

**PROPOSED EDITS TO NTIA DRAFT PROPOSAL ON WRC-15 AI 1.1
(REF. WAC/105(20.05.15))**

With Respect to 4 400-4 990 MHz

IWG-2 members were not able to reach consensus on a proposal for WRC-15 agenda item 1.1 regarding the 4 400- 4 990 MHz frequency range and, therefore, forwards two views on how the FCC should handle this matter.

View A is supported by Aerospace and Flight Test Radio Coordinating Council, Aviation Spectrum Resources, Inc., The Boeing Company, Lockheed Martin Corp., Intelsat, SES Americom, EchoStar Corporation, and New Wave Spectrum Partners LLC.

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

VIEW A

**VIEW A: SUPPORT FOR THE U.S. PROPOSAL FOR NO CHANGE UNDER AI 1.1,
FOR THE FREQUENCY BAND 4400-4990 MHz IN ALL THREE ITU REGIONS**

The following WAC members are of the view that IWG-2 and the WAC should accept and endorse the current United States Proposal to WRC-15, under Agenda Item 1.1, for no change (NOC) in all three ITU Regions in the frequency band 4400-4990 MHz: Aerospace and Flight Test Radio Coordinating Council, Aviation Spectrum Resources, Inc., The Boeing Company, Lockheed Martin Corp., Intelsat, SES Americom, EchoStar Corporation, and New Wave Spectrum Partners LLC.

Document WAC/105, from NTIA, contains a draft proposal for NOC for the 4400-4990 MHz frequency range. The United States took a slightly modified version of this proposal to the CITEL PCC.II meeting in Medellin, Colombia in February 2015. This NOC proposal is now a Preliminary Proposal in CITEL. Now, IWG-2 is considering whether to accept, reject, or propose comments to the proposal the U.S. has in CITEL. There are two distinct segments in this frequency range – the 4400-4500 MHz band and the 4500-4800 MHz bands. The reasons for support of the NOC proposal for these two segments, as well as for the entirety of the band 4400-4990 MHz, are provided below.

4400-4500 MHz:

The frequency band 4200-4400 MHz is globally allocated to the aeronautical radionavigation service exclusively for use by radio altimeters. The operational and technical characteristics and protection criteria are provided in Recommendation ITU-R M.2059. Radio altimeters are an essential component of the safe operation of an aircraft, including precision approach, landing, ground proximity and collision avoidance systems. This band is the only frequency band used for this purpose. Aircraft relying on this frequency band transit across all three ITU regions and any restrictions placed on IMT in one region must be applied across all regions. Otherwise, the safety of passengers and aircraft cannot be guaranteed.

The CPM Report observes in section 4.1.9.4, “No studies were provided regarding protection of radio altimeters from unwanted emissions from IMT operating in the frequency band 4 400-4 900 MHz.” Because no studies were conducted, the safety of aircraft and passengers cannot be guaranteed. Aircraft routinely fly between countries and between regions, spectrum in the 4400-4500 MHz frequency band that is not globally harmonized could put the safety of those aircraft in question, particularly without appropriate studies.

Given the importance of protecting the flying public, the proponents of View A believe the current U.S. proposal for NOC across all three ITU Regions is the appropriate and justifiable proposal. Changes to the proposal suggested in View B (including limiting the proposal to Region 2 and inclusion of inappropriate “position” statements in the background) would be counterproductive and could backfire on U.S. interests in other WRC-15 agenda items.

4500-4800 MHz:

The 4500-4800 MHz band is globally allocated and harmonized to provide C-Band FSS downlinks. 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. As the CPM Report observes, Appendix 30B and its C-band plan “are envisaged and used as a supporting backbone to the telecommunication infrastructure of many developing countries, in particular those which are located in high rain fall zones/areas of the globe.” CPM Report, Section 1/1.1/4.1.9.3.

C-band spectrum is very valuable to satellite networks 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.

ITU-R studies conducted in Joint Task Group 4-5-6-7 to assess the technical feasibility of deploying IMT-Advanced systems in the 4500-4800 MHz bands 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.

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 4500-4800 MHz band is not feasible.

The CPM Report echoes these conclusions. Section 1/1.1/4.1.9.3 states without dispute that “[w]hen FSS earth stations are deployed in a typical ubiquitous manner or with no individual licensing, sharing between IMT-Advanced and FSS is not feasible in the same geographical area since no minimum separation distance can be guaranteed.” The same section of the report concludes that “[d]eployment of IMT-Advanced would constrain future FSS earth stations from

being deployed in the same area in the frequency band 4 500-4 800 MHz as shown by the studies.”

Given the importance of the Appendix 30B frequencies to the satellite aspirations of developing world countries, in particular, the View A proponents believe that the current U.S. proposal for NOC across all three ITU Regions is the appropriate and justifiable proposal. Changes to the proposal suggested in View B (including limiting the proposal to Region 2 and inclusion of inappropriate “position” statements in the background) would be counterproductive and could backfire on U.S. interests in other WRC-15 agenda items. If, however, there is to be a change to the U.S. proposal in the manner substantively suggested by the View B proponents, the View A proponents believe that language reflecting the conclusions of the CPM Report and the relevant ITU-R Report regarding the lack of feasibility between IMT and FSS in the 4500-4800 MHz band should be included into the background section of any such revised proposal.

4400-4990 MHz:

With two relatively small exceptions (i.e. 4825-4835 MHz and 4950-4990 MHz; see RR 5.442), the entire 4400-4990 MHz band is available for aeronautical mobile use on a worldwide basis. The band is utilized for a variety of Government-related systems and missions supported by AFTRCC Member Companies. Identification of the band for IMT would significantly constrain the operation and use of such systems.

Given the importance of the 4400-4990 MHz band for aeronautical use, the View A proponents believe that the current U.S. proposal for NOC across all three ITU Regions is the appropriate and justifiable proposal. Changes to the proposal suggested in View B (including limiting the proposal to Region 2 and inclusion of inappropriate “position” statements in the background) would be counterproductive and could backfire on U.S. interests in other WRC-15 agenda items.

VIEW B

**VIEW B: Proposed Edits to Proposal Regarding
4 400- 4 990 MHz for WRC-15 Agenda Item 1.1**

View B (attached) proposes revisions to the US proposal for the 4400-4990 MHz frequency range under WRC-15 agenda item 1.1, in response to WAC/105 (20.05.15).

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

The US proposal under WRC-15 agenda item 1.1 for 4400-4990 MHz, which proposes NOC in all 3 Regions, is based upon operations and future planning of the incumbent Fixed Service and Mobile Service applications in the 4 400-4 990 MHz frequency range.

In this proposed revision, important corrections have been made to existing text clarifying that the results of the studies are based upon IMT macro-cell deployments. Regarding another important issue, text regarding spectrum segmentation has also been corrected based upon CPM text.

Although co-frequency sharing may not be possible in the same geographic area, there was also an adjacent channel study which could be applicable where incumbent systems for aeronautical/ground mobile applications do not use the entire 4 400-4 990 MHz frequency band: in these countries, there could be spectrum within this frequency range available to potentially implement IMT systems on an adjacent channel.

Regarding the use of FSS systems in 4 500- 4 800 MHz, CPM text states: “Concerning sharing studies to assess the technical feasibility of deploying IMT-Advanced systems in the 4 400-4 990 MHz frequency band, that are utilized by the FSS and other services as stipulated in the RR, similar considerations on the results of sharing studies obtained in the 3 400-4 200 MHz frequency band are applicable to the 4 500-4 800 MHz frequency band.” Based upon these results, it appears that the existing regulatory conditions associated with the use of IMT in the 3 400 – 3 600 MHz band (e.g. RR. No 5.430A, 5.432A, 5.432B and 5.433A) could be utilized to protect FSS systems in the 4 500 – 4 800 MHz frequency band.

The proponents of View B realize that the United States cannot support identification of spectrum within this frequency range to IMT due to the current and planned use of these Fixed Service and Mobile Service applications. Therefore, we propose no change to the frequency range in Region 2.

However, other administrations have submitted proposals to regional bodies to identify spectrum within this frequency range for IMT in response to WRC-15 agenda item 1.1. Recognizing that other countries may not utilize the entire frequency range for incumbent services, View B does not make any proposals for the other Regions.

**ATTACHMENT TO VIEW B:
Proposed Edits to Proposal Regarding
4 400- 4 990 MHz for WRC-15 Agenda Item 1.1**

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)**;

Background Information: The 2012 World Radiocommunication Conference (WRC-12) recognized a need for additional radio spectrum to support the increasing mobile data traffic, and placed consideration of additional spectrum allocations for terrestrial mobile broadband applications on the agenda for WRC-15. The ITU established the Joint Task Group (JTG) 4-5-6-7 to develop sharing studies and draft CPM text for WRC-15 Agenda Item 1.1.

The 4400-4500 MHz and 4800-4990 MHz frequency bands are allocated to the fixed service (FS) and mobile service (MS) on a co-primary basis, while the 4500-4800 MHz frequency band is allocated on a co-primary basis to the fixed, fixed-satellite, and mobile services. ITU-R conducted compatibility studies between IMT and FS, as well as between IMT and MS systems operating in the 4 400-4 990 MHz frequency range. The [final](#) JTG 4-5-6-7 Chairman's Report ([document 4-5-6-7/715](#)) contains the [completed](#) studies between IMT systems and the FS in Annex 18; and [the preliminary](#) studies between IMT systems and the MS [are](#) in Annex 33. Study Group 5 (SG 5) approved the IMT-FS sharing studies at its November 10-11, 2014 meeting. The JTG did not agree to the IMT-MS sharing studies; consequently, SG 5 did not consider the IMT-MS sharing studies.

The ITU-R studies generally show significant separation distances (hundreds of kilometers) would be required between IMT [macro](#) stations and both FS and MS stations. These results show that co-frequency, ~~co-coverage~~ sharing is difficult or infeasible between FS or MS systems and IMT [macro cells](#) in the same geographical area. The IMT [macro cell](#)-MS sharing studies show extreme separation distance requirements, including distances exceeding 500 km. ~~Moreover, the JTG did not agree on the underlying premise of the MS-IMT studies for the 4 400-~~

~~4 500 and 4 800-4 990 MHz bands and that incumbent systems would have to vacate portions of the frequency range to allow use by IMT applications. The JTG studies noted this would result in loss of spectrum for the incumbent services. If systems in incumbent services, the FS and the MS, currently use the entire band, the use of adjacent channel solutions would result in a loss of spectrum for these services which may impact operations and future planning for the incumbent services.~~ The United States believes this spectrum segmentation would negatively affect operations and future planning of the incumbent FS and MS uses in the 4 400-4 990 MHz frequency range.

Given the results of the JTG studies, and the adverse effects on the incumbent services' operations by IMT use of the bands, the United States proposes no changes to the ITU Radio Regulations for the contiguous 4 400-4 990 MHz frequency range in ~~all three regions.~~ Region 2. ~~The United States realizes that other administrations have submitted proposals to regional bodies to identify this frequency range for IMT in response to agenda item 1.1. Recognizing the frequency range has already been allocated to the mobile service, the US does not make any proposals regarding other Regions in order to allow flexible use of the spectrum to meet different national administration priorities.~~

Proposal:

NOC USA/1.1/1

ARTICLE 5

Frequency allocations

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

2 700-4 800 MHz

Allocation to services		
Region 1	Region 2	Region 3
<u>*****</u>	4 400-4 500 FIXED MOBILE 5.440A	<u>*****</u>
<u>*****</u>	4 500-4 800 FIXED FIXED-SATELLITE (space-to-Earth) 5.441 MOBILE 5.440A	<u>*****</u>

4 800-5 570 MHz

Allocation to services		
Region 1	Region 2	Region 3
*****	4 800-4 990 FIXED MOBILE 5.440A 5.442 Radio astronomy 5.149 5.339 5.443	*****

Reasons: ITU-R studies show co-frequency sharing between IMT macro cells and incumbent fixed and mobile service systems is not feasible in the 4 400-4 990 MHz frequency range in the same geographical area without disrupting in countries where current and planned incumbent operations utilize the entire frequency range. Given operations and future planning of the incumbent FS and MS applications in the 4 400-4 990 MHz frequency range, the United States does not support identification to IMT in Region 2.