ICCAIA
International Coordinating Council of Aerospace Industries Associations

ICCAIA's summary of the action points for WRC27 regarding aviation spectrum

1. **Aviation safety depends on protected spectrum:**
   Aeronautical radio services are recognized internationally to be prime users of radio frequencies without which aircraft operation would not be capable of meeting the global demand for safe, efficient and cost-effective air transport. Aviation communications, navigation and surveillance systems are safety-critical and must be protected from interference at all times. CNS/ATM systems are critically dependent on sufficient and well protected radio frequency spectrum. Insufficient access to spectrum for key CNS systems will lead to less efficient and less safe air-routing. Harmful interference to those systems can mislead pilots, disrupt landing systems and affect situational awareness, potentially with catastrophic consequences.

2. **Spectrum is under increasing pressure:**
   Airspace management is becoming more complex and the demand for frequency assignments is increasing. While some of this demand may be met through improved spectral efficiency of existing radio systems in frequency bands currently allocated to aeronautical services, it is inevitable that additional aviation spectrum allocations need to be agreed upon to meet this demand and accommodate new use-cases. Furthermore, growing demand for spectrum and increasing competition from other services such as commercial telecommunications services creates pressure on aviation spectrum allocations. Spectrum sharing creates risk for aviation safety, and caution must be taken with technologies like 5/6G because of the potential for interference with critical instruments such as aircraft radio altimeters. In addition, aviation systems stay in use for 20-30 years and can not adapt as fast as spectrum demand changes.

3. **Aviation representation at the conference:**
   It is critical that aviation is strongly represented and the above points are raised at the World Radiocommunication Conference 2027 (WRC-27). The following agenda items will be important.

a. <u>Agenda item 1.7:</u>

The radio altimeter (RA) is an onboard aircraft sensor that is the only means to provide a direct measurement of the aircraft's actual height above ground, which is especially safety-critical during low-altitude operations such as approach and landing and during off nominal conditions, e.g. when severe weather (microbursts, windshear, or engine-out conditions) cause the aircraft to deviate from their nominal flight path. RA operates in the frequency band 4200-4400 MHz and International Mobile Telecommunications (IMT) is being considered for, amongst other bands, the frequency band just above the RA, at 4400-4800 MHz. If strong ground-based mobile signals affect the RA, this could cause the aircraft to receive unreliable height information at safety-critical moments. Without sufficient mitigation measures, this could result in serious degradation of the function of the RA. Therefore, the RA must be protected, and any new identification for IMT in the frequency band 4400-4800 MHz that would reduce the protection of or impose additional regulatory or technical constraints on the RAs operating in the 4 200–4 400 MHz band should be opposed.

b. Agenda item 1.19:

Possible new primary allocation of the Earth exploration-satellite service (passive) in the frequency bands 4200-4400 MHz without protection from the existing services in these frequency bands and adjacent bands. Sea surface temperature measurement systems provide data for weather models that help predict significant meteorological events such as hurricanes and storms. The frequency band is used by RA and the Wireless Avionics Intra-Communications (WAIC). WAIC systems provide safety related wireless communication between two points onboard a single aircraft, for example to provide sensor information used to monitor the health of an aircraft structure and critical systems, and to communicate this to a central onboard entity. It needs to be ensured that changes will not impose any technical, regulatory or operational constraints on RA or WAIC in the frequency band, while still recognizing the benefit for civil aviation by providing sea surface temperature measurements for weather forecasting.

c. Agenda item 1.13:

Possible allocation of the frequency band 694-2700 MHz for the mobile-satellite service (MSS) for direct connectivity between space stations and IMT user equipment. A number of key aeronautical safety systems operate in or adjacent to the frequency range 694-2700 MHz and all of these systems will have to be taken into account, as the satellite transmission may change the radio frequency coexistence environment for aviation

systems. For example, the Airborne Collision Avoidance System (ACAS) operates within the frequency band 960-1164 MHz, which is within the frequency range and serves as a last resort safety net. Therefore, any new allocations that overlap with the frequencies used by civil aviation systems operating in parts of the frequency range should be opposed. It is imperative to ensure that any actions under this agenda item do not reduce the protection of, or impose additional regulatory or technical constraints on, civil aviation systems and radar systems operating within or adjacent bands to the 694–2 700 MHz frequency range.

d. Agenda item 9.1

This agenda item could serve as a basis for establishing a WRC-31 agenda item to assess whether sufficient AMS(R)S spectrum has been identified for beyond line of sight command and control (C2) Links for Remotely Piloted Aircraft Systems (RPAS). In light of the ICAO Annex 10, Volume VI provisions (published in July 2021) and forthcoming amendments, the studies under this item (Agenda item 9.1 of WRC-27) particularly the identification of suitable AMS(R)S frequency bands for C2 Links are considered urgent and critical to ensuring the safe operation of remotely piloted aircraft in non-segregated airspace.

e. Agenda item 10 (2.9):

Possible allocations to the radionavigation-satellite service (RNSS, space-to-Earth) in the frequency bands 5030-5150 MHz and 5150-5250 MHz (the frequency band is yet to be agreed on) or parts thereof at the coming WRC in 2031. The frequency band 5000-5150 MHz [1]has strong importance for aviation. The band is used for Remotely Piloted Aircraft Systems (RPAS) C2 Links that support communications, navigation and surveillance functionalities of RPAS for aeronautical mobile service that facilitates ground communications in airport areas and is also used for aeronautical mobile telemetry (wireless transmission of flight test data from aircraft to ground stations to monitor safety and performance). Experience on other RNSS frequency bands has highlighted increasing intentional interference by jammers and spoofers and this interference would have consequential impact on aeronautical systems. Therefore, it

[1] For terrestrial (non-satellite comms), the frequency band 5030-5091 MHz is for A/G C2-link. The frequency band 5091-5150 MHz can only be used on the ground, e.g. AeroMACS (ITU Resolution 748 applies). For satellite comms, the frequency band 5000-5150 MHz can be applied with restrictions (5.11A, 5.21A).

must be opposed to include this agenda item in the agenda for the WRC in 2031 because of the interference risk to aviation safety systems operating in the same frequency band.

4. **Strong international coordination and support for ICAO is essential:**
   Member States and International Organizations are urged to actively support ICAO's spectrum strategy and position at the World Radiocommunication Conference (WRC) in 2027. Active support from states and organizations is the only way to ensure that the results of the WRC in 2027 reflect civil aviation's continued need for protected radio frequency spectrum.