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ITUEvents

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Session 10 – General Issue
WRC-23 agenda item 9.1, Topic d)

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Background

Agenda item 1.6: to consider the development of a regulatory framework for non-GSO FSS satellite systems that may operate in the Q/V bands

- One of the studies has shown that non-GSO FSS space stations in the band 37.5-38 GHz at an altitude lower than the altitude of EESS satellites may create harmful interference in EESS (passive) sensors operating in the band 36-37 GHz unless an appropriate unwanted emission mask, more stringent than the one contained in Recommendation ITU-R SM.1541.
  - However, WRC-19 did not achieve consensus on such regulatory provision, nor in the place where to include it.
- Interference into the cold calibration channel of the EESS (passive) sensor operating in the frequency band 36-37 GHz has not been studied.
- These issues are included in the minutes of WRC-19 (Doc. 573, § 35.2) to invite 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. ➔ CPM23-1 identified for additional Topic under WRC-23 agenda item 9.1.

ITU-R studies

- **Responsible group**: ITU-R WP 7C (Chaired by Mr. Markus Dreis)
  - 6 Meetings (April 2020 ~ September/October 2022)
- **Contributing groups**: ITU-R WP 4A, WP 5A, WP 5C, WP 5D
- **Outcomes**:
  - Preliminary draft new Report on studies related to 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
  - Draft CPM text on WRC-23 agenda item 9.1, topic d)

Draft CPM texts

- **Summary of the results of ITU-R studies**
  - **Issue 1**: 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
    - One study results considering two different non-GSO FSS systems indicate that an unwanted emission power density limit of −31 dBW/100 MHz in the frequency band 36-37 GHz would be needed for non-GSO FSS constellations operating at altitudes below 970 km.
    - Another study results considering one non-GSO FSS system show that there is a minimum positive margin of 10-15 dB to the EESS (passive) protection criteria.
    - When considering an additional 30 dB attenuation provided by the FSS satellite body, all studies conclude that no specific unwanted emission limit would be needed to cover this scenario.

Draft CPM texts (cont'd)

- **Issue 2**: 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
  - The results of two studies considering three different non-GSO FSS systems indicate that an unwanted emission power density limit of −31 dBW/100 MHz in the frequency band 36-37 GHz would be needed, without apportionment of the EESS (passive) protection criterion for non-GSO FSS constellations operating at altitudes above 407 km.
  - Another study that considers a different set of operational FSS characteristics has shown that there is a minimum margin of approximately 7 dB to the EESS (passive) protection criteria when only assessing interference from the particular constellation considered, and this study concludes that no specific unwanted emission limit would be needed to cover this scenario.