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| **Radiocommunication Study Groups** |  |
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|  | **Document 5A/221-E** |
| **15 December 2020** |
| **English only** |
| Chairman, Working Party 5A | |
| report on the TWENTY-FOURTH meeting of working party 5a | |
| (Geneva e-Meeting, 9-20 November 2020) | |

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Annexes

[1](https://www.itu.int/dms_pub/itu-r/md/19/wp5a/c/R19-WP5A-C-0221!N01!MSW-E.docx) Working Party 5A Management

[2](https://www.itu.int/dms_pub/itu-r/md/19/wp5a/c/R19-WP5A-C-0221!N02!MSW-E.docx) Consolidation of texts approved by Working Party 5A

[3](https://www.itu.int/dms_pub/itu-r/md/19/wp5a/c/R19-WP5A-C-0221!N03!MSW-E.docx) Consolidation of reports from the Working Groups of Working Party 5A  
(Source: Docs. 5A/TEMP/63R1, 71R1, 72R1, 78, 81R1, 84R1, 85, 88, 91R1, 92)

[4](https://www.itu.int/dms_pub/itu-r/md/19/wp5a/c/R19-WP5A-C-0221!N04!MSW-E.docx) Working document towards draft CPM text for WRC-23 agenda item 1.3   
(Source: Doc. 5A/TEMP/66R1)

[5](https://www.itu.int/dms_pub/itu-r/md/19/wp5a/c/R19-WP5A-C-0221!N05!MSW-E.docx) Work plan for WRC-23 agenda item 1.3 (Source: Doc. 5A/TEMP/67R1)

[6](https://www.itu.int/dms_pub/itu-r/md/19/wp5a/c/R19-WP5A-C-0221!N06!MSW-E.docx) Working document towards draft CPM text for WRC-23 agenda item 9.1 topic b  
(Source: Doc. 5A/85, Annex 6)

[7](https://www.itu.int/dms_pub/itu-r/md/19/wp5a/c/R19-WP5A-C-0221!N07!MSW-E.docx) Work plan for WRC-23 agenda item 9.1 topic b (Source: Doc. 5A/TEMP/58)

[8](https://www.itu.int/dms_pub/itu-r/md/19/wp5a/c/R19-WP5A-C-0221!N08!MSW-E.docx) Working document towards draft CPM text for WRC-23 agenda item 9.1 topic c (Source: Doc. 5A/85, Annex 8)

[9](https://www.itu.int/dms_pub/itu-r/md/19/wp5a/c/R19-WP5A-C-0221!N09!MSW-E.docx) Work plan for WRC-23 agenda item 9.1 topic c (Source: Doc. 5A/TEMP/54)

[10](https://www.itu.int/dms_pub/itu-r/md/19/wp5a/c/R19-WP5A-C-0221!N10!MSW-E.docx) Elements of a working document towards a preliminary draft new Report ITU-R M.[AMATEUR.CHARACTERISTICS] (Source: Doc. 5A/TEMP/57R1)

[11](https://www.itu.int/dms_pub/itu-r/md/19/wp5a/c/R19-WP5A-C-0221!N11!MSW-E.docx) Working document towards preliminary draft revision of Recommendation ITU-R M.2134-0 – [Receiver / Technical and operational] characteristics and protection criteria for systems in the mobile service in the frequency range 27.5-29.5 GHz for use in sharing and compatibility studies (Source: Doc. 5A/TEMP/83)

[12](https://www.itu.int/dms_pub/itu-r/md/19/wp5a/c/R19-WP5A-C-0221!N12!MSW-E.docx) Working document towards a preliminary draft new Report ITU-R M.[UCS] – Utility Communication Systems (Source: Doc. 5A/TEMP/82(Rev.1))

[13](https://www.itu.int/dms_pub/itu-r/md/19/wp5a/c/R19-WP5A-C-0221!N13!MSW-E.docx) Working document towards a preliminary draft revision of Recommendation ITU-R M.1824-1 – System characteristics of television outside broadcast, electronic news gathering and electronic field production in the mobile service for use in sharing studies (Source: Doc. 5A/TEMP/68)

[14](https://www.itu.int/dms_pub/itu-r/md/19/wp5a/c/R19-WP5A-C-0221!N14!MSW-E.docx) Working document towards a preliminary draft new Report ITU-R M.[LMS.CONDITIONS>275GHZ] - Assessment of mitigation techniques and specific conditions to be applied to the land mobile service applications in the frequency bands 296-306 GHz, 313-318 GHz and 333-356 GHz, to ensure the protection of earth exploration-satellite service (passive) applications in accordance with RR No. **5.564A** (Source: Doc. 5A/TEMP/75)

[15](https://www.itu.int/dms_pub/itu-r/md/19/wp5a/c/R19-WP5A-C-0221!N15!MSW-E.docx) Elements for a working document towards a preliminary draft new Report ITU-R M.[252-296 GHZ.LMS.FS.COEXIST] - Coexistence between land-mobile and fixed service applications operating in the frequency range 252-296 GHz (Source: Doc. 5A/TEMP/62(Rev.1))

[16](https://www.itu.int/dms_pub/itu-r/md/19/wp5a/c/R19-WP5A-C-0221!N16!MSW-E.docx) Working document towards a preliminary draft new Report ITU-R M.[CAV] – Connected Automated Vehicles (CAV) (Source: Doc. 5A/TEMP/77(Rev.1))

[17](https://www.itu.int/dms_pub/itu-r/md/19/wp5a/c/R19-WP5A-C-0221!N17!MSW-E.docx) Working document towards a preliminary draft revision of Report ITU-R M.2417-0 – Technical and operational characteristics of land-mobile service applications in the frequency range 275-450 GHz (Source: Doc. 5A/TEMP/60(Rev.1))

[18](https://www.itu.int/dms_pub/itu-r/md/19/wp5a/c/R19-WP5A-C-0221!N18!MSW-E.docx) Elements towards a working document towards a preliminary draft new [Report/Recommendation] ITU-R F.[IMT-FWB] - Use of International Mobile Telecommunication system for fixed wireless broadband in the frequency bands allocated to the fixed service on a primary basis (Source: Doc. 5A/TEMP/53)

[19](https://www.itu.int/dms_pub/itu-r/md/19/wp5a/c/R19-WP5A-C-0221!N19!MSW-E.docx) List of output documents

Annexes from previous WP 5A Chairman’s Reports that are being carried forward:

[Annex 17](https://www.itu.int/dms_pub/itu-r/md/15/wp5a/c/R15-WP5A-C-0844!N17!MSW-E.docx) to [Doc. 5A/844](https://www.itu.int/md/R15-WP5A-C-0844/en): Vocabulary for RLANs: DFS and TCP (elements for a future update of Recommendation ITU-R M.1450).

[Annex 14](https://www.itu.int/dms_pub/itu-r/md/15/wp5a/c/R15-WP5A-C-0976!N14!MSW-E.docx) to [Doc. 5A/976](https://www.itu.int/md/R15-WP5A-C-0976/en): Preliminary draft new Report ITU-R M.[GEO.SHARE] – *Sharing schemes in the land mobile service on the basis of geographical use*.

[Annex 17](https://www.itu.int/dms_pub/itu-r/md/15/wp5a/c/R15-WP5A-C-0976!N17!MSW-E.docx) to [Doc. 5A/976](https://www.itu.int/md/R15-WP5A-C-0976/en): Preliminary draft new Report ITU-R M.[AGGREGATE RLAN MEASUREMENTS] – *Use of aggregate RLAN measurements from airborne and terrestrial platforms to support studies under WRC-19 agenda item 1.16.*

[Annex 6](http://www.itu.int/md/dologin_md.asp?lang=en&id=R15-WP5A-C-1065!N06!MSW-E) to [Doc. 5A/1065](http://www.itu.int/md/R15-WP5A-C-1065/en): Working document towards a preliminary draft revision of Report ITU‑R M.2282-0 – *Systems for public mobile communications with aircraft*.

[Annex 7](http://www.itu.int/md/dologin_md.asp?lang=en&id=R15-WP5A-C-1065!N07!MSW-E) to [Doc. 5A/1065](http://www.itu.int/md/R15-WP5A-C-1065/en): Working document towards a preliminary draft new Report on Broadband Air To Ground Systems – *Frequency usage in the land mobile service for broadband direct air-to-ground (A2G) communications links with passenger aircraft.*

[Annex 9](http://www.itu.int/md/dologin_md.asp?lang=en&id=R15-WP5A-C-1065!N09!MSW-E) to [Doc. 5A/1065](http://www.itu.int/md/R15-WP5A-C-1065/en): Preliminary draft new Report ITU-R M.[RLAN REQ-PAR] – *Technical characteristics and operational requirements of WAS/RLAN in the 5 GHz frequency range.*

[Annex 10](http://www.itu.int/md/dologin_md.asp?lang=en&id=R15-WP5A-C-1065!N10!MSW-E) to [Doc. 5A/1065](http://www.itu.int/md/R15-WP5A-C-1065/en): Preliminary draft new Report ITU-R M.[RLAN SHARING 5 350-5 470 MHZ] – *Sharing and compatibility studies of WAS/RLAN in the 5 350-5 470 MHz frequency range.*

[Annex 11](http://www.itu.int/md/dologin_md.asp?lang=en&id=R15-WP5A-C-1065!N11!MSW-E) to [Doc. 5A/1065](http://www.itu.int/md/R15-WP5A-C-1065/en): Preliminary draft new Report ITU-R M.[RLAN SHARING 5 150-5 250 MHz] – *Sharing and compatibility studies of WAS/RLAN in the 5 150-5 250 MHz frequency range.*

[Annex 12](http://www.itu.int/md/dologin_md.asp?lang=en&id=R15-WP5A-C-1065!N12!MSW-E) to [Doc. 5A/1065](http://www.itu.int/md/R15-WP5A-C-1065/en): Preliminary draft new Report ITU-R M.[RLAN SHARING 5 725-5 850 MHz] – *Sharing and compatibility studies of WAS/RLAN in the 5 725-5 850 MHz frequency range.*

[Annex 11](https://www.itu.int/dms_pub/itu-r/md/19/wp5a/c/R19-WP5A-C-0085!N11!MSW-E.docx) to [Doc. 5A/85](https://www.itu.int/md/R19-WP5A-C-0085/en): Working document towards a preliminary draft new Recommendation ITU-R M.[RSTT\_FRQ] – *Spectrum harmonization for Railway Radiocommunication Systems between Train and Trackside (RSTT).*

[Annex 12](https://www.itu.int/dms_pub/itu-r/md/19/wp5a/c/R19-WP5A-C-0085!N12!MSW-E.docx) to [Doc. 5A/85](https://www.itu.int/md/R19-WP5A-C-0085/en): Working document towards a preliminary draft new study Question ITU‑R [RSTT] – *Studies related to the further development of RSTT.*

[Annex 13](https://www.itu.int/dms_pub/itu-r/md/19/wp5a/c/R19-WP5A-C-0085!N13!MSW-E.docx) to [Doc. 5A/85](https://www.itu.int/md/R19-WP5A-C-0085/en): Working document towards a preliminary draft revision of Report ITU-R M.2442-0 – *Current and future usage of railway radiocommunication systems between train and trackside.*

[Annex 15](https://www.itu.int/dms_pub/itu-r/md/19/wp5a/c/R19-WP5A-C-0085!N15!MSW-E.docx) to [Doc. 5A/85](https://www.itu.int/md/R19-WP5A-C-0085/en): Working document towards a preliminary draft new Report ITU-R M.[100-GHz.RSTT.EESS.COEXIST] – *Coexistence between high-speed railway radiocommunication system between train and trackside operating in the frequency bands 92-94 GHz, 94.1-100 GHz and 102-109.5 GHz, and radio astronomy service and Earth exploration-satellite service (EESS) (active) and EESS (passive) services.*

Management documents referred to in the Report:

List of input documents: [Doc. 5A/218(Rev.1)](https://www.itu.int/md/R19-WP5A-C-0218/en)

Final list of participants: [Doc. 5A/220](https://www.itu.int/md/R19-WP5A-C-0220/en)

# 1 Introduction

Working Party 5A (WP 5A) held its twenty-fourth (24th) meeting and second e-meeting from 9-20 November 2020. The meeting participants (see list in [Doc. 5A/220](https://www.itu.int/md/R19-WP5A-C-0220/en)) included up to 415 participants (note that the actual number was less because some participants represented more than one organization), from 48 countries representing 46 Member States, 18 recognized operating agencies, 23 scientific or industrial organizations, 3 other entities dealing with telecommunication matters, 12 regional and other international organizations, 2 Intergovernmental Organizations Operating Satellite Systems, 2 United Nations and its specialized agencies, 1 associate, 2 academia, and the ITU staff. WP 5A held its opening plenary in one session on 9 November (draft agenda in [Doc. 5A/ADM/9](https://www.itu.int/md/R19-WP5A-ADM-0009/en)) and the closing plenary in two sessions on 19 and 20 November (draft agenda in [Doc. 5A/ADM/12R1](https://www.itu.int/md/R19-WP5A-ADM-0012/en)).

The meeting dealt with 162 input documents (135 listed in Doc. [5A/218(Rev.1](https://www.itu.int/md/R19-WP5A-C-0218/en)) and 27 carried over from previous meetings and upon their consideration the meeting prepared 41 output temporary documents (see list in [Annex 19](http://www.itu.int/md/dologin_md.asp?lang=en&id=R19-WP5A-C-0221!N19!MSW-E) to [Doc. 5A/221](http://www.itu.int/md/R19-WP5A-C-0221/en)).

The opening plenary meeting agenda in [Doc. 5A/ADM/9](https://www.itu.int/md/R19-WP5A-ADM-0009/en) was adopted.

The Chairman’s Report of the twenty-third meeting of WP 5A ([Doc. 5A/85](https://www.itu.int/md/R19-WP5A-C-0085/en)) was adopted, including the objectives for the 24th meeting as presented in Section 4 of [Doc. 5A/85](https://www.itu.int/md/R19-WP5A-C-0085/en).

The structure of WP 5A for this meeting was also adopted as presented in Section 2.2 of [Doc. 5A/85](https://www.itu.int/md/R19-WP5A-C-0085/en), which is reproduced in [Annex 1](http://www.itu.int/md/dologin_md.asp?lang=en&id=R19-WP5A-C-0221!N01!MSW-E) to [Doc. 5A/221](http://www.itu.int/md/R19-WP5A-C-0221/en).

[Annex 1](http://www.itu.int/md/dologin_md.asp?lang=en&id=R19-WP5A-C-0221!N01!MSW-E) contains the management aspects of WP 5A, including a summary of the status of the texts that are the responsibility of WP 5A, the WP 5A contacts in external organizations, and the use of electronic facilities.

The chairman informed the meeting on the results of the Study Group 5 meeting, 31 July 2020 ([Doc. 5/18(Rev.1](https://www.itu.int/md/R19-SG05-C-0018/en)) and the ITU Council & CPM-23 Steering Committee mtgs. (Add. 1 to [CA/251](https://www.itu.int/md/R00-CA-CIR-0251/en)).

The Chairman of CPM-23 presented [Doc. 5A/118](https://www.itu.int/md/R19-WP5A-C-0118/en), providing additional guidelines and information on the preparation of draft CPM text. The deadline for providing the draft CPM text to the chapter rapporteurs is 21 October 2022. Annex 1 to [Doc. 5A/118](https://www.itu.int/md/R19-WP5A-C-0118/en) provides guidance on the structure and numbering scheme for the methods to satisfy the agenda items in various cases, Annex 2 provides guidelines for the preparation of examples of regulatory texts for the draft CPM Report, and in the case of topics under agenda item 9.1 only a short summary is to be provided (i.e., no executive summary, no methods and no regulatory text) in accordance with Section 2.2 of Annex 6 of [CA/251](https://www.itu.int/md/R00-CA-CIR-0251/en). The Chairman of CPM-23 also directed the attention of WP 5A participants to the useful references relating to the ITU-R preparatory studies for the WRC-23 agenda items and topics that appear on the following ITU web page: [www.itu.int/go/rcpm-wrc-23-studies](http://www.itu.int/go/rcpm-wrc-23-studies).

The Chairman of WP 5C informed WP 5A about the ongoing meeting of WP 5C, 3-13 November 2020, indicating that WP 5C agreed to conduct the studies on topic 9.1c jointly with WP 5A in an ad hoc group and that no joint plenary of WPs 5A and 5C would be necessary because the expected outcome(s) would be attached to the chairmen’s reports; WP 5A also agreed with that approach (see Section 3.10). There was some discussion about the chairmanship of the ad hoc group and following offline consultations by email the ad hoc group was co-chaired by the chairmen of WP 5A and WP 5C.

The Chairman asked the meeting participants to review the list of contacts that appears in section 4 of [Annex 1](http://www.itu.int/md/dologin_md.asp?lang=en&id=R19-WP5A-C-0085!N01!MSW-E) to [Doc.  5A/85](http://www.itu.int/md/R19-WP5A-C-0085/en) and inform him of any necessary changes (the updated list appears in section 4 of [Annex 1](http://www.itu.int/md/dologin_md.asp?lang=en&id=R19-WP5A-C-0221!N01!MSW-E) to [Doc. 5A/221](http://www.itu.int/md/R19-WP5A-C-0221/en) and updates between meetings are maintained by the BR and the Chairman of WP 5A). The Chairman indicated this list showing the contacts by topics is used for all liaison statements to external organizations on those topics and the e-mail distribution lists are generated automatically from it.

The work program for the WP 5A meeting was adopted as presented in [Doc. 5A/ADM/7](http://www.itu.int/md/R19-WP5A-ADM-0007/en), with minor amendments as shown in [Table 1](#t1) below ([Doc. 5A/ADM/7(Rev.1)](http://www.itu.int/md/R19-WP5A-ADM-0007/en)). Germany does not wish to pursue [Doc. 5A/68](https://www.itu.int/md/R19-WP5A-C-0068/en) on Res. [ITU-R 59](https://www.itu.int/pub/R-RES-R.59) (ENG) in WP 5A for now and IEEE indicated that their contributions in Docs. 5A/43 and 5A/44 are superseded by Docs. 5A/153 and 5A/154, respectively. The initial schedule was adopted as per [Doc. 5A/ADM/8](http://www.itu.int/md/R19-WP5A-ADM-0008/en) and as the meeting progressed adjustments to the schedule were made in coordination with the parallel meetings of WPs 5B and 5C.

The Chairman drew the attention of the meeting to the WP 5A texts that are listed in section 1 of [Annex 1](http://www.itu.int/md/dologin_md.asp?lang=en&id=R19-WP5A-C-0085!N01!MSW-E) to [Doc.  5A/85](http://www.itu.int/md/R19-WP5A-C-0085/en), the [Guide to the use of ITU-R texts related to the land mobile service](http://www.itu.int/oth/R0A06000001/en), and the [Guide to the use of ITU-R texts relating to the amateur and amateur-satellite services](http://www.itu.int/oth/R0A06000067) asking each Working Group to review the texts assigned to them, noting that he had uploaded a draft revision with track changes in the WP 5A share folder.

The Chairman also pointed out the guidelines for the preparation of WP 5A texts in section 2.3 of [Annex 1](http://www.itu.int/md/dologin_md.asp?lang=en&id=R19-WP5A-C-0085!N01!MSW-E) to [Doc.  5A/85](http://www.itu.int/md/R19-WP5A-C-0085/en), including the [Format of ITU-R Recommendations](http://www.itu.int/dms_pub/itu-r/oth/0a/0E/R0A0E0000970001MSWE.docx) and the [ITU English Style Guide](http://www.itu.int/SG-CP/docs/styleguide.doc).

At the opening Plenary of WP 5A four Liaison Rapporteur reports were noted, on [WWRF](http://www.wireless-world-research.org/) (Wireless World Research Forum) by Hitoshi Yoshino, Japan, in [Doc. 5A/ 86](https://www.itu.int/md/R19-WP5A-C-0086/en), on certain countries in Region 1 by Gabrielle Owen, The Netherlands, in Docs. 5A/[109](https://www.itu.int/md/R19-WP5A-C-0109/en) and 5A/[198](https://www.itu.int/md/R19-WP5A-C-0198/en), on certain countries in Region 2 by Jonathan Siverling, USA, in [Doc. 5A/212](https://www.itu.int/md/R19-WP5A-C-0212/en), and on [Disaster Relief](http://www.itu.int/ITU-R/index.asp?category=information&link=emergency&lang=en) by Amy Sanders, USA, in [Doc. 5A/213](https://www.itu.int/md/R19-WP5A-C-0213/en); and at the closing Plenary of WP 5A the liaison rapporteur report on certain countries in Region 3 by Hitoshi Yoshino, Japan, in [Doc. 5A/219](https://www.itu.int/md/R19-WP5A-C-0219/en), was also noted. The chairman thanked the liaison rapporteurs for the valuable information presented in these reports and he asked that, due to lack of time, any questions be addressed by email directly to the respective liaison rapporteur(s).

# 2 Objectives and work programme for the meeting

The objectives for the meeting were adopted as set forth in the Chairman’s Report of the twenty-third meeting of WP 5A (section 4 of [Doc. 5A/85](https://www.itu.int/md/R19-WP5A-C-0085/en)) noting that need to consider also the proposals in the input contributions for the twenty-forth meeting, in particular those related to the WRC-23 agenda items and topics under the responsibility of WP 5A. WRC-23 topic 9.1 c) was addressed in an ad hoc group co-chaired by the Chairmen of WP 5A and WP 5C (cf. [Section 3.10](#s310)). Actions regarding future updates of documents that have a joint responsibility will be considered on a case-by-case basis depending on the input contributions and the nature of the proposed update.

The work was carried out within five Working Groups and a 5A/5C ad hoc group. The responsibilities for input contributions were assigned as per [Table 1](#t1), showing also the organization of the work for the meeting (the documents in the rows “Reports” and “General” were assigned to all the Working Groups).

TABLE 1

Assignment of input contributions and organization of the work for the meeting

The carried forward documents are highlighted in green (27 documents).  
New documents: 85-219 (135 contributions)

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| **Working Party 5A (Chairman:** [José Costa](mailto:jose.costa@ericsson.com?subject=WP5A-meeting)**, Canada)** | |
| **Reports** | [85](https://www.itu.int/md/R19-WP5A-C-0085/en) (Chairman, WP 5A); [86](https://www.itu.int/md/R19-WP5A-C-0086/en) (WWRF L.R.); [109](https://www.itu.int/md/R19-WP5A-C-0109/en) (L.R. #1); [198](https://www.itu.int/md/R19-WP5A-C-0198/en) (L.R. #1); [212](https://www.itu.int/md/R19-WP5A-C-0212/en) (L.R. #2); [213](https://www.itu.int/md/R19-WP5A-C-0213/en) (Disaster Relief L.R.); [219](https://www.itu.int/md/R19-WP5A-C-0219/en) (L.R. #3) |
| **General** | [118](https://www.itu.int/md/R19-WP5A-C-0118/en) (Chairman, CPM-23); [218](https://www.itu.int/md/R19-WP5A-C-0218/en) (List of documents) |
| **WRC-23 topic 9.1 c)** | [58](https://www.itu.int/md/R19-WP5A-C-0058/en) (China); [85](https://www.itu.int/md/R19-WP5A-C-0085/en) [Annex 8](https://www.itu.int/dms_pub/itu-r/md/19/wp5a/c/R19-WP5A-C-0085!N08!MSW-E.docx) (WP 5A); [85](https://www.itu.int/md/R19-WP5A-C-0085/en) [Annex 9](https://www.itu.int/dms_pub/itu-r/md/19/wp5a/c/R19-WP5A-C-0085!N09!MSW-E.docx) (WP 5A); [177](https://www.itu.int/md/R19-WP5A-C-0177/en), [178](https://www.itu.int/md/R19-WP5A-C-0178/en) (Germany, Finland, France, Hungary, Lithuania, Luxembourg, Norway, Sweden, Switzerland, UK);  [207](https://www.itu.int/md/R19-WP5A-C-0207/en) (UAE) |

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| **Working Group 1: Amateur Services (Chairman:** [**Dale Hughes**](mailto:dalevk1dsh@gmail.com?subject=WP5A-meeting)**, Australia)** | |
| **WRC-23 AI 9.1 b)** [**Res. 774**](https://www.itu.int/dms_pub/itu-r/oth/0c/0a/R0C0A00000D0023PDFE.pdf) | [85](https://www.itu.int/md/R19-WP5A-C-0085/en) [Annex 6](https://www.itu.int/dms_pub/itu-r/md/19/wp5a/c/R19-WP5A-C-0085!N06!MSW-E.docx) (WP 5A); [85](https://www.itu.int/md/R19-WP5A-C-0085/en) [Annex 7](https://www.itu.int/dms_pub/itu-r/md/19/wp5a/c/R19-WP5A-C-0085!N07!MSW-E.docx) (WP 5A); [85](https://www.itu.int/md/R19-WP5A-C-0085/en) [Annex 10](https://www.itu.int/dms_pub/itu-r/md/19/wp5a/c/R19-WP5A-C-0085!N10!MSW-E.docx) (WP 5A); [113](https://www.itu.int/md/R19-WP5A-C-0113/en) (WP 3M); [152](https://www.itu.int/md/R19-WP5A-C-0152/en) (Switzerland); [185](https://www.itu.int/md/R19-WP5A-C-0185/en) (IARU); [209](https://www.itu.int/md/R19-WP5A-C-0209/en) (WP 4C); [211](https://www.itu.int/md/R19-WP5A-C-0211/en) (WP 4C) |
| **Amateur satellite** | [127](https://www.itu.int/md/R19-WP5A-C-0127/en) (WP 7B) |
| **Amateur services protection** |  |
| **Protection of other services** |  |

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| **Working Group 2: Systems and standards (Chairman:** [Lang Baozhen](mailto:langbaozhen@sina.com?subject=WP5A-meeting)**, China)** | |
| **Railways**  **(incl.** [Res. 240 (WRC-19)](https://www.itu.int/oth/R0A060000A0/en)**)** | *RSTT:* [70](https://www.itu.int/md/R19-WP5A-C-0070/en) (Motorola Solutions); [85](https://www.itu.int/md/R19-WP5A-C-0085/en) [Annex 12](https://www.itu.int/dms_pub/itu-r/md/19/wp5a/c/R19-WP5A-C-0085!N12!MSW-E.docx) (WP 5A); [156](https://www.itu.int/md/R19-WP5A-C-0156/en)-Res.240 (3GPP)  *Rep. M.2442:* [85](https://www.itu.int/md/R19-WP5A-C-0085/en) [Annex 13](https://www.itu.int/dms_pub/itu-r/md/19/wp5a/c/R19-WP5A-C-0085!N13!MSW-E.docx) (WP 5A)  *Rec. RSTT Frequencies:* [85](https://www.itu.int/md/R19-WP5A-C-0085/en) [Annex 11](https://www.itu.int/dms_pub/itu-r/md/19/wp5a/c/R19-WP5A-C-0085!N11!MSW-E.docx) (WP 5A) |
| **Broadband Wireless Access** | *Rec. M.2134:* [35](https://www.itu.int/md/R19-WP5A-C-0035/en) (USA); [181](https://www.itu.int/md/R19-WP5A-C-0181/en) (Russian F.); [193](https://www.itu.int/md/R19-WP5A-C-0193/en)-Att.1 (USA)  *Rec. M.1801:* [~~43~~](https://www.itu.int/md/R19-WP5A-C-0043/en) ~~(IEEE);~~ [80](https://www.itu.int/md/R19-WP5A-C-0080/en) (Chairman, WP 5A); [153](https://www.itu.int/md/R19-WP5A-C-0153/en) (IEEE); [187](https://www.itu.int/md/R19-WP5A-C-0187/en) (China)  *Broadband for rural and remote areas:* [131](https://www.itu.int/md/R19-WP5A-C-0131/en) (ITU-D SG 1)  *Question 101-5/5:* |
| **Land mobile systems** | *~~Res.~~* [*~~ITU-R 59~~*](https://www.itu.int/pub/R-RES-R.59) *~~(ENG):~~* [~~68~~](https://www.itu.int/md/R19-WP5A-C-0068/en) ~~(Germany)~~  *Utilities:* [85](https://www.itu.int/md/R19-WP5A-C-0085/en) [Annex 14](https://www.itu.int/dms_pub/itu-r/md/19/wp5a/c/R19-WP5A-C-0085!N14!MSW-E.docx) (WP 5A); [123](https://www.itu.int/md/R19-WP5A-C-0123/en) (ITU-T SG 15); [173](https://www.itu.int/md/R19-WP5A-C-0173/en) (Canada); [189](https://www.itu.int/md/R19-WP5A-C-0189/en) (China);  [194](https://www.itu.int/md/R19-WP5A-C-0194/en) (UTC América Latina); [195](https://www.itu.int/md/R19-WP5A-C-0195/en) (UTC América Latina) |
| **Air to Ground** | *Update of Rep. ITU-R M.2282:* [1065](http://www.itu.int/md/R15-WP5A-C-1065/en) [Annex 6](http://www.itu.int/md/dologin_md.asp?lang=en&id=R15-WP5A-C-1065!N06!MSW-E) (WP 5A)  *New Report:* [1065](http://www.itu.int/md/R15-WP5A-C-1065/en) [Annex 7](http://www.itu.int/md/dologin_md.asp?lang=en&id=R15-WP5A-C-1065!N07!MSW-E) (WP 5A) |
| **RLAN characteristics** | *Rec. M.1450:* [844](http://www.itu.int/md/R15-WP5A-C-0844/en) [Annex 17](http://www.itu.int/md/dologin_md.asp?lang=en&id=R15-WP5A-C-0844!N17!MSW-E) (WP 5A); [~~44~~](https://www.itu.int/md/R19-WP5A-C-0044/en) ~~(IEEE);~~ [79](https://www.itu.int/md/R19-WP5A-C-0079/en) (Chairman, WP 5A); [154](https://www.itu.int/md/R19-WP5A-C-0154/en) (IEEE);  [187](https://www.itu.int/md/R19-WP5A-C-0187/en) (China)  *Support WG 4 with characteristics for sharing & coexistence studies* |
| **ANT, HNT** | [103](https://www.itu.int/md/R19-WP5A-C-0103/en) (ITU-T SG 13); [104](https://www.itu.int/md/R19-WP5A-C-0104/en) (ITU-T SG 13); [121](https://www.itu.int/md/R19-WP5A-C-0121/en) (ITU-T SG 15); [122](https://www.itu.int/md/R19-WP5A-C-0122/en) (ITU-T SG 15) |

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| **Working Group 3: PPDR (Chairman:** [Amy Sanders](mailto:asanders@ntia.gov?subject=WP5A-meeting)**, USA)** | |
| **Updates of ITU-R Recs.** |  |
| **Updates of ITU-R Reports** | *M.2377:* [891](http://www.itu.int/md/R15-WP5A-C-0891/en) (WP 5D) |
| **Liaison statements** | [99](https://www.itu.int/md/R19-WP5A-C-0099/en) (ITU-T SG 11); [150](https://www.itu.int/md/R19-WP5A-C-0150/en) (WP 5D); [155](https://www.itu.int/md/R19-WP5A-C-0155/en) (ITU-D SG 2); [172](https://www.itu.int/md/R19-WP5A-C-0172/en) (ITU-D SG 2); [175](https://www.itu.int/md/R19-WP5A-C-0175/en) (WP 5D) |

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| **Working Group 4: Interference and sharing (Chairman:** [Michael Kraemer](mailto:michael.kraemer@intel.com?subject=WP5A-meeting)**, Germany)** | |
| **Sharing studies (general)** | *General:* [110](https://www.itu.int/md/R19-WP5A-C-0110/en) (WP 3L); [144](https://www.itu.int/md/R19-WP5A-C-0144/en) (IMO); [157](https://www.itu.int/md/R19-WP5A-C-0157/en) (IRAN)  *Rec. M.1824 (ENG):* [162](https://www.itu.int/md/R19-WP5A-C-0162/en) (Japan)  *Protection of radio services:* [1078](http://www.itu.int/md/R15-WP5A-C-1078/en) *(*WP 1A)  *Range: 6-40 GHz:* [120](https://www.itu.int/md/R19-WP5A-C-0107/en) (WP 7D)  *IMT:* [47](https://www.itu.int/md/R19-WP5A-C-0047/en) (France); [156](https://www.itu.int/md/R19-WP5A-C-0156/en)-Res.241.242,243 (3GPP); [192](https://www.itu.int/md/R19-WP5A-C-0192/en) (China); [210](https://www.itu.int/md/R19-WP5A-C-0210/en) (WP 5C)  *Range 92-109.5 GHz:* [85](https://www.itu.int/md/R19-WP5A-C-0085/en) [Annex 15](https://www.itu.int/dms_pub/itu-r/md/19/wp5a/c/R19-WP5A-C-0085!N15!MSW-E.docx) (WP 5A); [107](https://www.itu.int/md/R19-WP5A-C-0107/en) (WP 5B); [119](https://www.itu.int/md/R19-WP5A-C-0119/en) (WP 7D);  [135](https://www.itu.int/md/R19-WP5A-C-0135) (WP 7C); [137](https://www.itu.int/md/R19-WP5A-C-0137) (WP 7C)  *Range 252-296 GHz:* [164](https://www.itu.int/md/R19-WP5A-C-0164/en) (Japan); [165](https://www.itu.int/md/R19-WP5A-C-0165/en) (Japan); [166](https://www.itu.int/md/R19-WP5A-C-0166/en) (Japan); [167](https://www.itu.int/md/R19-WP5A-C-0167/en) (Japan) |
| **Dynamic Access – sharing** | *Support WG 5 on sharing & coexistence studies* |
| **Sharing by zones** | [976](http://www.itu.int/md/R15-WP5A-C-0976/en) [Annex 14](http://www.itu.int/md/dologin_md.asp?lang=en&id=R15-WP5A-C-0976!N14!MSW-E) (WP 5A) |
| **Non-ionizing radiation** | [151](https://www.itu.int/md/R19-WP5A-C-0151/en) (ITU-D SG 2) |
| **RLAN sharing**  **(incl.** [Res. 229 (Rev.WRC-19)](https://www.itu.int/oth/R0A0600009D/en)**)** | *REQ-PAR:* [1065](http://www.itu.int/md/R15-WP5A-C-1065/en) [Annex 9](http://www.itu.int/md/dologin_md.asp?lang=en&id=R15-WP5A-C-1065!N09!MSW-E) (WP 5A)  *Aggregate Measurements:* [976](http://www.itu.int/md/R15-WP5A-C-0976/en) [Annex 17](http://www.itu.int/md/dologin_md.asp?lang=en&id=R15-WP5A-C-0976!N17!MSW-E) (WP 5A)  *Sharing 5150-5250 MHz:* [1065](http://www.itu.int/md/R15-WP5A-C-1065/en) [Annex 10](http://www.itu.int/md/dologin_md.asp?lang=en&id=R15-WP5A-C-1065!N10!MSW-E) (WP 5A)  *Sharing 5750-5250 MHz:* [1065](http://www.itu.int/md/R15-WP5A-C-1065/en) [Annex 11](http://www.itu.int/md/dologin_md.asp?lang=en&id=R15-WP5A-C-1065!N11!MSW-E) (WP 5A)  *Sharing 5725-5850 MHz:* [1065](http://www.itu.int/md/R15-WP5A-C-1065/en) [Annex 12](http://www.itu.int/md/dologin_md.asp?lang=en&id=R15-WP5A-C-1065!N12!MSW-E) (WP 5A) |
| **AI 1.2: IMT** [Res. 245](https://www.itu.int/dms_pub/itu-r/oth/0c/0a/R0C0A00000D0002PDFE.pdf) | [15](https://www.itu.int/md/R19-WP5A-C-0015/en) (WP 5D); [100](https://www.itu.int/md/R19-WP5A-C-0100/en) (WP 5C); [115](https://www.itu.int/md/R19-WP5A-C-0115/en) (WPs 3K & 3M); [132R1](https://www.itu.int/md/R19-WP5A-C-0132/en) (WP 7C); [148](https://www.itu.int/md/R19-WP5A-C-0148/en) (WP 5D);  [156](https://www.itu.int/md/R19-WP5A-C-0156/en)-Res.811:6.4to24GHz (3GPP); [206](https://www.itu.int/md/R19-WP5A-C-0206/en) (UAE) |
| **AI 1.3: 3.6-3.8 R1** [Res. 246](https://www.itu.int/dms_pub/itu-r/oth/0c/0a/R0C0A00000D0003PDFE.pdf) | [74](https://www.itu.int/md/R19-WP5A-C-0074/en) (ESOA); [85](https://www.itu.int/md/R19-WP5A-C-0085/en) [Annex 4](https://www.itu.int/dms_pub/itu-r/md/19/wp5a/c/R19-WP5A-C-0085!N04!MSW-E.docx) (WP 5A); [85](https://www.itu.int/md/R19-WP5A-C-0085/en) [Annex 5](https://www.itu.int/dms_pub/itu-r/md/19/wp5a/c/R19-WP5A-C-0085!N05!MSW-E.docx) (WP 5A); [87](https://www.itu.int/md/R19-WP5A-C-0087/en) (Guinea); [88](https://www.itu.int/md/R19-WP5A-C-0088/en) (WP 5B);  [116](https://www.itu.int/md/R19-WP5A-C-0116/en) (WPs 3K & 3M); [171](https://www.itu.int/md/R19-WP5A-C-0171/en) (WP 5D); [188](https://www.itu.int/md/R19-WP5A-C-0188/en) (China); [190](https://www.itu.int/md/R19-WP5A-C-0190/en) (China);  [203](https://www.itu.int/md/R19-WP5A-C-0203/en), [204](https://www.itu.int/md/R19-WP5A-C-0204/en) (Ericsson, Huawei, Intel, Nokia, Samsung); [205](https://www.itu.int/md/R19-WP5A-C-0205/en) (UK); [206](https://www.itu.int/md/R19-WP5A-C-0206/en) (UAE) |
| **AI 1.4: HIBS** [Res. 247](https://www.itu.int/dms_pub/itu-r/oth/0c/0a/R0C0A00000D0004PDFE.pdf) | [14](https://www.itu.int/md/R19-WP5A-C-0014/en) (WP 5D); [101](https://www.itu.int/md/R19-WP5A-C-0101/en) (WP 5C); [112](https://www.itu.int/md/R19-WP5A-C-0112/en) (WPs 3J, 3K, & 3M); [147](https://www.itu.int/md/R19-WP5A-C-0147/en) (WP 6A); [149](https://www.itu.int/md/R19-WP5A-C-0149/en) (WP 5D); [156](https://www.itu.int/md/R19-WP5A-C-0156/en)-Res.811-HIBS (3GPP) |
| **AI 1.5: 470-960 R1**[Res. 235](https://www.itu.int/dms_pub/itu-r/oth/0c/0a/R0C0A00000C0036PDFE.pdf) | [106](https://www.itu.int/md/R19-WP5A-C-0106/en) (WPs 3K & 3M); [158](https://www.itu.int/md/R19-WP5A-C-0158/en) (TG 6-1); [159](https://www.itu.int/md/R19-WP5A-C-0159/en) (TG 6-1); [160](https://www.itu.int/md/R19-WP5A-C-0160/en) (TG 6-1); [161](https://www.itu.int/md/R19-WP5A-C-0161/en) (WP 6A);  [170](https://www.itu.int/md/R19-WP5A-C-0170/en) (WP 5D); [176](https://www.itu.int/md/R19-WP5A-C-0176/en) (UK); [179](https://www.itu.int/md/R19-WP5A-C-0179/en) (BBC); [186](https://www.itu.int/md/R19-WP5A-C-0186/en) (France); [197](https://www.itu.int/md/R19-WP5A-C-0197/en) (Thales SA); [199](https://www.itu.int/md/R19-WP5A-C-0199/en) (Germany);  [200](https://www.itu.int/md/R19-WP5A-C-0200/en) (Germany); [201](https://www.itu.int/md/R19-WP5A-C-0201/en) (Germany); [202](https://www.itu.int/md/R19-WP5A-C-0202/en) (Motorola Solutions) |
| **AI 1.8: Res.155&5.484B** [Res. 171](https://www.itu.int/dms_pub/itu-r/oth/0c/0a/R0C0A00000D0027PDFE.pdf) | [105](https://www.itu.int/md/R19-WP5A-C-0105/en) (WP 5B); [182](https://www.itu.int/md/R19-WP5A-C-0182/en) (USA) |
| **AI 1.9 Appendix 27** [Res. 429](https://www.itu.int/dms_pub/itu-r/oth/0c/0a/R0C0A00000D0009PDFE.pdf) | [90](https://www.itu.int/md/R19-WP5A-C-0090/en) (WP 5B); [111](https://www.itu.int/md/R19-WP5A-C-0111/en) (WP 3L); [141](https://www.itu.int/md/R19-WP5A-C-0141/en) (ICAO) |
| **AI 1.10: AMS**[Res. 430](https://www.itu.int/dms_pub/itu-r/oth/0c/0a/R0C0A00000D0010PDFE.pdf) | [89](https://www.itu.int/md/R19-WP5A-C-0089/en) (WP 5B); [108](https://www.itu.int/md/R19-WP5A-C-0108/en) (WPs 3K & 3M) |
| **AI 1.12: EESS @45**[Res. 656](https://www.itu.int/dms_pub/itu-r/oth/0c/0a/R0C0A00000D0012PDFE.pdf) | [94](https://www.itu.int/md/R19-WP5A-C-0094/en) (WP 5C); [145](https://www.itu.int/md/R19-WP5A-C-0145/en) (WP 6A) |
| **AI 1.13: SRS**[Res. 661](https://www.itu.int/dms_pub/itu-r/oth/0c/0a/R0C0A00000D0013PDFE.pdf) | [97](https://www.itu.int/md/R19-WP5A-C-0097/en) (WP 5C); [114](https://www.itu.int/md/R19-WP5A-C-0114/en) (WP 3M); [125](https://www.itu.int/md/R19-WP5A-C-0125/en) (WP 7B) |
| **AI 1.14: EESS @231**[Res.662](https://www.itu.int/dms_pub/itu-r/oth/0c/0a/R0C0A00000D0014PDFE.pdf) | [102](https://www.itu.int/md/R19-WP5A-C-0102/en) (WP 5C); [138](https://www.itu.int/md/R19-WP5A-C-0138) (WP 7C) |
| **AI 1.15: FSS**[Res. 172](https://www.itu.int/dms_pub/itu-r/oth/0c/0a/R0C0A00000D0015PDFE.pdf) | [96](https://www.itu.int/md/R19-WP5A-C-0096/en) (WP 5C); [216](https://www.itu.int/md/R19-WP5A-C-0216/en) (WP 4A) |
| **AI 1.16: FSS ESIM**[Res. 173](https://www.itu.int/dms_pub/itu-r/oth/0c/0a/R0C0A00000D0016PDFE.pdf) | [32](https://www.itu.int/md/R19-WP5A-C-0032/en) (WP 4A); [92](https://www.itu.int/md/R19-WP5A-C-0092/en) (WP 5C); [124](https://www.itu.int/md/R19-WP5A-C-0124/en) (WP 7B); [140](https://www.itu.int/md/R19-WP5A-C-0140) (WP 7C); [193](https://www.itu.int/md/R19-WP5A-C-0193/en)-Att.2 (USA); [215](https://www.itu.int/md/R19-WP5A-C-0215/en) (WP 4A) |
| **AI 1.17: ISL**[Res. 773](https://www.itu.int/dms_pub/itu-r/oth/0c/0a/R0C0A00000D0017PDFE.pdf) | [31](https://www.itu.int/md/R19-WP5A-C-0031/en) (WP 4A); [95](https://www.itu.int/md/R19-WP5A-C-0095/en) (WP 5C); [126](https://www.itu.int/md/R19-WP5A-C-0126/en) (WP 7B); [139](https://www.itu.int/md/R19-WP5A-C-0139) (WP 7C); [193](https://www.itu.int/md/R19-WP5A-C-0193/en)-Att.2 (USA); [217](https://www.itu.int/md/R19-WP5A-C-0217/en) (WP 4A) |
| **AI 1.18: MSS** [Res. 248](https://www.itu.int/dms_pub/itu-r/oth/0c/0a/R0C0A00000D0018PDFE.pdf) | [29](https://www.itu.int/md/R19-WP5A-C-0029/en) (WP 4C); [98](https://www.itu.int/md/R19-WP5A-C-0098/en) (WP 5C); [117](https://www.itu.int/md/R19-WP5A-C-0117/en) (WP 3M) |
| **AI 1.19: FSS @17** [Res. 174](https://www.itu.int/dms_pub/itu-r/oth/0c/0a/R0C0A00000D0019PDFE.pdf) | [30](https://www.itu.int/md/R19-WP5A-C-0030/en) (WP 4A); [91](https://www.itu.int/md/R19-WP5A-C-0091/en) (WP 5C); [128](https://www.itu.int/md/R19-WP5A-C-0128/en) (WP 7B); [214](https://www.itu.int/md/R19-WP5A-C-0214/en) (WP 4A) |
| **AI 9.1 a): SWS** [Res. 657](https://www.itu.int/dms_pub/itu-r/oth/0c/0a/R0C0A00000D0022PDFE.pdf) | [134](https://www.itu.int/md/R19-WP5A-C-0134) (WP 7C); [146](https://www.itu.int/md/R19-WP5A-C-0146/en) (WP 6A) |
| **AI 9.1 d): EESS@36** [Doc.573](https://www.itu.int/dms_pub/itu-r/md/16/wrc19/c/R16-WRC19-C-0573!!MSW-E.docx) | [133](https://www.itu.int/md/R19-WP5A-C-0133) (WP 7C) |
| **ITU-T interference** |  |
| [Res. 731](https://www.itu.int/oth/R0A060000A1/en)**: >275 GHz** | [136](https://www.itu.int/md/R19-WP5A-C-0136/en) (WP 7C); [169](https://www.itu.int/md/R19-WP5A-C-0169/en) (Canada) |
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| **Working Group 5: New technologies (Chairman:** [Hitoshi Yoshino](mailto:hitoshi.yoshino@g.softbank.co.jp?subject=WP5A-meeting)**, Japan)** | |
| **ITS**  **(incl.** [Rec. 208 (WRC-19)](https://www.itu.int/oth/R0A060000A3/en)**)** | *General:* [143](https://www.itu.int/md/R19-WP5A-C-0143/en) (AWG); [156](https://www.itu.int/md/R19-WP5A-C-0156/en)-Rec.208 (3GPP)  *CAV (*[*Question ITU-R 261/5*](https://www.itu.int/pub/R-QUE-SG05.261)*):* [85](https://www.itu.int/md/R19-WP5A-C-0085/en) [Annex 16](https://www.itu.int/dms_pub/itu-r/md/19/wp5a/c/R19-WP5A-C-0085!N16!MSW-E.docx) (WP 5A); [129](https://www.itu.int/md/R19-WP5A-C-0129/en) (3GPP TSG RAN);  [130](https://www.itu.int/md/R19-WP5A-C-0130/en) (ETSI ISG MEC); [142](https://www.itu.int/md/R19-WP5A-C-0142/en) (ETSI ERM TGSRR); [168](https://www.itu.int/md/R19-WP5A-C-0168/en) (Japan); [184](https://www.itu.int/md/R19-WP5A-C-0184/en) (USA); [191](https://www.itu.int/md/R19-WP5A-C-0191/en) (China); [196](https://www.itu.int/md/R19-WP5A-C-0196/en) (5GAA); [208](https://www.itu.int/md/R19-WP5A-C-0208/en) (C2C-CC)  *Handbook:* [Share Folder](https://extranet.itu.int/rsg-meetings/sg5/wp5a/Share/Forms/Column%20view.aspx?RootFolder=%2Frsg%2Dmeetings%2Fsg5%2Fwp5a%2FShare%2FLMH%20review%2FLMH%20vol4%20ITS&FolderCTID=0x012000FB880722B4622243913B1114C70648D5&View=%7B627C3C95%2DCC37%2D49E0%2D8D8A%2D33AC93C6F497%7D) (WP 5A); [163](https://www.itu.int/md/R19-WP5A-C-0163/en) (Japan); [174](https://www.itu.int/md/R19-WP5A-C-0174/en) (Korea); [183](https://www.itu.int/md/R19-WP5A-C-0183/en) (USA) |
| [Q.256/5](https://www.itu.int/pub/R-QUE-SG05.256)**: >275 GHz** | *Rep. M.2417:* [85](https://www.itu.int/md/R19-WP5A-C-0085/en) [Annex 17](https://www.itu.int/dms_pub/itu-r/md/19/wp5a/c/R19-WP5A-C-0085!N17!MSW-E.docx) (WP 5A); [93](https://www.itu.int/md/R19-WP5A-C-0093/en) (WP 5C); [180](https://www.itu.int/md/R19-WP5A-C-0180/en) (Russian F.) |

The Working Groups developed preliminary draft revised/new Recommendations, Reports, Questions, and liaison statements, and progress reports on the work. The detailed reports from the Working Groups are contained in [Annex 3](http://www.itu.int/md/dologin_md.asp?lang=en&id=R19-WP5A-C-0221!N03!MSW-E). The texts proposed by these Working Groups in TEMP documents ([Annex 19](http://www.itu.int/md/dologin_md.asp?lang=en&id=R19-WP5A-C-0221!N19!MSW-E)) were considered by WP 5A and are either annexed to this Report for further work to be considered at future meetings of WP 5A or were approved by WP 5A as liaison statements to other groups or for submission to Study Group 5 ([Annex 2](http://www.itu.int/md/dologin_md.asp?lang=en&id=R19-WP5A-C-0221!N02!MSW-E)).

# 3 Executive summary of the results of the meeting

## 3.1 Summary of documents approved by WP 5A

The list of texts that are the responsibility of WP 5A has been updated in line with Doc. [5/1](http://www.itu.int/md/R19-SG05-C-0001/en), including the assignment of responsibilities to the Working Groups of WP 5A and identification of topics for the Recommendations and Reports. ([Annex 1](http://www.itu.int/md/dologin_md.asp?lang=en&id=R19-WP5A-C-0221!N01!MSW-E)).

At a previous meeting, WP 5A already decided to implement factual editorial updates of the guides to the use of ITU-R texts related to the radiocommunication services under the responsibility of WP 5A between the meetings of WP 5A (i.e., updates of references to Recommendations, Reports and Handbooks as they are approved), while amendments of substance will be considered for approval at the WP 5A meetings.

The consolidation of all the texts approved by WP 5A, including the liaison statements and proposals to Study Group 5, appears in [Annex 2](http://www.itu.int/md/dologin_md.asp?lang=en&id=R19-WP5A-C-0221!N02!MSW-E) to [Doc. 5A/221](http://www.itu.int/md/R19-WP5A-C-0221/en).

At its 24th meeting Working Party 5A approved a new edition of [Volume 4](http://www.itu.int/pub/R-HDB-49/en) of the Land Mobile Handbook – Intelligent Transport Systems, which has been submitted to the BR for publication and it is expected to be published by the end of January 2021 in 6 languages.

## 3.2 Summary of proposals and documents submitted by Working Party 5A to Study Group 5

None from the 24th meeting of Working Party 5A.

## 3.3 Amateur and amateur-satellite services

Continued the work on the draft work plan for activities covering WRC-23 agenda item 9.1 topic b). Updated the elements of a working document towards a preliminary draft new Report ITU-R M.[AMATEUR.CHARACTERISTICS] ([Annex 10](http://www.itu.int/md/dologin_md.asp?lang=en&id=R19-WP5A-C-0221!N10!MSW-E) to [Doc. 5A/221](http://www.itu.int/md/R19-WP5A-C-0221/en)). Generated two liaison statements on topic 9.1 b) to other ITU-R groups. Updated editorial revisions to the information document “[Guide to the use of ITU-R texts relating to the amateur and amateur-satellite services](http://www.itu.int/oth/R0A06000067)” which can be found on the WP 5A webpage.

## 3.4 Systems and standards

*UCS:* Continued to develop a working document towards a preliminary draft new Report ITU-R M.[UCS] – “Utility Communication Systems” ([Annex 12](http://www.itu.int/md/dologin_md.asp?lang=en&id=R19-WP5A-C-0221!N12!MSW-E) to [Doc. 5A/221](http://www.itu.int/md/R19-WP5A-C-0221/en)) and two liaison statements were sent to other ITU groups.

*RSTT:* Discussions continued on the development of 3 working documents on railway radiocommunication systems between train and trackside (RSTT), however, the working documents attached to [Doc. 5A/85](http://www.itu.int/md/R19-WP5A-C-0085/en) were not updated and are carried forward to the next meeting for further work.

*RLAN standards:* WP 5A has received proposals from IEEE (Docs. [5A/153](https://www.itu.int/md/R19-WP5A-C-0153) and [5A/154](https://www.itu.int/md/R19-WP5A-C-0154)) to update their RLAN standards in Recommendations [ITU-R](https://www.itu.int/rec/R-REC-M.1450) [M.1450](https://www.itu.int/rec/R-REC-M.1450) and ITU-R [M.1801](https://www.itu.int/rec/R-REC-M.1801). These standards include frequencies allocated to the mobile service on a primary basis beyond those in the existing Recommendations in force and some member states want to study frequency sharing and/or compatibility criteria before any working documents for the updates of these Recommendations are considered. However, traditionally the usual approach has been to define first in Recommendations the system characteristics and subsequently study any sharing conditions in separate Recommendations to enable the deployment and operation of the systems. The impasse has continued for the past 2 meetings of WP 5A.

*Protection of land mobile systems:* WP 5A received a proposal ([Doc. 5A/181(Rev.1](https://www.itu.int/md/R19-WP5A-C-0181/en))) to specify the in-force I/N protection criteria found in Recommendation ITU-R [M.2134](https://www.itu.int/rec/R-REC-M.2134/en) as a statistical value for land mobile systems in 27.5-29.5 GHz. It was pointed out that RA-19 ([Doc. RA19/PLEN/83](https://www.itu.int/md/R19-RA19-C-0083/en)) had found that the issue of changing the deterministic interference protection criteria methodology currently employed by the land mobile service in this band to a statistical methodology specified as a percentage of time could impact a number of terrestrial radio services that use the same deterministic approach, including the mobile, aeronautical mobile, maritime and radionavigation services under the purview of SG 5. Therefore, the RA had concluded it might be useful for SG 5 to further review the technical aspects associated with the protection criteria for these terrestrial radio services. Some participants felt that specifying a time percentage for one application of one service under SG 5 without considering the implications for other services and applications could have unintended consequences. The working document is in [Annex 11](http://www.itu.int/md/dologin_md.asp?lang=en&id=R19-WP5A-C-0221!N11!MSW-E) to [Doc. 5A/221](http://www.itu.int/md/R19-WP5A-C-0221/en).

## 3.5 Public protection and disaster relief

Five incoming liaison statements were considered and noted; no replies needed.

## 3.6 Interference and sharing

Initiated work on two new working documents towards PDNReports on [252-296 GHZ.LMS.FS.COEXIST] ([Annex 15](http://www.itu.int/md/dologin_md.asp?lang=en&id=R19-WP5A-C-0221!N15!MSW-E) to [Doc.  5A/221](http://www.itu.int/md/R19-WP5A-C-0221/en)) and Resolution **731** ([Annex 14](http://www.itu.int/md/dologin_md.asp?lang=en&id=R19-WP5A-C-0221!N14!MSW-E) to [Doc. 5A/221](http://www.itu.int/md/R19-WP5A-C-0221/en)); initiated a revision of Recommendation ITU-R M.1824 ([Annex 13](http://www.itu.int/md/dologin_md.asp?lang=en&id=R19-WP5A-C-0221!N13!MSW-E) to [Doc. 5A/221](http://www.itu.int/md/R19-WP5A-C-0221/en)); continued the preparatory work for WRC-23 agenda item 1.3 where WP 5A is the responsible group; held initial discussions on a number of WRC-23 agenda items where WP 5A is a contributing group and developed 9 reply liaison statements as well as text for a Circular Letter accordingly.

## 3.7 New technologies

Completed the year 2020 edition of [Volume 4](http://www.itu.int/pub/R-HDB-49/en) of the Land Mobile Handbook – Intelligent Transport Systems.

Continued to develop a working document towards a Preliminary Draft New Report ITU‑R M.[CAV] ] “Connected Automated Vehicles”([Annex 16](http://www.itu.int/md/dologin_md.asp?lang=en&id=R19-WP5A-C-0221!N16!MSW-E) to [Doc. 5A/221](http://www.itu.int/md/R19-WP5A-C-0221/en)).

Continued to develop a working document towards the development of preliminary draft revision of Report ITU-R M.2417-0 on Technical and operational characteristics of land-mobile service applications in the frequency range 275-450 GHz ([Annex 17](http://www.itu.int/md/dologin_md.asp?lang=en&id=R19-WP5A-C-0221!N17!MSW-E) to [Doc. 5A/221](http://www.itu.int/md/R19-WP5A-C-0221/en)).

Developed a reply liaison statement to the ITU-T focus group on vehicular multimedia (FG-VM) on “Technical reports on use cases and requirements as well as architecture for vehicular multimedia” ([Annex 2](http://www.itu.int/md/dologin_md.asp?lang=en&id=R19-WP5A-C-0221!N02!MSW-E) to [Doc. 5A/221](http://www.itu.int/md/R19-WP5A-C-0221/en)).

## 3.8 Land Mobile Handbook

Completed the new edition of [Volume 4](http://www.itu.int/pub/R-HDB-49/en) of the Land Mobile Handbook – Intelligent Transport Systems.

## 3.9 Vocabulary

WP 5A still carries forward vocabulary for RLANs on DFS and TCP (elements for a future update of Rec. ITU-R M.1450), in [Annex 17](https://www.itu.int/dms_pub/itu-r/md/15/wp5a/c/R15-WP5A-C-0844!N17!MSW-E.docx) to [Doc. 5A/844](https://www.itu.int/md/R15-WP5A-C-0844/en).

## 3.10 Joint activity of WP 5A and WP 5C on WRC-23 topic 9.1 c)

WPs 5A and 5C agreed that for the November 2020 block meeting there would be no need for a joint plenary of WPs 5A and 5C, since the expected results may be attached to the Chairmen’s Reports.  Therefore, based on the proposal in Doc. [5A/178](https://www.itu.int/md/R19-WP5A-C-0178/en)=[5C/120](https://www.itu.int/md/R19-WP5C-C-0120/en), the work was conducted in an Ad Hoc 5A/5C co-chaired by the Chairmen of WPs 5A and 5C that met 3 times (opening agenda in [Doc. 5A/ADM/10](https://www.itu.int/md/R19-WP5A-ADM-0010/en) and closing agenda in [Doc. 5A/ADM/11](https://www.itu.int/md/R19-WP5A-ADM-0011/en)). The following documents were considered: [5A/58](https://www.itu.int/md/R19-WP5A-C-0058/en) (China); [5A/85](https://www.itu.int/md/R19-WP5A-C-0085/en) [Annex 8](https://www.itu.int/dms_pub/itu-r/md/19/wp5a/c/R19-WP5A-C-0085!N08!MSW-E.docx) (WP 5A); [85](https://www.itu.int/md/R19-WP5A-C-0085/en) [Annex 9](https://www.itu.int/dms_pub/itu-r/md/19/wp5a/c/R19-WP5A-C-0085!N09!MSW-E.docx) (WP 5A); [5A/177](https://www.itu.int/md/R19-WP5A-C-0177/en)= [5C/119](https://www.itu.int/md/R19-WP5C-C-0119/en), [5A/178](https://www.itu.int/md/R19-WP5A-C-0178/en)=[5C/120](https://www.itu.int/md/R19-WP5C-C-0120/en) (Germany, Finland, France, Hungary, Lithuania, Luxembourg, Norway, Sweden, Switzerland, UK); and [5A/207](https://www.itu.int/md/R19-WP5A-C-0207/en) (UAE). Based on Docs. [5A/58 Att.2](https://www.itu.int/md/R19-WP5A-C-0058/en), [5A/177](https://www.itu.int/md/R19-WP5A-C-0177/en) and 5A/[207](https://www.itu.int/md/R19-WP5A-C-0207/en) Att.2 the workplan was updated ([Annex 9](http://www.itu.int/md/dologin_md.asp?lang=en&id=R19-WP5A-C-0221!N09!MSW-E)). Based on Docs. [5A/58 Att.1](https://www.itu.int/md/R19-WP5A-C-0058/en) and [5A/207 Att.1](https://www.itu.int/md/R19-WP5A-C-0207/en), elements for a working document are attached to the chairman’s report ([Annex 18](http://www.itu.int/md/dologin_md.asp?lang=en&id=R19-WP5A-C-0221!N18!MSW-E)), but the text was neither reviewed nor agreed. No liaison statements to other working parties were considered. Input contributions are encouraged for the next meeting scheduled for April 2021 to help progress the work on topic 9.1c.

# 4 Summary of WRC-23 preparations

WP 5A has responsibility for one WRC-23 agenda item and two topics under agenda item 9.1, as summarized in the following table:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Agenda item /  Topic | Topic | Resolution | Draft CPM text | Workplan/ Report of activities |
| 1.3 | Primary allocation of the band 3 600-3 800 MHz to the mobile service within Region 1 | [246 (WRC-19)](https://www.itu.int/dms_pub/itu-r/oth/0c/0a/R0C0A00000D0003PDFE.pdf) | [Annex 4](http://www.itu.int/md/dologin_md.asp?lang=en&id=R19-WP5A-C-0221!N04!MSW-E) to [Doc.  5A/221](http://www.itu.int/md/R19-WP5A-C-0221/en) | [Annex 5](http://www.itu.int/md/dologin_md.asp?lang=en&id=R19-WP5A-C-0221!N05!MSW-E) to [Doc.  5A/221](http://www.itu.int/md/R19-WP5A-C-0221/en) |
| /9.1 b) | Amateur service and amateur-satellite service allocations in 1 240-1 300 MHz | [774 (WRC‑19)](https://www.itu.int/dms_pub/itu-r/oth/0c/0a/R0C0A00000D0023PDFE.pdf) | [Annex 6](http://www.itu.int/md/dologin_md.asp?lang=en&id=R19-WP5A-C-0221!N06!MSW-E) to [Doc.  5A/221](http://www.itu.int/md/R19-WP5A-C-0221/en) | [Annex 7](http://www.itu.int/md/dologin_md.asp?lang=en&id=R19-WP5A-C-0221!N07!MSW-E) to [Doc.  5A/221](http://www.itu.int/md/R19-WP5A-C-0221/en) |
| /9.1 c) | IMT for fixed wireless broadband in the frequency bands allocated to the fixed services on primary basis | [175 (WRC-19)](https://www.itu.int/dms_pub/itu-r/oth/0c/0a/R0C0A00000D0024PDFE.pdf) | [Annex 8](http://www.itu.int/md/dologin_md.asp?lang=en&id=R19-WP5A-C-0221!N08!MSW-E) to [Doc.  5A/221](http://www.itu.int/md/R19-WP5A-C-0221/en) | [Annex 9](http://www.itu.int/md/dologin_md.asp?lang=en&id=R19-WP5A-C-0221!N09!MSW-E) to [Doc.  5A/221](http://www.itu.int/md/R19-WP5A-C-0221/en) |

These annex numbers of the WP 5A Chairman’s Report are maintained from meeting to meeting until the work is completed. The annexes with the work plans will be converted to reports of the work undertaken as the work is progressed.

Refer to [Section 3](https://www.itu.int/dms_pub/itu-r/md/19/wp5a/c/R19-WP5A-C-0221!N01!MSW-E.docx#s3) of [Annex 1](https://www.itu.int/dms_pub/itu-r/md/19/wp5a/c/R19-WP5A-C-0221!N01!MSW-E.docx) for further information on the WRC-23 preparations, in particular the principles in [Section 3.1](https://www.itu.int/dms_pub/itu-r/md/19/wp5a/c/R19-WP5A-C-0221!N01!MSW-E.docx#s31) of [Annex 1](https://www.itu.int/dms_pub/itu-r/md/19/wp5a/c/R19-WP5A-C-0221!N01!MSW-E.docx) to [Doc.  5A/221](http://www.itu.int/md/R19-WP5A-C-0221/en) or in the Annex to [CVC-16/2](https://www.itu.int/md/R19-CVC-C-0002/en).

WP 5A invites the membership to provide characteristics and protection criteria where applicable for radiocommunication systems operating and intended to operate in the future in the frequency band subject to WRC-23 agenda items.

# 5 Objectives for the twenty-fifth meeting of WP 5A

The principal objective for the 25th meeting of Working Party 5A is to assess the work that may need to be conducted by WP 5A in support of the preparations for WRC-23, as per the results of CPM23-1, and to continue the work on the study questions assigned to WP 5A.

Based on the reports from the Working Groups of WP 5A (cf. [Annex 3](http://www.itu.int/md/dologin_md.asp?lang=en&id=R19-WP5A-C-0221!N03!MSW-E)), the following overall objectives are tentatively set for the 25th meeting of WP 5A:

**1) Amateur and amateur-satellite services**

– Based on contributions continue work on WRC-23 agenda item 9.1 b).

– Update WG 5A-1 work plan as required.

– Respond to liaison statements from other groups as appropriate.

– Deal with any other work relevant to the amateur and amateur-satellite services that is brought to the meeting.

**2) Systems and standards**

– Development of the working document towards a preliminary draft new Recommendation ITU-R M.[RSTT\_FRQ] – “Spectrum Harmonization for Railway Radiocommunication Systems between Train and Trackside (RSTT)” ([Annex 11](http://www.itu.int/md/dologin_md.asp?lang=en&id=R19-WP5A-C-0085!N11!MSW-E) to [Doc. 5A/85](http://www.itu.int/md/R19-WP5A-C-0085/en)).

– Development of the working document towards a preliminary draft new study Question ITU-R [RSTT] – “Studies related to the further development of RSTT” ([Annex 12](http://www.itu.int/md/dologin_md.asp?lang=en&id=R19-WP5A-C-0085!N12!MSW-E) to [Doc. 5A/85](http://www.itu.int/md/R19-WP5A-C-0085/en)).

– Development of the working document towards a preliminary draft revision of Report ITU\_R M.2442-0 – “Current and future usage of railway radiocommunication systems between train and trackside” ([Annex 13](http://www.itu.int/md/dologin_md.asp?lang=en&id=R19-WP5A-C-0085!N13!MSW-E) to [Doc. 5A/85](http://www.itu.int/md/R19-WP5A-C-0085/en)).

– Development of the working document towards a preliminary draft new Report on Broadband Air To Ground Systems – “Frequency usage in the land mobile service for broadband direct air-to-ground (A2G) communications links with passenger aircraft” ([Annex 6](http://www.itu.int/md/dologin_md.asp?lang=en&id=R15-WP5A-C-1065!N06!MSW-E) to [Doc. 5A/1065](http://www.itu.int/md/R15-WP5A-C-1065/en)).

– Development of the working document towards a preliminary draft revision of Report ITU‑R M.2282-0 – “Systems for public mobile communications with aircraft” ([Annex 7](http://www.itu.int/md/dologin_md.asp?lang=en&id=R15-WP5A-C-1065!N07!MSW-E) to [Doc. 5A/1065](http://www.itu.int/md/R15-WP5A-C-1065/en)).

– Development of the working document towards a preliminary draft new Report ITU-R M.[UCS] – “Utility Communication Systems” ([Annex 12](http://www.itu.int/md/dologin_md.asp?lang=en&id=R19-WP5A-C-0221!N12!MSW-E) to [Doc. 5A/221](http://www.itu.int/md/R19-WP5A-C-0221/en)).

– Continue the work on the WAS Study Questions on the basis of input contributions.

**3) Public protection and disaster relief**

– Consider the possible revision of Report ITU-R M.2377, based on input contributions.

– Consider the possible revision of the ITU-R portion of the Compendium of ITU’s Work on Emergency Telecommunications, based on input contributions.

*Note:* As these have been objectives of the group for over a year with no input contributions, the meeting agreed that - if no inputs are received on the above topics at the next meeting - these would be discontinued as objectives.

**4) Interference and sharing**

– Consider how to proceed with the various working documents that did not receive any inputs lately (RLAN documents from WRC-19 agenda item 1.16 ([Annex 17](https://www.itu.int/dms_pub/itu-r/md/15/wp5a/c/R15-WP5A-C-0976!N17!MSW-E.docx) to [Doc. 5A/976](https://www.itu.int/md/R15-WP5A-C-0976/en) and Annexes [9](http://www.itu.int/md/dologin_md.asp?lang=en&id=R15-WP5A-C-1065!N09!MSW-E), [10](http://www.itu.int/md/dologin_md.asp?lang=en&id=R15-WP5A-C-1065!N10!MSW-E), [11](http://www.itu.int/md/dologin_md.asp?lang=en&id=R15-WP5A-C-1065!N11!MSW-E), and [12](http://www.itu.int/md/dologin_md.asp?lang=en&id=R15-WP5A-C-1065!N12!MSW-E) [Doc. 5A/1065](http://www.itu.int/md/R15-WP5A-C-1065/en)), range 92-109.5 GHz ([Annex 15](http://www.itu.int/md/dologin_md.asp?lang=en&id=R19-WP5A-C-0085!N15!MSW-E) to [Doc. 5A/85](http://www.itu.int/md/R19-WP5A-C-0085/en)) and sharing by zones ([Annex 14](https://www.itu.int/dms_pub/itu-r/md/15/wp5a/c/R15-WP5A-C-0976!N14!MSW-E.docx) to [Doc. 5A/976](https://www.itu.int/md/R15-WP5A-C-0976/en))).

– Continue work on the various working documents that are currently under development on interference and sharing (including Annexes [13](http://www.itu.int/md/dologin_md.asp?lang=en&id=R19-WP5A-C-0221!N13!MSW-E), [14](http://www.itu.int/md/dologin_md.asp?lang=en&id=R19-WP5A-C-0221!N14!MSW-E) and [15](http://www.itu.int/md/dologin_md.asp?lang=en&id=R19-WP5A-C-0221!N15!MSW-E) to [Doc. 5A/221](http://www.itu.int/md/R19-WP5A-C-0221/en)).

– Continue work in preparation of WRC-23 agenda item 1.3 as the lead group.

– Consider how to provide information on system parameters and spectrum needs for the various WRC-23 agenda items where WP 5A has received requests from other Working Parties as a contributing group.

**5) New technologies**

– Continue to develop a working document towards a PDN Report ITU-R M.[CAV] “Connected Automated Vehicles” ([Annex 16](http://www.itu.int/md/dologin_md.asp?lang=en&id=R19-WP5A-C-0221!N16!MSW-E) to [Doc. 5A/221](http://www.itu.int/md/R19-WP5A-C-0221/en)).

– Continue to develop a preliminary draft revision of Report ITU-R M.2417 “Technical and operational characteristics of land-mobile service applications in the frequency range 275‑450 GHz” ([Annex 17](http://www.itu.int/md/dologin_md.asp?lang=en&id=R19-WP5A-C-0221!N17!MSW-E) to [Doc. 5A/221](http://www.itu.int/md/R19-WP5A-C-0221/en)).

**6) Land Mobile Handbook**

– Consider the need to update the handbooks that are the responsibility of WP 5A. The development of future volumes will be contribution driven.

**7) Vocabulary**

– Continue the development of the land mobile vocabulary and liaise with the CCV.

**8) WRC-23 topic 9.1 c)**

– Continue the join activity with WP 5C in the work on WRC-23 topic 9.1 c) on the basis of input contributions.

# 6 Future meetings

The next meeting of WP 5A (#25) will be a virtual meeting and is scheduled to be held in the period from 28 April to 11 May 2021, which will be the 3rd e-meeting of WP 5A. If these dates are confirmed the deadline for contributions will be 1600 hours UTC, Monday, 21 April 2021[[1]](#footnote-1).

# 7 Progression of the work and concluding remarks

The work may continue by correspondence. The correspondence groups will conduct their work using the Share Point facilities as described in section 6.5 of [Annex 1](http://www.itu.int/md/dologin_md.asp?lang=en&id=R19-WP5A-C-0221!N01!MSW-E) to [Doc. 5A/221](http://www.itu.int/md/R19-WP5A-C-0221/en).

[Annex 1](http://www.itu.int/md/dologin_md.asp?lang=en&id=R19-WP5A-C-0221!N01!MSW-E) also summarizes the status of the texts that are the responsibility of WP 5A (section 1), the structure of WP 5A (section 2), and the list of contacts for liaison and collaboration with other organizations under Resolution ITU-R 9-5 (section 4).

The WP 5A and wireless access systems (WAS) home pages can be found, respectively, at:

<http://www.itu.int/ITU-R/go/rwp5a/en>

<http://www.itu.int/ITU-R/go/rwp8a-was>.

In closing, The Chairman thanked all the WP 5A participants for their hard work, and in particular the Chairmen of the Working Groups, Ms. Amy Sanders and Messrs. Dale Hughes, Lang Baozhen, Michael Kraemer, and Hitoshi Yoshino; the LMH Rapporteur, Mr. Takahiko Yamazaki; the Vocabulary Rapporteur, Mr. Brian Patten; the Liaison Rapporteurs, Mses. Gabrielle Owen and Amy Sanders and Messrs. Jonathan Siverling, Paul Najarian, Hitoshi Yoshino, and Brian Copsey; and the BR, in particular the SG 5 Counsellor, Mr. Uwe Loewenstein, and his team for the excellent support provided at the meetings, as well as the organizers and moderators that supported this e-meeting with the use of GoToWebinar tool.

1. Members are strongly advised to pay attention to the strict time deadline for contributions; refer to the forthcoming [5/LCCE Circular Letter](https://www.itu.int/md/R00-SG05-CIR/e) announcing the meeting. It is also advised to submit the contributions early in the case there are technical difficulties with either the email servers or the files submitted, because the revision of input contributions is not possible after the deadline. [↑](#footnote-ref-1)