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| **The 4th Meeting of the APT Conference Preparatory Group for WRC-23 (APG23-4)** | **APG23-4/OUT-25** |
| 15 – 20 August 2022, Bangkok, Thailand | 20 August 2022 |

Working Party 3

**PRELIMINARY VIEWs on WRC-23 agenda item 9.1 (topic d))**

**Agenda Item 9.1 topic d):** *Protection of EESS (passive) in the frequency band 36-37 GHz from non-GSO FSS space stations (the 2nd section of the Annex to WRC-19 Document 535)*

**1. Background**

After the twelfth plenary meeting at 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 FSS non-GSO 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* *invites ITU-R to conduct further study of this topic and develop Recommendations and/or Reports, as appropriate, and Report back to WRC-23 to take action, if necessary.*

*Furthermore, WRC-19 agreed that modifications to Resolution* ***750 (Rev. WRC-19)*** *should not be considered under these studies since the frequency band 36-37 GHz is not referenced in No.* ***5.340****.*

Based on the above, CPM23-1 assigned ITU-R Working Party (WP) 7C as a responsible group for WRC-23 Agenda item 9.1 topic d) and ITU-R WP 7C has conducted the relevant studies.

At its latest meeting of ITU-R WP 7C held in Aril/May 2022, a “Preliminary draft new Report on studies related to WRC-23 agenda item 9.1, topic d) - Protection of EESS (passive) in the frequency band 36-37 GHz from non-GSO FSS space stations” and a “Working Document towards a preliminary draft CPM text on WRC-23 Agenda item 9.1, topic d)” were developed and updated. These documents were carried forward to the next WP 7C meeting as [Annex 24](https://www.itu.int/dms_ties/itu-r/md/19/wp7c/c/R19-WP7C-C-0361!N24!MSW-E.docx) and [Annex 25](https://www.itu.int/dms_ties/itu-r/md/19/wp7c/c/R19-WP7C-C-0361!N25!MSW-E.docx) to the WP 7C Chairman’s Report (Document 7C/361).

**2. Documents**

***Input Documents:*** [APG23-4/INP-09 (J)](https://view.officeapps.live.com/op/view.aspx?src=https%3A%2F%2Fwww.apt.int%2Fsites%2Fdefault%2Ffiles%2F2022%2F08%2FAPG23-4-INP-09_J-3_WP3_Preliminary_Views_on_WRC-23_Agenda_Items_1.12_1.13_1.14_9.1.A_9.1.D_and_RES.655.docx&wdOrigin=BROWSELINK), [APG23-4/INP-16 (AUS)](https://view.officeapps.live.com/op/view.aspx?src=https%3A%2F%2Fwww.apt.int%2Fsites%2Fdefault%2Ffiles%2F2022%2F08%2FAPG23-4-INP-16_AUS_WP3_Preliminary_Views_on_WRC-23_Agenda_Items_1.12_1.13_1.14_9.1Topics_a_and_d.docx&wdOrigin=BROWSELINK), [APG23-4/INP-36 (KOR)](https://view.officeapps.live.com/op/view.aspx?src=https%3A%2F%2Fwww.apt.int%2Fsites%2Fdefault%2Ffiles%2F2022%2F08%2FAPG23-4-INP-36_KOR_WP3_Preliminary_Views_on_WRC-23_Agenda_Items_1.12_1.13_1.14_and_9.1Topic_a_and_d.docx&wdOrigin=BROWSELINK), [APG23-4/INP-42 (CHN)](https://view.officeapps.live.com/op/view.aspx?src=https%3A%2F%2Fwww.apt.int%2Fsites%2Fdefault%2Ffiles%2F2022%2F08%2FAPG23-4-INP-42_China_WP3_Preliminary_Views_on_WRC-23_Agenda_Items_1.12_1.13_1.14_9.1Topic_a_and_d.docx&wdOrigin=BROWSELINK), [APG23-4/INP-63 (IND)](https://view.officeapps.live.com/op/view.aspx?src=https%3A%2F%2Fwww.apt.int%2Fsites%2Fdefault%2Ffiles%2F2022%2F08%2FAPG23-4-INP-63_India_WP3_Preliminary_Views_on_WRC-23_Agenda_Items_1.12_1.13_1.14_9.1Topic_a_and_d.docx&wdOrigin=BROWSELINK)

***Information Documents:*** [APG23-4/INF-02 (ATU),](https://drive.google.com/drive/folders/1QXE2jkUDdPfREMJ18nNf0SvX92CfMLDb) [APG23-4/INF-03 (WMO)](https://view.officeapps.live.com/op/view.aspx?src=https%3A%2F%2Fwww.apt.int%2Fsites%2Fdefault%2Ffiles%2F2022%2F07%2FAPG23-4-INF-03_WMO_Positions.docx&wdOrigin=BROWSELINK), [APG23-4/INF-10 (Chair, APG23-4, DG 9.1 topic d))](https://view.officeapps.live.com/op/view.aspx?src=https%3A%2F%2Fwww.apt.int%2Fsites%2Fdefault%2Ffiles%2F2022%2F07%2FAPG23-4-INF-10_Brief_on_AI_9.1.d.docx&wdOrigin=BROWSELINK), [APG23-4/INF-21 (ASMG)](https://www.apt.int/sites/default/files/2022/08/APG23-4-INF-21_ASMG_Preparation_for_WRC-23.pdf), [APG23-4/INF-28 (CITEL)](https://www.apt.int/sites/default/files/2022/08/APG23-4-INF-28_CITEL_Preparation_for_WRC-23.pdf), [APG23-4/INF-35 (ITU BR)](https://www.apt.int/sites/default/files/2022/08/APG23-4-INF-35Rev.1_ITU-BR_Updates_on_ITU_preparations_for_CPM23-2_RA-23_and_WRC-23.pdf), [APG23-4/INF-44 (RCC)](https://www.apt.int/sites/default/files/2022/08/APG23-4-INF-44_Status_of_RCC_preparation_to_the_World_Radio_Conference_and_Radio_Assembly_2023.pdf), [APG23-4/INF-48 (CEPT)](https://www.apt.int/sites/default/files/2022/08/APG23-4-INF-48_Status_of_CEPT_preparation_for_WRC-23_and_RA-23.pdf)

**3. Summary of discussions**

**3.1 Summary of APT Members’ views**

**3.1.1 Japan - APG23-4/INP-09**

Japan supports studies in ITU-R for the protection of EESS (passive) sensors operating in the band 36-37 GHz from non-GSO FSS systems in the band 37.5-38 GHz, with due consideration of operational aspects of non-GSO FSS system, leading to appropriate Recommendations and/or Reports.

**3.1.2 Australia - APG23-4/INP-16**

Australia supports further work needed to simplify the studies that have been conducted with regard to the protection of EESS (passive) sensors operating in the band 36 ‑ 37 GHz from non-GSO fixed satellite service space stations in the band 37.5 ‑ 38 GHz, and development of Recommendations and Reports as appropriate.

**3.1.3 Korea (Republic of) - APG23-4/INP-36**

The Republic of Korea supports on-going ITU-R studies to determine appropriate unwanted emission power limits for the protection of EESS (passive) sensors operating in the band 36-37 GHz from non-GSO FSS systems operating in the band 37.5-38 GHz, with due consideration of operational aspects of non-GSO FSS system.

**3.1.4 China (People’s Republic of) - APG23-4/INP-42**

China supports the protection of EESS (passive) sensors operating in the frequency band 36‐37 GHz from NGSO FSS systems operating in the adjacent band 37.5‐38 GHz, and the determination of relevant conditions that would ensure such protection of preliminary draft CPM text for WRC-23 agenda item 9.1 topic d.

**3.1.5 India - APG23-4/INP-63**

India supports further work w.r.t the studies that have been conducted with a view to protection of EESS (passive) sensors operating in the band 36-37 GHz from non-GSO fixed satellite service space stations in the band 37.5-38 GHz, and development of Recommendations and Reports as appropriate.

* 1. **Summary of issues raised during the meeting**

None

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

APT Members support further studies in the ITU-R to determine appropriate unwanted emission power limits for the protection of EESS (passive) sensors operating in the band 36-37 GHz from non-GSO FSS systems operating in the band 37.5-38 GHz with due consideration of operational aspects of non-GSO FSS system.

**5. Other View(s) from APT Members**

None

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

ITU-R Working Party 7C meeting scheduled from 27 September to 6 October 2022 in Geneva will be the last meeting before the deadline to submit draft CPM Texts for WRC-23 agenda item 9.1 topic d). APT Members are encouraged to participate in the Working Party 7C meeting. Reviewing the outputs and progress of the meeting, APT Members are invited to submit their view(s) and possible proposals for modifications to the draft CPM texts to the APG23-5 meeting.

**7. Views from Other Organizations**

**7.1 Regional Groups and International Organisations**

**7.1.1 ATU** - **Document APG23-4/INF-2**

ATU supports studies in ITU-R for the protection of EESS (passive) sensors operating in the band 36-37 GHz from non-GSO FSS systems in the band 37.5-38 GHz, with due consideration of operational aspects of non-GSO FSS system, leading to Recommendations and/or Reports as appropriate*.*

**7.1.2 ASMG – Document APG23-4/INF-21**

ASMG follows 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.

**7.1.3 CITEL – Document APG23-4/INF-28**

Some administrations support further study to determine if it is necessary and feasible for non-GSO FSS stations (space-to-Earth) operating in 37.5-38 GHz as part of high density and low-altitude FSS constellations to not exceed a maximum out-of-band EIRP of −34 dBW/100 MHz, for all angles greater than 71.4 degrees from nadir, into EESS (passive) operations in 36-37 GHz. Additionally, these administrations support study of potential interference from these high-density and low-altitude non-GSO FSS space stations operating in 37.5-38 GHz into the cold calibration channel of EESS (passive) sensors operating in the frequency band 36-37 GHz. These administrations support the agreement of WRC-19 that no modifications to Resolution 750 (Rev WRC-19) are to be considered under these studies since the frequency band 36-37 GHz is not referenced in No. 5.340.

**7.1.4 RCC – Document APG23-4/INF-44**

The RCC Administrations support limiting the maximum level of e.i.r.p. of unwanted radiation from FSS space stations, determining technical provisions ensuring EESS (passive) sensors protection in frequency band 36-37 GHz from non-GSO FSS space stations interference in frequency band 37.5-38 GHz.

**7.1.5 CEPT – Document APG23-4/INF-48**

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.

Specifically: CEPT supports the unwanted emission e.i.r.p. limit of -34 dBW/100 MHz in the band 36-37 GHz, for all angles greater than 71.4 degrees from nadir, for FSS non-GSO space stations operating in the frequency band 37.5-38 GHz with constellations of more than 1000 satellites at altitudes below 970 km for the protection of EESS (passive) measurement channels.

CEPT also supports an unwanted emission power limit of -29.2 dBW/100 MHz in the band 36-37 GHz for FSS non-GSO space stations operating in the frequency band 37.5-38 GHz with constellations of more than 1000 satellites at altitudes above 400 km for the protection of EESS (passive) cold calibration channels.

**7.2 International Organisations**

**7.2.1 WMO -** **Document APG23-4/INF-3**

WMO supports studies to further evaluate the impact of non-GSO FSS operations in the band 37.5-38 GHz on EESS (passive) sensors in the band 36-37 GHz, in particular the interference impact on the cold-sky calibration of passive sensors.

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