Liaison Note to ITU

Technical and Editorial clarifications

**ITU-R M.1176-1**

# Background

The IALA e-Navigation Committee reviewed the proposed changes to ITU-R M.1176-1, Technical parameters of radar target enhancers. The review resulted in a number of technical comments which are described below.

# General Comments

1. Noting that the active target enhancer consists of ‘a broadband radio-frequency amplifier, receive and transmit antennas’.
2. The proposed Gain figures should include consideration of the target enhancer corrupting the frequency coding of a new technology radar which incorporates pulse compression techniques.

It is possible that the amplified and returned signalwill introduce corruption of the signal received from the radar which in turn will not provide the expected compression gain within the radar receiver.

1. To control the level of corruption to a coded pulse compression radar signal, a phase slope error across the typical radar chirp bandwidth (up to 1 Radian phase slope over any 50MHz region within the total bandwidth at both X band and S band, is suggested).
2. The proposed gain figures should more specifically reflect actual input and output levels so that new technology radars which have much lower peak transmit signal amplitude are still able to “trigger” the target enhancer at the expected ranges from the radar.

In addition the dynamic range of the target enhancer receiver and transmitter will limit its ability to achieve the gain expected with all radar types now employed (magnetron, pulse compression and FMCW).

1. The parameters should include consideration of the level of noise being output by the target enhancer when it is not actively amplifying a received radar signal.

This noise output will act as a continuous background jamming source to all radars in the vicinity of the target enhancer.

1. To verify existing designs, it is recommended that tests are arranged with current generation new technology radars and current generation target enhancers to assess the performance of the enhancers with respect to the above comments.