

**PLENARY MEETING**

**Addendum 4 to  
Document 6164(Add.13)-  
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29 August 2019  
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**Member States of the Inter-American Telecommunication Commission (CITEL)**

**PROPOSALS FOR THE WORK OF THE CONFERENCE**

**Agenda item 1.13**

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

**Part 4 – Frequency bands 45.5-47 GHz, 47-47.2 GHz, 47.2-48.2 GHz and  
48.2-50.2 GHz**

**45.5-47 GHz**

**BACKGROUND**

Resolution **238 (WRC-15)** invites ITU-R to conduct and complete in time for WRC-19 appropriate studies to determine the spectrum needs for the terrestrial component of IMT in the frequency range between 24.25 GHz and 86 GHz, as well as sharing and compatibility studies, taking into account the protection of services to which the frequency band is allocated on a primary basis, for the frequency bands:

- 24.25-27.5 GHz, 37-40.5 GHz, 42.5-43.5 GHz, 45.5-47 GHz, 47.2-50.2 GHz, 50.4-52.6 GHz, 66-76 GHz and 81-86 GHz, which have allocations to the mobile service on a primary basis; and
- 31.8-33.4 GHz, 40.5-42.5 GHz and 47-47.2 GHz, which may require additional allocations to the mobile service on a primary basis.

The Resolution further invites WRC-19 to consider, based on the results of these studies, additional spectrum allocations to the mobile service on a primary basis and identification of frequency bands for the terrestrial component of IMT. The bands to be considered are limited to part or all of the bands listed above.

The frequency band 45.5-47 MHz, or parts thereof, is allocated to the MS, the MSS, the RNS and the RNSS. The frequency bands adjacent to this frequency range are allocated to the ARS and ARSS. The details of these allocations and those of the adjacent bands are found in Article 5 of the RR.

Since no characteristics were provided for the RNS and the RNSS, the ITU-R has not conducted any sharing studies with the IMT systems.

On the other hand, there are no compatibility studies between the IMT systems in the 45.5-47 GHz band and the ARS/ARSS in the adjacent 47-47.2 GHz band. In this case, the compatibility of the IMT systems at 45.5-47 GHz with the ARS/ARSS at 47-47.2 GHz cannot be guaranteed.

### **47-47.2 GHz**

#### **BACKGROUND**

Resolution **238 (WRC-15)** invites ITU-R to conduct and complete in time for WRC-19 appropriate studies to determine the spectrum needs for the terrestrial component of IMT in the frequency range between 24.25 GHz and 86 GHz, as well as sharing and compatibility studies, taking into account the protection of services to which the frequency band is allocated on a primary basis, for the frequency bands:

- 24.25-27.5 GHz, 37-40.5 GHz, 42.5-43.5 GHz, 45.5-47 GHz, 47.2-50.2 GHz, 50.4-52.6 GHz, 66-76 GHz and 81-86 GHz, which have allocations to the mobile service on a primary basis; and
- 31.8-33.4 GHz, 40.5-42.5 GHz and 47-47.2 GHz, which may require additional allocations to the mobile service on a primary basis.

The Resolution further invites WRC-19 to consider, based on the results of these studies, additional spectrum allocations to the mobile service on a primary basis and identification of frequency bands for the terrestrial component of IMT. The bands to be considered are limited to part or all of the bands listed above.

The frequency band 47-47.2 GHz, or parts thereof, is allocated to the ARS and the ARSS. The details of these allocations and those of the adjacent bands are found in Article 5 of the RR.

In this frequency band, the ITU-R has not conducted any sharing studies between the IMT and the ARS/ARSS systems.

Considering the work done in the ITU-R and the solutions, including the points of view reflected in the CPM Report, the following proposals are made for the 45.5-47 GHz and 47-47.2 GHz frequency bands.

### **47.2-48.2 GHz**

#### **BACKGROUND**

Mobile broadband plays an increasingly crucial role in providing access to businesses and consumers worldwide. According to International Telecommunications Union (ITU) statistics, “Mobile-broadband subscriptions have grown more than 20% annually in the last five years and are expected to reach 4.3 billion globally by end 2017” while mobile-broadband prices as a percentage of GNI per capita halved between 2013 and 2016 worldwide. Incredible technological innovation has enabled the use of higher frequency bands (e.g. mmWave) to help meet the ever-increasing demand for mobile broadband.

The 47.2-50.2 GHz frequency range is shared on a co-primary basis between the Fixed, Fixed Satellite and Mobile Services in all three Regions. The Fixed Service allocation includes a global identification for high-altitude platform stations (“HAPS”) at 47.2-47.5 GHz paired with 47.9-48.2 GHz (No. 5.552A). As part of the preparations for WRC-19 agenda item 1.13, ITU-R carried out

extensive sharing and compatibility studies between IMT and the Fixed Satellite Service: these studies show that sharing between the terrestrial component of IMT and the Fixed Satellite Service is feasible with a large interference margin in the 47.2-50.2 GHz frequency range. The ITU-R Working Party 5C is studying sharing and compatibility of broadband HAPS with IMT for deployment of HAPS in this band with greater rain fade mitigation.

Finally, there is no need for a WRC Resolution specifying technical and operational constraints on IMT to be associated with this proposed identification for IMT. Operational characteristics that are used by cellular providers, such as base station *downtilt*, that change on time scales needed to minimize intra- and inter-cell interference and also guarantee quality of service should not be encoded in the Radio Regulations. Similarly, with regards to the use of the band by high density applications in the FSS (No. 5.561B), no condition is required to achieve a balance of spectrum between FSS and IMT since this is a national matter and hence should not be included in any WRC Resolution. With regards to protection of passive services in the adjacent band 50.2-50.4 GHz included in No. 5.340, no changes to Resolution 750 are necessary since No. 5.340.1 clearly states that “The allocation to the Earth exploration-satellite service (passive) and the space research service (passive) in the band 50.2-50.4 GHz should not impose undue constraints on the use of the adjacent bands by the primary allocated services in those bands.”

## **48.2-50.2 GHz**

### **BACKGROUND**

Mobile broadband plays an increasingly crucial role in providing access to businesses and consumers worldwide. According to International Telecommunications Union (ITU) statistics, “Mobile-broadband subscriptions have grown more than 20% annually in the last five years and are expected to reach 4.3 billion globally by end 2017” while mobile-broadband prices as a percentage of GNI per capita halved between 2013 and 2016 worldwide. Incredible technological innovation has enabled the use of higher frequency bands (e.g. mmWave) to help meet the ever-increasing demand for mobile broadband.

The 47.2-50.2 GHz frequency range is shared on a co-primary basis between the Fixed, Fixed Satellite and Mobile Services in all three Regions. The Fixed Service allocation includes a global identification for high-altitude platform stations (“HAPS”) at 47.2-47.5 GHz paired with 47.9-48.2 GHz (No. 5.552A). As part of the preparations for WRC-19 agenda item 1.13, ITU-R carried out extensive sharing and compatibility studies between IMT and the Fixed Satellite Service: these studies show that sharing between the terrestrial component of IMT and the Fixed Satellite Service is feasible with a large interference margin in the 47.2-50.2 GHz frequency range. The ITU-R Working Party 5C is studying sharing and compatibility of broadband HAPS with IMT for deployment of HAPS in this band with greater rain fade mitigation.

Finally, there is no need for a WRC Resolution specifying technical and operational constraints on IMT to be associated with this proposed identification for IMT. Operational characteristics that are used by cellular providers, such as base station *downtilt*, that change on time scales needed to minimize intra- and inter-cell interference and also guarantee quality of service should not be encoded in the Radio Regulations. Similarly, with regards to the use of the band by high density applications in the FSS (No. 5.561B), no condition is required to achieve a balance of spectrum between FSS and IMT since this is a national matter and hence should not be included in any WRC Resolution. With regards to protection of passive services in the adjacent band 50.2-50.4 GHz included in No. 5.340, no changes to Resolution 750 are necessary since No. 5.340.1 clearly states that “The allocation to the Earth exploration-satellite service (passive) and the space research

service (passive) in the band 50.2-50.4 GHz should not impose undue constraints on the use of the adjacent bands by the primary allocated services in those bands.”

## ARTICLE 5

### Frequency allocations

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

**NOC**      **IAP/6164A13A4/1**

40-47.5 GHz

Allocation to services		
Region 1	Region 2	Region 3
43.5-47	MOBILE 5.553 MOBILE-SATELLITE RADIONAVIGATION RADIONAVIGATION-SATELLITE 5.554	

**Reasons:** Studies were only performed between MSS and IMT-2020 systems in the 45.5-47 GHz band. The other incumbent services in 45.5-47 GHz were not studied. Therefore, it has not been demonstrated that the incumbent services can be protected, as required by Resolution **238 (WRC-15)** and No Change (NOC) is proposed for the 45.5-47 GHz frequency band.

**NOC**      **IAP/6164A13A4/2**

40-47.5 GHz

Allocation to services		
Region 1	Region 2	Region 3
47-47.2	AMATEUR AMATEUR-SATELLITE	

**Reasons:** Studies were not performed between IMT-2020 systems and incumbent services in the 47-47.2 GHz band. Therefore, it has not been demonstrated that the incumbent services can be protected, as required by Resolution **238 (WRC-15)** and No Change (NOC) is proposed for 47-47.2 GHz frequency band.

**MOD**      **IAP/6164A13A4/3**

40-47.5 GHz

Allocation to services		
Region 1	Region 2	Region 3
47.2-47.5	FIXED FIXED-SATELLITE (Earth-to-space) 5.552 MOBILE <u>ADD 5.H113</u> 5.552A	

**Reasons:** As studies show sharing with other services operating in 47.2-48.2 GHz is feasible, these modifications provide an identification for IMT in the frequency range 47.2 to 48.2 GHz. This facilitates harmonized worldwide bands for IMT, which are highly desirable in order to achieve global roaming and the benefits of economies of scale.

**MOD IAP/6164A13A4/4**

**47.5-51.4 GHz**

Allocation to services		
Region 1	Region 2	Region 3
<b>47.5-47.9</b> FIXED FIXED-SATELLITE (Earth-to-space) 5.552 (space-to-Earth) 5.516B 5.554A MOBILE <u>ADD 5.H113</u>	<b>47.5-47.9</b> FIXED FIXED-SATELLITE (Earth-to-space) 5.552 MOBILE <u>ADD 5.H113</u>	
	<b>47.9-48.2</b> FIXED FIXED-SATELLITE (Earth-to-space) 5.552 MOBILE <u>ADD 5.H113</u> 5.552A	

**Reasons:** As studies show sharing with other services operating in 47.2-48.2 GHz is feasible, these modifications provide an identification for IMT in the frequency range 47.2 to 48.2 GHz. This facilitates harmonized worldwide bands for IMT, which are highly desirable in order to achieve global roaming and the benefits of economies of scale. Identification of the band 47.5-48.2 GHz for IMT. Identification of the band 47.5-48.2 GHz to IMT will help meet the need for additional spectrum in the bands above 24 GHz.

**ADD IAP/6164A13A4/5**

**5.H113** The frequency band 47.2-48.2 GHz is identified for use by administrations wishing to implement International Mobile Telecommunications (IMT). This identification does not preclude the use of this frequency band by any application of the services to which it is allocated, and does not establish any priority in the Radio Regulations. (WRC-19)

**Reasons:** Identification of the band 47.2-48.2 GHz in Region 2 for IMT. Identification of the band 47.2-48.2 GHz to IMT will help meet the need for additional spectrum in the bands above 24 GHz. Also, harmonized worldwide bands for IMT enable global roaming and the benefits of economies of scale as the same user equipment can be used to serve the global market.

**NOC IAP/6164A13A4/6**

**47.5-51.4 GHz**

Allocation to services		
Region 1	Region 2	Region 3
<b>48.2-48.54</b> FIXED FIXED-SATELLITE (Earth-to-space) 5.552 (space-to-Earth) 5.516B 5.554A 5.555B MOBILE	<b>48.2-50.2</b> FIXED FIXED-SATELLITE (Earth-to-space) 5.516B 5.338A 5.552 MOBILE	

<b>48.54-49.44</b> FIXED FIXED-SATELLITE (Earth-to-space) 5.552 MOBILE 5.149 5.340 5.555	
<b>49.44-50.2</b> FIXED FIXED-SATELLITE (Earth-to-space) 5.338A 5.552 (space-to-Earth) 5.516B 5.554A 5.555B MOBILE	5.149 5.340 5.555

**Reasons:** No change would avoid any potential impacts to existing services.