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| A close up of a sign  Description automatically generated | **World Radiocommunication Conference (WRC-23) Dubai, 20 November - 15 December 2023** | |  |
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|  | | **Doc. CPG(23)060 ANNEX V-12** | |
| PLENARY MEETING | | **Addendum 12 to Document XXXX-E** | |
|  | | **30 August 2023** | |
|  | | **Original: English** | |
|  | | | |
| European Common Proposals | | | |
| Proposals for the work of the conference | | | |
|  | | | |
| Agenda item 1.12 | | | |

1.12 to conduct, and complete in time for WRC‑23, studies for a possible new secondary allocation to the Earth exploration-satellite service (active) for spaceborne radar sounders within the range of frequencies around 45 MHz, taking into account the protection of incumbent services, including in adjacent bands, in accordance with Resolution **656 (Rev.WRC‑19)**;

Introduction

This proposal consists in:

* The addition of a new global secondary allocation to the Earth exploration-satellite service (EESS) (active) in the 40-50 MHz range.
* The introduction of a new footnote No. **5.A112** and an associated WRC Resolution, which describes the provisions applicable to the new secondary allocation to the EESS (active) for the protection of the incumbent services, derived from Method A1, option 3 for agenda item 1.12 in the Report of the CPM to WRC-23. Specifically, CEPT proposes to apply a set of pfd limits to the EESS (active):
  + one reference value (-147 dB(W/(m2 · 4 kHz))) not to be exceeded for more than 0.05% of the time,
  + a cap value (-136 dB(W/(m2 · 4 kHz))),

with additional provisions to cover the case of multiple EESS (active) spaceborne radar sounders in operation.

* The suppression of Resolution **656 (Rev.WRC-19)**, which is no longer required.

Proposals

ARTICLE 5

Frequency allocations

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

MOD EUR/XXXXA12/1

27.5-40.98 MHz

|  |  |  |
| --- | --- | --- |
| Allocation to services | | |
| Region 1 | Region 2 | Region 3 |
| 39.986-40-  FIXED  MOBILE  Space research |  | 39.986-40  FIXED  MOBILE  RADIOLOCATION 5.132A  Space research |
| 40-40.02  FIXED  MOBILE  Earth exploration-satellite (active) ADD 5.A112  Space research |  | 40-40.02  FIXED  MOBILE  Earth exploration-satellite (active) ADD 5.A112  Space research |
| 40.02-40.98 FIXED  MOBILE  Earth exploration-satellite (active) ADD 5.A112  5.150 | | |

**Reasons:** Introduce a new global secondary allocation to the EESS (active) in the frequency range 40-50 MHz subject to the provisions described in No. **5.A112**.

MOD EUR/XXXXA12/2

40.98-47 MHz

|  |  |  |
| --- | --- | --- |
| Allocation to services | | |
| Region 1 | Region 2 | Region 3 |
| 40.98-41.015 FIXED  MOBILE  Earth exploration-satellite (active) ADD 5.A112  Space research  5.160 5.161 | | |
| 41.015-42 FIXED  MOBILE  Earth exploration-satellite (active) ADD 5.A112  5.160 5.161 5.161A | | |
| 42-42.5  FIXED  MOBILE  Earth exploration-satellite (active) ADD 5.A112  Radiolocation 5.132A | 42-42.5  FIXED  MOBILE  Earth exploration-satellite (active) ADD 5.A112 |  |
| 5.160 5.161B | 5.161 |  |
| 42.5-44 FIXED  MOBILE  Earth exploration-satellite (active) ADD 5.A112  5.160 5.161 5.161A | | |
| 44-47 FIXED  MOBILE  Earth exploration-satellite (active) ADD 5.A112  5.162 5.162A | | |

**Reasons:** Introduce a new global secondary allocation to EESS (active) in the frequency range 40-50 MHz subject to the provisions described in No. **5.A112**.

MOD EUR/XXXXA12/3

47-75.2 MHz

|  |  |  |
| --- | --- | --- |
| Allocation to services | | |
| Region 1 | Region 2 | Region 3 |
| 47-50  BROADCASTING  Earth exploration-satellite (active) ADD 5.A112  5.162A 5.163 5.164 5.165 | 47-50  FIXED  MOBILE  Earth exploration-satellite (active) ADD 5.A112 | 47-50  FIXED  MOBILE  BROADCASTING  Earth exploration-satellite (active) ADD 5.A112  5.162A |

**Reasons:** Introduce a new global secondary allocation to EESS (active) in the frequency range 40-50 MHz subject to the provisions described in No. **5.A112**.

ADD EUR/XXXXA12/4

5.A112 The use of the frequency band 40-50 MHz by the Earth exploration-satellite service (active) shall be in accordance with Resolution **[EUR-A12-EESS-40-50-MHZ] (WRC-23)**. The provisions of this footnote in no way diminish the obligation of the Earth exploration-satellite service (active) to operate as a secondary service in accordance with Nos. **5.29** and **5.30**.     (WRC‑23)

**Reasons:** This new footnote is proposed to limit the new EESS (active) allocation in the frequency band 40-50 MHz to the systems described in the new Resolution which would include the associated provisions.

ADD EUR/XXXXA12/5

Draft New Resolution [EUR-A12-EESS-40-50-MHZ](WRC-23)

Use of the frequency range 40-50 MHz allocated   
to the Earth exploration-satellite service (active) for spaceborne radar sounders

The World Radiocommunication Conference (Dubai, 2023),

considering

*a)* that spaceborne active sensors operating in the Earth exploration-satellite service (EESS) (active), described in Recommendation ITU-R RS.2042, can provide unique information on the physical properties of the Earth, such as characteristics of polar ice sheets and subterranean fossil aquifers in desertic environments;

*b)* that spaceborne active remote sensing requires specific frequency ranges depending on the physical phenomena to be observed;

*c)* that worldwide, periodic measurements of subsurface water/ice deposits require the use of spaceborne radar sounder active sensors;

*d)* that the measurement of reflectivity from subsurface scattering layers as deep as 10 m to 100 m for shallow aquifers and groundwater conduits, and on the order of 5 km for basal interface topography and ice-sheet thickness, is necessary;

*e)* that spaceborne radar sounders operating in the EESS (active) are intended to be operated from polar orbits, only in either uninhabited, sparsely populated or remote areas of the globe, with particular focus on deserts and polar ice fields;

*f)* that the frequency range 40-50 MHz is preferable to satisfy all operational requirements for such spaceborne radar sounder active sensors,

recognizing

*a)* that, given the complexity of the EESS (active) instruments implementation in these low frequencies, very few such sounders are expected to be in orbit at the same time; consequently, aggregate interference from multiple spaceborne radar sounders into incumbent services is not anticipated and could be mitigated by coordination between the operators of such instruments;

*b)* that measurements by these radar sounders are only possible when the total electron content of the ionosphere is near its daily minimum, which normally occurs in a few hours’ window centred approximately at 4 a.m. local time;

*c)* that No. **21.16.8** provides the equation to determine mean pfd values for EESS (active);

*d)* that coordination between operators of EESS (active) and operators of wind profiler radars in the 40-50 MHz band may be needed on a case-by-case basis to ensure coexistence between the corresponding stations,

resolves

1 that the use of the frequency band 40-50 MHz by EESS (active) is limited to spaceborne radar sounders as described in Recommendation ITU-R RS.2042;

2 that, for the purpose of protecting the in-band and adjacent band services, the mean pfd level per spaceborne radar sounder produced at the surface of the Earth shall not exceed ‑147 dB(W/(m2 · 4 kHz)), under clear sky propagation conditions;

3 that the pdf limit at the surface of the Earth provided in *resolves* 2 may be exceeded for no more than 0.05% of the time, while not exceeding -136 dB(W/(m2 · 4 kHz)), under clear sky propagation conditions;

4 that, if more than one spaceborne radar sounder is in operation, administrations shall ensure collectively that the pfd limit in *resolves* 2 is not exceeded for more than 0.1% of the time and shall have consultations accordingly; until such consultations enable to ensure the compliance with this pfd limit, each system will have to ensure that the limit in *resolves* 2 is not exceeded for more than 0.1/N % of the time, where N is the number of spaceborne radar sounders;

5 that the spaceborne radar sounder systems in the frequency range 40-50 MHz should only operate in a few hours’ window centred approximately around 4 a.m. local time,

invites the ITU Radiocommunication Sector

to regularly review the number and characteristics of spaceborne radar sounders and the application of *resolves*4 by concerned Member States,

instructs the Director of the Radiocommunication Bureau

to report to future competent World Radiocommunication Conferences on the number of EESS satellites in operation and on the application of *resolves* 4 above.

**Reasons:** This new Resolution is proposed to detail the relevant conditions for the use of the frequency range 40-50 MHz on a secondary basis for the Earth exploration-satellite service (active).

SUP EUR/XXXXA12/6

RESOLUTION 656 (REV.WRC‑19)

Possible secondary allocation to the Earth exploration-satellite service (active) for spaceborne radar sounders in the range of frequencies around 45 MHz

**Reasons:** With the proposed new secondary allocation to the EESS (active) in the frequency range40-50 MHz, Resolution **656 (Rev. WRC-19)** is no longer required and can be suppressed