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| **World Radiocommunication Conference (WRC-15) Geneva, 2–27 November 2015** |  |
| **INTERNATIONAL TELECOMMUNICATION UNION** |  |
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| PLENARY MEETING | **Revision 1 to Document 62(Add.23)(Add.2)(Add.3)-E** |
|  | **19 October 2015** |
|  | **Original: Chinese** |
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| China (People’s Republic of) | |
| Proposals for the work of the conference | |
| The application of radio regulations related to imt satellite component in the bands 1 980-2 010 mhz and 2 170-2 200 mhz | |
| Agenda item 9.2 | |

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

9.2 on any difficulties or inconsistencies encountered in the application of the Radio Regulations; and

# 1 Background

IMT includes terrestrial and satellite components, which complement one another. It is envisaged to provide highly mobile users with ubiquitous and content rich services all over the world. Universal coverage and global roaming are its key objectives in realizing the complete IMT vision, in which the satellite component plays an essential role. Also, the satellite component of IMT is indispensable for the provision of services in emergency and disaster relief situations. In this respect, due consideration of all the factors and an orderly approach are essential when making frequency arrangements for both the satellite and terrestrial components of IMT.

Since WARC-92, a total of 230 MHz of spectrum has been identified to facilitate the development of IMT, including the bands 1 885-2 025 MHz and 2 110-2 200 MHz. In Resolution 212(Rev.WRC-07)of the Radio Regulations (RR) it is noted that the availability of the satellite component of IMT in the bands 1 980-2 010 MHz and 2 170-2 200 MHz simultaneously with the terrestrial component of IMT in the bands identified in No. 5.388 would improve the overall implementation and attractiveness of IMT. Moreover, Recommendation ITU-R M.2047, published in 2013, indicates that the bands 1 980-2 010 MHz and 2 170-2 200 MHz are considered as candidate bands for the air interface of the satellite component of IMT with detailed radio interface specifications included.

The WRC-15 study period has witnessed the whole revision process of Recommendation ITU‑R M.1036-4. In particular, SG 5 drew up a draft revision by including 1 980-2 010 MHz and 2 170-2 200 MHz as additional and extended frequency arrangements for implementations of the terrestrial component of IMT. With regard to this revision, during their respective discussions, both SG 4 and SG 5 agreed on the need for compatibility studies between the satellite and terrestrial components of IMT. However, there exist different views as to whether compatibility studies should be completed and issues on regulatory procedure and coordination mechanisms resolved before adopting or approving the additional frequency arrangement for the terrestrial component of IMT (see Documents [5/194](http://www.itu.int/md/R12-SG05-C-0194/en), [5/212](http://www.itu.int/md/R12-SG05-C-0212/en), [5/213](http://www.itu.int/md/R12-SG05-C-0213/en), [5D/845](http://www.itu.int/md/R12-WP5D-C-0845/en) and [5D/1039](http://www.itu.int/md/R12-WP5D-C-1039/en)).

# 2 Compatibility and sharing difficulties between the satellite and terrestrial components of IMT in the bands 1 980-2 010 MHz and 2 170-2 200 MHz

According to BR IFIC 2800 (published on 4 August 2015), 331 requests for coordination filings have to date been sent to the Bureau by 24 administrations, and among them seven satellite networks under four administrations have been brought into use. Moreover, several countries have implemented mobile-satellite service (MSS) applications in these bands, and more MSS satellite systems are to be deployed globally in the near future.

On the other hand, with the growth of terrestrial mobile communications, some countries propose that the bands 1 980-2 010 MHz and 2 170-2 200 MHz be used for the IMT terrestrial component.

ITU-R studies currently available (such as Recommendations ITU-R M.687-2 and ITU‑R M.1036‑3, and Report ITU-R M.2041) demonstrate that co-frequency compatibility/sharing between the satellite and terrestrial components of IMT is unfeasible both in co-coverage areas and in adjacent service areas in the bands 1 980-2 010 MHz and 2 170-2 200 MHz.

In addition, in the band 2 170-2 200 MHz for MSS (space-to-Earth), Appendix 5 of the Radio Regulations specifies technical threshold values for coordination between FS/MS stations and MSS space stations. In particular, Note 3 in Table 5-2 points out that: “*The coordination thresholds in the band 2 160-2 170 MHz (Region 2) and 2 170-2 200 MHz (all Regions) to protect other terrestrial services do not apply to International Mobile Telecommunications (IMT) systems, as the satellite and the terrestrial components are not intended to operate in the same area or on common frequencies within these bands.*” More importantly, in the band 1 980-2 010 MHz for MSS (Earth-to-space), regulatory provisions and technical thresholds are still absent in the RR for coordination between MSS space stations and FS or MS stations.

In fact, some administrations having applied the coordination procedures between MSS and MS (IMT) have already encountered actual sharing and compatibility difficulties between the terrestrial and satellite components of IMT within the same area. The lack of regulatory provisions and technical thresholds has placed an overwhelming coordination burden on administrations, which in turn has an adverse impact on the efficient use of these frequency bands.

# 3 Proposals

China considers that:

1) the satellite component of IMT, indispensable for service provision, particularly in cases of emergency and disaster relief, is an essential element in enabling seamless global roaming and the complete IMT vision;

2) in accordance with Resolution 212 (Rev.WRC-07), Resolution 223 (Rev.WRC-12) and Resolution 225 (Rev.WRC-12), the bands 1 980-2 010 MHz and 2 170-2 200 MHz have been identified for use by the satellite component of IMT, and are the only available rare spectrum in the practical sense for implementing the satellite component of IMT;

3) while the bands 1 980-2 010 MHz and 2 170-2 200 MHz have been planned for the terrestrial component of IMT in some countries, existing studies show that co-frequency compatibility/sharing between the satellite and terrestrial components of IMT is unfeasible both in co-coverage areas and in adjacent service areas in these bands;

4) the Radio Regulations fail to specify regulatory procedures and technical thresholds for enabling effective coordination between the satellite and terrestrial components of IMT.

China proposes:

1) by modifying Resolution 212 (Rev.WRC-07), to conduct and complete studies on regulatory, technical and operational aspects in time for WRC-19 and to take any possible technical and regulatory measures while ensuring adequate protection of MSS space stations in the bands 1 980-2 010 MHz and 2 170-2 200 MHz from MS stations when those bands are shared by MSS and MS systems, with a view to facilitating simultaneous development of the satellite and terrestrial components of IMT;

2) to instruct the Director of the Radiocommunication Bureau to include in his Report to WRC-19 the results of the studies mentioned above and to take appropriate actions accordingly.

Proposed modifications to Resolution 212 are given below.

MOD CHN/62A23A2A3/1

RESOLUTION 212 (Rev.WRC‑15)

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

The World Radiocommunication Conference (Geneva, 2015),

**Reasons:** A version discussed and modified by WRC-15.

MOD CHN/62A23A2A3/2

considering

*a)* that International Mobile Telecommunications (IMT) includes IMT-2000 and IMT Advanced;

*b)* that 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-Advanced and to accommodate future user requirements and network deployments;

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

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

**Reasons:** A more accurate description with the development of IMT.

MOD CHN/62A23A2A3/3

noting

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

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

**Reasons:** An editorial change with the following addition.

ADD CHN/62A23A2A3/4

*c)* that relevant ITU studies show that co-frequency compatibility/sharing between the satellite and terrestrial components of IMT is unfeasible both in co-coverage areas and in adjacent service areas;

**Reasons:** Incorporation of relevant ITU-R study results.

ADD CHN/62A23A2A3/5

*d)* that in the bands 1 980-2 010 MHz and 2 170-2 200 MHz, the current Radio Regulations lacks regulatory provisions and applicable coordination thresholds between the satellite and terrestrial components of IMT,

**Reasons:** An objective description of the regulatory situation in the bands 1 980-2 010 MHz and 2 170-2 200 MHz.

NOC

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,

**Reasons:** No changes have been proposed.

NOC

invites administrations

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

**Reasons:** No changes have been proposed.

MOD CHN/62A23A2A3/6

invites ITU‑R

*a)* 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:** An editorial change.

ADD CHN/62A23A2A3/7

*b)* to conduct and complete studies on regulatory, technical and operational aspects in time for WRC‑19 and to take any possible technical and regulatory measures while ensuring adequate protection of MSS space stations in the bands 1 980-2 010 MHz and 2 170-2 200 MHz from MS stations when those bands are shared by MSS and MS systems, with a view to facilitating the simultaneous development of the satellite and terrestrial components of IMT,

**Reasons:** Considering the urgent and important nature of sharing studies between the satellite component and terrestrial components of IMT, and that relevant ITU-R studies have shown that co-frequency compatibility/sharing between the satellite and terrestrial components of IMT is unfeasible both in co-coverage areas and in adjacent service areas, and the fact that the RR are silent on applicable regulatory provisions and coordination thresholds, ITU-R should be invited to conduct studies within the next WRC study period.

ADD CHN/62A23A2A3/8

instructs the Director of the Radiocommunication Bureau

to include the results of these studies in his Report to WRC‑19 for appropriate actions by the conference in response to *resolves to invite ITU‑R* above.

**Reasons:** To invite ITU-R to conduct these studies within the next study period and include the results in the Director’s Report to WRC-19 as a permanent WRC agenda item.

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