



International Civil Aviation Organization

FSMP-WG/18-WP/24

WORKING PAPER

**FREQUENCY SPECTRUM MANAGEMENT PANEL
WORKING GROUP**

EIGHTEENTH MEETING

6 to 16 February 2024

Agenda Item :

**ICCAIA Recommendations in Developing the ICAO Positions for the 2027 World
Radiocommunication Conference**

(Presented by Joe Cramer)

SUMMARY

This paper reviews the agenda for the International Telecommunication Union (ITU) 2027 World Radiocommunication Conference (WRC-27), and provides text that can be used in the writing and development of ICAO's positions for WRC-27.

ICCAIA represents hundreds of aerospace and aviation companies located throughout the world. ICCAIA's goal is to ensure the protection of radio frequency spectrum assets while enabling the advancement of aerospace and aviation sciences, services and systems, such as those conducting communications, navigation and surveillance functions, and others that require access to radio frequency spectrum.

1. INTRODUCTION

1.1 ICCAIA submits this document to assist the ICAO Frequency Spectrum Management Panel in its development of the ICAO Position on Issues of Interest to International Civil Aviation to be addressed at the 2027 ITU World Radiocommunication Conference (WRC-27). ICCAIA does not provide input on every WRC-27 agenda item at this time. The ICCAIA input considers the complex political, regulatory and technical dynamics involved in changing the international radio regulations, and as the organization representing aerospace industry associations all over the world, ICCAIA's recommendations should be considered a valuable tool in the development of the ICAO position and seen as a critical component in advancing ICAO's position throughout the world. ICCAIA looks forward to working with all FSMP Panel Members in developing the ICAO position on the topics discussed below.

1.2 ICAO State Letter E 3/5-23/60, Attachment B provides the ICAO Position to the 2023 World Radiocommunication Conference. This document uses the format provided in Attachment B to assist in writing ICAO's position for WRC-27. Also provided for information is the ITU Radiocommunication Sector (ITU-R) Document providing the preliminary allocation of ITU-R preparatory work for WRC-27 as agreed at first WRC-27 Conference Preparatory Meeting, provided in Appendix B.

2.0 DISCUSSION

2.1 IMPORTANCE OF SPECTRUM TO CIVIL AVIATION

2.1.1 The safety of air operations is dependent on the availability of reliable communications, navigation and surveillance (CNS) services. Current and future CNS/air traffic management (CNS/ATM) systems are highly dependent upon the availability of sufficient radio spectrum that can support the high integrity and availability requirements associated with aeronautical safety systems used to safely transport people across the globe.

2.1.2 In support of the critical public safety benefits provided by access to protected radio frequency spectrum by aviation:

a) Article 40 of the ITU Constitution states, "international telecommunication services must give absolute priority to all telecommunications concerning safety of life at sea, on land, in the air or in outer space, as well as to epidemiological telecommunications of exceptional urgency of the World Health Organization"; and

b) Article 4.10 of the ITU Radio Regulations states, "ITU Member States recognize that the safety aspects of radionavigation and other safety services require special measures to ensure their freedom from harmful interference; it is necessary therefore to take this factor into account in the assignment and use of frequencies."

Taking into consideration the above international treaty provisions, aeronautical systems utilizing safety services must not be negatively impacted when decisions are made to allow radio frequency access to other users in the same or adjacent radio frequency band. This is especially important because public safety could be impacted if aeronautical systems cannot operate as designed and intended.

2.1.3 It is important that member states recognize ICAO's and ICCAIA's primary purpose when using radio frequency spectrum for aviation operations, to protect public safety.

2. ACTION BY THE MEETING

The FSMP is invited to

Consider ICCAIA's recommended ICAO positions for WRC-27 as provided in Appendix A

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to consider studies on sharing and compatibility and develop technical conditions for the use of International Mobile Telecommunications (IMT) in the frequency bands 4 400-4 800 MHz, 7 125-8 400 MHz (or parts thereof), and 14.8-15.35 GHz taking into account existing primary services operating in these, and adjacent, frequency bands, in accordance with Resolution COM6/26 (WRC-23).

Discussion:

This agenda item seeks to permit current and future terrestrial cellular communications to operate in the frequency bands; 4400-4800 MHz, 7125-8400 MHz (or parts thereof) and 14.8-15.35 GHz.

There are two *resolves* associated with this agenda item. Resolves 1 references the possible use of the terrestrial component of “IMT,” which is the designation provided to use of the Mobile Service for cellular systems. Of interest are the geographical limitations in terms of world regions where certain frequency bands would be used. These are provided in the invites the 2027 World Radiocommunication Conference “to consider, based on results of studies, the identification of frequency band(s):

- 4 400-4 800 MHz, or parts thereof, in Region 1 and Region 3;
- 7 125-8 400 MHz, or parts thereof, in Region 2 and Region 3;
- 7 125-7 250 MHz and 7 750-8 400 MHz, or parts thereof, in Region 1;
- 14.8-15.35 GHz.

These regional restrictions do not provide any mitigations for civil aviation because aircraft systems must operate safely in every country. As a result, an aircraft system used to protect public safety must be able to operate under the most challenging and difficult radio frequency interference environment.

Of particular concern regarding the push by IMT proponents is the fact that the aviation industry is working to update standards for radio altimeters that operate in the frequency band 4200-4400 MHz. Aviation standards are being updated to address IMT interference scenarios based on high powered terrestrial cellular systems operating below this frequency band. The new IMT proposal for WRC-27 targets the bands immediately above the radio altimeter band.

In addition, according to the ICAO Spectrum Handbook, the radio frequency band 15.4–15.7 GHz is used for ground-based primary surveillance radar systems including precision approach radar (PAR) and airport surveillance detection equipment (ASDE). The main purpose of these systems is to provide surveillance to support precision approach to aircraft and to detect traffic at airports. These functions are critical to maintaining public and aircraft safety. The 15.5-15.7 GHz frequency band is also used by airborne weather and ground mapping radar. These systems support the safe passage of an aircraft in turbulent weather conditions and provide timely warnings of rapidly changing weather conditions as an aid to in-flight planning and situational awareness.

Because of the potential to impact public and aviation safety, it is critical for the ITU to understand that a frequency separation of 50 MHz could require additional studies.

ICAO Position:

To oppose any frequency allocation for the terrestrial component of IMT that could impact public and aviation safety, particularly current and future radio altimeter systems operating in the frequency band 4200-4400 MHz, as well as ground-based air traffic monitoring systems and airborne weather radars operating in the frequency band 15.4-15.7 GHz.

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to consider possible primary allocations in all Regions to the Earth exploration-satellite service (passive) in the frequency bands 4 200-4 400 MHz and 8 400-8 500 MHz, in accordance with Resolution COM4/8 (WRC-23).

Discussion:

This agenda item seeks to study and consider a new primary allocation in all Regions to the EESS (passive) in the frequency bands 4200-4400 MHz and 8400-8500 MHz, without protection from existing services in these frequency bands and in adjacent bands.

The radio frequency band 4200-4400 MHz is used extensively for airborne radio altimeters which provide height above terrain information used by several aircraft safety systems, such as automated landing and ground proximity warning systems. Radio altimeters measure an aircraft's absolute height above the terrain below the aircraft.

In addition, the aeronautical mobile (route) service allocation in the frequency band 4200-4400 MHz is utilized for wireless avionics intra-communications (WAIC) systems. These systems will be used in aircraft to wirelessly connect and send information for safety-related systems and sensors wholly onboard a single aircraft.

Because radio altimeter and WAIC systems are undergoing standards development, it is critical that civil aviation's use and upgrading of these systems not be impacted by any new services in the 4200-4400 MHz band. An important component of protecting these systems is the need to have compatible systems and services that can support aviation's efforts to protect the 4200-4400 MHz band. The EESS service could be very helpful given the very low interference tolerance of the passive service.

Therefore, if proponents of the EESS new allocation will accept restrictions on their system to accept any interference from current or new systems operating in the ARNS or AM(R)S services, then aviation can support.

ICAO Position:

To support a frequency allocation to the Earth Exploration Satellite Service (EESS) if regulatory protections contained or referenced in Article 5 of the ITU-R Radio Regulations explicitly state the EESS service will accept all interference from the ARNS and AM(R)S services.

The new EESS allocation cannot restrict or claim protection from current and future use of the aeronautical radionavigation service or aeronautical mobile (route) service.