

IWG-3 45R3
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UNITED STATES OF AMERICA

DRAFT PROPOSALS FOR THE WORK OF THE CONFERENCE

Agenda Item 8.2: *to recommend to the Council items for inclusion in the agenda for the next WRC, and to give its views on the preliminary agenda for the subsequent conference and on possible agenda items for future conferences, taking into account Resolution 806 (WRC 07);*

Introduction:

The existing unplanned FSS bands in the 10-16 GHz range are extensively used for many applications. The very small aperture terminal (VSAT) services, video distribution, broadband networks, internet services, satellite news gathering, and backhaul links have triggered the rapid rise in the demand for the FSS in this frequency range. Satellite traffic is typically symmetrical in a large variety of applications, i.e. similar amounts of Earth-to-space (uplink) and space-to-Earth (downlink) traffic are transmitted. Hence, in order to accommodate these services in the most efficient manner, there is a need for equal amounts of uplink and downlink spectrum in the frequency range of 10-16 GHz.

Within some ITU Regions, there is more unplanned FSS spectrum available in the downlink direction as compared to the uplink in the 10-16 GHz range. In Region 2, there is 800 MHz of uplink spectrum, and 1000 MHz of downlink spectrum, creating a difference of 200 MHz. In Region 3, there is 750 MHz of uplink spectrum, and 1050 MHz of downlink spectrum, creating a difference of 300 MHz. ITU-R WP-4A has been developing a Report that details the difficulties and inefficiencies that arise as a consequence of this difference in uplink/downlink spectrum.

Many satellites currently deployed are using the available bands in their respective regions, both in the uplink and the downlink. However, due to the variety of services that satellites in the FSS offer, some administrations have expressed an urgent need for allocating additional uplink spectrum in the 10-16 GHz range in Regions 2 and 3 in order to match the amount of downlink spectrum available in this range in these Regions. To date, satellite operators and manufacturers have dealt with this bandwidth limitation in the uplink by designing ever more complicated payload configurations. This consequentially adds to the weight and complexity of the satellites being built, and hence leads to overall higher costs for these satellite projects.

Another way used to date to cope with the insufficiency of uplink spectrum in the 10-16 GHz band is to use unplanned FSS bands outside of the 10-16 GHz band. There are examples of satellites that use unplanned FSS uplink bands in the 6 GHz band and in the 27-30 GHz band that are paired with the 10-16 GHz downlink bands. However, this leads to inefficient use of the orbital/spectrum resource by propagating the spectrum shortage to other FSS bands or requiring the use of dual-band antennas at the spacecraft and earth stations, which are more complex to design and manufacture, leading to greater costs for end users.

Taking into account the above considerations, the United States proposes the addition of a WRC-16 agenda item to address this issue.

Attachment

Subject: Additional allocations to the fixed-satellite service in the Earth-to-space direction in the range 10-16 GHz

Origin: United States of America

Proposal: to consider additional spectrum allocations and modifications to the associated provisions in the Radio Regulations, in the Earth-to-space direction for the fixed-satellite service in the range 10-16 GHz based on studies conducted in accordance with Resolution [FSS-UP-10-16GHZ].

RESOLUTION [FSS-UP-10-16 GHZ]

Additional allocations to the fixed-satellite service in the Earth-to-space direction in the range 10-16 GHz

The World Radiocommunications Conference (WRC-12),

considering,

- a) that in Region 2 there is 200 MHz less spectrum in the Earth-to-space direction in unplanned fixed-satellite service (FSS) allocations than space-to-Earth spectrum in the range 10-16 GHz;
- b) that in Region 3 there is 300 MHz less spectrum in the Earth-to-space direction in unplanned FSS allocations than space-to-Earth spectrum in the 10-16 GHz;
- c) that this lack of FSS allocations in the Earth-to-space direction causes inefficient use of the geostationary satellite orbit due to the need to use FSS allocations outside this range;
- d) that use of Earth-to-space FSS allocations outside 10-16 GHz results in additional earth stations costs by requiring dual feeds;

- e) that the design of FSS satellite networks to compensate for the deficiency in uplink FSS allocations has led to greater complexity in the satellite and consequently more cost;
- f) that to support the diversity of services provided by the FSS, the uplink and downlink allocations should be in the same part of the spectrum;
- g) that there is a need to resolve the shortage of spectrum in the Earth-to-space direction such that the rapid growth of spectrum demand resulting from *considerings a)* and *b)* could be eased and the limited spectrum resources can be used in an efficient and economical way;
- h) that additional allocations to the unplanned fixed-satellite service in the Earth-to-space direction, that are contiguous (or near contiguous) to the existing allocations, are needed to solve the spectrum imbalance described in *considerings a)* and *b)*,

recognizing,

that it is important to ensure the FSS systems can be operated compatibly with the existing primary services having allocations in the bands

resolves to invite ITU-R,

- 1) to complete, for WRC-16, studies of possible bands for new allocations to the FSS in the Earth-to-space direction in the range 10-16 GHz, with particular focus on the frequency ranges that are contiguous (or near contiguous) to the existing allocations, taking into account sharing and compatibility with other services in the band;
- 2) to conduct, and complete in time for WRC-16, the appropriate technical, operational and regulatory studies leading to technical and procedural recommendations to the Conference enabling it to determine the possibility of removing and/or modifying regulatory restrictions to existing allocations to the FSS for use in the Earth-to-space direction;
- 3) to complete the referenced studies in time for WRC-16.

Background/reason: The existing unplanned FSS allocations in the 10-16 GHz range are extensively used for many applications. The very small aperture terminal (VSAT) services, video distribution, broadband networks, internet services, satellite news gathering, and backhaul applications have triggered the rapid rise in the demand for the FSS in this frequency range. Satellite traffic is typically symmetrical in a large variety of

applications, i.e. similar amounts of Earth-to-space (uplink) and space-to-Earth (downlink) traffic are transmitted. Hence, in order to accommodate these applications in the most efficient manner, there is a need for equal amounts of uplink and downlink spectrum in the frequency range of 10-16 GHz.

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Radiocommunication services concerned: Fixed Satellite Service; Fixed Service, Mobile Service, Radiolocation Service

Indication of possible difficulties: Regulatory constraints and technical sharing

Previous/ongoing studies on the issue: WARC-92, PDN Report ITU-R S.[ASYM.FSS] “Addressing the inefficiency associated with the asymmetry of existing unplanned FSS uplink/downlink spectrum in the 10-15 GHz band”

Studies to be carried out by:

ITU-R WP-4A

with the participation of:

ITU-R WP-5C, 5A,5B

ITU-R Study Groups concerned: Study Group 4, Study Group 5

ITU resource implications, including financial implications (refer to CV126):None

Common regional proposal: Yes/No

TBD

Multicountry proposal: Yes/No

Number of countries: TBD

Remarks