



International Civil Aviation Organization

**FOURTEENTH MEETING OF THE  
COMMUNICATIONS/NAVIGATION/SURVEILLANCE  
AND METEOROLOGY SUB-GROUP OF  
APANPIRG (CNS/MET SG/14)**



Jakarta, Indonesia, 19 – 22 July 2010

---

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

**1)   review ICAO position for WRC-2012**

**REGIONAL PREPARATIONS FOR  
THE INTERNATIONAL TELECOMMUNICATION UNION (ITU)  
WORLD RADIOCOMMUNICATION CONFERENCE (2012) (WRC – 12)**

(Presented by Secretariat)

**SUMMARY**

This paper reviews and discusses the outcome of activities during last one year on issues related to ITU WRC – 12 agenda items of critical interest for civil aviation.

ICAO Position projected on ITU WRC – 12 Agenda Items of critical interest to civil aviation was circulated through State Letter E 3/5-09/61 dated 30 June 2009. The position circulated specifically stressed that safety conditions dictate that exclusive frequency bands must be allocated to safety critical aeronautical systems and that adequate protection against harmful interference must be ensured for the operation of these systems. This paper discusses in brief the outcome of the Regional Preparatory Group meeting and the APT Preparatory Group Meeting held in last one year on this subject. Paper also informs about the future programme of activities on this subject.

This paper relates to:

**Strategic Objective:** A-Safety; D – Efficiency

**GPI:** 23 – Aeronautical Spectrum

**1.           Introduction**

1.1           Radio Frequency Spectrum is a scarce natural resource with finite capacity for which demand is continuously rising because of regular development of new technological applications and periodical expansion of existing services. Aeronautical Radio Services are recognized internationally to be amongst the prime users of radio frequency spectrum, without which aircraft operation would not be capable of meeting the global demand for safe, efficient and cost effective transportation. The process of international competition between expanding radio services, which takes place in the International Telecommunication Union (ITU), obliges all the existing spectrum users, aeronautical and non-aeronautical to continually defend and justify the retention of frequency bands or acquisition

of additional bands to those already allocated, to their services. Civil Aviation requirements continue to grow, demanding accommodation for more navigation, surveillance and communication facilities creating an ever-increasing pressure on an already stretched resource. Hence, Civil Aviation must develop and present its agreed policies and its quantified and qualified requirements for radio frequency spectrum to ensure continued availability and access to frequency spectrum.

1.2 ITU convenes World Radiocommunication Conferences (WRC) every four (approximately) years to discuss the regulatory and allocation issues related to the global frequency spectrum management. Next WRC is scheduled to be convened by ITU from 23 Jan to 17 Feb 2012 in Geneva, Switzerland.

1.3 To ensure that the frequency spectrum interests of aeronautical community are projected and defended in one voice in ITU WRC and in national/regional forums, ICAO circulated its Position on WRC Agenda Items of critical interest to civil aviation through its letter E 3/5 – 09/61 dated 30 June 2009. Focal Contact Points have been identified by the State Civil Aviation Organizations in their administrations, who will be responsible for projecting and defending ICAO Position in various national/regional forums and in ITU WRC.

1.4 To provide a forum for these Contact Focal Points to be thoroughly briefed about ICAO Position and help them in effectively participating at the national and regional level forums in support of ICAO position, First Meeting of the Regional Preparatory Group (RPG) for ITU WRC-2012 was held in Bangkok on 8 and 9 December 2009. The meeting was held in conjunction with the Twenty First Meeting of the Aeronautical Communication Panel, Working Group – F (ACP WG-F/21) meeting.

1.5 Third Meeting of Asia-Pacific Telecommunity (APT) Conference Preparatory Group for WRC – 2012 (APG 2012 – 3) was held in Bangkok from 8 to 12 March 2010 to progress on the common regional position on ITU WRC – 2012 Agenda Items. Participants from ICAO attended the meeting as observers and contributed to it through the presentation of two Information Papers and by providing civil aviation related information as and when required.

## **2. Discussion**

### **2.1 First Regional Preparatory Group (RPG/1) Meeting**

2.1.1 First Regional Preparatory Group (RPG/1) Meeting for ITU World Radiocommunication Conference – 2012 (WRC – 2012) was held in Bangkok on 8 and 9 December 2009. The meeting was attended by 36 participants from 16 States and 1 Industry Partner. The meeting was aimed at providing to the Focal Contact Points, designated by the member States, a thorough briefing about ICAO Position on WRC – 2012 Agenda Items of critical interest to civil aviation. Mr. Steve Mitchell, Rapporteur, ICAO Aeronautical Communication Panel Working Group – F chaired the meeting. Agenda for the meeting was as follows:

- 1) Introduction to ITU and the WRC Processes
- 2) Aviation Issues at WRC – 2012
- 3) Role of aviation sector in the preparation for WRC - 2012

#### **2.1.2 *Agenda Item 1:***

Under this Agenda Item, role of International Telecommunication Union (ITU) in the management of radio frequency spectrum was explained. Different types of services with respect to the World Radiocommunication Conference (WRC) agenda items were presented to the meeting. Meeting was informed about the changed schedule of WRC – 2012 and it was informed that the next WRC Meeting (WRC – 2012) will now be held from 23 January to 17 February 2012.

2.1.2.1 Meeting noted that aviation frequencies are a target for re-allocation to non-aviation users as the spectrum is a limited/scarce resource that feeds the requirements of technological developments in various sectors. If the aviation frequencies used in the provision of critical CNS/ATM related services are lost to non-aviation users, it will have an adverse effect on implementation, and will result in impairments in safety, regularity and efficiency of air transportation and the loss will be irreversible. In order to harmonize the global effort towards the protection of spectrum for civil aviation use, ICAO has developed an international civil aviation position for WRC – 2012. States are urged to participate actively in the relevant activities at the national and regional level to ensure support for ICAO position in the position developed at the national and regional level. Briefing the meeting about the WRC meeting held in November 2007, it was brought out that ICAO exclusively manages the usage of that portion of the spectrum, for which no permission for sharing with any other service(s) has been granted. But if a portion of the spectrum is being shared with some other service(s), then for that portion, ICAO has to go to WRC to resolve any issue as and when it comes up. It was informed that the process of developing common position in all the three ITU regions had started and hence the Contact Focal Points were urged to immediately start taking initiative to ensure that ICAO Position on the WRC – 2012 Agenda Items of interest to civil aviation are reflected in the national and regional positions. It was suggested that the Contact Focal Points in the States can use references to APANPIRG Conclusions and DGCA Conference action item to support them in pursuing this subject with the national regulatory bodies. Based on above, meeting adopted following recommendation:

**Draft Conclusion 14/XX - Preparation for WRC – 2012**

That

- a) States be urged to have the designated contact person closely involved in the preparatory work for WRC – 2012 at the national level in close coordination with the contact points designated by respective telecommunication regulators;
- b) Make necessary arrangement for the designated contact persons to attend the APT APG meetings and WRC – 2012 meeting to protect aviation interests; and
- c) Reference to APANPIRG Conclusions 19/41, 20/58 and DGCA Conference Action Item 46/8 may be used to support these efforts,

2.1.2.2 It was generally felt that the agenda items related to satellite provisions are of critical interest for the region because of large oceanic areas the region covers.

2.1.2.3 It was informed that Version 5 of '*Handbook on Radio Frequency Spectrum Requirements for Civil Aviation*' (Doc 9718) was available in the digital format and hard copy of the same will be available shortly. This document contains the allocations made for the Safety Services, radio navigation services, radio navigation satellite services and aeronautical radio navigation services. Handbook also addresses issues related to protection from interference and includes important aspects of radio equipment on board the aircraft. Chapter 7 of the document contains overview of all frequency allocations, details and policies of allocations for civil aviation.

2.1.3 *Agenda Item 2: Aviation Issues at WRC – 2012*

2.1.3.1 It was informed that the WRC-2012 Agenda Items have been divided into three groups based on their criticality for civil aviation. Agenda Items 1.3, 1.4 and 1.7 are in the First Group 'Related to Specific Aviation Issues'. Agenda Items 1.2, 1.5, 1.9, 1.12, 1.14, 1.15, 1.19, 1.21, 1.22, 1.23, 1.25, 4 and 8.2 in the Second Group are the ones in which 'Aviation is a Concerned Party'. The Third Group contains the 'Remaining Agenda Items', which are considered not of immediate relevance to civil aviation.

2.1.3.2 Meeting was informed about the APT Preliminary Views on WRC- 2012 Agenda Items, the outcomes of APG 1<sup>st</sup> Meeting held from 6 to 8 March 2008 in Bangkok and the 2<sup>nd</sup> Meeting held from 22 to 26 June 2009 in Hangzhou, China. APT preliminary position developed in the 2<sup>nd</sup> Meeting as compared to ICAO Position circulated was discussed. It was observed that the position developed in APG meeting was more or less in line with ICAO Position. The meeting was however cautioned that it is required to be ensured that the position developed in the subsequent meetings should continue to be in line with ICAO position. Detailed presentations were made on specific Agenda Items which are considered more critical for civil aviation.

#### 2.1.4 *Agenda Item 3: Role of aviation sector in the preparation for WRC – 2012*

2.1.4.1 Meeting noted actions taken by the aviation community in the preparation for WRC – 2012. The main emphasis was placed on the need for the States to effectively participate at the national as well as regional level forums and to support ICAO position in them. The meeting was also briefed about outcome of major regional level meetings.

2.1.4.2 The meeting was informed that the States can get the latest information on the subject from ICAO Aeronautical Communication Panel (ACP) website <http://www.icao.int/anb/panels/acp/index.cfm>. The site contains information on the latest related developments in various regulatory forums. It was however felt that better visibility should be provided to ICAO position on the ICAO website, like there should be a link provided at the ICAO Home page to access ICAO position. Following recommendation hence was adopted:

#### **Draft Conclusion 14/XX - Visibility to ICAO Position on WRC – 2012 Agenda Items**

That ICAO be urged to provide better visibility to ICAO Position on WRC – 2012 Agenda Items of critical interest to civil aviation on the ICAO website.

## **2.2 Third Meeting of APT Conference Preparatory Group for WRC – 2012**

2.2.1 Third Meeting of APT Conference Preparatory Group for WRC – 2012 was held from 8 to 12 March, 2010 in Bangkok. 306 participants representing 27 administrations in Asia/Pacific Region, observers from other regions (CEPT, CITELE), international and regional organizations attended the meeting. Two formal ICAO contributions (on ICAO Position and on ICAO Contribution to ITU – R WP 4C on AI 1.7) were submitted to the meeting. The meeting started with a plenary session and then broke into Working Parties and Drafting Groups on individual Agenda Items. APG is now well on its way to develop Common APT Views on WRC – 2012 Agenda Items.

2.2.2 Brief description of the outcomes on all the Agenda Items of critical interest for civil aviation (including the ones which are not of major importance) is given below:

2.2.2.1 *Agenda Item 1.1: To consider and taken appropriate action on requests from administrations to delete their country footnotes or to have their country name deleted from footnotes, if no longer required taking into account Resolution 26 (WRC – 2007)*

This Agenda Item was not discussed in the APG/3

2.2.2.2 *Agenda Item 1.2: Taking into account the ITU-R studies carried out in accordance with Resolution 951 (Rev. WRC –07), to take appropriate action with a view to enhancing the international regulatory framework.*

A general and common view of the APT members is that regardless of options/methods, the provisions of Radio Regulations should be utilized not only to protect existing services, but also to facilitate the introduction of emerging and future radio applications. Reservations have been expressed by some APT members with regards to any change to the definitions of the fixed, mobile, broadcasting and space services. Some APT members are of the view that studies pursued under agenda items should be limited to data with terrestrial (fixed or land-mobile) services only. Development on this Agenda Item needs to be monitored.

**2.2.2.3**      *Agenda Item 1.3: To consider spectrum requirements and possible regulatory actions, including allocations, in order to support the safe operation of unmanned aircraft system (UAS), based on the results of ITU – R studies, in accordance with Resolution 421 (WRC – 07)*

APT Administration views are generally in agreement with the ICAO Position, which asks for Aeronautical Safety type allocations for UAS Command and Control (CC) and Sense and Avoid (SA) use. A CEPT contribution indicated that they were considering the use of “technical means” rather than regulatory means to achieve the level of protection necessary. The APG is of the view that existing AM(R)S, AMS(R)S and ARNS allocations should be considered under this agenda item for safety allocations only and the APG agreed that Payload applications are not supported under this Agenda Item. New allocations are not supported at this stage. Some preliminary views have been developed on frequency band feasibility. 960 – 1164 MHz is not considered feasible due to already high current and foreseen ARNS and AM(R)S application load in this band. The two AMS(R)S L-bands were considered briefly. Out of the 5 bands considered, only 5000 – 5150 MHz or portion thereof was considered as potentially feasible. The Thales study on sharing the MLS Core band with AMS(R)S was noted. China claims to be using 50 MLS allocations in the 5030 – 5091 MHz (MLS core) band and so this band may not be considered feasible for UAS AM(R)S use. After discussion, it was agreed that it is premature to develop APT position on frequency band for UAS at this stage.

**2.2.2.4**      *Agenda Item 1.4: To consider, based on the results of ITU-R studies, any further regulatory measures to facilitate introduction of new aeronautical mobile (R) service (AM(R)S) systems in the band 112 – 117.975 MHz, 960 – 1164 MHz and 5000 – 5030 MHz in accordance with Resolutions 413 (Rev WRC – 07), 417 (WRC – 07) and 420 (WRC – 07).*

APT supports the suppression of the first *invites* to ITU – R Resolution 413 (WRC – 07) as a result of the study shown in Report ITU – R M.2147 and the compatibility study between digital sound-broadcasting below 108 MHz and AM(R)S taking into account Recommendation ITU – R BS.1114. APT also supports the amendment of Resolution 417 (WRC – 07), based on ITU – R Studies, in order to introduce operational and technical means to facilitate sharing and coordination process between administrations listed in Radio Regulations 5.312 operating non ICAO ARNS systems. Both these are in line with ICAO Position.

With regards to Resolution 420 (WRC – 07), a common view of the APT members is that study should first be carried out to identify whether the spectrum requirements can be fulfilled in the band 5091 – 5150 MHz. Before considering new allocation in the band 5000 – 5030 MHz, it is necessary to demonstrate that AM(R)S would not create undue constraints on the Radio Astronomy Service and existing radiocommunication services including Radio-Navigation Satellite Services (RNSS).

**2.2.2.4**      *Agenda Item 1.5: To consider worldwide/regional harmonization of spectrum for electronic news gathering (ENG), taking into account the results of ITU R studies, in accordance with Resolution 954 (WRC – 07)*

### **APT Preliminary View:**

Noting that studies undertaken by the ITU-R indicate that administrations/broadcasters could benefit from worldwide/regional harmonized band planning used for ENG systems, APT members support the harmonization of frequencies for ENG and the related studies being undertaken by the ITU – R on this issue.

APT members also propose that the ITU – R study should consider the inclusion of an analysis of compatibility between ENG applications and services currently using frequency ranges that may be applicable for harmonized ENG frequency bands/tuning ranges.

In this context, APT members suggest that the studies should take account of the following principles:

- Noting that several bands are in use in Region 3 demonstrating current lack of harmonization, APT recognizes the need and supports ITU – R action to achieve greater harmonization in future
- Worldwide/regional harmonization of ENG spectrum should not constrain existing other applications used in this band
- Existing services in the frequency bands already having allocations by ITU – R should be adequately protected.

Some frequency bands for ENG systems are suggested in the Recommendations ITU – R F. 1777, M.1824 and Annex 2 to the 5C Chairman's Report Doc. 5C/301-E. It may be desirable to seek potential frequency bands for harmonization of ENG systems based on information in above ITU – R Recommendations and APG contributions.

### **Other views from APT members:**

Based on the above framework some APT members have the view that selection of Method 3 and/or Method 4 adopted in WP5C November/December 2009 meeting seems more appropriate.

Some other APT members are of the view that it is not appropriate to select a Method before the identification of the frequency bands for ENG use is completed.

Under Method 3, some APT members suggested following frequency bands for harmonization of ENG systems.

- i) 925 – 932 MHz for wireless microphone
- ii) 1700 – 1710 MHz for analogue/digital audio
- iii) 7000 – 7100 MHz, 12.0 – 12.2 GHz and 39 0 40 GHz for video links

It is however noted that the band 925 – 932 MHz is also being used for GSM cellular mobile systems in some APT countries therefore some members were of the view that this band should not be considered as a harmonized band for ENG. This list is expected to be further developed and analyzed at APG – 2012/4 and administrations are encouraged to submit relevant material.

2.2.2.5 *Agenda Item 1.7: To consider the results of ITU-R studies in accordance with Resolution 222 (Rev. WRC – 07) in order to ensure long-term spectrum availability and access to spectrum necessary to meet requirements for the aeronautical mobile-satellite (R) service, and to take appropriate action on this subject, while retaining unchanged generic allocation to the mobile-satellite service in the bands 1525 – 1559 MHz and 1626.5 – 1660.5 MHz.*

One administration (Indonesia) strongly supports Method A of the CPM Methods developed during the last meeting of ITU – R WP4C and two administrations (ROK and Australia) may also provide their support to this method which calls for RR5.357A and Res222 to remain un-changed. Iran, Japan and New Zealand are strong supporters of Method B, which is the preferred approach as far as ICAO is concerned. There appeared to be no support for Method C (moving AMS(R)S out of L-band). This Agenda Item is of major importance to the civil aviation community and hence progress on it needs to be monitored.

2.2.2.6 **Agenda Item 1.9:** *To revise frequencies and channeling arrangements of Appendix 17 to the Radio Regulations in accordance with Resolution 351 (Rev WRC – 07), in order to implement new digital technologies for the maritime mobile service.*

APT supports the revision of Appendix 17 to the Radio Regulations in accordance with Resolution 351 (Rev. WRC – 07) to accommodate the implementation of new digital technologies in the maritime mobile HF bands. ICAO may need to take an initiative to influence APG to include a provision to protect the adjacent aeronautical (Appendix 27) HF bands from potential interference.

2.2.2.7 **Agenda Item 1.12:** *To protect the primary services in the band 37 – 38 GHz from interference resulting from aeronautical mobile service operations, taking into account the result of ITU-R studies, in accordance with Resolution 754 (WRC – 07),*

It is felt that APT administrations in general, will go with the outcome of current compatibility studies being conducted in ITU – R WP7B on this band. Currently aviation has no applications in this band. It has generally been said that the WAIC Community (Airbus, Boeing, Bombardier, Embraer, Goodrich), after its preliminary study on frequency band suitability, is not considering this band for use seriously.

2.2.2.8 **Agenda Item 1.14:** *To consider requirements for new applications in the radiolocation service and review allocations or regulatory provisions for implementation of the radiolocation service in the range 30 - 300 MHz in accordance with Resolution 611 (WRC – 07)*

Currently, in the ITU – R study, only one CPM method has been developed involving the band 154 – 156 MHz (Fixed and Mobile, except aeronautical mobile). APT does not accept this method. May be the aeronautical community has to keep a watch as the interest may move towards 137+ MHz close to the VHF AM(R)S band.

2.2.2.9 **Agenda Item 1.15:** *To consider possible allocations in the range 3 - 50 MHz to the radiolocation service for oceanographic radar applications, taking into account the results of ITU – R studies, in accordance with Resolution 612 (WRC – 07).*

APT members support allocations (each band not exceeding 600 kHz) to suitable candidate sub-bands in the range 3 – 50 MHz for the radiolocation service for oceanographic radar applications, under the condition that sharing studies with other services in ITU – R conclude that the oceanographic radar applications shall not cause harmful interference to, nor claim protection from existing services in accordance with Resolution 612 (WRC – 07). This is in line with ICAO Position.

2.2.2.10 **Agenda Item 1.19:** *To consider regulatory measures and their relevance, in order to enable the introduction of software-defined radio and cognitive radio systems, based on the results of ITU – R studies, in accordance with Resolution 956 (WRC – 07),*

The APT Preliminary view on this item is that SDR and CRS are not radio services, rather these are technologies that can be implemented in systems of any radiocommunication services and that any system operating in those services will have to be operated in accordance with the provision of the Radio Regulations. Consequently, APT does not feel the need of any change in the Radio Regulations. ICAO Position on this issue is to support inclusion of regulatory measures in the Radio

Regulations to preclude any uncertified use of SDR and CRS in bands allocated to the aeronautical services. Aeronautical community needs to monitor progress on this Agenda Item.

*2.2.2.11           **Agenda Item 1.21:** To consider a preliminary allocation to the radiolocation service in the band 15.4 – 15.7 GHz, taking into account the result of ITU – R studies, in accordance with Resolution 614 (WRC – 07).*

APT members support consideration of a primary allocation to the radiolocation service in the band 15.4 to 15.7 GHz only on the condition that the result of ITU – R studies on interference between radiolocation service and existing primary services in the band together with radio astronomy service in the adjacent band (15.35 to 15.40 MHz) do not indicate any undue strain on the existing services for which the frequency band is currently allocated. This is in line with ICAO Position.

*2.2.2.12           **Agenda Item 1.22:** To examine the effect of emissions from short-range devices on radiocommunication services, in accordance with Resolution 953 (WRC – 07)*

APT members expressed their concern about the impact of emissions from SRDs on radiocommunication services. Therefore they supported the studies being carried out by ITU – R WP 1A relating to this impact. APT members supported the studies by ITU – R WP 1B also, in accordance with the Resolution ITU – R 54 (“studies to achieve harmonization for short range radiocommunication devices (SRDs)”) which resolves to study and advise a mechanism that may ease the use of relevant frequency bands and/or frequency tuning ranges, preferably on a global or regional basis, suitable for SRDs.

**Other views from APT members:**

1. Some APT members are of the view that method A to be supported and also Method B should be given a favorable consideration
2. Some other APT members are of the view that it is premature to select any method(s) at this stage
3. Some APT members are of the view that regulation of emissions by SRDs can be achieved via national arrangements using, when available, relevant ITU – R Recommendations or regional agreements.

Further progress on this Agenda Item needs to be monitored by the aviation community.

*2.2.2.13           **Agenda Item 1.23:** To consider an allocation of about 15 kHz in parts of the band 415 – 526.5 kHz to the amateur service on a secondary basis, taking into account the need to protect existing services.*

APT supports studies carried out by the relevant ITU – R Working Parties which show that sharing by the amateur service with some of the other services in the band 415 – 526.5 kHz is possible in some circumstances. However, APT is of the view that further studies are necessary to demonstrate that sharing with the incumbent services in the band is feasible. This view is in line with the ICAO Position on this Agenda Item.

*2.2.2.14           **Agenda Item 1.25:** To consider possible additional allocations to the mobile-satellite service, in accordance with Resolution 231 (WRC – 07)*

APT is currently not considering any band used by aviation under this Agenda Item. However, it appears that 4.2 – 4.4 GHz (radio altimeter band) and 5.030 – 5.091 GHz (MLS Core band) may possibly come under consideration by some administrations. Aviation community needs to keep a watch on this Agenda Item)

2.2.2.15 **Agenda item 4:** *In accordance with Resolution 95 (Rev. WRC – 07), to review the resolutions and recommendations of previous conferences with a view of possible revision, replacement or abrogation.*

There was no output on this Agenda Item in the meeting

2.2.3 The next APG meeting (APG – 2012/4) is scheduled to be held in Hong Kong, China from 13 to 18 December, 2010.

4. **Action required by the Meeting**

The meeting is invited to:

- a) Note the outcomes of the First Regional Preparatory Group Meeting and the Third Meeting of APT Conference Preparatory Group on WRC – 2012; and
- b) Consider recommending draft Conclusions proposed in Paragraphs 2.1.2.1 and 2.1.4.2 for adoption by APANPIRG

-----