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|  | ASIA-PACIFIC TELECOMMUNITY | Document No: |
| **The 6th Meeting of the APT Conference Preparatory**  **Group for WRC-23 (APG23-6)** | **APG23-6/OUT-18** |
| 14 – 19 August 2023, Brisbane, Australia | 18 August 2023 |

Working Party 2

**APT VIEW[[1]](#footnote-1) and Preliminary APT Common Proposal**

**on WRC-23 agenda item 1.9**

**Agenda Item 1.9:**

*to review Appendix 27 of the Radio Regulations and consider appropriate regulatory actions and updates based on ITU‑R studies, in order to accommodate digital technologies for commercial aviation safety-of-life applications in existing HF bands allocated to the aeronautical mobile (route) service and ensure coexistence of current HF systems alongside modernized HF systems, in accordance with* ***Resolution 429 (WRC‑19)***

**1. Background**

Agenda Item 1.9 was proposed by an aviation community Region 2 administration and had broad support at the WRC-19. ICAO supports the work that may lead to changes and improvements to the Appendix **27**.

The HF spectrum has largely been broken up into repeating allocations throughout the range 3-30 MHz. These allocations have their conventional implementation arrangements and the traditional adoption of multiple 3 kHz channels (with a 2.7 kHz emission in the initial planning days) allowed for adjacent channel use, adjacent band use and service allocation replication across the HF domain. This is all to enable beyond line of site communications across all periods of the day, month, season and sunspot cycle.

There is a new layer of technologies that enable higher data rates in the HF frequency range via aggregation of contiguous 3 kHz channels as well as aggregation of non-contiguous channels.

The HF manufacturers want to be able to implement this aggregation for wider applications within the aviation domain. This application, conventionally termed Wideband HF or WBHF is being implemented in a non-aviation domain. The regulations do not preclude the use of WBHF but the current studies and implementation arrangements do not enable easy adoption of the new technologies in these allocations.

The aviation community, including ICAO, are supporting the studies limited to Appendix **27** bands only, to enable early adoption of the newer WBHF technologies.

More recent investigations have shown that the ability to change the Appendix **27** to enable wider bandwidths will require significant re-engineering as the channel plan has been designed to enable frequency re-use on an area-based pattern to minimize/remove the likelihood of interference, and this re-use pattern is not on a contiguous basis. It has been confirmed that the current Appendix **27** does not explicitly preclude the use of wideband HF, however because of the current frequency re-use plan there is very little opportunity to use contiguous wideband technologies. The use of non-contiguous wideband technologies would be achievable.

**Current documents of relevance within WP5B are:**

* + CPM Report - Section 2/1.9
  + [Annex 29](https://www.itu.int/dms_ties/itu-r/md/19/wp5b/c/R19-WP5B-C-0481!N29!MSW-E.docx) to Document 5B/481-E Chairman’s Report - *Working Document towards preliminary draft new report ITU-R M.[Aero-Wideband-HF]*

**Executive Summary from the CPM Report Section 2/1.9**

To address this agenda item, ITU-R has undertaken a regulatory analysis, pursuant to Resolution **429 (WRC-19)**, on consideration of regulatory provisions for updating Appendix **27** of the Radio Regulations (RR) in support of aeronautical HF modernization.

Two methods are considered to address this agenda item:

– Method A: no change (NOC)

– Method B: Inclusion into RR Appendix **27**, the relevant part of the Rules of Procedure, and explicit recognition of the aggregation of single channels for wideband digital communications.

**2. Documents**

* Input Documents

[APG23-6/INP-18](https://www.apt.int/sites/default/files/2023/08/APG23-6-INP-18_India_WP2_PACP_WRC-23_Agenda_Items.docx) (IND)

[APG23-6/INP-24](https://www.apt.int/sites/default/files/2023/08/APG23-6-INP-24_Bangladesh_WP2_PACP_WRC-23_Agenda_Items.docx) (BNG)

[APG23-6/INP-31](https://www.apt.int/sites/default/files/2023/08/APG23-6-INP-31_Japan_WP2_Views_and_Proposals_on_WRC-23_Agenda_Items.docx) (J)

[APG23-6/INP-48](https://www.apt.int/sites/default/files/2023/08/APG23-6-INP-48_Indonesia_WP2_PACP_WRC-23_Agenda_Items.docx) (INS)

[APG23-6/INP-54](https://www.apt.int/sites/default/files/2023/08/APG23-6-INP-54_Multicountry_WP2_PACP_WRC-23_Agenda_Item_1.9.docx) (AUS, MLA, NZL, SNG, THA)

[APG23-6/INP-66](https://www.apt.int/sites/default/files/2023/08/APG23-6-INP-66_Iran_WP2_Preliminary_Views_on_WRC-23_Agenda_Items.docx) (IRN)

[APG23-6/INP-88](https://www.apt.int/sites/default/files/2023/08/APG23-6-INP-88_KOR_WP2_PACP_WRC-23_Agenda_Items.docx) (KOR)

[APG23-6/INP-93](https://www.apt.int/sites/default/files/2023/08/APG23-6-INP-93_Philippines_WP2_PACP_WRC-23_Agenda_Items.docx) (PHL)

[APG23-6/INP-104](https://www.apt.int/sites/default/files/2023/08/APG23-6-INP-104_China_WP2_PACP_WRC-23_Agenda_Items.docx) (CHN)

[APG23-6/INP-119](https://www.apt.int/sites/default/files/2023/08/APG23-6-INP-119_VietNam_WP2_PACP_WRC-23_Agenda_Item_1.8.docx) (VTN)

* Information Documents

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

[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) (RCC)

[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)

[APG23-6/INF-52](https://www.apt.int/sites/default/files/2023/08/APG23-6-INF-52_CITEL_preparation_for_WRC-23.pdf) (CITEL)

**3. Summary of discussions**

**3.1 Summary of APT Members’ views**

**3.1.1 Multi-country** - **Document APG23-6/INP-54**

* + Australia, Malaysia, New Zealand, Singapore and Thailand support Method B in order to include the relevant part of the Rules of Procedure into RR Appendix **27** and explicit recognition of the aggregation of single channels for wideband digital communications to accommodate the use of wideband HF technologies for the AM(R)S.

**3.1.2 Bangladesh** - **Document APG23-6/INP-24**

* To satisfy this agenda item, Bangladesh administration supports method B of the CPM report to WRC-2023. However, appropriate technical and regulatory measures is required in order to prevent constraints to the operation of the current HF systems.

**3.1.3 China Document APG23-6/INP-104**

* China is of the view that:

When introducing aeronautical wideband digital systems under AM(R)S in the HF band of Agenda Item 1.9, protection of current HF applications from harmful interference shall be ensured. China supports Method B of the CPM report.

* Proposal：

China supports Method B of the CPM report to satisfy agenda item 1.9.

**3.1.4 India** **Document APG23-6/INP-18**

* + India supports the proposed changes to Appendix 27 of Radio Regulations to allow new modern/digital wideband HF communication systems using contiguous and/or non-contiguous 3 kHz channels coexisting with current HF voice and data systems. India supports Method B to satisfy this Agenda Item.

**3.1.5 Indonesia** - **Document APG23-6/INP-48**

* Indonesia is of the view to support digitalization of HF aeronautical communication, under Method B allowing digital HF communication using contiguous and or non-contiguous 3 kHz channels, coexisting with current analogue system.
* Further, the implementation of Digital HF communication shall avoid harmful interference to existing analogue systems.

**3.1.6 Iran** - **Document APG23-6/INP-66**

* The Administration of Iran (Islamic Republic of) does not oppose Method B for modifications to RR Appendix 27 and inclusion of relevant parts of the current text of the Rules of Procedures in RR Appendix 27 and make adjustments to explicit the use of wideband emissions with the need to avoid harmful interference to primary services in the same and adjacent bands, in particular, existing AM(R)S HF systems.

**3.1.7 Japan** - **Document APG23-6/INP-31**

* Japan supports necessary modifications to RR Appendix 27 as well as inclusion of the relevant part of the Rules of Procedure into RR Appendix 27, to accommodate wideband HF technologies for the aeronautical mobile (route) service (AM(R)S) between 2 850 and 22 000 kHz, as indicated in Method B.
* However, Japan is of the view that such modification must avoid harmful interference to existing systems, including current AM(R)S HF system, operating in the existing primary allocations in both the same and adjacent bands. Japan also recognizes that there are differing Wideband HF technologies, and is of the view that changes to RR Appendix 27 should ensure technology neutrality.

**3.1.8 Philippines** - **Document APG23-6/INP-93**

* Philippines supports Method B towards the modification of RR Appendix 27 for the inclusion of the relevant part of the current text of the Rules of Procedure, and for the explicit recognition of the aggregation of single channels for wideband digital communications.

**3.1.9 Republic of Korea** - **Document APG23-6/INP-88**

* + The Republic of Korea supports Method B described in the CPM Report which proposes modifications to RR Appendix **27** to accommodate digital technologies for aeronautical wideband HF systems, while it is required to ensure compliance with safety requirements and protection of other primary allocated services in the same and the adjacent bands.

**3.1.10 Vietnam** - **Document APG23-6/INP-119**

* Viet Nam support Method B in the CPM Report: Inclusion into RR Appendix 27, the relevant part of the Rules of Procedure, and explicit recognition of the aggregation of single channels for wideband digital communications.

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

* Clarification of what “100% modulation” means with respect to the measurement of the maximum power that is contained in Table 27/60 of the CPM text. Administrations are invited to consider the explanatory note under the table.

**4. APT View(s)**

The APT has considered Agenda Item 1.9 and drafted a Preliminary APT Common Proposal on the matter. In addition, the APT has formed the following view(s) on the Agenda Item:

* APT Members support modifications to RR Appendix 27 to accommodate digital technologies for aeronautical wideband HF systems, while ensuring compliance with safety requirements and protection of other primary services in the same and adjacent bands, in particular, existing AM(R)S HF systems.
* APT Members noted that there are differing Wideband HF technologies and are of the view that changes to the RR Appendix 27 should allow new digital wideband HF systems taking into account technology neutrality.

**5. Preliminary APT Common Proposal**



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

* Clarification of what “100% modulation” means with respect to the measurement of the maximum power that is contained in Table 27/60 of the CPM text. APT Members are invited to consider the explanatory note under the table.

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

APG23-6)

**7.1 Regional Groups**

**7.1.1 ASMG** - **Document APG23-4/INF-21 (August 2022)**

Promote optimal use of the frequency spectrum through initial support for the inclusion of the relevant part of the Rules of Procedure relating to Appendix 27 in the Radio Regulations provided coexistence with existing analogue systems is ensured.

**7.1.2 ATU** - **Document APG23-6/INF-55**

Support Method B, with the following conditions:

1. The new proposed digital wideband HF systems comply with the existing analog voice and data communication systems without causing interference or assignment modification unless agreed to by affected member states and operate in accordance with the ICAO international Standards and Recommended Practices and procedures.
2. Protection of in band and adjacent band services shall be ensured.

**7.1.3 CEPT** - **Document APG23-6/INF-46**

CEPT is of the view that the current version of RR Appendix 27 does not preclude the use of wideband digital HF communication by using multiple channels simultaneously.

* CEPT proposes:
  + - the introduction in the Appendix 27 of the relevant parts of the current text of the Rules of Procedure for clarification and,
    - adjustments of the Appendix 27 of the RR to make explicit the possibility to use wideband emissions by aggregation of multiple individual channels each of which complies with the provisions of Appendix 27.

**7.1.4 CITEL** - **Document APG23-6/INF-52**

Draft Inter-American Proposal:

A number of Administrations propose modifications to Appendix 27 to accommodate new digital HF technologies in frequency bands allocated to AM(R)S:

* The proposed modifications are in accordance with Method B of the final CPM

Report, reflecting existing Rules of Procedure (RoP) in the Appendix 27 of RR

* SUP RESOLUTION 429 (WRC-19) – Consequential to the results of studies at ITU-R in relation to this Resolution.

**7.1.5 RCC** - **Document APG23-6/INF-45**

* The RCC Administrations do not oppose modifications to RR Appendix 27, aimed at the use of digital technologies for commercial aviation AM(R)S safety-of-life applications in existing HF bands allocated to the aeronautical mobile (route) service when ensuring coexistence of current HF systems alongside modernized HF systems Regional Commonwealth in the field of Communications.
* Method В from the CPM Report is preferable.

**7.2 International Organisations**

**7.2.1 IARU** - **Document APG23-6/INF-ZZ**

* No View Provided

**7.2.2 ICAO** - **Document APG23-6/INF-25**

To support modification of Appendix **27** to the Radio Regulations for explicitly recognizing digital HF wideband aeronautical communication systems in a manner fully compatible with existing aeronautical HF assignments, and without modifying the Appendix **27** allotment plan. Those systems shall be operated in accordance with international Standards and Recommended Practices and procedures established in accordance with the Convention on International Civil Aviation.

**7.2.3 IMO - Document APG23-6/INF-ZZ**

* No View Provided

**7.2.4 WMO - Document APG23-6/INF-ZZ**

* + No View Provided

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1. The term ‘APT View’ refers to Section 4 of this document and is not a document type ‘APT View’. [↑](#footnote-ref-1)