

Received:

Document WP4C/XX-E

Subject: WRC-27 Agenda 1.13

Date 10 April 2025

Original: English

IAFI¹

TOWARDS SHARING STUDIES RELATED TO WRC-27 AGENDA ITEM 1.13

1. Background

ITU-R WP 5D sent an LS (Document: 4C/231) to WP 4C regarding the discussions on WRC-27 Agenda Item 1.13. The Liaison Statement highlights the consideration of regulatory provisions to protect terrestrial IMT systems from the MSS network/systems and the necessity of analysing the factors impacting the aggregate interference from the envisaged MSS systems providing direct connectivity to IMT user equipment (UE).

Further, the LS also notes the requirement that WP 4C may provide additional information regarding MSS technical operations and characteristics that might help estimate the aggregate interference to IMT receivers from different MSS satellites or systems.

WP 4C, the main responsible group for MSS systems, has continued developing the Working Document on Sharing and Compatibility Studies in relation to WRC-27 agenda item 1.13 in [Annex 4 to 4C/204](#). The WP 4C discussions include deliberations on several interference scenarios for direct connectivity between space stations and International Mobile Telecommunications (IMT) user equipment. This is also being referred to as Direct-to-Device, Direct-to-cellular MSS in the working document and discussions.

In this document, **D2C-MSS** is being used to refer to the systems that will use the proposed new allocations/identification of spectrum within 694/698 MHz to 2700 MHz under agenda item 1.13 of WRC-23.

2. Discussion

A D2C-MSS system could include several satellites (from hundreds to thousands) in low Earth orbit. The terrestrial IMT system could receive interference from multiple satellites from each of the D2C-MSS systems. The level of the received interference depends on the number of visible satellites and the distribution of their elevation angle. Some contributions in the previous 5D meeting calculated the number of visible satellites from an Earth Station located at different altitudes and concluded that for a dense satellite constellation such those used for D2C-MSS, the number of visible satellites from an Earth Station is relatively high. In this contribution, we propose such interference scenarios and method of calculating the aggregate interference from multiple D2C-MSS systems.

¹ ITU APT Foundation of India ([IAFI](#)) is a sector member of the ITU-R

3. Proposal:

We propose:

1. adding a Figure and the text under section “4. Interference Scenarios (Geometries)” in the [working document on sharing and compatibility studies in relation to WRC-27 agenda item 1.13](#) as attached with this contribution.
2. that the aggregate interference from multiple D2C-MSS systems should be considered when doing sharing and compatibility studies and defining pfd limits under AI 1.13. Therefore, when replying to the LS from 5D ([Document 4C/231-E](#)), it is proposed to provide the following info to 5D:

More than one D2C-MSS system could be actively transmitting (co-frequency) in visibility of a country's border. The aggregate interference from these D2C-MSS systems should be considered in sharing and compatibility studies under AI 1.13, to ensure protection of terrestrial IMT.

ATTACHMENT 1

Annex 4 to Working Party 4C Chair's Report

WORKING DOCUMENT ON SHARING AND COMPATIBILITY STUDIES IN RELATION TO
WRC-27 AGENDA ITEM 1.13.....

4 Interference scenarios (geometries)

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