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| **The 3rd Meeting of the APT Conference Preparatory Group for WRC-23 (APG23-3)** | **APG23-3/OUT-16** |
| 8 – 13 November 2021, Virtual/Online Meeting | 13 November 2021 |

Working Party 2

**PRELIMINARY VIEWs 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 WRC19. 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.
* Currently Appendix 27 (Frequency allotment plan for AM(R)S) does not allow aggregation, however the aviation industry, in conjunction with manufacturers, wants 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 in some other services (maritime mobile service, for instance), 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.
* To date, a work program has been discussed within Working Party 5B (WP 5B), and a request for technical parameters has been made to external organizations/administrations. Several sets of parameters have been provided and there is development working document toward draft new report on Aero wideband HF systems.
* Current documents of relevance within WP5B are:
* [Annex](https://www.itu.int/dms_ties/itu-r/md/19/wp5b/c/R19-WP5B-C-0355!N03!MSW-E.docx) 4 to Document 5B/355-E Chairman’s Report **-** *Draft Work Plan for WRC-23 agenda item 1.9*
* [Annex](https://www.itu.int/dms_ties/itu-r/md/19/wp5b/c/R19-WP5B-C-0355!N04!MSW-E.docx) 5 to Document 5B/355-E Chairman’s Report ***-*** *Working Document towards Draft CPM Text for WRC-23 agenda item 1.9*
* [Annex](https://www.itu.int/dms_ties/itu-r/md/19/wp5b/c/R19-WP5B-C-0355!N32!MSW-E.docx) 32 to Document 5B/355-E Chairman’s Report - *Working Document towards preliminary draft new report ITU-R M.[Aero-Wideband-HF]*

**2. Documents**

Input Documents submitted to the meeting of APG23-3

* Document [APG23-3/INP-08](https://www.apt.int/sites/default/files/2021/10/APG23-3-INP-08_AUS_contribution_for_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) (Australia),

[APG23-3/INP-21](https://www.apt.int/sites/default/files/2021/11/APG23-3-INP-21_New_Zealand_input_to_WP2_AIs_1.7_1.8_1.9_1.11.docx) (New Zealand),

[APG23-3/INP-25](https://www.apt.int/sites/default/files/2021/11/APG23-3-INP-25_WP2_Kor_1.6_1.7_1.8_1.9_1.10_1.11.docx) (Korea),

[APG23-3/INP-29](https://www.apt.int/sites/default/files/2021/11/APG23-3-INP-29_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) (Japan),

[APG23-3/INP-37](https://www.apt.int/sites/default/files/2021/11/APG23-3-INP-37_SNG_WP2_AI1.7_1.9.docx) (Singapore),

[APG23-3/INP-52](https://www.apt.int/sites/default/files/2021/11/APG23-3-INP-52_VTN_WP2_PV_1.7_1.8_1.9_1.10_1.11.docx) (Viet Nam)

Information Documents submitted to the meeting of APG23-3

* Document [APG32-3 INF-15](https://www.apt.int/sites/default/files/2021/10/APG23-3-INF-15_ICAO-Position_for_ITU_WRC-23.docx) (ICAO),

[APG23-3/INF-20](https://www.apt.int/sites/default/files/2021/11/APG23-3-INF-20_Status_of_CEPT_Preparation_for_WRC-23_and_RA-23.pdf) (CEPT)

[APG23-3/INF-37](https://www.apt.int/sites/default/files/2021/11/APG23-3-INF-37_ASMG_Preparation_for_WRC-23.pdf) (ATU)

[APG23-3/INF-39](https://www.apt.int/sites/default/files/2021/11/APG23-3-INF-39_Report_of_APM23-2.docx) (ASMG)

Briefing Document submitted to the meeting of APG23-3

* Document [APG23-3/INF-27](https://www.apt.int/sites/default/files/2021/11/APG23-3-INF-27_Briefing_on_AI1.9.docx)

**3. Summary of discussions**

**3.1 Summary of APT Members’ views**

**3.1.1 Australia -** **Document APG23-3/INP-08**

* Australia supports international arrangements through the Radio Regulations that are consistent with the rational and efficient use of Australia’s sovereign assets in the radiofrequency spectrum. In line with this, Australia supports sharing studies to ensure compatibility between the proposed digital technologies and the incumbent primary services within the frequency bands under Resolution **429 (WRC-19)** and adjacent bands. Australia supports ensuring studies and changes proposed are technology neutral.

**3.1.2 New Zealand -** **Document APG23-3/INP-21**

* New Zealand supports studies in accordance with Resolution 429 (WRC-19) with a view to enable new systems that improve the utility and efficiency of the HF bands (e.g. for modern digital wideband applications that can be used for long range, beyond line of sight communications). New Zealand supports proposed changes that are technology neutral.

**3.1.3 Korea -** **Document APG23-3/INP-25**

* The Republic of Korea supports reviewing 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 band and in adjacent bands.

**3.1.4 Japan** - **Document APG23-3/INP-29**

* Japan supports studies with a view to identify any necessary modifications to RR. Appendix 27 to accommodate wideband HF technologies for the aeronautical mobile (route) service (AM(R)S) between 2 850 and 22 000 kHz in accordance with Resolution 429 (WRC-19) with the need to avoid harmful interference to Primary services in the same band and adjacent bands in particular existing AM(R)S HF systems.
* Japan recognizes that there are differing Wideband HF technologies and are of the view that changes to RR. Appendix 27 should allow new digital wideband HF systems taking into account technology neutrality.

**3.1.5 Singapore -** **Document APG23-3/INP-37**

* Singapore supports the ITU-R studies to accommodate the introduction of HF wideband aeronautical communication systems, in accordance with Resolution 429 (WRC 19).

**3.1.6 Viet Nam -** **Document APG23-3/INP-52**

* Viet Nam supports the ITU-R studies with a view to identify any necessary modifications to RR. Appendix 27 to accommodate wideband HF technologies for the AM(R)S between 2 850 and 22 000 kHz frequency range in accordance with Resolution 429 (WRC-19) while ensuring no adverse effect on the allocation of the existing services and their future development in the same band and adjacent bands, in particular existing AM(R)S HF systems.
* Viet Nam is of the view that changes to RR. Appendix 27 should allow new digital wideband HF systems taking into account technology neutrality and possible usage of aggregating contiguous and/or not contiguous channels.
* Viet Nam regconizes that the implementation of new wideband AM(R)S HF systems would require coordination with ICAO and its regional groups given their role in organizing HF aeronautical channel plans in flight information regions.

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

* None

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

APT Members support studies with a view to identify any necessary modifications to RR. Appendix 27 to accommodate wideband HF technologies for the aeronautical mobile (route) service (AM(R)S) between 2 850 and 22 000 kHz in accordance with Resolution **429 (WRC-19)** with theneed to avoid harmful interference to primary services in the same and adjacent bands in particular existing AM(R)S HF systems.

APT Members are of the view that there are differing wideband HF technologies and are of the view that changes to RR. Appendix 27 should allow new digital wideband HF systems taking into account technology neutrality.

APT Members are also of the view that the implementation of new wideband AM(R)S HF systems require necessary coordination through ICAO given their role in organizing HF aeronautical channel plans in flight information regions.

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

* None

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

* None

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

APG23-2)

**7.1 Regional Groups**

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

* APG23-3 - Accommodate digital technologies for commercial aviation safety-of-life applications in existing HF bands allocated to the aeronautical mobile (route)

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

Support the ITU-R technical and regulatory studies to identify the necessary modifications to RR appendix 27, in order to accommodate digital technologies that are supposed to improve the HF communication systems and enhance aviation safety-of-life applications, provided that:

* + - The new proposed HF systems should coexist with the existing analog voice and data communication systems and operate in accordance with the ICAO international Standards and Recommended Practices and procedures.
    - Protection of in band and adjacent band services shall be ensured.

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

* CEPT supports the modification of the Appendix 27 of RR that would allow new digital wideband HF systems including aggregating contiguous and/or not contiguous channels, if retained, while ensuring:

• the protection of other primary services operating in band and in adjacent frequency bands, and

• coexistence with existing aeronautical analogue voice and data HF systems.

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

* *No information provided to APG23-3*
* APG23-2 - An Administration supports studies called for by Resolution 429 (WRC-19) to accommodate new digital HF technologies.

**7.1.5 RCC** - **Document APG23-3/INF-ZZ**

* None/No information available at this moment

**7.2 International Organisations**

**7.2.1 IARU** - **Document APG23-3/INF-ZZ**

* None/No information available at this moment

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

* To support ITU-R studies as called for by Resolution 429 (WRC-19).
* To support, based on agreed studies, the necessary modification of Appendix 27 to the Radio Regulations that will enable the introduction of HF wideband aeronautical communication systems. 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.

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