**Input paper: [[1]](#footnote-1)** ENG17-3.1.2.4

**Input paper for the following Committee(s):** **Purpose of paper:**

(Select as appropriate)

ARM  ENG  PAP  Input

ENAV VTS  Information

**Agenda item** [[2]](#footnote-2)

**Technical domain/ Task number** 2

**Author(s)/Submitter(s)** Stefan Gewies (DLR), Michael Hoppe (WSV), Younghoon HAN, Pyo-Woong Son (KRISO)

Intersessional work on draft of IALA Guideline on Medium Frequency R-Mode signal structure and navigation message[[3]](#footnote-3)

# Summary

## Purpose of the document

This paper provides information about the intersessional work on the “IALA Guideline on Medium Frequency R-Mode Signal Structure and Navigation Message”.

# Background

During ENG16 committee meeting it was decided to take the part of the description of the Medium Frequency (MF) R-Mode signal out from the draft of the “IALA Guideline on Implementation of R-Mode on MF and VHF frequencies” and generate a new R-Mode related Guideline on MF R-Mode signal structure and navigation message. This is beneficial because

* it will make the MF R-Mode standardisation more aligned with the VDES R-Mode standard where the IALA Guideline G1158 [1] describes the R-Mode ranging signal and
* secondly, with the signal related MF R-Mode Guideline it will be easier to start the MF R-Mode standardisation activities at RTCM and ITU-R. Here updates of the RTCM 10403.2 [2] and the ITU-R Recommendation M823-3 [3] are necessary to cover the modification of the maritime radio-beacon transmissions to support the R-Mode service.

# Discussion

During the time between ENG16 and ENG17 the authors have had several online meetings and a presence meeting during the IALA conference 2023. The authors reviewed the initial draft of the Guideline on Medium Frequency R-Mode signal structure and navigation message and identified chapters which required extensive and minor text changes. It was decided to keep the Guideline short and concentrate on the definition of signal and the navigation message. Details of the implementation are omitted because IALA is working at the same time on a Guideline on MF and VHF R-Mode implementation details.

The draft of the MF R-Mode signal Guideline consists of 4 chapters.

* Chapter 1 introduces the topic of the Guideline.
* Chapter 2 gives an overview about the MF R-Mode system and service. It Introduces the overall system architecture and the components of the system and service. Furthermore, the R-Mode System Time (RMST) is introduced as reference frame for all signal transmission.
* Chapter 3 explains in detail the structure of the MF R-Mode signals and its timing.
* Chapter 4 lists the R-Mode RTCM 2.3 navigation messages and explains in detail the different parameters.

The draft needs additional work in section 2.1 chapter 3 and section 4.10.

# References

|  |  |
| --- | --- |
| [1] | IALA, “IALA Guideline G1158 VDES R-Mode,” Edition 1.0, December 2020. |
| [2] | RTCM, “RTCM Standard 10403.2 Differential GNSS services - version 3,” July 2013. |
| [3] | ITU-R, “Recommendation ITU-R M.823-3 - Technical characteristics of differential transmissions for global navigation,” 2006. |

# Action requested of the Committee

The Committee is requested to:

1. Consider the draft of the Guideline on Medium Frequency R-Mode signal structure and navigation message.

1. Input document number, to be assigned by the Committee Secretary [↑](#footnote-ref-1)
2. Leave open if uncertain [↑](#footnote-ref-2)
3. Footer will automatically populate [↑](#footnote-ref-3)