|  |  |
| --- | --- |
| **World Radiocommunication Conference (WRC-19)Sharm el-Sheikh, Egypt, 28 October – 22 November 2019** |  |
|  |  |
|  |  |
| PLENARY MEETING | **Addendum 6 toDocument 58(Add.19)-E** |
|  | **8 October 2019** |
|  | **Original: English** |
|  |
| Canada/United States of America |
| Proposals for the work of the conference |
|  |
| Agenda item 7(F) |

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;

7(F) Issue F - Measures to facilitate entering new assignments into the RR Appendix **30B** List

Introduction

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

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

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

In response to these particular problems, and 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 under this agenda item in order to update the coordination triggers of RR Appendix **30B** to avoid some unnecessary coordination mentioned above while assuring adequate protection of other RR Appendix **30B** satellite networks.

Method F1 in the CPM Report is beneficial to all submissions for new networks, including those of newcomers and those of administrations seeking to convert their national allotments into assignments. Specifically, the proposed changes include:

– Adopting the structure decided by WRC-2000 for RR Appendices **30** and **30A**, i.e. a reduced coordination arc and mechanisms to remove unnecessary coordination requirements inside the coordination arc, and consequently align the Annex 3 of Appendix **30B** limits to newly established coordination arcs in line with that used for the unplanned frequency bands, i.e. 7° for C-band and 6° for Ku-band.

– Introducing pfd masks in Annex 4 of RR Appendix **30B** like it is the case in RR Appendices **30** and **30A** and portions of the unplanned frequency bands, in order to remove unnecessary coordination and prevent combinations of technical parameters leading to unrealistic links from hindering introduction of new networks. Proposed values for pfd masks and levels are those developed for unplanned broadcasting-satellite service (BSS) frequency band 21.4-22.0 GHz in preparation for WRC-15. They are based on a level of protection corresponding to ΔT/T = 6% for C-band antennas with a diameter between 1.2 and 18 m and for Ku-band antennas with a diameter between 45 cm and 11 m.

Canada and the United States support the above proposed changes represented as Method F1 in the CPM Report to improve the coordination procedure and make RR Appendix **30B** more efficient, while adequately protecting existing networks. Additionally, Canada and the United States support changes under Method F1 introduced and discussed at the last meeting of ITU-R Working Party 4A in June-July 2019 as portrayed in Annex 16 to Document 4A/912. Lastly, Canada and the United States have included an additional sentence to the modified footnote to the title of Annex 3 of RR Appendix **30B** to address limits that apply in the case of an assignment submitted under § 6.1 before the end of WRC-19 but for which the information to be examined under § 6.19 will be submitted after the entry into force of the Radio Regulations.

Proposals

MOD CAN/USA/58A19A6/1

APPENDIX 30B (REV.WRC‑19)

Provisions and associated Plan for the fixed-satellite service
in the frequency bands 4 500-4 800 MHz, 6 725-7 025 MHz,
10.70-10.95 GHz, 11.20-11.45 GHz and 12.75-13.25 GHz

**Reasons:** Required modifications for 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.

MOD CAN/USA/58A19A6/2#50094

ANNEX 3     (Rev.WRC‑19)

Limits applicable to submissions received under Article 6 or Article 7MOD [[1]](#footnote-1)15

Under assumed free-space propagation conditions, the power flux-density (space-to-Earth) of a proposed new allotment or assignment produced on any portion of the surface of the Earth shall not exceed:

– −131.4\* dB(W/(m2 · MHz)) in the 4 500-4 800 MHz frequency band; and

– −118.4\* dB(W/(m2 · MHz)) in the 10.70-10.95 GHz and 11.20-11.45 GHz frequency bands.

Under assumed free-space propagation conditions, the power flux-density (Earth-to-space) of a proposed new allotment or assignment shall not exceed:

– −140.0 dB(W/(m2 · MHz)) towards any location in the geostationary-satellite orbit located more than 7° from the proposed orbital position in the 6 725-7 025 MHz frequency band, and

– −133.0 dB(W/(m2 · MHz)) towards any location in the geostationary-satellite orbit located more than 6° from the proposed orbital position in the 12.75-13.25 GHz frequency band.

\* EDITOR’S NOTE – These are consequential changes to the proposed reduction of the coordination arc from 10° to 7° in the 4 GHz frequency band and from 9° to 6° in the 10/11 GHz frequency band. Should other sizes of the coordination arc be considered by WRC‑19, the power flux-densities should be amended according to the equation: pfdnew = pfdcurrent – 25 ∙ log (current coordination arc / new coordination arc).

**Reasons:** These changes align the pfd limits with the proposed modified coordination arc in Annex 4 of RR Appendix **30B**, ensuring protection of existing allotments and systems in the uplink direction while facilitating modified allotments and new entries.

MOD CAN/USA/58A19A6/3#50095

ANNEX 4     (REV.WRC‑19)

Criteria for determining whether an allotment or
an assignment is considered to be affected

An allotment or an assignment is considered as being affected by a proposed new allotment or assignment:

1 if the orbital spacing between its orbital position and the orbital position of the proposed new allotment or assignment is equal to or less than:

1.1 7° in the 4 500-4 800 MHz (space-to-Earth) and 6 725-7 025 MHz (Earth-to-space) frequency bands;

1.2 6° in the 10.70-10.95 GHz (space-to-Earth), 11.20-11.45 GHz (space-to-Earth) and 12.75-13.25 GHz (Earth-to-space) frequency bands.

2 However, an administration is considered as not being affected if at least one of the following conditions is satisfied:

2.1 the calculated16 Earth-to-space single-entry carrier-to-interference (*C*/*I*)*u* value at each test point associated with the allotment or assignment under consideration is greater than or equal to a reference value that is 30 dB, or (*C*/*N*)*u* + 9 dB17[[2]](#footnote-2) , whichever is the lowest and the calculated16 space-to-Earth single-entry (*C*/*I*)*d* value everywhere within the service area of the allotment or assignment under consideration is greater than or equal to a reference value19 that is 26.65 dB, or (*C*/*N*)*d* + 11.65 dB20, whichever is the lowest and the calculated16 overall aggregate (*C*/*I*)*agg* value at each test point associated with the allotment or assignment under consideration, is greater than or equal to a reference value that is 21 dB, or (*C/N*)*t* + 7 dB21, or any already accepted overall aggregate (*C*/*I*)*agg* value, whichever is the lowest, with a tolerance of 0.25 dB22 in the case of assignments not stemming from the conversion of an allotment into an assignment without modification, or when the modification is within the envelope characteristics of the initial allotment.

2.2 in the 4 500-4 800 MHz (space-to-Earth) frequency band, the pfd produced under assumed free-space propagation conditions does not exceed the threshold values shown below, anywhere within the service area of the allotment or assignment under consideration:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  |  | θ | ≤ | 0.09 | −243.5 | dB(W/(m2 ∙ Hz)) |
| 0.09 | < | θ | ≤ | 3 | −243.5 + 20log(θ/0.09) | dB(W/(m2 ∙ Hz)) |
| 3 | < | θ | ≤ | 5.5 | −219.8 + 0.75 ∙ θ2 | dB(W/(m2 ∙ Hz)) |
| 5.5 | < | θ | < | 7 | −196.8 + 25log(θ/5.6) | dB(W/(m2 ∙ Hz)) |

 where θ denotes nominal geocentric separation (degrees) between interfering and interfered-with satellite networks;

 in the 6 725-7 025 MHz (Earth-to-space) frequency band, the pfd produced at the location in the geostationary-satellite orbit of the allotment or assignment under consideration under assumed free‑space propagation conditions does not exceed −204.0 - *GRx* dB(W/(m2 ∙ Hz) where *GRx* is the relative space station uplink receive antenna gain of the potentially affected assignment at the location of the interfering earth station);

 in the 10.7-10.95 and 11.2-11.45 GHz (space-to-Earth) frequency bands, the pfd produced under assumed free-space propagation conditions does not exceed the threshold values shown below, anywhere within the service area of the allotment or assignment under consideration:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  |  | θ | ≤ | 0.05 | −238.0 | dB(W/(m2 ∙ Hz)) |
| 0.05 | < | θ | ≤ | 3 | −238.0 + 20log(θ/0.05) | dB(W/(m2 ∙ Hz)) |
| 3 | < | θ | ≤ | 5 | −210.9 + 0.95 ∙ θ2 | dB(W/(m2 ∙ Hz)) |
| 5 | < | θ | < | 6 | −187.2 + 25log(θ/5) | dB(W/(m2 ∙ Hz)) |

 where θ denotes nominal geocentric separation (degrees) between interfering and interfered-with satellite networks;

 in the 12.75-13.25 GHz (Earth-to-space) frequency band, the pfd produced at the location in the geostationary-satellite orbit of the allotment or assignment under consideration under assumed free‑space propagation conditions does not exceed −208.0 - *GRx*  dB(W/(m2 ∙ Hz) where *GRx* is the relative space station uplink receive antenna gain of the potentially affected assignment at the location of the interfering earth station).

**Reasons:** These changes to the coordination trigger in Annex 4 of RR Appendix **30B** protects existing allotments and systems while facilitating modified allotments and new entries.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. 15 These limits shall not apply to assignments submitted in accordance with Article 6 or recorded in the List before 22 November 2019. For assignments submitted under § 6.17 after 22 November 2019, related to assignments submitted under § 6.1 before 22 November 2019, the limits specified in Annex 3 (WRC-07) applies. [↑](#footnote-ref-1)
2. 18 (SUP – WRC‑19) [↑](#footnote-ref-2)