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| **33 MEETING OF PERMANENT**  **CONSULTATIVE COMMITTEE II:**  **RADIOCOMMUNICATIONS**  **April 8 to 12, 2019**  **Monterrey, Nuevo Leon, Mexico** | | **OEA/Ser.L/XVII.4.2.33**  **CCP.II-RADIO/doc.**  **XX March**  **Original: english** | |
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|  | **U.S. PROPOSAL ON WRC-19 AGENDA ITEM 1.5** | |  |
|  | **(Item on the Agenda: 3.1)** | |  |
|  | **(Document submitted by the delegation of the United States of America)** | |  |

Introduction

The United States supports taking appropriate regulatory actions in accordance Resolution **158 (WRC-15)**, to allow the use of 17.7-19.7 GHz (space-to-Earth) and 27.5‑29.5 GHz (Earth-to-space) by earth stations in motion communicating with geostationary space stations in the fixed-satellite service; taking into consideration the need to ensure protection of, and not impose undue constraints on, services allocated in the frequency bands. Resolution **158 (WRC-15)** is proposed to be suppressed as a consequential action as the studies have been completed.

There are certain portions of this proposal which still contain options or issues to be determined “TBD” regarding the regulatory and procedural considerations. This is in part due to ongoing ITU-R studies under this agenda item and/or ongoing domestic deliberations. The U.S. plans to provide final updates on these aspects of the proposal at the 34th meeting of CITEL PCC.II in August 2019.

**ATTACHMENT**

**Agenda Item 1.5**: *to consider the use of the frequency bands 17.7-19.7 GHz (space-to-Earth) and 27.5‑29.5 GHz (Earth-to-space) by earth stations in motion communicating with geostationary space stations in the fixed-satellite service and take appropriate action, in accordance with Resolution* ***158 (WRC-15)***

**BACKGROUND INFORMATION**:

The global demand for broadband communications continues unabated and is not location specific. Such demand includes requirements of connectivity for users on vessels, aircraft and vehicles that operate at both fixed locations and while in motion, often in very remote parts of the globe. ITU for many years has and continues to address ways of meeting this important need. State of the art 30/20 GHz GSO FSS satellite networks and earth stations that employ advanced technology available today are capable of meeting the connectivity requirements of broadband users on vehicles and vessels, including high-throughput applications.

Advances in satellite manufacturing and directional earth station technology, particularly the development of multi-axis stabilized earth station antennas capable of maintaining a high degree of pointing accuracy while stationary or on rapidly moving platforms, have made earth stations with very stable pointing characteristics both available and practical. Satellite network operators are designing, coordinating, and bringing into use GSO FSS networks that can offer both stationary and moving broadband services using a single stabilized directional antenna within existing GSO FSS technical parameters.

The ITU-R has been studying deployment of earth stations in motion (ESIM) communicating with GSO FSS space stations for years. WRC-15 adopted regulatory provisions for the operation of ESIM communicating with GSO FSS space stations in the frequency bands 29.5-30 GHz and 19.7-20.2 GHz under No. **5.527A** and Resolution **156 (WRC-15)**, and prior Conferences adopted provisions for operation of ESIM on maritime vessels communicating with GSO FSS space stations in lower FSS bands.

WRC-19 agenda item 1.5 considers the use of the frequency bands 17.7‑19.7 GHz (space-to-Earth) and 27.5-29.5 GHz (Earth-to-space) by earth stations in motion (ESIM) communicating with geostationary space stations in the fixed-satellite service (FSS). This agenda item has studied three types of ESIM: aeronautical, maritime and land, depending on which vehicle they are installed.

The sharing cases requiring study in the frequency bands 27.5-29.5 GHz and 17.7-19.7 GHz were set out in Resolution **158 (WRC-15)**. The ITU-R determined that a resolution containing the regulatory, technical, and operational conditions for ESIM operation on aircraft, maritime vessels, and land vehicles could be developed and effectively implemented.

The ITU-R examined sharing conditions between ESIM and terrestrial services in the frequency band 27.5‑29.5 GHz and concluded that there would be potential interference to receiving stations of terrestrial services from ESIM transmitters.

This proposal provides a new footnote in Article 5 of the Radio Regulations for the operation of earth stations in motion communicating with geostationary FSS space stations within the frequency bands 17.7-19.7 GHz and 27.5-29.5 GHz, referencing a new WRC Resolution providing the conditions for the operation of ESIM and protection of the services to which the bands are allocated, and consequential suppression of Resolution 158 (WRC-15). For the maritime ESIM operating within the frequency bands 27.5-29.5 GHz, an e.i.r.p. spectral density and separation distance from the coast line to protect terrestrial services are included in the new WRC Resolution. For the aeronautical ESIM operating within the frequency bands 27.5-29.5 GHz, an applicable pfd mask to protect terrestrial services is included in the new WRC Resolution.

**Proposals**

ARTICLE 5

**Frequency allocations**

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

**MOD USA/1.5/1**

|  |  |  |
| --- | --- | --- |
| **15.4-18.4 GHz** | | |
| **Allocation to services** | | |
| **Region 1** | **Region 2** | **Region 3** |
| **17.7-18.1**  FIXED  FIXED-SATELLITE (space-to-Earth) 5.484A ADD5.A15  (Earth-to-space) 5.516  MOBILE | **17.7-17.8**  FIXED  FIXED-SATELLITE (space-to-Earth) 5.517 ADD5.A15 (Earth-to-space) 5.516  BROADCASTING-SATELLITE  Mobile  5.515 | **17.7-18.1**  FIXED  FIXED-SATELLITE (space-to-Earth) 5.484A ADD5.A15  (Earth-to-space) 5.516  MOBILE |
|  | **17.8-18.1**  FIXED  FIXED-SATELLITE (space-to-Earth) 5.484A ADD5.A15  (Earth-to-space) 5.516  MOBILE  5.519 |  |
| **18.1-18.4** FIXED  FIXED-SATELLITE (space-to-Earth) 5.484A 5.516B ADD5.A15  (Earth-to-space) 5.520  MOBILE  5.519 5.521 | | |

**MOD USA/1.5/2**

|  |  |  |
| --- | --- | --- |
| **18.4-22 GHz** | | |
| **Allocation to services** | | |
| **Region 1** | **Region 2** | **Region 3** |
| **18.4-18.6** FIXED  FIXED-SATELLITE (space-to-Earth) 5.484A 5.516B ADD5.A15  MOBILE | | |
| **18.6-18.8**  EARTH EXPLORATION-SATELLITE (passive)  FIXED  FIXED-SATELLITE (space-to-Earth) 5.522B ADD5.A15  MOBILE except aeronautical mobile  Space research (passive) | **18.6-18.8**  EARTH EXPLORATION- SATELLITE (passive)  FIXED  FIXED-SATELLITE (space-to-Earth) 5.516B 5.522B ADD5.A15  MOBILE except aeronautical mobile  SPACE RESEARCH (passive) | **18.6-18.8**  EARTH EXPLORATION-SATELLITE (passive)  FIXED  FIXED-SATELLITE (space-to-Earth) 5.522B ADD5.A15  MOBILE except aeronautical mobile  Space research (passive) |
| 5.522A 5.522C | 5.522A | 5.522A |
| **18.8-19.3** FIXED  FIXED-SATELLITE (space-to-Earth) 5.516B 5.523A ADD5.A15  MOBILE | | |
| **19.3-19.7** FIXED  FIXED-SATELLITE (space-to-Earth) (Earth-to-space) 5.523B 5.523C 5.523D 5.523E ADD5.A15 MOBILE | | |

|  |  |  |
| --- | --- | --- |
| **MOD USA/1.5/3**  **24.75-29.9 GHz** | | |
| **Allocation to services** | | |
| **Region 1** | **Region 2** | **Region 3** |
| **27.5-28.5** FIXED 5.537A  FIXED-SATELLITE (Earth-to-space) 5.484A 5.516B 5.539 ADD5.A15  MOBILE  5.538 5.540 | | |
| **28.5-29.1** FIXED  FIXED-SATELLITE (Earth-to-space) 5.484A 5.516B 5.523A 5.539 ADD5.A15  MOBILE  Earth exploration-satellite (Earth-to-space) 5.541  5.540 | | |

**ADD USA/1.5/4**

**5.A15** The operation of earth stations in motion communicating with geostationary FSS space stations in the frequency bands 17.7-19.7 GHz and 27.5-29.5 GHz, or portions thereof, shall be subject to draft new Resolution [A15] (**WRC-19**).

**Reasons:** Permitting the operation of earth stations in motion within these frequency bands would provide additional spectrum to support broadband communication for users globally.

**ADD USA/1.5/5**

draft new RESOLUTION [AI1.5] (WRC-19)

**Use of the frequency bands 17.7-19.7 GHz and 27.5-29.5 GHz by earth stations in motion (ESIM) communicating with geostationary space stations  
in the fixed-satellite service**

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

*considering*

*a)* that there is a need for global broadband mobile-satellite communications, and that some of this need could be met by allowing earth stations in motion (ESIM) to communicate with space stations of geostationary-satellite orbit (GSO) fixed-satellite service (FSS) operating in the frequency bands 17.7-19.7 GHz (space-to-Earth) and 27.5-29.5 GHz (Earth-to-space);

*b)* that appropriate regulatory and interference management mechanisms are necessary for the operation of ESIM;

*c)* that the frequency bands 17.7-19.7 GHz (space-to-Earth) and 27.5-29.5 GHz (Earth-to-space) are also allocated to terrestrial and space services used by a variety of different systems and these existing services and their future development need to be protected from the operation of ESIM,

*recognizing*

*a)* that the administration authorizing ESIM on territory under its jurisdiction has the right to require that ESIM referred to above only use those assignments associated with GSO FSS networks which have been successfully coordinated, notified, brought into use and recorded in the MIFR with a favourable finding under Article **11**, including Nos. **11.31**, **11.32** or **11.32A**, where applicable;

*b)* that for cases of incomplete coordination under No. **9.7** of the GSO FSS network with assignments to be used by ESIM, the operation of ESIM on those assignments in the frequency bands 17.7-19.7 GHz and 27.5-29.5 GHz needs to be in accordance with the provisions of No. **11.42** with respect to any recorded frequency assignment which was the basis of the unfavourable finding under No. **11.38**;

*c)* that any course of action taken under this Resolution has no impact on the original date of receipt of the frequency assignments of the GSO FSS satellite network with which ESIM communicate or on the coordination requirements of that satellite network;

*d)* that the operation of any type of ESIM (land, maritime and aeronautical) within the territory(-ies), territorial waters and airspace under the jurisdiction of an administration, shall be carried out only if authorized by that administration,

*resolves*

1 that for any ESIM communicating with a GSO FSS space station in the frequency bands 17.7-19.7 GHz and 27.5-29.5 GHz, or portions thereof, the following conditions shall apply:

1.1 with respect to space services in the frequency bands 17.7-19.7 GHz and 27.5-29.5 GHz, ESIM shall comply with the following conditions:

1.1.1 with respect to satellite networks or systems of other administrations, the ESIM characteristics shall remain within the envelope of the satellite network with which these ESIM communicate;

1.1.2 that the notifying administration of the GSO FSS network, with which ESIM communicate, shall ensure that ESIM operation complies with coordination agreements for the frequency assignments of this GSO FSS network under the relevant provisions of the Radio Regulations;

1.1*.*3 for the implementation of *resolves*1.1.1 above, the notifying administration of the GSO FSS network with which ESIM communicate shall send to the Bureau under this Resolutionthe relevant Appendix **4** information related to the characteristics of the ESIM intended to communicate with the space station of that GSO FSS network, together with the commitment that the ESIM operation shall be in conformity with the Radio Regulations and this Resolution;

1.1.4 upon receipt of the information provided in accordance with *resolves*1.1.3 above, the Bureau shall examine it in relation to the requirements referred to in *resolves*1.1.1 based on the complete information submitted. If, following this examination, the Bureau concludes that the ESIM characteristics are within the envelope of the satellite network, the Bureau shall publish the results for information in the BR IFIC, otherwise the information shall be returned to the notifying administration;

1.1.5 should the Bureau find, prior to entering the characteristics for a network into the MIFR, that the information submitted under *resolves* 1.1.3 is not in compliance with the requirements of *resolves* 1.1.1, the corresponding information previously published by the Bureau under *resolves* 1.1.4 shall be suppressed;

1.1.6 for the protection of non-GSO FSS systems operating in the frequency band 27.5-28.6/29.1 GHz, ESIM communicating with GSO FSS networks shall comply with the provisions contained in Annex 1 to this Resolution;

*USA NOTE to CITEL: On 1.1.7, studies are still on-going with the regard to the actual outcome of this particular item. The U.S. has not decided on which option is appropriate for 1.1.7. It is proposed to keep both options with a view to address this at the 34th PCC.II meeting.*

**Option 1**

1.1.7 for the protection of non-GSO MSS feeder links operating in the frequency band 29.1-29.5 GHz, ESIM communicating with GSO FSS networks shall comply with the provisions contained in Annex 1 to this Resolution;

**Option 2**

1.1.7 is not needed.

1.1.8 ESIM shall not claim protection from non-GSO FSS systems operating in the frequency band 17.8-18.6 GHz in accordance with the Radio Regulations, including No. **22.5C**;

1.1.9 ESIM shall not claim protection from BSS feeder link earth stations operating in the frequency band 17.7-18.4 GHz in accordance with the Radio Regulations;

1.2 with respect to terrestrial services in the frequency bands 17.7-19.7 GHz and 27.5-29.5 GHz ESIM shall comply with the following conditions:

1.2.1 the receiving ESIM in the frequency band 17.7-19.7 GHz shall not claim protection from terrestrial services in the above-mentioned frequency band operating in accordance with the Radio Regulations;

1.2.2 the transmitting aeronautical and maritime ESIM in the frequency band 27.5-29.5 GHz shall not cause unacceptable interference to terrestrial services in the above-mentioned frequency band operating in accordance with the Radio Regulations and Annex 2 applies;

1.2.3 the transmitting land ESIM in the frequency band 27.5-29.5 GHz frequency band shall not cause unacceptable interference to terrestrial services in neighbouring countries in the above-mentioned frequency band operating in accordance with the Radio Regulations;

1.2.4 for the implementation of resolves 1.2.2 and 1.2.3 above, the notifying administration responsible for the GSO FSS satellite network with which ESIM communicate shall submit to the Bureau together with the Appendix **4** data referred to in resolves 1.1.2 a commitment undertaking that in case of unacceptable interference, upon receipt of a report of interference, take necessary action to immediately eliminate this interference or reduce interference to an acceptable level;

1.2.5 that for the protection of terrestrial services operating in the frequency band 27.5- 29.5 GHz, the aeronautical and maritime ESIM shall comply with the provisions contained in Annex 2 of this Resolution;

2 that ESIM shall not be used or relied upon for safety-of-life applications;

3 that the administration responsible for the GSO FSS satellite network with which the ESIM communicate shall ensure that:

3.1 techniques to maintain pointing accuracy with the associated GSO FSS satellite without inadvertently tracking adjacent GSO satellites; are employed for the operation of ESIM;

3.2 all necessary measures are taken so that ESIM are subject to permanent monitoring and control by a Network Control and Monitoring Centre (NCMC) or equivalent facility and are capable of receiving and acting upon at least “enable transmission” and “disable transmission” commands from the NCMC or equivalent facility;

3.3 measures, when required, are taken to limit the operation of ESIM to the territory or territories under the jurisdiction of the administrations authorizing ESIM;

3.4 a point of contact is provided for the purpose of tracing any suspected cases of unacceptable interference from ESIM;

4 that in case of unacceptable interference caused by any type of ESIM:

4.1 the administration of the country in which the ESIM is authorized shall cooperate with an investigation into the matter and provide, where possible, any required information on the operation of ESIM and a point of contact to provide such information;

4.2 the administration of the country in which the ESIM is authorized and the notifying administration of the satellite network with which the ESIM communicate shall, jointly or individually, as the case may be, upon receipt of a report of interference shall take required action to eliminate or reduce interference to an acceptable level;

*Note: in resolves 4.1 and 4.2 the administration authorizing ESIM is the administration providing the radio licence to the vehicle on which the ESIM operate.*

5 that the application of this Resolution does not provide regulatory status to ESIM different from that derived from the GSO FSS network with which they communicate taking into account the provisions referred to in this Resolution,

*instructs the Director of the Radiocommunication Bureau*

1 to take any necessary actions for the implementation of this Resolution;

2 to take any necessary actions to facilitate the implementation of this Resolution, including assisting in resolving interference, if any;

*invites administrations*

to collaborate, to the maximum extent practicable, for the implementation of this Resolution, in particular for resolving interference, if any;

*instructs the Secretary-General*

to bring this Resolution to the attention of the Secretary-General of the International Maritime Organization (IMO) and of the Secretary General of the International Civil Aviation Organization (ICAO).

Annex 1 to draft new Resolution [AI1.5] (WRC-19)

**Provisions for ESIM to protect space services**

**within the frequency band 27.5-29.5 GHz**

1 In order to protect those non-GSO FSS systems referred to in *resolves*1.1.6 of this Resolution, ESIM shall comply with the following provisions:

*a)* the level of equivalent isotropically radiated power (e.i.r.p.) density emitted by an ESIM in a geostationary-satellite network in the 27.5-28.6 GHz frequency band shall not exceed the following values for any off-axis angle ϕ which is 3° or more off the main-lobe axis of an ESIM antenna and outside 3° of the GSO:

|  |  |  |
| --- | --- | --- |
| *Off-axis angle* |  | *Maximum e.i.r.p. density* |
| 3    7 |  | 28 – 25 log dB(W/40 kHz) |
| 7    9.2 |  | 7 dB(W/40 kHz) |
| 9.2    48 |  | 31 – 25 log dB(W/40 kHz) |
| 48    180 |  | −1 dB(W/40 kHz) |

*b)* for any ESIM that does not meet the condition a) above, outside of 3° of the GSO arc, the maximum ESIM on-axis e.i.r.p. shall not exceed 55 dBW for emission bandwidths up to and including 100 MHz. For emission bandwidths larger than 100 MHz, the maximum ESIM on axis e.i.r.p. may be increased proportionately;

*USA NOTE to CITEL: Studies are still on-going with the regard to the actual outcome of item 2 below. Also see USA Note On 1.1.7. It is proposed to keep both options with a view to address this at the 34th PCC.II meeting.*

**Option 1**

2 In order to protect those non-GSO MSS feeder-links referred to in *resolves*1.1.7 Option 1 of this Resolution, ESIM shall comply with the following:

Note: Appropriate measures to be developed based on the outcome of ongoing studies to protect non-GSO MSS feeder-links referred to in resolves 1.1.7 Option 1 of this Resolution.

**Option 2**

Consistent with *resolves* 1.1.7 Option 2, item 2 is not required.

Annex 2 to draft new Resolution [AI1.5] (WRC-19)

**Provisions for maritime and aeronautical ESIM to protect terrestrial services in the frequency band 27.5-29.5 GHz**

Part 1: MARITIME ESIM

1 The notifying administration of the GSO FSS satellite network with which a maritime ESIM communicates shall ensure compliance of the maritime ESIM with the following conditions:

1.1 the minimum distances from the low-water mark as officially recognized by the coastal State beyond which maritime ESIM can operate without the prior agreement of any administration is 70 km in the frequency band 27.5-29.5 GHz. Any transmissions from maritime ESIM within the minimum distance shall be subject to the prior agreement of the concerned coastal State;

1.2 the maximum maritime ESIM e.i.r.p. spectral density towards the horizon shall be limited to 12.98 dB(W/1 MHz). Transmissions from maritime ESIM with higher e.i.r.p. spectral density levels towards the territory of any coastal state shall be subject to the prior agreement of the concerned coastal State together with the mechanism by which this level is to be maintained.

Part 2: AERONAUTICAL ESIM

1 The part below is intended as provisions for aeronautical ESIM to protect terrestrial services operating in the frequency band 27.5-29.5 GHz for the implementation of *resolves* 1.2.2.

2 The notifying administration of the GSO FSS satellite network with which an aeronautical ESIM communicates shall ensure compliance of the aeronautical ESIM with the following conditions:

2.1 That within the territory under the jurisdiction of an administration where the aeronautical ESIM operates, it shall not transmit in frequency bands authorized by that administration for fixed service and/or mobile service operation unless explicit agreement of the affected administration is provided;

2.2 that for the purpose of protecting fixed and mobile service stations in other administrations from interference, from a single aeronautical ESIM shall not exceed the following maximum power flux-density values at the Earth’s surface at an administration’s border, unless explicit agreement of the affected administration is provided: [TBD]

*USA NOTE to CITEL: With regards to 2.2 above, the U.S. has not decided on an appropriate aeronautical ESIM power flux density mask which will protect fixed and mobile stations from interference. It is the view of the U.S. that the current Option 1 aeronautical power flux density mask found in the CPM Report to WRC-19 does not take into account the need to protect the mobile service from interference. The Option 1 aeronautical power flux density mask was developed based on fixed service characteristics and does take into account any mobile service characteristics that were provided by the ITU-R. It is proposed to keep the PFD mask as TBD for 2.2 with a view to identify an appropriate PFD mask at the 34th PCC.II meeting.*

2.3 The maximum power of unwanted emissions should be attenuated below the maximum output power of the aeronautical ESIM transmitter as described in Recommendation ITU-R SM.1541-6.

3 Within the territory under the jurisdiction of an administration where the ESIM operate, aeronautical ESIM shall comply with the bilateral or multilateral agreements of the concerned administrations.

**MOD USA/1.5/6**

APPENDIX 4 (REV.WRC‑15)

Consolidated list and tables of characteristics for use in the  
application of the procedures of Chapter III

ANNEX 2

Characteristics of satellite networks, earth stations  
or radio astronomy stations2     (Rev.WRC‑12)

Footnotes to Tables A, B, C and D

**TABLE A**

GENERAL CHARACTERISTICS OF THE SATELLITE NETWORK,   
EARTH STATION OR RADIO ASTRONOMY STATION     (Rev.WRC‑19)

| Items in Appendix | *A \_ GENERAL CHARACTERISTICS OF THE SATELLITE NETWORK,  EARTH STATION OR RADIO ASTRONOMY STATION* | Advance publication of a geostationary-satellite network | Advance publication of a non-geostationary-satellite network subject to coordination under Section II of Article 9 | Advance publication of a non-geostationary-satellite network not subject to coordination under Section II  of Article 9 | Notification or coordination of a geostationary-satellite network (including space operation functions under Article 2A of Appendices 30 or 30A) | Notification or coordination of a non-geostationary-satellite network | Notification or coordination of an earth station (including notification under  Appendices 30A or 30B) | Notice for a satellite network in the broadcasting-satellite service under  Appendix 30 (Articles 4 and 5) | Notice for a satellite network  (feeder-link) under Appendix 30A  (Articles 4 and 5) | Notice for a satellite network in the fixed- satellite service under Appendix 30B  (Articles 6 and 8) | Items in Appendix | Radio astronomy |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **A.18** | **COMPLIANCE WITH NOTIFICATION OF AIRCRAFT EARTH STATION(S)** |  | | | | | | | | | **A.18** |  |
| A.18.a | a commitment that the characteristics of the aircraft earth station (AES) in the aeronautical mobile-satellite service are within the characteristics of the specific and/or typical earth station published by the Bureau for the space station to which the AES is associated  Required only for the band 14-14.5 GHz, when an aircraft earth station in the aeronautical mobile-satellite service communicates with a space station in the fixed-satellite service |  |  |  | **+** | **+** |  |  |  |  | A.18.a |  |
| **A.19** | **COMPLIANCE WITH § 6.26 OF ARTICLE 6 OF APPENDIX 30B** |  |  |  |  |  |  |  |  |  | **A.19** |  |
| A.19.a | a commitment that the use of the assignment shall not cause unacceptable interference to, nor claim protection from, those assignments for which agreement still needs to be obtained  Required if the notice is submitted under § 6.25 of Article 6 of Appendix **30B** |  |  |  |  |  |  |  |  | **+** | A.19.a |  |
| **A.20** | **COMPLIANCE WITH r*esolves*** **1.1.2 OF DRAFT NEW RESOLUTION [A15] (WRC‑19)** |  |  |  |  |  |  |  |  |  | **A.20** |  |
| A.20.a | indicator (yes) if an assignment for the 27.5‑29.5 GHz and/or 17.7-19.7 GHz band in the satellite network will be used by ESIM |  |  |  |  |  | **O** |  |  |  | A.20.a |  |
| A.20.b | if yes under A.20.a, a commitment that the ESIM operation would be in conformity with the Radio Regulations and draft new Resolution **[A15] (WRC‑19)** (including its Annexes) |  |  |  |  |  | **+** |  |  |  | A.20.b |  |

**SUP USA/1.5/7**

RESOLUTION 158 (WRC‑15)

**Use of the frequency bands 17.7-19.7 GHz (space-to-Earth) and 27.5-29.5 GHz (Earth-to-space) by earth stations in motion communicating with  
geostationary space stations in the fixed-satellite service**

**Reasons:** The suppression of this Resolution is consequential action as the studies have been completed.

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