

UNITED STATES OF AMERICA
PROPOSAL FOR THE WORK OF THE CONFERENCE

Agenda Item 1.17: *to consider possible spectrum requirements and regulatory actions, including appropriate aeronautical allocations, to support wireless avionics intra-communications (WAIC), in accordance with Resolution 423 (WRC-12)*

Background:

The aerospace industry is developing the future generation of commercial aircraft to provide airlines and the flying public more cost-efficient, safe, and reliable aircraft. Wireless capabilities will reduce aircraft weight, provide multiple and redundant methods to transmit safety-related information, and provide environmental benefits and cost savings to manufacturers and operators.

WAIC systems consist of multiple radiocommunication devices between two or more transmitters and receivers on a single aircraft and provide safety-related aircraft applications. WAIC system transmissions are located both inside and outside the aircraft with the majority being interior to the aircraft structure.

WAIC communication traffic will be between transmitters and receivers on the same aircraft as part of a closed, exclusive network required for aircraft operation. WAIC systems will not provide air-to-ground, air-to-air or air-to-satellite communications.

The 2012 World Radiocommunication Conference (WRC-12) in response to a request to consider possible spectrum requirements and regulatory measures in support of wireless avionics communication systems approved Agenda Item 1.17 for WRC-15.

WRC-12 resolved to invite the ITU-R to consider, based on the results of ITU-R studies, possible regulatory actions, including appropriate aeronautical allocations, to support the implementation of WAIC systems, while taking into account spectrum requirements for WAIC and protection requirements for incumbent systems operating in accordance with existing allocations.

Resolution 423 (WRC-12) invites Working Party 5B (WP5B) to consider:

- i. frequency bands within existing worldwide aeronautical mobile service, aeronautical mobile (R) service and aeronautical radionavigation service allocations; and
- ii. additional frequency bands above 15.7 GHz for aeronautical services if spectrum requirements cannot be met in frequency bands studied under *invites ITU-R 3 i)*

Studies submitted to WP5B show that WAIC systems can be accommodated in the band 4200-4400 MHz provided that mitigation techniques for some applications, provided in ~~[Working document towards a preliminary draft new Report, ITU-R M. 2319 are utilized]~~~~[WAIC_SHARING_4 200 4 400MHz — Compatibility analysis between wireless avionics intra communications systems and systems in the existing services in the frequency band 4 200 4 400 MHz. Document 5B/TEMP/241]~~ are utilized. If such mitigation techniques cannot be utilized, then some external WAIC applications might not be compatible with existing aeronautical services.

However, both radio altimeter and WAIC systems are aeronautical applications and regulated by aviation certification authorities. Additional standardization and aircraft certification efforts must occur within the

aviation community in order to guarantee the safe and compatible operation of WAIC and radio altimeter systems.

PROPOSALS:

ADD **USA/1.17/1**

ARTICLE 5

Frequency allocations

Section IV – Table of Frequency Allocations

4 200-4 400 MHz

Allocation to services		
Region 1	Region 2	Region 3
4 200-4 400	AERONAUTICAL RADIONAVIGATION <u>AERONAUTICAL MOBILE (R)</u> 5.439 5.440 <u>ADD 5.YYY</u>	<u>MOD 5.438</u> <u>ADD 5.XXX</u>

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. ~~However, passive sensing in the Earth exploration-satellite and space research services may be authorized in this band on a secondary basis (no protection is provided by the radio altimeters).~~

~~**5.A117XXX** Use of the frequency band 4 200- 4 400 MHz by the aeronautical mobile (R) service is reserved exclusively for wireless avionics intra-communication systems that operate in accordance with recognized limited to internationally standardized aeronautical standards. Such use shall be in accordance with Resolution [A117-WAIC] (WRC-15)systems for the provision of wireless avionics intra-communications.~~

5.YYY Passive sensing in the Earth exploration-satellite and space research services may be authorized in the band 4200-4400 MHz on a secondary basis. ~~(no protection is provided by radio altimeters or by wireless avionics intra-communications).~~

Reason: To add a primary Aeronautical mobile (route) service (AM(R)S) allocation in the frequency band 4200-4400 MHz to Article 5 of the Radio Regulations. The AM(R)S allocation is limited to WAIC systems via footnote. The Earth exploration-satellite and Space research services maintain their status via footnote.

SUP **USA/1.17/2**

RESOLUTION 423 (WRC-12)

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

Reason: The required studies have been completed and this resolution is no longer needed.

ADD **USA/1.17/3**

RESOLUTION [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 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.[WAIC-CONDITIONS] in the course of development of SARPs for WAIC systems.

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