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| **World Radiocommunication Conference (WRC-19) Sharm el-Sheikh, Egypt, 28 October – 22 November 2019** |  |
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| PLENARY MEETING | **Document 109-E** |
|  | **11 October 2019** |
|  | **Original: English** |
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| Azerbaijan (Republic of)/Slovak Republic/Slovenia (Republic of) | |
| Proposals for the work of the conference | |
|  | |
| Agenda item 10 | |

10 to 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.

Introduction

Global IMT spectrum harmonization remains to be an essential requirement for development of IMT, not least due to the associated economic benefits for consumers and industry.

Currently, commercial 5G deployments have started in 5G pioneer countries in all three ITU-R Regions, while many other countries are preparing for 5G launches. For the initial 5G deployments, at least 100 MHz of contiguous spectrum bandwidth from the middle frequency range is required to be assigned to each 5G network in order to unlock the core 5G technology capabilities, such as support for user experienced data rates of 100 Mbps at any location. The 3.5 GHz frequency range has been chosen in most countries as the primary 5G spectrum. Based on the experience with the rapid 4G deployments all over the world and considering the even higher expected pace of 5G developments compared with the previous generations of IMT systems, additional spectrum within the mid-range, approximately between 2 and 8 GHz, is needed to keep up with the growth of demand for data on a city-wide scale. The recent indications from the IMT industry suggest that such new spectrum will be required in the timeframe beyond the year 2023.

The 6 425-7 125 MHz frequency band is a unique potential band for IMT identification that could satisfy the 5G requirement of large contiguous spectrum blocks in mid-band spectrum, noting that C-band (3.4-3.8 GHz in Europe) is the only spectrum available in this range and that large contiguous blocks are not always available.

It is noted that regional organizations and individual countries have proposed study of a variety of bands in the 6 GHz range, or specific portions thereof, as the basis for IMT identification at WRC‑23. In order to facilitate flexibility for administrations wishing to deploy 5G in 6 GHz spectrum, these proposals could be combined into a new agenda item of WRC-23 with the widest proposed range, i.e. 5 925-7 125 MHz. Such an approach would enhance flexibility and would allow different Regions and countries to sign up for individual footnotes at WRC-23 which would address different portions of the 6 GHz frequency range. For example, considering that in CEPT the lower part 5 925-6 425 MHz has been harmonized for WAS/RLANs, it could be suitable for the CEPT countries wishing to introduce IMT in the 6 GHz range to sign up for the footnote dealing with the 6 425-7 125 MHz portion.

We further note that the 6 425-7 125 MHz band has primary allocation to the mobile service in all three ITU-R Regions. In Europe, it is used primarily by the fixed service (FS) and the fixed-satellite service (FSS). The usage of this band by the FS varies from one European country to another and there are countries where the band is almost free from FS. In those countries where FS is used extensively, the licensed nature of 5G services would allow for a case-by-case coordination to ensure proper protection of the FS links. Initial studies carried out by the IMT industry indicate that the separation distances between FS sites and IMT base stations would be practicable for city-wide 5G deployments in 6 GHz, although ITU-R studies are necessary to confirm these studies and provide the appropriate technical guidance to administrations.

Co-existence between 5G and FSS (Earth-to-space) potentially could be ensured by developing the appropriate technical conditions for 5G network deployments. It is certain that recent advances in antenna technology, such as beamforming, would facilitate the compatibility and co-existence between IMT and FSS. More accurate propagation models, accounting for clutter loss, developed by ITU-R since WRC-15 study period should also allow the required protection of the FSS (Earth-to-space) service with realistic protection criteria.

It should be noted that the option of national 5G deployments in the 6 GHz range under the primary mobile allocation, without an IMT identification in the Radio Regulations, would bear a higher risk of interference from 5G to FSS (Earth-to-space). This is due to the fact that the technical conditions for IMT deployments in this case would be decided at a national level, without careful evaluation through the ITU-R studies. Therefore co-existence and compatibility studies between 5G and the incumbent services in the 6 GHz range will need to be carried out by ITU-R during the WRC-23 study period so as to ensure through the IMT identification method that appropriate technical conditions for 5G deployments in 6 GHz would adequately protect the incumbent users.

Proposal

The co-signing countries propose to establish a new agenda item of WRC-23:

To consider a new allocation to the IMT in all or part of the band 6 425-7 125 MHz in order to achieve the global harmonization of the 6 GHz frequency range for future IMT deployments, while ensuring protection of existing services and their development without imposing additional constraint(s) which have allocations in the potential candidate bands and in adjacent bands on a primary basis, in accordance with Resolution **[AZE/SVK/SVN-A10-IMT] (WRC-19)**;

The following attachment contains draft text for a new Resolution related to the proposed new agenda item of WRC-23.

MOD AZE/SVK/SVN/109/1

RESOLUTION 810 (Rev.WRC‑19)

Agenda for the 2023 World Radiocommunication Conference

The World Radiocommunication Conference (Sharm el-Sheikh, 2019),

…

1.x to consider identification for IMT in the 6 425-7 125 MHz frequency band, or portions thereof, in accordance with Resolution **[AZE/SVK/SVN-A10-IMT] (WRC-19);**

…

**Reasons:** Proposal for a new WRC-23 agenda item to consider IMT identification in the 6 425-7 125 MHz frequency band, or portions thereof.

ADD AZE/SVK/SVN/109/2

Draft New Resolution [AZE/SVK/SVN-A10-IMT]

Studies on identification of International Mobile Telecommunications   
in 6 425-7 125 MHz frequency range

The World Radiocommunication Conference (Sharm el-Sheikh, 2019),

considering

*a)* that International Mobile Telecommunications (IMT), providing telecommunication services on a worldwide scale, have largely contributed and continues to contribute to global economic and social development;

*b)* that there is continuous growth of mobile data traffic in all countries, with various usage scenarios and applications such as enhanced mobile broadband, fixed wireless access, massive machine-type communications and ultra-reliable and low-latency communications;

*c)* 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;

*d)* that ITU is engaged in a wide range of activities for IMT, which include new information and deliverables to guide the continuing evolution of terrestrial IMT;

*e)* 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;

*f)* that the radio conditions of the frequencies in the mid-band spectrum are favourable to ensure future IMT expansion in wider areas;

*g)* that the ranges 6 425-7 125 MHz offer large amounts of contiguous spectrum with primary mobile allocation on a global basis;

*h)* that adequate and timely availability of spectrum and supporting regulatory provisions is essential to realize the objectives in Recommendation ITU-R M.2083;

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

*j)* that identification of a frequency band allocated to mobile service for IMT may change the sharing situation regarding applications of services to which the frequency band is already allocated, and may require additional regulatory actions;

*k)* the need to protect existing services and to allow for their continued development when considering frequency bands for possible additional allocations to any service,

recognizing

*a)* that to realize global roaming and obtain the benefits of cost-effective deployment of IMT system, it is necessary to achieve global/regional spectrum harmonization for IMT;

*b)* that incumbent services are already using parts of the frequency band of 5 925-7 125 MHz and these services and their future development require appropriate protection;

*c)* that to ensure the future IMT expansion there is a need for additional spectrum specifically in the bands below 24 GHz providing more favourable propagation characteristics;

*d)* that there is generally a long time between the identification of frequency bands by WRCs and factual availability of spectrum;

*e)* that to support future development and harmonization of IMT it is essential to ensure timely identification of additional spectrum;

*f)* that any identification of frequency bands for IMT should take into account the use of the bands by other services and the evolving needs of these services;

*g)* that there should be no additional regulatory or technical constraints imposed to services to which the bands are currently allocated on a primary basis,

noting

that compared with the low and high frequency bands, the 6 GHz frequency range can provide a better balance for meeting needs for both coverage and capacity,

resolves to invite the 2023 World Radiocommunication Conference

to consider, based on the results of ITU-R studies referred to in *resolves to* *invite ITU-R* below, identification for the terrestrial component of IMT in the frequency range of 6 425-7 125 MHz,

resolves to invite ITU‑R

to conduct and complete sharing and compatibility studies between IMT and incumbent services in the range 6 425-7 125 MHz and in adjacent bands in time for WRC-23, taking into account:

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

– the deployment scenarios envisaged for IMT-2020 systems and the related requirements, in particular those of high data traffic in urban and dense urban areas and/or in peak times;

– the timeframe in which spectrum would be needed;

– the need to ensure protection of existing services and their development without imposing additional constraint(s) which have allocations in the potential candidate bands and in adjacent bands on a primary basis,

further resolves

to invite WRC-23 to consider, based on the results of the above studies, an IMT identification of the band 6 425-7 125 MHz,

invites administrations

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

**Reasons:** A draft new Resolution that supports the proposed WRC-19 agenda item for the future development of IMT.

ANNEX

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| ***Subject:*** Proposal for a new WRC-23 agenda item to consider IMT identification in the 5 925-7 125 MHz frequency band, or parts thereof, for the future development of IMT | |
| ***Origin:* Azerbaijan, Slovak Republic, Slovenia** | |
| ***Proposal:*** To consider identification of additional spectrum within the frequency band 6 425-7 125 MHz for International Mobile Telecommunications (IMT), to secure future development of terrestrial mobile broadband applications | |
| ***Background/reason:***  Deployments of 5G systems have started or are being planned in many countries around the world. For the early deployment of 5G, at least 100 MHz contiguous spectrum bandwidth from the mid frequency range should be assigned to each 5G network in order to support user experienced data rates of 100 Mbps anywhere anytime and other 5G technical requirements. The 3.5 GHz band is the early primary 5G band for many of these initial deployments. Additional spectrum within the mid-range is needed to enable future 5G deployment and to meet the users’ increasing requirement of anytime anywhere high data rate communications.  Noting that the range 5 925-7 125 MHz may not be available on a global or regional basis, it could be considered as a tuning range that would enable a more restricted range to be identified for IMT in areas where the full range is not available. For example, in CEPT countries the 6 425-7 125 MHz frequency band is a good potential band for IMT identification since CEPT is considering the 5 925-6 425 MHz for WAS, under a license exempt regime. This approach will complement the availability of large spectrum blocks in mid-band spectrum, noting that C-band is the only spectrum available in this range (3.4-3.8 GHz) and that large blocks are not always available.  Regarding the spectrum usage within 6 425-7 125 MHz, we observe that it is mainly used by FS and FSS. The usage of these bands by the FS varies from one European country to another. Initial studies show that it is possible to share between IMT and FS through coordination (physical/frequency separation or a mixture of). Co-existence with FSS (Earth-to-space) could be potentially ensured by developing the appropriate technical conditions for 5G network deployments. Co-existence studies with incumbent services also need to be carried out by the ITU-R during the WRC study period.  Global IMT spectrum harmonization is essential for the development of IMT. It is also a key objective for ITU-R identifying IMT spectrum in primary allocations to the mobile service. In order to achieve global harmonization on frequency bands for future IMT implementation, the co-signing countries support to conduct studies on frequency related matters for IMT identification in the frequency band of 6 425-7 125 MHz. | |
| ***Radiocommunication services concerned:***  5 925-6 700 MHz fixed service, fixed-satellite service (Earth-to-space), mobile service  6 700-7 075 MHz fixed service, fixed-satellite service (Earth-to-space), fixed-satellite service (space-to-Earth), mobile service  7 075- 7145 MHz fixed service, mobile service  (adjacent services: TBD) | |
| ***Indication of possible difficulties:***  The coexistence of IMT and incumbent services (e.g. FS, FSS) needs to be studied | |
| ***Previous/ongoing studies on the issue:***  N/A | |
| ***Studies to be carried out by:***  ITU-R SG5 | ***with the participation of:***  Administrations and Sector members of the ITU-R |
| ***ITU-R Study Groups concerned:***  SG5, SG4 and other groups | |
| ***ITU resource implications, including financial implications (refer to CV 126):***  If a dedicated task group is needed to carry out research, it will require a related budget. | |
| ***Common regional proposal:***  No | ***Multicountry Proposal:*** Yes  ***Number of countries:***  Azerbaijan, Slovak Republic, Slovenia |
| ***Remarks*** | |

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