

ATTACHMENT A
to FCC Public Notice DA 18-423

**Draft Proposals presented at
April 23, 2018 Meeting of the
World Radiocommunication Conference Advisory Committee**

Maritime Aeronautical and Radar Services

UNITED STATES OF AMERICA

DRAFT PROPOSALS FOR THE WORK OF THE CONFERENCE

Agenda Item 1.10

Agenda Item 1.10: *to consider spectrum needs and regulatory provisions for the introduction and use of the Global Aeronautical Distress and Safety System (GADSS), in accordance with Resolution 426 (WRC-15)*

Background Information: The 2015 World Radiocommunication Conference (WRC-15) adopted Agenda Item 1.10 in accordance with Resolution 426 (WRC-15). The resolution's purpose is to consider spectrum needs and regulatory provisions for the introduction and use of the global aeronautical distress and safety system (GADSS).

The International Civil Aviation Organization (ICAO) has developed a concept of operations (ConOps) to support the future development of a GADSS for worldwide aviation use. This ConOps is the guideline for developing ICAO performance-based standards and aircraft must meet, as well as providing technical and operational requirements for aircraft and systems that must communicate with an aircraft.

The current ICAO ConOps describes the following functions:

- Aircraft tracking under normal conditions: Typically leverages existing technologies to assist in the timely identification and location of aircraft. Provides an automated reporting function every 15 mins or less. Aircraft tracking may be accomplished by multiple different systems over the duration of a flight.
- Autonomous distress tracking: An automated method of position reporting at intervals of one minute or less to support search and rescue (SAR), triggered by indications that an aircraft is in distress which may result in an accident. Distress tracking aims to establish the location of a potential accident site within a 6 nautical mile (11.11 km) radius.
- Post flight localization and recovery: A combination of both the immediate need to locate and rescue possible survivors after an accident using methods to an accuracy of <1 nautical mile (<1.85 km), and the timely collection of aircraft components and data that will assist in the accident investigation.
- Procedures and information management: The method of data collection and notification of flight tracking data to the relevant SAR platform, and rescue coordination centers.

Specific systems, and therefore specific technical requirements or spectrum allocations are not proposed under this agenda item because ICAO proposes to use existing systems operating under existing allocations.

However, changes to other portions of the RR are proposed in order to facilitate GADSS implementation. In particular, possible changes to portions of RR Chapters VII [and VIII] have been identified.

To achieve the above, the following approach is proposed:

- No changes to Article 5 of the Radio Regulations.
- To facilitate GADSS introduction, modification of the RR to include GADSS as a distress and safety communications system, within Chapter VII – Distress and Safety Communications in a new Chapter specific to GADSS.

Proposals:

NOC **USA/1.10/1**

ARTICLE 5

Frequency allocations

Reason: No modifications are needed as systems operating under existing allocations are to be used.

MOD **USA/1.10/2**

ARTICLE 30

General Provisions

Section I – Introduction

30.1 § 1 Nos. **30.4-30.13**, and Articles **31, 32, 33** and **34** of this Chapter contain the provisions for the operational use of the global maritime distress and safety system (GMDSS), whose functional requirements, system elements and equipment carriage requirements are set forth in the International Convention for the Safety of Life at Sea (SOLAS), 1974, as amended. These Articles contain provisions for initiating distress, urgency and safety communications by means of radiotelephony on the frequency 156.8 MHz (VHF channel 16). (WRC-19)

Reason: Modifications necessary to enable introduction new Article **34A** into Chapter **VII** on Distress and Safety Communications.

ADD USA/1.10/3

30.1A Article **34A** of this Chapter contains the provisions for the global aeronautical distress and safety system (GADSS), whose functional requirements are set forth in the Convention on International Civil Aviation, as amended. (WRC-19)

Reason: Provision to introduce new Article **34A** into Chapter **VII** on Distress and Safety Communications.

ADD USA/1.10/4

ARTICLE 34A

Global Aeronautical Distress and Safety System (GADSS)

34A.1 The GADSS concept of operations determines performance requirements for the radiocommunication systems being used for conducting aircraft tracking, autonomous distress tracking, and post flight location and recovery. (WRC-19)

4A.2 The type of radiocommunication service to be used by systems contributing to the GADSS depends on the requirements of the specific GADSS function. Systems contributing to the GADSS shall not operate under the provisions of Article 4.4. (WRC-19)

Reason: Introduction of new Article **34A** and its provisions into Chapter **VII** on Distress and Safety Communications.

SUP USA/1.10/5

RESOLUTION 426 (WRC-15)

Studies on spectrum needs and regulatory provisions for the introduction and use of the Global Aeronautical Distress and Safety System

Reason: Consequential. Consideration of the subject issues has been completed.

Terrestrial Services

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

Agenda Item 1.1: *to consider an allocation of the frequency band 50-54 MHz to the amateur service in Region 1, in accordance with **Resolution 658 (WRC-15)***

Background: The WRC-19 agenda item 1.1, if adopted, would facilitate global harmonization of the 50-54 MHz frequency band for the Amateur Service.

The 50 – 54 MHz frequency band is currently allocated to the amateur service on a primary basis in Regions 2 and 3. In Region 1, the band is currently allocated to only the Broadcasting Service on a primary basis. However, No. 5.169 of the Radio Regulations provides for an alternate allocation to the amateur service on a primary basis to a number of countries in Region 1, and No. 5.165 provides an alternate fixed and mobile, except aeronautical mobile, allocation on a primary basis to a number of countries in Region 1.

WRC-15 decided to study the sharing between the amateur service and incumbent services in Region 1 towards a primary allocation that would facilitate further worldwide harmonisation and international operability. The opportunity provided by Agenda Item 1.1 to achieve global harmonisation would provide the means to introduce new and innovative systems, as well as harmonizing existing amateur service usage in the range 50 - 54 MHz.

The frequency range 30 - 80 MHz marks the transition area between ionospheric and non-ionospheric propagation modes, which makes it particularly interesting for experimentation and study within the amateur service.

The technical and operational characteristics of systems used in the amateur service for the purpose of performing sharing studies can be found in ITU-R Recommendation M.1732.

Radio amateurs utilise allocations to the amateur service to engage in scientific and technical investigation and experimentation, provide communication in the wake of natural disasters, provide non-commercial public service communications, and conduct other activities to advance technical education, develop radio operating technique, and enhance international goodwill.

The radiocommunication systems that operate amateur and amateur satellite services have open communication systems, through which messages are transmitted to different geographical regions for experimentation.

Radio amateurs foster a source of experience in the exploration of propagation phenomena and the development of technologies for the efficient use of the radio spectrum and provide an opportunity for learning for all regardless of their location and/or social status.

In addition to this, it is vital to consider and recognize the technical contributions made to telecommunications and the valuable support provided in cases of natural disasters, which also fulfill a social mission by being used to establish emergency communications.

On this regard, the users of the different frequency bands that have allocation to the Amateur and Amateur Satellite Services, particularly in the frequency band 50-54 MHz, must comply with the provisions of the Radio Regulations in force, as well as international or regional agreements and the national regulations that apply to them.

The band is also considered to provide the transition between propagation conditions existing in higher HF frequency bands and VHF spectrum. This situation provides valuable experience in F2, Sporadic E, Meteor Scatter and Transequatorial propagation. Beacons are installed in the first portion of the band to serve as propagation indicators.

Furthermore, in recent years additional propagation studies have been made possible through the granting of all or parts of the frequency band 50-54 MHz to the amateur service in a number of Region 1 countries. As a result, amateur licensees in Region 2 have been able to communicate with Region 1 licensees when propagation conditions permit.

These characteristics and the use of the band fulfill the objective of the service as defined in article 1.56 of the Radio Regulations and engage the practitioners in scientific and technical investigations, as well as helping to develop radio operating techniques also useful for emergency communications.

Proposal:

NOC

USA/1.1/1

47-75.2 MHz

Allocation to services		
Region 1	Region 2	Region 3
	50-54 AMATEUR	

Reasons: No change is proposed for Region 2. WRC-19 agenda item 1.1 is a Region 1 issue. Any changes made to the Radio Regulations under WRC-19 agenda item 1.1 must not impact the existing allocation to the Amateur Service in 50-54 MHz in Region 2, nor subject Region 2 to any changed procedural or regulatory provisions.

Document WAC/053 (23.04.18)

WRC-19 Agenda Item 1.13

IWG-2 members were not able to reach consensus on a proposal for WRC-19 Agenda Item 1.13 regarding the identification of frequency bands for the future development of International Mobile Telecommunications (IMT), in accordance with Resolution 238 (WRC-15) for the frequency range 37 – 43.5 GHz. The views on the appropriate regulatory changes the FCC should support are provided.

View A is supported by: AT&T, Cisco Systems Inc., CTIA, Ericsson, GSMA, Intel Corporation, Sprint Corporation and T-Mobile.

View B is supported by: Inmarsat, Intelsat, Lockheed Martin and SES Americom.

VIEW A

View A:

View A proposes an identification to the terrestrial component of IMT for the 37-43.5 GHz frequency range as well as a corresponding upgrade to the Mobile service a co-primary allocation for the 40.5-42.5 GHz frequency bands. View A is supported by AT&T, Cisco Systems Inc., CTIA, Ericsson, GSMA, Intel Corporation, Sprint Corporation and T-Mobile.

Incredible technological innovation has enabled the use of higher frequency bands (e.g. mmWave) to help meet the ever-increasing demand for mobile broadband. As a global spectrum policy leader, the FCC led the US to be the first country in the world to make mmWave spectrum available for 5G in the 27.5-28.35 GHz and 37-40 GHz frequency ranges. While the US moves forward by making additional frequency bands available for 5G use, other countries and regions are now following suit with their initial spectrum licensing decisions.

The harmonization of spectrum for mobile broadband provide benefits to consumers and businesses through economies of scale and global roaming. Yet harmonization of exact frequency bands for mobile broadband has becoming increasingly difficult over time as governments are unable to make spectrum available in the exact same frequency bands due to different existing uses and priorities. Fortunately, the benefits of harmonization can still be achieved today over “radio tuning ranges”.

The identification for IMT of the 37-43.5 GHz frequency range would provide these benefits of harmonization while allowing regulators the flexibility to assign spectrum within this range for domestic use as appropriate. Leading administrations, including some of the world’s largest markets, have or are planning to assign spectrum licenses within the 37-43.5 GHz frequency range on an unpaired basis. The equipment developed for operation in the 37-40 GHz frequency band allocated for UMFUS in the US can also support other 5G networks operating within the 37-43.5 GHz radio tuning range. For instance, in Europe, the Radio Spectrum Policy Group has announced that 40.5-43.5 GHz is the “European priority in terms of studies for second stage mm-wave 5G bands” in recognition of “a tuning range for equipment from 37-43.5 GHz. The potential of this tuning range would be for different regions to be able to identify the most appropriate frequencies to be used for 5G.” Therefore, a global identification for IMT in 37-43.5 GHz would allow each country/region to assign spectrum for 5G consistent with their domestic use and priorities, while still facilitating the benefits of economies of scale for businesses and consumers.

It is also important to note that as part of WRC-19 agenda item 1.13 preparations, ITU-R Task Group 5/1 carried out extensive sharing and compatibility studies: these studies show that sharing between the terrestrial component of IMT and other services operating in this frequency range is feasible.

Finally, there is no need for a WRC Resolution specifying operational constraints on IMT to be associated with this proposed identification for IMT. Operational characteristics that are used by cellular providers, such as base station downtilt, that change on time scales needed to minimize intra- and inter-cell interference and also guarantee quality of service should not be encoded in the Radio Regulations. It should also be noted that the US rules for Upper Microwave Flexible Use Service (UMFUS), which allows fixed or mobile service, would not comply with the e.i.r.p. limits proposed for inclusion in a Resolution in the Radio Regulations.

Based upon the reasons described above, the above-signed support View A with an identification to the terrestrial component of IMT in 37-43.5 GHz as well as a corresponding co-primary allocation to the mobile service in 40.5-42.5 GHz.

**ATTACHMENT TO VIEW A:
UNITED STATES OF AMERICA**

DRAFT PROPOSALS FOR THE WORK OF THE CONFERENCE

Agenda Item 1.13: *to consider identification of frequency bands for the future development of International Mobile Telecommunications (IMT), including possible additional allocations to the mobile service on a primary basis, in accordance with Resolution 238 (WRC-15)*

Background Information:

Mobile broadband plays an increasingly crucial role in providing access to businesses and consumers worldwide. According to International Telecommunications Union (ITU) statistics, “Mobile-broadband subscriptions have grown more than 20% annually in the last five years and are expected to reach 4.3 billion globally by end 2017.” while “Mobile-broadband prices as a percentage of GNI per capita halved between 2013 and 2016 worldwide.¹ The mobile industry continues to drive technological innovations for International Mobile Telecommunications (IMT) in order to meet evolving user demands, including higher data rates. In early 2012, ITU-R embarked on a program to develop “IMT for 2020 and beyond”. In November 2015, ITU-R approved Recommendation ITU-R M.2083 “Framework and overall objectives of the future development of IMT for 2020”, which highlights three key usage scenarios for IMT-2020: enhanced mobile broadband, massive machine type communications, and ultra-reliable and low latency communications. Work within the ITU-R as well as the mobile industry continues on the development of specifications for IMT-2020.

As part of the preparations for WRC-19 agenda item 1.13, ITU-R studies have concluded that sharing between IMT and other incumbent services operating within the 37 to 43.5 GHz frequency range is feasible. For example, there were large interference margins for Fixed Satellite Service (FSS), Mobile Satellite Service (MSS) and Broadcasting Satellite Service (BSS) operating in the space to Earth direction in 37-42.5 GHz, with smaller margins in the Earth to space direction in 42.5-43.5 GHz, Protection for Earth Exploration Satellite Service (EESS) and Space Research Service (SRS) operating in the 37-38 GHz bands as well as the Radio Astronomy Service (RAS) operating in the 42.5-43.5 GHz bands could be considered at the national level due to relatively small separation distances. For Fixed Service (FS) operations in 37-43.5 GHz, studies showed a few cases of interference when the FS system pointed directly across the IMT deployment area, which is most likely not a realistic scenario as FS links deployed in a dense urban environment would be designed to avoid the clutter and noisy conditions. With respect to passive services in adjacent band, “we note that the -10dBW power limit was adopted to protect passive sensors in the 36-37 GHz band in accordance with ITU

¹ ICT Facts and Figures 2017, p 4 and 5. See: <https://www.itu.int/en/ITU-D/Statistics/Documents/facts/ICTFactsFigures2017.pdf>

Resolution 752 (WRC-07). Because this limit was adopted by the ITU to protect passive sensors from harmful interference from fixed and mobile transmitters in the 36-37 GHz band, we conclude that it will provide appropriate protection to the passive sensors from transmitters in the adjacent band.”²

International spectrum harmonization is a key component to enable introduction of mobile broadband services such as IMT. Spectrum harmonization facilitates global roaming, economies of scale and commonality of equipment, which is imperative given that mobile devices can be designed to operate only in a limited number of frequency bands. Harmonization is not limited to situations in which all regions have identical spectrum allocations. Consumers and businesses can also benefit from use of spectrum within harmonized “tuning range” solutions covering adjacent or nearly-adjacent bands in which equipment can be reconfigured to operate over multiple bands (i.e., they are within the same tuning range).

Leading administrations, including some of the world’s largest markets, have or are planning to assign spectrum licenses within the 37-43.5 GHz frequency range on an unpaired basis. For example, the United States of America made the 37-40 GHz frequency range available for mobile broadband use.³ In Europe, the Radio Spectrum Policy Group has announced that 40.5-43.5 GHz is the “European priority in terms of studies for second stage mm-wave 5G bands” in recognition of “a tuning range for equipment from 37-43.5 GHz. The potential of this tuning range would be for different regions to be able to identify the most appropriate frequencies to be used for 5G.”⁴ Consequently, standards are already under development for the 37-40 GHz frequency range which can readily be extended to enable devices to operate in unpaired blocks in any portion of the entire 37-43.5 GHz frequency range.

Harmonization of spectrum within “radio tuning ranges” is a crucial consideration for WRC-19 agenda item 1.13 as differences in uses and priorities among various countries and regions may make it difficult to reach consensus on the global identification to IMT for individual bands. Availability of standardized equipment allows countries to deploy mobile/IMT in different band segments (e.g. 37-40 GHz, 40.5-43.5 GHz, 37-43.5 GHz) consistent with their domestic priorities. As there is no need for a fixed duplex gap within these unpaired blocks, the same mobile devices can support the entire 37-43.5 GHz frequency range, thereby offering significant potential for economies of scale and global roaming. In other words, with the IMT identification in 37-43.5 GHz, Administrations have the flexibility to take full advantage of the benefits of international harmonization even if they do not choose to deploy across the entire frequency range. In light of the ITU-R studies showing feasibility of sharing and the benefits of international harmonization, this proposal supports an identification for IMT across the entire 37-43.5 GHz frequency range as well as upgrading the secondary allocation for the Mobile Service to a co-primary allocation in 40.5-42.5 GHz.

² See: https://apps.fcc.gov/edocs_public/attachmatch/FCC-16-89A1.pdf, p61.

³ See: https://apps.fcc.gov/edocs_public/attachmatch/FCC-16-89A1.pdf

⁴ https://circabc.europa.eu/sd/a/fe1a3338-b751-43e3-9ed8-a5632f051d1f/RSPG18-005final-2nd_opinion_on_5G.pdf

Proposal:

ARTICLE 5
Frequency allocations
Section IV – Table of Frequency Allocations
(See No. 2.1)

MOD

USA/1.13/1

34.2-40 GHz

Allocation to services		
Region 1	Region 2	Region 3
37-37.5	FIXED MOBILE except aeronautical mobile ADD 5.IMT SPACE RESEARCH (space-to-Earth) 5.547	
37.5-38	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile ADD 5.IMT SPACE RESEARCH (space-to-Earth) Earth exploration-satellite (space-to-Earth) 5.547	
38-39.5	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE ADD 5.IMT Earth exploration-satellite (space-to-Earth) 5.547	
39.5-40	FIXED FIXED-SATELLITE (space-to-Earth) 5.516B MOBILE ADD 5.IMT MOBILE-SATELLITE (space-to-Earth) Earth exploration-satellite (space-to-Earth) 5.547	

40-47.5 GHz

Allocation to services		
Region 1	Region 2	Region 3
40-40.5	EARTH EXPLORATION-SATELLITE (Earth-to-space) FIXED FIXED-SATELLITE (space-to-Earth) 5.516B MOBILE ADD 5.IMT MOBILE-SATELLITE (space-to-Earth) SPACE RESEARCH (Earth-to-space) Earth exploration-satellite (space-to-Earth)	
40.5-41 FIXED FIXED-SATELLITE (space-to-Earth) BROADCASTING BROADCASTING-SATELLITE MOBILE ADD 5.IMT 5.547	40.5-41 FIXED FIXED-SATELLITE (space-to-Earth) 5.516B BROADCASTING BROADCASTING-SATELLITE MOBILE ADD 5.IMT Mobile-satellite (space-to-Earth) 5.547	40.5-41 FIXED FIXED-SATELLITE (space-to-Earth) BROADCASTING BROADCASTING-SATELLITE MOBILE ADD 5.IMT 5.547
41-42.5	FIXED FIXED-SATELLITE (space-to-Earth) 5.516B BROADCASTING BROADCASTING-SATELLITE MOBILE ADD 5.IMT 5.547 5.551F 5.551H 5.551I	
42.5-43.5	FIXED FIXED-SATELLITE (Earth-to-space) 5.552 MOBILE except aeronautical mobile ADD 5.IMT RADIO ASTRONOMY 5.149 5.547	

Reasons: As studies show sharing with other services operating in 37-43.5 GHz is feasible, these modifications provide an identification for IMT in the frequency range 37 to 43.5 GHz and the Mobile Service is upgraded from a secondary allocation to a co-primary allocation in 40.5-42.5 GHz. This facilitates harmonized worldwide bands for IMT, which are highly desirable in order to achieve global roaming and the benefits of economies of scale.

ADD USA/1.13/2

5.IMT The 37-43.5 GHz frequency range is identified for use by administrations wishing to implement International Mobile Telecommunications (IMT). This identification does not preclude the use of this band by any application of the services to which it is allocated and does not establish priority in the Radio Regulations.

Reasons: Harmonized worldwide bands for IMT enable global roaming and the benefits of economies of scale as the same user equipment can be used to serve the global market. Identifying the entire 37-43.5 GHz tuning range facilitates global harmonization enables Administrations to reap the benefits of internationally harmonized spectrum while preserving the ability to identify the most appropriate frequencies for use based upon their domestic priorities.

VIEW B

VIEW B:

Introduction

WAC members supporting View B maintain that the WAC should approve Document IWG-2/071 (10.04.18) (“Document 71”) and recommend to the FCC to use Document 71 as the basis for reconciling a draft United States Proposal regarding Agenda Item 1.13 in the frequency range 37-43.5 GHz. Inmarsat, Intelsat, Lockheed Martin and SES Americom support View B.

View B

The proposal supported by the proponents of View B in document Document 71 is to

- (i) include a footnote identifying mobile allocations in the frequency ranges 37-40 GHz and 42.5-43.5 GHz for IMT,
- (ii) include a second footnote upgrading the mobile service from a secondary allocation to a co-primary allocation in the frequency range 42-42.5 GHz, identifying the band for IMT and restricting the upgraded primary mobile service allocation to IMT and
- (iii) include a Resolution providing for the implementation of IMT and protection of incumbent satellite services.

View B provides the following benefits:

a) It focuses on spectrum harmonization while allowing for regional flexibility.

The United States should take the lead for harmonizing spectrum for IMT and other services in Region 2 and building on the Spectrum Frontiers second Order. No administrations have identified specific frequency ranges for IMT at CITEL. The proposal in Document 71 provides an opportunity to achieve a balance between IMT and other services in Region 2. View B proponents recognize that Region 1 and 3 are considering other spectrum bands within the range 37-43.5 GHz for IMT identification and therefore this proposal allows for possible regional variations while focusing on Region 2.

b) It focuses on 4.5 GHz of spectrum for which studies demonstrated that sharing is feasible.

Consistent with Spectrum Frontiers, Document 71 proposes to identify the band 37-40 GHz for IMT and does not include the band 40-42 GHz. As recognized in Spectrum Frontiers, the band 40-42 GHz is reserved for use by ubiquitously-deployed FSS user terminals and no studies have demonstrated to date that such use is compatible with an IMT deployment. There is a great prospect for harmonization of this band in Region 2 for ubiquitously-deployed FSS user terminals as it is identified for use by high-density applications in the FSS through footnote 5.516B in Article 5 of the Radio Regulations.

In order to provide flexibility for harmonization of IMT spectrum in Region 2, Document 71 also proposes to identify the band 42-43.5 GHz for IMT as this band can be shared between IMT and FSS earth stations at known locations. This would make a total of 4.5 GHz of spectrum among which countries in Region 2 can select frequencies for IMT identification based on their needs.

Similar to IMT equipment today, future IMT equipment is expected to have the technical capability to adjust to different frequency ranges. This technical capability will ensure that global roaming and the benefits of economies of scale are achieved.

c) It provides a method for upgrading the secondary mobile allocation in 42-42.5 GHz that is within the scope of Resolution 238 (WRC-15).

Document 71 proposes to include a footnote upgrading the mobile service from a secondary allocation to a co-primary allocation in the frequency range 42-42.5 GHz, identifying the band for IMT and restricting use of the primary mobile service to IMT in accordance with Resolution 238 (WRC-15).

d) It provides necessary protection to satellite services.

Document 71 proposes that footnotes identifying frequencies for use by IMT refer to a Resolution providing for the implementation of IMT. This Resolution captures the key assumptions and conclusions of sharing studies conducted by ITU-R Task Group 5/1, which demonstrated that IMT and satellite services are compatible in certain frequency ranges under the studied conditions. It is essential for satellite services that technical protections and spectrum be harmonized on a regional basis through the Radio Regulations. Satellite services cannot be competitive if access to spectrum and protection are defined on a country-by-country basis, as proposed by the proponents of View A in Document IWG-2/061r3 (10.04.18).

The Resolution recognizes that geographic separations between FSS earth stations and IMT deployments should be adopted in order ensure compatibility, as demonstrated by the ITU-R studies and as recognized in the Spectrum Frontiers second Order. It leaves full flexibility to administrations regarding implementation of such geographic separations.

The Resolution also captures two key assumptions used in ITU-R studies, the minimum downtilt and maximum e.i.r.p. of base stations as provided by the expert IMT group WP 5D. The proponents of View B recognize that these assumptions may be in contradiction with national decisions providing flexibility in the design of IMT systems and that there may be other ways to ensure that IMT deployment remains compatible with satellite services as IMT technology evolves.

ATTACHMENT TO VIEW B:

UNITED STATES OF AMERICA

DRAFT PROPOSALS FOR THE WORK OF THE CONFERENCE

Agenda Item 1.13: *to consider identification of frequency bands for the future development of International Mobile Telecommunications (IMT), including possible additional allocations to the mobile service on a primary basis, in accordance with Resolution 238 (WRC-15)*

Background Information: Mobile broadband plays an increasingly crucial role in providing access to businesses and consumers worldwide. According to International Telecommunication Union (ITU) statistics, “Mobile-broadband subscriptions have grown more than 20% annually in the last five years and are expected to reach 4.3 billion globally by end 2017”, while “Mobile-broadband prices as a percentage of GNI per capita halved between 2013 and 2016 worldwide.”⁵ The mobile industry continues to drive technological innovations for International Mobile Telecommunication (IMT) in order to meet evolving user demands, including higher data rates. In early 2012, the ITU-R embarked on a program to develop “IMT for 2020 and beyond”. In November 2015, the ITU-R approved Recommendation ITU-R M.2083 “Framework and overall objectives of the future development of IMT for 2020”, which highlights three key usage scenarios for IMT-2020: enhanced mobile broadband, massive machine type communications, and ultra-reliable and low latency communications. Work within the ITU-R as well as the mobile industry continues on the development of specifications for IMT-2020.

As part of the preparations for WRC-19 agenda item 1.13, ITU-R studies under Resolution 238 (WRC-15) have addressed sharing and compatibility between IMT and other incumbent services operating within the 37 to 43.5 GHz frequency range. Resolution 238 (WRC-15) considered, on the one hand, that harmonized worldwide bands and harmonized frequency arrangements for IMT are highly desirable in order to achieve global roaming and the benefits of economies of scale, along with the fact that identification of frequency bands allocated to mobile service for IMT may change the sharing situation regarding applications of services to which a frequency band is already allocated and may require additional regulatory actions. Resolution 238 (WRC-15) also considered, on the other hand, the need to protect existing services and to allow for their continued development when considering frequency bands for possible identifications for IMT. Resolution 238 (WRC-15) recognized both that any identification of frequency bands for IMT should take into account the use of the bands by other services and the evolving needs of these services and that there should be no additional regulatory or technical constraints imposed on services to which a band is currently allocated on a primary basis.

⁵ ICT Facts and Figures 2017, p 4 and 5. See: <https://www.itu.int/en/ITU-D/Statistics/Documents/facts/ICTFactsFigures2017.pdf>

ITU-R studies showed that protection for Space Research Service (SRS) operating in the band 37-38 GHz and the Radio Astronomy Service (RAS) operating in the band 42.5-43.5 GHz could be considered at the national level due to relatively small separation distances. For Fixed Service (FS) operations in the band 37-43.5 GHz, studies showed a few cases of interference in excess of protection criteria when the FS system pointed directly across the IMT deployment area, which is most likely not a realistic scenario as FS links deployed in a dense urban environment would be designed to avoid the clutter and noisy conditions. With respect to passive services in adjacent band, “we note that the -10dBW power limit was adopted to protect passive sensors in the 36-37 GHz band in accordance with ITU Resolution 752 (WRC-07). Because this limit was adopted by the ITU to protect passive sensors from harmful interference from fixed and mobile transmitters in the 36-37 GHz band, we conclude that it will provide appropriate protection to the passive sensors from transmitters in the adjacent band.”⁶ In the 37.5-40 GHz and 42-42.5 GHz bands, which are used by the Fixed-Satellite Service (FSS) for space-to-Earth links for specifically, individually-authorized earth stations, ITU-R studies have shown that co-frequency, co-coverage operation of IMT is feasible under certain conditions of operations in both services/applications. The same is true in the 42.5-43.5 GHz band, which is used by the FSS for Earth-to-space links. In portions of the range where ubiquitously-deployed FSS user terminals would operate (e.g., the 40-42 GHz band reserved for such use by the United States Federal Communications Commission (FCC)²), ITU-R studies have not shown that co-frequency, co-coverage operation of FSS downlinks and IMT is feasible.

International spectrum harmonization is a key component to enable introduction of mobile broadband services such as IMT and satellite services including the FSS. For IMT deployment harmonization is not limited to situations in which all regions have identical spectrum identifications. Consumers and businesses today benefit from the provision of IMT services because the equipment can be reconfigured to operate over multiple bands to satisfy the differences in IMT identifications. This is also expected to be the case from IMT in the higher frequency bands under agenda item 1.13.

Some administrations have or are planning to assign spectrum licenses to IMT in parts of the 37-43.5 GHz frequency range on an unpaired basis and have assigned or are planning to assign spectrum licenses to operators in services other than IMT in other parts of the 37-43.5 GHz frequency range. For example, the United States of America made the 37-40 GHz frequency range available for mobile broadband use and took FSS use into account². However other administrations in other regions are looking at other portions of the 37-43.5 GHz frequency range for IMT. Standards are already under development for the 37-40 GHz frequency range which can readily be extended to enable devices to operate in unpaired blocks in other portions of the 37-43.5 GHz frequency range.

In light of the ITU-R studies showing feasibility of sharing under certain conditions and the benefits of regional harmonization, the proposal of the United States of America is to make the 37-40 GHz and 42-43.5 GHz frequency ranges available for mobile

⁶ US 2nd R&O See: https://apps.fcc.gov/edocs_public/attachmatch/FCC-16-89A1.pdf

broadband use. This proposal supports an identification for IMT across the 37-40 GHz and 42-43.5 GHz frequency ranges in Region 2 and an associated Resolution for the implementation of IMT as well as a new co-primary mobile service allocation by footnote in the band 42-42.5 GHz limited to IMT.

This proposal addresses only part of one frequency range that is under consideration under WRC-19 Agenda Item 1.13 and Resolution **238 (WRC-15)**. Additional proposals under Agenda Item 1.13 are under development.

This proposal does not address Regions 1 or 3 to allow for possible regional variations as explained above.

Proposal:

ARTICLE 5
Frequency allocations
Section IV – Table of Frequency Allocations
(See No. 2.1)

MOD

USA/1.13/1

34.2-40 GHz

Allocation to services

Region 1	Region 2	Region 3
37-37.5	FIXED MOBILE except aeronautical mobile ADD 5.IMT SPACE RESEARCH (space-to-Earth) 5.547	
37.5-38	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile ADD 5.IMT SPACE RESEARCH (space-to-Earth) Earth exploration-satellite (space-to-Earth) 5.547	
38-39.5	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE ADD 5.IMT Earth exploration-satellite (space-to-Earth) 5.547	
39.5-40	FIXED FIXED-SATELLITE (space-to-Earth) 5.516B MOBILE ADD 5.IMT MOBILE-SATELLITE (space-to-Earth) Earth exploration-satellite (space-to-Earth) 5.547	

40-47.5 GHz

Allocation to services		
Region 1	Region 2	Region 3

42-42.5	FIXED FIXED-SATELLITE (space-to-Earth) 5.516B BROADCASTING BROADCASTING-SATELLITE Mobile ADD 5.IMT2 5.547 5.551F 5.551H 5.551I	
42.5-43.5	FIXED FIXED-SATELLITE (Earth-to-space) 5.552 MOBILE except aeronautical mobile ADD 5.IMT RADIO ASTRONOMY 5.149 5.547	

ADD USA/1.13/2

5.IMT The 37-40 GHz and 42.5-43.5 GHz frequency ranges are identified in Region 2 for use by administrations wishing to implement International Mobile Telecommunications (IMT). This identification does not preclude the use of this band by any application of the services to which it is allocated and does not establish priority in the Radio Regulations. Administrations should take this into account when considering regulatory provisions in relation to these bands. Resolution [IMT Implementation] (WRC-19) shall apply.

Reasons: As studies show, IMT sharing with other services operating in 37-40 GHz and 42.5-43.5 GHz is feasible under certain conditions to protect incumbent services. Considering the importance of regional harmonization for IMT and for incumbent services, these modifications provide an identification for IMT in the frequency range 37-40 GHz and 42.5-43.5 GHz in Region 2 with a Resolution providing important protections for incumbent services. This facilitates harmonized regional bands for IMT, which are highly desirable in order to achieve global roaming and the benefits of economies of scale. Resolution [IMT implementation](WRC-19) provides for the implementation of IMT considering the need to protect existing services and to allow for their continued development, in accordance with Resolution 238 (WRC-15).

ADD USA/1.13/3

5.IMT2 *Different category of service:* in Region 2 the 42-42.5 GHz frequency band is allocated to the mobile service on a primary basis and identified for use by administrations wishing to implement International Mobile Telecommunications (IMT). Use of this primary mobile service allocation is limited to IMT. This identification does

not preclude the use of this band by any application of the other services to which it is allocated and does not establish priority in the Radio Regulations. Administrations should take this into account when considering regulatory provisions in relation to these bands. Resolution [IMT Implementation] (WRC-19) shall apply.

Reasons: As studies show, IMT sharing with other services operating in 42-42.5 GHz is feasible under certain conditions to protect incumbent services. Considering the importance of regional harmonization for IMT and for incumbent services, this modification provides an upgrade of the mobile service from a secondary allocation to a co-primary allocation and an identification for IMT in the frequency range 42-42.5 GHz in Region 2 with a Resolution providing important protections for incumbent services. This facilitates harmonized regional bands for IMT, which are highly desirable in order to achieve global roaming and the benefits of economies of scale. Limiting the new upgraded allocation to the mobile service in 42-42.5 GHz to IMT use keeps the identification within the scope of AI 1.13 and Resolution 238. Resolution [IMT implementation] provides for the implementation of IMT considering the need to protect existing services and to allow for their continued development, in accordance with Resolution 238 (WRC-15).

ADD USA/1.13/4

RESOLUTION [IMT IMPLEMENTATION] (WRC-19)

Implementation of International Mobile Telecommunications in the 37-40 GHz and 42-43.5 GHz bands

The World Radiocommunication Conference (Sharm-el-Sheik, 2019),

considering

- a)* that International Mobile Telecommunications (IMT) is intended to provide telecommunication services on a worldwide scale, regardless of location and type of network or terminal;
- b)* that IMT systems have contributed to global economic and social development;
- c)* that IMT systems are now being evolved to provide diverse usage scenarios and applications such as enhanced mobile broadband, massive machine-type communications and ultra-reliable and low-latency communications;
- d)* that there is a need to continually take advantage of technological developments in order to increase the efficient use of spectrum and facilitate spectrum access;
- e)* that ITU-T has initiated the study of network standardization for IMT for 2020 and beyond;
- f)* that adequate and timely availability of spectrum and supporting regulatory provisions is essential to realize the objectives in Recommendation ITU-R M.2083;

- g) that harmonized worldwide bands and harmonized frequency arrangements for IMT are highly desirable in order to achieve global roaming and the benefits of economies of scale;
- h) that the band or portions of the bands 37-40 GHz and 42-43.5 GHz are already allocated to the fixed, mobile, space research, fixed-satellite, mobile-satellite and earth exploration-satellite services and are already in use;
- i) that identification of frequency bands allocated to mobile service for IMT may change the sharing situation regarding applications of services to which the frequency band is already allocated, and may require additional regulatory actions;
- j) the need to protect existing services and to allow for their continued development when considering frequency bands for possible additional allocations to any service,

noting

- a) that Resolution ITU-R 65 addresses the principles for the process of development of IMT for 2020 and beyond, and that Question ITU-R 77-7/5 considers the needs of developing countries in the development and implementation of IMT;
- b) that Question ITU-R 229/5 seeks to address the further development of IMT;
- c) that IMT encompasses both IMT-2000, IMT-Advanced, and IMT-2020 collectively, as described in Resolution ITU-R 56-2;
- d) Recommendation ITU-R M.2083, on the framework and objectives of the future development of IMT for 2020 and beyond;
- e) that Report ITU-R M.2320 addresses future technology trends of terrestrial IMT systems;
- f) Report ITU-R M.2376, on technical feasibility of IMT in the frequency bands above 6 GHz;
- g) that Report ITU-R M.2370 analyses trends impacting future IMT traffic growth beyond the year 2020 and estimates global traffic demands for the period 2020 to 2030;
- h) that there are ongoing studies within ITU-R on the propagation characteristics for mobile systems in higher frequency bands;

recognizing

- a) the relevance of provisions in Nos. **5.516B** and **5.547**, and Resolution **143 (WRC-07)**;
- b) that there is a lead time between the allocation of frequency bands by world radiocommunication conferences and the deployment of systems in those bands, and that timely availability of wide and contiguous blocks of spectrum is therefore important to support the development of IMT;
- c) that any identification of frequency bands for IMT should take into account the use of the bands by other services and the evolving needs of these services;
- d) that there should be no additional regulatory or technical constraints imposed to services to which the band is currently allocated on a primary basis;
- e) that ITU-R studies have shown that compatible operations of IMT and receive satellite earth stations in the fixed-satellite service can be achieved through geographic separation between an IMT deployment and the receive earth station;

f) that the required geographic separation distance in *recognizing e)* will vary as a function of earth station antenna diameter, elevation angle, surrounding terrain, and IMT network system design and can vary from a few hundred to a few thousand meters ;

resolves

1) that administrations which implement IMT should consider the following:

- a)* making some or all of the frequency bands identified in No. **5.IMT** and No. **5.IMT2** available for IMT;
- b)* in making frequency bands available under paragraph *a)*, take into account:
 - in bands shared with satellite services, the impact that the deployment of IMT stations would have on the existing and future development of FSS earth stations, and the deployment of FSS earth stations would have on the existing and future development of IMT;
 - the relevant technical characteristics applicable to IMT, as identified by ITU-R Recommendations;

2) that administrations which implement IMT shall:

- a)* adopt geographic separations between FSS earth stations and IMT deployments, adjusted as appropriate to protect each specific FSS earth station.
- b)* ensure that IMT base stations comply with the following characteristics:
 - minimum downtilt: 10 degrees
 - maximum e.i.r.p.: 52 dBm/200 MHz

Reasons: As studies show, IMT sharing with other services operating in 37-40 GHz and 42-43.5 GHz is feasible under certain conditions to protect incumbent services. This Resolution provides for the implementation of IMT while providing important protections for incumbent services and allowing for their continued development, in accordance with Resolution 238 (WRC-15). ITU-R studies have shown that compatible operations of IMT and receive satellite earth stations in the fixed-satellite service can be achieved through geographic separation between an IMT deployment and the receive earth station, and assuming certain characteristics for IMT networks.

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

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 Information: WRC-19 agenda item 1.15 considers the introduction of land-mobile and fixed service applications operating in the frequency range 275-450 GHz. At present, there are no allocations to radiocommunications services above 275 GHz in the Radio Regulations (RR's).

Recent advances in microwave technology make possible the use of the frequency range 275-450 GHz by active services for communications and other uses. While optical fiber is generally the least expensive terrestrial communications medium in terms of equipment cost per Gb/s-km, there are some applications where fixed radio systems of comparable bandwidth have unique advantages. In some locations, *e.g.* highly urbanized areas, optical fiber has very high installation costs which greatly exceeds component costs. Optical fiber cannot be installed quickly in certain place for special events and may not be economical for short-term events at a given location. Optical fiber has a time latency greater than radio systems due to the index of refraction of the fiber material which results in a group velocity about 25% less than in radio systems. While for many applications this latency is insignificant, for some applications it is an issue. Finally, in case of disaster, especially earthquakes with ground rupture along a fault, fiber optics systems cannot be restored quickly and temporary radio systems with comparable capacity would be beneficial in restoring communications networks for both land line service and mobile service.

Footnote No. **5.565** identifies frequency bands in the range 275-450 GHz for use by administrations for radio astronomy, Earth exploration-satellite (passive) and space research (passive) service applications. Consistent with No. **5.565**, frequencies above 275 GHz can be utilized for active service applications such as those in the fixed and land mobile services, provided "all practicable steps" are taken to protect passive services.

The bands identified below for terrestrial sharing with the passive services have been identified in ITU-R compatibility studies as meeting the intent of No. **5.565**.

Proposals:

MOD

USA/1.15/1

ARTICLE 5

Frequency allocations

Section IV – Table of Frequency Allocations

248-3 000 GHz

Allocation to services		
Region 1	Region 2	Region 3
275-3 000	(Not allocated) 5.565, ADD 5.A115	

ADD USA/1.15/2

5.A115 The following frequency bands are identified for use by administrations for the implementation of the following active service applications:

– land-mobile service applications:

275-296 GHz, 306-313 GHz, 320-330 GHz and 356-450GHz

– fixed service applications:

275-296 GHz, 306-313 GHz, 320-330 GHz and 356-450GHz

Administrations wishing to make frequencies in the 275-450 GHz range available for land-mobile and fixed services applications are urged to take all practicable steps to protect the passive services from harmful interference. Protection of radio astronomy sites may require additional constraints (e.g. minimum separation distances and/or avoidance angles) to protect these sites on a case by case basis. Until such time when the Table of Frequency Allocations is established for the use of the range 275-450 GHz, land-mobile and/or fixed service applications should not preclude use of the frequency bands identified above by other active services.

Reasons: While much of the spectrum in 275-450 GHz has been previously identified in No. **5.565** for Earth exploration-satellite service (passive) and space research service (passive), compatibility studies in ITU-R have shown that sharing of these bands between passive users and terrestrial use is possible under the existing provisions of No. **5.565**, which are unchanged here.

SUP USA/1.15/3

RESOLUTION 767 (WRC-15)

Studies towards an identification for use by administrations for land-mobile and fixed services applications operating in the frequency range 275-450 GHz

The World Radiocommunication Conference (Geneva, 2015),

Reasons: With the successful resolution of terrestrial mobile and fixed use in 275-450 GHz band with protecting of the passive services in the band, there is no longer a need for this resolution.

Document WAC/055 (23.04.18)

WRC-19 Agenda Item 9.1, Issue 9.1.1

IWG-2 members were not able to reach consensus on a proposal for WRC-19 Agenda Item 9.1, Issue 9.1.1 regarding the possible technical and operational measures to ensure coexistence and compatibility between the terrestrial component of IMT (in the mobile service) and the satellite component of IMT (in the mobile service and the mobile-satellite service) in the frequency bands 1 980 – 2 010 MHz and 2 170 – 2 200 MHz. The views on the appropriate regulatory changes the FCC should support are provided.

View A is supported by: AT&T, Cisco Systems, Inc., CTIA, Dish Networks, Ericsson, GSMA, Intel Corporation, Nokia, Sprint Corporation and T-Mobile.

View B is supported by: Omnispace, Inmarsat, and Intelsat.

VIEW A

View A: No Change under Agenda Item 9.1/Issue 9.1.1 for the 1 980 – 2 010 MHz and 2 170 – 2 200 MHz Bands, Mod to Resolution 212 (Rev. WRC-212)

Agenda item 9.1/Issue 9.1.1 is to study possible technical and operational measures to ensure coexistence and compatibility between the terrestrial component of IMT (in the mobile service) and the satellite component of IMT (in the mobile service and the mobile-satellite service) in the frequency bands 1 980-2 010 MHz and 2 170-2 200 MHz where those frequency bands are shared by the mobile service and the mobile-satellite service in different countries, in particular for the deployment of independent satellite and terrestrial components of IMT and to facilitate development of both the satellite and terrestrial components of IMT. Studies between the terrestrial and satellite components of IMT have found several technical and operational measures which can be implemented on a bilateral basis without the need for additional regulatory constraints on an international basis. Therefore, WAC members supporting View A believe that the draft proposal for WRC-19 provided in View A should be the basis for the United States Proposal to the Conference addressing WRC-19 Agenda Item 9.1, Issue 9.1.1, and that the United States should submit this draft proposal to the upcoming meeting of CITEL PCC.II for Agenda Item 9.1, Issue 9.1.1.

View A is supported by the following WAC members: AT&T, Cisco Systems, Inc., CTIA, Ericsson, GSMA, Intel Corporation, Nokia, Sprint Corporation, T-Mobile.

BACKGROUND

With the onset of 5G and increased capacity demands, spectrum allocations must continue to serve the public interest and user demands. The 1980-2010/2170-2200 MHz bands have licensed and planned IMT deployments, pursuant to ITU-R Recommendations M.1457 and M.2012, and may be flexibly utilized to meet user demands.

Within the past 10 years, satellite operations of IMT, pursuant to ITU-R Recommendations M.1850 and M.818, have also been deployed in these bands by a number of countries. Both satellite and terrestrial operations have coexisted in these bands without undue burden on either service, achieving compatibility when necessary through bilateral coordination. A lone unresolved coordination issue between China and Korea prompted the inclusion of Agenda Item 9.1, Issue 9.1.1 on the WRC-19 agenda so that cross-border sharing between the terrestrial and satellite components of IMT could be studied.

DISCUSSION

In the United States, the frequency range 1850-2000 MHz is allocated on a coprimary basis to mobile and fixed services and is primarily being used by PCS operators. The 2000-2020 MHz band has also been allocated to the mobile-satellite service on a coprimary basis with mobile and fixed services. Within the band 2000-2020 MHz, the mobile and mobile-satellite licenses have been issued to a single licensee. Today, the mobile-satellite service is in use and the mobile service is being deployed consistent

with the issued FCC licenses.

Studies undertaken by ITU-R WP 4C and WP 5D to address WRC-19 Agenda Item 9.1, Issue 9.1.1, as specified by CPM 19-1, suggest that several mitigation techniques exist for fostering the compatibility between the terrestrial and satellite components of IMT in adjacent countries. These techniques may be considered during the bilateral coordination process. Accordingly, there is no need for additional regulatory constraints on an international basis. This is the basis of View A.

View A is consistent with the treatment of the terrestrial component of IMT in the mobile service and the satellite component of IMT in the mobile-satellite service adopted in the United States. It retains the flexibility to adopt a variety of technical and operational measures for co-existence, based on realistic system characteristics. Any change to the Radio Regulations would limit the present flexibility for deployments of either component of IMT by individual countries, and more importantly, is outside the scope of the Agenda Item 9.1, Issue 9.1.1. Specifically, changes to the Radio Regulations such as constraints on power emitted by transmitters or transmission limits into the transmit antenna would not comport with the regulatory regime of U.S. and would impose restrictions on mobile operators holding licenses throughout the 1990-2010 MHz band. In addition, it would impose unnecessarily restrictions on operations globally.

In the View A proposal, Resolution 212 (Rev. WRC-15) is also modified to reflect that the studies responsive to this agenda item will be complete by WRC-19 and technical and operational measures to promote compatibility between the terrestrial and satellite components of IMT in different countries will have been documented.

RECOMMENDATION

Given that several technical and operational measures have been identified and studied by the ITU-R for the coexistence of the terrestrial and satellite component of IMT, as per the scope of the Agenda Item 9.1, Issue 9.1.1, and the nature of the current regulatory regime within U.S., the supporters of View A believe the United States should take the position of no change (NOC) in the Radio Regulations for the bands addressed under WRC-19 Agenda Item 9.1, Issue 9.1.1 and that the ITU-R Resolution 212 (Rev. WRC 15) be modified, as reflected in the View A proposal below.

**ATTACHMENT TO VIEW A:
UNITED STATES OF AMERICA
DRAFT PROPOSALS FOR THE WORK OF THE CONFERENCE**

Agenda Item 9.1/Issue 9.1.1: *to study possible technical and operational measures to ensure coexistence and compatibility between the terrestrial component of IMT (in the mobile service) and the satellite component of IMT (in the mobile service and the mobile-satellite service) in the frequency bands 1 980-2 010 MHz and 2 170-2 200 MHz where those frequency bands are shared by mobile service and the mobile-satellite service in different countries, in particular for the deployment of independent satellite and terrestrial components of IMT and to facilitate development of both the satellite and terrestrial components of IMT*

Background Information: The basis for Agenda Item 9.1, Issue 9.1.1 originated at WARC-92 with the addition of No. 5.388. This footnote identified certain frequencies for use by both satellite (MSS), and terrestrial (MS) in what are now called International Mobile Telecommunications (IMT). The frequency ranges in the footnote are 1 885-2 025 and 2 110-2 200 MHz. Within these broader frequency ranges, the frequency bands 1 980-2 010 MHz and 2 170-2 200 MHz are allocated to the fixed, mobile, and mobile-satellite services on a co-primary basis. Both the satellite and terrestrial components of IMT have already been deployed or are being considered for further deployment within the 1 980-2 010 MHz and 2 170-2 200 MHz frequency bands as noted in Resolution **212 (WRC-15)**.

Prior ITU-R studies have focused on co-existence and compatibility of terrestrial and satellite components of IMT within the same geographic area. WRC-19 Agenda Item 9.1, Issue 9.1.1 is focused on studying the co-existence and compatibility when the two are deployed in adjacent countries.

Ongoing ITU-R studies in response to this agenda item indicate that while compatibility of the terrestrial and satellite components of IMT in adjacent countries may require certain technical and operational measures, these measures are varied and may not be universally applicable to all possible cross-border cases. Several technical and operational measures have been identified. Administrations presently have the flexibility to adopt a variety of such measures, based on actual system characteristics and confidential information, during the bilateral coordination processes, and this flexibility should be maintained. A change to the Radio Regulations would limit the present flexibility for deployments by individual countries.

Proposal:

NOC

USA/9.1.1/1

Radio Regulations (WRC-15) Volumes 1, 2 and 4

Reason: A change to the Radio Regulations would limit the present flexibility for deployments by individual countries.

MOD

USA/9.1.1/2

RESOLUTION 212 (REV.WRC-19)

Implementation of International Mobile Telecommunications in the frequency bands 1 885-2 025 MHz and 2 110-2 200 MHz

The World Radiocommunication Conference (Sharm-el-Sheikh, 2019),

considering

- a)* that Resolution ITU-R 56 defines the naming for International Mobile Telecommunications (IMT);
- b)* that the ITU Radiocommunication Sector (ITU-R), for WRC-97, recommended approximately 230 MHz for use by the terrestrial and satellite components of IMT;
- c)* that ITU-R studies forecast that additional spectrum may be required to support the future services of IMT and to accommodate future user requirements and network deployments;
- d)* that ITU-R has recognized that space techniques are an integral part of IMT;
- e)* that, in No. **5.388**, WARC-92 identified frequency bands to accommodate certain mobile services, now called IMT,

noting

- a)* that the terrestrial component of IMT has already been deployed or is being considered for deployment in the frequency bands 1 885-2 025 MHz and 2 110-2 200 MHz;
- b)* that the availability of the satellite component of IMT in the frequency bands 1 980-2 010 MHz and 2 170-2 200 MHz simultaneously with the terrestrial component of IMT in the frequency bands identified in No. **5.388** would improve the overall implementation and the attractiveness of IMT,
- c)* that ITU-R studies have identified technical and operational measures that may be implemented to allow co-existence and compatibility between satellite and

terrestrial components of IMT when deployed in the frequency bands 1 980-2 010 MHz and 2 170-2 200 MHz in adjacent geographic areas,

d)

resolves

that administrations which implement IMT:

- a) should make the necessary frequencies available for system development;
- b) should use those frequencies when IMT is implemented;
- c) should use the relevant international technical characteristics, as identified by ITU-R and ITU-T Recommendations,

invites administrations

1 to give due consideration to the accommodation of other services currently operating in these frequency bands when implementing IMT,

further invites ITU-R

to continue its studies with a view to developing suitable and acceptable technical characteristics for IMT that will facilitate worldwide use and roaming, and ensure that IMT can also meet the telecommunication needs of the developing countries and rural areas.

Reason: The studies responsive to this agenda item will be complete by WRC-19 and will document technical and operational measures to promote compatibility between the terrestrial and satellite components of IMT in different countries.

VIEW B

VIEW B:

WAC members Omnispace, Inmarsat, and Intelsat support the objective of WRC-19 agenda item 9.1, issue 9.1.1, “to ensure coexistence and compatibility between the terrestrial component of IMT (in the mobile service) and the satellite component of IMT (in the mobile service and the mobile-satellite service) in the frequency bands 1 980-2 010 MHz and 2 170-2 200 MHz where those frequency bands are shared by mobile service and the mobile-satellite service in different countries and to facilitate development of both the satellite and terrestrial components of IMT.” This agenda item is focused on co-existence and compatibility when the satellite and terrestrial component of IMT are deployed in different countries.

The frequency bands 1 980-2 010 MHz and 2 170-2 200 MHz are allocated in the International Telecommunication Union (ITU) Radio Regulations to the fixed, mobile, and mobile-satellite services on a co-primary, global basis. Both the satellite and terrestrial components of IMT have already been deployed or are being considered for deployment within the 1 980-2 010 MHz and 2 170-2 200 MHz frequency bands as noted in Resolution **212 (WRC-15)**. More than 400 satellite networks, both geostationary and non-geostationary, have been registered with the International Telecommunication Union in the 1 980-2 010 MHz and 2 170-2 200 MHz frequency bands and are undergoing coordination.

ITU-R studies in response to this agenda item calculate significant interference from IMT terrestrial base stations into IMT satellite receivers when the band 1 980-2 010 MHz is used for the downlink from the IMT terrestrial base station to user equipment. These studies analyzed three geostationary satellite networks and three non-geostationary satellite systems, one in highly elliptical orbit, one in medium earth orbit, and one in low earth orbit. The studies, which came from different administrations, all reached the same conclusion: the interference far exceeded the criterion to protect IMT satellite systems when the band 1 980-2 010 MHz is used for the downlink from the IMT terrestrial base station to user equipment.

In the worst case, the aggregate interference from IMT terrestrial base stations operating in the band 1 980-2 010 MHz is calculated to exceed the protection criterion by more than 50 dB. This level of interference can not be resolved by implementing mitigation methods. Moreover, the interference is not limited to adjacent countries, but is predicted when the satellite IMT deployment is at a distance of as much as 10,000 km from the terrestrial IMT deployment. There is no ITU coordination procedure in the Radio Regulations to address interference from terrestrial transmitters into receiving space stations.

The ITU-R studies show that this potential interference scenario can be most effectively addressed by using the band 1980-2010 MHz only as an uplink band for terrestrial IMT operations, i.e. transmission from IMT terrestrial user equipment to the base station, a frequency arrangement included in Recommendation ITU-R M.1036-5. This could be put into effect by limiting the terminal transmitter output power delivered to the antenna of terrestrial IMT stations to 23 dBm, which is the maximum power for user equipment indicated in ITU-R Report M.2292 (as well as 3GPP TS 25.101) and the basis for the

studies for agenda item 9.1.1. The WAC members supporting View B propose to modify Resolution **212 (WRC-15)** to incorporate this power limit.

Since footnote No. **5.389B** of the Radio Regulations mandates that the use of the band 1980-1990 MHz by the mobile-satellite service shall not cause harmful interference to or constrain the development of the mobile service in certain countries in Region 2, the power limit would apply only to the band 1990-2010 MHz in the countries listed in footnote **5.389B**.

The WAC members supporting View B endorse the outcome of the studies under this agenda item, which show significant interference from IMT terrestrial base stations into IMT satellite receivers when the band 1 980-2 010 MHz is used for the downlink from the IMT terrestrial base station to user equipment. The View B proposal provides a mechanism to address this interference through modifications to Resolution **212 (WRC-15)**, thereby enabling the development of the band 1 980-2 010 MHz by both the satellite and terrestrial components of IMT and satisfying the objective of agenda item 9.1.1.

The modifications to Resolution **212 (WRC-15)** contained in View A only note “that ITU-R studies have identified technical and operational measures that may be implemented to allow co-existence and compatibility between satellite and terrestrial components” without addressing the critical interference case in the ITU-R studies or providing a remedy for addressing it. As observed above, there is no ITU coordination procedure for this case and the expected interference exceeds levels that can be mitigated by technical and operational measures. The View A approach does not ensure the development of the band 1 980-2 010 MHz by both the satellite and terrestrial components of IMT as called for in the agenda item.

**ATTACHMENT TO VIEW B:
UNITED STATES OF AMERICA**

DRAFT PROPOSALS FOR THE WORK OF THE CONFERENCE

Agenda Item 9.1/Issue 9.1.1: *to study possible technical and operational measures to ensure coexistence and compatibility between the terrestrial component of IMT (in the mobile service) and the satellite component of IMT (in the mobile service and the mobile-satellite service) in the frequency bands 1 980-2 010 MHz and 2 170-2 200 MHz where those frequency bands are shared by mobile service and the mobile-satellite service in different countries, in particular for the deployment of independent satellite and terrestrial components of IMT and to facilitate development of both the satellite and terrestrial components of IMT*

Background Information: Footnote 5.388 indicates that the frequency bands 1 885-2 025 and 2 110-2 200 MHz are intended for use, on a worldwide basis, for International Mobile Telecommunications (IMT) and should be made available for IMT in accordance with Resolution **212 (Rev. WRC-15)**. Within these broader frequency ranges, the frequency bands 1 980-2 010 MHz and 2 170-2 200 MHz are allocated to the fixed, mobile, and mobile-satellite services on a co-primary basis. Both the satellite and terrestrial components of IMT have already been deployed or are being considered for further deployment within the 1 980-2 010 MHz and 2 170-2 200 MHz frequency bands as noted in Resolution **212 (WRC-15)**. Frequency Arrangements for terrestrial IMT are contained in Recommendation ITU-R M.1036-5.

Resolution **212 (Rev.WRC-15)** invites “ITU-R to study possible technical and operational measures to ensure coexistence and compatibility between the terrestrial component of IMT (in the mobile service) and the satellite component of IMT (in the mobile service and mobile-satellite service) in the frequency bands 1 980-2 010 MHz and 2 170-2 200 MHz where those frequency bands are shared by the mobile service and the mobile-satellite service in different countries, in particular for the deployment of independent satellite and terrestrial components of IMT and to facilitate development of both the satellite and terrestrial components of IMT”.

Prior ITU-R studies have focused on co-existence and compatibility of terrestrial and satellite components of IMT within the same geographical area. WRC-19 Agenda Item 9.1, Issue 9.1.1 is focused on studying the co-existence and compatibility when the two are deployed in different geographical areas.

With the exception of one scenario, ITU-R studies in response to this agenda item indicated compatibility may be achieved between the terrestrial and satellite components of IMT in different geographical areas. In most cases, technical and operational measures may be needed and could be agreed during coordination. However, ITU-R studies show that the aggregate interference from IMT terrestrial base stations into IMT satellite receivers in the band 1 980-2 010 MHz is predicted to exceed the protection criterion by more than 50 dB in the worst cases, more than mitigation measures alone could address. Additionally, there is no coordination procedure in the Radio Regulations to address interference from terrestrial IMT into receiving satellite IMT

space stations.

The ITU-R studies show that this potential interference scenario can be most effectively limited by using the band 1980-2010 MHz as an uplink band for terrestrial IMT operations (i.e. used for UE transmit only). This could be put into effect by limiting the terminal transmitter output power delivered to the antenna of terrestrial IMT stations to 23 dBm, which is the maximum power for user equipment indicated in ITU-R Report M.2292 (as well as 3GPP TS 25.101)

and the basis for the studies for agenda item 9.1.1. Since RR No. **5.389B** mandates that the use of the band 1980-1990 MHz by the mobile-satellite service shall not cause harmful interference to or constrain the development of the mobile service in certain countries in Region 2, the power limit would apply only to the band 1990-2010 MHz in the countries listed in footnote **5.389B**.⁷

Proposal:

MOD

USA/9.1.1/1

RESOLUTION 212 (REV.WRC-19)

Implementation of International Mobile Telecommunications in the frequency bands 1 885-2 025 MHz and 2 110-2 200 MHz

The World Radiocommunication Conference (Sharm-el-Sheikh, 2019),

considering

- a) that Resolution ITU-R 56 defines the naming for International Mobile Telecommunications (IMT);
- b) that the ITU Radiocommunication Sector (ITU-R), for WRC-97, recommended approximately 230 MHz for use by the terrestrial and satellite components of IMT;
- c) that ITU-R studies forecast that additional spectrum may be required to support the future services of IMT and to accommodate future user requirements and network deployments;
- d) that ITU-R has recognized that satellite services are an integral part of IMT;
- e) that, in No. **5.388**, WARC-92 identified frequency bands to accommodate certain mobile services, now called IMT,

⁷ Region 2 has primary allocations to the fixed, mobile and mobile-satellite service in the band 2 010-2 025 MHz. When used for terrestrial IMT, the band 2 010-2 025 MHz should similarly be used only for the uplink from the mobile user station to the base station in order to enable the development of both the satellite and terrestrial components of IMT.

noting

- b)* that the terrestrial component of IMT (in the mobile service) has already been deployed or is being considered for deployment in the frequency bands 1 885-2 025 MHz and 2 110-2 200 MHz;
- b)* that the satellite component of IMT (in the mobile service and mobile-satellite service) has already been deployed and further deployment in the frequency bands 1 980-2 010 MHz and 2 170-2 200 MHz is expected;
- c)* that the availability of the satellite component of IMT in the frequency bands 1 980-2 010 MHz and 2 170-2 200 MHz simultaneously with the terrestrial component of IMT in the frequency bands identified in No. **5.388** would improve the overall implementation and the attractiveness of IMT,

noting further

- a)* **that** co-coverage, co-frequency deployment of independent satellite and terrestrial IMT components is not feasible unless techniques, such as the use of an appropriate guardband or other mitigation techniques, are applied to ensure coexistence and compatibility between the terrestrial and satellite components of IMT but that co-coverage, co-frequency deployment of dependent hybrid IMT satellite systems with a complementary ground component is feasible;
- b)* that, when the satellite and terrestrial components of IMT are deployed in the frequency bands 1 980-2 010 MHz and 2 170-2 200 MHz in adjacent geographical areas, technical or operational measures may need to be implemented to avoid harmful interference;
- c)* that some difficulties have been raised in addressing potential interference between the satellite and terrestrial components of IMT,

resolves

that administrations which implement IMT:

- a)* should make the necessary frequencies available for system development;
- b)* should use those frequencies when IMT is implemented;
- c)* should use the relevant international technical characteristics, as identified by ITU-R and ITU-T Recommendations;
- d)* shall limit the transmitter output power delivered to the antenna of stations in the mobile service to 23 dBm in the band 1980-2010 MHz, except in the 1980-1990 MHz band for countries listed in RR No. **5.389B** in Region 2,

invites administrations

to give due consideration to the accommodation of other services currently operating in these frequency bands when implementing IMT,

further invites ITU-R

to continue its studies with a view to developing suitable and acceptable technical characteristics for IMT that will facilitate worldwide use and roaming, and ensure that IMT can also meet the telecommunication needs of the developing countries and rural areas.

Reasons: ITU-R studies in response to this agenda item showed that limiting the terminal transmitter output power delivered to the antenna of stations in the mobile service to 23 dBm, which is the maximum power for user equipment indicated in ITU-R Report M.2292 (as well as 3GPP TS 25.101), would enable the development of the band 1 980-2 010 MHz by both the satellite and terrestrial components of IMT and satisfy the objective of agenda item 9.1.1.

Regulatory Issues

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

Agenda Item 1.4 – *to consider the results of studies in accordance with Resolution 557 (WRC-15), and review, and revise if necessary, the limitations mentioned in Annex 7 to Appendix 30 (Rev.WRC-15), while ensuring the protection of, and without imposing additional constraints on, assignments in the Plan and the List and the future development of the broadcasting-satellite service within the Plan, and existing and planned fixed-satellite service networks.*

Background: Annex 7 to RR Appendix 30 (Rev.WRC-15) contains, the following orbital position limitations for BSS:

Annex 7 Limitation	Region and Service of interfering assignments	Region and Service of impacted assignments	Frequency band	Limitation description
A1 (part a)	Region 1 BSS	Region 2 FSS (Atlantic)	11.7-12.2 GHz	No assignments in the Region 1 List further west than 37.2°W
A1 (part b)		Region 2 FSS (Pacific)		No assignments in the Region 1 List further east than 146°E
		Region 3 BSS subject to Appendix 30		
A2a	Region 2 BSS	Region 1 FSS (Atlantic)	12.5-12.7 GHz	No modification in the Region 2 Plan further east than 54°W
A2b		Region 1 BSS subject to Appendix 30	12.2-12.5 GHz	No modification in the Region 2 Plan further east than 44°W
A2c		Region 3 FSS	12.2-12.7 GHz	No modification in the Region 2 Plan further west than 175.2°W
		Region 1 BSS subject to Appendix 30	12.2-12.5 GHz	
		Region 1 FSS (Pacific)	12.5-12.7 GHz	
A3 (part a)	Region 1 BSS	Region 2 FSS	11.7-12.2 GHz	No assignments in the Regions 1 & 3 List outside specific allowable portions of the orbital arc between 37.2°W and 10°E
A3 (part b)				Max. e.i.r.p. of 56 dBW for assignments in the Regions 1 & 3 List at specific allowable portions of the orbital arc between 37.2°W and 10°E

A3 (part c)				Max. power flux density of -138 dB(W/(m ² · 27 MHz)) at any point in Region 2 by assignments in the Regions 1 & 3 List located at 4°W and 9°E
B	Region 2 BSS	Region 2 BSS subject to Appendix 30	12.2-12.7 GHz	Required agreement of administrations having to space stations in the same cluster when an administration may locate a satellite within this cluster

The FSS in the same frequency bands is not the subject to orbital positions limitations.

Revision/suppression of the Annex 7 orbital position limitations would provide satellite operators an additional orbital/spectrum resource that is already allocated.

Due to the Atlantic Ocean, which provides geographical separation between the coverage areas in Region 1 and Region 2, the potential for interference between the FSS and the BSS in these Regions is significantly reduced.

The sharing studies conducted to investigate the possible suppression of Limitation A1 (part a) show that, by assuming 20 dB geographic discrimination, representative BSS and FSS networks serving different Regions can co-exist with orbital separations as small as 0.5 degree (for FSS versus BSS) and 2 degrees (for BSS versus FSS), considering the identified carrier parameters and a 6 dB edge of coverage. These small orbital separations demonstrate that the restriction in the orbital position further west than 37.2°W in Limitation A1 (part a) could be suppressed to allow an Appendix **30** Region 1 List system at an orbital position further west than 37.2°W.

Similar conclusions were reached with respect to Limitations A2a and A2b, which could likewise be suppressed.

However, due to the very close proximity between Chukotka (Region 1) and Alaska (Region 2), separated only by the Bering Strait and between land masses in Region 1 and Region 3, there is very little room for geographic discrimination in situations involving the Pacific Ocean, and consequently suppressing Limitations A1 (part b) and A2c cannot be justified without additional considerations. The sharing studies show that in the case of absence of geographic discrimination representative BSS and FSS networks serving different Regions can co-exist with orbital separations of 4.4 degrees (for Region 1 FSS versus Region 2 BSS) and 5.8 degrees (for Region 2 BSS versus Region 1 FSS), depending on the carrier parameters (for the EOC at 6 dB case).

In specific situations with respect to Region 2 FSS vs. Region 1 BSS or with respect to Region 1 FSS vs. Region 2 BSS with small orbital separations (i.e. a Region 2 FSS network intending to operate in an area close to the Region 1 border and with a service area very close to that of a Region 1 BSS or a Region 1 FSS network intending to operate in an area close to the Region 2 border and with a service area very close to that of a Region 2 BSS), the suppression of Limitation A1 (part a) or Limitation A2a could impose additional constraints on these Region 1 and Region 2 FSS networks.

This is due to the fact that the pfd limits applicable to Region 2 FSS networks for protection of Region 1 BSS networks and to Region 1 FSS networks for protection of Region 2 BSS networks, contained in Annex 4 of Appendix **30**, are a function of the orbital separation to the closest affected BSS network in Region 1 or Region 2. If Limitation A1 (part a) is suppressed, future Region 1 BSS networks can be located much closer to Region 2 FSS networks that were previously unencumbered, and therefore restrict the ability of future Region 2 FSS networks, in

some particular cases, to operate in the same manner that Region 2 FSS networks submitted before this Annex 7 limitation is suppressed. Likewise, if Limitation A2a is suppressed, future Region 2 BSS networks can be located much closer to Region 1 FSS networks that were previously unencumbered, and therefore restrict the ability of future Region 1 FSS networks, in some particular cases, to operate in the same manner that Region 1 FSS networks submitted before this Annex 7 limitation is suppressed.

In order to mitigate that effect, it is proposed to use the Region 1 and Region 2 BSS test points instead of the service area definition for the coordination with the FSS through a new Resolution [1.4] (WRC-19). This approach is consistent with the use of test points for intra-BSS coordination.

With respect to limitations A3a and A3b, there may be a risk that an existing satellite network that implemented earth stations with antenna size 40 cm under the current regulatory regime defined by the current orbit limitations in Annex 7, would not be able to continue its operation due to the possible additional level of interference that an incumbent might be forced to accept, unless additional measures are considered. Such a situation would be in contradiction to recognizing b) of Resolution 557 (WRC-15), stating: “that existing FSS networks operating in the frequency bands mentioned in considering b) and BSS networks implemented in accordance with the current provisions of Annex 7 to Appendix 30 shall continue to be protected.” As a result, it is proposed that such BSS networks with antenna diameter less than 60 cm are protected with a specific and adequate PFD mask through a new Resolution [1.4] (WRC-19), in line with the PFD mask proposed in Method A3-2 of the draft CPM text.

With respect to Section B of Annex 7, its maintenance is important for the Region 2 Plan whose original assignments were based on the cluster concept. Therefore, no change is proposed to that section.

Proposal:

MOD **USA/1.4/1**

APPENDIX 30 (REV.WRC-19)*

**Provisions for all services and associated Plans and List¹ for
the broadcasting-satellite service in the frequency bands
11.7-12.2 GHz (in Region 3), 11.7-12.5 GHz (in Region 1)
and 12.2-12.7 GHz (in Region 2) (WRC-03)**

MOD **USA/1.4/2**

ANNEX 7 (REV.WRC-19)

Orbital position limitations

- 1) No broadcasting satellite serving an area in Region 1 and using a frequency in the band 11.7-12.2 GHz shall occupy a nominal orbital position further-east than 146° E.
Broadcasting satellites serving an area in Region 1 using a frequency in the band 11.7-12.2 GHz and occupying a nominal orbital position further west than 37.2° W shall be in accordance with Resolution [1.4] (WRC-19).
- 2) No broadcasting satellite serving an area in Region 2 that involves an orbital position different from that contained in the Region 2 Plan shall occupy a nominal orbital position
further west than 175.2° W in the band 12.2-12.7 GHz.
Broadcasting satellites not operating under an original Region 2 Plan assignment in Article 11 serving an area in Region 2 using a frequency in the band 12.5-12.7 GHz and occupying a nominal orbital position further east than 54° W shall be in accordance with Resolution [1.4] (WRC-19).
Broadcasting satellites not operating under an original Region 2 Plan assignment in Article 11 serving an area in Region 2 using a frequency in the band 12.5-12.7 GHz and occupying a nominal orbital position further east than 54° W shall be in accordance with Resolution [1.4] (WRC-19).

Reasons: To provide the BSS additional orbital resources while ensuring the protection of, and without imposing additional constraints on existing and planned FSS networks.

MOD **USA/1.4/3**

- 3) Broadcasting satellite serving an area in Regions 1 or 3 using a frequency in the band 11.7-12.2 GHz, occupying a nominal orbital position within the

orbital arc of the geostationary-satellite orbit between 37.2° W and 10° E, with an earth station antenna diameter lower than 60 cm and for which complete Appendix 4 information had been received by the Bureau under § 4.1.3 of Appendix 30 prior to 28 November 2015; and for which complete Appendix 4 information had been received by the Bureau under § 4.1.12 of Appendix 30 prior to 23 November 2019; and for which the complete due diligence information, in accordance with Annex 2 to Resolution 49 (Rev.WRC-15), had been received by the Bureau prior to 23 November 2019; and for which complete Appendix 4 information had been received by the Bureau under § 5.1.2 of Appendix 30 prior to 23 November 2019; and which had been brought into use prior to 23 November 2019 and for which the date of bringing into use had been confirmed to the Bureau, the pfd mask contained in Annex 1 section 1 of Appendix 30 shall be replaced by the pfd masks contain in Resolution [1.4] (WRC-19).

Reasons: To protect BSS networks with antenna diameter less than 60 cm with a specific and adequate PFD mask.

NOC **USA/1.4/4**

B The Region 2 Plan is based on the grouping of the space stations in nominal orbital positions of $\pm 0.2^\circ$ from the centre of the cluster of satellites. Administrations may locate those satellites within a cluster at any orbital position within that cluster, provided they obtain the agreement of administrations having assignments to space stations in the same cluster. (See § 4.13.1 of Annex 3 to Appendix 30A.)

Reasons: No change is proposed to Annex 7 limitation B, as it forms the basis of the original Region 2 Plan.

RESOLUTION [1.4] (WRC-19)

Transitional measures for certain broadcasting-satellite/fixed-satellite service systems in the bands 11.7-12.2 and 12.2-12.7 GHz

The World Radiocommunication Conference (Geneva, 2019),

considering

- a) that World Radiocommunication Conference 2015 decided to conduct studies on, review, and identify possible revisions to, if necessary, the limitations mentioned in Annex 7 to Appendix 30 (Rev.WRC-15), while ensuring the protection of, and without imposing additional constraints on, assignments in the Plan and in the List and the future of broadcasting-satellite service (BSS) networks and existing fixed-satellite service (FSS) networks.
- b) that the provisions applying to the BSS in the frequency bands 11.7-12.5 GHz in Region 1, 12.2-12.7 GHz in Region 2 and 11.7-12.2 GHz in Region 3 are contained in Appendix 30;
- c) that FSS has primary allocations in the frequency bands 12.5-12.75 GHz in Region 1, 11.7-12.2 GHz in Region 2 and 12.2-12.75 GHz in Region 3, while unplanned BSS has a primary allocation in 12.5-12.7 GHz in Region 3;
- d) that this Conference suppressed the limitation in Annex 7 of Appendix 30 that prevented broadcasting satellites serving an area in Region 1 and using frequency assignments in the band 11.7-12.2 GHz from occupying a nominal orbital position further west than 37.2° W;
- e) that this Conference suppressed the limitation in Annex 7 of Appendix 30 that prevented broadcasting satellites serving an area in Region 2 and using frequency assignments in the band 12.5-12.7 GHz from occupying a nominal orbital position further east than 54°W;
- f) that this Conference suppressed the limitation in Annex 7 of Appendix 30 that prevented broadcasting satellites serving an area in Regions 1 or 3 and using frequency assignments in the band 11.7-12.2 GHz from occupying a nominal orbital position outside allowable portions of the orbital arc between 37.2°W and 10°E;
- g) that the result of those suppressions must ensure the protection of, and cannot impose additional constraints on, assignments in the Plan and the List and the future development of the BSS within the Plan, and existing and planned FSS networks;

recognizing

- a) that WRC-2000 developed new Plans for Regions 1 and 3 assuming digital BSS and feeder-link assignments;
- b) that existing FSS and unplanned BSS networks operating in the frequency bands mentioned in *considering c)* and planned BSS networks implemented in accordance with the provisions of Annex 7 to Appendix 30 (Rev.WRC-15) prior to WRC-19 shall continue to be protected;

c) that the frequency bands 11.7-12.2 GHz in Region 3, 11.7-12.5 GHz in Region 1 and 12.2-12.7 GHz in Region 2 are widely used by BSS networks, subject to the provisions of Annex 7 to Appendix **30** (Rev.WRC-15) prior to WRC-19;

d) that the frequency bands 12.5-12.75 GHz in Region 1, 11.7-12.2 GHz in Region 2 and 12.2-12.75 GHz in Region 3 are widely used by FSS networks.

resolves

1 that, with respect to § 7.1 *a)*, 7.2.1 *b)* and 7.2.1 *c)* of Article 7 of Appendix **30**, for the coordination of a transmitting space station in the FSS (space-to-Earth) of Region 2 with a broadcasting satellite serving an area in Region 1 and using a frequency assignment in the band 11.7-12.2 GHz with a nominal orbital position further west than 37.2°W, the conditions contained in Annex 4 to Appendix **30** are replaced by the conditions in Annex 1 to this resolution;

2 that, with respect to § 7.1 *a)*, 7.2.1 *b)* and 7.2.1 *c)* of Article 7 of Appendix **30**, for the coordination of a transmitting space station in the FSS (space-to-Earth) of Region 1 with a broadcasting satellite serving an area in Region 2 and using a frequency assignment in the band 12.5-12.7 GHz with a nominal orbital position further east than 54°W and not appearing in the original Region 2 BSS Plan in Article 11, the conditions contained in Annex 4 to Appendix **30** are replaced by the conditions in Annex 2 to this resolution.

3 that, with respect to § 4.1.1 *b)* of Article 4 of Appendix **30**, for the protection of a transmitting space station in the BSS serving an area in Regions 1 or 3 using a frequency in the band 11.7-12.2 GHz, occupying a nominal orbital position within the orbital arc of the geostationary-satellite orbit between 37.2° W and 10° E, with an earth station antenna diameter lower than 60 cm and for which complete Appendix 4 information had been received by the Bureau under § 4.1.3 of Appendix **30** prior to 28 November 2015; and for which complete Appendix 4 information had been received by the Bureau under § 4.1.12 of Appendix **30** prior to 23 November 2019; and for which the complete due diligence information, in accordance with Annex 2 to Resolution **49 (Rev.WRC-15)**, had been received by the Bureau prior to 23 November 2019; and for which complete Appendix 4 information had been received by the Bureau under § 5.1.2 of Appendix **30** prior to 23 November 2019; and which had been brought into use prior to 23 November 2019 and for which the date of bringing into use had been confirmed to the Bureau, the pfd mask contained in Annex 1 section 1 of Appendix 30 shall be replaced by the pfd masks contain in Annex 3 to this resolution.

ANNEX 1 TO RESOLUTION 1.4 (WRC-19)

With respect to § 7.1 *a*), 7.2.1 *b*) and 7.2.1 *c*) of Article 7 of Appendix **30**, coordination of a transmitting space station in the fixed-satellite service (FSS) (space-to-Earth) of Region 2 is required with a broadcasting satellite serving an area in Region 1 and using a frequency assignment in the band 11.7-12.2 GHz with a nominal orbital position further west than 37.2°W when, under assumed free-space propagation conditions, the power flux-density at any test point of its service area of the overlapping frequency assignments in the BSS exceeds the following values: (WRC-19)

$-147 \text{ dB(W/(m}^2 \text{ 27 MHz))}$	for	$0 \leq \theta \leq 0.23$
$-135.7 \text{ dB(W/(m}^2 \text{ 27 MHz))}$	for	$0.23 \leq \theta \leq 2.0$
$-136.7 \text{ dB(W/(m}^2 \text{ 27 MHz))}$	for	$\theta \geq 2.0$
$-129.2 \text{ dB(W/(m}^2 \text{ 27 MHz))}$	for	$3.59 \leq \theta \leq 10.57$
$-103.6 \text{ dB(W/(m}^2 \text{ 27 MHz))}$	for	$\theta \geq 10.57$

where θ is the minimum geocentric orbital separation in degrees between the wanted and interfering space stations, taking into account the respective East-West station-keeping accuracies.

ANNEX 2 TO RESOLUTION 1.4 (WRC-19)

With respect to § 7.1 *a*), 7.2.1 *b*) and 7.2.1 *c*) of Article 7 of Appendix **30**, coordination of a transmitting space station in the fixed-satellite service (FSS) (space-to-Earth) of Region 1 is required with a broadcasting satellite serving an area in Region 2 and using a frequency assignment in the band 12.5-12.7 GHz with a nominal orbital position further east than 54°W and not appearing in the original Region 2 BSS Plan in Article 11 when, under assumed free-space propagation conditions, the power flux-density at any test point of its service area of the overlapping frequency assignments in the BSS exceeds the following values: (WRC-19)

$-147 \text{ dB(W/(m}^2 \text{ 27 MHz))}$	for	$0 \leq \theta \leq 0.23$
$-135.7 \text{ dB(W/(m}^2 \text{ 27 MHz))}$	for	$0.23 \leq \theta \leq 1.8$
$-134.0 \text{ dB(W/(m}^2 \text{ 27 MHz))}$	for	$1.8 \leq \theta \leq 5.0$
$-129.2 \text{ dB(W/(m}^2 \text{ 27 MHz))}$	for	$5.0 \leq \theta \leq 10.57$
$-103.6 \text{ dB(W/(m}^2 \text{ 27 MHz))}$	for	$\theta \geq 10.57$

where θ is the minimum geocentric orbital separation in degrees between the wanted and interfering space stations, taking into account the respective East-West station-keeping accuracies.

ANNEX 3 TO RESOLUTION 1.4 (WRC-19)

With respect to § 4.1.1 b) of Article 4 of Appendix 30, For the protection of assignments in the band 11.7-12.2 GHz occupying a nominal orbital position within the orbital arc of the geostationary-satellite orbit between 37.2° W and 10° E, with an earth station antenna diameter lower than 60 cm,

- for which complete Appendix 4 information had been received by the Bureau under § 4.1.3 of Appendix 30 prior to 28 November 2015; and
- for which complete Appendix 4 information had been received by the Bureau under § 4.1.12 of Appendix 30 prior to 23 November 2019; and
- for which the complete due diligence information, in accordance with Annex 2 to Resolution 49 (Rev.WRC-15), had been received by the Bureau prior to 23 November 2019; and
- for which complete Appendix 4 information had been received by the Bureau under § 5.1.2 of Appendix 30 prior to 23 November 2019; and
- which had been brought into use prior to 23 November 2019 and for which the date of bringing into use had been confirmed to the Bureau.

The following values shall be used:

for antenna size of 40 cm:

$-133.2 + 0.74 \theta^2$	dB(W/(m ² · 27 MHz))	for $0^\circ \leq \theta < 5.54^\circ$
$-129.2 + 25 \log \theta$	dB(W/(m ² · 27 MHz))	for $5.54^\circ \leq \theta < 9^\circ$

for antenna size of 45 cm:

$-134.2 + 0.93 \theta^2$	dB(W/(m ² · 27 MHz))	for $0^\circ \leq \theta < 4.90^\circ$
$-129.2 + 25 \log \theta$	dB(W/(m ² · 27 MHz))	for $4.90^\circ \leq \theta < 9^\circ$

Reasons: To provide the BSS additional orbital resources while ensuring the protection of, and without imposing additional constraints on existing and planned FSS networks as well as to protect BSS networks with antenna diameter less than 60 cm with a specific and adequate PFD mask.

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

Agenda Item 7, Issue K – Difficulties for Part B examinations under § 4.1.12 or 4.2.16 of RR Appendices 30 and 30A and § 6.21 c) of RR Appendix 30B

Background Information: Examination under RR Appendices **30** and **30A** § 4.1.12 or 4.2.16 or RR Appendix **30B** § 6.21 c) is based on the assignments for which the Bureau has previously received complete information even though the senior network's Part B notice has already been published with reduced characteristic (e.g. reduced service area and coverage area) and from that Part B publication, the senior network's Part A no longer exists in the AP**30**, AP**30A** or AP**30B** databases.

This creates difficulties to the notifying administration of a satellite network and may prevent its Part B notice submitted from entering into the List or Plan with favorable findings as the examination of its submission in respect of a senior network's Part A notice is unfavorable even though in reality, its network (Part B notice) can co-exist with the senior network in the List or Plan (senior network's Part B notice) and if examination in respect of the senior network is based on its Part B notice, examination result will become favorable.

To overcome the difficulties encountered by the notifying administration in the Part B examination of its junior network under RR Appendices **30** and **30A** § 4.1.12 or 4.2.16 or RR Appendix **30B** § 6.21 c), Agenda Item 7, Issue K proposes to add one more examination under § 4.1.12 or 4.2.16 RR Appendices **30** and **30A** and § 6.21 c) of RR Appendix **30B** such that should any remaining affected networks whose assignments have been entered in the List or Plan, as appropriate, before the submission under § 4.1.12 or 4.2.16 of RR Appendices **30** and **30A** or § 6.17 of RR Appendix **30B**, the Bureau shall further examine if the remaining corresponding assignments in the List or Plan are still considered as being affected.

This additional examination allows networks to receive a favorable finding in respect to senior networks that are no longer considered to be affected. Further, it avoids overprotection of senior networks based on the characteristics which are outdated and no longer valid while ensuring that the senior networks are adequately protected.

Proposal:

APPENDIX 30 (Rev.WRC-15)*

**Provisions for all services and associated Plans and List¹ for
the broadcasting-satellite service in the frequency bands
11.7-12.2 GHz (in Region 3), 11.7-12.5 GHz (in Region 1)
and 12.2-12.7 GHz (in Region 2) (WRC-03)**

ARTICLE 4 (REV.WRC-15)

**Procedures for modifications to the Region 2 Plan or
for additional uses in Regions 1 and 3³**

A. 4.1 Provisions applicable to Regions 1 and 3

MOD USA/7/K/1

4.1.12^{xx} If agreement has been reached with the administrations identified in the publication referred to under § 4.1.5 above, the administration proposing the new or modified assignment may continue with the appropriate procedure in Article 5, and shall so inform the Bureau, indicating the final characteristics of the frequency assignment together with the names of the administrations with which agreement has been reached. (WRC-19)

ADD

^{xx} Should any remaining affected networks identified in the publication referred to under § 4.1.5 above whose assignments have been entered in the List before the notice received under § 4.1.12, the Bureau shall use the method of Annex 1 to further examine if the remaining corresponding assignments in the List are still considered as being affected. The examination in respect of those remaining affected networks is conducted independently using the RR Appendix **30-30A** master database corresponding to the Part B Special Section for the remaining affected network(s) published under § 4.1.15. In no case shall the network being examined be subject to additional requirements beyond those identified in its publication referred to under § 4.1.5 above. Resolution **548 (Rev.WRC-12)** applies.

Reasons: This method adds one more examination under § 4.1.12 of RR Appendix 30 such that should any remaining affected networks whose assignments have been entered in the List before the submission under § 4.1.12 of RR Appendix 30, the Bureau shall further examine if the remaining corresponding assignments in the List are still considered as being affected. The network being examined will not be subject to any new requirements beyond those specified in its Part A publication.

B. 4.2 Provisions applicable to Region 2

MOD USA/7/K/2

4.2.16^{XXI} If no comments have been received on the expiry of the periods specified in § 4.2.14, or if agreement has been reached with the administrations which have made comments and with which agreement is necessary, the administration proposing the modification may continue with the appropriate procedure in Article 5, and shall so inform the Bureau, indicating the final characteristics of the frequency assignment together with the names of the administrations with which agreement has been reached.

ADD

^{XXI} Should any remaining affected networks identified in the publication referred to under § 4.2.8 above whose assignments have been entered in the Plan before the notice received under § 4.2.16, the Bureau shall use the method of Annex 1 to further examine if the remaining corresponding assignments in the Plan are still considered as being affected. The examination in respect of those remaining affected networks is conducted independently using the Appendix **30-30A** master database corresponding to the Part B Special Section for the remaining affected network(s) published under § 4.2.19. In no case shall the network being examined be subject to additional requirements beyond those identified in its publication referred to under § 4.2.8 above.

Reasons: This method adds one more examination under § 4.2.16 of RR Appendix 30 such that should any remaining affected networks in the Plan before the submission under §4.2.16 of RR Appendix 30, the Bureau shall further examine if the remaining corresponding assignments in the Plan are still considered as being affected. The network being examined will not be subject to any new requirements beyond those specified in its Part A publication.

APPENDIX 30A (Rev.WRC-15)*

**Provisions and associated Plans and List¹ for feeder links for the
broadcasting-satellite service (11.7-12.5 GHz in Region 1, 12.2-12.7 GHz
in Region 2 and 11.7-12.2 GHz in Region 3) in the frequency bands
14.5-14.8 GHz² and 17.3-18.1 GHz in Regions 1 and 3,
and 17.3-17.8 GHz in Region 2 (WRC-03)**

ARTICLE 4 (REV.WRC-15)

**Procedures for modifications to the Region 2 feeder-link Plan
or for additional uses in Regions 1 and 3**

C. 4.1 Provisions applicable to Regions 1 and 3

MOD USA/7/K/3

4.1.12^{xx} If agreement has been reached with the administrations identified in the publication referred to under § 4.1.5 above, the administration proposing the new or modified assignment may continue with the appropriate procedure in Article 5 and shall inform the Bureau, indicating the final characteristics of the frequency assignment together with the names of the administrations with which agreement has been reached. (WRC-19)

ADD

^{xx} Should any remaining affected networks identified in the publication referred to under § 4.1.5 above whose assignments have been entered in the List before the notice received under § 4.1.12, the Bureau shall use the method of Annex 1 to further examine if the remaining corresponding assignments in the List are still considered as being affected. The examination in respect of those remaining affected networks is conducted independently using the Appendix **30-30A** master database corresponding to the Part B Special Section for the remaining affected network(s) published under § 4.1.15. In no case shall the network being examined be subject to additional requirements beyond those identified in its publication referred to under § 4.1.5 above. Resolution **548 (Rev.WRC-12)** applies.

Reason: This method adds one more examination under § 4.1.12 of RR Appendix 30A such that should any remaining affected networks whose assignments have been entered in the List before the submission under § 4.1.12 of RR Appendix 30A, the Bureau shall further examine if the remaining corresponding assignments in the List are still considered as being affected. The network being examined will not be subject to any new requirements beyond those specified in its Part A publication.

D. 4.2 Provisions applicable to Region 2

MOD USA/7/K/4

4.2.16^{xx1} If no comments have been received on the expiry of the periods specified in § 4.2.14, or if agreement has been reached with the administrations which have made comments and with which agreement is necessary, the administration proposing the modification may continue with the appropriate procedure in Article 5, and shall so inform the Bureau, indicating the final characteristics of the frequency assignment together with the names of the administrations with which agreement has been reached.

ADD

^{xx1} Should any remaining affected networks identified in the publication referred to under § 4.2.8 above whose assignments have been entered in the Plan before the notice received under § 4.2.16, the Bureau shall use the method of Annex 1 to further examine if the remaining corresponding assignments in the Plan are still considered as being affected. The examination in respect of those remaining affected networks is conducted independently using the RR Appendix **30-30A** master database corresponding to the Part B Special Section for the remaining affected network(s) published under § 4.2.19. In no case shall the network being examined be subject to additional requirements beyond those identified in its publication referred to under § 4.2.8 above.

Reasons: This method adds one more examination under § 4.2.16 of RR Appendices 30A such that should any remaining affected networks in the Plan before the submission under §4.2.16 of RR Appendix 30A, the Bureau shall further examine if the remaining corresponding assignments in the Plan are still considered as being affected. The network being examined will not be subject to any new requirements beyond those specified in its Part A publication.

APPENDIX 30B (Rev.WRC-15)

Provisions and associated Plan for the fixed-satellite service in the frequency bands 4 500-4 800 MHz, 6 725-7 025 MHz, 10.70-10.95 GHz, 11.20-11.45 GHz and 12.75-13.25 GHz

ARTICLE 6 (REV.WRC-15)

Procedures for the conversion of an allotment into an assignment, for the introduction of an additional system or for the modification of an assignment in the List^{1, 2}(WRC-15)

MOD USA/7/K/5

6.21 When the examination with respect to § 6.19 of an assignment received under § 6.17 leads to a favourable finding, the Bureau shall use the method of Annex 4 to examine if the affected administrations and the corresponding:

- a) allotments in the Plan;
- b) assignments which appear in the List at the date of receipt of the examined notice submitted under § 6.1;
- c) assignments for which the Bureau has previously received complete information in accordance with § 6.1 and has conducted the examination under § 6.5 of this Article at the date of receipt of the examined notice submitted under § 6.1⁸;

indicated in the Special Section published under § 6.7 and whose agreement has not been provided under § 6.17 are still considered as being affected by that assignment. (WRC-19)

ADD

⁸ Should any remaining affected networks identified in the publication referred to under § 6.7 above whose assignments have been entered in the List before the notice received under § 6.17, the Bureau shall use the method of Annex 4 to further examine if the remaining corresponding assignments in the List are still considered as being affected. The examination in respect of those remaining affected networks is conducted independently using the RR Appendix **30B** master database corresponding to the A6B Special Section for the remaining affected network(s) published under § 6.23 or § 6.25. In no case shall the network being examined be subject to additional requirements beyond those identified in its publication referred to under § 6.7 above.

Reasons: This method adds one more examination under § 6.21c) of RR Appendix **30B** such that should any remaining affected networks whose assignments have been entered in the List before the submission under § 6.17 of RR Appendix **30B**, the Bureau shall further examine if the remaining corresponding assignments in the List are still considered as being affected. The

network being examined will not be subject to any new requirements beyond those specified in its Part A publication.

Document WAC/058 (23.04.18)

WRC-19 Agenda Item 8

IWG-4 members were not able to reach consensus on a proposal for WRC-19 Agenda Item 8 regarding the deletion of the United States from Footnotes 5.295 and 5.297 of the Radio Regulations. The views on the appropriate regulatory changes the FCC should support are provided.

View A is supported by: The National Association of Broadcasters (NAB) and 21st Century Fox.

View B is supported by: AT&T, Cisco Systems Inc., CTIA, Ericsson, GSMA, Intel Corporation, Nokia, Sprint Corporation, T-Mobile.

VIEW A

View A:

WAC members supporting View A maintain that the WAC should approve Document IWG-4/024.2 (“Doc. 24.2”) and recommend to the FCC to use Doc. 24.2 as the basis for reconciling a draft United States Proposal for submission to the upcoming meeting of CITEL PCC.II.⁸ The National Association of Broadcasters and FOX support View A.

Background

Document IWG-4/024.2 is a draft proposal addressing Agenda Item 8 with respect to the consideration and appropriate action on requests from administrations to delete their country footnotes or to have their country name deleted from footnotes, if no longer required, taking into account Resolution 26 (Rev. WRC-07). This is a standing Agenda Item in every WRC.

Discussion

The ITU and regional organizations have emphasized that AI 8 is primarily to propose the *deletion* (not retention or addition) of their country footnotes or of their country names from footnotes, if no longer required, to keep them up to date, clear and effective, for the purpose of achieving global harmonization in spectrum use, and that therefore the usual need for sufficient time to examine the potential consequences of *additive proposals* under AI 8 does not apply in the case of a country name deletion.

For its role, through WRC-19, the International Telecommunication Union (“ITU”) will capture necessary changes to its Radio Regulations (“RR”) to recognize that the U.S. has not allocated the 512–608 MHz band for mobile or fixed services at all, and has no current or projected plans to use the frequency band 470–608 MHz for IMT. Taking into account these decisions by the U.S. regulator (made despite its determination to keep the U.S. a leader in 5G development and deployment), revisions to the RR Footnotes to recognize the primary rights of broadcasters within these band, and consequential revisions for RR simplification, will be minimal. The View A proposal reflects a minimalist approach to enhance simplification. In the View A proposal, the proposed revisions are:

- Deletion of the United States from footnote 5.297 of Article 5 making an additional allocation of the frequency band 512–608 MHz to the fixed and mobile services on a primary basis; and
- Deletion of the United States from footnote 5.295 of Article 5 identifying the frequency band 470–608 MHz, or portions thereof, for International Mobile Telecommunications (IMT).

⁸ The next meeting of CITEL PCC.II is planned for July 16–20, 2018; Mexico.

IWG-4 Opposition

In IWG-4 discussions proponents of View B have raised these issues (View A responses appear in italics after each point:

- The proposal would significantly limit the flexibility within the U.S. to deploy future mobile services and therefore No Change is needed.

The crucial time for 5G spectrum identifications and allocations will not be in the future; it has been underway for the past several years and is culminating now. The spectrum in question in the footnotes has been determined by the FCC to not become a part of the mobile 5G ecosystem; this will not change in the timeframe that it would take to add the U.S. back to the footnote in the unlikely event that action was deemed necessary.

- Footnote 5.295 does not deal with FS or MS allocation. US has made the allocation on a primary basis to FS and MS as per Footnote 5.293, and hence can use it for FS and all mobile applications (land, maritime, aeronautical). Given that Footnotes were developed very carefully to address specific needs of the countries in them, with unintended consequences for unjustifiable reasons. Thus, the objective of the proposed modification is not clear, since there is no change in the status of the broadcasting allocation and that broadcasting use is protected through the language used in the Footnote (no interference, no protection).

Since the U.S. has decided not to allocate the 512–608 MHz band for mobile or fixed services at all, retaining any identification for IMT in FN 5.295 in the case of the U.S. for mobile services makes no sense, having become extraneous, misleading and contrary to the charge to ITU members found in Radio Regulations 4.4 to hold as paramount that “Member States shall not assign to a station any frequency in derogation of either the Table of Frequency Allocations in this Chapter or the other provisions of these Regulations, except on the express condition that such a station, when using such a frequency assignment, shall not cause harmful interference to, and shall not claim protection from harmful interference caused by, a station operating in accordance with the provisions of ... these Regulations.”

- Opponents would also appreciate knowing where the determination of not identifying for IMT is made--a reference would be useful.

See, for example, FCC Order, “In the Matter of Expanding the Economic and Innovation Opportunities of Spectrum through Incentive Auctions,” GN Docket 12-268, adopted September 11, 2017, paras. 4 and 317ff.

Based on the points above, View B proponents have developed their own counter-proposal that modifies the proponent’s View A proposal to:

- Make No Change to the Radio Regulations Footnotes.

Proponent’s Proposal

The frequency band 470–694/698 MHz is the only band that is harmonized and used on a global scale for over-the-air broadcast television, and the frequency band 470–608 MHz or portions thereof was identified by *some* administrations at the WRC-15 for International Mobile Telecommunications (IMT) in footnote No. 5.295. The United States is no longer one of those

administrations. Moreover, terrestrial television broadcasting is one of the most important and efficient mass communications media for delivering news, information, cultural programs, and entertainment free of charge to the general public, and because terrestrial broadcasting networks and facilities have a long life cycle, a stable regulatory environment is necessary to provide protection of investment and to encourage future development of the service;

The ITU and regional organizations have emphasized that AI 8 is primarily to propose the deletion (not retention or addition) of their country footnotes or of their country names from footnotes, if no longer required, to keep them up to date, clear and effective, for the purpose of achieving global harmonization in spectrum use, and thus the fact that the U.S. has not allocated the 512–608 MHz band for mobile services at all makes retaining any identification in FN 5.295 in the case of the U.S. for mobile services makes no sense, having become extraneous, misleading and contrary to the imperative to keep frequency assignments from causing harmful interference to stations operating in accordance with the provisions of both the ITU and FCC regulations.

Summary and Recommendation

Two proposals are presented to address Agenda Item 8 concerning deletion of the United States from Footnotes of the Radio Regulations.

The first and original proposal (View A) is one that attempts to simplify the Radio Regulations by proposing the deletion of the United States from footnotes (as it is no longer required), to keep them up to date, clear and effective, for the purpose of achieving global harmonization in spectrum use. The proposal is minimalist because it reflects determinations that have been made by the Federal Communications Commission.

The second proposal (View B), by competitors and opponents, is one that attempts to use Agenda Item 8 to maintain the *status quo*.

The purpose of this draft United States Proposal is to begin to socialize the issue within CITEL PCC.II so that our regional WRC partners can assist in developing a regional position based on evolving events in the ITU-R Working Parties. The CITEL countries have not yet issued either a IAP or a DIAP and are awaiting developments on this Agenda Item 8 matter.

The proponent's intention is to capture this developments in subsequent evolutions of this proposal. At this juncture, there is no need to overly restrict the proposal. Consequently, View A proponents recommend that the WAC adopt the View A proposal and reject the View B proposal.

ATTACHMENT TO VIEW A:

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

Agenda Item 8: *to consider and take appropriate action on requests from administrations to delete their country footnotes or to have their country name deleted from footnotes, if no longer required, taking into account Resolution 26 (Rev. WRC-07).*

Background Information: The frequency bands 512–608 and 614–698 MHz are allocated to the broadcasting service on a primary basis in Region 2.⁹ Presently, Footnote No. 5.297 allocates 512–608 MHz to the fixed and mobile services on a co-primary basis with broadcasting in Canada, Costa Rica, Cuba, El Salvador, the United States, Guatemala, Guyana, and Jamaica, subject to agreement obtained under No. 9.21, and to the mobile service on a primary basis with broadcasting in the Bahamas, Barbados, and Mexico, subject to agreement obtained under No. 9.21. At WRC-15, Footnote No. 5.295 was added to identify the frequency band 470–608 MHz or portions thereof for International Mobile Telecommunications (IMT) in the Bahamas, Canada, the United States, and Mexico – see Resolution 224 (5.idR2a, WRC-15).

The United States sought co-primary allocation with broadcasting of the spectrum 512–608 and 614–698 MHz to the fixed and mobile service and identification for IMT use as a preliminary step in anticipation of a possible outcome of its “Incentive Auction,” which sought to use economic market forces to determine the highest and best use of spectrum within the band 470–698 MHz.¹⁰ Because the United States did not know in advance how much spectrum would be repurposed from broadcasting to mobile, it allocated to the mobile service on a co-primary basis with broadcasting all possible spectrum that could be repurposed.

The United States has determined that it must clearly identify where broadcast television and mobile wireless services will be permitted and must modify its frequency allocations to reflect the outcome of the Incentive Auction.¹¹ Specifically, the United States has determined that the spectrum 512–608 MHz will not be used for the mobile or fixed services and will remain used for broadcasting exclusively.¹² Canada¹³ and Mexico¹⁴ have made similar determinations. Accordingly, this proposal will withdraw the United States from Footnote 5.297.

The United States has also determined that the spectrum 470–608 MHz will not be identified for use for IMT and will be used either for the broadcasting service only (512–608 MHz) or for the broadcasting, fixed and land mobile services only (470–512 MHz). Accordingly, this proposal will withdraw the United States from Footnote 5.295, as its continuation of identifying the frequency band 470–608 MHz, or portions thereof, for International Mobile Telecommunications

⁹ RR5-57

¹⁰ See FCC Report and Order, “In the Matter of Expanding the Economic and Innovation Opportunities of Spectrum through Incentive Auctions,” GN Docket 12-268, adopted May 15, 2014, para. 317ff.

¹¹ *Ibid*, para 321.

¹² See FCC Order, “In the Matter of Expanding the Economic and Innovation Opportunities of Spectrum through Incentive Auctions,” GN Docket 12-268, adopted September 11, 2017, para. 4.

¹³ See ISED, “Proposed Revisions to the Canadian Table of Frequency Allocations [2017] Edition,” SMSE-005-17, page 21-23.

¹⁴ See IFT letter to Mindel de la Torre, FCC, IFT/222/UER/168/2015, 15 July 2015.

(IMT), with or without priority for IMT in the Radio Regulations, would invariably lead to a conflict with RR 4.4 and its goal of the prevention of harmful interference.

CONSIDERING:

- a) That the frequency band 470–694/698 MHz, or portions thereof, is the only band that is harmonized and used on a global scale for over-the-air broadcast television;
- b) That the frequency band 512–608 MHz was allocated by some administrations for fixed and mobile services on a co-primary basis with broadcasting in accordance with No. 5.297;
- c) That the frequency band 470–608 MHz or portions thereof was identified by some administrations at the 2015 World Radiocommunication Conference (WRC-15) for International Mobile Telecommunications (IMT) in footnote No. 5.295;
- d) That terrestrial television broadcasting is one of the most important and efficient mass communications media for delivering news, information, cultural programs, and entertainment free of charge to the general public;
- e) That terrestrial broadcasting networks and equipment have a long life cycle, and a stable regulatory environment is necessary to provide protection of investment and to encourage future development of the service;
- f) That the ITU and regional organizations have emphasized¹⁵ that AI 8 is primarily to propose the *deletion* (not retention or addition) of their country footnotes or of their country names from footnotes, if no longer required, to keep them up to date, clear and effective, for the purpose of achieving global harmonization in spectrum use, and that therefore the need for sufficient time to examine the potential consequences of additive proposals under AI 8 does not apply in the case of a country name deletion; and
- g) That the fact that the U.S. has not allocated the 512–608 MHz band for mobile services at all makes retaining any identification in FN 5.295 in the case of the U.S. for mobile services nonsensical, having become extraneous, misleading and contrary to the charge to ITU members found in Radio Regulations 4.4 to hold as paramount that “Member States shall not assign to a station any frequency in derogation of either the Table of Frequency Allocations in this Chapter or the other provisions of these Regulations, except on the express condition that such a station, when using such a frequency assignment, shall not cause harmful interference to, and shall not claim protection from harmful interference caused by, a station operating in accordance with the provisions of ... these Regulations.”
- h) That harmonized use of spectrum for specific services are desirable.

RECOGNIZING:

- a) That the frequency band 470–608 MHz is allocated to the broadcasting service on a primary basis in Region 2;
- b) That the United States has no current or projected plans to use the frequency band

¹⁵ See, e.g., Asia-Pacific Telecommunity, “PRELIMINARY VIEWS ON WRC-19 AGENDA ITEM 8,” Document APG19-3/OUT-29, 16 March 2018.

470–608 MHz for IMT; and

- c) That in proposing the deletion of country footnotes or country names in footnotes (if no longer required) administrations should be aware of implications on affected countries, factors which have been taken into consideration by the United States.

Proposals:

MOD USA/8/1

Radio Regulations Volume 1
ARTICLE 5

Frequency allocations

Section IV - Table of Frequency Allocations

460-890 MHz

Allocation to services		
Region 1	Region 2	Region 3
...		
470-694 BROADCASTING 5.149 5.291A 5.294 5.296 5.300 5.304 5.306 5.311A 5.312	470-512 BROADCASTING Fixed Mobile 5.292 5.293 MOD 5.295	470-585 FIXED MOBILE 5.296A BROADCASTING 5.291 5.298
	512-608 BROADCASTING MOD 5.295 MOD 5.297	585-610 FIXED
	608-614 RADIO ASTRONOMY Mobile-satellite except aeronautical mobile-satellite (Earth-to-space)	MOBILE 5.296A BROADCASTING RADIONAVIGATION 5.149 5.305 5.306 5.307
	614-698 BROADCASTING Fixed Mobile 5.293 5.308 5.308A 5.309 5.311A	610-890 FIXED MOBILE 5.296A 5.313A 5.317A BROADCASTING 5.149 5.305 5.306 5.307 5.311A 5.320
...	...	

Reasons: See below.

MOD USA/8/2

5.297 Additional allocation: in Canada, Costa Rica, Cuba, El Salvador, ~~the United States~~, Guatemala, Guyana and Jamaica, the frequency band 512-608 MHz is also allocated to the fixed and mobile services on a primary basis, subject to agreement obtained under No. 9.21. In the Bahamas, Barbados and Mexico, the frequency band 512-608 MHz is also allocated to the mobile service on a primary basis, subject to agreement obtained under No. 9.21. (WRC-15)

Reasons: The United States has determined that the spectrum 512□608 MHz will not be used for the mobile service and will remain used for the broadcasting service exclusively.

MOD USA/8/3

5.295 In the Bahamas, Barbados, Canada, ~~the United States~~ and Mexico, the frequency band 470-608 MHz, or portions thereof, is identified for International Mobile Telecommunications (IMT) – see Resolution 224 (Rev.WRC-15). This identification does not preclude the use of these frequency bands by any application of the services to which they are allocated and does not establish priority in the Radio Regulations. Mobile service stations of the IMT system within the frequency band are subject to agreement obtained under No. 9.21 and shall not cause harmful interference to, or claim protection from, the broadcasting service of neighbouring countries. Nos. 5.43 and 5.43A apply. In Mexico, the use of IMT in this frequency band will not start before 31 December 2018 and may be extended if agreed by the neighbouring countries. (WRC-15).

Reasons: The United States has determined that the spectrum 470□608 MHz will not be allocated or used, now or in the foreseeable future, for the mobile service or the fixed service, or identified for IMT, and 512□608 MHz will remain used for the broadcasting service only, while 470□512 MHz will remain used for the broadcasting service and the land mobile service on a co-primary basis.

VIEW B

VIEW B: View B proposes no change to the existing footnotes **No. 5297** and **No. 5.295** under WRC-19 agenda item 8. View B is supported by AT&T, Cisco Systems Inc., CTIA, Ericsson, GSMA, Intel Corporation, Nokia, Sprint Corporation, T-Mobile.

The parties supporting View B believe the US should not withdraw from **No. 5297** and **No. 5.295**.

Radio Regulations **No. 5.297** provides a co-primary allocation to the Fixed and Mobile Services in 512-608 MHz and **No. 5.295** provides an identification to IMT in the band 470-608 MHz. The co-primary allocations to the Fixed and Mobile Services in 512-608 MHz have existed in the Article 5 Table of Allocations in the Radio Regulations (RR) via footnote for the United States for decades without any negative effect: see Note 678 in the 1982 version of the Radio Regulations at <http://search.itu.int/history/HistoryDigitalCollectionDocLibrary/1.11.48.en.101.pdf>. It should be noted that Note 675 also provides co-primary allocations to the Fixed and Mobile Services in 470-512 MHz and 614-806 MHz.

The most important reason for the US to not withdraw from RR **No. 5297** and **No. 5.295** is due to the flexibility these footnotes provide to the US. As noted above, the co-primary allocations have existed for decades without any negative consequences. However if the US were to withdraw from these footnotes, it would require at least one four year study cycle and likely more to potentially reinstate the current status. It should also be noted that any changes to these frequency bands have been particularly challenging. During WRC-15 numerous countries tried to prevent any consideration of mobile use in the band even in Regions other than their own: it took three weeks of a four week conference and a rare Point of Order to even be permitted to discuss the US proposal. In fact, European countries insisted that there could not even be any consideration of mobile use in the band in Region 1 until 2023. With respect to the US identification to IMT, one nearby country tried to block any use in the US.

Therefore, the US should not withdraw from these footnotes, as it would cause the US to losing its current flexibility and leaving the US subject to gaining international consensus and lengthy delays to even consider allowing mobile use in the future. The US FCC has long been a leader in spectrum policy. Anything that would reduce the US flexibility to make domestic policy decisions should be avoided.

Furthermore, proposing these changes in the ITU RR's would not change anything in terms of protection of US broadcasting use from the neighbor countries, while compromising the US flexibility for the use of the bands involved.

Internationally, the US has been very clear what spectrum is utilized for broadcasting and which is available for mobile use. For example, the US has provided frequency arrangements limited to 608 MHz and above in Recommendation ITU-R M.1036, which is the guiding document on frequency arrangements for IMT. Similarly, the US has been clear regarding the use of these spectrum bands in its inputs to CITEL PCC II.

The US currently enjoys the flexibility to make domestic policy decisions with respect to these frequency bands without needing to again seek international consensus or being subject to lengthy delays. The US has also pursued other opportunities to provide clarity to the international community on our domestic use of these spectrum bands. We believe this combination of retaining regulatory flexibility while providing clear and accurate information is the most compelling and appropriate course of action.

For the reasons provided above, we support no change to **No. 5.295** and **No. 5.297** (i.e. the US should not withdraw from these footnotes).
