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| **32 MEETING OF PERMANENT****CONSULTATIVE COMMITTEE II:****RADIOCOMMUNICATIONS****December 3 to 7, 2018****Brasilia, D.F. Brazil** | **OEA/Ser.L/XVII.4.2.32****CCP.II-RADIO/doc. [ ]/18****10 November 2018****Original: English** |
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|  | **U.S. PROPOSAL ON WRC-19 AGENDA ITEM 1.6** |  |
|  | **(Item on the Agenda: 3.1)** |  |
|  | **(Document submitted by the delegation of the United States of America)** |  |

Introduction

This document contains an attachment including the USA proposal on WRC-19 Agenda Item 1.6 for consideration in CITEL’s preparation to WRC-19 Agenda Item 1.6.

# Attachment

# DRAFT PROPOSALS FOR THE WORK OF THE CONFERENCE

**Agenda Item 1.6**: *to consider the development of a regulatory framework for non-GSO FSS satellite systems that may operate in the frequency bands 37.5-39.5 GHz (space-to-Earth), 39.5-42.5 GHz (space‑to‑Earth), 47.2-50.2 GHz (Earth-to-space) and 50.4-51.4 GHz (Earth-to-space), in accordance with Resolution* ***159 (WRC-15);***

**BACKGROUND INFORMATION**:

Article **22** of the Radio Regulations contains provisions to ensure compatibility of non-GSO FSS operations with GSO networks. There are currently no defined technical provisions for sharing between non-GSO systems and GSO networks in the 50/40 GHz frequency bands. Moreover, there are no existing mechanisms in the RR establishing coordination procedures applicable to non-GSO systems operating within the FSS allocations in frequency bands in the 37.5 to 51.4 GHz range, such as application of RR No. **9.12**.

To address these issues, and the uncertainty they create among potential operators of non-GSO FSS satellite systems in this 50/40 GHz range, WRC-15 established agenda item 1.6 for WRC-19: “to consider the development of a regulatory framework for non-GSO FSS satellite systems that may operate in the frequency bands 37.5-39.5 GHz (space-to-Earth), 39.5-42.5 GHz (space-to-Earth), 47.2-50.2 GHz (Earth-to-space) and 50.4-51.4 GHz (Earth-to-space), in accordance with Resolution **159 (WRC-15).**” Resolution **159 (WRC-15)** invites administrations to contribute to the specified ITU-R studies of technical, operational issues and regulatory provisions for non-GSO fixed-satellite services satellite systems in these frequency bands while ensuring protection of GSO satellite networks in the FSS, MSS and BSS.

Non-GSO FSS systems in the 50/40 GHz band can be utilized to unlock a new and promising source of global broadband communications. Thanks to recent technological satellite and launch service advancements, next-generation non-GSO satellite systems are currently being developed. The benefits of such non-GSO satellite systems include providing worldwide connectivity and high-quality communication services to users in all geographic settings, be they urban, rural or remote, and offer tools for addressing the digital divide. Developing a regulatory framework in the 50/40 GHz band will provide regulatory certainty to allow non-GSO satellite systems to efficiently operate in these existing FSS frequency bands.

ITU-R studies have concluded that sharing between non-GSO systems and protection of GSO satellite networks is possible in these frequency bands. ITU-R Working Party 4A has also been working on the development of a new Recommendation to identify means and a methodology to define a protection criteria for sharing by FSS systems in the 50/40 GHz bands. The methodology in this Recommendation and proposed protection criteria considers both the short term performance objectives and long term time-average bandwidth efficiency to enable use of these frequency bands by non-GSO FSS systems that will ensure protection of GSO networks. ITU-R studies have confirmed that the application of the procedures in the new Recommendation allows for flexibility in the design and operation of non-GSO systems, while fully protecting GSO operations, therefore significantly enhancing spectrum efficiency of the 50/40 GHz bands.

The proposals below present a regulatory solution for providing certainty and technical provisions to allow for sharing between non-GSO FSS systems and for protection of co-frequency GSO networks and adjacent-band EESS (passive) systems under WRC-19 AI 1.6. The proposals have been developed based on the results of ITU-R studies called for in Resolution **159 (WRC-15),** and identify a methodology to allow for maximum spectrum efficiency for non-GSO FSS systems, while protecting operations of GSO networks from operations of non-GSO FSS systems. This proposal also provides a regulatory solution to ensure that aggregate emissions from operating non-GSO FSS systems do not exceed aggregate protection requirements of GSO networks.

Regarding protections of EESS (passive) and modifications to Resolution **750 (Rev. WRC-15)**, this proposal specifically proposes changes to both GSO and NGSO FSS earth station out of band emission limits as studies have shown that GSO FSS systems alone cause exceedance to the EESS (passive) protection criteria and that in order to allow the aggregate interference from both GSO and NGSO FSS earth stations emission to meet this criteria modifications to both limits are needed. This proposal tracks closely with Method D in the draft CPM Report, leaving the specific values for GSO and NGSO systems as TBD for further analysis. Since *recognizing i)* of Resolution **159 (WRC-15 )** states that potential revisions to the protection of passive services will be impractical to apply to GSO FSS networks that are operational, planned for near term operation or filed, the proposed changes would not apply to any GSO systems whose complete notification information was received by the bureau before [January 1, 2020].

**Proposals:**

ARTICLE 5

**Frequency allocations**

**Section IV – Table of Frequency Allocations**

**MOD USA/1.6/1**

|  |
| --- |
| 34.2-40 GHz |
| Allocation to services |
| Region 1 | Region 2 | Region 3 |
| 37.5-38 FIXED FIXED-SATELLITE (space-to-Earth) **ADD 5.A16** MOBILE except aeronautical mobile SPACE RESEARCH (space-to-Earth) Earth exploration-satellite (space-to-Earth) 5.547 |
| 38-39.5 FIXED FIXED-SATELLITE (space-to-Earth) **ADD 5.A16** MOBILE Earth exploration-satellite (space-to-Earth) 5.547 |
| 39.5-40 FIXED FIXED-SATELLITE (space-to-Earth) 5.516B **ADD 5.A16** MOBILE MOBILE-SATELLITE (space-to-Earth) **ADD 5.B16**  Earth exploration-satellite (space-to-Earth) 5.547 |

|  |
| --- |
| 40-47.5 GHz |
| Allocation to services |
| Region 1 | Region 2 | Region 3 |
| 40-40.5 EARTH EXPLORATION-SATELLITE (Earth-to-space) FIXED FIXED-SATELLITE (space-to-Earth) 5.516B **ADD 5.A16** MOBILE MOBILE-SATELLITE (space-to-Earth) **ADD 5.B16** SPACE RESEARCH (Earth-to-space) Earth exploration-satellite (space-to-Earth) |
| 40.5-41FIXEDFIXED-SATELLITE (space-to-Earth) ADD 5.484A **ADD 5.A16** BROADCASTINGBROADCASTING-SATELLITEMobile5.547 | 40.5-41FIXEDFIXED-SATELLITE (space-to-Earth) 5.516B **ADD 5.A16**BROADCASTINGBROADCASTING-SATELLITEMobileMobile-satellite (space-to-Earth)5.547 | 40.5-41FIXEDFIXED-SATELLITE (space-to-Earth) **ADD 5.A16** BROADCASTINGBROADCASTING-SATELLITEMobile5.547 |
| 41-42.5 FIXED FIXED-SATELLITE (space-to-Earth) 5.516B **ADD 5.A16** BROADCASTING BROADCASTING-SATELLITE Mobile 5.547 5.551F 5.551H 5.551I |
| 47.2-47.5 FIXED FIXED-SATELLITE (Earth-to-space) 5.552 **ADD 5.A16**  MOBILE 5.552A |

|  |
| --- |
| 47.5-51.4 GHz |
| Allocation to services |
| Region 1 | Region 2 | Region 3 |
| 47.5-47.9FIXEDFIXED-SATELLITE(Earth-to-space) 5.552 **ADD 5.A16** (space-to-Earth) 5.516B 5.554A MOBILE | 47.5-47.9 FIXED FIXED-SATELLITE (Earth-to-space) 5.552 **ADD 5.A16** MOBILE |
| 47.9-48.2 FIXED FIXED-SATELLITE (Earth-to-space) 5.552 **ADD 5.A16**  MOBILE 5.552A |
| 48.2-48.54FIXEDFIXED-SATELLITE(Earth-to-space) 5.552 **ADD 5.A16** (space-to-Earth) 5.516B5.554A 5.555BMOBILE | 48.2-50.2 FIXED FIXED-SATELLITE (Earth-to-space) 5.516B MOD 5.338A 5.552 **ADD 5.A16**  MOBILE |
| 48.54-49.44FIXEDFIXED-SATELLITE(Earth-to-space) 5.552 **ADD 5.A16** MOBILE5.149 5.340 5.555 |  |
| 49.44-50.2FIXEDFIXED-SATELLITE(Earth-to-space) MOD 5.338A 5.552 **ADD 5.A16** (space-to-Earth) 5.516B5.554A 5.555B MOBILE |  5.149 5.340 5.555 |
| 50.4-51.4 FIXED FIXED-SATELLITE (Earth-to-space) 5.338A **ADD 5.A16** MOBILE Mobile-satellite (Earth-to-space) |

**Reasons:** To insert provisions for coordination among non-GSO satellite services

ADD USA/1.6/2

5.A16The use of the frequency bands 37.5-39.5 GHz (space-to-Earth), 39.5-42.5 GHz (space‑to‑Earth), 47.2-50.2 GHz (Earth-to-space) and 50.4-51.4 GHz (Earth-to-space) by a non-GSO‑satellite system in the fixed-satellite service for which complete coordination and/or notification information, as appropriate, is received by the Bureau after 1 January 2021, is subject to the application of the provisions of No. **9.12** for coordination with other non-GSO-satellite systems in the fixed-satellite service, but not with non-GSO systems in other services. Draft new Resolution **[A16] (WRC-19)** shall also apply, and No. **22.2** shall continue to apply.     (WRC-19)

**Reasons:** To address coordination among non-GSO FSS systems in the 50/40 GHz bands

ADD USA/1.6/3

5.B16The use of the frequency bands 39.5-40 and 40-40.5 GHz by non-GSO systems in the mobile-satellite service (space-to-Earth) and non‑GSO satellite systems in the fixed-satellite service (space-to-Earth) for which complete coordination and/or notification information, as appropriate, is received by the Bureau after 1 January 2021, is subject to coordination under No. **9.12**.     (WRC-19).

**Reasons:** To address coordination among non-GSO FSS and non-GSO mobile-satellite service (space-to-Earth) systems in the 50/40 GHz bands

MOD USA/1.6/4

**5.338A** In the frequency bands 1 350-1 400 MHz, 1 427-1 452 MHz, 22.55-23.55 GHz, 30-31.3 GHz, 49.7-50.2 GHz, 50.4-50.9 GHz, 51.4-52.6 GHz, 81-86 GHz and 92-94 GHz, Resolution 750 (Rev.WRC-19) applies. (WRC-19)

**Reasons:** Consequential change

ARTICLE 22

**Space services**

**ADD USA/1.6/5**

**22.5L** 9) A non-GSO satellite system in the fixed-satellite service in the frequency bands 37.5-39.5 GHz, 39.5-42.5 GHz, 47.2-50.2 GHz, and 50.4-51.4 GHz shall not exceed a single-entry permissible allowance of 3% of time allowance for degradation in terms of C/N specified in the short-term and long-term performance objectives of GSO satellite networks . The calculation procedures given in Recommendation ITU‑R S.[50/40 GHz FSS Sharing Methodology] and the GSO reference links contained in Recommendation ITU-R S.[50/40 GHz Reference Links] shall be used for the calculation . (WRC-19)

**ADD USA/1.6/6**

**22.5M** 10) Administrations operating or planning to operate non-GSO-satellite systems in the fixed-satellite service in the frequency bands 37.5-39.5 GHz, 39.5-42.5 GHz, 47.2-50.2 GHz, and 50.4-51.4 GHz shall apply the provisions of Resolution **[A16] (WRC-19)** to ensure that the aggregate interference caused by all non-GSO fixed-service satellite systems operating co-frequency in these frequency bands shall not exceed 10% of the time allowance for degradation in terms of C/N specified in the short-term and long-term performance objectives of the geostationary reference links listed in Recommendation ITU-R S.[50/40 Reference Links]. (WRC-19).

**Reasons:** Based on ITU-R studies, the detailed technical regulatory provisions presented above will introduce technical regulatory provisions into the Radio Regulations that will enable the introduction of non-GSO satellite systems that will protect GSO networks and provide for maximum spectral efficiency for simultaneous operations of non-GSO system and GSO network operations in the 50/40 GHz bands.

ARTICLE 9

Procedure for effecting coordination with or obtaining agreement of other administrations1, 2, 3, 4, 5, 6, 7, 8, 9    (WRC‑15)

**MOD USA/1.6/7**

**9.35** *a)* examine that information with respect to its conformity with No. **11.31 MOD**19;

(WRC-2019)

MOD USA/1.6/8

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MOD 19 **9.35.1** The Bureau shall include the detailed results of its examination under No. **11.31** of compliance with the limits in Tables **22-1** to **22-3** and the single entry limits in No. **22.5L** of Article **22** in the publication under No. **9.38**. (WRC-2019)

**Reasons:** To address the publication of the Bureau’s examination of the non-GSO single entry limits.

**ADD USA/1.6/9**

draft new RESOLUTION [A16] (WRC‑19)

**Protection of geostationary satellite networks from unacceptable interference from non-GSO satellite FSS networks and systems in the 37.5-39.5 GHz, 39.5-42.5 GHz, 47.2-50.2 GHz, and 50.4-51.4 GHz frequency bands**

The World Radiocommunication Conference (2019),

*considering*

*a)* that the frequency bands 37.5-39.5 GHz (space-to-Earth), 39.5-42.5 GHz (space-to-Earth), 47.2-50.2 GHz (Earth-to-space), and 50.4-51.4 GHz (Earth-to-space) are allocated, *inter alia*, on a primary basis to the fixed-satellite service (FSS) in all Regions;

b) that the frequency bands 40.5-41 GHz and 41-42.5 GHz are allocated, on a primary basis to the broadcasting-satellite service (BSS) in all regions;

c) that the frequency bands 39.5-40 GHz and 40-40.5 GHz are allocated, on a primary basis to the mobile-satellite service (MSS) in all regions;

*d)* that, in accordance with No. **22.2**, non-GSO systems shall not cause unacceptable

interference to GSO FSS and broadcasting-satellite service (BSS) networks and, unless otherwise

specified in the Radio Regulations, shall not claim protection from GSO FSS and BSS satellite

networks;

*f*) that non-GSO FSS systems would benefit from the certainty that would result from the quantification of technical regulatory provisions required for protection of GSO satellite networks operating in the bands referred to in *considering* a), b), and c) above;

*g)* that GSO FSS, MSS and BSS networks can be protected without placing undue constraints on non-GSO FSS systems in the bands in *considering a), b), and c) above*;

*h)* that WRC-19 modified Article **22** to limit single-entry and aggregate permissible time allowances for degradation in terms of C/N by non-GSO FSS systems to GSO satellite networks, based on Recommendation ITU-R S.[50/40 Reference Links] and Recommendation ITU-R S.[50/40 GHz Sharing Methodology], in the bands in *considering a)*;

*i)* that, the aggregate interference levels from multiple non-GSO FSS systems will be directly related to the actual number of systems sharing a frequency band based on the single-entry operational use of each system;

*j)* that the aggregate interference caused by all co-frequency non-GSO FSS systems in these bands into GSO FSS, MSS and BSS networks should not exceed the aggregate limits given in Recommendation ITU-R S.[50/40 GHz FSS Sharing Methodology] *recommends* 3;

*recognizing*

1. that non-GSO FSS systems are likely to need to implement interference mitigation techniques, such as orbital avoidance angles, Earth station site diversity, and GSO arc avoidance, to mutually share frequencies and to protect GSO networks;
2. that to achieve compliance with the aggregate limit in *considering* *j)*, administrations operating or planning to operate non-GSO FSS systems will need to agree cooperatively through consultation meetings to equitably share the permissible aggregate interference in a manner to achieve the level of protection for GSO FSS, MSS and BSS networks that is stated in No. **22.5M** of the Radio Regulations**;**
3. that it may be appropriate for representatives of administrations operating or planning to operate GSO FSS, MSS and BSS networks to be involved in the determinations made pursuant to *recognizing b)*;

d) that WRC-19 decided to apply the coordination provisions of No. **9.12** to non-GSO FSS systems for which complete coordination is received by the Bureau after 1 January 2021,

*noting*

1. that Recommendation ITU‑R S.[50/40 GHz FSS Sharing Methodology] contains the methodology for determining conformity to the single-entry and aggregate limits to protect the GSO networks;
2. that Recommendation ITU-R S.1503 provides recommendations on how to compute the EPFD from a non-GSO FSS system into victim earth stations and satellites;
3. that Recommendation ITU-R S.[50/40 GHz FSS Reference Links] contains GSO satellite system characteristics to be considered in non-GSO/GSO frequency sharing analyses in the frequency bands 37.5-39.5 GHz, 39.5-42.5 GHz, 47.2-50.2 GHz and 50.4‑51.4 GHz;

*resolves*

1 that administrations operating or planning to operate non‑GSO FSS systems in the frequency bands referred to in *considering a)* above, shall, in collaboration, take all necessary steps, including, if necessary, by means of appropriate modifications to their systems or networks, to ensure that the aggregate interference into GSO FSS, MSS and BSS satellite networks caused by such systems operating co-frequency in these frequency bands does not exceed the aggregate protection limits as determined pursuant to No. **22.5M** of the Radio Regulations;

2 that to carry out the obligations in *resolves*1 above, administrations operating or planning to operate non-GSO FSS systems shall agree cooperatively through regular consultation meetings referred to in recognizing b) to ensure that operations of all non-GSO networks do not exceed the aggregate level of protection for GSO satellite networks;

3 that to carry out the calculation of *resolves 2,* administrations shall take into account the GSO satellite characteristics listed in Recommendation ITU-R S.[50/40 GHz Reference Links] when applying the methodology contained in Recommendation ITU-R S.[50/40 GHz Sharing Methodology] and the results of the aggregate calculation calculated by validation software;

4 that administrations (including representatives of administrations operating GSO FSS, MSS and BSS networks) participating in a consultation meeting may use their own software in conjunction with any approved ITU‑R software tools for the calculation and verification of the aggregate limits given in Recommendation ITU-R S.[50/40 GHz Sharing Methodology], subject to the agreement of the consultation meeting, noting that the aggregation of all systems can be performed from these results without a specialized software tool;

5 that administrations, in carrying out their obligations under *resolves*1, shall take into account only those non-GSO FSS systems with frequency assignments in the frequency bands referred to in *considering a)* above that have met the criteria listed in Annex 2 to this Resolution through appropriate information provided to consultation meetings referred to in *resolves* 2;

6 that administrations, in developing agreements to carry out their obligations under *resolves*1, shall establish mechanisms to ensure that all potential FSS system and network notifying administrations and operators are given full visibility of, and the opportunity to participate in, the consultation process;

7 that in the absence of an agreement reached at consultation meetings referred to in *resolves* 2, each non-GSO FSS system shall be operated in accordance with single-entry limits calculated by the apportionment of the aggregate levels commensurate to the number of non-GSO systems operating so as to assure equitable sharing of the aggregate limit among all non-GSO systems in operation;

8 that the administrations participating at the consultation meetings referred to in *resolves 2* shall designate one convener to be responsible for communicating to the Bureau, such as shown in Annex 1, that the results of the aggregate non-GSO system operational calculation and sharing determinations made in application of *resolves*1 above, without regard to whether such determinations result in any modifications to the published characteristics of their respective systems, providing a draft record of each Consultation meeting, and posting the approved record for posting by the Bureau to the ITU website;

*instructs the Radiocommunication Bureau*

1 to participate in the consultation meetings mentioned in *resolves* 2 above and observe carefully the results of the aggregate calculation performed according to *resolves*1;

2 to publish in the International Frequency Information Circular (BR IFIC), the information referred to in *resolves*8,

*urges administrations*

 to provide the Radiocommunication Bureau and all participants to the consultation meetings with access to independent software used in conjunction with *resolves 4*;

ANNEX 1 TO RESOLUTION [A16] (WRC-19)

List of GSO FSS system characteristics and format of the result of
the aggregate calculation to be provided to BR for
publication for information

# I GSO FSS, GSO MSS, GSO BSS and Non-GSO system characteristics to be used in the calculation of aggregate emissions from non-GSO FSS systems

## **I-1 GSO FSS, GSO MSS and GSO BSS Characteristics**

Recommendation ITU-R S.[50/40 GHz FSS Reference links]

## **I-2 Non-GSO satellite system constellation parameters**

For each non‑GSO satellite system, the following parameters should be provided to BR for publication in the aggregate calculation:

– System administration;

– Number of space stations used in aggregate calculation;

– Single entry use of each non-GSO FSS systems.

## **II. Results of the aggregate calculation**

Results of aggregate calculation including systems studied and assessment results

ANNEX 2 TO RESOLUTION [A16] (WRC-19)

**List of criteria for the application of *resolves* 3**

1 Submission of Notification Publication Information.

2 Entry into satellite manufacturing or procurement agreement, and entry into satellite launch agreement.

The non-GSO FSS system operator should possess:

i) clear evidence of a binding agreement for the manufacture or procurement of its satellites; and

ii) clear evidence of a binding agreement to launch its satellites.

The manufacturing or procurement agreement should identify the contract milestones leading to the completion of manufacture or procurement of satellites required for the service provision, and the launch agreement should identify the launch date, launch site and launch service provider. The notifying administration is responsible for authenticating the evidence of agreement.

The information required under this criterion may be submitted in the form of a written commitment by the responsible administration.

3 As an alternative to satellite manufacturing or procurement and launch agreements, clear evidence of guaranteedfunding arrangements for the implementation of the project would be accepted. The notifying administration is responsible for authenticating the evidence of these arrangements and for providing such evidence to other interested administrations in furtherance of its obligations under this Resolution.

**Reasons:** To provide a methodology to ensure that aggregate GSO satellite network protection levels are never exceeded and to provide a mechanism to monitor the aggregate limits from the operation of actual non-GSO FSS systems

**MOD USA/1.6/10**

**MOD**

RESOLUTION 750 (Rev.WRC‑19)

Compatibility between the Earth exploration-satellite service (passive) and relevant active services

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

TABLE 1-1

|  |  |  |  |
| --- | --- | --- | --- |
| EESS (passive) band | Activeservice band | Active service | Limits of unwanted emission power fromactive service stations in a specified bandwidthwithin the EESS (passive) band1 |
| 1 400-1 427 MHz | 1 427-1 452 MHz | Mobile | −72 dBW in the 27 MHz of the EESS (passive) band for IMT base stations−62 dBW in the 27 MHz of the EESS (passive) band for IMT mobile stations2, 3 |
| 23.6-24.0 GHz | 22.55-23.55 GHz | Inter-satellite | −36 dBW in any 200 MHz of the EESS (passive) band for non-geostationary (non-GSO) inter-satellite service (ISS) systems for which complete advance publication information is received by the Bureau before 1 January 2020, and −46 dBW in any 200 MHz of the EESS (passive) band for non-GSO ISS systems for which complete advance publication information is received by the Bureau on or after 1 January 2020 |
| 31.3-31.5 GHz | 31-31.3 GHz | Fixed(excluding HAPS) | For stations brought into use after 1 January 2012: −38 dBW in any 100 MHz of the EESS (passive) band. This limit does not apply to stations that have been authorized prior to 1 January 2012 |
| 50.2-50.4 GHz | 49.7-50.2 GHz | Fixed-satellite (E‑to‑s)4 | For stations brought into use after the date of entry into force of the Final Acts of WRC‑07:−10 dBW into the 200 MHz of the EESS (passive) band for earth stations having an antenna gain greater than or equal to 57 dBi−20 dBW into the 200 MHz of the EESS (passive) band for earth stations having an antenna gain less than 57 dBi |
| 50.2-50.4 GHz | 49.7-50.2 GHz | Fixed-satellitenon-GSO(E‑to‑s)4 | For NGSO stations brought into use after the date of entry into force of the Final Acts of WRC‑19:TBD into the 200 MHz of the EESS (passive) band |
| 50.2-50.4 GHz | 49.7-50.2 GHz | Fixed-satelliteGSO(E‑to‑s)4 | For GSO stations for which complete notification information is received by the Bureau before [1 January 2020],TBD in any 200 MHz of the EESS (passive) band |
| 50.2-50.4 GHz | 50.4-50.9 GHz | Fixed-satellite (E‑to‑s)4 | For stations brought into use after the date of entry into force of the Final Acts of WRC‑07:−10 dBW into the 200 MHz of the EESS (passive) band for earth stations having an antenna gain greater than or equal to 57 dBi−20 dBW into the 200 MHz of the EESS (passive) band for earth stations having an antenna gain less than 57 dBi |
| 50.2-50.4 GHz | 50.4-50.9 GHz | Fixed-satellitenon-GSO(E‑to‑s)4 | For NGSO stations brought into use after the date of entry into force of the Final Acts of WRC‑19:TBD into the 200 MHz of the EESS (passive) band |
| 50.2-50.4 GHz | 50.4-50.9 GHz | Fixed-satelliteGSO(E‑to‑s)4 | For GSO stations for which complete notification information is received by the Bureau before [1 January 2020],TBD in any 200 MHz of the EESS (passive) band |
| 52.6-54.25 GHz | 51.4-52.6 GHz | Fixed | For stations brought into use after the date of entry into force of the Final Acts of WRC‑07:−33 dBW in any 100 MHz of the EESS (passive) band |

**Reasons:** Studies have shown that GSO FSS systems alone cause exceedance the EESS (passive) protection criteria and that in order to allow the aggregate interference from both GSO and NGSO FSS earth stations emission to meet this criteria modifications to the unwanted emission limits for both GSO and NGSO FSS systems are needed.

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