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| European Common Proposals | |
| Proposals for the work of the conference | |
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| 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,

Introduction

Agenda item 10 requests WRC 19 to recommend to the Council items for inclusion in the agenda for the next WRC, and to give its view on the preliminary agenda for the subsequent Conference and on possible agenda items for future conferences, taking into account Resolution 810 (WRC 15).

The European proposals for the Agenda for WRC-23 builds upon some of the preliminary agenda items contained in Resolution 810 (WRC-15), as well as proposals for the consideration of new topics.

On a general basis, all proposed agenda items have to be considered under the general principle to take due regard to the requirements of existing and future services in the bands under consideration in a view of not putting undue constraints on existing services.

On this basis, Europe proposes that WRC 19 suppresses Resolution 810 (WRC-15) and adopts Draft New Resolution [EUR-A10] (WRC-19) as the basis for the provisional agenda for WRC-23 for adoption by the Council.

SUP EUR/9AXX/1

RESOLUTION 810 (WRC‑15)

Preliminary agenda for the 2023 World Radiocommunication Conference

ADD EUR/9AXX/2

DRAFT NEW RESOLUTION [EUR-A10] (WRC-19)

Agenda for the 2023 World Radiocommunication Conference

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

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 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),

recognizing

that, in preparing this agenda, many items proposed by administrations could not be included and have had to be deferred to future conference agendas,

resolves

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

1 on the basis of proposals from administrations, taking account of the results of WRC‑15 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:

1.1 to consider possible spectrum needs and regulatory actions to support Global Maritime Distress and Safety System (GMDSS) modernization and the implementation of e‑navigation, in accordance with Resolution **361 (WRC‑15)**;

1.2 to conduct, and complete in time for WRC‑23, studies for a possible new allocation to the Earth exploration-satellite (active) service for spaceborne radar sounders within the range of frequencies around 45 MHz, taking into account the protection of incumbent services, in accordance with Resolution **656 (WRC‑15)**;

1.3 in accordance with Resolution **657** (REV WRC‑19), to review the results of studies relating to the technical and operational characteristics, spectrum requirements and appropriate radio service designations for space weather sensors, with a view to providing appropriate recognition and protection in the Radio Regulations without placing additional constraints on incumbent services;

1.4 to review the spectrum use and spectrum needs of existing services in the frequency band 470-960 MHz in Region 1 and consider possible regulatory actions in the frequency band 470‑694 MHz in Region 1 on the basis of the review in accordance with Resolution **235** **(WRC‑15)**;

1.5 to consider a new allocation to the AMS(R)S in all or part of the band 112-137 MHz in order to support both the uplink and downlink of aeronautical VHF applications, while preventing any undue constraints on existing systems operating in the AM(R)S, the ARNS, and in adjacent bands, in accordance with Resolution **[EUR-AXX-X]** **(WRC-19)**;

1.6 To conduct studies on spectrum needs, coexistence with radiocommunication services and regulatory measures for the possible introduction of new non-safety aeronautical mobile applications in accordance with Resolution **[EUR-AXX-X]** **(WRC-19)**,

1.7 to consider the removal of the limitation regarding aeronautical mobile in the IMT bands within the frequency range 694-960 MHz for non-safety applications, where appropriate, in accordance with Resolution **[EUR-AXX-X] (WRC-19)**;

1.8 to review of radio regulatory provisions related to aeronautical terrestrial services, including appendix 27, but excluding article 5, in accordance with Resolution **[EUR-AXX-X] (WRC-19)**

1.9 to consider any change of Radio Regulation as appropriate based on the outcome of studies conducted to identify any required technical and operational measures, in relation to stations on board sub-orbital vehicles, to avoid harmful interference between radiocommunication services and existing applications operated in the same service in accordance with Resolution **[EUR-AXX-X] (WRC-19)**;

1.10 to review the technical and regulatory conditions pertaining to the 18.6-18.8 GHz to address possible new Fixed-Satellite Service usage and the protection of EESS (passive) in accordance with Resolution **[EUR-AXX-X] (WRC-19)**;

1.11 to study and develop technical, operational and regulatory measures, as appropriate, to facilitate the use of the bands 17.7-18.6 (space-to-Earth), 18.8-20.2 GHz (space-to-Earth), 27.5-30.0 GHz (Earth-to-space) by NGSO FSS ESIM, while ensuring due protection of existing services in those bands in accordance with Resolution **[EUR-AXX-X] (WRC-19)**;

1.12 to study technical, operational issues, and regulatory provisions for transmissions in the Earth-to-space direction in the 27.5 - 30 GHz and space-to-Earth direction in frequency bands 17.7-18.6 GHz and 18.8 - 20.2 GHz between non-geostationary satellites to other satellites in the fixed-satellite service frequency bands , in accordance with Resolution **[EUR-AXX-X] (WRC-19)**;

1.13 to consider protection of GSO satellite networks operating in 7/8 and 20/30 GHz from emissions of non-GSO satellite systems operating in the same bands and identical directions, in accordance with Resolution **[EUR-AXX-X] (WRC-19);**

1.14to consider, appropriate regulatory actions, with a view to reviewing and, if necessary, revising Resolution 155 (WRC-15) and RR No. 5.484B in accordance with Resolution **[EUR-AXX-X] (WRC-19)**

1.15 to harmonize globally the use of the frequency band 12.75-13.25 GHz by earth stations on aircraft communicating with geostationary space stations in the fixed-satellite service(Earth-to-space), in accordance with Resolution **[EUR-A24-X] (WRC-19)**;

1.16 to consider a new EESS (Earth-to-space) allocation in the band 22.55-23.15 GHz, in accordance with Resolution **[EUR-AXX-X] (WRC-19)**;

1.17 to determine, reassess and carry out appropriate regulatory actions for determining additional allocations to the mobile-satellite service between 1.5 GHz and 6 GHz, on the basis of ITU-R studies in accordance with Resolution **[EUR-AXX-X] (WRC-19)**

1.18 to consider, based on the results of ITU‑R studies:

1.18.1 the introduction of pfd and EIRP limits in Article 21 for the bands 71 -76 GHz and 81 – 86 GHz in accordance with Resolution **[EUR-B10-14] (WRC-19)**

1.18.2 the conditions for the use of the 71–76 GHz and 81–86 GHz bands by stations in the satellite services to ensure compatibility with passive services in accordance with Resolution **[EUR-B10-15] (WRC-19)**;

1.19 to address the following two issues to accommodate requirements for spectrum usage above 231.5 GHz :

- to consider, in accordance with Resolution **[EUR-AXX-X] (WRC-19)**; additional spectrum allocations to the radiolocation service on a co-primary basis in the frequency band 231.5 – 275 GHz and identification for radiolocation applications in frequency bands in the range 275 - 700 GHz for millimeter and sub-millimeter wave imaging systems.

- to review and consider possible adjustments of the existing or possible new primary frequency allocations to EESS (passive) in the range 231.5 – 252 GHz, to ensure alignment with more up-to-date remote sensing observation requirements in accordance with Resolution **[EUR-AXX-X] (WRC-19)**;

2 to examine the revised ITU‑R Recommendations incorporated by reference in the Radio Regulations communicated by the Radiocommunication Assembly, in accordance with Resolution 28 (Rev.WRC‑03), and to decide whether or not to update the corresponding references in the Radio Regulations, in accordance with the principles contained in Annex 1 to Resolution 27 (Rev.WRC‑07);

3 to consider such consequential changes and amendments to the Radio Regulations as may be necessitated by the decisions of the Conference;

4 in accordance with Resolution 95 (Rev.WRC‑07), to review the resolutions and recommendations of previous conferences with a view to their possible revision, replacement or abrogation;

5 to review, and take appropriate action on, the Report from the Radiocommunication Assembly submitted in accordance with Nos. 135 and 136 of the Convention;

6 to identify those items requiring urgent action by the Radiocommunication Study Groups in preparation for the next World Radiocommunication Conference;

7 to consider possible changes in response to Resolution 86 (Rev.Marrakesh, 2002) of the Plenipotentiary Conference: “Advance publication, coordination, notification and recording proce­dures for frequency assignments pertaining to satellite networks”, in accordance with Resolution 86 (Rev.WRC‑07);

8 to consider and take appropriate action on requests from administrations to delete their country footnotes or to have their country name deleted from footnotes, if no longer required, taking into account [Resolution 26 (Rev.WRC‑07)](#RES_26_rev_WRC07);

9 to consider and approve the Report of the Director of the Radiocommunication Bureau, in accordance with Article 7 of the Convention:

9.1 on the activities of the Radiocommunication Sector since WRC‑12;

9.2 on any difficulties or inconsistencies encountered in the application of the Radio Regulations; and

9.3 on action in response to [Resolution 80 (Rev.WRC‑07)](#RES_80_rev_WRC07);

10 to 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,

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.

ADD EUR/9AXX/3

DRAFT NEW RESOLUTION [EUR-B10-1] (wrc-19)

New allocation to the aeronautical mobile‑satellite (R) service within the band 112-137 MHz in order to support both the uplink and downlink of aeronautical VHF applications

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

considering

a) that the frequency band 108-117.975 MHz is allocated on a primary basis to the aeronautical radionavigation service (ARNS), and to the aeronautical mobile (R) service (AM(R)S) in accordance with Resolution 413;

b) that under No. **5.197A** of the Radio Regulations the use of the band 108-112 MHz by the AM(R)S shall be limited to systems composed of ground-based transmitters and associated receivers that provide navigational information in support of air navigation functions in accordance with recognized international aeronautical standards;

c) that the frequency band 117.975-137 MHz is allocated on a primary basis to the AM(R)S and is used by air-ground, air-air, and ground-air systems operated in accordance with ICAO standards and recommended practices (SARPS), providing critical voice and data communications for Air Traffic Management (ATM) on a global basis;

d) that under No. **5.201** and No. **5.202**  of the Radio Regulations, the frequency bands 132-136 MHz and 136-137 MHz are also allocated in several countries to the aeronautical mobile (OR) service on a primary basis;

recognizing

a) that the optimization of air traffic management over oceanic and remote areas necessitates appropriate aeronautical surveillance and communication means, in order to meet the required communication performance for reduced separation minima, without modification to aircraft equipment

b) that the frequency band 1 087.7-1 092.3 MHz was allocated to AMS(R)S (Earth‑to‑space) on a primary basis in order to extend reception of Automatic Dependent Surveillance-Broadcast (ADS‑B) signals beyond terrestrial line-of-sight, thereby facilitating the availability of surveillance means anywhere in the world

c) that the availability of appropriate communication means is still an issue over oceanic and remote areas, where there is currently no suitable solution to provide aeronautical Very High Frequency (“VHF”) voice services.

d) that satellite communication systems may complement terrestrial communication infrastructures in oceanic and remote areas in order to meet the evolving requirements of modern civil aviation

noting

a) that Annex 10 to the International Civil Aviation Organization (ICAO) Convention on International Civil Aviation contains Standards and Recommended Practices (SARPs) for safety aeronautical radionavigation and radiocommunication systems used by international civil aviation;

b) that the development of compatibility criteria between new AMS(R)S systems proposed for operations in the frequency band 112-137 MHz and ICAO-standardized aeronautical systems in this frequency band is the responsibility of ICAO;

c) that feeder links of AMS(R)S systems involving communications between aeronautical earth stations and space stations may be accommodated in the fixed-satellite service;

resolves

1 to study the compatibility between new AMS(R)S systems that may use the band 112-137 MHz in the Earth-to-space and space-to-Earth directions to support aeronautical VHF applications in oceanic and remote areas, and AM(R)S, ARNS and existing primary services in adjacent bands;

2 taking into account the results of the above study, to provide technical, regulatory and operational recommendations to the Conference, enabling that Conference to decide on a possible new allocation to AMS(R)S (Earth-to-space and space-to-Earth) within the band 112-137 MHz, while preventing any undue constraints on existing systems operating in the AM(R)S, the ARNS, and in adjacent bands

invites ITU-R

as a matter of urgency, to complete the studies called for in this Resolution,

*to invite the 2023 World Radiocommunication Conference*

to consider the results of the studies above and take appropriate actions,

invites the International Civil Aviation Organization

to participate actively in the studies by providing requirements and information that should be taken into account in ITU-R studies,

instructs the Secretary-General

to bring this Resolution to the attention of the ICAO and the International Air Transport Association (IATA).

Proposals on an Agenda item for WRC-23

**Subject: Proposal for a WRC-23 Agenda item to consider a new allocation to AMS(R)S for within the band 112-137 MHz** **in order to support both the uplink and downlink of aeronautical VHF applications.**

**Origin:** CEPT

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| ***Proposal*:**  To consider a new allocation to the AMS(R)S in all or part of the band 112-137 MHz in order to support both the uplink and downlink of aeronautical VHF applications, while preventing any undue constraints on existing systems operating in the AM(R)S, the ARNS, and in adjacent bands, in accordance with Resolution **[EUR-AXX-X]** **(WRC-19)**; | |
| ***Background/reason*:**  In order to apply radar-like or other similar reduced separation minima over oceanic and remote areas, appropriate surveillance and communications are required.  WRC-15 allocated the frequency band 1087.7 – 1092.3 MHz for reception of aircraft Automatic Dependent Surveillance – Broadcast (“ADS-B”) messages by space stations. Space-based ADS-B is expected to perform like terrestrial ADS-B sensors without any need for avionic modification.  However, appropriate communication means is still an issue for oceanic and remote areas, and there is currently no suitable solution to provide Very High Frequency (“VHF”) voice services over these areas. It is hence proposed to consider a potential solution using VHF radios relay installed onboard satellites (“space-based VHF”), which would be an effective complementary communication service to the space-based ADS-B. This requires a new allocation to the Aeronautical Mobile Satellite (R) Service (AMS(R)S) in all or part of the band 112-137 MHz.  Currently there is no practical and cost effective solution to provide VHF voice services over oceanic and some remote areas. Although High Frequency (“HF”) voice, satellite voice (“SATVOICE”) and controller-pilot data link communications (“CPDLC”) may be used in lieu of VHF voice, these technologies are currently not considered as direct controller-pilot communications (“DCPC”) for supporting radar-like or other similar reduced separation minima (e.g. 3, 5 or 10 NM). Moreover, not all aircraft are equipped with SATVOICE and/or CPDLC. Whereas, VHF voice communications relay would meet the required communication performance (“RCP”) for reduced separation minima, without modification to aircraft equipment. | |
| ***Radiocommunication services concerned*:**  Services in the band 112-137 MHz: Aeronautical Mobile (R) Service, Aeronautical Radionavigation Service, Aeronautical Mobile (OR) Service.  Other services in adjacent bands: Broadcasting Service, Space Operation Service (space-to-Earth), Meteorological-Satellite Service (space-to-Earth), Mobile-Satellite Service (space-to-Earth), Space Research Service (space-to-Earth). | |
| ***Indication of possible difficulties*:**  Sharing studies with existing VHF AM(R)S, ARNS, and other services in the adjacent bands | |
| ***Previous/ongoing studies on the issue*:**  Not Applicable | |
| ***Studies to be carried out by*:**  **ITU-R** | ***with the participation of*:** **Administrations, ITU-R Sector members, ICAO and Aviation Authorities** |
| ***ITU‑R Study Groups concerned*:**  **SG 4 and 5** | |
| ***ITU resource implications, including financial implications (refer to CV126)*:**  **This proposed agenda item will be studied as part of the regular ITU-R procedures and planned budget.** | |
| ***Common regional proposal*:** Yes | ***Multicountry proposal*:** No  ***Number of countries*:** |
| ***Remarks***  This proposed agenda item is supported by ICAO | |

ADD EUR/9AXX/4

DRAFT NEW RESOLUTION [EUR-B10-2] (WRC-19)

**Studies on frequency-related matters, including possible additional allocations, for the possible introduction of new non-safety aeronautical mobile applications.**

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

*considering*

1. that the number of manned and unmanned aircraft equipped with sensors has grown significantly in the past 20 years;
2. that the need for bidirectional low to high data rate communications between aeronautical stations and aircraft stations, or between aircraft stations is consequently increasing;
3. that the considered communication data links implement channel bandwidths from some kHz up to some hundreds of MHz requiring to study frequencies in the VHF range up to 23 GHz.
4. that these new aeronautical communications are not related to safety of flights;
5. that there is no clear identification of those bands in which these new aeronautical communication systems may be developed with a sufficient level of confidence for long term investment by industry;
6. that the decisions of previous conferences have introduced some restrictions to the use and have imposed constraints on the development of these communication systems within several existing mobile allocations traditionally used by the aeronautical mobile applications;
7. that the existing mobile allocations which can be used by these communication systems have some limitations due to coexistence with other services in the band;
8. that in Region 1, there are allocations to the mobile except aeronautical mobile service in some frequency bands which are allocated to the mobile service in Regions 2 and 3;
9. that harmonized worldwide allocation would facilitate the implementation of these new aeronautical communication systems ;
10. the only frequency ranges beyond 400 MHz, worldwide identified for aeronautical mobile applications other than those with the mobile allocation, those en route (R) or for telemetry are beyond 55 GHz as per N° 5.558;
11. that an adaptation of the regulatory framework for further visibility, protection and development of non-safety aeronautical mobile applications may be required;

*recognizing*

1. that the use innovative sharing methods may be considered to ensure the protection of existing services while offering the possibility to have access to new frequency bands;
2. that the implementation of tuning ranges may allow granting authorization depending on national circumstances and spectrum policies;
3. that the use of frequencies of Appendix 18 to the Radio Regulation for the maritime VHF communication shall be protected;
4. that new allocations for the aeronautical mobile service in the range 144-174 MHz would extend the existing usage in the band 138-144 MHz and would ensure the possibility to develop systems operating on a wider tuning range providing that the protection of the incumbent services is ensured;

*noting*

1. that the band 144-146 MHz is allocated to the amateur and amateur-satellite on a primary basis in all Regions;
2. that the band 5000-5010 MHz is allocated to the radionavigation satellite service (earth to space) on a primary basis;
3. that the band 15.4-15.7 GHz is allocated to the radiolocation, aeronautical radionavigation and, part of, to the fixed-satellite (Earth-to-space) service on a primary basis;
4. that the band 5000-5010 MHz is adjacent to the band 5010-5030 MHz which is allocated to the radionavigation-satellite (space-to-Earth) (space-to-space) service on a primary basis;
5. that the bands 162,0375-174 MHz, 862-874 MHz and 22-22.21 GHz are allocated on a primary basis to the mobile except aeronautical mobile service;
6. that footnotes 5.312 and 5.323 allocate the 645-960 MHz band or parts thereof to the aeronautical radionavigation service on a primary basis in several countries of Region 1
7. that the bands 5000-5010 MHz, 15.4-15.7 GHz and 144-146 MHz are adjacent respectively to the band 4990-5000 MHz, 15.35-15.4 GHz and 150.05-153 MHz which are allocated to the radioastronomy service on a primary basis;
8. that the band 22.01-22.21 GHz is covered by No. 5.149;

*resolves to invite ITU-R*

1. to study spectrum needs for new non-safety aeronautical mobile applications for air to air, ground to air and air to ground communications of manned and unmanned aircraft systems;
2. to study the bands 162,0375-174 MHz, 862-874 MHz and 22-22.21 GHz already allocated on a primary basis to the mobile except aeronautical mobile service, in order to evaluate the possible revision or deletion of the “except aeronautical mobile” restriction;
3. to study possible new allocations to the aeronautical mobile service in the bands 144-146 MHz, 5000-5010 MHz and 15.4-15.7 GHz, while ensuring the continued operation and the protection of existing services in the considered bands and, as appropriate, adjacent bands, and not constraining future development of these services;
4. to review studies in resolve 1 to 3 and elaborate regulatory measures for the possible introduction of new non-safety aeronautical mobile applications;
5. to complete studies in time for WRC‑23,

*further resolves to invite WRC-23*

to review the results of these studies and take appropriate actions,

*invites administrations*

to participate actively in the studies by submitting contributions to ITU-R.

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Proposals on an Agenda item for WRC-23

**Subject:**

Studies on frequency-related matters, including possible additional allocations, for the possible introduction of new non-safety aeronautical mobile applications.

**Origin:** France

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| ***Proposal*:**  In accordance with Resolution [EUR-B10-2] (WRC-19), to review studies on spectrum needs, coexistence with radiocommunication services and regulatory measures for the possible introduction of new non-safety aeronautical mobile applications:   * Spectrum needs for new non-safety aeronautical mobile applications for air to air, ground to air and air to ground communications of manned and unmanned aircraft systems. * Studies within the bands already allocated on a primary basis to the mobile except aeronautical mobile service above 146 MHz and up to 23 GHz in order to evaluate the possible revision or deletion of the “except aeronautical mobile” restriction. The following bands are proposed to be studied : 162,0375-174,000 MHz, 862-874 MHz and 22-22.21 GHz. * Study possible new allocations to the aeronautical mobile service in the bands 144-146 MHz, 5000-5010 MHz and 15.4-15.7 GHz, while ensuring the continued operations and the protection of existing services in those bands and, as appropriate, adjacent bands, and not constraining future development of these services. | |
| ***Background/reason*:**  The number of manned and unmanned aircraft equipped with sensors has grown significantly in the past 20 years together with the need of bidirectional low to high data rate communications.  One can mention the following applications: fire surveillance, border surveillance, air quality and environment monitoring, traffic monitoring, disaster monitoring, terrain modelling, imagery (visible, infrared, radar, meteo), video monitoring… Such applications require communications identification, sensor control or synchronization and for access to ground databases.  Consequently the need of non-safety data communications between various types of aeronautical platforms exponentially increases.  At the same time, there is no clear identification of those bands in which non-safety aeronautical mobile applications may be developed with a sufficient level of confidence for long term use by the industry. In addition, the existing mobile allocations which can be used for non-safety aeronautical mobile applications have some limitations due to coexistence with other services in the band. Furthermore the decisions of previous conferences have introduced some restrictions to the use and have imposed constraints on the development of wideband aeronautical mobile applications within some existing mobile allocations traditionally used by the aeronautical mobile applications.  In consequence an adaptation of the regulatory framework for further visibility, protection and development of wideband non-safety aeronautical mobile applications is required. Use of innovative sharing methods may be considered to ensure the protection of existing services while offering the possibility to have access to new frequency bands. The sharing methods could consider, for example, to take into account the separation linked to the altitude of the aircrafts or power control. In addition, the access may be supported by effective tuning ranges and may be authorized depending on national circumstances and spectrum policies.  Several frequency bands are proposed for investigation within different ranges in order to meet the various operational requirements for new non-safety aeronautical mobile applications. Implementation of separation distances for such aeronautical systems or pfd limits or others regulatory measures may be envisaged. | |
| ***Radiocommunication services concerned*: MS and AMS** | |
| ***Indication of possible difficulties*:**  Protection of existing services within the bands and adjacent bands allocated to the mobile except aeronautical mobile service.  Protection of existing services within the bands and adjacent bands proposed for a new allocation to the aeronautical mobile service. | |
| ***Previous/ongoing studies on the issue*:** no recent studies for aeronautical mobile applications, other than those for related to safety. | |
| ***Studies to be carried out by*: ITU-R WP5B** | ***with the participation of*:** |
| ***ITU‑R Study Groups concerned*: SG-4, SG-5, SG-6, SG-7** | |
| ***ITU resource implications, including financial implications (refer to CV126)*:**  **This proposed agenda item will be studied within the normal ITU-R procedures and planned budget.** | |
| ***Common regional proposal*:** Yes | ***Multicountry proposal*:** No  ***Number of countries*:** |
| ***Remarks*** | |

ADD EUR/9AXX/5

DRAFT RESOLUTION [EUR-B10-3] (WRC‑19)

**Removal of the limitation regarding aeronautical mobile in the frequency range 694-960 MHz for non-safety applications**

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

*considering*

*a)* that there is a need for greater connectivity of aeronautical vehicles to address existing, growing and new requirements from the aeronautical community,

*b)* that current and future IMT networks can provide connectivity services to helicopters, small aircrafts and Unmanned Aircraft Systems (UAS) at low and medium altitude,

*c)* that current and future IMT networks may provide communication functions for the Beyond Visual Line Of Sight operation of UAS,

*d)* that current and future IMT networks may provide communications functions for UAS Traffic Management systems,

*e)* that UAS may use IMT technology for direct communication, for example for sense and avoid functions,

*f)* that future IMT networks may support direct air to ground connectivity services to commercial airplanes with specific equipment on-board airplane,

*g)* that base stations located on helicopters, small aircrafts and Unmanned Aircraft Systems (UAS) at low and medium altitude may provide connectivity services to IMT terminals,

*h)* that base station located on aircrafts flying at high altitude may provide connectivity services to IMT terminals,

*i)* that the IMT capacities identified in the previous considerings have been demonstrated feasible by several studies and are currently being developed by Standards Development Organisations,

*noting*

*a)* that ITU-R sharing and compatibility studies supporting the identification of specific bands to IMT did not consider the use cases described in considering b) to h),

*b)* that some bands identified for IMT are allocated to the mobile except aeronautical mobile service,

c*)* that the 694-960 MHz band is allocated on a primary basis to the mobile except aeronautical mobile service in Region 1,

*d)* that the 890-902 MHz and 928-942 MHz bands are allocated on a primary basis to the mobile except aeronautical mobile service in Region 2 and that the 902-928 MHz band is allocated on a secondary basis to the mobile except aeronautical mobile service in Region 2,

*e)* that footnotes 5.312 and 5.323 allocate the 645-960 MHz band or parts thereof to the aeronautical radionavigation service on a primary basis in several countries of Region 1,

*f)* that the 694-960 MHz band is allocated on a primary basis to the broadcasting service in Region 1,

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*recognising*

*a)* that Resolution 224 (Rev.WRC-15) addresses frequency bands for the terrestrial component of International Mobile Telecommunications below 1 GHz,

*b)* that Resolution 749 (WRC-15)addresses the use of the frequency band 790-862 MHz in countries of Region 1 and the Islamic Republic of Iran by mobile applications and by other services

*c)* that Resolution 760 (WRC-15) addresses provisions relating to the use of the frequency band 694-790 MHz in Region 1 by the mobile, except aeronautical mobile, service and by other services,

*resolves to invite ITU R*

1 for the frequency band 694 – 960 MHz in Region 1 and 890-942 MHz in Region 2:

a to assess relevant aeronautical mobile service scenarios to be addressed in compatibility and sharing studies,

b to identify relevant technical parameters associated with the aeronautical mobile systems,

c to conduct sharing and compatibility studies with existing services, including in adjacent bands as appropriate (see noting a to f),

d to determine the applicability to remove the exception of the aeronautical mobile service or other suitable regulatory measures in the frequency range 694-960 MHz in Region 1 and 890-942 MHz in Region 2 based on the results of studies,

*further resolves,*

to invite WRC-23 to consider the results of the above studies and take appropriate actions.

Proposals on an Agenda item for WRC-23

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| **Subject: Considerations on air to ground and ground to air connectivity for airborne BS and UE in IMT bands within 694-960 MHz for non-safety applications**  **Origin: CEPT**   |  |  | | --- | --- | | ***Proposal:***  *to consider the*  *removal of the limitation regarding aeronautical mobile in the IMT bands*  *within the frequency range 694-960 MHz for non-safety applications, where appropriate in accordance with Resolution* [EUR-B10-3] | | | ***Background/reason*:**  *There is a growing demand for*  *- affordable air to ground and ground to air connectivity, due the rising expectation for connectivity in e.g. helicopters and small airplanes. Several test campaigns have demonstrated that IMT networks can respond to this type of connectivity demand,*  *- platforms capable of providing IMT coverage either in areas where there is no terrestrial network, or in case of disaster and the potential unavailability of the terrestrial network,*  *Standards Developing Organisations (SDOs) such as 3GPP are currently standardising functionalities to support these use cases.*  *IMT network with national coverage rely on the frequency range 694-960 MHz. However, the 694 - 960 MHz frequency range is currently allocated to the ‘MOBILE, except aeronautical mobile’ service in Region 1, which would prevent or at least restrict the possibility to connect Unmanned Aircraft to IMT network. Similar restrictions apply in 890-942 MHz in Region 2* | | | ***Radiocommunication services concerned*:**  *MS, FS, ARNS, and BS…* | | | ***Indication of possible difficulties*:**  *Sharing studies with radiocommunication services in band and in adjacent bands* | | | ***Previous/ongoing studies on the issue:*** | | | ***Studies to be carried out by*:**  *ITU-R SG-5 (WP5D* | ***with the participation of*:**  **---** | | ***ITU‑R Study Groups concerned*:**  *ITU-R, WP5B, WP6A* | | | ***ITU resource implications, including financial implications (refer to CV126)*:** | | | ***Common regional proposal*:** Yes | ***Multicountry proposal*:** No  ***Number of countries*:** | |
|  |

ADD EUR/9AXX/6

DRAFT NEW RESOLUTION [EUR-E10-4] (WRC-19)

**Review of the Radio Regulatory Provisions Related to Aeronautical Terrestrial Services, including Appendix 27 but excluding Article 5**

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

*considering*

*a)* that the Radio Regulations contain a number of provisions, excluding those contained in Article 5, directly related to aeronautical terrestrial services that have not been reviewed within the last 30 years;

*b)* that Appendix 27 contains the frequency allotment plan for aeronautical mobile (R) service in the HF frequency range, which was last reviewed and revised by the 1978 & 1979 World Administrative Radio Conferences;

*c)* that technology and operational procedures within aviation have evolved since the Radio Regulatory provisions referred to in *a)* were last reviewed to a point where they are inconsistent with the provisions in the Radio Regulations;

*d)* that advances in digital HF technology now offer the opportunity to improve spectral efficiency with which the HF spectrum can be used and the quality of the audio but in order to access those improvements Appendix 27 will need to be modified.

*recognizing*

*a)* that the intent is not to seek any modifications to frequency allocations contained in Article 5

*b)* that the International Civil Aviation Organization (ICAO) through its convention and associated annexes regulate the provision and operational use of aeronautical systems,

c) that the Director’s report to WRC-19 reflect the need to review the various provisions in the Radio Regulations related to aeronautical terrestrial services

*resolves to invite the 2023 World Radiocommunication Conference*

1 to consider, in light of the studies undertaken under invites *ITU-R 1,* changes to the provisions of the Radio Regulations contained in Articles 28 and 35 to 45 as well as Appendix 12 in order to reflect current operational practices;

2 to consider, in light of the studies undertaken under invites *ITU-R 1,* changes to Appendix 27 that would reflect current aeronautical HF usage and enable the implementation of the latest digital techniques for the provision of aeronautical HF services

*invites ITU-R*

1 to review Articles 28 and 35 to 45 as well as Appendix 12 of the Radio Regulations and to propose changes to WRC-23, where necessary, in order to ensure that the Articles are consistent with current ICAO standards and operational practices;

2 to review and, where necessary, proposes changes to Appendix 27 in order to enable the implementation of the latest digital techniques for the provision of aeronautical HF services

*invites the International Civil Aviation Organization*

to participate actively in the studies by providing requirements and information that should be taken into account in ITU-R studies, in particular those mentioned in *invites ITU-R* 1,

*instructs the Secretary-General*

to bring this Resolution to the attention of the ICAO and the International Air Transport Association (IATA) .

Proposals on an Agenda item for WRC-23

**Subject:** **Review of radio regulatory provisions related to aeronautical terrestrial services, including appendix 27 but excluding Article 5**

**Origin:** CEPT

|  |  |
| --- | --- |
| ***Proposal*:**  Review of radio regulatory provisions related to aeronautical terrestrial services, including appendix 27 but excluding Article 5 in accordance with [EUR-B10-4] | |
| ***Background/reason*:**  The radio regulatory provisions related to aeronautical terrestrial services, excluding Article 5, have not been reviewed since the 1980s at the latest. Certain technologies and operational practices have evolved since and, as was highlighted during the discussions on the Global Aeronautical Distress & Safety System as well as in the draft Director’s report to WRC-19, there are a number of provisions in the Radio Regulations that are either no longer relevant or need to be modified to reflect current practices within aviation. Additionally, advances in HF digital technology offer the possibility to increase both the quality and capacity of the HF frequencies current allocated to aeronautical services but this will require revisions to Appendix 27. | |
| ***Radiocommunication services concerned*:**  **AM(R)S, ARNS, AMS, RNS** | |
| ***Indication of possible difficulties*:**  None foreseen | |
| ***Previous/ongoing studies on the issue*:**  None since 1980s | |
| ***Studies to be carried out by*:**  **Administrations and Sector members of the ITU-R** | ***with the participation of*:**  **ICAO** |
| ***ITU-R Study Groups concerned*:**  **Study Group 5** | |
| ***ITU resource implications, including financial implications (refer to CV126)*:**  **Minimal** | |
| ***Common regional proposal*:** Yes | ***Multicountry proposal*:** No  ***Number of countries*:** |
| ***Remarks*** | |

ADD EUR/9AXX/7

DRAFT NEW Resolution [EUR-B10-5] (WRC‑19)

Studies to accommodate the operation of sub-orbital vehicles

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

considering

*a)* that the radio spectrum is a limited resource;

*b)* that some vehicles, including space planes, may reach altitudes much higher than usual aircraft altitudes, and use non-orbital trajectories;

*c)* that a sub-orbital flight can be defined at ITU-R as an intentional flight of a vehicle expected to reach the upper atmosphere with a portion of its flight path that may occur in space without completing a full orbit around the Earth before returning back to the surface of the Earth;

*d)* that sub-orbital vehicles are being developed to fly through the lower levels of the atmosphere, where they are expected to operate in controlled or uncontrolled airspace;

*e)* that sub-orbital vehicles must safely be accommodated into airspaces used by conventional aircrafts during certain phases of flight;

recognizing

*a)* that there is no internationally agreed legal delimitation between space and atmosphere,

*b)* that the definition of sub-orbital vehicle is not agreed internationally and is applicable only for the studies conducted under this Resolution;

recognizing further

*a)* that some space launchers may include components or items not reaching orbital trajectories, and that some of these components or items may be developed as re-usable items operating on sub-orbital trajectories,

*b)* that such re-usable items of space launch systems, may be considered as sub-orbital vehicles or as space launch systems from radio communication perspective;

c) that space launch systems may have a different radiocommunication regulatory framework from that of sub-orbital vehicles;

noting

a) ITU-R report M.[SUBORBITAL VEHICLES] on required technical and operational measures in relation to stations on-board sub-orbital vehicles, and spectrum requirements;

*b)* that provisions of No. **4.10** may apply for certain aspects of these operations,

resolves to invite the ITU Radiocommunication Sector

1 to conduct studies to determine spectrum needs for communications on stations on board sub-orbital vehicles in particular for telemetry, telecommand and voice or data communications as well as the existing services and allocations under which these stations may be operated;

2 to study, under existing allocations:

2.1 the technical and regulatory conditions to allow stations onboard sub-orbital vehicles to operate under the aeronautical regulation and to be considered as Earth stations or terrestrial stations even if a part of the flight occurs in space;

2.2 any required technical and operational measures, in relation to stations on board sub-orbital vehicles, to avoid harmful interference to other radiocommunication services and to existing applications of the same service in which stations on board sub-orbital vehicles operate;

3 to complete the studies within the next ITU Radiocommunication Sector (ITU-R) study cycle,

*invites the 2023 World Radiocommunication Conference*

to consider the results of the studies above and take appropriate actions;

instructs the Director of the Radiocommunication Bureau

1 to bring this Resolution to the attention of the ITU‑R study groups;

2 to include in his report, for consideration by WRC‑23, the results of the ITU‑R studies referred to in *resolves to invite the ITU Radiocommunication Sector* above,

invites administrations

to participate actively in the studies by submitting contributions to ITU‑R,

instructs the Secretary-General

to bring this Resolution to the attention of the United Nations Committee on the Peaceful Uses of Outer Space (COPUOS) and International Civil Aviation Organization (ICAO) and other international and regional organizations concerned.

Proposals on an Agenda item for WRC-23

Subject: Radiocommunications to accommodate sub-orbital vehicles

**Origin**: CEPT

|  |  |
| --- | --- |
| ***Proposal*:**  to consider any change of Radio Regulation as appropriate based on the outcome of studies conducted to identify any required technical and operational measures, in relation to stations on board sub-orbital vehicles, to avoid harmful interference between radiocommunication services and existing applications operated in the same service in accordance with Resolution **[EUR-AXX-X] (WRC-19)**; | |
| ***Background/reason*:**  Issue 4 of agenda item 9.1 initiated study on sub-orbital vehicles and has identified points relative to radiocommunication that would require further work. | |
| ***Radiocommunication services concerned*:**  Space operation, Mobile satellite, Aeronautical mobile-satellite, Aeronautical mobile-satellite (R), Aeronautical mobile-satellite (OR), Radionavigation-satellite, Aeronautical radionavigation-satellite, Radionavigation, Aeronautical radionavigation, Aeronautical mobile, Aeronautical mobile (OR), Aeronautical mobile (R) | |
| ***Indication of possible difficulties*:**  The availability of operational information needed to assume the relevant parameters and scenario for the technical studies.  The agreement on a definition of sub-orbital vehicle avoiding any impact on existing satellite launchers. | |
| ***Previous/ongoing studies on the issue*:**  A ITU-R Report, in response to agenda item 9.1.4, to be submitted to SG-5, provides information on the current understanding of radiocommunications for sub-orbital vehicles including a description of the flight trajectory, categories of sub-orbital vehicles, technical studies related to possible avionics systems used by sub-orbital vehicles, and service allocations of those systems. The Report also addresses Question ITU-R 259/5, “Operational and radio regulatory aspects for planes operating in the upper level of the atmosphere”.. | |
| ***Studies to be carried out by*: ITU-R** | ***with the participation of*: IACO, United Nations Committee on the Peaceful Uses of Outer Space (COPUOS)** |
| ***ITU‑R Study Groups concerned*: SG-4, SG-5** | |
| ***ITU resource implications, including financial implications (refer to CV126)*:** | |
| ***Common regional proposal*:** Yes/No | ***Multicountry proposal*:** Yes/No  ***Number of countries*:** |
| ***Remarks*** | |

ADD EUR/9AXX/8

DRAFT NEW RESOLUTION [EUR-B10-7] (WRC-19)

**Review of the technical and regulatory conditions pertaining to the 18.6-18.8 GHz to address possible new Fixed-Satellite Service usage and the protection of EESS (passive)**

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

*considering*

1. that the frequency band 18.6-18.8 GHz is currently allocated on a primary basis to the earth exploration-satellite (passive), fixed, mobile, fixed-satellite (space-to-Earth) services globally, as well as space research service (passive) on a primary basis in Region 2 and secondary basis in Regions 1 and 3;
2. that the emissions of the fixed, mobile and fixed-satellite services in the band 18.6-18.8 GHz are limited to the values given in **Nos**. **21.5** and, in accordance with RR **No. 5.522A**, **21.5A** and **21.16.2**;
3. that the use of the band 18.6-18.8 GHz by geostationary networks and non-geostationary systems in the fixed-satellite service (space-to-Earth) operate in accordance with RR N° **5.522B** in the Radio Regulations;
4. that the power flux-density specified in **No. 21.16.2** across the 200 MHz band 18.6-18.8 GHz produced at the surface of the Earth by emissions from a space station operating in the fixed-satellite service under assumed free-space propagation conditions shall not exceed −95 dB(W/m2), except for less than 5% of time, when the limit may be exceeded by up to 3 dB;
5. that non-geostationary-satellite systems shall not cause unacceptable interference to and shall not claim protection from geostationary-satellite networks in the fixed-satellite service and the broadcasting-satellite service in accordance with **No. 22.2**;
6. that **No.** **21.16** contains power flux-density limits applicable to fixed-satellite service to protect fixed and mobile services with allocations in the frequency band 18.6-18.8 GHz;
7. that the provisions of No. **21.17** do not apply in this band,

*recognizing*

1. that the power flux-density limits on the surface of the Earth, found in Article **21**, Table **21-4** for the 17.7-19.3 GHz band apply to all types of FSS systems in the band 18.6-18.8 GHz;
2. that possible new usage and deployments of FSS in LEO and MEO orbits would require to review and the minimum apogee limit of 20 000 km currently given in RR N° **5.522B;**
3. that the frequency band 18.6-18.8 GHz is used by the Earth exploration-satellite service (EESS) (passive) in remote sensing by Earth exploration and meteorological satellites, and protection from interference is essential for passive sensing measurements and applications, especially for measurements of known spectral lines, which are of particular importance;
4. that cases of harmful interference experienced by EESS passive sensors in the 18.6-18.8 GHz band have been reported by multiple Earth Observation missions;
5. that the frequency band 18.6-18.8 GHz is extensively used by GSO FSS Networks for decades which are operated in accordance with No 21.16.2;
6. that GSO FSS satellite networks referenced in *recognizing e)* already in operation, in deployment and in definition phase could have difficulty to accommodate possible new regulatory decisions,

*resolves to invite the ITU-R*

1 to develop technical and regulatory provisions for non-GSO stations operating in the FSS (space-to-Earth) at apogees less than or equal to 20,000 km in the 18.6-18.8 GHz frequency band, including possible ESIM operation and possible transmission from non-GSO FSS space stations to GSO and non-GSO FSS space stations, taking into account *considering f)* and *recognising a)*;

2 to conduct compatibility studies between FSS (space-to-Earth) systems and the EESS (passive) in the 18.6-18.8 GHz frequency band, covering:

* 1. review of the conditions, as specified in No 21.16.2 for future GSO FSS and non-GSO FSS with an orbit of apogee greater than 20 000 km, taking in particular into account *recognising d)*
  2. assessment of the conditions for the protection of the EESS (passive) in the 18.6-18.8 GHz band from possible new usage and deployments for NGSO FSS as referred under r*esolves 1*,
  3. consideration of the aggregate impact on EESS (passive) from all different sources of systems and stations,
  4. to determine the possible necessary regulatory conditions to be applied to future systems and stations, based on the results of i), ii) and iii).

3 to study the applicability of extending the equivalent power flux-density limits specified in Table **22-1B** from 18.6 GHz up to 18.8 GHz to ensure non-GSO FSS (space-to-Earth) systems do not cause unacceptable interference into GSO FSS networks both operating in the 18.6-18.8 GHz frequency band;

*further resolves*

1 that unacceptable interference from NGSO FSS networks into GSO FSS networks in the 18.6-18.8 GHz frequency band shall be avoided using equivalent power flux-density limits (e.g. Table **22-1B**);

*invites the 2023 World Radiocommunication Conference*

to consider the results of studies and take necessary action,

*invites administrations*

to participate actively in the studies by submitting contributions to ITU-R.

Proposals on an Agenda item for WRC-23

**Subject: To review the technical and regulatory conditions pertaining to the 18.6-18.8 GHz to address possible new Fixed-Satellite Service usage and the protection of EESS (passive)**

**Origin**: CEPT

|  |  |
| --- | --- |
| ***Proposal*:**  To review the technical and regulatory conditions pertaining to the 18.6-18.8 GHz to address possible new Fixed-Satellite Service usage and the protection of EESS (passive) in accordance with Resolution [EUR-B10-7] | |
| ***Background/reason*:**  The frequency band 18.6-18.8 GHz has been allocated worldwide to the EESS passive as a result of WRC-2000 agenda item 1.17. This allocation was complemented by a set of various regulations, in particular Nos. 5.522A and 5.522B as well as relevant power limits given Nos. 21.5A and 21.16.2 to ensure coexistence between FS/FSS and EESS (passive).  The 18.6-18.8 GHz band is utilized extensively for scientific uses, particularly for weather applications. Many passive remote sensing instruments operate in this band and more are planned for future deployment, it is therefore of vital interest to keep this important portion of the spectrum free of harmful interference. In particular, the 18 GHz channels are essential for all land and ocean surface data products generated from microwave imager and radiometer data, such as sea surface temperature, wind speed, water vapor, cloud liquid water, and rain rate. It is also important to note that as part of the evolution of Copernicus space component, the Copernicus Imaging Microwave Radiometry (CIMR) has been identified as High Priority Candidate Mission (HPCM). CIMR is a global multi-frequency radiometer in support of the Integrated European Union Policy for The Artic, and 18 GHz is one of the primary bands selected. This band will also be observed by the Microwave Imager (MWI) of the second generation of the EUMETSAT Polar System (EPS-SG). The primary objective of the MWI is to support Numerical Weather Prediction at regional and global scales by providing cloud and precipitation products and all weather surface imagery, including sea ice coverage and type, snow coverage, sea surface winds and total column water vapour above oceans.  Cases of interference experienced by EESS passive sensors in the 18.6-18.8 GHz band have been reported by multiple Earth Observation missions and are being considered within WP 7C (see <https://www.itu.int/dms_ties/itu-r/md/15/wp7c/c/R15-WP7C-C-0344!N08!MSW-E.docx> ).  In addition, the **s**tudies performed under agenda item 1.17 (WRC-2000) which led to the establishment of the current footnote No. 5.522B considered FSS systems known at that time, i.e. GSO systems and one non-GSO satellite system planning to use this band above an altitude of 20,000 km (Highly elliptical orbit (HEO)). The conditions related to the FSS use in the 18.6-18.8 GHz band as in No. 5.522B and 21.16.2 were hence determined for GSO and HEO systems accordingly.. Since there is a growing demand for Low Earth Orbit (LEO) and Medium Earth Orbit (MEO) global satellite broadband services, revisiting the studies performed in the band 18.6-18.8 GHz while taking into account the latest technology developments, could help facilitate the deployment of non-GSO systems operating with an apogee below 20 000 km.  In addition, should the use of Low Earth Orbit (LEO) and Medium Earth Orbit (MEO) satellite systems be shown as being feasible, consideration may also be given to the possibility of deploying Earth Stations in motion (ESIM) communicating with NGSO FSS in the 18.6-18.8 GHz.  Thus, this agenda item is expected to review the technical and regulatory conditions pertaining to the 18.6-18.8 GHz and to define the appropriate conditions to ensure the protection of the EESS (passive) in the 18.6-18.8 GHz band from all different sources of systems and stations, including possible new deployments for FSS (i.e. LEO and MEO, and, if appropriate, ESIM) and also possible transmission from non-GSO FSS space stations to GSO and non-GSO FSS space stations). | |
| ***Radiocommunication services concerned*:**  **EESS (passive), FSS, FS, MS** | |
| ***Indication of possible difficulties*:** | |
| ***Previous/ongoing studies on the issue*:**  Studies performed during the 1997-2000 cycle for the preparation of WRC-2000 agenda item 1.17.  Current studies within WP 7C on interference into EESS passive sensors in the band 18.6-18.8 GHz. | |
| ***Studies to be carried out by*: ITU-R WP4A and WP7C** | ***with the participation of*:**  **Administrations and Sector members of the  ITU-R** |
| ***ITU‑R Study Groups concerned*: SG7, SG4** | |
| ***ITU resource implications, including financial implications (refer to CV126)*:**  **This agenda item will be studied within the normal ITU-R procedures and associated budget. No extra cost is foreseen.** | |
| ***Common regional proposal*:** Yes | ***Multicountry proposal*:** No  ***Number of countries*:** |
| ***Remarks*** | |

ADD EUR/9A25/9

DRAFT NEW RESOLUTION [EUR-B10-6] (WRC-19)

**Use of the frequency bands 17.7-18.6 GHz (space-to-Earth), 18.8-20.2 GHz (space-to-Earth), and 27.5-30.0 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-Sheikh, 2019),

*considering*

1. that the frequency bands 17.7-20.2 GHz (space-to-Earth), 27.5-30.0 GHz (Earth-to-space) are currently allocated on a primary basis to the fixed-satellite service;
2. that there are existing and planned non-geostationary orbit (NGSO) satellite constellations in the frequency bands 17.7-20.2 GHz (space-to-Earth), 27.5-30.0 GHz (Earth-to-space) and that these constellations are designed to serve the growing need for access to broadband connectivity, regardless of location;
3. that the frequency bands listed in *considering a*) are also allocated to several other services on a primary basis, that those services are used by a variety of different systems in many administrations and that these existing services and their future development should be protected without undue constraints;
4. that currently there is no specific regulatory procedure for the coordination of earth stations in motion operating within non-geostationary satellite systems with regard to stations of terrestrial services;
5. that a consistent approach to the deployment of these earth stations in motion will support important and growing global communication requirements and provide adequate protection to other services in bands;
6. that the ITU Radiocommunication Sector (ITU R) has adopted Report ITU R S.2261,

*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 17.3-20.2 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;
2. that Article **22** of the Radio Regulations contains equivalent power flux density (epfd) limits for non-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 (Earth-to-space), 29.5-30 GHz (Earth-to-space) and 17.8-18.4 GHz (inter-satellite) frequency bands;

*c)* that the use of the frequency band 29.1-29.5 GHz (Earth-to-space) by the fixed-satellite service is limited to geostationary-satellite systems and feeder links to non-geostationary satellite systems in the mobile-satellite service, and that such use is subject to the application of the provisions of No. **9.11A**, but not subject to the provisions of No. **22.2**, except as indicated in Nos. **5.523C** and **5.523E**, where such use is not subject to the provisions of No. **9.11A** and shall continue to be subject to Articles **9** (except No. **9.11A**) and **11** procedures, and to the provisions of No. **22.2** (No. **5.535A**);

*d)* that parts of the frequency band 17.7-18.1 GHz are used by feeder links for the broadcasting-satellite service, subject to Appendix **30A** (No. **5.516**);

*e)* that the frequency bands 18.3-19.3 GHz (Region 2), 19.7-20.2 (all Regions), 27.5-27.82 GHz (Region 1), 28.35 28.45 GHz (Region 2), 28.45-28.94 GHz (all Regions), 28.94-29.1 GHz (Regions 2 and 3), 29.25-29.46 GHz (Region 2) and 29.46-30.0 GHz (all Regions) are identified for use by high-density applications in the fixed-satellite service (No. **5.516B**);

*f)* that use of the frequency band 18.1-18.4 GHz by the fixed-satellite service (Earth-to-space) is limited to feeder links of geostationary-satellite systems in the broadcasting-satellite service (No. **5.520**);

*g)* that the use of the frequency bands 17.8-18.6 GHz, 19.7-20.2 GHz, 27.5-28.6 GHz and 29.5-30.0 GHz by non-geostationary fixed-satellite service systems is subject to the application of the provisions of Nos. **5.484A**, **22.5C** and **22.5I**;

*h)* that use of the frequency bands 18.8-19.3 GHz and 28.6-29.1 GHz by geostationary and non-geostationary fixed-satellite service networks is subject to the application of the provisions of No. **9.11A**, and No. **22.2** does not apply (No. **5.523A**);

*i)* that use of the frequency band 19.3-19.7 GHz by geostationary fixed-satellite service systems and by feeder links for non-geostationary satellite systems in the mobile-satellite service is subject to the application of the provisions of No. **9.11A**, but not subject to the provisions of No. **22.2**, and that the use of this frequency band for other non-geostationary fixed-satellite service systems, or for the cases indicated in Nos. **5.523C** and **5.523E**, is not subject to the provisions of No. **9.11A** and shall continue to be subject to Articles **9** (except No. **9.11A**) and **11** procedures, and to the provisions of No. **22.2** (No. **5.523D**);

*j)* that the frequency band 27.5-30.0 GHz may be used by the fixed-satellite service (Earth-to-space) for the provision of feeder links for the broadcasting-satellite service (No. **5.539**);

*k)* that feeder links of non-geostationary networks in the mobile-satellite service and geostationary networks in the fixed-satellite service operating in the frequency band 29.1-29.5 GHz (Earth-to-space) shall employ uplink adaptive power control or other methods of fade compensation, such that the earth station transmissions shall be conducted at the power level required to meet the desired link performance while reducing the level of mutual interference between both networks (No. **5.541A**);

*l)* that the fixed and mobile services are allocated on a primary basis in the frequency bands 17.7-17.8 GHz, 18.1-19.7 GHz and 27.5-29.5 GHz on a global basis and fixed service is also primary within 17.8-18.1GHz;

*m)* that the frequency band 28.5-30 GHz (Earth-to-space) is allocated to the Earth exploration-satellite service on a secondary basis, and no additional constraints should be imposed on the EESS;

*n)* that the frequency band 29.95-30 GHz may be used for space-to-space links in the Earth exploration-satellite service on a secondary basis, and no additional constraints should be imposed on the EESS;

*o)* that all allocated services in these frequency bands should be taken into account,

p) that earth stations in motion addressed by this Resolution are not to be used for safety of life applications.

*resolves to invite ITU-R*

1. to study the technical and operational characteristics of different types of earth stations in motion that operate or plan to operate within NGSO FSS systems in the frequency bands 17.7-18.6 GHz (space-to-Earth), 18.8-20.2 GHz (space-to-Earth), 27.5-30.0 GHz (space-to-Earth);
2. to study the 29.1-29.5 GHz frequency band to allow for uses of the FSS (Earth-to-space) for other uses by non-geostationary satellites other than feeder-links to the mobile-satellite service;
3. to study sharing and compatibility between earth stations in motion operating with NGSO FSS systems and other services allocated in the frequency bands 17.7-18.6 GHz (space-to-Earth), 18.8-20.2 GHz (space-to-Earth), 27.5-30.0 GHz (space-to-Earth) to ensure protection of, and not impose undue constraints on, services allocated in those frequency bands, including their future developments;
4. to develop technical and operational conditions and regulatory provisions for the different types earth stations in motion operation with NGSO FSS systems taking into account the results of studies under *resolves* 1 - 3;
5. to complete studies in time for WRC‑23,

*invites WRC-23*

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

Proposals on an Agenda item for WRC-23

**Subject: Earth Stations In Motion (ESIM) communicating with non-geostationary (NGSO) space stations in the fixed-satellite service (FSS) in the frequency bands 17.7-18.6 (space-to-Earth), 18.8-20.2 GHz (space-to-Earth), 27.5-30.0 GHz (Earth-to-space), while ensuring due protection of existing services in those bands**

**Origin**: CEPT

|  |  |
| --- | --- |
| ***Proposal*:**  Study and develop technical, operational and regulatory measures, as appropriate, to facilitate the use of the bands 17.7-18.6 (space-to-Earth), 18.8-20.2 GHz (space-to-Earth), 27.5-30.0 GHz (Earth-to-space) by FSS NGSO ESIM, while ensuring due protection of existing services in those bands in accordance with [EUR-B10-6]. | |
| ***Background/reason*:**  NGSO satellite constellations in frequency bands 17.7-20.2 GHz (space-to-Earth) and 27.5-30 GHz (Earth-to-space) enable the provision of broadband connectivity for a variety of applications and with the added benefits of increased flexibility/security and decreased latency. More of such NGSO systems offering broadband solutions are planned to be deployed in the near future in the same frequency bands. These constellations are designed to meet the increasing consumer demand for access to broadband connectivity, regardless of location. One area of noticeable growth for NGSO systems is for ESIM. For example, there is growing demand for high performance connectivity for users on maritime vessels and aircraft, as well as for other applications at both ubiquitous fixed locations and while in motion. Next generation NGSO systems will be designed to serve even smaller ESIM terminals and, as such, NGSO systems offer the potential to rapidly expand service provision to new market segments, such as narrow body aircraft. In order to facilitate the further deployment of ubiquitous broadband connectivity to ESIM in the above mentioned frequency bands, there should be consideration on how to develop internationally harmonized technical, operational and regulatory measures . Such measures will enable and facilitate deployment of these critical and valuable service using NGSO satellites, while making sure that no harmful interference is caused to other services. Lack of a harmonised regulatory framework will lead to uncertainty also in terms of protection criteria for others users of the band, while impairing suitable deployment of these novel satellite services..  It is proposed to carry out technical sharing studies between all types of ESIM communicating with NGSO FSS systems and other services in the frequency bands 17.7-18.6 (space-to-Earth), 18.8-20.2 GHz (space-to-Earth), 27.5-30.0 GHz (Earth-to-space), in order to develop appropriate technical, operational and regulatory measures to facilitate the operation of such earth stations, while ensuring harmful interference is not caused to other 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).  In studying the frequencies 29.1-29.5 GHz for use by FSS NGSO ESIMs, it is necessary to first study the technical, operational and regulatory measures necessary to allow other uses by FSS NGSO satellite systems not limited to MSS feeder links, subject to provision **No. 22.2**. | |
| ***Radiocommunication services concerned*:**  **Fixed, Mobile, Inter-Satellite, Broadcasting-satellite, MSS, FSS, Space Research, Space Research (passive), EESS and EESS (passive)** | |
| ***Indication of possible difficulties*:**  None. | |
| ***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 ESIM 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 ESIM operating in these frequency bands must be designed and operated to meet the existing technical and/or operational requirements applicable to FSS earth stations.  In addition, studies on sharing between land/maritime ESIM communicating with NGSO FSS systems and terrestrial systems were carried out on a regional basis in the CEPT and are reflected in ECC Decision (15)04. ECC Decision (15)04 is currently under revision with the addition of aeronautical ESIM. | |
| ***Studies to be carried out by*: ITU-R** | ***with the participation of*:** |
| ***ITU‑R Study Groups concerned*: SG-4, SG-5 and SG-7** | |
| ***ITU resource implications, including financial implications (refer to CV126)*:**  This agenda item will be studied within the normal ITU-R procedures and associated budget. No extra cost is foreseen. | |
| ***Common regional proposal*:** Yes | ***Multicountry proposal*:No**  ***Number of countries*:-** |
| ***Remarks*** | |

ADD EUR/9AXX/10

draft new RESOLUTION [EUR-B10-8] (WRC‑19)

**Study of technical, operational issues, and regulatory provisions for transmissions in the Earth-to-space direction in the 27.5 - 30 GHz and space-to-Earth direction in frequency bands 17.7-18.6 GHz and 18.8 - 20.2 GHz between non-geostationary satellites to other satellites in the fixed-satellite service frequency bands**

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

*considering*

*a)* that the definition of fixed-satellite service (FSS) in No. **1.22** of the Radio Regulations includes the possibility, in some cases, of satellite-to-satellite links, which may also be operated in the inter-satellite service;

*b)* that there have been expressions of interest by some administrations of using the 27.5-30 GHz FSS Earth-to-space and space-to-Earth in frequency bands 17.7-20.2 GHz for transmissions between non-geostationary orbit (non-GSO) satellites and other FSS satellites

*c)* that frequency bands allocated to the fixed-satellite service are used for links between earth stations and space stations, and that such links may not be operated in the inter-satellite service;

*d)* that the ITU-R has begun preliminary studies on the technical and operational issues associated with the use of non-GSO satellites transmitting toward the GSO in the 27.5-30 GHz FSS band, and that such studies are expected to continue in this band and other bands after WRC-19;

*e)* that all allocations to the fixed-satellite service include a direction indicator,

*noting*

*a)* that preliminary ITU-R studies have identified factors to be considered in assessing the compatibility of non-geostationary satellite to-geostationary FSS satellite links in the Earth-to-space direction with existing services in the 27.5 – 30 GHz frequency band;

*b)* that further development of these studies, may identify and define the cases in which transmissions in the Earth-to-space direction from non-GSO satellites in the 27.5-30 GHz and space-to-Earth in frequency bands 17.7-20.2 GHz to other FSS satellites can be made without causing unacceptable or harmful interference to existing services,

*recognizing*

*a)* that it is necessary to analyse the use of the FSS (Earth-to-space) band in the 27.5-30 GHz frequency band and space-to-Earth in frequency bands 17.7-20.2 GHz between FSS non-GSO satellites and GSO satellites to ensure compatibility with all allocated services in this band and avoid harmful interference;

*b)* that the sharing scenario is likely to differ as the orbital characteristics of the non-GSO satellites vary;

*c)* that the use by a non-allocated space service of frequency bands allocated to another space service under No. **4.4** of the Radio Regulations, without recognition and on a non-harmful interference/non-protected basis, is being made today,

*recognizing further*

*a)* that the use of the frequency bands 27.5-28.6 GHz and 29.5-30 GHz by non-geostationary fixed-satellite service systems is subject to the application of the provisions of Nos. **5.484A**, **22.5C** and **22.5I**;

*b)* that use of the frequency band 28.6-29.1 GHz by geostationary and non-geostationary fixed-satellite service networks is subject to the application of the provisions of No. **9.11A**, and No. **22.2** does not apply (No. **5.523A**);

*c)* that use of the frequency band 29.1-29.5 GHz (Earth-to-space) by the fixed-satellite service is limited to geostationary-satellite systems and feeder links to non-geostationary satellite systems in the mobile-satellite service, and that such use is subject to the application of the provisions of No. **9.11A**, but not subject to the provisions of No. 22.2, except as indicated in Nos. **5.523C** and **5.523E**, where such use is not subject to the provisions of No. **9.11A** and shall continue to be subject to Articles **9** (except No. **9.11A**) and **11** procedures, and to the provisions of No. **22.2** (No. **5.535A**);

*d)* that the frequency band 27.5-30 GHz may be used by the fixed-satellite service (Earth-to-space) for the provision of feeder links for the broadcasting-satellite service (No. **5.539**);

*e)* that feeder links of non-geostationary networks in the mobile-satellite service and geostationary networks in the fixed-satellite service operating in the frequency band 29.1-29.5 GHz (Earth-to-space) shall employ uplink adaptive power control or other methods of fade compensation, such that the earth station transmissions shall be conducted at the power level required to meet the desired link performance while reducing the level of mutual interference between both networks (No. **5.541A**);

*f)* that the fixed and mobile services are allocated on a primary basis in the frequency bands 17.7-17.8 GHz, 18.1-19.7 GHz and 27.5-29.5 GHz frequency bands on a global basis and fixed service is also primary within 17.8-18.1GHz;

*g)* that the frequency band 28.5-29.5 GHz (Earth-to-space) is also allocated to the Earth exploration-satellite service on a secondary basis, and no additional constraints should be imposed on the EESS and the conditions of fixed-satellite service operation are described in Resolution **750** (Rev. **WRC-15**);

*h)* that the frequency band 29.5-30 GHz (Earth-to-space) is also allocated to the mobile-satellite service on a primary basis in 29.5-30 GHz in Region 2, on a primary basis in 29.9-30 GHz in Regions 1 and 3, and on a secondary basis in Regions 1 and 3 in 29.5-29.9 GHz,

i) that all allocated services in these frequency bands should be taken into account,

1. that parts of the frequency band 17.7-18.1 GHz are used by feeder links for the broadcasting-satellite service, subject to Appendix **30A** (No. **5.516**);
2. that use of the frequency band 18.1-18.4 GHz by the fixed-satellite service (Earth-to-space) is limited to feeder links of geostationary-satellite systems in the broadcasting-satellite service (No. **5.520**);
3. that the frequency band 18.6-18.8 GHz is used by the Earth exploration-satellite service (EESS) (passive) in remote sensing by Earth exploration and meteorological satellites, and protection from interference is essential for passive sensing measurements and applications, especially for measurements of known spectral lines, which are of particular importance;

*resolves to invite ITU-R*

to study the technical and operational characteristics and user requirements of different types of non-GSO space stations that plan transmissions in the general Earth-to-space direction in the frequency band 27.5-30 GHz and space-to-Earth in frequency bands 17.7-18.6 GHz and 18.8 - 20.2 GHz to GSO and non-GSO FSS space stations;

2 to study sharing and compatibility between non-GSO space stations transmitting in the general Earth-to-space direction in the 27.5-30 GHz frequency bands and space-to-Earth in frequency bands 17.7-18.6 GHz and 18.8 - 20.2 GHz to GSO and non-GSO FSS space stations and current and planned stations of the FSS allocated in same frequency bands, to ensure protection of, and not impose undue constraints on, other FSS operations allocated in those frequency bands and taking into account *recognizings further* a) to l);

3 to study sharing and compatibility between non-GSO space stations transmitting in the general Earth-to-space direction in the 27.5-30 GHz frequency bands and space-to-Earth in frequency bands 17.7-18.6 GHz and 18.8 - 20.2 GHz to GSO and other existing services allocated in same frequency bands, to ensure protection of, and not impose undue constraints on, other services allocated in those frequency bands, including their future developments and taking into account *recognizings further* a) to l);

3 to develop, for different types of non-GSO space stations and different portions of the frequency bands studied, technical conditions and regulatory provisions for their operation, including new or revised allocations as appropriate, taking into account the results of the studies above;

5 to complete these studies by the 2023 World Radiocommunication Conference,

*invites administrations*

to participate in the studies and to provide input contributions,

*resolves to invite the 2023 World Radiocommunication Conference*

to consider the results of the above studies and take necessary regulatory actions, as appropriate.

Proposals on an Agenda item for WRC-23

**Subject:** Proposed Future WRC Agenda Item for WRC-2023 to consider the results of studies on the compatibility of satellite-to-satellite links, in the Earth-to-space direction in the 27.5 – 30 GHz, and space-to-Earth in frequency bands 17.7-18.6 GHz and 18.8 -20.2 GHz with other FSS operations and other services

**Origin**: CEPT

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| ***Proposal*:**  To identify the cases and conditions under which transmissions in the Earth-to-space direction in the 27.5 – 30 GHz and space-to-Earth in frequency bands 17.7-18.6 GHz and 18.8 - 20.2 GHz from non-geostationary orbit space stations to geostationary-orbit or non-geostationary orbit space stations may be accommodated on a basis other than under No. 4.4 of the Radio Regulations , taking into account the necessary protection of existing services, in accordance with Resolution [EUR-B10-8] (WRC-19); | |
| ***Background/reason*:**  To provide a means for recognizing in the Radio Regulations transmissions in the Earth-to-space direction in the 27.5-30 GHz and space-to-Earth in frequency bands 17.7--18.6 GHz and 18.8 -20.2 GHz from non-GSO to other space stations where conditions of avoiding interference with existing systems are met. | |
| ***Radiocommunication services concerned*:**  Broadcasting-Satellite, Earth Exploration Satellite, Fixed, Fixed-Satellite, Mobile, Mobile Satellite. | |
| ***Indication of possible difficulties*:** None foreseen. | |
| ***Previous/ongoing studies on the issue*:** Studies have been initiated in Working Party 4A during the 2016-2019 ITU-R Study Cycle. | |
| ***Studies to be carried out by*:**  ITU-R Study Group 4 | ***with the participation of*:**  SGs 5 and 7 |
| ***ITU‑R Study Groups concerned*:** SG 5 and SG 7 | |
| ***ITU resource implications, including financial implications (refer to CV126)*:**  This agenda item will be studied within the normal ITU-R procedures and associated budget. No extra cost is foreseen. | |
| ***Common regional proposal*:** Yes | ***Multicountry proposal*:** No  ***Number of countries*:** |
| ***Remarks*** | |

ADD EUR/9A25/11

DRAFT NEW RESOLUTION [EUR-B10-9] (WRC-19)

**Protection of GSO satellite networks in the frequency bands 7 250-7 750 MHz (space-to-Earth), 7 900-8 400 MHz (Earth-to-space), 20.2-21.2 GHz (space-to-Earth) and 30-31 GHz (Earth-to-space) from emissions of non-GSO satellite systems operating in the same bands**

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

*considering*

1. that the frequency bands 7 250-7 750 MHz (space-to-Earth), 7 900-8 400 MHz (Earth-to-space), 20.2-21.2 GHz (space-to-Earth) and 30-31 GHz (Earth-to-space)are allocated on a primary basis to the fixed-satellite service;
2. that the frequency bands 7 250-7 375 MHz (space-to-Earth) and 7 900-8 025 MHz (Earth-to-space) are also allocated to the mobile-satellite service on a primary basis, subject to agreement obtained under No. 9.21
3. that the frequency bands 20.2-21.2 GHz (space-to-Earth) and 30-31 GHz (Earth-to-space) are also allocated on a primary basis to the mobile-satellite service;
4. that there is a growing number of non-geostationary orbit (NGSO) satellite constellations using the allocations and the frequency bands listed in *considerings a)*, *b)* and *c)*;
5. that the frequency bands listed in *considering a*) are also allocated to several other services on a primary basis, the allocated services are used by a variety of different systems in many administrations,
6. that implementation of well-defined criteria to avoid harmful interference will benefit the coordination between existing and future assignments;

*recognizing*

1. that Article 22 of the Radio Regulations does not contain limits on the equivalent power flux density visible at the geo-stationary orbit produced by emissions from all the space and earth stations of a non-geostationary-satellite system in the fixed-satellite service in the frequency bands listed in *considerings a)*,  *b)* and *c)*;
2. that the provisions of No. 22.2 do not apply to the geo-stationary orbit satellite systems using the mobile-satellite service allocation exclusively;
3. that the provisions of coordination between non-geostationary and geo-stationary orbit satellite systems under No.s 9.3, 9.4, 9.5, 9.11A, and 9.12A are based on cooperation in joint efforts;

*resolves to invite ITU-R*

to conduct, and complete in time for WRC-23:

studies of technical and operational issues and regulatory provisions for the operation of non-geostationary orbit satellite systems in the frequency bands 7 250-7 750 MHz (space-to-Earth), 7 900-8 400 MHz (Earth-to-space), 20.2-21.2 GHz (space-to-Earth) and 30-31 GHz (Earth-to-space), while ensuring the protection of geostationary orbit satellite networks in the FSS, MSS and BSS, without limiting or unduly constraining the future development of geostationary orbit networks across those bands;

*further resolves*

1. that non-geostationary orbit FSS and MSS satellite networks operating in the frequency bands referred in *resolves 1*, before being brought into use, shall apply all relevant provisions of Articles 9 and 11 for their relevant assignments taking into account the protection of the geostationary satellite networks operating in the same frequency bands and directions;
2. that non-geostationary orbit FSS and MSS satellite networks operating in the frequency bands referred in *resolves to invite ITU-R 1* shall neither cause more interference into geostationary orbit satellite networks as stipulated for their FSS and MSS assignments nor constrain those satellite networks during the application of the provisions of Articles 9 and 11;
3. that non-geostationary orbit FSS and MSS satellite networks operating in the frequency bands referred in *resolves 1* shall not claim protection from geostationary satellite networks operating in the same bands;
4. that in order to implement resolves 2, coordination conditions and requirements as well as criteria for identification of assignments to be taken into account in effecting coordination or seeking agreement need to be developed in Articles 5, 9, 11 and 22, as appropriate, until WRC-23 for adequately protecting the existing satellite networks in both, the Earth-to-space direction as well as the space-to-Earth direction;
5. that new satellite networks, before becoming operational, shall provide compliance evidence to the protection criteria developed under *resolves 4;*

*invites WRC-23*

to consider the results of the above studies referred to in this Resolution with a view to reviewing and, if necessary, revising this Resolution, and take necessary actions, as appropriate,

Proposals on an Agenda item for WRC-23

**Subject: Protection of GSO operating in 7/8 and 20/30 GHz from emissions of non-GSO operating in the same bands and identical directions**

**Origin: CEPT**

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| ***Proposal:***  *Discuss and verify the existing regulatory framework for the protection of geostationary satellite networks operating in the frequency bands 7 250-7 750 MHz (space-to-Earth), 7 900-8 400 MHz (Earth-to-space), 20.2-21.2 GHz (space-to-Earth) and 30-31 GHz (Earth-to-space) from harmful interference caused by emissions of non-geostationary satellite networks operating in the fixed- and mobile-satellite service and clarify, if appropriate, the regulatory provisions to ensure the protection of geostationary satellite networks operating in those frequency bands in accordance with Resolution* [EUR-B10-9]*.* | |
| ***Background/reason:***  *Non-geostationary satellite networks and systems operating in the frequency bands 7 250-7 750 MHz (space-to-Earth), 7 900-8 400 MHz (Earth-to-space), 20.2-21.2 GHz (space-to-Earth) and 30-31 GHz (Earth-to-space) do require coordination with geostationary satellite networks if an administration believes that unacceptable interference may be caused to its existing or planned geostationary systems, and its comments are communicated to the publishing administration responsible for the non-geostationary satellite network, according to RR Art. 9.3. The implementation of this provision in the coordination of geostationary and non-geostationary satellite networks leaves room for interpretation such as no coordination between non-geostationary and geostationary networks is required or this is based on a best effort basis only. RR Art. 22.2 regulates that non-geostationary satellite systems shall not cause unacceptable interference to geostationary satellite networks in the fixed-satellite and broadcasting-satellite service. There exists however no protection criteria to avoid unacceptable interference to geostationary satellite networks in the frequency bands mentioned above. Because of this apparent ambivalent regulatory framework, the protection of geostationary systems in these bands cannot be fully ensured.*  *According to the ITU-R Space Network List, in the identified frequency bands the Appendix 4 information of more than 20 non-geostationary constellations have been submitted to the BR (17 filings within the last 2 years with rising tendency).*  *There are existing regulatory provisions for the coexistence of non-geostationary and geostationary systems sharing the same bands such as RR Nos 5.484A and 22.5c. It is therefore proposed to clarify the existing regulatory provisions to also ensure the protection of geostationary satellite networks operating in the frequency bands 7 250-7 750 MHz (space-to-Earth), 7 900-8 400 MHz (Earth-to-space), 20.2-21.2 GHz (space-to-Earth) and 30-31 GHz (Earth-to-space). These bands are also allocated to the fixed satellite, mobile satellite, earth exploration-satellite, meteorological-satellite, maritime mobile-satellite and standard frequency and time signal service which status and existing regulations should not be affected by this proposed agenda item.* | |
| ***Radiocommunication services concerned*:**  *FSS, MSS* | |
| ***Indication of possible difficulties*:**  *Protection of geostationary systems in the above-mentioned frequency bands may limit non-geostationary operations.* | |
| ***Previous/ongoing studies on the issue:***  *The WRC-2000 and WRC-2003 study periods, the development of epfd limits in WRC-2012, WRC-2015 and WRC-2019 for several frequency bands adjacent to those ones considered in this Resolution.* | |
| ***Studies to be carried out by*:**  *ITU-R SG4* | ***with the participation of*:**  **---** |
| ***ITU‑R Study Groups concerned*:**  *ITU-R SG4* | |
| ***ITU resource implications, including financial implications (refer to CV126)*:** | |
| ***Common regional proposal*:** Yes | ***Multicountry proposal*:** No  ***Number of countries*:** |
| ***Remarks*** | |

ADD EUR/9AXX/12

DRAFT RESOLUTION [EUR-B10-10] (WRC‑19)

**Review and possible revision of Resolution 155 (WRC-15) and RR No. 5.484B in the frequency bands to which they apply to accommodate the use of FSS networks by Control and Non-Payload Communications of Unmanned Aircraft Systems**

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

*considering*

*a)* that there is urgency to conclude on the regulatory provisions for the use of the FSS frequency bands to support implementation of UAS CNPC links;

*b)* that ITU-R has made substantive progress on the implementation of the *Resolves* in Resolution **155 (WRC-15)**;

*c)* that ICAO is developing the Standards and Recommended Practices to ensure the technical aspects of using FSS satellites to support UAS CNPC links,

*recognizing*

a) hat Resolution 155 resolves to invite the 2023 World Radiocommunication Conference to consider the results of the above studies referred to in this Resolution with a view to reviewing and, if necessary, revising this Resolution, and take necessary actions, as appropriate,

*b)* that RR No. 5.484B adopted at WRC-15 makes reference to Resolution 155 (WRC-15) without any mandatory application of the provisions in the Table of Frequency Allocations,

*resolves to invite ITU-R*

*1)* to conduct in time for WRC-23 relevant studies of the technical, operational, and regulatory aspects in relation to the implementation of Resolution **155 (WRC-15)** ;

*2)* to conduct in time for WRC-23 relevant studies of RR No. **5.484B** and identify any necessary revisions to ensure the mandatory implementation of Resolution **155 (WRC-15)**,

*further resolves to invite WRC-23*

to take on the basis of the studies conducted under the *resolves to invite ITU-R* abovetheappropriate regulatory actions.

*instructs the Secretary-General*

to bring this resolution to the attention of the Secretary-General of ICAO.

Proposals on an Agenda item for WRC-23

Subject: Considerations towards the revision of Resolution 155 (WRC-15)

**Origin: CEPT**

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| ***Proposal:***  *to consider, on the basis of ITU-R studies in accordance with Resolution* [EUR-B10-10] *(WRC-19), appropriate regulatory actions, with a view to reviewing and, if necessary, revising Resolution 155 (WRC-15) and RR No. 5.484B* | |
| ***Background/reason*:**  *Resolution 155 (WRC-15) was developed by WRC-15 for earth stations on board unmanned aircraft which operate with geostationary-satellite networks in the frequency 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, 12.2-12.5 GHz (space-to-Earth) in Region 3, 12.5-12.75 GHz (space-to-Earth) in Regions 1 and 3 and 19.7-20.2 GHz (space-to-Earth), and in the frequency bands 14-14.47 GHz (Earth-to-space) and 29.5-30.0 GHz (Earth-to-space) allocated to the fixed-satellite service not subject to Appendices 30, 30A and 30B for the control and non-payload communications of unmanned aircraft systems (UAS) in non-segregated airspaces.*  *Resolution 155 (WRC-15) is pointing in its resolves part to some specific issues to be taken into account for communication between any earth station on-board an unmanned aircraft and a space station of a geostationary-satellite network of the fixed-satellite service. Especially since the content of required international aeronautical standards and recommended practices (SARPs) still need to be developed, it was resolved to invite WRC-23 to consider the results of those studies with a view to reviewing and, if necessary, revising Resolution 155, and take necessary actions, as appropriate.*  *Furthermore WRC-15 resolved further to invite WRC-23 to consider the results of the studies referred to in Resolution 155 with a view to reviewing and if necessary resolution as appropriate. This review will providing the basis for the Director of the Radiocommunication Bureau to decide on the processing of respective satellite network filings in context with instructs the Director of the Radiocommunication Bureau 4 of Resolution 155 (WRC-15).*  *During the study period 2015 – 2019 studies in response of Resolves 16 and Resolves 4 and 5 were undertaken:*   * *Concerning Resolves 4 and 5 for the identification and compilation of notified satellite networks operating in the FSS and of unmanned aircraft system command and non-payload control Earth stations characteristics including their parameter values provided by member countries and the Radiocommunication Bureau. Potential example characteristics proposed from some member countries are based on:* * *data rates for CNPC Links in the ICAO contribution that were themselves based, in part, on Report ITU-R M.2171-0.* * *performance and system characteristics of representative FSS space stations operated within the notified and recorded technical parameters as published by the Radiocommunication Bureau.* * *operational scenarios as provided by ICAO liaison statement in 14 May 2013 (Doc. 5B/269).* * *WP5B will process these characteristics in the Report ITU-R M.[UAV\_SYS\_CHAR] based on contributions at the upcoming meeting.* * *Resolves 14, 15 and 16 for revising the power flux-density hard limits provided in Annex 2. Respective proposals for appropriate hard limits protecting the terrestrial services from harmful interference in the applicable frequency bands 14-14.47 GHz are provided (chairman’s report Annex XXX)*   *WP5B developed new masks in the Report ITU-R M.[UAV\_PFD] in accordance with Resolves 16 of Resolution 155(WRC-15) the update of Annex 2 of Resolution 155 (WRC-15) is expected at WRC-19*  It needs to be noted that ICAO has developed its first package of Standards and Recommended Practices regarding CNPC for Unmanned Aircraft. ICAO is currently developing its second package of SARPS, which it plans to complete by 2022, on specific techniques for CNPC links that will operate within the required ITU regulatory environment in respect of the use of FSS networks for UAV CNPC links. | |
| ***Radiocommunication services concerned*:**  *Mobile, Fixed, Mobile-Satellite, Radionavigation, Broadcasting, Radio Astronomy, Broadcasting-Satellite, and Fixed-Satellite* | |
| ***Indication of possible difficulties*:**  *None foreseen* | |
| ***Previous/ongoing studies on the issue:***  *Studies undertaken in preparation of WRC-15 AI 1.5 and Studies contacted in support of the implementation of Resolution 155 (WRC-15) undertaken in ITU-R WP 5B after WRC-15* | |
| ***Studies to be carried out by*:**  *ITU-R*  *WP5B* | ***with the participation of*:**  **---** |
| ***ITU‑R Study Groups concerned*:**  *ITU-R SG-4 (WP4A, WP4C), SG-5 (WP5A WP5C)*, *SG6 (WP6A) and SG7 (WP7D)* | |
| ***ITU resource implications, including financial implications (refer to CV126)*:** | |
| ***Common regional proposal*:** Yes | ***Multicountry proposal*:** No  ***Number of countries*:** |
| ***Remarks*** | |

EUR/9AXX/13

DRAFT RESOLUTION [EUR-B10-11] (WRC‑19)

**Operation of earth stations on aircraft communicating with geostationary space stations in the fixed-satellite service (Earth-to-space) in the frequency band 12.75-13.25 GHz**

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

*considering*

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

*b)* that there is an increased need for in-flight connectivity which can be eased by allowing earth stations on aircraft to communicate with GSO space stations in the FSS in the frequency bands 12.75-13.25 GHz (Earth-to-space);

*c)* that advances in technology, including the use of tracking techniques, allow earth stations on aircraft to operate within the characteristics of fixed earth stations of the FSS;

*d)* that some administrations have already deployed, and plan to expand their use of, earth stations on aircraft communicating with operational and planned GSO space stations in the FSS;

*e)* that the use of the band 12.75-13.25 GHz for Earth-to-space links of earth stations on aircraft operating to GSO FSS satellite networks will contribute as an additional use of the spectrum and enhance broadband communications for aircraft passengers;

*f)* that there are many existing geostationary (GSO) FSS satellite networks operating in this frequency band subject to Appendix **30B RR** (No. **5.441**);

*g)* that the use of the frequency band 12.75-13.25 GHz by earth stations on aircraft shall not result in any changes or restrictions to the existing Plan allotments and List assignments made under the Appendix **30B**,

*recognizing*

*a)* that the technical characteristics of earth stations on aircraft communicating with a GSO space station in the FSS should comply with Appendix **30B** and with the coordination agreements reached between administrations;

*b)* that the current usage and future development of the existing services in the band should be protected without imposing additional constraints on them from earth stations on aircraft;

*c)* that a globally harmonised frequency use by earth stations on aircraft would benefit the administrations as well as both aviation and satellite industries;

*d)* that earth stations on aircraft addressed by this Resolution are not to be used or relied upon for safety-of-life applications;

*e)* that the procedure for the introduction of new systems to the List of Appendix **30B** in the band is stipulated in Article 6 of Appendix **30B**,

*resolves to invite ITU‑R*

1 to study the technical and operational characteristics and user requirements of earth stations on aircraft that communicate or plan to communicate with GSO space stations in the FSS in the frequency band 12.75-13.25 GHz in the Earth-to-space direction and examination of related existing regulatory provisions, if appropriate;

2 to study the sharing and compatibility issues between earth stations on aircraft communicating with GSO space stations in the FSS and current and planned stations of existing services with allocations in the frequency band 12.75-13.25 GHz;

3 to develop the technical conditions and regulatory provisions for the operation of earth stations on aircraft communicating with GSO space stations in the FSS operating in the frequency bands 12.75-13.25 GHz (Earth-to-space), considering the results of the studies outlined in *resolves* 1 and 2.

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Proposals on an Agenda item for WRC-23

**Subject: The harmonisation of the frequency band 12.75-13.25 GHz for the use by earth stations on aircraft communicating with GSO space stations in the FSS**

**Origin:** CEPT

|  |  |
| --- | --- |
| ***Proposal:***  Harmonize the global use of the frequency band 12.75-13.25 GHz by earth stations on aircraft communicating with geostationary space stations in the fixed-satellite service (Earth-to-space)*.* | |
| ***Background/reason*:**  The new Agenda item aims to harmonize the global use of the frequency band 12.75-13.25 GHz by earth stations on aircraft communicating with GSO space stations in the FSS for providing in-flight connectivity (IFC). The growing demand for internet-based applications for the airline industry and passengers calls for capacity for such services. The frequency band 12.75-13.25 GHz is allocated on primary basis to the Fixed Service (FS), Fixed-Satellite Service (FSS) (Earth-to-space) and Mobile Service (MS), and on a secondary basis to the Space research (deep space) (space-to-Earth) service (SRS) in all three Regions of ITU-R. IFC is a service deployed throughout the world, therefore globally harmonized approach within the Radio Regulations that provide the required protection to stations operation under other primary and secondary service would benefit the administrations as well as both, aviation and satellite industries.  The operation of earth stations on aircraft in the band 14-14.5 GHz (Earth-to-space) shared with the FS and/or the MS in parts of the band has demonstrated the feasibility of operating such satellite services without causing harmful interference to other services. Within the new harmonised regulatory framework the downlink frequency band 10.7-12.75 GHz is used by those stations on a non-interference and non-protected basis.  The intended use of spectrum by earth stations on aircraft with FS, MS and SRS, will contribute to the efficient use of spectrum and support innovation.  The use of the frequency band 12.75-13.25 GHz is subject to Appendix **30B** (No. **5.441**). The proposed harmonised use of the band by earth stations on aircraft will not be in contradiction with the existing Appendix 30B assignments nor should result in any changes to them. The earth stations on aircraft, similar to any other earth stations operating with Appendix 30B frequency assignments, are to be operated within the service area and with the characteristics notified for typical earth stations of the GSO FSS system (i.e. within the interference envelope established for typical earth stations of the GSO FSS system). Such operation therefore will not cause interference to other allotments/assignments (Plan and List) of Appendix 30B. | |
| ***Radiocommunication services concerned*:**  **FSS, FS, MS and SRS (deep space)** | |
| ***Indication of possible difficulties*:**  None foreseen | |
| ***Previous/ongoing studies on the issue:***  CEPT as one of the regional organisations in Region 1 conducted technical studies and successfully defined a pfd mask for a single earth station on aircraft to ensure the protection (long term and short-term criteria) of the FS stations from the aggregated interference from earth stations on aircraft communicating with GSO and non-GSO space stations in the FSS. CEPT also examined compatibility between the use of an Appendix 30B assignment for earth stations on aircraft and other assignments of Appendix 30B, and found that that those stations operating under certain technical conditions would be compatible with other Appendix 30B assignments. These studies resulted in ECC Decision ECC/DEC/(19)XX which harmonises the use of the frequency band 12.75-13.25 GHz by earth stations on aircraft and allows for free circulation and use. | |
| ***Studies to be carried out by*:**  **ITU-R SG-4** | ***with the participation of*:**  **---** |
| ***ITU‑R Study Groups concerned*:**  **ITU-R SG-5 and SG-7** | |
| ***ITU resource implications, including financial implications (refer to CV126)*:** | |
| ***Common regional proposal*:** Yes | ***Multicountry proposal*:** No  ***Number of countries*:** |
| ***Remarks*** | |

ADD EUR/9AXX/13

DRAFT NEW RESOLUTION **[EUR-B10-12]** (WRC-23)

**Additional allocations to the mobile-satellite service between 1.5 GHz and 6 GHz**

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

*considering*

1. that ITU has studied the spectrum requirements for the satellite component of IMT for the period 2010-2020, and the results are contained in Report ITU-R M.2077,
2. that the results in Report ITU-R M.2077 indicate a shortfall of spectrum available for the satellite component of IMT in the Earth-to-space direction of between 19 and 90 MHz for the year 2020,
3. that the results in Report ITU-R M.2077 indicate a shortfall of spectrum available for the satellite component of IMT in the space-to-Earth direction of between 144 and 257 MHz for the year 2020,
4. that many MSS bands already allocated above 2.5 GHz are outside of the inherent size, weight, and power restrictions of small satellites (usually having a mass of less than 100 kg)
5. that examples of such satellites are given in Report ITU-R SA.2312, which provides technical characteristics
6. that, since the number of these satellites is growing, the demand for suitable MSS allocations may increase
7. that satellite operations are hampered and limited by increasing crowding,
8. that MSS systems which are not part of the satellite component of IMT require additional spectrum,

*noting*

1. the need for studies to allow sharing of available spectrum for MSS applications in the 1980 – 2025 MHz and 2170 – 2020 MHz bands due to the introduction of ancillary terrestrial components (“ATC”)
2. the inability of small satellites (usually having a mass of less than 100 kg) to operate MSS at frequencies above 8 GHz due to their reduced footprint and surface area to host payloads

*Recognizing*

1. the benefit that small satellites (usually having a mass of less than 100 kg) provide with regards to the pace of system deployment, ability to rapidly iterate on in service technology, subsequent efficient use of spectrum and typical ability to deorbit post mission life without the need for propulsion,
2. that data collection satellites provide actionable information for the promotion of human  
   welfare,
3. that there is existing commercial interest for utilizing small satellites for MSS IoT deployments,
4. the need for regulatory certainty regarding the available spectrum for both satellite and earth station design and planning purposes;
5. that frequency allocations must balance the benefits of new services with the potential of those to create harmful interference;
6. the need to protect existing services when considering frequency bands for possible  
   additional allocations to any service;

*resolves to invite ITU-R*

to conduct and complete, in time for WRC-23

1. studies of possible bands for new allocations to the mobile-satellite service in the Earth-to-space and space-to-Earth directions, between 1.5 GHz and 6 GHz, taking into account sharing and compatibility studies, without placing undue constraints on existing services in this band,
2. sharing and compatibility studies determining the kinds of measures that could facilitate coexistence between GEO and NGSO systems in existing MSS allocations between 1.5 - 2.5 GHz
3. sharing and compatibility studies determining the kinds of measures that could facilitate coexistence between NGSO systems in existing MSS allocations between 1.5 - 2.5 GHz
4. studies comparing the merits of allocating earth-to-space and space-to-earth MSS links to the range in question using the following regulatory methods, among others:
   1. additional primary assignment of MSS allocations within the above range,
   2. assignment of MSS as a secondary service, additional allocation, or alternative allocation

*further resolves*

to invite WRC-23 to consider, on the basis of the studies conducted under the *resolves to invite  
ITU-R* above, appropriate regulatory actions

*invites administrations*

to participate in the studies by submitting contributions to ITU-R.

Proposals on an Agenda item for WRC-23

Subject: Proposed Future WRC Agenda Item for WRC-2023 to conduct studies identifying which space-to-Earth and Earth-to-space frequency bands between 1.5 and 6 GHz may also feasibly accommodate additional MSS allocations to encourage and facilitate the use and development of IoT technology via satellite.

Origin: CEPT

***Proposal****:* To determine, reassess and carry out appropriate regulatory actions for determining additional allocations to the mobile-satellite service between 1.5 GHz and 6 GHz, on the basis of ITU-R studies in accordance with Resolution **[EUR-AXX-X] (WRC-19)**

***Background/reason:***

Systems proposing to use rapidly deployed satellites are being hindered due to frequency crowding and a lack of available spectrum for emerging systems, especially in relation to initiating global IoT services. Identifying additional MSS allocation or methods of sharing existing allocations is paramount to ensuring the spectrum gap identified in ITU-R M.2077 is not prohibiting the deployment of novel systems.

***Radiocommunication services concerned:***

Mobile Satellite Service

***Indication of possible difficulties:***

WRC-12 resulted in no-change for a subset of the spectrum range in question.

***Previous/ongoing studies on the issue:***

ITU-R M.2077

|  |  |
| --- | --- |
| ***Studies to be carried out by:***  TBD | *with the participation of:*  SG4, SG5, SG7 |

***ITU-R Study Groups concerned:*** SG4, SG5, SG7

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

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

*Number of countries:*

***Remarks***

ADD EUR/9AXX/15

Draft RESOLUTION [EUR-B10-14]

Use of the band 22.55-23.15 GHz by the Earth exploration-satellite service (Earth-to-space)

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

considering

*a)* that the frequency band 25.5-27 GHz is allocated worldwide on a primary basis to the Earth exploration-satellite (EESS) (space-to-Earth);

*b)* that an EESS (Earth-to-space) allocation in the 22.55-23.15 GHz range would allow its use for satellite tracking, telemetry and control (TT&C) in combination with the existing EESS (space-to-Earth) allocation referred to in *considering a*);

*c)* that an EESS (Earth-to-space) allocation in the 23 GHz range would allow for uplinks and downlinks on the same transponder, increasing efficiency and reducing satellite complexity,

recognizing

*a)* that the band 22.55-23.55 GHz is allocated to the fixed, inter-satellite and mobile services;

*b)* that the band 22.55-23.15 GHz is also allocated to the space research service (Earth-to-space);

*c)* that the space research (Earth-to-space) allocation in the 22.55-23.15 GHz band is paired with the space research (space-to-Earth) allocation in the 25.5-27 GHz band;

*d)* that the possible development of EESS (Earth-to-space) in the 22.55-23.15 GHz band should not constrain the use and the development of the space research service (Earth-to-space) in this band,

resolves

to conduct sharing and compatibility studies between EESS (Earth-to-space) systems and the existing services mentioned in *recognizing a* and *b, while ensuring the protection of and not imposing undue constraints on all services and future developments of existing services,* in the band 22.55-23.15 GHz;

to invite ITU‑R

to complete the studies as a matter of urgency, taking into account the present use of the allocated band, with a view to presenting, at the appropriate time, the technical basis for the work of WRC‑23,

to invite WRC‑23

to review the results of these studies with a view to providing a worldwide primary allocation to EESS (Earth-to-space) in the band 22.55-23.15 GHz,

invites administrations

to participate actively in the studies by submitting contributions to ITU‑R,

instructs the Secretary-General

to bring this Resolution to the attention of the international and regional organizations concerned

Proposals on an Agenda item for WRC-23

**Subject: to consider a new EESS (Earth-to-space) allocation in the band 22.55-23.15 GHz**

**Origin:** CEPT

|  |  |
| --- | --- |
| ***Proposal:***  ***To consider a new EESS (Earth-to-space) allocation in the band 22.55-23.15 GHz,***  ***in accordance with Resolution [EESS\_23 GHz] in accordance with Resolution*** [EUR-B10-13] | |
| ***Background/reason*:** *Similarly to what has been achieved under WRC-12 agenda item 1.11 with a primary allocation to the space research service (Earth-to-space) in the band 22.55-23.15 GHz, it is proposed to investigate a possible new primary allocation to the EESS (Earth-to-space) in the same band. Such an allocation would provide a companion earth-to-space allocation to the existing EESS (space-to-Earth) allocation in 25.5-27 GHz in order to provide the associated command and control links.* | |
| ***Radiocommunication services concerned*:** *EESS (Earth-to-space), Fixed, Inter-satellite, Mobile, Space Research (Earth-to-space)* | |
| ***Indication of possible difficulties*:** *None currently identified* | |
| ***Previous/ongoing studies on the issue:*** *Studies performed in relation to the WRC-12 agenda item 1.11 (allocation to the space research service (Earth-to-space) in the band 22.55-23.15 GHz) may be relevant.* | |
| ***Studies to be carried out by*:**  *ITU-R WP 7B* | ***with the participation of*:**  *Administrations and Sector members of the  ITU-R* |
| ***ITU‑R Study Groups concerned:***  *SG7, SG4, SG5* | |
| ***ITU resource implications, including financial implications (refer to CV126)*:**  *This agenda item will be studied within the normal ITU-R procedures and associated budget. No extra cost is foreseen.* | |
| ***Common regional proposal*:** Yes | ***Multicountry proposal*:** No  ***Number of countries*:** |
| ***Remarks*** | |

ADD EUR/9AXX/16

Draft new RESOLUTION [EUR-B10-14] (WRC‑19)

**Sharing between stations in the fixed service and satellite services in the 71–76 GHz and 81–86 GHz bands**

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

*considering*

*a)* that WRC-2000 made a number of different allocation changes to the frequency bands 71-76 GHz and 81-86 GHz based on the requirements known at the time;

b) that the frequency bands 71–76 GHz and 81–86 GHz are allocated on a primary basis, amongst other services, to the fixed service globally;

c) that the frequency band 71–76 GHz is also allocated to the fixed-satellite service (space-to-Earth) and mobile-satellite service (space-to-Earth) and 74-76 GHz is allocated to the broadcasting-satellite service;

d) that the frequency band 81–86 GHz is also allocated to the fixed-satellite service and mobile-satellite service (Earth-to-space);

e) that sharing conditions between fixed service and satellite services in the bands 71–76 GHz and 81-86 GHz could not be fully developed at WRC-2000 due to lack of available information on these services at the time;

*f)* that now, nearly 20 years on, there have been a number of significant technology advances and network change requirements in the fixed service and the 71-76 GHz and 81–86 GHz bands have become strategically important bands for high capacity fixed service links including backhaul for future mobile networks;

g) that WRC-12 already addressed sharing and compatibility issues between fixed service and passive services in the bands 71 – 76 GHz and 81-86 GHz and relevant adjacent bands;,

*recognizing*

1. that there is now much more information available in the ITU-R on the characteristics and deployment of fixed service systems.
2. that there are an increasing number of satellite filings in the 71-76 GHz and 81-86 GHz bands;
3. that Article **21** and other provisions of the Radio Regulations currently do not have the necessary technical and regulatory provisions to protect the fixed service use in the 71-76 GHz and 81-86 GHz bands;

d) that Resolution **750** (**REV. WRC-15**) already contains necessary provisions to protect passive services in and adjacent bands from emissions of the fixed service in 71-76 GHz and 81-86 GHz and there is no intention to change these provisions;

e) that there is no intention to change the existing allocations or status of those allocations in Article **5** of radio regulations for the 71-76 GHz and 81-86 GHz bands,

*resolves to invites ITU‑R*

1 to conduct, as a matter of urgency and in time for WRC‑23, the appropriate studies to determine power flux density (pfd) and equivalent isotropically radiated power *(e.i.r.p.)* limits in Article **21** for satellite services to protect the fixed service in the 71-76 GHz and 81-86 GHz bands without unduly constraining satellite systems,

*invites the 2023 World Radiocommunication Conference*

to consider the results of studies and take necessary action,

*invites administrations*

to participate actively in the studies by submitting contributions to ITU-R,

ADD EUR/9AXX/16

Draft new RESOLUTION [EUR-B10-15] (WRC‑19)

Conditions for the use of the 71–76 GHz and 81–86 GHz bands by stations in the satellite services to ensure compatibility with passive services

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

considering

*a)* that WRC-2000 made a number of different allocation changes to the frequency bands 71-76 GHz and 81-86 GHz based on the requirements known at the time;

*b)* that the frequency band 71–76 GHz is also allocated to the fixed-satellite service (space-to-Earth) and mobile-satellite service (space-to-Earth) and 74-76 GHz is allocated to the broadcasting-satellite service;

*c)* that the frequency band 81–86 GHz is also allocated to the fixed-satellite service and mobile-satellite service (Earth-to-space);

*d)* that the frequency bands 76-77.5 GHz, 79-81 GHz and 81-86 GHz are allocated to the radio astronomy service on a primary basis;

*e)* that the frequency band 86-92 GHz is allocated to the Earth exploration-satellite (passive), the space research (passive) and the radio astronomy services and that RR 5.340 applies in this band;

*f)* that compatibility conditions between satellite services in the bands 71–76 GHz and 81-86 GHz and passive services in the bands and in adjacent bands could not be fully developed at WRC-2000 due to lack of available information on satellite services at the time;

*g)* that WRC-12 already addressed sharing and compatibility issues between fixed service and passive services in the bands 71 – 76 GHz and 81-86 GHz and relevant adjacent bands;

*h)* that Resolution **750** (**REV. WRC-15**) contains no provisions to protect the Earth exploration-satellite service (passive) in the 86-92 GHz band from emissions of the space services in the 81-86 GHz band;

*i)* that Resolution **739** (**REV. WRC-07**) contains no provisions to protect the radioastronomy service in adjacent bands from emissions of the space services in 71-76 GHz and 81-86 GHz,

*recognizing*

*a)* that there are an increasing number of satellite filings in the 71-76 GHz and 81-86 GHz bands;

*b)* that Resolution **731** (**REV. WRC-12**) calls for consideration of sharing and adjacent-band compatibility between passive and active services above 71 GHz;

*c)* that Resolution **750** (**REV. WRC-15**) already contains necessary provisions to protect passive services in and adjacent bands from emissions of the fixed service in 71-76 GHz and 81-86 GHz and there is no intention to change these provisions;

*d)* that there is no intention to change the existing allocations or status of those allocations in Article **5** of Radio Regulations for the 71-76 GHz and 81-86 GHz bands,

resolves to invites ITU‑R

1 to conduct the appropriate studies to determine the technical conditions for satellite services in the 81-86 GHz band in order to protect the Earth exploration-satellite (passive) and the space research (passive) services in the 86-92 GHz band and the radio astronomy in the bands mentioned in *considerings* d) and e) without unduly constraining satellite systems,

*invites the 2023 World Radiocommunication Conference*

to consider the results of studies and take necessary action,

*invites administrations*

to participate actively in the studies by submitting contributions to ITU-R,

Proposals on an Agenda item for WRC-23

**Subject:**

to consider, based on the results of ITU‑R studies:

1 the introduction of pfd and EIRP limits in Article 21 for the bands 71 -76 GHz and 81 – 86 GHz in accordance with Resolution **[EUR-B10-15] (WRC-19),**

2 the conditions for the use of the 71–76 GHz and 81–86 GHz bands by stations in the satellite services to ensure sharing with the fixed service and compatibility with passive services in accordance with Resolution **[EUR-B10-15] (WRC-19).**

**Origin:** **CEPT**

|  |  |
| --- | --- |
| ***Proposal*:**  to consider, based on the results of ITU‑R studies:  Issue 1 the introduction of pfd and EIRP limits in Article 21 for the bands 71 -76 GHz and 81 – 86 GHz in accordance with Resolution **[EUR-B10-15] (WRC-19),**  Issue 2 the conditions for the use of the 71–76 GHz and 81–86 GHz bands by stations in the satellite services to ensure sharing with the fixed service and compatibility with passive services in accordance with Resolution **[EUR-B10-15] (WRC-19).** | |
| ***Background/reason*:**  The 71-76/81-86GHz bands were subject to a number of different allocation changes at WRC-2000. However, the detailed sharing conditions for Article 21 were not able to be developed at the time due to a lack of available information on the different services.  Now, nearly 20 years on, there have been a number of significant technology advances and network change requirements and the 71-76/81–86GHz bands have become strategically important growth bands for high capacity backhaul fixed links including for future 5G fronthaul and backhaul solutions.  Given the above and that there is now much more information available on the characteristics of fixed service systems as well as an increasing number of satellite filings in these bands, it is considered appropriate and timely to develop pfd and EIRP limits for Article 21 of the Radio Regulations to address the sharing between satellite services and the fixed service in the bands under consideration. Introducing such technical framework will help manage the interference environment from an international perspective and provide clarity and certainty for future development of both the fixed and satellite services in these bands. It is envisaged that changes to the Radio Regulations (Article 21) will be required including the development of power flux density limits for satellite systems sharing with the fixed service in the band 71 – 76GHz.  In addition, taking into account Resolution **731** (**REV. WRC-12**), it is expected that the studies under Issue 2 would also address the compatibility between satellite services and passive services, namely Radio Astronomy in the 81-86 GHz band and in adjacent bands and the EESS/SRS (passive) in the adjacent 86-92 GHz band.  Compatibility between the fixed service and passive services was successfully addressed in the context of WRC-12 agenda item 1.8 (with the inclusion of relevant unwanted emission levels in Resolution **750** (**REV. WRC-15**)) and there is no intention to change these provisions. | |
| ***Radiocommunication services concerned*:** FIXED, FIXED-SATELLITE, MOBILE-SATELLITE, BROADCASTING-SATELLITE, RADIO ASTRONOMY, EARTH EXPLORATION-SATELLITE SERVICE (PASSIVE), SPACE RESEARCH SERVICE (PASSIVE). | |
| ***Indication of possible difficulties*:** None | |
| ***Previous/ongoing studies on the issue*:**  The studies between passive services in and adjacent bands to 71-76/81-86GHz bands and fixed service have already been addressed under WRC-12 Agenda Item 1.8 leading to ITU-R Report F.2239. | |
| ***Studies to be carried out by*:**  Administrations and Sector members of the ITU-R | ***with the participation of*:**  Fixed service and satellite operators |
| ***ITU‑R Study Groups concerned*:**  *Issue 1: WP 5C (Lead), WP4A, WP4C*  *Issue 2: WP7C, WP7D, WP4A, WP4C* | |
| ***ITU resource implications, including financial implications (refer to CV126)*:**  This agenda item will be studied within the normal ITU-R procedures and associated budget. No extra cost is foreseen. | |
| ***Common regional proposal*:** Yes | ***Multicountry proposal*:** No  ***Number of countries*:** |
| ***Remarks*** | |

ADD EUR/9AXX/17

DRAFT NEW RESOLUTION [EUR-B10-15] (WRC-19)

**New allocations for the radiolocation service in the frequency band 231.5-275 GHz, and new identification for radiolocation service applications of frequency bands in the range 275-700 GHz**

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

*considering*

a) that millimeter and sub-millimeter wave frequencies have been recognized by the scientific communities and governmental organizations as well suited for stand-off detection of concealed objects;

1. that millimeter and sub-millimeter wave imaging systems will provide a significant contribute to public safety, counter-terrorism and the security of high risk/high value assets or areas;
2. that millimeter and sub-millimeter wave imaging systems are typically designed in two main configurations: active (radars) and receive-only (radiometers);
3. that active millimeter and sub-millimeter wave imaging systems require a frequency bandwidth wider than 30 GHz to achieve range resolutions in the order of a one centimeter;
4. that receive-only millimeter and sub-millimeter wave imaging systems detect the extremely weak power that is naturally radiated by objects and require much wider frequency bandwidth than active systems to collect enough power for detection;
5. that globally harmonized spectrum for the millimeter and sub-millimeter wave imaging systems is required;
6. that the optimal frequency range for the operation of the active millimeter and sub-millimeter wave imaging systems is between 231.5 GHz and 320 GHz. In this frequency range the atmospheric absorption is relatively low;
7. that there are some narrower existing allocations to the radiolocation service in the frequency range 217-275 GHz in the three ITU regions which however do not support the bandwidth required for these systems;
8. that for the receive-only millimeter and sub-millimeter wave imagers an identification in the range 275-700 GHz is envisaged;
9. that a number of bands in the frequency range 275-1 000 GHz are identified for use by passive services, such as the radio astronomy service, the Earth exploration satellite service (passive) and the space research service (passive);
10. that No. 5.565 states that the use of the range above 275 GHz by the passive services does not preclude use of this range by active services;
11. that administrations wishing to make available frequencies in the 275-1 000 GHz range for active service applications are urged to take all practicable steps to protect these passive services from harmful interference until the date when the Table of Frequency Allocations is established for the relevant frequencies;

*recognizing*

1. that there is no service identified in the radio regulation for use by receive-only millimetre and sub-millimeter wave imaging systems,

*noting*

1. that active millimeter and sub-millimeter wave imaging systems operate at very low transmit power (a few milliwatts typically) and short ranges (up to 300 m);
2. that millimeter and sub-millimeter wave imaging systems may be severely affected by other power sources operating in the same frequency band;
3. that the technical and operational characteristics for millimeter and sub-millimeter wave imaging systems need to be defined, including protection criteria in particular for receive-only systems,

*resolves to invite ITU-R*

1 to study the future requirements for globally harmonized spectrum for the radiolocation service, in particular for millimeter and sub-millimeter wave imaging applications above 231.5 GHz;

2 to define technical and operational characteristics including required protection criteria for millimeter and sub-millimeter wave imaging systems;

3 to study sharing and compatibility of active millimeter and sub-millimeter wave imaging applications with other systems in the frequency range between 231.5 GHz and 700 GHz;

4 to study sharing and compatibility of receive-only millimeter and sub-millimeter wave imaging applications with other systems in the frequency range between 275 GHz and 700 GHz;

5 to study possible new allocations to the radiolocation service on a co-primary basis, in the frequency range between 231.5 GHz and 275 GHz, while ensuring the protection of existing services in the considered bands and, as appropriate, adjacent bands;

6 to study a possible identification of frequency bands in the range 275-700 GHz for use by radiolocation service applications;

7 to review studies in resolve 1 to 6 and elaborate regulatory measures for the possible introduction of millimeter and sub-millimeter wave imaging systems;

8 to complete studies in time for WRC‑23,

*further resolves to invite WRC-23*

to review the results of these studies and take appropriate actions,

*invites administrations*

to participate actively in the studies by submitting contributions to ITU-R.

DRAFT NEW RESOLUTION [EUR-B10-16] (WRC-19)

**Review of frequency allocations for EESS(passive) in the 231.5-252 GHz frequency range and consider possible adjustment according to observation requirements of passive microwave sensors**

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

*Considering*

*a)* that, within the range 231.5-252 GHz, the frequency bands 235 – 238 GHz and 250 – 252 GHz are allocated to the earth observation satellite service EESS (passive) for the use of passive microwave remote sensing systems;

*b)* that these allocations were agreed at the WRC-2000, under agenda item 1.16, Resolution 723 (WRC-97);

*c)* that the scientific and technology developments for passive microwave sensor measurements have evolved for the last twenty years;

*d)* that it is appropriate to ensure that the frequency allocations to EESS (passive) agreed in 2000 correspond to the up-to-date observation requirements for passive microwave sensing;

*recognizing*

*a)* that some passive sensor systems under development plan to operate some channel(s) in the range 239 – 248 GHz given the specific characteristics of this band for ice cloud analysis;

*b)* that, as a result, it may be necessary to consider some adjustment/extension of the EESS (passive) allocations within the range 231.5-252 GHz;

*c)* that the effect on the other primary services in the range 231.5-252 GHz would have to be studied and, the EESS(passive) allocations possibly adjusted;

*resolves to invite ITU-R*

1 to review the existing primary allocations to the EESS(passive) in the range 231.5 – 252 GHz, in order to analyse if these allocations are aligned with the spectral needs defined by more recent passive microwave sensors;

2 to identify, as appropriate, possible adjustments to the EESS (passive) allocations in the range, taking into account the results under item 1 above;

3 to study the impact that any change to the EESS(passive) allocations in the range 231.5 – 252 GHz might have on the other primary services in these bands;

*resolves to invite WRC‑23*

to review the results of these studies with a view to adjust existing or adding possible new allocations, as appropriate, to EESS (passive) in the range 231.5-252 GHz without unduly constraining the other primary services currently allocated in this range,

*invites administrations*

to participate actively in the studies by submitting contributions to ITU‑R,

*instructs the Secretary-General*

to bring this Resolution to the attention of the international and regional organizations concerned.

Proposals on an Agenda item for WRC-23

**Subject: Consideration of specific spectrum usage of millimeter and sub-millimeter frequency ranges:**

* new allocations for future imaging systems in the frequency band 231.5 – 275 GHz, and identification of frequency bands in the range 275 - 700 GHz;
* review of existing or possible new allocations for passive remote sensing systems in the 231.5-252 GHz frequency range.

**Origin: CEPT**

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| ***Proposal*:**  to address the following two issues to accommodate requirements for spectrum usage above 231.5 GHz :  - to consider, in accordance with Resolution **[EUR-AXX-X] (WRC-19)**; additional spectrum allocations to the radiolocation service on a co-primary basis in the frequency band 231.5 – 275 GHz and identification for radiolocation applications in frequency bands in the range 275 - 700 GHz for millimeter and sub-millimeter wave imaging systems.  - to review and consider possible adjustments of the existing or possible new primary frequency allocations to EESS (passive) in the range 231.5 – 252 GHz, to ensure alignment with more up-to-date remote sensing observation requirements in accordance with Resolution **[EUR-AXX-X] (WRC-19)**; |
| ***Background/reason*:**  **Part 1) Millimeter and sub-millimeter wave imagers (Radiolocation Service)**  Millimeter and sub-millimeter wave frequencies have been recognized by the scientific communities and governmental organizations as well suited for stand-off detection of concealed objects [1,2]. The radiated energy at these frequencies has good penetration through optically opaque media such as clothing, foliage, a truck with soft top, etc. Stand-off systems working at these frequencies have the advantage to allow good cross-range resolution with reasonably small aperture size compared to microwave (used for portal-like systems). Moreover, this radiation is non-ionizing, and therefor preferable to x-rays which can be harmful for living beings.  Millimeter and sub-millimeter wave imagers are typically designed in two main configurations: active (radars) and passive (radiometers) systems. Both types of imagers require wide bandwidth operation. Active millimeter and sub-millimeter wave imagers require a bandwidth wider than 30 GHz to achieve range resolutions in the order of a few millimeters. The latter is required, for example, to detect weapons concealed under clothing. Passive imagers detect the extremely weak power that is naturally radiated by objects and require much wider bandwidth than active systems, in the order of 100 to 200 GHz, to collect enough power for detection. An optimal frequency band, selected for the operation of these technologies, is in the range between 231.5 GHz and 320 GHz. In this frequency range the atmospheric absorption is reasonably low, as shown in Figure 1.    Figure 1: Atmospheric absorption at sub-THz range [3]. |
| In the frequency ranges that are considered suitable for millimeter and sub-millimeter wave imaging, or THz imaging, (231.5 GHz -320 GHz) allocations to other radio services exist (below 275 GHz) or spectrum has not been allocated yet (above 275 GHz), as shown in Figure 2.    Figure 2: Spectrum allocation in the range [216 ÷ 3000] GHz [4]. |

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| The operation of millimeter and sub-millimeter wave imaging systems will be limited in space and time: the systems can be employed for public safety purposes during events, i.e. screening people participating to a demonstration, a concert or a sportive activity. These situations require the use of the systems in a specific location and for a limited amount of time.  Active millimeter and sub-millimeter wave imaging systems operate at very low transmit power (a few milliwatts typically) and short ranges (up to 300 m). Passive systems, as mentioned before, rely on extremely weak signals. Therefore, both kinds of imagers can be severely affected by other power sources operating at the same frequency band. In view of this fact, passive imagers need to be very sensitive, although the sensitivity is lower than the required for satellite passive remote sensing and therefore can withstand more interference than passive remote sensing systems. To avoid confusions, these passive imaging systems could be referred to as receive-only imaging systems.  Given this high sensitivity for interference, co-existence with other systems shall be considered in the identification of suitable spectrum for this radiolocation application in the mentioned frequency range. This is a topic for study under the proposed agenda item, together with the co-existence with other radio services in the band.  Operational benefits  Millimeter and sub-millimeter wave imaging, as a radiolocation service, can provide the following major operational benefits:   1. Detection of concealed objects such as weapons, munitions and explosives can be enhanced; 2. Detection of objects is significantly less harmful for humans compared to the X-ray technology that is currently commonly used; 3. Detection can be done from a stand-off distance which is significantly larger than for X-ray technology, which makes is less intrusive for people; 4. This technology will provide a significant contribute to public safety, counter-terrorism and the security of high risk/high value assets or areas.   The foreseen end users are, amongst others, border police, armed forces, special forces, airports, harbors and security forces.  **Part 2) Passive microwave remote sensors (EESS(passive))**  WRC-2000 agreed, under its agenda item 1.16, on a number of allocations, including to the Earth exploration-satellite passive service, EESS(passive), above 71 GHz.  Currently there is a need to review the allocations at higher frequencies, specifically in the 231.5-252 GHz frequency range, taking into account the scientific and technology developments for passive microwave sensor measurements, as is the case in Europe with the development of the Ice Cloud Imager (ICI) instrument of the second generation of the EUMETSAT Polar System (EPS-SG)).  The objective of this new agenda item is to ensure that the allocations to EESS (passive) within this range considered correspond to the observation requirements for satellite passive microwave sensing. For potential adjustments/extension/shifting of the EESS (passive) allocations in this range, the effect on the other primary services would have to be addressed. | |
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| **Recommendation**  This agenda item has a dual objective related to two different types of services operating in frequency ranges above 231.5 GHz.  **1) Radiolocation service**: The proposed agenda item is intended to address and estimate the future requirements for globally harmonized spectrum for the radiolocation service.  The agenda item will have to address the allocation and identification on a co-primary basis of a sufficiently wide frequency band, whilst also investigating regulations to guarantee coexistence with existing services in these bands. It is recommended to allocate a sufficiently large frequency band in the range 231.5 – 275 GHz to the radiolocation service on a co-primary basis for the active part of millimeter and sub-millimeter wave imagers. For this, compatibility with the existing services would have to be assessed as well as with an adjusted/extended/shifted EESS (passive) service (under part 2 of this proposed agenda item) in case of frequency overlap.  For the active and passive millimeter and sub-millimeter wave imagers, it is recommended to identify a sufficiently large frequency band in the range 275 - 700 GHz.  **2) Earth Exploration Satellite Service (passive):** The proposed agenda item is intended to review the existing primary allocations to the EESS(passive) in the range 231.5 – 252 GHz, to analyse if these allocations are aligned with the spectral needs defined by more recent passive microwave sensors, and to propose necessary adjustments in the Table of Frequency Allocations. An important aspect will be the study of the potential impact that any changes could have on the other primary services. | |
| ***Radiocommunication services concerned*: Radiolocation, EESS(passive)**  Sharing the bands: FS, MS, RAS, FSS, AMATEUR, AMATEUR-SAT and RNAV-SAT | |
| ***Indication of possible difficulties*:**  Currently there is no allocation in the band above 275 GHz.  There are already requests for identification in this band for photonic communication (WRC-19 AI 1.15). | |
| ***Previous/ongoing studies on the issue*:**  To date there are no preceding studies for this topic in this band for Radiolocation.  Consider the analysis for EESS(passive) compatibility in conducted for WRC 2000 | |
| ***Studies to be carried out by*:**  ***ITU WP1A*** | ***with the participation of*:**  **WP 7C, WP 5C,WP5B,** |
| ***ITU‑R Study Groups concerned*: *SG-4, SG-5, SG-7, SG-1*** | |
| ***ITU resource implications, including financial implications (refer to CV126)*:**  This proposed agenda item will be studied within the normal ITU-R procedures and planned budget. | |
| ***Common regional proposal*:** Yes | ***Multicountry proposal*: Yes**  ***Number of countries*:** |
| ***Remarks***  ***None***  References:  [1] TIPPSI THz Imaging Phenomenology Platforms for Stand-off IED Detection, EDA, 2016  [2] CONSORTIS, Concealed Object Stand-Off Real-Time Imaging for Security, EU FP7, 2017.  [3] ITU-R P.676-11, 9-2016, Attenuation by atmospheric gases  [4] Radio regulations, Articles. ITU 2016 | |

MOD EUR/9AXX/

Resolution 657 (REV WRC-19)

**Spectrum needs and protection of space weather sensors**

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

*considering*

*a)* that space weather observations are becoming increasingly important in detecting solar activity events that could impact on services critical to the economy, safety and security of administrations;

*b)* that these observations are also made from platforms that may be ground-based, airborne or space-based;

*c)* that some of the sensors operate by receiving low-level natural emissions of the Sun or the Earth’s atmosphere, and therefore may suffer harmful interference at levels which could be tolerated by other radio systems;

*d)* that space weather sensor technology has been developed and operational systems have been deployed without much regard for domestic or international spectrum regulations, or for the potential need for protection from interference,

*recognizing*

*a)* that no frequency bands have been documented in any manner in the Radio Regulations for space weather sensor applications;

*b)* that the ITU Radiocommunication Sector (ITU-R) has a Study Question ITU-R 256/7 to study the technical and operational characteristics, frequency requirements and appropriate radio service designation for space weather sensors;

*c)* that any regulatory action associated with space weather sensor applications should take into account incumbent services that are already operating in the frequency bands of interest,

*resolves to invite the 2023 World Radiocommunication Conference*

hile taking into account the results of ITU‑R studies and without placing additional constraints on incumbent services, to consider regulatory conditions/provisions for appropriately covering space weather in the RR.

invites ITU-R

1 to identify, in time for WRC‑23, and based on the existing ITU-R studies, specific space weather sensors which need to be protected by appropriate regulation;

2 to determine, in time for WRC‑23, the appropriate radio service designations for space weather sensors;

3 to conduct, in time for WRC‑23, and based on existing ITU-R studies, any necessary sharing studies for incumbent systems operating in frequency bands used by space weather sensors, for both active and passive sensors, with the objective of determining appropriate regulatory provision that can be provided while not placing additional constraints on incumbent services,

4 to describe in the Radio Regulations, for example in a WRC-19 Resolution and/or in Article 1 or 4, as appropriate, the space weather systems and corresponding usages.

*invites administrations*

to participate actively in the studies and provide the technical and operational characteristics of the systems involved by submitting contributions to ITU‑R,

*instructs the Secretary-General*

to bring this Resolution to the attention of the World Meteorological Organization (WMO) and other international and regional organizations concerned.

Reasons:

SUP EUR/9AXX/

RESOLUTION 161 (WRC‑15)

**Studies relating to spectrum needs and possible allocation of the frequency band 37.5-39.5 GHz to the fixed-satellite service**

Reason: CEPT does not support the preliminary agenda item 2.4 as included in Resolution 810 for the agenda of WRC-23 and Resolution 161 (WRC-15) can be suppressed.

MOD EUR/9AXX/

RESOLUTION 804 (REV. WRC-19)

Principles for establishing agendas for world radiocommunication conferences

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

considering,

*a)* that in accordance with No.118 of the ITU Convention, the general scope of the agendas for world radiocommunication conferences (WRCs) should be established four to six years in advance;

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

*c)* that No. 92 of the Constitution and Nos. 488 and 489 of the Convention require conferences to be fiscally responsible;

*d)* that in Resolution 71 (Rev. Marrakesh, 2002), concerning the strategic plan of the Union, the Plenipotentiary Conference noted the increasingly complex and lengthy agendas for world radiocommunication conferences;

*e)* that Resolution 80 (Rev. Marrakesh, 2002) of the Plenipotentiary Conference and Resolution **72 (Rev.WRC-07)** recognize the positive contribution of regional and informal groups and the need for improved efficiency and fiscal prudence;

*f)* the relevant Resolutions of previous WRCs,

*noting*

*a)* that the number of issues addressed in agendas for WRCs has been growing, and that some issues could not be resolved adequately in the time allotted to the Conference, including conference preparations;

*b)* that some agenda items may have a greater impact on the future of radiocommunications than others;

*c)* that the human and financial resources of ITU are limited;

*d)* that there is a need to limit the agenda of conferences, taking account of the needs of developing countries, in a manner that allows the major issues to be dealt with equitably and efficiently;

*e)* that, in accordance with No. 90 of the Constitution, the interval between WRCs should normally be three to four years, to ensure that changes in technology and requirements of Member States are adequately reflected in conference agendas,

*resolves*

that the principles in Annex 1 should be used when developing future WRC agendas,

*resolves to invite administrations*

1 to use the template in Annex 2 in proposing agenda items for WRCs;

2 to participate in regional activities for the preparation of future WRC agendas.

MOD EUR/XXXAXX/2

ANNEX 1 TO RESOLUTION 804 (REV.WRC-19)

**Principles for establishing agendas for WRCs**

A conference agenda shall include:

1) items assigned to it by the ITU Plenipotentiary Conference;

2) items on which the Director of the Radiocommunication Bureau has been requested to report;

3) items concerning instructions to the Radio Regulations Board and the Radiocommunication Bureau regarding their activities, and concerning the review of those activities.

In general, a conference may include on a future conference agenda an item proposed by a group of administrations or an administration, if all the following conditions are met:

1) it addresses issues of a worldwide or regional character;

2) it is expected that changes in the Radio Regulations, including WRC Resolutions and Recommendations, may be necessary;

3) it is expected that required studies can be completed (e.g. that appropriate ITU-R Recommendations will be approved) prior to that conference;

4) resources associated with the subject are kept within a range which is manageable for Member States and Sector Members, the Radiocommunication Bureau and ITU-R Study Groups and Conference Preparatory Meeting (CPM).

To the extent possible, agenda items arising from previous conferences, normally reflected in Resolutions, and which have been considered by two successive conferences, should not be considered, unless justified.

In addition, the issues that could be addressed through actions undertaken by a Radiocommunication Assembly, particularly those not involving amendments to the Radio Regulations, should not be included into the agenda to the extent possible.

Agenda items on which the Director of the Radiocommunication Bureau reports on the activities of the Radiocommunication Sector since WRC, shall not include issues that intended to be addressed through modifications to the Radio Regulations, including issues related to frequency allocation for radiocommunication services and/or changing the conditions of their use.

In developing the conference agenda, efforts should be made to:

a) encourage regional and interregional coordination on the subjects to be considered in the preparatory process for the WRC, in accordance with Resolution 72 (Rev.WRC-07) and Resolution 80 (Rev. Marrakesh, 2002) of the Plenipotentiary Conference, with a view to addressing potentially difficult issues well before a WRC;

b) include, to the extent possible, agenda items that are prepared within regional groups, taking into account the equal right of individual administrations to submit proposals for agenda items;

*c)* ensure that proposals are submitted with an indication of priority;

*d)* include in proposals an assessment of their financial and other resource implications (with the assistance of the Radiocommunication Bureau) to ensure that they are within the agreed budgetary limits for ITU-R;

*e)* ensure that the objectives and scope of proposed agenda items are complete and unambiguous;

*f)* take into account the status of the ITU-R studies related to the potential agenda items before considering them as possible candidates for future agendas;

*g)* distinguish between items intended to result in changes to the Radio Regulations and those dealing solely with the progress of studies;

*h)* arrange items on the agenda by subject to the extent possible.

Reason: Agenda item 9.1 (to consider and approve the Report of the Director of the Radiocommunication Bureau, in accordance with Article 7 of the Convention, on the activities of the Radiocommunication Sector since WRC) exists for considering of issues that do not demand changes in the Radio Regulations.

Nevertheless, some administrations use this agenda item as a backdoor in case they were not able to add an agenda item to the WRC agenda because of the lack of support from other administrations. Sometimes these new issues of a.i. 9.1 are as difficult as regular agenda items of the WRC and to decide them it is necessary to make modifications to the Radio Regulations.

But according to Annex 6 of ITU-R Administrative Circular CA/226 “Results of the first session of the Conference Preparatory Meeting for WRC 19” (23 December 2015) it is not supposed to put Regulatory and procedural considerations to the CPM Report when describing issues of the agenda item 9.1.

Thus, this situation increases the workload of the Study Groups. The workload of the WRC is also increased because on the WRC it is necessary to consider each issue on the case by case basis.

It is proposed that in the next cycle such issues should be not put in the Director's Report on the activities of the Radiocommunication Sector.