



**Telecom Regulatory Authority of India**

**Recommendations on  
Licensing Framework for Establishing and  
Operating Satellite Earth Station Gateway (SESG)**

New Delhi

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# CHAPTER-I

## INTRODUCTION AND BACKGROUND

### **A. Satellite communication services**

- 1.1 The Second World War stimulated the expansion of two very distinct technologies – missiles and microwaves. The expertise eventually gained in the combined use of these two techniques opened the era of satellite communications. The service provided in this way usefully complements that previously provided exclusively by the terrestrial networks using radios and cables.<sup>1</sup>
  
- 1.2 The space age began in 1957 with the launch of the first artificial satellite named Sputnik-1. In 1962, the first commercial communications satellite was placed into orbit. By the 1980s, many countries started launching commercial communication satellites into orbits. The early 1980s witnessed a revolution in satellite communication in India with the INSAT<sup>2</sup> satellite network steered by the Indian Space Research Organization (ISRO). To date, ISRO has launched more than 40 communication satellites<sup>3</sup>. Worldwide, more than 3200 commercial communication satellites have been launched into orbits<sup>4</sup>.
  
- 1.3 Satellite-based communication systems can provide coverage to the remotest and most inaccessible areas of a geographically widespread country like India. At present, many sparsely populated areas, including areas of strategic importance and areas important from the socio-economic perspective, do not have mobile terrestrial coverage and other forms of connectivity. Communication satellites

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<sup>1</sup> Maral Gerard and Bousquet Michel (2009) *Satellite Communication Systems - Systems, Techniques and Technology* (West Sussex, Willey)

<sup>2</sup> INSAT is an acronym of Indian National Satellite System.

<sup>3</sup> Source: <https://www.isro.gov.in/CommunicatioSatellitenNew.html#>

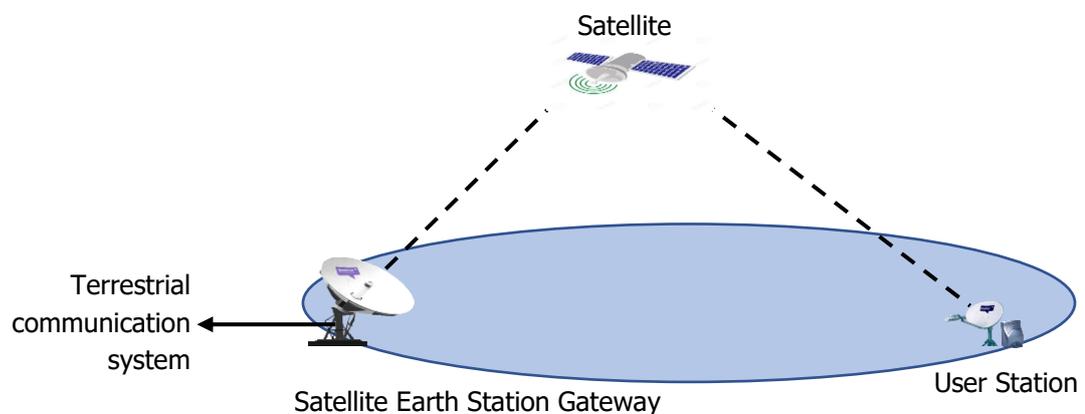
<sup>4</sup> UCS Satellite Database: <https://www.ucsusa.org/resources/satellite-database>

have a potential to bridge this gap by providing telecommunication and broadcasting services to even the remotest areas.

1.4 A typical satellite communication system consists of space segment, control segment and ground segment as outlined below.

- (a) Space segment contains one or more satellites in space.
- (b) Control segment consists of ground facilities for the control and monitoring of satellites and for the management of traffic and the associated resources on-board the satellites.
- (c) Ground segment consists of traffic earth stations. The traffic earth stations are of three types viz. user stations, interface stations and service stations, as mentioned below:
  - (i) User stations such as handsets and very small aperture terminals (VSATs) allow customer direct access to the space segment.
  - (ii) Interface stations (also known as gateways) interconnect the space segment with the terrestrial network.
  - (iii) Service stations, such as hub or feeder stations, collect or distribute information from and to user stations via the space segment.

1.5 The following block diagram shows three key elements of a typical satellite communication system.



**Diagram 1: Key Elements of Satellite Communication Systems**

- 1.6 The Diagram 1 above depicts that Satellite Earth Station Gateway (SESG), also known as 'Gateway Hub', acts as a bridge (or gateway) between space-based communication network and terrestrial communication network.
- 1.7 The trajectory of a satellite around Earth is known as orbit. The most common orbits followed by communication satellites are low earth orbit (LEO), medium earth orbit (MEO), and geostationary satellite orbit (GSO). Traditionally, GSO has been the most popular orbit in communication satellite systems. A GSO is at an altitude of approximately 35,786 kilometers directly over the equator of the Earth. At this altitude, one orbit takes 24 hours, the same length of time as the Earth requires to rotate once on its axis. The term geostationary comes from the fact that such a satellite appears nearly stationary in the sky as seen by a ground-based observer. A single geostationary satellite is in line-of-sight with about 40% of the Earth's surface. Three such satellites, each separated by 120 degrees of longitude, can provide coverage of the entire planet.
- 1.8 At present, many satellite communication systems make use of high-throughput satellites (HTSs). An HTS provides significantly more throughput than a conventional satellite for the same amount of radio frequency spectrum. While a conventional satellite utilizes a broad single beam (usually in the order of thousands of kilometers) to cover wide regions or even entire continents, an HTS employs - (a) frequency re-use, and (b) spot beam technology which enables frequency re-use across multiple narrowly focused spot beams (usually in the order of hundreds of kilometers), as in cellular networks. Together, these features help HTSs provide significantly higher throughputs as compared to conventional satellites.
- 1.9 Initially, HTS systems used GSO satellites. However, the propagation delay for a round-trip transmission for a GSO satellite can exceed 550 milli-second, which is detrimental to many digital connectivity applications. As a result, the focus for

HTS systems is increasingly shifting to the MEO and LEO, with altitudes as low as 600 km and delays as short as 40 milli-second.

- 1.10 Today, HTS systems are primarily deployed to provide broadband Internet access service (point-to-point) to consumers inhabiting regions unserved or underserved by terrestrial technologies. In such regions, HTS systems can deliver services comparable to terrestrial services in terms of bandwidth and price. Apart from providing broadband Internet access services to end-consumers, HTS systems also offer services to business enterprises, and terrestrial communication service providers (who are facing growing demand for broadband backhaul links to connect their base stations in rural and remote areas).

**B. DoT's Reference dated 10.09.2021 on satellite earth station gateway**

- 1.11 The Department of Telecommunications (DoT), Government of India through a letter dated 10.09.2021 (a copy of which is enclosed as **Annexure I**), sent a reference to TRAI (also referred to as "the Authority") and requested TRAI to furnish recommendations on the licensing framework for the operation of Satellite Earth Station Gateway in India. The said reference is reproduced below:

*"With the advancement in the satellite technologies, new generation satellites like HTS and LEO/ MEO satellites are currently getting operational. The infrastructure and architecture of these new generation system(s) are quite different from conventional satellites. While the conventional satellites operate with a single wide beam spanning a large area (say entire Indian territory), the satellite technologies like LEO and MEO operate through narrow beams with typical span of beam approximately 250 Kms. This results into multiple narrow beams covering an area as compared to a single wide beam of conventional satellites. Consequentially, there may be a need to set up multiple gateways to control large number of beams.*

*2. The current licensing framework mandates a licensee to establish its own gateway for rendering any kind of satellite-based communication services. At*

*present, the Unified Licensing framework is existent and provides authorization for following satellite-based services: i) VSAT CUG, ii) GMPCS, and iii) MSS-R. The specific clauses relating to establishment of gateways are as follows:*

- (i) VSAT CUG license: "4.3 The HUB Station shall be operated and maintained by the Licensee ..."*
- (ii) GMPCS license: "2.2 The Licensee shall establish Land Earth Station Gateway in India for the purpose of providing Global Mobile Personal Communication by Satellite (GMPCS) Service. GMPCS Service may be provided using one or more Satellite Systems provided that the Land Earth Station Gateway Switch is established separately in India for each Satellite System."*
- (iii) MSS-R license: There is no specific clause.*

*As per the license conditions stipulated above, the service provider licensee is required to establish gateway itself for rendering satellite-based communication services. There are no provisions in the existing licenses of VSAT CUG, GMPCS and MSS-R regarding the usage of gateway by service provider established by a satellite constellation operator.*

*3. Given the current regulatory/ licensing framework, a TSP may have to establish a gateway in compliance to the Unified License terms and conditions, even to utilize small chunk of bandwidth to render service. In case the TSP requires to use satellite bandwidth in multiple beam areas, then it is mandated to establish more gateways to utilize the bandwidth in different beam areas. Also, with a number of TSPs in operation, this may lead to multiplicity in set up of gateways. The advantage of higher bandwidth in HTS/ LEO/ MEO satellite will, however, require establishing a large number of gateways by each individual licensee to whom the bandwidth is allocated by the satellite constellation operator. On the other hand, sharing of the gateway established by the satellite constellation operator among different TSPs, wherein the service providers need only to deploy baseband systems at gateways to start harnessing the satellite capacity, may result in cost-effective and optimum use of resources.*

4. TRAI in its recommendation dated 28.07.2020 on "Provision of Cellular Backhaul Connectivity via Satellite through VSAT under Commercial VSAT CUG Service Authorization" had, inter-alia, stated as follows:

"3.6(b) As the Gateway hub for HTS satellites will be managed and operated by the satellite provider itself and the satellite bandwidth seeker will have to share the common gateway functionality of the satellite provider, suitable enabling clause may be incorporated in the license to permit such shared use of Gateway hub."

However, licensing framework for establishing gateways by the satellite constellation operators has not been covered in the said recommendations.

5. The current licensing conditions may pose a limitation to establish its own gateway for rendering satellite services thereby resulting in higher CAPEX and OPEX. Given the circumstances, it may be desirable to explore the possibility of a licensing framework for establishing gateway as an independent facility, set up either by a satellite constellation operator or any other entity. Under the new framework, the licensee who establishes gateway should be able to deliver its services to other licensees, which in turn would render services to the end users. Thus, the gateway establishing licensee may be thought of as a network operator which owns or controls the infrastructure necessary to deliver services to other licensed service operators providing services to end users.

6. In view of the above, TRAI is requested to give its recommendations in terms of clause 11(1) (a) of TRAI Act 1997, as amended from time to time, on the licensing framework for satellite gateway(s) operations encompassing aspects like license fee, entry fee, bank guarantee, NOCC charges and any other issue(s) which may be relevant for the LEO/ MEO/ HTS systems."

### **C. Provisions relating to establishment and operation of satellite earth station gateways under the existing licensing framework**

1.12 Satellite Earth Station Gateway is a key component of satellite communication systems. At present, an entity needs (a) a wireless operating license, and (b) a

service license for operating satellite communication systems in the country. Through a notification dated 24.11.2014<sup>5</sup>, DoT provided a clarification in respect of operation of satellite communication systems in the country:

*"This is to clarify that as per the Indian regulatory provisions, for operating satellite communication systems in India, be it Broadcasting Satellite (satellite-to-earth) Service or telecommunication (satellite-to-earth and earth-to-satellite) service, all entities, including government entities, need to obtain Service license and also Wireless operating license.*

*For broadcasting satellite services like Direct-to-Home (DTH), TV Uplink, Digital Satellite News Gathering Service (DSNG), etc., Ministry of Information & Broadcasting (MI&B) is the licensing authority. For interactive services like VSAT Services, DoT is the licensing authority. For any hybrid service, respective service license needs to be obtained from both these authorities.*

*In addition to these above service licenses, the entities need to obtain wireless licenses and uplink clearances from Wireless Planning & Coordination (WPC), DoT and Network Operation & Control Centre (NOCC), DoT, respectively, for the operations of the satellite network.*

*Internet Service Provider (ISP)/Internet Protocol Television (IPTV) license alone is not sufficient to provide either Audio Visual or Broadband Wireless Access services through satellite.*

*Even government agency engaged in Broadcasting or Telecommunication needs to obtain such service license, uplink/ downlink license, operating licenses from MI&B or DoT or both, as the case may be."*

- 1.13 DoT is the licensing authority for telecommunication services, while Ministry of Information & Broadcasting (MIB), Government of India is the licensing authority for broadcasting services in the country. In respect of telecommunication services, DoT currently follows a regime of Unified License in terms of the provisions of

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<sup>5</sup> Source: <https://dot.gov.in/sites/default/files/Certificate.pdf>

Section 4 of Indian Telegraph Act, 1885<sup>6</sup>. DoT provides authorizations<sup>7</sup> for provision of telecommunications services under Unified License to eligible persons. In respect of broadcasting services, MIB grants licenses/ permissions for uplinking/ downlinking of TV channels, uplinking Hub/ Teleport, uplink facility by a News Agency, use of Satellite News Gathering (SNG)/ Digital Satellite News Gathering (DSNG), DTH, HITS etc.

- 1.14 At present, there is no specific license/ authorization for establishment and operation of Satellite Earth Station Gateway for the purpose of providing satellite-based resources to service licensees. The service authorizations under Unified License, which deal with the provision of satellite communication services, are enumerated below:

### **(1) GMPCS Service Authorization**

- 1.15 The relevant provisions of GMPCS Service authorization (Chapter XII) under Unified License are reproduced below:

*"2.1 The licensee may provide, in its area of operation, all types of mobile services, including voice and non-voice messages, data services by establishing GMPCS Gateway utilizing any type of network equipment, including circuit and/or*

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<sup>6</sup> The Section 4 of the Indian Telegraph Act, 1885 provides as below:

*"4. Exclusive privilege in respect of telegraphs, and power to grant licenses. – (1) Within India, the Central Government shall have exclusive privilege of establishing, maintaining and working telegraphs:*

*Provided that the Central Government may grant a license, on such conditions and in consideration of such payments as it thinks fit, to any person to establish, maintain or work a telegraph within any part of India: ..."*

<sup>7</sup> There are nine service authorizations under Unified License viz. (a) Access Service, (b) Internet Service, (c) National Long Distance (NLD) Service, (d) International Long Distance (ILD) Service, (e) Global Mobile Personal Communication by Satellite (GMPCS) Service, (f) Public Mobile Radio Trunking Service (PMRTS), (g) Very Small Aperture Terminal (VSAT) Closed User Group (CUG) Service, (h) Audio Conferencing/ Audiotex /Voicemail Service, (i) Machine to Machine (M2M) Service.

*packet switches. The licensees may also provide satellite-based data connectivity to the IoT devices/ Aggregator devices.*

*2.2 The Licensee shall establish Land Earth Station Gateway in India for the purpose of providing Global Mobile Personal Communication by Satellite (GMPCS) Service. GMPCS Service may be provided using one or more Satellite Systems provided that the Land Earth Station Gateway Switch is established separately in India for each Satellite System.*

*...*

*4.1 The Licensee shall disclose complete details on terms and conditions of the contracts/licenses entered into with its parent/associate company and/or space-segment/satellite-system owner/operator, including those contained in contracts/licenses issued by the Governments/Authorities of the country where the parent/associate company is registered and/or carries on its business prior to grant of license and before security clearance for the service in India. The information so furnished to the Licensor along with authenticated copies of all such contracts/licenses shall be certified to be true and correct to the best knowledge of the licensee. The information shall be regularly updated, as and when any changes occur, during the validity of the license.*

*...*

*5.1 The Land Earth Station Gateway Switch for provision of GMPCS Service must be commissioned within 12 months from the date of frequency allotment by WPC. The Licensee shall approach WPC for frequency allotment within 1 month of date of allocation of transponder bandwidth in the concerned Satellite System.*

*5.2 For the purpose of verification of the commissioning of the applicable system, Licensee shall register with the Network Operations Control Centre (NOCC) of DoT, as per the prescribed procedure and payment of prescribed charges.*

*...*

*7.1 The operation and maintenance center of the GMPCS Gateway shall also be located in India. The Licensee shall demonstrate the system capabilities with*

*respect to security aspects, including monitoring to the Licensor or its authorized representative prior to starting of operations in India.*

...

*7.4 The designated Authority of the Central/ State Government as conveyed by the Licensor from time to time shall have the right to monitor the telecommunication traffic in every Gateway set up in India. ...*

...

*7.10 Adequate monitoring facility should be made available by the Licensee at the GMPCS Gateway in India to monitor all traffic (traffic originating/ terminating in India) passing through the applicable system."*

## **(2) Commercial VSAT Closed User Groups (CUG) Service Authorization**

1.16 This service authorization envisages to provide data connectivity service to CUG using a satellite system. For providing the services, the licensee is required to establish Satellite Earth Station Gateway in India. The relevant provisions of Commercial VSAT CUG Service Authorization (Chapter XIV) under Unified License are reproduced below:

*"4.3 The HUB Station shall be operated and maintained by the Licensee subject to the following conditions:*

*(i) The Hub station as well as all the VSATs shall be within the geographical boundary of India.*

*(ii) The VSAT at the premises of customer/users should have a logo prominently displayed indicating the name of VSAT Licensee.*

*(iii) The Licensor or its representative will have access to the HUB as well as the technical facilities provided by the Licensee for monitoring, inspection, etc.*

*(iv) Before start of operation from Hub Station, necessary clearances from Network Operations Control Center (NOCC) on payment of prescribed charges will be taken by the Licensee.*

...

5.1 *The Licensee shall roll out the network by installing and commissioning a HUB Station for Star Network configuration or at least two VSAT Terminals in case of Mesh Network configuration within 12 months from the date of frequency allotment by WPC. The Licensee shall approach WPC for frequency allotment within 1 month of date of allocation of transponder bandwidth by Department of Space (DoS) or space segment provider duly authorized by DoS.*

5.2 *For the purpose of verification of the commissioning of the applicable system, Licensee shall register with the Network Operations Control Centre (NOCC) of DoT, as per the prescribed procedure.*

...

7.1 *Mandatory performance verification of HUB Station will be carried out by NOCC, or any other agency authorized by the Licensor for this purpose on payment of necessary testing charges by Licensee."*

### **(3) Other Authorisations under Unified License**

1.17 As per the Unified License, a service licensee is permitted to use satellite media for the provision of services. The clause 30.11 of Chapter V ('Operating Conditions' applicable to all authorizations) of Unified License states as below:

*"30.11 In case of provision of services by the LICENSEE through the Satellite media or use of satellite media through owned/ leased satellite connectivity: -*

*(i) The Licensee shall abide by the prevalent Government guidelines, policy, orders, regulation, or direction on the subject like Satellite communication policy, VSAT policy, etc.*

*(ii) Before putting in operation the network for Satellite-based services, necessary clearances from INSAT Network Operations Control Center (NOCC) on payment of prescribed charges will be taken by the Licensee. NOCC instructions with regard to space segment access and other relevant operational matters will have to be complied by the Licensee.*

*(iii) For use of space segment and setting up and to start operating the Earth Station, etc., Licensee shall directly coordinate with and obtain clearance from*

*Network Operations Control Centre (NOCC), apart from obtaining SACFA clearance and clearance from other authorities.*

*(iv) Mandatory performance verification of HUB Station will be carried out by NOCC, or any other agency authorized by the Authority for this purpose on payment of necessary testing charges by Licensee.*

*(v) For VSATs supplied or leased by the Licensee, a certificate from the LICENSEE duly supported by the manufacturer certificate meeting the mandatory performance requirements shall be submitted by the LICENSEE to NOCC. Mandatory performance verification of VSATs will be carried out by NOCC on selective basis on payment of necessary testing charges by Licensee.*

*(vi) The Licensee shall submit a monthly operational report to NOCC/Satellite cell in DoT in both soft copy and hard copy.”*

#### **(4) License Agreement for provision of VSAT Service Using INSAT System**

- 1.18 This license envisages to provide closed user group domestic data network via INSAT Satellite System using VSATs. The relevant provisions of the license are given below:

*"SCHEDULE*

*TERMS AND CONDITIONS*

*...*

##### *9. Delivery of Service*

*LICENSEE shall be solely responsible for installation, networking and operation of necessary equipment and systems for provision of SERVICE, treatment of SUBSCRIBER complaints, issue of bills to its subscribers, collection of its component of revenue, attending to claims and damages arising out of his operations.*

*A minimum of 5 VSATs along with HUB must be commissioned within a period of one year from the effective date of LICENCE.*

*...*

*28.1 The HUB Station shall be operated and maintained by the LICENSEE subject to the following conditions:-*

*The Hub station as well as all the VSATs shall be within the geographical boundary of India.*

...

#### *DEFINITIONS AND INTERPRETATIONS*

...

*7. "COMMISSIONING OF SERVICE" means complete installation of HUB equipment and at least 5 VSATs. "*

### **(5) License Agreement for captive VSAT CUG Network**

1.19 The license for captive VSAT network envisages to provide data connectivity between various sites scattered throughout India using VSATs. The relevant provisions of the License are given below:

*"Section-I Specific Terms and Conditions*

*7.0 The HUB Station shall be operated and maintained by the Licensee subject to the following conditions:-*

*(i) The Licensee is required to provide the details of the equipment, address of the equipment location and site configuration details on monthly basis from the date of signing of the License agreement or as and when desired by the Licensor.*

*(ii) The network Licensee shall, on demand, provide a VSAT capable of monitoring the network to NOCC/authorized government agency free of cost, as and when desired.*

*(iii) Before energizing the VSAT network, necessary clearances from INSAT Network Operations Control Center (NOCC) on payment of prescribed charges will be taken by licensee. NOCC instructions with regard to space segment access and other relevant operational matter will have to be obeyed by the licensee.*

*(iv) The licensee will provide a suitable hot line between network Management Center and NOCC.*

*(v) The operation of the hub stations will have to be directly under the control of Licensee.*

...

*11.0 Necessary clearances for frequency and siting clearance of earth stations (hub and VSATs) should be taken from WPC before commencing the operation.*

...

*1.4 (Section-IV, Part-II) The Licensee shall provide at his own cost technical facilities for accessing any port of the switching equipment at the HUB or an independent VSAT for interception of the messages by the designated authorities at a location to be determined by the Licensor. "*

## **(6) License for Provision of Internet Services (ISP license)**

1.20 These licenses were issued prior to Unified License regime which was introduced in 2013. Relevant provisions of the ISP license are as below:

*"2.2 (viii) Licence Internet Service to any VSAT subscriber (who could be served by a shared hub commercial service provider or captive private VSAT network) can be provided, if the VSAT is located within the service area of the ISP. For this purpose, a direct interconnection of VSAT or VSAT-hub through leased line obtained from an authorised provider to the ISP's node/server shall be permitted only for the flow of Internet traffic. The ISP shall provide to the Licensor a monthly statement of VSAT subscribers served with their locations and details of leased line interconnection with the VSAT hub. The VSAT hub, however, need not be located in the service area of the ISP.*

...

*2.2(ix) Licensee may install operate and commission International Internet Gateway using satellite or submarine cable as medium after obtaining security clearance/approval from Licensor.*

...

*36.7 For use of space segment and setting up and operationalisation of Earth Station etc., LICENSEE shall coordinate with and obtain clearance from Network*

*Operations Control Centre (NOCC), apart from obtaining SACFA clearance and clearance from other authorities.”*

**(7) License for Provision of Unified Access Services**

1.21 These licenses were issued prior to Unified License regime which was introduced in 2013. Relevant provisions of the license are given below:

*“43.9 For use of space segment and setting up and operationalisation of Earth Station etc., LICENSEE shall directly coordinate with and obtain clearance from Network Operations and Control Centre (NOCC), apart from obtaining SACFA clearance and clearance from other authorities.*

1.22 **Existing Broadcasting Service Licenses/ Permissions.** A brief description in respect of DTH license and Teleport permission is given below:

**(1) DTH License**

1.23 As per the terms and conditions of the License for providing DTH Broadcasting Service, granted by the MIB, the Licensee is required to establish Uplink Earth Station for providing the DTH service. Clause 13.1 of Article-13, related to the Commissioning of DTH Platform, is reproduced below:

*“13.1 The Licensee shall establish and complete the installation of the uplink earth station in India, including the monitoring facility, etc., and commission the DTH Platform within twelve months from the date of issue of the SACFA clearance by the WPC after obtaining wireless operational license and would submit a report to the Licensor in this regard.”*

**(2) Teleport Permission**

1.24 MIB issues permission for 'Setting Up of Uplinking Hub/Teleports' as per the Policy Guidelines for Uplinking of Television Channels from India dated 05.12.2011. The relevant provisions of the said guidelines are reproduced below:

*“5.1 The company can uplink either in C or Ku Band. Uplinking in C Band would be permitted both to Indian as well as foreign satellites. However, proposals*

*envisaging use of Indian satellites will be accorded preferential treatment. On the other hand, uplinking in Ku Band would be permitted through Indian satellite only, subject to the condition that this permission is not used to run/operate DTH service without proper license, to which separate guidelines apply. Satellite to be used should have been coordinated with INSAT System.*

...

*5.7 The company shall comply with the terms and conditions of Wireless Operational License to be issued by the WPC Wing, Ministry of Communications & IT.*

...

*9.5 The applicant will pay the license fee and royalty, as prescribed by WPC Wing from time to time, annually, for the total amount of spectrum assigned to Hub/Teleport station, as per norms & rules of the WPC Wing."*

#### **D. TRAI's consultation process w.r.t. the DoT's Reference dated 10.09.2021**

1.25 In respect of the DoT's Reference dated 10.09.2021, the Authority issued a Consultation Paper on 'Licensing Framework for Establishing Satellite Earth Station Gateway' on 15.11.2021 (hereinafter, referred to as, "the CP dated 15.11.2021") to solicit views of stakeholders on the subject matter. Written comments on the CP dated 15.11.2021 were invited from stakeholders by 13.12.2021 and counter-comments by 27.12.2021. Upon request of some stakeholders, the last dates for furnishing comments and counter-comments were extended to 20.12.2021 and 03.01.2022 respectively. A total of 23 comments and 7 counter-comments were received by the Authority. The comments and counter-comments received from stakeholders were placed on the TRAI's website- [www.traigov.in](http://www.traigov.in). An online Open House Discussion (OHD) was held on 25.02.2022 with stakeholders. Based on the comments and counter-comments received from stakeholders during the consultation process, and further analysis, the Authority has arrived at the present recommendations.

1.26 These recommendations comprise of three chapters. Chapter I provides a background of the subject. Chapter II presents an analysis of the issues raised in the CP dated 15.11.2021 considering comments and counter-comments received from stakeholders, and the recommendations of the Authority thereon. Chapter III provides a summary of the recommendations of the Authority on the subject.

## **CHAPTER-II**

### **ANALYSIS OF ISSUES**

- 2.1 In the CP dated 15.11.2021, the Authority had sought views of stakeholders on the following broad issues related to licensing framework for establishing satellite earth station gateways (SESGs) in India:
- (a) Need for a specific license for establishing SESGs
  - (b) Specifications of the license
  - (c) Entities eligible for obtaining the license
  - (d) Framework for regulating the access to SESGs by the service licensees
  - (e) Permission to install baseband equipment at SESGs
  - (f) Requisite amendments in the relevant service licenses
  - (g) Sharing of SESGs
  - (h) Assignment of spectrum to the licensees
  - (i) Methodology for assignment of spectrum and charging mechanism
- 2.2 An analysis of the afore-mentioned issues based on the comments and counter-comments received from stakeholders is presented below.

#### **A. Need for a specific license for establishing SESGs**

- 2.3 Through the CP dated 15.11.2021, stakeholders' comments were invited on the following question:

*Q1. Whether there is a need to have a specific license for establishing satellite Earth Station Gateway in India for the purpose of providing satellite-based resources to service licensees? Do justify your answer.*

- 2.4 In response to the above question, most of the stakeholders have stated that there is a need for a specific license for establishing SESGs in India. Such stakeholders have provided the following arguments in support of their viewpoint:

- (a) With the advancement in satellite technologies, deployment of SESGs has become capital intensive. It may not be economically sustainable for many service licensees to establish individual SESGs for providing services to end customers. This makes it necessary for the satellite operators to establish their own SESGs and provide satellite-based resources to service licensees from their SESGs. A specific SESG licensing regime will simplify the establishment of SESGs for the next-generation satellite systems.
- (b) The existing licensing regime, which requires the service licensees to establish SESGs, leads to infrastructure redundancy. A separate SESG licensing regime will help avoid duplication of investment by various service licensees.
- (c) Decoupling the provisioning of SESGs from the service licenses will enable satellite operators to serve multiple service licensees in India. It will also enable service licensees in India to access multiple satellite systems.

2.5 A few stakeholders have opined that there is a need for a specific license for establishing SESGs only in respect of GSO-HTS-multiple gateway systems, and NGSO systems. Their viewpoint may be summed up as below:

- (a) For GSO-wide beam systems, and GSO-HTS-single gateway systems, only one SESG is sufficient to cover the entire Indian sub-continent. For obtaining satellite-based resources from such systems, the existing service licensees have already established SESGs, as per the extant licensing framework. Therefore, there is no need for introducing a specific license for establishing SESGs for GSO-wide beam systems, and GSO-HTS-single gateway systems.
- (b) For GSO-HTS-multiple gateway systems, several gateways are required to cover the entire footprint over India. In respect of such systems, the common antenna and radio frequency terminal (RFT) installed at an SESG may be used for serving multiple service licensees. This arrangement will be efficient and cost effective. Therefore, there is a need for a separate license for establishing SESGs for GSO-HTS-multiple gateway systems. A few other stakeholders have opined that only a registration like Infrastructure

Provider-I (IP-I) registration may be required for establishing SESGs for GSO-HTS-multiple gateway systems.

- (c) For NGSO systems, the technology is quite complex and is tied closely to the constellation of satellites. Since the satellites are constantly moving, each user station needs to switch to multiple satellites and do a hand-off without losing the connection. Therefore, it is essential that the SESGs are installed either by the satellite operator itself, or by an entity designated by the satellite operator. Therefore, for NGSO systems, there is a need for a separate license for establishing SESGs.

2.6 A few stakeholders have stated that only a wireless operating license (WOL) may be required for establishing SESGs. A few other stakeholders have suggested that only a registration like IP-I may be required for establishing SESGs.

2.7 One of the stakeholders has contended that the evolution of satellite network design towards cloud-based architecture means that physical network components such as gateways are no longer a defining feature for ensuring information security.

2.8 While evaluating the stakeholders' comments on the need for a specific license for establishing SESGs, the Authority observed that as per the extant service licensing framework in the country, a few telecommunication service licenses granted by DoT (viz. GMPCS authorization under UL, VSAT-CUG authorization under UL, Commercial VSAT-CUG license and Captive VSAT-CUG license), and DTH service license granted by MIB mandate the service licensees to establish and operate SESGs in India for the purpose of providing satellite-based communication services. The Authority also took note of the following aspects:

- (a) In India, many sparsely populated areas, with important economic activities, continue to lack terrestrial coverage because of high cost of connecting such areas through terrestrial communication networks.

- (b) The current statistics on Internet subscribers indicate the presence of a significant digital divide in the country. As on 30.06.2022, there were only 60.73 Internet subscribers per 100 population in the country. The number of rural Internet subscribers per 100 population was even lower (37.86).
- (c) Satellite communication is a potent tool for bridging the digital divide. By virtue of its design, a satellite communication system can instantly provide coverage across wide geographies without regard to challenging topographies.
- (d) The next-generation satellite communication systems, which are being introduced by various satellite operators worldwide, have a potential to connect the unconnected with a range of communication services in an affordable manner. In case the satellite communication ecosystem in the country is invigorated with suitable regulatory reforms, the hitherto digitally excluded section of the population may soon be able to reap the benefits of the digital economy.

2.9 In light of the comments and counter-comments of stakeholders on the Question No. 1 of the CP dated 15.11.2021 and its further analysis on the matter, the Authority is of the view that in case a specific license for establishing Satellite Earth Station Gateways for the purpose of providing satellite-based resources to service licensees is introduced, it will bring efficiencies and cost-effectiveness in the satellite communication ecosystem and thereby help bridge the digital divide in the country. Therefore, there is a need for a specific license for establishing satellite earth station gateway (SESG) in India for the purpose of providing satellite-based resources to service licensees.

## **B. Specifications of the license**

2.10 Through the CP dated 15.11.2021, stakeholders' comments were invited on the following question:

*Q2. If yes, what kind of license/ permission should be envisaged for establishing Satellite Earth Station Gateway in India? Do provide details with respect to the scope of license and technical, operational, and financial obligations, including license fee, entry fee, bank guarantee, and NOCC charges, etc.*

**(1) Type of the license**

- 2.11 On the question as to which kind of license/ permission should be required for establishing SESGs, while most of the stakeholders have stated that there should be a separate light-touch license or IP-I registration for establishing SESGs, a few other stakeholders have opined that establishment of SESGs should be governed through an authorization under Unified License. A couple of stakeholders have suggested a mixed approach; they have recommended for (a) a specific license for establishment of SESGs in respect of NGSO systems, (b) a registration like IP-I registration in respect of GSO-HTS-multiple gateway systems, and (c) no specific license for establishment of SESGs in respect of GSO-wide beam systems and GSO-HTS-single gateway systems. Another stakeholder has contended that SESG license should be a wireless telegraphy license from the WPC Wing of DoT to possess and import wireless equipment.
- 2.12 The stakeholders, who are in favour of a separate light-touch license or IP-I registration for establishing SESGs, have opined that, at present, IP-I registration is granted for putting up telecommunication infrastructure, which may be shared by multiple service licensees; on the same lines, the SESGs, established by an entity, will be shared by multiple service licensees; therefore, establishment of SESGs may be governed by a separate license, albeit a light-touch license. They have suggested that as the license for establishing SESGs will not confer any right to sell services to end users, the obligations under such license should be simple and cost effective in order to encourage ease of doing business and attracting investments in the sector; accordingly, the license for establishing SESGs should be modelled on the lines of IFMC service authorization.

2.13 On the other hand, the stakeholders, who are in favour of an authorization under Unified License for establishing SESGs, have contended that SESGs will hold active elements of telecommunication network through which they will provide services to multiple service licensees; therefore, establishment and operation of SESG is an integral part of the communication services being offered under the Unified License.

2.14 While examining the views of stakeholders, the Authority observed that as per the section 3(1) of Indian Telegraph Act 1885, "telegraph" means any appliance, instrument, material or apparatus used or capable of use for transmission or reception of signs, signals, writing, images and sounds or intelligence of any nature by wire, visual or other electro-magnetic emissions, Radio waves or Hertzian waves, galvanic, electric or magnetic means. Accordingly, the antenna sub-system and radio frequency (RF) sub-system, which are installed at SESGs, are, essentially, telegraph. Therefore, establishment, maintenance, and operation of SESGs should be licensed under the Section 4 of the Indian Telegraph Act 1885. The Authority further observed that under such a license, the licensees will only provide satellite-based resources to service licensees, and will not provide services to the end users, therefore, it would be apt to regulate establishment of SESGs through a light touch license.

2.15 Based on the comments of stakeholders and its further analysis on the matter, **the Authority recommends that-  
There shall be a separate Satellite Earth Station Gateway (SESG) License under the Section 4 of Indian Telegraph Act. The SESG License will not form part of the Unified License (UL).**

**(2) Service Area and scope of the SESG License**

2.16 On the question as to what the scope of the SESG License should be, many stakeholders have opined that the scope of such license should be (a) to set up

SESGs anywhere in India, (b) to access an authorized satellite (authorized by Department of Space or IN-SPACe<sup>8</sup>) and (c) to provide satellite bandwidth to other telecom service providers (access/ NLD/ VSAT/ ISP). One of the stakeholders has suggested that SESG licensees should be allowed to set permanent earth stations, transportable earth stations, earth station network (VSAT Hub), NGSO earth stations, Non-Fixed Satellite Service (Non-FSS) earth station, receive only earth stations etc; the SESG licensee should be allowed to set up any number of earth station antennas at a given location, particularly for NGSO earth station. Another stakeholder has recommended that the SESG license should cover establishment of all kinds of gateways with a fixed location in the Indian territory, including feeder-link earth stations for communication and broadcasting systems, hub stations for VSAT, IoT, MSS-R and GMPCS systems. A few stakeholders have recommended that SESG licensees should not have any provision to provide telecommunication services to the end consumers. One of the stakeholders has stated that the SESG Licensee should be treated as enabler for service licensees who in turn would be provisioning end-to-end service/ connectivity.

- 2.17 While evaluating the stakeholders' comments on the question as to what should be scope of the SESG License, the Authority took note of the following aspects:
- (a) As per the extant licensing framework, the licensed service area of the licenses/ authorizations, under which a licensee is permitted to render satellite-based communications services (viz. GMPCS authorization under UL, VSAT-CUG authorization under UL, Commercial VSAT-CUG license and Captive VSAT-CUG license and DTH license) is at National Level. The holders of these licenses/ authorizations are permitted to establish and operate

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<sup>8</sup> The Government has created the Indian National Space Promotion and Authorisation Centre (IN-SPACe), as a single-window, independent, nodal agency which functions as an autonomous agency under Department of Space (DOS). IN-SPACe has been established as a single window agency for all space sector activities of private entities.

Source: [https://www.inspace.gov.in/inspace?id=inspace\\_about\\_inspace](https://www.inspace.gov.in/inspace?id=inspace_about_inspace)

SESGs anywhere in India. They may provide satellite-based communications services using one or more satellite systems provided that the SESGs are established separately in India for each satellite system.

- (b) Earlier, The Authority, through 'the Recommendations on Licensing Framework for Satellite-based connectivity for Low Bit Rate Applications' dated 26.08.2021, the Authority recommended as below:
- "The Government may publish a list of approved foreign satellites/ satellite systems based on their technical and security evaluation, from whom the service licensees may procure the satellite capacities. The service licensees should be permitted to choose the foreign satellite/satellite system from the approved list and to lease the satellite capacity directly from the chosen foreign satellite/satellite system."*
- (c) In case of (a) GSO-wide beam systems, and (b) GSO-HTS-single gateway systems, the service licensees, which provide satellite-based communications services, need to establish a single SESG in India per satellite system. However, a single SESG will not suffice in the case of (a) GSO-HTS-multiple gateway systems, and (b) NGSO systems.
- (d) In the case of GSO systems, one antenna is required at each SESG to communicate with the satellite in orbit. On the other hand, in the case of NGSO systems, an array of antennas is deployed at SESGs for tracking multiple satellites in range.
- (e) DoT, through its Reference dated 10.09.2021, stated, *inter-alia*, that "*the gateway establishing licenses may be thought of as a network operator which owns or controls the infrastructure necessary to deliver services to other licensed service operators providing services to end users*". Simply put, DoT envisaged that the proposed SESG Licensee will provide satellite-based resources to service licensees, who in turn will serve the customers.
- (f) The period of validity of Unified License is 20 years from the effective date of the license unless revoked earlier. Further, the Licensor (i.e., DoT) may renew, if deemed expedient, the period of license by 10 years at one time, upon request of the Licensee, if made during the 19<sup>th</sup> year of the license

period, on the terms specified by the Licensor, subject to the extant policy. The Commercial VSAT CUG License and Captive VSAT CUG License also are granted for a period of 20 years, extendable by 10 years at a time upon request of the licensee.

2.18 Based on the comments of stakeholders and further analysis in respect of the question as to what the scope of SESG License should be, **the Authority recommends that-**

- (a) The Service Area for the SESG License shall be at National Level.**
- (b) Scope of the SESG License shall cover the following:**
  - (i) The SESG Licensee may establish, maintain, and work SESGs anywhere within the territory of India for all types of satellite systems for which the Government has given the permission.**
  - (ii) The SESG Licensee may provide satellite-based resources to any entity, which holds license/ permission granted by Department of Telecommunications (DoT) or Ministry of Information & Broadcasting (MIB) and is permitted to use satellite media for the provision of services under its license/ permission.**
  - (iii) The SESG Licensee may establish SESGs in respect of one or more Government approved satellite systems.**
  - (iv) The following recommendations made earlier vide TRAI's recommendations on "Licensing Framework for Satellite-based connectivity for Low Bit Rate Applications" dated 26.08.2021 are reiterated in respect of the Licensing Framework for Establishment of Satellite Earth Station Gateway:**  
*"The Government may publish a list of approved foreign satellites/ satellite systems based on their technical and security evaluation, from whom the service licensees may*

*procure the satellite capacities. The service licensees should be permitted to choose the foreign satellite/satellite system from the approved list and to lease the satellite capacity directly from the chosen foreign satellite/satellite system”.*

- (v) **The SESG Licensee may establish one or more SESGs for each Government approved satellite system. However, the licensee shall obtain separate permission from the Department of Telecommunications (DoT) before installing each SESG.**
- (vi) **The SESG Licensee shall not be permitted to provide any kind of telecommunication service or broadcasting service directly to the consumers, for provision of which, a separate license/ authorization/ permission is required from the Government.**
- (vii) **The SESG license shall be valid for a period of 20 years from the effective date of the license with a provision of renewal for 10 years.**

### **(3) Technical, operational, and financial obligations under SESG license**

2.19 On the question as to what should be the technical, operational, and financial obligations, including license fee, entry fee, bank guarantees, and NOCC charges, etc., the stakeholders have provided a wide range of views. In the ensuing paragraphs, the issues relating to technical and operational conditions are being taken up first, followed by the issues relating to financial conditions.

#### **(a) Technical and operational conditions**

2.20 Stakeholders have provided diverse inputs in respect of technical and operational conditions to be imposed on SESG licensees. A summary of the viewpoints received from stakeholders is given below:

- (a) The conditions should be proportionate to the purpose of the gateway license.
- (b) SESG should operate as per the technical parameters of space constellation and fully comply with all ITU radio regulations and relevant recommendations of ITU-R.
- (c) SESGs should be allowed to be established without due frequency allocation.
- (d) SESG Licensee should obtain SACFA clearance, and certification of technical characteristics established by TEC. It should successfully meet the NOCC's mandatory performance verification testing.
- (e) SESG Licensee should do operation and maintenance of the infrastructure to provide service level agreement (SLA) based services to service licensees. The services should be supported by the required helpdesk and trouble-ticketing system.
- (f) The requirement for compliance with TEC standards should be reconsidered for NGSO gateway earth stations.
- (g) India should provide more technical flexibility for establishment of SESGs. Today, the technical standards issued by TEC define technical criteria for gateway and terminal parameters deployed on DoS satellites. However, those parameters are not necessarily required when communicating with non-DoS satellites. For example, the TEC standards specify a minimum gateway antenna size of 8 m for a Ka-band gateway antenna to communicate with certain GSO satellites. However, many service licensees and satellite operators may consider an 8 m antenna as unnecessarily large (and expensive) for acceptable performance for their networks and end-user requirements. Similarly, a minimum terminal antenna size of 1.2 m in Ku-or Ka-band may also be inflexibly large when modern aeronautical antenna can be much smaller and still comply with applicable satellite coordination agreements. Internationally, other administrations are moving away from such inflexible parameters as antenna size, whenever not required by the ITU framework, and instead requiring compliance with satellite coordination

agreements and/ or establishing default off-axis EIRP density masks for the protection of other satellite systems.

- (h) The existing conditions of the Unified License should be applied on SESG Licensees.
- (i) Chapter VI (Security Conditions) of Unified License mandates service licensees to take adequate security measures. The same security conditions may also be applicable to SESG licensees because in the case of a satellite network, the security precautions apply more to the gateway and less to the customer premises equipment.

2.21 While examining the comments received from stakeholders in respect of technical and operating conditions to be imposed on SESG Licensee, the Authority took note of the following aspects:

- (a) The Chapter-IV (Technical Conditions) of Unified License provides that *"the Licensee shall utilize any type of equipment and product that meet TEC standards, wherever made mandatory by the Licensor from time to time. In the absence of mandatory TEC standard, the Licensee may utilize only those equipment and products which meet the relevant standards set by International standardization bodies, such as, ITU, ETSI, IEEE, ISO, IEC etc.,; or set by International Fora, such as 3GPP, 3GPP-2, IETF, MEF, WiMAX, Wi-Fi, IPTV, IPv6, etc. as recognized by TEC and subject to modifications/adaptation, if any, as may be prescribed by TEC from to time."*
- (b) Telecom Engineering Center (TEC), which is a technical arm of DoT, frames, *inter-alia*, standards for interface requirement for products/ equipment. TEC seeks inputs from various stakeholders and consults relevant journals, reports, recommendations, and standards/ specifications issued by Standardization Bodies, such as ITU, ETSI, IEEE, CISPR, IEC, ISO, 3GPP, IETF, International Forums, etc. before formulating standards for interface requirement. On 03.03.2021, TEC released the 'Standard for Interface Requirements for Communication and Broadcast Networks for FSS/BSS (Mandatory Technical Requirements)' through the document number TEC

42012:2021<sup>9</sup>. The said standard stipulates the mandatory technical and operational requirements for all satellite-based networks for fixed satellite service (FSS) and broadcasting satellite service (BSS) in the respective bands. A few stakeholders have opined that the said TEC standard requires a revision, specifically, with respect to the sizes of antenna of gateway and user terminal for the Ku- and Ka-band, considering the advancement in the satellite technology. It will be appropriate if TEC examines the need for amendment to the Standard for Interface Requirements for Communication and Broadcast Networks for FSS/BSS (TEC 42012:2021) keeping in view the latest technological developments in the satellite communication sector.

- (c) The clause 39.7.1 of The Chapter-VI (Security Conditions) of Unified License provides as below:

*"39.7.1. The Government through the Designated Authority will have the right to impose conditions for procurement of Telecommunication Equipment on grounds of Defence of India, or matters directly or indirectly related thereto, for national security. Designated Authority for this purpose shall be National Cyber Security Coordinator. In this regard, the licensee shall provide any information as and when sought by the Designated Authority. Designated Authority shall notify the categories of equipment for which the security requirement related to Trusted Sources are applicable. For the said categories of equipment, Designated Authority shall notify the Trusted Sources along with the associated Telecommunication Equipment (Trusted Products). The Designated Authority may also notify a list of Designated Sources from whom no procurement can be done. Procedure for inclusion of Telecommunication Equipment in the list of Trusted Sources will be issued by the Designated Authority.*

*With effect from 15<sup>th</sup> June 2021, the licensee, shall only connect Trusted Products in its network and also seek permission from Designated Authority*

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<sup>9</sup> On 07.10.2022, TEC issued an addendum to the 'Standard for Interface Requirements for Communication and Broadcast Networks for FSS/BSS' through the standards document number TEC 42012:2022. This Addendum prescribes the Interface Requirements for land based mobile earth stations/VSATs which communicate with geostationary satellites.

*for upgradation of existing Network utilizing the Telecommunication Equipment not designated as Trusted Products. However, these directions will not affect ongoing Annual Maintenance Contracts (AMC) or updates to existing equipment already inducted in the network as on date of effect. The licensees shall comply with the Guidance for Enhanced Supervision and Effective Control of Telecommunication Networks, as per guidelines to be issued by the licensor.”*

- (d) The Chapter-V (Operating Conditions) under Unified License provides that the licensee shall be responsible for installation, proper upkeep and maintenance of the Applicable System. It further provides as below:

*"30.11 In case of provision of services by the LICENSEE through the Satellite media or use of satellite media through owned/leased satellite connectivity:-*

*(i) The Licensee shall abide by the prevalent Government guidelines, policy, orders, regulation or direction on the subject like Satellite communication policy, VSAT policy etc.*

*(ii) Before putting in operation the network for Satellite based services, necessary clearances from INSAT Network Operations Control Center (NOCC) on payment of prescribed charges will be taken by the Licensee. NOCC instructions with regard to space segment access and other relevant operational matters will have to be complied by the Licensee.*

*(iii) For use of space segment and setting up and to start operating the Earth Station etc., Licensee shall directly coordinate with and obtain clearance from Network Operations Control Centre (NOCC), apart from obtaining SACFA clearance and clearance from other authorities.*

*(iv) Mandatory performance verification of HUB Station will be carried out by NOCC or any other agency authorized by the Authority for this purpose on payment of necessary testing charges<sup>10</sup> by Licensee.*

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<sup>10</sup> Through the order No. 824-201/TRAI/2020-SAT (Vol-III) dated 06.05.2022, DoT has decided that there shall be no NOCC charges for the use of space segment for all DoT licensees for commercial/ captive VSAT service, GMPCS, NLD and other telecom licensees having Unified License/ standalone license w.e.f. 01.04.2022.

*(v) For VSATs supplied or leased by the Licensee, a certificate from the LICENSEE duly supported by the manufacturer certificate meeting the mandatory performance requirements shall be submitted by the LICENSEE to NOCC. Mandatory performance verification of VSATs will be carried out by NOCC on selective basis on payment of necessary testing charges by Licensee.*

*The Licensee shall submit a monthly operational report to NOCC/Satellite cell in DoT in both soft copy and hard copy.”*

- (e) The SESG deployed for the modern satellite systems are likely to require close coordination with other service providers in respect of inference mitigation.
- (f) The Chapter-VI (Security Conditions) under Unified License provides that the Licensee shall meet the instructions/ directions of the Licensor (i.e., DoT) issued from time to time in the interest of national security. It also provides that the Licensee shall be completely and totally responsible for security of their networks.
- (g) Further, Unified License under its Commercial VSAT CUG Service Authorization (Chapter-XIV) stipulates, *inter-alia*, as below:

*"8.5 In the areas falling within 10 Kms of Line of Control (LOC), Line of Actual Control (LAC) and International Border between Akhnoor in J&K and Pathankot and other areas as may be notified from time to time by the Licensor, installation of VSAT/Hub Station by the Licensee shall be taken up only after prior approval from local Army authorities about specific location of VSAT/Hub Station with prior intimation to the Licensor and concerned LSA Field Unit of DoT in addition to requisite clearances. Width of this buffer zone along the borders within the Indian Territory shall be as decided by the Govt. of India from time to time. As and when there is any change in the structure of defined buffer zone, for whatsoever reason, it should be reported to the Licensor immediately. The Government and its authorized representatives may carry out physical verification of the accuracy of buffer zone so created.*

2.22 Based on the comments of the stakeholders and further analysis in respect of the technical and operating conditions of SESG license, **the Authority recommends that-**

- (a) For establishing SESGs, the SESG Licensee shall utilize any type of equipment and product that meets TEC standards, wherever made mandatory by the Licensor from time to time. In the absence of mandatory TEC standard, the Licensee may utilize only those equipment and products which meet the relevant standards set by international standardization bodies, such as, ITU, ETSI, IEEE, ISO, IEC etc.; or set by international fora, such as 3GPP, 3GPP-2, IETF, MEF, WIMAX, Wi-Fi, IPTV, IPv6, etc. as recognized by TEC and subject to modification/ adaptation, if any, as may be prescribed by TEC from time to time.**
- (b) The Licensee shall adhere to the instructions/ guidelines issued by the Government in respect of connecting Trusted Products in its network.**
- (c) The Government shall review the technical standards issued by TEC in respect of gateway stations and user stations to cater to the new technological developments in the satellite segment.**
- (d) The operating conditions of SESG License shall cover, *inter-alia*, the following:**
  - (i) The SESG Licensee shall be responsible for installation, proper upkeep, and maintenance of the Applicable System, to be established under the license.**
  - (ii) The SESG Licensee will obtain SACFA clearance apart from the necessary clearance from Network Operation and Control Center (NOCC) before start of operation of SESG.**
  - (iii) The operation of SESGs will be governed by the instructions and procedure of NOCC.**
  - (iv) The SESG Licensee shall adhere to the guidelines issued by the Government from time to time in respect of**

**coordination amongst licensees for interference mitigation.**

- (e) The security conditions of SESG License shall cover, *inter-alia*, the following:**
- (i) The SESG Licensee shall meet the instructions/ directions of the Licensor (i.e., DoT) issued from time to time in the interest of national security.**
  - (ii) The SESG Licensee shall be completely and totally responsible for security of their networks.**
  - (iii) The SESG Licensee shall abide by the instructions issued by the Government on the security aspects related to the establishment and operation of SESG near Line of Control (LOC), Line of Actual Control (LAC) and International Border.**

**(b) Financial conditions**

2.23 In respect of financial conditions to be imposed on SESG licensees, most of the stakeholders have recommended a nominal fee, or no fee to be charged from SESG licensees. However, a few stakeholders have suggested that the existing conditions of Unified License should be applicable to SESG licenses as well to ensure level playing field for all operators.

2.24 Specifically, in respect of License Fee, most of the stakeholders have opined that a notional annual License Fee of Re. 1 (like IFMC authorization<sup>11</sup>) should be charged from SESG licensees. In support of their viewpoint, they have stated that the telecommunication services to customers will be provided by the service

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<sup>11</sup> On 14.12.2018, the Government of India issued Flight and Maritime Connectivity Rules, 2018 for grant and regulation of authorisation for in Flight and Maritime Connectivity (IFMC). The clause 14 of the said rules provides as below:

*"14. Fee.– (1) The IFMC service provider shall pay annual fee of one rupee to be paid on annual basis to the DoT through Bharatkosh"*

licensees and not by the SESG licensees, and the service licensees are already paying License Fee as a percentage of AGR; therefore, License Fee should not be double charged. On the other hand, a few stakeholders have suggested that License Fee payable by SESG licensees should be 8% of AGR<sup>12</sup>, at par with the License Fee payable under Unified License; the charges paid by service licensees to the SESG licensee may be treated as pass-through charges for the purpose of computing License Fee payable by the service licensees to avoid double taxation.

- 2.25 In respect of Entry Fee, most of the stakeholders have opined that there should be nominal or no Entry Fee payable by SESG licensees. In support of this viewpoint, one of the stakeholders has mentioned that as establishment of SESG will require large investment on gateway infrastructure including land, RF terminal and antenna, it is expected that only serious Indian entities will apply for SESG License; considering this, the Entry Fee should be kept as minimal. One of the stakeholders has suggested to keep the Entry Fee for SESG license same as that for GMPCS service Authorization, while another stakeholder has recommended to keep it at par with the Entry Fee for VSAT-CUG Service Authorization<sup>13</sup>.
- 2.26 In respect of bank guarantees, most of the stakeholders have opined that there should be a nominal bank guarantee, or no bank guarantee to be given by SESG licensees. However, one stakeholder has suggested that the bank guarantees for SESG license should be kept the same as that for GMPCS service license.
- 2.27 In respect of Application Processing Fee, many stakeholders have suggested that a processing fee of Rs. 5,000 should be levied on the application for SESG License. One of the stakeholders has stated that the fee should be limited to the recovery of the administrative cost to process the application.

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<sup>12</sup> AGR is an acronym of Adjusted Gross Revenue.

<sup>13</sup> At present, in the Unified License, the Entry Fee for VSAT CUG Authorization and GMPCS authorization are Rs. 0.30 crore and Rs. 1 crore respectively.

- 2.28 In respect of Minimum Equity and Net Worth requirements, one of the stakeholders has opined that the conditions should be the same as those for IP-I registration. Another stakeholder has suggested that the Minimum Equity and Net Worth requirements for SESG License should be kept the same as that for GMPCS service license.
- 2.29 In respect of NOCC charges, most of the stakeholders have recommended that a nominal or no NOCC charges should be levied on SESG licensees.
- 2.30 While examining the comments received from stakeholders in respect of financial conditions to be imposed on SESG Licensee, the Authority observed that as SESG License involves deployment of capital-intensive SESG infrastructure, it is expected that only earnest and committed entities will seek such a license. With a view to attracting investment in the SESG segment, it would be desirable that there are no entry barriers for the prospective SESG licensees, and regulatory levies on SESG licensees are kept to the minimum possible.
- 2.31 The Authority also observed that through the order dated 06.05.2022, DoT has already removed NOCC charges for the use of space segment in respect of telecom licensees having Unified License/ standalone license.
- 2.32 Further, the Authority observed that the SESG licensees will render satellite-based resources to service licensees. Using the satellite-based resources provided by the SESG licensees, service licensees will provide communication services to the customers. The SESG licensees themselves will not provide communication services directly to the end users. The service licensees, to whom SESG licensees will provide satellite-based resources, are already governed by Adjusted Gross Revenue (AGR) based License Fee regime. Therefore, it would be desirable to keep the License Fee payable by SESG licensees as minimum possible.

2.33 Considering the comments of stakeholders and further analysis in respect of the financial conditions of SESG License, **the Authority recommends that-**

- (a) Entry Fee: A non-refundable one-time Entry Fee of Rs. Ten lakhs (Rs. 1,000,000) shall be levied for the grant of SESG License.**
- (b) License Fee: As the SESG licensees will not provide any service directly to end customers, only a token License Fee of Re. 1 per annum shall be levied on the SESG License.**
- (c) Bank Guarantees: No Bank Guarantees (Performance Bank Guarantee or Financial Bank Guarantee) shall be obtained from the SESG Licensee.**
- (d) Processing Fee: In respect of the application for a grant of SESG License, a Processing Fee of Rs. Five thousand shall be levied. Further, a Processing Fee of Rs. Five thousand shall be levied in respect of every application for grant of permission to establish an additional SESG.**
- (e) Minimum Equity and Minimum Networth: There shall be no requirement of minimum equity and minimum networth in respect of SESG License.**
- (f) NOCC charges: No NOCC charges shall be applicable in respect of SESG License.**

### **C. Eligibility for obtaining SESG License**

2.34 Through the CP dated 15.11.2021, stakeholders' comments were invited on the following question:

*Q3. Whether such Earth Station license should be made available to the satellite operator or its subsidiary or any entity having a tie up with the satellite operator? Do justify your answer.*

2.35 A variety of views have been received from stakeholders in response to the above question. At one extreme is a stakeholder, who has stated that SESG license

should be granted specifically to non-telcos and only on behalf of satellite or satellite-based service operators. At the middle, are many stakeholders who have opined that SESG license should be granted to any Indian company which is either a satellite operator, or a subsidiary of a satellite operator, or an entity having a tie-up with the satellite operator. The other extreme is occupied by a few stakeholders who have stated that all eligible Indian entities should be permitted to obtain SESG license without any pre-requisite for having a tie-up with satellite operators.

- 2.36 While examining the views of stakeholders, the Authority observed that SESG is a key component of satellite communication systems. Therefore, the entities which establish and operate SESGs for the purpose of providing satellite-based resources to service licensees in India should be under adequate corporate regulatory oversight. As SESG licensees will provide satellite-based resources to service licensees, they should hold a legal relationship with the satellite operator(s), whose bandwidth resources they will provide to service licensees. The Authority also observed that the Chapter-XII (GMPCS Service Authorization) of the Unified License stipulates, *inter-alia*, as below:

*"4.1 The Licensee shall disclose complete details of terms and conditions of the contracts/licenses entered into with its parent/associate company and/or space-segment/satellite-system owner/operator including those contained in contracts/licenses issued by the Governments/Authorities of the country where the parent/associate company is registered and/or carries on its business prior to grant of license and before security clearance for the service in India. The information so furnished to the Licensor along with authenticated copies of all such contracts/licenses shall be certified to be true and correct to the best knowledge of the licensee. The information shall be regularly updated, as and when any changes occur, during the validity of the license."*

- 2.37 In view of the comments of stakeholders and further analysis, **the Authority recommends that-**

- (a) Only the companies registered under the Companies Act, 2013 of India shall be eligible to apply for grant of SESG License.**
- (b) The applicant company shall be any one of the following:**
  - (i) A satellite operator operating satellite system(s) approved by the Indian Government; or**
  - (ii) A subsidiary of such satellite operator; or**
  - (iii) An entity having contracts/ license agreements entered into with such satellite operator for provision of satellite-based resources through SESGs.**
- (c) The SESG Licensee shall disclose complete details of terms and conditions of the contracts/ license agreements entered into with its parent/ associate company and/ or satellite system owner/ operator. This will also include the terms and conditions contained in contracts/ licenses issued by the Governments/ Authorities of the country where the parent/ associate company is registered and/ or carries on its business prior to grant of license and before security clearance for establishing and operating Satellite Earth Station Gateways in India.**

**D. Framework to regulate the provision of satellite-based resources to service licensees**

2.38 Through the CP dated 15.11.2021, stakeholders' comments were invited on the following question:

*Q4. What mechanism/ framework should be put in place to regulate the access to satellite transponder capacity and satellite-based resources of a Satellite operator/Earth Station licensee by the service licensees so as to get the resources in a time-bound, transparent, fair, and non-discriminatory manner?*

2.39 In response to the above question, stakeholders have provided, broadly, three kinds of views as given below:

- (a) View-1: SESG licensees and their customers can self-regulate the access to satellite-based resources at SESGs. The terms and conditions of the agreement between the SESG Licensee and service licensees should be left to the market forces and should not be regulated.
- (b) View-2: A service licensee should enter into an agreement with the satellite operator to access its satellite-based resources in India. The SESG Licensee should declare, on its website, a Reference Offer for offering access to satellite-based resources at SESGs in a transparent, time-bound, fair, and non-discriminatory manner to the eligible telecommunication and broadcasting service licensees. However, the tariff for provision of satellite-based resources should not be regulated because it depends on numerous factors such as the quantum of capacity, the type of service availed, the duration of commitment, and the time-period of commitment.
- (c) View-3: The Authority should institute a separate regulation like telecommunication interconnection regulation (TIR) between telecom service providers.

2.40 While evaluating the viewpoints of stakeholders, the Authority observed that under the SESG licensing regime, the eligible service licensees in India will seek satellite-based resources from the SESG licensees, for the purpose of providing communication services to their customers. The manner (promptness, commercial fairness etc.), in which SESG licensees provide satellite-based resources to the seeker service licensees, will influence the ability of the service licensees to provide communication services to their customers.

2.41 Considering the comments received from stakeholders and its further analysis, the Authority is of the view that there is a need for establishing a framework to ensure that the SESG licensees make available the satellite-based resources to

the eligible service licensees in a transparent, fair and non-discriminatory manner. Accordingly, **the Authority recommends that-**

- (a) The SESG Licensee shall offer satellite-based resources to the telecommunication and broadcasting service licensees/ permission holders in a transparent, fair and non-discriminatory manner.**
- (b) The SESG Licensee shall declare a Reference Offer on its website in order to ensure that the terms and conditions offered by the SESG Licensee to various telecommunication and broadcasting service licensees/ permission holders are fair, transparent, and non-discriminatory.**
- (c) The SESG Licensee shall provide an online portal wherein the eligible service licensees/ permission holders can make request for provision of satellite-based resources.**
- (d) The SESG Licensee shall provide the feasibility status, through the online portal, to the seeker service licensee/ permission holder clearly stating acceptance or refusal (with reasons thereof, in case of refusal) of the request within 30 days.**

#### **E. Installation of baseband equipment at SESGs**

2.42 Through the CP dated 15.11.2021, stakeholders' comments were invited on the following question:

*Q5. Whether the Earth Station Licensee should be permitted to install baseband equipment also for providing satellite bandwidth to the service licensees as per need? Provide a detailed response.*

2.43 In response to the afore-mentioned question, divergent inputs have been received from stakeholders. While many stakeholders have opined that SESG licensee should not be permitted to install baseband equipment at SESGs, many

other stakeholders have stated that SESG licensees should be allowed to install baseband equipment at SESGs.

2.44 A summary of inputs provided by stakeholders, who have not favoured installation of baseband equipment by SESG licensees, is given below:

- (a) The baseband equipment essentially enables the satellite earth station to establish the basic service capabilities. It has an active role in both uplink and downlink leg. Its role includes modulation and forward error correction (FEC), multiple access method, and interface to the user or terrestrial network. In the transmitting part, terrestrial data in the form of baseband signals, is passed through a baseband processor through antenna to orbiting satellite and reverse process is performed in receiving data from satellite. With multiple service licensees attached to a SESG, all with varying frequencies and different bandwidth requirements, it would be appropriate for the service licensees to install their own baseband equipment at SESG. Therefore, SESG licensees should not be permitted to install baseband equipment; instead, the service licensees should deploy the baseband equipment at satellite gateways to utilize the desired satellite capacity. An SESG Licensee can acquire a service license in case it wishes to install baseband equipment and acquire the right to use feeder link frequencies.
- (b) The baseband equipment for providing satellite capacity to service licensees should be installed by service licensees as they have the spectrum assigned for satellite communication.

2.45 A summary of the viewpoints expressed by the stakeholders, who have favored to permit SESG licensees to install baseband equipment at SESG, is given below:

- (a) Baseband equipment is an integral part of the ground infrastructure and a necessary element of the earth station. It should be installed by SESG licensees, when necessary.

- (b) SESG licensees should be permitted to install baseband equipment, so that satellite capacity can be provided in 'MHz' or 'Mbps' depending on the business model and the agreement between the service licensees and SESG licensees. In some instances, the satellite gateway provider or its authorised entity could also be the service provider. In such a case, they need to take the appropriate service license/ authorization.
- (c) The baseband equipment may be installed by SESG licensees or by service licensees as per business need. However, all legal compliance for delivery of such services that use the internet, or cloud, or other such facilities provided by the SESG licensees, remain solely with the service licensees that includes but is not limited to monitoring and security requirements and should be secured by contractual agreements between the contracting parties. As service provisioning and management happens at baseband level, it is important that service licensee has complete view and control of its baseband.

2.46 A few other stakeholders have contended that, in the case of GSO systems, only service licensees should be permitted to install baseband equipment at SESGs. However, in the case of NGSO systems, the baseband equipment should be under the direct control of satellite operators. In support of their viewpoint, such stakeholders have contended that the baseband controls the quantum of spectrum used, the modulation/ coding schemes, the IP address schemes, the access schemes, handling of real-time traffic and all the security aspects of the network. The service plans are also defined in the associated NMS of the baseband. The quantum of spectrum that needs to be authorized for a given gateway also depends on the baseband equipment. For GSO systems, SESG licensees need not be permitted to install the baseband equipment and can simply take an IP-1 registration to install the gateway RF terminal. Baseband equipment should be installed by only the service licensees to have full control over the services provided to its customers. Any related troubleshooting, change management is also done by service licensees. This way service licensee has

control, visibility, and management over quality of services. This domain is a core part of the services provided by service licensees and thus should remain with service licensees. A service licensee can derive greater efficiencies and competitiveness by a suitable choice of baseband keeping in mind the technical features that are required for the target applications of their customers, the skill level already acquired and the relationship that has been established with different OEMs. Therefore, for GSO systems, the baseband equipment may be operated by the service licensees. In case of NGSO systems, where the baseband equipment is an integral part of the network and cannot be separately installed by the service licensees, the same shall be integral to the gateway infrastructure and under the direct control of the satellite operator.

- 2.47 In the counter-comments, one of the stakeholders has stated that the SESG Licensee should be able to provide at best a tap at intermediate frequency (IF). At baseband level, he becomes a telecom service provider to connect to switch for call routing. Baseband is an activity commensurate with traffic. It should be the responsibility of telecom service providers.
- 2.48 While examining the comments of stakeholders, the Authority observed that, in satellite communication system, baseband equipment acts like the core network of terrestrial communication system; SESG (comprising of antenna sub-system and RF terminal) and satellite(s) together act like its access network. Baseband equipment in satellite communication systems – (a) performs modulation, demodulation, and error correction of the baseband signal, (b) manages the scheme for accessing the satellite and network resources, the scheme for addressing users (through IP addresses, telephone numbers etc.), and service profile of users (user specific service plans, quality of service parameters etc.), (c) controls the user traffic (Mbps), and quantum of frequency spectrum in use, and (d) monitors integrity and security of user traffic. In essence, baseband equipment is the brain of satellite communication systems.

2.49 The Authority also took note of the fact that DoT, through its reference dated 10.09.2021, mentioned that *"sharing of the gateway established by the satellite constellation operator among different TSPs, wherein the service providers need only to deploy baseband systems at gateways to start harnessing the satellite capacity, may result in cost-effective and optimum use of resources."*

2.50 Based on the comments of stakeholders and further analysis, the Authority is of the view that in the satellite communication system, it is the baseband equipment, which provides control, visibility, and management of the satellite communication services being rendered to end users, and therefore, baseband equipment may only be installed and operated by the service licensees who will serve the customers. Accordingly, **the Authority recommends that-  
The service licensee/ permission holders, being served by the SESG Licensee, shall install their own baseband equipment at the SESG established by SESG Licensee.**

**F. Amendment in the existing licenses to enable the use of Satellite Earth Station Gateways established by SESG licensees**

2.51 Through the CP dated 15.11.2021, stakeholders' comments were invited on the following question:

*Q6. What amendments will be required to be made in the existing terms and conditions of the relevant service authorizations of Unified License, DTH License/Teleport permission to enable the service licensee to connect to the Satellite Earth Station Gateway established by Earth Station Licensee/Service Licensee, for obtaining and using the satellite transponder bandwidth and satellite-based resources? Do justify your answer.*

2.52 In response to the afore-mentioned question, most of the stakeholders have suggested that there is a need for amending the terms and conditions of the relevant service licenses/ permissions to enable the service licensees to connect

to the SESGs established by SESG licensee, for obtaining and using the satellite transponder bandwidth and satellite-based resources. Their viewpoint may be summarized as below:

- (a) With the introduction of a specific SESG license, the requirement of establishing SESGs in India for the purposes of providing satellite-based communication services should be removed.
- (b) Necessary amendments may be made in the scope of respective service licenses/ authorizations to provide an option to the relevant service licensees to connect to the SESGs established by the SESG licensees for obtaining and using satellite transponder bandwidth and satellite-based resources.
- (c) The existing service licensees which have established their own SESGs under their respective licenses, should be allowed to continue to operate their SESGs and be allowed to share the SESG infrastructure with the other licensees.

2.53 On the other hand, a stakeholder has opined that no amendment is required in the existing licenses.

2.54 While examining the responses of stakeholders, the Authority observed that it would be proper to make amendments in the relevant license/ permission agreements to the effect that for the propose of providing satellite-based communication services, a service licensee may either establish SESG in India or use the SESG established by any SESG licensee at the terms and conditions offered by the SESG licensee. Accordingly, **the Authority recommends that-**

- (a) The mandate to compulsorily establish Land Earth Station Gateway/ Hub Station/ Uplink Earth Station in the relevant licenses/ permissions granted by DoT and MIB shall be removed.**
- (b) The telecommunication and broadcasting service licensees/ permission holders, who are eligible to provide satellite-based communication services in India, shall be allowed to use the**

**SESGs established by the SESG licensees by connecting their baseband equipment with the SESGs at the terms and conditions offered by the SESG licensees.**

**(c) The following amendments shall be made in the licenses/ authorizations:**

<b>License/ Authorization</b>	<b>Existing Clause</b>	<b>Recommended Clause</b>
<b>GMPCS Authorization under Unified License</b>	<b>Clause 2.1:</b> The Licensee may provide, in its area of operation, all types of mobile services including voice and non-voice messages, data services by establishing GMPCS Gateway utilizing any type of network equipment including circuit and/ or packet switches.	<b>Clause 2.1:</b> The Licensee may provide, in its area of operation, all types of mobile services including voice and non-voice messages, data services utilizing any type of network equipment including circuit and/ or packet switches.
	<b>Clause 2.2:</b> The Licensee shall establish Land Earth Station Gateway in India for the purpose of providing Global Mobile Personal Communication by Satellite (GMPCS) Service. GMPCS Service may be provided using	<b>Clause 2.2:</b> For the purpose of providing Global Mobile Personal Communication by Satellite (GMPCS) Service, the Licensee shall either establish Land Earth Station Gateway in India or use the SESG established by

<b>License/ Authorization</b>	<b>Existing Clause</b>	<b>Recommended Clause</b>
	<p>one or more Satellite Systems provided that the Land Earth Station Gateway Switch is established separately in India for each Satellite System.</p>	<p>any SESG Licensee in India. GMPCS Service may be provided using one or more satellite systems provided that the Satellite Earth Station Gateways for the respective satellite systems are located in India.</p>
<p><b>Commercial VSAT CUG Service Authorization under Unified License</b></p>	<p><b>Clause 4.3:</b> The HUB Station shall be operated and maintained by the Licensee subject to the following conditions: ...</p>	<p><b>Clause 4.3:</b> For the purpose of providing Commercial VSAT CUG Service, the Licensee shall either establish HUB station in India or use the SESG established by any SESG Licensee in India. In case the Licensee establishes HUB Station in India, it shall be operated and maintained by the Licensee subject to the following conditions: ...</p>

<b>License/ Authorization</b>	<b>Existing Clause</b>	<b>Recommended Clause</b>
	<p><b>Clause 5.1:</b></p> <p>The Licensee shall roll out the network by installing and commissioning a HUB Station for Star Network configuration or at least two VSAT Terminals in case of Mesh Network configuration within 12 months from the date of frequency allotment by WPC. The Licensee shall approach WPC for frequency allotment within 1 month of date of allocation of transponder bandwidth by Department of Space.</p>	<p><b>Clause 5.1:</b></p> <p>The Licensee shall roll out the network within 12 months from the date of frequency allotment by WPC. For rolling out the network, the Licensee, in case of Mesh Network configuration, shall install and commission at least two VSAT Terminals; in case of Star Network configuration, the Licensee shall either install and commission a HUB Station or use the SESG established by any SESG Licensee in India.</p>
<p><b>License Agreement for provision of VSAT Service Using INSAT System</b></p>	<p><b>Clause 9. Delivery of Service:</b></p> <p>...</p> <p>LICENSEE shall be solely responsible for installation, networking and operation of necessary equipment and systems for provision of</p>	<p><b>Clause 9. Delivery of Service:</b></p> <p>...</p> <p>LICENSEE shall be solely responsible for installation, networking and operation of necessary equipment and systems for provision of</p>

<b>License/ Authorization</b>	<b>Existing Clause</b>	<b>Recommended Clause</b>
	<p><b>SERVICE, treatment of SUBSCRIBER complaints, issue of bills to its subscribers, collection of its component of revenue, attending to claims and damages arising out of his operations.</b></p> <p><b>A minimum of 5 VSATs along with HUB must be commissioned within a period of one year from the effective date of LICENCE.</b></p>	<p><b>SERVICE, treatment of SUBSCRIBER complaints, issue of bills to its subscribers, collection of its component of revenue, attending to claims and damages arising out of his operations.</b></p> <p><b>A minimum of 5 VSATs along with HUB must be commissioned within a period of one year from the effective date of LICENCE. However, the licensee shall be permitted to use the SESG established by any SESG Licensee in India, instead of commissioning a HUB.</b></p>
	<p><b>DEFINITIONS AND INTERPRETATIONS</b></p> <p>...</p>	<p><b>DEFINITIONS AND INTERPRETATIONS</b></p> <p>...</p> <p><b>7. "COMMISSIONING OF SERVICE" means complete installation of</b></p>

<b>License/ Authorization</b>	<b>Existing Clause</b>	<b>Recommended Clause</b>
	<p><b>7. "COMMISSIONING OF SERVICE" means complete installation of HUB equipment and at least 5 VSATs. "</b></p>	<p><b>HUB equipment and at least 5 VSATs. However, the licensee shall be permitted to use the SESG established by any SESG Licensee in India, instead of commissioning a HUB.</b></p>
	<p><b>28.1 The HUB Station shall be operated and maintained by the LICENSEE subject to the following conditions: - The Hub station as well as all the VSATs shall be within the geographical boundary of India.</b></p>	<p><b>28.1 In case the LICENSEE establishes a HUB Station for provision of services, such HUB Station shall be operated and maintained by the LICENSEE subject to the following conditions: - The Hub station as well as all the VSATs shall be within the geographical boundary of India.</b></p>
<p><b>License Agreement for captive VSAT CUG Network</b></p>	<p><b>Section -I (Specific Terms and Conditions) Clause 7.0: The HUB Station shall be operated and maintained by the Licensee subject to the following conditions:-</b></p>	<p><b>Section -I (Specific Terms and Conditions) Clause 7.0: Licensee shall either establish a HUB Station on its own or use the SESG established by any SESG Licensee in India.</b></p>

<b>License/ Authorization</b>	<b>Existing Clause</b>	<b>Recommended Clause</b>
	<p>(i) ... ... (v) The operation of the hub stations will have to be directly under the control of Licensee.</p>	<p>This will be subject to the following conditions:- (i) ... ... (v) In case the LICENSEE establishes a HUB Station for provision of services, the operation of the hub stations will have to be directly under the control of Licensee.</p>
<b>DTH License</b>	<p><b>Clause 13.1:</b> The Licensee shall establish and complete the installation of the uplink earth station in India, including the monitoring facility, etc., and commission the DTH Platform within twelve months from the date of issue of the SACFA clearance by the WPC after obtaining wireless operational license and would submit a report to</p>	<p><b>Clause 13.1:</b> The Licensee shall roll out the network within 12 months from the date of issue of the SACFA clearance by the WPC after obtaining wireless operational license and shall submit a report to the Licensor in this regard. For rolling out the network, the Licensee shall commission its DTH Platform either by establishing an uplink earth station in India</p>

<b>License/ Authorization</b>	<b>Existing Clause</b>	<b>Recommended Clause</b>
	<b>the Licensor in this regard.</b>	<b>including the monitoring facility etc., or by using the SESG established by any SESG Licensee in India.</b>

### **G. Sharing of Satellite Earth Station Gateway infrastructure**

2.55 Through the CP dated 15.11.2021, stakeholders' comments were invited on the following question:

*Q7. Whether the sharing of Earth Station among the licensees (between proposed Earth Station licensee and Service Licensee; and among service licensees) should be permitted? Do provide the details with justification.*

2.56 In response to the afore-mentioned question, many stakeholders have suggested that sharing of SESGs between SESG licensees and service licensees, and among service licensees should be permitted. In support of their viewpoint, they have mentioned that sharing of SESGs will reduce costs, improve operational efficiencies, lessen time taken for service delivery, and thereby it will promote investment in this segment. In case an existing service licensee has already deployed SESG under its license, such SESG should also be permitted to be shared.

2.57 A few stakeholders have mentioned that sharing of SESG amongst various SESG licensees is not technically feasible in case of NGSO systems because SESGs for such satellite systems are specifically purpose-built and therefore, every SESG licensee will have to build its own SESG.

2.58 While evaluating the responses of stakeholders, the Authority took note of the following aspects:

- (a) Through an amendment dated 23.09.2021, DoT has included the following condition under the Part-I, Chapter V (Operating Conditions) of Unified License:

*"33.4 An authorized Gateway hub operated by the satellite provider itself is permitted to be shared with the satellite bandwidth seeker."*

- (b) In this regard, a few stakeholders have stated that this clause needs amendment; the bandwidth seeker, first of all, should be an authorized service provider either authorized by DoT on MIB; secondly, the Earth Station Gateway needs to be operated either by the satellite operator or its designated Indian entity; thirdly, it is not sharing infrastructure with the service provider; the gateway operator provides bandwidth to the service provider. These stakeholders have suggested that the clause 33.4 of Part-I, Chapter V (Operating Conditions) of Unified License may be amended with the following text:

*"An authorized Earth Station/ Hub Operated either by the Satellite Operator or its designated Indian entity is permitted to provide gateway services to an authorized service provider holding an appropriate license authorization."*

- (c) The intent of clause 33.4 of Part-I, Chapter V (Operating Conditions) of Unified License has already been met through the present recommendations. Further, the concern raised by the stakeholder, as mentioned in the above sub-paragraph, has also been addressed through the present recommendations, in which the Authority has already recommended that SESG licensees are permitted to provide satellite-based resources to the eligible service licensees. Therefore, it would be proper to amend the clause 33.4 of Part-I, Chapter V (Operating Conditions) of Unified License with the following text: "The Licensee, shall be allowed to obtain satellite-based resources from SESG licensees by connecting their baseband equipment with the SESGs established by the SESG licensees."

- (d) Under the existing licensing framework, many service licensees have established SESGs for using transponder capacities of satellite systems. Such service licensees may like to continue operating their SESGs under their respective licenses. It would be proper if such service licensees are permitted to provide satellite-based resources to other service licensees using such SESGs.

2.59 Based on the comments of stakeholders and its further analysis on the matter, **the Authority recommends that-**

- (a) **The following amendments shall be made in the Part-I, Chapter V (Operating Conditions) of Unified License:**

<b>License</b>	<b>Existing Clause</b>	<b>Recommended Clause</b>
<b>Unified License</b>	<p><b>Clause 33.4 under Part-I, Chapter V (Operating conditions):</b></p> <p><b>An authorized Gateway hub operated by the satellite provider itself is permitted to be shared with the satellite bandwidth seeker.</b></p>	<p><b>Clause 33.4 under Part-I, Chapter V (Operating conditions):</b></p> <p><b>The Licensee shall be allowed to use the SESG established by any SESG licensee by connecting its baseband equipment with the SESG at the terms and conditions offered by the SESG licensee.</b></p>

- (b) **A new clause in Unified License shall be added to enable the service licensees to provide satellite-based resources to the eligible service licensees/ permission holders as below:**

**“The service licensees who have established SESGs in the country under the respective service licenses, may provide satellite-based resources to the eligible service licensees/ permission holders.”**

## **H. Assignment of spectrum**

2.60 In respect of assignment of spectrum, stakeholders’ comments were invited on the following question through the CP dated 15.11.2021:

*Q8. To whom should the frequency carriers be assigned: the Earth Station Licensee, or the Service Licensee, or whoever establishes the Satellite Earth Station? Do justify your answer.*

2.61 In response to the afore-mentioned question, quite divergent views have been received from stakeholders. While many stakeholders have opined that frequency spectrum should be assigned to service licensees, many other stakeholders have stated that gateway frequency spectrum should be assigned to SESG licensees and terminal frequency spectrum should be assigned to service licensees.

2.62 A summary of the viewpoints expressed by the stakeholders, who have favoured assignment of frequency spectrum to service licensees and not to SESG licensees, is given below:

- (a) Frequency spectrum should be assigned to service licensees, which are accountable entities to meet the license requirements for delivering services.
- (b) SESG licensees will be operating the Earth Station only as a facility for service licensees to connect with appropriate satellite operator for provision of satellite-based communication services. Consequently, there is no need for change in current dispensation on assigning frequency carriers to service licensees based on the space segment acquired from the satellite operator. As all spectrum, be it access spectrum or the feeder

link, essentially pertains to provisioning the service, the spectrum should be assigned to service licensee only. Further, as the feeder link frequencies and look angle will vary for satellite constellations, the spectrum for the same should be allowed to service licensees and not to the SESG licensees. This will provide flexibility to the service licensees to use the services of any gateway provider and thereby avoid any monopolistic behaviour by SESG licensees.

- (c) Assignment of frequency spectrum should continue under existing regime to the service licenses. If any SESG licensee wishes to seek spectrum, it should take the service license/ authorization as per its operation of service.
- (d) Frequency spectrum should not be assigned to the SESG licensees, except in case the SESG licensees also wants to provide telecommunication services, beyond the provision of satellite capacity. All permissions, licenses, monitoring charges, usage charges of the spectrum (WPC or NOCC) should continue to be associated with the service licensees, who use the infrastructure created by SESG licensees.

2.63 A summary of the viewpoints expressed by the stakeholders, who have favoured assignment of gateway frequency spectrum to SESG licensees and terminal side frequency spectrum to service licensees, is given below:

- (a) Service licensees use the capacity provided by the SESG licensees and they are not required to manage the spectrum resource. Moreover, several service licensees may be using the same SESG. To ensure most efficient usage of the spectrum, SESG licensee should be the entity holding the spectrum as well.
- (b) Assignment of gateway frequencies to SESG licensees will enable sharing of SESG by multiple service licensees or satellite operators leading to more effective utilization of resources.

- 2.64 A few stakeholders have suggested that in the case of GSO-Wide beam satellites and GSO-HTS, where the baseband is operated by the service provider, the gateway frequency spectrum should be assigned to service licensees. For GSO-HTS (Multiple Gateways) & NGSO constellations, where the baseband is installed and operated by the GSO-HTS or the NGSO satellite operator, the gateway side of the spectrum should be assigned to the gateway operator and the terminal side of the spectrum should be assigned to the service provider.
- 2.65 While evaluating the comments of stakeholders, the Authority observed that SESG licensees are, essentially, facility providers whose primary function is to set up SESGs (with antenna sub-system and RF terminal) and provide satellite-based resources to service licensees on the terms and conditions offered by the SESGs. In effect, through the gateway facilities, a SESG licensee enables service licensees for provision of satellite communication services to their customers.
- 2.66 The Authority has already recommended that SESG licensees will not be permitted to provide communication services to customers and that the SESG licensees will not be permitted to install baseband equipment (which provides service capability). As already mentioned in the previous sections, the frequency spectrum is processed in the baseband equipment, and the resource allocation (in terms of frequency and timeslot) to individual users takes place in the baseband equipment.
- 2.67 Considering the comments received from stakeholders and further analysis, the Authority is of the view that provisioning of services to customers, and usage of frequency spectrum is tied up with the baseband equipment. Service licensees will deploy baseband equipment. As a corollary, service licensees will have to obtain frequency spectrum from the Government. The service licensees will process this frequency spectrum to deliver services to the customers. Clearly, there is no case for allocation of frequency spectrum to SESG licensees as they

will not provide communication services to end customers, nor will they have to install baseband equipment.

2.68 Based on the comments of stakeholders and its further analysis on the matter, **the Authority recommends that-**

**Frequency spectrum (gateway-side spectrum, as well as user terminal-side spectrum) should be assigned to the eligible service licensees/ permission holders as per the allocation of transponder bandwidth in the concerned satellite system. No frequency spectrum should be assigned to SESG licensees.**

**I. Methodology for the assignment of spectrum and charging mechanism for the spectrum assigned for establishing SESG**

2.69 In respect of methodology for the assignment of spectrum and charging mechanism for the spectrum assigned for establishing Satellite Earth Station Gateway, stakeholders' comments were invited on the following set of questions through the CP dated 15.11.2021:

*Q9. What should be the methodology for the assignment of spectrum for establishing satellite Earth Station? Provide a detailed justification.*

*Q10. What should be the charging mechanism for the spectrum assigned to the satellite Earth Station licensee? Elaborate your answer with justification.*

2.70 Quite divergent viewpoints have been received from the stakeholders in respect of the issues relating to assignment of spectrum for satellite-based communication, its methodology and charging mechanism.

2.71 It may be noted that through these recommendations, the Authority has already recommended that frequency spectrum should be assigned to the eligible service licensees/ permission holders and not to the SESG licensees.

2.72 It is worth mentioning that, earlier, the Authority received DoT's Reference through letter No. L-14006/01/2021-NTG dated 13.09.2021 on the subject- "Seeking TRAI recommendations for the auction of spectrum in the frequency bands identified for International Mobile Telecommunications (IMT)/ 5G", through which DoT had requested, *inter-alia*, to furnish its recommendations on the following:

*"7 (c): provide recommendations on appropriate frequency bands, band plan, block size, applicable reserve price, quantum of spectrum to be auctioned and associated conditions for auction of spectrum for space-based communication services ...."*

2.73 In this regard, TRAI, through letters dated 27.09.2021 and 23.11.2021, sought certain additional information including information in respect of space-based communication services from DoT. In response, DoT, through its letter dated 27.11.2021, conveyed, *inter-alia*, as below:

*"4. With regard to information in respect of space-based communication services sought by TRAI vide letter dated 23.11.2021, the same will take some time. Therefore to avoid delay in 5G roll-out, TRAI may go ahead with consultations/ recommendations on issues excluding space-based communication services referred in DoT's reference dated 13.09.2021 and 23.09.2021. Issues related to space-based communication services may be taken up separately on receipt of information from DoT."*

2.74 Thereafter, DoT, through its letter No. J-19022/01/2022-SAT dated 16.08.2022 provided information with respect to space-based communication services as sought by TRAI through the letters dated 27.09.2021 and 23.11.2021.

2.75 The Authority will take up a separate consultation process on the issue of spectrum for space-based communication services. Based on this consultation process, the Authority will provide its recommendations holistically in respect of

space-based communications including the matters relating to assignment of spectrum for satellite-based communication, its methodology and charging.

## **J. Miscellaneous Issues**

2.76 The Authority, through the CP dated 15.11.2021 requested stakeholders to provide comments on any related matter through the following question:

*Q11. Give your comments on any related matter that is not covered in this Consultation Paper.*

2.77 In response, a variety of inputs have been received from stakeholders. One of the stakeholders has opined that the complete process of regulatory permissions should be made online with specific timelines.

2.78 In the past also, the Authority has recommended to the Government that the process of obtaining license and other approval/ permissions should be made simple, time-bound and through an online portal. The Authority is of the view that the process of obtaining SESG license should also be kept simple and through an online portal. In this regard, **the Authority recommends that-**

- (a) For obtaining the SESG license, the applicant company shall apply online to the Government in the prescribed Application Form.**
- (b) SESG licensee shall submit the requisite details, in the prescribed format, of the satellite system for which the SESG is proposed to be established. The SESG licensee shall also submit complete details of the terms and conditions of the contract/ license agreement entered into with the satellite operator for establishing the SESG in the prescribed format.**
- (c) The process of application for obtaining SESG license as well as the process of its approval should be carried out through online portal in a time bound manner.**

- (d) Timelines for grant of SESG license should be specified and it should not be more than a period of 30 days from the date of filing of application, if the information/documents submitted by the applicant are found fit.**
- (e) For establishing a new SESG subsequently, the SESG Licensee shall apply in the prescribed format and seek permission of DoT for establishment of the new SESG. The permission for additional SESG should also be simple, and through an online portal.**
- (f) Any change in the details (such as name of the company, ownership, address, contact details, etc.) provided by the applicant during obtaining the permission/ license, are required to be intimated through the online portal within 15 days of such change.**
- (g) DoT should come out with the guidelines for grant of License for 'Satellite Earth Station Gateway (SESG) for companies desirous to establish Satellite Earth Station Gateway. These guidelines should be available on the DoT's website. The key elements to be included in the guidelines are given below:**
  - (i) The application process along with the terms and conditions for establishing Satellite Earth Station Gateway, should be clearly defined in the guidelines.**
  - (ii) Timelines for grant of permission/ license should be specified and it should not be more than a period of 30 days from the date of filing of application, if the information/documents submitted by the applicant are found fit.**
  - (iii) The guidelines should clearly specify the technical/ operating/ security/ financial conditions under the SESG license and instructions regarding deployment, operations and monitoring of SESGs.**

- (iv) SACFA clearance requirements and applicable charges should be clearly specified.**
- (v) The Licensor should be having a right to inspect the SESG and its *bonafide* use.**
- (vi) It should be clearly specified that SESG Licensee shall not be permitted to provide any kind of telecommunication service or broadcasting service directly to the consumers, for provision of which, a separate license/ authorization/ permission is required.**
- (vii) For the purpose of verification of the commissioning of the SESG, SESG licensee shall register with the Network Operations Control Centre (NOCC) of DoT, as per the prescribed procedure.**
- (viii) SESG licensee shall provide an online portal wherein the service licensees/ permission holders can make a request for provision of satellite-based resources.**
- (ix) The SESG licensee shall offer satellite-based resources to the telecommunication and broadcasting service licensees/ permission holders in a transparent, fair and non-discriminatory manner. SESG licensee shall declare a Reference Offer on its website.**
- (x) SESG licensee shall share the feasibility status clearly stating acceptance/refusal (with reasons thereof, in case of refusal) of the request, through the online portal, with the service licensee/ permission holder within 30 days.**
- (xi) The telecommunication and broadcasting service licensees/ permission holders, who are eligible to provide satellite-based communication services in India, shall be allowed to use SESGs established by the SESG licensees by connecting baseband equipment at the SESGs.**

**(xii) It should be clearly specified that frequency spectrum will not be assigned to SESG licensees.**

2.79 The following chapter list the recommendations of the Authority on Licensing Framework for Establishing and Operating Satellite Earth Station Gateway.

**CHAPTER III**  
**SUMMARY OF RECOMMENDATIONS**

**3.1. The Authority recommends that -**

**There shall be a separate Satellite Earth Station Gateway (SESG) License under the Section 4 of Indian Telegraph Act. The SESG License will not form part of the Unified License (UL).**

**[Para 2.15]**

**3.2. The Authority recommends that –**

- (a) The Service Area for the SESG License shall be at National Level.**
- (b) Scope of the SESG License shall cover the following:**
  - (i) The SESG Licensee may establish, maintain, and work SESGs anywhere within the territory of India for all types of satellite systems for which the Government has given the permission.**
  - (ii) The SESG Licensee may provide satellite-based resources to any entity, which holds license/ permission granted by Department of Telecommunications (DoT) or Ministry of Information & Broadcasting (MIB) and is permitted to use satellite media for the provision of services under its license/ permission.**
  - (iii) The SESG Licensee may establish SESGs in respect of one or more Government approved satellite systems.**
  - (iv) The following recommendations made earlier vide TRAI's recommendations on "Licensing Framework for Satellite-based connectivity for Low Bit Rate Applications" dated 26.08.2021 are reiterated in respect of the Licensing Framework for Establishment of Satellite Earth Station Gateway:**

***"The Government may publish a list of approved foreign satellites/ satellite systems based on their technical and security evaluation, from whom the service licensees may procure the satellite capacities. The service licensees should be permitted to choose the foreign satellite/ satellite system from the approved list and to lease the satellite capacity directly from the chosen foreign satellite/ satellite system".***

- (v) The SESG Licensee may establish one or more SESGs for each Government approved satellite system. However, the licensee shall obtain separate permission from the Department of Telecommunications (DoT) before installing each SESG.**
- (vi) The SESG Licensee shall not be permitted to provide any kind of telecommunication service or broadcasting service directly to the consumers, for provision of which, a separate license/ authorization/ permission is required from the Government.**
- (vii) The SESG license shall be valid for a period of 20 years from the effective date of the license with a provision of renewal for 10 years.**

**[Para 2.18]**

### **3.3. The Authority recommends that-**

- (a) For establishing SESGs, the SESG Licensee shall utilize any type of equipment and product that meets TEC standards, wherever made mandatory by the Licensor from time to time. In the absence of mandatory TEC standard, the Licensee may utilize only those equipment and products which meet the relevant standards set by international standardization bodies, such as, ITU, ETSI, IEEE, ISO, IEC etc.; or set by international fora, such as 3GPP,**

**3GPP-2, IETF, MEF, WIMAX, Wi-Fi, IPTV, IPv6, etc. as recognized by TEC and subject to modification/ adaptation, if any, as may be prescribed by TEC from time to time.**

- (b) The Licensee shall adhere to the instructions/ guidelines issued by the Government in respect of connecting Trusted Products in its network.**
- (c) The Government shall review the technical standards issued by TEC in respect of gateway stations and user stations to cater to the new technological developments in the satellite segment.**
- (d) The operating conditions of SESG License shall cover, *inter-alia*, the following:**
  - (i) The SESG Licensee shall be responsible for installation, proper upkeep, and maintenance of the Applicable System, to be established under the license.**
  - (ii) The SESG Licensee will obtain SACFA clearance apart from the necessary clearance from Network Operation and Control Center (NOCC) before start of operation of SESG.**
  - (iii) The operation of SESGs will be governed by the instructions and procedure of NOCC.**
  - (iv) The SESG Licensee shall adhere to the guidelines issued by the Government from time to time in respect of coordination amongst licensees for interference mitigation.**
- (e) The security conditions of SESG License shall cover, *inter-alia*, the following:**
  - (i) The SESG Licensee shall meet the instructions/ directions of the Licensor (i.e., DoT) issued from time to time in the interest of national security.**
  - (ii) The SESG Licensee shall be completely and totally responsible for security of their networks.**

- (iii) **The SESG Licensee shall abide by the instructions issued by the Government on the security aspects related to the establishment and operation of SESG near Line of Control (LOC), Line of Actual Control (LAC) and International Border.**

[Para 2.22]

**3.4. The Authority recommends that-**

- (a) **Entry Fee: A non-refundable one-time Entry Fee of Rs. Ten lakhs (Rs. 1,000,000) shall be levied for the grant of SESG License.**
- (b) **License Fee: As the SESG licensees will not provide any service directly to end customers, only a token License Fee of Re. 1 per annum shall be levied on the SESG License.**
- (c) **Bank Guarantees: No Bank Guarantees (Performance Bank Guarantee or Financial Bank Guarantee) shall be obtained from the SESG Licensee.**
- (d) **Processing Fee: In respect of the application for a grant of SESG License, a Processing Fee of Rs. Five thousand shall be levied. Further, a Processing Fee of Rs. Five thousand shall be levied in respect of every application for grant of permission to establish an additional SESG.**
- (e) **Minimum Equity and Minimum Networth: There shall be no requirement of minimum equity and minimum networth in respect of SESG License.**
- (f) **NOCC charges: No NOCC charges shall be applicable in respect of SESG License**

[Para 2.33]

**3.5. The Authority recommends that-**

- (a) **Only the companies registered under the Companies Act, 2013 of India shall be eligible to apply for grant of SESG License.**

- (b) The applicant company shall be any one of the following:**
- (i) A satellite operator operating satellite system(s) approved by the Indian Government; or**
  - (ii) A subsidiary of such satellite operator; or**
  - (iii) An entity having contracts/ license agreements entered into with such satellite operator for provision of satellite-based resources through SESGs.**
- (c) The SESG Licensee shall disclose complete details of terms and conditions of the contracts/ license agreements entered into with its parent/ associate company and/ or satellite system owner/ operator. This will also include the terms and conditions contained in contracts/ licenses issued by the Governments/ Authorities of the country where the parent/ associate company is registered and/ or carries on its business prior to grant of license and before security clearance for establishing and operating Satellite Earth Station Gateways in India.**

**[Para 2.37]**

**3.6. The Authority recommends that-**

- (a) The SESG Licensee shall offer satellite-based resources to the telecommunication and broadcasting service licensees/ permission holders in a transparent, fair and non-discriminatory manner.**
- (b) The SESG Licensee shall declare a Reference Offer on its website in order to ensure that the terms and conditions offered by the SESG Licensee to various telecommunication and broadcasting service licensees/ permission holders are fair, transparent, and non-discriminatory.**
- (c) The SESG Licensee shall provide an online portal wherein the eligible service licensees/ permission holders can make request for provision of satellite-based resources.**

- (d) The SESG Licensee shall provide the feasibility status, through the online portal, to the seeker service licensee/ permission holder clearly stating acceptance or refusal (with reasons thereof, in case of refusal) of the request within 30 days.

[Para 2.41]

**3.7. The Authority recommends that-**

The service licensee/ permission holders, being served by the SESG Licensee, shall install their own baseband equipment at the SESG established by SESG Licensee.

[Para 2.50]

**3.8. The Authority recommends that-**

- (a) The mandate to compulsorily establish Land Earth Station Gateway/ Hub Station/ Uplink Earth Station in the relevant licenses/ permissions granted by DoT and MIB shall be removed.
- (b) The telecommunication and broadcasting service licensees/ permission holders, who are eligible to provide satellite-based communication services in India, shall be allowed to use the SESGs established by the SESG licensees by connecting their baseband equipment with the SESGs at the terms and conditions offered by the SESG licensees.
- (c) The following amendments shall be made in the licenses/ authorizations:

<b>License/ Authorization</b>	<b>Existing Clause</b>	<b>Recommended Clause</b>
<b>GMPCS Authorization under Unified License</b>	<b>Clause 2.1:</b> The Licensee may provide, in its area of operation, all types of	<b>Clause 2.1:</b> The Licensee may provide, in its area of operation, all types of

<b>License/ Authorization</b>	<b>Existing Clause</b>	<b>Recommended Clause</b>
	<p><b>mobile services including voice and non-voice messages, data services by establishing GMPCS Gateway utilizing any type of network equipment including circuit and/ or packet switches.</b></p>	<p><b>mobile services including voice and non-voice messages, data services utilizing any type of network equipment including circuit and/ or packet switches.</b></p>
	<p><b>Clause 2.2:</b> The Licensee shall establish Land Earth Station Gateway in India for the purpose of providing Global Mobile Personal Communication by Satellite (GMPCS) Service. GMPCS Service may be provided using one or more Satellite Systems provided that the Land Earth Station Gateway Switch is established separately in India for each Satellite System.</p>	<p><b>Clause 2.2:</b> For the purpose of providing Global Mobile Personal Communication by Satellite (GMPCS) Service, the Licensee shall either establish Land Earth Station Gateway in India or use the SESG established by any SESG Licensee in India. GMPCS Service may be provided using one or more satellite systems provided that the Satellite Earth Station Gateways for the respective satellite</p>

<b>License/ Authorization</b>	<b>Existing Clause</b>	<b>Recommended Clause</b>
		systems are located in India.
<b>Commercial VSAT CUG Service Authorization under Unified License</b>	<b>Clause 4.3:</b> The HUB Station shall be operated and maintained by the Licensee subject to the following conditions: ...	<b>Clause 4.3:</b> For the purpose of providing Commercial VSAT CUG Service, the Licensee shall either establish HUB station in India or use the SESG established by any SESG Licensee in India. In case the Licensee establishes HUB Station in India, it shall be operated and maintained by the Licensee subject to the following conditions: ...
	<b>Clause 5.1:</b> The Licensee shall roll out the network by installing and commissioning a HUB Station for Star Network configuration or at least two VSAT Terminals in case of Mesh Network configuration within 12 months from the date of	<b>Clause 5.1:</b> The Licensee shall roll out the network within 12 months from the date of frequency allotment by WPC. For rolling out the network, the Licensee, in case of Mesh Network configuration, shall install and

<b>License/ Authorization</b>	<b>Existing Clause</b>	<b>Recommended Clause</b>
	<p>frequency allotment by WPC. The Licensee shall approach WPC for frequency allotment within 1 month of date of allocation of transponder bandwidth by Department of Space.</p>	<p>commission at least two VSAT Terminals; in case of Star Network configuration, the Licensee shall either install and commission a HUB Station or use the SESG established by any SESG Licensee in India.</p>
<p><b>License Agreement for provision of VSAT Service Using INSAT System</b></p>	<p><b>Clause 9. Delivery of Service:</b> ... <b>LICENSEE shall be solely responsible for installation, networking and operation of necessary equipment and systems for provision of SERVICE, treatment of SUBSCRIBER complaints, issue of bills to its subscribers, collection of its component of revenue, attending to claims and damages arising out of his operations.</b> <b>A minimum of 5 VSATs along with HUB must be</b></p>	<p><b>Clause 9. Delivery of Service:</b> ... <b>LICENSEE shall be solely responsible for installation, networking and operation of necessary equipment and systems for provision of SERVICE, treatment of SUBSCRIBER complaints, issue of bills to its subscribers, collection of its component of revenue, attending to claims and damages arising out of his operations.</b></p>

<b>License/ Authorization</b>	<b>Existing Clause</b>	<b>Recommended Clause</b>
	<p>commissioned within a period of one year from the effective date of LICENCE.</p>	<p>A minimum of 5 VSATs along with HUB must be commissioned within a period of one year from the effective date of LICENCE. However, the licensee shall be permitted to use the SESG established by any SESG Licensee in India, instead of commissioning a HUB.</p>
	<p><b>DEFINITIONS AND INTERPRETATIONS</b></p> <p>...</p> <p><b>7. "COMMISSIONING OF SERVICE" means complete installation of HUB equipment and at least 5 VSATs. "</b></p>	<p><b>DEFINITIONS AND INTERPRETATIONS</b></p> <p>...</p> <p><b>7. "COMMISSIONING OF SERVICE" means complete installation of HUB equipment and at least 5 VSATs. However, the licensee shall be permitted to use the SESG established by any SESG Licensee in India, instead of commissioning a HUB.</b></p>

<b>License/ Authorization</b>	<b>Existing Clause</b>	<b>Recommended Clause</b>
	<p><b>28.1 The HUB Station shall be operated and maintained by the LICENSEE subject to the following conditions: -</b></p> <p><b>The Hub station as well as all the VSATs shall be within the geographical boundary of India.</b></p>	<p><b>28.1 In case the LICENSEE establishes a HUB Station for provision of services, such HUB Station shall be operated and maintained by the LICENSEE subject to the following conditions: -</b></p> <p><b>The Hub station as well as all the VSATs shall be within the geographical boundary of India.</b></p>
<p><b>License Agreement for captive VSAT CUG Network</b></p>	<p><b>Section -I (Specific Terms and Conditions) Clause 7.0:</b></p> <p><b>The HUB Station shall be operated and maintained by the Licensee subject to the following conditions:-</b></p> <p><b>(i) ...</b></p> <p><b>...</b></p> <p><b>(v)The operation of the hub stations will have to be directly under the control of Licensee.</b></p>	<p><b>Section -I (Specific Terms and Conditions) Clause 7.0:</b></p> <p><b>Licensee shall either establish a HUB Station on its own or use the SESG established by any SESG Licensee in India. This will be subject to the following conditions:-</b></p> <p><b>(i) ...</b></p> <p><b>...</b></p> <p><b>(v) In case the LICENSEE establishes a HUB Station for provision</b></p>

<b>License/ Authorization</b>	<b>Existing Clause</b>	<b>Recommended Clause</b>
		of services, the operation of the hub stations will have to be directly under the control of Licensee.
<b>DTH License</b>	<p><b>Clause 13.1:</b> The Licensee shall establish and complete the installation of the uplink earth station in India, including the monitoring facility, etc., and commission the DTH Platform within twelve months from the date of issue of the SACFA clearance by the WPC after obtaining wireless operational license and would submit a report to the Licensor in this regard.</p>	<p><b>Clause 13.1:</b> The Licensee shall roll out the network within 12 months from the date of issue of the SACFA clearance by the WPC after obtaining wireless operational license and shall submit a report to the Licensor in this regard. For rolling out the network, the Licensee shall commission its DTH Platform either by establishing an uplink earth station in India including the monitoring facility etc., or by using the SESG established by any SESG Licensee in India.</p>

[Para 2.54]

**3.9. The Authority recommends that-**

**(a) The following amendments shall be made in the Part-I, Chapter V (Operating Conditions) of Unified License:**

License	Existing Clause	Recommended Clause
Unified License	<p>Clause 33.4 under Part-I, Chapter V (Operating conditions):</p> <p>An authorized Gateway hub operated by the satellite provider itself is permitted to be shared with the satellite bandwidth seeker.</p>	<p>Clause 33.4 under Part-I, Chapter V (Operating conditions):</p> <p>The Licensee shall be allowed to use the SESG established by any SESG licensee by connecting its baseband equipment with the SESG at the terms and conditions offered by the SESG licensee.</p>

**(b) A new clause in Unified License shall be added to enable the service licensees to provide satellite-based resources to the eligible service licensees/ permission holders as below:**

**“The service licensees who have established SESGs in the country under the respective service licenses, may provide satellite-based resources to the eligible service licensees/ permission holders.”**

**[Para 2.59]**

**3.10. The Authority recommends that-**

**Frequency spectrum (gateway-side spectrum, as well as user terminal-side spectrum) should be assigned to the eligible service licensees/ permission holders as per the allocation of transponder bandwidth in**

**the concerned satellite system. No frequency spectrum should be assigned to SESG licensees.**

**[Para 2.68]**

**3.11. The Authority recommends that-**

- (a) For obtaining the SESG license, the applicant company shall apply online to the Government in the prescribed Application Form.**
- (b) SESG licensee shall submit the requisite details, in the prescribed format, of the satellite system for which the SESG is proposed to be established. The SESG licensee shall also submit complete details of the terms and conditions of the contract/ license agreement entered into with the satellite operator for establishing the SESG in the prescribed format.**
- (c) The process of application for obtaining SESG license as well as the process of its approval should be carried out through online portal in a time bound manner.**
- (d) Timelines for grant of SESG license should be specified and it should not be more than a period of 30 days from the date of filing of application, if the information/documents submitted by the applicant are found fit.**
- (e) For establishing a new SESG subsequently, the SESG Licensee shall apply in the prescribed format and seek permission of DoT for establishment of the new SESG. The permission for additional SESG should also be simple, and through an online portal.**
- (f) Any change in the details (such as name of the company, ownership, address, contact details, etc.) provided by the applicant during obtaining the permission/ license, are required to be intimated through the online portal within 15 days of such change.**

- (g) DoT should come out with the guidelines for grant of License for 'Satellite Earth Station Gateway (SESG) for companies desirous to establish Satellite Earth Station Gateway. These guidelines should be available on the DoT's website. The key elements to be included in the guidelines are given below:**
- (i) The application process along with the terms and conditions for establishing Satellite Earth Station Gateway, should be clearly defined in the guidelines.**
  - (ii) Timelines for grant of permission/ license should be specified and it should not be more than a period of 30 days from the date of filing of application, if the information/documents submitted by the applicant are found fit.**
  - (iii) The guidelines should clearly specify the technical/ operating/ security/ financial conditions under the SESG license and instructions regarding deployment, operations and monitoring of SESGs.**
  - (iv) SACFA clearance requirements and applicable charges should be clearly specified.**
  - (v) The Licensor should be having a right to inspect the SESG and its *bonafide* use.**
  - (vi) It should be clearly specified that SESG Licensee shall not be permitted to provide any kind of telecommunication service or broadcasting service directly to the consumers, for provision of which, a separate license/ authorization/ permission is required.**
  - (vii) For the purpose of verification of the commissioning of the SESG, SESG licensee shall register with the Network Operations Control Centre (NOCC) of DoT, as per the prescribed procedure.**

- (viii) SESG licensee shall provide an online portal wherein the service licensees/ permission holders can make a request for provision of satellite-based resources.**
- (ix) The SESG licensee shall offer satellite-based resources to the telecommunication and broadcasting service licensees/ permission holders in a transparent, fair and non-discriminatory manner. SESG licensee shall declare a Reference Offer on its website.**
- (x) SESG licensee shall share the feasibility status clearly stating acceptance/refusal (with reasons thereof, in case of refusal) of the request, through the online portal, with the service licensee/ permission holder within 30 days.**
- (xi) The telecommunication and broadcasting service licensees/ permission holders, who are eligible to provide satellite-based communication services in India, shall be allowed to use SESGs established by the SESG licensees by connecting baseband equipment at the SESGs.**
- (xii) It should be clearly specified that frequency spectrum will not be assigned to SESG licensees.**

**[Para 2.78]**



Government of India / भारत सरकार  
Ministry of Communications / संचार मंत्रालय  
Department of Telecommunications / दूरसंचार विभाग  
Satellite Division, DoT HQ  
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No. 824-201/TRAI-GWL/2021-SAT

Date: 10.09.2021

To

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

Sub: TRAI recommendations on licensing framework on establishment of satellite gateway

With the advancement in the satellite technologies, new generation satellites like HTS and LEO/MEO satellites are currently getting operational. The infrastructure and architecture of these new generation system(s) are quite different from conventional satellites. While the conventional satellites operate with a single wide beam spanning a large area (say entire Indian territory), the satellite technologies like LEO and MEO operate through narrow beams with typical span of beam approximately 250 kms. This results into multiple narrow beams covering an area as compared to a single wide beam of conventional satellites. Consequentially, there may be a need to set up multiple gateways to control large number of beams.

2. The current licensing framework mandates a licensee to establish its own gateway for rendering any kind of satellite based communication services. At present, the Unified Licensing framework is existent and provides authorization for following satellite based services: i) VSAT CUG, ii) GMPCS and iii) MSS-R. The specific clauses relating to establishment of gateways are as follows:

(i) VSAT CUG license: "4.3 The HUB Station shall be operated and maintained by the Licensee....."

(ii) GMPCS license: "2.2 The Licensee shall establish Land Earth Station Gateway in India for the purpose of providing Global Mobile Personal Communication by Satellite (GMPCS) Service. GMPCS Service may be provided using one or more Satellite

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*Systems provided that the Land Earth Station Gateway Switch is established separately in India for each Satellite System."*

(iii) MSS-R license: There is no specific clause.

As per license conditions stipulated above, the service provider licensee is required to establish gateway itself for rendering satellite based communication services. There are no provisions in the existing licenses of VSAT CUG, GMPCS and MSS-R regarding usage of gateway by service provider established by a satellite constellation operator.

3. Given the current regulatory/licensing framework, a TSP may have to establish a gateway in compliance to the Unified License terms and conditions, even to utilize small chunk of bandwidth to render service. In case the TSP requires to use satellite bandwidth in multiple beam areas, then it is mandated to establish more gateways to utilize the bandwidth in different beam areas. Also, with a number of TSPs in operation, this may lead to multiplicity in set up of gateways. The advantage of higher bandwidth in HTS/LEO/MEO satellite will, however, require establishing a large number of gateways by each individual licensee to whom the bandwidth is allocated by the satellite constellation operator. On the other hand, sharing of the gateway established by the satellite constellation operator among different TSPs, wherein the service providers need only to deploy baseband systems at gateways to start harnessing the satellite capacity, may result in cost-effective and optimum use of resources.
4. TRAI in its recommendation dated 28.07.2020 on "Provision of Cellular Backhaul Connectivity via Satellite through VSAT under Commercial VSAT CUG Service Authorization" had, inter-alia, stated as follows:

*"3.6 (b) As the Gateway hub for HTS satellites will be managed and operated by the satellite provider itself and the satellite bandwidth seeker will have to share the common gateway functionality of the satellite provider, suitable enabling clause may be incorporated in the license to permit such shared use of Gateway hub."*

However, licensing framework for establishing gateways by the satellite constellation operators has not been covered in the said recommendations.

5. The current licensing conditions may pose a limitation to establish its own gateway for rendering satellite services thereby resulting in higher CAPEX and OPEX. Given the circumstances, it may be desirable to explore the possibility of a licensing framework for establishing gateway as an independent facility, set up either by a satellite constellation operator or any other entity. Under the new framework, the

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licensee who establish gateway should be able to deliver its services to other licensees, which in turn would render services to end users. Thus, the gateway establishing licensee may be thought of as a network operator which owns or controls the infrastructure necessary to deliver services to other licensed service operators providing services to end users.

6. In view of the above, TRAI is requested to give its recommendations in terms of clause 11(1)(a) of TRAI Act 1997, as amended from time to time, on the licensing framework for satellite gateway(s) operations encompassing aspects like license fee, entry fee, bank guarantee, NOCC charges, and any other issue(s) which may be relevant for the LEO/MEO/HTS systems.

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10/09/2021

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