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| **Radiocommunication Study Groups** |  |
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| Received: 29 August 2022  Subject: Sharing studies for WRC-23 agenda item 1.5 | **Document 6-1/124-E** |
| **30 August 2022** |
| **English only** |
| Saudi Arabia (Kingdom of), Egypt (Arab Republic of), United Arab Emirates | |
| proposed Modifications to the Overall summary of the sharing studies in TG 6/1 for WRC-23 agenda item 1.5 | |
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Introduction

Resolution **235 (WRC-15)** calls for review of the spectrum use and needs within the frequency band 470-960 MHz in Region 1, and to take appropriate regulatory actions including potential allocation to Mobile Service and/or identification of IMT within the whole band, or parts thereof. It resolves to invite ITU-R, after the 2019 World Radiocommunication Conference and in time for the 2023 World Radiocommunication Conference:

1 to review the spectrum use and study the spectrum needs of existing services within the frequency band 470-960 MHz in Region 1, in particular the spectrum requirements of the broadcasting and mobile, except aeronautical mobile, services, taking into account the relevant ITU Radiocommunication Sector (ITU-R) studies, Recommendations and Reports;

2 to carry out sharing and compatibility studies, as appropriate, in the frequency band 470-694 MHz in Region 1 between the broadcasting and mobile, except aeronautical mobile, services, taking into account relevant ITU-R studies, Recommendations and Reports.

Multiple administrations presented their serious concerns regarding the activities of the informative Correspondence Group (CG) by TG 6/1 since the outcomes did not take into consideration several documents and contributions, and simply noted them without taking appropriate action in their regard. Please refer to the other contributions on some of these concerns submitted to the last TG 6/1 meeting.

Proposal

This contribution provides proposal for modifications of the overall summary of studies of the working document of TG 6/1 (Document [R19-TG6.1-C-0106!N3!MSW-E rev03](https://extranet.itu.int/rsg-meetings/sg6/tg6-1/CG%20on%20S%26C%20study%20of%20TG6-1/Shared%20Documents/Working%20document/R19-TG6.1-C-0106!N3!MSW-E%20rev03.docx?d=w85b16f72decb42d29ac804d17e536c20)), Section 5.1, which was submitted to the information CG but was not addressed properly.

attachment

(Revision to Document [6-1/82](https://www.itu.int/md/R19-TG6.1-C-0082/en))

Working document/material on sharing and compatibility studies in the frequency band 470-694 MHz in Region 1

[Editor’s Note: Only those sections that are subject to the proposed modifications in this contribution are copied hereafter.]

# 5 Overall summary regarding the sharing studies done for WRC-23 agenda item 1.5

## 5.1 Overall summary regarding Broadcasting and Mobile services where studies of applications are available

[*Ed. Note: Move this first paragraph between brackets to the end of this section 5.1 considering the views on the scope of AI 1.5*] [A sharing and compatibility study showed that co-channel operation of DTTB transmitter and IMT uplink receiver may require separation distances around 100–300 km which may vary widely in the real world. Other studies indicated that the separation distance co-channel operation of DTTB transmitters and IMT base station receivers can be significantly lower of around 30 km, depending on the deployment cases. These studies also indicated that adjacent channel operation between DTTB transmitter and IMT receivers could be possible with separation distance, in the range of tens of meters. Due to the different views presented on whether, or not, this scenario of incumbent interference to new service is within the scope of AI 1.5, other studies were not submitted, which may have different results, and accordingly the results could not be validated.]

The results of the studies on the impact from IMT base station to DTTB reception in co-channel varies significantly based on the assumptions considered in the studies. The results of some studies showed distances between IMT base stations and DTTB receivers can be up to few tens of kilometres. The results of other studies using baseline parameters showed that the separation distance range from few km up to few tens of kilometres. Some other studies showed that the separation distance between IMT networks and DTTB receivers can be as low as a few km, depending on the interference criterion considered, indicating the possibility of co-existence between the systems. The implementation of mitigation measures would reduce the distances between IMT base stations and DTTB receivers.

Mitigation measures (e.g. EIRP reduction, antenna tilting and orientation) may help reducing the separation distance. Also, this interference might be further reduced by taking advantage of situations such as favourable terrain, large unpopulated areas, cross-border coordination and regional harmonisation of the band.

Indoor DTT reception is possible , but this is an unprotected mode in relevant countries.

Bilateral coordination is also a possible option to further eliminate potential interference, if any. A non-IMT trunked ad hoc Mobile system can, as necessary, change its operating channel, and may therefore operate inside a DTTB service area by avoiding the DTTB channels used in that area, subject to cross border coordination where relevant (a study showed that co-channel separation distances with DTTB transmitters and receivers are in the order of some tens of kilometres).

The results of compatibility studies for adjacent channel situations showed that interference distances can be limited generally to hundreds of meters for IMT and to some tens of meters for trunked ad hoc. In addition, mitigation measures such as ACLR improvement may be defined on national and/or regional basis.

In these adjacent channel situations, other mitigation approaches may include the following:

- Consider guard band and/or filters, as appropriate.

- Other technical mitigation measures including providing suitable filters for the DTTB receiving installations[[1]](#footnote-1).

## 5.2 Summary of submitted studies on the impact from wind profiler radars to mobile services and vice versa

If wind profiler radars and the mobile service are planned to be operated in the same channel, a decoupling distance of some kilometres may need to be established. This distance can be reduced by additional protective measures like lateral earth walls [or clutter fences] around the wind profiler radar, and by an appropriate planning of the location, respectively.

For every wind profiler installation [site], an individual consideration is necessary based on local conditions. An additional decoupling can be achieved by a selection of the wind profiler operating frequency to maximise the spectral separation.

Due to the different views on whether, or not, such studies are within the scope of AI 1.5, other studies were not submitted which may have different results.

## 5.3 Summary of submitted studies on Radioastronomy Service

. Report ITU-R RA.2332-0 on the compatibility and sharing studies between the RAS and IMT systems in the frequency band 608-614 MHz provides some results on the coexistence between RAS and IMT in this band. The results of a sharing study, taking into account the technical parameters provided by TG 6/1, indicated that for generic (flat-Earth) in-band aggregation scenarios, separation distances of up to 1 000 km (BS) / 450 km (UE).The results of a compatibility study demonstrated that for adjacent bands or in the spurious domain, a coordination zone with radii in excess of 500 km (adjacent) and 380 km (spurious) for BS, and distances of about 150 km (adjacent) and 10 km (spurious) for UE.

Due to the different views on whether, or not, such studies are within the scope of AI 1.5, other studies were not submitted which may have different results.

## 5.4 Summary of submitted studies on Audio SAB/SAP

Audio SAB/SAP (PMSE) could be planned in an interleaved manner in the broadcasting section within 470-694 MHz. Planning of PMSE is based on assessing the local RF environment for its operation on a case-by-case basis. Sharing studies are provided in Report [ITU-R BT.2338](https://www.itu.int/pub/publications.aspx?lang=en&parent=R-REP-BT.2338-2014), [ECC Report 221](https://docdb.cept.org/download/1173).

Due to the different views on whether, or not, such studies are within the scope of AI 1.5, other studies were not submitted which may have different results.

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1. For example, band-reject filters may be required. [↑](#footnote-ref-1)