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| A close up of a sign  Description automatically generated | **World Radiocommunication Conference (WRC-23) Dubai, 20 November - 15 December 2023** | |  |
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| PLENARY MEETING | | **Addendum 13 to Document 44-E** | |
|  | | **13 October 2023** | |
|  | | **Original: English** | |
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| Member States of the Inter-American Telecommunication Commission (CITEL) | | | |
| PROPOSALS FOR THE WORK OF THE CONFERENCE | | | |
|  | | | |
| Agenda item 1.13 | | | |

1.13 to consider a possible upgrade of the allocation of the frequency band 14.8-15.35 GHz to the space research service, in accordance with Resolution **661 (WRC‑19)**;

Background

The frequency band 14.8-15.35 GHz is currently allocated on a primary basis to the fixed and mobile services (FS and the MS), and on a secondary basis to the space research service (SRS). Within the SRS, the band is expected to enable high-speed science data return from space science missions to a limited number of earth stations located globally. Additionally, the frequency band is also currently used in two capacities by Data Relay Satellite (DRS) systems operated by multiple administrations. These uses include forward feeder uplinks from DRS earth stations to relay satellites in the geostationary-satellite orbit (GSO), as well as inter-satellite return links to relay data from non-GSO space science spacecraft (including crewed space vehicles and stations) through DRS satellites to the Earth.

The space research satellite requirements for use of the frequency band are expected to continue to increase in the coming years as a result of increasing numbers of robotic science satellites and crewed vehicles, limited bandwidth and/or increasing congestion in other SRS frequency bands, and increasing science mission data transport needs.

The purpose of this agenda item is to explore the feasibility of establishing a regulatory framework to provide for the operation of SRS systems in this frequency band on a primary basis, consistent with not causing harmful interference to nor constraining the operation of systems operating in other primary services in the frequency band.

Based on the results of ITU-R studies, cases of harmful interference to incumbent fixed and mobile (including aeronautical mobile) services were found for SRS (space-to-Earth) and SRS (Earth-to-space) operations using worst-case scenarios. For SRS (space-to-space) operation, some studies showed compatibility with incumbent in-band terrestrial services. For transmission from incumbent services into SRS, it was shown there would be an impact. For adjacent band scenarios, compatibility of SRS and RAS operations was not established by studies but may be achieved through implementation of techniques on out-of-band (OoB) emission suppression.

Space research services in the (space-to-Earth) and (Earth-to-space) segments will retain secondary allocation status. Additionally, the space research service in the 14.8-15.35 GHz frequency band shall not cause harmful interference to the radio astronomy service in the adjacent frequency band 15.35-15.4 GHz.

Proposals

ARTICLE 5

Frequency allocations

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

MOD IAP/44A13/1#1819

14.5-15.4 GHz

|  |  |  |  |
| --- | --- | --- | --- |
| Allocation to services | | | |
| Region 1 | Region 2 | Region 3 | |
| 14.5-14.75 FIXED  FIXED-SATELLITE (Earth-to-space) 5.509B 5.509C 5.509D 5.509E 5.509F 5.510  MOBILE  Space research 5.509G | | | |
| 14.**7**5-14.8  FIXED  FIXED-SATELLITE (Earth-to-space) 5.510  MOBILE  Space research 5.509G | | | 14.**7**5-14.8  FIXED  FIXED-SATELLITE (Earth-to-space) 5.509B 5.509C 5.509D 5.509E 5.509F 5.510  MOBILE  Space research 5.509G |
| 14.8-15.35 FIXED  MOBILE  SPACE RESEARCH (space-to-space) ADD 5.A113  Space research (Earth-to-space) (space-to-Earth)  5.339 | | | |
| 15.35-15.4 EARTH EXPLORATION-SATELLITE (passive)  RADIO ASTRONOMY  SPACE RESEARCH (passive)  5.340 5.511 | | | |

**Reasons:** Elevating the allocation of the space research service (space-to-space) from secondary to primary in the 14.8-15.35 GHz frequency band and to add a footnote establishing the operating conditions.

ADD IAP/44A13/2#1820

5.A113 Stations in the space research service (space-to-space) operating on a primary basis in the frequency band 14.8-15.35 GHz shall not claim protection from stations in the fixed and mobile services. No. **5.43A** does not apply. Additionally, the SRS (s-s) shall not cause harmful interference to the radio astronomy service in the adjacent frequency band 15.35-15.4 GHz.     (WRC‑23)

**Reasons:** To upgrade the existing space research (space-to-space) from secondary allocation to primary in the frequency band 14.8-15.35 GHz on the condition that SRS (space-to-space) shall not claim protection from the FS and MS and RR No. **5.43A** not applying. **Additionally, the SRS (s-s) shall not cause harmful interference to the radio astronomy service in the adjacent frequency band 15.35-15.4 GHz.**

ARTICLE 21

Terrestrial and space services sharing frequency bands above 1 GHz

Section V − Limits of power flux-density from space stations

MOD IAP/44A13/3#1821

TABLE **21-4**  (*continued*)     (Rev.WRC‑23)

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Frequency band | Service\* | Limit in dB(W/m2) for angles of arrival (δ) above the horizontal plane | | | | Reference bandwidth | |
| 0°-5° | 5°-25° | | 25°-90° |
| 11.7-12.5 GHz (Region 1)  12.5-12.75 GHz (Region 1 countries listed in Nos. 5.494 and 5.496)  11.7-12.7 GHz (Region 2)  11.7-12.75 GHz (Region 3) | Fixed-satellite (space-to-Earth)  (non-geostationary-satellite orbit) 25 | −124 | −124 + 0.5(δ − 5) | | −114 | 1 MHz | |
| 12.2-12.75 GHz 7 (Region 3)  12.5‑12.75 GHz 7 (Region 1 countries listed in Nos. 5.494 and 5.496) | Fixed-satellite (space-to-Earth) (geostationary-satellite orbit) | −148 | −148 + 0.5(δ − 5) | | −138 | 4 kHz | |
| 13.4-13.65 GHz (Region 1) | Fixed-satellite (space-to-Earth) (geostationary-satellite orbit) | **0°-25°** | **25°-80°** | **80°-84°** | **84°-90°** | 4 kHz | |
| −159 +  0.4δ 19 | −149 19 | −149 −  0.5(δ − 80)19 | −151 19 |
| 14.8-15.35 GHz | Space research (space-to-space) | **0°-5°** | **5°-25°** | | **25°-90°** | 1 MHz | |
| −124 | −124 **+**0.5(δ − 5) | | −114 |
| 17.7-19.3 GHz 7, 8 | Fixed-satellite (space-to-Earth) Meteorological-satellite (space-to-Earth) | **0°-5°** | **5°-25°** | | **25°-90°** | 1 MHz | |
| −115 14, 15  or  −115 − *X* 13 | −115 + 0.5(δ − 5) 14, 15  or  −115 − *X* + ((10 + *X*)/20)  (δ − 5) 13 | | −105 14, 15  or  −105 13 |
| 17.7-19.3 GHz 7, 8 | Fixed-satellite (space-to-Earth) | **0°-3°** | **3°-12°** | **12°-25°** | −105 16 | 1 MHz |
| −120 16 | −120 +  (8/9) (δ − 3) 16 | −112 + (7/13) (δ − 12) 16 |
| 19.3-19.7 GHz | Fixed-satellite (space-to-Earth) | **0°-3°** | **3°-12°** | **12°-25°** | −105 16 | 1 MHz |
| −120 16 | −120 +  (8/9) (δ − 3) 16 | −112 + (7/13) (δ − 12) 16 |

**Reasons:** The power flux-density limits proposed to be added in RR Table **21-4** for the space research (s-s) service will provide the required protection levels to the fixed and mobile services, including the land mobile service (LMS) and aeronautical mobile service (AMS).

SUP IAP/44A13/4#1817

RESOLUTION 661 **(**WRC‑19**)**

Examination of a possible upgrade to primary status of the secondary allocation to the space research service in the frequency band 14.8‑15.35 GHz

**Reasons:** This Resolution is no longer necessary.

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