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|  | ASIA-PACIFIC TELECOMMUNITY | Document No: |
| **The 6th Meeting of the APT Conference Preparatory****Group for WRC-23 (APG23-6)** | **APG23-6/OUT-26** |
| 14 – 19 August 2023, Brisbane, Australia | 18 August 2023 |

Working Party 3

**APT VIEW and Preliminary APT Common Proposal on WRC-23 agenda item 9.1 Topic D[[1]](#footnote-1)**

**Agenda Item 9.1 Topic d:**

*Protection of EESS (passive) in the frequency band 36-37 GHz from non-GSO FSS space stations;*

**1. Background**

At the twelfth plenary meeting of WRC-19, the following was included in the 2nd section of the Annex to [WRC-19 Document 535](https://www.itu.int/md/R16-WRC19-C-0535/en) (Plenary Decision).

Under studies considered for WRC-19 agenda item 1.6, a preliminary study on the protection of EESS (passive) sensors operating in the 36-37 GHz was submitted to the ITU-R. This preliminary study indicated that it may be necessary to not exceed an out-of-band e.i.r.p of −34 dBW/100 MHz, for all angles greater than 71.4 degrees from nadir, for non-geostationary-satellite orbit (non-GSO) FSS space stations operating in the frequency band 37.5-38 GHz. In addition, interference into the cold calibration channel of the EESS (passive) sensor operating in the frequency band 36-37 GHz has not been studied.

WRC-19 invited ITU-R to conduct further study of this topic and develop Recommendations and/or Reports, and report back to WRC-23 to take action, if necessary. ITU-R Working Party (WP) 7C has conducted its studies as a responsible group for the Topic accordingly.

At its recent meeting, ITU-R WP 7C developed the preliminary draft new (PDN) Report, and decided to carry forward the PDN Report to the next WP 7C meeting scheduled in October 2023. The PDN Report is attached to [Annex 23](https://www.itu.int/dms_ties/itu-r/md/19/wp7c/c/R19-WP7C-C-0459%21N23%21MSW-E.docx) to WP 7C Chairman’s Report, Document 7C/459. The meeting developed the draft CPM text for this Topic providing summary of ITU-R studies [Annex 24](https://www.itu.int/dms_ties/itu-r/md/19/wp7c/c/R19-WP7C-C-0459%21N24%21MSW-E.docx) to the Document 7C/459.

In the [CPM Report on the Agenda item 9.1 Topic d) of the CPM Report to WRC-23](https://www.itu.int/md/R19-CPM23.2-R-0001/en), two potential interference issues are presented based on the draft CPM text including summary of ITU-R studies as follows:

* With regard to the interference into the sensing channel of EESS (passive) from non-geostationary-satellite orbit (non-GSO) FSS constellations operating in the frequency band 37.5-38 GHz at a lower altitude than EESS (passive) sensors
* With regard to the interference into the cold calibration channel of EESS (passive) from non-GSO FSS constellations operating in the frequency band 37.5-38 GHz at a higher altitude than EESS (passive) sensors

**2. Documents**

* Input Documents APG23-6/INP-19 (IND), APG23-6/INP-36 (J), APG23-6/INP-60 (THA), APG23-6/INP-82 (AUS), APG23-6/INP-87 (KOR), APG23-6/INP-105 (CHN), APG23-6/INP-111 (MLA)
* Information Documents APG23-6/INF-45 (CEPT) APG23-6/INF-52 (CITEL), APG23-6/INF-44 (RCC)

**3. Summary of discussions**

**3.1 Summary of APT Members’ views**

**3.1.1 AUS** - **Document APG23-6/INP-82**

Australia supports the protection of EESS (passive) sensors, including cold-sky calibration, in the band 36–37 GHz from non-GSO FSS operations in the band 37.5–38 GHz. Australia supports an approach of implementing the conditions identified in the results of ITU-R studies conducted under this agenda item as regulatory provisions to protect EESS (passive) sensors.

Australia proposes a Preliminary APT Common Proposal as follows:



**3.1.2 CHN (People’s Republic of)** - **Document APG23-6/INP-105**

China supports the protection of EESS (passive) sensors, including cold-sky calibration, in the band 36–37 GHz from non-GSO FSS operations in the band 37.5–38 GHz, with an unwanted emission power density limit, as appropriate, based on the results of ITU-R studies.

China supports the protection of EESS (passive) sensors (including for the cold-sky calibration channel) in the band 36–37 GHz from non-GSO FSS operations in the band 37.5–38 GHz with an unwanted emission power density limit of −31 dBW/100 MHz. This limit would be applicable to non-GSO FSS constellations operating at altitudes above 407 km (minimum altitude of EESS (passive) sensors in this frequency band) and below 2 000 km (limited to LEO constellations).

* + 1. **IND (Republic of)** - **Document APG23-6/INP-19**

India supports the protection of EESS (passive) sensors, including cold-sky calibration, in the band 36–37 GHz from non-GSO FSS operations in the band 37.5–38 GHz, with an unwanted emission power density limit, as appropriate, based on the results of ITU-R studies.

**3.1.4 J** - **Document APG23-6/INP-36**

Japan supports the results of studies in ITU-R.

**3.1.5 KOR (Republic of)** - **Document APG23-6/INP-89**

The Republic of Korea supports the protection of EESS (passive) sensors, including cold calibration channel, in the band 36-37 GHz from non-GSO FSS systems operating in the band 37.5-38 GHz.

In addition, the Republic of Korea is of a view that unwanted emission power density limit of -31 dBW/100MHz in the band 36-37 GHz needs to be applied to the non-GSO FSS systems and it may be necessary to consider the inclusion of this limit in a new footnote of Article 5 of the Radio Regulations.

**3.1.6 MLA** - **Document APG23-6/INP-111**

Malaysia supports the protection of EESS (passive) sensors, including cold-sky calibration, in the 36–37 GHz frequency band from non-GSO FSS operations in the 37.5–38 GHz frequency band, with an unwanted emission power density limit, as appropriate, based on the results of ITU-R studies.

**3.1.7 THA (Kingdom of)** - **Document APG23-6/INP-60**

Thailand supports the APT preliminary view reached at APG23-5 that supports the protection of EESS (passive) sensors operating in the frequency band 36-37 GHz, including cold-sky calibration, from non-GSO FSS systems operating in the frequency band 37.5-38 GHz under this agenda item.

**3.2 Summary of issues raised during the meeting**

APT Members supported the protection of EESS (passive) sensors operating in the frequency band 36-37 GHz, including cold-sky calibration, from non-GSO FSS systems operating in the frequency band 37.5-38 GHz. In addition, some APT Members supported the inclusion of -31 dBW/100 MHz as an unwanted emission power density limit for EESS (passive) protection.

With this, some APT Members were of the view that it may be necessary to consider including the conditions identified in the ITU-R studies as regulatory provisions to protect EESS (passive) sensors in a new footnote of Article 5 of the Radio Regulations.

However, one APT Member was of the view that depending on the study results of ITU-R meeting planned in October 2023, there may or may not be a need for an unwanted emission limit to be applied to non-GSO FSS systems.

Therefore, the meeting could not find common view for PACP on this Agenda item 9.1 Topic d.

**4. APT View(s)**

The APT Members have considered Agenda item 9.1 Topic d, but has not developed a Preliminary APT Common Proposal on the matter. The APT Members have however formed the following view(s) on the Agenda item 9.1 Topic d.

* APT Members support the results of ITU-R studies on the impact of unwanted emission from non-GSO FSS systems into EESS (passive) and the potential need for unwanted emission limits, or any other solutions, to non-GSO FSS systems.
* APT Members support protection of EESS (passive) sensors operating in the frequency band 36-37 GHz, including cold-sky calibration, from non-GSO FSS systems operating in the frequency band 37.5-38 GHz.

**5. Preliminary APT Common Proposal**

No PACP on this Agenda item 9.1 Topic d to WRC-23.

**6. Issues for Consideration at APG Coordination Meeting at WRC-23**

Some APT Members were of a view that it may be necessary to consider including the conditions identified in the ITU-R studies as regulatory provisions to protect EESS (passive) sensors in a new footnote of Article 5 of the Radio Regulations.

ITU-R Working Party 7C has conducted studies on the protection of EESS (passive) systems operating in the band 36-37 GHz from non-GSO FSS systems in the band 37.5-38 GHz and developed a preliminary draft new (PDN) Report including the unwanted emission power density limit of -31 dBW/100 MHz. Therefore, the remaining action to be taken is to add a footnote to Article 5 of the Radio Regulations applying the study result to non-GSO FSS in the band 37.5-38 GHz. In this regard, it is considered efficient and rational to handle the matter in WRC-23 rather than carrying it forward to the next Conference.

However, some APT Members believe that studies that have been conducted until now are inconclusive, as there are some studies showing the need for a limit and others that conclude that no limit is needed. Moreover, WP4A held in June/July 2023 agreed on a liaison statement that was sent to WP7C highlighting potential issues with some of the studies. It would be advisable, therefore, to wait for the completion of ITU-R studies and eventually reconvene at WRC-23 to evaluate the appropriate steps to be taken.

**7. Views from Other Organisations**

**7.1 Regional Groups**

**7.1.1 ASMG** (30th ASMG Meeting, Feb. 2023)

Follow-up studies to identify the necessary regulatory and technical issues that ensure protection of EESS sensors (passive) in the band 36-37 GHz from interference of N-GSO FSS space stations in the band 37.5-38 GHz.

**7.1.2 ATU** (3rd APM23-3, Aug. 2022)

Part 1: Common position:

Support and contribute to studies related to the protection of EESS (passive) sensors operating in the band 36-37㎓ from non-GSO FSS systems in the band 37.5-38㎓, due consideration of operational aspects of non-GSO FSS systems, leading to Recommendations and/or Reports as appropriate.

Part 2: Way forward:

Request ATU administrations to Participate in the ITU-R studies, and to submit their views to the next meetings.

**7.1.3 CEPT** - **Document APG23-6/INF-46**

CEPT supports the protection of EESS (passive) sensors operating in the frequency band 36-37 GHz from NGSO FSS systems operating in the band 37.5-38 GHz. CEPT supports an unwanted emission power limit of -31 dBW/100 MHz in the band 36-37 GHz for FSS non-GSO space stations operating at an apogee altitude above 407 km and below 2000 km in the frequency band 37.5-38 GHz for the protection of EESS (passive) cold calibration channels; CEPT supports the inclusion of that unwanted emission power limit in a new footnote of Article 5 of the Radio Regulation during WRC-23. CEPT support the inclusion the inclusion of items A.25 in Annex 2 of Appendix 4 regarding the compliance with the unwanted emission limit defined in a proposed new footnote.

**7.1.4 CITEL** - **Document APG23-6/INF-52**

One Administration supports No Change to the Articles and Appendices of the RR, and No Change to resolutions and recommendations. Regulatory changes to the Radio Regulations are outside the scope of Agenda Item 9.1. Furthermore, this administration notes that neither studies during the WRC-19 study cycle under Agenda Item 1.6 nor the updated WRC-23 studies under this topic have demonstrated with certainty that EESS (passive) in 36-37 GHz requires any additional protection from non-GSO FSS operation in 37.5-38 GHz.

**7.1.5 RCC** - **Document APG23-6/INF-45**

The RCC Administrations support to limit maximum e.i.r.p. level of unwanted emissions of FSS space stations in order to ensure protection of EESS (passive) sensors operating in the frequency band 36-37 GHz (−34 dBW/100 MHz) from interference caused by non-GSO FSS space stations operating in the frequency band 37.5-38 GHz.

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1. Please note that the term ‘Issues/issues’ should not be confused with Issues in WRC-23 Agenda Items 7 and 9. [↑](#footnote-ref-1)