



3 bis villa Emile Bergerat, 92522 Neuilly-sur-Seine Cedex, France

When replying please quote

Reference : EUR/NAT 18-0599.TEC (FIC/HOI)

10 December 2018

Subject : **CEPT Radio Spectrum Sharing Considerations for PMSE in the Band 960-1164 MHz used by Aeronautical Safety Systems**

Action

required : *Please refer to paragraphs 4 and 5*

Dear Madam/Sir,

1. I wish to provide you information on radio regulatory and technical studies conducted within Electronics Communications Committee (ECC) of the European Conference of Postal and Telecommunications Administrations (CEPT) aiming towards the use of the band 960-1164 MHz by programme making and special events (PMSE) radio equipment.

2. The intention of CEPT to conclude on the subject and adopt an ECC Report with a revised timetable that has the draft elements needing to be complete in the first half of the year 2019 is of concern and prompted the writing of this letter.

3. Potential harmful interference to navigation and surveillance systems, as well as future communication systems, stemming from PMSE is of concern. As of today, the CEPT study on interference effects of PMSE into aeronautical safety services is considered inadequate and therefore unlikely to be suitable for the development of regulatory provisions, including safety assessments, on the subject.

4. In light of the above and since the CEPT indicated to conclude on the subject with potential negative consequences for aeronautical safety services in the band 960 – 1164 MHz, I wish to invite you to coordinate with your State representation at the CEPT to ensure that the aeronautical concerns are duly considered, in line with ICAO's position, promulgated through EUR/NAT State Letter 17-0335. **Appendix A** provides information to support you in this action.

5. The progression of the subject, within the tight timelines given, requires quick and efficient response. Should you have further questions or comments, please do not hesitate to contact Mr Celso Figueiredo, Secretary of the FMG at cfigueiredo@paris.icao.int and icaournat@paris.icao.int.

Yours faithfully,

Luis Fonseca de Almeida
ICAO Regional Director
Europe and North Atlantic

Enclosure: 1

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Appendix A

Background

The band 960–1215 MHz is a prime radionavigation band used intensively, and extensively, to support a number of aeronautical safety systems, for both civil and military purposes. Navigation and surveillance systems, as well as upcoming communications systems, will continue to intensively exploit the band. This is especially true for the ICAO European region taking into account technological developments and changing operational requirements on the utilization of these systems.

The ICAO Frequency Management Group (FMG) is responsible to pursue tasks in the field of aeronautical frequency spectrum management in support to ICAO Strategic Objectives in the European region. The activities include identifying any deficiencies in the aeronautical frequency spectrum management related matters and ensuring the development and implementation of relevant action plans by the States to resolve them.

Potential harmful interference to navigation and surveillance systems, as well as future communication systems, stemming from PMSE is of concern. Please refer also to earlier correspondence on the subject, EUR/NAT State Letter 17-0335 dated 12 June 2017.

DME-related Considerations

DME is the ICAO standard system for the determination of the distance between an aircraft and a ground-based DME beacon within radio line of sight supporting both conventional and performance-based navigation in en-route and terminal airspace.

Unavailability of navigation aids due to interference have a direct impact on flight operation with subsequent airspace capacity and potential safety implications. Since the radio horizon distance of an aircraft in flight is significant, the localisation and elimination of an interference sources is very time consuming, if feasible at all.

SSR, Mode-S, WAM, ADS-B, ACAS and UAT related issues

Secondary surveillance radar (SSR), Mode-S, automatic dependent surveillance — broadcast (ADS-B, both at 1090 and 978 MHz) are ICAO standard cooperative surveillance systems used to detect aircraft, measure position and receive information from aircraft. The airborne collision avoidance system (ACAS) is essential to improve safety by acting a last-resort method of preventing mid-air collisions or near-collisions between aircraft.

The appropriate protection of the two sub-bands around 1030 and 1090 MHz as well as that for the Universal Access Transceiver (UAT) around 978 MHz from harmful interference is of paramount importance. Potential harmful interference to such systems stemming from low power audio PMSE with the potential to impact their proper functioning is also of concern.

Harmful interference into those frequencies may impact the surveillance capabilities and therefore have a direct impact on flight operation with subsequent airspace capacity and potential safety implications.

LDACS

Also, the band has been identified for use by L-DACS (L band Digital Aeronautical Communication System). While not currently operational, standardisation work is underway in ICAO. At working group level, mature draft Standards and Recommended Practices (SARPs) have been agreed in October 2018. The system is expected to be introduced in the mid-2020s.

Sharing Studies and Safety Assessment

ICAO Contracting States shall ensure that the level of air traffic services (ATS) and communications, navigation and surveillance, as well as the ATS procedures applicable to the airspace or aerodrome concerned, are appropriate and adequate for maintaining an acceptable level of safety in the provision of ATS.

In order to ensure that the established level of safety applicable to the provision of ATS within an airspace or at an aerodrome is met, inter alia, safety assessments need to be performed.

The FMG noted that the compatibility studies prepared in response to work item SE7_28 (Low power audio PMSE in the aeronautical frequency band 960-1164MHz) cannot be considered conclusive since for a range of topics such as input parameters, coexistence scenarios, propagation models, safety margin and trials no common views are anticipated to be reached. Hence such study is unlikely to be considered adequate for the development of regulatory provisions, including safety assessments, on the subject at national level.

In addition, there would also be concern should interference be experienced by PMSE equipment as a result of aeronautical operations in this band which may not have fully considered in CEPT's compatibility studies.

Aviation Safety Factor

Aeronautical safety applications are required to have continued operation through worst case interference, so all factors which contribute to harmful interference should be considered in analyses. An aviation safety margin is included in order to address the risk that some such factors cannot be foreseen (for example impacts of differing modulation schemes). This margin is applied to the system protection criteria to increase the operational assurances to the required level. Until established on the basis of agreed studies on a case-by-case basis, an aviation safety margin of not less than 6 dB should be applied.

The FMG re-iterated the need to consider worst case scenarios in such compatibility studies in order to guarantee a high level of safety and continuity of service.

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