



INTERNATIONAL CIVIL AVIATION ORGANIZATION

Seventh Meeting of the APIRG Infrastructure and Information Management Sub-Group (IIM/SG7)*Dakar, Senegal, 5 - 8 August 2024***Agenda Item 3: Achievements in Infrastructure and Information Management****3.3: Progress in Implementation of APIRG IIM Projects.****WP3.3H Progress of the Aeronautical Frequency Management Project- SPEC Project***(Presented by Coordinator SPEC Project)***SUMMARY**

This working paper presents the SPEC project's activities on the development of policies, and systems to protect Aeronautical Spectrum. The SPECs project is one of the projects identified within the Infrastructure and Information Management (IIM) subgroup of APIRG. This project aims at ensuring the Aeronautical frequency spectrum is free from harmful and any form of interference.

Action by the meeting in paragraph 3

REFERENCE(S):

- Annex 10 – Aeronautical Telecommunications
- Doc 9718 – Handbook on Radio Frequency Spectrum Requirements for Civil Aviation.
- Doc 9750 – Global Air Navigation Plan
- Report of the 5th and 6th meeting of APIRG IIM Subgroup.
- Terms of Reference for APRIG IIM Subgroup.

Related ICAO's Strategic Objectives: *A – Safety, and B – Air Navigation Capacity and Efficiency.*

1. INTRODUCTION

- 1.1 The 21st APIRG meeting held in Nairobi in October 2017 approved the SPEC project following development and endorsement by the 1st IIM meeting and the APIRG Projects Coordination Committee (APCC) in line with the regional priorities and targets related to ICAO ASBU priorities for the AFI region.
- 1.2 Aviation frequency Spectrum protection has been a subject of interest both within the industry and outside the sector as frequency allotment needs for the limited frequency Spectrum available across all areas including aviation have drastically increased due to technological innovation and evolution. New technologies have put a serious strain on the frequency spectrum, of which the utilization within the aviation sector covers the safety of life services that require protection from harmful interference.

- 1.3 In the framework of the International Telecommunication Union (ITU) which is mandated with the responsibility of managing the frequency spectrum; initiatives are proposed for the sharing of frequencies across various industries to cope with the frequency demand.
- 1.4 It is therefore imperative that the aviation industry through the International Civil Aviation Organization continues to develop /improve on the policies and systems to ensure the protection of aviation frequencies and bands for improved safety of aircraft operation.

2. DISCUSSIONS

- 2.1 The IIM Aeronautical Frequency Management Project was established by the APIRG IIM subgroup meeting with the aim of developing policies and systems to protect the aeronautical spectrum. The project's expected deliverables were tied to ensuring that the regional aeronautical frequency bands are free from harmful interference and any form of interference.

Objectives

- 2.2 The key objectives of the project, as outlined in the draft project description of the project initiation documentation, are
 - a) to develop a resilient framework for the coordination of Aeronautical frequencies in the region.
 - b) Establish a forum and logical infrastructure to coordinate aeronautical frequencies with State regulators and sub-regional, and Regional frequency management bodies.
 - c) Establish a forum and logical infrastructure to coordinate aeronautical frequencies with State regulators and sub-regional, and Regional frequency management bodies.
 - d) To ensure States are conversant with ICAO tools on frequency management.
 - e) Establish a forum for coordination and support of ICAO positions for the forthcoming World Radio Conferences (WRC).
 - f) Undertake studies on the effect of possible interferences to aeronautical frequency bands from adjacent bands.

Project scope

- 2.3 The project is focused on maintaining, identifying, and protecting all Aeronautical frequency bands and any other frequencies key to the safe and secure operations of all aeronautical telecommunication and avionics facilities and systems in line with ICAO's long-term vision to ensure continuity and harmonization of international civil aviation.

Key Achievements and activities of the spectrum project to date

- 2.4 Revision of Project Documentation: Two major tasks were considered in this major milestone, and this included the alignment of the project to the latest edition of the Global Air Navigation Plan (GANP). This was achieved and the project documentation were submitted to the ICAO secretariat after alignment to the 6th edition of the GANP.
- 2.5 The second major task was the inclusion of 5G issues affecting radio altimeters to the project scope which called for revision of the project description documentation. This activity necessitates outputs that are geared at providing necessary information and sensitization to the member states on the criticality of implementation of 5G in the adjacent bands to the band used for radio altimeters.
- 2.6 Development of MOU template between CAAs and Frequency Regulators : The major task in this deliverable was to develop a memorandum of understanding template taking into consideration the States structures on frequency management policies and procedures to ensure proper coordination between entities responsible for frequency management and the Civil

Aviation entity. The main purpose is to ensure proper separation criteria are considered especially where the safety of life services in the aviation industry are adjacent to other operational requirements such as telecommunication needs.

- 2.7 Conducting workshops on ICAO 9718 and the ICAO frequency finder tool : This deliverable is aimed at ensuring AFI member states attain the necessary knowledge and skills to assign aviation frequencies in the various bands of aviation in a coordinated manner to avoid and prevent cross-border and domestic interferences of critical operations. Major interference challenges have been observed in the areas of VHF operation which affects the industry's air traffic control (ATC) operations. Understanding the separation criteria and utilization of the frequency finder tool hosted at the two regional offices would facilitate the elimination of interference challenges in the region.
- 2.8 Studies and engagements carried out on the requirement for Aeronautical frequency bands and their guard bands for safe utilization. One of the areas identified for study within this deliverable is the effect of 5G operations in the adjacent bands of aeronautical bands. The operation of radio altimeters in the frequency band 4.2 to 4.4 GHz is adjacent to the band identified for the operation of 5G by many telecoms. Identification of appropriate mitigation such as limiting the power of the 5 G transmitters, establishing significant separation distances between these transmitters to aircraft, and implementing appropriate band separation criteria on top of regulatory needs need to be considered for the protection of radio altimeters. Various cases of interference have been identified in other regions therefore a need for caution in the AFI region too. The project is in the phase of review of scenarios where 5G has affected radio altimeters.

Project Costing

- 2.9 The Spectrum project costing has been developed and adopted by the Spectrum project team at the meeting held in July 2023 and submitted to the secretariat for consideration.

3. ACTIONS BY THE MEETING

- 3.1 The meeting is invited to:
- a) Note the content of this working paper
 - b) Request States/ Organizations to actively participate in the project through their nominated representatives.

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