ATTACHMENT 2
to FCC Public Notice DA 10-2060

Draft Proposals formulated and approved within the National Telecommunications and Information Administration:

Document WAC/088(26.10.10)

Ms. Mindel De La Torre
Chief of the International Bureau
Federal Communications Commission
445 12th Street SW
Washington, DC 20554

Dear Ms. De La Torre:

The National Telecommunications and Information Administration (NTIA), on behalf of the Executive Branch agencies, approves the release of draft Executive Branch proposals for WRC-12 agenda items 1.10 (Resolution 357) and 1.14.

NTIA considered the Federal agencies' input toward the development of U.S. proposals for WRC-12. NTIA forwards this package for consideration and review by your WRC-12 Advisory Committee. Dr. Darlene Drazenovich is the primary contact from my staff.

Sincerely,

(*Original Signed August 10, 2010)*

Karl B. Nebbia
Associate Administrator
Office of Spectrum Management

UNITED STATES OF AMERICA

DRAFT PROPOSALS FOR THE WORK OF THE CONFERENCE

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

Background Information: The ITU-R intends to address several essential maritime issues at WRC-12 under agenda item 1.10. The technical, operational, procedural work and studies, for certain maritime issues proved to be too complex to reach a satisfactory stage for any conclusive action by WRC-12.

These issues include:

1. the next generation of the Global Maritime Distress and Safety System (GMDSS);
2. implementation of E-Navigation (eNAV), which is the harmonized creation, collection, integration, exchange, and presentation of maritime 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;
3. mesh networking for improved safety communications in the maritime environment; and
4. container and cargo identification systems to support global commerce and enhanced port security

These remaining topics in the global maritime community require continued study within the ITU-R in an effort to reach a resolution at a future WRC. Modification at WRC-12 to Resolution **357** (**WRC-07**) is necessary to continue studies within the ITU-R and reach conclusion on the subjects noted above.

Proposal:

MOD USA/1.10/1

RESOLUTION 357 (WRC-12)

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

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

considering

a) that there is increasing need, on a global basis, to enhance ship and cargo identification, tracking, and surveillance as well as ship and port security and safety;

b) that the International Maritime Organization (IMO) adoption of the International Ship and Port Facility Security (ISPS) Code, specifically Safety of Life at Sea (SOLAS) Convention, Chapter XI-2, on special measures to enhance maritime security, requires long-range spectrum dependent systems;

c) that the introduction of the shipborne universal automatic identification system (AIS) supports maritime safety and offers potential enhancements to ship and port security and maritime safety;

d) that the IMO will propose modernization of Global Maritime Distress and Safety System (GMDSS)~~that studies within ITU-R indicate that additional AIS channels in the mobile-satellite service may be required to enhance and accommodate global ship tracking capabilities~~;

e) that new systems will harmonize creation, collection, integration, exchange and presentation of maritime 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~~that advanced maritime HF data systems may be used to deliver security alerts and safety information to, and to receive similar information and long-range identification and tracking (LRIT) information from, ships in global regions not under satellite coverage~~;

f) that use of existing maritime mobile allocations, where practicable, for ship and port security and enhanced maritime safety would be preferable, particularly where international interoperability is required;

g) that additional studies within ITU-R on spectrum efficient radio technologies may be required to resolve these multifaceted spectrum requirements;

~~*h)* that requirements for ITU Service Publications and specific revisions of content, format and structure of those publications may be required to support maritime security and safety systems,~~

noting

a) ~~*a)*~~ Resolution **342 (Rev.WRC-2000)**: "New technologies to provide improved efficiency in the use of the band 156-174 MHz by stations in the maritime mobile service";

b) IMO Martime Safety Committee Circular 1056: Guidelines for Ships Operating in Arctic Ice-Covered Waters,

~~*b)* 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",~~

recognizing

a) that there is a global requirement to enhance maritime safety, ship and port security via spectrum dependent systems;

~~*b)* that existing and future technologies for Ship Security and Alerting Systems (SSAS), introduced as a result of the ISPS Code referred to in *considering b)*, will require long-range communication links and networks between mobile ships and shore-based stations;~~

b~~*c*~~*)* that due to the importance of these radio links in ensuring the safe and secure operation of international shipping and commerce, they must be resilient to interference;

c~~*d*~~*)* that studies will be required to provide a basis for considering regulatory changes, including additional allocations and recommendations, designed to accommodate spectrum requirements of ship and port security, consistent with the protection of incumbent services;

d~~*e*~~*)* that the ITU and international standards organizations have initiated related studies on spectrum efficient technology;

e) that IMO has established new NAVAREAs in the Arctic regions and there is a need for improved GMDSS communications in the Arctic,~~,~~

resolves

1 that WRC-16~~1~~ consider amendments to provisions of the Radio Regulations necessary to provide for the operation of ship and port security and maritime safety systems;

2 that WRC-16~~1~~ consider additional allocations to the maritime mobile service ~~below 1 GHz~~ to support the requirements identified in *resolves* 1;

~~3 that WRC-11 consider additional allocations to the maritime mobile-satellite service in frequency bands allocated to the maritime mobile service between 156 and 162.025 MHz to support the requirements identified in *resolves* 1,~~

invites ITU-R

1 to conduct, as a matter of urgency, studies to determine the spectrum requirements and potential frequency bands suitable to support ship and port security and enhanced maritime safety systems;

2 that the studies referred to in *invites ITU-R* 1 should include the applicability of spectrum efficient technologies, and sharing and compatibility studies with services already having allocations in potential spectrum for ship safety and port security systems,

invites

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

instructs the Secretary-General

to bring this Resolution to the attention of IMO, ISO, IEC, IALA and other international and regional organizations concerned.

Reasons: It is necessary to modify Resolution **357 (WRC-07)** to continue the technical, operational and procedural work and studies to address several essential maritime issues under WRC-12 agenda item 1.10.

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UNITED STATES OF AMERICA

DRAFT PROPOSALS FOR THE WORK OF THE CONFERENCE

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

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

The 30-300 MHz band is allocated to and used by a wide variety of services, including the fixed, mobile, aeronautical mobile (R), aeronautical radionavigation, broadcasting, and amateur services, as well as a range of space services. For example, the maritime mobile service utilizes safety channels for aircraft Search and Rescue (SAR) operating on channels 16 (156.800 MHz ± 37.5 kHz) and 70 (156.525 MHz ± 12.5 kHz) and the aircraft SAR and satellites operating on Automatic Identification System (AIS) channels AIS 1 (161.975 MHz ± 12.5 kHz) and AIS 2 (162.025 MHz ± 12.5 kHz), and there are space research and satellite service allocations in the 137-138 MHz, 148-149.9 MHz and 149.9-150.05 MHz bands.

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

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

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

Proposal:

NOC USA/AI1.14/1

ARTICLE 5

Frequency Allocations

Section IV – Table of Frequency Allocations

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

SUP USA/AI1.14/2

RESOLUTION 611 (WRC-07)

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

Reasons: Consequential to completion of agenda item 1.14 at WRC-12.

Document WAC/089(26.10.10)

Ms. Mindel De La Torre
Chief of the International Bureau
Federal Communications Commission
445 12th Street SW
Washington, DC 20554

Dear Ms. De La Torre:

The National Telecommunications and Information Administration (NTIA), on behalf of the Executive Branch agencies, approves the release of a draft Executive Branch proposal for WRC-12 agenda item 1.7 (aeronautical mobile-satellite and mobile-satellite services). NTIA proposes modification Resolution 222 (Rev. WRC-07).

NTIA considered the Federal agencies' input toward the development of U.S. proposals for WRC-12. NTIA forwards this package for consideration and review by your WRC-12 Advisory Committee. Dr. Darlene Drazenovich is the primary contact from my staff.

Sincerely,

(*Original Signed August 12, 2010)*

Karl B. Nebbia
Associate Administrator
Office of Spectrum Management

UNITED STATES OF AMERICA

DRAFT PROPOSALS FOR THE WORK OF THE CONFERENCE

Agenda Item 1.7: *to consider the results of ITU-R studies in accordance with Resolution **222 (Rev.WRC-07)** in order to ensure long-term spectrum availability and access to spectrum necessary to meet requirements for the aeronautical mobile-satellite (R) service, and to take appropriate action on this subject, while retaining unchanged the generic allocation to the mobile-satellite service in the bands 1 525-1 559 MHz and 1 626.5-1 660.5 MHz*

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

WRC-2000 adopted Resolution **222 (WRC-2000)** resolving that, in frequency coordination of MSS systems in the bands 1 525-1 559 MHz and 1 626.5-1 660.5 MHz, administrations shall ensure that the spectrum needed for AMS(R)S communications within priority categories 1 to 6 of Article **44** is accommodated. WRC-07 revised Resolution **222** inviting ITU-R to carry out a number of additional studies towards ensuring long term spectrum availability for AMS(R)S.

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

In the CPM Report, one administration stated that in the framework of one multilateral meeting (MLM)/operator's review meeting (ORM) group (Regions 1 and 3) no more than 76 % of the spectrum requested by that operator was made available and, when then considering the additional constraints on spectrum reuse due to the other operators in Region 2, the overall resulting spectrum freely accessible for that AMS(R)S network was less than 50 % of the requested amount. Therefore, the CPM report indicates that some administrations believe that the current provisions of Resolution **222 (Rev.WRC-07)** have not achieved the objectives of No. **5.357A**.

To ensure long-term availability of AMS(R)S, this proposal puts forth "no change" to Article **5**; however, it modifies Resolution **222 (WRC-07)**. The proposed modifications to the resolution include inviting ITU-R to study and develop a recommendation on a method to determine spectrum requirements for AMS(R)S related to the categories 1 to 6 of Article **44** for use during coordination discussions. The modifications also include an annex to the resolution to describe the procedures that administrations can

[1] For AMS(R)S priority access to the sub-bands 1 555-1 559 MHz and 1 656.5-1 660.5 MHz, see also RR No. **5.362A**.

utilize during coordination discussions to accommodate priority access to AMS(R)S spectrum in the bands that are under the provisions of No. **5.357A**.

Proposal:

ARTICLE 5

Frequency allocations

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

NOC USA/AI 1.7/1

1 525-1 610 MHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
1 525-1 530 SPACE OPERATION (space-to-Earth) FIXED MOBILE-SATELLITE (space-to-Earth) 5.208B 5.351A Earth exploration-satellite Mobile except aeronautical mobile 5.349 5.341 5.342 5.350 5.351 5.352A 5.354	**1 525-1 530** SPACE OPERATION (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) 5.208B 5.351A Earth exploration-satellite Fixed Mobile 5.343 5.341 5.351 5.354	**1 525-1 530** SPACE OPERATION (space-to-Earth) FIXED MOBILE-SATELLITE (space-to-Earth) 5.208B 5.351A Earth exploration-satellite Mobile 5.349 5.341 5.351 5.352A 5.354
1 530-1 535 SPACE OPERATION (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) 5.208B 5.351A 5.353A Earth exploration-satellite Fixed Mobile except aeronautical mobile 5.341 5.342 5.351 5.354	**1 530-1 535** SPACE OPERATION (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) 5.208B 5.351A 5.353A Earth exploration-satellite Fixed Mobile 5.343 5.341 5.351 5.354	
1 535-1 559	MOBILE-SATELLITE (space-to-Earth) 5.208B 5.351A 5.341 5.351 5.353A 5.354 5.355 5.356 5.357 5.357A 5.359 5.362A	
1 559-1 610	AERONAUTICAL RADIONAVIGATION RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.208B 5.328B 5.329A 5.341 5.362B 5.362C	

Reasons: The MSS allocations continue to be necessary to satisfy future requirements. No modifications are required to satisfy AMS(R)S requirements.

NOC USA/AI 1.7/2

1 610-1 660 MHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
1 610-1 610.6 MOBILE-SATELLITE (Earth-to-space) 5.351A AERONAUTICAL RADIONAVIGATION 5.341 5.355 5.359 5.364 5.366 5.367 5.368 5.369 5.371 5.372	**1 610-1 610.6** MOBILE-SATELLITE (Earth-to-space) 5.351A AERONAUTICAL RADIONAVIGATION RADIODETERMINATION-SATELLITE (Earth-to-space) 5.341 5.364 5.366 5.367 5.368 5.370 5.372	**1 610-1 610.6** MOBILE-SATELLITE (Earth-to-space) 5.351A AERONAUTICAL RADIONAVIGATION Radiodetermination-satellite (Earth-to-space) 5.341 5.355 5.359 5.364 5.366 5.367 5.368 5.369 5.372
1 610.6-1 613.8 MOBILE-SATELLITE (Earth-to-space) 5.351A RADIO ASTRONOMY AERONAUTICAL RADIONAVIGATION 5.149 5.341 5.355 5.359 5.364 5.366 5.367 5.368 5.369 5.371 5.372	**1 610.6-1 613.8** MOBILE-SATELLITE (Earth-to-space) 5.351A RADIO ASTRONOMY AERONAUTICAL RADIONAVIGATION RADIODETERMINATION-SATELLITE (Earth-to-space) 5.149 5.341 5.364 5.366 5.367 5.368 5.370 5.372	**1 610.6-1 613.8** MOBILE-SATELLITE (Earth-to-space) 5.351A RADIO ASTRONOMY AERONAUTICAL RADIONAVIGATION Radiodetermination-satellite (Earth-to-space) 5.149 5.341 5.355 5.359 5.364 5.366 5.367 5.368 5.369 5.372
1 613.8-1 626.5 MOBILE-SATELLITE (Earth-to-space) 5.351A AERONAUTICAL RADIONAVIGATION Mobile-satellite (space-to-Earth) 5.208B 5.341 5.355 5.359 5.364 5.365 5.366 5.367 5.368 5.369 5.371 5.372	**1 613.8-1 626.5** MOBILE-SATELLITE (Earth-to-space) 5.351A AERONAUTICAL RADIONAVIGATION RADIODETERMINATION-SATELLITE (Earth-to-space) Mobile-satellite (space-to-Earth) 5.208B 5.341 5.364 5.365 5.366 5.367 5.368 5.370 5.372	**1 613.8-1 626.5** MOBILE-SATELLITE (Earth-to-space) 5.351A AERONAUTICAL RADIONAVIGATION Mobile-satellite (space-to-Earth) 5.208B Radiodetermination-satellite (Earth-to-space) 5.341 5.355 5.359 5.364 5.365 5.366 5.367 5.368 5.369 5.372
1 626.5-1 660	MOBILE-SATELLITE (Earth-to-space) 5.351A 5.341 5.351 5.353A 5.354 5.355 5.357A 5.359 5.362A 5.374 5.375 5.376	

Reasons: The MSS allocations continue to be necessary to satisfy future requirements. No modifications are required to satisfy AMS(R)S requirements.

NOC USA/AI 1.7/3

1 660-1 710 MHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
1 660-1 660.5	MOBILE-SATELLITE (Earth-to-space) 5.351A RADIO ASTRONOMY 5.149 5.341 5.351 5.354 5.362A 5.376A	
1 660.5-1 668	RADIO ASTRONOMY SPACE RESEARCH (passive) Fixed Mobile except aeronautical mobile 5.149 5.341 5.379 5.379A	
1 668-1 668.4	MOBILE-SATELLITE (Earth-to-space) 5.351A 5.379B 5.379C RADIO ASTRONOMY SPACE RESEARCH (passive) Fixed Mobile except aeronautical mobile 5.149 5.341 5.379 5.379A	
1 668.4-1 670	METEOROLOGICAL AIDS FIXED MOBILE except aeronautical mobile MOBILE-SATELLITE (Earth-to-space) 5.351A 5.379B 5.379C RADIO ASTRONOMY 5.149 5.341 5.379D 5.379E	
1 670-1 675	METEOROLOGICAL AIDS FIXED METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE MOBILE-SATELLITE (Earth-to-space) 5.351A 5.379B 5.341 5.379D 5.379E 5.380A	
1 675-1 690	METEOROLOGICAL AIDS FIXED METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile 5.341	
1 690-1 700 METEOROLOGICAL AIDS METEOROLOGICAL-SATELLITE (space-to-Earth) Fixed Mobile except aeronautical mobile 5.289 5.341 5.382	**1 690-1 700** METEOROLOGICAL AIDS METEOROLOGICAL-SATELLITE (space-to-Earth) 5.289 5.341 5.381	

1 700-1 710 FIXED METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile 5.289 5.341	**1 700-1 710** FIXED METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile 5.289 5.341 5.384

Reasons: The MSS allocations continue to be necessary to satisfy future requirements. No modifications are required to satisfy AMS(R)S requirements.

MOD USA/AI 1.7/4

5.357A In applying the procedures of Section II of Article **9** to the mobile-satellite service in the bands 1 545-1 555 MHz and 1 646.5-1 656.5 MHz, priority shall be given to accommodating the spectrum requirements of the aeronautical mobile-satellite (R) service providing transmission of messages with priority 1 to 6 in Article **44**. Aeronautical mobile-satellite (R) service communications with priority 1 to 6 in Article **44** shall have priority access and immediate availability, by pre-emption if necessary, over all other mobile-satellite communications operating within a network. Mobile-satellite systems shall not cause unacceptable interference to, or claim protection from, aeronautical mobile-satellite (R) service communications with priority 1 to 6 in Article **44**. Account shall be taken of the priority of safety-related communications in the other mobile-satellite services. (The provisions of Resolution **222 (WRC-20<u>12</u>~~00~~)**~~*~~ shall apply.) (WRC-20<u>12</u>~~00~~)

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

Reasons: Additional provisions are necessary in Resolution **222** to ensure priority access by the AMS(R)S to spectrum under the provisions of No. **5.357A**.

<u>NOC</u> USA/AI 1.7/5

5.362A

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

MOD USA/AI 1.7/6

MOD

RESOLUTION 222 (Rev.WRC-~~07~~12)

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

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

considering

a) that prior to WRC-97, the bands 1 530-1 544 MHz (space-to-Earth) and 1 626.5-1 645.5 MHz (Earth-to-space) were allocated to the maritime mobile-satellite service and the bands 1 545-1 555 MHz (space-to-Earth) and 1 646.5-1 656.5 MHz (Earth-to-space) were allocated on an exclusive basis to the aeronautical mobile-satellite (R) service (AMS(R)S) in most countries;

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

c) that WRC-97 adopted No. **5.353A** giving priority to accommodating spectrum requirements for and protecting from unacceptable interference distress, urgency and safety communications of the Global Maritime Distress and Safety System (GMDSS) in the bands 1 530-1 544 MHz and 1 626.5-1 645.5 MHz and No. **5.357A** giving priority to accommodating spectrum requirements for and protecting from unacceptable interference the AMS(R)S providing transmission of messages with priority categories 1 to 6 in Article **44** in the bands 1 545-1 555 MHz and 1 646.5-1 656.5 MHz;

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

further considering

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

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

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

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

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

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

recognizing

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

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

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

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

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

noting

that there is a need to use spectrum in the most efficient manner within and among MSS systems,

resolves

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

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

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

~~3~~4 that the notifying administrations of mobile-satellite networks shall ensure that MSS operators carrying non-safety-related traffic yield capacity, as and when necessary, to accommodate the spectrum requirements for distress, urgency and safety communication of GMDSS communications, as elaborated in Articles 32 and 33, and for AMS(R)S communications within priority categories 1 to 6 of Article 44; this could be achieved in advance through the coordination process in *resolves* 1 and the procedures contained in the Annex to this Resolution shall apply~~and, when necessary, through other means if such means are identified as a result of studies in *invites ITU-R*~~,

invites ITU-R

1. to conduct studies on and develop in one or more ITU-R Recommendations a methodology to compute spectrum requirements for AMS(R)S related to the categories 1 to 6 of Article **44** by 2016 to support discussions between notifying administrations;

2. to take into account *further considering c* in conducting the studies of *invites ITU-R* 1;

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

~~i) to study, as a matter of urgency, the existing and future spectrum requirements of the aeronautical mobile-satellite (R) service;~~

ii) to assess whether the long-term requirements of the AMS(R)S can be met within the existing allocations with respect to No. **5.357A** while retaining unchanged the generic allocation for the mobile-satellite service in the bands 1 525-1 559 MHz and 1 626.5-1 660.5 MHz, and without placing undue constraints on the existing systems operating in accordance with the Radio Regulations;

iii) to complete studies to determine the feasibility and practicality of technical or regulatory means, other than the coordination process referred to in *resolves* 1 or the means considered in Report ITU-R M.2073, in order to ensure adequate access to spectrum to accommodate the AMS(R)S requirements as referenced in *resolves* 3 above, while taking into account the latest technical advances in order to maximize spectral efficiency;

iv) if the assessment identified in *invites ITU-R* i) and ii) indicates that these requirements cannot be met, to study existing MSS allocations or possible new allocations only for satisfying the requirements of the aeronautical mobile satellite (R) service for communications with priority categories 1 to 6 of Article **44**, for global and seamless operation of civil aviation taking into account the need to avoid undue constraints on existing systems and other services,

invites WRC-11

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

invites

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

ANNEX TO RESOLUTION 222 (Rev.WRC-12)

Procedures to implement No. 5.357A and Resolution 222 (Rev. WRC-12) within the Coordination Process

1) The notifying administrations of planned MSS, including AMS(R)S networks, submit the required technical characteristics and other relevant information of their MSS networks in accordance with Appendix **4**. Coordination of these MSS systems with other affected satellite systems operating in the bands 1 525-1 559 MHz and 1 626.5-1 660.5 MHz proceeds in accordance with Articles **9** and **11** and other relevant provisions of the Radio Regulations, as appropriate.

2) To further facilitate coordination under Articles **9** and **11**, the notifying administrations of MSS, including AMS(R)S, networks may authorize their respective MSS satellite operators, including AMS(R)S satellite operators, to enter into bilateral and multilateral coordination processes to secure operator agreements on access to spectrum for their satellite systems.

3) At frequency coordination meetings, including operator meetings referred to in 2), the notifying administration or its respective MSS satellite operator presents the spectrum requirements of each AMS(R)S system according to an agreed method and accompanied with the information justifying such requirements. The other notifying administrations or their respective MSS satellite operators then

validate the requirements under agreed criteria. In accordance with No. **5.357A** the notifying administrations ensure that their coordination agreement accommodates all validated AMS(R)S spectrum requirements with priority categories 1 to 6 of Article **44**.

4) The notifying administrations of MSS systems, including AMS(R)S, have responsibility to ensure that their respective assignments are compatible in the relevant bilateral or multilateral frequency coordination meetings (in particular when those systems span over various geographic area(s)). In the event an administration notifying an AMS(R)S system experiences difficulty in accommodating its validated AMS(R)S spectrum requirements at these meetings, it may invoke No. **5.357A** (as per the procedures described in Items 5, 6 and 7 below).

5) In the event that a notifying AMS(R)S administration invokes No. **5.357A** based on the results of a bilateral or multilateral coordination operators' meeting, that administration shall ensure that its designated operator does not accept the spectrum sharing arrangement developed at the operators' meeting as acceptance indicates that the agreement satisfies requirements presented. That AMS(R)S administration informs the other administrations involved in the coordination process of its intention to invoke No. **5.357A**, and informs the Radiocommunication Bureau that its AMS(R)S requirements have not been satisfied. The concerned AMS(R)S administration then calls for an administrations' frequency coordination meeting of all affected notifying administrations, to be convened within six months. That notifying AMS(R)S administration may seek the assistance of the Radiocommunication Bureau in accordance with Articles **7** and **13,** if any of the affected notifying administrations do not agree to meet to resolve the raised issues.

6) At the administrations' frequency coordination meeting, all affected notifying administrations review and validate the AMS(R)S requirements of the notifying administration referred to in 5) above. All affected notifying administrations work toward accommodating any validated AMS(R)S requirements in accordance with No. **5.357A** and **Resolution 222 (Rev.WRC-12)**.

7) If the matter remains unresolved at the administrations' frequency coordination meeting referred to in 6) above, the notifying AMS(R)S administration may seek the assistance of the Radiocommunication Bureau pursuant to Articles **7** and **13** and notify the respective administrations. The Radiocommunication Bureau provides a report and assistance in accordance with No. **13.3**.

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

Reasons: Additional provisions are necessary in Resolution **222** to ensure priority access by the AMS(R)S to spectrum under the provisions of No. **5.357A**.

Document WAC/091(26.10.10)

Ms. Mindel De La Torre
Chief of the International Bureau
Federal Communications Commission
445 12th Street SW
Washington, DC 20554

Dear Ms. De La Torre:

The National Telecommunications and Information Administration (NTIA), on behalf of the Executive Branch agencies, approve the release of a draft Executive Branch proposal for WRC-12 agenda item 2. NTIA proposes modifications to Resolution 27 to add cross reference data to the table of contents for recommendations incorporated by reference.

NTIA considered the Federal agencies' input toward the development of U.S. proposals for WRC-12. NTIA forwards this package for consideration and review by your WRC-12 Advisory Committee. Dr. Darlene Drazenovich is the primary contact from my staff.

Sincerely,

(*Original Signed September 24, 2010)*

Karl B. Nebbia
Associate Administrator
Office of Spectrum Management

UNITED STATES OF AMERICA

DRAFT 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-12~~07~~)

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	Parts of the RR including references to the ITU-R Rec.	Page
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	No. **34.1**	179
S.672-4	Satellite antenna radiation pattern for use as a design objective in the fixed-satellite service employing geostationary satellites	Article **22** Table 22-2 (and **22.5D.3**), Table 22-3 (and **22.5F.3**)	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	Appendix **15** Table 15-2	207
P.838-3	Specific attenuation model for rain for use in prediction methods	Appendix **30A** Annex 3 § 2.2	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)	Appendix **18,** NOTE B (prior to the table)	217
SM.1138-1	Determination of necessary bandwidths including examples for their calculation and associated examples for the designation of emissions	Appendix **1** § 1 2) and § 2 3.1)	229
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	No. **5.391**	237
M.1171	Radiotelephony procedures in the maritime mobile service	Nos. **52.192**, **52.195**, **52.213**, **52.224**, **52.234**, **52.240**, **57.1**,	267

Recommendation ITU-R	Title of the Recommendation	Parts of the RR including references to the ITU-R Rec.	Page
M.1172	Miscellaneous abbreviations and signals to be used for radiocommunications in the maritime mobile service	Nos. **19.48**	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	Nos. **52.181**, **52.229**, Appendix **17** Part B § 6 a) and b)	311
M.1174-2	Technical characteristics of equipment used for on-board vessel communications in the bands between 450 and 470 MHz	No. **5.287**, **5.288**	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	Appendix **4** Annex 2 item C.11.b	315
S.1256	Methodology for determining the maximum aggregate power flux-density at the geostationary-satellite orbit in the band 6 700-7 075 MHz from feeder links of non-geostationary satellite systems in the mobile-satellite service in the space-to-Earth direction	No. **22.5A**	321
RS.1260-1	Feasibility of sharing between active spaceborne sensors and other services in the range 420-470 MHz	No. **5.279A**	329
BO.1293-2 (Annexes 1 and 2)	Protection masks and associated calculation methods for interference into broadcast-satellite systems involving digital emissions	Appendix **30** Annex 5 § 3.4, Appendix **30A** Annex 3 § 3.3	345

Recommendation ITU-R	Title of the Recommendation	Parts of the RR including references to the ITU-R Rec.	Page
S.1340	Sharing between feeder links for the mobile-satellite service and the aeronautical radionavigation service in the Earth-to-space direction in the band 15.4-15.7 GHz	No. **5.511C**	357
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	No. **5.511A**	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	Article **22** Table 22-1A (and **22.5C.6**), Table 22-1B (and **22.5C.6**), Table 22-1C (and **22.5C.6**)	387
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	Article **22** Table 22-1D (and **22.5C.11**)	391
M.1583	Interference calculations between non-geostationary mobile-satellite service or radionavigation-satellite service systems and radio astronomy telescope sites	No. **5.443B** + Resolution **741 (WRC-03)** *resolves* 2, Appendix **4** Annex 2 item A.17.b.3 + Resolution **741 (WRC-03)** *resolves* 2	399
S.1586-1	Calculation of unwanted emission levels produced by a non-geostationary fixed-satellite service system at radio astronomy sites	No. **5.551H**	409

Recommendation ITU-R	Title of the Recommendation	Parts of the RR including references to the ITU-R Rec.	Page
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	No. **5.447E**	417
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. **5.551H,** No. **5.443B** + Resolution **741 (WRC-03)** *resolves* 2 Appendix **4** Annex 2 item A.17.b.3 + Resolution **741 (WRC-03)** *resolves* 2	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. **5.447F**	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. **5.447F**, **5.450A**	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. **5.328A** + Resolution **609 (Rev.WRC-07)** *resolves* 10	475

Recommendation ITU-R	Title of the Recommendation	Parts of the RR including references to the ITU-R Rec.	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. **5.504B**, **5.504C**, **5.508A**, **5.509A**	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. **5.446A** + Resolution **229 (WRC-03)** *resolves* 8	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. **5.444B** + Resolution **419 (WRC-07)** *resolves* 2, No. **5.444B** + Resolution **748 (WRC-07)** *resolves* 2	517

Document WAC/092(26.10.10)

Ms. Mindel De La Torre
Chief of the International Bureau
Federal Communications Commission
445 12th Street SW
Washington, DC 20554

Dear Ms. De La Torre:

The National Telecommunications and Information Administration (NTIA), on behalf of the Executive Branch agencies, approves the release of the attached draft Executive Branch proposals for WRC-12 agenda items 1.4 and 1.21. For agenda item 1.4, NTIA proposes i) no change to the bands 108-117.975 MHz and 5010-5030 MHz; and ii) a primary allocation to the aeronautical mobile (route) service in the band 5000-5010 MHz with an associated resolution. The reason for the no change proposal for the band 5010-5030 MHz is that neither the aeronautical mobile (R) service (AM(R)S) operational environment nor the radionavigation-satellite service (RNSS) signal characteristics are sufficiently defined to finalize ITU-R compatibility studies between the two services. This WRC-12 proposal does not mean that Federal agencies oppose a U.S. domestic allocation to the AM(R)S in the band 5 010-5 030 MHz. In fact, the Federal agencies support such a domestic allocation, and suggested text for a U.S. footnote for consideration by NTIA.[1] I expect that NTIA will pursue this domestic allocation during the WRC-12 domestic implementation process.

For agenda item 1.21, NTIA proposes a primary allocation to the radiolocation service in the band 15.4-15.7 GHz. NTIA also proposes footnotes concerning the protection of the existing aeronautical radionavigation and the adjacent band radio astronomy services.

NTIA considered the Federal agencies' input toward the development of U.S. proposals for WRC-12. NTIA forwards this package for consideration and review by your WRC-12 Advisory Committee. Dr. Darlene Drazenovich is the primary contact from my staff.

Sincerely,

(*Original Signed October 4, 2010)*
Karl B. Nebbia
Associate Administrator
Office of Spectrum Management

Enclosure

[1] The footnote agreed by the Federal agencies reads as follows, "**US_5.1-5.3** - The band 5010-5030 MHz is also allocated to the aeronautical mobile (R) service (AM(R)S) limited to stations operating in accordance with international civil aviation standards and supporting surface applications at airports. In making assignments for this band, attempts shall first be made to satisfy the AM(R)S requirements in the bands 5000-5010 MHz and 5091-5150 MHz. AM(R)S systems used in the band 5 010-5 030 MHz shall be designed and implemented to be capable of operational modification if receiving harmful interference from the radionavigation service. Finally, notwithstanding Article 4, No. 4.10, stations in the AM(R)S operating in this band shall be designed and implemented to be capable of operational modification to reduce throughput and/or preclude the use of specific frequencies in order to ensure protection of radionavigation-satellite service systems operating in the band 5010-5030 MHz."

UNITED STATES OF AMERICA

DRAFT 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 ADD 5.AMR	

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, 2012~~07~~),

considering

h) that ~~this~~ 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;

…

resolves

…

~~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,~~

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 40.3 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 attempt to 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 the AM(R)S systems used in the 5 000-5 010 MHz band shall be designed and implemented to be capable of operational modification if receiving harmful interference from the radionavigation service;

5 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;

6 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

DRAFT 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 RADIOLOCATION 5.RLS 5.YYY 5.511D	
15.43-15.63	FIXED-SATELLITE (Earth-to-space) 5.511A AERONAUTICAL RADIONAVIGATION RADIOLOCATION 5.RLS 5.YYY 5.511C	
15.63-15.7	AERONAUTICAL RADIONAVIGATION RADIOLOCATION 5.RLS 5.YYY 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 dB(W/m^2) 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.

Document WAC/103(26.10.10)

Ms. Mindel De La Torre
Chief of the International Bureau
Federal Communications Commission
445 12th Street SW
Washington, DC 20554

Dear Ms. De La Torre:

The National Telecommunications and Information Administration (NTIA) on behalf of the Executive Branch agencies, approves the release of the attached Executive Branch proposal for WRC-12 agenda items 1.3.

NTIA proposes no change in the use of the band 5091-5150 MHz for unmanned aircraft systems (UAS) operations.

NTIA considered the Federal agencies' input toward the development of U.S. proposals for WRC-12. NTIA forwards this package for your consideration and review by your WRC-12 Advisory Committee. Dr. Darlene Drazenovich is the primary contact from my staff.

Sincerely,

(*Original Signed October 22, 2010)*

Karl B. Nebbia
Associate Administrator
Office of Spectrum Management

UNITED STATES OF AMERICA

DRAFT PROPOSAL FOR THE WORK AT 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% $\Delta Ts / Ts$. 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.