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ORGANIZATION OF AMERICAN STATES

Comisión Interamericana de Telecomunicaciones
Inter-American Telecommunication Commission

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AGENDA ITEM 1.3

PRELIMINARY VIEWS FOR WRC-19

(Item on the agenda: 3.1 (SGT 2))

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(Document submitted by the Coordinator)

SGT 2B – Science services

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Source: documents 4356-1-3 and 4430

Agenda item 1.3: *to consider possible upgrading of the secondary allocation to the meteorological-satellite service (space-to-Earth) to primary status and a possible primary allocation to the Earth exploration-satellite service (space-to-Earth) in the frequency band 460-470 MHz, in accordance with Resolution **766 (WRC-15)***

BACKGROUND

[From Doc 4356-1-3; 1st paragraph below has been moved in its position in the document]

The meteorological-satellite service is used by the data collection system (DCS). The DCS is a network of sensors measuring temperature, pressure, humidity, sea level, tracking animal migration and sailboats, located in areas difficult to reach. The data is transmitted to GSO and non-GSO satellite networks. Most DCS are using the band 460-470 MHz for data downlinks to transmit the information collected by the DCS sensors.

The 460-470 MHz band is allocated on a primary basis to the fixed and mobile services. ~~The band 460-470 MHz has primary allocations to the fixed and mobile service~~, ~~and~~ It is also allocated on a secondary basis ~~allocation~~ to the meteorological-satellite service in the space-to-earth direction, upgraded to primary allocation in a few countries of Regions 1 and 3 per **No. 5.290**. The operation of EESS applications is also permitted via RR **No. 5.289** on a no-interference, no-protection basis. Under the co-primary allocation to the mobile service**,** "the frequency band 450-470 MHz is identified for use by administrations wishing to implement International Mobile Telecommunications (IMT)" in all 3 Regions pursuant to Radio Regulation **No 5.286AA.**

~~The band 460-470 MHz is identified for use by IMT as per **No. 5.286AA**. However, the band may not generally be available for use by broadband systems (e.g., IMT) due to the extensive use by conventional and trunked mobile radio systems in some countries.~~ Additionally, channels in the range 467.525-467.825 MHz can be used for maritime on-board communications as per **No. 5.287** and **No. 5.288**.

In order to provide regulatory certainty, MetSat and EESS stakeholders are seeking to upgrade the meteorological-satellite allocation to primary status and to include a primary EESS allocation in the band 460-470 MHz while providing protection and not imposing additional constraints on existing primary services. This would bring confidence for administrations and space agencies involved in DCS and for the public sector funding the development and operation of such systems. In order to protect systems of the terrestrial service, the United States have already adopted a pfd limit imposed on space stations.

[USA-Doc 4430][Modifications to Doc 4430 text are highlighted in yellow]

Within this band, the Argos Data Collection System (ADCS) monitors more than 21,000 active Argos platforms collecting data for over 2,000 distinct projects in 100+ countries. Critical applications of the ADCS include atmospheric and ocean monitoring/research, tropical cyclone forecasting, fishery management, oil spill tracking, fishing vessel tracking, search and rescue modeling (at sea), anti-piracy alerting, import/export and hazardous materials tracking, endangered species studies, migration mapping, and wildlife tracking and management. The administration of the Argos program is under a joint agreement between the National Oceanic and Atmospheric Administration (NOAA) and the French Space Agency, Centre National d'Etudes Spatiales (CNES). Additional partners include the European Organization for the Exploitation of Meteorological Satellites (EUMETSAT), and the Indian Space Research Organization (ISRO).

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The meteorological-satellite (space-to-Earth) service operates on a secondary basis to the fixed and mobile services and thus it must not interfere with these services. ~~The resolution of WRC-19 agenda item 1.3 has the potential to adversely impact approximately 127,000 licensed PLMR operations if not implemented in a way that ensures protection of terrestrial operations from harmful interference.~~ Critical applications of licensees using this spectrum include Public Safety dispatch of first responders; correctional institution communications; state and local government operation and homeland security response; critical infrastructure communications (water, sewer, power and fuel pipeline control); and hospital operations. In addition, the 460-470 MHz band is used by alarm service providers to monitor ~~at least 400,000~~ homes, businesses and government facilities in several countries within and outside the region~~the United States~~ to detect fires, medical emergencies, home invasions and other urgent circumstances, and alert first responders[1] To protect the fixed and land mobile services within one Administration, a power flux density (pfd) limit of -152 dBW/m^2/4kHz has been imposed on the meteorological-satellite (space-to-Earth) service.

One administration has conducted Ppreliminary testing ~~by the relevant United States government agencies has~~ which shown that, at satellite angles of arrival below 25 degrees, the -152 dBW/m^2/4kHz limit is not adequate to protect terrestrial operations. To provide the necessary protection to existing services in the band, globally, the next generation of ADCS transmitters ~~must~~ would have to implement direct sequence spread spectrum or equivalent technology in the satellite downlink to reduce the pfd in the 460-470 MHz band to less than -152 dBW/m^2/4kHz, or such other levels determined necessary to protect terrestrial operations, depending on the angle of arrival.

With respect to a ~~P~~potential ~~upgrade of~~ new primary EESS allocation, , such an allocation ~~to primary will~~would bring confidence to the space agencies involved in Satellite Data Collection Programs and ~~will~~ would ease coordination with other Administrations. These space programs do represent a long-term effort and require decades of investment between the time the program is officially approved and the time the various satellites are in operation, keeping in mind that usually many satellites are deployed in order to provide a continuous service. For the specific case of this band, the number of satellites expected to be in operation is limited for cost reasons, and it is unlikely that two satellites will transmit at the same time over the same geographical area.

[From Doc 4356-1-3]

ISSUES

- An upgrade of the Metsat and EESS allocation to primary status would provide regulatory certainty for data collection systems.
- Measures need to be taken to ensure protection of and that no constraints are put on, fixed and mobile services, including the use of the band for IMT.

[From Doc. 4430]
PRELIMINARY VIEW:

USA
The United States supports conducting and completing sharing and compatibility studies with the co-primary fixed and mobile services, including IMT systems. These studies would determine the feasibility of potentially upgrading the MetSat (space-to-Earth) allocation to primary status, and the potential addition of a primary EESS (space-to-Earth) allocation in the frequency band 460-470 MHz, while

[1] Alarm radio systems operate in the 460-470 MHz band in more than 50 nations outside of the United States, including countries such as Canada, Greece, Ireland, Russia, Spain, United Kingdom, Netherlands, Columbia, France, Belgium, Bolivia, Saudi Arabia, Mexico, Ethiopia, Argentina, Brazil and Cambodia.

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protecting the current primary allocations for fixed and land mobile services including IMT systems and maintaining the conditions contained in No. **5.289**.

Should studies support the upgrade of the MetSat service and/or addition of a primary allocation to the EESS, the appropriate pfd limit should be determined for MetSat (space-to-Earth) and EESS (space-to-Earth) systems to protect the existing and planned deployments of primary services in the frequency band 460-470 MHz. Should studies conclude that a less restrictive pfd limit than that contained in Resolution **766** (WRC-15) *considering further* a) can protect incumbent services, then the pfd limit (−152 dBW/m^2 /4 kHz) shall apply. To the extent that sharing and compatibility studies, field tests and other relevant input indicate that a more restrictive pfd limit is necessary to protect terrestrial operations, this more restrictive limit must be adopted if any upgrade to the existing MetSat secondary allocation or new allocation to EESS is proposed.