



India (Republic of)

## PRELIMINARY VIEWS ON WRC-23 AGENDA ITEMS 1.16, 1.17, 1.18, 1.19

### Agenda Item 1.16:

*to study and develop technical, operational and regulatory measures, as appropriate, to facilitate the use of the frequency bands 17.7-18.6 GHz and 18.8-19.3 GHz and 19.7-20.2 GHz (space-to-Earth) and 27.5-29.1 GHz and 29.5-30 GHz (Earth-to-space) by non-GSO FSS earth stations in motion, while ensuring due protection of existing services in those frequency bands, in accordance with Resolution 173 (WRC-19);*

### 1. Background

World Radiocommunication Conference 2019 (WRC-19) adopted agenda item 1.16 and Resolution 173 that calls for studies for possible operation of ESIMs communicating with Non GSO FSS space stations in the frequency bands 17.7-18.6 GHz and 18.8-19.3 GHz and 19.7-20.2 GHz (space-to-Earth) and 27.5-29.1 GHz and 29.5-30 GHz (Earth-to-space)

The frequency bands 17.7-18.6 GHz, 18.8-19.3 GHz and 19.7-20.2 GHz (space-to-Earth) and 27.5-29.1 GHz and 29.5-30 GHz (Earth-to-space) are globally allocated on a co-primary basis to the fixed-satellite service (FSS). The frequency bands 17.7-18.6 GHz, 18.8-19.3 GHz and 19.7-20.2 GHz and 27.5-29.1 GHz are allocated on primary basis to Fixed and Mobile. The frequency band 20.1-20.2 GHz and 29.9 to 30 GHz is also allocated for Mobile Satellite Service on primary basis. The frequency band 28.5-30 GHz (Earth-to-space) is allocated to the Earth exploration-satellite service (EESS) on a secondary basis.

There are existing and planned non-GSO satellite constellations in the frequency bands 17.7-20.2 GHz (space-to-Earth) and 27.5-30 GHz (Earth-to-space) to serve the growing need for access to broadband connectivity. A consistent approach to the deployment of these ESIMs will support important and growing global communication requirements and provide adequate protection to other services in the frequency bands.

Working Party (WP) 4A is the responsible group for the Agenda Item 1.16 to prepare a CPM text for WRC-23 on this agenda item (see Annex 29 of Doc 4A/691) based on contributions received from member states and the sharing studies conducted in the Radiocommunication sector for protection of the other services in the band.

### 2. Preliminary Views:

India supports the ITU-R studies for developing appropriate technical, operational, and regulatory measures to facilitate the use of the frequency bands 17.7-18.6 GHz and 18.8-19.3 GHz and 19.7-20.2 GHz (space-to-Earth) and 27.5-29.1 GHz and 29.5-30 GHz (Earth-to-space) by non-GSO FSS earth stations in motion, while ensuring due protection to the existing services and their applications in these frequency bands and adjacent bands.

Earth Stations in Motion should be permitted to operate only with the specified technical, operational, and regulatory conditions to ensure that their deployment do not cause interference or put constraints on the existing stations operating in accordance with the provisions of the Radio Regulations.

### **Agenda Item 1.17:**

*To determine and carry out, on the basis of the ITU R studies in accordance with Resolution 773 (WRC-19), the appropriate regulatory actions for the provision of inter-satellite links in specific frequency bands, or portions thereof, by adding an inter-satellite service allocation where appropriate;*

#### **1. Background**

WRC-23 will consider regulatory actions for possible provision of satellite-to-satellite links, including new ISS allocations, in the frequency ranges 11.7-12.7 GHz, 18.1-18.6 GHz, 18.8-20.2 GHz, and 27.5-30 GHz in order to facilitate relaying of data from non-GSO space stations through satellite networks in the fixed-satellite service.

The 11.7-12.7 GHz frequency range is allocated to the fixed, mobile, broadcasting, broadcasting satellite, and fixed-satellite service on a primary basis. The 18.1-18.6 GHz, 18.8-19.7 GHz, and 27.5-29.5 GHz frequency ranges are allocated to the fixed, mobile, and fixed-satellite services on a primary basis. The Radio Regulation provides for feeder links operations of non-GSO mobile-satellite service (MSS) in the 19.3-19.7 GHz and 29.1-29.5 MHz frequency bands. The 19.7-20.2 GHz and 29.5-30 GHz frequency bands are allocated to the fixed-satellite and mobile-satellite services on a primary basis. There is an adjacent band primary allocation to the Earth-exploration satellite service (passive) in 18.6-18.8 GHz.

Considering that there is growing interest for utilizing satellite-to-satellite links for a variety of applications and that there have been expressions of interest by some administrations in using the FSS frequency bands 27.5-30 GHz (Earth-to-space) and 11.7-12.7 GHz, 18.1-18.6 GHz and 18.8- 20.2 GHz (space-to-Earth) for links between space stations; ITU Radiocommunication Sector (ITU-R) has begun preliminary studies on the technical and operational issues associated with the use of non-geostationary (non-GSO) satellites transmitting towards the geostationary-satellite orbit (GSO) in the FSS frequency band 27.5-30 GHz. Resolution 773 (WRC-19) has been adopted under this agenda item.

WP4A is the responsible group for the Agenda Item 1.17 to conduct sharing studies in ITU-R to ensure protection of the existing primary services in the bands and in the adjacent frequency bands (see Annex 20 of Doc 4A/691). Further, WP-4A is developing draft CPM text for this agenda item (see Annex 30 of Doc 4A/691).

#### **2. Preliminary views**

India supports the development of appropriate regulatory framework to enable the operation of satellite-to-satellite links within the FSS in the frequency bands 11.7-12.7 GHz, 18.1-18.6 GHz, 18.8-20.2 GHz and 27.5-30 GHz, while ensuring protection of existing services, their current and future applications and expansions in the same and adjacent frequency bands

## **Agenda Item 1.18:**

*to consider studies relating to spectrum needs and potential new allocations to the mobile-satellite service for future development of narrowband mobile-satellite systems, in accordance with Resolution 248 (WRC-19);*

### **1. Background**

WRC-19 adopted WRC-23 agenda item 1.18 for the consideration of new mobile satellite service (MSS) allocations for MSS systems, as described in Resolution 248 (WRC-19), potentially operating in the frequency bands 1 695-1 710 MHz (Region 2), 2 010-2 025 MHz (Region 1), 3 300-3 315 MHz (Region 2) and 3 385-3 400 MHz (Region 2) for future development of narrowband MSS systems while ensuring the protection of existing primary services in those frequency bands and adjacent frequency bands.

There is an increasing demand of MSS systems using small satellites, for the delivery of narrowband MSS applications. Similar to terrestrial mobile systems, it is infeasible for any two MSS systems to operate co-frequency in the same service area unless the operation and characteristics of the MSS systems is delicately coordinated at the design stage. Past studies suggested that the technical and operational characteristics of existing MSS systems may impose significant constraints to a new MSS system, hampering the sharing of MSS spectrum. Since existing MSS allocations below 5 GHz are fully utilized by incumbent MSS systems which have large geographical coverage or global coverage that effectively removed the possibility of geographical separation, additional MSS spectrum is required for the implementation of such non GSO MSS systems.

ITU-R WP 4C which is a responsible group for this agenda item held its last meeting during 04-10 May 2022. WP 4C is reviewing the Working Document towards a Preliminary DNRep ITU-R M.[NB-MSS] dealing with sharing and compatibility studies between narrowband MSS systems and systems within the services operating in the proposed frequency bands and in the adjacent bands (see Annex 3 of Doc 4C/333). Further, WP 4C is also developing draft CPM text for this agenda item (see Annex 5 of Doc 4C/333).

### **2. Preliminary Views**

India is of the view that potential new allocations to the mobile-satellite service for future development of narrowband mobile-satellite systems in Region 1 and Region 2 should not impose any constraints to the incumbent services operating in the concerned frequency bands and adjacent bands in Region 3.

## **Agenda Item 1.19:**

*to consider a new primary allocation to the fixed-satellite service in the space-to-Earth direction in the frequency band 17.3-17.7 GHz in Region 2, while protecting existing primary services in the band, in accordance with Resolution 174 (WRC-19);*

### **1. Background**

WRC-23 agenda item 1.19, in accordance with Resolution 174 (WRC-19), invites ITU-R Sector to conduct, and complete in time for WRC-23, sharing and compatibility studies between the FSS (space-to-Earth) and the BSS (space-to-Earth) and between the FSS (space-to-Earth) and

the FSS (Earth-to-space), in order to consider a possible new primary allocation to the FSS (space-to-Earth) in the frequency band 17.3-17.7 GHz for Region 2, while ensuring the protection of existing primary allocations in the same and adjacent frequency bands, as appropriate, and without imposing any additional constraints on existing allocations to the BSS (space-to-Earth) and the FSS (Earth-to-space).

Considering that the FSS systems based on the use of new technologies associated with geostationary satellite systems are capable of providing high-capacity and low-cost means of broadband communication even to the most isolated regions of the world, this allocation will enable the introduction of new applications of radiocommunication technology to ensure the operation of as many systems as possible in order to ensure efficient use of the spectrum;

In accordance with Resolution 174 (WRC-19), the sharing and studies have to be done with the existing services in the frequency band 17.3-17.7 GHz; fixed-satellite service (Earth-to-space) and broadcasting-satellite service (space-to-Earth) and the existing services in adjacent frequency bands (Earth exploration-satellite service, space research service, radiolocation service, fixed service and mobile service).

This agenda item is being dealt by ITU-R Working Party 4A. Last meeting of Working Party 4A was held during 11-20 May 2022. Working Party 4A is developing following documents w.r.t. this agenda item: i) Working document on WRC-23 agenda item 1.19 (see Annex 24 of Doc 4A/691) and ii) Preliminary draft CPM Text for WRC-23 agenda item 1.19 (see Annex 31 of Doc 4A/691)

## **2. Preliminary Views**

India is of the view that new primary allocation to the fixed-satellite service in the space-to-Earth direction in the frequency band 17.3-17.7 GHz in Region 2 should not impose any constraints to the incumbent services operating in the concerned frequency bands and adjacent bands in Region

3