



**INFORMATION PAPER**

**FREQUENCY SPECTRUM MANAGEMENT PANEL (FSMP)**

**Sixteenth Working Group meeting**

**Bangkok, Thailand, 15 – 24 February 2023**

**Agenda Item 4: Radio Altimeter issues – FSMP.006.02**

**c) Development of SARPS material for Annex 10, Vol. V**

**FUTURE RADIO ALTIMETER STANDARDS – FAA STATUS**

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**SUMMARY**

The FAA looks forward to issuing new Technical Standard Orders for radio altimetry equipment when the standards at RTCA and EUROCAE are complete. These new standards are expected to be of interest to the Panel when developing proposed amendments for Annex 10.

**1. INTRODUCTION**

1.1 States are modifying spectrum use for frequencies close to the radio/radar altimeter frequencies. In parallel, RTCA and EUROCAE are working on new Minimum Operational Performance Standards (MOPS) for the altimeters. The task of the committee developing these standards is “to enable the efficient use of near-band spectrum by setting a standard for new radar altimeters that provide state-of-the-art near-band rejection while maintaining the current intended functions of the radar altimeters.”<sup>i</sup> These standards are also expected to embrace “modernized” avionics requirements and test methods consistent with current best practices.

**2. DISCUSSION**

2.1 The Federal Aviation Administration (FAA) intends to use the new altimeter standards (MOPS) in Technical Standard Orders (TSOs) for airborne equipment. Multiple configurations of equipment are envisioned. The standards are expected to support TSO authorizations for transceivers as well as antennas, providing a performance characterization of the entire radio altimeter system.

2.2 The TSOs are intended to support equipment operating globally. RTCA/EUROCAE are currently finalizing an interim document (DO-399, Guidance Document on Radar Altimeter RF Interference Rejection and Tolerance) that provides estimates from multiple manufacturers of so-called achievable radio frequency interference rejection and tolerance. The document contains an appendix that summarizes the known technical characteristics of new terrestrial systems in all regions of the world for operations near radio altimeter band. Such information, essentially defining the new spectrum environment, is a critical input to the development of avionics standards and future compatibility assessments.

2.3 One factor that can be considered a “minimum” threshold for success of the new TSOs would be that they support all current uses of altimetry in the new spectrum environment. It is well known that multiple aircraft flight and safety systems use radio altimeter inputs, in addition to the flight crew’s direct use of the sensor outputs. Spectral compatibility at the *altimetry equipment level* would support maintaining the current designs of these aircraft systems, the existing crew operational procedures and the existing crew training procedures.

2.4 In the meantime, the FAA, and indeed other civil aviation authorities, must evaluate changes to the spectrum environment current radio altimeters will be operating within around the globe. If that environment changes such that existing radio altimeter equipment can no longer reliably perform its intended function, the aircraft certification state of design should address this risk through continued airworthiness and continued operational safety processes. This may include specifying guidance or mandating operational or equipment requirements. States are encouraged to coordinate changes to spectrum environments with the states of design for aircraft operating in their airspace.

### 3. CONCLUSION

3.1 The new standards for altimeters are expected to be of interest to the Panel when developing proposed amendments for Annex 10, particularly those standards related to spectrum compatibility.

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<sup>i</sup> RTCA SC-239 Terms of Reference, 15 December 2022. The MOPS is being developed jointly by RTCA Special Committee 239 and EUROCAE Working Group 119.