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PRELIMINARY VIEWS FOR WRC-19

AGENDA ITEM 1.13

(Item on the Agenda: 3.1 (SGT-1))

(Document submitted by CITEL Member States)

SGT-1

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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

Mobile broadband plays a crucial and fundamental role in providing access to information for businesses and consumers worldwide. According to ITU statistics, published on July 2016, "In developing countries, the number of mobile-broadband subscriptions continues to grow at double digit rates, reaching a penetration rate of close to 41 percent. The total number of mobile-broadband subscriptions is expected to reach 3.6 billion by end 2016." [1]

Mobile broadband users are also demanding higher data rates and are increasingly using mobile devices to access audio-visual content. The mobile industry continues to drive technological innovations in order to meet these evolving user demands. Research and development efforts from both industry as well as academia are facilitating the use of spectrum in bands above 6 GHz for mobile broadband. These efforts span the globe. Some countries and regions have also begun making spectrum available for mobile broadband applications in higher frequency bands in order to provide the benefits of these innovations to businesses and consumers worldwide.

The evolution of International Mobile Telecommunications (IMT), which provides wireless telecommunication services on a worldwide scale, has contributed to global economic and social development. IMT systems are now being evolved to provide applications such as enhanced mobile broadband, massive machine-type communications and ultra-reliable and low-latency communications. Many of these ultra-low latency and very high bit rate applications will require larger contiguous blocks of spectrum than those available in the frequency bands currently identified for IMT. This has resulted in the need to address higher frequency bands to find these larger blocks of spectrum in the bands indicated in Resolution **238 (WRC-15)**,

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. The success of these usage scenarios, in both developed and developing countries, will rely on both spectrum availability for the terrestrial IMT-2020 systems and the support of high capacity backhaul capabilities (including fiber, wireless, satellite and microwave solutions). Recognizing the need to consider the spectrum in the range 24.25 to 86 GHz to support the terrestrial component of IMT in higher frequency bands, while protecting existing services, World Radiocommunication Conference (WRC) 2015 approved WRC-19 agenda item 1.13. ITU-R, standards development organizations, and industry continue to progress the work on the development of IMT-2020.

The central topic is the need to conceive, from the outset, high frequency bands that are harmonized enough to foster economies of scale and meet the short-, medium- and long-term spectrum requirements, and to incorporate the use of new technologies that can benefit from the physical features of various frequency ranges, whose bandwidths would enable lower latencies and higher transmission rates for the transmission and exchange of mobile data.

[1] http://www.itu.int/en/ITU-D/Statistics/Documents/facts/ICTFactsFigures2016.pdf

Beyond the results of the last WRC-15, the challenge for the future is now to focus efforts on the 24.25 GHz to 86 GHz frequency range. This is a great opportunity to meet the technical and spectral needs for the future development of IMT-2020 systems, better known as 5G. [Source: Doc. 4297]

WRC-19 agenda item 1.13 (Resolution 238 (WRC-15)) decided to study candidate frequency bands in portion(s) of the frequency range between 24.25 and 86GHz for IMT identification. In order to better understand the situation in the Americas region with-respect-to this agenda item, a "Questionnaire on Usage and Future Plan of Frequency Bands Under Study in Agenda Item 1.13 of WRC-19, in Americas Region" was proposed, and responses from eight administrations were received and the compilation of the answers were compiled in document (CCP.II- RADIO/doc.4310/17) in the XXIX PCCII meeting (Orlando, Florida).

ISSUES

- To determine the spectrum needs for the terrestrial component of IMT (IMT-2020) in the frequency range between 24.25 GHz and 86 GHz.
- To assess the sharing/compatibility (co- and adjacent-band) of terrestrial IMT-2020 with systems of other services with allocations in each of the bands between 24.25 GHz and 86 GHz listed above.
- Based on these spectrum needs and sharing/compatibility studies, to determine which bands or portions of the bands listed above should be candidates for identification for the terrestrial component of IMT including the bands in which primary allocation to mobile will be required.
- Since some bands indicated for study under AI 1.13 are common to those indicated for a) HAPS under AI 1.14, b) non-GSO under AI 1.6 and c) GSO feeder links under AI 9.1.9, linkages to these items need to be considered including the details in the respective associated Resolutions.

PRELIMINARY VIEWS

Brazil

Agenda Item 1.13 is key to the future development of IMT systems for the delivery of IMT-2020 services. The aim of IMT-2020 is to create a more 'hyper connected' society by more comprehensively, and intelligently, integrating LTE, Wi-Fi and cellular IoT technologies, together with at least one new IMT-2020 radio interface. This will allow mobile networks to dynamically allocate resources to support the varying needs of a diverse set of connections – ranging from industrial machinery in factories, to automated vehicles as well as smartphones. A central component in the evolution of all mobile technology generations has been the use of increasingly wide frequency bands to support higher speeds and larger amounts of traffic. IMT-2020 is no different, ultra-fast IMT-2020 services will require large amounts of spectrum including above 24 GHz where wide bandwidths are more readily available. Spectrum above 24 GHz is well recognized worldwide as being the key component for the data intensive IMT-2020 services. Without them, IMT-2020 won't be able to deliver significantly faster data speeds or support projected extensive mobile traffic growth.

With that in mind, we support appropriate sharing and compatibility studies under Agenda Item 1.13 in the bands 24.25-27.5 GHz, 31.8-33.4 GHz, 37-43.5 GHz, 45.5-50.2 GHz, 50.4-52.6 GHz, 66-76 GHz and 81-86 GHz. Such studies should consider that the significant extra capacity of IMT-2020 systems will need to be perfectly integrated with heterogenous networks, including fibre, satellite and microwave systems, taking into account their specific benefits which are crucial to developing countries.

The Brazilian Administration is analyzing the current status of all the bands listed under agenda item 1.13. As such, preliminary studies conducted by the Brazilian Administration and submitted to the ITU-R TG 5/1, using propagation models, parameters and modelling provided by the relevant groups in the ITU, suggest that sharing is feasible between IMT and other services. Further studies are ongoing considering other services and applications.

Based on these studies Brazil is considering support identification of the bands 24.25-27.5 GHz and 37-43.5 GHz, or parts thereof. Additionally, these two bands, known as the 26 GHz and the 40 GHz bands,are the ones for which more interest has been expressed in the ongoing discussions at the ITU-R TG 5/1.

Canada

Canada supports and is participating in the studies under WRC-19 agenda item 1.13, taking place in ITU-R TG 5/1, in the following 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.

Canada is of the view that passive services in frequency bands adjacent to those under study in AI 1.13 should be protected taking into account the relevant provisions of the Radio Regulations.

Colombia

While all bands remain suitable for identification at this stage, Colombia would like to make the following observations regarding the lower portions of the range, from 24.25 GHz to 43.5 GHz:

- Responses received until the previous meeting of CCP.II to the questionnaire show that, except for a few cases, there are either no services licensed in these bands or the services belong to the fixed service category. When they belong to other service categories (such as FSS), most of them occupy a relatively small (500MHz or less) bandwidth with-respect-to the total range being considered for study (e.g. 3.25 GHz for 24.25GHz – 27.5GHz).

- Other regions initiated discussions on suitable bands among the lists of candidate bands. As an example, Europe ([2], [3]) identified the 24.25 GHz – 27.5 GHz as a “pioneer band”, while other bands up to 43.5 GHz have been positively considered. With the view of seeking not only regional but global frequency harmonization to the possible extent, it is positive to take under consideration activities of other regions.

- The lower portions of the range would provide comparatively more suitable propagation characteristics for deployment compared to the upper portions, considering that some installations could cover outdoor and indoor environments with some Non-Line-of-Sight (NLoS) situations.

Based on the considerations above, Colombia is of the initial view that the lower portions of the frequency range (from 24.25 GHz to 43.5 GHz) provide good opportunities in terms of availability, technical performance and potential for global harmonization. Colombia would like to invite other members to consider this initial view for consideration and collaboration towards a regional (and possibly global) harmonization of the frequency bands.

USA

Support studies under WRC-19 agenda item 1.13 and take appropriate action based on the results of these sharing and compatibility studies in accordance with Resolution 238 in the following 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.

Mexico

Regional harmonization for this item on the agenda should consider similar approaches in terms of allocations and plans for the radio spectrum, in order to favor cost reduction and encourage the development of a sustainable ecosystem for the deployment of IMT systems.

A public survey is currently being prepared in Mexico to identify the IMT spectrum requirements from 24.25 GHz to 86 GHz. To this end, we plan to study the discussions and documents issued by the different working groups of both the International Telecommunication Union (ITU) and CITEL regarding regional and global spectral requirements for IMT at the frequencies of 24.25 to 86 GHz.

For this reason, we deem it necessary to conduct, in the best terms possible, the planned studies on sharing and compatibility in the bands agreed on through Resolution 238 (WRC-15), i.e., the segments of 24.25-27.5 GHz, 31.8-33.4 GHz, 37-43.5 GHz, 45.5-50.2 GHz, 50.4-52.6 GHz, 66-76 GHz and 81-86 GHz, in order for the CITEL administrations to make better, more fully-grounded decisions to achieve regional or global harmonization for the future development of IMT-2020 systems.

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