



# PUBLIC NOTICE

Federal Communications Commission  
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DA 09-763  
April 6, 2009

**THE FCC'S ADVISORY COMMITTEE FOR THE  
2011 WORLD RADIOCOMMUNICATION CONFERENCE PROPOSES PRELIMINARY  
VIEWS ON WRC-11 ISSUES**

IB Docket No. 04-286

**Comment Date: April 24, 2009**

On March 31, 2009, the World Radiocommunication Conference Advisory Committee (WRC-11 Advisory Committee) adopted preliminary views on numerous issues that the 2011 World Radiocommunication Conference (WRC-11) will address. The WRC-11 Advisory Committee was established by the Commission to assist it in the development of proposals for WRC-11. To that end, the WRC-11 Advisory Committee has forwarded the recommendations it has developed since the beginning of the year to the Commission for consideration. We have attached to this Public Notice the WRC-11 Advisory Committee's recommendations, which are in the form of "preliminary views." We appreciate the substantial amount of work that the WRC-11 Advisory Committee has put into developing its recommendations. This Public Notice requests comments on all of these preliminary views.

Based upon our initial review of the recommendations forwarded to the Commission, the International Bureau in coordination with other Commission Bureaus and Offices tentatively concludes that we can generally support the attached WRC-11 Advisory Committee recommendations. We also take note of differing views expressed by the WRC-11 Advisory Committee in document WAC/027. We seek comment on the recommendations provided by the WRC-11 Advisory Committee (attachment 1).

In addition, the National Telecommunications and Information Administration (NTIA) has provided to the Commission preliminary views on some WRC-11 agenda items that have been developed by the Executive Branch Agencies. We also request comment on these preliminary views (attachment 2).

The comments provided will assist the FCC in its upcoming consultations with the U.S. Department of State and NTIA in the development of U.S. preliminary views. Once agreed by these agencies of the U.S. Government, preliminary views will be used by U.S. delegations at bilateral, regional and international meetings to stimulate discussion and to attempt to achieve common proposals with other countries on these issues. The proposed preliminary views that are attached to this Public Notice may evolve in the course of interagency discussions as we approach WRC-11 and, therefore, do not constitute a final U.S. Government position on any issue.

The complete text of these preliminary views and proposals is also available in the FCC's Reference Information Center, Room CY-A257, 445 12<sup>th</sup> Street, SW, Washington, DC 20554 or by accessing the FCC's WRC-11 world wide web site at: <http://www.fcc.gov/ib/wrc-11/>.

The deadline for comments on the proposed preliminary views is April 24, 2009. It is necessary that all comments be received by April 24, 2009 in order to allow us to finalize the U.S. position before commencement of regional WRC-11 preparatory meetings.

All comments should refer to IB Docket No. 04-286 and to specific recommendations by WAC document number. Comments may be filed using (1) the Commission's Electronic Comment Filing System (ECFS), (2) by email to [wrc-11@fcc.gov](mailto:wrc-11@fcc.gov), or (3) by filing paper copies.<sup>1</sup> Generally, only one copy of an electronic submission must be filed.

Comments filed through the ECFS can be sent as an electronic file via the Internet to <http://www.fcc.gov/cgb/ecfs/>. In completing the transmittal screen, commenters should include their full name, U.S. Postal Service mailing address, and the applicable docket or rulemaking number. Parties may also submit an electronic comment by Internet e-mail. To get filing instructions for e-mail comments, commenters should send an e-mail to [ecfs@fcc.gov](mailto:ecfs@fcc.gov), and should include the following words in the body of the message, "get form." A sample form and directions will be sent in reply.

Parties who choose to file by paper must file an original and four copies of each filing.

Filings can be sent by hand or messenger delivery, by commercial overnight courier, or by first-class or overnight U.S. Postal Service mail (although we continue to experience delays in receiving U.S. Postal Service mail). All filings must be addressed to the Commission's Secretary, Office of the Secretary, Federal Communications Commission.

The Commission's contractor will receive hand-delivered or messenger-delivered paper filings for the Commission's Secretary at 236 Massachusetts Avenue, N.E., Suite 110, Washington, D.C. 20002. The filing hours at this location are 8:00 a.m. to 7:00 p.m. All hand deliveries must be held together with rubber bands or fasteners. Any envelopes must be disposed of before entering the building.

Commercial overnight mail (other than U.S. Postal Service Express Mail and Priority Mail) must be sent to 9300 East Hampton Drive, Capitol Heights, MD 20743.

U.S. Postal Service first-class mail, Express Mail, and Priority Mail should be addressed to 445 12th Street, S.W., Washington, D.C. 20554.

Additionally, filers must deliver courtesy copies by email to the following Commission staff: Alexander Roytblat, at [Alexander.Roytblat@fcc.gov](mailto:Alexander.Roytblat@fcc.gov)

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<sup>1</sup> See Electronic Filing of Documents in Rulemaking Proceedings, 63 Fed. Reg. 24121 (1998).

**ATTACHMENT 1**  
**to FCC Public Notice DA 09-763**

**Recommendations on draft preliminary views by the Advisory  
Committee for the 2011 World Radiocommunication Conference**

**Maritime Aeronautical and Radar Services**

**Document WAC/013(31.03.09)**

***WAC Informal Working Group (IWG)-1***

Modifications to NTIA's Preliminary View  
on Agenda Item 1.3 (see WAC/006(13.01.09))

Preparation for ITU Radiocommunication Conferences

**UNITED STATES OF AMERICA  
PRELIMINARY VIEWS ON WRC-11**

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

**ISSUE:** The purpose of this agenda item is to identify spectrum requirements and potentially take regulatory actions, including allocations, to support the safe operation of UASs. The ITU-R is studying sharing and compatibility with existing services already having allocations. This agenda item specifically excludes at WRC-11 the allocation of spectrum for radiocommunications related to payloads on aircraft, but invites the ITU-R to study payload radiocommunication requirements.

**BACKGROUND:** Unmanned aircraft systems (UASs) enable the remote piloting of aircraft over short range and significant distances within or out-of-sight of the remote pilot. These flight operations currently take place in segregated airspace, to ensure the safety of the air vehicle and other airspace users.

Administrations expect broad deployment of UASs throughout the airspace structure. As UAS deployment increases, it will be impractical for some users to deploy in segregated airspace. Some UASs will need to integrate with the current airspace users in a safe and seamless manner. To accomplish integration into non-segregated airspace, UASs will require high integrity communications link(s) between the unmanned aircraft (UA) and remote control centers capable of relaying the necessary air traffic control (ATC) messages and flight critical aircraft information. The UAS pilot will need sense and avoid functions for situational awareness.

The ICAO future communications study may be able to identify technologies with some capacity to meet the requirements for command and control (including the relaying of ATC communications). The aeronautical mobile (R) service (AM(R)S) and aeronautical mobile satellite (R) service (AMS(R)S) are the appropriate services to accommodate command and control and ATC radiocommunications. The ITU-R is examining existing AM(R)S and AMS(R)S allocations for suitable bandwidth prior to studying new allocations.

**Command & Control**

In non-segregated airspace, the remote pilot must reliably monitor the status of the UA, pass control instructions to their UA, and interact with the appropriate air traffic controllers monitoring airspace within which their UA is flying. A line-of-sight link might provide these capabilities for

UA flying and maneuvering in a localized area. A combination of a terrestrial radio and satellite network and could provide these capabilities to UA flying trans-horizon.

#### **Relay of Air Traffic Control (ATC) Communications**

Safe operation of manned or unmanned aircraft depends on ATC communications. Pilots act based on ATC instructions. When the pilot is remote (not in the aircraft) the pilot and ATC must maintain a voice channel to relay information from a radio in the aircraft to the pilot on ground. Early concepts assume that this function, if digitized, could be part of the command and control links.

#### **Sense and Avoid**

The safe flight operation of UA necessitates advanced techniques to detect and track nearby aircraft, terrain, and obstacles to navigation. Unmanned aircraft must avoid these objects in the same manner as manned aircraft. The remote pilot will need to be aware of the environment within which the aircraft is operating, be able to identify the potential threats to the continued safe operation of the aircraft, and take the appropriate action. The radiodetermination service allocations could potentially accommodate the sense and avoid function. The ITU-R is examining existing Aeronautical Radionavigation Service (“ARNS”) allocations for suitable bandwidth prior to studying new ARNS allocations. The UAV industry is studying the suitability of other technologies for sense and avoid.

#### **Payload**

The spectrum requirements to support payload communications are not critical to the safe operation of that aircraft. The ITU-R is developing a report or recommendation on how to address UAS payload requirements.

**U.S. VIEW:** If studies identified in Resolution **421 (WRC-07)** support regulatory actions at WRC-11 for the operation of UAS, the United States supports ~~possible modification to use of~~ existing primary AM(R)S and/or AMS(R)S allocations, or, if necessary, new allocations for these two services to support the command and control (~~and including~~ ATC communications) of UAS in non-segregated airspace. ~~If In connection with studies identified in Resolution 421 (WRC-07), and further ongoing studies to determine suitability of other technologies, substantiate regulatory actions at WRC 11 for, related to~~ the sense and avoid function of UAS, the United States supports ~~possible regulatory modification to use of~~ existing ~~radiodetermination service~~ primary ARNS allocations, or, if necessary, new radiodetermination service allocations based on the satisfactory results of ITU-R studies to that service to support the sense and avoid function of UAS in non-segregated airspace. The United States does not support new allocations for the radiocommunication requirements for UAS payloads. The identification of any frequency band within AM(R)S, AMS(R)S and ARNS allocations, or any new frequency band allocation to these AM(R)S, AMS(R)S and ARNS services for use by the proposed UAS command and control, sense and avoid functions, must ensure the protection of the other co-primary services in that band, and not unduly constrain use of that band by other co-primary services. Development of related ITU-R Recommendations is also supported. (August 27, 2008).

***WAC Informal Working Group (IWG)-1***

**Preparation for ITU Radiocommunication Conferences**

**UNITED STATES OF AMERICA  
PRELIMINARY VIEWS ON WRC-11**

**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 bands 112-117.975 MHz, 960-1 164 MHz and 5 000-5 030 MHz in accordance with Resolutions 413 (Rev.WRC-07), 417 (WRC-07) and 420 (WRC-07);*

**ISSUE:** The **Resolution 420 (WRC-07)** aspect of **WRC-11 Agenda Item 1.4**

**Resolution 420 (WRC-07) resolves**

1. that ITU-R investigate, with priority, AM(R)S spectrum requirements for surface applications in the 5 GHz range, in order to determine if they can be fulfilled in the band 5 091-5 150 MHz;
2. that ITU-R further investigate, if necessary, the feasibility of an allocation for AM(R)S for surface applications at airports, study the technical and operational issues relating to the protection of RNSS in the bands between 5 000 and 5 030 MHz and of the radio astronomy service in the band 4 990-5 000 MHz from AM(R)S, and develop appropriate Recommendations;
3. that WRC-11 consider results of the above studies and take appropriate actions.

**BACKGROUND:**

The RNSS bands in the 1164-1610 MHz range are now reaching a point where little bandwidth remains for new signals. Having foreseen this lack of spectrum for future RNSS applications, the 5000-5010 MHz (Earth-to-space) and 5010-5030 MHz (space-to-Earth) bands were allocated to the RNSS by WRC-2000 and confirmed by WRC-03. The Navstar Global Positioning System (GPS) and other RNSS systems such as QZSS, Galileo and GLONASS are planning to implement RNSS services in these 5 GHz bands. Aside from the congested 1 GHz RNSS bands, the 5000-5030 MHz bands are currently the only ones that remain of practical use to the RNSS and there appear to be no viable future RNSS allocation possibilities.

The introduction of AM(R)S in the 5GHz RNSS bands would rule out the possibility of domestic mobile GPS stations. Such mobile stations may indeed need to operate in and around airports to be effective, and studies have shown that AM(R)S systems might be incompatible with such use. Furthermore, new 5 GHz RNSS applications; e.g., small anti-jam antennas, are made possible due to the shorter wavelength, and the 5000-5030

MHz bands need to be maintained for future GPS development. Since WRC-07, a preliminary GPS service downlink has been designed for the 5010-5030 MHz band and it is expected that this design will evolve over the next few years as technology progresses to more fully take advantage of the potential available.

It appears that the proposed AM(R)S allocations would effectively end future RNSS development of the 5000-5030 MHz bands. If AM(R)S systems were deployed throughout airports worldwide, finding sites for future RNSS terminals, or the use of mobile RNSS terminals would become problematic. As a practical matter, once an AM(R)S system is installed at an airport, it would be difficult to have it modified to accommodate an incoming RNSS system. Since current RNSS applications operate at airports, it would be useful for 5 GHz applications to operate alongside of 1 GHz applications and a significant burden to operate 5 GHz applications several kilometres from airports.

Finally, there is no clear regulatory path to protecting the RNSS from the AM(R)S. The RNSS requires protection, but some proposed regulatory language appears to be insufficient. The clause “not cause harmful interference to, nor claim protection from” would effectively make the AM(R)S Secondary to RNSS. However, due to the safety-service status of the AM(R)S, several serious regulatory questions have been raised. For example, how can the RNSS, which is not normally considered a safety service, claim protection from the AM(R)S? Since the AM(R)S allocation is intended to provide safety at airports, the AM(R)S allocation cannot waive its safety status and there is no easy regulatory fix. Hence RNSS proponents still have yet another strong argument to oppose a new AM(R)S allocation in the 5000-5030 MHz band.

#### **U.S. VIEW:**

In regard to Resolution 420 of WRC-11 A.I. 1.4, until technical and regulatory approaches can be demonstrated to be feasible in these bands, the United States believes there should be no changes proposed to the allocations in the bands 5000-5010 MHz and 5010-5030 MHz.

## Document WAC/015(31.03.09)

### *WAC Informal Working Group (IWG)-1*

#### Modifications to NTIA's Preliminary View on Agenda Item 1.9 (see WAC/010(31.03.09))

#### Preparation for ITU Radiocommunication Conferences

#### UNITED STATES OF AMERICA PRELIMINARY VIEWS ON WRC-11

**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.

**ISSUES:** Appendix 17 outlines the frequencies and channelling arrangements in the high-frequency bands for the maritime mobile service (MMS). During WRC-03, changes to Appendix 17 allowed for the use of digital technology on a no-protection, non-interference basis in certain bands (footnote "p").

WRC-07 modified Resolution 351 (Rev. WRC-07) to invite WRC-11 to consider necessary changes to Appendix 17 to implement the use of new technology by the MMS with a view to promote efficiency. To this end, the ITU-R tasks are to finalize studies:

1. to identify any necessary modifications to the frequency tables contained within Appendix 17;
2. to identify any necessary transition arrangements for the introduction of new digital technologies and any consequential changes to Appendix 17; and
3. to recommend how digital technologies can be introduced while ensuring compliance with distress and safety requirements.

**BACKGROUND:** ~~The future-current spectrum needs of the maritime mobile service in the HF bands are now inextricably connected closely related to the introduction of new HF data exchange technologies which now function as an effective alternative standard for narrow-band direct printing (NBDP) for commercial shipping. In the past decade the use of NBDP for commercial communication worldwide, has is in rapidly declined worldwide.~~ The International Maritime Organization (IMO) ~~has noted that NBDP in the past has been mostly used~~ currently is for broadcasting of maritime safety information (MSI), ship reporting, weather forecasts, and for business communications, e.g. by fishing fleets. All these functions are now achievedable by through alternative data communications technology through HF and Satellite transmissions.

The global maritime community has successfully demonstrated that expects to improved the utilization of maritime mobile service spectrum can be achieved by formally adopting allowing the ongoing practice of the usinge of data transmissions on a variety of certain Appendix 17 voice channels, NBDP channels and/data /fax frequencies previously used primarily for radio

telegraphy, Morse code and facsimile transmissions. ~~This a~~ Utilization of spectrum in this manner will provide critical additional flexibility for data exchange services in future.

The ITU and IMO have now had 4 years to ~~will~~ evaluate the HF data service for incorporation into the Global Maritime Distress Safety System (GMDSS). This experience has demonstrated that ~~Additionally, the communication protocols of the HF data service by~~ the ITU and IMO will need to review communication protocols of the HF data service before completely removing the NBDP requirement from GMDSS. HF NBDP remains useful for distress communications in the Polar Regions (sea area A4) where other terrestrial means of communication are ~~no longer~~ less reliable, ~~and there is no coverage from geostationary satellites.~~ Preservation of NBDP ~~is possible~~ can be achieved by using the HF distress and safety frequencies in Appendix 15.

Amendments to RR Appendix 17 may also have consequential impact to RR Appendix 25.

**U.S. VIEW:** If studies under Resolution 351 (WRC-07) show that new digital technologies protect existing distress and safety frequencies, and take into account the commercial communication aspect of the HF band use, the United States supports the revision of RR Appendix 17 to accommodate new digital technologies for the maritime mobile service.

**Document WAC/016(31.03.09)**

***WAC Informal Working Group (IWG)-1***

Modifications to NTLA's Preliminary View on  
Agenda Item 1.12 (see WAC/007(13.01.09))

Preparation for ITU Radiocommunication Conferences

**UNITED STATES OF AMERICA  
PRELIMINARY VIEWS ON WRC-11**

**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 results of ITU-R studies in accordance with Resolution 754 (WRC-07)

**ISSUE:** Resolution 754 (WRC-07), "Consideration of modification of the aeronautical component of the mobile service allocation in the 37-38 GHz band for protection of other primary services in the band," calls for consideration of the compatibility of the aeronautical mobile service (AMS) with other primary services in the band 37-38 GHz in order to determine appropriate compatibility criteria for inclusion within the Radio Regulations or an appropriate modifications to the Table of Frequency Allocations.

**BACKGROUND:** The band 37-38 GHz is allocated on a primary basis to the fixed, mobile and space research (space-to-Earth) services, and the 37.5-38 GHz portion of this band is also allocated on a primary basis to the fixed-satellite service (space-to-Earth). Space research service (SRS) earth station receivers are being implemented in the 37-38 GHz band to support manned missions, for both near Earth and deep space distances. Use of the wider bandwidth available in the 37-38 GHz band is required to support the increasing data requirements of planned manned missions.

Preliminary analysis within ITU-R Working Party 7B has shown that aeronautical mobile stations (assuming parameters from lower bands) are capable of causing unacceptable levels of interference ~~for significant periods whenever they are within the~~ -line-of-sight of an SRS receiving earth station. In particular, SRS earth station receivers operating in the 37-38 GHz band have a very low interference threshold. Protection criteria applicable to these SRS Earth stations operating with either deep space or non-deep-space missions are contained in ITU-R Recommendations ITU-R SA.1396, ITU-R SA.609, ITU-R SA.1157 and ITU-R SA.1015s. The operation of an aeronautical mobile station exceeding the protection criteria of the SRS for an extended period could jeopardize the success of a manned or scientific space mission. WRC-07 approved this agenda item based on information that no aeronautical mobile systems operate or plan to operate in the 37-38 GHz band.

CITEL proposed this agenda item at WRC-07 with the intent to exclude the AMS from the Mobile Service allocations in the 37-38 GHz band, in order to determine appropriate compatibility criteria, and protect the other services using this band, particularly the space research service. However, subsequent to WRC-07 it was believed that some aeronautical use might be made of this band if the proper precautions were taken to protect the existing services. Preliminary studies using technical and operational criteria for AMS operations in lower bands are not necessarily applicable to future potential AMS use in the 37-38 GHz band. These earlier studies have shown that sharing with traditional AMS systems is not feasible if the AMS systems were to operate in the band. However, since WRC07 adopted this agenda item, the aviation industry is considering several candidate bands, which includes the 37-38 GHz band, for a newly identified airborne application. If studies show this application can operate without exceeding applicable interference thresholds, it may be feasible to establish sharing criteria that protects the other primary services in the band 37-38 GHz.

Resolution 754 (WRC-07) calls for sharing studies between the AMS and the SRS, fixed service, FSS and MS in the band 37-38 GHz to determine appropriate criteria to ensure the protection of the other primary services from AMS operations in the band 37-38 GHz. FSS system characteristics which may be used in sharing or compatibility studies can be found in Recommendation ITU-R S.1328.

**U.S. VIEW:** The United States supports sharing studies in the band 37-38 GHz to determine appropriate compatibility criteria for the AMS. If the studies show that sharing is feasible with particular AMS applications, support the establishment of sharing criteria that both protects the other primary services in the band 37-38 GHz, as well as allows for such compatible AMS applications. However, if the studies show that sharing is not feasible, support the suppression of the AMS from the 37-38 GHz band.

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**Document WAC/017(31.03.09)**

***WAC Informal Working Group (IWG)-1***

**UNITED STATES OF AMERICA**

**DRAFT PRELIMINARY VIEWS ON WRC-11**

**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)

**ISSUE:** To determine if any new radiolocation service allocations or applications in a portion of 30-300 MHz, with bandwidth no larger than 2 MHz, are compatible with existing services and applications in these bands

**BACKGROUND:**

Resolution 611 (WRC-07) asks WRC-11 to determine if any new radiolocation service allocations or applications in a portion of 30-300 MHz, with bandwidth no larger than 2 MHz, are compatible with existing services and applications in these bands. The Resolution recognizes that it is important to ensure radiolocation radars can be operated compatibly with the existing primary services having allocations in the portions of the VHF band. Further, the Resolution states that introduction of new systems in the radiolocation service shall be avoided in the frequency bands 156.4875-156.8375 MHz and 161.9625-162.0375 MHz, which are used by distress and safety applications in maritime mobile service. Among other things, the ITU-R is invited to study the technical characteristics, protection criteria, and other factors to ensure that radiolocation systems can operate compatibly with systems operating in accordance with the Table of Frequency Allocations in services in the 30-300 MHz frequency range band. Working Party 5B is the lead Working Party on this agenda item.

Based on contributions to ITU meetings and other regional groups, it appears that at least one administration is targeting the 154-156 MHz band for a new radar allocation for space-object detection purposes and that another is targeting the 138-144 MHz band for new radar allocations.

The 30-300 MHz band is allocated to and used by a wide variety of services, including the fixed, mobile, Aeronautical Mobile (R), Aeronautical Radionavigation, broadcasting and amateur services. In the United States, the 138-144 MHz band, portions of the 150-174 MHz and the 220-222 MHz bands are available for land mobile radio use. Private land mobile radio systems are used by companies, local, state or federal governments, and other organizations to meet a wide range of communication requirements, including coordination of people and materials, important safety and security needs, and quick response in times of emergency, but are not made available to the general public. A review of the FCC's licensing database for the frequency band 150-174 MHz band shows over 176, 000 active licenses. In the 154-156 MHz band alone, there are over 70,000 active licenses. The United States also has a large number of LMR systems operating in portions of the VHF band that are not part of the FCC licensing database. This frequency band has favourable propagation which allows implementation of systems with fewer base stations and hence a lower overall cost.

Further, in the United States, the bands 50-54 MHz, 144-148 MHz, and 222-225 MHz are allocated to the amateur and amateur satellite services. These bands are heavily populated by a variety of amateur and amateur satellite stations, including, but not limited to, over 9,800 voice repeater systems in these bands. VHF repeater systems are a predominant medium for amateur communications over a short range. These bands are also used by amateurs for simplex, digital, and long-range weak signal communication via terrestrial, satellite, and earth-moon-earth propagation paths.

**U.S. VIEW:** The United States is of the view that before any new radar allocations within 30-300 MHz can be adopted, it needs to be demonstrated that they are compatible with existing services (including land mobile systems and amateur radio systems) and that they would not unduly constrain use of the band by existing services.

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***WAC Informal Working Group (IWG)-1***  
**UNITED STATES OF AMERICA**  
**DRAFT PRELIMINARY VIEWS ON WRC-11**

**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 the range 3-50 MHz, in accordance with Resolution **612 (WRC-07)**

**ISSUE:** To determine if oceanographic radar applications in portions of the band 3-50 MHz are compatible with existing services and applications in these bands.

**BACKGROUND:**

Resolution **612 (WRC-07)** asks WRC-11 to consider allocations to the radiolocation service between 3 and 50 MHz, in bands not to exceed 600 kHz each, for the operation of oceanographic radars. The bands are to be determined by ITU-R sharing studies.

Resolution 612 recognizes that oceanographic radars have been operated on an experimental basis for more than 30 years, and that the developers of these experimental systems have made efforts to mitigate interference to other services. Although oceanographic radars operate through the use of ground wave propagation, the spectrum to be considered, particularly below 30 MHz, reliably supports sky wave propagation, the refraction of signals back toward the earth by the ionosphere, enabling long-distance communication. Most of the users of incumbent services below 30 MHz rely on this mode of propagation.

Given the reliance of the mobile, amateur and broadcasting services on sky wave propagation, the widespread geographic location of these services' incumbent users and listeners and near constant use of these services at all times of the day somewhere in the world, sharing with the mobile, broadcast and amateur services would be difficult. Further, the maritime, aeronautical, and standard time and frequency services are incompatible with HF oceanographic radar because of the safety aspects of these services.

**U.S. VIEW:** The United States is of the view that if an allocation to the radiolocation service within 3-50 MHz is to be adopted, compatibility with incumbent services must be demonstrated. Sharing with the maritime, aeronautical, standard time and frequency, broadcasting, and amateur services should be avoided.

## **Terrestrial Services**

**Document WAC/024(31.03.09)**

***WAC Informal Working Group (IWG)-2***

***Modifications to***

***NTIA's Preliminary View on Agenda Item 1.8 (see WAC/007(13.01.09))***

**UNITED STATES OF AMERICA**

**DRAFT PRELIMINARY VIEWS ON WRC-11**

**AGENDA ITEM 1.8:** *to consider the progress of ITU-R studies concerning the technical and regulatory issues relative to the fixed service in the bands between 71 GHz and 238 GHz, taking into account Resolutions 731 (WRC-2000) and 732 (WRC-2000);*

**ISSUE:**

The intent of this agenda item is to study compatibility between passive and active services and develop sharing criteria for co-primary active services in bands above 71 GHz. In particular, it is important to study the spectrum requirements for active services for which the technology will be commercially available at a future date. Based on proposals and documentation available at WRC-07 it is likely that some administrations may seek to develop sharing criteria for the radio regulations in the form of pfd limits on space service downlinks.

**BACKGROUND:**

WRC-2000 adopted Resolutions 731 and 732 as part of the conference decisions on the allocation of frequency bands above 71 GHz to the Earth exploration-satellite (passive) and radio astronomy services resulting in an overall rearrangement of the allocation tables in Article 5 of the Radio Regulations. These resolutions became necessary because the ITU-R was not able to fully evaluate for the active services (e.g., fixed, mobile, radiolocation, etc.), the new arrangement of their allocations vis-à-vis the passive allocations or each other. Therefore, the conference decided to adopt these two resolutions providing for further study and possible action in the future when active services technology and emerging requirements become better known. Since that time, millimeter wave spectrum above 71 GHz has become the subject of increasing interest for commercial use due to its unique propagation characteristics and the wide bandwidth available for carrying telecommunications traffic. New technologies are now emerging that offer the possibility of using these higher frequency bands for fixed wireless applications, taking advantage of the wide bandwidths available to support applications such as extremely high speed data transmission (e.g., data rates in the 1 to 10 Gbps range) for short distance (e.g., < 1-2 km). Several administrations have made or are making provisions for such wideband terrestrial fixed wireless applications. In particular, in the United States, the Fixed Service has operational links in the frequency bands 71-76 GHz, 81-86 GHz, 92-94 GHz and 94.1-95 GHz.

In a somewhat unique set of circumstances, WRC-07 did not adopt a Resolution to define this agenda item. Therefore, the definition and scope of the agenda item is unclear.

**U.S. VIEW:**

The United States supports ITU-R studies concerning the fixed service bands between 71 and 238 GHz. The United States supports protection of the existing services allocated within this frequency range.

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**UNITED STATES OF AMERICA**

**DRAFT PRELIMINARY VIEWS ON WRC-11**

**AGENDA ITEM 1.17:** to consider the results of sharing studies between the mobile service and other services in the band 790-862 MHz in Regions 1 and 3, in accordance with **Resolution 749 (WRC-07)**, to ensure the adequate protection of services to which the frequency band is allocated, and to take regulatory actions as appropriate

**ISSUE:** The main issue is to avoid impact on Region 2 services in 790-862 MHz. Although this Agenda Item focuses on Regions 1 and 3, the results of the sharing studies called for could impact on services within the United States or its territories in terms of 1) cross-border frequency use by administrations in Regions 1 and 3 and/or 2) precedents established by using methodologies or characteristics in the studies.

**BACKGROUND:**

The transition to digital television is underway in many countries worldwide. The eventual global transition to digital television will make valuable spectrum available for introduction of the next generation wireless services. In the United States, for example, legislation was signed into law requiring all TV broadcasters to switch from analog to digital transmissions by a certain date in 2009. All television stations operating on TV channels 52-69 are required to vacate this spectrum as part of the transition from analog to digital television. This legislation became the catalyst that opened up this spectrum for other uses, including spectrum for commercial mobile systems and for public safety agencies to implement 700 MHz voice and data communications systems. It is important to ensure that possible regulatory solutions developed under WRC-11 Agenda Item 1.17 do not preclude some countries or regions from opportunities to benefit from this transition and, also facilitate global roaming, reduce equipment cost, etc.

At WRC-07, footnotes 5.314, 5.316, 5.316A, 5.316B, and 5.317A that pertain to the band 790-862 MHz were either modified or included in the Table of Frequency Allocations. In Region 1 the 790-862 MHz band was allocated to the mobile service on a primary basis and identified for IMT effective in 2015. In addition, more than 70 countries in Region 1 identified the band for IMT effective immediately. In Region 3, where the band was already allocated to the mobile service on a primary basis, a number of countries also identified it for IMT. While unrelated to WRC-11 Agenda Item 1.17, it is worth noting that WRC-07 also allocated the band 698-806 MHz to the mobile service on a primary basis in Region 2 and identified it for IMT.

Footnote 5.317A, adopted into the Radio Regulations, states:

**5.317A** Those parts of the band 698-960 MHz in Region 2 and the band 790-960 MHz in Regions 1 and 3 which are allocated to the mobile service on a primary basis are identified for use by administrations wishing to implement International Mobile Telecommunications (IMT) See Resolution **224 (Rev.WRC-07)** and Resolution **749 [COM4/13] (WRC-07)**. This identification does not preclude the use of these bands by any application of the services to which they are allocated and does not establish priority in the Radio Regulations. (WRC-07)

Also of note is the GE06 Agreement that contains a plan for digital TV covering frequencies including the 790-862 MHz band in Region 1 and one country in Region 3. The GE06 Agreement also contains provisions for the coexistence between the terrestrial broadcasting service and other terrestrial services, as well as the list of other primary terrestrial services.

Since the sharing studies called for under Agenda Item 1.17 between the mobile service and the other services that are allocated on a primary basis in the 790-862 MHz band were not completed prior to WRC-07, these are called for under Agenda Item 1.17 and are being conducted within the purview of Joint Task Group (JTG) 5-6.

JTG 5-6 will conduct sharing studies to ensure the protection of the services to which the band 790-862 MHz is currently allocated. Adjacent channel interference will be treated within these studies. The results of the studies conducted by the JTG 5-6 will be made available to the relevant ITU-R Working Parties with the view that these Working Parties can develop ITU-R Recommendations and/or Reports, as appropriate, noting that according to its Terms of Reference, JTG 5-6 will not develop ITU-R Recommendations. It also should be pointed out, that at the JTG 5-6 meetings held thus far, interventions by the United States commenting on the methodologies and technical characteristics being considered for study have been discounted for the most part since the United States is in Region 2.

**U.S. VIEW:** The scope of the WRC-11 Agenda Item 1.17 studies is limited to terrestrial services only in Regions 1 and 3 and only in the band 790-862 MHz. The United States is of the view that, there are no bases for any changes to the Radio Regulations pertaining to terrestrial services in the band 790-862 MHz in Region 2. Consequently, the United States is opposed to any proposals to modify Radio Regulations for Region 2 services in the band 790-862 MHz. The U.S. also seeks to avoid undue constraints that may impede worldwide introduction of new telecommunications services in the band 790-862 MHz.

***WAC Informal Working Group (IWG)-2***

***Draft Modifications to***

***NTIA's Preliminary View on Agenda Item 1.19 (see WAC/005(13.01.09))***

**UNITED STATES OF AMERICA**

**DRAFT PRELIMINARY VIEWS ON WRC-11**

**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)

**ISSUE:** Resolution 956 (WRC-07) calls for studies into the potential need for regulatory measures regarding related to the application of software-defined radio (SDR) technologies and/or cognitive radio systems (CRS), and specifies that the results of these studies should be considered reviewed at WRC-11 for possible action. The resolution also specifies potential issues with cognitive radio systems, including the possible need for a worldwide pilot channel for "harmonization" of such systems.

**BACKGROUND:**

Agenda item 1.19 originated from various proposals at WRC-07. One proposal focused on cognitive radio and the possibility of a worldwide allocation for a "cognition supporting pilot channel (CPC)" – essentially, a pilot channel which would provide radio systems with cognitive capabilities with information regarding locally-available radio spectrum. Another proposal suggested more general studies regarding both cognitive radio and software-defined radio technologies. The ITU-R has not reviewed the studies mentioned in Resolution 956 notes that without additional means, it may not be possible for a radio system to discover receive-only usage. Resolution 956 (WRC-07) also notes that some studies indicate the usefulness of having means to assist in the determination of the local spectrum usage, such as wireless or wired access to a database or to other networks.

Working Party 1B is the lead ITU-R group on this agenda item and is developing a common understanding of SDR and CRS that is appropriate for all radiocommunication services. Previous ITU-R work on SDR was done in ITU-R Working Parties 5A and 5D (or their predecessors Working Parties 8A and 8F) and resulted in the adoption of Report M.2117 ("Software defined radio in the land mobile, amateur and amateur satellite services"). In addition, in this study cycle, Working Party 5A is developing a new Report entitled "Cognitive radio systems in the land mobile service". The stated scope of this Report, which is currently at the Working Document stage, is to address "the definition, description and application of cognitive radio systems in the land mobile service." The work within WP 5A has focused on SDR/CRS for Land Mobile Services. Other ITU-R Working Parties (including Working Parties 4C, 4A, 7C, and 7D) are pursuing studies of their own on the implications of SDR and CRS use within and/or on the services for which those groups are responsible, and on whether it is

appropriate for technologies or techniques that dynamically search for spectrum to be used in particular frequency bands that are used by receive-only, passive, and/or safety services. In some of these bands, services are fully operational at all times in all locations on Earth and use low-power signals that will be difficult for any device that is designed to determine spectrum usage before operating to detect. In other bands, terminals are capable of operating at any location at any time, making detection both difficult and uncertain.

**U.S. VIEW:** ~~The United States supports ITU-R studies within Working Party 1B on the relevance of regulatory measures for software-defined radio and cognitive radio systems. Relevant ITU-R working parties are conducting technical studies, as noted in Resolution 956 (WRC-07). The United States will participate as appropriate in these studies. The United States does not believe that changes to the Radio Regulations are needed to address these technologies. In particular, the United States does not support regulatory measures leading to allocations, including identification footnotes, for software-defined radio and cognitive radio systems, as these are technologies, each with its own attributes, and not radiocommunication services. With respect to the definitions, description, or characterization of SDR or CRS, there is no need to include a definition of SDR or CRS in the Radio Regulations. In addition, the United States encourages administrations to contribute technical studies to other ITU-R working parties regarding SDR and CRS technologies, their functionalities, the key technical characteristics, requirements, performance, and benefits to the various ITU-R services. As these technologies may also be implemented in license exempt devices, which operate on a non-interference, no protection from interference basis, after being authorized by an administration be used in conjunction with unlicensed/short range device (SRD) systems, it may be important to follow studies on WRC-11 agenda item 1.22 on short-range device SRD systems.~~  
(August 7, 2008)

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## **Document WAC/027(31.03.09)**

### **IWG-2 Views A and B on the US Preliminary View on Agenda Item 1.20**

**Agenda Item 1.20:** To consider the results of ITU-R studies and spectrum identification for gateway links for high altitude platform stations (HAPS) in the range between 5 850-7 075 MHz in order to support operations in the fixed and mobile services, in accordance with Resolution 734 (Rev.WRC-07).

#### **Summary**

Members of IWG-2 considered proposed changes to the existing U.S. preliminary view on agenda item 1.20 contained in Document WAC/007. This preliminary view was developed prior to creation of the WRC Advisory Committee for WRC-11.

After thorough discussion, IWG-2 members were unable to reach agreement on the proposed modifications to the U.S. preliminary view on this agenda item. Consequently, two views on the proposed modifications to the U.S. preliminary view were developed.

View A (contained in Attachment A to this document) is supported by Aerovironment and Stratocomm and reflects the views of these companies. IWG-2 as a whole did not review and approve the text provided in Attachment A.

View B (contained in Attachment B to this document) is supported by SES Americom, Globalstar, Intelsat, ICO, Hughes Network Systems and DIRECTV and reflects the views of these companies. IWG-2 as a whole did not review and approve the text provided in Attachment B.

Beyond the substantive disagreements on the proposed modifications to the preliminary view, IWG-2 did consider two additional points and agreed they should also be conveyed through the WAC to the FCC. Specifically, that any discussion of possible identification of two channels of 80 MHz each in the range 5850-7075 MHz for HAPS gateway links is, under Resolution 734 (Rev. WRC-07), addressing possible identification for HAPS within the fixed service, and not identification of spectrum generally within a frequency band; and that there is a need for new electromagnetic compatibility studies for HAPS in the fixed service with respect to all other services with allocations in the particular bands, including other applications in the fixed service.

IWG-2 respectfully submits this document and the attached two Views to the WRC Advisory Committee for consideration.

ATTACHMENT A

View A regarding the US Preliminary View on Agenda Item 1.20

**RATIONALE FOR THE CHANGES TO THE PRELIMINARY VIEW (PV)  
OF THE UNITED STATES REGARDING WRC-2011 AGENDA ITEM 1.20 (HAPS)  
PROPOSED BY AEROVIRONMENT AND STRATOCOMM**

**Executive Summary**

- The current Preliminary View (PV) of the United States on HAPS was adopted before the establishment of the FCC's WAC, without the participation of any proponents of this emerging, commercially oriented, telecommunications technology and with no technical basis or support for its conclusions. As such, it will prevent the implementation and utilization of HAPS systems that would represent a new, desirable and cost-effective option for many countries around the world.
- The fundamental concern with the PV is that it incorporates wording that proposes a completely different and much more restricted regulatory status for HAPS gateway links than is contemplated by Agenda Item 1.20, which states specifically that studies and spectrum identification is to be "in accordance with Resolution 734."
- Specifically, Resolution 734 resolves that the sharing studies should be extended "with a view to identifying....channels... for gateway links...in bands already allocated to the fixed service, *while ensuring the protection of existing services.*" But the existing PV states that "The identification of any spectrum..."*should not constrain the use of [any such spectrum] by any application of the services to which they are allocated.*"
- Those differing statements imply vastly different regulatory regimes:
  - Any identification for spectrum for HAPS restricted to bands already allocated to the fixed service, where provisions of Article 9 for the coordination of satellite and terrestrial services would apply.
  - The use of the words "shall not constrain" implies a much more restricted regulatory regime. It would permit unrestricted expansion of other systems into areas currently being served by HAPS gateway stations. It would be totally unfair and unreasonable, would be detrimental to a HAPS operator and would destroy its business.
- The current PV -- through use of the word "constrain" -- has effectively made the premature, technically unsupported decision that sharing is not possible, not only before any of those studies have been completed, and before ascertaining the levels of interference that might be caused, but even before considering the mitigation techniques that could be taken to reduce any possible interference to acceptable levels.

- The PV should be revised to reflect the exact wording of the resolution:

“The United States supports the studies for potential HAPS identification in the 5 850 – 7 075 MHz band. The identification of any spectrum for HAPS in the 6 GHz band should ensure the protection of existing services in the range 5850-7075 MHz and in adjacent bands.”

## **Introduction**

The establishment of WAC-2011 in January, 2009, is the first time the FCC has sought the views of industry on Preliminary Views (PVs) of the United States for WRC-2011. Therefore, the FCC’s adoption of recommendations for Preliminary Views is one of first impression. Consequently, we urge the Commission to consider each PV on its own merits, that is, de novo, without giving any preference to the PVs that have been adopted by other government agencies.

For the first time ever, the FCC did not establish a WAC for this impending ITU Conference until two full years after the conclusion of the previous Conference, WRC-07, which adopted the Agenda Items that were to be considered at WRC-2011.

This is especially important in the case of WRC-2011 Agenda Item 1.20, on the possible identification of spectrum around 6 GHz for gateway links for High-Altitude Platform Stations (HAPS), the commercial and non-Federal Government implementations of which would clearly fall under the exclusive aegis of the FCC.

Preliminary Views on this Agenda Item were adopted by NTIA and the US State Department before the establishment of the FCC’s WAC and without the participation of any proponents of this emerging, commercially oriented, telecommunications technology.

Following its adoption as a Preliminary View of the United States by the State Department in August, 2008, this PV on HAPS was presented at the September, 2008 meeting of PCC-II of CITEI, the Inter-American Telecommunications Commission. Unless that PV is revised, it will remain the US view at the next meeting of PCC-II in June, 2009.

The crux of our concern with the State Department’s PV is that it incorporates wording that proposes a completely different and much more restricted regulatory status for HAPS gateway links than is contemplated by Agenda Item 1.20, which states specifically that studies and spectrum identification is to be “in accordance with Resolution 734.”

Specifically, Resolution 734 resolves that the sharing studies should be extended “with a view to identifying....channels... for gateway links...*while ensuring the protection of existing services.*” But the existing State Department PV state that “The identification of any spectrum...”*should not constrain the use of [any such spectrum] by any application of the services to which they are allocated.*” Those differing statements imply vastly different regulatory regimes as discussed below.

## **Rationale**