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| **World Radiocommunication Conference (WRC-15)Geneva, 2–27 November 2015** |  |
| **INTERNATIONAL TELECOMMUNICATION UNION** |  |
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| PLENARY MEETING | **Addendum 24 toDocument 70-E** |
|  | **16 October 2015** |
|  | **Original: English** |
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| Brazil (Federative Republic of) |
| Proposals for the work of the conference |
|  |
| Agenda item 10 |

10to recommend to the Council items for inclusion in the agenda for the next WRC, and to give its views on the preliminary agenda for the subsequent conference and on possible agenda items for future conferences, in accordance with Article 7 of the Convention,

Background

Information and Communication Technologies (ICTs) have been playing a major role in the transformations of our societies in the last few decades, whether it is considered social, cultural or economic aspects. ICTs are not only changing the way we live and interact with others, but mainly how productive processes are evolving in global dimensions. Working processes remodelled in private and public sectors, hyperconnected economies, new business opportunities, e-government – all of those are just a few examples of how new technologies impacts on social and economic organizations.

In 2020 and beyond, wireless communication services will have an even bigger impact on our economies due to improved quality of service and user experience, faster and ubiquitous networks, and new market segments such as machine-to-machine (M2M) and Internet of Things (IoT). A massive amount of wireless devices and sensors measuring the environment, communicating data and status reports will help to reduce energy and water consumption, while improving the management of critical infrastructure. High-resolution security cameras monitoring public spaces, wireless sensors for biological and chemical hazard detection, smart roads (vehicular-to-road communication), vehicle traffic control, and automated processes will drive efficiency and productivity, thereby affecting the way buildings, cities, logistics and factories are run.

Future mobile services and applications will also expand into new market segments, such as smart grid, e-health, telemedicine, new tools for distance learning, online gaming (wirelessly delivered with high-resolution graphics), 4K and 8K video mobile streaming services (even on a crowded subway/bus and in public places), virtual reality, and augmented reality. Big Data analytics is an ascending area, making it possible to identify and combine relevant data to enable businesses for better decision-making and execution.

All the applications mentioned above, as well as others still unforeseen, will continue to drive the mobile broadband data traffic volume of future. The next generation of mobile communication technologies can support future mobile traffic demands by operating in efficient and wider bandwidths. Contiguous wide system bandwidth (approximately 500 MHz to 1 GHz or more) will be considered as a critical factor for efficient delivery of ultra-high end user bit rates.

Recommendation ITU‑R M.2083 clearly recommends to consider higher frequency bands above 6 GHz to support the usage scenarios requiring several hundred MHz up to at least 1 GHz of IMT for 2020 and beyond. Also, Report ITU‑R M.2376 summarizes theoretical and experimental analysis of feasibility of IMT deployment at the bands above 6 GHz and concludes it is feasible to use higher frequency bands between 6 GHz and 100 GHz for IMT.

In addition, many experiments conducted recently (and many others currently underway) with positive results from both industry and academia researches are emphasizing on the possible usage and benefits of implementing IMT in higher frequency bands in the future.

The Ka band is currently used widely by Brazil and other administrations in Region 2 for national security systems, social coverage and a large number of satellite communication services. Billions have already been invested in satellite communications networks, which are often used as a basis for other broadband access technologies (e.g. backhaul links for IMT) and massive investment is being made in new systems and networks employing state-of-the-art technology for operation in the Ka band and higher bands currently allocated to satellite service. The total investment in satellites covering Brazil represents an amount of USD 4billion.

The Brazilian Administration proposes an agenda item for WRC-19 to study identification of additional spectrum for IMT as follow.

ADD B/70A24/1

Draft New Resolution [B-A10-2019] (WRC 15)

Agenda for the 2019 World Radiocommunication Conference

The World Radiocommunication Conference (Geneva, 2015),

…

resolves

…

1[IMT6GHz] to consider the identification of frequency ranges to IMT in the range between 10 GHz and 76 GHz, in accordance with Resolution [B-B10] (WRC 15);

**Reasons:** To add an item to the WRC‑19 agenda enabling consideration additional frequency bands to IMT in the frequency range 10-76 GHz, while ensuring compatibility with existing services.

ADD B/70A24/2

Draft New Resolution [B-B10] (WRC 15)

Studies on identification of frequency range between 10 GHz and 76 GHz for the future development of terrestrial component of IMT for 2020 and beyond

The World Radiocommunication Conference (Geneva, 2015),

considering

*a)* that International Mobile Telecommunications (IMT) systems have been the main method of delivering wide area mobile broadband applications;

*b)* that IMT and other mobile broadband systems contribute to global economic and social development by providing a wide range of multimedia applications, such as mobile telemedicine, teleworking, distance learning and other applications;

*c)* that IMT and other mobile broadband systems have helped reduce the digital divide between urban and rural areas, including underserved communities;

*d)* that in many developing markets the main delivery mechanism for broadband access is expected to be through mobile devices;

*e)* that adequate and timely availability of spectrum and supporting regulatory provisions is essential to support the future growth of IMT and other mobile broadband systems;

*f)* that there is a need to continually take advantage of technological developments in order to increase the efficient use of spectrum and facilitate spectrum access;

*g)* that IMT-2020 systems are envisaged to expand and support diverse usage scenarios that will extend beyond the current IMT systems;

*h)* that harmonized worldwide bands and harmonized frequency arrangements for IMT and other mobile broadband systems are highly desirable in order to achieve global roaming and the benefits of economies of scale;

*i)* that IMT and mobile broadband systems in the year 2020 and beyond, are envisaged to expand and support diverse usage scenarios and applications;

*j)* that in conjunction with increased data-traffic demand, there has been a requirement for improved user experience, high reliability communications, and low latency;

*k)* that for very high data rate mobile broadband systems (e.g. throughput of up to 1 Gbits/s), and to minimize infrastructure, user device complexity and economic factors, wider bandwidths are required;

*l)* that for very high data rates mobile broadband systems, wider bandwidths facilitate higher energy efficiency, thereby mitigating the environmental impact of such future high-speed mobile broadband networks;

*m)* that many countries have not yet made available spectrum already identified in the Radio Regulations for IMT, for various reasons, including the use of this spectrum by other systems and services;

*n)* that frequency-related matters for mobile broadband in frequency bands below 6 GHz were studied in preparation for WRC‑15;

*o)* that there is a need to ensure the protection of incumbent primary services when considering frequency bands for possible additional allocations to any service;

*p)* that spectrum in higher bands can support broader channel bandwidths than available in lower frequency bands, which would be better suited to deliver emerging high data rate services,

noting

*a)* that IMT encompasses both IMT-2000 and IMT-Advanced [and IMT-2020] collectively, as described in Resolution ITU‑R 56;

*b)* that Resolution ITU‑R 57 addresses the principles for the process of development of IMT-Advanced, and Question ITU‑R 77‑7/5 considers the needs of developing countries in the development and implementation of IMT;

*c)* that Question ITU‑R 229‑3/5 seeks to address the further development of IMT;

*d)* that Recommendations ITU‑R M.1457 and ITU‑R M.2012 contain detailed specifications of the terrestrial radio interfaces of IMT-2000 and IMT-Advanced, respectively;

*e)* that there are ongoing studies within ITU‑R on the propagation characteristics for mobile systems in higher frequency bands;

*f)* that Report ITU‑R M.2290, on future spectrum requirements estimate for terrestrial IMT, predicted total global spectrum requirements for 2020 to be in the range of 1 340 MHz and 1 960 MHz for lower and higher user density settings, respectively;

*g)* that Report ITU‑R M.2370, analyses trends impacting future IMT traffic growth beyond the year 2020 and estimates global traffic demands for the period 2020 to 2030;

*h)* that Report ITU‑R M.2320 provides information on the technology trends of terrestrial IMT systems considering the time-frame 2015-2020 and beyond;

*i)* that Report ITU‑R M.2376 has studied the technical feasibility of deploying IMT in frequency bands above 6 GHz;

*j)* that Recommendation ITU‑R M.2083 defines the framework and overall objectives of the future development of IMT for 2020 and beyond,

recognizing

*a)* that there is a fairly long lead time between the identification of frequency bands by world radiocommunication conferences and the deployment of systems in those bands, and timely availability of spectrum is therefore important to support the development and harmonization of IMT and other terrestrial mobile broadband applications;

*b)* that IMT is an application in the mobile service;

*c)* that although many frequency ranges are identified for IMT in footnotes of Article **5**, and global harmonization is encouraged, their implementation is dependent on each country’s national regulations and priorities and therefore the entire identified range may not be available;

*d)* the use of relevant parts of the spectrum by other radiocommunication services, many of which involve significant investment in infrastructure or represent significant social benefit, and the evolving needs of these services,

resolves to invite ITU‑R

1 to conduct and complete in time for WRC‑19 the appropriate studies to determine the spectrum requirements for the terrestrial component of IMT in the frequency range between 10 GHz and 76 GHz, taking into account:

– technical and operational characteristics of IMT systems that would operate in this frequency range, including the evolution of IMT through advances in technology and spectrally-efficient techniques, and their deployment;

– the needs of developing countries;

– the time-frame in which spectrum would be needed;

2 to conduct and complete in time for WRC‑19 the appropriate sharing and compatibility studies, taking into account the protection of existing services, for the frequency bands:

– 10-10.45 GHz[[1]](#footnote-1)1, 23.15-23.6 GHz, 24.25-27 GHz, 37-40.5 GHz, 45.5-47 GHz, 47.2-50.2 GHz, 50.4-52.6 GHz and 59.3-76 GHz, which have allocations to the mobile service on a primary basis; and

– 31.8-33 GHz, including possible additional allocation to the mobile service on a primary basis in this band,

further resolves

1 to invite CPM19‑1 to define the date by which technical and operational characteristics needed for sharing and compatibility studies are to be available, to ensure that studies referred to in *resolves to invite ITU‑R* can be completed in time for consideration at WRC‑19;

2 to invite WRC‑19 to consider the results of the above studies and take appropriate actions, including identification of frequency bands to the terrestrial component of IMT,

invites administrations

to participate actively in these studies by submitting contributions to ITU‑R.

**Reasons:** To provide guidance for the work under the proposed WRC‑19 agenda item.

SUP B/70A24/3

RESOLUTION 808 (WRC‑12)

Preliminary agenda for the 2018 World Radiocommunication Conference

**Reasons:** This Resolution must be suppressed, as WRC‑15 will create a new Resolution that will include the agenda for WRC‑19.

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1. 1 The band 10-10.45 GHz applies to countries listed in footnote 5.480. [↑](#footnote-ref-1)