

## UNITED STATES OF AMERICA

### DRAFT PROPOSALS FOR THE WORK OF THE CONFERENCE

**Agenda Item 1.6.1:** *to consider possible additional primary allocations, to the fixed-satellite service (Earth-to-space and space-to-Earth) of 250 MHz in the range between 10 GHz and 17 GHz in Region 1; and review the regulatory provisions on the current allocations to the fixed-satellite service (FSS) within each range, taking into account the results of ITU-R studies, in accordance with Resolutions 151 (WRC-12)*

**Background Information:** The 13.25-13.4 GHz frequency band has allocations to the Earth exploration-satellite service (EESS) (active), the aeronautical radionavigation service (ARNS) and the space research service (active) on a primary basis in all three ITU regions subject to Radio Regulation Nos. **5.497**, **5.498A**, and **5.499**.

ITU-R sharing studies demonstrate that the proposed fixed-satellite service (FSS) (space-to-Earth) links will interfere with the ARNS in the bands 13.25-13.4 GHz. The studies show that the ARNS transmissions would cause interference into the FSS earth station receivers.

The 13.4-13.75 GHz frequency band has allocations to the Earth exploration-satellite service (active), the radiolocation service and the space research service (active) on a primary basis in all three ITU regions. RR No. **5.501A** indicates that the use of the band 13.4-13.75 GHz by the space research service on a primary basis is limited to active spaceborne sensors. Other uses of the band by the space research service are on a secondary basis. RR Nos. **5.499**, **5.500**, **5.501**, and **5.501B** apply.

ITU-R sharing studies demonstrate that the proposed fixed-satellite service (FSS) (Earth-to-space) links in the 13.25-13.75 GHz bands will interfere with existing authorized services in the bands 13.25-13.4 GHz and 13.4-13.75 GHz. The sharing studies' results show that EESS (active) altimeter measurements of lakes, reservoirs, and coastal areas will be lost over a large area of the Earth spanning over all three ITU regions. Mitigation techniques sufficient to protect the EESS (active) altimeters operating in the current allocations may impose severe if not impractical restrictions on new FSS systems that might operate in this band.

The 14.5-15.35 GHz frequency range has allocations to the fixed and mobile radio services on a primary basis in all three ITU regions. The frequency band 14.5-14.8 GHz also has an allocation to fixed-satellite service on a primary basis in all three ITU regions subject to Radio Regulation No. **5.510**. No. **5.510** limits FSS use to feeder links for the broadcasting satellite service outside Europe, which are subject to the Appendix **30A** Broadcast Satellite Plan and associated procedures. The space research service has an allocation on a secondary basis in the frequency band 14.5-15.35 GHz in all three regions. Aeronautical mobile data links currently operate in the 14.5-15.35 GHz band under the mobile service (MS) allocation, the parent service to aeronautical mobile service (AMS).

The band 15.4-17.0 GHz has allocations to the radiolocation service (RLS) on a primary basis in all three Regions and to the aeronautical radionavigation service on a primary basis in all three Regions. Some Administrations will operate airborne synthetic aperture radars worldwide as part of the global RLS allocation in the band 15.4-17 GHz. Some Administrations also operate an airport surface detection system on a co-primary basis with the primary RLS in the band 15.7-16.2 GHz.

ITU-R sharing studies demonstrate that the proposed FSS (Earth-to-space) links in the 10.0-17.0 GHz bands will interfere with existing authorized services in the bands 14.5-15.35 GHz and 15.4-17.0 GHz. The sharing studies' results show that in order to protect the AMS receivers operating in the band 14.5-15.35 GHz band, there is a required separation distance of up to 577 km (not accounting for terrain obstruction). The studies also show that in order to protect radiolocation stations operating in the band 15.4-17.0 GHz, a separation distance of up to 420 km (not accounting for terrain obstruction) is required. Given the large, required separation distances around AMS and RLS receivers' operational area and the mobile nature of AMS/RLS airborne receiver, the ubiquitous deployment of FSS transmitters would make mitigation and coordination approaches to permit sharing with the FSS very difficult or impractical. In addition, FSS space station receivers in the geostationary satellite orbit may be subject to unacceptable levels of interference from existing operations in these bands.

With respect to FSS downlinks from Region 1 operating in the band 15.4-17.0 GHz, ITU-R studies indicate radiolocation stations in Region 2 operating in the band 15.4-17.0 GHz may receive unacceptable levels of interference from FSS space stations in the geostationary satellite orbit and FSS downlink earth stations may receive unacceptable levels of interference from airborne stations beyond the radio horizon. Mitigation techniques sufficient to protect the systems operating in the current allocations may impose severe if not impractical restrictions on new FSS systems that might operate in this band.

With respect to FSS downlinks from Region 1 operating in the band 13.4-13.75 GHz, ITU-R studies indicate that EESS (active) systems operating across all three ITU regions in the band 13.4-13.75 GHz will not be unduly constrained. Therefore, operations of U.S. EESS (active) assets operating in the 13.4-13.75 GHz band on a global basis would not be adversely affected by an ITU Region 1 FSS (s-E) allocation in the 13.4-13.75 GHz band.

**Proposal:**

## ARTICLE 5

### Frequency allocations

#### Section IV – Table of Frequency Allocations (See No. 2.1)

**NOC**      USA/1.6.1/1

#### 11.7-14 GHz

Allocation to services		
Region 1	Region 2	Region 3
<b>13.25-13.4</b>	EARTH EXPLORATION-SATELLITE (active) AERONAUTICAL RADIONAVIGATION 5.497 SPACE RESEARCH (active) 5.498A 5.499	

**Reasons:** ITU-R studies indicate a potential for interference into existing EESS (active) systems from FSS (E-s). ITU-R studies indicate a potential for interference between the proposed FSS (s-E) and the existing ARNS systems.

**NOC**      USA/1.6.1/2

**11.7-14 GHz**

Allocation to services		
Region 1	Region 2	Region 3
<b>13.4-13.75</b>	EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH 5.501A Standard frequency and time signal-satellite (Earth-to-space) 5.499 5.500 5.501 5.501B	

**Reasons:** ITU-R studies indicate a potential for interference into existing EESS (active) systems from FSS (Earth-to-space). EESS (active) systems would not be adversely impacted if Region 1 were to implement FSS (space-to-Earth) links in this band. This NOC proposal applies only with regard to the FSS (Earth-to-space) direction.

**NOC**      USA/1.6.1/3

**14-15.4 GHz**

Allocation to services		
Region 1	Region 2	Region 3
<b>14.5-14.8</b>	FIXED FIXED-SATELLITE (Earth-to-space) 5.510 MOBILE Space research	
<b>14.8-15.35</b>	FIXED MOBILE Space research 5.339	

**Reasons:** ITU-R studies indicate a potential for interference into existing MS and AMS systems.

**NOC**      USA/1.6.1/4

**15.4-18.4 GHz**

Allocation to services		
Region 1	Region 2	Region 3
<b>15.4-15.43</b>	RADIOLOCATION 5.511E 5.511F AERONAUTICAL RADIONAVIGATION 5.511D	
<b>15.43-15.63</b>	FIXED-SATELLITE (Earth-to-space) 5.511A RADIOLOCATION 5.511E 5.511F AERONAUTICAL RADIONAVIGATION 5.511C	

<b>15.63-15.7</b>	RADIOLOCATION 5.511E 5.511F AERONAUTICAL RADIONAVIGATION 5.511D
<b>15.7-16.6</b>	RADIOLOCATION 5.512 5.513
<b>16.6-17.1</b>	RADIOLOCATION Space research (deep space) (Earth-to-space) 5.512 5.513

**Reasons:** ITU-R studies indicate a potential for interference into existing RLS systems.

**SUP** USA/1.6.1/5

### **RESOLUTION 151 (WRC-12)**

**Allocations, to the fixed-satellite service  
(Earth-to-space and space-to-Earth)  
of 250 MHz in the range between 10 GHz and 17 GHz in Region 1**

**Reasons:** Consequential change to completion of the agenda item.