



International Civil Aviation Organization

**SIXTEENTH MEETING OF THE  
COMMUNICATIONS/NAVIGATION/SURVEILLANCE AND  
METEOROLOGY SUB-GROUP (CNS/MET SG/16) OF APANPIRG**

Bangkok, Thailand, 23 – 27 July 2012

**Agenda Item 7:           Aeronautical electromagnetic spectrum utilization**

- 1) review outcome of WRC 2012
- 2) Initial preparations for WRC 2015
- 3) Radio spectrum management related issues

**AVIATION SPECTRUM REVIEW OF WRC 2012 AND LOOKING FORWARD TO  
WRC 2015 - AUSTRALIAN PERSPECTIVE**

(Presented by Australia)

**SUMMARY**

This paper presents Australia's views of outcomes of the World Radiocommunication Conference in 2012 (WRC-12), outlines Australia's views on issues for aviation at WRC-15, and explains the importance of regional and global coordination in achieving aviation beneficial outcomes. Suggested actions that could be taken by States within the Asia Pacific region to strengthen support for aviation spectrum requirements in preparing for WRC-15 are recommended.

This paper relates to -

**Strategic Objectives:**

**A: Safety** - *Enhance global civil aviation safety*

**C: Environmental Protection and Sustainable Development of Air Transport** -  
*Foster harmonized and economically viable development of international civil aviation that does not unduly harm the environment*

**Global Plan Initiatives:**

GPI-23 Aeronautical radio spectrum

**1. Introduction**

1.1           The 2012 World Radiocommunication Conference (WRC-12) was held earlier this year in Geneva from 23 January to 17 February. Over 3,140 delegates from 165 ITU Member States attended WRC-12; braving the worst winter conditions experienced in Geneva for 23 years. The conference considered an agenda established by the previous WRC in 2007, and approved regulatory solutions now incorporated in the Provisional Final Acts of WRC-12. Several of the WRC-12 decisions impact Australian aviation.

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1.2 WRC-12 also recommended to ITU Council that the next WRC be held in 2015 and approved the agenda for WRC-15. The 1<sup>st</sup> Conference Preparatory Meeting (or CPM) for WRC-15 was held in Geneva on 20 and 21 February 2012. The CPM decided which ITU-R Working Parties would undertake studies for WRC-15, and developed the structure for the CPM Report to WRC-15. The new resolutions adopted by WRC-12 and the Agenda items for WRC-15 will result in a range of studies within the ITU-R of interest to Australian aviation.

1.3 The preparatory work within Australia, the Asia-Pacific Telecommunity (APT) and ICAO's Aeronautical Communications Panel (ACP) Working Group-F (Frequency) (WG-F) was instrumental in achieving successful outcomes for Australian aviation at WRC-12. In preparing for WRC-15 it is critical that aviation again works in a coordinated manner in regional and global meetings to achieve beneficial outcomes for aviation.

**2. WRC-2012 Agenda Item Outcomes Affecting Australian Aviation**

2.1 Mr D'Amico (RF Spectrum Manager, Airservices Australia) was a member of the Australian delegation at WRC-12. He actively participated in discussions on Agenda items of interest to aviation, and significantly, was the APT coordinator for WRC-12 Agenda item 1.4. The outcomes of WRC-12 are considered favourable to Australian aviation. In all cases Agenda items were resolved in a manner that either increased the ability of aviation to use spectrum, or protected existing uses.<sup>1</sup>

2.2 *WRC-12 Agenda item 1.3 - spectrum to support the safe operation of Unmanned Aircraft Systems (UAS) in current and future non-segregated airspace including command and control, ATC relay and sense and avoid.*

2.3 A major concern in introducing unmanned aircraft into non-segregated airspace is the absence of secure and allocated spectrum for UAS safety communications. Regulatory action was necessary to ensure access to spectrum for terrestrial and satellite communications to relay command and control, sense and avoid messages. WRC-12 approved the use of existing AMS(R)S allocations for the satellite component of UAS (1.5/1.6 GHz and 5 030-5 091 MHz) and a new AM(R)S allocation for the terrestrial component of UAS in the band 5 030-5 091 MHz.

2.4 There was a Canadian/US proposal to make a provisional allocation to use the Fixed Satellite Service (FSS) at Ku-band for satellite UAS (FSS/UAS). Australia was sympathetic to the proposal but believed further work was required before FSS/UAS satisfies Article 4.10 requirements for safety in regards coordination and frequency assignment. In the end there was little support for this proposal, although WRC-12 did approve a future agenda item for the WRC-15 conference to undertake studies on the suitability of FSS bands to support satellite UAS.

2.5 *WRC-12 Agenda item 1.4 - regulatory measures to facilitate the introduction of new air-ground communication systems in the bands 112-118 MHz and 960-1 164 MHz, and airport surface applications in the band 5 000-5 030 MHz.*

2.6 At WRC-07, provisional AM(R)S allocations were made in the band 108-117 MHz and the band 960-1 215 MHz to relief air-ground voice communications congestion and for new air-ground data links (L-DACS) respectively. An AM(R)S allocation was also made in the band 5 091-5 150 MHz for the aeronautical mobile airport communications system (AeroMACS).

2.7 WRC-12 reviewed the provisional allocations and considered a proposal to expand the allocation for AeroMACS. WRC-12 decided to remove the provisional status of the AM(R)S allocations and to not make an additional allocation for AeroMACS.

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<sup>1</sup> It should be noted that ICAO will need to develop SARPs before new allocations will benefit aviation.

2.8 *Agenda item 1.7 - satellite coordination procedures that ensures priority access for aviation L-band satellite communications (L-band AMS(R)S)*

2.9 The aviation community was seeking greater transparency in the L-band satellite coordination process. This item proved to be contentious at WRC-12 with the MSS and aviation interests holding strongly opposed views up until the last week of the conference. After many hours of debate with limited progress, a compromise solution emerged in which greater transparency in the spectrum assignment process was achieved through the incorporation of reassessment meetings as an alternative to a specific role for ICAO.

### **3. WRC-2015 Agenda Items with Significant Potential to Affect Australian Aviation**

3.1 The ITU-R Circular CA-201 provides a very useful summary of the results of the CPM including the work allocations for WRC-15. The Australian aviation community will need to closely monitor the progress of numerous Agenda items (as identified in the draft ICAO Position for WRC-15). Issues of specific interest to Australian aviation are discussed below.

3.2 *WRC-15 Agenda item 1.1: New MS allocations for IMT - study spectrum requirements and make additional allocations to the Mobile Service (MS) to support the terrestrial component of International Mobile Telecommunications (IMT).*

3.3 The CPM decided that a dedicated Joint Task Group (JTG) 4-5-6-7 be established to deal with the complex sharing studies associated with this Agenda item. To perform these studies, technical and operational characteristics, protection requirements and information on current and planned use from concerned ITU-R Working Parties, as well as spectrum requirements from the Working Parties 5A and 5D are to be submitted to the JTG by 31 July 2013. It is important that the aviation community actively participate in the JTG to ensure that aeronautical bands, or bands adjacent to aeronautical bands, that are being considered as candidate bands for IMT are appropriately studied. Bands likely to be considered include the 4.2-4.4 GHz band (radio altimeter) and the 2.7-2.9 GHz band (primary surveillance radar).

3.4 *WRC-15 Agenda item 1.5: FSS/UAS - consider the use of FSS for UAS command and control in non-segregated airspace.*

3.5 At WRC-12 there was no support for a proposal to use FSS for UAS safety communications (FSS/UAS) in non-segregated airspace. However, there was support from countries, including Australia, for WRC-12 to approve a future agenda item for the WRC-15 conference to undertake studies on the suitability of the FSS/UAS. The reason for this is that there are no satellites operating in the band 5 030-5 091 MHz at present, whilst UAS operations in segregated airspace currently utilise the FSS for the satellite UAS component.

3.6 FSS/UAS may be beneficial to a large country like Australia as FSS can foster the development of UAS. It is unlikely that AMS(R)S in the band 5 030-5 091 MHz can do this as there are no satellite are in orbit. However, caution needs to be taken to ensure the use of FSS spectrum for satellite UAS does not explicitly waive safety-of-life provisions that the Radio Regulations provide for aeronautical safety services. This is because existing frequency assignments for FSS are essentially deregulated. ICAO would have difficulty developing SARPs if new regulatory requirements do not satisfy Article **4.10**.

3.7 *WRC-15 Agenda item 1.17: WAIC - considering spectrum/regulatory requirements, to support wireless avionics intra-communication (WAIC) systems.*

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3.8 WAIC systems consist of radiocommunications between two or more transmitters and receivers on a single aircraft, and will only be used for safety-related applications. This proposal was sponsored by aircraft manufacturers and was fully supported by ICAO. Australia fully supports the consideration of spectrum/regulatory requirement to implement WAIC.

**4. Importance of Regional and Global Aviation Coordination**

4.1 ACP WG-F is developing a draft ICAO Position for the WRC-15. The draft position will need to be reviewed and completed at the next WG-F meeting in September, to allow a timely review by the Air Navigation Commission before being provided to States for comments. The draft position is scheduled to be finalised and approved by Council in mid-2013. Significant work is required in developing suitable positions for some Agenda items (in particular Agenda item 1.5). Contracting States should actively participate in WG-F discussions, and where possible, support the ICAO Position in ITU-R Working Party 5B and JTG 4-5-6-7 meetings.

4.2 The Australian aviation position for WRC-15 will be developed through the Aviation Spectrum Group (ASG). This position will likely reflect the ICAO Position for WRC-15. This position will be vigorously debated with positions of other stakeholders to hopefully become the Australian position. Australia will then use this position to influence the regional position at the APT Preparatory Group for WRC-15 (APG2015). The APG2015 is the forum for the coordination of APT views for WRC-15.

4.3 The 1<sup>st</sup> APG2015 meeting (APG2015-1) is scheduled for 10 and 11 September 2012, and will be directly followed by the APT Wireless Group (AWG) from 12-15 September. The APT is likely to request that the AWG identify suitable candidate bands for IMT (Agenda item 1.1) in the Asia-Pacific region. It is therefore important that Contracting States participate in domestic and regional preparation meetings for WRC-15, so that aviation has a coordinated position.

**5. Action by the Meeting**

(1) The meeting notes that:

- a) The outcomes of WRC-12 are considered favourable to Australian aviation;
- b) There are significant issues that have implications for aviation in the Agenda for WRC-15 including spectrum requirements and new allocations for International Mobile Telecommunications below 5 GHz, proposal to use FSS for UAS safety communications in non-segregated airspace, and spectrum requirements and allocations to support wireless avionics intra-communication systems; and
- c) The 1<sup>st</sup> APT Preparatory Group for WRC-15 meeting (APG2015-1) is planned for the second week of September 2012.

(2) The meeting urges Contracting States to:

- a) Carefully consider State and international requirements for aeronautical services identified in the WRC-15 Agenda and adopt national positions to ensure the availability and protection of this spectrum for aviation use; and
- b) Actively participate and support WRC-15 aeronautical spectrum issues through national and international meetings including the APT Preparatory Group for WRC-15 and ITU-R Working Party 5B and JTG 4-5-6-7.

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