

**ATTACHMENT B**  
**to FCC Public Notice DA 17-365**

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



MAR 24 2017

Robert Nelson  
Chief Engineer, International Bureau  
Federal Communications Commission  
445 12<sup>th</sup> Street SW  
Washington, DC 20554

Dear Mr. Nelson

The National Telecommunications and Information Administration (NTIA), on behalf of the Executive Branch, approve the release of two Executive Branch draft proposals for the 2019 World Radiocommunication Conference (WRC-19). NTIA is submitting WRC-19 draft proposals for two agenda item 9.1 issues.

- 1) Issue 9.1.7 – Urgent Studies for unauthorized operation of earth station terminals.
- 2) Issue 9.1.8 – Urgent Studies for Machine Type Communications (MTC).

NTIA considered the federal agencies' inputs toward the development of these documents. NTIA forwards this package for your consideration and review by the FCC WRC-19 Advisory Committee. Mr. Charles Glass is the primary contact from my staff.

Sincerely

A handwritten signature in blue ink, appearing to read "Paige R. Atkins".

Paige R. Atkins  
Associate Administrator  
Office of Spectrum Management

Enclosures:

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

**Agenda Item 9.1, Issue 9.1.7: Resolution 958 (Rev.WRC-15):** to consider and approve the Report of the Director of the Radiocommunication Bureau, in accordance with Article 7 of the Convention, on the activities of the Radiocommunication Sector since WRC-15 on the urgent studies required in preparation for WRC-19 on the unauthorized operation of earth station terminals (Res. ITU-R 64).

**Background Information:** The Radiocommunication Assembly (RA-15) approved Resolution ITU-R 64, titled “Guidelines for the management of unauthorized operation of earth station terminals”. The resolves of this resolution invited ITU-R study groups concerned:

- 1 to conduct studies to examine whether there is a need for possible additional measures in order to limit uplink transmissions of terminals to those terminals authorized in accordance with No. 18.1;
- 2 to study the possible methods that will assist administrations in managing the unauthorized operation of earth station terminals deployed within their territory, as a tool to guide their national spectrum-management program.

Resolution 958 (WRC-15) identifies topics requiring urgent study for inclusion in the Report of the Director for WRC-19. In the Annex to this resolution, Section 2 raises the issue of unauthorized operation of uplink terminals.

- a) whether there is a need for possible additional measures in order to limit uplink transmissions of terminals to those authorized terminals in accordance with No. 18.1; and
- b) the possible methods that will assist administrations in managing the unauthorized operation of earth station terminals deployed within its territory, as a tool to guide their national spectrum management programme, in accordance with Resolution ITU-R 64 (RA-15).

This issue concerns the operation of unlicensed uplink terminals in an administration’s territory. For some administrations, the use of these terminals causes interference into legitimate satellite service users as well as terrestrial systems. These administrations may not have the resources or technical capabilities to identify and geo-locate the unauthorized uplink terminals. An objective of this issue is to determine whether there is any need for regulatory measures to inhibit the use of unauthorized uplink terminals. So far, studies have shown that this issue can be resolved within the administration by methods not requiring modification of the Radio Regulations. Some administrations may require better spectrum management training and internal spectrum monitoring to identify unauthorized uplink transmissions. The development of ITU-R reports or handbooks may assist administrations in the management of their satellite spectrum resources to prevent or limit the unauthorized use of uplink terminals and enable the administration to locate and terminate the unauthorized transmissions.

**Conclusion:** Studies have not identified any methods requiring modification to the Radio Regulations. Instead, better training and monitoring capability, along with ITU developed Reports and Handbooks, can assist administrations in inhibiting the use of unauthorized uplink earth terminals and can enable administrations to locate and terminate the unauthorized transmissions.

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

**Agenda Item 9.1, Issue 9.1.8:** on the activities of the Radiocommunication Sector since WRC-15, Issue 9.1.8: – Resolution 958 (WRC-15) – Urgent studies required in preparation for WRC-19 – Narrowband and broadband machine-type communication infrastructures.

**Background Information:** WRC-19 Agenda item 9.1, issue 9.1.8 calls for studies on the technical and operational aspects of radio networks and systems, as well as spectrum needed, including possible harmonized use of spectrum to support the implementation of narrowband and broadband machine-type communication infrastructures, in order to develop Recommendations, Reports and/or Handbooks, as appropriate, and to take appropriate actions within the ITU Radiocommunication Sector (ITU-R) scope of work.

Machine-type communication (MTC), machine-to-machine (M2M), and Internet of Things (IoT) are all different names for the same type of application that enables machines to communicate with each other. In this proposal MTC is the common reference for these forms of communication. In the ITU-R, these types of applications already take advantage of spectrum allocated to the mobile service, including frequency ranges identified for International Mobile Telecommunications (IMT). Input from industry and other groups developing MTC technologies, including presentations at the ITU Workshop on Spectrum Management for Internet of Things Deployment (November 2016, Geneva, Switzerland), indicated overwhelmingly that identifying specific frequency bands for those applications may delay or unnecessarily restrict innovation, and may cause an inefficient use of the spectrum. Therefore, having spectrum identified specifically for MTC is neither desired, nor necessary.

**Conclusion:** The United States believes it is unnecessary to identify spectrum specifically for machine-type communications. Therefore, no regulatory action is required.

Document WAC/026(18.04.17)



**UNITED STATES DEPARTMENT OF COMMERCE**  
**National Telecommunications and**  
**Information Administration**  
Washington, D.C. 20230

MAR 24 2017

Robert Nelson  
Chief Engineer, International Bureau  
Federal Communications Commission  
445 12<sup>th</sup> Street SW  
Washington, DC 20554

Dear Mr. Nelson

The National Telecommunications and Information Administration (NTIA), on behalf of the Executive Branch, approved the release of four Executive Branch draft preliminary views for the 2019 World Radiocommunication Conference (WRC-19).

- 1) Agenda Item 1.11 – Railway Radiocommunication Systems between train and trackside
- 2) Agenda Item 1.12 – Intelligent Transport Systems (ITS)
- 3) Agenda Item 1.15 – Land Mobile and Fixed services footnote between 275-450 GHz
- 4) Agenda Item 9.1, Issue 9.1.4 – Stations on board sub-orbital vehicles

NTIA considered the federal agencies' inputs toward the development of these documents. NTIA forwards this package for your consideration and review by the FCC WRC-19 Advisory Committee. Mr. Charles Glass is the primary contact from my staff.

Sincerely

A handwritten signature in blue ink, appearing to read "Paige R. Atkins".

Paige R. Atkins  
Associate Administrator  
Office of Spectrum Management

Enclosures:

**UNITED STATES OF AMERICA**  
**DRAFT PRELIMINARY VIEWS FOR WRC-19**

**Agenda Item 1.11:** to take necessary actions, as appropriate, to facilitate global or regional harmonized frequency bands to support railway radiocommunication systems between train and trackside within existing mobile service allocations, in accordance with Resolution 236 (WRC-15)

**BACKGROUND:** Railway radiocommunication systems between train and trackside (Rail RSTT) carry train control, command, and operational information as well as monitoring data between on-board radio equipment and related radio infrastructure located along trackside. WRC-19 agenda item 1.11 and associated ITU-R Resolution 236 (WRC-15) were developed by some administrations to harmonize spectrum for railway radiocommunication systems between train and trackside for command and control.

**U.S. VIEW:** The United States is of the view that the development of applicable ITU-R Reports and Recommendations can satisfy this agenda item and no change is required for the Radio Regulations. The United States supports studies under Resolution 236 (WRC-15) regarding the possible regional or global harmonization of frequency bands within existing mobile service allocations to facilitate train and trackside radiocommunication for command and control.

**UNITED STATES OF AMERICA**  
**DRAFT PRELIMINARY VIEWS FOR WRC-19**

**Agenda Item 1.12:** to consider possible global or regional harmonized frequency bands, to the maximum extent possible, for the implementation of evolving Intelligent Transport Systems (ITS) under existing mobile-service allocations, in accordance with Resolution 237 (WRC-15).

**BACKGROUND:** An Intelligent Transport System uses communications and computing technologies to improve transportation applications such as safe driving and to enhance productivity through the integration of advanced communications technologies into the transportation infrastructure and into vehicles and other end users. ITS encompasses a broad range of wireless and wireline communications-based information and electronics technologies.

The World Radiocommunication Conference 2015 (WRC-15) developed agenda item 1.12 and associated Resolution 237 (WRC-15) out of an effort by some Administrations to harmonize spectrum for ITS. Since the ITU initiated studies on ITS in the 1990s, there have been many changes in the ITS environment, including the introduction/planned introduction of new technologies and use of various frequency ranges.

**U.S. VIEW:** The United States is of the view that this agenda item could be satisfied by developing ITU-R Reports and Recommendations rather than changing the Radio Regulations. We do support studies under Resolution 237 (WRC-15) regarding the possible harmonization of frequency bands for ITS applications under existing mobile service allocations.



**UNITED STATES OF AMERICA**  
**DRAFT PRELIMINARY VIEWS FOR WRC-19**

**Agenda Item 1.15:** to consider identification of frequency bands for use by administrations for the land-mobile and fixed services applications operating in the frequency range 275-450 GHz, in accordance with Resolution 767 (WRC-15).

**BACKGROUND:** At present, there are no international allocations for radiocommunication services above 275 GHz in the Radio Regulations (RR's). However, footnote No. 5.565 does make identifications for radio astronomy, earth exploration-satellite (passive) and space research (passive) services. Recent advances in microwave technology make possible the use of this spectrum by active services for communications and related uses. Consistent with No. 5.565, frequencies for fixed and land mobile use could be utilized above 275 GHz, provided "all practicable steps" are taken to protect passive services.

Report ITU-R RA.2189 "Sharing between the radio astronomy service and active services in the frequency range 275-3 000 GHz" indicates that the radio astronomy service can share with terrestrial systems due to propagation conditions and power limitations of current active services technologies. The space research service (passive) and the Earth exploration-satellite service (passive) may also be able to share frequencies with the active services; however, studies are needed to demonstrate this.

**U.S. VIEW:** The United States is of the view that it may be possible to develop a similar footnote to that in No. 5.565 for land-mobile and fixed services, identifying bands for terrestrial active service use. To this end, the United States supports studies in the ITU-R on sharing and compatibility between passive and active services as well as spectrum needs for the land-mobile and fixed services for WRC-19 agenda item 1.15 under the terms of Resolution 767 (WRC-15).

**UNITED STATES OF AMERICA**  
**DRAFT PRELIMINARY VIEWS FOR WRC-19**

**Agenda Item 9:** to consider and approve the Report of the Director of the Radiocommunication Bureau, in accordance with Article 7 of the Convention:

**Agenda Item 9.1:** on the activities of the Radiocommunication Sector since WRC-15.

**Note:** The subdivision of Agenda Item 9.1 into issues, such as 9.1.1, 9.1.2, etc., was made at the first session of the Conference Preparatory Meeting for WRC-19 (CPM19-1) and is summarized in the BR Administrative Circular CA/226, 23<sup>rd</sup> December 2015.

**Issue 9.1.4 - Resolution 763 (WRC-15) – Stations on board sub-orbital vehicles**

**BACKGROUND:** Sub-orbital vehicles, including manned reusable launch vehicles and high-altitude balloons, are being licensed by the Federal Aviation Administration to operate within the United States of America. It is predicted that the commercial space transportation industry will grow substantially in the coming years. Resolution 763 (WRC-15) identifies a number of challenges that have to be addressed regarding the spectrum supportability of stations on board sub-orbital vehicles.

The ITU Radiocommunication Sector is presently engaged in studying the current and future radio equipage on board sub-orbital vehicles. Studies will be required to identify any required technical and operational measures that could assist in avoiding harmful interference between radiocommunication systems and determine spectrum requirements to consider a possible future agenda item for WRC-23. These studies have been directed to be completed during the WRC-19 study cycle.

**U.S. VIEW:** The United States supports:

1. The studies called for by Resolution 763 (WRC-15) noting that those studies need to be completed during this study cycle.
2. If the results of studies indicate that additional spectrum and/or other regulatory measures are required, consider seeking an agenda item at a future WRC.

Document WAC/028(18.04.17)



**UNITED STATES DEPARTMENT OF COMMERCE**  
**National Telecommunications and**  
**Information Administration**  
Washington, D.C. 20230

April 3, 2017

Mr. Robert Nelson  
Chief Engineer, International Bureau  
Federal Communications Commission  
445 12<sup>th</sup> Street, SW  
Washington, DC 20554

Dear Mr. Nelson:

The National Telecommunications and Information Administration (NTIA), on behalf of the Executive Branch, approves the release of two Executive Branch draft preliminary views for the 2019 World Radiocommunication Conference (WRC-19). The preliminary views address:

1. Agenda item 1.2, which considers in-band power limits for earth stations operating in the mobile-satellite service, meteorological-satellite service and Earth exploration-satellite service in the frequency bands 401-403 MHz and 399.9-400.05 MHz, in accordance with Resolution **765 (WRC-15)**.
2. Agenda item 1.3, which considers possible upgrading of the secondary allocation to the meteorological-satellite service (space-to-Earth) to primary status and a possible primary allocation to the Earth exploration-satellite service (space-to-Earth) in the frequency band 460-470 MHz, in accordance with Resolution **766 (WRC-15)**.

NTIA considered the federal agencies' inputs toward the development of these two documents. NTIA forwards this package for your consideration and review by the FCC WRC-19 Advisory Committee. Mr. Charles Glass is the primary contact from my staff (202-482-1896 or [cglass@ntia.doc.gov](mailto:cglass@ntia.doc.gov)).

Sincerely,

Paige R. Atkins  
Associate Administrator  
Office of Spectrum

Management

Enclosures (2)

## UNITED STATES OF AMERICA

### DRAFT PRELIMINARY VIEWS FOR WRC-19

**AGENDA ITEM 1.2:** to consider in-band power limits for earth stations operating in the mobile-satellite service, meteorological-satellite service and Earth exploration-satellite service in the frequency bands 401-403 MHz and 399.9-400.05 MHz, in accordance with Resolution **765 (WRC-15)**.

**ISSUE:** Resolution **765 (WRC-15)** – *Establishment of in-band power limits for earth stations operating in mobile-satellite service, the meteorological-satellite service and the Earth exploration-satellite service in the frequency bands 401-403 MHz and 399.9-400.05 MHz*, calls for the necessary technical, operational and regulatory consideration of the possibility of establishing in-band power limits for earth stations in the EESS and MetSat services in the frequency bands 401-403 MHz and in the MSS frequency band 399.9-400.05 MHz.

It is necessary to have stable regulatory certainty in order to be able to provide long-term continuity for the operation of data collection systems (DCS). DCS represents long-term efforts and significant investments. The establishment of in-band power limits for earth stations operating in the EESS, MetSat service, and MSS will bring confidence for DCS operators using the frequency bands 401-403 MHz and 399.9-400.05 MHz.

**BACKGROUND:** The Earth exploration-satellite service (EESS) (Earth-to-space) and meteorological-satellite service (MetSat) (Earth-to-space) systems deployed in the frequency band 401-403 MHz and mobile-satellite service (MSS) (Earth-to-space) systems in the frequency band 399.9-400.05 MHz are currently used for DCS. These systems usually operate most efficiently together by using moderate to low e.i.r.p. levels, resulting in small link margins.

Recommendation ITU-R SA.2045 provides information on the performance and interference criteria for relevant geostationary-satellite orbit (GSO) and non-geostationary satellite (non-GSO) DCS in the frequency band 401-403 MHz. Recommendation ITU-R SA.2044 provides information on the current and future usage of non-GSO DCS in the frequency band 401-403 MHz, and the portioning of the frequency band to allow all DCS equal access to the spectrum. Recommendation ITU-R M.2046 provides a description, and the corresponding protection criteria for broadband noise and narrowband interference, of one MSS system that uses the frequency band 399.9-400.05 MHz (Earth-to-space).

EESS, MetSat, and MSS systems are indispensable for monitoring and predicting climate change; monitoring oceans, weather, and water resources. Additionally, these systems assist in protecting biodiversity, and improve maritime safety, and security. There are a growing number of satellite operators planning to use these frequency bands for telecommand purposes under the EESS, MetSat service, or MSS allocations.

The output power levels of the earth stations at the antenna port of these telecommand links (Earth-to-space) can be much higher than the moderate to low power levels traditionally used for the operation of EESS, MetSat, or MSS systems, and service links in the frequency bands 401-403 MHz and 399.9-400.05 MHz.

**U.S. VIEW:** The United States supports conducting and completing the necessary technical, operational, and regulatory studies on the possibility of establishing in-band power limits for earth stations in the EESS and MetSat service in the frequency band 401-403 MHz and the MSS in the frequency band 399.9-400.05 MHz.

## UNITED STATES OF AMERICA

### DRAFT PRELIMINARY VIEWS FOR WRC-19

**AGENDA ITEM 1.3:** to consider possible upgrading of the secondary allocation to the meteorological-satellite service (space-to-Earth) to primary status and a possible primary allocation to the Earth exploration-satellite service (space-to-Earth) in the frequency band 460-470 MHz, in accordance with Resolution **766 (WRC-15)**.

**ISSUE:** This agenda item relates to consideration of possible upgrade of the secondary allocation to the meteorological-satellite service (space-to-Earth) to primary status and a possible primary allocation to the Earth exploration-satellite service (space-to-Earth) in the frequency band 460-470 MHz, in accordance with Resolution **766 (WRC-15)**.

The ITU-R is invited to study:

- Sharing and compatibility studies of such an upgrade while protecting existing primary fixed and mobile services.
- Determine the appropriate pfd limits to place on MetSat (space-to-Earth), and EESS (space-to-Earth) systems to protect existing primary services.

**BACKGROUND:** The 460-470 MHz band is allocated on a primary basis to the fixed and mobile services. The meteorological-satellite service currently has a secondary allocation in this band. Under **No. 5.289**, “*Earth exploration-satellite service applications, other than the meteorological-satellite service, may also be used in the bands 460-470 MHz for space-to-Earth transmissions subject to not causing harmful interference to stations operating in accordance with the Table*”.

Within this band, the Argos Data Collection System (ADCS) monitors more than 21,000 active Argos platforms collecting data for over 2,000 distinct projects in 100+ countries. The administration of the Argos program is under a joint agreement between the National Oceanic and Atmospheric Administration (NOAA) and the French Space Agency, Centre National d’Etudes Spatiales (CNES). Additional partners include the European Organization for the Exploitation of Meteorological Satellites (EUMETSAT), and the Indian Space Research Organization (ISRO).

Critical applications of the ADCS include atmospheric and ocean monitoring/research, tropical cyclone forecasting, fishery management, oil spill tracking, fishing vessel tracking, search and rescue modeling (at sea), anti-piracy alerting, import/export and hazardous materials tracking, endangered species studies, migration mapping, and wildlife tracking and management.

The meteorological-satellite (space-to-Earth) service operates on a secondary basis to the fixed and mobile services and thus it must not interfere with these services. To protect the fixed and land mobile services within the United States, a power flux density (pfd) limit of  $-152 \text{ dBW/m}^2/4\text{kHz}$  has been imposed on the meteorological-satellite (space-to-Earth) service.

To provide added protection to existing services in the band, globally, the next generation of ADCS transmitters will implement direct sequence spread spectrum in the satellite downlink to reduce the pfd in the 460-470 MHz band to less than  $-152 \text{ dBW/m}^2/4\text{kHz}$ .

Potential upgrade of EESS allocation to primary will bring confidence to the space agencies involved in Satellite Data Collection Programs and will ease coordination with Administrations. These space

programs do represent a long-term effort and require decades of investment between the time the program is officially approved and the time the various satellites are in operation, keeping in mind that usually many satellites are deployed in order to provide a continuous service. For the specific case of this band, the number of satellites expected to be in operation is limited for cost reasons, and it is unlikely that two satellites will transmit at the same time over the same geographical area.

**U.S. VIEW:** In order to protect the investment and expansion of the ADCS systems, the United States supports conducting and completing sharing and compatibility studies. These studies would determine the feasibility of upgrading the MetSat (space-to-Earth) allocation to primary status, and the addition of a primary EESS (space-to-Earth) allocation in the frequency band 460-470 MHz, while protecting the current primary allocations for fixed and land mobile services and maintaining the conditions contained in No. **5.289**.

Should studies support the upgrade of the MetSat service and/or addition of a primary allocation to the EESS, the appropriate pfd limit should be determined for MetSat (space-to-Earth) and EESS (space-to-Earth) systems to protect the existing primary services in the frequency band 460-470 MHz. Should studies conclude that a less restrictive pfd limit than that contained in Resolution **766** (WRC-15) *considering further a*) can protect incumbent services, then the pfd limit ( $-152 \text{ dBW/m}^2 / 4 \text{ kHz}$ ) shall apply.

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