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| **34 MEETING OF PERMANENT****CONSULTATIVE COMMITTEE II:****RADIOCOMMUNICATIONS****August 12 to 16, 2019****Ottawa, Ontario, Canada** | **OEA/Ser.L/XVII.4.2.34****CCP.II-RADIO/doc. /19****1 July 2019****Original: English** |
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|  | **PRELIMINARY PROPOSAL FOR WRC-19 ON AGENDA ITEM 10: NGSO ESIMs** |
|  | **(Item on the Agenda: 3.1)** |
|  | **(Document submitted by the delegation of the United States of America)** |

**Introduction**

WRC-19 agenda item 10, recommends to Council items to include in the agenda for the next WRC, and to give its views on the preliminary agenda for the subsequent conference and on possible items for future conferences, in accordance with Article 7 of the Convention. For this agenda item, the United States offers to CITEL PCC.II the included preliminary proposal for the WRC-23 agenda to consider, on the basis of ITU-R studies, appropriate regulatory actions, for the use of the frequency bands within the bands 17.7-19.3 GHz and 19.7-20.2 GHz (space-to-Earth) and 28.6-29.1 GHz and 29.5-30 GHz (Earth-to-space), by aeronautical and maritime earth stations in motion communicating with non-geostationary space stations in the fixed-satellite service

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| **World Radiocommunication Conference (WRC-19)Sharm el-Sheikh, Egypt, 28 October – 22 November 2019** |  |
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| PLENARY MEETING | **Addendum 24 toDocument 5658-E** |
|  | **9 July 2019** |
|  | **Original: English** |
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| United States of America |
| Proposals for the work of the conference |
|  |
| Agenda item 10 |

10to recommend to the Council items for inclusion in the agenda for the next WRC, and to give its views on the preliminary agenda for the subsequent conference and on possible agenda items for future conferences, in accordance with Article 7 of the Convention,

**Background Information:**

Non-geostationary Fixed-Satellite Service (“NGSO FSS”) satellite constellations enable the provision of Internet connectivity and more of such NGSO systems offering broadband solutions are planned to be deployed in the near future within FSS allocations in the frequency bands 17.7-19.3, 19.7-20.2, 28.6-29.1 GHz, and 29.5-30.0 GHz.[[1]](#footnote-1) These constellations are designed to meet the consumer demand for access to broadband connectivity, regardless of location. One area of noticeable growth for NGSO connectivity is for earth stations in motion (“ESIM”). This market segment is particularly well served by satellites and in instances where lower latency matters, NGSO connectivity is there to deliver. For example, there is growing demand for high performance connectivity for users on maritime vessels and aircraft, as well as on for other applications. New and next generation NGSO systems will be designed to serve smaller ESIM terminals and as such NGSO systems offer the potential to expand connectivity to new market segments rapidly. In order to facilitate the further deployment of ESIM services in the above mentioned frequency bands, there should be consideration on how to develop harmonized spectrum technical and regulatory measures or frameworks that will enable and facilitate deployment of this service using NGSO satellites.

**Proposals:**

It is proposed to carry out technical sharing and compatibility studies between maritime and aeronautical ESIM communicating with NGSO FSS systems with other primary services in the frequency bands 17.7-18.6, 18.8-19.3, 19.7-20.2, 28.6-29.1 GHz and 29.5-30.0 GHz to develop appropriate technical and regulatory requirements to facilitate the operations of such earth stations, while ensuring harmful interference is not caused to other primary services.

This proposal does not call for the revision of the epfd limits in Article 22 of the Radio Regulations for the frequency bands of 17.7-18.6 GHz, 19.7-20.2 GHz (space-to-Earth) / 27.5-28.6 GHz, 29.5-30 GHz (Earth-to-space) and 17.8-18.4 GHz (inter-satellite) nor any provisions established by WRC-19 in consideration of Resolution **159** (**WRC-15**).

ADD USA/5658A24/1

Draft New Resolution [USA-2023]

Agenda for the 2023 World Radiocommunication Conference

The World Radiocommunication Conference (Geneva, 2015),

considering

*a)* that, in accordance with No. 118 of the ITU Convention, the general scope of the agenda for a world radiocommunication conference should be established four to six years in advance and that a final agenda shall be established by the Council two years before the conference;

*b)* Article 13 of the ITU Constitution relating to the competence and scheduling of world radiocommunication conferences and Article 7 of the Convention relating to their agendas;

*c)* the relevant resolutions and recommendations of previous world administrative radio conferences (WARCs) and world radiocommunication conferences (WRCs),

resolves

to recommend to the Council that a world radiocommunication conference be held in 2023 for a maximum period of four weeks, with the following agenda:

1 on the basis of proposals from administrations, taking account of the results of WRC‑19 and the Report of the Conference Preparatory Meeting, and with due regard to the requirements of existing and future services in the bands under consideration, to consider and take appropriate action in respect of the following items:

1.[NGSO-ESIM] to consider, on the basis of ITU-R studies in accordance with Resolution **[USA/10/NGSO ESIM] (WRC-19)**, appropriate regulatory actions, for the use of the frequency bands within the bands 17.7-19.3 GHz and 19.7-20.2 GHz (space-to-Earth) and 28.6-29.1 GHz and 29.5-30 GHz (Earth-to-space), by aeronautical and maritime earth stations in motion communicating with non-geostationary space stations in the fixed-satellite service;

resolves further

to activate the Conference Preparatory Meeting,

invites the Council

to finalize the agenda and arrange for the convening of WRC‑23, and to initiate as soon as possible the necessary consultations with Member States,

instructs the Director of the Radiocommunication Bureau

to make the necessary arrangements to convene meetings of the Conference Preparatory Meeting and to prepare a report to WRC‑23,

instructs the Secretary-General

to communicate this Resolution to international and regional organizations concerned.

**Reasons:** To fulfil the growing need for connectivity ‘in motion’ by allowing operation of ESIM with NGSO in additional frequency bands while preventing harmful interference to other services.

ADD USA/5658A24/2

DRAFT NEW RESOLUTION [USA/10/NGSO ESIM] (WRC-19)

**Use of the frequency bands 17.7-18.6, 18.8-20.2 GHz (space-to-Earth), 28.6-29.1 GHz, and 29.5-30.0 GHz (Earth-to-space by earth stations in motion communicating with non-geostationary space stations in the fixed-satellite service**

The World Radiocommunication Conference (Sharm el-Sheik Egypt, 2019),

 *considering*

1. that the frequency bands 17.7--30.0 GHz are currently allocated on a primary basis to the fixed-satellite service;
2. that there are existing NGSO satellite constellations in the 17.7-20.2 GHz (space-to-Earth) and 27.5-30 GHz (Earth-to-space) and that these constellations are designed to serve the growing need for access to broadband connectivity, regardless of location,

 *recognizing*

1. that technical and operational requirements for ESIM (which were referred to as earth stations on mobile platforms (“ESOMPs”) prior to WRC-15) operating with NGSO in the fixed-satellite service systems in the frequency bands 17.3-19.3, 19.7-20.2, 27.-29.1 GHz and 29.5-30.0 GHz have been discussed in the ITU-R and are reflected in the Report ITU-R S.2261;
2. that Article 22 of the Radio Regulations set epfd limits for non-geostationary-satellite systems in the fixed-satellite service system to protect geostationary-satellite systems in the fixed-satellite service in the 17.8-18.6 GHz, 19.7-20.2 GHz (space-to-Earth) / 27.5-28.6 GHz, 29.5-30 GHz (Earth-to-space) and 17.8-18.4 GHz (inter-satellite) frequency bands;
3. that these earth stations not be used or relied upon for safety-of-life applications,

 *resolves to invite ITU-R*

1. to develop the technical and operational characteristics needed for sharing and compatibility studies for aeronautical and maritime earth stations in motion communicating with non-geostationary FSS systems and conduct and complete in time for WRC-23 the appropriate studies to determine the spectrum needs for these operations in the frequency range 17.7 – 30 GHz;
2. to perform sharing and compatibility studies between aeronautical and maritime earth stations in motion communicating with non-geostationary FSS systems with other primary services in the frequency bands 17.7-18.6 GHz, 18.8-19.3, 19.7-20.2, 28.6.-29.1 GHz and 29.5-30.0 GHz;
3. to develop technical conditions and regulatory provisions for earth stations in motion operation with non-geostationary FSS systems taking into account the results of studies under *resolves* 1;
4. to complete studies in time for WRC‑23,

 *further resolves to invite WRC-23*

to review the results of these studies and take appropriate action.

SUP USA/5658A24/3

RESOLUTION 810 (WRC‑15)

Preliminary agenda for the 2023 World Radiocommunication Conference

**Reasons:** This Resolution must be suppressed, as WRC-19 will create a new Resolution that will include the agenda for WRC-23.

**ATTACHMENT**

**PROPOSAL FOR FUTURE AGENDA ITEM FOR WRC-23**

**Subject:** Proposed Future WRC Agenda Item for WRC-2023 to consider the results of studies on NGSO ESIM in the frequency bands 17.7-18.6, 18.8-19.3, 19.7-20.2, 28.6-29.1 GHz and 29.5-30.0 GHz.

**Origin**: United States of America

*Proposal:* **Study and develop technical and regulatory measures or framework, as appropriate, to facilitate the use of the frequency bands 17.7-18.6, 18.8-19.3, 19.7-20.2, 28.6-29.1 GHz and 29.5-30.0 GHz -by NGSO aeronautical and maritime ESIM.**

***Background/reason:***

Non-geostationary (“NGSO”) satellite constellations in frequency bands 17.7-18.6, 18.8-19.3, 19.7-20.2, 28.6-29.1 GHz and 29.5-30.0 GHz could enable the provision of Internet connectivity. These constellations are designed to meet the consumer demand for access to broadband connectivity, regardless of location. One area of noticeable growth for NGSO connectivity is for aeronautical and maritime earth stations in motion (“ESIM”). New and next generation NGSO systems will be designed to serve smaller ESIM terminals and as such NGSO systems offer the potential to expand connectivity to new market segments rapidly. In order to facilitate the further deployment of ubiquitous broadband connectivity to aeronautical and maritime ESIM services in the above mentioned frequency bands, there should be consideration on how to develop internationally harmonized spectrum technical and regulatory measures or frameworks that will enable and facilitate deployment of this critical and valuable service using NGSO satellites.

It is proposed to carry out technical sharing and compatibility studies between aeronautical and maritime ESIM communicating with NGSO FSS systems with other primary services in the frequency bands 17.7-18.6, 18.8-19.3, 19.7-20.2, 28.6-29.1 GHz and 29.5-30.0 GHz , in order to develop appropriate technical and regulatory requirements (which may include, but not limited to, off-axis EIRP density limits, minimum antenna elevation angles and power-flux densities) to facilitate the operations of such earth stations, while ensuring harmful interference is not caused to other primary services.

This proposal does not call for the revision of the epfd limits in Article 22 of the Radio Regulations for the frequency bands of 17.8-18.6 GHz, 19.7-20.2 GHz (space-to-Earth) / 27.5-28.6 GHz, 29.5-30 GHz (Earth-to-space) and 17.8-18.4 GHz (inter-satellite) nor any provisions established by WRC-19 in consideration of Resolution **159** (**WRC-15**).

***Radiocommunication services concerned:***

Fixed, Mobile, Inter-Satellite, Broadcasting-satellite, MSS, FSS, Space Research (passive) and EESS (passive)

***Indication of possible difficulties:***

Technical and regulatory requirements too stringent to allow an efficient deployment of ESIM services.

***Previous/ongoing studies on the issue:*** Technical and operational requirements for ESIM (which were referred to as earth stations on mobile platforms (“ESOMPs”) prior to WRC-15) operating with NGSO FSS systems in the frequency bands 17.3-20.2 GHz, 27.5-29.1 GHz and 29.5-30.0 GHz have been discussed in the ITU-R and are reflected in the Report ITU-R S.2261. The Report identified the technical and operational requirements to be considered with the deployment of ESOMPs operating with NGSO FSS systems in the frequency bands 17.3-19.3 GHz, 19.7-20.2 GHz, 27.0-29.1 GHz and 29.5-30.0 GHz. The Report describes how ESOMPs operating in these frequency bands must be designed and operated to meet the existing technical and/or operational requirements applicable to FSS earth stations.

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| ***Studies to be carried out by:*** ITU-R Study Group 4 | *with the participation of:* SG-5, SG-6, SG-7  |

***ITU-R Study Groups concerned:*** SG-4, SG-5, SG-6 and SG 7

***ITU resource implications, including financial implications (refer to CV126):*** minimal

***Common regional proposal:*** Yes/No ***Multicountry proposal:*** Yes/No

*Number of countries:*

***Remarks***

1. In the United States, the Federal Communications Commission has proposed the following bands and conditions for use for NGSO FSS ESIM: 18.8-19.3/28.6-29.1 GHz in the Earth-to-space direction on a primary basis; 11.7-12.2 GHz, 14.0-14.5 GHz, 18.3-18.6 GHz, 19.7- 20.2 GHz; 28.35-28.6 GHz; and 29.5-30 GHz in the Earth-to-space direction on a primary basis, *provided* they do not cause harmful interference, or claim protection from GSO FSS networks; 10.7-11.7 GHz, 19.3-19.4 GHz, and 19.6-19.7 GHz in the space-to-Earth direction on an unprotected basis (with respect to non-Federal fixed service stations); and 17.8-18.3 GHz in the space-to-Earth direction on a secondary basis. [↑](#footnote-ref-1)