GSOA

Agenda Item 1.12

WRC-27 Agenda Item 1.12

Possible allocations to the MSS and regulatory actions required for the future development of low-data-rate non-geostationary MSS systems.

Overview

This Agenda Item invites Administrations to consider studies on possible new allocations to, and regulatory actions for, the mobile-satellite service (MSS) in the frequency bands 1 427-1 432 MHz (space-to-Earth), 1 645.5-1 646.5 MHz (space-to-Earth) (Earth-to-space), 1 880-1 920 MHz (space-to-Earth) (Earth-to-space) and 2 010-2 025 MHz (space-to-Earth) (Earth-to-space) required for the future development of low-data-rate non-geostationary (NGSO) mobile-satellite systems, in accordance with Resolution 252 (WRC-23).

Background

Low data rate (LDR) systems may refer to services that support applications such as Internet of Things (IoT) devices, sensor networks, telemetry systems, and certain types of machine-to-machine (M2M) communications. The systems considered under AI 1.12, according to Resolution 252 (WRC-27), are envisaged to not include telephony, transmit data in bursts, capable of operating with periodic or intermittent data transmission and capable of maintaining a service while experiencing packet loss.

The existing MSS spectrum is not sufficient to accommodate new systems. Frequencies between 1-2 GHz are particularly well-suited for MSS services due to their favorable propagation characteristics. These bands offer better coverage and improved penetration, which is suitable for IoT and M2M MSS applications.

Allocating sufficient spectrum for LDR systems may play a critical role in expanding the IoT ecosystem, supporting new use cases across various industries. Understanding the specific spectrum needs and technical parameters of these systems will help ensure that suitable spectrum is studied for LDR applications.

Key Points

- New MSS allocations are required to accommodate LDR systems and applications that have specific requirements. Among the bands proposed in Resolution 252 (WRC-23) the 1 645.5-1 646.5 MHz frequency band is reserved for distress, safety, and urgency communications within GMDSS by various provisions of the ITU Radio Regulations, and the International Maritime Organization is considering future use of the band in this context.
- The bands under study are often adjacent to or co-channel with existing MSS allocations and, in some cases, consider both space-to-Earth and Earth-to-space operations. GSOA is of the view that the studies must ensure the protection of existing MSS uplink allocations in the 1645.5-1646.5 MHz, globally and 2010-2025 MHz band in Region 2 from potential interference caused by new LDR MSS downlink allocations operating in the opposite direction.
- LDR MSS systems as defined by Resolution 252 transmit data in bursts, are capable of operating with periodic or intermittent data transmission and can maintain service while experiencing packet loss. In addition to

other spectrum management techniques and digital modulation mechanisms that support co-frequency use, LDR systems allow for multiple LDR systems to coexist within the same frequency band.

- Allocating specific spectrum to LDR systems may help decongest existing MSS bands which are used for applications that require relatively larger portions of contiguous spectrum. Differentiating between conventional MSS applications and LDR applications when considering spectral needs would allow for more efficient traffic management and mitigate interference between services.

Work status

During the April-May 2025 ITU-R WP4C meeting held in Shanghai, several contributions were reviewed and incorporated into the working document. These included preliminary technical studies on some of the candidate bands, which were neither reviewed nor agreed upon; clarification requests on the technical definition of LDR systems - to which proponents responded that Resolution 252 already provides a description and that specific technical parameters will be developed from and for the ITU-R studies; considerations regarding spectrum requirements provisions for the proposed services; and discussions on interference mitigation techniques. Four output documents were produced, and administrations are encouraged to contribute further in future WP4C meetings.

GSOA Position

- GSOA supports studies on the potential allocations to MSS for non-GSO low-data-rate MSS systems with technical and operational conditions that allow coexistence of these systems in the same frequency band, as long as the protection of existing primary services, including MSS, in-band and in the relevant adjacent frequency bands are ensured.
- GSOA supports studies aiming at defining the spectrum requirements, technical and operational characteristics and conditions for non-GSO low-data-rate MSS systems.
- GSOA also supports studies on sharing and compatibility between the non-GSO low-data-rate MSS systems and existing primary services in-band and in the relevant adjacent frequency bands.
- GSOA supports that studies must ensure the protection of existing MSS uplink allocations from potential interference caused by new LDR MSS downlink allocations. operating in the opposite direction.
- The 1 645.5-1 646.5 MHz frequency band is reserved for distress, safety, and urgency communications within the GMDSS. It requires further input from the International Maritime Organization before being considered under this agenda item.

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