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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 19 to Document 148-E** | |
|  | | **25 October 2023** | |
|  | | **Original: English** | |
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| Iran (Islamic Republic of) | | | |
| PROPOSALS FOR THE WORK OF THE CONFERENCE | | | |
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| Agenda item 1.19 | | | |

1.19to consider a new primary allocation to the fixed-satellite service in the space-to-Earth direction in the frequency band 17.3-17.7 GHz in Region 2, while protecting existing primary services in the band, in accordance with Resolution **174 (WRC‑19)**;

Introduction

As a result of ITU‑R conducted studies, four methods have been proposed to address this agenda item which can be summarized as follows:

– Method A: NOC.

– Method B (Alternative 1): is identical to Method D and contains fewer provisions to protect existing services.

– Method B (Alternative 2): contains additional provisions to protect existing services including the BSS feeder link of RR Appendix **30A** receiving space station and GSO FSS system.

– Method C: will limit the new allocation to GSO.

– Method D: is identical to Method B (Alternative 1) and contains fewer provisions to protect existing services.

It is pointed out that the following considerations are specific to Method B Alternative 2:

– avoiding the creation of a new type of implicit agreement to be imposed on the assignment of RR Appendix **30A** by the new FSS allocation;

– establishing an obligation to obtain explicit agreement with respect to the assignment of RR Appendix **30A** (avoiding conditional notification in case of continuing disagreement);

– establishing the maximum pfd limit at the edge of the Earth’s surface, which is in line with the ITU‑R studies that suggest keeping arrival angles to service areas above 20° to reduce the amount of spill over power transmitted towards the orbital arc by the new FSS allocation.

In order to ensure the protection of existing services, this administration supports Method B of the CPM Report where Alternative 2 is selected throughout this Method with just one modification. This modification has been made to RR No. **5.516A** and is also supported in the APT Common Proposal for this agenda item. This administration has no difficulty if WRC‑23 decides to limit the proposed new allocation to GSO as suggested in Method C.

Proposals

These proposals adhere to Method B Alternative 2 as outlined in the CPM Report. They are in agreement with the APT Common Proposals and only seeks the inclusion of one extra regulatory provision in comparison to it.

ARTICLE 5

Frequency allocations

Section IV – Table of Frequency Allocations  
(See No. 2.1)

MOD IRN/148A19/1#1921

15.4-18.4 GHz

|  |  |  |
| --- | --- | --- |
| Allocation to services | | |
| Region 1 | Region 2 | Region 3 |
| 17.3-17.7  FIXED-SATELLITE (Earth-to-space) 5.516 (space-to-Earth) MOD 5.516A 5.516B  Radiolocation | 17.3-17.7  FIXED-SATELLITE (Earth-to-space) 5.516 (space-to-Earth) MOD 5.484A MOD 5.516A MOD 5.517  BROADCASTING-SATELLITE  Radiolocation | 17.3-17.7  FIXED-SATELLITE (Earth-to-space) 5.516  Radiolocation |
| 5.514 | 5.514 5.515 | 5.514 |

**Reasons:** To introduce the FSS (space-to-Earth) allocation in the frequency band 17.3-17.7 GHz in Region 2 and apply RR Nos. 5.516A and 5.517 to this new allocation. Also, RR No. 5.484A is modified to extend the use of the frequency band 17.3-17.7 GHz (space-to-Earth) in Region 2, for application of the provisions of RR No. 9.12 for non-GSO satellite systems and priority with relation with GSO FSS.

MOD IRN/148A19/2#1923

5.516A In the band 17.3-17.7 GHz, earth stations of the fixed-satellite service (space-to-Earth) in Regions 1 and 2 shall not claim protection from the broadcasting-satellite service feeder-link earth stations operating under Appendix 30A, nor put any limitations or restrictions on the locations of the broadcasting-satellite service feeder-link earth stations anywhere within the service area of the feeder link. In Region 2, the use of the fixed-satellite service in the frequency band 17.3-17.7 GHz shall not cause unacceptable interference to the space station receivers of the broadcasting-satellite service feeder link in Regions 1 and 3 operating and those to be operated in the future under Appendix **30A**; upon receipt of a report of unacceptable interference, the notifying administration of the fixed-satellite service shall immediately eliminate or reduce interference to an acceptable level. In order to implement the commitment with regard to fixed-satellite service allocation in Region 2, the notifying administration of the fixed-satellite service at the time of notification under Article **11**, submitting Appendix **4** information to ITU shall also provide a firm commitment that, in the case of unacceptable interference, undertakes to immediately cease emission or reduce the interference to an acceptable level and that the fixed-satellite service system is capable to make this commitment immediately.     (WRC‑23)

**Reasons:** To extend the applicability of this footnote to Region 2 and ensure the protection of receiving space stations operating under RR Appendix 30Aand to implement the commitment set out in RR No. 5.516A.

MOD IRN/148A19/3#1924

5.484AThe use of the bands 10.95-11.2 GHz (space-to-Earth), 11.45-11.7 GHz (space-to-Earth), 11.7-12.2 GHz (space-to-Earth) in Region 2, 12.2-12.75 GHz (space-to-Earth) in Region 3, 12.5-12.75 GHz (space-to-Earth) in Region 1, 13.75-14.5 GHz (Earth-to-space), 17.3-17.7 GHz (space-to-Earth) in Region 2, 17.8-18.6 GHz (space-to-Earth), 19.7-20.2 GHz (space-to-Earth), 27.5-28.6 GHz (Earth-to-space), 29.5-30 GHz (Earth-to-space) by a non-geostationary-satellite system in the fixed-satellite service is subject to application of the provisions of No. **9.12** for coordination with other non-geostationary-satellite systems in the fixed-satellite service. Non-geostationary-satellite systems in the fixed-satellite service shall not claim protection from geostationary-satellite networks in the fixed-satellite service operating in accordance with the Radio Regulations, irrespective of the dates of receipt by the Bureau of the complete coordination or notification information, as appropriate, for the non-geostationary-satellite systems in the fixed-satellite service and of the complete coordination or notification information, as appropriate, for the geostationary-satellite networks, and No. **5.43A** does not apply. Non-geostationary-satellite systems in the fixed-satellite service in the above bands shall be operated in such a way that any unacceptable interference that may occur during their operation shall be rapidly eliminated.     (WRC‑23)

**Reasons:** To extend the applicability of this footnote to the frequency band 17.3-17.7 GHz in Region 2.

MOD IRN/148A19/4#1925

5.517In Region 2, use of the fixed-satellite (space-to-Earth) service in the band 17.3-17.8 GHz shall not cause harmful interference to nor claim protection from assignments in the broadcasting-satellite service operating in conformity with the Radio Regulations.     (WRC‑23)

**Reasons:** To extend the applicability of the frequency ranges in this footnote to Region 2.

ARTICLE 22

Space services1

Section II − Control of interference to geostationary-satellite systems

MOD IRN/148A19/5#1928

TABLE **22-1B**     (WRC‑23)

Limits to the epfd↓ radiated by non‑geostationary-satellite systems  
in the fixed-satellite service in certain frequency bands3, 6, 8, X

| Frequency band (GHz) | epfd↓ (dB(W/m2)) | Percentage of time during which epfd↓ may not be exceeded | Reference bandwidth (kHz) | Reference antenna diameter and reference radiation pattern7 |
| --- | --- | --- | --- | --- |
| 17.8-18.6;  17.3-17.7  in Region 2 | −175.4  −175.4  −172.5  −167  −164  −164 | 0  90  99  99.714  99.971  100 | 40 | 1 m Recommendation ITU‑R S.1428-1 |
| −161.4  −161.4  −158.5  −153  −150  −150 | 0  90  99  99.714  99.971  100 | 1 000 |
|  | −178.4  −178.4  −171.4  −170.5  −166  −164  −164 | 0  99.4  99.9  99.913  99.971  99.977  100 | 40 | 2 m Recommendation ITU‑R S.1428-1 |
| −164.4  −164.4  −157.4  −156.5  −152  −150  −150 | 0  99.4  99.9  99.913  99.971  99.977  100 | 1 000 |
|  | −185.4  −185.4  −180  −180  −172  −164  −164 | 0  99.8  99.8  99.943  99.943  99.998  100 | 40 | 5 m Recommendation ITU‑R S.1428-1 |
| −171.4  −171.4  −166  −166  −158  −150  −150 | 0  99.8  99.8  99.943  99.943  99.998  100 | 1 000 |

**Reasons:** To extend the applicability of RR Table **22-1B** epfd limits to the frequency band 17.3‑17.7 GHz for the protection of RR Appendix 30A and other geostationary-satellite systems.

ADD IRN/148A19/6#1929

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X 22.5C.X In Region 2, a non-geostationary-satellite system in the fixed-satellite service shall meet the limits of this table for the frequency band 17.3-17.7 GHz with respect to geostationary-satellite systems in the broadcasting-satellite service and shall utilize the reference patterns of Recommendation ITU‑R BO.1443‑3.     (WRC‑23)

**Reasons:** From a regulatory perspective, the use of the word “shall” is required. As well, the limits were derived using antenna reference patterns of a specific version of the Recommendation. For non-GSO systems operating in Region 2, to extend the applicability of RR Table **22-1B** epfd limits to the frequency band 17.3-17.7 GHz to protect BSS services globally. The BSS earth station antenna pattern is already incorporated by reference in the Recommendation ITU‑R S.1503 methodology and is correctly stated in this footnote.

MOD IRN/148A19/7#1930

TABLE **22-3**     (WRC‑23)

Limits to the epfdis radiated by non-geostationary-satellite systems in the fixed-  
satellite service in certain frequency bands19, Y

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Frequency band (GHz) | epfdis (dB(W/m2)) | Percentage of time during which epfdis level may not be exceeded | Reference bandwidth (kHz) | Reference antenna beamwidth and reference radiation pattern20 |
| 10.7-11.7  (Region 1)  12.5-12.75  (Region 1)  12.7-12.75  (Region 2) | −160 | 100 | 40 | 4° Recommendation ITU‑R S.672-4, *Ls* = −20 |
| 17.8-18.4 | −160 | 100 | 40 | 4° Recommendation ITU‑R S.672-4, *Ls* = −20 |

**Reasons:** To extend the applicability of RR Table **22-3** epfd limits to the frequency band 17.3‑17.7 GHz for the protection of RR Appendix 30A.

ADD IRN/148A19/8#1932

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Y 22.5F.Y A non-geostationary-satellite system operating in Region 2, at any position in the orbit, shall meet the limits of this table for the frequency band 17.3-17.7 GHz with respect to a receiving space station in the broadcasting-satellite feeder link of Appendix 30A, in all three Regions.     (WRC‑23)

**Reasons:** There are two aspects regarding epfd, one is the areas where a non-geostationary satellite is located as the source of possible interference. This area is interpreted as all positions in non-GSO orbit. The other is the area that needs to be protected and is interpreted as the whole part of the GSO orbit. By this understanding, a non-geostationary-satellite system operating in Region 2 shall meet the epfd limits of this table for the frequency band 17.3-17.7 GHz at any position in the orbit with respect to all receiving space station in the broadcasting-satellite feeder link of RR Appendix 30A.

MOD IRN/148A19/9#1933

TABLE **22-4B**     (WRC‑23)

Operational limits to the epfd↓ radiated by non-geostationary-satellite  
systems in the fixed-satellite service in certain frequency bands21,25

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Frequency band (GHz) | epfd↓ (dB(W/m2)) | Percentage of time during which epfd↓ may not be exceeded | Reference bandwidth (kHz) | Geostationary-satellite system receive earth station antenna gain (dBi) | Orbital inclination of geostationary satellite (degrees) |
| 19.7-20.2 | −157  −157  −155 | 100  100  100 | 40  40  40 | ≥ 49  ≥ 43  25  ≥ 49 | ≤ 2.5  ≤ 2.5  > 2.5 and ≤ 4.5 |
| 19.7-20.2 | −143  −143  −141 | 100  100  100 | 1 000  1 000  1 000 | ≥ 49  ≥ 43  25  ≥ 49 | ≤ 2.5  ≤ 2.5  > 2.5 and ≤ 4.5 |
| 17.8-18.6;  17.3-17.7  in Region 2 | −164  −162 | 100  100 | 40  40 | ≥ 49  ≥ 49 | ≤ 2.5  > 2.5 and ≤ 4.5 |
| 17.8-18.6;  17.3-17.7  in Region 2 | −150  −148 | 100  100 | 1 000  1 000 | ≥ 49  ≥ 49 | ≤ 2.5  > 2.5 and ≤ 4.5 |

**Reasons:** In order to fully protect geostationary satellites which have orbital inclination, to extend the applicability of RR Table **22-4B** epfd limits to the frequency band 17.3-17.7 GHz.

MOD IRN/148A19/10#1938

APPENDIX 5 (REV.WRC‑23)

Identification of administrations with which coordination is to be effected or  
agreement sought under the provisions of Article 9

MOD IRN/148A19/11#1939

TABLE 5-1     (Rev.WRC‑23)

Technical conditions for coordination

(see Article 9)

…

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Reference of Article 9 | Case | Frequency bands (and Region) of the service for which coordination is sought | Threshold/condition | Calculation  method | Remarks |
| No. **9.7** GSO/GSO (*cont.*) |  | 2*bis*) 13.4-13.65 GHz (Region 1) | i) Bandwidth overlap, and  ii) any network in the space research service (SRS) or any network in the FSS and any associated space operation functions (see No. **1.23**) with a space station within an orbital arc of ±6° of the nominal orbital position of a proposed network in the FSS or SRS |  |  |
|  | 3) 17.7‑19.7 GHz, (Region 3),  17.3-19.7 GHz  (Regions 1 and 2) and 27.5‑29.5 GHz | i) Bandwidth overlap, and  ii) any network in the FSS and any associated space operation functions (see No. **1.23**) with a space station within an orbital arc of ±8° of the nominal orbital position of a proposed network in the FSS |  |  |
|  | 3*bis*)19.7-20.2 GHz and 29.5-30 GHz | i) Bandwidth overlap, and  ii) any network in the FSS or in the mobile-satellite service (MSS) and any associated space operation functions (see No. **1.23**) with a space station within an orbital arc of ±8° of the nominal orbital position of a proposed network in the FSS or in the MSS. |  |  |
|  |  |  |  |  |

…

**Reasons:** It covers the coordination of two GSO networks of the FSS (except earth stations operating in opposite directions of transmission) under RR No. 9.7.

APPENDIX 30A (REV.WRC‑19)[[1]](#footnote-1)\*

Provisions and associated Plans and List[[2]](#footnote-2)1 for feeder links for the broadcasting-satellite service (11.7-12.5 GHz in Region 1, 12.2-12.7 GHz  
in Region 2 and 11.7-12.2 GHz in Region 3) in the frequency bands  
14.5-14.8 GHz[[3]](#footnote-3)2 and 17.3-18.1 GHz in Regions 1 and 3,  
and 17.3-17.8 GHz in Region 2     (WRC‑03)

MOD IRN/148A19/12#1934

ARTICLE 7     (Rev.WRC‑23)

Coordination, notification and recording in the Master International   
Frequency Register of frequency assignments to stations in the fixed-satellite service (space-to-Earth) in Regions 1 and 2 in the frequency band 17.3-18.1 GHz and in Region 3 in the frequency band 17.7-18.1 GHz, to stations in the fixed‑satellite service (Earth-to-space) in Region 2 in the frequency bands 14.5‑14.8 GHz and 17.8‑18.1 GHz, to stations in the fixed-satellite service (Earth-to-space) in countries listed in Resolution 163 (WRC‑15) in the frequency band 14.5‑14.75 GHz and in countries listed in Resolution 164 (WRC‑15) in the frequency band 14.5-14.8 GHz where those stations are not for feeder links for the broadcasting-satellite service, and to stations in the broadcasting-satellite service in Region 2 in the frequency band 17.3-17.8 GHz when frequency assignments to feeder links for broadcasting-satellite stations in the frequency bands 14.5-14.8 GHz and 17.3-18.1 GHz in Regions 1 and 3 or in the   
frequency band 17.3-17.8 GHz in Region 2 are involved28     (Rev.WRC‑23)

Section I – Coordination of transmitting space or earth stations in the fixed-satellite   
service or transmitting space stations in the broadcasting-satellite service  
with assignments to broadcasting-satellite service feeder links

MOD IRN/148A19/13#1935

7.1 The provisions of No. 9.7[[4]](#footnote-4)29 and the associated provisions under Articles 9 and 11 are applicable to transmitting space stations in the fixed-satellite service in Regions 1 and 2 in the frequency band 17.3-18.1 GHz, to transmitting space stations in the fixed-satellite service in Region 3 in the frequency band 17.7-18.1 GHz, to transmitting earth stations in the fixed-satellite service in Region 2 in the frequency bands 14.5-14.8 GHz and 17.8‑18.1 GHz, to transmitting earth stations in the fixed-satellite service in countries listed in Resolution **163 (WRC‑15)** in the frequency band 14.5-14.75 GHz and in countries listed in Resolution **164 (WRC‑15)** in the frequency band 14.5-14.8 GHz where those stations are not for feeder links for the broadcasting-satellite service, and to transmitting space stations in the broadcasting-satellite service in Region 2 in the frequency band 17.3-17.8 GHz.     (WRC‑23)

ADD IRN/148A19/14#1936

7.2.3 For the fixed-satellite service (space-to-Earth) in the frequency band 17.3-17.7 GHz (in Region 2), the course of action described in Nos. **9.60** to **9.62** and the provision No. **11.41** do not apply with respect to feeder links of an assignment in the Plan, List or proposed new or modified assignments in the List or an assignment intended to enter in the Regions 1 and 3 Plan.     (WRC‑23)

**Reasons:** In order to protect the feeder link of RR Appendix 30A, it is proposed to establish an obligation for obtaining the explicit agreement of the affected administrations (RR No. 11.41 does not apply) as well as those who fail to reply or to give a decision within the regulatory deadline (RR Nos. 9.60 to 9.62 do not apply).

ANNEX 4     (Rev.WRC‑19)

Criteria for sharing between services

MOD IRN/148A19/15#1937

1 Threshold values for determining when coordination is required between, on one hand, transmitting space stations in the fixed-satellite service or the broadcasting-satellite service and, on the other hand, a receiving space station in the feeder-link Plan or List or a proposed new or modified receiving space station in the List, in the frequency bands 17.3-18.1 GHz (Regions 1 and 3) and in the feeder-link Plan or a proposed modification to the Plan in the frequency band 17.3‑17.8 GHz (Region 2)     (WRC‑23)

In addition to the need to comply with the following coordination criteria, under assumed free-space propagation conditions, the power flux-density of an assignment in the fixed-satellite service (space to-Earth) in the frequency band 17.3-17.7 GHz in Region 2 shall not exceed the value of −147 dB(W/(m2 · 27 MHz)) at the edge of Earth’s surface.     (WRC‑23)

With respect to § 7.1, Article 7, coordination of a transmitting space station in the fixed-satellite service or in the broadcasting-satellite service with a receiving space station in a broadcasting-satellite service feeder link in the Regions 1 and 3 feeder-link Plan or List, or a proposed new or modified receiving space station in the List, or in the Region 2 feeder-link Plan or proposed modification to the Plan is required when the power flux-density arriving at the receiving space station of a broadcasting-satellite service feeder link of another administration would cause an increase in the noise temperature of the feeder-link space station which exceeds a threshold value of Δ*Ts* / *Ts* corresponding to 6%. Δ*Ts* / *Ts* is calculated in accordance with Case II of the method given in Appendix 8.     (WRC‑03)

**Reasons:** The purpose is to limit the pfd at the edge of the Earth’s surface in order to avoid potential unacceptable interference to the receiving BSS feeder-link (Earth-to-space) operating under RR Appendix 30A. This would result in producing a low pfd value over portions of the Earth's surface with a very low receiving elevation angle which is also consistent with the mitigation technique outlined for the equatorial-limb case in Study 1.

SUP IRN/148A19/16#1940

RESOLUTION 174 (WRC‑19)

Primary allocation to the fixed-satellite service in the space-to-Earth direction in the frequency band 17.3-17.7 GHz in Region 2

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1. \* The expression “frequency assignment to a space station”, wherever it appears in this Appendix, shall be understood to refer to a frequency assignment associated with a given orbital position.     (WRC‑03) [↑](#footnote-ref-1)
2. 1 The Regions 1 and 3 feeder-link List of additional uses is annexed to the Master International Frequency Register (see Resolution **542 (WRC‑2000**)\*\*).     (WRC‑03)

   \*\* *Note by the Secretariat*: This Resolution was abrogated by WRC‑03. [↑](#footnote-ref-2)
3. 2 This use of the band 14.5-14.8 GHz is reserved for countries outside Europe.

   *Note by the Secretariat*: Reference to an Article with the number in roman is referring to an Article in this Appendix. [↑](#footnote-ref-3)
4. 29 (SUP – WRC-19) [↑](#footnote-ref-4)