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| U.S. Radiocommunications Sector  Fact Sheet | |
| **Working Party:** ITU-R WP 4C | **Document No:** US4C-20 |
| **Ref:** Resolution 253(WRC-23), Administrative Circular CA/270, 4C/83, 4C/88, 4C/96 | **Date:** July 12th, 2024 |
| **Document Title:** Proposed Edits/Amendments to Documents 4C/77, Annexes 6 and 7 (Agenda item 1.13 Workplan and Working Document), and proposed organization for Joint WPs 4C/5D sessions on Agenda item 1.13 | |
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| **Purpose/Objective:** According to Administrative Circular CA/270, WP 4C has the role as the responsible group for WRC-27 Agenda item 1.13, which regards possible new allocations to the mobile-satellite service for direct connectivity between space stations and International Mobile Telecommunications (IMT) in the frequency ranges 694/98 – 2700 MHz.  If it is determined to be necessary for the October 2024 meeting of WP 4C, a contribution will be prepared which addresses the Annexes 6 and 7 of the Chairman’s Report of the April 2024 meeting, along with a proposed organization for the joint WPs 4C/5D sessions which will occur in the overlapping meeting days of these two groups. | |
| **Abstract:**  Contribution provides edits and additions to Docs. 4C/77(Annex 6), "Work plan for WRC-27 agenda item 1.13”, and 4C/77(Annex 7), “Elements for working document toward supporting WRC-27 agenda item 1.13”, and a proposed organization for the joint sessions of WPs 4C/5D which are to take place during the October 2024 meetings, taking into account reply liaison statements in Docs. 4C/83, 4C/88, 4C/96. (If necessary additional reply liaison statements from WP 4C will likewise be proposed.) | |

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| **Radiocommunication Study Groups** | Logo  Description automatically generated |
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| Proposed Edits/Amendments to Documents 4C/77, Annexes 6 and 7, and proposed organization for Joint WPs 4C/5D sessions on Agenda item 1.13 | |

Introduction

As determined by the CPM27-1 meeting (18-19 December 2023, Dubai) and according to Administrative Circular [CA/270](https://www.itu.int/md/R00-CA-CIR-0270/en), WP 4C has the role as the responsible group for WRC-27 Agenda item 1.13 with regards to undertaking sharing/compatibility studies and developing draft text for the CPM Report to WRC-27. Agenda item 1.13 is to investigate potential regulatory measures, including possible new allocations to the MSS, for direct connectivity between space stations and IMT user equipment to enhance the coverage area of terrestrial IMT networks:

to consider studies on possible new allocations to the mobile-satellite service for direct connectivity between space stations and International Mobile Telecommunications (IMT) user equipment to complement terrestrial IMT network coverage, in accordance with Resolution ​253 (WRC-23);

Attachments 1 and 2 of this contribution contains proposed edits to WP 4C’s workplan for WRC-27 Agenda item 1.13 and Elements for Working Document Toward Supporting Agenda Item 1.13, Annex 6 and 7 to Document 4C/77, respectively, largely based on reply liaison statements received from WP 5D and other contributing groups to this agenda item since the April 2024 meeting of WP 4C. The edits to Attachment 2 mostly regard §4 of Part B of Annex 7 to Document 4C/77.

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| **ATTACHMENT 1**  WORK PLAN FOR WRC-27 AGENDA ITEM 1.13 |
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Note 1: The finalization date in this work plan is of indicative nature as it will depend on the progress of work and the extent of any possible contributions. This work plan may therefore be adjusted at each meeting.

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| Milestones | **Meeting No. 31 (24-30 April 2024, Geneva, Switzerland)**  1 Consider the received contributions  2 Develop a preliminary list of frequency bands to be considered for WRC-27 agenda item (AI) 1.13  3 Develop liaison statements (LS) to contributing groups to request propagation models and characteristics of the existing services for the sharing and compatibility studies. Send LS to contributing groups  4 Consider Doc. [4C/3](https://www.itu.int/md/R23-WP4C-C-0003/en) from Working Party (WP) 5D and develop LS reply to WP 5D on organizing work on WRC-27 agenda item 1.13  5 Establish a detailed draft work plan for this agenda item to be considered at subsequent meetings of WP 4C  6 Establish a working document for WRC-27 AI 1.13 sharing and compatibility studies.  **Meeting No. 32 (16-22 October 2024, Geneva, Switzerland)**  ***\*1st Joint session with WP 5D***  1 Consider the received contributions and LS replies from contributing groups  2 Finalize the list of the frequency bands and arrangements to be considered in WRC-27 AI 1.13 studies  3 Initiate the implementation of the WRC decisions as contained in the BR Director note in paragraphs 3 and 4 as summarized below:   * to set to the fullest extent possible within the responsible ITU‑R group the criteria, assumptions, sharing methodologies and simulation processes to be used for sharing and compatibility studies; * to ensure that the ITU‑R studies relevant to WRC agenda items are based on ITU‑R Recommendations in force, input contributions, real-world measurements where feasible, evaluate realistic sharing scenarios and use real system values and refer to best practices   4 Establish characteristics of incumbent systems to be used in WRC-27 AI 1.13 sharing studies.  5 Continue development of working document for WRC-27 AI 1.13 sharing and compatibility studies, based on input contributions received  6 Send LS and LS replies to contributing groups as necessary  7 Review and revise work plan as necessary  8 Consider, if necessary, one (or multiple) correspondence group meetings for interested parties to discuss the technical characteristics, operational parameters and spectrum needs of D2D MSS as necessary.  **Meeting No. 33 (May [2025, TBD])**  1 Consider the received contributions and LS replies from contributing groups  2 Update working documents for WRC-27 AI 1.13 sharing and compatibility studies, based on input contributions received  3 Finalize the implementation of the WRC decisions as contained in the BR Director’s note in paragraph 3  4 Continue implementation of the WRC decisions as contained in the BR Director’s note in paragraph 4  5 Finalize characteristics of incumbent systems, including protection criteria, to be used in WRC-27 AI 1.13 sharing studies  6 Finalize the technical and operational characteristics of MSS  7 Initiate development of the draft CPM text  8 Send LS and LS replies to contributing groups as necessary  9 Review and revise work plan as necessary.  **Meeting No. 34 (October [2025, TBD])**  ***Possible \*2nd Joint session with WP 5D (to be confirmed if needed)***  1 Consider the received contributions and LS replies from contributing groups  2 Update working document for WRC-27 AI 1.13 sharing and compatibility studies, based on input contributions received  3 Continue implementation of the WRC decisions as contained in the BR Director’s note in paragraph 4  4 Update the draft CPM text  5 Send LS to WP 5D informing about the sharing studies progress as necessary  6 Send LS to other contributing groups as necessary  7 Review and revise work plan as necessary.  **Meeting No. 35 (April/May [2026, TBD])**  1 Consider the received contributions  2 Update working documents for WRC-27 AI 1.13 sharing and compatibility studies, based on input contributions received  3 Upgrade any working documents intended as new Reports or Recommendations to the Preliminary draft new ITU-R Recommendation(s)/Report(s)  4 Update the draft CPM text  5 Send LS to WP 5D informing about the sharing studies progress as necessary  6 Send LS to other contributing groups as necessary  7 Review and revise work plan as necessary.  **Meeting No. 36 (October [2026, TBD])**  ***Possible \*3rd Joint session with WP 5D (to be confirmed if needed)***  1 Consider the received contributions  2 Finalize any draft new ITU-R Recommendations/Reports, to the extent possible  3 Receive results of regulatory studies from WP 5D  4 Update working documents for WRC-27 AI 1.13 sharing and compatibility studies, based on input contributions received  5 Finalize the draft CPM text including regulatory studies from WP 5D and send to the CPM Chapter Rapporteur  6 Send LS to contributing groups as necessary  7 Review and revise work plan as necessary.  **Meeting No. 37 ([2027, TBD])**  1 Additional work as necessary based on input contributions  2 Finalize the sharing and compatibility studies, if necessary  3 Send LS to contributing groups as necessary  4 Send any relevant draft new Recommendations/Reports to Study Group 4 for adoption, as appropriate. |

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**ATTACHMENT 2**

**(Edits/Additions to §4 of Part B of Annex 7 of Document 4C/77 (page 19))**

4 Sharing and compatibility studies

[Text to be developed.]

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4.1 Interference scenarios (geometries)

[Text to be developed.]

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4.2 Study results

[Text to be developed.]

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4.2.1 Technical and operational characteristics of services and systems operating in the Frequency range 694/698-960 MHz

**4.2.1.1** Technical and operational characteristics of radar systems operating in thefrequency range 694/698-960 MHz

*{From Document 4C/83}*

**Recommendation ITU-R M.1227-2:** Technical and operational characteristics of wind profiler radars in bands in the vicinity of 1 000 MHz

4.2.2 Technical and operational characteristics of services and systems operating in the Frequency range 1 427-1 518 MHz

4.2.2.1 Technical and operational characteristics of aeronautical mobile service systems operating in the Frequency range 1 427-1 518 MHz

*{From Document 4C/83}*

**Recommendation ITU-R M.1459:** Protection criteria for telemetry systems in the aeronautical mobile service and mitigation techniques to facilitate sharing with geostationary broadcasting-satellite and mobile-satellite services in the frequency bands 1 452-1 525 MHz and 2 310-2 360 MHz

**Report ITU-R M.2286-0:** Operational characteristics of aeronautical mobile telemetry systems

This Report describes the operational details of AMT systems that, when combined with traditional link budget analyses and references, will provide a full-description of how AMT systems might affect, or be affected by, the operations of other systems in either co-channel or adjacent channel scenarios.

4.2.3 Technical and operational characteristics of services and systems operating in the frequency range 1 710-2 200 MHz

4.2.3.1 Technical and operational characteristics of aeronautical mobile service systems operating in the frequency range 1 710-2 200 MHz

*{From Document 4C/83}*

**PDN-Recommendation ITU-R M.[AMS CHARACTERISTICS\_1 780-1 850 MHz]:** Technical characteristics and protection criteria for systems operating in the aeronautical mobile service within the frequency range 1 780-1 850 MHz

The information contained in this PDNR can be found in Annex 16 of the WP 5B Chair’s Report (Doc. [5B/96](https://www.itu.int/md/R23-WP5B-C-0096/en)).

4.2.4 Technical and operational characteristics of services and systems operating in the Frequency range 2 300 - 2 400 MHz

4.2.4.1 Technical and operational characteristics of aeronautical mobile service systems operating in the Frequency range 2 300 - 2 400 MHz

*{From Document 4C/83}*

**Recommendation ITU-R M.1459:** Protection criteria for telemetry systems in the aeronautical mobile service and mitigation techniques to facilitate sharing with geostationary broadcasting-satellite and mobile-satellite services in the frequency bands 1 452-1 525 MHz and 2 310-2 360 MHz

**Report ITU-R M.2286-0:** Operational characteristics of aeronautical mobile telemetry systems

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4.2.4 Technical and operational characteristics of services and systems operating in the frequency range 2 500-2 690 MHz

[Text to be developed.]

4.2.5 Technical and operational characteristics of Fixes Service systems operating in the frequency range 694/698 - 2 700 MHz

*{From Document 4C/88}*

**Recommendation ITU-R F.758-7** System parameters and considerations in the development of criteria for sharing or compatibility between digital fixed wireless systems in the fixed service and systems in other services and other sources of interference (11/2019)

**Report ITU-R F.2108** Fixed service system parameters for different frequency bands (2007).

**Recommendation ITU-R F.699-8** Reference radiation patterns for fixed wireless system antennas for use in coordination studies and interference assessment in the frequency range from 100 MHz to 86 GHz (01/2018)

**Recommendation ITU-R F.1245-3** Mathematical model of average and related radiation patterns for point-to-point fixed wireless system antennas for use in interference assessment in the frequency range from 1 GHz to 86 GHz (01/2019)

**Recommendation ITU-R F.1336-5** Reference radiation patterns of omnidirectional, sectoral and other antennas for the fixed and mobile service for use in sharing studies in the frequency range from 400 MHz to about 70 GHz (01/2019)

**Recommendation ITU-R F.2086** Deployment scenarios for point-to-point systems in the fixed service (09/2015)

4.2.6 Propagation models for sharing and compatibility studies in the in the frequency range 694/698 - 2 700 MHz

*{From Document 4C/96}*

4.2.6.1 Recommendations for all sharing geometries

ITU-R P.2108 – Prediction of clutter loss

ITU-R P.2402 – A method to predict the statistics of clutter loss for earth-space and aeronautical paths describes the development of a stochastic model for the inclined path in this Recommendation based on a typical cluttered terminal height of 4 to 6 metres.

ITU-R P.2109 – Prediction of building entry loss

4.2.6.2 Recommendations for sharing between stations in space and stations on the Earth’s surface

ITU-R P.531 - Ionospheric propagation data and prediction methods required for the design of satellite networks and systems

ITU-R P.619 – Propagation data required for the evaluation of interference between stations in space and those on the surface of the Earth