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| **The 4th Meeting of the APT Conference Preparatory Group for WRC-19 (APG19-4)** | **APG19-4/INP-112** |
| 7 – 12 January 2019, Busan, Republic of Korea | **31 December 2018** |

India (Republic of)

**proposed modification to the chapter 3 of the draft cpm report**

**Agenda Item 7:** *to consider possible changes, and other options, in response to Resolution 86 (Rev. Marrakesh, 2002) of the Plenipotentiary Conference, an advance publication, coordination, notification and recording procedures for frequency assignments pertaining to satellite networks, in accordance with Resolution* ***86 (Rev.WRC-07)****, in order to facilitate rational, efficient and economical use of radio frequencies and any associated orbits, including the geostationary-satellite orbit;*

Resolution **86 (Rev.WRC‑07)** – *Implementation of Resolution 86 (Rev. Marrakesh, 2002) of the Plenipotentiary Conference*

The Administration of India proposes the following modifications to the text in the draft CPM Report related to WRC-19 Agenda Item 7

**3/7/2 Issue B – Application of coordination arc in the Ka-band, to determine coordination requirements between the FSS and other satellite services**

**3/7/2.4 Methods to satisfy Issue B**

**3/7/2.4.2 Method B2:** Agreed

# 3/7/3 Issue C – Issues for which consensus was achieved in ITU-R and a single method has been identified

**3/7/3.2.1 Background for Issue C1**

Further review of the provisions dealing with any changes to the characteristics of an assignment submitted under provisions of RR No. **11.43A** of RR Article **11**, and that submitted under paragraph 8.13 of Article 8 of RR Appendix **30B** and confirmed as having been brought into use, reveals that there is a regulatory inconsistency between the objectives of the two provisions/paragraph as follows:

*“8.13 A notice of a change in the characteristics of an assignment already recorded, as specified in Appendix****4****, shall be examined by the Bureau under § 8.8 and § 8.9, as appropriate. Any changes to the characteristics of an assignment that has been notified and confirmed as having been brought into use shall be brought into use within eight years from the date of the notification of the modification. Any changes to the characteristics of an assignment that has been notified but not yet brought into use shall be brought into use within the period provided for in §§ 6.1, 6.31 or 6.31bis of Article 6.    (WRC‑12)”*

***“11.43A*** *A notice of a change in the characteristics of an assignment already recorded, as specified in Appendix****4****, shall be examined by the Bureau under Nos.****11.31*** *to* ***11.34****, as appropriate. Any change to the characteristics of an assignment that has been recorded and confirmed as having been brought into use shall be brought into use within five years from the date of the notification of the modification. Any change to the characteristics of an assignment that has been recorded but not yet brought into use shall be brought into use within the period provided for in No.****11.44****.    (WRC‑07)”*

**3/7/3.4.1 Method to satisfy Issue C1:** Agreed

**3/7/3.2.2 Background for Issue C2**

RR Appendix **30B** consists of two blocks/sub-bands of 250 MHz each in the 13-11 GHz frequency band, i.e. 10.70‑10.95 GHz, 11.2-11.45 GHz for downlink and 12.75-13.0 GHz, 13.0-13.25 GHz for uplink. Submission from administrations when applying Article 6 of RR Appendix **30B** for additional use usually covers both blocks/sub-bands of 250 MHz mentioned above or may only submit either of the two blocks for additional use or while successfully applying Article 6for the two blocks/sub‑bands, when applying Article 8, only bring into use one block/sub-band of the 13-11 GHz.

**3/7/3.4.2 Method to satisfy Issue C2:** Agreed

**3/7/3.2.3 Background for Issue C3**

Issue C3 addresses the consequences for not replying to the letters from the Bureau initiated by a request for its assistance by a notifying administration seeking the inclusion of the territory of a foreign administration under § 6.6 of RR Appendix **30B**.

**3/7/3.4.3 Method to satisfy Issue C3:** Agreed

**3/7/3.2.4 Background for Issue C4**

Normally, at the end of the coordination process for Regions 1 and 3 under Article **4**of RR Appendices **30** and **30A** and when a network is about to be implemented, systems are submitted for entry into the List under § 4.1.12 and for Notification under §§ 5.1.1 and 5.1.2 of RR Appendices **30** and **30A**, respectively at the same time. This is logical since both these two provisions refer to actions following the completion of the coordination process and since they are both required to implement the network.

**3/7/3.4.4 Method to satisfy Issue C4:** Agreed

**3/7/3.2.5 Background for Issue C5**

Pursuant to RR No. **11.46**, the Bureau allows notifying administrations six months to resubmit their notified frequency assignments which were returned due to an unfavourable finding with respect to RR Nos. **11.32**, **11.32A**or **11.33**. Any notification resubmitted beyond six months is considered as a new notification with a new date of receipt and would be subject to cost-recovery fees. However, neither RR No. **11.46**nor any other provision in the Radio Regulations requires the Bureau to send a reminder to the notifying administration at any point during the six-month period. If the notifying administration resubmits the notice to the Bureau beyond the required six-month period, the Bureau assigns a new date of receipt and reviews whether the notice complies with the period in RR No. **11.44.1**or RR No. **11.43A**and takes the appropriate action. In the case that a notice resubmitted beyond the six-month deadline is receivable, cost-recovery fees would be required for the resubmitted assignments. Addressing this lack of a reminder would be beneficial to administrations who may have experienced difficulties receiving or addressing the Bureau’s return of notice and the need to ensure that frequency assignments that are in use are properly recorded in the Master Register.

**3/7/3.4.5 Method to satisfy Issue C5:** Agreed

**3/7/3.2.6 Background for Issue C6**

Normally, at the end of the coordination process under Article 6 of RR Appendix **30B** and when a network is about to be implemented, systems are submitted for entry into the List under § 6.17 and for notification under § 8.1 at the same time. This is logical since both these two provisions refer to actions following the completion of the coordination process and since they are both required to implement the network.

**3/7/3.4.6 Method to satisfy Issue C6:** Agreed

**3/7/3.2.7 Background for Issue C7**

Taking into account that the possibility of obtaining agreement from affected administrations for a specified period would considerably facilitate the tasks of those administrations applying Article 4 of RR Appendices **30** and **30A** as well as Article 6 of RR Appendix **30B**, it is proposed to amend RR Appendices **30A**and **30B** to be harmonized among RR Appendices **30**, **30A** and **30B**.

**3/7/3.4.7 Method to satisfy Issue C7:** Agreed

**3/7/4 Issue D – Identification of those specific satellite networks and systems with which coordination needs to be effected under RR Nos. 9.12, 9.12A and 9.13**

**3/7/4.4 Methods to satisfy Issue D**

**3/7/4.4.2 Method D2:** Agreed

**3/7/5 Issue E: Resolution related to RR Appendix 30B**

(Skipping queue for modification to allotment as in the case of 23GHz BSS)

**3/7/5.4 Method to satisfy Issue E:** Agreed

**3/7/6 Issue F – Measures to facilitate entering new assignments into the RR Appendix 30B List**

An administration wishing to convert its national allotment in RR Appendix **30B** to assignments with characteristics beyond those of the initial allotment or wishing to introduce a new network will be faced with several difficulties. Two of these are:

– due to the conservative criteria used in RR Appendix **30B**, a large number of coordination requirements will be identified;

– networks can be designed with combinations of characteristics, possibly unrealistic, to obtain a high sensitivity to interference from later submissions

**3/7/6.4 Methods to satisfy Issue F**

**3/7/6.4.1 Method F1:** Agreed

To facilitate coordination of submissions of new networks and ease access of administrations to the frequency bands of RR Appendix **30B**, a possible method has been identified to update the coordination triggers to take into account technological advances and avoid some unnecessary coordination while assuring adequate protection of other satellite networks. This method will be beneficial to all submissions for new networks, including those of newcomers and those of administrations seeking to convert their national allotments into assignments with changes.

**3/7/8 Issue H – Modifications to RR Appendix 4 items to be provided for non-geostationary satellite systems not subject to the procedures of Section II of RR Article 9**

The RR Appendix **4** items provided in the API for frequency assignments to non-GSO networks or systems in frequency bands not subject to coordination under Section II of RR Article 9 are used initially by administrations to identify potential interference scenarios to their existing and planned systems and to formulate their comments under RR No. **9.3**. The capability of these administrations to identify such potential scenarios depends, amongst other things, on whether the satellite orbits can be properly modelled based on the information provided in the API. The modelling of the orbit of satellites of non-GSO systems requires significantly more information than a GSO satellite network. Recent analysis performed for non-GSO satellite networks or systems based on APIs as published in the Radiocommunication Bureau International Frequency Information Circular (BR IFIC) have shown that, in some instances, there is a need for additional information in order to properly model the satellite orbits.

In general, to model a satellite orbit, a set of parameters typically referred to as the classical orbital elements are required, as follows:

1) semimajor axis (a);

2) eccentricity (Ɛ);

3) inclination angle (i);

4) right ascension of the ascending node (Ω), the point where the satellite crosses the equatorial plane in the south-to-north direction;

5) argument of the perigee (ω), the angle between the ascending node and the perigee, measured in the orbital plane in the direction of the motion;

6) epoch time (t), is the time at which the orbital elements are observed, and

7) mean anomaly (M), gives the position of the satellite in its orbital path.

**3/7/8.4 Method to satisfy Issue H:** Agreed

**3/7/9 Issue I – Additional RR Appendix 4 data items to be provided for non-geostationary satellite systems with multiple orbital planes**

WRC-15 endorsed the recommendation of the Radiocommunication Bureau Director to allow two types of submissions for the coordination request (CR/C) for frequency assignments to non-GSO systems:

1) CR/C for frequency assignments to a non-GSO system with one (or more than one) set(s) of orbital characteristics with an indication that all frequency assignments of the system would be operated simultaneously;

2) CR/C for frequency assignments to a non-GSO system with different sets of orbital characteristics with an indication that the different sets of orbital planes would be mutually exclusive, i.e. satellites on these sets of orbits would not be operated simultaneously and only one of these sets of orbital planes would be implemented

**3/7/9.4 Method to satisfy Issue I:** Agreed

Under this method, it is proposed to include two new items in RR Appendix **4** for the provision of information relating to the multiple orbital planes and their relationship with respect to the non-GSO system:

– new item A.4.b.1.a: indicator of whether all of the orbital planes identified under A.4.b.1 describe a single configuration where all orbits are operated simultaneously or multiple, mutually exclusive configurations identified at the coordination stage with the expectation to select a single configuration at the notification stage. This new item is required for both APIs and CR/Cs as appropriate, when the filing contains more than one orbital plane;

– new item A.4.b.1.b: in case the number of orbital planes identified under A.4.b.1 describe multiple mutually exclusive configurations, this new item allows for the identification of the orbital planes that are associated with each of the mutually exclusive configurations. This new item is required for both APIs and CR/Cs as appropriate, only if the proposed new item A.4.b.1.a is different from 1.

**3/7/10 Issue J – Pfd limit in Section 1, Annex 1 of RR Appendix 30**

Issue J deals with the possibility of the exceedance of the power flux-density (pfd) limit for the broadcasting-satellite service (BSS) networks in the List.

The pfd limit of −103.6 dB(W/(m2 · 27 MHz)) was established for additional use in Regions 1 and 3 in order to protect BSS networks outside the coordination arc of ±9 degrees. In the case that an administration applies the relevant provisions of RR Article **23** to request the exclusion of its territory from the service areas of BSS networks of other administrations, such BSS networks of other administrations are not entitled to be protected within the territory of the objecting administration. According to the idea above, the pfd limit of −103.6 dB(W/(m2 · 27 MHz)) may be exceeded only within the national territory of the notifying administration providing that, on the border areas and other territory of another country, this pfd limit is not exceeded.

**3/7/10.4 Methods to satisfy Issue J**

Two methods have been proposed. Method J1 allows exceedance of pfd limit within the

only within the national territory of the notifying administration under the condition that the assignment does not overlap with the Regions 1 and 3 guardbands as defined in § 3.9 of Annex 5 to RR Appendix **30** and also under the condition that, on the border areas and other territory of another country, this pfd limit is not exceeded.

In Method J2, there is no change to the Radio Regulations since the pfd limit referred to in the first paragraph of Section 1 of Annex 1 to RR Appendix **30** is a hard limit that shall not be exceeded inordertoprotectBSS assignmentsfrominterferencethatmaybecausedbyBSSnetworkslocatedoutsideanarcof 9aroundawantedBSSnetwork

**3/7/10.4.2 Method J2:** Agreed

**3/7/12 Issue L – Update to RR Appendix 4 data elements required for RR Article 22 epfd verification after revision of Recommendation ITU-R S.1503**

**3/7/12.2 Background**

Recommendation ITU-R S.1503 defines an algorithm that can be used to determine whether a non-GSO FSS system or network meets the equivalent power flux-density (epfd) limits in RR Article **22**. A revision to this Recommendation from versions ITU-R S.1503-2 to version ITU-R S.1503-3 was formally approved on 15 January 2018 after the procedure for simultaneous adoption and approval by correspondence.

The motivation for this work is to provide a better framework for GSO and non-GSO systems in frequency bands where there are epfd limits to protect the GSO in RR Article **22**. Improvements in the detail and accuracy of the modelling of non-GSO systems can improve spectrum utilization, increasing spectrum efficiency while maintaining the protection of the GSO. It can facilitate the introduction of new technologies and development of a wider range of non-GSO system types.

To realize these benefits it is necessary for the input data to be available, and to ensure this can occur they should be mandatory parameters defined in RR Appendix **4**. Hence it is proposed to revise RR Appendix **4** to include these additional parameters.

**3/7/12.4 Method to satisfy Issue L:** Agreed

**3/7/13 Issue M – Simplified regulatory regime for non-GSO satellite systems with short-duration missions**

**3/7/13.2 Background**

At WRC-15 a proposal for a new agenda item for WRC-19 “to consider modifications to the regulatory procedures for notifying satellite networks to accommodate nanosatellite and picosatellite missions”was submitted.WRC-15 decided not to include this as an item on the WRC-19 agenda, and concluded that this matter could best be dealt with by the ITU-R under the standing WRC agenda item 7.

Considering that the size of a satellite is independent of the nature of the service that it is intended to provide, a simplified regulatory regime has been developed for satellites with short-duration missions, independent of the size of the satellite.

Based on the above, ITU-R developed a method to address this issue that consists of modifications to the existing regulatory procedures for advanced publication and notification of satellite networks and systems that are not subject to Section II of RR Article **9** to facilitate the recording of non-GSO satellite systems with short-duration missions in the MIFR.

**3/7/13.4 Method to satisfy Issue M:** Agreed