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| **The 3rd Meeting of the APT Conference Preparatory Group for WRC-23 (APG23-3)** | **APG23-3/OUT-28** |
| 8 – 13 November 2021, Virtual/Online Meeting | 13 November 2021 |

Working Party 4

**PRELIMINARY VIEWs on WRC-23 agenda item 1.15**

**Agenda Item 1.15:**

*to harmonize the use of the frequency band 12.75-13.25 GHz (Earth-to-space) by earth stations on aircraft and vessels communicating with geostationary space stations in the fixed-satellite service globally, in accordance with Resolution* ***172 (WRC-​19);***

RESOLUTION **172 (WRC-​19*)*** – *Operation of earth stations on aircraft and vessels communicating with geostationary space stations in the fixed-satellite service in the frequency band 12.75-13.25 GHz (Earth-to-space).*

**1. Background**

World Radiocommunication Conference 2019 (WRC-19) adopted agenda item 1.15 that calls for studies on the possible operation of earth stations on aircraft and vessels communicating with geostationary space stations in the fixed-satellite service in the frequency band 12.75-13.25 GHz (Earth-to-space), in accordance with Resolution **172 (WRC-19)**.

The ITU has addressed aeronautical and maritime earth stations operating with GSO FSS satellites in Study Group 4 and at several WRCs that adopted technical and regulatory regimes to allow such operations. In the Radio Regulations Resolution **902 (WRC-03)** and Resolution **169 (WRC-19)** define technical and regulatory rules to allow GSO FSS networks to communicate with earth stations on aircraft or vessels to provide broadband communications.

WRC-15 adopted Resolution **156 (WRC-15)** allowing the use of ESIM communicating with GSO FSS networks in the 19.7-20.2 GHz and 29.5-30.0 GHz bands and WRC-19 adopted Resolution **169 (WRC-169)** allowing the use of ESIM communicating with GSO FSS networks in the frequency bands 17.7-19.7 GHz and 27.5-29.5 GHz.

Resolution **172 (WRC-19)** calls for studies to ensure that AP30B allotments and assignments as well as other allocated services are protected.

Working Party (WP) 4A has been designated by CPM23-1 as the responsible group for the Agenda Item 1.15.

Sharing studies are needed in ITU-R to ensure protection of the other primary services in the band such as Fixed-Satellite Service, Fixed Service, and Mobile Service, as well as the protection of Earth exploration-satellite service EESS (active) and aeronautical radionavigation service operating in the adjacent band 13.25-13.4 GHz.

Working Party 4A, in preparation of WRC-19 Agenda item 1.15, has studied to consider the issues mentioned above and has developed working document on WRC-23 agenda item 1.15 and preliminary draft CPM text.

**2. Documents**

* Input Documents: APG23-3/INP-10(AUS), INP-14(THA), INP-18(INS), INP-27 Rev1 (KOR), INP-31(J), INP-38(SNG), INP-44(CHN), INP-49(IRN), INP-54(VTN).
* Information Documents: APG23-3/INF-01(WMO), INF-15(ICAO), INF-20(CEPT), INF-37 (ASMG).

**3. Summary of discussions**

**3.1 Summary of APT Members’ views**

* + 1. **Australia** - **Document APG23-3/INP-10**
* Australia supports the establishment of a new regulatory framework (including technical and operational requirements) that improves the efficiency of use of the 12.75-13.25 GHz band by facilitating fixed-satellite service (FSS) earth stations in motion (ESIM) to use the frequency bands. Such ESIM use must ensure protection of services allocated in the bands and should not impact the usability of the allotments in the Plan and assignments in the List under Appendix **30B** of the Radio Regulations.

**3.1.2 Thailand** - **Document APG23-3/INP-14**

* Thailand supports ITU-R studies currently carried out in accordance with Resolution **172 (WRC-19)**. The operation of earth stations on aircraft and vessels communicating with geostationary space stations in the fixed-satellite service in the frequency band 12.75-13.25GHz (Earth-to-space) shall take into account the protection of existing services as well as their future developments.

**3.1.3 Indonesia** - **Document APG23-3 / INP-18**

* Indonesia is of the view to support sharing and compatibility study between earth stations on aircraft and vessels communicating with GSO space stations in the FSS and current and planned stations of existing services in the same and adjacent frequency bands, to ensure protection of, and not impose undue constraints on, those services and their future development, taking into account allotment in the Plan, assignment in the List and new additional systems submitted to ITU under Appendix **30B**.

**3.1.4 Korea (Rep. of)** - **Document APG23-3/INP-27 Rev1**

The Republic of Korea also has preliminary views as follows;

* use of the frequency band 12.75-13.25 GHz (Earth-to-space) by earth stations on aircraft and vessels shall not limit the access of other administrations to their national resources in Appendix **30B** as well as implementation of Resolution **170 (WRC‑19)**,
* use of the frequency band 12.75-13.25 GHz (Earth-to-space) by earth stations on aircraft and vessels shall not impose undue constraints on existing services and their future development,
* earth stations on aircraft and vessels in the frequency band 12.75-13.25 GHz shall be operated in consistency with the Appendix **30B** procedures while protecting the Appendix **30B** allotments in the Plan and assignments in the List.
  + 1. **Japan** - **Document APG23-3/ INP-31**

Japan supports on-going studies being carried out by ITU-R Working party 4A for the use of the frequency band 12.75 – 13.25 GHz (Earth-to-space) by earth stations on aircraft and vessels communicating with GSO space stations in the FSS while ensuring protection of existing services in those frequency bands and in adjacent bands, in accordance with Resolution **172 (WRC-19).**

Japan also supports ITU-R studies to develop technical conditions and regulatory provisions for operation of earth stations on aircraft and vessels communicating with GSO space stations in the FSS operating in the frequency band 12.75-13.25 GHz (Earth-to-space), while ensuring protection to the existing services and those in the adjacent bands, in accordance with Resolution **172 (WRC-19)**.

Japan also has preliminary views as follows:

* operation of such earth stations on aircraft and vessels should not impact the usability of the allotments in the Plan and assignments in the List under Appendix **30B** of the Radio Regulations.
* use of the frequency band 12.75-13.25 GHz (Earth-to-space) by earth stations on aircraft and vessels shall not limit the access of other administrations to their national resources in Appendix **30B** as well as implementation of Resolution **170 (WRC‑19)**.

**3.1.6 Singapore** - **Document APG23-3/INP-38**

Based on the recent development of ITU-R studies under Agenda Item 1.15, Singapore would like to share its preliminary views under this agenda item as follows:

1. Supports to establish a regulatory framework and technical requirements for operation of earth stations on aircraft and vessels in the frequency band 12.75 – 13.25 GHz (Earth-to-space) taking into account the results of ITU-R studies to protect existing services allocated in this frequency bands and the bands adjacent to it in accordance with Resolution **172 (WRC-19)**.
2. The use of the frequency band 12.75 – 13.25 GHz by earth stations on aircraft and vessels need to respect the Appendix **30B** procedures, and such operations shall protect the Appendix **30B** allotments in the Plan and assignments in the List submitted under Articles 6 and 7 as well as under Resolution **170 (WRC-19)**.
3. Supports to develop an appropriate pfd limit examination methodology to determine conformity of earth stations on aircraft which need to be included in the new Resolution on Agenda Item 1.15.

**3.1.7 China** - **Document APG23-3/INP-44**

* China continues to support the preliminary views reached in the APG23-2 meeting.
* With respect to the sharing and compatibility studies between earth stations on board aircraft and vessels communicating with geostationary space stations in the fixed-satellite service and the fixed service in the frequency band 12.75-13.25 GHz, both long-term and short-term interference scenarios should be considered and carried out in the studies under relevant ITU-R Recommendations as suggested by WP 5C.

**3.1.8 Iran** - **Document APG23-3/INP-49**

* Due to various problems in this agenda item, I.R. of Iran is on this view that to make it possible to use the aeronautical and maritime earth stations operating with GSO FSS networks in the 12.75-13.25 GHz band (Earth-to-space), it is required to continue studies to develop technical/ regulatory solution(s) for all difficulties/concerns currently being discussed, in order to ensure the protection of the existing and planned radiocommunication services in the 12.75-13.25 GHz band and adjacent bands.
* Use of earth stations on board aircraft and vessels shall not cause any interference to **AP30B** allotments and all existing services. Earth stations on board aircraft and vessels shall not claim protection from the allotment plan, assignments in the List of **AP30B**, and other services including terrestrial services to which the frequency band is allocated and operating in accordance with the Radio Regulations.
* Use of earth stations on board aircraft and vessels shall not cause any interference to **AP30B** allotments, converted allotments to assignments within the limits of initial characteristics as contained in the allotment Plan, and those stemming from application of Article 7 transferred to Article 6 of **AP30B** as well as all existing and planned services in that frequency band and adjacent bands. Earth stations on board aircraft and vessels shall not claim protection from the allotment plan, assignments in the List of **AP30B**, and other services including terrestrial services to which the frequency band is allocated and operating in accordance with the Radio Regulations. They shall also not cause any interference beyond those referred to in relevant annexes to Appendix **30B**.

**3.1.9 Viet Nam** - **Document APG23-3/INP-44**

* Viet Nam supports on-going studies being carried out by ITU-R Working party 4A for the use of the frequency band 12.75 – 13.25 GHz (Earth-to-space) by earth stations on aircraft and vessels communicating with GSO space stations in the FSS while ensuring protection of existing services in those frequency bands and in adjacent bands, in accordance with Resolution **172 (WRC-19).**
* Viet Nam is of the view that the operation of such earth stations on aircraft and vessels should not impact the usability of the allotments in the Plan and assignments in the List under Appendix **30B** of the Radio Regulations.

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

Discussion carried out during the meeting are reflected that in section 4.

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

APT Members support on-going studies being carried out by ITU-R Working party 4A regarding the use of the frequency band 12.75 – 13.25 GHz (Earth-to-space) by earth stations on aircraft and vessels communicating with GSO space stations in the FSS while ensuring protection of existing services in those frequency bands and in adjacent bands, in accordance with Resolution **172 (WRC-19)**.

APT Members also have preliminary views as follows:

* The use of the frequency band 12.75-13.25 GHz (Earth-to-space) by earth stations on aircraft and vessels shall not limit the access of other administrations to their national resources in Appendix **30B** as well as implementation of Resolution **170 (WRC‑19)**.
* The use of the frequency band 12.75-13.25 GHz (Earth-to-space) by earth stations on aircraft and vessels shall not adversely affect the operation of existing services and their future development.
* Support the development of an appropriate methodology in order to enable the Bureau to examine the conformity with PFD limit established under this Agenda Item 1.15.
* Use of earth stations on board aircraft and vessels shall not cause unacceptable interference (more than what is stipulated in relevant annexes to **AP30B** of the Radio Regulations) to allotments, converted allotments to assignments within the limits of initial characteristics as contained in the allotment Plan, and those stemming from application of Article 7 transferred to Article 6 of **AP30B** and those submitted under Resolution **170 (WRC-19)** as well as all existing and planned services in that frequency band and adjacent bands operating in accordance with the Radio Regulations. Earth stations on board aircraft and vessels shall not claim protection from the allotment Plan, assignments in the List of **AP30B** for national coverage, and other services including terrestrial services to which the frequency band is allocated and operating in accordance with the provisions of Radio Regulations.
* With respect to the sharing and compatibility studies between earth stations on board aircraft and vessels communicating with geostationary space stations in the fixed-satellite service and the fixed service in the frequency band 12.75-13.25 GHz, both long-term and short-term interference scenarios under relevant ITU-R Recommendations should be considered and carried out in these studies.

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

None.

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

APT Members are invited to follow the progress of ITU-R studies, in particular attending correspondence group CG-1 of Working party 4A, and are encouraged to submit their contributions for further considerations at the next meeting.

**7. Views from Other Organisations**

**7.1 Regional Groups**

**7.1.1 ASMG - Document APG23-3/ INF-37**

* Follow up the studies on the regulatory and technical aspects for ESIMs on aircraft and vessels communicating with GSO space stations in the FSS operating in the frequency band 12.75-13.25 GHz (Earth-to-space), while ensuring protection to the existing services and those in the adjacent bands within the frequency band 13.25−13.75 GHz, taking into account not to impose any affect on these services and their future development as well as implementation of Resolution 170 (WRC 19)
* The studies should specify the responsibilities of the administration as following:
* The notifying administration for ESIM.
* The administration that use the satellite network.
* The administrations that allow the communication between ESIMS and Satellite network.
* The administration that EISM operate within it territory.
* Develop a methodology for the BR to examine the conformity of earth stations on aircraft and vessels in case of usage of an appropriate pfd to protect terrestrial services from ESIM with such methodology needs to be established and agreed before the conference.
* Support to develop a regulatory, technical and registration procedures for ESIMs on aircraft and vessels communicating with GSO space stations in the FSS operating in the frequency band 12.75-13.25 GHz (Earth-to space), which may differ from current procedures.

**7.1.2 ATU** - **Document APG23-3/INF-39**

*Part 1: Common position:*

* **Support** the studies on the regulatory and technical aspects for ESIMs on aircraft and vessels communicating with GSO space stations in the FSS operating in the frequency band 12.75-13.25 GHz (Earth-to-space), while ensuring protection to the existing services and those in the adjacent bands within the frequency band 13.25−13.75 GHz, taking into account the need to protect Appendix 30B.
* **Decide** that studies under this agenda item need to equally consider the effect of aggregated interference from ESIMs to ensure long term protection of Fixed and Mobile Service.
* **Decide** that the operation of such earth stations on aircraft and vessels should not impact the usability of the allotments in the Plan and assignments in the List under Appendix 30B of the Radio Regulations and not limit the access of other administrations to their national resources in Appendix 30B as well as implementation of Resolution 170 (WRC 19).
* **Develop** a methodology for the BR to examine the conformity of earth stations on aircraft and vessels in case of usage of an appropriate pfd to protect terrestrial services from ESIM with such methodology needs to be established and agreed upon.
* **Decide** that Aeronautical or maritime earth stations in the 12.75 - 13.25 GHz band need to have the capability to restrict operations in territories of those administrations where agreement under No. 6.6 has been obtained and authorization for such operations has been granted.
* **Decide** that, there is need to establish regulatory, technical and recording procedures for the usage of these type of Earth Stations in Motion (ESIMs) that may differ than the current FSS Appendix 30B Plan and list recording procedures. Any cost arising from potential implementation of Resolution 172 as well as its updates at WRC-23 need to be carefully examined and decided upon.
* **Seek** to ensure that the use of ESIMs with satellite networks that have a global coverage in Appendix 30B do not create an obstacle for deployment of national or sub-regional satellite networks of other countries in RR Appendix 30B in accordance with Topic F under AI 7 which are initiated from Multi-African administration proposal.
* **Support** that any AI under consideration of WRC-23 shall ensure that the protection of RR Appendix**30B** is guaranteed.
* **Support** that the administrations responsible for notice to use an Appendix 30B assignment in the List in support of the operation of earth stations on aircraft and vessels in the frequency band 12.75-13.25 GHz, to seek the explicit agreement of all the affected administrations from such use.

*Part 2: Way forward*

***Request ATU administrations to:***

* **Follow-up** the studies between earth stations on aircraft and vessels communicating with GSO space stations in the FSS and current and planned stations of existing as well as services in adjacent frequency bands, to ensure protection of, and in no way adversely affect these services and their future development, considering the provisions of Appendix 30B in accordance with Resolution 172 (WRC-19).
* **Follow-up** the regulatory and technical aspects of operations of earth stations on aircraft and vessels communicating with GSO space stations in service area under the jurisdiction of any country Member State of the ITU.
* **Assess** the spectrum utilization in the frequency band 12.75 – 13.25 GHz within their country.
* **Contribute** to and actively participate in work of ITU-R WP4A, in order to have ATU views addressed in the Agenda item.

**7.1.3 CEPT** - **Document APG23-3/INF-20**

* CEPT supports establishing a regulatory framework and technical requirements for operation of earth stations on aircraft in the frequency band 12.75‐13.25 GHz (Earth‐to‐space) with conditions that protect the services currently allocated in this frequency band and bands adjacent to it, taking into account ECC Decision (19)04.
* CEPT supports establishing a regulatory framework and technical requirements for operation of earth stations on vessels in the frequency band 12.75‐13.25 GHz (Earth‐to‐space) pending on the results of the studies conducted on protection services currently allocated in this frequency band and bands adjacent to it.
* CEPT considers that earth stations on aircraft and vessels in the frequency range 12.75‐13.25 GHz shall operate consistent with the Appendix 30B procedures, protect the Appendix 30B allotments in the Plan, assignments in the List and in the new proposed Appendix 30B ESIM List (if adopted at WRC‐23) and respect Resolution 170 (WRC‐19).
* CEPT supports the operation of these earth stations in the territories (air space and territorial waters) of administrations which have given agreement under No. 6.6 of Article 6 of Appendix 30B and have authorized such operation within their territories. The characteristics of these earth stations should remain in the envelope of notified earth station characteristics.
* CEPT also supports to study regulatory and technical aspects of operations of earth stations on aircraft and vessels in international waters and airspace.

**7.1.4 CITEL** - **Document APG23-2/INF-34**

* Some administrations support studies on the operation of earth stations on aircraft and vessels communicating with GSO FSS space stations in the 12.75-13.25 GHz (Earth-to-space) frequency band with the objective of developing appropriate technical and regulatory provisions to protect allotments/assignments in the Appendix 30B Plan and other primary allocated services, as well as primary services in adjacent bands, as alled for in Resolution 172 (WRC-19).

**7.1.5 RCC** - **Document APG23-2/INF-36**

* The RCC Administrations are in favour of the study-based development of technical requirements and regulatory provisions for ESIMs on aircraft and vessels for the harmonized operation of such earth stations communicating with GSO space stations in the FSS operating in the frequency band 12.75-13.25 GHz (Earth-to-space), while ensuring protection to the existing services and those in the adjacent bands (i.e. EESS (active) within the frequency band 13.25−13.75 GHz), taking into account the provisions of Appendix **30B**.
* The RCC Administrations are in favour of the need to ensure protection to frequency assignments in the Plan and allotments in the List of RR Appendix **30B** in accordance with criteria provided in Annex 4 to Appendix **30B,**when considering the issue of potential use of earth stations in motion on aircraft and vessels communicating with GSO space stations in the FSS operating in the frequency band 12.75-13.25 GHz (Earth-to-space), and such use of the frequency band 12.75-13.25 GHz (Earth-to-space) by the earth stations on aircraft and vessels shall not result in any constraints or changes in the existing assignments/allotments in the Plan/List and shall not adversely affect the criteria of Annex 4, including cumulative effect of multiple earth stations on aircraft and vessels.
* The RCC Administrations consider that ESIMs on aircraft and vessels shall operate in the frequency band 12.75-13.25 GHz (Earth-to-space) within the envelope of the earth station’s characteristics notified under the satellite network and also within the agreements reached by administrations under §§6.5, 6.6 and 6.16 of Article 6, Appendix **30B**.
* The RCC Administrations consider that the use of ESIM on aircraft and vessels in the frequency band 12.75-13.25 GHz (Earth-to-space) shall be allowed within the frequency assignments to satellite networks notified and recorded in accordance with provisions of Articles 6 and 8 of RR Appendix **30B**.
* The Administrations planning to use ESIMs on aircraft and vessels in the frequency band 12.75-13.25 GHz (Earth-to-space) in international waters or international airspace shall send to the Bureau notification information on such ESIMs. These notifications shall be considered as new notifications of frequency assignments to satellite networks with a new date of receipt by the BR, and they are subject to examination by the BR for the protection of the RR Appendix **30B** Plan and List frequency assignments/ allocations against interference, considering the worst-location of test points outside and above the land.

**7.2 International Organisations**

**7.2.1 WHO** - **Document APG23-3/INF-01**

* WMO supports studies to ensure that earth stations on aircraft and vessels communicating with geostationary space stations in the FSS in the frequency band 12.75-13.25 GHz (Earth-to-space) will protect the EESS (active) instruments operating in the adjacent band 13.25-13.75 GHz.

**7.2.2 ICAO** - **Document APG23-3/INF-15**

* To ensure that any radio regulatory action, taken as a result of this agenda item, neither adversely affects the provision of aeronautical safety-of-life services nor sets an unwanted precedent.

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