



ASIA-PACIFIC TELECOMMUNITY

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India (Republic of)

PROPOSAL FOR PRELIMINARY VIEWS ON WRC-27 AGENDA ITEM 1.12

Agenda Item 1.12: to consider, based on the results of studies, possible new allocations to the mobile-satellite service and possible regulatory actions 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 mobile-satellite systems, in accordance with Resolution 252 (WRC-23);

Resolution 252 (WRC-23) – Possible new allocations to the mobile-satellite service for the future development of low-data-rate non-geostationary mobile-satellite systems

Background:

WRC-23 adopted Resolution 252 (WRC-23), which invites the WRC-27 under agenda item 1.12 to consider, based on the results of studies, possible allocations to the mobile-satellite service and relevant regulatory actions 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 mobile-satellite service (LDR MSS) systems. The ITU-R was invited to conduct studies on spectrum requirements, technical and operational characteristics and conditions for LDR MSS systems, as well as sharing and compatibility studies (including mitigation techniques) between LDR MSS systems and existing primary services operating in the above-mentioned bands and in the relevant adjacent frequency bands.

Resolution 252 (WRC-23) provides a broad description of the low-data-rate mobile-satellite service (LDR MSS) systems. Based on that description, the non-GSO LDR MSS systems can be summarized/described as systems that:

- do not include telephony.
- transmit data in bursts.
- capable of operating with periodic or intermittent data transmission.
- capable of maintaining a service while experiencing packet loss.

In addition to the initial description provided by Resolution 252 (WRC-23), it is noted that low-data-rate non GSO MSS systems typically implement functionalities such as event-driven communications and messaging, rather than constant connectivity, and may not support exchange of time critical information.

It is noted that, the term “data in burst” in this context refers to short data transmissions characterized by low data volume, short duration, and typically asynchronous communication,

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and are distinct from traditional telephony or continuous data services, such as non-voice messaging and data collection services delivered over satellite networks.

For the purposes of global operational deployment of low-data-rate non-GSO MSS, it is noted that some of these systems cannot accommodate channel sharing without technical restrictions in performance and service continuity requirements.

One of the use cases for non-GSO LDR MSS systems is satellite-based Internet of Things (IoT) applications, such as data collection from sensor nodes, including mobile, nomadic and fixed terminals, deployed over a large geographical area. Such sensor nodes, or user terminals (UT), typically generate from a few tens of bytes to a couple of hundred kilobytes per day and transmit this data in bursts when the satellite is in view and available. To optimize the efficiency of the data collection in non-GSO LDR MSS systems and to reduce interference generated by the user terminals, the satellites need to broadcast information over its signalling channel, possibly including almanac/ephemeris data, to the user terminals. This system requirement further emphasizes that non-GSO LDR MSS systems require access to the spectrum in both the Earth-to-space and space-to-Earth directions.

The signaling traffic broadcasted by satellites in non-GSO LDR MSS systems may inform the UT when a satellite is available to avoid unnecessary transmissions. The amount of spectrum needed for traffic transmitted on the downlink by the satellite may depend on the number of UTs deployed.

Recommendation [ITU-R M.1391-1](#) section 5.3.3 may be used for identifying spectrum requirements as a function of a known carrier bandwidth (B_c), whereas there is a need to determine the spectrum requirements in the frequency bands under study, considering that the many application of non-GSO LDR MSS, the downlink may require less spectrum than the uplink, since it usually uses for command and configuration.

India's Preliminary Views:

The proposed frequency bands 1 427-1 432 MHz (space-to-Earth), 1 645.5-1 646.5 MHz, 1 880-1 920 MHz and 2 010-2 025 MHz required for the future development of LDR MSS are being extensively used for various terrestrial services and further studies are required for consideration of these bands for LDR MSS