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| U.S. Radiocommunications Sector  Fact Sheet | |
| **Working Party:** ITU-R WP-5B | **Document No:** USWP5B35-17 |
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| **Purpose/Objective:** The purpose of this paper is to begin drafting the CPM text for Agenda Item 1.9, in accordance with Resolution **411 (WRC-23)**. | |
| **Abstract:** Working Party 5B is the responsible Working Party for reviewing Appendix 26 in accordance with Resolution **411 (WRC-23)** and developing draft CPM text. To date, WP 5B has initiated a Working Document towards a Preliminary Draft New Report for modernization of HF AM(OR)S. This paper will propose an initial framework and edits to the draft CPM text for Agenda Item 1.9. | |

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The United States proposes the following Attachment be considered for the development of Draft CPM text for Agenda Item 1.9. The United States submits this contribution to facilitate the drafting of text for methods and regulatory considerations.

**Attachment:** 1

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| ATTACHMENT |
| |  | | --- | | Proposed text for the CPM text on agenda item 1.9 | |

**CHAPTER 2**

**Fixed, mobile and radiolocation issues**

(Agenda items 1.7, 1.8, 1.9, 1.10)

Agenda item 1.9

(**WP 5B / WP 3L, WP 5C, WP 6A, WP 7A**)

*1.9 to consider appropriate regulatory actions to update Appendix****26*** *to the Radio Regulations in support of aeronautical mobile (OR) high frequency modernization, in accordance with Resolution****411*** *(****WRC‑23)****;*

Resolution **411 (WRC-23)** – *Consideration of appropriate regulatory actions to update Appendix****26*** *in support of modernization of high-frequency spectrum use in the aeronautical mobile (OR) service*

**2/1.9/1 Executive summary**

To address this agenda item, ITU-R has undertaken a regulatory analysis, pursuant to Resolution **411 (WRC-23)**, on consideration of regulatory provisions for updating Appendix **26** of the Radio Regulations (RR) in support of aeronautical (OR) HF modernization.

Two methods are considered to address this agenda item:

– Method A: no change to the Radio Regulations (NOC);

– Method B: Modification to Appendix 26; this method would include the explicit recognition of the aggregation of single contiguous and non-contiguous channels for wideband digital communications to support the modernization of high-frequency spectrum use in the aeronautical (OR) service.

**2/1.9/2 Background**

The High Frequency (HF) band has been identified as an effective alternative to provide much-needed integrated and interoperable Beyond-Line-of-Sight (BLOS) communications capabilities. HF is also a critical and affordable option for global broadcasting and amateur radio, and an alternative when other communications services are unavailable due to natural disasters or other national emergencies. The challenge with meeting the growing requirement for modern HF is the need for the increased bandwidth allocations. These allocations would be required to achieve higher data rates and improved voice quality communications while not impeding the legacy frequency needs of incumbent users, groups, or countries. Appendix **26** of the ITU Radio Regulations limits Aeronautical Mobile (OR) Service (AM(OR)S) to a maximum bandwidth of 2.8 kHz.

There are modern wideband HF (WBHF) technologies available that enable the flexibility to use wider channel bandwidths within advanced digital HF. This includes enhanced applications that can support a shared environment while also maximizing spectrum efficiency. Current wideband technology and methodologies are available that automate the negotiating of the Radio Frequency (RF) environment while mitigating any harmful interference to users in, or adjacent to, a desired HF frequency range.

WRC-23 through Resolution **411** (**WRC-23**) resolves to invite the Radiocommunication Sector to review Appendix **26** of the Radio Regulations and consider necessary changes, as appropriate, to Appendix **26**, on the basis of studies without modifying the existing area allotments, and while taking into account that the current use of the narrowband systems shall remain unchanged and shall not be impacted nor precluded by the revision of Appendix **26**.

**2/1.9/3 Summary and analysis of the results of ITU‑R studies**

*[Summary of the technical and operational studies, including a list of relevant ITU-R Recommendations, and analysis of the results of studies relating to the possible methods of satisfying the agenda item (see §§  A2.3, A2.5 and A2.6 of Annex 2 to* [*Resolution ITU-R 2-9*](http://www.itu.int/pub/R-RES-R.2-9-2023)*)]*

Several analysis were conducted to support the modernization of HF spectrum use in the AM(OR)S. A comparative measurement was conducted and results showed that adjacent band emissions and noise floor levels were below the incumbent maximum interference levels, below the average noise floor across the 3 to 18 MHz frequency band, did not contain any anomalous emissions and met the WBHF emission mask as described in Appendix 27 and included in this Report as Figure 2.

A static analysis was also conducted and the results of the static analysis showed that signal levels at the incumbent receiver are below the maximum interference levels for the incumbents along path lengths of 500, 1000, 5000 and 10000 km and the exceedance levels vary between -66 to -175 dB.

Given these results, and the fact that frequency allotments within Appendix 26 only apply to AM(OR)S, incumbent services operating in frequency bands adjacent to AM(OR)S transmissions would operate in an interference free environment, making WBHF AM(OR)S feasible in the context of Appendix 26.

**2/1.9/4 Methods to satisfy the agenda item**

**2/1.9/4.1 Method A: No change to the Radio Regulations**

[USA note: Administrations may provide a reason for inclusion of method A.]

**2/1.9/4.2 Method B: Modification of RR Appendix 26, to include the explicit recognition of the aggregation of single channels for wideband digital communications**

This agenda item could be the opportunity to include appropriate language in Appendix 26 for the use of wideband digital emissions. Although aggregation of carriers could be considered, this method proposes to explicitly recognize the possibility to aggregate single channels to benefit from wideband digital communications without modifying the existing Plan. In this method, the suppression of Resolution **411 (WRC-23)** is also proposed.

**2/1.9/5 Regulatory and procedural considerations**

2/1.9/5.1 Method A:

NOC to RR.

2/1.9/5.2 Method B:

**PART I - General provisions, definitions**

NOC

**PART II - Technical bases used for the establishment of the Frequency Allotment Plan for the aeronautical mobile (OR) service in the bands allocated exclusively to that service between 3 025 kHz and 18 030 kHz**

The channelling arrangement specified in No. **26**/3.1 does not prejudice the rights of administrations to establish, and to notify assignments to stations in the aeronautical mobile (OR) service other than those using radiotelephony, provided that:

– channel bandwidth does not exceed 2.8 and is situated wholly within one frequency channel;

For non-contiguous aggregation channel bandwidth does not exceed 2.8 kHz (within a 200 kHz bandwidth);

For contiguous aggregation occupied bandwidths of 6 to 48 kHz can be implemented using currently allotted frequency channels;

;– the limits of unwanted emission are met (see Appendix **27**, No. **27**/74).     (WRC‑2000)

Individual contiguous channels complying with the provisions of Appendix 26 5/2 may be aggregated to provide wideband communication without changing the plan of individual channels.

**PART III - Arrangement for the allotment of frequencies for the aeronautical mobile (OR) service in the exclusive bands between 3 025 and 18 030 kHz**

NOC

**PART IV – Criteria for compatibility assessment**

NOC

**PART V – Procedure for modification and maintenance of Part III**

NOC

2/1.9/5.3

SUP RESOLUTION 411 (WRC-23)