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| APTlogogreen3 | ASIA-PACIFIC TELECOMMUNITY | **Document:** |
| **The 2nd Meeting of the APT Conference Preparatory Group for WRC-19 (APG19-2)** | **APG19-2/OUT-39 (Rev.1)** |
| 17 – 21 July 2017, Bali, Republic of Indonesia | **21 July 2017** |

Working Party 4

**PRELIMINARY VIEWs on WRC-19 agenda item 1.7**

**Agenda Item 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)****;*

**1. Background**

The need for more spectrum dedicated to telemetry, tracking and command (TT&C) requirement, particularly for small satellites operating in non-geostationary orbit (non-GSO), was considered at WRC-15.

Resolution **659 (WRC-15)** calls to study the spectrum needs for telemetry, tracking and command in the space operation service for NGSO satellites with short duration missions, to assess the suitability of existing allocations to the space operation service and, if necessary, to consider new allocations. Typical short duration missions are understood in this context to have a maximum lifetime of three years.

Resolution **659** **(WRC-15)** invites ITU-R:

1 to study the spectrum requirements for telemetry, tracking and command in the space operation service for the growing number of non-GSO satellites with short duration missions, taking into account RR No. **1.23**;

2 to assess the suitability of existing allocations to the space operation service in the frequency range below 1 GHz, taking into account current use and that the existing allocations to the space operation service below 1 GHz, where RR No. **9.21** applies, are not suitable for non-GSO satellites with short duration missions.

3 if studies of the current allocations to the space operations service indicate that requirements cannot be met under *invites ITU-R* 1 and 2, to conduct sharing and compatibility studies, and study mitigation techniques to protect the incumbent services, both in-band as well as in adjacent bands, in order to consider possible new allocations or an upgrade of the existing allocations to the space operation service within the frequency ranges 150.05-174 MHz and 400.15‑420MHz.

**Recent ITU-R developments**

A working document towards a preliminary draft new Report ITU-R SA.[SHORT DURATION NGSO] was developed in the April 2016 meetings of WP 7B which compiled elements related to background on WRC-19 agenda item **1.7**. At the subsequent October 2016 meetings of WP 7B, the working document was split into three separate PDN Reports in the interest of improving document clarity and work efficiency. At the April 2017 meetings of WP 7B, output documents were produced: four draft Reports and the draft CPM Text as follows:

1. PDN Report ITU-R SA.[SHORT DURATION NGSO – CHARACTERISTICS] (see [Annex 7 to Doc. 7B/170](https://www.itu.int/dms_ties/itu-r/md/15/wp7b/c/R15-WP7B-C-0170!N07!MSW-E.docx)).
2. PDN Report ITU-R SA.[SHORT DURATION NGSO – REQUIREMENTS] (see [Annex 8 to Doc. 7B/170](https://www.itu.int/dms_ties/itu-r/md/15/wp7b/c/R15-WP7B-C-0170!N08!MSW-E.docx)).
3. WD to PDN Report ITU-R SA.[SHORT DURATION NGSO – SHARING STUDIES] (see [Annex 9 to Doc. 7B/170](https://www.itu.int/dms_ties/itu-r/md/15/wp7b/c/R15-WP7B-C-0170!N09!MSW-E.docx)).

The current version of the WD on sharing studies has not identified any frequency bands in which sharing of SOS with existing services is considered clearly feasible.

1. WD to PDN Report ITU-R SA.[SHORT DURATION NGSO - SHARING] (be incorporated into 3)) (see [Annex 20 to Doc. 7B/170](https://www.itu.int/dms_ties/itu-r/md/15/wp7b/c/R15-WP7B-C-0170!N20!MSW-E.docx)).
2. Draft CPM text (see [Annex 5 to Doc. 7B/170](https://www.itu.int/dms_ties/itu-r/md/15/wp7b/c/R15-WP7B-C-0170!N05!MSW-E.docx)).

**2. Documents**

* Input Documents APG19-2/INP-11 (KOR), APG19-2/INP-23 (NZL), APG19-2/INP-31 (AUS), APG19-2/INP-37 (IRN), APG19-2/INP-42 (INS), APG19-2/INP-47 (VTN), APG19-2/INP-52 (CHN), APG19-2/INP-58 (J) APG19-2/INP-67 (THA).
* Information Documents APG19-2/INF-02 (ICAO), APG19-2/INF-04 (CITEL),   
  APG19-2/INF-05 (RCC), APG19-2/INF-06 (IARU), APG19-2/INF-07 (ATU),   
  APG19-2/INF-14 (CEPT).

**3. Summary of Discussions**

**3.1 Summary of Members’ Preliminary Views**

**3.1.1 Korea (Republic of)**

* Frequency bands used by Global Maritime Distress and Safety System (GMDSS) included in Appendix **15** of RR should be protected and not be allocated to the space operation service for Non-GSO satellites with short duration missions.

**3.1.2 New Zealand**

* In New Zealand, the band 150.05-174 MHz is largely allocated to fixed and mobile services on a co-primary basis, with some sub-bands allocated exclusively to maritime mobile (in accordance with Appendix **18** of the Radio Regulations). The band 400.15-403 MHz is largely allocated to meteorological aids service for usages including radiosondes and data collection system.
* Supports the ITU-R studies undertaken in accordance with Resolution **659** (**WRC-15**). New Zealand considers that the existing allocation to space operation service in the band 148-149.9 MHz (RR No. **5.218**) could address the immediate TT&C demand for non-GSO satellites with short duration missions.
* If the ITU-R studies indicate that requirement cannot be met within existing allocations, New Zealand’s preference is to consider possible new allocation to space operation service within the frequency range 400.15-420 MHz. New Zealand is also of the view that the following frequency ranges should not be considered:
* Maritime mobile VHF radiocommunication in the frequency ranges 156-157.45 MHz, 160.6-160.975 MHz and 161.475-162.05 MHz, in accordance with RR No. **5.226** and Appendix **18** (**Rev. WRC-15**); and
* Mobile-satellite service in the frequency range 406-406.1 MHz that is dedicated for satellite emergency position-indicating radio beacons, in accordance with Resolution **205** (**Rev. WRC-15**).

**3.1.3 Australia**

* Support ITU-R studies.
* Should current allocations below 1 GHz be found to not meet requirements, Australia would consider ITU-R studies of possible new allocations or an upgrade of the existing SOS allocations within the frequency ranges 150.05-174 MHz and 400.15-420 MHz as identified in *invites* ITU-R 3 of Resolution **659** (**WRC-15**).
* Any changes to the Radio Regulations will be dependent on satisfactory results of ITU-R sharing and compatibility studies and studies into possible mitigation techniques to protect incumbent services, both in-band as well as in adjacent bands.

**3.1.4 Iran (Islamic Republic of)**

* May agree additional allocations or upgrades of existing allocations to the space operation service for short duration mission satellites provided that:
* ITU-R Studies of spectrum requirements for short duration NGSO systems show the need for additional allocations or upgrades of existing allocations.
* New allocations or upgrades of existing allocations to the space operation service could be applied provided that no unacceptable constrains is caused (or is placed) to the incumbent services (existing systems/ applications) and their future development.
* Consideration of the frequency band 406-406.1 MHz, used by the COSPAS-SARSAT system for safety of life purposes, should be excluded (note RR Nos. **5.226**, **5.267** and Resolution **205** (**WRC-15**)).

**3.1.5 Indonesia (Republic Of)**

* Support study the spectrum requirements by non-GSO satellite mission of short duration for telemetry, tracking and command of the space operation service in the frequency range below 1 GHz, while taking into account the existing allocations and current use.

**3.1.6 Viet Nam (Socialist Republic of)**

* Support studies that are on-going on the spectrum needs for telemetry, tracking and command in the space operation service for non-GSO satellites with short duration missions.
* No support to study and furthermore consider the band 406–406.1 MHz for TT&C in the space operation service for non-GSO satellites with short duration missions.

**3.1.7 China (People’s Republic of)**

* As the number of non-GSO satellites for short duration missions is growing at a fast rate, China supports the studies in ITU-R WP 7B on this Agenda item.
* If the studies show that sharing and compatibility, both in-band and out-of-band, is feasible with existing services and systems, China supports to satisfy the additional spectrum requirements by possible new allocations or an upgrade of the existing allocations to the SOS on a primary basis in accordance with Resolution **659** (**WRC-15**).

**3.1.8 Japan**

* The current version of the WD on sharing studies has not identified any frequency bands in which sharing of SOS with existing services is considered clearly feasible.
* Appropriate protection of existing services is necessary.

**3.1.9 Thailand**

* Support studies currently undertaken by ITU-R Working Party 7B. Nevertheless, there exist a concern on sharing between existing services (meteorological aids service) and the upgrade of existing SOS allocations. The Royal Thai Navy and the Thai Meteorological Department use radiosonde for weather forecast which operate in frequency 403 MHz with 20 kHz bandwidth. Thailand is of the view that these usages must be protected from the possible upgrades of existing SOS allocations.
* Further encourages APT Member countries that operate radiosonde in the same band submit its technical characteristics to WP 7B to ensure the protection of existing radiosonde.

**3.2 Key points raised during the meeting**

* The studies are not yet completed within ITU-R Working Party 7B.

**4. APT Preliminary View(s)**

APT Members are of the view that:

* ITU-R studies should be continued in accordance with Resolution **659** (**WRC-15**).
* Protection of existing services is necessary and any new allocations or upgrades of existing allocations to the space operation service could be applied without any constraint to the incumbent services and their future development.
* The following frequency ranges should not be considered:
* Maritime mobile VHF radiocommunication in the frequency ranges 156-157.45 MHz, 160.6-160.975 MHz and 161.475-162.05 MHz, in accordance with RR No. **5.226** and Appendix **18** (**Rev. WRC-15**)**.**
* The frequency range 406-406.1 MHz that is dedicated for satellite emergency position-indicating radio beacons, in accordance with Resolution **205** (**Rev. WRC-15**); and
* Frequency bands used by Global Maritime Distress and Safety System (GMDSS) included in Appendix **15** of RR.

**5. Other Views**

None

**6. Views from Other Organisations**

**6.1 CEPT**

* CEPT supports additional allocations or upgrades of existing allocations to the space  
  operation service for short duration mission satellites provided that:

• Studies of spectrum requirements are based on satellite missions planned and constellation development.

• Studies of spectrum requirements show the need for additional allocations or upgrades of existing allocations.

• Studies show compatibility with existing services.

* CEPT recognises that studies with regard to the bands 399.9-400.05 MHz and 401-403 MHz, if any, will have to take into account the considerations under Agenda item **1.2**.
* CEPT recognises that all allocations to the space operation service in the Earth-to-space direction below 1 GHz are subject to coordination under No. **9.21** and therefore not suitable for short duration NGSO satellites.
* CEPT is of the view that, before considering additional allocations to the space operation  
  service in the Earth-to-space direction, there may be a need to consider modifying the current regulatory situation in the existing allocations.
* CEPT is of the view that consideration of the frequency band 154-156 MHz as candidate for operation of non-GSO satellites with short duration missions is not feasible due to difficulties in sharing with the incumbent services (the radiolocation service).
* CEPT is of the view that any consideration of bands for use under this agenda item must exclude the 406-406.1 MHz COSPAS-SARSAT band as well as its adjacent 405.9-406 MHz and 406.1-406.2 MHz bands (see resolves 1, Resolution **205** (**WRC-15**)).

**6.2 CITEL**

**CAN**

* Subject to the outcome of the compatibility studies, Canada will consider supporting new allocations and an upgrade of the existing allocations to the space operation service within the frequency ranges 150.05-174 MHz and 400.15-420 MHz. Canada is of the view that frequency bands subject to No. **9.21** are not suitable for space operation service for satellites with small duration missions.

**6.3 RCC**

* The RCC Administrations consider that spectrum needs for telemetry, tracking and command in the space operation service for non-GSO satellites with short duration missions should be based on real plans for satellite constellation development, taking into account to be able to meet these needs by existing allocations to the space operation service and to the services where a space station is operated in the frequency bands below 1 GHz.
* The RCC Administrations consider that when using existing or new frequency allocations to the space operation service below 1 GHz (including frequency bands 150.05–174 MHz and 400.15−420 MHz) for the purpose to command non-GSO satellites with short duration missions, the protection shall be ensured to the incumbent services in the same and adjacent frequency bands.
* The RCC Administrations oppose using the frequency bands 150.05-174.0 MHz and 405.9-406.2 to command non-GSO satellites with short duration missions, since according to No 5.225А some countries of Region 1 have allocated the frequency band 154-156 MHz on a primary basis to the radiolocation service, and the frequency bands 156.000 -157.450 MHz, 160.600 -160.975 MHz, 161.475-162.050 MHz and 405.9-406.2 MHz are required for operation and protection of the GMDSS, and separate parts of the frequency band 150.05-174.0 MHz are intensively used in the territory of RCC Administrations for fixed and mobile services.

**6.4 ICAO:**

* To oppose consideration of possible allocation to the space operation service in the frequency range 405.9 ‒ 406.2 MHz unless agreed ITU-R studies have proven aviation use of the EPIRBs operating in the frequency band 406 ‒ 406.1 MHz is protected in accordance with Resolution **205** (**Rev. WRC-15**) and RR No. **5.267**.
* To oppose any new allocations to the space operations service in other frequency bands/ranges that could impact aviation systems unless agreed ITU-R studies have proven sharing and compatibility with those systems.
* To ensure that any change to the regulatory provisions and spectrum allocations resulting from this agenda item do not preclude the use of any particular allocations for space planes if the radiocommunication service is deemed appropriate for such use.

**6.5 IARU**

* The IARU supports satisfying the spectrum requirements for non-GSO satellites with short duration missions within the existing allocations for the space operation service or the frequency ranges identified in invites ITU-R 3 of Resolution 659 (WRC-15), unless the satellites are amateur satellites as defined in RR Nos. 1.56 and 1.57.

**7. Issues for Consideration at Next APG Meeting**

APT Members are encouraged to participate in and submit their contributions to WP 7B and future APG meetings.

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