

FEB 17 2011

The Honorable Phillip L. Verveer  
Coordinator  
International Communications and Information Policy  
Department of State  
Washington, D.C. 20520

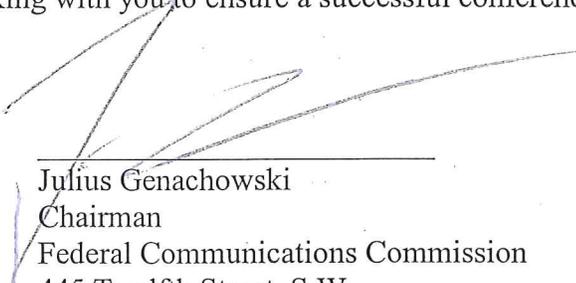
Dear Ambassador Verveer:

On behalf of the National Telecommunications and Information Administration of the United States Department of Commerce and the Federal Communications Commission, respectively, we jointly transmit to you the enclosed first set of U.S. proposals for the upcoming World Radiocommunication Conference 2012 (WRC-12). We respectfully request that you send these proposals forward to the International Telecommunication Union.

The results of the WRC-12 will have significant implications for the United States government, as well as for U.S. industry and consumers who use radiocommunications. We are pleased to be able to provide you with the attached reconciled proposals covering many of the issues to be addressed at WRC-12.

With your assistance, we will continue our efforts to resolve other outstanding WRC-12 issues. We look forward to continue working with you to ensure a successful conference.

  
Lawrence E. Strickling  
Assistant Secretary  
for Communication and Information  
United States Department of Commerce  
1401 Constitution Avenue, N.W.  
Washington, D.C. 20230

  
Julius Genachowski  
Chairman  
Federal Communications Commission  
445 Twelfth Street, S.W.  
Washington, D.C. 20554

Enclosure

## Attachment

### U.S. WRC-12 Proposals – 1<sup>st</sup> Tranche

February 17, 2011

Agenda Item	Short Title	Description
1.3	Unmanned Aircraft Systems (terrestrial)	Proposal for a new aeronautical mobile (Route) service allocation in the 5030 – 5091 MHz band to support airport radio local area network (RLAN) systems.
1.5	Electronic News Gathering	Proposal for a new Resolution to encourage administrations and broadcasters to develop a database to harmonize the use of electronic news gathering systems.
1.6A	Passive Services at 275-3000 GHz (Res. 950)	Proposal to update the list of frequency bands in the 275-3000 GHz range to be used for measurements by passive services, to allow the experimentation and development of various active service applications in the 275-3000 GHz range, and to allow the passive space science services to operate up to 3000 GHz for ground- and space-based experimentation without placing constraints on other services in the band.
1.6B	Free-Space Optical	Proposal not to regulate the use of free-space optical links.
1.7	Aeronautical Mobile-Satellite (Route) and Mobile-Satellite Services	Proposal to revise procedures to facilitate priority access by the aeronautical mobile-satellite (Route) service to mobile-satellite spectrum in the L-band.
1.8	Fixed Service at 71-238 GHz	Proposal not to modify existing regulatory provisions concerning the fixed service in the 71-238 GHz band.
1.10	Safety Systems for Ships and Ports	Proposal to add exclusive maritime mobile, aeronautical mobile (Off-Route), and mobile-satellite service allocations for the Automatic Identification System (AIS 1&2), Channels 87B & 88B of Appendix 18, for search and rescue.
1.10	Safety Systems for Ships and Ports	Proposal to modify the international radio regulations to permit Enhanced Satellite Automatic Identification System Detection on Channels 75 and 76.
1.10	Safety Systems for Ships and Ports	Proposal to modify the international radio regulations to permit simplex use of duplex channels, provide protection of terrestrial Automatic Identification System, identify channels for data exchange, and not permit interleaving of safety channels.
1.10	Safety Systems for Ships and Ports	Proposal for an exclusive maritime mobile service allocation in the 495-505 kHz band.
1.11	Space Research Service at 22.55-23.15 GHz	Proposal for a new allocation to the space research service in the band 22.55-23.15 GHz.
1.12	Aeronautical Mobile Service Interference at 37-38 GHz	Proposal for additional regulatory provisions to apply to the aeronautical mobile service in the 37-38 GHz band in order to protect other existing services in the band.
1.13	Broadcasting-Satellite Service at 21.4-22 GHz	Proposal for new regulatory provisions to ensure protection of the fixed services from possible interference of the broadcasting-satellite service in the 21.4-22 GHz band.

<b>Agenda Item</b>	<b>Short Title</b>	<b>Description</b>
<b>1.14</b>	Radiolocation Service at VHF	Proposal not to support additional allocations to the radiolocation service in the band the 154-156 MHz band.
<b>1.17</b>	Mobile and Other Services at 790-862 MHz	Proposal to preserve the regulatory status and integrity of the mobile service in the 698-890 MHz band in the Americas region.
<b>1.18</b>	Radiodetermination-Satellite Service at 2483.5-2500 MHz	Proposal to modify the coordination requirements for the mobile-satellite service in the 2483.5-2500 MHz band.
<b>1.19</b>	Software-Defined and Cognitive Radio Systems	Proposal against additional international regulations of software-defined and cognitive radio systems.
<b>1.22</b>	Emissions from Short-Range Devices	Proposal against additional international regulations of the short-range devices. No change to Radio Regulations Article 5 is needed as short-range devices are permitted to operate in any frequency consistent with Article 5 the Table of Frequency Allocations or national regulations.
<b>1.23</b>	Amateur Service at 415-526.5 kHz	Proposal for additional spectrum allocations to the amateur service in 461-469 kHz and 471-478 kHz bands.
<b>1.24</b>	Meteorological-Satellite Service at 7750-7850 MHz	Proposal for additional spectrum allocations to the meteorological-satellite service in the 7850-7900 MHz band.
<b>7</b>	Satellite Network Filings (Res. 86)	Proposal to modify the satellite coordination provision No. 9.36: Satellite operators need a definitive list of networks from the Bureau with which coordination needs to be effected.
<b>7</b>	Satellite Network Filings (Res. 86)	Proposal to modify the satellite coordination provision No. 9.51: Eliminates the need to respond to a coordination request published pursuant to No. 9.7 if the Administration is identified as being effected.
<b>7</b>	Satellite Network Filings (Res. 86)	Proposal to add a new resolution on bringing into use of satellite networks: Requires the BR to maintain data on its website with regard to satellites that have been brought into use.
<b>7</b>	Satellite Network Filings (Res. 86)	Proposal not to modify existing regulatory provisions concerning the broadcast satellite coverage No. 23.13.
<b>7</b>	Satellite Network Filings (Res. 86)	Proposal to modify the satellite coordination provision Appendix 4 on Coordination Arc: Reduces the number of satellites with which a satellite network needs to coordinate in the C and Ku-Bands.
<b>8.1.2</b>	Inconsistencies in the Radio Regulations	Proposal to change the term International Mobile Telecommunication 2000 (IMT-2000) to IMT throughout the Radio Regulations.
<b>8.2</b>	Future Agenda Items	Proposal to retain on the agenda for WRC-15, the item dealing with the use of the 5091-5150 MHz band by the fixed-satellite service (Earth-to-space) feeder links of NGSO MSS.

## UNITED STATES OF AMERICA

### PROPOSALS FOR THE WORK OF THE CONFERENCE

**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)*

**Background Information:** 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.

Some administrations expect 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 communication links 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 International Civil Aviation Organization (ICAO) future communications study may be able to identify technologies with some capability 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 aeronautical allocations to satisfy spectrum requirements 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 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 communication channel to relay information from a radio in the aircraft to the pilot on the 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

a manner equivalent to that of a 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 UAS industry is studying the suitability of various technologies for sense and avoid.

***Payload***

Resolution 421 (WRC-07) *Resolves 1* specifically excludes the allocation of spectrum at WRC-11 for payload applications. However, *invites ITU-R 3* does call for the development of an ITU-R report or recommendation on how to accommodate the radiocommunication requirements for UAS payloads. The purpose of this agenda item is not to seek new spectrum allocations to meet payload requirements.

The 5 030-5 091 MHz band is an appropriate band to satisfy the terrestrial, line-of-sight, spectrum requirements for the command and control of UASs in non-segregated airspace. Currently, there is minimum usage in this band worldwide. The lack of an existing or planned microwave landing system deployment in the United States ensures availability of appropriate aeronautical spectrum for a terrestrial line-of-sight UAS system in the 5 030-5 091 MHz band.

**Proposal:**

**ARTICLE 5**

**Frequency allocations**

**Section IV – Table of Frequency Allocations**

(See No.2.1)

**MOD** USA/1.3/1

**4 800-5 570 MHz**

Allocation to services		
Region 1	Region 2	Region 3
5 030-5 091	AERONAUTICAL RADIONAVIGATION <u>AERONAUTICAL MOBILE (R)</u> 5.367 5.444	

**Reasons:** To provide an AM(R)S allocation to support line-of-sight control links for unmanned aircraft (UA).

## UNITED STATES OF AMERICA

### PROPOSALS FOR THE WORK OF THE CONFERENCE

**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)*

**Background Information:** WRC-07 established Resolution 954 (WRC-07), which ‘invites ITU-R to carry out studies of ENG regarding possible solutions for global/regional harmonization in frequency bands and tuning ranges, taking into account: available technologies to maximize efficient and flexible use of frequency; system characteristics and operational practices which facilitate the implementation of these solutions...’ CPM11-1 established a framework for the studies to be undertaken as outlined in Resolution 954 (WRC-07) under agenda item 1.5.

Resolution 954 (WRC-07) calls for the ITU-R to include in its studies “...sharing and compatibility issues with services already having allocations in frequency bands and tuning ranges which have potential for ENG use” and “to propose operational measures to facilitate operation of ENG equipment consistent with global circulation of radiocommunication equipment..” Furthermore, the ITU-R is to “...report the results of those studies to the World Radiocommunication Conference 2011.”

There is no specific mention of addressing changes to the Article 5 of the Radio Regulations in either the agenda item text or in Resolution 954 (WRC-07). Thus, careful consideration needs to be given to any solutions for this agenda item that refer to regulatory changes in Article 5. It may be possible that rationalization (the use of available technology to maximize efficient and flexible use of frequency assets) would be effective in utilizing existing spectrum allocations in the mobile and fixed service where ENG is employed

Recommendation ITU-R M.1824, “*System characteristics of television outside broadcast, electronic news gathering and electronic field production in the mobile service for use in sharing studies*”, provides digital and analogue system parameters for BAS in the mobile service. Recommendation ITU-R F.1777, “*System characteristics of television outside broadcast, electronic news gathering and electronic field production in the fixed service for use in sharing studies*”, provides digital and analogue system parameters for BAS in the fixed service. Report ITU-R BT.2069, “*Spectrum usage and operational characteristics of terrestrial electronic news gathering systems (ENG), Television Outside Broadcast (TVOB) and Electronic Field Production (EFP)*”, provides specifications for BAS.

Spectrum harmonization provides many benefits but may not be feasible given the disparate use of spectrum by countries around the world and the differing broadcasting standards used in the three ITU Regions. Instead a mechanism for spectrum rationalization may be more productive in allowing broadcasters to gain knowledge of, and access to, the spectrum used to support ENG operations in a given country or Region. This will help to ensure that international news-worthy events can be covered with a minimum of disruption to both foreign broadcasters and domestic regulators alike. The harmonization, or rather rationalization, of spectrum for ENG use should be considered on a band-by-band basis for each of the separate applications described in Report ITU-R BT. 2069-2. Furthermore it

is recognized that the transition from analog to digital broadcasting will impact how ENG operations are conducted.

**Proposal:**

ADD USA/1.5/1

DRAFT RESOLUTION [USA-1.5-ENG] (WRC-12)

**Spectrum Management Guidelines for Electronic News Gathering (ENG)<sup>1</sup>**

The World Radiocommunication Conference (Geneva, 2012),

*considering*

- a) that some administrations may have different operational needs and spectrum requirements for electronic news gathering;
- b) that the dynamic nature of the use of ENG, which is driven by scheduled, unscheduled and unpredictable events such as breaking news, emergencies and disasters makes it highly desirable to facilitate the rapid and less restricted deployment and operation of ENG systems from one country to another,

*recognizing*

- ) that broadcasting ancillary services can be utilized as part of an administration's telecommunications/information and communication technologies (ICTs) systems in service of management in emergency and disaster situations for early warning, prevention, mitigation, and relief;
- b) that Recommendation ITU-R M.1824 provides system characteristics of television outside broadcast, electronic news gathering (ENG) and electronic field production (EFP) in the mobile service for use in sharing studies;
- c) that Recommendation ITU-R F.1777 provides system characteristics of television outside broadcast, electronic news gathering and electronic field production in the fixed service for use in sharing studies;
- d) that a large number of bands in Mobile and Fixed spectrum are already used to host various elements of electronic news gathering applications;
- e) that Report ITU-R BT.2069 provides spectrum usage and operational characteristics of terrestrial ENG, television outside broadcast (TVOB) and EFP systems,

*noting*

- a) that when an international news worthy event happens, ENG operations must be deployed in a very short time-frame;
- b) that frequency coordination must be undertaken with the Administration where an international news-worthy event takes place;
- c) that advance information on the frequencies available for ENG use in any given Administration may ease interoperability and/or internetworking, especially in international news-worthy events that draw broadcasters regionally or globally,

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<sup>1</sup> For the purpose of this Resolution, ENG represents all applications ancillary to broadcasting, such as terrestrial electronic news gathering, electronic field production, TV outside broadcasting, wireless radio microphones, and radio outside production and broadcast.

*noting further*

that it is in the interest of administrations and broadcasters to have access to updated information on national spectrum planning for ENG use,

*resolves*

to encourage administrations to assist the broadcasting community in developing a database of currently available ENG frequencies, ENG technical and operational requirements, and spectrum authorization points of contact as appropriate,

*instructs the Director of the Radiocommunication Bureau*

- 1 to maintain a link on the ITU-R website to the broadcast community's database(s) referenced in the resolves above;
- 2 to report on the progress on this Resolution to subsequent World Radiocommunication Conferences,

*urges administrations*

- 1 to provide the broadcasting community with the relevant information concerning their national ENG frequency allocations, ENG spectrum management practices, and appropriate points-of-contact for ENG usage within their administration;
- 2 to assist the broadcasting community in keeping the ENG database current.

**Reasons:** It is important that information be provided and maintained on ENG usage around the world. Resolution [USA-1.5-ENG] provides a mechanism to rationalize ENG spectrum usage by maintaining a data-base of country specific ENG bands with required technical and operational requirements for deployment. This will provide ENG users and operators with the needed information to ensure that they deploy equipment that will operate within a given country and allow them to seek spectrum use approval in an expeditious manner. It will also provide manufacturers with a knowledge base of required frequency bands and deployment requirements needed to build common-use equipment for the worldwide ENG market.

SUP USA/AI 1.5/2

## RESOLUTION 954 (WRC-07)

### **Harmonization of spectrum for use by terrestrial electronic news gathering systems**

**Reasons:** The ITU-R completed work on this agenda item for WRC-12.

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## UNITED STATES OF AMERICA

### PROPOSALS FOR THE WORK OF THE CONFERENCE

**Agenda Item 1.6:** *to review No. 5.565 of the Radio Regulations in order to update the spectrum use by the passive services between 275 GHz and 3 000 GHz, in accordance with Resolution 950 (Rev.WRC 07), and to consider possible procedures for free-space optical-links, taking into account the results of ITU R studies, in accordance with Resolution 955 (WRC 07)*

**Background Information:** Agenda item 1.6 addresses two distinct issues. The content of this proposal addresses only the updating of No. 5.565 in accordance with Resolution 950 (Rev. WRC-07). The Table of Frequency Allocations establishes allocations at frequencies between 9 kHz and 275 GHz. No allocations currently exist above 275 GHz, although an entry in the Table for the range 275-1 000 GHz contains a reference to No. 5.565.

Resolution 950 (Rev. WRC-07) calls for a re-examination of the frequency bands contained in No. 5.565 with a view to updating this footnote, including advice on the applications suitable for the range 275-3 000 GHz. Passive services such as the Earth exploration-satellite service (EESS), space research service (SRS), and radio astronomy service (RAS) already utilize portions of the 275-3 000 GHz range for scientific observation. Some of these operations measure spectral line and continuum emissions from space while others measure atmospheric and climate-related natural emissions from the Earth and its atmosphere. Resolution 950 (Rev. WRC-07) resolves to review No. 5.565 to update the information on spectrum use in the frequency range 275-3 000 GHz by the passive services, but specifically excludes allocations in this range. Although the focus of the agenda item is spectrum use by passive services, it is important to recognize that this frequency range concurrently is used for experimentation with, and development of, an array of emerging active service applications.

ITU-R studies of current and projected scientific needs for passive use of the frequency range 275-3 000 GHz resulted in new recommendations and reports. These studies revealed a need to update No. 5.565 through the addition of some new bands of interest and the deletion of some existing bands. Technical factors strongly influence use of the range 275-3 000 GHz. First, the Earth's atmosphere absorbs signals at these frequencies, especially in the range 1 000-3 000 GHz where the atmosphere is nearly opaque. Second, antenna beamwidths are extremely narrow at such high frequencies.

Interference from non-geostationary satellites into terrestrial stations is highly unlikely due to the above factors and the speed of the spacecraft relative to Earth. With regard to geostationary satellites, coordination would resolve the potential interference from the unlikely scenario of transmissions with maximum antenna coupling and minimum propagation loss. As a result, passive and active services can share frequencies above 1 000 GHz without constraints.

**Proposal:**

## ARTICLE 5 Frequency allocations

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

MOD USA/AI 1.6/1

**5.565** ~~A number of frequency bands in the frequency band range 275-1 000 GHz may be used by administrations for experimentation with, and development of, various active and passive services applications. This frequency range also is used for experimentation with, and development of, various active service applications. In this band-frequency range 275-1 000 GHz a need has been identified for the following frequency bands for measurements by spectral line measurements for~~ passive services:

- radio astronomy service: 275-323 GHz, 327-371 GHz, 388-424 GHz, 426-442 GHz, 453-510 GHz, 623-711 GHz, 795-909 GHz and 926-945 GHz;

- Earth exploration-satellite service (passive) and space research service (passive): 275-~~277~~286 GHz, ~~294~~296-306 GHz, ~~316~~313-~~334~~356 GHz, ~~342-349 GHz~~, ~~363~~361-365 GHz, ~~371~~369-~~389~~392 GHz, ~~397-399 GHz~~, ~~409-411 GHz~~, 416-434 GHz, ~~442~~439-~~444~~467 GHz, ~~496~~477-~~506~~502 GHz, ~~523-527 GHz~~, ~~546~~538-~~568~~581 GHz, ~~624~~611-~~629~~630 GHz, 634-654 GHz, ~~659~~657-~~664~~692 GHz, ~~684-692 GHz~~, ~~713-718 GHz~~, ~~730~~729-~~732~~733 GHz, ~~750-754 GHz~~, ~~771-776 GHz~~, ~~823-846 GHz~~, ~~851-850-853~~854 GHz, 857-862 GHz, ~~866-882 GHz~~, ~~905-928 GHz~~, and 951-956 GHz, ~~968-973 GHz~~ and ~~985-990 GHz~~.

In the frequency range 1 000-3 000 GHz, passive services may use any band segment for ground- and space-based experimentation without constraints on any other services operating in this range.

~~Future research in this largely unexplored spectral region may yield additional spectral lines and continuum bands of interest to the passive services.~~ Administrations are urged to take all practicable steps to protect ~~these~~ passive services from harmful interference until the date when the allocation ~~Table~~ is established in the ~~above-mentioned 275-3 000 GHz~~ frequency ~~rangeband~~.

**Reasons:** Based on the studies performed, the list of EESS and SRS bands of interest in the range 275-1 000 GHz need to be updated in No. 5.565. ITU-R studies have shown that unconstrained sharing between passive and active services in the frequency range 1 000-3 000 GHz is feasible; therefore passive services should have use of any band segment in this frequency range for experimentation.

SUP USA/AI 1.6/2

**RESOLUTION 950 (Rev. WRC-07)**  
**Consideration of the use of the frequencies**  
**between 275 and 3 000 GHz**

**Reasons:** Required studies have been completed. The resolution is no longer needed.

## UNITED STATES OF AMERICA

### PROPOSALS FOR THE WORK OF THE CONFERENCE

**Agenda Item 1.6:** *to review No. 5.565 of the Radio Regulations in order to update the spectrum use by the passive services between 275 GHz and 3 000 GHz, in accordance with Resolution 950 (Rev.WRC 07), and to consider possible procedures for free-space optical-links, taking into account the results of ITU R studies, in accordance with Resolution 955 (WRC 07)*

**Background Information:** Agenda item 1.6 addresses two distinct issues. The content of this proposal addresses only the consideration of possible procedures for free-space optical links (Resolution 955 (WRC-07)).

Resolution 955 (WRC-07) considers possible procedures for free-space optical links. Free space communication links operating above 3 000 GHz have been in existence for many years. No. 1005 of the Annex to the ITU Convention indicates that the term radiocommunication is limited to “electromagnetic waves of frequencies arbitrarily lower than 3 000 GHz, propagated in space without artificial guide.” In 2002, the Plenipotentiary Conference adopted Resolution 118 (Marrakesh) which resolves that “world radiocommunication conferences can include in agendas for future conferences, items relevant to spectrum regulation of frequencies above 3 000 GHz and take any appropriate measures, including revision of the relevant parts of the Radio Regulations.” The outcome of the 2010 Plenipotentiary Conference might affect this agenda item should that conference change or remove the upper limit of 3 000 GHz in the radio wave definition.

Because emitters used in near-infrared, free-space links have extremely narrow beamwidth, and terrestrial emitters can only cause interference over very short distances, cases of terrestrial interference will be very rare and easily resolved on a local basis. Moreover, interference between inter-satellite links would also be rare due to directed and narrow beamwidths, and the vast geometry of space.

The ITU-R has not conducted studies related to procedures for the use of free space optical links; therefore, there is no need to modify the Radio Regulations.

**Proposal:**

NOC

USA/1.6 (Res. 955)/1

### International Telecommunication Union RADIO REGULATIONS

## VOLUME 1

### Articles

**Reasons:** There is no evidence to suggest procedures for free space optical links are needed.

NOC

USA/1.6 (Res. 955)/2

**International Telecommunication Union  
RADIO REGULATIONS**

**VOLUME 2**

**Appendices**

**Reasons:** There is no evidence to suggest procedures for free space optical links are needed.

SUP

USA/1.6 (Res. 955)/3

**RESOLUTION 955**

**Consideration of procedures for free-space optical links**

**Reasons:** Since no regulatory action or further work is required on procedures for free-space optical link, the Resolution 955 (WRC-07) can be suppressed.

## UNITED STATES OF AMERICA

### PROPOSALS FOR THE WORK OF THE CONFERENCE

**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 the generic allocation to the mobile-satellite service in the bands 1 525-1 559 MHz and 1 626.5-1 660.5 MHz*

**Background Information:** Prior to the 1997 World Radiocommunication Conference (WRC-97), the Radio Regulations contained an exclusive allocation to the aeronautical mobile-satellite (R) service (AMS(R)S) for the bands 1 545-1 555 MHz (space-to-Earth) and 1 646.5-1 656.5 MHz (Earth-to-space). To allow flexibility in frequency coordination and to achieve spectrum efficiency, WRC-97 changed this into a generic mobile-satellite service (MSS) allocation subject to the provision No. 5.357A to prioritize access to the AMS(R)S spectrum with priority categories 1 to 6 of Article 44 of the Radio Regulations.

WRC-2000 adopted Resolution 222 (**WRC-2000**) resolving that, in frequency coordination of MSS systems in the bands 1 525-1 559 MHz and 1 626.5-1 660.5 MHz, administrations shall ensure that the spectrum needed for AMS(R)S communications within priority categories 1 to 6 of RR Article 44 in the bands where No. 5.357A applies is accommodated. Also administrations shall ensure the use of the latest technical advances in order to achieve the most flexible and practical use of the generic allocations.

WRC-07 revised Resolution 222 to remove the request for studies to determine the feasibility and practicality of prioritization and real-time pre-emptive access issues, and invited ITU-R to carry out a number of additional studies towards ensuring long term spectrum availability for AMS(R)S.

In coordinating MSS systems under the procedure of Article 9, the notifying administrations for MSS systems in the above bands have adopted two multilateral Memoranda of Understanding (MoU) to facilitate the coordination process: one MoU involves the administrations providing MSS over North America and a second MoU involves administrations providing MSS over ITU Regions 1 and 3. Usually on an annual basis under these MoUs, Operator Review Meetings (ORM) coordinate and review assignments across the bands 1 525-1 559/1 626.5-1 660.5 MHz so as to ensure fair and efficient use of the radio spectrum.

This multilateral process recognizes the communications needs of AMS(R)S and the resulting spectrum needed to accommodate the requirements of the systems offering this service, in accordance with the Radio Regulatory provisions. The current coordination process includes a validation process of requested spectrum assignments in order to justify the spectrum requirements and achieve efficient use of the spectrum. By adopting the MoUs, administrations

have increased the efficiency of the coordination process. Additional coordination also takes place outside of the MoU process, where necessary.

WRC-12 is invited to consider the results of ITU-R studies and to take appropriate action on this subject, while retaining unchanged the generic allocation to the mobile-satellite service in the bands 1 525-1 559 MHz and 1 626.5-1 660.5 MHz.

To ensure long-term availability of AMS(R)S, the US proposes “no change” to Articles 5 and 9 and modifications to Resolution **222 (WRC-07)**. The modifications include an annex to the resolution to describe the procedures that administrations can utilize during coordination discussions to accommodate priority access to AMS(R)S spectrum in the bands that are under the provisions of No. **5.357A**. A separate Resolution [SPECT.METHOD] is proposed to invite ITU-R to study and develop a recommendation on a method to determine spectrum requirements for AMS(R)S related to the categories 1 to 6 of Article **44** for use during coordination discussions.

**Proposal:**

NOC USA/1.7/1

**ARTICLE 5**

**Frequency allocations**

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

**Reasons:** The current allocations to AMS(R)S pursuant to No 5.357A are sufficient to accommodate long term AMS(R)S spectrum requirements. Only consequential changes are necessary as a result of the modifications to Resolution 222 (WRC-2007).

**MOD** USA/1.7/2

**5.357A** In applying the procedures of Section II of Article 9 to the mobile-satellite service in the bands 1 545-1 555 MHz and 1 646.5-1 656.5 MHz, priority shall be given to accommodating the spectrum requirements of the aeronautical mobile-satellite (R) service providing transmission of messages with priority 1 to 6 in Article 44. Aeronautical mobile-satellite (R) service communications with priority 1 to 6 in Article 44 shall have priority access and immediate availability, by pre-emption if necessary, over all other mobile-satellite communications operating within a network. Mobile-satellite systems shall not cause unacceptable interference to, or claim protection from, aeronautical mobile-satellite (R) service communications with priority 1 to 6 in Article 44. Account shall be taken of the priority of safety-related communications in the other mobile-satellite services. (The provisions of Resolution 222 (WRC-201200)\* shall apply.) (WRC-201200)

~~\* -Note by the Secretariat: This Resolution was revised by WRC-07.~~

**Reasons:** Consequential to the proposed MOD to Resolution 222 (WRC-2007).

NOC USA/1.7/3

**5.362A**

**Reasons:** For the bands covered by agenda item 1.7, the 1 555-1 559 MHz and 1 656.5-1 660.5 MHz bands with the 2 x 10 MHz in No. 5.357A are sufficient to accommodate AMS(R)S operations inside the United States. No additional spectrum is required to satisfy this agenda item.

NOC

USA/1.7/4

## ARTICLE 9

### **Procedure for effecting coordination with or obtaining agreement of other administrations<sup>1, 2, 3, 4, 5, 6, 7, 8</sup> (WRC- 07)**

**Reasons:** No changes to Article 9 are needed for Agenda Item 1.7. The modified Resolution 222 (WRC-2012) provides adequate provisions to address the accommodation of the long term AMS(R)S requirements pursuant to RR 5.357A.

**MOD**

USA/ 1.7/5

### RESOLUTION 222 (Rev.WRC-~~0712~~)

#### **Use of the bands 1 525-1 559 MHz and 1 626.5-1 660.5 MHz by the mobile-satellite service, and studies-procedures to ensure long-term spectrum availability access for the aeronautical mobile-satellite (R) service**

The World Radiocommunication Conference (Geneva, ~~2012~~2007),

*considering*

- a) that prior to WRC-97, the bands 1 530-1 544 MHz (space-to-Earth) and 1 626.5-1 645.5 MHz (Earth-to-space) were allocated to the maritime mobile-satellite service and the bands 1 545-1 555 MHz (space-to-Earth) and 1 646.5-1 656.5 MHz (Earth-to-space) were allocated on an exclusive basis to the aeronautical mobile-satellite (R) service (AMS(R)S) in most countries;
- b) that WRC-97 allocated the bands 1 525-1 559 MHz (space-to-Earth) and 1 626.5-1 660.5 MHz (Earth-to-space) to the mobile-satellite service (MSS) to facilitate the assignment of spectrum to multiple MSS systems in a flexible and efficient manner;
- c) that WRC-97 adopted No. 5.353A giving priority to accommodating spectrum requirements for and protecting from unacceptable interference distress, urgency and safety communications of the Global Maritime Distress and Safety System (GMDSS) in the bands 1 530-1 544 MHz and 1 626.5-1 645.5 MHz and No. 5.357A giving priority to accommodating spectrum requirements for and protecting from unacceptable interference the AMS(R)S providing transmission of messages with priority categories 1 to 6 in Article 44 in the bands 1 545-1 555 MHz and 1 646.5-1 656.5 MHz;
- d) that AMS(R)S is an essential element of ICAO CNS/ATM to provide safety and regularity of flight in the civil air transportation,

*further considering*

a) that coordination between satellite networks is required on a bilateral basis in accordance with the Radio Regulations, and, in the bands 1 525-1 559 MHz (space-to-Earth) and 1 626.5-1 660.5 MHz (Earth-to-space), coordination is partially assisted by regional multilateral meetings;

b) that, in these bands, geostationary mobile-satellite system operators currently use a capacity-planning approach at multilateral coordination meetings, with the guidance and support of their administrations, to periodically coordinate access to the spectrum needed to accommodate their requirements;

c) that spectrum requirements for MSS networks, including the GMDSS and AMS(R)S, are currently accommodated through the capacity-planning approach and that, in the bands to which Nos. 5.353A or 5.357A apply, this approach, and other methods may assist in accommodating the expected increase of spectrum requirements for GMDSS and AMS(R)S;

d) that Report ITU-R M.2073 has concluded that prioritization and inter-system pre-emption between different mobile-satellite systems is not practical and, without a significant advance in technology, is unlikely to be feasible for technical, operational and economical reasons.  
~~*It summarized that prioritization and intersystem real-time pre-emption would not necessarily increase the efficiency of spectrum use compared to the current situation, but it would certainly complicate substantially the coordination process and network structure;*~~

e) that there is existing and increasing demand for spectrum for AMS(R)S and non-AMS(R)S by several mobile satellite systems in the bands 1 525-1 559 MHz and 1 626.5-1 660.5 MHz, ~~and that the application of this Resolution may impact the provision of services by non-AMS(R)S systems in the mobile satellite service;~~

f) that future requirements for ~~AMS(R)S and~~ GMDSS spectrum may require additional allocations,

*recognizing*

a) that absolute priority to all telecommunications concerning safety of life at sea, on land, in air or in outer space is given by No. 191 of the ITU Constitution;

b) that the International Civil Aviation Organization (ICAO) has adopted Standards and Recommended Practices (SARPs) addressing satellite communications with aircraft in accordance with the Convention on International Civil Aviation;

c) that all air traffic communications as defined in Annex 10 to the Convention on International Civil Aviation fall within priority categories 1 to 6 of Article 44;

d) that Table 15-2 of Appendix 15 identifies the bands 1 530-1 544 MHz (space-to-Earth) and 1 626.5-1 645.5 MHz (Earth-to-space) for distress and safety purposes in the maritime mobile-satellite service as well as for routine non-safety purposes,

e) that any administration having difficulty in applying the procedures of Articles 9 and 11 with respect to No. 5.357A and this Resolution may at any time request assistance of the Radiocommunication Bureau and the Board under the relevant provisions of the Radio Regulations, including Article 7, the relevant provisions of Articles 9 and 11, as well as Articles 13 and 14,

noting

that, since spectrum resources are limited, there is a need to use them in the most efficient manner within and amongst various MSS systems,

resolves

1 that, in frequency coordination of MSS in the bands 1 525-1 559 MHz and 1 626.5-1 660.5 MHz, the notifying administrations of mobile-satellite networks shall ensure that the spectrum needed for distress, urgency and safety communications of GMDSS, as elaborated in Articles 32 and 33, in the bands where No. 5.353A applies, and for AMS(R)S communications within priority categories 1 to 6 of Article 44 in the bands where No. 5.357A applies, is accommodated met;

2 that the notifying administrations of mobile-satellite networks shall ensure the use of the latest technical advances in mobile-satellite systems, in order to achieve the most flexible, efficient and practical use of the generic MSS allocations;

3 that the notifying administrations of mobile-satellite networks shall ensure that, in the event that spectrum requirements of an MSS, including AMS(R)S, network are decreasing relative to the previous coordination meeting, the corresponding unused spectrum resources shall be released to facilitate efficient use of spectrum;

34 that the notifying administrations of mobile-satellite networks shall ensure that MSS operators carrying non-safety-related traffic yield capacity, as and when necessary, to accommodate the spectrum requirements for distress, urgency and safety communication of GMDSS communications, as elaborated in Articles 32 and 33, and for AMS(R)S communications within priority categories 1 to 6 of Article 44; this could be achieved in advance through the coordination process in resolves 1 and the procedures contained in the Annex to this Resolution shall apply; and, when necessary, through other means if such means are identified as a result of studies in

~~invites ITU-R,~~

~~to conduct, in time for consideration by WRC 11, the appropriate technical, operational and regulatory studies to ensure long term spectrum availability for the aeronautical mobile satellite (R) service (AMS(R)S) including:~~

- ~~i) to study, as a matter of urgency, the existing and future spectrum requirements of the aeronautical mobile satellite (R) service;~~
- ~~ii) to assess whether the long-term requirements of the AMS(R)S can be met within the existing allocations with respect to No. 5.357A while retaining unchanged the generic allocation for the mobile satellite service in the bands 1 525-1 559 MHz and 1 626.5-1 660.5 MHz, and without placing undue constraints on the existing systems operating in accordance with the Radio Regulations;~~
- ~~iii) to complete studies to determine the feasibility and practicality of technical or regulatory means, other than the coordination process referred to in *resolves* 1 or the means considered in Report ITU R M.2073, in order to ensure adequate access to spectrum to accommodate the AMS(R)S requirements as referenced in *resolves* 3 above, while taking into account the latest technical advances in order to maximize spectral efficiency;~~
- ~~iv) if the assessment identified in *invites ITU R* i) and ii) indicates that these requirements cannot be met, to study existing MSS allocations or possible new allocations only for satisfying the requirements of the aeronautical mobile satellite (R) service for communications with priority categories 1 to 6 of Article 44, for global and seamless operation of civil aviation taking into account the need to avoid undue constraints on existing systems and other services;~~

*invites WRC-11*

~~to consider the results of the above ITU R studies and to take appropriate action on this subject, while retaining unchanged the generic allocation to the mobile satellite service in the bands 1 525-1 559 MHz and 1 626.5-1 660.5 MHz;~~

*invites*

~~the International Civil Aviation Organization (ICAO), the International Maritime Organization (IMO), the International Air Transport Association (IATA), administrations and other organizations concerned to participate in the studies identified in *invites ITU R* above.~~

## ANNEX TO RESOLUTION 222 (Rev.WRC-12)

### Procedures to implement No. 5.357A and Resolution 222 (Rev. WRC-12)

- 1) The notifying administrations of planned MSS, including AMS(R)S, networks shall submit the required technical characteristics and other relevant information of their MSS networks in accordance with Appendix 4. Coordination of these MSS networks with other affected satellite networks operating in the bands 1 525-1 559 MHz and 1 626.5-1 660.5 MHz shall proceed in accordance with Articles 9 and 11 and other relevant provisions of the Radio Regulations, as appropriate.
- 2) To further facilitate coordination under Articles 9 and 11, the notifying administrations of MSS, including AMS(R)S, networks may authorize their respective MSS satellite operators, including AMS(R)S satellite operators, to enter into bilateral and multilateral coordination processes to secure operator agreements on access to spectrum for their satellite networks.
- 3) At frequency coordination meetings, including operator meetings referred to in 2), the notifying administration of each AMS(R)S network or its respective satellite operator shall present the spectrum requirements of each AMS(R)S network developed in accordance with an agreed methodology and accompanied with the information justifying such requirements. The participants to the frequency coordination meeting then collectively validate the requirements under agreed criteria. The notifying administrations and/or their MSS operators shall accommodate validated AMS(R)S spectrum requirements in accordance with No. 5.357A. In the event that spectrum requirements of an MSS, including AMS(R)S, network are decreasing relative to the previous coordination meeting, the notifying administration of the network shall release the corresponding unused spectrum resources.
- 4) The notifying administrations of MSS networks, including AMS(R)S, have responsibility to ensure that their respective assignments are compatible in the relevant bilateral or multilateral frequency coordination meetings (in particular when those networks span over various geographic area(s)). In the event an administration notifying an AMS(R)S network experiences difficulty in accommodating its validated AMS(R)S spectrum requirements at these meetings, it should invoke No. 5.357A (as per the procedures described in Items 5, 6 and 7 below).
- 5) In the event that a notifying AMS(R)S administration invokes No. 5.357A based on the results of a bilateral or multilateral coordination operators' meeting, that administration shall ensure that its designated operator does not accept the spectrum sharing arrangement developed at the operators' meeting, as acceptance indicates that the agreement satisfies requirements presented. That AMS(R)S administration shall inform the other administrations involved in the coordination process of its intention to invoke No. 5.357A, with a copy to the Radiocommunication Bureau, it then calls for an administrations' frequency coordination meeting of all affected notifying administrations, which should be convened within six months. That notifying AMS(R)S administration shall seek the

assistance of the Radiocommunication Bureau in accordance with Articles 7 and 13, if any of the affected notifying administrations do not agree to meet to resolve the raised issues.

6) At the administrations' frequency coordination meeting, all affected notifying administrations shall review and validate the AMS(R)S requirements of the notifying administration referred to in 5) above. All affected notifying administrations shall cooperate toward accommodating any validated AMS(R)S requirements in accordance with No. 5.357A and Resolution 222 (Rev.WRC-12). In this regard, notifying administrations shall ensure that MSS operators carrying non safety-related traffic yield capacity, as and when necessary, to accommodate the spectrum requirements for AMS(R)S communications with priority categories 1 to 6 of Article 44.

7) If the matter remains unresolved at the administrations' frequency coordination meeting referred to in 6) above, the notifying AMS(R)S administration shall seek the assistance of the Radiocommunication Bureau pursuant to Articles 7 and 13 and notify the respective administrations indicating that its AMS(R)S requirements have not been satisfied. The Radiocommunication Bureau shall provide a report and assistance in accordance with No. 13.3.

8) To facilitate the users' long term planning, each MSS operator providing AMS(R)S service or its notifying administration may decide to disclose information regarding its coordinated AMS(R)S spectrum resource (e.g. to AMS(R)S users of such service).

**Reasons:** It is necessary to explicitly identify the coordination process that should be used, highlighting the regulatory provisions in place describing administrations' rights and obligations when seeking priority access to AMS(R)S spectrum as well as the process to be followed when validated AMS(R)S spectrum needs of a system are not fulfilled.

RESOLUTION [SPECT.METHOD] (WRC-12)

Development of a Methodology to determine AMS(R)S Spectrum Requirements within the bands 1 545-1 555 MHz (space-to-Earth) and 1 646.5-1 656.5 MHz (Earth-to-space)

The World Radiocommunication Conference (Geneva, 2012),

considering

- a) that coordination between satellite networks is required on a bilateral basis in accordance with the Radio Regulations, and, in the bands 1 525-1 559 MHz (space-to-Earth) and 1 626.5-1 660.5 MHz (Earth-to-space), coordination is partially assisted by regional multilateral meetings;
- b) that, in these bands, geostationary mobile-satellite system operators currently use a capacity-planning approach in the bands to which No. 5.357A applies at multilateral coordination meetings, with the guidance and support of their administrations, to periodically coordinate access to the spectrum needed to accommodate their requirements, including AMS(R)S spectrum requirements;
- c) that within the ITU-R there is no agreed methodology for computing AMS(R)S spectrum requirements related to the priority categories 1 to 6 of Article 44;
- d) that within the ITU-R, some administrations have expressed a desire to develop an agreed methodology for computing AMS(R)S spectrum requirements on an ongoing basis for purposes of bilateral and multilateral MSS coordinations conducted pursuant to Article 9 of the Radio Regulations;
- e) that, since spectrum resources are limited, there is a need to use them in the most efficient manner within and amongst various MSS systems,

recognizing

- a) that WRC-97 allocated the bands 1 525-1 559 MHz (space-to-Earth) and 1 626.5-1 660.5 MHz (Earth-to-space) to the mobile-satellite service (MSS) to facilitate the assignment of spectrum to multiple MSS systems in a flexible and efficient manner;

b) that WRC-97 adopted No. 5.357A giving priority to accommodating spectrum requirements for and protecting from unacceptable interference the AMS(R)S providing transmission of messages with priority categories 1 to 6 in Article 44 in the bands 1 545-1 555 MHz and 1 646.5-1 656.5 MHz,

noting

that AMS(R)S is an essential element of ICAO CNS/ATM to provide safety and regularity of flight in the civil air transportation,

resolves

to invite the ITU-R to conduct studies on and develop in one or more ITU-R Recommendations a methodology, including clear definitions of input parameters and assumptions to be used, to compute spectrum requirements-for AMS(R)S related to the priority categories 1 to 6 of Article 44 and to take into account considering b in conducting these studies.

invites

the International Civil Aviation Organization (ICAO), the International Air Transport Association (IATA), administrations and other organizations concerned to participate in the studies identified in resolves above.

**Reasons:** To have the ITU-R conduct studies on and develop in one or more ITU Recommendations, a methodology to compute the spectrum requirements for AMS(R)S related to priority categories 1 to 6 of Article 44 to assist notifying MSS and AMS(R)S administrations in satellite coordination in their efforts to satisfy AMS(R)S requirements in the bands 1 545-1 555 MHz and 1 646.5- 1 656.6 MHz pursuant to Mod Resolution 222 (WRC-12)

## UNITED STATES OF AMERICA

### PROPOSALS FOR THE WORK OF THE CONFERENCE

**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)*

**Resolution 731 (WRC-2000):** *Consideration by a future competent world radiocommunication conference of issues dealing with sharing and adjacent-band compatibility between passive and active services above 71 GHz*

**Resolution 732 (WRC-2000):** *Consideration by a future competent world radiocommunication conference of issues dealing with sharing between active services above 71 GHz*

**Background Information:** This agenda item addresses consideration of changes in regulations for spectrum above 71 GHz to accommodate sharing among the fixed service and other active services and to protect the passive services from adjacent band fixed systems.

Several countries have operational fixed service links in the frequency bands 71-76 GHz, 81-86 GHz, 92-94 GHz and 94.1-95 GHz. In addition to these active service applications, several countries also operate remote sensing and meteorological satellites that utilize the Earth exploration-satellite service (EESS) (passive) allocation from 86-92 GHz subject to No. 5.340. The ITU-R was unable to fully evaluate sharing among the active services or sharing between the active services and passive services allocated above 71 GHz due to the lack of studies prepared during this study cycle for this agenda item.

WRC-2000 adopted Resolutions 731 (WRC-2000) and 732 (WRC-2000) as part of the conference decisions in an overall rearrangement of the allocation tables in Article 5 of the Radio Regulations, and not in support of WRC-07 agenda item 1.8. The ITU-R did not complete studies in support of this agenda item; therefore the conference should retain these resolutions unchanged. There is no need for WRC-15 to consider the results of these studies and that is not proposed.

**Proposals:**

NOC USA/AI 1.8/1

ARTICLE 5

**Frequency allocations**

**Reasons:** Insufficient information is available at this time to substantiate specific out-of-band emission limits to protect the EESS (passive) in the 86-92 GHz band. The ITU-R studies are immature because the technologies employed by the active services in these bands are still in the early stages of development.

NOC USA/AI 1.8/2

RESOLUTION 731 (WRC-2000)

**Consideration by a future competent world radiocommunication conference of issues dealing with sharing and adjacent-band compatibility between passive and active services above 71 GHz**

**Reasons:** WRC-2000 developed this resolution as a result of the realignment of the Table of Allocations above 71 GHz. The retention of this resolution allows the ITU-R to continue studies on sharing and adjacent band compatibility in this frequency range. There is no need for WRC-15 to consider the results of ITU-R studies under *resolves* of Resolution 731 (WRC-2000) and that is not proposed.

NOC USA/AI 1.8/3

RESOLUTION 732 (WRC-2000)

**Consideration by a future competent world radiocommunication conference of issues dealing with sharing between active services above 71 GHz**

**Reasons:** WRC-2000 developed this resolution as a result of the realignment of the Table of Allocations above 71 GHz. The retention of this resolution allows the ITU-R to continue studies on sharing and adjacent band compatibility in this frequency range. There is no need for WRC-15 to consider the results of ITU-R studies under *resolves* of Resolution 732 (WRC-2000) and that is not proposed.

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## UNITED STATES OF AMERICA

### PROPOSALS FOR THE WORK OF THE CONFERENCE

**Agenda Item 1.10:** *to examine the frequency allocation requirements with regard to operation of safety systems for ships and ports and associated regulatory provisions, in accordance with Resolution 357 (WRC-07)*

**Background Information:** International Maritime Organization (IMO) Resolution MSC 74(69) required that Automatic Identification System (AIS), "...improve the safety of navigation by assisting in the efficient navigation of ships, protection of the environment, and operation of Vessel Traffic Services (VTS), by satisfying the following functional requirements: 1) in a ship-to-ship mode for collision avoidance; 2) as a means for littoral States to obtain information about a ship and its cargo; and 3) as a VTS tool, i.e. ship-to-shore (traffic management)". IMO NAV 55 meeting in July 2009 decided to add a distress indicator in the navigation status field of AIS Class A position report messages. Although these IMO functional requirements clearly specify safety and surveillance functions, the Radio Regulations only recognize the Automatic Identification System-Search and Rescue Team (AIS-SART) operation as having a safety function on the two AIS frequencies (161.975 MHz and 162.025 MHz). Operation of AIS on search and rescue aircraft is consistent with ITU-R Recommendation M.1371-3 and Appendix 18 of the Radio Regulations.

Modifying the Radio Regulations to reflect the AIS frequencies is critical to search and rescue, safety of navigation, and the safe movement and tracking of vessels, which are vital to the future of maritime safety. This proposal specifically addresses the need to recognize the safety aspect of AIS use by search and rescue aircraft authorized by Appendix 18 of the Radio Regulations and ITU-R Recommendation M.1371-3, and recognizes the decision by the International Maritime Organization to include a distress indicator in the navigation status field of AIS Class A position report messages. The ITU-R may need to conduct a review of No. 5.229, as it applies to the sub-band 162 - 162.05 MHz.

The ITU-R has not completed all the studies associated with Resolution 357 (WRC-07). It may be more appropriate for WRC-12 to suppress Resolution 357 (WRC-07) and adopt a new resolution to complete the unfinished work such as for GMDSS and e-Navigation. Therefore, this proposal recommends deletion of Resolution 357 (WRC-07).

**Proposal:**

#### ARTICLE 5

#### Frequency allocations

#### Section IV – Table of Frequency Allocations

(See No. 2.1)

MOD USA/AI 1.10/1

148-223 MHz

Allocation to services		
Region 1	Region 2	Region 3
<del>156.8375-161.9625-174</del> FIXED MOBILE except aeronautical mobile MOD 5.226 <del>5.227A-5.229</del>	<del>156.8375-161.9625-174</del> FIXED MOBILE MOD 5.226 <del>5.227A 5.230 5.231 5.232</del>	

**Reasons:** Proposed changes reflect the allocation and use of AIS frequencies to the required services in Article 5 to support maritime safety requirements. Footnotes that do not apply to the revised frequency band are also removed, but are not proposed for suppression (e.g., No. 5.227A, 5.230, 5.231, 5.232).

ADD USA/AI 1.10/2

Region 1	Region 2	Region 3
<del>161.9625-161.9875</del> MARITIME MOBILE AERONAUTICAL MOBILE (OR) ADD 5.A01 MOBILE-SATELLITE (Earth-to-space) ADD 5.A02	<del>161.9625-161.9875</del> MARITIME MOBILE AERONAUTICAL MOBILE (OR) ADD 5.A01 MOBILE-SATELLITE (Earth-to-space) ADD 5.A02	

**Reasons:** Proposed changes reflect the allocation and use of AIS frequencies to the required services in Article 5 to support maritime safety requirements. The proposal that AM(OR)S has primary status and the upgrade to primary status of MSS (Earth-to-space) is necessary due to a pending IMO decision to include a distress alert notification within the AIS position message report. Footnotes that do not apply to the revised frequency band are also removed, but are not proposed for suppression (No. 5.227A).

MOD USA/AI 1.10/3

Region 1	Region 2	Region 3
<del>161.9875-162.0125</del> FIXED MOBILE except aeronautical mobile 5.229 MOD 5.226	<del>161.9875-162.0125</del> FIXED MOBILE MOD 5.226	

**Reasons:** Consequential change to the allocated services in Article 5. Footnotes that do not apply to the revised frequency band are also removed, but are not proposed for suppression (No. 5.227A, 5.227A, 5.230, 5.231, 5.232).

**ADD** USA/AI 1.10/4

Region 1	Region 2	Region 3
<u>162.0125-162.0375</u> <u>MARITIME MOBILE</u> <u>AERONAUTICAL MOBILE (OR)</u> <u>ADD 5.A01</u> <u>MOBILE-SATELLITE (Earth-to-space)</u> <u>ADD 5.A02</u>	<u>162.0125-162.0375</u>  <u>MARITIME MOBILE</u> <u>AERONAUTICAL MOBILE (OR) ADD 5.A01</u> <u>MOBILE-SATELLITE (Earth-to-space)</u>  <u>ADD 5.A02</u>	

**Reasons:** Proposed changes reflect the allocation and use of AIS frequencies to the required services in Article 5 to support maritime safety requirements. The proposal that AM(OR)S be primary status and the upgrade to primary status of MSS (Earth-to-space) is necessary due to a pending IMO decision to include a distress alert notification within the AIS position message report.

**MOD** USA/AI 1.10/5

<u>162.0375-174</u> FIXED MOBILE except aeronautical mobile <u>MOD 5.226 <del>5.227A</del> 5.229</u>	<u>162.0375-174</u> FIXED MOBILE  <u>MOD 5.226 <del>5.227A</del> 5.230 5.231 5.232</u>
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**Reasons:** Proposed changes reflect the allocation and use of AIS frequencies to the required services in Article 5 to support maritime safety requirements.

**ADD** USA/AI 1.10/6

**5.A01** The use of the bands 161.9625-161.9875 MHz and 162.0125-162.0375 MHz by the aeronautical mobile (OR) service is restricted to automatic identification system (AIS) emissions from Search and Rescue aircraft operating in accordance with Appendix 18. The AIS operations in the bands 161.9625-161.9875 MHz and 162.0125-162.0375 MHz shall not constrain operation of stations in services allocated in the adjacent frequency bands.

**Reasons:** The proposed footnote is necessary to restrict the use of the aeronautical mobile (OR) service to AIS emissions in support of search and rescue missions by aircraft in accordance with Appendix 18 and without undue constraints on services in adjacent bands.

**ADD** USA/AI1.10/7

**5.A02** The use of the bands 161.9625-161.9875 MHz and 162.0125-162.0375 MHz by the maritime mobile service and mobile-satellite (Earth-to-space) service is restricted to automatic identification system (AIS) emissions operating in accordance with Appendix 18. The AIS operations in the bands 161.9625-161.9875 MHz and 162.0125-162.0375 MHz shall not constrain operation of stations in services allocated in the adjacent frequency bands.

**Reasons:** The proposed footnote is necessary to restrict the use of the mobile-satellite (Earth-to-space) service to AIS emissions operating in accordance with Appendix 18 and without undue constraints on services in adjacent bands.

**SUP** USA/AI 1.10/8

#### 5.227A

**Reasons:** This footnote is no longer necessary after allocation of the AIS channels to the necessary services in Article 5.

**MOD** USA/AI 1.10/9

**5.226** The frequency 156.525 MHz is the international distress, safety and calling frequency for the maritime mobile VHF radiotelephone service using digital selective calling (DSC). The conditions for the use of this frequency and the band 156.4875-156.5625 MHz are contained in Articles 31 and 52, and in Appendix 18.

The frequency 156.8 MHz is the international distress, safety and calling frequency for the maritime mobile VHF radiotelephone service. The conditions for the use of this frequency and the band 156.7625-156.8375 MHz are contained in Article 31 and Appendix 18.

In the bands 156-156.4875 MHz, 156.5625-156.7625 MHz, 156.8375-157.45 MHz, 160.6-160.975 MHz, ~~and 161.475-162.05~~ 161.9625 MHz, 161.9875-162.0125 MHz, and 162.0375-162.05 MHz, each administration shall give priority to the maritime mobile service on only such frequencies as are assigned to stations of the maritime mobile service by the administration (see Articles 31 and 52, and Appendix 18).

**MOD** USA/AI 1.10/10

## APPENDIX 18 (Rev.WRC-07)

### Table of transmitting frequencies in the VHF maritime mobile band

(See Article 52)

NOTE A – For assistance in understanding the Table, see Notes *a)* to *q)* below. (WRC-07)

NOTE B – The Table below defines the channel numbering for maritime VHF communications based on 25 kHz channel spacing and use of several duplex channels, but also allows the use of 12.5 kHz channel spacing. The channel numbering for 12.5 kHz channels and the conversion of two-frequency channels for single-frequency operation shall be in accordance with Recommendation ITU-R M.1084-4 Annex 4, Tables 1 and 3. (WRC-07)

**Reasons:** Proposed changes to NOTE B will allow for more flexibility for simplex (single-channel) use of duplex channels.

MOD USA/AI 1.10/11

Channel designator	Notes	Transmitting frequencies (MHz)		Inter-ship	Port operations and ship movement		Public correspondence
		From ship stations	From coast stations		Single frequency	Two frequency	
60	<i>m), o)</i>	156.025	160.625			x	X
01	<i>m), o)</i>	156.050	160.650			x	X
61	<i>m), o)</i>	156.075	160.675		x	x	X
02	<i>m), o)</i>	156.100	160.700		x	x	X
62	<i>m), o)</i>	156.125	160.725		x	x	X
03	<i>m), o)</i>	156.150	160.750		x	x	X
63	<i>m), o)</i>	156.175	160.775		x	x	X
04	<i>m), o)</i>	156.200	160.800		x	x	X
64	<i>m), o)</i>	156.225	160.825		x	x	X
05	<i>m), o)</i>	156.250	160.850		x	x	X
65	<i>m), o)</i>	156.275	160.875		x	x	X
06	<i>f)</i>	156.300		X			
66	<i>m), o)</i>	156.325	160.925			x	X
07	<i>m), o)</i>	156.350	160.950			x	X
67	<i>h)</i>	156.375	156.375	X	x		
08		156.400		X			
68		156.425	156.425		x		
09	<i>i)</i>	156.450	156.450	X	x		
69		156.475	156.475	X	x		
10	<i>h), q)</i>	156.500	156.500	X	x		
70	<i>f), j)</i>	156.525	156.525	Digital selective calling for distress, safety and calling			
11	<i>q)</i>	156.550	156.550		x		
71		156.575	156.575		x		
12		156.600	156.600		x		
72	<i>i)</i>	156.625		X			
13	<i>k)</i>	156.650	156.650	X	x		
73	<i>h), i)</i>	156.675	156.675	X	x		
14		156.700	156.700		x		
74		156.725	156.725		x		

15	<i>g)</i>	156.750	156.750	X	x		
75	<i>n)</i>	156.775	156.775		x		

Channel designator	Notes	Transmitting frequencies (MHz)		Inter-ship	Port operations and ship movement		Public correspondence
		From ship stations	From coast stations		Single frequency	Two frequency	
16	<i>f)</i>	156.800	156.800	DISTRESS, SAFETY AND CALLING			
76	<i>n)</i>	156.825	156.825		x		
17	<i>g)</i>	156.850	156.850	X	x		
77		156.875		X			
18	<i>m)</i>	156.900	161.500		x	x	X
78	<i>m)</i>	156.925	161.525			x	X
19	<i>m)</i>	156.950	161.550			x	X
79	<i>m)</i>	156.975	161.575			x	X
20	<i>m)</i>	157.000	161.600			x	X
80	<i>m)</i>	157.025	161.625			x	X
21	<i>m)</i>	157.050	161.650			x	X
81	<i>m)</i>	157.075	161.675			x	X
22	<i>m)</i>	157.100	161.700		x	x	X
82	<i>m), o)</i>	157.125	161.725		x	x	X
23	<i>m), o)</i>	157.150	161.750		x	x	X
83	<i>m), o)</i>	157.175	161.775		x	x	X
24	<i>m), o)</i>	157.200	161.800		x	x	X
84	<i>m), o)</i>	157.225	161.825		x	x	X
25	<i>m), o)</i>	157.250	161.850		x	x	X
85	<i>m), o)</i>	157.275	161.875		x	x	X
26	<i>m), o)</i>	157.300	161.900		x	x	X
86	<i>m), o)</i>	157.325	161.925		x	x	X
27	<i>l</i>	157.350	161.950			x	X
87		157.375	157.375		x		
28	<i>l</i>	157.400	162.000			x	X
88		157.425	157.425		x		
AIS 1	<i>f), l), p)</i>	161.975	161.975				
AIS 2	<i>f), l), p)</i>	162.025	162.025				

**Reasons:** Proposed changes address need to protect AIS 1 and AIS 2 from adjacent channel interference.

ADD USA/AI 1.10/12

t) When using these channels (27 and 28), all reasonable precautions should be taken to avoid harmful interference to AIS 1 and AIS 2.

**Reasons:** New note provides protection from adjacent channels 27 and 28 into AIS1 and AIS 2.

SUP

USA/AI 1.10/13

### RESOLUTION 357 (WRC-07)

#### **Consideration of regulatory provisions and spectrum allocations for use by enhanced maritime safety systems for ships and ports**

**Reasons:** It is more appropriate to complete the ITU-R associated with Resolution 357 (WRC-07), such as for GMDSS and e-Navigation, under a new resolution for WRC-15.

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## UNITED STATES OF AMERICA

### PROPOSALS FOR THE WORK OF THE CONFERENCE

**Agenda Item 1.10:** *to examine the frequency allocation requirements with regard to operation of safety systems for ships and ports and associated regulatory provisions, in accordance with Resolution 357 (WRC-07)*

**Background Information:** Modifying the Radio Regulations to reflect the satellite monitoring of Automatic Identification System (AIS) equipped vessels is critical to search and rescue, safety of navigation, and the safe movement and tracking of vessels. This proposal specifically adds a mobile-satellite service (MSS) (Earth-to-space) allocation to 156.775 MHz and 156.825 MHz (Appendix 18, Channels 75 and 76) for improved AIS satellite detection using message 27.

This proposal satisfies the International Maritime Organization (IMO) Resolution MSC 74(69), which requires that AIS improve the safety of navigation by assisting in the efficient navigation of ships, protection of the environment, and operation of Vessel Traffic Services (VTS). Improved satellite detection of AIS will satisfy IMO functional requirements for collision avoidance, obtaining information about a ship and its cargo, and providing ship-to-shore traffic management. The ITU-R completed studies to identify VHF channels in Appendix 18 for improved AIS satellite detection and recently updated Recommendation ITU-R M.1371-3, "Technical characteristics for an automatic identification system using time division multiple access in the VHF maritime mobile band," to reflect specialized message 27 for long-range AIS broadcast messages of AIS Class A equipped vessels.

This proposed MSS (Earth-to-space) allocation for satellite AIS is compatible with the existing navigation-related communications of the frequencies as designated in Appendix 18, note *n*). ITU-R Report M.2169, "Improved satellite detection of AIS," and the recently updated ITU-R Recommendation M.1371-3, confirm the compatibility and show that the transmission of new AIS message 27 contains navigational information including position, speed over ground, course over ground, navigational status. The proposed MSS (Earth-to-space) frequencies (channels 75 and 76) are for navigation and serve as guard-bands for channel 16 - the safety and distress frequency. Precautions to avoid harmful interference to channel 16 are achievable by prohibiting message 27 transmissions within 40 nautical miles of coast stations. Therefore, the new proposed footnote *r*) is fully compliant with footnote *n*) in Appendix 18.

Proposal:

**ARTICLE 5  
Frequency allocations**

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

MOD USA/AI 1.10/1

148-223 MHz

Allocation to services		
Region 1	Region 2	Region 3
156.7625-156.8375	MARITIME MOBILE (distress and calling) 5.111 5.226 <b>ADD 5.XYZ</b>	

**Reasons:** Proposed changes reflect the allocation of 156.7625-156.8375 MHz to the required services in Article 5 to support maritime vessel tracking requirements.

ADD USA/AI 1.10/2

**5.XYZ** *Additional allocation:* the bands 156.775 MHz and 156.825 MHz are also allocated to the Mobile-Satellite Service (Earth-to-space) for the reception of automatic identification system (AIS) emissions, using solely message 27 as specified in Recommendation ITU-R M.1371, from stations operating in the maritime-mobile service (see Appendix 18).

**Reasons:** Proposed changes reflect the allocation of 156.775MHz and 156.825 MHz to the required services in Article 5 to support maritime vessel tracking requirements.

MOD USA/AI 1.10/3

**APPENDIX 18 (Rev. WRC-1207)  
Table of transmitting frequencies in the  
VHF maritime mobile band**

(See Article 52)

NOTE A – For assistance in understanding the Table, see Notes *a*) to *q*) below. (WRC-07)

NOTE B – The Table below defines the channel numbering for maritime VHF communications based on 25 kHz channel spacing and use of several duplex channels, but also allows the use of 12.5 kHz channel spacing. The channel numbering for 12.5 kHz channels and the conversion of two-frequency channels for single-frequency operation shall be in accordance with Recommendation ITU-R M.1084-4 Annex 4, Tables 1 and 3. (WRC-07)

Channel designator	Notes	Transmitting frequencies (MHz)	Inter-ship	Port operations and ship movement	Public correspondence

		From ship stations	From coast stations		Single frequency	Two frequency	
60	<i>m), o)</i>	156.025	160.625			X	x
01	<i>m), o)</i>	156.050	160.650			X	x
61	<i>m), o)</i>	156.075	160.675		x	X	x
02	<i>m), o)</i>	156.100	160.700		x	X	x
62	<i>m), o)</i>	156.125	160.725		x	X	x
03	<i>m), o)</i>	156.150	160.750		x	X	x
63	<i>m), o)</i>	156.175	160.775		x	X	x
04	<i>m), o)</i>	156.200	160.800		x	X	x
64	<i>m), o)</i>	156.225	160.825		x	X	x
05	<i>m), o)</i>	156.250	160.850		x	X	x
65	<i>m), o)</i>	156.275	160.875		x	X	x
06	<i>f)</i>	156.300		X			
66	<i>m), o)</i>	156.325	160.925			X	x
07	<i>m), o)</i>	156.350	160.950			X	x
67	<i>h)</i>	156.375	156.375	X	x		
08		156.400		X			
68		156.425	156.425		x		
09	<i>i)</i>	156.450	156.450	X	x		
69		156.475	156.475	X	x		
10	<i>h), q)</i>	156.500	156.500	X	x		
70	<i>f), j)</i>	156.525	156.525	Digital selective calling for distress, safety and calling			
11	<i>q)</i>	156.550	156.550		x		
71		156.575	156.575		x		
12		156.600	156.600		x		
72	<i>i)</i>	156.625		X			
13	<i>k)</i>	156.650	156.650	X	x		
73	<i>h), i)</i>	156.675	156.675	X	x		
14		156.700	156.700		x		
74		156.725	156.725		x		

Channel designator	Notes	Transmitting frequencies (MHz)		Inter-ship	Port operations and ship movement		Public correspondence
		From ship stations	From coast stations		Single frequency	Two frequency	
15	<i>g)</i>	156.750	156.750	X	x		
75	<i>n) <u>r</u></i>	156.775	156.775		x		
16	<i>f)</i>	156.800	156.800	DISTRESS, SAFETY AND CALLING			
76	<i>n) <u>r</u></i>	156.825	156.825		x		
17	<i>g)</i>	156.850	156.850	X	x		
77		156.875		X			
18	<i>m)</i>	156.900	161.500		x	X	x
78	<i>m)</i>	156.925	161.525			X	x
19	<i>m)</i>	156.950	161.550			X	x
79	<i>m)</i>	156.975	161.575			X	x
20	<i>m)</i>	157.000	161.600			X	x
80	<i>m)</i>	157.025	161.625			X	x
21	<i>m)</i>	157.050	161.650			X	x
81	<i>m)</i>	157.075	161.675			X	x
22	<i>m)</i>	157.100	161.700		x	X	x
82	<i>m), o)</i>	157.125	161.725		x	X	x
23	<i>m), o)</i>	157.150	161.750		x	X	x

83	<i>m), o)</i>	157.175	161.775		x	X	x
24	<i>m), o)</i>	157.200	161.800		x	X	x
84	<i>m), o)</i>	157.225	161.825		x	X	x
25	<i>m), o)</i>	157.250	161.850		x	X	x
85	<i>m), o)</i>	157.275	161.875		x	X	x
26	<i>m), o)</i>	157.300	161.900		x	X	x
86	<i>m), o)</i>	157.325	161.925		x	X	x
27		157.350	161.950			X	x
87		157.375	157.375		x		
28		157.400	162.000			X	x
88		157.425	157.425		x		
AIS 1	<i>f), l), p)</i>	161.975	161.975				
AIS 2	<i>f), l), p)</i>	162.025	162.025				

**Reasons:** Proposed changes reflect the allocation of 156.775 MHz and 156.875 MHz to the required services in RR Appendix 18 to support maritime vessel tracking requirements.

#### Notes referring to the Table

##### *General notes*

**ADD** USA/AI 1.10/4

**r)** Channels 75 and 76 are allocated to the mobile-satellite service (Earth-to-space) for the transmission of AIS message 27 from ships as defined in Recommendation ITU-R M.1371.

**Reasons:** Proposed footnote reflects the allocation of 156.775 MHz and 156.875 MHz to the required services in Appendix 18 to support maritime vessel tracking requirements.

**UNITED STATES OF AMERICA**  
**PROPOSALS FOR THE WORK OF THE CONFERENCE**

**Agenda Item 1.10:** *to examine the frequency allocation requirements with regard to operation of safety systems for ships and ports and associated regulatory provisions, in accordance with Resolution 357 (WRC-07)*

**Background Information:**

**Simplex Use of Duplex Channels**

The Radio Regulations Board approved a Rule of Procedure after WRC-07 regarding simplex use in Appendix 18, effectively implementing this part of the enclosed proposal. WRC-07 revised Appendix 18 to allow simplex use of channels 01, 07, 19, 20, 21, 60, 66, 78, 79, 80, and 81 subject to coordination with affected administrations (Note *m*). However, WRC-07 omitted placing an "x" in the "Single frequency" column against affected channels in Appendix 18, thereby unintentionally omitting this from the Radio Regulations.

Expansion of optional simplex use of duplex channels (add more "x" designations to duplex channels) in Appendix 18 will provide further benefits to maritime radiocommunications by relieving current congestion in the VHF maritime mobile bands in accordance with Recommendation ITU-R M.1084-4. Report ITU-R M.2010-1, a study on efficiency in the VHF maritime mobile band, concluded that this spectrum efficiency option expands the number of usable communications channels with the minimum of compatibility issues. The analogue VHF radio on board vessels that travel internationally would have access to both the original two-frequency channels and their single-frequency derivatives, thus allowing port operations on two or single frequency channels.

**Channels for Data Exchange**

Recommendation ITU-R M.1842-1 provides examples of potential VHF data exchange systems and recommends the use of Appendix 18 channels to support future digital technologies in the maritime mobile service. Adding a new Note *s*) to the table of Appendix 18 and to the section "Notes referring to the Table" supports the identification of six channels (24, 25, 26, and 84, 85, 86) for potential data exchange systems.

**Protection of Channels AIS 1 and AIS 2**

Protecting the Automatic Identification System channels (AIS 1 and AIS 2) from harmful interference would ensure the future safety of maritime mobile radiocommunications for these channels. Report ITU-R M.2122 "EMC assessment of shore-based electronic navigation (eNAV) infrastructure and new draft standards for data exchange in the VHF maritime mobile band (156-174 MHz)" describes the susceptibility of AIS 1 and AIS 2 to interference from the adjacent duplex channels. This Report also provides technical guidelines for the electromagnetic compatibility between AIS and systems that use channels 27 and 28. Thus, modifying Note *c*) in the section "Notes referring to the Table" of Appendix 18 is necessary for protecting AIS.

### Non-Application of Channel Interleaving

Recommendation ITU-R M.1084-4 describes the advantages of increased spectrum efficiency by channel interleaving 12.5 kHz channels with 25 kHz channels. The current Appendix 18 excludes maritime mobile service safety channels from 12.5 kHz channel interleaving (See Note e)). By modifying Note e) in the section “Notes referring to the Table” of Appendix 18, the non-application of channel interleaving extends to the exclusion of AIS 1 and AIS 2, and the proposed channels for E-Navigation discussed above.

### Long-Range Detection of AIS

Recommendation ITU-R M.1371-3 provides technical and operational characteristics for designing systems intended for long-range detection of AIS. Modifying Note n) in the section “Notes referring to the Table” of Appendix 18 identifies the use of AIS for long-range detection for channels 75 and 76 and ensures the protection of these channels from harmful interference.

### **Proposal:**

MOD USA/AI 1.10/1

## APPENDIX 18 (Rev.WRC-0712)

### **Table of transmitting frequencies in the VHF maritime mobile band**

(See Article 52)

NOTE A – For assistance in understanding the Table, see Notes a) to q) below. (WRC-07)

NOTE B – The Table below defines the channel numbering for maritime VHF communications based on 25 kHz channel spacing and use of several duplex channels, ~~but and~~ also allows the simplex use of ~~12.5 kHz channel spacing duplex channels~~. The channel numbering for ~~12.5 kHz channels and the conversion of two frequency channels for~~ single-frequency operation of duplex channels shall be in accordance with Recommendations ITU-R M.493 and 1084 (latest versions)-4 Annex 4, Tables 1 and 3. (WRC-0712)

**Reasons:** Proposed changes to NOTE B will allow for more flexibility for simplex (single-channel) use of duplex channels.

MOD USA/AI 1.10/2

Channel designator	Notes	Transmitting frequencies (MHz)		Inter-ship	Port operations and ship movement		Public correspondence
		From ship stations	From coast stations		Single frequency	Two frequency	
60	<i>m), o)</i>	156.025	160.625		<del>x</del>	x	X
01	<i>m), o)</i>	156.050	160.650		<del>x</del>	x	X
61	<i>m), o)</i>	156.075	160.675		x	x	X
02	<i>m), o)</i>	156.100	160.700		x	x	X
62	<i>m), o)</i>	156.125	160.725		x	x	X
03	<i>m), o)</i>	156.150	160.750		x	x	X
63	<i>m), o)</i>	156.175	160.775		x	x	X
04	<i>m), o)</i>	156.200	160.800		x	x	X
64	<i>m), o)</i>	156.225	160.825		x	x	X
05	<i>m), o)</i>	156.250	160.850		x	x	X
65	<i>m), o)</i>	156.275	160.875		x	x	X
06	<i>f)</i>	156.300		X			
66	<i>m), o)</i>	156.325	160.925		<del>x</del>	x	X
07	<i>m), o)</i>	156.350	160.950		<del>x</del>	x	X
67	<i>h)</i>	156.375	156.375	X	x		
08		156.400		X			
68		156.425	156.425		x		
09	<i>i)</i>	156.450	156.450	X	x		
69		156.475	156.475	X	x		
10	<i>h), q)</i>	156.500	156.500	X	x		
70	<i>f), j)</i>	156.525	156.525	Digital selective calling for distress, safety and calling			
11	<i>q)</i>	156.550	156.550		x		
71		156.575	156.575		x		
12		156.600	156.600		x		
72	<i>i)</i>	156.625		X			
13	<i>k)</i>	156.650	156.650	X	x		
73	<i>h), i)</i>	156.675	156.675	X	x		
14		156.700	156.700		x		
74		156.725	156.725		x		
15	<i>g)</i>	156.750	156.750	X	x		
75	<i>n)</i>	156.775	156.775		x		

Channel designator	Notes	Transmitting frequencies (MHz)		Inter-ship	Port operations and ship movement		Public correspondence
		From ship stations	From coast stations		Single frequency	Two frequency	
16	<i>f)</i>	156.800	156.800	DISTRESS, SAFETY AND CALLING			
76	<i>n)</i>	156.825	156.825		x		
17	<i>g)</i>	156.850	156.850	X	x		
77		156.875		X			
18	<i>m)</i>	156.900	161.500		x	x	X
78	<i>m)</i>	156.925	161.525		<del>x</del>	x	X
19	<i>m)</i>	156.950	161.550		<del>x</del>	x	X
79	<i>m)</i>	156.975	161.575		<del>x</del>	x	X
20	<i>m)</i>	157.000	161.600		<del>x</del>	x	X
80	<i>m)</i>	157.025	161.625		<del>x</del>	x	X
21	<i>m)</i>	157.050	161.650		<del>x</del>	x	X
81	<i>m)</i>	157.075	161.675		<del>x</del>	x	X
22	<i>m)</i>	157.100	161.700		x	x	X
82	<i>m), o)</i>	157.125	161.725		x	x	X
23	<i>m), o)</i>	157.150	161.750		x	x	X
83	<i>m), o)</i>	157.175	161.775		x	x	X
24	<i>m), <del>o</del> <u>s</u>)</i>	157.200	161.800		x	x	X
84	<i>m), <del>o</del> <u>s</u>)</i>	157.225	161.825		x	x	X
25	<i>m), <del>o</del> <u>s</u>)</i>	157.250	161.850		x	x	X
85	<i>m), <del>o</del> <u>s</u>)</i>	157.275	161.875		x	x	X
26	<i>m), <del>o</del> <u>s</u>)</i>	157.300	161.900		x	x	X
86	<i>m), <del>o</del> <u>s</u>)</i>	157.325	161.925		x	x	X
27		157.350	161.950			x	X
87		157.375	157.375		x		
28		157.400	162.000			x	X
88		157.425	157.425		x		
AIS 1	<i>f), l), p)</i>	161.975	161.975				
AIS 2	<i>f), l), p)</i>	162.025	162.025				

**Reasons:** Proposed changes to the Table will allow for more flexibility for simplex (single-channel) use of duplex channels. Additional notes are added to identify channels for data exchange and protection of AIS 1 and AIS 2.

#### Notes referring to the Table

##### General notes

**MOD** USA/AI 1.10/3

- c) The channels of the present Appendix, ~~but preferably channel 28 and~~ with the exception of channels 06, 13, 15, 16, 17, 70, 75 and 76, may be used for direct-printing telegraphy and data transmission, subject to special arrangement between interested and affected administrations.

**Reasons:** Proposed change reflects the need to protect AIS 1 and AIS 2 from adjacent band interference from channel 28.

**MOD** USA/AI 1.10/4

- e) Administrations may apply 12.5 kHz channel interleaving on a non-interference basis to 25 kHz channels, in accordance with the most recent version of Recommendation ITU-R M.1084, provided:
- it shall not affect the 25 kHz channels of the present Appendix maritime mobile distress and safety, AIS, and data exchange frequencies, especially the channels 06, 13, 15, 16, 17, ~~and 70, AIS 1 and AIS 2,~~ nor the technical characteristics set forth in Recommendation ITU-R M.489-2 for those channels;
  - implementation of 12.5 kHz channel interleaving and consequential national requirements shall be subject to coordination with affected administrations. (WRC-07)

**Reasons:** Proposed changes to Note e) identify AIS and data exchange channels as additional channels requiring protection from channel interleaving.

**MOD** USA/AI 1.10/5

- n) The use of these channels (75 and 76) should be restricted to navigation-related communications only and all precautions should be taken to avoid harmful interference to channel 16, e.g. by limiting the output power to 1 W or by means of geographical separation. These channels are also used for long-range detection of AIS in accordance with recommendation ITU-R M.1371.

**Reasons:** Proposed change protects the channels intended to be used for long-range detection of AIS from harmful interference.

**ADD** USA/AI 1.10/6

- s) These channels may be used for data exchange in accordance with Recommendation ITU-R M.1842 (WRC-12)

**Reasons:** Proposed Note s) identifies channels for data exchange in Appendix 18.

## UNITED STATES OF AMERICA

### PROPOSALS FOR THE WORK OF THE CONFERENCE

**Agenda Item 1.10:** *to examine the frequency allocation requirements with regard to operation of safety systems for ships and ports and associated regulatory provisions, in accordance with Resolution 357 (WRC-07)*

**Background Information:** The broadcast of safety and security information, to and from ships is vital for maritime safety. Article 33 of the Radio Regulations describes the operational procedures for maritime urgency and safety communications, including the transmission of maritime safety information (MSI).

Radio Regulation No. 5.82A limits the use of maritime mobile service (MMS) systems in the band 495 - 505 kHz to radio telegraphy. No. 5.82B requires administrations making frequency assignments to services other than the maritime mobile service in the 495-505 kHz band shall not cause harmful interference to the MMS in this band and to other services in adjacent bands. These provisions already give priority to the MMS over other mobile service applications in the band 495 – 505 kHz. Due to further requirements for spectrum to accommodate existing and new maritime systems, it is appropriate to make an exclusive primary allocation to the maritime mobile service in 495 – 505 kHz.

Maritime communication systems in the bands 415 – 526.5 kHz include transmissions in accordance with Recommendations ITU-R M.540 (Operational and technical characteristics for an automated direct-printing telegraph system for promulgation of navigational and meteorological warnings and urgent information to ships), ITU-R M.1677 (International Morse code), and ITU-R M.1798 (Characteristics of HF radio equipment for the exchange of digital data and electronic mail in the maritime mobile service). These systems currently operate in support of maritime applications other than those used for radiotelegraphy. Based on current worldwide operational experience, other maritime applications are compatible with radiotelegraphy.

It is also vital for the maritime community to have a globally harmonized primary allocation to the maritime mobile service in 415 – 526.5 kHz for MMSI, security related broadcasts, and data communication systems.

#### **Proposal:**

### ARTICLE 5 Frequency allocations

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

MOD USA/AI 1.10/1

495-1 800 kHz

Allocation to services		
Region 1	Region 2	Region 3
495-505	<u>MARITIME</u> MOBILE <u>SUP</u> 5.82A <u>SUP</u> 5.82B	
505-526.5 MARITIME MOBILE 5.79 5.79A 5.84 AERONAUTICAL RADIONAVIGATION	505-510 MARITIME MOBILE 5.79	505-526.5 MARITIME MOBILE 5.79 5.79A 5.84 AERONAUTICAL RADIONAVIGATION Aeronautical mobile Land mobile
	510-525 <u>MARITIME</u> MOBILE 5.79A 5.84 AERONAUTICAL RADIONAVIGATION	

**Reasons:** Maritime mobile service allocations and global harmonization of transmissions for MSI, security related broadcasts, and data communication systems.

SUP USA/AI 1.10/2

5.82A

**Reasons:** This is a consequential change to allocating the entire 495-505 MHz band to the maritime mobile service on a primary basis.

SUP USA/AI 1.10/3

5.82B

**Reasons:** This is a consequential change to allocating the entire 495-505 MHz band to the maritime mobile service on a primary basis.

## UNITED STATES OF AMERICA

### PROPOSALS FOR THE WORK OF THE CONFERENCE

**Agenda Item 1.11:** *to consider a primary allocation to the space research service (Earth-to-space) within the band 22.55-23.15 GHz, taking into account the results of ITU-R studies, in accordance with Resolution 753 (WRC-07)*

**Background Information:** Downlink (space-to-Earth) transmissions will operate in the 25.5-27.0 GHz space research service (SRS) allocation to support the SRS missions in near Earth orbit, including missions in transit to the moon and at or near the moon. Countries will use this 1.5 GHz wide downlink band for both scientific data retrieval and voice/video communication with the Earth. However, there is a need for a companion uplink (Earth-to-space) band to provide the mission data, voice/video communications, and command and control links to support manned and unmanned missions. The proposed SRS allocation at 23 GHz will fulfill this need for the global space science community.

Space agencies throughout the world require 600 MHz of uplink spectrum due to the potential for many concurrent exploration-related systems, the large bandwidth requirements for these systems, synergistic operations with existing data relay systems, selection of frequencies due to ranging constraints, and the evolution, growth, and complexity of those systems over a period of 20-30 years.

- 1) Space agencies require their own segments of spectrum for lunar and many Lagrangian missions since antenna discrimination is not possible. Any spacecraft around the moon and some of those with small orbit apogees around the L1 or L2 points can be situated within the main-beam lobe of other space agency antennas.
- 2) The specific RF carrier frequencies selected will often be coupled with internationally agreed channels for data relay systems in order to provide global support either via an earth station or via a data relay satellite. These data relay channels have a spacing of 60 MHz, irrespective of the actual bandwidth.
- 3) There is a fixed turn-around ratio required between the Earth-to-space link around 23 GHz and the corresponding space-to-Earth link in the 25.5-27 GHz band. This is required for ranging purposes and further limits the choice of available frequencies as it requires a suitable available companion frequency around 26 GHz.

Proposals from a number of administrations to WRC-07 covered the entire band 22.55 – 23.55 GHz. However, compatibility concerns expressed at WRC-07 with respect to the existing HIBLEO-2 system that operates above 23.18 GHz led to a compromise that limited the bandwidth under consideration to 600 MHz.

Considering the inherently limited number of these large SRS earth stations and their remote locations, ITU-R sharing studies between SRS (Earth-to-space) and the fixed, inter-satellite and mobile services in the 22.55-23.55 GHz band determined that sharing between a new SRS

(Earth-to-space) allocation in the 22.55-23.15 GHz band and the existing services in the 22.55-23.55 GHz band is feasible and will not cause harmful interference to their existing operations.

**Proposal:**

**ARTICLE 5**

**Frequency allocations**

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

**MOD** USA/AI1.11/1

**22-24.75 GHz**

Allocation to services		
Region 1	Region 2	Region 3
<u>22.55-23.5515</u>	FIXED INTER-SATELLITE 5.338A MOBILE <u>SPACE RESEARCH SERVICE (Earth-to-space) 5.A111</u> 5.149	
<u>22.5523.15-23.55</u>	FIXED INTER-SATELLITE 5.338A MOBILE 5.149	

**Reasons:** To provide a needed companion uplink (Earth-to-space) band for the transmission of mission data and command and control links for future space missions.

**ADD** USA/AI1.11/2

**5.A111** Unless otherwise agreed by neighboring administrations, space research service earth stations shall maintain a separation distance of at least 54 km from respective border(s) to protect the existing and future deployment of fixed and mobile services.

**Reasons:** To provide a footnote regarding the location of SRS earth stations to protect existing and future deployment of FS and MS of neighboring administrations.

ARTICLE 21  
Terrestrial and space services sharing frequency bands above 1 GHz

Section III – Power limits for earth stations

MOD USA/AI1.11/3

TABLE 21-3 (*end*) (WRC-0312)

Frequency band	Services
17.7-18.1 GHz	Fixed-satellite
<u>22.55-23.15 GHz</u>	Earth exploration-satellite
27.0-27.5 GHz <sup>6</sup> (for Regions 2 and 3)	Mobile-satellite
27.5-29.5 GHz	Space research
31.0-31.3 GHz (for the countries listed in No. 5.545)	
34.2-35.2 GHz (for the countries listed in No. 5.550 with respect to the countries listed in No. 5.549)	

**Reasons:** The band 22.55-23.15 GHz is added to Table 21-3 to ensure protection of terrestrial services consequential to the addition of the SRS uplink allocation.

SUP USA/AI1.11/4

RESOLUTION 753 (WRC-07)

**Use of the band 22.55-23.15 GHz by the space research service**

**Reasons:** Required studies have been completed for this agenda item; no more work is needed.

## UNITED STATES OF AMERICA

### PROPOSALS FOR THE WORK OF THE CONFERENCE

**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)*

**Background Information:** Administrations are implementing space research service (SRS) earth station receivers in the band 37-38 GHz to support manned missions for both near Earth and deep space missions. Use of the wider bandwidth available in the 37-38 GHz band is necessary to support the increasing data requirements of these planned manned missions.

The ITU studied sharing between systems in the space research service (SRS), fixed service (FS), and fixed-satellite service (FSS) and potential systems in the aeronautical mobile services (AMS) in the 37-38 GHz band. The sharing studies indicate that high power emissions from typical aeronautical mobile transmitters would pose a high probability for causing harmful interference to receiving earth stations of the space research service and fixed-satellite service, but that lower powered aircraft stations could be compatible, if they meet a specified pfd mask. These studies also found that transmissions from the high-density fixed service (HDFS) systems could interfere with the airborne receivers of the AMS.

The aviation industry anticipates increasing demand for applications to be installed onboard aircraft for intra-aircraft communications, called Wireless Avionics IntraCommunications (WAIC). WAIC systems will be low power applications intended to support data, voice, and video communications between systems on an aircraft, including communications systems used by the crew. Wireless sensors located at various points throughout the aircraft will be used to wirelessly monitor the health of the aircraft structure and many of its critical systems, and communicate this information within the aircraft. WAIC transmissions will not provide air-to-ground, air-to-satellite, or air-to-air communication. They will not include communications with consumer devices, such as Radio Local Area Network (RLAN) devices that are brought on board the aircraft by passengers. Therefore, since these systems are for aviation personnel use and not the general flying public, such systems may be able to meet the pfd limits needed to protect other allocated services.

**Proposal:**

#### ARTICLE 5

#### Frequency allocations

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

MOD

USA/AI1.12/1

37-38 GHz

Allocation to services		
Region 1	Region 2	Region 3
37-37.5	FIXED MOBILE <b>ADD 5.AMS</b> SPACE RESEARCH (space-to-Earth) 5.547	
37.5-38	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE <b>ADD 5.AMS</b> SPACE RESEARCH (space-to-Earth) Earth exploration-satellite (space-to-Earth) 5.547	

ADD

USA/AI1.12/2

**5.AMS** In the band 37-38 GHz, the power flux-density at the Earth's surface produced by emissions from an aircraft station shall not exceed -227 dB(W/m<sup>2</sup>) in any 1 Hz bandwidth, using free space propagation conditions as applied from the exterior of the aircraft.

**Reasons:** In accordance with the agenda item, earth stations of the space research service, the fixed satellite service, and stations of the fixed service will be protected in the band 37-38 GHz by the application of a power flux-density limit at the surface of the Earth on the emissions radiated by any device on an aircraft in flight or on the ground.

SUP

USA/AI1.12/3

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**

**Reasons:** Consequential to completion of agenda item 1.12 at WRC-12.

## UNITED STATES OF AMERICA

### PROPOSALS FOR THE WORK OF THE CONFERENCE

**Agenda Item 1.13:** *to consider the results of ITU-R studies in accordance with Resolution 551 (WRC-07) and decide on the spectrum usage of the 21.4-22 GHz band for the broadcasting-satellite service and the associated feeder-link bands in Regions 1 and 3*

**Background Information:** In the United States, the 23 GHz band is widely used in urban areas for many applications. The primary ones are for backhauling wireless telephone traffic and for carrying business data and communications in corporate networks. The propagation characteristics at 23 GHz make it particularly suitable for wireless backhaul over relatively short distances. These links provide connectivity between mobile cell towers and the central network facilities of the local carrier. The growing sophistication of end-user wireless devices and services, from cell phones to advanced wireless services and from voice to music and to real-time video, contributes to increases in demand for backhaul capacity. At the same time, as wireless providers continue subdividing their cells to extract maximum usage from costly spectrum, the number of towers requiring backhaul increases in proportion. The band provides a vital resource for meeting this need. As of June 2007, there were more than 4500 assignments in the sub-band 21.4-22 GHz in the U.S. alone. There are numerous deployments in this frequency band in other Region 2 countries as well. It is therefore imperative to ensure that WRC-12 adopt regulatory solution(s) that preserve the basic principle of equality to spectrum access in all Regions consistent with No. 4.8.

WARC-92 allocated the BSS in Regions 1 and 3 in the 21.4-22 GHz band with 1 April 2007 as the date of entry into force of the allocation. It also adopted Resolution 525, which provided interim procedures for the introduction, before and after 1 April 2007, of high definition television systems (HDTV) of the broadcasting-satellite service (BSS) in the band 21.4-22.0 GHz in Regions 1 and 3 on a first-come-first-served basis. Resolution 525 has been revised several times since 1992. Prior to 1 April 2007, in Regions 1 and 3, an interim coordination procedure applied to operational BSS (HDTV) systems in the band 21.4 – 22.0 GHz for the protection of terrestrial services operating in the same band based on pfd coordination thresholds. WRC-07 modified Resolution 525 by removing protection of terrestrial networks and removing the procedures of No. 9.11. However, since Resolution 525 is applied by footnote 5.530, which appears to the right of the broadcasting-satellite service allocations in Regions 1 and 3, the Resolution 525 (Rev. WRC-07) provisions do not apply to any service in Region 2. (See No. 5.50 and 5.51). Thus, the procedures for the protection of terrestrial services in Region 2 from the BSS in Regions 1 and 3 are not addressed in Resolution 525 (WRC-07).

With regard to Region 2, the coordination requirements for the BSS systems that were introduced in the 21.4-22 GHz band prior to 1 April 2007 are explicitly clear. Inter-Regional protection of the FS was provided by Resolution 33 (Rev. WRC-03) which included a coordination procedure applicable in all frequency bands allocated to the BSS. The WRC-03 version of Resolution 525 (Rev. WRC-03) was consistent with Resolution

**33** (Rev. WRC-03) in that these systems are subject to No. **9.11** coordination procedures. Resolution **525** (Rev. WRC-03) required coordination if the power flux-density at the Earth's surface produced by emissions from a space station, on the territory of any other country, exceeded:

- $-115 \text{ dB(W/m}^2\text{)}$  in any 1 MHz band for angles of arrival between  $0^\circ$  and  $5^\circ$  above the horizontal plane; or
- $-105 \text{ dB(W/m}^2\text{)}$  in any 1 MHz band for angles of arrival between  $25^\circ$  and  $90^\circ$  above the horizontal plane; or
- values to be derived by linear interpolation between these limits for angles of arrival between  $5^\circ$  and  $25^\circ$  above the horizontal plane.

These threshold values for triggering coordination with terrestrial services are consistent with reference power flux density for the BSS values that have been developed and given in Recommendation ITU-R BO.1776. They are also consistent with the power flux-density limits recommended for this band in Recommendation ITU-R F.760. It is important to recognize that the ITU-R BO.1776 is referenced in Resolutions **525** (Rev. WRC-07) and **551** (Rev. WRC-07).

The coordination requirements for the BSS systems in the 21.4-22.0 GHz band introduced after 1 April 2007 in respect to terrestrial services of Region 2 are conflicting and ambiguous. Resolution **525** (Rev. WRC-07), as discussed previously, only applies to Regions 1 and 3 while Resolution **33** (Rev. WRC -03) applies for inter-Regional coordination, but it has no pfd criterion for triggering coordination.

Considering the ambiguity associated with the implementation of the BSS allocation and the difficulty of coordinating space stations with terrestrial stations, the U.S. notes that sharing between satellite services in Regions 1 and 3 and terrestrial services in Region 2 can be most simply implemented through a pfd limits regime in Article **21**, Section V. In the present case, the pfd values developed and given in Recommendation ITU-R BO.1776 and also applied to the BSS systems that were introduced in the subject band prior to 1 April 2007 could be used as a power flux-density limit that would apply to all BSS systems in region 1 and 3 for purposes of sharing with the Fixed and Mobile services in Region 2. Such a limit would only apply to BSS satellite networks' beams on the territories of Region 2 countries.

Proposal:

MOD USA/1.13/1

ARTICLE 21

Terrestrial and space services sharing frequency bands above 1 GHz

Section V – Limits of power flux-density from space stations

TABLE 21-4 (CONTINUED) (Rev.WRC-07)

Frequency band	Service*	Limit in dB(W/m <sup>2</sup> ) for angles of arrival (δ) above the horizontal plane			Reference bandwidth h
		0°-5°	5°-25°	25°-90°	
19.3-19.7 GHz 22.55-23.55 GHz 24.45-24.75 GHz 25.25-27.5 GHz 27.500-27.501 GHz	Fixed-satellite (space-to-Earth) Earth exploration-satellite (space-to-Earth) Inter-satellite Space research (space-to-Earth)	-115 <sup>13A</sup>	-115 + 0.5(δ - 5) <sup>13A</sup>	-105 <sup>13A</sup>	1 MHz
<u>21.4-22.0 GHz</u>	<u>Broadcasting – satellite (space-to-Earth)</u>	<u>-115<sup>fnR2</sup></u>	<u>-115 + 0.5(δ - 5)<sup>fnR2</sup></u>	<u>-105<sup>fnR2</sup></u>	<u>1 MHz</u>
31.0-31.3 GHz 34.7-35.2 GHz (space-to-Earth transmissions referred to in No. 5.550 on the territories of countries listed in No. 5.549)	Space research	-115	-115 + 0.5(δ - 5)	-105	1 MHz

<sup>fnR2</sup> 21.16.YYY These limits shall apply only on territories of Region 2 countries.

**Reasons:** Sharing between satellite services in Regions 1 and 3 and terrestrial services in Region 2 can be implemented most simply through power flux density (pfd) limits specified in Article 21, Section V. The proposed pfd values are the same as the values

that are applied to the BSS systems that were introduced in the 21.4-22.0 GHz band prior to 1 April 2007. The proposed modification would provide regulatory certainty to satellite services as a defined set of pfd limits would be known and extensive coordination with uncertain outcome would not be required. The proposed modification would also reduce the administrative burden for the Bureau and administrations in all Regions.

SUP USA/1.13/2

## RESOLUTION 525 (REV.WRC-07)

### **Introduction of high-definition television systems of the broadcasting-satellite service in the band 21.4-22.0 GHz in Regions 1 and 3**

**Reasons:** The Resolution 525 (WRC-07) provides interim procedures for the introduction of BSS (HDTV) systems in the band 21.2-22.0 GHz in Regions 1 and 3. The WRC-12 is expected to make a decision on definitive procedures under Agenda Item 1.13. As a consequence, the Resolution 525 (WRC-07) can be suppressed.

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## UNITED STATES OF AMERICA

### PROPOSALS FOR THE WORK OF THE CONFERENCE

**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)*

**Background Information:** Resolution 611 (WRC-07) resolves to consider a new primary allocation to the radiolocation service for new applications in a portion of 30-300 MHz, with bandwidths no larger than 2 MHz. The results of ITU-R studies should confirm compatibility with existing services and applications in the bands where the new radiolocation service plans to operate. The ITU-R studied technical characteristics, protection criteria, and other factors to determine whether radiolocation systems could operate compatibly with systems operating in accordance with Article 5 of the Radio Regulations.

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, as well as a range of space services. For example, the maritime mobile service utilizes safety channels for aircraft Search and Rescue (SAR) operating on channels 16 (156.800 MHz  $\pm$  37.5 kHz) and 70 (156.525 MHz  $\pm$  12.5 kHz) and the aircraft SAR and satellites operating on Automatic Identification System (AIS) channels AIS 1 (161.975 MHz  $\pm$  12.5 kHz) and AIS 2 (162.025 MHz  $\pm$  12.5 kHz), and there are space research and satellite service allocations in the 137-138 MHz, 148-149.9 MHz and 149.9-150.05 MHz bands.

Based on contributions to ITU-R meetings and other regional groups, the primary frequency band of interest within the ITU-R is 154-156 MHz. The new allocation would support applications in the radiolocation service for aerospace surveillance, tracking and maneuvering spacecrafts. Contributions to the ITU-R have not effectively demonstrated compatibility with primary services in or adjacent to the 154-156 MHz range (particularly in the adjacent bands that effect safety and distress applications). ITU-R studies have not shown compatibility with existing services. Also, additional compatibility studies may be necessary to ensure that the primary services for amateur broadcasting and amateur satellites operating globally will not encounter unacceptable interference.

Within Region 2, several primary radiolocation allocations exist within the 30-300 MHz range and any additional allocation may create unacceptable interference with existing services and hinder future technological development and efficient spectrum use.

The proposed “no change” to Article 5 of the Radio Regulations covers Region 2 only and will ensure protection to services and systems within Region 2. Conversely, it may be appropriate for WRC-12 to consider a country specific footnote within the 154-156 MHz range in order to accommodate future radiolocation services without changing the Table of Frequency Allocations of the Radio Regulations.

**Proposal:**

NOC

USA/AI1.14/1

## ARTICLE 5

### Frequency allocations

#### Section IV – Table of Frequency Allocations

**Reasons:** No change to the Radio Regulations in Region 2 is necessary, as there are several existing primary radiolocation allocations within the 30-300 MHz range. Compatibility studies regarding existing primary services, particularly the safety and distress services, mobile-satellite service, fixed-satellite service, and the amateur service, need further inquiry to be confident that unacceptable interference will not occur.

SUP

USA/AI1.14/2

## RESOLUTION 611 (WRC-07)

### Use of a portion of the VHF band by the radiolocation service

**Reasons:** Consequential to completion

## UNITED STATES OF AMERICA

### PROPOSALS FOR THE WORK OF THE CONFERENCE

**Agenda item 1.17:** *to consider 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 this frequency band is allocated, and take appropriate action*

**Background Information:** The transition to digital television is underway in many countries worldwide. The eventual global transition to digital television will make spectrum available for introduction of the new services, including next generation wireless services. The WRC-12 decisions under the agenda item 1.17 are therefore, important to operators, manufacturers and, most importantly, consumers worldwide.

At WRC-07, there were difficult discussions surrounding the future use of the 790-862 MHz band in Region 1 and in the end No. **5.316B** was agreed allocating 790-862 MHz to the Mobile service, except aeronautical, on a primary basis starting from 17 June 2015, the DTV transition date in the GE06 Agreement. The footnote also states that the use of stations of the mobile service is subject to the successful application of the procedures of the GE06 Agreement for those countries party to it. No. **5.316** was updated and No. **5.316A** was developed, allocating 790-862 MHz to the Mobile service in 65 Region 1 countries effective immediately and in force until 16 June 2015. No. **5.317A** identifies for IMT those parts of the band 790-960 MHz in Region 1, which are allocated to the mobile service on a primary basis.

Due to the extensive debates in Region 1 concerning this band, Resolution **749 (WRC-07): Studies on the use of the band 790-862 MHz by mobile applications and by other services**, was developed.

The GE06 Agreement contains a plan for digital TV covering frequencies including the 790-862 MHz band in Region 1 (parts of Region 1 situated to the west of meridian 170° east and north of parallel 40° south, except the territory of Mongolia) and one country in Region 3. The GE06 Agreement also contains regulatory provisions concerning sharing between the terrestrial broadcasting service and other terrestrial services, as well as the list of other primary terrestrial services. The GE06 Agreement appears to provide sufficient regulatory framework to address sharing issue between the mobile service and other services in the band 790-862 MHz between countries that are signatories to this agreement.

With regard to Region 3, it is important to recognize that allocation to the mobile service in the band 790-862 MHz has been in effect since WARC-71. If there have been no reported instances of interference, then this should be taken into account when considering any regulatory changes.

With regard to Region 2, WRC-07 allocated the band 698-806 MHz to the mobile service on a co-primary basis and identified it for use by IMT systems. Some Region 2

administrations have successfully completed the realignment of allocations in this spectrum while others are progressing towards that goal. In addition, WRC-07 determined that there is no need to conduct a further review of the regulatory provisions concerning the use of the band 790-862 MHz in Region 2. That decision is explicitly affirmed in the agenda item 1.17 and the associated Resolution 749 (WRC-07).

**Proposal:**

**ARTICLE 5**

**Frequency allocations**

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

**NOC** USA/1.17/1

**460-890 MHz**

<b>Allocation to services</b>		
	<b>Region 2</b>	
	<b>698-806</b> BROADCASTING Fixed MOBILE 5.313B 5.317A  5.293 5.309 5.311A	
	<b>806-890</b> FIXED MOBILE 5.317A BROADCASTING  5.317 5.318	

**Reasons:** WRC-12 Agenda Item 1.17 is limited to terrestrial services only in Regions 1 and 3 and only in the band 790-862 MHz. There are no bases for any changes in the Radio Regulations that would impact the terrestrial services in the band 790-862 MHz in Region 2. Therefore, the United States proposes NOC with respect to any change to Article 5 that could impact Region 2 services in the band 790-862 MHz. This proposal does not concern the Regions 1 and 3 columns of the Table of Frequency Allocations in Article 5, which are thus not reproduced above. The worldwide introduction of new telecommunications services in the mobile and fixed service allocations in this band requires stable allocations that are harmonized to the greatest degree possible.

## UNITED STATES OF AMERICA

### PROPOSALS FOR THE WORK OF THE CONFERENCE

**Agenda Item 1.18:** *to consider extending the existing primary and secondary radiodetermination-satellite service (space-to-Earth) allocations in the band 2483.5-2500 MHz in order to make a global primary allocation, and to determine the necessary regulatory provisions based upon the results of ITU-R studies, in accordance with Resolution 613 (WRC-07)*

**Background Information:** The 2 483.5-2 500 MHz band is allocated globally on a primary basis, to fixed, mobile and mobile-satellite services. In addition, in Regions 2 and 3 there are primary allocations to the radiolocation service. In Region 1, the radiolocation service is allocated on a secondary basis. The RDSS is allocated on a primary basis in Region 2 and on a secondary basis in Region 3, in the space-to-Earth direction. No. 5.400 allocates this band for RDSS on a Primary basis in certain countries in Regions 1 and 3 subject to agreement obtained under No. 9.21 from countries not listed in No. 5.400. No. 5.398 states that the provisions of No. 4.10 do not apply to RDSS in this band. No. 5.402 calls for coordination of mobile-satellite service and radiodetermination-satellite service networks under No. 9.11A.

The 2 483.5 – 2 500 MHz band is used by the mobile-satellite service, in the space-to-Earth direction, to provide communication service to remote and underserved locations. Service to these remote and underserved areas is critical for the continued development of the areas and represents the only means of communication available in these areas. The 1992 World Administrative Radio Conference made the MSS allocation based on a 1998 implementation date and the MSS has successfully operated in this band since 1998.

In other parts of the world, fixed and mobile services are active in the 2 483.5 – 2 500 MHz band. In particular, advanced terrestrial wireless services operate in the 2 496-2 690 MHz band in the United States.

Currently, the RDSS is active in the 2483.5 – 2500 MHz band only from geostationary space stations serving parts of Region 3. It is uncertain at this time whether RDSS operation has had any effect on the other primary allocated services.

Studies conducted within the ITU-R have indicated that the radiodetermination-satellite service (space-to-Earth) could cause unacceptable interference to the mobile-satellite service (space-to-Earth) based on current operating conditions. Relaxation of the coordination trigger power flux density level given in Table 5-2 of Annex 1 of Appendix 5, which some systems regard as a power flux density limit, would allow this potential interference to be overcome.

The power flux density coordination trigger level was developed in preparation for WRC-95. The usage of the 2483.5-2500 MHz band has changed since the ITU-R studies preparing for WRC-95 were conducted. In some countries the use of this band for the fixed service has been discontinued while in other countries the characteristics of the fixed service systems have been drastically changed.

**Proposal:**

**ARTICLE 5**

**Frequency allocations**

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

**NOC**            USA/AI 1.18/1

**2 170-2 520 MHz**

<b>Allocation to services</b>		
<b>Region 1</b>	<b>Region 2</b>	<b>Region 3</b>
<b>2 483.5-2 500</b> FIXED MOBILE MOBILE-SATELLITE (space-to-Earth) 5.351A Radiolocation  5.150 5.371 5.397 5.398 5.399 5.400 5.402	<b>2 483.5-2 500</b> FIXED MOBILE MOBILE-SATELLITE (space-to-Earth) 5.351A RADIOLOCATION RADIODETERMINATION-SATELLITE (space-to-Earth) 5.398  5.150 5.402	<b>2 483.5-2 500</b> FIXED MOBILE MOBILE-SATELLITE (space-to-Earth) 5.351A RADIOLOCATION Radiodetermination-satellite (space-to-Earth) 5.398  5.150 5.400 5.402

**Reasons:** No proposals are made with respect to the Table of Frequency Allocations in the band 2483.5-2500 MHz but it is presumed that WRC-12 under Agenda Item 1.18 will allocate this band to the Radiodetermination-satellite (space-to-Earth) on the primary bases in Regions 1 and 3.

**NOC**            USA/AI 1.18/2

**5.398**                            In respect of the radiodetermination-satellite service in the band 2 483.5-2 500 MHz, the provisions of No. **4.10** do not apply.

**Reasons:** The operation under the radiodetermination-satellite service in this band is not intended to be used for safety-of-life applications.

**NOC**            USA/AI 1.18/3

**5.402**                            The use of the band 2 483.5-2 500 MHz by the mobile-satellite and the radiodetermination-satellite services is subject to the coordination under No. **9.11A**. Administrations are urged to take all practicable steps to prevent harmful interference to the radio astronomy service from emissions in the 2 483.5-2 500 MHz

band, especially those caused by second-harmonic radiation that would fall into the 4 990-5 000 MHz band allocated to the radio astronomy service worldwide.

**Reasons:** The necessity for coordination between networks operating in the space services and between space and terrestrial networks will continue in the future.

## APPENDIX 5 (REV.WRC-07)

### Identification of administrations with which coordination is to be effected or agreement sought under the provisions of Article 9

#### ANNEX 1

### 1 Coordination thresholds for sharing between MSS (space-to-Earth) and terrestrial services in the same frequency bands and between non-GSO MSS feeder links (space-to-Earth) and terrestrial services in the same frequency bands

MOD USA/AI 1.18/4

TABLE 5-2 (continued) (WRC-07)

Frequency band (MHz)	Terrestrial service to be protected	Coordination threshold values				
		GSO space stations		Non-GSO space stations		
		pfd (per space station) calculation factors (NOTE 2)		pfd (per space station) calculation factors (NOTE 2)		% FDP (in 1 MHz) (NOTE 1)
		<i>P</i>	<i>r</i> dB/degrees	<i>P</i>	<i>r</i> dB/degrees	
2 483.5-2 500	All cases	-146 dB(W/m <sup>2</sup> ) in 4 kHz and -128 dB(W/m <sup>2</sup> ) in 1 MHz	0.5	-1404 dB(W/m <sup>2</sup> ) in 4 kHz and -1226 dB(W/m <sup>2</sup> ) in 1 MHz (NOTE 7)	0.65	

NOTE 1 – The calculation of FDP is contained in § 1.2.2.1, using the reference FS parameters contained in § 1.2.2.2.1 and 1.2.2.2.3. The use of FDP threshold is limited to the case of digital FS systems.

NOTE 2 – The following formula should be used for deriving the coordination threshold in terms of pfd:

$$\begin{aligned}
 &P && \text{for } 0^\circ \leq \delta \leq 5^\circ \\
 &P + r(\delta - 5) && \text{for } 5^\circ < \delta \leq 25^\circ \\
 &P + 20r && \text{for } 25^\circ < \delta \leq 90^\circ
 \end{aligned}$$

where  $\delta$  is the angle of arrival (degrees).

The threshold values are obtained under assumed free-space propagation conditions.

NOTE 7 – The pfd values specified for the band 2 483.5-2 500 MHz provide full protection for analogue radio-relay systems using the sharing criteria established by Recommendation ITU-R SF.357, for operation with multiple non-GSO MSS systems employing code division multiple access techniques. The pfd values specified will not provide full protection for existing digital fixed systems in all cases. However, these pfd values are considered to provide adequate protection for digital fixed systems designed to operate in this band, where high-power industrial, scientific and medical equipment and possible low-power applications are expected to produce a relatively high interference environment.

**Reasons:** Studies conducted within the ITU-R have indicated that the radiodetermination-satellite service (space-to-Earth) could cause unacceptable interference to the mobile-satellite service (space-to-Earth) based on current operating conditions. Relaxation of the coordination trigger power flux density level given in Table 5-2 of Annex 1 of Appendix 5, which some systems regard as a power flux density limit, would allow this potential interference to be overcome.

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## UNITED STATES OF AMERICA

### PROPOSALS FOR THE WORK OF THE CONFERENCE

**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)*

**Background Information:** Resolution 956 (WRC-07) resolves to invite ITU-R to study whether there is a need for regulatory measures to enable the introduction of software-defined radio and cognitive radio systems.

Software defined radios (SDR) and cognitive radio systems (CRS) are technologies which may offer improved efficiency to the overall spectrum use and provide additional flexibilities to radiocommunication services. They are not radiocommunication services themselves, but rather are technologies that may be deployed in radiocommunication systems.

Any system that incorporates SDR, CRS or combined SDR/CRS technologies shall operate in accordance with the provisions of the Radio Regulations and administration rules governing the use of the frequency band in which the systems are intended to operate. To date, some administrations have allowed such systems to operate on a license-exempt, non-harmful interference basis. In the U.S., the regulatory body has provided, through equipment authorization requirements, operating parameters for SDR/CRS devices to ensure that such devices will not cause harmful interference to allocated radiocommunication services.

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.

**Proposal:**

NOC USA/1.19/1

#### ARTICLE 1 Terms and definitions

**Reasons:** No changes to the Radio Regulations are necessary to enable the introduction of SDR and CRS technologies. SDR and CRS techniques can be used with a range of technologies, and in a range of frequency bands subject to appropriate equipment authorization procedures to ensure that authorized devices operate within the limitations an administration applies to the

frequency bands in which these systems are *permitted* to operate. Any definitions developed for SDR and CRS could be captured in an ITU-R recommendation.

NOC USA/1.19/2

**ARTICLE 5**  
**Frequency allocations**  
**Section IV – Table of Frequency Allocations**  
(See No. 2.1)

**Reasons:** No changes to Article 5 (frequency allocations) of the Radio Regulations are necessary to enable the introduction of SDR and CRS technologies. SDR and CRS techniques can be used with a range of technologies, and in a range of frequency bands subject to appropriate equipment authorization procedures to ensure that authorized devices operate within the limitations an administration applies to the frequency bands in which these systems are *permitted* to operate.

SUP USA/1.19/3

**RESOLUTION 956 (WRC-07)**

**Regulatory measures and their relevance to enable the introduction  
of software-defined radio and cognitive radio systems**

**Reasons:** Since no regulatory action or further work is required for agenda item 1.19, Resolution **956 (WRC-07)** can be suppressed.

## UNITED STATES OF AMERICA

### PROPOSALS FOR THE WORK OF THE CONFERENCE

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

**Background Information:** Resolution 953 (WRC-07) requests the ITU-R to study emissions from SRDs, in particular RFIDs, inside and outside the frequency bands designated in the Radio Regulations for ISM applications to ensure adequate protection of radiocommunication services.

The United States, like many other administrations, has adopted a flexible regulatory regime, primarily in the ISM bands, that sets basic technical requirements that facilitate spectrum sharing among license-exempt devices, including short-range devices, while minimizing constraints on product designs. The technical requirements placed on these devices ensure adequate protection of radiocommunication services operating in the same or adjacent frequency bands. This regime has led to the implementation of a variety of devices, including cordless telephones, wireless access systems, RFIDs, alarm systems, and baby monitors.

Short-range devices have been studied by the ITU-R and the results are contained in Recommendation ITU-R SM.1538-2. This Recommendation provides descriptions of short range device applications, common frequency ranges, and regulatory regimes adopted by several Administrations.

The United States believes that the regulation of short-range devices is primarily a national matter and that there is no need for any modification to the international Radio Regulations to accommodate these devices.

#### **Proposal:**

NOC USA/1.22/1

#### ARTICLE 5

#### Frequency allocations

#### Section IV – Table of Frequency Allocations

(See No. 2.1)

**Reasons:** The regulation of short-range devices is primarily a national matter and does not require any modifications to the Radio Regulations. There is no need for international regulation of such devices. Technical aspects of these devices, including facilitating harmonization of frequency bands, can be covered in ITU-R recommendations.

SUP USA/1.22/2

#### RESOLUTION 953 (WRC-07)

#### Protection of radiocommunication services from emissions by short-range radio devices

**Reasons:** Since no regulatory action or further work is required for agenda item 1.22, Resolution **953 (WRC-07)** can be suppressed.

## UNITED STATES OF AMERICA

### PROPOSALS FOR THE WORK OF THE CONFERENCE

**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*

**Background Information:** The spectrum between 415-526.5 kHz is currently allocated to the maritime mobile and aeronautical radiolocation services, with some variances in the allocations among the three ITU Regions. Footnote No. **5.82** advises, in relevant part, "In using the band 415-495 kHz for the aeronautical radiolocation service, administrations are requested to ensure that no harmful interference is caused to the frequency 490 kHz." Footnote No. **5.82B** advises, "Administrations authorizing the use of frequencies in the band 495-505 kHz by services other than the maritime mobile service shall ensure that no harmful interference is caused to the maritime mobile service in this band or to the services having allocations in adjacent bands, noting in particular the conditions of the use of the frequencies 490 and 518 kHz, as prescribed in Articles **31** and **52**." NAVTEX services operate on 490 kHz and 518 kHz per Resolution **339 (Rev. WRC-07)**.

Maritime mobile operations within this band are and have been historically limited to radiotelegraphy, per Footnotes No. **5.79** and **5.82**. Over the past two decades, maritime mobile operations within the range 415-526.5 kHz have significantly diminished with the implementation of the Global Maritime Distress Safety System. The designation of the 495-505 kHz portion of this band for distress and calling purposes was suppressed at WRC-07. Nevertheless, new maritime systems operating within the range 495-505 kHz are being contemplated in work under Resolution **357 (WRC-07)**.

Aeronautical radiolocation applications within 415-526.5 kHz are limited to non-directional beacons not employing voice transmission. This limitation is required by Footnote No. **5.80** within ITU Region 2 and is reflected in actual practice elsewhere in the world. Analysis of operating NDBs indicates relatively low population within the range 461-469 kHz and 471-487 kHz.

A secondary allocation between 415-526.5 kHz would offer an option for amateurs complementing the existing LF and MF international allocations at 135.7-137.8 kHz and 1810-1850 kHz (1800-2000 kHz in Regions 2 and 3). Amateurs select operating frequencies based on the communication and path desired, and the range 415-526.5 kHz offers groundwave propagation characteristics that may prove ideal for a given path.'

Worldwide, the amateur service successfully shares spectrum as a secondary user to the fixed service between 10.100 and 10.150 MHz. In some countries around the world, including the United States, amateurs utilize specific channels between 5.25 and 5.45 MHz as secondary users to the fixed and mobile services. The primary interference avoidance technique on these bands has been a listen-before-transmit protocol, supplemented by appropriate regulatory power limitations. These techniques have led to successful sharing arrangements, which should be replicable to protect aeronautical NDB operations.

Proposal:

## ARTICLE 5

### Frequency allocations

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

MOD USA/AI 1.23/1

200-495 kHz

Allocation to services		
Region 1	Region 2	Region 3
<p><b>415-435</b> MARITIME MOBILE 5.79 AERONAUTICAL RADIONAVIGATION 5.72</p>	<p><b>415-<del>495</del>461</b> MARITIME MOBILE 5.79-<del>5.79A</del> Aeronautical radionavigation 5.80</p>	
<p><del>435-495</del><b>461</b> MARITIME MOBILE 5.79-<del>5.79A</del> Aeronautical radionavigation 5.72 <u>MOD</u> 5.82</p>	<p>5.77 5.78 <u>MOD</u> 5.82</p>	
<p><u>461-469</u> MARITIME MOBILE 5.79 Aeronautical radionavigation <u>Amateur</u> 5.72 <u>MOD</u> 5.82</p>	<p><u>461-469</u> MARITIME MOBILE 5.79 Aeronautical radionavigation 5.80 <u>Amateur</u> 5.77 <u>MOD</u> 5.82</p>	
<p><u>469-471</u> MARITIME MOBILE 5.79 Aeronautical radionavigation 5.72 <u>MOD</u> 5.82</p>	<p><u>469-471</u> MARITIME MOBILE 5.79 Aeronautical radionavigation 5.80 5.77 <u>MOD</u> 5.82</p>	
<p><u>471-478</u> MARITIME MOBILE 5.79 Aeronautical radionavigation <u>Amateur</u> 5.72 <u>MOD</u> 5.82</p>	<p><u>471-478</u> MARITIME MOBILE 5.79 Aeronautical radionavigation 5.80 <u>Amateur</u> 5.77 <u>MOD</u> 5.82</p>	
<p><del>478-495</del> MARITIME MOBILE 5.79 5.79A Aeronautical radionavigation 5.72 <u>MOD</u> 5.82</p>	<p><del>478-495</del> MARITIME MOBILE 5.79 5.79A Aeronautical radionavigation 5.80 5.77-<del>5.78</del> <u>MOD</u> 5.82</p>	

**Reasons:** A secondary allocation to the amateur service will complement the frequencies available for amateur use. The segments 461-469 kHz and 471-478 kHz afford ample separation to NAVTEX operation and avoid conflict with the vast majority of aeronautical NDBs.

Deletions of Nos. 5.78 and 5.79A from the Table are proposed so that these footnote provisions only appear in the applicable ranges and Regions (i.e., 415-435 kHz in ITU Region 2 for 5.78 and 490 kHz worldwide for 5.79A).

**MOD** USA/AI 1.23/2

**5.82** In the maritime mobile service, the frequency 490 kHz is to be used exclusively for the transmission by coast stations of navigational and meteorological warnings and urgent information to ships, by means of narrowband direct-printing telegraphy. The conditions for use of the frequency 490 kHz are prescribed in Articles 31 and 52. In using the band 415-495 kHz for the aeronautical radionavigation or the bands 461-469 kHz and 471-487 kHz for the amateur services, administrations are requested to ensure that no harmful interference is caused to the frequency 490 kHz.

**Reasons:** This change affords NAVTEX the same protection from the amateur service as is given by the aeronautical radiolocation service.

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## UNITED STATES OF AMERICA

### PROPOSALS FOR THE WORK OF THE CONFERENCE

**Agenda Item 1.24:** *to consider the existing allocation to the meteorological-satellite service in the band 7 750-7 850 MHz with a view to extending this allocation to the band 7 850-7 900 MHz, limited to non-geostationary meteorological satellites in the space-to-Earth direction, in accordance with Resolution 672 (WRC-07)*

**Background Information:** The estimated data rates for the next generation of non-geostationary meteorological satellites (MetSat), circa 2018-2020, are expected to be on the order of about 225 - 230 Mbps. This data rate requires 150 MHz of spectrum to provide the necessary bandwidth for the transmission of un-coded raw instrument data. Extension of the current 100 MHz meteorological-satellite service allocation into the band 7 850 – 7 900 MHz will provide a contiguous 150 MHz (7 750-7 900) to meet this requirement. Sharing within the proposed 50 MHz extension involves the same radiocommunication services that currently share the band 7 750 – 7 850 MHz with MetSat (limited to NGSO) on a co-primary basis.

Compatibility analyses (Document 7B/121 Annex 08) performed by WP 7B between MetSat and fixed service concluded that the potential extension band 7 850-7 900 MHz can be shared under the same conditions as the current 7 750-7 850 MHz allocation.

**Proposal:**

#### ARTICLE 5

#### Frequency allocations

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

MOD USA/1.24/1

7 250-8 500 MHz

Allocation to services		
Region 1	Region 2	Region 3
7 750- <del>7 850</del> 7 900	FIXED METEOROLOGICAL-SATELLITE (space-to-Earth) MOD 5.461B MOBILE except aeronautical mobile	
<del>7 850 7 900</del>	<del>FIXED</del> <del>MOBILE except aeronautical mobile</del>	

MOD USA/1.24/2

**5.461B** The use of the band 7 750-~~7 850~~7 900 MHz by the meteorological-satellite service (space-to-Earth) is limited to non-geostationary satellite systems.

**Reasons:** To extend the current MetSat allocation by 50 MHz to 7 900 MHz with consequential change to the footnote.

SUP USA/1.24/3

## RESOLUTION 672

### **Extension of the allocation to the meteorological-satellite service in the band 7 750-7 850 MHz**

**Reasons:** Required studies have been completed for this agenda item; no more work is needed.

## UNITED STATES OF AMERICA

### PROPOSALS FOR THE WORK OF THE CONFERENCE

**Agenda Item 7:** *to consider possible changes in response to Resolution 86 (Rev. Marrakesh, 2002) of the Plenipotentiary Conference: "Advance publication, coordination, notification and recording procedures for frequency assignments pertaining to satellite networks", in accordance with Resolution 86 (Rev. WRC-07)*

**Issue:** List of networks with which coordination needs to be effected (No. 9.36)

**Background Information:** For the coordination between geostationary satellite networks (No. 9.7), the Bureau identifies the administrations with which coordination has to be effected as well as the respective satellite networks. However, the list of identified satellite networks is for information only. Coordination would be facilitated if, after receiving comments from all interested administrations, the Bureau would render definitive the list of networks with which coordination has to be effected. This proposal contains the necessary changes to the Radio Regulations in order to achieve this goal.

The regulations currently in force - namely provisions Nos. 9.36 and 9.36.2 - indicate that the Bureau, when it examines a request for coordination in application of Nos. 9.34 - 9.38, shall identify any administration with which coordination may need to be effected.

Provision No. 9.36.2 further specifies that *"in the case of coordination under Nos. 9.7, 9.7A and 9.7B, the Bureau shall also identify the specific satellite networks or earth stations with which coordination needs to be effected. In the case of coordination under No. 9.7 the list of the networks identified by the Bureau under No. 9.27 is for information purposes only, to help administrations comply with this procedure."*

In this context, for sake of discussion assume that the coordination request of a network of administration A has been published and that administration B has been identified by the Bureau under No. 9.7 as one of the administrations with which coordination has to be effected.

As the list of the satellite networks of administration B provided by the Bureau is "for information purposes only," administration A will not necessarily know the complete list of networks of administration B that have to be considered until bilateral coordination between A and B is conducted. This is not desirable, especially because detailed coordination is often conducted between operators, whereas satellite networks are submitted to the ITU by administrations. Operator-to-operator coordination agreements are subsequently ratified by the administrations involved and a formal coordination meeting between administrations may never happen. Therefore, the operator of administration A associated with the satellite network under consideration may never know the complete list of networks of administration B with which coordination is required.

Provision No. 9.36.2 stipulates that the Bureau identifies the satellite networks with which coordination needs to be effected in the framework of the coordination procedure foreseen in Article 9 (Section II) for the coordination forms 9.7 to 9.7B. The Bureau uses for this identification either the "coordination arc" (CA) concept or the method described

in Appendix 8 ( $\Delta T/T > 6\%$ ). On the above basis, the BR establishes the list of affected administrations (No. 9.36) and a list of satellite networks, which may be affected by the network contained in the “incoming” coordination request. The latter list, however, may not be complete or definitive for a given coordination request. Under the provisions of No. 9.41 the administrations which are not included in the list under No. 9.36 may request their inclusion in this list, identifying networks outside the coordination arc for which the value of  $\Delta T/T$  calculated by the method in Appendix 8 exceeds 6%.

In addition, administrations which are included in the list of 9.36 may at a later time request that, in addition to the networks included in the list of No. 9.36.2, other networks should also be included in the coordination process. The latter case does not seem to be covered by the provisions of No. 9.41 which treats only cases of administrations not included in the first list established under No. 9.36 rather than the networks.

Consequently, this problem needs to be solved by the administrations during bilateral coordination discussions. A further difficulty is that the additions under No. 9.41 to the list of the affected administrations can only be handled by addenda to the BR first publication under No. 9.38 at different times, after the first publication (see Nos. 9.41 and 9.42). While the additionally affected administrations are in this way published and consequently known by all the administrations after the 4 month comment period, the complete list of networks to be considered is not available, as the list of networks originally published under No. 9.36.2 is not updated.

Having experienced the above difficulties, a Rule of Procedure (RoP) concerning the application of Provisions Nos. 9.41 and 9.42 has been established. This RoP is attached to the present document for information. (Annex 1). The RoP recognizes that under the current regulations the list of affected networks (No. 9.36.2) cannot be considered as exhaustive. In addition, it is also recognized that when administrations disagree on the list of networks to be considered the problem can only be solved by the Bureau at the very end of the notification process (Article 11, Nos. 11.32A, and probably 11.41).

It is noted that the wording of No. 9.41 excludes from its application those administrations which have been selected for inclusion in the list of affected administration under No. 9.36. These administrations may also find that some of their networks which were not included in the list of No. 9.36.2 – since they were outside the coordination arc – should be included into the coordination procedure as their  $\Delta T/T$  value exceeds the threshold value of 6%. Logically for these administrations the concept of No. 9.41 should also apply. The current Rule of Procedure on Nos. 9.41 – 9.42 recognizes this problem (see §.2.1 of the RoP in Annex 1) and suggests that such cases should be considered under No. 9.52 (disagreement communicated to the initiating administration). For such a case the Rule states that the administration should, *“while applying No. 9.52 and without having to apply No. 9.41, bring into the bilateral coordination discussion any of their networks located outside the coordination arc which meet the  $\Delta T/T > 6\%$  criterion.”*

In view of the above considerations, it seems logical and necessary to open the application of the concept of No. 9.41 also for those administrations which have already been identified as affected administrations under No. 9.36, to allow for the possible

addition of networks which were not identified under No. 9.36.2 where the only criterion applied was the coordination arc.

In summary, an improvement to the process would be for the list of networks identified under No. 9.36.2 with respect to coordination under No. 9.7 to be considered provisional and not “for information only.” Currently, according to No. 9.41, within the period of four months following the publication of a coordination request, administrations are able to request that an administration be added or removed from the list generated by the Bureau. In an improved process, this possibility would be expanded so that requests could also be made to add or remove networks from the list generated by the Bureau.<sup>1</sup> The Bureau would then study all these requests (see No. 9.42) and subsequently publish, at the earliest possible date, a definitive list of administrations and corresponding satellite networks with which coordination would be required.

Consequential changes to Article 9 and Appendix 5 of the Radio Regulations will be required in order to implement these proposals.

In view of the above, the United States proposes that changes to Article 9 and Appendix 5 of the Radio Regulations be introduced in order to allow that a definitive list of administrations and corresponding satellite networks with which coordination needs to be effected be generated as early as possible in the coordination process.

## Annex 1

### Extracts from the Rules of Procedure

#### 9.41 – 9.42

1 The Board has closely studied the situation and the reasons that led to the adoption of the coordination arc (CA) principle at WRC-2000 and in particular Nos. 9.41 and 9.42. In doing so, it was guided by *recognizing* and *considering* of Resolution 55 (WRC-2000), by Article 9 in general, and by Nos. 9.36, 9.36.2 and Appendix 5.

2 The Board has accordingly arrived at the following conclusions regarding the application of the provisions of No. 9.41 by an administration which considers that its name should have been identified under No. 9.36 in the context of a request for coordination stemming from the application of No. 9.7 (including for cases not having to do with application of coordination arc):

2.1 Once an administration has been identified and included in the coordination requirements of a particular assignment published in a coordination special section, coordination is to be effected between administrations (not between networks) who decide, based on Appendix 5, which networks they wish to take into account in their bilateral discussions. The list of satellite networks published under No. 9.36.2 is intended for information purposes only, and thus should not be considered as exhaustive. Administrations identified on the basis of CA can, while applying No. 9.52 and without having to apply No. 9.41, bring into the bilateral coordination discussions any of their networks located outside of the coordination arc which meet the  $\Delta T/T > 6\%$  criterion. In this case, no action is undertaken by the Bureau under No. 9.42.

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<sup>1</sup> Requests for addition of an administration should also include the specification of the networks of this administration to be considered in the coordination.

2.2 Administrations not identified by CA are entitled, based on the  $\Delta T/T > 6\%$  criterion, to be included in coordination, in application of Nos. 9.41 and 9.42. Requests under No. 9.41 must be substantiated by  $\Delta T/T > 6\%$  calculations. To minimize the administrative burden on the Bureau and administrations, it shall be deemed sufficient for an administration wishing to be added in a coordination request under No. 9.41 to provide  $\Delta T/T > 6\%$  calculations for only one pair of assignments for each satellite network to be further considered in the coordination process (a pair consisting of one assignment of the published network and one assignment of the network of the requesting administration); the Bureau will then examine all assignments of the specific networks of the requesting administration and then establish coordination requirements for all the assignments of the network referred to in the publication vis-à-vis the requesting administration under No. 9.42 commensurate with the results of such examination.

3 In case of continuing disagreement between the administration of the published network and an administration involved in coordination under Nos. 9.7 or 9.42, which cannot be resolved between them at coordination stage, the two administrations may communicate to the Bureau a mutually agreed list of networks to be taken into account for examination under No. 11.32A at notification stage. If the two administrations cannot agree on such a list, the Board decided that examination under No. 11.32A at notification stage will be carried out with respect to all networks of the latter administration, indicated in application of § 2 of this Rule, whose assignments, identified in accordance with § 1 of Appendix 5, have  $\Delta T/T$  greater than 6%.

**Proposal:**

## ARTICLE 9

### Procedure for effecting coordination with or obtaining agreement of other administrations (WRC-07)

MOD USA/7 (9.36)/1

<sup>21</sup> 9.36.2 In the case of coordination under Nos. 9.7, 9.7A and 9.7B, the Bureau shall also identify the specific satellite networks or earth stations with which coordination needs to be effected. ~~(See also No. 9.42.1.) In the case of coordination under No. 9.7 the list of the networks identified by the Bureau under No. 9.27 is for information purposes only, to help administrations comply with this procedure.~~

**Reasons:** To make the list of affected networks an exhaustive, official list for the coordination under 9.7 and therefore avoid unnecessary discussions between administration concerning the status of the assignments/networks which are to be included or not in the bilateral coordination negotiations. According to the addition proposed under No. 9.42.1 hereafter this list will be updated after each action under Nos. 9.41-9.42, and at the end of this procedure, will be made available to the administrations as an exhaustive and official list of networks with which coordination needs to be effected.

**MOD** USA/7 (9.36)/2

**9.41** Following receipt of the BR IFIC referring to requests for coordination under Nos. **9.7** to **9.7B**, an administration believing that it should have been included in the request or the initiating administration believing that an administration or any of its networks identified under No. **9.36** in accordance with the provisions of No. **9.7** (GSO/GSO) (items 1) to 8) of the frequency band column), No. **9.7A** (GSO earth station/non-GSO system) or No. **9.7B** (non-GSO system/GSO earth station) of Table 5-1 of Appendix **5** should not have been included in the request, shall, within four months of the date of publication of the relevant BR IFIC, inform the initiating administration or the identified administration, as appropriate, and the Bureau, giving its technical reasons for doing so, and shall request that its name and the complete associated list of its networks be included or that the name of the identified administration or any of its networks be excluded, as appropriate.

**Reasons:** To allow the initiating administration to propose changes not only to the list of administrations identified by the BR but also to the list of networks associated with these administrations. To require that an administration that wants to be included in the coordination, but has not been identified by the BR, also identify all of its specific networks to be considered.

**ADD** USA/7 (9.36)/3

**9.41A** Following receipt of the BR IFIC referring to requests for coordination under Nos. **9.7** to **9.7B**, an administration already identified under No. **9.36** as an affected administration, may propose changes to the list of its networks provisionally identified by the BR. In particular, if this administration considers that the value of  $\Delta T/T$  calculated by the method in § 2.2.1.2 and 3.2 of Appendix **8** exceeds 6% for some other network(s) outside the coordination arc in addition to those included in the provisional list of networks under No. **9.36.2**, it may request the inclusion of this (these) other network(s) in the list. This administration shall, within four months of the date of publication of the relevant BR IFIC, inform the initiating administration and the Bureau of any proposed changes to the list established under No. **9.36.2**, giving its technical reasons for doing so.

**Reasons:** To make available for administrations already identified as affected administration under No. 9.36 (because of their networks within the coordination arc) the possibility of adding networks outside the coordination arc provided the trigger level of  $\Delta T/T$  is exceeded for these networks and of proposing any other changes to the list of networks identified by the BR.

**MOD** USA/7 (9.36)/4

**9.42** The Bureau shall study theis information received under Nos. 9.41 and 9.41A on the basis of Appendix **5** and shall inform both administrations of its conclusions. Should the Bureau agree to include or exclude, as appropriate, the administration and/or associated networks in the request, it shall publish an addendum to the publication under No. **9.38**<sup>22A</sup>

**Reasons:** To make explicit reference to the two preceding provisions as now both are concerned and that inclusions and exclusions to the list may refer to administrations and/or networks.

To update the list originally established under No. 9.36.2 with the inclusions and/or exclusions of administrations and/or networks submitted by administrations under Nos. 9.41 and 9.41A and considered justifiable after studied by the BR under No. 9.42. The administration may use this list in their coordination negotiations as an exhaustive list of networks with which coordination has to be effected.

**ADD** USA/7 (9.36)/5

**9.43A** The list of networks identified for those administrations not responding under No. **9.41A** within the time limit specified therein shall be regarded as definitive.

**Reasons:** To make explicit that lack of a reply from an administration under No. 9.41A will be understood by the BR as agreement of that administration with its inclusion in the provisional list as well as with the associated list of its networks.

**MOD** USA/7 (9.36)/6

## APPENDIX 5 (Rev.WRC-07)

### **Identification of administrations with which coordination is to be effected or agreement sought under the provisions of Article 9**

#### **TABLE 5-1 Technical conditions for coordination**

Reference of Article 9	Case	Frequency bands (and Region) of the service for which coordination is sought	Threshold/condition	Calculation method	Remarks
No. 9.7 GSO/GSO	A station in a satellite network using the geostationary-satellite orbit (GSO), in any space radiocommunication service, in a frequency band and in a Region where this service is not subject to a Plan, in respect of any other satellite network using that orbit, in any space radio-communication service in a frequency band and in a Region where this service is not subject to a Plan, with the exception of the coordination between earth stations operating in the opposite direction of transmission	1) 3 400-4 200 MHz 5 725-5 850 MHz (Region 1) and 5 850-6 725 MHz 7 025-7 075 MHz  2) 10.95-11.2 GHz 11.45-11.7 GHz 11.7-12.2 GHz (Region 2) 12.2-12.5 GHz (Region 3) 12.5-12.75 GHz (Regions 1 and 3) 12.7-12.75 GHz (Region 2) and 13.75-14.5 GHz	i) Bandwidth overlap, and ii) any network in the fixed-satellite service (FSS) and any associated space operation functions (see No. 1.23) with a space station within an orbital arc of $\pm 10^\circ$ of the nominal orbital position of a proposed network in the FSS  i) Bandwidth overlap, and ii) any network in the FSS or broadcasting-satellite service (BSS), not subject to a Plan, and any associated space operation functions (see No. 1.23) with a space station within an orbital arc of $\pm 9^\circ$ of the nominal orbital position of a proposed network in the FSS or BSS, not subject to a Plan		With respect to the space services listed in the threshold/condition column in the bands in 1), 2), 3), 4), 5), 6), 7) and 8), an administration may request, pursuant to No. 9.41, to be included in requests for coordination, <u>or under No. 9.41A to include into it additional networks</u> , indicating the networks for which the value of $\Delta T/T$ calculated by the method in § 2.2.1.2 and 3.2 of Appendix 8 exceeds 6%. When the Bureau, on request by an affected administration, studies this information pursuant to No. 9.42, the calculation method given in § 2.2.1.2 and 3.2 of Appendix 8 shall be used

Reasons: To add a reference to the new provision No. 9.41A which allows those administrations already identified as affected administration under No. 9.36 (because of their networks within the coordination arc) to add networks outside the coordination arc, provided the trigger level of  $\Delta T/T$  is exceeded for these networks.

## UNITED STATES OF AMERICA

### PROPOSALS FOR THE WORK OF THE CONFERENCE

**Agenda Item 7:** *to consider possible changes in response to Resolution 86 (Rev. Marrakesh, 2002) of the Plenipotentiary Conference: "Advance publication, coordination, notification and recording procedures for frequency assignments pertaining to satellite networks", in accordance with Resolution 86 (Rev.WRC-07)*

**Issue:** Application of Nos. 9.51 and 9.52 with respect to coordination under No. 9.7

**Background Information:** After a Coordination Request is submitted to the ITU, the Bureau identifies the administrations with which coordination has to be effected. Within four months of the publication of the Coordination Request each of the identified administrations has to either agree with the coordination or explicitly express its disagreement. Almost without exception, administrations choose the second option. This proposal contains the necessary changes to the Radio Regulations in order to ensure that lack of response from an administration is understood by the Bureau as disagreement and therefore eliminate a significant amount of correspondence that in most cases does not contribute in any way to expedite the coordination process.

For sake of discussion, assume that the coordination request of a network of administration A has been published and that administration B has been identified by the Bureau under No. 9.7 as one of the administrations with which coordination has to be effected.

Then, according No. 9.51, administration B, within four months of the publication of the coordination request, shall "either inform the requesting administration of its agreement or act under No. 9.52," with the latter meaning that administration B will express its disagreement, i.e. the need for coordination.

In the vast majority of cases, administrations respond in accordance with No. 9.52 without providing any reasons for their disagreement. It is certainly the easiest and safest way to proceed.

It follows from the above that the required formal answer under Nos. 9.51 or 9.52 has lost its value in the framework of GSO to GSO coordination. An improvement to this aspect of the process can be realized by lifting the mandatory nature of this requirement for coordination requests made under No. 9.7 (GSO vs. GSO).

In an improved process, after the coordination request of a satellite network of administration A is published together with the initial list of administrations and corresponding provisional list of satellite networks with which coordination has to be effected, administrations would review this list. In case an administration wants to add or remove itself and/or a network, then it would send this request to the Bureau, as well as to administration A, within four months of the date of publication of the coordination request. However, if an administration agrees with the initial list of administrations and provisional list of corresponding networks published by the Bureau, no action would be required. In particular, an administration already included in the list would not be removed from the final list due to lack of response under No.9.52 as such lack of a

response would be understood by the Bureau to mean that this administration believes that coordination with one or more of its networks is required. Removing the requirement to respond under No. 9.52 will eliminate a significant amount of correspondence that in most cases does not contribute in any way to expedite the coordination process.

In view of the above, the United States proposes that changes to Article 9 of the Radio Regulations be introduced in order to allow that: (1) if an administration, in respect to a coordination request from another administration, is not in a position to give its agreement under No. 9.51 then this administration would not need to respond to such a request; and (2) the lack of such a response would be understood by the Bureau to mean that this administration believes that coordination with one or more of its networks is required.

**Proposal:**

**ARTICLE 9**

**Procedure for effecting coordination with or  
obtaining agreement of other administrations (WRC-07)**

**MOD** USA/7 (9.51)/1

**9.51** Following its action under No. 9.50, the administration with which coordination was sought under Nos. 9.7 to 9.7B shall, within four months of the date of publication of the BR IFIC under No. 9.38 or its addenda published under No. 9.42, respectively, either inform the requesting administration and the Bureau of its agreement or act under No. 9.52.

**Reasons:** To explicitly state that different 4-month windows apply to the original publication and each of its addenda published within or just after the first 4-month period.

**MOD** USA/7 (9.51)/2

**9.52** If an administration, following its action under No. 9.50, does not agree to the request for coordination, it shall, within four months of the date of publication of the BR IFIC under No. 9.38, or of the date of dispatch of the coordination data under No. 9.29, inform the requesting administration of its disagreement and shall provide information concerning its own assignments upon which that disagreement is based. It shall also make such suggestions as it is able to offer with a view to satisfactory resolution of the matter. A copy of that information shall be sent to the Bureau. <sup>24A</sup> Where the information relates to terrestrial stations or earth stations operating in the opposite direction of transmission within the coordination area of an earth station, only that information relating to existing radiocommunication stations or to those to be brought into use within the next three months for terrestrial stations, or three years for earth stations, shall be treated as notifications under Nos. 11.2 or 11.9.

**Reasons:** To indicate that the following footnote is added:

**ADD** USA/7 (9.51)/3

<sup>24A</sup> **9.52.1** In the case of coordination requests under No. 9.7, an affected administration not responding under Nos. 9.51 or 9.52 within four months of the date of publication of the BR IFIC made under No. 9.38 shall continue to be regarded as an affected administration. The fact that this administration did not reply under No.9.52 will be considered as a confirmation – for its part – of the BR publication and will not change its status under No. 9.36 nor the list of its networks established under No. 9.36.2.

**Reasons:** This footnote to No. 9.52 lifts the mandatory nature of making comments under No. 9.52 for the coordination category of No. 9.7 (GSO/GSO). A non-reply will be understood as a confirmation of the BR IFIC publication made under No. 9.38, with respect to the list of affected administrations (No. 9.36) and the list of satellite networks compiled under No. 9.36.2.

**MOD** USA/7(9.51)/4

**9.60** If, within the same four-month period specified in Nos. **9.51** or **9.51A**, an administration with which coordination is sought under Nos. **9.7 A to or 9.7B and/or 9.15 to 9.19** fails to reply or to give a decision under Nos. **9.51** or **9.51A** or, following its disagreement under No. **9.52**, fails to provide information concerning its own assignments on which its disagreement is based, the requesting administration may seek the assistance of the Bureau. The administration initiating the coordination under No. 9.7 may also request the assistance of the Bureau when this administration considers that any of the affected administrations is not willing to participate in the coordination process or does not want to cooperate in the resolution of the problems in the manner foreseen under No. 9.53.

**Reasons:** As the new provision footnote No. 9.52.1 above proposes to lift the mandatory nature of No. 9.52 for the coordination category of No. 9.7 (GSO/GSO), this category has to be excluded from the current formulation of No. 9.60. However, the possibility for the initiating administration to ask the Bureau’s assistance in case of difficulties should be maintained.

**MOD** USA/7 (9.51)/5

**9.62** If the administration concerned ~~still~~ fails to respond within thirty days of the Bureau’s action under No. **9.61**, the provisions of Nos. **9.48** and **9.49** shall apply.

**Reasons:** The word “still” is not applicable to the situation addressed in the last sentence of the modified No. 9.60.

## UNITED STATES OF AMERICA

### PROPOSALS FOR THE WORK OF THE CONFERENCE

**Agenda Item 7:** *to consider possible changes in response to Resolution 86 (Rev. Marrakesh, 2002) of the Plenipotentiary Conference: “Advance publication, coordination, notification and recording procedures for frequency assignments pertaining to satellite networks”, in accordance with Resolution 86 (Rev. WRC-07)*

**Issue:** Bringing into use date (No. 11.47).

**Background Information:** Access to orbital locations and frequencies for satellite networks has become increasingly difficult over the years, in large part due to difficulties in applying the relevant provisions of the Radio Regulations, particularly with regard to coordination. As highlighted at the recent ITU Radiocommunication Bureau *Workshop on the Efficient Use of the Spectrum/Orbit Resource*, and in ITU-R Circular Letter CR/301, some unused frequency and orbital resources remain recorded in the Master International Frequency Register, aggravating the problem. Improving the transparency of the processes for notification and bringing into use could help to improve this situation.

For non-planned satellite bands, No. 11.44 of the Radio Regulations (RR) requires that “the notified date of bringing into use of any assignment to a space station of a satellite network shall not be later than seven years following the date of receipt...of the relevant complete information under No. 9.1 or 9.2, as appropriate.” Additionally, this provision states that “any frequency assignment not brought into use within the required period shall be cancelled by the Bureau...” When the notified date of bringing into use of frequency assignments is earlier than the date of submission of the notification request, the Bureau considers the request itself to be confirmation that the frequency assignments have been brought into use. Otherwise, the notifying administration must inform the Bureau when it actually brings the system into use, in accordance with No. 11.47.

The potential difficulty with the current process is that it can result in uncertainty for administrations as to the status of frequency assignments. While administrations can examine the space radiocommunications stations database for details pertaining to notified frequency assignments submitted to the Bureau, or examined by the Bureau and found to be in conformity with the Radio Regulations, they cannot readily determine whether, or when, an administration has informed the Bureau that a frequency assignment has been brought into use. Other administrations may not know if frequency assignments in the Master International Frequency Register have provisional status, or if the Bureau may cancel them because the administration has missed the bringing into use deadline established by No. 11.44.

The Bureau has established, on a trial basis, a web page providing information on such notifications for satellite networks: <http://www.itu.int/ITU-R/space/snl/listinuse/>. This web page allows an administration to readily determine whether, and when, another administration has informed the Bureau that its satellite network frequency assignment has been brought into use.

The Conference should instruct the Bureau to permanently maintain these pages, and to include thereon a hyperlink to the associated Resolution 49 information.

**Proposal:**

**ADD** USA/AI 7 (BIU)/1

**DRAFT RESOLUTION [USA-7-BIU] (WRC-12)**

**Publication of bringing into use data for satellite networks**

The World Radiocommunication Conference (Geneva, 2012),

*considering*

- a) that the Master International Frequency Register contains unused frequency assignments to satellite networks, which complicate coordination and consultation for administrations seeking access to orbital resources and applying the relevant provisions of the Radio Regulations;
- b) that it is currently cumbersome, and in some cases not possible, for administrations to determine whether the Bureau has been informed that frequency assignments associated with a given satellite network have been brought into use;
- c) that improving the transparency of the notification process for satellites networks would help to address some of the aforementioned difficulties;
- d) that a readily accessible website, maintained by the Bureau, displaying information related to the date of bringing into use of satellite networks, would improve administrations' access to this information,

*resolves to instruct the Director of the Radiocommunication Bureau*

- 1 to take necessary steps to maintain a website, as part of the Bureau's collection of web pages, displaying data pertaining to the bringing into use of frequency assignments associated with specific satellite networks;
- 2 to post, upon receipt from a notifying administration, information indicating the date of bringing into use of frequency assignments associated with a particular satellite network, and to include on this website a hyperlink to the associated Resolution 49 data for the particular frequency assignments and satellite network, along with an indication as to whether the frequency assignments are confirmed as being brought into use; and,
- 3 to provide the website for the use of administrations and operators in their coordinations and consultations, and not as a substitute for, or adjunct to, the provisions of the Radio Regulations.

**Reasons:** Proposed changes would improve administrations' access to orbital resources by providing transparency to the notification process for satellite networks, and by making information on frequencies actually being used more readily available.

## UNITED STATES OF AMERICA

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**Issue:** Nos. **23.13**, **23.13A**, **23.13B** and **23.13C** of the Radio Regulations

**Background Information:** No. **23.13** and its sub-provisions deal with broadcasting-satellite service (BSS) systems which have the capability to serve other countries. No. **23.13** has been the subject of intense debate at many past WRCs. WRC-95 adopted Resolution **531 (WRC-95)**, which (through Section 5.3.1 of Annex 1) instructed the RRB to modify its Rule of Procedure for (then) **S23.13**. The instructions were very similar to the provisions **23.13A** and **23.13B** added by WRC-2000—an administration must comment within four months to object to its inclusion in the service area of a BSS network after its publication, and if no agreement is reached between the concerned administrations, then the service area would be modified to exclude the objecting administration's territory, without changing the network's coverage area. Non-commenting administrations were assumed to have no objection to inclusion in the service area (which is different from provision **23.13C** adopted subsequently by WRC-2000). Resolution **531 (WRC-95)** also maintained clear separation between agreements under **S23.13** and Article 4 of Appendix **30**.

At WRC-97, Resolution **536** was adopted, regarding the operation of broadcasting satellites serving other countries. It resolves "that, in addition to observing No. **S23.13/2674**, and before providing satellite broadcasting services to other administrations, administrations originating the services should obtain the agreement of those other administrations." The United States took a reservation against this Resolution stating "that it disagrees with aspects of the resolution that would encourage administrations originating satellite broadcasting services to other administrations to obtain further agreement of administrations before providing such service."

Finally, at WRC-2000, after extensive and contentious discussion, a balance was reached among the very different views regarding the issue. No. **23.13** was modified to include specific provisions—**23.13A**, **23.13B**, and **23.13C**—which detail how this provision is to be implemented in practice. Nos. **23.13A**, **23.13B**, and **23.13C** were carefully crafted to describe the actions required if an agreement cannot be reached with an administration not wishing to be included in the BSS satellite's service area. These provisions specifically require modification of a BSS satellite's *service area*, which means the earth stations associated with the satellite network would not receive protection on the territory of the countries whose objection cannot be resolved. WRC-2000 also adopted Resolution **139**, regarding use of fixed-satellite service systems for the provision of direct-to-home television broadcasting. This short Resolution ultimately asks for the ITU-R to conduct studies of use of FSS allocations for DTH and to report to WRC-03 for possible inclusion in a future agenda. No action was taken at WRC-03 in this regard and WRC-07 since decided to suppress the Resolution.

It is worth noting that since WRC-2000, Nos. **23.13**, **23.13A**, **23.13B**, and **23.13C** have not been touched, with no proposals from any administration to WRC-03 and -07 addressing these provisions, underscoring the fact that an appropriate balance between the concerns of administrations was achieved.

Recently there have been some speculations with regard to changes to No. **23.13** and its sub-provisions in several Working Parties of the ITU-R. One suggestion is that footnotes be added to the title of Article **23** stating that Section II of the Article applies to FSS transponders used for DTH transmissions, implying that No. **23.13** and its sub-provisions would apply to DTH FSS. Other suggested changes have been to modify Nos. **23.13B** and **23.13C** to be “consistent” with the wording of No. **23.13** itself. Such changes to **23.13B** and **23.13C** would require that the satellite’s physical “coverage area” be modified, contrary to the current requirement that its “service area” be modified. When these suggestions were raised in several Working Parties there was considerable opposition, and little support.

There are serious issues associated with the suggested changes to No **23.13**. Firstly, the United States does not support any extension of No. **23.13** and its sub-provisions, or Article **23**, to other services or applications like direct-to-home FSS. No useful purpose would be served by abandoning the present distinction between the BSS and the FSS. Many applications are unique to only one of the services and these applications justify maintaining the distinction between them.

Further, there is no inconsistency between No. **23.13** and its sub-provisions. The wording of No. **23.13A** through **23.13C**, which describe how No. **23.13** is implemented in practice, was carefully chosen in order to reach agreement across many administrations with diverse views at WRC-2000. The United States does not support reopening the difficult discussions associated with No. **23.13** and its sub-provisions.

In addition, Nos. **23.13A**, **23.13B**, and **23.13C** were carefully crafted to specifically require only the modification of a BSS satellite’s *service area*, recognizing that modification of a satellite’s *coverage area* is simply not technically feasible, either from the perspective of modifying a satellite’s antenna, or designing a satellite antenna to exclude one country’s territory when the satellite provides service to neighboring countries. Such proposals would have grave detrimental effects on the future of the satellite industry as satellites are inherently regional or international in nature.

**Proposal:**

ARTICLE 23

**Broadcasting services**

**Section I – Broadcasting service**

NOC USA/7/1

**Section II – Broadcasting-satellite service**

**23.13 § 4** In devising the characteristics of a space station in the broadcasting-satellite service, all technical means available shall be used to reduce, to the maximum, the radiation over the territory of other countries unless an agreement has been previously reached with such countries.

**NOC** USA/7/2

**23.13A** If the Bureau receives an indication of a written agreement under No. **23.13**, it shall include reference to that agreement when the assignments to the system are recorded with reference to No. **23.13** in the Remarks column of the Master International Frequency Register or included in the Regions 1 and 3 List. (WRC-2000)

**NOC** USA/7/3

**23.13B** If, within the four-month period following the publication of the Special Section for a broadcasting-satellite service (except sound broadcasting) network submitted for coordination under Article **9** or Appendix **30**, an administration informs the Bureau that all technical means have not been used to reduce the radiation over its territory, the Bureau shall draw the attention of the responsible administration to the comments received. The Bureau shall request the two administrations to make every effort possible in order to resolve the issue. Either administration may request the Bureau to study the matter and submit its report to the administrations concerned. If no agreement can be reached, then the Bureau shall delete the territory of the objecting administration from the service area without adversely affecting the rest of the service area and inform the responsible administration. (WRC-2000)

**NOC** USA/7/4

**23.13C** If, after the four-month period mentioned above, an administration objects to remaining in the service area, the Bureau shall delete the territory of the objecting administration from the service area of the broadcasting-satellite service (except sound broadcasting) network concerned without adversely affecting the rest of the service area and inform the responsible administration. (WRC-2000)

**Reasons:** No. **23.13** has been a very contentious issue at several past WRCs. The difficult compromise reached at WRC-2000 (where Nos. **23.13A** thru **23.13C** were added to explain what responsibilities administrations and the Radiocommunications Bureau have under No. **23.13**) represents a delicate balance between the strongly differing views and should not be revisited. Nos. **23.13B** and **23.13C** were carefully drafted to require only modification of a satellite network's service area in the event of a continuing disagreement. Therefore, the United States is of the view that no action/modification is required on Nos. **23.13B** and **23.13C**.

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## UNITED STATES OF AMERICA

### PROPOSALS FOR THE WORK OF THE CONFERENCE

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**Issue:** Coordination Arc applicable to fixed-satellite service (FSS) geostationary satellite orbit (GSO) networks in certain congested portions of the 4/6 GHz and 10/11/12/14 GHz frequency bands.

**Background:** In certain portions of the 6/4 GHz band<sup>1</sup> as well as of the 10/11/12/14 GHz band<sup>2</sup>, a new GSO FSS satellite network is likely required to effect coordination with a large number of other satellite networks with orbital separations in the range of 2° to 4° or even with less than 2° separation. The need to co-exist and ensure appropriate protection to all these satellite networks implies that coexistence with and protection of satellite networks with larger separation angles will automatically result and coordination with such networks is actually unnecessary.

One of the consequences of this situation is that many of the coordinations triggered by the current coordination arcs of 10° (6/4 GHz) and 9° (10/11/12/14 GHz) are never conducted because neither of the parties involved feels an actual need for it to be done. The burden of having to conduct coordination with satellite networks which are closer to the incoming network is already heavy enough to discourage operators and administrations to devote scarce resources to conduct coordination exercises that are clearly unnecessary.

#### **Satellite networks in 6/4 GHz and 10/11/12/14 GHz**

To assess the number of coordinations likely to be triggered in the 6/4 GHz band, a query to the ITU BR SNS database identified the satellite networks with frequency assignments in the range 3 700-4 200 MHz<sup>3</sup>. Satellite networks including this frequency range are found in 498 distinct orbital locations, some of them separated by only 0.1°. In most of these orbital locations there are multiple satellite networks, often filed by different administrations.

This means that the average orbital separation between neighboring orbital locations with filings in the 3 700-4 200 MHz band is about 0.72<sup>4</sup>. Moreover, within the current coordination arc of ±10° a new satellite network will on average have to coordinate with satellite networks at about 28 other orbital locations and many of these locations will include networks from multiple administrations.

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1 3 400-4 200 MHz (space-to-Earth), 5 725-5 850 MHz (Earth-to-space) in Region 1, 5 850-6 725 MHz (Earth-to-space), 7 025-7 075 MHz (space-to-Earth) and (Earth-to-space).

2 10.95-11.2 GHz (space-to-Earth), 11.45-11.7 GHz (space-to-Earth), 11.7-12.2 GHz (space-to-Earth) in Region 2, 12.2-12.5 GHz (space-to-Earth) in Region 3, 12.5-12.75 GHz (space-to-Earth) in Regions 1 and 3, 12.7-12.75 GHz (Earth-to-space) in Region 2, and 13.75-14.5 GHz (Earth-to-space)

3 Query was conducted in early February 2010. The query included satellite networks with submitted advance publication information, with or without a coordination request or notification information submission.

4 Note that the average orbital separation between any two satellite networks is smaller than that because the separation of 0° between collocated satellite networks was not included in the computation of this average value.

Similarly, a query of the SNS for the band 14-14.5 GHz reveals that there are 527 distinct orbital locations with satellite networks with frequency assignments within this range<sup>5</sup>. This means that the average orbital separation between neighbouring orbital locations with filings in the 14-14.5 GHz band is about 0.68<sup>6</sup>.

Therefore, within the current coordination arc of  $\pm 9^\circ$  a new satellite network will on average have to coordinate with satellite networks at about 26 other orbital locations and many of these locations will include networks from multiple administrations.

In view of the assessment described above, it is concluded that the coordination arc of  $\pm 10^\circ$  for satellite networks using the 6/4 GHz band is excessive. To assist in the evaluation of possible reduced values for the coordination arc, it is useful to assess the number of networks a satellite network would have to coordinate with, on average, if the coordination arc is reduced to alternative values. If the coordination arc is reduced to  $\pm 5^\circ$  any new satellite network will on average still have to coordinate with satellite networks at 14 other orbital locations and coordination with satellite networks outside the  $5^\circ$  arc becomes unnecessary. Similarly, if the coordination arc is reduced to  $\pm 6^\circ$  any new satellite network will on average still have to coordinate with satellite networks at 17 other orbital locations. Any constraints that may have to be imposed on the new comer in order to protect networks outside of these reduced arcs will already have been imposed by the significant number of networks within the arc.

Similarly, it is concluded from the above that the coordination arc of  $\pm 9^\circ$  for satellite networks using the 10/11/12/14 GHz band is also excessive. Again, to assist in the evaluation of possible reduced values for the coordination arc, it is useful to assess the number of networks a satellite network would have to coordinate with, on average, if the coordination arc is reduced to alternative values. If the coordination arc is reduced to  $\pm 4^\circ$  any new satellite network will on average still have to coordinate with satellite networks at 12 other orbital locations and coordination with satellite networks outside the  $4^\circ$  arc becomes unnecessary. Similarly, if the coordination arc is reduced to  $\pm 5^\circ$  any new satellite network will on average still have to coordinate with satellite networks at 15 other orbital locations. Again, protection of the satellite networks within these reduced arcs of the new satellite network ensure that satellite networks outside the arc will also be protected.

Although the reasoning above was based on average values, a closer look at the distribution of satellite networks along the geostationary orbit reveals that the values of the orbital interval between adjacent satellite networks are limited to a small range. Actually, both for 6/4 GHz and 10/11/12/14 GHz, more than 90% of these orbital intervals do not exceed  $1^\circ$ . This means that adoption of the  $\pm 5^\circ$  arc for satellite networks using the 6/4 GHz or of the  $\pm 4^\circ$  arc for satellite networks using the 10/11/12/14 GHz band will still require that any new satellite network coordinate with several other satellite networks.

For satellite networks using the band 3 700-4 200 MHz the distribution of orbital spacing between adjacent orbital locations is shown in Table 1. It is concluded from Table 1 that almost 59% of these orbital intervals are  $0.5^\circ$  or less and more than 90% of the intervals are  $1^\circ$  or less.

The maximum orbital spacing is  $4^\circ$  which occurs only once, between  $150^\circ\text{W}$  and  $154^\circ\text{W}$ . Even in this extreme situation, a hypothetical satellite network at  $152^\circ\text{W}$  would have to coordinate with satellite networks from five different administrations with satellite networks at  $147.6^\circ\text{W}$ ,  $148^\circ\text{W}$ ,  $150^\circ\text{W}$ ,  $154^\circ\text{W}$ ,  $155^\circ\text{W}$  and  $156^\circ\text{W}$ . Coordination constraints imposed on the new satellite network by satellite networks at these six orbital locations would provide adequate protection to satellite networks outside the smallest of the coordination arcs considered above,  $\pm 5^\circ$ .

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<sup>5</sup> See 3 above.

<sup>6</sup> See 4 above.

Table 1

**Distribution of the orbital separation ( $\delta$ ) between adjacent orbital locations with satellite networks<sup>7</sup> including the frequency range 3 700-4 200 MHz**

Orbital Separation ( $\delta$ )	Number of Occurrences	Percentage (%)
$0 < \delta < 0.5$	124	24.91
0.5	169	33.94
$0.5 < \delta < 1.0$	36	7.23
1.0	121	24.30
$1.0 < \delta < 1.5$	6	1.20
1.5	6	1.20
$1.5 < \delta < 2.0$	3	0.60
2.0	27	5.42
2.5	4	0.80
3.0	1	0.20
4.0	1	0.20
Total Number of Intervals	498	100

For satellite networks using the band 14-14.5 GHz the distribution of orbital spacing between adjacent orbital locations is shown in Table 2. It is concluded from Table 2 that about 59% of these orbital intervals are 0.5° or less and more than 92% of the intervals are 1° or less.

The maximum orbital spacing is 3° which occurs only once, between 140°W and 143°W. Even in this extreme situation, a hypothetical satellite network at 141.5°W would have to coordinate with satellite networks from six different administrations with satellite networks at 138°W, 139°W, 140°W, 143°W and 144°W. Coordination constraints imposed on the new satellite network by satellite networks at these five orbital locations would provide adequate protection to satellite networks outside the smallest of the coordination arcs considered above,  $\pm 4^\circ$ .

The distributions in Tables 1 and 2 are quite similar as many satellite networks include both the 6/4 GHz and the 10/11/12/14 GHz frequency ranges. For both distributions the mode is the interval of 0.5° while intervals of 1° and the aggregate of those of less than 0.5° have about the same frequency of occurrence.

Table 2

**Distribution of the orbital separation ( $\delta$ ) between adjacent orbital locations with satellite networks<sup>8</sup> including the frequency range 14-14.5 GHz**

Orbital separation ( $\delta$ )	Number of occurrences	Percentage (%)
$0 < \delta < 0.5$	136	25.81
0.5	177	33.59
$0.5 < \delta < 1.0$	44	8.35
1.0	131	24.86
$1.0 < \delta < 1.5$	5	0.95
1.5	5	0.95

<sup>7</sup> Satellite networks referenced here include those with submitted advance publication information, with or without a coordination request or notification information submission.

<sup>8</sup> Satellite networks referenced here include advance publication information and coordination requests.

1.5 < $\delta$ < 2.0	2	0.34
2.0	25	4.74
2.5	1	0.19
3.0	1	0.19
Total Number of Intervals	527	100

### Satellites Currently in Orbit Using Frequencies in 6/4 GHz and 10/11/12/14 GHz

In order to further corroborate the above assessment that is based on satellite networks filed with the ITU, a similar assessment based on satellites currently in orbit was conducted. This assessment concluded that the number of geostationary satellites currently in orbit which utilize the frequencies 3 700-4 200 MHz is 168. Table 3 shows the distribution of the orbital separation between satellites currently in orbit using the band 3 700-4 200 MHz.

It can be concluded that the average orbital separation between two satellites currently in orbit using the frequencies 3 700-4 200 MHz is about 2.16°. Based on the number of filed satellite networks, as discussed above, it was concluded that, for a 5° coordination arc, on the average a newly filed network would have to coordinate with satellite networks in 14 other orbital locations. It is now concluded that the average number of satellites currently in orbit involved in these coordinations would be approximately 4.6. For a possible coordination arc of 6°, the average number of satellites involved in the coordination increases to 6.

It has been noted that the distribution of satellites currently in orbit is significantly non-uniform over the 360° geostationary arc. In the arc 139 °W to 180 °E the average orbital separation becomes about 1.92<sup>9</sup> while there are only two satellites in the interval (139 °W-180 °W). The largest arc without a satellite using the frequencies 3 700-4 200 MHz extends from 139 °W to 167 °W. Therefore, for a 5° coordination arc a hypothetical filing at, for instance, 153 °W would have to coordinate with several satellite networks but at the moment none of these networks would be associated with a satellite already in orbit. Although reducing the coordination arc from 10° to 5° would lead to more occurrences of such a situation, it is also true that not having to coordinate with a network associated with a satellite in orbit would currently occur for any filing between 149 °W and 157 °W<sup>10</sup>.

Table 3

**Distribution of the orbital separation ( $\delta$ ) between adjacent satellites that include the frequency range 3 700-4 200 MHz (coverage overlapping was not taken into account; frequency overlapping may be total or partial)**

Orbital separation ( $\delta^\circ$ )	Number of occurrences	Percentage (%)
$0 \leq \delta \leq 0.5$	32	19.16
$0.5 < \delta \leq 1.0$	19	11.38
$1.0 < \delta \leq 1.5$	15	8.98
$1.5 < \delta \leq 2.0$	43	25.75
$2.0 < \delta \leq 3.0$	35	20.96

<sup>9</sup> In the arc 139° W to 180° E a new filing would have to coordinate with networks that on average would be associated with approximately 5.2 satellites currently in orbit involved.

<sup>10</sup> These assertions are being made discarding the possibility that a satellite network outside the coordination arc could request to be included in the coordination based on the  $\Delta T/T$  criterion.

$3.0 < \delta \leq 4.0$	13	7.78
$4.0 < \delta \leq 5.0$	3	1.80
$\Delta > 5.0$	7	4.19
Total number of intervals	167	100

Similarly, an assessment of geostationary satellites currently in orbit which utilize the frequencies 14.0-14.5 GHz led to a total of 194 satellites. Table 4 shows the distribution of the orbital separation between satellites currently in orbit using the band 14.0-14.5 GHz.

It can be concluded that the average orbital separation between two satellites currently in orbit using the frequencies 14.0-14.5 GHz is about  $1.87^\circ$ . Based on the number of filed satellite networks, as discussed above, it was concluded that, for a  $4^\circ$  coordination arc, on the average a newly filed network would have to coordinate with satellite networks in 12 other orbital locations. It is now concluded that the average number of satellites currently in orbit involved in these coordinations would be approximately 4.3. For a possible coordination arc of  $5^\circ$ , the average number of satellites involved in the coordination increases to 5.3.

It has been noted that the distribution of satellites currently in orbit is significantly non-uniform over the  $360^\circ$  geostationary arc. In the arc  $129^\circ\text{W}$  to  $180^\circ\text{E}$  the average orbital separation becomes about  $1.62^\circ$  while there are only two satellites in the interval ( $139^\circ\text{W}$ - $180^\circ\text{W}$ ). The largest arc without a satellite using the frequencies 14.0-14.5 GHz extends from  $129^\circ\text{W}$  to  $167^\circ\text{W}$ . Therefore, for a  $4^\circ$  coordination arc a hypothetical filing at, for instance,  $148^\circ\text{W}$  would have to coordinate with several satellite networks but at the moment none of these networks would be associated with a satellite already in orbit. Although reducing the coordination arc from  $9^\circ$  to  $4^\circ$  would lead to more occurrences of such a situation, it is also true that not having to coordinate with a network associated with a satellite in orbit would currently occur for any filing between  $138^\circ\text{W}$  and  $158^\circ\text{W}$ <sup>11</sup>.

Table 4

**Distribution of the orbital separation ( $\delta$ ) between adjacent satellites that include the frequency range 14.0-14.5 GHz (coverage overlapping was not taken into account; frequency overlapping may be total or partial)**

Orbital separation ( $\delta^\circ$ )	Number of occurrences	Percentage (%)
$0 \leq \delta \leq 0.5$	52	26.94
$0.5 < \delta \leq 1.0$	16	8.29
$1.0 < \delta \leq 1.5$	19	9.84
$1.5 < \delta \leq 2.0$	49	25.39
$2.0 < \delta \leq 3.0$	39	20.20
$3.0 < \delta \leq 4.0$	14	7.25
$4.0 < \delta \leq 5.0$	1	0.52
$\delta > 5.0$	3	1.55
Total number of intervals	193	100

<sup>11</sup> These assertions are being made discarding the possibility that a satellite network outside the coordination arc request to be included in the coordination based on the  $\Delta T/T$  criterion.

Finally, it is noted that a reduction in the size of the coordination arc will eliminate coordination requirements that are often either not fulfilled<sup>12</sup> or carried out as a mere formality. Even with reduced coordination arcs, satellite networks in 6/4 GHz or in the 10/11/12/14 GHz which are outside the applicable arcs are already significantly constrained by other closer by satellite networks. Therefore, coordination between satellite networks that are far apart will either confirm the constraints imposed by closer networks or will lead to lighter constraints that are not applicable as they will be overcome by the former constraints.

Taking into account the above analyses, it is proposed that a slightly more conservative approach be taken. Accordingly, it is proposed here that coordination arcs of 6° for satellite networks in 6/4 GHz and 5° for satellite net 10/11/12/14 GHz be adopted.

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<sup>12</sup> Recording is possible through the application of RR No.11.32A or No.11.41.

Proposal:

MOD USA/7/1

APPENDIX 5 (Rev.WRC-07)

Identification of administrations with which coordination is to be effected or agreement sought under the provisions of Article 9

TABLE 5-1 (WRC-07)  
Technical conditions for coordination  
(see Article 9)

Reference of Article 9	Case	Frequency bands (and Region) of the service for which coordination is sought	Threshold/condition	Calculation method	Remarks
No. 9.7 GSO/GSO	A station in a satellite network using the geostationary-satellite orbit (GSO), in any space radiocommunication service, in a frequency band and in a Region where this service is not subject to a Plan, in respect of any other satellite network using that orbit, in any space radiocommunication service in a frequency band and in a Region where this service is not subject to a Plan, with the exception of the coordination between earth stations operating in the	1) 3 400-4 200 MHz 5 725-5 850 MHz (Region 1) 5 850-6 725 MHz 7 025-7 075 MHz  2) 10.95-11.2 GHz 11.45-11.7 GHz 11.7-12.2 GHz (Region 2) 12.2-12.5 GHz (Region 3) 12.5-12.75 GHz (Regions 1 and 3) 12.7-12.75 GHz	i) Bandwidth overlap, and ii) any network in the fixed-satellite service (FSS) and any associated space operation functions (see No. 1.23) with a space station within an orbital arc of $\pm 106^\circ$ of the nominal orbital position of a proposed network in the FSS  i) Bandwidth overlap, and ii) any network in the FSS or broadcasting-satellite service (BSS), not subject to a Plan, and any associated space operation functions (see No. 1.23) with a space station within an orbital arc of $\pm 95^\circ$ of the nominal orbital position of a proposed		With respect to the space services listed in the threshold/condition in the bands in 1), 2), 3), 4), 5), 6), 7) and 8), an administration may request, pursuant to No. 9.41, to be included in requests for coordination, indicating the networks for which the value of $\Delta T/T$ calculated by the method in § 2.2.1.2 and 3.2 of Appendix 8 exceeds 6%. When the Bureau, on request by an affected administration, studies this information pursuant to No. 9.42, the calculation method given in § 2.2.1.2 and

	opposite direction of transmission	(Region 2) 13.75-14.5 GHz	and network in the FSS or BSS, not subject to a Plan		3.2 of Appendix 8 shall be used
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**Reasons:** In view of the discussion in the background section, this document proposes that the coordination arc applicable to FSS geostationary satellite networks in certain congested portions of the 4/6 GHz and 10/11/12/14 GHz frequency bands be reduced from 10° to 6° in 4/6 GHz and from 9° to 5° in 10/11/12/14 GHz.

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## UNITED STATES OF AMERICA

### PROPOSALS FOR THE WORK OF THE CONFERENCE

**Agenda Item 8.1:** *to consider and approve the Report of the Director of the Radiocommunication Bureau:*

*8.1.1 on the activities of the Radiocommunication Sector since WRC-07;*

*8.1.2 on any difficulties or inconsistencies encountered in the application of the Radio Regulations; and*

*8.1.3 on action in response to Resolution 80 (Rev.WRC-07)*

**Background Information:** These proposals address inconsistencies in the Radio Regulations to be addressed under Agenda Item 8.1.2.

The Radiocommunications Assembly 2007 adopted Res. ITU-R 56 “that the term “IMT” be the root name that encompasses both IMT-2000 and IMT-Advanced collectively.”

The US and CITEL positions at WRC-07 were that references in the Radio Regulations to “IMT-2000” should be changed to “IMT.”

At WRC-07, appropriate changes were made in the Footnotes and Resolutions associated with IMT-2000; so the term “IMT-2000” was changed to “IMT.” (See, for example, Res. 223, 224, 225, etc. and Footnotes 5.317A, 5.384A, etc.)

In implementing its decision on using IMT as the root name for all references to IMT-2000 and IMT-Advanced, the WRC-07 overlooked some regulatory provisions and Resolutions (e.g., No. 5.388, 5.388A, and 5.388B). There is a need to correct these inconsistencies at WRC-12 as detailed in the proposal below.

**Proposal:**

**ARTICLE 5**

**Frequency allocations**

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

**MOD** USA/AI 8.1.2/1

**5.388** The bands 1 885-2 025 MHz and 2 110-2 200 MHz are intended for use, on a worldwide basis, by administrations wishing to implement International Mobile Telecommunications-2000 (IMT-2000). Such use does not preclude the use of these bands by other services to which they are allocated. The bands should be made available for IMT-2000 in accordance with Resolution 212 (Rev.WRC-907)\*. (See also Resolution 223 (Rev.WRC-2007)\*.)

**Reasons:** Resolution 212 was revised by the WRC-07 consistent with Res. ITU-R 56 on using IMT as the root name for all references to IMT-2000 and IMT-Advanced. No. 5.388 needs to be updated to remain consistent with Resolution 212 (WRC-07). Also, the references to WRC Resolutions 212 and 223 need to be updated to appropriate Revisions.

**MOD** USA/AI 8.1.2/2

**5.388A** In Regions 1 and 3, the bands 1 885-1 980 MHz, 2 010-2 025 MHz and 2 110-2 170 MHz and, in Region 2, the bands 1 885-1 980 MHz and 2 110-2 160 MHz may be used by high altitude platform stations as base stations to provide International Mobile Telecommunications-2000 (IMT-2000), in accordance with Resolution 221 (Rev.WRC-0307)\*. Their use by IMT-2000 applications using high altitude platform stations as base stations does not preclude the use of these bands by any station in the services to which they are allocated and does not establish priority in the Radio Regulations.

**Reasons:** Resolution 221 was revised by WRC-07 consistent with Res. ITU-R 56 on using IMT as the root name for all references to IMT-2000 and IMT-Advanced. No. 5.388A needs to be updated to remain consistent with Resolution 221 (WRC-07). Also, the references to WRC Resolution 221 need to be updated to appropriate Revisions.

**MOD** USA/AI 8.1.2/3

**5.388B** In Algeria, Saudi Arabia, Bahrain, Benin, Burkina Faso, Cameroon, Comoros, Côte d'Ivoire, China, Cuba, Djibouti, Egypt, United Arab Emirates, Eritrea, Ethiopia, Gabon, Ghana, India, Iran (Islamic Republic of), Israel, the Libyan Arab Jamahiriya, Jordan, Kenya, Kuwait, Mali, Morocco, Mauritania, Nigeria, Oman, Uganda, Qatar, the Syrian Arab Republic, Senegal, Singapore, Sudan, Tanzania, Chad, Togo, Tunisia, Yemen, Zambia and Zimbabwe, for the purpose of protecting fixed and mobile services, including IMT-2000 mobile stations, in their territories from co-channel interference, a high altitude platform station (HAPS) operating as an IMT-2000 base

station in neighbouring countries, in the bands referred to in No. 5.388A, shall not exceed a co-channel power flux-density of  $-127 \text{ dB(W/(m}^2 \cdot \text{MHz))}$  at the Earth's surface outside a country's borders unless explicit agreement of the affected administration is provided at the time of the notification of HAPS.

**Reasons:** No. 5.388B refers to No. 5.388A, which in turn refers to Resolution 221, which was revised at WRC-07 consistent with Res. ITU-R 56 on using IMT as the root name for all references to IMT-2000 and IMT-Advanced. No. 5.388B needs to be updated to remain consistent with No. 5.388A and Resolution 221 (WRC-07).

## ARTICLE 11

### Notification and recording of frequency assignments<sup>1, 2, 3, 4, 5, 6, 7</sup>

**MOD** USA/AI 8.1.2/4

**11.26A** Notices relating to assignments for high altitude platform stations operating as base stations to provide IMT-~~2000~~ in the bands identified in 5.388A shall reach the Bureau not earlier than three years before the assignments are brought into use.

**Reasons:** No.11.26A refers to No. 5.388A, which in turn refers to Resolution 221, was revised by the WRC-07 consistent with the Res. ITU-R 56 on using IMT as the root name for all references to IMT-2000 and IMT-Advanced. No. 11.26A needs to be updated to remain consistent with No. 5.388A and Resolution 221 (WRC-07).

## APPENDIX 5 (Rev.WRC-07)

### Identification of administrations with which coordination is to be effected or agreement sought under the provisions of Article 9

#### ANNEX 1

#### TABLE 5-2

**MOD** USA/AI 8.1.2/5

**NOTE 3** – The coordination thresholds in the band 2 160-2 270 MHz (Region 2) and 2 170-2 200 MHz (all Regions) to protect other terrestrial services do not apply to International Mobile Telecommunications-~~2000~~ (IMT-~~2000~~) systems, as the satellite and the terrestrial components are not intended to operate in the same area or on common frequencies within these bands.

**Reasons:** Appendix 5 needs to be modified to remain consistent with the action taken at WRC-07 changing IMT-2000 to IMT as the root name for IMT-2000 and IMT-Advanced in line with Res. ITU-R 56.

## UNITED STATES OF AMERICA

### PROPOSALS FOR THE WORK OF THE CONFERENCE

**Agenda Item 8.2:** *to recommend to the Council items for inclusion in the agenda for the next WRC, and to give its views on the preliminary agenda for the subsequent conference and on possible agenda items for future conferences, taking into account Resolution 806 (WRC 07)*

**Background Information:** In Resolution **806 (WRC-07)**, "Preliminary agenda for the 2015 World Radiocommunication Conference," WRC-07 included preliminary Agenda Item 2.2 dealing with the review of the use of the band 5091-5150 MHz by the fixed-satellite service (FSS) for feeder links to non-GSO, mobile-satellite service systems. At WRC-95, allocation was made to the fixed-satellite service in the 5091-5150 MHz band for feeder links to non-GSO mobile-satellite service systems, in the Earth-to-space direction, on a primary basis under No. **5.444A**.

The 5091-5150 MHz band was originally designated for expansion of the international standard Microwave Landing System (MLS) and Recommendation ITU-R S.1342 describes a method for determining coordination distances between international standard MLS stations operating in the band 5030-5090 MHz and FSS stations providing Earth-to-space feeder links in the 5091-5150 MHz band.

At WRC-07, an additional allocation was made, in the 5091-5150 MHz band, to the aeronautical mobile service (AMS) for use by aeronautical telemetry for flight test, aeronautical mobile (route) service and aeronautical security applications. Compatibility between the newly allocated aeronautical mobile service planned usage and the existing fixed-satellite service usage was demonstrated by extensive studies carried out by the ITU-R in the lead up to WRC-07.

This allocation is currently used by the HIBLEO-4FL network and has been used compatibly with other services since 1998. The extensive studies undertaken in preparation for WRC-07 resulted in the creation of No. **5.444B** and Resolutions **748 (WRC-07)**, **418 (WRC-07)** and **419 (WRC-07)** and demonstrated compatibility between the fixed-satellite service and the aeronautical mobile (route) service, the planned usage by the aeronautical mobile service used for aeronautical mobile telemetry for flight test, and aeronautical security transmissions, respectively.

The operator of the HIBLEO-4FL network has embarked on the replenishment of its satellite constellation with the expected entry into service of new spacecraft during 2010. As these new spacecraft will be replacements for existing equipment, they will also utilize the 5091-5150 MHz range for feeder links in the Earth-to-space direction. The replacement satellites are expected to remain in service beyond the year 2025. As a result of these developments, continued FSS use of the 5091-5150 MHz band for feeder links of the MSS, Earth-to-space, is required. Taking into account the time constraints contained in No. **5.444A**, it is necessary to comply with Resolution **114 (WRC-03)** prior to 2018. Recognizing the considerable effort expended in studying the

compatibility between feeder links, Earth-to-space, for MSS systems and the Aeronautical Mobile Service in preparation for WRC-07, and since the interference budgets and scenarios studied before remain the same for the HIBLEO-4FL replacement spacecraft, study of technical and operational issues can and should be limited to the sharing of this band between new systems of the aeronautical radionavigation service and the FSS providing feeder links of the non-GSO systems in the MSS.

The continued use of this allocation by feeder uplinks is of great importance in providing continuing service by MSS systems to developing countries, under-served areas and critical response in the event of natural disasters and other civil emergencies.

**Proposal:**

**RESOLUTION 806 (WRC-07)**

**Preliminary agenda for the 2015 World  
Radiocommunication Conference**

**NOC**      **USA/8.2/1**

*(resolves to give the view 2.2)*

**2.2**                    to review the use of the band 5 091-5 150 MHz by the fixed-satellite service (Earth-to-space) (limited to feeder links of the non-GSO mobile-satellite service) in accordance with Resolution **114 (Rev.WRC-03)**;

**Reasons:** Maintaining this item on the Agenda for the 2015 World Radiocommunication Conference will allow studies of compatibility between the aeronautical radionavigation service and FSS feeder links of non-GSO mobile-satellite service systems and allow uninterrupted operation of MSS systems into the future.

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