


Annexure I (Chapter no. 1 Para no. 1.1)

Reference from DoT


Government of India / भारत सरकार
Ministry of Communications / संचार मंत्रालय
Department of Telecommunications / दूरसंचार विभाग
Satellite Division, DoT HQ
Sanchar Bhawan, New Delhi - 110001

No. 824-201/Policy/2020-SAT Date: 23.11.2020

To
The Secretary
Telecom Regulatory Authority of India,
Mahanagar Doorsanchar Bhawan,
Jawahar Lal Nehru Marg (Old Minto Road),
New Delhi-110002

भारतीय दूरसंचार विनियामक प्राधिकरण
महानगर दूरसंचार भवन, नई दिल्ली-2
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Sub: TRAI recommendations on licensing framework for Satellite based low bit-rate applications

With the evolution in Satellite Communication (SATCOM) technologies, new types of applications are emerging based on low bit-rate communications. The typical applications/use-cases utilizing a satellite networking protocol and sensor connectivity solution are envisaged in sectors like agriculture, fisheries, forestry, logistics, mining, industrial equipment, railways, remote utilities & infrastructure and disaster preparedness & response. A brief on such applications/use-cases utilizing low bit-rate satellite based communication is enclosed as Annexure-A.

2. The current licensing framework of Department of Telecommunications (DoT) with respect to satellite communication services and their limitations vis-à-vis the proposed satellite based low bit-rate services are as follows:

- i. **Captive VSAT CUG License:** The scope of this license is to provide data connectivity between various sites scattered throughout India for captive use using Very Small Aperture Terminals (VSATs) which should form part of a Closed User Group (CUG). The licensees can set up only one CUG for their own use. The proposed low bit-rate services does not seem to fit suitably in this licensing framework because of the following reasons:
 - a. The remote terminals to be installed under the proposed low bit-rate services are of smaller size with typical antenna sizes less than 1 meter which is the least allowed size as prescribed in the applicable TEC IR.
 - b. The user terminal location is fixed in the Captive VSAT CUG service, whereas, the proposed low bit-rate service envisages possible deployments of remote terminals/sensors on moving platforms over

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land surface also. For such use-cases, no technical regulations exist as of now in the form of TEC IR/GR/standards.

- c. This license is granted to establish, maintain and operate Captive VSAT CUG domestic data network via INSAT satellite system only, whereas, the proposed low bit-rate services can be used on other satellite systems as well.
 - d. For this license, the licensee has to pay license fee annually at Rs. 10,000/- per annum per user terminal installed. Since the proposed low bit-rate service envisages deployment of thousands of remote terminals/sensors as compared to VSAT terminals, the license fee may turn out to be exorbitantly high.
 - e. The WPC Royalty charge for this license is formula based and depends on the number of carriers. Applying the present formula for the present low bit-rate services may lead to exorbitant Royalty charges.
 - f. Also, NOCC charges are fixed at ₹ 21 lakhs per transponder (36 MHz) per annum and calculated on a pro-rata basis for a part of transponder.
- ii. **Commercial VSAT CUG License:** The scope of this license is to provide data connectivity between various sites scattered throughout India using VSATs. The users of the service should belong to a CUG. This service is meant for commercial purpose and the license fee for this service is based on AGR. This license has limitations as stated in para 2.i.a, 2.i.b, 2.i.c and 2.1.f above.
 - iii. **Global Mobile Personal Communication by Satellite (GMPCS) License:** The scope of this license is to provide all types of mobile services including voice and non-voice messages, data services by establishing GMPCS Land Earth Station Gateway in India. At present, there is no GMPCS licensee. Only BSNL has been granted license for provision and operation of satellite based services using gateway installed in India under "sui-generis" category.
 - iv. **INSAT- Mobile Satellite System Reporting (MSS-R) License:** This is a commercial one way satellite based messaging service. This service provides one way message reporting (transmit only) facility from anywhere in India. This is a low speed data service with maximum capacity limited to 300 bps. Only one such license was issued which is non-operative since last 5-6 years. This license has following limitations:
 - a. INSAT MSS-R is a one-way reporting service only.
 - b. The data speed is limited to 300 bps.
 - c. There is no licensing framework for captive use of this service.

3. Considering the above, there is a need for suitable licensing framework in respect of the proposed satellite based low bit-rate services for:
- i. Providing such services on commercial basis.
 - ii. Organizations like State Transport Authorities, Indian Railways, other fleet owners, disaster management agencies etc. which may need to setup a captive network for their own use (and not for selling the service). These captive networks may fall into two categories:
 - a. Government authorities/Police & Security Agencies/PSUs/Board(s) which are government owned entities
 - b. Private companies
4. TRAI is requested to examine all the above factors holistically and furnish their recommendations in terms of clause 11(1)(a) of TRAI Act 1997, as amended from time to time, to enable the provisioning of the proposed satellite based low bit-rate services under the existing licensing framework of DoT or suggest new licensing framework including the entry fee, license fee, bank guarantee, NOCC charges, spectrum usage charges/royalty fee etc. for such services for both commercial and captive usage.

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23/11/2020

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Enclosed: As above.

Brief on use-cases utilizing narrowband, low bit-rate satellite based communication

The applications/use-cases utilizing a satellite networking protocol and sensor connectivity solution are discussed briefly in the following paras.

Logistics: Fleet management including monitoring and tracking movement of goods and services, geo-location of vehicles, SOS functionality, temperature monitoring of cargo, monitoring of fuel level etc.

Railways: Geo-location of rolling stock assets, monitoring of safety systems in a train, mission critical two-way data etc.

Disaster management: Delivery of real-time and geo-location alerts in case of floods, landslides etc, emergency alert broadcasts and SOS messaging for fishing vessels, real-time tsunami alerts from marine buoys, detection of fires in rural forests or strategic buildings, managing logistics of NDRF vehicles, boats, fire engines, ambulances etc. during natural disasters and accidents.

Internal security: Tracking of patrol vehicles, monitoring of critical logistics supplies through remote areas, connectivity among coast guard vessels and monitoring of vessels at sea.

Fisheries: The sensor based connectivity is used for location and vessel monitoring, maritime boundary alerts, geo-fenced fishing zones, monitor the cold-chain of stored fish and two-way emergency messaging system for distressed vessels, inclement weather.

Health services response mechanism: Ambulance and medical logistics tracking especially in rural areas, vehicle telemetry, live monitoring of patients' diagnostics etc.

Agriculture: Monitoring soil conditions for critical inputs such as water, fertilizers and pesticides etc.
