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|  | ASIA-PACIFIC TELECOMMUNITY | Document No: |
| **The 2nd Meeting of the APT Conference Preparatory Group for WRC-23 (APG23-2)** | **APG23-2/INF-05** |
| 19 – 23 April 2021, Virtual/Online Meeting | 14 March 2021 |

Chairman, DG on AI 9.1 topic d

**brief on wrc-23 agenda item 9.1 topic D**

**ANNEX x**

**Brief on WRC-23 Agenda item 9.1 topic d)** (as of February 28, 2021)

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

Editor’s Note: The following texts are cut and pasted from the texts of [CA251](https://www.itu.int/dms_pub/itu-r/md/00/ca/cir/R00-CA-CIR-0251!!MSW-E.docx), [CA251A1](https://www.itu.int/dms_pub/itu-r/md/00/ca/cir/R00-CA-CIR-0251!A1!MSW-E.docx) and [CA 251C1](https://www.itu.int/dms_pub/itu-r/md/00/ca/cir/R00-CA-CIR-0251!C1!MSW-E.docx).

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| [WRC-19 Document 535](https://www.itu.int/md/R16-WRC19-C-0535/en), 2nd section of the Annex | **Protection of EESS (passive) in the frequency band 36-37 GHz**  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**. |

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| Responsible group | Contributing group |
| WP 7C | WP 4A, WP 5A, WP 5C,  WP 5D |

1. **Background information**

WRC-19 revised the Regulations and Procedures for the operation of non-GSO FSS satellite systems in the frequency bands including 37.5-39.5 GHz (space-to-Earth) under WRC-19 Agenda item 1.6, while ensuring protection of GSO satellite networks in the FSS, MSS and BSS.

Meanwhile, under studies considered for WRC-19 agenda item 1.6, a preliminary study on the protection of EESS (passive) sensors operating in the adjacent frequency band 36-37 GHz was submitted to the ITU‑R because EESS (passive) was used or planned to be used by several sensors in the band. The 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, it was pointed out in the Conference that interference into the cold calibration channel of the EESS (passive) sensor operating in the frequency band 36‑37 GHz had not been studied.

Accordingly, WRC-19 invited 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, as mentioned in the 2nd section of the Annex to WRC-19 Document 535.

Frequency allocations to the band 36-39.5 GHz are as follows.

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| GHz | **36.0 37.0 37.5 38.0 39.5** | | | |
| Region 1 | EARTH EXPLORATION-SATELLITE (passive)  FIXED  MOBILE  SPACE RESEARCH (passive)  5.149 5.550A | FIXED  MOBILE except aeronautical mobile  SPACE RESEARCH (space-to-Earth)  5.547 | FIXED  FIXED-SATELLITE (space-to-Earth)  MOBILE except aeronautical mobile  SPACE RESEARCH (space-to-Earth)  Earth exploration-satellite (space-to-Earth)  5.547 | FIXED  FIXED-SATELLITE (space-to-Earth)  MOBILE  Earth exploration-satellite (space-to-Earth)  5.547 |
| Region 2 |
| Region 3 |

1. **Information on on-going ITU-R study**

ITU-R WP 4A was responsible for WRC-19 Agenda item 1.6 and was developing Preliminary Draft New Report S.[50/40 GHZADJACENT BAND STUDIES] ([Annex 11 to Document 4A/826](https://www.itu.int/dms_ties/itu-r/md/15/wp4a/c/R15-WP4A-C-0826!N11!MSW-E.docx) and [Annex 6 to Document 4A/912](https://www.itu.int/dms_ties/itu-r/md/15/wp4a/c/R15-WP4A-C-0912!N06!MSW-E.docx)). The relevant studies for WRC-23 agenda item 9.1 topic d) are contained in Annex 1 of the Preliminary Draft New Report. Sections 4.2 and 4.4 are relevant for the protection of EESS (passive) in the frequency band 36-37 GHz.

**2.1 ITU-R SG7 and WPs meeting in April 2020**

Editor’s Note: The Document [R19-WP7C-C-0022!!MSW-E](https://www.itu.int/dms_ties/itu-r/md/19/wp7c/c/R19-WP7C-C-0022!!MSW-E.docx) is the ITU-R WP 4C Chairman’s Report of the April meeting.

QUOTE

**3.3.8** WRC-23 agenda item 9.1d) (Protection of EESS (passive) in the frequency band 36-37 GHz)

The preparations for this WRC-23 agenda item are under the responsibility of WP 7C. At the meeting, no discussion took place on this agenda item.

UNQUOTE

**2.2 ITU-R SG7 WPs meeting in September 2020**

Editor’s Note: The Document [R19-WP7C-C-0105!!MSW-E](https://www.itu.int/dms_ties/itu-r/md/19/wp7c/c/R19-WP7C-C-0105!!MSW-E.docx) is the ITU-R WP 4C Chairman’s Report of the September meeting.

QUOTE

**5.13** WRC-23 agenda item 9.1, topic d) (Protection of EESS (passive) in the frequency band 36-37 GHz)

The preparations for this WRC-23 agenda item are under the responsibility of WP 7C. At the meeting, input document [7C/56](https://www.itu.int/md/R19-WP7C-C-0056/en) was received. Based on this contribution, WP 7C developed a liaison statement to WP 4A ([4A/74](https://www.itu.int/md/meetingdoc.asp?lang=en&parent=R19-WP4A-C-0074)) [or WP 7C (7C/TEMP/43)] on the issue of the protection of EESS (passive) in the band 36-37 GHz from unwanted emissions of NGSO FSS systems operating in the band 37.5-38 GHz. This liaison statement requested additional information on parameters, including unwanted emission masks, to be considered in the studies under this agenda item.

UNQUOTE

1. **Positions of regional groups and international organizations**

**ASMG (as of Aug. 2020)**

Inviting ASMG administrations to follow up the studies and ensure protection of existing systems in the frequency band 36-37 GHz.

**RCC (as of Dec. 2020)**

The RCC Administrations support conducting compatibility studies to determine technical conditions and regulatory provisions ensuring EESS (passive) sensors’ protection in the frequency band 36-37 GHz from interference of non-GSO FSS space stations operating in the frequency band 37.5-38 GHz.

1. **Positions of regional groups and international organizations**

**SFCG (as of Aug. 2020)**

SFCG supports the development of 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, including the interference impact on the cold-sky calibration of passive sensors.

**ESA (as of Aug. 2020)**

ESA supports SFCG position.

**WMO (in APG23-1, Sep. 2020)**

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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