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| **World Radiocommunication Conference (WRC-15)Geneva, 2–27 November 2015** |  |
| **INTERNATIONAL TELECOMMUNICATION UNION** |  |
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| PLENARY MEETING | **Addendum 11 toDocument 130-E** |
|  | **16 October 2015** |
|  | **Original: English** |
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| Angola (Republic of)/Botswana (Republic of)/Lesotho (Kingdom of)/Madagascar (Republic of)/Malawi/Mauritius (Republic of)/Mozambique (Republic of)/Namibia (Republic of)/Democratic Republic of the Congo/Seychelles (Republic of)/South Africa (Republic of)/Swaziland (Kingdom of)/Tanzania (United Republic of)/Zambia (Republic of)/Zimbabwe (Republic of) |
| Proposals for the work of the conference |
|  |
| Agenda item 1.11 |

1.11to consider a primary allocation for the Earth exploration-satellite service (Earth-to-space) in the 7-8 GHz range, in accordance with Resolution **650 (WRC‑12)**;

Introduction

WRC-15 agenda item 1.11 calls for providing a worldwide primary allocation to the EESS (Earth-to-space) in the frequency range 7-8 GHz with priority to the frequency band 7 145-7 235 MHz, in accordance with Resolution 650 (WRC-12). Resolution 650 (WRC-12) invites ITU-R to conduct a study of spectrum requirements in the 7-8 GHz frequency range for EESS (Earth-to-space) telecommand operations in order to complement telemetry operations of EESS (space-to-Earth) in the 8 025-8 400 MHz frequency band and to conduct compatibility studies between EESS (Earth-to-space) systems and existing services, with priority to the frequency band 7 145-7 235 MHz, and then within other portions of the 7-8 GHz frequency range only if the frequency band 7 145‑7 235 MHz is found not to be suitable. ITU-R studies indicate that sharing is feasible with all the allocated services in the frequency range 7 190-7 250 MHz subject to the relevant regulatory provisions.

The frequency range 7-8 GHz is extensively used for the provision of fixed services within the Southern African Development Community (SADC) Member States. In particular, this frequency range is utilized for point-to-point links. It is therefore imperative that future allocations in the 7‑8 GHz frequency range do not adversely affect existing and planned terrestrial services.

Proposal

The SADC Member States support Method A of the CPM Report, which proposes to add a global primary allocation to the EESS (Earth-to-space), in the frequency band 7 190-7 250 MHz in the Table of Frequency Allocations in RR Article 5 and to include a provision with regard to this allocation for the modification of RR footnote No. 5.460 in order to indicate that geostationary EESS systems shall not claim protection from existing and future stations of the FS and the MS, that RR No. 5.43A does not apply and that EESS usage is restricted to TT&C for spacecraft operations. For the SOS, the obtaining of agreement under RR No. 9.21 (see RR No. 5.459) with regard to the EESS (Earth-to-space) is not applied. Additionally, Table 7b in RR Appendix 7 is modified to include the EESS (Earth-to-space) allocation, and

Table 21-3 in RR Article 21 is modified to extend the frequency range 7 190-7 235 MHz to 7 190‑7 250 MHz.

Resolution 650 (WRC-12) would be consequentially suppressed.

**Reasons:** A new EESS (Earth-to-space) allocation of 60 MHz is permitted, while satisfying the requirements of protecting existing and planned terrestrial services.

ARTICLE 5

Frequency allocations

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

MOD AGL/BOT/LSO/MDG/MWI/MAU/MOZ/NMB/COD/SEY/AFS/SWZ/TZA/ZMB/
ZWE/130A11/1

5 570-7 250 MHz

|  |
| --- |
| Allocation to services |
| Region 1 | Region 2 | Region 3 |
| 7 145-7 190 FIXED MOBILE SPACE RESEARCH (deep space) (Earth-to-space) 5.458 MOD 5.459 |
| 7 190-7 235 EARTH EXPLORATION-SATELLITE (Earth-to-space) ADD 5.A111 FIXED MOBILE SPACE RESEARCH (Earth-to-space) MOD 5.460 5.458 MOD 5.459 |
| 7 235-7 250 EARTH EXPLORATION-SATELLITE (Earth-to-space) ADD 5.A111 FIXED MOBILE 5.458 |

MOD AGL/BOT/LSO/MDG/MWI/MAU/MOZ/NMB/COD/SEY/AFS/SWZ/TZA/ZMB/
ZWE/130A11/2

5.459 *Additional allocation:*in the Russian Federation, the frequency bands 7 100‑7 155 MHz and 7 190-7 235 MHz are also allocated to the space operation service (Earth‑to‑space) on a primary basis, subject to agreement obtained under No. **9.21**.  Inthe frequency band 7 190‑7 235 MHz, obtaining agreement under No. **9.21** with respect to the Earth exploration-satellite service (Earth-to-space) is not applied.   (WRC-15)

**Reasons:** In the frequency band 7 190-7 235 MHz RR No. 9.21 is applied to the space operation service in order to provide protection for the existing radio services and shall not be applied with respect to a new service (the EESS) not to impose new constraints on the existing radio service.

MOD AGL/BOT/LSO/MDG/MWI/MAU/MOZ/NMB/COD/SEY/AFS/SWZ/TZA/ZMB/
ZWE/130A11/3

5.460 No emissions to spacecraft operating in deep space shall be effected in the frequency band 7 190-7 235 MHz. Geostationary satellites in the space research service operating in the frequency band 7 190-7 235 MHz shall not claim protection from existing and future stations of the fixed and mobile services and No. 5.43Adoes not apply.     (WRC-15)

**Reasons:** Deletion of first sentence as consequential changes. Addition of words “spacecraft operating in” to be more precise.

ADD AGL/BOT/LSO/MDG/MWI/MAU/MOZ/NMB/COD/SEY/AFS/SWZ/TZA/ZMB/
ZWE/130A11/4

5.A111 The usage of the frequency band 7 190-7 250 MHz by the Earth exploration-satellite service shall be limited to tracking, telemetry and command for the operation of the spacecraft and that Earth exploration-satellite service geostationary satellites in this frequency band, shall not claim protection from existing and future stations of the fixed and mobile services and No. **5.43A** does not apply.     (WRC‑15)

**Reasons:** To provide a new allocation to the EESS (Earth-to-space) in the frequency band 7 190‑7 250 MHz. The TT&C function could be implemented by pairing this new allocation with the already existing EESS (space-to-Earth) allocation in the frequency band 8 025-8 400 MHz. It restricts the usage of the frequency band 7 190-7 250 MHz to the operation of the EESS spacecraft, because the aim for the Resolution 650 (WRC-12**)** is to obtain a new allocation in the frequency range 7-8 GHz for the TT&C operations and no studies regarding other purpose except for TT&C function have been performed. If there were no restriction, this new allocation might be used for other purposes (e.g. data dissemination).

SUP AGL/BOT/LSO/MDG/MWI/MAU/MOZ/NMB/COD/SEY/AFS/SWZ/TZA/ZMB/
ZWE/130A11/5

RESOLUTION 650 (WRC‑12)

Allocation for the Earth exploration-satellite service
(Earth-to-space) in the 7-8 GHz range

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

MOD AGL/BOT/LSO/MDG/MWI/MAU/MOZ/NMB/COD/SEY/AFS/SWZ/TZA/ZMB/
ZWE/130A11/6

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 AGL/BOT/LSO/MDG/MWI/MAU/MOZ/NMB/COD/SEY/AFS/SWZ/TZA/ZMB/ZWE/130A11/7

TABLE 7b    (Rev.WRC‑15)

Parameters required for the determination of coordination distance for a transmitting earth station

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Transmitting space radiocommunication service designation | Fixed-satellite,mobile-satellite | Aero-nautical mobile-satellite (R) service | Aero-nautical mobile-satellite (R) service | Fixed-satellite | Fixed-satellite | Fixed-satellite | Fixed-satellite | Earth exploration-satellite, space operation,space research | Fixed-satellite,mobile-satellite,meteorological- satellite | Fixed-satellite | Fixed-satellite | Fixed-satellite | Fixed-satellite 3 | Fixed-satellite | Fixed-satellite 3 |
| Frequency bands (GHz) | 2.655-2.690 | 5.030-5.091 | 5.030-5.091 | 5.091-5.150 | 5.091-5.150 | 5.725-5.850 | 5.725-7.075 | 7.100-7.250 5 | 7.900-8.400 | 10.7-11.7 | 12.5-14.8 | 13.75-14.3 | 15.43-15.65 | 17.7-18.4 | 19.3-19.7 |
| Receiving terrestrialservice designations | Fixed,mobile | Aeronautical radio-navigation | Aeronautical mobile (R) | Aeronautical radio-navigation | Aeronautical mobile (R) | Radiolocation | Fixed, mobile | Fixed, mobile | Fixed, mobile | Fixed, mobile | Fixed, mobile | Radiolocation radionavigation (land only) | Aeronautical radionavigation | Fixed, mobile | Fixed, mobile |
| Method to be used | § 2.1 | § 2.1, § 2.2 | § 2.1, § 2.2 |  |  | § 2.1 | § 2.1 | § 2.1, § 2.2 | § 2.1 | § 2.1 | § 2.1, § 2.2 | § 2.1 |  | § 2.1, § 2.2 | § 2.2 |
| Modulation at terrestrial station 1 | A |  |  |  |  |  | A | N | A | N | A | N | A | N | A | N | − |  | N | N |
| Terrestrial station interference parameters and criteria | *p0* (%) | 0.01 |  |  |  |  |  | 0.01 | 0.005 | 0.01 | 0.005 | 0.01 | 0.005 | 0.01 | 0.005 | 0.01 | 0.005 | 0.01 |  | 0.005 | 0.005 |
| *n* | 2 |  |  |  |  |  | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 1 |  | 2 | 2 |
| *p* (%) | 0.005 |  |  |  |  |  | 0.005 | 0.0025 | 0.005 | 0.0025 | 0.005 | 0.0025 | 0.005 | 0.0025 | 0.005 | 0.0025 | 0.01 |  | 0.0025 | 0.0025 |
| *NL* (dB) | 0 |  |  |  |  |  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 |
| *Ms* (dB) | 26 2 |  |  |  |  |  | 33 | 37 | 33 | 37 | 33 | 37 | 33 | 40 | 33 | 40 | 1 |  | 25 | 25 |
| *W* (dB) | 0 |  |  |  |  |  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 |
| Terrestrial station parameters | *Gx* (dBi) 4 | 49 2 | 6 | 10 | 6 | 6 |  | 46 | 46 | 46 | 46 | 46 | 46 | 50 | 50 | 52 | 52 | 36 |  | 48 | 48 |
| *Te* (K) | 500 2 |  |  |  |  |  | 750 | 750 | 750 | 750 | 750 | 750 | 1 500 | 1 100 | 1 500 | 1 100 | 2 636 |  | 1 100 | 1 100 |
| Reference bandwidth | *B* (Hz) | 4 × 103 | 150 × 103 | 37.5 × 103 | 150 × 103 | 106 |  | 4 × 103 | 106 | 4 × 103 | 106 | 4 × 103 | 106 | 4 × 103 | 106 | 4 × 103 | 106 | 107 |  | 106 | 106 |
| Permissible interference power | *Pr*( *p*) (dBW)in *B* | −140 | −160 | −157 | −160 | −143 |  | −131 | −103 | −131 | −103 | −131 | −103 | −128 | −98 | −128 | −98 | −131 |  | −113 | −113 |

1 A: analogue modulation; N: digital modulation.

2 The parameters for the terrestrial station associated with transhorizon systems have been used. Line-of-sight radio-relay parameters associated with the frequency band 5 725‑7 075 MHz may also be used to determine a supplementary contour with the exception that *Gx* = 37 dBi.

3 Feeder links of non-geostationary-satellite systems in the mobile‑satellite service.

4 Feeder losses are not included.

5 Actual frequency bands are 7 190-7 250 MHz for the Earth exploration-satellite service, 7 100-7 155 MHz and 7 190-7 235 MHz for the space operation service and 7 145-7 235 MHz for the space research service.     (WRC-15)

**Reasons:** Consequential changes as a result of including the new allocation to the EESS (Earth-to-space) in Appendix7, Table 7b (Parameters required for the determination of coordination distance for a transmitting earth station).

ARTICLE 21

Terrestrial and space services sharing frequency bands above 1 GHz

Section III − Power limits for earth stations

MOD AGL/BOT/LSO/MDG/MWI/MAU/MOZ/NMB/COD/SEY/AFS/SWZ/TZA/ZMB/
ZWE/130A11/8

TABLE **21-3**     (Rev.WRC‑15)

|  |  |
| --- | --- |
| Frequency band | Services |
| 2 025-2 110 MHz5 670-5 725 MHz5 725-5 755 MHz6 | (for the countries listed in No. 5.454 with respect to the countries listed in Nos. 5.453 and 5.455)(for Region 1 with respect to the countries listed in Nos. 5.453 and 5.455) | Earth-exploration-satelliteFixed-satelliteMeteorological-satelliteMobile-satelliteSpace operation |
| 5 755-5 850 MHz6 | (for Region 1 with respect to the countries listed in Nos. 5.453, 5.455 and 5.456) | Space research |
| 5 850-7 075 MHz |  |  |
| 7 190-7 250 MHz |  |  |
| 7 900-8 400 MHz |  |  |
| 10.7-11.7 GHz6 | (for Region 1) |  |
| 12.5-12.75 GHz6 | (for Region 1 with respect to the countries listed in No. 5.494) |  |
| 12.7-12.75 GHz6  | (for Region 2) |  |
| 12.75-13.25 GHz |  |  |
| 14.0-14.25 GHz  | (with respect to the countries listed in No. 5.505) |  |
| 14.25-14.3 GHz  | (with respect to the countries listed inNos. 5.505, 5.508 and 5.509) |  |
| 14.3-14.4 GHz6 | (for Regions 1 and 3) |  |
| 14.4-14.8 GHz |  |  |
| ... |  |  |

**Reasons:** Consequential changes as a result of considering the new allocation to the Earth exploration-satellite service (Earth-to-space) the 7 190-7 250 MHz frequency band.

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