WAC/077(27.08.14)
IWG-4/044

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 draft Executive Branch proposal for WRC-15 agenda item 1.1 and 9. NTIA proposes no change to agenda item 1.1 in the bands 5010-5030 MHz and 1164-1300 MHz. NTIA also proposes no change to agenda item 9 in the band 5010-5030 MHz.

NTIA considered the federal agencies' input 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. Mr. Charles Glass is the primary contact from my staff.

Sincerely,

(Original Signed June 24, 2014)

Karl B. Nebbia
Associate Administrator
Office of Spectrum Management

UNITED STATES OF AMERICA

DRAFT PROPOSALS FOR THE WORK OF THE CONFERENCE

Agenda Item 1.1: *to consider additional spectrum allocations to the mobile service on a primary basis and identification of additional frequency bands for International Mobile Telecommunications (IMT) and related regulatory provisions, to facilitate the development of terrestrial mobile broadband applications, in accordance with Resolution* ***233 (WRC-12)****;*

Background Information: The 2012 World Radiocommunication Conference (WRC-12) recognized a need for additional radio spectrum to support the increasing mobile data traffic, and placed consideration of additional spectrum allocations for terrestrial mobile broadband applications on the Agenda for WRC-15. Joint Task Group (JTG) 4-5-6-7 was established to consider spectrum requirements for IMT/mobile broadband and compatibility studies taking into account protection requirements of other services from concerned ITU-R Working Parties.

The radionavigation-satellite service (RNSS) has allocations used for Earth-to-space operations in the 5 000-5 010 MHz band and space-to-Earth and space-to-space operations in the 5 010-5 030 MHz band. Operators plan or currently operate several global and regional non-geostationary satellite RNSS systems, including GPS, GLONASS, Beidou, QZSS, Galileo, IRNSS within these bands. RNSS shares its allocations 5 000-5 010 MHz and 5 010-5 030 MHz with the aeronautical radionavigation service (ARNS), also a safety service.

There is a long history of protecting RNSS operations in the ITU. Multiple RNSS systems and networks transmit signals around-the-clock across all three ITU Regions and radiate across the entire surface of the Earth. Although these RNSS allocations are in bands that have favorable propagation and other characteristics for mobile broadband, JTG 4-5-6-7 did not study the use of these or adjacent bands. This is indicative of the virtually universal will to protect RNSS operations on a global basis.

Due to the vital and global role of the RNSS, and lack of demonstrated in-band and adjacent band frequency sharing compatibility, no allocation to the mobile service for IMT should be considered in the bands 5 000-5 010 MHz or 5 010-5 030 MHz.

Proposal:

NOC USA/1.1/1

ARTICLE 5

Frequency allocations

5 010-5 030 MHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
…		
5 000-5 010	AERONAUTICAL MOBILE-SATELLITE (R) 5.443AA AERONAUTICAL RADIONAVIGATION RADIONAVIGATION-SATELLITE (Earth-to-space)	
5 010-5 030	AERONAUTICAL MOBILE-SATELLITE (R) 5.443AA AERONAUTICAL RADIONAVIGATION RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.328B 5.443B	

Reason: To ensure the protection of current and future operation of RNSS systems around the world.

UNITED STATES OF AMERICA

DRAFT PROPOSALS FOR THE WORK OF THE CONFERENCE

Agenda Item 1.1: *to consider additional spectrum allocations to the mobile service on a primary basis and identification of additional frequency bands for International Mobile Telecommunications (IMT) and related regulatory provisions, to facilitate the development of terrestrial mobile broadband applications, in accordance with Resolution* ***233 (WRC-12)****;*

Background Information: The 2012 World Radiocommunication Conference (WRC-12) recognized a need for additional radio spectrum to support the increasing mobile data traffic, and placed consideration of additional spectrum allocations for terrestrial mobile broadband applications on the agenda for WRC-15. Joint Task Group (JTG) 4-5-6-7 was established to consider spectrum requirements for IMT/mobile broadband and compatibility studies taking into account protection requirements of other services from concerned ITU-R Working Parties.

The radionavigation-satellite service (RNSS) has allocations used for space-to-Earth and space-to-space systems and networks in the 1 164-1 215 MHz, 1 215-1 300 MHz and 1 559-1 610 MHz bands. Operators plan or currently operate several global and regional non-geostationary satellite RNSS systems, including GPS, GLONASS, Beidou, QZSS, Galileo, IRNSS, as well as a number of geostationary-orbit satellite networks that provide space-based augmentation services within these bands. Operators deploy RNSS receivers and applications by the hundreds of millions worldwide, and are pervasive in every facet of everyday life. People use RNSS receivers in the Global Navigation Satellite System (GNSS) and other safety-of-life applications for precision surveying, construction, agriculture, and mining, environmental monitoring (including earthquake and tsunami monitoring), precision timing applications, all within many mobile broadband devices and other handsets. RNSS shares its allocations at 1 559-1 610 MHz and, 1 164-1 215 MHz with the aeronautical radionavigation service (ARNS), also a safety service.

There is a long history of protecting RNSS operations in the ITU. Multiple RNSS systems and networks transmit signals around-the-clock across all three ITU Regions and radiate across the entire surface of the Earth. RNSS frequency bands thus are operational at all times in all locations on Earth. RNSS signals are very low power, spread-spectrum signals coming from space that are difficult to detect. It takes special processing by RNSS receivers to extract the signal from the background noise. If a high-power, continuous in time, signal in the same frequency band, or an adjacent band, is broadcast near an RNSS receiver, it could desensitize the RNSS receiver to the degree that the RNSS receiver is unable to extract the RNSS signal from space.

Studies in the ITU in preparation for WRC-2000 concluded that even relatively weak continuous in time signals from mobile-satellite service satellites in geostationary orbit would not be able to be provided on a co-frequency basis with the RNSS and ARNS in the 1 559-1 610 MHz band. CPM-99 concluded, in Section 2.2.1.3 of the CPM Report for WRC-2000, that "although studies were not carried out on every different type of RNSS receiver used in all the numerous applications of RNSS, it was nevertheless possible to conclude that sharing between ARNS/RNSS and MSS (space-to-Earth) is not feasible in any portion of the 1 559-1 567 MHz band." WRC-2000 agreed, and declined to add a co-primary MSS allocation to a portion of the RNSS band. To protect RNSS in the 1 164-1 215 MHz band, WRC-12 modified Resolution 417 to include strict power limits on high-powered terrestrial transmitters in the adjacent aeronautical radionavigation service band at 960-1 164 MHz.

Although all the RNSS allocations are in bands that have favorable propagation and other characteristics for mobile broadband, JTG 4-5-6-7 did not study the use of these or adjacent

bands. This is indicative of the virtually universal will to protect RNSS operations on a global basis.

Due to the vital and global role of the RNSS, and demonstrated in-band and adjacent band frequency sharing incompatibility, no allocation to the mobile service or designation for IMT should be considered in the bands 1 164-1 215 MHz, 1 215-1 300 MHz and 1 559-1 610 MHz. Furthermore, any proposed new use of a band adjacent to any of these RNSS bands would need to include regulations that would ensure that mobile broadband systems did not cause harmful interference to RNSS receivers (e.g., guard bands, power limits, etc.).

Proposals:

NOC USA/1.1/1

ARTICLE 5

Frequency Allocations

890-1 300 MHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
	…	
1 164-1 215		
	AERONAUTICAL RADIONAVIGATION 5.328 RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.328B 5.328A	
1 215-1 240		
	EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.328B 5.329 5.329A SPACE RESEARCH (active) 5.330 5.331 5.332	
1 240-1 300		
	EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.328B 5.329 5.329A SPACE RESEARCH (active) Amateur 5.282 5.330 5.331 5.332 5.335 5.335A	

Reason: To ensure the protection of current and future operation of RNSS systems around the world.

NOC USA/1.1/2

ARTICLE 5

Frequency Allocations

1 525-1 610 MHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
…		
1 559-1610	AERONAUTICAL RADIONAVIGATION RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.208B 5.328B 5.329A 5.314 5.362B 5.362C	

Reason: To ensure the protection of current and future operation of RNSS systems around the world.

UNITED STATES OF AMERICA

DRAFT PROPOSALS FOR THE WORK OF THE CONFERENCE

Agenda Item 9: *to consider and approve the Report of the Director of the Radiocommunication Bureau, in accordance with Article **7** of the Convention; **9.1**: on the activities of the Radiocommunication Sector since WRC-12;*

Background Information: RR No. **5.443C** was adopted at WRC-12 in conjunction with a new AM(R)S allocation in 5 030-5 091 MHz to enable use of unmanned aircraft systems in that band while ensuring protection of RNSS systems and networks in the adjacent 5 010-5 030 MHz (space-to-Earth) and (space-to-space) RNSS band. No. **5.443C** states:

> The use of the frequency band 5 030-5 091 MHz by the aeronautical mobile (R) service is limited to internationally standardized aeronautical systems. Unwanted emissions from the aeronautical mobile (R) service in the frequency band 5 030-5 091 MHz shall be limited to protect RNSS system downlinks in the adjacent 5 010-5 030 MHz band. Until such time that an appropriate value is established in a relevant ITU-R Recommendation, the e.i.r.p. density limit of −75 dBW/MHz in the frequency band 5 010-5 030 MHz for any AM(R)S station unwanted emission should be used. (WRC-12)

The BR Director's CPM Report is very likely to reference RR No. **5.443C**, since it contains the phrase, "*Until such time that an appropriate value is established in a relevant ITU-R Recommendation…*" In May 2012, WP 4C began work toward finalizing the provisional e.i.r.p. density limit of −75 dBW/MHz limit in No. **5.443C** with a liaison statement to WP 5B (cf. Doc. 5B/57) and this work was reported to SG 4 (cf. Doc. 4/15). However, WP 5B (cf. Doc. 4C/104) and ICAO (cf. § 3.2, Doc. 4C/173) have communicated that no AM(R)S transmitter characteristics are available to perform compatibility studies. Therefore, the ITU can develop no such Recommendation at this time.

Although the USA consented to No. **5.443C**, prior compatibility studies had not been performed within the ITU-R for the adjacent-band compatibility of RNSS and AM(R)S in the 5 GHz band. This is reflected in the call for *"an appropriate value"* of the out-of-band AM(R)S e.i.r.p. density limit. However, the USA has agreed that the current provisional limit is acceptable given the current state of knowledge. At this time, a change to No. **5.443C** could have unintended consequences, and so, to prevent WRC-15 from making any changes without having performed the appropriate ITU-R studies, the USA proposes NOC on any proposals to alter RR No. **5.443C**.

Proposal:

<u>NOC</u> USA/9.1/1

ARTICLE 5

Frequency allocations

RR No. **5.443C (WRC-12)**

Reason: The ITU-R has not yet completed the necessary studies to establish an appropriate value in a relevant ITU-R Recommendation for the e.i.r.p. density limit required in the frequency band 5 010-5 030 MHz for AM(R)S station unwanted emissions in order to ensure protection of RNSS system and network operations (space-to-Earth) and (space-to-space) in that band.