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| **World Radiocommunication Conference (WRC-15) Geneva, 2–27 November 2015** |  |
| **INTERNATIONAL TELECOMMUNICATION UNION** |  |
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| **PLENARY MEETING** | **Addendum 17 to Document 9-E** |
|  | **24 June 2015** |
|  | **Original: English** |
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| European Common Proposals | |
| Proposals for the work of the conference | |
|  | |
| Agenda item 1.17 | |

1.17 to consider possible spectrum requirements and regulatory actions, including appropriate aeronautical allocations, to support wireless avionics intra-communications (WAIC), in accordance withResolution **423 (WRC‑12)**;

Introduction

This agenda item considers the spectrum requirements and regulatory actions to support wireless avionics intra-communications (WAIC). WAIC systems make use of radiocommunications between two or more stations on board a single aircraft; consisting of on-board networks supporting the safe operation of the aircraft. WAIC systems transmissions are not limited to the interior of the aircraft structure. For example, sensors mounted on the wings or engines could communicate with systems located within the airplane.

The civil aviation industry is continually developing future generations of aircraft. Each subsequent generation is designed to enhance efficiency and reliability while maintaining current required levels of safety. WAIC systems will be used for safety-related aircraft applications, providing communications within a single aircraft, WAIC systems do not provide communications between an aircraft and the ground, another aircraft or a satellite. WAIC systems offer the opportunity for lower cost of operations and environmental benefits.

A major application field for WAIC systems is wireless sensing. It is expected that future and even existing aircraft will be equipped with wireless sensors of all kinds. These sensors will be located at various points of the aircraft and will be used to wirelessly monitor the health of the aircraft structure and all of its critical systems, and to communicate this information within the aircraft to a central on-board entity. WAIC systems are intended to support data, voice and safety related video surveillance applications such as taxiing cameras and may also include communication systems used by the crew for safe operation of the aircraft.

Report ITU-R M.2283 – Technical characteristics and spectrum requirements of wireless avionics intra-communications systems to support their safe operation – provides the analysis for determining the amount of frequency spectrum required for the operation of WAIC systems as required by Resolution 423 (WRC-12) and in response to WRC-12 agenda item 1.17. According to this analysis 145 MHz of spectrum is necessary to satisfy the spectrum requirements for WAIC systems. Europe supports the spectrum requirements of 145 MHz. Europe is further of the view that the AM(R)S is the appropriate radiocommunication service for WAIC systems.

Report ITU-R M.2318 contains an initial assessment of frequency bands between 960 MHz and 15.7 GHz considered under 2015 World Radiocommunication Conference (WRC-15) agenda item 1.17 and a summary of detailed studies undertaken for those frequency bands which were assessed.

In accordance with Resolution 423 (WRC-12) the assessment considers all aeronautical mobile, aeronautical mobile (route) and aeronautical radionavigation service allocations in the frequency range 960 MHz-15.7 GHz.

Out of the frequency bands assessed, the frequency bands 2 700-2 900 MHz, 4 200-4 400 MHz and 5 350-5 460 MHz were considered as suitable for further detailed sharing studies mainly because of their bandwidth and of the preferred frequency range below 6 GHz. The other frequency bands are not taken into further consideration.

In the studies for the frequency bands 2 700-2 900 MHz and 5 350-5 460 MHz, WAIC systems were found to be incompatible with incumbent systems.

The analysis of the frequency band 4 200-4 400 MHz, provided in the Report ITU-R M.2319, shows that sharing between WAIC systems and the incumbent services and applications is feasible in this band.

Europe proposes to allocate the frequency band 4 200-4 400 MHz to the AM(R)S, reserved exclusively to the use by WAIC systems to satisfy the agenda item, along with consequential regulatory and technical considerations to protect the existing services.

ARTICLE 5

Frequency allocations

Section IV – Table of Frequency Allocations  
(See No. 2.1)

MOD EUR/9A17/1

2 700-4 800 MHz

|  |  |  |
| --- | --- | --- |
| Allocation to services | | |
| Region 1 | Region 2 | Region 3 |
| 4 200-4 400 AERONAUTICAL RADIONAVIGATION MOD 5.438  AERONAUTICAL MOBILE (R) ADD 5.A117  5.439 5.440 ADD 5.B117 | | |

**Reasons:** The modification provides the required frequency spectrum and the regulatory framework to support wireless avionics intra- communications (WAIC) in accordance with Resolution 423 (WRC-12).

MOD EUR/9A17/2

5.438 Use of the band 4 200-4 400 MHz by the aeronautical radionavigation service is reserved exclusively for radio altimeters installed on board aircraft and for the associated transponders on the ground.     (WRC‑15)

**Reasons:** With a new primary allocation in this band it is proposed to modify this footnote and transfer the deleted text to a new footnote (5.B117).

ADD EUR/9A17/3

5.A117 Use of the frequency band 4 200-4 400 MHz by the aeronautical mobile (R) service is reserved exclusively for wireless avionics intra-communications systems that operate in accordance with recognized international aeronautical standards. Such use shall be in accordance with Resolution **[EUR-A117-WAIC] (WRC‑15)**.     (WRC‑15)

**Reasons:** Compatibility with existing radio altimeters is limited to WAIC systems as described in Report ITU-R M.2283.

ADD EUR/9A17/4

5.B117 Passive sensing in the Earth exploration-satellite and space research services may be authorized in this band on a secondary basis.     (WRC‑15)

**Reasons:** To avoid any ambiguity on the relevance of the footnote text regarding the existing ARNS and newly proposed AM(R)S allocations.

SUP EUR/9A17/5

RESOLUTION 423 (WRC‑12)

Consideration of regulatory actions, including allocations, to support   
Wireless Avionics Intra-Communications

**Reasons:** Proposed modifications of the Radio Regulations are fully covering the aim of Resolution 423 (WRC-12).

ADD EUR/9A17/6

Draft New Resolution [EUR-A117-WAIC] (wrc‑15)

Use of Wireless Avionics Intra-Communications in the  
 frequency band 4 200‑4 400 MHz

The World Radiocommunication Conference (Geneva, 2015),

considering

*a)* that aircraft are designed to enhance efficiency, reliability and safety, as well as to be more environmentally friendly;

*b)* that Wireless Avionics Intra-Communications (WAIC) systems provide radiocommunications between two or more aircraft stations integrated into or installed on a single aircraft, supporting the safe operation of the aircraft;

*c)* that WAIC systems do not provide radiocommunications between an aircraft and the ground, another aircraft or a satellite;

*d)* that WAIC systems operate in a manner that ensures the safe operation of an aircraft;

*e)* that WAIC systems operate during all phases of flight including on the ground;

*f)* that aircraft equipped with WAIC systems operate globally;

*g)* that WAIC systems operating inside an aircraft receive the benefits of fuselage attenuation to facilitate sharing with other services;

*h)* that Recommendation ITU‑R M.2067 provides technical characteristics and operational objectives for WAIC systems,

recognizing

that Annex 10 to the Convention on International Civil Aviation contains Standards and Recommended Practices (SARPs) for aeronautical radionavigation and radiocommunication systems used by international civil aviation,

resolves

1 that WAIC is defined as radiocommunication between two or more aircraft stations located on a single aircraft, supporting the safe operation of the aircraft;

2 that the WAIC systems operating in the frequency band 4 200-4 400 MHz shall not cause harmful interference to, nor claim protection from aeronautical radionavigation service systems operating in this frequency band;

3 that the WAIC systems operating in the frequency band 4 200-4 400 MHz shall comply with Standards And Recommended Practices published in Annex 10 to the Convention on International Civil Aviation;

4 that No. **43.1** shall not apply for WAIC systems,

instructs the Secretary-General

to bring this Resolution to the attention of ICAO,

invites ICAO

to take into account Recommendation ITU‑R M.[WAIC-CONDITIONS] in the course of development of SARPs for WAIC systems.

**Reasons:** This Resolution provides relevant regulatory provisions to satisfy the agenda item.

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