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| **The 4th Meeting of the APT Conference Preparatory****Group for WRC-23 (APG23-4)** | **APG23-4/OUT-14** |
| 15 – 20 August 2022, Bangkok, Thailand | 20 August 2022 |

Working Party 2

**PRELIMINARY VIEWs on WRC-23 agenda item 1.7**

**Agenda Item 1.7:**

*To consider a new aeronautical mobile-satellite (R) service (AMS(R)S) allocation in accordance with Resolution* ***428 (WRC-19)*** *for both the Earth-to-space and space-to-Earth directions of aeronautical VHF communications in all or part of the frequency band 117.975-137 MHz, while preventing any undue constraints on existing VHF systems operating in the AM(R)S, the ARNS, and in adjacent frequency bands;*

**1. Background**

WRC-23 Agenda Item 1.7 was initiated by APT, CEPT and CITEL to consider a new AMS(R)S allocation that will enable satellite relay of existing aeronautical VHF communications to complement terrestrial infrastructures and extend the direct controller-pilot communications for aircraft operating in remote/oceanic region without having the need to change the existing aircraft equipage.

The WP 5B held in July 2022 upgraded the status of the two working documents to PDN Report ITU-R M.[SPACE-VHF] ([Annex 15](https://www.itu.int/dms_ties/itu-r/md/19/wp5b/c/R19-WP5B-C-0649%21N15%21MSW-E.docx) Document 5B/649) and Draft CPM Text ([Annex 2](https://www.itu.int/dms_ties/itu-r/md/19/wp5b/c/R19-WP5B-C-0649%21N02%21MSW-E.docx) Document 5B/649). The PDN Report will be developed further at the next WP 5B meeting to be held from 14 to 25 November 2022 and the Draft CPM text will be discussed at CPM23-2.

In the Draft CPM text, three methods were considered to satisfy this agenda item:

* **Method A**: No change
* **Method B**: This Method, which provides general common elements required to be complemented with Methods B1 or B2, proposes to add a new allocation to the AMS(R)S in the frequency band 117.975-137 MHz, or part thereof, limited to non-geostationary satellite systems and to internationally standardized aeronautical systems. This Method is not an independent and standalone Method as such and thus should be considered together with Methods B1 or B2.
* **Method B1** is containing the elements of Method B, and proposes to add a pfd limit, where appropriate, on AMS(R)S space stations unwanted emissions falling above 137 MHz, in order to ensure protection of adjacent band services above 137 MHz
* **Method B2** is containing the elements of Method B, and proposes that AMS(R)S be subject to the application of regulatory and technical measures to ensure compatibility with existing services in co-frequency bands and in the adjacent bands.

Liaison Statement was sent to ICAO to requested for information regarding the current VHF coordination process(es) with the goal of understanding how the new AMS(R)S assignments could be included. Liaison Statements were also sent to WP 4C and 7B to updated the group of the compatibility studies conducted for systems operating above 137 MHz.

**2. Documents**

* Input Documents APG23-4/INP-[08](https://www.apt.int/sites/default/files/2022/08/APG23-4-INP-08_J-2_WP2_Preliminary_Views_on_WRC-23_Agenda_Items_1.6_1.7_1.8_1.9_1.10_1.11_and_RES.427.docx) (J), [15](https://www.apt.int/sites/default/files/2022/08/APG23-4-INP-15_AUS_WP2_Preliminary_Views_on_WRC-23_Agenda_Items_1.6_1.7_1.8_1.9_1.10_1.11_and_Res.427WRC-19.docx) (AUS), [20](https://www.apt.int/sites/default/files/2022/08/APG23-4-INP-20_BGD_WP2_Preliminary_Views_on_WRC-23_Agenda_Items_1.7_and_1.11.docx) (BGD), [24(Rev.1)](https://www.apt.int/sites/default/files/2022/08/APG23-4-INP-24Rev.1_IRN_WP2_Preliminary_Views_on_WRC-23_Agenda_Items_1.6_1.7_1.8_1.10_and_1.11.docx) (IRN), [35](https://www.apt.int/sites/default/files/2022/08/APG23-4-INP-35_KOR_WP2_Preliminary_Views_on_WRC-23_Agenda_Items_1.6_1.7_1.8_1.9_1.10_and_1.11.docx) (KOR), [41](https://www.apt.int/sites/default/files/2022/08/APG23-4-INP-41_China_WP2_Preliminary_Views_on_WRC-23_Agenda_Items_1.6_1.7_1.8_1.9_1.10_1.11_and_Res.427WRC-19.docx) (CHN), [46](https://www.apt.int/sites/default/files/2022/08/APG23-4-INP-46_Thailand_WP2_Preliminary_Views_on_WRC-23_Agenda_Items_1.7_1.8_1.9_and_1.11.docx) (THA), [52](https://www.apt.int/sites/default/files/2022/08/APG23-4-INP-52_NZL_WP2_Preliminary_Views_on_WRC-23_Agenda_Items_1.7_1.8_1.9_and_1.11.docx) (NZL), [54](https://www.apt.int/sites/default/files/2022/08/APG23-4-INP-54_SNG_AUS_WP2_Preliminary_View_on_WRC-23_Agenda_Item_Agenda_Item_1.7.docx) (AUS+SNG), [62](https://www.apt.int/sites/default/files/2022/08/APG23-4-INP-62_India_WP2_Preliminary_Views_on_WRC-23_Agenda_Items_1.7_1.9_and_1.10.docx) (IND), [75](https://www.apt.int/sites/default/files/2022/08/APG23-4-INP-75_VTN_WP2_Preliminary_Views_on_WRC-23_Agenda_Items_1.7_1.8_1.9_1.10_and_1.11.docx) (VTN).
* Information Documents APG23-4/INF-[02](https://www.apt.int/sites/default/files/2022/07/APG23-4-INF-02_ATU_preparation.docx) (ATU), [20](https://www.apt.int/sites/default/files/2022/08/APG23-4-INF-20_Brief_on_AI1.7.docx) (DG Chair), [21](https://www.apt.int/sites/default/files/2022/08/APG23-4-INF-21_ASMG_Preparation_for_WRC-23.pdf) (ASMG), [28(Rev.1)](https://www.apt.int/sites/default/files/2022/08/APG23-4-INF-28Rev.1_CITEL_Preparation_for_WRC-23.pdf) (CITEL), [44](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) (RCC), [48](https://www.apt.int/sites/default/files/2022/08/APG23-4-INF-48_Status_of_CEPT_preparation_for_WRC-23_and_RA-23.pdf) (CEPT).

**3. Summary of discussions**

**3.1 Summary of APT Members’ views**

**3.1.1 Japan - Document APG23-4/INP-08**

* Japan supports ITU-R studies for a new AMS(R)S allocation in accordance with Resolution 428 (WRC-19) for the Earth to space and space to Earth direction.

**3.1.2 Australia – Document APG23-4/INP-15**

* Australia supports **Method B1** in the current draft CPM text for a new primary allocation to the AMS(R)S in the frequency band 117.975 ‑ 137 MHz, or part thereof, limited to non-geostationary satellite systems, limited to internationally standardized aeronautical systems and proposes to add a pfd limit, where appropriate, on AMS(R)S space stations unwanted emissions falling above 137 MHz, in order to ensure protection of adjacent band services above 137 MHz.
* Australia also supports the ongoing ITU-R studies to update the PDNR ITU-R M.[SPACE-VHF], in accordance with Resolution **428 (WRC-19)**.

**3.1.3 Bangladesh (People's Republic of) – Document APG23-4/INP-20**

* Bangladesh supports ITU-R studies for new AMS(R)S allocations for both the Earth-to-Space and Space-to-Earth directions in the frequency band 117.975-137 MHz. The People’s Republic of Bangladesh is also of the view that the sharing and compatibility studies showing no adverse impact to the operation of existing services operating in this frequency band and in adjacent frequency bands.

**3.1.4 Iran (Islamic Republic of) – Document APG23-4/INP-24(Rev.1)**

* This Administration supports NOC, however, if Method B that complemented with Methods B1 or B2 will be agreed upon the following condition should be included in the additional footnote for the use of this frequency band so as such the assignments in question use shall not cause unacceptable interference to nor claim protection from the existing services to which the frequency band is allocated.

**3.1.5 Korea (Republic of) – Document APG23-4/INP-35**

* The Republic of Korea supports a new primary allocation to AMS(R)S limited to internationally standardized aeronautical systems in the Earth-to-space and space-to-Earth directions in all or part of the frequency band 117.975-137 MHz while ensuring protection of the allocated services in the same and the adjacent bands and not constraining these services. In this respect, the Republic of Korea also supports the on-going ITU-R studies related to WRC-23 agenda item 1.7 in accordance with Resolution **428 (WRC-19)**.

**3.1.6 China (People's Republic of) – Document APG23-4/INP-41**

* China supports the current ITU-R studies for the introduction of AMS(R)S in the frequency band 117.975-137 MHz mandated by Resolution 428 (WRC-19). The protection of existing services operating in the frequency band 117.975-137 MHz and adjacent frequency bands shall be ensured. In particular, the level of unwanted emissions above 137 MHz shall be taken into account to protect SOS/MetSat/SRS.

**3.1.7 Thailand (Kingdom of) – Document APG23-4/INP-46**

* Thailand supports APT Preliminary View on agenda item 1.7 reached at APG23-3 Meeting. Thailand is also of the view that a new AMS(R)S allocation in the 117.975-137 MHz band shall not adversely impact existing services in this frequency band and in adjacent frequency bands.

**3.1.8 New Zealand – Document APG23-4/INP-52**

* New Zealand supports measures that ensure existing primary services in that frequency band and in adjacent frequency bands remain protected while ensuring there is no adverse impact to systems in the Aeronautical Mobile (Route) Service (AM(R)S).
* New Zealand Supports Method B. However, we note that studies for Method B2 are ongoing for the protection of adjacent band services operating above 137 MHz from AMS(R)S emissions. We await the results of these studies before developing a view on this Method.

**3.1.9 Australia and Singapore (Republic of) – Document APG23-4/INP-54**

* Australia and Singapore support **Method B1** in the current draft CPM text for a new primary allocation to the AMS(R)S in the frequency band 117.975-137 MHz, or part thereof, limited to non-geostationary satellite systems, limited to internationally standardized aeronautical systems and proposes to add a pfd limit, where appropriate, on AMS(R)S space stations unwanted emissions falling above 137 MHz, in order to ensure protection of adjacent band services above 137 MHz.
* Australia and Singapore also support the ongoing ITU-R studies to update the PDNR ITU-R M.[SPACE-VHF], in accordance with Resolution **428 (WRC-19)**.

**3.1.10 India (Republic of) – Document APG23-4/INP-62**

* India supports a new co-primary allocation for the AMS (R)S in the band 117.975 MHz-137 MHz in the Earth-to-space and space-to-Earth directions limited to internationally standardized aeronautical systems operating in accordance with ICAO Standards and Recommended Practices (SARPs), while ensuring protection and not constraining the systems of the incumbent services in the band and adjacent bands.

**3.1.11 Viet Nam (Socialist Republic of) – Document APG23-4/INP-75**

* Viet Nam supports the ITU-R studies to consider a possible primary allocation to AMS(R)S in the Earth-to-space and space-to-Earth directions in entire or portions of the frequency band 117.975-137 MHz while ensuring no adverse effect on the allocation of the existing services and their future development.
* Viet Nam is of the view that new AMS(R)S allocation is limited to implement internationally standardised aeronautical systems.
* Viet Nam supports Method B in the current draft CPM text for a new AMS(R)S allocation in accordance with Resolution 428 (WRC-19) for the Earth to space and space to Earth direction
	1. **Summary of issues raised during the meeting**

None.

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

* APT Members support ITU-R studies defined in Resolution **428 (WRC-19)** for a new AMS(R)S allocation for both the Earth-to-space and space-to-Earth directions in all or part of the frequency band 117.975-137 MHz, while taking into account the protection of existing services operating in this frequency band and in adjacent frequency bands.
* APT Members are considering to support Method B, with the associated conditions as contained in the Draft CPM text.

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

* Some APT Members support Method B1;
* Some APT Members await the result of ITU-R studies to develop further views on Method B1 or B2;
* Some APT Members support Method A (NOC). However, if Method B that complemented with Methods B1 or B2 will be agreed upon the following condition should be included in the additional footnote for the use of this frequency band so as such the assignments in question use shall not cause unacceptable interference to nor claim protection from the existing services to which the frequency band is allocated.
* Some APT Members support Method B on the condition that the protection to the existing services which is allocated in the frequency band 117.975 ‑ 137 MHz and the adjacent frequency band be fully ensured and the level of unwanted emission of AMS(R)S above 137 MHz be clearly defined to protect the adjacent SOS/MetSat/SRS.

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

APT Members are encouraged to contribute to the next APG meeting on the agenda item 1.7, taking into account the outcome of APG 23-4 and the results of ITU-R studies.

**7. Views from Other Organisations**

**7.1 Regional Groups**

**7.1.1 ATU** - **Document APG23-4/INF-02**

* Support the ITU-R ongoing technical studies and regulatory procedures in order to improve/enhance the aeronautical communications in oceanic and remote areas, while ensuring the protection of the existing radio communication services, without imposing any operational constraints on existing VHF aeronautical systems or other services operating at the adjacent frequency bands.

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

* Support a new allocation to the aeronautical mobile-satellite service, in the frequency band 117.975 – 137 MHz, or portions thereof, according to the results of the ongoing studies, in order to support aeronautical systems operating in aeronautical very high frequency (VHF) bands, provided that incumbent in-band and adjacent band services are protected and no additional operational restrictions are imposed.

**7.1.3 CITEL** - **Document APG23-4/INF-28(Rev.1)**

* Some Administrations support the ongoing ITU-R technical and regulatory studies for co-existence between potential new primary AMS(R)S service in the frequency band 117.975 – 137 MHz and existing terrestrial primary allocated in-band and adjacent band services in anticipation of providing space-based VHF communications between pilot and air traffic controllers. This potential new allocation must protect current systems using existing primary allocated services and should not constrain the planned usage of those systems, for both ground stations and aircraft stations under their control.

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

* The RCC Administrations do not oppose the new allocation of the frequency band 117.975-137 MHz, or part thereof, to the aeronautical mobile-satellite (R) service on the primary basis to develop aeronautical VHF communications systems for Earth-to-space and space-to-Earth directions, subject to development and adoption at WRC-23 of:
* mechanism for ensuring compatibility in this and adjacent frequency bands between AMS(R)S systems of one Administration with AM(R)S, AM(OR)S, ARNS systems of another Administration, especially when such Administrations are located in different airspaces or different Regions;
* protective measures for the systems of SOS, SRS and meteorological satellite service in the frequency band 137-138 MHz;
* compatibility conditions between AMS(R)S systems of different administrations.
* The RCC Administrations consider that the standardization and frequency planning carried out within the ICAO for AM(R)S systems are insufficient to ensure the compatibility of AM(R)S of one Administration with the above-mentioned radio services of other Administrations.
* The RCC Administrations also consider that the above conditions should be met without imposing regulatory or technical restrictions on the affected services within this band or adjacent frequency bands.

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

* CEPT supports a new primary allocation to AMS(R)S in the Earth‐to‐space and space‐to‐Earth directions in all or part of the frequency band 117.975‐137 MHz while:
* limiting the use of the new AMS(R)S allocation to internationally standardised aeronautical systems;
* ensuring protection of AM(OR)S service in the band 132‐137 MHz noting however that the characteristics of AM(OR)S systems are not available;
* ensuring protection of services in adjacent bands and not constraining these services.
* CEPT is of the view that in‐band coexistence between AM(R)S and AMS(R)S and adjacent‐band coexistence between ARNS and AMS(R)S around 117.975 MHz will be ensured through frequency planning and coordination work.
* CEPT is of the view that the protection of adjacent band services operating above 137 MHz from AMS(R)S emissions should be ensured either:
* through the 1 MHz guard band in 136‐137 MHz for AMS(R)S systems operating in 117.975‐136 MHz, or
* through a limit on the level of unwanted emissions above 137 MHz for AMS(R)S emissions from systems operating in 136‐137 MHz.

**7.2 International Organisations**

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

* To support ITU-R studies and the definition of relevant technical characteristics as called for by Resolution 428 (WRC-19).
* To support a global allocation to the aeronautical mobile-satellite (route) service for both the Earth-to-space and space-to-Earth directions in the frequency band 117.975-137 MHz and that the use of the allocation be limited to the relaying of aeronautical VHF air traffic management communications.
* To support that those systems shall operate in accordance with international Standards and Recommended Practices and procedures established in accordance with the Convention on International Civil Aviation.
* To ensure that any change to the regulatory provisions and spectrum allocation resulting from this agenda item do not adversely impact the operation of existing VHF systems in the band 117.975-137 MHz operating in the AM(R)S, including regional usage of terrestrial VHF, nor require any changes to aircraft equipage or to existing installations.