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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 62-E** |
|  | **16 October 2015** |
|  | **Original: Chinese** |
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| China (People's Republic of) | |
| 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

The use of Wireless Avionics Intra-Communications (WAIC) systems in the future generation of aircraft could reduce the overall weight of aircraft and hence the amount of fuel required, thereby benefiting the environment. WAIC also reduces the complexity of aircraft design, improves aircraft performance, enhances maintenance accessibility and reduces maintenance costs.

As regards the envisaged WAIC system functionalities, WAIC systems provide radiocommunication between two or more stations on a single aircraft; they do not provide air-to-ground, air-to-satellite or air-to-air communications, and will be used solely for safety-related aircraft applications.

WAIC applications are divided into four categories according to the data rate and location of the transmitters, namely “low data rate inside (LI)”, “low data rate outside (LO)”, “high data rate inside (HI)” and “high data rate outside (HO)”. The low data rate transmission will use the IEEE 802.15.4 protocol and the high data rate transmission will use IEEE 802.11a/g.

ITU-R Working Party 5B is engaged in studies on the spectrum requirements of WAIC systems, having considered several elements of each of the above four application categories, including the application data rate, protocol overhead, channelization overhead and modulation efficiency. The studies completed by WP 5B show that the LI WAIC applications will require a maximum of 11 MHz of spectrum, and that LO applications will require a maximum of 40 MHz of spectrum, while HI applications will require a maximum of 32 MHz of spectrum and HO applications will require a maximum of 62 MHz of spectrum. The total spectrum required for all WAIC application is 145 MHz.

In accordance with Resolution 423 (WRC‑12), the WP 5B studies on potential frequency bands for WAIC systems should begin by focusing on the bands currently allocated to the aeronautical services below 15.7 GHz. The frequency bands below 1 GHz are generally considered not to be suitable for WAIC systems.

In reviewing the frequency bands above 960 MHz, several factors were taken into consideration including the bandwidth of the frequency bands, existing AM(R)S allocation, level of international harmonization, current use of the frequency band, aircraft control and installation, other non- technical obstacles, and values for the expected potential of sharing.

The following candidate frequency bands were studied for WAIC systems: 2 700-2 900 MHz, 4 200-4 400 MHz, 5 350-5 460 MHz, 22.5‑22.55 GHz and 23.55‑23.6 GHz. The results of the compatibility studies show that frequency band 4 200-4 400 MHz is a suitable band that can accommodate WAIC spectrum requirements, and that other candidate frequency bands are not feasible for WAIC systems.

The CPM15-2 meeting agreed on harmonizing the various methods/variations to satisfy this agenda item into a single method.  This method contains a new AM(R)S allocation  in the frequency band 4 200-4 400 MHz reserved for WAIC, an accompanying footnote and a resolution defining the allocation.

China proposes allocation of the frequency band 4 200-4 400 MHz to the AM(R)S, reserved for WAIC, to satisfy the agenda item, along with the following regulatory changes to the RR.

Proposals

ARTICLE 5

Frequency allocations

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

MOD CHN/62A17/1

2 700-4 800 MHz

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

MOD CHN/62A17/2

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.

ADD CHN/62A17/3

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

ADD CHN/62A17/4

5.B117 Passive sensing in the Earth exploration-satellite and space research services may be authorized in the frequency band 4 200-4 400 MHz on a secondary basis.

SUP CHN/62A17/5

RESOLUTION 423 (WRC‑12)\*

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

ADD CHN/62A17/6

draft new RESOLUTION [CHN-A117-WAIC] (WRC-15)[[1]](#footnote-1)\*

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 safety 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 systems of the aeronautical radionavigation service 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.2085 in the course of development of SARPs for WAIC systems.

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1. \*  Note by the Secretariat: The changes in this section concern only the Chinese version. [↑](#footnote-ref-1)