**UNITED STATES OF AMERICA**

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

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

**Background Information**:

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

As part of the preparations for WRC-19 agenda item 1.13, ITU-R studies have concluded that sharing between IMT and other incumbent services operating within the 37 to 43.5 GHz frequency range is feasible. For example, there were large interference margins for Fixed Satellite Service (FSS), Mobile Satellite Service (MSS) and Broadcasting Satellite Service (BSS) operating in the space to Earth direction in 37-42.5 GH, with smaller margins in the Earth to space direction in 42.5-43.5 GHz, Protection for Earth Exploration Satellite Service (EESS) and Space Research Service (SRS) operating in the 37-38 GHz and 40-40.5 GHz bands as well as the Radio Astronomy Service (RAS) operating in the 42.5-43.5 GHz bands could be considered at the national level due to relatively small separation distances. For Fixed Service (FS) operations in 37-43.5 GHz, studies showed a few cases of interference when the FS system pointed directly across the IMT deployment area, which is most likely not a realistic scenario as FS links deployed in a dense urban environment would be designed to avoid the clutter and noisy conditions. With respect to passive services in adjacent band, “we note that the -10dBW power limit was adopted to protect passive sensors in the 36-37 GHz band in accordance with ITU Resolution 752 (WRC-07).[1] Because this limit was adopted by the ITU to protect passive sensors from harmful interference from fixed and mobile transmitters in the 36-37 GHz band, we conclude that it will provide appropriate protection to the passive sensors from transmitters in the adjacent band.” [[2]](#footnote-2)

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

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

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

**Proposal**:

ARTICLE 5

**Frequency allocations**

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

**MOD** **USA/1.13/1**

|  |  |  |
| --- | --- | --- |
| 34.2-40 GHz | | |
| Allocation to services | | |
| Region 1 | Region 2 | Region 3 |
| 37-37.5 FIXED  MOBILE except aeronautical mobile ADD 5.IMT  SPACE RESEARCH (space-to-Earth)  5.547 | | |
| 37.5-38 FIXED  FIXED-SATELLITE (space-to-Earth)  MOBILE except aeronautical mobile ADD 5.IMT  SPACE RESEARCH (space-to-Earth)  Earth exploration-satellite (space-to-Earth)  5.547 | | |
| 38-39.5 FIXED  FIXED-SATELLITE (space-to-Earth)  MOBILE ADD 5.IMT  Earth exploration-satellite (space-to-Earth)  5.547 | | |
| 39.5-40 FIXED  FIXED-SATELLITE (space-to-Earth) 5.516B  MOBILE ADD 5.IMT  MOBILE-SATELLITE (space-to-Earth)  Earth exploration-satellite (space-to-Earth)  5.547 | | |

|  |  |  |
| --- | --- | --- |
| 40-47.5 GHz | | |
| Allocation to services | | |
| Region 1 | Region 2 | Region 3 |
| 40-40.5 EARTH EXPLORATION-SATELLITE (Earth-to-space)  FIXED  FIXED-SATELLITE (space-to-Earth) 5.516B  MOBILE ADD 5.IMT  MOBILE-SATELLITE (space-to-Earth)  SPACE RESEARCH (Earth-to-space)  Earth exploration-satellite (space-to-Earth) | | |
| 40.5-41  FIXED  FIXED-SATELLITE  (space-to-Earth)  BROADCASTING  BROADCASTING-SATELLITE  MOBILE ADD 5.IMT  5.547 | 40.5-41  FIXED  FIXED-SATELLITE  (space-to-Earth) 5.516B  BROADCASTING  BROADCASTING-SATELLITE  MOBILE ADD 5.IMT  Mobile-satellite (space-to-Earth)  5.547 | 40.5-41  FIXED  FIXED-SATELLITE  (space-to-Earth)  BROADCASTING  BROADCASTING-SATELLITE  MOBILE ADD 5.IMT  5.547 |
| 41-42.5 FIXED  FIXED-SATELLITE (space-to-Earth) 5.516B  BROADCASTING  BROADCASTING-SATELLITE  MOBILE ADD 5.IMT  5.547 5.551F 5.551H 5.551I | | |
| 42.5-43.5 FIXED  FIXED-SATELLITE (Earth-to-space) 5.552  MOBILE except aeronautical mobile ADD 5.IMT  RADIO ASTRONOMY  5.149 5.547 | | |

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

**ADD USA/1.13/2**

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

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

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-1)
2. US 2nd R&O See: https://apps.fcc.gov/edocs\_public/attachmatch/FCC-16-89A1.pdf [↑](#footnote-ref-2)
3. See: https://apps.fcc.gov/edocs\_public/attachmatch/FCC-16-89A1.pdf [↑](#footnote-ref-3)
4. https://circabc.europa.eu/sd/a/fe1a3338-b751-43e3-9ed8-a5632f051d1f/RSPG18-005final-2nd\_opinion\_on\_5G.pdf [↑](#footnote-ref-4)