ATTACHMENT A
to FCC Public Notice DA 14-1845

Recommendations presented at
December 17, 2014 Meeting of
the Advisory Committee for
the 2015 World Radiocommunication Conference

Maritime Aeronautical and Radar Services

WAC/103(17.12.14)

PROPOSED EDITS TO NTIA DRAFT PROPOSAL ON WRC-15 AI 10
(REF. WAC/098(17.12.14))

DRAFT

UNITED STATES OF AMERICA

~~**DRAFT**~~ PROPOSALS FOR THE WORK OF THE CONFERENCE

Agenda item 10

~~**Agenda Item**~~ 10~~:~~ ___to recommend to the Council items for inclusion in the agenda for the next WRC, and to give its views on the preliminary agenda for the subsequent conference and on possible agenda items for future conferences, in accordance with Article 7 of the Convention;

Background Information:

The 2 200- 2 290 MHz radio frequency band is allocated on a co-primary basis to the following services: Space Operation (space-to-Earth) (space-to-space), Earth Exploration Satellite (space-to-Earth) (space-to-space), Fixed, Mobile, and Space Research.~~In the 2 200-2 290 MHz band,~~

~~administrations had previously agreed to use 1050 km as the predetermined coordination distance between space research earth stations and mobile (aircraft) stations based on the distances specified in~~ Table III of ~~,~~ Appendix S7 of the Radio Regulations (RR) (1998) previously provided the methods for determining the coordination area around earth stations, including space research service earth stations in the 2 200-2 290 MHz band~~,~~. ~~which gave the maximum coordination distance for propagation mode (1), determined by requiring that interference from all sources (line-of-sight and non-line-of-sight) would not exceed the protection criterion of the space research earth stations. The ITU-R determined that this coordination distance was adequate for protecting the space research service earth stations from transmissions of aircrafts flying over the ocean surface, where signals would propagate through ducting mechanism and would potentially create interference at the space research stations.~~ The World Radiocommunication Conference (Istanbul, 2000) deleted Appendix S7 of the 1998 edition of the Radio Regulations (RR) and introduced a new Appendix (the current Appendix 7) entitled "Methods for the determination of the coordination area around an earth station in frequency bands between 100 MHz and 105 GHz".

Table 10 of Annex 7 to Appendix 7 of the Radio Regulations provides "Predetermined coordination distances" for determination of the coordination area around an earth station. This Table currently does not include a row specifying predetermined coordination distances between aeronautical mobile stations and space research earth stations in the 2 200- 2 290 MHz frequency band. WRC-07 added a new row to Table 10~~, Annex 7, Appendix 7 of the RR~~ that specified a 500 km predetermined coordination distance between aeronautical mobile ~~(aircraft)~~ stations and ground-based earth stations in the bands in which the frequency sharing situation is not covered in the other rows of the Table.

~~-~~Since the current Table 10 does not include a row that specifies the required coordination distance between space research earth stations and aeronautical mobile ~~(aircraft)~~ stations, the administrations are likely to use 500 km as the predetermined coordination distance between these types of stations in the 2 200-2 290 MHz frequency band. This distance may not be sufficient to protect the space research earth stations.

This future conference agenda item proposes to study this case and potentially modify Table 10 to explicitly add a row~~include~~ to provide ~~an appropriate~~ predetermined coordination distance between ~~the stations of~~ the space research service earth stations and aeronautical mobile ~~(aircraft)~~ stations in the 2 200- 2 290 MHz frequency band. However, other approaches are also being pursued to effect this change in the Radio Regulations, which may obviate the need for a future conference agenda proposal. In that case, this proposal for a future agenda item would be withdrawn.

Proposal:

MOD USA/10/1

RESOLUTION 808 (Rev. WRC-~~12~~15)

~~Preliminary a~~Agenda for the 201~~9~~8 World Radiocommunication Conference

The World Radiocommunication Conference (Geneva, ~~2012~~2015),

Reasons: To modify the agenda for WRC-1~~9~~8 to add a new item.

ADD USA/10/2

2.XX to review Table 10 of ~~,~~ Annex 7 to~~,~~ Appendix 7 of the Radio Regulations ~~for the suitability of 500-km predetermined coordination distance between space research service earth stations and mobile (aircraft) stations in the 2 200 - 2 290 MHz band~~, with a view of ~~amending it~~adding a new row to that Table limited to specifying the predetermined coordination distance between space research service earth stations and aeronautical mobile stations in the 2 200 - 2 290 MHz frequency band ~~to ensure protection of the space research service,~~ in accordance with Resolution **[USA-YYY] (WRC-15)**, without modifying any other rows in Table 10.

Reasons: To conduct studies to examine if the 500-km predetermined coordination distance given in Table 10 of~~,~~ Annex 7 to ~~,~~Appendix 7 of the Radio Regulations is adequate to protect the space research service earth stations from the emission of aeronautical mobile ~~(aircraft)~~ stations in the 2 200 - 2 290 MHz band with a view of ~~possible modification~~adding a new row in ~~of~~ that Table limited to providing the predetermined coordination distance between the space research service earth stations and aeronautical mobile stations in the 2 200-2 290 MHz frequency band without modifying any other rows.

ADD USA/10/3

RESOLUTION USA-YYY (WRC-15)

~~Protection of~~ Coordination distance between space research service earth stations and~~from~~ aeronautical mobile ~~(aircraft)~~ stations in the 2 200 - 2 290 MHz frequency band

The World Radiocommunication Conference (Geneva, 2015),

considering

a) that the radio frequency band 2 200 - 2 290 MHz is allocated to the space operation (s-E)(s-s), Earth exploration-satellite (s-E)(s-s), fixed, mobile, and space research (s-s) services on a primary basis;

b) that Table 10 of~~,~~ Annex 7 to ~~,~~ Appendix 7 of the Radio Regulations gives predetermined coordination distances between earth stations and terrestrial stations in sharing situations involving services allocated with equal rights;

c) that in the radio frequency band 2 200 - 2 290 MHz, for the frequency sharing between space research service and aeronautical mobile ~~(aircraft)~~ service, Table 10 of~~,~~ Annex 7~~,~~ Appendix 7 of Radio Regulations does not specify explicitly the predetermined ~~required~~ coordination distance;

d) that the last row of Table 10 of~~,~~ Annex 7 ~~,~~ to Appendix 7 of the Radio Regulations ~~gives~~ provides a coordination distance of 500 km between aeronautical mobile ~~(aircraft)~~ stations and ground-based earth stations in the bands in which the frequency sharing situation is not covered in the other rows;

~~recognizing~~

e~~a~~) that the predetermined coordination distance of 500 km may not be enough to meet the protection criterion of space research service earth stations from aeronautical mobile service stations;

f~~b~~) ~~that in the past administrations have used a coordination distance of 1 050 km to meet the protection criterion of space research service earth stations~~that the coordination area is not an exclusion zone within which the sharing of frequencies between the earth station and terrestrial stations or other earth stations is prohibited, but a means for determining the area within which more detailed calculations needs to be performed;

resolves to invite ITU-R

1 to conduct sharing studies between the space research service (s-E) and the aeronautical mobile ~~(aircraft)~~ service in the ~~band~~ 2 200 - 2 290 MHz radio frequency band to determine appropriate preedetermined coordination distance;

2 to complete the studies~~, taking into account the present use of the allocated band,~~ with a view of presenting, at the appropriate time, the technical basis for the work to~~of~~ WRC-19~~8~~;

~~3~~

~~to determine the appropriate coordination distance so that the emissions from transmissions of the mobile (aircraft) stations meet the protection criterion of space research service earth stations in the 2200-2290 MHz band;~~

resolves to invite WRC-19~~8~~

to consider the addition of a new row in ~~modifications to~~ Table 10 of~~,~~ Annex 7 to ~~,~~ Appendix 7 of the Radio Regulations, taking into account the results of ITU-R studies, ~~including addition of a new row~~ specifying the appropriate predetermined coordination distance between space research earth stations and aeronautical mobile ~~(aircraft)~~ stations in the 2 200- 2 290 MHz frequency band, without modifying any of the other rows;

invites administrations

to participate actively in the studies by submitting contributions to ITU-R;

instructs the Secretary-General

to bring this resolution to the attention of the Space Frequency Coordination Group (SFCG), the International Civil Aviation Organization (ICAO) and other international and regional organizations concerned.

Reasons: A resolution will support the ITU-R studies needed under the relevant WRC-19~~8~~ agenda item.

ATTACHMENT

PROPOSAL FOR AGENDA ITEM STUDYING
~~PROTECTION OF~~PREDETERMINED COORDINATION DISTANCE BETWEEN SPACE RESEARCH EARTH STATIONS AND~~FROM~~ AERONAUTICAL MOBILE ~~(AIRCRAFT)~~ STATIONS IN THE 2 200 - 2 290 MHZ FREQUENCY BAND

Subject: Proposed future WRC agenda item for WRC-2019~~8~~ studying the ~~protection of~~predetermined coordination distance between space research earth stations ~~from~~ and aeronautical mobile ~~(aircraft)~~ stations in the 2 200 - 2 290 MHz frequency band.

Origin: United States of America

Proposal: to review Table 10 of ~~,~~ Annex 7 to~~,~~ Appendix 7 of the Radio Regulations with a view to ~~modify it by~~ add a new row to that Table limited to specifying ~~a more appropriate~~ the predetermined coordination distance ~~to protect the~~between space research earth stations ~~from~~ and aeronautical mobile ~~(aircraft)~~ stations in the 2200 - 2290 MHz frequency band, in accordance with **Resolution [USA-YYY] (WRC-15)** without modifying any other rows in Table 10.

Background/reason:

The 2 200- 2 290 MHz radio frequency band is allocated on a co-primary basis to the following services: Space Operation (space-to-Earth) (space-to-space), Earth Exploration Satellite (space-to-Earth) (space-to-space), Fixed, Mobile, and Space Research.

~~In the 2 200-2 290 MHz band, administrations had previously agreed to use 1050 km as the predetermined coordination distance between space research earth stations and mobile (aircraft) stations based on the distances specified in~~ Table III of ~~,~~ Appendix S7 of the Radio Regulations (1998) previously provided the methods for determining the coordination area around earth stations, including space research earth stations in the 2 200-2 290 MHz band.~~, which gave the maximum coordination distance for propagation mode (1), determined by requiring that interference from all sources (line-of-sight and non-line-of-sight) would not exceed the protection criterion of the space research earth stations. The ITU-R determined that this coordination distance was adequate for protecting the space research service earth stations from transmissions of aircrafts flying over the ocean surface, where signals would propagate through ducting mechanism and would potentially create interference at the space research stations.~~

The World Radiocommunication Conference (Istanbul, 2000) deleted Appendix S7 of the 1998 edition of the Radio Regulations (RR) and introduced a new Appendix (the current Appendix 7) entitled "Methods for the determination of the coordination area around an earth station in frequency bands between 100 MHz and 105 GHz".

Table 10 of Annex 7 to Appendix 7 of the Radio Regulations provides “Predetermined coordination distances” for determination of the coordination area around an earth station. This Table currently does not include a row specifying predetermined coordination distances between aeronautical mobile stations and ground-based earth stations in the 2 200- 2 290 MHz frequency band. WRC-07 added a new row to Table 10 ~~, Annex 7, Appendix 7 of the RR~~that specifies a 500- km predetermined coordination distance

between aeronautical mobile ~~(aircraft)~~ stations and ground-based stations in the bands in which the frequency sharing situation is not covered in the other rows.

Since the current Table 10 does not include a row that specifies the predetermined~~required~~ coordination distance between space research earth stations and aeronautical mobile ~~(aircraft)~~ stations in the 2 200- 2 290 MHz frequency band, the administrations are likely to use 500 km as the coordination distance between these types of stations in the 2 200- 2 290 MHz frequency band. This distance may not be sufficient to protect the space research earth stations. It is therefore necessary to study this case and to possibly ~~modify~~ add a row to Table 10 to explicitly provide a predetermined ~~include appropriate~~ coordination distance between ~~the stations of~~ space research service earth stations and aeronautical mobile ~~(aircraft)~~ stations in the 2 200-2 290 MHz frequency band.

Radiocommunication services concerned: mobile (aircraft), space research (s-E)

Indication of possible difficulties: none foreseen

Previous/ongoing studies on the issue: TBD

Studies to be carried out by: WP 7B	***with the participation of:*** WP~~s~~ 5B

ITU-R Study Groups concerned: SG7 and SG5

ITU resource implications, including financial implications (refer to CV126): minimal

Common regional proposal: No	***Multi-country proposal:*** No ***Number of countries:***

Remarks

Terrestrial Services

WAC/099(17.12.14)

WRC-15 Agenda Item 1.1

With Respect to the 3400-4200 MHz and 4500-4800 MHz Frequency Bands

IWG-2 members were not able to reach consensus on a proposal for WRC-15 agenda item 1.1 regarding the 3400-4200 MHz and 4500-4800 MHz frequency bands, and, therefore, forwards two views on how the FCC should handle this matter.

View A is supported by 21st Century Fox, Inc., ARRL, Aviation Spectrum Resources, Inc., CBS, Inc., EchoStar Corporation, Inmarsat, Intelsat, Lockheed Martin Corp., National Association of Broadcasters, New Wave Spectrum Partners LLC, Satellite Industry Association, SES Americom, The Boeing Company, Time Warner, Inc., and Viacom, Inc.

View B is supported by Alcatel-Lucent, AT&T, Ericsson, GSMA, Intel Corporation, Motorola Mobility, Nokia Solutions and Networks, Samsung, Sprint Corporation, Telecommunications Management Group Inc. and Verizon.

VIEW A

VIEW A: No Change under AI 1.1 for the 3400-4200 MHz and 4500-4800 MHz bands

WAC members setting forth this view carefully considered that without a mechanism that: i) ensures continued satellite access, ii) protects existing satellite earth station receive operations, iii) addresses two-way compatibility issues, and iv) does not constrain future growth for fixed-satellite service (FSS) in the 3400-4200 MHz and 4500-4800 MHz bands, it is necessary for the United States to propose no changes (NOC) to WRC-15 under agenda item 1.1 for these bands. 21st Century Fox, Inc., ARRL, Aviation Spectrum Resources, Inc., CBS, Inc., EchoStar Corporation, Inmarsat, Intelsat, Lockheed Martin Corp., National Association of Broadcasters, New Wave Spectrum Partners LLC, Satellite Industry Association, SES Americom, The Boeing Company, Time Warner, Inc., and Viacom, Inc. support this view.

Continued access to the C-Band spectrum used to provide critical and highly reliable satellite services globally must be assured. The 3400-4200 MHz and 4500-4800 MHz bands are globally allocated and harmonized to provide C-Band FSS downlinks. C-band is the preferred frequency band for a number of reasons. One of the main reasons is its unique and important technical properties - low rain fade - which makes it appropriate for national telecommunication and broadcasting infrastructure, satellite telemetry, disaster relief, public meteorological data distribution, and aeronautical applications in various regions. Technical and regulatory mechanisms must be fully developed to ensure continued worldwide access for these services in the increasingly-congested international radiofrequency spectrum environment. Any proposal identifying IMT for these bands that relies upon administrations to individually determine a level of protection for the FSS operating within their territories would mean that continued access for these critical and highly reliable services – either worldwide or within individual ITU Regions – would be unacceptably not assured.

Global interference protection to FSS would not be provided given the significant separation distances required. Protection of satellite services (in this case receiving earth stations) could only practically be accomplished through individual coordination. As noted in the draft NOC proposal in the Attachment to this view, ITU-R studies conducted in Joint Task Group 4-5-6-7 to assess the technical feasibility of deploying IMT-Advanced systems in the 3400-4200 MHz and 4500-4800 MHz bands, and recently approved by ITU-R Study Group 5 in November 2014 conclude unequivocally that when FSS is deployed in a ubiquitous manner and/or with no individual licensing of earth stations, sharing with IMT is not feasible in the same geographical area since no minimum separation distance can be guaranteed. ITU-R studies determined that the separation distances required to protect FSS earth stations, taking the effects of terrain into account, have been found to range from at least tens of kilometers up to several hundred kilometers based on the various potential IMT Advanced macro cell and small cells deployment scenarios.

Taking into account the number of earth stations deployed around the world, maintenance of separation distances on this order requires a clearly specified global approach to ensure protection of the incumbent primary FSS. Mechanisms considered by proponents of an IMT identification provide a level of protection only at the border of a neighboring administration and no protection at all for earth stations operating within the country of an administration authorizing IMT. In other words, there would not be global protection for receiving earth

stations. Therefore, noting that the resulting contours produced by these separation distances enclose areas of considerable size and given the considerable numbers of FSS earth stations that operate in the C-band frequencies around the world, IMT deployment in the 3400-4200 MHz and 4500-4800 MHz bands is not feasible.

Locations of many operating earth stations are unknown and would not be able to be protected. In the United States, and likewise around the world, many earth stations in the C-Band (including millions of receive-only earth stations) are registered only in rare situations. There has been no requirement to register such earth stations, as discussed in DNReport ITU-R [FSS-IMT C-BAND DOWNLINK], and thus the physical locations of all of the operating C-band earth stations is unknown and changeable at will. Without having a complete and accurately updated list of locations, protecting these earth stations that are operating in the primary FSS spectrum allocation through a coordination process is not feasible on a global scale.

U.S. domestic use is unique and should not drive international policy and future FSS growth. Internationally, in contrast with the United States, the use of the 3400-3700 MHz band is not treated differently than that of the 3700-4200 MHz band. Within the 3600-3700 MHz band, U.S. earth station locations are known via a listing in the FCC licensing database, and are few in number. There are no U.S. earth station operations in the 3400-3600 MHz band, and there are approximately 5,000 U.S.-licensed earth stations in the 3700-4200 MHz band – with many times more unregistered. The 4500-4800 MHz band is an Appendix 30B band intended to assure equitable access for developed and developing countries; however, there are currently no U.S. earth stations in the 4500-4800 MHz band. Although the FCC has an on-going rulemaking/allocation proceeding that is considering an allocation and associated technical rules for mobile broadband in the 3550-3650 MHz (and potentially the 3650-3700 MHz band, where, unlike the situation internationally, there is a known and small set of operating U.S. earth stations), the technical and regulatory mechanisms to protect these stations have not yet been established. Indeed, there is no consensus on whether meaningful technical and regulatory mechanisms to protect these stations (as well as earth stations operating in frequency bands adjacent to spectrum used for mobile broadband) are even viable. It is therefore premature for the United States to export such an approach internationally under agenda item 1.1 at WRC-15, and doing so in any event would not respect the global differences and future FSS growth in these bands. The C-band FSS applications would be severely impacted if any additional constraints were to be imposed on their locations and/or deployments.

* * *

For all of these reasons, the only alternative for the United States at WRC-15 is to propose to WRC-15 that there be no changes for these bands under agenda item 1.1, as reflected in the Attachment hereto.

ATTACHMENT TO VIEW A:
DRAFT PROPOSAL FOR NO CHANGE UNDER AGENDA ITEM 1.1
FOR THE 3400-4200 MHz AND 4500-4800 MHZ

United States of America

Draft Proposals for the Work of the WRC-15

Agenda item 1.1

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

BACKGROUND:
Joint Task Group 4-5-6-7 (JTG 4-5-6-7) was established by Conference Preparatory Meeting 15-1 to conduct sharing studies under agenda item 1.1 and prepare draft CPM text. The IMT spectrum requirements under this agenda item, as well as characteristics of envisioned IMT systems, were developed in Working Party 5D (WP 5D). In addition, WP 5D has defined suitable frequency ranges for IMT as 410 to 6425 MHz. The JTG conducted studies in a variety of frequency bands within this suitable range, including 3400-4200 MHz and 4500-4800 MHz which are allocated to the fixed-satellite service (FSS) on a primary basis and generally referred to as "C-band."

These global C-band FSS allocations are and have been the workhorse spectrum bands for the FSS since the 1970's. There are approximately 180 geostationary satellites operating in these bands, and many new satellites with C-band capacity have been constructed or are under construction and scheduled to be launched in the near future. The C-band, with its unique and important technical properties, such as low rain fade and coverage of wide service areas, is extensively used worldwide. After several decades of development, C-band payloads reflect an efficient, proven technology; this allows for very low cost equipment which benefits users, small and large, in developing or developed nations. This is also the reason why many countries have utilized C-band to establish themselves as space-faring nations, placing their important national telecommunication and broadcasting infrastructure in the bands with high availability and reliability, at the lowest costs. In addition, many highly sensitive and public services are also using FSS C-band, such as satellite telemetry, disaster relief, public meteorological data distribution, and aeronautical applications in various regions, etc.

The 3400-3500 MHz segment is allocated on a secondary basis to the amateur service in ITU Regions 2 and 3, with a secondary allocation by footnote in some countries in ITU Region 1. A variety of operation types are accommodated, including satellite operations in subbands where the amateur-satellite service is authorized, and operations implementing broadband technologies in amateur networks, including 802.11 protocols and LTE, concentrated in the 3460-3500 MHz segment by convention. A number of more traditional amateur systems are accommodated.

With respect to sharing studies in the 3400-4200 MHz and 4500-4800 MHz bands, Report ITU-R M.2109 finds that the minimum required separation distances from IMT-Advanced base stations, when using the long term interference criterion derived in the studies, are at least in the tens of kilometers for in-band co-channel operations; and that the minimum separation distances associated with short-term interference criterion, generally, but not in all cases, exceed one hundred kilometers in the considered cases with similar assumptions as the ones used for the long-term.

The conclusion of the JTG 4-5-6-7 studies indicate that if FSS is deployed in a ubiquitous manner and/or with no individual licensing of earth stations, sharing is not feasible in the same geographical area since no minimum separation distance can be guaranteed. The FSS deployment in C-band is ubiquitous in most geographical areas of the world. C-band FSS applications would be severely impacted if limitations are imposed on their location and/or deployments.

Similarly, recent sharing studies have been performed in JTG 4-5-6-7 to assess the technical feasibility of deploying IMT-Advanced systems in the 3 400-4 200 MHz and 4500-4800 MHz bands using the latest IMT-Advanced characteristics provided by WP 5D. These results from the recent sharing studies have shown no improvements in the ability of IMT-Advanced to share with FSS, and thus are in line with those already found in Report ITU-R M.2109. To provide protection of the FSS receive earth stations operating in the C-band, the following measures are required:

- For the in-band case, for suburban and urban macro-cell as well as small-cell outdoor deployment scenarios, for the long-term interference criterion, the required separation distances are at least in the tens of km. Similarly, in the case of IMT-Advanced small-cell indoor deployment scenarios, the required separation distances vary from about 5 kilometres to tens of kilometres
- For the out of band case, using the long-term interference criteria, the required separation distance is from 5 kilometres up to tens of kilometres for IMT-Advanced macro-cell (urban and suburban) deployment and from 900 metres to less than 5 kilometres for IMT-Advanced small-cell outdoor deployments, respectively, with no guard band.
- For a specific macro-cell deployment scenario studied, the required separation distances from the edge of the IMT-Advanced deployment area are in the range of 30 kilometres to 20 kilometres with an associated guardband of 2 MHz to 80 MHz respectively. The results show that an IMT implementation of any deployment scenario sterilizes large geographical areas preventing future deployment of satellite earth stations, e.g.,VSATs.

With respect to sharing studies in the band 4 500-4 800 MHz, it should be recognized that this band is part of the Appendix 30B FSS Plan. This Plan aims to preserve orbit/spectrum resources and guarantee, for developed and developing countries equitable access to the geostationary-satellite orbit at anytime and anywhere for their use. From a technical point of view, the same sharing difficulties will be faced when IMT is allocated in this band as found above for the 3400-4200 MHz band.

Noting that the resulting contours produced by these sharing studies enclose areas of considerable size, and given the considerable numbers of FSS Earth stations that operate in the C band around the world, IMT deployment in this band would not be feasible.

Sharing studies were not conducted to evaluate compatibility with amateur service stations. The secondary nature of the amateur service allocation requires flexibility in frequency selection to permit an amateur service licensee to use the allocation and fulfill his or her obligation not to cause harmful interference to the numerous primary services, including the FSS.
As a result, this Administration proposes no change to the 3400-4200 MHz and 4500-4800 MHz frequency bands under this agenda item.

PROPOSAL:

ARTICLE 5

Frequency allocations

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

NOC **USA/1.1/1**

2 700-4 800 MHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
*** * * * ***		
3 400-3 600 FIXED FIXED-SATELLITE (space-to-Earth) Mobile 5.430A Radiolocation 5.431	**3 400-3 500** FIXED FIXED-SATELLITE (space-to-Earth) Amateur Mobile 5.431A Radiolocation 5.433 5.282	**3 400-3 500** FIXED FIXED-SATELLITE (space-to-Earth) Amateur Mobile 5.432B Radiolocation 5.433 5.282 5.432 5.432A
	3 500-3 700 FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile Radiolocation 5.433	**3 500-3 600** FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile 5.433A Radiolocation 5.433

3 600-4 200 FIXED FIXED-SATELLITE (space-to-Earth) Mobile		**3 600-3 700** FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile Radiolocation 5.435
	3 700-4 200 FIXED FIXED-SATELLITE (space to-Earth) MOBILE except aeronautical mobile	
*** * * * ***		
4 500-4 800	FIXED FIXED-SATELLITE (space-to-Earth) 5.441 MOBILE 5.440A	

Reasons: Report ITU-R M.2109 and the studies performed by the JTG show that sharing between IMT and FSS in these frequency bands is not feasible.

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VIEW B

VIEW B: IDENTIFICATION FOR IMT OF 3400-3800 MHz

View B (attached) seeks the identification for IMT of 3400-3800 MHz, with corresponding co-primary allocations to the mobile service as appropriate, under WRC-15 Agenda Item 1.1 to help meet the tremendous demand for mobile broadband. The 3400 – 3 800 MHz bands are well-suited to provide capacity for users. The bands are already partially harmonized worldwide and can be extended to provide for economies of scale, global roaming and commonality of equipment.

View B is supported by Alcatel-Lucent, AT&T, Ericsson, GSMA, Intel Corporation, Motorola Mobility, Nokia Solutions and Networks, Samsung, Sprint Corporation, Telecommunications Management Group Inc. and Verizon.

The "Presidential Memorandum: Unleashing the Wireless Broadband Revolution" emphasizes the importance of additional spectrum for mobile broadband: "America's future competitiveness and global technology leadership depend, in part, upon the availability of additional spectrum."[1] The success of the recent AWS-3 auctions also underscores the vital importance of spectrum for mobile broadband.

Mobile broadband applications require access to a variety of spectrum bands. Lower frequency bands facilitate widespread coverage including inside buildings, while wider, contiguous bandwidths can address user demands in terms of both capacity and data rates. Of the potential candidate bands for WRC-15 agenda item 1.1, the 3400- 4200 MHz bands are well-suited to meet growing demands for greater capacity and higher data rates due to 1) potential for large, contiguous bandwidths 2) the ability to implement MIMO antennas, and 3) propagation characteristics. Furthermore, "As supported by the results of this Fast Track Evaluation, NTIA recommends that the…3550-3650 MHz bands can be made available for wireless broadband, with some geographic limitations on wireless broadband implementation." [2] Accordingly, the FCC has begun proceedings on the 3550- 3700 MHz bands.

Harmonization is a crucial aspect for the mobile industry, which includes the US service providers which deploy these networks and the US manufacturers which develop products that operate worldwide. In addition to the well-established benefits of economies of scale and global roaming, harmonization also allows for commonality of equipment, which is critical due to the limited number of bands that can be supported in mobile handsets, as well as enabling low-cost user equipment to support the 2.3 billion mobile broadband subscriptions globally[3]. Given that 90 countries have already identified 3400-3600 MHz for IMT in the Radio Regulations and that CEPT is finalizing a European Common Proposal for a co-primary allocation to the Mobile Service and an identification for IMT in the 3400-3600 MHz and 3600-3800 MHz bands, the 3

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[1] Presidential Memorandum: Unleashing the Wireless Broadband Revolution, available at: http://www.whitehouse.gov/the-press-office/presidential-memorandum-unleashing-wireless-broadband-revolution

[2] NTIA, An Assessment of the Near-Term Viability of Accommodating Wireless Broadband Systems in the 1675-1710 MHz, 1755-1780 MHz, 3500-3650 MHz, 4200-4220 MHz, and 4380-4400 MHz Bands (Fast Track Evaluation) p1-4.

[3] ITU statistics: http://www.itu.int/net/pressoffice/press_releases/2014/23.aspx#.VH59LTHF8cQ

400- 3 800 MHz frequency bands provide a great opportunity to realize the benefits of harmonization.

Global standards have already been developed and equipment already exists to support operation in 3400-3800 MHz. This equipment is based upon unpaired frequency blocks: the lack of a defined duplex gap separating uplink and downlink provides the flexibility to support IMT operation in any portion of the band within the frequency range.

The proposal supported by View B provides an identification for IMT from 3 400 to 3 800 MHz which would maximize the benefits of harmonization in terms of economies of scale, global roaming and commonality of equipment, while still providing administrations with the flexibility to utilize any portion of the frequency range for IMT networks.

The proposal in View B does not address the 4500- 4800 MHz frequency band. The proponents of View B are not in a position to make a recommendation on this band at this time as discussions were focused on the 3400- 4200 MHz frequency range.

WRC-15 agenda item 1.1 is crucial to the mobile industry as access to additional spectrum is imperative to address the growing demand for mobile broadband. To date, the US has only submitted a single proposal to CITEL PCC II supporting additional spectrum for IMT: the remainder of US proposals under AI 1.1 have been for NOC.

Therefore, the companies listed above urge FCC to consider the attached proposal supported by View B.

ATTACHMENT TO VIEW B:
DRAFT PROPOSAL FOR IDENTIFICATION FOR IMT IN 3400-3800 MHz

Draft

United States of America

PROPOSALS FOR THE WORK OF THE CONFERENCE

Agenda item 1.1

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

Terrestrial Mobile Broadband:

According to the ITU/UNESCO Broadband Commission for Digital Development ("Broadband Commission"), "High-speed, affordable broadband connectivity to the Internet is a foundation stone of modern society, offering widely recognized economic and social benefits. High-speed broadband is no longer just cutting-edge technology for an elite few; instead, the steady march of connectivity among the broader population is slowly but surely transforming our society with new ways of accessing services and information."[4] International Mobile Telecommunications (IMT) systems are at the core of this transformation. The Broadband Commissions finds that "by the end of 2014, mobile broadband subscriptions will exceed fixed broadband subscriptions by a ratio of over 3:1 (up from 2:1, just three years ago).[5]

IMT systems play a critical role in providing internet connectivity to businesses and consumers worldwide, as IMT networks are the primary mechanism for delivering wide area mobile broadband communications. ITU statistics show that "by end 2014, there will be almost 3 billion Internet users, two-thirds of them coming from the developing world, and that the number of mobile-broadband subscriptions will reach 2.3 billion globally. Fifty-five per cent of these

[4] ITU/UNESCO Broadband Commission, The State of Broadband 2014: Broadband for all, 8. http://www.broadbandcommission.org/Documents/reports/bb-annualreport2014.pdf

[5] Ibid., 19.

subscriptions are expected to be in the developing world." [6] Statistics from the Broadband Commission show the demand for IMT continues to increase as "Mobile broadband (3G and 4G) continues to show the highest growth rate of any ICT, growing almost 20% during 2014." [7]

In addition to the growing number of IMT subscribers, there has also been a tremendous increase in demand for multimedia applications and content. The Broadband Commission finds that the two leading drivers for LTE deployments are insufficient capacity and user demands for greater speeds.[8] Therefore, in addition to access to lower frequency bands for ensuring widespread coverage including inside buildings, there is also a need for wider, contiguous bandwidths in order to meet user demands in terms of both capacity and data rates.

The mobile industry continues to drive technological advances, including greater spectrum efficiency, great capacity, and higher data rates. For instance, "IMT-Advanced provides comprehensive support for broadband wireless data and brings major improvements. These include increased spectrum efficiency to handle more users at higher data rates per radio channel; a fully packet-based architecture for reduced costs; lower latency leading to more responsive Internet and multimedia applications; improved radio resource management and control to enhance quality of service, and new capabilities for the radio interface such as wideband radio channels and multiple-input and multiple-output (MIMO) for the use of multiple antennas at both the transmitter and receiver end to improve communication performance.[9] However, the benefits of these technology advances are enhanced when wider channels are available.

Attractive Features of 3 400 – 4 200 MHz for IMT:

Large, contiguous bandwidths enable greater capacity and higher data rates to be achieved, while reducing equipment complexity. The 3 400-4 200 GHz frequency range is extremely attractive as it offers the potential for large, contiguous bandwidths within a single band. This frequency range is suitable for accommodating IMT, in particular IMT-Advanced, systems utilizing wider channel bandwidths, providing greater capacity (due to reduced overhead relative to smaller channel bandwidths).

As antenna size is proportional to wavelength, it is easier to accommodate multiple antennas in a handset in these frequency bands relative to lower frequency bands. The 3 400-4 200 MHz frequency range is also attractive due to the ability to implement multiple-input/multiple-output (MIMO) antennas, which enable higher spectral efficiency (capacity) and higher throughput (data rates).

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[6] http://www.itu.int/net/pressoffice/press_releases/2014/23.aspx#.VH59LTHF8cQ

[7] ITU/UNESCO Broadband Commission, The State of Broadband 2014: Broadband for all, 19.

Note: ICT is Information and Communication Technologies

[8] Ibid., 21.

[9] http://www.itu.int/en/ITU-R/Documents/ITU-R-FAQ-IMT.pdf, 5.

In addition, the propagation characteristics of this frequency range are favorable for emerging applications such as high data rate video services in dense urban areas: sufficiently low to not suffer from adverse propagation impairments needing higher link margins and sufficiently high to have limited signal propagation thereby reducing interference.

Of the potential candidate bands for WRC-15 agenda item 1.1, the 3 400- 4 200 MHz bands are well-suited to meet growing demands for greater capacity and higher data rates due to the combination of the potential for large, contiguous bandwidths within a single band, the ability to implement MIMO antennas, and the propagation characteristics.

Equipment:

Global standards have already been developed for the 3 400 – 3 600 MHz and 3 600 -3 800 MHz frequency bands. Base stations and user devices are available to support IMT networks already in operation in these frequency bands, as well as planned networks.

Many administrations have assigned or plan to assign mobile broadband licenses within the 3 400 -3 800 MHz frequency range using unpaired frequency blocks.[10] Networks operating in unpaired frequency blocks utilize Time Division Duplexing (TDD) in which downlink and uplink transmissions are carried over the same frequency but at different times. The lack of a defined duplex gap separating uplink and downlink provides the flexibility to operate in any portion of the band within the frequency range. TDD networks can be especially beneficial in cases of asymmetric traffic as assignment of transmission capability could be varied, for instance to support more downlink traffic.

A single radio in user devices could currently cover the entire 3 400 – 3 800 MHz frequency bands and possibly a larger range. This radio tuning range, combined with the unpaired band plan in this frequency range, provides incredible flexibility for economies of scale and global roaming with reduced device complexity. For example, if country A decides to assign licenses for IMT in the 3 400- 3 600 MHz band, country B in 3 500- 3 700 MHz, and country C in 3 400 – 3 800 MHz, the same user devices could be utilized in all three countries. It should be noted that although the radio has the capability to cover the entire range, the user devices would not operate outside the bands permitted in the respective country.

3 400-3 500 MHz:

Over 90 countries in Regions 1 and 3 have already identified 3 400- 3 500 MHz for IMT in the Radio Regulations (via footnotes 5.430A, 5.432A, and 5.432B) and more countries have indicated their intention to provide a similar identification at WRC-15 through Preliminary Views and Proposals submitted to regional preparatory groups (e.g. the APT Preparatory Group and CITEL PCC II).

[10] For example, TDD is the preferred channel arrangement for the 3400-3600 MHz and 3600-3800 MHz bands within CEPT. See ECC Decision (ECC/DEC/ (11)06) "Harmonised frequency arrangements for mobile/fixed communications networks (MFCN) operating in the bands 3400-3600 MHz and 3600-3800 MHz"

In Region 2, fourteen administrations already have a primary allocation to the Mobile Service via footnote 5.431A subject to two constraints (Article No. **9.21** and Table **21-4** of the Radio Regulations). Several countries in Region 2 are supporting a proposal to CITEL PCC II seeking to provide a co-primary allocation to the Mobile Service and identification for IMT in 3 400- 3 500 MHz. One country has proposed to CITEL PCC II an identification for IMT in 3 300- 3 600 MHz. Another country has proposed to CITEL PCC II to modify the footnote 5.431A to provide the co-primary mobile allocation to the entire Region 2. The benefits of harmonization can be realized by providing a co-primary allocation to the Mobile Service in the entire Region 2 and providing an accompanying identification for IMT.

3 500- 3 800 MHz:

Similarly, over 90 countries in Regions 1 and 3 have already identified 3 500- 3 600 MHz for IMT in the Radio Regulations (via footnotes 5.430A and 5.433A). Preliminary Views and Proposals submitted to regional preparatory groups in each of the 3 Regions indicate interest in deploying IMT in various portions of the 3 400- 4 200 MHz frequency range. For example, in Region 2, several countries support an identification to IMT in 3 400- 3 600 MHz, while another proposal provides an identification for IMT in 3 500- 3 700 MHz. In Region 3, several countries have proposed an identification for IMT from 3 400 to 4 200 MHz, while a Preliminary View from another country sought an identification for IMT in 3 400 - 3 700 MHz.

The band 3 400-3 600 and 3 600-3 800 MHz bands have already been harmonized by CEPT for high data rate mobile/fixed communications networks (MFCN) including International Mobile Telecommunications (IMT) services supported by larger channel bandwidths. . In order to facilitate the benefits of global harmonization, a European Common Proposal is being finalized: this proposal adds a co-primary allocation to the Mobile Service in the Table of Allocations and identification for IMT for 3 400- 3 600 and 3 600-3 800 MHz. As Region 1 does not currently have a co-primary allocation to the Mobile Service, the proposal includes various constraints on the Mobile Service.

In Regions 2 and 3 however, a co-primary allocation to the Mobile Service already exists for the 3 500- 4200 MHz frequency range so an identification to IMT would not require any additional constraints.

3 800- 4 200 MHz:

A co-primary allocation to the Mobile Service already exists in the 3 700- 4200 MHz frequency range in Regions 2 and 3. Given this existing primary allocation, some administrations in Region 3 have proposed to the APT Preparatory Group the extension of the identification to IMT throughout the entire frequency range.

Harmonization:

As stated in *considering j* of Resolution 233, "Harmonized worldwide bands and harmonized frequency arrangements for IMT and other mobile broadband systems are highly desirable in order to achieve global roaming and the benefits of economies of scale." Harmonization also allows for commonality of equipment, which is important given that a limited number of bands can be accommodated in a mobile device, and can minimize inter-system and cross-border interference.

As discussed above, Preliminary Views and Proposals submitted to regional preparatory groups in each of the 3 Regions indicate interest in utilizing different frequency bands within the 3 400-4 200 MHz frequency range for IMT. There are over 90 countries that have already identified 3 400- 3 600 MHz for IMT. In Region 1, a European Common Proposal is being developed that proposes a co-primary allocation to the Mobile Service and identification for IMT for 3 400- 3 600 and 3 600-3 800 MHz. consistent with the designation of the 3 400- 3 800 MHz frequency range for high data rate mobile/fixed communications networks (MFCN) including International Mobile Telecommunications (IMT) services supported by larger channel bandwidths in Europe. In Region 2, several countries support an identification to IMT in 3 400- 3 600 MHz, another country supports an identification to IMT for 3 300- 3 600 MHz while another proposal provides an identification for IMT in 3 500- 3 700 MHz as well as co-primary allocation to the Mobile Service in 3 400- 3 500 MHz. In Region 3, several countries have proposed an identification for IMT from 3 400 to 4 200 MHz, while a Preliminary View from another country sought an identification for IMT in 3 400 - 3 700 MHz,

Furthermore, a co-primary allocation to the Mobile Service already exists in 3 500 – 4 200 MHz in two Regions, so adding an identification for IMT would provide substantial benefits in terms of economies of scale. In areas where the Mobile Service only has a secondary allocation (e.g. within Region 1), additional constraints might be necessary to protect incumbent services.

Clearly, this frequency range offers great opportunity to realize the benefits of harmonization, yet administrations need the flexibility to be able to select bands within the range based upon their national situations. Fortunately, the lack of a defined duplex gap separating uplink and downlink provides the flexibility to support IMT operation in any portion of the band within the frequency range. The proposed footnotes reflect this flexibility by clearly stating that "the bands, or portions of the bands, are identified for use by administrations wishing to implement International Mobile Telecommunications (IMT)." Therefore, the proposed footnotes provide an identification for IMT from 3 400 to 3 800 MHz which would maximize the benefits of harmonization in terms of economies of scale, global roaming and reduced device complexity, while still providing administrations with the flexibility to utilize any portion of the frequency range for IMT networks, consistent with their national requirements, timescales, and objectives.

Proposal:

ARTICLE 5

Frequency allocations

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

MOD USA/1.1/1

2 700-4 800 MHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
*** * * * ***		
3 400-3 600 FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile ADD 5.XYZ ~~Mobile 5.430A~~ Radiolocation 5.431	**3 400-3 500** FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile MOD 5.431A Amateur ~~Mobile 5.431A~~ Radiolocation ~~5.433~~ 5.282	**3 400-3 500** FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile ADD 5.XYZ Amateur ~~Mobile 5.432B~~ Radiolocation ~~5.433~~ 5.282 5.432 5.432A
	3 500-3 700 FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile ADD 5.IMT Radiolocation ~~5.433~~	**3 500-3 600** FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile 5.433A ADD 5.IMT Radiolocation ~~5.433~~
3 600-~~4 200~~ 3 800 FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile ADD 5.XYZ ~~Mobile~~		**3 600-3 700** FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile ADD 5.IMT Radiolocation 5.435
	3 700- ~~4 200~~ 3 800 FIXED FIXED-SATELLITE (space to-Earth) MOBILE except aeronautical mobile ADD 5.IMT	
~~3 600~~3800-4 200 FIXED FIXED-SATELLITE (space-to-Earth) Mobile	**~~3 700~~3 800-4 200** FIXED FIXED-SATELLITE (space to-Earth) MOBILE except aeronautical mobile	
*** * * * ***		

Reasons: The modifications are proposed to provide a worldwide identification for IMT from 3 400 to 3 800 MHz in order to facilitate the benefits of harmonization. In two Regions, a co-primary allocation to the mobile service already exists for 3 700 – 4 200 MHz. In cases where a co-primary allocation to the mobile service was added, constraints were included to protect incumbent services. Harmonized worldwide bands for IMT are highly desirable in order to achieve global roaming and the benefits of economies of scale. Harmonization also allows for commonality of equipment, which is important given that a limited number of bands can be accommodated in a mobile device, and can minimize inter-system and cross-border interference. Given that over 90 countries have already identified 3 400- 3 600 MHz for IMT, the development of a regional common proposal for 3 600- 3 800 MHz, and that additional countries have indicated their intention to also identify spectrum in the 3 400 - 4 200 MHz range for IMT, an identification to IMT in the 3 400-3 800 MHz frequency range offers great opportunity for harmonization.

This frequency range is extremely attractive as it offers the potential for large, contiguous bandwidths within a single band as well as the ability to implement multiple-input/multiple-output (MIMO) antennas: these factors enable greater capacity and higher data rates to be achieved, while reducing equipment complexity.

Global standards have already been developed for 3 400- 3 800 MHz and equipment already exists. Furthermore, IMT equipment in this band supports operation in unpaired blocks and the lack of a defined duplex gap provides flexibility for the equipment to operate in any portion of the band. Therefore, providing an identification for IMT from 3 400 to 3 800 MHz would maximize the benefits of harmonization, while providing administrations with full flexibility to utilize all or portions of this range for IMT, consistent with their national requirements.

MOD USA/1.1/2

5.431A ~~*Different category of service:* in Argentina, Brazil, Chile, Costa Rica, Cuba, French overseas departments and communities in Region 2, Dominican Republic, El Salvador, Guatemala, Mexico, Paraguay, Suriname, Uruguay and Venezuela~~In Region 2, use of the band 3 400-3 500 MHz by ~~is allocated to~~ the mobile, except aeronautical mobile, service ~~on a primary basis,~~is subject to agreement obtained under No. **9.21,** and the band, or portions of the band, 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. Stations of the mobile service in the band 3 400-3 500 MHz shall not claim more protection from space stations than that provided in Table **21-4** of the Radio Regulations (Edition of 2004). (WRC-15~~2~~)

Reasons: Modification of this footnote is proposed in order to extend to the entire Region the co-primary allocation to the mobile service while retaining the associated constraints on the mobile service. The modification also provides an identification to IMT. Harmonized worldwide bands for IMT are highly desirable in order to achieve global roaming and the benefits of economies of scale. Harmonization also allows for commonality of equipment, which is important given that a limited number of bands can be accommodated in a mobile device, and can minimize inter-system and cross-border interference. Given that over 90 countries have

already identified 3 400- 3 600 MHz for IMT, the development of a regional common proposal for 3 600- 3 800 MHz, and that additional countries have indicated their intention to also identify spectrum in the 3 400 - 4 200 MHz range for IMT, an identification to IMT in the 3 400-3 500 MHz frequency band offers great opportunity for harmonization.
This frequency range is extremely attractive as it offers the potential for large, contiguous bandwidths within a single band as well as the ability to implement multiple-input/multiple-output (MIMO) antennas: these factors enable greater capacity and higher data rates to be achieved, while reducing equipment complexity.
Global standards have already been developed for 3 400- 3 800 MHz and equipment already exists. Furthermore, IMT equipment in this band supports operation in unpaired blocks and the lack of a defined duplex gap provides flexibility for the equipment to operate in any portion of the band. Therefore, providing an identification for IMT from 3 400 to 3 500 MHz would maximize the benefits of harmonization while providing administrations with full flexibility to utilize all or portions of this range for IMT, consistent with their national requirements.

SUP USA/1.1/3

5.433 In Regions 2 and 3, in the band 3 400-3 600 MHz the radiolocation service is allocated on a primary basis. However, all administrations operating radiolocation systems in this band are urged to cease operations by 1985. Thereafter, administrations shall take all practicable steps to protect the fixed-satellite service and coordination requirements shall not be imposed on the fixed-satellite service.

Reasons: Suppression of this footnote is proposed as administrations were urged to cease operations by 1985, which is 30 years ago.

ADD USA/1.1/4

5.IMT The bands, or portions of the bands, 3 500-3 800 MHz are identified for use by administrations wishing to implement International Mobile Telecommunications (IMT). This identification does not preclude the use of these bands by any application of the services to which they are allocated and does not establish priority in the Radio Regulations.

Reasons: Harmonized worldwide bands for IMT are highly desirable in order to achieve global roaming and the benefits of economies of scale. Harmonization also allows for commonality of equipment, which is important given that a limited number of bands can be accommodated in a mobile device, and can minimize inter-system and cross-border interference. Given that over 90 countries have already identified 3 400- 3 600 MHz for IMT, the development of a regional common proposal for 3 600- 3 800, and that additional countries have indicated their intention to also identify spectrum in the 3 400 - 4 200 MHz range for IMT, an identification to IMT in the 3 500-3 800 MHz frequency bands offers great opportunity for harmonization.
This frequency range is extremely attractive as it offers the potential for large, contiguous bandwidths within a single band as well as the ability to implement multiple-input/multiple-

output (MIMO) antennas: these factors enable greater capacity and higher data rates to be achieved, while reducing equipment complexity.
Global standards have already been developed for 3 400- 3 800 MHz and equipment already exists. Furthermore, IMT equipment in this band supports operation in unpaired blocks and the lack of a defined duplex gap provides flexibility for the equipment to operate in any portion of the band. Therefore, providing an identification for IMT from 3 500 to 3 800 MHz would maximize the benefits of harmonization while providing administrations with full flexibility to utilize all or portions of this range for IMT, consistent with their national requirements.

ADD USA/1.1/5

5.XYZ The use of the bands 3 400-3 600 and 3600-3800 MHz in Region 1 and 3 400- 3 500 MHz in Region 3 by mobile service is subject to agreement obtained under No. 9.21 and is identified for 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. At the stage of coordination the provisions of Nos. 9.17 and 9.18 also apply. Before an administration brings into use a (base or mobile) station of the mobile service in this band, it shall ensure that the power flux-density (pfd) produced at 3 m above ground does not exceed −154.5 dB(W/(m2 □ 4 kHz)) for more than 20% of time at the border of the territory of any other administration. This limit may be exceeded on the territory of any country whose administration has so agreed. In order to ensure that the pfd limit at the border of the territory of any other administration is met, the calculations and verification shall be made, taking into account all relevant information, with the mutual agreement of both administrations (the administration responsible for the terrestrial station and the administration responsible for the earth station), with the assistance of the Bureau if so requested. In case of disagreement, the calculation and verification of the pfd shall be made by the Bureau, taking into account the information referred to above. Stations of the mobile service in the band 3 600-3 800 MHz shall not claim more protection from space stations than that provided in Table 21-4 of the Radio Regulations (Edition of 2004). (WRC 15)

Reasons: Harmonized worldwide bands for IMT are highly desirable in order to achieve global roaming and the benefits of economies of scale. Harmonization also allows for commonality of equipment, which is important given that a limited number of bands can be accommodated in a mobile device, and can minimize inter-system and cross-border interference. Given that over 90 countries have already identified 3 400- 3 600 MHz for IMT, the development of a regional common proposal for 3 600- 3 800 MHz, and that additional countries have indicated their intention to also identify spectrum in the 3 400 - 4 200 MHz range for IMT, an identification to IMT in the 3 600-3 800 MHz frequency bands offers great opportunity for harmonization.
This frequency range is extremely attractive as it offers the potential for large, contiguous bandwidths within a single band as well as the ability to implement multiple-input/multiple-output (MIMO) antennas: these factors: these factors enable greater capacity and higher data rates to be achieved, while reducing equipment complexity.
Global standards have already been developed for 3 400- 3 800 MHz and equipment already exists. Furthermore, IMT equipment in this band supports operation in unpaired blocks and the lack of a defined duplex gap provides flexibility for the equipment to operate in any portion of the band. Therefore, providing an identification for IMT from 3 600 to 3 800 MHz would

maximize the benefits of harmonization while providing administrations with full flexibility to utilize all or portions of this range for IMT, consistent with their national requirements. Constraints have been added to protect incumbent services in order to provide a co-primary allocation to the Mobile Service.

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WAC/100(17.12.14)

Draft

United States of America

PROPOSALS FOR THE WORK OF THE CONFERENCE

Agenda item 1.3

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

Background Information

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

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

In its studies under this agenda item, ITU-R Working Party 5A is proposing to suppress Report ITU-R M.2033, "Radiocommunication objectives and requirements for public protection and disaster relief", as it is producing a new Report ITU-R M.[PPDR]. This new Report will address the three bullets above. Therefore, the changes to Resolution **646 (Rev.WRC-12)** should reflect that work and focus on improving interoperability and cross-border coordination.

The benefits resulting from the use of regionally or internationally harmonized frequency bands have been well-documented in the Resolution and in many studies and reports. These benefits include, among others, achieving economies of scale and expanded equipment availability, possibly increasing competition and improved spectrum management and planning. In emergency and disaster relief situations, the benefits of harmonization also include enhanced cross-border circulation of equipment and increased potential for interoperability of communications when a country receives assistance from other nations.

From a U.S. perspective, the key objectives of any revision to Resolution **646 (Rev.WRC-12)** should accomplish the following:

- Promote harmonization through the establishment of "core" common ranges for PPDR
- Enable flexibility by facilitating the smooth adoption of advanced technologies for PPDR.

Since the adoption of Resolution **646** in 2003, there have been many changes in the public safety environment, often as a result of major disasters. Administrations have introduced new technologies (e.g. LTE in the U.S.) and they have adopted new band plans (e.g., the U.S. 700 MHz band plan for public safety). However, no changes could be reflected in the guiding Resolution without WRC action. This is increasingly viewed as a cumbersome mechanism.

Therefore, it would be advisable to institute a mechanism that would allow administrations to more easily provide updated information on their band plans and the technologies they intend to use. This would facilitate harmonization of both frequency arrangements and technologies.

It is equally important for economies of scale and cross-border circulation that a limited number of bands are used for public safety operations. Therefore, it would be helpful to maintain a list of core common frequency ranges in the Resolution. This would encourage the adoption of regionally harmonized bands that would provide beneficial implications for economies of scale.

The specific information regarding which Regions or administrations were employing which part(s) of the bands could be detailed in a revision of Recommendation ITU-R M.2015, "Frequency arrangements for public protection and disaster relief radiocommunication systems in UHF bands in accordance with Resolution **646 (Rev.WRC-12)**" (which would have to be consequentially appropriately modified to include all bands in Resolution **646**).

The benefit of this approach is that it would not require WRC action for an administration to include its PPDR usage. Furthermore, the inclusion of the bands in the Resolution, without specifying countries, would encourage wider use of globally harmonized bands, with its obvious benefits for economies of scale, cross-border coordination, and interoperability.

The proposal below accomplishes the objectives above by:

1) Encouraging the use of globally and regionally harmonized bands by including the core ranges in Resolution 646 without specific designations for administrations;
2) Promoting the adoption of common band plans and technologies through incorporation in Recommendation ITU-R M.2015.

PROPOSAL:

MOD USA/1.3/1

RESOLUTION 646 (REV.WRC-~~12~~15)

Public protection and disaster relief

The World Radiocommunication Conference (Geneva, ~~2012~~2015),

considering

a) that Report ITU-R M. [PPDR] provides comprehensive details of systems and applications supporting PPDR operations in narrow-, wide- and broadband use, including but not limited to

– the generic technical and operational requirements relating to PPDR;

– spectrum needs;

– mobile broadband PPDR services and applications including further developments and the evolution of PPDR through advances in technology;

– promotion of interoperability and interworking; and

– the needs of developing countries;

b) that Report ITU-R M.2291 provides details of the capabilities of IMT technologies to meet the requirements of applications supporting broadband PPDR operations;

~~*a)*~~*c)* that the term "public protection radiocommunication" refers to radiocommunications used by responsible agencies and organizations dealing with maintenance of law and order, protection of life and property and emergency situations;

~~*b*~~*d)* that the term "disaster relief radiocommunication" refers to radiocommunications used by agencies and organizations dealing with a serious disruption of the functioning of society, posing a significant widespread threat to human life, health, property or the environment, whether caused by accident, natural phenomena or human activity~~, and whether developing suddenly or as a result of complex, long-term processes~~;

~~*c*~~*e)* the growing telecommunication and radiocommunication needs of public protection agencies and organizations, including those dealing with emergency situations and disaster relief, that are vital to the maintenance of law and order, protection of life and property, disaster relief and emergency response;

~~*d) that many administrations wish to promote interoperability and interworking between systems used for public protection and disaster relief, both nationally and for cross-border operations in emergency situations and for disaster relief;~~

~~*e*~~*f)* that legacy~~current~~ public protection and disaster relief ~~applications~~ systems are mostly narrow-band supporting voice and low data-rate applications~~, typically in channel bandwidths of 25 kHz or less~~;

~~*f)* that, although there will continue to be narrow-band requirements, many future applications will be wideband (indicative data rates in the order of 384-500 kbit/s) and/or broadband (indicative data rates in the order of 1-100 Mbit/s) with channel bandwidths dependent on the use of spectrally efficient technologies;~~

g) that new technologies for wideband and broadband public protection and disaster relief applications are being developed in various standards organizations, e.g. IMT technologies supporting higher data rates and higher capacity in comparison to traditional PPDR networks~~1~~;

h) that the continuing development of new technologies and systems, such as ~~International Mobile Telecommunications (IMT) and~~ Intelligent Transportation Systems (ITS), may be able to support or supplement advanced public protection and disaster relief applications;

i) that some commercial terrestrial and satellite systems are complementing the dedicated systems in support of public protection and disaster relief, that the use of commercial solutions will be in response to technology development and market demands and that this may affect the spectrum required for those applications and for commercial networks;

j) that Resolution 36 (Rev. Guadalajara, 2010) of the Plenipotentiary Conference urges Member States Parties to the Tampere Convention to take all practical steps for the application of the Tampere Convention and to work closely with the operational coordinator as provided for therein;

k) that Recommendation ITU-R M.1637 offers guidance to facilitate the global circulation of radiocommunication equipment in emergency and disaster relief situations;

l) that Report ITU-R BT.2299 provides a compilation of supporting evidence that terrestrial broadcasting plays a critically important role in disseminating information to the public in times of emergencies;

m) that some administrations may have different operational needs and spectrum requirements for public protection and disaster relief applications depending on the circumstances;

n~~*m*~~*)* that the Tampere Convention on the Provision of Telecommunications Resources for Disaster Mitigation and Relief Operations (Tampere, 1998), an international treaty deposited

~~1 For example, a joint standardization programme between the European Telecommunications Standards Institute (ETSI) and the Telecommunications Industry Association (TIA), known as Project MESA (Mobility for Emergency and Safety Applications) has commenced for broadband public protection and disaster relief. Also, the Working Group on Emergency Telecommunications (WGET), convened by the United Nations Office for Humanitarian Affairs (OCHA), is an open forum to facilitate the use of telecommunications in the service of humanitarian assistance comprising United Nations entities, major non-governmental organizations, the International Committee of the Red Cross (ICRC), ITU and experts from the private sector and academia. Another platform for coordination and to foster harmonized global Telecommunication for Disaster Relief (TDR) standards is the TDR Partnership Coordination Panel, which was established under the coordination of ITU with participation of international telecommunication service providers, related government departments, standards development organizations, and disaster relief organizations.~~

with the United Nations Secretary-General and related United Nations General Assembly Resolutions and Reports are also relevant in this regard,

recognizing

a) the benefits of spectrum harmonization such as:

– increased potential for interoperability;

– a broader manufacturing base and increased volume of equipment resulting in economies of scale and expanded equipment availability;

– improved spectrum management and planning; and

– enhanced cross-border coordination and circulation of equipment;

b) that the organizational distinction between public protection activities and disaster relief activities are matters for administrations to determine at the national level;

c) that national spectrum planning for public protection and disaster relief needs to have regard to cooperation and bilateral consultation with other concerned administrations, which should be facilitated by greater levels of spectrum harmonization;

d) the benefits of cooperation between countries for the provision of effective and appropriate humanitarian assistance in case of disasters, particularly in view of the special operational requirements of such activities involving multinational response;

e) the needs of countries, particularly the developing countries~~2~~[1], for ~~low-~~cost-efficient communication equipment;

f) that the adoption of IMT technologies for broadband PPDR should be encouraged because of the advantages and efficiencies that the standardisation of these technologies offer~~that the trend is to increase the use of technologies based on Internet Protocols~~;

g) that Recommendation ITU-R M.2015 contains regionally harmonized frequency arrangements for public protection and disaster relief~~that currently some bands or parts thereof have been designated for existing public protection and disaster relief operations, as documented in Report ITU-R M.2033~~[3];

h) that in order to achieve spectrum harmonization, a solution based on regional frequency ranges[2] may enable administrations to benefit from harmonization while continuing to meet national planning requirements; ~~that for solving future bandwidth requirements, there are~~

~~2~~[1] Taking into account, for example, the ITU-D updated Handbook on disaster relief (Appendix 1 of the Report of Question 22-1/2).

~~3 3-30, 68-88, 138-144, 148-174, 380-400 MHz (including CEPT designation of 380-385/390-395 MHz), 400-430, 440-470, 764-776, 794-806 and 806-869 MHz (including CITEL designation of 821-824/866-869 MHz).~~

[2] In the context of this Resolution, the term "frequency range" means a range of frequencies over which ~~a~~ radio equipment is envisaged to be capable of operating but limited to specific frequency band(s) according to national conditions and requirements.

~~several emerging technology developments such as software-defined radio, advanced compression and networking techniques that may reduce the amount of new spectrum required to support some public protection and disaster relief applications;~~

i) that in times of disasters, if most terrestrial-based networks are destroyed or impaired, amateur, satellite and other non-ground-based networks may be available to provide communication services to assist in public protection and disaster relief efforts;

j) that the amount of spectrum needed for public protection on a daily basis ~~can~~ differs significantly between countries, that certain amounts of spectrum are already in use in various countries ~~for narrow-band applications~~, and that in response to a disaster, access to additional spectrum on a temporary basis may be required;

~~*k) that in order to achieve spectrum harmonization, a solution based on regional frequency ranges[4] may enable administrations to benefit from harmonization while continuing to meet national planning requirements;*~~

~~*l*~~*k)* that not all frequencies within an identified common frequency range will be available within each country;

~~*m*~~*l)* that the identification of a common frequency range within which equipment could operate may ease the interoperability and/or inter-working, with mutual cooperation and consultation, especially in national, regional and cross-border emergency situations and disaster relief activities,~~;~~

~~*n) that when a disaster occurs, the public protection and disaster relief agencies are usually the first on the scene using their day-to-day communication systems, but that in most cases other agencies and organizations may also be involved in disaster relief operations,~~

noting

a) that many administrations are currently using frequency bands below 1 GHz for narrow-band ~~public protection and disaster relief~~ systems and applications supporting PPDR and may decide to use the same range for future broadband PPDR systems as well;

~~*b) that applications requiring large coverage areas and providing good signal availability would generally be accommodated in lower frequency bands and that applications requiring wider bandwidths would generally be accommodated in progressively higher bands;~~

~~*c*~~*b)* that public protection and disaster relief agencies and organizations have an initial set of requirements, including but not limited to interoperability, secure and reliable communications, sufficient capacity to respond to emergencies, priority access in the use of non-dedicated systems, fast response times, ability to handle multiple group calls and the ability to cover large areas as described in Report ITU-R M.~~2033~~[PPDR];

~~[4] In the context of this Resolution, the term "frequency range" means a range of frequencies over which a radio equipment is envisaged to be capable of operating but limited to specific frequency band(s) according to national conditions and requirements.~~

~~*d*~~*c)* that, while harmonization may be one method of realizing the desired benefits, in some countries, the use of multiple frequency bands can contribute to meeting the communication needs in disaster situations;

~~*e*~~*d)* that many administrations have made significant investments in public protection and disaster relief systems;

~~*f*~~*e)* that flexibility must be afforded to disaster relief agencies and organizations to use current and future radiocommunications, so as to facilitate their humanitarian operations~~;~~;

f) that IMT technologies offer a high degree of flexibility for supporting broadband PPDR applications, and there are a number of different approaches for using IMT technologies to meet the broadband communications needs of PPDR agencies, which are outlined in Report ITU-R M.2291;

emphasizing

a) that the frequency bands identified in this Resolution are allocated to a variety of services in accordance with the relevant provisions of the Radio Regulations and are currently used intensively by the fixed, mobile, mobile satellite and broadcasting services;

b) that flexibility must be afforded to administrations to determine:

– ~~to determine, at national level,~~ how much spectrum to make available at a national level for public protection and disaster relief from the ~~bands~~ranges identified in this Resolution in order to meet their particular national requirements; as well as

~~– to have the ability for bands identified in this Resolution to be used by all services having allocations within those bands according to the provisions of the Radio Regulations, taking into account the existing applications and their evolution;~~

– ~~to determine~~ the need and timing of availability as well as the conditions of usage of the bands listed ~~identified~~ in this Resolution for ~~public protection and disaster relief~~PPDR in order to meet specific regional or national situations~~;~~;

c) that not all of the frequency bands listed in this Resolution may be suitable for every type of PPDR operation (narrowband, wideband or broadband),

resolves

1 to strongly recommend administrations to use regionally harmonized bands for public protection and disaster relief to the maximum extent possible, taking into account the national and regional requirements and also having regard to any needed consultation and cooperation with other concerned countries;

2 to encourage administrations, for the purposes of achieving regionally harmonized frequency ~~bands/~~ranges for advanced public protection and disaster relief solutions, to consider the following identified core frequency ~~bands/~~ranges or parts thereof when undertaking their national planning:

– ~~in Region 1:~~ 380-470 MHz ~~as the frequency range within which the band 380-385/390-395 MHz is a preferred core harmonized band for permanent public protection activities within certain countries of~~ in Region 1 ~~which have given their agreement~~;

– 406.1-430 MHz and 440-470 MHz in Region 3;

– ~~in Region 25:~~ 746-806 MHz in Region 2;

– ~~,~~806-869 MHz in Region 2 and Region 3;~~4 940-4 990 MHz;~~

– ~~in Region 36: 406.1-430 MHz, 440-470 MHz, 806-824/851-869 MHz,~~ 4 940-4 990 MHz in Region 2 and Region 3~~and 5 850-5 925 MHz~~;

3 that specific information on the frequency arrangements for public protection and disaster relief in these ranges, as well as the specific details of the Regions and/or administrations utilizing these ranges be contained in Recommendation ITU-R M.2015;

4 that the identification of the above frequency bands/ranges for public protection and disaster relief does not preclude the use of these bands/frequencies by any application within the services to which these bands/frequencies are allocated and does not preclude the use of nor establish priority over any other frequencies for public protection and disaster relief in accordance with the Radio Regulations;

~~4~~5 to encourage administrations, in emergency and disaster relief situations, to satisfy temporary needs for frequencies in addition to what may be normally provided for in agreements with the concerned administrations;

~~5~~6 that administrations encourage public protection and disaster relief agencies and organizations to utilize both existing and new technologies/~~ and~~ solutions (satellite and terrestrial), to the extent practicable, to satisfy interoperability requirements and to further the goals of public protection and disaster relief;

~~6 that administrations may encourage agencies and organizations to use advanced wireless solutions taking into account considering h) and i) for providing complementary support to public protection and disaster relief;~~

7 to encourage administrations to facilitate cross-border circulation of radiocommunication equipment intended for use in emergency and disaster relief situations through mutual cooperation and consultation without hindering national legislation;

8 that administrations encourage public protection and disaster relief agencies and organizations to utilize relevant ITU-R Recommendations and Reports in planning spectrum use and implementing technology and systems supporting public protection and disaster relief;

~~5 Venezuela has identified the band 380-400 MHz for public protection and disaster relief applications.~~

~~6 Some countries in Region 3 have also identified the bands 380-400 MHz and 746-806 MHz for public protection and disaster relief applications.~~

9 to encourage administrations to continue to work closely with their public protection and disaster relief community to further refine the operational requirements for public protection and disaster relief activities;

10 that manufacturers should be encouraged to take this Resolution and related ITU-R Recommendations and Reports into account in future equipment designs, including the need for administrations to operate within different parts of the identified bands,

invites ITU-R

1 to continue its ~~technical~~ studies and to make recommendations concerning technical and operational implementation, as necessary, for advanced solutions to meet the needs of public protection and disaster relief radiocommunication applications, taking into account the capabilities, evolution and any resulting transition requirements of the existing systems, particularly those of many developing countries, for national and international operations;

2 to conduct further appropriate technical studies in support of possible additional ~~identification of other~~ frequency ~~ranges~~ arrangements~~,~~ ~~to meet the particular needs of certain countries in Region 1 which have given their agreement, especially in order~~ to meet the radiocommunication needs of public protection and disaster relief agencies.

_____

Reasons: This approach preserves the harmonized PPDR frequency core ranges/bands within Resolution **646** while introducing greater flexibility by allowing new arrangements in these ranges/bands to be addressed through updates to Recommendation ITU-R M.2015 on PPDR frequency arrangements. Inclusion of common core frequency ranges in Resolution **646** will encourage the use of that spectrum for public safety, resulting in greater economies of scale and facilitated cross-border coordination and interoperability, which are beneficial to public protection and disaster relief operations. Moving the details of administration-specific implementations within the specified ranges in the resolution to a Recommendation will ease the revision process by no longer requiring WRC action to introduce revisions.

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Space Services

WAC/101(17.12.14)

WRC-15 Agenda Item 1.12

At its eleventh meeting on December 16, 2013, IWG-3 considered an NTIA proposal that supported a primary allocation of an additional 600 MHz to the EESS (active) in the frequency range 9 900 – 10 500 MHz (i.e. document WAC/059. Some concerns were raised at that time by IWG-3 members and it was agreed that the proposal would be re-considered at the next IWG-3 meeting, thereby affording participants time to consider the proposal more fully. At its twelfth meeting on January 13, 2014, IWG-3 received document IWG-3_041, which was a "redlined" version of document WAC /059. Document IWG-3_041 opposed the primary allocation of an additional 600 MHz to the EESS (active) in the frequency range 9 900 – 10 500 MHz. This document instead supported a secondary allocation to the EESS in this frequency range and made the case that a secondary allocation is sufficient to protect EESS operations in this band, given the characteristics of the other services using the band and the necessity to protect the radiolocation service. IWG-3 agreed the proposal contained in document IWG-3/041 for submission to the upcoming WAC meeting and this document was approved at the fifth WAC on January 27, 2014, as document WAC/073. The Commission placed the proposal in approved document WAC/073 on Public Notice on January 28, 2014 (DA 14-88). The Public Notice sought comments on this proposal and set a comment deadline of February 18, 2014. One supportive comment and no opposing or modifying comments were received by the comment deadline.

At its thirteenth meeting on June 11, 2014, IWG-3 received Document IWG-3/041 redline of WAC_059_NTIA proposal 1_12 mimosa June, which was a revised version of the previously agreed IWG-3 markup of the NTIA proposal on this topic. The revised markup was prompted by a petition for Rulemaking that Mimosa filed with the FCC to open up this band for Fixed Service (FS) and called for adding the US to FN 5.480 to indicate that "In Venezuela **and the United States**, the band 10-10.45 GHz is also allocated to the fixed service on a primary basis along with thirteen other Region 2 countries. Concerns were raised with this markup of the previously agreed IWG-3 proposal on this issue and these concerns were discussed at subsequent meetings of IWG-3. IWG-3 has not been able reach consensus on the issues raised in this proposed revision of the previously agreed IWG-3 proposal and is therefore forwarding two IWG-3 views on this issue to the WAC.

View A

The proposal contained in Document WAC/073, which was approved by the WAC on January 27, 2014, placed on Public Notice on January 28, 2014, and received no negative or modifying comments by the established comment deadline of February 18, 2014, should stand without modification and serve as the basis for initiation of reconciliation discussions with federal agencies.

The proposed revision seeks to modify footnote 5.480 of the Radio Regulations to represent that there is an allocation to the fixed service in the United States at 10 – 10.45 GHz. The plain text of the United States table of allocations and relevant footnotes thereto specifically indicate otherwise. **The proposed modification would cause the United States to make a representation in the Radio Regulations that is simply and indisputably <u>not true</u>.** A pending petition for rulemaking by the proponent of the revision, upon which the Commission has not initiated proposed rulemaking and against which numerous opposing comments were filed, does not and cannot change this simple and indisputable fact. The process of preparing United States proposals for a World Radiocommunication Conference is not a mechanism for bypassing the domestic rulemaking process, and this is precisely what the proponent of the revision seeks to do here.

It is also noted that the consideration of a fixed service allocation, even within a footnote, stretches the scope of agenda item 1.12 and Resolution 26 to the limits of credibility. Adoption of this revision would weaken the credibility with which the United States would rightly seek to resist similar vast expansions of scope of other agenda items at WRC-15.

The relevant portions of the United States table of allocations and footnotes thereto are presented in Appendix 1 to this view.

Appendix 1 to View A—Relevant Segments of United States Table of Allocations and Footnotes Thereto

47 C.F.R. § 2.106 Table of Frequency Allocations

United States Table		FCC Rule Part(s)
Federal Table	Non-Federal Table	
10-10.5 RADIOLOCATION US108 G32	10-10.45 Amateur Radiolocation US108 5.479 US128 NG50	Private Land Mobile (90) Amateur Radio (97)
5.479 US128	10.45-10.5 Amateur Amateur-satellite Radiolocation US108 US128 NG50	

Footnote US108

In the bands 3300-3500 MHz and 10-10.5 GHz, survey operations, using transmitters with a peak power not to exceed five watts into the antenna, may be authorized for Federal and non-Federal use on a secondary basis to other Federal radiolocation operations.

Footnote US128

In the band 10-10.5 GHz, pulsed emissions are prohibited, except for weather radars on board meteorological satellites in the sub-band 10-10.025 GHz. The amateur service, the amateur-satellite service, and the non-Federal radiolocation service, which shall not cause harmful interference to the Federal radiolocation service, are the only non-Federal services permitted in this band. The non-Federal radiolocation service is limited to survey operations as specified in footnote US108.

Footnote NG50

In the band 10-10.5 GHz, non-Federal stations in the radiolocation service shall not cause harmful interference to the amateur service; and in the sub-band 10.45-10.5 GHz, these stations shall not cause harmful interference to the amateur-satellite service.

View B

Introduction

As part of considering Agenda Item 1.12 calling for a potential allocation to the EESS (active) service in the 10 -10.45 GHz band, Mimosa, the primary proponent of View B, requests that the United States add its name to international footnote **5.480** to avoid prematurely foreclosing consideration by the Federal Communications Commission of the use of this band for fixed services in the 10.000 - 10.450 GHz band.

Background

- **Broadband Benefits of the 10 GHz Band**

Adjusting the International Table of Allocations to make the 10-10.45 GHz band available for fixed services in the United States is in the public interest. It would enable further consideration and possible action by the FCC to support innovative wireless broadband solutions in a band that many consider underutilized. In its Petition for Rulemaking, Mimosa set forth in detail the opportunities offered by the 10 GHz band for the provision of much-needed wireless broadband services.[1] Mimosa's Petition was supported by a wide range of commenters. The 10 GHz spectrum is particularly valuable for increasing broadband availability in rural areas, for both end-user customers and backhaul. For example, this spectrum can offer an important new competitive option for dedicated access facilities (for example, from cell towers to mobile operator switches). Opening up the 10 GHz band for fixed services would also reduce pressure on the increasingly congested 5 GHz band, which is used for both mobile and fixed services.

Allocating the 10 GHz band to fixed services would also give wireless Internet service providers an opportunity to deploy overlay networks in urban and suburban areas currently served only by large incumbent providers. The competition created by such networks would advance the Commission's pro-competitive spectrum allocation policies.

At a time when spectrum for broadband services is limited, and policymakers and industry leaders alike are searching for suitable spectrum, exploring the benefits of the 10 GHz band for fixed services in the United States is in the public interest.

- **Modifying the Footnote in 2015 Provides US Flexibility**

Modifying the footnote at WRC-15 does not prejudge or require the United States to modify its domestic table of allocations; it simply preserves the opportunity for the FCC -- after full consideration of the record in the rulemaking proceeding -- to establish service and technical rules and make a domestic allocation. Moreover, by adding itself to this footnote, the United States would join fourteen other countries in Region 2 along with all countries in Regions 1 and 3 in having this band allocated to the fixed services on a primary basis internationally.

By contrast, if the US does not add itself to the footnote at WRC-15, it would create unnecessary challenges to updating the international allocation. First, World Radio Conferences are held every four years; as a result, the next opportunity for the US would not be until WRC-19, five years – and a

[1] Petition for Rulemaking, Mimosa Networks, Inc., filed May 1, 2013, RM-11715. *See also* Reply of Mimosa Networks, Inc., filed April 25, 2014.

generation of technology – from now. Second, the procedures regarding when a country can modify or delete a footnote will present an on-going obstacle, as explained below.

- **Resolution 26 allows for Modifications to Footnotes**

Resolution 26 (Rev.WRC-07) "*Footnotes to the Table of Frequency Allocations in Article 5 of the Radio Regulations*" provides guidance for countries seeking to modify and/or delete footnotes. It further resolves that any addition of a new footnote or modification to a footnote should be considered by a WRC only under certain conditions, such as when the agenda of that conference explicitly includes the frequency band to which the proposed additional or modified footnote relates. This is the case with the WRC-15 agenda through Agenda Item 1.12 and its consideration of the 10 GHz band.

Since Regions 1, 3 and a majority of Region 2 already have allocated this band to fixed services on a primary basis, it is unlikely that a proposed future stand-alone agenda item on this topic would be approved. Most of the future agenda items are developed through regional organizations and need support from other regions. Since nearly every country in the world has already allocated fixed services to this band, it is highly unrealistic to expect that a future WRC would approve a dedicated agenda item to this topic.

Therefore this upcoming WRC-15 presents an ideal occasion to modify the footnote and preserve the opportunity for US domestic consideration of the use of the 10 GHz band for fixed services. Future opportunities for the US to add itself to the footnote are likely to be very limited.

Opposing Views

The amateur radio operators (ARRL) maintain an objection, primarily on procedural grounds, including the timeliness of the request. These objections are without merit. This request was submitted to IWG-3 in June 2014 -- a full 17 months before the WRC. Further, the footnote would impact the United States primarily, and thus, there is little or no need for CITEL outreach or approval.

ARRL specifically argues that that if the requested international allocation is made, such allocation would be factually incorrect because there is no domestic allocation. This argument is flawed in several ways. First, the language of the current footnote must be read in context. On its face, the footnote states that the 10 GHz band "is … allocated …" in the delineated countries. ARRL appears to be arguing that because the US has not allocated the 10 GHz band for fixed services, it would be factually incorrect to state, in essence, that "the band *is* allocated in the US". However, the clear meaning of the language in the footnote is that the delineated countries "may allocate" the 10 GHz band for fixed services. To Mimosa's knowledge, not all of the delineated countries had actually allocated the 10 GHz band to fixed services prior to adoption of the footnote, and in fact, some countries still have not made such allocation. Second, ARRL's argument presents a chicken and egg scenario: what must come first, the domestic allocation or the international allocation? In fact, in opposing Mimosa's Petition for Rulemaking, ARRL argued that the US cannot allocate the 10 GHz band to fixed services because there is no international allocation.[2] However in IWG-3, ARRL is arguing that the US cannot add itself to the international allocation because there is no domestic allocation of the 10 GHz band to fixed services.

[2] ARRL Comments, filed April 10, 2014 at 4 ("Mimosa is … asking the Commission to place the cart a huge distance in front of the horse. The proper route to modify a Region 2 allocation is at a competent ITU World Radiocommunication Conference, not by means of a domestic allocation at variance with both the current international and domestic tables of allocation."

Should the US ultimately decide not to make a domestic allocation to fixed service in this band, there would be no consequences. Adding the US to the footnote would not place any international requirement on the United States to modify its domestic allocation.

Recommendation

The FCC should support the proposal to add ***'and the United States***' to footnote 5.480 to provide greater flexibility in the future for the United States to deploy fixed services in support of its broadband objectives.

> **5.480** *Additional allocation*: in Argentina, Brazil, Chile, Costa Rica, Cuba, El Salvador, Ecuador, Guatemala, Honduras, Mexico, Paraguay, the Netherlands Antilles, Peru and Uruguay, the band 10-10.45 GHz is also allocated to the fixed and mobile services on a primary basis. In Venezuela ***and the United States***, the band 10-10.45 GHz is also allocated to the fixed service on a primary basis. (WRC-15)

Regulatory Issues

WAC/102(17.12.14)

PROPOSED EDITS TO NTIA DRAFT PROPOSAL ON WRC-15 AI 7
(REF. WAC/097(17.12.14))

UNITED STATES OF AMERICA

PROPOSALS FOR THE WORK OF THE CONFERENCE

Agenda Item 7: *to consider possible changes, and other options, in response to Resolution 86 (Rev. Marrakesh, 2002) of the Plenipotentiary Conference, an advance publication, coordination, notification and recording procedures for frequency assignments pertaining to satellite networks, in accordance with Resolution **86 (Rev. WRC-07)** to facilitate rational efficient, and economical use of radio frequencies and any associated orbits, including the geostationary-satellite orbit*

Issue E: Failure of a satellite during the ninety-day bringing into use period

Background Information: WRC-12 introduced the additional provisions No. **11.44.2** and No. **11.44B** in the Radio Regulations (RR) in order to better define the bringing into use of a frequency assignment to a space station in the geostationary satellite orbit. According to RR No. **11.44B**, "*A frequency assignment to a space station in the geostationary-satellite orbit shall be considered as having been brought into use when a space station in the geostationary-satellite orbit with the capability of transmitting or receiving that frequency assignment has been deployed and maintained at the notified orbital position for a continuous period of ninety days* …". However, the current provisions regarding the bringing into use do not address a possible scenario of a satellite failure during the above-mentioned period of ninety days. WRC-12 discussed the issue of a satellite failure, especially that of a newly launched satellite, during the ninety-day bringing into use period that renders the satellite technically incapable of operating in a given frequency band. WRC-12 invited the ITU-R to study the issue, as a matter of urgency, to determine what regulatory changes, if any, should be made to the RR under WRC-15 agenda item 7 to address this issue. Furthermore, WRC-12 decided that in case of such failure, the notifying administration may submit the case to the Radio Regulations Board (RRB) for its consideration and decision on a case-by-case basis.

Method A in the Draft Conference Preparatory Meeting (CPM) text proposes to allow a frequency assignment to be considered as having been brought into use in accordance with RR No. **11.44B,** in cases for which a frequency assignment could not be brought into use due to a failure of a newly launched satellite during the ninety-day bringing into use period. However, after consideration of the discussions within the ITU-R of this issue, it would be better to continue to apply the current procedures in the Radio Regulations since the failure of any satellite during a 90-day BIU or bringing back into use (BBIU) period is considered to be extremely rare. In the case of a newly-launched or on-orbit satellite failure during the 90-day BIU or BBIU period, Administrations already have the possibility of petitioning the RRB for relief under the

current procedures. If not successful at the RRB, then Administrations may petition a WRC. There is no regulatory difference between a newly launched satellite or an on-orbit satellite, and adding provisions giving special treatment only to a newly launched satellite could penalize operators conducting legitimate satellite fleet movements. Additionally, Method A in the draft CPM text could encourage abuse of the newly proposed BIU provisions by unintentionally sanctioning the movement of aging and older satellites from one orbital location to another for the purpose of bringing into use orbital slots without worry about potential satellite failure. Since there have not been any demonstrable events of a satellite failure during the BIU period, it is premature and unnecessary to modify the current regulatory procedures. Therefore, the United States proposes No Change to Article **11** of the Radio Regulations for this Issue under WRC-15 agenda item 7.

Proposal:

NOC USA/AI 7/1

ARTICLE 11

Notification and recording of frequency assignments[1, 2, 3, 4, 5, 6, 7] (WRC-07)

Reason: There have not been any demonstrable events of a satellite failure during the BIU period so it is premature and unnecessary to modify the current regulatory procedures.