

I n t e r n a t i o n a l   T e l e c o m m u n i c a t i o n   U n i o n

**WORLD  
RADIOCOMMUNICATION  
CONFERENCE  
PROVISIONAL FINAL ACTS**

**Geneva, 22 October-16 November 2007**



**TABLE OF CONTENTS**

ARTICLES

APPENDICES

RESOLUTIONS

RECOMMENDATIONS



# ARTICLES



## ARTICLE 2

### Nomenclature

#### Section I – Frequency and wavelength bands

**MOD** COM6/382/1 (B20/414/1)

**2.1** The radio spectrum shall be subdivided into nine frequency bands, which shall be designated by progressive whole numbers in accordance with the following table. As the unit of frequency is the hertz (Hz), frequencies shall be expressed:

- in kilohertz (kHz), up to and including 3 000 kHz;
- in megahertz (MHz), above 3 MHz, up to and including 3 000 MHz;
- in gigahertz (GHz), above 3 GHz, up to and including 3 000 GHz.

However, where adherence to these provisions would introduce serious difficulties, for example in connection with the notification and registration of frequencies, the lists of frequencies and related matters, reasonable departures may be made<sup>1</sup>.

## ARTICLE 4

### Assignment and use of frequencies

#### Section I – General rules

**MOD** COM4/296/8 (B9/305/1) (R4/335/1)

**4.19** In certain cases provided for in Articles **31** and **51**, aircraft stations are authorized to use frequencies in the bands allocated to the maritime mobile service for the purpose of communicating with stations of that service (see No. **51.73**). (WRC-07)

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<sup>1</sup> **2.1.1** In the application of the Radio Regulations, the Radiocommunication Bureau uses the following units:

kHz	for frequencies up to 28 000 kHz inclusive
MHz	for frequencies above 28 000 kHz up to 10 500 MHz inclusive
GHz	for frequencies above 10 500 MHz.

## ARTICLE 5

### Frequency allocations

#### Section IV – Table of Frequency Allocations

(See No. 2.1)

**MOD** COM6/227/1 (B3/224/38) (R6/410/1)

**5.14** The “European Broadcasting Area” is bounded on the west by the western boundary of Region 1, on the east by the meridian 40° East of Greenwich and on the south by the parallel 30° North so as to include the northern part of Saudi Arabia and that part of those countries bordering the Mediterranean within these limits. In addition, Armenia, Azerbaijan, Georgia and those parts of the territories of Iraq, Jordan, Syrian Arab Republic, Turkey and Ukraine lying outside the above limits are included in the European Broadcasting Area.

**MOD** COM5/264/1 (B6/268/1) (R3/292/1)

**5.55** *Additional allocation:* in Armenia, Azerbaijan, the Russian Federation, Georgia, Kyrgyzstan, Tajikistan and Turkmenistan, the band 14-17 kHz is also allocated to the radionavigation service on a primary basis. (WRC-07)

**MOD** COM5/264/2 (B6/268/2) (R3/292/2)

**5.56** The stations of services to which the bands 14-19.95 kHz and 20.05-70 kHz and in Region 1 also the bands 72-84 kHz and 86-90 kHz are allocated may transmit standard frequency and time signals. Such stations shall be afforded protection from harmful interference. In Armenia, Azerbaijan, Belarus, Bulgaria, the Russian Federation, Georgia, Kazakhstan, Mongolia, Kyrgyzstan, Slovakia, Tajikistan and Turkmenistan, the frequencies 25 kHz and 50 kHz will be used for this purpose under the same conditions. (WRC-07)

**MOD** COM4/296/57 (B9/305/2) (R4/335/2)

#### 110-255 kHz

Allocation to services		
Region 1	Region 2	Region 3
...		
<b>130-135.7</b> FIXED MARITIME MOBILE  5.64 5.67	<b>130-135.7</b> FIXED MARITIME MOBILE  5.64	<b>130-135.7</b> FIXED MARITIME MOBILE RADIONAVIGATION 5.64
<b>135.7-137.8</b> FIXED MARITIME MOBILE Amateur ADD 5.4C03  5.64 5.67 ADD 5.4C04	<b>135.7-137.8</b> FIXED MARITIME MOBILE Amateur ADD 5.4C03  5.64	<b>135.7-137.8</b> FIXED MARITIME MOBILE RADIONAVIGATION Amateur ADD 5.4C03 5.64 ADD 5.4C04



Allocation to services		
Region 1	Region 2	Region 3
137.8-148.5 FIXED MARITIME MOBILE 5.64 5.67	137.8-160 FIXED MARITIME MOBILE	137.8-160 FIXED MARITIME MOBILE RADIONAVIGATION
...	5.64	5.64
	...	...

**ADD** COM4/296/58 (B9/305/3) (R4/335/3)

**5.4C03** Stations in the amateur service using frequencies in the band 135.7-137.8 kHz shall not exceed a maximum radiated power of 1 W (e.i.r.p.) and shall not cause harmful interference to stations of the radionavigation service operating in countries listed in No. **5.67**. (WRC-07)

**ADD** COM4/296/59 (B9/305/4) (R4/335/4)

**5.4C04** The use of the band 135.7-137.8 kHz in Algeria, Egypt, Iran (Islamic Republic of), Iraq, Libyan Arab Jamahiriya, Lebanon, Syrian Arab Republic, Sudan and Tunisia is limited to the fixed and maritime mobile services. The amateur service shall not be used in the above-mentioned countries in the band 135.7-137.8 kHz, and this should be taken into account by the countries authorizing such use. (WRC-07)

**MOD** COM5/264/3 (B6/268/3) (R3/292/3)

**5.67** *Additional allocation:* in Mongolia, Kyrgyzstan and Turkmenistan, the band 130-148.5 kHz is also allocated to the radionavigation service on a secondary basis. Within and between these countries this service shall have an equal right to operate. (WRC-07)

**MOD** COM5/264/4 (B6/268/4) (R3/292/4)

**5.70** *Alternative allocation:* in Angola, Botswana, Burundi, the Central African Rep., Congo (Rep. of the), Ethiopia, Kenya, Lesotho, Madagascar, Malawi, Mozambique, Namibia, Nigeria, Oman, the Dem. Rep. of the Congo, Rwanda, South Africa, Swaziland, Tanzania, Chad, Zambia and Zimbabwe, the band 200-283.5 kHz is allocated to the aeronautical radionavigation service on a primary basis. (WRC-07)

**MOD**      COM4/332/1      (B13/347/1)      (R7/411/1)

**200-495 kHz**

Allocation to services		
Region 1	Region 2	Region 3
<b>415-435</b> MARITIME MOBILE 5.79 AERONAUTICAL RADIONAVIGATION 5.72	<b>415-495</b>  MARITIME MOBILE 5.79 MOD 5.79A Aeronautical radionavigation 5.80          5.77 5.78 MOD 5.82	
<b>435-495</b> MARITIME MOBILE 5.79 MOD 5.79A Aeronautical radionavigation 5.72 MOD 5.82		

**MOD**      COM5/264/5      (B6/268/5)      (R3/292/5)

**5.75** *Different category of service:* in Armenia, Azerbaijan, Belarus, the Russian Federation, Georgia, Moldova, Kyrgyzstan, Tajikistan, Turkmenistan, Ukraine and the Black Sea areas of Romania, the allocation of the band 315-325 kHz to the maritime radionavigation service is on a primary basis under the condition that in the Baltic Sea area, the assignment of frequencies in this band to new stations in the maritime or aeronautical radionavigation services shall be subject to prior consultation between the administrations concerned. (WRC-07)

**MOD**      COM6/341/1      (B14/365/1)      (R7/411/2)

**5.77** *Different category of service:* in Australia, China, the French Overseas Communities of Region 3, India, Iran (Islamic Republic of), Japan, Pakistan, Papua New Guinea and Sri Lanka, the allocation of the band 415-495 kHz to the aeronautical radionavigation service is on a primary basis. Administrations in these countries shall take all practical steps necessary to ensure that aeronautical radionavigation stations in the band 435-495 kHz do not cause interference to reception by coast stations of ship stations transmitting on frequencies designated for ship stations on a worldwide basis (see No. **52.39**). (WRC-07)

**MOD**      COM4/332/3      (B13/347/2)      (R7/411/3)

**5.79A** When establishing coast stations in the NAVTEX service on the frequencies 490 kHz, 518 kHz and 4 209.5 kHz, administrations are strongly recommended to coordinate the operating characteristics in accordance with the procedures of the International Maritime Organization (IMO) (see Resolution **339 (Rev.WRC-07)**). (WRC-07)

**ADD** COM4/332/4 (B13/347/3) (R7/411/4)

**5.79B** The use of the band 495-505 kHz is limited to radiotelegraphy. (WRC-07)

**MOD** COM4/332/5 (B13/347/4) (R7/411/5)

**5.82** In the maritime mobile service, the frequency 490 kHz is to be used exclusively for the transmission by coast stations of navigational and meteorological warnings and urgent information to ships, by means of narrow-band direct-printing telegraphy. The conditions for use of the frequency 490 kHz are prescribed in Articles **31** and **52**. In using the band 415-495 kHz for the aeronautical radionavigation service, administrations are requested to ensure that no harmful interference is caused to the frequency 490 kHz. (WRC-07)

**MOD** COM4/332/2 (B13/347/5) (R7/411/6)

**495-1 800 kHz**

Allocation to services		
Region 1	Region 2	Region 3
<b>495-505</b>	MOBILE ADD 5.79B ADD 5.4C01	
<b>505-526.5</b> MARITIME MOBILE 5.79 MOD 5.79A MOD 5.84 AERONAUTICAL RADIONAVIGATION  5.72	<b>505-510</b> MARITIME MOBILE 5.79	<b>505-526.5</b> MARITIME MOBILE 5.79 MOD 5.79A MOD 5.84 AERONAUTICAL RADIONAVIGATION Aeronautical mobile Land mobile
	<b>510-525</b> MOBILE MOD 5.79A MOD 5.84 AERONAUTICAL RADIONAVIGATION	

**SUP** COM4/332/6 (B13/347/6) (R7/411/7)

**5.83**

**ADD** COM4/332/7 (B13/347/7) (R7/411/8)

**5.4C01** Administrations authorizing the use of frequencies in the band 495-505 kHz by services other than the maritime mobile service shall ensure that no harmful interference is caused to the maritime mobile service in this band or to the services having allocations in the adjacent bands, noting in particular the conditions of use of the frequencies 490 kHz and 518 kHz, as prescribed in Articles **31** and **52**. (WRC-07)

**MOD** COM4/332/8 (B13/347/8) (R7/411/9)

**5.84** The conditions for the use of the frequency 518 kHz by the maritime mobile service are prescribed in Articles **31** and **52**. (WRC-07)

**MOD** COM5/264/6 (B6/268/6) (R3/292/6)

**5.93** *Additional allocation:* in Angola, Armenia, Azerbaijan, Belarus, the Russian Federation, Georgia, Hungary, Kazakhstan, Latvia, Lithuania, Moldova, Mongolia, Nigeria, Uzbekistan, Poland, Kyrgyzstan, Slovakia, the Czech Rep., Tajikistan, Chad, Turkmenistan and Ukraine, the bands 1 625-1 635 kHz, 1 800-1 810 kHz and 2 160-2 170 kHz are also allocated to the fixed and land mobile services on a primary basis, subject to agreement obtained under No. **9.21**. (WRC-07)

**MOD** COM5/264/7 (B6/268/7) (R3/292/7)

**5.98** *Alternative allocation:* in Angola, Armenia, Azerbaijan, Belarus, Belgium, Cameroon, Congo (Rep. of the), Denmark, Egypt, Eritrea, Spain, Ethiopia, the Russian Federation, Georgia, Greece, Italy, Kazakhstan, Lebanon, Lithuania, Moldova, the Syrian Arab Republic, Kyrgyzstan, Somalia, Tajikistan, Tunisia, Turkmenistan, Turkey and Ukraine, the band 1 810-1 830 kHz is allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis. (WRC-07)

**MOD** COM5/264/8 (B6/268/8) (R3/292/8)

**5.99** *Additional allocation:* in Saudi Arabia, Austria, Iraq, the Libyan Arab Jamahiriya, Uzbekistan, Slovakia, Romania, Serbia, Slovenia, Chad, and Togo, the band 1 810-1 830 kHz is also allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis. (WRC-07)

**MOD** COM5/264/9 (B6/268/9) (R3/292/9)

**5.102** *Alternative allocation:* in Bolivia, Chile, Mexico, Paraguay, Peru and Uruguay, the band 1 850-2 000 kHz is allocated to the fixed, mobile except aeronautical mobile, radiolocation and radionavigation services on a primary basis. (WRC-07)

**MOD** COM4/332/9 (B13/347/9) (R7/411/10)

**5.108** The carrier frequency 2 182 kHz is an international distress and calling frequency for radiotelephony. The conditions for the use of the band 2 173.5-2 190.5 kHz are prescribed in Articles **31** and **52**. (WRC-07)

**MOD** COM4/332/10 (B13/347/10) (R7/411/11)

**5.111** The carrier frequencies 2 182 kHz, 3 023 kHz, 5 680 kHz, 8 364 kHz and the frequencies 121.5 MHz, 156.525 MHz, 156.8 MHz and 243 MHz may also be used, in accordance with the procedures in force for terrestrial radiocommunication services, for search and rescue operations concerning manned space vehicles. The conditions for the use of the frequencies are prescribed in Article **31**.

The same applies to the frequencies 10 003 kHz, 14 993 kHz and 19 993 kHz, but in each of these cases emissions must be confined in a band of  $\pm 3$  kHz about the frequency. (WRC-07)

**MOD** COM5/264/10 (B6/268/10) (R3/292/10)

**5.112** *Alternative allocation:* in Denmark, Malta, Serbia and Sri Lanka, the band 2 194-2 300 kHz is allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis. (WRC-07)

**MOD** COM5/264/11 (B6/268/11) (R3/292/11)

**5.114** *Alternative allocation:* in Denmark, Iraq, Malta, and Serbia, the band 2 502-2 625 kHz is allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis. (WRC-07)

**MOD** COM4/332/11 (B13/347/11) (R7/411/12)

**5.115** The carrier (reference) frequencies 3 023 kHz and 5 680 kHz may also be used, in accordance with Article **31** by stations of the maritime mobile service engaged in coordinated search and rescue operations. (WRC-07)

**MOD** COM5/264/12 (B6/268/12) (R3/292/12)

**5.117** *Alternative allocation:* in Côte d'Ivoire, Denmark, Egypt, Liberia, Malta, Serbia, Sri Lanka and Togo, the band 3 155-3 200 kHz is allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis. (WRC-07)

**MOD** COM5/264/13 (B6/268/13) (R3/292/13)

**5.119** *Additional allocation:* in Honduras, Mexico and Peru, the band 3 500-3 750 kHz is also allocated to the fixed and mobile services on a primary basis. (WRC-07)

**MOD** COM5/264/14 (B6/268/14) (R3/292/14)

**5.122** *Alternative allocation:* in Bolivia, Chile, Ecuador, Paraguay, Peru and Uruguay, the band 3 750-4 000 kHz is allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis. (WRC-07)

**MOD** COM4/380/63 (B17/404/1)

**5.128** Frequencies in the bands 4 063-4 123 kHz and 4 130-4 438 kHz may be used exceptionally by stations in the fixed service, communicating only within the boundary of the country in which they are located, with a mean power not exceeding 50 W, on condition that harmful interference is not caused to the maritime mobile service. In addition, in Afghanistan, Argentina, Armenia, Azerbaijan, Belarus, Botswana, Burkina Faso, the Central African Rep., China, the Russian Federation, Georgia, India, Kazakhstan, Mali, Niger, Kyrgyzstan, Tajikistan, Chad, Turkmenistan and Ukraine, in the bands 4 063-4 123 kHz, 4 130-4 133 kHz and 4 408-4 438 kHz, stations in the fixed service, with a mean power not exceeding 1 kW, can be operated on condition that they are situated at least 600 km from the coast and that harmful interference is not caused to the maritime mobile service. (WRC-07)

**SUP** COM4/380/64 (B17/404/2)

**5.129**

**MOD** COM4/332/12 (B13/347/12) (R7/411/13)

**5.130** The conditions for the use of the carrier frequencies 4 125 kHz and 6 215 kHz are prescribed in Articles **31** and **52**. (WRC-07)

**MOD** COM5/264/15 (B6/268/15) (R3/292/15)

**5.133** *Different category of service:* in Armenia, Azerbaijan, Belarus, the Russian Federation, Georgia, Kazakhstan, Latvia, Lithuania, Uzbekistan, Kyrgyzstan, Tajikistan, Turkmenistan and Ukraine, the allocation of the band 5 130-5 250 kHz to the mobile, except aeronautical mobile, service is on a primary basis (see No. **5.33**). (WRC-07)

**MOD** COM4/380/65 (B17/404/3)

**5.134** The use of the bands 5 900-5 950 kHz, 7 300-7 350 kHz, 9 400-9 500 kHz, 11 600-11 650 kHz, 12 050-12 100 kHz, 13 570-13 600 kHz, 13 800-13 870 kHz, 15 600-15 800 kHz, 17 480-17 550 kHz and 18 900-19 020 kHz by the broadcasting service is subject to the application of the procedure of Article 12. Administrations are encouraged to use these bands to facilitate the introduction of digitally modulated emissions in accordance with the provisions of Resolution 517 (Rev.WRC-07). (WRC-07)

**MOD** COM4/380/66 (B17/404/4)

**5.136** *Additional allocation:* Frequencies in the band 5 900-5 950 kHz may be used by stations in the following services, communicating only within the boundary of the country in which they are located: fixed service (in all three Regions), land mobile service (in Region 1), mobile except aeronautical mobile (R) service (in Regions 2 and 3), on condition that harmful interference is not caused to the broadcasting service. When using frequencies for these services, administrations are urged to use the minimum power required and to take account of the seasonal use of frequencies by the broadcasting service published in accordance with the Radio Regulations. (WRC-07)

**MOD** COM5/264/16 (B6/268/16) (R3/292/16)

**5.139** *Different category of service:* until 29 March 2009, in Armenia, Azerbaijan, Belarus, the Russian Federation, Georgia, Kazakhstan, Latvia, Lithuania, Mongolia, Uzbekistan, Kyrgyzstan, Tajikistan, Turkmenistan and Ukraine, the allocation of the band 6 765-7 000 kHz to the land mobile service is on a primary basis (see No. 5.33). (WRC-07)

**MOD** COM4/380/67 (B17/404/5)

**5.143** *Additional allocation:* Frequencies in the band 7 300-7 350 kHz may be used by stations in the fixed service and in the land mobile service, communicating only within the boundary of the country in which they are located, on condition that harmful interference is not caused to the broadcasting service. When using frequencies for these services, administrations are urged to use the minimum power required and to take account of the seasonal use of frequencies by the broadcasting service published in accordance with the Radio Regulations. (WRC-07)

**MOD** COM4/332/13 (B13/347/13) (R7/411/14)

**5.145** The conditions for the use of the carrier frequencies 8 291 kHz, 12 290 kHz and 16 420 kHz are prescribed in Articles 31 and 52. (WRC-07)

**MOD** COM4/380/68 (B17/404/6)

**5.146** *Additional allocation:* Frequencies in the bands 9 400-9 500 kHz, 11 600-11 650 kHz, 12 050-12 100 kHz, 15 600-15 800 kHz, 17 480-17 550 kHz and 18 900-19 020 kHz may be used by stations in the fixed service, communicating only within the boundary of the country in which they are located, on condition that harmful interference is not caused to the broadcasting service. When using frequencies in the fixed service, administrations are urged to use the minimum power required and to take account of the seasonal use of frequencies by the broadcasting service published in accordance with the Radio Regulations. (WRC-07)

**MOD** COM4/380/69 (B17/404/7)

**5.151** *Additional allocation:* Frequencies in the bands 13 570-13 600 kHz and 13 800-13 870 kHz may be used by stations in the fixed service and in the mobile except aeronautical mobile (R) service, communicating only within the boundary of the country in which they are located, on the condition that harmful interference is not caused to the broadcasting service. When using frequencies in these services, administrations are urged to use the minimum power required and to take account of the seasonal use of frequencies by the broadcasting service published in accordance with the Radio Regulations. (WRC-07)

**MOD** COM5/264/17 (B6/268/17) (R3/292/17)

**5.155** *Additional allocation:* in Armenia, Azerbaijan, Belarus, the Russian Federation, Georgia, Kazakhstan, Moldova, Mongolia, Uzbekistan, Kyrgyzstan, Slovakia, Tajikistan, Turkmenistan and Ukraine, the band 21 850-21 870 kHz is also allocated to the aeronautical mobile (R) service on a primary basis. (WRC-07)

**MOD** COM5/264/18 (B6/268/18) (R3/292/18)

**5.155A** In Armenia, Azerbaijan, Belarus, the Russian Federation, Georgia, Kazakhstan, Moldova, Mongolia, Uzbekistan, Kyrgyzstan, Slovakia, Tajikistan, Turkmenistan and Ukraine, the use of the band 21 850-21 870 kHz by the fixed service is limited to provision of services related to aircraft flight safety. (WRC-07)

**MOD** COM5/264/19 (B6/268/19) (R3/292/19)

**5.162A** *Additional allocation:* in Germany, Austria, Belgium, Bosnia and Herzegovina, China, Vatican, Denmark, Spain, Estonia, the Russian Federation, Finland, France, Ireland, Iceland, Italy, Latvia, The Former Yugoslav Republic of Macedonia, Liechtenstein, Lithuania, Luxembourg, Monaco, Montenegro, Norway, the Netherlands, Poland, Portugal, Slovakia, the Czech Rep., the United Kingdom, Serbia, Slovenia, Sweden and Switzerland the band 46-68 MHz is also allocated to the radiolocation service on a secondary basis. This use is limited to the operation of wind profiler radars in accordance with Resolution **217 (WRC-97)**. (WRC-07)

**MOD** COM5/264/20 (B6/268/20) (R3/292/20)

**5.163** *Additional allocation:* in Armenia, Belarus, the Russian Federation, Georgia, Hungary, Kazakhstan, Latvia, Lithuania, Moldova, Uzbekistan, Kyrgyzstan, Slovakia, the Czech Rep., Tajikistan, Turkmenistan and Ukraine, the bands 47-48.5 MHz and 56.5-58 MHz are also allocated to the fixed and land mobile services on a secondary basis. (WRC-07)

**MOD** COM5/264/21 (B6/268/21) (R3/292/21)

**5.164** *Additional allocation:* in Albania, Germany, Austria, Belgium, Bosnia and Herzegovina, Botswana, Bulgaria, Côte d'Ivoire, Denmark, Spain, Estonia, Finland, France, Gabon, Greece, Ireland, Israel, Italy, the Libyan Arab Jamahiriya, Jordan, Lebanon, Liechtenstein, Luxembourg, Madagascar, Mali, Malta, Morocco, Mauritania, Monaco, Montenegro, Nigeria, Norway, the Netherlands, Poland, Syrian Arab Republic, Romania, the United Kingdom, Serbia, Slovenia, Sweden, Switzerland, Swaziland, Chad, Togo, Tunisia and Turkey, the band 47-68 MHz, in South Africa the band 47-50 MHz, in the Czech Rep. the band 66-68 MHz, and in Latvia and Lithuania the band 48.5-56.5 MHz, are also allocated to the land mobile service on a primary basis. However, stations of the land mobile service in the countries mentioned in connection with each band referred to in this footnote shall not cause harmful interference to, or claim protection from, existing or planned broadcasting stations of countries other than those mentioned in connection with the band. (WRC-07)

**MOD** COM5/264/22 (B6/268/22) (R3/292/22)

**5.167** *Alternative allocation:* in Bangladesh, Brunei Darussalam, India, Iran (Islamic Republic of), Pakistan, Singapore and Thailand, the band 50-54 MHz is allocated to the fixed, mobile and broadcasting services on a primary basis. (WRC-07)

**ADD** COM5/264/23 (B6/268/23) (R3/292/23)

**5.167A** *Additional allocation:* in Indonesia, the band 50-54 MHz is also allocated to the fixed, mobile and broadcasting services on a primary basis. (WRC-07)

**SUP** COM5/264/24 (B6/268/24) (R3/292/24)

**5.174**

**MOD** COM5/264/25 (B6/268/25) (R3/292/25)

**5.175** *Alternative allocation:* in Armenia, Azerbaijan, Belarus, the Russian Federation, Georgia, Kazakhstan, Moldova, Uzbekistan, Kyrgyzstan, Tajikistan, Turkmenistan and Ukraine, the bands 68-73 MHz and 76-87.5 MHz are allocated to the broadcasting service on a primary basis. In Latvia and Lithuania, the bands 68-73 MHz and 76-87.5 MHz are allocated to the broadcasting and mobile, except aeronautical mobile, services on a primary basis. The services to which these bands are allocated in other countries and the broadcasting service in the countries listed above are subject to agreements with the neighbouring countries concerned. (WRC-07)

**MOD** COM5/264/26 (B6/268/26) (R3/292/26)

**5.176** *Additional allocation:* in Australia, China, Korea (Rep. of), the Philippines, the Dem. People's Rep. of Korea and Samoa, the band 68-74 MHz is also allocated to the broadcasting service on a primary basis. (WRC-07)

**MOD** COM5/264/27 (B6/268/27) (R3/292/27)

**5.177** *Additional allocation:* in Armenia, Azerbaijan, Belarus, the Russian Federation, Georgia, Kazakhstan, Uzbekistan, Kyrgyzstan, Tajikistan, Turkmenistan and Ukraine, the band 73-74 MHz is also allocated to the broadcasting service on a primary basis, subject to agreement obtained under No. **9.21**. (WRC-07)

**MOD** COM5/264/28 (B6/268/28) (R3/292/28)

**5.179** *Additional allocation:* in Armenia, Azerbaijan, Belarus, China, the Russian Federation, Georgia, Kazakhstan, Lithuania, Mongolia, Kyrgyzstan, Slovakia, Tajikistan, Turkmenistan and Ukraine, the bands 74.6-74.8 MHz and 75.2-75.4 MHz are also allocated to the aeronautical radionavigation service, on a primary basis, for ground-based transmitters only. (WRC-07)

**MOD** COM4/318/5 (B11/329/1) (R6/410/2)

**75.2-137.175 MHz**

Allocation to services		
Region 1	Region 2	Region 3
<b>108-117.975</b>	AERONAUTICAL RADIONAVIGATION 5.197 MOD 5.197A	



**MOD** COM4/332/15 (B13/347/14) (R7/411/15)

**75.2-137.175 MHz**

Allocation to services		
Region 1	Region 2	Region 3
117.975-137	AERONAUTICAL MOBILE (R) 5.111 MOD 5.200 5.201 5.202	

**MOD** COM5/265/1 (B6/268/29) (R3/292/29)

**75.2-137.175 MHz**

Allocation to services		
Region 1	Region 2	Region 3
137-137.025	SPACE OPERATION (space-to-Earth) METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) MOD 5.208A 5.209 MOD 5.347A SPACE RESEARCH (space-to-Earth) Fixed Mobile except aeronautical mobile (R) 5.204 5.205 5.206 5.207 5.208	
137.025-137.175	SPACE OPERATION (space-to-Earth) METEOROLOGICAL-SATELLITE (space-to-Earth) SPACE RESEARCH (space-to-Earth) Fixed Mobile-satellite (space-to-Earth) MOD 5.208A 5.209 MOD 5.347A Mobile except aeronautical mobile (R) 5.204 5.205 5.206 5.207 5.208	

**SUP** COM5/264/29 (B6/268/30) (R3/292/30)

**5.184**

**MOD** COM5/264/30 (B6/268/31) (R3/292/31)

**5.194** *Additional allocation:* in Azerbaijan, Kyrgyzstan, Somalia and Turkmenistan, the band 104-108 MHz is also allocated to the mobile, except aeronautical mobile (R), service on a secondary basis. (WRC-07)

**MOD** COM5/264/31 (B6/268/32) (R3/292/32)

**5.197** *Additional allocation:* in Pakistan and the Syrian Arab Republic, the band 108-111.975 MHz is also allocated to the mobile service on a secondary basis, subject to agreement obtained under No. **9.21**. In order to ensure that harmful interference is not caused to stations of the aeronautical radionavigation service, stations of the mobile service shall not be introduced in the band until it is no longer required for the aeronautical radionavigation service by any administration which may be identified in the application of the procedures invoked under No. **9.21**. (WRC-07)

**MOD** COM4/318/6 (B11/329/3) (R6/410/4)

**5.197A** *Additional allocation:* the band 108-117.975 MHz is also allocated on a primary basis to the aeronautical mobile (R) service, limited to systems operating in accordance with recognized international aeronautical standards. Such use shall be in accordance with Resolution **413 (Rev.WRC-07)**. The use of the band 108-112 MHz by the aeronautical mobile (R) service shall be limited to systems composed of ground-based transmitters and associated receivers that provide navigational information in support of air navigation functions in accordance with recognized international aeronautical standards. (WRC-07)

**SUP** COM4/318/3 (B11/329/4) (R6/410/5)

**5.198**

**SUP** COM4/332/14 (B13/347/15) (R7/411/17)

**5.199**

**MOD** COM4/332/16 (B13/347/16) (R7/411/18)

**5.200** In the band 117.975-137 MHz, the frequency 121.5 MHz is the aeronautical emergency frequency and, where required, the frequency 123.1 MHz is the aeronautical frequency auxiliary to 121.5 MHz. Mobile stations of the maritime mobile service may communicate on these frequencies under the conditions laid down in Article **31** for distress and safety purposes with stations of the aeronautical mobile service. (WRC-07)

**SUP** COM6/341/3 (B14/365/3) (R7/411/19)

**5.203**

**SUP** COM5/264/32 (B6/268/33) (R3/292/33)

**5.203A**

**MOD** COM5/265/2 (B6/268/36) (R3/292/36)

**137.175-148 MHz**

Allocation to services		
Region 1	Region 2	Region 3
<b>137.175-137.825</b>	SPACE OPERATION (space-to-Earth) METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) MOD 5.208A 5.209 MOD 5.347A SPACE RESEARCH (space-to-Earth) Fixed Mobile except aeronautical mobile (R) 5.204 5.205 5.206 5.207 5.208	

Allocation to services		
Region 1	Region 2	Region 3
<b>137.825-138</b>	SPACE OPERATION (space-to-Earth) METEOROLOGICAL-SATELLITE (space-to-Earth) SPACE RESEARCH (space-to-Earth) Fixed Mobile-satellite (space-to-Earth) MOD 5.208A 5.209 MOD 5.347A Mobile except aeronautical mobile (R) 5.204 5.205 5.206 5.207 5.208	

**SUP** COM6/341/4 (B14/365/4) (R7/411/20)

## 5.203B

**MOD** COM5/264/33 (B6/268/34) (R3/292/34)

**5.204** *Different category of service:* in Afghanistan, Saudi Arabia, Bahrain, Bangladesh, Brunei Darussalam, China, Cuba, the United Arab Emirates, India, Indonesia, Iran (Islamic Republic of), Iraq, Kuwait, Montenegro, Oman, Pakistan, the Philippines, Qatar, Serbia, Singapore, Thailand and Yemen, the band 137-138 MHz is allocated to the fixed and mobile, except aeronautical mobile (R), services on a primary basis (see No. **5.33**). (WRC-07)

**MOD** COM5/265/3 (B6/268/35) (R3/292/35)

**5.208A** In making assignments to space stations in the mobile-satellite service in the bands 137-138 MHz, 387-390 MHz and 400.15-401 MHz, administrations shall take all practicable steps to protect the radio astronomy service in the bands 150.05-153 MHz, 322-328.6 MHz, 406.1-410 MHz and 608-614 MHz from harmful interference from unwanted emissions. The threshold levels of interference detrimental to the radio astronomy service are shown in the relevant ITU-R Recommendation. (WRC-07)

**MOD** COM5/264/34 (B6/268/37) (R3/292/37)

**5.210** *Additional allocation:* in Italy, the Czech Rep. and the United Kingdom, the bands 138-143.6 MHz and 143.65-144 MHz are also allocated to the space research service (space-to-Earth) on a secondary basis. (WRC-07)

**MOD** COM5/264/35 (B6/268/38) (R3/292/38)

**5.211** *Additional allocation:* in Germany, Saudi Arabia, Austria, Bahrain, Belgium, Denmark, the United Arab Emirates, Spain, Finland, Greece, Ireland, Israel, Kenya, Kuwait, The Former Yugoslav Republic of Macedonia, Lebanon, Liechtenstein, Luxembourg, Mali, Malta, Montenegro, Norway, the Netherlands, Qatar, the United Kingdom, Serbia, Slovenia, Somalia, Sweden, Switzerland, Tanzania, Tunisia and Turkey, the band 138-144 MHz is also allocated to the maritime mobile and land mobile services on a primary basis. (WRC-07)

**MOD** COM5/264/36 (B6/268/39) (R3/292/39)

**5.212** *Alternative allocation:* in Angola, Botswana, Burundi, Cameroon, the Central African Rep., Congo (Rep. of the), Gabon, Gambia, Ghana, Guinea, Iraq, Libyan Arab Jamahiriya, Jordan, Lesotho, Liberia, Malawi, Mozambique, Namibia, Oman, Uganda, Syrian Arab Republic, the Dem. Rep. of the Congo, Rwanda, Sierra Leone, South Africa, Swaziland, Chad, Togo, Zambia and Zimbabwe, the band 138-144 MHz is allocated to the fixed and mobile services on a primary basis. (WRC-07)

**MOD** COM5/264/37 (B6/268/40) (R3/292/40)

**5.214** *Additional allocation:* in Eritrea, Ethiopia, Kenya, The Former Yugoslav Republic of Macedonia, Malta, Montenegro, Serbia, Somalia, Sudan and Tanzania, the band 138-144 MHz is also allocated to the fixed service on a primary basis. (WRC-07)

**MOD**      COM4/332/17      (B13/347/17)      (R7/411/21)

## 148-223 MHz

Allocation to services					
Region 1		Region 2		Region 3	
<b>150.05-153</b> FIXED MOBILE except aeronautical mobile RADIO ASTRONOMY 5.149		<b>150.05-156.4875</b>  FIXED  MOBILE			
<b>153-154</b> FIXED MOBILE except aeronautical mobile (R) Meteorological Aids					
<b>154-156.4875</b> FIXED MOBILE except aeronautical mobile (R) MOD 5.226					
<b>156.4875-156.5625</b> MARITIME MOBILE (distress and calling via DSC) MOD 5.111 MOD 5.226 MOD 5.227		<b>156.4875-156.5625</b>  MARITIME MOBILE (distress and calling via DSC)   MOD 5.111 MOD 5.226 MOD 5.227			
<b>156.5625-156.7625</b> FIXED MOBILE except aeronautical mobile (R) MOD 5.226		<b>156.5625-156.7625</b>  FIXED  MOBILE   5.225 MOD 5.226			
<b>156.7625-156.8375</b>		MARITIME MOBILE (distress and calling) MOD 5.111 MOD 5.226			
<b>156.8375-174</b> FIXED MOBILE except aeronautical mobile MOD 5.226 5.229 ADD 5.4C02		<b>156.8375-174</b>  FIXED  MOBILE   MOD 5.226 5.230 5.231 5.232 ADD 5.4C02			

**MOD** COM5/264/38 (B6/268/41) (R3/292/41)

**5.221** Stations of the mobile-satellite service in the band 148-149.9 MHz shall not cause harmful interference to, or claim protection from, stations of the fixed or mobile services operating in accordance with the Table of Frequency Allocations in the following countries: Albania, Algeria, Germany, Saudi Arabia, Australia, Austria, Bahrain, Bangladesh, Barbados, Belarus, Belgium, Benin, Bosnia and Herzegovina, Botswana, Brunei Darussalam, Bulgaria, Cameroon, China, Cyprus, Congo (Rep. of the), Korea (Rep. of), Côte d'Ivoire, Croatia, Cuba, Denmark, Egypt, the United Arab Emirates, Eritrea, Spain, Estonia, Ethiopia, the Russian Federation, Finland, France, Gabon, Ghana, Greece, Guinea, Guinea Bissau, Hungary, India, Iran (Islamic Republic of), Ireland, Iceland, Israel, Italy, the Libyan Arab Jamahiriya, Jamaica, Japan, Jordan, Kazakhstan, Kenya, Kuwait, The Former Yugoslav Republic of Macedonia, Lesotho, Latvia, Lebanon, Liechtenstein, Lithuania, Luxembourg, Malaysia, Mali, Malta, Mauritania, Moldova, Mongolia, Montenegro, Mozambique, Namibia, Norway, New Zealand, Oman, Uganda, Uzbekistan, Pakistan, Panama, Papua New Guinea, Paraguay, the Netherlands, the Philippines, Poland, Portugal, Qatar, the Syrian Arab Republic, Kyrgyzstan, Dem. People's Rep. of Korea, Slovakia, Romania, the United Kingdom, Senegal, Serbia, Sierra Leone, Singapore, Slovenia, Sri Lanka, South Africa, Sweden, Switzerland, Swaziland, Tanzania, Chad, Thailand, Togo, Tonga, Trinidad and Tobago, Tunisia, Turkey, Ukraine, Viet Nam, Yemen, Zambia, and Zimbabwe. (WRC-07)

**MOD** COM4/332/18 (B13/347/18) (R7/411/22)

**5.226** The frequency 156.8 MHz is the international distress, safety and calling frequency for the maritime mobile VHF radiotelephone service. The conditions for the use of this frequency and the band 156.7625-156.8375 MHz are contained in Article **31** and Appendix **18**.

The frequency 156.525 MHz is the international distress, safety and calling frequency for the maritime mobile VHF radiotelephone service using digital selective calling (DSC). The conditions for the use of this frequency and the band 156.4875-156.5625 MHz are contained in Articles **31** and **52**, and in Appendix **18**.

In the bands 156-156.4875 MHz, 156.5625-156.7625 MHz, 156.8375-157.45 MHz, 160.6-160.975 MHz and 161.475-162.05 MHz, each administration shall give priority to the maritime mobile service on only such frequencies as are assigned to stations of the maritime mobile service by the administration (see Articles **31** and **52**, and Appendix **18**).

Any use of frequencies in these bands by stations of other services to which they are allocated should be avoided in areas where such use might cause harmful interference to the maritime mobile VHF radiocommunication service.

However, the frequencies 156.8 MHz and 156.525 MHz and the frequency bands in which priority is given to the maritime mobile service may be used for radiocommunications on inland waterways subject to agreement between interested and affected administrations and taking into account current frequency usage and existing agreements. (WRC-07)

**MOD** COM4/332/19 (B13/347/19) (R7/411/23)

**5.227** *Additional allocation:* the bands 156.4875-156.5125 MHz and 156.5375-156.5625 MHz are also allocated to the fixed and land mobile services on a primary basis. The use of these bands by the fixed and land mobile services shall not cause harmful interference to nor claim protection from the maritime mobile VHF radiocommunication service. (WRC-07)

**ADD** COM4/332/20 (B13/347/20) (R7/411/24)

**5.4C02** *Additional allocation:* the bands 161.9625-161.9875 MHz and 162.0125-162.0375 MHz are also allocated to the mobile-satellite service (Earth-to-space) on a secondary basis for the reception of automatic identification system (AIS) emissions from stations operating in the maritime-mobile service (see Appendix 18). (WRC-07)

**MOD** COM5/264/39 (B6/268/42) (R3/292/42)

**5.237** *Additional allocation:* in Congo (Rep. of the), Eritrea, Ethiopia, Gambia, Guinea, the Libyan Arab Jamahiriya, Malawi, Mali, Sierra Leone, Somalia and Chad, the band 174-223 MHz is also allocated to the fixed and mobile services on a secondary basis. (WRC-07)

**MOD** COM4/332/21 (B13/347/21) (R7/411/25)

**5.256** The frequency 243 MHz is the frequency in this band for use by survival craft stations and equipment used for survival purposes. (WRC-07)

**MOD** COM5/264/40 (B6/268/43) (R3/292/43)

**5.259** *Additional allocation:* in Egypt, Israel and the Syrian Arab Republic, the band 328.6-335.4 MHz is also allocated to the mobile service on a secondary basis, subject to agreement obtained under No. 9.21. In order to ensure that harmful interference is not caused to stations of the aeronautical radionavigation service, stations of the mobile service shall not be introduced in the band until it is no longer required for the aeronautical radionavigation service by any administration which may be identified in the application of the procedure invoked under No. 9.21. (WRC-07)

**MOD** COM5/265/4 (B6/268/44) (R3/292/44)

#### 335.4-410 MHz

Allocation to services						
Region 1		Region 2			Region 3	
...						
387-390		FIXED MOBILE Mobile-satellite (space-to-Earth) 5.208A 5.254 5.255 MOD 5.347A				
...						
400.15-401		METEOROLOGICAL AIDS METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) 5.208A 5.209 MOD 5.347A SPACE RESEARCH (space-to-Earth) 5.263 Space operation (space-to-Earth) 5.262 5.264				

**MOD** COM5/264/41 (B6/268/45) (R3/292/45)

**5.262** *Additional allocation:* in Saudi Arabia, Armenia, Azerbaijan, Bahrain, Belarus, Botswana, Colombia, Costa Rica, Cuba, Egypt, the United Arab Emirates, Ecuador, the Russian Federation, Georgia, Hungary, Iran (Islamic Republic of), Iraq, Israel, Jordan, Kazakhstan, Kuwait, Liberia, Malaysia, Moldova, Uzbekistan, Pakistan, the Philippines, Qatar, the Syrian Arab Republic, Kyrgyzstan, Romania, Singapore, Somalia, Tajikistan, Turkmenistan and Ukraine, the band 400.05-401 MHz is also allocated to the fixed and mobile services on a primary basis. (WRC-07)

**MOD** COM4/332/22 (B13/347/22) (R7/411/26)

**5.266** The use of the band 406-406.1 MHz by the mobile-satellite service is limited to low power satellite emergency position-indicating radiobeacons (see also Article **31**). (WRC-07)

**MOD** COM4/394/1 (B22/416/1)

#### 410-460 MHz

Allocation to services		
Region 1	Region 2	Region 3
<b>450-455</b>	FIXED MOBILE ADD 5.XXX 5.209 5.271 5.286 5.286A 5.286B 5.286C 5.286D 5.286E	
<b>455-456</b> FIXED MOBILE ADD 5.XXX  5.209 5.271 5.286A 5.286B 5.286C 5.286E	<b>455-456</b> FIXED MOBILE ADD 5.XXX MOBILE-SATELLITE (Earth-to-space) 5.286A 5.286B 5.286C 5.209	<b>455-456</b> FIXED MOBILE ADD 5.XXX  5.209 5.271 5.286A 5.286B 5.286C 5.286E
<b>456-459</b>	FIXED MOBILE ADD 5.XXX 5.271 5.287 5.288	
<b>459-460</b> FIXED MOBILE ADD 5.XXX  5.209 5.271 5.286A 5.286B 5.286C 5.286E	<b>459-460</b> FIXED MOBILE ADD 5.XXX MOBILE-SATELLITE (Earth-to-space) 5.286A 5.286B 5.286C 5.209	<b>459-460</b> FIXED MOBILE ADD 5.XXX  5.209 5.271 5.286A 5.286B 5.286C 5.286E

**MOD** COM4/332/23 (B13/347/23) (R7/411/27)

#### 410-460 MHz

Allocation to services		
Region 1	Region 2	Region 3
<b>456-459</b>	FIXED MOBILE ADD 5.xxx 5.271 MOD 5.287 5.288	

**MOD** COM5/264/42 (B6/268/46) (R3/292/46)

**5.271** *Additional allocation:* in Belarus, China, India, Kyrgyzstan and Turkmenistan, the band 420-460 MHz is also allocated to the aeronautical radionavigation service (radio altimeters) on a secondary basis. (WRC-07)

**MOD** COM5/264/43 (B6/268/47) (R3/292/47)

**5.275** *Additional allocation:* in Croatia, Estonia, Finland, Libyan Arab Jamahiriya, The Former Yugoslav Republic of Macedonia, Montenegro, Serbia and Slovenia, the bands 430-432 MHz and 438-440 MHz are also allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis. (WRC-07)

**MOD** COM5/264/44 (B6/268/48) (R3/292/48)

**5.276** *Additional allocation:* in Afghanistan, Algeria, Saudi Arabia, Bahrain, Bangladesh, Brunei Darussalam, Burkina Faso, Burundi, Egypt, the United Arab Emirates, Ecuador, Eritrea, Ethiopia, Greece, Guinea, India, Indonesia, Iran (Islamic Republic of), Iraq, Israel, Italy, Libyan Arab Jamahiriya, Jordan, Kenya, Kuwait, Lebanon, Malaysia, Malta, Nigeria, Oman, Pakistan, the Philippines, Qatar, the Syrian Arab Republic, the Dem. People's Rep. of Korea, Singapore, Somalia, Switzerland, Tanzania, Thailand, Togo, Turkey and Yemen, the band 430-440 MHz is also allocated to the fixed service on a primary basis and the bands 430-435 MHz and 438-440 MHz are also allocated to the mobile, except aeronautical mobile, service on a primary basis. (WRC-07)

**MOD** COM5/264/45 (B6/268/49) (R3/292/49)

**5.277** *Additional allocation:* in Angola, Armenia, Azerbaijan, Belarus, Cameroon, Congo (Rep. of the), Djibouti, the Russian Federation, Georgia, Hungary, Israel, Kazakhstan, Mali, Moldova, Mongolia, Uzbekistan, Poland, Kyrgyzstan, Slovakia, Romania, Rwanda, Tajikistan, Chad, Turkmenistan and Ukraine, the band 430-440 MHz is also allocated to the fixed service on a primary basis. (WRC-07)

**MOD** COM5/264/46 (B6/268/50) (R3/292/50)

**5.280** In Germany, Austria, Bosnia and Herzegovina, Croatia, The Former Yugoslav Republic of Macedonia, Liechtenstein, Montenegro, Portugal, Serbia, Slovenia and Switzerland, the band 433.05-434.79 MHz (centre frequency 433.92 MHz) is designated for industrial, scientific and medical (ISM) applications. Radiocommunication services of these countries operating within this band must accept harmful interference which may be caused by these applications. ISM equipment operating in this band is subject to the provisions of No. **15.13**. (WRC-07)

**MOD** COM5/264/47 (B6/268/51) (R3/292/51)

**5.286D** *Additional allocation:* in Canada, the United States and Panama, the band 454-455 MHz is also allocated to the mobile-satellite service (Earth-to-space) on a primary basis. (WRC-07)



**MOD** COM5/264/48 (B6/268/52) (R3/292/52)

**5.286E** *Additional allocation:* in Cape Verde, Nepal and Nigeria, the bands 454-456 MHz and 459-460 MHz are also allocated to the mobile-satellite (Earth-to-space) service on a primary basis. (WRC-07)

**MOD** COM4/394/1*bis* (B22/416/2)

**460-890 MHz**

Allocation to services		
Region 1	Region 2	Region 3
<b>460-470</b>	FIXED MOBILE ADD 5.XXX Meteorological-satellite (space-to-Earth) MOD 5.287 5.288 5.289 5.290	

**ADD** COM4/394/2 (B22/416/3)

**5.XXX** The band 450-470 MHz is identified for use by administrations wishing to implement International Mobile Telecommunications (IMT). See Resolution **224 (Rev.WRC-07)**. This identification does not preclude the use of this band by any application of the services to which it is allocated and does not establish priority in the Radio Regulations.

**MOD** COM4/332/25 (B13/347/24) (R7/411/28)

**5.287** In the maritime mobile service, the frequencies 457.525 MHz, 457.550 MHz, 457.575 MHz, 467.525 MHz, 467.550 MHz and 467.575 MHz may be used by on-board communication stations. Where needed, equipment designed for 12.5 kHz channel spacing using also the additional frequencies 457.5375 MHz, 457.5625 MHz, 467.5375 MHz and 467.5625 MHz may be introduced for on-board communications. The use of these frequencies in territorial waters may be subject to the national regulations of the administration concerned. The characteristics of the equipment used shall conform to those specified in Recommendation ITU-R M.1174-2. (WRC-07)

**MOD** (R9/425/1)

Allocation to services					
Region 1		Region 2		Region 3	
<b>470-790</b> BROADCASTING		<b>470-512</b> BROADCASTING Fixed Mobile 5.292 MOD 5.293		<b>470-585</b> FIXED MOBILE BROADCASTING	
		<b>512-608</b> BROADCASTING 5.297		5.291 5.298	
		<b>608-614</b> RADIO ASTRONOMY Mobile-satellite except aeronautical mobile-satellite (Earth-to-space)		<b>585-610</b> FIXED MOBILE BROADCASTING RADIONAVIGATION 5.149 5.305 5.306 5.307	
		<b>614-698</b> BROADCASTING Fixed Mobile  MOD 5.293 5.309 ADD 5.311A		<b>610-890</b> FIXED MOBILE MOD 5.317A ADD 5.YYY BROADCASTING	
	5.149 5.291A 5.294 5.296 5.300 5.302 5.304 5.306 ADD 5.311A 5.312	<b>698-806</b> BROADCASTING Fixed MOBILE MOD 5.317A ADD 5.UUU			
<b>790-862</b> FIXED BROADCASTING MOBILE except aeronautical mobile ADD 5.XXX MOD 5.317A  5.312 5.314 5.315 MOD 5.316 ADD 5.316A 5.319		MOD 5.293 5.309 ADD 5.311A			
<b>862-890</b> FIXED MOBILE except aeronautical mobile MOD 5.317A BROADCASTING 5.322  5.319 5.323		<b>806-890</b> FIXED MOBILE MOD 5.317A BROADCASTING  5.317 5.318		5.149 5.305 5.306 5.307 ADD 5.311A 5.320	

**MOD** COM5/264/49 (B6/268/53) (R3/292/53)

**5.290** *Different category of service:* in Afghanistan, Azerbaijan, Belarus, China, the Russian Federation, Japan, Mongolia, Kyrgyzstan, Slovakia, Tajikistan, Turkmenistan and Ukraine, the allocation of the band 460-470 MHz to the meteorological-satellite service (space-to-Earth) is on a primary basis (see No. **5.33**), subject to agreement obtained under No. **9.21**. (WRC-07)

**MOD** COM4/380/79 (B19/413/1)

**5.292** *Different category of service:* in Mexico, the allocation of the band 470-512 MHz to the fixed and mobile services, and in Argentina, Uruguay and Venezuela to the mobile service, is on a primary basis (see No. **5.33**), subject to agreement obtained under No. **9.21**. (WRC-07)

**MOD** (R9/425/2)

**5.293** *Different category of service:* in Canada, Chile, Colombia, Cuba, the United States, Guyana, Honduras, Jamaica, Mexico, Panama and Peru, the allocation of the bands 470-512 MHz and 614-806 MHz to the fixed service is on a primary basis (see No. **5.33**), subject to agreement obtained under No. **9.21**. In Canada, Chile, Colombia, Cuba, the United States, Guyana, Honduras, Jamaica, Mexico, Panama and Peru, the allocation of the bands 470-512 MHz and 614-698 MHz to the mobile service is on a primary basis (see No. **5.33**), subject to agreement obtained under No. **9.21**. In Argentina and Ecuador, the allocation of the band 470-512 MHz to the fixed and mobile services is on a primary basis (see No. **5.33**), subject to agreement obtained under No. **9.21**. (WRC-07)

**MOD** COM4/380/80 (B19/413/2)

**5.294** *Additional allocation:* in Saudi Arabia, Burundi, Cameroon, Côte d'Ivoire, Egypt, Ethiopia, Israel, the Libyan Arab Jamahiriya, Kenya, Malawi, the Syrian Arab Republic, Sudan, Chad and Yemen, the band 470-582 MHz is also allocated to the fixed service on a secondary basis. (WRC-07)

**MOD** COM4/380/81 (B19/413/3)

**5.296** *Additional allocation:* in Germany, Saudi Arabia, Austria, Belgium, Côte d'Ivoire, Denmark, Egypt, Spain, Finland, France, Ireland, Israel, Italy, the Libyan Arab Jamahiriya, Jordan, Lithuania, Malta, Morocco, Monaco, Norway, Oman, the Netherlands, Portugal, the Syrian Arab Republic, the United Kingdom, Sweden, Switzerland, Swaziland and Tunisia, the band 470-790 MHz is also allocated on a secondary basis to the land mobile service, intended for applications ancillary to broadcasting. Stations of the land mobile service in the countries listed in this footnote shall not cause harmful interference to existing or planned stations operating in accordance with the Table in countries other than those listed in this footnote. (WRC-07)

**MOD** COM4/380/82 (B19/413/4)

**5.297** *Additional allocation:* in Canada, Costa Rica, Cuba, El Salvador, the United States, Guatemala, Guyana, Honduras, Jamaica and Mexico, the band 512-608 MHz is also allocated to the fixed and mobile services on a primary basis, subject to agreement obtained under No. **9.21**. (WRC-07)

**MOD** COM4/380/83 (B19/413/5)

**5.300** *Additional allocation:* in Saudi Arabia, Egypt, Israel, the Libyan Arab Jamahiriya, Jordan, Oman, the Syrian Arab Republic and Sudan, the band 582-790 MHz is also allocated to the fixed and mobile, except aeronautical mobile, services on a secondary basis. (WRC-07)

**SUP** COM4/211/2 (B3/224/2)

**5.311**

**ADD** COM4/211/3 (B3/224/3)

**5.311A** For the frequency band 620-790 MHz, see also Resolution [COM4/1] (WRC-07).

**ADD** (R9/425/3)

**5.311A** For the frequency band 620-790 MHz, see also Resolution [COM4/1] (WRC-07).

**MOD** COM4/380/84 (B19/413/6)

**5.314** *Additional allocation:* in Austria, Italy, Moldova, Uzbekistan, Kyrgyzstan, the United Kingdom and Swaziland, the band 790-862 MHz is also allocated to the land mobile service on a secondary basis. (WRC-07)

**MOD** (R9/425/4)

**5.316** *Additional allocation:* in Germany, Saudi Arabia, Bosnia and Herzegovina, Burkina Faso, Cameroon, Côte d'Ivoire, Croatia, Denmark, Egypt, Finland, Greece, Israel, the Libyan Arab Jamahiriya, Jordan, Kenya, The Former Yugoslav Republic of Macedonia, Liechtenstein, Mali, Monaco, Montenegro, Norway, the Netherlands, Portugal, the United Kingdom, the Syrian Arab Republic, Serbia,, Sweden and Switzerland, the band 790-830 MHz, and in these same countries and in Spain, France, Gabon and Malta, the band 830-862 MHz, are also allocated to the mobile, except aeronautical mobile, service on a primary basis. However, stations of the mobile service in the countries mentioned in connection with each band referred to in this footnote shall not cause harmful interference to, or claim protection from, stations of services operating in accordance with the Table in countries other than those mentioned in connection with the band. This allocation is effective until 16 June 2015. (WRC-07)

**ADD** (R9/425/5)

**5.YYY** The band, or position of the band, in Bangladesh, China, Korea (Rep. of), India, Japan, New Zealand, Papua New Guinea, Philippines and Singapore is identified for use by these administrations wishing to implement IMT. This identification does not preclude the use of these bands by any application of the services to which they are allocated and does not establish priority in the Radio Regulations. (WRC-07)

**ADD** (R9/425/6)

**5.316A** *Additional allocation:* in Angola, Bahrain, Benin, Botswana, Cameroon, Congo (Rep. of the), French Overseas Departments and Communities, Gambia, Ghana, Guinea, Kuwait, Lesotho, Malawi, Morocco, Mauritania, Mozambique, Namibia, Niger, Oman, Uganda, Poland, Qatar, Rwanda, Senegal, Sudan, South Africa, Swaziland, Tanzania, Chad, Togo, Yemen, Zambia and Zimbabwe in the band 790-862 MHz in Spain, France, Gabon and Malta and in Lithuania in the band 830-862 MHz and in Georgia in the band 806-862 MHz are also allocated to the mobile service except the aeronautical mobile on a primary basis subject to the agreement by the administrations concerned obtained under No. 9.21 and under the Geneva-06 Agreement, as appropriate, including those administrations mentioned in No. 5.312 where appropriate. However, stations of the mobile service in the countries mentioned in connection with each band referred to in

this footnote shall not cause unacceptable interference to, nor claim protection from, stations of services operating in accordance with the Table in countries other than those mentioned in connection with the band. This allocation is effective until 16 June 2015. Frequency assignment to the mobile service under this allocation in Lithuania and Poland shall not be used without the agreement of the Russian Federation. (WRC-07)

**MOD** (R9/425/7)

**5.317A** Those parts of the band 698-960 MHz in Region 2 and the band 790-960 MHz in Regions 1 and 3 which are allocated to the mobile service on a primary basis are identified for use by administrations wishing to implement International Mobile Telecommunications (IMT) See Resolution **224 (Rev.WRC-07)** and Resolution **[COM4/13] (WRC-07)**. This identification does not preclude the use of these bands by any application of the services to which they are allocated and does not establish priority in the Radio Regulations. (WRC-07)

**ADD** (R9/425/8)

**5.XXX** In Region 1, the allocation to the mobile, except aeronautical mobile, service on a primary basis in the frequency band 790-862 MHz shall come into effect from 17 June 2015 and shall be subject to agreement obtained under No. **9.21** with respect to the aeronautical radionavigation service in countries mentioned in No. **5.312**. For countries party to the GE06 Agreement, the use of stations of the mobile service is also subject to the successful application of the procedures of that Agreement. Resolution **224 (Rev.WRC-07)** and Resolution **[COM4/13] (Rev.WRC-07)** shall apply. (WRC-07)

**ADD** (R9/425/9)

**5.UUU** *Different category of service:* In Brazil, the allocation of the band 698-806 MHz to the mobile service is on a secondary basis (see No. **5.32**).

**SUP** COM6/382/3 (B20/414/3)

**5.321**

**MOD** COM5/264/50 (B6/268/54) (R3/292/54)

**5.323** *Additional allocation:* in Armenia, Azerbaijan, Belarus, Bulgaria, the Russian Federation, Hungary, Kazakhstan, Moldova, Uzbekistan, Poland, Kyrgyzstan, Romania, Tajikistan, Turkmenistan and Ukraine, the band 862-960 MHz is also allocated to the aeronautical radionavigation service on a primary basis. Such use is subject to agreement obtained under No. **9.21** with administrations concerned and limited to ground-based radiobeacons in operation on 27 October 1997 until the end of their lifetime. (WRC-07)

**MOD** COM4/318/8 (B11/329/5) (R6/410/6)

**890-1 300 MHz**

Allocation to services		
Region 1	Region 2	Region 3
<b>960-1 164</b>	AERONAUTICAL RADIONAVIGATION 5.328 AERONAUTICAL MOBILE (R) ADD 5.4B06	

**MOD** COM6/341/5 (B14/365/5) (R7/411/30)

**5.328A** Stations in the radionavigation-satellite service in the band 1 164-1 215 MHz shall operate in accordance with the provisions of Resolution **609 (Rev.WRC-07)** and shall not claim protection from stations in the aeronautical radionavigation service in the band 960-1 215 MHz. No. **5.43A** does not apply. The provisions of No. **21.18** shall apply. (WRC-07)

**MOD** COM5/216/1 (B3/224/4)

**5.328B** The use of the bands 1 164-1 300 MHz, 1 559-1 610 MHz and 5 010-5 030 MHz by systems and networks in the radionavigation-satellite service for which complete coordination or notification information, as appropriate, is received by the Radiocommunication Bureau after 1 January 2005 is subject to the application of the provisions of Nos. **9.12**, **9.12A** and **9.13**. Resolution **610 (WRC-03)** shall also apply; however, in the case of radionavigation-satellite service (space-to-space) networks and systems, Resolution **610 (WRC-03)** shall only apply to transmitting space stations. In accordance with No. **5.329A**, for systems and networks in the radionavigation-satellite service (space-to-space) in the bands 1 215-1 300 MHz and 1 559-1 610 MHz, the provisions of Nos. **9.7**, **9.12**, **9.12A** and **9.13** shall only apply with respect to other systems and networks in the radionavigation-satellite service (space-to-space). (WRC-07)

**MOD** COM5/216/2 (B3/224/5)

**5.329A** Use of systems in the radionavigation-satellite service (space-to-space) operating in the bands 1 215-1 300 MHz and 1 559-1 610 MHz is not intended to provide safety service applications, and shall not impose any additional constraints on radionavigation-satellite service (space-to-Earth) systems or on other services operating in accordance with the Table of Frequency Allocations. (WRC-07)

**MOD** COM5/264/51 (B6/268/55) (R3/292/55)

**5.331** *Additional allocation:* in Algeria, Germany, Saudi Arabia, Australia, Austria, Bahrain, Belarus, Belgium, Benin, Bosnia and Herzegovina, Brazil, Burkina Faso, Burundi, Cameroon, China, Korea (Rep. of), Croatia, Denmark, Egypt, the United Arab Emirates, Estonia, the Russian Federation, Finland, France, Ghana, Greece, Guinea, Equatorial Guinea, Hungary, India, Indonesia, Iran (Islamic Republic of), Iraq, Ireland, Israel, Jordan, Kenya, Kuwait, The Former Yugoslav Republic of Macedonia, Lesotho, Latvia, Lebanon, Liechtenstein, Lithuania, Luxembourg, Madagascar, Mali, Mauritania, Montenegro, Nigeria, Norway, Oman, the Netherlands, Poland, Portugal, Qatar, the Syrian Arab Republic, Dem. People's Rep. of Korea, Slovakia, the United Kingdom, Serbia, Slovenia, Somalia, Sudan, Sri Lanka, South Africa, Sweden, Switzerland, Thailand, Togo, Turkey, Venezuela and Viet Nam, the band 1 215-1 300 MHz is also allocated to the radionavigation service on a primary basis. In Canada and the United States, the band 1 240-1 300 MHz is also allocated to the radionavigation service, and use of the radionavigation service shall be limited to the aeronautical radionavigation service. (WRC-07)

**ADD** COM4/318/9 (B11/329/6) (R6/410/7)

**5.4B06** The use of the band 960-1 164 MHz by the aeronautical mobile (R) service is limited to systems that operate in accordance with recognized international aeronautical standards. Such use shall be in accordance with Resolution [COM4/5] (WRC-07). (WRC-07)

**MOD** COM5/372/1 (B15/396/1)

**1 300-1 525 MHz**

Allocation to services		
Region 1	Region 2	Region 3
<b>1 350-1 400</b> FIXED MOBILE RADIOLOCATION 5.149 5.338 5.339 ADD 5.BA03	<b>1 350-1 400</b> RADIOLOCATION ADD 5.BA03  5.149 5.334 5.339	
<b>1 400-1 427</b>	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.341	
<b>1 427-1 429</b>	SPACE OPERATION (Earth-to-space) FIXED MOBILE except aeronautical mobile 5.341 ADD 5.BA03	
<b>1 429-1 452</b> FIXED MOBILE except aeronautical mobile 5.341 5.342 ADD 5.BA03	<b>1 429-1 452</b> FIXED MOBILE 5.343  5.341 ADD 5.BA03	

**MOD** COM6/341/6 (B14/365/6) (R7/411/31)

**1 300-1 525 MHz**

Allocation to services		
Region 1	Region 2	Region 3
<b>1 452-1 492</b> FIXED MOBILE except aeronautical mobile BROADCASTING 5.345 BROADCASTING-SATELLITE 5.345 5.347A 5.341 5.342	<b>1 452-1 492</b> FIXED MOBILE 5.343 BROADCASTING 5.345 BROADCASTING-SATELLITE 5.345 5.347A  5.341 5.344	

**MOD** COM4/332/75 (B13/347/26) (R7/411/32)

**1 300-1 525 MHz**

Allocation to services		
Region 1	Region 2	Region 3
<b>1 518-1 525</b> FIXED MOBILE except aeronautical mobile MOBILE-SATELLITE (space-to-Earth) 5.348 5.348A 5.348B MOD 5.351A 5.341 5.342	<b>1 518-1 525</b> FIXED MOBILE 5.343 MOBILE-SATELLITE (space-to-Earth) 5.348 5.348A 5.348B MOD 5.351A 5.341 5.344	<b>1 518-1 525</b> FIXED MOBILE MOBILE-SATELLITE (space-to-Earth) 5.348 5.348A 5.348B MOD 5.351A 5.341

**MOD** COM5/264/52 (B6/268/56) (R3/292/56)

**5.338** In Mongolia, Kyrgyzstan, Slovakia, the Czech Rep. and Turkmenistan, existing installations of the radionavigation service may continue to operate in the band 1 350-1 400 MHz. (WRC-07)

**SUP** COM5/173/5 (B1/196/3) (R1/221/2)

**5.339A**

**SUP** COM6/341/7 (B14/365/7) (R7/411/33)

**5.347**

**MOD** COM5/265/6 (B6/268/57) (R3/292/57)

**5.347A**

In the bands:

137-138 MHz,  
387-390 MHz,  
400.15-401 MHz,  
1 452-1 492 MHz,  
1 525-1 559 MHz,  
1 559-1 610 MHz,  
1 613.8-1 626.5 MHz,  
2 655-2 670 MHz,  
2 670-2 690 MHz,  
21.4-22 GHz,

Resolution **739 (Rev.WRC-07)** applies. (WRC-07)

**SUP** COM4/332/76 (B13/347/27) (R7/411/34)

**5.348C**



**MOD** COM5/265/5 (B6/268/58) (R3/292/58)

**1 525-1 610 MHz**

Allocation to services		
Region 1	Region 2	Region 3
<b>1 559-1 610</b>	AERONAUTICAL RADIONAVIGATION RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.328B 5.329A MOD 5.347A 5.341 5.362B 5.362C 5.363	

**MOD** COM5/264/53 (B6/268/59) (R3/292/59)

**5.349** *Different category of service:* in Saudi Arabia, Azerbaijan, Bahrain, Cameroon, Egypt, France, Iran (Islamic Republic of), Iraq, Israel, Kazakhstan, Kuwait, The Former Yugoslav Republic of Macedonia, Lebanon, Morocco, Qatar, Syrian Arab Republic, Kyrgyzstan, Turkmenistan and Yemen, the allocation of the band 1 525-1 530 MHz to the mobile, except aeronautical mobile, service is on a primary basis (see No. **5.33**). (WRC-07)

**MOD** COM4/332/77 (B13/347/28) (R7/411/35)

**5.351A** For the use of the bands 1 518-1 544 MHz, 1 545-1 559 MHz, 1 610-1 626.5 MHz, 1 626.5-1 645.5 MHz, 1 646.5-1 660.5 MHz, 1 668-1 675 MHz, 1 980-2 010 MHz, 2 170-2 200 MHz, 2 483.5-2 500 MHz, 2 500-2 520 MHz and 2 670-2 690 MHz by the mobile-satellite service, see Resolutions **212 (Rev.WRC-07)** and **225 (Rev.WRC-07)**. (WRC-07)

**MOD** COM5/264/54 (B6/268/60) (R3/292/60)

**5.359** *Additional allocation:* in Germany, Saudi Arabia, Armenia, Austria, Azerbaijan, Belarus, Benin, Bulgaria, Cameroon, Spain, the Russian Federation, France, Gabon, Georgia, Greece, Guinea, Guinea-Bissau, the Libyan Arab Jamahiriya, Jordan, Kazakhstan, Kuwait, Lebanon, Lithuania, Mauritania, Moldova, Uganda, Uzbekistan, Pakistan, Poland, the Syrian Arab Republic, Kyrgyzstan, the Dem. People's Rep. of Korea, Romania, Swaziland, Tajikistan, Tanzania, Tunisia, Turkmenistan and Ukraine, the bands 1 550-1 559 MHz, 1 610-1 645.5 MHz and 1 646.5-1 660 MHz are also allocated to the fixed service on a primary basis. Administrations are urged to make all practicable efforts to avoid the implementation of new fixed-service stations in these bands. (WRC-07)

**MOD** COM6/341/8 (B14/365/8) (R7/411/36)

**5.362B** *Additional allocation:* The band 1 559-1 610 MHz is also allocated to the fixed service on a primary basis until 1 January 2010 in Algeria, Saudi Arabia, Cameroon, Libyan Arab Jamahiriya, Jordan, Mali, Mauritania, Syrian Arab Republic and Tunisia. After this date, the fixed service may continue to operate on a secondary basis until 1 January 2015, at which time this allocation shall no longer be valid. The band 1 559-1 610 MHz is also allocated to the fixed service on a secondary basis in Algeria, Germany, Armenia, Azerbaijan, Belarus, Benin, Bulgaria, Spain, Russian Federation, France, Gabon, Georgia, Guinea, Guinea-Bissau, Kazakhstan, Lithuania, Moldova, Nigeria, Uganda, Uzbekistan, Pakistan, Poland, Kyrgyzstan, Dem. People's Rep. of Korea, Romania, Senegal, Swaziland, Tajikistan, Tanzania, Turkmenistan and Ukraine until 1 January 2015, at which time this allocation shall no longer be valid. Administrations are urged to take all practicable steps to protect the radionavigation-satellite service and the aeronautical radionavigation service and not authorize new frequency assignments to fixed-service systems in this band. (WRC-07)

**MOD** COM5/264/55 (B6/268/61) (R3/292/61)

**5.362C** *Additional allocation:* in Congo (Rep. of the), Egypt, Eritrea, Iraq, Israel, Jordan, Malta, Qatar, the Syrian Arab Republic, Somalia, Sudan, Chad, Togo and Yemen, the band 1 559-1 610 MHz is also allocated to the fixed service on a secondary basis until 1 January 2015, at which time this allocation shall no longer be valid. Administrations are urged to take all practicable steps to protect the radionavigation-satellite service and not authorize new frequency assignments to fixed-service systems in this band. (WRC-07)

**SUP** COM5/173/3 (B1/196/4) (R1/221/3)

**5.363**

**MOD** COM4/332/78 (B13/347/29) (R7/411/37)

**1 660-1 710 MHz**

Allocation to services		
Region 1	Region 2	Region 3
<b>1 668-1 668.4</b>	MOBILE-SATELLITE (Earth-to-space) MOD 5.351A MOD 5.379B 5.379C RADIO ASTRONOMY SPACE RESEARCH (passive) Fixed Mobile except aeronautical mobile 5.149 5.341 5.379 5.379A	
<b>1 668.4-1 670</b>	METEOROLOGICAL AIDS FIXED MOBILE except aeronautical mobile MOBILE-SATELLITE (Earth-to-space) MOD 5.351A MOD 5.379B 5.379C RADIO ASTRONOMY 5.149 5.341 MOD 5.379D 5.379E	
<b>1 670-1 675</b>	METEOROLOGICAL AIDS FIXED METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE 5.380 MOBILE-SATELLITE (Earth-to-space) MOD 5.351A MOD 5.379B 5.341 MOD 5.379D 5.379E 5.380A	

**MOD** COM5/230/3 (B4/234/3) (R3/292/63)

**5.379B** The use of the band 1 668-1 675 MHz by the mobile-satellite service is subject to coordination under No. **9.11A**. In the band 1 668-1 668.4 MHz, Resolution [COM5/1] (WRC-07) shall apply. (WRC-07)

**MOD** COM5/230/4 (B4/234/4) (R3/292/64)

**5.379D** For sharing of the band 1 668.4-1 675 MHz between the mobile-satellite service and the fixed and mobile services, Resolution **744 (Rev.WRC-07)** shall apply. (WRC-07)

**SUP** COM5/230/5 (B4/234/5) (R3/292/65)

### 5.380

**MOD** COM6/382/4 (B20/414/4)

**5.380A** In the band 1 670-1 675 MHz, stations in the mobile-satellite service shall not cause harmful interference to, nor constrain the development of, existing earth stations in the meteorological-satellite service notified before 1 January 2004. Any new assignment to these earth stations in this band shall also be protected from harmful interference from stations in the mobile-satellite service. (WRC-07)

**MOD** COM5/264/56 (B6/268/62) (R3/292/66)

**5.382** *Different category of service:* in Saudi Arabia, Armenia, Azerbaijan, Bahrain, Belarus, Congo (Rep. of the), Egypt, the United Arab Emirates, Eritrea, Ethiopia, the Russian Federation, Guinea, Iraq, Israel, Jordan, Kazakhstan, Kuwait, the Former Yugoslav Republic of Macedonia, Lebanon, Mauritania, Moldova, Mongolia, Oman, Uzbekistan, Poland, Qatar, the Syrian Arab Republic, Kyrgyzstan, Serbia, Somalia, Tajikistan, Tanzania, Turkmenistan, Ukraine and Yemen, the allocation of the band 1 690-1 700 MHz to the fixed and mobile, except aeronautical mobile, services is on a primary basis (see No. **5.33**), and in the Dem. People's Rep. of Korea, the allocation of the band 1 690-1 700 MHz to the fixed service is on a primary basis (see No. **5.33**) and to the mobile, except aeronautical mobile, service on a secondary basis. (WRC-07)

**MOD** COM5/230/2 (B4/234/2) (R3/292/67)

### 1 710-2 170 MHz

Allocation to services		
Region 1	Region 2	Region 3
1 710-1 930	FIXED	
	MOBILE 5.384A 5.388A 5.388B	
	5.149 5.341 5.385 5.386 5.387 5.388	

**MOD** COM4/332/81 (B13/347/30) (R7/411/39) (R8/424/1)

**5.384A** The bands, or portions of the bands, 1 710-1 885 MHz, 2 300-2 400 MHz and 2 500-2 690 MHz, are identified for use by administrations wishing to implement International Mobile Telecommunications (IMT) in accordance with Resolution **223 (Rev.WRC-07)**. This identification does not preclude the use of these bands by any application of the services to which they are allocated and does not establish priority in the Radio Regulations. (WRC-07).

**MOD** COM5/264/57 (B6/268/63) (R3/292/68)

**5.387** *Additional allocation:* in Belarus, Georgia, Kazakhstan, Mongolia, Kyrgyzstan, Slovakia, Romania, Tajikistan and Turkmenistan, the band 1 770-1 790 MHz is also allocated to the meteorological-satellite service on a primary basis, subject to agreement obtained under No. **9.21**. (WRC-07)

**MOD** COM6/382/5 (B20/414/5)

**1 710-2 170 MHz**

Allocation to services		
Region 1	Region 2	Region 3
<b>2 010-2 025</b> FIXED MOBILE 5.388A 5.388B  5.388	<b>2 010-2 025</b> FIXED MOBILE MOBILE-SATELLITE (Earth-to-space)  5.388 5.389C 5.389E	<b>2 010-2 025</b> FIXED MOBILE 5.388A 5.388B  5.388
...		
<b>2 160-2 170</b> FIXED MOBILE 5.388A 5.388B  5.388 5.392A	<b>2 160-2 170</b> FIXED MOBILE MOBILE-SATELLITE (space-to-Earth)  5.388 5.389C 5.389E	<b>2 160-2 170</b> FIXED MOBILE 5.388A 5.388B  5.388

**MOD** COM6/382/6 (B20/414/6)

**5.389A** The use of the bands 1 980-2 010 MHz and 2 170-2 200 MHz by the mobile-satellite service is subject to coordination under No. **9.11A** and to the provisions of Resolution **716 (Rev.WRC-2000)**. (WRC-07)

**MOD** COM6/382/7 (B20/414/7)

**5.389C** The use of the bands 2 010-2 025 MHz and 2 160-2 170 MHz in Region 2 by the mobile-satellite service is subject to coordination under No. **9.11A** and to the provisions of Resolution **716 (Rev.WRC-2000)**. (WRC-07)

**SUP** COM6/382/8 (B20/414/8)

**5.390**

**SUP** COM6/341/10 (B14/365/10) (R7/411/40)

**5.392A**

**MOD** COM5/264/60 (B6/268/64) (R8/424/3)  
2 170-2 520 MHz

Allocation to services		
Region 1	Region 2	Region 3
<b>2 300-2 450</b> FIXED MOBILE Amateur Radiolocation 5.150 5.282 MOD 5.384A 5.395	<b>2 300-2 450</b> FIXED MOBILE RADIOLOCATION Amateur 5.150 5.282 MOD 5.393 MOD 5.394 5.396	
<b>2 450-2 483.5</b> FIXED MOBILE Radiolocation 5.150 5.397	<b>2 450-2 483.5</b> FIXED MOBILE RADIOLOCATION 5.150	

**MOD** COM4/392/1 (B19/413/7)

2 170-2 520 MHz

Allocation to services		
Region 1	Region 2	Region 3
<b>2 500-2 520</b> FIXED MOD 5.410 MOBILE except aeronautical mobile 5.384A  5.405 5.412	<b>2 500-2 520</b> FIXED MOD 5.410 FIXED-SATELLITE (space-to- Earth) 5.415 MOBILE except aeronautical mobile 5.384A  5.404	<b>2 500-2 520</b> FIXED MOD 5.410 FIXED-SATELLITE (space-to- Earth) 5.415 MOBILE except aeronautical mobile 5.384A MOBILE-SATELLITE (space-to- Earth) 5.351A ADD 5.4A01 ADD 5.414 5.404 5.407 5.415A

**MOD** COM5/264/58 (B6/268/65) (R8/424/4)

**5.393** *Additional allocation:* in Canada, the United States, India and Mexico, the band 2 310-2 360 MHz is also allocated to the broadcasting-satellite service (sound) and complementary terrestrial sound broadcasting service on a primary basis. Such use is limited to digital audio broadcasting and is subject to the provisions of Resolution **528 (Rev.WRC-03)**, with the exception of *resolves* 3 in regard to the limitation on broadcasting-satellite systems in the upper 25 MHz. (WRC-07)

**MOD** COM5/264/59 (B6/268/66) (R8/424/5)

**5.394** In the United States, the use of the band 2 300-2 390 MHz by the aeronautical mobile service for telemetry has priority over other uses by the mobile services. In Canada, the use of the band 2 360-2 400 MHz by the aeronautical mobile service for telemetry has priority over other uses by the mobile services. (WRC-07)

**MOD** COM4/392/4 (B19/413/8)

**5.403** Subject to agreement obtained under No. **9.21**, the band 2 520-2 535 MHz may also be used for the mobile-satellite (space-to-Earth), except aeronautical mobile-satellite, service for operation limited to within national boundaries. The provisions of No. **9.11A** apply. (WRC-07)

**SUP** COM4/392/5 (B19/413/9)

**5.409**

**MOD** COM4/392/6 (B19/413/10)

**5.410** The band 2 500-2 690 MHz may be used for tropospheric scatter systems in Region 1, subject to agreement obtained under No. **9.21**. Administrations shall make all practicable efforts to avoid developing new tropospheric scatter systems in this band. When planning new tropospheric scatter radio-relay links in this band, all possible measures shall be taken to avoid directing the antennas of these links towards the geostationary-satellite orbit. (WRC-07)

**SUP** COM4/392/7 (B19/413/11)

**5.411**

**MOD** COM5/264/61 (B6/268/67) (R3/292/69)

**5.412** *Alternative allocation:* in Azerbaijan, Kyrgyzstan and Turkmenistan, the band 2 500-2 690 MHz is allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis. (WRC-07)

**MOD** COM4/392/8 (B19/413/12)

**5.414** The allocation of the frequency band 2 500-2 520 MHz to the mobile-satellite service (space-to-Earth) is subject to coordination under No. **9.11A**. (WRC-07)

**MOD** COM4/392/9 (B19/413/13)

**5.415** The use of the bands 2 500-2 690 MHz in Region 2 and 2 500-2 535 MHz and 2 655-2 690 MHz in Region 3 by the fixed-satellite service is limited to national and regional systems, subject to agreement obtained under No. **9.21**, giving particular attention to the broadcasting-satellite service in Region 1. (WRC-07)

**ADD** COM4/392/3 (B19/413/14)

**5.4A01** In Japan and India, the use of the bands 2 500-2 520 MHz and 2 520-2 535 MHz, under No. **5.403**, by a satellite network in the mobile-satellite service (space-to-Earth) is limited to operation within national boundaries and subject to the application of No. **9.11A**. The following pfd values shall be used as a threshold for coordination under No. **9.11A**, for all conditions and for all methods of modulation, in an area of 1 000 km around the territory of the administration notifying the mobile-satellite service network:

$-136 \text{ dB(W/(m}^2 \cdot \text{MHz))}$	for	$0^\circ \leq \theta \leq 5^\circ$
$-136 + 0.55 (\theta - 5) \text{ dB(W/(m}^2 \cdot \text{MHz))}$	for	$5^\circ < \theta \leq 25^\circ$
$-125 \text{ dB(W/(m}^2 \cdot \text{MHz))}$	for	$25^\circ < \theta \leq 90^\circ$

where  $\theta$  is the angle of arrival of the incident wave above the horizontal plane, in degrees. Outside this area Table 21-4 of Article 21 shall apply. Furthermore, the coordination thresholds in Table 5-2 of Annex 1 to Appendix 5 of the Radio Regulations (edition of 2004), in conjunction with the applicable provisions of Articles 9 and 11 associated with No. 9.11A, shall apply to systems for which complete notification information has been received by the Radiocommunication Bureau by 14 November 2007 and that have been brought into use by that date. (WRC-07)

**MOD** COM4/392/2 (B19/413/15)

**2 520-2 700 MHz**

<b>Allocation to services</b>		
<b>Region 1</b>	<b>Region 2</b>	<b>Region 3</b>
<b>2 520-2 655</b> FIXED MOD 5.410 MOBILE except aeronautical mobile 5.384A BROADCASTING-SATELLITE 5.413 MOD 5.416      5.339 5.405 5.412 5.417C 5.417D 5.418B 5.418C	<b>2 520-2 655</b> FIXED MOD 5.410 FIXED-SATELLITE (space-to-Earth) 5.415 MOBILE except aeronautical mobile 5.384A BROADCASTING-SATELLITE 5.413 MOD 5.416     5.339 5.417C 5.417D 5.418B 5.418C	<b>2 520-2 535</b> FIXED MOD 5.410 FIXED-SATELLITE (space-to-Earth) 5.415 MOBILE except aeronautical mobile 5.384A BROADCASTING-SATELLITE 5.413 MOD 5.416 5.403 5.415A ADD 5.4A01
		<b>2 535-2 655</b> FIXED MOD 5.410 MOBILE except aeronautical mobile 5.384A BROADCASTING-SATELLITE 5.413 MOD 5.416 5.339 5.417A 5.417B 5.417C 5.417D MOD 5.418 5.418A 5.418B 5.418C
<b>2 655-2 670</b> FIXED MOD 5.410 MOBILE except aeronautical mobile 5.384A BROADCASTING-SATELLITE 5.347A 5.413 MOD 5.416 Earth exploration-satellite (passive) Radio astronomy Space research (passive)  5.149 5.412	<b>2 655-2 670</b> FIXED MOD 5.410 FIXED-SATELLITE (Earth-to-space) (space-to-Earth) 5.347A 5.415 MOBILE except aeronautical mobile 5.384A BROADCASTING-SATELLITE 5.347A 5.413 MOD 5.416 Earth exploration-satellite (passive) Radio astronomy Space research (passive) 5.149	<b>2 655-2 670</b> FIXED MOD 5.410 FIXED-SATELLITE (Earth-to-space) 5.415 MOBILE except aeronautical mobile 5.384A BROADCASTING-SATELLITE 5.347A 5.413 MOD 5.416 Earth exploration-satellite (passive) Radio astronomy Space research (passive) 5.149 5.420

Allocation to services		
Region 1	Region 2	Region 3
<b>2 670-2 690</b> FIXED MOD 5.410 MOBILE except aeronautical mobile 5.384A Earth exploration-satellite (passive) Radio astronomy Space research (passive)  5.149 5.412	<b>2 670-2 690</b> FIXED MOD 5.410 FIXED-SATELLITE (Earth-to-space) (space-to-Earth) 5.347A 5.415 MOBILE except aeronautical mobile 5.384A Earth exploration-satellite (passive) Radio astronomy Space research (passive)  5.149	<b>2 670-2 690</b> FIXED MOD 5.410 FIXED-SATELLITE (Earth-to-space) 5.415 MOBILE except aeronautical mobile 5.384A MOBILE-SATELLITE (Earth-to-space) 5.351A ADD 5.419 Earth exploration-satellite (passive) Radio astronomy Space research (passive)  5.149

**MOD** COM4/392/10 (B19/413/16)

**5.416** The use of the band 2 520-2 670 MHz by the broadcasting-satellite service is limited to national and regional systems for community reception, subject to agreement obtained under No. **9.21**. The provisions of No. **9.19** shall be applied by administrations in this band in their bilateral and multilateral negotiations. (WRC-07)

**MOD** COM4/392/11 (B19/413/17)

**5.418** *Additional allocation:* in Korea (Rep. of), India, Japan, Pakistan and Thailand, the band 2 535-2 655 MHz is also allocated to the broadcasting-satellite service (sound) and complementary terrestrial broadcasting service on a primary basis. Such use is limited to digital audio broadcasting and is subject to the provisions of Resolution **528 (Rev.WRC-03)**. The provisions of No. **5.416** and Table **21-4** of Article **21**, do not apply to this additional allocation. Use of non-geostationary-satellite systems in the broadcasting-satellite service (sound) is subject to Resolution **539 (Rev.WRC-03)**. Geostationary broadcasting-satellite service (sound) systems for which complete Appendix **4** coordination information has been received after 1 June 2005 are limited to systems intended for national coverage. The power flux-density at the Earth's surface produced by emissions from a geostationary broadcasting-satellite service (sound) space station operating in the band 2 630-2 655 MHz, and for which complete Appendix **4** coordination information has been received after 1 June 2005, shall not exceed the following limits, for all conditions and for all methods of modulation:

$$\begin{array}{ll}
 -130 \text{ dB(W/(m}^2 \cdot \text{MHz))} & \text{for } 0^\circ \leq \theta \leq 5^\circ \\
 -130 + 0.4 (\theta - 5) \text{ dB(W/(m}^2 \cdot \text{MHz))} & \text{for } 5^\circ < \theta \leq 25^\circ \\
 -122 \text{ dB(W/(m}^2 \cdot \text{MHz))} & \text{for } 25^\circ < \theta \leq 90^\circ
 \end{array}$$

where  $\theta$  is the angle of arrival of the incident wave above the horizontal plane, in degrees. These limits may be exceeded on the territory of any country whose administration has so agreed. As an exception to the limits above, the pfd value of  $-122 \text{ dB(W/(m}^2 \cdot \text{MHz))}$  shall be used as a threshold for coordination under No. **9.11** in an area of 1 500 km around the territory of the administration notifying the broadcasting-satellite service (sound) system.



In addition, an administration listed in this provision shall not have simultaneously two overlapping frequency assignments, one under this provision and the other under No. **5.416** for systems for which complete Appendix 4 coordination information has been received after 1 June 2005. (WRC-07)

**MOD** COM4/392/12 (B19/413/18)

**5.419** When introducing systems of the mobile-satellite service in the band 2 670-2 690 MHz, administrations shall take all necessary steps to protect the satellite systems operating in this band prior to 3 March 1992. The coordination of mobile-satellite systems in the band shall be in accordance with No. **9.11A**. (WRC-07)

**MOD** COM4/392/13 (B19/413/19)

**5.420** The band 2 655-2 670 MHz may also be used for the mobile-satellite (Earth-to-space), except aeronautical mobile-satellite, service for operation limited to within national boundaries, subject to agreement obtained under No. **9.21**. The coordination under No. **9.11A** applies. (WRC-07)

**SUP** COM4/392/14 (B19/413/20)

**5.420A**

**MOD** COM5/264/62 (B6/268/68) (R3/292/70)

**5.422** *Additional allocation:* in Saudi Arabia, Armenia, Azerbaijan, Bahrain, Belarus, Brunei Darussalam, Congo (Rep. of the), Côte d'Ivoire, Cuba, Egypt, the United Arab Emirates, Eritrea, Ethiopia, Gabon, Georgia, Guinea, Guinea-Bissau, Iran (Islamic Republic of), Iraq, Israel, Jordan, Kuwait, Lebanon, Mauritania, Moldova, Mongolia, Montenegro, Nigeria, Oman, Pakistan, the Philippines, Qatar, Syrian Arab Republic, Kyrgyzstan, the Dem. Rep. of the Congo, Romania, Somalia, Tajikistan, Tunisia, Turkmenistan, Ukraine and Yemen, the band 2 690-2 700 MHz is also allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis. Such use is limited to equipment in operation by 1 January 1985. (WRC-07)

**MOD** (R9/424/10)

**2 700-4 800 MHz**

Allocation to services		
Region 1	Region 2	Region 3
<b>3 400-3 600</b> FIXED FIXED-SATELLITE (space-to-Earth) Mobile ADD 5.AAA Radiolocation	<b>3 400-3 500</b> FIXED FIXED-SATELLITE (space-to-Earth) Amateur Mobile ADD 5.ZZZRadiolocation 5.433 5.282 5.432	<b>3 400-3 500</b> FIXED FIXED-SATELLITE (space-to-Earth) Amateur Mobile ADD 5.BBB ADD 5.AAA1 Radiolocation 5.433 5.282 .432
5.431	<b>3 500-3 700</b> FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile Radiolocation 5.433 5.435	<b>3 500-3 600</b> FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile ADD 5.CCC Radiolocation 5.433 5.435
<b>3 600-4 200</b> FIXED FIXED-SATELLITE (space-to-Earth) Mobile		<b>3 600-3 700</b> FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile Radiolocation 3 5.435
	<b>3 700-4 200</b> FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile	<b>3 700-4 200</b> FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile

**MOD** COM4/296/1 (B9/305/5) (R4/335/5)

**2 700-4 800 MHz**

Allocation to services		
Region 1	Region 2	Region 3
<b>4 400-4 500</b>	FIXED MOBILE ADD 5.4B01	
<b>4 500-4 800</b>	FIXED FIXED-SATELLITE (space-to-Earth) 5.441 MOBILE ADD 5.4B01	

**ADD** COM4/296/4 (B9/305/6) (R4/335/6)

**5.4B01** In Region 2 (except Brazil, Cuba, French Overseas Departments and Communities, Guatemala, Paraguay, Uruguay and Venezuela), and in Australia, the band 4 400-4 940 MHz may be used for aeronautical mobile telemetry for flight testing by aircraft stations (see No. **1.83**). Such use shall be in accordance with Resolution [COM4/2] (WRC-07) and shall not cause harmful interference to, nor claim protection from, the fixed-satellite and fixed services. Any such use does not preclude the use of these bands by other mobile service applications or by other services to which these bands are allocated on a co-primary basis and does not establish priority in the Radio Regulations. (WRC-07)

**MOD** COM5/264/63 (B6/268/69) (R3/292/71)

**5.428** *Additional allocation:* in Azerbaijan, Mongolia, Kyrgyzstan, Romania and Turkmenistan, the band 3 100-3 300 MHz is also allocated to the radionavigation service on a primary basis. (WRC-07)

**MOD** COM5/264/64 (B6/268/70) (R3/292/72)

**5.429** *Additional allocation:* in Saudi Arabia, Bahrain, Bangladesh, Brunei Darussalam, China, Congo (Rep. of the), Korea (Rep. of), Côte d'Ivoire, the United Arab Emirates, India, Indonesia, Iran (Islamic Republic of), Iraq, Israel, the Libyan Arab Jamahiriya, Japan, Jordan, Kenya, Kuwait, Lebanon, Malaysia, Oman, Uganda, Pakistan, Qatar, the Syrian Arab Republic, the Dem. People's Rep. of Korea and Yemen, the band 3 300-3 400 MHz is also allocated to the fixed and mobile services on a primary basis. The countries bordering the Mediterranean shall not claim protection for their fixed and mobile services from the radiolocation service. (WRC-07)

**MOD** COM5/264/65 (B6/268/71) (R3/292/73)

**5.430** *Additional allocation:* in Azerbaijan, Mongolia, Kyrgyzstan, Romania and Turkmenistan, the band 3 300-3 400 MHz is also allocated to the radionavigation service on a primary basis. (WRC-07)

**ADD** (R9/424/12)

**5.AAA** *Different category of service:* in Albania, Algeria, Germany, Andorra, Saudi Arabia, Austria, Azerbaijan, Bahrain, Belgium, Benin, Bosnia and Herzegovina, Botswana, Bulgaria, Burkina Faso, Cameroon, Cyprus, Vatican, Côte d'Ivoire, Croatia, Denmark, French Overseas Departments and Communities in Region 1, Egypt, Spain, Estonia, Finland, France, Gabon, Georgia, Greece, Guinea, Hungary, Ireland, Iceland, Israel, Italy, Jordan, Kuwait, Lesotho, Latvia, Macedonia, Liechtenstein, Lithuania, Malawi, Malta, Morocco, Mauritania, Moldova, Monaco, Mongolia, Montenegro, Mozambique, Namibia, Niger, Norway, Oman, Netherlands, Poland, Portugal, Qatar, Syria, Congo, Slovakia, Czech Rep., Romania, United Kingdom, San Marino, Senegal, Serbia, Sierra Leone, Slovenia, South Africa, Sweden, Switzerland, Swaziland, Togo, Chad, Tunisia, Turkey, Ukraine, Zambia and Zimbabwe, the band 3 400-3 600 MHz is allocated to the mobile, except aeronautical mobile, service on a primary basis subject to agreement obtained under No. **9.21** with other administrations and is identified for International Mobile Telecommunications (IMT). This identification does not preclude the use of this band by any application of the services to which it is allocated and does not establish priority in the Radio Regulations. At the stage of coordination the provisions of Nos. **9.17** and **9.18** also apply. Before an administration brings into use a (base or mobile) station of the mobile service in this band it shall ensure that the power flux-density (pfd) produced at 3 m above ground does not exceed  $-154.5 \text{ dBW}/(\text{m}^2 \cdot 4 \text{ kHz})$  for more than 20 per cent of time at the border of the territory of any other administration. This limit may be exceeded on the territory of any country whose administration has so agreed. In order to ensure that the pfd limit at the border of the territory of any other administration is met, the calculations and verification shall be made, taking into account all relevant information, with the mutual agreement of both administrations (the administration responsible for the terrestrial station and the administration responsible for the earth station), with the assistance of the Bureau if so requested. In case of disagreement, the calculation and verification of the pfd shall be made by the Bureau, taking into account the information referred to above. Stations of the mobile service in the band 3 400-3 600 MHz shall not claim more protection from space stations than that provided in Table **21-4** of the Radio Regulations (Edition of 2004). This allocation is effective from 17 November 2010. (WRC-07)

**ADD** (R9/424/13)

**5.AAA1** In Korea (Rep. of), Japan and Pakistan, the band 3 400-3 500 MHz is identified for International Mobile Telecommunications (IMT). This identification does not preclude the use of this band by any application of the services to which it is allocated and does not establish priority in the Radio Regulations. At the stage of coordination the provisions of Nos. **9.17** and **9.18** also apply. Before an administration brings into use a (base or mobile) station of the mobile service in this band it shall ensure that the power flux-density (pfd) produced at 3 m above ground does not exceed  $-154.5 \text{ dBW}/(\text{m}^2 \cdot 4 \text{ kHz})$  for more than 20 per cent of time at the border of the territory of any other administration. This limit may be exceeded on the territory of any country whose administration has so agreed. In order to ensure that the pfd limit at the border of the territory of any other administration is met, the calculations and verification shall be made, taking into account all relevant information, with the mutual agreement of both administrations (the administration responsible for the terrestrial station and the administration responsible for the earth station), with the assistance of the Bureau if so requested. In case of disagreement, the calculation and verification of the pfd shall be made by the Bureau, taking into account the information referred to above. Stations of the mobile service in the band 3 400-3 500 MHz shall not claim more protection from space stations than that provided in Table **21-4** of the Radio Regulations (Edition of 2004). (WRC-07)

**ADD** (R9/424/14)

**5.BBB** *Different category of service:* in Bangladesh, China, India, Iran (Islamic Republic of), New Zealand, Singapore and French Overseas Communities in Region 3, the band 3 400-3 500 MHz is allocated to the mobile, except aeronautical mobile, service on a primary basis, subject to agreement obtained under No. **9.21** with other administrations and is identified for International Mobile Telecommunications (IMT). This identification does not preclude the use of this band by any application of the services to which it is allocated and does not establish priority in the Radio Regulations. At the stage of coordination the provisions of Nos. **9.17** and **9.18** also apply. Before an administration brings into use a station of the mobile service in this band it shall ensure that the power flux-density (pfd) produced at 3 m above ground does not exceed  $-154.5 \text{ dBW}/(\text{m}^2 \cdot 4 \text{ kHz})$  for more than 20 per cent of time at the border of the territory of any other administration. This limit may be exceeded on the territory of any country whose administration has so agreed. In order to ensure that the pfd limit at the border of the territory of any other administration is met, the calculations and verification shall be made, taking into account all relevant information, with the mutual agreement of both administrations (the administration responsible for the terrestrial station and the administration responsible for the earth station) with the assistance of the Bureau if so requested. In case of disagreement, the calculation and verification of the pfd shall be made by the Bureau, taking into account the information referred to above. Stations of the mobile service in the band 3 400-3 500 MHz shall not claim more protection from space stations than that provided in Table **21-4** of the Radio Regulations (2004 edition). (WRC-07)

**ADD** (R9/424/15)

**5.CCC** In Bangladesh, China, Korea (Rep. of), India, Iran (Islamic Republic of), Japan, New Zealand, Pakistan and French Overseas Communities in Region 3, the band 3 500-3 600 MHz is identified for International Mobile Telecommunications (IMT). This identification does not preclude the use of this band by any application of the services to which it is allocated and does not establish priority in the Radio Regulations. At the stage of coordination the provisions of Nos. **9.17** and **9.18** also apply. Before an administration brings into use a station of the mobile service in this band it shall ensure that the power flux-density (pfd) produced at 3 m above ground does not exceed  $-154.5 \text{ dBW}/(\text{m}^2 \cdot 4 \text{ kHz})$  for more than 20 per cent of time at the border of the territory of any other administration. This limit may be exceeded on the territory of any country whose administration has so agreed. In order to ensure that the pfd limit at the border of the territory of any other administration is met, the calculations and verification shall be made, taking into account all relevant information, with the mutual agreement of both administrations (the administration responsible for the terrestrial station and the administration responsible for the earth station), with the assistance of the Bureau if so requested. In case of disagreement, the calculation and verification of the pfd shall be made by the Bureau, taking into account the information referred to above. Stations of the mobile service in the band 3 500-3 600 MHz shall not claim more protection from space stations than that provided in Table **21-4** of the Radio Regulations (Edition of 2004). (WRC-07)

**ADD** (R9/424/16)

**5.ZZZ** *Different category of service:* in Argentina, Brazil, Chile, Costa Rica, Cuba, Dominican Republic, El Salvador, Guatemala, Mexico, Paraguay, Suriname, Uruguay, Venezuela and French Overseas Departments and Communities in Region 2, the band 3 400-3 500 MHz is allocated to the mobile, except aeronautical mobile, service on a primary basis, subject to agreement obtained under No. **9.21**. Stations of the mobile service in the band 3 400-3 500 MHz shall not claim more protection from space stations than that provided in Table **21-4** of the Radio Regulations (Edition of 2004). (WRC-07)

**MOD** COM4/296/5 (B9/305/8) (R4/335/8)

**5.442** In the bands 4 825-4 835 MHz and 4 950-4 990 MHz, the allocation to the mobile service is restricted to the mobile, except aeronautical mobile, service. In Region 2 (except Brazil, Cuba, Guatemala, Paraguay, Uruguay and Venezuela), and in Australia, the band 4 825-4 835 MHz is also allocated to the aeronautical mobile service, limited to aeronautical mobile telemetry for flight testing by aircraft stations. Such use shall be in accordance with Resolution **[COM4/2] (WRC-07)** and shall not cause harmful interference to the fixed service. (WRC-07)

**MOD** COM4/380/4 (B17/404/11)

**5.444** The band 5 030-5 150 MHz is to be used for the operation of the international standard system (microwave landing system) for precision approach and landing. In the band 5 030-5 091 MHz, the requirements of this system shall take precedence over other uses of this band. For the use of the band 5 091-5 150 MHz, No. **5.444A** and Resolution **114 (Rev.WRC-03)** apply. (WRC-07)

**MOD** PLEN/420/1

**5.444** The band 5 030-5 150 MHz is to be used for the operation of the international standard system (microwave landing system) for precision approach and landing. The requirements of this system shall take precedence over other uses of this band. For the use of this band, No. **5.444A** and Resolution **114 (Rev.WRC-03)** apply. (WRC-03)

**MOD** PLEN/420/2

**5.444A** *Additional allocation:* the band 5 091-5 150 MHz is also allocated to the fixed-satellite service (Earth-to-space) on a primary basis. This allocation is limited to feeder links of non-geostationary mobile-satellite systems in the mobile-satellite service and is subject to coordination under No. **9.11A**.

In the band 5 091-5 150 MHz, the following conditions also apply:

- prior to 1 January 2018, the use of the band 5 091-5 150 MHz by feeder links of non-geostationary-satellite systems in the mobile-satellite service shall be made in accordance with Resolution **114 (Rev.WRC-03)**;
- prior to 1 January 2018, the requirements of existing and planned international standard systems for the aeronautical radionavigation service which cannot be met in the 5 000-5 091 MHz band, shall take precedence over other uses of this band;
- after 1 January 2016, no new assignments shall be made to earth stations providing feeder links of non-geostationary mobile-satellite systems;
- after 1 January 2018, the fixed-satellite service will become secondary to the aeronautical radionavigation service. (WRC-03)

**MOD** COM4/380/5 (B17/404/12)

**5.444A** *Additional allocation:* the band 5 091-5 150 MHz is also allocated to the fixed-satellite service (Earth-to-space) on a primary basis. This allocation is limited to feeder links of non-geostationary mobile-satellite systems in the mobile-satellite service and is subject to coordination under No. **9.11A**.

In the band 5 091-5 150 MHz, the following conditions also apply:

- prior to 1 January 2018, the use of the band 5 091-5 150 MHz by feeder links of non-geostationary-satellite systems in the mobile-satellite service shall be made in accordance with Resolution **114 (Rev.WRC-03)**;

- after 1 January 2012, no new assignments shall be made to earth stations providing feeder links of non-geostationary mobile-satellite systems;
- after 1 January 2018, the fixed-satellite service will become secondary to the aeronautical radionavigation service. (WRC-07)

**ADD** COM4/380/6 (B17/404/13)

**5.4B03** The use of the band 5 091-5 150 MHz by the aeronautical mobile service is limited to:

- systems operating in the aeronautical mobile (R) service and in accordance with international aeronautical standards, limited to surface applications at airports. Such use shall be in accordance with Resolution [COM4/4] (WRC-07);
- aeronautical telemetry transmissions from aircraft stations (see No. 1.83) in accordance with Resolution [COM4/7] (WRC-07);
- aeronautical security transmissions. Such use shall be in accordance with Resolution [COM4/8] (WRC-07). (WRC-07)

**ADD** COM4/380/7 (B17/404/14)

**5.4B04** *Additional allocation:* in Region 1 (except in Algeria, Saudi Arabia, Bahrain, Egypt, United Arab Emirates, Jordan, Kuwait, Lebanon, Morocco, Oman, Qatar, Syrian Arab Republic, Sudan and Tunisia) and in Brazil, the band 5 150-5 250 MHz is also allocated to the aeronautical mobile service on a primary basis, limited to aeronautical telemetry transmissions from aircraft stations (see No. 1.83), in accordance with Resolution [COM4/7] (WRC-07). These stations shall not claim protection from other stations operating in accordance with Article 5. No. 5.43A does not apply. (WRC-07)

**MOD** COM4/380/8 (B17/404/15)

**5.446A** The use of the bands 5 150-5 350 MHz and 5 470-5 725 MHz by the stations in the mobile, except aeronautical mobile, service shall be in accordance with Resolution 229 (WRC-03). (WRC-07)

**MOD** COM5/264/66 (B6/268/72) (R3/292/74)

**5.447** *Additional allocation:* in Côte d'Ivoire, Israel, Lebanon, Pakistan, the Syrian Arab Republic and Tunisia, the band 5 150-5 250 MHz is also allocated to the mobile service, on a primary basis, subject to agreement obtained under No. 9.21. In this case, the provisions of Resolution 229 (WRC-03) do not apply. (WRC-07)

**MOD** COM5/264/67 (B6/268/73) (R3/292/75)

**5.447E** *Additional allocation:* The band 5 250-5 350 MHz is also allocated to the fixed service on a primary basis in the following countries in Region 3: Australia, Korea (Rep. of), India, Indonesia, Iran (Islamic Republic of), Japan, Malaysia, Papua New Guinea, the Philippines, Dem. People's Rep. of Korea, Sri Lanka, Thailand and Viet Nam. The use of this band by the fixed service is intended for the implementation of fixed wireless access systems and shall comply with Recommendation ITU-R F.1613. In addition, the fixed service shall not claim protection from the radiodetermination, Earth exploration-satellite (active) and space research (active) services, but the provisions of No. 5.43A do not apply to the fixed service with respect to the Earth exploration-satellite (active) and space research (active) services. After implementation of fixed wireless access systems in the fixed service with protection for the existing radiodetermination systems, no more stringent constraints should be imposed on the fixed wireless access systems by future radiodetermination implementations. (WRC-07)

**MOD** COM4/296/2 (B9/305/7) (R4/335/7)

**4 800-5 570 MHz**

Allocation to services		
Region 1	Region 2	Region 3
<b>4 800-4 990</b>	FIXED MOBILE MOD 5.442 ADD 5.4B01 Radio astronomy 5.149 5.339 5.443	

**MOD** COM4/380/1 (B17/404/8)

**4 800-5 570 MHz**

Allocation to services		
Region 1	Region 2	Region 3
<b>5 030-5 091</b>	AERONAUTICAL RADIONAVIGATION 5.367 MOD 5.444	

**MOD** COM4/380/2 (B17/404/9)

**4 800-5 570 MHz**

Allocation to services		
Region 1	Region 2	Region 3
<b>5 091-5 150</b>	AERONAUTICAL RADIONAVIGATION AERONAUTICAL MOBILE ADD 5.4B03 5.367 MOD 5.444 MOD 5.444A	

**MOD** COM4/380/3 (B17/404/10)

**4 800-5 570 MHz**

Allocation to services		
Region 1	Region 2	Region 3
<b>5 150-5 250</b>	AERONAUTICAL RADIONAVIGATION FIXED-SATELLITE (Earth-to-space) 5.447A MOBILE except aeronautical mobile MOD 5.446A 5.446B 5.446 5.447 5.447B 5.447C ADD 5.4B04	

**MOD** COM5/264/68 (B6/268/74) (R3/292/76)

**5.454** *Different category of service:* in Azerbaijan, the Russian Federation, Georgia, Mongolia, Kyrgyzstan, Tajikistan and Turkmenistan, the allocation of the band 5 670-5 725 MHz to the space research service is on a primary basis (see No. **5.33**). (WRC-07)



**MOD** COM5/264/69 (B6/268/75) (R3/292/77)

**5.455** *Additional allocation:* in Armenia, Azerbaijan, Belarus, Cuba, the Russian Federation, Georgia, Hungary, Kazakhstan, Moldova, Mongolia, Uzbekistan, Kyrgyzstan, Tajikistan, Turkmenistan and Ukraine, the band 5 670-5 850 MHz is also allocated to the fixed service on a primary basis. (WRC-07)

**MOD** COM4/296/3 (B9/305/9) (R4/335/9)

**5 570-7 250 MHz**

Allocation to services		
Region 1	Region 2	Region 3
<b>5 925-6 700</b>	FIXED FIXED-SATELLITE (Earth-to-space) 5.457A 5.457B MOBILE ADD 5.4B02 5.149 5.440 5.458	

**ADD** COM4/296/6 (B9/305/10) (R4/335/10)

**5.4B02** In Region 2 (except Brazil, Cuba, French Overseas Departments and Communities, Guatemala, Paraguay, Uruguay and Venezuela), the band 5 925-6 700 MHz may be used for aeronautical mobile telemetry for flight testing by aircraft stations (see No. **1.83**). Such use shall be in accordance with Resolution [COM4/2] (WRC-07) and shall not cause harmful interference to, nor claim protection from, the fixed-satellite and fixed services. Any such use does not preclude the use of these bands by other mobile service applications or by other services to which these bands are allocated on a co-primary basis and does not establish priority in the Radio Regulations.  
(WRC-07)

**MOD** (COM4/272/1) (B7/283/1) (R4/335/11)

**8 500-10 000 MHz**

Allocation to services		
Region 1	Region 2	Region 3
<b>9 000-9 200</b>	AERONAUTICAL RADIONAVIGATION 5.337 RADIOLOCATION MOD 5.471 ADD 5.475A	
<b>9 200-9 300</b>	RADIOLOCATION MARITIME RADIONAVIGATION 5.472 5.473 5.474	

**MOD** COM4/332/83 (B13/347/32) (R7/411/43)

**8 500-10 000 MHz**

Allocation to services		
Region 1	Region 2	Region 3
<b>9 300-9 500</b>	RADIONAVIGATION 5.476 EARTH EXPLORATION-SATELLITE (active) SPACE RESEARCH (active) RADIOLOCATION 5.427 5.474 MOD 5.475 ADD 5.475B MOD 5.476A ADD 5.4B07	
<b>9 500-9 800</b>	EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION RADIONAVIGATION SPACE RESEARCH (active) MOD 5.476A	

**MOD** (COM4/272/2) (B7/283/3) (R4/335/13)

**5.475** The use of the band 9 300-9 500 MHz by the aeronautical radionavigation service is limited to airborne weather radars and ground-based radars. In addition, ground-based radar beacons in the aeronautical radionavigation service are permitted in the band 9 300-9 320 MHz on condition that harmful interference is not caused to the maritime radionavigation service. (WRC-07)

**ADD** (COM4/272/3) (B7/283/4) (R4/335/14)

**5.475A** In the band 9 000-9 200 MHz, stations operating in the radiolocation service shall not cause harmful interference to, nor claim protection from, systems identified in No. **5.337** operating in the aeronautical radionavigation service, or radar systems in the maritime radionavigation service operating in this band on a primary basis in the countries listed in No. **5.471**. (WRC-07)

**MOD** COM4/417/1

**8 500-10 000 MHz**

Allocation to services		
Region 1	Region 2	Region 3
<b>9 800-9 900</b>	RADIOLOCATION Earth exploration-satellite (active) Space research (active) Fixed 5.477 5.478 ADD 5.xyz ADD 5.xyy	

**MOD** COM4/417/2

<b>9 900-10 000</b>	RADIOLOCATION Fixed 5.477 5.478 5.479
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**MOD** (COM4/272/5) (B7/283/2) (R4/335/12)

**5.471** *Additional allocation:* in Algeria, Germany, Bahrain, Belgium, China, Egypt, the United Arab Emirates, France, Greece, Indonesia, Iran (Islamic Republic of), the Libyan Arab Jamahiriya, the Netherlands, Qatar and Sudan, the bands 8 825-8 850 MHz and 9 000-9 200 MHz are also allocated to the maritime radionavigation service, on a primary basis, for use by shore-based radars only. (WRC-07)

**MOD** COM5/264/71 (B6/268/77) (R3/292/79)

**5.473** *Additional allocation:* in Armenia, Austria, Azerbaijan, Belarus, Cuba, the Russian Federation, Georgia, Hungary, Mongolia, Uzbekistan, Poland, Kyrgyzstan, Romania, Tajikistan, Turkmenistan and Ukraine, the bands 8 850-9 000 MHz and 9 200-9 300 MHz are also allocated to the radionavigation service on a primary basis. (WRC-07)

**ADD** (COM4/272/4) (B7/283/5) (R4/335/15)

**5.475B** In the band 9 300-9 500 MHz, stations operating in the radiolocation service shall not cause harmful interference to, nor claim protection from, radars operating in the radionavigation service in conformity with the Radio Regulations. Ground-based radars used for meteorological purposes have priority over other radiolocation uses. (WRC-07)

**SUP** COM6/341/12 (B14/365/12) (R7/411/44)

**5.476**

**MOD** COM4/332/84 (B13/347/33) (R7/411/45)

**5.476A** In the band 9 300-9 800 MHz, stations in the Earth exploration-satellite service (active) and space research service (active) shall not cause harmful interference to, nor claim protection from, stations of the radionavigation and radiolocation services. (WRC-07)

**ADD** COM4/332/85 (B13/347/34) (R7/411/46)

**5.4B07** The use of the band 9 300-9 500 MHz by the Earth exploration-satellite service (active) and the space research service (active) is limited to systems requiring necessary bandwidth greater than 300 MHz that cannot be fully accommodated within the 9 500-9 800 MHz band. (WRC-07)

**MOD** COM5/264/72 (B6/268/78) (R3/292/80)

**5.477** *Different category of service:* in Algeria, Saudi Arabia, Bahrain, Bangladesh, Brunei Darussalam, Cameroon, Egypt, the United Arab Emirates, Eritrea, Ethiopia, Guyana, India, Indonesia, Iran (Islamic Republic of), Iraq, Jamaica, Japan, Jordan, Kuwait, Lebanon, Liberia, Malaysia, Nigeria, Oman, Pakistan, Qatar, Syrian Arab Republic, the Dem. People's Rep. of Korea, Singapore, Somalia, Sudan, Trinidad and Tobago, and Yemen, the allocation of the band 9 800-10 000 MHz to the fixed service is on a primary basis (see No. **5.33**). (WRC-07)

**MOD** COM5/264/73 (B6/268/79) (R3/292/81)

**5.478** *Additional allocation:* in Azerbaijan, Mongolia, Kyrgyzstan, Romania, Turkmenistan and Ukraine, the band 9 800-10 000 MHz is also allocated to the radionavigation service on a primary basis. (WRC-07)

**ADD** COM4/417/3

**5.xyz** The use of the band 9 800-9 900 MHz by the Earth exploration-satellite service (active) and the space research service (active) is limited to systems requiring necessary bandwidth greater than 500 MHz that cannot be fully accommodated within the 9 300-9 800 MHz band.

**ADD** COM4/417/4

**5.xyy** In the band 9 800-9 900 MHz, stations in the Earth exploration-satellite service (active) and space research service (active) shall not cause harmful interference to, nor claim protection from stations of the fixed service to which this band is allocated on a secondary basis.

**MOD** COM5/264/74 (B6/268/80) (R3/292/82)

**5.480** *Additional allocation:* in Argentina, Brazil, Chile, Costa Rica, Cuba, El Salvador, Ecuador, Guatemala, Honduras, Mexico, Paraguay, the Netherlands Antilles, Peru and Uruguay, the band 10-10.45 GHz is also allocated to the fixed and mobile services on a primary basis. In Venezuela, the band 10-10.45 GHz is also allocated to the fixed service on a primary basis. (WRC-07)

**MOD** COM5/264/75 (B6/268/81) (R3/292/83)

**5.481** *Additional allocation:* in Germany, Angola, Brazil, China, Costa Rica, Côte d'Ivoire, El Salvador, Ecuador, Spain, Guatemala, Hungary, Japan, Kenya, Morocco, Nigeria, Oman, Uzbekistan, Paraguay, Peru, the Dem. People's Rep. of Korea, Romania, Tanzania, Thailand and Uruguay, the band 10.45-10.5 GHz is also allocated to the fixed and mobile services on a primary basis. (WRC-07)

**MOD** COM5/373/1 (B15/396/2)

#### 10-11.7 GHz

Allocation to services		
Region 1	Region 2	Region 3
<b>10.6-10.68</b>	EARTH EXPLORATION-SATELLITE (passive) FIXED MOBILE except aeronautical mobile RADIO ASTRONOMY SPACE RESEARCH (passive) Radiolocation 5.149 MOD 5.482 ADD 5.BA01	

**MOD** COM5/373/2 (B15/396/3)

**5.482** In the band 10.6-10.68 GHz, the power delivered to the antenna of stations of the fixed and mobile, except aeronautical mobile, services shall not exceed –3 dBW. This limit may be exceeded, subject to agreement obtained under No. **9.21**. However, in Algeria, Saudi Arabia, Armenia, Azerbaijan, Bahrain, Bangladesh, Belarus, Egypt, United Arab Emirates, Georgia, India, Indonesia, Iran (Islamic Republic of), Iraq, Jordan, Libyan Arab Jamahiriya, Kazakhstan, Kuwait, Lebanon, Morocco, Mauritania, Moldova, Nigeria, Oman, Uzbekistan, Pakistan, Philippines, Qatar, Syrian Arab Republic, Kyrgyzstan, Singapore, Tajikistan, Tunisia, Turkmenistan and Viet Nam, this restriction on the fixed and mobile, except aeronautical mobile, service is not applicable. (WRC-07)

**ADD** COM5/373/3 (B15/396/4)

**5.BA01** For sharing of the band 10.6-10.68 GHz between the Earth exploration-satellite (passive) service and the fixed and mobile, except aeronautical mobile, services, Resolution [COM5/5] (WRC-07) applies. (WRC-07)

**MOD** COM5/264/76 (B6/268/82) (R3/292/84)

**5.483** *Additional allocation:* in Saudi Arabia, Armenia, Azerbaijan, Bahrain, Belarus, China, Colombia, Korea (Rep. of), Costa Rica, Egypt, the United Arab Emirates, Georgia, Iran (Islamic Republic of), Iraq, Israel, Jordan, Kazakhstan, Kuwait, Lebanon, Mongolia, Qatar, Kyrgyzstan, the Dem. People's Rep. of Korea, Romania, Tajikistan, Turkmenistan and Yemen, the band 10.68-10.7 GHz is also allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis. Such use is limited to equipment in operation by 1 January 1985. (WRC-07)

**MOD** COM5/264/77 (B6/268/83) (R3/292/85)

**5.495** *Additional allocation:* in Bosnia and Herzegovina, France, Greece, Liechtenstein, Monaco, Montenegro, Uganda, Romania, Serbia, Switzerland, Tanzania and Tunisia, the band 12.5-12.75 GHz is also allocated to the fixed and mobile, except aeronautical mobile, services on a secondary basis. (WRC-07)

**MOD** COM5/264/78 (B6/268/84) (R3/292/86)

**5.501** *Additional allocation:* in Azerbaijan, Hungary, Japan, Mongolia, Kyrgyzstan, Romania and Turkmenistan, the band 13.4-14 GHz is also allocated to the radionavigation service on a primary basis. (WRC-07)

**MOD** COM5/264/79 (B6/268/85) (R3/292/87)

**5.505** *Additional allocation:* in Algeria, Angola, Saudi Arabia, Bahrain, Botswana, Brunei Darussalam, Cameroon, China, Congo (Rep. of the), Korea (Rep. of), Egypt, the United Arab Emirates, Gabon, Guinea, India, Indonesia, Iran (Islamic Republic of), Iraq, Israel, Japan, Jordan, Kuwait, Lesotho, Lebanon, Malaysia, Mali, Morocco, Mauritania, Oman, Pakistan, the Philippines, Qatar, the Syrian Arab Republic, the Dem. People's Rep. of Korea, Singapore, Somalia, Sudan, Swaziland, Tanzania, Chad, Viet Nam and Yemen, the band 14-14.3 GHz is also allocated to the fixed service on a primary basis. (WRC-07)

**MOD** COM5/264/80 (B6/268/86) (R3/292/88)

**5.508** *Additional allocation:* in Germany, Bosnia and Herzegovina, France, Italy, Libyan Arab Jamahiriya, The Former Yugoslav Rep. of Macedonia and the United Kingdom, the band 14.25-14.3 GHz is also allocated to the fixed service on a primary basis. (WRC-07)

**SUP** COM5/173/2 (B1/196/6) (R1/221/5)

**5.509**

**MOD** COM5/264/81 (B6/268/87) (R3/292/89)

**5.511** *Additional allocation:* in Saudi Arabia, Bahrain, Bosnia and Herzegovina, Cameroon, Egypt, the United Arab Emirates, Guinea, Iran (Islamic Republic of), Iraq, Israel, the Libyan Arab Jamahiriya, Kuwait, Lebanon, Pakistan, Qatar, the Syrian Arab Republic and Somalia, the band 15.35-15.4 GHz is also allocated to the fixed and mobile services on a secondary basis. (WRC-07)

**MOD** COM5/264/82 (B6/268/88) (R3/292/90)

**5.512** *Additional allocation:* in Algeria, Angola, Saudi Arabia, Austria, Bahrain, Bangladesh, Brunei Darussalam, Cameroon, Congo (Rep. of the), Costa Rica, Egypt, El Salvador, the United Arab Emirates, Eritrea, Finland, Guatemala, India, Indonesia, Iran (Islamic Republic of), the Libyan Arab Jamahiriya, Jordan, Kenya, Kuwait, Lebanon, Malaysia, Mali, Morocco, Mauritania, Montenegro, Mozambique, Nepal, Nicaragua, Oman, Pakistan, Qatar, Syrian Arab Republic, Serbia, Singapore, Somalia, Sudan, Swaziland, Tanzania, Chad, Togo and Yemen, the band 15.7-17.3 GHz is also allocated to the fixed and mobile services on a primary basis. (WRC-07)

**MOD** COM5/287/1 (B8/293/1) (R4/335/17)

#### 15.4-18.4 GHz

Allocation to services		
Region 1	Region 2	Region 3
<b>17.3-17.7</b> FIXED-SATELLITE (Earth-to-space) 5.516 (space-to-Earth) 5.516A 5.516B Radiolocation 5.514	<b>17.3-17.7</b> FIXED-SATELLITE (Earth-to-space) 5.516 BROADCASTING-SATELLITE Radiolocation 5.514 5.515	<b>17.3-17.7</b> FIXED-SATELLITE (Earth-to-space) 5.516 Radiolocation 5.514
<b>17.7-18.1</b> FIXED FIXED-SATELLITE (space-to-Earth) 5.484A (Earth-to-space) 5.516 MOBILE	<b>17.7-17.8</b> FIXED FIXED-SATELLITE (space-to-Earth) MOD 5.517 (Earth-to-space) 5.516 BROADCASTING-SATELLITE Mobile 5.515	<b>17.7-18.1</b> FIXED FIXED-SATELLITE (space-to-Earth) 5.484A (Earth-to-space) 5.516 MOBILE
	<b>17.8-18.1</b> FIXED FIXED-SATELLITE (space-to-Earth) 5.484A (Earth-to-space) 5.516 MOBILE MOD 5.519	
<b>18.1-18.4</b>	FIXED FIXED-SATELLITE (space-to-Earth) 5.484A 5.516B (Earth-to-space) 5.520 MOBILE MOD 5.519 5.521	

**MOD** COM5/264/83 (B6/268/89) (R3/292/91)

**5.514** *Additional allocation:* in Algeria, Angola, Saudi Arabia, Bahrain, Bangladesh, Cameroon, Costa Rica, El Salvador, the United Arab Emirates, Guatemala, India, Iran (Islamic Republic of), Iraq, Israel, Italy, the Libyan Arab Jamahiriya, Japan, Jordan, Kuwait, Lithuania, Nepal, Nicaragua, Nigeria, Oman, Uzbekistan, Pakistan, Qatar, Kyrgyzstan and Sudan, the band 17.3-17.7 GHz is also allocated to the fixed and mobile services on a secondary basis. The power limits given in Nos. **21.3** and **21.5** shall apply. (WRC-07)

**MOD** COM5/287/2 (B8/293/2) (R4/335/18)

**5.517** In Region 2, use of the fixed-satellite (space-to-Earth) service in the band 17.7-17.8 GHz shall not cause harmful interference to nor claim protection from assignments in the broadcasting-satellite service operating in conformity with the Radio Regulations. (WRC-07)

**SUP** COM5/287/3 (B8/293/3) (R4/335/19)

**5.518**

**MOD** COM5/287/4 (B8/293/4) (R4/335/20)

**5.519** *Additional allocation:* the bands 18.0-18.3 GHz in Region 2 and 18.1-18.4 GHz in Regions 1 and 3 are also allocated to the meteorological-satellite service (space-to-Earth) on a primary basis. Their use is limited to geostationary satellites. (WRC-07)

**MOD** COM5/264/84 (B6/268/90) (R3/292/92)

**5.524** *Additional allocation:* in Afghanistan, Algeria, Angola, Saudi Arabia, Bahrain, Brunei Darussalam, Cameroon, China, Congo (Rep. of the), Costa Rica, Egypt, the United Arab Emirates, Gabon, Guatemala, Guinea, India, Iran (Islamic Republic of), Iraq, Israel, Japan, Jordan, Kuwait, Lebanon, Malaysia, Mali, Morocco, Mauritania, Nepal, Nigeria, Oman, Pakistan, the Philippines, Qatar, the Syrian Arab Republic, the Dem. Rep. of the Congo, the Dem. People's Rep. of Korea, Singapore, Somalia, Sudan, Tanzania, Chad, Togo and Tunisia, the band 19.7-21.2 GHz is also allocated to the fixed and mobile services on a primary basis. This additional use shall not impose any limitation on the power flux-density of space stations in the fixed-satellite service in the band 19.7-21.2 GHz and of space stations in the mobile-satellite service in the band 19.7-20.2 GHz where the allocation to the mobile-satellite service is on a primary basis in the latter band. (WRC-07)

**MOD** COM6/341/13 (B14/365/13) (R7/411/47)

**5.530** In Regions 1 and 3, the use of the band 21.4-22 GHz by the broadcasting-satellite service is subject to the provisions of Resolution **525 (Rev.WRC-07)**. (WRC-07)

**MOD** COM5/372/2 (B15/396/5)

**22-24.75 GHz**

Allocation to services		
Region 1	Region 2	Region 3
<b>22.55-23.55</b>	FIXED INTER-SATELLITE ADD 5.BA03 MOBILE 5.149	
<b>23.55-23.6</b>	FIXED MOBILE	
<b>23.6-24</b>	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340	

**MOD** COM5/372/3 (B15/396/6)

**29.9-34.2 GHz**

Allocation to services		
Region 1	Region 2	Region 3
<b>30-31</b>	FIXED-SATELLITE (Earth-to-space) ADD 5.BA03 MOBILE-SATELLITE (Earth-to-space) Standard frequency and time signal-satellite (space-to-Earth) 5.542	
<b>31-31.3</b>	FIXED 5.543A ADD 5.BA03 MOBILE Standard frequency and time signal-satellite (space-to-Earth) Space research 5.544 5.545 5.149	
<b>31.3-31.5</b>	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340	

**ADD** COM5/372/6 (B15/396/11)

**5.BA03** In the bands 1 350-1 400 MHz, 1 427-1 429 MHz, 1 429-1 452 MHz, 22.55-23.55 GHz, 30-31 GHz, 31-31.3 GHz, 49.7-50.2 GHz, 50.4-50.9 GHz and 51.4-52.6 GHz, Resolution [COM5/4] (WRC-07) applies. (WRC-07)

**MOD** COM5/373/6 (B15/396/7)

**34.2-40 GHz**

Allocation to services		
Region 1	Region 2	Region 3
<b>36-37</b>	EARTH EXPLORATION-SATELLITE (passive) FIXED MOBILE SPACE RESEARCH (passive) 5.149 ADD 5.BA02	

**ADD** COM5/373/7 (B15/396/8)

**5.BA02** For sharing of the band 36-37 GHz between the Earth exploration-satellite (passive) service and the fixed and mobile services, Resolution [COM5/6] (WRC-07) shall apply. (WRC-07)



**MOD** COM5/264/85 (B6/268/91) (R3/292/93)

**5.536B** In Germany, Saudi Arabia, Austria, Belgium, Brazil, Bulgaria, China, Korea (Rep. of), Denmark, Egypt, United Arab Emirates, Spain, Estonia, Finland, France, Hungary, India, Iran (Islamic Republic of), Ireland, Israel, Italy, the Libyan Arab Jamahiriya, Jordan, Kenya, Kuwait, Lebanon, Liechtenstein, Lithuania, Moldova, Norway, Oman, Uganda, Pakistan, the Philippines, Poland, Portugal, the Syrian Arab Republic, Dem. People's Rep. of Korea, Slovakia, the Czech Rep., Romania, the United Kingdom, Singapore, Sweden, Switzerland, Tanzania, Turkey, Viet Nam and Zimbabwe, earth stations operating in the Earth exploration-satellite service in the band 25.5-27 GHz shall not claim protection from, or constrain the use and deployment of, stations of the fixed and mobile services. (WRC-07)

**MOD** COM5/284/1 (B8/293/5) (R4/335/21)

**5.537A** In Bhutan, Cameroon, Korea (Rep. of), the Russian Federation, India, Indonesia, Iran (Islamic Republic of), Japan, Kazakhstan, Lesotho, Malaysia, Maldives, Mongolia, Myanmar, Uzbekistan, Pakistan, the Philippines, Kyrgyzstan, the Dem. People's Rep. of Korea, Sri Lanka, Thailand and Viet Nam, the allocation to the fixed service in the band 27.9-28.2 GHz may also be used by high altitude platform stations (HAPS) within the territory of these countries. Such use of 300 MHz of the fixed-service allocation by HAPS in the above countries is further limited to operation in the HAPS-to-ground direction and shall not cause harmful interference to, nor claim protection from, other types of fixed-service systems or other co-primary services. Furthermore, the development of these other services shall not be constrained by HAPS. See Resolution **145 (Rev.WRC-07)**. (WRC-07)

**MOD** COM5/216/3 (B3/224/6)

**5.538** *Additional allocation:* the bands 27.500-27.501 GHz and 29.999-30.000 GHz are also allocated to the fixed-satellite service (space-to-Earth) on a primary basis for the beacon transmissions intended for up-link power control. Such space-to-Earth transmissions shall not exceed an equivalent isotropically radiated power (e.i.r.p.) of +10 dBW in the direction of adjacent satellites on the geostationary-satellite orbit. (WRC-07)

**MOD** COM5/264/86 (B6/268/92) (R3/292/94)

**5.542** *Additional allocation:* in Algeria, Saudi Arabia, Bahrain, Brunei Darussalam, Cameroon, China, Congo (Rep. of the), Egypt, the United Arab Emirates, Eritrea, Ethiopia, Guinea, India, Iran (Islamic Republic of), Iraq, Japan, Jordan, Kuwait, Lebanon, Malaysia, Mali, Morocco, Mauritania, Nepal, Pakistan, Philippines, Qatar, the Syrian Arab Republic, the Dem. People's Rep. of Korea, Somalia, Sudan, Sri Lanka and Chad, the band 29.5-31 GHz is also allocated to the fixed and mobile services on a secondary basis. The power limits specified in Nos. **21.3** and **21.5** shall apply. (WRC-07)

**MOD** COM5/284/2 (B8/293/6) (R4/335/22)

**5.543A** In Bhutan, Cameroon, Korea (Rep. of), the Russian Federation, India, Indonesia, Iran (Islamic Republic of), Japan, Kazakhstan, Lesotho, Malaysia, Maldives, Mongolia, Myanmar, Uzbekistan, Pakistan, the Philippines, Kyrgyzstan, the Dem. People's Rep. of Korea, Sri Lanka, Thailand and Viet Nam, the allocation to the fixed service in the band 31-31.3 GHz may also be used by systems using high altitude platform stations (HAPS) in the ground-to-HAPS direction. The use of the band 31-31.3 GHz by systems using HAPS is limited to the territory of the countries listed above and shall not cause harmful interference to, nor claim protection from, other types of fixed-service systems, systems in the mobile service and systems operated under No. **5.545**. Furthermore, the development of these services shall not be constrained by HAPS. Systems using

HAPS in the band 31-31.3 GHz shall not cause harmful interference to the radio astronomy service having a primary allocation in the band 31.3-31.8 GHz, taking into account the protection criterion as given in Recommendation ITU-R RA.769. In order to ensure the protection of satellite passive services, the level of unwanted power density into a HAPS ground station antenna in the band 31.3-31.8 GHz shall be limited to –106 dB(W/MHz) under clear-sky conditions, and may be increased up to –100 dB(W/MHz) under rainy conditions to mitigate fading due to rain, provided the effective impact on the passive satellite does not exceed the impact under clear-sky conditions. See Resolution **145 (Rev.WRC-07)**. (WRC-07)

**MOD** COM5/264/87 (B6/268/93) (R3/292/95)

**5.545** *Different category of service:* in Armenia, Georgia, Mongolia, Kyrgyzstan, Tajikistan and Turkmenistan, the allocation of the band 31-31.3 GHz to the space research service is on a primary basis (see No. **5.33**). (WRC-07)

**MOD** COM5/372/5 (B15/396/10)

#### 51.4-55.78 GHz

Allocation to services		
Region 1	Region 2	Region 3
<b>51.4-52.6</b>	FIXED ADD 5.BA03 MOBILE 5.547 5.556	

**MOD** COM5/264/88 (B6/268/94) (R3/292/96)

**5.546** *Different category of service:* in Saudi Arabia, Armenia, Azerbaijan, Belarus, Egypt, the United Arab Emirates, Spain, Estonia, the Russian Federation, Georgia, Hungary, Iran (Islamic Republic of), Israel, Jordan, Lebanon, Moldova, Mongolia, Uzbekistan, Poland, the Syrian Arab Republic, Kyrgyzstan, Romania, the United Kingdom, South Africa, Tajikistan, Turkmenistan and Turkey, the allocation of the band 31.5-31.8 GHz to the fixed and mobile, except aeronautical mobile, services is on a primary basis (see No. **5.33**). (WRC-07)

**MOD** COM6/382/9 (B20/414/9)

**5.547** The bands 31.8-33.4 GHz, 37-40 GHz, 40.5-43.5 GHz, 51.4-52.6 GHz, 55.78-59 GHz and 64-66 GHz are available for high-density applications in the fixed service (see Resolution **75 (WRC-2000)**). Administrations should take this into account when considering regulatory provisions in relation to these bands. Because of the potential deployment of high-density applications in the fixed-satellite service in the bands 39.5-40 GHz and 40.5-42 GHz (see No. **5.516B**), administrations should further take into account potential constraints to high-density applications in the fixed service, as appropriate. (WRC-07)

**MOD** COM5/264/89 (B6/268/95) (R3/292/97)

**5.550** *Different category of service:* in Armenia, Azerbaijan, Belarus, the Russian Federation, Georgia, Mongolia, Kyrgyzstan, Tajikistan and Turkmenistan, the allocation of the band 34.7-35.2 GHz to the space research service is on a primary basis (see No. **5.33**). (WRC-07)

**MOD** COM6/341/14 (B14/365/14) (R7/411/48)

**5.551H** The equivalent power flux-density (epfd) produced in the band 42.5-43.5 GHz by all space stations in any non-geostationary-satellite system in the fixed-satellite service (space-to-Earth), or in the broadcasting-satellite service (space-to-Earth) operating in the 42-42.5 GHz band, shall not exceed the following values at the site of any radio astronomy station for more than 2% of the time:

- 230 dB(W/m<sup>2</sup>) in 1 GHz and –246 dB(W/m<sup>2</sup>) in any 500 kHz of the 42.5-43.5 GHz band at the site of any radio astronomy station registered as a single-dish telescope; and
- 209 dB(W/m<sup>2</sup>) in any 500 kHz of the 42.5-43.5 GHz band at the site of any radio astronomy station registered as a very long baseline interferometry station.

These epfd values shall be evaluated using the methodology given in Recommendation ITU-R S.1586-1 and the reference antenna pattern and the maximum gain of an antenna in the radio astronomy service given in Recommendation ITU-R RA.1631 and shall apply over the whole sky and for elevation angles higher than the minimum operating angle  $\theta_{min}$  of the radiotelescope (for which a default value of 5° should be adopted in the absence of notified information).

These values shall apply at any radio astronomy station that either:

- was in operation prior to 5 July 2003 and has been notified to the Bureau before 4 January 2004; or
- was notified before the date of receipt of the complete Appendix 4 information for coordination or notification, as appropriate, for the space station to which the limits apply.

Other radio astronomy stations notified after these dates may seek an agreement with administrations that have authorized the space stations. In Region 2, Resolution **743 (WRC-03)** shall apply. The limits in this footnote may be exceeded at the site of a radio astronomy station of any country whose administration so agreed. (WRC-07)

MOD

COM5/372/4

(B15/396/9)

**47.5-51.4 GHz**

Allocation to services					
Region 1		Region 2		Region 3	
<b>47.5-47.9</b> FIXED FIXED-SATELLITE (Earth-to-space) 5.552 (space-to-Earth) 5.516B 5.554A MOBILE		<b>47.5-47.9</b> FIXED FIXED-SATELLITE (Earth-to-space) 5.552 MOBILE			
<b>47.9-48.2</b>		FIXED FIXED-SATELLITE (Earth-to-space) 5.552 MOBILE 5.552A			
<b>48.2-48.54</b> FIXED FIXED-SATELLITE (Earth-to-space) 5.552 (space-to-Earth) 5.516B 5.554A 5.555B MOBILE		<b>48.2-50.2</b>  FIXED FIXED-SATELLITE (Earth-to-space) 5.516B 5.552 ADD 5.BA03 MOBILE          5.149 5.340 5.555			
<b>48.54-49.44</b> FIXED FIXED-SATELLITE (Earth-to-space) 5.552 MOBILE 5.149 5.340 5.555					
<b>49.44-50.2</b> FIXED FIXED-SATELLITE (Earth-to-space) 5.552 ADD 5.BA03 (space-to-Earth) 5.516B 5.554A 5.555B MOBILE					
<b>50.2-50.4</b>		EARTH EXPLORATION-SATELLITE (passive) SPACE RESEARCH (passive) 5.340			
<b>50.4-51.4</b>		FIXED FIXED-SATELLITE (Earth-to-space) ADD 5.BA03 MOBILE Mobile-satellite (Earth-to-space)			

MOD

COM5/284/3

(B8/293/7)

(R4/335/23)

**5.552A**

The allocation to the fixed service in the bands 47.2-47.5 GHz and 47.9-48.2 GHz is

designated for use by high altitude platform stations. The use of the bands 47.2-47.5 GHz and

47.9-48.2 GHz is subject to the provisions of Resolution **122 (Rev.WRC-07)**. (WRC-07)

**MOD** COM6/341/15 (B14/365/15) (R7/411/49)

**66-81 GHz**

Allocation to services		
Region 1	Region 2	Region 3
74-76	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE BROADCASTING BROADCASTING-SATELLITE Space research (space-to-Earth) 5.561	

**SUP** COM6/341/16 (B14/365/16) (R7/411/50)

**5.559A**

**ARTICLE 9**

**Procedure for effecting coordination with or  
obtaining agreement of other administrations<sup>1, 2, 3, 4, 5, 6, 7, 8</sup> (WRC-07)**

**Section I – Advance publication of information on satellite  
networks or satellite systems**

**9.2B**

**MOD** COM5/308/1 (B10/326/1) (R6/410/8)

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<sup>10</sup> **9.2B.1** If the payments are not received in accordance with the provisions of Council Decision 482, as amended, on the implementation of cost recovery for satellite network filings, the Bureau shall cancel the publication, after informing the administration concerned. The Bureau shall inform all administrations of such action, and that the network specified in the publication in question no longer has to be taken into consideration by the Bureau and other administrations. The Bureau shall send a reminder to the notifying administration not later than two months prior to the deadline for the payment in accordance with the above-mentioned Council Decision 482 unless the payment has already been received. (WRC-07)

**Section II – Procedure for effecting coordination<sup>12, 13</sup>**

**Sub-Section IIA – Requirement and request for coordination**

**MOD** COM5/216/5 (B3/224/8) (R2/266/1)

**9.14** *i)* for a transmitting space station of a satellite network for which the requirement to coordinate is included in a footnote to the Table of Frequency Allocations referring to this provision or to No. **9.11A** in respect of receiving stations of terrestrial services where the threshold value is exceeded; (WRC-07)

## 9.38

**MOD** COM5/308/2 (B10/326/2) (R6/410/9)

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<sup>22</sup> **9.38.1** If the payments are not received in accordance with the provisions of Council Decision 482, as amended, on the implementation of cost recovery for satellite network filings, the Bureau shall cancel the publication, after informing the administration concerned. The Bureau shall inform all administrations of such action and that the network specified in the publication in question no longer has to be taken into consideration by the Bureau and other administrations. The Bureau shall send a reminder to the notifying administration not later than two months prior to the deadline for the payment in accordance with the above-mentioned Council Decision 482 unless the payment has already been received. (WRC-07)

**MOD** COM5/287/5 (B8/293/8) (R4/335/24)

**9.41** Following receipt of the BR IFIC referring to requests for coordination under Nos. **9.7** to **9.7B**, an administration believing that it should have been included in the request or the initiating administration believing that an administration identified under No. **9.36** in accordance with the provisions of No. **9.7** (GSO/GSO) (items 1) to 8) of the frequency band column), No. **9.7A** (GSO earth station/non-GSO system) or No. **9.7B** (non-GSO system/GSO earth station) of Table 5-1 of Appendix **5** should not have been included in the request, shall, within four months of the date of publication of the relevant BR IFIC, inform the initiating administration or the identified administration, as appropriate, and the Bureau, giving its technical reasons for doing so, and shall request that its name be included or that the name of the identified administration be excluded, as appropriate. (WRC-07)

**MOD** COM5/308/3 (B10/326/3) (R6/410/10)

## ARTICLE 11

### **Notification and recording of frequency assignments**<sup>1, 2, 3, 4, 5, 6, ADD 6bis</sup> (WRC-07)

**ADD** COM5/308/4 (B10/326/4) (R6/410/11)

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<sup>6bis</sup> **A.11.6** If the payments are not received in accordance with the provisions of Council Decision 482, as amended, on the implementation of cost recovery for satellite network filings, the Bureau shall cancel the publication specified in Nos. **11.28** and **11.43** and the corresponding entries in the Master Register under Nos. **11.36**, **11.37**, **11.38**, **11.39**, **11.41**, **11.43B** or **11.43C**, as appropriate, after informing the administration concerned. The Bureau shall inform all administrations of such action and that the entries specified in the publication in question no longer have to be taken into consideration by the Bureau and other administrations and that any resubmitted notice shall be considered to be a new notice. The Bureau shall send a reminder to the notifying administration not later than two months prior to the deadline for the payment in accordance with the above-mentioned Council Decision 482 unless the payment has already been received. See also Resolution [COM 5/2] (WRC-07). (WRC-07)

## **Section I – Notification**

**SUP** COM5/344/1 (B14/365/17) (R7/411/51)

### **11.3A**

**MOD** COM5/379/1 (B16/401/1)

**11.9** Similar notification shall be made for a frequency assignment to a receiving earth station or space station, or to a receiving high altitude platform station in the fixed service using the bands mentioned in Nos. **5.543A** and **5.552A** or to a land station for reception from mobile stations, when: (WRC-07)

**MOD** COM5/307/1 (B11/329/7) (R6/410/12)

**11.15** When notifying a frequency assignment, the administration<sup>7</sup> shall provide the relevant characteristics listed in Appendix 4. (WRC-07)

**MOD** COM5/284/4 (B8/293/9) (R4/335/25)

**11.26** Notices relating to assignments for high altitude platform stations in the fixed service in the bands identified in provisions **5.537A**, **5.543A** and **5.552A** shall reach the Bureau not earlier than five years before the assignments are brought into use. (WRC-07)

## **Section II – Examination of notices and recording of frequency assignments in the Master Register**

**MOD** COM5/379/2 (B16/401/2)

**11.43A** A notice of a change in the characteristics of an assignment already recorded, as specified in Appendix 4, shall be examined by the Bureau under Nos. **11.31** to **11.34**, as appropriate. Any change to the characteristics of an assignment that has been recorded and confirmed as having been brought into use shall be brought into use within five years from the date of the notification of the modification. Any change to the characteristics of an assignment that has been recorded but not yet brought into use shall be brought into use within the period provided for in No. **11.44**. (WRC-07)

**MOD** COM5/379/3 (B16/401/3)

**11.46** In applying the provisions of this Article, any resubmitted notice which is received by the Bureau more than six months after the date on which the original notice was returned by the Bureau shall be considered to be a new notification with a new date of receipt. For frequency assignments to a space station, should the new date of receipt of such a notice not comply with the period specified in No. **11.44.1** or No. **11.43A**, as appropriate, the notice shall be returned to the notifying administration in the case of No. **11.44.1**, and the notice shall be examined as a new notice of a change in the characteristics of an assignment already recorded with a new date of receipt in the case of No. **11.43A**. (WRC-07)

**MOD** COM5/216/7 (B3/224/10) (R2/266/2)

**11.47** All frequency assignments notified in advance of their being brought into use shall be entered provisionally in the Master Register. Any frequency assignment to a space station provisionally recorded under this provision shall be brought into use no later than the end of the period provided under No. **11.44**. Any other frequency assignment provisionally recorded under this provision shall be brought into use by the date specified in the notice, or by the end of the extension period granted under No. **11.45**, as the case may be. Unless the Bureau has been informed by the notifying administration of the bringing into use of the assignment, it shall, no later than fifteen days before either the notified date of bringing into use, in the case of an earth station, or the end of the regulatory period established under No. **11.44** or No. **11.45**, as appropriate, send a reminder requesting confirmation that the assignment has been brought into use within that regulatory period. If the Bureau does not receive that confirmation within thirty days following the notified date of bringing into use, in the case of an earth station, or the period provided under No. **11.44** or No. **11.45**, as the case may be, it shall cancel the entry in the Master Register. The Bureau shall, however, inform the administration concerned before taking such action. (WRC-07)

## ARTICLE 15

### Interferences

#### Section I – Interference from Radio Stations

**MOD** COM4/211/10 (B3/224/11) (R2/266/3)

**15.8** § 4 Special consideration shall be given to avoiding interference on distress and safety frequencies, those related to distress and safety identified in Article **31** and those related to safety and regularity of flight identified in Appendix **27**. (WRC-07)

#### Section VI – Procedure in a case of harmful interference

**MOD** COM4/211/11 (B3/224/12) (R2/266/4)

**15.28** § 20 Recognizing that transmissions on distress and safety frequencies and frequencies used for the safety and regularity of flight (see Article **31** and Appendix **27**) require absolute international protection and that the elimination of harmful interference to such transmissions is imperative, administrations undertake to act immediately when their attention is drawn to any such harmful interference. (WRC-07)

## ARTICLE 16

### International monitoring

**MOD** COM6/341/17 (B14/365/18) (R7/411/52)

**16.2** The international monitoring system comprises only those monitoring stations which have been so nominated by administrations in the information sent to the Secretary-General in accordance with Resolution ITU-R 23-1 and Recommendation ITU-R SM.1139. These stations may be operated by an administration or, in accordance with an authorization granted by the appropriate administration, by a public or private enterprise, by a common monitoring service established by two or more countries, or by an international organization. (WRC-07)



## ARTICLE 19

### Identification of stations

#### Section II – Allocation of international series and assignment of call signs

**MOD** COM4/332/181 (B14/365/19) (R7/411/53)

**19.30** 2) As the need arises, ship stations and ship earth stations to which the provisions of Chapter **IX** apply, and coast stations, coast earth stations, or other non-shipborne stations capable of communicating with such ship stations, shall have assigned to them maritime mobile service identities in accordance with Section VI of this Article. (WRC-07)

**MOD** COM4/332/89 (B13/347/35) (R7/411/54)

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<sup>2</sup> **19.36.1** In no circumstances may an administration claim more MIDs than the total number of its ship stations notified to ITU divided by 1 000, plus one. Administrations shall make every attempt to reuse the Maritime Mobile Service Identities (MMSI) assigned from earlier MID resources, which become redundant after ships leave their national ship registry. Such numbers should be considered for reassignment after being absent from at least two successive editions of List V of the ITU service publications. Administrations seeking additional MID resources must meet the criteria of having notified all previous assignments, in accordance with No. **20.16**. This criteria applies only to MMSIs in the basic category and to all MIDs assigned to the administration. (WRC-07)

**MOD** COM4/332/90 (B13/347/36) (R7/411/55)

**19.38** § 19 1) Each administration shall choose the call signs from the international series allocated or supplied to it; and shall notify this information to the Secretary-General together with the information which is to appear in Lists I, IV, V. These notifications do not include call signs assigned to amateur and experimental stations. (WRC-07)

#### Section III – Formation of call signs

**MOD** COM4/211/12 (B3/224/13) (R2/266/5)

**19.55** § 24 1)

- two characters and two letters, *or*
- two characters, two letters and one digit (other than the digits 0 or 1), *or*
- two characters (provided that the second is a letter) followed by four digits (other than the digits 0 or 1 in cases where they immediately follow a letter), *or*
- two characters and one letter followed by four digits (other than the digits 0 or 1 in cases where they immediately follow a letter). (WRC-07)

**SUP** COM4/211/13 (B3/224/14) (R2/266/6)

**19.56**

**ADD** COM4/211/14 (B3/224/15) (R2/266/7)

**19.68.1** In the case of half series (i.e. when the first two characters are allocated to more than one Member State), the first three characters are required for nationality identification. In such cases, the call sign shall consist of three characters followed by a single digit and a group of not more than three characters, the last of which shall be a letter. (WRC-07)

#### **Section IV – Identification of stations using radiotelephony**

**MOD** COM4/332/91 (B13/347/37) (R7/411/56)

**19.73** § 33 1) *Coast stations*

- a call sign (see No. **19.52**); *or*
- the geographical name of the place as it appears in the List of Coast Stations and Special Service Stations, followed preferably by the word RADIO or by any other appropriate indication. (WRC-07)

**MOD** COM4/211/15 (B3/224/16) (R2/266/8)

**19.76** 4) *Emergency position-indicating radiobeacon stations*

When speech transmission is used:

- the name and/or the call sign of the parent ship to which the radiobeacon belongs. (WRC-07)

#### **Section V – Selective call numbers in the maritime mobile service**

**MOD** COM4/332/92 (B13/347/38) (R7/411/57)

**19.83** § 36 When stations of the maritime mobile service use selective calling devices in accordance with Recommendations ITU-R M.476-5 and ITU-R M.625-3, their call numbers shall be assigned by the responsible administrations in accordance with the provisions below. (WRC-07)

**MOD** COM4/332/93 (B13/347/39) (R7/411/58)

**19.92** § 38 1) In cases where selective call numbers for ship stations and identification numbers for coast stations are required for use in the maritime mobile service, the selective call numbers and identification numbers shall be supplied by the Secretary-General on request. Upon notification by an administration of the introduction of selective calling for use in the maritime mobile service: (WRC-07)

**MOD** COM4/332/94 (B13/347/40) (R7/411/59)

**19.96A** 3) Five-digit ship station selective call numbers shall be assigned for narrow-band direct printing (NBDP) equipment (as described in Recommendation ITU-R M.476-5). (WRC-07)

**MOD** COM4/332/182 (B14/365/20) (R7/411/60)

**Section VI – Maritime mobile service identities** (WRC-07)

**MOD** COM4/332/183 (B14/365/21) (R7/411/61)

**19.99** § 39 When a station<sup>5</sup> operating in the maritime mobile service or the maritime mobile-satellite service is required to use maritime mobile service identities, the responsible administration shall assign the identity to the station in accordance with the provisions described in Annexes 1 to 5 of Recommendation ITU-R M.585-4. In accordance with No. **20.16**, administrations shall notify the Radiocommunication Bureau immediately when assigning maritime mobile service identities. (WRC-07)

**MOD** COM4/332/184 (B14/365/22) (R7/411/62)

**19.100** § 40 1) Maritime mobile service identities are formed of a series of nine digits which are transmitted over the radio path in order to uniquely identify ship stations, ship earth stations, coast stations, coast earth stations, and other non-shipborne stations operating in the maritime mobile service or the maritime mobile satellite service, and group calls. (WRC-07)

**MOD** COM4/332/185 (B14/365/23) (R7/411/63)

**19.102** 3) The types of maritime mobile service identities shall be as described in Annexes 1 to 5 of Recommendation ITU-R M.585-4. (WRC-07)

**SUP** COM4/332/186 (B14/365/24) (R7/411/64)

**19.103 to 19.107**

**MOD** COM4/332/187 (B14/365/25) (R7/411/65)

**19.108A** § 41 The maritime identification digits M<sub>1</sub>I<sub>2</sub>D<sub>3</sub> are an integral part of the maritime mobile service identity and denote the geographical area of the administration responsible for the station so identified. (WRC-07)

**MOD** COM4/332/188 (B14/365/26) (R7/411/66)

**19.110** *C – Maritime mobile service identities* (WRC-07)

**MOD** COM4/332/189 (B14/365/27) (R7/411/67)

**19.111** § 43 1) Administrations shall follow Annexes 1 to 5 of Recommendation ITU-R M.585-4 concerning the assignment and use of maritime mobile service identities. (WRC-07)

**MOD** COM4/332/190 (B14/365/28) (R7/411/68)

**19.112** 2) Administrations should: (WRC-07)

**MOD** COM4/332/191 (B14/365/29) (R7/411/69)

**19.113** a) make optimum use of the possibilities of forming identities from the single MID allocated to them; (WRC-07)

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<sup>5</sup> **19.99.1** In this Section a reference to a ship station or a coast station may include the respective earth stations.

**MOD** COM4/332/192 (B14/365/30) (R7/411/70)

**19.114** b) take particular care in assigning ship station identities with six significant digits (i.e. having three-trailing-zero identities), which should be assigned only to ship stations which can reasonably be expected to require such an identity for automatic access on a worldwide basis to public switched networks, in particular for mobile-satellite systems accepted for use in the GMDSS on or before 1 February 2002, as long as those systems maintain the MMSI as part of their numbering scheme. (WRC-07)

**SUP** COM4/332/193 (B14/365/31) (R7/411/71)

**19.115 to 19.126**

## ARTICLE 20

### **Service publications and online information systems** (WRC-07)

#### **Section I – Titles and contents of service publications** (WRC-07)

**MOD** COM4/296/9 (B9/305/11) (R4/335/26)

**20.1** § 1 The following publications shall be issued by the Secretary-General. As circumstances warrant and in response to individual requests by administrations, the published information shall also be available in various formats and by appropriate means. (WRC-07)

**MOD** COM4/296/10 (B9/305/12) (R4/335/27)

**20.5** b) the frequencies prescribed by these Regulations for common use by certain services; (WRC-07)

**MOD** COM4/296/11 (B9/305/13) (R4/335/28)

**20.7** § 3 *List IV – List of Coast Stations and Special Service Stations.* (WRC-07)

**MOD** COM4/296/12 (B9/305/14) (R4/335/29)

**20.8** § 4 *List V – List of Ship Stations and Maritime Mobile Service Identity Assignments.* (WRC-07)

**SUP** COM4/296/13 (B9/305/15) (R4/335/30)

**20.9 and 20.10**

**ADD** COM4/296/14 (B9/305/16) (R4/335/31)

#### **Section II – Online information systems** (WRC-07)

**ADD** COM4/296/15 (B9/305/17) (R4/335/32)

**20.14A** The following online information system(s) are made available by the Radiocommunication Bureau:

the ITU Maritime mobile Access and Retrieval System (MARS). (WRC-07)

**MOD** COM4/296/16 (B9/305/18) (R4/335/33)

**Section III – Preparation and amendment of service publications  
and online information systems (WRC-07)**

**MOD** COM4/296/17 (B9/305/19) (R4/335/34)

**20.15** § 11 The form, the content and the periodicity of each publication shall be decided by the Radiocommunication Bureau in consultation with administrations and the international organizations concerned. Similar consultation shall be made with regard to the maritime online information systems. (WRC-07)

**MOD** COM4/296/18 (B9/305/20) (R4/335/35)

**20.16** § 12 Administrations shall take all appropriate measures to notify the Radiocommunication Bureau immediately of any changes in the operational information contained in Lists IV and V, in view of the importance of this information, particularly with regard to safety. In the case of the data published in List V, which is also made available online through MARS, administrations shall communicate those changes at least once a month. In the case of other publications, administrations shall communicate the changes in the information contained in them as soon as possible. (WRC-07)

**ADD** COM4/296/19 (B9/305/21) (R4/335/36)

**20.16A** The names of the administrations which have failed to notify the Radiocommunication Bureau of the changes in the operational information contained in Lists IV and V shall be published in these Lists.

The Radiocommunication Bureau will periodically request administrations to reconfirm the information published in Lists IV and V. If no information has been received by the Radiocommunication Bureau for two consecutive editions of Lists IV and V, unvalidated information shall be deleted. The Radiocommunication Bureau shall however inform the administration concerned before taking such action. (WRC-07)

## ARTICLE 21

### Terrestrial and space services sharing frequency bands above 1 GHz

#### Section II – Power limits for terrestrial stations

**MOD** COM5/307/2 (B11/329/8) (R6/410/13)

TABLE 21-2 (WRC-07)

Frequency band	Service	Limit as specified in Nos.
1 427-1 429 MHz 1 610-1 645.5 MHz (No. 5.359) 1 646.5-1 660 MHz (No. 5.359) 1 980-2 010 MHz 2 010-2 025 MHz (Region 2) 2 025-2 110 MHz 2 200-2 290 MHz 2 655-2 670 MHz <sup>5</sup> (Regions 2 and 3) 2 670-2 690 MHz 5 670-5 725 MHz (Nos. 5.453 and 5.455) 5 725-5 755 MHz <sup>5</sup> (Region 1 countries listed in Nos. 5.451, 5.453 and 5.455) 5 755-5 850 MHz <sup>5</sup> (Region 1 countries listed in Nos. 5.451, 5.453, 5.455 and 5.456) 5 850-7 075 MHz 7 145-7 235 MHz* 7 900-8 400 MHz	Fixed-satellite Meteorological-satellite Space research Space operation Earth exploration-satellite Mobile-satellite	21.2, 21.3, 21.4 and 21.5

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\* For this frequency band only the limits of Nos. 21.3 and 21.5 apply.

TABLE 21-2 (end) (WRC-07)

Frequency band	Service	Limit as specified in Nos.
10.7-11.7 GHz <sup>5</sup> (Region 1) 12.5-12.75 GHz <sup>5</sup> (Nos. 5.494 and 5.496) 12.7-12.75 GHz <sup>5</sup> (Region 2) 12.75-13.25 GHz 13.75-14 GHz (Nos. 5.499 and 5.500) 14.0-14.25 GHz (No. 5.505) 14.25-14.3 GHz (Nos. 5.505, 5.508 and 5.509) 14.3-14.4 GHz <sup>5</sup> (Regions 1 and 3) 14.4-14.5 GHz 14.5-14.8 GHz	Fixed-satellite	21.2, 21.3 and 21.5
17.7-18.4 GHz 18.6-18.8 GHz 19.3-19.7 GHz 22.55-23.55 GHz 24.45-24.75 GHz (Regions 1 and 3) 24.75-25.25 GHz (Region 3) 25.25-29.5 GHz	Fixed-satellite Earth exploration-satellite Space research Inter-satellite	21.2, 21.3, 21.5 and 21.5A

### Section V – Limits of power flux-density from space stations

**MOD** COM4/392/15 (B19/413/21)

TABLE 21-4 (WRC-07)

Frequency band	Service*	Limit in dB(W/m <sup>2</sup> ) for angles of arrival ( $\delta$ ) above the horizontal plane			Reference bandwidth
		0°-5°	5°-25°	25°-90°	
...					
2 500-2 690 MHz 2 520-2 670 MHz 2 500-2 516.5 MHz (No. 5.404) 2 500-2 520 MHz 2 520-2 535 MHz (No. 5.403)	Fixed-satellite Broadcasting-satellite Radiodetermination-satellite Mobile-satellite Mobile-satellite (except aeronautical mobile-satellite)	-136 <sup>21</sup>	-136 + 11/20( $\delta$ - 5) <sup>21</sup>	-125 <sup>21</sup>	1 MHz
...					

<sup>21</sup> **21.16.19** Resolution [COM4/12] (WRC-07) shall apply. (WRC-07)

<sup>5</sup> **21.6.1** The equality of right to operate when a band of frequencies is allocated in different Regions to different services of the same category is established in No. 4.8. Therefore any limits concerning inter-Regional interference which may appear in ITU-R Recommendations should, as far as practicable, be observed by administrations.

TABLE 21-4 (continued) (WRC-07)

Frequency band	Service*	Limit in dB(W/m <sup>2</sup> ) for angles of arrival (δ) above the horizontal plane			Reference bandwidth	
		0°-5°	5°-25°			25°-90°
...						
17.7-19.3 GHz <sup>7, 8</sup>	Fixed-satellite (space-to-Earth) Meteorological-satellite (space-to-Earth)	-115 <sup>13, 21</sup> or -115 - X <sup>12</sup>	-115 + 0.5(δ - 5) <sup>13, 21</sup> or -115 - X + ((10 + X)/20)(δ - 5) <sup>12</sup>		-105 <sup>13, 21</sup> or -105 <sup>12</sup>	1 MHz
17.7-19.3 GHz <sup>7, 8</sup>	Fixed-satellite (space-to-Earth)	0°-3°	3°-12°	12°-25°	-105 <sup>22</sup>	1 MHz
		-120 <sup>22</sup>	-120 + (8/9)(δ - 3) <sup>22</sup>	-112 + (7/13)(δ - 12) <sup>22</sup>		
19.3-19.7 GHz	Fixed-satellite (space-to-Earth)	0°-3°	3°-12°	12°-25°	-105 <sup>22</sup>	1 MHz
		-120 <sup>22</sup>	-120 + (8/9)(δ - 3) <sup>22</sup>	-112 + (7/13)(δ - 12) <sup>22</sup>		
19.3-19.7 GHz 22.55-23.55 GHz 24.45-24.75 GHz 25.25-27.5 GHz 27.500-27.501 GHz	Fixed-satellite (space-to-Earth) Earth exploration-satellite (space-to-Earth) Inter-satellite Space research (space-to-Earth)	0°-5°	5°-25°		-105 <sup>21</sup>	1 MHz
		-115 <sup>21</sup>	-115 + 0.5(δ - 5) <sup>21</sup>			
...						



**ADD** COM5/344/3 (B14/365/33) (R7/411/73)

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<sup>21</sup> **21.16.x** These limits also apply to fixed-satellite service space stations using highly-inclined orbits having an apogee altitude greater than 18 000 km and an orbital inclination between 35° and 145° in the band 17.7-19.7 GHz to which Resolution **[COM 5/3] (WRC-07)** applies. (WRC-07)

**ADD** COM5/344/4 (B14/365/34) (R7/411/74)

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<sup>22</sup> **21.16.y** These limits apply to all space stations in the fixed-satellite service that use highly-inclined orbits having an apogee altitude greater than 18 000 km and an orbital inclination between 35° and 145° in the band 17.7-19.7 GHz that are not covered by Resolution **[COM5/3] (WRC-07)**, and for which complete coordination or notification information, as appropriate, was received by the Radiocommunication Bureau after 16 November 2007. (WRC-07)

## ARTICLE 22

### Space services<sup>1</sup>

#### Section II – Control of interference to geostationary-satellite systems

**MOD** COM5/379/4 (B16/401/4)

**22.2** § 2 1) Non-geostationary-satellite systems shall not cause unacceptable interference to and, unless otherwise specified in these Regulations, shall not claim protection from, geostationary-satellite networks in the fixed-satellite service and the broadcasting-satellite service operating in accordance with these Regulations. No. **5.43A** does not apply in this case. (WRC-07)

**MOD** COM6/341/18 (B14/365/35) (R7/411/75)

TABLE 22-1D (WRC-07)

**Limits to the  $\text{epfd}_{\downarrow}$  radiated by non-geostationary-satellite systems in the fixed-satellite service in certain frequency bands into 30 cm, 45 cm, 60 cm, 90 cm, 120 cm, 180 cm, 240 cm and 300 cm broadcasting-satellite service antennas<sup>6, 9, 10, 11</sup>**

Frequency band (GHz)	$\text{epfd}_{\downarrow}$ (dB(W/m <sup>2</sup> ))	Percentage of time during which $\text{epfd}_{\downarrow}$ may not be exceeded	Reference bandwidth (kHz)	Reference antenna diameter and reference radiation pattern <sup>MOD 12</sup>
11.7-12.5 in Region 1; 11.7-12.2 and 12.5-12.75 in Region 3; 12.2-12.7 in Region 2	-165.841	0	40	30 cm Recommendation ITU-R BO.1443-2, Annex 1
	-165.541	25		
	-164.041	96		
	-158.6	98.857		
	-158.6	99.429		
	-158.33	99.429		
	-158.33	100		
	-175.441	0	40	45 cm Recommendation ITU-R BO.1443-2, Annex 1
	-172.441	66		
	-169.441	97.75		
	-164	99.357		
	-160.75	99.809		
	-160	99.986		
	-160	100		
	-176.441	0	40	60 cm Recommendation ITU-R BO.1443-2, Annex 1
	-173.191	97.8		
	-167.75	99.371		
	-162	99.886		
	-161	99.943		
	-160.2	99.971		
	-160	99.997		
	-160	100		

**MOD** COM6/341/19 (B14/365/36) (R7/411/76)

<sup>12</sup> **22.5C.11** For this Table, reference patterns of Annex 1 to Recommendation ITU-R BO.1443-2 shall be used only for the calculation of interference from non-geostationary-satellite systems in the fixed-satellite service into geostationary-satellite systems in the broadcasting-satellite service. (WRC-07)

TABLE 22-1D (end) (WRC-07)

Frequency band (GHz)	epfd <sub>↓</sub> (dB(W/m <sup>2</sup> ))	Percentage of time during which epfd <sub>↓</sub> may not be exceeded	Reference bandwidth (kHz)	Reference antenna diameter and reference radiation pattern <sup>MOD 12</sup>
11.7-12.5 in Region 1; 11.7-12.2 and 12.5-12.75 in Region 3; 12.2-12.7 in Region 2	-178.94	0	40	90 cm Recommendation ITU-R BO.1443-2, Annex 1
	-178.44	33		
	-176.44	98		
	-171	99.429		
	-165.5	99.714		
	-163	99.857		
	-161	99.943		
	-160	99.991		
	-160	100		
	-182.44	0	40	120 cm Recommendation ITU-R BO.1443-2, Annex 1
	-180.69	90		
	-179.19	98.9		
	-178.44	98.9		
	-174.94	99.5		
	-173.75	99.68		
	-173	99.68		
	-169.5	99.85		
	-167.8	99.915		
	-164	99.94		
	-161.9	99.97		
	-161	99.99		
	-160.4	99.998		
	-160	100		
	-184.941	0	40	180 cm Recommendation ITU-R BO.1443-2, Annex 1
	-184.101	33		
	-181.691	98.5		
	-176.25	99.571		
	-163.25	99.946		
	-161.5	99.974		
	-160.35	99.993		
	-160	99.999		
	-160	100		
	-187.441	0	40	240 cm Recommendation ITU-R BO.1443-2, Annex 1
	-186.341	33		
	-183.441	99.25		
	-178	99.786		
	-164.4	99.957		
	-161.9	99.983		
	-160.5	99.994		
	-160	99.999		
	-160	100		
	-191.941	0	40	300 cm Recommendation ITU-R BO.1443-2, Annex 1
	-189.441	33		
	-185.941	99.5		
	-180.5	99.857		
	-173	99.914		
	-167	99.951		
	-162	99.983		
	-160	99.991		
	-160	100		

**Section VI – Off-axis power limits on earth stations of a geostationary-satellite network in the fixed-satellite service<sup>33, 34</sup> (WRC-2000)**

**MOD** COM6/341/20 (B14/365/38) (R7/411/78)

**22.36** Earth stations operating in the frequency band 29.5-30 GHz should be designed in such a manner that 90% of their peak off-axis e.i.r.p. density levels do not exceed the values given in No. **22.32**. Further study is needed to determine the off-axis angular range over which these exceedences would be permitted, taking into account the interference level into adjacent satellites. The statistical processing of the off-axis e.i.r.p. density peaks should be carried out using the method given in the most recent version of Recommendation ITU-R S.732. (WRC-07)

**ARTICLE 28**

**Radiodetermination services**

**Section I – General provisions**

**MOD** COM4/332/95 (B13/347/41) (R7/411/79)

**28.3** § 3 Administrations shall notify to the Bureau the characteristics of each radiodetermination station providing an international service of value to the maritime mobile service and, if considered necessary, for each station or group of stations, the sectors in which the information furnished is normally reliable. This information is published in the List of Coast Stations and Special Service Stations (List IV), and the Bureau shall be notified of any change of a permanent nature. (WRC-07)

**ARTICLE 30**

**General provisions**

**Section I – Introduction**

**MOD** COM4/211/16 (B3/224/18) (R2/266/10)

**30.1** § 1 This Chapter contains the provisions for the operational use of the global maritime distress and safety system (GMDSS), whose functional requirements, system elements and equipment carriage requirements are set forth in the International Convention for the Safety of Life at Sea (SOLAS), 1974, as amended. This Chapter also contains provisions for initiating distress, urgency and safety communications by means of radiotelephony on the frequency 156.8 MHz (VHF channel 16). (WRC-07)

**Section II – Maritime provisions**

**MOD** COM4/211/17 (B3/224/19) (R2/266/11)

**30.4** § 4 The provisions specified in this Chapter are obligatory in the maritime mobile service and the maritime mobile-satellite service for all stations using the frequencies and techniques prescribed for the functions set out herein (see also No. **30.5**). (WRC-07)

### **Section III – Aeronautical provisions**

**ADD** COM4/211/18 (B3/224/20) (R2/266/12)

**30.11bis** Aircraft, when conducting search and rescue operations, are also permitted to operate digital selective calling (DSC) equipment on the VHF DSC frequency 156.525 MHz, and automatic identification system (AIS) equipment on the AIS frequencies 161.975 MHz and 162.025 MHz. (WRC-07)

## **ARTICLE 31**

### **Frequencies for the global maritime distress and safety system (GMDSS)**

#### **Section I – General**

**MOD** COM4/296/20 (B9/305/22) (R4/335/37)

**31.1** § 1 The frequencies to be used for the transmission of distress and safety information under the GMDSS are contained in Appendix **15**. In addition to the frequencies listed in Appendix **15**, ship stations and coast stations should use other appropriate frequencies for the transmission of safety messages and general radiocommunications to and from shore-based radio systems or networks. (WRC-07)

**MOD** COM4/296/21 (B9/305/23) (R4/335/38)

**31.2** § 2 Any emission causing harmful interference to distress and safety communications on any of the discrete frequencies identified in Appendix **15** is prohibited. (WRC-07)

#### **Section III – Watchkeeping**

**MOD** COM4/332/96 (B13/347/42) (R7/411/80)

**31.13** § 6 Those coast stations assuming a watch-keeping responsibility in the GMDSS shall maintain an automatic digital selective calling watch on frequencies and for periods of time as indicated in the information published in the List of Coast Stations and Special Service Stations (List IV). (WRC-07)

**MOD** COM4/296/22 (B9/305/24) (R4/335/39)

**31.17** § 8 1) Ship stations, where so equipped, shall, while at sea, maintain an automatic digital selective calling watch on the appropriate distress and safety calling frequencies in the frequency bands in which they are operating. Ship stations, where so equipped, shall also maintain watch on the appropriate frequencies for the automatic reception of transmissions of meteorological and navigational warnings and other urgent information to ships. (WRC-07)

**MOD** COM4/296/23 (B9/305/25) (R4/335/40)

**31.18** 2) Ship stations complying with the provisions of this Chapter should, where practicable, maintain a watch on the frequency 156.800 MHz (VHF channel 16). (WRC-07)

**MOD** COM4/332/97 (B13/347/43) (R7/411/81)

## ARTICLE 32

### **Operational procedures for distress communications in the global maritime distress and safety system (GMDSS)**

#### **Section I – General**

**MOD** COM4/332/98 (B13/347/44) (R7/411/82)

**32.1** § 1 Distress communications rely on the use of terrestrial MF, HF and VHF radiocommunications and communications using satellite techniques. Distress communications shall have absolute priority over all other transmissions. The following terms apply:

- a)* The distress alert is a digital selective call (DSC) using a distress call format, in the bands used for terrestrial radiocommunication, or a distress message format, in which case it is relayed through space stations.
- b)* The distress call is the initial voice or text procedure.
- c)* The distress message is the subsequent voice or text procedure.
- d)* The distress alert relay is a DSC transmission on behalf of another station.
- e)* The distress call relay is the initial voice or text procedure for a station not itself in distress. (WRC-07)

**MOD** COM4/332/99 (B13/347/45) (R7/411/83)

**32.2** § 2 1) The distress alert shall be sent through a satellite either with absolute priority in general communication channels, on exclusive distress and safety frequencies reserved for satellite EPIRBs in the Earth-to-space direction or on the distress and safety frequencies designated in the MF, HF and VHF bands for digital selective calling (see Appendix 15). (WRC-07)

**ADD** COM4/332/100 (B13/347/46) (R7/411/84)

**32.2bis** The distress call shall be sent on the distress and safety frequencies designated in the MF, HF and VHF bands for radiotelephony. (WRC-07)

**MOD** COM4/332/101 (B13/347/47) (R7/411/85)

**32.3** 2) The distress alert or call and subsequent messages shall be sent only on the authority of the person responsible for the ship, aircraft or other vehicle carrying the mobile station or the mobile earth station. (WRC-07)

**MOD** COM4/332/102 (B13/347/48) (R7/411/86)

**32.4** § 3 All stations which receive a distress alert or call transmitted on the distress and safety frequencies in the MF, HF and VHF bands shall immediately cease any transmission capable of interfering with distress traffic and prepare for subsequent distress traffic. (WRC-07)

**MOD** COM4/332/103 (B13/347/49) (R7/411/87)

**32.5** § 4 Distress alerts or distress alert relays using DSC should use the technical structures and content set forth in the most recent version of Recommendations ITU-R M.493 and ITU-R M.541. (WRC-07)

**MOD** COM4/332/104 (B13/347/50) (R7/411/88)

**32.5A** § 4A Each administration shall ensure that suitable arrangements are made for assigning and registering identities used by ships participating in the GMDSS, and shall make registration information available to rescue coordination centres on a 24-hour day, 7-day week basis. Where appropriate, administrations shall notify responsible organizations immediately of additions, deletions and other changes in these assignments (see Nos. **19.39**, **19.96** and **19.99**). Registration information submitted shall be in accordance with Resolution **340 (WRC-97)**. (WRC-07)

**MOD** COM4/332/105 (B13/347/51) (R7/411/89)

**32.5B** § 4B Any GMDSS shipboard equipment which is capable of transmitting position coordinates as part of a distress alert and which does not have an integral electronic position-fixing system receiver shall be interconnected to a separate navigation receiver, if one is installed, to provide that information automatically. (WRC-07)

**MOD** COM4/332/106 (B13/347/52) (R7/411/90)

## **Section II – Distress alerting and distress calling** (WRC-07)

### **32.8** *A – General*

**MOD** COM4/332/107 (B13/347/53) (R7/411/91)

**32.9** § 7 1) The transmission of a distress alert or a distress call indicates that a mobile unit<sup>2</sup> or person<sup>3</sup> is threatened by grave and imminent danger and requires immediate assistance. (WRC-07)

**MOD** COM4/332/108 (B13/347/54) (R7/411/92)

**32.10A** § 7A A distress alert is false if it was transmitted without any indication that a mobile unit or person was in distress and required immediate assistance (see No. **32.9**). Administrations receiving a false distress alert shall report this infringement in accordance with Section V of Article **15**, if that alert:

- a) was transmitted intentionally;
- b) was not cancelled in accordance with No. **32.53A** and Resolution **349 (Rev.WRC-07)**;
- c) could not be verified as a result of either the ship's failure to keep watch on appropriate frequencies in accordance with Nos. **31.16** to **31.20**, or its failure to respond to calls from an authorized rescue authority;
- d) was repeated; or
- e) was transmitted using a false identity.

Administrations receiving such a report shall take appropriate steps to ensure that the infringement does not recur. No action should normally be taken against any ship or mariner for reporting and cancelling a false distress alert. (WRC-07)

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<sup>2</sup> **32.9.1** Mobile unit: a ship, aircraft or other vehicle.

<sup>3</sup> **32.9.2** In this Article, where the case is of a person in distress, the application of the procedures may require adaptation to meet the needs of the particular circumstances.

**ADD** COM4/332/109 (B13/347/55) (R7/411/93)

**32.10B** Administrations shall take practicable and necessary steps to ensure the avoidance of false distress alerts, including those transmitted inadvertently. (WRC-07)

**MOD** COM4/332/110 (B13/347/56) (R7/411/94)

**32.11** *B – Transmission of a distress alert or a distress call* (WRC-07)

B1 – Transmission of a distress alert or a distress call by a ship station or a ship earth station  
(WRC-07)

**MOD** COM4/332/111 (B13/347/57) (R7/411/95)

**32.12** § 8 Ship-to-shore distress alerts or calls are used to alert rescue coordination centres via coast stations or coast earth stations that a ship is in distress. These alerts are based on the use of transmissions via satellites (from a ship earth station or a satellite EPIRB) and terrestrial services (from ship stations and EPIRBs). (WRC-07)

**MOD** COM4/332/112 (B13/347/58) (R7/411/96)

**32.13** § 9 1) Ship-to-ship distress alerts are used to alert other ships in the vicinity of the ship in distress and are based on the use of digital selective calling in the VHF and MF bands. Additionally, the HF band may be used. (WRC-07)

**ADD** COM4/332/113 (B13/347/59) (R7/411/97)

**32.13A** 2) Ship stations equipped for digital selective calling procedures may transmit a distress call and distress message immediately following the distress alert in order to attract attention from as many ship stations as possible. (WRC-07)

**ADD** COM4/332/114 (B13/347/60) (R7/411/98)

**32.13B** 3) Ship stations not equipped for digital selective calling procedures shall, where practical, initiate the distress communications by transmitting a radio telephony distress call and message on the frequency 156.8 MHz (VHF channel 16). (WRC-07)

**ADD** COM4/332/115 (B13/347/61) (R7/411/99)

**32.13Bbis** § 7B 1) The radiotelephone distress signal consists of the word MAYDAY pronounced as the French expression “m'aider”. (WRC-07)

**ADD** COM4/332/116 (B13/347/62) (R7/411/100)

**32.13C** § 9A 1) The distress call sent on the frequency 156.8 MHz (VHF channel 16) shall be given in the following form:

- the distress signal MAYDAY, spoken three times;
- the words THIS IS;
- the name of the vessel in distress, spoken three times;
- the call sign or other identification;
- the MMSI (if the initial alert has been sent by DSC). (WRC-07)



**ADD** COM4/332/117 (B13/347/63) (R7/411/101)

**32.13D** 2) The distress message which follows the distress call should be given in the following form:

- the distress signal MAYDAY;
- the name of the vessel in distress;
- the call sign or other identification;
- the MMSI (if the initial alert has been sent by DSC);
- the position, given as the latitude and longitude, or if the latitude and longitude are not known or if time is insufficient, in relation to a known geographical location;
- the nature of the distress;
- the kind of assistance required;
- any other useful information. (WRC-07)

**ADD** COM4/332/118 (B13/347/64) (R7/411/102)

**32.13E** § 9B DSC procedures use a combination of automated functions and manual intervention to generate the appropriate distress call format in the most recent version of Recommendation ITU-R M.541. A distress alert sent by DSC consists of one or more distress alert attempts in which a message format is transmitted identifying the station in distress, giving its last recorded position and, if entered, the nature of the distress. In MF and HF bands, distress alert attempts may be sent as a single-frequency attempt or a multi-frequency attempt on up to six frequencies within one minute. In VHF bands, only single-frequency call attempts are used. The distress alert will repeat automatically at random intervals, a few minutes apart, until an acknowledgement sent by DSC is received. (WRC-07)

**MOD** COM4/332/119 (B13/347/65) (R7/411/103)

B2 – Transmission of a shore-to-ship distress alert relay or a distress call relay (WRC-07)

**MOD** COM4/332/120 (B13/347/66) (R7/411/104)

**32.14** § 10 1) A station or a rescue coordination centre which receives a distress alert or call and a distress message shall initiate the transmission of a shore-to-ship distress alert relay addressed, as appropriate, to all ships, to a selected group of ships, or to a specific ship, by satellite and/or terrestrial means. (WRC-07)

**MOD** COM4/332/121 (B13/347/67) (R7/411/105)

**32.15** 2) The distress alert relay and the distress call relay shall contain the identification of the mobile unit in distress, its position and all other information which might facilitate rescue. (WRC-07)

**MOD** COM4/332/122 (B13/347/68) (R7/411/106)

B3 – Transmission of a distress alert relay or a distress call relay by a station not itself in distress (WRC-07)

**MOD** COM4/332/123 (B13/347/69) (R7/411/107)

**32.16** § 11 A station in the mobile or mobile-satellite service which learns that a mobile unit is in distress (for example, by a radio call or by observation) shall initiate and transmit a distress alert relay or a distress call relay on behalf of the mobile unit in distress once it has ascertained that any of the following circumstances apply: (WRC-07)

**MOD** COM4/332/124 (B13/347/70) (R7/411/108)

**32.17** a) on receiving a distress alert or call which is not acknowledged by a coast station or another vessel within five minutes (see also Nos. **32.29A** and **32.31**); (WRC-07)

**MOD** COM4/332/125 (B13/347/71) (R7/411/109)

**32.18** b) on learning that the mobile unit in distress is otherwise unable or incapable of participating in distress communications, if the master or other person responsible for the mobile unit not in distress considers that further help is necessary. (WRC-07)

**MOD** COM4/332/126 (B13/347/72) (R7/411/110)

**32.19** § 12 1) The distress relay on behalf of a mobile unit in distress shall be sent in a form appropriate to the circumstances (see Nos. **32.19A** to **32.19D**) using either a distress call relay by radiotelephony (see Nos. **32.19D** and **32.19E**), an individually addressed distress alert relay by DSC (see No. **32.19B**), or a distress priority message through a ship earth station. (WRC-07)

**ADD** COM4/332/127 (B13/347/73) (R7/411/111)

**32.19A** 2) A station transmitting a distress alert relay or a distress call relay in accordance with Nos. **32.16** to **32.18** shall indicate that it is not itself in distress. (WRC-07)

**ADD** COM4/332/128 (B13/347/74) (R7/411/112)

**32.19B** 3) A distress alert relay sent by DSC should use the call format, as found in the most recent version of Recommendations ITU-R M.493 and ITU-R M.541, and should preferably be addressed to an individual coast station or rescue coordination centre<sup>new1</sup>. (WRC-07)

**ADD** COM4/332/129 (B13/347/75) (R7/411/113)

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<sup>new1</sup> **32.19B.1** Vessels making a distress alert relay or a distress call relay should ensure that a suitable coast station or rescue coordination centre is informed of any distress communications previously exchanged. (WRC-07)

**ADD** COM4/332/130 (B13/347/76) (R7/411/114)

**32.19C** 4) However, a ship shall not transmit a distress alert relay to all ships by digital selective calling on the VHF or MF distress frequencies following receipt of a distress alert sent by digital selective calling by the ship in distress. (WRC-07)

**ADD** COM4/332/131 (B13/347/77) (R7/411/115)

**32.19D** 5) When an aural watch is being maintained on shore and reliable ship-to-shore communications can be established by radiotelephony, a distress call relay is sent by radiotelephony and addressed to the relevant coast station or rescue coordination centre<sup>new2</sup> on the appropriate frequency. (WRC-07)

**ADD** COM4/332/132 (B13/347/78) (R7/411/116)

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new2

**32.19D.1** Vessels making a distress call relay should ensure that a suitable coast station or rescue coordination centre is informed of any distress communications previously exchanged. (WRC-07)

**ADD** COM4/332/133 (B13/347/79) (R7/411/117)

**32.19E** 6) The distress call relay sent by radiotelephony should be given in the following form:

- the distress signal MAYDAY RELAY, spoken three times;
- ALL STATIONS or coast station name, as appropriate, spoken three times;
- the words THIS IS;
- the name of the relaying station, spoken three times;
- the call sign or other identification of the relaying station;
- the MMSI (if the initial alert has been sent by DSC) of the relaying station (the vessel not in distress). (WRC-07)

**ADD** COM4/332/134 (B13/347/80) (R7/411/118)

**32.19F** 7) This call shall be followed by a distress message which shall, as far as possible, repeat the information<sup>new3</sup> contained in the original distress alert or distress message. (WRC-07)

**ADD** COM4/332/135 (B13/347/81) (R7/411/119)

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new3

**32.19F.1** If the station in distress cannot be identified, then it will be necessary to originate the distress message as well, using, for example, terms such as “Unidentified trawler” refer to the mobile unit in distress. (WRC-07)

**ADD** COM4/332/136 (B13/347/82) (R7/411/120)

**32.19G** 8) When no aural watch is being maintained on shore, or there are other difficulties in establishing reliable ship-to-shore communications by radiotelephony, an appropriate coast station or rescue coordination centre may be contacted by sending an individual distress alert relay by DSC, addressed solely to that station and using the appropriate call formats. (WRC-07)

**ADD** COM4/332/137 (B13/347/83) (R7/411/121)

**32.19H** 9) In the event of continued failure to contact a coast station or rescue coordination centre directly, it may be appropriate to send a distress call relay by radiotelephony addressed to all ships, or to all ships in a certain geographical area. See also No. **32.19C**. (WRC-07)

**MOD** COM4/332/138 (B13/347/84) (R7/411/122)

**32.20** *C – Receipt and acknowledgement of distress alerts and distress calls* (WRC-07)

C1 – Procedure for acknowledgement of receipt of distress alerts or a distress call (WRC-07)

**MOD** COM4/332/139 (B13/347/85) (R7/411/123)

**32.21** § 13 1) Acknowledgement of receipt of a distress alert, including a distress alert relay, shall be made in the manner appropriate to the method of transmission of the alert and within the time-scale appropriate to the role of the station in receipt of the alert. Acknowledgement by satellite shall be sent immediately. (WRC-07)

**ADD** COM4/332/140 (B13/347/86) (R7/411/124)

**32.21A** 2) When acknowledging receipt of a distress alert sent by DSC<sup>new4</sup>, the acknowledgement in the terrestrial services shall be made by DSC, radiotelephony or narrow-band direct-printing telegraphy as appropriate to the circumstances, on the associated distress and safety frequency in the same band in which the distress alert was received, taking due account of the directions given in the most recent versions of Recommendations ITU-R M.493 and ITU-R M.541. (WRC-07)

**ADD** COM4/332/141 (B13/347/87) (R7/411/125)

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<sup>new4</sup>

**32.21A.1** In order to ensure that no unnecessary delay occurs before the shore-based authorities become aware of a distress incident, the acknowledgement by DSC to a distress alert sent by DSC shall normally only be made by a coast station or a rescue coordination centre. An acknowledgement by DSC will cancel any further automated repetition of the distress alert using DSC. (WRC-07)

**ADD** COM4/332/142 (B13/347/88) (R7/411/126)

**32.21B** Acknowledgement by DSC of a distress alert sent by DSC addressed to stations in the maritime mobile service shall be addressed to all stations<sup>new4</sup>. (WRC-07)

**SUP** COM4/332/143 (B13/347/89) (R7/411/127)

**32.22**

**MOD** COM4/332/144 (B13/347/90) (R7/411/128)

**32.23** § 15 1) When acknowledging by radiotelephony the receipt of a distress alert or a distress call from a ship station or a ship earth station, the acknowledgement should be given in the following form:

- the distress signal MAYDAY;
- the name followed by the call sign, or the MMSI or other identification of the station sending the distress message;
- the words THIS IS;
- the name and call sign or other identification of the station acknowledging receipt;
- the word RECEIVED;
- the distress signal MAYDAY. (WRC-07)

**MOD** COM4/332/145 (B13/347/91) (R7/411/129)

**32.24** 2) When acknowledging by narrow-band direct-printing telegraphy the receipt of a distress alert from a ship station, the acknowledgement should be given in the following form:

- the distress signal MAYDAY;
- the call sign or other identification of the station sending the distress alert;
- the word DE;
- the call sign or other identification of the station acknowledging receipt of the distress alert;
- the signal RRR;
- the distress signal MAYDAY. (WRC-07)

**SUP** COM4/332/146 (B13/347/92) (R7/411/130)

**32.25**

**MOD** COM4/332/147 (B13/347/93) (R7/411/131)

C2 – Receipt and acknowledgement by a coast station, a coast earth station  
or a rescue coordination centre (WRC-07)

**MOD** COM4/332/148 (B13/347/94) (R7/411/132)

**32.26** § 17 Coast stations and the appropriate coast earth stations in receipt of distress alerts or distress calls shall ensure that they are routed as soon as possible to a rescue coordination centre. In addition, receipt of a distress alert or a distress call is to be acknowledged as soon as possible by a coast station, or by a rescue coordination centre via a coast station or an appropriate coast earth station. A shore-to-ship distress alert relay or a distress call relay (see Nos. **32.14** and **32.15**) shall also be made when the method of receipt warrants a broadcast alert to shipping or when the circumstances of the distress incident indicate that further help is necessary. (WRC-07)

**MOD** COM4/332/149 (B13/347/95) (R7/411/133)

**32.27** § 18 A coast station using DSC to acknowledge a distress alert shall transmit the acknowledgement on the distress calling frequency on which the distress alert was received and should address it to all ships. The acknowledgement shall include the identification of the ship whose distress alert is being acknowledged. (WRC-07)

**MOD** COM4/332/150 (B13/347/96) (R7/411/134)

C3 – Receipt and acknowledgement by a ship station or ship earth station (WRC-07)

**MOD** COM4/332/151 (B13/347/97) (R7/411/135)

**32.28** § 19 1) Ship or ship earth stations in receipt of a distress alert or a distress call shall, as soon as possible, inform the master or person responsible for the ship of the contents of the distress alert. (WRC-07)

**MOD** COM4/332/152 (B13/347/98) (R7/411/136)

**32.29** 2) In areas where reliable communications with one or more coast stations are practicable, ship stations in receipt of a distress alert or a distress call from another vessel should defer acknowledgement for a short interval so that a coast station may acknowledge receipt in the first instance. (WRC-07)

**ADD** COM4/332/153 (B13/347/99) (R7/411/137)

**32.29A** 3) Ship stations in receipt of a distress call sent by radiotelephony on the frequency 156.8 MHz (VHF channel 16) shall, if the call is not acknowledged by a coast station or another vessel within five minutes, acknowledge receipt to the vessel in distress and use any means available to relay the distress call to an appropriate coast station or coast earth station (see also Nos. **32.16** to **32.19F**). (WRC-07)

**MOD** COM4/332/154 (B13/347/100) (R7/411/138)

**32.30** § 20 1) Ship stations operating in areas where reliable communications with a coast station are not practicable which receive a distress alert or call from a ship station which is, beyond doubt, in their vicinity, shall, as soon as possible and if appropriately equipped, acknowledge receipt to the vessel in distress and inform a rescue coordination centre through a coast station or coast earth station (see also Nos. **32.16** to **32.19H**). (WRC-07)

**MOD** COM4/332/155 (B13/347/101) (R7/411/139)

**32.31** 2) However in order to avoid making unnecessary or confusing transmissions in response, a ship station, which may be at a considerable distance from the incident, receiving an HF distress alert, shall not acknowledge it but shall observe the provisions of Nos. **32.36** to **32.38**, and shall, if the distress alert is not acknowledged by a coast station within five minutes, relay the distress alert, but only to an appropriate coast station or coast earth station (see also Nos. **32.16** to **32.19H**). (WRC-07)

**MOD** COM4/332/156 (B13/347/102) (R7/411/140)

**32.32** § 21 A ship station acknowledging receipt of a distress alert sent by DSC should, in accordance with No. **32.29** or No. **32.30**: (WRC-07)

**MOD** COM4/332/157 (B13/347/103) (R7/411/141)

**32.33** a) in the first instance, acknowledge receipt of the distress alert by using radiotelephony on the distress and safety traffic frequency in the band used for the alert, taking into account any instructions which may be issued by a responding coast station; (WRC-07)

**ADD** COM4/332/158 (B13/347/104) (R7/411/142)

**32.34A** § 21A However, unless instructed to do so by a coast station or a rescue coordination centre, a ship station may only send an acknowledgement by DSC in the event that:

- a) no acknowledgement by DSC from a coast station has been observed; and
- b) no other communication by radiotelephony or narrow-band direct-printing telegraphy to or from the vessel in distress has been observed; and
- c) at least five minutes have elapsed and the distress alert by DSC has been repeated (see No. **32.21A.1**). (WRC-07)

**MOD** COM4/332/159 (B13/347/105) (R7/411/143)

**32.35** § 22 A ship station in receipt of a shore-to-ship distress alert relay or distress call relay (see No. **32.14**) should establish communication as directed and render such assistance as required and appropriate. (WRC-07)

**MOD** COM4/332/160 (B13/347/106) (R7/411/144)

**32.37** § 23 On receipt of a distress alert or a distress call, ship stations and coast stations shall set watch on the radiotelephone distress and safety traffic frequency associated with the distress and safety calling frequency on which the distress alert was received. (WRC-07)

**MOD** COM4/332/161 (B13/347/107) (R7/411/145)

**32.38** § 24 Coast stations and ship stations with narrow-band direct-printing equipment shall set watch on the narrow-band direct-printing frequency associated with the distress alert if it indicates that narrow-band direct-printing is to be used for subsequent distress communications. If practicable, they should additionally set watch on the radiotelephone frequency associated with the distress alert frequency. (WRC-07)

### **Section III – Distress traffic**

**SUP** COM4/332/162 (B13/347/108) (R7/411/146)

#### **32.41**

**MOD** COM4/332/163 (B13/347/109) (R7/411/147)

**32.45** § 28 1) The rescue coordination centre responsible for controlling a search and rescue operation shall also coordinate the distress traffic relating to the incident or may appoint another station to do so. (WRC-07)

**MOD** COM4/332/164 (B13/347/110) (R7/411/148)

**32.51** § 31 When distress traffic has ceased on frequencies which have been used for distress traffic, the station controlling the search and rescue operation shall initiate a message for transmission on these frequencies indicating that distress traffic has finished. (WRC-07)

**MOD** COM4/332/165 (B13/347/111) (R7/411/149)

**32.52** § 32 1) In radiotelephony, the message referred to in No. **32.51** should consist of:

- the distress signal MAYDAY;
- the call “ALL STATIONS”, spoken three times;
- the words THIS IS;
- the name of the station sending that message, spoken three times;
- the call sign or other identification of the station sending the message;
- the time of handing in of the message;
- the MMSI (if the initial alert has been sent by DSC), the name and the call sign of the mobile station which was in distress;
- the words SEELONCE FEENEE pronounced as the French words “silence fini”. (WRC-07)

**ADD** COM4/332/166 (B13/347/112) (R7/411/150)

**32.53A** *Cancellation of an inadvertent distress alert* (WRC-07)

**ADD** COM4/332/167 (B13/347/113) (R7/411/151)

**32.53B** A station transmitting an inadvertent distress alert or call shall cancel the transmission. (WRC-07)

**ADD** COM4/332/168 (B13/347/114) (R7/411/152)

**32.53C** An inadvertent DSC alert shall be cancelled by DSC, if the DSC equipment is so capable. The cancellation should be in accordance with the most recent version of Recommendation ITU-R M.493. In all cases, cancellations shall also be transmitted by radiotelephone in accordance with **32.53E**. (WRC-07)

**ADD** COM4/332/169 (B13/347/115) (R7/411/153)

**32.53D** An inadvertent distress call shall be cancelled by radiotelephone in accordance with the procedure in **32.53E**. (WRC-07)

**ADD** COM4/332/170 (B13/347/116) (R7/411/154)

**32.53E** Inadvertent distress transmissions shall be cancelled orally on the associated distress and safety frequency in the same band on which the distress transmission was sent, using the following procedure:

- the call “ALL STATIONS” , spoken three times;
- the words THIS IS;
- the name of the vessel, spoken three times;
- the call sign or other identification;
- the MMSI (if the initial alert has been sent by DSC);
- PLEASE CANCEL MY DISTRESS ALERT OF time in UTC.

Monitor the same band on which the inadvertent distress transmission was sent and respond to any communications concerning that distress transmission as appropriate. (WRC-07)

**MOD** COM4/332/171 (B13/347/117) (R7/411/155)

**32.63** 3) Locating signals may be transmitted in the following frequency bands:  
117.975-137 MHz;  
156-174 MHz;  
406-406.1 MHz; and  
9 200-9 500 MHz. (WRC-07)

**SUP** COM4/332/172 (B13/347/118) (R7/411/156)

**32.64**



## ARTICLE 33

### Operational procedures for urgency and safety communications in the global maritime distress and safety system (GMDSS)

#### Section I – General

**MOD** COM4/332/26 (B13/347/119) (R7/411/157)

**33.1** § 1 1) Urgency and safety communications include: (WRC-07)

**ADD** COM4/332/27 (B13/347/120) (R7/411/158)

**33.7A** 2) Urgency communications shall have priority over all other communications, except distress. (WRC-07)

**ADD** COM4/332/28 (B13/347/121) (R7/411/159)

**33.7B** 3) Safety communications shall have priority over all other communications, except distress and urgency. (WRC-07)

#### Section II – Urgency communications

**ADD** COM4/332/29 (B13/347/122) (R7/411/160)

**33.XX** The following terms apply:

- a)* The urgency announcement is a digital selective call using an urgency call format<sup>1</sup>, in the bands used for terrestrial radiocommunication, or an urgency message format, in which case it is relayed through space stations.
- b)* The urgency call is the initial voice or text procedure.
- c)* The urgency message is the subsequent voice or text procedure. (WRC-07)

**ADD** COM4/332/31 (B13/347/123) (R7/411/161)

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<sup>1</sup> **33.XX.1** The format of urgency calls and urgency messages should be in accordance with the relevant ITU-R Recommendations. (WRC-07)

**MOD** COM4/332/30 (B13/347/124) (R7/411/162)

**33.8** § 2 In a terrestrial system, urgency communications consist of an announcement, transmitted using digital selective calling, followed by the urgency call and message transmitted using radiotelephony, narrow-band direct-printing, or data. The announcement of the urgency message shall be made on one or more of the distress and safety calling frequencies specified in Section I of Article 31 using either digital selective calling and the urgency call format, or if not available, radio telephony procedures and the urgency signal. Announcements using digital selective calling should use the technical structure and content set forth in the most recent version of Recommendations ITU-R M.493 and ITU-R M.541. A separate announcement need not be made if the urgency message is to be transmitted through the maritime mobile-satellite service. (WRC-07)

**ADD** COM4/332/32 (B13/347/125) (R7/411/163)

**33.8A** 2) Ship stations not equipped for digital selective calling procedures may announce an urgency call and message by transmitting the urgency signal by radiotelephony on the frequency 156.8 MHz (channel 16), while taking into account that other stations outside VHF range may not receive the announcement. (WRC-07)

**ADD** COM4/332/33 (B13/347/126) (R7/411/164)

**33.8B** 3) In the maritime mobile service, urgency communications may be addressed either to all stations or to a particular station. When using digital selective calling techniques, the urgency announcement shall indicate which frequency is to be used to send the subsequent message and, in the case of a message to all stations, shall use the “All Ships” format setting. (WRC-07)

**ADD** COM4/332/34 (B13/347/127) (R7/411/165)

**33.8C** 4) Urgency announcements from a coast station may also be directed to a group of vessels or to vessels in a defined geographical area. (WRC-07)

**MOD** COM4/332/35 (B13/347/128) (R7/411/166)

**33.9** § 3 1) The urgency call and message shall be transmitted on one or more of the distress and safety traffic frequencies specified in Section I of Article 31. (WRC-07)

**ADD** COM4/332/36 (B13/347/129) (R7/411/167)

**33.9A** 2) However, in the maritime mobile service, the urgency message shall be transmitted on a working frequency:

- a) in the case of a long message or a medical call; *or*
- b) in areas of heavy traffic when the message is being repeated.

An indication to this effect shall be included in the urgency announcement or call. (WRC-07)

**ADD** COM4/332/37 (B13/347/130) (R7/411/168)

**33.9B** 3) In the maritime mobile-satellite service, a separate urgency announcement or call does not need to be made before sending the urgency message. However, if available, the appropriate network priority access settings should be used for sending the message. (WRC-07)

**MOD** COM4/332/38 (B13/347/131) (R7/411/169)

**33.11** § 5 1) The urgency call format and the urgency signal indicate that the calling station has a very urgent message to transmit concerning the safety of a mobile unit or a person. (WRC-07)

**ADD** COM4/332/39 (B13/347/132) (R7/411/170)

**33.11A** 2) Communications concerning medical advice may be preceded by the urgency signal. Mobile stations requiring medical advice may obtain it through any of the land stations shown in the List of Coast Stations and Special Service Stations. (WRC-07)

**ADD** COM4/332/40 (B13/347/133) (R7/411/171)

**33.11B** 3) Urgency communications to support search and rescue operations need not be preceded by the urgency signal. (WRC-07)

**MOD** COM4/332/41 (B13/347/134) (R7/411/172)

- 33.12** § 6 1) The urgency call should consist of:
- the urgency signal PAN PAN, spoken three times;
  - the name of the called station or “all stations”, spoken three times;
  - the words THIS IS;
  - the name of the station transmitting the urgency message, spoken three times;
  - the call sign or any other identification;
  - the MMSI (if the initial announcement has been sent by DSC),

followed by the urgency message or followed by the details of the channel to be used for the message in the case where a working channel is to be used.

In radiotelephony, on the selected working frequency, the urgency call and message consists of:

- the urgency signal PAN PAN, spoken three times;
- the name of the called station or “all stations”, spoken three times;
- the words THIS IS;
- the name of the station transmitting the urgency message, spoken three times;
- the call sign or any other identification;
- the MMSI (if the initial announcement has been sent by DSC);
- the text of the urgency message. (WRC-07)

**MOD** COM4/332/42 (B13/347/135) (R7/411/173)

**33.14** § 7 1) The urgency call format or urgency signal shall be sent only on the authority of the person responsible for the ship, aircraft or other vehicle carrying the mobile station or mobile earth station. (WRC-07)

**ADD** COM4/332/43 (B13/347/136) (R7/411/174)

**33.15A** § 7A 1) Ship stations in receipt of an urgency announcement or call addressed to all stations shall not acknowledge. (WRC-07)

**ADD** COM4/332/44 (B13/347/137) (R7/411/175)

**33.15B** 2) Ship stations in receipt of an urgency announcement or call of an urgency message shall monitor the frequency or channel indicated for the message for at least five minutes. If, at the end of the five-minute monitoring period, no urgency message has been received, a coast station should, if possible, be notified of the missing message. Thereafter, normal working may be resumed. (WRC-07)

**ADD** COM4/332/45 (B13/347/138) (R7/411/176)

**33.15C** 3) Coast and ship stations which are in communication on frequencies other than those used for the transmission of the urgency signal or the subsequent message may continue their normal work without interruption, provided that the urgency message is not addressed to them nor broadcast to all stations. (WRC-07)

**MOD** COM4/332/46 (B13/347/139) (R7/411/177)

**33.16** § 8 When an urgency announcement or call and message was transmitted to more than one station and action is no longer required, an urgency cancellation should be sent by the station responsible for its transmission.

The urgency cancellation should consist of:

- the urgency signal PAN PAN, spoken three times;
- “all stations”, spoken three times;
- the words THIS IS;
- the name of the station transmitting the urgency message, spoken three times;
- the call sign or any other identification;
- the MMSI (if the initial announcement has been sent by DSC);
- PLEASE CANCEL URGENCY MESSAGE OF time in UTC. (WRC-07)

### **Section III – Medical transports**

**MOD** COM4/332/47 (B13/347/140) (R7/411/178)

**33.20** § 11 1) For the purpose of announcing and identifying medical transports which are protected under the above-mentioned Conventions, the procedure of Section II of this Article is used. The urgency call shall be followed by the addition of the single word MEDICAL in narrow-band direct-printing and by the addition of the single word MAY-DEE-CAL pronounced as in French “médical”, in radiotelephony. (WRC-07)

**ADD** COM4/332/48 (B13/347/141) (R7/411/179)

**33.20A** 2) When using digital selective calling techniques, the urgency announcement on the appropriate Digital Selective Calling distress and safety frequencies shall always be addressed to all stations on VHF and to a specified geographical area on MF and HF and shall indicate “Medical transport” in accordance with the most recent version of Recommendations ITU-R M.493 and ITU-R M.541. (WRC-07)

**ADD** COM4/332/49 (B13/347/142) (R7/411/180)

**33.20B** 3) Medical transports may use one or more of the distress and safety traffic frequencies specified in Section I of Article 31 for the purpose of self-identification and to establish communications. As soon as practicable, communications shall be transferred to an appropriate working frequency. (WRC-07)

**MOD** COM4/332/50 (B13/347/143) (R7/411/181)

**33.21** § 12 The use of the signals described in Nos. 33.20 and 33.20A indicates that the message which follows concerns a protected medical transport. The message shall convey the following data: (WRC-07)

**SUP** COM4/332/51 (B13/347/144) (R7/411/182)

**33.28**

**SUP** COM4/332/52 (B13/347/145) (R7/411/183)

**33.29**

## Section IV – Safety communications

**ADD** COM4/332/53 (B13/347/146) (R7/411/184)

**33.YY** § 1 The following terms apply:

- a)* the safety announcement is a digital selective call using a safety call format in the bands used for terrestrial radiocommunication or a safety message format, in which case it is relayed through space stations;
- b)* the safety call is the initial voice or text procedure;
- c)* the safety message is the subsequent voice or text procedure. (WRC-07)

**MOD** COM4/332/54 (B13/347/147) (R7/411/185)

**33.31** § 15 1) In a terrestrial system, safety communications consist of a safety announcement, transmitted using digital selective calling, followed by the safety call and message transmitted using radiotelephony, narrow-band direct-printing or data. The announcement of the safety message shall be made on one or more of the distress and safety calling frequencies specified in Section I of Article 31 using either digital selective calling techniques and the safety call format, or radiotelephony procedures and the safety signal. (WRC-07)

**MOD** COM4/332/55 (B13/347/148) (R7/411/186)

**33.31A** 2) However, in order to avoid unnecessary loading of the distress and safety calling frequencies specified for use with digital selective calling techniques:

- a)* safety messages transmitted by coast stations in accordance with a predefined timetable should not be announced by digital selective calling techniques;
- b)* safety messages which only concern vessels sailing in the vicinity should be announced using radiotelephony procedures. (WRC-07)

**ADD** COM4/332/56 (B13/347/149) (R7/411/187)

**33.31B** 3) In addition, ship stations not equipped for digital selective calling procedures may announce a safety message by transmitting the safety call by radiotelephony. In such cases the announcement shall be made using the frequency 156.8 MHz (VHF channel 16), while taking into account that other stations outside VHF range may not receive the announcement. (WRC-07)

**ADD** COM4/332/57 (B13/347/150) (R7/411/188)

**33.31C** 4) In the maritime mobile service, safety messages shall generally be addressed to all stations. In some cases, however, they may be addressed to a particular station. When using digital selective calling techniques, the safety announcement shall indicate which frequency is to be used to send the subsequent message and, in the case of a message to all stations, shall use the “All Ships” format setting. (WRC-07)

**MOD** COM4/332/58 (B13/347/151) (R7/411/189)

**33.32** § 16 1) In the maritime mobile service, the safety message shall, where practicable, be transmitted on a working frequency in the same band(s) as those used for the safety announcement or call. A suitable indication to this effect shall be made at the end of the safety call. In the case that no other option is practicable, the safety message may be sent by radiotelephony on the frequency 156.8 MHz (VHF channel 16). (WRC-07)

**ADD** COM4/332/59 (B13/347/152) (R7/411/190)

**33.32A** 2) In the maritime mobile-satellite service, a separate safety announcement or call does not need to be made before sending the safety message. However, if available, the appropriate network priority access settings should be used for sending the message. (WRC-07)

**MOD** COM4/332/60 (B13/347/153) (R7/411/191)

**33.34** § 18 1) The safety call format or the safety signal indicates that the calling station has an important navigational or meteorological warning to transmit. (WRC-07)

**ADD** COM4/332/61 (B13/347/154) (R7/411/192)

**33.34A** 2) Messages from ship stations containing information concerning the presence of cyclones shall be transmitted, with the least possible delay, to other mobile stations in the vicinity and to the appropriate authorities through a coast station, or through a rescue coordination centre via a coast station or an appropriate coast earth station. These transmissions shall be preceded by the safety announcement or call. (WRC-07)

**ADD** COM4/332/62 (B13/347/155) (R7/411/193)

**33.34B** 3) Messages from ship stations, containing information on the presence of dangerous ice, dangerous wrecks, or any other imminent danger to marine navigation, shall be transmitted as soon as possible to other ships in the vicinity, and to the appropriate authorities through a coast station, or through a rescue coordination centre via a coast station or an appropriate coast earth station. These transmissions shall be preceded by the safety announcement or call. (WRC-07)

**MOD** COM4/332/63 (B13/347/156) (R7/411/194)

**33.35** § 19 1) The complete safety call should consist of:

- the safety signal SÉCURITÉ, spoken three times;
- the name of the called station or “all stations”, spoken three times;
- the words THIS IS;
- the name of the station transmitting the safety message, spoken three times;
- the call sign or any other identification;
- the MMSI (if the initial announcement has been sent by DSC),

followed by the safety message or followed by the details of the channel to be used for the message in the case where a working channel is to be used.

In radiotelephony, on the selected working frequency, the safety call and message should consist of:

- the safety signal SÉCURITÉ, spoken three times;
- the name of the called station or “all stations”, spoken three times;
- the words THIS IS;
- the name of the station transmitting the safety message, spoken three times;
- the call sign or any other identification;
- the MMSI (if the initial alert has been sent by DSC);
- the text of the safety message. (WRC-07)

**ADD** COM4/332/64 (B13/347/157) (R7/411/195)

**33.38A** § 20*bis* 1) Ship stations in receipt of a safety announcement using digital selective calling techniques and the “All Ships” format setting, or otherwise addressed to all stations, shall not acknowledge. (WRC-07)

**ADD** COM4/332/65 (B13/347/158) (R7/411/196)

**33.38B** 2) Ship stations in receipt of a safety announcement or safety call and message shall monitor the frequency or channel indicated for the message and shall listen until they are satisfied that the message is of no concern to them. They shall not make any transmission likely to interfere with the message. (WRC-07)

**MOD** COM4/332/66 (B13/347/159) (R7/411/197)

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<sup>1</sup> **33.V.1** Maritime safety information includes navigation and meteorological warnings, meteorological forecasts and other urgent messages pertaining to safety transmitted from coast stations or coast earth stations. (WRC-07)

**SUP** COM4/332/67 (B13/347/160) (R7/411/198)

**33.39A**

**SUP** COM4/332/68 (B13/347/161) (R7/411/199)

**33.39B**

**SUP** COM4/332/69 (B13/347/162) (R7/411/200)

**33.40**

**MOD** COM4/332/70 (B13/347/163) (R7/411/201)

## **Section VII – Use of other frequencies for safety** (WRC-07)

**MOD** COM4/332/71 (B13/347/164) (R7/411/202)

**33.53** § 28 Radiocommunications for safety purposes concerning ship reporting communications, communications relating to the navigation, movements and needs of ships and weather observation messages may be conducted on any appropriate communications frequency, including those used for public correspondence. In terrestrial systems, the bands 415-535 kHz (see Article **52**), 1 606.5-4 000 kHz (see Article **52**), 4 000-27 500 kHz (see Appendix **17**), and 156-174 MHz (see Appendix **18**) are used for this function. In the maritime mobile-satellite service, frequencies in the bands 1 530-1 544 MHz and 1 626.5-1 645.5 MHz are used for this function as well as for distress alerting purposes (see No. **32.2**). (WRC-07)

**SUP** COM4/332/72 (B13/347/165) (R7/411/203)

**33.54**

**SUP** COM4/332/73 (B13/347/166) (R7/411/204)

**33.55**

## ARTICLE 34

### Alerting signals in the global maritime distress and safety system (GMDSS)

#### Section I – Emergency position-indicating radiobeacon (EPIRB) and satellite EPIRB signals

**MOD** COM4/296/24 (B9/305/26) (R4/335/41)

**34.1** § 1 The emergency position-indicating radiobeacon signal in the band 406-406.1 MHz shall be in accordance with Recommendation ITU-R M.633-3. (WRC-07)

## ARTICLE 41

### Communications with stations in the maritime services

**MOD** COM4/296/25 (B9/305/27) (R4/335/42)

**41.1** Stations on board aircraft may communicate, for purposes of distress, and for public correspondence<sup>1</sup>, with stations of the maritime mobile or maritime mobile-satellite services. For these purposes, they shall conform to the relevant provisions of Chapter **VII** and Chapter **IX**, Articles **51** (Section III), **53**, **54**, **55**, **57** and **58** (see also Nos. **4.19**, **4.20** and **43.4**). (WRC-07)

## ARTICLE 47

### Operator's certificates

#### Section I – General provisions

**MOD** COM4/380/13 (B17/404/16)

**47.2** § 1 1) The service of every ship radiotelephone station, ship earth station and ship station using the frequencies and techniques for GMDSS, as prescribed in Chapter **VII**, shall be controlled by an operator holding a certificate issued or recognized by the government to which the station is subject. Provided the station is so controlled, other persons besides the holder of the certificate may use the equipment. (WRC-07)

**SUP** COM4/380/14 (B17/404/17)

**47.6 to 47.8**

**MOD** COM4/380/15 (B17/404/18)

**47.18** § 5 1) Each administration may determine the conditions under which personnel holding certificates specified in Section II may be granted certificates specified in Nos. **47.20** to **47.23B**. (WRC-07)

**ADD** COM4/380/16 (B17/404/19)

**47.18A** 2) Each administration may determine the conditions under which personnel holding certificates for equipment that operate with non-GMDSS frequencies and techniques may be granted certificates specified in Nos. **47.26** and **47.27**. (WRC-07)



## Section II – Categories of operator's certificates

**ADD** COM4/380/17 (B17/404/20)

### *A – GMDSS certificates*

**MOD** COM4/380/18 (B17/404/21)

**47.19** § 6 1) There are six categories of certificates, shown in descending order of requirements, for personnel of ship stations and ship earth stations using the frequencies and techniques prescribed in Chapter VII. An operator meeting the requirements of a certificate automatically meets all of the requirements of lower order certificates. (WRC-07)

**ADD** COM4/380/19 (B17/404/22)

**47.23A** e) Long range certificate (for non-SOLAS vessels). (WRC-07)

**ADD** COM4/380/20 (B17/404/23)

**47.23B** f) Short range certificate (for non-SOLAS vessels). (WRC-07)

**ADD** COM4/380/21 (B17/404/24)

### *B – Non-GMDSS certificates*

## Section III – Conditions for the issue of certificates

**MOD** COM4/380/22 (B17/404/25)

**47.25** § 7 1) There are six categories of certificates. Existing certificates of the categories listed in No. **47.26** may continue to be used for the purposes they were issued for. (WRC-07)

**SUP** COM4/380/26 (B17/404/27)

## Section IV – Qualifying service<sup>1</sup> (WRC-03)

**MOD** COM4/380/23 (B17/404/28)

**47.26** § 8 The following maritime radio operator's certificates are still valid:

- 1 Radiocommunication operator's general certificate.
- 2 First-class radio telegraph operator's certificate.
- 3 Second-class radio telegraph operator's certificate.
- 4 Radiotelegraph operator's special certificate.
- 5 Radiotelephone operator's general certificate.
- 6 Restricted radiotelephone operator's certificate. (WRC-07)

**MOD** COM4/380/24 (B17/404/29)

**47.27** § 9 The requirements for the certificates of this section, for which candidates must show proof of technical and professional knowledge and qualification, are shown in Table **47-1**.  
(WRC-07)

TABLE 47-1

**Requirements for radio electronic and operator's certificates**

**ADD** COM4/380/25 (B17/404/26)

NOTE 2 – The conditions for the issuing of the long-range and short-range Certificates are contained in Resolution **343 (WRC-97)**. (WRC-07)

**SUP** COM4/380/27 (B17/404/30)

**47.28 to 47.29**

ARTICLE 50

**Working hours of stations**

**MOD** COM4/380/70 (B17/404/31)

**50.4** 2) These hours of service shall be notified to the Radiocommunication Bureau, who shall publish them in the List of Coast Stations and Special Service Stations (List IV). (WRC-07)

**MOD** COM4/380/71 (B17/404/32)

**50.5** § 4 Coast stations whose service is not continuous shall not close before finishing all operations resulting from a distress call or from an urgency or safety signal. (WRC-07)

**SUP** COM4/380/72 (B17/404/33)

**50.6 to 50.9**

ARTICLE 51

**Conditions to be observed in the maritime services**

**Section I – Maritime mobile service**

**SUP** COM4/296/26 (B9/305/28) (R4/335/43)

**51.8 to 51.23**

**MOD** COM4/380/28 (B17/404/34)

**51.35** b) send and receive class F1B or J2B emissions on an international calling channel (specified in Recommendation ITU-R M.541-9) in each of the HF maritime mobile bands necessary for their service; (WRC-07)

**MOD** COM4/296/27 (B9/305/29) (R4/335/44)

**51.53** a) send class J3E emissions on a carrier frequency of 2 182 kHz and receive class J3E emissions on a carrier frequency of 2 182 kHz, except for such apparatus as is referred to in No. **51.56**; (WRC-07)

**MOD** COM4/296/28 (B9/305/30) (R4/335/45)

**51.58** § 23 All ship stations equipped with radiotelephony to work in the authorized bands between 4 000 kHz and 27 500 kHz and which do not comply with the provisions of Chapter **VII** should be able to send and receive on the carrier frequencies 4 125 kHz and 6 215 kHz. However, all ship stations which comply with the provisions of Chapter **VII** shall be able to send and receive on the carrier frequencies designated in Article **31** for distress and safety traffic by radiotelephony for the frequency bands in which they are operating. (WRC-07)

### **Section III – Stations on board aircraft communicating with stations of the maritime mobile service and the maritime mobile-satellite service**

**MOD** COM6/341/21 (B14/365/39) (R7/411/206)

**51.71** § 28 In the case of communication between stations on board aircraft and stations of the maritime mobile service, radiotelephone calling may be renewed as specified in the most recent version of Recommendation ITU-R M.1171 and radiotelegraph calling may be renewed after an interval of five minutes, notwithstanding the procedure contained in the most recent version of Recommendation ITU-R M.1170. (WRC-07)

**MOD** COM4/296/29 (B9/305/31) (R4/335/46)

**51.79** 2) The frequency 156.3 MHz may be used by stations on board aircraft for safety purposes. It may also be used for communication between ship stations and stations on board aircraft engaged in coordinated search and rescue operations (see Appendix **15**). (WRC-07)

**MOD** COM4/296/30 (B9/305/32) (R4/335/47)

**51.80** 3) The frequency 156.8 MHz may be used by stations on board aircraft for safety purposes only (see Appendix **15**). (WRC-07)

## **ARTICLE 52**

### **Special rules relating to the use of frequencies**

**SUP** COM4/296/31 (B9/305/33) (R4/335/48)

#### **Section II**

**SUP** COM4/296/32 (B9/305/34) (R4/335/49)

**52.16 to 52.93**

### **Section III – Use of frequencies for narrow-band direct-printing telegraphy**

**MOD** COM4/380/29 (B17/404/35)

**52.95** § 44 Frequencies assigned to coast stations for narrow-band direct-printing telegraphy shall be indicated in the List of Coast Stations and Special Service Stations (List IV). This List shall also indicate any other useful information concerning the service performed by each coast station. (WRC-07)

**MOD** COM4/296/33 (B9/305/35) (R4/335/50)

**52.101** 2) Narrow-band direct-printing telegraphy is forbidden in the band 2 170-2 194 kHz except, as provided for in Appendix **15** and Resolution **[COM4/3] (WRC-07)**. (WRC-07)

#### **Section IV – Use of frequencies for digital selective-calling**

**MOD** COM4/380/30 (B17/404/36)

**52.112** § 51 The characteristics of the digital selective-calling equipment shall be in accordance with Recommendation ITU-R M.541-9 and should be in accordance with the most recent version of Recommendation ITU-R M. 493. (WRC-07)

**MOD** COM4/380/31 (B17/404/37)

**52.113** § 52 The frequencies on which coast stations provide services using digital selective-calling techniques shall be indicated in the List of Coast Stations and Special Service Stations (List IV), which shall also supply any other useful information concerning such services. (WRC-07)

**MOD** COM4/380/32 (B17/404/38)

**52.122** § 59 1) A coast station providing international public correspondence service using digital selective-calling techniques within the bands between 415 kHz and 526.5 kHz should, during its hours of service, maintain automatic digital selective-calling watch on appropriate national or international calling frequencies. The hours and frequencies shall be indicated in the List of Coast Stations and Special Service Stations (List IV). (WRC-07)

**MOD** COM4/380/33 (B17/404/39)

**52.137** § 63 The frequency to be used for transmission of an acknowledgement shall normally be the frequency paired with the frequency used for the call received, as indicated in the List of Coast Stations and Special Service Stations (List IV) (see also No. **52.113**). (WRC-07)

**MOD** COM4/380/34 (B17/404/40)

**52.139** 2) A coast station providing international public correspondence service using digital selective-calling techniques within the bands between 1 606.5 kHz and 4 000 kHz should, during its hours of service, maintain automatic digital selective-calling watch on appropriate national or international calling frequencies. The hours and frequencies shall be indicated in the List of Coast Stations and Special Service Stations (List IV). (WRC-07)

**MOD** COM4/380/35 (B17/404/41)

**52.148** b) subject to the provisions of No. **52.149**, one of the international digital selective-calling frequencies. (WRC-07)

**MOD** COM4/380/36 (B17/404/42)

**52.149** 2) The international digital selective-calling frequencies shall be as indicated in Recommendation ITU-R M.541-9 and may be used by any ship station. In order to reduce interference on these frequencies, they shall only be used when calling cannot be made on nationally assigned frequencies. (WRC-07)

**MOD** COM4/380/37 (B17/404/43)

**52.152** *b)* subject to the provisions of No. **52.153**, one of the international digital selective-calling frequencies. (WRC-07)

**MOD** COM4/380/38 (B17/404/44)

**52.153** 2) The international digital selective-calling frequencies shall be as indicated in Recommendation ITU-R M.541-9 and may be assigned to any coast station. In order to reduce interference on these frequencies, they may be used as a general rule by coast stations to call ships of another nationality, or in cases where it is not known on which digital selective-calling frequencies within the bands concerned the ship station is maintaining watch. (WRC-07)

**MOD** COM4/380/39 (B17/404/45)

**52.155** 2) A coast station providing international public correspondence service using digital selective-calling techniques within the bands between 4 000 kHz and 27 500 kHz should, during its hours of service, maintain automatic digital selective-calling watch on the appropriate digital selective-calling frequencies as indicated in the List of Coast Stations and Special Service Stations (List IV). (WRC-07)

**MOD** COM4/380/40 (B17/404/46)

**52.159** § 71 1) The frequency 156.525 MHz is an international frequency in the maritime mobile service used for distress, urgency, safety and calling by digital selective-calling techniques (see Nos. **33.8** and **33.31** and Appendix **15**). (WRC-07)

**MOD** COM4/380/41 (B17/404/47)

**52.161** § 72 Information concerning watch-keeping by automatic digital selective-calling on the frequency 156.525 MHz by coast stations shall be given in the List of Coast Stations and Special Service Stations (List IV) (see also No. **31.13**). (WRC-07) Section VI – Use of frequencies for radiotelephony

**MOD** COM4/380/42 (B17/404/48)

**52.180** § 84 The frequencies of transmission (and reception when these frequencies are in pairs as in the case of duplex radiotelephony) assigned to each coast station shall be indicated in the List of Coast Stations and Special Service Stations (List IV). This List shall also indicate any other useful information concerning the service performed by each coast station. (WRC-07)

**MOD** COM4/296/34 (B9/305/36) (R4/335/51)

**52.183** § 86 1) Unless otherwise specified in the Radio Regulations (see Nos. **51.53**, **52.188**, **52.189** and **52.199**), the class of emission to be used in the bands between 1 606.5 kHz and 4 000 kHz shall be J3E. (WRC-07)

**MOD** COM4/380/43 (B17/404/49)

**52.187** 3) The normal mode of operation for each coast station shall be indicated in the List of Coast Stations and Special Service Stations (List IV). (WRC-07)

**MOD** COM4/380/44 (B17/404/50)

**52.188** 4) Transmissions in the bands 2 170-2 173.5 kHz and 2 190.5-2 194 kHz with the carrier frequency 2 170.5 kHz and the carrier frequency 2 191 kHz, respectively, are limited to class J3E emissions and are limited to a peak envelope power of 400 W. (WRC-07)

**MOD** COM4/296/35 (B9/305/37) (R4/335/52)

**52.189** § 87 1) The frequency 2 182 kHz<sup>2</sup> is an international distress frequency for radiotelephony (see Appendix **15** and Resolution [COM4/3] (WRC-07)). (WRC-07)

**MOD** COM4/380/45 (B17/404/51)

**52.200** 4) One of the frequencies which coast stations are required to be able to use (see No. **52.197**) is printed in heavy type in the List of Coast Stations and Special Service Stations (List IV) to indicate that it is the normal working frequency of the stations. Supplementary frequencies, if assigned, are shown in ordinary type. (WRC-07)

**SUP** COM4/296/36 (B9/305/38) (R4/335/53)

**52.209**

**MOD** COM4/380/46 (B17/404/52)

**52.212** – where the facility is open to ships of all nationalities by virtue of a note against each of the frequencies concerned in the List of Coast Stations and Special Service Stations (List IV). (WRC-07)

**MOD** COM4/380/47 (B17/404/53)

**52.218** 2) The normal mode of operation of each coast station is indicated in the List of Coast Stations and Special Service Stations (List IV). (WRC-07)

**MOD** COM4/296/37 (B9/305/39) (R4/335/54)

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<sup>4</sup> **52.221.2** The carrier frequencies 4 125 kHz and 6 215 kHz are also authorized for common use by coast and ship stations for single-sideband radiotelephony on a simplex basis for call and reply purposes, provided that the peak envelope power of such stations does not exceed 1 kW. The use of these frequencies for working purposes is not permitted (see also No. **52.221.1**). (WRC-07)

**SUP** COM4/380/48 (B17/404/54)

<sup>6</sup> **52.222.1**

**MOD** COM4/380/49 (B17/404/55)

**52.223** § 98 The hours of service of coast stations open to public correspondence and the frequency or frequencies on which watch is maintained shall be indicated in the List of Coast Stations and Special Service Stations (List IV). (WRC-07)

**MOD** COM4/296/38 (B9/305/40) (R4/335/55)

**52.231** § 101 1) The frequency 156.8 MHz is the international frequency for distress traffic and for calling by radiotelephony when using frequencies in the authorized bands between 156 MHz and 174 MHz. The class of emission to be used for radiotelephony on the frequency 156.8 MHz shall be G3E (as specified in Recommendation ITU-R M.489-2). (WRC-07)

**SUP** COM4/380/50 (B17/404/56)

**52.235**

**MOD** COM4/380/51 (B17/404/57)

**52.236** 3) Any one of the channels designated in Appendix 18 for public correspondence may be used as a calling channel if an administration so desires. Such use shall be indicated in the List of Coast Stations and Special Service Stations (List IV). (WRC-07)

**ADD** COM4/296/39 (B9/305/41) (R4/335/56)

**52.241A** 10) The frequency 156.525 MHz is the international distress, safety and calling frequency for the maritime mobile VHF radiotelephone service using digital selective calling (DSC) when using frequencies in the authorized bands between 156 MHz and 174 MHz. (WRC-07)

**ADD** COM4/296/40 (B9/305/42) (R4/335/57)

**52.241B** 11) All emissions in the band 156.4875-156.5625 MHz capable of causing harmful interference to the authorized transmissions of stations of the maritime mobile service on 156.525 MHz are forbidden. (WRC-07)

**ADD** COM4/296/41 (B9/305/43) (R4/335/58)

**52.241C** 12) To facilitate the reception of distress calls and distress traffic, all transmissions on 156.525 MHz shall be kept to a minimum. (WRC-07)

**MOD** COM4/296/42 (B9/305/44) (R4/335/59)

**52.242** § 102 1) A coast station open to the international public correspondence service should, during its hours of service, maintain watch on its receiving frequency or frequencies indicated in the List of Coast Stations and Special Service Stations. (WRC-07)

**MOD** COM4/380/52 (B17/404/58)

**52.247** § 103 A coast station in the port operations service in an area where 156.8 MHz is being used for distress, urgency or safety shall, during its working hours, keep an additional watch on 156.6 MHz or another port operations frequency indicated in heavy type in the List of Coast Stations and Special Service Stations (List IV). (WRC-07)

**MOD** COM4/380/53 (B17/404/59)

**52.248** § 104 A coast station in the ship movement service in an area where 156.8 MHz is being used for distress, urgency and safety shall, during its working hours, keep an additional watch on the ship movement frequencies indicated in heavy type in the List of Coast Stations and Special Service Stations (List IV). (WRC-07)

## ARTICLE 54

### **Selective calling**

**MOD** COM4/332/174 (B13/347/168) (R7/411/207)

**54.2** 2) Selective calling is carried out using a digital selective calling system which shall be in accordance with Recommendation ITU-R M.541-9, and may be in accordance with the most recent version of Recommendation ITU-R M.493. (WRC-07)

## ARTICLE 55

### **Morse radiotelegraphy**

**MOD** COM4/332/175 (B13/347/169) (R7/411/208)

**55.1** The recommended procedure for conducting Morse radiotelegraph communications is detailed in the most recent version of Recommendation ITU-R M.1170. (WRC-07)

## ARTICLE 56

### **Narrow-band direct-printing telegraphy**

**MOD** COM4/380/54 (B17/404/60)

**56.2** § 2 The procedures specified in Recommendation ITU-R M.492-6 shall be employed except in cases of distress, urgency, or safety, in which case alternate or non-standard procedures may be used. (WRC-07)

**MOD** COM4/332/176 (B13/347/170) (R7/411/209)

**56.6** § 5 The services provided by each station open to public correspondence shall be indicated in the List of Coast Stations and Special Service Stations (List IV) and in the List of Ship Stations and Maritime Mobile Service Identity Assignments (List V), together with information on charging. (WRC-07)



## ARTICLE 57

### Radiotelephony

**MOD** COM4/296/43 (B9/305/45) (R4/335/60)

**57.1** § 1 The procedure detailed in Recommendation ITU-R M.1171 shall be applicable to radiotelephone stations, except in cases of distress, urgency or safety. (WRC-07)

**MOD** COM4/296/44 (B9/305/46) (R4/335/61)

**57.8** § 4 Calling, and signals preparatory to traffic, shall not exceed one minute when made on the carrier frequency 2 182 kHz or on 156.8 MHz, except in cases of distress, urgency or safety. (WRC-07)

**MOD** PLEN/423/1

## ARTICLE 59

### Entry into force and provisional application of the Radio Regulations (WRC-2000)

**59.1** These Regulations, which complement the provisions of the Constitution and Convention of the International Telecommunication Union, and as revised and contained in the Final Acts of WRC-95, WRC-97, WRC-2000, WRC-03, and WRC-07, shall be applied, pursuant to Article 54 of the Constitution, on the following basis. (WRC-07)

**59.2** The provisions of these Regulations, as revised by WRC-95, concerning new or modified frequency allocations (including any new or modified conditions applying to existing allocations) and the related provisions of Articles **S21\*** and **S22\***, and Appendix **S4\***, apply provisionally as of 1 January 1997.

**59.3** The other provisions of these Regulations, as revised by WRC-95 and WRC-97, apply provisionally as of 1 January 1999, with the following exceptions: (WRC-2000)

**59.4** – the revised provisions for which other effective dates of application are stipulated in Resolutions:

**49 (WRC-97), 51 (WRC-97), 52 (WRC-97)\*\* , 54 (WRC-97)\*\* ,  
130 (WRC-97)\*\* , 533 (WRC-97), 534 (WRC-97)\*\* and 538 (WRC-97)\*\* .**

**59.5** The other provisions of these Regulations, as revised by WRC-2000, shall enter into force on 1 January 2002, with the following exceptions: (WRC-2000)

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\* *Note by the Secretariat:* In view of the changes in the numbering scheme, these references correspond now to Articles **21** and **22**, and to Appendix **4**, as appropriate.

\*\* *Note by the Secretariat:* This Resolution was abrogated by WRC-2000.

**59.6** – the revised provisions for which other effective dates of application are stipulated in Resolutions:

**49 (Rev.WRC-2000), 51 (Rev.WRC-2000), 53 (Rev.WRC-2000)<sup>\*\*\*</sup>, 55 (WRC-2000), 56 (WRC-2000), 58 (WRC-2000), 59 (WRC-2000)<sup>\*\*\*</sup>, 77 (WRC-2000)<sup>\*\*\*</sup>, 84 (WRC-2000)<sup>\*\*\*</sup>, 122 (Rev.WRC-2000), 128 (Rev.WRC-2000)<sup>\*\*\*</sup>, 533 (Rev.WRC-2000), 539 (WRC-2000), 540 (WRC-2000)<sup>\*\*\*</sup>, 541 (WRC-2000)<sup>\*\*\*</sup>, 542 (WRC-2000)<sup>\*\*\*</sup>, 604 (WRC-2000)<sup>\*\*\*</sup> and 605 (WRC-2000)<sup>\*\*\*</sup>. (WRC-2000)**

**59.7** The other provisions of these Regulations, as revised by WRC-03, shall enter into force on 1 January 2005, with the following exceptions: (WRC-03)

**59.8** – the revised provisions for which other effective dates of application are stipulated in Resolutions:

**56 (Rev.WRC-03)<sup>\*\*\*</sup>, 85 (WRC-03), 87 (WRC-03)<sup>\*\*\*</sup>, 96 (WRC-03)<sup>\*\*\*</sup>, 122 (Rev.WRC-03), 142 (WRC-03), 145 (WRC-03), 146 (WRC-03)<sup>\*\*\*</sup>, 221 (Rev.WRC-03), 413 (WRC-03), 539 (Rev.WRC-03), 546 (WRC-03), 743 (WRC-03) and 902 (WRC-03). (WRC-07)**

**ADD**

**59.9** The other provisions of these Regulations, as revised by WRC-07, shall enter into force on 1 January 2009, with the following exceptions: (WRC-07)

**ADD**

**59.10** – the revised provisions for which other effective dates of application are stipulated in Resolutions:

**55 (Rev.WRC-07), [COM4/6] (WRC-07), [COM5/2] (WRC-07), [COM5/8] (WRC-07), [COM6/1] (WRC-07) and [COM6/6] (WRC-07),. (WRC-07)**

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<sup>\*\*\*</sup> *Note by the Secretariat:* This Resolution was abrogated by WRC-03.

<sup>\*\*\*\*</sup> *Note by the Secretariat:* This Resolution was abrogated by WRC-07.

# **APPENDICES**

## **APPENDIX 1**

### **Classification of emissions and necessary bandwidths**

(See Article 2)

- § 1            1)        ...
- 2)        Formulae and examples of emissions designated in accordance with this Appendix are given in Recommendation ITU-R SM.1138-1. Further examples may be provided in other ITU-R Recommendations. These examples may also be published in the Preface to the International Frequency List.

#### **Section I – Necessary bandwidth**

- § 2            1)        ...
- 2)        ...
- 3)        ...
- 3.1)        use of the formulae and examples of necessary bandwidths and designation of corresponding emissions given in Recommendation ITU-R SM.1138-1;

APPENDIX 4 (Rev.WRC-07)

**Consolidated list and tables of characteristics for use in the application of the procedures of Chapter III**

1 The substance of this Appendix is separated into two parts: one concerning data and their use for terrestrial radiocommunication services and another concerning data and their use for space radiocommunication services.

2 Both parts contain a list of characteristics and a table indicating the use of each of the characteristics in specific circumstances.

*Annex 1:* Characteristics of stations in the terrestrial services

*Annex 2:* Characteristics of satellite networks, earth stations or radio astronomy stations.

**SUP**      COM6/398/2      (B21/415/2)

## ANNEX 1A

### **List of characteristics of stations in the terrestrial services<sup>1</sup>**

**SUP**      COM6/398/3      (B21/415/3)

## ANNEX 1B

### **Table of characteristics to be submitted for stations in the terrestrial services (WRC-2000)**

## ANNEX 1

**Characteristics of stations in the terrestrial services<sup>1</sup>**

In application of Appendix 4 there are many cases when the data requirements involve the use of standard symbols in submissions to the Radiocommunication Bureau. These standard symbols may be found in the “Preface to the BR International Frequency Information Circular” (BR IFIC) (Terrestrial Services). In the Tables, this is referred to simply as “the Preface”. Also additional information may be found in the guidelines published on the Bureau’s website.

**Key to the symbols used in Annex 1**

X	Mandatory information
+	Mandatory under the conditions specified in column 3
O	Optional information
C	Mandatory if used as a basis to effect coordination with another administration
	The data item is not applicable to the corresponding notice

**Reading Appendix 4 Tables 1 and 2**

The rules used to link the sign with the text are based on the Table column headings covering specific procedures, services and frequency bands.

1 If any data item has the indication “+”, it shows that the data item is subject to a mandatory requirement under specific conditions. If these conditions are not met, the corresponding item is not applicable unless otherwise specified. These conditions are listed after the data item name and are normally presented as shown below.

2 “Required” without any reference to a column heading is used in the case that the associated condition is valid for every applicable column.

1.5.2	1B	the reference frequency, as defined in Article 1 Required if the modulation envelope is asymmetric	+	+	1B
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<sup>1</sup> The Radiocommunication Bureau shall develop and keep up-to-date forms of notice to meet fully the statutory provisions of this Appendix and related decisions of future conferences. Additional information on the items listed in this Annex together with an explanation of the symbols is to be found in the Preface to the International Frequency List.

“In the case of”, followed by a reference to the column heading is used, as shown below, when the associated conditions are different for individual columns, or if the indication is not the same across all applicable columns.

6.1	6A	the nature of service, using the symbols from the Preface In the case of a transmitting station, required for all services, except the broadcasting service	+	X	6A
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3 A subheading limits the range of procedures, services or frequency bands applicable under a Table column heading. Unless further specific conditions apply, the data items grouped under that subheading have an “X” as the conditional nature is shown in the subheading title.

1.4.4		<b>For assignments in the bands and services governed by the Geneva 06 Regional Agreement only</b>			
1.4.4.4		the digital broadcasting assignment code	X		

### Footnotes to Tables 1 and 2

- 1 The most recent version of Recommendation ITU-R SF.675 should be used to the extent applicable in calculating the maximum power density per Hz.



TABLE 1  
Characteristics for terrestrial services

Column No.	Item identifier	<div>Notice related to</div> <div>Description of data item and requirements</div>	Broadcasting (sound and television) stations in the VHF/UHF bands up to 960 MHz, for the application of No. 11.2 and No. 9.21	Broadcasting (sound) stations in the LF/MF bands, for the application of No. 11.2	Transmitting stations (except broadcasting stations in the planned LF/MF bands, in the HF bands governed by Article 12, and in the VHF/UHF bands up to 960 MHz), for the application of No. 11.2 and No. 9.21	Receiving land stations, for the application of No. 11.9 and No. 9.21	Typical transmitting stations, for the application of No. 11.17	Maritime mobile frequency allotment, for the application of plan modification under Appendix 25 (Nos. 25/1.1.1, 25/1.1.2, 25/1.2.5)	Broadcasting stations in the HF bands, for the application of No. 12.16	Item identifier
1		<b>GENERAL INFORMATION AND FREQUENCY CHARACTERISTICS</b>								
1.1	B	the symbol of the notifying administration (see the Preface)	X	X	X	X	X	X	X	B
1.2	[D]	the provision code of the Radio Regulations under which the notice has been submitted	X	X	X	X	X	X	X	[D]
1.3		<p>the resubmission indicator</p> <p>In the case of a VHF/UHF broadcasting station, or a typical transmitting station, required for an assignment subject to the GE06 Regional Agreement if the notice is resubmitted in the application of Article 11</p> <p>In the case of a transmitting station, or a receiving land station, required for an assignment subject to the GE06 Regional Agreement or Nos. 9.16, 9.18 or 9.19 if the notice is resubmitted in the application of Article 11</p>	+		+	+	+			

Column No.	Item identifier	<div>Notice related to</div> <div>Description of data item and requirements</div>	Broadcasting (sound and television) stations in the VHF/UHF bands up to 960 MHz, for the application of No. 11.2 and No. 9.21	Broadcasting (sound) stations in the LF/MF bands, for the application of No. 11.2	Transmitting stations (except broadcasting stations in the planned LF/MF bands, in the HF bands governed by Article 12, and in the VHF/UHF bands up to 960 MHz), for the application of No. 11.2 and No. 9.21	Receiving land stations, for the application of No. 11.9 and No. 9.21	Typical transmitting stations, for the application of No. 11.17	Maritime mobile frequency allotment, for the application of plan modification under Appendix 25 (Nos. 25/1.1.1, 25/1.1.2, 25/1.25)	Broadcasting stations in the HF bands, for the application of No. 12.16	Item identifier
1.4		<b>Assignment and allotment identification information</b>								
1.4.1	SYNC	<p>the identification symbols for the synchronized, or single-frequency, network</p> <p>In the case of a VHF/UHF broadcasting station, required for a digital broadcasting assignment in a synchronized or single frequency network subject to the GE06 Regional Agreement</p> <p>In the case of an LF/MF broadcasting station, required for an assignment in a synchronized or single frequency network</p>	+	+						SYNC
1.4.2		<p>the unique identification code given by the administration to the assignment or allotment</p> <p>Required for assignments subject to the GE06 Regional Agreement, and optional for assignments not subject to this Agreement</p>	+	O	+	+	+	O		
1.4.3		<b>For assignments in the bands and services governed by the Geneva 06 Regional Agreement only</b>								
1.4.3.1		<p>the unique identification code given by the administration for the associated allotment</p> <p>Required for a digital broadcasting assignment linked to an allotment, or converted from an allotment, within the GE06 Plan</p>	+							
1.4.3.2		<p>the unique identification code given by the administration to the digital broadcasting Plan entry for which § 5.1.3 of the GE06 Agreement is to be applied</p> <p>Required if the notified assignment is to be operated under the mask of a digital broadcasting Plan entry in accordance with § 5.1.3 of the GE06 Regional Agreement</p>	+		+	+				
1.4.3.3		the digital broadcasting plan entry code that identifies the category of Plan entry to which the assignment belongs	X							
1.4.3.4		the digital broadcasting assignment code	X							

Column No.	Item identifier	<div>Notice related to</div> <div>Description of data item and requirements</div>	Broadcasting (sound and television) stations in the VHF/UHF bands up to 960 MHz, for the application of No. 11.2 and No. 9.21	Broadcasting (sound) stations in the LF/MF bands, for the application of No. 11.2	Transmitting stations (except broadcasting stations in the planned LF/MF bands, in the HF bands governed by Article 12, and in the VHF/UHF bands up to 960 MHz), for the application of No. 11.2 and No. 9.21	Receiving land stations, for the application of No. 11.9 and No. 9.21	Typical transmitting stations, for the application of No. 11.17	Maritime mobile frequency allotment, for the application of plan modification under Appendix 25 (Nos. 25/1.1.1, 25/1.1.2, 25/1.25)	Broadcasting stations in the HF bands, for the application of No. 12.16	Item identifier
1.5		<b>Frequency information</b>								
1.5.1	1A	<p>the assigned frequency, as defined in Article 1</p> <p>In the case of a transmitting station, required for all services, except adaptive systems in the fixed or mobile service operating in the bands between 300 kHz and 28 MHz (see also Resolution 729 (Rev.WRC-07))</p> <p>In the case of an HF broadcasting station under Article 12, required if neither the preferred band nor reference frequency is provided</p>	X	X	+	X	X		+	1A
1.5.2	1B	<p>the reference frequency, as defined in Article 1</p> <p>Required if the modulation envelope is asymmetric</p>			+	+	+		+	1B
1.5.3	1G	the alternative frequency							O	1G
1.5.4	1X	<p>the channel number of the proposed or allotted channel</p> <p>Required for submissions in accordance with Nos. 25/1.1.1, 25/1.1.2 or 25/1.25 of Appendix 25 if the assistance of the Bureau is not requested under No. 25/1.3.1 of Appendix 25</p>						+		1X
1.5.5	1Y	the channel number of the alternative proposed channel						O		1Y
1.5.6	1Z	<p>the channel number of the channel to be replaced</p> <p>Required if the administration needs to replace its existing allotted channel</p>						+		1Z

Column No.	Item identifier	<div>Notice related to</div> <div>Description of data item and requirements</div>	Broadcasting (sound and television) stations in the VHF/UHF bands up to 960 MHz, for the application of No. 11.2 and No. 9.21	Broadcasting (sound) stations in the LF/MF bands, for the application of No. 11.2	Transmitting stations (except broadcasting stations in the planned LF/MF bands, in the HF bands governed by Article 12, and in the VHF/UHF bands up to 960 MHz), for the application of No. 11.2 and No. 9.21	Receiving land stations, for the application of No. 11.9 and No. 9.21	Typical transmitting stations, for the application of No. 11.17	Maritime mobile frequency allotment, for the application of plan modification under Appendix 25 (Nos. 25/1.1.1, 25/1.1.2, 25/1.25)	Broadcasting stations in the HF bands, for the application of No. 12.16	Item identifier
1.5.7	1AA	<p>the lower limit of the usable frequency range within which the carrier and the bandwidth of the emission will be located</p> <p>Required for adaptive systems in the fixed or mobile service operating in the bands between 300 kHz and 28 MHz (see also Resolution 729 (Rev.WRC-07))</p>			+					1AA
1.5.7bis	[1a]	<p>the upper limit of the usable frequency range within which the carrier and the bandwidth of the emission will be located</p> <p>Required for adaptive systems in the fixed or mobile service operating in the bands between 300 kHz and 28 MHz (see also Resolution 729 (Rev.WRC-07))</p>			+					
1.5.8	1C	<p>the preferred band, in MHz</p> <p>In the case of maritime mobile frequency allotment, required if the assistance of the Bureau is requested under No. 25/1.3.1 of Appendix 25</p> <p>In the case of an HF broadcasting station under Article 12, required for notices if assistance is requested in accordance with No. 7.6</p>						+	+	1C
1.5.9		<b>For digital broadcasting (except assignments subject to § 5.1.3 of the GE06 Regional Agreement)</b>								
1.5.9.1	1E1[β]	<p>the frequency offset, in kHz</p> <p>Required for an assignment subject to the GE06 Regional Agreement if the centre frequency of the emission is offset from the assigned frequency, and optional for assignments not subject to this Agreement</p>	+							1E1[β]

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1.5.10	1E	<b>For analogue television broadcasting</b>								
1.5.10.1	1E	the vision carrier frequency offset, in multiples of 1/12 of the line frequency of the television system concerned, expressed by a number (positive or negative) Required if the vision carrier frequency offset, in kHz, (1E1) is not provided for assignments subject to the ST61, GE89 or GE06 Regional Agreements	+							1E
1.5.10.2	1E1	the vision carrier frequency offset, in kHz, expressed by a number (positive or negative) Required if the vision carrier frequency offset, in multiples of 1/12 of the line frequency (1E) is not provided for assignments subject to the ST61, GE89 or GE06 Regional Agreements	+							1E1
1.5.10.3		<b>For the case where the sound carrier frequency offset is different from the vision carrier frequency offset</b>								
1.5.10.3.1	1E[α]	the sound carrier frequency offset, in multiples of 1/12 of the line frequency of the television system concerned, expressed by a number (positive or negative) Required if the sound carrier frequency offset, in kHz, (1E1[α]) is not provided for assignments subject to the ST61, GE89 or GE06 Regional Agreements	+							1E[α]
1.5.10.3.2	1E1[α]	the sound carrier frequency offset, in kHz, expressed by a number (positive or negative) Required if the sound carrier frequency offset, in multiples of 1/12 of the line frequency (1E[α]) is not provided for assignments subject to the ST61, GE89 or GE06 Regional Agreements	+							1E1[α]

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2		<b>DATE OF OPERATION</b>								
2.1	2C	the date (actual or foreseen, as appropriate) of bringing the frequency assignment (new or modified) into use	X	X	X	X	X	X		2C
2.2		<p>the date for the end of operation of a frequency assignment</p> <p>In the case of a VHF/UHF broadcasting station, required, in the application of Article 11, when the operation of an assignment is limited to a specific period of time under § 4.1.5.4 of the GE06 Regional Agreement</p> <p>In the case of a transmitting station, a receiving land station, or a typical transmitting station, required, in the application of Article 11, when the operation of an assignment is limited to a specific period of time under § 4.2.5.5 of the GE06 Regional Agreement</p>	+		+	+	+			
2.3		the season of operation code							X	
2.4	10CA	the start date for the transmission							X	10CA
2.5	10CB	the stop date for the transmission							X	10CB
2.6	10CC	the days of operation for the transmission during the HFBC schedule							X	10CC
3		<b>CALL SIGN AND STATION IDENTIFICATION</b>								
3.1	3A[1]	<p>the call sign used in accordance with Article 19</p> <p>In the case of a transmitting station, for the fixed service below 28 MHz, mobile service, meteorological aids service, or standard frequency and time signal service, in the application of Article 11, required if the station identification (3A[2]) is not provided</p>	O	O	+				O	3A[1]

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3.2	3A[2]	<p>the station identification used in accordance with Article 19</p> <p>In the case of a transmitting station, for the fixed service below 28 MHz, mobile service, meteorological aids service, or standard frequency and time signal service, in the application of Article 11, required if the call sign (3A[1]) is not provided</p>	O	O	+				O	3A[2]
4		<b>LOCATION OF THE TRANSMITTING ANTENNA(S)</b>								
4.1	4A	the name of the locality by which the transmitting station is known or in which it is situated	X	X	X					4A
4.2	4AA	<p>the name of the location of the intended coast station</p> <p>Required for submissions in accordance with No. 25/1.1.1 of Appendix 25</p>						+		
4.3	4B	the code of the geographical area in which the transmitting station is located (see the Preface)	X	X	X					4B
4.4	4C	<p>the geographical coordinates of the transmitter site</p> <p>Latitude and longitude are provided in degrees, minutes and seconds</p>	X	X	X					4C
4.5	4CA	<p>the geographical coordinates of the intended coast station</p> <p>Latitude and longitude are provided in degrees, minutes and seconds</p> <p>Required for submissions in accordance with No. 25/1.1.1 of Appendix 25</p>						+		
4.6		<p>HFBC site code</p> <p>NOTE – The code is assigned by the Bureau prior to commencement of the Article 12 procedure and represents the location of the station, its geographical area and geographical coordinates</p>							X	

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4.7		<b>For an area in which transmitting stations operate</b>								
4.7.1	4C[α]	<p>the geographical coordinates of the centre of the circular zone, in which mobile transmitting stations associated with a receiving land station, or a typical transmitting station are operating</p> <p>Latitude and longitude are provided in degrees, minutes and seconds</p> <p>In the case of a receiving land station, required:</p> <ul style="list-style-type: none"> <li>– for the maritime radionavigation service; and</li> <li>– for other services if the code of a geographical area or standard defined area (4E) is not provided</li> </ul> <p>In the case of a typical transmitting station, required if a geographical area or standard defined area (4E) is not provided</p>				+	+			4C[α]
4.7.2	4D	<p>the nominal radius, in km, of the circular zone, in which mobile transmitting stations associated with a receiving land station, or a typical transmitting station are operating</p> <p>In the case of a receiving land station, required:</p> <ul style="list-style-type: none"> <li>– for the maritime radionavigation service; and</li> <li>– for other services if the code of a geographical area or standard defined area (4E) is not provided</li> </ul> <p>In the case of a typical transmitting station, required if a geographical area or standard defined area (4E) is not provided</p>				+	+			4D



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4.7.3	4E	<p>the code of the geographical area or standard defined area (see the Preface)</p> <p>NOTE – The standard defined area for a receiving land station in the maritime mobile service may be a maritime zone. The standard defined area for a maritime mobile frequency allotment is the allotment area</p> <p>In the case of a receiving land station, for all services, except the maritime radionavigation service, required if a circular zone (4C[α] and 4D) is not provided</p> <p>In the case of a typical transmitting station, required if a circular zone (4C[α] and 4D) is not provided</p>				+	+	X		4E
4.8	4G	<p>the ground conductivity</p> <p>Required for an assignment subject to the GE75 Regional Agreement</p>		+						4G
5		<b>LOCATION OF THE RECEIVING ANTENNA(S)</b>								
5.1	5A	<p>the name of the locality by which the receiving station is known or in which it is situated</p> <p>In the case of a transmitting station, required for an associated receiving station in the fixed service if the geographical coordinates of a given reception zone (5C[α]) are not provided</p>			+	X				5A
5.2	5B	<p>the code of the geographical area in which the receiving station(s) is located (see the Preface)</p> <p>In the case of a transmitting station, required for an associated receiving station in the fixed service if the geographical coordinates of a given reception zone (5C[α]) are not provided</p>			+	X				5B
5.3	5C	<p>the geographical coordinates of the site of the receiving station</p> <p>Latitude and longitude are provided in degrees, minutes and seconds</p> <p>In the case of a transmitting station, required for an associated receiving station in the fixed service if the geographical coordinates of a given reception zone (5C[α]) are not provided</p>			+	X				5C

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5.4		<b>For an area in which receiving stations operate</b>								
5.4.1	5C[α]	<p>the geographical coordinates of a given reception zone</p> <p>A minimum of 3 geographical coordinates are to be provided. All geographical coordinates (latitude and longitude) are provided in degrees, minutes and seconds</p> <p>For an associated receiving station in the fixed service, required if the name of the locality (5A), geographical area (5B) and geographical coordinates (5C) are not provided</p> <p>For all other services, except where the assignment is subject to the GE06 Agreement, required if neither a circular area (5E and 5F) nor a geographical area or standard defined area of reception (5D) is provided</p>			+					5C[α]
5.4.2	5D	<p>the code of the geographical area or standard defined area of reception (see the Preface)</p> <p>NOTE – The standard defined area of a transmitting station may be represented by a maritime zone or aeronautical zone. The standard defined area of a maritime mobile frequency allotment is a maritime zone. The standard defined area of an HF broadcasting station subject to Article 12 is represented by a CIRAF zone</p> <p>In the case of a transmitting station, except transmitting stations in the fixed service, maritime radionavigation service, aeronautical radionavigation service subject to the GE85-MM-R1 Regional Agreement or the maritime mobile service subject to the GE85-MM-R1 Regional Agreement, required if neither a circular receiving area (5E and 5F) nor geographical coordinates of a given reception zone (5C[α]) is provided</p>			+			X	X	5D

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5.4.3	5E	<p>the geographical coordinates of the centre of the circular receiving area</p> <p>Latitude and longitude are provided in degrees, minutes and seconds</p> <p>Required:</p> <ul style="list-style-type: none"> <li>– for the maritime radionavigation service, aeronautical radionavigation service subject to the GE85-MM-R1 Regional Agreement or the maritime mobile service subject to the GE85-MM-R1 Regional Agreement; and</li> <li>– for all other services, except the fixed service, if neither a geographical area or standard defined area of reception (5D) nor the geographical coordinates of a given reception zone (5C[α]) is provided</li> </ul>			+					5E
5.4.4	5F	<p>the radius, in km, of the circular receiving area</p> <p>Required:</p> <ul style="list-style-type: none"> <li>– for the maritime radionavigation service, aeronautical radionavigation service subject to the GE85-MM-R1 Regional Agreement or the maritime mobile service subject to the GE85-MM-R1 Regional Agreement; and</li> <li>– for all other services, except the fixed service, if neither the geographical area or standard defined area of reception (5D) nor the geographical coordinates of a given reception zone (5C[α]) is provided</li> </ul>			+					5F
5.5	5G	<p>the maximum length of the circuit, in km, for non-circular receiving areas</p> <p>Stations in the HF bands only</p>			O			O		5G

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6		<b>CLASS OF STATION AND NATURE OF SERVICE</b>								
6.1	6A	the class of station, using the symbols from the Preface	X	X	X	X	X	X	X	6A
6.2	6B	the nature of service, using the symbols from the Preface In the case of a transmitting station, required for all services, except the broadcasting service			+	X	X	X		6B
7		<b>CLASS OF EMISSION AND NECESSARY BANDWIDTH</b> (in accordance with Article 2 and Appendix 1)								
7.1	7A	the class of emission In the case of a VHF/UHF broadcasting station, required for assignments subject to § 5.1.3 of the GE06 Regional Agreement	+	X	X	X	X	X		7A
7.2	7A[α]	the necessary bandwidth In the case of a VHF/UHF broadcasting station, required for analogue sound broadcasting assignments and for assignments subject to § 5.1.3 of the GE06 Regional Agreement	+	X	X	X	X	X	X	7A[α]
7.3		<b>System characteristics</b>								
7.3.1	7A1	the code describing the frequency stability (RELAXED, NORMAL or PRECISION) Required for analogue television broadcasting	+							7A1
7.3.2	7AA	the code for the type of modulation The type of modulation denotes the use of DSB, SSB or any new modulation techniques recommended by ITU-R							X	7AA

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7.3.3	7B[α]	the “RJ 81 class” (A, B or C) Required for the RJ 81 Regional Agreement		+						7B[α]
7.3.4	7B1	the adjacent channel protection ratio, in dB Required for the GE75 Regional Agreement		+						7B1
7.3.5		the system code NOTE – The code identifies the category of system to which the station belongs and hence its protection requirements In the VHF band two codes are required for protection from T-DAB and DVB-T In the UHF band only one code is required for protection from DVB-T Required for an assignment subject to the GE06 Regional Agreement			+	+	+			
7.3.6	7C1	the code identifying the television system (see the Preface) Required for television broadcasting assignments, except assignments subject to § 5.1.3 of the GE06 Regional Agreement	+							7C1
7.3.7	7C2	the code corresponding to the colour system (see the Preface) Required for analogue television broadcasting	+							7C2

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7.3.8	7D	<p>the code corresponding to the sound broadcasting transmission system (see the Preface)</p> <p>NOTE – For LF/MF systems, the signal may consist of analogue or digital modulation or data or some combination of them: the latter case is referred to as hybrid modulation</p> <p>In the case of a VHF/UHF broadcasting station, required for sound broadcasting assignments, except assignments subject to the GE06 Regional Agreement</p> <p>In the case of an LF/MF broadcasting station, required for an assignment with digital or hybrid modulation</p>	+	+						7D
7.3.9		<b>For the GE06 Regional Agreement (except notices subject to § 5.1.3 of the GE06 Regional Agreement)</b>								
7.3.9.1		<p>the reference planning configuration (see the Preface)</p> <p>Required for digital sound broadcasting</p>	+							
7.3.9.2		the type of spectrum mask	X							
7.3.9.3		<p>the reception mode (see the Preface)</p> <p>Required for digital television broadcasting</p>	+							
7.3.10		<b>For the fixed service in the bands shared with space services and any type of modulation as applicable</b>								
7.3.10.1	7E	the peak to peak frequency deviation, in MHz			C					7E
7.3.10.2	7F	the sweep frequency, in kHz, of the energy dispersal waveform			C					7F

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8		POWER CHARACTERISTICS								
8.1	8	the symbol (X, Y or Z, as appropriate) describing the type of power (see Article 1) corresponding to the class of emission	X	X	X	X	X	X	X	8
8.2	8A	the power delivered to the antenna transmission line, in kW		X					X	8A
8.3	8A[α]	the power delivered to the antenna, in dBW  In the case of a transmitting station, required for an assignment: <ul style="list-style-type: none"><li>– in the bands below 28 MHz, in all services except the radionavigation service; or</li><li>– in the bands above 28 MHz shared with space services; or</li><li>– in the bands above 28 MHz not shared with space services:<ul style="list-style-type: none"><li>– in the aeronautical mobile service, meteorological aids service; or</li><li>– in all other services, if the radiated power is not supplied</li></ul></li></ul> In the case of a receiving land station, required if the associated transmitting station’s radiated power is not supplied  In the case of a typical transmitting station, required if the radiated power is not supplied			+	+	+	X		8A[α]
8.4	8AB	the maximum power density <sup>1</sup> (dB(W/Hz)) for each carrier type averaged over the worst 4 kHz band for carriers below 15 GHz , or averaged over the worst 1 MHz band for carriers above 15 GHz, supplied to the antenna transmission line  For the fixed service in the bands shared with space services			C					8AB

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8.5		<p>the maximum power density (dB(W/Hz)) averaged over the worst 4 kHz band, calculated for the maximum effective radiated power</p> <p>NOTE – For a receiving land station, the maximum power density refers to the associated transmitting station</p> <p>In the case of a VHF/UHF broadcasting station, required for assignments subject to § 5.1.3 of the GE06 Regional Agreement</p> <p>In the case of a transmitting station, a receiving land station, or a typical transmitting station, required for assignments subject to the GE06 Regional Agreement</p>	+		+	+	+			
8.6	8B	<p>the radiated power, in dBW, in one of the forms described in Nos. <b>1.161</b> to <b>1.163</b></p> <p>NOTE – Where adaptive systems in the fixed or mobile service operating in the bands between 300 kHz and 28 MHz (see also Resolution 729 (Rev.WRC-07)) use automatic power control, the radiated power includes the level of power control listed under 8BA</p> <p>For assignments in all services and frequency bands, except assignments subject to the GE06 Regional Agreement, required if the power delivered to the antenna (8A[α]), or the maximum antenna gain (9G), is not provided</p> <p>For an assignment subject to the GE06 Regional Agreement, required if the power delivered to the antenna (8A[α]) is not provided</p>			+	+	+			8B
8.7	8BA	<p>the range of power control, in dB</p> <p>Required for adaptive systems in the fixed or mobile service operating in the bands between 300 kHz and 28 MHz (see also Resolution 729 (Rev.WRC-07)), if automatic power control is used</p>			+					8BA
8.8	8BH	<p>the maximum effective radiated power, in dBW, of the horizontally polarized component</p> <p>Required for horizontal or mixed polarization</p>	+							8BH



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8.9	8BV	the maximum effective radiated power, in dBW, of the vertically polarized component Required for vertical or mixed polarization	+							8BV
8.10		the maximum effective radiated power, in dBW, in the plane defined by the beam tilt angle For a digital broadcasting assignment in the UHF band subject to the GE06 Regional Agreement only	O							
8.11	8D	the vision/sound carrier power ratio, in dB Required for analogue television broadcasting	+							8D
8.12	9L	the maximum effective monopole radiated power, in dB(kW) Required for the GE75 Regional Agreement		+						9L
8.13		<b>For the RJ81 and RJ88 Regional Agreements</b>								
8.13.1	9I	the r.m.s. value of radiation The product of the r.m.s. characteristic field strength in the horizontal plane and the square root of the power		X						9I
8.13.2	9IA	the value of the radiation at the central azimuth of the augmentation, in mV/m at 1 km Required for antenna radiation pattern type “M” (see 9O)		+						9IA
8.13.3	9P	the value of the special quadrature factor, in mV/m at 1 km NOTE – A special quadrature factor may be used with antenna pattern type “M” or “E” to replace the normal expanded quadrature factor when special precautions are taken to ensure pattern stability		O						9P

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9		<b>ANTENNA CHARACTERISTICS</b>								
9.1		<b>For a transmitting or receiving antenna</b>								
9.1.1	9	the indicator showing whether the antenna is directional (D) or non-directional (ND) In the case of a receiving land station, required for an assignment subject to the GE06 Regional Agreement	X		X	+		X	X	9
9.1.2	9D	the code indicating the type of polarization (see the Preface) In the case of a transmitting station, required for an assignment: <ul style="list-style-type: none"> <li>– in the fixed service in the bands shared with space services; or</li> <li>– subject to the GE06 Regional Agreement</li> </ul> In the case of a receiving land station, required for an assignment subject to the GE06 Regional Agreement	X		+	+				9D
9.1.3	9E	the height of the antenna above ground level, in metres In the case of a VHF/UHF broadcasting station, required for the ST61, GE84, GE89, or GE06 Regional Agreements, and optional for assignments not subject to these Agreements In the case of a transmitting station, required for an assignment: <ul style="list-style-type: none"> <li>– in the bands shared with space services; or</li> <li>– subject to the GE06 Regional Agreement</li> </ul> In the case of a receiving land station, required for an assignment subject to the GE06 Regional Agreement	+		+	+				9E

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9.2		<b>For a directional transmitting or receiving antenna</b>								
9.2.1	9C	<p>the total angular width of the radiation main lobe (beamwidth) measured horizontally in a plane containing the direction of maximum radiation, in degrees, within which the power radiated in any direction does not fall more than 3 dB below the power radiated in the direction of maximum radiation</p> <p>In the case of a transmitting station, required for all assignments, except assignments subject to GE06 Regional Agreement where it is optional</p> <p>In the case of a receiving land station, for an assignment subject to the GE06 Regional Agreement only</p>			+	O		X		9C
9.2.2		<p>the antenna gain towards the local horizon</p> <p>For an assignment subject to the GE06 Regional Agreement only</p>			O	O				
9.2.3	9K	<p>the lowest total receiving system noise temperature, in kelvins</p> <p>For an associated receiving antenna in the fixed service operating in the bands shared with space services only</p>			C					9K

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9.3		<b>For a transmitting antenna</b>								
9.3.1	9EA	<p>the altitude of the site above mean sea level, in metres</p> <p>In the case of a VHF/UHF broadcasting station, required for assignments subject to the ST61, GE84, GE89, or GE06 Regional Agreements, and optional for assignments not subject to these Agreements</p> <p>In the case of a transmitting station, required for an assignment:</p> <ul style="list-style-type: none"> <li>– in the fixed or mobile service in the bands shared with space services; or</li> <li>– subject to the GE06 Regional Agreement</li> </ul>	+		+					9EA
9.3.2	9EB	<p>the maximum effective height of the antenna, in metres, above the mean level of the ground between 3 and 15 km from the transmitting antenna</p> <p>In the case of a transmitting station, required for an assignment subject to the GE06 Regional Agreement</p>	X		+					9EB
9.3.3	9EC	<p>the effective height of the antenna, in metres, above the mean level of the ground between 3 and 15 km from the transmitting antenna, at 36 different azimuths in 10° intervals (i.e. 0°, 10°, ..., 350°), measured in the horizontal plane from True North in a clockwise direction</p> <p>In the case of a VHF/UHF broadcasting station, required for an assignment subject to the ST61, GE84, GE89 or GE06 Regional Agreements</p> <p>In the case of a transmitting station, required for an assignment subject to the GE06 Regional Agreement</p>	+		+					9EC

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9.3.4	9G	<p>the maximum antenna gain (isotropic, relative to a short vertical antenna or relative to a half-wave dipole, as appropriate) of the transmitting antenna (see No. 1.160)</p> <p>For a directional antenna, the gain is in the direction of maximum radiation</p> <p>In the case of a transmitting station, or a typical transmitting station:</p> <ul style="list-style-type: none"> <li>for all frequency bands and services, except assignments subject to the GE06 Regional Agreement, required if the antenna is: <ul style="list-style-type: none"> <li>directional, including where the antenna beam is rotating or swept; or</li> <li>non-directional, and the power to the antenna (8A[α]) or the radiated power (8B) is not provided</li> </ul> </li> <li>for an assignment subject to the GE06 Regional Agreement required if the radiated power (8B) is not provided</li> </ul> <p>In the case of a maritime mobile frequency allotment, required if the antenna is directional, including where the antenna beam is rotating or swept</p>			+		+	+		9G
9.3.5		the transmitting antenna design frequency							X	
9.3.6		<p>the beam tilt angle, in degrees</p> <p>The beam tilt angle is measured from the horizontal plane towards ground and the sign of the angle is negative</p> <p>NOTE – In some broadcasting definitions, the angle may have the opposite sign</p> <p>For a digital broadcasting assignment in the UHF band subject to the GE06 Regional Agreement only</p>	O							
9.3.7	9J	the measured radiation pattern of the antenna, the reference radiation pattern or the symbols in standard references to be used for coordination			O				X	9J

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9.4	9AB	<b>For a directional transmitting antenna where the antenna beam is rotating or swept</b>								9AB
9.4.1	9AB[α]	the start azimuth for the range of operational angles for the antenna's main beam axis, measured in the horizontal plane from True North in a clockwise direction			X			X		9AB[α]
9.4.2	9AB[β]	the end azimuth for the range of operational angles for the antenna's main beam axis, measured in the horizontal plane from True North in a clockwise direction			X			X		9AB[β]
9.5		<b>For a directional transmitting antenna where the antenna beam is not rotating or swept</b>								
9.5.1	9A	the azimuth of maximum radiation of the transmitting antenna, measured in the horizontal plane from True North in a clockwise direction			X			X	X	9A
9.5.2	9B	the elevation angle of maximum directivity, in degrees Required for an assignment in the bands shared with space services			+					9B
9.5.3	9R	the slew angle measured between the azimuth of maximum radiation and the direction of unslewed radiation							X	9R
9.5.4	9NH	the value of attenuation of the horizontally polarized component, at 36 different azimuths in 10° intervals (i.e. 0°, 10°, ..., 350°), measured in the horizontal plane from True North in a clockwise direction, with respect to the maximum effective radiated power of this component, in dB  For all assignments, except digital broadcasting assignments subject to the GE06 Regional Agreement and broadcasting assignments subject to § 5.1.3 of the GE06 Regional Agreement, required if the polarization is horizontal or mixed	+							9NH

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9.5.5	9NV	<p>the value of attenuation of the vertically polarized component, at 36 different azimuths in 10° intervals (i.e. 0°, 10°, ..., 350°), measured in the horizontal plane from True North in a clockwise direction, with respect to the maximum effective radiated power of this component, in dB</p> <p>For all assignments, except digital broadcasting assignments subject to the GE06 Regional Agreement and broadcasting assignments subject to § 5.1.3 of the GE06 Regional Agreement, required if the polarization is vertical or mixed</p>	+							9NV
9.5.6		<p>the value of attenuation of the horizontally polarized component in the horizontal plane, normalized to 0 dB, at 36 different azimuths in 10° intervals (i.e. 0°, 10°, ..., 350°), measured in the horizontal plane from True North in a clockwise direction, with respect to the maximum radiated power of this component, in dB</p> <p>In the case of a VHF/UHF broadcasting station, for a digital broadcasting assignment subject to the GE06 Regional Agreement and an assignment subject to § 5.1.3 of the GE06 Regional Agreement, required if the polarization is horizontal or mixed</p> <p>In the case of a transmitting station, for an assignment subject to § 5.1.3 of the GE06 Regional Agreement, required if the polarization is horizontal or mixed</p>	+		+					

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9.5.7		<p>the value of attenuation of the vertically polarized component in the horizontal plane, normalized to 0 dB, at 36 different azimuths in 10° intervals (i.e. 0°, 10°, ..., 350°), measured in the horizontal plane from True North in a clockwise direction, with respect to the maximum radiated power of this component, in dB</p> <p>In the case of a VHF/UHF broadcasting station, for a digital broadcasting assignment subject to the GE06 Regional Agreement and an assignment subject to § 5.1.3 of the GE06 Regional Agreement, required if the polarization is vertical or mixed</p> <p>In the case of a transmitting station, for an assignment subject to § 5.1.3 of the GE06 Regional Agreement, required if the polarization is vertical or mixed</p>	+		+					
9.6	9Q	<p>the symbol identifying the type of antenna</p> <p>Type A – a simple vertical antenna</p> <p>Type B – a directional or omnidirectional antenna of complex construction</p>		X						9Q
9.7		<b>For a type A antenna (simple vertical antenna)</b>								
9.7.1	9E[a]	<p>the transmitting antenna's physical length in metres</p> <p>Required for the GE75 Regional Agreement</p>		+						9E[a]
9.7.2	9F	<p>the electrical height of the antenna, in degrees</p> <p>Required for the RJ81 or RJ88 Regional Agreements</p>		+						9F



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9.8		<b>For a station subject to the GE75 Regional Agreement with a type B antenna (a directional antenna, or omnidirectional antenna of complex construction)</b>								
9.8.1	9GH	the antenna gain, in dB, in the horizontal plane, at 36 different azimuths in 10° intervals (i.e. 0°, 10°, ..., 350°), measured in the horizontal plane from True North in a clockwise direction		X						9GH
9.8.2	9GV	the antenna gain, in dB, in the vertical plane, at 36 different azimuths in 10° intervals (i.e. 0°, 10°, ..., 350°) measured in the horizontal plane from True North in a clockwise direction, and at ten different elevations in 10° intervals (i.e. 0°, 10°, ..., 90°) measured in the vertical plane  NOTE – If administrations have difficulty in providing this information, they can provide a reference to any other information that may be of assistance (e.g. ITU-R Recommendation, antenna pattern)  Required for an assignment to be used for night-time operation		+						9GV
9.9		<b>For a station subject to the RJ81 or RJ88 Regional Agreements with a type B antenna (a directional antenna, or omnidirectional antenna of complex construction)</b>								
9.9.1	9O	the symbol identifying the type of antenna radiation pattern (T, M, or E)		X						9O
9.9.2		<b>For antenna radiation pattern type M</b>								
9.9.2.1	9NA	the serial number of the augmentation as described by items 9IA, 9AA and 9CA		X						9NA
9.9.2.2	9AA	the central azimuth of the augmentation (centre of the span) in degrees		X						9AA
9.9.2.3	9CA	the total span of the augmentation, in degrees		X						9CA

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9.9.3		<b>For each tower of a type B antenna in the RJ81 or RJ88 Regional Agreements</b>								
9.9.3.1	9T1	the serial number of each of the towers whose characteristics are described in items 9T2 to 9T8		X						9T1
9.9.3.2	9T8	the symbol corresponding to the tower structure		X						9T8
9.9.3.3	9T7	the electrical height, in degrees, of the tower under consideration Required if the tower is not top-loaded nor sectionalized (see 9.9.4)		+						9T7
9.9.3.4	9T2	the ratio of the tower field to the field of the reference tower Required if the antenna consists of two or more towers		+						9T2
9.9.3.5	9T3	the positive or negative phase difference in the tower field with respect to the field of the reference tower, in degrees Required if the antenna consists of two or more towers		+						9T3
9.9.3.6	9T4	the electrical spacing of the tower from the reference point, in degrees Required if the antenna consists of two or more towers		+						9T4
9.9.3.7	9T5	the angular orientation of the tower from the reference point, in degrees (clockwise) from True North Required if the antenna consists of two or more towers		+						9T5

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9.9.4		<b>For each tower of a type B antenna that is top-loaded or sectionalized in accordance with the Regional Administrative MF Broadcasting Conference (Region 2) Rio de Janeiro, 1981 or 1988 Agreements</b>								
9.9.4.1	9T9A	the description of a top-loaded or sectionalized tower		X						9T9A
9.9.4.2	9T9B	the description of a top-loaded or sectionalized tower Required if tower structure symbol (9T8) is 1, 2, 5, 6, 7, 8 or 9		+						9T9B
9.9.4.3	9T9C	the description of a top-loaded or sectionalized tower Required if the tower structure symbol (9T8) is 2, 5, 7 or 8		+						9T9C
9.9.4.4	9T9D	the description of a top-loaded or sectionalized tower Required if tower structures symbol (9T8) is 2, 5 or 8		+						9T9D
10		<b>HOURS OF OPERATION</b>								
10.1	10B	the regular hours of operation (in hours and minutes from ... to ...) of the frequency assignment, in UTC	X	O	X	X	X	X	X	10B
10.2	10B[α]	the local operation period code (see the Preface)		X						10B[α]
10.3	10D	the estimated peak hours of traffic						X		10D
10.4	10E	the estimated daily volume of traffic						X		10E

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11		<b>COORDINATION AND AGREEMENT</b>								
11.1	11	the symbol of each administration with which coordination has been successfully effected Required if coordination is necessary and has been obtained pursuant to the relevant provisions of the Radio Regulations	+	O	+	+	O	+		11
11.2		a declaration by the notifying administration that all conditions associated with the remark are fully met for recording the submitted assignment in the Master International Frequency Register Required for a digital broadcasting assignment subject to § 5.1.2 of the GE06 Regional Agreement	+							
11.3		a signed commitment from the notifying administration that the submitted assignment for recording in the Master International Frequency Register shall not cause unacceptable interference and shall not claim protection Required for an assignment subject to § 5.1.8 of the GE06 Regional Agreement	+							
11.4		a signed commitment from the notifying administration that the submitted assignment for recording in the Master International Frequency Register shall not cause unacceptable interference and shall not claim protection Required for an assignment subject to § 5.2.6 of the GE06 Regional Agreement			+	+	+			
12		<b>OPERATING ADMINISTRATION OR AGENCY</b>								
12.1	12A	the symbol for the operating agency	O	O	O	O	O		O	12A

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12.2	12B	<p>the symbol for the address of the administration responsible for the station and to which communication should be sent on urgent matters regarding interference, quality of emissions and questions referring to the technical operation of the circuit (see Article 15, also the Preface)</p> <p>In the case of a VHF/UHF broadcasting station, transmitting station, or a receiving land station, required for application of Article 11</p>	+	X	+	+	X		X	12B
13		REMARKS								
13.1	13C	Remarks for assisting the Bureau in processing the notice	O	O	O	O	O	O	O	13C

TABLE 2

**Characteristics for high altitude platform stations (HAPS) frequency assignments in the terrestrial services**

Items in Appendix	<i>1 – GENERAL CHARACTERISTICS OF THE HAPS</i>	Transmitting station in the bands listed in No. 5.388A for the application of No. 11.2	Receiving station in the bands listed in No. 5.388A for the application of No. 11.9	Transmitting station in the bands listed in Nos. 5.537A and 5.552A for the application of No. 11.2	Receiving station in the bands listed in Nos. 5.543A and 5.552A for the application of No. 11.9
	<b>GENERAL INFORMATION</b>				
1.B	the symbol of the notifying administration (see the Preface)	X	X	X	X
1.[D]	the provision code of the Radio Regulations under which the notice has been submitted	X	X	X	X
1.[α]	the unique identifier given by the administration to the station	X	X	X	X
	<b>LOCATION OF THE STATION</b>				
1.4.a	the name by which the station is known	X	X	X	X
1.4.b	the code of the geographical area, above which the station is located (see the Preface)	X	X	X	X
1.4.c	the nominal geographical coordinates of the station Latitude and longitude are provided in degrees, minutes and seconds	X	X	X	X
1.4.[α]	the nominal altitude of the station above mean sea level, in metres	X	X	X	X
1.4.[β]	<b>Station location tolerances</b>				
1.4.[β].1.a	the planned latitudinal tolerance northerly limit, using d.m.s units	X	X	X	X
1.4.[β].1.b	the planned latitudinal tolerance southerly limit, using d.m.s units	X	X	X	X
1.4.[β].2.a	the planned longitudinal tolerance easterly limit, using d.m.s units	X	X	X	X
1.4.[β].2.b	the planned longitudinal tolerance westerly limit, using d.m.s units	X	X	X	X
1.4.[β].3	the planned altitudinal tolerance, in metres	X	X	X	X
1.[7]	<b>COMPLIANCE WITH TECHNICAL OR OPERATIONAL LIMITS</b>				
1.[7].b	a commitment that the HAPS does not exceed an out-of-band pfd of $-165 \text{ dB(W/(m}^2 \cdot 4 \text{ kHz))}$ at the Earth's surface in the bands 2 160-2 200 MHz in Region 2 and 2 170-2 200 MHz in Regions 1 and 3 (see Resolution <b>221 (Rev.WRC-07)</b> )	X			
1.[7].c	a commitment that the HAPS does not exceed the out-of-band pfd limits $-165 \text{ dB(W/(m}^2 \cdot \text{MHz))}$ for angles of arrival ( $\theta$ ) less than $5^\circ$ above the horizontal plane, $-165 + 1.75 (\theta - 5) \text{ dB(W/(m}^2 \cdot \text{MHz))}$ for angles of arrival between $5^\circ$ and $25^\circ$ and $-130 \text{ dB(W/(m}^2 \cdot \text{MHz))}$ for angles of arrival between $25^\circ$ and $90^\circ$ (see Resolution <b>221 (Rev.WRC-07)</b> )	X			

Items in Appendix	<i>1 – GENERAL CHARACTERISTICS OF THE HAPS</i>	Transmitting station in the bands listed in No. 5.388A for the application of No. 11.2	Receiving station in the bands listed in No. 5.388A for the application of No. 11.9	Transmitting station in the bands listed in Nos. 5.537A and 5.552A for the application of No. 11.2	Receiving station in the bands listed in Nos. 5.543A and 5.552A for the application of No. 11.9
1.[7].d	a commitment that the unwanted power density into the HAPS ground station antenna in the band 31.3-31.8 GHz shall not exceed –106 dB(W/MHz) under clear-sky conditions and –100 dB(W/MHz) under rainy conditions (see Resolution <b>145 (Rev.WRC-07)</b> ) Required in the band 31-31.3 GHz				+
1.[7].e	a commitment that the maximum power density into an ubiquitous HAPS ground station antenna in the Urban Area Coverage (UAC) shall not exceed 6.4 dB(W/MHz) for elevation angles of ground station antenna greater than 30° and less than or equal to 90° (see Resolution <b>122 (Rev.WRC-07)</b> ) Required in the bands 47.2-47.5 GHz and 47.9-48.2 GHz				+
1.[7].f	a commitment that the maximum power density into an ubiquitous HAPS ground station antenna in the Suburban Area Coverage (SAC) shall not exceed 22.57 dB(W/MHz) for elevation angles of ground station antenna greater than 15° and less than or equal to 30° (see Resolution <b>122 (Rev.WRC-07)</b> ) Required in the bands 47.2-47.5 GHz and 47.9-48.2 GHz				+
1.[7].g	a commitment that the maximum power density into an ubiquitous HAPS ground station antenna in the Rural Area Coverage (RAC) shall not exceed 28 dB(W/MHz) for elevation angles of ground station antenna greater than 5° and less than or equal to 15° (see Resolution <b>122 (Rev.WRC-07)</b> ) Required in the bands 47.2-47.5 GHz and 47.9-48.2 GHz				+
1.[7].h	a commitment that the separation distance between the nadir of the HAPS and a radio astronomy station operating in the band 48.94-49.04 GHz within the territory of another administration shall exceed 50 km (see Resolution <b>122 (Rev.WRC-07)</b> ) Required in the bands 47.2-47.5 GHz and 47.9-48.2 GHz			+	
1.11	<b>COORDINATION AND AGREEMENT</b>				
1.11.a	the symbol of each administration with which coordination has been successfully effected, including where the agreement is to exceed the limits prescribed in the Radio Regulations Required if coordination is necessary and has been obtained pursuant to the relevant provisions of the Radio Regulations	+	+	+	+
	<b>OPERATING ADMINISTRATION OR AGENCY</b>				
1.12.a	the symbol for the operating agency	O	O	O	O
1.12.b	the symbol for the address of the administration responsible for the station and to which communication should be sent on urgent matters regarding interference, quality of emissions and questions referring to the technical operation of the circuit (see Article 15)	X	X	X	X
	<b>REMARKS</b>				
1.13.c	Remarks for assisting the Bureau in processing the notice	O	O	O	O

Items in Appendix	<i><b>2 – CHARACTERISTICS TO BE PROVIDED FOR EACH INDIVIDUAL OR COMPOSITE HAPS ANTENNA BEAM</b></i>	Transmitting station in the bands listed in No. 5.388A for the application of No. 11.2	Receiving station in the bands listed in No. 5.388A for the application of No. 11.9	Transmitting station in the bands listed in Nos. 5.537A and 5.552A for the application of No. 11.2	Receiving station in the bands listed in Nos. 5.543A and 5.552A for the application of No. 11.9
	<b>IDENTIFICATION AND DIRECTION OF THE HAPS ANTENNA BEAM</b>				
2.1.a	the designation of the HAPS antenna beam	X	X	X	X
2.1.b	an indicator showing whether the antenna beam, under 2.1.a, is fixed or whether it is steerable and/or reconfigurable	X	X	X	X
2.1.c	an indicator showing whether the HAPS antenna tracks the service area	X		X	
2.1.d	an indicator showing whether the antenna beam is individual or composite beam	X	X	X	X
	<b>ANTENNA CHARACTERISTICS</b>				
2.9.g	the maximum co-polar isotropic gain	X	X	X	X
2.9.j	the measured radiation pattern of the antenna, the reference radiation pattern or the symbols in standard references to be used for coordination	X	X		
2.9.[α]	<p>the co-polar antenna gain contours plotted on a map of the Earth's surface, preferably in a radial projection from the HAPS onto a plane perpendicular to the axis from the centre of the Earth to the HAPS</p> <p>The HAPS antenna gain contours shall be drawn as isolines of the isotropic gain, relative to the maximum antenna gain, when any of these contours is located either totally or partially outside the territory of the notifying administration</p> <p>The antenna gain contours shall include the effects of the planned longitudinal and latitudinal tolerance, planned altitudinal tolerance and the pointing accuracy of the antenna, taking into consideration the movement of the HAPS antenna boresight around the effective boresight area.</p>	X	X	X	X



Items in Appendix	<b>3 - CHARACTERISTICS TO BE PROVIDED FOR EACH FREQUENCY ASSIGNMENT FOR EACH INDIVIDUAL OR COMPOSITE HAPS ANTENNA BEAM</b>	Transmitting station in the bands listed in No. 5.388A for the application of No. 11.2	Receiving station in the bands listed in No. 5.388A for the application of No. 11.9	Transmitting station in the bands listed in Nos. 5.537A and 5.552A for the application of No. 11.2	Receiving station in the bands listed in Nos. 5.543A and 5.552A for the application of No. 11.9
	<b>ASSIGNED FREQUENCY</b>				
3.1.a	the assigned frequency, as defined in No. 1.148	X	X	X	X
3.1.b	the reference frequency, as defined in Article 1 Required if the modulation envelope is asymmetric	+	+	+	+
	<b>DATE OF OPERATION</b>				
3.2.c	the date (actual or foreseen, as appropriate) of bringing the frequency assignment (new or modified) into use	X	X	X	X
	<b>LOCATION OF THE ASSOCIATED ANTENNA(S)</b>				
	<b>For an area in which associated transmitting/receiving ground station(s) operate</b>				
3.5.c.[α]	the geographical coordinates of a given zone A minimum of six geographical coordinates are required, in degrees, minutes and seconds NOTE – For the fixed service in the bands 47.2-47.5 GHz and 47.9-48.2 GHz the geographical coordinates are provided for each of the UAC, SAC and if applicable RAC (see the most recent version of Recommendation ITU-R F.1500) Required if neither a circular area (3.5.e and 3.5.f) nor a geographical area (3.5.d) are provided	+	+	+	+
3.5.d	the code of the geographical area (see the Preface) NOTE – For the fixed service in the bands 47.2-47.5 GHz and 47.9-48.2 GHz separate geographical areas are provided for each of the UAC, SAC and if applicable RAC (see the most recent version of Recommendation ITU-R F.1500) Required if neither a circular area (3.5.e and 3.5.f) nor the geographical coordinates of a given zone (3.5.c.[α]) are provided	+	+	+	+
3.5.e	the geographical coordinates of the centre of the circular area in which the associated ground station(s) are operating The latitude and longitude are provided in degrees, minutes and seconds NOTE – For the fixed service in the bands 47.2-47.5 GHz and 47.9-48.2 GHz different centres of the circular area may be provided for the UAC, SAC and if applicable RAC (see the most recent version of Recommendation ITU-R F.1500) Required if neither a geographical area (3.5.d) or geographical coordinates of a given zone (3.5.c.[α]) are provided	+	+	+	+
3.5.f	the radius, in km, of the circular area NOTE – For the fixed service in the bands 47.2-47.5 GHz and 47.9-48.2 GHz a separate radius is provided for each of the UAC, SAC and if applicable RAC (see the most recent version of Recommendation ITU-R F.1500) Required if neither a geographical area (3.5.d) nor geographical coordinates of a given zone (3.5.c.[α]) are provided	+	+	+	+
	<b>CLASS OF STATION AND NATURE OF SERVICE</b>				
3.6.a	the class of station, using the symbols from the Preface	X	X	X	X
3.6.b	the nature of service, using the symbols from the Preface	X	X	X	X

Items in Appendix	<b>3 - CHARACTERISTICS TO BE PROVIDED FOR EACH FREQUENCY ASSIGNMENT FOR EACH INDIVIDUAL OR COMPOSITE HAPS ANTENNA BEAM</b>	Transmitting station in the bands listed in No. 5.388A for the application of No. 11.2	Receiving station in the bands listed in No. 5.388A for the application of No. 11.9	Transmitting station in the bands listed in Nos. 5.537A and 5.552A for the application of No. 11.2	Receiving station in the bands listed in Nos. 5.543A and 5.552A for the application of No. 11.9
	<b>CLASS OF EMISSION AND NECESSARY BANDWIDTH</b> (in accordance with Article 2 and Appendix 1)				
3.7.a	the class of emission	X	X	X	X
3.7.b	the necessary bandwidth	X	X	X	X
	<b>POWER CHARACTERISTICS OF THE TRANSMISSION</b>				
3.8.[α]	the symbol (X, Y or Z, as appropriate) describing the type of power (see Article 1) corresponding to the class of emission	X	X	X	X
3.8.a.[α]	the power delivered to the antenna, in dBW, including the level of power control in 3.8.B.A  NOTE – For a receiving HAPS, the power delivered to the antenna refers to the associated transmitting ground station(s)	X		X	X
3.8AB[α]	the maximum power density <sup>1</sup> averaged over the worst 1 MHz band delivered to the antenna	X		X	
3.8.B.A	the range of power control, in dB  NOTE – For a receiving HAPS, the power control refers to its use by the associated transmitting ground station(s)  In the case of a receiving HAPS, required in the bands 47.2-47.5 GHz and 47.9-48.2 GHz	X			+
	<b>POLARIZATION AND RECEIVING SYSTEM NOISE TEMPERATURE</b>				
3.9.a	the code indicating the type of polarization (see the Preface)	X	X	X	X
3.9.j	the reference radiation pattern of the associated ground station(s)  Required in the bands 47.2-47.5 GHz and 47.9-48.2 GHz			+	+
3.9.k	the lowest total receiving system noise temperature, in kelvins, referred to the output of the receiving antenna		X		X
	<b>HOURS OF OPERATION</b>				
3.10.b	the regular hours of operation (in hours and minutes from ... to ...) of the frequency assignment, in UTC	X	X	X	X

## ANNEX 2

## Characteristics of satellite networks, earth stations or radio astronomy stations<sup>2</sup> (Rev.WRC-07)

### Information relating to the data listed in the following Tables

In many cases the data requirements involve the use of standard symbols in submissions to the Radiocommunication Bureau. These standard symbols may be found in the “Preface to the BR International Frequency Information Circular”, (BR IFIC) (Space Services), the ITU-R webpage and the Space Radiocommunication Stations on DVD-ROM. (In the Table, this is referred to simply as “the Preface”.) Information relating to the provision of data may also be found in ITU-R Recommendations, for example, information on the mask data can be found in the most recent version of Recommendation ITU-R S.1503, and the most recent version of Recommendation ITU-R SM.1413 provides general information related to submission of data.

### Key to the symbols used in Tables A, B, C and D

X	Mandatory information
+	Mandatory under the conditions specified in column 2
O	Optional information
C	Mandatory if used as a basis to effect coordination with another administration
	The data item is not applicable to the corresponding notice

### Reading the Appendix 4 Tables

The rules used to link the sign with the text are based on the Table column headings covering specific procedures and specific services.

1 If any data item has a condition attached to it, then it has a “+”.

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A.6.c	if agreement has been reached, the related provision code (see the Preface)	+	A.6.c
C.8.f.1	the space station’s nominal equivalent isotropically radiated power(s) (e.i.r.p.) on the beam axis  Required only for a space-to-space link	+	C.8.f.1

2 Data items grouped under a common subheading that limits the range of procedures, services or frequency bands have a “X” as the conditional nature is shown in the subheading title.

A.4.b.5	<b>For space stations operating in a frequency band subject to the provisions of Nos. 9.11A, 9.12 or 9.12A, the data elements to characterize properly the orbital statistics of the non-geostationary-satellite system:</b>		A.4.b.5
A.4.b.5.a	the right ascension of the ascending node ( $\Omega_j$ ) for the $j$ -th orbital plane, measured counter-clockwise in the equatorial plane from the direction of the vernal equinox to the point where the satellite makes its South-to-North crossing of the equatorial plane ( $0^\circ \leq \Omega_j < 360^\circ$ )	X	A.4.b.5.a


3 “In the case of”, followed by a reference to the column heading, is used as shown below when the associated conditions are different for individual columns, or if the indication is not the same across all applicable columns.

A.3.a	the symbol for the operating administration or agency (see the Preface) that is in operational control of the space station, earth station or radio astronomy station  In the case of Appendix <b>30B</b> , required only for notification under Article 8	X	+	A.3.a
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### Footnotes to Tables A, B, C and D

- 1 Not required for coordination under No. **9.7A**.
- 2 The most recent version of Recommendation ITU-R SF.675 should be used to the extent applicable in calculating the maximum power density per Hz. For carriers below 15 GHz, the power density is averaged over the worst 4 kHz band. For carriers at or above 15 GHz, the power density is averaged over the worst 1 MHz band. In the case of assignments with a bandwidth less than the stated averaging bandwidth, the maximum density is calculated as if the assignment occupied the averaging bandwidth.

**Table of characteristics to be submitted for space and radio astronomy services** (Rev.WRC-07)

Items in Appendix	<i>A - GENERAL CHARACTERISTICS OF THE SATELLITE NETWORK, EARTH STATION OR RADIO ASTRONOMY STATION</i>	Advance publication of a geostationary-satellite network	Advance publication of a non-geostationary-satellite network subject to coordination under Section II of Article 9	Advance publication of a non-geostationary-satellite network not subject to coordination under Section II of Article 9	Notification or coordination of a geostationary-satellite network (including space operation functions under Article 2A of Appendices 30 or 30A)	Notification or coordination of a non-geostationary-satellite network	Notification or coordination of an earth station (including notification under Appendices 30A or 30B)	Notice for a satellite network in the broadcasting-satellite service under Appendix 30 (Articles 4 and 5)	Notice for a satellite network (feeder-link) under Appendix 30A (Articles 4 and 5)	Notice for a satellite network in the fixed-satellite service under Appendix 30B (Articles 6 and 8)	Items in Appendix	Radio astronomy
<b>A.1</b>	<b>IDENTITY OF THE SATELLITE NETWORK, EARTH STATION OR RADIOASTRONOMY STATION</b>										<b>A.1</b>	
A.1.a	the identity of the satellite network	X	X	X	X	X		X	X	X	A.1.a	
A.1.b	the beam identification  In the case of Appendix <b>30</b> or <b>30A</b> , required for modification, suppression or notification of Plan assignments  In the case of Appendix <b>30B</b> , required for a network derived from the Allotment Plan							+	+	+	A.1.b	
A.1.e	<b>Identity of the earth station or radio astronomy station:</b>										A.1.e	
A.1.e.1	the type of earth station (specific or typical)						X				A.1.e.1	
A.1.e.2	the name of the station						X				A.1.e.2	X

Items in Appendix	<i>A - GENERAL CHARACTERISTICS OF THE SATELLITE NETWORK, EARTH STATION OR RADIO ASTRONOMY STATION</i>	Advance publication of a geostationary-satellite network	Advance publication of a non-geostationary-satellite network subject to coordination under Section II of Article 9	Advance publication of a non-geostationary-satellite network not subject to coordination under Section II of Article 9	Notification or coordination of a geostationary-satellite network (including space operation functions under Article 2A of Appendices 30 or 30A)	Notification or coordination of a non-geostationary-satellite network	Notification or coordination of an earth station (including notification under Appendices 30A or 30B)	Notice for a satellite network in the broadcasting-satellite service under Appendix 30 (Articles 4 and 5)	Notice for a satellite network (feeder-link) under Appendix 30A (Articles 4 and 5)	Notice for a satellite network in the fixed-satellite service under Appendix 30B (Articles 6 and 8)	Items in Appendix	Radio astronomy
A.1.e.3	<b>For a specific earth station or radio astronomy station:</b>										A.1.e.3	
A.1.e.3.a	the country or geographical area in which the station is located, using the symbols from the Preface						X				A.1.e.3.a	X
A.1.e.3.b	the geographical coordinates of each transmitting or receiving antenna site constituting the station (latitude and longitude in degrees and minutes)  For a specific earth station, seconds are to be provided if the coordination area of the earth station overlaps the territory of another administration						X				A.1.e.3.b	X
A.1.f	<b>Administration and intergovernmental organization symbol:</b>										A.1.f	
A.1.f.1	the symbol of the notifying administration (see the Preface)	X	X	X	X	X	X	X	X	X	A.1.f.1	X
A.1.f.2	if the notice is submitted on behalf of a group of administrations, the symbols of each of the administrations in the group, submitting the information on the satellite network (see the Preface)	+	+	+	+	+		+	+	+	A.1.f.2	
A.1.f.3	if the notice is submitted on behalf of an intergovernmental satellite organization, the symbol of	+	+	+	+	+		+	+	+	A.1.f.3	



Items in Appendix		Advance publication of a geostationary-satellite network	Advance publication of a non-geostationary-satellite network subject to coordination under Section II of Article 9	Advance publication of a non-geostationary-satellite network not subject to coordination under Section II of Article 9	Notification or coordination of a geostationary-satellite network (including space operation functions under Article 2A of Appendices 30 or 30A)	Notification or coordination of a non-geostationary-satellite network	Notification or coordination of an earth station (including notification under Appendices 30A or 30B)	Notice for a satellite network in the broadcasting-satellite service under Appendix 30 (Articles 4 and 5)	Notice for a satellite network (feeder-link) under Appendix 30A (Articles 4 and 5)	Notice for a satellite network in the fixed-satellite service under Appendix 30B (Articles 6 and 8)	Items in Appendix	Radio astronomy
	* Pending further studies by ITU-R on the applicability of the term “regular operation” to non-geostationary satellite networks, the condition of regular operation shall be limited to geostationary satellite networks											
A.2.b	for a space station, the period of validity of the frequency assignments (see Resolution 4 (Rev.WRC-03))	X	X	X	X	X					A.2.b	
A.2.c	the date (actual or foreseen, as appropriate) on which reception of the frequency band begins or on which any of the basic characteristics are modified										A.2.c	X
A.3	<b>OPERATING ADMINISTRATION OR AGENCY</b>										A.3	
A.3.a	the symbol for the operating administration or agency (see the Preface) that is in operational control of the space station, earth station or radio astronomy station  In the case of Appendix 30B, required only for notification under Article 8			X	X	X	X	X	X	+	A.3.a	X



Items in Appendix	<i>A - GENERAL CHARACTERISTICS OF THE SATELLITE NETWORK, EARTH STATION OR RADIO ASTRONOMY STATION</i>	Advance publication of a geostationary-satellite network	Advance publication of a non-geostationary-satellite network subject to coordination under Section II of Article 9	Advance publication of a non-geostationary-satellite network not subject to coordination under Section II of Article 9	Notification or coordination of a geostationary-satellite network (including space operation functions under Article 2A of Appendices 30 or 30A)	Notification or coordination of a non-geostationary-satellite network	Notification or coordination of an earth station (including notification under Appendices 30A or 30B)	Notice for a satellite network in the broadcasting-satellite service under Appendix 30 (Articles 4 and 5)	Notice for a satellite network (feeder-link) under Appendix 30A (Articles 4 and 5)	Notice for a satellite network in the fixed-satellite service under Appendix 30B (Articles 6 and 8)	Items in Appendix	Radio astronomy
A.3.b	the symbol for the address of the administration (see the Preface) to which communication should be sent on urgent matters regarding interference, quality of emissions and questions referring to the technical operation of the network or station (see Article 15)  In the case of Appendix 30B, required only for notification under Article 8			X	X	X	X	X	X	+	A.3.b	X
A.4	<b>ORBITAL INFORMATION</b>										A.4	
A.4.a	<b>For a space station onboard a geostationary-satellite:</b>										A.4.a	
A.4.a.1	the nominal geographical longitude on the geostationary-satellite orbit (GSO)	X			X			X	X	X	A.4.a.1	
A.4.a.2	<b>Orbital tolerances</b>											
A.4.a.2.a	the planned longitudinal tolerance easterly limit				X			X	X	X	A.4.a.2.a	
A.4.a.2.b	the planned longitudinal tolerance westerly limit				X			X	X	X	A.4.a.2.b	
A.4.a.2.c	the planned inclination excursion				X					X	A.4.a.2.c	

Items in Appendix	<i>A - GENERAL CHARACTERISTICS OF THE SATELLITE NETWORK, EARTH STATION OR RADIO ASTRONOMY STATION</i>	Advance publication of a geostationary-satellite network	Advance publication of a non-geostationary-satellite network subject to coordination under Section II of Article 9	Advance publication of a non-geostationary-satellite network not subject to coordination under Section II of Article 9	Notification or coordination of a geostationary-satellite network (including space operation functions under Article 2A of Appendices 30 or 30A)	Notification or coordination of a non-geostationary-satellite network	Notification or coordination of an earth station (including notification under Appendices 30A or 30B)	Notice for a satellite network in the broadcasting-satellite service under Appendix 30 (Articles 4 and 5)	Notice for a satellite network (feeder-link) under Appendix 30A (Articles 4 and 5)	Notice for a satellite network in the fixed-satellite service under Appendix 30B (Articles 6 and 8)	Items in Appendix	Radio astronomy
A.4.a.4	Not used										A.4.a.4	
A.4.a.4.a	Not used										A.4.a.4.a	
A.4.a.4.b	Not used										A.4.a.4.b	
A.4.b	<b>For space station(s) onboard non-geostationary satellite(s):</b>										A.4.b	
A.4.b.1	the number of orbital planes			X		X					A.4.b.1	
A.4.b.2	the reference body code		X	X		X					A.4.b.2	
A.4.b.3	<b>For space stations of a non-geostationary fixed-satellite service system operating in the band 3 400-4 200 MHz:</b>										A.4.b.3	
A.4.b.3.a	the maximum number of space stations ( $N_N$ ) in a non-geostationary-satellite system simultaneously transmitting on a co-frequency basis in the fixed-satellite service in the Northern Hemisphere			X		X					A.4.b.3.a	
A.4.b.3.b	the maximum number of space stations ( $N_S$ ) in a non-geostationary-satellite system simultaneously transmitting on a co-frequency basis in the fixed-			X		X					A.4.b.3.b	

Items in Appendix	A - GENERAL CHARACTERISTICS OF THE SATELLITE NETWORK, EARTH STATION OR RADIO ASTRONOMY STATION	Advance publication of a geostationary-satellite network	Advance publication of a non-geostationary-satellite network subject to coordination under Section II of Article 9	Advance publication of a non-geostationary-satellite network not subject to coordination under Section II of Article 9	Notification or coordination of a geostationary-satellite network (including space operation functions under Article 2A of Appendices 30 or 30A)	Notification or coordination of a non-geostationary-satellite network	Notification or coordination of an earth station (including notification under Appendices 30A or 30B)	Notice for a satellite network in the broadcasting-satellite service under Appendix 30 (Articles 4 and 5)	Notice for a satellite network (feeder-link) under Appendix 30A (Articles 4 and 5)	Notice for a satellite network in the fixed-satellite service under Appendix 30B (Articles 6 and 8)	Items in Appendix	Radio astronomy
	satellite service in the Southern Hemisphere											
A.4.b.4	<b>For each orbital plane, where the Earth is the reference body:</b>										A.4.b.4	
A.4.b.4.a	the angle of inclination ( $i_j$ ) of the orbital plane with respect to the Earth's equatorial plane ( $0^\circ \leq i_j < 180^\circ$ )			X		X					A.4.b.4.a	
A.4.b.4.b	the number of satellites in the orbital plane			X		X					A.4.b.4.b	
A.4.b.4.c	the period			X		X					A.4.b.4.c	
A.4.b.4.d	the altitude, in kilometres, of the apogee of the space station			X		X					A.4.b.4.d	
A.4.b.4.e	the altitude, in kilometres, of the perigee of the space station			X		X					A.4.b.4.e	

Items in Appendix	<i>A - GENERAL CHARACTERISTICS OF THE SATELLITE NETWORK, EARTH STATION OR RADIO ASTRONOMY STATION</i>										Items in Appendix	Radio astronomy
		Advance publication of a geostationary-satellite network	Advance publication of a non-geostationary-satellite network subject to coordination under Section II of Article 9	Advance publication of a non-geostationary-satellite network not subject to coordination under Section II of Article 9	Notification or coordination of a geostationary-satellite network (including space operation functions under Article 2A of Appendices 30 or 30A)	Notification or coordination of a non-geostationary-satellite network	Notification or coordination of an earth station (including notification under Appendices 30A or 30B)	Notice for a satellite network in the broadcasting-satellite service under Appendix 30 (Articles 4 and 5)	Notice for a satellite network (feeder-link) under Appendix 30A (Articles 4 and 5)	Notice for a satellite network in the fixed-satellite service under Appendix 30B (Articles 6 and 8)		
A.4.b.5	<b>For space stations operating in a frequency band subject to the provisions of Nos. 9.11A, 9.12 or 9.12A, the data elements to characterize properly the orbital statistics of the non-geostationary-satellite system:</b>										A.4.b.5	
A.4.b.5.a	the right ascension of the ascending node ( $\Omega_j$ ) for the $j$ -th orbital plane, measured counter-clockwise in the equatorial plane from the direction of the vernal equinox to the point where the satellite makes its South-to-North crossing of the equatorial plane ( $0^\circ \leq \Omega_j < 360^\circ$ )					X					A.4.b.5.a	
A.4.b.5.b	the initial phase angle ( $\omega_i$ ) of the $i$ -th satellite in its orbital plane at reference time $t = 0$ , measured from the point of the ascending node ( $0^\circ \leq \omega_i < 360^\circ$ )					X					A.4.b.5.b	
A.4.b.5.c	the argument of perigee ( $\omega_p$ ), measured in the orbital plane, in the direction of motion, from the ascending node to the perigee ( $0^\circ \leq \omega_p < 360^\circ$ )					X					A.4.b.5.c	

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A.4.b.6	<b>For space stations operating in a frequency band subject to Nos. 22.5C, 22.5D or 22.5F, the data elements to characterize properly the orbital operation of the non-geostationary-satellite system:</b>										A.4.b.6	
A.4.b.6.a	<b>For each range of latitudes:</b>										A.4.b.6.a	
A.4.b.6.a.1	the maximum number of non-geostationary satellites transmitting with overlapping frequencies to a given location					X					A.4.b.6.a.1	
A.4.b.6.a.2	the associated start of the latitude range					X					A.4.b.6.a.2	
A.4.b.6.a.3	the associated end of the latitude range					X					A.4.b.6.a.3	
A.4.b.6.b	the minimum altitude of the space station above the surface of the Earth at which any satellite transmits					X					A.4.b.6.b	
A.4.b.6.c	an indicator showing whether the space station uses station-keeping to maintain a repeating ground track					X					A.4.b.6.c	
A.4.b.6.d	if the space station uses station-keeping to maintain a repeating ground track, the time in seconds that it takes for the constellation to return to its starting position, i.e. such that all satellites are in the same location with respect to the Earth and each other					+					A.4.b.6.d	

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A.4.b.6.e	an indicator showing whether the space station should be modelled with a specific precession rate of the ascending node of the orbit instead of the $J_2$ term					X					A.4.b.6.e	
A.4.b.6.f	if the space station is to be modelled with a specific precession rate of the ascending node of the orbit instead of the $J_2$ term, the precession rate in degrees/day, measured counter-clockwise in the equatorial plane					+					A.4.b.6.f	
A.4.b.6.g	the longitude of the ascending node ( $\theta_j$ ) for the $j$ -th orbital plane, measured counter-clockwise in the equatorial plane from the Greenwich meridian to the point where the satellite orbit makes its South-to-North crossing of the equatorial plane ( $0^\circ \leq \theta_j < 360^\circ$ )  <i>Note</i> – For the evaluation of epfd a reference to a point on the Earth is used and hence the “longitude of the ascending node” is required. All satellites in the constellation must use the same reference time					X					A.4.b.6.g	
A.4.b.6.h	the date (day:month:year) at which the satellite is at the location defined by the longitude of the ascending node ( $\theta_j$ ), (see Note under A.4.b.6.g)					X					A.4.b.6.h	

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A.4.b.6.i	the time (hours:minutes) at which the satellite is at the location defined by the longitude of the ascending node ( $\theta_j$ ), (see Note under A.4.b.6.g)					X					A.4.b.6.i	
A.4.b.6.j	the longitudinal tolerance of the longitude of the ascending node					X					A.4.b.6.j	
A.4.b.7	<b>For space stations operating in a frequency band subject to Nos. 22.5C, 22.5D or 22.5F, the data elements to characterize properly the performance of the non-geostationary-satellite system:</b>										A.4.b.7	
A.4.b.7.a	the maximum number of non-geostationary satellites receiving simultaneously with overlapping frequencies from the associated earth stations within a given cell					X					A.4.b.7.a	
A.4.b.7.b	the average number of associated earth stations with overlapping frequencies per square kilometre within a cell					X					A.4.b.7.b	
A.4.b.7.c	the average distance, in kilometres, between co-frequency cells					X					A.4.b.7.c	

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A.4.b.7.d	<b>For the exclusion zone about the geostationary-satellite orbit:</b>										A.4.b.7.d	
A.4.b.7.d.1	the type of zone (based on topocentric angle, satellite-based angle or other method for establishing the exclusion zone)					X					A.4.b.7.d.1	
A.4.b.7.d.2	if the zone is based on a topocentric angle or a satellite-based angle, the width of the zone, in degrees					+					A.4.b.7.d.2	
A.4.b.7.d.3	if an alternative method is used for establishing the exclusion zone, a detailed description of the avoidance mechanism					+					A.4.b.7.d.3	
A.4.c	<b>For an earth station:</b>										A.4.c	
A.4.c.1	the identity of the associated space station(s) with which communication is to be established						X				A.4.c.1	
A.4.c.2	if communication is to be established with a geostationary space station, its orbital position						+				A.4.c.2	



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<b>A.5</b>	<b>COORDINATIONS</b>										<b>A.5</b>	
A.5.a.1	the symbol of any administration (see the Preface) with which coordination has been successfully effected Required only in the case of notification				+	+	+ <sup>1</sup>				A.5.a.1	
A.5.a.2	the symbol of any intergovernmental organization (see the Preface) with which coordination has been successfully effected Required only in the case of notification				+	+	+ <sup>1</sup>				A.5.a.2	
A.5.b.1	the symbol of any administration (see the Preface) with which coordination has been sought but not completed				O	O	O				A.5.b.1	
A.5.b.2	the symbol of any intergovernmental organization (see the Preface) with which coordination has been sought but not completed				O	O					A.5.b.2	
A.5.c	the related provision code (see the Preface) under which coordination has been sought or completed if either A.5.a.1 (and A.5.a.2) or A.5.b.1 (and A.5.b.2) has been supplied				+	+	+ <sup>1</sup>				A.5.c	

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<b>A.6</b>	<b>AGREEMENTS</b>										<b>A.6</b>	
A.6.a	if appropriate, the symbol of any administration or administration representing a group of administrations (see the Preface) with which agreement has been reached, including where the agreement is to exceed the limits prescribed in these Regulations				+	+	+ <sup>1</sup>	+	+	+	A.6.a	
A.6.b	if appropriate, the symbol of any intergovernmental organization (see the Preface) with which agreement has been reached, including where the agreement is to exceed the limits prescribed in these Regulations				+	+	+ <sup>1</sup>	+	+	+	A.6.b	
A.6.c	if agreement has been reached, the related provision code (see the Preface)				+	+	+ <sup>1</sup>	+	+	+	A.6.c	
<b>A.7</b>	<b>SPECIFIC EARTH STATION OR RADIO ASTRONOMY STATION SITE CHARACTERISTICS</b>										<b>A.7</b>	
A.7.a.1	the horizon elevation angle, in degrees, for each azimuth around the earth station						+ <sup>1</sup>				A.7.a.1	
A.7.a.2	the distance, in kilometres, from the earth station to the horizon for each azimuth around the earth station						O				A.7.a.2	

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A.7.b.1	<p>the planned minimum angle of elevation of the antenna's main beam axis, in degrees, from the horizontal plane</p> <p>For determining the minimum elevation angle of an earth station, due regard should be given to possible inclined-orbit operation of the associated geostationary space station</p> <p>In the case of an earth station, required for operation to geostationary satellites</p>						+ <sup>1</sup>				A.7.b.1	X
A.7.b.2	<p>the planned maximum angle of elevation of the antenna's main beam axis, in degrees, from the horizontal plane</p>										A.7.b.2	X
A.7.c.1	<p>the start azimuth for the planned range of operating azimuthal angles for the antenna's main beam axis, in degrees, clockwise from True North</p> <p>For determining the start azimuth of an earth station, due regard should be given to possible inclined-orbit operation of the associated geostationary space station</p> <p>In the case of an earth station, required for operation to geostationary satellites</p>						+ <sup>1</sup>				A.7.c.1	X

[illegible]

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<b>A.10</b>	<b>EARTH STATION COORDINATION AREA DIAGRAMS</b>										<b>A.10</b>	
A.10.a	the diagrams shall be drawn to an appropriate scale, indicating, for both transmission and reception, the location of the earth station and its associated coordination areas, or the coordination area related to the service area in which it is intended to operate the mobile earth station  Required only for notification						+				A.10.a	
<b>A.11</b>	<b>REGULAR HOURS OF OPERATION</b>										<b>A.11</b>	
A.11.a	the start time UTC							X	X		A.11.a	
A.11.b	the stop time UTC							X	X		A.11.b	
<b>A.12</b>	<b>RANGE OF AUTOMATIC GAIN CONTROL, in dB</b>								X		<b>A.12</b>	
<b>A.13</b>	<b>REFERENCES TO THE PUBLISHED SPECIAL SECTIONS OF THE BUREAU'S INTERNATIONAL FREQUENCY INFORMATION CIRCULAR (see the Preface)</b>										<b>A.13</b>	
A.13.a	the reference and number of the advance publication information in accordance with No. 9.1				X	X	X				A.13.a	



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A.14.a.1	the mask identification code					X					A.14.a.1	
A.14.a.2	the lowest frequency for which the mask is valid					X					A.14.a.2	
A.14.a.3	the highest frequency for which the mask is valid					X					A.14.a.3	
A.14.a.4	the mask pattern defined in terms of the power in the reference bandwidth for a series of off-axis angles with respect to a specified reference point					X					A.14.a.4	
A.14.b	<b>For each associated earth station e.i.r.p. mask:</b>										A.14.b	
A.14.b.1	the mask identification code					X					A.14.b.1	
A.14.b.2	the lowest frequency for which the mask is valid					X					A.14.b.2	
A.14.b.3	the highest frequency for which the mask is valid					X					A.14.b.3	
A.14.b.4	the minimum elevation angle at which any associated earth station can transmit to a non-geostationary satellite					X					A.14.b.4	
A.14.b.5	the minimum separation angle between the geostationary-satellite orbit arc and the associated earth station main beam-axis at which the associated earth station can transmit towards a non-geostationary satellite					X					A.14.b.5	
A.14.b.6	the mask pattern defined in terms of the power in the reference bandwidth for a series of off-axis angles with respect to a specified reference point					X					A.14.b.6	

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A.14.c	<p><b>For each pfd mask used by the non-geostationary space station:</b></p> <p><i>Note</i> – The space station pfd mask is defined by the maximum power flux-density generated by any space station in the interfering non-geostationary-satellite system as seen from any point on the surface of the Earth</p>										A.14.c	
A.14.c.1	the mask identification code					X					A.14.c.1	
A.14.c.2	the lowest frequency for which the mask is valid					X					A.14.c.2	
A.14.c.3	the highest frequency for which the mask is valid					X					A.14.c.3	
A.14.c.4	the type of mask					X					A.14.c.4	
A.14.c.5	the mask pattern of the power flux-density defined in three dimensions					X					A.14.c.5	



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A.15	COMMITMENT REGARDING COMPLIANCE WITH ADDITIONAL OPERATIONAL EQUIVALENT POWER FLUX DENSITY, $\text{epfd}_\downarrow$ , LIMITS										A.15	
A.15.a	<p>a commitment that the filed for system will meet the additional operational <math>\text{epfd}_\downarrow</math> limits that are specified in Table 22-4A1 under No. 22.51</p> <p>Required only for non-geostationary-satellite systems operating in the fixed-satellite service in the bands 10.7-11.7 GHz (in all Regions), 11.7-12.2 GHz (Region 2), 12.2-12.5 GHz (Region 3), and 12.5-12.75 GHz (Regions 1 and 3)</p>					+					A.15.a	

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A.16	<b>COMMITMENT REGARDING COMPLIANCE WITH OFF-AXIS POWER LIMITATIONS OR POWER FLUX-DENSITY, pfd, LIMITS</b>										A.16	
A.16.a	<p>a commitment that the associated earth stations operating with a geostationary-satellite network in the fixed-satellite service meet the off-axis power limitations given in Nos. <b>22.26</b> to <b>22.28</b> or <b>22.32</b> (as appropriate) under the conditions specified in Nos. <b>22.30</b>, <b>22.31</b> and <b>22.34</b> to <b>22.39</b></p> <p>Required only where the earth stations are subject to those power limitations</p>				+						A.16.a	
A.16.b	<p>a commitment by administrations that the filed system will meet the single entry power flux-density limits that are specified in No. <b>5.502</b></p> <p>Required only for specific earth station antennas less than 4.5 m in diameter operating with geostationary space stations in the fixed-satellite service in the band 13.75-14 GHz</p>						+				A.16.b	

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A.17	COMPLIANCE WITH POWER FLUX-DENSITY, pfd, LIMITS										A.17	
A.17.a	a commitment of compliance with per-satellite power-flux density level produced at the Earth's surface of $-129 \text{ dB(W/(m}^2 \cdot \text{MHz))}$ in any 1 MHz band under free space propagation conditions Required only for satellite systems operating in the radionavigation-satellite service in the band 1 164-1 215 MHz				+	+					A.17.a	
A.17.b.1	the calculated aggregate power flux-density produced at the Earth's surface by any geostationary radionavigation-satellite system in the band 4 990-5 000 MHz in a 10 MHz bandwidth, as defined in <i>resolves</i> 1 of Resolution <b>741 (WRC-03)</b> Required only for geostationary satellite systems operating in the radionavigation-satellite service in the band 5 010-5 030 MHz				+						A.17.b.1	

Items in Appendix	A - GENERAL CHARACTERISTICS OF THE SATELLITE NETWORK, EARTH STATION OR RADIO ASTRONOMY STATION										Items in Appendix	Radio astronomy
		Advance publication of a geostationary-satellite network	Advance publication of a non-geostationary-satellite network subject to coordination under Section II of Article 9	Advance publication of a non-geostationary-satellite network not subject to coordination under Section II of Article 9	Notification or coordination of a geostationary-satellite network (including space operation functions under Article 2A of Appendices 30 or 30A)	Notification or coordination of a non-geostationary-satellite network	Notification or coordination of an earth station (including notification under Appendices 30A or 30B)	Notice for a satellite network in the broadcasting-satellite service under Appendix 30 (Articles 4 and 5)	Notice for a satellite network (feeder-link) under Appendix 30A (Articles 4 and 5)	Notice for a satellite network in the fixed-satellite service under Appendix 30B (Articles 6 and 8)		
A.17.b.2	<p>the calculated aggregate power flux-density produced at the Earth's surface by all space stations within any radionavigation-satellite service system in the band 5 030-5 150 MHz in a 150 kHz bandwidth, as defined in No. <b>5.443B</b></p> <p>Required only for satellite systems operating in the radionavigation-satellite service in the band 5 010-5 030 MHz</p>				+	+					A.17.b.2	
A.17.b.3	<p>the equivalent power flux-density produced at the Earth's surface by all space stations within any non-geostationary radionavigation-satellite service system in the band 4 990-5 000 MHz in a 10 MHz bandwidth, as defined in <i>resolves</i> 2 of Resolution <b>741 (WRC-03)</b></p> <p>Required only for non-geostationary satellite systems operating in the radionavigation-satellite service in the band 5 010-5 030 MHz</p>					+					A.17.b.3	

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A.17.c	the aggregate power flux-density produced at the Earth's surface in the band 15.35-15.4 GHz, as defined in No. <b>5.511A</b>  Required only for non-geostationary-satellite systems operating in the fixed-satellite service (feeder links) in the band 15.43-15.63 GHz (space-to-Earth)					+					A.17.c	
A.17.d	the mean power flux-density produced at the Earth's surface by any spaceborne sensor, as defined in No. <b>5.549A</b>  Required only for satellite systems operating in the Earth exploration-satellite service (active) or space research service (active) in the band 35.5-36 GHz				+	+					A.17.d	
A.17.e.1	the calculated equivalent power flux-density produced at the site of a radio astronomy station in the band 42.5-43.5 GHz, as defined in No. <b>5.551H</b>  Required only for non-geostationary-satellite systems operating in the fixed-satellite service and broadcasting-satellite service in the band 42-42.5 GHz					+					A.17.e.1	

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A.17.e.2	the calculated power flux-density produced at the site of a radio astronomy station in the band 42.5-43.5 GHz, as defined in No. <b>5.551I</b>  Required only for geostationary-satellite systems operating in the fixed-satellite service and broadcasting-satellite service in the band 42-42.5 GHz				+						A.17.e.2	
<b>A.18</b>	<b>COMPLIANCE WITH NOTIFICATION OF AIRCRAFT EARTH STATION(S)</b>											<b>A.18</b>
A.18.a	a commitment that the characteristics of the aircraft earth station (AES) in the aeronautical mobile-satellite service are within the characteristics of the specific and/or typical earth station published by the Bureau for the space station to which the AES is associated  Required only for the band 14-14.5 GHz, when an aircraft earth station in the aeronautical mobile-satellite service communicates with a space station in the fixed-satellite service				+	+					A.18.a	
<b>A.19</b>	<b>COMPLIANCE WITH § 6.26 OF ARTICLE 6 OF APPENDIX 30B</b>											<b>A.19</b>

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A.19.a	<p>a commitment that the use of the assignment shall not cause unacceptable interference to, nor claim protection from, those assignments for which agreement still needs to be obtained</p> <p>Required if the notice is submitted under § 6.25 of Article 6 of Appendix <b>30B</b></p>									+	A.19.a	

Items in Appendix	<i><b>B - CHARACTERISTICS TO BE PROVIDED FOR EACH SATELLITE ANTENNA BEAM OR EACH EARTH STATION OR RADIO ASTRONOMY ANTENNA</b></i>	Advance publication of a geostationary-satellite network	Advance publication of a non-geostationary-satellite network subject to coordination under Section II of Article 9	Advance publication of a non-geostationary-satellite network not subject to coordination under Section II of Article 9	Notification or coordination of a geostationary-satellite network (including space operation functions under Article 2A of Appendices 30 or 30A)	Notification or coordination of a non-geostationary-satellite network	Notification or coordination of an earth station (including notification under Appendices 30A or 30B)	Notice for a satellite network in the broadcasting-satellite service under Appendix 30 (Articles 4 and 5)	Notice for a satellite network (feeder-link) under Appendix 30A (Articles 4 and 5)	Notice for a satellite network in the fixed-satellite service under Appendix 30B (Articles 6 and 8)	Items in Appendix	Radio astronomy
<b>B.1</b>	<b>IDENTIFICATION AND DIRECTION OF THE SATELLITE ANTENNA BEAM</b>										<b>B.1</b>	
B.1.a	the designation of the satellite antenna beam For an earth station, the designation of the satellite antenna beam of the associated space station			X	X	X	X	X	X	X	B.1.a	
B.1.b	an indicator showing whether the antenna beam, under B.1.a, is fixed or whether it is steerable and / or reconfigurable			X	X	X		X	X	X	B.1.b	
<b>B.2</b>	<b>TRANSMISSION / RECEPTION INDICATOR FOR THE BEAM OF THE SPACE STATION OR THE ASSOCIATED SPACE STATION</b>	X	X	X	X	X	+ <sup>1</sup>			X	<b>B.2</b>	
<b>B.3</b>	<b>SPACE STATION ANTENNA CHARACTERISTICS</b>										<b>B.3</b>	
B.3.a	<b>For each space station antenna:</b>										B.3.a	
B.3.a.1	the maximum co-polar isotropic gain, in dBi Where a steerable beam (see No. 1.191) is used, if the effective boresight area (see No. 1.175) is identical with the global service area, the maximum antenna gain, in dBi, is applicable to all points on the Earth's visible surface			X	X	X		X	X	X	B.3.a.1	
B.3.a.2	if a non-elliptical beam, the maximum cross-polar isotropic antenna gain, in dBi							+	+		B.3.a.2	



Items in Appendix	<i><b>B - CHARACTERISTICS TO BE PROVIDED FOR EACH SATELLITE ANTENNA BEAM OR EACH EARTH STATION OR RADIO ASTRONOMY ANTENNA</b></i>	Advance publication of a geostationary-satellite network	Advance publication of a non-geostationary-satellite network subject to coordination under Section II of Article 9	Advance publication of a non-geostationary-satellite network not subject to coordination under Section II of Article 9	Notification or coordination of a geostationary-satellite network (including space operation functions under Article 2A of Appendices 30 or 30A)	Notification or coordination of a non-geostationary-satellite network	Notification or coordination of an earth station (including notification under Appendices 30A or 30B)	Notice for a satellite network in the broadcasting-satellite service under Appendix 30 (Articles 4 and 5)	Notice for a satellite network (feeder-link) under Appendix 30A (Articles 4 and 5)	Notice for a satellite network in the fixed-satellite service under Appendix 30B (Articles 6 and 8)	Items in Appendix	Radio astronomy
B.3.b	<b>Antenna gain contours:</b>										B.3.b	
B.3.b.1	<p>the co-polar antenna gain contours plotted on a map of the Earth's surface, preferably in a radial projection from the satellite onto a plane perpendicular to the axis from the centre of the Earth to the satellite</p> <p>The space station antenna gain contours shall be drawn as isolines of the isotropic gain, at least for – 2, – 4, – 6, – 10 and – 20 dB and at 10 dB intervals thereafter, as necessary, relative to the maximum antenna gain, when any of these contours is located either totally or partially anywhere within the limit of visibility of the Earth from the given geostationary satellite</p> <p>Whenever possible, the gain contours of the space station antenna should also be provided in a numerical format (e.g. equation or table)</p> <p>Where a steerable beam (see No. <b>1.191</b>) is used, if the effective boresight area (see No. <b>1.175</b>) is less than the global service area, the contours are the result of moving the boresight of the steerable beam around the limit defined by the effective boresight area and are to be provided as described above but shall also include the 0 dB relative gain isoline</p>				X			+	+	+	B.3.b.1	

Items in Appendix	<b><i>B - CHARACTERISTICS TO BE PROVIDED FOR EACH SATELLITE ANTENNA BEAM OR EACH EARTH STATION OR RADIO ASTRONOMY ANTENNA</i></b>											
	The antenna gain contours shall include the effects of the planned inclination excursion, longitudinal tolerance and the planned pointing accuracy of the antenna  In the case of Appendix <b>30, 30A</b> or <b>30B</b> , required only for non-elliptical beams	Advance publication of a geostationary-satellite network	Advance publication of a non-geostationary-satellite network subject to coordination under Section II of Article 9	Advance publication of a non-geostationary-satellite network not subject to coordination under Section II of Article 9	Notification or coordination of a geostationary-satellite network (including space operation functions under Article 2A of Appendices 30 or 30A)	Notification or coordination of a non-geostationary-satellite network	Notification or coordination of an earth station (including notification under Appendices 30A or 30B)	Notice for a satellite network in the broadcasting-satellite service under Appendix 30 (Articles 4 and 5)	Notice for a satellite network (feeder-link) under Appendix 30A (Articles 4 and 5)	Notice for a satellite network in the fixed-satellite service under Appendix 30B (Articles 6 and 8)	Items in Appendix	Radio astronomy
B.3.b.2	if a non-elliptical beam, the cross-polar gain contours shall be provided as defined under B.3.b.1							+	+		B.3.b.2	

[illegible]

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B.3.f.1	the boresight or aim point of the antenna beam (longitude and latitude)							X	X	X	B.3.f.1	
B.3.f.2	<b>For each elliptical beam:</b>										B.3.f.2	
B.3.f.2.a	the rotational accuracy, in degrees							X	X	X	B.3.f.2.a	
B.3.f.2.b	the major axis orientation, in degrees, anticlockwise from the Equator							X	X	X	B.3.f.2.b	
B.3.f.2.c	the major axis, in degrees, at the half-power beamwidth							X	X	X	B.3.f.2.c	
B.3.f.2.d	the minor axis, in degrees, at the half-power beamwidth							X	X	X	B.3.f.2.d	
<b>B.4</b>	<b>ADDITIONAL CHARACTERISTICS FOR NON-GEOSTATIONARY SPACE STATION ANTENNA</b>										<b>B.4</b>	
B.4.a.1	the reference number of each orbital plane in which the space station antenna characteristics are used			X		X					B.4.a.1	

[illegible]

Items in Appendix	<i>B - CHARACTERISTICS TO BE PROVIDED FOR EACH SATELLITE ANTENNA BEAM OR EACH EARTH STATION OR RADIO ASTRONOMY ANTENNA</i>	Advance publication of a geostationary-satellite network	Advance publication of a non-geostationary-satellite network subject to coordination under Section II of Article 9	Advance publication of a non-geostationary-satellite network not subject to coordination under Section II of Article 9	Notification or coordination of a geostationary-satellite network (including space operation functions under Article 2A of Appendices 30 or 30A)	Notification or coordination of a non-geostationary-satellite network	Notification or coordination of an earth station (including notification under Appendices 30A or 30B)	Notice for a satellite network in the broadcasting-satellite service under Appendix 30 (Articles 4 and 5)	Notice for a satellite network (feeder-link) under Appendix 30A (Articles 4 and 5)	Notice for a satellite network in the fixed-satellite service under Appendix 30B (Articles 6 and 8)	Items in Appendix	Radio astronomy
B.4.b.2	the satellite antenna gain $G(\theta_e)$ as a function of elevation angle ( $\theta_e$ ) at a fixed point on the Earth					X					B.4.b.2	
B.4.b.3	the spreading loss as a function of elevation angle (to be determined by equations or provided in graphical format)					X					B.4.b.3	
B.4.b.4	<b>For each beam:</b>										B.4.b.4	
B.4.b.4.a	the maximum beam peak e.i.r.p./4 kHz					X					B.4.b.4.a	
B.4.b.4.b	the average beam peak e.i.r.p./4 kHz					X					B.4.b.4.b	
B.4.b.4.c	the maximum beam peak e.i.r.p./1 MHz					X					B.4.b.4.c	
B.4.b.4.d	the average beam peak e.i.r.p./1 MHz					X					B.4.b.4.d	
B.4.b.5	the calculated peak value of power flux-density produced within $\pm 5^\circ$ inclination of the geostationary-satellite orbit  Required only for the fixed-satellite service (space-to-Earth) in the band 6 700-7 075 MHz					+					B.4.b.5	
<b>B.5</b>	<b>EARTH STATION ANTENNA CHARACTERISTICS</b>										<b>B.5</b>	
B.5.a	the isotropic gain, in dBi, of the antenna in the direction of maximum radiation (see No. <b>1.160</b> )						X				B.5.a	

[illegible]

<b>Items in Appendix</b>	<b>C - CHARACTERISTICS TO BE PROVIDED FOR EACH GROUP OF FREQUENCY ASSIGNMENTS FOR A SATELLITE ANTENNA BEAM OR AN EARTH STATION OR RADIO ASTRONOMY ANTENNA</b>	<b>Advance publication of a geostationary-satellite network</b>	<b>Advance publication of a non-geostationary-satellite network subject to coordination under Section II of Article 9</b>	<b>Advance publication of a non-geostationary-satellite network not subject to coordination under Section II of Article 9</b>	<b>Notification or coordination of a geostationary-satellite network (including space operation functions under Article 2A of Appendices 30 or 30A)</b>	<b>Notification or coordination of a non-geostationary-satellite network</b>	<b>Notification or coordination of an earth station (including notification under Appendices 30A or 30B)</b>	<b>Notice for a satellite network in the broadcasting-satellite service under Appendix 30 (Articles 4 and 5)</b>	<b>Notice for a satellite network (feeder-link) under Appendix 30A (Articles 4 and 5)</b>	<b>Notice for a satellite network in the fixed-satellite service under Appendix 30B (Articles 6 and 8)</b>	<b>Items in Appendix</b>	<b>Radio astronomy</b>
<b>C.1</b>	<b>FREQUENCY RANGE</b>										<b>C.1</b>	
C.1.a	the lower limit of the frequency range within which the carriers and the bandwidth of the emission will be located for each Earth-to-space or space-to-Earth service area, or for each space-to-space relay	X	X	X						X	C.1.a	
C.1.b	the upper limit of the frequency range within which the carriers and the bandwidth of the emission will be located for each Earth-to-space or space-to-Earth service area, or for each space-to-space relay	X	X	X						X	C.1.b	



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<b>C.2</b>	<b>ASSIGNED FREQUENCY (FREQUENCIES)</b>										<b>C.2</b>	
C.2.a.1	<p>the assigned frequency (frequencies), as defined in No. <b>1.148</b></p> <ul style="list-style-type: none"> <li>– in kHz up to 28 000 kHz inclusive</li> <li>– in MHz above 28 000 kHz to 10 500 MHz inclusive</li> <li>– in GHz above 10 500 MHz</li> </ul> <p>If the basic characteristics are identical, with the exception of the assigned frequency, a list of frequency assignments may be provided</p> <p>In the case of advance publication, required only for active sensors</p> <p>In the case of geostationary and non-geostationary satellite networks, required for all space applications except passive sensors</p> <p>In the case of Appendix <b>30B</b>, required only for notification under Article 8</p>			+	+	+	X	X	X	+	C.2.a.1	
C.2.a.2	the channel number							X	X		C.2.a.2	

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C.2.b	the centre of the frequency band observed – in kHz up to 28 000 kHz inclusive – in MHz above 28 000 kHz to 10 500 MHz inclusive – in GHz above 10 500 MHz In the case of satellite networks, required only for passive sensors			+	+	+					C.2.b	X
C.2.c	if the frequency assignment is to be filed under No. 4.4, an indication to that effect			+	+	+	+				C.2.c	+
<b>C.3</b>	<b>ASSIGNED FREQUENCY BAND</b>										<b>C.3</b>	
C.3.a	the bandwidth of the assigned frequency band, in kHz (see No. 1.147) In the case of advance publication, required only for active sensors In the case of geostationary and non-geostationary satellite networks, required for all space applications except passive sensors In the case of Appendix 30B, required only for notification under Article 8			+	+	+	X	X	X	+	C.3.a	

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C.3.b	the bandwidth of the frequency band, in kHz, observed by the station  In the case of satellite networks, required only for passive sensors			+	+	+					C.3.b	X
<b>C.4</b>	<b>CLASS OF STATION AND NATURE OF SERVICE</b>										<b>C.4</b>	
C.4.a	the class of station, using the symbols from the Preface	X	X	X	X	X	X	X	X	X	C.4.a	X
C.4.b	the nature of service performed, using the symbols from the Preface	X	X	X	X	X	X				C.4.b	X
<b>C.5</b>	<b>RECEIVING SYSTEM NOISE TEMPERATURE</b>										<b>C.5</b>	
C.5.a	the lowest total receiving system noise temperature, in kelvins, referred to the output of the receiving antenna of the space station  In the case of satellite networks, required for all space applications except for active or passive sensors			+	+	+			X	X	C.5.a	

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C.5.b	the lowest total receiving system noise temperature, in kelvins, referred to the output of the receiving antenna of the earth station under clear-sky conditions This value shall be indicated for the nominal value of the angle of elevation when the associated transmitting station is onboard a geostationary satellite and, in other cases, for the minimum value of the angle of elevation						X				C.5.b	
C.5.c	the overall receiving system noise temperature, in kelvins, referred to the output of the receiving antenna										C.5.c	X
C.5.d	<b>For active sensors:</b>										C.5.d	
C.5.d.1	the system noise temperature at the output of the signal processor			X	X	X					C.5.d.1	
C.5.d.2	the receiver noise bandwidth			X	X	X					C.5.d.2	

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<b>C.6</b>	<b>POLARIZATION</b>										<b>C.6</b>	
C.6.a	<p>the type of polarization (see the Preface)</p> <p>In the case of circular polarization, this includes the sense of polarization (see Nos. <b>1.154</b> and <b>1.155</b>)</p> <p>In the case of a space station submitted in accordance with Appendix <b>30</b> or <b>30A</b>, see § 3.2 of Annex 5 to Appendix <b>30</b></p>			X	X	X	+ <sup>1</sup>	X	X		C.6.a	
C.6.b	<p>if linear polarization is used, the angle, in degrees, measured counter-clockwise in a plane normal to the beam axis from the equatorial plane to the electric vector of the waves as seen from the satellite</p> <p>In the case of a space station submitted in accordance with Appendix <b>30</b> or <b>30A</b>, see § 3.2 of Annex 5 to Appendix <b>30</b></p>			+	+	+	+ <sup>1</sup>	+	+		C.6.b	

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<b>C.7</b>	<p><b>NECESSARY BANDWIDTH AND CLASS OF EMISSION</b></p> <p>(in accordance with Article 2 and Appendix 1)</p> <p>For advance publication of a non-geostationary-satellite network not subject to coordination under Section II of Article 9, changes to this information within the limits specified under C.1 shall not affect consideration of notification under Article 11</p> <p>Not required for active or passive sensors</p>										<b>C.7</b>	
C.7.a	<p>the necessary bandwidth and the class of emission: for each carrier</p> <p>In the case of Appendix 30B, required only for notification under Article 8</p>			X	X	X	X	X	X	+	C.7.a	
C.7.b	the carrier frequency or frequencies of the emission(s)			X	C	C	C				C.7.b	

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C.8	<b>POWER CHARACTERISTICS OF THE TRANSMISSION</b>  Not required for passive sensors										C.8	
C.8.a	<b>For the case where individual carriers can be identified:</b>										C.8.a	
C.8.a.1	the maximum value of the peak envelope power, in dBW, supplied to the input of the antenna for each carrier type Required if neither C.8.b.1 nor C.8.b.3.a is provided			+	+	+	C				C.8.a.1	
C.8.a.2	the maximum power density, in dB(W/Hz), supplied to the input of the antenna for each carrier type <sup>2</sup> Required if neither C.8.b.2 nor C.8.b.3.b is provided			+	+	+	O				C.8.a.2	

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C.8.b	<b>For the case where it is not appropriate to identify individual carriers:</b>										C.8.b	
C.8.b.1	the total peak envelope power, in dBW, supplied to the input of the antenna  For coordination or notification of an Appendix 30A earth station the values shall include the maximum range of power control Required if neither C.8.a.1 nor C.8.b.3.a is provided			+	+	+	+ <sup>1</sup>	X	X		C.8.b.1	
C.8.b.2	the maximum power density, in dB(W/Hz), supplied to the input of the antenna <sup>2</sup>  For coordination or notification of an Appendix 30A earth station the values shall include the maximum range of power control Required if neither C.8.a.2 nor C.8.b.3.b is provided			+	+	+	+ <sup>1</sup>	X	X	X	C.8.b.2	



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C.8.b.3	<b>For the case of active sensors:</b>										C.8.b.3	
C.8.b.3.a	the mean peak envelope power, in dBW, supplied to the input of the antenna Required if neither C.8.a.1 nor C.8.b.1 is provided			+	+	+					C.8.b.3.a	
C.8.b.3.b	the mean power density, in dB(W/Hz), supplied to the input of the antenna Required if neither C.8.a.2 nor C.8.b.2 is provided			+	+	+					C.8.b.3.b	
C.8.c	<b>Minimum power values:</b> For all space applications except active or passive sensors										C.8.c	
C.8.c.1	the minimum value of the peak envelope power, in dBW, supplied to the input of the antenna for each carrier type If not provided, the reason for absence under C.8.c.2			+	+	+	+				C.8.c.1	
C.8.c.2	if C.8.c.1 is not provided, the reason for absence of the minimum value of the peak envelope power			+	+	+	+				C.8.c.2	

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C.8.c.3	the minimum power density, in dB(W/Hz), supplied to the input of the antenna for each carrier type <sup>2</sup>  If not provided, the reason for absence under C.8.c.4			+	+	+	+ <sup>1</sup>				C.8.c.3	
C.8.c.4	if C.8.c.3 is not provided, the reason for absence of the minimum power density			+	+	+	+ <sup>1</sup>				C.8.c.4	
C.8.d.1	the maximum total peak envelope power, in dBW, supplied to the input of the antenna for each contiguous satellite bandwidth  For a satellite transponder, this corresponds to the maximum saturated peak envelope power Required only for a space-to-Earth or space-to-space link			O	+	+					C.8.d.1	
C.8.d.2	each contiguous satellite bandwidth  For the maximum saturated peak envelope power of the satellite transponder, this corresponds to the bandwidth of each transponder Required only for a space-to-Earth or space-to-space link, if different from item C.3.a			O	+	+					C.8.d.2	

[illegible]

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C.8.f.2	the associated space station's nominal equivalent isotropically radiated power(s) (e.i.r.p.) on the beam axis Required only for a space-to-space link			+							C.8.f.2	
C.8.g.1	the maximum aggregate power, in dBW, of all carriers (per transponder, if applicable) supplied to the input of the transmitting antenna of the earth station or the associated earth station  Not required for coordination of a specific earth station under Nos. <b>9.15</b> , <b>9.17</b> or <b>9.17A</b>				C	C	C				C.8.g.1	
C.8.g.2	the aggregate bandwidth of all carriers (per transponder, if applicable) supplied to the input of the transmitting antenna of the earth station or the associated earth station  Not required for coordination of a specific earth station under Nos. <b>9.15</b> , <b>9.17</b> or <b>9.17A</b>				C	C	C				C.8.g.2	

[illegible]

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<b>C.9</b>	<b>INFORMATION ON MODULATION CHARACTERISTICS</b>  For all space applications, except active or passive sensors										<b>C.9</b>	
C.9.a	<b>For each carrier, according to the nature of the signal modulating the carrier:</b>										C.9.a	
C.9.a.1	the type of modulation  In the case of a non-geostationary space station required only for Nos. <b>9.11A</b> , <b>9.12</b> or <b>9.12A</b>			<b>O</b>	<b>C</b>	<b>+</b>		<b>X</b>	<b>X</b>		C.9.a.1	
C.9.a.2	<b>For a carrier frequency modulated by a frequency-division multichannel telephony baseband (FDM/FM) or by a signal that can be represented by a multichannel telephony baseband:</b>										C.9.a.2	
C.9.a.2.a	the lowest frequency of the baseband			<b>O</b>	<b>C</b>	<b>C</b>					C.9.a.2.a	
C.9.a.2.b	the highest frequency of the baseband			<b>O</b>	<b>C</b>	<b>C</b>					C.9.a.2.b	
C.9.a.2.c	the r.m.s. frequency deviation of the pre-emphasized signal for a test tone as a function of baseband frequency			<b>O</b>	<b>C</b>	<b>C</b>					C.9.a.2.c	

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C.9.a.3	<b>For a carrier frequency modulated by a television signal:</b>										C.9.a.3	
C.9.a.3.a	the peak-to-peak frequency deviation of the pre-emphasized signal			O	C	C		X	X		C.9.a.3.a	
C.9.a.3.b	the pre-emphasis characteristic			O	C	C		X	X		C.9.a.3.b	
C.9.a.3.c	if applicable, the characteristics of the multiplexing of the video signal with the sound signal(s) or other signals			O	C	C		+	+		C.9.a.3.c	
C.9.a.4	<b>For a carrier phase-shift modulated by a digital signal:</b>										C.9.a.4	
C.9.a.4.a	the bit rate			O	C	C					C.9.a.4.a	
C.9.a.4.b	the number of phases			O	C	C					C.9.a.4.b	
C.9.a.5	<b>For an amplitude modulated carrier (including single sideband):</b>										C.9.a.5	
C.9.a.5.a	the nature of the modulating signal, as precisely as possible			O	C	C					C.9.a.5.a	
C.9.a.5.b	the kind of amplitude modulation used			O	C	C					C.9.a.5.b	

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C.9.a.6	<b>For a frequency modulated carrier:</b>										C.9.a.6	
C.9.a.6.a	the peak-to-peak frequency deviation, in MHz, of the energy dispersal waveform			O	C	C		X	X		C.9.a.6.a	
C.9.a.6.b	the sweep frequency, in kHz, of the energy dispersal waveform			O	C	C		X	X		C.9.a.6.b	
C.9.a.6.c	the energy dispersal waveform			O	C	C		X	X		C.9.a.6.c	
C.9.a.7	if other forms of modulation than frequency modulation, are being used, the type of energy dispersal			O	C	C		+	+		C.9.a.7	
C.9.a.8	for all other types of modulation, such particulars as may be useful for an interference study			O	C	C					C.9.a.8	
C.9.a.9	the TV standard			O	C	C		X	X		C.9.a.9	
C.9.b	<b>For analogue carriers:</b>										C.9.b	
C.9.b.1	the sound-broadcasting characteristics							X	X		C.9.b.1	
C.9.b.2	the composition of the baseband							X	X		C.9.b.2	
C.9.c	<b>For a non-geostationary space station submitted in accordance with Nos. 9.11A, 9.12 or 9.12A:</b>										C.9.c	
C.9.c.1	the type of multiple access					X					C.9.c.1	



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C.9.c.2	the spectrum mask					X					C.9.c.2	
C.9.d	<b>For stations operating in a frequency band subject to Nos. 22.5C, 22.5D or 22.5F:</b>										C.9.d	
C.9.d.1	the type of mask					X					C.9.d.1	
C.9.d.2	the pfd mask identification code					X					C.9.d.2	
C.9.d.3	the space station's e.i.r.p. mask identification code					X					C.9.d.3	
C.9.d.4	the associated earth station's e.i.r.p. mask identification code					X					C.9.d.4	
<b>C.10</b>	<b>TYPE AND IDENTITY OF THE ASSOCIATED STATION(S)</b>  (the associated station may be another space station, a typical earth station of the network or a specific earth station)  For all space applications except active or passive sensors										<b>C.10</b>	
C.10.a	<b>For an associated space station:</b>										C.10.a	
C.10.a.1	the identity of the station			X	X	X					C.10.a.1	

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C.10.a.2	if the associated space station is in the geostationary orbit, its nominal longitude			+	+	+					C.10.a.2	
C.10.b	<b>For an associated earth station:</b>										C.10.b	
C.10.b.1	the name of the station			X	X	X			X		C.10.b.1	
C.10.b.2	the type of station (specific or typical)			X	X	X					C.10.b.2	
C.10.c	<b>For a specific associated earth station:</b>										C.10.c	
C.10.c.1	the geographical coordinates of the antenna site			X	X	X			X		C.10.c.1	
C.10.c.2	the country or geographical area in which the earth station is located, using the symbols from the Preface			X	X	X			X		C.10.c.2	
C.10.d	<b>For an associated earth station (whether specific or typical):</b>										C.10.d	
C.10.d.1	the class of station, using the symbols from the Preface			X	X	X					C.10.d.1	
C.10.d.2	the nature of service performed, using the symbols from the Preface			X	X	X					C.10.d.2	
C.10.d.3	the isotropic gain, in dBi, of the antenna in the direction of maximum radiation (see No. <b>1.160</b> )			X	X	X		X	X	X	C.10.d.3	

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C.10.d.4	the beamwidth, in degrees, between the half-power points (described in detail if not symmetrical)			O	X	X		X	X	X	C.10.d.4	
C.10.d.5.a	either the measured co-polar radiation pattern of the antenna or the co-polar reference radiation pattern			X	X	X		X	X	X	C.10.d.5.a	
C.10.d.5.b	either the measured cross-polar radiation pattern of the antenna or the cross-polar reference radiation pattern							X	X		C.10.d.5.b	
C.10.d.6	if the associated station is a receiving earth station, the lowest total receiving system noise temperature, in kelvins, referred to the output of the receiving antenna of the earth station under clear-sky conditions			+	+	+				+	C.10.d.6	
C.10.d.7	the antenna diameter, in metres In cases other than Appendix 30A, required for fixed-satellite service networks operating in the frequency band 13.75-14 GHz and for maritime mobile-satellite service networks operating in the frequency band 14-14.5 GHz				+	+			X		C.10.d.7	
C.10.d.8	the equivalent antenna diameter (i.e. the diameter, in metres, of a parabolic antenna with the same off-axis performance as the receiving associated earth station antenna)							X			C.10.d.8	

Items in Appendix	<i>C - CHARACTERISTICS TO BE PROVIDED FOR EACH GROUP OF FREQUENCY ASSIGNMENTS FOR A SATELLITE ANTENNA BEAM OR AN EARTH STATION OR RADIO ASTRONOMY ANTENNA</i>	Advance publication of a geostationary-satellite network	Advance publication of a non-geostationary-satellite network subject to coordination under Section II of Article 9	Advance publication of a non-geostationary-satellite network not subject to coordination under Section II of Article 9	Notification or coordination of a geostationary-satellite network (including space operation functions under Article 2A of Appendices 30 or 30A)	Notification or coordination of a non-geostationary-satellite network	Notification or coordination of an earth station (including notification under Appendices 30A or 30B)	Notice for a satellite network in the broadcasting-satellite service under Appendix 30 (Articles 4 and 5)	Notice for a satellite network (feeder-link) under Appendix 30A (Articles 4 and 5)	Notice for a satellite network in the fixed-satellite service under Appendix 30B (Articles 6 and 8)	Items in Appendix	Radio astronomy
C.11	<b>SERVICE AREA(S)</b>  For all space applications except active or passive sensors										C.11	
C.11.a	the service area or areas of the satellite beam on the Earth, when the associated transmitting or receiving stations are earth stations  For a space station submitted in accordance with Appendix 30, 30A or 30B, the service area identified by a set of a maximum of twenty test points and by a service area contour on the surface of the Earth or defined by a minimum elevation angle  For advance publication of satellite networks subject to coordination, only a list of countries and geographical areas, using the symbols from the Preface, or a narrative description of the service area shall be supplied	X	X	X	X	X		X	X	X	C.11.a	

Items in Appendix	<i>C - CHARACTERISTICS TO BE PROVIDED FOR EACH GROUP OF FREQUENCY ASSIGNMENTS FOR A SATELLITE ANTENNA BEAM OR AN EARTH STATION OR RADIO ASTRONOMY ANTENNA</i>	Advance publication of a geostationary-satellite network	Advance publication of a non-geostationary-satellite network subject to coordination under Section II of Article 9	Advance publication of a non-geostationary-satellite network not subject to coordination under Section II of Article 9	Notification or coordination of a geostationary-satellite network (including space operation functions under Article 2A of Appendices 30 or 30A)	Notification or coordination of a non-geostationary-satellite network	Notification or coordination of an earth station (including notification under Appendices 30A or 30B)	Notice for a satellite network in the broadcasting-satellite service under Appendix 30 (Articles 4 and 5)	Notice for a satellite network (feeder-link) under Appendix 30A (Articles 4 and 5)	Notice for a satellite network in the fixed-satellite service under Appendix 30B (Articles 6 and 8)	Items in Appendix	Radio astronomy
C.11.b	the appropriate information required to calculate the affected region (as defined in Recommendation ITU-R M.1187-1) Required only for a non-geostationary space station in the mobile-satellite service submitted in accordance with No. <b>9.11A</b>					+					C.11.b	
<b>C.12</b>	<b>REQUIRED PROTECTION RATIO</b>										<b>C.12</b>	
C.12.a	the minimum acceptable aggregate carrier-to-interference ratio, if less than 21 dB The carrier-to-interference ratio is to be expressed in terms of the power averaged over the necessary bandwidth of the modulated wanted and interfering signals, assuming both the desired carrier and interfering signals have equivalent bandwidths and modulation types									+	C.12.a	



Items in Appendix		Advance publication of a geostationary-satellite network	Advance publication of a non-geostationary-satellite network subject to coordination under Section II of Article 9	Advance publication of a non-geostationary-satellite network not subject to coordination under Section II of Article 9	Notification or coordination of a geostationary-satellite network (including space operation functions under Article 2A of Appendices 30 or 30A)	Notification or coordination of a non-geostationary-satellite network	Notification or coordination of an earth station (including notification under Appendices 30A or 30B)	Notice for a satellite network in the broadcasting-satellite service under Appendix 30 (Articles 4 and 5)	Notice for a satellite network (feeder-link) under Appendix 30A (Articles 4 and 5)	Notice for a satellite network in the fixed-satellite service under Appendix 30B (Articles 6 and 8)	Items in Appendix	Radio astronomy
C.14	Not used										C.14	
C.15	DESCRIPTION OF THE GROUP(S) REQUIRED IN THE CASE OF NON-SIMULTANEOUS EMISSIONS										C.15	
C.15.a	if part of an exclusive operation group, the group identification code							+	+	+	C.15.a	
C.16	DESCRIPTION OF ACTIVE AND PASSIVE SENSOR SYSTEMS										C.16	
C.16.a	<b>For active sensors:</b>										C.16.a	
C.16.a.1	the pulse length, in $\mu\text{s}$			X	X	X					C.16.a.1	
C.16.a.2	the pulse repetition frequency, in kHz			X	X	X					C.16.a.2	
C.16.b	<b>For passive sensors:</b>										C.16.b	
C.16.b.1	the sensitivity threshold, in kelvins			X	X	X					C.16.b.1	

Items in Appendix		Advance publication of a geostationary-satellite network	Advance publication of a non-geostationary-satellite network subject to coordination under Section II of Article 9	Advance publication of a non-geostationary-satellite network not subject to coordination under Section II of Article 9	Notification or coordination of a geostationary-satellite network (including space operation functions under Article 2A of Appendices 30 or 30A)	Notification or coordination of a non-geostationary-satellite network	Notification or coordination of an earth station (including notification under Appendices 30A or 30B)	Notice for a satellite network in the broadcasting-satellite service under Appendix 30 (Articles 4 and 5)	Notice for a satellite network (feeder-link) under Appendix 30A (Articles 4 and 5)	Notice for a satellite network in the fixed-satellite service under Appendix 30B (Articles 6 and 8)	Items in Appendix	Radio astronomy
	For non-plan services, this data may be provided by administrations that so desire but only when simple frequency-changing transponders are used on the space station onboard a geostationary satellite											
<b>D.1</b>	<b>CONNECTION BETWEEN EARTH-TO-SPACE AND SPACE-TO-EARTH FREQUENCIES IN THE NETWORK</b>										<b>D.1</b>	
D.1.a	the connection between uplink and downlink frequency assignments for each intended combination of receiving and transmitting beams  In the case of Appendix <b>30</b> or <b>30A</b> , required only in Region 2  In the case of Appendix <b>30B</b> , required except for submission of one link only				<b>O</b>			+	+	+	D.1.a	



Items in Appendix	<i>D - OVERALL LINK CHARACTERISTICS</i>	Advance publication of a geostationary-satellite network	Advance publication of a non-geostationary-satellite network subject to coordination under Section II of Article 9	Advance publication of a non-geostationary-satellite network not subject to coordination under Section II of Article 9	Notification or coordination of a geostationary-satellite network (including space operation functions under Article 2A of Appendices 30 or 30A)	Notification or coordination of a non-geostationary-satellite network	Notification or coordination of an earth station (including notification under Appendices 30A or 30B)	Notice for a satellite network in the broadcasting-satellite service under Appendix 30 (Articles 4 and 5)	Notice for a satellite network (feeder-link) under Appendix 30A (Articles 4 and 5)	Notice for a satellite network in the fixed-satellite service under Appendix 30B (Articles 6 and 8)	Items in Appendix	Radio astronomy
<b>D.2</b>	<b>TRANSMISSION GAINS AND ASSOCIATED EQUIVALENT SATELLITE LINK NOISE TEMPERATURES</b>										<b>D.2</b>	
D.2.a	<b>For each entry under D.1.a:</b>										D.2.a	
D.2.a.1	the lowest equivalent satellite link noise temperature These values shall be indicated for the nominal value of the angle of elevation				<b>O</b>						D.2.a.1	
D.2.a.2	the associated transmission gain of the lowest equivalent satellite link noise temperature These values shall be indicated for the nominal value of the angle of elevation The transmission gain is evaluated from the output of the receiving antenna of the space station to the output of the receiving antenna of the earth station				<b>O</b>						D.2.a.2	
D.2.b.1	the values of associated equivalent satellite link noise temperature that correspond to the highest ratio of transmission gain to equivalent satellite link noise temperature				<b>O</b>						D.2.b.1	

D.2.b.2	the values of transmission gain that correspond to the highest ratio of transmission gain to equivalent satellite link noise temperature				O						D.2.b.2	
Items in Appendix		<i>D - OVERALL LINK CHARACTERISTICS</i>									Items in Appendix	
		Advance publication of a geostationary-satellite network	Advance publication of a non-geostationary-satellite network subject to coordination under Section II of Article 9	Advance publication of a non-geostationary-satellite network not subject to coordination under Section II of Article 9	Notification or coordination of a geostationary-satellite network (including space operation functions under Article 2A of Appendices 30 or 30A)	Notification or coordination of a non-geostationary-satellite network	Notification or coordination of an earth station (including notification under Appendices 30A or 30B)	Notice for a satellite network in the broadcasting-satellite service under Appendix 30 (Articles 4 and 5)	Notice for a satellite network (feeder-link) under Appendix 30A (Articles 4 and 5)	Notice for a satellite network in the fixed-satellite service under Appendix 30B (Articles 6 and 8)		Radio astronomy

# APPENDIX 5 (Rev.WRC-07)

## Identification of administrations with which coordination is to be effected or agreement sought under the provisions of Article 9

TABLE 5-1 (Rev.WRC-07)

**Technical conditions for coordination**  
(see Article 9)

**MOD** COM5/287/6 (B8/293/10) (R4/335/62)

Reference of Article 9	Case	Frequency bands (and Region) of the service for which coordination is sought	Threshold/condition	Calculation method	Remarks
No. <b>9.7</b> GSO/GSO	A station in a satellite network using the geostationary-satellite orbit (GSO), in any space radiocommunication service, in a frequency band and in a Region where this service is not subject to a Plan, in respect of any other satellite network using that orbit, in any space radio-communication service in a frequency band and in a Region where this service is not subject to a Plan, with the exception of the coordination between earth stations operating in the opposite direction of transmission	<p>1) 3 400-4 200 MHz 5 725-5 850 MHz (Region 1) and 5 850-6 725 MHz 7 025-7 075 MHz</p> <p>2) 10.95-11.2 GHz 11.45-11.7 GHz 11.7-12.2 GHz (Region 2) 12.2-12.5 GHz (Region 3) 12.5-12.75 GHz (Regions 1 and 3) 12.7-12.75 GHz (Region 2) and 13.75-14.5 GHz</p>	<p>i) Bandwidth overlap, and</p> <p>ii) any network in the fixed-satellite service (FSS) and any associated space operation functions (see No. <b>1.23</b>) with a space station within an orbital arc of <math>\pm 10^\circ</math> of the nominal orbital position of a proposed network in the FSS</p> <p>i) Bandwidth overlap, and</p> <p>ii) any network in the FSS or broadcasting-satellite service (BSS), not subject to a Plan, and any associated space operation functions (see No. <b>1.23</b>) with a space station within an orbital arc of <math>\pm 9^\circ</math> of the nominal orbital position of a proposed network in the FSS or BSS, not subject to a Plan</p>		With respect to the space services listed in the threshold/condition column in the bands in 1), 2), 3), 4), 5), 6), 7) and 8), an administration may request, pursuant to No. <b>9.41</b> , to be included in requests for coordination, indicating the networks for which the value of $\Delta T/T$ calculated by the method in § 2.2.1.2 and 3.2 of Appendix <b>8</b> exceeds 6%. When the Bureau, on request by an affected administration, studies this information pursuant to No. <b>9.42</b> , the calculation method given in § 2.2.1.2 and 3.2 of Appendix <b>8</b> shall be used

TABLE 5-1 (*continued*) (Rev.WRC-07)

Reference of Article 9	Case	Frequency bands (and Region) of the service for which coordination is sought	Threshold/condition	Calculation method	Remarks
No. 9.7 GSO/GSO ( <i>cont.</i> )		<p>3) 17.7-20.2 GHz, (Regions 2 and 3), 17.3-20.2 GHz (Region 1) and 27.5-30 GHz</p> <p>4) 17.3-17.7 GHz (Regions 1 and 2)</p>	<p>i) Bandwidth overlap, and</p> <p>ii) any network in the FSS and any associated space operation functions (see No. <b>1.23</b>) with a space station within an orbital arc of <math>\pm 8^\circ</math> of the nominal orbital position of a proposed network in the FSS</p> <p>i) Bandwidth overlap, and</p> <p>ii) a) any network in the FSS and any associated space operation functions (see No. <b>1.23</b>) with a space station within an orbital arc of <math>\pm 8^\circ</math> of the nominal orbital position of a proposed network in the BSS,</p> <p>or</p> <p>b) any network in the BSS and any associated space operation functions (see No. <b>1.23</b>) with a space station within an orbital arc of <math>\pm 8^\circ</math> of the nominal orbital position of a proposed network in the FSS</p>		

TABLE 5-1 (*continued*) (Rev.WRC-07)

Reference of Article 9	Case	Frequency bands (and Region) of the service for which coordination is sought	Threshold/condition	Calculation method	Remarks
No. 9.7 GSO/GSO ( <i>cont.</i> )		5) 17.7-17.8 GHz	i) Bandwidth overlap, and ii) a) any network in the FSS and any associated space operation functions (see No. 1.23) with a space station within an orbital arc of $\pm 8^\circ$ of the nominal orbital position of a proposed network in the BSS,  or b) any network in the BSS and any associated space operation functions (see No. 1.23) with a space station within an orbital arc of $\pm 8^\circ$ of the nominal orbital position of a proposed network in the FSS  NOTE – No. 5.517 applies in Region 2.		
		6) 18.0-18.3 GHz (Region 2) 18.1-18.4 GHz (Regions 1 and 3)	i) Bandwidth overlap, and ii) any network in the FSS or meteorological-satellite service and any associated space operation functions (see No. 1.23) with a space station within an orbital arc of $\pm 8^\circ$ of the nominal orbital position of a proposed network in the FSS or the meteorological-satellite service		

TABLE 5-1 (*continued*) (Rev.WRC-07)

Reference of Article 9	Case	Frequency bands (and Region) of the service for which coordination is sought	Threshold/condition	Calculation method	Remarks
No. 9.7 GSO/GSO ( <i>cont.</i> )		7) Bands above 17.3 GHz, except those defined in § 3) and 6)	i) Bandwidth overlap, and ii) any network in the FSS and any associated space operation functions (see No. 1.23) with a space station within an orbital arc of $\pm 8^\circ$ of the nominal orbital position of a proposed network in the FSS (see also Resolution 901 (Rev.WRC-07))		
		8) Bands above 17.3 GHz except those defined in § 4) and 5)	i) Bandwidth overlap, and ii) any network in the FSS or BSS, not subject to a Plan, and any associated space operation functions (see No. 1.23) with a space station within an orbital arc of $\pm 16^\circ$ of the nominal orbital position of a proposed network in the FSS or BSS, not subject to a Plan, except in the case of a network in the FSS with respect to a network in the FSS (see also Resolution 901 (Rev.WRC-07))		

TABLE 5-1 (continued) (Rev.WRC-07)

Reference of Article 9	Case	Frequency bands (and Region) of the service for which coordination is sought	Threshold/condition	Calculation method	Remarks
No. 9.7 GSO/GSO (cont.)		9) All frequency bands, other than those in 1), 2), 3), 4), 5), 6), 7) and 8), allocated to a space service, and the bands in 1), 2), 3), 4), 5), 6), 7) and 8) where the radio service of the proposed network or affected networks is other than the space services listed in the threshold/condition column, or in the case of coordination of space stations operating in the opposite direction of transmission	i) Bandwidth overlap, and  ii) Value of $\Delta T/T$ exceeds 6%	Appendix 8	In application of Article 2A of Appendix 30 for the space operation functions using the guardbands defined in § 3.9 of Annex 5 of Appendix 30, the threshold/condition specified for the FSS in the bands in 2) applies.  In application of Article 2A of Appendix 30A for the space operation functions using the guardbands defined in § 3.1 and 4.1 of Annex 3 of Appendix 30A, the threshold/condition specified for the FSS in the bands in 7) applies

TABLE 5-1 (*continued*) (Rev.WRC-07)

Reference of Article 9	Case	Frequency bands (and Region) of the service for which coordination is sought	Threshold/condition	Calculation method	Remarks
No. <b>9.11</b> GSO, non-GSO/ terrestrial	A space station in the BSS in any band shared on an equal primary basis with terrestrial services and where the BSS is not subject to a Plan, in respect of terrestrial services	620-790 MHz 1 452-1 492 MHz 2 310-2 360 MHz 2 535-2 655 MHz (Nos. <b>5.417A</b> and <b>5.418</b> ) 12.5-12.75 GHz (Region 3) 17.3-17.8 GHz (Region 2) 21.4-22 GHz (Regions 1 and 3) 74-76 GHz	Bandwidths overlap: The detailed conditions for the application of No. <b>9.11</b> in the bands 2 630-2 655 MHz and 2 605-2 630 MHz are provided in Resolution <b>539 (Rev.WRC-03)</b> for non-GSO BSS (sound) systems pursuant to Nos. <b>5.417A</b> and <b>5.418</b> , and in Nos. <b>5.417A</b> and <b>5.418</b> for GSO BSS (sound) networks pursuant to those provisions. Resolution [ <b>COM4/1</b> ] ( <b>WRC-07</b> ) applies in the 620-790 MHz band	Check by using the assigned frequencies and bandwidths	



TABLE 5-1 (*continued*) (Rev.WRC-07)

Reference of Article 9	Case	Frequency bands (and Region) of the service for which coordination is sought	Threshold/condition	Calculation method	Remarks
...					
No. <b>9.13</b> GSO/non-GSO	A station in a GSO satellite network in the frequency bands for which a footnote refers to No. <b>9.11A</b> or No. <b>9.13</b> , in respect of any other non-GSO satellite network, with the exception of coordination between earth stations operating in the opposite direction of transmission	Frequency bands for which a footnote refers to No. <b>9.11A</b> or No. <b>9.13</b>	1) Bandwidths overlap 2) For the band 1 668-1 668.4 MHz with respect to MSS network coordination with <b>SRS</b> (passive) networks, in addition to bandwidth overlap, the e.i.r.p. spectral density of mobile earth stations in a GSO network of the mobile-satellite service operating in this band exceeds $-2.5 \text{ dB(W/4 kHz)}$ or the power spectral density delivered to the mobile earth station antenna exceeds $-10 \text{ dB(W/4 kHz)}$	1) Check by using the assigned frequencies and bandwidths 2) Check by using MSS network Appendix 4 data	
...					

TABLE 5-1 (*continued*) (Rev.WRC-07)

Reference of Article 9	Case	Frequency bands (and Region) of the service for which coordination is sought	Threshold/condition	Calculation method	Remarks
...					
No. <b>9.19</b> Terrestrial, GSO, non-GSO/ GSO, non-GSO	Any transmitting station of a terrestrial service or a transmitting earth station in the FSS (Earth-to-space) in a frequency band shared on an equal primary basis with the BSS, with respect to typical earth stations included in the service area of a space station in the BSS	Bands listed in No. <b>9.11</b> , the band 2 520-2 670 MHz and the band 11.7-12.7 GHz	i) Necessary bandwidths overlap; and  ii) the power flux-density (pfd) of the interfering station at the edge of the BSS service area exceeds the permissible level	Check by using the assigned frequencies and bandwidths	See also Article 6 of Appendix <b>30</b>
...					

TABLE 5-1 (continued) (Rev.WRC-07)

Reference of Article 9	Case	Frequency bands (and Region) of the service for which coordination is sought	Threshold/condition	Calculation method	Remarks
...					
No. <b>9.14</b> Non-GSO/ terrestrial, GSO/ terrestrial	A space station in a satellite network in the frequency bands for which a footnote refers to No. <b>9.11A</b> or to No. <b>9.14</b> , in respect of stations of terrestrial services where threshold(s) is (are) exceeded	1) Frequency bands for which a footnote refers to No. <b>9.11A</b> ; or  2) 11.7-12.2 GHz (Region 2 GSO FSS)	1) See § 1 of Annex 1 to this Appendix; In the bands specified in No. <b>5.4A01</b> , the detailed conditions for the application of No. <b>9.14</b> are provided in No. <b>5.4A01</b> for MSS networks or  2) In the band 11.7-12.2 GHz (Region 2 GSO FSS): -124 dB(W/(m <sup>2</sup> · MHz)) for 0° ≤ θ ≤ 5° -124 + 0.5 (θ - 5) dB(W/(m <sup>2</sup> · MHz)) for 5° < θ ≤ 25° -114 dB(W/(m <sup>2</sup> · MHz)) for θ > 25° where θ is the angle of arrival of the incident wave above the horizontal plane (degrees)	1) See § 1 of Annex 1 to this Appendix	

**MOD**      COM4/392/18      (B19/413/24)

TABLE 5-2 (continued) (WRC-07)

Frequency band (MHz)	Terrestrial service to be protected	Coordination threshold values				
		GSO space stations		Non-GSO space stations		
		pfd (per space station) calculation factors (NOTE 2)		pfd (per space station) calculation factors (NOTE 2)		% FDP (in 1 MHz) (NOTE 1)
		$P$	$r$ dB/degrees	$P$	$r$ dB/degrees	
...						
SUP 2 500-2 520						
SUP 2 520-2 535						
...						

**MOD**      COM5/287/7      (B8/293/11)      (R4/335/63)

## APPENDIX 7 (Rev.WRC-07)

### **Methods for the determination of the coordination area around an earth station in frequency bands between 100 MHz and 105 GHz**

#### ANNEX 7

### **System parameters and predetermined coordination distances for determination of the coordination area around an earth station**

Parameters required for the determination of coordination distance for a transmitting earth station

Transmitting space radiocommunication service designation		Fixed-satellite, mobile-satellite	Fixed-satellite	Fixed-satellite	Fixed-satellite	Fixed-satellite	Fixed-satellite	Space operation, space research		Fixed-satellite, mobile-satellite, meteorological-satellite		Fixed-satellite		Fixed-satellite		Fixed-satellite	Fixed-satellite <sup>3</sup>	Fixed-satellite	Fixed-satellite <sup>3</sup>	
Frequency bands (GHz)		2.655-2.690	5.091-5.150	5.091-5.150	5.725-5.850	5.725-7.075		7.100-7.235 <sup>5</sup>		7.900-8.400		10.7-11.7		12.5-14.8		13.75-14.3		15.43-15.65	17.7-18.4	19.3-19.7
Receiving terrestrial service designations		Fixed, mobile	Aeronautical radio-navigation	Aeronautical mobile (R)	Radio-location	Fixed, mobile		Fixed, mobile		Fixed, mobile		Fixed, mobile		Fixed, mobile		Radiolocation radionavigation (land only)		Aeronautical radionavigation	Fixed, mobile	Fixed, mobile
Method to be used		§ 2.1			§ 2.1	§ 2.1		§ 2.1, § 2.2		§ 2.1		§ 2.1		§ 2.1, § 2.2		§ 2.1			§ 2.1, § 2.2	§ 2.2
Modulation at terrestrial station <sup>1</sup>		A				A	N	A	N	A	N	A	N	A	N	–		N	N	
Terrestrial station interference parameters and criteria	$p_0$ (%)	0.01				0.01	0.005	0.01	0.005	0.01	0.005	0.01	0.005	0.01	0.005	0.01		0.005	0.005	
	$n$	2				2	2	2	2	2	2	2	2	2	2	1		2	2	
	$p$ (%)	0.005				0.005	0.0025	0.005	0.0025	0.005	0.0025	0.005	0.0025	0.005	0.0025	0.01		0.0025	0.0025	
	$N_L$ (dB)	0				0	0	0	0	0	0	0	0	0	0	0		0	0	
	$M_s$ (dB)	26 <sup>2</sup>				33	37	33	37	33	37	33	40	33	40	1		25	25	
	$W$ (dB)	0				0	0	0	0	0	0	0	0	0	0	0		0	0	
Terrestrial station parameters	$G_x$ (dBi) <sup>4</sup>	49 <sup>2</sup>	6	6		46	46	46	46	46	46	50	50	52	52	36		48	48	
	$T_e$ (K)	500 <sup>2</sup>				750	750	750	750	750	750	1 500	1 100	1 500	1 100	2 636		1 100	1 100	
Reference bandwidth	$B$ (Hz)	$4 \times 10^3$	$150 \times 10^3$	$10^6$		$4 \times 10^3$	$10^6$	$4 \times 10^3$	$10^6$	$4 \times 10^3$	$10^6$	$4 \times 10^3$	$10^6$	$4 \times 10^3$	$10^6$	$10^7$		$10^6$	$10^6$	
Permissible interference power	$P_A(p)$ (dBW) in $B$	–140	–160	–143		–131	–103	–131	–103	–131	–103	–128	–98	–128	–98	–131		–113	–113	

<sup>1</sup> A: analogue modulation; N: digital modulation.<sup>2</sup> The parameters for the terrestrial station associated with transhorizon systems have been used. Line-of-sight radio-relay parameters associated with the frequency band 5 725-7 075 MHz may also be used to determine a supplementary contour with the exception that  $G_x = 37$  dBi.<sup>3</sup> Feeder links of non-geostationary-satellite systems in the mobile-satellite service.<sup>4</sup> Feeder losses are not included.<sup>5</sup> Actual frequency bands are 7 100-7 155 MHz and 7 190-7 235 MHz for space operation service and 7 145-7 235 MHz for the space research service.

TABLE 8d (Rev.WRC-07)

**Parameters required for the determination of coordination distance for a receiving earth station**

Receiving space radiocommunication service designation	Meteoro- logical- satellite	Fixed- satellite	Fixed- satellite <sup>3</sup>	Broad- casting- satellite	Earth exploration- satellite <sup>4</sup>	Earth exploration- satellite <sup>5</sup>	Space research (deep space)	Space research		Fixed- satellite <sup>6</sup>	Fixed- satellite <sup>5</sup>	Mobile- satellite	Broadcasting- satellite, fixed-satellite	Mobile- satellite	Radio- navigation	Broadcasting- satellite
								Unman- ned	Manned							
Frequency bands (GHz)	18.0-18.4	18.8-19.3	19.3-19.7	21.4-22.0	25.5-27.0	25.5-27.0	31.8-32.3	37.0-38.0		37.5-40.5	37.5-40.5	39.5-40.5	40.5-42.5	43.5-47.0	43.5-47.0	84-86
Transmitting terrestrial service designations	Fixed, mobile	Fixed, mobile	Fixed, mobile	Fixed, mobile	Fixed, mobile	Fixed, mobile	Fixed, radio- navigation	Fixed, mobile		Fixed, mobile	Fixed, mobile	Fixed, mobile	Broadcasting, fixed	Mobile	Mobile	Fixed, mobile, broadcasting
Method to be used	§ 2.1	§ 2.1, § 2.2	§ 2.2	§ 1.4.5	§ 2.2	§ 2.1	§ 2.1, § 2.2	§ 2.1, § 2.2		§ 2.2	§ 2.1	§ 1.4.6	§ 1.4.5, § 2.1	§ 1.4.6	–	§ 1.4.5
Modulation at earth station <sup>1</sup>	N	N	N		N	N	N	N		N	N	N	–	N		
Earth station interference parameters and criteria	$p_0$ (%)	0.05	0.003	0.01		0.25	0.25	0.001	0.1	0.001	0.02	0.003				
	$n$	2	2	1		2	2	1	1	1		2				
	$p$ (%)	0.025	0.0015	0.01		0.125	0.125	0.001	0.1	0.001		0.0015				
	$N_L$ (dB)	0	0	0		0	0	0	0		1	1				
	$M_s$ (dB)	18.8	5	5		11.4	14	1	1		6.8	6				
	$W$ (dB)	0	0	0		0	0	0	0		0	0				
Terrestrial station parameters	$E$ (dBW) in $B$ <sup>2</sup>	A	–	–		–	–	–	–		–	–	–	–		
		N	40	40	40	42	42	–28	–28		35	35	35	44	40	40
	$P_f$ (dBW) in $B$	A	–	–		–	–	–	–		–	–	–	–		
		N	–7	–7	–7	–3	–3	–81	–73		–10	–10	–10	–1	–7	–7
	$G_x$ (dBi)	47	47	47	47	45	45	53	45		45	45	45	45	47	47
Reference bandwidth <sup>6</sup>	$B$ (Hz)	$10^7$	$10^6$	$10^6$		$10^7$	$10^7$	1	1		$10^6$	$10^6$	$10^6$			
Permissible interference power	$P_f(p)$ (dBW) in $B$	–115	–140	–137		–120	–116	–216	–217		–140					

<sup>1</sup> A: analogue modulation; N: digital modulation.<sup>2</sup>  $E$  is defined as the equivalent isotropically radiated power of the interfering terrestrial station in the reference bandwidth.<sup>3</sup> Non-geostationary mobile-satellite service feeder links.<sup>4</sup> Non-geostationary-satellite systems.<sup>5</sup> Geostationary-satellite systems.<sup>6</sup> Non-geostationary fixed-satellite service systems.

**MOD** COM5/216/9 (B3/224/22) (R2/266/14)

TABLE 10 (WRC-07)

**Predetermined coordination distances**

Frequency sharing situation		Coordination distance (in sharing situations involving services allocated with equal rights) (km)
Type of earth station	Type of terrestrial station	
...	...	...
Ground-based in the bands in which the frequency sharing situation is not covered in the rows above	Mobile (aircraft)	500

**SUP** COM4/211/8 (B3/224/23)

**APPENDIX 13 (Rev.WRC-03)\***

**Distress and safety communications (non-GMDSS)**

**MOD** COM4/296/45 (B9/305/47) (R4/335/65)

**APPENDIX 14 (Rev.WRC-07)**

**Phonetic alphabet and figure code**

(See Articles **30** and **57**) (WRC-07)

**MOD** COM4/296/46 (B9/305/48) (R4/335/66)

**APPENDIX 15 (Rev.WRC-07)**

**Frequencies for distress and safety communications for the Global Maritime Distress and Safety System (GMDSS)**

(See Article **31**)

The frequencies for distress and safety communications for the GMDSS are given in Tables 15-1 and 15-2 for frequencies below and above 30 MHz, respectively.



TABLE 15-1 (WRC-07)

**Frequencies below 30 MHz**

<b>Frequency (kHz)</b>	<b>Description of usage</b>	<b>Notes</b>
490	MSI	The frequency 490 kHz is used exclusively for maritime safety information (MSI). (WRC-03)
518	MSI	The frequency 518 kHz is used exclusively by the international NAVTEX system.
*2 174.5	NBDP-COM	
*2 182	RTP-COM	The frequency 2 182 kHz uses class of emission J3E. See also No. <b>52.190</b> .
*2 187.5	DSC	
3 023	AERO-SAR	The aeronautical carrier (reference) frequencies 3 023 kHz and 5 680 kHz may be used for intercommunication between mobile stations engaged in coordinated search and rescue operations, and for communication between these stations and participating land stations, in accordance with the provisions of Appendix 27 (see Nos. <b>5.111</b> and <b>5.115</b> ).
*4 125	RTP-COM	See also No. <b>52.221</b> . The carrier frequency 4 125 kHz may be used by aircraft stations to communicate with stations of the maritime mobile service for distress and safety purposes, including search and rescue (see No. <b>30.11</b> ).
*4 177.5	NBDP-COM	
*4 207.5	DSC	
4 209.5	MSI	The frequency 4 209.5 kHz is exclusively used for NAVTEX-type transmissions (see Resolution <b>339 (Rev.WRC-03)</b> ).
4 210	MSI-HF	
5 680	AERO-SAR	See note under 3 023 kHz above.
*6 215	RTP-COM	See also No. <b>52.221</b> .
*6 268	NBDP-COM	
*6 312	DSC	
6 314	MSI-HF	
*8 291	RTP-COM	
*8 376.5	NBDP-COM	
*8 414.5	DSC	
8 416.5	MSI-HF	

TABLE 15-1 (*end*) (WRC-07)

Frequency (kHz)	Description of usage	Notes
*12 290	RTP-COM	
*12 520	NBDP-COM	
*12 577	DSC	
12 579	MSI-HF	
*16 420	RTP-COM	
*16 695	NBDP-COM	
*16 804.5	DSC	
16 806.5	MSI-HF	
19 680.5	MSI-HF	
22 376	MSI-HF	
26 100.5	MSI-HF	

**Legend:**

**AERO-SAR** These aeronautical carrier (reference) frequencies may be used for distress and safety purposes by mobile stations engaged in coordinated search and rescue operations.

**DSC** These frequencies are used exclusively for distress and safety calls using digital selective calling in accordance with No. **32.5** (see Nos. **33.8** and **33.32**). (WRC-07)

**MSI** In the maritime mobile service, these frequencies are used exclusively for the transmission of maritime safety information (MSI) (including meteorological and navigational warnings and urgent information) by coast stations to ships, by means of narrow-band direct-printing telegraphy.

**MSI-HF** In the maritime mobile service, these frequencies are used exclusively for the transmission of high seas MSI by coast stations to ships, by means of narrow-band direct-printing telegraphy.

**NBDP-COM** These frequencies are used exclusively for distress and safety communications (traffic) using narrow-band direct-printing telegraphy.

**RTP-COM** These carrier frequencies are used for distress and safety communications (traffic) by radio-telephony.

\* Except as provided in these Regulations, any emission capable of causing harmful interference to distress, alarm, urgency or safety communications on the frequencies denoted by an asterisk (\*) is prohibited. Any emission causing harmful interference to distress and safety communications on any of the discrete frequencies identified in this Appendix is prohibited. (WRC-07)

TABLE 15-2 (WRC-07)

**Frequencies above 30 MHz (VHF/UHF)**

<b>Frequency (MHz)</b>	<b>Description of usage</b>	<b>Notes</b>
*121.5	AERO-SAR	<p>The aeronautical emergency frequency 121.5 MHz is used for the purposes of distress and urgency for radiotelephony by stations of the aeronautical mobile service using frequencies in the band between 117.975 MHz and 137 MHz. This frequency may also be used for these purposes by survival craft stations. Emergency position-indicating radio beacons use the frequency 121.5 MHz as indicated in Recommendation ITU-R M.690-1.</p> <p>Mobile stations of the maritime mobile service may communicate with stations of the aeronautical mobile service on the aeronautical emergency frequency 121.5 MHz for the purposes of distress and urgency only, and on the aeronautical auxiliary frequency 123.1 MHz for coordinated search and rescue operations, using class A3E emissions for both frequencies (see also Nos. <b>5.111</b> and <b>5.200</b>). They shall then comply with any special arrangement between governments concerned by which the aeronautical mobile service is regulated.</p>
123.1	AERO-SAR	<p>The aeronautical auxiliary frequency 123.1 MHz, which is auxiliary to the aeronautical emergency frequency 121.5 MHz, is for use by stations of the aeronautical mobile service and by other mobile and land stations engaged in coordinated search and rescue operations (see also No. <b>5.200</b>).</p> <p>Mobile stations of the maritime mobile service may communicate with stations of the aeronautical mobile service on the aeronautical emergency frequency 121.5 MHz for the purposes of distress and urgency only, and on the aeronautical auxiliary frequency 123.1 MHz for coordinated search and rescue operations, using class A3E emissions for both frequencies (see also Nos. <b>5.111</b> and <b>5.200</b>). They shall then comply with any special arrangement between governments concerned by which the aeronautical mobile service is regulated.</p>
156.3	VHF-CH06	The frequency 156.3 MHz may be used for communication between ship stations and aircraft stations engaged in coordinated search and rescue operations. It may also be used by aircraft stations to communicate with ship stations for other safety purposes (see also Note <i>f</i> ) in Appendix <b>18</b> ).
*156.525	VHF-CH70	The frequency 156.525 MHz is used in the maritime mobile service for distress and safety calls using digital selective calling (see also Nos. <b>4.9</b> , <b>5.227</b> , <b>30.2</b> and <b>30.3</b> ).

TABLE 15-2 (*end*) (WRC-07)

Frequency (MHz)	Description of usage	Notes
156.650	VHF-CH13	The frequency 156.650 MHz is used for ship-to-ship communications relating to the safety of navigation in accordance with Note <i>k</i> ) in Appendix 18.
*156.8	VHF-CH16	The frequency 156.8 MHz is used for distress and safety communications by radiotelephony. Additionally, the frequency 156.8 MHz may be used by aircraft stations for safety purposes only.
*161.975	AIS-SART VHF CH AIS 1	AIS 1 is used for AIS search and rescue transmitters (AIS-SART) for use in search and rescue operations.
*162.025	AIS-SART VHF CH AIS 2	AIS 2 is used for AIS search and rescue transmitters (AIS-SART) for use in search and rescue operations.
*406-406.1	406-EPIRB	This frequency band is used exclusively by satellite emergency position-indicating radio beacons in the Earth-to-space direction (see No. 5.266).
1 530-1 544	SAT-COM	In addition to its availability for routine non-safety purposes, the band 1 530-1 544 MHz is used for distress and safety purposes in the space-to-Earth direction in the maritime mobile-satellite service. GMDSS distress, urgency and safety communications have priority in this band (see No. 5.353A).
*1 544-1 545	D&S-OPS	Use of the band 1 544-1 545 MHz (space-to-Earth) is limited to distress and safety operations (see No. 5.356), including feeder links of satellites needed to relay the emissions of satellite emergency position-indicating radio beacons to earth stations and narrow-band (space-to-Earth) links from space stations to mobile stations.
1 626.5-1 645.5	SAT-COM	In addition to its availability for routine non-safety purposes, the band 1 626.5-1 645.5 MHz is used for distress and safety purposes in the Earth-to-space direction in the maritime mobile-satellite service. GMDSS distress, urgency and safety communications have priority in this band (see No. 5.353A).
*1 645.5-1 646.5	D&S-OPS	Use of the band 1 645.5-1 646.5 MHz (Earth-to-space) is limited to distress and safety operations (see No. 5.375).
9 200-9 500	SARTS	This frequency band is used by radar transponders to facilitate search and rescue.

**Legend:**

**AERO-SAR** These aeronautical carrier (reference) frequencies may be used for distress and safety purposes by mobile stations engaged in coordinated search and rescue operations.

**D&S-OPS** The use of these bands is limited to distress and safety operations of satellite emergency position-indicating radio beacons (EPIRBs).

**SAT-COM** These frequency bands are available for distress and safety purposes in the maritime mobile-satellite service (see Notes).

**VHF-CH#** These VHF frequencies are used for distress and safety purposes. The channel number (CH#) refers to the VHF channel as listed in Appendix 18, which should also be consulted.

**AIS** These frequencies are used by automatic identification systems (AIS), which should operate in accordance with the most recent version of Recommendation ITU-R M.1371. (WRC-07)

\* Except as provided in these Regulations, any emission capable of causing harmful interference to distress, alarm, urgency or safety communications on the frequencies denoted by an asterisk (\*) is prohibited. Any emission causing harmful interference to distress and safety communications on any of the discrete frequencies identified in this Appendix is prohibited. (WRC-07)

**MOD** COM4/332/177 (B14/365/40) (R7/411/210)

## APPENDIX 16 (Rev.WRC-07)

(See Articles 42 and 51)

### Section I – Ship stations for which a Global Maritime Distress and Safety System installation is required by international agreement

These stations shall be provided with:

- 1 the licence prescribed by Article 18;
- 2 certificates of the operator or operators;

3 a log in which the following are recorded as they occur, together with the time of the occurrence, unless administrations have adopted other arrangements for recording all information which the log should contain:

- a) a summary of communications relating to distress, urgency and safety traffic;
- b) a reference to important service incidents;

4 the *List of Ship Stations and Maritime Mobile Service Identity Assignments* (see Article 20) in either printed or electronic format;

5 the *List of Coast Stations and Special Service Stations* (see Article 20) in either printed or electronic format;

6 the *Manual for Use by the Maritime Mobile and Maritime Mobile-Satellite Services* (see Article 20) in either printed or electronic format.

NOTE – An administration may exempt a ship from the carriage of the documents mentioned in items 5 and 6 above under various circumstances (for example, when that ship carries equivalent information for the ship's specified trading area).

## **Section II – Other ship stations for which a radio installation is required by regional or international agreement**

These stations shall be provided with:

- 1 the licence prescribed by Article 18;
- 2 certificates of the operator or operators;
- 3 a log or other arrangements which the administration may have adopted for that purpose, in which a summary of communications related to distress, urgency and safety traffic shall be recorded together with the time of their occurrence;
- 4 the *List of Coast Stations and Special Service Stations* (see Article 20) in either printed or electronic format;
- 5 the relevant rules and procedures of radiocommunications, e.g. *Manual for Use by the Maritime Mobile and Maritime Mobile-Satellite Services* (paper or electronic format) (see Article 20).

NOTE – An administration may exempt a ship from the carriage of the documents mentioned in items 4 and 5 above under various circumstances (for example, when that ship carries equivalent information for the ship's specified trading area).

### **Section III – Other ship stations**

These stations shall be provided with:

- 1 the documents mentioned in items 1 and 2 of Section II;
- 2 the documents mentioned in items 4 and 5 of Section II, in accordance with the requirements of the administrations concerned.

NOTE – An administration may exempt a ship from the carriage of the documents mentioned in item 2 above under various circumstances (for example, when that ship carries equivalent information for the ship's specified trading area). Administrations may also, by mutual agreement, exempt ships travelling only between their national jurisdictions from the licensing prescribed by Article 18 and the carriage of the documents mentioned in item 1 above, provided those vessels are otherwise licensed or authorized by regulation.

### **Section IV – Stations on board aircraft**

These stations shall be provided with:

- 1 the documents mentioned in items 1 and 2 of Section I;
- 2 a log, unless administrations have adopted other arrangements for recording all information which the log should contain;
- 3 those published documents, in either printed or electronic formats, containing official information relating to stations which the aircraft station may use for the execution of its service.

## **APPENDIX 17 (Rev.WRC-07)**

### **Frequencies and channelling arrangements in the high-frequency bands for the maritime mobile service**

(See Article 52)

**MOD** COM4/380/58 (B17/404/62)

#### **PART A – Table of subdivided bands (WRC-07)**

**SUP** COM4/380/59 (B17/404/63)

*h)*

**MOD** COM4/380/60 (B17/404/64)

- i)* For the use of the carrier frequencies 4 125 kHz, 6 215 kHz, 8 291 kHz, 12 290 kHz and 16 420 kHz in these sub-bands by ship and coast stations for distress and safety purposes, by single-sideband radiotelephony, see Article 31.

## **PART B – Channelling arrangements** (WRC-07)

### **Section I – Radiotelephony**

**MOD** COM4/380/61 (B17/404/65)

5A For the use of the carrier frequencies:

4 125 kHz (Channel No. 421);

6 215 kHz (Channel No. 606);

8 291 kHz (Channel No. 833);

12 290 kHz (Channel No. 1221);

16 420 kHz (Channel No. 1621);

in Sub-Section A, by coast and ship stations for distress and safety purposes, see Article **31**. (WRC-07)

**MOD** COM4/380/62 (B17/404/66)

5 For the conditions of use of the carrier frequency 6 215 kHz, see Appendix **15**.

**MOD** COM4/296/47 (B9/305/49) (R4/335/67)

### **APPENDIX 18 (Rev.WRC-07)**

#### **Table of transmitting frequencies in the VHF maritime mobile band**

(See Article **52**)

NOTE A – For assistance in understanding the Table, see Notes *a*) to *q*) below. (WRC-07)

**ADD** COM4/296/48 (B9/305/50) (R4/335/68)

NOTE B – The Table below defines the channel numbering for maritime VHF communications based on 25 kHz channel spacing and use of several duplex channels, but also allows the use of 12.5 kHz channel spacing. The channel numbering for 12.5 kHz channels and the conversion of two-frequency channels for single-frequency operation shall be in accordance with Recommendation ITU-R M.1084-4 Annex 4, Tables 1 and 3. (WRC-07)



Channel designator	Notes	Transmitting frequencies (MHz)		Inter-ship	Port operations and ship movement		Public correspondence
		From ship stations	From coast stations		Single frequency	Two frequency	
60	<i>m), o)</i>	156.025	160.625			x	x
01	<i>m), o)</i>	156.050	160.650			x	x
61	<i>m), o)</i>	156.075	160.675		x	x	x
02	<i>m), o)</i>	156.100	160.700		x	x	x
62	<i>m), o)</i>	156.125	160.725		x	x	x
03	<i>m), o)</i>	156.150	160.750		x	x	x
63	<i>m), o)</i>	156.175	160.775		x	x	x
04	<i>m), o)</i>	156.200	160.800		x	x	x
64	<i>m), o)</i>	156.225	160.825		x	x	x
05	<i>m), o)</i>	156.250	160.850		x	x	x
65	<i>m), o)</i>	156.275	160.875		x	x	x
06	<i>f)</i>	156.300		x			
66	<i>m), o)</i>	156.325	160.925			x	x
07	<i>m), o)</i>	156.350	160.950			x	x
67	<i>h)</i>	156.375	156.375	x	x		
08		156.400		x			
68		156.425	156.425		x		
09	<i>i)</i>	156.450	156.450	x	x		
69		156.475	156.475	x	x		
10	<i>h), q)</i>	156.500	156.500	x	x		
70	<i>f), j)</i>	156.525	156.525	Digital selective calling for distress, safety and calling			
11	<i>q)</i>	156.550	156.550		x		
71		156.575	156.575		x		
12		156.600	156.600		x		
72	<i>i)</i>	156.625		x			
13	<i>k)</i>	156.650	156.650	x	x		
73	<i>h), i)</i>	156.675	156.675	x	x		
14		156.700	156.700		x		
74		156.725	156.725		x		
15	<i>g)</i>	156.750	156.750	x	x		
75	<i>n)</i>	156.775	156.775		x		

Channel designator	Notes	Transmitting frequencies (MHz)		Inter-ship	Port operations and ship movement		Public corres- pondence
		From ship stations	From coast stations		Single frequency	Two frequency	
16	<i>f)</i>	156.800	156.800	DISTRESS, SAFETY AND CALLING			
76	<i>n)</i>	156.825	156.825		x		
17	<i>g)</i>	156.850	156.850	x	x		
77		156.875		x			
18	<i>m)</i>	156.900	161.500		x	x	x
78	<i>m)</i>	156.925	161.525			x	x
19	<i>m)</i>	156.950	161.550			x	x
79	<i>m)</i>	156.975	161.575			x	x
20	<i>m)</i>	157.000	161.600			x	x
80	<i>m)</i>	157.025	161.625			x	x
21	<i>m)</i>	157.050	161.650			x	x
81	<i>m)</i>	157.075	161.675			x	x
22	<i>m)</i>	157.100	161.700		x	x	x
82	<i>m), o)</i>	157.125	161.725		x	x	x
23	<i>m), o)</i>	157.150	161.750		x	x	x
83	<i>m), o)</i>	157.175	161.775		x	x	x
24	<i>m), o)</i>	157.200	161.800		x	x	x
84	<i>m), o)</i>	157.225	161.825		x	x	x
25	<i>m), o)</i>	157.250	161.850		x	x	x
85	<i>m), o)</i>	157.275	161.875		x	x	x
26	<i>m), o)</i>	157.300	161.900		x	x	x
86	<i>m), o)</i>	157.325	161.925		x	x	x
27		157.350	161.950			x	x
87		157.375	157.375		x		
28		157.400	162.000			x	x
88		157.425	157.425		x		
AIS 1	<i>f), l), p)</i>	161.975	161.975				
AIS 2	<i>f), l), p)</i>	162.025	162.025				

## Notes referring to the Table

### *General notes*

**MOD** COM4/296/50 (B9/305/52) (R4/335/70)

- e) Administrations may apply 12.5 kHz channel interleaving on a non-interference basis to 25 kHz channels, in accordance with the most recent version of Recommendation ITU-R M.1084, provided:
- it shall not affect the 25 kHz channels of the present Appendix maritime mobile distress and safety frequencies, especially the channels 06, 13, 15, 16, 17, and 70, nor the technical characteristics set forth in Recommendation ITU-R M.489-2 for those channels;
  - implementation of 12.5 kHz channel interleaving and consequential national requirements shall be subject to coordination with affected administrations. (WRC-07)

**MOD** COM4/296/51 (B9/305/53) (R4/335/71)

### *Specific notes*

- f) The frequencies 156.300 MHz (channel 06), 156.525 MHz (channel 70), 156.800 MHz (channel 16), 161.975 MHz (AIS 1) and 162.025 MHz (AIS 2) may also be used by aircraft stations for the purpose of search and rescue operations and other safety-related communication. (WRC-07)

**MOD** COM4/296/52 (B9/305/54) (R4/335/72)

- l) These channels (AIS 1 and AIS 2) are used for an automatic identification system (AIS) capable of providing worldwide operation, unless other frequencies are designated on a regional basis for this purpose. Such use should be in accordance with the most recent version of Recommendation ITU-R M.1371. (WRC-07)
- m) These channels may be operated as single frequency channels, subject to coordination with affected administrations. (WRC-07)
- o) These channels may be used to provide bands for new technologies, subject to coordination with affected administrations. Stations using these channels or bands for new technologies shall not cause harmful interference to, and shall not claim protection from, other stations operating in accordance with Article 5. The design of such systems shall be such as to preclude the possibility of interference to the detection of AIS signals on 161.975 or 162.025 MHz. (WRC-07)

**ADD** COM4/296/53 (B16/401/5)

- p) Additionally, AIS 1 and AIS 2 may be used by the mobile-satellite service (Earth-to-space) for the reception of AIS transmissions from ships. (WRC-07)

**ADD** COM4/296/54 (B9/305/56) (R4/335/73)

- q) When using these channels (10 and 11), all precautions should be taken to avoid harmful interference to channel 70. (WRC-07)

APPENDIX 19

**Technical characteristics of emergency position-indicating radiobeacons  
operating on the carrier frequency 2 182 kHz**

APPENDIX 30 (Rev.WRC-07)\*

**Provisions for all services and associated Plans and List<sup>1</sup> for  
the broadcasting-satellite service in the frequency bands  
11.7-12.2 GHz (in Region 3), 11.7-12.5 GHz (in Region 1)  
and 12.2-12.7 GHz (in Region 2) (WRC-03)**

(See Articles 9 and 11) (WRC-03)

ARTICLE 2A (Rev.WRC-07)

**Use of the guardbands**

MOD COM5/307/3 (B11/329/10) (R6/410/15)

2A.1 The use of the guardbands defined in § 3.9 of Annex 5 to provide space operation functions in accordance with No. **1.23** in support of the operation of geostationary-satellite networks in the broadcasting-satellite service (BSS) is not subject to the application of Section I of Article 9.

2A.1.1 Coordination between assignments intended to provide the space operation functions and assignments of the BSS subject to a Plan shall be effected using the provisions of Article 7.

2A.1.2 Coordination among assignments intended to provide the space operation functions and services not subject to a Plan shall be effected using the provisions of Nos. **9.7, 9.17, 9.18** and the associated provisions of Section II of Article 9, or § 4.1.1 *d*) or 4.2.3 *d*) of Article 4, as appropriate.

2A.1.3 Coordination of modifications to the Region 2 Plan or assignments to be included in the Regions 1 and 3 List with assignments intended to provide these functions shall be effected using § 4.1.1 *e*) or 4.2.3 *e*), as appropriate, of Article 4.

2A.1.4 Requests for the above-mentioned coordination shall be sent by the requesting administration to the Bureau, together with the appropriate information listed in Appendix 4.

2A.2 Any assignment intended to provide these functions in support of a geostationary-satellite network in the BSS shall be notified under Article 11 and brought into use within the following time-limits:

2A.2.1 a) for the case where the associated BSS assignments are contained in one of the initial Plans (Region 2 Plans incorporated in the Radio Regulations at WARC Orb-85 and the Regions 1 and 3 Plan adopted at WRC-2000), within the regulatory time-limit referred to in § 4.1.3 or § 4.2.6 of Article 4 from the date of receipt by the Bureau of the complete Appendix 4 data for those assignments intended to provide the space operation functions;

2A.2.2 b) for the case where the associated BSS assignments have been submitted under § 4.1.3 or § 4.2.6 of Article 4 for entry in the Regions 1 and 3 List or a modification to the Region 2 Plan, within the regulatory time-limit referred to in § 4.1.3 or § 4.2.6 of Article 4 for those associated BSS assignments;

2A.2.3 c) for the case where the associated BSS assignments have already been brought into use in accordance with the Radio Regulations, within the regulatory time-limit referred to in § 4.1.3 and § 4.2.6 of Article 4 from the date of receipt by the Bureau of the complete Appendix 4 data for those assignments intended to provide the space operation functions.

2A.3 Section II of Article 23 does not apply to assignments in the guardbands intended to provide the above-mentioned functions.

## ARTICLE 4 (Rev.WRC-03)

### **Procedures for modifications to the Region 2 Plan or for additional uses in Regions 1 and 3<sup>3</sup>**

**MOD** COM5/307/4 (B11/329/11) (R6/410/16)

4.1.3 An administration, or one<sup>4</sup> acting on behalf of a group of named administrations, intending to include a new or modified assignment in the List shall send to the Bureau, not earlier than eight years but preferably not later than two years before the date on which the assignment is to be brought into use, the relevant information listed in Appendix 4. An assignment in the List shall lapse if it is not brought into use within eight years after the date of receipt by the Bureau of the relevant complete information<sup>5</sup>. A proposed new or modified assignment not included in the List within eight years after the date of receipt by the Bureau of the relevant complete information shall also lapse<sup>5</sup>. (WRC-07)

**MOD** COM5/307/5 (B11/329/12) (R6/410/17)

4.1.5 The Bureau shall determine, on the basis of Annex 1, the administrations whose frequency assignments are considered to be affected. The Bureau shall publish<sup>7</sup>, in a Special Section of its International Frequency Information Circular (BR IFIC), the complete information received under § 4.1.3, together with the names of the affected administrations, the corresponding fixed-satellite service networks, the corresponding broadcasting-satellite service assignments and terrestrial stations, as appropriate. The Bureau shall immediately send a telegram/fax to the administration proposing the assignment, drawing its attention to the information contained in the relevant BR IFIC. (WRC-07)

#### 4.1.5

**MOD** COM5/308/5 (B10/326/5) (R6/410/18)

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<sup>7</sup> If the payments are not received in accordance with the provisions of Council Decision 482, as amended, on the implementation of cost recovery for satellite network filings, the Bureau shall cancel the publication, after informing the administration concerned. The Bureau shall inform all administrations of such action and that the network specified in the publication in question no longer has to be taken into consideration by the Bureau and other administrations. The Bureau shall send a reminder to the notifying administration not later than two months prior to the deadline for the payment in accordance with the above-mentioned Council Decision 482 unless the payment has already been received. (WRC-07)

**MOD** COM5/307/6 (B11/329/13) (R6/410/19)

4.1.6 The Bureau shall send a telegram/fax to the administrations listed in the Special Section of the BR IFIC, drawing their attention to the information it contains. (WRC-07)

**MOD** COM5/379/5 (B16/401/6)

4.1.11 If, in seeking agreement, an administration modifies its initial proposal, it shall again apply the provisions of § 4.1 and the subsequent procedure in cases where:

- the assignments of any other administration received by the Bureau in accordance with § 4.1.3 or § 4.2.6, or § 7.1 of Article 7, or No. 9.7 before this modified proposal is received under § 4.1.12;
- the assignments of any other administration contained in the Plans or the Lists; *or*
- the terrestrial services of any other administration,

are considered as being affected and receive more interference as a result of the modifications than that produced by the initial proposal. (WRC-07)

#### 4.1.1.5

**MOD** COM5/308/6 (B10/326/6) (R6/410/20)

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<sup>8</sup> If the payments are not received in accordance with the provisions of Council Decision 482, as amended, on the implementation of cost recovery for satellite network filings, the Bureau shall cancel the publication, after informing the administration concerned. The Bureau shall inform all administrations of such action and that the network specified in the publication in question no longer has to be taken into consideration by the Bureau and other administrations. The Bureau shall send a reminder to the notifying administration not later than two months prior to the deadline for the payment in accordance with the above-mentioned Council Decision 482 unless the payment has already been received. (WRC-07)

**MOD** COM5/307/7 (B11/329/14) (R6/410/21)

4.2.6 An administration, or one<sup>13</sup> acting on behalf of a group of named administrations, intending to make a modification to the Region 2 Plan shall send to the Bureau, not earlier than eight years but preferably not later than two years before the date on which the assignment is to be brought into use, the relevant information listed in Appendix 4. Modifications to that Plan shall lapse if the assignment is not brought into use within eight years after the date of receipt by the Bureau of the relevant complete information<sup>14</sup>. A request for a modification that has not been included in that Plan within eight years after the date of receipt by the Bureau of the relevant complete information shall also lapse<sup>14</sup>. (WRC-07)

**MOD** COM5/307/8 (B11/329/15) (R6/410/22)

4.2.8 The Bureau shall determine, on the basis of Annex 1, the administrations whose frequency assignments are considered to be affected within the meaning of § 4.2.3. The Bureau shall publish<sup>16</sup>, in a Special Section of its BR IFIC, the complete information received under § 4.2.6, together with the names of the affected administrations, the corresponding fixed-satellite service networks, the corresponding broadcasting-satellite service assignments and terrestrial stations, as appropriate. The Bureau shall immediately send a telegram/fax to the administration proposing the modification to the Region 2 Plan, drawing its attention to the information contained in the relevant BR IFIC. (WRC-07)

#### 4.2.8

**MOD** COM5/308/7 (B10/326/7) (R6/410/23)

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<sup>16</sup> If the payments are not received in accordance with the provisions of Council Decision 482, as amended, on the implementation of cost recovery for satellite network filings, the Bureau shall cancel the publication, after informing the administration concerned. The Bureau shall inform all administrations of such action and that the network specified in the publication in question no longer has to be taken into consideration by the Bureau and other administrations. The Bureau shall send a reminder to the notifying administration not later than two months prior to the deadline for the payment in accordance with the above-mentioned Council Decision 482 unless the payment has already been received. (WRC-07)

**MOD** COM5/307/9 (B11/329/16) (R6/410/24)

4.2.9 The Bureau shall send a telegram/fax to the administrations listed in the Special Section of its BR IFIC, drawing their attention to the information it contains. (WRC-07)

**MOD** COM5/307/10 (B11/329/17) (R6/410/25)

4.2.10 An administration which considers that it should have been included in the publication referred to under § 4.2.8 above shall, within four months of the date of publication in the relevant BR IFIC, and giving the technical reasons for so doing, request the Bureau to include its name in the publication. The Bureau shall study this information on the basis of Annex 1 and shall inform both administrations of its conclusions. Should the Bureau agree to the administration's request, it shall publish an addendum to the publication under § 4.2.8. (WRC-07)

#### 4.2.19

**MOD** COM5/308/8 (B10/326/8) (R6/410/26)

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<sup>17</sup> If the payments are not received in accordance with the provisions of Council Decision 482, as amended, on the implementation of cost recovery for satellite network filings, the Bureau shall cancel the publication, after informing the administration concerned. The Bureau shall inform all administrations of such action and that the network specified in the publication in question no longer has to be taken into consideration by the Bureau and other administrations. The Bureau shall send a reminder to the notifying administration not later than two months prior to the deadline for the payment in accordance with the above-mentioned Council Decision 482 unless the payment has already been received. (WRC-07)

**MOD** COM5/308/9 (B10/326/9) (R6/410/27)

### ARTICLE 5 (WRC-03)

#### **Notification, examination and recording in the Master International Frequency Register of frequency assignments to space stations in the broadcasting-satellite service**<sup>ADD 17A</sup> (WRC-07)

**ADD** COM5/308/10 (B10/326/10) (R6/410/28)

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<sup>17A</sup> If the payments are not received in accordance with the provisions of Council Decision 482, as amended, on the implementation of cost recovery for satellite network filings, the Bureau shall cancel the publication specified in § 5.1.6 and the corresponding entries in the Master Register under § 5.2.2, 5.2.2.1, 5.2.2.2 or 5.2.6, as appropriate, and the corresponding entries included in the Plan on and after 3 June 2000 or in the List, as appropriate, after informing the administration concerned. The Bureau shall inform all administrations of such action. The Bureau shall send a reminder to the notifying administration not later than two months prior to the deadline for the payment in accordance with the above-mentioned Council Decision 482 unless the payment has already been received. See also Resolution [COM 5/2] (WRC-07). (WRC-07)

**MOD** COM5/307/11 (B11/329/18) (R6/410/29)

5.2.2 Where the Bureau reaches a favourable finding with respect to § 5.2.1 *a*), 5.2.1 *b*) and 5.2.1 *c*), the frequency assignment of an administration shall be recorded in the Master Register. The date of receipt of the notice by the Bureau shall be entered in the Master Register. In relations between administrations, all frequency assignments brought into use in conformity with the appropriate Regional Plan and recorded in the Master Register shall be considered to have the same status irrespective of the dates of receipt entered in the Master Register for such frequency assignments. (WRC-07)



**MOD** COM5/307/12 (B11/329/19) (R6/410/30)

5.2.2.1 Where the Bureau reaches a favourable finding with respect to § 5.2.1 *a*), 5.2.1 *c*) and 5.2.1 *d*), the frequency assignment shall be recorded in the Master Register. The date of receipt of the notice by the Bureau shall be entered in the Master Register. In relations between administrations, all frequency assignments brought into use in conformity with the appropriate Regional Plan and recorded in the Master Register shall be considered to have the same status irrespective of the dates of receipt entered in the Master Register for such frequency assignments. When recording these assignments, the Bureau shall indicate by an appropriate symbol the characteristics having a value different from that appearing in the appropriate regional Plan. (WRC-07)

**MOD** COM5/307/13 (B11/329/20) (R6/410/31)

5.2.2.2 In the case of Region 2, where the Bureau reaches a favourable finding with respect to § 5.2.1 *a*) and 5.2.1 *c*), but an unfavourable finding with respect to § 5.2.1 *b*) and 5.2.1 *d*), it shall examine the notice with respect to the successful application of the provisions of Resolution **42 (Rev.WRC-03)**. A frequency assignment for which the provisions of Resolution **42 (Rev.WRC-03)** have been successfully applied shall be recorded in the Master Register with an appropriate symbol to indicate its interim status. The date of receipt of the notice by the Bureau shall be entered in the Master Register. In relations between administrations all frequency assignments brought into use following the successful application of the provisions of Resolution **42 (Rev.WRC-03)** and recorded in the Master Register shall be considered to have the same status irrespective of the dates of receipt entered in the Master Register for such frequency assignments. (WRC-07)

**MOD** COM5/307/14 (B11/329/21) (R6/410/32)

5.2.3 Whenever a frequency assignment is recorded in the Master Register, the finding reached by the Bureau shall be indicated. (WRC-07)

**MOD** COM5/307/15 (B11/329/22) (R6/410/33)

5.2.9 The date of bringing into use notified by the administration concerned shall be recorded in the Master Register. (WRC-07)

**MOD** COM5/307/16 (B11/329/23) (R6/410/34)

5.3.1 Any notified frequency assignment to which the Article 4 procedures have been applied and which has been provisionally recorded under § 5.2.7 shall be brought into use no later than the end of the period provided under § 4.1.3 or 4.2.6 of Article 4. Any other frequency assignment provisionally recorded under § 5.2.7 shall be brought into use by the date specified in the notice. Unless the Bureau has been informed by the notifying administration of the bringing into use of the assignment under § 5.2.8, it shall, no later than fifteen days before the notified date of bringing into use or the end of the regulatory period established under § 4.1.3 or 4.2.6 of Article 4, as appropriate, send a reminder requesting confirmation that the assignment has been brought into use within the regulatory period. If the Bureau does not receive that confirmation within thirty days following the notified date of bringing into use or the period provided under § 4.1.3 or 4.2.6 of Article 4, as the case may be, it shall cancel the entry in the Master Register. (WRC-07)

## ARTICLE 10

### **The Plan for the broadcasting-satellite service in the frequency band 12.2-12.7 GHz in Region 2**

**MOD** COM5/216/10 (B3/224/25) (R2/266/16)

*(Note after Table 3)*

Note – The administrations listed in Table 3 were identified on the basis of the criteria adopted at the Regional Administrative Conference for the Planning of the Broadcasting-satellite Service in Region 2 (Geneva, 1983) (RARC Sat-R2), as shown in Table 2. WRC-2000 and WRC-03 revised the criteria applicable to determine affected administrations. Therefore, the Bureau, when receiving a notification for an assignment in the Region 2 Plan, shall determine which countries are affected on the basis of the revised criteria adopted by WRC-03, which may lead to a different set of affected administration(s) from that currently contained in Table 3. (WRC-07)

## ARTICLE 11 (Rev.WRC-03)

### **Plan for the broadcasting-satellite service in the frequency bands 11.7-12.2 GHz in Region 3 and 11.7-12.5 GHz in Region 1**

11.2 TEXT FOR NOTES IN THE REMARKS COLUMN  
OF THE PLAN (WRC-03)

**SUP** COM5/328/1 (B12/346/1) (R6/410/35)

TABLE 2

**ADD** COM5/328/5 (B12/346/2) (R6/410/36)

TABLE 2 (WRC-07)

**Affected administrations and corresponding networks/beams identified based on Note 5 in § 11.2 of Article 11**

Beam name	Channels	Ref. Table 1	Affected administrations*	Affected networks/beams/terrestrial stations*
ARS34000	40	c	BLR/IK, CHN, F/EUT, G, HOL, INS, J, KOR, MLA, PAK, THA, TON, UAE, USA	AM-SAT A4, APSTAR-4, ASIASAT-AKX, ASIASAT-CKX, ASIASAT-EK1, ASIASAT-EKX, EMARSAT-1F, EMARSAT-1G, EUTELSAT 3-36E, EUTELSAT 3-48E, EUTELSAT 3-70.5E, INTELSAT7 66E, INTERSPUTNIK-27E-Q, JCSAT-3A, JCSAT-3B, KOREASAT-1, MEASAT-1, MEASAT-91.5E, MEASAT-95E, N-SAT-110, N-SAT-110E, N-SAT-128, NSS-8, NSS-9, PAKSAT-1, SJC-1, THAICOM-A2B, THAICOM-C1, THAICOM-G1K, TONGASAT C/KU-1
AUSA_100	1, 5, 9	c	BLR/IK	INTERSPUTNIK-153.5EQ
AZE06400	25, 27, 29, 31, 33, 35, 37, 39	c	BLR/IK	INTERSPUTNIK-27E-Q
BEL01800	26, 28, 30, 32, 34, 36, 38, 40	c	PAK	PAKSAT-1
BFA10700	22, 24	c	E	HISPASAT-1, HISPASAT-2C3 KU
BHR25500	25	c	BLR/IK, F/EUT, PAK	EUTELSAT 3-36E, INTERSPUTNIK-27E-Q, PAKSAT-1
BHR25500	29, 33, 37	c	BLR/IK, F/EUT	EUTELSAT 3-36E, INTERSPUTNIK-27E-Q
CAF25800	22, 26	c	F/EUT	EUTELSAT 3-12.5W
CME30000	22, 24, 26	c	F/EUT	EUTELSAT 3-12.5W
COG23500	1, 3, 5, 7, 9, 11, 13, 15, 17, 19	c	F/EUT	EUTELSAT 3-12.5W
CPV30100	2, 4, 6, 8, 10, 12	c	USA	INTELSAT7 325.5E
CVA08300	1, 3, 5, 7, 9, 11	c	USA	INTELSAT7 359E, INTELSAT8 359E, INTELSAT10 359E
CYP08600	1, 3, 5, 7, 9, 11, 13	c	USA	INTELSAT7 359E, INTELSAT8 359E
CZE14401	1, 9, 17, 25	c	F/EUT	EUTELSAT 3-12.5W
CZE14402	14	c	F/EUT	EUTELSAT 3-12.5W
CZE14403	2, 22, 24	c	F/EUT	EUTELSAT 3-12.5W
FSM00000	1, 3, 5, 7, 9, 11, 13	c	J, USA	INTELSAT7 157E, SUPERBIRD-A2

Beam name	Channels	Ref. Table 1	Affected administrations*	Affected networks/beams/terrestrial stations*
FSM00000	15, 17, 19, 21, 23	c	J	SUPERBIRD-A2
GAB26000	1, 5, 9, 13, 17	c	F/EUT	EUTELSAT 3-12.5W
GMB30200	1, 5, 9, 13, 17	c	USA	USASAT-26A
GNB30400	22, 24	c	E	HISPASAT-1, HISPASAT-2C3 KU
GRC10500	2, 4, 6, 8, 10, 12	c	USA	INTELSAT7 359E, INTELSAT8 359E, INTELSAT10 359E
GUI19200	2, 4, 6, 8, 10, 12, 14, 16, 18, 20	c	USA	USASAT-26A
HNG10601	3, 11, 19	c	F/EUT	EUTELSAT 3-12.5W
HNG10602	6	c	F/EUT	EUTELSAT 3-12.5W
HNG10603	2, 22, 24	c	F/EUT	EUTELSAT 3-12.5W
HRV14801	5, 13, 21	c	F/EUT	EUTELSAT 3-12.5W
HRV14802	10	c	F/EUT	EUTELSAT 3-12.5W
HRV14803	2, 22, 24	c	F/EUT	EUTELSAT 3-12.5W
I 08200	22	c	F/EUT	EUTELSAT 3-7E
I 08200	26	c	F/EUT	EUTELSAT 3-7E
IRL21100	1, 3, 5, 7, 9, 11, 13, 15, 17, 19	c	USA	USASAT-26A
ISL04900	27	a	GUY	GUY00302
ISL04900	29, 39	a	JMC	JMC00005
ISL04900	31, 33, 35, 37	a	GUY, JMC	GUY00302, JMC00005
ISL04900	23	c	B, F, F/EUT, HOL, USA	B-SAT I, EUTELSAT 3-12.5W, EUTELSAT 3-7E, F-SAT-KU-E-5W, INTELSAT8 304.5E, INTELSAT8 310E, NSS-18, USASAT-14L, USASAT-26G
ISL05000	22, 24, 26	c	HOL	NSS-18
KIR__100	1, 3, 5, 7, 9, 11, 13	c	USA	INTELSAT7 174E, INTELSAT7 176E, INTELSAT7 177E, INTELSAT7 178E, INTELSAT7 180E, INTELSAT8 174E, INTELSAT8 176E, INTELSAT8 178E, USASAT-14K
KIR__100	17, 21	c	USA	USASAT-14K
LBR24400	1, 5, 9, 13	c	USA	INTELSAT7 325.5E
MAU__100	26, 28, 30, 32, 34, 36, 38, 40	c	BLR/IK, F/EUT	EUTELSAT 3-36E, INTERSPUTNIK-27E-Q
MDA06300	28, 30, 32, 34, 36, 38, 40	c	THA	THAICOM-C1
MLI__100	1, 3, 5, 7, 9, 11, 13	c	USA	INTELSAT IBS 342E, INTELSAT7 342E, INTELSAT7 340E, INTELSAT8 342E, INTELSAT8 340E

Beam name	Channels	Ref. Table 1	Affected administrations*	Affected networks/beams/terrestrial stations*
MNG24800	27	c	BLR/IK, F/EUT, IND	EUTELSAT 3-70.5E, INSAT-EK74, INTERSPUTNIK-75E-Q
MNG24800	31, 35	c	BLR/IK, CHN, F/EUT, IND, THA	APSTAR-4, EUTELSAT 3-70.5E, INSAT-EK74, INTERSPUTNIK-75E-Q, THAICOM-A2B, THAICOM-G1K
MOZ30700	2, 6, 10	c	USA	INTELSAT7 359E, INTELSAT8 359E, INTELSAT10 359E
NGR11500	2, 4, 6, 8, 10, 12, 14, 16, 18, 20	c	USA	USASAT-26A
NOR12000	1, 3, 5, 7, 9, 11, 13	c	USA	INTELSAT7 359E, INTELSAT8 359E, INTELSAT10 359E
NZL__100	2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24	c	J	SUPERBIRD-A2
POL13200	28, 30, 32, 34, 36, 38, 40	c	THA	THAICOM-C1
POR__100	1, 3, 5, 7, 9, 11, 13, 15, 17, 19	c	USA	USASAT-26A
RUS-4	26	c	J	N-SAT-110, N-SAT-110E
RUS-4	28	c	G, J, KOR	AM-SAT A4, KOREASAT-1, KOREASAT-2, N-SAT-110, N-SAT-110E
RUS-4	29	c	G, J, KOR	AM-SAT A4, KOREASAT-1, KOREASAT-2, N-SAT-110, N-SAT-110E
RUS-4	31, 35, 39	c	G	AM-SAT A4
RUS-4	33, 37	c	G, J, KOR	AM-SAT A4, KOREASAT-1, KOREASAT-2, N-SAT-110, N-SAT-110E
SEN22200	23	c	USA	USASAT-26A
S 13800	21, 23, 25	c	F/EUT	EUTELSAT 3-7E
SEY00000	26, 28, 30, 32, 34, 36, 38, 40	c	F/EUT, PAK, UAE	EMARSAT-1F, EUTELSAT 3-36E, EUTELSAT 3-48E, PAKSAT-2
SOM31200	26	c	F/EUT, PAK	EUTELSAT 3-36E, PAKSAT-1, PAKSAT-2
SOM31200	28, 30, 32, 34, 36, 38, 40	c	F/EUT, PAK	EUTELSAT 3-36E, PAKSAT-1, PAKSAT-2
SVK14401	7, 15, 23	c	F/EUT	EUTELSAT 3-12.5W
SVK14402	18, 26	c	F/EUT	EUTELSAT 3-12.5W
SVK14403	2, 22, 24	c	F/EUT	EUTELSAT 3-12.5W
TGO22600	1, 3, 5, 7, 9, 11	c	USA	INTELSAT7 330.5E, INTELSAT8 330.5E
TGO22600	13	c	E, USA	HISPASAT-1, INTELSAT7 330.5E, HISPASAT-2C3 KU, INTELSAT8 330.5E
TGO22600	15, 17, 19	c	E	HISPASAT-1, HISPASAT-2C3 KU
TJK06900	26	c	F/EUT, PAK, UAE	EMARSAT-1F, EUTELSAT 3-36E, EUTELSAT 3-48E, PAKSAT-1, PAKSAT-2

Beam name	Channels	Ref. Table 1	Affected administrations*	Affected networks/beams/terrestrial stations*
TJK06900	28, 30, 32, 34, 36, 38, 40	c	F/EUT, PAK, UAE	EMARSAT-1F, EUTELSAT 3-36E, EUTELSAT 3-48E, PAKSAT-1, PAKSAT-2
TKM06800	26	c	F/EUT, HOL, IND, UAE	EMARSAT-1F, EMARSAT-1G, EUTELSAT 3-48E, INSAT-EK48, NSS-8, PAKSAT-1, PAKSAT-2
TKM06800	28	c	F/EUT, HOL, IND, J, PAK, THA, UAE	EMARSAT-1F, EMARSAT-1G, EUTELSAT 3-48E, INSAT-EK48, JCSAT-3B, NSS-8, PAKSAT-1, PAKSAT-2, THAICOM-C1
TKM06800	30, 32, 34, 36, 38, 40	c	F/EUT, HOL, IND, J, KOR, THA, UAE	EMARSAT-1F, EMARSAT-1G, EUTELSAT 3-48E, INSAT-EK48, JCSAT-3B, KOREASAT-1, NSS-8, PAKSAT-1, PAKSAT-2, SJC-1, THAICOM-C1
TON21500	2, 6, 10, 14, 18, 20, 22, 24	c	USA	USASAT-14K
TUV00000	4, 8, 12	c	USA	INTELSAT7 176E, INTELSAT8 176E
UAE27400	27	c	F/EUT, HOL	EUTELSAT 3-48E, NSS-8
UAE27400	31, 35, 39	c	F/EUT, HOL, THA	EUTELSAT 3-48E, NSS-8, THAICOM-C1
ZWE13500	1, 3, 5, 7, 9, 11, 13	c	USA	INTELSAT7 359E, INTELSAT8 359E

\* Administrations and corresponding networks/beams/terrestrial stations whose assignment(s) may receive interference from the beam shown in the left-hand column.

**SUP** COM5/328/2 (B12/346/3) (R6/410/37)

TABLE 3

**ADD** COM5/328/6 (B12/346/4) (R6/410/38)

TABLE 3 (WRC-07)

**Affecting administrations and corresponding networks/beams identified based on Notes 6 and 7 in § 11.2 of Article 11**

Beam name	Channels	Note	Affecting administrations*	Affecting networks/beams*
AGL29500	1, 3, 5, 7, 9, 11, 13	7	HOL, USA	INTELSAT7 338.5E, INTELSAT7 342E, INTELSAT8 338.5E
AND34100	2, 6, 10, 12	7	HOL, USA	INTELSAT7 319.5E, INTELSAT8 319.5E, USASAT-26A INTELSAT8 328.5E
AND34100	14, 16, 18, 20	7	USA	USASAT-26A
ARM06400	26, 28, 30, 32, 34, 36, 38, 40	7	J	JCSAT-3B
ARS34000	40	7	J	JCSAT-3A, JCSAT-3B
ARS__100	26, 28, 30, 32, 34, 36, 38, 40	7	J	JCSAT-3A, JCSAT-3B

Beam name	Channels	Note	Affecting administrations*	Affecting networks/beams*
AUSB_100	4, 8, 12	7	USA	INTELSAT7 174E
AZE06400	25, 27, 29, 31, 33, 35, 37, 39	7	J	JCSAT-3A, JCSAT-3B
BEN23300	1, 3, 5, 7, 9, 11, 13	7	HOL, USA	INTELSAT7 338.5E, INTELSAT7 342E, INTELSAT8 338.5E
BFA10700	22, 24	7	E	HISPASAT-1, HISPASAT-2C3 KU
BHR25500	25, 27, 29, 31, 33, 35, 37, 39	7	J	JCSAT-3A, JCSAT-3B
COD__100	2, 4, 6, 8, 10, 12	7	HOL, USA	INTELSAT7 338.5E, INTELSAT7 342E, INTELSAT8 338.5E
COG23500	1, 3, 5, 7, 9, 11, 13	7	USA	INTELSAT7 342E
COM20700	25, 27, 29, 31, 33, 35, 37, 39	7	J	JCSAT-3B
CPV30100	2, 4, 6, 8, 10, 12	7	USA	INTELSAT8 328.5E
CTI23700	1, 3, 5, 7, 9, 11, 13	7	HOL, USA	INTELSAT7 338.5E, INTELSAT7 342E, INTELSAT8 338.5E
CVA08300	1, 3, 5, 7, 9, 11	7	USA	INTELSAT7 359E
CYP08600	1, 3, 5, 7, 9, 11, 13	7	USA	INTELSAT7 359E
CZE14401	1, 9	7	USA	INTELSAT7 342E
CZE14403	2	7	USA	INTELSAT7 342E
D 08700	1, 3, 5, 7, 9, 11, 13	7	HOL, USA	INTELSAT7 338.5E, INTELSAT7 342E, INTELSAT8 338.5E
DNK090XR	29	6	JMC	JMC00005
DNK090XR	33	6	GUY, JMC	GUY00302, JMC00005
DNK091XR	31, 35	6	GUY, JMC	GUY00302, JMC00005
DNK__100	1, 3, 5, 7, 9, 11, 13	7	HOL, USA	INTELSAT7 338.5E, INTELSAT7 342E, INTELSAT8 338.5E
EGY02600	2, 6, 8, 10, 12	7	USA	INTELSAT7 359E
ERI09200	25, 27, 29, 31, 33, 35, 37, 39	7	J	JCSAT-3B
FJI19300	1, 3, 5, 7, 9, 11, 13	7	HOL, USA	INTELSAT7 174E, INTELSAT7 177E, INTELSAT7 180E, INTELSAT7 183E, INTELSAT IBS 183E
F____100	25, 27, 29, 31, 33, 35, 37, 39	7	J	JCSAT-3A, JCSAT-3B
G 02700	2, 4, 6, 8, 10, 12	7	USA	INTELSAT8 328.5E
GAB26000	1, 3, 5, 7, 9, 11, 13	7	USA	INTELSAT7 342E
GMB30200	1, 3, 5, 7, 9, 11, 13	7	HOL, USA	INTELSAT7 319.5E, INTELSAT8 319.5E, USASAT-26A, INTELSAT8 328.5E
GMB30200	15, 17, 19	7	USA	USASAT-26A
GNB30400	22, 24	7	E	HISPASAT-1, HISPASAT-2C3 KU
GRC10500	2, 4, 6, 8, 10, 12	7	USA	INTELSAT7 359E
GUI19200	2, 4, 6, 8, 10, 12	7	HOL, USA	INTELSAT7 319.5E, INTELSAT8 319.5E, USASAT-26A, INTELSAT8 328.5E

Beam name	Channels	Note	Affecting administrations*	Affecting networks/beams*
GUI19200	14, 16, 18, 20	7	USA	USASAT-26A
HNG10601	3, 11	7	USA	INTELSAT7 342E
HNG10602	6	7	USA	INTELSAT7 342E
HNG10603	2	7	USA	INTELSAT7 342E
HRV14801	5, 13	7	USA	INTELSAT7 342E
HRV14802	10	7	USA	INTELSAT7 342E
HRV14803	2	7	USA	INTELSAT7 342E
IRL21100	1, 3, 5, 7, 9, 11, 13	7	HOL, USA	INTELSAT7 319.5E, INTELSAT8 319.5E, USASAT-26A
IRL21100	15, 17, 19	7	USA	USASAT-26A
ISL04900	27	6	GUY	GUY00302
ISL04900	29, 39	6	JMC	JMC00005
ISL04900	31, 33, 35, 37	6	GUY, JMC	GUY00302, JMC00005
KIR__100	1, 3, 5, 7, 9, 11, 13	7	USA	INTELSAT7 174E, INTELSAT7 177E, INTELSAT7 180E, INTELSAT8 174E
KWT11300	26, 28, 30, 32, 34, 36, 38, 40	7	J	JCSAT-3A, JCSAT-3B
LBR24400	1, 5, 7, 9, 11, 13	7	USA	INTELSAT8 328.5E
LBY__100	2, 4, 6, 8, 10, 12	7	HOL, USA	INTELSAT7 338.5E, INTELSAT7 342E, INTELSAT8 338.5E
LSO30500	1, 3, 5, 7, 9, 11, 13	7	USA	INTELSAT7 359E
MAU__100	26, 28, 30, 32, 34, 36, 38, 40	7	J	JCSAT-3A, JCSAT-3B
MLI__100	1, 3, 5, 7, 9, 11, 13	7	HOL, USA	INTELSAT7 338.5E, INTELSAT7 342E, INTELSAT8 338.5E
MNG24800	27	7	J	JCSAT-3A, JCSAT-3B, JCSAT-1R, SUPERBIRD-C
MNG24800	29, 31, 33, 35, 37, 39	7	CHN, J, THA	JCSAT-3A, JCSAT-3B, APSTAR-4, JCSAT-1R, THAICOM-A2B, SUPERBIRD-C
MOZ30700	2, 6, 10, 12	7	USA	INTELSAT7 359E
MRC20900	1, 3, 5, 7, 9, 11, 13	7	HOL, USA	INTELSAT7 338.5E, INTELSAT7 342E, INTELSAT8 338.5E
MTN__100	22, 24, 26	7	USA	USASAT-26A
MWI30800	2, 4, 6, 8, 10, 12	7	USA	INTELSAT7 359E
NGR11500	2, 4, 6, 8, 10, 12	7	HOL, USA	INTELSAT7 319.5E, INTELSAT8 319.5E, USASAT-26A, INTELSAT8 328.5E
NGR11500	14, 16, 18, 20	7	USA	USASAT-26A
NOR12000	1, 3, 5, 7, 9, 11, 13	7	USA	INTELSAT7 359E
OMA12300	26, 28, 30, 32, 34, 36, 38, 40	7	J	JCSAT-3A, JCSAT-3B
POR__100	1, 3, 5, 7, 9, 11, 13	7	HOL, USA	INTELSAT7 319.5E, INTELSAT8 319.5E, USASAT-26A, INTELSAT8 328.5E



Beam name	Channels	Note	Affecting administrations*	Affecting networks/beams*
POR__100	15, 17, 19	7	USA	USASAT-26A
RUS-4	25	7	J	JCSAT-3A, JCSAT-3B, JCSAT-1R, SUPERBIRD-C
RUS-4	26, 27	7	J	JCSAT-3A, JCSAT-3B, JCSAT-1R, SUPERBIRD-C
RUS-4	28, 29	7	J, KOR	JCSAT-3A, JCSAT-3B, JCSAT-1R, SUPERBIRD-C, KOREASAT-1, KOREASAT-2
RUS-4	31, 33, 35, 37, 39	7	J, KOR	JCSAT-3A, JCSAT-3B, JCSAT-1R, SUPERBIRD-C, KOREASAT-1, KOREASAT-2
SEN22200	23, 25	7	USA	USASAT-26A
SEY00000	26, 28, 30, 32, 34, 36, 38, 40	7	J	JCSAT-3A, JCSAT-3B
SMO05700	1, 3, 5, 7, 9, 11, 13	7	HOL, USA	INTELSAT7 174E, INTELSAT7 177E, INTELSAT7 180E, INTELSAT7 183E, INTELSAT IBS 183E
SMR31100	1, 3, 5, 7, 9, 11, 13	7	HOL, USA	INTELSAT7 319.5E, INTELSAT8 319.5E, USASAT-26A, INTELSAT8 328.5E
SMR31100	15, 17, 19	7	USA	USASAT-26A
SOM31200	26, 28, 30, 32, 34, 36, 38, 40	7	J	JCSAT-3A, JCSAT-3B
SRL25900	27	6	GUY	GUY00302
SRL25900	29, 39	6	JMC	JMC00005
SRL25900	31, 33, 35, 37	6	GUY, JMC	GUY00302, JMC00005
STP24100	2, 4, 6, 8, 10, 12	7	USA	INTELSAT7 359E
SUI14000	2, 4, 6, 8, 10, 12	7	HOL, USA	INTELSAT7 338.5E, INTELSAT7 342E, INTELSAT8 338.5E
SVK14401	7	7	USA	INTELSAT7 342E
SVK14403	2	7	USA	INTELSAT7 342E
SWZ31300	1, 3, 5, 7, 9, 11, 13	7	USA	INTELSAT7 359E
TGO22600	1, 3, 5, 7, 9, 11	7	USA	INTELSAT8 328.5E
TGO22600	13	7	E, USA	INTELSAT8 328.5E, HISPASAT-2C3 KU
TGO22600	15, 17, 19	7	E	HISPASAT-1, HISPASAT-2C3 KU
TJK06900	26, 28, 30, 32, 34, 36, 38, 40	7	J	JCSAT-3A, JCSAT-3B, JCSAT-1R
TKM06800	26, 28, 30, 32, 34, 36, 38, 40	7	J	JCSAT-3A, JCSAT-3B
TON21500	2, 4, 6, 8, 10, 12	7	USA	INTELSAT7 174E, INTELSAT7 177E, INTELSAT7 180E, INTELSAT8 174E
TUV00000	2, 4, 6, 8, 10, 12	7	USA	INTELSAT7 174E, INTELSAT7 177E, INTELSAT7 180E, INTELSAT8 174E
UAE27400	25, 27, 29, 31, 33, 35, 37, 39	7	J	JCSAT-3A, JCSAT-3B
ZWE13500	1, 3, 5, 7, 9, 11, 13	7	USA	INTELSAT7 359E

\* Administrations and corresponding networks/beams whose assignment(s) may cause interference to the beam shown in the left-hand column.

**SUP** COM5/328/3 (B12/346/5) (R6/410/39)

TABLE 4

**ADD** COM5/328/7 (B12/346/6) (R6/410/40)

TABLE 4 (WRC-07)

**Affecting administrations and corresponding terrestrial stations identified based on Note 8 in § 11.2 of Article 11**

Beam name	Channels	Affecting administrations*	Affecting terrestrial stations*
EGY02600	2	ISR	HERZILIYA
F 09300	24, 26	SUI	GENEVE STUDIO C VOGT
I 08200	38, 40	AUT	EHRWALD
JOR22400	2	ISR	HERZILIYA, JERUSALEM
RUS-4	25, 26, 27, 28, 29, 31, 33, 35, 37, 39	J <sup>1</sup>	

\* Administrations and corresponding terrestrial stations whose assignment(s) may cause interference to the beam shown in the left-hand column.

<sup>1</sup> The identification of this administration is based on its typical terrestrial station assignments as recorded in the Master Register.

**SUP** COM5/328/4 (B12/346/7) (R6/410/41)

TABLE 6A

**ADD** COM5/328/8 (B12/346/8) (R6/410/42)

TABLE 6A (WRC-07)

**Basic characteristics of the Regions 1 and 3 Plan (sorted by administration)**

1	2	3	4		5			6	7	8		9		10		11	12	13	14	15	16
Admin. symbol	Beam identification	Orbital position	Boresight		Space station antenna characteristics			Space station antenna code	Shaped beam	Space station antenna gain		Earth station antenna		Polarization		e.i.r.p.	Designation of emission	Identity of the space station	Group code	Status	Remarks
			Long.	Lat.	Ma- jor axis	Minor axis	Orien- tation			Co-polar	Cross- polar	Code	Gain	Type	Angle						
AFG	AFG_100	50.00	65.88	33.86				CB_TSS_AFGA		42.71		MODRES	35.50	CL		58.4	27M0G7W			P	
AFS	AFS02100	4.80	24.50	-28.00	3.13	1.68	27.00	R13TSS		37.24		MODRES	35.50	CL		59.1	27M0G7W			P	
AGL	AGL29500	-24.80	16.06	-12.45	2.42	1.88	77.88	R13TSS		37.87		MODRES	35.50	CL		59.1	27M0G7W			P	7

1	2	3	4		5			6	7	8		9		10		11	12	13	14	15	16
Admin. symbol	Beam identification	Orbital position	Boresight		Space station antenna characteristics			Space station antenna code	Shaped beam	Space station antenna gain		Earth station antenna		Polarization		e.i.r.p.	Designation of emission	Identity of the space station	Group code	Status	Remarks
			Long.	Lat.	Ma- jor axis	Minor axis	Orien- tation			Co-polar	Cross- polar	Code	Gain	Type	Angle						
ALB	ALB29600	62.00	20.04	41.23	0.60	0.60	61.32	R13TSS		48.88		MODRES	35.50	CL		58.9	27M0G7W			P	
ALG	ALG__100	-24.80	1.86	27.60				CB_TSS_ALGA		39.59		MODRES	35.50	CL		54.5	27M0G7W			P	
AND	AND34100	-37.00	1.60	42.50	0.60	0.60	0.00	R13TSS		48.88		MODRES	35.50	CL		56.5	27M0G7W			P	7
ARM	ARM06400	22.80	44.99	39.95	0.73	0.60	148.17	R13TSS		48.02		MODRES	35.50	CR		58.9	27M0G7W			P	7
ARS	ARS__100	17.00	44.72	23.76				CB_TSS_ARSA		37.81		MODRES	35.50	CL		57.7	27M0G7W		54	P	7
ARS	ARS34000	17.00	52.30	24.80	2.68	0.70	143.00	R13TSS		41.71		MODRES	35.50	CL		59.2	27M0G7W		54	P	5, 7
AUS	AUS00400	152.00	123.00	-24.20	3.06	2.17	102.00	R13TSS		36.22		MODRES	35.50	CR		58.2	27M0G7W		30	P	
AUS	AUS0040A	152.00	96.83	-12.19	0.60	0.60	0.00	R13TSS		48.88		MODRES	35.50	CR		58.9	27M0G7W		30	P	
AUS	AUS0040B	152.00	105.69	-10.45	0.60	0.60	0.00	R13TSS		48.88		MODRES	35.50	CR		58.9	27M0G7W		30	P	
AUS	AUS0040C	152.00	110.52	-66.28	0.60	0.60	0.00	R13TSS		48.88		MODRES	35.50	CR		58.9	27M0G7W		30	P	
AUS	AUS00500	152.00	133.90	-18.40	2.82	1.74	105.00	R13TSS		37.53		MODRES	35.50	CL		59.4	27M0G7W			P	
AUS	AUS00600	152.00	136.60	-30.90	2.41	1.52	161.00	R13TSS		38.80		MODRES	35.50	CL		58.4	27M0G7W			P	
AUS	AUS00700	164.00	145.20	-38.10	2.12	1.02	147.00	R13TSS		41.09		MODRES	35.50	CR		58.5	27M0G7W		31	P	
AUS	AUS0070A	164.00	158.94	-54.50	0.60	0.60	0.00	R13TSS		48.88		MODRES	35.50	CR		58.9	27M0G7W		31	P	
AUS	AUS00800	164.00	145.90	-21.70	3.62	1.63	136.00	R13TSS		36.73		MODRES	35.50	CL		58.8	27M0G7W			P	
AUS	AUS00900	164.00	147.50	-32.10	2.31	1.43	187.00	R13TSS		39.25		MODRES	35.50	CR		59.3	27M0G7W		32	P	
AUS	AUS0090A	164.00	159.06	-31.52	0.60	0.60	0.00	R13TSS		48.88		MODRES	35.50	CR		58.9	27M0G7W		32	P	
AUS	AUS0090B	164.00	167.93	-29.02	0.60	0.60	0.00	R13TSS		48.88		MODRES	35.50	CR		58.9	27M0G7W		32	P	
AUS	AUSA_100	152.00	132.38	-38.37				CB_TSS_AUSA		48.88		MODRES	35.50	CR		58.9	27M0G7W			P	5
AUS	AUSB_100	164.00	132.38	-38.37				CB_TSS_AUSB		48.88		MODRES	35.50	CL		58.9	27M0G7W			P	7
AUT	AUT01600	-18.80	10.31	49.47	1.82	0.92	151.78	MOD13FRTSS		42.19		MODRES	35.50	CR		59.1	27M0G7W			P	
AZE	AZE06400	23.20	47.47	40.14	0.93	0.60	158.14	R13TSS		46.98		MODRES	35.50	CL		58.9	27M0G7W			P	5, 7
BDI	BDI27000	11.00	29.90	-3.10	0.71	0.60	80.00	R13TSS		48.15		MODRES	35.50	CL		58.4	27M0G7W			P	
BEL	BEL01800	38.20	5.12	51.96	1.00	1.00	24.53	MOD13FRTSS		44.45		MODRES	35.50	CL		55.5	27M0G7W			P	5
BEN	BEN23300	-19.20	2.20	9.50	1.44	0.68	97.00	R13TSS		44.54		MODRES	35.50	CL		58.3	27M0G7W			P	7
BFA	BFA10700	-30.00	-1.50	12.20	1.45	1.14	29.00	R13TSS		42.26		MODRES	35.50	CL		57.0	27M0G7W			P	5, 7
BGD	BGD22000	74.00	90.30	23.60	1.46	0.84	135.00	R13TSS		43.56		MODRES	35.50	CR		58.7	27M0G7W			P	
BHR	BHR25500	34.00	50.50	26.10	0.60	0.60	0.00	MOD13FRTSS		48.88		MODRES	35.50	CR		54.5	27M0G7W			P	5, 7
BIH	BIH14800	56.00	18.22	43.97	0.60	0.60	90.00	R13TSS		48.88		MODRES	35.50	CL		58.9	27M0G7W			P	
BLR	BLR06200	37.80	27.91	53.06	1.21	0.60	11.47	R13TSS		45.83		MODRES	35.50	CL		58.9	27M0G7W			P	
BOT	BOT29700	-0.80	23.30	-22.20	2.13	1.50	36.00	R13TSS		39.40		MODRES	35.50	CL		58.7	27M0G7W			P	
BRM	BRM29800	104.00	96.97	18.67	3.33	1.66	91.58	R13TSS		37.04		MODRES	35.50	CL		58.9	27M0G7W			P	
BRU	BRU33000	74.00	114.70	4.40	0.60	0.60	0.00	R13TSS		48.88		MODRES	35.50	CR		57.5	27M0G7W			P	
BTN	BTN03100	86.00	90.44	27.05	0.72	0.60	175.47	R13TSS		48.11		MODRES	35.50	CR		58.9	27M0G7W			P	
BUL	BUL02000	-1.20	25.00	43.00	1.04	0.60	165.00	R13TSS		46.50		MODRES	35.50	CL		58.6	27M0G7W			P	
CAF	CAF25800	-13.20	21.00	6.30	2.25	1.68	31.00	R13TSS		38.67		MODRES	35.50	CL		59.3	27M0G7W			P	5

1	2	3	4		5			6	7	8		9		10		11	12	13	14	15	16
Admin. symbol	Beam identification	Orbital position	Boresight		Space station antenna characteristics			Space station antenna code	Shaped beam	Space station antenna gain		Earth station antenna		Polarization		e.i.r.p.	Designation of emission	Identity of the space station	Group code	Status	Remarks
			Long.	Lat.	Ma- jor axis	Minor axis	Orien- tation			Co-polar	Cross- polar	Code	Gain	Type	Angle						
CBG	CBG29900	86.00	104.82	12.34	1.04	0.86	9.45	R13TSS		44.91		MODRES	35.50	CR		59.3	27M0G7W			P	
CHN	CHN15500	62.00	88.18	31.20	3.03	1.24	163.23	R13TSS		38.69		MODRES	35.50	CL		57.9	27M0G7W			P	
CHN	CHN15800	134.00	113.29	39.70	2.80	1.55	35.44	R13TSS		38.07		MODRES	35.50	CR		57.0	27M0G7W			P	
CHN	CHN19000	122.00	114.17	23.32	0.91	0.60	2.88	MOD13FRTSS		47.08		MODRES	35.50	CR		58.9	27M0G7W			P	
CHN	CHN20000	122.00	113.55	22.20	0.60	0.60	0.00	MOD13FRTSS		48.88		MODRES	35.50	CL		57.0	27M0G7W			P	
CHN	CHNA_100	62.00	90.56	39.22				CB_TSS_CHNA		40.01		MODRES	35.50	CR		58.5	27M0G7W			P	
CHN	CHNC_100	134.00	105.77	27.56				CB_TSS_CHNC		39.51		MODRES	35.50	CL		57.1	27M0G7W			P	
CHN	CHNE_100	92.20	114.96	20.16				CB_TSS_CHNE		44.74		MODRES	35.50	CL		59.4	27M0G7W			P	
CHN	CHNF_100	92.20	123.54	45.78				CB_TSS_CHNF		43.71		MODRES	35.50	CR		60.4	27M0G7W			P	
CLN	CLN21900	50.00	80.60	7.70	1.18	0.60	106.00	R13TSS		45.95		MODRES	35.50	CL		56.7	27M0G7W			P	
CME	CME30000	-13.00	12.70	6.20	2.54	1.68	87.00	R13TSS		38.15		MODRES	35.50	CR		58.5	27M0G7W			P	5
COD	COD__100	-19.20	21.85	-3.40				CB_TSS_CODA		38.36		MODRES	35.50	CR		59.7	27M0G7W			P	7
COG	COG23500	-13.20	14.60	-0.70	2.02	1.18	59.00	R13TSS		40.67		MODRES	35.50	CL		58.8	27M0G7W			P	5, 7
COM	COM20700	29.00	44.10	-12.10	0.76	0.60	149.00	R13TSS		47.86		MODRES	35.50	CR		58.1	27M0G7W			P	7
CPV	CPV30100	-33.50	-24.12	16.09	0.77	0.63	94.46	R13TSS		47.56		MODRES	35.50	CL		57.2	27M0G7W			P	5, 7
CTI	CTI23700	-24.80	-5.78	7.19	1.50	1.26	111.74	R13TSS		41.67		MODRES	35.50	CL		58.8	27M0G7W			P	7
CVA	CVA08300	-1.20	13.02	42.09	0.75	0.66	20.53	R13TSS		47.50		MODRES	35.50	CR		60.2	27M0G7W			P	5, 7
CVA	CVA08500	-1.20	12.59	41.09	1.72	1.31	144.13	MOD13FRTSS		40.92		MODRES	35.50	CR		56.5	27M0G7W			P	
CYP	CYP08600	-1.20	33.45	35.12	0.60	0.60	0.00	MOD13FRTSS		48.88		MODRES	35.50	CR		56.1	27M0G7W			P	5, 7
CZE	CZE14401	-12.80	16.77	46.78	1.71	0.89	149.15	MOD13FRTSS		42.64		MODRES	35.50	CL		58.8	27M0G7W			P	5, 7
CZE	CZE14402	-12.80	16.77	46.78	1.71	0.89	149.15	MOD13FRTSS		42.64		MODRES	35.50	CR		58.8	27M0G7W			P	5
CZE	CZE14403	-12.80	16.77	46.78	1.71	0.89	149.15	MOD13FRTSS		42.64		MODRES	35.50	CR		58.8	27M0G7W		37	P	5, 7
D	D 08700	-18.80	10.31	49.47	1.82	0.92	151.78	MOD13FRTSS		42.19		MODRES	35.50	CR		59.1	27M0G7W			P	7
DJI	DJI09900	16.80	42.68	11.68	0.60	0.60	90.00	R13TSS		48.88		MODRES	35.50	CL		57.5	27M0G7W			P	
DNK	DNK_100	-25.20	2.92	59.62				CB_TSS_DNKA		48.88		MODRES	35.50	CL		58.3	27M0G7W			P	7
DNK	DNK090XR	-33.50	13.27	60.86	1.99	0.63	151.38	MOD13FRTSS		43.48		MODRES	35.50	CR		54.5	27M0G7W			P	6
DNK	DNK091XR	-33.50	-15.16	63.67	1.56	0.60	170.63	MOD13FRTSS		44.73		MODRES	35.50	CR		58.6	27M0G7W			P	6
E	E__100	-30.00	-9.40	34.15				CB_TSS_E__A		44.79		MODRES	35.50	CL		58.9	27M0G7W			P	
E	HISP33D1	-30.00	-4.00	39.00					COP	39.80	5.50	MODRES	35.50	CL		57.6	33M0G7W--	HISPASAT-1	01	PE	
E	HISP33D2	-30.00	-4.00	39.00					COP	39.80	5.50	MODRES	32.50	CL		57.6	33M0G7W--	HISPASAT-1	01	PE	
E	HISPA27D	-30.00	-4.00	39.00					COP	39.80	5.50	MODRES	38.43	CL		57.6	27M0G7W--	HISPASAT-1	01	PE	
E	HISPASA4	-30.00	-4.00	39.00					COP	39.80	5.50	MODRES	38.43	CL		57.6	27M0F8W	HISPASAT-1	01	PE	
EGY	EGY02600	-7.00	29.70	26.80	2.33	1.72	136.00	R13TSS		38.42		MODRES	35.50	CL		58.1	27M0G7W		12	P	7, 8
ERI	ERI09200	22.80	39.41	14.98	1.67	0.95	145.48	R13TSS		42.44		MODRES	35.50	CR		58.9	27M0G7W			P	7
EST	EST06100	44.50	25.06	58.60	0.77	0.60	12.27	R13TSS		47.81		MODRES	35.50	CR		58.7	27M0G7W			P	
ETH	ETH09200	36.00	40.29	8.95	2.87	2.16	174.06	R13TSS		36.52		MODRES	35.50	CL		58.7	27M0G7W			P	

1	2	3	4		5			6	7	8		9		10		11	12	13	14	15	16
Admin. symbol	Beam identification	Orbital position	Boresight		Space station antenna characteristics			Space station antenna code	Shaped beam	Space station antenna gain		Earth station antenna		Polarization		e.i.r.p.	Designation of emission	Identity of the space station	Group code	Status	Remarks
			Long.	Lat.	Ma- jor axis	Minor axis	Orien- tation			Co-polar	Cross- polar	Code	Gain	Type	Angle						
F	F 09300	-7.00	3.52	45.41	2.22	1.15	159.34	R13TSS		40.39		MODRES	35.50	CL		58.8	27M0G7W		21	P	8
F	F____100	-7.00	50.00	-15.65				CB_TSS_F__A		48.88		MODRES	35.50	CR		58.9	27M0G7W			P	7
F	NCL10000	140.00	166.00	-21.00	1.14	0.72	146.00	R13TSS		45.30		MODRES	35.50	CR		58.7	27M0G7W			P	
F	OCE10100	-160.00	-145.00	-16.30	4.34	3.54	4.00	R13TSS		32.58		MODRES	35.50	CL		58.5	27M0G7W			P	
F	WAL10200	140.00	-176.80	-14.00	0.74	0.60	29.00	R13TSS		47.97		MODRES	35.50	CR		59.4	27M0G7W			P	
FIN	FIN10300	22.80	22.50	64.50	1.38	0.76	171.00	MOD13FRTSS		44.24		MODRES	35.50	CL		54.5	27M0G7W		52	P	
FIN	FIN10400	22.80	15.87	61.15	2.24	0.91	16.70	MOD13FRTSS		41.37		MODRES	35.50	CL		54.5	27M0G7W		52	P	
FJI	FJI19300	-178.00	179.62	-17.87	1.16	0.92	155.22	R13TSS		44.16		MODRES	35.50	CR		58.7	27M0G7W			P	7
FSM	FSM00000	158.00	151.90	5.48	5.15	1.57	167.00	R13TSS		35.38		MODRES	35.50	CR		58.9	27M0G7W			P	5
G	G 02700	-33.50	-3.50	53.80	1.84	0.72	142.00	R13TSS		43.23		MODRES	35.50	CR		58.0	27M0G7W			P	7
GAB	GAB26000	-13.20	11.80	-0.60	1.43	1.12	64.00	R13TSS		42.40		MODRES	35.50	CR		58.3	27M0G7W			P	5, 7
GEO	GEO06400	23.20	43.35	42.27	1.11	0.60	161.21	R13TSS		46.23		MODRES	35.50	CR		58.9	27M0G7W			P	
GHA	GHA10800	-25.00	-1.20	7.90	1.48	1.06	102.00	R13TSS		42.49		MODRES	35.50	CR		58.6	27M0G7W			P	
GMB	GMB30200	-37.20	-15.10	13.40	0.79	0.60	4.00	R13TSS		47.69		MODRES	35.50	CL		58.3	27M0G7W			P	5, 7
GNB	GNB30400	-30.00	-15.00	12.00	0.90	0.60	172.00	R13TSS		47.12		MODRES	35.50	CL		58.1	27M0G7W			P	5, 7
GNE	GNE30300	-18.80	10.30	1.50	0.68	0.60	10.00	R13TSS		48.34		MODRES	35.50	CL		58.8	27M0G7W			P	
GRC	GRC10500	-1.20	24.51	38.08	1.70	0.95	152.97	MOD13FRTSS		42.40		MODRES	35.50	CL		56.3	27M0G7W			P	5, 7
GUI	GUI19200	-37.00	-11.00	10.20	1.58	1.04	147.00	R13TSS		42.29		MODRES	35.50	CR		58.4	27M0G7W			P	5, 7
HNG	HNG10601	-12.80	16.77	46.78	1.71	0.89	149.15	MOD13FRTSS		42.64		MODRES	35.50	CL		59.3	27M0G7W			P	5, 7
HNG	HNG10602	-12.80	16.77	46.78	1.71	0.89	149.15	MOD13FRTSS		42.64		MODRES	35.50	CR		59.3	27M0G7W			P	5, 7
HNG	HNG10603	-12.80	16.77	46.78	1.71	0.89	149.15	MOD13FRTSS		42.64		MODRES	35.50	CR		59.3	27M0G7W		37	P	5, 7
HOL	HOL21300	38.20	5.12	51.96	1.00	1.00	24.53	MOD13FRTSS		44.45		MODRES	35.50	CL		58.5	27M0G7W			P	
HRV	HRV14801	-12.80	16.77	46.78	1.71	0.89	149.15	MOD13FRTSS		42.64		MODRES	35.50	CL		58.8	27M0G7W			P	5, 7
HRV	HRV14802	-12.80	16.77	46.78	1.71	0.89	149.15	MOD13FRTSS		42.64		MODRES	35.50	CR		58.8	27M0G7W			P	5, 7
HRV	HRV14803	-12.80	16.77	46.78	1.71	0.89	149.15	MOD13FRTSS		42.64		MODRES	35.50	CR		58.8	27M0G7W		37	P	5, 7
I	I 08200	9.00	12.67	40.74	1.99	1.35	144.20	R13TSS		40.14		MODRES	35.50	CR		54.5	27M0G7W			P	5, 8
IND	IND03700	68.00	93.00	25.50	1.46	1.13	40.00	R13TSS		42.27		MODRES	35.50	CL		58.9	27M0G7W			P	
IND	IND04700	68.00	93.30	11.10	1.92	0.60	96.00	R13TSS		43.83		MODRES	35.50	CR		58.4	27M0G7W			P	
IND	INDA_100	55.80	76.16	14.72				CB_TSS_INDA		45.66		MODRES	35.50	CR		58.8	27M0G7W			P	
IND	INDB_100	55.80	83.43	24.22				CB_TSS_INDB		43.15		MODRES	35.50	CL		58.9	27M0G7W			P	
IND	INDD_100	68.00	74.37	29.16				CB_TSS_INDD		41.80		MODRES	35.50	CR		59.3	27M0G7W			P	
INS	INSA_100	80.20	108.82	-0.73				CB_TSS_INSA		38.88		MODRES	35.50	CR		59.2	27M0G7W			P	
INS	INSB_100	104.00	129.75	-3.50				CB_TSS_INSB		37.53		MODRES	35.50	CL		58.8	27M0G7W			P	
IRL	IRL21100	-37.20	-8.25	53.22	0.72	0.60	157.56	R13TSS		48.08		MODRES	35.50	CL		59.2	27M0G7W			P	5, 7
IRN	IRN10900	34.00	54.20	32.40	3.82	1.82	149.00	R13TSS		36.03		MODRES	35.50	CL		57.8	27M0G7W			P	
IRQ	IRQ25600	50.00	43.78	33.28	1.74	1.23	156.76	R13TSS		41.14		MODRES	35.50	CL		58.3	27M0G7W			P	

1	2	3	4		5			6	7	8		9		10		11	12	13	14	15	16
Admin. symbol	Beam identification	Orbital position	Boresight		Space station antenna characteristics			Space station antenna code	Shaped beam	Space station antenna gain		Earth station antenna		Polarization		e.i.r.p.	Designation of emission	Identity of the space station	Group code	Status	Remarks
			Long.	Lat.	Ma- jor axis	Minor axis	Orien- tation			Co-polar	Cross- polar	Code	Gain	Type	Angle						
ISL	ISL04900	-33.50	-19.00	64.90	1.00	0.60	177.00	R13TSS		46.67		MODRES	35.50	CL		60.8	27M0G7W			P	5, 6
ISL	ISL05000	-33.50	-15.35	63.25	1.58	0.60	169.00	R13TSS		44.67		MODRES	35.50	CR		57.3	27M0G7W			P	5
ISR	ISR11000	-4.00	34.95	31.32	0.73	0.60	110.02	R13TSS		48.01		MODRES	35.50	CR		58.8	27M0G7W			P	
J	000BS-3N	109.85	134.50	31.50	3.52	3.30	68.00	R13TSS		33.80		MODRES	35.50	CR		*	27M0F8W	BS-3N	02	PE	
J	J 10985	109.85	134.50	31.50	3.52	3.30	68.00	R13TSS		33.80		MODRES	35.50	CR		*	34M5G7W		02	P	
J	J 11100	110.00	134.50	31.50	3.52	3.30	68.00	R13TSS		33.80		MODRES	35.50	CR		*	34M5G7W		02	P	
J	J 1110E	110.00	134.50	31.50	3.52	3.30	68.00	R13TSS		33.80		MODRES	35.50	CR		*	27M0F8W	BS-3M	02	PE	
JOR	JOR22400	11.00	37.55	34.02	1.47	0.91	73.16	MOD13FRTSS		43.19		MODRES	35.50	CL		55.5	27M0G7W			P	8
KAZ	KAZ06600	56.40	65.73	46.40	4.58	1.76	177.45	R13TSS		35.38		MODRES	35.50	CR		58.9	27M0G7W			P	
KEN	KEN24900	-0.80	37.95	0.92	2.13	1.34	98.35	R13TSS		39.90		MODRES	35.50	CL		58.7	27M0G7W			P	
KGZ	KGZ07000	50.00	73.91	41.32	1.47	0.64	5.05	R13TSS		44.75		MODRES	35.50	CR		59.0	27M0G7W			P	
KIR	KIR_100	176.00	-170.31	-0.56				CB_TSS_KIRA		42.58		MODRES	35.50	CL		58.9	27M0G7W			P	5, 7
KOR	KO11201D	116.00	127.50	36.00	1.24	1.02	168.00	R13TSS		43.40		MODRES	38.43	CL		**	27M0G7W	KOREASAT-1	03	PE	
KOR	KOR11200	116.00	127.50	36.00	1.24	1.02	168.00	R13TSS		43.80		MODRES	35.50	CL		***	27M0G7W		03	P	
KOR	KOR11201	116.00	127.50	36.00	1.24	1.02	168.00	R13TSS		43.40		MODRES	38.43	CL		**	27M0F8W	KOREASAT-1	03	PE	
KRE	KRE28600	140.00	128.45	40.32	1.63	0.68	18.89	R13TSS		44.00		MODRES	35.50	CL		59.0	27M0G7W			P	
KWT	KWT11300	11.00	47.48	29.12	0.60	0.60	90.00	R13TSS		48.88		MODRES	35.50	CR		58.2	27M0G7W			P	7
LAO	LAO28400	122.20	103.71	18.17	1.87	1.03	123.99	MOD13FRTSS		41.60		MODRES	35.50	CR		58.8	33M0G7W			P	
LBN	LBN27900	11.00	37.55	34.02	1.47	0.91	73.16	MOD13FRTSS		43.19		MODRES	35.50	CR		55.5	27M0G7W			P	
LBR	LBR24400	-33.50	-9.30	6.60	1.22	0.70	133.00	R13TSS		45.13		MODRES	35.50	CR		58.2	27M0G7W			P	5, 7
LBY	LBY_100	-24.80	17.62	26.55				CB_TSS_LBYA		40.30		MODRES	35.50	CL		58.0	27M0G7W			P	7
LIE	LIE25300	-18.80	10.31	49.47	1.82	0.92	151.78	MOD13FRTSS		42.19		MODRES	35.50	CL		59.1	27M0G7W			P	
LSO	LSO30500	4.80	27.80	-29.80	0.66	0.60	36.00	R13TSS		48.47		MODRES	35.50	CR		59.2	27M0G7W			P	7
LTU	LTU06100	23.20	24.51	56.09				CB_TSS_LTUA		48.21		MODRES	35.50	CL		56.9	27M0G7W			P	
LUX	LUX11400	28.20	5.21	49.20	0.60	0.60	90.00	R13TSS		48.88		MODRES	35.50	CL		57.9	27M0G7W		09	P	
LVA	LVA06100	23.20	24.51	56.09				CB_TSS_LVAA		48.21		MODRES	35.50	CR		56.9	27M0G7W			P	
MAU	MAU_100	29.00	58.61	-15.88				CB_TSS_MAUA		41.42		MODRES	35.50	CL		59.0	27M0G7W			P	5, 7
MCO	MCO11600	34.20	7.93	43.59	1.28	0.60	21.73	MOD13FRTSS		45.58		MODRES	35.50	CL		58.6	27M0G7W			P	
MDA	MDA06300	50.00	28.45	46.99	0.60	0.60	90.00	R13TSS		48.88		MODRES	35.50	CR		58.9	27M0G7W			P	5
MDG	MDG23600	29.00	46.60	-18.80	2.72	1.14	65.00	R13TSS		39.53		MODRES	35.50	CL		58.3	27M0G7W			P	

\* Channel 1: 58.2 dBW, channels 3, 5, 7: 59.2 dBW, channels 9, 11, 13: 59.3 dBW, other channels: 59.4 dBW.

\*\* Channels 2, 4, 6: 63.6 dBW, channels 8, 10, 12: 63.7 dBW.

\*\*\* Channels 2, 4, 6: 59.0 dBW, other channels: 59.1 dBW.

1	2	3	4		5			6	7	8		9		10		11	12	13	14	15	16
Admin. symbol	Beam identification	Orbital position	Boresight		Space station antenna characteristics			Space station antenna code	Shaped beam	Space station antenna gain		Earth station antenna		Polarization		e.i.r.p.	Designation of emission	Identity of the space station	Group code	Status	Remarks
			Long.	Lat.	Ma- jor axis	Minor axis	Orien- tation			Co-polar	Cross- polar	Code	Gain	Type	Angle						
MHL	MHL00000	146.00	167.64	9.83	2.07	0.90	157.42	R13TSS		41.75		MODRES	35.50	CR		59.0	27M0G7W			P	
MKD	MKD14800	22.80	21.61	41.56	0.60	0.60	90.00	R13TSS		48.88		MODRES	35.50	CR		58.9	27M0G7W			P	
MLA	MLA_100	91.50	108.05	4.00				CB_TSS_MLAA		43.00		MODRES	35.50	CR		58.4	27M0G7W			P	
MLD	MLD30600	50.00	72.95	5.78	1.19	0.91	104.53	R13TSS		44.09		MODRES	35.50	CR		58.7	27M0G7W			P	
MLI	MLI_100	-19.20	-5.35	17.11				CB_TSS_MLIB		41.21		MODRES	35.50	CR		58.7	27M0G7W			P	5, 7
MLT	MLT14700	22.80	14.40	35.90	0.60	0.60	0.00	R13TSS		48.88		MODRES	35.50	CR		56.0	27M0G7W			P	
MNG	MNG24800	74.00	102.20	46.60	3.60	1.13	169.00	R13TSS		38.35		MODRES	35.50	CR		59.0	27M0G7W			P	5, 7
MOZ	MOZ30700	-1.00	34.00	-18.00	3.57	1.38	55.00	R13TSS		37.52		MODRES	35.50	CL		59.2	27M0G7W			P	5, 7
MRC	MRC20900	-25.20	-8.95	28.98	3.56	1.23	49.23	R13TSS		38.02		MODRES	35.50	CR		54.9	27M0G7W			P	7
MTN	MTN_100	-36.80	-10.52	19.66				CB_TSS_MTNA		41.91		MODRES	35.50	CR		55.5	27M0G7W			P	7
MWI	MWI30800	4.80	33.79	-13.25	1.56	0.70	92.69	R13TSS		44.10		MODRES	35.50	CR		59.2	27M0G7W			P	7
NGR	NGR11500	-37.20	7.63	17.01	2.20	1.80	102.40	R13TSS		38.48		MODRES	35.50	CL		59.5	27M0G7W			P	5, 7
NIG	NIG11900	-19.20	7.80	9.40	2.16	2.02	45.00	R13TSS		38.05		MODRES	35.50	CR		58.9	27M0G7W			P	
NMB	NMB02500	-18.80	17.50	-21.60	2.66	1.90	48.00	R13TSS		37.41		MODRES	35.50	CL		59.7	27M0G7W			P	
NOR	NOR12000	-0.80	13.42	62.76	1.43	0.60	19.61	MOD13FRTSS		45.10		MODRES	35.50	CL		56.2	27M0G7W		06	P	5, 7
NOR	NOR12100	-0.80	18.00	60.23	1.67	0.83	23.85	R13TSS		43.02		MODRES	35.50	CL		57.8	27M0G7W		06	P	
NPL	NPL12200	50.00	83.70	28.30	1.72	0.60	163.00	R13TSS		44.31		MODRES	35.50	CR		59.6	27M0G7W			P	
NRU	NRU30900	134.00	167.00	-0.50	0.60	0.60	0.00	R13TSS		48.88		MODRES	35.50	CL		57.5	27M0G7W			P	
NZL	NZL_100	158.00	-170.68	-19.72				CB_TSS_NZLA		48.88		MODRES	35.50	CL		59.6	27M0G7W			P	5
OMA	OMA12300	17.20	55.60	21.00	1.88	1.02	100.00	R13TSS		41.62		MODRES	35.50	CR		58.3	27M0G7W			P	7
PAK	PAK12700	38.20	69.60	29.50	2.30	2.16	14.00	R13TSS		37.49		MODRES	35.50	CR		58.9	27M0G7W			P	
PHL	PHL28500	98.00	121.30	11.10	3.46	1.76	99.00	R13TSS		36.60		MODRES	35.50	CL		58.7	27M0G7W			P	
PLW	PLW00000	140.00	132.98	5.51	1.30	0.60	55.41	R13TSS		45.53		MODRES	35.50	CR		58.8	27M0G7W			P	
PNG	PNG13100	134.00	148.07	-6.65	3.13	2.30	168.32	MOD13FRTSS		35.87		MODRES	35.50	CR		54.5	27M0G7W			P	
POL	POL13200	50.00	20.07	51.86	1.20	0.69	17.76	R13TSS		45.26		MODRES	35.50	CL		59.2	27M0G7W			P	5
POR	POR_100	-37.00	-15.92	37.65				CB_TSS_PORA		47.17		MODRES	35.50	CR		58.4	27M0G7W			P	5, 7
PSE	YYY00000	-13.20	34.99	31.86	0.60	0.60	90.00	R13TSS		48.88		MODRES	35.50	CL		58.9	27M0G7W			P	3
OAT	OAT24700	20.00	51.38	25.26	0.60	0.60	90.00	R13TSS		48.88		MODRES	35.50	CL		54.5	27M0G7W			P	
ROU	ROU13600	50.00	25.12	45.75	1.17	0.73	9.52	R13TSS		45.15		MODRES	35.50	CR		58.9	27M0G7W			P	
RRW	RRW31000	11.00	30.00	-2.10	0.66	0.60	42.00	R13TSS		48.47		MODRES	35.50	CL		59.8	27M0G7W			P	
RUS	RSTREA11	36.00	38.00	53.00	2.20	2.20	0.00	R13TSS		37.70		MODRES	35.50	CL		53.0	27M0F8W	RST-1	05	PE	
RUS	RSTREA12	36.00	38.00	53.00	2.20	2.20	0.00	R13TSS		37.70		MODRES	35.50	CR		53.0	27M0F8W	RST-1	05	PE	
RUS	RSTRED11	36.00	38.00	53.00	2.20	2.20	0.00	R13TSS		37.70		MODRES	35.50	CL		53.0	27M0G7W	RST-1	05	PE	
RUS	RSTRED12	36.00	38.00	53.00	2.20	2.20	0.00	R13TSS		37.70		MODRES	35.50	CR		53.0	27M0G7W	RST-1	05	PE	
RUS	RSTRSD11	36.00	38.00	53.00	2.20	2.20	0.00	R13TSS		37.70		MODRES	35.50	CL		53.0	27M0G7W	RST-1	05	P	
RUS	RSTRSD12	36.00	38.00	53.00	2.20	2.20	0.00	R13TSS		37.70		MODRES	35.50	CR		53.0	27M0G7W	RST-1	05	P	

1	2	3	4		5			6	7	8		9		10		11	12	13	14	15	16
Admin. symbol	Beam identification	Orbital position	Boresight		Space station antenna characteristics			Space station antenna code	Shaped beam	Space station antenna gain		Earth station antenna		Polarization		e.i.r.p.	Designation of emission	Identity of the space station	Group code	Status	Remarks
			Long.	Lat.	Ma- jor axis	Minor axis	Orien- tation			Co-polar	Cross- polar	Code	Gain	Type	Angle						
RUS	RSTRSD13	36.00	38.00	53.00	2.20	2.20	0.00	R13TSS		37.70		MODRES	39.02	CL		53.0	27M0G7W	RST-1	05	P	
RUS	RSTRSD14	36.00	38.00	53.00	2.20	2.20	0.00	R13TSS		37.70		MODRES	39.02	CR		53.0	27M0G7W	RST-1	05	P	
RUS	RSTRSD21	56.00	65.00	63.00	2.20	2.20	0.00	R123FR		37.70		MODRES	35.50	CL		55.0	27M0G7W	RST-2	14	P	
RUS	RSTRSD22	56.00	65.00	63.00	2.20	2.20	0.00	R123FR		37.70		MODRES	35.50	CR		55.0	27M0G7W	RST-2	14	P	
RUS	RSTRSD31	86.00	97.00	62.00	2.20	2.20	0.00	R13TSS		37.70		MODRES	35.50	CL		55.0	27M0G7W	RST-3	33	P	
RUS	RSTRSD32	86.00	97.00	62.00	2.20	2.20	0.00	R13TSS		37.70		MODRES	35.50	CR		55.0	27M0G7W	RST-3	33	P	
RUS	RSTRSD51	140.00	158.00	56.00	2.20	2.20	0.00	R13TSS		37.70		MODRES	35.50	CL		55.0	27M0G7W	RST-5	35	P	
RUS	RSTRSD52	140.00	158.00	56.00	2.20	2.20	0.00	R13TSS		37.70		MODRES	35.50	CR		55.0	27M0G7W	RST-5	35	P	
RUS	RUS00401	110.00	128.73	54.30	4.25	2.02	156.81	R13TSS		35.11		MODRES	35.50	CL		58.9	27M0G7W	RUS-4	34	P	5, 7, 8
RUS	RUS00402	110.00	128.73	54.30	4.25	2.02	156.81	R13TSS		35.11		MODRES	35.50	CR		58.9	27M0G7W	RUS-4	34	P	5, 7, 8
S	S 13800	5.00	16.20	61.00	1.04	0.98	14.00	R13TSS		44.36		MODRES	35.50	CL		55.6	27M0G7W		04	P	5
S	S 13900	5.00	17.00	61.50	2.00	1.00	10.00	R13TSS		41.44		MODRES	35.50	CL		61.1	27M0G7W		04	P	
SCG*	SCG14800	-7.00	20.50	43.98	0.91	0.60	145.16	R13TSS		47.07		MODRES	35.50	CR		58.9	27M0G7W			P	
SDN	SDN_100	-7.00	30.24	13.53				CB_TSS_SDNA		40.26		MODRES	35.50	CR		59.4	27M0G7W			P	
SEN	SEN22200	-37.00	-14.40	13.80	1.46	1.04	139.00	R13TSS		42.63		MODRES	35.50	CL		58.6	27M0G7W			P	5, 7
SEY	SEY00000	42.50	51.86	-7.23	2.43	1.04	27.51	R13TSS		40.44		MODRES	35.50	CR		58.9	27M0G7W			P	5, 7
SLM	SLM00000	128.00	159.27	-8.40	1.35	1.08	118.59	R13TSS		42.81		MODRES	35.50	CL		58.9	27M0G7W			P	
SMO	SMO05700	-178.00	-171.70	-13.87	0.60	0.60	90.00	R13TSS		48.88		MODRES	35.50	CR		58.6	27M0G7W			P	7
SMR	SMR31100	-36.80	12.60	43.70	0.60	0.60	0.00	R13TSS		48.88		MODRES	35.50	CR		57.4	27M0G7W			P	7
SNG	SNG15100	88.00	103.86	1.42	0.92	0.72	175.12	R13TSS		46.25		MODRES	35.50	CL		58.5	27M0G7W			P	
SOM	SOM31200	37.80	45.16	7.11	3.31	1.51	65.48	R13TSS		37.46		MODRES	35.50	CR		57.4	27M0G7W			P	5, 7
SRL	SRL25900	-33.50	-11.80	8.60	0.78	0.68	114.00	R13TSS		47.20		MODRES	35.50	CR		58.4	27M0G7W			P	6
STP	STP24100	-7.00	6.17	1.45	0.65	0.60	153.51	R13TSS		48.56		MODRES	35.50	CR		56.4	27M0G7W			P	7
SUI	SUI14000	-18.80	10.31	49.47	1.82	0.92	151.78	MOD13FRTSS		42.19		MODRES	35.50	CL		59.1	27M0G7W			P	7
SVK	SVK14401	-12.80	16.77	46.78	1.71	0.89	149.15	MOD13FRTSS		42.64		MODRES	35.50	CL		59.3	27M0G7W			P	5, 7
SVK	SVK14402	-12.80	16.77	46.78	1.71	0.89	149.15	MOD13FRTSS		42.64		MODRES	35.50	CR		59.3	27M0G7W			P	5
SVK	SVK14403	-12.80	16.77	46.78	1.71	0.89	149.15	MOD13FRTSS		42.64		MODRES	35.50	CR		59.3	27M0G7W		37	P	5, 7
SVN	SVN14800	33.80	15.01	46.18	0.60	0.60	90.00	R13TSS		48.88		MODRES	35.50	CR		58.9	27M0G7W			P	
SWZ	SWZ31300	4.80	31.39	-26.44	0.60	0.60	90.00	R13TSS		48.88		MODRES	35.50	CL		57.9	27M0G7W			P	7
SYR	SYR22900	11.00	37.55	34.02	1.47	0.91	73.16	MOD13FRTSS		43.19		MODRES	35.50	CL		55.5	27M0G7W		53	P	
SYR	SYR33900	11.00	37.60	34.20	1.32	0.88	74.00	MOD13FRTSS		43.80		MODRES	35.50	CL		56.4	27M0G7W		53	P	
TCD	TCD14300	17.00	18.36	15.47	3.23	2.05	82.89	R13TSS		36.23		MODRES	35.50	CR		58.9	27M0G7W			P	

\* *Note by the Secretariat:* This designation replaces the former designation “YUG” which was used previously as a three-letter code for the Administration of Serbia and Montenegro.



1	2	3	4		5			6	7	8		9		10		11	12	13	14	15	16
Admin. symbol	Beam identification	Orbital position	Boresight		Space station antenna characteristics			Space station antenna code	Shaped beam	Space station antenna gain		Earth station antenna		Polarization		e.i.r.p.	Designation of emission	Identity of the space station	Group code	Status	Remarks
			Long.	Lat.	Ma- jor axis	Minor axis	Orien- tation			Co-polar	Cross- polar	Code	Gain	Type	Angle						
TGO	TGO22600	-30.00	0.72	8.61	1.12	0.60	109.54	R13TSS		46.19		MODRES	35.50	CR		58.5	27M0G7W			P	5, 7
THA	THA14200	98.00	100.75	12.88	2.80	1.82	93.77	R13TSS		37.37		MODRES	35.50	CL		58.6	27M0G7W			P	
TJK	TJK06900	38.00	71.14	38.41	1.21	0.73	155.31	R13TSS		45.00		MODRES	35.50	CL		58.8	27M0G7W			P	5, 7
TKM	TKM06800	50.00	59.24	38.83	2.26	1.02	166.64	R13TSS		40.81		MODRES	35.50	CR		58.9	27M0G7W			P	5, 7
TMP	TMP00000	128.00	126.03	-8.72	0.66	0.60	13.92	R13TSS		48.50		MODRES	35.50	CR		58.9	27M0G7W			P	9
TON	TON21500	170.75	-175.23	-18.19	1.59	0.60	71.33	R13TSS		44.64		MODRES	35.50	CR		58.3	27M0G7W			P	5, 7
TUN	TUN15000	-25.20	9.50	33.50	1.88	0.72	135.00	MOD13FRTSS		43.13		MODRES	35.50	CR		57.3	27M0G7W		55	P	
TUN	TUN27200	-25.20	2.10	31.75	3.41	1.81	179.18	MOD13FRTSS		36.54		MODRES	35.50	CR		55.5	27M0G7W		55	P	4
TUR	TUR14500	42.00	34.95	39.09	3.18	0.99	0.79	R13TSS		39.47		MODRES	35.50	CL		58.8	27M0G7W		36	P	
TUV	TUV00000	176.00	177.61	-7.11	0.94	0.60	137.58	R13TSS		46.93		MODRES	35.50	CR		58.9	27M0G7W			P	5, 7
TZA	TZA22500	11.00	34.60	-6.20	2.41	1.72	129.00	R13TSS		38.27		MODRES	35.50	CR		58.7	27M0G7W			P	
UAE	UAE27400	52.50	53.85	24.34	1.19	0.85	3.72	R13TSS		44.39		MODRES	35.50	CR		58.2	27M0G7W			P	5, 7
UGA	UGA05100	17.00	32.20	1.04	1.50	1.02	68.73	R13TSS		42.62		MODRES	35.50	CL		58.2	27M0G7W			P	
UKR	UKR06300	38.20	31.74	48.22	2.29	0.96	177.78	R13TSS		41.01		MODRES	35.50	CR		58.9	27M0G7W			P	
USA	GUM33100	122.00	144.50	13.10	0.60	0.60	0.00	R13TSS		48.88		MODRES	35.50	CL		58.3	27M0G7W			P	
USA	MRA33200	121.80	145.90	16.90	1.20	0.60	76.00	R13TSS		45.87		MODRES	35.50	CR		58.5	27M0G7W			P	
USA	PLM33200	170.00	-161.40	7.00	0.60	0.60	0.00	R13TSS		48.88		MODRES	35.50	CL		57.4	27M0G7W			P	
USA	USAA_100	170.00	-170.51	-12.72				CB_TSS_USAA		48.88		MODRES	35.50	CL		56.1	27M0G7W			P	
USA	WAK33400	140.00	166.50	19.20	0.60	0.60	0.00	R13TSS		48.88		MODRES	35.50	CR		58.6	27M0G7W			P	
UZB	UZB07100	33.80	63.80	41.21	2.56	0.89	159.91	R13TSS		40.84		MODRES	35.50	CR		58.8	27M0G7W			P	
VTN	VTN32500	107.00	106.84	14.21	3.43	1.76	109.43	R13TSS		36.65		MODRES	35.50	CR		58.4	27M0G7W			P	
VUT	VUT12800	140.00	168.00	-16.40	1.52	0.68	87.00	R13TSS		44.30		MODRES	35.50	CL		57.8	27M0G7W			P	
YEM	YEM__100	11.00	48.05	14.64				CB_TSS_YEMA		47.63		MODRES	35.50	CL		54.9	27M0G7W			P	
ZMB	ZMB31400	-0.80	27.50	-13.10	2.38	1.48	39.00	R13TSS		38.98		MODRES	35.50	CR		58.7	27M0G7W			P	
ZWE	ZWE13500	-0.80	29.60	-18.80	1.46	1.36	37.00	R13TSS		41.47		MODRES	35.50	CR		59.2	27M0G7W			P	5, 7

ANNEX 1 (Rev.WRC-03)

**Limits for determining whether a service of an administration is affected by a proposed modification to the Region 2 Plan or by a proposed new or modified assignment in the Regions 1 and 3 List or when it is necessary under this Appendix to seek the agreement of any other administration<sup>25</sup>**

**MOD** COM5/216/13 (B3/224/28) (R2/266/17)

**7 Limits to the change in equivalent noise temperature to protect the fixed-satellite service (Earth-to-space) in Region 1 from modifications to the Region 2 Plan in the band 12.5-12.7 GHz**

With respect to § 4.2.3 *e*) of Article 4, an administration is considered as being affected if the proposed modification to the Region 2 Plan would result in:

- the value of  $\Delta T/T$  of its overlapping frequency assignments in the fixed-satellite service in Region 1 resulting from the proposed modification is greater than the value of  $\Delta T/T$  resulting from the assignment in the Region 2 Plan as of the date of entry into force of the Final Acts of the 1985 Conference; *and*
- the value of  $\Delta T/T$  of its overlapping frequency assignments in the fixed-satellite service in Region 1 resulting from the proposed modification exceeds 6%,

using the method of Appendix 8 (Case II). (WRC-07)

ANNEX 4 (Rev.WRC-03)

**Need for coordination of a transmitting space station in the fixed-satellite service or in the broadcasting-satellite service where this service is not subject to a Plan: in Region 2 (11.7-12.2 GHz) with respect to the Plan, the List or proposed new or modified assignments in the List for Regions 1 and 3; in Region 1 (12.5-12.7 GHz) and in Region 3 (12.2-12.7 GHz) with respect to the Plan or proposed modifications to the Plan in Region 2; in Region 3 (12.2-12.5 GHz) with respect to the Plan, List or proposed new or modified assignments in the List for Region 1**

(See Article 7)

**MOD** COM5/216/14 (B3/224/29) (R2/266/18)

With respect to § 7.1 and 7.2 of Article 7, coordination of a transmitting space station in the fixed-satellite service (FSS) (space-to-Earth) of Region 2 or Region 3 is required when, under assumed free-space propagation conditions, the power flux-density over any portion of the service area of the overlapping frequency assignments in the BSS of an administration in Region 1 or Region 3 exceeds the following values: (WRC-07)

## ANNEX 5

### **Technical data used in establishing the provisions and associated Plans and the Regions 1 and 3 List, which should be used for their application<sup>34</sup> (Rev.WRC-03)**

**MOD** COM5/216/15 (B3/224/30) (R2/266/19)

#### **3.7.1**

...

In revising this Plan at WRC-97, the minimum receiving antenna diameter was such that the half-power beamwidth was 2.86°. (WRC-07)

...

**MOD** COM5/216/16 (B3/224/31) (R2/266/20)

*(Figure 7bis - Cross-polar pattern)*

#### **3.7.2**

...

$$G_{cross}(\varphi) = G_{max} - 17 + C \left| \frac{\varphi - \varphi_0}{\varphi_1 - \varphi_0} \right| \quad \text{for } \varphi_0 \leq \varphi < \varphi_1 \quad (\text{WRC-07})$$

...

## APPENDIX 30A (Rev.WRC-07)\*

### **Provisions and associated Plans and List<sup>1</sup> for feeder links for the broadcasting-satellite service (11.7-12.5 GHz in Region 1, 12.2-12.7 GHz in Region 2 and 11.7-12.2 GHz in Region 3) in the frequency bands 14.5-14.8 GHz<sup>2</sup> and 17.3-18.1 GHz in Regions 1 and 3, and 17.3-17.8 GHz in Region 2 (WRC-03)**

(See Articles 9 and 11) (WRC-03)

## ARTICLE 2A (Rev.WRC-07)

### **Use of the guardbands**

**MOD** COM5/307/17 (B11/329/24) (R6/410/43)

2A.1 The use of the guardbands defined in § 3.1 and 4.1 of Annex 3 to provide space operation functions in accordance with No. **1.23** in support of the operation of geostationary-satellite networks for the broadcasting-satellite service (BSS) feeder link is not subject to the application of Section I of Article 9.

2A.1.1 Coordination between assignments intended to provide the space operation functions and assignments of the BSS feeder link subject to a Plan shall be effected using the provisions of Article 7.

2A.1.2 Coordination among assignments intended to provide the space operation functions and services not subject to a Plan shall be effected using the provisions of Nos. **9.7, 9.17, 9.17A, 9.18**, and the associated provisions of Section II of Article 9, as appropriate.

2A.1.3 Coordination of modifications to the Region 2 feeder-link Plan or assignments to be included in the Regions 1 and 3 feeder-link List, with assignments intended to provide these functions shall be effected using § 4.1.1 *d*) of Article 4.

2A.1.4 Requests for the above-mentioned coordination shall be sent by the requesting administration to the Bureau, together with the appropriate information listed in Appendix 4.

2A.2 Any assignment intended to provide these functions in support of a geostationary-satellite network for the BSS feeder link shall be notified under Article 11 and brought into use within the following time-limits:

2A.2.1 *a)* for the case where the associated BSS feeder-link assignments are contained in one of the initial Plans (Region 2 Plans incorporated in the Radio Regulations at WARC Orb-85 and Regions 1 and 3 Plan adopted at WRC-2000), within the regulatory time-limit referred to in § 4.1.3 or 4.2.6 of Article 4 from the date of receipt by the Bureau of the complete Appendix 4 data for those assignments intended to provide the space operation functions;

2A.2.2 *b)* for the case where the associated BSS feeder-link assignments have been submitted under § 4.1.3 or § 4.2.6 of Article 4 for entry in the Regions 1 and 3 List or a modification to the Region 2 Plan, within the regulatory time-limit referred to in § 4.1.3 or § 4.2.6 of Article 4 for those associated BSS feeder-link assignments;

2A.2.3 c) for the case where the associated BSS feeder-link assignments have already been brought into use in accordance with the Radio Regulations, within the regulatory time-limit referred to in § 4.1.3 and § 4.2.6 of Article 4 from the date of receipt by the Bureau of the complete Appendix 4 data for those assignments intended to provide these space operation functions.

## ARTICLE 4 (Rev.WRC-03)

### **Procedures for modifications to the Region 2 feeder-link Plan or for additional uses in Regions 1 and 3**

**MOD** COM5/307/18 (B11/329/25) (R6/410/44)

4.1.3 An administration, or one<sup>6</sup> acting on behalf of a group of named administrations, intending to include a new or modified assignment in the feeder-link List shall send to the Bureau, not earlier than eight years but preferably not later than two years before the date on which the assignment is to be brought into use, the relevant information listed in Appendix 4. An assignment in the feeder-link List shall lapse if it is not brought into use within eight years after the date of receipt by the Bureau of the relevant complete information. A proposed new or modified assignment not included in the List within eight years after the date of receipt by the Bureau of the relevant complete information<sup>7</sup> shall also lapse. (WRC-07)

**MOD** COM5/307/19 (B11/329/26) (R6/410/45)

4.1.5 The Bureau shall determine, on the basis of Annex 1, the administrations whose frequency assignments are considered to be affected. The Bureau shall publish<sup>9</sup>, in a Special Section of its International Frequency Information Circular (BR IFIC), the complete information received under § 4.1.3, together with the names of the affected administrations, the corresponding fixed-satellite service networks, and the corresponding feeder-links to broadcasting-satellite service assignments, as appropriate. The Bureau shall immediately send a telegram/fax to the administration proposing the assignment, drawing its attention to the information contained in the relevant BR IFIC. (WRC-07)

#### **4.1.5**

**MOD** COM5/308/11 (B10/326/11) (R6/410/46)

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<sup>9</sup> If the payments are not received in accordance with the provisions of Council Decision 482, as amended, on the implementation of cost recovery for satellite network filings, the Bureau shall cancel the publication, after informing the administration concerned. The Bureau shall inform all administrations of such action and that the network specified in the publication in question no longer has to be taken into consideration by the Bureau and other administrations. The Bureau shall send a reminder to the notifying administration not later than two months prior to the deadline for the payment in accordance with the above-mentioned Council Decision 482 unless the payment has already been received. (WRC-07)

**MOD** COM5/307/20 (B11/329/27) (R6/410/47)

4.1.6 The Bureau shall send a telegram/fax to the administrations listed in the Special Section of the BR IFIC, drawing their attention to the information it contains. (WRC-07)

**MOD** COM5/379/6 (B16/401/7)

4.1.11 If, in seeking agreement, an administration modifies its initial proposal, it shall again apply the provisions of § 4.1 and the subsequent procedure in cases where:

- the assignments of any other administration received by the Bureau in accordance with § 4.1.3 or § 4.2.6, or § 7.1 of Article 7, or No. 9.7 before this modified proposal is received under § 4.1.12; *or*
- the assignments of any other administration contained in the Plans or the Lists,

are considered as being affected and receive more interference as a result of the modifications than that produced by the initial proposal. (WRC-07)

#### 4.1.15

**MOD** COM5/308/12 (B10/326/12) (R6/410/48)

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<sup>10</sup> If the payments are not received in accordance with the provisions of Council Decision 482, as amended, on the implementation of cost recovery for satellite network filings, the Bureau shall cancel the publication, after informing the administration concerned. The Bureau shall inform all administrations of such action and that the network specified in the publication in question no longer has to be taken into consideration by the Bureau and other administrations. The Bureau shall send a reminder to the notifying administration not later than two months prior to the deadline for the payment in accordance with the above-mentioned Council Decision 482 unless the payment has already been received. (WRC-07)

**MOD** COM5/307/21 (B11/329/28) (R6/410/49)

4.2.6 An administration, or one<sup>16</sup> acting on behalf of a group of named administrations, intending to make a modification to the Region 2 feeder-link Plan shall send to the Bureau, not earlier than eight years but preferably not later than two years before the date on which the assignment is to be brought into use, the relevant information listed in Appendix 4. Modifications to that Plan shall lapse if the assignment is not brought into use within eight years after the date of receipt by the Bureau of the relevant complete information<sup>17</sup>. A request for a modification that has not been included in that Plan within eight years after the date of receipt by the Bureau of the relevant complete information<sup>17</sup> shall also lapse. (WRC-07)

**MOD** COM5/307/22 (B11/329/29) (R6/410/50)

4.2.8 The Bureau shall determine, on the basis of Annex 1, the administrations whose frequency assignments are considered to be affected within the meaning of § 4.2.2. The Bureau shall publish<sup>19</sup>, in a Special Section of its BR IFIC, the complete information received under § 4.2.6, together with the names of the affected administrations, the corresponding fixed-satellite service networks, and the corresponding feeder links to broadcasting-satellite service assignments, as appropriate. The Bureau shall immediately send a telegram/fax to the administration proposing the modification to the Region 2 feeder-link Plan, drawing its attention to the information contained in the relevant BR IFIC. (WRC-07)

#### **4.2.8**

**MOD** COM5/308/13 (B10/326/13) (R6/410/51)

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<sup>19</sup> If the payments are not received in accordance with the provisions of Council Decision 482, as amended, on the implementation of cost recovery for satellite network filings, the Bureau shall cancel the publication, after informing the administration concerned. The Bureau shall inform all administrations of such action and that the network specified in the publication in question no longer has to be taken into consideration by the Bureau and other administrations. The Bureau shall send a reminder to the notifying administration not later than two months prior to the deadline for the payment in accordance with the above-mentioned Council Decision 482 unless the payment has already been received. (WRC-07)

**MOD** COM5/307/23 (B11/329/30) (R6/410/52)

4.2.9 The Bureau shall send a telegram/fax to the administrations listed in the Special Section of its BR IFIC, drawing their attention to the information it contains. (WRC-07)

**MOD** COM5/307/24 (B11/329/31) (R6/410/53)

4.2.10 An administration which considers that it should have been included in the publication referred to under § 4.2.8 above shall, within four months of the date of publication in the relevant BR IFIC, and giving the technical reasons for so doing, request the Bureau to include its name in the publication. The Bureau shall study this information on the basis of Annex 1 and shall inform both administrations of its conclusions. Should the Bureau agree to the administration's request, it shall publish an addendum to the publication under § 4.2.8. (WRC-07)

#### **4.2.19**

**MOD** COM5/308/14 (B10/326/14) (R6/410/54)

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<sup>20</sup> If the payments are not received in accordance with the provisions of Council Decision 482, as amended, on the implementation of cost recovery for satellite network filings, the Bureau shall cancel the publication, after informing the administration concerned. The Bureau shall inform all administrations of such action and that the network specified in the publication in question no longer has to be taken into consideration by the Bureau and other administrations. The Bureau shall send a reminder to the notifying administration not later than two months prior to the deadline for the payment in accordance with the above-mentioned Council Decision 482 unless the payment has already been received. (WRC-07)

**MOD** COM5/308/15 (B10/326/15) (R6/410/55)

ARTICLE 5 (Rev.WRC-03)

**Coordination, notification, examination and recording in the Master International Frequency Register of frequency assignments to feeder-link transmitting earth stations and receiving space stations in the fixed-satellite service**<sup>21A, ADD 21A</sup> (WRC-07)

**ADD** COM5/308/16 (B10/326/16) (R6/410/56)

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<sup>21A</sup> If the payments are not received in accordance with the provisions of Council Decision 482, as amended, on the implementation of cost recovery for satellite network filings, the Bureau shall cancel the publication specified in § 5.1.10 and the corresponding entries in the Master Register under § 5.2.2, 5.2.2.1 or 5.2.2.2, as appropriate, and the corresponding entries included in the Plan on and after 3 June 2000 or in the List, as appropriate, after informing the administration concerned. The Bureau shall inform all administrations of such action. The Bureau shall send a reminder to the notifying administration not later than two months prior to the deadline for the payment in accordance with the above-mentioned Council Decision 482 unless the payment has already been received. See also Resolution [COM 5/2] (WRC-07). (WRC-07)

**MOD** COM5/307/25 (B11/329/32) (R6/410/57)

5.2.2 When the Bureau reaches a favourable finding with respect to § 5.2.1 *a*), 5.2.1 *b*), 5.2.1 *c*) and 5.2.1 *f*), the frequency assignment of an administration shall be recorded in the Master Register. The date of receipt of the notice by the Bureau shall be entered in the Master Register. In relations between administrations all frequency assignments brought into use in conformity with the feeder-link Plan and recorded in the Master Register shall be considered to have the same status irrespective of the dates of receipt entered in the Master Register for such frequency assignments. (WRC-07)

**MOD** COM5/307/26 (B11/329/33) (R6/410/58)

5.2.2.1 When the Bureau reaches a favourable finding with respect to § 5.2.1 *a*), 5.2.1 *c*), 5.2.1 *d*) and 5.2.1 *f*), the frequency assignment shall be recorded in the Master Register. The date of receipt of the notice by the Bureau shall be entered in the Master Register. In relations between administrations, all frequency assignments brought into use in conformity with the feeder-link Plan and recorded in the Master Register shall be considered to have the same status irrespective of the dates of receipt entered in the Master Register for such frequency assignments. When recording these assignments, the Bureau shall indicate by an appropriate symbol the characteristics having a value different from that appearing in that Plan. (WRC-07)



**MOD** COM5/307/27 (B11/329/34) (R6/410/59)

5.2.2.2 In the case of Region 2, when the Bureau reaches a favourable finding with respect to § 5.2.1 *a*) and 5.2.1 *c*) but an unfavourable finding with respect to § 5.2.1 *b*) and 5.2.1 *d*), it shall examine the notice with respect to the successful application of the provisions of Resolution **42 (Rev.WRC-03)**. A frequency assignment for which the provisions of Resolution **42 (Rev.WRC-03)** have been successfully applied shall be recorded in the Master Register with an appropriate symbol to indicate its interim status. The date of receipt of the notice by the Bureau shall be entered in the Master Register. In relations between administrations all frequency assignments brought into use following the successful application of the provisions of Resolution **42 (Rev.WRC-03)** and recorded in the Master Register shall be considered to have the same status irrespective of the dates of receipt entered in the Master Register for such frequency assignments. If the finding with respect to § 5.2.1 *e*), where applicable, is unfavourable, the notice shall be returned immediately by airmail to the notifying administration. (WRC-07)

**MOD** COM5/307/28 (B11/329/35) (R6/410/60)

5.2.3 Whenever a frequency assignment is recorded in the Master Register, the finding reached by the Bureau shall be indicated. (WRC-07)

**MOD** COM5/307/29 (B11/329/36) (R6/410/61)

5.2.9 The date of bringing into use notified by the administration concerned shall be recorded in the Master Register. (WRC-07)

**MOD** COM5/307/30 (B11/329/37) (R6/410/62)

5.3.1 Any notified frequency assignment to which the Article 4 procedures have been applied and which has been provisionally recorded under § 5.2.7 shall be brought into use no later than the end of the period provided under § 4.1.3 or 4.2.6 of Article 4. Any other frequency assignment provisionally recorded under § 5.2.7 shall be brought into use by the date specified in the notice. Unless the Bureau has been informed by the notifying administration of the bringing into use of the assignment under § 5.2.8, it shall, no later than fifteen days before the notified date of bringing into use or the end of the regulatory period established under § 4.1.3 or 4.2.6 of Article 4, as appropriate, send a reminder requesting confirmation that the assignment has been brought into use within the regulatory period. If the Bureau does not receive that confirmation within thirty days following the notified date of bringing into use or the period provided under § 4.1.3 or 4.2.6 of Article 4, as the case may be, it shall cancel the entry in the Master Register. (WRC-07)

## ARTICLE 9A (Rev.WRC-03)

### **Plan for feeder links for the broadcasting-satellite service in the fixed-satellite service in the frequency bands 14.5-14.8 GHz and 17.3-18.1 GHz in Regions 1 and 3**

9A.2 TEXT FOR NOTES IN THE REMARKS COLUMN OF THE  
REGIONS 1 AND 3 FEEDER-LINK PLAN (WRC-03)

**SUP** COM5/328/9 (B12/346/9) (R6/410/63)

TABLE 1A

**ADD** COM5/328/12 (B12/346/10) (R6/410/64)

TABLE 1A (WRC-07)

**Affected administrations and corresponding networks/beams identified based on Note 5 in § 9A.2 of Article 9A**

Beam name	Channels	Affected administrations <sup>*</sup>	Affected networks/beams <sup>*</sup>
CPV30100	2, 4, 8, 10, 12	GUY JMC	GUY00302, JMC00005
CPV30100	6	JMC	JMC00005
G 02700	2, 4, 8, 10, 12	GUY JMC	GUY00302, JMC00005
G 02700	6	JMC	JMC00005
LBR24400	1	GUY	GUY00302
LBR24400	3, 9, 13	JMC	JMC00005
LBR24400	5, 7, 11	GUY JMC	GUY00302, JMC00005

\* Administrations and corresponding networks or beams whose assignment(s) may receive interference from the beam shown in the left-hand column.

**SUP** COM5/328/10 (B12/346/11) (R6/410/65)

TABLE 1B

**ADD** COM5/328/13 (B12/346/12) (R6/410/66)

TABLE 1B (WRC-07)

**Affecting administrations and corresponding networks/beams identified based on Notes 6 and 7 in § 9A.2 of Article 9A**

Beam name	Channels	Note	Affecting administrations <sup>*</sup>	Affecting networks/beams <sup>*</sup>
CPV30100	2, 4, 8, 10, 12	6	GUY JMC	GUY00302, JMC00005
CPV30100	6	6	JMC	JMC00005
E____100	1, 3, 5, 7, 9, 11, 13	6	G	BERBER02
G 02700	2, 4, 8, 10, 12	6	GUY JMC	GUY00302, JMC00005
G 02700	6	6	JMC	JMC00005
LBR24400	1	6	GUY	GUY00302
LBR24400	3, 9, 13	6	JMC	JMC00005
LBR24400	5, 7, 11	6	GUY JMC	GUY00302, JMC00005
NZL__100	24	7	J	SUPERBIRD-A

\* Administrations and corresponding networks or beams whose assignment(s) may cause interference to the beam shown in the left-hand column.

**SUP** COM5/328/11 (B12/346/13) (R6/410/67)

TABLE 3A2

**ADD** COM5/328/14 (B12/346/14) (R6/410/68)

TABLE 3A2 (WRC-07)

**Basic characteristics of the Regions 1 and 3 feeder-link Plan in the frequency band 17.3-18.1 GHz (sorted by administration)**

1	2	3	4		5			6	7	8		9		10		11	12	13	14	15	16	17
Admin. symbol	Beam identification	Orbital position	Boresight		Space station antenna characteristics			Space station antenna code	Shaped beam	Space station antenna gain		Earth station antenna		Polarization		e.i.r.p.	Power control	Designation of emission	Identity of the space station	Group code	Status	Remarks
			Long.	Lat.	Major axis	Minor axis	Orientation			Co-polar	Cross-polar	Code	Gain	Type	Angle							
AFG	AFG24501	50.00	67.00	34.30	1.89	1.19	18.00	MODRSS		40.93		MODTES	57.00	CL		84.0		27M0G7W		71	P	
AFG	AFG24502	50.00	67.00	34.30	1.89	1.19	18.00	MODRSS		40.93		MODTES	57.00	CR		84.0		27M0G7W		71	P	
AGL	AGL29500	-24.80	16.43	-12.37	2.66	1.75	77.43	MODRSS		37.77		MODTES	57.00	CR		84.0		27M0G7W			P	
ALB	ALB29600	62.00	19.50	41.37	0.60	0.60	69.35	MODRSS		48.88		MODTES	57.00	CL		82.6		27M0G7W			P	
ALG	ALG25152	-24.80	1.50	27.60	3.65	2.94	135.00	MODRSS		34.14		MODTES	57.00	CL		84.0		27M0G7W			P	
AND	AND34100	-37.00	1.60	42.50	0.60	0.60	0.00	MODRSS		48.88		MODTES	57.00	CL		83.0		27M0G7W			P	
ARM	ARM06400	22.80	44.99	39.95	0.73	0.60	148.17	MODRSS		48.02		MODTES	57.00	CR		84.0		27M0G7W			P	
ARS	ARS00375	17.00	44.60	23.40	4.21	2.48	145.00	MODRSS		34.26		MODTES	57.00	CL		84.0		27M0G7W		54	P	
ARS	ARS34000	17.00	44.60	23.40	4.21	2.48	145.00	MODRSS		34.28		MODTES	57.00	CL		84.0		27M0G7W		54	P	
AUS	AUS00400	152.00	135.00	-24.20	7.19	5.20	140.00	MODRSS		28.71		MODTES	57.00	CL		87.0		27M0G7W		30	P	
AUS	AUS00401	152.00	96.83	-12.19	0.60	0.60	0.00	MODRSS		48.88		MODTES	57.00	CL		87.0		27M0G7W		30	P	
AUS	AUS00402	152.00	105.69	-10.45	0.60	0.60	0.00	MODRSS		48.88		MODTES	57.00	CL		87.0		27M0G7W		30	P	
AUS	AUS00403	152.00	110.52	-66.28	0.60	0.60	0.00	MODRSS		48.88		MODTES	57.00	CL		87.0		27M0G7W		30	P	
AUS	AUS00404	152.00	158.94	-54.50	0.60	0.60	0.00	MODRSS		48.88		MODTES	57.00	CL		87.0		27M0G7W		30	P	
AUS	AUS00405	152.00	159.06	-31.52	0.60	0.60	0.00	MODRSS		48.88		MODTES	57.00	CL		87.0		27M0G7W		30	P	
AUS	AUS00406	152.00	167.93	-29.02	0.60	0.60	0.00	MODRSS		48.88		MODTES	57.00	CL		87.0		27M0G7W		30	P	
AUS	AUS0040A	152.00	135.36	-23.95	6.89	4.83	141.15	R123FR		29.23		MODTES	57.00	CL		87.0		27M0G7W		30	P	
AUS	AUS00500	152.00	135.00	-24.20	7.19	5.20	140.00	MODRSS		28.71		MODTES	57.00	CR		87.0		27M0G7W		41	P	
AUS	AUS00501	152.00	96.83	-12.19	0.60	0.60	0.00	MODRSS		48.88		MODTES	57.00	CR		87.0		27M0G7W		41	P	
AUS	AUS00502	152.00	105.69	-10.45	0.60	0.60	0.00	MODRSS		48.88		MODTES	57.00	CR		87.0		27M0G7W		41	P	
AUS	AUS00503	152.00	110.52	-66.28	0.60	0.60	0.00	MODRSS		48.88		MODTES	57.00	CR		87.0		27M0G7W		41	P	
AUS	AUS00504	152.00	158.94	-54.50	0.60	0.60	0.00	MODRSS		48.88		MODTES	57.00	CR		87.0		27M0G7W		41	P	

1	2	3	4		5			6	7	8		9		10		11	12	13	14	15	16	17
Admin. symbol	Beam identification	Orbital position	Boresight		Space station antenna characteristics			Space station antenna code	Shaped beam	Space station antenna gain		Earth station antenna		Polarization		e.i.r.p.	Power control	Designation of emission	Identity of the space station	Group code	Status	Remarks
			Long.	Lat.	Major axis	Minor axis	Orien- tation			Co- polar	Cross- polar	Code	Gain	Type	Angle							
AUS	AUS00505	152.00	159.06	-31.52	0.60	0.60	0.00	MODRSS		48.88		MODTES	57.00	CR		87.0		27M0G7W		41	P	
AUS	AUS00506	152.00	167.93	-29.02	0.60	0.60	0.00	MODRSS		48.88		MODTES	57.00	CR		87.0		27M0G7W		41	P	
AUS	AUS00600	152.00	135.50	-24.20	7.19	5.20	140.00	MODRSS		28.71		MODTES	57.00	CR		87.0		27M0G7W		42	P	
AUS	AUS00601	152.00	96.83	-12.19	0.60	0.60	0.00	MODRSS		48.88		MODTES	57.00	CR		87.0		27M0G7W		42	P	
AUS	AUS00602	152.00	105.69	-10.45	0.60	0.60	0.00	MODRSS		48.88		MODTES	57.00	CR		87.0		27M0G7W		42	P	
AUS	AUS00603	152.00	110.52	-66.28	0.60	0.60	0.00	MODRSS		48.88		MODTES	57.00	CR		87.0		27M0G7W		42	P	
AUS	AUS00604	152.00	158.94	-54.50	0.60	0.60	0.00	MODRSS		48.88		MODTES	57.00	CR		87.0		27M0G7W		42	P	
AUS	AUS00605	152.00	159.06	-31.52	0.60	0.60	0.00	MODRSS		48.88		MODTES	57.00	CR		87.0		27M0G7W		42	P	
AUS	AUS00606	152.00	167.93	-29.02	0.60	0.60	0.00	MODRSS		48.88		MODTES	57.00	CR		87.0		27M0G7W		42	P	
AUS	AUS00700	164.00	136.00	-23.90	7.26	4.48	132.00	MODRSS		29.32		MODTES	57.00	CR		87.0		27M0G7W		31	P	
AUS	AUS00701	164.00	96.83	-12.19	0.60	0.60	0.00	MODRSS		48.88		MODTES	57.00	CR		87.0		27M0G7W		31	P	
AUS	AUS00702	164.00	105.69	-10.45	0.60	0.60	0.00	MODRSS		48.88		MODTES	57.00	CR		87.0		27M0G7W		31	P	
AUS	AUS00703	164.00	110.52	-66.28	0.60	0.60	0.00	MODRSS		48.88		MODTES	57.00	CR		87.0		27M0G7W		31	P	
AUS	AUS00704	164.00	158.94	-54.50	0.60	0.60	0.00	MODRSS		48.88		MODTES	57.00	CR		87.0		27M0G7W		31	P	
AUS	AUS00705	164.00	159.06	-31.52	0.60	0.60	0.00	MODRSS		48.88		MODTES	57.00	CR		87.0		27M0G7W		31	P	
AUS	AUS00706	164.00	167.93	-29.02	0.60	0.60	0.00	MODRSS		48.88		MODTES	57.00	CR		87.0		27M0G7W		31	P	
AUS	AUS0070A	164.00	136.62	-24.16	6.82	4.20	134.19	R123FR		29.87		MODTES	57.00	CR		87.0		27M0G7W		31	P	
AUS	AUS00800	164.00	136.00	-23.90	7.26	4.48	132.00	MODRSS		29.32		MODTES	57.00	CL		87.0		27M0G7W		44	P	
AUS	AUS00801	164.00	96.83	-12.19	0.60	0.60	0.00	MODRSS		48.88		MODTES	57.00	CL		87.0		27M0G7W		44	P	
AUS	AUS00802	164.00	105.69	-10.45	0.60	0.60	0.00	MODRSS		48.88		MODTES	57.00	CL		87.0		27M0G7W		44	P	
AUS	AUS00803	164.00	110.52	-66.28	0.60	0.60	0.00	MODRSS		48.88		MODTES	57.00	CL		87.0		27M0G7W		44	P	
AUS	AUS00804	164.00	158.94	-54.50	0.60	0.60	0.00	MODRSS		48.88		MODTES	57.00	CL		87.0		27M0G7W		44	P	
AUS	AUS00805	164.00	159.06	-31.52	0.60	0.60	0.00	MODRSS		48.88		MODTES	57.00	CL		87.0		27M0G7W		44	P	
AUS	AUS00806	164.00	167.93	-29.02	0.60	0.60	0.00	MODRSS		48.88		MODTES	57.00	CL		87.0		27M0G7W		44	P	
AUS	AUS00900	164.00	136.00	-23.90	7.26	4.48	132.00	MODRSS		29.32		MODTES	57.00	CR		87.0		27M0G7W		32	P	
AUS	AUS00901	164.00	96.83	-12.19	0.60	0.60	0.00	MODRSS		48.88		MODTES	57.00	CR		87.0		27M0G7W		32	P	
AUS	AUS00902	164.00	105.69	-10.45	0.60	0.60	0.00	MODRSS		48.88		MODTES	57.00	CR		87.0		27M0G7W		32	P	
AUS	AUS00903	164.00	110.52	-66.28	0.60	0.60	0.00	MODRSS		48.88		MODTES	57.00	CR		87.0		27M0G7W		32	P	
AUS	AUS00904	164.00	158.94	-54.50	0.60	0.60	0.00	MODRSS		48.88		MODTES	57.00	CR		87.0		27M0G7W		32	P	
AUS	AUS00905	164.00	159.06	-31.52	0.60	0.60	0.00	MODRSS		48.88		MODTES	57.00	CR		87.0		27M0G7W		32	P	

1	2	3	4		5			6	7	8		9		10		11	12	13	14	15	16	17
Admin. symbol	Beam identification	Orbital position	Boresight		Space station antenna characteristics			Space station antenna code	Shaped beam	Space station antenna gain		Earth station antenna		Polarization		e.i.r.p.	Power control	Designation of emission	Identity of the space station	Group code	Status	Remarks
			Long.	Lat.	Major axis	Minor axis	Orien- tation			Co- polar	Cross- polar	Code	Gain	Type	Angle							
AUS	AUS00906	164.00	167.93	-29.02	0.60	0.60	0.00	MODRSS		48.88		MODTES	57.00	CR		87.0		27M0G7W		32	P	
AUS	AUS0090A	164.00	136.62	-24.16	6.82	4.20	134.19	R123FR		29.87		MODTES	57.00	CR		87.0		27M0G7W		32	P	
AUS	AUSA0000	152.00	135.36	-23.95	6.89	4.83	141.15	R123FR		29.23		MODTES	57.00	CL		87.0		27M0G7W		40	P	
AUS	AUSA0001	152.00	96.83	-12.19	0.60	0.60	0.00	MODRSS		48.88		MODTES	57.00	CL		87.0		27M0G7W		40	P	
AUS	AUSA0002	152.00	105.69	-10.45	0.60	0.60	0.00	MODRSS		48.88		MODTES	57.00	CL		87.0		27M0G7W		40	P	
AUS	AUSA0003	152.00	110.52	-66.28	0.60	0.60	0.00	MODRSS		48.88		MODTES	57.00	CL		87.0		27M0G7W		40	P	
AUS	AUSA0004	152.00	158.94	-54.50	0.60	0.60	0.00	MODRSS		48.88		MODTES	57.00	CL		87.0		27M0G7W		40	P	
AUS	AUSA0005	152.00	159.06	-31.52	0.60	0.60	0.00	MODRSS		48.88		MODTES	57.00	CL		87.0		27M0G7W		40	P	
AUS	AUSA0006	152.00	167.93	-29.02	0.60	0.60	0.00	MODRSS		48.88		MODTES	57.00	CL		87.0		27M0G7W		40	P	
AUS	AUSB0000	164.00	136.62	-24.16	6.82	4.20	134.19	R123FR		29.87		MODTES	57.00	CL		87.0		27M0G7W		43	P	
AUS	AUSB0001	164.00	96.83	-12.19	0.60	0.60	0.00	MODRSS		48.88		MODTES	57.00	CL		87.0		27M0G7W		43	P	
AUS	AUSB0002	164.00	105.69	-10.45	0.60	0.60	0.00	MODRSS		48.88		MODTES	57.00	CL		87.0		27M0G7W		43	P	
AUS	AUSB0003	164.00	110.52	-66.28	0.60	0.60	0.00	MODRSS		48.88		MODTES	57.00	CL		87.0		27M0G7W		43	P	
AUS	AUSB0004	164.00	158.94	-54.50	0.60	0.60	0.00	MODRSS		48.88		MODTES	57.00	CL		87.0		27M0G7W		43	P	
AUS	AUSB0005	164.00	159.06	-31.52	0.60	0.60	0.00	MODRSS		48.88		MODTES	57.00	CL		87.0		27M0G7W		43	P	
AUS	AUSB0006	164.00	167.93	-29.02	0.60	0.60	0.00	MODRSS		48.88		MODTES	57.00	CL		87.0		27M0G7W		43	P	
AUT	AUT01600	-18.80	10.31	49.47	1.82	0.92	151.78	MODRSS		42.19		MODTES	57.00	CR		84.0		27M0G7W			P	
AZE	AZE06400	23.20	47.47	40.14	0.93	0.60	158.14	MODRSS		46.98		MODTES	57.00	CL		84.0		27M0G7W			P	
BDI	BDI27000	11.00	29.90	-3.10	0.71	0.60	80.00	MODRSS		48.15		MODTES	57.00	CL		81.0		27M0G7W			P	
BEL	BEL01800	38.20	5.12	51.96	1.00	1.00	0.00	MODRSS		44.44		MODTES	57.00	CR		85.5		27M0G7W			P	
BEN	BEN23300	-19.20	2.20	9.50	1.44	0.68	97.00	MODRSS		44.54		MODTES	57.00	CL		84.0		27M0G7W			P	
BFA	BFA10700	-30.00	-1.50	12.20	1.45	1.14	29.00	MODRSS		42.26		MODTES	57.00	CL		84.0		27M0G7W			P	
BGD	BGD22000	74.00	90.30	23.60	1.46	0.84	135.00	MODRSS		43.56		MODTES	57.00	CR		84.0		27M0G7W			P	
BHR	BHR25500	34.00	50.50	26.10	0.60	0.60	0.00	MODRSS		48.88		MODTES	57.00	CR		83.0		27M0G7W			P	
BIH	BIH14800	56.00	18.22	43.97	0.60	0.60	90.00	MODRSS		48.88		MODTES	57.00	CR		84.0		27M0G7W			P	
BLR	BLR06200	37.80	28.04	53.18	1.17	0.60	9.68	MODRSS		45.96		MODTES	57.00	CL		84.0		27M0G7W			P	
BOT	BOT29700	-0.80	23.30	-22.20	2.13	1.50	36.00	MODRSS		39.40		MODTES	57.00	CL		84.0		27M0G7W			P	
BRM	BRM29800	104.00	96.97	18.68	3.33	1.66	91.63	MODRSS		37.02		MODTES	57.00	CR		84.0		27M0G7W			P	
BRU	BRU3300A	74.00	114.70	4.40	0.60	0.60	0.00	MODRSS		48.88		MODTES	57.00	CR		84.0		27M0G7W			P	
BTN	BTN03100	86.00	90.44	27.05	0.72	0.60	175.47	MODRSS		48.11		MODTES	57.00	CR		84.0		27M0G7W			P	

1	2	3	4		5			6	7	8		9		10		11	12	13	14	15	16	17
Admin. symbol	Beam identification	Orbital position	Boresight		Space station antenna characteristics			Space station antenna code	Shaped beam	Space station antenna gain		Earth station antenna		Polarization		e.i.r.p.	Power control	Designation of emission	Identity of the space station	Group code	Status	Remarks
			Long.	Lat.	Major axis	Minor axis	Orien- tation			Co- polar	Cross- polar	Code	Gain	Type	Angle							
BUL	BUL02000	-1.20	25.00	43.00	1.04	0.60	165.00	MODRSS		46.50		MODTES	57.00	CL		83.0		27M0G7W			P	
CAF	CAF25800	-13.20	21.00	6.30	2.25	1.68	31.00	MODRSS		38.67		MODTES	57.00	CR		84.0		27M0G7W			P	
CBG	CBG29900	86.00	104.89	12.79	1.12	0.94	32.89	MODRSS		44.22		MODTES	57.00	CR		84.0		27M0G7W			P	
CHN	CHN15400	62.00	101.90	33.50	5.10	2.80	143.00	MODRSS		32.90		MODTES	57.00	CR		84.0		27M0G7W		45	P	
CHN	CHN15500	62.00	101.90	33.50	5.10	2.80	143.00	MODRSS		32.90		MODTES	57.00	CL		84.0		27M0G7W		45	P	
CHN	CHN15800	134.00	113.21	34.27	6.40	3.16	10.74	MODRSS		31.39		MODTES	57.00	CL		84.0		27M0G7W		46	P	
CHN	CHN15900	134.00	113.21	34.27	6.40	3.16	10.74	MODRSS		31.39		MODTES	57.00	CR		84.0		27M0G7W		46	P	
CHN	CHN16000	92.20	108.10	33.70	5.00	4.00	148.00	MODRSS		31.44		MODTES	57.00	CR		84.0		27M0G7W		47	P	
CHN	CHN16100	92.20	108.10	33.70	5.00	4.00	148.00	MODRSS		31.44		MODTES	57.00	CL		84.0		27M0G7W		47	P	
CHN	CHN20000	122.00	113.55	22.20	0.60	0.60	0.00	MODRSS		48.88		MODTES	57.00	CL		84.0		27M0G7W			P	
CLN	CLN21900	50.00	80.60	7.70	1.18	0.60	106.00	MODRSS		45.95		MODTES	57.00	CL		84.0		27M0G7W			P	
COD	COD__100	-19.20	21.85	-3.40				CB_RSS_CODA		38.36		MODTES	57.00	CL		84.0		27M0G7W			P	
COG	COG23500	-13.20	14.60	-0.70	2.02	1.18	59.00	MODRSS		40.67		MODTES	57.00	CR		84.0		27M0G7W			P	
COM	COM20700	29.00	44.10	-12.10	0.76	0.60	149.00	MODRSS		47.86		MODTES	57.00	CR		84.0		27M0G7W			P	
CPV	CPV30100	-33.50	-24.12	16.09	0.77	0.63	94.46	MODRSS		47.56		MODTES	57.00	CL		84.0		27M0G7W			P	5, 6
CTI	CTI23700	-24.80	-5.66	7.39	1.45	1.29	126.59	MODRSS		41.73		MODTES	57.00	CR		84.0		27M0G7W			P	
CVA	CVA08300	-1.20	13.02	42.09	0.75	0.66	20.53	MODRSS		47.48		MODTES	57.00	CR		84.0		27M0G7W			P	
CVA	CVA08500	-1.20	13.02	42.09	0.75	0.66	20.53	MODRSS		47.48		MODTES	57.00	CR		84.0		27M0G7W			P	
CYP	CYP08600	-1.20	33.45	35.12	0.60	0.60	90.00	MODRSS		48.88		MODTES	57.00	CL		84.0		27M0G7W			P	
CZE	CZE14401	-12.80	16.77	46.78	1.71	0.89	149.15	MODRSS		42.64		MODTES	57.00	CR		84.0		27M0G7W			P	
CZE	CZE14402	-12.80	16.77	46.78	1.71	0.89	149.15	MODRSS		42.64		MODTES	57.00	CL		84.0		27M0G7W			P	
CZE	CZE14403	-12.80	16.77	46.78	1.71	0.89	149.15	MODRSS		42.64		MODTES	57.00	CL		84.0		27M0G7W		37	P	
D	D 08700	-18.80	10.31	49.47	1.82	0.92	151.78	MODRSS		42.19		MODTES	57.00	CR		84.0		27M0G7W			P	
DJI	DJI09900	16.80	42.68	11.68	0.60	0.60	90.00	MODRSS		48.88		MODTES	57.00	CL		84.0		27M0G7W			P	
DNK	DNK__100	-25.20	5.28	61.83				CB_RSS_DNKA		48.88		MODTES	57.00	CL		79.5		27M0G7W			P	
DNK	DNK09000	-33.50	14.34	61.72	1.83	0.60	151.50	MODRSS		44.05		MODTES	57.00	CR		84.0		27M0G7W			P	
DNK	DNK09100	-33.50	-14.94	63.79	1.52	0.60	168.57	MODRSS		44.86		MODTES	57.00	CR		84.0		27M0G7W			P	
E	E____100	-30.00	-9.40	34.15				CB_RSS_E__A		44.79		MODTES	57.00	CR		84.0		27M0G7W		01	P	6
E	HISP27D4	-30.00	-3.10	39.90					ECO	43.00	18.70	R13TES	55.00	CR		82.5		27M0G7W--	HISPASAT-1	01	PE	
E	HISP27D6	-30.00	-3.10	39.90					ECO	43.00	18.70	R13TES	58.50	CR		83.5		27M0G7W--	HISPASAT-1	01	PE	

1	2	3	4		5			6	7	8		9		10		11	12	13	14	15	16	17
Admin. symbol	Beam identification	Orbital position	Boresight		Space station antenna characteristics			Space station antenna code	Shaped beam	Space station antenna gain		Earth station antenna		Polarization		e.i.r.p.	Power control	Designation of emission	Identity of the space station	Group code	Status	Remarks
			Long.	Lat.	Major axis	Minor axis	Orien- tation			Co- polar	Cross- polar	Code	Gain	Type	Angle							
E	HISP33D4	-30.00	-3.10	39.90					ECO	43.00	18.70	MODTES	55.00	CR		82.5		33MOG7W--	HISPASAT-1	01	PE	
E	HISP33D6	-30.00	-3.10	39.90					ECO	43.00	18.70	MODTES	58.50	CR		83.5		33MOG7W--	HISPASAT-1	01	PE	
E	HISPASA4	-30.00	-3.10	39.90					ECO	43.00	18.70	R13TES	55.00	CR		82.5		27MOF8W	HISPASAT-1	01	PE	
E	HISPASA6	-30.00	-3.10	39.90					ECO	43.00	18.70	R13TES	58.50	CR		83.5		27MOF8W	HISPASAT-1	01	PE	
EGY	EGY02600	-7.00	29.70	26.80	2.33	1.72	136.00	MODRSS		38.42		MODTES	57.00	CR		84.0		27MOG7W		12	P	
ERI	ERI09200	22.80	39.41	14.98	1.67	0.95	145.49	MODRSS		42.44		MODTES	57.00	CL		84.0		27MOG7W			P	
EST	EST06100	44.50	25.40	59.18	0.67	0.60	5.99	MODRSS		48.42		MODTES	57.00	CR		84.0		27MOG7W			P	
F	F 09300	-7.00	3.30	45.37	2.18	1.20	156.36	MODRSS		40.27		MODTES	57.00	CR		84.0		27MOG7W		21	P	
F	F___100	-7.00	29.16	13.43				CB_RSS_F__A		48.88		MODTES	57.00	CL		84.0		27MOG7W		12	P	
F	F___200	140.00	174.50	-17.30				CB_RSS_F__B		45.80		MODTES	57.00	CL		84.0		27MOG7W		7F	P	
F	F___300	140.00	174.65	-17.65				CB_RSS_F__C		47.97		MODTES	57.00	CR		84.0		27MOG7W		7F	P	
F	OCE10100	-160.00	-145.00	-16.30	4.34	3.54	4.00	MODRSS		32.58		MODTES	57.00	CL		84.0		27MOG7W			P	
FIN	FIN10300	22.80	17.61	61.54	2.18	0.90	11.59	MODRSS		41.53		MODTES	57.00	CL		84.0		27MOG7W		52	P	
FIN	FIN10400	22.80	17.61	61.54	2.18	0.90	11.59	MODRSS		41.53		MODTES	57.00	CL		84.0		27MOG7W		52	P	
FJI	FJI19300	-178.00	179.62	-17.87	1.16	0.92	155.22	MODRSS		44.16		MODTES	57.00	CR		84.0		27MOG7W			P	
FSM	FSM00000	158.00	151.90	5.48	5.15	1.57	167.00	MODRSS		35.38		MODTES	57.00	CR		84.0		27MOG7W			P	
G	G 02700	-33.50	-3.50	53.80	1.84	0.72	142.00	MODRSS		43.23		MODTES	57.00	CR		84.0		27MOG7W			P	5, 6
GAB	GAB26000	-13.20	11.80	-0.60	1.43	1.12	64.00	MODRSS		42.40		MODTES	57.00	CL		84.0		27MOG7W			P	
GEO	GEO06400	23.20	43.35	42.27	1.11	0.60	161.21	MODRSS		46.23		MODTES	57.00	CL		84.0		27MOG7W			P	
GMB	GMB30200	-37.20	-15.10	13.40	0.79	0.60	4.00	MODRSS		47.69		MODTES	57.00	CL		83.0		27MOG7W			P	
GNB	GNB30400	-30.00	-15.00	12.00	0.90	0.60	172.00	MODRSS		47.12		MODTES	57.00	CL		84.0		27MOG7W			P	
GNE	GNE30300	-18.80	10.30	1.50	0.68	0.60	10.00	MODRSS		48.34		MODTES	57.00	CR		84.0		27MOG7W			P	
GRC	GRC10500	-1.20	24.52	38.11	1.70	0.95	152.55	MODRSS		42.37		MODTES	57.00	CR		84.0		27MOG7W			P	
GUI	GUI19200	-37.00	-11.00	10.20	1.58	1.04	147.00	MODRSS		42.29		MODTES	57.00	CR		85.0		27MOG7W			P	
HNG	HNG10601	-12.80	16.77	46.78	1.71	0.89	149.15	MODRSS		42.64		MODTES	57.00	CR		84.0		27MOG7W			P	
HNG	HNG10602	-12.80	16.77	46.78	1.71	0.89	149.15	MODRSS		42.64		MODTES	57.00	CL		84.0		27MOG7W			P	
HNG	HNG10603	-12.80	16.77	46.78	1.71	0.89	149.15	MODRSS		42.64		MODTES	57.00	CL		84.0		27MOG7W		37	P	
HOL	HOL21300	38.20	5.12	51.96	1.00	1.00	0.00	MODRSS		44.44		MODTES	57.00	CL		85.5		27MOG7W			P	
HRV	HRV14801	-12.80	16.77	46.78	1.71	0.89	149.15	MODRSS		42.64		MODTES	57.00	CR		84.0		27MOG7W			P	
HRV	HRV14802	-12.80	16.77	46.78	1.71	0.89	149.15	MODRSS		42.64		MODTES	57.00	CL		84.0		27MOG7W			P	



1	2	3	4		5			6	7	8		9		10		11	12	13	14	15	16	17
Admin. symbol	Beam identification	Orbital position	Boresight		Space station antenna characteristics			Space station antenna code	Shaped beam	Space station antenna gain		Earth station antenna		Polarization		e.i.r.p.	Power control	Designation of emission	Identity of the space station	Group code	Status	Remarks
			Long.	Lat.	Major axis	Minor axis	Orien- tation			Co- polar	Cross- polar	Code	Gain	Type	Angle							
HRV	HRV14803	-12.80	16.77	46.78	1.71	0.89	149.15	MODRSS		42.64		MODTES	57.00	CL		84.0		27M0G7W		37	P	
I	I 08200	9.00	12.67	40.74	1.99	1.35	144.20	MODRSS		40.14		MODTES	57.00	CR		84.0		27M0G7W			P	
IND	IND03700	68.00	93.00	25.50	1.46	1.13	40.00	MODRSS		42.27		MODTES	57.00	CL		84.0		27M0G7W			P	
IND	IND04701	68.00	93.30	11.10	1.92	0.60	96.00	MODRSS		43.83		MODTES	57.00	CR		84.0		27M0G7W		7E	P	
IND	IND04702	68.00	93.30	11.10	1.92	0.60	96.00	MODRSS		43.83		MODTES	57.00	CL		84.0		27M0G7W		7E	P	
IND	INDA_101	55.80	76.16	14.72				CB_RSS_INDA		45.66		MODTES	57.00	CR		84.0		27M0G7W		7G	P	
IND	INDA_102	55.80	76.16	14.72				CB_RSS_INDA		45.66		MODTES	57.00	CL		84.0		27M0G7W		7G	P	
IND	INDB_101	55.80	83.67	23.73				CB_RSS_INDB		43.13		MODTES	57.00	CR		84.0		27M0G7W		7H	P	
IND	INDB_102	55.80	83.67	23.73				CB_RSS_INDB		43.13		MODTES	57.00	CL		84.0		27M0G7W		7H	P	
IND	INDD_100	68.00	74.37	29.16				CB_RSS_INDD		41.79		MODTES	57.00	CR		84.0		27M0G7W			P	
INS	INS02800	80.20	113.60	-1.40	6.73	3.33	160.00	MODRSS		30.94		MODTES	57.00	CR		84.0		27M0G7W			P	
INS	INS03501	104.00	115.20	-1.70	9.14	3.43	170.00	MODRSS		29.48		MODTES	57.00	CL		84.0		27M0G7W		7D	P	
INS	INS03502	104.00	115.20	-1.70	9.14	3.43	170.00	MODRSS		29.48		MODTES	57.00	CR		84.0		27M0G7W		7D	P	
IRL	IRL21100	-37.20	-8.25	53.22	0.72	0.60	157.56	MODRSS		48.08		MODTES	57.00	CR		84.0		27M0G7W			P	
IRN	IRN10900	34.00	54.20	32.40	3.82	1.82	149.00	MODRSS		36.03		MODTES	57.00	CL		83.0		27M0G7W			P	
ISL	ISL04900	-33.50	-19.00	64.90	1.00	0.60	177.00	MODRSS		46.67		MODTES	57.00	CL		83.0		27M0G7W			P	
ISL	ISL05000	-33.50	-14.94	63.79	1.52	0.60	168.57	MODRSS		44.86		MODTES	57.00	CR		84.0		27M0G7W			P	
ISR	ISR11000	-4.00	34.95	31.32	0.73	0.60	110.02	MODRSS		48.03		MODTES	57.00	CR		84.0		27M0G7W			P	
J	000BS-3N	109.85	134.50	31.50	3.52	3.30	68.00	MODRSS		33.80		MODTES	57.00	CR		87.0		27M0F8W	BS-3N	02	PE	
J	J 10985	109.85	134.50	31.50	3.52	3.30	68.00	MODRSS		33.80		MODTES	57.00	CR		87.0		34M5G7W		02	P	
J	J 11100	110.00	134.50	31.50	3.52	3.30	68.00	MODRSS		33.80		MODTES	57.00	CR		87.0		34M5G7W		02	P	
J	J 1110E	110.00	134.50	31.50	3.52	3.30	68.00	MODRSS		33.80		MODTES	57.00	CR		87.0		27M0F8W	BS-3M	02	PE	
JOR	JOR22400	11.00	37.55	34.02	1.47	0.91	73.16	MODRSS		43.19		MODTES	57.00	CL		85.0		27M0G7W			P	
KAZ	KAZ06600	56.40	65.73	46.40	4.58	1.76	177.45	MODRSS		35.38		MODTES	57.00	CL		84.0		27M0G7W			P	
KEN	KEN24900	-0.80	37.99	0.88	2.06	1.30	99.68	MODRSS		40.17		MODTES	57.00	CR		84.0		27M0G7W			P	
KGZ	KGZ07000	50.00	73.91	41.32	1.47	0.64	5.05	MODRSS		44.75		MODTES	57.00	CR		84.0		27M0G7W			P	
KIR	KIR_100	176.00	-170.31	-0.56				CB_RSS_KIRA		42.60		MODTES	57.00	CL		84.0		27M0G7W			P	
KOR	KOR11201	116.00	127.50	36.00	1.24	1.02	168.00	MODRSS		43.43		MODTES	57.00	CL		89.0		27M0G7W		03	P	

1	2	3	4		5			6	7	8		9		10		11	12	13	14	15	16	17
Admin. symbol	Beam identification	Orbital position	Boresight		Space station antenna characteristics			Space station antenna code	Shaped beam	Space station antenna gain		Earth station antenna		Polarization		e.i.r.p.	Power control	Designation of emission	Identity of the space station	Group code	Status	Remarks
			Long.	Lat.	Major axis	Minor axis	Orien- tation			Co- polar	Cross- polar	Code	Gain	Type	Angle							
KOR	KOR11202	116.00	127.50	36.00	1.24	1.02	168.00	MODRSS		43.43		MODTES	57.00	CR		89.0		27M0G7W		03	P	
KRE	KRE28600	140.00	128.45	40.32	1.63	0.68	18.89	MODRSS		44.00		MODTES	57.00	CL		87.0		27M0G7W			P	
KWT	KWT11300	11.00	47.48	29.12	0.60	0.60	90.00	MODRSS		48.88		MODTES	57.00	CR		83.0		27M0G7W			P	
LAO	LAO28400	122.20	103.71	18.17	1.87	1.03	123.99	MODRSS		42.18		MODTES	57.00	CR		84.0		33M0G7W			P	
LBN	LBN27900	11.00	37.55	34.02	1.47	0.91	73.16	MODRSS		43.19		MODTES	57.00	CR		84.0		27M0G7W			P	
LBR	LBR24400	-33.50	-9.30	6.60	1.22	0.70	133.00	MODRSS		45.13		MODTES	57.00	CR		84.0		27M0G7W			P	5, 6
LBY	LBY28021	-24.80	17.50	26.30	3.68	1.84	130.00	MODRSS		36.14		MODTES	57.00	CL		84.0		27M0G7W			P	
LIE	LIE25300	-18.80	10.31	49.47	1.82	0.92	151.78	MODRSS		42.19		MODTES	57.00	CL		84.0		27M0G7W			P	
LSO	LSO30500	4.80	27.80	-29.80	0.66	0.60	36.00	MODRSS		48.47		MODTES	57.00	CL		84.0		27M0G7W			P	
LTU	LTU06100	23.20	24.52	56.11				CB_RSS_LTUA		47.92		MODTES	57.00	CR		84.0		27M0G7W			P	
LUX	LUX11400	28.20	5.21	49.20	0.60	0.60	90.00	MODRSS		48.88		MODTES	57.00	CL		84.0		27M0G7W		09	P	
LVA	LVA06100	23.20	24.52	56.11				CB_RSS_LVAA		47.92		MODTES	57.00	CR		84.0		27M0G7W			P	
MAU	MAU_100	29.00	58.61	-15.88				CB_RSS_MAUA		41.42		MODTES	57.00	CL		84.0		27M0G7W			P	
MCO	MCO11600	34.20	7.40	43.70	0.60	0.60	0.00	MODRSS		48.88		MODTES	57.00	CR		81.0		27M0G7W			P	
MDA	MDA06300	50.00	28.45	46.99	0.60	0.60	90.00	MODRSS		48.88		MODTES	57.00	CR		84.0		27M0G7W			P	
MDG	MDG23600	29.00	46.20	-18.60	2.57	0.80	67.00	MODRSS		41.32		MODTES	57.00	CL		84.0		27M0G7W			P	
MHL	MHL00000	146.00	167.64	9.83	2.07	0.90	157.42	MODRSS		41.75		MODTES	57.00	CR		84.0		27M0G7W			P	
MKD	MKD14800	22.80	21.53	41.50	0.60	0.60	90.00	MODRSS		48.88		MODTES	57.00	CL		84.0		27M0G7W			P	
MLA	MLA_100	91.50	108.07	3.92				CB_RSS_MLAA		41.75		MODTES	57.00	CR		84.0		27M0G7W			P	
MLD	MLD30600	50.00	73.10	6.00	0.60	0.60	0.00	MODRSS		48.88		MODTES	57.00	CR		84.0		27M0G7W			P	
MLI	MLI_100	-19.20	-4.80	16.10				CB_RSS_MLIA		41.11		MODTES	57.00	CR		87.0		27M0G7W			P	
MLT	MLT14700	22.80	14.40	35.90	0.60	0.60	0.00	MODRSS		48.88		MODTES	57.00	CR		84.0		27M0G7W			P	
MNG	MNG24800	74.00	101.95	46.79	3.32	1.04	169.27	MODRSS		39.07		MODTES	59.92	CL		86.9		27M0G7W			P	
MRC	MRC20900	-25.20	-8.90	28.90	3.96	1.55	50.00	MODRSS		36.57		MODTES	57.00	CR		80.0		27M0G7W			P	
MTN	MTN_100	-36.80	-11.24	20.91				CB_RSS_MTNA		37.55		MODTES	57.00	CR		86.0		27M0G7W			P	
MWI	MWI30800	4.80	33.79	-13.25	1.56	0.70	92.69	MODRSS		44.10		MODTES	57.00	CR		84.0		27M0G7W			P	
NGR	NGR11500	-37.20	7.63	16.97	2.20	1.80	100.58	MODRSS		38.47		MODTES	57.00	CL		84.0		27M0G7W			P	
NOR	NOR12000	-0.80	16.70	61.58	1.84	0.95	177.31	MODRSS		42.02		MODTES	57.00	CR		84.0		27M0G7W		06	P	
NOR	NOR12100	-0.80	16.70	61.58	1.84	0.95	177.31	MODRSS		42.02		MODTES	57.00	CL		84.0		27M0G7W		06	P	
NRU	NRU30900	134.00	167.00	-0.50	0.60	0.60	0.00	MODRSS		48.88		MODTES	57.00	CL		84.0		27M0G7W			P	

1	2	3	4		5			6	7	8		9		10		11	12	13	14	15	16	17
Admin. symbol	Beam identification	Orbital position	Boresight		Space station antenna characteristics			Space station antenna code	Shaped beam	Space station antenna gain		Earth station antenna		Polarization		e.i.r.p.	Power control	Designation of emission	Identity of the space station	Group code	Status	Remarks
			Long.	Lat.	Major axis	Minor axis	Orien- tation			Co- polar	Cross- polar	Code	Gain	Type	Angle							
NZL	NZL__100	158.00	-174.35	-24.30				CB_RSS_NZLA		48.88		MODTES	57.00	CL		84.0		27M0G7W			P	7
OMA	OMA12300	17.20	55.60	21.00	1.88	1.02	100.00	MODRSS		41.62		MODTES	57.00	CL		85.0		27M0G7W			P	
PHL	PHL28500	98.00	121.30	11.10	3.46	1.76	99.00	MODRSS		36.60		MODTES	57.00	CL		84.0		27M0G7W			P	
PLW	PLW00000	140.00	132.98	5.51	1.30	0.60	55.41	MODRSS		45.53		MODTES	57.00	CR		84.0		27M0G7W			P	
POL	POL13200	50.00	19.71	52.18	1.22	0.63	16.12	MODRSS		45.59		MODTES	57.00	CR		84.0		27M0G7W			P	
POR	POR__100	-37.00	-15.92	37.65				CB_RSS_PORA		47.17		MODTES	57.00	CR		84.0		27M0G7W			P	
PSE	YYY00001	-13.20	34.99	31.86	0.60	0.60	90.00	MODRSS		48.88		MODTES	57.00	CL		80.5		27M0G7W			P	8
QAT	QAT24700	20.00	51.59	25.35	0.60	0.60	90.00	MODRSS		48.88		MODTES	57.00	CL		84.0		27M0G7W			P	
ROU	ROU13600	50.00	25.12	45.75	1.17	0.73	9.52	MODRSS		45.15		MODTES	57.00	CL		84.0		27M0G7W			P	
RRW	RRW31000	11.00	30.00	-2.10	0.66	0.60	42.00	MODRSS		48.47		MODTES	57.00	CR		81.0		27M0G7W			P	
RUS	RSTREA11	36.00	38.00	53.00					COP	38.40	8.40	MODTES	57.00	CR		84.0		27M0F8W	RST-1	05	PE	
RUS	RSTREA12	36.00	38.00	53.00					COP	38.40	8.40	MODTES	57.00	CL		84.0		27M0F8W	RST-1	05	PE	
RUS	RSTRED11	36.00	38.00	53.00					COP	38.40	8.40	MODTES	57.00	CR		84.0		27M0G7W	RST-1	05	PE	
RUS	RSTRED12	36.00	38.00	53.00					COP	38.40	8.40	MODTES	57.00	CL		84.0		27M0G7W	RST-1	05	PE	
RUS	RSTRSD11	36.00	38.00	53.00					COP	38.40	8.40	MODTES	57.00	CR		84.0		27M0G7W	RST-1	05	P	
RUS	RSTRSD12	36.00	38.00	53.00					COP	38.40	8.40	MODTES	57.00	CL		84.0		27M0G7W	RST-1	05	P	
RUS	RSTRSD21	56.00	65.00	63.00					COP	38.40	8.40	MODTES	57.00	CR		84.0		27M0G7W	RST-2	14	P	
RUS	RSTRSD22	56.00	65.00	63.00					COP	38.40	8.40	MODTES	57.00	CL		84.0		27M0G7W	RST-2	14	P	
RUS	RSTRSD31	86.00	97.00	62.00					COP	38.40	8.40	MODTES	57.00	CR		84.0		27M0G7W	RST-3	33	P	
RUS	RSTRSD32	86.00	97.00	62.00					COP	38.40	8.40	MODTES	57.00	CL		84.0		27M0G7W	RST-3	33	P	
RUS	RSTRSD51	140.00	158.00	56.00					COP	38.40	8.40	MODTES	57.00	CR		84.0		27M0G7W	RST-5	35	P	
RUS	RSTRSD52	140.00	158.00	56.00					COP	38.40	8.40	MODTES	57.00	CL		84.0		27M0G7W	RST-5	35	P	
RUS	RUS00401	110.00	118.22	51.52					COP	38.40	8.40	MODTES	57.00	CR		84.0		27M0G7W	RUS-4	34	P	
RUS	RUS00402	110.00	118.22	51.52					COP	38.40	8.40	MODTES	57.00	CL		84.0		27M0G7W	RUS-4	34	P	
S	S 13800	5.00	17.00	61.50	2.00	1.00	10.00	MODRSS		41.44		MODTES	57.00	CL		84.0		27M0G7W		04	P	
S	S 13900	5.00	17.00	61.50	2.00	1.00	10.00	MODRSS		41.44		MODTES	57.00	CL		84.0		27M0G7W		04	P	
SCG*	SCG14800	-7.00	20.50	43.98	0.91	0.60	145.16	MODRSS		47.07		MODTES	57.00	CL		84.0		27M0G7W			P	
SEY	SEY00000	42.50	51.86	-7.23	2.43	1.04	27.51	MODRSS		40.44		MODTES	57.00	CR		84.0		27M0G7W			P	

\* *Note by the Secretariat:* This designation replaces the former designation “YUG” which was used previously as a three-letter code for the Administration of Serbia and Montenegro

1	2	3	4		5			6	7	8		9		10		11	12	13	14	15	16	17
Admin. symbol	Beam identification	Orbital position	Boresight		Space station antenna characteristics			Space station antenna code	Shaped beam	Space station antenna gain		Earth station antenna		Polarization		e.i.r.p.	Power control	Designation of emission	Identity of the space station	Group code	Status	Remarks
			Long.	Lat.	Major axis	Minor axis	Orien- tation			Co- polar	Cross- polar	Code	Gain	Type	Angle							
SLM	SLM00000	128.00	159.27	-8.40	1.35	1.08	118.59	MODRSS		42.81		MODTES	57.00	CL		84.0		27M0G7W			P	
SMO	SMO05700	-178.00	-171.70	-13.87	0.60	0.60	90.00	MODRSS		48.88		MODTES	57.00	CL		84.0		27M0G7W			P	
SMR	SMR31100	-36.80	12.50	43.90	0.60	0.60	0.00	MODRSS		48.88		MODTES	57.00	CL		83.0		27M0G7W			P	
SNG	SNG15100	88.00	103.86	1.42	0.92	0.72	175.12	MODRSS		46.25		MODTES	57.00	CL		84.0		27M0G7W			P	
SRL	SRL25900	-33.50	-11.80	8.60	0.78	0.68	114.00	MODRSS		47.20		MODTES	57.00	CR		84.0		27M0G7W			P	
STP	STP24100	-7.00	7.00	0.80	0.60	0.60	0.00	MODRSS		48.88		MODTES	57.00	CL		84.0		27M0G7W			P	
SUI	SUI14000	-18.80	10.31	49.47	1.82	0.92	151.78	MODRSS		42.19		MODTES	57.00	CL		84.0		27M0G7W			P	
SVK	SVK14401	-12.80	16.77	46.78	1.71	0.89	149.15	MODRSS		42.64		MODTES	57.00	CR		84.0		27M0G7W			P	
SVK	SVK14402	-12.80	16.77	46.78	1.71	0.89	149.15	MODRSS		42.64		MODTES	57.00	CL		84.0		27M0G7W			P	
SVK	SVK14403	-12.80	16.77	46.78	1.71	0.89	149.15	MODRSS		42.64		MODTES	57.00	CL		84.0		27M0G7W		37	P	
SVN	SVN14800	33.80	15.01	46.18	0.60	0.60	90.00	MODRSS		48.88		MODTES	57.00	CR		82.0		27M0G7W			P	
SWZ	SWZ31300	4.80	31.39	-26.44	0.60	0.60	90.00	MODRSS		48.88		MODTES	57.00	CR		82.0		27M0G7W			P	
SYR	SYR22900	11.00	37.55	34.02	1.47	0.91	73.16	MODRSS		43.19		MODTES	57.00	CL		84.0		27M0G7W		53	P	
SYR	SYR33900	11.00	37.60	34.20	1.32	0.88	74.00	MODRSS		43.80		MODTES	57.00	CL		84.0		27M0G7W		53	P	
TCD	TCD14300	17.00	18.39	15.52	3.21	2.05	83.26	MODRSS		36.26		MODTES	57.00	CR		84.0		27M0G7W			P	
THA	THA14200	98.00	100.75	12.88	2.80	1.82	93.77	MODRSS		37.38		MODTES	57.00	CR		84.0		27M0G7W			P	
TJK	TJK06900	38.00	71.14	38.41	1.21	0.73	155.31	MODRSS		45.00		MODTES	57.00	CL		82.0		27M0G7W			P	
TKM	TKM06800	50.00	59.24	38.83	2.26	1.02	166.64	MODRSS		40.81		MODTES	57.00	CL		85.7		27M0G7W			P	
TMP	TMP00000	128.00	126.03	-8.72	0.66	0.60	13.92	MODRSS		48.50		MODTES	57.00	CR		84.0		27M0G7W			P	10
TON	TON21500	170.75	-175.23	-18.19	1.59	0.60	71.33	MODRSS		44.64		MODTES	57.00	CR		84.0		27M0G7W			P	
TUN	TUN15000	-25.20	9.50	33.50	1.88	0.72	135.00	MODRSS		43.13		MODTES	57.00	CR		84.0		27M0G7W		55	P	
TUN	TUN27200	-25.20	2.50	32.00	3.59	1.75	175.00	MODRSS		36.47		MODTES	57.00	CR		84.0		27M0G7W		55	P	
TUR	TUR14500	42.00	35.14	38.99	3.19	1.10	0.03	MODRSS		39.00		MODTES	57.00	CL		84.0		27M0G7W		36	P	
TUV	TUV00000	176.00	177.61	-7.11	0.94	0.60	137.58	MODRSS		46.93		MODTES	57.00	CR		84.0		27M0G7W			P	
TZA	TZA22500	11.00	34.60	-6.20	2.41	1.72	129.00	MODRSS		38.27		MODTES	57.00	CR		84.0		27M0G7W			P	
UAE	UAE27400	52.50	53.98	24.37	1.23	0.84	6.62	MODRSS		44.31		MODTES	57.00	CR		84.0		27M0G7W			P	
UGA	UGA05100	17.00	32.20	1.04	1.50	1.02	68.73	MODRSS		42.62		MODTES	57.00	CR		84.0		27M0G7W			P	
UKR	UKR06300	38.20	31.82	48.19	2.32	0.95	177.32	MODRSS		41.01		MODTES	57.00	CR		84.0		27M0G7W			P	
USA	GUM33101	122.00	155.56	13.21				CB_RSS_GUMA		43.61		MODTES	57.00	CR		87.0		27M0G7W		7C	P	
USA	GUM33102	122.00	155.56	13.21				CB_RSS_GUMA		43.61		MODTES	57.00	CL		87.0		27M0G7W		7C	P	

1	2	3	4		5			6	7	8		9		10		11	12	13	14	15	16	17
Admin. symbol	Beam identification	Orbital position	Boresight		Space station antenna characteristics			Space station antenna code	Shaped beam	Space station antenna gain		Earth station antenna		Polarization		e.i.r.p.	Power control	Designation of emission	Identity of the space station	Group code	Status	Remarks
			Long.	Lat.	Major axis	Minor axis	Orien- tation			Co- polar	Cross- polar	Code	Gain	Type	Angle							
USA	MRA33200	121.80	155.56	13.21				CB_RSS_MRAA		43.61		MODTES	57.00	CR		91.0		27M0G7W			P	
USA	PLM33200	170.00	-145.55	19.50				CB_RSS_PLMA		39.35		MODTES	57.00	CL		87.0		27M0G7W			P	
USA	USAA_101	170.00	-145.55	19.50				CB_RSS_USAA		39.35		MODTES	57.00	CR		87.0		27M0G7W		7A	P	
USA	USAA_102	170.00	-145.55	19.50				CB_RSS_USAA		39.35		MODTES	57.00	CL		87.0		27M0G7W		7A	P	
UZB	UZB07100	33.80	63.80	41.21	2.56	0.89	159.91	MODRSS		40.84		MODTES	57.00	CR		82.0		27M0G7W			P	
VTN	VTN32500	107.00	106.84	14.21	3.43	1.76	109.43	MODRSS		36.64		MODTES	57.00	CR		84.0		27M0G7W			P	
VUT	VUT12801	140.00	168.00	-16.40	1.52	0.68	87.00	MODRSS		44.30		MODTES	57.00	CL		84.0		27M0G7W		7B	P	
VUT	VUT12802	140.00	168.00	-16.40	1.52	0.68	87.00	MODRSS		44.30		MODTES	57.00	CR		84.0		27M0G7W		7B	P	
ZMB	ZMB31400	-0.80	27.50	-13.10	2.38	1.48	39.00	MODRSS		38.98		MODTES	57.00	CR		84.0		27M0G7W			P	
ZWE	ZWE13500	-0.80	29.60	-18.80	1.46	1.36	37.00	MODRSS		41.47		MODTES	57.00	CL		85.0		27M0G7W			P	

## ANNEX 3

### **Technical data used in establishing the provisions and associated Plans and Regions 1 and 3 feeder-link List, which should be used for their application<sup>36</sup> (Rev.WRC-03)**

**MOD** COM6/341/22 (B14/365/41) (R7/411/211)

#### **2.2 Rain attenuation**

...

Step 6 remains the same except the frequency dependent coefficients  $k$  and  $\alpha$  shall be obtained from Recommendation ITU-R P.838-3. (WRC-07)

...

**MOD** COM5/385/1A (B18/405/1)

### APPENDIX 30B (Rev.WRC-07)

#### **Provisions and associated Plan for the fixed-satellite service in the frequency bands 4 500-4 800 MHz, 6 725-7 025 MHz, 10.70-10.95 GHz, 11.20-11.45 GHz and 12.75-13.25 GHz**

### TABLE OF CONTENTS

	<i>Page</i>
<b>MOD</b> COM5/385/1B (B18/405/2)	
Article 1 Objective of the provisions and associated Plan.....	3
Article 2 Definitions .....	3
Article 3 Frequency bands .....	4
Article 4 Execution of the provisions and associated Plan.....	4
Article 6 Procedures for the conversion of an allotment into an assignment, for the introduction of an additional system or for the modification to an assignment in the List.....	7
Article 7 Procedure for the addition of a new allotment to the Plan for a new Member State of the Union.....	15
Article 8 Procedure for notification and recording in the Master Register of assignments in the planned bands for the fixed-satellite service.....	15
Article 9 General provisions .....	17

Article 10	Plan for the fixed-satellite service in the frequency bands 4 500-4 800 MHz, 6 725-7 025 MHz, 10.70-10.95 GHz, 11.20-11.45 GHz and 12.75-13.25 GHz .....	18
Article 11	Period of validity of the provisions and associated Plan .....	30
ANNEXES		
Annex 1	Parameters used in characterizing the fixed-satellite service Plan .....	30
Annex 3	Limits applicable to submissions received under Article 6 or Article 7	28
Annex 4	Criteria for determining whether an allotment or an assignment is considered to be affected .....	39

## ARTICLE 1

### Objective of the provisions and associated Plan

**MOD** COM5/385/1 (B18/405/3)

1.2 The procedures prescribed in this Appendix shall in no way prevent the implementation of assignments in conformity with the national allotments of the Plan. (WRC-07)

## ARTICLE 2

### Definitions

**MOD** COM5/385/2 (B18/405/4)

2.2 *Plan*: The Plan for the fixed-satellite service in the frequency bands contained in this Appendix, consisting of national allotments. (WRC-07)

**ADD** COM5/385/3 (B18/405/5)

2.2bis *List of assignments (hereinafter, called the “List”)*: The List associated with the Plan containing assignments resulting from the successful application of the provisions of Article 6 of Appendix **30B** or the application of Resolution [COM5/7] (WRC-07). (WRC-07)

**MOD** COM5/385/4 (B18/405/6)

2.3 *Allotment*: For the purpose of this Appendix, an allotment comprises:

- a nominal orbital position;
- a bandwidth of 800 MHz (up-link and down-link) in the frequency bands listed in Article 3 of this Appendix;
- a service area for national coverage

. (WRC-07)

**MOD** COM5/385/5 (B18/405/7)

2.4 *Existing systems*: Those satellite systems in the frequency bands covered by this Appendix which are identified in Resolution [COM5/7] (WRC-07). (WRC-07)

**SUP** COM5/385/6 (B18/405/8)

2.5

**MOD** COM5/385/7 (B18/405/9)

2.6 *Additional system:* For the application of the provisions of this Appendix, an additional system is a system for which the assignments submitted by an administration are not the result of conversion of an allotment into assignments. When submitting an additional system, the national allotment in the Plan of the submitting administration shall be retained. An additional system may also be submitted on behalf of a group of named administrations, with one administration designated to act as the notifying administration in respect of that additional system. (WRC-07)

**]ADD** COM5/385/8 (B18/405/10)

2.6*bis* When submitting additional system(s), administrations shall fully comply with the requirements stipulated in Article 44 of the ITU Constitution. In particular, these administrations shall limit the number of orbital positions and associated spectrum so that:

- a) the orbital/spectrum natural resources are used rationally, efficiently and economically;  
and
- b) the use of multiple orbital locations to cover the same service area is avoided. (WRC-07)

## ARTICLE 3

### Frequency bands

## ARTICLE 4

### Execution of the provisions and associated Plan

**SUP** COM5/385/9 (B18/405/11)

## ARTICLE 5 (WRC-03)

### The Plan and the associated List of assignments

**MOD** COM5/385/10 (B18/405/12)

## ARTICLE 6 (Rev.WRC-07)

**MOD** COM5/385/11 (B18/405/13)

**Procedures for the conversion of an allotment into an assignment, for the introduction of an additional system or for the modification of an assignment in the List**<sup>MOD 1, ADD 1A</sup> (WRC-07)



**MOD** COM5/385/12 (B18/405/14)

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<sup>1</sup> If the payments are not received in accordance with the provisions of Council Decision 482, as amended, on the implementation of cost recovery for satellite network filings, the Bureau shall cancel the publication specified in § 6.7 and/or 6.23 and the corresponding entries in the List under § 6.23 and/or 6.25, as appropriate, and reinstate any allotments back into the Plan after informing the administration concerned. The Bureau shall inform all administrations of such action and that the network specified in the publication in question no longer has to be taken into consideration by the Bureau and other administrations. The Bureau shall send a reminder to the notifying administration not later than two months prior to the deadline for the payment in accordance with the above-mentioned Council Decision 482, unless the payment has already been received. See also Resolution [COM 5/2] (WRC-07). (WRC-07)

**ADD** COM5/385/13 (B18/405/15)

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<sup>1A</sup> Resolution 49 (Rev.WRC-07) applies.

**SUP** COM5/385/14 (B18/405/16)

**Section I – Procedure for conversion of an allotment into an assignment**

**SUP** COM5/385/15 (B18/405/17)

**Section IA – Procedure for conversion of an allotment into an assignment that is not in conformity with Part A of the Plan or that does not comply with Annex 3B**

**SUP** COM5/385/16 (B18/405/18)

**Section IB – Procedure for recording in the List of the existing systems contained in Part B of the Plan**

**SUP** COM5/385/17 (B18/405/19)

**Section II – Procedure for the introduction of a subregional system**

**MOD** COM5/385/18 (B18/405/20)

6.1 When an administration intends to convert an allotment into an assignment or when an administration, or one acting on behalf of a group of named administrations<sup>ADD 1B</sup>, intends to introduce an additional system or modify the characteristics of assignments in the List that have been brought into use, it shall, not earlier than eight years and not later than two years before the planned date of bringing the assignment into use, send to the Bureau the information specified in Appendix 4<sup>ADD 1C, ADD 1D</sup>. (WRC-07)

**ADD** COM5/385/19 (B18/405/21)

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<sup>1B</sup> Whenever, under § 6.1, an administration acts on behalf of a group of named administrations, all members of that group retain the right to respond in respect of their own allotments or assignments.

<sup>1C</sup> Submissions may include conversion of the 6/4 GHz or the 13/10-11 GHz portion (both uplink and downlink) of an allotment into an assignment provided that the orbital location of the assignment is the same as the unconverted portion of the allotment.

<sup>1D</sup> Submissions for additional systems may include use of only space-to-Earth or only Earth-to-space links.

**ADD** COM5/385/20 (B18/405/22)

6.2 If the information received by the Bureau under § 6.1 is found to be incomplete, the Bureau shall immediately seek any clarification required and information not provided from the administration concerned.

**SUP** COM5/385/21 (B18/405/23)

6.39 to 6.42

**MOD** COM5/385/22 (B18/405/24)

6.3 Upon receipt of a complete notice under § 6.1, the Bureau shall examine it with respect to its conformity with:

- a) the Table of Frequency Allocations and the other provisions<sup>ADD 1E</sup> of the Radio Regulations, except those provisions relating to conformity with the fixed-satellite service Plan; *and*
- b) Annex 3 to this Appendix.

**ADD** COM5/385/23 (B18/405/25)

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<sup>1E</sup> The “other provisions” shall be identified and included in the Rules of Procedure.

**ADD** COM5/385/24 (B18/405/26)

6.4 When the examination with respect to § 6.3 leads to an unfavourable finding, the relevant part of the notice shall be returned to the notifying administration with an indication of the appropriate action.

6.5 When the examination of each assignment in a notice received under § 6.1 with respect to § 6.3 leads to a favourable finding, the Bureau shall use the method of Annex 4 to determine administrations whose:

- a) allotments in the Plan; or
- b) assignments which appear in the List; or
- c) assignments which the Bureau has previously examined under this paragraph after receiving complete information in accordance with § 6.1 of this Article,

are considered as being affected by any assignment in that notice.

6.6 The Bureau shall then identify those administrations whose territories have been included in the service area of the assignment under examination. The notifying administration shall seek the agreement of any administration whose territory is partially or wholly included in the intended service area of the assignment.

6.7 The Bureau shall publish, in a Special Section of its International Frequency Information Circular (BR IFIC), the complete information received under § 6.1 and examined under § 6.5, together with:

- a) the names of the administrations identified under § 6.5 and the corresponding allotments in the Plan, assignments in the List and assignments for which the Bureau has previously received complete information in accordance with § 6.1 and which it has examined under § 6.5 of this Article;
- b) the names of the administrations identified under § 6.6.

6.8 Following the examination under § 6.5 and 6.6, the Bureau shall immediately send a telegram or fax to the administration that has submitted the notice under § 6.1, drawing attention to the requirement to seek and obtain the agreement of those administrations identified in the Special Section of the BR IFIC published under § 6.7.

6.9 The Bureau shall also send a telegram or fax to each administration listed in the Special Section of the BR IFIC published under § 6.7, drawing its attention to the information it contains.

6.10 Comments from administrations identified as affected under § 6.5 in the Special Section of the BR IFIC published under § 6.7 shall be sent to the Bureau and to the administration that has submitted the notice under § 6.1, either directly or through the Bureau, within a period of four months following the date of the publication in the BR IFIC. When an administration has not replied within this four-month period, it is deemed that this administration has not agreed to the proposed assignment, unless the provisions of § 6.13 to 6.15 are applied.

The above-mentioned four-month period shall be extended for an administration that has requested the assistance of the Bureau by up to thirty days following the date on which the Bureau communicated the result of its action.

6.11 Thirty days prior to the expiry of the same four month period, the Bureau shall dispatch a reminder telegram or fax to each administration listed in the Special Section published under § 6.7 which has not made its comments under § 6.10, bringing the matter to its attention.

6.12 An administration which considers that it should have been identified as affected in the publication referred to under § 6.7 above shall, within four months of the date of publication of the relevant BR IFIC, request the Bureau to include its name in the publication while providing the reasons therefor. The Bureau shall study this information on the basis of Annex 4 and shall inform both the affected administration and the administration that submitted the notice of its conclusions. Should the Bureau agree to the administration's request, it shall publish an addendum to the publication under § 6.7.

6.13 After the same time period as specified in § 6.10, the notifying administration may request the Bureau to assist in respect of an administration which has not replied within this time period.

6.14 The Bureau, acting on a request for assistance under § 6.13, shall send a reminder to the administration which has not replied, requesting a decision.

6.14bis Fifteen days before the expiry of the 30-day period referred to in § 6.15, the Bureau shall send a reminder to the above-mentioned administration drawing its attention to the consequence of no reply.

6.15 If no decision is communicated to the Bureau within thirty days after the date of dispatch of the reminder under § 6.14, it shall be deemed that the administration which has not given a decision has agreed to the proposed assignment.

6.16 An administration may at any time during or after the above-mentioned four-month period inform the Bureau about its objection to being included in the service area of any assignment, even if this assignment has been entered in the List. The Bureau shall then inform the administration responsible for the assignment and exclude the territory and test points that are within the territory of the objecting administration from the service area. The Bureau shall update the reference situation without reviewing the previous examinations.

6.17 If agreements have been reached with administrations published in accordance with § 6.7, the administration proposing the new or modified assignment may request the Bureau to have the assignment entered into the List, indicating the final characteristics of the assignment together with the names of the administrations with which agreement has been reached. For this purpose, it shall send to the Bureau the information specified in Appendix 4. In submitting the notice, the administration may request the Bureau to examine the notice under § 6.19, 6.21 and 6.22 (entry into the List) and Article 8 of this Appendix (notification).

6.18 If the information received by the Bureau under § 6.17 is found to be incomplete, the Bureau shall immediately seek any clarification required and information not provided from the administration concerned.

6.19 Upon receipt of a complete notice under § 6.17, the Bureau shall examine each assignment in the notice:

- a) with respect to the requirement for the notifying administration to seek the agreement of those administrations identified in § 6.6;
- b) with respect to its conformity with respect to the Table of Frequency Allocations and the other provisions<sup>ADD 1F</sup> of the Radio Regulations, except those provisions relating to conformity with the fixed-satellite service Plan; and
- c) with respect to its conformity with Annex 3 to this Appendix.

**ADD** COM5/385/25 (B18/405/27)

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<sup>1F</sup> The “other provisions” shall be identified and included in the Rules of Procedure.

**ADD** COM5/385/26 (B18/405/28)

6.20 When the examination with respect to § 6.19 of an assignment received under § 6.17 leads to an unfavourable finding, the notice shall be returned to the notifying administration with an indication that subsequent resubmission under § 6.17 will be considered with a new date of receipt.

6.21 When the examination with respect to § 6.19 of an assignment received under § 6.17 leads to a favourable finding, the Bureau shall use the method of Annex 4 to examine if the affected administrations and the corresponding:

- a) allotments in the Plan;
- b) assignments which appear in the List at the date of receipt of the examined notice submitted under § 6.1;

- c) assignments for which the Bureau has previously received complete information in accordance with § 6.1 and has conducted the examination under § 6.5 of this Article at the date of receipt of the examined notice submitted under § 6.1;

indicated in the Special Section published under § 6.7 and whose agreement has not been provided under § 6.17 are still considered as being affected by that assignment.

6.22 The Bureau shall determine if the final characteristics of an assignment received under § 6.17 cause more interference by checking if they decrease the uplink and/or downlink single-entry C/I value of an allotment in the Plan or an assignment in the List or an assignment for which the Bureau has received complete information in accordance with this Article before the date of receipt of the complete notice under § 6.17. If the final characteristics cause more interference than was produced by the characteristics previously submitted under § 6.1 to an allotment in the Plan or assignment in the List or assignment for which the Bureau has received complete information in accordance with this Article, the Bureau shall use the method of Annex 4 to determine whether that allotment or assignment is considered as being affected by the proposed assignment without the explicit agreement of the identified administrations.

**SUP** COM5/385/27 (B18/405/29)

6.43bis

**ADD** COM5/385/28 (B18/405/30)

6.23 In the event of a favourable finding under § 6.21 and 6.22, the Bureau shall enter the proposed assignment in the List<sup>ADD 1G</sup> and publish in a Special Section of its BR IFIC the characteristics of the assignment received under § 6.17, together with the names of administrations with which the provisions of this Article have been successfully applied. The administration may then notify the assignment in accordance with Article 8 of this Appendix.

**ADD** COM5/385/29 (B18/405/31)

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<sup>1G</sup> In the case of a conversion of an allotment into an assignment, the part of the allotment that has been converted shall be removed from the Plan and the reference situation shall be updated.

**ADD** COM5/385/30 (B18/405/32)

6.24 When the examination under § 6.21 or 6.22 leads to an unfavourable finding, the Bureau shall return the notice received under § 6.17 to the notifying administration together with the names of the administrations with which necessary agreements under § 6.21 or 6.22 have not been provided and with an indication that subsequent resubmission under § 6.17 will be considered with a new date of receipt.

6.25 After a notice is returned under § 6.24, should the notifying administration resubmit the notice and insist upon its reconsideration, the Bureau, on the condition of a favourable finding under § 6.21 and 6.22 with respect to allotments in the Plan, shall enter the assignment provisionally in the List, with an indication of those administrations whose assignments were the basis of the unfavourable finding. The entry in the List shall be changed from provisional to definitive only if the Bureau is informed that all required agreements have been obtained.

6.26 Notices submitted under § 6.25 shall also include a signed commitment by the notifying administration, indicating that use of an assignment recorded in the List under § 6.25 shall not cause unacceptable interference to, nor claim protection from, those assignments for which agreement still needs to be obtained.

6.27 When an assignment is entered provisionally in the List under the provisions of § 6.25, that assignment shall not be taken into account in updating the reference situation of those assignments which were the basis for the unfavourable finding. If the Bureau is informed that an agreement has been reached with respect to a given assignment, the reference situation of this assignment shall be updated.

6.28 Should the assignments that were the basis of the unfavourable finding not be brought into use within the period specified in § 6.1, then the status of the assignment in the List shall be reviewed accordingly.

6.29 Should unacceptable interference be caused by an assignment entered in the List under § 6.25 to any assignment in the List which was the basis of the disagreement, the notifying administration of the assignment entered in the List under § 6.25 shall, upon receipt of advice thereof, immediately eliminate this unacceptable interference.

**SUP** COM5/385/31 (B18/405/33)

6.44 to 6.53

**MOD** COM5/385/32 (B18/405/34)

6.30 When an assignment included in the List is no longer required, the notifying administration shall so inform the Bureau.

**ADD** COM5/385/33 (B18/405/35)

6.31 The date of bringing into use may be extended by the notifying administration up to no more than eight years from the date of receipt by the Bureau of the complete notice under § 6.1.

6.32 Thirty days prior to the date of bringing into use under § 6.31, the Bureau shall dispatch a reminder telegram or fax to the notifying administration which has not brought its assignment into use, bringing the matter to its attention.

6.33

When:

- i) an assignment is no longer required; *or*
- ii) an assignment recorded in the List and brought into use has been suspended for a period exceeding two years and ending after the expiry date specified in § 6.31; *or*
- iii) an assignment recorded in the List has not been brought into use within the eight-year period following the receipt by the Bureau of the relevant complete information under § 6.1, with the exception of assignments submitted by new Member States where § 6.35 and 7.7 apply,

the Bureau shall:

- a) publish in a Special Section of its BR IFIC the cancellation of the related Special Sections and the assignments recorded in the Appendix **30B** List;
- b) if the cancelled assignment is the result of a conversion of an allotment without modification, reinstate the allotment in the Appendix **30B** Plan;

- c) if the cancelled assignment is the result of the conversion of an allotment with modifications, reinstate the allotment with the same orbital location and technical parameters of the cancelled assignment except for its service area, which shall be the national territory of the administration whose allotment is being reinstated; *and*
- d) update the reference situation for the allotments of the Plan and the assignments of the List.

6.34 When a proposed new or modified frequency assignment has not fulfilled all the requirements for entering the List, in accordance with § 6.23 or 6.25, by the expiry date specified in § 6.31, the Bureau shall publish in a Special Section of the BR IFIC the cancellation of the related Special Sections.

6.35 The procedure of this Article may be applied by the administration of a country\* which has joined the Union as an ITU Member State and does not have a national allotment in the Plan or an assignment in the List stemming from the conversion of an allotment in order to include new assignments in the List. Upon completion of the procedure, the next world radiocommunication conference may be requested to consider, among the assignments included in the List after the successful completion of this procedure, the inclusion in the Plan of a new allotment over the national territory of the new Member State.

6.36 Should the assignments mentioned in § 6.35 over the national territory of the administration not be brought into use within the eight years following the receipt by the Bureau of the relevant complete information under § 6.1, they would be retained in the List until the end of the World Radiocommunication Conference immediately following the successful completion of the procedure referred to in § 6.35.

**SUP** COM5/385/34 (B18/405/36)

### **Section III – Supplementary provisions applicable to additional uses in the planned bands**

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\* This procedure may be applied by Palestine to obtain assignments in the Appendix **30B** Plan. Such assignments are for exclusive use by Palestine, in accordance with the Israeli-Palestinian Interim Agreement of 28 September 1995, Resolution 741 of the Council notwithstanding, and Resolution 99 (Rev. Antalya, 2006) of the Plenipotentiary Conference. This is without prejudice of future agreements between the State of Israel and Palestine.

**MOD** COM5/385/35 (B18/405/37)

## ARTICLE 7 (Rev.WRC-07)

### **Procedure for the addition of a new allotment to the Plan for a new Member State of the Union**

**MOD** COM5/385/36 (B18/405/38)

7.1 The administration of a country\*\* which has joined the Union as a Member State and does not have a national allotment in the Plan<sup>ADD 1H</sup> or an assignment stemming from the conversion of an allotment shall obtain a national allotment by the following procedure.

**ADD** COM5/385/37 (B18/405/39)

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<sup>1H</sup>Following WRC-07, the Administration of Ukraine may, on an exceptional basis, submit a request for an allotment in replacement of its existing allotment.

**MOD** COM5/385/38 (B18/405/40)

7.2 The administration shall submit its request for an allotment to the Bureau, with the following information:

- a) the geographical coordinates of not more than 20 test points for determining the minimal ellipse to cover its national territory;
- b) the height above sea level of each of its test points;
- c) any special requirement which is to be taken into account to the extent practicable.

**MOD** COM5/385/39 (B18/405/41)

7.3 Upon receipt of the complete information (mentioned in § 7.2 above), the Bureau shall expeditiously and ahead of submissions for which the examination under § 6.5 has not yet started, identify appropriate technical characteristics and associated orbital locations for a prospective national allotment. The Bureau shall send this information to the requesting administration.

**SUP** COM5/385/40 (B18/405/42)

7.4

**ADD** COM5/385/41 (B18/405/43)

7.4 Upon receipt of the Bureau's response under § 7.3, the requesting administration shall, within thirty days, indicate which of the proposed orbital locations with the associated technical parameters as identified by the Bureau it has selected. During this period, the requesting administration may at any time seek the assistance of the Bureau.

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\*\* This procedure may be applied by Palestine to obtain an allotment in the Appendix **30B** Plan. Such allotment is for exclusive use by Palestine, in accordance with the Israeli-Palestinian Interim Agreement of 28 September 1995, Resolution 741 of the Council notwithstanding, and Resolution 99 (Rev. Antalya, 2006) of the Plenipotentiary Conference. This is without prejudice of future agreements between the State of Israel and Palestine.



*7.4bis* If a selection for an allotment under § 7.4 has not been received by the Bureau within the specified time-limit, the Bureau will resume examination of submissions under § 6.5, or subsequent submission under Article 7, as appropriate, and inform the requesting administration that its request will be processed under § 7.5 when the Bureau is informed about the selected orbit location.

*7.5* Upon receipt of a request under § 7.4, the Bureau shall process the request ahead of submissions for which the examination under § 6.5 has not yet started and, using Annexes 3 and 4, with respect to its conformity with:

- a)* the Table of Frequency Allocations and the other provisions<sup>ADD II</sup> of the Radio Regulations, except those provisions relating to conformity with the fixed-satellite service Plan which are the subject of the following subparagraph;
- b)* allotments in the Plan;
- c)* assignments which appear in the List;
- d)* assignments for which the Bureau has previously received complete information and which have been examined, or are at the stage of examination under § 6.5.

**ADD** COM5/385/42 (B18/405/44)

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<sup>II</sup> The “other provisions” shall be identified and included in the Rules of Procedure.)

**ADD** COM5/385/43 (B18/405/45)

*7.6* When the examination under § 7.5 leads to a favorable finding, the Bureau shall enter the national allotment of the new Member State of the Union in the Plan and publish the characteristics of the allotment concerned and the result of its examination in a Special Section of the BR IFIC with the updated reference situation.

*7.7* In the event that the Bureau’s findings under § 7.5 are unfavourable, the proposed allotment of the Member State shall be treated as a submission under § 6.1 and shall be treated by the Bureau ahead of any other submissions received under Article 6, except for submissions which were already under examination under § 6.5 by the Bureau at the time of completion of the examination of the request of the new Member State under § 7.5.

**MOD** COM5/385/44 (B18/405/46)

## ARTICLE 8 (Rev.WRC-07)

**MOD** COM5/385/45 (B18/405/47)

### **Procedure for notification and recording in the Master Register of assignments in the planned bands for the fixed-satellite service**<sup>ADD 1J, ADD 1K</sup> (WRC-07)

**ADD** COM5/385/46 (B18/405/48)

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<sup>1J</sup> If the payments are not received in accordance with the provisions of Council Decision 482, as amended, on the implementation of cost recovery for satellite network filings, the Bureau shall cancel the publication specified in § 8.5 and 8.12 and the corresponding entries in the Master Register under § 8.11, after informing the administration concerned. The Bureau shall inform all administrations of such action and that any resubmitted notice shall be considered to be a new notice. The Bureau shall send a reminder to the notifying administration not later than two months prior to the deadline for the payment in accordance with the above-mentioned Council Decision 482, unless the payment has already been received. See also Resolution [COM5/2] (WRC-07).

<sup>1K</sup> Resolution 49 (Rev.WRC-07) applies. (WRC-07)

**MOD** COM5/385/47 (B18/405/49)

8.2 If the first notice referred to in § 8.1 has not been received by the Bureau within the eight-year period mentioned in § 6.1 of Article 6, the assignments in the List shall no longer be taken into account by the Bureau and administrations. The Bureau shall then act as if the assignment in the List has not been brought into use in conformity with § 6.1 of Article 6. The Bureau shall inform the notifying administration, three months in advance of the end of the eight-year period, of the actions it intends to take. (WRC-07)

**SUP** COM5/385/48 (B18/405/50)

8.4

**MOD** COM5/385/49 (B18/405/51)

8.5 Complete notices shall be marked by the Bureau with their date of receipt and shall be examined in the date order of their receipt. Following receipt of a complete notice the Bureau shall, within not more than two months, publish its contents, with any diagrams and maps and the date of receipt, in the BR IFIC, which shall constitute the acknowledgement to the notifying administration of receipt of its notice. When the Bureau is not in a position to comply with the time-limit referred to above, it shall periodically so inform the administrations, giving the reasons thereof. (WRC-07)

**MOD** COM5/385/50 (B18/405/52)

8.9 *b)* with respect to its conformity with the fixed-satellite service Plan and the associated provisions<sup>ADD 1L</sup>. (WRC-07)

**ADD** COM5/385/51 (B18/405/53)

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<sup>1L</sup> When an administration notifies any assignment with characteristics different from those entered in the List through successful application of Article 6 of Appendix **30B**, the Bureau shall undertake calculation to determine if the proposed new characteristics increase the interference level caused to other allotments and assignments in the Plan and List. The increase of the interference due to characteristics different from those entered in the List will be checked by comparing the *C/I* ratios of these other allotments and assignments, which result from the use of the proposed new characteristics of the subject assignment on the one hand, and those obtained with the characteristics of the subject assignment in the List, on the other hand. This *C/I* calculation is performed under the same technical assumptions and conditions. (WRC-07)

**MOD** COM5/385/52 (B18/405/54)

8.13 A notice of a change in the characteristics of an assignment already recorded, as specified in Appendix 4, shall be examined by the Bureau under § 8.8 and 8.9 as appropriate. Any changes to the characteristics of an assignment, that has been notified and confirmed as having been brought into use, shall be brought into use within eight years from the date of the notification of the modification. Any changes to the characteristics of an assignment that has been notified but not yet brought into use shall be brought into use within the period provided for in § 6.1 or 6.31 of Article 6. (WRC-07)

**SUP** COM5/385/53 (B18/405/55)

8.14

**MOD** COM5/385/54 (B18/405/56)

8.16 All frequency assignments notified in advance of their being brought into use shall be entered provisionally in the Master Register. Any frequency assignment provisionally recorded under this provision shall be brought into use no later than the end of the period provided for in § 6.1. Unless the Bureau has been informed by the notifying administration of the bringing into use of the assignment, it shall, no later than 15 days before the end of the regulatory period established under § 6.1, send a reminder requesting confirmation that the assignment has been brought into use within the regulatory period. If the Bureau does not receive that confirmation within 30 days following the period provided under § 6.1, it shall cancel the entry in the Master Register. (WRC-07)

**MOD** COM5/385/55 (B18/405/57)

8.17 Where the use of a recorded assignment to a space station is suspended for a period not exceeding eighteen months, the notifying administration shall, as soon as possible, inform the Bureau of the date on which such use was suspended and the date on which the assignment is to be brought back into regular use. This latter date shall not exceed two years from the date of suspension. If the assignment is not brought back into use within two years from the date of suspension, the Bureau shall cancel the assignment from the Master Register and apply the provisions of § 6.33. (WRC-07)

**MOD** COM5/385/56 (B18/405/58)

## ARTICLE 9 (Rev.WRC-07)

### General provisions

**MOD** COM5/385/57 (B18/405/59)

9.1 The Plan is limited to national systems providing a domestic service. Administrations may, however, in accordance with the provisions of Article 6, convert their allotments or propose additional systems to provide national or multinational services.

**SUP** COM5/385/57B (B18/405/60)

9.2

**MOD** COM5/385/58 (B18/405/61)

## ARTICLE 10 (Rev.WRC-07)

**MOD** COM5/385/59 (B18/405/62)

### **Plan for the fixed-satellite service in the frequency bands 4 500-4 800 MHz, 6 725-7 025 MHz, 10.70-10.95 GHz, 11.20-11.45 GHz and 12.75-13.25 GHz**

**MOD** COM5/385/60 (B18/405/63)

A.1 COLUMN HEADINGS OF THE PLAN

**MOD** COM5/385/61 (B18/405/64)

Col. 2 *Nominal orbital position*, in degrees

**SUP** COM5/385/62 (B18/405/65)

Col. 3

**SUP** COM5/385/63 (B18/405/66)

Col. 4

**MOD** COM5/385/64 (B18/405/67)

Col. 3 *Longitude of the boresight*, in degrees

**MOD** COM5/385/65 (B18/405/68)

Col. 4 *Latitude of the boresight*, in degrees

**MOD** COM5/385/66 (B18/405/69)

Col. 5 *Major axis of the elliptical cross-section half-power beam*, in degrees

<b>MOD</b>	COM5/385/67	(B18/405/70)
Col. 6	<i>Minor axis of the elliptical cross-section half-power beam, in degrees</i>	
<b>MOD</b>	COM5/385/68	(B18/405/71)
Col. 7	<i>Orientation of the ellipse</i> determined as follows: in a plane normal to the beam axis, the direction of the major axis of the ellipse is defined by the angle measured anticlockwise from a line parallel to the equatorial plane to the major axis of the ellipse, to the nearest degree	
<b>MOD</b>	COM5/385/69	(B18/405/72)
Col. 8	Earth station <i>e.i.r.p.</i> density (dB(W/Hz))	
<b>MOD</b>	COM5/385/70	(B18/405/73)
Col. 9	Satellite <i>e.i.r.p.</i> density (dB(W/Hz))	
<b>MOD</b>	COM5/385/71	(B18/405/74)
Col. 10	<i>Remarks</i>	
<b>SUP</b>	COM5/385/72	(B18/405/75)
1		
<b>ADD</b>	COM5/385/73	(B18/405/76)
1	Assignment converted from allotment.	
<b>SUP</b>	COM5/385/74	(B18/405/77)
2		
<b>ADD</b>	COM5/385/75	(B18/405/78)
2	The Administration of Luxembourg (LUX) agreed to operate the LUX-30B-6 satellite network within the characteristics included in the Appendix <b>30B</b> List, as modified during WRC-07, and to immediately eliminate interference that could be caused by LUX-30B-6 to the national allotment of the Islamic Republic of Iran (IRN00000) (IRN).	
<b>SUP</b>	COM5/385/76	(B18/405/79)
3		
<b>ADD</b>	COM5/385/77	(B18/405/80)
3	Allotment converted into assignment with a shaped beam and then reinstated back into the Plan.	
<b>SUP</b>	COM5/385/78	(B18/405/81)
4		
<b>SUP</b>	COM5/385/79	(B18/405/82)
5		

**MOD** COM5/385/80 (B18/405/83)

*Note by the Secretariat (applicable when an asterisk (\*) appears in column 10):* It is to be noted that this beam is intended to be implemented as part of a multi-beam network, operating from a single orbital location. Within any multi-beam network, the beams are the responsibility of a single administration, hence interference between them has not been taken into account during the Conference. The number which appears in the alphanumeric code that follows the asterisk serves to identify the multi-beam network concerned.

**SUP** COM5/385/81 (B18/405/84)

**B** COLUMN HEADINGS OF PART B OF THE PLAN

**A.2** TEXT FOR SYMBOLS IN REMARKS COLUMN OF THE PLAN

**SUP** COM5/403/1 (B20/414/11)

Table with Appendix 30B Plan (pages from AP30B-20 to AP30B-26)

ADD COM5/403/2 (B20/414/12)

4 500-4 800 MHz, 6 725-7 025 MHz

1	2	3	4	5	6	7	8	9	10
ABW000000	-98.20	-69.10	12.40	1.60	1.60	90.00	-9.6	-41.4	
ADL000000	113.00	140.00	-66.70	1.60	1.60	90.00	-9.6	-41.3	*/MB1
AFG000000	50.00	66.40	33.90	2.20	1.60	15.00	-9.6	-39.4	
AFS000000	71.00	27.20	-30.10	5.30	1.60	128.00	-7.8	-38.6	
AGL000000	-36.10	15.90	-12.40	2.40	1.60	78.00	-9.6	-39.1	
ALB000000	4.13	20.00	41.10	1.60	1.60	90.00	-9.6	-41.4	
ALG000000	-33.50	1.60	27.80	3.30	2.20	133.00	-8.6	-38.9	
ALS000000	-159.00	-158.60	57.50	6.30	1.60	1.00	-7.9	-38.8	*/MB2
AND000000	-41.00	1.50	42.50	1.60	1.60	90.00	-9.6	-41.4	
ARG000000	-51.00	-62.00	-33.60	4.80	2.90	93.00	-2.5	-38.1	*/MB3
ARGINSUL	-51.00	-60.00	-57.50	3.60	1.60	154.00	-9.6	-38.5	*/MB3
ARM000000	71.40	45.13	40.12	1.60	1.60	90.00	-9.6	-40.4	
ARS000000	51.90	45.70	23.10	3.70	2.60	153.00	-8.7	-39.3	
ASCSTHTC	-37.10	-11.80	-19.60	5.60	1.80	77.00	-8.0	-39.0	*/MB4
ATG000000	-77.70	-61.80	17.00	1.60	1.60	90.00	-9.6	-41.8	
ATN000000	-5.00	-65.60	15.10	1.60	1.60	90.00	-9.6	-38.9	*/MB5
AUS000001	144.10	134.30	-24.50	6.60	5.30	146.00	1.9	-38.2	*/MB6
AUS000002	144.10	163.60	-30.50	1.60	1.60	90.00	-9.6	-39.5	*/MB6
AUS000003	144.10	101.50	-11.10	1.60	1.60	90.00	-9.6	-40.5	*/MB6
AUS000004	144.10	159.00	-54.50	1.60	1.60	90.00	-9.6	-41.6	*/MB6
AUS000005	144.10	110.40	-66.30	1.60	1.60	90.00	-9.6	-41.3	*/MB6
AUT000000	-11.40	13.20	47.50	1.60	1.60	90.00	-9.6	-40.8	
AZR000000	-10.60	-28.00	38.70	1.60	1.60	90.00	-9.6	-41.1	*/MB7
B 000001	-66.25	-62.60	-6.00	4.10	4.00	43.00	-2.5	-38.7	
B 000002	-63.60	-45.40	-6.30	4.60	4.10	152.00	-1.9	-38.6	
B 000003	-69.45	-50.00	-20.90	4.30	3.00	60.00	-3.4	-38.5	
BAH000000	-74.30	-75.80	24.00	1.60	1.60	133.00	-9.6	-39.4	
BDI000000	-3.50	29.90	-3.40	1.60	1.60	90.00	-9.6	-41.6	
BEL000000	54.55	5.20	50.60	1.60	1.60	90.00	-9.6	-41.2	
BEN000000	-30.60	2.30	9.30	1.60	1.60	90.00	-9.6	-39.9	
BERCAYMS	-37.10	-68.60	22.50	3.70	2.30	41.00	-5.6	-38.2	*/MB4
BFA000000	10.79	-1.40	12.20	1.70	1.60	24.00	-9.6	-39.5	
BGD000000	133.00	90.20	24.00	1.60	1.60	90.00	-9.6	-40.3	
BHR000000	13.60	50.60	26.10	1.60	1.60	90.00	-9.6	-41.9	
BLZ000000	-90.80	-88.60	17.20	1.60	1.60	90.00	-9.6	-41.6	
BOL000000	-34.80	-64.40	-17.10	2.70	1.70	129.00	-7.5	-38.6	
BOT000000	21.20	24.00	-21.80	1.60	1.60	90.00	-9.6	-40.0	
BRB000000	-29.60	-59.60	13.20	1.60	1.60	90.00	-9.6	-41.6	
BRM000000	111.50	97.00	18.90	3.20	1.60	88.00	-7.2	-38.8	
BRU000000	157.30	114.60	4.50	1.60	1.60	90.00	-9.6	-40.9	
BTN000000	59.10	90.40	27.00	1.60	1.60	90.00	-9.6	-41.5	
BUL000000	56.02	25.60	42.80	1.60	1.60	90.00	-9.6	-40.8	
CAF000000	14.40	21.50	6.50	2.70	1.70	14.00	-8.4	-39.1	
CANOCENT	-111.10	-96.10	51.40	4.30	2.00	155.00	-7.6	-38.4	
CANOEAST	-107.30	-76.60	50.10	5.00	1.70	154.00	-7.0	-38.3	
CANOWEST	-114.90	-120.10	57.40	3.10	1.90	173.00	-9.6	-38.7	
CBG000000	96.10	105.10	12.90	1.60	1.60	90.00	-9.6	-40.4	
CHL000000	-74.90	-82.60	-32.80	8.10	6.10	155.00	-0.7	-38.4	
CHN000001	101.40	103.70	35.00	8.10	4.30	2.00	-0.1	-38.3	
CHN000002	135.50	114.80	16.40	4.90	2.40	65.00	-3.6	-38.7	
CLM000000	-70.90	-74.00	5.70	4.00	2.30	121.00	-5.1	-38.9	
CLN000000	121.50	80.10	7.70	1.60	1.60	90.00	-9.6	-41.2	
CME000000	7.98	12.90	6.30	2.50	1.90	84.00	-8.4	-39.5	
CNR000000	-30.00	-15.90	28.50	1.60	1.60	90.00	-9.6	-41.3	*/MB8

4 500-4 800 MHz, 6 725-7 025 MHz

1	2	3	4	5	6	7	8	9	10
COD000000	50.95	24.40	-4.60	3.90	3.50	92.00	-7.4	-38.5	
COG000000	-16.35	14.80	-0.60	2.00	1.60	63.00	-9.1	-38.8	
COM000000	94.50	44.10	-12.20	1.60	1.60	90.00	-9.6	-41.0	
CPV000000	-85.70	-24.10	16.00	1.60	1.60	90.00	-9.6	-41.3	
CTI000000	-15.76	-5.90	7.80	1.60	1.60	90.00	-9.6	-40.0	
CTR000000	-96.00	-85.30	8.20	1.60	1.60	90.00	-9.6	-40.2	
CUB000000	-80.60	-79.50	21.00	2.00	1.60	172.00	-9.6	-39.3	
CVA000000	59.00	12.50	41.90	1.60	1.60	90.00	-9.6	-41.3	
CYP000000	0.50	33.20	35.10	1.60	1.60	90.00	-9.6	-41.6	
CYPSBA00	57.50	32.90	34.60	1.60	1.60	90.00	-9.6	-41.7	*/MB9
D 00001	26.40	9.70	50.70	1.60	1.60	90.00	-9.6	-40.5	
D 00002	37.20	12.60	51.40	1.60	1.60	90.00	-9.6	-40.8	
DJI000000	-17.46	42.60	11.70	1.60	1.60	90.00	-9.6	-41.3	
DMA000000	-70.00	-61.30	15.30	1.60	1.60	90.00	-9.6	-41.8	
DNK00001	32.28	11.60	56.00	1.60	1.60	90.00	-9.6	-40.9	
DNK00002	-49.00	12.50	56.30	1.60	1.60	90.00	-9.6	-40.6	*/MB10
DNK00FAR	-49.00	-7.20	61.70	1.60	1.60	90.00	-9.6	-41.1	*/MB10
DOM000000	-85.40	-70.40	18.70	1.60	1.60	90.00	-9.6	-41.7	
E 00002	-30.00	-3.00	39.90	2.10	1.60	8.00	-9.6	-39.5	*/MB8
EGY000000	67.11	30.30	26.20	2.30	1.60	54.00	-9.6	-39.2	
EQA000000	-104.00	-83.10	-1.40	3.10	1.60	174.00	-7.8	-38.9	
ETH000000	58.30	40.60	10.30	2.80	2.80	64.00	-9.4	-39.4	
F 00000	-8.00								1
FIN000000	46.80	23.80	64.30	1.60	1.60	90.00	-9.6	-39.3	
FJI000000	148.80	178.50	-17.20	1.60	1.60	90.00	-9.6	-41.5	
FLKSTGGL	-37.10	-46.80	-59.60	3.70	1.60	170.00	-9.6	-38.8	*/MB4
G 00000	-37.10	-4.10	53.90	1.60	1.60	151.00	-9.6	-39.0	*/MB4
GAB000000	39.00	11.70	-0.70	1.60	1.60	90.00	-9.6	-39.8	
GDL000000	-8.00								1
GDL00002	-115.90	-61.80	16.40	1.60	1.60	90.00	-9.6	-40.3	*/MB13
GHA000000	15.90	-1.30	7.70	1.60	1.60	90.00	-9.6	-39.7	
GIB000000	57.50	-5.40	36.10	1.60	1.60	90.00	-9.6	-40.9	*/MB9
GMB000000	-34.00	-16.40	13.40	1.60	1.60	90.00	-9.6	-42.1	
GNB000000	40.00	-15.40	12.00	1.60	1.60	90.00	-9.6	-41.3	
GNE000000	-32.30	10.50	1.70	1.60	1.60	90.00	-9.6	-40.9	
GRC000000	22.05	24.70	38.30	1.70	1.60	160.00	-9.6	-39.3	
GRD000000	-32.80	-61.60	12.00	1.60	1.60	90.00	-9.6	-41.6	
GRL000000	-49.00	-42.90	68.60	2.30	1.60	174.00	-9.6	-38.6	*/MB10
GTM000000	-135.70	-90.50	15.50	1.60	1.60	90.00	-9.6	-40.5	
GUF000000	-8.00								1
GUF00002	-115.90	-53.30	4.30	1.60	1.60	90.00	-8.6	-39.4	*/MB13
GUI000000	27.50	-10.90	10.20	1.60	1.60	90.00	-9.6	-39.2	
GUMMRA00	-159.00	145.40	16.70	1.70	1.60	79.00	-9.4	-38.3	*/MB2
GUY000000	-23.80	-59.20	4.70	1.60	1.60	90.00	-9.6	-39.4	
HKG000000	57.50	114.50	22.40	1.60	1.60	90.00	-9.6	-40.6	
HND000000	-76.20	-86.10	15.40	1.60	1.60	90.00	-9.6	-40.0	
HNG000000	-7.50	19.40	47.40	1.60	1.60	90.00	-9.6	-41.0	
HOL000000	-5.00	5.40	52.40	1.60	1.60	90.00	-9.6	-41.4	*/MB5
HTI000000	-92.00	-73.00	18.80	1.60	1.60	90.00	-9.6	-41.7	
HWA000000	-159.00	-157.60	20.70	1.60	1.60	90.00	-9.6	-40.2	*/MB2
HWL000000	-159.00	-176.60	0.10	1.60	1.60	90.00	-9.6	-41.8	*/MB2
I 00000	-23.40	11.30	40.90	2.10	1.60	141.00	-9.6	-38.9	
IND000000	74.00	82.70	18.90	6.20	4.90	120.00	0.3	-38.5	
INS000000	115.40	117.60	-1.80	9.40	4.30	170.00	1.8	-38.6	
IRL000000	-21.80	-8.20	53.20	1.60	1.60	90.00	-9.6	-41.1	



4 500-4 800 MHz, 6 725-7 025 MHz

1	2	3	4	5	6	7	8	9	10
IRN000000	24.19	54.30	33.00	3.70	1.60	143.00	-9.6	-39.0	
IRQ000000	65.45	44.30	33.10	1.60	1.60	90.00	-9.6	-39.4	
ISL000000	-35.20	-18.20	64.90	1.60	1.60	90.00	-9.6	-40.5	
ISR000000	-4.00								1
J 000000	152.50	140.40	30.40	5.70	3.70	15.00	-2.3	-38.5	
JAR000000	-159.00	-160.00	-0.40	1.60	1.60	90.00	-9.6	-41.9	*/MB2
JMC000000	-108.60	-77.60	18.20	1.60	1.60	90.00	-9.6	-41.5	
JON000000	-159.00	-168.50	17.00	1.60	1.60	90.00	-9.6	-42.2	*/MB2
JOR000000	81.76	36.70	31.30	1.60	1.60	90.00	-9.6	-40.9	
KEN000000	78.20	38.40	0.80	2.10	1.60	95.00	-9.6	-39.3	
KER000000	113.00	69.30	-43.90	1.90	1.60	169.00	-9.6	-38.7	*/MB1
KGZ000000	64.60	74.54	41.15	1.60	1.60	90.00	-9.6	-38.8	
KIR000000	150.00	173.00	1.00	1.60	1.60	90.00	-9.6	-41.8	
KNA000000	-88.80	-62.90	17.30	1.60	1.60	90.00	-9.6	-41.6	
KOR000000	116.20	127.70	36.20	1.60	1.60	90.00	-9.6	-40.5	
KRE000000	145.00	127.80	39.80	1.60	1.60	90.00	-9.6	-39.6	
KWT000000	30.90	47.70	29.10	1.60	1.60	90.00	-9.6	-41.9	
LAO000000	142.00	104.10	18.10	1.60	1.60	90.00	-9.6	-39.1	
LBN000000	97.50	35.80	33.80	1.60	1.60	90.00	-9.6	-41.3	
LBR000000	-41.80	-8.90	6.50	1.60	1.60	90.00	-9.6	-40.4	
LBY000000	28.90								1
LIE000000	-17.10	9.50	47.20	1.60	1.60	90.00	-9.6	-41.7	
LSO000000	-19.30	28.40	-29.50	1.60	1.60	90.00	-9.6	-41.5	
LUX000000	19.20	6.20	49.70	1.60	1.60	90.00	-9.6	-41.6	
MAC000000	117.00	113.60	22.20	1.60	1.60	90.00	-9.6	-41.8	
MAU000000	92.20	57.50	-20.20	1.60	1.60	90.00	-9.6	-41.4	
MCO000000	41.00	7.40	43.70	1.60	1.60	90.00	-9.6	-41.3	
MDG000000	16.90	46.60	-18.70	2.60	1.60	66.00	-7.5	-38.6	
MDR000000	-10.60	-16.20	31.60	1.60	1.60	90.00	-9.6	-41.7	*/MB7
MDW000000	-159.00	-177.40	28.20	1.60	1.60	90.00	-9.6	-42.0	*/MB2
MEX000000	-113.00	-103.60	23.30	5.80	2.40	161.00	-4.7	-38.8	
MHL000000	-159.00	175.30	8.70	2.30	1.60	94.00	-8.6	-38.8	*/MB2
MLA000000	78.50	108.20	4.70	3.20	1.60	0.00	-6.3	-38.5	
MLD000000	117.60	73.40	2.50	2.20	1.60	88.00	-9.6	-38.7	
MLI000000	-6.00	-3.90	17.60	3.30	2.50	21.00	-7.6	-39.2	
MLT000000	-3.00	14.40	35.90	1.60	1.60	90.00	-9.6	-41.8	
MNG000000	113.60	103.80	46.80	3.60	1.60	3.00	-9.6	-38.9	
MOZ000000	90.60	35.60	-17.20	3.10	1.60	98.00	-7.7	-38.3	
MRC000000	32.86	-8.90	27.90	3.40	1.60	45.00	-9.6	-38.8	
MTN000000	-21.10	-10.30	19.80	2.50	2.40	76.00	-9.6	-39.4	
MWI000000	28.00	34.10	-13.30	1.60	1.60	90.00	-9.6	-40.0	
MYT000000	-8.00								1
NCG000000	-84.40	-84.90	12.90	1.60	1.60	90.00	-9.6	-40.6	
NCL000000	113.00	165.80	-21.40	1.60	1.60	90.00	-9.6	-40.6	*/MB1
NGR000000	-38.50	7.50	17.20	2.10	1.70	100.00	-9.6	-38.9	
NIG000000	41.82	8.00	9.90	2.50	1.60	47.00	-7.7	-38.5	
NMB000000	12.20	18.50	-21.00	2.70	2.60	155.00	-9.6	-39.5	
NOR000000	-0.80	11.70	64.60	2.00	1.60	17.00	-9.6	-38.7	
NPL000000	123.30	84.40	28.00	1.60	1.60	90.00	-9.6	-40.8	
NRU000000	146.00	166.90	-0.50	1.60	1.60	90.00	-9.6	-41.8	
NZL000001	152.00	170.90	-44.80	5.40	1.60	49.00	-7.4	-38.1	*/MB14
NZL000002	152.00	-165.40	-13.20	2.70	2.00	82.00	-7.3	-38.3	*/MB14
OCE000000	-115.90	-141.90	-16.10	3.50	2.40	139.00	-7.1	-38.9	*/MB13
OMA000000	104.00	55.10	21.60	1.90	1.60	61.00	-9.6	-39.2	
PAK000000	56.50	69.90	29.80	3.00	2.00	22.00	-9.3	-39.0	

4 500-4 800 MHz, 6 725-7 025 MHz

1	2	3	4	5	6	7	8	9	10
PHL000000	161.00	122.23	11.37	3.33	1.60	79.65	-6.3	-38.4	
PLM000000	-159.00	-161.40	7.00	1.60	1.60	90.00	-9.6	-41.9	*/MB2
PNG000000	154.10	148.40	-6.60	3.30	2.30	167.00	-6.2	-39.0	
PNR000000	-79.20	-80.20	8.50	1.60	1.60	90.00	-9.6	-40.4	
POL000000	15.20	19.30	52.00	1.60	1.60	90.00	-9.6	-40.0	
POR000000	-10.60	-8.00	39.70	1.60	1.60	90.00	-9.6	-41.2	*/MB7
PRG000000	-81.50	-58.70	-23.10	1.60	1.60	90.00	-9.6	-39.1	
PRU000000	-89.90	-74.20	-8.40	3.60	2.40	111.00	-5.4	-38.7	
PTC000000	-62.30	-130.10	-25.10	1.60	1.60	90.00	-9.6	-41.2	
QAT000000	0.90	51.60	25.40	1.60	1.60	90.00	-9.6	-41.6	
REU000000	-8.00								1
REU000002	113.00	55.60	-21.10	1.60	1.60	90.00	-9.6	-40.6	*/MB1
ROU000000	30.45	25.00	46.30	1.60	1.60	90.00	-9.6	-39.6	
RRW000000	17.60	29.70	-1.90	1.60	1.60	90.00	-9.6	-41.9	
RUS000001	61.00	51.50	52.99	5.56	2.01	10.74	-7.2	-38.3	
RUS000003	138.50	138.14	53.83	5.86	2.09	8.41	-6.7	-38.2	
RUSLA201	88.10	94.80	48.60	7.50	3.50	175.00	-1.4	-38.3	
S 000000	5.00	16.70	60.90	1.60	1.60	90.00	-9.6	-40.2	
SDN000001	23.55	29.30	10.30	3.00	1.90	131.00	-9.3	-39.0	*/MB15
SDN000002	23.55	29.40	16.70	2.60	2.40	171.00	-9.6	-39.3	*/MB15
SEN000000	-48.40	-14.00	14.10	1.60	1.60	90.00	-9.6	-40.3	
SEY000000	42.25								1
SLM000000	147.50	159.00	-9.10	1.60	1.60	90.00	-9.6	-39.5	
SLV000000	-130.50	-89.00	13.70	1.60	1.60	90.00	-9.6	-40.9	
SMA000000	-159.00	-170.70	-14.20	1.60	1.60	90.00	-9.6	-42.2	*/MB2
SMO000000	-125.50	-172.10	-13.70	1.60	1.60	90.00	-9.6	-41.1	
SMR000000	16.50	12.50	43.90	1.60	1.60	90.00	-9.6	-42.0	
SNG000000	98.10	103.90	1.30	1.60	1.60	90.00	-9.6	-41.6	
SOM000000	98.40	46.00	6.30	3.10	1.60	72.00	-9.6	-38.8	
SPM000000	-8.00								1
SRL000000	-51.80	-11.90	8.50	1.60	1.60	90.00	-9.6	-41.4	
STP000000	30.25	7.00	1.00	1.60	1.60	90.00	-9.6	-41.7	
SUI000000	9.45	8.20	46.50	1.60	1.60	90.00	-9.6	-41.3	
SUR000000	-77.00	-55.60	3.90	1.60	1.60	90.00	-9.6	-40.7	
SWZ000000	30.10	31.30	-26.40	1.60	1.60	90.00	-9.6	-42.0	
SYR000000	18.00	38.60	35.30	1.60	1.60	90.00	-9.6	-40.8	
TCD000000	-9.90	18.40	15.60	3.50	1.60	97.00	-8.9	-39.0	
TGO000000	-23.15	0.80	8.60	1.60	1.60	90.00	-9.6	-40.4	
THA000000	120.60	100.90	12.80	2.80	1.60	83.00	-7.7	-38.8	
TON000000	-128.00	-175.20	-21.20	1.60	1.60	90.00	-9.6	-41.0	
TRD000000	-73.40	-61.10	10.80	1.60	1.60	90.00	-9.6	-41.8	
TUN000000	5.74	9.40	33.50	1.60	1.60	90.00	-9.6	-40.3	
TUR000000	8.50	34.10	38.90	2.80	1.60	171.00	-6.4	-38.6	
TUV000000	158.00	179.20	-8.50	1.60	1.60	90.00	-9.6	-41.8	
TZA000000	67.50	35.40	-5.90	2.40	1.60	117.00	-9.6	-39.3	
UAE000000	63.50	53.80	24.90	1.60	1.60	90.00	-9.6	-41.1	
UGA000000	31.50	32.20	0.90	1.60	1.60	90.00	-9.6	-40.3	
UKR000000	50.50	34.42	49.50	1.60	1.60	0.00	-8.4	-38.2	
URG000000	-86.10	-56.30	-33.70	1.60	1.60	90.00	-9.6	-40.7	
USA000000	-101.00	-93.90	36.80	8.20	3.60	172.00	-0.9	-38.3	*/MB16
USAVIPRT	-101.00	-64.50	17.80	1.60	1.60	90.00	-9.6	-41.4	*/MB16
VCT000000	-93.10	-61.10	13.20	1.60	1.60	90.00	-9.6	-41.5	
VEN000001	-82.70	-66.40	6.80	2.80	2.10	142.00	-7.0	-38.9	*/MB17
VEN000002	-82.70	-63.60	15.70	1.60	1.60	90.00	-9.6	-41.7	*/MB17
VTN000000	107.00								1

**4 500-4 800 MHz, 6 725-7 025 MHz**

1	2	3	4	5	6	7	8	9	10
VUT000000	150.70	168.40	-17.20	1.60	1.60	90.00	-9.6	-40.3	
WAK000000	-159.00	166.50	19.20	1.60	1.60	90.00	-9.6	-41.9	*/MB2
WAL000000	113.00	-177.10	-13.80	1.60	1.60	90.00	-9.0	-39.8	*/MB1
XCQ000000	-159.00	173.40	4.60	10.20	2.40	175.00	4.5	-35.6	*/MB2
XCS000000	-19.82	17.30	49.60	1.60	1.60	90.00	-9.6	-40.0	
XYU000000	43.04	18.70	44.40	1.60	1.60	90.00	-9.6	-40.5	
YEM000001	27.00	44.20	15.10	1.60	1.60	90.00	-9.6	-41.4	
YEM000002	108.00	49.90	14.80	1.60	1.60	90.00	-9.6	-39.7	
ZMB000000	39.55	27.90	-12.80	2.40	1.60	26.00	-9.6	-39.6	
ZWE000000	65.60	30.00	-18.90	1.60	1.60	90.00	-9.6	-39.9	

**10.70-10.95 GHz, 11.20-11.45 GHz, 12.75-13.25 GHz**

<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>
ABW000000	-98.20	-69.10	12.40	0.80	0.80	90.00	-6.4	-25.8	
ADL000000	113.00	140.00	-66.70	0.80	0.80	90.00	-10.2	-31.9	*/MB1
AFG000000	50.00	66.40	33.90	2.20	1.30	15.00	-4.1	-29.2	
AFS000000	71.00	27.20	-30.10	5.30	1.40	128.00	3.3	-26.7	
AGL000000	-36.10	15.90	-12.40	2.40	1.40	78.00	1.1	-25.8	
ALB000000	4.13	20.00	41.10	0.80	0.80	90.00	-8.6	-28.2	
ALG000000	-33.50	1.60	27.80	3.30	2.20	133.00	3.4	-26.6	
ALS000000	-159.00	-158.60	57.50	6.30	1.50	1.00	1.6	-28.7	*/MB2
AND000000	-41.00	1.50	42.50	0.80	0.80	90.00	-10.2	-30.0	
ARG000000	-51.00	-62.00	-33.60	4.80	2.90	93.00	9.4	-21.9	*/MB3
ARGINSUL	-51.00	-60.00	-57.50	3.60	1.30	154.00	-1.4	-28.6	*/MB3
ARM000000	71.40	45.13	40.12	0.80	0.80	90.00	-10.2	-30.1	
ARS000000	51.90	45.70	23.10	3.70	2.60	153.00	0.8	-29.4	
ASCSTHTC	-37.10	-11.80	-19.60	5.60	1.80	77.00	2.1	-28.6	*/MB4
ATG000000	-77.70	-61.80	17.00	0.80	0.80	90.00	-7.2	-27.1	
ATN000000	-5.00	-65.60	15.10	1.30	1.00	58.00	-1.1	-22.3	*/MB5
AUS000001	144.10	134.30	-24.50	6.60	5.30	146.00	13.4	-22.1	*/MB6
AUS000002	144.10	163.60	-30.50	1.60	1.00	15.00	-2.9	-26.5	*/MB6
AUS000003	144.10	101.50	-11.10	1.10	1.00	15.00	-6.9	-28.5	*/MB6
AUS000004	144.10	159.00	-54.50	0.80	0.80	90.00	-10.2	-32.3	*/MB6
AUS000005	144.10	110.40	-66.30	0.80	0.80	90.00	-10.2	-31.8	*/MB6
AUT000000	-11.40	13.20	47.50	0.80	0.80	90.00	-8.1	-27.2	
AZR000000	-10.60	-28.00	38.70	0.80	0.80	90.00	-8.7	-27.9	*/MB7
B 000001	-66.25	-62.60	-6.00	4.10	4.00	43.00	9.8	-22.4	
B 000002	-63.60	-45.40	-6.30	4.60	4.10	152.00	10.4	-22.4	
B 000003	-69.45	-50.00	-20.90	4.30	3.00	60.00	8.9	-22.2	
BAH000000	-74.30	-75.80	24.00	1.60	1.00	133.00	-0.8	-24.5	
BDI000000	-3.50	29.90	-3.40	0.80	0.80	90.00	-10.2	-29.9	
BEL000000	54.55	5.20	50.60	0.80	0.80	90.00	-10.2	-30.2	
BEN000000	-30.60	2.30	9.30	1.20	1.00	89.00	-2.1	-23.0	
BERCAYMS	-37.10	-68.60	22.50	3.70	2.30	41.00	7.4	-21.8	*/MB4
BFA000000	10.79	-1.40	12.20	1.70	1.00	24.00	-0.6	-25.0	
BGD000000	133.00	90.20	24.00	0.80	0.80	90.00	-3.9	-21.9	
BHR000000	13.60	50.60	26.10	0.80	0.80	90.00	-10.2	-32.2	
BLZ000000	-90.80	-88.60	17.20	0.80	0.80	90.00	-6.5	-26.6	
BOL000000	-34.80	-64.40	-17.10	2.70	1.70	129.00	4.3	-22.5	
BOT000000	21.20	24.00	-21.80	1.50	1.50	94.00	-6.0	-30.0	
BRB000000	-29.60	-59.60	13.20	0.80	0.80	90.00	-7.0	-26.4	
BRM000000	111.50	97.00	18.90	3.20	1.60	88.00	4.6	-22.6	
BRU000000	157.30	114.60	4.50	0.80	0.80	90.00	-6.9	-24.9	
BTN000000	59.10	90.40	27.00	0.80	0.80	90.00	-10.2	-29.3	
BUL000000	56.02	25.60	42.80	0.80	0.80	90.00	-7.8	-27.0	
CAF000000	14.40	21.50	6.50	2.70	1.70	14.00	3.8	-22.8	
CANOCENT	-111.10	-96.10	51.40	4.30	2.00	155.00	3.9	-26.7	
CANOEAST	-107.30	-76.60	50.10	5.00	1.70	154.00	6.2	-25.0	
CANOWEST	-114.90	-120.10	57.40	3.10	1.90	173.00	-0.6	-28.7	
CBG000000	96.10	105.10	12.90	1.20	1.00	35.00	-2.5	-23.2	
CHL000000	-74.90	-82.60	-32.80	8.10	6.10	155.00	9.0	-28.4	
CHN000001	101.40	103.70	35.00	8.10	4.30	2.00	13.6	-23.2	
CHN000002	135.50	114.80	16.40	4.90	2.40	65.00	8.2	-22.5	
CLM000000	-70.90	-74.00	5.70	4.00	2.30	121.00	7.1	-22.6	
CLN000000	121.50	80.10	7.70	0.80	0.80	90.00	-6.5	-24.8	
CME000000	7.98	12.90	6.30	2.50	1.90	84.00	3.9	-22.7	
CNR000000	-30.00								1

**10.70-10.95 GHz, 11.20-11.45 GHz, 12.75-13.25 GHz**

1	2	3	4	5	6	7	8	9	10
COD000000	50.95	24.40	-4.60	3.90	3.50	92.00	6.5	-24.4	
COG000000	-16.35	14.80	-0.60	2.00	1.10	63.00	0.7	-22.7	
COM000000	94.50	44.10	-12.20	0.80	0.80	90.00	-6.7	-24.7	
CPV000000	-85.70	-24.10	16.00	0.80	0.80	90.00	-10.2	-30.4	
CTI000000	-15.76	-5.90	7.80	1.40	1.20	66.00	-0.9	-23.1	
CTR000000	-96.00	-85.30	8.20	1.30	1.00	64.00	-2.1	-23.2	
CUB000000	-80.60	-79.50	21.00	2.00	1.00	172.00	0.1	-24.6	
CVA000000	59.00	12.50	41.90	0.80	0.80	90.00	-9.3	-28.8	
CYP000000	0.50	33.20	35.10	0.80	0.80	90.00	-10.2	-29.8	
CYPSBA00	57.50	32.90	34.60	0.80	0.80	90.00	-10.2	-30.2	*/MB9
D 00001	26.40	9.70	50.70	1.10	1.00	41.00	-7.7	-28.7	
D 00002	37.20	12.60	51.40	0.80	0.80	90.00	-9.3	-28.2	
DJI000000	-17.46	42.60	11.70	0.80	0.80	90.00	-10.2	-30.1	
DMA000000	-70.00	-61.30	15.30	0.80	0.80	90.00	-7.3	-27.3	
DNK00001	32.28	11.60	56.00	0.80	0.80	90.00	-10.2	-29.0	
DNK00002	-49.00	12.50	56.30	0.80	0.80	90.00	-8.2	-27.7	*/MB10
DNK00FAR	-49.00	-7.20	61.70	0.80	0.80	90.00	-10.2	-29.5	*/MB10
DOM000000	-85.40	-70.40	18.70	0.80	0.80	90.00	-7.2	-27.1	
E 00002	-30.00								1
EGY000000	67.11	30.30	26.20	2.30	1.50	54.00	-2.7	-28.8	
EQA000000	-104.00	-83.10	-1.40	3.10	1.40	174.00	3.8	-22.7	
ETH000000	58.30	40.60	10.30	2.80	2.80	64.00	1.1	-28.6	
F 00000	-8.00								1
FIN000000	46.80	23.80	64.30	1.50	1.00	23.00	-6.2	-28.6	
FJI000000	148.80	178.50	-17.20	0.80	0.80	90.00	-7.0	-26.2	
FLKSTGGL	-37.10	-46.80	-59.60	3.70	1.40	170.00	-0.9	-28.7	*/MB4
G 00000	-37.10	-4.10	53.90	1.60	1.00	151.00	-4.7	-27.8	*/MB4
GAB000000	39.00	11.70	-0.70	1.40	1.10	79.00	-1.5	-23.0	
GDL000000	-8.00								1
GDL00002	-115.90	-61.80	16.40	0.80	0.80	90.00	-4.6	-22.7	*/MB13
GHA000000	15.90	-1.30	7.70	1.50	1.10	90.00	-1.0	-23.0	
GIB000000	57.50	-5.40	36.10	0.80	0.80	90.00	-6.8	-27.0	*/MB9
GMB000000	-34.00	-16.40	13.40	0.80	0.80	90.00	-10.2	-31.0	
GNB000000	40.00	-15.40	12.00	0.80	0.80	90.00	-9.2	-28.8	
GNE000000	-32.30	10.50	1.70	0.80	0.80	90.00	-6.8	-24.9	
GRC000000	22.05	24.70	38.30	1.70	1.00	160.00	-2.7	-26.6	
GRD000000	-32.80	-61.60	12.00	0.80	0.80	90.00	-7.1	-26.5	
GRL000000	-49.00	-42.90	68.60	2.30	1.00	174.00	-3.3	-27.8	*/MB10
GTM000000	-135.70	-90.50	15.50	0.80	0.80	90.00	-4.2	-22.2	
GUF000000	-8.00								1
GUF00002	-115.90	-53.30	4.30	0.80	0.80	90.00	-5.3	-23.4	*/MB13
GUI000000	27.50	-10.90	10.20	1.30	1.10	104.00	-1.5	-22.9	
GUMMRA00	-159.00	145.40	16.70	1.70	1.00	79.00	0.0	-22.2	*/MB2
GUY000000	-23.80	-59.20	4.70	1.40	1.00	94.00	-1.4	-22.8	
HKG000000	57.50	114.50	22.40	0.80	0.80	90.00	-6.5	-24.5	
HND000000	-76.20	-86.10	15.40	1.40	1.00	26.00	-1.8	-23.1	
HNG000000	-7.50	19.40	47.40	0.80	0.80	90.00	-8.8	-28.1	
HOL000000	-5.00	5.40	52.40	0.80	0.80	90.00	-10.2	-30.8	*/MB5
HTI000000	-92.00	-73.00	18.80	0.80	0.80	90.00	-7.1	-26.9	
HWA000000	-159.00	-157.60	20.70	1.20	1.00	157.00	-2.2	-23.1	*/MB2
HWL000000	-159.00	-176.60	0.10	0.80	0.80	90.00	-7.3	-27.4	*/MB2
I 00000	-23.40	11.30	40.90	2.10	1.00	141.00	-1.6	-26.4	
IND000000	74.00	82.70	18.90	6.20	4.90	120.00	12.6	-22.2	
INS000000	115.40	117.60	-1.80	9.40	4.30	170.00	13.7	-22.4	
IRL000000	-21.80	-8.20	53.20	0.80	0.80	90.00	-10.2	-29.3	

**10.70-10.95 GHz, 11.20-11.45 GHz, 12.75-13.25 GHz**

1	2	3	4	5	6	7	8	9	10
IRN000000	24.19	54.30	33.00	3.70	1.50	143.00	1.1	-27.5	2
IRQ000000	65.45	44.30	33.10	1.60	1.30	178.00	-4.0	-28.0	
ISL000000	-35.20	-18.20	64.90	0.80	0.80	90.00	-8.5	-27.4	
ISR000000	-4.00								1
J 000000	152.50	140.40	30.40	5.70	3.70	15.00	11.1	-22.8	
JAR000000	-159.00	-160.00	-0.40	0.80	0.80	90.00	-7.5	-27.5	*/MB2
JMC000000	-108.60	-77.60	18.20	0.80	0.80	90.00	-6.9	-25.9	
JON000000	-159.00	-168.50	17.00	0.80	0.80	90.00	-10.2	-32.5	*/MB2
JOR000000	81.76	36.70	31.30	0.80	0.80	90.00	-9.7	-28.5	
KEN000000	78.20	38.40	0.80	2.10	1.30	95.00	-2.1	-27.6	
KER000000	113.00	69.30	-43.90	1.90	1.60	169.00	-2.2	-27.8	*/MB1
KGZ000000	64.60	74.54	41.15	1.56	0.80	10.12	-8.3	-29.7	
KIR000000	150.00	173.00	1.00	0.80	0.80	90.00	-7.2	-27.1	
KNA000000	-88.80	-62.90	17.30	0.80	0.80	90.00	-7.1	-26.5	
KOR000000	116.20	127.70	36.20	1.30	1.00	4.00	-4.3	-26.7	
KRE000000	145.00	127.80	39.80	1.40	1.00	14.00	-1.2	-23.3	
KWT000000	30.90	47.70	29.10	0.80	0.80	90.00	-10.2	-31.6	
LAO000000	142.00	104.10	18.10	1.50	1.00	101.00	-0.7	-22.6	
LBN000000	97.50	35.80	33.80	0.80	0.80	90.00	-10.2	-30.5	
LBR000000	-41.80	-8.90	6.50	0.80	0.80	90.00	-4.0	-22.1	
LBY000000	28.90								1
LIE000000	-17.10	9.50	47.20	0.80	0.80	90.00	-10.2	-31.2	
LSO000000	-19.30	28.40	-29.50	0.80	0.80	90.00	-10.2	-31.1	
LUX000000	19.20	6.20	49.70	0.80	0.80	90.00	-10.2	-31.6	
MAC000000	117.00	113.60	22.20	0.80	0.80	90.00	-7.2	-27.1	
MAU000000	92.20	57.50	-20.20	0.80	0.80	90.00	-6.9	-25.6	
MCO000000	41.00	7.40	43.70	0.80	0.80	90.00	-8.0	-27.8	
MDG000000	16.90	46.60	-18.70	2.60	1.00	66.00	1.6	-22.5	
MDR000000	-10.60	-16.20	31.60	0.80	0.80	90.00	-10.2	-30.5	*/MB7
MDW000000	-159.00	-177.40	28.20	0.80	0.80	90.00	-10.2	-32.2	*/MB2
MEX000000	-113.00	-103.60	23.30	5.80	2.40	161.00	9.1	-23.7	
MHL000000	-159.00	175.30	8.70	2.30	1.40	94.00	2.7	-22.6	*/MB2
MLA000000	78.50	108.20	4.70	3.20	1.40	0.00	4.1	-22.3	
MLD000000	117.60	73.40	2.50	2.20	0.80	88.00	0.1	-22.4	
MLI000000	-6.00	-3.90	17.60	3.30	2.50	21.00	6.3	-24.8	
MLT000000	-3.00	14.40	35.90	0.80	0.80	90.00	-10.2	-30.4	
MNG000000	113.60	103.80	46.80	3.60	1.10	3.00	-0.3	-27.6	
MOZ000000	90.60	35.60	-17.20	3.10	1.10	98.00	3.2	-22.0	
MRC000000	32.86	-8.90	27.90	3.40	1.00	45.00	-0.5	-27.0	
MTN000000	-21.10	-10.30	19.80	2.50	2.40	76.00	0.1	-28.4	
MWI000000	28.00	34.10	-13.30	1.60	1.00	101.00	-6.7	-29.3	
MYT000000	-8.00								1
NCG000000	-84.40	-84.90	12.90	1.10	1.00	16.00	-2.8	-23.1	
NCL000000	113.00	165.80	-21.40	0.80	0.80	90.00	-5.9	-23.9	*/MB1
NGR000000	-38.50	7.50	17.20	2.10	1.70	100.00	-0.6	-27.3	
NIG000000	41.82	8.00	9.90	2.50	1.60	47.00	3.4	-22.4	
NMB000000	12.20	18.50	-21.00	2.70	2.60	155.00	-0.7	-29.6	
NOR000000	-0.80								1
NPL000000	123.30	84.40	28.00	0.80	0.80	90.00	-7.2	-26.6	
NRU000000	146.00	166.90	-0.50	0.80	0.80	90.00	-7.2	-27.2	
NZL000001	152.00	170.90	-44.80	5.40	1.00	49.00	2.0	-26.5	*/MB14
NZL000002	152.00	-165.40	-13.20	2.70	2.00	82.00	5.4	-22.0	*/MB14
OCE000000	-115.90	-141.90	-16.10	3.50	2.40	139.00	6.8	-24.2	*/MB13
OMA000000	104.00	55.10	21.60	1.90	1.00	61.00	-6.0	-29.3	
PAK000000	56.50	69.90	29.80	3.00	2.00	22.00	3.7	-25.7	

10.70-10.95 GHz, 11.20-11.45 GHz, 12.75-13.25 GHz

1	2	3	4	5	6	7	8	9	10
PHL000000	161.00	122.23	11.37	3.33	1.41	79.65	4.8	-22.3	
PLM000000	-159.00	-161.40	7.00	0.80	0.80	90.00	-7.6	-27.6	*/MB2
PNG000000	154.10	148.40	-6.60	3.30	2.30	167.00	6.0	-22.7	
PNR000000	-79.20	-80.20	8.50	1.20	1.00	177.00	-2.4	-23.2	
POL000000	15.20	19.30	52.00	1.30	1.00	166.00	-7.0	-28.7	
POR000000	-10.60	-8.00	39.70	0.80	0.80	90.00	-9.0	-28.1	*/MB7
PRG000000	-81.50	-58.70	-23.10	1.50	1.30	116.00	0.1	-22.8	
PRU000000	-89.90	-74.20	-8.40	3.60	2.40	111.00	6.9	-22.5	
PTC000000	-62.30	-130.10	-25.10	0.80	0.80	90.00	-10.2	-27.3	
QAT000000	0.90	51.60	25.40	0.80	0.80	90.00	-10.2	-31.5	
REU000000	-8.00								1
REU000002	113.00	55.60	-21.10	0.80	0.80	90.00	-6.4	-24.5	*/MB1
ROU000000	30.45	25.00	46.30	1.50	1.00	178.00	-5.2	-28.0	
RRW000000	17.60	29.70	-1.90	0.80	0.80	90.00	-10.2	-30.8	
RUS000001	61.00	51.50	52.99	5.56	2.01	10.74	3.1	-28.2	
RUS000003	138.50	138.14	53.83	5.86	2.09	8.41	3.3	-28.4	
RUS0BF1A	87.70	38.50	52.00	1.00	1.00	0.00	-8.0	-29.6	*/MB18
RUS0BF1B	87.70	38.50	52.00	1.00	1.00	0.00	-4.0	-29.6	*/MB18
RUS0BF2A	87.70	46.00	55.00	1.00	1.00	0.00	-8.0	-29.6	*/MB18
RUS0BF2B	87.70	46.00	55.00	1.00	1.00	0.00	-4.0	-29.6	*/MB18
RUS0BF3A	87.70	57.00	57.00	1.00	1.00	0.00	-8.0	-29.6	*/MB18
RUS0BF3B	87.70	57.00	57.00	1.00	1.00	0.00	-4.0	-29.6	*/MB18
RUS0BF4A	87.70	71.00	57.00	1.00	1.00	0.00	-8.0	-29.6	*/MB18
RUS0BF4B	87.70	71.00	57.00	1.00	1.00	0.00	-4.0	-29.6	*/MB18
RUS0BF5A	87.70	87.50	58.00	1.00	1.00	0.00	-8.0	-29.6	*/MB18
RUS0BF5B	87.70	87.50	58.00	1.00	1.00	0.00	-4.0	-29.6	*/MB18
RUS0BF6A	87.70	106.50	56.00	1.00	1.00	0.00	-8.0	-29.6	*/MB18
RUS0BF6B	87.70	106.50	56.00	1.00	1.00	0.00	-4.0	-29.6	*/MB18
RUS0BF7A	87.70	120.00	55.00	1.00	1.00	0.00	-8.0	-29.6	*/MB18
RUS0BF7B	87.70	120.00	55.00	1.00	1.00	0.00	-4.0	-29.6	*/MB18
RUS0BF8A	87.70	135.00	47.00	1.00	1.00	0.00	-8.0	-29.6	*/MB18
RUS0BF8B	87.70	135.00	47.00	1.00	1.00	0.00	-4.0	-29.6	*/MB18
RUS0BF9A	87.70	42.00	44.50	1.00	1.00	0.00	-8.0	-29.6	*/MB18
RUS0BF9B	87.70	42.00	44.50	1.00	1.00	0.00	-4.0	-29.6	*/MB18
RUS0BR1A	87.70	38.50	52.00	1.00	1.00	0.00	-8.0	-28.1	*/MB18
RUS0BR1B	87.70	38.50	52.00	1.00	1.00	0.00	-4.0	-28.1	*/MB18
RUS0BR2A	87.70	135.00	47.00	1.00	1.00	0.00	-8.0	-28.1	*/MB18
RUS0BR2B	87.70	135.00	47.00	1.00	1.00	0.00	-4.0	-28.1	*/MB18
S 000000	-5.00								1
SDN000001	23.55	29.30	10.30	3.00	1.90	131.00	5.3	-24.0	*/MB15
SDN000002	23.55	29.40	16.70	2.60	2.40	171.00	1.1	-27.4	*/MB15
SEN000000	-48.40	-14.00	14.10	1.10	1.00	148.00	-2.3	-23.8	
SEY000000	42.25								1
SLM000000	147.50	159.00	-9.10	1.50	1.00	147.00	-1.2	-23.0	
SLV000000	-130.50	-89.00	13.70	0.80	0.80	90.00	-6.8	-24.9	
SMA000000	-159.00	-170.70	-14.20	0.80	0.80	90.00	-10.2	-31.1	*/MB2
SMO000000	-125.50	-172.10	-13.70	0.80	0.80	90.00	-6.6	-24.6	
SMR000000	16.50	12.50	43.90	0.80	0.80	90.00	-10.2	-30.3	
SNG000000	98.10	103.90	1.30	0.80	0.80	90.00	-7.3	-25.4	
SOM000000	98.40	46.00	6.30	3.10	1.00	72.00	-0.8	-25.5	
SPM000000	-8.00								1
SRL000000	-51.80	-11.90	8.50	0.80	0.80	90.00	-6.9	-25.4	
STP000000	30.25	7.00	1.00	0.80	0.80	90.00	-7.1	-27.0	
SUI000000	9.45	8.20	46.50	0.80	0.80	90.00	-10.2	-29.4	
SUR000000	-77.00	-55.60	3.90	1.00	0.90	37.00	-3.6	-23.2	

**10.70-10.95 GHz, 11.20-11.45 GHz, 12.75-13.25 GHz**

<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>
SWZ000000	30.10	31.30	-26.40	0.80	0.80	90.00	-10.2	-30.9	
SYR000000	18.00	38.60	35.30	1.10	1.00	32.00	-7.1	-28.3	
TCD000000	-9.90	18.40	15.60	3.50	1.60	97.00	5.0	-24.1	
TGO000000	-23.15	0.80	8.60	1.10	1.00	116.00	-2.7	-23.2	
THA000000	120.60	100.90	12.80	2.80	1.60	83.00	4.0	-22.6	
TON000000	-128.00	-175.20	-21.20	0.80	0.80	90.00	-6.7	-24.7	
TRD000000	-73.40	-61.10	10.80	0.80	0.80	90.00	-7.2	-27.3	
TUN000000	5.74	9.40	33.50	1.30	1.00	104.00	-5.9	-28.2	
TUR000000	8.50	34.10	38.90	2.80	1.00	171.00	0.0	-26.0	
TUV000000	158.00	179.20	-8.50	0.80	0.80	90.00	-7.1	-27.1	
TZA000000	67.50	35.40	-5.90	2.40	1.40	117.00	-1.3	-27.8	
UAE000000	63.50	53.80	24.90	1.10	1.00	12.00	-9.7	-30.4	
UGA000000	31.50	32.20	0.90	1.50	1.00	70.00	-6.3	-28.9	
UKR000000	50.50	35.43	49.71	1.14	0.80	174.61	-7.0	-28.1	
URG000000	-86.10	-56.30	-33.70	1.10	1.00	58.00	-6.5	-27.7	
USA000000	-101.00						11.2	-23.9	3, */MB16
USAVIPRT	-101.00	-64.50	17.80	0.80	0.80	90.00	-6.9	-25.5	*/MB16
VCT000000	-93.10	-61.10	13.20	0.80	0.80	90.00	-7.0	-26.2	
VEN000001	-82.70	-66.40	6.80	2.80	2.10	142.00	4.9	-22.8	*/MB17
VEN000002	-82.70	-63.60	15.70	0.80	0.80	90.00	-7.1	-27.0	*/MB17
VTN000000	107.00								1
VUT000000	150.70	168.40	-17.20	1.20	1.00	122.00	-2.4	-23.1	
WAK000000	-159.00	166.50	19.20	0.80	0.80	90.00	-10.2	-31.9	*/MB2
WAL000000	113.00	-177.10	-13.80	0.80	0.80	90.00	-6.0	-24.1	*/MB1
XCQ000000	-159.00	173.40	4.60	10.20	2.40	175.00	16.0	-16.0	*/MB2
XCS000000	-19.82	17.30	49.60	1.30	1.00	166.00	-5.1	-27.4	
XYU000000	43.04	18.70	44.40	1.10	1.00	161.00	-5.6	-27.3	
YEM000001	27.00	44.20	15.10	1.00	1.00	103.00	-9.8	-30.1	
YEM000002	108.00	49.90	14.80	1.40	1.00	53.00	-5.7	-26.9	
ZMB000000	39.55	27.90	-12.80	2.40	1.60	26.00	-3.0	-29.2	
ZWE000000	65.60	30.00	-18.90	1.50	1.10	140.00	-6.0	-28.9	



**MOD** COM5/385/82 (B18/405/85)

## ARTICLE 11

### **Period of validity of the provisions and associated Plan**

**MOD** COM5/385/83 (B18/405/86)

11.2 These provisions and associated Plan shall, in any event, remain in force until their revision by a competent world radiocommunication conference, convened in accordance with the relevant provisions of the ITU Constitution and Convention in force. (WRC-07)

**MOD** COM5/385/84 (B18/405/87)

## ANNEX 1 (WRC-03)

**MOD** COM5/385/85 (B18/405/88)

### **Parameters used in characterizing the fixed-satellite service allotment Plan**

**SUP** COM5/385/86 (B18/405/89)

#### **Section A – Technical data used in establishing the Allotment Plan and the associated provisions**

**MOD** COM5/385/87 (B18/405/90)

#### **1.2 Parameters used for calculating the earth station and space station power densities**

The carrier-to-noise ratio ( $C/N$ ) is as follows:

- a)* the uplink  $C/N$  ratio exceeds 21 dB under rain-faded conditions with a minimum earth station transmitter power density of  $-60$  dB(W/Hz) averaged over the necessary bandwidth of the modulated carrier;
- b)* the downlink  $C/N$  ratio exceeds 15 dB under rain-faded conditions;
- c)* for the 6/4 GHz bands, the above  $C/N$ s are exceeded for 99.95% of the year (NOTE – The rain attenuation margin is limited to a maximum of 8 dB);
- d)* for the 13/10-11 GHz bands, the above  $C/N$ s are exceeded for 99.9% of the year (NOTE – The rain attenuation margin is limited to a maximum of 8 dB);
- e)* the gaseous atmospheric attenuation and rain attenuation models used are those described in Recommendations ITU-R P.676-7 and ITU-R P.618-9. (WRC-07)

**MOD** COM5/385/88 (B18/405/91)

### **1.3 Earth station antenna elevation angle**

The minimum elevation angle for each test point included in the service area is based on the following:

- 10° for  $R_p \leq 40$  mm/h;
- 20° for  $40 < R_p \leq 70$  mm/h;
- 30° for  $70 < R_p \leq 100$  mm/h;
- 40° for  $R_p > 100$  mm/h.

Where  $R_p$  is the rainfall rate exceeded for any given percentage  $p$  of the average year, calculated in accordance with Recommendation ITU-R P.837-5. Administrations may select lower elevation angles for their service areas. For countries at high latitudes or with dispersed territories, in the absence of such a request, if the above values for minimum elevation angle are unobtainable, then the highest elevation angle leading to a non-zero range of possible orbital positions applies. In mountainous areas, the elevation angles are specified by the administrations concerned. (WRC-07)

**MOD** COM5/385/89 (B18/405/92)

### **1.4 Interference criteria**

The Plan has been prepared with a view to assuring for each allotment an overall aggregate carrier-to-interference value under free-space conditions of 21 dB or higher, and an overall single entry carrier-to-interference value under free-space conditions of 25 dB. (WRC-07)

**MOD** COM5/385/90 (B18/405/93)

### **1.6 Earth station characteristics**

1.6.1 The diameters of the earth station antennas are:

- 5.5 m for the 6/4 GHz band;
- 2.7 m for the 13/10-11 GHz band. (WRC-07)

1.6.2 The earth station receiving system noise temperature referred to the output of the receiving antenna is:

- 95 K for the 4 GHz band;
- 125 K for the 10-11 GHz band. (WRC-07)

1.6.3 The earth station antenna efficiency is 70%.

1.6.3bis The gains of the earth station antennas for the diameters and the efficiency specified above at the indicated evaluation frequencies are as follows:

- 50.4 dBi at 6 875 MHz;
- 47.0 dBi at 4 650 MHz;
- 49.8 dBi at 13.0 GHz;
- 48.4 dBi at 11.075 GHz. (WRC-07)

1.6.4  
07)

The applicable earth station reference antenna pattern is shown in Table 1 below. (WRC-

TABLE 1 (WRC-07)

$G_{max} = 10 \log (\eta(\pi D/\lambda)^2)$		dBi
$G(\varphi) = G_{max} - 2.5 \times 10^{-3} \left( \frac{D}{\lambda} \varphi \right)^2$	for $0 < \varphi < \varphi_m$	dBi
$G(\varphi) = \min (G_1, 29 - 25 \log \varphi)$	for $\varphi_m \leq \varphi \leq 19.95^\circ$	dBi
$G(\varphi) = \max (\min (-3.5, 32 - 25 \log \varphi), -10)$	for $\varphi > 19.95^\circ$	dBi
<p>where:</p> <div style="border: 1px solid black; padding: 5px; display: inline-block;"> <math>D</math>: antenna diameter  <math>\lambda</math>: wavelength         </div> } expressed in the same unit		
$\varphi$ : off-axis angle of the antenna (degrees)		
<div style="border: 1px solid black; padding: 5px; display: inline-block;"> <math>G_1</math>: gain of the first side lobe = <math>-1 + 15 \log \frac{D}{\lambda}</math> </div> dBi		
$\varphi_m = \frac{20\lambda}{D} \times \sqrt{G_{max} - G_1} \quad \text{degrees}$		
$\eta$ : antenna efficiency		

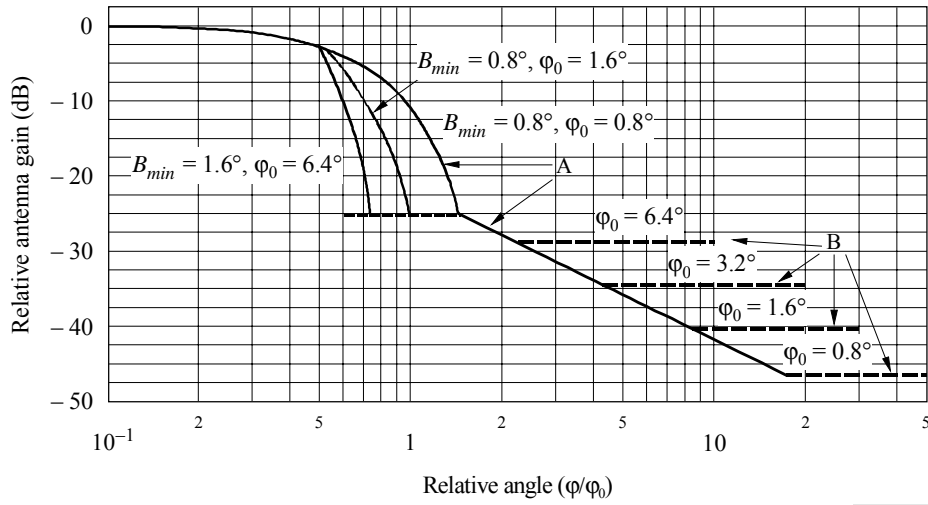
**MOD** COM5/385/91 (B18/405/94)

## 1.7 Space station characteristics (WRC-07)

1.7.1 The allotment Plan is based on the use of space station antennas with beams of elliptical cross-section.

1.7.2 The antenna radiation characteristics are as shown in Fig. 1.

FIGURE 1\* (WRC-07)  
Reference patterns for satellite antennas  
with fast roll-off in the main beam



RP/A1-02

\* Figure 1 represents patterns for some combinations of  $B_{min}$  and  $\phi_0$ . (WRC-07)

$$G_{max} = 44.45 - 10 \log (\phi_{01} \cdot \phi_{02}) \quad \text{dBi} \quad (\text{WRC-07})$$

Curve A: dB relative to main beam gain

$$-12 (\phi/\phi_0)^2 \quad \text{for } 0 \leq (\phi/\phi_0) \leq 0.5$$

$$-12 \left[ \frac{(\phi/\phi_0) - x}{B_{min}/\phi_0} \right]^2 \quad \text{for } 0.5 < (\phi/\phi_0) \leq \left( \frac{1.45 B_{min}}{\phi_0} + x \right)$$

$$-25.23 \quad \text{for } \left( \frac{1.45 B_{min}}{\phi_0} + x \right) < (\phi/\phi_0) \leq 1.45$$

$$-(22 + 20 \log (\phi/\phi_0)) \quad \text{for } (\phi/\phi_0) > 1.45$$

after intersection with Curve B: Curve B.

Curve B: Minus the on-axis gain (Curve B represents examples of four antennas having different values of  $\phi_0$  as labelled in Fig. 1. The on-axis gains of these antennas are approximately 28.3, 34.3, 40.4 and 46.4 dBi, respectively) (WRC-07)

where:

- $\phi$ : off-axis angle (degrees)
- $\phi_0$ : cross-sectional half-power beamwidth in the direction of interest (degrees)
- $\phi_{01}, \phi_{02}$ : major and minor axis half-power beamwidth, respectively, of elliptical beam (degrees) (WRC-07)

$$x = 0.5 \left( 1 - \frac{B_{min}}{\Phi_0} \right)$$

where:

$$B_{min} = \begin{cases} 0.8^\circ & \text{for 13/10-11 GHz} \\ 1.6^\circ & \text{for 6/4 GHz} \end{cases}$$

1.7.3 The space station receiving system noise temperature referred to the output of the receiving antenna is:

500 K for the 6 GHz band;

550 K for the 13 GHz band.

1.7.4 The minimum beamwidth size, in terms of the half-power beamwidth, is 1.6° for the 6/4 GHz band and 0.8° for the 13/10-11 GHz band.

1.7.5 The space station antenna efficiency is 55%.

1.7.6 The deviation of the space station antenna beam from its nominal pointing direction is limited to 0.1° in any direction. The rotation accuracy of elliptical beams is ±1.0°.

**SUP** COM5/385/93 (B18/405/96)

**Section B – Generalized parameters used for determining when the assignments of a proposed satellite network are in conformity with the Plan**

**SUP** COM5/385/94 (B18/405/97)

**ANNEX 2 (WRC-03)**

**Basic data to be furnished in notices relating to stations  
in the fixed-satellite service entering the design stage  
using frequency bands of the Plan**

**SUP** COM5/385/95 (B18/405/98)

**ANNEX 3A**

**Criteria for determining when proposed assignments  
are considered as being in conformity with the Plan**

**SUP** COM5/385/96 (B18/405/99)

## ANNEX 3B

### Macrosegmentation concept

**ADD** COM5/385/97 (B18/405/100)

## ANNEX 3 (WRC-07)

### Limits applicable to submissions received under Article 6 or Article 7<sup>1M</sup>

Under assumed free-space propagation conditions, the power flux-density (space-to-Earth) of a proposed new allotment or assignment produced on any portion of the surface of the Earth shall not exceed:

- $-127.5 \text{ dB(W/(m}^2 \cdot \text{MHz))}$  in the 4 500-4 800 MHz band; and
- $-114.0 \text{ dB(W/(m}^2 \cdot \text{MHz))}$  in the 10.70-10.95 GHz and 11.20-11.45 GHz bands.

Under assumed free-space propagation conditions, the power flux-density (Earth-to-space) of a proposed new allotment or assignment shall not exceed:

- $-140.0 \text{ dB(W/(m}^2 \cdot \text{MHz))}$  towards any location in the geostationary-satellite orbit located more than  $10^\circ$  from the proposed orbital position in the 6 725-7 025 MHz band, and
- $-133.0 \text{ dB(W/(m}^2 \cdot \text{MHz))}$  towards any location in the geostationary-satellite orbit located more than  $9^\circ$  from the proposed orbital position in the 12.75-13.25 GHz band.

**MOD** COM5/385/98 (B18/405/101)

## ANNEX 4 (Rev.WRC-07)

### Criteria for determining whether an allotment or an assignment is considered to be affected

An allotment or an assignment is considered as being affected by a proposed new allotment or assignment:

- 1 if the orbital spacing between its orbital position and the orbital position of the proposed new allotment or assignment is equal to or less than:
  - 1.1  $10^\circ$  in the 4 500-4 800 MHz (space-to-Earth) and 6 725-7 025 MHz (Earth-to-space) bands;
  - 1.2  $9^\circ$  in the 10.70-10.95 GHz (space-to-Earth), 11.20-11.45 GHz (space-to-Earth) and 12.75-13.25 GHz (Earth-to-space) bands;

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<sup>1M</sup> These limits shall not apply to assignments recorded in the List before 17 November 2007.

and

- 2 if at least one of the following three conditions is not satisfied:
- 2.1 the calculated<sup>1</sup> Earth-to-space single-entry carrier-to-interference  $(C/I)_u$  value at each test point associated with the allotment or assignment under consideration is greater than or equal to a reference value that is 30 dB, or  $(C/N)_u + 9$  dB<sup>2</sup>, or any already accepted Earth-to-space single-entry  $(C/I)_u$ <sup>3</sup>, whichever is the lowest;
- 2.2 the calculated<sup>1</sup> space-to-Earth single-entry  $(C/I)_d$  value everywhere within the service area of the allotment or assignment under consideration is greater than or equal to a reference value<sup>4</sup> that is 26.65 dB, or  $(C/N)_d + 11.65$  dB<sup>5</sup>, or any already accepted space-to-Earth single-entry  $(C/I)_d$  value, whichever is the lowest;
- 2.3 the calculated<sup>1</sup> overall aggregate  $(C/I)_{agg}$  value at each test point associated with the allotment or assignment under consideration, is greater than or equal to a reference value that is 21 dB, or  $(C/N)_t + 7$  dB<sup>6</sup>, or any already accepted overall aggregate  $(C/I)_{agg}$  value, whichever is the lowest, with a tolerance of 0.25 dB<sup>7</sup> in the case of assignments not stemming from the conversion of an allotment into an assignment without modification, or when the modification is within the envelope characteristics of the initial allotment.

**MOD** COM5/385/99 (B18/405/102)

## APPENDIX 1 TO ANNEX 4 (WRC-07)

### **Method for determination of the overall single-entry and aggregate carrier-to-interference value averaged over the necessary bandwidth of the modulated carrier**

#### **1 Single-entry $C/I$**

This section describes the method for calculating the single-entry interference potential.

The method is based on the single-entry carrier-to-interference ratio  $(C/I)$  which a given allotment or assignment made in accordance with the provisions of Appendix **30B** might experience due to an emission from the proposed new assignment or modification. The single-entry uplink  $(C/I)_u$  and downlink  $(C/I)_d$  values due to a single interfering satellite network are given by:

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<sup>1</sup> Including a computational precision of 0.05 dB.

<sup>2</sup>  $C/N_u$  is calculated as in Appendix 2 to this Annex.

<sup>3</sup> Excluding values accepted in accordance with § 6.15 of Article 6.

<sup>4</sup> The reference values within the service area are interpolated from the reference values on the test points.

<sup>5</sup>  $C/N_d$  is calculated as in Appendix 2 to this Annex.

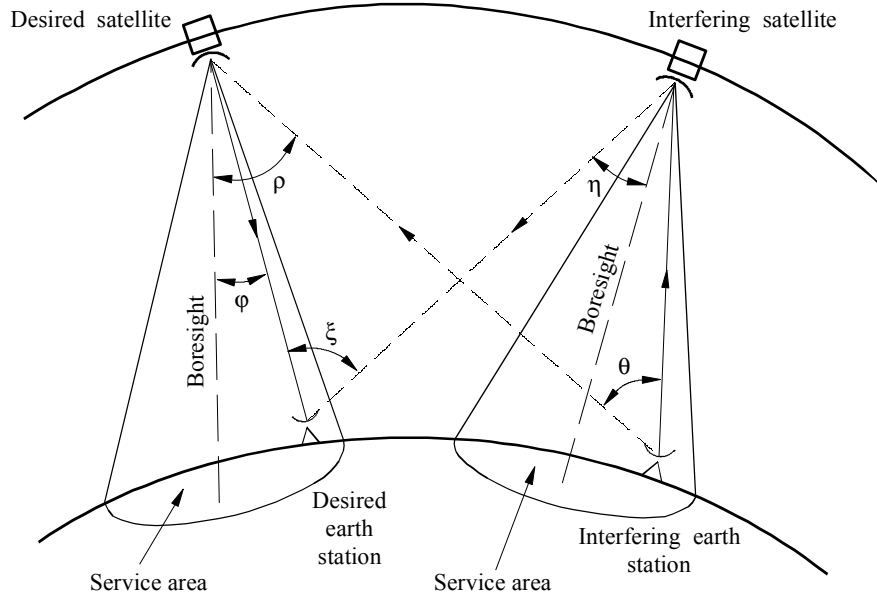
<sup>6</sup>  $(C/N)_t$  is calculated as in Appendix 2 of this Annex.

<sup>7</sup> Inclusive of the 0.05 dB computational precision.

$$(C/I)_u = 10 \log_{10} \left( \frac{p_1 g_1 g_2(\varphi) l_{su'}}{p_1' g_1'(\theta) g_2(\rho) l_{su}} \right), \text{ dB}$$

$$(C/I)_d = 10 \log_{10} \left( \frac{p_3 g_3(\varphi) g_4 l_{sd'}}{p_3' g_3'(\eta) g_4(\xi) l_{sd}} \right), \text{ dB}$$

FIGURE 1



AP30BA4-01

where:

$\theta, \varphi, \rho, \eta, \xi$  are angles as defined in Fig. 1, above.

In the following, all ratios are numerical power ratios.

- $p_1$ : the power density, averaged over the necessary bandwidth of the modulated carrier, fed into the desired earth station transmitting antenna (W/Hz)
- $g_1$ : the maximum gain of the desired transmitting earth station antenna
- $l_{su}$ : the free-space path loss of the desired up-path signal
- $l_{su'}$ : the free-space path loss of the interfering up-path signal
- $g_2(\varphi)$ : the gain of the desired space station receiving antenna in the direction of the desired earth station
- $g_2$ : the maximum gain of the desired space station receiving antenna
- $p_1'$ : the power density, averaged over the necessary bandwidth of the modulated carrier, fed into the interfering earth station transmitting antenna (W/Hz)
- $g_1'(\theta)$ : the interfering earth station antenna gain in the direction of the desired satellite



$l_{sd}$ :	the free-space path loss of the desired down-path signal
$l_{sd'}$ :	the free-space path loss of the interfering down-path signal
$g_2(\rho)$ :	the gain of the desired space station receiving antenna in the direction of the interfering earth station
$p_3$ :	the power density, averaged over the necessary bandwidth of the modulated carrier, fed into the desired space station transmitting antenna (W/Hz)
$g_3(\varphi)$ :	the desired space station transmitting antenna gain in the direction of the desired earth station
$g_3$ :	the maximum gain of the desired space station transmitting antenna
$g_4$ :	the maximum gain of the desired receiving earth station antenna
$p_3'$ :	the power density, averaged over the necessary bandwidth of the modulated carrier, fed into the interfering space station transmitting antenna (W/Hz)
$g_3'(\eta)$ :	the interfering space station transmitting antenna gain in the direction of the desired earth station
$g_4(\xi)$ :	the desired earth station receiving antenna gain in the direction of the interfering satellite

The overall single-entry  $(C/I)_t$  at a given downlink test point due to a single interfering allotment or assignment is given by:

$$(C/I)_t = -10 \log_{10} \left[ 10^{-\frac{(C/I)_{u_{min}}}{10}} + 10^{-\frac{(C/I)_d}{10}} \right] \text{ dB}$$

where:

$(C/I)_{u_{min}}$ : the lowest uplink  $C/I$  value among all uplink test points

$(C/I)_d$ : the downlink  $C/I$  value at the test point under consideration.

NOTE – When only one of the uplink or the downlink is implemented in the bands subject to Appendix 30B, only the contribution from the link that is implemented in the bands subject to Appendix 30B shall be considered in calculating  $(C/I)_t$ .

## 2 Aggregate $C/I$

The aggregate  $(C/I)_{agg}$  at a given downlink test point is given by:

$$(C/I)_{agg} = -10 \log_{10} \left( \sum_j^n 10^{-\frac{(C/I)_{t_j}}{10}} \right) \text{ dB}$$

$$j = 1, 2, 3 \dots n,$$

where:

$(C/I)_i$ : overall carrier-to-interference ratio due to interference from the  $i$ -th allotment or assignment calculated using the method for overall single-entry  $(C/I)_i$  as provided in § 1 of Appendix 1 to this Annex; and

where:

$n$ : the total number of interfering allotments or assignments for which the orbital separation with the desired satellite is less than or equal to  $10^\circ$  in the case of the 6/4 GHz band and less than or equal to  $9^\circ$  in the case of the 13/10-11 GHz band.

**ADD** COM5/385/100 (B18/405/103)

## APPENDIX 2 TO ANNEX 4 (WRC-07)

### Method for determination of the carrier-to-noise ( $C/N$ ) values

The uplink carrier-to noise value  $(C/N)_u$  and the downlink carrier-to-noise value  $(C/N)_d$  are calculated as follows:

$$(C/N)_u = 10 \log_{10} \left( \frac{p_1 \cdot g_1 \cdot g_2(\varphi)}{k \cdot T_s \cdot l_{su}} \right) \quad \text{dB}$$

$$(C/N)_d = 10 \log_{10} \left( \frac{p_3 \cdot g_4 \cdot g_3(\varphi)}{k \cdot T_e \cdot l_{sd}} \right) \quad \text{dB}$$

where:

In the following, all ratios are numerical power ratios.

- |                  |   |
|------------------|---|
| $p_1$ :          | the power density, averaged over the necessary bandwidth of the modulated carrier, fed into the earth station transmitting antenna (W/Hz) |
| $g_1$ :          | the maximum gain of the transmitting earth station antenna  |
| $l_{su}$ :       | the free-space path loss of the up-path signal  |
| $g_2(\varphi)$ : | the gain of the space station receiving antenna in the direction of the earth station   |
| $T_s$ :          | the space station receiving system noise temperature referred to the output of the receiving antenna                                      |
| $p_3$ :          | the power density, averaged over the necessary bandwidth of the modulated carrier, fed into the space station transmitting antenna (W/Hz) |
| $g_3(\varphi)$ : | the space station transmitting antenna gain in the direction of the earth station   |
| $l_{sd}$ :       | the free-space path loss of the down-path signal  |
| $g_4$ :          | the maximum gain of the receiving earth station antenna   |
| $T_e$ :          | the earth station receiving system noise temperature, referred to the output of the receiving antenna                                     |
| $k$ :            | Boltzmann's constant.   |

The overall carrier-to-noise value  $(C/N)_t$  is then calculated as follows:

$$(C/N)_t = -10 \log_{10} \left[ 10^{-\frac{(C/N)_{u_{min}}}{10}} + 10^{-\frac{(C/N)_d}{10}} \right] \text{ dB}$$

where:

$(C/N)_{u_{min}}$ : the lowest uplink  $C/N$  value among all test points,

$(C/N)_d$ : the downlink  $C/N$  value at the test point under consideration.

NOTE – When only one of the uplink or the downlink is implemented in the bands subject to Appendix **30B**, only the contribution from the link that is implemented in the bands subject to Appendix **30B** shall be considered in calculating  $(C/N)_t$ .

**SUP** COM5/385/101 (B18/405/104)

ANNEX 5 (WRC-03)

### **Application of the PDA (predetermined arc) concept**

**SUP** COM5/385/102 (B18/405/105)

ANNEX 6 (WRC-03)

### **Technical means which may be used to avoid incompatibilities between systems in the fixed-satellite service at their implementation stage**

**MOD** COM4/211/19 (B3/224/32) (R2/266/21)

APPENDIX 42 (Rev.WRC-07)

### **Table of allocation of international call sign series**

(See Article 19)

1) SUP the following entries from the current Table:

Call sign series	Allocated to
T9A-T9Z	Bosnia and Herzegovina
YTA-YUZ	Serbia and Montenegro
YZA-YZZ	Serbia and Montenegro
4NA-4OZ	Serbia and Montenegro

2) ADD the following entries to the current Table:

Call sign series	Allocated to	
E5A-E5Z	New Zealand – Cook Islands	(WRC-07)
E7A-E7Z	Bosnia and Herzegovina	(WRC-07)
XXA-XXZ	China (People’s Republic of) – Macao	(WRC-07)
YTA-YUZ	Serbia (Republic of)	(WRC-07)
4OA-4OZ	Montenegro (Republic of)	(WRC-07)

# **RESOLUTIONS**

RESOLUTION 18 (Rev.WRC-07)

**Relating to the procedure for identifying and announcing the position of ships and aircraft of States not parties to an armed conflict<sup>1</sup>**

The World Radiocommunication Conference (Geneva, 2007),

*considering*

- a) that ships and aircraft encounter considerable risk in the vicinity of an area of armed conflict;
- b) that for the safety of life and property it is desirable for ships and aircraft of States not parties to an armed conflict to be able to identify themselves and announce their position in such circumstances;
- c) that radiocommunication offers such ships and aircraft a rapid means of self-identification and providing location information prior to their entering areas of armed conflict and during their passage through the areas;
- d) that it is considered desirable to provide a supplementary signal and procedure for use, in accordance with customary practice, in the area of armed conflict by ships and aircraft of States representing themselves as not parties to an armed conflict,

*resolves*

1 that the frequencies for urgency signal and messages specified in the Radio Regulations may be used by ships and aircraft of States not parties to an armed conflict for self-identification and establishing communications. The transmission will consist of the urgency or safety signals, as appropriate, described in Article 33 followed by the addition of the single group "NNN" in radiotelegraphy and by the addition of the single word "NEUTRAL" pronounced as in French "neutral" in radiotelephony. As soon as practicable, communications shall be transferred to an appropriate working frequency;

2 that the use of the signal as described in the preceding paragraph indicates that the message which follows concerns a ship or aircraft of a State not party to an armed conflict. The message shall convey at least the following data:

- a) call sign or other recognized means of identification of such ship or aircraft;
- b) position of such ship or aircraft;
- c) number and type of such ships or aircraft;
- d) intended route;
- e) estimated time en route and of departure and arrival, as appropriate;
- f) any other information, such as flight altitude, radio frequencies guarded, languages and secondary surveillance radar modes and codes;

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<sup>1</sup> Administrations are invited to study the text of this Resolution and provide any proposals to a future competent Conference.

3 that the provisions of Article **33** relating to urgency and safety transmissions, and medical transports shall apply as appropriate to the use of the urgency and safety signals, respectively, by such ship or aircraft;

4 that the identification and location of ships of a State not party to an armed conflict may be effected by means of appropriate standard maritime radar transponders. The identification and location of aircraft of a State not party to an armed conflict may be effected by the use of the secondary surveillance radar (SSR) system in accordance with procedures to be recommended by the International Civil Aviation Organization (ICAO);

5 that the use of the signals described above would not confer or imply recognition of any rights or duties of a State not party to an armed conflict or a party to the conflict, except as may be recognized by common agreement between the parties to the conflict and a non-party;

6 to encourage parties to a conflict to enter into such agreements,

*requests the Secretary-General*

to communicate the contents of this Resolution to the International Maritime Organization, the International Civil Aviation Organization, the International Committee of the Red Cross, and the International Federation of Red Cross and Red Crescent Societies for such action as they may consider appropriate,

*requests ITU-R*

to recommend an appropriate signal in the digital selective calling system for use in the maritime mobile service and other appropriate information as necessary, in consultation with concerned organizations.

**SUP** COM4/211/20 (B3/224/33) (R2/266/22)

## RESOLUTION 21 (Rev.WRC-03)

### **Implementation of changes in frequency allocations between 5900 kHz and 19020 kHz**

RESOLUTION 26 (Rev.WRC-07)

**Footnotes to the Table of Frequency Allocations in  
Article 5 of the Radio Regulations**

The World Radiocommunication Conference (Geneva, 2007),

*considering*

- a) that footnotes are an integral part of the Table of Frequency Allocations in the Radio Regulations and, as such, form part of an international treaty text;
- b) that footnotes to the Table of Frequency Allocations should be clear, concise and easy to understand;
- c) that footnotes should relate directly to matters of frequency allocation;
- d) that, in order to ensure that footnotes allow modification of the Table of Frequency Allocations without introducing unnecessary complications, principles relating to the use of footnotes are needed;
- e) that, currently, footnotes are adopted by competent world radiocommunication conferences and any addition, modification or deletion of a footnote is considered and adopted by the competent conference;
- f) that some problems concerning country footnotes may be resolved through the application of a special agreement envisaged by Article 6;
- g) that, in certain cases, administrations are confronted with major difficulties due to inconsistencies or omissions in footnotes;
- h) that, in order to keep the footnotes to the Table of Frequency Allocations up to date, there should be clear and effective guidelines for additions, modifications and deletions of footnotes,

*resolves*

- 1 that, wherever possible, footnotes to the Table of Frequency Allocations should be confined to altering, limiting or otherwise changing the relevant allocations rather than dealing with the operation of stations, assignment of frequencies or other matters;
- 2 that the Table of Frequency Allocations should include only those footnotes which have international implications for the use of the radio-frequency spectrum;
- 3 that new footnotes to the Table of Frequency Allocations should only be adopted in order to:
  - a) achieve flexibility in the Table of Frequency Allocations;
  - b) protect the relevant allocations in the body of the Table and in other footnotes in accordance with Section II of Article 5;
  - c) introduce either transitional or permanent restrictions on a new service to achieve compatibility; or
  - d) meet the specific requirements of a country or area when it is impracticable to satisfy such needs otherwise within the Table of Frequency Allocations;



4 that footnotes serving a common purpose should be in a common format, and, where possible, be grouped into a single footnote with appropriate references to the relevant frequency bands,

*further resolves*

1 that any addition of a new footnote or modification of an existing footnote should be considered by a world radiocommunication conference only when:

- a) the agenda of that conference explicitly includes the frequency band to which the proposed additional or modified footnote relates; or
- b) the frequency bands to which the desired additions or modifications of the footnote belong are considered during the conference and the conference decides to make a change in those bands; or
- c) the addition or modification of footnotes is specifically included in the agenda of the conference as a result of the consideration of proposals submitted by one or more interested administration(s);

2 that recommended agendas for future world radiocommunication conferences should include a standing agenda item which would allow for the consideration of proposals by administrations for deletion of country footnotes, or country names in footnotes, if no longer required;

3 that in cases not covered by *further resolves* 1 and 2, proposals for new footnotes or modification of existing footnotes could exceptionally be considered by a world radiocommunication conference if they concern corrections of obvious omissions, inconsistencies, ambiguities or editorial errors and have been submitted to ITU as stipulated in No. 40 of the General Rules of Conferences, Assemblies and Meetings of the Union (Antalya, 2006),

*urges administrations*

1 to review footnotes periodically and to propose the deletion of their country footnotes or of their country names from footnotes, as appropriate;

2 to take account of the *further resolves* above in making proposals to world radiocommunication conferences.

**MOD** COM6/206/1 (B2/213/1) (R1/221/6)

## RESOLUTION 27 (Rev.WRC-07)

### **Use of incorporation by reference in the Radio Regulations**

The World Radiocommunication Conference (Geneva, 2007),

*considering*

- a) that the principles of incorporation by reference were adopted by WRC-95, revised by WRC-97 and further refined by WRC-2000 (see Annexes 1 and 2 to this Resolution);
- b) that there are provisions in the Radio Regulations containing references which fail to distinguish adequately whether the status of the referenced text is mandatory or non-mandatory,

*noting*

that references to Resolutions or Recommendations of a world radiocommunication conference (WRC) require no special procedures, and are acceptable for consideration, since such texts will have been agreed by a WRC,

*resolves*

- 1 that for the purposes of the Radio Regulations, the term “incorporation by reference” shall only apply to those references intended to be mandatory;
- 2 that when considering the introduction of new cases of incorporation by reference, such incorporation shall be kept to a minimum and made by applying the following criteria:
  - only texts which are relevant to a specific WRC agenda item may be considered;
  - the correct method of reference shall be determined on the basis of the principles set out in Annex 1 to this Resolution;
  - the guidance contained in Annex 2 to this Resolution shall be applied in order to ensure that the correct method of reference for the intended purpose is employed;
- 3 that the procedure described in Annex 3 to this Resolution shall be applied for approving the incorporation by reference of ITU-R Recommendations or parts thereof;
- 4 that existing references to ITU-R Recommendations shall be reviewed to clarify whether the reference is mandatory or non-mandatory in accordance with Annex 2 to this Resolution;
- 5 that ITU-R Recommendations, or parts thereof, incorporated by reference at the conclusion of each WRC shall be collated and published in a volume of the Radio Regulations (see Annex 3 to this Resolution),

*instructs the Director of the Radiocommunication Bureau*

- 1 to bring this Resolution to the attention of the Radiocommunication Assembly and the ITU-R Study Groups;
- 2 to identify the provisions and footnotes of the Radio Regulations containing references to ITU-R Recommendations and make suggestions on any further action to the second session of the Conference Preparatory Meeting (CPM) for its consideration, as well as for inclusion in the Director’s Report to the next WRC;
- 3 to identify the provisions and footnotes of the Radio Regulations containing references to WRC Resolutions that contain references to ITU-R Recommendations, and make suggestions on any further action to the second session of the Conference Preparatory Meeting (CPM) for its consideration, as well as for inclusion in the Director’s Report to the next WRC,

*invites administrations*

to submit proposals to future conferences, taking into account the CPM Report, in order to clarify the status of references, where ambiguities remain regarding the mandatory or non-mandatory status of the references in question, with a view to amending those references:

- i) that appear to be of a mandatory nature, identifying such references as being incorporated by reference by using clear linking language in accordance with Annex 2;
- ii) that are of a non-mandatory character, so as to refer to “the most recent version” of the Recommendations.

## ANNEX 1 TO RESOLUTION 27 (Rev.WRC-07)

### Principles of incorporation by reference

- 1 For the purposes of the Radio Regulations, the term “incorporation by reference” shall apply only to those references intended to be mandatory.
- 2 Where the relevant texts are brief, the referenced material should be placed in the body of the Radio Regulations rather than using incorporation by reference.
- 2bis* Where a mandatory reference to an ITU-R Recommendation, or parts thereof, is included in the *resolves* of a WRC Resolution, which is itself cited in a provision or footnote of the Radio Regulations using mandatory language (i.e. "shall"), that ITU-R Recommendation or parts thereof shall also be considered as incorporated by reference.
- 3 Texts which are of a non-mandatory nature or which refer to other texts of a non-mandatory nature shall not be considered for incorporation by reference.
- 4 If, on a case-by-case basis, it is decided to incorporate material by reference on a mandatory basis, then the following provisions shall apply:
  - 4.1 the text incorporated by reference shall have the same treaty status as the Radio Regulations themselves;
  - 4.2 the reference must be explicit, specifying the specific part of the text (if appropriate) and the version or issue number;
  - 4.3 the text incorporated by reference must be submitted for adoption by a competent WRC in accordance with *resolves* 3;
  - 4.4 all texts incorporated by reference shall be published following a WRC, in accordance with *resolves* 5.
- 5 If, between WRCs, a text incorporated by reference (e.g. an ITU-R Recommendation) is updated, the reference in the Radio Regulations shall continue to apply to the earlier version incorporated by reference until such time as a competent WRC agrees to incorporate the new version. The mechanism for considering such a step is given in Resolution **28 (Rev.WRC-03)**.

## ANNEX 2 TO RESOLUTION 27 (Rev.WRC-07)

### Application of incorporation by reference

When introducing new cases of incorporation by reference in the provisions of the Radio Regulations or reviewing existing cases of incorporation by reference, administrations and ITU-R should address the following factors in order to ensure that the correct method of reference is employed for the intended purpose, according to whether each reference is mandatory (i.e. incorporated by reference), or non-mandatory:

#### Mandatory references

- 1 mandatory references shall use clear linking language, i.e. “shall”;
- 2 mandatory references shall be explicitly and specifically identified, e.g. “Recommendation ITU-R M.541-8”;

3 if the intended reference material is, as a whole, unsuitable as treaty-status text, the reference shall be limited to just those portions of the material in question which are of a suitable nature, e.g. “Annex A to Recommendation ITU-R Z.123-4”.

#### **Non-mandatory references**

4 Non-mandatory references or ambiguous references that are determined to be of a non-mandatory character (i.e. not incorporated by reference) shall use appropriate language, such as “should” or “may”. This appropriate language may refer to “the most recent version” of a Recommendation. Any appropriate language may be changed at any future WRC.

### **ANNEX 3 TO RESOLUTION 27 (Rev.WRC-07)**

#### **Procedures applicable by WRC for approving the incorporation by reference of ITU-R Recommendations or parts thereof**

The referenced texts shall be made available to delegations in sufficient time for all administrations to consult them in the ITU languages. A single copy of the texts shall be made available to each administration as a conference document.

During the course of each WRC, a list of the texts incorporated by reference shall be developed and maintained by the committees. This list shall be published as a conference document in line with developments during the conference.

Following the end of each WRC, the Bureau and General Secretariat will update the volume of the Radio Regulations which serves as the repository of texts incorporated by reference in line with developments at the conference as recorded in the above-mentioned document.

**MOD** COM5/384/1 (B16/401/8)

### **RESOLUTION 49 (Rev.WRC-07)**

#### **Administrative due diligence applicable to some satellite radiocommunication services**

The World Radiocommunication Conference (Geneva, 2007),

*considering*

*a)* that Resolution 18 of the Plenipotentiary Conference (Kyoto, 1994) instructed the Director of the Radiocommunication Bureau to initiate a review of some important issues concerning international satellite network coordination and to make a preliminary report to WRC-95 and a final report to WRC-97;

*b)* that the Director of the Bureau provided a comprehensive report to WRC-97, including a number of recommendations for action as soon as possible and for identifying areas requiring further study;

*c)* that one of the recommendations in the Director’s report to WRC-97 was that administrative due diligence should be adopted as a means of addressing the problem of reservation of orbit and spectrum capacity without actual use;

- d) that experience may need to be gained in the application of the administrative due diligence procedures adopted by WRC-97, and that several years may be needed to see whether administrative due diligence measures produce satisfactory results;
- e) that new regulatory approaches may need to be carefully considered in order to avoid adverse effects on networks already going through the different phases of the procedures;
- f) that Article 44 of the Constitution sets out the basic principles for the use of the radio-frequency spectrum and the geostationary-satellite and other satellite orbits, taking into account the needs of developing countries,

*considering further*

- g) that WRC-97 decided to reduce the regulatory time-frame for bringing a satellite network into use;
- h) that WRC-2000 has considered the results of the implementation of the administrative due diligence procedures and prepared a report to the 2002 Plenipotentiary Conference in response to Resolution 85 (Minneapolis, 1998),

*resolves*

1 that the administrative due diligence procedure contained in Annex 1 to this Resolution shall be applied as from 22 November 1997 for a satellite network or satellite system of the fixed-satellite service, mobile-satellite service or broadcasting-satellite service for which the advance publication information under No. **9.2B**, or for which the request for modifications of the Region 2 Plan under Article 4, § 4.2.1 *b*) of Appendices **30** and **30A** that involve the addition of new frequencies or orbit positions, or for which the request for modifications of the Region 2 Plan under Article 4, § 4.2.1 *a*) of Appendices **30** and **30A** that extend the service area to another country or countries in addition to the existing service area, or for which the request for additional uses in Regions 1 and 3 under § 4.1 of Article 4 of Appendices **30** and **30A**, or for which the submission of information under supplementary provisions applicable to additional uses in the planned bands as defined in Article 2 of Appendix **30B** (Section III of Article 6) has been received by the Bureau from 22 November 1997, or for which submission under Article 6 of Appendix **30B** (**Rev.WRC-07**) is received on or after 17 November 2007, with the exception of submissions of new Member States seeking the acquisition of their respective national allotments<sup>1</sup> for inclusion in the Appendix **30B** Plan;

2 that for a satellite network or satellite system within the scope of § 1 or 3 of Annex 1 to this Resolution not yet recorded in the Master International Frequency Register (MIFR) by 22 November 1997, for which the advance publication information under No. **1042** of the Radio Regulations (edition of 1990, revised in 1994) or for the application of Section III of Article 6 of Appendix **30B** has been received by the Bureau before 22 November 1997, the responsible administration shall submit to the Bureau the complete due diligence information in accordance with Annex 2 to this Resolution not later than 21 November 2004, or before the expiry of the notified period for bringing the satellite network into use, plus any extension period which shall not exceed three years pursuant to the application of No. **1550** of the Radio Regulations (edition of 1990, revised in 1994) or the dates specified in the relevant provisions Article 6 of Appendix **30B**, whichever date comes earlier. If the date of bringing into use, including extension specified above, is before 1 July 1998, the responsible administration shall submit to the Bureau the complete due diligence information in accordance with Annex 2 to this Resolution not later than 1 July 1998;

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<sup>1</sup> See § 2.3 of Appendix **30B** (**Rev.WRC-07**).

*2bis* that for a satellite network or satellite system within the scope of § 2 of Annex 1 to this Resolution not recorded in the MIFR by 22 November 1997, for which the request for a modification to the Plans of Appendices **30** and **30A** has been received by the Bureau before 22 November 1997, the responsible administration shall submit to the Bureau the complete due diligence information in accordance with Annex 2 to this Resolution as early as possible before the end of the period established as a limit to bringing into use in accordance with the relevant provisions of Article 4 of Appendix **30** and the relevant provisions of Article 4 of Appendix **30A**;

3 that for a satellite network or satellite system within the scope of § 1, 2 or 3 of Annex 1 to this Resolution recorded in the MIFR by 22 November 1997, the responsible administration shall submit to the Bureau the complete due diligence information in accordance with Annex 2 to this Resolution not later than 21 November 2000, or before the notified date of bringing the satellite network into use (including any extension period), whichever date comes later;

4 that six months before the expiry date specified in *resolves* 2 or *2bis* above, if the responsible administration has not submitted the due diligence information, the Bureau shall send a reminder to that administration;

5 that if the due diligence information is found to be incomplete, the Bureau shall immediately request the administration to submit the missing information. In any case, the complete due diligence information shall be received by the Bureau before the expiry date specified in *resolves* 2 or *2bis* above, as appropriate, and shall be published by the Bureau in the International Frequency Information Circular (BR IFIC);

6 that if the complete due diligence information is not received by the Bureau before the expiry date specified in *resolves* 2 or *2bis* above, the request for coordination or request for a modification to the Plans of Appendices **30** and **30A** or for application of Section III of Article 6 of Appendix **30B** as covered by *resolves* 1 above submitted to the Bureau shall be cancelled. Any modifications of the Plans (Appendices **30** and **30A**) shall lapse and any recording in the MIFR as well as recordings in the Appendix **30B** List shall be deleted by the Bureau after it has informed the concerned administration. The Bureau shall publish this information in the BR IFIC,

*further resolves*

that the procedures in this Resolution are in addition to the provisions under Article **9** or **11** of the Radio Regulations or Appendices **30**, **30A** or **30B**, as applicable, and, in particular, do not affect the requirement to coordinate under those provisions (Appendices **30**, **30A**) in respect of extending the service area to another country or countries in addition to the existing service area,

*instructs the Director of the Radiocommunication Bureau*

to report to future competent world radiocommunication conferences on the results of the implementation of the administrative due diligence procedure.

## ANNEX 1 TO RESOLUTION 49 (Rev.WRC-07)

1 Any satellite network or satellite system of the fixed-satellite service, mobile-satellite service or broadcasting-satellite service with frequency assignments that are subject to coordination under Nos. **9.7, 9.11, 9.12, 9.12A and 9.13** and Resolution **33 (Rev.WRC-03)** shall be subject to these procedures.

2 Any request for modifications of the Region 2 Plan under the relevant provisions of Article 4 of Appendices **30** and **30A** that involve the addition of new frequencies or orbit positions or for modifications of the Region 2 Plan under the relevant provisions of Article 4 of Appendices **30** and **30A** that extend the service area to another country or countries in addition to the existing service area or request for additional uses in Regions 1 and 3 under the relevant provisions of Article 4 of Appendices **30** and **30A** shall be subject to these procedures.

3 Any submission of information under Article 6 of Appendix **30B (Rev.WRC-07)**, with the exception of submissions of new Member States seeking the acquisition of their respective national allotments<sup>2</sup> for inclusion in the Appendix **30B** Plan, shall be subject to these procedures.

4 An administration requesting coordination for a satellite network under § 1 above shall send to the Bureau as early as possible before the end of the period established as a limit to bringing into use in No. **9.1**, the due diligence information relating to the identity of the satellite network and the spacecraft manufacturer specified in Annex 2 to this Resolution.

5 An administration requesting a modification of the Region 2 Plan or additional uses in Regions 1 and 3 under Appendices **30** and **30A** under § 2 above shall send to the Bureau as early as possible before the end of the period established as a limit to bringing into use in accordance with the relevant provisions of Article 4 of Appendix **30** and the relevant provisions of Article 4 of Appendix **30A**, the due diligence information relating to the identity of the satellite network and the spacecraft manufacturer specified in Annex 2 to this Resolution.

6 An administration applying Article 6 of Appendix **30B (Rev.WRC-07)** under § 3 above shall send to the Bureau as early as possible before the end of the period established as a limit to bringing into use in § 6.1 of that Article, the due diligence information relating to the identity of the satellite network and the spacecraft manufacturer specified in Annex 2 to this Resolution.

7 The information to be submitted in accordance with § 4, 5 or 6 above shall be signed by an authorized official of the notifying administration or of an administration that is acting on behalf of a group of named administrations.

8 On receipt of the due diligence information under § 4, 5 or 6 above, the Bureau shall promptly examine that information for completeness. If the information is found to be complete, the Bureau shall publish the complete information in a special section of the BR IFIC within 30 days.

9 If the information is found to be incomplete, the Bureau shall immediately request the administration to submit the missing information. In all cases, the complete due diligence information shall be received by the Bureau within the appropriate time period specified in § 4, 5 or 6 above, as the case may be, relating to the date of bringing the satellite network into use.

10 Six months before expiry of the period specified in § 4, 5 or 6 above and if the administration responsible for the satellite network has not submitted the due diligence information under § 4, 5 or 6 above, the Bureau shall send a reminder to the responsible administration.

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<sup>2</sup> See § 2.3 of Appendix **30B (Rev.WRC-07)**.

11 If the complete due diligence information is not received by the Bureau within the time limits specified in this Resolution, the networks covered by § 1, 2 or 3 above shall no longer be taken into account and shall not be recorded in the MIFR. The provisional recording in the MIFR shall be deleted by the Bureau after it has informed the concerned administration. The Bureau shall publish this information in the BR IFIC.

With respect to the request for modification of the Region 2 Plan or for additional uses in Regions 1 and 3 under Appendices **30** and **30A** under § 2 above, the modification shall lapse if the due diligence information is not submitted in accordance with this Resolution.

With respect to the request for application of Article 6 of Appendix **30B (Rev.WRC-07)** under § 3 above, the network shall also be deleted from the Appendix **30B** List. When an allotment under Appendix **30B** is converted into an assignment, the assignment shall be reinstated in the Plan in accordance with § 6.33 c) of Article 6 of Appendix **30B (Rev.WRC-07)**.

12 An administration notifying a satellite network under § 1, 2 or 3 above for recording in the MIFR shall send to the Bureau, as early as possible before the date of bringing into use, the due diligence information relating to the identity of the satellite network and the launch services provider specified in Annex 2 to this Resolution.

13 When an administration has completely fulfilled the due diligence procedure but has not completed coordination, this does not preclude the application of No. **11.41** by that administration.

## ANNEX 2 TO RESOLUTION 49 (Rev.WRC-07)

### **A Identity of the satellite network**

- a)* Identity of the satellite network
- b)* Name of the administration
- c)* Country symbol
- d)* Reference to the advance publication information or to the request for modification of the Region 2 Plan or for additional uses in Regions 1 and 3 under Appendices **30** and **30A**; or reference to the information processed under Article 6 of Appendix **30B (Rev.WRC-07)**
- e)* Reference to the request for coordination (not applicable for Appendices **30**, **30A** and **30B**)
- f)* Frequency band(s)
- g)* Name of the operator
- h)* Name of the satellite
- i)* Orbital characteristics.



**B           Spacecraft manufacturer\***

- a)*       Name of the spacecraft manufacturer
- b)*       Date of execution of the contract
- c)*       Contractual “delivery window”
- d)*       Number of satellites procured.

**C           Launch services provider**

- a)*       Name of the launch vehicle provider
- b)*       Date of execution of the contract
- c)*       Launch or in-orbit delivery window
- d)*       Name of the launch vehicle
- e)*       Name and location of the launch facility.

**MOD**       COM5/307/31    (B11/329/38) (R6/410/69)

**RESOLUTION 55 (Rev.WRC-07)**

**Electronic submission of notice forms for satellite networks, earth stations and radio astronomy stations**

The World Radiocommunication Conference (Geneva, 2007),

*considering*

that submission of notices for all satellite networks, earth stations and radio astronomy stations in electronic format would further facilitate the tasks of the Radiocommunication Bureau and of administrations, and would accelerate the processing of these notices,

*recognizing*

that, should the processing delays related to the coordination and notification procedures extend beyond the periods specified in Articles **9** and **11** as well as in Appendices **30**, **30A** and **30B**, administrations may be faced with a shortened time window in which to effect coordination,

*resolves*

1           that, as from 3 June 2000, all notices (AP4/II and AP4/III), radio astronomy notices (AP4/IV) and API (AP4/V and AP4/VI) and due diligence information (Resolution **49 (WRC-07)**) for satellite networks and earth stations submitted to the Radiocommunication Bureau pursuant to Articles **9** and **11** shall be submitted in electronic format which is compatible with the BR electronic notice form capture software (SpaceCap);

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\* NOTE – In cases where a contract for satellite procurement covers more than one satellite, the relevant information shall be submitted for each satellite.

2 that, as from 17 November 2007, all notices for satellite networks, earth stations and radio astronomy stations submitted to the Radiocommunication Bureau pursuant to Articles 9 and 11, as well as Appendices 30 and 30A and Resolution 49 (WRC-07), shall be submitted in electronic format which is compatible with the BR electronic notice form capture software (SpaceCap and SpaceCom);

3 that, as from 1 June 2008, all notices for satellite networks and earth stations submitted to the Radiocommunication Bureau pursuant to Appendix 30B shall be submitted in electronic format which is compatible with the BR electronic notice form capture software (SpaceCap);

4 that, since 3 June 2000, all graphical data associated with the submissions addressed in *resolves* 1, 2 and 3 should be submitted in graphics data format which is compatible with the Bureau's data capture software (graphical interference management system (GIMS)); submission of graphics in paper form, however, continues to be accepted,

*instructs the Radiocommunication Bureau*

1 to make available coordination requests and notifications referred to in *resolves* 1, “as received”, on its BR International Frequency Information Circular CD-ROM, within 30 days of receipt, and also on its website;

2 to provide administrations with the latest versions of the capture and validation software and any necessary technical means, training and manuals, along with any assistance requested by administrations to enable them to comply with *resolves* 1 to 4 above;

3 to integrate the validation software with the capture software to the extent practicable,

*urges administrations*

to submit, as soon as practicable, the graphical data relating to their notices in a format compatible with the Bureau's graphic data capture software.

**MOD** COM6/269/1 (B7/283/7) (R5/336/2)

## RESOLUTION 63 (Rev.WRC-07)

### **Protection of radiocommunication services against interference caused by radiation from industrial, scientific and medical (ISM) equipment**

The World Radiocommunication Conference (Geneva, 2007),

*considering*

a) that ISM applications are defined under RR 1.15 as “operation of equipment or appliances designed to generate and use locally radio frequency energy for industrial, scientific, medical, domestic or similar purposes, excluding applications in the field of *telecommunications*”;

b) that ISM equipment may be situated in locations where outward radiation cannot always be avoided;

c) that there is an increasing amount of ISM equipment working on various frequencies throughout the spectrum;

- d) that in some cases a considerable part of the energy may be radiated by ISM equipment outside its working frequency;
- e) that Recommendation ITU-R SM.1056 recommends to administrations the use of International Special Committee on Radio Interference (CISPR) Publication 11 as a guide for ISM equipment to protect radiocommunication services, but that CISPR 11 does not yet fully specify radiation limits for all frequency bands;
- f) that some radio services, especially those using low field strengths, may suffer interference caused by radiation from ISM equipment, a risk which is unacceptable particularly in the case of radionavigation or other safety services;
- g) that, in order to limit the risks of interference to specified parts of the spectrum:
- the preceding Radio Conferences of Atlantic City, 1947, and Geneva, 1959, designated some frequency bands within which the radiocommunication services must accept harmful interference produced by ISM equipment;
  - WARC-79 accepted an increase in the number of bands to be designated for ISM equipment, but only on the condition that limits of radiation from such equipment be specified within the bands newly designated for worldwide use and outside all the bands designated for ISM equipment,

*resolves*

that, to ensure that radiocommunication services are adequately protected, studies are required on the limits to be imposed on the radiation from ISM equipment within the frequency bands designated in the Radio Regulations for this use and outside of those bands,

*invites ITU-R*

to continue, in collaboration with CISPR, its studies relating to radiation from ISM equipment within the frequency bands designated in the Radio Regulations for this use and outside of those bands in order to ensure adequate protection of radiocommunication services, with priority being given to the completion of studies which would permit CISPR to define limits in Publication CISPR 11 on radiation from ISM equipment inside all the bands designated in the Radio Regulations for the use of such equipment,

*instructs the Director of the Radiocommunication Bureau*

- 1 to bring this Resolution to the attention of CISPR;
- 2 to provide the results of these studies to WRC-11 for its consideration.

RESOLUTION 72 (Rev.WRC-07)

**World and regional preparations for  
world radiocommunication conferences**

The World Radiocommunication Conference (Geneva, 2007),

*considering*

- a) that many regional telecommunication organizations continue to coordinate their preparations for WRCs;
- b) that many common proposals have been submitted to this Conference from administrations participating in the preparations of regional telecommunication organizations;
- c) that this consolidation of views at regional level, together with the opportunity for interregional discussions prior to the Conference, has eased the task of reaching a common understanding and saved time during past WRCs;
- d) that the burden of preparation for future conferences is likely to increase;
- e) that there is consequently great benefit to the Member States of coordination of preparations at world level and at regional level;
- f) that the success of future conferences will depend on greater efficiency of regional coordination and interaction at interregional level prior to future conferences, including possible face-to-face meetings between regional groups;
- g) that there is a need for overall coordination of the interregional consultations,

*recognizing*

- a) *resolves* 2 of Resolution 80 (Rev. Marrakesh, 2002) of the Plenipotentiary Conference: “to support the regional harmonization of common proposals, as stated in Resolution 72 (WRC-97), for submission to world radiocommunication conferences”;
- b) *resolves* 3 of Resolution 80 (Rev. Marrakesh, 2002) of the Plenipotentiary Conference: “to encourage both formal and informal collaboration in the interval between conferences with a view to resolving differences on items already on the agenda of a conference or new items”,

*noting*

that the plenipotentiary conferences have resolved that the Union should continue to develop stronger relations with regional telecommunication organizations,

*resolves*

to invite the regional groups to continue their preparations for WRCs, including the possible convening of joint meetings of regional groups formally and informally,

*further resolves to instruct the Director of the Radiocommunication Bureau*

1 to continue consulting the regional telecommunication organizations on the means by which assistance can be given to their preparations for future world radiocommunication conferences in the following areas:

- organization of regional preparatory meetings;
  - organization of information sessions, preferably before and after the second session of the Conference Preparatory Meeting (CPM);
  - identification of major issues to be resolved by the future world radiocommunication conference;
  - facilitation of regional and interregional formal and informal meetings, with the objective of reaching a possible convergence of interregional views on major issues;
- 2 pursuant to Resolution ITU-R 2-5 of the Radiocommunication Assembly on the CPM, to assist in ensuring that overview presentations of the chapters of the CPM Report will be made by the CPM management at an early stage in the CPM session, as part of the regularly scheduled meetings, in order to help all participants understand the contents of the CPM Report;
- 3 to submit a report on the results of such consultations to the next WRC,
- invites the Director of the Telecommunication Development Bureau*
- to collaborate with the Director of the Radiocommunication Bureau in implementing this Resolution.

**MOD**      COM6/301/1      (B10/326/17) (R6/410/70)

## RESOLUTION 80 (Rev.WRC-07)

### **Due diligence in applying the principles embodied in the Constitution**

The World Radiocommunication Conference (Geneva, 2007),

*considering*

- a)* that Articles 12 and 44 of the Constitution lay down the basic principles for the use of the radio-frequency spectrum and the geostationary-satellite and other satellite orbits;
- b)* that those principles have been included in the Radio Regulations;
- c)* that Article I of the Agreement between the United Nations and the International Telecommunication Union provides that “the United Nations recognizes the International Telecommunication Union (hereinafter called “the Union”) as the specialized agency responsible for taking such action as may be appropriate under its basic instrument for the accomplishment of the purposes set forth therein”;
- d)* that, in accordance with Nos. **11.30**, **11.31** and **11.31.2**, notices shall be examined with respect to the provisions of the Radio Regulations, including the provision relating to the basic principles, appropriate rules of procedure being developed for the purpose;
- e)* that WRC-97 instructed the Radio Regulations Board (RRB) to develop, within the framework of Nos. **11.30**, **11.31** and **11.31.2**, rules of procedure to be followed in order to be in compliance with the principles in No. **0.3** of the Preamble to the Radio Regulations;

f) that the Board, in accordance with Resolution **80 (WRC-97)**, submitted a report to WRC-2000 suggesting possible solutions and stating that, after examining the Radio Regulations, it had concluded that there are no provisions currently in the Radio Regulations that link the formal notification or coordination procedures with the principles stated in No. **0.3** of the Preamble to the Radio Regulations;

g) that the Legal Subcommittee of the Committee on the Peaceful Uses of Outer Space of the United Nations General Assembly has drawn up recommendations in this respect,

*noting*

a) that, in accordance with the provisions of No. 127 of the Convention, the Conference may give instructions to the Sectors of the Union;

b) that, according to No. 160C of the Convention, the Radiocommunication Advisory Group (RAG) shall review any matter as directed by a conference;

c) the RRB report to WRC-2000 (see Annex 1);

d) the RRB report to WRC-03 (see Annex 2);

e) that some of the issues identified in the report referred to in *noting c)* have been resolved before WRC-07,

*resolves*

1 to instruct the Radiocommunication Sector, in accordance with No. 1 of Article 12 of the Constitution, to carry out studies on procedures for measurement and analysis of the application of the basic principles contained in Article 44 of the Constitution;

2 to instruct the RRB to consider and review possible draft recommendations and draft provisions linking the formal notification, coordination and registration procedures with the principles contained in Article 44 of the Constitution and No. **0.3** of the Preamble to the Radio Regulations, and to report to each future World Radiocommunication Conference with regard to this Resolution;

3 to instruct the Director of the Radiocommunication Bureau to submit to each future World Radiocommunication Conference a detailed progress report on the action taken on this Resolution,

*invites*

1 the other organs of the Radiocommunication Sector, in particular the RAG, to make relevant contributions to the Director of the Radiocommunication Bureau for inclusion in his report to each future World Radiocommunication Conference;

2 administrations to contribute to the studies referred to in *resolves 1* and to the work of the RRB as detailed in *resolves 2*.

## ANNEX 1 TO RESOLUTION 80 (Rev.WRC-07)

### RRB Report to WRC-2000

In the RRB Report to WRC-2000<sup>1</sup>, several members of the Board noted some difficulties likely to be experienced by administrations, particularly administrations of developing countries, as follows:

- the “first-come first-served” concept restricts and sometimes prevents access to and use of certain frequency bands and orbit positions;
- a relative disadvantage for developing countries in coordination negotiations due to various reasons such as a lack of resources and expertise;
- perceived differences in consistency of application of the Radio Regulations;
- the submitting of “paper” satellites that restricts access options;
- the growing use of the bands of the Plans of Appendices **30** and **30A** by regional, multichannel systems, which may modify the main purpose of these Plans to provide equitable access to all countries;
- the considerable processing delays in the Radiocommunication Bureau are due to the very complex procedures required and the large number of filings submitted; these delays contribute to a coordination backlog of 18 months which could extend to three years and creates uncertain regulatory situations, additional delay in the coordination process that cannot be overcome by administrations, and the possible loss of the assignment because the allotted time is exceeded;
- satellite systems may already be in orbit before completion of coordination;
- statutory time-frames, such as those in No. **11.48**, may often be insufficient for developing countries to be able to complete the regulatory requirements as well as the design, construction and launch of satellite systems;
- no provisions for international monitoring to confirm the bringing into use of satellite networks (assignments and orbits).

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<sup>1</sup> This Report can be found in Document 29 to WRC-2000.

## ANNEX 2 TO RESOLUTION 80 (Rev.WRC-07)

### RRB Report to WRC-03

In the RRB Report to WRC-03<sup>2</sup>, concepts to satisfy *resolves* 2 of Resolution **80 (WRC-2000)** were provided, as follows:

- special measures for countries submitting their first satellite filing:
  - on an exceptional basis, special consideration could be given to countries submitting their first filing for a satellite system, taking into account the special needs of developing countries;
  - such consideration should take into account the following:
    - impact on other administrations;
    - satellite service of the system (i.e. FSS, MSS, BSS);
    - frequency band covered by the filing;
    - system is intended to meet the direct needs of the country(s) concerned;
- extension of the regulatory time-limit for bringing into use:
  - conditions could be specified under which extensions might be granted on an exceptional basis to developing countries when they are not able to complete the regulatory date requirements, so that sufficient time for design, construction and launch of satellite systems is made available;
  - the conditions created under the previous paragraph should be included in the Radio Regulations as provisions that would allow the Radiocommunication Bureau to grant the extension.

**MOD**      PLEN/422/1

## RESOLUTION 86 (Rev.WRC-07)

### **Implementation of Resolution 86 (Rev. Marrakesh, 2002) of the Plenipotentiary Conference**

The World Radiocommunication Conference (Geneva, 2007),

*considering*

- a)*            that the Plenipotentiary Conference (Marrakesh, 2002) discussed the application of Resolution 86 (Minneapolis, 1998) and decided to request WRC-03 to determine the scope and criteria to be used by future world radiocommunication conferences (WRCs) in the application of Resolution 86 (Rev. Marrakesh, 2002);
- b)*            that the Plenipotentiary Conference (Antalya, 2006) invited WRC-07 to consider Resolution 86 (Marrakesh, 2002) and to report the results to the 2010 Plenipotentiary Conference,

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<sup>2</sup> This Report can be found in Addendum 5 to Document 4 to WRC-03.



*recognizing*

that the Radio Regulations Board makes suggestions to transform the content of the Rules of Procedure into a regulatory text in accordance with Nos. **13.0.1** and **13.0.2** of Article **13** of the Radio Regulations,

*noting*

that administrations may also wish to make proposals to transform the content of the Rules of Procedure into a regulatory text for possible inclusion in the Radio Regulations,

*resolves to invite future world radiocommunication conferences*

1 to consider any proposals which deal with deficiencies and improvements in the advance publication, coordination, notification and recording procedures of the Radio Regulations for frequency assignments pertaining to space services which have either been identified by the Board and included in the Rules of Procedure or which have been identified by administrations or by the Radiocommunication Bureau, as appropriate;

2 to ensure that these procedures, and the related appendices of the Radio Regulations reflect the latest technologies, as far as possible,

*invites administrations*

to consider, in preparing for PP-10, appropriate action with regard to Resolution 86 (Rev. Marrakesh, 2002).

**SUP** COM5/308/21 (B10/326/18) (R6/410/71)

## **RESOLUTION 87 (WRC-03)**

### **Date of entry into force of certain provisions of the Radio Regulations relating to the non-payment of cost-recovery fees**

**SUP** COM5/216/17 (B3/224/34) (R2/266/23)

## **RESOLUTION 88 (WRC-03)**

### **Rationalization of Articles 9 and 11 of the Radio Regulations**

RESOLUTION 95 (Rev.WRC-07)

**General review of the Resolutions and Recommendations of  
world administrative radio conferences and world  
radiocommunication conferences**

The World Radiocommunication Conference (Geneva, 2007),

*considering*

- a) that it is important to keep the Resolutions and Recommendations of past world administrative radio conferences and world radiocommunication conferences under constant review, in order to keep them up to date;
- b) that the reports of the Director of the Radiocommunication Bureau submitted to previous conferences provided a useful basis for a general review of the Resolutions and Recommendations of past conferences;
- c) that some principles and guidelines are necessary for future conferences to treat the Resolutions and Recommendations of previous conferences which are not related to the agenda of the Conference,

*resolves to invite future competent world radiocommunication conferences*

- 1 to review the Resolutions and Recommendations of previous conferences that are related to the agenda of the Conference with a view to their possible revision, replacement or abrogation and to take appropriate action;
- 2 to review the Resolutions and Recommendations of previous conferences that are not related to any agenda item of the Conference with a view to:
  - abrogating those Resolutions and Recommendations that have served their purpose or have become no longer necessary;
  - reviewing the need for those Resolutions and Recommendations, or parts thereof, requesting ITU-R studies on which no progress has been made during the last two periods between conferences;
  - updating and modifying Resolutions and Recommendations, or parts thereof that have become out of date, and to correct obvious omissions, inconsistencies, ambiguities or editorial errors and effect any necessary alignment;
- 3 at the beginning of the conference, to determine which committee within the conference has the primary responsibility to review each of the Resolutions and Recommendations referred to in *resolves* 1 and 2 above,

*instructs the Director of the Radiocommunication Bureau*

- 1 to conduct a general review of the Resolutions and Recommendations of previous conferences and, after consultation with the Radiocommunication Advisory Group and the Chairmen and Vice-Chairmen of the Radiocommunication Study Groups, submit a report to the second session of the Conference Preparatory Meeting (CPM) in respect of *resolves* 1 and *resolves* 2, including an indication of any associated agenda items;

2 to include in the above report, with the cooperation of the chairmen of the Radiocommunication Study Groups, the progress reports of ITU-R studies on the issues which have been requested by the Resolutions and Recommendations of previous conferences, but which are not placed on the agendas of the forthcoming two conferences,

*invites administrations*

to submit contributions on the implementation of this Resolution to CPM,

*invites the Conference Preparatory Meeting*

to include, in its Report, the results of the general review of the Resolutions and Recommendations of previous conferences, based on the contributions by administrations to CPM, in order to facilitate the follow-up by future WRCs.

**SUP** COM/385/104 (B18/405/106)

### **RESOLUTION 105 (Orb-88)**

#### **Improvement of the quality of certain allotments in Part A of the fixed-satellite service Plan<sup>1</sup>**

**MOD** COM5/284/6 (B8/293/13) (R5/336/3)

### **RESOLUTION 122 (Rev.WRC-07)**

#### **Use of the bands 47.2-47.5 GHz and 47.9-48.2 GHz by high altitude platform stations in the fixed service and by other services**

The World Radiocommunication Conference (Geneva, 2007),

*considering*

- a)* that the band 47.2-50.2 GHz is allocated to the fixed, mobile and fixed-satellite services on a co-primary basis;
- b)* that WRC-97 made provision for operation of high altitude platform stations (HAPS), also known as stratospheric repeaters, within the fixed service in the bands 47.2-47.5 GHz and 47.9-48.2 GHz;
- c)* that establishing a stable technical and regulatory environment will promote the use of all co-primary services in the band 47.2-47.5 GHz and 47.9-48.2 GHz;
- d)* that systems using HAPS are in an advanced stage of development and some countries have notified such systems to ITU in the bands 47.2-47.5 GHz and 47.9-48.2 GHz;
- e)* that Recommendation ITU-R F.1500 contains the characteristics of systems in the fixed service using HAPS in the bands 47.2-47.5 GHz and 47.9-48.2 GHz;
- f)* that while the decision to deploy HAPS can be taken on a national basis, such deployment may affect neighbouring administrations and operators of co-primary services;

g) that ITU-R has completed studies dealing with sharing between systems using HAPS in the fixed service and other types of systems in the fixed service in the bands 47.2-47.5 GHz and 47.9-48.2 GHz;

h) that ITU-R has completed studies on compatibility between HAPS systems in the 47.2-47.5 GHz and 47.9-48.2 GHz bands and the radio astronomy service in the 48.94-49.04 GHz band;

i) that No. **5.552** urges administrations to take all practicable steps to reserve fixed-satellite service (FSS) use of the band 47.2-49.2 GHz for feeder links for the broadcasting-satellite service (BSS) operating in the band 40.5-42.5 GHz, and that ITU-R studies indicate that HAPS in the fixed service may share with such feeder links;

j) that the technical characteristics of expected BSS feeder links and FSS gateway-type stations are similar;

k) that ITU-R has completed studies dealing with sharing between systems using HAPS in the fixed service and the fixed-satellite service,

*recognizing*

a) that, in the long term, the bands 47.2-47.5 GHz and 47.9-48.2 GHz are expected to be required for HAPS operations for both gateway and ubiquitous terminal applications, for which several administrations have already notified systems to the Radiocommunication Bureau;

b) that identification of common sub-bands for ubiquitous ground terminal applications in the use of the fixed service could facilitate HAPS deployment and sharing with other primary services in the 47.2-47.5 GHz and 47.9-48.2 GHz bands;

c) that Recommendation ITU-R SF.1481-1 and Recommendation ITU-R SF.1843 provide information on the feasibility of HAPS systems in the fixed service sharing with the FSS;

d) that ITU-R studies on HAPS operation in the bands 47.2-47.5 GHz and 47.9-48.2 GHz allocated to the fixed service have concluded that, in order to share with FSS (Earth-to-space), the maximum uplink transmit e.i.r.p. density of HAPS ground terminals in the bands should, in clear-sky conditions, be 6.4 dB(W/MHz) for Urban Area Coverage (UAC), 22.57 dB(W/MHz) for Suburban Area Coverage (SAC) and 28 dB(W/MHz) for Rural Area Coverage (RAC), and that these values can be increased by up to 5 dB during periods of rain;

e) that ITU-R studies have established specific power flux-density values to be met at international borders to facilitate bilateral agreement on sharing conditions for HAPS with other types of fixed service systems in a neighbouring country;

f) that FSS satellite networks and systems with earth station antenna diameters of 2.5 metres or larger operating as a gateway-type station are capable of sharing with ubiquitous HAPS terminals,

*resolves*

1 that to facilitate sharing with the FSS (Earth-to-space), the maximum transmit e.i.r.p. density of a ubiquitous HAPS ground terminal shall not exceed the following levels under clear-sky conditions:

6.4 dB(W/MHz)	for UAC	(30° < θ ≤ 90°)
22.57 dB(W/MHz)	for SAC	(15° < θ ≤ 30°)
28 dB(W/MHz)	for RAC	(5° < θ ≤ 15°)

where θ is the ground terminal elevation angle in degrees;

2 that the maximum transmit e.i.r.p. density levels specified in *resolves* 1 may be increased, using fading compensation techniques, by up to 5 dB during periods of rain;

3 that the ground terminal antenna patterns of HAPS operating in the bands 47.2-47.5 GHz and 47.9-48.2 GHz shall meet the following antenna beam patterns:

$$G(\varphi) = G_{max} - 2.5 \times 10^{-3} \left( \frac{D}{\lambda} \varphi \right)^2 \quad \text{for } 0^\circ < \varphi < \varphi_m$$

$$G(\varphi) = 39 - 5 \log (D/\lambda) - 25 \log \varphi \quad \text{for } \varphi_m \leq \varphi < 48^\circ$$

$$G(\varphi) = -3 - 5 \log (D/\lambda) \quad \text{for } 48^\circ \leq \varphi \leq 180^\circ$$

where:

$G_{max}$ : maximum antenna gain (dBi)

$G(\varphi)$ : gain (dBi) relative to an isotropic antenna

$\varphi$ : off-axis angle (degrees)

$D$ : antenna diameter  
 $\lambda$ : wavelength } expressed in the same units

$$\varphi_m = \frac{20 \lambda}{D} \sqrt{G_{max} - G_1} \quad \text{degrees}$$

$G_1$ : gain of the first side lobe

$$= 2 + 15 \log (D/\lambda) \text{ (dBi)};$$

4 that for the purpose of protecting fixed wireless systems in neighbouring administrations from co-channel interference, a HAPS system operating in the frequency bands 47.2-47.5 GHz and 47.9-48.2 GHz shall not exceed the following power flux-density values at the Earth's surface at an administration's border, unless explicit agreement of the affected administration is provided at the time of the notification of HAPS:

$$-141 \quad \text{dB(W/(m}^2 \cdot \text{MHz))} \quad \text{for } 0^\circ \leq \delta < 3^\circ$$

$$-141 + 2(\delta - 3) \quad \text{dB(W/(m}^2 \cdot \text{MHz))} \quad \text{for } 3^\circ \leq \delta \leq 13^\circ$$

$$-121 \quad \text{dB(W/(m}^2 \cdot \text{MHz))} \quad \text{for } 13^\circ < \delta \leq 90^\circ$$

where  $\delta$  is the angle of the arrival above the horizontal plane in degrees;

5 that, to protect radio astronomy stations operating in the band 48.94-49.04 GHz from unwanted emissions of HAPS operating in the 47.2-47.5 GHz and 47.9-48.2 GHz bands, the separation distance between the radio astronomy station and the nadir of a HAPS platform shall exceed 50 km;

6 that administrations planning to implement a HAPS system in the 47.2-47.5 GHz and 47.9-48.2 GHz bands shall notify the frequency assignments by submitting all mandatory elements of Appendix 4 to the Bureau for the examination of compliance with respect to *resolves* 1, 2, 3, 4 and 5 above with a view to their registration in the Master International Frequency Register;

7 that administrations shall notify the new data elements for the notices referred to in *instructs the Director of the Radiocommunication Bureau* 1 in order to enable the Bureau to perform the examinations,

*invites administrations*

that intend to deploy HAPS systems in the fixed service in the bands 47.2-47.5 GHz and 47.9-48.2 GHz to consider specifying the use of the bands 47.2-47.35 GHz and 47.9-48.05 GHz for ubiquitous HAPS terminals,

*instructs the Director of the Radiocommunication Bureau*

1 to maintain and process notices concerning HAPS that were received by the Bureau prior to 20 October 2007 and provisionally recorded in the Master International Frequency Register, only until 1 January 2012, unless the notifying administration informs the Bureau before that date that a particular assignment has been brought into use and provides the complete set of data elements of Appendix 4;

2 to examine all assignments to HAPS in the fixed service notified prior to 20 October 2007 and apply the provisions of *resolves* 1, 2, 3, 4 and 5 and the respective calculation methodologies included in Recommendation ITU-R F.1820 and Recommendation ITU-R SF.1843.

**SUP** COM5/344/6 (B14/365/42) (R7/411/212)

### **RESOLUTION 141 (WRC-03)**

#### **Sharing between certain types of non-geostationary-satellite systems in the fixed-satellite service and stations in the fixed service in the 17.7-19.7 GHz band**

**MOD** COM6/269/2 (B7/283/8) (R5/336/4)

### **RESOLUTION 143 (Rev.WRC-07)**

#### **Guidelines for the implementation of high-density applications in the fixed-satellite service in frequency bands identified for these applications**

The World Radiocommunication Conference (Geneva, 2007),

*considering*

- a)* that demand has been increasing steadily for global broadband communication services throughout the world, such as those provided by high-density applications in the fixed-satellite service (HDFSS);
- b)* that HDFSS systems are characterized by flexible, rapid and ubiquitous deployment of large numbers of cost-optimized earth stations employing small antennas and having common technical characteristics;
- c)* that HDFSS is an advanced broadband communication application concept that will provide access to a wide range of broadband telecommunication applications supported by fixed telecommunication networks (including the Internet), and thus will complement other telecommunication systems;
- d)* that, as with other FSS systems, HDFSS offers great potential to establish telecommunication infrastructure rapidly;

- e) that HDFSS applications can be provided by satellites of any orbital type;
- f) that interference mitigation techniques have been and continue to be studied in ITU-R to facilitate sharing between HDFSS earth stations and terrestrial services;
- g) that to date, studies have not concluded on the practicability of implementation of interference mitigation techniques for all HDFSS earth stations,

*noting*

- a) that No. **5.516B** identifies bands for HDFSS;
- b) that, in some of these bands, the FSS allocations are co-primary with fixed and mobile service allocations as well as other services;
- c) that this identification does not preclude the use of these bands by other services or by other FSS applications, and does not establish priority in these Radio Regulations among users of the bands;
- d) that, in the band 18.6-18.8 GHz, the FSS allocation is co-primary with the Earth exploration-satellite service (EESS) (passive) with the restrictions of Nos. **5.522A** and **5.522B**;
- e) that radio astronomy observations are carried out in the 48.94-49.04 GHz band, and that such observations require protection at notified radio astronomy stations;
- f) that co-frequency sharing between transmitting HDFSS earth stations and terrestrial services is difficult in the same geographical area;
- g) that co-frequency sharing between receiving HDFSS earth stations and terrestrial stations in the same geographical area may be facilitated through the implementation of interference mitigation techniques, if practicable;
- h) that many FSS systems with other types of earth stations and characteristics have already been brought into use or are planned to be brought into use in some of the frequency bands identified for HDFSS in No. **5.516B**;
- i) that HDFSS stations in these bands are expected to be deployed in large numbers over urban, suburban and rural areas of large geographical extent;
- j) that the 50.2-50.4 GHz band, adjacent to the band 48.2-50.2 GHz (Earth-to-space) identified for HDFSS in Region 2, is allocated to the EESS (passive),

*recognizing*

- a) that in cases where FSS earth stations use bands that are shared on a co-primary basis with terrestrial services, the Radio Regulations stipulate that earth stations of the FSS shall be individually notified to the Bureau when their coordination contours extend into the territory of another administration;
- b) that, as a consequence of their general characteristics, it is expected that the coordination of HDFSS earth stations with fixed service stations on an individual site-by-site basis between administrations will be a difficult and long process;
- c) that, to minimize the burden for administrations, simplified coordination procedures and provisions can be agreed by administrations for large numbers of similar HDFSS earth stations associated with a given satellite system;
- d) that harmonized worldwide bands for HDFSS would facilitate the implementation of HDFSS, thereby helping to maximize global access and economies of scale,

*recognizing further*

that HDFSS applications implemented on FSS networks and systems are subject to all provisions of the Radio Regulations applicable to the FSS, such as coordination and notification pursuant to Articles 9 and 11, including any requirements to coordinate with terrestrial services of other countries, and the provisions of Articles 21 and 22,

*resolves*

that administrations which implement HDFSS should consider the following guidelines:

- a) making some or all of the frequency bands identified in No. **5.516B** available for HDFSS applications;
- b) in making frequency bands available under *resolves a*), take into account:
  - that HDFSS deployment will be simplified in bands that are not shared with terrestrial services;
  - in bands shared with terrestrial services, the impact that the further deployment of terrestrial stations would have on the existing and future development of HDFSS, and the further deployment of HDFSS earth stations would have on the existing and future development of terrestrial services;
- c) take into account the relevant technical characteristics applicable to HDFSS, as identified by ITU-R Recommendations (e.g. Recommendations ITU-R S.524-9, ITU-R S.1594 and ITU-R S.1783);
- d) take into account other existing and planned FSS systems, having different characteristics, in frequency bands where HDFSS is implemented in accordance with *resolves a*) above and the conditions specified in No. **5.516B**,

*invites administrations*

- 1 to give due consideration to the benefits of harmonized utilization of the spectrum for HDFSS on a global basis, taking into account the use and planned use of these bands by all other services to which these bands are allocated, as well as other types of FSS applications;
- 2 to consider implementing simplified procedures and provisions that facilitate the deployment of HDFSS systems in some or all of the bands identified in No. **5.516B**;
- 3 when considering the deployment of HDFSS systems in the upper portion of the band 48.2-50.2 GHz, to take into account as appropriate the potential impact such deployment may have on the satellite passive services in the adjacent band 50.2-50.4 GHz, and to participate in ITU-R studies on the compatibility between these services, taking into account No. **5.340**;
- 4 to consider, given *invites administrations* 3 above, and where practicable, starting the deployment of HDFSS earth stations in the lower part of the band 48.2-50.2 GHz.



RESOLUTION 144 (Rev.WRC-07)

**Special requirements of geographically small or narrow countries  
operating earth stations in the fixed-satellite service  
in the band 13.75-14 GHz**

The World Radiocommunication Conference (Geneva, 2007),

*considering*

- a) that WARC-92 made an additional allocation to the fixed-satellite service (FSS) (Earth-to-space) in the band 13.75-14 GHz;
- b) that this band is shared with the radiolocation and radionavigation services;
- c) that, following a decision by WRC-2000 and the completion of ITU-R studies, WRC-03 reviewed and revised the sharing conditions for the services in this band and adopted new regulations which govern sharing between the FSS, radiolocation and radionavigation services (see No. **5.502**);
- d) that these revised sharing conditions additionally permit the operation of geostationary FSS earth stations in the band 13.75-14 GHz with antennas having diameters between 1.2 m and 4.5 m,

*recognizing*

- a) that these sharing conditions of No. **5.502** will mean that countries which are geographically small or narrow will have significant difficulties deploying geostationary FSS earth stations in this band with antennas having diameters between 1.2 m and 4.5 m;
- b) that in order to further facilitate sharing between the FSS and the maritime radiolocation systems operating in the radiolocation service, there may be a need to develop technical and operational methods;
- c) that these technical and operational methods may be used to allow a greater deployment of FSS earth stations in the band 13.75-14 GHz in conformity with No. **5.502** while protecting the radiolocation service,

*resolves*

- 1 to continue inviting ITU-R, to pursue its studies as a matter of urgency, with a view to developing ITU-R Recommendations, which will establish technical or operational methods which will further facilitate sharing and may allow greater flexibility in the deployment of FSS earth stations in the band 13.75-14 GHz, having regard to No. **5.502**, and which may also be used as a basis for the establishment of bilateral agreements between concerned administrations;
- 2 that the administrations of geographically small or narrow countries may exceed the limitations on FSS earth station power flux-density at the low-water mark in No. **5.502** if such operation is in conformance with bilateral agreements with administrations deploying maritime radiolocation systems in the band 13.75-14 GHz, this being in order to provide due consideration to administrations of geographically small or narrow countries,

*encourages*

administrations deploying maritime and land mobile radiolocation systems in the band 13.75-14 GHz to rapidly reach bilateral agreements relating to the operation of FSS earth stations in this band with administrations of those geographically small or narrow countries deploying these FSS earth stations, this being in order to provide due consideration to administrations of geographically small or narrow countries,

*invites*

1 administrations deploying maritime radiolocation systems in the band 13.75 to 14 GHz to participate actively in the ITU-R studies referred to in *resolves* 1;

2 administrations of geographically small or narrow countries to also contribute to the above studies.

**MOD** COM5/284/5 (B8/293/14) (R5/336/5)

## RESOLUTION 145 (Rev.WRC-07)

### **Use of the bands 27.9-28.2 GHz and 31-31.3 GHz by high altitude platform stations in the fixed service**

The World Radiocommunication Conference (Geneva, 2007),

*considering*

a) that WRC-97 made provision for the operation of high altitude platform stations (HAPS), also known as stratospheric repeaters, within a  $2 \times 300$  MHz portion of the fixed-service allocation in the bands 47.2-47.5 GHz and 47.9-48.2 GHz;

b) that WRC-97 adopted No. **4.15A** specifying that transmissions to or from HAPS shall be limited to the bands specifically identified in Article 5;

c) that at WRC-2000, several countries in Region 3 and one country in Region 1 expressed a need for a lower frequency band for HAPS due to the excessive rain attenuation that occurs at 47 GHz in these countries;

d) that some countries in Region 2 have also expressed an interest in using a frequency range lower than those referred to in *considering a*);

e) that, in order to accommodate the need expressed by the countries referred to in *considering c*), WRC-2000 adopted Nos. **5.537A** and **5.543A**, which were modified at WRC-03 and then again at WRC-07 to permit the use of HAPS in the fixed service in the band 27.9-28.2 GHz and in the band 31-31.3 GHz in certain Region 1 and 3 countries on a non-harmful interference, non-protection basis;

f) that the bands 27.9-28.2 GHz and 31-31.3 GHz are already heavily used or planned to be used by a number of different services and a number of other types of applications in the fixed service;

g) that while the decision to deploy HAPS can be taken on a national basis, such deployment may affect neighbouring administrations, particularly in small countries;

- h) that the 31.3-31.8 GHz band is allocated to the radio astronomy, Earth exploration-satellite (passive) and space research (passive) services, and that WRC-03 amended No. **5.543A** to specify signal levels that would protect satellite passive services and radio astronomy stations;
- i) that ITU-R has conducted studies dealing with sharing between systems using HAPS in the fixed service and other types of systems in the fixed service in the bands 27.9-28.2 GHz and 31-31.3 GHz leading to Recommendation ITU-R F.1609;
- j) that results of some ITU-R studies indicate that, in the bands 27.9-28.2 GHz and 31-31.3 GHz, sharing between fixed-service systems using HAPS and other conventional fixed-service systems in the same area will require appropriate interference mitigation techniques to be developed and implemented;
- k) that ITU-R has conducted studies dealing with compatibility between systems using HAPS and the passive services in the 31.3-31.8 GHz band leading to Recommendations ITU-R F.1570 and ITU-R F.1612;
- l) that ITU-R has produced Recommendation ITU-R SF.1601 containing methodologies for evaluating interference from fixed-service systems using HAPS into GSO FSS systems in the band 27.9-28.2 GHz;
- m) that HAPS technical issues could continue to be studied in order to determine appropriate measures for protecting the fixed service and other co-primary services in the band 27.9-28.2 GHz,

*resolves*

- 1 that, notwithstanding No. **4.15A**, in Region 2 the use of HAPS within the fixed-service allocations within the 27.9-28.2 GHz and 31-31.3 GHz bands shall not cause harmful interference to, nor claim protection from, other stations of services operating in accordance with the Table of Frequency Allocations of Article **5**, and, further, that the development of these other services shall proceed without constraints by HAPS operating pursuant to this Resolution;
- 2 that any use by HAPS of the fixed-service allocation at 27.9-28.2 GHz pursuant to *resolves* 1 above shall be limited to operation in the HAPS-to-ground direction, and that any use by HAPS of the fixed-service allocation at 31-31.3 GHz shall be limited to operation in the ground-to-HAPS direction;
- 3 that systems using HAPS in the band 31-31.3 GHz, in accordance with *resolves* 1 above, shall not cause harmful interference to the radio astronomy service having a primary allocation in the band 31.3-31.8 GHz, taking into account the protection criterion given in the relevant ITU-R Recommendation in the RA series. In order to ensure the protection of satellite passive services, the level of unwanted power density into the HAPS ground station antenna in the band 31.3-31.8 GHz shall be limited to  $-106$  dB(W/MHz) under clear-sky conditions and may be increased up to  $-100$  dB(W/MHz) under rainy conditions to mitigate fading due to rain, provided that the effective impact on the passive satellite does not exceed the impact under clear-sky conditions;
- 4 that the administrations listed in Nos. **5.537A** and **5.543A** which intend to implement systems using HAPS in the fixed service in the bands 27.9-28.2 GHz and 31-31.3 GHz shall seek explicit agreement of concerned administrations with regard to their stations of primary services to ensure that the conditions in Nos **5.537A** and **5.543A** are met, and those administrations in Region 2 which intend to implement systems using HAPS in the fixed service in these bands shall seek explicit agreement of concerned administrations with regard to their stations of services operating in accordance with the Table of Frequency Allocations of Article **5** to ensure that the conditions in *resolves* 1 and *resolves* 3 are met;

5 that administrations planning to implement a HAPS system pursuant to *resolves* 1 above shall notify the frequency assignment(s) by submitting all mandatory elements of Appendix 4 to the Radiocommunication Bureau for the examination of compliance with *resolves* 3 and 4 above,

*invites ITU-R*

1 to continue to carry out studies on the appropriate interference mitigation techniques for the situations referred to in *considering j*);

2 to develop protection criteria for the mobile service having primary allocations in the frequency bands 27.9-28.2 GHz and 31-31.3 GHz from HAPS in the fixed service.

**SUP** COM/385/105 (B18/405/107)

### RESOLUTION 146 (WRC-03)

#### **Transitional arrangements for the application of modified provisions of Appendix 30B**

**MOD** COM4/332/74 (B13/347/171) (R7/411/213)

### RESOLUTION 212 (Rev.WRC-07)

#### **Implementation of International Mobile Telecommunications in the bands 1 885-2 025 MHz and 2 110-2 200 MHz**

The World Radiocommunication Conference (Geneva, 2007),

*considering*

*a)* that International Mobile Telecommunications (IMT) includes IMT-2000 and IMT Advanced;

*b)* that ITU-R, for WRC-97, recommended approximately 230 MHz for use by the terrestrial and satellite components of IMT-2000;

*c)* that ITU-R studies forecast that additional spectrum may be required to support the future services of IMT-Advanced and to accommodate future user requirements and network deployments;

*d)* that ITU-R has recognized that space techniques are an integral part of IMT;

*e)* that, in No. **5.388**, WARC-92 identified bands to accommodate certain mobile services, now called IMT,

*noting*

*a)* that the terrestrial component of IMT has already been deployed or is being considered for deployment in the bands 1 885-2 025 MHz and 2 110-2 200 MHz;

*b)* that the availability of the satellite component of IMT in the bands 1 980-2 010 MHz and 2 170-2 200 MHz simultaneously with the terrestrial component of IMT in the bands identified in No. **5.388** would improve the overall implementation and the attractiveness of IMT,

*resolves*

that administrations which implement IMT:

- a) should make the necessary frequencies available for system development;
- b) should use those frequencies when IMT is implemented;
- c) should use the relevant international technical characteristics, as identified by ITU-R and ITU-T Recommendations,

*invites administrations*

to give due consideration to the accommodation of other services currently operating in these bands when implementing IMT,

*invites ITU-R*

to continue its studies with a view to developing suitable and acceptable technical characteristics for IMT that will facilitate worldwide use and roaming, and ensure that IMT can also meet the telecommunication needs of the developing countries and rural areas.

**MOD** COM6/338/1 (B12/346/15) (R6/410/72)

## RESOLUTION 221 (Rev.WRC-07)

### **Use of high altitude platform stations providing IMT in the bands 1 885-1 980 MHz, 2 010-2 025 MHz and 2 110-2 170 MHz in Regions 1 and 3 and 1 885-1 980 MHz and 2 110-2 160 MHz in Region 2**

The World Radiocommunication Conference (Geneva, 2007),

*considering*

- a) that the bands 1 885-2 025 MHz and 2 110-2 200 MHz are identified in No. **5.388** as intended for use on a worldwide basis for IMT, including the bands 1 980-2 010 MHz and 2 170-2 200 MHz for the terrestrial and satellite components of IMT;
- b) that a high altitude platform station (HAPS) is defined in No. **1.66A** as “a station located on an object at an altitude of 20 to 50 km and at a specified, nominal, fixed point relative to the Earth”;
- c) that HAPS may offer a new means of providing IMT services with minimal network infrastructure as they are capable of providing service to a large footprint together with a dense coverage;
- d) that the use of HAPS as base stations within the terrestrial component of IMT is optional for administrations, and that such use should not have any priority over other terrestrial IMT use;
- e) that, in accordance with No. **5.388** and Resolution **212 (Rev.WRC-97)**, administrations may use the bands identified for IMT, including the bands referred to in this Resolution, for stations of other primary services to which they are allocated;
- f) that these bands are allocated to the fixed and mobile services on a co-primary basis;

- g) that, in accordance with No. **5.388A**, HAPS may be used as base stations within the terrestrial component of IMT in the bands 1 885-1 980 MHz, 2 010-2 025 MHz and 2 110-2 170 MHz in Regions 1 and 3 and 1 885-1 980 MHz and 2 110-2 160 MHz in Region 2. Their use by IMT applications using HAPS as base stations does not preclude the use of these bands by any station in the services to which they are allocated and does not establish priority in the Radio Regulations;
- h) that ITU-R has studied sharing and coordination between HAPS and other stations within IMT, has considered compatibility of HAPS within IMT with some services having allocations in the adjacent bands, and has approved Recommendation ITU-R M.1456;
- i) that radio interfaces of IMT HAPS are compliant with Recommendation ITU-R M.1457;
- j) that ITU-R has addressed sharing between systems using HAPS and some existing systems, particularly PCS (personal communications system), MMDS (multichannel multipoint distribution system) and systems in the fixed service, which are currently operating in some countries in the bands 1 885-2 025 MHz and 2 110-2 200 MHz;
- k) that HAPS stations are intended to transmit in the band 2 110-2 170 MHz in Regions 1 and 3 and in the band 2 110-2 160 MHz in Region 2;
- l) that administrations planning to implement a HAPS as an IMT base station may need to exchange information, on a bilateral basis, with other concerned administrations, including data items describing the HAPS characteristics in a more detailed manner than the data items currently included in Annexes 1A and 1B of Appendix 4, as indicated in the Annex to this Resolution,

*resolves*

1 that:

1.1 for the purpose of protecting IMT mobile stations in neighbouring countries from co-channel interference, a HAPS operating as an IMT base station shall not exceed a co-channel power flux-density (pfd) of  $-117 \text{ dB(W/(m}^2 \cdot \text{MHz))}$  at the Earth's surface outside a country's borders unless explicit agreement of the affected administration is provided at the time of the notification of HAPS;

1.2 a HAPS operating as an IMT base station shall not transmit outside the frequency bands 2 110-2 170 MHz in Regions 1 and 3 and 2 110-2 160 MHz in Region 2;

1.3 in Region 2, for the purpose of protecting MMDS stations in some neighbouring countries in the band 2 150-2 160 MHz from co-channel interference, a HAPS operating as an IMT base station shall not exceed the following co-channel pfd at the Earth's surface outside a country's borders unless explicit agreement of the affected administration is provided at the time of the notification of the HAPS;

- $-127 \text{ dB(W/(m}^2 \cdot \text{MHz))}$  for angles of arrival ( $\theta$ ) less than  $7^\circ$  above the horizontal plane;
- $-127 + 0.666 (\theta - 7) \text{ dB(W/(m}^2 \cdot \text{MHz))}$  for angles of arrival between  $7^\circ$  and  $22^\circ$  above the horizontal plane; and
- $-117 \text{ dB(W/(m}^2 \cdot \text{MHz))}$  for angles of arrival between  $22^\circ$  and  $90^\circ$  above the horizontal plane;

1.4 in some countries (see No. **5.388B**), for the purpose of protecting fixed and mobile services, including IMT mobile stations, in their territories from co-channel interference caused by a HAPS operating as an IMT base station in accordance with No. **5.388A** in neighbouring countries, the limits of **5.388B** shall apply;

2 that the limits referred to in this Resolution shall apply to all HAPS operating in accordance with No. **5.388A**;

3 that administrations wishing to implement HAPS within a terrestrial IMT system shall comply with the following:

3.1 for the purpose of protecting IMT stations operating in neighbouring countries from co-channel interference, a HAPS operating as a base station within IMT shall use antennas that comply with the following antenna pattern:

$$\begin{aligned} G(\psi) &= G_m - 3(\psi/\psi_b)^2 & \text{dBi} & \quad \text{for } 0^\circ \leq \psi \leq \psi_1 \\ G(\psi) &= G_m + L_N & \text{dBi} & \quad \text{for } \psi_1 < \psi \leq \psi_2 \\ G(\psi) &= X - 60 \log(\psi) & \text{dBi} & \quad \text{for } \psi_2 < \psi \leq \psi_3 \\ G(\psi) &= L_F & \text{dBi} & \quad \text{for } \psi_3 < \psi \leq 90^\circ \end{aligned}$$

where:

$G(\psi)$  : gain at the angle  $\psi$  from the main beam direction (dBi)

$G_m$  : maximum gain in the main lobe (dBi)

$\psi_b$  : one-half of the 3 dB beamwidth in the plane considered (3 dB below  $G_m$ ) (degrees)

$L_N$  : near side-lobe level (dB) relative to the peak gain required by the system design, and has a maximum value of –25 dB

$L_F$  : far side-lobe level,  $G_m - 73$  dBi

$\psi_1 = \psi_b \sqrt{-L_N/3}$  degrees

$\psi_2 = 3.745 \psi_b$  degrees

$X = G_m + L_N + 60 \log(\psi_2)$  dBi

$\psi_3 = 10^{(X-L_F)/60}$  degrees

The 3 dB beamwidth ( $2\psi_b$ ) is estimated by:

$$(\psi_b)^2 = 7442/(10^{0.1G_m}) \quad \text{degrees}^2;$$

3.2 for the purpose of protecting mobile earth stations within the satellite component of IMT from interference, a HAPS operating as an IMT base station, shall not exceed an out-of-band pfd of –165 dB(W/(m<sup>2</sup> · 4 kHz)) at the Earth's surface in the bands 2 160-2 200 MHz in Region 2 and 2 170-2 200 MHz in Regions 1 and 3;

3.3 a HAPS operating as an IMT base station, in order to protect fixed stations from interference, shall not exceed the following limits of out-of-band power flux-density (pfd) at the Earth's surface in the bands 2 025-2 110 MHz:

- –165 dB(W/(m<sup>2</sup> · MHz)) for angles of arrival ( $\theta$ ) less than 5° above the horizontal plane;
- –165 + 1.75 ( $\theta - 5$ ) dB(W/(m<sup>2</sup> · MHz)) for angles of arrival between 5° and 25° above the horizontal plane; and
- –130 dB(W/(m<sup>2</sup> · MHz)) for angles of arrival between 25° and 90° above the horizontal plane;

4 that, for facilitating consultations between administrations, administrations planning to implement a HAPS as an IMT base station shall furnish to the concerned administrations the additional data elements listed in the Annex to this Resolution, if so requested;

5 that administrations planning to implement a HAPS as an IMT base station shall notify the frequency assignment(s) by submitting all mandatory elements of Appendix 4 to the Radiocommunication Bureau for the examination of compliance with *resolves* 1.1, 1.3 and 1.4 above;

6 that, since 5 July 2003, the Bureau and administrations provisionally apply Nos. **5.388A** and **5.388B** as revised by WRC-03 for the frequency assignments to HAPS referred to in this Resolution, including those received before this date but not yet processed by the Bureau,

*invites ITU-R*

to develop, as a matter of urgency, an ITU-R Recommendation providing technical guidance to facilitate consultations with neighbouring administrations.

## ANNEX TO RESOLUTION 221 (Rev.WRC-07)

### **Characteristics of a HAPS operating as an IMT base station in the frequency bands given in Resolution 221 (Rev.WRC-07)**

#### **A General characteristics to be provided for the station**

##### **A.1 Identity of the station**

- a) Identity of the station
- b) Country

##### **A.2 Date of bringing into use**

The date (actual or foreseen, as appropriate) of bringing the frequency assignment (new or modified) into use.

##### **A.3 Administration or operating agency**

Symbols for the administration or operating agency and for the address of the administration to which communication should be sent on urgent matters regarding interference, quality of emissions and questions referring to the technical operation of the station (see Article 15).

##### **A.4 Position information of the HAPS**

- a) The nominal geographical longitude for the HAPS
- b) The nominal geographical latitude for the HAPS
- c) The nominal altitude for the HAPS
- d) The planned longitudinal and latitudinal tolerance for the HAPS
- e) The planned tolerance of altitude for the HAPS



## **A.5 Agreements**

If appropriate, the country symbol of any administration or administration representing a group of administrations with which agreement has been reached, including where the agreement is to exceed the limits prescribed in Resolution 221 (Rev.WRC-07).

## **B Characteristics to be provided for each antenna beam**

### **B.1 HAPS antenna characteristics**

- a)* The maximum isotropic gain (dBi).
- b)* HAPS antenna gain contours plotted on a map of the Earth's surface.

## **C Characteristics to be provided for each frequency assignment for HAPS antenna beam**

### **C.1 Frequency range**

### **C.2 Power density characteristics of the transmission**

The maximum value of the maximum power density (dB(W/MHz)), averaged over the worst 1 MHz supplied to the input of the antenna.

## **D Calculated pfd limit produced over any country in visibility of HAPS**

The maximum pfd calculated at the Earth's surface within each administration's territory over which the HAPS may be visible and over which these calculated pfd levels exceed the limits indicated in *resolves* 1.1, 1.3 and 1.4 of Resolution 221 (Rev.WRC-07).

**MOD**      PLEN/408/5      (B24/419/1)

## **RESOLUTION 222 (Rev.WRC-07)**

### **Use of the bands 1 525-1 559 MHz and 1 626.5-1 660.5 MHz by the mobile-satellite service, and studies to ensure long-term spectrum availability for the aeronautical mobile-satellite (R) service**

The World Radiocommunication Conference (Geneva, 2007),

*considering*

- a)* that prior to WRC-97, the bands 1 530-1 544 MHz (space-to-Earth) and 1 626.5-1 645.5 MHz (Earth-to-space) were allocated to the maritime mobile-satellite service and the bands 1 545-1 555 MHz (space-to-Earth) and 1 646.5-1 656.5 MHz (Earth-to-space) were allocated on an exclusive basis to the aeronautical mobile-satellite (R) service (AMS(R)S) in most countries;
- b)* that WRC-97 allocated the bands 1 525-1 559 MHz (space-to-Earth) and 1 626.5-1 660.5 MHz (Earth-to-space) to the mobile-satellite service (MSS) to facilitate the assignment of spectrum to multiple MSS systems in a flexible and efficient manner;

c) that WRC-97 adopted No. **5.353A** giving priority to accommodating spectrum requirements for and protecting from unacceptable interference distress, urgency and safety communications of the Global Maritime Distress and Safety System (GMDSS) in the bands 1 530-1 544 MHz and 1 626.5-1 645.5 MHz and No. **5.357A** giving priority to accommodating spectrum requirements for and protecting from unacceptable interference the AMS(R)S providing transmission of messages with priority categories 1 to 6 in Article **44** in the bands 1 545-1 555 MHz and 1 646.5-1 656.5 MHz;

d) that AMS(R)S is an essential element of ICAO CNS/ATM to provide safety and regularity of flight in the civil air transportation,

*further considering*

a) that coordination between satellite networks is required on a bilateral basis in accordance with the Radio Regulations, and, in the bands 1 525-1 559 MHz (space-to-Earth) and 1 626.5-1 660.5 MHz (Earth-to-space), coordination is partially assisted by regional multilateral meetings;

b) that, in these bands, geostationary satellite system operators currently use a capacity-planning approach at multilateral coordination meetings, with the guidance and support of their administrations, to periodically coordinate access to the spectrum needed to accommodate their requirements;

c) that spectrum requirements for MSS networks, including the GMDSS and AMS(R)S , are currently accommodated through the capacity-planning approach and that, in the bands to which Nos. **5.353A** or **5.357A** apply, this approach, and other methods may assist in accommodating the expected increase of spectrum requirements for GMDSS and AMS(R)S;

d) that Report ITU-R M.2073 has concluded that prioritization and inter-system pre-emption between different mobile-satellite systems is not practical and, without a significant advance in technology, is unlikely to be feasible for technical, operational and economical reasons. It summarized that prioritization and intersystem real-time pre-emption would not necessarily increase the efficiency of spectrum use compared to the current situation, but it would certainly complicate substantially the coordination process and network structure;

e) that there is existing and increasing demand for spectrum for AMS(R)S and non-AMS(R)S by several mobile satellite systems in the bands 1 525-1 559 MHz and 1 626.5-1 660.5 MHz, and that the application of this Resolution may impact the provision of services by non-AMS(R)S systems in the mobile satellite service;

f) that future requirements for AMS(R)S and GMDSS spectrum may require additional allocations,

*recognizing*

a) that absolute priority to all telecommunications concerning safety of life at sea, on land, in air or in outer space is given by No. 191 of the ITU Constitution;

b) that the International Civil Aviation Organization (ICAO) has adopted Standards and Recommended Practices (SARPs) addressing satellite communications with aircraft in accordance with the Convention on International Civil Aviation;

c) that all air traffic communications as defined in Annex 10 to the Convention on International Civil Aviation fall within priority categories 1 to 6 of Article **44**;

d) that Table 15-2 of Appendix **15** identifies the bands 1 530-1 544 MHz (space-to-Earth) and 1 626.5-1 645.5 MHz (Earth-to-space) for distress and safety purposes in the maritime mobile-satellite service as well as for routine non-safety purposes,

*resolves*

1 that, in frequency coordination of MSS in the bands 1 525-1 559 MHz and 1 626.5-1 660.5 MHz, administrations shall ensure that the spectrum needed for distress, urgency and safety communications of GMDSS, as elaborated in Articles **32** and **33**, in the bands where No. **5.353A** applies, and for AMS(R)S communications within priority categories 1 to 6 of Article **44** in the bands where No. **5.357A** applies is accommodated;

2 that administrations shall ensure the use of the latest technical advances, in order to achieve the most flexible and practical use of the generic allocations;

3 that administrations shall ensure that MSS operators carrying non-safety-related traffic yield capacity, as and when necessary, to accommodate the spectrum requirements for distress, urgency and safety communication of GMDSS communications, as elaborated in Articles **32** and **33**, and for AMS(R)S communications within priority categories 1 to 6 of Article **44**; this could be achieved in advance through the coordination process in *resolves* 1, and, when necessary, through other means if such means are identified as a result of studies in *invites ITU-R*,

*invites ITU-R*

to conduct, in time for consideration by WRC-11, the appropriate technical, operational and regulatory studies to ensure long-term spectrum availability for the aeronautical mobile-satellite (R) service (AMS(R)S) including:

(i) to study, as a matter of urgency, the existing and future spectrum requirements of the aeronautical mobile-satellite (R) service;

(ii) to assess whether the long-term requirements of the AMS(R)S can be met within the existing allocations with respect to No. **5.357A** while retaining unchanged the generic allocation for the mobile-satellite service in the bands 1 525-1 559 MHz and 1 626.5-1 660.5 MHz, and without placing undue constraints on the existing systems operating in accordance with the Radio Regulations;

(iii) to complete studies to determine the feasibility and practicality of technical or regulatory means, other than the coordination process referred to in *resolves* 1 or the means considered in Report ITU-R M.2073, in order to ensure adequate access to spectrum to accommodate the AMS(R)S requirements as referenced in *resolves* 3 above, while taking into account the latest technical advances in order to maximize spectral efficiency;

(iv) if the assessment identified in *invites ITU-R* (i) and (ii) indicates that these requirements cannot be met, to study existing MSS allocations or possible, new allocations only for satisfying the requirements of the aeronautical mobile satellite (R) service for communications with priority categories 1 to 6 of Article **44**, for global and seamless operation of civil aviation taking into account the need to avoid undue constraints on existing systems and other services,

*invites WRC-11*

to consider the results of the above ITU-R studies and to take appropriate action on this subject, while retaining unchanged the generic allocation to the mobile-satellite service in the bands 1 525-1 559 MHz and 1 626.5-1 660.5 MHz,

*invites*

the International Civil Aviation Organization (ICAO), the International Maritime Organization (IMO), the International Air Transport Association (IATA), administrations and other organizations concerned to participate in the studies identified in *invites ITU-R* above.

**MOD** COM4/332/82 (B13/347/172) (R7/411/214)

## RESOLUTION 223 (Rev.WRC-07)

### **Additional frequency bands identified for IMT**

The World Radiocommunication Conference (Geneva, 2007),

*considering*

- a) that International Mobile Telecommunications (IMT), including IMT-2000 and IMT-Advanced, is the ITU vision of global mobile access;
- b) that IMT systems provide telecommunication services on a worldwide scale regardless of location, network or terminal used;
- c) that IMT provides access to a wide range of telecommunication services supported by fixed telecommunication networks (e.g. PSTN/ISDN, high bitrate Internet access), and to other services which are specific to mobile users;
- d) that the technical characteristics of IMT-2000 are specified in ITU-R and ITU-T Recommendations, including Recommendation ITU-R M.1457, which contains the detailed specifications of the radio interfaces of IMT-2000;
- e) that the evolution of IMT is being studied within ITU-R;
- f) that the review of IMT-2000 spectrum requirements at WRC-2000 concentrated on the bands below 3 GHz;
- g) that at WARC-92, 230 MHz of spectrum was identified for IMT-2000 in the bands 1 885-2 025 MHz and 2 110-2 200 MHz, including the bands 1 980-2 010 MHz and 2 170-2 200 MHz for the satellite component of IMT-2000, in No. **5.388** and under the provisions of Resolution **212 (Rev.WRC-07)**;
- h) that since WARC-92 there has been a tremendous growth in mobile communications including an increasing demand for broadband multimedia capability;
- i) that the bands identified for IMT are currently used by mobile systems or applications of other radiocommunication services;
- j) that Recommendation ITU-R M.1308 addresses the evolution of existing mobile communication systems to IMT-2000, and that Recommendation ITU-R M.1645 addresses the evolution of the IMT systems and maps out their future development;

- k)* that harmonized worldwide bands for IMT are desirable in order to achieve global roaming and the benefits of economies of scale;
- l)* that the bands 1 710-1 885 MHz and 2 500-2 690 MHz are allocated to a variety of services in accordance with the relevant provisions of the Radio Regulations;
- m)* that the band 2 300-2 400 MHz is allocated to the mobile service on a co-primary basis in the three ITU Regions;
- n)* that the band 2 300-2 400 MHz, or portions thereof, is used extensively in a number of administrations by other services including the aeronautical mobile service for telemetry in accordance with the relevant provisions in the Radio Regulations;
- o)* that IMT has already been deployed or is being considered for deployment in some countries in the band 1 710-1 885 MHz, 2 300-2 400 MHz and 2 500-2 690 MHz and equipment is readily available;
- p)* that the bands, or parts of the bands, 1 710-1 885 MHz, 2 300-2 400 MHz and 2 500-2 690 MHz are identified for use by administrations wishing to implement IMT;
- q)* that technological advancement and user needs will promote innovation and accelerate the delivery of advanced communication applications to consumers;
- r)* that changes in technology may lead to the further development of communication applications, including IMT;
- s)* that timely availability of spectrum is important to support future applications;
- t)* that IMT systems are envisaged to provide increased peak data rates and capacity that may require a larger bandwidth;
- u)* that ITU-R studies forecasted that additional spectrum may be required to support the future services of IMT and to accommodate future user requirements and network deployments,

*emphasizing*

- a) that flexibility must be afforded to administrations:
  - to determine, at a national level, how much spectrum to make available for IMT from within the identified bands;
  - to develop their own transition plans, if necessary, tailored to meet their specific deployment of existing systems;
  - to have the ability for the identified bands to be used by all services having allocations in those bands;
  - to determine the timing of availability and use of the bands identified for IMT, in order to meet particular user demand and other national considerations;
- b) that the particular needs of developing countries must be met;
- c) that Recommendation ITU-R M.819 describes the objectives to be met by IMT-2000 in order to meet the needs of developing countries,

*noting*

- a) Resolutions **224 (Rev.WRC-07)** and **225 (Rev.WRC-07)**, which also relate to IMT;
- b) that the sharing implications between services sharing the bands identified for IMT in No. **5.384A**, as relevant, will need further study in ITU-R;
- c) that studies regarding the availability of the band 2 300-2 400 MHz for IMT are being conducted in many countries, the results of which could have implications for the use of those bands in those countries;
- d) that, due to differing requirements, not all administrations may need all of the IMT bands identified at this Conference, or, due to the usage by and investment in existing services, may not be able to implement IMT in all of those bands;
- e) that the spectrum for IMT identified by this Conference may not completely satisfy the expected requirements of some administrations;
- f) that currently operating mobile communication systems may evolve to IMT in their existing bands;
- g) that services such as fixed, mobile (second-generation systems), space operations, space research and aeronautical mobile are in operation or planned in the band 1 710-1 885 MHz, or in portions of that band;
- h) that in the band 2 300-2 400 MHz, or portions of that band, there are services such as the fixed, mobile, amateur and radiolocation service which are currently in operation or planned to be in operation in the future;
- i) that services such as broadcasting-satellite, broadcasting-satellite (sound), mobile-satellite and fixed (including multipoint distribution/communication systems) are in operation or planned in the band 2 500-2 690 MHz, or in portions of that band;
- j) that the identification of several bands for IMT allows administrations to choose the best band or parts of bands for their circumstances;
- k) that ITU-R has identified additional work to address further developments in IMT;
- l) that the IMT-2000 radio interfaces as defined in Recommendation ITU-R M.1457 are expected to evolve within the framework of ITU-R beyond those initially specified, to provide enhanced services and services beyond those envisaged in the initial implementation;

*m)* that the identification of a band for IMT does not establish priority in the Radio Regulations and does not preclude the use of the band for any application of the services to which they are allocated;

*n)* that the provisions of Nos. **5.317A**, **5.384A** and **5.388** do not prevent administrations from having the choice to implement other technologies in the frequency bands identified for IMT, based on national requirements,

*recognizing*

that for some administrations the only way of implementing IMT would be spectrum refarming, requiring significant financial investment,

*resolves*

1 to invite administrations implementing IMT or planning to implement IMT to make available, based on user demand and other national considerations, additional bands or portions of the bands above 1 GHz identified in No. **5.384A** for the terrestrial component of IMT; due consideration should be given to the benefits of harmonized utilization of the spectrum for the terrestrial component of IMT, taking into account the services to which the frequency band is currently allocated;

2 to acknowledge that the differences in the texts of Nos. **5.384A** and **5.388** do not confer differences in regulatory status,

*invites ITU-R*

1 to study the implications of sharing of IMT with other applications and services in the band 2 300-2 400 MHz and the implementation, sharing and frequency arrangements of IMT in the band 2 300-2 400 MHz;

2 to develop harmonized frequency arrangements for the 2 300-2 400 MHz band for operation of the terrestrial component of IMT, taking into account the results of the sharing studies;

3 to continue its studies on further enhancements of IMT, including the provision of Internet Protocol (IP)-based applications that may require unbalanced radio resources between the mobile and base stations;

4 to continue providing guidance to ensure that IMT can meet the telecommunication needs of the developing countries and rural areas in the context of the studies referred to above;

5 to include these frequency arrangements and the results of these studies in one or more ITU-R Recommendations,

*further invites ITU-R*

to commence these studies forthwith.

RESOLUTION 224 (Rev.WRC-07)

**Frequency bands for the terrestrial component of International Mobile Telecommunications below 1 GHz**

The World Radiocommunication Conference (Geneva, 2007),

*considering*

- a) that International Mobile Telecommunications (IMT) is the root name, encompassing both IMT-2000 and IMT-Advanced (see Resolution ITU-R 56);
- b) that IMT systems are intended to provide telecommunication services on a worldwide scale, regardless of location, network or terminal used;
- c) that parts of the band 806-960 MHz are extensively used in the three Regions by mobile systems;
- d) that IMT systems have already been deployed in the band 806-960 MHz in some countries of the three Regions;
- e) that some administrations are planning to use the band 698-862 MHz, or part of that band, for IMT;
- f) that, as a result of the transition from analogue to digital terrestrial television broadcasting, some countries are planning to make or are making the band 698-862 MHz, or parts of that band, available for applications in the mobile service (including uplinks);
- g) that the band 450-470 MHz is allocated to the mobile service on a primary basis in the three Regions and that IMT systems have already been deployed in some countries of the three Regions;
- h) that results of the sharing studies for the band 450-470 MHz are contained in Report ITU-R M.2110;
- i) that cellular mobile systems in the three Regions in the bands below 1 GHz operate using various frequency arrangements;
- j) that where cost considerations warrant the installation of fewer base stations, such as in rural and/or sparsely populated areas, bands below 1 GHz are generally suitable for implementing mobile systems including IMT;
- k) that bands below 1 GHz are important, especially for some developing countries and countries with large areas where economic solutions for low population density areas are necessary;
- l) that Recommendation ITU-R M.819 describes the objectives to be met by IMT-2000 in order to meet the needs of developing countries, and in order to assist them to “bridge the gap” between their communication capabilities and those in developed countries;
- m) that Recommendation ITU-R M.1645 also describes the coverage objectives of IMT,

*recognizing*

- a) that cellular-based mobile networks’ evolution to IMT can be facilitated if they are permitted to evolve within their current frequency bands;



- b)* that the band 450-470 MHz and parts of the bands 746-806 MHz and 806-862 MHz are used extensively in many countries by various other terrestrial mobile systems and applications, including public protection and disaster relief radiocommunications (see Resolution **646 (WRC-03)**);
- c)* that there is a need, in many developing countries and countries with large areas of low population density, for the cost-effective implementation of IMT, and that the propagation characteristics of frequency bands below 1 GHz identified in Nos **5.XXX\*** and **5.317A** result in larger cells;
- d)* that the band 450-470 MHz, or parts of that band, is also allocated to services other than the mobile service;
- e)* that the band 460-470 MHz is also allocated to the meteorological-satellite service in accordance with No. **5.290**;
- f)* that the frequency band 470-806/862 MHz is allocated to the broadcasting service on a primary basis in all three Regions and used predominantly by this service, and that the GE06 Agreement applies in all Region 1 countries, except Mongolia, and in the Islamic Republic of Iran in Region 3;
- g)* that the GE06 Agreement contains provisions for the terrestrial broadcasting service and other primary terrestrial services, a Plan for digital television, and a list of stations of other primary terrestrial services;
- h)* that the transition from analogue to digital television is expected to result in situations where the band 470-806/862 MHz will be used extensively for both analogue and digital terrestrial transmission, and the demand for spectrum during the transition period may be even greater than the stand-alone usage of analogue broadcasting systems;
- i)* that the time-frame and transition period for analogue to digital television switchover may not be the same for all countries;
- j)* that, after analogue to digital television switchover, some administrations may decide to use all or parts of the band 698-806/862 MHz for other services to which the band is allocated on a primary basis, in particular the mobile service for the implementation of IMT, while in other countries the broadcasting service will continue to operate in that band;
- k)* that in the band 470-862 MHz, or parts of that band, there is an allocation on a primary basis for the fixed service;
- l)* that, in some countries, the band 698-806/862 MHz is allocated to the mobile service on a primary basis;
- m)* that the band 645-862 MHz is allocated on a primary basis to the aeronautical radionavigation service in the countries listed in No. **5.312**;
- n)* that the compatibility of the mobile service with the broadcasting, fixed and aeronautical radionavigation service in the band referred to in *recognizing k)* and *m)* will need further study in ITU-R,

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\* Note from the Secretariat: This footnote refers to 450-470 MHz.

*emphasizing*

- a) that in all administrations terrestrial broadcasting is a vital part of the communication and information infrastructure;
- b) that flexibility must be afforded to administrations:
  - to determine, at a national level, how much spectrum to make available for IMT from within the identified bands, taking into account current uses of the spectrum and the needs of other applications;
  - to develop their own transition plans, if necessary, tailored to meet their specific deployment of existing systems;
  - to have the ability for the identified bands to be used by all services having allocations in those bands;
  - to determine the timing of availability and use of the bands identified for IMT, in order to meet particular market demand and other national considerations;
- c) that the particular needs and national conditions and circumstances of developing countries, including least-developed countries, highly-indebted poor countries with economies in transition, and countries with large territories and territories with a low-subscriber density, must be met;
- d) that due consideration should be given to the benefits of harmonized utilization of the spectrum for the terrestrial component of IMT, taking into account the current and planned use of these bands by all services to which these bands are allocated;
- e) that the use of frequency bands below 1 GHz for IMT also helps to “bridge the gap” between sparsely-populated areas and densely-populated areas in various countries;
- f) that the identification of a band for IMT does not preclude the use of this band by other services or applications to which it is allocated;
- g) that the use of the band 470-862 MHz by the broadcasting service and other primary services is also covered by the GE06 Agreement;
- h) that the requirements of the different services to which the band is allocated, including the mobile and broadcasting services, need to be taken into account,

*resolves*

- 1 that administrations which are implementing, or planning to implement IMT, consider the use of bands identified for IMT below 1 GHz and the possibility of cellular-based mobile networks’ evolution to IMT, in the frequency band identified in Nos **5.XXX\*** and **5.317A**, based on user demand and other considerations;
- 2 to encourage administrations to take into account the results of the ITU-R studies referred to in *invites ITU-R* below, and any recommended measures when implementing applications/systems in the bands 790-862 MHz in Region 1 and Region 3, in the band 698-806 MHz in Region 2, and in those administrations mentioned in No. **5.YYY**;
- 3 that administrations should take into account the need to protect the existing and future broadcasting stations, both analogue and digital, in the 470-806/862 MHz band, as well as other primary terrestrial services;

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\* Note from the Secretariat: This footnote refers to 450-470 MHz.

4 that administrations planning to implement IMT in the bands mentioned in *resolves* 2 shall effect coordination with all neighbouring administrations prior to implementation;

5 that in Region 1 (excluding Mongolia) and in the Islamic Republic of Iran the implementation of stations in the mobile service shall be subject to the applications of procedures contained in the GE06 Agreement. In so doing:

- a) administrations which deploy stations in the mobile service for which coordination was not required, or without having obtained the prior consent of those administrations that may be affected, shall not cause unacceptable interference to, nor claim protection from, stations of the broadcasting service of administrations operating in conformity with the GE06 Agreement. This should include a signed commitment as required under § 5.2.6 of the GE06 Agreement;
- b) administrations which deploy stations in the mobile service for which coordination was not required, or without having obtained the prior consent of those administrations that may be affected, shall not object nor prevent the entry into the GE06 plan or recording in the MIFR of additional future broadcasting allotments or assignments of any other administration in the GE06 Plan with reference to those stations;

6 that, in Region 2, implementation of IMT shall be subject to the decision of each administration on the transition from analogue to digital television,

*invites ITU-R*

1 to study the potential use of the band 790-862 MHz in Region 1 and Region 3, the band 698-806 MHz in Region 2 and in those administrations mentioned in No. **5.YYY** in Region 3 by new mobile and broadcasting applications, including the impact on the GE06 Agreement, where applicable, and to develop ITU-R Recommendations on how to protect the services to which these bands are currently allocated, including the broadcasting service and in particular the GE06 Plan, as updated, and its future developments;

2 in the frequency bands mentioned in *invites ITU-R* 1, to study compatibility between mobile systems with different technical characteristics and provide guidance on any impact the new considerations may have on spectrum arrangements;

3 to include the results of the studies referred to in *invites ITU-R* 2, and in particular harmonization measures for IMT, in one or more ITU-R Recommendations by 2010;

4 to develop harmonized frequency arrangements for the 450-470 MHz band for operation of the terrestrial component of IMT, taking into account *considering h)* above.

*invites the Director of the Telecommunication Development Sector*

to draw the attention of the Telecommunication Development Sector to this Resolution.

RESOLUTION 225 (Rev.WRC-07)

**Use of additional frequency bands for the satellite component of IMT**

The World Radiocommunication Conference (Geneva, 2007),

*considering*

- a)* that the bands 1 980-2 010 MHz and 2 170-2 200 MHz are identified for use by the satellite component of International Mobile Telecommunications (IMT) through No. **5.388** and Resolution **212 (Rev.WRC-07)**;
- b)* Resolutions **212 (Rev.WRC-07)**, **223 (WRC-07)** and **224 (WRC-07)** on the implementation of the terrestrial and satellite components of IMT;
- c)* that the bands 1 518-1 544 MHz, 1 545-1 559 MHz, 1 610-1 626.5 MHz, 1 626.5-1 645.5 MHz, 1 646.5-1 660.5 MHz, 1 668-1 675 MHz, 2 483.5-2 500 MHz, 2 500-2 520 MHz and 2 670-2 690 MHz are allocated on a co-primary basis to the mobile-satellite service and other services in accordance with the Radio Regulations;
- d)* that distress, urgency and safety communications of the Global Maritime Distress and Safety System and the aeronautical mobile-satellite (R) service have priority over all other mobile-satellite service communications in accordance with Nos. **5.353A** and **5.357A**,

*recognizing*

- a)* that services such as broadcasting-satellite, broadcasting-satellite (sound), mobile-satellite, fixed (including point-to-multipoint distribution/communication systems) and mobile are in operation or planned in the band 2 500-2 690 MHz, or in portions of that band;
- b)* that other services such as the mobile service, the radio astronomy service and radiodetermination-satellite service are in operation or planned, in accordance with the Table of Frequency Allocations, in the bands 1 518-1 559/1 626.5-1 660.5 MHz, 1 610-1 626.5/2 483.5-2 500 MHz and 1 668-1 670 MHz, or in portions of those bands, and that those bands, or portions thereof, are intensively used in some countries by applications other than the IMT satellite component, and the sharing studies within ITU-R are not finished;
- c)* that studies of potential sharing and coordination between the satellite component of IMT and the terrestrial component of IMT, mobile-satellite service applications and other high-density applications in other services such as point-to-multipoint communication/distribution systems in the bands 2 500-2 520 MHz and 2 670-2 690 MHz bands are not finished;
- d)* that the bands 2 520-2 535 MHz and 2 655-2 670 MHz are allocated to the mobile-satellite, except aeronautical mobile-satellite, service for operation limited to within national boundaries pursuant to Nos. **5.403** and **5.420**;
- e)* Resolution ITU-R 47 on studies under way on satellite radio transmission technologies for IMT,

*resolves*

1 that, in addition to the frequency bands indicated in *considering a)* and *resolves 2*, the frequency bands 1 518-1 544 MHz, 1 545-1 559 MHz, 1 610-1 626.5 MHz, 1 626.5-1 645.5 MHz, 1 646.5-1 660.5 MHz, 1 668-1 675 MHz and 2 483.5-2 500 MHz may be used by administrations wishing to implement the satellite component of IMT, subject to the regulatory provisions related to the mobile-satellite service in these frequency bands;

2 that the bands 2 500-2 520 MHz and 2 670-2 690 MHz as identified for IMT in No. **5.384A** and allocated to the mobile-satellite service may be used by administrations wishing to implement the satellite component of IMT; however, depending on user demand, it may be possible in the longer term that the administrations decide to use these bands for the terrestrial component of IMT (see the Preamble of the ITU Constitution);

3 that this identification of frequency bands for the satellite component of IMT does not preclude the use of these bands by any applications of the services to which they are allocated and does not establish priority in the Radio Regulations,

*invites ITU-R*

1 to study the sharing and coordination issues in the above bands related to use of the mobile-satellite service allocations for the satellite component of IMT and the use of this spectrum by the other allocated services, including the radiodetermination-satellite service;

2 to report the results of these studies to a future world radiocommunication conference,

*invites the Director of the Telecommunication Development Bureau*

to draw the attention of the Telecommunication Development Sector to this Resolution,

[NOC] COM6/390/1

## RESOLUTION 228 (Rev.WRC-03)

### **Studies on frequency-related matters for the future development of IMT-2000 and systems beyond IMT-2000 as defined by ITU-R**

SUP COM4/332/88 (B13/347/174) (R7/411/216)

## RESOLUTION 230 (WRC-03)

### **Consideration of mobile allocations for wideband aeronautical telemetry and associated telecommand**

RESOLUTION 331 (Rev.WRC-07)

**Transition to the Global Maritime Distress and Safety System (GMDSS)**

The World Radiocommunication Conference (Geneva, 2007),

*noting*

that all ships subject to the International Convention for the Safety of Life at Sea (SOLAS), 1974, as amended, are required to be fitted for the Global Maritime Distress and Safety System (GMDSS),

*noting further*

- a) that a number of administrations have taken steps to implement the GMDSS also for classes of vessels not subject to SOLAS, 1974, as amended;
- b) that an increasing number of vessels not subject to SOLAS, 1974, as amended, are making use of the techniques and frequencies of the GMDSS prescribed in Chapter VII;
- c) that this Conference has amended Chapter VII to provide for maintaining interoperability between ships fitted for GMDSS and ships not yet fully equipped for GMDSS;
- d) that there may be a need to maintain existing shore-based distress and safety services for the reception of distress, urgency and safety calling by voice on VHF channel 16 so that vessels not subject to SOLAS, 1974, as amended and not yet using the techniques and frequencies of the GMDSS will be able to attract attention and obtain assistance from these services;
- e) that the International Maritime Organization (IMO) is of the view that SOLAS ships, while at sea, should be required to keep a listening watch on VHF channel 16, for the foreseeable future, with a view to providing:
  - a distress alerting and communication channel for non-SOLAS ships; and
  - bridge-to-bridge communications;
- f) that IMO has urged administrations to require all seagoing vessels under national legislation, and encourage all vessels voluntarily carrying VHF radio equipment to be fitted with facilities for transmitting and receiving distress alerts by digital selective calling (DSC) on VHF channel 70;
- g) that the Radio Regulations require GMDSS ships to keep watch on the appropriate DSC distress frequencies;
- h) that separate provisions in the existing Radio Regulations designate VHF channel 16 as the international channel for general calling by radiotelephony;
- i) that several administrations have established Vessel Traffic Service (VTS) systems and require their vessels to keep watch on local VTS channels;
- j) that ships that are required by SOLAS to carry a radio station have been equipped with DSC, and many vessels subject to national carriage requirements are also being equipped with DSC, but the majority of vessels that carry a radio station on a voluntary basis might not yet have DSC equipment;

k) that similarly, many administrations have established distress and safety service based on DSC watchkeeping, but the majority of port stations, pilot stations and other operational coast stations might not yet have been equipped with DSC facilities;

l) that Nos **52.190** to **52.192** and **52.232** to **52.234** allow frequency 2 182 kHz and channel 16 to be used for call and reply,

*recognizing*

a) that, as indicated in *noting further a), b), f), j)* and k) above, stations in the maritime mobile service are increasingly making use of the frequencies and techniques of GMDSS;

b) that this Conference has adopted provisions for distress, urgency and safety calling by radiotelephony on VHF channel 16, requiring ships, where practicable, to maintain watch on VHF channel 16;

c) the need to maintain existing shore-based distress and safety services for reception of distress, urgency and safety calling by voice on VHF channel 16 for some years after this Conference so that vessels not subject to SOLAS, 1974, as amended, and not yet using the techniques and frequencies of the GMDSS, will be able to attract attention and obtain assistance from these services until such time as they are able to participate in the GMDSS;

d) the need indicated in *noting further d)* above for maintaining existing shore-based distress, urgency and safety services on VHF channel 16,

*resolves*

1 to retain the provisions permitting use of VHF channel 16 and the frequency 2 182 kHz for general voice-calling;

2 to urge all administrations to assist in enhancing safety at sea by:

- encouraging all vessels to finalize the transition to the GMDSS as soon as possible;
- encouraging, where appropriate, establishment of suitable shore-based facilities for GMDSS, either on an individual basis or in cooperation with other relevant parties in the area;
- encouraging all vessels carrying maritime VHF equipment to be fitted with DSC on VHF channel 70 as soon as possible, taking into account the relevant decisions of IMO;
- encouraging vessels to limit their use of VHF channel 16 and the frequency 2 182 kHz for calling to the minimum necessary, noting the provisions of No. **52.239**;

3 that coast stations forming part of shore-based arrangements in the area concerned for reception of distress calling by radiotelephony on VHF channel 16 should maintain an efficient watch on VHF channel 16. Such watch should be indicated in the List of Coast Stations and Special Service Stations;

4 that administrations may release their ship stations and coast stations from the listening watch on VHF channel 16 in respect of distress, urgency and safety calling by voice, in accordance with relevant decisions of IMO and ITU on aural watch-keeping requirements on channel 16, taking into account the GMDSS radio systems available in the area concerned;

when doing so, administrations should:

- inform IMO of their decisions and submit to IMO details on the area concerned;
- inform the Secretary-General of the necessary details for inclusion in the List of Coast Stations and Special Service Stations,

*invites ITU-R*

to monitor the development of and changes to the GMDSS, in particular:

- watch-keeping requirements;
- distress alerting;
- carriage requirements,

and report to a future world radiocommunication conference on when further rationalization of Chapter **VII** should be considered,

*resolves further*

that the Secretary-General should ensure that such arrangements and details regarding the area concerned be indicated in relevant maritime publications,

*instructs the Secretary-General*

to bring this Resolution to the attention of the International Maritime Organization, the International Civil Aviation Organization and the International Association of Marine Aids to Navigation and Lighthouse Authorities.

**MOD** COM4/332/178 (B14/365/43) (R7/411/217)

## **RESOLUTION 339 (Rev.WRC-07)**

### **Coordination of NAVTEX services**

The World Radiocommunication Conference (Geneva, 2007),

...

*instructs the Secretary-General*

1 to invite IMO to provide ITU with information on a regular basis on operational coordination for NAVTEX services on the frequencies 490 kHz, 518 kHz and 4 209.5 kHz,

*instructs the Director of the Radiocommunication Bureau*

to publish this information in the *List of Coast Stations and Special Service Stations* (List IV) (see No. **20.7**).



SUP COM4/380/56 (B17/404/67)

RESOLUTION 340 (WRC-97)

**Need for additional search and rescue information in databases**

MOD COM4/380/73 (B17/404/68)

RESOLUTION 351 (Rev.WRC-07)

**Review of the frequency and channel arrangements in the HF bands allocated to the maritime mobile service contained in Appendix 17 with a view to improving efficiency through the use of new digital technology by the maritime mobile service**

The World Radiocommunication Conference (Geneva, 2007),

*considering*

- a) that the introduction of new digital technology in the maritime mobile service (MMS) shall not disrupt the distress and safety communications in the HF bands including those established by the International Convention for the Safety of Life at Sea (SOLAS), 1974, as amended;
- b) that changes made in Appendix 17 should not prejudice the future use of these frequencies or the capabilities of systems or new applications required for use by the MMS;
- c) that the need to use new digital technologies in the MMS is growing rapidly;
- d) that the use of new digital technology on HF frequencies allocated to the MMS will make it possible to better respond to the emerging demand for new services;
- e) that the HF bands allocated to the MMS for A1A Morse telegraphy and narrow-band direct-printing (NBDP) contained in Appendix 17 are significantly under-utilized at present;
- f) that there are new HF data exchange technologies capable of delivering maritime safety information;
- g) that the International Maritime Organization (IMO) supports the frequencies of Appendix 15, concerning NBDP, being retained for the foreseeable future;
- h) that the ITU Radiocommunication Sector is conducting ongoing studies to improve the efficient use of these bands,

*noting*

- a) that different digital technologies have already been developed and are in use in the HF bands in several radiocommunication services;
- b) that new maritime HF data transfer protocols have already been developed and are in operation using Appendix 17 frequencies and other frequencies outside Appendix 17,

*resolves*

to invite [WRC-11] to consider necessary changes to Appendix 17 in order to implement the use of new technology by MMS, in accordance with *invites ITU-R*,

*invites ITU-R*

to finalize studies currently ongoing:

- to identify any necessary modifications to the frequency table contained within Appendix 17;
- to identify any necessary transition arrangements for the introduction of new digital technologies and any consequential changes to Appendix 17;
- to recommend how digital technologies can be introduced while ensuring compliance with distress and safety requirements,

*encourages Member States*

when contributing to the implementation of this Resolution, to take into consideration other modifications to Articles and Appendices as necessary,

*instructs the Secretary-General*

to bring this Resolution to the attention of IMO, the International Civil Aviation Organization (ICAO), the International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA), the Comité International Radio-Maritime (CIRM), and International Electrotechnical Commission (IEC).

**SUP** COM4/332/194 (B14/365/44) (R7/411/218)

## **RESOLUTION 353 (WRC-03)**

### **Maritime mobile service identities for equipment other than shipborne mobile equipment**

**MOD** COM4/318/7 (B11/329/39) (R6/410/73)

## **RESOLUTION 413 (Rev.WRC-07)**

### **Use of the band 108-117.975 MHz by the aeronautical mobile (R) service**

The World Radiocommunication Conference (Geneva, 2007),

*considering*

- a)* the current allocation of the frequency band 108-117.975 MHz to the aeronautical radionavigation service (ARNS);
- b)* the current requirements of FM broadcasting systems operating in the frequency band 87-108 MHz;
- c)* that digital sound broadcasting systems are capable of operating in the frequency band at about 87-108 MHz as described in Recommendation ITU-R BS.1114;
- d)* the need for the aeronautical community to provide additional services by enhancing navigation systems through a radiocommunication data link;

- e) the need for the broadcasting community to provide digital terrestrial sound broadcasting services;
- f) that this allocation was made by this Conference in the knowledge that studies are ongoing with respect to the technical characteristics, sharing criteria and sharing capabilities;
- g) the need for the aeronautical community to provide additional services for radiocommunications, relating to safety and regularity of flight, in the band 112-117.975 MHz;
- h) that this Conference has modified the allocation of the band 112-117.975 MHz to the aeronautical mobile (R) services (AM(R)S) in order to make available this frequency band for new AM(R)S systems, and in doing so enabled further technical developments, investments and deployment;
- i) that the frequency band 117.975-137 MHz currently allocated to the AM(R)S is reaching saturation in certain areas of the world;
- j) that this new allocation is intended to support the introduction of applications and concepts in air traffic management which are data intensive, and which could support data links that carry safety-critical aeronautical data;
- k) that additional information is needed about the new technologies which will be used, the amount of spectrum required, the characteristics and sharing capabilities/conditions, and that therefore studies are urgently required on which AM(R)S systems will be used, the amount of spectrum required, the characteristics and the conditions for sharing with ARNS systems,

*recognizing*

- a) that precedence must be given to the ARNS operating in the frequency band 108-117.975 MHz;
- b) that, in accordance with Annex 10 of the Convention of the International Civil Aviation Organization (ICAO) on international civil aviation, all aeronautical systems must meet standards and recommended practices (SARPs) requirements;
- c) that within ITU-R, compatibility criteria between FM broadcasting systems operating in the frequency band 87-108 MHz and the ARNS operating in the frequency band 108-117.975 MHz already exist, as indicated in the most recent version of Recommendation ITU-R SM.1009;
- d) that all compatibility issues between FM broadcasting systems and ICAO standard ground-based systems for the transmission of radionavigation-satellite differential correction signals have been addressed,

*noting*

- a) that aeronautical systems are converging towards a radiocommunication data link environment to support aeronautical navigation and surveillance functions, which need to be accommodated in existing radio spectrum;
- b) that some administrations are planning to introduce digital sound broadcasting systems in the frequency band at about 87-108 MHz;
- c) that no compatibility criteria currently exist between FM broadcasting systems operating in the frequency band 87-108 MHz and the planned additional aeronautical systems in the adjacent band 108-117.975 MHz using aircraft transmission;
- d) that no compatibility criteria currently exist between digital sound broadcasting systems capable of operating in the frequency band at about 87-108 MHz and aeronautical services in the band 108-117.975 MHz,

*resolves*

- 1 that any aeronautical mobile (R) service systems operating in the band 108-117.975 MHz shall not cause harmful interference to, nor claim protection from ARNS systems operating in accordance with international aeronautical standards;
- 2 that any AM(R)S systems planned to operate in the frequency band 108-117.975 MHz shall, as a minimum, meet the FM broadcasting immunity requirements contained in Annex 10 of the ICAO Convention on International Civil Aviation for existing aeronautical radionavigation systems operating in this frequency band;
- 3 that AM(R)S systems operating in the band 108-117.975 MHz shall place no additional constraints on the broadcasting service or cause harmful interference to stations operating in the bands allocated to the broadcasting service in the frequency band 87-108 MHz and No. **5.43** does not apply to systems identified in *recognizing d*);
- 4 that frequencies below 112 MHz shall not be used for AM(R)S systems excluding the ICAO systems identified in *recognizing d*);
- 5 that any AM(R)S operating in the frequency band 108-117.975 MHz shall meet SARPs requirements published in Annex 10 of the ICAO Convention on International Civil Aviation;
- 6 that WRC-11 should consider, based on the results of the ITU-R studies mentioned under *invites ITU-R*, any further regulatory measure to facilitate introduction of new AM(R)S systems,

*invites ITU-R*

- 1 to study any compatibility issues between the broadcasting and AM(R) services that may arise from the introduction of AM(R)S systems in the band 112-117.975 MHz, and to develop new or revised ITU-R Recommendations as appropriate;
- 2 to study any compatibility issues between the broadcasting and AM(R) services in the band 108-117.975 MHz that may arise from the introduction of appropriate digital sound broadcasting systems, described in Recommendation ITU-R BS.1114, and to develop new or revised ITU-R Recommendations as appropriate;
- 3 to report to WRC-11 on the results of these studies,

*instructs the Secretary-General*

to bring this Resolution to the attention of ICAO.

**SUP** COM4/332/87 (B13/347/175) (R7/411/219)

**RESOLUTION 414 (WRC-03)**

**Consideration of the frequency range between 108 MHz and 6 GHz  
for new aeronautical applications**

SUP COM4/318/1 (B11/329/40) (R6/410/74)

RESOLUTION 415 (WRC-03)

**Study of current satellite frequency allocations that will  
support the modernization of civil aviation  
telecommunications systems**

MOD COM4/380/74 (B19/413/25)

RESOLUTION 517 (Rev.WRC-07)

**Introduction of digitally modulated emissions in the  
high-frequency bands between 3 200 kHz and 26 100 kHz  
allocated to the broadcasting service**

The World Radiocommunication Conference (Geneva, 2007),

*considering*

- a) that digital techniques are being introduced into many existing services;
- b) that digital techniques allow more effective utilization of the frequency spectrum than double-sideband (DSB) techniques;
- c) that digital techniques enable reception quality to be improved;
- d) the relevant parts of Appendix 11 concerning the digital system specification in the HF broadcasting services;
- e) that ITU-R, in its Recommendation ITU-R BS.1514, has recommended system characteristics for digital sound broadcasts in the broadcast bands below 30 MHz;
- f) that digital modulation techniques are expected to provide the means to achieve the optimum balance between sound quality, circuit reliability and bandwidth;
- g) that digitally modulated emissions can, in general, provide more efficient coverage than amplitude-modulated transmissions by using fewer simultaneous frequencies and less power;
- h) that it may be economically attractive, using current technology, to convert modern conventional DSB broadcasting systems to digital operation in accordance with *considering d)*;
- i) that some DSB transmitters have been used with digital modulation techniques without transmitter modifications;
- j) that ITU-R is carrying out further studies on the development of broadcasting using digitally modulated emissions in the bands allocated to the broadcasting service below 30 MHz;
- k) that a long period could be needed for the introduction of digital broadcasting, taking into account the cost impact of replacement of transmitters and receivers,

*resolves*

- 1 that the early introduction of digitally modulated emissions as recommended by ITU-R in the HF bands between 3 200 kHz and 26 100 kHz allocated to the broadcasting service is to be encouraged;
- 2 that digitally modulated emissions shall comply with the characteristics specified in the relevant parts of Appendix 11;
- 3 that whenever an administration replaces a DSB emission by an emission using digital modulation techniques, it shall ensure that the level of interference is not greater than that caused by the original DSB emission, and shall use the RF protection values specified in Resolution 543 (WRC-03) and Recommendation 517 (Rev.WRC-03);
- 4 that the continued use of DSB emissions may be reviewed by a future competent world radiocommunication conference based on administrations' experience with the introduction of digital HF broadcasting services,

*instructs the Director of the Radiocommunication Bureau*

to compile and provide to the future competent world radiocommunication conference referred to in *resolves* 4 the latest available complete statistics on the worldwide distribution of digital HF broadcasting receivers and transmitters,

*invites ITU-R*

to continue its studies on digital techniques in HF broadcasting with a view to assisting in the development of this technology for future use,

*invites administrations*

to encourage the inclusion in all new HF broadcasting transmitters put into service after 1 January 2004 of the capability to offer digital modulation,

*further invites administrations*

- 1 to assist the Director of the Radiocommunication Bureau by providing the relevant statistical data and to participate in ITU-R studies on matters relating to the development and introduction of digitally modulated emissions in the HF bands between 3 200 kHz and 26 100 kHz allocated to the broadcasting service;
- 2 to bring to the notice of transmitter and receiver manufacturers the recent results of relevant ITU-R studies on spectrum-efficient modulation techniques suitable for use at HF as well as the information referred to in *considering d)* and *e)*, and encourage the availability of affordable low-cost digital receivers.

RESOLUTION 525 (Rev.WRC-07)

**Introduction of high-definition television systems  
of the broadcasting-satellite service in the  
band 21.4-22.0 GHz in Regions 1 and 3**

The World Radiocommunication Conference (Geneva, 2007),

*considering*

- a) that WARC-92 reallocated the band 21.4-22.0 GHz in Regions 1 and 3 to the broadcasting-satellite service (BSS) to be implemented after 1 April 2007;
- b) that until 1 April 2007 the existing services operating in the band 21.4-22.0 GHz in Regions 1 and 3 in accordance with the Table of Frequency Allocations were therefore entitled to continue operating without harmful interference from other services;
- c) that as of 1 April 2007 the introduction of high-definition television (HDTV) systems in this band is to be regulated in a flexible and equitable manner until such time as a future competent world radiocommunication conference has adopted definitive provisions for this purpose in accordance with Resolution **507 (Rev.WRC-03)**;
- d) that procedures are required for the circumstances envisaged in *considering c)* above,

*further considering*

- a) that mitigation techniques for rain attenuation for the BSS have been developed and given in Recommendation ITU-R BO.1659;
- b) that in the band 21.4-22.0 GHz in Regions 1 and 3, a reference power flux-density for the BSS has been developed and given in Recommendation ITU-R BO.1776;
- c) that in the band 21.4-22.0 GHz in Regions 1 and 3, intra-service sharing criteria for geostationary BSS systems have been developed and given in Recommendation ITU-R BO.1785;
- d) that in the band 21.4-22.0 GHz in Regions 1 and 3, system parameters of BSS between 17.3 GHz and 42.5 GHz and associated feeder links have been developed and given in Report ITU-R BO.2071,

*noting*

- a) that Recommendation ITU-R BT.1201 deals with extremely high resolution imagery (EHRI);
- b) that Recommendation ITU-R BT.1769 contains parameter values for an expanded hierarchy of large screen digital imagery (LSDI) image formats for production and international programme exchange;
- c) that, in future BSS systems in the band 21.4-22.0 GHz, HDTV applications may include such EHRI applications as shown in Report ITU-R BT.2042,

*recognizing*

that there might have been some broadcasting satellite networks that introduced operational HDTV systems in this band before 1 April 2007 without affecting the continued operation of existing services,

*resolves*

to adopt the interim procedures contained in the Annex hereto,

*invites all administrations*

to comply with the above procedures,

*instructs the Radiocommunication Bureau*

to apply the above procedures.

## ANNEX TO RESOLUTION 525 (Rev.WRC-07)

### **Interim procedures for the introduction of broadcasting-satellite service (HDTV) systems in the band 21.4-22.0 GHz in Regions 1 and 3**

#### **Section I – General provisions**

1 All services other than the broadcasting-satellite service (BSS) in the band 21.4-22.0 GHz in Regions 1 and 3 operating in accordance with the Table of Frequency Allocations may operate subject to not causing harmful interference to BSS (HDTV) systems nor claiming protection from such systems. It shall be understood that the introduction of an operational BSS (HDTV) system in the band 21.4-22.0 GHz in Regions 1 and 3 should be regulated by an interim procedure in a flexible and equitable manner until the date to be decided by WRC-11.

#### **Section II – Interim procedure relating to BSS (HDTV) systems**

2 For the purpose of introducing and operating BSS (HDTV) systems in the band 21.4-22.0 GHz in Regions 1 and 3 before the next conference has taken decisions on definitive procedures, all relevant provisions of Articles 9 to 14 except No. 9.11 shall be applied.

3 Administrations shall, to the maximum extent possible, seek to ensure that operational BSS (HDTV) systems introduced in the band 21.4-22.0 GHz in Regions 1 and 3 have characteristics which take into account the studies of the ITU-R for the preparation of WRC-11.

SUP COM4/380/75 (B19/413/26)

## RESOLUTION 544 (WRC-03)

### **Identification of additional spectrum for the broadcasting service in the HF bands**



SUP COM4/211/5 (B3/224/35) (R2/266/24)

RESOLUTION 545 (WRC-03)

**Technical and regulatory procedures relating to the broadcasting-satellite service networks operating in the 620-790 MHz band**

MOD COM5/307/32 (B11/329/41) (R6/410/75)

RESOLUTION 547 (Rev.WRC-07)

**Updating of the “Remarks” columns in the Tables of Article 9A of Appendix 30A and Article 11 of Appendix 30 of the Radio Regulations**

The World Radiocommunication Conference (Geneva, 2007),

*considering*

- a) that this Conference updated the “Remarks” columns in the Tables of Article 9A of Appendix 30A and Article 11 of Appendix 30 based on the results of studies by the Radiocommunication Bureau;
- b) that this Conference updated the Tables, included in Article 9A of Appendix 30A and Article 11 of Appendix 30, that specify affected or affecting networks, terrestrial stations or beams of administrations based on the results of studies by the Radiocommunication Bureau;
- c) that it would be appropriate to update the Tables referred to in *considering b)* to reflect the changes in status of the fixed-satellite service networks and modifications to the characteristics, contained in these Tables,

*recognizing*

- a) that the integrity of the Region 2 Plan and its associated provisions must be preserved;
- b) that the compatibility between the broadcasting-satellite service (BSS) in Regions 1 and 3 and the other services in all three Regions must be ensured,

*resolves*

that, in order to reduce the number of affected and affecting administrations or networks, the Bureau shall carry out the required analyses following any changes in the characteristics and any suppression of assignments contained in Tables 1A and 1B of Article 9A of Appendix 30A and in Tables 2, 3 and 4 of Article 11 of Appendix 30,

*instructs the Director of the Radiocommunication Bureau*

to report to WRC-11 and subsequent world radiocommunication conferences on the results of the implementation of this Resolution, with a view to updating the “Remarks” columns in the Tables of Article 9A of Appendix 30A and Article 11 of Appendix 30 as well as the Tables, contained in the same Articles, that specify affected or affecting networks, terrestrial stations or beams of administrations.

RESOLUTION 609 (Rev.WRC-07)

**Protection of aeronautical radionavigation service systems from the equivalent power flux-density produced by radionavigation-satellite service networks and systems in the 1 164-1 215 MHz frequency band**

The World Radiocommunication Conference (Geneva, 2007),

*considering*

...

d) that WRC-03 determined that protection of the ARNS from harmful interference can be achieved if the value of the equivalent pfd (epfd) produced by all the space stations of all RNSS (space-to-Earth) systems in the 1 164-1 215 MHz band does not exceed the level of  $-121.5 \text{ dB(W/m}^2\text{)}$  in any 1 MHz band;

...

i) that WRC-03 decided to apply the coordination provisions of Nos. **9.12**, **9.12A** and **9.13** to RNSS systems and networks for which complete coordination or notification information, as appropriate, is received by the Bureau after 1 January 2005,

...

*resolves*

...

5 that in order to allow multiple RNSS systems to operate in the frequency band 1 164-1 215 MHz, no single RNSS system shall be permitted to use up the entire interference allowance specified in *resolves* 1 above in any 1 MHz of the 1 164-1 215 MHz band (see Recommendation **608 (Rev.WRC-07)**);

...

8 the administrations participating in the consultation meeting shall designate one administration that shall communicate to the Bureau the results of any aggregate sharing determinations made in application of *resolves* 2 above, without regard to whether such determinations result in any modifications to the published characteristics of their respective systems or networks (see Recommendation **608 (Rev.WRC-07)**);

9 that administrations operating or planning to operate ARNS systems in the 1 164-1 215 MHz band should participate, as appropriate, in discussions and determinations relating to the *resolves* above;

10 that the methodology and the reference worst-case ARNS system antenna contained in Recommendation ITU-R M.1642-2 shall be used by administrations for calculating the aggregate epfd produced by all the space stations within all RNSS systems in the band 1 164-1 215 MHz,

*instructs the Radiocommunication Bureau*

1 to participate in consultation meetings mentioned under *resolves* 6 and to observe carefully results of the epfd calculation mentioned in *resolves* 1;

2 to determine whether the pfd level in *recommends* 1 of Recommendation **608 (Rev.WRC-07)** is exceeded by any subject space station, and to report the findings of this determination to the participants in the consultation meeting;

3 to publish in the International Frequency Information Circular (BR IFIC), the information referred to in *resolves* 8 and *instructs the Radiocommunication Bureau* 2,

...

## ANNEX TO RESOLUTION 609 (Rev.WRC-07)

### Criteria for application of Resolution 609 (Rev.WRC-07)

...

**MOD** COM6/258/1 (B5/267/3) (R3/292/101)

## RESOLUTION 644 (Rev.WRC-07)

### **Radiocommunication resources for early warning, disaster mitigation and relief operations**

The World Radiocommunication Conference (Geneva, 2007),

*considering*

a) that administrations have been urged to take all practical steps to facilitate the rapid deployment and effective use of telecommunication resources for early warning, disaster mitigation and disaster relief operations by reducing and, where possible, removing regulatory barriers and strengthening global, regional and transborder cooperation between States;

b) the potential of modern telecommunication technologies as an essential tool for disaster mitigation and relief operations and the vital role of telecommunications and ICT for the safety and security of relief workers in the field;

c) the particular needs of developing countries and the special requirements of the inhabitants living in high risk areas exposed to disasters, as well as those living in remote areas;

d) the work carried out by the Telecommunication Standardization Sector in standardizing the common alerting protocol (CAP), through the approval of the relevant CAP Recommendation;

e) that, under the Strategic Plan of the Union 2008-2011, “encouraging the effective use of telecommunications/ICTs and modern technologies during critical emergencies, as a crucial part of disaster early warning, mitigation, management and relief strategies, in light of the accelerating pace of change in the global environment and of the action lines of WSIS”, is considered one of the three major priorities for ITU in this period;

f) that the majority of terrestrial networks in affected areas were damaged during recent disasters,

*recognizing*

- a) Article 40 of the Constitution, on priority of telecommunications concerning safety of life;
- b) Article 46 of the Constitution, on distress calls and messages;
- c) No. 91 of the Tunis Agenda for the Information Society adopted by the second phase of the World Summit on the Information Society and in particular provision c): “Working expeditiously towards the establishment of standards-based monitoring and worldwide early-warning systems linked to national and regional networks and facilitating emergency disaster response all over the world, particularly in high-risk regions”;
- d) Resolution 34 (Rev.Doha, 2006) of the World Telecommunication Development Conference on the role of telecommunications/ICT in early warning and mitigation of disasters and humanitarian assistance, as well as ITU-D Question 22/2 “Utilization of ICT for disaster management, resources and active and passive space-based sensing systems as they apply to disaster and emergency relief situations”;
- e) Resolution 36 (Rev. Antalya, 2006) of the Plenipotentiary Conference on telecommunications/information and communication technology in the service of humanitarian assistance;
- f) Resolution 136 (Antalya, 2006) of the Plenipotentiary Conference on the use of telecommunications/information and communication technologies for monitoring and management in emergency and disaster situations for early warning, prevention, mitigation and relief;
- g) Resolution ITU-R 53 of the Radiocommunication Assembly (Geneva, 2007), on the use of radiocommunications in disaster response and relief;
- h) Resolution ITU-R 55 of the Radiocommunication Assembly (Geneva, 2007), on the ITU-R studies of disaster prediction, detection, mitigation and relief,

*noting*

the close relation of this Resolution with Resolution **646 (WRC-03)** on public protection and disaster relief and Resolution **[COM6/2] (WRC-07)** on spectrum management guidelines for emergency and disaster relief radiocommunication, and the need to coordinate activities under these Resolutions in order to prevent any possible overlap,

*resolves*

- 1 that the ITU Radiocommunication Sector (ITU-R) continue to study, as a matter of urgency, those aspects of radiocommunications/ICT that are relevant to early warning, disaster mitigation and relief operations, such as decentralized means of telecommunications that are appropriate and generally available, including amateur terrestrial and satellite radio facilities, mobile and portable satellite terminals, as well as the use of passive space-based sensing systems;
- 2 to urge the ITU-R Study Groups, taking into account the scope of ongoing studies/activities appended to Resolution ITU-R 55 of the Radiocommunication Assembly (Geneva, 2007), to accelerate their work, particularly in the areas of disaster prediction, detection, mitigation and relief,

*instructs the Director of the Radiocommunication Bureau*

- 1 to support administrations in their work towards the implementation of both Resolutions 36 (Rev. Antalya, 2006) and 136 (Antalya, 2006), as well as the Tampere Convention;
- 2 to collaborate, as appropriate, with the United Nations Working Group on Emergency Telecommunications (WGET);
- 3 to participate actively in, and contribute to, the ITU Global Forum on Effective Use of Telecommunications/ICT for Disaster Management: Saving Lives (Geneva, 10-12 December 2007);
- 4 to participate in, and contribute to, Telecommunications for Disaster Relief and Mitigation – Partnership Coordination Panel (PCP-TDR);
- 5 to synchronize activities between this Resolution, Resolution **646 (WRC-03)** and Resolution **[COM6/2] (WRC-07)** to prevent a possible overlap.

**MOD** COM6/251/3 (B5/267/4) (R3/292/102)

## RESOLUTION 703 (Rev.WRC-07)

### **Calculation methods and interference criteria recommended by ITU-R for sharing frequency bands between space radiocommunication and terrestrial radiocommunication services or between space radiocommunication services**

The World Radiocommunication Conference (Geneva, 2007),

*considering*

- a) that, in frequency bands shared with equal rights by space radiocommunication and terrestrial radiocommunication services, it is necessary to impose certain technical limitations and coordination procedures on each of the sharing services for the purpose of limiting mutual interference;
- b) that, in frequency bands shared by space stations located on geostationary satellites, it is necessary to impose coordination procedures for the purpose of limiting mutual interference;
- c) that the calculation methods and interference criteria relating to coordination procedures referred to in *considering a)* and *b)* are based upon ITU-R Recommendations;
- d) that, in recognition of the successful sharing of the frequency bands by space radiocommunication and terrestrial radiocommunication services, and the continuing improvements in space technology and that of the Earth segment, each Radiocommunication Assembly has improved upon some of the technical criteria recommended by the preceding Assembly;
- e) that the ITU Radiocommunication Assembly has approved a procedure for approving Recommendations between Radiocommunication Assemblies;
- f) that the Constitution recognizes the right of Member States to make special arrangements on telecommunication matters; however, such arrangements shall not be in conflict with the terms of the Constitution, Convention or of the Regulations annexed thereto as far as harmful interference to the radio services of other countries is concerned;

g) that the use of this Resolution may reduce the need for incorporation by reference of some ITU-R Recommendations,

*is of the opinion*

a) that future decisions of the ITU-R are likely to make further changes in the recommended calculation methods and interference criteria;

b) that the administrations should whenever possible apply the current ITU-R Recommendations on sharing criteria when planning systems for use in frequency bands shared with equal rights between space radiocommunication and terrestrial radiocommunication services, or between space radiocommunication services,

*invites administrations*

to submit contributions to the Radiocommunication Study Groups, providing information on practical results and experience of sharing between terrestrial and space radiocommunication services or between space services, which help to bring about significant improvements in coordination procedures, calculation methods and harmful interference thresholds, and thereby to optimize the available orbit/spectrum resources,

*resolves*

1 that the Director of the Radiocommunication Bureau, in consultation with Study Group Chairmen, shall annually prepare a list identifying the relevant newly approved ITU-R Recommendations relating to sharing between space radiocommunication and terrestrial radiocommunication services, or between space radiocommunication services;

2 that the Director of the Radiocommunication Bureau shall, once a year, publish this list electronically for the information of all administrations.

**MOD** COM4/380/76 (B19/413/27)

## RESOLUTION 729 (Rev.WRC-07)

### **Use of frequency adaptive systems in the MF and HF bands\***

The World Radiocommunication Conference (Geneva, 2007),

*considering*

a) that the efficiency of spectrum use will be improved by the use of frequency adaptive systems in the MF and HF bands shared by the fixed and the mobile services;

b) that trials and deployment of frequency adaptive systems have been under way during the past 30 years and have demonstrated the effectiveness of such systems and improved spectrum efficiency;

c) that such improved efficiency is attained through:

– shorter call set-up and improved transmission quality by selection of the most suitable assigned channels;

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\* This Resolution should be brought to the attention of ITU-D Study Group 2.

- reduced channel occupancy, permitting the same channels to be used by different networks, yet decreasing the probability of harmful interference;
  - minimization of the transmitter power required for each transmission;
  - continued optimization of the emissions owing to the sophistication of the systems;
  - simple operation by the use of intelligent peripheral equipment;
  - reduced need for skilled radio operators;
- d)* that following WRC-95, the Radiocommunication Bureau no longer undertakes examination with respect to the probability of harmful interference caused by new assignments recorded in the Master International Frequency Register (MIFR) in the non-planned bands below 28 MHz;
- e)* that WRC-97 introduced a means for notification of block assignments;
- f)* that frequency adaptive systems will actively contribute to the avoidance of interference since, when other signals are observed on the channel, the frequency adaptive system will move to another frequency,

*resolves*

- 1 that, in authorizing the operation of frequency adaptive systems in the fixed and mobile services for the MF and HF bands, administrations shall:
- 1.1 not make assignments in those bands:
- governed by the Appendix **25** frequency allotment Plan for the maritime mobile service or the Appendix **27** frequency allotment Plan for the aeronautical mobile (R) service;
  - shared on a co-primary basis with the broadcasting service, radiodetermination service or the amateur services;
  - allocated to the radio astronomy service;
- 1.2 avoid use which may affect frequency assignments involving safety services made in accordance with Nos. **5.155**, **5.155A** and **5.155B**;
- 1.3 take into account any footnotes applicable to the proposed bands and the implications regarding compatibility;
- 2 that frequency adaptive systems shall automatically limit simultaneous use of frequencies to the minimum necessary for communication requirements;
- 3 that, with a view to avoiding harmful interference, frequency adaptive systems should evaluate the channel occupancy prior to and during operation;
- 4 that assignments for frequency adaptive systems shall be notified to the Bureau in accordance with the provisions of Article **11** and Appendix **4**.

RESOLUTION 734 (Rev.WRC-07)

**Studies for spectrum identification for gateway links for high-altitude platform stations in the range from 5 850 to 7 500 MHz**

The World Radiocommunication Conference (Geneva, 2007),

*considering*

- a)* that ITU has among its purposes “to promote the extension of the benefit of the new telecommunication technologies to all the world’s inhabitants” (No. 6 of the Constitution);
- b)* that systems based on new technologies using high altitude platform stations (HAPS) can potentially be used for various applications such as the provision of high-capacity services to urban and rural areas;
- c)* that provision has been made in the Radio Regulations for the deployment of HAPS in specific bands, including as base stations to serve IMT-2000 networks (Article 11);
- d)* that it is desirable to have adequate provision for gateway links to serve HAPS operations;
- e)* that ITU-R has studied spectrum sharing between HAPS as a fixed service with other fixed services and with fixed-satellite services in much higher bands, as well as the regulatory considerations to avoid interference to services in neighbouring countries,

*recognizing*

- a)* that ITU-R has studied the sharing of HAPS with fixed services in part of the 6 GHz band resulting in Recommendation ITU-R F.1764, which provides a methodology for interference evaluation that could be used for sharing studies between fixed services systems and HAPS;
- b)* that as in some areas the bands may be saturated with other fixed service use and it would be desirable to have greater flexibility in the choice of spectrum for gateway operations in support of HAPS networks;
- c)* that the World Summit on the Information Society has encouraged the development and application of emerging technologies to facilitate infrastructure and network development worldwide with special focus on underserved regions and areas;
- d)* that the allocations to the fixed-satellite service in the band 5 925–6 425 MHz are heavily used for Earth-to-space links providing telecommunication services, and that are particularly important for the development of infrastructure in developing countries through the deployment of VSAT capabilities;
- e)* that more than 160 geostationary satellites currently in operation use frequencies in the range 5 850-6 725 MHz and such use will continue to grow in the future;



*f)* that No. 5.441 in the band 6 725-7 025 MHz is used by uplinks in the FSS Plan of Appendix **30B** of the Radio Regulations (see No. 5.441), and, while the band 5 150-5 250 is used by uplinks on non-geostationary-satellite systems (see No. 5.447A);

*g)* that the Earth-to-space transmissions in the FSS described in “*recognizing*” *d)*, *e)* and *f)* above will have levels much higher than those in HAPS systems and have therefore the potential for causing interference to HAPS receivers either on the ground or on the platform;

*h)* that in view of *recognizing g)*, HAPS use of frequencies around 6 GHz may be limited by current FSS transmit earth stations while protection of HAPS receivers may limit future deployment of these FSS earth stations,

*resolves*

1 to invite ITU-R to extend the sharing studies, with a view to identifying two channels of 80 MHz each for gateway links for HAPS in the range from 5 850 to 7 500 MHz, in bands already allocated to the fixed service, while ensuring the protection of existing services;

2 to recommend to WRC-11 to review the extended studies, with a view to taking an appropriate decision for the deployment of HAPS gateway links to service the relevant stratospheric base station operations and support for these networks,

*encourages administrations*

to contribute actively to the sharing studies in accordance with this Resolution.

**SUP** COM5/372/8 (B15/396/12)

## RESOLUTION 738 (WRC-03)

### **Compatibility analyses between the Earth exploration-satellite service (passive) and active services**

**MOD** COM5/265/7 (B6/268/96) (R5/336/7)

## RESOLUTION 739 (Rev.WRC-07)

### **Compatibility between the radio astronomy service and the active space services in certain adjacent and nearby frequency bands**

The World Radiocommunication Conference (Geneva, 2007),

*considering*

*a)* that adjacent or nearby primary service allocations have been made to the radio astronomy service, and to various space services, such as the fixed-satellite service (FSS), radionavigation-satellite service (RNSS), mobile-satellite service (MSS) and broadcasting-satellite service (BSS), hereafter referred to as “active space services”;

*b)* that, in many cases, the frequencies used by the radio astronomy service (RAS) are chosen to study natural phenomena producing radio emissions at frequencies fixed by the laws of nature, so shifting frequency to avoid or mitigate interference problems may not be possible;

- c) that Report ITU-R SM.2091 provides a methodology for conducting, and a framework for documenting the results of, compatibility studies between active space service and the radio astronomy service band-pairs;
- d) that Report ITU-R SM.2091 also provides the results of compatibility studies between the radio astronomy service and an active space service in certain adjacent and nearby bands;
- e) that appropriate consultation between administrations has the potential to lead to the development of innovative solutions and to the rapid deployment of systems;
- f) that, for technical or operational reasons, more stringent spurious emission limits than the general limits in Appendix 3 may be required to protect the RAS from active services in specific bands,

*noting*

- a) that the additional burden of undertaking any technical examination should not be placed on the Radiocommunication Bureau;
- b) that a consultation procedure, as contained in this Resolution, would not place an additional burden on the Bureau;
- c) that Recommendation ITU-R M.1583 provides a methodology based on the equivalent power flux-density (epfd) concept for calculation of interference resulting from unwanted emissions from non-geostationary (non-GSO) satellite systems of the MSS or RNSS into radio astronomy stations;
- d) that Recommendation ITU-R S.1586 provides a methodology based on the epfd concept for calculation of interference resulting from unwanted emissions from non-GSO systems of the FSS into radio astronomy stations;
- e) that the methodology described in these Recommendations may also be used to study the case of non-GSO systems in the BSS;
- f) that Recommendation ITU-R RA.1631 provides antenna patterns to be used for compatibility analyses between non-GSO systems and RAS stations, based on the epfd concept;
- g) that Recommendation ITU-R RA.1513 provides acceptable levels of data loss to radio astronomy observations, stating in particular that the percentage of data loss caused by any system should be lower than 2%;
- h) that some of the results documented in Report ITU-R SM.2091 may be used as threshold levels to initiate the consultation procedure;
- i) that the results of successful consultation between concerned administrations would ensure that the interests of both the active and radio astronomy services are considered;
- j) that measures taken by active space services to protect radio astronomy stations from interference may result in increased costs and/or reduced capabilities for those services;
- k) that conversely, not taking such measures may result in additional operating costs and reduced operational effectiveness for the radio astronomy stations concerned;
- l) that the implementation of additional interference mitigation measures at the radio astronomy station may increase operating costs and reduce observational effectiveness;
- m) that conversely, not implementing such measures may impose upon the active space services an additional cost burden and reduction in service capability,

*recognizing*

- a) that unwanted emissions produced by stations of the active space services may cause unacceptable interference to stations of the RAS;
- b) that, although some unwanted emissions from transmitters on space stations can be controlled through careful design methods and appropriate testing procedures, other unwanted emissions, such as narrow-band spurious emissions, generated by uncontrollable and/or unpredictable physical mechanisms, may only be detected after the spacecraft is launched;
- c) that there is an uncertainty in the pre-launch assessment of the levels of unwanted emissions;
- d) that it is necessary to ensure an equitable sharing of burden for achieving compatibility between the active space services and the RAS;
- e) that for those cases where difficulties are encountered in meeting the values in Annex 1, a consultation procedure could be used to resolve the difficulties,

*resolves*

- 1 that an administration takes all reasonable steps to ensure that any space station or satellite system being designed and constructed to operate in the bands in Annex 1 meets the values given therein at any radio astronomy station operating in the corresponding bands identified in this Annex;
- 2 that in the event that during construction and prior to launch it is determined that, after having considered all reasonable means, the unwanted emissions from the space station or satellite system cannot meet the values given in Annex 1, the administration that notified the space station or satellite system contacts, as soon as possible, the administration operating the radio astronomy station to confirm that *resolves* 1 has been fulfilled, and the concerned administrations enter into a consultation process in order to achieve a mutually acceptable solution;
- 3 that in the event, following the space station launch, an administration operating a radio astronomy station determines that, due to unexpected circumstances, a space station or satellite system does not meet the values for unwanted emissions given in Annex 1 at that radio astronomy station, it contacts the administration that notified the space station or satellite system so that the administration that notified the space station or satellite system confirms that *resolves* 1 has been fulfilled, and the concerned administrations enter into a consultation process in order to identify further steps with a view to achieving a mutually acceptable solution;
- 4 that the radio astronomy stations to be taken into account in applying *resolves* 1, 2 and 3 are those which are operating in the frequency band(s) identified in Annex 1 and which are notified before the date of reception of the advance publication information of the space station or satellite system to which this Resolution applies;
- 5 that the space stations or satellite systems to be considered in the application of *resolves* 1 to 4 above are those designed to operate in the space service frequency bands listed in the tables of Annex 1 for which advance publication information (API) is received by the Bureau following the entry into force of the Final Acts of the appropriate conference, as specified in these tables;
- 6 that the objective of the consultation process in *resolves* 1, 2 and 3 is to achieve a mutually acceptable solution, using as guidance Report ITU-R SM.2091 and any other ITU-R Recommendations deemed relevant by the concerned administrations;

7 that the Bureau shall make no examination or finding with respect to this Resolution under either Article 9 or 11,

*invites administrations*

1 to take all appropriate and practicable steps, from the design phase onward, to ensure that unwanted emissions are minimized from space stations that are planned to operate in one or more space service allocations, in order to avoid exceeding the threshold levels of unwanted emissions identified in Annex 1 at any radio astronomy station;

2 to take all practicable steps, from the design phase onward, to minimize the sensitivity of radio astronomy stations to interference and to take into account the need to implement interference mitigation measures.

## ANNEX 1 TO RESOLUTION 739 (Rev.WRC-07)

### Unwanted emission threshold levels

The unwanted emission threshold levels applicable to geostationary space stations are given in Table 1-1 in terms of power flux-density (pfd) in a reference bandwidth produced at a radio astronomy station.

In Table 1-1 the unwanted emission threshold levels given in the fourth, sixth and eighth columns (associated with the reference bandwidth contained in the adjacent columns) should be met by any geostationary space station operating in the bands indicated in the second column at the radio astronomy station operating in the band mentioned in the third column.

The unwanted emission threshold levels applicable to space stations of a non-geostationary system are given in Table 1-2 in terms of the equivalent power flux-density (epfd), produced at a radio astronomy station in a reference bandwidth by all the space stations in a non-geostationary satellite system that are visible to the radio astronomy station considered, not to be exceeded during a given percentage of time, over the whole sky.

In Table 1-2 the epfd value given in the fourth, sixth and eighth columns (associated with the reference bandwidths contained in the adjacent column) should be met by all the space stations of a non-geostationary satellite system operating in the bands indicated in the second column at the radio astronomy station operating in the band mentioned in the third column. The epfd value at a given radio astronomy station shall be evaluated by using the antenna pattern and the RAS maximum antenna gain given in Recommendation ITU-R RA.1631. Guidance on the calculation of epfd can be found in Recommendations ITU-R S.1586 and ITU-R M.1583. The elevation angles of the radio astronomy stations to be taken into account in the epfd calculation are those higher than the minimum elevation angle  $\theta_{min}$  of the radio telescope. In the absence of such information a value of 5° shall be taken. The percentage of time during which the epfd level shall not be exceeded is mentioned in Note <sup>(1)</sup> of Table 1-2.

Some sections of Report ITU-R SM.2091 indicate levels of unwanted emissions in radio astronomy bands that certain satellite systems, by design, do not exceed.

TABLE 1-1

**pfd thresholds for unwanted emissions from any geostationary space station  
at a radio astronomy station**

Space service	Space service band	Radio astronomy band	Single dish, continuum observations		Single dish, spectral line observations		VLBI		Condition of application: the API is received by the Bureau following the entry into force of the Final Acts of:
			pfd <sup>(1)</sup>	Reference bandwidth	pfd <sup>(1)</sup>	Reference bandwidth	pfd <sup>(1)</sup>	Reference bandwidth	
	(MHz)	(MHz)	(dB(W/m <sup>2</sup> ))	(MHz)	(dB(W/m <sup>2</sup> ))	(kHz)	(dB(W/m <sup>2</sup> ))	(kHz)	
MSS (space-to-Earth)	387-390	322-328.6	−189	6.6	−204	10	−177	10	WRC-07
BSS MSS (space-to-Earth)	1 452-1 492 1 525-1 559	1 400-1 427	−180	27	−196	20	−166	20	WRC-03
MSS (space-to-Earth) MSS (space-to-Earth)	1 525-1 559 1 613.8- 1 626.5	1 610.6-1 613.8	NA	NA	−194	20	−166	20	WRC-03
RNSS (space-to-Earth)	1 559-1 610	1 610.6-1 613.8	NA	NA	−194	20	−166	20	WRC-07
BSS FSS (space-to-Earth)	2 655-2 670	2 690-2 700	−177	10	NA	NA	−161	20	WRC-03
FSS (space-to-Earth)	2 670-2 690	2 690-2 700 (in Regions 1 and 3)	−177	10	NA	NA	−161	20	WRC-03
	(GHz)	(GHz)	—	—	—	—	—	—	
BSS	21.4-22.0	22.21-22.5	−146	290	−162	250	−128	250	WRC-03 for VLBI, and WRC-07 for other types of observation

NA: Not applicable, measurements of this type are not made in this band.

<sup>(1)</sup> Integrated over the reference bandwidth with an integration time of 2 000 s.

TABLE 1-2

**epfd thresholds<sup>(1)</sup> for unwanted emissions from all space stations of a non-GSO satellite system  
at a radio astronomy station**

Space service	Space service band	Radio astronomy band	Single dish, continuum observations		Single dish, spectral line observations		VLBI		Condition of application: the API is received by the Bureau following the entry into force of the Final Acts of:
			epfd <sup>(2)</sup>	Reference bandwidth	epfd <sup>(2)</sup>	Reference bandwidth	epfd <sup>(2)</sup>	Reference bandwidth	
	(MHz)	(MHz)	(dB(W/m <sup>2</sup> ))	(MHz)	(dB(W/m <sup>2</sup> ))	(kHz)	(dB(W/m <sup>2</sup> ))	(kHz)	
MSS (space-to-Earth)	137-138	150.05-153	−238	2.95	NA	NA	NA	NA	WRC-07
MSS (space-to-Earth)	387-390	322-328.6	−240	6.6	−255	10	−228	10	WRC-07
MSS (space-to-Earth)	400.15-401	406.1-410	−242	3.9	NA	NA	NA	NA	WRC-07
MSS (space-to-Earth)	1 525-1 559	1 400-1 427	−243	27	−259	20	−229	20	WRC-07
RNSS (space-to-Earth) <sup>(3)</sup>	1 559-1 610	1 610.6-1 613.8	NA	NA	−258	20	−230	20	WRC-07
MSS (space-to-Earth)	1 525-1 559	1 610.6-1 613.8	NA	NA	−258	20	−230	20	WRC-07
MSS (space-to-Earth)	1 613.8-1 626.5	1 610.6-1 613.8	NA	NA	−258	20	−230	20	WRC-03

NA: Not applicable, measurements of this type are not made in this band.

<sup>(1)</sup> These epfd thresholds should not be exceeded for more than 2% of time.

<sup>(2)</sup> Integrated over the reference bandwidth with an integration time of 2 000 s.

<sup>(3)</sup> This Resolution does not apply to current and future assignments of the radionavigation-satellite system GLONASS/GLONASS-M in the band 1 559-1 610 MHz, irrespective of the date of reception of the related coordination or notification information, as appropriate. The protection of the radio astronomy service in the 1 610.6-1 613.8 MHz band is ensured and will continue to be in accordance with the bilateral agreement between the Russian Federation, the notifying administration of the GLONASS/GLONASS-M system, and IUCAF, and subsequent bilateral agreements with other administrations.

SUP COM5/265/8 (B6/268/97) (R3/292/103)

RESOLUTION 740 (WRC-03)

**Future compatibility analyses between the radio astronomy service and active space services in certain adjacent and nearby frequency bands**

SUP COM5/373/9 (B15/396/13)

RESOLUTION 742 (WRC-03)

**Use of the frequency band 36-37 GHz**

MOD COM5/230/8 (B4/234/7) (R3/292/104)

RESOLUTION 744 (Rev.WRC-07)

**Sharing between the mobile-satellite service (Earth-to-space) and the fixed and mobile services in the band 1 668.4-1 675 MHz**

The World Radiocommunication Conference (Geneva, 2007),

*considering*

- a)* that WRC-03 made a global allocation to the mobile-satellite service (MSS) (Earth-to-space) in the band 1 668-1 675 MHz and a global allocation to the MSS (space-to-Earth) in the band 1 518-1 525 MHz;
- b)* that the band 1 668.4-1 675 MHz is also allocated to the fixed and mobile services;
- c)* that due to sharing conditions between MSS (space-to-Earth) and the aeronautical mobile service for telemetry in the band 1 518-1 525 MHz (see No. **5.348B**), MSS operation in the United States of America is unlikely to be feasible;
- d)* that the above constraints on the MSS in the band 1 518-1 525 MHz therefore limit the possible use of the band 1 668-1 675 MHz by the MSS in the United States of America;
- e)* that the band 1 670-1 675 MHz is used in Canada and the United States of America for the fixed and mobile services;
- f)* that some administrations operate transportable radio-relay systems in the band 1 668.4-1 675 MHz which could operate as part of the fixed or mobile service allocations;
- g)* that sharing between the mobile service and the mobile-satellite service (Earth-to-space) in the band 1 668.4-1 675 MHz has been studied in Recommendation ITU-R M.1799,

*resolves*

- 1 that the use of the band 1 668.4-1 675 MHz by systems in the mobile service is limited to transportable radio-relay systems;
- 2 that administrations operating transportable radio-relay systems should take into account Recommendation ITU-R M.1799, which states that, to adequately protect MSS networks, the e.i.r.p. of transportable radio-relay stations should not exceed  $-27$  dB(W/4 kHz) in the band 1 668.4-1 675 MHz in the direction of the geostationary orbit;
- 3 that from 1 January 2015 administrations operating such systems in the mobile service shall limit the e.i.r.p. spectral density radiated in the direction of the geostationary orbit by these systems to  $-27$  dB(W/4 kHz) in the band 1 668.4-1 675 MHz;
- 4 that, in the band 1 670-1 675 MHz, stations in the MSS shall not claim protection from stations in the fixed and mobile services operating in Canada and the United States of America;
- 5 that *resolves* 1, 2 and 3 do not apply to stations in the fixed and mobile services operating in Canada and the United States of America.

SUP COM5/173/6 (B1/196/7) (R1/221/9)

#### RESOLUTION 745 (WRC-03)

##### **Protection of existing services in all Regions from non-geostationary-satellite networks in the fixed-satellite service using the frequency bands around 1.4 GHz on a secondary basis**

SUP COM5/373/5 (B15/396/14)

#### RESOLUTION 746 (WRC-03)

##### **Issues dealing with allocations to science services**

SUP COM4/332/86 (B13/347/176) (R7/411/222)

#### RESOLUTION 747 (WRC-03)

##### **Possible upgrade of the radiolocation service to primary allocation status in the frequency bands 9 000-9 200 MHz and 9 300-9 500 MHz, and possible extension of the existing primary allocations to the Earth exploration-satellite service (active) and the space research service (active) in the band 9 500-9 800 MHz**



**MOD** COM5/287/9 (B8/293/15) (R5/336/8)

**RESOLUTION 901 (Rev.WRC-07)**

**Determination of the orbital arc separation for which coordination would be required between two satellite networks operating in a space service not subject to a Plan**

The World Radiocommunication Conference (Geneva, 2007),

...

*invites ITU-R*

...

2 to recommend, as appropriate, the orbital separation required for triggering inter-service and intra-service coordination concerning the satellite services in frequency bands above 3.4 GHz for geostationary-satellite (GSO) networks not subject to a Plan and not already covered by the coordination arc concept specified in No. **9.7** (GSO/GSO) of Table 5-1 (Appendix **5**), under items 1) to 8) of the frequency band column, and subject to Section II of Article **9**,

...

**MOD** PLEN/408/3 (B24/419/3)

**RESOLUTION 950 (Rev.WRC-07)**

**Consideration of the use of the frequencies between 275 and 3 000 GHz**

The World Radiocommunication Conference (Geneva, 2007),

*considering*

a) that, in the Table of Frequency Allocations, frequency bands above 275 GHz are not allocated;

b) that, notwithstanding *considering a)*, No. **5.565** makes provision for the use of the frequency band 275-1 000 GHz for experimentation with, and development of various passive services and all other services and recognizes the need to conduct further research;

c) that No. **5.565** also makes provision for the protection of passive services until, and if, such time as the Table of Frequency Allocations may be extended;

d) that, in addition to the spectral lines identified by No. **5.565**, research activities in the bands above 275 GHz may yield other spectral lines of interest, such as those listed in Recommendation ITU-R RA.314;

e) that within various Radiocommunication Study Groups, studies on systems between 275 and 3 000 GHz, including system characteristics of suitable applications, are being considered;

- f) that the present use of the bands between 275 and 3 000 GHz is mainly related to the passive services, however, with anticipated technology development, the bands may become increasingly important for suitable active service applications;
- g) that sharing studies in ITU-R among passive services and all other services operating in frequencies between 275 and 3 000 GHz have not been completed;
- h) that the lack of use to date of the band 275-3 000 GHz by the various active services indicates a general consideration of frequency allocations above 275 GHz may be premature,

*recognizing*

- a) that propagation characteristics at frequencies above 275 GHz, such as atmospheric absorption and scattering, have a significant impact on the performance of both active and passive systems and need to be studied;
- b) that it is necessary to investigate further the potential uses of the bands between 275 and 3 000 GHz by suitable applications,

*noting*

- a) that significant infrastructure investments are being made under international collaboration for the use of these bands between 275 and 3 000 GHz, for example, the Atacama Large Millimetre Array (ALMA), a facility under construction that will provide new insights on the structure of the universe;
- b) that Radiocommunication Bureau Circular Letter CR/137 identified additional information for the Bureau to record characteristics of active and passive sensors for Earth exploration-satellite service and space research service satellites, in frequency bands below 275 GHz,

*further noting*

- a) that a process and format similar to that provided in *noting b)* could be used to record systems operating in the 275 to 3 000 GHz band;
- b) that recording active and passive systems operating in the 275 to 3 000 GHz band will provide information until the date when, and if, it is determined that changes to the Radio Regulations are needed,

*resolves*

- 1 to review No. **5.565** of the Radio Regulations, excluding frequency allocations, in order to update the spectrum use between 275 GHz and 3 000 GHz by the passive services at WRC-11, taking into account the result of the ITU-R studies;
- 2 that administrations may submit for inclusion in the Master International Frequency Register details on systems which operate between 275 and 3 000 GHz and which may be recorded by the Radiocommunication Bureau under Nos. **8.4**, **11.8** and **11.12**,

*invites ITU-R*

to conduct the necessary studies in time for consideration by WRC-11 with a view to the modification of No. **5.565**, including advice on the applications suitable for the band 275-3 000 GHz,

*instructs the Director of the Radiocommunication Bureau*

to accept submissions referred to in *resolves 2*, and to record them in the Master International Frequency Register.

RESOLUTION 951 (Rev.WRC-07)

**Enhancing the international spectrum  
regulatory framework**

The World Radiocommunication Conference (Geneva, 2007),

*considering*

- a)* that radio spectrum is a finite resource and there is a continued increase and evolution in demand and multiplicity of existing and future applications for radiocommunications;
- b)* that the current technological environment for some applications is substantively different from the one which prevailed when the current allocation principles and definitions were established;
- c)* that past WRCs were able to respond to the developments mentioned under *considering a)* and *b)* in certain cases;
- d)* that there is a keen interest in the rational, efficient and economic use of spectrum;
- e)* that allocations to radiocommunication services should aim to reach the best outcome in terms of spectrum efficiency;
- f)* that applications are emerging in which elements of different radiocommunication services (as defined in the Radio Regulations) are combined;
- g)* that there is a convergence of radio technologies, inasmuch as the same radio technology can be used in systems that operate in different radiocommunication services or with different allocation status (primary or secondary), that might have an impact on the allocation scenario;
- h)* that similar data rates and quality of service attributes are available with different radiocommunication systems operating in different radiocommunication services;
- i)* that the use of modern underlying communication architectures and protocols, such as those used in packet radio systems, enables the concurrent provision of different applications from the same platform operating in the same frequency bands;
- j)* that evolving and emerging radiocommunication technologies may enable sharing possibilities and may lead to more frequency-agile and interference-tolerant equipment and consequently to more flexible use of spectrum;
- k)* that these evolving and emerging technologies may not require band segmentation within the traditional spectrum allocation framework;
- l)* that the regulatory procedures should be continually assessed in order to meet the demands of administrations,

*recognizing*

- a) that the rights of administrations to deploy, operate and protect services should be the guiding principle;
- b) that the studies in response to Resolution **951 (WRC-03)** have shown that any change intended to improve the flexibility of administrations in accommodating converging services has to rely on a combination of service definitions, allocations and procedures,

*noting*

- a) that one of the purposes of the Radio Regulations is the effective management and use of spectrum;
- b) that World Radiocommunication Conferences shall normally be convened every three to four years for possible amending of the Radio Regulations;
- c) that the studies initiated under Resolution **951 (WRC-03)** have shown a need for additional studies,

*resolves*

- 1 that, as a matter of urgency, taking into account Annexes 1 and 2, studies are to be continued by ITU-R, in order to develop concepts and procedures for enhancing the Radio Regulations to meet the demands of current, emerging and future radio applications, while taking into account existing services and usage;
- 2 that the studies mentioned in *resolves* 1 shall be limited to general allocation or procedural issues relating to general spectrum management solutions, such as those already developed in Annex 1, in line with the process contained in Annex 2;
- 3 to invite WRC-11 to take into consideration the results of these studies, including sharing and their impact on allocations in the concerned frequency bands, and take appropriate action in accordance with Annex 2,

*invites ITU-R*

to conduct the necessary studies in time for consideration by WRC-11 and in accordance with this Resolution,

*invites administrations*

to participate actively in the studies by submitting contributions to ITU-R.

## ANNEX 1 TO RESOLUTION 951 (Rev.WRC-07)

### **Options for enhancing the international spectrum regulatory framework\***

The following four possible options have been so far identified in order to develop concepts and procedures for enhancing the Radio Regulations; a combination of these options as well as other options may also be used.

Option 1 is keeping the current practice as it is.

Option 2 is reviewing and possibly revising the current service definitions or adding a new service to the list of service definitions, which would encompass several of the existing ones.

Option 3 is the introduction of a new provision in the Radio Regulations enabling substitution<sup>1</sup> between assignments of specific services.

Option 4 is the introduction of composite services in the Table of Frequency Allocations.

NOTE – For Options 2, 3 and 4, improved forms of notices associated with existing Appendix 4, and/or relevant adjustments to this Appendix, should be considered.

#### **1 Option 1: Keeping current practice**

Under this option, it is considered that there is sufficient flexibility within the present Radio Regulations and the WRC process to meet any current or likely future requirements within the time-frame typically set forth for WRCs.

Under this option, national regulation may be appropriate to provide relevant solutions to the changing environment.

Although new applications may be introduced in a shorter time-frame, this would be without protection against harmful interference, which may not be practical for the vast majority of emerging wireless applications, including IMT, scientific, public safety, radiolocation, radionavigation, broadcast and fixed/mobile/broadcast satellite systems.

The current service definitions in Article 1 of the Radio Regulations appear to have generally enabled the Radio Regulations to be adapted dynamically to latest technology evolution such as IMT, HAPS, RLANs, digital TV, public protection and disaster relief (PPDR) and scientific community interests.

It was noted that, in spite of different definitions for the fixed and mobile (except aeronautical and maritime) services, in most frequency bands where one of the two services is allocated, the other one is also allocated. This indicates that convergence is already achieved in the ITU Table of Frequency Allocations, except in some frequency bands, where allocations to both services may be considered on a band-by-band basis by future WRCs, as required.

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\* Further information can be found in Document 24 to WRC-07.

<sup>1</sup> This term needs to be clarified and defined properly.

## **2 Option 2: Review and possibly revise some of the service definitions**

Under this approach, the current service definitions in Article 1 of the Radio Regulations would be reviewed in order to ensure that they adequately and clearly cover actual use while providing flexibility for emerging technologies. After an extensive consultation within the ITU-R Study Groups, this review may encompass the fixed and mobile (except aeronautical and maritime mobile) services and possibly other services, if considered appropriate<sup>2</sup>. It may lead to reviewing the current definitions for these services and modifying them as necessary.

Possible changes to the service definitions would need to be addressed from the point of view of their regulatory implications in the assignment and use of frequencies, in particular in the ITU coordination, notification and recording processes, impact on assignments made under the current definitions, and impact on other services.

## **3 Option 3: Introduction of a new provision in the Radio Regulations enabling substitution between assignments of specific services**

Under this approach, a new provision would be introduced in the Radio Regulations in order to enable substitution between assignments of specific services. For example, in the context of fixed and mobile (except maritime and aeronautical mobile) services, substitution could be applied in the same way as it is applied by Nos. 5.485 or 5.492 in the context of the fixed-satellite and broadcasting-satellite services.

Using the example of fixed and mobile services, this could reflect the current convergence between the services, address the current ambiguities between the definitions of these services, facilitate the timely implementation of new applications, provide adequate regulatory protection for such applications, and protect the rights of other administrations against interference caused by them.

A new provision enabling substitution would need to be addressed from the point of view of its regulatory implications in the assignment and use of frequencies, in particular in the ITU coordination, notification and recording processes, impact on assignments made under the current definitions, and impact on other services.

## **4 Option 4: Introduction of composite services in the Table of Frequency Allocations**

Under this approach, which could reflect the convergence between some radiocommunication services in a specific frequency band, the Table of Frequency Allocations (Article 5 of the RR) could be modified by replacing the current separate allocations to some radiocommunication services by a joint allocation to these services (e.g. a specific frequency band allocated to the “fixed service” and to the “land mobile service” could be modified to a composite allocation of “fixed and land mobile service”). The above approach would only be applicable if all concerned services referred to in the allocation to the composite services have equal regulatory status.

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<sup>2</sup> The ITU-R studies indicated that the current definition of the fixed-satellite service has been able to accommodate new technologies and applications in the fixed-satellite service.

This approach would provide administrations with increased flexibility. In the example above, administrations could opt for either the fixed service alone, for the land mobile service alone, for separate applications in both services in an independent manner, or for a composite application which would include both services. This option would not require any revision to the current definitions of the concerned radiocommunication services (i.e. neither to the fixed nor to the land mobile service).

To enable the notification and recording of frequency assignments in such a composite service, a new class of station could be introduced named “Station in the fixed and land mobile service” (with a separate symbol than those used for the fixed and land mobile service), with appropriate forms of notice, or other adequate notification mechanisms.

## ANNEX 2 TO RESOLUTION 951 (Rev.WRC-07)

### **Guidelines for implementing this Resolution**

**These guidelines contain three steps:**

- 1 Step 1: Evaluate various options including those in Annex 1 as to their usefulness regarding the enhancement of spectrum management solutions to meet the objectives of this Resolution.
- 2 Step 2: Develop concepts and procedures based on the options evaluated in Step 1 including sharing studies on a band-by-band basis.
- 3 Step 3: Prepare, based on Step 2, technical and regulatory solutions for consideration and appropriate action at WRC-11.

**SUP** COM6/339/1 (B12/346/16) (R6/410/77)

RESOLUTION 952 (WRC-03)

**Studies regarding devices using  
ultra-wideband technology**

RESOLUTION [COM4/1] (WRC-07)

**Use of the frequency band 620-790 MHz for existing assignments to stations of the broadcasting-satellite service**

The World Radiocommunication Conference (Geneva, 2007),

*considering*

- a)* that the Regional Radiocommunication Conference, (Geneva, 2006) (RRC-06) has adopted an Agreement and associated Plans for digital terrestrial broadcasting for Region 1, except Mongolia, and the Islamic Republic of Iran, in the frequency bands 174-230 MHz and 470-862 MHz;
- b)* that a number of notices have been submitted to the Radiocommunication Bureau for satellite systems and networks in the band 620-790 MHz under No. **5.311** of the Radio Regulations (Edition of 2004);
- c)* that many administrations have extensive infrastructure for the transmission and reception of analogue and digital television signals between 620 MHz and 790 MHz;
- d)* that it is necessary to protect terrestrial services such as terrestrial television broadcasting, fixed, mobile and aeronautical radionavigation services in the band 620-790 MHz (see also Nos. **5.293**, **5.300**, **5.309** and **5.312**);
- e)* that, as a result of the transition from analogue to digital terrestrial television broadcasting, some countries plan to make available part of that band for applications in the mobile service,

*recognizing*

- a)* that, in accordance with No. **5.311**, two frequency assignments to BSS stations, “STATSIONAR-T” and “STATSIONAR-T2”, in the band 620-790 MHz were notified and brought into use and that their date of bringing into use was confirmed before 5 July 2003;
- b)* that this Conference has deleted No. **5.311**, in the light of the protection requirements of the terrestrial television systems and other terrestrial systems mentioned in *considering a) to e)* above;
- c)* that, according to the records of the Bureau, there has been no complaint of any harmful interference to or request for claiming protection for these two frequency assignments from the terrestrial television systems of any administration;
- d)* that, by Resolution 1 (RRC-06) on the broadcasting-satellite service in the band 620-790 MHz, RRC-06 *resolves to invite the 2007 World Radiocommunication Conference* “to take appropriate and necessary measures to effectively protect the broadcasting Plans adopted by RRC-06 and their subsequent evolution from the GSO-BSS and/or non-GSO BSS networks/systems which were not brought into use prior to 5 July 2003”;

*further recognizing*

that there is a need to authorize these two frequency assignments to the BSS stations to continue their operation in providing the broadcasting-satellite service to their intended service area,



*resolves*

1 that the frequency assignments to the BSS stations, “STATSIONAR-T” and “STATSIONAR-T2”, as described in *recognizing a*) and recorded in the Master International Frequency Register with a favourable finding, shall be allowed to continue to operate during the period of validity of the assignments in question if so decided by the notifying administration;

2 that any submission of a frequency assignment relating to the broadcasting-satellite service in the frequency band 620-790 MHz, received by the Radiocommunication Bureau under Articles 9 and/or 11, as the case may be, other than those referred to in *resolves* 1, shall be returned to the submitting administration,

*instructs the Director of the Radiocommunication Bureau*

to implement this Resolution.

**ADD** COM4/296/7 (B9/305/59) (R5/336/9)

## RESOLUTION [COM4/2] (WRC-07)

### **Use of the bands 4 400-4 940 MHz and 5 925-6 700 MHz by an aeronautical mobile telemetry application in the mobile service**

The World Radiocommunication Conference (Geneva, 2007),

*considering*

a) that there is a need to provide global spectrum to the mobile service for wideband aeronautical mobile telemetry (AMT) systems;

b) that studies have been conducted within ITU-R concerning the sharing and compatibility of AMT for flight testing with other services in the bands 4 400-4 940 MHz and 5 925-6 700 MHz;

c) that based on the results of these studies, in the bands 4 400-4 940 MHz and 5 925-6 700 MHz, technical and operational measures applied to AMT for flight testing purposes facilitate sharing with other services and applications in these bands;

d) that spectrum efficiency is enhanced in situations where new applications can be implemented compatibly in bands that are heavily occupied;

e) that there is extensive deployment of fixed-satellite service (FSS) earth stations in the band 5 925-6 425 MHz and to a lesser extent in the band 6 425-6 700 MHz;

f) that there is extensive deployment of fixed service stations in the bands 4 400-4 940 MHz and 5 925-6 700 MHz;

g) that in certain locations, availability of spectrum will be limited due to its extensive use by the various services while in other locations, this may not be the case;

h) that there are various techniques which can enhance sharing between co-primary services such as frequency or geographic separation;

i) that WRC-07 has adopted Nos. **5.4B01** and **5.4B02**,

*recognizing*

- a) that the bands 4 400-4 500 MHz and 4 800-4 940 MHz are allocated to the fixed and mobile services on a primary basis;
- b) that the band 4 500-4 800 MHz is allocated to the fixed, fixed-satellite (space-to-Earth), and mobile services on a co-primary basis;
- c) that the band 4 800-4 990 MHz is allocated to the radio astronomy service on a secondary basis worldwide and that No. **5.149** applies;
- d) that the band 4 825-4 835 MHz referred to in *recognizing c)* is allocated on a primary basis to radio astronomy in Argentina, Australia and Canada (see No. **5.443**);
- e) that No. **5.442** applies to AMT for flight testing operations in the band 4 825-4 835 MHz;
- f) that the band 5 925-6 700 MHz is allocated to the fixed, fixed-satellite (Earth-to-space), and mobile services on a co-primary basis;
- g) that the use of the band 4 500-4 800 MHz (space-to-Earth) by the FSS shall be in accordance with the provisions of Appendix **30B** (see No. **5.441**);
- h) that provisions for the coordination of terrestrial and space services exist in the Radio Regulations,

*resolves*

- 1 that, in the bands 4 400-4 940 MHz and 5 925-6 700 MHz, administrations authorizing AMT for flight test purposes per Nos **5.4B01**, **5.442** and **5.4B02** shall utilize the criteria set forth below:
- emissions limited to transmission from aircraft stations only, see No. **1.83**;
  - in these bands, AMT in the aeronautical mobile service is not considered an application of a safety service as per No. **1.59**;
  - the peak e.i.r.p. density of a telemetry transmitter antenna shall not exceed  $-2.2 \text{ dB(W/MHz)}$ ;
  - transmissions limited to designated flight test areas, where flight test areas are airspace designated by administrations for flight testing;
  - if operation of AMT aircraft stations is planned within 500 km of the territory of an administration in which the band 4 825-4 835 MHz is allocated to radio astronomy on a primary basis (see No. **5.443**), consult with that administration to determine whether any special measures are needed to prevent interference to their radio astronomy observations;
  - in the bands 4 400-4 940 MHz and 5 925-6 700 MHz, bilateral coordination of transmitting AMT aircraft stations with respect to receiving fixed or mobile stations must be effected if the AMT aircraft station will operate within 450 km of the receiving fixed or mobile stations of another administration. The following procedure should be used to establish whether a fixed or mobile service receiver within 450 km of the flight test area will receive an acceptable level of interference:

- determine if the receiving fixed or mobile station's antenna main-beam axis, out to a distance of 450 km, passes within 12 km of the designated area used by transmitting AMT aircraft stations, where this distance is measured orthogonally from the main-beam axis projection on the Earth's surface to the nearest boundary of the projection of the flight test area on the Earth's surface;
- if the main-beam axis does not intersect the flight test area or any point within the 12 km offset, the interference could be accepted. Otherwise, further bilateral coordination discussions would be needed;

2 that administrations authorizing AMT per Nos **5.4B01**, **5.442** and **5.4B02** in the bands 4 400-4 940 MHz and 5 925-6 700 MHz require the use of technical and/or operational measures on AMT where appropriate to facilitate sharing with other services and applications in these bands.

**ADD** COM4/332/179 (B14/365/47) (R7/411/223)

## RESOLUTION [COM4/3] (WRC-07)

### **Distress and safety radiotelephony procedures for 2 182 kHz**

The World Radiocommunication Conference (Geneva, 2007),

*noting*

- a) that all ships subject to the International Convention for the Safety of Life at Sea (SOLAS), 1974, as amended, are required to be fitted for the Global Maritime Distress and Safety System (GMDSS);
- b) that some vessels not subject to SOLAS, 1974, as amended, may not be making use of the techniques and frequencies of GMDSS prescribed in Chapter **VII** and may wish to continue using radiotelephony procedures for distress and safety communications on 2 182 kHz until such time as they are able to participate in the GMDSS;
- c) that some administrations may have a need to maintain shore-based radiotelephony distress and safety services on 2 182 kHz so that vessels not subject to SOLAS, 1974, as amended, and not yet using the techniques and frequencies of GMDSS will be able to obtain assistance from these services until such time as they are able to participate in GMDSS,

*considering*

that there needs to be some recognized guidance for the use of radiotelephony on 2 182 kHz for distress and safety communications,

*resolves*

- 1 that ships, when in distress or when engaged in urgency or safety-related communications on 2 182 kHz, use the radiotelephony procedures contained in the Annex to this Resolution;
- 2 that coast stations, in order to maintain communication with non-GMDSS ships that are in distress or engaged in urgency or safety related communications on 2 182 kHz, use the radiotelephony procedures contained in the Annex to this Resolution.

## ANNEX TO RESOLUTION [COM4/3] (WRC-07)

### **Distress and safety radiotelephony procedures for 2 182 kHz\***

#### PART A1 – GENERAL

§ 1 The frequencies and techniques specified in this Resolution may be used in the maritime mobile service for stations<sup>1</sup> not required by national or international regulation to fit GMDSS equipment and for communications between those stations and aircraft. However, stations of the maritime mobile service, when additionally fitted with any of the equipment used by stations operating in conformity with the provisions specified in Chapter VII, should, when using that equipment, comply with the appropriate provisions of that Chapter.

§ 2 1) No provision of this Resolution prevents the use by a mobile station or mobile earth station in distress of any means at its disposal to attract attention, make known its position, and obtain help.

2) No provision of this Resolution prevents the use by stations on board aircraft or ships engaged in search and rescue operations, in exceptional circumstances, of any means at their disposal to assist a mobile station or mobile earth station in distress.

3) No provision of this Resolution prevents the use by a land station or coast earth station, in exceptional circumstances, of any means at its disposal to assist a mobile station or mobile earth station in distress (see also No. 4.16).

§ 3 In cases of distress, urgency or safety, communications by radiotelephony should be made slowly and distinctly, each word being clearly pronounced to facilitate transcription.

§ 4 The abbreviations and signals of Recommendation ITU-R M.1172 and the Phonetic Alphabet and Figure Code in Appendix 14 should be used where applicable<sup>2</sup>.

§ 5 Distress, urgency and safety communications may also be made using digital selective calling and satellite techniques and/or direct-printing telegraphy, in accordance with the provisions specified in Chapter VII and relevant ITU-R Recommendations.

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\* Distress and safety communications include distress, urgency and safety calls and messages.

<sup>1</sup> These stations may include rescue coordination centres. The term “Rescue Coordination Centre” as defined in the International Convention on Maritime Search and Rescue (1979) refers to a unit responsible for promoting the efficient organization of search and rescue services and for coordinating the conduct of search and rescue operations within a search and rescue region.

<sup>2</sup> The use of the Standard Marine Communication Phrases and, where language difficulties exist, the International Code of Signals, both published by the International Maritime Organization, is also recommended.

§ 6 Mobile stations<sup>3</sup> of the maritime mobile service may communicate for safety purposes with stations of the aeronautical mobile service. Such communications shall normally be made on the frequencies authorized, and under the conditions specified, in Section I of Part A2 (see also § 2 1)).

§ 6A Mobile stations of the aeronautical mobile service may communicate for distress and safety purposes with stations of the maritime mobile service in conformity with the provisions of this Resolution.

§ 7 Any aircraft required by national or international regulations to communicate for distress, urgency or safety purposes with stations of the maritime mobile service shall be capable of transmitting and receiving class J3E emissions when using the carrier frequency 2 182 kHz or the carrier frequency 4 125 kHz.

## PART A2 – FREQUENCIES FOR DISTRESS AND SAFETY

### Section I – Availability of frequencies

#### *A – 2 182 kHz*

§ 1 1) The carrier frequency 2 182 kHz is an international distress frequency for radiotelephony; it may be used by ship, aircraft and survival craft stations when requesting assistance from the maritime services. It is used for distress calls and distress traffic, for the urgency signal and urgency messages and for the safety signal. Safety messages should be transmitted, when practicable, on a working frequency, after a preliminary announcement on 2 182 kHz. The class of emission to be used for radiotelephony on the frequency 2 182 kHz shall be J3E. Distress traffic on 2 182 kHz following the reception of a distress call using digital selective calling should take into account that some shipping in the vicinity may not be able to receive this traffic.

2) If a distress message on the carrier frequency 2 182 kHz has not been acknowledged, the distress call and message may be transmitted again on a carrier frequency of 4 125 kHz or 6 215 kHz, as appropriate.

3) However, ship stations and aircraft which cannot transmit either on the carrier frequency 2 182 kHz or on the carrier frequencies 4 125 kHz or 6 215 kHz may use any other available frequency on which attention might be attracted.

4) Coast stations using the carrier frequency 2 182 kHz for distress purposes and to send navigational warnings may transmit an audible alarm signal<sup>4</sup> of short duration for the purpose of attracting attention to the message which follows.

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<sup>3</sup> Mobile stations communicating with the stations of the aeronautical mobile (R) service in bands allocated to the aeronautical mobile (R) service shall conform to the provisions of the Regulations which relate to that service and, as appropriate, any special arrangements between the governments concerned by which the aeronautical mobile (R) service is regulated.

<sup>4</sup> Alarm signals may consist of transmissions of sinusoidal audio frequency tones 1 300 Hz, 2 200 Hz, or both. Different tone generation patterns may be used to signal the type of message which follows, and an alarm signal ending in a 10-second continuous tone could be used to identify a transmission by a coast station.

*B – 4 125 kHz*

§ 2            1)        The carrier frequency 4 125 kHz is used to supplement the carrier frequency 2 182 kHz for distress and safety purposes and for call and reply. This frequency is also used for distress and safety traffic by radiotelephony.

                 2)        The carrier frequency 4 125 kHz may be used by aircraft to communicate with stations of the maritime mobile service for distress and safety purposes, including search and rescue.

*C – 6 215 kHz*

§ 3            The carrier frequency 6 215 kHz is used to supplement the carrier frequency 2 182 kHz for distress and safety purposes and for call and reply. This frequency is also used for distress and safety traffic by radiotelephony.

**Section II – Protection of distress and safety frequencies**

*A – General*

§ 4            Test transmissions on any of the distress and safety frequencies described above shall be kept to a minimum and, wherever practicable, be carried out on artificial antennas or with reduced power.

§ 5            Before transmitting on any of the frequencies identified for distress and safety communications, a station shall listen on the frequency concerned to make sure that no distress transmission is being sent (see Recommendation ITU-R M.1171). This does not apply to stations in distress.

*B – 2 182 kHz*

§ 6            1)        Except for transmissions authorized on the carrier frequency 2 182 kHz and on the frequencies 2 174.5 kHz, 2 177 kHz, 2 187.5 kHz and 2 189.5 kHz, all transmissions on the frequencies between 2 173.5 kHz and 2 190.5 kHz are forbidden (see also Appendix 15).

                 2)        To facilitate the reception of distress calls, all transmissions on 2 182 kHz should be kept to a minimum.

**Section III – Watch on distress frequencies**

*A – 2 182 kHz*

§ 7            1)        Coast stations may maintain a watch on the carrier frequency 2 182 kHz if so directed by their Administration. Such assignments should be indicated in the List of Coast Stations and Special Service Stations.

                 2)        Ship stations not fitted with equipment compatible with the GMDSS are encouraged to keep the maximum watch practicable on the carrier frequency 2 182 kHz.

*B – 4 125 kHz, 6 215 kHz*

§ 8 Coast stations may maintain additional watch, as permitted, on the carrier frequencies 4 125 kHz and 6 215 kHz. Such assignments should be indicated in the List of Coast Stations and Special Service Stations.

## **PART A3 – DISTRESS COMMUNICATIONS**

### **Section I – General**

§ 1 The general provisions for distress communications are found in Section I of Article **32** (see Nos. **32.1**, **32.3**, and **32.4**).

### **Section II – Distress signal, call and message**

§ 2 The radiotelephone distress signal, call and message are described in Section II of Article **32** (see Nos. **32.13Bbis**, **32.9**, **32.13B**, **32.13C**, and **32.13D**).

### **Section III – Procedures**

§ 3 After the transmission by radiotelephony of its distress message, the mobile station may be requested to transmit suitable signals, followed by its call sign or other identification, to permit direction-finding stations to determine its position. This request may be repeated at frequent intervals if necessary.

§ 4 1) The distress message, preceded by the distress call, shall be repeated at intervals until an answer is received.

2) The intervals shall be sufficiently long to allow time for replying stations, in their preparations, to start their sending apparatus.

§ 5 When the mobile station in distress receives no answer to a distress message sent on the distress frequency, the message may be repeated on any other available frequency on which attention might be attracted.

### **Section IV – Transmission of a distress relay message by a station not itself in distress**

§ 6 The radiotelephone procedures for the transmission of a distress relay message by a station not itself in distress are found in Section II of Article **32** (see Nos. **32.16** to **32.19A** and **32.19D** to **32.19F**).

### **Section V – Receipt and acknowledgement of a distress message**

§ 7 The procedures relating to the receipt and acknowledgement of a distress message are found in Section II of Article **32** (see Nos. **32.23**, **32.26**, **32.28**, **32.29**, **32.30** and **32.35**).

## **Section VI – Distress traffic**

§ 8 The radiotelephone procedures relating to the distress traffic are found in Section III of Article **32** (see Nos. **32.39** to **32.42**, **32.45** to **32.47**, **32.49** to **32.52** and **32.54** to **32.59**).

§ 9 1) Every mobile station acknowledging receipt of a distress message shall, on the order of the person responsible for the ship, aircraft or other vehicle, transmit the following information in the order shown as soon as possible:

- its name;
- its position;
- the speed at which it is proceeding towards, and the approximate time it will take to reach, the mobile station in distress;
- additionally, if the position of the ship in distress appears doubtful, ship stations should also transmit, when available, the true bearing of the ship in distress.

2) Before transmitting the message specified in § 9 1), the station shall ensure that it will not interfere with the emissions of other stations better situated to render immediate assistance to the station in distress.

## **PART A4 – URGENCY AND SAFETY COMMUNICATIONS**

### **Section I – Urgency communications**

§ 1 The radiotelephone procedures for urgency communications are found in Sections I and II of Article **33** (see Nos. **33.1** to **33.7** and **33.8**, **33.8b** to **33.9a** and **33.11** to **33.16**).

### **Section II – Safety communications**

§ 2 The radiotelephone procedures for safety communications are found in Sections I and IV of Article **33** (see Nos. **33.31**, **33.31C**, **33.32**, **33.34** to **33.35** and **33.38B**).

**ADD** COM4/318/11 (B11/329/42)

## **RESOLUTION [COM4/4] (WRC-07)**

### **Compatibility between the aeronautical mobile (R) service and the fixed-satellite service (Earth-to-space) in the band 5 091-5 150 MHz**

The World Radiocommunication Conference (Geneva, 2007),

*considering*

- a) that the allocation of the 5 091-5 150 MHz band to the fixed-satellite service (FSS) (Earth-to-space) is limited to feeder links of non-geostationary-satellite (non-GSO) systems in the mobile-satellite service (MSS);
- b) that the frequency band 5 000-5 150 MHz is currently allocated to the aeronautical mobile-satellite (R) service (AMS(R)S), subject to agreement obtained under No. **9.21**, and to the aeronautical radionavigation service (ARNS);



- c) that this Conference has allocated the band 5 091-5 150 MHz to the aeronautical mobile service (AMS) on a primary basis subject to No. **5.4B03**;
- d) that the International Civil Aviation Organization (ICAO) is in the process of identifying the technical and operating characteristics of new systems operating in the AM(R)S in the band 5 091-5 150 MHz;
- e) that the compatibility of one AM(R)S system, to be used by aircraft operating on the airport surface, and the FSS has been demonstrated in the 5 091-5 150 MHz band;
- f) that ITU-R studies have examined potential sharing among AMS applications and have shown that the aggregate interference from aeronautical security, aeronautical telemetry and AM(R)S should total no more than  $3\% \Delta T_s/T_s$ ;
- g) that the frequency band 117.975-137 MHz currently allocated to the AM(R)S is reaching saturation in certain areas of the world, and therefore that band would not be available to support additional surface applications at airports;
- h) that this new allocation is intended to support the introduction of applications and concepts in air traffic management which are data intensive, and which will support data links that carry safety-critical aeronautical data,

*recognizing*

- a) that in the frequency band 5 030-5 091 MHz precedence is to be given to the microwave landing system (MLS) in accordance with No. **5.444**;
- b) that ICAO publishes recognized international aeronautical standards for AM(R)S systems;
- c) that Resolution **114 (Rev.WRC-03)** applies to the sharing conditions between the FSS and ARNS in the 5 091-5 150 MHz band,

*noting*

- a) that the number of FSS transmitting stations required may be limited;
- b) that the use of the band 5 091-5 150 MHz by the AM(R)S needs to ensure protection of the current or planned use of this band by the FSS (Earth-to-space);
- c) that ITU-R studies describe methods for ensuring compatibility between the AM(R)S and FSS operating in the band 5 091-5 150 MHz, and compatibility has been demonstrated for the AM(R)S system referred to in *considering e*),

*resolves*

- 1 that any AM(R)S systems operating in the band 5 091-5 150 MHz shall not cause harmful interference to, nor claim protection from, systems operating in the ARNS;
- 2 that any AM(R)S systems operating in the frequency band 5 091-5 150 MHz shall meet the SARPs requirements published in Annex 10 of the ICAO Convention on International Civil Aviation and the requirements of Recommendation ITU-R M.1827, to ensure compatibility with FSS systems operating in that band;
- 3 that, in part to meet the provisions of No. **4.10**, the coordination distance with respect to stations in the FSS operating in the band 5 091-5 150 MHz shall be based on ensuring that the signal received at the AM(R)S station from the FSS transmitter does not exceed  $-143 \text{ dB(W/MHz)}$ , where the required basic transmission loss shall be determined using the methods described in Recommendations ITU-R P.525-2 and ITU-R P.526-10,

*invites*

1 administrations to supply technical and operational criteria necessary for sharing studies for the AM(R)S, and to participate actively in such studies;

2 ICAO and other organizations to actively participate in such studies,

*instructs the Secretary-General*

to bring this Resolution to the attention of ICAO.

**ADD** COM4/318/10 (B11/329/43) (R6/410/78)

## RESOLUTION [COM4/5] (WRC-07)

### **Use of the band 960-1 164 MHz by the aeronautical mobile (R) service**

The World Radiocommunication Conference (Geneva, 2007),

*considering*

a) that this Conference has allocated the band 960 to 1 164 MHz to the aeronautical mobile (R) service (AM(R)S) in order to make available this frequency band for new AM(R)S systems, and in doing so enabled further technical developments, investments and deployment;

b) the current allocation of the frequency band 960-1 164 MHz to the aeronautical radionavigation service (ARNS);

c) the use of the band 960-1 215 MHz by the ARNS is reserved on a worldwide basis for the operation and development of airborne electronic aids to air navigation and any directly associated ground-based facilities per No. **5.328**;

d) that new technologies are being developed to support communications and air navigation, including airborne and ground surveillance applications;

e) that this new allocation is intended to support the introduction of applications and concepts in air traffic management which are data intensive and which could support data links that carry safety critical aeronautical data;

f) that in countries listed in No. **5.312** the frequency band 960-1 164 MHz is also used by systems in the ARNS for which standards and recommended practices (SARPs) have not been developed nor published by the International Civil Aviation Organization (ICAO);

g) that, furthermore, the frequency band 960-1 164 MHz is also used by a non-ICAO system operating in the ARNS that has characteristics similar to those of ICAO standard distance measuring equipment;

h) that this allocation was made knowing that studies are ongoing with respect to the technical characteristics, sharing criteria and sharing capabilities;

i) that the frequency band 117.975-137 MHz currently allocated to the AM(R)S is reaching saturation within certain areas of the world, therefore that band would not be available to support additional medium- and long-range data communications;

j) that, additional information is needed on the new technologies which will be used, other than the AM(R)S system identified in *recognizing c)*, the amount of spectrum required, and the characteristics and sharing capabilities/conditions. Therefore, studies are urgently required on which AM(R)S systems will be used, the amount of spectrum required and the characteristics and conditions for sharing with ARNS systems,

*recognizing*

- a) that precedence must be given to the ARNS operating in the frequency band 960-1 164 MHz;
- b) that Annex 10 of the Convention of the ICAO contains SARPs for aeronautical radionavigation and radiocommunication systems used by international civil aviation;
- c) that all compatibility issues between the ICAO Standard Universal Access Transceiver (UAT) and other systems which operate in the same frequency range, excluding the system identified in *considering f)*, have been addressed;
- d) that in the frequency band 1 024-1 164 MHz the sharing conditions are more complex than in the band 960-1 024 MHz,

*noting*

that, excluding the system identified in *recognizing c)*, no compatibility criteria currently exist between AM(R)S systems proposed for operations in the frequency band 960-1 164 MHz and the existing aeronautical systems in the band,

*resolves*

- 1 that any AM(R)S system operating in the frequency band 960-1 164 MHz shall meet SARPs requirements published in Annex 10 of the ICAO Convention on International Civil Aviation;
- 2 that any AM(R)S systems operating in the band 960-1 164 MHz shall not cause harmful interference to, nor claim protection from, and shall not impose constraints on the operation and planned development of aeronautical radionavigation systems in the same band;
- 3 that compatibility studies between AM(R)S systems operating in the band 960-1 164 MHz and ARNS systems in *considering f)* and *g)* need to be conducted to develop sharing conditions to ensure that the conditions of *resolves 2* are satisfied, and that ITU-R Recommendations are developed as appropriate;
- 4 that the result of the studies pursuant to *resolves 3* shall be reported to WRC-11 and the decision should be taken by WRC-11 to review, if appropriate, regulatory provisions in *resolves 2* taking into account protection requirements of ARNS systems identified in *considering f)* and *g)* and the need for global facilitation of AM(R)S operating in accordance with ICAO standards;
- 5 that frequencies in the band 960-1 164 MHz shall not be used by an AM(R)S system, except for the AM(R)S system identified in *recognizing c)*, until all potential compatibility issues with the ARNS and, as necessary, the radionavigation-satellite service (RNSS) in the adjacent band have been resolved, also taking into account *recognizing d)*,

*invites*

administrations and ICAO, for the purposes of conducting the ITU-R studies mentioned in *resolves 3* and *5*, to provide to ITU-R the technical and operational characteristics of systems involved,

*invites ITU-R*

1 to conduct studies in accordance with *resolves* 3 and 5 on operational and technical means to facilitate sharing between AM(R)S systems operating in the band 960-1 164 MHz and ARNS systems identified in *considering f)* and *g)*;

2 to conduct studies in accordance with *resolves* 5 on operational and technical means to facilitate sharing between AM(R)S systems operating in the band 960-1 164 MHz and the RNSS operating in the band 1 164-1 215 MHz;

3 to report the results of the studies to WRC-11,

*instructs the Secretary-General*

to bring this Resolution to the attention of ICAO.

**ADD** COM4/332/180 (B14/365/48) (R7/411/224)

## RESOLUTION [COM4/6] (WRC-07)

### **Content, formats and periodicity of the maritime related service publications**

The World Radiocommunication Conference (Geneva, 2007),

*noting*

a) that Appendix **16** specifies the documents with which stations on board ships and aircraft shall be provided;

b) that Article **20** specifies the titles, content, preparation, and amendment of service publications and on-line information systems;

c) that stations in the maritime mobile service have an increasing requirement to have up-to-date information in the publications and on-line information systems,

*noting further*

a) that administrations have indicated a need for establishing a functional series of service publications which will enhance safety on board ships;

b) that this Conference has modified the relevant provisions, concerning the preparation and amendments of service publications and on-line information systems in Article **20**;

c) that this Conference decided to merge certain Lists, previously mentioned in Article **20**;

d) that this Conference also decided to modify the carriage requirements as stipulated in Appendix **16**;

e) that there will be a transition period until 31 December 2010, during which the Radiocommunication Bureau will continue to issue service publications in their prior format,

*recognizing*

a) that this Conference has adopted modifications with regard to the titles and content of List IV as well as of List V of the service publications;

b) that administrations may exempt ships from the carriage of the documents required in Appendix **16 (Rev.WRC-07)**,

*resolves to invite all administrations*

- 1 to submit regular updates of the information for recording in the ITU maritime databases in accordance with provision **20.16**;
- 2 to assist in enhancing maritime safety by contributing to the continued work with regard to the content, formats and periodicity of the maritime service publications,

*invites ITU-R*

- 1 to conduct studies with the active participation of the Radiocommunication Bureau in view of developing a functional series of maritime Service Publications (Lists IV and V), which will enhance safety of life at sea;
- 2 to complete these studies by 31 December 2010 (see *noting further e*));
- 3 to conduct studies with a view to developing a practice-oriented and user-friendly format of the current Manual for Use by the Maritime Mobile and Maritime Mobile-Satellite Services;
- 4 to periodically update the text of this Manual to cover the latest developments,

*instructs the Director of the Radiocommunication Bureau*

- 1 to publish the maritime service publications in the current format in the transition period until 31 December 2010, and after that date in the new format in the six official languages of the Union in accordance with *invites ITU-R 2* above;
- 2 to report to the next World Radiocommunication Conference on further rationalization of Lists IV and V and the Manual, and to include the results of the studies on further rationalization of these documents in the Report of the Director of the Radiocommunication Bureau,

*instructs the Secretary-General*

to bring this Resolution to the attention of the International Maritime Organization, the International Civil Aviation Organization and the International Association of Marine Aids to Navigation and Lighthouse Authorities.

**ADD** COM4/380/9 (B17/404/69)

## RESOLUTION [COM4/7] (WRC-07)

### **Use of the band 5 091-5 250 MHz by the aeronautical mobile service for telemetry applications**

The World Radiocommunication Conference (Geneva, 2007),

*considering*

- a) that there is a need to provide global spectrum to the mobile service for wideband aeronautical telemetry systems;
- b) that the operation of aircraft stations is subject to national and international rules and regulations;
- c) that the frequency band 5 030-5 150 MHz is allocated to the aeronautical radionavigation service on a primary basis;

- d) that the allocation of the 5 091-5 250 MHz band to the fixed-satellite service (Earth-to-space) is limited to feeder links of non-geostationary satellite systems in the mobile-satellite service;
- e) that the band 5 000-5 150 MHz is also allocated to the aeronautical mobile-satellite (R) service on a primary basis, subject to agreement obtained under No. **9.21**;
- f) that this Conference allocated the band 5 091-5 150 MHz to the aeronautical mobile service on a primary basis subject to No. **5.4B03**;
- g) that the band 5 150-5 250 MHz is also allocated to the mobile, except aeronautical mobile, service on a primary basis;
- h) that this Conference additionally allocated the band 5 150-5 250 MHz to the aeronautical mobile service on a primary basis, subject to No. **5.4B04**;
- i) that aeronautical mobile telemetry (AMT) in the aeronautical mobile service is not considered an application of a safety service as defined in No. **1.59**,

*noting*

- a) that results of studies conducted in accordance with Resolution **230 (Rev.WRC-03)** show the feasibility of using the band 5 091-5 250 MHz for the aeronautical mobile service on a primary basis, limited to transmissions of telemetry for flight testing, under certain conditions and arrangements;
- b) that the identification by ITU-R of technical and operational requirements for aircraft stations operating in the band 5 091-5 250 MHz should prevent unacceptable interference to other services;
- c) that the band 5 091-5 150 MHz is to be used for the operation of the international standard microwave landing system (MLS) for precision approach and landing;
- d) that MLS can be protected through the implementation of an adequate separation distance between an aeronautical mobile service transmitter to support telemetry and MLS receivers;
- e) that ITU-R studies have generated methods, described in Report ITU-R M.2118, for ensuring compatibility and sharing between the aeronautical mobile service and the fixed-satellite service operating in the band 5 091-5 250 MHz, which result in interference of no more than 1%  $\Delta T_{\text{satellite}}/T_{\text{satellite}}$  from AMT aircraft station transmissions to fixed-satellite service spacecraft receivers;
- f) that a method to facilitate sharing between MLS and aeronautical mobile service is contained in Recommendation ITU-R M.1829;
- g) that Recommendation ITU-R M.1828 provides the technical and operational requirements for aircraft stations of the aeronautical mobile service, limited to transmissions of telemetry for flight testing;
- h) that ITU-R compatibility studies have been performed for AMT, limited to flight testing; such application is for the testing of aircraft during non-commercial flights for the purpose of development, evaluation and/or certification of aircraft in airspace designated by administrations for this purpose,

*recognizing*

- a) that precedence is to be given to MLS in accordance with No. **5.444** in the frequency band 5 030-5 091 MHz;
- b) that studies have been performed within ITU-R concerning the sharing and compatibility of AMT for flight testing with other services in the band 5 091-5 250 MHz;
- c) that Resolutions **[COM4/4] (WRC-07)** and **[COM4/8] (WRC-07)** also provide guidance on the use of the band 5 091-5 150 MHz by the aeronautical mobile service,

*resolves*

- 1 that administrations choosing to implement AMT shall limit AMT applications to those identified in *noting h)* in the band 5 091-5 250 MHz, and shall utilize the criteria set forth in Annex 1 to this Resolution;
- 2 that the pfd limits in §§ 3 and 4 of Annex 1 to this Resolution which protect terrestrial services may be exceeded on the territory of any country whose administration has so agreed,

*invites ITU-R*

to continue studying the conditions and arrangements stipulated in *noting a)*.

**ADD** COM4/380/10 (B17/404/70)

## ANNEX 1 TO RESOLUTION **[COM4/7] (WRC-07)**

1 In implementing aeronautical mobile telemetry (AMT), administrations shall utilize the following criteria:

- limit transmissions to those from aircraft stations only (see No. **1.83**);
- the operation of aeronautical telemetry systems within the band 5 091-5 150 MHz shall be coordinated with administrations operating microwave landing systems (MLS) and whose territory is located within a distance  $D$  of the AMT flight area, where  $D$  is determined by the following equation:

$$D = 43 + 10^{(127.55 - 20 \log(f) + E)/20}$$

where:

- $D$ : separation distance (km) triggering the coordination
- $f$ : minimum frequency (MHz) used by the AMT system
- $E$ : peak equivalent isotropically radiated power density (dBW in 150 kHz) of the aircraft transmitter.

2 For the protection of the fixed-satellite service (FSS), a telemetry aircraft station in the band 5 091-5 250 MHz shall be operated in such a manner that one aircraft station transmitter power flux-density be limited to  $-198.9 \text{ dB(W/(m}^2 \cdot \text{Hz))}$  at the FSS satellite orbit for spacecraft using Earth coverage receive antennas. Such pfd limit per aircraft transmitter has been derived under the assumptions that the FSS satellite orbit is at 1 414 km altitude and that a total of 21 co-frequency AMT transmitters operate concurrently within the field of view of the FSS satellite. In case of fewer than 21 AMT co-frequency transmitters operating simultaneously in view of the satellite, the transmitter power can be adjusted so as not to exceed an aggregate pfd at the satellite of  $-185.7 \text{ dB(W/(m}^2 \cdot \text{Hz))}$ , which corresponds to a  $\Delta T_{\text{satellite}}/T_{\text{satellite}}$  of 1%.

3 For the protection of the mobile service in the 5 150-5 250 MHz frequency band, the maximum pfd produced at the surface of the Earth by emissions from an aircraft station of an aeronautical mobile service system, limited to transmissions of telemetry for flight testing, shall not exceed:  $-79.4 \text{ dB(W/(m}^2 \cdot 20 \text{ MHz))} - G_r(\theta)$ .

$G_r(\theta)$  represents the mobile service receiver antenna gain versus elevation angle  $\theta$  and is defined as follows:

**Wireless access system elevation antenna pattern**

Elevation angle, $\theta$ (degrees)	Gain $G_r(\theta)$ (dBi)
$45 < \theta \leq 90$	-4
$35 < \theta \leq 45$	-3
$0 < \theta \leq 35$	0
$-15 < \theta \leq 0$	-1
$-30 < \theta \leq -15$	-4
$-60 < \theta \leq -30$	-6
$-90 < \theta \leq -60$	-5

4 For the protection of the aeronautical mobile (R) service (AM(R)S) in the frequency band 5 091-5 150 MHz, the maximum pfd produced at the surface of the Earth, where AM(R)S may be deployed in accordance with No. **5.4B03**, by emissions from an aircraft station of an aeronautical mobile service system, limited to transmissions of telemetry for flight testing, shall not exceed:  $-89.4 \text{ dB(W/(m}^2 \cdot 20 \text{ MHz))} - G_r(\theta)$ .

$G_r(\theta)$  represents the mobile service receiver antenna gain versus elevation angle  $\theta$  and is defined as follows:

$$G_r(\theta) = \max[G_1(\theta), G_2(\theta)]$$

$$G_1(\theta) = 6 - 12 \left( \frac{\theta}{27} \right)^2$$

$$G_2(\theta) = -6 + 10 \log \left[ \left( \max \left\{ \frac{|\theta|}{27}, 1 \right\} \right)^{-1.5} + 0.7 \right]$$

where:

$G(\theta)$ : gain relative to an isotropic antenna (dBi)

$\theta$ : absolute value of the elevation angle relative to the angle of maximum gain (degrees).



RESOLUTION [COM4/8] (WRC-07)

**Considerations for use of the band 5 091-5 150 MHz by the aeronautical mobile service for certain aeronautical applications**

The World Radiocommunication Conference (Geneva, 2007),

*considering*

- a) the current allocation of the 5 091-5 150 MHz band to the fixed-satellite (FSS) (Earth-to-space), which is limited to feeder links of non-geostationary-satellite systems in the mobile-satellite service;
- b) the current allocation of the frequency band 5 000-5 150 MHz to the aeronautical mobile-satellite (R) service, subject to agreement obtained under No. **9.21**, and the aeronautical radionavigation service (ARNS);
- c) that this Conference allocated the band 5 091-5 150 MHz to the aeronautical mobile service (AMS) on a primary basis, subject to No. **5.4B03**,

*recognizing*

- a) that precedence is to be given to the microwave landing system (MLS) in accordance with No. **5.444** in the frequency band 5 030-5 091 MHz;
- b) that Resolution **114 (Rev.WRC-03)** applies to the sharing conditions between FSS and ARNS in the band 5 091-5 150 MHz;
- c) that Resolutions **[COM4/4] (WRC-07)** and **[COM4/7] (WRC-07)** also provide guidance on the use of the band 5 091-5 150 MHz by AMS,

*noting*

that Recommendation ITU-R M.1827 describes methods for ensuring compatibility between AMS for aeronautical security applications and FSS operating in the band 5 091-5 150 MHz,

*resolves*

- 1 that the use of AMS for aeronautical applications described in *noting* above is limited to stations providing confidential radiocommunications intended for systems used in response to interruption of aircraft operations that have not been permitted by the appropriate authorities;
- 2 that AMS stations for such aeronautical applications shall be designed to operate in accordance with Recommendation ITU-R M.1827;
- 3 that administrations, in making assignments, shall ensure that requirements for the aeronautical mobile (R) service take precedence over those of AMS for applications described in *resolves* 1 and 2 above.

RESOLUTION [COM4/9] (WRC-07)

**Consideration of the frequency bands between 5 000 and 5 030 MHz for aeronautical mobile (R) service surface applications at airports**

The World Radiocommunication Conference (Geneva, 2007),

*considering*

- a) the current allocation of the frequency band 5 000-5 010 MHz to the aeronautical mobile-satellite (R) service (AMS(R)S), subject to agreement obtained under No. **9.21**, the aeronautical radionavigation service (ARNS) and the radionavigation-satellite service (RNSS) (Earth-to-space);
- b) the current allocation of the frequency band 5 010-5 030 MHz to AMS(R)S, subject to agreement obtained under No. **9.21**, ARNS and RNSS (space-to-Earth and space-to-space);
- c) the current allocation of the frequency band 4 990-5 000 MHz to the radio astronomy service;
- d) that this Conference has additionally allocated the band 5 091-5 150 MHz to the aeronautical mobile (R) service (AM(R)S), for use by systems operating in accordance with international aeronautical standards, limited to surface applications at airports;
- e) that the International Civil Aviation Organization (ICAO) is in the process of identifying the technical and operating characteristics of such AM(R)S systems, and that initial estimates for associated spectrum requirements are approximately 60-100 MHz in some portion of the band 5 000-5 150 MHz (Report ITU-R M.2120);
- f) that the band 5 091-5 150 MHz may not provide sufficient spectrum capacity to satisfy the requirement identified in *considering e*), and therefore additional spectrum may be required;
- g) that the protection requirements for the radio astronomy service are given in Recommendation ITU-R RA.769,

*recognizing*

- a) that the RNSS allocations in these bands were made at WRC-2000;
- b) that RNSS currently operates in the Earth-to-space direction in the band 5 000-5 010 MHz, and needs access to the space-to-Earth allocation in 5 010-5 030 MHz for service and feeder links in the longer term;
- c) that RNSS and AM(R)S systems planned in the 5 GHz range are still evolving, and that technical characteristics and operational parameters for these systems have not been fully established within ITU-R;
- d) that protection of RNSS and the radio astronomy service must first be demonstrated before additional services can be allocated in the bands between 5 000-5 030 MHz;
- e) that, currently, there are no agreed studies within ITU-R for AM(R)S to ensure protection of RNSS and the radio astronomy service,

*resolves*

- 1 that ITU-R investigate, with priority, AM(R)S spectrum requirements for surface applications in the 5 GHz range, in order to determine if they can be fulfilled in the band 5 091-5 150 MHz;
- 2 that ITU-R further investigate, if necessary, the feasibility of an allocation for AM(R)S for surface applications at airports, study the technical and operational issues relating to the protection of RNSS in the bands between 5 000 and 5 030 MHz and of the radio astronomy service in the band 4 990-5 000 MHz from AM(R)S, and develop appropriate Recommendations;
- 3 that WRC-11 consider results of the above studies and take appropriate actions,

*invites*

- 1 administrations and ICAO to supply technical and operational characteristics for AM(R)S necessary for compatibility studies, and to participate actively in the studies;
- 2 administrations to supply technical and operational characteristics and protection criteria for RNSS necessary for compatibility studies, and to participate actively in the studies,

*instructs the Secretary-General*

to bring this Resolution to the attention of ICAO.

**ADD** COM4/380/57 (B17/404/73)

## RESOLUTION [COM4/10] (WRC-07)

### **ITU maritime service information registration**

The World Radiocommunication Conference (Geneva, 2007),

*noting*

- a) that the provisions of No. **20.16** of Article **20** require administrations to notify the Radiocommunication Bureau of operational information contained in the List of Coast Stations and Special Service Stations (List IV) and List of Ship Stations and Maritime Mobile Service Identity Assignments (List V);
- b) that this Conference has modified Article **19** to provide for the assignment of a maritime mobile service identity (MMSI) to search and rescue aircraft, automatic identification system (AIS) aids to navigation, and craft associated with a parent ship;
- c) that the provisions of No. **20.15**, however, give the Radiocommunication Bureau authority to change the content and form of this information in consultation with administrations;
- d) that the International Maritime Organization (IMO) has already identified, in Resolution A.887(21) adopted on 25 November 1999, information to be included in search and rescue databases, including:
  - vessel identification number (IMO number or national registration number);
  - Maritime mobile service identity (MMSI);
  - radio call sign;

- name, address and telephone number and, if applicable, telefax number of emergency contact person ashore;
- alternative 24-hour emergency telephone number;
- capacity for persons on board (passengers and crew),

*resolves to instruct the Director of the Radiocommunication Bureau*

to maintain online information systems to allow rescue coordination centres to have immediate access to this information on a 24-hour per day, 7-day per week basis,

*invites ITU-R*

to consult with administrations, IMO, the International Civil Aviation Organization (ICAO), the International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA), and the International Hydrographic Organization (IHO) to identify elements for incorporation in ITU online information systems,

*instructs the Secretary-General*

to communicate this Resolution to IMO, ICAO, IALA, and IHO.

**ADD** COM4/380/77 (B19/413/28)

## RESOLUTION [COM4/11] (WRC-07)

### **Information relating to the high-frequency broadcasting service**

The World Radiocommunication Conference (Geneva, 2007),

*considering*

- a) that this Conference reviewed the case for relieving congestion in certain of the HF bands allocated to the broadcasting service;
- b) that this Conference decided to maintain the present Table of Frequency Allocations in the HF bands, in view of the rapid development and use of the bands by all services;
- c) that, as part of a general transition away from analogue transmission systems, digital modulation is being introduced into the HF broadcasting bands;
- d) that, in common with the other services using the HF bands, the broadcasting service has an ongoing need to review the effectiveness of its use of spectrum,

*noting*

that Resolution **517 (Rev.WRC-07)** deals with the introduction of digitally modulated emissions in the HF bands allocated to the broadcasting service,

*noting further*

that ITU-R Study Group 6 has prepared a wide-ranging report, namely Report ITU-R BS.2105 “Information relating to the HF broadcasting service”,

*resolves to invite ITU-R*

to continue studies on HF broadcasting taking into account:

- technical and operational factors,
- digital transmissions, including how the introduction of these emissions will affect HF broadcasting requirements and operations,

*invites administrations and Sector Members*

to participate actively in the aforementioned studies by submitting contributions to ITU-R.

**ADD** COM4/392/16 (B19/413/29)

## RESOLUTION [COM4/12] (WRC-07)

### **Transitional measures for certain broadcasting-satellite/fixed-satellite service systems in the band 2 500-2 690 MHz**

The World Radiocommunication Conference (Geneva, 2007),

*considering*

- a)* that this Conference revised the limits of power flux-density from space stations in Article **21**, Table **21-4** for the band 2 500-2 690 MHz;
- b)* that use of the bands 2 500-2 690 MHz in Region 2 and 2 500-2 535 MHz and 2 655-2 690 MHz in Region 3 by the fixed-satellite service (FSS) is limited to national and regional systems, subject to agreement obtained under No. **9.21** (see No. **5.415** and No. **5.2.1**);
- c)* that in the band 2 520-2 670 MHz, the broadcasting-satellite service (BSS) is limited to national and regional systems, subject to agreement obtained under No. **9.21** (see No. **5.416** and No. **5.2.1**);
- d)* that, in No. **5.384A**, the 2 500-2 690 MHz band is identified as one of the bands for use by administrations wishing to implement International Mobile Telecommunications (IMT) in accordance with Resolution **223 (Rev.WRC-07)**;
- e)* that, due to the specific national and regional allocation status applied to the space services mentioned above, and the identification for use by administrations wishing to implement IMT, it is advantageous to apply the revised Article **21**, Table **21-4** limits in the band 2 500-2 690 MHz at an early date;
- f)* that certain space systems are at advanced stages of development and need to be taken into account;
- g)* that agenda item 1.9 of this Conference mentioned a requirement to not place undue constraints on the services to which the band is allocated,

*resolves*

1 that in the band 2 500-2 690 MHz space stations of satellite networks listed in Annex 1 to this Resolution shall not exceed the following pfd values:

$$\begin{array}{ll} -152 \text{ dB(W/m}^2\text{)} & \text{for } \delta < 5^\circ \\ -152 + 0.75 (\delta - 5) \text{ dB(W/m}^2\text{)} & \text{for } 5^\circ \leq \delta \leq 25^\circ \\ -137 \text{ dB(W/m}^2\text{)} & \text{for } \delta > 25^\circ \end{array}$$

in any 4 kHz band, where  $\delta$  is the angle of arrival above the horizontal plane. The limits in Table **21-4** do not apply;

2 that, for systems other than those addressed in *resolves* 1, Nos **5.418**, **5.417A** and Resolution **539**, the Bureau shall examine any coordination and notification information with respect to the provisions Nos **9.35** and **11.31** (respectively) for frequency assignments in the FSS or BSS received by the Bureau after 14 November 2007 using the pfd limits for the band 2 500-2 690 MHz in Table **21-4** of Article **21**, as revised by this Conference,

*instructs the Bureau*

to implement *resolves* 1 and *resolves* 2.

## ANNEX 1 TO RESOLUTION [COM4/12] (WRC-07)

Notifying administration	Name of space station	Orbital position	Coordination request Special Section	Date of receipt of Advance Publication Information
ARS/ARB	ARABSAT 5A-30.5E	30.50 E	CR/C/1626 M2	10.01.05
ARS/ARB	ARABSAT 5B-26E	26.00 E	CR/C/1627 M2	10.01.05
CHN	CHINASAT-MSB4	115.50 E	CR/C/1448 M1 and CR/C/1448 M2	03.11.03
CHN	CHNBSAT-113E	113.20 E	CR/C/1564 M1 and CR/C/1564 M2	18.06.04
CHN	CHNBSAT-119E	119.00 E	CR/C/1565 M1 and CR/C/1565 M2	18.06.04
IND	INSAT-2(74)	74.00 E	CR/C/1311 and CR/C/1311 M1	07.08.85
IND	INSAT-2(83)	83.00 E	CR/C/1312 and CR/C/1312 M1	07.08.85
IND	INSAT-2(93.5)	93.50 E	CR/C/1313 and CR/C/1313 M1	07.08.85
INS	INDOSTAR-107.7E	107.70 E	CR/C/1940	31.07.06
INS	INDOSTAR-118E	118.00 E	CR/C/1941	31.07.06

RESOLUTION [COM4/13] (WRC-07)

**Studies on the use of the band 790-862 MHz by mobile applications  
and by other services**

The World Radiocommunication Conference (Geneva, 2007),

*considering*

- a) that the favourable propagation characteristics of the band 470-806/862 MHz are beneficial to provide cost-effective solutions for coverage, including large areas of low population density;
- b) that the operation of broadcasting stations and base stations in the same geographical area may create incompatibility issues;
- c) that, according to Resolution **646 (WRC-03)**, the bands 764-776 MHz and 794-806 MHz are currently used in some countries for Public Protection and Disaster Relief (PPDR); and the bands 806-866 MHz (in Region 2) and 806-824 MHz and 851-869 MHz (in Region 3) are currently identified for PPDR;
- d) that many communities are particularly underserved compared to urban centres;
- e) that applications ancillary to broadcasting are sharing the band 470-862 MHz with the broadcasting service in all three Regions, and are expected to continue their operations in this band;
- f) that it is necessary to adequately protect, *inter alia*, terrestrial television broadcasting and other systems in this band,

*recognizing*

- a) that, in Article 5 of the Radio Regulations, the band 790-862 MHz, or parts of that band, is allocated, and is used on a primary basis for services other than broadcasting;
- b) that the frequency band 470-806/862 MHz is allocated to the broadcasting service on a primary basis in all three Regions and used predominantly by this service, and that the GE06 Agreement applies in all Region 1 countries except Mongolia and one country in Region 3;
- c) that the transition from analogue to digital television is expected to result in situations where the band 790-862 MHz will be used for both analogue and digital terrestrial transmission; and the demand for spectrum during the transition period may be even greater than the stand-alone usage of analogue broadcasting systems;
- d) the switch-over to digital may result in spectrum opportunities for new applications;
- e) the timing of the switch-over to digital is likely to vary from country to country;
- f) that the use of spectrum for different services should take into account the need for sharing studies;
- g) that the Radio Regulations provide that the identification of a given band for IMT does not preclude the use of that band by any application of the services to which it is allocated and does not establish priority in the Radio Regulations;
- h) that the GE06 Agreement contains provisions for the terrestrial broadcasting service and other terrestrial services, a Plan for digital TV, and the List of other primary terrestrial services,

*noting*

that Resolution ITU-R 57 provides principles for the process of development of IMT-Advanced and this process is planned to start after this Conference,

*emphasizing*

a) that the use of the band 470-862 MHz by broadcasting and other primary services is also covered by the GE06 Agreement;

b) that the requirements of the different services to which the band is allocated, including mobile and broadcasting services, shall be taken into account,

*resolves*

1 to invite ITU-R to conduct sharing studies for Regions 1 and 3 in the band 790-862 MHz between the mobile service and other services in order to protect the services to which the frequency band is currently allocated;

2 to invite ITU-R to report the results of the studies referred to in *resolves* 1 for consideration by WRC-11 to take appropriate action,

*invites administrations*

to participate in the studies by submitting contributions to ITU-R.

*invites the Director of the Telecommunication Development Bureau*

to draw the attention of the Telecommunication Development Sector to this Resolution,



RESOLUTION [COM5/1] (WRC-07)

**Transitional measures for coordination between the mobile-satellite service (Earth-to-space) and the space research (passive) service in the band 1 668-1 668.4 MHz for a specific case**

The World Radiocommunication Conference (Geneva, 2007),

*considering*

- a)* that WRC-03 made a global allocation to the mobile-satellite service (MSS) (Earth-to-space) in the band 1 668-1 675 MHz and a global allocation to the MSS (space-to-Earth) in the band 1 518-1 525 MHz;
- b)* that the band 1 660.5-1 668.4 MHz is allocated to the space research (passive) service;
- c)* that in the band 1 668-1 668.4 MHz, mobile earth stations and space research (passive) stations are subject to coordination under No. **9.11A**;
- d)* that the relevant coordination threshold condition is given in Appendix **5**;
- e)* that before WRC-07, Appendix **4** did not contain the relevant information for the request for coordination for passive services;
- f)* that before WRC-07, Appendix **4** contained all necessary data for request for coordination for MSS systems, and coordination information was submitted after WRC-03 for some MSS systems;
- g)* that there is one satellite system (SPECTR-R) in the space research (passive) service in the band 1 668-1 668.4 MHz for which relevant advance publication information has been communicated to the Bureau prior to WRC-07, and that it is necessary to provide some transitional measures for the treatment of this information by the Bureau,

*noting*

- a)* that Report ITU-R M.2124 contains an assessment of sharing between the mobile-satellite service and space research (passive) service in the band 1 668-1 668.4 MHz;
- b)* that the satellite system SPECTR-R is associated with the RADIOASTRON project, which is an international project for a space very long baseline interferometry system,

*resolves*

that, in the band 1 668-1 668.4 MHz, mobile-satellite service systems that exceed the relevant coordination threshold condition shall be coordinated with the SPECTR-R system operating in the space research service (passive), for which advance publication information was received by the Bureau on 7 December 2005<sup>1</sup>, provided that the complete coordination information is received by the Bureau within the time-limit mentioned in No. **9.5D**.

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<sup>1</sup> API/A/3957 dated 24 January 2006.

RESOLUTION [COM 5/2] (WRC-07)

**Date of entry into force of certain provisions of the Radio Regulations  
relating to the non-payment of cost-recovery fees**

The World Radiocommunication Conference (Geneva, 2007),

*considering*

- a) that Council 2005 modified Decision 482 to apply satellite network cost recovery to all satellite network filings concerning notification for recording of frequency assignments in the Master International Frequency Register (Article 11, Article 5 of Appendices 30/30A and Article 8 of Appendix 30B) received by the Radiocommunication Bureau on or after 1 January 2006 if they refer to advance publication or modification of the space service Plans or Lists (Part A) or requests for the implementation of the fixed-satellite service Plan, as appropriate, received on or after 19 October 2002;
- b) that Council 2005 also modified Decision 482 to apply satellite network cost recovery to all requests for the implementation of the fixed-satellite service Plan (Sections IA and III of Article 6 of Appendix 30B) received by the Radiocommunication Bureau on or after 1 January 2006;
- c) that this Conference adopted certain provisions in Article 11, Appendices 30, 30A and 30B relating to the consequences of the non-payment of cost-recovery fees for notification of satellite networks and the implementation of the fixed-satellite service Plan (Sections IA and III of Article 6 of Appendix 30B) as adopted by the Council in Decision 482 (as modified),

*recognizing*

that Resolution 88 (Rev. Marrakesh, 2002) of the Plenipotentiary Conference recognizes that the provisions adopted by WRC-2000 established a linkage between the rights acquired by Member States in applying the relevant procedures of the Radio Regulations after 7 November 1998 and the payment of the fees for cost recovery for satellite network filings,

*noting*

that invoices have been issued for cost-recovery fees for notifications since 1 January 2006, as indicated in *considering a)* and *b)*,

*resolves*

- 1 that the date of entry into force of footnote A.11.6 to the title of Article 11, footnote 17A to the title of Article 5 in Appendix 30, footnote 21A to the title of Article 5 in Appendix 30A, footnote 1 to the title of Article 6 in Appendix 30B and footnote 3A to the title of Article 8 in Appendix 30B shall be 17 November 2007;
- 2 that satellite network filings subject to satellite network cost recovery for notification in accordance with Decision 482 (modified 2005) as summarized in *considering a)* and *b)* and for which complete information was received by the Radiocommunication Bureau before 17 November 2007 and the corresponding invoice was issued before that date but the payment was not yet made, shall be cancelled if payment has not been received by 17 May 2008;

3 that satellite network filings subject to satellite network cost recovery for notification in accordance with Decision 482 (modified 2005) as summarized in *considering a)* and *b)* and for which complete information was received by the Radiocommunication Bureau before 17 November 2007 but the corresponding invoice was not issued before 17 November 2007, shall be cancelled if the payment has not been made by the due date specified in that invoice,

*instructs the Director of the Radiocommunication Bureau*

1 to send, to the notifying administrations responsible for satellite networks to which *resolves 2* or *3* applies, a reminder concerning the deadline for the payment in Council Decision 482 (modified 2005) and of the consequences of non-payment according to *resolves 2* or *3* not later than two months prior to 17 May 2008, in the case of *resolves 2*, or the invoice payment due date in the case of *resolves 3*, unless the payment has already been received;

2 to take necessary action, as appropriate, with respect to the consequential changes to Appendix **30B**.

**ADD** COM5/344/5 (B14/365/49) (R7/411/225)

## RESOLUTION [COM 5/3] (WRC-07)

### **Power flux-density limits for certain systems in the fixed-satellite service using highly-inclined orbits having an apogee altitude greater than 18 000 km and an orbital inclination between 35° and 145° in the band 17.7-19.7 GHz**

The World Radiocommunication Conference (Geneva, 2007),

*considering*

*a)* that the band 17.7-19.7 GHz is heavily used in many countries for fixed service (FS) applications including mobile communication network infrastructure;

*b)* that in the band 17.7-19.7 GHz, there are planned or existing non-geostationary (non-GSO) fixed-satellite service (FSS) systems using satellites with highly-inclined orbits having an apogee altitude greater than 18 000 km and an orbital inclination between 35° and 145°;

*c)* that in this frequency band, ITU-R has conducted studies of the impact on FS stations of the pfd produced or to be produced by non-GSO FSS systems of the types described in *considering b)*;

*d)* that one of the types of systems referred to in *considering b)* under the ITU filing name USCSID-P, was notified and brought into use under the applicable power flux-density (pfd) levels for the 17.7-19.7 GHz band in Table **21-4**:

-115	dB(W/(m <sup>2</sup> · MHz))	for	0° ≤ δ < 5°
-115 + 0.5(δ - 5)	dB(W/(m <sup>2</sup> · MHz))	for	5° ≤ δ ≤ 25°
-105	dB(W/(m <sup>2</sup> · MHz))	for	25° < δ ≤ 90°

where δ is the angle of arrival above the horizontal plane in degrees,

*recognizing*

1 that studies carried out in ITU-R of the systems described in *considering b)*, demonstrated that the system described in *considering d)* did not cause harmful interference to the fixed service in the 17.7-19.7 GHz band;

2 that one FSS system of the type described in *considering d)* has been operating since 1995 at the  $-115/-105$  dB(W/(m<sup>2</sup> · MHz)) levels and there has been no complaint of harmful interference to any station in the fixed service of any administration,

*resolves*

that in the band 17.7-19.7 GHz, FSS space stations currently operating in a system of the type described in *considering d)* and for which advance publication information was received by the Radiocommunication Bureau before 5 July 2003, as well as space stations with the same parameters in a future notice for a replacement system, shall continue to be subject to the power flux-density limits:

$$\begin{array}{lll} -115 & \text{dB(W/(m}^2 \cdot \text{MHz))} & \text{for } 0^\circ \leq \delta < 5^\circ \\ -115 + 0.5(\delta - 5) & \text{dB(W/(m}^2 \cdot \text{MHz))} & \text{for } 5^\circ \leq \delta \leq 25^\circ \\ -105 & \text{dB(W/(m}^2 \cdot \text{MHz))} & \text{for } 25^\circ < \delta \leq 90^\circ \end{array}$$

where  $\delta$  is the angle of arrival above the horizontal plane in degrees.

**ADD** COM5/372/7 (B15/396/15)

## RESOLUTION [COM5/4] (WRC-07)

### **Compatibility between the Earth exploration-satellite service (passive) and relevant active services**

The World Radiocommunication Conference (Geneva, 2007),

*considering*

a) that primary allocations have been made to various space services such as the fixed-satellite service (Earth-to-space), the space operation service (Earth-to-space) and the inter-satellite service and/or to terrestrial services such as the fixed service, the mobile service and the radiolocation service, hereinafter referred to as “active services”, in bands adjacent or nearby to bands allocated to the Earth exploration-satellite service (EESS) (passive) subject to No. **5.340**;

b) that unwanted emissions from active services have the potential to cause unacceptable interference to EESS (passive) sensors;

c) that, for technical or operational reasons, the general limits in Appendix **3** may be insufficient in protecting the EESS (passive) in specific bands;

d) that, in many cases, the frequencies used by EESS (passive) sensors are chosen to study natural phenomena producing radio emissions at frequencies fixed by the laws of nature, and therefore shifting frequency to avoid or mitigate interference problems is not possible;

e) that the band 1 400-1 427 MHz is used for measuring soil moisture, and also for measuring sea-surface salinity and vegetation biomass;

f) that long-term protection of the EESS in the bands 23.6-24 GHz, 31.3-31.5 GHz, 50.2-50.4 GHz and 52.6-54.25 GHz is vital to weather prediction and disaster management, and measurements at several frequencies must be made simultaneously in order to isolate and retrieve each individual contribution;

g) that, in many cases, the bands adjacent or nearby to passive service bands are used and will continue to be used for various active service applications;

h) that it is necessary to ensure equitable burden sharing for achieving compatibility between active and passive services operating in adjacent or nearby bands,

*noting*

a) that the compatibility studies between relevant active and passive services operating in adjacent and nearby bands are documented in Report ITU-R SM.2092;

b) that Recommendation ITU-R RS.1029 provides the interference criteria for satellite passive remote sensing,

*noting further*

that, for the purpose of this Resolution:

- point-to-point communication is defined as radiocommunication provided by a link, for example a radio-relay link, between two stations located at specified fixed points;
- point-to-multipoint communication is defined as radiocommunication provided by links between a single station located at a specified fixed point (also called “hub station”) and a number of stations located at specified fixed points (also called “customer stations”),

*recognizing*

that studies documented in Report ITU-R SM.2092 do not consider point-to-multipoint communication links in the fixed service in the bands 1 350-1 400 MHz and 1 427-1 452 MHz,

*resolves*

1 that unwanted emissions of stations brought into use in the bands and services listed in Table 1-1 below shall not exceed the corresponding limits in that table, subject to the specified conditions;

2 to urge administrations to take all reasonable steps to ensure that unwanted emissions of active service stations in the bands and services listed in Table 1-2 below do not exceed the recommended maximum levels contained in that table, noting that EESS (passive) sensors provide worldwide measurements that benefit all countries, even if these sensors are not operated by their country;

3 that the Radiocommunication Bureau shall not make any examination or finding with respect to compliance with this Resolution under either Article 9 or 11.

TABLE 1-1

<b>EESS (passive) band</b>	<b>Active service band</b>	<b>Active service</b>	<b>Limits of unwanted emission power from active service stations in a specified bandwidth within the EESS (passive) band<sup>1</sup></b>
23.6-24.0 GHz	22.55-23.55 GHz	Inter-satellite	–36 dBW in any 200 MHz of the EESS (passive) band for non-geostationary (non-GSO) inter-satellite service (ISS) systems for which complete advance publication information is received by the Bureau before 1 January 2020, and –46 dBW in any 200 MHz of the EESS (passive) band for non-GSO ISS systems for which complete advance publication information is received by the Bureau on or after 1 January 2020
31.3-31.5 GHz	31-31.3 GHz	Fixed (excluding HAPS)	For stations brought into use after 1 January 2012: –38 dBW in any 100 MHz of the EESS (passive) band. This limit does not apply to stations that have been authorized prior to 1 January 2012
50.2-50.4 GHz	49.7-50.2 GHz	Fixed-satellite (E-to-s) <sup>2</sup>	For stations brought into use after the date of entry into force of the Final Acts of WRC-07: –10 dBW into the 200 MHz of the EESS (passive) band for earth stations having an antenna gain greater than or equal to 57 dBi –20 dBW into the 200 MHz of the EESS (passive) band for earth stations having an antenna gain less than 57 dBi
50.2-50.4 GHz	50.4-50.9 GHz	Fixed-satellite (E-to-s) <sup>2</sup>	For stations brought into use after the date of entry into force of the Final Acts of WRC-07: –10 dBW into the 200 MHz of the EESS (passive) band for earth stations having an antenna gain greater than or equal to 57 dBi –20 dBW into the 200 MHz of the EESS (passive) band for earth stations having an antenna gain less than 57 dBi
52.6-54.25 GHz	51.4-52.6 GHz	Fixed	For stations brought into use after the date of entry into force of the Final Acts of WRC-07: –33 dBW in any 100 MHz of the EESS (passive) band

<sup>1</sup> The unwanted emission power level is to be understood here as the level measured at the antenna port.

<sup>2</sup> The limits apply under clear-sky conditions. During fading conditions, the limits may be exceeded by earth stations when using uplink power control.

TABLE 1-2

<b>EESS (passive) band</b>	<b>Active service band</b>	<b>Active service</b>	<b>Recommended maximum level of unwanted emission power from active service stations in a specified bandwidth within the EESS (passive) band<sup>1</sup></b>
1 400-1 427 MHz	1 350-1 400 MHz	Radiolocation <sup>2</sup>	–29 dBW in the 27 MHz of the EESS (passive) band
		Fixed	–45 dBW in the 27 MHz of the EESS (passive) band for point-to-point
		Mobile	–60 dBW in the 27 MHz of the EESS (passive) band for mobile service stations except transportable radio-relay stations –45 dBW in the 27 MHz of the EESS (passive) band for transportable radio-relay stations
	1 427-1 429 MHz	Space operation (E-to-s)	–36 dBW in the 27 MHz of the EESS (passive) band
	1 427-1 429 MHz	Mobile except aeronautical mobile	–60 dBW in the 27 MHz of the EESS (passive) band for mobile service stations except transportable radio-relay stations <sup>3</sup> –45 dBW in the 27 MHz of the EESS (passive) band for transportable radio-relay stations
		Fixed	–45 dBW in the 27 MHz of the EESS (passive) band for point-to-point
	1 429-1 452 MHz	Mobile	–60 dBW in the 27 MHz of the EESS (passive) band for mobile service stations except transportable radio-relay stations <sup>3</sup> –45 dBW in the 27 MHz of the EESS (passive) band for transportable radio-relay stations –28 dBW in the 27 MHz of the EESS (passive) band for aeronautical telemetry stations <sup>4</sup>
		Fixed	–45 dBW in the 27 MHz of the EESS (passive) band for point-to-point
31.3-31.5 GHz	30.0-31.0 GHz	Fixed-satellite (E-to-s) <sup>5</sup>	–9 dBW into the 200 MHz of the EESS (passive) band for earth stations having an antenna gain greater than or equal to 56 dBi –20 dBW into the 200 MHz of the EESS (passive) band for earth stations having an antenna gain less than 56 dBi

<sup>1</sup> The unwanted emission power level is to be understood here as the level measured at the antenna port.

<sup>2</sup> The mean power is to be understood here as the total power measured at the antenna port (or an equivalent thereof) in the band 1 400-1 427 MHz, averaged over a period of the order of 5 seconds.

<sup>3</sup> Stations of the mobile service for cellular systems, including those complying with Recommendation ITU-R M.1457 or IMT standards, are likely to meet this unwanted emission power level.

<sup>4</sup> The band 1 429-1 435 MHz is also allocated to the aeronautical mobile service in eight Region 1 administrations on a primary basis exclusively for the purposes of aeronautical telemetry within their national territory (RR No. 5.342).

<sup>5</sup> The recommended maximum levels apply under clear-sky conditions. During fading conditions, these levels may be exceeded by earth stations when using uplink power control.

RESOLUTION [COM5/5] (WRC-07)

**Use of the frequency band 10.6-10.68 GHz**

The World Radiocommunication Conference (Geneva, 2007),

*considering*

- a) that the frequency band 10.6-10.7 GHz is allocated to the Earth exploration-satellite service (EESS) (passive) and to the space research service (passive) on a primary basis;
- b) that the band 10.6-10.7 GHz is of primary interest for the measurement of rain, snow, sea state, ocean wind and soil moisture;
- c) that this frequency band is used by passive sensors to study natural phenomena producing radio emissions at frequencies fixed by the laws of nature, and therefore shifting frequency to avoid or mitigate interference problems may not be possible;
- d) that any limitation of the operation of passive sensors in the band 10.68-10.7 GHz covered by No. **5.340** would degrade the sensitivity of those sensors;
- e) that the frequency band 10.6-10.68 GHz is also allocated to the mobile, except aeronautical mobile, and the fixed services on a primary basis;
- f) that experience has shown that EESS (passive) sensors currently operating in the band 10.6-10.68 GHz are facing high interference levels from the emissions of systems of active services in some parts of the world;
- g) that studies have concluded that appropriate sharing criteria applicable to both passive and active services would reduce this interference to a level that would permit passive sensors to operate successfully, while allowing continuing operation of active services in the same band,

*noting*

that, for the purpose of this Resolution:

- point-to-point communication is defined as radiocommunication provided by a link, for example a radio-relay link, between two stations located at specified fixed points;
- point-to-multipoint communication is defined as radiocommunication provided by links between a single station located at a specified fixed point (also called “hub station”) and a number of stations located at specified fixed points (also called “customer stations”);
- automatic transmit-power control (ATPC) is a technique in which the output power of a microwave transmitter is automatically varied to compensate for path propagation conditions; in normal propagation conditions, ATPC maintains the transmitter output power at a reduced level; ATPC is characterized by its range, which is defined as the difference between the maximum and minimum values of transmitted power, and has no impact on the design of the related link,



*resolves*

1 to urge administrations to take all reasonable steps to comply with the sharing criteria in Tables 1 to 4 contained in Annex 1 to this Resolution when bringing into use stations in the Earth exploration-satellite service (passive), the fixed service and the mobile, except aeronautical mobile, service, noting that EESS (passive) sensors provide worldwide measurements that benefit all countries, even if these sensors are not operated by their country;

2 that the Radiocommunication Bureau shall not make any examination or finding with respect to compliance with this Resolution under either Article 9 or 11.

## ANNEX 1 TO RESOLUTION [COM5/5] (WRC-07)

### Sharing criteria in the band 10.6-10.68 GHz

TABLE 1

#### Earth exploration-satellite service (passive)

Parameter	Value
Incidence angle (defined as the angle at the Earth's surface between the local vertical and the direction of the passive sensor)	$\leq 60^\circ$
Spatial resolution (defined as the maximum cross-section of the passive sensor $-3$ dB contour on the Earth's surface)	$\leq 50$ km (See Note 1)
Main-beam efficiency (defined as the energy of main and cross-polarization components within 2.5 times the $-3$ dB beamwidth region, relative to the total energy within all angles)	$\geq 85\%$ (See Note 1)

NOTE 1 – These parameters only apply to real-aperture EESS (passive) systems.

TABLE 2

#### Stations of point-to-point systems in the fixed service

Parameter	Value
Maximum elevation angle	$20^\circ$
Maximum transmitter power at the antenna port	$-15$ dBW (See Notes 2 and 3)

NOTE 2 – In the case of point-to-point systems using ATPC, the maximum transmitter power at the antenna port may be increased by a value corresponding to the ATPC range, up to a maximum of  $-3$  dBW.

NOTE 3 – In the case of point-to-point fixed service used for unidirectional transmissions for broadcasting applications, the maximum transmitter power at the antenna port may be increased up to  $-3$  dBW. For such applications, administrations are urged to limit the off-axis e.i.r.p. above  $20^\circ$  elevation to a level of  $-10$  dBW.

TABLE 3

**Stations of point-to-multipoint systems in the fixed service**

<b>Parameter</b>	<b>Value</b>
<b>Hub stations</b> (See Note 4)	
Maximum transmitter power at the antenna port	−7 dBW
Maximum off-axis e.i.r.p. above 20° from the horizontal plane	−6 dBW
Maximum off-axis e.i.r.p. above 45° from the horizontal plane	−11 dBW
Maximum off-axis e.i.r.p. at 90° from the horizontal plane	−13 dBW
<b>Customer stations</b> (See Note 4)	
Maximum elevation angle	20°
Maximum transmitter power at the antenna port	−8 dBW
Maximum off-axis e.i.r.p. above 45° from the horizontal plane	−18 dBW (See Note 5)

NOTE 4 – Administrations planning point-to-multipoint deployment in the band 10.6-10.68 GHz, paired with another frequency band, are encouraged to only deploy return links (i.e. emissions from customer stations) in the 10.6-10.68 GHz band.

NOTE 5 – In the case of point-to-multipoint systems using ATPC, the maximum transmitter power at the antenna port may be increased by a value corresponding to the ATPC range, up to a maximum of −3 dBW.

TABLE 4

**Stations in the mobile service**

<b>Parameter</b>	<b>Value</b>
Maximum transmitter power at the antenna port	−17 dBW (See Note 6)

NOTE 6 – In the case of mobile service systems used for broadcasting applications, the maximum transmitter power at the antenna port may be increased up to −3 dBW. For such applications, administrations are urged to limit the off-axis e.i.r.p. above 20° elevation to a level of −10 dBW.

RESOLUTION [COM5/6] (WRC-07)

**Use of the frequency band 36-37 GHz**

The World Radiocommunication Conference (Geneva, 2007),

*considering*

- a)* that the frequency band 36-37 GHz is allocated to the Earth exploration-satellite service (EESS) (passive) and to the space research service (passive) on a primary basis;
- b)* that the band 36-37 GHz is of primary interest for the measurement of rain, snow, ocean ice and water vapour;
- c)* that this frequency band is used by passive sensors to study natural phenomena producing radio emissions at frequencies fixed by the laws of nature, and therefore shifting frequency to avoid or mitigate interference problems may not be possible;
- d)* that the frequency band 36-37 GHz is also allocated to the fixed service and to the mobile service on a primary basis;
- e)* that the EESS (passive) operating in the band 36-37 GHz may suffer from interference from the emissions of systems of active services;
- f)* that studies have concluded that appropriate sharing criteria applicable to both passive and active services would reduce this interference to a level that would permit passive sensors to operate successfully in this band, while allowing continuing operation of active services in the same band,

*noting*

that, for the purpose of this Resolution:

- point-to-point communication is defined as radiocommunication provided by a link, for example a radio-relay link, between two stations located at specified fixed points;
- point-to-multipoint communication is defined as radiocommunication provided by links between a single station located at a specified fixed point (also called “hub station”) and a number of stations located at specified fixed points (also called “customer stations”);
- automatic transmit-power control (ATPC) is a technique in which the output power of a microwave transmitter is automatically varied to compensate for path propagation conditions; in normal propagation conditions, ATPC maintains the transmitter output power at a reduced level; ATPC is characterized by its range, which is defined as the difference between the maximum and minimum values of transmitted power,

*resolves*

- 1 that, in order to facilitate sharing between active and passive services in the band 36-37 GHz, EESS (passive) stations brought into use after the date of entry into force of the Final Acts of WRC-07 shall comply with the sharing criteria contained in Table 1 of Annex 1 to this Resolution;

2 that, in order to facilitate sharing between active and passive services in the band  
36-37 GHz, stations of point-to-point systems in the fixed service brought into use after  
1 January 2012 shall comply with the sharing criteria contained in Table 2 of Annex 1 to this  
Resolution;

3 that, in order to facilitate sharing between active and passive services in the band  
36-37 GHz, stations of point-to-multipoint systems in the fixed service brought into use after the  
date of entry into force of Final Acts of WRC-07 shall comply with the sharing criteria contained in  
Table 2 of Annex 1 to this Resolution;

4 that, in order to facilitate sharing between active and passive services in the band 36-  
37 GHz, stations in the mobile service brought into use after the date of entry into force of the Final  
Acts of WRC-07 shall comply with the sharing criteria contained in Table 3 of Annex 1 to this  
Resolution;

5 that the Radiocommunication Bureau shall not make any examination or finding with  
respect to compliance with this Resolution under either Article 9 or 11.

## ANNEX 1 TO RESOLUTION [COM5/6] (WRC-07)

### Sharing criteria in the band 36-37 GHz

TABLE 1

#### Earth exploration-satellite service (passive)

Parameter	Value
Incidence angle (defined as the angle at the Earth's surface between the local vertical and the direction of the passive sensor)	$\leq 60^\circ$
Spatial resolution (defined as the maximum cross-section of the passive sensor $-3$ dB contour on the Earth's surface)	$\leq 50$ km (See Note 1)
Main-beam efficiency (defined as the energy of main and cross-polarization components within 2.5 times the $-3$ dB beamwidth region, relative to the total energy within all angles)	$\geq 92\%$ (See Note 1)

NOTE 1 – These parameters only apply to real-aperture EESS (passive) systems.

TABLE 2  
Fixed service

Parameter	Value
Maximum elevation angle	20°
<b>Point-to-point systems</b>	
Maximum transmitter power at the antenna port	–10 dBW (See Note 2)
<b>Point-to-multipoint systems</b>	
Maximum transmitter power at the antenna port of hub stations	–5 dBW
Maximum transmitter power at the antenna port of customer stations	–10 dBW (See Note 2)

NOTE 2 – In the case of fixed service systems using ATPC, the maximum transmitter power at the antenna port may be increased by a value corresponding to the ATPC range, up to a maximum of –7 dBW.

TABLE 3  
Mobile service

Parameter	Value
Maximum transmitter power at the antenna port	–10 dBW (See Note 3)

NOTE 3 – The maximum transmitter power at the antenna port may be increased up to –3 dBW for stations used for public safety and disaster management.

**ADD** COM5/384/9 (B16/401/9)

## RESOLUTION [COM5/7] (WRC-07)

### Satellite systems formerly listed in Part B of the Plan of Appendix 30B (WARC Orb-88)

The World Radiocommunication Conference (Geneva, 2007),

*considering*

- a)* that WARC Orb-88 adopted a Plan for the fixed-satellite service in the frequency bands 4 500-4 800 MHz, 6 725-7 025 MHz, 10.70-10.95 GHz, 11.20-11.45 GHz and 12.75-13.25 GHz contained in Appendix **30B (WARC Orb-88)**;
- b)* that, when the Plan was adopted, some satellite systems in the same frequency bands were under coordination or had been recorded in the Master International Frequency Register (MIFR), or had information relating to advance publication that was received by the Radiocommunication Bureau before 8 August 1985, and which in all cases were listed in Part B of the Plan at WARC Orb-88;
- c)* that in the original provisions of Appendix **30B (WARC Orb-88)**, the satellite systems mentioned in *considering b)* above were referred to as “existing systems”;
- d)* that satellite systems identified in *considering b)* have either been included in the List of Appendix **30B** or cancelled, and thus Part B of the Plan is empty;
- e)* that, therefore, this Conference suppressed Part B of the Plan in Appendix **30B**,

*recognizing*

- a) that § 9.2 of Appendix **30B (WARC Orb-88)** indicates that “The existing systems listed in Part B of the Plan may continue in operation for a maximum period of 20 years from the date of entry into force of this Appendix”, and consequently the period of operation of satellite systems in Part B of the Plan expires after 16 March 2010;
- b) that some administrations expressed their wish to continue operation of these systems after the deadline mentioned in *recognizing a*);
- c) that satellite systems referred to in *considering b*) are compatible with satellite networks in Appendix **30B**,

*resolves*

- 1 that the notified period of validity of assignments to “existing system(s)” as referred to in *considering c*) for which the notified period of validity expires before 16 May 2011 shall be extended until that date;
- 2 that administrations intending to further operate assignments to “existing system(s)” as referred to in *considering c*) beyond 16 March 2010 shall so inform the Radiocommunication Bureau before 16 March 2008, indicating which assignments are concerned;
- 3 that, after the notifying administration has acted in accordance with *resolves 2*, assignments to “existing system(s)” as referred to in *considering c*) may continue to be operated in accordance with the notified period of validity, including the extension provided in *resolves 1*, if appropriate;
- 4 that an administration wishing to further extend the notified period of validity, extended under *resolves 1*, if applicable, of assignments to “existing system(s)” as referred to in *considering c*), shall inform the Bureau accordingly more than three years before the expiry of the notified period of validity, extended under *resolves 1*, if applicable, and if the characteristics of that assignment remain unchanged, the Bureau shall amend, as requested, the notified period of validity and publish that information in a special section of the Bureau’s International Frequency Information Circular (BR IFIC),

*instructs the Radiocommunication Bureau*

- 1 to cancel from the Master Register and the List assignments to “existing system(s)” as referred to in *considering c*) upon expiry of their notified period of validity, or if the notifying administration failed to comply with *resolves 2* above;
- 2 to calculate aggregate *C/I* of the “existing systems” as referred to in *considering c*) without taking into account the interference between these systems;
- 3 to take the appropriate actions in accordance with *resolves 1* and 4.

RESOLUTION [COM5/8] (WRC-07)

**Implementation of the decisions of WRC-07 relating to  
Appendix 30B to the Radio Regulations**

The World Radiocommunication Conference (Geneva, 2007),

*considering*

- a)* that WARC Orb-88 adopted a Plan for the fixed-satellite service in the frequency bands 4 500-4 800 MHz, 6 725-7 025 MHz, 10.70-10.95 GHz, 11.20-11.45 GHz and 12.75-13.25 GHz as contained in Appendix **30B (WARC Orb-88)**;
- b)* that this Conference revised the Appendix **30B** Plan and the associated regulatory procedures;
- c)* that this Conference has adopted new technical parameters, sharing criteria and associated calculation methods which are included or referred to in the Annexes to Appendix **30B (Rev.WRC-07)**;
- d)* that in revising the regulatory procedures, this Conference decided that the principle of guaranteed access to spectrum resources for all Members of the Union must be maintained and, as a consequence, the highest priority should be given to submissions from countries not having a national allotment in the Plan or an assignment in the List stemming from the conversion of an allotment;
- e)* that under the regulatory provisions adopted by WARC Orb-88 and revised by subsequent conferences, submissions from Member States not having a national allotment in the Plan or an assignment in the List stemming from the conversion of an allotment are processed in order of receipt together with other submissions;
- f)* that, as a result of the decisions of this Conference, a large number of Rules of Procedure developed with respect to the application of the procedures of Appendix **30B** need to be reviewed;
- g)* that, at the conclusion of this Conference, there is a large number of submissions under Appendix **30B** waiting to be processed,

*recognizing*

- a)* that the Radiocommunication Bureau needs clear instructions from this Conference on how to implement Appendix **30B (Rev.WRC-07)** and how to process submissions that have been received, but have not yet been processed;
- b)* that, since the establishment of the WARC Orb-88 Plan, the geographical situation of some ITU Member States has changed;
- c)* that some countries that have joined, or may join, the Union as a Member State do not have a national allotment or an assignment in the List stemming from the conversion of an allotment;
- d)* that the Radiocommunication Bureau needs some time to modify its software to implement the new criteria adopted by this Conference,

*resolves*

1 that the revised Appendix **30B** as adopted by this Conference shall enter into force as of 17 November 2007;

2 that following WRC-07, the Bureau shall update and publish the reference situation of the Appendix **30B** Plan and List as of 17 November 2007, based on the decisions of this Conference;

3 that a single-entry *C/I* of 25 dB and an aggregate *C/I* of 21 dB shall be applied when processing requests from new Member States received before 17 November 2007 under Article 7 of Appendix **30B**;

4 that as of 17 November 2007 the Bureau shall use the revised Appendix **30B** as adopted by this Conference in its examination of submissions received after the Conference as well as submissions received before 17 November 2007, but not yet processed at that time<sup>1</sup>;

5 that an administration of a country which has joined the Union as a Member State and does not have a national allotment in the Plan or an assignment in the List stemming from the conversion of an allotment shall have the right to request the Bureau to exclude its territory from the service area of an allotment or an assignment, whereupon the Bureau shall exclude the territory accordingly without adversely affecting the rest of the service area and subsequently recalculate the new reference situation for the Appendix **30B** Plan and List;

6 that administrations, in compliance with Article 44 of the ITU Constitution, review their submissions under Appendix **30B** received before 17 November 2007 but not yet processed, with a view to reducing their number of submissions, and to indicate to the Bureau the networks which are no longer required to be considered and processed under Article 6 of Appendix **30B**;

7 that, for submissions received under Appendix **30B** before 17 November 2007 but not yet processed, administrations may reduce the e.i.r.p. density to meet the limits of Annex 3 and supply new values before the Bureau's examination under § 6.3 of Article 6 of Appendix **30B (Rev.WRC-07)**;

8 to urge administrations<sup>2</sup> to make utmost efforts to accommodate submissions received from new Member States of ITU,

*instructs the Radio Regulations Board*

1 to review the current Rules of Procedure and make necessary revisions;

2 to prepare necessary Rules of Procedure in response to possible inconsistencies or difficulties encountered by the Radiocommunication Bureau in applying Appendix **30B (WRC-07)**;

3 in compliance with Nos. **13.01** and **13.02**, report to the next World Radiocommunication Conference any possible modifications to the Radio Regulations to alleviate inconsistencies or difficulties encountered in applying the procedures of Appendix **30B (WRC-07)**,

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<sup>1</sup> With the exception of those cases identified in the revised Appendix **30B** as adopted by this Conference.

<sup>2</sup> Those administrations which are the basis of unfavourable findings with respect to submissions from new Member States.



*instructs the Director of the Radiocommunication Bureau*

1 to prepare a report for the next meeting of the ITU Council on the revised procedures of Appendix **30B (WRC-07)** for their consideration of required consequential changes to Council Decision 482;

2 to communicate to administrations the details of the interpolation method implemented for examination under Annex 4 of Appendix **30B (Rev.WRC-07)**;

3 to take all possible measures in order to make available, not later than 17 November 2008, the software for the application of revised Annexes 3 and 4 to Appendix **30B (Rev.WRC-07)**,

*invites administrations*

whose geographical situation has changed to evaluate the technical parameters of their allotments in conjunction with the principles of Appendix **30B (WRC-07)**.

**ADD** COM6/207/1 (B2/213/4) (R1/221/10)

## RESOLUTION [COM6/1] (WRC-07)

### **Submission of notices for terrestrial services to the Radiocommunication Bureau**

The World Radiocommunication Conference (Geneva, 2007),

*considering*

a) that the electronic format for submission of notifications concerning terrestrial services under Article **11** and Plans annexed to Regional Agreements has been used by the Radiocommunication Bureau since September 1994;

b) that the “BR High Frequency Broadcasting Schedule” (HFBC Schedule) and the “BR International Frequency Information Circular” (BR IFIC) are the only regulatory publications resulting from the application of Chapter **III** and the associated Regional Agreements, and that the HFBC Schedule has been published every month, except the month of June, in CD-ROM format since January 1999, while the BR IFIC has been published every two weeks in CD-ROM format since 11 January 2000 and, subsequently, for terrestrial services, in DVD-ROM format since September 2005;

c) that, since 8 December 1998, submission of HFBC requirements under Article **12** has been in electronic format only;

d) that, since 3 June 2001 for space services, all notice forms (AP4/II and AP4/III), radio astronomy notices (AP4/IV) and advanced publication information (AP4/V and AP4/VI) and due diligence information (Resolution **49 (Rev.WRC-03)**) for satellite networks and earth stations submitted to the Radiocommunication Bureau pursuant to Articles **9** and **11** have been submitted in electronic format only;

- e) that, from 7 December 2004, the submission of digital broadcasting requirements to be used for the planning exercise and the development of a draft plan for the second session of the Regional Radiocommunication Conference for the planning of digital terrestrial broadcasting in parts of Regions 1 and 3, in the frequency bands 174-230 MHz and 470-862 MHz (RRC-06), were only provided in electronic format;
- f) that RRC-06 decided that all submissions in the application of Articles 4 and 5 of the GE06 Regional Agreement shall be in electronic format only;
- g) that preparation of notices for terrestrial services in electronic format would allow administrations to validate the data prior to submission using Radiocommunication Bureau software tools;
- h) that submission of notices for terrestrial services in electronic format would remove the need for the Radiocommunication Bureau to transcribe the data, avoid the potential for the introduction of errors and reduce the data processing effort required by the Radiocommunication Bureau;
- i) that the introduction of the submission of notices for terrestrial services only in electronic format may require appropriate training on the Radiocommunication Bureau's software tools, especially in developing countries;
- j) that, for some administrations, the submission of notices for terrestrial services only in electronic format may require the adaptation of their national procedures and the development of appropriate electronic facilities;
- k) that information in electronic format could be used to fulfil administrations' database requirements and facilitate the exchange of information between administrations and with the Radiocommunication Bureau,

*further considering*

- a) that the use of an electronic format for the submission of notices for terrestrial services to the Radiocommunication Bureau would reduce its costs;
- b) that the revision of Appendix 4, at this Conference, would facilitate the administrations' and the Radiocommunication Bureau's transition to the use of an electronic format for the submission of notices for terrestrial services;
- c) that the Radiocommunication Bureau has already developed an electronic format for submission of all notice types for terrestrial services;
- d) that the large majority of notices for terrestrial services received by the Radiocommunication Bureau are already submitted only in electronic format,

*resolves*

- 1 that, from 1 January 2009, the submission of notices for terrestrial services to the Radiocommunication Bureau shall be in electronic format only;
- 2 that administrations are encouraged to discontinue usage of paper notices as soon as possible and to inform the Radiocommunication Bureau accordingly;
- 3 that administrations are encouraged to use, as soon as possible, an electronic format and electronic facilities for the exchange of coordination data between administrations,

*instructs the Director of the Radiocommunication Bureau*

- 1 to refine and complete the specification of the electronic format to be used for the submission of notices for terrestrial services, as may be required after the revision of Appendix 4 at this Conference;
- 2 to provide assistance, as required, to any administration, particularly in the transition to use of the electronic format for the submission of notices for terrestrial services;
- 3 to include in radiocommunication seminars appropriate training in the use of the electronic format for the submission of notices for terrestrial services,

*invites the Secretary-General*

to consider the provision free of charge of suitable software and/or hardware for any least developed countries that so request.

**ADD** COM6/258/2 (B5/267/5) (R3/292/106)

## RESOLUTION [COM6/2] (WRC-07)

### **Spectrum management guidelines for emergency and disaster relief radiocommunication<sup>1</sup>**

The World Radiocommunication Conference (Geneva, 2007),

*considering*

- a) the Tampere Convention on the Provision of Telecommunications Resources for Disaster Mitigation and Relief Operations (Tampere, 1998)<sup>2</sup>, an international treaty deposited with the United Nations Secretary-General, calls on the States Parties, when possible, and in conformity with their national law, to develop and implement measures to facilitate the availability of telecommunication resources for such operations;
- b) that some administrations may have different operational needs and spectrum requirements for emergency and disaster-relief applications, depending on the circumstances;
- c) that the immediate availability of pre-identified and pre-coordinated frequencies, and/or spectrum-flexible technologies to allow near-instantaneous decisions to make use of available spectrum, are important for successful telecommunications in the very early stages of humanitarian assistance intervention for disaster relief,

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<sup>1</sup> The term “emergency and disaster relief radiocommunication” refers to radiocommunications used by agencies and organizations dealing with a serious disruption of the functioning of society, posing a significant widespread threat to human life, health, property or the environment, whether caused by accident, natural phenomena or human activity, and whether occurring suddenly or as a result of complex, long-term processes.

<sup>2</sup> However, a number of countries have not ratified the Tampere Convention.

*recognizing*

- a) Resolution 36 (Rev. Antalya, 2006) of the Plenipotentiary Conference on telecommunications/information and communication technologies (ICTs) in the service of humanitarian assistance;
- b) Resolution 136 (Antalya, 2006) of the Plenipotentiary Conference on the use of telecommunications/information and communication technologies for monitoring and management in emergency and disaster situations for early warning, prevention, mitigation and relief;
- c) Resolution 34 (Rev.Doha, 2006) of the World Telecommunication Development Conference (WTDC) on the role of telecommunications/ICT in early warning and mitigation of disasters and humanitarian assistance, as well as ITU-D Question 22/2 “Utilization of ICT for disaster management, resources, and active and passive space-based sensing systems as they apply to disaster and emergency relief situations”;
- d) Resolution 48 (Doha, 2006) of WTDC on strengthening cooperation among telecommunication regulators;
- e) Resolution **644 (Rev.WRC-07)** on radiocommunication resources for early warning, disaster mitigation and relief operations;
- f) Programme 6 (Least developed countries and small island developing states, and emergency communications), a revised version of which was adopted by WTDC (Doha, 2006);
- g) Resolution **646 (WRC-03)** on public protection and disaster relief;
- h) Recommendation ITU-R M.1637, which offers guidance to facilitate the global circulation of radiocommunication equipment in emergency and disaster relief situations;
- i) Report ITU-R M.2033, which contains information on some bands or parts thereof which have been designated for disaster relief operations,

*aware*

of the progress made in regional organizations around the world, and in particular in regional telecommunication organizations, on matters related to emergency communications planning and response,

*recognizing further*

- a) Resolution ITU-R 55 of the Radiocommunication Assembly (Geneva, 2007), which invites the ITU-R Study Groups to take into consideration the scope of ongoing studies/activities outlined in the annex to the Resolution, and to develop guidelines related to the management of radiocommunications in disaster prediction, detection, mitigation and relief, collaboratively and cooperatively, within ITU and with organizations external to the Union, in order to avoid duplication of effort;
- b) Resolution ITU-R 53 of the Radiocommunication Assembly (Geneva, 2007), which instructs the Director of the Radiocommunication Bureau to assist Member States with their emergency radiocommunication preparedness activities such as the listing of currently available frequencies for use in emergency situations for inclusion in a database maintained by the Bureau,

*noting*

- a) that when a disaster occurs, the disaster relief agencies are usually the first on the scene using their day-to-day communication systems, but that in most cases other agencies and organizations may also be involved in disaster relief operations;

- b) that there is a critical requirement to perform immediate spectrum management actions, including frequency coordination, sharing and spectrum reuse, within a disaster area;
- c) that national spectrum planning for emergency and disaster relief should take into account the need for cooperation and bilateral consultation with other concerned administrations, which can be facilitated by spectrum harmonization and/or spectrum-flexible technology, as well as agreed spectrum management guidelines pertaining to disaster relief and emergency planning;
- d) that in times of disasters, radiocommunication facilities may be destroyed or impaired and the national regulatory authorities may not be able to provide the necessary spectrum management services for the deployment of radio systems for relief operations;
- e) that the identification of frequency availability within individual administrations within which equipment could operate, or the use of spectrum-flexible equipment that allows for operation in various spectrum-access scenarios, may ease the interoperability and/or interworking, with mutual cooperation and consultation, especially in national, regional and cross-border emergency situations and disaster relief activities,

*noting further*

- a) that flexibility must be afforded to disaster relief agencies and organizations to use current and future radiocommunications, so as to facilitate their humanitarian operations;
- b) that it is in the interest of administrations and disaster relief agencies and organizations to have access to updated information on national spectrum planning for emergency and disaster relief,

*resolves*

- 1 to encourage administrations to consider global and/or regional frequency bands/ranges for emergency and disaster relief when undertaking their national planning and to communicate this information to the Bureau;
- 2 to encourage administrations to maintain available frequencies for use in the very early stages of humanitarian assistance intervention for disaster relief,

*instructs the Director of the Radiocommunication Bureau*

- 1 to assist Member States with their emergency communication preparedness activities by establishing a database of currently available frequencies for use in emergency situations, which are not limited to those listed in Resolution **646 (WRC-03)**, and by issuing an appropriate listing, taking into account Resolution ITU-R 53 of the Radiocommunication Assembly (Geneva, 2007);
- 2 to maintain the database and facilitate online access thereto by administrations, national regulatory authorities, disaster relief agencies and organizations, in particular the United Nations Emergency Relief Coordinator, in accordance with the operating procedures developed for disaster situations;
- 3 to collaborate with the United Nations Office for the Coordination of Humanitarian Affairs and other organizations, as appropriate, in the development and dissemination of standard operating procedures and relevant spectrum management practices for use in the event of a disaster situation;
- 4 to take into consideration all relevant activities in ITU's other two Sectors and General Secretariat;
- 5 to report on the progress on this Resolution to subsequent World Radiocommunication Conferences,

*invites ITU-R*

to conduct studies as necessary, and as a matter of urgency, in support of the establishment of appropriate spectrum management guidelines applicable in emergency and disaster relief operations,

*urges administrations*

1 to participate in the emergency communication preparedness activities described above and to provide the relevant information to the Bureau concerning their national frequency allocations and spectrum management practices for emergency and disaster relief radiocommunications, taking into account Resolution ITU-R 53 of the Radiocommunication Assembly (Geneva, 2007);

2 to assist in keeping the database up to date by advising the Bureau on an ongoing basis of any modifications to the information requested above.

**ADD** COM6/338/3 (B12/346/17) (R6/410/80)

## RESOLUTION [COM6/3] (WRC-07)

### **Principles for establishing agendas for world radiocommunication conferences**

The World Radiocommunication Conference (Geneva, 2007),

*considering*

*a)* that, in accordance with No. 118 of the ITU Convention, the general scope of the agendas for world radiocommunication conferences (WRCs) should be established four to six years in advance;

*b)* Article 13 of the ITU Constitution relating to the competence and scheduling of WRCs and Article 7 of the Convention relating to their agendas;

*c)* that No. 92 of the Constitution and Nos. 488 and 489 of the Convention require conferences to be fiscally responsible;

*d)* that in Resolution 71 (Rev. Marrakesh, 2002), concerning the strategic plan of the Union, the Plenipotentiary Conference noted the increasingly complex and lengthy agendas for world radiocommunication conferences;

*e)* that Resolution 80 (Rev. Marrakesh, 2002) of the Plenipotentiary Conference and Resolution 72 (**Rev.WRC-07**) recognize the positive contribution of regional and informal groups and the need for improved efficiency and fiscal prudence;

*f)* the relevant Resolutions of previous WRCs,

*noting*

- a) that the number of issues addressed in agendas for WRCs has been growing, and that some issues could not be resolved adequately in the time allotted to the Conference, including conference preparations;
- b) that some agenda items may have a greater impact on the future of radio-communications than others;
- c) that the human and financial resources of ITU are limited;
- d) that there is a need to limit the agenda of conferences, taking account of the needs of developing countries, in a manner that allows the major issues to be dealt with equitably and efficiently,

*resolves*

that the principles in Annex 1 should be used when developing future WRC agendas,

*resolves to invite administrations*

- 1 to use the template in Annex 2 in proposing agenda items for WRCs;
- 2 to participate in regional activities for the preparation of future WRC agendas.

## ANNEX 1 TO RESOLUTION [COM6/3] (WRC-07)

### **Principles for establishing agendas for WRCs**

A conference agenda shall include:

- 1) items assigned to it by the ITU Plenipotentiary Conference;
- 2) items on which the Director of the Radiocommunication Bureau has been requested to report;
- 3) items concerning instructions to the Radio Regulations Board and the Radiocommunication Bureau regarding their activities, and concerning the review of those activities.

In general, a conference may include on a future conference agenda an item proposed by a group of administrations or an administration, if all the following conditions are met:

- 1) it addresses issues of a worldwide or regional character;
- 2) it is expected that changes in the Radio Regulations, including WRC Resolutions and Recommendations, may be necessary;
- 3) it is expected that required studies can be completed (e.g. that appropriate ITU-R Recommendations will be approved) prior to that conference;
- 4) resources associated with the subject are kept within a range which is manageable for Member States and Sector Members, the Radiocommunication Bureau and ITU-R Study Groups, Conference Preparatory Meeting (CPM) and the Special Committee.

To the extent possible, agenda items arising from previous conferences, normally reflected in Resolutions, and which have been considered by two successive conferences, should not be considered, unless justified.

In developing the conference agenda, efforts should be made to:

- a)* encourage regional and interregional coordination on the subjects to be considered in the preparatory process for the WRC, in accordance with Resolution **72 (Rev.WRC-07)** and Resolution 80 (Rev. Marrakesh, 2002) of the Plenipotentiary Conference;
- b)* include, to the extent possible, agenda items that are prepared within regional groups, taking into account the equal right of individual administrations to submit proposals for agenda items;
- c)* ensure that proposals are submitted with an indication of priority;
- d)* include in proposals an assessment of their financial and other resource implications (with the assistance of the Radiocommunication Bureau) to ensure that they are within the agreed budgetary limits for ITU-R;
- e)* ensure that the objectives and scope of proposed agenda items are complete and unambiguous;
- f)* take into account the status of the ITU-R studies related to the potential agenda items before considering them as possible candidates for future agendas;
- g)* distinguish between items intended to result in changes to the Radio Regulations and those dealing solely with the progress of studies.



ANNEX 2 TO RESOLUTION [COM6/3] (WRC-07)

**Template for the submission of  
proposals for agenda items**

**Subject:**

**Origin:**

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***Proposal:***

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***Background/reason:***

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***Radiocommunication services concerned:***

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***Indication of possible difficulties:***

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***Previous/ongoing studies on the issue:***

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<b><i>Studies to be carried out by:</i></b>	<b><i>with the participation of:</i></b>
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***ITU-R Study Groups concerned:***

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***ITU resource implications, including financial implications (refer to CV126):***

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***Common regional proposal:*** Yes/No

***Multicountry proposal:*** Yes/No

***Number of countries:***

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***Remarks***

**ADD** COM6/339/2 (B12/346/18) (R6/410/81)

**RESOLUTION [COM6/4] (WRC-07)**

**Protection of radiocommunication services from  
emissions by short-range radio devices**

The World Radiocommunication Conference (Geneva, 2007),

*considering*

- a)* that short-range radio devices (SRDs) are radio transmitters or receivers, or both, and hence are not considered as industrial, scientific and medical (ISM) applications under No. **1.15**;
- b)* that SRDs, including devices using ultra-wideband (UWB) technologies, radio-frequency identification devices (RFIDs), and other similar devices, generate and use radio frequencies locally;
- c)* that SRDs cannot claim protection from interference from radio services and therefore have been developed in priority in ISM frequency bands;
- d)* that there is an increasing amount of SRDs proliferating across various frequencies throughout the spectrum, such as devices using UWB technologies or RFIDs, etc.;
- e)* that in some cases considerable energy may be radiated by RFIDs;
- f)* that some radio services, especially those using low field strengths, may suffer harmful interference from SRDs, in particular RFIDs, a risk which is unacceptable, particularly in the case of radionavigation or other safety services,

*recognizing*

- a)* the work carried out by ITU-R resulting in relevant ITU-R Recommendations (see ITU-R SM.1538, ITU-R SM.1754, ITU-R SM.1755, ITU-R SM.1756, ITU-R SM.1757);
- b)* the work carried out by ITU-T on RFID;
- c)* that SRDs, in particular RFIDs, hold promise for an array of new applications that may provide benefits for users;
- d)* that the characteristics of RFIDs, including the power of the transmitter, are standardized in the framework of the International Standardization Organization (ISO),

*recognizing further*

Resolution ITU-R 54 of the Radiocommunication Assembly (Geneva, 2007), which resolves that ITU-R should study the capabilities of SRDs while ensuring protection of radiocommunication services,

*resolves*

that, to ensure that radiocommunication services are adequately protected, further studies are required on the emissions from SRDs, inside and outside the frequency bands designated in the Radio Regulations for ISM applications,

*invites ITU-R*

to study emissions from SRDs, in particular RFIDs, inside and outside the frequency bands designated in the Radio Regulations for ISM applications to ensure adequate protection of radiocommunication services,

*invites administrations*

to participate in the studies by submitting contributions to ITU-R,

*instructs the Director of the Radiocommunication Bureau*

1 to bring this Resolution to the attention of ITU-T, ISO and the International Electrotechnical Commission;

2 to provide the results of these studies to WRC-11 for its considerations and actions.

**ADD** COM6/340/2 (B14/365/50) (R7/411/226)

## RESOLUTION [COM6/5] (WRC-07)

### **Harmonization of spectrum for use by terrestrial electronic news gathering<sup>1</sup> systems**

The World Radiocommunication Conference (Geneva, 2007),

*considering*

*a)* that the use of terrestrial portable radio equipment by services ancillary to broadcasting, commonly described as electronic news gathering (ENG), operating in the bands allocated to the broadcasting, fixed and mobile services has become an important element in the comprehensive coverage of a wide range of internationally noteworthy events, including natural disasters;

*b)* that WRC-03 initiated studies concerned with spectrum usage and operational characteristics of portable and nomadic links for terrestrial ENG systems operation on a global basis, in accordance with Recommendation **723 (WRC-03)**;

*c)* that modularization and miniaturization of terrestrial ENG systems has increased the portability for these systems and has thus increased the trend towards cross-border operation of ENG equipment;

*d)* that the technical characteristics for television outside broadcast, ENG and electronic field production systems in the fixed and mobile services for use in sharing studies have been established in ITU-R Recommendations,

*noting*

*a)* that studies undertaken by ITU-R indicate that national spectrum management could benefit from globally harmonized band planning for ENG systems;

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<sup>1</sup> For the purpose of this Resolution, ENG represents all applications ancillary to broadcasting, such as terrestrial electronic news gathering, electronic field production, TV outside broadcast, wireless radio microphones and radio outside production and broadcast.

- b) that ENG-related studies in ITU-R are based on data for current and anticipated ENG spectrum requirements collected from many administrations in all regions;
- c) that some of the frequency bands currently used for ENG have a number of technical and operational attributes making them suitable for continued long-term use for ENG;
- d) that lower frequency spectrum bands tend to provide better propagation characteristics over obstructed paths, thereby increasing the reliability of ENG links operating in these bands,

*recognizing*

- a) that broadcasters now embrace advanced digital technologies that open new opportunities for both fixed and mobile ENG operations, and that these developments have spectrum related implications;
- b) that the dynamic nature of the use of ENG is driven by scheduled, unscheduled and unpredictable events such as breaking news, emergencies and disasters;
- c) that news gathering and electronic production typically takes place in an environment where several television broadcasters/organizations/networks attempt to cover the same event, creating a demand for multiple ENG links and increased demand for access to spectrum in suitable frequency bands;
- d) that access to a globally harmonized spectrum is highly desirable to facilitate the rapid and less restricted deployment and operation of ENG systems from one country to another,

*resolves*

- 1 that, based on studies undertaken by ITU-R, WRC-11 should address the feasibility of achieving a satisfactory degree of worldwide/regional harmonization of spectrum for ENG use in terms of the frequency bands and tuning ranges;
- 2 that methods should be identified for the possible harmonization of frequency bands and tuning ranges for ENG usage,

*invites ITU-R*

- 1 to carry out studies of ENG regarding possible solutions for global/regional harmonization in frequency bands and tuning ranges, taking into account:
  - available technologies to maximize efficient and flexible use of frequency;
  - system characteristics and operational practices which facilitate the implementation of these solutions;
- 2 to include in the studies referred to above sharing and compatibility issues with services already having allocations in frequency bands and tuning ranges which have potential for ENG use;
- 3 to propose operational measures to facilitate operation of ENG equipment consistent with global circulation of radiocommunication equipment, taking into account Recommendation ITU-R M.1637;
- 4 to report the results of those studies to the World Radiocommunication Conference 2011,

*invites administrations*

to participate in the studies by submitting contributions to ITU-R.

RESOLUTION [COM6/6] (WRC-07)

**Provisional application of certain provisions of the Radio Regulations  
as revised by WRC-07 and abrogation of certain  
resolutions and recommendations**

The World Radiocommunication Conference (Geneva, 2007),

*considering*

- a)* that this conference has adopted a partial revision to the Radio Regulations (RR) in accordance with its terms of reference which will enter into force on 1 January 2009;
- b)* that some of the provisions, as amended by this conference, need to apply provisionally as of an earlier date;
- c)* that as a general rule, new and revised resolutions and recommendations enter into force at the time of signing of the Final Acts of a conference;
- d)* that as a general rule, resolutions and recommendations which a WRC has decided to suppress are abrogated at the time of the signing of the Final Acts of the conference,

*resolves*

1 that, as of 17 November 2007, the following provisions of the RR, as revised or established by this conference, shall provisionally apply: No. **5.4B06** and the associated allocation in the Table of Article **5** to the aeronautical mobile (R) service in the band 960-1 164 MHz, Nos, **5.328B** and **5.329A** and the associated allocations in the Table of Article **5** to the radionavigation-satellite service, Nos. **5.379B** and the associated allocations in the Table of Article **5** to the mobile-satellite service, No. **5.517** and the associated allocations in the Table of Article **5** to the broadcasting-satellite and to the fixed-satellite services, No. **5.538** and the associated allocations in the Table of Article **5** to the fixed-satellite service, **5.BA01** and the associated allocations in the Table of Article **5** to the Earth exploration-satellite (passive), fixed and mobile services, **5.BA02** and the associated allocations in the Table of Article **5** to the Earth exploration-satellite (passive), fixed and mobile services, **5.BA03** and the associated allocations in the Table of Article **5** to the fixed and to the fixed-satellite services, **5.403** and the associated allocations in the Table of Article **5** to the mobile-satellite, except aeronautical mobile-satellite service, **5.414** and the associated allocations in the Table of Article **5** to the mobile-satellite service, **5.415** and the associated allocations in the Table of Article **5** to the fixed-satellite service, **5.416** and the associated allocations in the Table of Article **5** to the broadcasting-satellite service, **5.418** and the associated allocations in the Table of Article **5** to the broadcasting-satellite and the broadcasting services, **5.419** and the associated allocations in the Table of Article **5** to the mobile-satellite service, **5.420** and the associated allocations in the Table of Article **5** to the mobile-satellite service except aeronautical mobile-satellite service, **5.420A** and the associated allocations in the Table of Article **5** to the aeronautical mobile-satellite service, **5.4A01** and the associated allocations in the Table of Article **5**, **9.2B.1**, **9.14**, **9.38.1**, **9.41** of Article **9**, **A.11.6**, **11.15**, **11.43A**, **11.46**, **11.47** of Article **11**, **21.16.19**, **21.16.x**, **21.16.y**, Table **21-2**, Table **21-4**, No. **22.2**, Annex 2 to Appendix **4**, Tables 5-1 and 5-2 of Appendix **5**, Table 10 of Appendix **7**, Appendix **30**, Appendix **30A**, Appendix **30B**, Appendix **42**;

2 that, as of 17 November 2007, No. **5.518**, which is suppressed by this conference, shall be abrogated;

3 that, as of 1 February 2009, No. **5.199**, which is suppressed by this conference, shall be  
abrogated;

*further resolves*

1 to abrogate the following resolutions as of 17 November 2007:

Resolution **21 (Rev.WRC-03)**,  
Resolution **56 (Rev.WRC-03)**,  
Resolution **57 (WRC-2000)**,  
Resolution **79 (WRC-2000)**,  
Resolution **87 (WRC-03)**,  
Resolution **88 (WRC-03)**,  
Resolution **89 (WRC-03)**,  
Resolution **96 (WRC-03)**,  
Resolution **105 (Orb-88)**,  
Resolution **132 (WRC-97)**,  
Resolution **139 (WRC-2000)**,  
Resolution **141 (WRC-03)**,  
Resolution **146 (WRC-03)**,  
Resolution **228 (Rev.WRC-03)**,  
Resolution **230 (WRC-03)**,  
Resolution **340 (WRC-97)**,  
Resolution **353 (WRC-03)**,  
Resolution **414 (WRC-03)**,

Resolution **415 (WRC-03)**,  
Resolution **527 (WARC-92)**,  
Resolution **544 (WRC-03)**,  
Resolution **545 (WRC-03)**,  
Resolution **670 (WRC-03)**,  
Resolution **728 (Rev.WRC-2000)**,  
Resolution **738 (WRC-03)**,  
Resolution **740 (WRC-03)**,  
Resolution **742 (WRC-03)**,  
Resolution **745 (WRC-03)**,  
Resolution **746 (WRC-03)**,  
Resolution **747 (WRC-03)**,  
Resolution **802 (WRC-03)**,  
Resolution **803 (WRC-03)**,  
Resolution **952 (WRC-03)**

2 to abrogate the following recommendations as of 17 November 2007:

Recommendation **14 (Mob-87)**,  
Recommendation **318 (Mob-87)**,  
Recommendation **517 (Rev.WRC-03)**,  
Recommendation **604 (Rev.Mob-87)**,  
Recommendation **605 (Rev.Mob-87)**,

Recommendation **606 (Mob-87)**,  
Recommendation **705**,  
Recommendation **722 (WRC-03)**,  
Recommendation **723 (WRC-03)**,  
Recommendation **800 (WRC-03)**;

3 to abrogate Resolution **51 (Rev.WRC-2000)** as of 1 January 2010.

RESOLUTION [COM6/7] (WRC-07)

**Agenda for the 2011 World Radiocommunication Conference**

The World Radiocommunication Conference (Geneva, 2007),

*considering*

- a) that, in accordance with No. 118 of the ITU Convention, the general scope of the agenda for a world radiocommunication conference should be established four to six years in advance and a final agenda shall be established by the Council two years before the conference;
- b) Article 13 of the ITU Constitution relating to the competence and scheduling of world radiocommunication conferences and Article 7 of the Convention relating to their agendas;
- c) the relevant resolutions and recommendations of previous world administrative radio conferences (WARCs) and world radiocommunication conferences (WRCs),

*recognizing*

- a) that this Conference has identified a number of urgent issues requiring further examination by WRC-11;
- b) that, in preparing this agenda, many items proposed by administrations could not be included and have had to be deferred to future conference agendas,

*resolves*

to recommend to the Council that a world radiocommunication conference be held in 2011 for a period of four weeks, with the following agenda:

- 1 on the basis of proposals from administrations, taking account of the results of WRC-07 and the Report of the Conference Preparatory Meeting, and with due regard to the requirements of existing and future services in the bands under consideration, to consider and take appropriate action with respect to the following items:
  - 1.1 to consider and take appropriate action on requests from administrations to delete their country footnotes or to have their country name deleted from footnotes, if no longer required, taking into account Resolution **26 (Rev.WRC-07)**;
  - 1.2 taking into account the ITU-R studies carried out in accordance with Resolution **951 (Rev.WRC-07)**, to take appropriate action with a view to enhancing the international regulatory framework;
  - 1.3 to consider spectrum requirements and possible regulatory actions, including allocations, in order to support the safe operation of unmanned aircraft systems (UAS), based on the results of ITU-R studies, in accordance with Resolution **[COM6/8] (WRC-07)**;
  - 1.4 to consider, based on the results of ITU-R studies, any further regulatory measures to facilitate introduction of new aeronautical mobile (R) service (AM(R)S) systems in the bands 112-117.975 MHz, 960-1 164 MHz and 5 000-5 030 MHz in accordance with Resolutions **413 (Rev.WRC-07)**, **[COM4/5] (WRC-07)** and **[COM4/9] (WRC-07)**;

- 1.5 to consider worldwide/regional harmonization of spectrum for electronic news gathering (ENG), taking into account the results of ITU-R studies, in accordance with Resolution **[COM6/5] (WRC-07)**;
- 1.6 to review No. **5.565** of the Radio Regulations in order to update the spectrum use by the passive services between 275 GHz and 3 000 GHz, in accordance with Resolution **950 (Rev.WRC-07)**, and to consider possible procedures for free-space optical-links, taking into account the results of ITU-R studies, in accordance with Resolution **[COM6/9] (WRC-07)**;
- 1.7 to consider the results of ITU-R studies in accordance with Resolution **222 (Rev.WRC-07)** in order to ensure long-term spectrum availability and access to spectrum necessary to meet requirements for the aeronautical mobile-satellite (R) service, and to take appropriate action on this subject, while retaining unchanged the generic allocation to the mobile-satellite service in the bands 1 525-1 559 MHz and 1 626.5-1 660.5 MHz;
- 1.8 to consider the progress of ITU-R studies concerning the technical and regulatory issues relative to the fixed service in the bands between 71 GHz and 238 GHz, taking into account Resolutions **731 (WRC-2000)** and **732 (WRC-2000)**;
- 1.9 to revise frequencies and channelling arrangements of Appendix 17 to the Radio Regulations, in accordance with Resolution **351 (Rev.WRC-07)**, in order to implement new digital technologies for the maritime mobile service;
- 1.10 to examine the frequency allocation requirements with regard to operation of safety systems for ships and ports and the related regulatory provisions, in accordance with Resolution **[COM6/10] (WRC-07)**;
- 1.11 to consider a primary allocation to the space research service (Earth-to-space) within the band 22.55-23.15 GHz, taking into account the results of ITU-R studies, in accordance with Resolution **[COM6/11] (WRC-07)**;
- 1.12 to protect the primary services in the band 37-38 GHz from interference resulting from aeronautical mobile service operations, taking into account the results of ITU-R studies, in accordance with Resolution **[COM6/12] (WRC-07)**;
- 1.13 to consider the results of ITU-R studies in accordance with Resolution **[COM6/13] (WRC-07)** and decide on the spectrum usage of the 21.4-22 GHz band for the broadcasting-satellite service and the associated feeder-link bands in Regions 1 and 3;
- 1.14 to consider requirements for new applications in the radiolocation service and review allocations or regulatory provisions for implementation of the radiolocation service in the range 30-300 MHz, in accordance with Resolution **[COM6/14] (WRC-07)**;
- 1.15 to consider possible allocations in the range 3-50 MHz to the radiolocation service for oceanographic radar applications, taking into account the results of ITU-R studies, in accordance with Resolution **[COM6/15] (WRC-07)**;
- 1.16 to consider the needs of passive systems for lightning detection in the meteorological aids service, including the possibility of an allocation in the frequency range below 20 kHz, and to take appropriate action, in accordance with Resolution **[COM6/16] (WRC-07)**;
- 1.17 to consider results of sharing studies between the mobile service and other services in the band 790-862 MHz in Regions 1 and 3, in accordance with Resolution **[COM4/13] (WRC-07)**, to ensure the adequate protection of services to which this frequency band is allocated, and take appropriate action;



- 1.18 to consider extending the existing primary and secondary radiodetermination-satellite service (space-to-Earth) allocations in the band 2 483.5-2 500 MHz in order to make a global primary allocation, and to determine the necessary regulatory provisions based upon the results of ITU-R studies, in accordance with Resolution **[COM6/17] (WRC-07)**;
- 1.19 to consider regulatory measures and their relevance, in order to enable the introduction of software-defined radio and cognitive radio systems, based on the results of ITU-R studies, in accordance with Resolution **[COM6/18] (WRC-07)**;
- 1.20 to consider the results of ITU-R studies and spectrum identification for gateway links for high altitude platform stations (HAPS) in the range 5 850-7 075 MHz in order to support operations in the fixed and mobile services, in accordance with Resolution **734 (Rev.WRC-07)**;
- 1.21 to consider a primary allocation to the radiolocation service in the band 15.4-15.7 GHz, taking into account the results of ITU-R studies, in accordance with Resolution **[COM6/19] (WRC-07)**;
- 1.22 to examine the effect of emissions from short-range devices on radiocommunication services, in accordance with Resolution **[COM6/4] (WRC-07)**;
- 1.23 to consider an allocation of about 15 kHz in parts of the band 415-526.5 kHz to the amateur service on a secondary basis, taking into account the need to protect existing services;
- 1.24 to consider the existing allocation to the meteorological-satellite service in the band 7 750-7 850 MHz with a view to extending this allocation to the band 7 850-7 900 MHz, limited to non-geostationary meteorological satellites in the space-to-Earth direction, in accordance with Resolution **[COM6/20] (WRC-07)**;
- 1.25 to consider possible additional allocations to the mobile-satellite service, in accordance with Resolution **[COM6/21] (WRC-07)**;
- 2 to examine the revised ITU-R Recommendations incorporated by reference in the Radio Regulations communicated by the Radiocommunication Assembly, in accordance with Resolution **28 (Rev.WRC-03)**, and to decide whether or not to update the corresponding references in the Radio Regulations, in accordance with principles contained in the Annex 1 to Resolution **27 (Rev.WRC-07)**;
- 3 to consider such consequential changes and amendments to the Radio Regulations as may be necessitated by the decisions of the Conference;
- 4 in accordance with Resolution **95 (Rev.WRC-07)**, to review the resolutions and recommendations of previous conferences with a view to their possible revision, replacement or abrogation;
- 5 to review, and take appropriate action on, the Report from the Radiocommunication Assembly submitted in accordance with Nos. 135 and 136 of the Convention;
- 6 to identify those items requiring urgent action by the Radiocommunication Study Groups in preparation for the next world radiocommunication conference;
- 7 to consider possible changes in response to Resolution 86 (Rev. Marrakesh, 2002) of the Plenipotentiary Conference: “Advance publication, coordination, notification and recording procedures for frequency assignments pertaining to satellite networks”, in accordance with Resolution **86 (Rev.WRC-07)**;

- 8 in accordance with Article 7 of the Convention:
- 8.1 to consider and approve the Report of the Director of the Radiocommunication Bureau:
- 8.1.1 on the activities of the Radiocommunication Sector since WRC-07;
- 8.1.2 on any difficulties or inconsistencies encountered in the application of the Radio Regulations; and
- 8.1.3 on action in response to Resolution **80 (Rev.WRC-07)**;
- 8.2 to recommend to the Council items for inclusion in the agenda for the next WRC, and to give its views on the preliminary agenda for the subsequent conference and on possible agenda items for future conferences, taking into account Resolution **[COM6/22] (WRC-07)**,

*resolves further*

to activate the Conference Preparatory Meeting and the Special Committee on Regulatory/Procedural Matters,

*invites the Council*

to finalize the agenda and arrange for the convening of WRC-11, and to initiate as soon as possible the necessary consultations with Member States,

*instructs the Director of the Radiocommunication Bureau*

to make the necessary arrangements to convene meetings of the Conference Preparatory Meeting and to prepare a report to WRC-11,

*instructs the Secretary-General*

to communicate this Resolution to international and regional organizations concerned.

**ADD** PLEN/408/2 (B24/419/5)

## RESOLUTION [COM6/8] (WRC-07)

### **Consideration of appropriate regulatory provisions for the operation of unmanned aircraft systems**

The World Radiocommunication Conference (Geneva, 2007),

*considering*

- a)* that worldwide use of unmanned aircraft systems (UAS) is expected to increase significantly in the near future;
- b)* that unmanned aircraft need to operate seamlessly with piloted aircraft in non-segregated airspaces and that there is a need to provide globally harmonized spectrum for that purpose;
- c)* that the safe flight operation of UAS needs reliable communication links and associated spectrum, especially for the remote pilot to command and control the flight and to relay the air traffic control communications;

d) that the safe flight operation of UAS necessitates advanced techniques to detect and track nearby aircraft, terrain and obstacles to navigation in order to ensure the UAS avoids these objects in a manner equivalent to that achieved by manned aircraft;

e) that satellite radiocommunications are part of UAS operations, in particular to relay transmissions beyond the horizon and maintain safety of flight;

f) that there is a need to protect existing services;

g) that some applications of UAS involve high data-rate payload transmissions from the aircraft to remote stations,

*recognizing*

a) that UAS will operate in the same environment as manned aircraft;

b) that some UAS will operate below or above the current conventional air traffic of manned aircraft, including in specific environments not accessible to manned aircraft, such as volcanoes, hurricanes, poisonous or electromagnetic zones;

c) that studies are required to provide a basis for considering regulatory changes, including additional allocations, to accommodate spectrum requirements of UAS consistent with the protection of incumbent services;

d) that any new allocation should not place undue constraints on services to which the frequency bands are allocated;

e) that this agenda item is not intended to be used to identify bands for UAS use, but rather only to propose, as necessary, new allocations or modifications to existing allocations to accommodate UAS,

*resolves*

that WRC-11 consider, based on the results of ITU-R studies:

1 the spectrum requirements and possible regulatory actions, including additional allocations, to support the remote pilot in commanding and controlling the unmanned aircraft systems and in relaying the air traffic control communications, as mentioned in *considering c*);

2 the spectrum requirements and possible regulatory actions, including additional allocations, to support the safe operation of unmanned aircraft systems not covered by *resolves 1*, as mentioned in *considering d*),

*invites ITU-R*

1 to conduct in time for WRC-11 the necessary studies leading to technical, regulatory and operational recommendations to the Conference, enabling that Conference to decide on appropriate allocations for the operation of UAS;

2 that the studies referred to in *invites ITU-R 1* should include sharing and compatibility studies with services already having allocations in those bands;

3 to produce a report or a recommendation, as appropriate, on how to accommodate the radiocommunication requirements for UAS payloads,

*further invites*

the International Civil Aviation Organization (ICAO), the International Air Transport Association (IATA), administrations and other organizations concerned to participate in the studies identified in *invites ITU-R* above,

*requests the Secretary-General*

to bring this Resolution to the attention of ICAO.

**ADD**      PLEN/408/4      (B24/419/6)

## RESOLUTION [COM6/9] (WRC-07)

### **Consideration of procedures for free-space optical links**

The World Radiocommunication Conference (Geneva, 2007),

*considering*

- a)*          that frequencies above 3 000 GHz are already used for various optical applications from telecommunication links to satellite remote sensing;
- b)*          that optical links are currently under consideration by several ITU-R Study Groups;
- c)*          that Recommendations ITU-R P.1621, P.1622, S.1590, RA.1630; SA.1742, SA.1805, and RS.1744 contain information pertaining to free-space optical links and remote sensing;
- d)*          that the ITU-R is in the process of preparing reports regarding the possibility and relevance of including in the Radio Regulations frequency bands above 3 000 GHz as well as fixed service applications using such frequency bands,

*recognizing*

- a)*          that Resolution 118 (Marrakesh, 2002) of the Plenipotentiary Conference instructs the Director of the BR to report to world radiocommunication conferences on the progress of ITU-R studies concerning the use of frequencies above 3 000 GHz;
- b)*          that the ITU-R has identified technical aspects regarding the use of optical free-space telecommunications as an item requiring urgent study by the ITU-R Study Groups,

*resolves*

to consider possible procedures for free-space optical links, taking into account the results of ITU-R studies covering at least sharing aspects with other services, a clear definition of the band limits and measures to be considered if allocations to various services in the Radio Regulations above 3 000 GHz are considered feasible,

*invites ITU-R*

to conduct the necessary studies in time for consideration by WRC-11.

RESOLUTION [COM6/10] (WRC-07)

**Consideration of regulatory provisions and spectrum allocations for use by enhanced maritime safety systems for ships and ports**

The World Radiocommunication Conference (Geneva, 2007),

*considering*

- a)* that there is increasing need, on a global basis, to enhance ship and cargo identification, tracking, and surveillance as well as ship and port security and safety;
- b)* that the International Maritime Organization (IMO) adoption of the International Ship and Port Facility Security (ISPS) Code, specifically Safety of Life at Sea (SOLAS) Convention, Chapter XI-2, on special measures to enhance maritime security, requires long-range spectrum dependent systems;
- c)* that the introduction of the shipborne universal automatic identification system (AIS) supports maritime safety and offers potential enhancements to ship and port security and maritime safety;
- d)* that studies within ITU-R indicate that additional AIS channels in the mobile-satellite service may be required to enhance and accommodate global ship tracking capabilities;
- e)* that advanced maritime HF data systems may be used to deliver security alerts and safety information to, and to receive similar information and long-range identification and tracking (LRIT) information from, ships in global regions not under satellite coverage;
- f)* that use of existing maritime mobile allocations, where practicable, for ship and port security and enhanced maritime safety would be preferable, particularly where international interoperability is required;
- g)* that additional studies within ITU-R on spectrum efficient radio technologies may be required to resolve these multifaceted spectrum requirements;
- h)* that requirements for ITU Service Publications and specific revisions of content, format and structure of those publications may be required to support maritime security and safety systems,

*noting*

- a)* Resolution **342 (Rev.WRC-2000)**: “New technologies to provide improved efficiency in the use of the band 156-174 MHz by stations in the maritime mobile service”;
- b)* Resolution **351 (Rev.WRC-07)**: “Review of the frequency and channel arrangements in the HF bands allocated to the maritime mobile service contained in Appendix 17 with a view to improving efficiency through the use of new digital technology by the maritime mobile service”,

*recognizing*

- a)* that there is a global requirement to enhance maritime safety, ship and port security via spectrum dependent systems;
- b)* that existing and future technologies for Ship Security and Alerting Systems (SSAS), introduced as a result of the ISPS Code referred to in *considering b)*, will require long-range communication links and networks between mobile ships and shore-based stations;

- c) that due to the importance of these radio links in ensuring the safe and secure operation of international shipping and commerce, they must be resilient to interference;
- d) that studies will be required to provide a basis for considering regulatory changes, including additional allocations and recommendations, designed to accommodate spectrum requirements of ship and port security, consistent with the protection of incumbent services;
- e) that the ITU and international standards organizations have initiated related studies on spectrum efficient technology,

*resolves*

- 1 that WRC-11 consider amendments to provisions of the Radio Regulations necessary to provide for the operation of ship and port security and maritime safety systems;
- 2 that WRC-11 consider additional allocations to the maritime mobile service below 1 GHz to support the requirements identified in *resolves* 1;
- 3 that WRC-11 consider additional allocations to the maritime mobile-satellite service in frequency bands allocated to the maritime mobile service between 156 and 162.025 MHz to support the requirements identified in *resolves* 1,

*invites ITU-R*

- 1 to conduct, as a matter of urgency, studies to determine the spectrum requirements and potential frequency bands suitable to support ship and port security and enhanced maritime safety systems;
- 2 that the studies referred to in *invites ITU-R* 1 should include the applicability of spectrum efficient technologies, and sharing and compatibility studies with services already having allocations in potential spectrum for ship safety and port security systems,

*invites*

all members of the Radiocommunication Sector, the International Maritime Organization (IMO), International Organization for Standardization (ISO), International Electrotechnical Commission (IEC), and the International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA) to contribute to these studies,

*instructs the Secretary-General*

to bring this Resolution to the attention of IMO, ISO, IEC, IALA and other international and regional organizations concerned.

RESOLUTION [COM6/11] (WRC-07)

**Use of the band 22.55-23.15 GHz by the space research service**

The World Radiocommunication Conference (Geneva, 2007),

*considering*

- a) that there is growing interest around the world in the comprehensive space exploration in particular around the Moon;
- b) that the lunar exploration missions, examining the terrain, environment and potential landing sites, will be robotic for the foreseeable future and manned in the long term;
- c) that a primary space research service (space-to-Earth) allocation in the band 25.5-27.0 GHz was added to the Table of Frequency Allocations to support a wide range of space research missions;
- d) that space research service (space-to-Earth) transmissions in the 25.5-27.0 GHz band will be used to support space research service missions in near-Earth orbit, including missions in transit to the Moon and at or near the Moon;
- e) that the space research service (space-to-Earth) transmissions in the 25.5-27.0 GHz band will be used for both scientific data retrieval and voice/videocommunication with the Earth;
- f) that there is a need for a companion uplink space research service (Earth-to-space) band to provide the mission data, command and control links for the lunar exploration missions;
- g) that due to the potential for many concurrent exploration-related systems and the large bandwidth requirements of these systems, especially those supporting manned missions, it is envisaged that a total uplink bandwidth of at least several hundred MHz will be needed;
- h) that the 22.55-23.15 GHz band is far enough from the 25.5-27.0 GHz band to provide adequate frequency separation;
- i) that the 22.55-23.55 GHz band is used by data relay satellite systems to communicate with user satellites (forward links) in the existing primary inter-satellite service allocation;
- j) that the 22.55-23.15 GHz band is the logical companion band to provide the necessary uplink bandwidth and by using the same band as data relay satellite systems in *considering i)* for radiocommunication in the Earth-to-space direction, it provides a degree of redundancy and coverage that may prove vital for future missions,

*recognizing*

- 1 that the band 22.55-23.55 GHz is allocated to the fixed, inter-satellite and mobile services;
- 2 that the inter-satellite forward links in the 22.55-23.55 GHz band are paired with inter-satellite return links in the 25.25-27.5 GHz band;
- 3 that non-GSO inter-satellite service links have been operating for several years and are expected to continue to operate in the 23.183-23.377 GHz band and that these links are increasingly being used in situations of emergencies and natural disasters;

4 that systems referred to in *recognizing* 1 need to be protected and their future requirements be taken into account,

*resolves*

1 to invite ITU-R to conduct sharing studies between space research service systems operating in the Earth-to-space direction and the fixed, inter-satellite and mobile services in the band 22.55-23.15 GHz, and to recommend appropriate sharing criteria for an allocation to the space research service in the Earth-to-space direction;

2 to invite WRC-11 to review the results of the studies under *resolves* 1 and consider the inclusion of the sharing criteria within the Radio Regulations and appropriate modifications to the Table of Frequency Allocations,

*invites administrations*

to contribute to the sharing studies between the space research service and the fixed, inter-satellite and mobile services in the 22.55-23.15 GHz band,

*invites ITU-R*

to complete the necessary studies, as a matter of urgency, taking into account the present use of the allocated band, with a view to presenting, at the appropriate time, the technical information likely to be required as a basis for the work of the conference,

*instructs the Secretary-General*

to bring this Resolution to the attention of the international and regional organizations concerned.

**ADD** PLEN/408/8 (B24/419/9)

## RESOLUTION [COM6/12] (WRC-07)

### **Consideration of modification of the aeronautical component of the mobile service allocation in the 37-38 GHz band for protection of other primary services in the band**

The World Radiocommunication Conference (Geneva, 2007),

*considering*

a) that the band 37-38 GHz is allocated on a primary basis to the fixed, mobile and space research (space-to-Earth) services, and the 37.5-38 GHz portion of this band is also allocated on a primary basis to the fixed-satellite service (space-to-Earth);

b) that an aeronautical mobile station can cause unacceptable interference to receivers in the fixed service (including high-density applications), as well as land mobile, maritime mobile and fixed-satellite (space-to-Earth) receivers within line-of-sight;

c) that an aeronautical mobile station can cause unacceptable interference to receivers in the space research service whenever it is within line-of-sight of the receiver, as indicated in Recommendation ITU-R SA.1016;



d) that interference from the emissions of an aeronautical mobile station to a space research service earth station receiver may significantly exceed the permissible interference levels for extended periods of time, thus jeopardizing the success of a space mission,

*recognizing*

a) that the Table of Frequency Allocations already excludes the operation of aeronautical mobile stations in the bands 2.29-2.3 GHz, 8.4-8.5 GHz and 22.21-22.5 GHz where the mobile service is co-allocated on a primary basis with the space research service (space-to-Earth), and in the 31.5-31.8 GHz band where the mobile service is allocated on a secondary basis;

b) that the Table of Frequency Allocations also already excludes the operation of aeronautical mobile stations in many bands where the mobile service is co-allocated on a primary basis with the fixed service, such as in the band 11.7-12.5 GHz and the fixed service and the fixed-satellite service (space-to-Earth), such as 7 300-7 750 MHz;

c) that RR No. **5.547** indicates that the 37-38 GHz band is available for high-density applications in the fixed service;

d) that use of the 37-38 GHz band is required to support the increased data requirements of planned manned and scientific missions,

*noting*

a) that aeronautical mobile service systems are currently neither deployed nor planned in the 37-38 GHz band;

b) that sharing studies between the space research service (space-to-Earth) and the aeronautical mobile service have already begun,

*resolves*

1 to invite ITU-R to conduct appropriate studies involving the aeronautical mobile service and the affected primary services in the band 37-38 GHz in order to determine the compatibility of the aeronautical mobile service with these other services;

2 to invite WRC-11 to review the results of the studies under *resolves* 1 and consider the inclusion of any appropriate compatibility criteria within the Radio Regulations or appropriate modifications to the Table of Frequency Allocations,

*invites ITU-R*

to complete the necessary studies, as a matter of urgency, taking into account the present use of the allocated band, with a view to presenting, at the appropriate time, the technical information likely to be required as a basis for the work of the Conference,

*invites administrations*

to contribute to the compatibility studies between the aeronautical mobile service and the other services in the 37-38 GHz band,

*instructs the Director of BR*

to bring this Resolution to the attention of the international and regional organizations concerned.

RESOLUTION [COM6/13] (WRC-07)

**Use of the band 21.4-22 GHz for broadcasting-satellite service  
and associated feeder-link bands in Regions 1 and 3**

The World Radiocommunication Conference (Geneva, 2007),

*considering*

- a) that WARC-92 allocated the band 21.4-22.0 GHz in Regions 1 and 3 to the broadcasting-satellite service and the allocation came into effect on 1 April 2007;
- b) that after 1 April 2007 the introduction of BSS (HDTV) systems in this band should be regulated in a flexible and equitable manner until such time as a future competent world radiocommunication conference has adopted definitive provisions for this purpose in accordance with Resolution **507 (Rev.WRC-03)**;
- c) that the interim use of this band by the broadcasting-satellite service is subject to the provisions of Resolution **525 (Rev.WRC-07)**;
- d) that future BSS systems in the band 21.4-22.0 GHz may provide extremely high resolution imagery (EHRI) applications as shown in Recommendation ITU-R BT.1201 and Report ITU-R BT.2042;
- e) that, based on its studies, ITU-R has established basic operating parameters of BSS systems in this band, including methods of overcoming attenuation in countries with higher rainfall (Recommendation ITU-R BO.1659 and Report ITU-R BO.2071);
- f) that in the band 21.4-22.0 GHz in Regions 1 and 3, reference power flux-density for the BSS has been developed and given in Recommendation ITU-R BO.1776;
- g) that in the band 21.4-22.0 GHz in Regions 1 and 3, intra-service sharing criteria for GSO BSS systems have been developed and given in Recommendation ITU-R BO.1785;
- h) that *a priori* planning is not necessary and should be avoided as it freezes access according to technological assumptions at the time of planning and then prevents flexible use taking account of real world demand and technical developments;
- i) that interim arrangements for the use of the bands are on a first-come-first-served basis;
- j) that further study is needed for the spectrum usage of the band 21.4-22.0 GHz in Regions 1 and 3,

*noting*

that Resolution **525 (Rev.WRC-07)** identifies interim procedures for introduction of HDTV BSS systems in the band 21.4-22 GHz in Regions 1 and 3,

*resolves*

1 that ITU-R continue technical and regulatory studies on harmonization of spectrum usage, including planning methodologies, coordination procedures or other procedures, and BSS technologies, in preparation for WRC-11, in the 21.4-22 GHz band and the associated feeder-link bands in Regions 1 and 3, taking into account *considering h) and i)*;

2 that WRC-11 review the results of the studies and decide the usage of the 21.4-22 GHz band and the associated feeder-link bands in Regions 1 and 3,

*invites administrations*

to participate in ITU-R studies by providing contributions.

**ADD** PLEN/408/10 (B24/419/11)

## RESOLUTION [COM6/14] (WRC-07)

### **Use of portion of the VHF band by the radiolocation service**

The World Radiocommunication Conference (Geneva, 2007),

*considering*

- a) that the band below 300 MHz is primarily allocated to terrestrial services;
- b) that the radiolocation service has no global primary allocations in the band 30-300 MHz;
- c) that the frequency band 138-144 MHz is allocated to the radiolocation service on a primary basis in Region 2, the frequency band 216-225 MHz is allocated to radiolocation service on a secondary basis in Region 2, and the frequency band 223-230 MHz is also allocated to radiolocation service on a secondary basis in Region 3;
- d) the current regional allocations to radiolocation service are used on the shared basis with other services, specifically with fixed and mobile services;
- e) that due to extensive development of broadcasting service in the frequency bands 174-230 MHz and 470-862 MHz there is an increasing need to accommodate the existing radiolocation service operating in these bands to different frequency bands, while improving the interference mitigation techniques and introducing modern technologies;
- f) that there are emerging requirements for increased resolution and range for radars operation;
- g) that VHF radiowaves propagate well through the ionosphere, thus enabling various space object detection applications including remote space sensing and asteroid detection, as well as for defining the position of natural and artificial Earth satellites, from terrestrial-based radiolocation systems;
- h) that Recommendation ITU-R M.1372 identifies interference reduction techniques which enhance compatibility among radar systems;
- i) that over the horizon operation of radiolocation in VHF frequency range is technically not feasible;

j) that current requirements for radiolocation systems for space-object detection from terrestrial locations in portion of the band 30-300 MHz are based on 2 MHz bandwidth systems, however allocation with a wider frequency range may provide flexibility and facilitate sharing with existing services;

k) that, to provide adequate spectrum for new radar systems, there is a need to allocate on a primary basis worldwide additional spectrum in the 30-300 MHz frequency range,

*recognizing*

a) that it is important to ensure radiolocation radars can be operated compatibly with the existing primary services having allocations in the portions of the VHF band;

b) that ITU-R initiated studies in response to ITU-R Question 237/8 on characteristics and protection criteria for radars operating in the radiolocation service in the frequency band 30-300 MHz,

*resolves*

1 to consider at WRC-11 a primary allocation to the radiolocation service in the portion of the band 30-300 MHz for the implementation of new applications in the radiolocation service, with bandwidth no larger than 2 MHz, taking into account the results of ITU-R studies;

2 that the introduction of new systems in the radiolocation service shall be avoided in the frequency bands 156.4875-156.8375 MHz and 161.9625-162.0375 MHz, which are used by distress and safety applications in the maritime mobile service,

*invites ITU-R*

1 to continue to study, as a matter of urgency, the technical characteristics, protection criteria, and other factors to ensure that radiolocation systems can operate compatibly with systems operating in accordance with the Table in service in the 30-300 MHz frequency range band;

2 to include the results of the above studies in one or more new or existing ITU-R Recommendations, if appropriate;

3 to complete these studies in time for WRC-11.

**ADD** PLEN/408/11 (B24/419/12)

## RESOLUTION [COM6/15] (WRC-07)

### **Use of the radiolocation service between 3 and 50 MHz to support high-frequency oceanographic radar operations**

The World Radiocommunication Conference (Geneva, 2007),

*considering*

a) that there is increasing interest, on a global basis, in the operation of high-frequency oceanographic radars for measurement of coastal sea surface conditions to support environmental, oceanographic, meteorological, climatological, maritime and disaster mitigation operations;

b) that high-frequency oceanographic radars are also known in parts of the world as HF ocean radars, HF wave height sensing radars or HF surface wave radars;

- c) that high-frequency oceanographic radars operate through the use of ground-wave propagation;
- d) that high-frequency oceanographic radar technology has applications in global maritime domain awareness by allowing the long-range sensing of surface vessels, which provides a benefit to the global safety and security of shipping and ports;
- e) that operation of high-frequency oceanographic radars provides benefits to society through environmental protection, disaster preparedness, public health protection, improved meteorological operations, increased coastal and maritime safety and enhancement of national economies;
- f) that high-frequency oceanographic radars have been operated on an experimental basis around the world, providing an understanding of spectrum needs and spectrum sharing considerations, as well as an understanding of the benefits these systems provide;
- g) that between 3 and 50 MHz, no radiolocation allocations exist;
- h) that performance and data requirements dictate the regions of spectrum that can be used by high-frequency oceanographic radar systems for ocean observations,

*recognizing*

- a) that high-frequency oceanographic radars have been operated on an experimental basis for more than 30 years;
- b) that developers of the experimental systems have implemented techniques to make the most efficient use of the spectrum and mitigate interference to other radio services;
- c) that the objective of Question ITU-R 240/8 is to study the most appropriate frequency bands for operation of high-frequency oceanographic radars considering both radar system requirements and the protection of existing services;
- d) that high-frequency oceanographic radars operate with peak power levels on the order of 50 Watts,

*resolves*

- 1 to invite ITU-R to identify high-frequency oceanographic radar system applications between 3 and 50 MHz, including bandwidth requirements, appropriate portions of this band for these applications, and other characteristics necessary to conduct sharing studies;
- 2 to invite ITU-R to conduct sharing analyses between the radiolocation service applications identified under *resolves* 1 and incumbent services in the bands identified to be suitable for the operation of high-frequency oceanographic radar systems;
- 3 that, if compatibility with existing services is confirmed under *resolves* 2, to recommend that WRC-11 consider allocations to the radiolocation service in several suitable bands between 3 and 50 MHz, as determined in the ITU-R studies, each band not exceeding 600 kHz, for the operation of oceanographic radars,

*invites administrations*

to contribute to the sharing studies between the radiolocation service and incumbent services in portions of the 3 to 50 MHz band identified as suitable for high-frequency oceanographic radar operations,

*invites ITU-R*

to complete the necessary studies, as a matter of urgency, taking into account the present use of the allocated band, with a view to presenting, at the appropriate time, the technical information likely to be required as a basis for the work of WRC-11,

*instructs the Secretary-General*

to bring this Resolution to the attention of the International Maritime Organization (IMO), World Meteorological Organization (WMO) and other international and regional organizations concerned.

**ADD**      PLEN/408/12      (B24/419/13)

## RESOLUTION [COM6/16] (WRC-07)

### **Recognition of systems in the meteorological aids service in the frequency range below 20 kHz**

The World Radiocommunication Conference (Geneva, 2007),

*considering*

- a)*            that lightning detection systems used by meteorological organizations are long-established, passive applications which have operational, safety-of-life considerations providing warnings of extreme weather events to a range of organizations and customers including emergency services, aviation, defence, the utilities and the public;
- b)*            that although lightning strikes emit electromagnetic waves over a range of frequencies, the propagation characteristics below 20 kHz make the frequency range of about 9 kHz to 20 kHz the most suitable for detection;
- c)*            that to avoid interference in certain parts of the world, the centre frequency of a current international network of lightning detection stations, which had been centred on 9.765625 kHz since 1939, has recently had to be moved to 13.733 kHz;
- d)*            that other lightning detection systems often use a combination of UHF and LF frequencies, but these provide more limited coverage than systems operating at VLF frequencies;
- e)*            that it is expected that between 30 and 40 reception stations would be needed at VLF frequencies to provide global coverage;
- f)*            that these systems have coexisted with services already having allocations in potential spectrum for systems in the meteorological aid service for a considerable period of time without interference,

*recognizing*

- a)*            that the accurate location of lightning is important to public safety. As well as the dangers of the lightning strike itself, thunderstorms can result in intense precipitation with consequent flooding, severe icing, wind shear, turbulence and gusting winds;
- b)*            that recent instances of interference have increased concerns that lightning detection systems may not be able to maintain the quality of service or to provide global coverage unless recognition is afforded to these systems in the Radio Regulations, and coordination with other services is carried out properly;

- c) that this passive use is poorly protected at present;
- d) that it is desirable to allocate frequencies to the meteorological aids service for lightning detection systems in spectrum which is not shared with high-power systems,

*noting*

- a) that the 3 dB bandwidth of existing lightning detection systems is approximately 2.5 kHz and hence an allocation of between 3 and 5 kHz bandwidth would be required;
- b) that the proposed allocation is not intended to prevent the development of other services in the same frequency band but for this to be done in a regulated manner. ITU-R may need to develop the appropriate sharing criteria, taking into account both in-band and adjacent band services,

*resolves*

- 1 to invite ITU-R to conduct, and complete in time for WRC-11, the required studies leading to technical and procedural recommendations to the Conference enabling it to decide on an appropriate method of providing recognition to long-established systems, including the possibility of making an allocation to the meteorological aids service in the frequency range below 20 kHz;
- 2 that the studies referred to in *resolves* 1, without placing constraints on existing services operating in accordance with the Radio Regulations, shall include sharing and compatibility studies with services already having allocations in potential spectrum for systems in the meteorological aids service taking into account the needs of other services,

*invites administrations*

to participate in the studies by submitting contributions to ITU-R.

**ADD** PLEN/408/13 (B24/419/14)

## RESOLUTION [COM6/17] (WRC-07)

### **Global primary allocation to the radiodetermination-satellite service in the frequency band 2 483.5-2 500 MHz (space-to-Earth)**

The World Radiocommunication Conference (Geneva, 2007),

*considering*

- a) that determination of position and time using satellite systems offers great societal benefits by, for example, enabling efficiencies in transport utilization, banking and location-based services;
- b) that the accuracy of positions and timing determined by means of transmissions from space subject to ionospheric delays can be improved using multiple frequencies;
- c) that the band 2 483.5-2 500 MHz is allocated worldwide to the fixed, mobile and mobile-satellite services (space-to-Earth) on a primary basis;
- d) that the band 2 400-2 500 MHz is also designated for industrial, scientific and medical (ISM) applications. Radiocommunication services operating within this band must accept harmful interference which may be caused by these applications. ISM equipment operating in these bands is subject to the provisions of No. **15.13**;

*e)* that the band 2 483.5-2 500 MHz is also allocated to radiolocation on a primary basis in Regions 2 and 3 and on a secondary basis in Region 1;

*f)* that the band 2 483.5-2 500 MHz is already allocated to the radiodetermination-satellite service on a primary basis in Region 2 and on a secondary basis in Region 3, and that in addition No. **5.371** specifies a secondary allocation in Region 1 and No. **5.400** a primary allocation in 22 countries of Regions 1 and 3;

*g)* that systems in the radiodetermination-satellite service (RDSS) already use the band 2 483.5-2 500 MHz (space-to-Earth) in parts of Region 3 to provide position and timing determination;

*h)* that in Europe a radionavigation-satellite system is under development that intends to use the band 2 483.5-2 500 MHz in response to the growing need of public end users for positioning and timing applications,

*recognizing*

*a)* that mobile satellite systems using the 2 483.5-2 500 MHz band provide telecommunication services in many remote areas;

*b)* that other bands are available for radiodetermination- and radionavigation-satellite services,

*noting*

that the proposed allocation is not intended to prevent the development of other services in the same frequency band but for this to be done in a regulated manner. ITU-R may need to develop the appropriate sharing criteria, taking into account other in-band services,

*resolves to invite ITU-R*

to conduct, and complete in time for WRC-11, the appropriate technical, operational and regulatory studies leading to technical and procedural recommendations to the Conference enabling it to decide whether a global primary allocation for the radiodetermination-satellite service in the frequency band 2 483.5-2 500 MHz (space-to-Earth) is compatible with other services in the band,

*invites administrations*

to participate in the studies by submitting contributions to ITU-R.

**ADD** PLEN/408/14 (B24/419/15)

## RESOLUTION [COM6/18] (WRC-07)

### **Regulatory measures and their relevance to enable the introduction of software-defined radio and cognitive radio systems**

The World Radiocommunication Conference (Geneva, 2007),

*considering*

*a)* that cognitive radio and self-configuring networks are expected to provide additional flexibility and improved efficiency to the overall spectrum use;



- b) that ITU-R is already studying such advanced radio technologies, their functionalities, the key technical characteristics, requirements, performance and benefits (Question ITU-R 241/8);
- c) that studies have shown that software defined radio using cognitive control mechanisms is an approach for achieving better spectrum utilization, dynamic spectrum management, and flexible spectrum use (Report ITU-R M.2064);
- d) that considerable research and development is being carried out on cognitive radio systems and related network configurations such as self-configuring networks;
- e) that cognitive radio systems may cover a number of radio access techniques (RATs);
- f) that cognitive radio systems include self-configuring networks of different network topologies that will be able to set their spectrum usage based on the locally available spectrum;
- g) that without any information about the location and characteristics of other RATs within the covered frequency range reachable from the mobile terminal, it will be necessary to scan the whole tuning range in order to discover the local spectrum usage, which will result in a huge power and time consumption;
- h) that without additional means, it may not be possible to discover receive-only usage;
- i) that some studies indicate usefulness to have means to assist in the determination of the local spectrum usage, such as wireless or wired access to a database or to other networks;
- j) that some studies indicate a possible need for a worldwide harmonized cognitive supporting pilot channel with a bandwidth less than 50 kHz, whilst other studies indicate that the availability of a database could support access and connectivity, and therefore support the use of these systems,

*resolves to invite ITU-R*

1 to study whether there is a need for regulatory measures related to the application of cognitive radio system technologies;

2 to study whether there is a need for regulatory measures related to the application of software-defined radio,

*resolves further*

that WRC-11 consider the results of these studies and take the appropriate actions.

**ADD** PLEN/408/16 (B24/419/16)

## RESOLUTION [COM6/19] (WRC-07)

### **Use of the band 15.4-15.7 GHz by the radiolocation service**

The World Radiocommunication Conference (Geneva, 2007),

*considering*

- a) that the aeronautical radionavigation service (ARNS) has an allocation on a primary basis in the frequency range 15.4-15.7 GHz;
- b) that the radionavigation service is a safety service used permanently or temporarily for the safeguarding of human life (RR 1.59);

- c) that in accordance with **4.10** Member States are to recognize that the safety aspects of radionavigation and other safety services require special measures to ensure their freedom from harmful interference; it is necessary therefore to take this factor into account in the assignment and use of frequencies;
- d) that the mobile aspect of the aeronautical radionavigation service may require the stations of this service to be used in unspecified points;
- e) that the fixed-satellite service has an allocation on a primary basis in the frequency range 15.43-15.63 GHz taking into account the constraints of No. **5.511A**, as well as the bands 15.4-15.43 and 15.63-15.7 GHz taking into account the constraints of No. **5.11D**;
- f) that there are no ICAO-standard ARNS systems operating in this band and that those ARNS systems that do use this band are radars that have similar technical and operational characteristics as radiolocation systems;
- g) that, to provide adequate spectrum for new radar systems, there is a need to allocate on a primary basis worldwide additional spectrum in the band 15.4-15.7 GHz for the radiolocation service;
- h) that emerging requirements for increased resolution and range accuracy necessitate wider emission bandwidths;
- i) that radiolocation services using system low duty cycle emissions, scanning beams and interference reduction have demonstrated compatible operations with radionavigation radars in several bands (2 900-3 100 MHz, 9 000-9 200 MHz and 9 300-9 500 MHz) over many years;
- j) that radars in the radiolocation service operate on a primary basis worldwide in the band 15.7-17.3 GHz;
- k) that Recommendation ITU-R M.1372 identifies interference reduction techniques which enhance compatibility among radar systems;
- l) that Report ITU-R M.2076 contains further mitigation factors for radiolocation interference to radionavigation radars in the 9 GHz band, many of which apply to the band 15.4-15.7 GHz;
- m) that Recommendation ITU-R M.1730 provides information on the technical characteristics and protection criteria for the radiolocation service in the band 15.7-17.3 GHz,

*recognizing*

- a) that it is important to ensure radiolocation radars can be operated compatibly with the existing primary services having allocations in the band 15.4-15.7 GHz and with the radio astronomy service (RAS) in the adjacent band 15.35-15.40 GHz;
- b) that a primary allocation worldwide may be required to give developers of radar systems operating in the radiolocation service, manufacturers and investors confidence that their systems will have the regulatory assurance to operate globally;
- c) that the safety aspects of the radionavigation service in RR **1.59** require special measures to ensure the freedom of harmful interference in accordance with RR **4.10**,

*resolves*

to consider at WRC-11 a primary allocation to the radiolocation service in the band 15.4-15.7 GHz, taking into account the results of ITU-R studies,

*invites ITU-R*

- 1 to study, as a matter of urgency, the technical characteristics, protection criteria, and other factors to ensure that radiolocation systems can operate compatibly with systems in the aeronautical radionavigation and fixed-satellite services in the band 15.4-15.7 GHz, taking account of the safety nature of the aeronautical radionavigation service;
- 2 to study, as a matter of urgency, the compatibility between the radiolocation service in the band 15.4-15.7 GHz and RAS in the adjacent band 15.35-15.40 GHz;
- 3 to include the results of the above studies in one or more new or existing ITU-R Recommendations;
- 4 to complete these studies in time for WRC-11.

**ADD** PLEN/408/17 (B24/419/17)

## RESOLUTION [COM6/20] (WRC-07)

### **Extension of the allocation to the meteorological-satellite service in the band 7 750-7 850 MHz**

The World Radiocommunication Conference (Geneva, 2007),

*considering*

- a) that the band 7 750-7 850 MHz is allocated to the fixed, the meteorological-satellite (space-to-Earth) and the mobile services;
- b) that this band is currently used by non-geostationary polar orbiting meteorological satellites transmitting typically in data dump modes to large earth stations;
- c) the maximum contact times between satellites and corresponding earth stations occur at high latitudes resulting in optimum deployment of such earth stations at high latitudes in the northern and the southern hemispheres;
- d) that the bandwidth requirements for transmission of data from high-resolution sensors on the next-generation non-geostationary meteorological satellites planned to be launched in the time-frame 2017-2020 are in excess of 100 MHz;
- e) that an extension of the current allocation by 50 MHz would be necessary to accommodate future data transmission requirements;
- f) that the band 7 850-7 900 MHz is allocated to exactly the same services as the band 7 750-7 850 MHz and would be a prime candidate for extension of the current allocation to the meteorological-satellite service;
- g) that ITU-R studies conducted prior to WRC-97 concluded that sharing between the meteorological-satellite service and the fixed service is possible with ample margins resulting to the allocation of the band 7 750-7 850 MHz,

*recognizing*

1 that the data obtained by these meteorological satellites are essential for global weather forecast, climate changes and hazard predictions;

2 that existing systems need to be duly protected,

*resolves*

1 to invite ITU-R to conduct sharing analyses between non-geostationary meteorological satellites operating in the space-to-Earth direction and the fixed and mobile services in the band 7 850-7 900 MHz with a view to extending the current allocation in the space-to-Earth direction to this band;

2 to recommend that WRC-11 review the results of the studies under *resolves* 1;

3 to make appropriate modifications to the Table of Frequency Allocations with respect to *resolves* 1, based on proposals from administrations,

*invites administrations*

to contribute to the sharing studies between the meteorological-satellite service and the fixed and mobile services in the frequency range 7 850-7 900 MHz,

*invites ITU-R*

to complete the necessary studies, taking into account the present use of allocated bands, with a view to presenting its results to WRC-11.

**ADD** PLEN/408/18 (B24/419/18)

## RESOLUTION [COM6/21] (WRC-07)

### **Additional allocations to the mobile-satellite service with particular focus on the bands between 4 GHz and 16 GHz**

The World Radiocommunication Conference (Geneva, 2007),

*considering*

a) that ITU has studied the spectrum requirements for the satellite component of IMT for the period 2010-2020, and the results are contained in Report ITU-R M.2077;

b) that the results in Report ITU-R M.2077 indicate a shortfall of spectrum available for the satellite component of IMT in the Earth-to-space direction of between 19 and 90 MHz for the year 2020;

c) that the results in Report ITU-R M.2077 indicate a shortfall of spectrum available for the satellite component of IMT in the space-to-Earth direction of between 144 and 257 MHz for the year 2020;

d) that MSS systems which are not part of the satellite component of IMT may also require additional spectrum,

*resolves to invite ITU-R*

to complete, for WRC-11, studies of possible bands for new allocations to the mobile-satellite service in the Earth-to-space and space-to-Earth directions, with particular focus on the range 4 GHz to 16 GHz, taking into account sharing and compatibility, without placing undue constraints on existing services in this band,

*invites administrations*

to participate in the studies by submitting contributions to ITU-R.

**ADD**      PLEN/408/19      (B24/419/19)

## RESOLUTION [COM6/22] (WRC-07)

### **Preliminary agenda for the 2015 World Radiocommunication Conference**

The World Radiocommunication Conference (Geneva, 2007),

*considering*

- a) that, in accordance with No. 118 of the ITU Convention, the general scope of the agenda for WRC-15 should be established four to six years in advance;
- b) Article 13 of the ITU Constitution relating to the competence and scheduling of world radiocommunication conferences and Article 7 of the Convention relating to their agendas;
- c) the relevant resolutions and recommendations of previous world administrative radio conferences (WARCs) and world radiocommunication conferences (WRCs),

*resolves to give the view*

that the following items should be included in the preliminary agenda for WRC-15:

- 1 to take appropriate action in respect of those urgent issues that were specifically requested by WRC-11;
- 2 on the basis of proposals from administrations and the Report of the Conference Preparatory Meeting, and taking account of the results of WRC-11, to consider and take appropriate action in respect of the following items:
  - 2.1 to consider spectrum requirements and possible additional spectrum allocations in the radiodetermination service to support the operation of unmanned aerial systems (UAS) in non-segregated airspace;
  - 2.2 to review the use of the band 5 091-5 150 MHz by the fixed-satellite service (Earth-to-space) (limited to feeder links of the non-GSO mobile-satellite service) in accordance with Resolution **114 (Rev.WRC-03)**;
- 3 to examine the revised ITU-R Recommendations incorporated by reference in the Radio Regulations communicated by the Radiocommunication Assembly, in accordance with Resolution **28 (Rev.WRC-03)**, and to decide whether or not to update the corresponding references in the Radio Regulations, in accordance with the principles contained in Annex 1 to Resolution **27 (Rev.WRC-07)**;

- 4 to consider such consequential changes and amendments to the Radio Regulations as may be necessitated by the decisions of the Conference;
- 5 in accordance with Resolution **95 (Rev.WRC-07)**, to review the resolutions and recommendations of previous conferences with a view to their possible revision, replacement or abrogation;
- 6 to review, and take appropriate action on, the Report from the Radiocommunication Assembly submitted in accordance with Nos. 135 and 136 of the Convention;
- 7 to identify those items requiring urgent action by the Radiocommunication Study Groups;
- 8 to consider possible changes in response to Resolution 86 (Rev. Marrakesh, 2002) of the Plenipotentiary Conference: “Advance publication, coordination, notification and recording procedures for frequency assignments pertaining to satellite networks”, in accordance with Resolution **86 (Rev.WRC-07)**;
- 9 in accordance with Article 7 of the Convention:
- 9.1 to consider and approve the Report of the Director of the Radiocommunication Bureau on the activities of the Radiocommunication Sector since WRC-11;
- 9.2 to recommend to the Council items for inclusion in the agenda for the following WRC,  
*invites the Council*
- to consider the views given in this Resolution,  
*instructs the Director of the Radiocommunication Bureau*
- to make the necessary arrangements to convene meetings of the Conference Preparatory Meeting and to prepare a report to WRC-15,  
*instructs the Secretary-General*
- to communicate this Resolution to international and regional organizations concerned.

**ADD** COM6/409/1 (B22/416/4)

## RESOLUTION [COM6/23] (WRC-07)

### **Radiocommunications use for Earth observation applications**

The World Radiocommunication Conference (Geneva, 2007),

*considering*

- a) that *in situ* and remote Earth observation capabilities depend on the availability of radio frequencies under a number of radio services, allowing for a wide range of passive and active applications on satellite- or ground-based platforms;
- b) that the collection and exchange of Earth observation data are essential for maintaining and improving the accuracy of weather forecasts that contribute to the protection of life, preservation of property and sustainable development throughout the world;

- c) that Earth observation data are also essential for monitoring and predicting climate changes, for disaster prediction, monitoring and mitigation, for increasing the understanding, modelling and verification of all aspects of climate change, and for related policy-making;
- d) that Earth observations are also used to obtain pertinent data regarding natural resources, this being particularly crucial for the benefit of developing countries;
- e) that Earth observations are performed for the benefit of the whole international community and all mankind, are shared among all countries and are generally available at no cost,

*recognizing*

- a) that § 20 c) of the Plan of Action of the World Summit on Information Society (Geneva, 2003), on e-environment, calls for the establishment of monitoring systems, using information and communication technologies (ICT), to forecast and monitor the impact of natural and man-made disasters, particularly in developing countries, least developed countries and small economies;
- b) Resolution 34 (Rev. Doha, 2006) of the World Telecommunication Development Conference, on the role of telecommunications/ICT in early warning and mitigation of disasters and humanitarian assistance;
- c) ITU-D Question 22/2 “Utilization of ICT for disaster management, resources and active and passive space-based sensing systems as they apply to disaster and emergency relief situations”,

*noting*

- a) that Earth observation applications are conducted under the Earth exploration-satellite (active and passive), meteorological satellite, meteorological aids and radiolocation services;
- b) that some essential passive frequency bands are covered by No. **5.340**,

*noting further*

- a) that the importance of Earth observation radiocommunications applications has been stressed by a number of international bodies such as the Group on Earth Observation (GEO), the World Meteorological Organization (WMO) and the Intergovernmental Panel on Climate Change (IPCC) and that collaboration of ITU-R with these bodies could be important;
- b) that, in particular, GEO is leading a worldwide effort to build a Global Earth Observation System of Systems (GEOSS) to provide comprehensive and coordinated Earth observations from thousands of instruments worldwide, transforming the collected data into vital information for society and mankind;
- c) that GEOSS provides a broad range of societal benefits, including disaster management and aspects related to human health, energy, climate, water, weather, ecosystems, agriculture and biodiversity;
- d) that more than 90 per cent of natural disasters are climate- or weather-related;
- e) that some essential passive Earth observation operations currently suffer radio interference resulting in erroneous data or even complete loss of data;
- f) that, although meteorological and Earth observation satellites are currently only operated by a limited number of countries, the data and/or related analyses resulting from their operation are distributed and used globally, in particular by national weather services in developed and developing countries and by climate-change-related organizations,

*resolves to invite ITU-R*

to carry out studies on possible means to improve the recognition of the essential role and global importance of Earth observation radiocommunications applications and the knowledge and understanding of administrations regarding the utilization and benefits of these applications,

*instructs the Director of the Radiocommunication Bureau*

to include the results of these studies in his Report to WRC-11 for the purposes of considering adequate actions in response to *resolves to invite ITU-R* above, noting that neither new allocations nor additional protection would be objectives of such studies,

*invites administrations*

to participate actively in the studies by submitting contributions to ITU-R.

safety. (WRC-07)



# **RECOMMENDATIONS**

RECOMMENDATION 608 (Rev.WRC-07)

**Guidelines for consultation meetings established in  
Resolution 609 (Rev.WRC-07)**

The World Radiocommunication Conference (Geneva, 2007),

*considering*

- a)* that in accordance with the Radio Regulations (RR), the band 960-1 215 MHz is allocated on a primary basis to the aeronautical radionavigation service (ARNS) in all the ITU Regions;
- b)* that WRC-2000 introduced a co-primary allocation for the radionavigation-satellite service (RNSS) in the frequency band 1 164-1 215 MHz (subject to the conditions specified under No. **5.328A**), with a provisional limit on the aggregate power flux-density (pfd) produced by all the space stations within all radionavigation-satellite systems at the Earth's surface of  $-115 \text{ dB(W/m}^2\text{)}$  in any 1 MHz band for all angles of arrival;
- c)* that WRC-03 revised this provisional limit and decided that the level of  $-121.5 \text{ dB(W/m}^2\text{)}$  in any 1 MHz for the aggregate equivalent pfd (epfd) applying for all the space stations within all RNSS systems, taking into account the reference worst-case ARNS system antenna characteristics described in Annex 2 of Recommendation ITU-R M.1642-2, is adequate to ensure the protection of the ARNS in the band 1 164-1 215 MHz;
- d)* that WRC-03 decided that to achieve the objectives in *resolves* 1 and 2 of Resolution **609 (Rev.WRC-07)**, administrations operating or planning to operate RNSS systems will need to agree cooperatively through consultation meetings to achieve the level of protection for ARNS systems, and shall establish mechanisms to ensure that all potential RNSS system operators are given full visibility of the process but that only real systems are taken into account in the calculation of the aggregate epfd,

*recommends*

- 1 that in the implementation of *resolves* 5 of Resolution **609 (Rev.WRC-07)**, in the frequency band 1 164-1 215 MHz, the maximum pfd produced at the surface of the Earth by emissions from a space station in the RNSS, for all angles of arrival, should not exceed  $-129 \text{ dB(W/m}^2\text{)}$  in any 1 MHz band under free space propagation conditions;
- 2 that the RNSS characteristics listed in the Annex 1, used when applying the methodology contained in Recommendation ITU-R M.1642-2, as well as the calculated aggregate epfd in  $\text{dB(W/m}^2\text{)}$  in each 1 MHz in the range 1 164-1 215 MHz, should be made available in electronic format by the consultation meetings.

ANNEX 1 TO RECOMMENDATION 608 (Rev.WRC-07)

**List of RNSS system characteristics and format of the result of the aggregate  
epfd calculation to be provided to the Radiocommunication  
Bureau for publication for information**



SUP COM4/211/4 (B3/224/37) (R2/266/26)

RECOMMENDATION 705

**Criteria to be applied for frequency sharing between the  
broadcasting-satellite service and the terrestrial broadcasting  
service in the band 620-790 MHz<sup>1</sup>**

SUP COM6/390/2

RECOMMENDATION 723 (WRC-03)

**Spectrum usage and operational characteristics  
of electronic news gathering systems**

SUP COM6/338/2 (B12/346/19) (R6/410/82)

RECOMMENDATION 800 (WRC-03)

**Principles for establishing agendas for world  
radiocommunication conferences**

ADD COM4/318/4 (B11/329/44) (R6/410/83)

RECOMMENDATION [COM4/A] (WRC-07)

**Use by civil aviation of frequency allocations on a primary basis  
to the fixed-satellite service**

The World Radiocommunication Conference (Geneva, 2007),

*considering*

- a)* that remote and rural areas often still lack a terrestrial communication infrastructure that meets the evolving requirements of modern civil aviation;
- b)* that the cost of providing and maintaining such an infrastructure could be expensive, particularly in remote regions;
- c)* that satellite communication systems operating in the fixed-satellite service (FSS) may be the only medium to satisfy the requirements of the International Civil Aviation Organization's (ICAO) communication, navigation, surveillance and air traffic management (CNS/ATM) systems, where an adequate terrestrial communication infrastructure is not available;
- d)* that the use of VSAT systems, operating in the FSS and being deployed on a large scale in aeronautical communications, has the potential to significantly enhance communications between air traffic control centres as well as with remote aeronautical stations;

e) that establishing and utilizing satellite communication systems for civil aviation would also bring benefits for developing countries and countries with remote and rural areas by enabling the use of VSAT systems for non-aeronautical communications;

f) that in the cases identified in *considering e)* it is necessary to draw attention to the importance of aeronautical communications as opposed to non-aeronautical communications,

*noting*

a) that the FSS is not a safety service;

b) that Resolution **20 (Rev.WRC-03)** *resolves to instruct the Secretary-General* “to encourage ICAO to continue its assistance to developing countries which are endeavouring to improve their aeronautical telecommunications ...”,

*recommends*

1 that administrations, in particular in developing countries and in countries with remote and rural areas, recognize the importance of VSAT operations to the modernization of civil aviation telecommunications systems and encourage the implementation of VSAT systems that could support both aeronautical and other communication requirements;

2 that administrations in developing countries be encouraged, to the maximum extent possible and as necessary, to expedite the authorization process to enable aeronautical communications using VSAT technology;

3 that arrangements should be made to provide for urgent service restoration or alternative routing in case of a disruption of a VSAT link associated with the aeronautical communications;

4 that administrations implementing VSAT systems in accordance with *recommends* 1 to 3 should do so in satellite networks operating in frequency bands with a primary allocation to the satellite services;

5 to invite ICAO, noting Resolution **20 (Rev.WRC-03)**, to continue its assistance to developing countries to improve their aeronautical telecommunications, including interoperability of VSAT networks, and provide guidance to developing countries on how they could best use VSAT technology for this purpose,

*requests the Secretary-General*

to bring this Recommendation to the attention of ICAO.

RECOMMENDATION [COM4/B] (WRC-07)

**Consideration on the possible use of integrated mobile-satellite service  
and ground component systems in some frequency bands  
identified for the satellite component of International  
Mobile Telecommunications**

The World Radiocommunication Conference (Geneva, 2007),

*considering*

- a) that mobile-satellite service (MSS) systems may provide service to a wide area;
- b) that MSS systems have a limited capacity for providing reliable radiocommunication services in urban areas on account of natural or man-made obstacles and that the ground component of an integrated MSS system can mitigate blockage areas, as well as allow for indoor service coverage;
- c) that MSS systems can improve coverage of rural areas, thus being one element that can bridge the digital divide in terms of geography;
- d) that MSS systems are suitable for public protection and disaster relief communications, as stated in Resolution **646 (WRC-03)**;
- e) that the bands 1 525-1 544 MHz, 1 545-1 559 MHz, 1 610-1 626.5 MHz, 1 626.5-1 645.5 MHz, 1 646.5-1 660.5 MHz and 2 483.5-2 500 MHz are among those identified in Resolution **225 (Rev.WRC-07)** for administrations wishing to implement the satellite component of International Mobile Telecommunications (IMT);
- f) that the bands mentioned in *considering e)* are allocated on a primary basis to the mobile-satellite services and other services and that not all of them are allocated to the mobile service;
- g) that the bands 1 980-2 010 MHz and 2 170-2 200 MHz are identified for use by the satellite component of IMT-2000 in accordance with Resolution **212 (Rev.WRC-07)**;
- h) that within their territories in some or parts of the bands identified in *considering e)* and g) and in parts of the band 2 010-2 025 MHz in some countries in Region 2, some administrations have authorized or plan to authorize MSS system operators to establish an integrated ground component to their MSS systems ("Integrated System") and under certain conditions determined at the national level such as:
  - i) the ground component is complementary to, and operates as an integral part, of the MSS system and, together with the satellite component, provides an integrated service offering;
  - ii) the ground component is controlled by the satellite resource and network management system;
  - iii) the ground component uses the same designated portions of the frequency band as the associated operational MSS system;

i) that ITU-R has performed frequency sharing studies and has determined that the coexistence between independent systems in the MSS and systems in the mobile services in the same spectrum without harmful interference is not feasible in the same or adjacent geographical area,

*recognizing*

a) that ITU-R has not performed studies on sharing, technical or regulatory issues with regard to integrated MSS and ground component systems, but that some administrations have performed such studies;

b) that the radionavigation-satellite service in the 1 559-1 610 MHz band and the radio astronomy service in the bands 1 610.6-1 613.8 MHz and 1 660-1 670 MHz need to be protected from harmful interference;

c) that the MSS needs to be protected from harmful interference that may be caused by the introduction of the ground component of Integrated Systems;

d) that Nos. **5.353A** and **5.357A** are applicable to MSS systems in different portions of the bands 1 525-1 559 MHz and 1 626.5-1 660.5 MHz with respect to the spectrum requirements and prioritization of communications for the Global Maritime Distress and Safety System and the aeronautical mobile-satellite (R) service,

*noting*

a) that the combined wide-area and urban coverage capabilities of Integrated Systems may contribute to meeting the particular needs of developing countries such as is noted in Resolution **212 (Rev.WRC-07)**;

b) that some administrations that are planning to implement or are implementing Integrated Systems within their national territories have imposed limitations, in rules and authorization actions, on the e.i.r.p. density that the ground component of such systems may produce into bands allocated to the radionavigation-satellite service;

c) that there are a limited number of frequency bands allocated to the MSS, that these bands are already congested, and that the introduction of integrated ground components may in some instances make spectrum access for other MSS systems more difficult;

d) that administrations implementing Integrated Systems may provide, in bilateral consultations of administrations, information on system characteristics of the ground component,

*recommends*

to invite ITU-R to conduct studies, as appropriate, taking into account existing systems and those proposed to be used soon and the above *considering, recognizing and noting*,

*invites administrations*

to participate as necessary in the ITU-R studies taking into account *recognizing a*).

RECOMMENDATION [COM4/C] (WRC-07)

**Future IMT systems**

The World Radiocommunication Conference (Geneva, 2007),

*considering*

- a)*            that the future development of IMT is being studied by ITU-R in accordance with Recommendation ITU-R M.1645 and further Recommendations are to be developed for IMT-Advanced;
- b)*            that the future development of IMT is foreseen to address the need for higher data rates than those of currently deployed IMT systems;
- c)*            the need to define the requirements associated with ongoing enhancement of future IMT systems,

*noting*

- a)*            the ongoing relevant studies by ITU-R on IMT-Advanced, in particular the outputs from Question ITU-R 229-1/8;
- b)*            the need to take into consideration requirements of applications of other services,

*recommends*

to invite ITU-R to study as necessary technical, operational and spectrum related issues to meet the objectives of future IMT systems.

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