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| A close up of a sign  Description automatically generated | **World Radiocommunication Conference (WRC-23)Dubai, 20 November - 15 December 2023** |  |
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| PLENARY MEETING | **Addendum 12 toDocument 157(Add.22)-E** |
|  | **30 October 2023** |
|  | **Original: English** |
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| India (Republic of) |
| PROPOSALS FOR THE WORK OF THE CONFERENCE |
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| Agenda item 7(J) |

7 to consider possible changes, in response to Resolution 86 (Rev. Marrakesh, 2002) of the Plenipotentiary Conference, on 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 the rational, efficient and economical use of radio frequencies and any associated orbits, including the geostationary-satellite orbit;

7(J) Topic J – Modifications to Resolution **76 (Rev.WRC-15)**

ARTICLE 22

Space services1

Section II − Control of interference to geostationary-satellite systems

MOD IND/157A22A12/1#2163

22.5K 8) Administrations operating or planning to operate non-geostationary-satellite systems in the fixed-satellite service in the frequency bands listed in Tables **22‑1A** to **22‑1D** of No. **22.5C** will apply the provisions of Resolution **76 (Rev.WRC‑23)** to ensure that the actual aggregate interference into geostationary fixed-satellite service and geostationary broadcasting-satellite service networks caused by such systems operating co-frequency in these frequency bands does not exceed the aggregate power levels shown in Tables 1A to 1D of Resolution **76 (Rev.WRC‑23)** In the event that an administration operating a geostationary-satellite network in conformity with the Radio Regulations identifies equivalent power flux-density levels from non-geostationary-satellite systems in the fixed-satellite service which may be in excess of the aggregate limits contained in Tables 1A to 1D of Resolution **76 (Rev.WRC‑23)**, the administrations responsible for the non-geostationary-satellite systems in the fixed-satellite service will apply the provisions contained in *resolves* 2 of Resolution **76 (Rev.WRC‑23)**.     (WRC‑23)

MOD IND/157A22A12/2#2162

RESOLUTION 76 (REV.WRC-23)

Protection of geostationary fixed-satellite service and geostationary broadcasting-satellite service networks from the maximum aggregate
equivalent power flux‑density produced by multiple non‑geostationary
fixed-satellite service systems in frequency bands where equivalent
power flux-density limits have been adopted

The World Radiocommunication Conference (Dubai, 2023),

considering

*a)* that WRC‑97 adopted, in Article **22**, provisional equivalent power flux-density (epfd) limits to be met by non‑geostationary fixed-satellite service (non-GSO FSS) systems in order to protect GSO FSS and GSO broadcasting-satellite service (BSS) networks in parts of the frequency range 10.7-30 GHz;

*b)* that WRC‑2000 revised Article **22** to ensure the limits contained therein provide adequate protection to GSO systems without placing undue constraints on any of the systems and services sharing these frequency bands;

*c)* that WRC‑2000 decided that a combination of single-entry validation, single-entry operational and, for certain antenna sizes, single-entry additional operational epfd limits, contained in Article **22**, along with the aggregate limits in Tables 1A to 1D as contained in Annex 1 to this Resolution, which apply to non‑GSO FSS systems, protects GSO networks in these frequency bands;

*d)* that these single-entry validation limits have been derived from aggregate epfd masks contained in Tables 1A to 1D, assuming a maximum effective number of non-GSO FSS systems of 3.5;

*e)* that the aggregate interference caused by all co-frequency non‑GSO FSS systems in these frequency bands into GSO FSS systems should not exceed the aggregate epfd limits in Tables 1A to 1D;

*f)* that WRC‑97 decided, and WRC‑2000 confirmed, that non‑GSO FSS systems in the frequency bands in question are to mutually coordinate the use of frequencies in these frequency bands under the provisions of No. **9.12**;

*g)* that the orbital characteristics of such systems are likely to be inhomogeneous;

*h)* that, as a result of this likely inhomogeneity, the aggregate epfd levels from multiple non‑GSO FSS systems will not be directly related to the actual number of systems sharing a frequency band, and the number of such systems operating co-frequency is likely to be small;

*i)* that the possible misapplication of single-entry limits should be avoided,

recognizing

*a)* that non-GSO FSS systems are likely to need to implement interference mitigation techniques to mutually share frequencies;

*b)* that, on account of the use of such interference mitigation techniques, it is likely that the number of non‑GSO systems will remain small, as will the aggregate interference caused by non‑GSO FSS systems into GSO systems;

*c)* that, notwithstanding *considering d)* and *e)* and *recognizing b)*, there may be instances where the aggregate interference from non‑GSO systems could exceed the interference levels given in Tables 1A to 1D;

*d)* that administrations operating GSO systems may wish to ensure that the aggregate epfd produced by all operating co-frequency non‑GSO FSS systems in the frequency bands referred to in *considering a)* above into GSO FSS and/or GSO BSS networks does not exceed the aggregate interference levels given in Tables 1A to 1D;

*e)* that previous WRCs have adopted the use of a consultation meeting procedure in Resolutions **609 (Rev.WRC-07)** and **769 (WRC-19)** to ensure that non-GSO systems meet their obligations to not exceed limits on unacceptable aggregate interference to other services or applications,

noting

Recommendation ITU‑R S.1588 “Methodologies for calculating aggregate downlink equivalent power flux-density produced by multiple non-geostationary fixed-satellite service systems into a geostationary fixed-satellite service network”,

resolves

1 that administrations operating or planning to operate non‑GSO FSS systems, for which coordination or notification information, as appropriate, was received after 21 November 1997, in the frequency bands referred to in *considering a)* above, individually or in collaboration, shall take all possible steps, including, if necessary, by means of appropriate modifications to their systems, to ensure that the aggregate interference into GSO FSS and GSO BSS networks caused by such systems operating co-frequency in these frequency bands does not cause the aggregate power levels given in Tables 1A to 1D to be exceeded (see No. **22.5K**);

2 that, in the event that the aggregate interference levels in Tables 1A to 1D are exceeded, administrations operating non‑GSO FSS systems in these frequency bands shall take all necessary measures expeditiously to reduce the aggregate epfd levels to those given in Tables 1A to 1D, or to higher levels where those levels are acceptable to the affected GSO administration (see No. **22.5K**),

invites the ITU Radiocommunication Sector

1 to continue its studies and to develop, as a matter of urgency, a suitable methodology to calculate the aggregate epfd produced by all non‑GSO FSS systems operating or planning to operate co-frequency in the frequency bands referred to in *considering a)* above into GSO FSS and GSO BSS networks, which may be used to determine whether the systems are in compliance with the aggregate power levels given in Tables 1A to 1D;

2 to continue its studies and to develop, as a matter of urgency, a Recommendation on the accurate modelling to calculate the aggregate interference from non‑GSO FSS systems into GSO FSS and GSO BSS networks in the frequency bands referred to in *considering a)* above, and taking into account the coordination of frequency use among non-GSO systems, in order to assist administrations planning or operating non‑GSO FSS systems in their efforts to limit the aggregate epfd levels produced by their systems into GSO networks, and to provide guidance to GSO network designers on the maximum epfd↓ levels expected to be produced by all non‑GSO FSS systems when accurate modelling assumptions are used;

3 taking into account *recognizing e),* to continue its studies and develop, as a matter of urgency, a Recommendation and/or providing the basis for a processes or procedures to be used among administrations in order to ensure that the aggregate epfd limits given in Tables 1A to 1D are not exceeded by operators of non-GSO FSS systems;

4 to work on the development of measurement techniques to identify the interference levels from non-GSO systems in excess of the aggregate limits given in Tables 1A to 1D, and to confirm compliance with these limits,

instructs the Director of the Radiocommunication Bureau

1 to assist in the development of the methodology referred to in *invites the ITU Radiocommunication Sector*1above;

2 to report to WRC‑27 on the results of studies in *invites the ITU Radiocommunication Sector* above,

invites the 2027 World Radiocommunication Conference

to establish a procedure or process, based on the results of studies in *invites the ITU Radiocommunication Sector* above, whereby administrations operating or planning to operate non-GSO FSS to ensure that operations of all non-GSO FSS networks do not exceed the aggregate level of protection for GSO networks.

ANNEX 1 TO RESOLUTION 76 (REV.WRC-23)

…

**Reasons:** An accurate aggregate calculation method is needed before requiring changes to the operations of non-GSO systems. It is recognized that there is no existing methodology which can be used for the calculation of the aggregate. This methodology should be developed with supported studies and careful thought to ensure the protection of GSO networks and avoid any chance of dispute. Proposed modification and update of Resolution **76 (Rev.WRC-15)** is to call specifically for further study on a consultation process for non-GSO FSS systems operating in the frequency bands specified in *considering a)* of the Resolution to use to ensure compliance with the aggregate epfd limits in Tables 1A to 1D of the Resolution.

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