IWG-2/069 (21.03.18)

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

**Agenda Item 9.1/Issue 9.1.1:** *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 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*

**Background Information**: Footnote 5.388 indicates that the frequency bands 1 885-2 025 and 2 110-2 200 MHz are intended for use, on a worldwide basis, for International Mobile Telecommunications (IMT) and should be made available for IMT in accordance with Resolution **212 (Rev. WRC-15)**. Within these broader frequency ranges, the frequency bands 1 980-2 010 MHz and 2 170-2 200 MHz are allocated to the fixed, mobile, and mobile-satellite services on a co-primary basis. Both the satellite and terrestrial components of IMT have already been deployed or are being considered for further deployment within the 1 980-2 010 MHz and 2 170-2 200 MHz frequency bands as noted in Resolution **212 (WRC-15)**. Frequency Arrangements for terrestrial IMT are contained in Recommendation ITU-R M.1036-5.

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 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”*.

Prior ITU-R studies have focused on co-existence and compatibility of terrestrial and satellite components of IMT within the same geographical area. WRC-19 Agenda Item 9.1, Issue 9.1.1 is focused on studying the co-existence and compatibility when the two are deployed in different geographical areas.

With the exception of one scenario, ITU-R studies in response to this agenda item indicated compatibility may be achieved between the terrestrial and satellite components of IMT in different geographical areas. In most cases, technical and operational measures may be needed and could be agreed during coordination. However, ITU-R studies show that the aggregate interference from IMT terrestrial base stations into IMT satellite receivers in the band 1 980-2 010 MHz is predicted to exceed the protection criterion by more than 50 dB in the worst cases, more than mitigation measures alone could address. Additionally, there is no coordination procedure in the Radio Regulations to address interference from terrestrial IMT into receiving satellite IMT space stations.

The ITU-R studies show that this potential interference scenario can be most effectively limited by using the band 1980-2010 MHz as an uplink band for terrestrial IMT operations (i.e. used for UE transmit only). This could be put into effect by limiting the terminal transmitter output power delivered to the antenna of terrestrial IMT stations to 23 dBm, which is the maximum power for user equipment indicated in ITU-R Report M.2292 (as well as 3GPP TS 25.101)

and the basis for the studies for agenda item 9.1.1. Since RR No. **5.389B** mandates that the use of the band 1980-1990 MHz by the mobile-satellite service shall not cause harmful interference to or constrain the development of the mobile service in certain countries in Region 2, the power limit would apply only to the band 1990-2010 MHz in the countries listed in footnote **5.389B**.[[1]](#footnote-1)

**Proposal**:

**MOD** **USA/9.1.1/1**

RESOLUTION 212 (Rev.WRC‑19)

**Implementation of International Mobile Telecommunications in the frequency bands 1 885-2 025 MHz and 2 110-2 200 MHz**

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

*considering*

*a)* that Resolution ITU‑R 56 defines the naming for International Mobile Telecommunications (IMT);

*b)* that the ITU Radiocommunication Sector (ITU‑R), for WRC‑97, recommended approximately 230 MHz for use by the terrestrial and satellite components of IMT;

*c)* that ITU‑R studies forecast that additional spectrum may be required to support the future services of IMT and to accommodate future user requirements and network deployments;

*d)* that ITU‑R has recognized that satellite services are an integral part of IMT;

*e)* that, in No. **5.388**, WARC‑92 identified frequency bands to accommodate certain mobile services, now called IMT,

*noting*

1. that the terrestrial component of IMT (in the mobile service) has already been deployed or is being considered for deployment in the frequency bands 1 885-2 025 MHz and 2 110-2 200 MHz;

*b)* that the satellite component of IMT (in the mobile service and mobile-satellite service) has already been deployed and further deployment in the frequency bands 1 980-2 010 MHz and 2 170-2 200 MHz is expected;

*c)* that the availability of the satellite component of IMT in the frequency bands 1 980‑2 010 MHz and 2 170-2 200 MHz simultaneously with the terrestrial component of IMT in the frequency bands identified in No. **5.388** would improve the overall implementation and the attractiveness of IMT,

noting further

*a)* that co‑coverage, co-frequency deployment of independent satellite and terrestrial IMT components is not feasible unless techniques, 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 but that co-coverage, co-frequency deployment of dependent hybrid IMT satellite systems with a complementary ground component is feasible;

*b)* that, when the satellite and terrestrial components of IMT are deployed in the frequency bands 1 980-2 010 MHz and 2 170-2 200 MHz in adjacent geographical areas, technical or operational measures may need to be implemented to avoid harmful interference;

*c)* that some difficulties have been raised in addressing potential interference between the satellite and terrestrial components of IMT,

resolves

that administrations which implement IMT:

*a)* should make the necessary frequencies available for system development;

*b)* should use those frequencies when IMT is implemented;

*c)* should use the relevant international technical characteristics, as identified by ITU‑R and ITU‑T Recommendations;

*d)* shall limit the terminal transmitter output power delivered to the antenna of stations in the mobile service to 23 dBm in the band 1980-2010 MHz, except in the 1980-1990 MHz band for countries listed in RR No. **5.389B** in Region 2,

invites administrations

to give due consideration to the accommodation of other services currently operating in these frequency bands when implementing IMT,

further invites ITU‑R

to continue its studies with a view to developing suitable and acceptable technical characteristics for IMT that will facilitate worldwide use and roaming, and ensure that IMT can also meet the telecommunication needs of the developing countries and rural areas.

**Reasons**: ITU-R studies in response to this agenda item showed that limiting the terminal transmitter output power delivered to the antenna of stations in the mobile service to 23 dBm, which is the maximum power for user equipment indicated in ITU-R Report M.2292 (as well as 3GPP TS 25.101), would enable the development of the band 1 980-2 010 MHz by both the satellite and terrestrial components of IMT and satisfy the objective of agenda item 9.1.1.

1. Region 2 has primary allocations to the fixed, mobile and mobile-satellite service in the band 2 010-2 025 MHz. When used for terrestrial IMT, the band 2 010-2 025 MHz should similiarly be used only for the uplink from the mobile user station to the base station in order to enable the development of both the satellite and terrestrial components of IMT. [↑](#footnote-ref-1)