**WRC-19 Agenda Item 1.13**

**(50.4 – 52.6 GHz)**

IWG-2 members were not able to reach consensus on a proposal for WRC-19 Agenda Item 1.13 regarding the identification of frequency bands for the future development of International Mobile Telecommunications (IMT), in accordance with Resolution 238 (WRC-15) for the frequency range 50.4 – 52.6 GHz. The views on the appropriate regulatory changes the FCC should support are provided.

View A is supported by: AT&T, CTIA, Ericsson, GSMA, Intel, Nokia, Samsung, Sprint, T-Mobile, Verizon

View B is supported by: Echostar Corporation, Lockheed Martin, SES Americom, Inc., WorldVu Satellites Ltd. d/b/a OneWeb

VIEW A

**UNITED STATES OF AMERICA**

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

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

**Background**:

Mobile broadband plays an increasingly crucial role in providing access to businesses and consumers worldwide. According to International Telecommunications Union (ITU) statistics, “Mobile-broadband subscriptions have grown more than 20% annually in the last five years and are expected to reach 4.3 billion globally by end 2017.” while “Mobile-broadband prices as a percentage of GNI per capita halved between 2013 and 2016 worldwide.[[1]](#footnote-2) Incredible technological innovation has enabled the use of higher frequency bands (e.g. mmWave) to help meet the ever-increasing demand for mobile broadband.  It is important to note that the properties of higher frequency bands, such as shorter wavelength, would better enable the use of advanced antenna systems, including multiple-input and multiple-output (MIMO) and beam-forming techniques in supporting enhanced mobile broadband.

The frequency range 50.4-52.6 GHz, or parts thereof, is allocated to the Fixed Service (FS), Fixed Satellite Service (FSS) and Mobile Service (MS). The frequency bands adjacent to this frequency range are allocated to the Earth Exploration Satellite Service (EESS) (passive) and Space Research Service (SRS) (passive). The results of studies between IMT-2020 and FSS showed that sharing was feasible with a large margin. Studies between IMT-2020 and FSS in these frequencies under agenda item 9.1/Issue 9.1.9 showed even better results; CPM text for Issue 9.1.9 states “separation distances between FSS earth stations and IMT base station and IMT user equipment are 260 and 330 metres, respectively. These values may be further reduced by consideration of propagation losses other than free space, the pointing of the IMT-2020 antennas in directions other than that of the FSS earth station, and the high likelihood that the antenna pattern of the FSS earth station is more directive than the 29-25 log *θ* pattern assumed in the analysis.”

With respect to the EESS (passive), Radio Regulations No. 5.340.1 applies.

5.340.1 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.

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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.

**Proposal:**

ARTICLE 5

Frequency allocations

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

**MOD USA/1.13/1**

47.5-51.4 GHz

|  |  |  |
| --- | --- | --- |
| Allocation to services | | |
| Region 1 | Region 2 | Region 3 |
| 50.4-51.4 FIXED  FIXED-SATELLITE (Earth-to-space) 5.338A  MOBILE ADD 5.AI113  Mobile-satellite (Earth-to-space) | | |

**Reasons:** Taking into account No. 5.340.1, sharing is feasible between IMT-2020 and other services in 50.4-51.4 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 USA/1.13/2**

51.4-55.78 GHz

|  |  |  |
| --- | --- | --- |
| Allocation to services | | |
| Region 1 | Region 2 | Region 3 |
| 51.4-52.6 FIXED 5.338A  MOBILE ADD 5.AI113  5.547 5.556 | | |

**Reasons:** Taking into account No. 5.340.1, sharing is feasible between IMT-2020 and other services in 51.4-52.6 GHz. This facilitates harmonized worldwide bands for IMT, which are highly desirable in order to achieve global roaming and the benefits of economies of scale.

**ADD USA/1.13/3**

5.A113 The frequency band 50.4-52.6 GHz is identified for use by administrations wishing to implement the terrestrial component of International Mobile Telecommunications (IMT). This identification does not preclude the use of this frequency band by any application of the services to which they are allocated and does not establish priority in the Radio Regulations.

**Reasons:** This facilitates harmonized worldwide bands for IMT, which are highly desirable in order to achieve global roaming and the benefits of economies of scale.

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VIEW B

**United States of America**

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)****;*

**Background**:

Resolution **238 (WRC-15)** calls for 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.

It is important to note that the properties of higher frequency bands, such as shorter wavelength, would better enable the use of advanced antenna systems, including multiple-input and multiple-output (MIMO) and beam-forming techniques in supporting enhanced mobile broadband.

Spectrum needs studies conducted in response to Resolution 238 determined that 6.1 GHz of spectrum is needed for the terrestrial component of IMT in the frequency range 37-52.6 GHz. The United States, contrary to studies within the ITU-R, has proposed to make 7.5 GHz of spectrum in this range available to the terrestrial component of IMT, in the frequency ranges 37-43.5 GHz and 47.2-48.2 GHz.

Further, several compatibility studies between the EESS/SRS (passive) in the frequency band 50.2-50.4 GHz and IMT in the frequency band 47.2-50.2 GHz have been conducted. All of these studies showed that IMT systems will cause exceedance of the EESS (passive) protection criteria, especially if IMT deployments by multiple operators are considered.

Data from EESS (passive) systems in this band plays a major role in many public safety activities such as:

– identifying areas at risk for natural disasters;

– forecasting weather and predicting climate change;

– detecting and tracking tsunamis, hurricanes, tornadoes, oil leaks, etc.;

– providing alerting/warning information of such disasters;

– assessing the damage caused by such disasters;

– providing information for planning relief operations; and

– monitoring recovery from a disaster.

This band is also being utilized by the Fixed Satellite Service for the deployment of both gateways and user terminals. Additionally, studies have shown the sharing is not feasible between FSS user terminals with undetermined locations and ubiquitous IMT.

**Proposal:**

Considering the potential impacts to EESS (passive), the infeasibility of sharing between FSS user terminals and IMT, and that the United States has proposed spectrum for the terrestrial component of IMT that exceeds, in aggregate, the spectrum needs, as determined by ITU-R studies, for the terrestrial component of IMT in the 37-52.6 GHz frequency range, NOC is proposed for the 50.4-52.6 GHz frequency band.

ARTICLE 5

Frequency allocations

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

NOC USA/4827A13/1

47.5-51.4 GHz

|  |  |  |
| --- | --- | --- |
| Allocation to services | | |
| Region 1 | Region 2 | Region 3 |
| \* \* \* | | |
| 50.4-51.4 FIXED  FIXED-SATELLITE (Earth-to-space) 5.338A  MOBILE  Mobile-satellite (Earth-to-space) | | |

**Reasons:** Because spectrum needs have been met and exceeded in other bands in the 37-52.6 GHz frequency range, and to protect EESS (passive) in the 50.2-50.4 GHz band and due to infeasibility of sharing between FSS user terminals and IMT, NOC is proposed for the 50.4-52.6 GHz frequency band.

NOC USA/4827A13/2

51.4-55.78 GHz

|  |  |  |
| --- | --- | --- |
| Allocation to services | | |
| Region 1 | Region 2 | Region 3 |
| 51.4-52.6 FIXED 5.338A  MOBILE  5.547 5.556 | | |
| 52.6-54.25 EARTH EXPLORATION-SATELLITE (passive)  SPACE RESEARCH (passive)  5.340 5.556 | | |
| 54.25-55.78 EARTH EXPLORATION-SATELLITE (passive)  INTER-SATELLITE 5.556A  SPACE RESEARCH (passive)  5.556B | | |

**Reasons:** Because spectrum needs have been met and exceeded in other bands in the 37-52.6 GHz frequency range, and to protect EESS (passive) in the 50.2-50.4 GHz band and due to infeasibility of sharing between FSS user terminals and IMT, NOC is proposed for the 50.4-52.6 GHz frequency band.

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1. ICT Facts and Figures 2017, p 4 and 5. See: https://www.itu.int/en/ITU-D/Statistics/Documents/facts/ICTFactsFigures2017.pdf [↑](#footnote-ref-2)