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| **World Radiocommunication Conference (WRC-19) Sharm el-Sheikh, Egypt, 28 October – 22 November 2019** |  |
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| PLENARY MEETING | **Addendum 1 to Document 80(Add.21)-E** |
|  | **9 October 2019** |
|  | **Original: English** |
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| Japan | |
| Proposals for the work of the conference | |
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| Agenda item 9.1(9.1.1) | |

9 to consider and approve the Report of the Director of the Radiocommunication Bureau, in accordance with Article 7 of the Convention:

9.1 on the activities of the Radiocommunication Sector since WRC-15;

9.1 (9.1.1) Resolution **212 (Rev.WRC-15)** **-** Implementation of International Mobile Telecommunications in the frequency bands 1 885-2 025 MHz and 2 110-2 200 MHz

# 1 Background

Resolution **212 (Rev. WRC-15)** invites ITU-R to study possible technical and operational measures to ensure coexistence and compatibility between the terrestrial component of IMT (in the mobile service) and the satellite component of IMT (in the mobile service and the mobile-satellite service) in the frequency bands 1 980-2 010 MHz and 2 170-2 200 MHz where those frequency bands are shared by the mobile service and the mobile-satellite service in different countries, in particular for the deployment of independent satellite and terrestrial components of IMT and to facilitate development of both the satellite and terrestrial components of IMT.

WARC-92 identified some frequency bands to accommodate certain mobile services, now called IMT. The frequency bands 1 885-2 025 MHz and 2 110-2 200 MHz have been identified in the Radio Regulations (RR) for use of IMT. Within these frequency ranges, the frequency bands   
1 980-2 010 MHz and 2 170-2 200 MHz are allocated to the fixed service (FS), the mobile service (MS) and the mobile-satellite service (MSS) on a co-primary basis, without any constraint on the MS frequency band usage. The MSS allocation is in the Earth-to-space direction in the frequency band 1 980-2 010 MHz and in the space-to-Earth direction in the 2 170-2 200 MHz. Both the terrestrial and satellite components of IMT have already been deployed or are being considered for deployment in the frequency bands 1 980-2 010 MHz and 2 170-2 200 MHz.

It was noted that co-frequency deployment of independent satellite and terrestrial IMT components in the same geographical area is not feasible unless technique, such as the use of an appropriate guardband or other mitigation techniques are applied to ensure coexistence and compatibility between the terrestrial and satellite components of IMT.

It was also noted that satellite and terrestrial IMT components deployed in adjacent geographical areas might require technical and operational measures to avoid harmful interference between them. Administrations are currently enjoying flexibilities to consider a variety of measures for this purpose. ITU-R is invited to identify technical and operational measures in accordance with Resolution **212 (Rev.WRC-15)**.

# 2 ITU-R Discussions Status

Within ITU-R, Working Party (WP) 4C and WP 5D, which are responsible for the studies, have jointly developed the working document towards a preliminary draft new Report ITU-R M.[MSS&IMT-ADVANCED SHARING]. This working document provides the ITU-R studies conducted in the frequency bands 1 980-2 010 MHz and 2 170–2 200 MHz for the co-existence and the compatibility between the satellite component of IMT and terrestrial component of IMT in adjacent geographical areas across different countries. The above ITU-R studies found several technical and operational measures which can be implemented, taking into account the actual deployment characteristics, on a bilateral consultation basis without additional regulatory constraints in the RR.

Taking into account these studies, ITU-R has produced the CPM Report, which will assist Administrations to consider this issue at WRC-19.

# 3 Discussions

It should be noted that, Resolution **212 (Rev.WRC-15)**, the Resolution pertaining to WRC-19 agenda item 9.1, issue 9.1.1, is limited to the study of “possible technical and operational measures to ensure coexistence and compatibility between the terrestrial component of IMT (in the mobile service) and the satellite component of IMT (in the mobile service and the mobile-satellite service)”. Thus, the result of the discussion of this issue should not include any regulatory changes, which is outside the scope of this issue.

In addition, there is no clear evidence that lack of regulatory constraints on the terrestrial component of IMT has impeded the efficient and effective deployment of either satellite or terrestrial component of IMT.

Furthermore, based on the status of the ITU-R studies, View 2 (NOC) of CPM Report should be supported as explained below.

## 3.1 Current Status of the ITU-R Study for This Issue

CPM Report contains two views. View 1 proposes to place regulatory constraints on the terrestrial services, such as *i)* limiting e.i.r.p. of the terrestrial transmission in order to reduce terrestrial transmitting power and *ii)* relaxing the pfd level of the satellite transmission at the Earth’s surface in order to enable a satellite to increase its power. View 2 proposes “No regulatory Constraints” on the terrestrial services, because possible interference can be managed through bilateral/multilateral coordination or consultation process and with the application of technical and operational measures.

Because of the unique and varying system characteristics and deployment scenarios of the satellite and terrestrial components of IMT in adjacent geographic areas in different countries, bilateral/multilateral discussions between affected administrations provide greater operational flexibility, while ensuring coexistence using the available technical and operational measures identified in ITU-R. Thus, there is no need for any changes to the RR.

Furthermore, no technical conclusion was drawn within ITU-R to expand the scope of this issue beyond the adjacent geographical area.

## 3.2 Consideration of Relevant ITU-R Documents

It should also be recognized that Recommendation ITU-R M.818-2 “Satellite Operation within International Mobile Telecommunications-2000 (IMT-2000)” contains *considering s) the design of the terrestrial component of the IMT-2000 should not be adversely affected by the satellite component.* Thus, the consideration of regulatory constraints on the terrestrial station to facilitate the operation of the satellite component of IMT would be against this concept which was already agreed within ITU-R.

## 3.3 Inappropriateness of View 1

View 1 proposes to relax pfd threshold levels to protect terrestrial services. While the current pfd level contained in Appendix **5** of the RR is –128 dBW/m2/MHz at elevation angles between 0 degrees and 5 degrees (Please refer to Annex 1 of Addendum 1 to Document CMR-15/4. Even for terrestrial component of IMT, BR’s current practice is applying the same pfd levels as in Appendix **5** of the RR.), View 1 is proposing the relaxed level of –108.8 dBW/m2/MHz at the same elevation. It is around 20 dB relaxation. This relaxed pfd level does not take into account the protection of some terrestrial stations, in particular IMT Machine-type User Equipment. Thus, the proposed relaxed pfd level will endanger the current operation and future development of terrestrial networks. Therefore, Japan proposes to maintain the current pfd levels contained in Appendix **5** of the RR.

In addition, the e.i.r.p. limit which View 1 proposes for terrestrial stations is based on unrealistic worst-case assumption. However, this limit is intended to apply uniformly to all the terrestrial IMT stations, although the ITU-R studies showed much smaller potential interference from the terrestrial into satellite in realistic cases.

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No change (NOC) to the Radio Regulations is proposed for WRC-19 agenda item 9.1, issue 9.1.1. Only Resolution **212 (Rev. WRC-15)** should be updated to reflect the completion of studies.

**Reasons:** Potential interference for all interference scenarios between satellite and terrestrial components of IMT could be managed by bilateral/multilateral consultation where administrations can bilaterally/multilaterally determine the appropriate mitigation techniques on a case-by-case basis, without losing present flexibility of each Administration for deployments of either terrestrial or satellite components of IMT.

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