

INTERNATIONAL TELECOMMUNICATION UNION

PLENARY MEETING

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Member States of the Inter-American Telecommunication Commission (CITEL)

PROPOSALS FOR THE WORK OF THE CONFERENCE

Agenda item 1.6.2

1.6.2 to the fixed-satellite service (Earth-to-space) of 250 MHz in Region 2 and 300 MHz in Region 3 within the range 13-17 GHz;

Background Information: The bands between 13 and 17 GHz have allocations to a variety of services with worldwide applications, including Earth exploration-satellite, space research, aeronautical radionavigation, mobile and aeronautical mobile services, representing significant and, in many cases global commitments by Administrations. Efforts to rectify previous WRC agreements that created imbalances between fixed-satellite service (FSS) up and downlinks in the frequency range 13-17 GHz need to ensure the protection of vital incumbent operations. The United States does not support an additional primary allocation to the FSS (Earth-to-space) in the frequency range 13.25-17 GHz in either Region 2 or 3 due to interference into existing global services.

13.25-13.4 GHz

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 FSS (Earth-to-space) links will interfere with the ARNS in the bands 13.25-13.4 GHz, exceeding protection criteria by large margins. ITU-R sharing studies also 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.

13.4-13.75 GHz

The 13.4-13.75 GHz frequency band has allocations to the EESS (active), the radiolocation service (RLS) 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 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. Studies also show that the proposed FSS (Earth-to-space) would significantly exceed allowed aggregate interference levels into the ARNS.

14.5-15.35 GHz

The 14.5-15.35 GHz frequency range has allocations to the fixed and mobile services on a primary basis in all three ITU Regions. The 14.5-14.8 GHz frequency band also has an allocation to the FSS 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 range 14.5-15.35 GHz in all three regions. Aeronautical mobile data links currently operate in the 14.5-15.35 GHz range under the mobile service (MS) allocation, the parent service to aeronautical mobile service (AMS).

In particular, the United States and other Administrations operate many critical aeronautical mobile systems (uplink, downlink and air-air) on a 24/7 basis around the world to support coordinated security, law enforcement, and humanitarian assistance efforts throughout the 14.5-15.35 GHz frequency range and cannot afford disruptions. In addition to the studies conducted in the ITU-R, the United States performed additional analysis of possible approaches to facilitate sharing, e.g., via minimum FSS antenna size-restrictions, PFD limits, and/or other mitigation techniques that could be utilized by FSS providers. However, in each case, studies concluded that interference to aeronautical mobile operations would still occur over large distances and that implementation of proposed mitigation techniques was not practical. While larger antennas are likely to decrease the density of FSS deployments and narrow the beams through which aeronautical systems might fly, even signals from low densities of high-gain FSS antennas would frequently exceed airborne receiver thresholds and at greater levels and distances than those resulting from small dishes. Sharing studies show that in order to protect the AMS receivers operating in the range 14.5-15.35 GHz, there is a required separation distance in the range of 400-575 km for aircraft altitude of 19 km and in the range of 150-180 km for aircraft altitude of 2.4 km.

It is important to note that the band 14.5-14.8 GHz is allocated to the FSS (Earth-to-space), limited to feeder links for the broadcasting-satellite service (BSS) outside Europe. Such planned bands anticipate the future needs of developing countries. Despite some satellites currently recorded in the Master International Frequency Register, no typical or specific earth stations have been notified for this band. The limitation to FSS feeder links for BSS, while not ensuring protection of all AMS operations, minimizes the potential conflict.

15.4-17 GHz

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

ITU-R sharing studies demonstrate that the proposed FSS (Earth-to-space) links in the 13.0-17.0 GHz range will interfere with existing services in the frequency ranges 14.5-15.35 GHz and 15.4-17.0 GHz. In addition, the band 15.35-15.4 GHz is an exclusive passive band in which RR **5.340** prohibits all emissions in the band. The studies also show that in order to protect radiolocation stations operating in the range 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 areas, and the mobile nature of AMS receiver/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, ITU-R studies have yet to demonstrate how FSS space station receivers in the geostationary satellite orbit could mitigate unacceptable levels of interference from existing operations in these bands.

Proposal:

ARTICLE 5

Frequency allocations

Section IV – Table of Frequency Allocations

(See No. 2.1)

NOC USA/1.6.2/1

11.7-14 GHz

Allocation to services		
Region 1	Region 2	Region 3
13.25-13.4	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. ITU-R studies indicate a potential for interference between the proposed FSS (space-to-Earth) and the existing ARNS systems.

NOC USA/1.6.2/2

11.7-14 GHz

Allocation to services		
Region 1	Region 2	Region 3
13.4-13.75	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.

NOC USA/1.6.2/3

14-15.4 GHz

Allocation to services		
Region 1	Region 2	Region 3
14.5-14.8	FIXED FIXED-SATELLITE (Earth-to-space) 5.510 MOBILE Space research	

14.8-15.35	FIXED MOBILE Space research 5.339
15.35-15.4	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.511

Reasons: ITU-R studies indicate a potential for interference into existing MS and AMS systems. All emissions are prohibited by RR 5.340 in the exclusive passive band 15.35-15.4 GHz.

NOC **USA/1.6.2/4**

15.4-18.4 GHz

Allocation to services		
Region 1	Region 2	Region 3
15.4-15.43	RADIOLOCATION 5.511E 5.511F AERONAUTICAL RADIONAVIGATION 5.511D	
15.43-15.63	FIXED-SATELLITE (Earth-to-space) 5.511A RADIOLOCATION 5.511E 5.511F AERONAUTICAL RADIONAVIGATION 5.511C	
15.63-15.7	RADIOLOCATION 5.511E 5.511F AERONAUTICAL RADIONAVIGATION 5.511D	
15.7-16.6	RADIOLOCATION 5.512 5.513	
16.6-17.1	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/1.6.2/5**

RESOLUTION 152 (WRC-12)

Additional primary allocations to the fixed-satellite service in the Earth-to-space direction in frequency bands between 13-17 GHz in Region 2 and Region 3

The World Radiocommunication Conference (Geneva, 2012),

Reasons: Consequential change to completing the agenda item.