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| **34 MEETING OF PERMANENT****CONSULTATIVE COMMITTEE II:****RADIOCOMMUNICATIONS****August 12 to 16, 2019****Ottawa, Ontario, Canada** | **OEA/Ser.L/XVII.4.2.34****CCP.II-RADIO/doc. /19****26 July 2019****Original:**  |
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|  | **MODIFICATION OF DRAFT INTER-AMERICAN PROPOSAL ON WRC-19 AGENDA ITEM 1.3** |  |
|  | **AGENDA ITEM 1.3** |  |
|  | **(Item on the Agenda: 3.1 (SGT-2))****(Document submitted by the delegation of United States of America)** |  |

**Introduction:**

This contribution contains modifications to the Draft Inter-American proposal for WRC-19 agenda item 1.3. The modifications to the Resolution address primarily the transition of existing frequency assignments through removal of unnecessary procedures and simplification of the DIAP.

**Agenda Item 1.3:** *to consider possible upgrading of the secondary allocation to the meteorological-satellite service (space-to-Earth) to primary status and a possible primary allocation to the Earth exploration-satellite service (space-to-Earth) in the frequency band 460-470 MHz, in accordance with Resolution* ***766 (WRC-15)***

**BACKGROUND**

The meteorological-satellite service (MetSat) and Earth exploration-satellite service (EESS) use Data Collection Systems (DCS), which consist in a network of sensors that are critical to monitor and predict climate change, monitor oceans and water resources, predict the weather, assist in biodiversity protection, and improve marine safety in areas that are hard to reach. In particular, the utility of DCS helps the scientific community to gain a better monitoring and understanding of the environment, and to help the industry to comply with the environmental protection regulations implemented by some governments.

The frequency band 460-470 MHz is allocated on a primary basis to the fixed and mobile services. It is also allocated on a secondary basis to the MetSat (space-to-Earth) service. Moreover, in some countries of Regions 1 and 3, primary allocation is allowed by **No. 5.290** of the Radio Regulations (RR). The operation of EESS applications is also permitted under RR No. **5.289** considering a no-interference and no-protection basis. In addition, channels in the 467.525-467.825 MHz segment can be used for on-board maritime communications under RR No. **5.287** and No. **5.288**.

Primary allocation to MetSat and EESS services in the frequency band 460-470 MHz may give confidence to the public sector and to space and meteorological agencies on the development of data collection systems and programs, as well as provide regulatory certainty. Therefore, parties interested in using the MetSat and EESS services are seeking to upgrade the MetSat allocation to primary status, and to include a primary allocation to EESS in the frequency band 460-470 MHz while providing protection and not imposing additional constraints on existing terrestrial services nor adjacent frequency bands.

Studies have demonstrated that sharing is possible between meteorological-satellite (space-to-Earth)/Earth-exploration-satellite (space-to-Earth) services and the incumbent services in the 460 – 470 MHz frequency band if the pfd limits proposed below are applied. Based on the results of sharing studies, this proposal supports an allocation upgrade from secondary to a primary for the meteorological-satellite service (space-to-Earth) and a new primary allocation to the earth-exploration-satellite (space-to-Earth) service in the frequency band 460 – 470 MHz band. This proposal applies a set of elevation angle dependent pfd limits to the meteorological-satellite and Earth exploration-satellite services to protect the incumbent services globally.

**DRAFT INTER-AMERICAN PROPOSAL**

**MOD B, CAN, USA, MEX/1.3/1**

**460-890 MHz**

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| --- |
| **Allocation to services** |
| **Region 1** | **Region 2** | **Region 3** |
| **460-470** EARTH EXPLORATION-SATELLITE (space-to-Earth) ADD 5.B13 FIXED METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE 5.286AA  5.287 5.288 ADD 5.A13  |

***Reasons:*** *Inclusion in the Table, a primary EESS (space-to-Earth) and MetSat allocation in the frequency band 460-470 MHz.*

**MOD** **B, CAN, USA, MEX/1.3/2**

**1 690-1 700 MHz**

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| --- |
| **Allocation to services** |
| **Region 1**  | **Region 2**  | **Region 3** |
| **1 690-1 700**METEOROLOGICAL AIDSMETEOROLOGICAL-SATELLITE (space-to-Earth)FixedMobile except aeronautical mobileMOD 5.289 5.341 5.382 | **1 690-1 700**METEOROLOGICAL AIDSMETEOROLOGICAL-SATELLITE (space-to-Earth)MOD 5.289 5.341 5.381 |
| **1 700-1 710**FIXEDMETEOROLOGICAL-SATELLITE (space-to-Earth)MOBILE except aeronautical mobileMOD 5.289 5.341 | **1 700-1 710**FIXEDMETEOROLOGICAL-SATELLITE (space-to-Earth)MOBILE except aeronautical mobileMOD 5.289 5.341 5.384 |

**MOD B, CAN, USA, MEX/1.3/3**

**5.289** Earth exploration-satellite service applications, other than the meteorological-satellite service, may also be used in the band 1 690-1 710 MHz for space-to-Earth transmissions subject to not causing harmful interference to stations operating in accordance with the Table of Frequency Allocations. (WRC-19)

***Reasons:*** *Inclusion in the Table a primary EESS (space-to-Earth) allocation in the frequency band 460-470 MHz.*

**SUP B, CAN, USA, MEX/1.3/4**

**5.290** *Different category of service:* in Afghanistan, Azerbaijan, Belarus, China, the Russian Federation, Japan, Kyrgyzstan, Tajikistan and Turkmenistan, the allocation of the band 460‑470 MHz to the meteorological-satellite service (space-to-Earth) is on a primary basis (see No. **5.33**), subject to agreement obtained under No. **9.21**.    (WRC‑12)

***Reasons:*** *Consequential change of the Inclusion in the Table a primary EESS (space-to-Earth) allocation in the frequency band 460-470 MHz.*

**ADD B, CAN, USA, MEX/AI 1.3/5**

**5.A13** In the frequency band 460-470 MHz, earth stations in the meteorological-satellite service (space-to-Earth) and Earth exploration-satellite service (space-to-Earth) shall not claim protection from stations of the fixed and mobile services in the frequency band 460-470. Resolution **[A13] (WRC‑19)** shall apply.

***Reasons:*** *To provide protection to the fixed and mobile services from MetSat and EESS satellite downlinks.*

**ADD B, CAN, USA, MEX/1.3/6**

**5.B13** In the frequency band 460-470 MHz stations in the Earth exploration-satellite service (space-to-Earth) shall not cause harmful interference to nor claim protection from stations in the meteorological-satellite service (space-to-Earth).      (WRC-19)

***Reasons:*** *To provide protection to MetSat downlinks from EESS satellite downlinks.*

APPENDIX 7 (REV.WRC‑15)

**Methods for the determination of the coordination area around an earth
station in frequency bands between 100 MHz and 105 GHz**

ANNEX 7

**System parameters and predetermined coordination distances for determination of the coordination area around an earth station**

**3 Horizon antenna gain for a receiving earth station with respect to a transmitting earth station**

**MOD B, CAN, USA, MEX/1.3/7**

TABLE 8A     (Rev.WRC‑19)

**Parameters required for the determination of coordination distance for a receiving earth station**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Receiving spaceradiocommunicationservice designation** | **Space operation, space research** | **Meteoro-logical- satellite, mobile-satellite** | **Space research** | **Space research, space operation** | **Space operation** | **Mobile-satellite** | **Meteoro-logical-satellite** | **Mobile-satellite** | **Space research** | **Space operation** |  | **Broad-casting- satellite** | **Mobile-satellite** | **Broadcasting- satellite(DAB)** | **Mobile-satellite,land-mobile satellite, maritime mobile-satellite** |
| Frequency bands (MHz) | 137-138 | 137-138 | 143.6-143.65 | 174-184 | 163-167 272-273 5 | 335.4-399.9 | 400.15-401 | 400.15-401 | 400.15-401 | 401-402 |  | 620-790 | 856-890 | 1 452-1 492 | 1 518-1 5301 555-1 5592 160-2 200 1 |
| Transmitting terrestrial service designations | Fixed,mobile | Fixed,mobile | Fixed, mobile, radio-location | Fixed, mobile,broad-casting | Fixed, mobile | Fixed, mobile | Meteoro-logical aids | Meteoro-logical aids | Meteoro-logical aids | Meteoro-logical aids,fixed, mobile |  | Fixed, mobile,broad-casting | Fixed, mobile,broadcasting | Fixed, mobile,broadcasting | Fixed, mobile |
| Method to be used | § 2.1 | § 2.1 | § 2.1 | § 2.1 | § 2.1 | § 1.4.6 | § 1.4.6 | § 1.4.6 | – | § 2.1 |  | § 1.4.5 | § 1.4.6 | § 1.4.5 | § 1.4.6 |
| Modulation at earth station 2 | N |  | N |  | N |  |  |  | N | N |  |  |  | N | N |
| Earth stationinterferenceparametersand criteria | *p*0 (%) |  | 0.1 |  | 0.1 |  | 1.0 |  | 0.012 |  | 0.1 | 0.1 |  |  |  |  | 10 |
| *n* |  | 2 |  | 2 |  | 1 |  | 1 |  | 2 | 2 |  |  |  |  | 1 |
| *p* (%) |  | 0.05 |  | 0.05 |  | 1.0 |  | 0.012 |  | 0.05 | 0.05 |  |  |  |  | 10 |
| *NL* (dB) |  | 0 |  | 0 |  | 0 |  | 0 |  | 0 | 0 |  |  |  |  | 0 |
| *Ms* (dB) |  | 1 |  | 1 |  | 1 |  | 4.3 |  | 1 | 1 |  |  |  |  | 1 |
| *W* (dB) |  | 0 |  | 0 |  | 0 |  | 0 |  | 0 | 0 |  |  |  |  | 0 |
| Terrestrial station parameters | *E* (dBW)in *B* 3 | A | – |  | – |  | 15 |  |  |  | – | – |  |  |  | 38 | 37 4 |
| N | – |  | – |  | 15 |  |  |  | – | – |  |  |  | 38 | 37 |
| *Pt* (dBW) in *B* | A | – |  | – |  | –1 |  |  |  | – | – |  |  |  | 3 | 0 |
| N | – |  | – |  | –1 |  |  |  | – | – |  |  |  | 3 | 0 |
| *Gx* (dBi) |  | – |  | – |  | 16 |  |  |  | – | – |  |  |  | 35 | 37 |
| Reference bandwidth | *B* (Hz) |  | 1 |  | 1 |  | 103 |  | 177.5 × 103 |  | 1 | 1 |  |  |  | 25 × 103 | 4 × 103 |
| Permissible interference power | *Pr*( *p*) (dBW)in *B* |  | −199 |  | −199 |  | −173 |  | −148 |  | −208 | −208 |  |  |  |  | −176 |

***Reasons:*** *Consequential change.*

**ADD [B, CAN,] USA, [MEX]/1.3/8**

Draft New Resolution [A13] (WRC-19)

**Implementation of satellite networks and systems of the meteorological-satellite service (space-to-Earth) and the Earth exploration-satellite service (space-to-Earth) in the
frequency band 460-470 MHz**

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

*considering*

*a)* that data collection systems (DCS) operate on geostationary and non-geostationary orbits in the meteorological-satellite service (MetSat) and the Earth exploration-satellite service (EESS) (Earth-to-space) systems in the frequency band 401-403 MHz;

*b)* that DCS are essential for monitoring and predicting climate change, monitoring oceans, and water resources, weather forecasting and assisting in protecting biodiversity, and improving maritime security;

*c)* that most of these DCS have implemented satellite downlinks (space-to-Earth) in the frequency band 460-470 MHz which bring significant improvements to the operation of satellite DCS, such as the transmission of information to optimize the usage of the terrestrial data collection platforms;

*d)* that the frequency band 460-470 MHz is also used for the downlink of mission and telemetry data for meteorological and Earth-exploration purposes;

*e)* that the frequency band 460-470 MHz is allocated to the fixed and mobile services on a primary basis and is widely used by these services and is also identified for IMT on a global basis;

*f)* that WRC‑19 has upgraded the secondary allocation of the MetSat (space-to-Earth) to primary status and added a primary allocation to the EESS (space-to-Earth) in the frequency band 460-470 MHz, and established a power flux-density (pfd) limit to provide protection of existing terrestrial services;

*g)* that WRC-19 suppressed No. **5.290** and the relevant parameters in Table 8A of Appendix **7**, which identified some administrations that already had a primary allocation to the MetSat (space-to-Earth), subject to agreement obtained under No. **9.21,** in the light of the upgrade mentioned in *considering f)* above, and that it is necessary to provide some measures for the satellite systems which operate in accordance with No. **5.290** to retain their regulatory status as of the end of WRC-19,

*noting*

*a)* that frequency assignments for several EESS and MetSat satellite networks and systems in the frequency band 460-470 MHz were notified and brought into use before 22 November 2019;

*b)* that some of these EESS and MetSat satellite networks and systems above may not meet the pfd limit in *considering f),* but there is a need to authorise them to continue their operation,

*resolves*

1 that in the frequency band 460-470 MHz the power flux-density at the Earth’s surface produced by stations in the meteorological-satellite (space-to-Earth) and Earth exploration-satellite (space-to-Earth) services shall comply with the limits listed below under assumed free-space propagation conditions for all methods of modulation:

For non-GSO space stations:

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and for GSO space stations:

where ɑ is the angle of arrival above the horizontal plane, in degrees.

 2 that the MetSat and EESS in the 460-470 MHz band shall not limit the development or the deployment of the fixed, mobile and broadcast services allocated in the 460-470 MHz and adjacent bands;

3 that in the frequency band 460-470 MHz, earth stations in the meteorological-satellite service (space-to-Earth) and Earth exploration-satellite service (space-to-Earth) shall not claim protection from stations of the fixed and mobile services in the frequency band 460-470 MHz and shall not claim protection from stations of the broadcasting service operating in the adjacent band unless other agreements were obtained under No. **9.21** prior to the end of WRC‑19. No. **5.43A** does not apply;

*instructs the Director of the Radiocommunication Bureau*

1 to retain existing status in the MIFR, when applying No. **11.50**,of the frequency assignments of MetSat (space-to-Earth) and EESS (space-to-Earth) satellite networks or systems recorded as of the end of WRC-19 that do not meet the pfd limits given in *resolves*1;

2 to record in the MIFR the frequency assignments for which the notification information is received after the end of WRC-19 and the advance publication information or the coordination request, as appropriate, was received prior to the end of WRC‑19,that do not meet the pfd limits given in *resolves*1, subject to not causing harmful interference to fixed and mobile services;

***Reasons:*** *To apply pfd limits to protect fixed and mobile services and to provide transition measures for EESS (space-to-Earth) and MetSat (space-to-Earth).*

SUP B, CAN, USA, MEX/1.3/9

RESOLUTION 766 (WRC-15)

Consideration of possible upgrading of the secondary allocation to the meteorological-satellite service (space-to-Earth) to primary
status and a primary allocation to the Earth exploration-
satellite service (space-to-Earth) in the
frequency band 460-470 MHz

***Reasons:*** *Consequential change.*

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