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| U.S. Radiocommunications Sector  Fact Sheet | | |
| **Working Party:** ITU-R WP 7D | **Document No:** USWP7D\_24-01\_NC | |
| **Ref:** WRC-27 AI 1.7 | **Date:** August 15, 2024 | |
| **Document Title:** Proposed draft liaison statement to Working Party 5D – Relevant technical information to support studies under WRC-27 agenda item 1.7 | | |
| **Author(s)/Contributors(s):**  Michael Mullinix  CTIA | | Phone: 301-639-7159  Email: mmullinix@ctia.org |
| **Purpose/Objective:** This contribution will propose amendments to Annex 12 of the previous 7D Chair’s report with an aim to finalize a liaison statement to WP5D with the relevant technical information for studies under WRC-27 agenda item 1.7. | | |
| **Abstract:** At the previous meeting of WP 7D, the United States contributed material which formed the baseline for elements towards a draft liaison statement to WP 5D concerning technical information needed for sharing studies with RAS under WRC-27 1.7. This input will suggest modifications to the draft liaison contained in Annex 12 of [7D/41](https://www.itu.int/md/R23-WP7D-C-0041/en). | | |

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| **Radiocommunication Study Groups** |  |
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| Source: None  Subject: WRC-27 Agenda Item 1.7 | **Document 7D/** |
| **Day Date 2024** |
| **English only** |
| United States of America | |
| proposed draft reply liaison statement to Working party 5D  **Relevant technical information to support studies under WRC-27 Agenda Item 1.7** | |
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**Introduction**

According to the Administrative Circular [CA/270](https://www.itu.int/md/R00-CA-CIR-0270/en) dated 26 January 2024, Working Party (WP) 5D is responsible for carrying out studies under WRC-27 agenda item 1.7 concerning the frequency bands 4 400-4 800 MHz, 7 125-8 400 MHz (or parts thereof) and 14.8-15.35 GHz. WP 7D has received a liaison statement from WP 5D in Document [7D/6](https://www.itu.int/md/R23-WP7D-C-0006/en) requesting information on technical and operational characteristics, protection criteria (which may include any methodology on how to apply it or performance objectives, as appropriate), with respect to systems operating on a primary basis in the indicated and adjacent frequency bands, as appropriate.

At its previous meeting of WP 7D, members progressed a draft liaison statement that was attached to the Chair’s Report in Annex 12 of Document 7D/41 for further consideration in order to meet the CPM-27/1 deadline of 31 December 2024. In this contribution, the United States proposes revisions to that draft found in Annex 2 (of Annex 12) to focus the liaison statement on the characteristics required to support the scope of the studies called for in Resolution **256 (WRC-23).** Proposed modifications are shown in tracked changes and highlighted in yellow, to guide the finalization of the liaison statement to be sent to WP 5D.

**Attachment**

**ATTACHMENT**

Annex 2

**Working Party 7D**

Draft REPLY liaison statement to Working PartY 5D   
(COPY TO WORKING PARTIES 3K, 3M, 4A, 4C, 5A, 5B, 5C,   
7B and 7C FOR INFORMATION)

**Relevant technical information to support studies under   
WRC-27 agenda item 1.7**

Working Party (WP) 7D thanks WP 5D for its liaison statement (Document 7D/6) requesting technical and operational characteristics, and protection criteria relevant to the studies to be undertaken under WRC-27 agenda item 1.7. WP 7D recognizes that according to the Administrative Circular CA/270 dated 26 January 2024, Working Party (WP) 5D is responsible for carrying out studies under WRC-27 agenda item 1.7 concerning the frequency bands 4 400-4 800 MHz, 7 125-8 400 MHz (or parts thereof) and 14.8-15.35 GHz, and has requested contributing Working Parties “to provide information on technical and operational characteristics, protection criteria (which may include any methodology on how to apply it or performance objectives, as appropriate), with respect to systems operating on a primary basis in the indicated and adjacent frequency bands, as appropriate.”

Working Party 7D notes the 14.8-15.35 GHz band under study is immediately adjacent to the 15.35‑15.40 GHz band allocated to the radio astronomy service (RAS) on a co-primary basis with other passive services. This band is covered by RR No. 5.340, stating that “all emissions are prohibited” in the band, and is a key band for conducting RAS operations. This footnote enables the passive services to operate and deploy their systems at very high-performance levels.

Working Party 7D would like to emphasize that many radio astronomy stations are typically located in rural areas, which may be taken into account during the course of the studies.

ITU-R Recommendations and Reports relevant to compatibility studies for new identification of International Mobile Telecommunications (IMT) in adjacent bands are given below.

**Relevant ITU-R Recommendations and Reports**

ITU-R Recommendations:

RA.769 *Protection criteria used for radio astronomical measurements* where the values in Tables 1, 2, and 3 should be jointly taken into account in analyses.

RA.1513 *Levels of data loss to radio astronomy observations and percentage-of-time criteria resulting from degradation by interference for frequency bands allocated to the radio astronomy service on a primary basis.*

RA.517 *Protection of the radio astronomy service from transmitters operating in adjacent bands*.

RA.1631 *Reference radio astronomy antenna pattern to be used for compatibility analyses between non-GSO systems and radio astronomy service stations based on the epfd concept* (Note: This Recommendation may be used for the purpose of determining a radio astronomy station gain.)

**ITU-R Report:**

RA.2131 *Supplementary information on the detrimental threshold levels of interference to radio astronomy observations in Recommendation ITU-R RA.769*

**Representative system characteristics for use in cross-border compatibility studies**

Radio astronomy service facilities may be sited at any location within an administration while taking into account Article**29** of the Radio Regulations, including near the border of another administration. For worst-case compatibility studies, therefore, a representative system may be assumed to be located at or near such a border location, with signals arriving into the RAS station from an equal or near-equal elevation. Conditions consistent with the application of protection criteria from Recommendation ITU-R RA.769-2 assume a representative system employs a high-gain antenna with average non-main-beam gain at or near 0 dBi, representing the receiver gain through which ground-based interfering signals (in band or adjacent) are received. Data loss thresholds should be derived from Recommendation ITU-R RA.1513-2. WP 7D recommends examining stations operating with the three conditions found in Recommendation ITU-R RA.769-2 for this frequency range:

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| **Operation** | **Bandwidth** | **Threshold level**  **(dB(W/(m2 · Hz)))** |
| Continuum | 50 MHz | –233 |
| Spectral Line | 150 kHz | –221 |
| Very long-baseline interferometry (VLBI) | 50 MHz | –189 |

These levels are specified for observing times of 2 000 seconds.

Working Party 7D kindly requests that WP 5D keep it informed on the progress of the compatibility and sharing studies under WRC-27 agenda item 1.7.

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| **Status:** Working Party 5D, for action   Working Parties 3K, 3M, 4A, 4C, 5A, 5B, 5C, 7B, and 7C, for information | |
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| **Contact:** [Name] | **E-mail:** [Contact] |