|  |  |
| --- | --- |
| **World Radiocommunication Conference (WRC-19)Sharm el-Sheikh, Egypt, 28 October – 22 November 2019** |  |
|  |  |
|  |  |
| PLENARY MEETING | **Addendum 7 toDocument 12-E** |
|  | **7 October 2019** |
|  | **Original: Russian** |
|  |
| Regional Commonwealth in the field of Communications Common Proposals |
| Proposals for the work of the conference |
|  |
| Agenda item 1.7 |

1.7 to study the spectrum needs for telemetry, tracking and command in the space operation service for non-GSO satellites with short duration missions, to assess the suitability of existing allocations to the space operation service and, if necessary, to consider new allocations, in accordance with Resolution **659 (WRC-15)**;

Introduction

The RCC Administrations consider that when using existing or new frequency band allocations to the space operation service (SOS) in the range below 1 GHz for telemetry, tracking and command links of non-GSO satellites with short duration missions, protection shall be ensured to the incumbent services in the co-frequency and adjacent frequency bands.

The RCC Administrations do not oppose using existing allocations to SOS in the frequency band 137-138 MHz (space-to-Earth) for telemetry links of non-GSO satellites with short duration missions without application of RR No. **9.11А** subject to the application for SOS of the pfd limit specified for MSS in this band in RR Appendix **5**.

The RCC Administrations oppose the identification of spectrum for command and tracking links of non-GSO satellites with short duration missions in the frequency bands 148-174.0 MHz (Earth-to-space) and 403-410 MHz (Earth-to-space), as ITU-R studies have identified difficulties in regard to their sharing with existing radio services.

Proposal

In order to address WRC-19 agenda item 1.7, it is proposed to use the regulatory text in annex hereto.

ANNEX

ARTICLE 5

Frequency allocations

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

MOD RCC/12A7/1#50217

75.2-137.175 MHz

|  |
| --- |
| Allocation to services |
| Region 1 | Region 2 | Region 3 |
| 137-137.025 SPACE OPERATION (space-to-Earth) ADD 5.C17 METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) 5.208A 5.208B 5.209 SPACE RESEARCH (space-to-Earth) Fixed Mobile except aeronautical mobile (R) 5.204 5.205 5.206 5.207 5.208 |
| 137.025-137.175 SPACE OPERATION (space-to-Earth) ADD 5.C17 METEOROLOGICAL-SATELLITE (space-to-Earth) SPACE RESEARCH (space-to-Earth) Fixed Mobile except aeronautical mobile (R) Mobile-satellite (space-to-Earth) 5.208A 5.208B 5.209 5.204 5.205 5.206 5.207 5.208 |

MOD RCC/12A7/2#50219

137.175-148 MHz

|  |
| --- |
| Allocation to services |
| Region 1 | Region 2 | Region 3 |
| 137.175-137.825 SPACE OPERATION (space-to-Earth) ADD 5.C17 METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) 5.208A 5.208B 5.209 SPACE RESEARCH (space-to-Earth) Fixed Mobile except aeronautical mobile (R) 5.204 5.205 5.206 5.207 5.208 |
| 137.825-138 SPACE OPERATION (space-to-Earth) ADD 5.C17 METEOROLOGICAL-SATELLITE (space-to-Earth) SPACE RESEARCH (space-to-Earth) Fixed Mobile except aeronautical mobile (R) Mobile-satellite (space-to-Earth) 5.208A 5.208B 5.209 5.204 5.205 5.206 5.207 5.208 |

ADD RCC/12A7/3

5.C17 The frequency band 137-138 MHz may be used in the space operation service (space-to-Earth) for the telemetry and tracking links of non-GSO satellites with short duration missions. Resolution **[RCС/A17‑METHOD-C] (WRC-19)** applies.     (WRC-19)

**Reasons:** Studies have shown that the frequency band 137-138 MHz in the SOS (space-to-Earth) is the most suitable for telemetry and tracking links of non-GSO satellites with short duration missions under certain conditions. Changes are made to the Table of Frequency Allocations in the Radio Regulations to reflect this.

NOC RCC/12A7/4

148-161.9375 MHz

|  |
| --- |
| Allocation to services |
| Region 1 | Region 2 | Region 3 |
| 148-149.9FIXEDMOBILE except aeronauticalmobile (R)MOBILE-SATELLITE(Earth-to-space) 5.209 | 148-149.9 FIXED MOBILE MOBILE-SATELLITE (Earth-to-space) 5.209 |
| 5.218 5.219 5.221 |  5.218 5.219 5.221 |
| 149.9-150.05 MOBILE-SATELLITE (Earth-to-space) 5.209 5.220 |
| 150.05-153FIXEDMOBILE except aeronauticalmobileRADIO ASTRONOMY5.149 | 150.05-154 FIXED MOBILE |
| 153-154FIXEDMOBILE except aeronauticalmobile (R)Meteorological aids |  5.225 |
| 154-156.4875FIXEDMOBILE except aeronauticalmobile (R)5.225A 5.226  | 154-156.4875FIXEDMOBILE5.226 | 154-156.4875FIXEDMOBILE5.225A 5.226  |
| 156.4875-156.5625 MARITIME MOBILE (distress and calling via DSC) 5.111 5.226 5.227 |
| 156.5625-156.7625FIXEDMOBILE except aeronauticalmobile (R) | 156.5625-156.7625  FIXED MOBILE |
| 5.226 |  5.226 |
| 156.7625-156.7875MARITIME MOBILEMobile-satellite (Earth-to-space) | 156.7625-156.7875MARITIME MOBILEMOBILE-SATELLITE (Earth-to-space) | 156.7625-156.7875MARITIME MOBILEMobile-satellite (Earth-to-space) |
| 5.111 5.226 5.228 | 5.111 5.226 5.228 | 5.111 5.226 5.228 |
| 156.7875-156.8125 MARITIME MOBILE (distress and calling) 5.111 5.226 |
| 156.8125-156.8375MARITIME MOBILEMobile-satellite (Earth-to-space) | 156.8125-156.8375MARITIME MOBILEMOBILE-SATELLITE (Earth-to-space) | 156.8125-156.8375MARITIME MOBILEMobile-satellite (Earth-to-space) |
| 5.111 5.226 5.228 | 5.111 5.226 5.228 | 5.111 5.226 5.228 |
| 156.8375-161.9375FIXEDMOBILE except aeronauticalmobile | 156.8375-161.9375 FIXED MOBILE |
| 5.226 |  5.226 |

**Reasons:** It is necessary to retain the current use of the band 148-161.9375 MHz owing to a deterioration in compatibility conditions with existing radio services.

NOC RCC/12A7/5

161.9375-223 MHz

|  |
| --- |
| Allocation to services |
| Region 1 | Region 2 | Region 3 |
| 161.9375-**161.9625**FIXEDMOBILE except aeronauticalmobileMaritime mobile-satellite (Earth-to-space) 5.228AA | 161.9375-**161.9625** FIXED MOBILE Maritime mobile-satellite (Earth-to-space) 5.228AA |
| 5.226 |  5.226 |
| 161.9625-161.9875FIXEDMOBILE except aeronauticalmobileMobile-satellite (Earth-to-space) 5.228F | 161.9625-161.9875AERONAUTICAL MOBILE (OR)MARITIME MOBILEMOBILE-SATELITE (Earth-to-space) | 161.9625-161.9875MARITIME MOBILEAeronautical mobile (OR) 5.228EMobile-satellite (Earth-to-space) 5.228F |
| 5.226 5.228A 5.228B | 5.228C 5.228D | 5.226 |
| **161.9875-162.0125**FIXEDMOBILE except aeronauticalmobileMaritime mobile-satellite (Earth-to-space) 5.228AA | **161.9875-162.0125** FIXED MOBILE Maritime mobile-satellite (Earth-to-space) 5.228AA  |
| 5.226 5.229 |  5.226 |
| 162.0125-162.0375FIXEDMOBILE except aeronauticalmobileMobile-satellite (Earth-to-space) 5.228F | 162.0125-162.0375AERONAUTICAL MOBILE (OR)MARITIME MOBILEMOBILE-SATELITE (Earth-to-space) | 162.0125-162.0375MARITIME MOBILEAeronautical mobile (OR) 5.228EMobile-satellite (Earth-to-space) 5.228F |
| 5.226 5.228A 5.228B 5.229 | 5.228C 5.228D | 5.226 |
| 162.0375-174FIXEDMOBILE except aeronauticalmobile | 162.0375-174 FIXED MOBILE |
| 5.226 5.229 |  5.226 5.230 5.231 |

**Reasons:** It is necessary to retain the current use of the band 161.9375-174 MHz owing to a possible deterioration in compatibility conditions with existing radio services.

NOC RCC/12A7/6

335.4-410 MHz

|  |
| --- |
| Allocation to services |
| Region 1 | Region 2 | Region 3 |
| 403-406 METEOROLOGICAL AIDS Fixed Mobile except aeronautical mobile5.265 |

**Reasons:** It is necessary to retain the current use of the band 403-406 MHz owing to compatibility problems with stations in the meteorological aids service.

ADD RCC/12A7/7#50222

Draft New Resolution [RCC/A17-METHOD-C] (WRC-19)

Frequency bands used for the telemetry and tracking links of non‑GSO satellites with short duration missions

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

considering

*a)* that the term “short duration mission” used in this Resolution refers to a mission having a limited period of validity of not more than three years;

*b)* that telemetry and tracking and links for non-GSO satellites with short duration missions fall under the space operation service;

*c)* that these satellites are constrained in terms of low on-board power and low antenna gain;

*d)* that No. **5.C17** identifies the band 137-138 MHz (space-to-Earth) for such applications;

*e)* that ITU‑R studies have indicated that frequency bands other than those mentioned in *considering d)* allocated to the space operation service below 1 GHz are not suitable for such applications,

invites administrations

to use the BR software in order to check the SOS pfd values mentioned in *resolves* 2,

resolves

1 that administrations wishing to implement telemetry and tracking links for non-GSO satellites with short duration missions may use the band referred to in *considering d)* above;

2 that in the band 137-138 MHz (space-to-Earth), space stations of space operation service shall not exceed pfd value −140 dB(W/(m2 ⋅ 4 kHz)), except in cases when another value was coordinated. If this level is exceeded, No. **9.11A** applies for networks or systems within the SOS in this band;

3 that the use of the band137-138 MHz (space-to-Earth) for non-GSO satellites in the space operation service with short duration missions does not establish priority in the Radio Regulations and does not preclude the use of that band for any application of the services to which they are allocated;

instructs the BR

in applying *resolves* 1 at the notification stage, to check conformity with the pfd value contained herein during its examination under No. **11.31**: if the value is met, the finding shall be favourable; if the value is exceeded, the Bureau shall check whether a coordination request under No. **9.11A** has previously been sent for this satellite or otherwise issue an unfavourable finding under No. **11.32**.

**Reasons:** This Resolution identifies the conditions under which the frequency band 137-138 MHz in the SOS may be used for the telemetry links of non-GSO satellites with short duration missions.

APPENDIX 5 (REV.WRC‑15)

Identification of administrations with which coordination is to be effected or
agreement sought under the provisions of Article 9

MOD RCC/12A7/8#50223

TABLE 5-1 (*continued*)     (Rev.WRC‑19)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| ReferenceofArticle 9 | Case | Frequency bands (and Region) of the service for which coordination is sought | Threshold/condition | Calculation method | Remarks |
| No. **9.13**GSO/non‑GSO | A station in a GSO satellite network in the frequency bands for which a footnote refers to No. **9.11A** or No. **9.13**, in respect of any other non-GSO satellite network, with the exception of coordination between earth stations operating in the opposite direction of transmission | Frequency bands for which a footnote refers to No. **9.11A** or No. **9.13** | 1) Bandwidths overlap2) For the band 1 668-1 668.4 MHz with respect to MSS network coordination with SRS (passive) networks, in addition to bandwidth overlap, the e.i.r.p. spectral density of mobile earth stations in a GSO network of the mobile-satellite service operating in this band exceeds −2.5 dB(W/4 kHz) or the power spectral density delivered to the mobile earth station antenna exceeds −10 dB(W/4 kHz) | 1) Check by using the assigned frequencies and bandwidths2) Check by using MSS network Appendix **4** data |  |
| No. **9.14**Non-GSO/terrestrial, GSO/terrestrial | A space station in a satellite network in the frequency bands for which a footnote refers to No. **9.11A** or to No. **9.14**, in respect of stations of terrestrial services where threshold(s) is (are) exceeded | 1) Frequency bands for which a footnote refers to No. **9.11A**; or2) 11.7-12.2 GHz (Region 2 GSO FSS)3) 5 030-5 091 MHz4) 137-138 MHz (SOS, space-to-Earth) | 1) See § 1 of Annex 1 to this Appendix; In the bands specified in No. **5.414A**, the detailed conditions for the application of No. **9.14** are provided in No. **5.414A** for MSS networks or2) In the band 11.7-12.2 GHz (Region 2 GSO FSS):−124 dB(W/(m2 · MHz)) for 0° ≤ θ ≤ 5°−124 + 0.5 (θ – 5) dB(W/(m2 · MHz))for 5° < θ ≤ 25°−114 dB(W/(m2 · MHz)) for θ > 25°where θ is the angle of arrival of the incident wave above the horizontal plane (degrees)3) Bandwidth overlap4) In the band 137-138 MHz (SOS): −140 dB (W/(m2 ⋅ 4 kHz)) | 1) See § 1 of Annex 1 to this Appendix |  |

**Reasons:** It is necessary to add to Appendix **5** of the Radio Regulations the conditions in which coordination under RR No. **9.11A** shall not apply in the band 137-138 MHz for the telemetry, tracking and command links of non-GSO satellites with short duration missions.

SUP RCC/12A7/9#50216

RESOLUTION 659 (WRC‑15)

Studies to accommodate requirements in the space operation service for
non-geostationary satellites with short duration missions

**Reasons:** Once the modifications presented above have been incorporated in the Radio Regulations, Resolution **659 (WRC-15)** will become superfluous.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_