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| **The 6th Meeting of the APT Conference Preparatory**  **Group for WRC-23 (APG23-6)** | **APG23-6/OUT-23** |
| 14 – 19 August 2023, Brisbane, Australia | 18 August 2023 |

Working Party 3

**APT VIEW AND PRELIMINARY APT COMMON PROPOSAL ON**

**WRC-23 AGENDA ITEM 1.13**

**Agenda Item 1.13:**

*to consider a possible upgrade of the allocation of the frequency band 14.8-15.35 GHz to*

*the space research service, in accordance with Resolution****661******(WRC‑19)***

**1. Background**

The frequency band 14.8-15.35 GHz is currently allocated to the SRS on a secondary basis, which is used by some administrations for data relay systems (DRS). There is an interest among space agencies and administrations to use this frequency band in high data transmission speed for scientific missions. Resolution **661 (WRC-19)** invites ITU-R to investigate and identify all relevant scenarios that need to be considered in compatibility and sharing studies, and to conduct and complete such studies in time for WRC-23 in order to determine any associated technical and regulatory conditions to ensure protection of the current in-band and adjacent band primary services. WRC 23 agenda item 1.13 calls for examination, on the basis of the results of studies by the ITU-R, the possibility of upgrading the secondary status of the allocation to the space research service (SRS) to primary status.

The responsible group for this agenda item is ITU-R Working Party 7B (WP 7B), and during this study cycle, a new ITU-R Recommendation has been formed to provide characteristics of space research service systems in the focused Ku band, and a PDN report related to the sharing and compatibility studies is still under development. During the CPM23-2 meeting, a lot of discussion was made and finally five Methods have been proposed.

- Method A: No change to the RR except the suppression of **Resolution 661 (WRC-19)**;

- Method B: To upgrade the space research service (space-to-space) to primary status with the modification of RR Article 5 Table of Frequency Allocations and to add a row in RR Table 21-4 of RR Article 21 to specify pfd limits for SRS (space-to-space);

- Method C: To upgrade the secondary SRS allocation except SRS active and SRS passive applications. Tables of RR Article 21, Appendix 4 and Appendix 7 are modified to specify pfd limits for SRS (space-to-Earth) and (space-to-space), to protect the radio astronomy service and to determine the coordination distances around SRS earth stations. A new Resolution are proposed to upgrade the status of the existing assignments recorded in the MIFR with the original date of receipt, subject to conformity with the new conditions of the allocation of the frequency band 14.8-15.35 GHz to the space research service.

- Method D: The upgrade is limited to the usage of the SRS for near-Earth missions avoiding the upgrade of all other subsets of the SRS and to modify RR Table 21-4 of RR Article 21 to specify pfd limits for SRS (space-to-space) and (space-to-space). It is also proposed to have a pfd limit in order to protect the AMS, HTTS and RAS operated in neighbouring countries.

- Method E: Provisions to both protect and avoid constraints on primary services for the FS and MS in the frequency band 14.8-15.35 GHz, as well as radio astronomy service in the adjacent frequency band 15.35-15.4 GHz are provided in this method, which are reflected in three sub-Methods.

All the methods support the suppression of Resolution **661 (WRC-19)**

Relevant ITU-R documents:

* [Resolution 661 (WRC-19)](https://www.itu.int/dms_pub/itu-r/oth/0c/0a/R0C0A00000D0013PDFE.pdf) “Examination of a possible upgrade to primary status of the secondary allocation to the space research service in the frequency band 14.8-15.35 GHz”
* [ITU-R Rec. SA.510-3](https://www.itu.int/rec/R-REC-SA.510-3-201707-I/en) “Feasibility of frequency sharing between the space research service and other services in bands near 14 and 15 GHz - Potential interference from data relay satellite systems”
* [ITU-R Rec. SA.1414-2](https://www.itu.int/rec/R-REC-SA.1414-2-201707-I/en) “Characteristics of data relay satellite systems”
* [ITU-R Rec. SA.1626-1](https://www.itu.int/rec/R-REC-SA.1626-1-201312-I/en) “Feasibility of sharing between the space research service (space-to-Earth) and the fixed and mobile services in the band 14.8-15.35 GHz”
* [Chairman's Report 7B/246](https://www.itu.int/md/R19-WP7B-C-0246/en) “Report on the September/October 2022 meeting (27 September - 5 October 2022) of Working Party 7B with a view to its next meeting (2-12 October 2023)”
* [Chairman's Report 7B/246 (Annex 2)](https://www.itu.int/dms_ties/itu-r/md/19/wp7b/c/R19-WP7B-C-0246!N02!MSW-E.docx) “Preliminary draft new Report ITU-R SA.[15 GHZ SRS SHARING] - Sharing and Compatibility Studies for the SRS in the band 14.8-15.35 GHz”
* [ITU-R Rec. SA.2141](https://www.itu.int/rec/R-REC-SA.2141/en) “Characteristics of space research service systems in the frequency range 14.8-15.35 GHz”
* [ITU-R Report CPM23-2](https://www.itu.int/md/R19-CPM23.2-R-0001/en) “Final CPM Report for WRC-23”

**2. Documents**

* Input Documents APG23-6/[INP-19](https://www.apt.int/sites/default/files/2023/08/APG23-6-INP-19_India_WP3_PACP_WRC-23_Agenda_Items.docx) (IND), [INP-25](https://www.apt.int/sites/default/files/2023/08/APG23-6-INP-25_Bangladesh_WP3_PACP_WRC-23_Agenda_Items.docx) (BGD), [INP-33 (Rev.1)](https://www.apt.int/sites/default/files/2023/08/APG23-6-INP-33R1_Multicountry_WP3_PACP_WRC-23_Agenda_Item_1.13.docx) (INS, J, KOR, VTN), [INP-60](https://www.apt.int/sites/default/files/2023/08/APG23-6-INP-60_Thailand_WP3_PACP_WRC-23_Agenda_Items.docx) (THA), [INP-67](https://www.apt.int/sites/default/files/2023/08/APG23-6-INP-67_Iran_WP3_Preliminary_Views_on_WRC-23_Agenda_Items.docx) (IRN), [INP-82](https://www.apt.int/sites/default/files/2023/08/APG23-6-INP-82_Australia_WP3_PACP_WRC-23_Agenda_Items_and_Res.655_WRC-15.docx) (AUS), [INP-105](https://www.apt.int/sites/default/files/2023/08/APG23-6-INP-105_China_WP3_PACP_WRC-23_Agenda_Items.docx) (CHN), [INP-111](https://www.apt.int/sites/default/files/2023/08/APG23-6-INP-111_Malaysia_WP3_PACP_WRC-23_Agenda_Items.docx) (MLA)
* Information Documents APG23-6/[INF-0](https://www.apt.int/sites/default/files/2023/06/APG23-6-INF-02_WMO_Position_on_WRC-23_Agenda.docx)2(WMO), [INF-25](https://www.apt.int/sites/default/files/2023/07/APG23-6-INF-25_ICAO-Position_for_ITU-WRC23.docx) (ICAO), [INF-27](https://www.apt.int/sites/default/files/2023/07/APG23-6-INF-27_Brief_on_AI1.13.docx) (DG Chair), [INF-45](https://www.apt.int/sites/default/files/2023/08/APG23-6-INF-45_Status_of_RCC_preparation_to_WRC-23.pdf) (RCC), [INF-46](https://www.apt.int/sites/default/files/2023/08/APG23-6-INF-46_Status_of_CEPT_preparation_for_WRC-23_and_RA-23.pdf) (CEPT), [INF-52](https://www.apt.int/sites/default/files/2023/08/APG23-6-INF-46_Status_of_CEPT_preparation_for_WRC-23_and_RA-23.pdf) (CITEL)

**3. Summary of discussions**

**3.1 Summary of APT Members’ views**

**3.1.1 India (Republic of)** - **Document APG23-6/**[**INP-19**](https://www.apt.int/sites/default/files/2023/08/APG23-6-INP-19_India_WP3_PACP_WRC-23_Agenda_Items.docx)

Several studies were performed to determine pfd levels corresponding to the interference criteria, and the results of those studies have diverging conclusions. The results of some of the studies raised a question around whether the proposed pfd mask in Recommendation ITU-R SA.1626-1 is suitable to satisfy Resolution 661 (WRC-19) and ensures the protection of incumbent primary allocated services operating in the frequency band 14.8-15.35 GHz. Therefore, India supports Method A which proposes “No Change” to Radio Regulations.

**3.1.2 Bangladesh (People's Republic of)** - **Document APG23-6/**[**INP-25**](https://www.apt.int/sites/default/files/2023/08/APG23-6-INP-25_Bangladesh_WP3_PACP_WRC-23_Agenda_Items.docx)

In Bangladesh 14.8-15.35 MHz is extensively used for fixed service. According to the study results presented in the CPM report, the sharing and compatibility studies show that the existing primary services which are allocated in the frequency band 14.8-15.35 could not be protected from the SRS. Therefore, Bangladesh administration prefers method A of the CPM report i.e., no change to the Radio Regulations.

**3.1.3 Indonesia (Republic of), Japan, Korea (Republic of), Viet Nam (Socialist Republic of)** - **Document APG23-6/**[**INP-33 (Rev.1)**](https://www.apt.int/sites/default/files/2023/08/APG23-6-INP-33R1_Multicountry_WP3_PACP_WRC-23_Agenda_Item_1.13.docx)

The fixed and mobile services are allocated on a primary basis in the 14.8-15.35 GHz band and the radio astronomy service is allocated on a primary basis in the 15.35-15.4 GHz band. The 14.8-15.35 GHz band is used extensively for fixed links in many countries including developing countries as well as for mobile links between aircrafts/helicopters and ground stations to transmit critical information including on public protection and disaster relief in some countries. Possible upgrade of the space research service in the 14.8-15.35 GHz band shall ensure the appropriate protection of, and not impose additional constraints on the incumbent primary services in this band and the adjacent bands. However, the current ITU-R study shows clearly that possible upgrade of the space research service in the 14.8-15.35 GHz band does not protect the incumbent primary services. Thus, possible upgrade of the space research service in the 14.8-15.35 GHz band does not satisfy Resolution **661 (WRC-19).**

Therefore, the APT Members listed on the first page support no change to the Radio Regulations and the suppression of Resolution **661 (WRC-19)** (Method A in the CPM Report), and accordingly propose a Preliminary APT Common Proposals (PACP) on WRC-23 Agenda Item 1.13 as shown in the embedded file below.



**3.1.4 Thailand (Kingdom of)** - **Document APG23-6/**[**INP-60**](https://www.apt.int/sites/default/files/2023/08/APG23-6-INP-60_Thailand_WP3_PACP_WRC-23_Agenda_Items.docx)

Thailand is of the view that the upgrade of the SRS allocation from secondary to primary in the frequency band 14.8-15.35 GHz should ensure protection to and not adversely affect the existing services in the frequency band 14.8-15.35 GHz and adjacent bands, including the band 15.35-15.4 GHz to which the RAS is allocated.

Furthermore, stations in the SRS service should not claim protection from stations in the fixed and mobile services in this band.

In order to satisfy the above conditions, Method E Option 2 is preferred to address this agenda item.



**3.1.5 Iran (Islamic Republic of)** - **Document APG23-6/**[**INP-67**](https://www.apt.int/sites/default/files/2023/08/APG23-6-INP-67_Iran_WP3_Preliminary_Views_on_WRC-23_Agenda_Items.docx)

This Administration is of the view that any potential upgrade of the SRS to a primary service shall ensure protection of and shall neither adversely affect nor claim protection from the incumbent services in the 14.8-15.35 GHz band.

This Administration believes that the assumptions used in some of the sharing and compatibility studies carried out by ITU-R WP 7B regarding the agenda item 1.13 may lead to underestimation of the interference from the Space Research Service into the incumbent terrestrial services.

If there are no appropriate regulatory and technical measures to resolve the concerns mentioned above, no change to the Radio Regulations should be considered for this agenda item.

**3.1.6 Australia** - **Document APG23-6/**[**INP-82**](https://www.apt.int/sites/default/files/2023/08/APG23-6-INP-82_Australia_WP3_PACP_WRC-23_Agenda_Items_and_Res.655_WRC-15.docx)

Australia supports the upgrade of the SRS allocation from secondary to primary status in the band 14.8-15.35 GHz while ensuring compatibility between SRS and the mobile service and fixed service in the band 14.8-15.35 GHz, and between SRS and the radio astronomy service in the adjacent band 15.35-15.4 GHz.

Australia believes that an upgrade of the SRS allocation in the space-to-space direction is achievable with limited impact on incumbent primary services with appropriate operational and regulatory measures.

In order to upgrade the secondary SRS allocation in the space-to-Earth and Earth-to-space directions Australia believes that studies and relevant provisions must be finalised in order to establish the feasibility of protection for the incumbent mobile service and fixed service.

Australia proposes a Preliminary APT Common Proposal as follows:



**3.1.7 China (People's Republic of)** - **Document APG23-6/**[**INP-105**](https://www.apt.int/sites/default/files/2023/08/APG23-6-INP-105_China_WP3_PACP_WRC-23_Agenda_Items.docx)

China is of the view that existing co-frequencies primary services as well as radio astronomy service in the adjacent band should be adequately protected, while considering the upgrade of SRS in the frequency band 14.8-15.35 GHz.

There were no ITU-R studies on the passive, active and deep space missions for SRS in the frequency band 14.8-15.35 GHz, therefore the use of the frequency band by the SRS should not be upgraded in these subsets.

Regarding the above, our preferred choice in this agenda item is Method D.

**3.1.8 Malaysia** - **Document APG23-6/**[**INP-111**](https://www.apt.int/sites/default/files/2023/08/APG23-6-INP-111_Malaysia_WP3_PACP_WRC-23_Agenda_Items.docx)

Malaysia supports **Method B** of the CPM Report, which upgrades only SRS (space-to-space) from secondary to primary status and retain the secondary allocation to SRS (space-to-Earth) and SRS (Earth-to-space).

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

Different proposals were submitted by APT Members, and consensus could not be reached at the meeting, therefore no Preliminary APT Common Proposal is agreed.

**4. APT View(s)**

The APT Members have considered agenda item 1.13 but have not developed a Preliminary APT Common Proposal on the matter. The APT Members have however formed the following view(s) on the agenda item:

The fixed and mobile services are allocated on a primary basis in the 14.8-15.35 GHz band and the radio astronomy service is allocated on a primary basis in the 15.35-15.4 GHz band. The 14.8-15.35 GHz band is used extensively for fixed links in many countries including developing countries as well as for mobile links between aircrafts/helicopters and ground stations to transmit critical information including on public protection and disaster relief.

According to Resolution **661 (WRC-19)**, possible upgrade of the space research service in the 14.8-15.35 GHz band shall ensure the appropriate protection of, and not impose additional constraints on the incumbent primary services in this band and the adjacent bands.

APT Members believe that studies and relevant regulatory provisions must be finalised in ITU-R. If possible upgrade of the space research service in the 14.8-15.35 GHz band could not ensure enough protection of and/or impose additional constraints to/adversely affect the incumbent primary services in-band and adjacent band, APT Members would support no change to the Radio Regulations.

**5. Preliminary APT Common Proposal**

None.

**6. Issues for Consideration at APG Coordination Meeting at WRC-23 (if any)**

Some APT administrations support No Change to the Radio Regulations for this agenda item on the premise that ITU-R studies currently showed that the possible upgrade of SRS can not protect the incumbent service in-band and in adjacent bands.

Some APT administrations support the upgrade of the SRS allocation from secondary to primary status in the band 14.8-15.35 GHz while ensuring compatibility between SRS and the mobile service and fixed service in the band 14.8-15.35 GHz, and between SRS and the radio astronomy service in the adjacent band 15.35-15.4 GHz. However, Administrations differed in their preferred Methods of the options proposed within the CPM report.

Some APT administrations believe that an upgrade of the SRS allocation in the space-to-space direction is likely feasible due to the greatly reduced potential impact on incumbent primary terrestrial in-band services and adjacent band services but still requires final ITU-R Working Party 7B and Study Group 7 consideration within their meetings during October 2023 of appropriate operational and regulatory measures.

The WRC-23 APG Coordination Meetings at WRC-23 should address and consider the sharing study results developed and agreed at the ITU-R WP 7B meeting held from 3-10 October, 2023, in Geneva when reviewing the APT position for this agenda item at WRC-23, with a view of possibly adjusting their positions presented at the WRC-23.

**7. Views from Other Organisations** (as provided in the information documents to

APG23-6)

**7.1 Regional Groups**

**7.1.1 ASMG** - **Document APG23-6/**[**INF-27**](https://www.apt.int/sites/default/files/2023/07/APG23-6-INF-27_Brief_on_AI1.13.docx)

Follow-up studies under this agenda item, focusing on protecting existing services in the band 14.8-15.35 GHz and radio services in adjacent bands.

**7.1.2 ATU** - **Document APG23-6/**[**INF-27**](https://www.apt.int/sites/default/files/2023/07/APG23-6-INF-27_Brief_on_AI1.13.docx)

Consider no change to the radio regulations until the completion of the sharing studies for all the current radio services in the frequency band 14.8-15.35 GHz and the adjacent frequency bands.

Continue to review the results of compatibility and sharing studies to ensure the protection of all existing services in this frequency band and adjacent frequency bands as well. The upgrade of the SRS allocation should not impose constraints on the fixed and mobile systems currently allocated in the frequency band under consideration.

**7.1.3 CEPT** - **Document APG23-6/**[**INF-46**](https://www.apt.int/sites/default/files/2023/08/APG23-6-INF-46_Status_of_CEPT_preparation_for_WRC-23_and_RA-23.pdf)

CEPT is supporting upgrade of space research service (SRS) allocation to satellite systems operating in the space-to-space, space-to-Earth and Earth-to-space directions at distances from the Earth less than 2 × 106 km from secondary to primary while ensuring protection for in-band FS/MS and for radioastronomy service in the adjacent band 15.35-15.4 GHz. Upgrading of the allocation of the frequency band 14.8-15.35 GHz to the SRS shall not claim protection from the aeronautical mobile service (AMS) and from FS in the frequency band 14.8-15.35 GHz.

**7.1.4 CITEL** - **Document APG23-6/**[**INF-52**](https://www.apt.int/sites/default/files/2023/08/APG23-6-INF-46_Status_of_CEPT_preparation_for_WRC-23_and_RA-23.pdf)

Some Administrations support studies in accordance with Resolution **661 (Rev. WRC-19)** to consider a possible upgrade to the existing global allocation to the SRS in the frequency range 14.8-15.35 GHz, taking into account the need to provide protection to and not to impose constraints on the incumbent services in this frequency band and its adjacent frequency bands. DIAP consist in:

* MOD Article 5;
* ADD Footnote 5.A113;
* MOD Article 21 table to include Space Research (space-to-space);
* SUP Resolution 661.

**7.1.5 RCC** - **Document APG23-6/**[**INF-45**](https://www.apt.int/sites/default/files/2023/08/APG23-6-INF-45_Status_of_RCC_preparation_to_WRC-23.pdf)

The RCC Administrations are in favor of upgrading the allocation of the frequency band 14.8-15.35 GHz to the space research service under the following conditions:

* protection of FS and MS in this frequency band, as well as passive services in the adjacent frequency band 15.35-15.4GHz
* upgrading the SRS allocation should not impose constraints on the incumbent FS and MS systems in the frequency band 14.8-15.35 GHz which are eligible for international recognition in accordance with Article 8 RR.

No specific Method from the CPM Report.

**7.2 International Organisations**

**7.2.1 ICAO** - **Document APG23-6/**[**INF-25**](https://www.apt.int/sites/default/files/2023/07/APG23-6-INF-25_ICAO-Position_for_ITU-WRC23.docx)

To ensure that any radio regulatory action taken as a result of agreed studies does not adversely affect the provision of aeronautical services.

**7.2.2 SFCG - Document APG23-6/**[**INF-27**](https://www.apt.int/sites/default/files/2023/07/APG23-6-INF-27_Brief_on_AI1.13.docx)

SFCG supports the upgrade of the SRS allocation (space-to-space, space-to-Earth and Earth-to-space) from secondary to primary status in the band 14.8-15.35 GHz to support existing and future applications and increasing science mission data transport needs.

Relevant provisions are needed to ensure the compatibility between SRS and FS/MS in the band 14.8-15.35 GHz, and between SRS and RAS in the adjacent band 15.35-15.4 GHz.

In order to advocate for the regulatory conditions that are included in Method C of the CPM Report applicable for SRS (Earth-to-space, space-to-Earth) it is essential that additional studies demonstrate that no additional constraints are needed for MS/FS in the band 14.8-15.35 GHz.

SFCG notes that an upgrade of the SRS allocation in the space-to-space direction would have limited impact on incumbent primary services and sharing can be achieved based on operational and technical characteristics provided by competent ITU-R Working Parties.

**7.2.3 WMO - Document APG23-6/**[**INF-0**](https://www.apt.int/sites/default/files/2023/06/APG23-6-INF-02_WMO_Position_on_WRC-23_Agenda.docx)**2**

WMO is not opposed to the upgrading of the existing SRS secondary allocation in 14.8-15.35 GHz to primary status.

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