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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 | | **Revision 1 to Document 164-E** | |
|  | | **15 November 2023** | |
|  | | **Original: English** | |
|  | | | |
| Nigeria (Federal Republic of)/Papua New Guinea/Tonga (Kingdom of) | | | |
| PROPOSALS FOR THE WORK OF THE CONFERENCE | | | |
|  | | | |
| Agenda item 10 | | | |

10to recommend to the ITU Council items for inclusion in the agenda for the next world radiocommunication conference, and items for the preliminary agenda of future conferences, in accordance with Article 7 of the ITU Convention and Resolution **804 (Rev.WRC‑19)**,

Introduction

The growing demand for Internet-based applications for the aeronautical and maritime industries requires additional satellite capacity for these services. This demand can be partially satisfied by additional capacity obtained by allowing operation of ESIM communicating with non-GSO space stations in the FSS in the frequency band 12.75-13.25 GHz.

New multi-orbit electronically steered phased array antennas can allow ESIMs to connect to both GSO and non-GSO satellites to provide the highest-quality for in-flight and maritime internet experience, by combining the benefits of non-GSO low latency along with the reliability of GSO.

The frequency band 12.75-13.25 GHz has been studied for use by A-ESIM and M-ESIM communicating with GSO FSS space stations under WRC‑23 agenda item 1.15, in accordance with Resolution **172 (WRC‑19)**. These studies showed that it is possible to develop a set of technical, operational and regulatory conditions to allow operation of A- and M- ESIM with GSO FSS space stations in the band while protecting other allocated services.

Studies under WRC‑23 agenda item 1.16, in accordance with Resolution **173 (WRC‑19)** show that NGSO and GSO ESIM can operate using similar conditions to ensure the protection of existing services.

With the growing development of NGSO constellations, studying the extension of the use of FSS to include the provision of NGSO ESIM applications in the frequency band 12.75-13.25 GHz while protecting existing services would be a way to increase efficient use of available satellite spectrum.

Satellite services for the aeronautical and maritime industries are global in nature and thus benefit greatly from global regulatory harmonization through the ITU Radio Regulations.

Proposal

Support WRC‑27 agenda item to study the use of the frequency band 12.75-13.75 GHz (Earth-to-space) FSS spectrum for the operation of A-ESIM and M-ESIM communicating with non-GSO while ensuring protection of existing services.

ADD NIG/PNG/TON/164/1

DRAFT NEW RESOLUTION [AI WRC‑27] (WRC‑23)

Agenda of the 2027 World Radiocommunication Conference

The World Radiocommunication Conference (Dubai, 2023),

considering

…

recognizing

…

resolves

to recommend to the Council a four-week WRC in 2027 on the basis of the following agenda:

1 on the basis of the proposals made by the administrations, taking into account the results of WRC‑23 and the Report on the Conference Preparatory Meeting, and with due consideration given to the needs of existing and future services in the frequency bands, to consider and take adequate measures in regard to the following subjects;

...

1.X to consider the use of aeronautical and maritime earth stations in motion communicating with non-geostationary space stations in the fixed-satellite service (Earth-to-space) in the frequency band 12.75-13.25 GHz in conformity with Resolution **[NGSO ESIM 13 GHz] (WRC‑23)**,

…

invites the ITU Council

…

instructs the Director of the Radiocommunication Bureau

…

instructs the Secretary-General

…

ADD NIG/PNG/TON/164/2

DRAFT NEW RESOLUTION [NGSO ESIM 13 GHz] (WRC‑23)

Study the possible use of the frequency band 12.75-13.25 GHz by aeronautical and maritime earth stations in motion communicating with non-geostationary space stations in the fixed-satellite service (Earth-to-space)

The World Radiocommunication Conference (Dubai, 2023),

considering

*a)* that the frequency band 12.75-13.25 GHz is currently allocated, on a primary basis, to the fixed service, mobile service, and fixed-satellite service (FSS) (Earth-to-space) and, on a secondary basis, to the deep-space research service (space-to-Earth) worldwide;

*b)* that the frequency band 12.75-13.25 GHz is used in the FSS with geostationary-satellite orbit (GSO) space stations in conformity with the provisions of Appendix **30B** (No. **5.441**) and that there are many GSO space station networks in the FSS that are operating in this frequency band;

*c)* that the frequency band 12.75-13.25 GHz is used in the FSS with non-GSO systems in conformity with No. **5.441**;

*d)* that the growing need for aeronautical and maritime connectivity could be partially met by allowing aeronautical earth stations in motions (A‑ESIM) and maritime earth stations in motion (M‑ESIM) to communicate with non-GSO space stations in the FSS in the frequency band 12.75-13.25 GHz (Earth-to-space);

*e)* that technology breakthroughs, including the use of tracking techniques, allow A‑ESIM and M‑ESIM to operate within the characteristics of fixed earth stations in the FSS;

*f)* that the use of the frequency band 12.75-13.25 GHz for linkages of A‑ESIM to M‑ESIM operating with non-GSO FSS could contribute, as an additional use of the spectrum, to improving broadband communications for passengers;

*g)* that A‑ESIM and M‑ESIM referred to in the present resolution must not be used for safety-of-life applications,

observing

*a)* that Resolution **169 (WRC‑19)** addresses the use of ESIMs communicating with GSO space stations in the FSS in the frequency bands 17.7-19.7 GHz and 27.5-29.5 GHz under the conditions contained in said resolution;

*b)* that Resolution **173 (WRC‑19)** is aimed at broadening the framework of Resolution **169 (WRC‑19)** by studying the use of ESIMs communicating with non-geostationary space stations in the FSS in the frequency bands 17.7-18.6 GHz, 18.8-19.3 GHz, and 19.7-20.2 GHz (space-to-Earth) and the frequency bands 27.5-29.1 GHz and 29.5-30.0 GHz (Earth-to-space);

*c)* that Resolution **172 (WRC‑19)** invites studies to be conducted for the use of A‑ESIM and M‑ESIM communicating with GSO space stations in the FSS in the frequency band 12.75-13.25 GHz,

recognizing

*a)* that, in conformity with No. **5.441**, non-GSO systems cannot call for protection against GSO networks operating in conformity with the Radio Regulations and must operate in such a way as to quickly eliminate any unacceptable interference that might occur when operating;

*b)* that, in conformity with No. **5.441**, use of the frequency band 12.75-13.25 GHz (Earth-to-space) by a non-GSO system in the FSS is subject to the application of the provisions of No. **9.12** for coordination with other non-GSO systems in the FSS;

*c)* that, in conformity with the relevant provisions of Articles **9** and **11,** the non-GSO FSS networks that intend to operate in the frequency band 12.75-13.25 GHz (Earth-to-space) must coordinate and notify each other;

*d)* that Article **21** determines the limits of the equivalent isotropically radiated power (e.i.r.p.) applicable to the non-GSO FSS systems to protect fixed and mobile earth stations;

*e)* that Article **22** contains the limits of the equivalent power flux-density (epfd)for non-GSO FSS systems in the frequency band 12.75-13.25 GHz (Earth-to-space) that guarantee the protection of GSO networks;

*f)* that the current use and future development of existing services in the frequency band must be protected without imposing additional restrictions because of the operation of A‑ESIM and M‑ESIM in the band,

resolves to invite the ITU Radiocommunication Sector

1 to study the technical and operational characteristics and user requirements of the A‑ESIM and M‑ESIM communicating with or intending to communicate with the non-GSO space stations in the FSS in the frequency band 12.75-13.25 GHz (Earth-to-space);

2 to study sharing and compatibility between A‑ESIM and M‑ESIM communicating with non-GSO spaces in the FSS and the current and planned stations of existing services with allocations in the frequency band 12.75-13.25 GHz;

3 to draw up the criteria for ensuring that ESIMs will not be calling for further protection or causing more interference than existing typical earth stations;

4 to develop the technical conditions and regulatory provisions for the operation of A‑ESIM and M‑ESIM communicating with non-GSO space stations in the FSS that operate in the frequency band 12.75-13.25 GHz (Earth-to-space), taking into account the results of the studies outlined in ITU‑R invitation Resolutions 1 and 2, while ensuring the protection of incumbent services,

invites the 2027 World Radiocommunication Conference

to consider the results of the above-mentioned studies and to adopt the necessary measures accordingly,

invites the administrations

to participate actively in the studies by sending their contributions to ITU‑R.

SUP NIG/PNG/TON/164/3

RESOLUTION 812 (WRC‑19)

Preliminary agenda for the 2027 World Radiocommunication Conference[[1]](#footnote-1)\*

**Reasons:** This resolution should be eliminated because WRC‑23 shall be drawing up a new resolution that will incorporate the WRC‑27 agenda.

ANNEX

Proposals on an agenda item for WRC‑27

|  |  |
| --- | --- |
| **Subject:** Use of the frequency band 12.75-13.25 GHz by earth stations in motion on aircraft and vessels communicating with non-geostationary space (non-GSO) space stations in the fixed-satellite service (FSS) (Earth-to-space) | |
| **Origin:** Nigeria (Federal Republic of), Papua New Guinea, Tonga (Kingdom of) | |
| ***Proposal*:**  Use of the frequency band 12.75-13.25 GHz by earth stations in motion on aircraft and vessels communicating with non-geostationary space stations in the fixed-satellite service (Earth-to-space) as per Resolution **[NGSO ESIM 13 GHz] (WRC‑23)**. | |
| ***Background/reason*:**  The growing demand for Internet-based applications for the aeronautical and maritime industries requires additional satellite capacity for these services. This demand can be partially satisfied by additional capacity obtained by allowing operation of earth stations in motion (ESIMs) communicating with non-GSO space stations in the FSS in the frequency band 12.75-13.25 GHz.  The frequency band 12.75-13.25 GHz has been studied for use by A-ESIM and M-ESIM communicating with GSO FSS space stations under WRC‑23 agenda item 1.15, in accordance with Resolution **172 (WRC‑19)**. These studies showed that it is possible to develop a set of technical, operational and regulatory conditions to allow operation of A- and M- ESIM with GSO FSS space stations in the band while protecting other allocated services.  Studies under WRC‑23 agenda item 1.16, in accordance with Resolution **173 (WRC‑19)** show that non-GSO and GSO ESIMs can operate using similar conditions to ensure the protection of existing services.  With the growing development of non-GSO constellations, studying the extension of the use of FSS to include the provision of non-GSO ESIMs applications in the frequency band 12.75-13.25 GHz while protecting existing services would be a way to increase efficient use of available satellite spectrum.  Satellite services for the aeronautical and maritime industries are global in nature and thus benefit greatly from global regulatory harmonization through the ITU Radio Regulations. | |
| ***Radiocommunication services concerned*:**  Fixed-satellite service, fixed service, mobile service, space research service (deep space) | |
| ***Indication of possible difficulties*:**  None foreseen | |
| ***Previous/ongoing studies on the issue*:**  WRC‑23 agenda item 1.15 is looking into technical, operational and regulatory conditions to allow the operation of A-ESIMs and M-ESIMs in the frequency band 12.75-13.25 GHz while protecting the existing services.  CEPT published in 2019 an ECC Decision ECC/DEC/(19)04 which defines conditions for operation of A-ESIM communicating with either GSO and non-GSO space stations in the FSS in the frequency band 12.75-13.25 GHz. | |
| ***Studies to be carried out by*:**  ITU‑R SG 4 | ***with the participation of*:** |
| ***ITU‑R study groups concerned*:**  SG 5 and 7 | |
| ***ITU resource implications, including financial implications (refer to CV126)*:** | |
| ***Common regional proposal*:** Yes/No | ***Multicountry proposal*:** Yes/No  ***Number of countries*:** |
| ***Remarks*** | |

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1. \* The appearance of square brackets around certain frequency bands in this Resolution is understood to mean that WRC‑23 will consider and review the inclusion of these frequency bands with square brackets and decide, as appropriate. [↑](#footnote-ref-1)