

CGMS-41

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Origin: ISRO/India

Coordination of 402.65 to 402.85 MHz for INSAT-3D Satellite from 82 degE orbital slot and 402.5 to 402.65 MHz for INSAT-3DR satellite from 74 degE orbital slot for DCP operations

Abstract

As per ITU Radio Regulations, the band 401-403 MHz has been allocated to Meteorological satellites and Earth-exploration satellites for Earth-to-space links in addition to other services. Currently many Meteorological satellites including non-geostationary satellites are using this limited spectrum for the operation of Meteorological data collection platforms (DCPs). Many countries operating DCPs have planned future generation Metsat programmes with capability to operate more number of DCPs to meet the requirements. CGMS forum provides a framework for coordination of DCP frequency band among the Metsat operators. ISRO has operated Meteorological satellites from 74 degE, 83 degE and 93.5 degE orbital slots for many years. Currently Kalpana and INSAT-3A satellites are operating at 74 degE and 93.5 degE orbital slots respectively. Hence the INSAT-3D satellite was planned at 83 degE. Due to operational reasons later it was decided to park INSAT-3D satellite at 82 degE. Another advanced Meteorological satellite INSAT-3DR is being built by ISRO was initially planned for 400 KHz of DCP band from 402.25 to 402.65 MHz. However after obtaining the responses from various Metsat operators, the band was reduced from 402.25 – 402.65 To 402.5 - 402.65 MHz, especially due to overlap with Russian GOMS satellite at 76 degE. Already letters have been written to various Administrations based on their objections to ITU filings made by Indian Administration under the filing names INSAT-MET (74E, 81.5E, 82E, 83E and 93.5E) satellite networks. Recently coordination agreement has been received from F/ESA providing their concurrence for the completion of coordination in the 401-403 MHz. ISRO needs similar agreement/concurrence from other Metsat operators for the operation of INSAT-3D and INSAt-3DR satellites in this meeting.

1. Introduction

The band 401-403 MHz is being used for DCP systems. Presently many Geostationary and Non-geo-stationary satellites are using this band. Because of more demand for the operation of DCP systems by various Metsat operators the requirement of spectrum is also increasing. Considering the wide beam width of DCP antennas and global Receive capabilities of Metsat satellite Receive antennas, co-existence among different Metsats can be established only by selecting non-overlapping sub band with in the allocated band of 401-403 MHz. Because of the above, ISRO has taken the CGMS forum to coordinate the DCP frequency band of frequencies in CGMS meeting where all the Metsat operators meet to discuss various frequency coordination issues. This paper examines the coordination of DCP frequencies for the ISROs upcoming satellites INSAT-3D and INSAT-3DR.

2 Regulatory status

As per ITU Radio Regulations, the band 401-403 MHz has been allocated to meteorological satellite services and Earth-exploration satellite services for Earth-to-space links in addition to other services. Currently many Meteorological satellites including non-geostationary satellites are using this limited spectrum for the operation of Meteorological data collection platforms (DCPs). As per the currently available ITU data base, Administrations have filed for many orbital locations with ITU in order to obtain DCP spectrum for their present and future requirements. ISRO has also filed under the filing names INSAT-MET (74, 81.5,82,83, 93.5) E orbital slots and coordination agreement is required for these filings. Once the coordination agreement is obtained, after the launch of the satellite due-diligence information and notification filing will be submitted to ITU

3 Compatibility issues

DCPs operate in the band 401-403 MHz with geostationary meteorological satellites. Currently there are many satellites operating in this band and also there are satellites planned to be launched by some Metsat operators in this band. Each Metsat operator has occupied certain amount of spectrum in this band for the currently operational satellites. Considering the wide beam width of DCP antennas and satellite Receive antennas, it is difficult to reuse the

frequency band. Keeping this in mind, in order to meet the requirements, non overlapping frequency band has been selected for INSAT-3DR satellite. In case of INSAT-3D satellite it is just 1 deg away from the already operated and registered slot of 83 degE slot with same frequency band as that at 83 degE. This change would not result in any additional interference. Hence coordination agreement can be granted.

4 Coordination efforts taken by ISRO

ISRO has made necessary ITU filings with ITU viz INSAT-MET (74, 81.5, 82, 83, 93.5) E. These publications have been published in IFIC2683 dated 30/11/2010. ITU has identified the Administrations/METSATs with whom coordination has to be carried out by Indian Administration. ISRO has already written letters to all the concerned Administrations seeking their agreement for the coordination of DCP frequencies for INSAT-3D and INSAT-3DR satellites. Recently F/ESA of France has conveyed its response of providing coordination agreement.

5 Operational and planned DCP systems of India

ISRO has been providing meteorological services using DCPs in the band 402.65-402.85 MHz for well over past two decades. So far, this band had been used in different INSAT-1 and INSAT-2 series and is being used in the currently operational KALPANA and INSAT-3A satellites. Use of this frequency band will further be continued in the to be launched INSAT-3D satellite. In the recent past, the numbers of users have increased and to meet the requirements, additional bandwidth of another 400 KHz was required. Request for additional spectrum of 400 KHz was made in the CGMS-38 meeting. However after obtaining the response from various operators, specifically from Russia, it was decided to limit the DCP band to 150 KHz (402.5-402.65) MHz. In the meteorological satellite INSAT-3DR which is being built and to be launched after INSAT-3D will carry a DRT transponder with a bandwidth of 150 KHz. ISRO has finalized to use 402.5-402.65 MHz in the INSAT-3DR satellite. ISRO requests CGMS members to consider this and accord concurrence. . However the requirement for another 250 KHz of spectrum from 402.25-402.5 MHz still exists and requests CGMS members to provide their views on this band.

6 Conclusions

Administrations have made ITU filings at many locations which are in various stages of ITU processing for obtaining orbit and spectrum. Because it is possible to meet all the Metsat operators in the CGMS meeting at one place, ISRO decided to use this opportunity for obtaining their concurrence. INSAT-3D will be launched in July 2013 and coordination agreement is required urgently for

operating at 82 degE. Similarly, INSAT-3DR satellite will be launched in the near future; presently the satellite is being under construction. Concurrence of CGMS members is required for the DCP band of 402.5-402.65 MHz for INSAT-3DR satellite. In addition another 250 KHz of spectrum is required to address the DCP user requirements. Concurrence of CGMS members is required for this additional band from 402.25-402.5 MHz.