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

SEP 14 2012

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 preliminary views for WRC-15. The enclosed draft preliminary views address agenda items 1.3 (public protection and disaster relief), 1.5 (unmanned aircraft systems in the fixed-satellite service), 1.6.1 (fixed-satellite service allocations for region 1 uplink/downlink at 10-17 GHz), 1.6.2 (fixed-satellite service allocations for region 2 and 3 uplink/downlink at 13-17 GHz), 1.9.1 (fixed-satellite service allocations uplink/downlink in the 7-8 GHz range), 1.9.2 (maritime-mobile satellite service allocation in the 7-8 GHz range), 1.14 (coordinated universal time), 1.17 (wireless avionics intra-communications), and 1.18 (automotive radiolocation applications in the 77.5-78.0 GHz band).

These draft preliminary views consider the federal agency inputs toward the development of U.S. proposals for WRC-15. NTIA forwards this package for your consideration and review by your WRC-15 Advisory Committee. Dr. Darlene Drazenovich is the primary contact from my staff.

Sincerely,

Karl B. Nebbia
Associate Administrator
Office of Spectrum Management

Enclosures

UNITED STATES OF AMERICA

DRAFT PRELIMINARY VIEWS FOR WRC-15

Agenda Item 1.3: to review and revise Resolution **646 (Rev.WRC-12)** for broadband public protection and disaster relief (PPDR), in accordance with Resolution **648 (WRC-12)**

BACKGROUND: Resolution **646 (Rev.WRC-12)** encourages administrations, for the purpose of achieving regionally harmonized frequency bands/ranges for PPDR, to consider certain frequency bands when undertaking their national planning. Under agenda item 1.3, Resolution **648 (Rev.WRC-12)** calls for the ITU-R to study technical and operational issues relating to broadband PPDR and its further development, taking into account:

- technical requirements for PPDR services and applications;
- the evolution of broadband PPDR through advances in technology, and
- the needs of developing countries.

Some aspects of Resolution **646 (Rev.WRC-12)** have evolved since WRC-03 developed the resolution, such as the list of possible frequency bands for PPDR applications and the current and future demand for broadband PPDR (especially video). However, Resolution **648 (Rev.WRC-12)** does not provide for changes to the list of frequency bands contained in Resolution **646 (Rev.WRC-12)**. ITU-R Working Party 5A is initiating revisions of Reports M.2033 and M.1155 to update technical and operational requirements for PPDR, taking into account administrations' demand for broadband applications. Therefore, the changes to Resolution **646 (Rev.WRC-12)** should focus on improving interoperability and cross-border coordination.

Increased interoperability and cross-border coordination is vital to the success of PPDR operations along borders and cooperation between administrations. Technological advances in PPDR and new developments in technical and operation deployments will help administrations address this need.

U.S. VIEW: The United States supports studies to take appropriate action with regard to revision of Resolution **646 (Rev.WRC-12)** to take into account technical requirements for PPDR services and applications, which should provide increased interoperability and cross-border coordination. The United States also believes that modification to the list of frequency bands in Resolution **646 (Rev.WRC-12)** is outside the scope of this agenda item. The United States continues to support the work of Working Party 5A in revising Reports M.2033 and M.1155 to update technical and operational requirements and the frequency bands currently used by administrations in their respective region.

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DRAFT PRELIMINARY VIEWS FOR WRC-15

Agenda Item 1.5: to consider the use of frequency bands allocated to the fixed-satellite service not subject to Appendices 30, 30A and 30B for the control and non-payload communications of unmanned aircraft systems (UAS) in non-segregated airspaces, in accordance with Resolution **153 (WRC-12)**

BACKGROUND: UAS enable the remote piloting of aircraft both over short range and at significant distances within or beyond line-of-sight of the remote pilot. These flight operations currently take place in airspace segregated from commercial air traffic, to ensure the safety of the unmanned air vehicle and other airspace users. The 2012 World Radiocommunication Conference (WRC-12) allocated the band 5 030 – 5 091 MHz to the aeronautical mobile (R) service for terrestrial line-of-sight UAS control links and enhance the possible use of the existing aeronautical mobile-satellite (R) service (AMS(R)S) allocations in the same band for beyond line-of-sight UAS control links. However, the total bandwidth requirements for UAS exceed the 61 MHz available in this band. WRC-12 did not adopt proposals to address beyond line-of-sight operations within some fixed-satellite service (FSS) allocations, but instead established WRC-15 agenda item 1.5 to study the use of FSS for beyond line-of-sight UAS control and non-payload communications (CNPC) links.

In the future, administrations expect broad deployment of UAS throughout the airspace structure. As UAS deployment increases, it will be impractical for some users to deploy only in segregated airspace; rather some UAS will need to integrate with the current airspace users in a safe and seamless manner. To accomplish integration into non-segregated airspace, UAS will require high integrity CNPC link(s) capable of relaying the necessary air traffic control messages and flight critical aircraft information between the unmanned aircraft and remote control centers.

Existing ITU-R studies (e.g., Report ITU-R M.2233) show that commercial fixed-satellite service (FSS) systems operating in portions of the frequency ranges 10.95-14.5 GHz and 17.3-30.0 GHz can support UAS beyond line-of-sight control links and meet the desired link availability. Many commercial aircraft are already equipped with systems operating in these bands, offering immediate access to spectrum for UAS beyond line-of-sight communications.

The International Civil Aviation Organization (ICAO) will develop technical Standards and Recommended Practices (SARPs) for CNPC to ensure safe operation of UAS. UAS CPNC would operate as an FSS application and the responsibilities and liabilities for meeting domestic and ICAO standards and regulations would be specified in the FSS and UAS operators' contracts or procedures.

U.S. VIEW: The United States supports the addition of technical and regulatory provisions that will enable the use of portions of FSS bands for UAS CNPC links in non-segregated airspace, if studies identified in Resolution **153 (WRC-12)** demonstrate that the requirements of aviation authorities are satisfied. However, the United States does not support the addition of an AMS(R)S allocation to the bands used by the FSS for this purpose.

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DRAFT PRELIMINARY VIEWS FOR WRC-15

Agenda Item 1.6.1: to consider possible additional primary allocations, to the fixed-satellite service (Earth-to-space and space-to-Earth) of 250 MHz in the range between 10 GHz and 17 GHz in Region 1; and review the regulatory provisions on the current allocations to the fixed-satellite service (FSS) within each range, taking into account the results of ITU-R studies, in accordance with Resolution **151 (WRC-12)**

BACKGROUND: Considering current allocations and studies under WRC-15 agenda item 1.6.2, Region 1 potentially has a shortfall of 250 MHz in both directions when compared to Regions 2 and 3. WRC-15 agenda item 1.6.1 initiates studies regarding this imbalance for the downlink and the potential imbalance for the uplink and considers allocating an additional 250 MHz of spectrum in both the uplink and downlink directions in the range 10.0-17.0 GHz. Prior to allocating any additional spectrum, studies in the ITU-R must demonstrate compatibility of the FSS with incumbent services in these bands.

Studies in preparation for WRC-95 identified limited sharing compatibility between FSS uplinks and space-borne active sensors in the Earth exploration-satellite service (active) operating in the band 13.75-14 GHz. These previous studies suggest similar incompatibilities might exist between FSS uplinks and the EESS (active) primary allocation in the band 13.25-13.75 GHz.

U.S. VIEW: Given the number of existing services, types of operation, and systems, co-frequency sharing between the FSS and existing services in the frequency ranges 10.0-10.7 GHz and 13.25 – 17.0 GHz will be difficult. Recognizing *resolves* 4 of Resolution **151 (WRC-12)**, the United States supports focusing ITU-R studies in the frequency range 10.7-12.75 GHz.

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DRAFT PRELIMINARY VIEWS FOR WRC-15

Agenda Item 1.6.2: to consider possible additional primary allocations, to the fixed-satellite service (Earth-to-space) of 250 MHz in Region 2 and 300 MHz in Region 3 within the range 13-17 GHz; and review the regulatory provisions on the current allocations to the fixed-satellite service within each range, taking into account the results of ITU-R studies, in accordance with Resolution **152 (WRC-12)**

BACKGROUND: This agenda item studies the unplanned fixed-satellite service (FSS) imbalance between the Earth-to-space direction within ITU Region 2 and 3 and considers allocating an additional 250 MHz and 300 MHz FSS (Earth-to-space), within the range 13.0-17.0 GHz, in Region 2 and Region 3, respectively. ITU-R sharing studies for this agenda item shall exclude the frequency band 13.0-13.25 GHz from consideration, in accordance with *resolves* 3 of Resolution **152 (WRC-12)**. As a result, studies in the ITU-R must demonstrate compatibility with incumbent services prior to WRC-15 allocating any additional spectrum to the FSS (Earth-to-space) in the 13.25-17.0 GHz range.

Studies carried out in preparation for WRC-95 identified limited sharing compatibility between FSS uplinks and space-borne active sensors in the Earth exploration-satellite service (active) operating in the band 13.75-14.0 GHz. These previous studies would suggest similar incompatibilities might exist between FSS uplinks and the EESS (active) primary allocation in the band 13.25-13.75 GHz.

U.S. VIEW: Given the number of existing services, types of operation, and systems, co-frequency sharing between transmitting earth stations in the FSS and existing services in the frequency range 13.25 – 17.0 GHz will be difficult.

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DRAFT PRELIMINARY VIEWS FOR WRC-15

Agenda Item 1.9.1: to consider possible new allocations to the fixed-satellite service in the frequency bands 7 150-7 250 MHz (space-to-Earth) and 8 400-8 500 MHz (Earth-to-space), subject to appropriate sharing conditions, in accordance with Resolution **758 (WRC-12)**

BACKGROUND: The frequency bands 7 250-7 750 MHz (space-to-Earth) and 7 900-8 400 MHz (Earth-to-space) are allocated worldwide to the fixed-satellite service (FSS). Some administrations report a shortfall of spectrum for their current and future FSS applications, and estimate an additional bandwidth requirement of up to 100 MHz for both uplink and downlink data transmission on FSS next-generation satellites.

The bands under study for the new FSS allocations are 7 150-7 250 MHz and 8 400-8 500 MHz. Both bands are currently allocated to the space research service (SRS), fixed service, and mobile service. The use of the bands 7 145-7 190 MHz and 8 400-8 450 MHz by the SRS is limited to deep space. The SRS supports near Earth missions in the bands 7 190-7 235 MHz and 8 450 -8 500 MHz. Currently, there are no other space services co-allocated with primary SRS (deep space) anywhere in the Radio Regulations.

In accordance with Resolution **758 (WRC-12)**, *resolves* 2, any new FSS allocation will be limited to FSS systems operated from a fixed known location and will not encompass small VSAT-like FSS earth stations.

U.S. VIEW: If ITU-R studies demonstrate compatibility with incumbent services, the United States will consider supporting allocations to the FSS in the bands 7 150-7 250 MHz and 8 400-8 500 MHz, or portions thereof, limited to FSS systems operated from a fixed, known location not encompassing small VSAT-like FSS earth stations.

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DRAFT PRELIMINARY VIEWS FOR WRC-15

Agenda Item 1.9.2: to consider the possibility of allocating the bands 7 375-7 750 MHz and 8 025-8 400 MHz to the maritime-mobile satellite service and additional regulatory measures, depending on the results of appropriate studies, in accordance with Resolution **758 (WRC-12)**

BACKGROUND: The bands 7 250-7 750 MHz (space-to-Earth) and 7900-8400 MHz (Earth-to-space) are allocated on a primary basis to the fixed-satellite service (FSS). The band 7 300-8 500 MHz is allocated on a primary basis to the fixed service (FS). Additionally, the bands 7 250-7 375 MHz (space-to-Earth) and 7 900-8 025 MHz (Earth-to-space) are allocated to the mobile-satellite service on a primary basis, subject to agreement obtained under No. **9.21** as required by No. **5.461**. The ITU-R has not determined the additional bandwidth requirements for data transmission on maritime mobile-satellite service (MMSS) next-generation satellites, but intends to address operation beyond territorial waters. Resolution **758 (WRC-12)**, *resolves* 3, indicates the possibility of allocating less than the entire range 7 375-7 750 MHz (space-to-Earth) and 8 025-8 400 MHz (Earth-to-space) to the maritime mobile-satellite service.

The band 8 025-8 400 MHz is allocated to the Earth exploration-satellite service (EESS) (space-to-Earth) on a primary basis. This band supports the downlink of environmental and climate data from non-geostationary orbit (NGSO) satellites, which are often in polar orbits, to earth stations that may be located at high latitudes and/or near coastal areas. The adjacent band 8 400-8 500 MHz is allocated to the space research service (SRS) and to the fixed and mobile services. Additionally, there is extensive use of the band 8 400-8 450 MHz at sites around the world by the SRS (space-to-Earth) for deep space with very large antennas and sensitive receivers that are susceptible to possible out-of-band emissions.

Studies should take into account the location of EESS and SRS earth stations located near coastal areas, which may experience harmful interference caused by emissions from MMSS operations in the area. Exclusion zones may be necessary to avoid interference to these EESS and SRS earth stations.

U.S. VIEW: If ITU-R studies demonstrate compatibility with incumbent services, including the adjacent SRS (space-to-Earth) allocation in the band 8 400-8 450 MHz, which is limited to deep space, the United States will consider supporting allocations to the MMSS in the bands 7 375-7 750 MHz and 8 025-8 400 MHz, or portions thereof.

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DRAFT PRELIMINARY VIEWS FOR WRC-15

Agenda Item 1.14: to consider the feasibility of achieving a continuous reference time-scale, whether by the modification of coordinated universal time (UTC) or some other method, and take appropriate action, in accordance with Resolution **653 (WRC-12)**

BACKGROUND: Coordinated Universal Time (UTC) is the international standard time scale for practical timekeeping in the modern world. The basic unit of measurement is the internationally accepted Système International (SI) second, which is realized in practice by atomic clocks in national laboratories throughout the world. The Bureau International des Poids et Mesures uses clock information from these laboratories to coordinate the various national realizations of UTC. This process provides time with a stability of better than a billionth of a second per day for the international infrastructure that requires accurate timing information, such as communications, computer networks, navigation, and air traffic control. The Radio Regulations define UTC in No. **1.14** through incorporation by reference of Recommendation ITU-R TF.460-6.

The International Radio Consultative Committee (CCIR) formally adopted the system for UTC in Recommendation 374 in 1963. The CCIR introduced leap seconds into the definition of UTC beginning on January 1, 1972. In its Recommendation 460, the CCIR stated that UTC is a timescale that uses the SI second. The CCIR also stated the accounting of those seconds will be adjusted, when necessary, in 1 second steps to compensate for the slowing of the Earth's rotation rate. This version of the UTC system remains in use today, defined by ITU-R (formerly CCIR) Recommendation ITU-R TF.460-6, leap seconds have been inserted into UTC at irregular intervals because the slowing of the Earth's rotation rate is not uniform.

Much of our international infrastructure relies on steady, accurate timing. Many of these systems view leap seconds as disruptions of the count in the time stream. Resolution **653 (WRC-12)**, considering e, states "that the occasional insertion of leap seconds into UTC may create difficulties for systems and applications that depend on accurate timing." Given that our reliance on many of these systems and applications is both critical and growing with time, WRC-12 adopted agenda item 1.14 in order to consider the feasibility of achieving a continuous reference time-scale, whether by the modification of UTC or some other method.

U.S. VIEW: The United States supports the adoption of UTC without leap seconds as the solution for achieving a continuous reference time-scale for dissemination by radiocommunication systems if the studies, in accordance with Resolution **653 (WRC-12)**, support this as a viable solution.

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DRAFT PRELIMINARY VIEWS FOR WRC-15

Agenda Item 1.17: to consider possible spectrum requirements and regulatory actions, including appropriate aeronautical allocations, to support wireless avionics intra-communications (WAIC), in accordance with Resolution **423 (WRC-12)**

BACKGROUND: The aerospace industry is developing the future generation of commercial aircraft to provide airlines and the flying public more cost-efficient, safe, and reliable aircraft. Wireless capabilities will reduce aircraft weight, provide multiple and redundant methods to transmit safety-related information, and provide environmental benefits and cost savings to manufacturers and operators.

WAIC systems consist of multiple radiocommunication devices between two or more transmitters and receivers on a single aircraft and provide safety-related aircraft applications. WAIC system transmissions are not limited to the interior of the aircraft structure. For example, wireless sensors mounted on the wings or engines can communicate with systems located within the aircraft. WAIC communication traffic will be between transmitters and receivers on the same aircraft as part of a closed, exclusive network required for aircraft operation. WAIC systems will not provide air-to-ground, air-to-air or air-to-satellite communications.

Report ITU-R M. 2197 provides findings on the technical characteristics and operational requirements of WAIC systems.

Although Resolution **423 (WRC-12)** does not provide a specific frequency range in the "*Resolves*" section, the "*Invites ITU-R*" section, point (3), indicates studies should consider:

i. frequency bands within existing worldwide aeronautical mobile service, aeronautical mobile (R) service and aeronautical radionavigation service allocations; and
ii. additional frequency bands above 15.7 GHz for aeronautical services if spectrum requirements cannot be met in frequency bands studied under *invites ITU-R* 3 i)

U.S. VIEW: The United States supports regulatory actions, including appropriate allocations to the AM(R)S limited to WAIC systems, if the results of ITU-R studies show compatibility with existing services in accordance with Resolution **423 (WRC-12)**. Those studies should consider frequency bands above 15.7 GHz only if spectrum requirements cannot be met in existing worldwide AMS, AM(R)S and/or ARNS allocations below 15.7 GHz.

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DRAFT PRELIMINARY VIEWS FOR WRC-15

Agenda Item 1.18: to consider a primary allocation to the radiolocation service for automotive applications in the 77.5-78.0 GHz frequency band in accordance with Resolution **654 (WRC-12)**

BACKGROUND: Resolution **654 (WRC-12)** calls for WRC-15 to consider a primary allocation to the radiolocation service in the 77.5-78 GHz frequency band for automotive applications, based on appropriate technical, operational and regulatory studies, including sharing studies with services operating in the band and compatibility studies in nearby bands. The resolution also calls for evaluation of Intelligent Transportation System (ITS) safety-related applications that would benefit from global or regional harmonization.

The worldwide automotive industry is developing vehicular radar systems that would operate on an unlicensed basis in portions of the 76-81 GHz band for safety and operational purposes. Such systems may contribute substantially to road safety, diminishing the increasing incidence of traffic fatalities and injuries due to driver distraction.

The primary amateur and amateur-satellite allocation in the 77.5-78 GHz band is shared with the secondary radio astronomy and space research (space-to-Earth) services. Additionally, radio astronomy observatories worldwide, including the Atacama Large Millimeter Array, built through an international collaboration, observe in the 76-81 GHz band. No. **5.149** states that, in this band, "administrations are urged to take all practicable steps to protect the radio astronomy service from harmful interference." The ITU-R studies will need to consider sharing and compatibility with these services.

U.S. VIEW: The United States supports ITU-R sharing, compatibility and regulatory studies between vehicular radars and all services that operate in the 76-81 GHz region of the spectrum. Based on the outcome of those studies, the United States will consider supporting an allocation to the radiolocation service in the 77.5-78 GHz band for automotive radars.