

JUN 21 2011

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

Dear Ambassador Verveer:

The National Telecommunications and Information Administration of the United States Department of Commerce and the Federal Communications Commission transmit to you the enclosed second set of draft 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 Federal Government, as well as for U.S. industry and consumers who use radiocommunications. We are pleased 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 any outstanding WRC-12 issues. We look forward to working with you to ensure a successful conference.

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Enclosure

Attachments

U.S. WRC-12 Proposals – 2nd Tranche

20 June 2011

Agenda Item	Short Title	Description
1.2	International Regulatory Framework (Res. 951)	Proposal for no change to the Radio Regulations with the exception of suppressing Resolution 951
1.3	Unmanned Aircraft Systems (5091-5150)	Proposal for no change to the Radio Regulation in 5091-5150 MHz
1.3	Unmanned Aircraft Systems (satellite)	Provide footnotes to the table of frequency allocations to allow unmanned aircraft to utilize selected fixed-satellite service allocations for beyond-line-of-sight control links communications and to add a new resolution
1.4	Aeronautical Mobile (R) Service at VHF/UHF/SHF Resolutions 413 and 420	Proposal to modify Resolution 413 to continue ITU-R studies in 112-117.975 MHz and a new aeronautical mobile (Route) service allocation in the 5000 – 5010 MHz band to support airport radio local area network (RLAN) systems
1.9	Digital Maritime Mobile (Appendix 17)	Proposal for modifications to Appendix 17
1.15	Oceanographic Radar Applications at 3-50 MHz	Proposal for a primary radiolocation allocation in various frequency bands and a new resolution
1.16	Passive Systems for Lightning Detection	Proposal to extend the table of allocations below the current limit for passive lightning detection systems
1.21	Radiolocation Service at 15.4-15.7 GHz	Proposal for a new allocation to the radiolocation service on a primary basis in the 15.4-15.7 GHz band
1.25	Mobile-Satellite Service Allocations	Proposal for no change to the Radio Regulations
2	Incorporation by Reference	Proposal to modify the table of contents for cross references
4	Conference Resolutions and Recommendations	Proposal to make editorial modifications to Resolution 644 regarding radiocommunication for disaster relief
7	Satellite Network Filings (Res. 86)	New RR Appendix 4 data item for non-geostationary satellite systems in bands other than those where epfd limits are specified in RR Article 22 (Issue 1A)
7	Satellite Network Filings (Res. 86)	Addition of a data item in Appendix 4 of the Radio Regulations about occurrence of transmissions of a non-geostationary satellite network (Issue 1B)
7	Satellite Network Filings (Res. 86)	Eliminates the need to respond to a coordination request published pursuant to No. 9.7 if the Administration is identified as being affected (9.51, 9.52, 9.52A, 9.60) (Issue 2B)
7	Satellite Network Filings (Res. 86)	Review of the bands listed in Table 5-1 of RR Appendix 5 for RR Nos. 9.11 and 9.19 (Issue 2D)
7	Satellite Network Filings (Res. 86)	Modification to advance publication of information (API) of a satellite network or system not subject to coordination procedure under Section II of Article 9 (9.2) (Issue 2E)

Agenda Item	Short Title	Description
7	Satellite Network Filings (Res. 86)	Modification of Article 11 (11.41, 11.42, 11.42bis) of the Radio Regulations to clarify that Administrations, upon receipt of a detailed report of harmful interference, shall immediately eliminate the harmful interference and the BR shall cancel provisional entries for which the harmful interference is not resolved, upon confirmation by the RRB (Issue 3A)
7	Satellite Network Filings (Res. 86)	Modification of Article 11 (11.41A) of the Radio Regulations to ensure that the BR considers the status of an assignment initially recorded under No. 11.41 as equal to the status of the existing assignment, if coordination is completed, which was the basis for the unfavorable findings under No. 11.32A (Issue 3B)
7	Satellite Network Filings (Res. 86)	Modification to Article 11 (11.49) of the Radio Regulations to clarify when an administration must inform the Bureau of a suspended network (Issue 4C)
7	Satellite Network Filings (Res. 86)	Modification to Article 13 (13.6) of the Radio Regulations to clarify the Radiocommunications Bureau's (BR) actions before cancelling a network and the subsequent confirmation of the cancellation by the Radiocommunication Regulations Board (RRB)
7	Satellite Network Filings (Res. 86)	Modification to Article 9 (9.1) of the Radio Regulations for elimination of six-month waiting period for submitting coordination data after filing an API/A
8.1.1 Issue C	Activities of the Radiocommunication Sector	Proposal for no change to Articles 4 and 5 of the Radio Regulations and a modification to Resolution 673 on Earth observation communications
8.2	Future Agenda Items	GMDSS/e-Nav
8.2	Future Agenda Items	WAIC
8.2	Future Agenda Items	Broadband
8.2	Future Agenda Items	7 GHz EESS

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

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

Background Information: Agenda item 1.2 originated at WRC-03 as agenda item 7.1, Resolution 951 (WRC-03), "Options to improve the international spectrum regulatory framework." The Director's Report to WRC-07 includes the results of the ITU-R studies in response to Resolution 951 (WRC-03). The conference concluded that it was necessary for the ITU-R to evaluate various options. These options include maintenance of the current practice (no change to the international spectrum regulatory framework), the review and possible revision of existing service definitions, introduction of a new provision in the Radio Regulations enabling substitution between assignments of specific services, and introduction of composite services in the Table of Frequency Allocations. Resolution 951 (Rev. WRC-07) details these options and provides the guidelines for implementation of this resolution.

To date, ongoing ITU-R studies contained in the Working Document on a Preliminary Draft New Report on Enhancing the International Spectrum Regulatory Framework (Annex 9 to Doc. 1B/267), do not conclude that there is a need to change the current international spectrum regulatory framework, such as revision of service definitions, new provisions enabling substitution between assignments of services, and introduction of composite services.

Proposal:**NOC** USA/1.2/1**International Telecommunication Union
RADIO REGULATIONS****VOLUME 1
Articles**

Reasons: ITU-R studies do not conclude that there is a need for changes to the international spectrum regulatory framework. Maintaining the current international spectrum regulatory framework provides flexibility to enable new technologies and convergence of services. The NOC to Volume 1 pertains specifically to AI 1.2.

NOC USA/1.2/2**International Telecommunication Union
RADIO REGULATIONS****VOLUME 2
Appendices**

Reasons: ITU-R studies do not conclude that there is a need for changes to the international spectrum regulatory framework. Maintaining the current international spectrum regulatory framework provides flexibility to enable new technologies and convergence of services. The NOC to Volume 2 pertains specifically to AI 1.2.

SUP USA/1.2/3**RESOLUTION 951 (WRC-07)****Enhancing the international spectrum
regulatory framework**

Reasons: ITU-R studies do not conclude that there is a need for changes to the international spectrum regulatory framework. Since no regulatory action or further work is required for this issue, Resolution 951 (WRC-07) can be suppressed.

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: Method B1 in the Draft CPM Report contemplates a new aeronautical mobile (route) service (AM(R)S) allocation for UAS command and control in portion(s) of various bands including 5 091-5 150 MHz subject to satisfactory results of compatibility studies.

The 5 091-5 150 MHz band was originally reserved as an expansion band for microwave landing system (MLS) but now is also allocated to the fixed-satellite service (FSS) for use by mobile-satellite service (MSS) Earth-to-space feeder links. Furthermore, the 2007 World Radiocommunication Conference (WRC-07) decided to add allocations to the band for AM(R)S and aeronautical mobile service (AMS). Existing and planned systems include satellite feeder uplinks, airport surface communication systems, aeronautical mobile telemetry systems, and aeronautical security systems. See No. **5.444B (WRC-07)**.

Resolution **748** details complex sharing criteria to ensure the compatibility of the AM(R)S with respect to incumbent services and systems including the FSS and the MLS. *Considering f*) of Resolution **748** states that the aggregate interference from aeronautical security, aeronautical telemetry and AM(R)S should total no more than 3% $\Delta T_s / T_s$. WRC-07 based this conclusion on extensive sharing studies conducted during the study cycle preceding WRC-07.

Similarly, Resolutions **418** and **419 (WRC-07)** specify complex sharing criteria to ensure the compatibility of the AMS for telemetry, and the AMS for security, respectively, with respect to incumbent services including the FSS and the MLS.

In summary, given the existing allocations and users, the 5 091-5 150 MHz band is already heavily occupied, or expected to be in the near future, and use of this band is constrained by complex sharing arrangements. Coordinating any use of this spectrum for UAS would be difficult especially given that little interference margin would remain after accommodating the existing services and applications. It is thus not practical to consider use of the 5 091-5 150 MHz band for UAS command and control.

Proposal:

ARTICLE 5

Frequency allocations

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

NOC**USA/1.3/1****4 800-5 570 MHz**

Allocation to services		
Region 1	Region 2	Region 3
...		
5 091-5 150	AERONAUTICAL RADIONAVIGATION AERONAUTICAL MOBILE 5.444B 5.367 5.444 5.444A	
...		

Reasons: Given that the band is heavily used and operation is constrained by complex sharing criteria, it is not practical to consider the use of this band for applications such as UAS command and control.

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: Administrations predict significant growth in the unmanned aircraft systems (UAS) sector of aviation. Though UAS have traditionally been used in segregated airspace where separation from other air traffic can be assured, administrations expect broad deployment of UAS in non-segregated airspace alongside manned aircraft. Current and future UAS operations may include scientific research, search and rescue operations, hurricane and tornado tracking, volcanic activity monitoring and measurement, mapping, forest fire suppression, weather modification (e.g. cloud seeding), surveillance, communications relays, agricultural applications, environmental monitoring, emergency management, and law enforcement applications. ITU-R Report M.2171 estimates that 56 MHz of satellite spectrum, and an additional 34 MHz of terrestrial spectrum, would be required to support the anticipated growth of UAS operations in non-segregated airspace.

Although predictions indicate significant numbers of UAS flights in non-segregated airspace, the limited spectrum requirement for UAS geostationary satellite orbit (GSO) satellite use is insufficient to justify the development, launch and ongoing management of GSO satellites solely for use by UAS. Additionally, it would be very difficult to introduce a new GSO satellite system in the 4/6 GHz and/or 12/14 GHz bands dedicated to supporting UAS control and communication links within the existing (GSO satellite) interference environment. The current deployment of GSO satellites, particularly in the 4/6 GHz and 12/14 GHz bands in many regions, is typically no more than 2 to 3 degrees in orbital spacing separation, making frequency sharing difficult to achieve. Therefore, it is likely that UAS operations will need to gain access to existing satellite capacity and share that capacity with other users.

Spectrum requirements for UAS beyond-line-of-sight control link communications could potentially be satisfied through use of the existing 11/12/14 GHz and 20/30 GHz fixed-satellite service (FSS) allocations. Specifically, using UAS in these bands could be accommodated through the addition of an appropriate footnote to the Table of Frequency Allocations referencing a WRC-12 resolution specifying technical characteristics and performance requirements of the UAS communications link(s) and earth terminals.

Therefore, this proposal supports the addition of new regulatory footnotes in Article 5, allowing UAS control link use of portions of the existing 11/12/14 GHz and 20/30 GHz FSS allocations in accordance with a proposed WRC-12 resolution.

Proposal:

ARTICLE 5

Frequency allocations

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

MOD USA/1.3/1

10-11.7 GHz

Allocation to services		
Region 1	Region 2	Region 3
10.7-11.7 FIXED FIXED-SATELLITE (space-to-Earth) 5.441 5.484A <u>ADD 5.YYY</u> (Earth-to-space) 5.484 MOBILE except aeronautical mobile	10.7-11.7 FIXED FIXED-SATELLITE (space-to-Earth) 5.441 5.484A <u>5.YYY</u> MOBILE except aeronautical mobile	

Reasons: To allow unmanned aircraft to utilize selected fixed-satellite service allocations for beyond-line-of-sight control links communications.

MOD USA/1.3/2

11.7-14 GHz

Allocation to services		
Region 1	Region 2	Region 3
11.7-12.5 FIXED MOBILE except aeronautical mobile BROADCASTING BROADCASTING-SATELLITE 5.492	11.7-12.1 FIXED 5.486 FIXED-SATELLITE (space-to-Earth) 5.484A 5.488 <u>ADD 5.YYY</u> Mobile except aeronautical mobile 5.485	11.7-12.2 FIXED MOBILE except aeronautical mobile BROADCASTING BROADCASTING-SATELLITE 5.492
	12.1-12.2 FIXED-SATELLITE (space-to-Earth) 5.484A 5.488 <u>ADD 5.YYY</u> 5.485 5.489	
	5.487 5.487A	12.2-12.7 FIXED MOBILE except aeronautical mobile BROADCASTING BROADCASTING-SATELLITE 5.492
12.5-12.75 FIXED-SATELLITE (space-to-Earth) 5.484A <u>ADD 5.YYY</u> (Earth-to-space)	5.487A 5.488 5.490	12.5-12.75 FIXED FIXED-SATELLITE (space-to-Earth) 5.484A <u>ADD 5.YYY</u> MOBILE except aeronautical mobile BROADCASTING-SATELLITE 5.493
5.494 5.495 5.496	12.7-12.75 FIXED FIXED-SATELLITE (Earth-to-space) MOBILE except aeronautical mobile	

Reasons: To allow unmanned aircraft to utilize selected fixed-satellite service allocations for beyond-line-of-sight control links communications.

14-15.4 GHz

Allocation to services		
Region 1	Region 2	Region 3
14-14.25	FIXED-SATELLITE (Earth-to-space) 5.457A 5.457B 5.484A 5.506 5.506B <u>ADD 5.ZZZ</u> RADIONAVIGATION 5.504 Mobile-satellite (Earth-to-space) 5.504B 5.504C 5.506A Space research 5.504A 5.505	
14.25-14.3	FIXED-SATELLITE (Earth-to-space) 5.457A 5.457B 5.484A 5.506 5.506B <u>ADD 5.ZZZ</u> RADIONAVIGATION 5.504 Mobile-satellite (Earth-to-space) 5.504B 5.506A 5.508A Space research 5.504A 5.505 5.508	
14.3-14.4 FIXED FIXED-SATELLITE (Earth-to-space) 5.457A 5.457B 5.484A 5.506 5.506B <u>ADD 5.ZZZ</u> MOBILE except aeronautical mobile Mobile-satellite (Earth-to-space) 5.504B 5.506A 5.509A Radionavigation-satellite 5.504A	14.3-14.4 FIXED-SATELLITE (Earth-to-space) 5.457A 5.484A 5.506 5.506B <u>ADD</u> <u>5.ZZZ</u> Mobile-satellite (Earth-to-space) 5.506A Radionavigation-satellite 5.504A	14.3-14.4 FIXED FIXED-SATELLITE (Earth-to-space) 5.457A 5.484A 5.506 5.506B <u>ADD</u> <u>5.ZZZ</u> MOBILE except aeronautical mobile Mobile-satellite (Earth-to-space) 5.504B 5.506A 5.509A Radionavigation-satellite 5.504A
14.4-14.47	FIXED FIXED-SATELLITE (Earth-to-space) 5.457A 5.457B 5.484A 5.506 5.506B <u>ADD 5.ZZZ</u> MOBILE except aeronautical mobile Mobile-satellite (Earth-to-space) 5.504B 5.506A 5.509A Space research (space-to-Earth) 5.504A	
14.47-14.5	FIXED FIXED-SATELLITE (Earth-to-space) 5.457A 5.457B 5.484A 5.506 5.506B <u>ADD 5.ZZZ</u> MOBILE except aeronautical mobile Mobile-satellite (Earth-to-space) 5.504B 5.506A 5.509A Radio astronomy 5.149 5.504A	

Reasons: To allow unmanned aircraft to utilize selected fixed-satellite service allocations for beyond-line-of-sight control links communications.

MOD USA/1.3/4

15.4-18.4 GHz

Allocation to services		
Region 1	Region 2	Region 3
17.3-17.7 FIXED-SATELLITE (Earth-to-space) 5.516 (space-to-Earth) 5.516A 5.516B <u>ADD 5.YYY</u> Radiolocation 5.514	17.3-17.7 FIXED-SATELLITE (Earth-to-space) 5.516 BROADCASTING-SATELLITE Radiolocation 5.514 5.515	17.3-17.7 FIXED-SATELLITE (Earth-to-space) 5.516 Radiolocation 5.514
17.7-18.1 FIXED FIXED-SATELLITE (space-to-Earth) 5.484A (Earth-to-space) 5.516 MOBILE	17.7-17.8 FIXED FIXED-SATELLITE (space-to-Earth) 5.517 (Earth-to-space) 5.516 BROADCASTING-SATELLITE Mobile 5.515	17.7-18.1 FIXED FIXED-SATELLITE (space-to-Earth) 5.484A (Earth-to-space) 5.516 MOBILE
	17.8-18.1 FIXED FIXED-SATELLITE (space-to-Earth) 5.484A (Earth-to-space) 5.516 MOBILE 5.519	
18.1-18.4	FIXED FIXED-SATELLITE (space-to-Earth) 5.484A 5.516B <u>ADD 5.YYY</u> (Earth-to-space) 5.520 MOBILE 5.519 5.521	

Reasons: To allow unmanned aircraft to utilize selected fixed-satellite service allocations for beyond-line-of-sight control links communications.

MOD USA/1.3/5

18.4-22 GHz

Allocation to services		
Region 1	Region 2	Region 3
18.4-18.6	FIXED FIXED-SATELLITE (space-to-Earth) 5.484A 5.516B <u>ADD 5.YYY</u> MOBILE	
18.6-18.8 EARTH EXPLORATION- SATELLITE (passive) FIXED FIXED-SATELLITE (space-to-Earth) 5.522B <u>ADD</u> <u>5.YYY</u> MOBILE except aeronautical mobile Space research (passive) 5.522A 5.522C	18.6-18.8 EARTH EXPLORATION- SATELLITE (passive) FIXED FIXED-SATELLITE (space-to-Earth) 5.516B 5.522B <u>ADD 5.YYY</u> MOBILE except aeronautical mobile SPACE RESEARCH (passive) 5.522A	18.6-18.8 EARTH EXPLORATION- SATELLITE (passive) FIXED FIXED-SATELLITE (space-to-Earth) 5.522B <u>ADD</u> <u>5.YYY</u> MOBILE except aeronautical mobile Space research (passive) 5.522A
...		
19.7-20.1 FIXED-SATELLITE (space-to-Earth) 5.484A 5.516B <u>ADD 5.YYY</u> Mobile-satellite (space-to-Earth) 5.524	19.7-20.1 FIXED-SATELLITE (space-to-Earth) 5.484A 5.516B <u>ADD 5.YYY</u> MOBILE-SATELLITE (space-to-Earth) 5.524 5.525 5.526 5.527 5.528 5.529	19.7-20.1 FIXED-SATELLITE (space-to-Earth) 5.484A 5.516B <u>ADD 5.YYY</u> Mobile-satellite (space-to-Earth) 5.524
20.1-20.2	FIXED-SATELLITE (space-to-Earth) 5.484A 5.516B <u>ADD 5.YYY</u> MOBILE-SATELLITE (space-to-Earth) 5.524 5.525 5.526 5.527 5.528	

Reasons: To allow unmanned aircraft to utilize selected fixed-satellite service allocations for beyond-line-of-sight control links communications

MOD USA/1.3/6

27.5-29.9 GHz

Allocation to services		
Region 1	Region 2	Region 3
27.5-28.5	FIXED 5.537A FIXED-SATELLITE (Earth-to-space) 5.484A 5.516B 5.539 <u>ADD 5.ZZZ</u> MOBILE 5.538 5.540	
28.5-28.6	FIXED FIXED-SATELLITE (Earth-to-space) 5.484A 5.516B 5.523A 5.539 <u>ADD 5.ZZZ</u> MOBILE Earth exploration-satellite (Earth-to-space) 5.541 5.540	
28.6 -29.1	FIXED FIXED-SATELLITE (Earth-to-space) 5.484A 5.516B 5.523A 5.539 MOBILE Earth exploration-satellite (Earth-to-space) 5.541 5.540	
.....		
29.5-29.9 FIXED-SATELLITE (Earth-to-space) 5.484A 5.516B 5.539 <u>ADD 5.ZZZ</u> Earth exploration-satellite (Earth-to-space) 5.541 Mobile-satellite (Earth-to-space) 5.540 5.542	29.5-29.9 FIXED-SATELLITE (Earth-to-space) 5.484A 5.516B 5.539 <u>ADD 5.ZZZ</u> MOBILE-SATELLITE (Earth-to-space) Earth exploration-satellite (Earth-to-space) 5.541 5.525 5.526 5.527 5.529 5.540 5.542	29.5-29.9 FIXED-SATELLITE (Earth-to-space) 5.484A 5.516B 5.539 <u>ADD 5.ZZZ</u> Earth exploration-satellite (Earth-to-space) 5.541 Mobile-satellite (Earth-to-space) 5.540 5.542

Reasons: To allow unmanned aircraft to utilize selected fixed-satellite service allocations for beyond-line-of-sight control links communications.

MOD USA/1.3/7**29.9-34.2 GHz**

Allocation to services		
Region 1	Region 2	Region 3
29.9-30	FIXED-SATELLITE (Earth-to-space) 5.484A 5.516B 5.539 <u>ADD 5.ZZZ</u> MOBILE-SATELLITE (Earth-to-space) Earth exploration-satellite (Earth-to-space) 5.541 5.543 5.525 5.526 5.527 5.538 5.540 5.542	

Reasons: To allow unmanned aircraft to utilize selected fixed-satellite service allocations for beyond-line-of-sight control links communications.

ADD USA/1.3/8

5.YYY Earth stations on board unmanned aircraft (UA) and their associated control stations (UACSS) that operate as part of an Unmanned Aircraft System (UAS) may receive transmissions from space stations in geostationary-satellite networks operating in a primary allocation of the fixed-satellite service (space-to-Earth) in the following frequency bands: 10.95 – 11.20 GHz, 11.45 – 11.70 GHz, 11.70 – 12.20 GHz (in Region 2 only), 12.20 – 12.50 GHz (in Region 3 only), 12.50 – 12.75 GHz (in Regions 1 and 3 only), 17.30 – 17.70 GHz (in Region 1 only), 18.1 – 18.80 GHz and 19.70 – 20.20 GHz. Such operations shall be in accordance with the provisions of Resolution [SAT-UAS-FSS] (WRC-12). The use of these frequency bands by the aforementioned UA and UACS stations is limited to UAS control link communications in the space-to-Earth direction. Moreover, the operation of UAS control links in any of the above specified frequency bands does not establish priority in the Radio Regulations over any station operating in a primary service allocated to these bands, including stations operating in the fixed-satellite service, nor does it establish priority in relation to other communication links within the fixed-satellite service. The UAS control link is comprised of any radio link used for the transmission of UAS telecommand and telemetry data, transmission of sense and avoid data from the UA to the associated UACS, and relay of voice communication between the Air Traffic Control (ATC) and the UACS.

Reasons: To allow unmanned aircraft to utilize selected fixed-satellite service allocations for beyond-line-of-sight control links communications

ADD USA/1.3/9

5.ZZZ Earth stations on board unmanned aircraft (UA) and their associated control stations (UACSS) that operate as part of an Unmanned Aircraft System (UAS) may transmit to space stations in geostationary-satellite networks operating in a primary allocation of the fixed-satellite service (Earth-to-space) in the following frequency bands: 14.00 – 14.50 GHz, 27.50 – 28.6 GHz and 29.50 – 30.00 GHz. Such operations shall be in accordance with the provisions of Resolution [SAT-UAS-FSS] (WRC-12). The use of these frequency bands by the aforementioned UA and UACS stations is

limited to UAS control link communications in the Earth-to-space direction. Moreover, the operation of UAS control links in any of the above specified frequency bands does not establish priority in the Radio Regulations over any station operating in a primary service allocated to these bands, including stations operating in the fixed-satellite service, nor does it establish priority in relation to other communication links within the fixed-satellite service. The UAS control link is comprised of any radio link used for the transmission of UAS telecommand and telemetry data, transmission of sense and avoid data from the UA to the associated UACS, and relay of voice communication between the Air Traffic Control (ATC) and the UACS.

Reasons: To allow unmanned aircraft to utilize selected fixed-satellite service allocations for beyond-line-of-sight control links communications

ADD USA/1.3/10

RESOLUTION [SAT-UAS-FSS] (WRC-12)

Use of FSS frequency bands not subject to Appendix 30A/30B for the control communications of unmanned aircraft systems in non-segregated airspaces with geostationary satellites operating in the fixed-satellite service

The World Radiocommunication Conference (Geneva, 2012),

considering

- a) that worldwide use of unmanned aircraft systems (UAS) is expected to increase significantly in the near future;
- b) that unmanned aircraft (UA) need to operate seamlessly with piloted aircraft in non-segregated airspace and that there is a need to provide spectrum for that purpose;
- c) that the operation of UAS in non-segregated airspace requires reliable communication links, in particular to relay the air traffic control communications and for the remote pilot to control the flight;
- d) that, in accordance with the Convention on International Civil Aviation, all aeronautical systems must meet standards and recommended practices (SARPs);
- e) that SARPs are applicable to the use of frequency spectrum to support the safe operation of aeronautical systems;
- f) that satellite radiocommunications are an essential part of UAS operations, in particular to relay transmissions beyond the horizon and include links between the unmanned aircraft and the satellite, and links between the UA Control Station (UACS) and the satellite;
- g) that systems providing UAS satellite communications may also operate in bands allocated to the AMS(R)S, the AMSS and the MSS;

h) that satellite systems operating in the fixed satellite service (FSS) bands have the capability to provide the communication links mentioned in *considering f)*;

i) that Annex 10 of the Convention of the ICAO contains SARPs for aeronautical radionavigation and radiocommunication systems used by international civil aviation,

further considering

a) that there is a need to limit the number of communication equipments onboard an UA;

b) that, as a dedicated satellite system for UAS is not likely, it is necessary to take into account the existing and future satellite systems to accommodate the growth of the use of UAS;

c) that there are various technical methods that may be used to increase the reliability of digital communication links, e.g. modulation, coding, redundancy, etc.;

d) that for UAS communications used for the control of UA, relay of Air Traffic Control (ATC) voice communications, and sense and avoid, relate to the safe operation of UAS and have certain technical, operational, and regulatory requirements;

e) that the requirements in *further considering d)* can be specified for UAS use of FSS networks,

recognizing

a) that Recommendation **724 (WRC-07)** notes that FSS is not, intrinsically, a safety service;

b) that No. **1.59** provides the definition of a safety service as any radiocommunication service used permanently or temporarily for the safeguarding of human life and property;

c) that agenda item 1.3 calls for the safe operation of UAS in non-segregated air space,

resolves

that for the communications for control of the unmanned aircraft (UA), Air Traffic Control (ATC) voice communications, and sense and avoid data transmission between an UA and the UACS via geostationary-satellites in the FSS, the frequency bands in Nos. 5.YYY and 5.ZZZ may be used, provided that the technical requirements contained in Annex 1 of this Resolution are met;

2 that the use of such links will be guided by the relevant SARPs established by ICAO.

requests the Secretary-General

to bring this Resolution to the attention of the ICAO.

Annex 1

Technical characteristics of fixed-satellite service systems to support control communication links of unmanned aircraft systems (UAS)

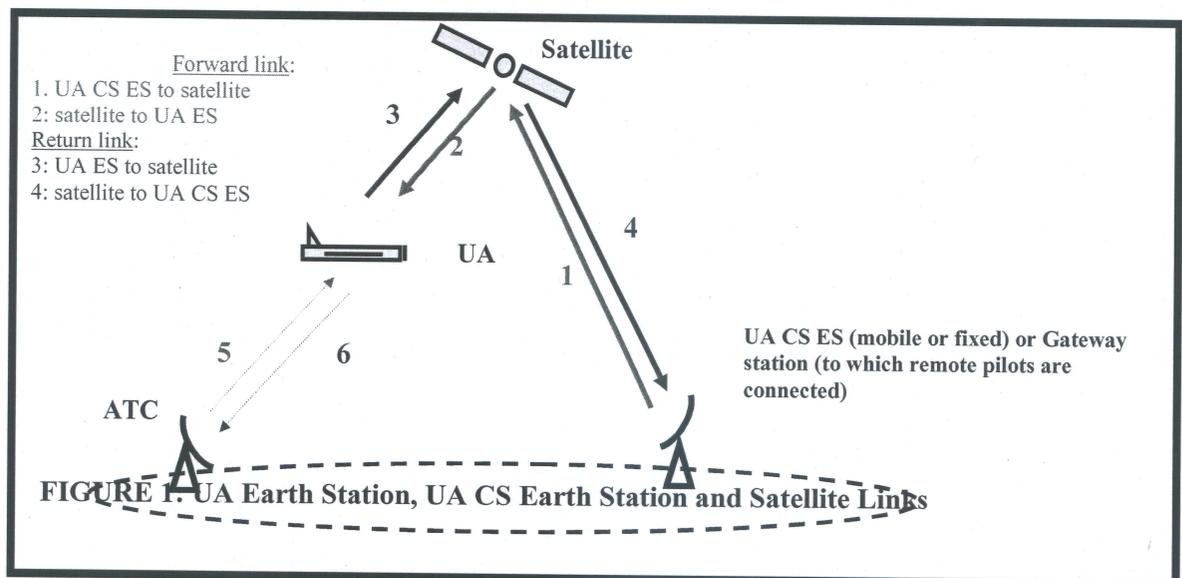
1 Introduction

UAS that fly beyond-line-of-sight (BLOS) need satellite communications to maintain aircraft control, relay Air Traffic Control (ATC) voice communications through the UA, and pass sense and avoid data between the UA and the UA Control Station (UA CS). It is likely that UA will utilize terrestrial radio communications for critical low-altitude operations, such as takeoff and landing, but switch over to satellite communications for the majority of their flight. These satellite links need to achieve high availability to meet national and international aviation requirements when flying in non-segregated airspace.

This annex contains the performance criteria that must be met and the technical characteristics of UAS control links necessary to meet them. Meeting these technical criteria will allow UAS to use FSS allocations.

The UA CS Earth Station and UA Earth Station are operated to the same regulatory limits as a conventional FSS Earth Station.

The technical characteristics of UAS to be used in assessing the forward and return (UAS) link performance via a FSS network is provided in Section 2.



2 Technical requirements

The technical characteristics of UAS to be used in assessing the forward and return (UAS) link performance via a FSS network is provided below. It is emphasized that an administration may implement an UAS with characteristics different than those listed below within its national airspace.

a) Frequency bands.

Space-to-Earth

10.95 – 11.20 GHz
 11.45 – 11.70 GHz
 11.70 – 12.20 GHz [Region 2 only]
 12.20 – 12.50 GHz [Region 3 only]
 12.50 – 12.75 GHz [Regions 1 and 3 only]
 17.30 – 17.70 GHz in Region 1
 18.1 – 18.8 GHz
 19.70 – 20.20 GHz

Earth-to-Space

14.00 – 14.50 GHz
 27.50 – 28.60 GHz
 29.50 – 30.0 GHz

b) Minimum required availability for the end-to-end Forward (up 1 and down 2) Link and end-to-end Return (up 3 and down 4) Link – refer to figure 1.

End-to-end Forward (UA CS ES to UA ES) Link Availability: exceed 99.8% under the conditions contained in this Annex.

End-to-end Return (UA ES to UA CS ES) Link Availability: exceed 99.8% under the conditions contained in this Annex.

In practice, the allocation of availability to the up and down portions of each end-to-end link will not be the same; however, the combined availability of the up and down links should meet the end-to-end availability cited herein.

c) Geographic coverage area where the UAS requirements will have to be met.

Using appropriately located satellites, the availability referenced in b) should be met with the UA or UA CS at any longitude and less than +/-75 degrees latitude. The availability referenced in b) should be met with the satellite equivalent isotropically radiated power (e.i.r.p.), G/T and saturated flux density (s.f.d) at the locations of the UA CS Earth Station and UA Earth Station.

Global operations are expected covering all longitudes and latitudes to +/-75 degrees. Ranges of operation can extend to transcontinental and transoceanic distances. Flight times can extend to many days of either loitering over a specific area or flying point to point paths.

d) The rain conditions (i.e. rain rates) in which the links must operate.

UA CS Earth Stations should be designed to achieve the availability referenced in b) while accommodating the rain rates experienced in their location. Recommendation ITU-R P-837 should be used to determine the maximum UA CS Earth Station rain rates (links 1 and 4 in Figure 1) for 0.01 % of the average year and any other rain related information.

UA Earth Stations should be designed to achieve the availability referenced in b) while accommodating rain rates up to and including 20 mm/hr for 0.01% of the average year (links 2 and 3 in Figure 1). For safety reasons aircraft will be operated to mitigate very high rain rates either by flying at altitudes above the rain or by changing their flight plan to fly where rain rates are lower. Recommendation ITU-R P-837 should be used to determine any other rain related information.

e) Carrier characteristics:

It is noted that other carrier characteristics may also be suitable to achieve the required performance in b).

Information rate. Forward Link 10 kbit/s. Return Link 320 kbit/s.

Occupied bandwidth. Forward Link 9 kHz. Return Link 290 kHz.

Modulation type. QPSK

Forward error correction rate. Rate $\frac{3}{4}$ concatenated with Reed Solomon (212,236).

Minimum required C/(N+I). 3.8 dB.

f) Minimum and maximum antenna sizes and corresponding gains of the UA CS Earth Station and UA Earth Station antennas.

UA CS Earth station antennas should be sized to achieve the availability defined in b) for the rain rates experienced at their location d), as well as the other technical requirements cited in this Annex.

The minimum UA Earth Station antenna diameter should be 0.5 meters (20/30GHz) and 0.8 meters (12/14GHz). Maximum UA Earth Station antenna diameters are limited by the size and weight constraint of the UA airframe, so maximum diameters of 1.2m are anticipated. The peak antenna gain values to be used in UAS Control Link performance calculations using the aforementioned antenna diameters and frequencies are provided below:

14GHz UA antenna transmit gain 38 dBi (0.8 meter) – 42 dBi (1.2 meter).

12GHz UA antenna receive gain 36 dBi (0.8 meter) – 40 dBi (1.2 meter).

30GHz UA antenna transmit gain 40 Bi (0.5 meter) – 48 dBi (1.2 meter).

20GHz UA antenna receive gain 37 dBi (0.5 meter) – 44dBi (1.2 meter).

g) Pointing accuracy of the UA Earth Station antenna.

The 12/14GHz UA Earth Station antenna tracking error not exceed +/- 0.40 degrees peak¹.

The 20/30GHz UA Earth Station antenna tracking error not exceed +/- 0.40 degrees peak.²

h) Maximum and minimum e.i.r.p density of the UA CS Earth Station and UA Earth Station.

14 GHz UA CS Earth Station and UA Earth Station should meet the following off-axis e.i.r.p. density levels under clear sky conditions in the plane of the geostationary satellite orbit location:

<i>Angle off-axis</i>	<i>Maximum e.i.r.p. per 4 kHz</i>
$1.5^\circ \leq \theta \leq 7^\circ$	$15 - 10 \log(N) - 25 \log \theta$ dBW/4 kHz
$7^\circ < \theta \leq 9.2^\circ$	$-6 - 10 \log(N)$ dBW/4 kHz
$9.2^\circ < \theta \leq 48^\circ$	$18 - 10 \log(N) - 25 \log \theta$ dBW/4 kHz
$48^\circ < \theta \leq 85^\circ$	$-24 - 10 \log(N)$ dBW/4 kHz
$85^\circ < \theta \leq 180^\circ$	$-14 - 10 \log(N)$ dBW/4 kHz

where θ is the angle in degrees from the line connecting the antenna to the target satellite. The e.i.r.p density should be met with the maximum antenna pointing error referenced in g). For digital SCPC using frequency division multiplex access (FDMA) or time division multiple access (TDMA) technique, N is equal to one. For digital SCPC using code division multiple access (CDMA) technique, N is the maximum number of co-frequency simultaneously transmitting earth stations in the same satellite receiving beam.

30 GHz UA CS Earth Station and UA Earth Station should meet the following off-axis e.i.r.p. density levels under clear sky conditions in the plane of the geostationary satellite orbit location:

<i>Angle off-axis</i>	<i>Maximum e.i.r.p. per 40 kHz</i>
$2.0^\circ \leq \theta \leq 7^\circ$	$(18.5 - 25 \log \theta) - 10 \log(N)$ dB (W/40 kHz)
$7^\circ < \theta \leq 9.23^\circ$	$-2.63 - 10 \log(N)$ dB (W/40 kHz)
$9.23^\circ < \theta \leq 48^\circ$	$(21.5 - 25 \log \theta) - 10 \log(N)$ dB (W/40 kHz)
$48^\circ < \theta \leq 180^\circ$	-10.5 dB $- 10 \log(N)$ (W/40 kHz).

where θ is the angle in degrees from the line connecting the antenna to the target satellite. The e.i.r.p. density should be met with the maximum antenna pointing error referenced in g). For digital SCPC using frequency division multiplex access (FDMA) or time division multiple access (TDMA) technique, N is equal to one. For digital SCPC using code division multiple access (CDMA) technique, N is the maximum number of co-frequency simultaneously transmitting earth stations in the same satellite receiving beam.

¹ Additional study is required to verify the correct antenna tracking/pointing error.

² Id.

i) Minimum G/T of the receiving UA CS Earth Station and UA Earth Station.

The UA Earth Station system noise temperature should not exceed 270° Kelvin at the antenna feed flange. G/Ts will depend on the antenna size used. UA CS Earth station G/Ts are the same as conventional FSS systems.

Reasons: To allow unmanned aircraft to utilize selected fixed-satellite service allocations for beyond-line-of-sight control links communications.

UNITED STATES OF AMERICA

PROPOSALS FOR THE WORK OF THE CONFERENCE

Agenda Item 1.4: *to consider, based on the results of ITU-R studies, any further regulatory measures to facilitate introduction of new aeronautical mobile (R) service (AM(R)S) systems in the bands 112-117.975 MHz, 960-1 164 MHz and 5 000-5 030 MHz in accordance with Resolutions 413 (Rev.WRC-07), 417 (WRC-07) and 420 (WRC-07)*

Background Information: WRC-12 agenda item 1.4 provides an opportunity to complete the studies requested in Resolution 413 (WRC-07) and propose to WRC-12 any additional regulatory measures to facilitate the introduction of new AM(R)S systems in the bands 112 – 117.975 MHz. The International Civil Aviation Organization (ICAO) will address compatibility of the AM(R)S with ICAO standardized systems. The ITU is addressing compatibility with in-band and adjacent band non-ICAO systems identified in Resolution 413 (WRC-07). Due to the introduction of AM(R)S systems in the 112-117.975 MHz band, the ITU-R conducted studies on compatibility between analogue broadcasting and AM(R)S systems. These studies indicate that no harmful interference to analogue FM broadcasting receivers below 108 MHz will arise from the introduction of AM(R)S systems in the band 112-117.975 MHz. The studies concluded that both services can operate compatibly. The ITU-R will pursue compatibility studies with digital broadcasting systems below 108 MHz under ITU-R study group activities and outside the WRC process; therefore, this proposal modifies Resolution 413 (Rev.WRC-07) to account for the completed ITU-R study work.

WRC-12 agenda item 1.4 also *resolves*, under Resolution 420 (WRC-07), to investigate, if necessary, the feasibility of a new allocation to AM(R)S in the frequency bands in 5 000 – 5 030 MHz for surface applications at airports, provided that requirements for those applications cannot be satisfied in the 5 091 – 5 150 MHz band, and that those applications are compatible with the radionavigation-satellite service (RNSS) in the 5 000 – 5 030 MHz band and the radio astronomy service (RAS) in the adjacent 4 990 – 5 000 MHz band. ITU-R Report M.2120 concluded that new surface applications at airports require approximately 60-100 MHz of AM(R)S spectrum in the 5 000 – 5 150 MHz band. Some administrations support a spectrum requirement of approximately 60 MHz. This requirement cannot be fulfilled entirely within 5 091 – 5 150 MHz. ITU-R studies concluded that compatibility between planned AM(R)S and RNSS feeder link and telemetry, tracking, and commanding (TT&C) stations in the 5 000-5 010 MHz band is feasible under worst-case conditions. However, to avoid interference to AM(R)S systems, feeder link and TT&C stations and the AM(R)S systems need to maintain separation distances determined based on system characteristics and local conditions such as terrain, building obstruction, and airport layout. Current GPS feeder link and TT&C stations are fixed; however, in the future these stations may be transportable and located near airports. If systems cannot maintain the required separation distances, certain AM(R)S channels in the 5 000 – 5 010 MHz band may not be useable at those geographic locations.

This contribution does not propose an AM(R)S allocation in the 5010 – 5030 MHz band because neither the AM(R)S operational environment nor the RNSS signal characteristics are sufficiently defined to finalize ITU-R compatibility studies between the two services.

Proposal:**ARTICLE 5****Frequency allocations****Section IV – Table of Frequency Allocations**
(See No. 2.1)**NOC** USA/AI 1.4/1

75.2-137.175 MHz

Allocation to services		
Region 1	Region 2	Region 3
108-117.975	AERONAUTICAL RADIONAVIGATION 5.197 5.197A	

Reasons: Any modifications to the 108-117.975 MHz band may place additional constraints on the broadcasting service in the 87-108 MHz band.

MOD USA/AI 1.4/2

5 000-5 010 MHz

Allocation to services		
Region 1	Region 2	Region 3
5 000-5 010	AERONAUTICAL RADIONAVIGATION RADIONAVIGATION-SATELLITE (Earth-to-space) 5.367 <u>ADD 5.AMR</u>	

Reasons: To provide an allocation to support AM(R)S surface applications at airports.

NOC USA/AI 1.4/3

5 010-5 030 MHz

Allocation to services		
Region 1	Region 2	Region 3
5 010-5 030	AERONAUTICAL RADIONAVIGATION RADIONAVIGATION-SATELLITE (space-to-Earth)(space-to-space) 5.328B 5.443B 5.367	

Reasons: Neither the AM(R)S operational environment nor the RNSS signal characteristics are sufficiently defined to finalize ITU-R compatibility studies between the two service. Therefore, no allocation is proposed for the AM(R)S in this band.

ADD USA/AI 1.4/4

5.AMR The band 5 000-5 010 MHz is also allocated to the aeronautical mobile (R) service. Such use shall be in accordance with Resolution [USA/AI1.4/1-5 GHZ AM(R)S] (WRC-12).

Reasons: To provide an allocation to support AM(R)S surface applications at airports.

MOD USA/AI 1.4/5

RESOLUTION 413 (Rev.WRC-~~12~~07)**Use of the band 108-117.975 MHz by the aeronautical mobile (R) service**

The World Radiocommunication Conference (Geneva, 201~~2~~07),

considering

- a) the current allocation of the frequency band 108-117.975 MHz to the aeronautical radionavigation service (ARNS);
- b) the current requirements of FM broadcasting systems operating in the frequency band 87-108 MHz;
- c) that digital sound broadcasting systems are capable of operating in the frequency band at about 87-108 MHz as described in Recommendation ITU-R BS.1114;
- d) the need for the aeronautical community to provide additional services by enhancing navigation systems through a radiocommunication data link;

- e) the need for the broadcasting community to provide digital terrestrial sound broadcasting services;
- f) that this allocation was made by this Conference in the knowledge that studies are ongoing with respect to the technical characteristics, sharing criteria and sharing capabilities;
- g) the need for the aeronautical community to provide additional services for radiocommunications, relating to safety and regularity of flight, in the band 112-117.975 MHz;
- h) that ~~theis WRC-07 Conference~~ has modified the allocation of the band 112-117.975 MHz to the aeronautical mobile (R) services (AM(R)S) in order to make available this frequency band for new AM(R)S systems, and in doing so enabled further technical developments, investments and deployment;
- i) that the frequency band 117.975-137 MHz currently allocated to the AM(R)S is reaching saturation in certain areas of the world;
- j) that this new allocation is intended to support the introduction of applications and concepts in air traffic management which are data intensive, and which could support data links that carry safety-critical aeronautical data;
- k) that additional information is needed about the new technologies which will be used, the amount of spectrum required, the characteristics and sharing capabilities/conditions, and that therefore studies are urgently required on which AM(R)S systems will be used, the amount of spectrum required, the characteristics and the conditions for sharing with ARNS systems,

recognizing

- a) that precedence must be given to the ARNS operating in the frequency band 108-117.975 MHz;
- b) that, in accordance with Annex 10 ~~of the Convention of the International Civil Aviation Organization (ICAO) on International eCivil aAviation~~, all aeronautical systems must meet standards and recommended practices (SARPs) requirements;
- c) that within ITU-R, compatibility criteria between FM broadcasting systems operating in the frequency band 87-108 MHz and the ARNS operating in the frequency band 108-117.975 MHz already exist, as indicated in the most recent version of Recommendation ITU-R SM.1009;
- d) that all compatibility issues between FM broadcasting systems and ICAO standard ground-based systems for the transmission of radionavigation-satellite differential correction signals have been addressed,

noting

- a) that aeronautical systems are converging towards a radiocommunication data link environment to support aeronautical navigation and surveillance functions, which need to be accommodated in existing radio spectrum;
- b) that some administrations are planning to introduce digital sound broadcasting systems in the frequency band at about 87-108 MHz;

- c) that no compatibility criteria currently exist between FM broadcasting systems operating in the frequency band 87-108 MHz and the planned additional aeronautical systems in the adjacent band 108-117.975 MHz using aircraft transmission;
- d) that no compatibility criteria currently exist between digital sound broadcasting systems capable of operating in the frequency band at about 87-108 MHz and aeronautical services in the band 108-117.975 MHz,

resolves

- 1 that any aeronautical mobile (R) service systems operating in the band 108-117.975 MHz shall not cause harmful interference to, nor claim protection from ARNS systems operating in accordance with international aeronautical standards;
- 2 that any AM(R)S systems planned to operate in the frequency band 108-117.975 MHz shall, as a minimum, meet the FM broadcasting immunity requirements contained in Annex 10 ~~of the~~ the ICAO Convention on International Civil Aviation for existing aeronautical radionavigation systems operating in this frequency band;
- 3 that AM(R)S systems operating in the band 108-117.975 MHz shall place no additional constraints on the broadcasting service or cause harmful interference to stations operating in the bands allocated to the broadcasting service in the frequency band 87-108 MHz and No. 5.43 does not apply to systems identified in *recognizing d*);
- 4 that frequencies below 112 MHz shall not be used for AM(R)S systems excluding the ICAO systems identified in *recognizing d*);
- 5 that any AM(R)S operating in the frequency band 108-117.975 MHz shall meet SARPs requirements published in Annex 10 ~~of the~~ the ICAO Convention on International Civil Aviation;
- ~~6 that WRC-11 should consider, based on the results of the ITU-R studies mentioned under invites ITU-R, any further regulatory measure to facilitate introduction of new AM(R)S systems;~~

invites ITU-R

- ~~1 to study any compatibility issues between the broadcasting and AM(R) services that may arise from the introduction of AM(R)S systems in the band 112-117.975 MHz, and to develop new or revised ITU-R Recommendations as appropriate;~~
- 2 to study any compatibility issues between the broadcasting and AM(R) services in the band 108-117.975 MHz that may arise from the introduction of appropriate digital sound broadcasting systems, described in Recommendation ITU-R BS.1114, and to develop new or revised ITU-R Recommendations as appropriate;
- ~~3 to report to WRC-11 on the results of these studies,~~

instructs the Secretary-General

to bring this Resolution to the attention of ICAO.

Reasons: Editorial modifications to the resolution are consequential to the no change proposal in the band 108-117.975 MHz.

ADD USA/AI 1.4/6

RESOLUTION [USA/1.4/1-5 GHZ AM(R)S] (WRC-12)

Use of the 5 000-5 010 MHz band by the aeronautical mobile (R) service and protection of the radionavigation-satellite and the radio astronomy services

The World Radiocommunication Conference (Geneva, 2012),

considering

- a) the current allocation of the frequency band 5 000-5 010 MHz to the aeronautical mobile satellite (R) service (AMS(R)S) subject to agreement obtained under No. **9.21**, the aeronautical radionavigation service (ARNS) and the radionavigation-satellite service (RNSS) (Earth-to-space);
- b) that this Conference has made an allocation to the aeronautical mobile (R) service (AM(R)S) in the band 5 000-5 010 MHz limited to systems operating in accordance with recognized international aeronautical standards;
- c) that the International Civil Aviation Organization (ICAO) is in the process of identifying the technical and operating characteristics of new systems operating in the AM(R)S in the band 5 000-5 010 MHz;
- d) that compatibility between AM(R)S systems and ARNS systems operating in accordance with international aeronautical standards is ensured by ICAO,

recognizing

- a) that ICAO publishes recognized international aeronautical standards and recommended practices (SARPs) for AM(R)S;
- b) that ITU-R studies demonstrate the compatibility of surface-based AM(R)S systems with planned RNSS systems in the band 5 000-5 010 MHz, and with the radio astronomy service operating in the band 4 990-5 000 MHz;
- c) that the RNSS will need access to the band 5 000-5 010 MHz for feeder links in the longer term;
- d) that spectrum efficiency is enhanced in situations where new applications can be implemented compatibly in bands to be used by multiple services;

e) that restriction of the AM(R)S to surface applications at airports results in conditions such that compatibility with the radio astronomy service can be assured through geographic separation and/or coordination as necessary,

noting

a) that ITU-R is developing new recommendations regarding the technical characteristics and operational parameters for the RNSS in the band 5 000-5 010 MHz;

b) that the use of the band 5 000-5 010 MHz by the AM(R)S needs to ensure protection of the current and planned use of this band by the RNSS,

resolves

1 that stations in the AM(R)S operating in the band 5 000-5 010 MHz shall meet SARPs requirements published in Annex 10 of the ICAO Convention on International Civil Aviation and the maximum instantaneous equivalent isotropically radiated power for the aggregate transmissions in any given direction from all AM(R)S at a single airport operating in the 5 000-5 010 MHz band shall not exceed 40.6 dBm/10 MHz below 5 degrees elevation, or 37.1 dBm/10 MHz at or above 5 degrees elevation, which will ensure protection of RNSS systems operating in this band;

2 that AM(R)S use in the band 5 000-5 010 MHz shall be limited to surface applications at airports;

3 that administrations, in making assignments, shall first satisfy the requirements for the AM(R)S in the band 5 091-5 150 MHz before making AM(R)S assignments in the 5 000-5 010 MHz band;

4 that, notwithstanding No. 4.10, in the case where transmissions from RNSS earth stations exceed AM(R)S interference thresholds, AM(R)S stations operating in the band 5 000-5 010 MHz shall cease their use of certain frequencies when sufficient geographic separations cannot be maintained;

5 that if the separation distance for AM(R)S stations operating in the band 5 000-5 010 MHz with respect to stations in the RAS operating in the band 4 990-5 000 MHz is less than 150 km, site-specific compatibility studies including local conditions shall be undertaken in order to ensure that the RAS is protected,

invites ICAO

to take account of the power limits in *resolves* 1 when developing SARPs for AM(R)S systems in the 5 000-5 010 MHz band,

instructs the Secretary-General

to bring this Resolution to the attention of ICAO.

Reasons: A resolution is needed to establish conditions of the proposed use of the band 5 000-5 010 MHz by the AM(R)S and to explain the role of administrations, ITU-R, and ICAO in developing technical and operational parameters, and compatibility studies, in order to ensure protection of the RNSS and RAS from emissions of the AM(R)S in this band.

SUP USA/AI 1.4/7

RESOLUTION 420 (WRC-07)

Consideration of the frequency bands between 5 000 and 5 030 MHz for aeronautical mobile (R) service surface applications at airports

Reasons: ITU-R studies with respect to this resolution are complete.

UNITED STATES OF AMERICA

PROPOSALS FOR THE WORK OF THE CONFERENCE

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

Background Information: The introduction of new data exchange technologies¹ in the HF maritime mobile service is providing an alternative to narrow-band direct printing (NBDP) technology. According to the International Maritime Organization, current NBDP applications include maritime safety information (MSI) broadcasts, ship reporting, weather forecasts and business communications (e.g. fishing fleets), but remains part of the International Convention for the Safety of Life at Sea (SOLAS) requirements for vessels sailing in sea areas A3² and A4³. Since alternative data communication technologies for these functions are available, NBDP equipment use is in rapid decline. However, NBDP telegraphy remains essential for distress communications in the polar regions (sea area A4) where geostationary satellites cannot provide coverage and other terrestrial means of communication are unreliable.

The global maritime community intends to improve efficiency and flexibility in the HF maritime mobile service spectrum by designating certain assignable frequencies in Appendix 17 to data transmissions using new data exchange technologies. This proposal would:

- 1) modify Part A and B of RR Appendix 17 to promote the implementation of new digital technologies, while protecting existing applications;
- 2) significantly reduce the number of NBDP frequencies to those actually used for NBDP telegraphy and GMDSS (Appendix 15);
- 3) create a new NBDP core band and retain sufficient paired channels in the NBDP core bands to accommodate existing public services;
- 4) include the MSI frequencies in the NBDP core bands in order to show a clear indication and provide adequate protection;
- 5) specify bandwidth and channelling arrangements for new digital technologies in Appendix 17. Recommendation ITU-R M.1798 describes two 3 kHz bandwidth systems and one wideband system using 10-20 kHz bandwidth. Therefore, the

¹ See Recommendation ITU-R M.1798 *Characteristics of HF radio equipment for the exchange of digital data and electronic mail in the maritime mobile service*

² **Sea Area A3:** An area that is beyond the range of MF and VHF coastal stations providing continuous digital selective calling alerting (about 150 miles from the coast) but within coverage of geostationary maritime communication satellites. This covers the areas between roughly 76° North and 76° South.

³ **Sea Area A4:** An area that is beyond the range of coverage of geostationary maritime communication satellites. The most important of these is the area around the north pole as the south pole is mostly land.

- basic bandwidth for new digital technologies should be 3 kHz, and should allow use of multiple 3 kHz contiguous channels for wideband systems;
- 6) make efficient use of the spectrum, the frequency bands in Part A for new digital technologies should be adjusted to 3 kHz bandwidth channels, however allow for use of contiguous multiple 3 kHz channels for wideband system;
 - 7) identifies paired channels for new digital frequencies for coast stations and ship stations;
 - 8) allow for the use of the current NBDP bands for digital data transmissions, subject to not claiming protection from nor causing harmful interference to other stations in the maritime mobile service using NBDP technology until December 31, 2016;
 - 9) make new digital data transmissions primary in the current NBDP bands effective January 1, 2017, though stations could use NBDP technology subject to not claiming protection from nor causing harmful interference to stations in the maritime mobile service using digital data transmissions;
 - 10) re-designate the frequencies currently assignable to stations using facsimile, wide-band telegraphy and Morse telegraphy A1A/A1B to stations using data transmission without a transition period;
 - 11) allow stations using wide-band telegraphy or Morse telegraphy A1A/A1B to continue on their currently assigned frequencies subject to not claiming protection from nor causing harmful interference to stations in the maritime mobile service using digital data transmissions;
 - 12) not modify Appendix 25 radiotelephony bands, but would allow for the use of digital data transmissions in the radiotelephony bands in accordance with the Appendix 25 allotment plan, and
 - 13) provide flexibility to administrations in portions of the bands 4 MHz, 6 MHz and 8 MHz to assign new simplex radiotelephony frequencies in accordance with No. 52.177, subject to not claiming protection from stations in the maritime mobile service using digital data transmissions.

Proposal:**MOD** USA/AI 1.9/1APPENDIX 17 (REV.WRC-0712)**Frequencies and channelling arrangements in the high-frequency bands for the maritime mobile service**

(See Article 52)

PART A – Table of subdivided bands (WRC-0712)

In the Table, where appropriate¹, the assignable frequencies in a given band for each usage are:

- indicated by the lowest and highest frequency, in heavy type, assigned in that band;
- regularly spaced, the number of assignable frequencies (*f*) and the spacing in kHz being indicated in italics.

Table of frequencies (kHz) to be used in the band between 4 000 kHz and 27 500 kHz allocated exclusively to the maritime mobile service

Band (MHz)	4	6	8	12	16	18/19	22	25/26
Limits (kHz)	4 063	6 200	8 195	12 230	16 360	18 780	22 000	25 070
Frequencies assignable to ship stations for oceanographic data transmission <i>c)</i>	4 063.3 to 4 064.8 <i>6 f.</i> <i>0.3 kHz</i>							
Limits (kHz)	4 065	6 200	8 195	12 230	16 360	18 780	22 000	25 070
Frequencies assignable to ship stations for telephony, duplex operation <i>a) i) gg)</i>	4 066.4 to 4 144.4 <i>27 f.</i> <i>3 kHz</i>	6 201.4 to 6 222.4 <i>8 f.</i> <i>3 kHz</i>	8 196.4 to 8 292.4 <i>33 f.</i> <i>3 kHz</i>	12 231.4 to 12 351.4 <i>41 f.</i> <i>3 kHz</i>	16 361.4 to 16 526.4 <i>56 f.</i> <i>3 kHz</i>	18 781.4 to 18 823.4 <i>15 f.</i> <i>3 kHz</i>	22 001.4 to 22 157.4 <i>53 f.</i> <i>3 kHz</i>	25 071.4 to 25 098.4 <i>10 f.</i> <i>3 kHz</i>
Limits (kHz)	4 146	6 224	8 294	12 353	16 528	18 825	22 159	25 100

Table of frequencies (kHz) to be used in the band between 4 000 kHz and 27 500 kHz allocated exclusively to the maritime mobile service (continued)

Band (MHz)	4	6	8	12	16	18/19	22	25/26
Limits (kHz)	4 146	6 224	8 294	12 353	16 528	18 825	22 159	25 100
Frequencies assignable to ship stations and coast stations for telephony, simplex operation <i>a) gg)</i>	4 147.4 to 4 150.4 <i>2 f.</i> <i>3 kHz</i>	6 225.4 to 6 231.4 <i>3 f.</i> <i>3 kHz</i>	8 295.4 to 8 298.4 <i>2 f.</i> <i>3 kHz</i>	12 354.4 to 12 366.4 <i>5 f.</i> <i>3 kHz</i>	16 529.4 to 16 547.4 <i>7 f.</i> <i>3 kHz</i>	18 826.4 to 18 844.4 <i>7 f.</i> <i>3 kHz</i>	22 160.4 to 22 178.4 <i>7 f.</i> <i>3 kHz</i>	25 101.4 to 25 119.4 <i>7 f.</i> <i>3 kHz</i>
Limits (kHz)	4 152	6 233	8 300	12 368	16 549	18 846	22 180	25 121

¹ Within the non-shaded boxes.

Band (MHz)	4	6	8	12	16	18/19	22	25/26
Frequencies assignable to ship stations for wide-band telegraphy, facsimile and special transmission systems	4 154 to 4 170	6 235 to 6 259	8 302 to 8 338	12 370 to 12 418	16 551 to 16 615	18 848 to 18 868	22 182 to 22 238	25 123 to 25 159
Frequencies assignable to ship stations for data transmissions	<i>5 f.</i> <u>4 kHz</u>	<i>7 f.</i> <u>4 kHz</u>	<i>10 f.</i> <u>4 kHz</u>	<i>13 f.</i> <u>4 kHz</u>	<i>17 f.</i> <u>4 kHz</u>	<i>6 f.</i> <u>4 kHz</u>	<i>15 f.</i> <u>4 kHz</u>	<i>10 f.</i> <u>4 kHz</u>
<i>p) ee)</i>	<u>4 154.5</u> to <u>4 169.5</u>	<u>6 235</u> to <u>6 259</u>	<u>8 302</u> to <u>8 338</u>	<u>12 370</u> to <u>12 418</u>	<u>16 551.5</u> to <u>16 614.5</u>	<u>18 847.5</u> to <u>18 868.5</u>	<u>22 181.5</u> to <u>22 238.5</u>	<u>25 123</u> to <u>25 138</u>
	<i>6 f.</i> <u>3 kHz</u>	<i>9 f.</i> <u>3 kHz</u>	<i>13 f.</i> <u>3 kHz</u>	<i>17 f.</i> <u>3 kHz</u>	<i>22 f.</i> <u>3 kHz</u>	<i>8 f.</i> <u>3 kHz</u>	<i>20 f.</i> <u>3 kHz</u>	<i>6 f.</i> <u>3 kHz</u>
Limits (kHz)	4 172	6 261	8 340	12 420	16 617	18 870	22 240	25 161-39.25
Frequencies assignable to ship stations for oceanographic data transmission		6 261.3 to 6 262.5	8 340.3 to 8 341.5	12 420.3 to 12 421.5	16 617.3 to 16 618.5		22 240.3 to 22 241.5	
<i>c) p)</i>		<i>5 f.</i> <u>0.3 kHz</u>	<i>5 f.</i> <u>0.3 kHz</u>	<i>5 f.</i> <u>0.3 kHz</u>	<i>5 f.</i> <u>0.3 kHz</u>		<i>5 f.</i> <u>0.3 kHz</u>	
Limits (kHz)	4 172	6 262.75	8 341.75	12 421.75	16 618.75	18 870	22 241.75	25 139.5
Frequencies assignable to ship stations for data transmission						18 871.5		
<i>d) p) aa) bb) cc)</i>						<i>1 f.</i> <u>3 kHz</u>		
Limits (kHz)	4 172	6 262.75	8 341.75	12 421.75	16 618.75	18 870-3.25	22 241.75	25 161-39.25
Frequencies (paired) assignable to ship stations for narrow-band direct-printing (NBDP) telegraphy and data transmission systems at speeds not exceeding 100 Bd for FSK and 200 Bd for PSK	4 172.5 to 4 181.54 178	6 263 to 6 2756 268.5					18 873.5 to 18 880	
<i>d) j)-m)-p)</i>	<i>18 12 f.</i> <u>0.5 kHz</u>	<i>25 12 f.</i> <u>0.5 kHz</u>					<i>14 f.</i> <u>0.5 kHz</u>	
Limits (kHz)	4 181-78.725	6 2756-8.75	8 341.75	12 421.75	16 618.75	18 878-0.75	22 241.75	25 161-39.25
Limits (kHz)	4 178.25	6 268.75	8 341.75	12 421.75	16 618.75	18 880.75	22 241.75	25 139.5
Frequencies assignable to ship stations for data transmission	4 180	6 270.5 to 6 273.5				18 883.5 to 18 886.5		
<i>d) p) aa) bb) cc)</i>	<i>1 f.</i> <u>3 kHz</u>	<i>2 f.</i> <u>3 kHz</u>				<i>2 f.</i> <u>3 kHz</u>		
Limits (kHz)	4 181.75	6 275	8 341.75	12 421.75	16 618.75	18 889	22 241.75	25 139.5

Band (MHz)	4	6	8	12	16	18/19	22	25/26
Calling frequencies assignable to ship stations for A1A or A1B Morse telegraphy Frequencies assignable to ship stations for data transmission <i>gm) p)</i>	<u>4 183.25</u>	<u>6 276.5</u> to <u>6 279.5</u> <u>1 f.</u> <u>3 kHz</u>						
Limits (kHz)	4 1864.75	6 280 <u>1.75</u>	8 341.75	12 421.75	16 618.75	18 870 <u>89</u>	22 241.75	25 164 <u>39.25</u>
Frequencies (paired) assignable to ship stations for NBDP telegraphy and data transmission systems at speeds not exceeding 100 Bd for FSK and 200 Bd for PSK Frequencies assignable to ship stations for data transmission <i>d)-m) p) aa) bb) cc)</i>		<u>6 284.5</u> to <u>6 284.5</u> <u>8 f.</u> <u>0.53 kHz</u>						
Limits (kHz)	4 1864.75	6 284.75	8 341.75	12 421.75	16 618.75	18 870 <u>89</u>	22 241.75	25 164 <u>39.25</u>

Table of frequencies (kHz) to be used in the band between 4 000 kHz and 27 500 kHz allocated exclusively to the maritime mobile service (continued)

Band (MHz)	4	6	8	12	16	18/19	22	25/26
Limits (kHz)	4 186.75	6 284.75	8 341.75	12 421.75	16 618.75	18 870.89	22 241.75	25 164.39.25
Working frequencies assignable to ship stations for A1A or A1B Morse telegraphy Frequencies assignable to ship stations for data transmission <i>e) f) m) p)</i>	<u>4 1876.25</u> to <u>4 2021.25</u> <i>346 f.</i> <i>0.53 kHz</i>	<u>6 285.5</u> to <u>6 300297.5</u> <i>345 f.</i> <i>0.53 kHz</i>	<u>8 3423.25</u> to <u>8 3654.25</u> <i>488 f.</i> <i>0.53 kHz</i>	<u>12 4223.75</u> to <u>12 4764.75</u> <i>44018 f.</i> <i>0.53 kHz</i>	<u>16 61921</u> to <u>16 6831</u> <i>42921 f.</i> <i>0.53 kHz</i>		<u>22 2423.5</u> to <u>22 2796.5</u> <i>7512 f.</i> <i>0.53 kHz</i>	<u>25 161.5</u> to <u>25 171</u> <i>20 f.</i> <i>0.5 kHz</i>
Limits (kHz)	4 202.275	6 300299.25	8 365.75	12 476.75	16 683.25	18 870.89	22 2798.25	25 17139.25
Calling frequencies assignable to ship stations for A1A or A1B Morse telegraphy Frequencies assignable to ship stations for data transmission <i>e) m) p)</i>			<u>8 368</u> to <u>8 374</u> <i>3 f.</i> <i>3 kHz</i>				<u>22 279.5</u> to <u>22 282.5</u> <i>2 f.</i> <i>3 kHz</i>	
Limits (kHz)	4 202.275	6 300299.25	8 3706.725	12 476.75	16 683.25	18 870.89	22 284.25	25 17239.75
Working frequencies assignable to ship stations for A1A or A1B Morse telegraphy <i>e) f) p)</i>			<u>8 371</u> to <u>8 376</u> <i>44 f.</i> <i>0.5 kHz</i>					
Limits (kHz)	4 202.25	6 300.25	8 376.25	12 476.75	16 683.25	18 870	22 284.25	25 172.75
Frequencies (paired) assignable to ship stations for NBDP telegraphy and data transmission systems at speeds not exceeding 100 bauds for FSK and 200 bauds for PSK <i>d) j) m) p)</i>			<u>8 376.5</u> to <u>8 39683.5</u> <i>4015 f.</i> <i>0.5 kHz</i>	<u>12 477</u> to <u>12 549.5</u> <i>146 f.</i> <i>0.5 kHz</i>	<u>16 683.5</u> to <u>16 733.5</u> <i>101 f.</i> <i>0.5 kHz</i>	<u>18 870.5</u> to <u>18 892.5</u> <i>45 f.</i> <i>0.5 kHz</i>	<u>22 284.5</u> to <u>22 351.5</u> <i>135 f.</i> <i>0.5 kHz</i>	<u>25 173</u> to <u>25 192.5</u> <i>40 f.</i> <i>0.5 kHz</i>
Limits (kHz)	4 202.275	6 300299.25	8 39683.275	12 549476.75	16 73683.72	18 89289.75	22 351284.75	25 192.7513
Frequencies assignable to ship stations for data transmission <i>d) p) aa) bb) cc)</i>			<u>8 385.5</u> to <u>8 394.5</u> <i>4 f.</i> <i>3 kHz</i>				<u>22 286</u> to <u>22 289</u> <i>2 f.</i> <i>3 kHz</i>	
Limits (kHz)	4 202.75	6 299	8 396.25	12 476.75	16 683.25	18 889	22 290.75	25 139.5

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Band (MHz)	4	6	8	12	16	18/19	22	25/26
Frequencies (paired) assignable to ship stations for NBDP telegraphy and data transmission systems at speeds not exceeding 100 bauds for FSK and 200 bauds for PSK <i>d) j)</i>				<u>12 477</u> to <u>12 522.5</u> <i>92 f.</i> <i>0.5 kHz</i>	<u>16 683.5</u> to <u>16 698.5</u> <i>31 f.</i> <i>0.5 kHz</i>		<u>22 291</u> to <u>22 297</u> <i>13 f.</i> <i>0.5 kHz</i>	
Limits (kHz)	<u>4 202.75</u>	<u>6 299</u>	<u>8 396.25</u>	<u>12 522.75</u>	<u>16 698.75</u>	<u>18 889</u>	<u>22 297.25</u>	<u>25 139.5</u>
Limits (kHz)	<u>4 202.75</u>	<u>6 299</u>	<u>8 396.25</u>	<u>12 522.75</u>	<u>16 698.75</u>	<u>18 889</u>	<u>22 297.25</u>	<u>25 139.5</u>
Frequencies assignable to ship stations for data transmission <i>d) p) aa) bb) cc)</i>				<u>12 524.25</u> to <u>12 548.25</u> <i>9 f.</i> <i>3 kHz</i>	<u>16 700.5</u> to <u>16 733.5</u> <i>12 f.</i> <i>3 kHz</i>		<u>22 299.5</u> to <u>22 350.5</u> <i>18 f.</i> <i>3 kHz</i>	
Limits (kHz)	<u>4 202.75</u>	<u>6 299</u>	<u>8 396.25</u>	<u>12 549.75</u>	<u>16 735</u>	<u>18 889</u>	<u>22 352.5</u>	<u>25 139.5</u>
Calling frequencies assignable to ship stations for A1A or A1B Morse telegraphy Frequencies assignable to ship stations for data transmission <i>g) m) p)</i>				<u>12 551.25</u> to <u>12 554.25</u> <i>2 f.</i> <i>3 kHz</i>	<u>16 736.5</u> to <u>16 739.5</u> <i>2 f.</i> <i>3 kHz</i>			
Limits (kHz)	<u>4 202.275</u>	<u>6 300.299.25</u>	<u>8 396.25</u>	<u>12 554.75</u>	<u>16 738.41.75</u>	<u>18 892.89.75</u>	<u>22 354.2.75</u>	<u>25 192.39.75</u>
Frequencies (paired) assignable to ship stations for NBDP telegraphy and data transmission systems at speeds not exceeding 100 bauds for FSK and 200 bauds for PSK Frequencies assignable to ship stations for data transmission <i>d) m) p) aa) bb) cc)</i>				<u>12 555.7.25</u> to <u>12 559.60.25</u> <i>102 f.</i> <i>0.53 kHz</i>	<u>16 739.42.5</u> to <u>16 784.5</u> <i>92.15 f.</i> <i>0.53 kHz</i>			
Limits (kHz)	<u>4 202.275</u>	<u>6 300.299.25</u>	<u>8 396.25</u>	<u>12 559.61.75</u>	<u>16 784.6.75</u>	<u>18 892.89.75</u>	<u>22 354.2.75</u>	<u>25 192.39.75</u>

Table of frequencies (kHz) to be used in the band between 4 000 kHz and 27 500 kHz
allocated exclusively to the maritime mobile service (continued)

Band (MHz)	4	6	8	12	16	18/19	22	25/26
Limits (kHz)	4 202.275	6 300.299.25	8 396.25	12 559.61.7 5	16 784.6.75	18 892.89.75	22 354.2.75	25 192.39.75
Frequencies (non paired) assignable to ship stations for NBDP telegraphy and data transmission systems at speeds not exceeding 100 Bd for FSK and 200 Bd for PSK and for A1A or A1B Morse telegraphy (working) <i>b) m) p) dd)</i>	<u>4 202.5</u> to <u>4 207</u> <i>10 f.</i> <i>0.5 kHz</i>	<u>6 300.5</u> to <u>6 311.09.5</u> <i>234 f.</i> <i>0.5 kHz</i>	<u>8 396.7.75</u> to <u>8 414.2.75</u> <i>36 f.</i> <i>0.5 kHz</i>	<u>12 560.3.25</u> to <u>12 576.5.25</u> <i>345 f.</i> <i>0.5 kHz</i>	<u>16 785.7.5</u> to <u>16 804.2.5</u> <i>396 f.</i> <i>0.5 kHz</i>	<u>18 893.0.5</u> to <u>18 898.6.5</u> <i>443 f.</i> <i>0.5 kHz</i>	<u>22 352.4</u> to <u>22 374.2</u> <i>457 f.</i> <i>0.5 kHz</i>	<u>25 193.42</u> to <u>25 208.5</u> <i>342.2 f.</i> <i>0.5 kHz</i>
Limits (kHz)	4 207.25	6 311.75	8 414.25	12 576.75	16 804.25	18 898.25	22 374.25	25 208.25
Frequencies assignable to ship stations for digital selective calling <i>k) l)</i>	<u>4 207.5</u> to <u>4 209</u> <i>4 f.</i> <i>0.5 kHz</i>	<u>6 312</u> to <u>6 313.5</u> <i>4 f.</i> <i>0.5 kHz</i>	<u>8 414.5</u> to <u>8 416</u> <i>4 f.</i> <i>0.5 kHz</i>	<u>12 577</u> to <u>12 578.5</u> <i>4 f.</i> <i>0.5 kHz</i>	<u>16 804.5</u> to <u>16 806</u> <i>4 f.</i> <i>0.5 kHz</i>	<u>18 898.5</u> to <u>18 899.5</u> <i>3 f.</i> <i>0.5 kHz</i>	<u>22 374.5</u> to <u>22 375.5</u> <i>3 f.</i> <i>0.5 kHz</i>	<u>25 208.5</u> to <u>25 209.5</u> <i>3 f.</i> <i>0.5 kHz</i>
Limits (kHz)	4 209.25	6 313.75	8 416.25	12 578.75	16 806.25	18 899.75	22 375.75	25 210
Limits (kHz)	4 209.25	6 313.75	8 416.25	12 578.75	16 806.25	19 680.25	22 375.75	26 100.25
Frequencies (paired) assignable to coast stations for NBDP and data transmission systems, at speeds not exceeding 100 bauds for FSK and 200 bauds for PSK <i>d)</i>		<u>6 314</u> <i>1 f.</i> <i>0.5 kHz</i>				<u>19 680.5</u> <i>1 f.</i> <i>0.5 kHz</i>	<u>22 376</u> <i>1 f.</i> <i>0.5 kHz</i>	<u>26 100.5</u> <i>1 f.</i> <i>0.5 kHz</i>
Limits (kHz)	<u>4 209.25</u>	<u>6 314.25</u>	<u>8 416.25</u>	<u>12 578.75</u>	<u>16 806.25</u>	<u>19 680.75</u>	<u>22 376.25</u>	<u>26 100.75</u>
Frequencies assignable to coast stations for data transmission <i>n) o) p) aa) bb) cc)</i>						<u>19 682.25</u> <i>1 f.</i> <i>3 kHz</i>	<u>22 378</u> to <u>22 381</u> <i>2 f.</i> <i>3 kHz</i>	<u>26 103.5</u> to <u>26 118.5</u> <i>6 f.</i> <i>3 kHz</i>
Limits (kHz)	4 209.25	6 314.25	8 416.25	12 578.75	16 806.25	19 683.75	22 382.75	26 120.75
Frequencies (paired) assignable to coast stations for NBDP and data transmission systems, at speeds not exceeding 100 Bd for FSK and 200 Bd for PSK <i>d) n) o) p)</i>	<u>4 209.5</u> to <u>4 219.5</u> <i>2013 f.</i> <i>0.5 kHz</i>	<u>6 314.5</u> to <u>6 330.19.5</u> <i>3412 f.</i> <i>0.5 kHz</i>	<u>8 416.5</u> to <u>8 436.23.5</u> <i>4015 f.</i> <i>0.5 kHz</i>	<u>12 579</u> to <u>12 656.24.5</u> <i>15693 f.</i> <i>0.5 kHz</i>	<u>16 806.5</u> to <u>16 902.821.5</u> <i>19332 f.</i> <i>0.5 kHz</i>	<u>19 680.5</u> to <u>19 703.690.5</u> <i>4614 f.</i> <i>0.5 kHz</i>	<u>22 376.83</u> to <u>22 443.389.5</u> <i>136 f.</i> <i>0.5 kHz</i>	<u>26 100.5</u> to <u>26 120.5</u> <i>41 f.</i> <i>0.5 kHz</i>

Band (MHz)	4	6	8	12	16	18/19	22	25/26
Limits (kHz)	4 351	6 501	8 707	13 077	17 242	19 755	22 696	26 145

Table of frequencies (kHz) to be used in the band between 4 000 kHz and 27 500 kHz allocated exclusively to the maritime mobile service (end)

Band (MHz)	4	6	8	12	16	18/19	22	25/26
Limits (kHz)	4 351	6 501	8 707	13 077	17 242	19 755	22 696	26 145
Frequencies assignable to coast stations for telephony, duplex operation	4 352.4 to 4 436.4	6 502.4 to 6 523.4	8 708.4 to 8 813.4	13 078.4 to 13 198.4	17 243.4 to 17 408.4	19 756.4 to 19 798.4	22 697.4 to 22 853.4	26 146.4 to 26 173.4
a) <i>gg)</i>	29 <i>f.</i> 3 kHz	8 <i>f.</i> 3 kHz	36 <i>f.</i> 3 kHz	41 <i>f.</i> 3 kHz	56 <i>f.</i> 3 kHz	15 <i>f.</i> 3 kHz	53 <i>f.</i> 3 kHz	10 <i>f.</i> 3 kHz
Limits (kHz)	4 438	6 525	8 815	13 200	17 410	19 800	22 855	26 175

Reasons: Modifications to help reduce NBDP bands and channelize bands for new digital technologies.

NOC USA/AI 1.9/2

a)

Reasons: Maintains the frequency bands dedicated for the radiotelephony simplex operation.

MOD USA/AI 1.9/3

b) Until 1 January 2017, Ssee Part B, Section III. After this date, Section III will no longer apply and has to be deleted by a future competent WRC.

Reasons: After the entry into force date of 1 January 2017, Section III, Part B this note will no longer be required.

NOC USA/AI 1.9/4

c) to d)

Reasons: Maintains frequencies for transmission of oceanographic data and paired frequencies for NBDP.

SUP USA/AI 1.9/5

e)

Reasons: Maintains frequencies for ship stations using A1A Morse telegraphy not travelling faster than 40 Bd.

SUP USA/AI 1.9/6

f)

Reasons: Part B, Section V is proposed for suppression.

SUP USA/AI 1.9/7

g)

Reasons: Part B, Section IV is proposed for suppression.

NOC USA/AI 1.9/8

h) to l)

Reasons: Maintains paired frequencies for digital selective calling.

MOD USA/AI 1.9/9

m) Frequencies from these frequency bands may also be used for A1A or A1B Morse telegraphy (working) (see Part B, Section II) subject to not claiming protection from other stations in the maritime mobile service using digitally modulated emissions.

Reasons: Assigns additional frequencies for A1A or A1B Morse telegraphy subject to protection of the maritime mobile service using new digital technologies.

NOC USA/AI 1.9/10

n) and o)

Reasons: No change is proposed to frequencies used for maritime safety information (MSI) and Navigational Telex (NAVTEX).

MOD USA/AI 1.9/11

p) These sub-bands, except the frequencies referred to in Notes *i), j), n) and o)*, may be used for the initial testing and the possible future introduction within the maritime mobile service of new digital technologies. Stations using these sub-bands for this purpose shall not cause harmful interference to, and shall not claim protection from, other stations operating in accordance with Article 5 for digitally modulated emissions for maritime mobile service (e.g. as described in Recommendation ITU-R M.1798). The provisions of No. 15.8 apply.

Reasons: Implements the channels for new digital technologies in the frequency bands designated for wide-band telegraphy, and facsimile without transition a period.

ADD USA/AI 1.9/12

aa) Until 1 January 2017, these bands may be used by narrow-band direct-printing applications. Before 1 January 2017, administrations who introduce digitally modulated emissions for radiocommunications are urged to take all practicable steps to prevent interference to the narrow-band direct-printing applications in the band.

Reasons: Allows for transition period for frequencies employing NBDP to transmission of new digital technologies subject to not causing interference into NBDP.

ADD USA/AI 1.9/13

- bb)* From 1 January 2017 these bands, except the frequencies referred to in Notes *n)* and *o)*, may be used by narrow-band direct-printing applications by administrations, subject to not claiming protection from other stations in the maritime mobile service using digitally modulated emissions.

Reasons: Allows for continued use of NBDP after transition date subject to not claiming protection from the maritime mobile service.

ADD USA/AI 1.9/14

- cc)* From 1 January 2017, administrations who will make assignments to stations using digitally modulated emissions are encouraged to effect coordination with potentially affected administrations.

Reasons: Removes the use of single channel NBDP after 1 January 2017 to allow the introduction of new HF data exchange technologies into the maritime mobile service.

ADD USA/AI 1.9/15

- dd)* These bands may be used by narrow-band direct-printing applications by the administrations, subject to not claiming protection from other stations in the maritime mobile service using digitally modulated emissions.

Reasons: Removes the use of single channel NBDP after 1 January 2017 to allow the introduction of new HF data exchange technologies into the maritime mobile service.

ADD USA/AI 1.9/16

- ee)* Frequencies from these bands may be used for wideband telegraphy, facsimile, A1A/A1B Morse telegraphy and special data transmission on the condition that interference is not caused to and protection is not claimed from stations in the maritime mobile service using digitally modulated emissions.

Reasons: Removes the use of single channel NBDP after 1 January 2017 to allow the introduction of new HF data exchange technologies into the maritime mobile service.

ADD USA/AI 1.9/17

- ff)* The bands 4 345-4 351 kHz, 6 495-6 501 kHz, 8 701-8 707 kHz may be used for simplex (single-sideband) telephone operation (regularly spaced by 3 kHz), in accordance with provision No. **52.177**, subject to not claiming protection from other stations in the maritime mobile service using digitally modulated emissions.

Reasons: Removes the use of single channel NBDP after 1 January 2017 to allow the introduction of new HF data exchange technologies into the maritime mobile service.

ADD USA/AI 1.9/18

gg) The bands 4 066.4-4 150.4 kHz, 4 352.4-4 436.4 kHz, 6 201.4-6 231.4 kHz, 6 502.4-6 523.4 kHz, 8 196.4-8 298.4 kHz, 8 708.4-8 813.4 kHz, 12 231.4-12 366.4 kHz, 13 078.4-13 198.4 kHz, 16 361.4-16 574.4 kHz, 17 243.4-17 408.4 kHz, 18 781.4-18 844.4 kHz, 19 756.4-19 798.4 kHz, 22 001.4-22 178.4 kHz, 22 697.4-22 853.4 kHz, 25 071.4-25 119.4 kHz, 26 146.4-26 173.4 kHz may be used, in accordance with the Appendix 25 allotment Plan, for digitally modulated emissions as described in Recommendation ITU-R M.1798 on condition that it shall not cause harmful interference to, or claim protection from other stations in the maritime mobile service using radiotelephony operations. The digitally modulated emissions may be used provided that their occupied bandwidth does not exceed 2 800 Hz, it is situated wholly within one frequency channel and the peak envelope power of coast stations does not exceed 10 kW and the peak envelope power of ship stations does not exceed 1.5 kW per channel.

Reasons: Allows additional use for digital data transmissions in the RR Appendix 25 bands.

MOD USA/AI 1.9/19**PART B – Channelling arrangements** (WRC-0712)

Reasons: Update the date channelling arrangements apply.

NOC USA/AI 1.9/20**Section I – Radiotelephony**

Reasons: No changes are proposed for this section.

MOD USA/AI 1.9/21**Section II – Narrow-band direct-printing telegraphy (paired frequencies)**

1 Each coast station which uses paired frequencies is assigned one or more frequency pairs from the following series; each pair consists of a transmitting and a receiving frequency.

2 The speed of the narrow-band direct-printing telegraphy and data systems shall not exceed 100 Bd for FSK and 200 Bd for PSK.

**Table of frequencies for two-frequency operation by coast stations (kHz)
to be used until 1 January 2017**

Reasons: Providing a new title to distinguish what should be used before January 1, 2017.

NOC USA/AI 1.9/22

The table itself is unchanged.

Reasons: No changes are proposed to the table for two-frequency operations in Section II

MOD USA/AI 1.9/23

Table of frequencies for two-frequency operation by coast stations (kHz)
to be used after 1 January 2017

Channel No.	4 MHz band ¹		6 MHz band ³		8 MHz band ⁴	
	Transmit	Receive	Transmit	Receive	Transmit	Receive
1	4210.5	4172.5	6314.5	6263	8376.5 ²	8376.5 ²
2	4211	4173	6315	6263.5	8417	8377
3	4211.5	4173.5	6315.5	6264	8417.5	8377.5
4	4212	4174	6316	6264.5	8418	8378
5	4212.5	4174.5	6316.5	6265	8418.5	8378.5
6	4213	4175	6317	6265.5	8419	8379
7	4213.5	4175.5	6317.5	6266	8419.5	8379.5
8	4214	4176	6318	6266.5	8420	8380
9	4214.5	4176.5	6318.5	6267	8420.5	8380.5
10	4215	4177	6319	6267.5	8421	8381
11	4177.5 ²	4177.5 ²	6268 ²	6268 ²	8421.5	8381.5
12	4215.5	4178	6319.5	6268.5	8422	8382
13	4216	4178.5	6320	6269	8422.5	8382.5
14	4216.5	4179	6320.5	6269.5	8423	8383
15	4217	4179.5	6321	6270	8423.5	8383.5
16	4217.5	4180	6321.5	6270.5	8424	8384
17	4218	4180.5	6322	6271	8424.5	8384.5
18	4218.5	4181	6322.5	6271.5	8425	8385
19	4219	4181.5	6323	6272	8425.5	8385.5
20			6323.5	6272.5	8426	8386
21			6324	6273	8426.5	8386.5
22			6324.5	6273.5	8427	8387
23			6325	6274	8427.5	8387.5
24			6325.5	6274.5	8428	8388
25			6326	6275	8428.5	8388.5
26			6326.5	6275.5	8429	8389
27			6327	6281	8429.5	8389.5
28			6327.5	6281.5	8430	8390
29			6328	6282	8430.5	8390.5
30			6328.5	6282.5	8431	8391
31			6329	6283	8431.5	8391.5
32			6329.5	6283.5	8432	8392
33			6330	6284	8432.5	8392.5
34			6330.5	6284.5	8433	8393
35					8433.5	8393.5
36					8434	8394
37					8434.5	8394.5
38					8435	8395
39					8435.5	8395.5
40					8436	8396

¹ Ship stations may use the coast station receiving frequencies for transmitting A1A or A1B Morse telegraphy (working), with the exception of channel No. 11 (see Appendix 15).

² For the conditions of use of this frequency, see Article 31.

³ Ship stations may use the coast station receiving frequencies of channel Nos. 25 up to and including 34 for transmitting A1A or A1B Morse telegraphy (working).

⁴ Ship stations may use the coast station receiving frequencies of channel Nos. 29 up to and including 40 for transmitting A1A or A1B Morse telegraphy (working).

Reasons: Provides modifications to table that come into force after January 1, 2017.

MOD USA/AI 1.9/24

Table of frequencies for two-frequency operation by coast stations (kHz)

Channel No.	12 MHz band ⁵		16 MHz band ⁶		18/19 MHz band	
	Transmit	Receive	Transmit	Receive	Transmit	Receive
1	12 579.5	12 477	16 807	16 683.5	19 681	18 870.5
2	12 580	12 477.5	16 807.5	16 684	19 681.5	18 871
3	12 580.5	12 478	16 808	16 684.5	19 682	18 871.5
4	12 581	12 478.5	16 808.5	16 685	19 682.5	18 872
5	12 581.5	12 479	16 809	16 685.5	19 683	18 872.5
6	12 582	12 479.5	16 809.5	16 686	19 683.5	18 873
7	12 582.5	12 480	16 810	16 686.5	19 684	18 873.5
8	12 583	12 480.5	16 810.5	16 687	19 684.5	18 874
9	12 583.5	12 481	16 811	16 687.5	19 685	18 874.5
10	12 584	12 481.5	16 811.5	16 688	19 685.5	18 875
11	12 584.5	12 482	16 812	16 688.5	19 686	18 875.5
12	12 585	12 482.5	16 812.5	16 689	19 686.5	18 876
13	12 585.5	12 483	16 813	16 689.5	19 687	18 876.5
14	12 586	12 483.5	16 813.5	16 690	19 687.5	18 877
15	12 586.5	12 484	16 814	16 690.5	19 688	18 877.5
16	12 587	12 484.5	16 814.5	16 691	19 688.5	18 878
17	12 587.5	12 485	16 815	16 691.5	19 689	18 878.5
18	12 588	12 485.5	16 815.5	16 692	19 689.5	18 879
19	12 588.5	12 486	16 816	16 692.5	19 690	18 879.5
20	12 589	12 486.5	16 816.5	16 693	19 690.5	18 880
21	12 589.5	12 487	16 817	16 693.5	19 691	18 880.5
22	12 590	12 487.5	16 817.5	16 694	19 691.5	18 881
23	12 590.5	12 488	16 818	16 694.5	19 692	18 881.5
24	12 591	12 488.5	16 695 ²	16 695 ²	19 692.5	18 882
25	12 591.5	12 489	16 818.5	16 695.5	19 693	18 882.5
26	12 592	12 489.5	16 819	16 696	19 693.5	18 883
27	12 592.5	12 490	16 819.5	16 696.5	19 694	18 883.5
28	12 593	12 490.5	16 820	16 697	19 694.5	18 884
29	12 593.5	12 491	16 820.5	16 697.5	19 695	18 884.5
30	12 594	12 491.5	16 821	16 698	19 695.5	18 885
31	12 594.5	12 492	16 821.5	16 698.5	19 696	18 885.5
32	12 595	12 492.5	16 822	16 699	19 696.5	18 886
33	12 595.5	12 493	16 822.5	16 699.5	19 697	18 886.5
34	12 596	12 493.5	16 823	16 700	19 697.5	18 887
35	12 596.5	12 494	16 823.5	16 700.5	19 698	18 887.5
36	12 597	12 494.5	16 824	16 701	19 698.5	18 888
37	12 597.5	12 495	16 824.5	16 701.5	19 699	18 888.5
38	12 598	12 495.5	16 825	16 702	19 699.5	18 889
39	12 598.5	12 496	16 825.5	16 702.5	19 700	18 889.5
40	12 599	12 496.5	16 826	16 703	19 700.5	18 890
41	12 599.5	12 497	16 826.5	16 703.5	19 701	18 890.5
42	12 600	12 497.5	16 827	16 704	19 701.5	18 891
43	12 600.5	12 498	16 827.5	16 704.5	19 702	18 891.5
44	12 601	12 498.5	16 828	16 705	19 702.5	18 892
45	12 601.5	12 499	16 828.5	16 705.5	19 703	18 892.5

⁵ Ship stations may use the coast station receiving frequencies of channel Nos. 58 up to and including 156 for transmitting A1A or A1B Morse telegraphy (working), with the exception of channel No. 87 (see Appendix 15).

⁶ Ship stations may use the coast station receiving frequencies of channel Nos. 71 up to and including 193 for transmitting A1A or A1B Morse telegraphy (working).

Reasons: Provides modifications to table that come into force after January 1, 2017.

MOD USA/AI 1.9/25

Table of frequencies for two-frequency operation by coast stations (kHz)

Channel No.	12 MHz band ⁵ (cont.)		16 MHz band ⁶ (cont.)	
	Transmit	Receive	Transmit	Receive
46	12 602	12 499.5	16 829	16 706
47	12 602.5	12 500	16 829.5	16 706.5
48	12 603	12 500.5	16 830	16 707
49	12 603.5	12 501	16 830.5	16 707.5
50	12 604	12 501.5	16 831	16 708
51	12 604.5	12 502	16 831.5	16 708.5
52	12 605	12 502.5	16 832	16 709
53	12 605.5	12 503	16 832.5	16 709.5
54	12 606	12 503.5	16 833	16 710
55	12 606.5	12 504	16 833.5	16 710.5
56	12 607	12 504.5	16 834	16 711
57	12 607.5	12 505	16 834.5	16 711.5
58	12 608	12 505.5	16 835	16 712
59	12 608.5	12 506	16 835.5	16 712.5
60	12 609	12 506.5	16 836	16 713
61	12 609.5	12 507	16 836.5	16 713.5
62	12 610	12 507.5	16 837	16 714
63	12 610.5	12 508	16 837.5	16 714.5
64	12 611	12 508.5	16 838	16 715
65	12 611.5	12 509	16 838.5	16 715.5
66	12 612	12 509.5	16 839	16 716
67	12 612.5	12 510	16 839.5	16 716.5
68	12 613	12 510.5	16 840	16 717
69	12 613.5	12 511	16 840.5	16 717.5
70	12 614	12 511.5	16 841	16 718
71	12 614.5	12 512	16 841.5	16 718.5
72	12 615	12 512.5	16 842	16 719
73	12 615.5	12 513	16 842.5	16 719.5
74	12 616	12 513.5	16 843	16 720
75	12 616.5	12 514	16 843.5	16 720.5
76	12 617	12 514.5	16 844	16 721
77	12 617.5	12 515	16 844.5	16 721.5
78	12 618	12 515.5	16 845	16 722
79	12 618.5	12 516	16 845.5	16 722.5
80	12 619	12 516.5	16 846	16 723
81	12 619.5	12 517	16 846.5	16 723.5
82	12 620	12 517.5	16 847	16 724
83	12 620.5	12 518	16 847.5	16 724.5
84	12 621	12 518.5	16 848	16 725
85	12 621.5	12 519	16 848.5	16 725.5
86	12 622	12 519.5	16 849	16 726
87	12 520 ²	12 520 ²	16 849.5	16 726.5
88	12 622.5	12 520.5	16 850	16 727
89	12 623	12 521	16 850.5	16 727.5
90	12 623.5	12 521.5	16 851	16 728
91	12 624	12 522	16 851.5	16 728.5
92	12 624.5	12 522.5	16 852	16 729
93	12 625	12 523	16 852.5	16 729.5
94	12 625.5	12 523.5	16 853	16 730
95	12 626	12 524	16 853.5	16 730.5

Reasons: Provides modifications to table that come into force after January 1, 2017.

MOD USA/AI 1.9/26

Table of frequencies for two-frequency operation by coast stations (kHz)

Channel No.	12 MHz band ⁵ (cont.)		16 MHz band ⁶ (cont.)	
	Transmit	Receive	Transmit	Receive
96	12 626.5	12 524.5	16 854	16 731
to
193			16 902.5	16 784.5

Reasons: Table is no longer needed.

MOD USA/AI 1.9/27

Table of frequencies for two-frequency operation by coast stations (kHz)

Channel No.	22 MHz band ⁷		25/26 MHz band	
	Transmit	Receive	Transmit	Receive
-1	22 376.5	22 284.5	26 101	25 173
-2	22 377	22 285	26 101.5	25 173.5
-3	22 377.5	22 285.5	26 102	25 174
-4	22 378	22 286	26 102.5	25 174.5
-5	22 378.5	22 286.5	26 103	25 175
-6	22 379	22 287	26 103.5	25 175.5
-7	22 379.5	22 287.5	26 104	25 176
-8	22 380	22 288	26 104.5	25 176.5
-9	22 380.5	22 288.5	26 105	25 177
10	22 381	22 289	26 105.5	25 177.5
11	22 381.5	22 289.5	26 106	25 178
12	22 382	22 290	26 106.5	25 178.5
13	22 382.5	22 290.5	26 107	25 179
14	22 383	22 291	26 107.5	25 179.5
15	22 383.5	22 291.5	26 108	25 180
16	22 384	22 292	26 108.5	25 180.5
17	22 384.5	22 292.5	26 109	25 181
18	22 385	22 293	26 109.5	25 181.5
19	22 385.5	22 293.5	26 110	25 182
20	22 386	22 294	26 110.5	25 182.5
21	22 386.5	22 294.5	26 111	25 183
22	22 387	22 295	26 111.5	25 183.5
23	22 387.5	22 295.5	26 112	25 184
24	22 388	22 296	26 112.5	25 184.5
25	22 388.5	22 296.5	26 113	25 185
26	22 389	22 297	26 113.5	25 185.5
27	22 389.5	22 297.5	26 114	25 186
28	22 390	22 298	26 114.5	25 186.5
29	22 390.5	22 298.5	26 115	25 187
30	22 391	22 299	26 115.5	25 187.5
31	22 391.5	22 299.5	26 116	25 188
32	22 392	22 300	26 116.5	25 188.5
33	22 392.5	22 300.5	26 117	25 189
34	22 393	22 301	26 117.5	25 189.5
35	22 393.5	22 301.5	26 118	25 190
36	22 394	22 302	26 118.5	25 190.5
37	22 394.5	22 302.5	26 119	25 191
38	22 395	22 303	26 119.5	25 191.5
39	22 395.5	22 303.5	26 120	25 192
40	22 396	22 304	26 120.5	25 192.5
41	22 396.5	22 304.5		
42	22 397	22 305		
43	22 397.5	22 305.5		
44	22 398	22 306		
45	22 398.5	22 306.5		
46	22 399	22 307		
47	22 399.5	22 307.5		
48	22 400	22 308		
49	22 400.5	22 308.5		
50	22 401	22 309		

⁷—Ship stations may use the coast station receiving frequencies of channels No. 68 up to and including 135 for transmitting A1A or A1B Morse telegraphy (working).

Reasons: Provides modifications to table that come into force after January 1, 2017.

MOD USA/AI 1.9/28

Table of frequencies for two-frequency
operation by coast stations (kHz)

Channel No.	22 MHz band ⁷ (cont.)	
	Transmit	Receive
-51	22 401.5	22 309.5
-52	22 402	22 310
-53	22 402.5	22 310.5
-54	22 403	22 311
-55	22 403.5	22 311.5
-56	22 404	22 312
-57	22 404.5	22 312.5
-58	22 405	22 313
-59	22 405.5	22 313.5
-60	22 406	22 314
-61	22 406.5	22 314.5
-62	22 407	22 315
-63	22 407.5	22 315.5
-64	22 408	22 316
-65	22 408.5	22 316.5
-66	22 409	22 317
-67	22 409.5	22 317.5
-68	22 410	22 318
-69	22 410.5	22 318.5
-70	22 411	22 319
-71	22 411.5	22 319.5
-72	22 412	22 320
-73	22 412.5	22 320.5
-74	22 413	22 321
-75	22 413.5	22 321.5
-76	22 414	22 322
-77	22 414.5	22 322.5
-78	22 415	22 323
-79	22 415.5	22 323.5
-80	22 416	22 324
-81	22 416.5	22 324.5
-82	22 417	22 325
-83	22 417.5	22 325.5
-84	22 418	22 326
-85	22 418.5	22 326.5
-86	22 419	22 327
-87	22 419.5	22 327.5
-88	22 420	22 328
-89	22 420.5	22 328.5
-90	22 421	22 329
-91	22 421.5	22 329.5
-92	22 422	22 330
-93	22 422.5	22 330.5
-94	22 423	22 331
-95	22 423.5	22 331.5
-96	22 424	22 332
-97	22 424.5	22 332.5
-98	22 425	22 333
-99	22 425.5	22 333.5
100	22 426	22 334
101	22 426.5	22 334.5
102	22 427	22 335
103	22 427.5	22 335.5
104	22 428	22 336
105	22 428.5	22 336.5

Reasons: Removes table no longer in force after January 1, 2017.

MOD USA/AI 1.9/29

Table of frequencies for two-frequency operation by coast stations (kHz)

Channel No.	22 MHz band ⁷ (end)	
	Transmit	Receive
106	22 429	22 337
107	22 429.5	22 337.5
108	22 430	22 338
109	22 430.5	22 338.5
110	22 431	22 339
111	22 431.5	22 339.5
112	22 432	22 340
113	22 432.5	22 340.5
114	22 433	22 341
115	22 433.5	22 341.5
116	22 434	22 342
117	22 434.5	22 342.5
118	22 435	22 343
119	22 435.5	22 343.5
120	22 436	22 344
121	22 436.5	22 344.5
122	22 437	22 345
123	22 437.5	22 345.5
124	22 438	22 346
125	22 438.5	22 346.5
126	22 439	22 347
127	22 439.5	22 347.5
128	22 440	22 348
129	22 440.5	22 348.5
130	22 441	22 349
131	22 441.5	22 349.5
132	22 442	22 350
133	22 442.5	22 350.5
134	22 443	22 351
135	22 443.5	22 351.5

Reasons: Removes table no longer in force after January 1, 2017.

MOD USA/AI 1.9/30

**Section III – Narrow-band direct-printing telegraphy
(non-paired frequencies)**

until 1 January 2017 (after this date the entire section will no longer apply and has to be deleted by a future competent WRC)

Reasons: After the entry into force date of 1 January 2017, this section will no longer be needed and will be suppressed.

SUP USA/AI 1.9/31

Section IV – Morse telegraphy (calling)

Reasons: Removes the use of Morse telegraphy to allow the introduction of new HF data exchange technologies into the maritime mobile service.

SUP USA/AI 1.9/32

Section V – Morse telegraphy (working)

Reasons: Removes the use of Morse telegraphy to allow the introduction of new HF data exchange technologies into the maritime mobile service.

ADD USA/AI 1.9/33

Section VI – Data transmission

Table of frequencies (kHz) assignable to ship and coast stations for data transmission (kHz)¹ to be used from 1 January 2017

Channel No.	4 MHz band		6 MHz band		8 MHz band	
	Coast TX (Ship RX)	Coast RX (Ship TX)	Coast TX (Ship RX)	Coast RX (Ship TX)	Coast TX (Ship RX)	Coast RX (Ship TX)
1	4 205 ²	4 205 ²	6 300.5 ²	6 300.5 ²	8 397.75 ²	8 397.75 ²
2	4 217.5	4 154.5	6 303.5 ²	6 303.5 ²	8 400.75 ²	8 400.75 ²
3	4 222.5 ³	4 157.5 ³	6 306.5 ²	6 306.5 ²	8 403.75 ²	8 403.75 ²
4	4 225.5 ³	4 160.5 ³	6 309.5 ²	6 309.5 ²	8 406.75 ²	8 406.75 ²
5	4 228.5 ³	4 163.5 ³	6 322 ³	6 235 ³	8 409.75 ²	8 409.75 ²
6	4 231.5 ³	4 166.5 ³	6 325 ³	6 238 ³	8 412.75 ²	8 412.75 ²
7	4 234.5 ³	4 169.5 ³	6 328 ³	6 241 ³	8 425.5 ³	8 302 ³
8	4 237.5	4 180	6 334	6 244	8 428.5 ³	8 305 ³
9	4 240.5	4 183.25	6 337	6 247	8 431.5 ³	8 308 ³
10	4 243.5 ³	4 186.25 ³	6 340	6 250	8 434.5 ³	8 311 ³
11	4 246.5 ³	4 189.25 ³	6 343	6 253	8 439.5	8 314
12	4 249.5 ³	4 192.25 ³	6 346	6 256	8 442.5	8 317
13	4 252.5 ³	4 195.25 ³	6 349	6 259	8 445.5	8 320
14	4 255.5 ³	4 198.25 ³	6 352	6 270.5	8 448.5	8 323

Channel No.	4 MHz band		6 MHz band		8 MHz band	
	Coast TX (Ship RX)	Coast RX (Ship TX)	Coast TX (Ship RX)	Coast RX (Ship TX)	Coast TX (Ship RX)	Coast RX (Ship TX)
15	4 258.5 ³	4 201.25 ³	6 355	6 273.5	8 451.5	8 326
16			6 358	6 276.5	8 454.5	8 329
17			6 361	6 279.5	8 457.5	8 332
18			6 364	6 282.5	8 460.5	8 335
19			6 367 ³	6 285.5 ³	8 463.5	8 338
20			6 370 ³	6 288.5 ³	8 466.5 ³	8 343.25 ³
21			6 373 ³	6 291.5 ³	8 469.5 ³	8 346.25 ³
22			6 376 ³	6 294.5 ³	8 472.5 ³	8 349.25 ³
23			6 379 ³	6 297.5 ³	8 475.5 ³	8 352.25 ³
24					8 478.5 ³	8 355.25 ³
25					8 481.5 ³	8 358.25 ³
26					8 484.5 ³	8 361.25 ³
27					8 487.5 ³	8 364.25 ³
28					8 490.5	8 368
29					8 493.5	8 371
30					8 496.5	8 374
31					8 499.5 ³	8 385.5 ³
32					8 502.5 ³	8 388.5 ³
33					8 505.5 ³	8 391.5 ³
34					8 508.5 ³	8 394.5 ³

¹ The data transmission shall be in accordance with the latest version of Recommendation ITU-R M.1798.

² Non-paired (simplex) operations only.

³ Assignable for wideband operation using multiple of 3 kHz bandwidth.

Table of frequencies (kHz) assignable to ship and coast stations for data transmission (kHz)¹ to be used from 1 January 2017

Channel No.	12 MHz		16 MHz		18/19 MHz	
	Coast TX (Ship RX)	Coast RX (Ship TX)	Coast TX (Ship RX)	Coast RX (Ship TX)	Coast TX (Ship RX)	Coast RX (Ship TX)
1	12 563.25 ²	12 563.25 ²	16 787.5 ²	16 787.5 ²	18 890.5 ²	18 890.5 ²
2	12 566.25 ²	12 566.25 ²	16 790.5 ²	16 790.5 ²	18 893.5 ²	18 893.5 ²
3	12 569.25 ²	12 569.25 ²	16 793.5 ²	16 793.5 ²	18 896.5 ²	18 896.5 ²
4	12 572.25 ²	12 572.25 ²	16 796.5 ²	16 796.5 ²	19 682.25	18 847.5
5	12 575.25 ²	12 575.25 ²	16 799.5 ²	16 799.5 ²	19 692.5 ³	18 850.5 ³
6	12 627 ³	12 370 ³	16 802.5 ²	16 802.5 ²	19 695.5 ³	18 853.5 ³
7	12 630 ³	12 373 ³	16 823.25 ³	16 551.5 ³	19 698.5 ³	18 856.5 ³
8	12 633 ³	12 376 ³	16 826.25 ³	16 554.5 ³	19 701.5 ³	18 859.5 ³
9	12 636 ³	12 379 ³	16 829.25 ³	16 557.5 ³	19 706.5	18 862.5
10	12 639 ³	12 382 ³	16 832.25 ³	16 560.5 ³	19 709.5	18 865.5

Channel No.	12 MHz		16 MHz		18/19 MHz	
	Coast TX (Ship RX)	Coast RX (Ship TX)	Coast TX (Ship RX)	Coast RX (Ship TX)	Coast TX (Ship RX)	Coast RX (Ship TX)
11	12 642 ³	12 385 ³	16 835.25 ³	16 563.5 ³	19 712.5	18 868.5
12	12 645 ³	12 388 ³	16 838.25 ³	16 566.5 ³	19 715.5	18 871.5
13	12 648 ³	12 391 ³	16 841.25 ³	16 569.5 ³	19 718.5	18 883.5
14	12 651 ³	12 394 ³	16 844.25 ³	16 572.5 ³	19 721.5	18 886.5
15	12 654 ³	12 397 ³	16 847.25 ³	16 575.5 ³		
16	12 660	12 400	16 850.25 ³	16 578.5 ³		
17	12 663	12 403	16 853.25 ³	16 581.5 ³		
18	12 666	12 406	16 856.25 ³	16 584.5 ³		
19	12 669	12 409	16 859.25 ³	16 587.5 ³		
20	12 672	12 412	16 862.25 ³	16 590.5 ³		
21	12 675	12 415	16 865.25 ³	16 593.5 ³		
22	12 678	12 418	16 868.25 ³	16 596.5 ³		
23	12 681 ³	12 423.75 ³	16 871.25 ³	16 599.5 ³		
24	12 684 ³	12 426.75 ³	16 874.25 ³	16 602.5 ³		
25	12 687 ³	12 429.75 ³	16 877.25 ³	16 605.5 ³		
26	12 690 ³	12 432.75 ³	16 880.25 ³	16 608.5 ³		
27	12 693 ³	12 435.75 ³	16 883.25 ³	16 611.5 ³		
28	12 696 ³	12 438.75 ³	16 886.25 ³	16 614.5 ³		
29	12 699	12 441.75	16 889.25	16 621		
30	12 702	12 444.75	16 892.25 ³	16 624 ³		
31	12 705	12 447.75	16 895.25 ³	16 627 ³		
32	12 708	12 450.75	16 898.25 ³	16 630 ³		
33	12 711 ³	12 453.75 ³	16 901.25 ³	16 633 ³		
34	12 714 ³	12 456.75 ³	16 906	16 636		
35	12 717 ³	12 459.75 ³	16 909	16 639		
36	12 720 ³	12 462.75 ³	16 912	16 642		
37	12 723 ³	12 465.75 ³	16 915	16 645		
38	12 726 ³	12 468.75 ³	16 918	16 648		
39	12 729 ³	12 471.75 ³	16 921	16 651		
40	12 732 ³	12 474.75 ³	16 924	16 654		
41	12 735	12 524.25	16 927	16 657		
42	12 738 ³	12 527.25 ³	16 930	16 660		
43	12 741 ³	12 530.25 ³	16 933	16 663		
44	12 744 ³	12 533.25 ³	16 936	16 666		
45	12 747 ³	12 536.25 ³	16 939	16 669		
46	12 750 ³	12 539.25 ³	16 942	16 672		
47	12 753 ³	12 542.25 ³	16 945	16 675		
48	12 756 ³	12 545.25 ³	16 948	16 678		
49	12 759 ³	12 548.25 ³	16 951	16 681		
50	12 762	12 551.25	16 954 ³	16 700.5 ³		
51	12 765	12 554.25	16 957 ³	16 703.5 ³		
52	12 768	12 557.25	16 960 ³	16 706.5 ³		
53	12 771	12 560.25	16 963 ³	16 709.5 ³		
54			16 966 ³	16 712.5 ³		
55			16 969 ³	16 715.5 ³		

Channel No.	12 MHz		16 MHz		18/19 MHz	
	Coast TX (Ship RX)	Coast RX (Ship TX)	Coast TX (Ship RX)	Coast RX (Ship TX)	Coast TX (Ship RX)	Coast RX (Ship TX)
56			16 972 ³	16 718.5 ³		
57			16 975 ³	16 721.5 ³		
58			16 978 ³	16 724.5 ³		
59			16 981 ³	16 727.5 ³		
60			16 984 ³	16 730.5 ³		
61			16 987 ³	16 733.5 ³		
62			16 990	16 736.5		
63			16 993	16 739.5		
64			16 996 ³	16 742.5 ³		
65			16 999 ³	16 745.5 ³		
66			17 002 ³	16 748.5 ³		
67			17 005 ³	16 751.5 ³		
68			17 008 ³	16 754.5 ³		
69			17 011 ³	16 757.5 ³		
70			17 014 ³	16 760.5 ³		
71			17 017 ³	16 763.5 ³		
72			17 020 ³	16 766.5 ³		
73			17 023 ³	16 769.5 ³		
74			17 026 ³	16 772.5 ³		
75			17 029 ³	16 775.5 ³		
76			17 032 ³	16 778.5 ³		
77			17 035 ³	16 781.5 ³		
78			17 038 ³	16 784.5 ³		

Table of frequencies (kHz) assignable to ship and coast stations
for data transmission (kHz) ¹ to be used from 1 January 2017

Channel No.	22 MHz		25/26 MHz	
	Coast TX (Ship RX)	Coast RX (Ship TX)	Coast TX (Ship RX)	Coast RX (Ship TX)
1	22 354 ²	22 354 ²	25 142 ²	25 142 ²
2	22 357 ²	22 357 ²	25 145 ²	25 145 ²
3	22 360 ²	22 360 ²	25 148 ²	25 148 ²
4	22 363 ²	22 363 ²	25 151 ²	25 151 ²
5	22 366 ²	22 366 ²	25 154 ²	25 154 ²
6	22 369 ²	22 369 ²	25 157 ²	25 157 ²
7	22 372 ²	22 372 ²	25 160 ²	25 160 ²
8	22 378	22 181.5	25 163 ²	25 163 ²
9	22 381	22 184.5	25 166 ²	25 166 ²
10	22 391 ³	22 187.5 ³	25 169 ²	25 169 ²
11	22 394 ³	22 190.5 ³	25 172 ²	25 172 ²
12	22 397 ³	22 193.5 ³	25 175 ²	25 175 ²
13	22 400 ³	22 196.5 ³	25 178 ²	25 178 ²
14	22 403 ³	22 199.5 ³	25 181 ²	25 181 ²
15	22 406 ³	22 202.5 ³	25 184 ²	25 184 ²
16	22 409 ³	22 205.5 ³	25 187 ²	25 187 ²
17	22 412 ³	22 208.5 ³	25 190 ²	25 190 ²
18	22 415 ³	22 211.5 ³	25 193 ²	25 193 ²
19	22 418 ³	22 214.5 ³	25 196 ²	25 196 ²
20	22 421 ³	22 217.5 ³	25 199 ²	25 199 ²
21	22 424 ³	22 220.5 ³	25 202 ²	25 202 ²
22	22 427 ³	22 223.5 ³	25 205 ²	25 205 ²
23	22 430 ³	22 226.5 ³	26 103.5 ³	25 123 ³
24	22 433 ³	22 229.5 ³	26 106.5 ³	25 126 ³
25	22 436 ³	22 232.5 ³	26 109.5 ³	25 129 ³
26	22 439 ³	22 235.5 ³	26 112.5 ³	25 132 ³
27	22 442 ³	22 238.5 ³	26 115.5 ³	25 135 ³
28	22 447	22 243.5	26 118.5 ³	25 138 ³
29	22 450	22 246.5		
30	22 453 ³	22 249.5 ³		
31	22 456 ³	22 252.5 ³		
32	22 459 ³	22 255.5 ³		
33	22 462 ³	22 258.5 ³		
34	22 465 ³	22 261.5 ³		
35	22 468 ³	22 264.5 ³		
36	22 471 ³	22 267.5 ³		
37	22 474 ³	22 270.5 ³		
38	22 477 ³	22 273.5 ³		
39	22 480 ³	22 276.5 ³		
40	22 483	22 279.5		
41	22 486	22 282.5		
42	22 489	22 286		
43	22 492	22 289		
44	22 495	22 299.5		
45	22 498	22 302.5		

Channel No.	22 MHz		25/26 MHz	
	Coast TX (Ship RX)	Coast RX (Ship TX)	Coast TX (Ship RX)	Coast RX (Ship TX)
46	22 501	22 305.5		
47	22 504	22 308.5		
48	22 507	22 311.5		
49	22 510	22 314.5		
50	22 513 ³	22 317.5 ³		
51	22 516 ³	22 320.5 ³		
52	22 519 ³	22 323.5 ³		
53	22 522 ³	22 326.5 ³		
54	22 525 ³	22 329.5 ³		
55	22 528 ³	22 332.5 ³		
56	22 531 ³	22 335.5 ³		
57	22 534 ³	22 338.5 ³		
58	22 537 ³	22 341.5 ³		
59	22 540 ³	22 344.5 ³		
60	22 543 ³	22 347.5 ³		
61	22 546 ³	22 350.5 ³		

Reasons: New Section VI provides channelization for data transmissions to be used after 1 January 2017.

ADD USA/AI 1.9/34

RESOLUTION [A1.9_NBDP] (WRC-12)

Application and abrogation of certain provisions of the Radio Regulations as revised by WRC-12

The World Radiocommunication Conference (Geneva, 2012),

considering

- a) that this conference has adopted a revision to the Radio Regulations (RR) in accordance with its terms of reference which will enter into force on [1 January 2013];
- b) that some of the provisions, as amended by this conference, need to apply as of a later date;
- c) that as a general rule, new and revised Resolutions and Recommendations enter into force at the time of signing of the Final Acts of a conference;
- d) that as a general rule, Resolutions and Recommendations which a WRC has decided to suppress are abrogated at the time of the signing of the Final Acts of the conference,

resolves

- 1 that, as of 1 January 2017, the following provisions of the RR, which are suppressed by this conference, shall be abrogated: "Table of frequencies for two-

frequency operation by coast stations (kHz) to be used before 1 January 2017”, Section II of Part B of Appendix 17;

2 that, as of 1 January 2017, the following provisions, as established by this conference, shall enter into force: “Table of frequencies for two-frequency operation by coast stations (kHz) to be used from 1 January 2017”, Section II of Part B of Appendix 17.

Reasons: The Resolution XYZ.NBDP allows for provisions in Appendix 17 to enter into force on the agreed date of 1 January, 2017.

MOD USA/AI 1.9/35

ARTICLE 59

Entry into force and provisional application of the Radio Regulations (WRC-200012)

Reasons: Update the WRC date for Article 59.

ADD USA/AI 1.9/36

59.A109 – the revised provisions for which other effective dates of application are stipulated in Resolution [A1.9_NBDP] (WRC-12):

Reasons: This reference to Resolution XYZ.NBDP allows for the transition date for the entry into force of provisions in Appendix 17 and suppress other provisions.

SUP USA/AI 1.9/37

RESOLUTION 351 (Rev.WRC-07)

Review of the frequency and channel arrangements in the HF bands allocated to the maritime mobile service contained in Appendix 17 with a view to improving efficiency through the use of new digital technology by the maritime mobile service

Reasons: The ITU-R completed work under this resolution.

UNITED STATES OF AMERICA
PROPOSALS FOR THE WORK OF THE CONFERENCE

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

Background Information: Oceanographic radars have been operating in the 3 to 50 MHz range for more than 30 years on an experimental, non-interference basis. Increased reliance on the data from these systems for maritime safety, oceanographic, climatological, meteorological and disaster response operations have driven the need to improve the regulatory status of oceanographic radars while taking into account the protection of existing allocated services. Oceanographic radars have an operational range on the order of 200 km. There is an increasing interest in the ability to accurately measure the currents and waves in coastal waters and to maintain awareness of ships for maritime domain awareness. Oceanographic radar systems operating at frequencies higher than 50 MHz are limited in their ability to provide data meeting the combined range, accuracy and resolution requirements. The global oceanography community is planning for the implementation of coastal oceanographic radar networks.

The potential benefits to society for improved measurement of coastal currents and sea state include a better understanding of issues like coastal pollution, fisheries management, search and rescue, beach erosion, maritime navigation and sediment transport. Oceanographic radar measurements of the sea surface provide support to meteorological operations through the collection of sea state and dominant ocean wave data. In addition, high-frequency surface wave radar technology has applications in global maritime domain awareness by allowing the long range sensing of surface vessels. This could benefit the safety and security of shipping and ports.

This agenda item begins the process of better organizing and reducing spectrum use for oceanographic radar operations. Current operations on a non-interference basis in bands without allocations covering oceanographic radars has resulted in uncoordinated use of frequencies globally. Allocated status and coordinated assignment procedures can reduce the number of frequencies in use and make the impact to other allocated users and band congestion much less.

Proposal:

ARTICLE 5

Frequency allocations

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

MOD USA/AI1.15/1**2 194-3 230 kHz**

Allocation to services		
Region 1	Region 2	Region 3
3 155-3 200	FIXED MOBILE except aeronautical mobile (R) <u>RADIOLOCATION ADD 5.YYY</u> 5.116 5.117	
3 200-3 230	FIXED MOBILE except aeronautical mobile (R) BROADCASTING 5.113 5.116	

Reasons: Provides spectrum for operation of oceanographic radars while minimizing impact to incumbent fixed and mobile service users.

MOD USA/AI1.15/2**3 230-5 003 kHz**

Allocation to services		
Region 1	Region 2	Region 3
4 438-4 650 FIXED MOBILE except aeronautical mobile (R) <u>RADIOLOCATION ADD 5.YYY</u>		4 438-4 650 FIXED MOBILE except aeronautical mobile <u>RADIOLOCATION ADD 5.YYY</u>
4 650-4 700	AERONAUTICAL MOBILE (R)	
4 700-4 750	AERONAUTICAL MOBILE (OR)	
4 750-4 850 FIXED AERONAUTICAL MOBILE (OR) LAND MOBILE BROADCASTING 5.113	4 750-4 850 FIXED MOBILE except aeronautical mobile (R) BROADCASTING 5.113	4 750-4 850 FIXED BROADCASTING 5.113 Land mobile
4 850-4 995	FIXED LAND MOBILE BROADCASTING 5.113	
4 995-5 003	STANDARD FREQUENCY AND TIME SIGNAL (5 000 kHz)	

Reasons: Provides spectrum for operation of oceanographic radars while minimizing impact to incumbent fixed and mobile service users.

MOD USA/AI1.15/3

5 003-7450 kHz

Allocation to services		
Region 1	Region 2	Region 3
5 003-5 005	STANDARD FREQUENCY AND TIME SIGNAL Space research	
5 005-5 060	FIXED BROADCASTING 5.113	
5 060-5 250	FIXED Mobile except aeronautical mobile 5.133	
5 250-5 450	FIXED MOBILE except aeronautical mobile RADIOLOCATION ADD 5.YYY	
5 450-5 480 FIXED AERONAUTICAL MOBILE (OR) LAND MOBILE	5 450-5 480 AERONAUTICAL MOBILE (R)	5 450-5 480 FIXED AERONAUTICAL MOBILE (OR) LAND MOBILE

Reasons: Provides spectrum for operation of oceanographic radars while minimizing impact to incumbent fixed and mobile service users.

MOD USA/AI1.15/4

13 360-18 030 kHz

Allocation to services		
Region 1	Region 2	Region 3
13 360-13 410	FIXED RADIO ASTRONOMY 5.149	
13 410-13 570	FIXED Mobile except aeronautical mobile (R) <u>RADIOLOCATION ADD 5.YYY</u> 5.150	
13 570-13 600	BROADCASTING 5.134 5.151	
13 600-13 800	BROADCASTING	
13 800-13 870	BROADCASTING 5.134 5.151	
13 870-14 000	FIXED Mobile except aeronautical mobile (R)	
14 000-14 250	AMATEUR AMATEUR-SATELLITE	
14 250-14 350	AMATEUR 5.152	
14 350-14 990	FIXED Mobile except aeronautical mobile (R) <u>RADIOLOCATION ADD 5.YYY</u>	

Reasons: Provides spectrum for operation of oceanographic radars while minimizing impact to incumbent fixed and mobile service users.

MOD USA/AII.15/5

23 350-27 500 kHz

Allocation to services		
Region 1	Region 2	Region 3
23 350-24 000	FIXED MOBILE except aeronautical mobile 5.157	
24 000-24 890	FIXED LAND MOBILE	
24 890-24 990	AMATEUR AMATEUR-SATELLITE	
24 990-25 005	STANDARD FREQUENCY AND TIME SIGNAL (25 000 kHz)	
25 005-25 010	STANDARD FREQUENCY AND TIME SIGNAL Space research	
25 010-25 070	FIXED MOBILE except aeronautical mobile	
25 070-25 210	MARITIME MOBILE	
25 210-25 550 <u>330</u>	FIXED MOBILE except aeronautical mobile	
<u>25 330-25 550</u>	FIXED MOBILE except aeronautical mobile RADIOLOCATION ADD 5.YYY	
25 550-25 670	RADIO ASTRONOMY 5.149	
25 670-26 100	BROADCASTING	
26 100-26 175	MARITIME MOBILE 5.132	
26 175-26 200 <u>7 500</u>	FIXED MOBILE except aeronautical mobile 5.150	
<u>26 200-26 420</u>	FIXED MOBILE except aeronautical mobile RADIOLOCATION ADD 5.YYY 5.150	
<u>26 420-27 500</u>	FIXED MOBILE except aeronautical mobile 5.150	

Reasons: Provides spectrum for operation of oceanographic radars while minimizing impact to incumbent fixed and mobile service users.

MOD USA/AI1.15/6

27.5-47 MHz

Allocation to services		
Region 1	Region 2	Region 3
<u>41.015-4441.665</u>	FIXED MOBILE 5.160 5.161 <u>RADIOLOCATION ADD 5.YYY</u>	
<u>41.665-43.35</u>	<u>FIXED</u> <u>MOBILE</u> 5.160 5.161	
<u>43.35-44</u>	FIXED MOBILE <u>RADIOLOCATION ADD 5.YYY</u> 5.160 5.161	
<u>44-47</u>	FIXED MOBILE 5.162 5.162A	

Reasons: Provides spectrum for operation of oceanographic radars while minimizing impact to incumbent fixed and mobile service users.

ADD USA/AI1.15/7

5.YYY Stations in the radiolocation service shall not cause harmful interference to, nor claim protection from, stations operating in the fixed and mobile services. Resolution **612 (Rev. WRC-12)** shall apply. (WRC-12)

Reasons: Provides spectrum for operation of oceanographic radars while minimizing impact to incumbent services through use of spectrum management practices that make assignments to avoid existing fixed and mobile service users.

MOD USA/A11.15/8

RESOLUTION 612 (Rev. WRC-1207)

Use of the radiolocation service between 3 and 50 MHz to support ~~high frequency~~ oceanographic radar operations

The World Radiocommunication Conference (Geneva, 201207),

considering

- a) that there is increasing interest, on a global basis, in the operation of ~~high frequency~~ oceanographic radars for measurement of coastal sea surface conditions to support environmental, oceanographic, meteorological, climatological, maritime and disaster mitigation operations;
- b) that ~~high frequency~~ oceanographic radars are also known in parts of the world as HF ocean radars, HF wave height sensing radars or HF surface wave radars;
- c) that ~~high frequency~~ oceanographic radars operate through the use of ground-wave propagation;
- d) that ~~high frequency~~ oceanographic radar technology has applications in global maritime domain awareness by allowing the long-range sensing of surface vessels, which provides a benefit to the global safety and security of shipping and ports;
- e) that operation of ~~high frequency~~ oceanographic radars provides benefits to society through environmental protection, disaster preparedness, public health protection, improved meteorological operations, increased coastal and maritime safety and enhancement of national economies;
- f) that ~~high frequency~~ oceanographic radars have been operated on an experimental basis around the world, providing an understanding of spectrum needs and spectrum sharing considerations, as well as an understanding of the benefits these systems provide;
- ~~g) that between 3 and 50 MHz, no radiolocation allocations exist;~~
- h) that performance and data requirements dictate the regions of spectrum that can be used by ~~high frequency~~ oceanographic radar systems for ocean observations,

recognizing

- a) that ~~high frequency~~ oceanographic radars have been operated on an experimental basis ~~for more than 30 years~~ since the 1970s by several administrations;
- b) that developers of the experimental systems have implemented techniques to make the most efficient use of the spectrum and mitigate interference to other radio services;
- ~~e) that the objective of Question ITU-R 240/8 is to study the most appropriate frequency bands for the operation of high frequency oceanographic radars considering both radar system requirements and the protection of existing services;~~

c) that for the purpose of protecting existing services from interference, oceanographic radars shall not exceed a power flux-density at interfering points with an I/N ratio of -6 dB where refer to Recommendation ITU-R P.372-9 radio noise for quiet rural and rural;

d) that high-frequency oceanographic radars operate with peak power levels on the order of 50 W that for the purpose of protecting existing services from interference, oceanographic radars' impact via ground-wave propagation can be checked by Report ITU-R M.[RLS 3-50 MHz SHARING] based on Recommendation ITU-R P.368-9 and P.1546-3;:

e) that use of natural terrain shielding can, when present, reduce the potential interference impact to co-allocated services,

resolves

1 to invite ITU-R to identify high-frequency oceanographic radar system applications between 3 and 50 MHz, including bandwidth requirements, appropriate portions of this band for these applications, and other characteristics necessary to conduct sharing studies;

1 that oceanographic radars should be notified to the Bureau in accordance with No. 11.2 of the Radio Regulations; and

2 that each oceanographic radar station shall transmit a station identification (call sign) at an interval of no more than 60 minutes, at times when it is in operation;

2 to invite ITU-R to conduct sharing analyses between the radiolocation service applications identified under *resolves* 1 and incumbent services in the bands identified to be suitable for the operation of high-frequency oceanographic radar systems;

3 that oceanographic radars shall not operate with a peak e.i.r.p. of more than 25 dBW;

3 that, if compatibility with existing services is confirmed under *resolves* 2, to recommend that WRC-11 consider allocations to the radiolocation service in several suitable bands between 3 and 50 MHz, as determined in the ITU-R studies, each band not exceeding 600 kHz, for the operation of oceanographic radars,

4 that oceanographic radars should use techniques that allow multiple radars to operate on the same frequency, reducing to a minimum the spectral occupancy of a regional or global deployment of radars;

5 that oceanographic radars should use directional antennas, where applicable and as required, to facilitate sharing with a co-allocated station, thereby reducing the propagation in the direction of the transmit antenna backlobe;

6 that agreements between administrations may reduce distances between an oceanographic radar and the border of a neighbouring country to less than those specified in the following table:

<u>Frequency (MHz)</u>	<u>Land path (km)</u>		<u>Sea or mixed path (km)</u>	
	<u>Rural</u>	<u>Quiet rural</u>	<u>Rural</u>	<u>Quiet rural</u>
<u>5 (± 1 MHz)</u>	<u>120</u>	<u>170</u>	<u>790</u>	<u>920</u>

<u>13</u> (± 1 MHz)	<u>100</u>	<u>110</u>	<u>480</u>	<u>520</u>
<u>25</u> (± 3 MHz)	<u>80</u>	<u>100</u>	<u>280</u>	<u>320</u>
<u>42</u> (± 3 MHz)	<u>80</u>	<u>100</u>	<u>200</u>	<u>230</u>

instructs the Secretary-General

~~to bring this resolution to the attention of the International Maritime Organization (IMO), World Meteorological Organization (WMO) and other international and regional organizations concerned.~~*invites administrations*

~~to contribute to the sharing studies between the radiolocation service and incumbent services in portions of the 3 to 50 MHz band identified as suitable for high-frequency oceanographic radar operations;~~

invites ITU-R

~~to complete the necessary studies, as a matter of urgency, taking into account the present use of the allocated band, with a view to presenting, at the appropriate time, the technical information likely to be required as a basis for the work of WRC-11;~~

Reasons: Provides limits and requirements for oceanographic radars to ensure protection of incumbent fixed and mobile service users.

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

Agenda Item 1.16: *to consider the needs of passive systems for lightning detection in the meteorological aids service, including the possibility of an allocation in the frequency range below 20 kHz, and to take appropriate action, in accordance with Resolution 671 (WRC-07)*

Background Information: Resolution 671 (WRC-07) resolves to invite the ITU-R to conduct and complete studies related to lightning detection to enable a decision on an appropriate method for providing recognition, including the possibility of making an allocation, to the meteorological aids service in the frequency range below 20 kHz.

The automated Arrival Time Difference (ATD) system uses the time differences of signal received to derive lightning strike locations. Meteorological organizations analyze the data from the ATD system and provide forecasts to assist safety of life, public safety and aviation operations. Recent ITU-R studies show the optimal frequency for ATD measurements is around 9.76 kHz.

Recommendation ITU-R RS.[20 kHz ATD PROTECTION] determined lightning detection systems are optimized with a 3 kHz bandwidth signal from 8.3 - 11.3 kHz. Any interference in the lower portion, i.e. 8.3 - 9 kHz, would impact the whole system. Therefore, it is important to protect the full range of the signal to ensure that the systems will be able to use their allocated band without interference.

Proposal:

ARTICLE 5

Frequency allocations

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

MOD USA/1.16/1

98.3-110 kHz

Allocation to services		
Region 1	Region 2	Region 3
<u>Below 98.3</u>	(Not allocated) <u>MOD 5.53 MOD 5.54</u>	
<u>8.3-9</u>	<u>METEOROLOGICAL AIDS</u> <u>ADD 5.C116</u>	
<u>9-1411.3</u>	<u>METEOROLOGICAL AIDS</u> <u>RADIONAVIGATION</u> <u>ADD 5.C116</u>	
<u>11.3-14</u>	<u>RADIONAVIGATION</u>	
....		

Reasons: A primary allocation to the meteorological aids service in 8.3-11.3 kHz will protect the lightning detection systems from users operating under No. 4.4. Interference in the lower portion, i.e. 8.3-9 kHz, is expected to impact the whole system.

MOD USA/1.16/2

5.53 Administrations authorizing the use of frequencies below 9-8.3 kHz shall ensure that no harmful interference is caused thereby to the services to which the bands above 98.3 kHz are allocated.

Reasons: Consequential to the meteorological aids service primary allocation in the 8.3-9 kHz frequency band.

MOD USA/1.16/3

5.54 Administrations conducting scientific research using frequencies below 9-8.3 kHz are urged to advise other administrations that may be concerned in order that such research may be afforded all practicable protection from harmful interference.

Reasons: Consequential to the meteorological aids service primary allocation in the 8.3-9 kHz frequency band.

ADD USA/1.16/4

5.C116 Use of the band 8.3-11.3 kHz by the meteorological aids service is limited to passive use. In the 9-11.3 kHz band, meteorological aids service stations shall not claim protection from stations of the radionavigation service submitted for notification to the Bureau prior to the [date of entry into force of WRC-12 Final Acts]. For sharing between stations of the meteorological aids service and stations in the radionavigation service submitted after this date the most recent version of Recommendation ITU-R RS.[20 kHz ATD PROTECTION] should be applied.

Reasons: To protect passive lightning detection systems below 20 kHz and support a meteorological aids service allocation, limited to passive use, under the condition that no undue constraints are placed on existing services.

SUP USA/1.16/5

RESOLUTION 671 (WRC-07)

Recognition of systems in the meteorological aids service in the frequency range below 20 kHz

Reasons: The ITU-R completed the required studies for this agenda item.

UNITED STATES OF AMERICA

PROPOSALS FOR THE WORK OF THE CONFERENCE

Agenda Item 1.21: *to consider a primary allocation for radiolocation services in the band 15.4-15.7 GHz, taking into account the results of ITU-R studies, in accordance with Resolution 614 (WRC-07)*

Background Information: Resolution 614 (WRC-07) calls for WRC-12 to consider a new primary radiolocation service allocation in the band 15.4-15.7 GHz to provide additional spectrum for new radar systems to increase image resolution and range accuracy. These advanced radars require wider emission bandwidths than currently available. Operation of these radars must not adversely affect other co-primary services in the band, or the radio astronomy service in the adjacent band 15.35-15.40 GHz.

ITU-R studies demonstrate compatibility between the radiolocation service and other services allocated in the 15.4-15.7 GHz band. Report ITU-R M.2170 addresses compatibility between radiolocation and radionavigation, fixed satellite systems in this band and radio astronomy in the 15.3-15.4 GHz adjacent band. These latter studies demonstrate that sharing between these types of systems in the band 15.4-15.7 GHz is feasible, provided the systems maintain appropriate separation distances. The ITU-R studies used technical characteristics and protection criteria of System 6 in Recommendation ITU-R M.1730 to represent the radiolocation radars proposed for the band 15.4-17.3 GHz. Recommendation ITU-R M.1372 identifies interference mitigation techniques that ensure compatibility among radar systems operating in different radiodetermination services. Additionally, Report ITU-R M.2076 contains further mitigation techniques for interference from radiolocation radars into radionavigation radars operating in the 9 GHz band.

This proposal does not preclude consideration of additional AMS(R)S or AM(R)S allocations in this band under WRC-12 agenda item 1.3 or a similar agenda item for WRC-16, if necessary.

Proposal:

ARTICLE 5

Frequency allocations

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

MOD USA/AI1.21/1

15.4-18.4 GHz

Allocation to services		
Region 1	Region 2	Region 3
15.4-15.43	AERONAUTICAL RADIONAVIGATION <u>RADIOLOCATION 5.RLS 5.YYY</u> 5.511D	
15.43-15.63	FIXED-SATELLITE (Earth-to-space) 5.511A AERONAUTICAL RADIONAVIGATION <u>RADIOLOCATION 5.RLS 5.YYY</u> 5.511C	
15.63-15.7	AERONAUTICAL RADIONAVIGATION <u>RADIOLOCATION 5.RLS 5.YYY</u> 5.511D	

Reasons: This allocation will provide additional spectrum for new advanced radar systems. This additional bandwidth will provide an increase in image resolution and range accuracy.

ADD USA/AI1.21/2

5.RLS In the band 15.4-15.7 GHz, stations operating in the radiolocation service shall not cause harmful interference to, nor claim protection from, stations operating in the aeronautical radionavigation service.

Reasons: This footnote minimizes the impact to incumbent services through use of spectrum management practices to preclude interference with existing services.

ADD USA/AI1.21/3

5.YYY In order to protect the radio astronomy service in the band 15.35-15.4 GHz, radiolocation stations operating in the 15.4-15.7 GHz band shall not exceed the power flux density level of $-156 \text{ dB(W/m}^2\text{)}$ in the 15.35-15.4 GHz, at any radio astronomy observatory site for more than 2% of the time.

Reasons: This footnote minimizes the impact to incumbent services through use of spectrum management practices to preclude interference with existing services.

SUP USA/A11.21/4

RESOLUTION 614 (WRC-07)

Use of the band 15.4-15.7 GHz by the radiolocation service

Reasons: Studies are complete and no further action is required.

UNITED STATES OF AMERICA
PROPOSALS FOR THE WORK OF THE CONFERENCE

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

Background Information: WRC-12 will consider possible allocations to the mobile-satellite service (MSS), particularly in the 4-16 GHz range, based on the results of ITU-R sharing and compatibility studies and without placing undue constraints on the existing services. The ITU-R studies to date on some of the possible bands indicate difficulties in sharing with existing services. For other possible bands, the ITU-R did not conduct studies. Therefore, this proposal advocates no change in the spectrum allocations for the bands 5 150 – 5 250, 7 055 – 7 250, and 8 400 – 8 500 MHz and 10.5 – 10.6, 13.25 – 13.4, and 15.43 – 15.63 GHz due to the results of the ITU-R sharing studies.

Proposal:

NOC USA/1.25/1

ARTICLE 5

Frequency allocations

Section IV – Table of Frequency Allocations

(See No. 2.1)

Reasons: Studies have shown that compatibility between the MSS and the existing services in the frequency bands 5 150 – 5 250, 7 055 – 7 250, and 8 400 – 8 500 MHz, and 10.5 – 10.6, 13.25 – 13.4, and 15.43 – 15.63 GHz will be difficult if not impossible to achieve. There are insufficient assurances that the existing services will be able to operate without unacceptable interference from the MSS.

SUP USA/1.25/2

RESOLUTION 231 (WRC-07)

**Additional allocations to the mobile-satellite service with
particular focus on the bands between 4 GHz and 16 GHz**

Reasons: The ITU-R has completed studies under this Resolution for WRC-12.

UNITED STATES OF AMERICA

PROPOSALS FOR THE WORK OF THE CONFERENCE

Agenda Item 2: *to examine the revised ITU-R Recommendations incorporated by reference in the Radio Regulations communicated by the Radiocommunication Assembly, in accordance with Resolution 28 (Rev.WRC-03), and to decide whether or not to update the corresponding references in the Radio Regulations, in accordance with principles contained in the Annex 1 to Resolution 27 (Rev.WRC-07)*

Background Information: A number of provisions of the Radio Regulations incorporate by reference specific versions of ITU-R Recommendations. As these referenced ITU-R Recommendations are updated at future ITU-R meetings, it is then necessary for later WRCs to review the corresponding Radio Regulations to see if the references they contain should be revised to reflect the new version of the cited ITU-R Recommendation. Otherwise, the older version of the ITU-R Recommendation remains in effect. As a result, this is a standing item on every WRC agenda, and its main purpose is to examine revised ITU-R Recommendations to determine their suitability for incorporation by reference.

Resolution 27 (Rev.WRC-07) provides principles and procedures for use of incorporation by reference in the Radio Regulations. WRC-07 made improvements to Resolution 27. In particular, WRC-07 updated the Resolution with an additional principle stating that where a mandatory reference to an ITU-R Recommendation is included in the *resolves* of a WRC Resolution, which is itself cited in a provision or footnote using mandatory language, that ITU-R Recommendation shall also be considered as incorporated by reference. Also, the revised resolution provides further clarification for the application of mandatory and non-mandatory references. Resolution 28 (Rev.WRC-03) directs WRCs to review ITU-R Recommendations incorporated by reference in the Radio Regulations that have been revised during the elapsed study period (based on the list to be provided by the Radiocommunication Assembly).

These Resolutions provide clear instructions and guidance for both the Radiocommunication Bureau and administrations to assist them in their preparations for future conferences. To facilitate this task, the Report of the Director of the Radiocommunication Bureau to the Conference Preparatory Meeting (CPM) is to include an initial list of those ITU-R Recommendations containing texts incorporated by reference that have been revised or approved since the previous WRC, or that may be revised in time for the upcoming WRC. The Report will also identify the provisions and footnotes to the Radio Regulations containing references to 1) ITU-R recommendations, and 2) WRC resolutions that contain references to ITU-R recommendations, and propose suggestions on any future action.

WRC-12 could revise the "Table of Contents" in RR Volume 4 to include, for each of the ITU-R recommendations incorporated by reference (or portions thereof), the corresponding mandatory reference(s) in the RR. An example of a revised table of

contents, based on the 2008 edition of the RR, can be found in attachment 1 to this document. Note that the Radiocommunication Bureau may wish to review the proposed additions for completeness. A reference table in this manner would be useful for general reference purposes and would also assist administrations in their preparatory work for this agenda item prior to CPM and WRC. Each WRC would need to revise this table and provide appropriate instructions to the Bureau and General Secretariat for its inclusion in Volume 4 of the subsequent edition of the RR. To implement these changes, some revisions to Resolution 27 (Rev. WRC-07) are required.

Proposals:

MOD USA/2/1

RESOLUTION 27 (REV.WRC-0712)

Use of incorporation by reference in the Radio Regulations

The World Radiocommunication Conference (Geneva, 201207),

considering

a) that the principles of incorporation by reference were adopted by WRC-95, and revised by subsequent conferences ~~WRC-97 and further refined by WRC-2000~~ (see Annexes 1 and 2 to this Resolution);

b) that there are provisions in the Radio Regulations containing references which fail to distinguish adequately whether the status of the referenced text is mandatory or non-mandatory,

noting

that references to Resolutions or Recommendations of a world radiocommunication conference (WRC) require no special procedures, and are acceptable for consideration, since such texts will have been agreed by a WRC,

resolves

1 that for the purposes of the Radio Regulations, the term “incorporation by reference” shall only apply to those references intended to be mandatory;

2 that when considering the introduction of new cases of incorporation by reference, such incorporation shall be kept to a minimum and made by applying the following criteria:

- only texts which are relevant to a specific WRC agenda item may be considered;

- the correct method of reference shall be determined on the basis of the principles set out in Annex 1 to this Resolution;
 - the guidance contained in Annex 2 to this Resolution shall be applied in order to ensure that the correct method of reference for the intended purpose is employed;
- 3 that the procedure described in Annex 3 to this Resolution shall be applied for approving the incorporation by reference of ITU-R Recommendations or parts thereof;
- 4 that existing references to ITU-R Recommendations shall be reviewed to clarify whether the reference is mandatory or non-mandatory in accordance with Annex 2 to this Resolution;
- 5 that ITU-R Recommendations, or parts thereof, incorporated by reference at the conclusion of each WRC, and a cross reference list of the corresponding references (e.g. Articles, Resolutions, etc.) to these referenced texts in the Radio Regulations, shall be collated and published in a volume of the Radio Regulations (see Annex 3 to this Resolution),

instructs the Director of the Radiocommunication Bureau

- 1 to bring this Resolution to the attention of the Radiocommunication Assembly and the ITU-R Study Groups;
- 2 to identify the provisions and footnotes of the Radio Regulations containing references to ITU-R Recommendations and make suggestions on any further action to the second session of the Conference Preparatory Meeting (CPM) for its consideration, as well as for inclusion in the Director's Report to the next WRC;
- 3 to identify the provisions and footnotes of the Radio Regulations containing references to WRC Resolutions that contain references to ITU-R Recommendations, and make suggestions on any further action to the second session of the Conference Preparatory Meeting (CPM) for its consideration, as well as for inclusion in the Director's Report to the next WRC,

invites administrations

to submit proposals to future conferences, taking into account the CPM Report, in order to clarify the status of references, where ambiguities remain regarding the mandatory or non-mandatory status of the references in question, with a view to amending those references:

- i) that appear to be of a mandatory nature, identifying such references as being incorporated by reference by using clear linking language in accordance with Annex 2;
- ii) that are of a non-mandatory character, so as to refer to "the most recent version" of the Recommendations.

Reasons: MOD to resolves 5 includes the concept that, for each ITU-R Recommendation incorporated by reference and published in Volume 4 of the Radio Regulations, the corresponding references in the RR are to be included. Also, the MOD to considering a) is intended to capture, yet simplify the concept that this Resolution was revised by WRC-97, WRC-2000, WRC-03 and WRC-07 and may be revised at WRC-12 and future conferences.

NOC USA/2/2

ANNEX 1 TO RESOLUTION 27 (REV.WRC-07)

Principles of incorporation by reference

Reasons: No change is needed for Annex 1.

NOC USA/2/3

ANNEX 2 TO RESOLUTION 27 (REV.WRC-07)

Application of incorporation by reference

Reasons: No change is needed for Annex 2.

MOD USA/2/4

ANNEX 3 TO RESOLUTION 27 (REV.WRC-1207)

Procedures applicable by WRC for approving the incorporation by reference of ITU-R Recommendations or parts thereof

The referenced texts shall be made available to delegations in sufficient time for all administrations to consult them in the ITU languages. A single copy of the texts shall be made available to each administration as a conference document.

During the course of each WRC, a list of the texts incorporated by reference, and a cross reference list of the corresponding references (e.g. Articles, Resolutions, etc.) to these referenced texts in the Radio Regulations shall be developed and maintained by the committees. This list shall be published as a conference document in line with developments during the conference.

Following the end of each WRC, the Bureau and General Secretariat will update the volume of the Radio Regulations which serves as the repository of texts incorporated by reference in line with developments at the conference as recorded in the above-mentioned document.

Reasons: MOD to Annex 3 includes the concept that the list of the texts incorporated by reference prepared at the conference include the corresponding references in the RR and that, following the end of each WRC, the Bureau and General Secretariat are to update Volume 4 of the RR based on these texts and the developments at the conference.

ATTACHMENT 1
(Example of Revised Table of Contents to Volume 4 of the RR)

**List of ITU-R Recommendations incorporated by reference
in Volume 4 of the Radio Regulations (Edition of 2008)**

TABLE OF CONTENTS

Recommendation ITU-R	Title of the Recommendation	<u>Parts of the RR including references to the ITU-R Rec.</u>	Page
TF.460-6	Standard-frequency and time-signal emissions	<u>No. 1.14</u>	1
M.476-5	Direct-printing telegraph equipment in the maritime mobile service	<u>Nos. 19.83, 19.96A, 51.41</u>	7
M.489-2	Technical characteristics of VHF radiotelephone equipment operating in the maritime mobile service in channels spaced by 25 kHz	<u>Nos. 51.77, 52.231, Appendix 18 Notes referring to the Table note e)</u>	19
M.492-6	Operational procedures for the use of direct-printing telegraph equipment in the maritime mobile service	<u>Nos. 56.2</u>	21
P.525-2	Calculation of free-space attenuation	<u>No. 5.444B + Resolution 748 (WRC-07) resolves 3</u>	31
P.526-10	Propagation by diffraction	<u>No. 5.444B + Resolution 748 (WRC-07) resolves 3</u>	35
M.541-9	Operational procedures for the use of digital selective-calling equipment in the maritime mobile service	<u>Nos. 51.35, 52.112, 52.149, 52.153, 54.2</u>	73
M.585-4 (Annexes 1 to 5)	Assignment and use of maritime mobile service identities (See Annexes 1 to 5)	<u>Nos. 19.99, 19.102, 19.111</u>	111

Recommendation ITU-R	Title of the Recommendation	<u>Parts of the RR including references to the ITU-R Rec.</u>	Page
M.625-3	Direct-printing telegraph equipment employing automatic identification in the maritime mobile service	<u>Nos. 19.83, 51.41</u>	119
M.633-3	Transmission characteristics of a satellite emergency position-indicating radio beacon (satellite EPIRB) system operating through a satellite system in the 406 MHz band	<u>No. 34.1</u>	179
S.672-4	Satellite antenna radiation pattern for use as a design objective in the fixed-satellite service employing geostationary satellites	<u>Article 22 Table 22-2 (and 22.5D.3), Table 22-3 (and 22.5F.3)</u>	181
M.690-1	Technical characteristics of emergency position-indicating radio beacons (EPIRBs) operating on the carrier frequencies of 121.5 MHz and 243 MHz	<u>Appendix 15 Table 15-2</u>	207
P.838-3	Specific attenuation model for rain for use in prediction methods	<u>Appendix 30A Annex 3 § 2.2</u>	209
M.1084-4	Interim solutions for improved efficiency in the use of the band 156-174 MHz by stations in the maritime mobile service (See Tables 1 and 3 of Annex 4)	<u>Appendix 18, NOTE B (prior to the table)</u>	217
SM.1138-1	Determination of necessary bandwidths including examples for their calculation and associated examples for the designation of emissions	<u>Appendix 1 § 1 2) and § 2 3.1)</u>	229

Recommendation ITU-R	Title of the Recommendation	<u>Parts of the RR including references to the ITU-R Rec.</u>	Page
SA.1154	Provisions to protect the space research (SR), space operations (SO) and Earth-exploration satellite services (EES) and to facilitate sharing with the mobile service in the 2 025-2 110 MHz and 2 200-2 290 MHz bands	<u>No. 5.391</u>	237
M.1171	Radiotelephony procedures in the maritime mobile service	<u>Nos. 52.192, 52.195, 52.213, 52.224, 52.234, 52.240, 57.1,</u>	267
M.1172	Miscellaneous abbreviations and signals to be used for radiocommunications in the maritime mobile service	<u>Nos. 19.48</u>	277
M.1173	Technical characteristics of single-sideband transmitters used in the maritime mobile service for radiotelephony in the bands between 1 606.5 kHz (1 605 kHz Region 2) and 4 000 kHz and between 4 000 kHz and 27 500 kHz	<u>Nos. 52.181, 52.229, Appendix 17 Part B § 6 a) and b)</u>	311
M.1174-2	Technical characteristics of equipment used for on-board vessel communications in the bands between 450 and 470 MHz	<u>No. 5.287, 5.288</u>	313
M.1187-1	A method for the calculation of the potentially affected region for a mobile-satellite service network in the 1-3 GHz range using circular orbits	<u>Appendix 4 Annex 2 item C.11.b</u>	315

Recommendation ITU-R	Title of the Recommendation	<u>Parts of the RR including references to the ITU-R Rec.</u>	Page
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RS.1260-1	Feasibility of sharing between active spaceborne sensors and other services in the range 420-470 MHz	<u>No. 5.279A</u>	329
BO.1293-2 (Annexes 1 and 2)	Protection masks and associated calculation methods for interference into broadcast-satellite systems involving digital emissions	<u>Appendix 30</u> <u>Annex 5 § 3.4,</u> <u>Appendix 30A</u> <u>Annex 3 § 3.3</u>	345
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S.1341	Sharing between feeder links for the mobile-satellite service and the aeronautical radionavigation service in the space-to-Earth direction in the band 15.4-15.7 GHz and the protection of the radio astronomy service in the band 15.35-15.4 GHz	<u>No. 5.511A</u>	373
S.1428-1	Reference FSS earth-station radiation patterns for use in interference assessment involving non-GSO satellites in frequency bands between 10.7 GHz and 30 GHz	<u>Article 22 Table 22-1A (and 22.5C.6), Table 22-1B (and 22.5C.6), Table 22-1C (and 22.5C.6)</u>	387

Recommendation ITU-R	Title of the Recommendation	<u>Parts of the RR including references to the ITU-R Rec.</u>	Page
BO.1443-2 (Annex 1)	Reference BSS earth station antenna patterns for use in interference assessment involving non-GSO satellites in frequency bands covered by RR Appendix 30	<u>Article 22 Table 22-1D (and 22.5C.11)</u>	391
M.1583	Interference calculations between non-geostationary mobile-satellite service or radionavigation-satellite service systems and radio astronomy telescope sites	<u>No. 5.443B + Resolution 741 (WRC-03) resolves 2, Appendix 4 Annex 2 item A.17.b.3 + Resolution 741 (WRC-03) resolves 2</u>	399
S.1586-1	Calculation of unwanted emission levels produced by a non-geostationary fixed-satellite service system at radio astronomy sites	<u>No. 5.551H</u>	409
F.1613	Operational and deployment requirements for fixed wireless access systems in the fixed service in Region 3 to ensure the protection of systems in the Earth exploration-satellite service (active) and the space research service (active) in the band 5 250-5 350 MHz	<u>No. 5.447E</u>	417

Recommendation ITU-R	Title of the Recommendation	<u>Parts of the RR including references to the ITU-R Rec.</u>	Page
RA.1631	Reference radio astronomy antenna pattern to be used for compatibility analyses between non-GSO systems and radio astronomy service stations based on the epfd concept	No. <u>5.551H</u> , No. <u>5.443B</u> + <u>Resolution 741</u> <u>(WRC-03)</u> <i>resolves 2</i> <u>Appendix 4</u> <u>Annex 2 item</u> <u>A.17.b.3</u> + <u>Resolution 741</u> <u>(WRC-03)</u> <i>resolves 2</i>	433
RS.1632	Sharing in the band 5 250-5 350 MHz between the Earth exploration-satellite service (active) and wireless access systems (including radio local area networks) in the mobile service	No. <u>5.447F</u>	437
M.1638	Characteristics of and protection criteria for sharing studies for radiolocation, aeronautical radionavigation and meteorological radars operating in the frequency bands between 5 250 and 5 850 MHz	Nos. <u>5.447F</u> , <u>5.450A</u>	465
M.1642-2	Methodology for assessing the maximum aggregate equivalent power flux-density at an aeronautical radionavigation service station from all radionavigation-satellite service systems operating in the 1 164-1 215 MHz band	No. <u>5.328A</u> + <u>Resolution 609</u> <u>(Rev.WRC-07)</u> <i>resolves 10</i>	475

Recommendation ITU-R	Title of the Recommendation	<u>Parts of the RR including references to the ITU-R Rec.</u>	Page
M.1643 (Annex 1)	Technical and operational requirements for aircraft earth stations of aeronautical mobile-satellite service including those using fixed-satellite service network transponders in the band 14-14.5 GHz (Earth-to-space)	Nos. <u>5.504B</u> , <u>5.504C</u> , <u>5.508A</u> , <u>5.509A</u>	491
M.1652 (Annex 1)	Dynamic frequency selection (DFS) in wireless access systems including radio local area networks for the purpose of protecting the radiodetermination service in the 5 GHz band (See Annex 1)	No. <u>5.446A</u> + <u>Resolution 229</u> <u>(WRC-03)</u> <i>resolves 8</i>	497
M.1827	Technical and operational requirements for stations of the aeronautical mobile (R) service (AM(R)S) limited to surface application at airports and for stations of the aeronautical mobile service (AMS) limited to aeronautical security (AS) applications in the band 5 091-5 150 MHz	No. <u>5.444B</u> + <u>Resolution 419</u> <u>(WRC-07)</u> <i>resolves 2</i> , No. <u>5.444B</u> + <u>Resolution 748</u> <u>(WRC-07)</u> <i>resolves 2</i>	517

UNITED STATES OF AMERICA

PROPOSALS FOR THE WORK OF THE CONFERENCE

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

Issue: To review the resolutions and recommendations in the Radio Regulations and to identify potential modifications or suppressions.

Background: This is a standing item on every WRC agenda and its purpose is to examine the WRC resolutions and recommendations for editorial corrections as well as suppressions due to completion of work or material being superseded by other work. This includes consequential suppression or modification of resolutions associated with WRC-12 agenda items.

Emergency telecommunications has been identified as a top priority for all ITU Member States. Since WRC-07, the United States has actively supported the work of the ITU in all three sectors related to use of telecommunications/ICTs for disaster prediction, mitigation, relief, response and recovery. In order to take account of developments since 2007 and to reinforce the importance of ongoing work in the ITU Radiocommunication Sector in support of emergency telecommunications, the United States proposes modification of Resolution 644 (Rev. WRC-07) "Radiocommunication resources for early warning, disaster mitigation and relief operations" and Resolution 647 (WRC-07) "Spectrum management guidelines for emergency and disaster relief radiocommunication."

Proposal:

RESOLUTION 644 (Rev.WRC-1207)

Radiocommunication resources for early warning, disaster mitigation and relief operations

The World Radiocommunication Conference (Geneva, 201207),

considering

- a) that administrations have been urged to take all practical steps to facilitate the rapid deployment and effective use of telecommunication resources for early warning, disaster mitigation and disaster relief operations by reducing and, where possible, removing regulatory barriers and strengthening global, regional and transborder cooperation between States;
- b) that ~~e potential of modern telecommunication technologies are~~ an essential tool for disaster mitigation and relief operations and the vital role of telecommunications and ICT for the safety and security of relief workers in the field;
- c) the particular needs of developing countries and the special requirements of the inhabitants living in high risk areas exposed to disasters, as well as those living in remote areas;
- d) the work carried out by the Telecommunication Standardization Sector in standardizing the common alerting protocol (CAP), through the approval of the relevant CAP Recommendation;
- e) that, under the Strategic Plan of the Union ~~2012-201508-2011~~, “the need for effective use of telecommunications/ICTs and modern technologies during critical emergencies, as a crucial part of disaster prediction, detection, early-warning, mitigation, management and relief strategies” ~~encouraging the effective use of telecommunications/ICTs and modern technologies during critical emergencies, as a crucial part of disaster early warning, mitigation, management and relief strategies, in light of the accelerating pace of change in the global environment and of the action lines of WSIS”, is considered a priority one of the three major priorities for the ITU in this~~ period;
- f) that the majority of terrestrial networks in affected areas were damaged during recent disasters,

recognizing

- a) Article 40 of the Constitution, on priority of telecommunications concerning safety of life;
- b) Article 46 of the Constitution, on distress calls and messages;
- c) No. 91 of the Tunis Agenda for the Information Society adopted by the second phase of the World Summit on the Information Society and in particular provision

c): “Working expeditiously towards the establishment of standards-based monitoring and worldwide early-warning systems linked to national and regional networks and facilitating emergency disaster response all over the world, particularly in high-risk regions”;

d) Resolution 34 (Rev. ~~Hyderabad~~~~Doha~~, 201006) of the World Telecommunication Development Conference on the role of telecommunications/information and communication technologies in disaster preparedness, early warning, rescue, mitigation, relief and response/ICT in early warning and mitigation of disasters and humanitarian assistance, as well as ITU-D Question 22/2 “Utilization of telecommunications/ICT for disaster preparedness, mitigation and response management, resources and active and passive space-based sensing systems as they apply to disaster and emergency relief situations”;

e) Resolution 36 (Rev. ~~Guadalajara~~~~Antalya~~, 201006) of the Plenipotentiary Conference on telecommunications/information and communication technology in the service of humanitarian assistance;

f) Resolution 136 (~~Guadalajara~~~~Antalya~~, 201006) of the Plenipotentiary Conference on the use of telecommunications/information and communication technologies for monitoring and management in emergency and disaster situations for early warning, prevention, mitigation and relief;

g) Resolution ITU-R 53 of the Radiocommunication Assembly (Geneva, 2007), on the use of radiocommunications in disaster response and relief;

h) Resolution ITU-R 55 of the Radiocommunication Assembly (Geneva, 2007), on the ITU-R studies of disaster prediction, detection, mitigation and relief,

noting

the close relation of this Resolution with Resolution 646 (WRC-03) on public protection and disaster relief and Resolution ~~647~~~~COM6/2~~ [(Rev. WRC-1207)] on spectrum management guidelines for emergency and disaster relief radiocommunication, and the need to coordinate activities under these Resolutions in order to prevent any possible overlap,

resolves

1 that the ITU Radiocommunication Sector (ITU-R) continue to study, as a matter of urgency, those aspects of radiocommunications/ICT that are relevant to early warning, disaster mitigation and relief operations, such as decentralized means of telecommunications that are appropriate and generally available, including amateur terrestrial and satellite radio facilities, mobile and portable satellite terminals, as well as the use of passive space-based sensing systems;

2 to urge the ITU-R Study Groups, taking into account the scope of ongoing studies/activities appended to Resolution ITU-R 55 of the Radiocommunication Assembly [(Rev. Geneva, 201207)], to accelerate their work, particularly in the areas of disaster prediction, detection, mitigation and relief,

instructs the Director of the Radiocommunication Bureau

1 to support administrations in their work towards the implementation of both Resolutions 36 (Rev. ~~Guadalajara~~~~Antalya~~, 2010~~06~~) and 136 (~~Guadalajara~~~~Antalya~~, 2010~~06~~), as well as the Tampere Convention;

2 to collaborate, as appropriate, with the United Nations Working Group on Emergency Telecommunications (WGET);

~~3 to participate actively in, and contribute to, the ITU Global Forum on Effective Use of Telecommunications/ICT for Disaster Management: Saving Lives (Geneva, 10-12 December 2007);~~

~~4~~ to participate in, and contribute to, Telecommunications for Disaster Relief and Mitigation – Partnership Coordination Panel (PCP-TDR);

~~5~~ to synchronize activities between this Resolution, Resolution 646 (WRC-03), and Resolution ~~647~~~~[COM6/2]~~ [(Rev. WRC-~~1207~~)] to prevent a possible overlap.

Reasons: to update the Resolution taking into consideration the results of the 2010 Plenipotentiary Conference.

RESOLUTION 647 (Rev. WRC-1207)

**Spectrum management guidelines for emergency and disaster relief
radiocommunication¹**

The World Radiocommunication Conference (Geneva, 201207),

considering

~~a)~~

a) the Tampere Convention on the Provision of Telecommunications Resources for Disaster Mitigation and Relief Operations (Tampere, 1998)², an international treaty deposited with the United Nations Secretary-General, calls on the States Parties, when possible, and in conformity with their national law, to develop and implement measures to facilitate the availability of telecommunication resources for such operations;

b) that some administrations may have different operational needs and spectrum requirements for emergency and disaster-relief applications, depending on the circumstances;

c) that the immediate availability of pre-identified and pre-coordinated frequencies, and/or spectrum-flexible technologies to allow near-instantaneous decisions to make use of available spectrum, are important for successful telecommunications in the very early stages of humanitarian assistance intervention for disaster relief,

recognizing

a) Resolution 36 (Rev. ~~GuadalajaraAntalya~~, 201006) of the Plenipotentiary Conference on telecommunications/information and communication technologies (ICTs) in the service of humanitarian assistance;

b) Resolution 136 (Rev. ~~GuadalajaraAntalya~~, 201006) of the Plenipotentiary Conference on the use of telecommunications/information and communication technologies for monitoring and management in emergency and disaster situations for early warning, prevention, mitigation and relief;

c) Resolution 34 (Rev. ~~HyderabadDoha~~, 201006) of the World Telecommunication Development Conference (WTDC) on the role of telecommunications/information and communication technologies in disaster preparedness, early warning, rescue, mitigation, relief and response, ~~ICT in early warning and mitigation of disasters and humanitarian~~

¹ The term “emergency and disaster relief radiocommunication” refers to radiocommunications used by agencies and organizations dealing with a serious disruption of the functioning of society, posing a significant widespread threat to human life, health, property or the environment, whether caused by accident, natural phenomena or human activity, and whether occurring suddenly or as a result of complex, long-term processes.

² However, a number of countries have not ratified the Tampere Convention.

assistance, as well as ITU-D Question 22/1-2 “Utilization of telecommunications/ICT for disaster management, resources, and active and passive space-based sensing systems as they apply to disaster and emergency relief situations preparedness, mitigation and response”;

- d) Resolution 48 (Rev. Hyderabad/Doha, 2010/06) of WTDC on strengthening cooperation among telecommunication regulators;
- e) Resolution 644 [**(Rev. WRC-12/07)**] on radiocommunication resources for early warning, disaster mitigation and relief operations;
- f) Programme 56 (Least developed countries, countries in special need, and small island developing states, and emergency telecommunications, and climate change adaptation), a revised version of which was adopted by WTDC (Hyderabad/Doha, 2010/06);
- g) Resolution 646 (**WRC-03**) on public protection and disaster relief;
- h) Recommendation ITU-R M.1637, which offers guidance to facilitate the global circulation of radiocommunication equipment in emergency and disaster relief situations;
- i) Recommendation ITU-R M.1854, “Use of mobile satellite service (MSS) in disaster response and relief”, and Recommendation ITU-R S.1001-2, “Use of systems in the fixed-satellite service in the event of natural disasters and similar emergencies for warning and relief operations, which provide information on the range of radio-frequencies that can be used by MSS and FSS systems for emergency and disaster relief operations;
- ii) Report ITU-R M.2033, which contains information on some bands or parts thereof which have been designated for disaster relief operations,

aware

of the progress made in regional organizations around the world, and in particular in regional telecommunication organizations, on matters related to emergency communications planning and response,

recognizing further

- a) Resolution ITU-R 55 of the Radiocommunication Assembly [(Rev. Geneva, 2012/07)], which invites the ITU-R Study Groups to take into consideration the scope of ongoing studies/activities outlined in the annex to the Resolution, and to develop guidelines related to the management of radiocommunications in disaster prediction, detection, mitigation and relief, collaboratively and cooperatively, within ITU and with organizations external to the Union, in order to avoid duplication of effort;
- b) Resolution ITU-R 53 of the Radiocommunication Assembly [(Rev. Geneva, 2012/07)], which instructs the Director of the Radiocommunication Bureau to assist Member States with their emergency radiocommunication preparedness activities such as the listing of currently available frequencies for use in emergency situations for inclusion in a database maintained by the Bureau,

noting

- a) that when a disaster occurs, the disaster relief agencies are usually the first on the scene using their day-to-day communication systems, but that in most cases other agencies and organizations may also be involved in disaster relief operations;

- b) that there is a critical requirement to perform immediate spectrum management actions, including frequency coordination, sharing and spectrum reuse, within a disaster area;
- c) that national spectrum planning for emergency and disaster relief should take into account the need for cooperation and bilateral consultation with other concerned administrations, which can be facilitated by spectrum harmonization and/or spectrum-flexible technology, as well as agreed spectrum management guidelines pertaining to disaster relief and emergency planning;
- d) that in times of disasters, radiocommunication facilities may be destroyed or impaired and the national regulatory authorities may not be able to provide the necessary spectrum management services for the deployment of radio systems for relief operations;
- e) that the identification of frequency availability within individual administrations within which equipment could operate, or the use of spectrum-flexible equipment that allows for operation in various spectrum-access scenarios, may ease the interoperability and/or interworking, with mutual cooperation and consultation, especially in national, regional and cross-border emergency situations and disaster relief activities,

noting further

- a) that flexibility must be afforded to disaster relief agencies and organizations to use current and future radiocommunications, so as to facilitate their humanitarian operations;
- b) that it is in the interest of administrations and disaster relief agencies and organizations to have access to updated information on national spectrum planning for emergency and disaster relief,

resolves

- 1 to encourage administrations to consider global and/or regional frequency bands/ranges for emergency and disaster relief when undertaking their national planning and to communicate this information to the Bureau;
- 2 to encourage administrations to maintain available frequencies for use in the very early stages of humanitarian assistance intervention for disaster relief,

instructs the Director of the Radiocommunication Bureau

- 1 to assist Member States with their emergency communication preparedness activities by establishing a database of currently available frequencies for use in emergency situations, which are not limited to those listed in Resolution **646 (WRC-03)**, and by issuing an appropriate listing, taking into account Resolution ITU-R 53 of the Radiocommunication Assembly [(Rev. Geneva, 201207)];
- 2 to maintain the database and facilitate online access thereto by administrations, national regulatory authorities, disaster relief agencies and organizations, in particular the United Nations Emergency Relief Coordinator, in accordance with the operating procedures developed for disaster situations;
- 3 to collaborate with the United Nations Office for the Coordination of Humanitarian Affairs and other organizations, as appropriate, in the development and dissemination of standard operating procedures and relevant spectrum management practices for use in the event of a disaster situation;

4 to take into consideration all relevant activities in ITU's other two Sectors and General Secretariat;

5 to report on the progress on this Resolution to subsequent World Radiocommunication Conferences,

invites ITU-R

to conduct studies as necessary, and as a matter of urgency, in support of the establishment of appropriate spectrum management guidelines applicable in emergency and disaster relief operations,

urges administrations

1 to participate in the emergency communication preparedness activities described above and to provide the relevant information to the Bureau concerning their national frequency allocations and spectrum management practices for emergency and disaster relief radiocommunications, taking into account Resolution ITU-R 53 of the Radiocommunication Assembly [(Rev. Geneva, 201207)];

2 to assist in keeping the database up to date by advising the Bureau on an ongoing basis of any modifications to the information requested above.

Reasons: to update the Resolution taking into consideration the results of the 2010 Plenipotentiary Conference, as well as add mention of appropriate resolutions on MSS and FSS systems for emergency and disaster relief operations.

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);*

Background Information: This proposal pertains to Issue 1A of the CPM Report related to new Appendix 4 of the Radio Regulations data item for non-geostationary satellite systems in bands other than those where equivalent power flux density (epfd) limits are specified in Article 22. The information required by Appendix 4 to be supplied when a filing for a non-GSO satellite system is submitted to the Radiocommunication Bureau includes the apogee and perigee heights and the eccentricity. However, the active arc limits, which are relevant only for non-GSO systems of the HEO-type, are not listed in Appendix 4 as required data to be submitted. For all types of non-GSO systems planned to use bands in which Article 22 epfd limits apply, one of the parameters required by Appendix 4 is the minimum height above the Earth's surface at which any satellite in the system transmits.

Considering that many frequency bands may be used for both GSO and non-GSO satellite systems other than those bands where epfd limits are specified in the Article 22, there is no data item in Appendix 4 requiring an administration to provide the minimum height above the Earth's surface at which any satellite in the system transmits.

This proposal modifies Appendix 4, Annex 2 Table A, to include the requirement to provide the minimum altitude of the space station above the surface of the Earth at which any satellite transmits for non-GSO systems not operating in bands subject to Article 22 epfd limits. This proposal is consistent with the CPM Method for Issue 1A.

Proposal:

APPENDIX 4 (Rev.WRC-0712)

Consolidated list and tables of characteristics for use in the application of the procedures of Chapter III

MOD

USA/7/1

ANNEX 2

**Characteristics of satellite networks, earth stations
or radio astronomy stations²** (Rev.WRC-0712)

Table of characteristics to be submitted for space and radio astronomy services (WRC-0712)

Items in Appendix	Advance publication of a geostationary-satellite network	Advance publication of a non-geostationary-satellite network subject to coordination under Section II of Article 9	Advance publication of a non-geostationary-satellite network not subject to coordination under Section II of Article 9	Notification or coordination of a geostationary-satellite network (including space operation functions under Article 2A of Appendices 30 or 30A)	Notification or coordination of a non-geostationary-satellite network	Notification or coordination of an earth station (including notification under Appendices 30A or 30B)	Notice for a satellite network in the broadcasting-satellite service under Appendix 30 (Articles 4 and 5)	Notice for a satellite network (feeder-link) under Appendix 30A (Articles 4 and 5)	Notice for a satellite network in the fixed-satellite service under Appendix 30B (Articles 6 and 8)	Items in Appendix	Radio astronomy											
...	<p>A - GENERAL CHARACTERISTICS OF THE SATELLITE NETWORK, EARTH STATION OR RADIO ASTRONOMY STATION</p>																					
A.4.b.4												<p>For each orbital plane, where the Earth is the reference body:</p>										
...												<p>the minimum altitude of the space station above the surface of the Earth at which any satellite transmits</p>										
A.4.b.4f	X																					
...	<p>the minimum altitude of the space station above the surface of the Earth at which any satellite transmits</p>																					
A.4.b.6.b																						

Reasons: To describe operational characteristics of non-GSO satellite systems so that potential for interference can be calculated more accurately.

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);*

Background Information: This proposal pertains to issue 1B of the CPM Report related to the addition of a data item in Appendix 4 of the Radio Regulations about occurrence of transmissions of a non-geostationary satellite network. Under No. 9.3 for the case of a non-geostationary satellite network not subject to coordination, any administration which believes that unacceptable interference may be caused to its existing or planned satellite networks or systems, shall within four months of the date of publication of the Radiocommunication Bureau International Frequency Information Circular (BR IFIC) communicate to the publishing administration its comments on the particulars of the anticipated interference to its existing or planned systems. Because of the limited time to comment and the number of satellite networks to consider, comments under No. 9.3 are generally sent to other administrations on the basis of a first simple analysis and often requests *inter alia* if the space station emits only when it has visibility with the associated earth stations. Comments from other administrations frequently request the notifying administration to indicate whether the space station emits only when it has visibility with the associated earth stations.

This proposal includes a new data element in Appendix 4 for non-geostationary satellite networks or systems. This new data element would indicate whether or not the space station transmits only in visibility of either the service area or the associated earth stations. This addition has the potential to reduce administrative correspondence and to limit the number of comments received by an administration submitting such a satellite network. This proposal is consistent with Alternative 1 of the CPM Method for Issue 1B.

Proposal:

APPENDIX 4 (Rev.WRC-0712)

Consolidated list and tables of characteristics for use in the application of the procedures of Chapter III

MOD

USA/7/1

ANNEX 2

**Characteristics of satellite networks, earth stations
or radio astronomy stations²** (Rev.WRC-0712)

Table of characteristics to be submitted for space and radio astronomy services (WRC-0712)

Items in Appendix	B - CHARACTERISTICS TO BE PROVIDED FOR EACH SATELLITE ANTENNA BEAM OR EACH EARTH STATION OR RADIO ASTRONOMY ANTENNA										Items in Appendix
B.1	Advance publication of a geostationary-satellite network	Advance publication of a non-geostationary-satellite network subject to coordination under Section II of Article 9	Advance publication of a non-geostationary-satellite network not subject to coordination under Section II of Article 9	Notification or coordination of a geostationary-satellite network (including space operation functions under Article 2A of Appendices 30 or 30A)	Notification or coordination of a non-geostationary-satellite network	Notification or coordination of an earth station (including notification under Appendices 30A or 30B)	Notice for a satellite network in the broadcasting-satellite service under Appendix 30 (Articles 4 and 5)	Notice for a satellite network (feeder-link) under Appendix 30A (Articles 4 and 5)	Notice for a satellite network in the fixed-satellite service under Appendix 30B (Articles 6 and 8)	B.1	
B.1.a			X	X	X	X	X	X	X	B.1.a	
B.1.b			X	X	X		X	X	X	B.1.b	
B.2	X	X	X	X	X	+ ¹			X	B.2	
B.2A			X							B.2A	
B.3			X		X					B.3	

IDENTIFICATION AND DIRECTION OF THE SATELLITE ANTENNA BEAM

the designation of the satellite antenna beam
For an earth station, the designation of the satellite antenna beam of the associated space station
an indicator showing whether the antenna beam, under B.1.a, is fixed or whether it is steerable and / or reconfigurable

TRANSMISSION / RECEPTION INDICATOR FOR THE BEAM OF THE SPACE STATION OR THE ASSOCIATED SPACE STATION

INDICATOR SHOWING WHETHER THE SPACE STATION TRANSMITS/RECEIVES ONLY IN VISIBILITY OF SERVICE AREA OR NOT

SPACE STATION ANTENNA CHARACTERISTICS

Reasons: To reduce administrative correspondence by allowing administrations to provide an essential element to assess the interference potential of a non-geostationary satellite network.

ADD

USA/7/3

9.52A In the case of coordination requests under No. 9.7, an affected administration identified by the Bureau under No. 9.36 that is not responding under Nos. 9.51 or 9.52 shall be considered to have expressed its disagreement within the time limit prescribed in No. 9.52. That administration shall continue to be identified as one with which coordination must be effected.

Reason: A non-response by an affected administration can be considered as a response confirming within the 4 month comment period that the affected administration agrees with the Bureau that coordination is required with one or more of its networks.

MOD

USA/7/4

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 to 9.7B 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 or 9.52A, as applicable, 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 an affected administration is not willing to participate in the coordination process or does not cooperate in the resolution of the coordination requirements pursuant to No. 9.53.

Reason: For coordination under No. 9.7 (GSO/GSO), disagreement can also be expressed by a non-response, as contemplated in No. 9.52A.

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);*

Background Information: If an administration is identified by the Bureau under No. 9.7 as one with which coordination is necessary, then under No. 9.51, that affected administration shall within four months of the publication of the CR/C under No. 9.38; either inform the requesting administration of its agreement or act under No. 9.52. No. 9.52, in respect of coordination pursuant to No. 9.7, identifies the procedures an affected administration must follow if it is not in agreement with the satellite network published under No. 9.38. Due to the mandatory nature of No. 9.52, administrations generally request inclusion in the coordination discussions within the four month period to ensure that their rights are maintained and considered in the coordination process. However, these requests for inclusion in the coordination process seldom fulfill all the requirements of No. 9.52.

It is believed that removing this requirement of responding under No. 9.52 would eliminate a significant amount of correspondence that, in most cases, does not contribute to expediting the coordination process.

After a request for coordination is published under No. 9.38 in respect of coordination pursuant to No. 9.7, an administration with which coordination is sought must either provide its agreement under No. 9.51 or respond in accordance with 9.52. In the vast majority of cases, administrations respond in accordance with No. 9.52. This requirement generates a large amount of administrative correspondence, which, in turn, has to be sorted out, forwarded to the relevant satellite operators, stored, etc. Consequently, in order to simplify the coordination procedures, a possible improvement to the process would be to remove the mandatory nature of this requirement for coordination requests made under No. 9.7 (GSO vs. GSO) in order to decrease the amount of administrative correspondence generated by the application of No. 9.52 for coordination cases under No. 9.7.

With this approach, an administration identified by the Bureau as affected would be retained on the list of administrations with which coordination must be effected without having to respond in accordance with No. 9.52. The absence of a response under RR No. 9.52 would be understood by the Bureau to mean that this administration believes that coordination with one or more of its networks is required. It is also understood that the onus would then be on the administration seeking coordination to initiate bilateral discussions with the affected administrations to resolve the matter.

It is proposed to remove the requirement to respond under No. **9.52** for coordination cases under No. **9.7** in order to eliminate a significant amount of correspondence that in most cases does not contribute in any way to expedite the coordination process. As this proposal should have no impact on the responsibility of an affected administration to cooperate with a filing administration to effect coordination of their satellite networks, consequential changes to No. **9.60** are also required.

Proposals:

ARTICLE 9

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

NOC USA/7/1

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**, either inform the requesting administration and the Bureau of its agreement or act under No. **9.52**. (WRC-2000)

Reason: Adequately addresses the need for an explicit agreement to the proposed satellite network filing published under No. **9.38** within 4 months of the publication of the relevant special section or identify the basis of a non-agreement.

NOC USA/7/2

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. 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**.

Reason: Adequately addresses the need for an explicit agreement to the proposed satellite network filing published under No. **9.38** within 4 months of the publication of the relevant special section or identify the basis of a non-agreement.

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);*

Background Information: If an administration is identified by the Bureau under No. 9.7 as one with which coordination is necessary, then under No. 9.51, that affected administration shall within four months of the publication of the CR/C under No. 9.38; either inform the requesting administration of its agreement or act under No. 9.52. No. 9.52, in respect of coordination pursuant to No. 9.7, identifies the procedures an affected administration must follow if it is not in agreement with the satellite network published under No. 9.38. Due to the mandatory nature of No. 9.52, administrations generally request inclusion in the coordination discussions within the four month period to ensure that their rights are maintained and considered in the coordination process. However, these requests for inclusion in the coordination process seldom fulfill all the requirements of No. 9.52.

It is believed that removing this requirement of responding under No. 9.52 would eliminate a significant amount of correspondence that, in most cases, does not contribute to expediting the coordination process.

After a request for coordination is published under No. 9.38 in respect of coordination pursuant to No. 9.7, an administration with which coordination is sought must either provide its agreement under No 9.51 or respond in accordance with 9.52. In the vast majority of cases, administrations respond in accordance with No. 9.52. This requirement generates a large amount of administrative correspondence, which, in turn, has to be sorted out, forwarded to the relevant satellite operators, stored, etc. Consequently, in order to simplify the coordination procedures, a possible improvement to the process would be to remove the mandatory nature of this requirement for coordination requests made under No. 9.7 (GSO vs. GSO) in order to decrease the amount of administrative correspondence generated by the application of No. 9.52 for coordination cases under No. 9.7.

With this approach, an administration identified by the Bureau as affected would be retained on the list of administrations with which coordination must be effected without having to respond in accordance with No. 9.52. The absence of a response under RR No.9.52 would be understood by the Bureau to mean that this administration believes that coordination with one or more of its networks is required. It is also understood that the onus would then be on the administration seeking coordination to initiate bilateral discussions with the affected administrations to resolve the matter.

It is proposed to remove the requirement to respond under No. **9.52** for coordination cases under No. **9.7** in order to eliminate a significant amount of correspondence that in most cases does not contribute in any way to expedite the coordination process. As this proposal should have no impact on the responsibility of an affected administration to cooperate with a filing administration to effect coordination of their satellite networks, consequential changes to No. **9.60** are also required.

Proposals:

ARTICLE 9

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

NOC USA/7/1

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**, either inform the requesting administration and the Bureau of its agreement or act under No. **9.52**. (WRC-2000)

Reason: Adequately addresses the need for an explicit agreement to the proposed satellite network filing published under No. **9.38** within 4 months of the publication of the relevant special section or identify the basis of a non-agreement.

NOC USA/7/2

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. 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**.

Reason: Adequately addresses the need for an explicit agreement to the proposed satellite network filing published under No. **9.38** within 4 months of the publication of the relevant special section or identify the basis of a non-agreement.

ADD

USA/7/3

9.52A In the case of coordination requests under No. 9.7, an affected administration identified by the Bureau under No. 9.36 that is not responding under Nos. 9.51 or 9.52 shall be considered to have expressed its disagreement within the time limit prescribed in No. 9.52. That administration shall continue to be identified as one with which coordination must be effected.

Reason: A non-response by an affected administration can be considered as a response confirming within the 4 month comment period that the affected administration agrees with the Bureau that coordination is required with one or more of its networks.

MOD

USA/7/4

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 to 9.7B 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 or 9.52A, as applicable, 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 an affected administration is not willing to participate in the coordination process or does not cooperate in the resolution of the coordination requirements pursuant to No. 9.53.

Reason: For coordination under No. 9.7 (GSO/GSO), disagreement can also be expressed by a non-response, as contemplated in No. 9.52A.

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)*

Background Information: Table 5-1 of RR Appendix 5 lists the technical conditions for the various coordination cases contained in Section II of Article 9. Among other conditions, the frequency bands where a specific provision applies are listed. In particular, for the row corresponding to No. 9.11, a number of bands are listed where the Bureau is supposed to apply this provision. However some inconsistencies with other parts of the Radio Regulations have been identified. Moreover, the row corresponding to No. 9.19 only refers to the row of No. 9.11 concerning the involved frequency bands.

Because inaccuracies in Table 5-1 of RR Appendix 5 lead to confusion in applying the provisions of Section II of RR Article 9 and may cause difficulties for both administrations and the Bureau, the ITU-R reviewed the list of frequency bands indicated in the Appendix 5 Table 5-1 row corresponding to RR No. 9.11 and identified possible updates to it. In addition, the ITU-R reviewed the Appendix 5 Table 5-1 entries for the row dealing with No. 9.19 and also identified possible updates to it, such as explicitly list the bands where RR No. 9.19 applies instead of referring to the row dealing with RR No. 9.11.

In order to review the situation, it is important to consider the coordination situations that each of these provisions addresses. No. 9.11 deals with coordination of transmissions from a BSS space station with respect to terrestrial services, while No. 9.19 deals with coordination of transmissions from a terrestrial station or an earth station with respect to receiving BSS earth stations. While the provisions may seem to be the reverse case of each other, No. 9.19 also includes coordination of transmitting earth stations. Therefore, in reviewing Table 5-1, it is necessary to ensure that BSS frequency bands shared with Earth-to-space satellite allocations are also included in the entry for No. 9.19. In addition, it is noted that a BSS allocation – 40.5-42.5 GHz – appears to be missing from the Table 5-1 entries for both Nos. 9.11 and 9.19.

The CPM Report to WRC-12 identifies one Method to address this issue. The United States proposal is based on this Method.

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)

MOD

TABLE 5-1 (continued) (WRC-07)

Reference of Article 9	Case	Frequency bands (and Region) of the service for which coordination is sought	Threshold/condition	Calculation method	Remarks
No. 9.11 GSO, non-GSO/ terrestrial	A space station in the BSS in any band shared on an equal primary basis with terrestrial services and where the BSS is not subject to a Plan, in respect of terrestrial services	620-790 MHz (see Resolution 549 (WRC-07)) 1 452-1 492 MHz 2 310-2 360 MHz (No. 5.393) 2 535-2 655 MHz (Nos. 5.417A and 5.418) 12.5-12.75 GHz (Region 3) 17.37-17.8 GHz (Region 2) 21.4-22 GHz (Regions 1 and 3) 74-76 GHz	Bandwidths overlap: The detailed conditions for the application of No. 9.11 in the bands 2 630-2 655 MHz and 2 605-2 630 MHz are provided in Resolution 539 (Rev. WRC-03) for non-GSO BSS (sound) systems pursuant to Nos. 5.417A and 5.418, and in Nos. 5.417A and 5.418 for GSO BSS (sound) networks pursuant to those provisions. Resolution 549 (WRC-07) applies in the band 620-790 MHz	Check by using the assigned frequencies and bandwidths	

TABLE 5-1 (end) (WRC-07)

Reference of Article 9	Case	Frequency bands (and Region) of the service for which coordination is sought	Threshold/condition	Calculation method	Remarks
No. 9.19 Terrestrial, GSO, non-GSO/ GSO, non-GSO	Any transmitting station of a terrestrial service or a transmitting earth station in the FSS (Earth-to-space) in a frequency band shared on an equal primary basis with the BSS, with respect to typical earth stations included in the service area of a space station in the BSS	<p><u>Bands listed in No. 9.11, the band 620-790 MHz (see Resolution 549 (WRC-07))</u></p> <p><u>1 452-1 492 MHz</u></p> <p><u>2 310-2 360 MHz (terrestrial services in all three Regions in respect of BSS allocation in No. 5.393)</u></p> <p><u>2 520-2 670 MHz (see No. 5.416) and the band 11.7-12.7 GHz (see Article 6 of Appendix 30)</u></p> <p><u>12.5-12.7 GHz (terrestrial services in Nos. 5.494 and 5.496 as well as in Regions 2 and 3, or transmitting earth station in the FSS (Earth-to-space) in Region 1, in respect of BSS allocation in Region 3)</u></p> <p><u>12.7-12.75 GHz (terrestrial services in Nos. 5.494 and 5.496 as well as in Regions 2 and 3, or transmitting earth station in the FSS (Earth-to-space) in Regions 1 and 2, in respect of BSS allocation in Region 3)</u></p> <p><u>17.7-17.8 GHz (terrestrial services in all three Regions in respect of BSS allocation in Region 2)</u></p> <p><u>17.3-17.8 GHz (transmitting earth stations in the FSS (Earth-to-space) in respect of BSS allocation in Region 2) (see Article 4 of Appendix 30A)</u></p> <p><u>[21.4-22 GHz (Regions 1 and 3) TBD under AI 1.13]</u></p>	<p>i) Necessary bandwidths overlap; and</p> <p>ii) the power flux-density (pfd) of the interfering station at the edge of the BSS service area exceeds the permissible level</p>	Check by using the assigned frequencies and bandwidths	See also Article 6 of Appendix 30

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);*

Background Information: This proposal pertains to Issue 2E of the CPM Report related to modifications to advance publication of information (API) of a satellite network or system not subject to coordination procedure under Section II of Article 9. As indicated in No. 9.2 of the Radio Regulations, amendments to information in accordance with No. 9.1 shall be sent to the Radiocommunication Bureau (the Bureau) as soon as they become available. No. 9.2 also indicates that only amendments, which involve addition of frequency bands or modification of the orbital location for a GSO network beyond ± 6 degrees of the original location, require the re-application of the advance publication procedure. In the case of Advance Publication Information (API) for a network not subject to coordination, Nos. 9.3 and 9.4 provide a mechanism for resolving potential difficulties between administrations.

The Bureau has been receiving cases of modifications to satellite network filings not subject to coordination, at the API stage, or with the first notice for recording the assignments, where the submission may involve one or more modifications to the network characteristics (e.g., increase of power density values, change of service area, addition of beams, etc.), which could modify the interference environment. In these cases, modifications to API were published and modified information was taken into account for the notification examination. However, those modifications would not trigger a new application of the advance publication procedure. Administrations believing that unacceptable interference may be caused to their existing or planned satellite networks or systems by these modifications do not have timely opportunity to comment and resolve potential difficulties as foreseen under Nos. 9.3 and 9.4 before the recording of the assignments in the Master International Frequency Register (MIFR).

This proposal modifies No. 9.2 to clarify the circumstances under which administrations would need to file a new API and is consistent with Method B of the CPM Report for Issue 2E.

Proposal:

ARTICLE 9

Procedure for effecting coordination with or obtaining agreement of other administrations (Rev. WRC-0712)

Section I – Advance publication of information on satellite networks or satellite systems

MOD USA/7/1

9.2 Amendments to the information sent in accordance with the provisions of No. **9.1** shall also be sent to the Bureau as soon as they become available. The use of an additional frequency band or modification of the orbital location by more than $\pm 6^\circ$ for a space station using the geostationary-satellite orbit will require the application of the advance publication procedure for this band or orbital location, as appropriate. Furthermore, where coordination is not required by Section II of Article 9, the modification of the reference body, the modification of the direction of transmission, the modification resulting in the continuous transmission of the space station or the increase of the service area for a space station using a non-geostationary-satellite orbit will require the application of the advance publication procedure. (WRC-0712)

Reasons: To allow administrations have the possibility to comment under No. **9.3** if changes to a satellite network are likely to affect their space services.

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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 3A: Application of RR Nos. 11.41 and 11.42 in respect of satellite networks (Provisional / definitive recording of frequency assignments)

Background Information: In its report to the 2007 World Radiocommunications Conference (Document 4, Addendum 2, Section 3.1.3.3), the Radiocommunications Bureau (BR) considered the case of recording provisional assignments under No. **11.41**. The BR indicated that there were insufficient "indications as what would be the course of action, by the Bureau, if harmful interference is reported, during the four-month period of simultaneous operation."

The BR's initial proposal suggested that: "[i]f the interference is not eliminated by the end of the four-month period envisaged for simultaneous operation, the Bureau cancels the "incoming" assignment (i.e. the one recorded under No. **11.41**) and informs the concerned administration accordingly."

The BR proposal may provide excessive control to the administration claiming interference, since there is no requirement for that administration to present proof of harmful interference. In the case of actual harmful interference, it may take considerable time to establish the source of interference which could result in automatic cancellation of particular frequency assignments without definitively establishing that those frequency assignments were the cause of the unresolved interference complaint. However, removing any type of "penalty" for a provisional assignment causing harmful interference to the assignment which was the basis of the unfavourable finding under No. **11.32A** could lead to administrations purposefully not completing difficult coordinations with networks having date priority and already recorded in the MIFR.

For the case where complaints of interference are received after the four-month period, the BR's initial proposal suggested that: "For a complaint received beyond the four month period indicated in No. **11.41**, it requests the administration responsible for the "incoming" assignment (i.e. the one recorded under No. **11.41**) to eliminate the harmful interference immediately under No. **11.42**. The matter is thereafter dealt with in accordance with the procedures set forth in Article **15** of the Radio Regulations."

So, summarizing the BR proposal, if an interference complaint is received against a new assignment within the first four months of operations of the new assignment and the interference is not eliminated within the 4 months, the BR would cancel the new assignment. If an interference complaint is received after the first four months, the BR would ask the administration responsible for the provisionally recorded assignments to eliminate the interference immediately and then apply the procedures of Article **15**. It would seem that there should be no difference in treatment applied to situations where the interference complaints

occur within or outside the four-month period. However, if the harmful interference is not resolved, then the provisional assignment should be cancelled by the BR and the concerned administration informed accordingly.

Proposals:

ARTICLE 11

Notification and recording of frequency assignments^{1, 2, 3, 4, 5, 6, 7} (WRC-07)

Section II – Examination of notices and recording of frequency assignments in the Master Register

NOC USA/7/1

11.41

Reasons: Changes are not required to this provision.

MOD USA/7/2

11.42 Should harmful interference be caused by an assignment recorded under No. **11.41** to any recorded assignment which was the basis of the unfavourable finding, the station using the frequency assignment recorded under No. **11.41** shall, upon receipt of a detailed report of harmful interference using to the maximum extent possible the format prescribed in Appendix 10 of the Radio Regulations, advice thereof immediately eliminate this harmful interference. Administrations involved shall cooperate in the resolution of the harmful interference and may request assistance from the Bureau, as necessary.

Reasons: Changes clarify that complaints of harmful interference should be based on a detailed report of the interference event.

ADD USA/7/3

11.42bis In respect of satellite networks, if the Bureau is informed that the harmful interference reported under No. **11.41** is resolved and the two assignments have been in use for at least four months without any complaint of harmful interference, the Bureau shall change the provisional entry recorded under No. **11.41** to definitive. If, after cooperation between the concerned administrations and the assistance of the Bureau, the harmful interference is not resolved, the Bureau shall cancel the provisional entry recorded under No. **11.41**, subject to confirmation by the Board, and shall inform the administrations concerned. Until the cancellation is confirmed by the Board, the Bureau shall maintain the provisional assignment in the MIFR.

Reasons: New provision explicitly states that if harmful interference is not resolved the BR shall cancel the provisional entry. However, cancellation depends on confirmation by the Board and does not go into force until such confirmation occurs.

UNITED STATES OF AMERICA

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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 3B: Status of frequency assignments initially recorded under RR No. 11.41 in cases where the required coordinations are completed after the assignments are recorded in the MIFR.

Background Information: The Radiocommunication Bureau (BR) considered issues concerning definitive and provisional recordings of frequency assignments and related articles of the Radio Regulations.¹ The BR considers an assignment receiving an unfavorable finding for not completing coordination and filing under No. 11.41 as "provisional." If no interference has occurred between the provisional assignment and any assignment, which was the basis for the unfavorable finding during the four month period of simultaneous operation, then the BR changes the provisional recording to "definitive." The BR considers an assignment recorded under No. 11.41, even if the status changes from provisional to definitive, as having a lower status to the assignment for which the BR based the unfavorable finding on No. 11.32A.² The BR should record an assignment as definitive if the BR initially recorded it under No. 11.41 and the assignment subsequently completes all of the requirements for coordination and successfully operates simultaneously for the four-month period with the assignment which was the basis for the initial unfavorable finding. This assignment should also receive the same status as the existing assignment. Therefore, the BR should consider an assignment that it initially recorded under No. 11.41 equally with respect to an existing assignment which was the basis for the unfavorable findings under No. 11.32A if coordination with the latter is completed and should not be seen as "always lower." Continuing to consider the provisional assignment as having a lower status could be a disincentive to complete coordination.

This proposal modifies No. 11.41A to ensure that the BR consider the status of an assignment initially recorded under No. 11.41 as equal to the status of the existing assignment, which was the basis for the unfavorable findings under No. 11.32A if coordination is completed with respect to that existing assignment after the BR initially recorded the assignment in the MIFR.

¹ BR Report to the 2007 World Radiocommunication Conference (Document 4, Addendum 2, Section 3.1.3.3).

² BR Report to the 2007 World Radiocommunication Conference (Document 4, Addendum 2, Section 3.1.3.3.4).

Proposal:

ARTICLE 11

Notification and recording of frequency assignments^{1, 2, 3, 4, 5, 6, 7} (WRC-07)

Section II – Examination of notices and recording of frequency assignments in the Master Register

MOD USA/7/1

11.41A Should the assignments that were the basis of the unfavourable finding under Nos. **11.32A** or **11.33** not be brought into use within the period specified in Nos. **11.24**, **11.25** or **11.44**, as appropriate, then the finding of the assignments resubmitted under No. **11.41** shall be reviewed accordingly. Should the coordination procedures specified in No. **11.32** be completed with administration(s) whose assignments were the basis of the recording under No. **11.41**, then any conditions related to the initial recording of assignments under No. **11.41** shall be removed.

Reasons: The proposed modification to No. **11.41A** will ensure that the BR consider the status of an assignment initially recorded under No. **11.41** as equal to the status of the existing assignment, which was the basis for the unfavorable findings under No. **11.32A**, if coordination is completed with respect to that existing assignment after the BR initially recorded the assignment in the MIFR.

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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: Modifications to No. 11.49 to clarify when an administration must inform the Bureau of a suspended network.

Background Information: No. 11.49 of the Radio Regulations allows for the use of a recorded assignment to a space station to be suspended for a finite period of time. The Rule of Procedure for No. 11.49 clarifies the time limit (two years) and states that suspensions may be effected by the administration either at its own initiative or in response to an inquiry by the BR under No. 13.6. During the BR's recent review of the Master Register for the C, Ku and Ka bands, almost half of the recent inquiries made under No. 13.6 resulted in suspensions under No. 11.49. In some cases, the operation was actually suspended many months before the BR inquiry under No. 13.6, but the BR was not informed until after the inquiry.

This document modifies No. 11.49 to quantify "as soon as possible" and proposes a period of "six months" to minimize delays or situations where the suspension is announced and the two year period begins after operation was actually suspended. This proposal modifies No. 11.49 to separate the declaration of suspension from the declaration of resumption to improve clarity in the formulation of this regulatory provision and provide certainty on the actual date of bringing the assignment back into regular operation.

Proposal:

ARTICLE 11

Notification and recording of frequency assignments^{1, 2, 3, 4, 5, 6, 7} (WRC-07)

Section II – Examination of notices and recording of frequency assignments in the Master Register

MOD USA/7/1

11.49 ~~Where Whenever~~ the use of a recorded assignment to a space station is suspended for a period not exceeding eighteen months, the notifying administration shall, as soon as possible, but no later than six months from the date on which the use was suspended, inform the Bureau of the date on which such use was suspended. The notifying administration shall also inform the Bureau and of the date on which the assignment is to be brought back into regular use within 30 days of the assignment being brought back into use. This latter date of the assignment being brought back into use shall not exceed two years from the date on which the use was suspended of suspension.

Reasons: Establishes a six-month period for the administration to notify the Bureau of the network's suspension and clarifies when an administration needs to inform the Bureau that the network has been brought back into use.

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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: Modifications to No. 13.6 to clarify the Radiocommunications Bureau's (BR) actions before cancelling a network and the subsequent confirmation of the cancellation by the Radiocommunication Regulations Board (RRB).

Background Information: Under No. 13.4, the BR is solely responsible for maintenance of the Master Register in accordance with the Rules of Procedure. One of the BR's duties, under No. 13.6, is to consult with the notifying administration in the case where reliable information has been brought to the BR's attention that a recorded assignment has not been brought into regular operation in accordance with the filed characteristics. The first sentence of No. 13.6 states "... the Bureau shall consult the notifying administration and, subject to its agreement or in the event of non-response after the dispatch of two consecutive reminders, each within a three-month period, shall either cancel, or suitably modify, or retain the basic characteristics of the entry." A reminder is only necessary in the case of non-response, which includes the situation where the administration replies but does not respond to the inquiry.

The time period during which the BR dispatches the two consecutive reminders is not completely clear. There is no timeframe specified by which the administration must respond. This proposal clarifies the time period of the reminders and limits the administration response time. This proposal adopts the 30-day response time for clarifications concerning notices. This proposal modifies No. 13.6 to specify a one-month period between the initial inquiry and the first reminder, a one-month period between the first reminder and the second reminder, and a one-month period after the second reminder by which the notifying administration must respond. This retains the spirit of the three month period currently provided for in No. 13.6 and clarifies its application.

The last sentence of No. 13.6 states that "A decision of the Bureau to cancel the entry in the event of non-response shall be confirmed by the Board." There are two ways of understanding this wording:

- That the Bureau's decision was in force from the time that it was taken by the Bureau and subject to confirmation by the Board, or
- That the Bureau's decision did not come into force until it was confirmed by the Board.

The practice followed by the Bureau, as confirmed by the Board, is to implement the decision immediately, subject to later confirmation by the Board. Notwithstanding the situation that the Bureau would have to restore the assignments and inform all affected administrations should the

Board not confirm the Bureau's decision, the primary advantage to this approach is that the cancelled assignments no longer have to be taken into account by the Bureau or other administrations with respect to coordination. This proposal modifies No. 13.6 to specify that the Bureau's decision to cancel an assignment takes effect immediately, but is subject to confirmation by the Board.

Proposal:

ARTICLE 13

Instruction to the Bureau

Section II – Maintenance of the Master Register and World Plans by the Bureau

MOD USA/7/1

13.6 b) whenever it appears from reliable information available that a recorded assignment has not been brought into ~~use~~regular operation in accordance with the notified required characteristics as specified in Appendix 4, or is not being used in accordance with those characteristics, the Bureau shall consult the notifying administration and request clarification as to whether the assignment was brought into use in accordance with the notified characteristics and continues to be in use in accordance with the notified characteristics. If the notifying administration does not provide clarification within one month, the Bureau shall issue a reminder. ~~and,~~In the event the notifying administration does not respond within one month of the first reminder, the Bureau shall issue a second reminder. Subject to its the agreement of the notifying administration or in the event of the notifying administration does not respond within non-response one month after the dispatch of two consecutive the second reminders, each within a three-month period, the Bureau shall either cancel, or suitably modify, or retain the basic characteristics of the entry. A decision of the Bureau to cancel the entry in the event of non-response shall take effect immediately, but is subject to be confirmed confirmation by the Board.

Reasons: To clarify the BR's actions with respect to No. 13.6 for requesting clarification from administrations before network cancellation and to clarify the RRB's role in confirming any network cancellations.

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)*

Background Information: WRC-03 identified in Resolution 86 (WRC-03) the scope and the criteria to be used for the implementation of Resolution 86 (Rev. Marrakesh, 2002). The current version of this Resolution (i.e. Resolution 86 (WRC-07)) resolves "to invite future World Radiocommunication Conferences to consider any proposals which deal with deficiencies in the advance publication, coordination, notification and recording procedures of the Radio Regulations for space services which have either been identified by the Board and included in the Rules of Procedure or which have been identified by administrations or by the Bureau as appropriate."

There has been a longstanding requirement in Article 9 of the Radio Regulations, under No. 9.1, for the Radiocommunication Bureau to wait a requisite six months after receiving the advanced publication information (API) for satellite networks requiring coordination under Section II of Article 9 before receiving the accompanying coordination request information, even if both sets of information are submitted to the Bureau at the same time. While this six-month delay may have served a purpose in years past when there was a substantial amount of technical data included in the API for administrations to consider and potentially comment upon, this is no longer the case. As a consequence of the simplification of the Radio Regulations at WRC-95, the API for satellite networks requiring coordination under Section II of Article 9 includes very limited information (e.g. orbital position and frequency bands) and, as such, there is little for administrations to review and comment upon. This required six month delay therefore serves no purpose other than to delay the overall start of coordination process for satellite networks.

In addition to creating a delay to the start of the coordination process, this six month period adds considerable uncertainty as to the potential availability of frequency assignments at any given orbital location. Whereas the SRS database maintained by the ITU BR can be queried and carefully examined in the process of searching for and identifying a potential orbital location at which a new satellite network could be launched and operated in a given frequency band, once an API for this new network is submitted there is six months of uncertainty as the filing administration must wait to see if another administration, which may have an API in the vicinity that has already been submitted to the ITU and is still valid, files a coordination request in advance of the BR's receipt of the coordination request associated with the new API. This very issue was indeed one of the issues highlighted in the BR's recently conducted Workshop on the efficient use of the orbit/spectrum resource. During that workshop, views expressed by administrations

“stressed the uselessness of this procedure for satellite networks subject to coordination and indicated in addition that the 6 month period mention in No. 9.1 before coordination adds no value to the registration procedure.”¹

Proposal:

MOD USA/7/1

9.1 Before initiating any action under this Article or under Article 11 in respect of frequency assignments for a satellite network or a satellite system, an administration, or one⁹ acting on behalf of a group of named administrations, shall, prior to the coordination procedure described in Section II of Article 9 below, where applicable, send to the Bureau a general description of the network or system for advance publication in the International Frequency Information Circular (BR IFIC) not earlier than seven years and preferably not later than two years before the planned date of bringing into use of the network or system (see also No. 11.44). The characteristics to be provided for this purpose are listed in Appendix 4. The coordination or notification information may also be communicated to the Bureau at the same time. Where coordination information is required by Section II of Article 9, the coordination information it shall be considered as having been received by the Bureau upon its actual date of receipt whereas notification information shall be considered as having been received by the Bureau not earlier than six months after the date of receipt of the coordination information, for advance publication, where coordination is required by Section II of Article 9. Where coordination is not required by Section II, notification shall be considered as having been received by the Bureau not earlier than six months after the date of publication of the advance publication information. (WRC-1203)

Reasons: To address the unnecessary requirement for the Radiocommunications Bureau to wait six months after receipt of the advanced publication information before receiving the coordination request information for satellite networks requiring coordination under Section II of Article 9.

MOD USA/7/2

9.5B If, upon receipt of the BR IFIC containing information published under No. 9.2B, any administration considers its existing or planned satellite systems or networks or terrestrial stations¹¹ to be affected, it may send its comments to the publishing administration, so that the latter may take those comments into consideration during when initiating the coordination procedure. A copy of these comments may also be sent to the Bureau. Thereafter, both administrations shall endeavour to cooperate in joint

¹ See Summary Notes on BR Workshop on the efficient use of spectrum/orbit resources (Geneva, Switzerland 6 May 2009) at <http://www.itu.int/ITU-R/go/space-workshop-efficient-use-geneva-2009/en>

¹¹ **9.5B.1** The only terrestrial stations to be taken into account are those for which the requirement to coordinate is under Nos. 9.11, 9.11A and 9.21.

efforts to resolve any difficulties, with the assistance of the Bureau, if so requested by either of the parties, and shall exchange any additional relevant information that may be available. (WRC-201200)

Reasons: To address the unnecessary requirement for the Radiocommunications Bureau to wait six months after receipt of the advanced publication information before receiving the coordination request information for satellite networks requiring coordination under Section II of Article 9.

UNITED STATES OF AMERICA

PROPOSALS FOR THE WORK OF THE CONFERENCE

Agenda Item 8.1.1: *on activities of the Radiocommunication Sector since WRC-07*

Background Information: This proposal addresses Issue C and Resolution 673 (WRC-07) on radiocommunications use for Earth observation applications. Resolution 673 (WRC-07) called for studies by the ITU-R on possible means to improve the recognition of the essential role and global importance of Earth observation radiocommunications applications and the knowledge and understanding of administrations regarding the utilization and benefits of these applications. This resolution also instructed the Director of the Radiocommunication Bureau to include the results of these studies in his report to WRC-12 for the purposes of considering adequate actions in response to these ITU-R studies. The objectives of these studies do not include new allocations or additional protection.

The ITU-R completed several studies resulting in Recommendation ITU-R RS.1859 on the use of remote sensing systems for data collection for guidance in the event of natural disasters and similar emergencies and Recommendation ITU-R RS.[CLIMATE] on the use of remote sensing systems in the study of climate change and the effects thereof. The ITU-R also completed Report ITU-R RS.2178 on the essential role and global importance of radio spectrum use for Earth observations and for related applications.

In order to improve the recognition of the importance of Earth observation systems within the Radio Regulations, this proposal seeks to modify Resolution 673 (WRC-07) to reflect the conclusions of the ITU-R studies.

Proposal:

ARTICLE 4
Assignment and use of frequencies

NOC USA/8.1.1.C/1

Reasons: Resolution **673 (WRC-07)** notes that the ITU-R studies under this resolution should not result in additional protection or regulatory status of Earth observation systems and applications.

ARTICLE 5
Frequency allocations

NOC USA/8.1.1.C/2

Reasons: Resolution **673 (WRC-07)** notes that the ITU-R studies under this resolution should not result in new allocations or additional protection of Earth observation systems and applications.

RESOLUTION 673 (Rev. WRC-0712)

Radiocommunications The use of the radio spectrum for Earth observation applications

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

considering

- a) that *in situ* and remote Earth observation capabilities depend on the availability of radio frequencies under a number of radio services, allowing for a wide range of passive and active applications on satellite- or ground-based platforms;
- b) that the collection and exchange of Earth observation data are essential for maintaining and improving the accuracy of weather forecasts that contribute to the protection of life, preservation of property and sustainable development throughout the world;
- c) that Earth observation data are also essential for monitoring and predicting climate changes, for disaster prediction, monitoring and mitigation, for increasing the understanding, modelling and verification of all aspects of climate change, and for related policy-making;
- d) that Earth observations are also used to obtain pertinent data regarding natural resources, this being particularly crucial for the benefit of developing countries;
- e) that Earth observations are performed for the benefit of the whole international community and all mankind, are shared among all countries and are generally available at no cost,

recognizing

- a) that § 20 c) of the Plan of Action of the World Summit on Information Society (Geneva, 2003), on e-environment, calls for the establishment of monitoring systems, using information and communication technologies (ICT), to forecast and monitor the impact of natural and man-made disasters, particularly in developing countries, least developed countries and small economies;
- b) Resolution 34 (Rev. Doha, 2006) of the World Telecommunication Development Conference, on the role of telecommunications/ICT in early warning and mitigation of disasters and humanitarian assistance;
- c) that ITU-D Question 22/2 “Utilization of ICT for disaster management, resources and active and passive space-based sensing systems as they apply to disaster and emergency relief situations” studies resulted in ITU-D Report “Utilization of ICT for disaster management,

resources and active and passive space-based sensing systems as they apply to disaster and emergency relief situations.”;

d) that ITU-R studies resulted in Report ITU-R RS.2178 “The essential role and global importance of radio spectrum use for Earth observations and for related applications”;

e) that Earth observation applications have economic and societal benefits as most of the data retrieved by these observations are used for applications to meteorology, climatology, environmental monitoring and agriculture;

noting

a) that Earth observation applications are conducted under the Earth exploration-satellite (active and passive), meteorological satellite, meteorological aids and radiolocation services;

b) that some essential passive frequency bands are covered by No. **5.340**;

c) that certain frequency bands used by Earth observation applications have specific physical characteristics (e.g., spectral lines, propagation) that do not allow a migration to a different frequency;

noting further

a) that the importance of Earth observation radiocommunications applications has been stressed by a number of international bodies such as the Group on Earth Observation (GEO), the World Meteorological Organization (WMO) and the Intergovernmental Panel on Climate Change (IPCC) and that collaboration of ITU-R with these bodies ~~could be~~ is important;

b) that, in particular, GEO is leading a worldwide effort to build a Global Earth Observation System of Systems (GEOSS) to provide comprehensive and coordinated Earth observations from thousands of instruments worldwide, transforming the collected data into vital information for society and mankind;

~~e) that GEOSS provides a broad range of societal benefits, including disaster management and aspects related to human health, energy, climate, water, weather, ecosystems, agriculture and biodiversity;~~

~~c)~~ that more than 90 per cent of natural disasters are climate- or weather-related;

~~ed)~~ that some essential passive Earth observation operations currently suffer radio interference resulting in erroneous data or even complete loss of data;

~~fe)~~ that, although meteorological and Earth observation satellites are currently only operated by a limited number of countries, the data and/or related analyses resulting from their operation are distributed and used globally, in particular by national weather services in developed and developing countries and by climate-change-related organizations,

resolves to invite ITU-R urge Member States

1. to consider the use of certain frequency bands by Earth observation applications prior to any decision potentially affecting these applications;

2. to take into account the radio-frequency requirements of Earth observation systems and, in particular, the protection and long-term availability of related frequency bands when making frequency assignments.

~~to carry out studies on possible means to improve the recognition of the essential role and global importance of Earth observation radiocommunications applications and the knowledge and understanding of administrations regarding the utilization and benefits of these applications,~~

instructs the Director of the Radiocommunication Bureau

~~to include the results of these studies in his Report to WRC-11 for the purposes of considering adequate actions in response to *resolves to invite ITU-R* above, noting that neither new allocations nor additional protection would be objectives of such studies,~~

invites administrations

~~to participate actively in the studies by submitting contributions to ITU-R.~~

Reasons: Noting the results of the ITU-R studies and related work completed in ITU-D, which led to approval of relevant recommendations and reports, the modifications proposed to this resolution complete the goal of increasing the recognition of the importance of radio spectrum use by Earth observation applications.

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 of 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: There is a global requirement for modernization of the Global Maritime Distress and Safety System (GMDSS), as noted by the International Maritime Organization (IMO). IMO COMSAR 14 has initiated scoping exercises, and a work plan to define the requirements for GMDSS modernization. This GMDSS modernization has the endorsement of the IMO Maritime Safety Committee 88.

The International Telecommunication Union Radio Regulations contain many provisions, articles, appendices, and recommendations, associated with the GMDSS. Changes to the Radio Regulations will be necessary to support GMDSS modernization.

IMO is also developing an e-Navigation strategy and implementation plan as endorsed by IMO NAV 56. Initial analysis shows that e-Navigation would require global harmonization of data communications systems. IMO technical bodies have identified that countries could not deploy e-Navigation without an ITU review of the Radio Regulations, to accommodate advanced maritime communication systems.

Proposal:

MOD USA/8.2 /1

RESOLUTION 806 (Rev. WRC-0712)

~~Preliminary a~~**Agenda for the 2015 World Radiocommunication Conference**

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

Reasons: To modify the agenda for wrc-15 to add a new item.

ADD USA/8.2/2

2.XYZ to consider regulatory changes to support implementation of e-Navigation within the maritime mobile service and any possible regulatory action, as necessary, to support GMDSS modernization in accordance with Resolution **XYZ (WRC-12)**.

Reasons: Meet international maritime shipping need and IMO requirements for GMDSS modernization and IMO implementation of e-Navigation.

ADD USA/8.2/3

RESOLUTION XYZ (WRC-12)

Consideration of implementing regulatory provisions from the Global Maritime Distress Safety System modernization and studies related to e-Navigation

The World Radiocommunication Conference (Geneva, 2012),

considering

- a)* that there is an increasing need, on a global basis, for modern Global Maritime Distress Safety System (GMDSS) communication capabilities, for enhanced maritime safety;
- b)* that the International Maritime Organization (IMO) has initiated work plans for GMDSS modernization;
- c)* that the establishment of the maritime Automatic Identification Systems (AIS) offers potential enhancements to VHF maritime safety communications;
- d)* that advanced maritime MF/HF/VHF data systems may be used to deliver Maritime Safety Information (MSI), and GMDSS communications;

- e) that additional global and regional GMDSS satellite providers are being considered by IMO;
- f) that IMO is developing an e-Navigation strategy and implementation plan for e-Navigation, defined as the harmonized collection, integration, exchange, presentation and analysis of marine information onboard and ashore by electronic means to enhance berth to berth navigation and related services for safety and security at sea and protection of the marine environment;
- g) that GMDSS modernization may be influenced by the development of e-Navigation,

recognizing

- a) that advanced maritime communication systems may support the implementation of GMDSS modernization and e-Navigation;
- b) that due to the importance of these radio links in ensuring the safe operation of international shipping and commerce, they must be resilient to interference,

resolves to invite WRC-15

1 to consider appropriate modifications to the Radio Regulations, as necessary, but excluding new allocations, to support GMDSS modernization;

2 to consider appropriate modifications to the Radio Regulations, based on ITU R studies and excluding new allocations, for maritime communication systems supporting e-Navigation within the maritime mobile service,

invites ITU-R

1 to conduct, as a matter of urgency, studies to determine the spectrum requirements and potential frequency bands within the existing maritime mobile service allocations suitable to support e-Navigation;

2 to conduct, as a matter of urgency, studies that identify potential regulatory actions required by WRC-15 to accommodate GMDSS modernization,

further invites

all members of the Radiocommunication Sector and the International Maritime Organization (IMO), the International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA), the International Electrotechnical Commission (IEC) and the World Meteorological Organization (WMO) to contribute to these studies,

instructs the Secretary-General

to bring this Resolution to the attention of the International Maritime Organization (IMO), and other international and regional organizations concerned.

Reasons: Meet advanced maritime communication systems needs from IMO requirements for GMDSS modernization and IMO implementation of e-Navigation.

Annex

Subject: 2012 World Radiocommunication Conference Agenda Item 8.2 Proposal to support Global Maritime Distress Safety System modernization and e-Navigation studies.

Origin: United States of America

Proposal: to consider regulatory changes to support implementation of e-Navigation within the maritime mobile service and any possible regulatory action, as necessary, to support GMDSS modernization in accordance with Resolution **USXYZ (WRC-12)**

Background/reason:

The International Telecommunication Union Radio Regulations contain many provisions, articles, appendices, and recommendations, associated with the GMDSS. Changes to the Radio Regulations will be necessary to support GMDSS modernization.

Initial analysis shows that e-Navigation would require global harmonization of data communications systems. International Maritime Organization technical bodies have identified that countries could not deploy e-Navigation without an ITU review of the Radio Regulations, to accommodate advanced maritime communication systems.

Radiocommunication services concerned: maritime mobile service, mobile satellite service.

Indication of possible difficulties: None

Previous/ongoing studies on the issue: None

<i>Studies to be carried out by:</i> ITU-R Study Group 5, Working Party 5B.	<i>with the participation of:</i> Working Party 4C, IMO, IALA, IMSO
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ITU-R Study Groups concerned: Study Groups 4 and 5.

ITU resource implications, including financial implications (refer to CV126): -- Minimal.

Common regional proposal: No
Number of countries:

Multicountry proposal: No

Remarks

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: The aerospace industry is developing the future generation of commercial aircraft to provide airlines and the flying public more cost-efficient, safe, and reliable aircraft. One important way of accomplishing these aims is to reduce aircraft weight while providing multiple and redundant methods to transmit information on an aircraft. Employment of wireless technologies can accomplish these goals while providing environmental benefits and cost savings to manufacturers and operators.

Installed Wireless Avionics Intra-Communications (WAIC) systems are one way to derive these benefits. WAIC systems consist of radiocommunications between two or more transmitters and receivers on a single aircraft. Both the transmitter and receiver are integrated with or installed on the aircraft. In all cases, communication is part of a closed, exclusive network required for aircraft operation. WAIC systems will not provide air-to-ground or air-to-air communications. WAIC systems will include safety-related applications among their operations.

~~Draft~~ New Report ITU-R M. 2197 [WAIC] provides findings on the technical characteristics and operational requirements of WAIC systems for a single aircraft. Current aeronautical services allocations may not be sufficient to permit the introduction of WAIC systems due to the anticipated WAIC bandwidth requirements. Therefore, this document proposes a WRC-15 agenda item with an associated draft resolution to conduct studies and take appropriate regulatory action to accommodate WAIC systems.

Proposal:

MOD USA/8.2/1

RESOLUTION 806 (REV. WRC-0712)

~~Preliminary a~~Agenda for the 2015 World Radiocommunication Conference

Reasons: To modify the agenda for WRC-15 to add a new item.

ADD USA/8.2/2

2.WAIC to consider spectrum requirements and possible regulatory actions, including allocations, to support wireless avionics intra-communications (WAIC) systems, based on ITU-R studies in accordance with Resolution [WAIC-X] (WRC-12);

Reasons: WAIC is submitted as an agenda item for WRC-15 to enable the appropriate studies on the spectrum requirements and regulatory actions for wireless avionics intra-communications (WAIC) systems.

ADD USA/8.2/3

RESOLUTION [WAIC-X] (WRC-12)

Consideration of regulatory actions, including allocations, for Wireless Avionics Intra-Communications (WAIC)

The World Radiocommunication Conference (Geneva, 2012),

considering

- a) that the future generation of commercial aircraft is being designed to be more cost-efficient, safe, and reliable as well as environmentally friendly;
- b) that WAIC systems are restricted to radiocommunications between two or more points integrated into or installed on a single aircraft;
- c) that WAIC systems will be operated onboard aircraft on the ground and during all phases of flight;
- d) that WAIC systems are expected to be used for safety-related aircraft applications;
- e) that in identifying any spectrum for use by WAIC systems, there is a need to protect and not unduly constrain existing services,

recognizing

- a) that WAIC systems, as described in *considering b)*, are being developed to operate safely and efficiently in one or more non-contiguous radio frequency bands, with emphasis on those currently allocated to aeronautical services;
- b) that WAIC systems operating inside an aircraft will obtain some benefits of fuselage attenuation and other aircraft surface attenuation in order to facilitate sharing with other services;
- c) that ITU-R Report M.2197 parametrically identifies theoretical power level requirements of WAIC systems utilizing different bandwidths over frequency ranges between 1-10 GHz for low data rate applications and between 10-66 GHz for high data rate applications;
- d) that most WAIC applications will be internal to the aircraft structure and will utilize data rates below 10 kbps for typical individual WAIC applications, with an aggregation of numerous WAIC applications on a given aircraft, along with associated overhead, resulting in up to 17.3 Mbits/s;
- e) that studies will be required to provide the basis for considering regulatory changes, including additional allocation, to accommodate justified spectrum requirements of WAIC systems taking into account protection of incumbent services,

resolves

- 1 that ITU-R conduct, in time for WRC-15, more detailed studies than contained in ITU-R Report M.2197 to determine the specific spectrum requirements needed to support WAIC systems as described in *considering b)*;
- 2 that ITU-R, based on the results of *resolves 1*, conduct sharing and compatibility studies;
- 3 that in conducting the sharing and compatibility studies in *resolves 2*:
 - for bands below 15.7 GHz, to only consider spectrum limited to WAIC use within existing aeronautical service allocations;
 - if spectrum requirements cannot be met below 15.7 GHz, to consider frequency bands above 15.7 GHz for new AMS allocation(s) limited to WAIC use;
- 4 that, if compatibility with existing services is confirmed under *resolves 2* and *3* and based on the results of ITU-R studies, recommend that WRC-15 consider possible regulatory provisions to support the implementation of WAIC systems, including the possibility of new AMS allocation(s), taking into account protection of incumbent services and without placing undue constraints on existing services in the considered bands,

invites

all members of the Radiocommunication Sector and the International Civil Aviation Organization (ICAO) to participate in these studies.

Reasons: This resolution details the scope and required studies related to future spectrum requirements of wireless avionics intra-communications systems. This resolution will enable the required analysis to determine the spectrum requirements and potential frequency bands to take place in the appropriate ITU-R study group(s).

Annex

Subject: 2012 World Radiocommunication Conference Agenda Item 8.2 Proposal to support the introduction of new allocations in the Aeronautical Mobile Service.

Origin: United States of America

Proposal: To consider spectrum requirements and possible regulatory actions, including allocations, to support wireless avionics intra-communications (WAIC) systems, based on ITU-R studies in accordance with Resolution [WAIC-X] (WRC-12)

Background/reason: The commercial aviation industry is developing the next generation of aircraft to provide airlines and the flying public more cost-efficient, safer, and more reliable aircraft. It is believed that wireless technologies can reduce the weight of systems on an aircraft, thereby reducing the amount of fuel required to fly and providing significant cost savings. Installed wireless avionics intra-communications (WAIC) systems are one way to derive these benefits.

Radiocommunication services concerned: All services.

Indication of possible difficulties: None

Previous/ongoing studies on the issue: Report ITU-R M. 2197 as approved at November 2010 Study Group 5 meeting.

Studies to be carried out by: ITU-R Study Group 5, Working Party 5B.	with the participation of: ICAO
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ITU-R Study Groups concerned: Study Groups 4, 5, 6, and 7.

ITU resource implications, including financial implications (refer to CV126): -- Minimal.

Common regional proposal: No

Multicountry proposal: No

Number of countries:

Remarks

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: Currently approximately 5 billion of the world's estimated 6.8 billion people are connected to global telecommunication networks via mobile terminals. Mobile telephony and mobile broadband demand and consumption have been growing at an unprecedented pace. Correspondingly, mobile telephony consumers have grown to expect and demand a user experience that is similar to services and applications that they currently experience in wired office and home environments. Thus, the increasing demand for higher data rate services with comparable quality of service to the global broadband consumer will place increasing pressure on the available spectrum resources to support the growth of a variety of mobile applications.

Moreover, the expanded access to mobile broadband services will trigger the creation of innovative new businesses, provide cost-effective connections in developing countries and under-served areas, increase productivity, improve public safety, and allow for the development of mobile telemedicine, telework, distance learning, as well as many other benefits that will transform lives. These benefits, however, may not be realized unless adequate spectrum is available for the mobile broadband implementation. Preliminary analyses indicate that the broadband spectrum deficit is likely to approach 300 MHz by 2014 while up to 500 MHz of additional spectrum will be needed in the coming 10 years. These analyses also indicate that making available additional spectrum for mobile broadband would create value in excess of \$100B in the next five years through avoidance of unnecessary costs. This estimate of value creation is limited, as it does not take into account the broader social value, of which some elements are highlighted below:

➤ *Healthcare*

Information technology plays a key role in improving health and health care delivery. The mobile broadband can improve care quality, safety, efficiency, and reduce disparities in health care. Increased access to broadband will serve to engage patients and families in managing their health and enhance care coordination. Broadband access might help ensure adequate privacy and security of health information. Increased use of mobile devices can dramatically improve the collection, presentation and exchange of health care information, and provide clinicians and consumers the tools to transform care. Technology alone cannot heal, but when appropriately incorporated into care, technology can help health care professionals and consumers make better decisions, become more efficient, engage in innovation, and understand both individual and public health more effectively.

➤ *Education*

Broadband can be an important tool to help educators, parents and students meet major challenges in education. A country's economic welfare and long-term success depend on improving learning for all students, and broadband-enabled solutions hold tremendous promise to help reverse patterns of low achievement and lack of access. With broadband, students and teachers can expand instruction beyond the confines of the physical classroom and traditional school day.

Broadband can also provide more customized learning opportunities for students to access high-quality, low-cost and personally relevant educational material.

Broadband can improve the flow of educational information, allowing teachers, parents and organizations to make better decisions tied to each student's location, needs and abilities. Improved information flow can also make educational product and service markets more competitive by allowing school districts and other organizations to develop or purchase higher-quality educational products and services.

➤ *Economic Growth*

Mobile broadband systems can make it possible for small businesses to reach new markets and improve their business processes. They have also become a critical pathway for individuals to gain skills and access careers. It is a core infrastructure component for local communities seeking to attract new industries and skilled work forces. As a result, small businesses, workers, and communities must have the broadband infrastructure, training and tools to participate and compete in a changing economy. Broadband can help every community.

➤ *Government Services*

Smarter use of broadband can facilitate a vast change in government. Like private companies, government can make its services available 24 hours a day, seven days a week, 365 days a year. Broadband-enabled online services can create paths across government's bureaucratic silos so that someone wanting to access unemployment benefits can deal with the local government and the federal government at the same time. Broadband holds the potential to move all government forms online, eliminating paperwork. Broadband allows for online tutorials for simple government services, which can help free government employees to focus on the more complex cases. And broadband can increase efficiency by increasing the speed and depth of cooperation across departments and across different levels of government.

➤ *Civic Engagement*

Civic engagement starts with an informed public, and mobile broadband systems can help by strengthening the reach and relevance of mediated and unmediated information. Broadband can enable government to share unmediated information more easily. Providing more information and data to the public about the processes and results of government can strengthen the citizenry and its government. Broadband can also empower citizens to engage their government through new broadband-enabled tools. Broadband has already increased access to information and revolutionized the way citizens interact with each other.

➤ *Public Safety*

There are significant benefits, including cost efficiencies and improved technological advancement, if the public safety community can increasingly use applications and devices developed for commercial mobile broadband networks. Ultimately, this system must be flexible, allowing public safety entities to forge incentive-based partnerships with commercial operators and others. This system will allow the public safety community to realize the benefits of commercial technologies, which will reduce costs and ensure the network evolves.

In light of these benefits, it is important to emphasize that as the use of mobile broadband technologies expands, existing mobile service allocations will not be adequate to meet the growing demand. Since making new spectrum available has historically taken several years, and since mobile data growth trends are expected to continue beyond the near-term forecasts, there is an urgent need for timely WRC action to allocate spectrum for the mobile broadband including IMT.

For these reasons the United States proposes that the ITU-R undertake studies with a view towards allocating spectrum to support the implementation of broadband systems, including IMT, and report the results of these studies to the next WRC for its regulatory actions as required, including new allocations and identifications. The United States also recognizes that existing radiocommunication services in the bands being studied must be taken into account in order to ensure their continuing operation.

Proposals:

MOD USA/8.2 /1

RESOLUTION 806 (WRC-~~07~~12)

~~Preliminary~~ Agenda for the 2015 World Radiocommunication Conference

The World Radiocommunication Conference (Geneva, 20~~07~~12),

Reasons: Modify the agenda for WRC-15 to add a new item

ADD USA/8.2/2

#.XYZ to consider the spectrum requirements and possible regulatory actions, including additional allocations to the mobile service¹ on a primary basis to accommodate the development of broadband systems, including IMT, based on the results of ITU-R studies, in accordance with Resolution **[BROADBAND] (WRC-12)**;

Reasons: Available spectrum to meet consumer demand for high-data rate, high-quality mobile services may not be adequate to meet the growing worldwide demand. Also, the existing regulatory framework needs to be examined to ensure that it remains sufficiently flexible to support the introduction of the new broadband wireless applications in the mobile radio service. This agenda item will consider regulatory actions, including additional allocations to the mobile service on a primary basis, to meet this demand.

ADD USA/8.2/3

RESOLUTION [BROADBAND](WRC-12)

Consideration of spectrum requirements, regulatory provisions, and additional allocations to the mobile service for broadband systems, including International Mobile Telecommunications (IMT)

The World Radiocommunication Conference (Geneva, 2012),

considering

- a) that, currently approximately 5 billion of the world's estimated 6.8 billion people are connected to global telecommunication networks via mobile terminals;
- b) that mobile telephony and mobile broadband demand and utilization are growing at an unprecedented pace and is likely to exceed capacity under current spectrum availability in the near-term;

¹ Including fixed point-to-area applications

- c) that currently, there are more than one billion mobile broadband subscribers worldwide and, by 2013, the number of mobile broadband subscribers is projected to reach approximately 2.4 billion;
- d) that the number of mobile broadband subscriptions has grown steadily and in 2008 surpassed those for fixed broadband;
- e) that the development of common worldwide allocations is desirable in order to improve and harmonize utilization of the radio-frequency spectrum;
- f) that flexibility and harmonization of spectrum usage are important factors to support bridging the digital divide and bringing the benefits of ICTs to all citizens;
- g) that current projections indicate that by 2014, the monthly worldwide broadband mobile data traffic will exceed the annualized total broadband data traffic for all of 2008;
- h) that expanded broadband access is expected increase connectivity of underserved areas, increase productivity and improve public safety;
- i) that ensuring connectivity to schools, rural communities and health facilities is vital to economic development and to making effective use of ICTs and that increased deployment of affordable broadband will help facilitate this;
- j) that wireless applications are often the most cost-effective and practicable means of delivering advanced ICT in many countries;
- k) that expanded broadband access also is expected to allow for the development of mobile telemedicine, telework, distance learning, and other new applications;
- l) that for global operation and economies of scale, which are key requirements for the success of mobile communications systems, it is desirable to agree on harmonized or common operational, technical and spectrum parameters;
- m) that Question ITU-R 77-6/5 addresses the needs of developing countries in the development and implementation of mobile radiocommunication technology;
- n) that adequate spectrum availability is a prerequisite for the success of the continuing development of mobile broadband systems, including IMT;
- o) that there is a long lead time between the allocation and/or identification of frequency bands by World Radiocommunication Conference and the deployment of systems in those bands;
- p) that it is therefore timely to study demand, technical, spectrum and regulatory issues related to the future development of mobile broadband systems, including IMT;
- q) that there is a need to continually take advantage of technological developments in order to increase the efficient use of spectrum and facilitate spectrum access,

further considering

that broadband mobile systems may include fixed point-to-area applications,

recognizing

- a) that it is important to ensure compatibility with existing services;

- b) that international operations (*i.e.*, roaming) and economies of scale are facilitated by globally harmonized spectrum allocations and identification;
- c) that in-band sharing is not feasible between the mobile and radionavigation-satellite service (RNSS) signals that are provided in the 1164-1215 MHz, 1215-1300 MHz, and 1559-1610 MHz frequency bands;
- d) that the current regulatory framework may not adequately support the point-to-area applications in the fixed service allocations;
- e) that one of the primary objectives of the Radio Regulations is to provide for and, where necessary, regulate new applications of radiocommunication technology, (see No. **0.10**);
- f) that previous conferences have adopted regulatory provisions, including on an interim or provisional basis, to allow implementation of emerging technologies in an expeditious manner taking into account existing services;
- g) that spectrum demand for the mobile broadband systems, including IMT are determined by the mobile traffic demand which, in turn, is driven by the data usage characteristics of each device type and the numbers devices in use,

resolves to invite the ITU-R

- 1 to pursue studies to facilitate common, worldwide allocations and identification of spectrum suitable for the development of mobile broadband systems, including IMT;
- 2 to study sharing and compatibility between broadband systems including IMT and systems of other services while ensuring that existing services are not unduly constrained;
- 3 to take into account ITU-R recommendations and reports on sharing and compatibility between IMT and systems in other services when conducting the studies in resolves 2;
- 4 to study technical, operational and regulatory issues relating to mobile broadband systems, including IMT, and develop recommendations and reports as required,

resolves to invite WRC-15

to review the results of studies called for under *resolves* and take appropriate action to accommodate development of mobile broadband systems, including IMT while providing the maximum flexibility to administrations in spectrum use,

instructs the first session of the Conference Preparatory Meeting for WRC-15

pursuant to Resolution ITU-R 2-5, to establish a new Joint Task Group comprised of affected ITU-R Study Groups, to carry out the studies in response to *resolves to invite the ITU-R*,

request the Secretary-General

to bring this Resolution to the attention of the International Civil Aviation Organization particularly with regard to the 4 200-4 400 MHz frequency band, and to the attention of the World Meteorological Organization particularly with regard to the 1 695-1 710 MHz

frequency band, and to other international organizations, because these bands require the involvement of these organizations,

invites the Director of the Telecommunication Development Bureau

to draw the attention of the Telecommunication Development Sector to this Resolution.

Reasons: This new Resolution will provide structure and guidance to ITU-R for consideration of regulatory actions, including additional allocations to the mobile service on a primary basis, for the development of broadband systems in preparation for WRC-15.

ATTACHMENT

Proposal for an additional agenda item to consider spectrum requirements, regulatory provisions, and allocations to support mobile broadband systems, including the terrestrial component of International Mobile Telecommunications

Subject: Proposed WRC-15 agenda item to determine the amount of spectrum needed to support the development of mobile broadband systems, including IMT, and modify the Radio Regulations as required, including new allocations and identifications.

Origin: United States of America

Proposal: The United States proposes that the ITU-R undertake studies to determine the amount of spectrum needed to support mobile broadband systems, including IMT, and report the results of these studies to the next WRC for regulatory actions as required, including new allocations and identifications, taking into account the requirements of existing radio services.

Background/reason: Currently approximately 5 billion of the world's estimated 6.8 billion people are connected to global telecommunication networks via mobile terminals. Mobile telephony and mobile broadband demand and consumption have been growing at an unprecedented pace. Currently, 3G technologies are providing services to more than one billion subscribers worldwide and, by 2013, the number of 3G subscribers is projected to reach approximately 2.4 billion. Estimates of worldwide wireless data traffic indicate that it grew by 5,800 percent during the two year period from 2006 to 2008 with slightly decreased rate of 4,500 percent forecast over the next few years. Current projections indicate that by 2014 monthly worldwide mobile broadband data traffic will exceed the total broadband data traffic for all of 2008. One operator in the United States reported in February 2010 that its mobile broadband traffic had grown more than 5,000 percent over the past three years. This strong demand creates an ever-expanding market for phones, smartphones, PDAs, tablets, e-readers, gaming devices, consumer electronics devices, and laptops.

In light of these developments, it is anticipated that the mobile data demand is likely to exceed capacity under current spectrum availability in the near-term, and that meeting this demand by making additional spectrum available is likely to create significant economic value. Preliminary analyses indicate that, in the U.S., the broadband spectrum deficit is likely to approach 300 MHz by 2014, and that making available additional spectrum for mobile broadband would create value in excess of \$100B in the next five years through avoidance of unnecessary costs. This estimate of value creation is narrow, as it does not account for the broader social value created through mobile broadband, which some economists estimate as multiples of the private value. Since making new spectrum available has historically taken several years, and since mobile data growth trends are expected to continue beyond the near-term forecasts, there is an urgent need for timely WRC action to allocate spectrum for the mobile broadband including IMT.

This agenda item will provide an opportunity to determine the need for spectrum, and to

identify suitable spectrum for the mobile broadband including IMT through sharing studies of candidate frequency bands. The United States proposes that the ITU-R undertake the studies called for in Resolution [**BROADBAND**] below to determine the amount of spectrum needed to support the development of mobile broadband systems, including IMT, and report the results of these studies to the next WRC for its regulatory actions as required, including new allocations and identifications.

Radiocommunication services concerned: Mobile, Fixed, Broadcasting, Satellite, Radiolocation Aeronautical, Metairds, Metsat

Indication of possible difficulties: The frequency bands to be considered as candidates to support mobile broadband systems are equally likely to be encumbered by other services (e.g., fixed, broadcast, radiolocation and satellites).

Previous/ongoing studies on the issue: Several studies have been performed in SG -4, -5 and -6 on sharing between mobile broadband technologies and existing services in a number of bands.

Studies to be carried out by: JTG 4-5-6-7

with the participation of: Study Groups 4, 5, 6 and 7

ITU-R Study Groups concerned: 4, 5, 6 and 7

ITU resource implications, including financial implications (refer to CV126): Work can be completed within the existing resources of the ITU-R Study Groups, placing no additional burden on ITU-R

Common regional proposal: No

Multicountry proposal: No

Number of countries:

Remarks

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: The Earth exploration-satellite service (EESS) requires an additional Earth-to-space allocation in the frequency band 7 190 – 7 235 MHz because of congestion in the bands 2 025 – 2 110 MHz and 2 200 – 2 290 MHz. These bands currently support several hundred satellites, making coordination extremely difficult. This allocation, along with existing space-to-Earth allocations near 8 GHz, would also allow EESS satellites to employ a single transponder for both uplinks and downlinks, reducing design and launch costs.

Currently, no suitable Earth-to-space allocations are available for tracking, telemetry and control (TT&C) of EESS satellites at frequencies higher than the 2 025 – 2 110 MHz global allocation. Additionally, the band 2 200 – 2 290 MHz can support payload data downlinks for only a few EESS satellites. These factors require current EESS satellites to be equipped with two transponders: one operating near 2 GHz for TT&C and the other operating at the higher frequencies required for medium- and high-rate payload data downlinks, typically in the band 8 025 – 8 400 MHz. With a suitable EESS Earth-to-space allocation near 8 025 – 8 400 MHz, a single transponder could accommodate both satellite control and payload data downlink requirements.

The band 7 145 – 7 235 MHz is currently allocated to the fixed, mobile and space research (Earth-to-space) services on a primary basis, in accordance with No. 5.460. EESS satellites normally operate in low-Earth orbit. The number of EESS ground stations receivers in the 8 025 – 8 400 MHz band is small and they are usually located at high latitudes. EESS telecommand uplinks and EESS downlink receivers typically share the same ground station locations.

Proposals:

MOD USA/8.2 /1

RESOLUTION 806 (WRC-~~07~~12)

Preliminary Agenda for the 2015 World Radiocommunication Conference

The World Radiocommunication Conference (Geneva, 20~~07~~12),

ADD USA/8.2 /2

2.BB to review ITU-R studies on sharing between potential Earth exploration-satellite service (EESS) uplinks and existing services in the band 7 190 – 7 235 MHz, with the view to providing a primary allocation for the EESS (Earth-to-space) in the 7 190 – 7 235 MHz band, in accordance with Resolution [USA-YYY] (WRC-12).

Reasons: To provide a primary allocation to the EESS (Earth-to-space) in the 7 190 – 7 235 MHz band which, when used in conjunction with EESS (space-to-Earth) allocations near 8 GHz, would accommodate both uplinks and high data rate downlinks on the same EESS satellite transponder.

ADD USA/8.2/3

RESOLUTION YYY (WRC-12)

Use of the 7 190 – 7 235 MHz band by the Earth exploration-satellite service (Earth-to-space)

The World Radiocommunication Conference (Geneva, 2012),

considering

- a) that the band 7 145 – 7 235 MHz is allocated to the fixed, mobile and space research (Earth-to-space) services on a primary basis, subject to No. 5.460;
- b) that the bands 8 025 – 8 175 MHz, 8 175 – 8 215 MHz, and 8 215 – 8 400 MHz are allocated to the Earth exploration-satellite service (EESS) (space-to-Earth) worldwide;
- c) that an EESS (Earth-to-space) allocation in the band 7 190 – 7 235 MHz would provide for uplinks and downlinks on the same transponder, increasing efficiency and reducing costs;
- d) that limited bandwidth is available in the bands 2 025 – 2 110 MHz and 2 200 – 2 290 MHz for EESS operations;
- e) that requirements for environmental and climate change data from EESS satellites are increasing,

recognizing

- a) that simplifying satellite design and reducing design and launch costs by incorporating a single transponder on EESS satellites would be beneficial to EESS operators;
- b) that congestion in the 2 025 – 2 110 MHz and 2 220 – 2 290 MHz bands increases the probability of harmful interference, which could contribute to deleterious effects on critical environmental data available only through EESS satellite resources,

further recognizing

- a) that the number of EESS ground stations receivers in the band 8 025 – 8 400 MHz is small and that they are usually located at high latitudes;
- b) that EESS telecommand uplinks and corresponding EESS ground station receivers typically share the same ground station locations,

resolves to invite ITU-R

- 1 to conduct sharing studies between EESS (Earth-to-space) systems and existing services in the band 7 190 – 7 235 MHz;
- 2 to complete the studies as a matter of urgency, taking into account the present use of the allocated band, with a view to presenting, at the appropriate time, the technical basis for the work of WRC-15,

resolves to invite WRC-15

- 1 to consider a primary allocation to the EESS (Earth-to-space) in the band 7 190 – 7 235 MHz, taking into account the results of ITU-R studies;
- 2 to consider appropriate modifications to the Table of Frequency Allocations, based on proposals from administrations,

invites administrations

to participate actively in the studies by submitting contributions to ITU-R,

instructs the Secretary-General

to bring this Resolution to the attention of the World Meteorological Organization (WMO) and other international and regional organizations concerned.

Reasons: To support ITU-R studies toward a potential new EESS (Earth-to-space) allocation in the band 7 190 – 7 235 MHz.

ATTACHMENT

PROPOSAL FOR AN AGENDA ITEM STUDYING THE EARTH EXPLORATION-SATELLITE SERVICE (EARTH-TO-SPACE) SHARING WITH SERVICES IN THE BAND 7 190 – 7 235 MHz

Subject: Proposed Agenda Item for WRC-15 studying an Earth exploration-satellite service (Earth-to-space) allocation in the band 7 190 – 7 235 MHz and sharing between the fixed, mobile and space research services.

Origin: United States of America

Proposal: to review ITU-R studies on sharing between potential Earth exploration-satellite service (EESS) uplinks and existing services in the band 7 190 – 7 235 MHz, with the view to providing a primary allocation for the EESS (Earth-to-space) in the 7 190 – 7 235 MHz band, in accordance with Resolution [USA-YYY] (WRC-12).

Background/reason: The Earth exploration-satellite service (EESS) requires an additional Earth-to-space allocation in the frequency band 7 190 – 7 235 MHz because of congestion in the bands 2 025 – 2 110 MHz and 2 200 – 2 290 MHz, which support several hundred satellites, making coordination extremely difficult. This allocation, along with existing space-to-Earth allocations near 8 GHz, would also allow EESS satellites to employ a single transponder for both uplinks and downlinks, reducing design and launch costs.

Radiocommunication services concerned: fixed, mobile, space research (Earth-to-space)

Indication of possible difficulties: none foreseen

Previous/ongoing studies on the issue: TBD

Studies to be carried out by: WP 7B	with the participation of: WPs 5A, 5C
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ITU-R Study Groups concerned: SG7

ITU resource implications, including financial implications (refer to CV126): *minimal*

Common regional proposal: Yes/No	Multicountry proposal: Yes/No
Number of countries:	

Remarks