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| **US Radiocommunication Sector****FACT SHEET** |
| **Working Party:** ITU-R WP 5B | **Document No:** USWP5B28-06 |
| **Reference:** 5B/481 Annex 31, 5B/255 Annex 6 | **Date: 23** February 2022 |
| **Document Title:** Working document towards a draft CPM text for WRC-23 agenda item 1.10 |
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| **Purpose/Objective:** The purpose of this document is to initiate the WD towards a draft CPM text for WRC-23 AI 1.10. |
| **Abstract:** WRC-19 approved AI 1.10 for the WRC-23 study cycle to consider a possible introduction of new non-safety AMS applications in the 15.4-15.7 GHz band. This contribution initiates the WD towards a draft CPM text for WRC-23 AI 1.10. |
| **Fact Sheet Preparer:** Dominic Nguyen, Ryan McDonough |

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| **Radiocommunication Study Groups** | Logo  Description automatically generated |
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| United States of America |
| Working document towards a draft CPM text for WRC-23 agenda item 1.10 |

**1 Introduction**The United States of America would like to initiate the development of a working document towards a draft CPM text for WRC-23 agenda item 1.10. The intent of this contribution is to aid Working Party (WP) 5B as the responsible group in progressing the work on draft CPM text and should not be viewed as the United States of America supporting one method over any other at this time.Attachment: 1 |

ATTACHMENT

**CHAPTER 2**

**Aeronautical and maritime issues**

(Agenda items 1.6, 1.7, 1.8, 1.9, 1.10, 1.11)

Agenda item 1.10

**(WP 5B[[1]](#footnote-2)\* / WP 3K, WP 3M, WP 4A, WP 5A, WP 5C, WP 7C, WP 7D)**

*1.10 ​​to conduct studies on spectrum needs, coexistence with radiocommunication services and regulatory measures for possible new allocations for the aeronautical mobile service for the use of non-safety aeronautical mobile applications, in accordance with Resolution* ***430 (WRC-19);***

Resolution **430 (WRC-19)** – *Studies on frequency-related matters, including possible additional allocations, for the possible introduction of new non-safety aeronautical mobile applications.*

**2/1.10/1 Executive summary**

This agenda item seeks possible new aeronautical mobile service allocations for the use of non-safety aeronautical mobile applications. To address this agenda item, ITU-R has undertaken studies, pursuant to Resolution **430 (WRC-19)**, on frequency-related matters for the possible introduction of new non-safety aeronautical mobile applications, including consideration of possible additional allocations, (see section 2/1.10/3).

The following methods are considered to answer this agenda item:

– Method A: NOC

**2/1.10/2 Background**

*[Text of the background, not more than half a page of text to provide general information in a concise manner, in order to describe the rationale of the agenda items (or issue(s)). See also § A2.2 of Annex 2 to* [*Resolution ITU-R 2-8*](http://www.itu.int/pub/R-RES-R.2-8-2019)*]*

The frequency range 15.4-15.7 GHz is widely used by the radiolocation and aeronautical radionavigation services for critical applications with a significant investment in airborne radar applications within this band. ITU-R past studies show sharing between RLS and AMS could be difficult, requiring extremely large separation distances. Additionally, the sub-band 15.43-15.63 GHz is allocated to the fixed-satellite service (Earth-to-space) on a primary basis for use by feeder links of non-geostationary systems in the mobile satellite service. The aeronautical radionavigation service in the 15.4-15.7 GHz band is used for landing systems and unmanned aircraft detect and avoid systems. An ITU-R Recommendation is currently being developed to provide characteristics and protection requirements for these aeronautical radionavigation systems (Document 5B/481 Annex 18). The sharing studies for the 15.4-15.7 GHz band should take into account the characteristics and protection requirements being developed and the airborne mobile nature of the aeronautical radionavigation systems that operate in the 15.4-15.7 GHz band.

The 22-22.21 GHz frequency band under consideration is adjacent to the 22.21-22.5 GHz frequency band allocated to the EESS (passive). The 22.21-22.5 GHz frequency band allows for remote sensing observations near an H2O absorption line that is essential not only for measuring atmospheric water vapor, but also for reducing error in other geophysical parameters due to the presence of water vapor. Therefore, adjacent band studies are required to ensure protection of the EESS (passive) in the 22.21-22.5 GHz frequency band.

**2/1.10/3 Summary and analysis of the results of ITU-R studies**

*[This section should contain a summary of the technical and operational studies performed within ITU-R, including a list of relevant ITU-R Recommendations. Depending on the agenda item, this section could be divided in two parts, one part dealing with the summary and the other part dealing with the analysis. The results of the ITU-R studies should also be analysed with respect to the possible methods of satisfying the agenda item and presented in a concise manner.]*

**2/1.10/3.1 Relevant ITU-R Recommendations and Reports**

The relevant ITU-R Recommendations are:

Characteristics and protection criteria: [F.758-7](https://www.itu.int/rec/R-REC-F.758-7-201911-I/en), [M.1730-1](https://www.itu.int/rec/R-REC-M.1730/en), [M.2089-0](https://www.itu.int/rec/R-REC-M.2089/_page.print), [M.2114-0](https://www.itu.int/rec/R-REC-M.2114/en), [M.2115-0](https://www.itu.int/rec/R-REC-M.2115/en), [M.2116-0](https://www.itu.int/rec/R-REC-M.2116/en), [M.2120-0](https://www.itu.int/rec/R-REC-M.2120/en), [RA.517-4](https://www.itu.int/rec/R-REC-RA.517/en), [RA.769-2](https://www.itu.int/rec/R-REC-RA.769/en), [RS.1028-2](https://www.itu.int/rec/R-REC-RS.1028/en), [RS.1029-2](https://www.itu.int/rec/R-REC-RS.1029), [RS.1861-0](https://www.itu.int/rec/R-REC-RS.1861/en), [RS.2017-0](https://www.itu.int/rec/R-REC-RS.2017/en), [S.1340-0](https://www.itu.int/dms_pubrec/itu-r/rec/s/R-REC-S.1340-0-199710-I%21%21PDF-E.pdf), and [S.1341-0](https://www.itu.int/rec/R-REC-S.1341/en).

Antenna patterns: [F.699-8](https://www.itu.int/rec/R-REC-F.699/en), [F.1245-3](https://www.itu.int/rec/R-REC-F.1245/en), [F.1336-5](https://www.itu.int/rec/R-REC-F.1336/en), [M.1851-1](https://www.itu.int/rec/R-REC-M.1851/en), [RA.1631-0](https://www.itu.int/rec/R-REC-RA.1631/en), [RS.1813-1](https://www.itu.int/rec/R-REC-RS.1813/en), [S.465-6](https://www.itu.int/rec/R-REC-S.465/_page.print), [S.580-6](https://www.itu.int/rec/R-REC-S.580/en), [S.732-1](https://www.itu.int/dms_pubrec/itu-r/rec/s/R-REC-S.732-1-201212-I%21%21PDF-E.pdf), and [SA.509-3](https://www.itu.int/rec/R-REC-SA.509/en).

Propagation models and others: [F.637-4](https://www.itu.int/rec/R-REC-F.637/en), [M.1461-2](https://www.itu.int/rec/R-REC-M.1461/en), [M.1825-0](https://www.itu.int/rec/R-REC-M.1825/en), [P.452-17](https://www.itu.int/rec/R-REC-P.452/en), [P.528-5](https://www.itu.int/rec/R-REC-P.528/en), [P.619-4](https://www.itu.int/rec/R-REC-P.619/en), [P.1409-2](https://www.itu.int/rec/R-REC-P.1409/en), [RA.1513-2](https://www.itu.int/rec/R-REC-RA.1513/en), [SA.510-3](https://www.itu.int/rec/R-REC-SA.510/en), [SM.337-6](https://www.itu.int/rec/R-REC-SM.337/en), and [SM.1541-6](https://www.itu.int/rec/R-REC-SM.1541).

The relevant sharing studies ITU-R Reports are: [M.2170-0](https://www.itu.int/pub/R-REP-M.2170), [M.2229-0](https://www.itu.int/pub/R-REP-M.2229/ar), [M.2230-0](https://www.itu.int/pub/R-REP-M.2230/ru), and [RA.2131-0](https://www.itu.int/pub/R-REP-RA.2131-2009).

To perform studies required under agenda item 1.10 and Resolution **430 (WRC-19)**, developed Report ITU-R M.[NON-SAFETY AMS CHARACTERISTICS AND SHARING STUDIES].

**2/1.10/3.2 Summary of the sharing and compatibility studies**

**2/1.10/3.2.1 Radioastronomy operating in the band 15.35-15.4 GHz**

**2/1.10/3.2.2 Radiolocation operating in the band 15.4-15.7 GHz**

Sharing in the 15.4 – 15.7 GHz band should take into account the characteristics and protection requirements for these aeronautical radionavigation systems and the radiolocation systems that operate in the 15.4 – 15.7 GHz band. The current studies C in Doc 5B/481 Annex 31 show that sharing between non-safety AMS (using scenario of data networks above the clouds) and radiolocation systems is not feasible due to a high transmitted EIRP limit from the non-safety AMS resulting in a minimum separation distance of TBD km.

**2/1.10/3.2.3 Aeronautical Radionavigation operating in the band 15.4-15.7 GHz**

**2/1.10/3.2.4 Fixed-Satellite operating in the band 15.43-15.63 GHz**

**2/1.10/3.2.5 Broadcasting-Satellite operating in the band 21.4-22 GHz**

**2/1.10/3.2.6 Fixed Service operating in the band 22-22.21 GHz**

**2/1.10/3.2.7 Mobile Service operating in the band 22-22.21 GHz**

**2/1.10/3.2.8 Radioastronomy operating in the band 22.21-22.5 GHz**

**2/1.10/3.2.9 Earth Exploration Satellite Service (passive) operating in the band 22.21-22.5 GHz**

Sharing in the 22.21-22.5 GHz band should take into account the characteristics and protection requirements for these Earth Exploration Satellite Service (passive) systems that operate in the 22.21-22.5 GHz band.

The current studies A in Doc 5B/481 Annex 31 section A2.3.3 show that sharing between non-safety AMS and EESS (passive) systems is not feasible for AMS scenarios such as in 4.2 (wildfire observation) due to the anticipated, out-of-band emission level from the non-safety AMS uplinks operating in the 22.16-22.21 GHz region immediately adjacent to the EESS (passive) sensors operating in 22.21-22.5 GHz. A guard region of 50MHz limiting aggregate OOB emmisions of wildfire observation operations to [XX dBW/MHz] immediately adjacent to the band edge would be necessary to ensure protection of EESS (passive) operations.

[Note: The following text regards the sharing scenario 4.5 (Data networks above the clouds) but this study has not been finalized for consideration in the PDNR in section 4 of Doc 5B/481 Annex 31.

The current studies A in Doc 5B/481 Annex 31 section A2.3.3 show that sharing between non-safety AMS and EESS (passive) systems is not feasible for AMS scenarios such as in 4.5 (network above the cloud) due to the anticipated, out-of-band emission level from the non-safety AMS links operating in the 22.16-22.21 GHz region immediately adjacent to the EESS (passive) sensors operating in 22.21-22.5 GHz. A guard region of 50MHz limiting aggregate OOB emmisions of wildfire observation operations to [YY dBW/MHz] immediately adjacent to the band edge would be necessary to ensure protection of EESS (passive) operations.]

Note: Given the lack of defined deployment information to model planned AMS operations over a large area, these studies make assumptions on potential deployments based on information derived from sections 4.2 (wildfire observation) and 4.5 (data networks above the clouds). Should different deployment information or operational scenarios become available or change, the results of the studies could change.

**2/1.10/3.2.10 Space Research operating in the band 22.21-22.5 GHz**

**2/1.10/4 Methods to satisfy the agenda item**

*This section should contain the brief description of the Method or Methods to satisfy the agenda item as per Section A2.4 of Annex 2 to* [*Resolution ITU-R 2-8*](http://www.itu.int/pub/R-RES-R.2-8-2019)

**2/1.10/4.1 Method A:**

No changes to the Radio Regulations for the band 15.4-15.7 GHz.

**2/1.10/5 Regulatory and procedural considerations**

**2/1.10/5.1 For Method A: No change to Radio Regulations**

**NOC**

**No change to Volume I, II, and IV of the Radio Regulations.**

**2/1.10/5.2 For Method X: This method proposes to suppress Resolution 430 (This method can be combined with any other methods)**

SUP

RESOLUTION 430 (WRC-19)

**Studies on frequency-related matters, including possible additional allocations, for the possible introduction of new non-safety aeronautical mobile applications**

[Additional sections with example(s) of regulatory text for the other methods to satisfy the agenda item, if any]. [To be populated later]

1. \* Note: See relevant text in CPM23-1 meeting report (Annex 4 to BR Administrative Circular [CA/251](https://www.itu.int/md/R00-CA-CIR-0251/en)) on how to facilitate the work related to satellite. [↑](#footnote-ref-2)