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| U.S. Radiocommunications Sector  Fact Sheet | |
| **Working Party:** ITU-R WP 5B | **Document No:** USWP5B24-21 |
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| **Document Title:** PROPOSED WORK PLAN FOR AGENDA ITEM 1.8, WRC-23 **Implementation of Resolution 155 (Rev.WRC-19)** | |
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| **Purpose/Objective:** The purpose of this contribution is to propose a work plan, based on the previous “Guidelines for implementation of Resolution **155 (WRC-15)**” document, that WP 5B can use to ensure it is ready to respond to it’s obligations under Agenda Item 1.8. | |
| **Abstract:** Unlike the last four years, there is now an Agenda Item (1.8) to support the continuing development of the technical and regulatory aspects of the use of the FSS by Unmanned Aircraft System. Consequently it is appropriate that the working party responsible for this work should have a Work Plan for its future meetings to ensure it is ready to respond to the *resolves to encourage administrations* (1 and 2) as well as the *invites ITU-R* contained in Resolution **155 (Rev.WRC-19)**. | |

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| **Radiocommunication Study Groups** |  |
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| **July 2020** |
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| PROPOSED WORK PLAN FOR AGENDA ITEM 1.8, WRC-23  **Implementation of Resolution 155 (Rev.WRC-19)**  **Introduction**  WRC-23 Agenda Item 1.8 calls for review and possible revision of Resolution **155 (Rev.WRC-19)** and No. **5.484B** in the frequency bands to which they apply. Work on the use of the FSS by Unmanned Aircraft Systems (UAS) has been ongoing since WRC-15 Agenda Item 1.5. With the adoption of Agenda Item 1.8 by WRC-19 it is now appropriate to introduce, develop and maintain a formal Work Plan for the guidance of WP 5B in its work.  **Proposal**  The United States of America proposes to assist in answering the above need for a formalized Work Plan with the attached contribution.  The Work Plan proposal by the United States of America is very similar to the informal “Guidelines” document, 5B/712 Annex 1, that had been previously used by WP 5B during the 2015-2019 study cycle of its work.  **Attachment:** | |

attachment

PROPSED WORK PLAN FOR WRC-23 AGENDA ITEM 1.8, WRC-23

**Implementation of Resolution 155 (Rev.WRC-19)**

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**1 Introduction and scope**

The proposed Work Plan includes the same four elements contained in the previous “Guideline for the Implementation of Resolution **155 (WRC-15)**”, 5B/712 Annex 1 document that WP5B had been successfully using to guide its work in the last study cycle.

Those four elements are:

1) Consideration of the regulations regarding Earth Stations In Motion

2) UAS CNPC Earth Station Characteristics

3) Sharing Studies with other Systems

4) Procedural considerations for the implementation of Resolution **155 (Rev.WRC-19)**

The following sections identify the key items in each of these four elements and propose a Work Plan to assist WP 5B in meeting its responsibilities under Resolution **155 (Rev.WRC-19).**

**2 Consideration of the regulations regarding Earth Stations In Motion**

Due to some overlapping regulatory principles for operation of UAS/CNPC and Aircraft ESIMs for spectrum compatible use in their respective bands, how to progress with Resolution **155** **(Rev. WRC-19)** should take into account the outcome of the WRC-19 decision on Aircraft ESIMs from the view point of:

a) Protecting space services

b) Protecting terrestrial services.

For terrestrial service it is necessary to take into account the representative characteristics of fixed and mobile services for existing and future use of the band, noting that the PFD for the Fixed Service is being developed in ITU-R M.[UA-PFD] however there is a need to complete sharing studies with other services as indicated later in this document. For space services, Resolution **169 (WRC-19)** includes provisions on commitments, treatment on cases of unacceptable interference, and operational use that should be reviewed for possible incorporation into Resolution **155**.

**3 UAS CNPC Earth Station Characteristics**

The following steps are necessary for the implementation of Resolution **155 (Rev.WRC-19)** regarding development of UAS CNPC Earth station characteristics a) extracted from the BRIFIC and b) those provided as potential characteristics for information only at this stage. This work is being documented in the [Report/Recommendation], **Characteristics of unmanned aircraft system control and non-payload Earth stations for use with space stations operating in the Fixed Satellite Service,** [UAS CNPC\_CHAR], 5B/712 Annex 5.

It should be noted that steps 1) through 4) have already been completed prior to WRC-19.

1) Identify all satellite networks recorded in the MIFR in conformity with the relevant elements of *resolves* 13 of Resolution **155 (Rev.WRC-19)** see a) and b) below:

a) Having assignments that have been successfully coordinated under Article **9** of the Radio Regulations (RR).

b) Have been notified and recorded in the MIFR with favorable finding in conformity with respect to RR Nos. **11.31**, **11.32** or **11.32A** except those which are recorded under RR No. **11.32** by applying Appendix **5** § 6.d.

2) Request that the Radiocommunication Bureau certifies that those satellite networks identified comply with the appropriate resolves in Resolution **155 (Rev.WRC-19)**.

3) Identify the sensitive/critical satellite network parameters that are required in order to determine the generic envelope of satellite network characteristics from those satellite networks mentioned in 1) above to be used in step 5) below and develop a methodology/tools to extract these characteristics from the certified list of FSS satellite networks from 1).

4) Compile UAS CNPC Earth stations characteristics and their parameter values from those submitted to WP 5B by its members in order to finalize characteristics for UAS CNPC in application of Resolution **155 (Rev.WRC-19)**.

5) Compare the characteristics and their parameter values in 4) with those in 3) to determine if the proposed characteristics of the UAS CNPC Earth stations in 4) fit with the characteristics of the specific and/or typical earth stations for the satellite networks described in 3) to determine that UAS CNPC Earth stations intended to communicate with satellite networks mentioned in 1) above are in compliance with Resolution **155 (Rev.WRC-19)**.

6) Once these satellite network and UAS CNPC Earth station characteristics are finalized in a tabular or other format liaise them to WP 4A to allow WP 4A to examine the final characteristics concluded/agreed by WP 5B [and inform WP 5B that they are certified to be adequate/to be used as of the generic envelope of characteristics of specific and/or typical fixed satellite service Earth stations] taking into account the relevant resolves and “instructs the Director of the Radiocommunication Bureau”.

7) Amend, if necessary, the generic envelope characteristics for inclusion in [UAS CNPC\_CHAR].

8) Provide ICAO with UAS CNPC Earth station characteristics parameters and their values that comply with Resolution **155 (Rev.WRC-19)** in order to enable ICAO to implement relevant resolves of Resolution **155 (Rev.WRC-19)**.

**4 Sharing Studies with other Systems**

The following studies ITU-R M.[UAS CNPC\_SHAR] need to be addressed for implementation of Resolution **155 (Rev.WRC‑19****).**

**4.1 Sharing studies with space services**

**4.1.1 Sharing studies with the Fixed-Satellite Service**

**4.1.1.1 GSO FSS networks**

**4.1.1.2 Non-GSO FSS systems**

Non-geostationary-satellite systems in the fixed-satellite service in the respective frequency bands are secondary (see and Article **22.2** footnote **5.484A**)

**4.1.2 Sharing studies with the other space services**

**4.1.2.1** **Sharing studies with the Broadcasting-Satellite Service (space-to-Earth)**

Broadcasting-Satellite Service is allocated primary in 12.5-12.75 GHz in Region 3.

**4.1.2.2 Sharing studies with the Mobile-Satellite Service**

Mobile-Satellite Service is allocated primary in 19.7-20.1 GHz and 29.5-29.9 GHz in Region 2 and in 20.1-20.2 GHz and 29.9-30 GHz for all regions.

**4.2 Sharing studies with terrestrial services**

**4.2.1 Sharing studies with the Fixed Service**

Fixed Service is allocated primary in 10.95-11.2 GHz and 11.45-11.7 GHz in all regions, in 11.7‑12.1 GHz in Region 2, 12.2-12.75 GHz in Region 3, 14-14.3 GHz in some countries, 14.3-14.4 GHz in Region 1 and 3, and in 14.4-14.47 GHz in all regions.

This work is being documented in the Report, **Review of power flux-density limits in accordance with *resolves* 16 of Resolution 155 (WRC-15)**, [UA\_PFD], 5B/712 Annex 7.

**4.2.2 Sharing studies with the Mobile Service**

Mobile Service is allocated primary in 10.95-11.2 GHz and 11.45-11.7 GHz in all regions, 12.2-12.75 GHz in Region 3, 14.3-14.4 GHz in Region 1 and 3, and in 14.4-14.47 GHz in all regions.

**4.2.3 Sharing studies with the Radionavigation Services**

Radionavigation Service is allocated primary in 14.0-14.3 GHz band.

**5 Procedural consideration for future implementation of Resolution 155 (Rev.WRC-19)**

With regard to the implementation of *resolves* 4 of Resolution **155 (Rev. WRC-19)** any required regulatory provisions need to be identified or developed for inclusion in Articles **9** and **11** of the Radio Regulations.

In addition, country-based national frequency authorization approval and checking of station class UG compliance with pfd masks needs to be undertaken.

In consideration of the safety-of-life aspects of Agenda Item 1.8, Resolution **155 (Rev.WRC-19)** and footnote No. **5.484B** require clarification to ensure that:

1) UAS CNPC Links have the appropriate regulatory status.

2) UAS CNPC Links operate as an application of the FSS, which is a primary service.

3) The interference that the UA may receive from other services when it is operating as an application of the FSS is fully and clearly described.

4) The limits on emissions from the UA, to ensure that other services experience no more interference than they would from any other application of the FSS, are fully and clearly described.

**6 Work Plan**

| **Working Party 5B Meetings** | **Work plan** |
| --- | --- |
| Meeting #24  2020 | – Agree on Work Plan  – Continue development of ITU-R M.[CNPC\_CHAR]  – Finalize ITU-R M.[UA\_PFD] |
| Meeting #25  2020 | – Review and update Work Plan as needed  – Continue development of ITU-R M.[CNPC\_CHAR]  – Begin development of Sharing Studies ITU-R M.[UAS CNPC\_SHAR] |
| Meeting #26  2021 | – Review and update Work Plan as needed  – Liaise ITU-R M.[CNPC\_CHAR] with WP 4A – Section 3, step 6)  – Continue development of Sharing Studies ITU-R M.[UAS CNPC\_SHAR] |
| Meeting #27  2021 | – Review and update Work Plan as needed  – Continue development of ITU-R M.[CNPC\_CHAR]  – Liaise ITU-R M.[CNPC\_CHAR] with ICAO– Section 3, step 8)  – Continue development of Sharing Studies ITU-R M.[UAS CNPC\_SHAR]  – Begin development of draft CPM text |
| Meeting #28  2022 | – Review and update Work Plan as needed  – Finalize ITU-R M.[CNPC\_CHAR]  – Continue Development of ITU-R M.[UAS CNPC\_SHAR]  – Finalize draft CPM text for WRC-23 AI 1.8 |
| Meeting #29  2022 | – Review and update Work Plan as needed  – Finalize ITU-R M.[UAS CNPC\_SHAR] |
| CPM 23-2  2023 |  |
| WRC-23  2023 |  |