भारतीय दूरसंचार विनियामक प्राधिकरण

Telecom Regulatory Authority of India

Recommendations on the Framework for Satellite Communication Network Provider Authorisation, and Assignment of Spectrum to Satellite Communication Network Providers

New Delhi, India

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Tower F, NBCC World Trade Centre, Nauroji Nagar, New Delhi-110029

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CHAPTER I: INTRODUCTION AND BACKGROUND

A. Evolution of Satellite Communications

1.1 In 1895, Konstantin Tsiolkovsky introduced the concept of artificial satellites in his work 'Dreams of the Earth and Sky', where he envisioned rotating space stations and artificial gravity.[1] These ideas laid the theoretical foundation for orbital stations in the sky. Later, in 1929, Herman Potočnik—writing under the pseudonym Hermann Noordung—published an article named 'The Problem of Space Travel: The Rocket Motor', in which, he presented a detailed engineering design of a space station in geostationary orbit.[2] In 1945, Arthur C. Clarke published his seminal paper 'Extra-Terrestrial Relays: Can Rocket Stations Give Worldwide Radio Coverage?' proposing three geostationary satellites to provide continuous global radio and television coverage, establishing the foundation of modern satellite communications.[3]

1.2 Today, artificial telecommunications satellites are an integral part of global communications. However, before the advent of constellations of artificial satellites, the U.S. Navy explored the use of the Moon as a natural satellite to establish a secure and reliable long-distance wireless communication system.[4]

1.3 On July 24, 1954, James Trexler sat in a room at the Naval Research Center in Maryland talking to himself. To the outside observer, the

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[1] https://russianspaceweb.com/tsiolkovsky_kaluga.html. Konstantin Tsiolkovsky is recognized as one of the founding fathers of astronautics.

[2] https://www.nasa.gov/wp-content/uploads/2023/03/sp-4026.pdf

[3] https://spacelaw.uniandes.edu.co/images/d_arthur_clarke.pdf

[4] July 24, 1954: Operation Moon Bounce | American Physical Society

situation would certainly look strange. But Trexler was speaking into a microphone connected to a large antenna. This antenna was directed toward the Moon and when Trexler spoke into microphone, his words returned to him two and a half seconds later after traveling a 500,000 mile circuit to the Moon and back.

1.4 With these experiments, the US military hoped to turn the Moon into a natural communications satellite. After a series of successful tests, in 1959, the US military used the Moon to establish a communication link between Hawaii and Washington DC.

1.5 By the 1960s, many communication networks using artificial satellites started getting built in many parts of the world. Yet these (artificial) satellite communication networks were built using lessons learned from the use of Moon for establishing communication systems.

1.6 The launch of Sputnik 1 in 1957 marked the beginning of the Space Age and demonstrated the feasibility of artificial satellites.[5] This was followed by Telstar 1 in 1962, the first active communications satellite, which enabled live transatlantic television broadcasts and telephone communications. In 1965, Intelsat I (Early Bird) became the world's first commercial communications satellite, ushering in the era of global satellite telecommunications.[6]

1.7 During the 1970s and 1980s, satellite communications expanded beyond fixed international links to support maritime, aeronautical, and broadcasting services. The establishment of Inmarsat enabled global mobile satellite communications, while high-power Geo-stationary Earth Orbit (GEO) satellites facilitated the rapid growth of Direct-to-Home

[5] https://www.nasa.gov/history/dawn-of-the-space-age/

[6] Communications Satellites: Making the Global Village Possible - NASA

(DTH) television services, significantly expanding the commercial use of satellite networks.

1.8 The 1990s and 2000s witnessed significant advances in satellite technology. Low Earth Orbit (LEO) constellations enabled global mobile connectivity with lower latency, while High Throughput Satellites (HTS) replaced wide single-beam coverage with dozens/ hundreds of narrow spot beams.[7] This allowed frequency reuse across regions, increasing total bandwidth capacity by orders of magnitude and driving down the cost-per-megabit for broadband internet.

1.9 Since 2019, the deployment of LEO broadband satellite constellations using Ka and Ku bands has transformed satellite broadband to provide global Internet connectivity, low-latency, high-speed internet to remote and underserved regions.[8] In 2022, the integration of satellites into 5G Non-Terrestrial Networks (NTN) under 3GPP Release 17 has enabled the development of Direct-to-Device (D2D) services, allowing ordinary smartphones to communicate directly with satellites and extending mobile connectivity beyond the reach of terrestrial networks.[9]

1.10 The development of satellite communication has been marked by a series of technological advancements that have progressively overcome the geographical limitations of terrestrial communication networks. Over the past century, satellite communication has evolved from a theoretical concept into an indispensable component of the global telecommunications ecosystem, enabling voice, broadcasting, broadband internet, disaster management, navigation, and emerging direct-to-device (D2D) services. Each phase of this evolution has been

[7] https://www.itu.int/dms_pub/itu-r/opb/rep/R-REP-M.2460-2019-PDF-E.pdf

[8] https://docs.fcc.gov/public/attachments/DOC-349998A1.pdf

[9] https://www.3gpp.org/specifications-technologies/releases/release-17

driven by advances in space technology, radio communications, and network architectures, expanding the scope, capacity, and accessibility of satellite-enabled services.

B. Satellite Communication Network

1.11 A satellite communication network is a system that uses satellites to relay signals between different points on Earth, enabling long-distance communication without relying on terrestrial infrastructure like cables or towers. Satellite communication networks offer a unique ability to reach remote and inaccessible areas – including regions of strategic importance or socio-economic significance, where terrestrial mobile coverage or fibre connectivity may not be techno-commercially feasible. In the Indian context, with its vast geography and varied terrain, satellite communication systems are especially well-suited to extend connectivity into underserved areas.

1.12 A typical satellite communication network consists of space segment, control segment and ground segment as outlined below:

(a) Space segment – One or more satellites in orbit.

(b) Control segment – Ground-based facilities responsible for satellite command & control, payload monitoring and traffic/ resource management onboard the satellite.

(c) Ground segment – Earth stations through which traffic is sent and received. These earth stations are of three functional types:

(i) User stations: Earth stations providing direct access to the space segment - for example handsets, very small aperture terminals (VSATs).

(ii) Interface stations (gateways): Earth stations that interface the satellite network with terrestrial networks, acting as gateways between the space and terrestrial domains – often referred to as gateway earth stations.

(iii) Service stations (hubs): Earth stations that collect or distribute information from/ to user earth stations via the space segment, often acting as central nodes in the network.

1.13 The following figure shows three key elements of a typical satellite communication network (viz. satellite, gateway earth station, and user earth station).

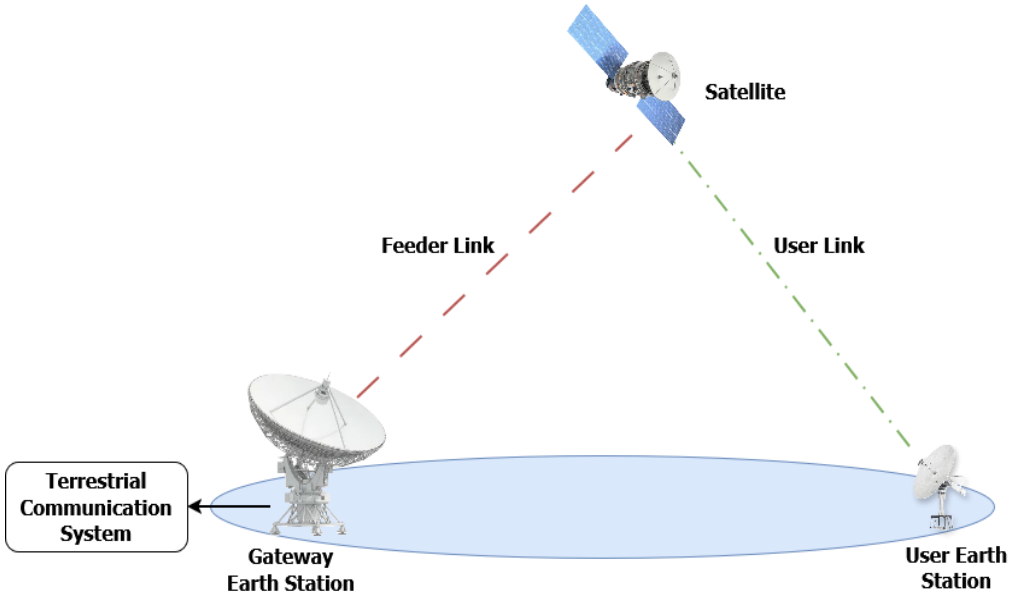


Figure 1.1: Key Elements of Satellite Communication Network

1.14 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). MEO and LEO satellites collectively are also called Non-Geo Stationary Orbit (NGSO) satellites. GSO satellites are at about 36,000 km above the Earth, a place where they appear fixed in the sky when observed from the ground. They are commonly used for communication, weather monitoring, Direct-To-Home (DTH) television broadcasting, and internet provisioning. NGSO satellites at MEO altitudes are between 8,000 and 20,000 km above the Earth and LEO altitudes are between 400 to 2,000 km above the Earth. Since NGSO satellites move across the sky during their orbit around the Earth, NGSO operators deploy a fleet

of satellites, generally called 'constellations', to provide continuous service from these altitudes. NGSO constellations intend to cover the globe providing high-bandwidth connectivity and processing high volumes of data with minimal delay. The following figure depicts the orbital altitudes and coverage areas of GSO and NGSO satellites.

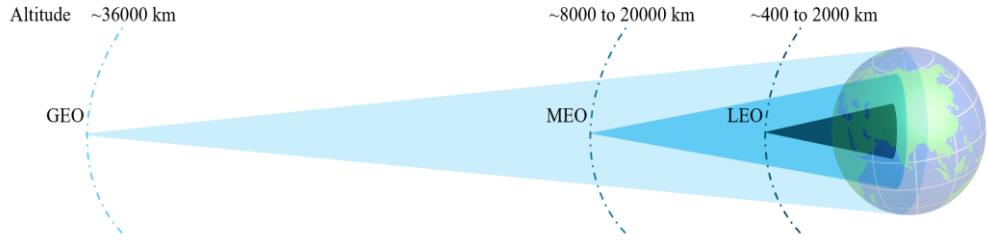


Figure 1.2: Schematic diagram of orbital altitudes and coverage areas of satellites

1.15 The ITU publication- 'The Last-mile Internet Connectivity Solutions Guide Sustainable connectivity options for unconnected sites 2020' provides a comparison of GEO, MEO and LEO characteristics. Some of the characteristics are given in the following table:

Table 1.1: Characteristics of GEO, MEO and LEO Satellites[10]

Satellite category	**Altitude**	**Orbital period**	**Latency (round-trip)**	**Number of satellites to span globe**
GEO	35,786 km	24 hours	477 ms	3-4
MEO	8,000 to 20,000 km	127 minutes to 24 hours	27 to 477 ms	5 to 30
LEO	400 to 2,000 km	88 minutes to 127 minutes	2 to 27 ms	100s to 1000s

[10] Source: https://www.itu.int/dms_pub/itu-d/opb/tnd/D-TND-01-2020-PDF-E.pdf

1.16 Amongst satellite-based communication services, Fixed-Satellite Service (FSS) and Mobile-Satellite Service (MSS) are the most prominent services. ITU's Radio Regulations 2024[11] provide the following definitions of the terms 'FSS' and 'MSS':

"1.21 fixed-satellite service: A radiocommunication service between earth stations at given positions, when one or more satellites are used; the given position may be a specified fixed point or any fixed point within specified areas; in some cases this service includes satellite-to-satellite links, which may also be operated in the inter-satellite service; the fixed-satellite service may also include feeder links for other space radiocommunication services."

"1.25 mobile-satellite service: A radiocommunication service: between mobile earth stations and one or more space stations, or between space stations used by this service; or between mobile earth stations by means of one or more space stations. This service may also include feeder links necessary for its operation."

1.17 FSS and MSS rely on carefully allocated frequency bands, each chosen to balance coverage, capacity, and resilience against atmospheric effects. Lower frequency bands[12] such as L-band (1-2 GHz) and S-band (2- 4 GHz) are often favoured for providing MSS due to their better propagation characteristics. The higher frequency bands[13] such as C-band (4-8 GHz), Ku-band (10-15 GHz) and Ka-band (17-31 GHz) are often used for providing FSS; the higher bands enable high-capacity fixed services but face challenges like rain fade.

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[11] Source: https://www.itu.int/hub/publication/r-reg-rr-2024/

[12] Lower frequencies suffer less from atmospheric attenuation (rain fade, clouds, etc.), making them more reliable for mobile platforms.

[13] Higher frequencies support wider bandwidths, enabling faster data rates.

C. Context for the Satellite Communication Network Provider Authorisation

1.18 Prior to the enactment of the Telecommunications Act, 2023[14], the Central Government administered the licensing of telegraph[15], broadly through the Indian Telegraph Act, 1885, and the Indian Wireless Telegraphy Act, 1933.[16] The Indian Telegraph Act, 1885 was the main legislation dealing with the establishment, maintenance and working of telegraphs in the country. It provided the Central Government an exclusive privilege of establishing, maintaining and working telegraphs in India, and a power to 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. The Wireless Telegraphy Act, 1933 regulated the possession of wireless telegraphy apparatus in the country. Section 3 of the Wireless Telegraphy Act, 1933 prohibited the possession of wireless telegraphy apparatus without licence.

1.19 At the time of independence, all foreign telecommunications companies were nationalized to create the Posts and Telegraphs (P&T) Department, a state-run monopoly.[17] In 1984, the P&T Department was bifurcated into two separate Departments, viz., the Department of Posts (DoP) and

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[14] https://egazette.gov.in/WriteReadData/2023/250880.pdf

[15] Section 3 (1AA) of the Indian Telegraph Act, 1885 provides that *"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.*

[16] Apart from these two statutes namely, the Indian Telegraph Act, 1885 and the Indian Wireless Telegraphy Act, 1933, Parliament enacted the Telecom Regulatory Authority of India Act, 1997 (as amended). Through this Act, TRAI and Telecom Disputes Settlement and Appellate Tribunal (TDSAT) have been established - TRAI for regulating the telecommunication services, and TDSAT for adjudicating disputes and dispose of appeals.

[17] Source: https://scholarworks.lib.csusb.edu/cgi/viewcontent.cgi?article=1072&context=ciima

the Department of Telecommunications (DoT).[18] From 1947 to early 1990s, the telecommunication sector in the Independent India remained a state monopoly. The licensing of telecommunications in India began in 1994 when DoT granted licenses to private entities for cellular mobile telephone service (CMTS) in the four metro areas. Since then, a host of telecommunication services have been brought under licensing regime in the country.

1.20 In 2013, DoT introduced a new licensing regime viz. Unified License (UL) regime for telecommunication services. Eligible entities could obtain appropriate authorizations[19] under Unified License from DoT and provide a range of telecommunication services to their customers. Apart from the Unified License, DoT also granted Unified License for VNO [UL (VNO)] to eligible entities.[20] For the services which were not covered under UL or UL (VNO), DoT continued granting standalone licenses/ authorizations/ registrations/ NOC[21] etc. The Government prescribed different sets of terms and conditions for various authorizations under UL and UL (VNO) and standalone licenses/ authorizations/ registrations/ NOC etc. As far as satellite-based telecommunication services are concerned, such services were administered mainly through the following licenses and authorizations:

(a) Commercial Very Small Aperture Terminal (VSAT) Closed User Group (CUG) Service License

(b) Captive VSAT CUG Service License

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[18] Source: https://www.indiapost.gov.in/VAS/DOP_PDFFiles/Annual_Report_1984-85.pdf

[19] Authorizations under Unified License: Access Service, Internet Service, NLD Service, ILD Service, GMPCS Service, PMRTS Service, VSAT CUG Service, Audio Conferencing/ Audiotext/ Voice Mail Service, and Machine to Machine Service

[20] Authorizations under Unified License for VNO: Access Service, Internet Service, NLD Service, ILD Service, GMPCS Service, PMRTS Service, VSAT CUG Service, Resale of IPLC Service, Access Service Category B, and Machine to Machine Service

[21] Standalone licenses/ authorizations/ registrations/ NOC: Mobile Number Portability (MNP) service license, CMRTS License, CNPN License, In-flight and Maritime Connectivity (IFMC) service authorization, M2M Service Provider registration, WPAN/ WLAN Connectivity Providers registration, IP-I Registration, PM-WANI service registration, No objection certificate (NOC) for sale/ rent of International Roaming SIM Cards, and other captive authorizations.

(c) Global Mobile Personal Communication by Satellite (GMPCS) Service License

(d) License for Provision and Operation of Satellite Based Services Using Gateway Installed in India Under 'Sui-Generis' Category

(e) Commercial VSAT CUG Service under UL and UL (VNO)

(f) GMPCS Service Authorization under UL and UL (VNO)

1.21 In December 2023, the Indian Parliament enacted 'the Telecommunications Act, 2023'[22]. The Section 3 of the Telecommunications Act, 2023 grants the power of authorisation to the Central Government. The Section 3 is reproduced below:

"3(1) Any person intending to —

(a) provide telecommunication services;

(b) establish, operate, maintain or expand telecommunication network; or

(c) possess radio equipment,

shall obtain an authorisation from the Central Government, subject to such terms and conditions, including fees or charges, as may be prescribed.

(2) The Central Government may while making rules under sub-section (1) provide for different terms and conditions of authorisation for different types of telecommunication services, telecommunication network or radio equipment.

(3) The Central Government, if it determines that it is necessary in the public interest so to do, may provide exemption from the requirement of authorisation under sub-section (1), in such manner as may be prescribed.

(4) Any exemption granted prior to the appointed day under the Indian Telegraph Act, 1885 or the Indian Wireless Telegraphy Act, 1933 shall

[22] Source: https://egazette.gov.in/WriteReadData/2023/250880.pdf

continue under this Act, unless otherwise notified by the Central Government.

(5) Any authorised entity may undertake any merger, demerger or acquisition, or other forms of restructuring, subject to any law for the time being in force and any authorised entity that emerges pursuant to such process, shall comply with the terms and conditions, including fees and charges, applicable to the original authorised entity, and such other terms and conditions, as may be prescribed.

(6) A licence, registration, permission, by whatever name called, granted prior to the appointed day under the Indian Telegraph Act, 1885 or the Indian Wireless Telegraphy Act, 1933, in respect of provision of telecommunication services or telecommunication network—

(a) where a definite validity period is given, shall be entitled to continue to operate under the terms and conditions and for the duration as specified under such licence or registration or permission, or to migrate to such terms and conditions of the relevant authorisation, as may be prescribed; or

(b) where a definite validity period is not given, shall be entitled to continue to operate on the terms and conditions of such licence or registration or permission for a period of five years from the appointed day, or to migrate to such terms and conditions of the relevant authorisation, as may be prescribed.

(7) Any authorised entity which provides such telecommunication services as may be notified by the Central Government, shall identify the person to whom it provides telecommunication services through use of any verifiable biometric based identification as may be prescribed.

(8) The Central Government may, subject to such terms and conditions, including fees or charges as may be prescribed, allot telecommunication identifiers for use by authorised entities.

(9) The Central Government may allow use of telecommunication identifiers allotted by international bodies which are recognised by the Central Government from time to time."

1.22 After the enactment of the Telecommunications Act, 2023, DoT sent two separate references under Section 11(1)(a) of the TRAI Act, 1997 for seeking recommendations of TRAI with respect to authorisations under the Telecommunications Act, 2023, as outlined below:

(a) Reference dated 21.06.2024: Through the reference dated 21.06.2024, DoT requested TRAI to provide recommendations on terms and conditions for authorisation to provide telecommunication services under Section 3(1)(a) of the Telecommunications Act, 2023.

(b) Reference dated 26.07.2024: Through the reference dated 26.07.2024, DoT requested TRAI to provide recommendations on terms and conditions for authorisation to establish, operate, maintain or expand telecommunication network under Section 3(1)(b) of the Telecommunications Act, 2023.

1.23 The relevant developments with respect to the afore-mentioned references are outlined in the following sub-sections.

(1) Developments w.r.t. the DoT's reference dated 21.06.2024

1.24 With respect to the DoT's reference dated 21.06.2024, TRAI issued a consultation paper dated 11.07.2024 for soliciting comments from stakeholders. After a comprehensive consultation with stakeholders, TRAI, on 18.09.2024, sent its recommendations on 'the Framework for Service Authorisations to be Granted Under the Telecommunications Act, 2023'[23]. Through these recommendations, TRAI provided recommendations on a range of service authorisations including 'Satellite-based Telecommunication Service Authorisation'.

[23] TRAI's recommendations dated 18.09.2024 on 'the Framework for Service Authorisations to be Granted Under the Telecommunications Act, 2023' may be accessed at the following URL: https://trai.gov.in/sites/default/files/2024-11/Recommendation_18092024.pdf

1.25 Subsequently, DoT, through its back-reference dated 14.01.2025 to the TRAI's recommendations dated 18.09.2024, informed, *inter alia*, that *"[t]o enable technology neutral and future ready service authorisation regime, the Government is of the view that instead of having a separate authorisation for satellite-based telecommunication services, the use of satellite technology/ media may be permitted to each type of authorised entity under the Main Service Authorisations[24] category."*

1.26 TRAI, in its response dated 28.02.2025[25] to the DoT's back-reference dated 14.01.2025, informed that *"[c]onsidering the specialized nature of the satellite-based telecommunication services, to attract business entities to enter the relatively underdeveloped satellite-based telecommunication service segment in the country, and to promote and preserve the business focus of such entities, the Authority recommended a separate service authorisation for satellite-based telecommunication service in the country with reasonably light financial obligations including low entry fees."* Based on its analysis, TRAI conveyed to DoT that it "*does not agree with the DoT's prima facie view regarding removal of separate service authorisations for Satellite-based Telecommunication Service …."*[26]

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[24] Through the recommendations on 'the Framework for Service Authorisations to be Granted Under the Telecommunications Act, 2023', TRAI recommended, inter alia, that the service authorisations to be granted under Section 3(1)(a) of the Telecommunications Act, 2023 should be organized in the following manner:
(a) Main service authorisations,
(b) Miscellaneous service authorisations,
(c) Captive service authorisations.
Under the Main Service Authorisations, TRAI proposed the following service authorisations:
Unified Service Authorisation, Access Service Authorisation, Internet Service Authorisation, Long Distance Service Authorisation, Satellite-Based Telecommunication Service Authorisation, and M2M WAN service authorisation.

[25] Response of TRAI to the Back-Reference dated 14.01.2025 on the Recommendations of TRAI on the 'Framework for Service Authorisations to be Granted Under the Telecommunications Act, 2023' may be accessed at the following URL: https://trai.gov.in/sites/default/files/2025-02/Recommendation_28022025.pdf

[26] Thereafter, DoT, on 05.09.2025, issued a draft of the Telecommunication (Authorisation for Provision of Main Telecommunication Services) Rules, 2025 for public consultation. In the draft rules dated 05.09.2025, DoT did not propose to include the Satellite-based Telecommunication Service Authorisation under the main telecommunication services authorisation[26]. Instead, DoT proposed to include a chapter on "Specific Conditions for Provision of Telecommunication Services Using Satellite System"[26], the provisions of which would become applicable to any authorised entity providing telecommunication service using satellite networks including non-terrestrial networks and GMPCS networks.

(2) Developments w.r.t. the DoT's reference dated 26.07.2024

1.27 Through its reference dated 26.07.2024, DoT requested TRAI to provide recommendations on terms and conditions for the authorisation to establish, operate, maintain, or expand telecommunication network under Section 3(1)(b) of the Telecommunications Act, 2023. DoT suggested that while formulating recommendations, TRAI may also consider the recommendations of TRAI, under consideration of the Government, like recommendations on 'Licensing framework for establishing and operating Satellite Earth Station Gateway (SESG)' dated 29.11.2022[27] which primarily relates to establishing telecommunication networks under Section 3(1)(b) of the Telecommunications Act 2023, and would provide telecommunication network as a service to authorised entities under Section 3(1)(a) of the Telecommunications Act 2023 only.

1.28 Subsequently, through a supplementary reference dated 17.10.2024 (**Annexure 1.1**), DoT conveyed to TRAI that "*keeping in view the increasing use of NTN (Non terrestrial networks) including satellite communication networks in provisioning of FSS (Fixed Satellite Services) including VSAT services and MSS (Mobile Satellite Services), TRAI may consider an authorisation for satellite communication network under Section 3(1)(b) of the Telecommunications Act, 2023 along with the following:*

a. Terms and conditions relating to such authorisation

After public consultation, DoT, on 23.06.2026, issued Telecommunications (Authorisation for Provision of Principal Telecommunication Services) Rules, 2026 which does not include the Satellite-based Telecommunication Service Authorisation under the principal telecommunication services authorisation. These rules define five categories of principal telecommunication services viz. (a) unified service authorisation; (b) access service authorisation; (c) wireline access service authorisation; (d) internet service authorisation; and (e) long distance service authorisation. Authorised entities holding any category of principal telecommunication service can provide services as per their scope through wireline or wireless terrestrial networks, satellite networks or submarine networks.

[27] TRAI's recommendations on the 'Licensing framework for establishing and operating Satellite Earth Station Gateway (SESG)' dated 29.11.2022 may be accessed at the following URL: https://trai.gov.in/sites/default/files/2024-09/Recommendation_29112022.pdf

b. Provision of assignment of spectrum for both feeder link as well as user link under such authorisation

c. Service area of such authorisation."

1.29 In this regard, TRAI issued a consultation paper dated 22.10.2024 for soliciting comments from stakeholders. After a comprehensive consultation with stakeholders, TRAI provided its recommendations dated 17.02.2025[28] on 'the Terms and Conditions of Network Authorisations to be Granted Under the Telecommunications Act, 2023'. The relevant points of the recommendations dated 17.02.2025 are given below:

(a) TRAI recommended that the Central Government should introduce Satellite Earth Station Gateway (SESG) Provider Authorisation[29] under Section 3(1)(b) of the Telecommunications Act, 2023.

(b) TRAI expressed a view that "*at the principle level, authorised spectrum should be granted to service authorised entities only and not to network authorised entities."*

(c) About the satellite communication network authorisation suggested by DoT, TRAI conducted a detailed analysis and expressed its considered opinion that "*the permissible options for the delivery of satellite-based telecommunication services have been enabled*

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[28] Recommendations dated 17.02.2025: Recommendation of TRAI on the 'Terms and Conditions of Network Authorisations to be Granted Under the Telecommunications Act, 2023' dated 17.02.2025 [URL: https://trai.gov.in/sites/default/files/2025-02/Recommendations_17022025.pdf]

[29] The salient recommendations of TRAI in respect of the SESG Provider Authorisation are given below:

(a) The Central Government should introduce Satellite Earth Station Gateway (SESG) Provider Authorisation under Section 3(1)(b) of the Telecommunications Act, 2023.

(b) Any entity intending to establish, operate, maintain, or expand satellite earth station gateway (SESG) in India should be required to obtain SESG Provider Authorisation from the Central Government.

(c) Broad scope of the SESG Provider Authorisation: To provide its SESG infrastructure to the entities which are authorised under Section 3(1)(a) of the Telecommunications Act, 2023 and which are permitted to use satellite media under their scope of service

(d) The baseband equipment to be installed at SESGs should be owned by the eligible service authorised entity interworking with the SESG Provider authorised entity. However, the SESG Provider authorised entity should be permitted to install the baseband equipment at its SESGs on behalf of the eligible service authorised entities.

(e) The satellite spectrum (gateway-side spectrum as well as user-side spectrum) should be assigned only to the eligible service authorised entities and not to SESG Provider authorised entities. However, for configuration and provisioning purposes, the SESG Provider authorised entity should be permitted to utilize the spectrum of its partnering service authorised entity on its SESGs. Such configuration and provisioning should be done on behalf of the partnering service authorised entity, and the right to use of spectrum should remain with the partnering service authorised entity.

through the Authority's recommendations dated 18.09.2024 in respect of Satellite-based Telecommunication Service authorisation and the present recommendations in respect of the SESG authorisation. Accordingly, the Authority is of the view that "there is no need for introducing any additional authorisation for satellite communication network under the Telecommunications Act, 2023, at this stage".

1.30 Subsequently, DoT, through its back-reference dated 03.07.2025 to the TRAI's recommendations dated 17.02.2025, informed, *inter alia*, as below:

"4.2 …It is pertinent to note here that the Government has not accepted the TRAI's recommendations on the Satellite-based Telecommunication Service Authorisation. Therefore, the primary basis on which TRAI concluded that there is no need to introduce an additional authorisation for satellite communication networks under Section 3(1)(b) of the Telecommunications Act, 2023, is no longer valid. Further, SCN authorisation under section 3(1) (b) will enable the relevant authorised entities under Section 3(1)(a), in mutual commercial agreement with the SCN authorised entities, to provide supplemental coverage from space using Mobile Satellite Service (MSS) spectrum bands to the users in areas with limited or no terrestrial coverage.

…

Absence of such SCN authorisation would either leave a gap in the regulatory framework for provisioning of telecommunication services in areas uncovered through terrestrial network or it would require each authorised entity, providing Unified service or Access service, and intending to provide supplemental coverage services, to obtain the assignment of MSS spectrum separately and establish parallel networks. Such duplicity would be capex and opex inefficient.

…

4.6 Further, the Telecommunications Act, 2023 does not restrict spectrum assignment solely to entities under Section 3(1)(a), and

limiting it as such may constrain future policy flexibility. Allowing the flexibility of obtaining spectrum by authorised entity either under 3(1)(a) or 3(1)(b) (Service or Network) will enable regulatory framework to meet the requirement of future network and evolving technology in this space.

4.7 Therefore, the views of TRAI in respect of SCN authorisation and spectrum assignment to entities authorised under Section 3(1)(b), as stated above, need modification.

4.8 Hence, to avoid the regulatory gap - given that the Government has not accepted the Satellite-based Telecommunication Service Authorisation under Section 3(1)(a) - the Government proposes the introduction of a Satellite Communication Network (SCN) Authorisation under Section 3(1)(b) and requests TRAI to provide terms and conditions for Satellite Communication Network (SCN) authorisation including provision of assignment of spectrum for both feeder link as well as user link under such authorisation."

1.31 TRAI, in its response dated 13.08.2025[30] to the DoT's back-reference dated 03.07.2025, expressed "*its concern on the non-acceptance of its recommendations on the Satellite-based Telecommunication Service Authorisation*." TRAI also stated that "*as the Government has not accepted the TRAI's recommendations on the Satellite-based Telecommunication Service Authorisation, a regulatory gap would indeed be created in the ecosystem for satellite communications in the country."* With respect to the satellite communication network authorisation suggested by DoT, TRAI conveyed to DoT as below:

"2.131.7 In this regard, the Authority has decided to initiate a fresh process of consultation with stakeholders to solicit views on terms and conditions for Satellite Communication Network (SCN) authorisation, including the provision of assignment of spectrum for both feeder link as

[30] Response dated 13.08.2025: Response of TRAI to the Back-Reference dated 03.07.2025 on the Recommendations of TRAI on the 'Terms and Conditions of Network Authorisations to be Granted Under the Telecommunications Act, 2023' [URL: https://trai.gov.in/sites/default/files/2025-07/TRAI_Response_04072025.pdf]

well as user link under such authorisation. Upon the conclusion of the consultation process, the Authority would provide its recommendations on the matter to the Government.

2.131.8 In case upon the conclusion of the consultation process, the Authority recommends that the spectrum for feeder link and/ or user link should be assigned under SCN Authorisation, the Government may thereafter, if deemed fit, seek the recommendations of the Authority on the terms and conditions for the assignment of spectrum under SCN Authorisation."

1.32 Subsequently, DoT, through its letter dated 29.08.2025 (**Annexure 1.2**), requested TRAI to provide recommendations on the terms and conditions of the proposed Satellite Communication Network (SCN) authorisation, along with terms and conditions relating to the assignment of spectrum in a consolidated form, covering all aspects at once.

1.33 In this regard, TRAI through a letter dated 22.09.2025 requested DoT to clarify as to whether the assignment of spectrum to 'Satellite Communication Network' is covered under the First Schedule of the Telecommunications Act, 2023; and provide information on frequency bands in which spectrum is envisaged to be assigned to the entities holding the proposed SCN authorisation.

1.34 In response, DoT through its letter dated 07.10.2025[31] **(Annexure 1.3)**, provided its clarification on the relevant aspects. An extract from the DoT's letter dated 07.10.2025 is given below:

"2. … it is submitted that, the First Schedule of The Telecommunications Act, 2023, is a list of entries based on use of the spectrum. Where the use of the spectrum is covered within the scope of an entry in the First

[31] Letter dated 07.10.2025: DoT's clarification letter to a letter from TRAI seeking clarification with respect to the Reference dated 29.08.2025.

Schedule, the assignment of such spectrum may be undertaken by administrative process.

2.1 An entity holding a SCN (Satellite Communication Network) authorisation seeks assignment of spectrum for use that falls within the scope of any of the entries of the First Schedule, it can be assigned spectrum through administrative method. Accordingly, an SCN Authorised Entity seeking to use spectrum for In-flight Maritime Connectivity, may apply for administrative assignment under Entry 14 of the First Schedule. An SCN Authorised Entity seeking to use spectrum for the satellite-based services under Entry 16, such as Very Small Aperture Terminal, Global Mobile Personal Communication by Satellites, National Long Distance, International Long Distance, Mobile Satellite Services in L & S bands, can apply for spectrum assignment under Entry 16.

2.2 It may also be possible that a SCN Authorised Entity without seeking spectrum may enter into sharing agreements with another authorised entity availing of its satellite network (the "partnering entity"), to utilise the spectrum assigned to such partnering entity for the limited purpose of providing the service of its satellite-based networks.

3. … at present, spectrum assignments for different kind of telecommunication services are being made in the L, C, Ku and Ka bands. Also, based on the TRAI recommendations dated 09.05.2025, other frequency bands i.e. Q-band and V-band are also being considered for different kind of Telecommunications Services."

D. TRAI's Consultation Paper dated 08.04.2026

1.35 With respect to the afore-mentioned reference received from DoT, the Authority issued a consultation paper on 'the Framework for Satellite Communication Network Authorisation, and Assignment of Spectrum to Satellite Communication Network Providers' dated 08.04.2026 (hereinafter, also referred to as, "the Consultation Paper dated 08.04.2026") to solicit comments of stakeholders on the subject matter.

Written comments from stakeholders on the Consultation Paper dated 08.04.2026 were invited by 06.05.2026 and counter-comments by 20.05.2026. Upon request of the industry associations and stakeholders, the last dates for furnishing comments and counter-comments were extended to 13.05.2026 and 27.05.2026 respectively.

1.36 In response to the Consultation Paper dated 08.04.2026, the Authority received written comments from 31 stakeholders and counter-comments from 12 stakeholders. The comments and counter-comments, received from stakeholders, were placed on the TRAI's website. An open house discussion (OHD) on the Consultation Paper dated 08.04.2026 was held on 02.07.2026 with stakeholders through virtual mode.

E. The Present Recommendations

1.37 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. The recommendations comprise four chapters. This chapter provides an introduction to and background on the subject matter. Chapter II provides a summary of stakeholders' comments, Authority's analysis and recommendations on the issues related to the framework for satellite communications network provider authorisation, and assignment of spectrum to satellite communications network providers. Chapter III provides analysis and recommendations on the issues related to spectrum charges and other financial conditions applicable to Satellite Communications Network Provider Authorisation. Chapter IV provides a summary of the recommendations.

CHAPTER II: ANALYSIS OF ISSUES

2.1 Through the Consultation Paper dated 08.04.2026, the Authority solicited comments from stakeholders on mainly the following aspects:

(a) Framework for the Satellite Communication Network (SCN) authorisation;
(b) Assignment of spectrum to SCN authorised entities;
(c) Usage of spectrum assigned to service authorised entities by SCN provider authorised entities;
(d) Regulatory framework for Direct-to-device (D2D) services;
(e) Financial conditions of SCN provider authorisation; and
(f) Financial conditions for the assignment of spectrum to SCN provider authorised entities

2.2 This chapter presents an analysis of the issues related to (a) to (d) above and recommendations thereupon. Analysis of the issues related to (e) and (f) above and recommendations thereupon will be presented in the following chapter.

A. Framework for Satellite Communication Network (SCN) Authorisation

2.3 With respect to the framework for the proposed SCN authorisation, the Authority solicited comments of stakeholders through Q1 to Q8 of the Consultation Paper dated 08.04.2026. Q1 of the Consultation Paper dated 08.04.2026 is reproduced below:

"Q1. What should be the eligibility conditions, area of operation, validity period of authorisation and the scope of the proposed Satellite Communication Network (SCN) authorisation under Section 3(1)(b) of the Telecommunications Act, 2023? Kindly provide a detailed response with justification."

2.4 In response to Q1, while many of the stakeholders have provided specific inputs on the issues raised through Q1 (viz. eligibility conditions, area of operation, validity period, and scope of SCN authorisation), many of them have also expressed opinions on the need for the introduction of the proposed SCN authorisation under Section 3(1)(b) of the Telecommunications Act, 2023. Considering that the need for the introduction of an authorisation under the provisions of the Telecommunications Act, 2023 is a foundational question, the opinions expressed by stakeholders on the need for introduction of SCN authorisation under Section 3(1)(b) of the Telecommunications Act, 2023 will be examined first. The specific inputs of stakeholders on the issues raised through Q1 will be examined in the subsequent sub-section.

A.1 The need for introduction of SCN authorisation under Section 3(1)(b) of the Telecommunications Act, 2023

Summary of comments on the need for introduction of SCN authorisation

2.5 The responses of stakeholders in respect of the proposed introduction of SCN authorisation under Section 3(1)(b) of the Telecommunications Act, 2023 may be grouped in the following two categories:

(a) In favour: Many stakeholders have supported the introduction of the proposed SCN authorisation.

(b) Against: Two stakeholders have opposed the introduction of the proposed SCN authorisation.

2.6 The assertions made by the two stakeholders, who have opposed the introduction of SCN authorisation, are summarized below:

(a) One stakeholder has stated that the proposed SCN authorisation framework may push satellite services into a dependent structure requiring commercial arrangements with service licensees, potentially raising entry barriers for specialised satellite players; in satellite communications, satellite operators are often best

positioned to ensure continuity of service, capacity planning, interference management, spectrum utilization efficiency and service quality management; accordingly, preserving closer alignment between the service layer and operational layer would support both efficiency and accountability in the satellite communication ecosystem; at the same time, satellite operators should continue to retain the flexibility to partner with terrestrial service providers and network operators wherever commercially and technologically beneficial; in order to support the balanced and long term development of India's satellite communication ecosystem, instead of introducing the proposed SCN authorisation under Section 3(1)(b) of the Telecommunications Act, 2023, the Government should introduce a standalone 'Satellite-based Telecommunication Service Authorisation', as recommended by TRAI in the recommendations on 'the Framework for Service Authorisations to be Granted Under the Telecommunications Act, 2023' dated 18.09.2024; satellite-based communication service should not be subsumed within terrestrial-focussed Access Service Authorisation and Internet Service Authorisation; the introduction of a distinct Satellite-based Telecommunication Service Authorisation will more appropriately reflect the specialized nature of satellite communications.

(b) The other stakeholder has stated that the proposed SCN framework may adversely impact the orderly growth of the satellite communication sector; in the initial phase of the sector, incentives should be given to boost investment in infrastructure creation to deliver an infrastructure backbone to the sector and not to curtail direct investments by supporting shared infrastructure as is being envisaged under the proposed SCN authorisation; the separation of service and network layers is already in place – Satellite Earth Station Gateway (SESG) authorisation is available on the infrastructure side, and virtual network operator (VNO) authorisation is available on service side; the only justification for

the proposed SCN authorisation is the desire to increase infrastructure sharing between telecom service providers, by providing incentives to the proposed SCN authorised entities, however, such proposals have never benefitted the sector and have created many level playing field and arbitrage related issues.

2.7 The arguments presented by the stakeholders, who have supported the introduction of the proposed SCN authorisation, are summarised below:

(a) Under the extant licensing regime, the satellite operators who only wish to set up satellite gateway in India and acquire satellite spectrum to operate a satellite communication network to provide satellite bandwidth to telecom service providers and do not intend to provide any retail services to end customers directly – have no choice but to take a Unified license and comply with the full-fledged service license obligations. To bridge this gap, there is an urgent need to introduce SCN authorisation under Section 3(1)(b) of the Telecommunications Act, 2023.

(b) The concern of a stakeholder [reference: sub-para (b) of the preceding paragraph] against infrastructure sharing is misplaced. The introduction of the Infrastructure Provider Category-I (IP-1) registration in the year 2000, catalysed the fastest and most cost-effective mobile rollout in India. Applying a similar structural separation to the capital-intensive satellite layer will ensure orderly growth and prevent the economically unviable duplication of global gateway infrastructure.

<u>Analysis w.r.t. the need for introduction of SCN authorisation</u>

2.8 Prior to the enactment of the Telecommunications Act, 2023, the Indian Telegraph Act, 1885 was the main legislation for telecommunications in India. The Indian Telegraph Act, 1885 accorded to the Central Government an exclusive privilege of establishing, maintaining, and working telegraph in India. The Indian Telegraph Act, 1885 also

empowered the Central Government to grant a license to any person to establish, maintain or work a telegraph within any part of India. In the telecommunication regulatory framework under the Indian Telegraph Act, 1885, satellite-based telecommunication services were provided mainly through the following licenses and authorizations:

(a) Commercial VSAT[32] CUG Service License, Commercial VSAT CUG Service Authorisation under UL and UL (VNO), and Captive VSAT CUG Service License - for the provision of mainly private communication within a group using FSS

(b) GMPCS[33] Service License, GMPCS Service Authorization under UL and UL (VNO), and License for Provision and Operation of Satellite Based Services Using Gateway Installed in India Under 'Sui-Generis' Category - for the provision of mainly public telecommunication (voice, text and data) services using MSS and FSS

2.9 The Telecommunications Act, 2023 (which will repeal the Indian Telegraph Act, 1885) empowers the Central Government to grant authorisations of three categories viz.-

(a) authorisation to provide telecommunication service;

(b) authorisation to establish, operate, maintain or expand telecommunication network; and

(c) possess radio equipment.

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[32] As per ITU, *"VSATs could be described as earth stations that share satellite resources among a large number of similar terminals. Individual VSAT terminals typically have small aperture sizes, transmit at relatively low equivalent isotropically radiated power (e.i.r.p.) levels, and use relatively small equipment that allows flexible installation of a satellite network earth station directly at a wide variety of user locations and platforms".*
Source: https://www.itu.int/dms_pub/itu-r/opb/rep/r-rep-s.2278-2013-pdf-e.pdf

[33] As per ITU, *"GMPCS is a personal communication system providing transnational, regional or global coverage from a constellation of satellites accessible with small and easily transportable terminals. Whether the GMPCS satellite systems are geostationary or non-geostationary,* fixed *or mobile, broadband or narrowband, global or regional, they are capable of providing telecommunication services directly to end users. GMPCS services include two-way voice, fax, messaging, data and even broadband multimedia".*
Source: https://www.itu.int/en/gmpcs/Pages/default.aspx

2.10 Based on a reference from DoT, TRAI provided its recommendations dated 18.09.2024 on 'the Framework for Service Authorisations to be Granted Under the Telecommunications Act, 2023'. Through these recommendations, TRAI recommended for the introduction of a range of authorisations to provide telecommunication service under the Telecommunications Act, 2023. Importantly, TRAI recommended for the introduction of Satellite-based Telecommunication Service Authorisation under which an authorised entity could provide GMPCS service using MSS and FSS, and VSAT-based FSS.

2.11 On 23.06.2026, DoT notified the Telecommunications (Authorisation for Provision of Principal Telecommunication Services) Rules, 2026. Under these rules, DoT did not include Satellite-based Telecommunication Service Authorisation, as recommended by TRAI. Instead, DoT, through these rules, permitted the entities holding Unified Service Authorisation, Access Service Authorisation, Internet Service Authorisation and Long Distance Service Authorisation to provide services within the scope of respective authorisations through satellite networks as well.[34]

2.12 DoT has envisaged that a new authorisation for satellite communication network under Section 3(1)(b) of the Telecommunications Act, 2023, should be introduced to enable an SCN authorised entity to perform, *inter alia*, the following activities:

(a) The SCN authorised entity may establish gateway earth station(s) in India. For establishing communication links in its satellite communication network, the authorised entity may seek assignment of spectrum[35] from the Central Government.

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[34] For illustration, the Telecommunications (Authorisation for Provision of Principal Telecommunication Services) Rules, 2026 contains, *inter alia*, the following provision in respect of Internet Service Authorisation:
"*Every new authorised entity that holds an access service authorisation may provide the principal telecommunication services specified in sub-rule (1) or (2), as the case may be, through wireline or wireless terrestrial networks, satellite networks or submarine networks.*"

[35] A relevant extract of Section 4 of the Telecommunications Act, 2023 is given below:

Alternatively, the authorised entity may enter into an agreement with a service authorised entity, desirous of availing its satellite communication network ("the partnering entity") to utilize the spectrum assigned to such partnering entity for the limited purpose of providing Satellite Communication Network as a Service (SCNaaS) to the partnering entity.

(b) The SCN authorised entity may provide SCNaaS to eligible service authorised entities on commercial terms.

(c) Under SCN authorisation, the authorised entity may not provide telecommunication services directly to users[36].

2.13 While evaluating the need for the introduction of SCN provider authorisation under Section 3(1)(b) of the Telecommunications Act, 2023, the Authority has taken note of the following aspects:

(a) In its communication to TRAI, the Government has proposed the introduction of SCN authorisation under Section 3(1)(b) and has requested TRAI to provide terms and conditions for SCN authorisation including provision of assignment of spectrum under such authorisation. With respect to the assignment of spectrum, the Government has specifically stated that "*[a]llowing the flexibility of obtaining spectrum by authorised entity either under 3(1)(a) or 3(1)(b) (Service or Network) will enable regulatory framework to meet the requirement of future network and evolving technology in this space.*"

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4. (1) The Central Government, being the owner of the spectrum on behalf of the people, shall assign the spectrum in accordance with this Act, and may notify a National Frequency Allocation Plan from time to time.
(2) Any person intending to use spectrum shall require an assignment from the Central Government.
(3) The Central Government may prescribe such terms and conditions as may be applicable, for such assignment of spectrum, including the frequency range, methodology for pricing, price, fees and charges, payment mechanism, duration and procedure for the same.
(4) The Central Government shall assign spectrum for telecommunication through auction except for entries listed in the First Schedule for which assignment shall be done by administrative process.

[36] The Telecommunications Act, 2023 defines the term "user" as below:
"user" means a natural or legal person using or requesting a telecommunication service but does not include person providing such telecommunication service or telecommunication network.

(b) In the present consultation process, many stakeholders have supported (i) the proposed introduction of SCN provider authorisation under Section 3(1)(b) of the Telecommunications Act, 2023, and (ii) the proposed assignment of satellite spectrum to entities holding such authorisation.

2.14 Considering the views of the Government with respect to the assignment of spectrum to network authorised entities and inputs of stakeholders, the Authority is of the view that the proposed satellite communication network (SCN) provider authorisation should be introduced under Section 3(1)(b) of the Telecommunications Act, 2023.

2.15 Notwithstanding para 2.14 above, the Authority is of the view that the need for a separate satellite-based telecommunication service authorisation under Section 3(1)(a) of the Telecommunications Act, 2023 (as recommended through the recommendations dated 18.09.2024 on 'the Framework for Service Authorisations to be Granted under the Telecommunications Act, 2023') cannot be undermined. A well-structured regulatory framework should ideally provide adequate flexibility to businesses to undertake all reasonable business models. If a potential applicant intends to provide only satellite-based telecommunication services, the regulatory framework should be able to promote and preserve the business focus of such entities. In the past also, separate licenses and authorisations for the provision of satellite-based telecommunication services have existed alongside licenses and authorisations for the provision of terrestrial telecommunication services without causing any market distortion.

2.16 Considering the above, **the Authority recommends that –**

(a) **The Central Government should introduce a new authorisation for satellite communication network under section 3(1)(b) of the Telecommunications Act, 2023. The**

new authorisation should be termed as "satellite communication network provider authorisation".

(b) **In line with the Authority's recommendations dated 18.09.2024 on 'the Framework for Service Authorisations to be Granted under the Telecommunications Act, 2023', the Central Government should reconsider the introduction of satellite-based telecommunication service authorisation under the Telecommunications (Authorisation for Provision of Principal Telecommunication Services) Rules, 2026.**

2.17 Having examined the need for the introduction of SCN provider authorisation under Section 3(1)(b) of the Telecommunications Act, 2023, the Authority proceeds to examine the specific inputs of stakeholders on the issues raised through Q1.

A.2 Aspects related to eligibility conditions, area of operation, validity period, and scope of SCN provider authorisation

Summary of comments on eligibility conditions

2.18 Many stakeholders have suggested that eligibility conditions for SCN provider authorisation should be analogous to eligibility conditions for Satellite Earth Station Gateway (SESG) Provider Authorisation proposed by DoT through the draft dated 09.10.2025 of the Telecommunications (Authorisation for Telecommunication Networks) Rules, 2025.[37] A few

[37] DoT, through draft dated 09.10.2025 of the Telecommunications (Authorisation for Telecommunication Networks) Rules, 2025, proposed the following eligibility conditions for Satellite Earth Station Gateway (SESG) Provider Authorisation:
"(1) An applicant seeking authorisation under these rules shall be a company incorporated under the Companies Act.
(2) An applicant seeking SESG provider authorisation under these rules shall, in addition to the requirement specified in sub-rule (1), also be either of the following:
(a) a space segment provider, authorised by the Department of Space or IN-SPACe, or any other office so authorised by the Central Government for this purpose;
(b) a subsidiary of a space segment provider as specified in clause (a); or
(c) a person having agreement with a space segment provider as specified in clause (a), for establishing, maintaining, operating, or expanding SESG in respect of the satellite systems of the space segment provider in India."

stakeholders have stated that the eligibility conditions for SCN provider authorisation should not impose restrictions inconsistent with the extant 100% foreign direct investment (FDI) permitted under the extant telecommunications sector FDI Policy.

Analysis w.r.t. eligibility conditions

2.19 DoT, through rule 5 of the Telecommunications (Authorisations for Telecommunication Network) rules, 2026, has specified eligibility conditions for applying for various authorisations to establish, operate, maintain or expand telecommunication network under Section 3(1)(b) of the Telecommunications Act, 2023, namely-

(a) infrastructure provider authorisation;
(b) digital connectivity infrastructure provider authorisation;
(c) internet exchange point provider authorisation;
(d) satellite earth station gateway provider authorisation;
(e) cloud-hosted telecommunication network provider authorisation; and
(f) mobile number portability provider authorisation.

2.20 The rule 5 of the Telecommunications (Authorisations for Telecommunication Network) rules, 2026 is reproduced below:

"5. Eligibility. —

A person specified in clause (a), who also fulfils the conditions in clauses (b) and (c), shall be eligible to apply for authorisation under rule 6, namely:—

(a) it is a company[38]—

[38] DoT has defined the term "company" in the Telecommunications (Authorisations for Provision of Principal Telecommunication Services) Rules, 2026 dated 23.06.2026 as below:
"company" shall have the same meaning as assigned to it in the Companies Act, 2013 (18 of 2013)."

(i) in which foreign direct investment, if any, is in conformity with the policy issued by the Government of India from time to time in respect of foreign direct investment and applicable law; and

(ii) the general character of whose management is sound in terms of its track record in providing telecommunication services or in establishing, operating, maintaining or expanding telecommunication networks in a responsible manner:

Provided that if it applies to obtain authorisation for satellite earth station gateway, it shall be a company as referred to in clause (a), which fulfils the following criteria, namely:—

(i) a company that has the satellite or space segment capacity authorised by the Department of Space in the Government of India, or any other designated agency specified for this purpose;

(ii) a subsidiary of an entity under sub-clause (i); or

(iii) a company having agreement with a company under sub-clause (i), for establishing, maintaining, operating or expanding satellite earth station gateway in respect of the satellite network of such entity in India:

…

(b) it has no pending dues;

(c) it holds no authorisation or license for telecommunication services, the scope and service area of which covers in its entirety, the scope and network area of the authorisation that it intends to obtain under these rules:

Provided that the Central Government may, if it is satisfied that it is necessary in public interest so to do, exempt or relax any condition under this rule."

2.21 As may be seen from the above, through rule 5, DoT has prescribed general eligibility conditions for applying for any authorisation under Section 3(1)(b) of the Telecommunications Act, 2023. It has also prescribed, *inter alia*, specific eligibility conditions for applying for satellite earth station gateway provider authorisation. It is noteworthy that the specific conditions applicable to satellite earth station gateway

provider authorisation are in line with TRAI's recommendations dated 17.02.2025 on 'the Terms and Conditions of Network Authorisations to be Granted Under the Telecommunications Act, 2023'.[39]

2.22 The Authority notes that SCN provider authorised entities will provide satellite communication network as a service (SCNaaS) to service providers by way of satellite earth station gateways configured for a specific satellite or satellite constellation. Therefore, before applying for SCN provider authorisation, the applicant company should hold a legal relationship with the satellite operator whose satellite or space segment capacity it intends to use at its satellite earth station gateways for the provision of SCNaaS. Accordingly, the Authority is of the view that specific eligibility conditions for applying for SESG provider authorisation should also be made applicable for applying for SCN provider authorisation.

Summary of comments on area of operation under SCN provider authorisation

2.23 Many stakeholders have suggested that the area of operation for SCN provider authorisation should be 'national area'. In support of keeping the area of operation for SCN provider authorisation at national level, they have presented mainly the following arguments:

(a) Large beam sizes and orbital footprints of satellites naturally extend across multiple service areas simultaneously, making licensed service area-wise authorisation for SCN providers would be technically impractical.

[39] Through the recommendations dated 17.02.2025 on the Terms and Conditions of Network Authorisations to be Granted Under the Telecommunications Act, 2023, TRAI recommended additional requirement for obtaining satellite earth station gateway provider authorisation as below:
For obtaining SESG Provider Authorisation, the applicant company shall be any one of the following:
(a) "A satellite operator operating satellite system(s) approved by the Indian Government; or
(b) A subsidiary of such satellite operator; or
(c) An entity having contracts/ license agreements entered into with such satellite operator for establishing SESG."

(b) Keeping the area of operation for SCN provider authorisation at the national level would be consistent with the service area of the existing Commercial VSAT CUG Service License, and GMPCS Service License and the area of operation for the SESG provider authorisation proposed by DoT through the draft dated 09.10.2025 of the Telecommunications (Authorisation for Telecommunication Networks) Rules, 2025.

Analysis w.r.t. area of operation under SCN provider authorisation

2.24 Under the Telecommunications (Authorisations for Telecommunication Network) rules, 2026, DoT has defined the term "network area" as "*the geographical area in respect of which authorisation to establish, maintain, operate or expand telecommunication network is granted, which may be national area or zonal area*". DoT has prescribed the network area as "national area" for all authorisations under Section 3(1)(b) of the Telecommunications Act, 2023 except for mobile number portability provider authorisation.[40]

2.25 While evaluating the issue as to what should be the network area under SCN provider authorisation, the Authority took note of the following aspects:

[40] DoT has prescribed network area for mobile number portability provider authorisation as "zonal area". At present, there are two zonal areas in the country as per the Schedule B of the Telecommunications (Authorisations for Telecommunication Network) rules, 2026.

SCHEDULE B

ZONAL AREAS

[*See* rule 2(1)(v)]

S. No.	Zone	Authorised Areas
1	Zonal Area 1	Gujarat, Haryana, Himachal Pradesh, Jammu and Kashmir, Maharashtra, Punjab, Rajasthan, Uttar Pradesh (E), Uttar Pradesh (W), Delhi and Mumbai.
2	Zonal Area 2	Andhra Pradesh, Assam, Bihar, Karnataka, Kerala, Madhya Pradesh, North-East, Orissa, Tamil Nadu, West Bengal and Kolkata.

Explanation.—The Central Government may amend this Schedule B by notification.

(a) Under the extant telecommunication 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) is at national level. The holders of these licenses/ authorizations are permitted to establish and operate satellite earth station gateways anywhere in India. Besides, in the extant regime, the satellite spectrum (FSS and MSS) was being assigned to satellite-based communications service licensees on a national level.

(b) Under the Telecommunications (Authorisations for Telecommunication Network) rules, 2026, DoT has prescribed the network area for SESG provider authorisation at national level in line with TRAI's recommendations dated 17.02.2025 on 'the Terms and Conditions of Network Authorisations to be Granted Under the Telecommunications Act, 2023'.

2.26 Satellite communication networks inherently provide national, regional, or global coverage. Therefore, restricting the network area for SCN provider authorisation at a level below national level would be inefficient. Accordingly, the Authority is of the view that the network area for SCN provider authorisation should be at national level.

Summary of comments on validity period of SCN provider authorisation

2.27 Many stakeholders have suggested that SCN provider authorisation should be granted for a period of 20 years. In support, they have presented mainly the following arguments:

(a) 20-year authorisation is necessary considering the capital-intensive nature of satellite infrastructure, long investment cycles, and need for a prior spectrum coordination. Validity period of 20-years would provide long-term regulatory certainty, improve investment

confidence and support financing of satellite infrastructure. After the expiry of the validity period of 20 years, there should be an appropriate renewal mechanism to ensure continuity of operations.

(b) The validity period of SCN provider authorisation should be aligned with the validity of other authorisations under the Telecommunications Act, 2023 and extant Unified Licence to ensure regulatory consistency.

2.28 A few other stakeholders have suggested shorter validity period of 10 to 15 years, coupled with periodic reviews. Such stakeholders have argued that periodic reviews would enable assessment of deployment progress, technical performance and compliance with regulatory obligations.

2.29 Another stakeholder has expressed that the SCN provider authorisation should be co-terminus with the validity of the satellite frequency assignment, that is, five years with an extension of two years, in line with the TRAI's recommendations dated 09.05.2025 on Terms and Conditions for the Assignment of Spectrum for Certain Satellite-Based Commercial Communication Services.

Analysis w.r.t. validity period of SCN provider authorisation

2.30 While evaluating the issue as to what should be the validity period of SCN provider authorisation, the Authority took note of the following aspects:

(a) The period of validity of the extant Unified License is 20 years from the effective date of the license unless revoked earlier, with a provision of extension by 10 years at a time upon request of the licensee subject to the extant policy. The standalone satellite-based communication service licenses viz. Commercial VSAT CUG License and Captive VSAT CUG License were also granted for a period of 20 years, with a provision of extension by 10 years at a time upon request of the licensee.

(b) The rule 9 under the Telecommunications (Authorisations for Telecommunication Network) rules, 2026 prescribes the duration of various authorisations to establish, operate, maintain or operate telecommunication networks. The rule 9 is reproduced below:

"9. Duration of authorisation.—The duration of each authorisation granted under rule 7 shall be such as is specified under the said rule, subject to a maximum of twenty years and the provisions of rules 14, 15 and 64:

Provided that the duration of mobile number portability provider authorisation shall be subject to maximum of ten years."

(c) The rule 13 under the Telecommunications (Authorisations for Telecommunication Network) rules, 2026 prescribes the mechanism for renewal of various authorisations to establish, operate, maintain or operate telecommunication networks. The relevant sub-rule under rule 13 is reproduced below:

"(3) The Central Government may, in its discretion, on receipt of an application under sub-rules (1) or (2), renew the authorisation for such period as decided by the Central Government, subject to maximum of twenty years:

Provided that renewal for mobile number portability provider authorisation shall be for such period as may be decided by the Central Government, subject to maximum of ten years."

2.31 Satellite communication networks are inherently capital-intensive in nature. Besides, the useful life of satellite earth station gateway and ancillary ground infrastructure is typically of the order of 15 to 20 years. Therefore, to provide regulatory certainty to the entities desirous of entering into this business segment, as well as to improve investor confidence, it would be suitable to allow a reasonably long validity period for SCN provider authorisation with an option for renewal. Accordingly, the Authority is of the view that SCN provider authorisation should be allowed to operate for a maximum period of 20 years and should be renewed on receipt of application for a maximum period of 20 years.

Summary of comments on the scope of SCN provider authorisation

2.32 Many stakeholders have favoured network-only function under SCN provider authorisation with the eligibility to obtain satellite spectrum from the Government and permission to utilize spectrum of the partnering service providers. A gist of the submissions made by stakeholders is given below:

(a) SCN provider authorisation should be restricted to the network layer and the SCN provider authorised entity should provide satellite communication network as a service (SCNaaS) only to entities authorised under Section 3(1)(a) of the Telecommunications Act, 2023. For the provision of SCNaaS to service authorised entities, SCN provider authorised entities should be permitted to facilitate diverse satellite communication services.

(b) The scope of SCN provider authorisation should include satellite network operation, baseband and resource management, user-link and feeder-link operation, gateway interconnection where needed, and wholesale connectivity to authorised service providers, but not retail telecom service provision. For the purpose of operating user-link and feeder link, SCN provider authorised entity should be permitted to seek assignment of satellite spectrum from the Central Government. It should also be permitted to use the spectrum held by service licensees through suitable contracts. The SCN provider authorised entity should be permitted to establish Points of Presence (PoPs), deploy fibre connectivity between satellite earth station gateways and PoPs, provide internet breakout, enter into peering arrangements with Internet Exchange Points (IXPs) and Content Delivery Networks (CDNs), and carry traffic between different locations.

(c) SCN provider authorised entity should not provide telecommunication services directly to end-users or non-service authorised entities.

2.33 One of the stakeholders has contended that SCN provider authorised entities should also be permitted to provide retail services to end users.

Analysis w.r.t. the scope of SCN provider authorisation

2.34 Through rule 50 of the Telecommunications (Authorisations for Telecommunication Network) rules, 2026, DoT has prescribed the scope of satellite earth station gateway provider authorisation. Rule 50 is reproduced below:

"50. Scope of satellite earth station gateway provider authorisation.—

(1) Satellite earth station gateway provider authorisation consists of authorisation to establish, operate, maintain or expand the satellite earth station gateway for such satellite or space segment capacity which is authorised by the Department of Space in the Government of India, or any other designated agency specified for this purpose.

Explanation.—For the removal of doubts, it is clarified that the scope of satellite earth station gateway provider authorisation includes baseband systems for such satellite or space segment capacity.

(2) Every new authorised entity shall establish, operate, maintain or expand only such telecommunication network which are authorised under the scope of its authorisation, and not any other telecommunication network which requires a separate authorisation from the Central Government."

2.35 Under rule 52 of the Telecommunications (Authorisations for Telecommunication Network) rules, 2026, DoT has prescribed that SESG provider authorised entity "*may utilise the spectrum assigned to the partnering entity for the limited purpose of configuration of satellite earth station gateway, while the right to use of spectrum shall remain with the partnering entity*."

2.36 In essence, under SESG provider authorisation, an entity may perform the following main activities:

(a) SESG provider authored entity may establish, operate, maintain or expand only satellite earth station gateway and baseband equipment for concerned satellite systems.

(b) SESG provider authored entity cannot obtain spectrum from the Central Government. However, it may utilise the spectrum assigned to the partnering entity for the limited purpose of configuration of satellite earth station gateway.

2.37 In its reference, DoT has envisaged that SCN provider authorised entity should perform not only the activities which are permitted under the scope of SESG provider authorisation (as mentioned above) but should also be permitted to seek assignment of spectrum from the Central Government. Apparently, SCN provider authorisation is being envisaged with a view to providing a further degree of freedom in satellite communication eco-system so that service authorised entities can focus exclusively on the provisioning of services to end users without themselves getting involved in establishing a satellite communication network or acquiring satellite spectrum from the Central Government.

2.38 Considering the above, the Authority is of the view that it would be appropriate to include the following activities under the scope of SCN provider authorisation:

(a) SCN provider authorised entity may establish, operate, maintain, or expand gateway earth station(s) for duly authorised satellite or space segment capacity by the Government. It may also deploy baseband systems for such satellite or space segment capacity.

(b) SCN provider authorised entity may seek appropriate satellite spectrum from the Central Government for providing satellite communication network as a service (SCNaaS) to eligible entities. [The specific aspects related to eligible entities have been dealt with in sub-section A.5 of these recommendations, while

assignment of appropriate satellite spectrum for feeder link and user link to SCN provider authorised entities have been dealt with in Section B of these recommendations.]

(c) SCN provider authorised entity may enter into an agreement with an eligible service authorised entity (partnering entity) to utilize the spectrum assigned to such partnering entity for the limited purpose of providing SCNaaS to the partnering entity. [The specific aspects related to assignment of appropriate satellite spectrum for feeder link and user link to SCN provider authorised entities have been dealt in Section B of these recommendations.]

(d) SCN provider authorised entity may not provide telecommunication services directly to users.

2.39 In view of the foregoing analysis, **the Authority recommends that –**

(a) Eligibility: Apart from the general eligibility conditions for applying to obtain authorisation to establish, operate, maintain or expand telecommunication network given in rule 5 of the Telecommunications (Authorisations for Telecommunication Network) Rules, 2026, the applicant entity should also fulfil the following criteria, namely: —

(i) a company that has the satellite or space segment capacity authorised by the Department of Space in the Government of India, or any other designated agency specified for this purpose;

(ii) a subsidiary of an entity under sub-clause (i); or

(iii) a company having agreement with a company under sub-clause (i), for establishing, maintaining, operating or expanding satellite earth station gateway in respect of the satellite network of such entity in India.

(b) Network Area: The network area for SCN provider authorisation should be national area.

(c) Duration: The maximum duration of SCN provider authorisation should be 20 years.

(d) Renewal: There should be an option for renewal of SCN provider authorisation for upto 20 years.

(e) Scope: The scope of SCN provider authorisation should be as below:

(i) SCN provider authorised entity may establish, operate, maintain, or expand gateway earth station(s) for such satellite or space segment capacity which is authorised by the Department of Space in the Government of India, or any other designated agency specified for this purpose. It may also deploy baseband systems for such satellite or space segment capacity.

(ii) SCN provider authorised entity may seek appropriate satellite spectrum from the Central Government for providing satellite communication network as a service (SCNaaS) to eligible entities.

(iii) SCN provider authorised entity may enter into an agreement with an eligible service authorised entity (partnering entity) to utilize the spectrum assigned to such partnering entity for the limited purpose of providing SCNaaS to the partnering entity.

(iv) SCN provider authorised entity cannot provide telecommunication services directly to users.

A.3 General, technical, operating, and security conditions for SCN provider authorisation

2.40 The Authority solicited comments of stakeholders on general, technical, operating, and security conditions for SCN provider authorisation through Q2 of the Consultation Paper dated 08.04.2026, as reproduced below:

"Q2. What should be the terms and conditions (general, technical, operating, security related etc.) that should be made applicable for the proposed Satellite Communication Network authorisation? Kindly provide a detailed response with justification."

Comments of stakeholders on Q2

2.41 In response to Q2, stakeholders have generally supported a light-touch, technology-neutral and predictable regulatory framework for SCN provider authorisation. Many stakeholders have stated that terms and conditions should clearly distinguish the responsibilities of the network layer and the service layer, while ensuring security, regulatory compliance and ease of doing business. Some stakeholders also recommended alignment with the draft network authorisation rules, existing telecom licensing framework, the Telecommunications Act, 2023, India's Space Policy and international best practices. A gist of comments of stakeholders on Q2 is given below:

(a) Technical conditions for SCN provider authorisation should be balanced, technology-neutral, and clearly limited to the network and infrastructure layer, consistent with the Telecommunications Act, 2023.

(b) SCN provider authorised entities should establish at least one gateway earth station within 12 months of commercial spectrum assignment and meet applicable rollout obligations.

(c) SCN provider authorised entities should maintain network operations centres (NOCs) and operational systems within India capable of monitoring, controlling and managing the satellite communication network.

(d) The security responsibilities of the SCN provider authorised entity and the service authorised entity should be clearly delineated to avoid duplication or regulatory gaps. Provision of lawful interception (LI), call detail records (CDRs), Internet protocol detail records (IPDRs) and subscriber detail records (SDRs) to law enforcement agencies (LEAs) should remain the responsibility of the service authorised entity, while the SCN provider authorised entity should provide the necessary network support.

(e) All user traffic originating from or terminating within India should be routed through satellite gateways located within India, in accordance with DoT security directives and national security requirements. Routing of Indian user traffic through foreign gateways, bypassing Indian gateways through inter-satellite links, or mirroring user traffic to offshore servers should not be permitted.

Analysis w.r.t. Q2

2.42 Through the Chapter III, IV and V of the Telecommunication (Authorisation for Telecommunication Network) Rules, 2026 dated 20.07.2026, DoT has prescribed (i) general conditions; (ii) technical and operating conditions; and (iii) security conditions respectively. These conditions are applicable to all types of authorisations to establish, operate, maintain or expand telecommunication network. The Authority has perused the Chapter III, IV and V of the Telecommunication (Authorisation for Telecommunication Network) Rules, 2026 and is of the view that the conditions contained in these chapters are generic in nature and are agnostic to the type of authorisation. The Authority is of

the view that these conditions should be applicable to SCN provider authorisation as well.

2.43 Through the Chapter VI of the Telecommunication (Authorisation for Telecommunication Network) Rules, 2026, DoT has prescribed specific technical and operating conditions for each type of telecommunication network authorisation. Notably, through the part D of Chapter VI of the Telecommunication (Authorisation for Telecommunication Network) Rules, 2026, DoT has prescribed specific technical and operating conditions for SESG provider authorisation[41]. The Authority has perused the part D of Chapter VI. In this regard, the Authority is of the view that most of the specific technical and operating conditions which have been prescribed for SESG provider authorisation should become applicable for SCN provider authorisation, with necessary modifications to account for the difference in the scope of the two authorisations.

2.44 On 23.06.2026, DoT issued the Telecommunications (Authorisation for Provision of Principal Telecommunication Services) Rules, 2026.[42] These

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[41] In respect of SESG provider authorisation, DoT has prescribed the following technical and operating conditions through the Telecommunication (Authorisation for Telecommunication Network) Rules, 2026:

"52. Technical and operating conditions.—
(1) A new authorised entity shall, prior to establishing any satellite earth station gateway, submit to the Central Government or the designated agency the details, including location and technical details of such gateway on the portal.
(2) The Central Government or a designated agency may, on examination of the details provided under sub-rule (1), direct the new authorised entity to take specific actions, if any, with regard to establishment of such satellite earth station gateway.
(3) The new authorised entity may provide its telecommunication network to any other new authorised entity or licensee that holds any permission or license (hereinafter "partnering entity" for the purpose of this rule) to establish, operate, maintain or expand satellite network, in accordance with their mutual agreement, on a fair and non-discriminatory basis.
(4) The new authorised entity that establish, operate, maintain or expand a baseband system under rule 50 shall extend control, visibility, resource allocation and management of the telecommunication services being provisioned using satellite network to users, to the partnering entity on mutually agreed terms and conditions.
(5) The new authorised entity may utilise the spectrum assigned to the partnering entity for the limited purpose of configuration of satellite earth station gateway, while the right to use of spectrum shall remain with the partnering entity.
(6) The new authorised entity may share infrastructure, including building, and passive telecommunication infrastructure established, operated, maintained or expanded by such new authorised entity, as well as, right of way held by it or its facility provider, with any other entity that holds any authorisation or license, in accordance with their mutual agreement, on a fair and non-discriminatory basis.
(7) The new authorised entity shall ensure that any agreement entered into for the purpose specified under sub-rules (3) and (6) adhere to terms and conditions as may be specified by the Central Government."

[42] DoT has included the following authorisations under The Telecommunications (Authorisation for Provision of Principal Telecommunication Services) Rules, 2026:
(a) unified service authorisation;
(b) access service authorisation;
(c) wireline access service authorisation;

rules provide, *inter alia*, that the entities holding (a) unified service authorisation, or (b) access service authorisation, or (d) internet service authorisation, and (e) long distance service authorisation can also use satellite networks for the provision of respective services. In Chapter VII of these rules, DoT has prescribed 'specific conditions for provision of principal telecommunication services using satellite network', under which DoT has laid down, *inter alia*, specific technical and operating conditions, rollout obligations and security conditions. The Authority has perused Chapter VII of the Telecommunications (Authorisation for Provision of Principal Telecommunication Services) Rules, 2026 and is of the view that except for the conditions which relate to service provisioning particularly, the remaining specific technical and operating conditions, rollout obligations and security conditions contained in Chapter VII of the Telecommunications (Authorisation for Provision of Principal Telecommunication Services) Rules, 2026 should become applicable to SCN provider authorisation.

2.45 In light of the above, technical and operating conditions, roll out obligations and security conditions which should become applicable to SCN provider authorisation [apart from the generical conditions contained in Chapter III, IV and V of the Telecommunication (Authorisation for Telecommunication Network) Rules, 2026] have been drafted. These conditions are enclosed in Annexure 2.1 of these recommendations.

2.46 Considering the above, **the Authority recommends that in addition to the conditions specified in Chapter III: General Conditions, Chapter IV: Technical and Operating Conditions and Chapter V: Security Conditions of the Telecommunication (Authorisation**

(d) internet service authorisation; and
(e) long distance service authorisation.

for Telecommunication Network) Rules, 2026, the SCN provider authorisation shall be subject to specific technical and operating conditions, roll out obligations and security conditions as specified in Annexure 2.1 'Technical and operating conditions, roll out obligations and security conditions applicable to SCN provider authorisation'.

A.4 Type of authorised entities which may be permitted to seek SCNaaS from SCN provider authorised entities

2.47 Through Q3 of the Consultation Paper dated 08.04.2026, the Authority solicited comments of stakeholders on the question as to which type of authorised entities should be permitted to seek SCNaaS from SCN authorised entities. Q3 is reproduced below:

"Q3. Which type of authorised entities should be permitted to seek Satellite Communication Network as a Service (SCNaaS) from the entities holding the proposed Satellite Communication Network authorisation? Whether virtual network operators (VNOs) should also be permitted to seek SCNaaS? Kindly provide a detailed response with justification."

Comments of stakeholders on Q3

2.48 Stakeholders have provided divergent views on the question as to which type of authorised entities should be permitted to seek SCNaaS from SCN provider authorised entities, as outlined below:

(a) At one hand, a few stakeholders have contended that all service-authorised entities holding valid authorisations under Section 3(1)(a) of the Telecommunications Act, 2023 should be permitted to seek SCNaaS from SCN provider authorised entities.

(b) At the other hand, a few stakeholders have argued that only those entities which are authorised to provide Access Service or Internet Service should be permitted to seek SCNaaS from SCN provider authorised entities.

(c) In the middle, many stakeholders have suggested that only those entities which hold relevant service authorisations [viz. authorisations for providing Access Service, Internet Service, National Long Distance (NLD) Service, VSAT Closed User Group (CUG) Service and GMPCS Service under the extant licensing regime, or equivalent service authorisations under the Telecommunications Act, 2023] should be permitted to seek SCNaaS from SCN provider authorised entities.

2.49 On the question as to whether VNOs should also be permitted to seek SCNaaS, many stakeholders have stated that VNOs should be permitted to seek SCNaaS from SCN provider authorised entities. On the other hand, many other stakeholders have opposed it.

2.50 A gist of stakeholders' comments in support of permitting VNOs to seek SCNaaS is given below:

(a) The VNO framework was introduced precisely to enable asset-light service providers to deliver telecom services by leveraging network infrastructure — the SCNaaS model is architecturally identical. Permitting VNOs maximises competition at the service layer, accelerates rural connectivity, enables specialisation segments, and reduces entry barriers.

(b) If VNOs are also permitted to seek SCNaaS, it would foster a competitive ecosystem, accelerate market reach, facilitate wider service delivery, and expand deployment in remote and underserved areas. It would promote efficient utilisation of satellite capacity, lowers entry barriers, encourages innovation, and avoid duplication of infrastructure.

2.51 A gist of stakeholders' comments against permitting VNOs to seek SCNaaS is given below:

(a) The access to SCNaaS should remain only at the NSO level. VNOs are intended to operate as extensions of their parent NSOs.

Allowing direct access to SCNaaS would blur the distinction between NSOs and VNOs.

(b) Permitting VNOs to access SCNaaS would create regulatory arbitrage and undermine the existing licensing structure that clearly separates NSOs from VNOs.

Analysis w.r.t. Q3

2.52 Through the recommendations dated 17.02.2025 on 'the Terms and Conditions of Network Authorisations to be Granted Under the Telecommunications Act, 2023', TRAI had recommended, *inter alia*, as below to DoT in respect of the scope of satellite earth station gateway (SESG) provider authorisation:

"Broad scope of the SESG Provider Authorisation: To provide its SESG infrastructure to the entities which are authorised under Section 3(1)(a) of the Telecommunications Act, 2023 and which are permitted to use satellite media under their scope of service"

2.53 After considering the afore-mentioned recommendations, DoT, through the rule 52(3) of the Telecommunications (Authorisation for Telecommunication Network) Rules, 2026 dated 20.07.2026, provided as below:

"The new authorised entity may provide its telecommunication network to any other new authorised entity or licensee that holds any permission or license (hereinafter "partnering entity" for the purpose of this rule) to establish, operate, maintain or expand satellite network, in accordance with their mutual agreement, on a fair and non-discriminatory basis."

2.54 DoT, through the Telecommunications (Authorisation for Provision of Principal Telecommunication Services) Rule, 2026 dated 23.06.2026 has permitted both the NSO and VNO entities holding the following

authorisations to provide services under their respective scopes of service through, *inter alia*, satellite network:

(a) unified service authorisation;

(b) access service authorisation;

(c) internet service authorisation; and

(d) long distance service authorisation.

2.55 Further, any entity may establish, operate, maintain or expand satellite network under captive very small aperture terminal service authorisation, which is one of the authorisations under the Telecommunications (Authorisation for Provision of Captive Telecommunication Services) Rules, 2026 dated 23.06.2026.

2.56 With respect to the extant regime in respect of satellite-based communication networks, the Authority notes that DoT, on 26.10.2022, issued 'Guidelines for establishing satellite-based communication network(s)'.[43] Through these guidelines, DoT stated, *inter alia*, as below:

"Satellite based communication services can be provided within the respective scope of the following licenses/ authorizations issued under Section 4 of the Indian Telegraph Act, 1885:

(i) Global Mobile Personal Communication by Satellite (GMPCS) Service authorization under Unified License

(ii) VSAT CUG Service authorization under Unified License for commercial service

(iii) In-Flight and Maritime Connectivity (IFMC) Service authorization

(iv) Captive VSAT CUG license

(v) National Long Distance (NLD) Service authorization under Unified License

[43] Source: https://www.dot.gov.in/static/uploads/2026/05/f3015084f0f9f0149100d1780abff4f6.pdf

Besides the above, satellite-based connectivity can also be provided under other authorizations of the Unified License, viz. Access Service as per the scope of the respective license."

2.57 As far as In-Flight and Maritime Connectivity (IFMC) Service authorization is concerned, the Authority notes that DoT, on 14.12.2018, issued 'Flight and Maritime Connectivity Rules, 2018'[44]. As per these rules, *"[a] licensee shall be eligible to apply for authorisation to provide IFMC service if it-*

(a) *holds a license for access service or an ISP category A license; and*

(b) *holds an NLD license or a commercial VSAT CUG service license, and has satellite gateway earth station within the service area of the license as specified in clause (a), in case connectivity through satellite is used."*

2.58 Considering the above, IFMC service (a variant of satellite-based communication service) can be provided by using a combination of the following licenses:

(a) Unified Access Service License (UASL), or Access Service Authorization under Unified License, or Internet service (Category A) License or Internet Service (Category A) Authorization under Unified License; and

(b) National Long Distance Operator (NLDO) License, or NLD Service Authorization under Unified License, or Commercial VSAT CUG License or Commercial VSAT CUG Service Authorization.

2.59 Apart from the above, satellite based communication services can also be provided under (standalone) Captive VSAT CUG license.

2.60 Considering the foregoing description, the Authority is of the view that it would be apt to permit SCN provider authorised entities to provide

[44] Source: https://www.eservices.dot.gov.in/sites/default/files/circular-notifications/IFMC%2014.12.2018.pdf

SCNaaS to any service authorised entity or service licensee that is permitted to provide satellite-based communication services or to provide telecommunication services through satellite network.

2.61 Further, the Authority has taken note of the following aspects:

(a) Under rule 52(3) of the Telecommunications (Authorisation for Telecommunication Network) Rules, 2026 dated 20.07.2026, an entity holding the Satellite Earth Station Gateway (SESG) provider authorisation is permitted to provide its telecommunication network to any other new authorised entity or licensee that holds a permission or license to establish, operate, maintain or expand a satellite network, in accordance with their mutual agreement and on a fair and non-discriminatory basis.

(b) Through para 2.39 above, the Authority has recommended that the scope of satellite communication network provider authorisation should include establishment, operation, maintenance, or expansion of gateway earth station(s).

2.62 Considering the provisions of the rule 52(3) of the Telecommunications (Authorisation for Telecommunication Network) Rules, 2026, The Authority is of the view that satellite communication network provider authorised entities may be permitted to seek satellite earth station gateway(s) from satellite earth station gateway provider authorised entities for providing SCNaaS to the eligible service authorised entities.

2.63 The Authority is further of the view that, as a natural corollary to permitting any satellite communication network provider authorised entity to obtain satellite earth station gateway(s) from SESG provider authorised entities for providing SCNaaS, such satellite communication network provider authorised entity may also be permitted to seek satellite earth station gateway(s) from another satellite communication

network provider authorised entity for providing SCNaaS to the eligible service authorised entities.

2.64 Keeping the above in view, **the Authority recommends that-**

(a) **The satellite communication network provider authorised entity may provide its telecommunication network to any licensee or authorised entity that is permitted to provide satellite-based communication services or provide telecommunication services through satellite network.**

(b) **All licensees and authorised entities - that are permitted to provide satellite-based communication services or provide telecommunication services through satellite network – should be permitted to seek satellite communication network as a service (SCNaaS) from satellite communication network provider authorised entities. For this purpose, the scope of all licenses and authorisations – under which the provision of satellite-based communication services, or the provision of telecommunication services through satellite network is permitted - should be suitably amended.**

(c) **The SCN provider authorised entity should be permitted to seek satellite earth station gateway(s) from (i) SESG provider authorised entities, and (ii) other SCN provider authorised entities, for providing SCNaaS.**

A.5 Need for extending control, visibility, resource allocation, and service management to partnering service providers

2.65 Through Q4 of the Consultation Paper dated 08.04.2026, the Authority solicited comments of stakeholders on the following question:

"Q4. Whether the SCN authorised entity establishing, operating, maintaining, or expanding the baseband system along with SCN should be mandated to extend control, visibility, resource allocation and

management of the telecommunication services, being provisioned using SCN to users, to the partnering entity on mutually agreed terms and conditions? Please provide a detailed response with justification."

Comments of stakeholders on Q4

2.66 In response to Q4, a few stakeholders have supported mandating SCN provider authorised entities to extend control, visibility, resource allocation and management of telecommunication services to partnering service providers, while many others have opposed it.

2.67 A gist of comments of stakeholders, who have supported the mandatory extension of control, visibility, resource allocation and service management to partnering service provider, is given below:

(a) The SCN provider authorised entity must be mandated to extend the necessary control, visibility, and resource allocation capabilities (e.g., service mandate provisioning, fault detection, usage data) to the partnering service-authorized entity. This is essential for the service provider to meet its regulatory obligations and manage customer service.

(b) Extending these capabilities to the partnering entity is essential to enable it to fulfil its regulatory obligations, including quality of service, subscriber management and customer service responsibilities. Without mandated visibility, the service provider becomes a billing intermediary with no ability to ensure QoS compliance, perform lawful interception, respond to subscriber complaints with network-level diagnostics, or manage capacity allocation.

2.68 A gist of comments of stakeholders who have opposed the mandatory extension of control, visibility, resource allocation and service management to partnering service provider is given below:

(a) These matters should be addressed through mutually agreed commercial and technical arrangements, based on the applicable service model and network architecture. The SCN authorised entity should remain responsible for managing the satellite network, baseband system, beam planning, satellite resources, capacity allocation, and technical operation of the SCN. The partnering entity should receive the operational visibility, interfaces, reporting, and service-level information needed to meet its own regulatory, customer, security, billing, emergency service, and quality-of-service obligations. That does not require a blanket transfer of control over the SCN or its baseband system.

(b) Different satellite communication operators across the globe may have different technical and operational models, with equipment and systems of proprietary nature. Even the use cases of SCNaaS may differ for different service providers – ranging from standalone GSO/ NGSO-based satellite system to hybrid GSO-NGSO networks. Not every model/ use case would require satellite communication operators to extend control/ visibility/ resource allocation/ management to service providers. In such cases, a mandatory requirement may force satellite communication network (SCN) operators to unnecessarily expose confidential information to external parties. The inter-se requirements of exchange of information and extent of control/visibility – depending on the technical/ operating model and use case – may be effectively served through mutual agreements between satellite communication operators and service providers. There is no market failure necessitating an intervention from the Authority at this stage.

(c) The extent of control, visibility and information exchange should be left to mutual commercial agreements between SCN operators and service providers, tailored to each technical/ operational model. At this stage, there is no need for regulatory intervention on this

aspect. Flexibility will better support innovation and efficient SCNaaS arrangements.

(d) A non-prescriptive approach will better support innovation, efficient service delivery, and the development of evolving satellite–terrestrial integration models. Operational arrangements between SCN authorised entities and partnering service providers should be defined through commercially agreed frameworks. Regulatory approaches should allow flexibility in how responsibilities related to network operations, service delivery, and resource management are structured between parties, reflecting different technical architectures and partnership models.

(e) Satellite operators employ diverse technical and operational models with proprietary equipment and systems, and SCNaaS use cases vary significantly across standalone and hybrid satellite networks. A mandatory requirement would unnecessarily expose confidential information and proprietary technologies. The extent of control and visibility should therefore be determined through mutually agreed commercial arrangements, as there is no demonstrated market failure warranting regulatory intervention.

Analysis w.r.t. Q4

2.69 As outlined in Chapter I, the satellite earth station gateway acts as the bridge linking the satellite communication network to the terrestrial communication network. A gateway earth station receives signals from satellite(s), processes them through a chain of radio frequency (RF) equipment, intermediate frequency (IF) equipment and baseband equipment, and routes them into terrestrial networks, enabling broadband, voice, and data services for end-users. The baseband equipment (also referred to as "baseband system") is the critical pivot point where satellite signals become usable telecommunication services.

2.70 The baseband equipment performs modulation, demodulation and error correction of baseband signal, 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.), controls the user traffic (Mbps), and quantum of frequency spectrum in use, and monitors integrity and security of user traffic. In short, baseband equipment provides control, visibility, and management of the satellite communication services being rendered to end users.

2.71 Through its recommendations dated 17.02.2025 on 'the Terms and Conditions of Network Authorisations to be Granted Under the Telecommunications Act, 2023', read with 'the Response dated 13.08.2025 to the DoT's back-reference dated 03.07.2025 on the recommendations dated 17.02.2025', TRAI recommended, *inter alia*, as below with respect to satellite earth station gateway provider authorisation:

"*The baseband equipment to be installed at the SESG should ordinarily be owned by the eligible service authorised entity interworking with the SESG Provider authorised entity. However, the SESG Provider authorised entity should be permitted to install the baseband equipment at its SESG on behalf of the eligible service authorised entity:*

Provided that the baseband equipment to be installed at the SESG may be permitted to be owned by the SESG authorised entity as well if the control, visibility, and management of the satellite communication services being rendered to end users remains with the service authorised entity."

2.72 After considering TRAI's recommendations dated 17.02.2025 on 'the Terms and Conditions of Network Authorisations to be Granted Under the Telecommunications Act, 2023', read with 'the Response dated 13.08.2025 to the DoT's back-reference dated 03.07.2025 on the recommendations dated 17.02.2025', DoT has issued the

Telecommunications (Authorisation for Telecommunication Network) Rules, 2026 dated 20.07.2026. In these rules, DoT has permitted, inter alia, the establishment, operation, maintenance and expansion of baseband systems within the scope of satellite earth station gateway (SESG) provider authorisation. DoT has mandated that the SESG provider authorised entity that establishes, operates, maintains or expands a baseband system "*shall extend control, visibility, resource allocation and management of telecommunication services being provisioned using satellite network to users to the partnering entity on mutually agreed terms and conditions*."

2.73 The present stipulation in case of SESG provider authorisation includes the phrase "*on mutually agreed terms and conditions*" which provides adequate flexibility to SESG provider and partnering service provider to negotiate the extent of control on satellite network which is required to be exercised by the two parties.

2.74 The Authority notes that SCN provider authorisation is, essentially, a super-set of SESG provider authorisation. The aspect of extent of control on satellite communication network which is required to be exercised by the two parties in case of SCN provider authorisation is of similar nature as that in case of SESG provider authorisation. Accordingly, it would be apt to include a similar provision under SCN provider authorisation as well.

2.75 Considering the above, **the Authority recommends that under the technical and operating conditions of satellite communication network provider authorisation, a provision should be included that satellite communication network provider authorised entity that establishes, operates, maintains or expands a baseband system shall extend control, visibility, resource allocation and management of telecommunication services**

being provisioned using satellite communication network to users to the partnering entity on mutually agreed terms and conditions.

A.6 Provisions in the Space Policy

2.76 In the year 2020, the Government of India introduced space reforms, allowing greater participation of non-government entities (NGEs) in space activities and ensuring a level playing field. To provide regulatory clarity and foster a thriving space ecosystem, the Government issued Indian Space Policy-2023[45]. Para 5.1 of the Indian Space Policy-2023 states that IN-SPACe shall act as the single window agency for the authorisation of space activities by government entities as well as NGEs, subject to relevant Government directives, keeping in mind safety, national security, international obligations and/or foreign policy considerations. In May 2024, the IN-SPACe issued 'Norms, Guidelines and Procedures for Implementation of Indian Space Policy-2023 in respect of Authorization of Space Activities (NGP)'.[46]

2.77 In this regard, through the Consultation Paper dated 08.04.2026, the Authority solicited comments of stakeholders on the following question:
Q5. What provisions should be included in the terms and conditions of Satellite Communication Network (SCN) authorisation considering the policy/ Act in the Space sector? Kindly provide a detailed response with justification.

[45] https://www.isro.gov.in/media_isro/pdf/IndianSpacePolicy2023.pdf

[46] https://www.inspace.gov.in/sys_attachment.do?sys_id=5d532e37877102503b0f0d060cbb35cf

Comments of stakeholders on Q5

2.78 In response to Q5, one of the stakeholders has stated that IN-SPACe authorization is not required for satellite earth station gateways as these are covered by DoT's existing telecom licenses. Another stakeholder has opined that no additional space sector-related conditions should be prescribed beyond requiring compliance with the existing IN-SPACe authorisation framework.

2.79 Apart from the afore-mentioned comments, many stakeholders have expressed that the SCN provider authorisation should be aligned with the Space Policy, 2023. Many of such stakeholders have drawn attention to the following clauses under the head 'Non-Governmental Entities' of 'Norms, Guidelines and Procedures for Implementation of Indian Space Policy-2023 in respect of Authorization of Space Activities (NGP)':

"*NGEs would be encouraged to:*

1. offer national and international space-based communication services, through self-owned or procured or leased GSO/ NGSO communication satellites.

2. ……..

3. use Indian Orbital Resources and/or Non-Indian Orbital Resources to establish space objects for communication services over India and outside India.

4……"

2.80 Such stakeholders have urged that in line with the vision of the Government of India encapsulated under the Space Policy, satellite earth station gateways established in India should be permitted to be used for providing feeder-link connectivity to satellites that provide connectivity to customers outside of India.

Analysis w.r.t. Q5:

2.81 TRAI has already deliberated the matter of permitting authorised entities to use their satellite earth station gateways established in India for providing service in foreign countries in the recommendations dated 17.09.2024 on 'the Framework for Service Authorisations to be Granted Under the Telecommunications Act, 2023'. Through these recommendations, TRAI had recommended, *inter alia*, as below with respect to the entities holding satellite-based telecommunication service authorisation:

"The Authorised Entity should be permitted to use its Satellite Earth Station Gateway established in India for providing service in foreign countries after obtaining permission from the Central Government."

2.82 Based on the afore-mentioned recommendations, DoT has included the following provision in the rule 60 of Chapter VII (specific conditions for provision of principal telecommunication services using satellite network) of the Telecommunications (Authorisation for Provision of Principal Telecommunication Services) Rules, 2026 dated 23.06.2026:

(2) Every new authorised entity may, subject to the prior permission of the Central Government in writing, for which an application may be submitted in such form and manner and subject to such terms and conditions as specified on the portal,—

(a) use its satellite earth station gateway established in India for providing telecommunication services to users located outside India, subject to—

(i) obtaining all clearances, by whatever name called, as may be required to provide such telecommunication services in the relevant jurisdiction where the user is located, and

(ii) compliance with such directions as issued by the Central Government in this behalf; or

(b) enter into arrangements with entities providing telecommunication services, in areas outside India, after obtaining all clearances, by whatever name called, as may be required to provide such telecommunication services in the relevant jurisdiction where the user is located, for enabling use of the new authorised entity's satellite earth station gateway established in India for uplink and downlink of signals to and from satellites, subject to compliance with such directions as issued by the Central Government in this behalf."

2.83 The Authority is of the view that an analogous provision requires to be included under SCN provider authorisation. Accordingly, **the Authority recommends that the SCN provider authorised entity may, subject to the prior permission of the Central Government in writing, enter into arrangements with entities providing telecommunication services, in areas outside India, after obtaining all clearances, by whatever name called, as may be required to provide such telecommunication services in the relevant jurisdiction where the user is located, for enabling use of the SCN provider authorised entity's satellite earth station gateway established in India for uplink and downlink of signals to and from satellites, subject to compliance with such directions as issued by the Central Government in this behalf.**

A.7 Interconnection with SCN providers

2.84 On 10.11.2025, the Authority issued a consultation paper on 'Review of existing TRAI Regulations on Interconnection matters'. In the consultation paper dated 10.11.2025, the Authority included a section to examine the issues with respect to interconnection framework for satellite-based telecommunications services. Through the consultation paper dated 10.11.2025, the Authority solicited inputs from stakeholders on, *inter alia*, the following question:

"Q34. What should be the interconnection framework for satellite-based telecommunications networks with other telecom networks? Further, whether the interconnection frameworks for MSS and FSS satellite-based telecommunications networks should be distinct? Please provide your response along with end-to-end diagrammatic representation and justification in respect of the following:

a. Satellite - Satellite network interconnection

b. Satellite - PLMN interconnection

c. Satellite - PSTN interconnection"

2.85 In this background, the Authority, through the Consultation Paper dated 08.04.2026, solicited comments of stakeholders on the following question:

Q7. With respect to the interconnection with the proposed Satellite Communication Network Authorised Entities, whether there are any other issues in addition to those raised in TRAI's consultation paper on 'Review of existing TRAI Regulations on Interconnection matters' dated 10.11.2025, which require to be addressed in this consultation process? Please provide a detailed response with justification.

Comments of stakeholders on Q7

2.86 In response to Q7, many stakeholders have opined that no additional interconnection issues need to be addressed beyond those already covered in TRAI's consultation dated 10.11.2025. Many such stakeholders argued that the existing interconnection framework is broadly adequate and that no separate interconnection regime is required for satellite communication networks. A few other stakeholders have suggested that the existing interconnection framework should be updated to accommodate the unique characteristics of satellite communication networks.

2.87 A gist of comments of stakeholders, who have opined that no additional interconnection issues need to be addressed beyond those already covered in TRAI's consultation dated 10.11.2025, is given below:

(a) Currently, satellite-based telecommunications networks operate independently and separately from other telecom networks. There is no interconnection between satellite communication networks and terrestrial communication networks. In fact, there is no interconnection even among the various satellite communication operators *inter-se*. Each satellite communication network – whether GSO or NGSO and MSS or FSS – operates as a standalone network. While technological advancements in the future may require different satellite communication networks to interconnect with each other as well as with terrestrial communication networks, a discussion on interconnection framework at this stage may be too premature.

(b) Existing interconnection frameworks are sufficient and appropriate to govern interconnection involving SCN provider authorised entities.

(c) Satellite-based communication services will be offered by the service providers only under access services authorisation and therefore there is no need for a separate interconnection regime for these service providers, and they should establish interconnection as per the existing regime.

(d) Interconnection-related obligation should continue to rest with the authorised entities providing telecommunication services to end users.

2.88 A gist of comments of a few other stakeholders, who have suggested that the existing interconnection framework should be updated to accommodate the unique characteristics of satellite communication networks, is given below:

(a) As satellite technologies, including NTN technologies, continue to develop, ensuring alignment with international standards, including

3GPP and ITU frameworks, will be important to support interoperability, scalability, and long-term investment

(b) Interconnection responsibilities between SCN provider entity and service providers regarding traffic routing, QoS, fault management, resource allocation etc. should be clearly defined.

Analysis w.r.t. Q7

2.89 In accordance with the powers conferred under the TRAI Act, 1997 (as amended), TRAI regulates a wide range of matters related to interconnection in telecommunication sector. The salient matters are given below:

(a) Terms and conditions of interconnection

(b) Interconnection usage charges

(c) Interconnection charges

2.90 Currently, TRAI is conducting an extensive review of the framework for interconnection in telecommunication sector. For this purpose, TRAI, on 10.11.2025, issued a comprehensive consultation paper on 'Review of existing TRAI Regulations on Interconnection matters' for seeking comments and counter-comments of stakeholders. Stakeholders have submitted their comments and counter-comments on the consultation paper dated 10.11.2025. An open house discussion on the consultation paper has also been conducted on the consultation paper. Considering the inputs provided by stakeholders and further analysis, TRAI, on 03.11.2026, has issued The Telecommunication Interconnection (Third Amendment) Regulations, 2026. At present, TRAI is analysing the inputs received from stakeholders on remaining aspects raised through the consultation paper dated 10.11.2025. Based on its analysis, TRAI would issue revised regulations on remaining aspects, wherever deemed appropriate.

2.91 Till date, the regulatory framework for interconnection was mainly focussed on terrestrial telecommunications networks (viz. PSTN and PLMN). Through the consultation paper dated 11.10.2025, TRAI has invited comments from stakeholders on, *inter alia*, regulatory framework for interconnection between two satellite-based telecommunications networks and interconnection between a satellite-based telecommunications network and terrestrial telecommunications networks (viz. PSTN and PLMN). TRAI has also invited comments from stakeholders with respect to the need for differential treatment of MSS and FSS for the purpose of interconnection.

2.92 Based on the stakeholders' comments on Q7 of the Consultation Paper dated 08.04.2026, and its own analysis, the Authority has decided to deal with the general matters related to interconnection with satellite communication network under its ongoing review of existing TRAI regulations on interconnection matters. However, the specific matter of interconnection agreement between SCN providers and access service providers in case of direct-to-device connectivity will be dealt with through these recommendations itself - in Section D of this chapter.

A.8 Miscellaneous issues related to SCN provider authorisation

2.93 Through Q8 of the Consultation Paper dated 22.08.2026, the Authority invited stakeholders to provide any other inputs or suggestions relevant to the SCN provider authorisation. Q8 is reproduced below:

"*Q8. Any other inputs or suggestions relevant to the proposed Satellite Communication Network authorisation may kindly provide with detailed justification.*"

2.94 In response to Q8, stakeholders broadly emphasised the need for a simple, technology-neutral and future-ready regulatory framework that promotes regulatory certainty, facilitates integration of satellite and

terrestrial networks, supports emerging NTN services and preserves competition. The Authority has taken note of these inputs.

2.95 Having dealt with the issues related to SCN provider authorisation, the Authority proceeds to examine the issues related to assignment of spectrum to SCN provider authorised entities.

B. Assignment of Spectrum to Satellite Communication Network Provider Authorised Entities

B.1 Services to be Provided by Using SCNs

2.96 Amongst satellite-based communication services, Fixed-Satellite Services (FSS) and Mobile-Satellite Services (MSS) are the most prominent services. FSS supports communications from one fixed-point to another fixed-point, such as VSAT. MSS supports communications between mobile devices, such as satellite phones. The definitions of these services, as provided by ITU's Radio Regulations 2024[47], are given below:

"1.21 fixed-satellite service: A radiocommunication service between earth stations at given positions, when one or more satellites are used; the given position may be a specified fixed point or any fixed point within specified areas; in some cases this service includes satellite-to-satellite links, which may also be operated in the inter-satellite service; the fixed-satellite service may also include feeder links for other space radiocommunication services."

"1.25 mobile-satellite service: A radiocommunication service: between mobile earth stations and one or more space stations, or between space stations used by this service; or between mobile earth stations by means

[47] Source: https://www.itu.int/hub/publication/r-reg-rr-2024/

of one or more space stations. This service may also include feeder links necessary for its operation."

2.97 Both FSS and MSS involve user links and feeder links. Feeder links are fixed in nature and therefore fall under FSS category. On the other hand, type of user terminals determines as to whether the service is FSS or MSS – if the user terminal is fixed[48], the service falls under the FSS category; else if the user terminal is mobile, the service falls under the MSS category. Both FSS and MSS can be provided by using GSO satellites or NGSO (MEO/ LEO) satellites.

2.98 Until a few years ago, MSS could be accessed only on specialized devices[49] often referred to as "satellite phones". However, today, MSS satellites can also transmit to and receive from ordinary smartphones. This development represents the evolution of MSS into mainstream consumer connectivity, moving beyond specialized satellite phones toward seamless integration with everyday mobile devices. When MSS is consumed on cellular mobile handsets, it is often referred to direct-to-device (D2D) service via satellite. In general, D2D service via satellite may be leveraged to fill coverage gaps in remote areas, oceans, or during emergencies, making global connectivity more resilient and accessible.

2.99 In many parts of the world, D2D service via satellite has already become operational. The D2D service via satellite has also been formally

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[48] As per the extant policy regime in India, user terminal stations on moving platforms are also permitted for provisioning of connectivity subject to compliance to relevant TEC standard(s) and conditions mentioned therein.
Source: Unified License Agreement

[49] The traditional satellite phones had specialized hardware and appearance as outlined below:
(a) Prominent Antennas: Early and traditional satphones are instantly recognizable by their large, often retractable or external antenna systems, necessary to catch signals from satellites hundreds or thousands of miles away.
(b) Ruggedized Design: They were designed for extreme conditions, built to be water-, shock-, and dust-resistant for explorers, sailors, and military personnel.
(c) Size and Weight: Early models were significantly larger and heavier than contemporary mobile phones, often compared to "bricks" or luggage, though they have since become more portable.

recognized by 3rd Generation Partnership Project (3GPP) through the inclusion of non-terrestrial networks (NTNs)[50] in mobile broadband standards[51]. Considering these developments in the use of NTN, TRAI, in its recommendations dated 18.09.2024 on the Framework for Service Authorisations to be Granted Under the Telecommunications Act, 2023, noted that "*with the technological developments taking place it is now possible for the Access Service providers to deliver the mobile services through Non-Terrestrial Networks (NTNs). It will complement the terrestrial networks in those areas where the terrestrial networks have not reached*." Accordingly, the Authority, through its recommendations dated 18.09.2024, recommended that "*for providing the service, use of Non-Terrestrial Network (NTN) shall be permitted to the Access Service authorised entity and Unified Service authorised entity*." On 23.06.2026, DoT issued the Telecommunications (Authorisation for Provision of Principal Telecommunication Services) Rules, 2026. These rules provide, *inter alia*, that the entities holding (a) unified service authorisation, or (b) access service authorisation, or (c) internet service authorisation, and (d) long distance service authorisation can also use satellite networks for the provision of respective services.

2.100 As outlined above, D2D service via satellite is, essentially, a form of Mobile Satellite Service (MSS). It can be delivered by using the spectrum in frequency bands identified for MSS (such as L-band and S-band), or frequency bands identified for IMT (such as 600 MHz band, 700 MHz band, 800 MHz band, 900 MHz band, 1800 MHz band etc.).

[50] As per 3GPP, non-terrestrial networks (NTN) are networks or segments of networks that use either Uncrewed Aircraft Systems (UAS) operating typically between 8 and 50 km altitudes, including High Altitude Platforms (HAPs) or satellites in different constellations to carry a transmission equipment relay node or a base station.
Source: https://www.3gpp.org/technologies/ntn-overview

[51] 3rd Generation Partnership Project (3GPP) has included NTNs in its mobile broadband standards. These standards define a technical framework for the interoperability between terrestrial and non-terrestrial systems.
The integration of non-terrestrial networks with terrestrial networks by 3GPP is, essentially, aimed at providing ubiquitous connectivity.

2.101 India exhibits immense geographical diversity. Broadly, it comprises five regions – (a) the great mountain range, (b) the Indo-Gangetic plains, (c) the desert region, (d) the southern Deccan peninsula, and (e) the islands. The Indo-Gangetic plains, and a large part of the southern Deccan peninsula are fertile and agriculturally productive. The great mountain range has rugged terrain and high altitude. The desert region is arid with sparse settlements. From the perspective of population density, the Indo-Gangetic plains and most part of the southern Deccan peninsula exhibit high population densities; in comparison, the great mountain range, the desert region, and the islands have lower population densities. In essence, there is a significant variation in population density across its diverse geographical regions, encompassing densely populated urban areas, rural regions, and sparsely populated locations. For the sake of convenience, sparsely populated locations in the country shall collectively be referred to as "remote areas".

2.102 Over the past three decades since the launch of cellular mobile services in India, significant progress has been made in expanding telecommunications connectivity across the country. However, despite these achievements, substantial rural and remote areas continue to remain either unserved or underserved. Due to techno-commercial considerations, cellular mobile service providers do not find it attractive to deploy terrestrial mobile networks in many parts of such regions. Department of Telecommunications, Ministry of Communications, Government of India, through the Digital Bharat Nidhi (earlier known as Universal Service Obligation Fund), supports, *inter alia*, universal service through promoting access to and delivery of telecommunication services in underserved rural, remote and urban areas.[52] It is a continuing effort

[52] In India, the Indian Telegraph (Amendment) Act, 2003 giving statutory status to the Universal Service Obligation Fund (USOF), was passed by the parliament in December 2003. The Universal Service Obligation (USO) Fund was established with the fundamental objective of providing access to "Basic" telegraph services to people in remote and rural areas at affordable and reasonable prices. Subsequently, the Indian Telegraph (Amendment) Act, 2006 was

and is essentially a work-in-progress.[53] As on date, some parts of rural and remote areas still continue to remain unserved or underserved. In this context, the two variants of D2D service viz. (a) D2D service via satellite by using MSS spectrum, and (b) D2D service via satellite by using IMT spectrum may potentially act as enablers of ubiquitous connectivity in the country, particularly in such underserved rural and remote areas.

2.103 For convenience, in these recommendations, the two service types viz. 'MSS' and 'D2D service via satellite by using MSS spectrum' would be dealt up separately. The service type 'MSS' would mean the provision of MSS on specialized satellite phones, while 'D2D service via satellite by using MSS spectrum' would mean the provision of MSS on cellular mobile devices.

2.104 While FSS and MSS remain the mainstream radiocommunication services which are provided via satellite, considering the potential usefulness of the D2D service via satellite in providing ubiquitous connectivity in the country, the Authority considered it necessary to examine as to whether the SCNs established by the SCN provider authorised entities should also be permitted to be used for providing D2D service via satellite by using MSS spectrum, and D2D service via satellite by using IMT spectrum. Accordingly, the Authority, through the Consultation Paper dated 08.04.2026, solicited comments of stakeholders on the following question:

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notified on 29.12.2006 to repeal the term "Basic" wherein the scope of USO Fund was widened to provide access to telegraph services (including mobile services, broadband connectivity, and ICT infrastructure creation) in rural and remote areas. As per the information available on the USOF website, USOF has completed several schemes/ projects such as (a) rural wireline broadband scheme, (b) Amarnath project, (c) sanchar shakti project, (d) village public telephone project, (e) mobile infrastructure scheme, (f) rural community phone project, (g) rural direct exchange lines project, (h) solar mobile charging facilities project, (i) mobile tower project.

[53] The focus of the schemes and projects of DBN (USOF) has been mostly to provide telecommunication services in inhabited uncovered villages.

"Q9. Which of the following services should be permitted to be provided by using the SCNs established by the proposed SCN authorised entities:
(a) Fixed Satellite Service (FSS);
(b) Mobile Satellite Service (MSS);
(c) Direct-to-Device (D2D) Service via satellite by using MSS spectrum;
(d) Direct-to-Device (D2D) Service via satellite by using IMT spectrum?
Kindly provide a detailed response with justification."

Comments of stakeholders on Q9

2.105 In response to Q9, many stakeholders have stated that all four types of services viz. FSS, MSS, D2D service by using MSS spectrum, and D2D service by using IMT spectrum should be permitted to be provided by using the SCNaaS provided by SCN provider authorised entities. A gist of comments of such stakeholders is given below:

(a) The fundamental objective of creating the SCN provider authorisation under Section 3(1)(b) of the Telecommunications Act, 2023 is to establish a robust, shared network infrastructure capable of delivering SCNaaS. To maximize the utility, economic viability, and public benefit of this high-cost space infrastructure, the regulatory framework must be technologically neutral and service-agnostic.

(b) All satellite communication services that service providers are currently permitted to offer using their own infrastructure should equally be permitted when using SCNaaS. Any restriction on the types of services permitted would create level playing field issues, encourage regulatory arbitrage, and defeat the purpose of the SCN authorisation.

2.106 In response to Q9, a few stakeholders have suggested that D2D service by using IMT spectrum should be examined after considering the outcome of WRC-2027.

Analysis of issues raised through Q9

2.107 While examining the comments of stakeholders, the Authority has taken note of the following aspects:

(a) Through the Telecommunications (Authorisation for Provision of Principal Telecommunication Services) Rules, 2026 dated 23.06.2026, DoT has permitted the entities holding (i) unified service authorisation, or (ii) access service authorisation, (iii) internet service authorisation, and (iv) long distance service authorisation to also use satellite networks for the provision of services under the scope of respective authorisations.

(b) The introduction of SCN provider authorisation is intended to bring more flexibility in the ecosystem where it would become feasible to provide satellite communication service and satellite communication network by different entities.

2.108 The Authority is of the view that there should be no difference in the scope of services provided to users by any entity holding (i) unified service authorisation, or (ii) access service authorisation, or (iii) internet service authorisation, or (iv) long distance service authorisation choosing to use SCNaaS and one establishing its own network. Besides, permitting full range of services to be provided by using SCNs will ensure that the regulatory framework for SCN provider authorisation remains technologically neutral and future ready.

2.109 In view of the foregoing discussion, **the Authority recommends that FSS, MSS, D2D service via satellite using MSS spectrum, and D2D service via satellite using IMT spectrum should be permitted to be provided by using the SCNs established by SCN provider authorised entities.**

B.2 Whether the D2D service by using IMT spectrum be permitted in India at this stage

2.110 For permitting D2D service via satellite by using IMT spectrum, it would normally be necessary that MSS allocations are formally made in IMT frequency bands under ITU Radio Regulations, and/ or in National Frequency Allocation Plan (NFAP). As yet, ITU Radio Regulations have not included MSS allocations in IMT frequency bands. In the next WRC-27, the agenda item 1.13[54] will "*consider studies on possible new allocations to the mobile-satellite service for direct connectivity between space stations and International Mobile Telecommunications (IMT) user equipment to complement terrestrial IMT network coverage, in accordance with Resolution 253 (WRC-23)*".[55]

2.111 In short, WRC-27 will consider new allocations to MSS in IMT frequency bands in the ITU-Radio Regulations under the agenda item 1.13, as a means of providing a spectrum management framework for D2D service via satellite by using the spectrum in IMT frequency bands. Having said that, Article 4.4 of ITU-Radio Regulations provides that "*Administrations of the Member States shall not assign to a station any frequency in derogation of either the Table of Frequency Allocations in this Chapter or the other provisions of these Regulations, except on the express condition that such a station, when using such a frequency assignment, shall not cause harmful interference to, and shall not claim protection*

[54] Source: https://www.itu.int/en/ITU-R/study-groups/rcpm/Pages/wrc-27-studies.aspx

[55] Resolution 253 of WRC-2023 included the following studies:
(a) studies on possible allocations to the MSS in the frequency range between 694/698 MHz and 2.7 GHz, taking into account the IMT frequency arrangements addressed in the most recent version of Recommendation ITU-R M.1036;
(b) studies on spectrum requirements and on technical, operational and regulatory matters related to the implementation of the mobile-satellite service for direct connectivity to the IMT user equipment to complement the terrestrial IMT network coverage,
(c) studies on sharing and compatibility between incumbent services, including in adjacent frequency bands, ensuring the protection of incumbent services in accordance with the Radio Regulations;
(d) study on possible technical and operational measures to ensure that the stations in the MSS do not cause harmful interference to, or claim protection from, stations operating in the mobile service.

from harmful interference caused by, a station operating in accordance with the provisions of the Constitution, the Convention and these Regulations.". Therefore, in case it is decided to permit D2D service via satellite using the spectrum in IMT frequency bands before ITU makes such an allocation after WRC-27, a satellite system operating in IMT frequency bands for which there is no allocation in the ITU-Radio Regulations may do so under the 'no-interference, no-protection' provisions of Article 4.4 of the ITU-Radio Regulations.

2.112 While the matter relating to the use of spectrum in IMT frequency bands for D2D service via satellite would be decided in WRC-27, some countries such as Australia, Canada, New Zealand, United Kingdom (UK), and United States of America (USA) have already developed national regulatory frameworks for enabling D2D service via satellite - under various nomenclatures – in select FDD[56] bands of IMT in their respective countries.[57] In general, these regulatory frameworks permit a commercial partnership between a terrestrial cellular mobile operator and a satellite operator, under which, the satellite operator facilitates the terrestrial cellular mobile operator to provide D2D service via satellite to consumers, especially in remote, unserved, and underserved areas. The aim of such partnerships is to enable ubiquitous mobile connectivity to the subscribers of terrestrial mobile operators. A brief description of the regulatory framework for D2D service via satellite by the telecom regulators in the USA, Canada, Australia, New Zealand, and UK is given below:

[56] FDD is an acronym of frequency division duplexing.

[57] The European Commission (EC) based on the opinion of Radio Spectrum Policy Group (RSPG) has given a mandate to the European Conference of Postal and Telecommunications Administrations (CEPT) to study the feasibility and develop harmonised technical conditions for the use of EU-harmonised frequency bands for the terrestrial provision of electronic communications services (ECS) also by satellite systems providing Direct-to-Device-IMT (D2D-IMT) connectivity.
Source: https://cept.org/files/1412/ECC(25)059_Annex1_Mandate%20to%20the%20CEPT%20on%20D2D-IMT%20in%20EU-harmonised%20ECS%20bands.pdf

(a) **USA**: In 2024, the Federal Communications Commission (FCC), USA, established a regulatory framework for Supplemental Coverage from Space (SCS) to enable partnerships between satellite operators and terrestrial mobile operators to offer ubiquitous connectivity directly to consumer handsets using spectrum previously allocated only to terrestrial mobile service.[58] In order to allow satellite communications on the spectrum previously allocated only to terrestrial mobile services, the FCC modified the US Table of Frequency Allocations to authorize secondary Mobile Satellite Service (MSS) operations in certain frequency bands [600 MHz band, 700 MHz band, 800 MHz band, 1850-1915 MHz and 1930-1995 MHz, and 1915-1920 MHz and 1995-2000 MHz][59] in FDD mode. In these frequency bands, the FCC authorized SCS only where one or more terrestrial mobile operators, together holding all licenses of the relevant frequency channel throughout a defined geographically independent area (GIA)[60], lease access to their spectrum rights to a participating satellite operator. Under the FCC's SCS framework, satellite operators and terrestrial mobile operators providing SCS must comply with the existing satellite and terrestrial rules to avoid harmful interference into radio astronomy and related services. FCC also prescribed an entry criteria that satellite operators must meet to operate satellites in the SCS bands.

(b) **Canada**: In 2025, the Innovation, Science and Economic Development (ISED), Canada, established its regulatory framework for Supplemental Mobile Coverage by Satellite (SMCS) by

[58] Source: https://docs.fcc.gov/public/attachments/DOC-400678A1.pdf

[59] These bands make use of the frequency division duplexing (FDD) scheme in USA.

[60] GIAs in USA: (1) the contiguous United States (CONUS); (2) Alaska; (3) Hawaii; (4) American Samoa; (5) Puerto Rico/U.S. Virgin Islands; and (6) Guam/Northern Mariana Islands

leveraging satellite technology to supplement terrestrial mobile networks.[61] ISED modified the Canadian Table of Frequency Allocation (CTFA) to add a new secondary MSS allocation for the provision of SMCS on a no-protection, no-interference basis in 600 MHz band, 700 MHz band, 800 MHz band, 1850-1915 MHz paired with 1930-1995 MHz, 1710-1755 MHz paired with 2110-2155 MHz, and 1755-1780 MHz paired with 2155-2180 MHz in FDD mode.

(c) **Australia**: In 2024, the Australian Communications and Media Authority (ACMA) issued a regulatory guidance for the operation of IMT satellite direct-to-mobile (D2M) service.[62] The salient points of the regulatory guidance for IMT satellite D2M service issued by ACMA are given below:

(i) IMT satellite D2M services must operate through collaboration between a satellite operator, and an existing terrestrial IMT licensee (i.e. a mobile network operator already holding spectrum rights).

(ii) IMT satellite D2M services are practical only under Australia-wide spectrum licenses. Suitable spectrum bands identified are 700 MHz band, 800 MHz band, 850/ 900 MHz band, and 2.5 GHz band. These frequency bands are already licensed to mobile network operators and support frequency division duplexing (FDD), which is critical for IMT satellite D2M operations.

(iii) Satellite operators and partnering IMT licensees are

[61] Innovation, Science and Economic Development Canada, "Decision on a Policy, Licensing and Technical Framework for Supplemental Mobile Coverage by Satellite," SMSE-001-25, February 2025
The decision is available at the following URL:
https://ised-isde.canada.ca/site/spectrum-management-telecommunications/en/learn-more/key-documents/consultations/decision-policy-licensing-and-technical-framework-supplemental-mobile-coverage-satellite

[62] Australian Communications and Media Authority, "Regulatory Guide: Operation of an IMT Satellite Direct-to-Mobile Service," September 2024
The regulatory guide is available at the following URL:
https://www.acma.gov.au/sites/default/files/2025-05/Regulatory%20guide_Operation%20of%20an%20IMT%20satellite%20direct-to-mobile%20service_0.pdf

responsible for due diligence in ensuring coexistence with other spectrum users, and minimization of interference, especially outside spectrum-licensed areas.

(d) **New Zealand**: In 2023, New Zealand established a framework under which Direct-to-Device (D2D) services can be provided in the existing mobile frequency bands under the management rights framework administered by Ministry of Business, Innovation and Employment (MBIE). Under this approach, operators are expected to cooperate and coordinate with each other and with adjacent spectrum users to manage and prevent potential interference issues[63].

(e) **UK**: In February 2026, Ofcom, UK introduced the Wireless Telegraphy (Direct to Device Satellite Communications) (Exemption) Regulations 2026[64]. The purpose of the regulations is to enable mobile phones to connect directly to satellites using spectrum already licensed to mobile network operators (MNOs). This allows users to access connectivity in areas without terrestrial mobile coverage and during network outages. These regulations exempt mobile handsets and SIM-enabled devices from needing individual wireless licences when connecting to authorised satellite Direct-to-Device (D2D) services. To enable the implementation of the authorisation framework, Ofcom decided to allow D2D operation in all frequency division duplex (FDD) and supplementary downlink (SDL) mobile spectrum bands below 3 GHz. However, Ofcom mentioned that some bands, including 1.4 GHz and 2.1 GHz would require further technical analysis and may require

[63] Source: https://www.rsm.govt.nz/licensing/direct-to-device-licensing

[64] Source:https://www.ofcom.org.uk/siteassets/resources/documents/consultations/category-1-10-weeks/consultation-enabling-satellite-direct-to-device-services-in-mobile-spectrum-bands/main-documents/statement-the-final-regulations-for-the-authorisation-of-satellite-direct-to-device-services.pdf

consultation prior to authorisation.[65] According to Ofcom's framework, mobile network operators (MNOs) must apply for a variation of their wireless telegraphy licence to provide D2D service via satellite. Once a licence variation is approved, the relevant frequencies are added to the exemption regulations. The framework also prescribes that the wireless telegraphy apparatus must not cause or contribute to any undue interference to any wireless telegraphy, and the wireless telegraphy apparatus must not be airborne. Further, Ofcom has prescribed band-specific power limits for D2D satellite unwanted emissions in mobile downlink spectrum.

2.113 Considering that spectrum management including interference management related issues pertaining to D2D service via satellite by using IMT spectrum would be decided in WRC-27 under Agenda Item 1.13, the Authority raised the following question in the Consultation Paper dated 08.04.2026 for seeking comments of stakeholders:

"Q10. Whether D2D Service via satellite by using IMT spectrum should be permitted at this stage itself, or should this matter be examined after considering the outcome of WRC-2027? Kindly provide a detailed response with justification."

Comments of stakeholders on Q10

2.114 In response to Q10, many stakeholders have supported immediate enablement of D2D service by using IMT spectrum as an extension of terrestrial mobile networks through partnerships between SCN operators and mobile service providers. A few other stakeholders have suggested that D2D service using IMT spectrum should wait for the outcomes of

[65] https://www.ofcom.org.uk/siteassets/resources/documents/consultations/category-1-10-weeks/consultation-enabling-satellite-direct-to-device-services-in-mobile-spectrum-bands/main-documents/dec2025/statement---enabling-satellite-direct-to-device-connectivity-in-mobile-spectrum-bands.pdf

WRC-27 to ensure technical, regulatory, and spectrum compatibility with terrestrial networks.

2.115 A gist of comments of the supporters of immediate enablement of D2D service by using IMT spectrum is given below:

(a) Satellite-based D2D on IMT spectrum requires significant investment in satellite payloads, gateways, network integration and device development. Investors need a clear regulatory signal that such services are permissible in India. Deferring the decision until WRC-27 would create prolonged uncertainty, potentially causing India to miss out on current investment and partnership opportunities as global operators and vendors move ahead in other markets.

(b) Waiting for WRC-27 would place India years behind global technological adoption, severely delaying the socio-economic benefits of ubiquitous connectivity for Indian citizens. India can safely leverage the provision of Article 4.4 of ITU-RR. Since D2D via IMT is primarily aimed at bridging coverage gaps within India's sovereign borders, domestic spectrum management can be handled via coordination between the SCN provider, the partnering mobile network operator, and the WPC Wing without waiting for global harmonization. Outcomes of WRC-2027 can be incorporated later through adjustments to technical conditions or coordination requirements, without delaying initial enablement.

(c) India should not delay participation in the evolution of D2D service by using IMT spectrum. Several international operators and satellite players have already demonstrated technical feasibility and provided a clear evolution path for the global handset and chipset ecosystem. Early permission in India will ensure that Indian users and networks are not left behind. Waiting until 2027 means enabling frameworks will come by 2028-29 and commercial rollouts might only begin by 2029-2030. In that window, India would

remain a consumer of globally tested and proved technologies rather than one of the creators of them.

(d) Since IMT spectrum is already assigned to terrestrial access service providers, any D2D implementation via IMT spectrum will be managed in close coordination with these licensees, ensuring that terrestrial services remain protected.

2.116 A gist of comments of stakeholders, who have suggested that D2D service by using IMT spectrum should wait for the outcomes of WRC-27, is given below:

(a) Commercial deployment of D2D satellite services via IMT spectrum should be decided based upon global/ regulatory clarity and deferred until the international regulatory framework and technical conditions are conclusively addressed through WRC-2027. In the interim period, limited, controlled, and non-commercial trials or pilots—subject to strict safeguards, power limits, and coordination requirements—may be considered for specific public interest use cases such as emergency communications, without creating regulatory precedents.

(b) D2D services using IMT spectrum raise complex issues regarding interference, international coordination, and cross-border spill-over that require technical study. Waiting for the WRC-27 decisions is essential to ensure a proven technology pathway, global harmonization of frequency bands, and the evolution of a stable policy framework for interference mitigation.

Analysis of issues raised through Q10

2.117 While analysing the comments of stakeholders on Q10, the Authority has taken note of the following aspects:

(a) Owing to techno commercial considerations, terrestrial mobile network coverage has not been able to reach all parts of the country, particularly in rural and remote areas. IMT-based D2D

service is uniquely suited to fill the gaps in terrestrial mobile network coverage in the country.

(b) Article 4.4 of the ITU Radio Regulations already provides a robust international mechanism to authorize IMT-based D2D services on a 'non-interference, non-protection' basis. This provision allows administrations to assign frequencies in derogation of the Table of Frequency Allocations of ITU Radio Regulations, provided such stations do not cause harmful interference to, nor claim protection from, services operating in accordance with the existing regulations.

(c) IMT-based D2D service has already been recognized by 3GPP (Release 17 onwards) through the inclusion of NTNs in mobile broadband standards.

(d) Globally, D2D service by using IMT spectrum is already operational in several countries. In such countries, national telecommunication regulators have established national frameworks to enable supplemental coverage from space using IMT spectrum primarily through commercial partnerships between satellite operators and terrestrial mobile network operators.

2.118 Considering the above, **the Authority recommends that –**

(a) D2D service via satellite by using IMT spectrum should be permitted in the country on non-interference, non-protection basis under the provisions of Article 4.4 of ITU Radio Regulations without waiting for the outcome of WRC-27; and

(b) The decision, if any, taken by the Government of India on the matter of D2D service via satellite using IMT spectrum after the conclusion of WRC-2027 should be made applicable to D2D service via satellite using IMT spectrum at that stage.

2.119 Regulatory Framework for D2D service via satellite using IMT spectrum will be analysed in a subsequent section of these recommendations.

B.3 Assignment of spectrum to SCN provider authorised entity

2.120 A typical satellite communication network relies mainly on two types of links viz. user link, and feeder link. A brief description of user link and feeder link is given below:

(a) User link: The user link is the communication path between the end-user terminal (such as VSAT, satellite phone etc.) and the satellite.

(b) Feeder link: The feeder link is the communication path between a gateway earth station and the satellite. It carries aggregated traffic from the operator's terrestrial network to the satellite and *vice versa*.

2.121 In an earlier sub-section, the Authority has recommended that four types of services viz. FSS, MSS, D2D service via satellite by using MSS spectrum, and D2D service via satellite by using IMT spectrum should be permitted to be provided by using the SCNs established by SCN provider authorised entities. For providing these services through SCNs, appropriate type of spectrum will have to be deployed in the feeder link and user link of SCNs as outlined below:

(a) Feeder link: The feeder link of any SCN will invariably use FSS spectrum[66] regardless of the type of underlying service viz. FSS, or MSS, or D2D via satellite by using MSS spectrum, or D2D via satellite by using IMT spectrum, being provided through SCN.

(b) User link: the following scenarios would apply w.r.t. the user link of SCNs:

[66] FSS spectrum means the spectrum in the frequency bands allocated for Fixed Satellite Service (FSS).

(i) If the SCN is to be used for providing FSS, the FSS spectrum would be used in the user link of the SCN.

(ii) If the SCN is to be used for providing MSS, the MSS spectrum[67] would be used in the user link of the SCN.

(iii) If the SCN is to be used for providing D2D service via satellite by using MSS spectrum, the MSS spectrum would be used in the user link of the SCN.

(iv) If the SCN is to be used for providing D2D service via satellite by using IMT spectrum, the IMT spectrum would be used in the user link of the SCN.

2.122 The description in the preceding paragraph may be summarized with the help of the following table:

Table 2.1: Type of spectrum to be used in SCN

Type of service to be provided by using SCNs	**Type of spectrum to be used in SCN**	
	In the feeder link	In the user link
FSS	FSS	FSS
MSS	FSS	MSS
D2D service via satellite using MSS spectrum	FSS	MSS
D2D service via satellite using IMT	FSS	IMT

2.123 Simply put, SCNs may potentially use three types of frequency spectrum viz. FSS spectrum, MSS spectrum, and IMT spectrum. As per the extant policy regime, the Government assigns FSS spectrum and MSS spectrum to satellite-based telecommunication service providers [such as commercial VSAT-CUG service provider and Licensee for Provision and Operation of Satellite Based Services Using Gateway Installed in India

[67] MSS spectrum means the spectrum in the frequency bands allocated for Mobile Satellite Service (MSS).

Under 'Sui-Generis' Category]. On the other hand, the Government assigns IMT spectrum to only those entities which are authorised to provide access service.

2.124 In this background, the Authority solicited comments from stakeholders on the following questions:

"Q11. From the perspective of holding spectrum for the feeder link and the user link on SCNs, which of the following combinations should be permitted at the SCNs established by the proposed SCN authorised entities:

Combination No.	*Spectrum for the feeder link held by -*	*Spectrum for the user link held by -*
1	*SCN authorised entity*	*SCN authorised entity*
2	*SCN authorised entity*	*Partnering entity (service provider)*
3	*Partnering entity (service provider)*	*SCN authorised entity*
4	*Partnering entity (service provider)*	*Partnering entity (service provider)*

Kindly provide a detailed response with justification.

Q12. Which of the following types of spectrum should be assigned to the proposed SCN authorised entities:

(a) Spectrum in the frequency bands allocated for FSS

(b) Spectrum in the frequency bands allocated for MSS

(c) Any other?

Kindly provide a detailed response with justification."

Comments of stakeholders on Q11

2.125 In response to Q11, many stakeholders have preferred the combination #1, while many other stakeholders have supported the combination #2. A couple of stakeholders have supported the combination #4 also.

2.126 A gist of comments of stakeholders, who have preferred the combination #1, is given below:

(a) The combination #1 ensures end-to-end network control by a single entity, efficient spectrum coordination, and simpler interference management. Also, it is more efficient as it will allow the spectrum held by SCN providers to be shared by multiple service partnering entities.

(b) The combination #1 is the most practical option considering that SCN provider authorisation is being envisaged to offer SCNaaS to service providers. Under this combination, while the complete responsibility and control of the SCN and the usage of spectrum will be with the SCN provider, its partnering service providers will have to only engage with the end users. This will allow service providers to focus on provisioning of service without having to bear the capital-intensive burden of establishing independent ground segments or managing separate spectrum assignments.

2.127 A gist of comments of stakeholders, who have preferred the combination #2, is given below:

(a) Spectrum should be assigned to the entity that controls and operates the equipment using that spectrum. The SCN provider entity will own and operate gateway earth stations; hence the feeder link spectrum should be assigned to SCN providers. The partnering service provider will own and manage the user terminals; hence the user link spectrum should be assigned to partnering service providers. This will ensure clear regulatory accountability, avoids ambiguity in

enforcement, and give the service provider direct control over the user link for ensuring quality of service to end users.

(b) Combination #2 is ideal for fulfilling the respective spectrum requirements of SCN providers and partnering service providers. This combination would facilitate a clear delineation of responsibilities and enable the efficient use of spectrum.

2.128 The stakeholders, who have preferred the combination #4, have opined that spectrum should be assigned only to authorised access service providers and no other entity should hold any right to use spectrum.

2.129 Many stakeholders, who have preferred the combination#1, have suggested that all combinations given in Q11 should be permitted. A gist of comments of such stakeholders is given below:

(a) Satellite communication systems operate across a wide range of technical architectures, spectrum bands, service models, and partnership arrangements. Allowing flexibility in holding spectrum for feeder links and user links is essential to support innovation, efficient deployment, and the evolution of satellite-based services in India. Accordingly, all arrangements should be permissible.

(b) Permitting multiple combinations will accommodate diversity of satellite system architectures, will support different commercial and partnership models; and will avoid artificial constraints that could increase costs or delay deployment. Neither type of entity should be precluded from obtaining spectrum in either the feeder link or user link.

2.130 Many stakeholders, who have favoured the combination#1, have opined that for D2D via IMT spectrum, the FSS spectrum in the feeder link should be held by SCN provider while the IMT spectrum to be used in the user link should be held by the partnering service provider. For all other service scenarios viz. FSS, MSS and D2D service via MSS spectrum,

SCN provider should be permitted to hold the spectrum for both feeder link as well as user link.

Comments of stakeholders on Q12

2.131 In response to Q12, many stakeholders have supported that both types of spectrum viz. FSS and MSS should be assigned to SCN provider authorised entities. On the other hand, a few stakeholders have suggested that only FSS spectrum for feeder link should be assigned to SCN provider authorised entities. A couple of stakeholders have opined that no spectrum should be assigned to SCN provider authorised entities.

2.132 A gist of comments of stakeholders, who have supported that both type of spectrum viz. FSS and MSS should be assigned to SCN provider authorised entities, is given below:

(a) FSS and MSS bands form the core globally harmonised resources for satellite communications covering fixed, mobility, and broadband use cases. To establish a robust, modern and technology-first network, SCN providers should be permitted to design a network and configure services in the most efficient manner without constraints on allocation of a specific frequency band. A flexible, technology-neutral approach will be important to support innovation and efficient deployment. This will enable support for wide range of services.

(b) Depending on the range of service requirements, spectrum in the frequency bands allocated to both FSS and MSS should be assigned to SCN provider authorised entities. Given the magnitude of capital expenditure involved in establishing the satellite network, restriction on any specific frequency band may not be beneficial for promoting and attracting global players.

2.133 The stakeholders who have supported the combination #2 (i.e. only feeder link spectrum to SCN providers) in response to Q11, have stated

that the feeder link spectrum of all kinds of satellite services – FSS, MSS as well as D2D – lies in the FSS bands; as SCN providers may only require feeder link spectrum for their operations, only FSS bands may be relevant for them.

2.134 With respect to IMT spectrum, many stakeholders have opined that IMT spectrum should only be assigned to mobile access service providers; SCN providers should be permitted to use IMT spectrum only with the consent of mobile access service providers on a secondary, non-interference, non-protected basis; this pathway leverages the existing device ecosystem and the mobile access service providers' spectrum rights and policy control.

Analysis of issues raised through Q11 and Q12

2.135 Spectrum for feeder link: The feeder link for both FSS and MSS architectures, including D2D variants utilizes FSS spectrum. Without the provision of FSS spectrum for feeder link, SCN provider authorisation would be reduced to SESG provider authorisation. In this regard, the Authority is of the view that permitting SCN provider authorised entities to obtain FSS spectrum for feeder links would be essential for enabling them to provide SCNaaS to partnering service providers. The Authority is also of the view that SCN provider authorised entities should be permitted to utilize the FSS spectrum held by its partnering service providers for using it in the feeder links under an agreement between them.

2.136 Spectrum for user link for FSS, MSS and D2D service by using MSS spectrum: The spectrum to be assigned for user link must align with the nature of the end user service and terminal type. For providing services to fixed terminals like VSATs, FSS spectrum is required. On the other hand, for providing services to mobile devices like satellite phones (under the MSS service) and ordinary mobile handsets (under the D2D

service by using MSS spectrum), MSS spectrum is required. The Authority is of the view that for enabling SCN provider authorised entities to support diverse use cases ranging from high-capacity fixed broadband to narrowband IoT and mobile connectivity within a unified, efficient satellite communication network provider authorisation framework, it would be essential to permit them to obtain both FSS spectrum and MSS spectrum for user links. Permitting SCN provider authorised entities to hold MSS spectrum for user links would be particularly efficient as the SCN provider can serve multiple partnering service provider by using the same (limited quantum of) MSS spectrum. The Authority is also of the view that SCN provider authorised entities should be permitted to utilize the FSS/ MSS spectrum held by its partnering service providers for using it in the user links under an agreement between them.

2.137 Spectrum for user link for D2D service by using IMT spectrum: For this specific use case, there is a significant regulatory distinction in the country. IMT spectrum is assigned only to access service providers through an auction process, granting them exclusive rights over their respective licensed service areas. Considering the international practices on the matter, it would be suitable to permit the SCN provider authorised entity to utilize IMT spectrum held by its partnering access service provider under an agreement between them. This approach would help enable supplemental satellite coverage and, at the same time, it would ensure that terrestrial access services remain duly protected.

2.138 Considering the comments of stakeholders and its own analysis, **the Authority recommends that SCN provider authorised entities should be permitted to seek the assignment of (a) FSS spectrum for feeder link; and (b) FSS spectrum and/or MSS spectrum for user link from the Government.**

B.4 Regulatory framework for assignment of FSS spectrum and/or MSS spectrum to SCN providers

2.139 Prior to the enactment of the Telecommunications Act, 2023, the Central Government was assigning the spectrum in C-band, Ku-band and Ka-band for the provision of GSO-based FSS (mainly for VSAT-based CUG applications). Further, for the provision of GSO-based MSS, the Central Government was assigning the spectrum in L-band (for the user link) and C-band (for the feeder link).

2.140 After the enactment of the Telecommunications Act, 2023, DoT sent a reference dated 11.07.2024 to TRAI. Through the reference dated 11.07.2024, DoT expressed that "*[k]eeping in view the provisions of Section 4 and the First Schedule of the Telecommunications Act-2023, in terms of Section 11(1)(a) of TRAI Act 1997, TRAI is requested to provide its recommendations on terms and conditions of spectrum assignment including spectrum pricing while accounting for level playing field with terrestrial access services for the following satellite-based communication services:*

i. NGSO based Fixed Satellite Services providing data communication and Internet services. In its recommendations, TRAI may take into account services provided by GSO-based satellite communication service providers.

ii. GSO/ NGSO based Mobile Satellite Services providing voice, text, data, and internet services."

2.141 With respect to DoT's reference dated 11.07.2024, TRAI provided its recommendations on 'Terms and Conditions for the Assignment of Spectrum for Certain Satellite-Based Commercial Communication Services' dated 09.05.2025[68]. In line with the DoT's request through the

[68] TRAI's recommendations dated 09.05.2025 are available at the following URL: https://trai.gov.in/sites/default/files/2025-05/PR_No.36of2025.pdf

reference dated 11.07.2024, TRAI provided its recommendations on both GSO-based MSS, and NGSO-based MSS; with respect to FSS, the recommendations were mainly focussed on NGSO-based FSS. In respect of GSO-based FSS[69], TRAI provided its recommendations on spectrum charges only, as a policy framework for the assignment of spectrum for GSO-based FSS already existed.

2.142 Thereafter, DoT, on 12.11.2025, sent a back-reference to TRAI on the recommendations dated 09.05.2025 of TRAI. In this regard, TRAI, on 08.12.2025, sent its response to the back reference dated 12.11.2025 of DoT.

2.143 Salient points of the TRAI's recommendations dated 09.05.2025, read with the TRAI's response dated 08.12.2025 to DoT's back-reference dated 12.11.2025, are given below:

(a) For assigning frequency spectrum for user links and feeder links for NGSO-based FSS for data communication and Internet service, frequency spectrum in Ku band, Ka band, and Q/V band should be considered.

(b) For assigning frequency spectrum for GSO/ NGSO-based MSS for providing voice, text, data communication and Internet service, the following frequency bands should be considered:

(i) L band and S band for user links; and

(ii) C band, Ku band, Ka band and Q/V band for feeder links.

(c) Frequency spectrum should be assigned for NGSO-based FSS and GSO/ NGSO-based MSS for a period of up to five years. However, considering the market conditions, the Government may extend it for a further period of up to two years.

[69] While seeking recommendations on NGSO based FSS, DoT expressed that *"[i]n its recommendations, TRAI may take into account services provided by GSO-based satellite communication service providers."*

(d) Terms and conditions including prices for the spectrum assignment for NGSO-based FSS and GSO/ NGSO-based MSS, recommended through these recommendations, should remain valid for a period of five years from the date of notification of the policy regime by the Central Government, further extendable by a period of upto two years.

(e) Any revision in the terms and conditions including prices for the spectrum assignment for NGSO based FSS and GSO/ NGSO based MSS, notified by the Central Government after a period of five years from the date of notification of the policy regime recommended through these recommendations, should become applicable to all authorised entities including the existing entities.

(f) To control interference, the relevant provisions of ITU-RR should be made applicable to the authorised entities, and other entities which have been authorised by the Central Government.

(g) The frequency spectrum identified by the Central Government for satellite-based telecommunication services in the higher frequency bands such as C, Ku, Ka, and Q/V bands that are assigned on a shared basis, should be assigned with a condition that each Authorised Entity and all other entities which have been authorized by the Central Government to use such shared frequency spectrum, will coordinate among themselves in good faith.

(h) The Government, with the help of Telecom Engineering Centre (TEC), should examine the need for prescribing the framework for sharing of spectrum. The framework may include conditions on the maximum equivalent power flux density (EPFD) etc. With a view to nudging the satellite operators to coordinate among themselves in good faith at the earliest, the Government may also consider introducing a provision for splitting of spectrum as a last resort in line with the provision created by FCC in its 'Spectrum Sharing Rules for Non-Geostationary Orbit, Fixed-Satellite Service Systems' in case two or more NGSO-based FSS satellite systems fail to complete coordination.

(i) For establishment and operation of satellite earth station gateways, the authorised entities should be mandated to coordinate among themselves in good faith.

(j) The DoT, with the help of TEC, should carry out a study to assess the requirement for prescribing coordination distance between two satellite earth station gateways (GSO-NGSO and NGSO-NSGO) operating on the same frequencies. If required, necessary guidelines may be issued.

(k) In the frequency range(s) already identified for IMT such as 42.5-43.5 GHz, the satellite earth station gateways should be permitted to be established at uninhabited or remote locations on case-to-case basis, where there is a less likelihood of IMT services to come up.

(l) With a view to mitigate the risk of scarcity of gateway sites, Satellite Earth Station Gateway(s) should be installed and commissioned within 12 months from the date of permission granted to the authorised entities by the Central Government for the establishment of the Satellite Earth Station Gateway(s):

Provided that if the satellite earth station gateway is installed and commissioned by the Authorised Entity within thirty days of the expiry of the due date for complying with such obligations, the Central Government should consider the same as fulfilment of the obligation, without treating it as a breach of terms and conditions of the authorisation.

(m) The entities authorised to provide satellite-based telecommunication services should be permitted to surrender the right to use frequency spectrum assigned to them before the expiry of the validity period. For this purpose, broad terms and conditions have been recommended.

(n) There should be a defined timeline, not exceeding 30 days from the date of application, within which the frequency spectrum should be assigned to an Authorised Entity for the provision of satellite-based communication services, provided that the in-principle

clearance of satellite network has been given by the Central Government. In case of any objection, the same may be communicated to the concerned Authorised Entity within such window of 30 days from the date of application, for necessary action.

(o) Spectrum charges should be levied as:

GSO-based FSS	4% of Adjusted Gross Revenue, subject to a minimum annual spectrum charge of Rs. 3,500 per MHz.
NGSO-based FSS	4% of Adjusted Gross Revenue *Plus* an additional charge of Rs. 500 per subscriber per annum in urban areas, while exempting the rural and remote areas from this additional charge Subject to a minimum annual spectrum charge of Rs. 3,500 per MHz
GSO/ NGSO-based MSS	4% of Adjusted Gross Revenue, subject to a minimum annual spectrum charge of Rs. 3,500 per MHz

(p) Payment terms for spectrum charges:

(i) AGR-based spectrum charges should be paid in accordance with the schedule of payment as finalised by DoT after the consultation process on the draft dated 05.09.2025 of the Telecommunications (Authorisation for Provision of Main Telecommunication Services) Rules, 2025.

(ii) Minimum spectrum charges should be paid in advance at the time of assignment of spectrum and at the beginning of every year. The quarterly/annual adjustment of payment dues shall be made with the minimum spectrum charge for the particular year only.

(iii) Per subscriber charges should be paid by NGSO-based FSS service providers on a quarterly basis equal to $125xN_u$, where N_u refers to the total number of subscribers in urban areas at the end of the previous quarter.

(q) The Government may consider providing a subsidy for NGSO-based FSS user terminals to the targeted user segments in unserved/ underserved regions of rural and remote areas.

2.144 At present, these recommendations are under consideration of the Government.

2.145 As mentioned above, DoT, through its letter dated 07.10.2025, has stated, *inter alia*, that "if *an entity holding a SCN (Satellite Communication Network) authorisation seeks assignment of spectrum for use that falls within the scope of any of the entries of the First Schedule, it can be assigned spectrum through administrative method. Accordingly, an SCN Authorised Entity seeking to use spectrum for In-flight Maritime Connectivity, may apply for administrative assignment under Entry 14 of the First Schedule. An SCN Authorised Entity seeking to use spectrum for the satellite-based services under Entry 16, such as Very Small Aperture Terminal, Global Mobile Personal Communication by Satellites, National Long Distance, International Long Distance, Mobile Satellite Services in L & S bands, can apply for spectrum assignment under Entry 16.*"

2.146 In this background, the Authority solicited comments from stakeholders on the following set of questions:

"Q13. What should be the broad policy and regulatory framework for the assignment of FSS spectrum and/ or MSS spectrum to the proposed SCN authorised entities? Specifically, -

(a) <u>NGSO-based FSS and GSO/ NGSO-based MSS</u>: Whether in respect of NGSO-based FSS and GSO/ NGSO-based MSS, TRAI's recommendations dated 09.05.2025 on 'Terms and Conditions for the

Assignment of Spectrum for Certain Satellite-Based Commercial Communication Services' to DoT (read with the TRAI's response dated 08.12.2025 to DoT's back-reference dated 12.11.2025) should be made applicable to SCN authorised entities with necessary modifications? If yes, what modifications would be required in the terms and conditions for the assignment of spectrum for NGSO-based FSS and GSO/ NGSO-based MSS? If no, what should be the terms and conditions for this purpose?

(b) GSO-based FSS: Whether the terms and conditions for the assignment of spectrum to SCN authorised entities for GSO-based FSS should be analogous to those recommended by TRAI for NGSO-based FSS and GSO/ NGSO-based MSS through its recommendations on 'Terms and Conditions for the Assignment of Spectrum for Certain Satellite-Based Commercial Communication Services' dated 09.05.2025 (read with the TRAI's response dated 08.12.2025 to DoT's back-reference dated 12.11.2025) with necessary modifications? If yes, what modifications would be required for GSO-based FSS? If no, what should be the terms and conditions for this purpose?

Kindly provide a detailed response with justification.

Q14. What should be the eligibility conditions for seeking administrative assignment of FSS spectrum and/or MSS spectrum by the proposed SCN authorised entities? Kindly provide a detailed response with justification.

Q15. Whether there are any other inputs or suggestions relevant to the assignment of FSS spectrum and/ or MSS spectrum to the entities holding the proposed SCN authorisation? Kindly provide a detailed response with justification."

Comments of stakeholders on Q13

2.147 A gist of comments of stakeholders with respect to suitability of applying the terms and conditions recommended by TRAI for assignment of

spectrum to service providers for NGSO-based FSS and GSO/ NGSO-based MSS for the purpose of assignment of spectrum to SCN providers for NGSO-based FSS and GSO/ NGSO-based MSS is given below:

(a) Many stakeholders have suggested that the terms and conditions recommended by TRAI through its recommendations dated 09.05.2025 for assignment of spectrum to service providers for NGSO-based FSS and GSO/ NGSO-based MSS should be made applicable *mutatis mutandis* for assignment of spectrum to SCN provider authorised entities for NGSO-based FSS and GSO/ NGSO-based MSS.

(b) While many stakeholders have opined that the recommended period of five years as a validity period for assignment of spectrum is suitable, one stakeholder has stated that the frequency spectrum should be assigned for NGSO-based FSS and GSO/ NGSO-based MSS for a period of up to ten years from current five years. Another stakeholder has stated that the 5-year validity period for spectrum assignment recommended by TRAI on 09.05.2025, is short for capital-intensive investments such as gateway infrastructure and associated ground segment deployment; greater certainty would be achieved if the framework provides for a five-year initial assignment with an auto-renewal mechanism for further two 5-year terms based on milestones with respect to actual deployment and activation of services.

(c) One stakeholder has stated that TRAI's recommendations dated 09.05.2025 provide for per-subscriber charges in urban areas, which is concerning; in several SCN deployment models, FSS spectrum is used solely for feeder link capacity, supporting the underlying satellite network, while no end-user services are directly provided using FSS spectrum; applying per-subscriber or user-linked charges in such scenarios does not align with the network-layer role of SCN provider authorised entities.

(d) Another stakeholder has stated that the Authority should recommend that the spectrum assignment rules for NGSO services

incorporate a mandatory Equal Rights Coordination Agreement (ERCA) requirement; any foreign NGSO operator seeking Indian market access and spectrum assignment must, as a non-negotiable precondition, execute an ERCA with the Government of India, committing to afford any authorised Indian NGSO constellation the same coordination rights, interference protection, spectrum access, and operational standing that the foreign constellation enjoys in its home jurisdiction and under its ITU priority.

2.148 A gist of comments of stakeholders with respect to keeping the terms and conditions for assignment of spectrum to SCN providers for GSO-based FSS analogous to the terms and conditions recommended by TRAI for assignment of spectrum to service providers for NGSO-based FSS and GSO/ NGSO-based MSS is given below:

(a) Many stakeholders have suggested that an approach similar to that recommended by TRAI for NGSO-based FSS and GSO/ NGSO-based MSS should be adopted for assignment of spectrum to SCN providers for GSO-based FSS, with adjustments to reflect capacity-based and service-specific characteristics such as stable interference environment and long operational life of GSO systems.

(b) Many stakeholders have opined that terms for GSO-based FSS should be analogous to those for NGSO systems to promote a level playing field across different architectures.

(c) Many stakeholders have stated that the overall framework should remain technology-neutral.

Comments of stakeholders on Q14

2.149 A gist of comments of stakeholders with respect to eligibility conditions on SCN provider authorised entities for seeking administrative assignment of FSS spectrum and/ or MSS spectrum is given below:

(a) A few stakeholders have opined that no separate eligibility criteria should be applied to SCN provider authorised entities for seeking

administrative spectrum assignment of FSS spectrum and/ or MSS spectrum.

(b) A few stakeholder has stated that entry 12 of the First Schedule to the Telecom Act, provides for administrative assignment for "Radio backhaul for telecommunication services"; further, the term 'radio backhaul' has been defined as "the use of radio frequency only to interconnect telecommunication equipment, other than the customer equipment in telecommunication networks"; as feeder link spectrum would only be used to connect SESGs with satellites, and not customer equipment, it would fall within the scope of 'radio backhaul'; also, Entry 16 of the First Schedule of the Telecom Act provides for administrative assignment of spectrum for a number of satellite services including MSS in the L & S band; hence, in line with Section 4(4), such assignment may be done through administrative process only.

(c) A few stakeholders have suggested that for seeking administrative spectrum assignment of FSS spectrum and/ or MSS spectrum, SCN provider or its NGSO partners should have a valid ITU allocation of the relevant spectrum. A few other stakeholders have suggested that FSS-NGSO spectrum may be assigned administratively to SCN provider authorised entities subject to valid SCN provider authorisation, IN-SPACe authorisation for NGSO capacity, partnership with an authorised NGSO operator and compliance with NFAP. One stakeholder has stated that security-cleared SCN provider authorised entities that demonstrate technical competence, financial stability by bank guarantees and compliance readiness to support sovereignty safeguards should be eligible to seek administrative spectrum assignment of FSS spectrum and/ or MSS spectrum. Another stakeholder has stated that the eligibility conditions should be a valid SCN provider authorisation, IN-SPACe authorisation for provisioning of satellite capacity over India, in-principle clearance of the network including SACFA clearance for gateway earth stations, and Satellite Monitoring Centre (SMC) approval for the carrier plan.

(d) One stakeholder has stated that SCN provider authorised entities should be assigned FSS spectrum and/ or MSS spectrum administratively if the end-usage of the spectrum falls under any entry of First Schedule of the Telecommunications Act, 2023. Another stakeholder has stated that the SCN provider should have an agreement of partnership with service provider(s) for providing MSS D2D services.

(e) One stakeholder has stated that the eligibility conditions should be analogous to the eligibility conditions that are applicable to entities holding service authorisation under 3(1)(a).

Comments of stakeholders on Q15

2.150 A broad summary of comments of stakeholders in response to Q15 is given below:

(a) Certain supplementary policy and regulatory considerations should be incorporated into the framework for assigning FSS and MSS spectrum to SCN provider authorised entities viz. (i) long-term certainty and stability of spectrum assignments, (ii) explicit recognition of SCNaaS and shared use of spectrum, (iii) evolution of use cases without requiring repeated regulatory amendments, (iv) continued reliance on ITU coordination and notification procedures, (v) clear domestic processes for resolving interference issues, and (vi) proportionate compliance and reporting obligations.

(b) The regulatory framework should establish a single-window portal integrating WPC, SMC, and IN-SPACe. The recommended 30-day timeline for spectrum assignment must be legally binding on the authorities once the SCN entity has submitted a complete, compliant application.

(c) There should be a provision of regulatory sandboxes to enable controlled pilot projects before full commercial spectrum assignment.

Analysis of issues raised through Q13, Q14 and Q15

2.151 The Authority notes that Section 4(4) of the Telecommunications Act, 2023 provides as below:

"The Central Government shall assign spectrum for telecommunication through auction except for entries listed in the First Schedule for which assignment shall be done by administrative process."

2.152 There are 19 entries in the First Schedule of the Telecommunications Act, 2023. The notable entries of the First Schedule (entry No. 12, 14 and 16) are reproduced below:

"12. Radio backhaul for telecommunication services.

Explanation.—The term "radio backhaul" shall mean the use of radio frequency only to interconnect telecommunication equipment, other than the customer equipment in telecommunication networks.

…

14. In-flight and maritime connectivity.

…

16. Certain satellite-based services such as: Teleports, Television channels, Direct To Home, Headend In The Sky, Digital Satellite News Gathering, Very Small Aperture Terminal, Global Mobile Personal Communication by Satellites, National Long Distance, International Long Distance, Mobile Satellite Service in L and S bands."

2.153 In accordance with the provisions of section 4(4) of the Telecommunications Act, 2023, the spectrum for any telecommunication shall be assigned administratively only if it appears as an entry of the First Schedule of the Telecommunications Act, 2023.

2.154 As mentioned above, DoT, through a letter dated 07.10.2025 to TRAI conveyed, *inter alia*, as below:

"2. …, the First Schedule of The Telecommunications Act, 2023, is a list of entries based on use of the spectrum. Where the use of the spectrum is covered within the scope of an entry in the First Schedule, the assignment of such spectrum may be undertaken by administrative process.

2.1 An entity holding a SCN (Satellite Communication Network) authorisation seeks assignment of spectrum for use that falls within the scope of any of the entries of the First Schedule, it can be assigned spectrum through administrative method. Accordingly, an SCN Authorised Entity seeking to use spectrum for In-flight Maritime Connectivity, may apply for administrative assignment under Entry 14 of the First Schedule. An SCN Authorised Entity seeking to use spectrum for the satellite-based services under Entry 16, such as Very Small Aperture Terminal, Global Mobile Personal Communication by Satellites, National Long Distance, International Long Distance, Mobile Satellite Services in L & S bands, can apply for spectrum assignment under Entry 16."

2.155 The Authority also takes note of the inputs of a few stakeholders that only that portion of satellite spectrum should be assigned to an SCN provider authorised entity which corresponds to the satellite or space segment capacity for which the SCN provider authorised entity or its partnering satellite operator has obtained requisite authorization from DoS/ IN-SPACe.

2.156 Considering the comments of stakeholders and its own analysis, the Authority is of the following view:

(a) The First Schedule of the Telecommunication Act, 2023 provides the following definition to the term "radio backhaul":

"The term "radio backhaul" shall mean the use of radio frequency only to interconnect telecommunication equipment, other than the customer equipment in telecommunication networks."

As feeder link of a satellite communication network connects satellite earth station gateway to orbiting satellite(s), it qualifies in the definition of radio backhaul for telecommunication services. Thus, feeder link is covered in the First Schedule of the Telecommunications Act, 2023. Therefore, in accordance to the provisions of section 4(4) of the Telecommunications Act, 2023, the SCN provider authorised entity should be permitted to seek administrative assignment of FSS spectrum for use in the feeder link.

(b) For seeking administrative assignment of FSS/ MSS spectrum to be used in user links, SCN provider authorised entity would have to demonstrate that the intended service to be provided by its partnering service provider(s) by using that spectrum belongs to the First Schedule of the Telecommunications Act, 2023. For this purpose, the SCN provider authorised entity should submit the details of its partnering service authorised entities (viz. name of the service authorised entity, license/ authorisation held by the entity under which the intended services will be provided) and the intended services to be provided by them by using that spectrum.

(a) The FSS/ MSS spectrum sought by the SCN provider authorised entity should correspond to the satellite or space segment capacity authorised by the Department of Space in the Government of India, or any other designated agency specified for this purpose to the SCN provider authorised entity, or its subsidiary company, or a company having agreement with it. For this purpose, the SCN provider authorised entity should submit the documentary evidence to the Government at the time of submitting application for the assignment of FSS/ MSS spectrum.

2.157 In view of the inputs from stakeholders and its analysis, **the Authority recommends the following regulatory framework for the grant of FSS/ MSS spectrum to SCN provider authorised entities on an administrative basis:**

(a) The SCN provider authorised entity should be assigned FSS spectrum for deploying in the feeder link on an administrative basis.

(b) For seeking administrative assignment of FSS/ MSS spectrum for deploying in user links, SCN provider authorised entity should demonstrate that the intended service to be provided by its partnering service provider(s) by using the spectrum falls in the First Schedule of the Telecommunications Act, 2023. For this purpose, the SCN provider authorised entity should submit the following details:

(i) name of its partnering service authorised entity (ies);

(ii) license/ authorisation held by the partnering service authorised entity under which the intended services will be provided; and

(iii) intended services to be provided by using the spectrum.

(c) The FSS/ MSS spectrum sought by the SCN provider authorised entity should correspond to the satellite or space segment capacity authorised, by the Department of Space in the Government of India or any other designated agency specified for this purpose, to the SCN provider authorised entity or its subsidiary company or a company having agreement with it. For this purpose, the SCN provider authorised entity should submit the supporting documentary evidence to the Government at the time of submitting application for the assignment of FSS/ MSS spectrum.

2.158 TRAI's recommendations dated 09.05.2025 on 'Terms and Conditions for the Assignment of Spectrum for Certain Satellite-Based Commercial Communication Services' read with the TRAI's response dated 08.12.2025 to the DoT's back-reference dated 12.11.2025, provide a comprehensive framework for the assignment of spectrum for NGSO-based FSS and GSO/ NGSO-based MSS. As SCN provider authorised entities would be facilitating similar satellite-based communication services through the SCNs established by them, extending the same framework to SCN provider authorised entities - with only necessary modifications for the SCNaaS context - will help maintain competitive neutrality and ensure regulatory certainty. Accordingly, the Authority is of the view that TRAI's recommendations dated 09.05.2025 in respect of assignment of spectrum to service providers for NGSO-based FSS and GSO/ NGSO-based MSS may serve as a foundational base for assignment of spectrum to SCN providers for GSO/ NGSO-based FSS and GSO/ NGSO-based MSS.

2.159 Through recommendation No. 4.1 of the recommendations dated 09.05.2025, TRAI had recommended the frequency bands in which spectrum may be assigned for (a) NGSO-based FSS for data communication and Internet services and (b) GSO/ NGSO-based MSS for providing voice, text, data communication and Internet service as below:

"The Authority recommends that subject to alignment with the allocations in NFAP 2022, -

(a) For assigning frequency spectrum for user links and feeder links for NGSO-based FSS for data communication and Internet service, frequency spectrum in Ku band, Ka band, and Q/V band should be considered.

(b) For assigning frequency spectrum for GSO/ NGSO-based MSS for providing voice, text, data communication and Internet service, the following frequency bands should be considered:

i. L band and S band for user links; and

ii. C band, Ku band, Ka band and Q/V band for feeder links."

2.160 The Authority is of the view that the afore-mentioned recommendation No. 4.1 of the recommendations dated 09.05.2025 can be made applicable to the assignment of FSS spectrum and MSS spectrum to SCN provider authorised entities also. It is noteworthy that the afore-mentioned recommendation No. 4.1 of the recommendations dated 09.05.2025 does not cover assignment of GSO-based FSS. In this regard, the Authority has taken note of the following aspects:

(a) Under the extant practice, frequency spectrum in C band, Ku band, Ka band were assigned for GSO-based FSS.

(b) Through recommendations dated 09.05.2025, TRAI had recommended the assignment of spectrum in C band, Ku band, Ka band and Q/V band for feeder links of GSO-based MSS.

2.161 Keeping in view the comments of stakeholders and the foregoing discussion, the Authority is of the view that the spectrum in C band, Ku band, Ka band and Q/V band should be assigned to SCN provider authorised entities for both feeder link as well as user links of GSO-based FSS.

2.162 Considering the above, **the Authority recommends that subject to alignment with the allocations in NFAP 2025 (as amended from time to time), spectrum should be assigned to SCN provider authorised entities in the following frequency bands:**

<table>
<tr><th>Type of Service</th><th>Type of Satellites</th><th>Frequency band for user link</th><th>Frequency band for feeder link</th></tr>
<tr><td rowspan="2">FSS</td><td>GSO</td><td colspan="2">C band, Ku band, Ka band and Q/V band</td></tr>
<tr><td>NGSO</td><td colspan="2">Ku band, Ka band, and Q/V band</td></tr>
<tr><td rowspan="2">MSS</td><td>GSO</td><td rowspan="2">L band and S band</td><td rowspan="2">C band, Ku band, Ka band and Q/V band</td></tr>
<tr><td>NGSO</td></tr>
</table>

2.163 Through recommendation No. 4.2 of the recommendations dated 09.05.2025, TRAI had recommended the validity period of assignment of spectrum for (a) NGSO-based FSS for data communication and Internet services and (b) GSO/ NGSO-based MSS for providing voice, text, data communication and Internet service as below:

"The Authority recommends that –

(a) Frequency spectrum should be assigned for NGSO-based FSS and GSO/ NGSO-based MSS for a period of up to five years. However, considering the market conditions, the Government may extend it for a further period of up to two years.

(b) Terms and conditions of spectrum assignment including spectrum pricing for NGSO-based FSS and GSO/ NGSO-based MSS, recommended through these recommendations, should remain valid for a period of five years from the date of notification of the policy regime by the Central Government, further extendable by a period of upto two years.

(c) Any revision in the terms and conditions of spectrum assignment including spectrum pricing for NGSO-based FSS and GSO/ NGSO-based MSS, notified by the Central Government after a period of five years from the date of notification of the policy regime recommended through these recommendations, should become applicable to all authorised entities including the existing entities."

2.164 The Authority notes that in the present consultation process, many stakeholders have opined that the recommended period of five years as a validity period for assignment of spectrum to SCN providers is suitable; however, a couple of stakeholders have suggested that the 5-year validity period for spectrum assignment, as recommended by TRAI on 09.05.2025, is short for capital-intensive investments such as gateway infrastructure and associated ground segment deployment by SCN providers and hence the frequency spectrum should be assigned to SCN providers for NGSO-based FSS and GSO/ NGSO-based MSS for a period of up to ten years.

2.165 In this regard, the Authority notes that the aspect of validity period of assignment of satellite spectrum was deliberated in detail while providing the recommendations dated 09.05.2025. Relevant extract of the TRAI's recommendations dated 09.05.2025 is reproduced below:

"2.79 The Authority notes that in April 2023, the Government of India issued the Indian Space Policy-2023 (ISP-2023) outlining the role of all the stakeholders in the space sector in the country. The ISP-2023 has also identified the range of Space Activities that require Authorization by Indian National Space Promotion and Authorization Centre (IN-SPACe). In May 2024, IN-SPACe issued the Norms, Guidelines and Procedures for Implementation of Indian Space Policy-2023 in respect of Authorization of Space Activities (NGP)15. NGP provides that in respect of Authorization of Space Activities, the Authorization shall be valid till the end of the declared operational life of the satellite/ constellation or 5 (five) years period, whichever is earlier. Recently, IN-SPACe has granted authorizations to two NGSO-based FSS providers for a period of five years. It is also noteworthy that the useful life of LEO satellites is, generally, of the order of five to seven years.

2.80 Considering the above aspects, the Authority is of the view that, at this stage, a shorter validity period of up to five years should be considered for spectrum assignment to an Entity holding relevant Service Authorisation granted by the DoT and also having requisite Authorization from IN-SPACe. However, after evaluating the market conditions prevalent at the end of five years, the Government may consider extending it for a further period of up to two years. The terms and conditions of spectrum assignment including spectrum pricing for satellite-based communication services recommended through these recommendations should remain valid for a period of five years from the date of notification of the policy regime in this regard by the Central Government, further extendable by a period upto two years. During this period, the market developments and uptake of satellite-based communication services will be closely monitored. Based on the assessment of market conditions, the terms and conditions of spectrum

assignment including spectrum pricing for satellite-based communication services for assignment of spectrum for such services may be reviewed. Generally, in case of an administrative assignment of spectrum, any revision in the terms and conditions of spectrum assignment including spectrum pricing become applicable to all entities. Therefore, the Authority is of the view that the revision in the terms and conditions of spectrum assignment including spectrum pricing (after a period of 5 years from the date of notification of the policy regime recommended through these recommendations), notified by the Central Government, should become applicable to all authorised entities including the existing entities."

2.166 The Authority is of the view that with respect to the validity period of assignment of spectrum, there is no cogent reason to keep differential regulatory treatment for SCN providers vis-à-vis service providers. Therefore, the Authority considers it suitable to keep the validity period of assignment of FSS spectrum and MSS spectrum to SCN provider authorised entities upto five years, further extendable by two years. The Authority is of the view that assignment of spectrum for feeder link and user link associated with any satellite system to an SCN provider authorised entity should be accompanied with roll out obligations requiring the SCN provider authorised entity to demonstrate, by using its satellite earth station gateway(s), operational feeder link and user link associated with that satellite system within 12 months of assignment of feeder link spectrum and/ or within 6 months of assignment of user link spectrum.

2.167 Accordingly, **the Authority recommends that-**

(a) FSS spectrum and MSS Frequency spectrum should be assigned to SCN provider authorised entities for a period of up to five years. However, considering the market conditions, the Government may extend it for a further period of up to two years.

(b) Terms and conditions, including pricing, for assignment of FSS spectrum and MSS spectrum to SCN provider authorised entities, recommended through these recommendations, should remain valid for a period of five years from the date of notification of the policy regime by the Central Government, further extendable by a period of upto two years.

(c) Any revision in the terms and conditions, including pricing, for assignment of FSS spectrum and MSS spectrum to SCN provider authorised entities, notified by the Central Government after a period of five years from the date of notification of the policy regime recommended through these recommendations, should become applicable to all SCN provider authorised entities including the existing SCN provider authorised entities.

(d) The following roll-out obligations should be made applicable to the SCN provider authorised entity upon assignment of spectrum for feeder link and/or user link associated with any satellite system to it:

(i) SCN provider authorised entity should, by using its satellite earth station gateway(s), demonstrate operational feeder link with that satellite system within 12 months from the date of assignment of spectrum for feeder link and/ or

(ii) SCN provider authorised entity should, by using its satellite earth station gateway(s), demonstrate operational user link with that satellite system within 6 months from the date of assignment of spectrum for user link.

2.168 Through the recommendation No. 4.3 of the recommendations dated 09.05.2025, TRAI had recommended a regulatory framework for interference management for satellite-based service providers as below:

"The Authority recommends that-

(a) To control interference, the relevant provisions of ITU-RR should be made applicable to the authorised entities, and other entities which have been authorised by the Central Government. Further, the ITU framework for coordination among NGSO-based satellite systems, as may be laid down by ITU in the future, should also be made applicable.

(b) The frequency spectrum identified by the Government for satellite-based telecommunication services in the higher frequency bands such as C, Ku, Ka, and Q/V bands that are assigned on a shared basis, should be assigned with a condition that each Authorised Entity and all other entities which have been authorized by the Central Government to use such shared frequency spectrum, will coordinate among themselves in good faith.

(c) A provision should be included in the terms and conditions of the assignment of frequency spectrum that in case the need arises, the Government may prescribe a framework for sharing of spectrum in higher frequency bands such as C, Ku, Ka, and Q/V bands, which will be binding on the authorised entities and all other entities which have been authorized by the Central Government to use such shared frequency spectrum.

(d) The Government, with the help of the Telecom Engineering Centre (TEC), should examine the need for prescribing the framework for the sharing of spectrum. The framework may include conditions on the maximum equivalent power flux density (EPFD) etc. With a view to nudging the satellite operators to coordinate among themselves in good faith at the earliest, the Government may also consider introducing a provision for splitting of spectrum as a last resort in line with the provision created by FCC in its 'Spectrum Sharing Rules for Non-Geostationary Orbit, Fixed-Satellite Service

Systems' in case two or more NGSO-based FSS satellite systems fail to complete coordination."

2.169 The Authority of the view that the regulatory framework for interference management should remain the same regardless of whether satellite spectrum is assigned to service providers or it is assigned to SCN provider authorised entities. Accordingly, **the Authority recommends that the recommendation No. 4.3 of the TRAI's recommendations dated 09.05.2025 should be made applicable to SCN provider authorised entities as well.**

2.170 Through recommendation No. 4.4 of the recommendations dated 09.05.2025, TRAI had recommended a regulatory framework for the establishment and operation of satellite earth station gateways as below:

"The Authority recommends that for the establishment and operation of satellite earth station gateways-

(a) The authorised entities should be mandated to coordinate among themselves in good faith.

(b) A provision should be included in the terms and conditions for the assignment of frequency spectrum that in case the need arises, the Government may prescribe a coordination distance between two earth station gateways (GSO-NGSO and NGSO-NGSO) operating in the same frequencies, which will be binding on the authorised entities and all other entities which have been authorized by the Central Government to use such shared frequency spectrum.

(c) The DoT, with the help of TEC, should carry out a study to assess the requirement for prescribing coordination distance between two satellite earth station gateways (GSO-NGSO and NGSO-NSGO) operating on the same frequencies. If required, necessary guidelines may be issued."

2.171 The Authority of the view that the regulatory framework for the establishment and operation of satellite earth station gateways for SCN provider authorised entities should be the same as that for service providers to maintain regulatory consistency. Accordingly, **the Authority recommends that the recommendation No. 4.4 of the TRAI's recommendations dated 09.05.2025 should be made applicable to SCN provider authorised entities as well.**

2.172 Through the recommendation No. 4.5 of the recommendations dated 09.05.2025, TRAI had recommended a regulatory framework for co-existence of satellite systems as below:

"*The Authority recommends that-*

(a) The provisions of Article 21 of ITU-RR for terrestrial and space services sharing frequency bands above 1 GHz should be made applicable.

(b) For the coexistence of satellite systems and IMT, ITU-RR provisions and ITU recommendations, including WRC-19 Resolution 243[70], should be made applicable.

(c) In the frequency range(s) already identified for IMT such as 42.5-43.5 GHz, the satellite earth station gateways should be permitted to be established at uninhabited or remote locations on case-to-case basis, where there is a less likelihood of IMT services to come up. For this purpose –

(i) DoT should prescribe the exclusion zone requirement for co-existence of IMT and satellite earth station gateways.

(ii) DoT should create a software defined automated process on a portal having the database of coordinates of the IMT base stations in these frequency ranges. The geofencing coordinates of the proposed earth station in such frequency

[70] See Resolution 243 (WRC-19) at https://www.itu.int/dms_pub/itu-r/oth/0C/0A/R0C0A00000F0081PDFE.pdf

ranges can provide the feasibility results through the portal for establishing the earth station."

2.173 The Authority of the view that for ensuring a fair and non-discriminatory mechanism for co-existence of satellite systems, there should be a uniform regulatory framework for co-existence of satellite systems for all types of authorised entities including SCN provider authorised entities in the country. Accordingly, **the Authority recommends that recommendation No. 4.5 of the TRAI's recommendations dated 09.05.2025 should be made applicable to SCN provider authorised entities as well.**

2.174 Through recommendation No. 4.6 of the recommendations dated 09.05.2025, TRAI had recommended the following obligations in respect of establishment of satellite earth station gateways on satellite-based service providers:

"The Authority recommends that with a view to mitigate the risk of scarcity of gateway sites, Satellite Earth Station Gateway(s) should be installed and commissioned within 12 months from the date of permission granted to the authorised entities by the Central Government for the establishment of the Satellite Earth Station Gateway(s)."

2.175 Later, after examining the Government's view, conveyed through the back-reference dated 12.11.2025 on the recommendations dated 09.05.2025, the Authority, through its response dated 08.12.2025 to the back-reference dated 12.11.2025, recommended the inclusion of the following proviso to the afore-mentioned recommendation No. 4.6:

"Provided that if the satellite earth station gateway is installed and commissioned by the Authorised Entity within thirty days of the expiry of the due date for complying with such obligations, the Central Government should consider the same as fulfilment of the obligation,

without treating it as a breach of terms and conditions of the authorisation."

2.176 The Authority is of the view that obligations in respect of establishment of satellite earth station gateways on SCN provider authorised entities should be the same as those applicable to satellite-based service providers. Accordingly, **the Authority recommends that with a view to mitigating the risk of scarcity of gateway sites, Satellite Earth Station Gateway(s) should be installed and commissioned within 12 months from the date of permission granted to the SCN provider authorised entities by the Central Government for the establishment of the Satellite Earth Station Gateway(s):**

Provided that if the satellite earth station gateway is installed and commissioned by the SCN provider authorised entity within thirty days of the expiry of the due date for complying with such obligations, the Central Government should consider the same as fulfilment of the obligation, without treating it as a breach of terms and conditions of the authorisation.

2.177 Through recommendation No. 4.7 of the recommendations dated 09.05.2025, TRAI had recommended an enabling framework for surrender of spectrum for entities authorised to provide satellite-based telecommunication services as below:

"The Authority recommends that entities authorised to provide satellite-based telecommunication services should be permitted to surrender the right to use of frequency spectrum assigned to them before the expiry of the validity period. For this purpose, the following should be the broad terms and conditions:

(a) The Authorised Entity should provide a notice period to the Central Government and TRAI of at least 30 days prior to the proposed date of surrender of right to use the frequency spectrum along with the relevant

details, including the precise frequency range(s) proposed to be surrendered. However, in case the surrender of right to use of spectrum by an Authorised Entity is likely to result in a disruption or closure of services for the consumers, the service provider should be required to serve an advance notice to the Central Government and TRAI as well as each of its subscribers, 60 days prior to the proposed date of surrender of the right to use of frequency spectrum.

(b) DoT may charge a reasonable processing fee to recover administrative charges, if any, for the surrender of the right to use of frequency spectrum."

2.178 The Authority is of the view that for surrender of spectrum by SCN provider authorised entities, regulatory provision should be similar to the one recommended through the afore-mentioned recommendation No. 4.7. The Authority notes that there could be a scenario where the surrender of right to the use of spectrum by an SCN provider authorised entity results in a disruption or closure of services for the consumers of its partnering service provider(s). As this could lead to complete disruption of business of partnering service provider(s), they should be given a sufficiently long notice. The Authority notes that through the Telecommunications (Authorisation for Provision of Principal Telecommunication Services) Rules, 2026, DoT has imposed the following condition on the access service authorised entities upon surrender of the spectrum held by them, which is being used by its users for captive non-public networks:

"if it decides to surrender the spectrum, which is being used by its users for captive non-public networks, it shall give notice of such surrender, at least six months before the effective date of surrender of such spectrum, to such users of captive non-public networks."

2.179 Considering the foregoing discussion, the Authority is of the view that it would be appropriate to apply a condition on SCN provider authorised entities to serve an advance notice six months prior to the proposed date

of surrender of the right to use of frequency spectrum to the Central Government and TRAI as well as each of its partnering service providers, whose consumer services might be disrupted or closed due to the surrender of spectrum.

2.180 In view of the above, **the Authority recommends that SCN provider authorised entities should be permitted to surrender the right to use of frequency spectrum assigned to them before the expiry of the validity period. For this purpose, the following should be the broad terms and conditions:**

(a) The SCN provider authorised entity should serve a notice to the Central Government and TRAI at least 30 days prior to the proposed date of surrender of right to use the frequency spectrum along with the relevant details, including the precise frequency range(s) proposed to be surrendered. However, in case the surrender of right to use of spectrum by an SCN provider authorised entity is likely to result in a disruption or closure of services for the consumers of its partnering service providers, the SCN provider authorised entity should be required to serve an advance notice six months prior to the proposed date of surrender of the right to use of frequency spectrum to the Central Government and TRAI as well as each of its partnering service providers, whose consumer services might be disrupted or closed due to the surrender of spectrum.

(b) DoT may charge a reasonable processing fee to recover administrative charges, if any, for the surrender of the right to use of frequency spectrum.

2.181 Through the recommendation No. 4.8 of the recommendations dated 09.05.2025, TRAI had recommended that spectrum should be assigned

in a time-bound manner. The recommendation No. 4.8 is reproduced below:

"The Authority recommends that there should be a defined timeline, not exceeding 30 days from the date of application, within which the frequency spectrum should be assigned to an Authorised Entity for provision of satellite-based communication services, provided that the in-principle clearance of satellite network has been given by the Central Government. In case of any objection, the same may be communicated to the concerned Authorised Entity within such window of 30 days from the date of application, for necessary action."

2.182 The Authority is of the view that to ensure ease-of-doing-business, the Central Government should assign frequency spectrum to SCN provider authorised entity within a prescribed timeline, not exceeding 30 days from the date of receipt of application from the SCN provider authorised entity for the grant of FSS/ MSS spectrum along with the necessary documents as prescribed in the eligibility conditions for the grant of FSS/ MSS spectrum.

2.183 Considering the above, **the Authority recommends that the Central Government should grant spectrum to SCN provider authorised entity within a defined timeline, not exceeding 30 days from the date of application for FSS/ MSS spectrum, along with necessary documents as recommended to be submitted under the regulatory framework for the grant of FSS/ MSS spectrum to SCN provider authorised entities on an administrative basis, provided that the in-principle clearances, necessary if any for the satellite network, along with security clearance (if any required) has been given by the Central Government. In case of any objection, the same may be communicated to the concerned SCN provider authorised entity within such window of 30 days from the date of application, for necessary action.**

2.184 Through recommendation No. 4.9 of the recommendations dated 09.05.2025, TRAI had made recommendation in respect of assignment of spectrum on a block basis as below:

"The Authority recommends that the Central Government should explore the possibility of assigning frequency spectrum for satellite-based telecommunication services on a block basis rather than on a carrier-by-carrier basis."

2.185 The Authority is of the view that in a similar manner, the Central Government should explore the possibility of assigning FSS/ MSS spectrum to SCN provider authorised entity. on a block-basis rather than on a carrier-by-carrier basis. Accordingly, **the Authority recommends that the Central Government should explore the possibility of assigning FSS/ MSS spectrum to SCN provider authorised entities on a block basis rather than on a carrier-by-carrier basis.**

2.186 The remaining recommendations i.e. recommendation No. 4.10 to recommendation No. 4.17 of the TRAI's recommendations dated 09.05.2025 relate to financial terms and conditions for assignment of spectrum to satellite-based service providers. The aspects related to financial terms and conditions for assignment of spectrum to SCN provider authorised entities will be examined in Chapter III of these recommendations.

C. Usage of the spectrum assigned to service authorised entities by SCN provider authorised entities

2.187 As mentioned above, through its letter dated 07.09.2025, DoT conveyed, *inter alia*, the following to TRAI:

"2.2 It may also be possible that a SCN Authorised Entity without seeking spectrum may enter into sharing agreements with another

authorised entity availing of its satellite network (the "partnering entity"), to utilize the spectrum assigned to such partnering entity for the limited purpose of providing the service of its satellite-based networks."

2.188 In this background, the Authority solicited comments of stakeholders on the following questions:

"Q16. In case it is decided to permit the proposed SCN authorised entity to utilize the FSS spectrum and/ or MSS spectrum assigned to a service authorised entity ("partnering entity") for the purposes of providing SCNaaS to the partnering entity -whether there is a need to establish a policy to enter into an agreement/ arrangement with the partnering entity to utilize FSS spectrum and/ or MSS spectrum assigned to such partnering entity for the purpose of providing SCNaaS to the partnering entity?

(i) If yes, what should be the terms and conditions under such a framework?

(ii) If no, in what manner such agreements/ arrangements should be enabled and regulated?

Kindly provide a detailed response with justification.

Q17. Whether there are any other inputs or suggestions relevant to the agreement/ arrangement between the proposed SCN authorised entities and service authorised entities ("partnering entities") to utilize the FSS spectrum and/ or MSS spectrum assigned to such partnering entities? Kindly provide a detailed response with justification."

Comments of stakeholders on Q16

2.189 In response to Q16, many stakeholders have opined that there is a need to establish a policy and regulatory framework for enabling the SCN provider authorised entity to enter into an agreement with its partnering service provider entity to utilize FSS/ MSS spectrum assigned to such

partnering entity for the purpose of providing SCNaaS to the partnering entity. On the other hand, a few stakeholders have contended that there is no need for establishing any framework for this purpose.

2.190 A gist of comments of stakeholders who have supported the need for establishing a policy and regulatory framework for enabling SCN provider authorised entities to utilise FSS/ MSS spectrum assigned to its partnering service provider entity for providing SCNaaS to such partnering entity is given below:

(a) A light-touch, flexible and enabling policy and regulatory framework should be adopted that balances regulatory transparency with commercial flexibility. The framework should enable the SCN provider authorised entity and its partnering service authorised entity to enter into a commercially negotiated agreement for utilisation of the spectrum assigned to the partnering service authorised entity for providing SCNaaS to it. The framework should accommodate different service models and operational requirements. Given the diversity of satellite architectures, services, and partnership models envisaged under the SCN framework, overly prescriptive rules are neither necessary nor desirable. The commercial terms, including financial considerations, service levels, and operational arrangements, should remain subject to mutual negotiation, without mandated disclosure or standardisation.

(b) Written agreement should include terms and conditions for frequency ranges available for SCNaaS, scope of spectrum use, geographical areas where spectrum may be utilized, duration of the agreement/ arrangements, termination provisions, and technical/ operating parameters. Spectrum rights and obligations including interference management should continue to vest with the spectrum-holding service authorised entity.

2.191 A gist of comments of stakeholders who have contended that there is no need for establishing any framework for enabling the SCN provider authorised entity to enter into an agreement with its partnering service provider entity to utilize FSS/ MSS spectrum assigned to such partnering entity is given below:

(a) SCN provider authorisation is only a network-layer authorisation. Therefore, in no situation, the FSS/ MSS spectrum assigned to service providers for user link, may be required to be used by the SCN provider. Hence, there is no need to establish a policy and regulatory framework for enabling the SCN provider authorised entity to enter into an agreement/ arrangement with the partnering entity to utilize FSS spectrum and/ or MSS spectrum assigned to such partnering entity for the purpose of providing SCNaaS to the partnering entity.

(b) Under the Telecommunications Act, 2023, the entity to whom spectrum is assigned bears regulatory accountability for compliance with usage conditions, payment of spectrum charge, and ensuring no harmful interference. Permitting the SCN provider entity to "utilise" spectrum assigned to its partnering service provider entity creates an untenable accountability gap — the partnering entity holds the spectrum assignment but does not operationally control the spectrum, while the SCN provider entity operates the spectrum but does not hold the spectrum assignment.

Comments of stakeholders on Q17

2.192 In response to Q17, stakeholders provided additional inputs and suggestions regarding the agreement between SCN provider authorised entities and partnering service provider entities for utilisation of FSS/ MSS spectrum. A gist of additional suggestions is given below:

(a) Regulatory framework should clarify that permitting an SCN provider authorised entity to utilise FSS/ MSS spectrum assigned to a service authorised entity for providing SCNaaS does not

constitute spectrum sharing or spectrum trading, since the spectrum continues to remain assigned to the service authorised entity and the arrangement is only for network provisioning.

(b) Such agreements should be permitted only for new telecom satellite services and should not become mandatory for existing broadcasters, DTH operators or teleports.

Analysis of issues raised through Q16 and Q17

2.193 In Section B.3 above, the Authority has already expressed its considered view that the SCN provider authorised entity should be permitted to utilize –

(a) the FSS spectrum held by its partnering service provider for using it in the feeder links; and

(b) the FSS/ MSS spectrum held by its partnering service provider for using it in the user links -

under suitable agreements between SCN provider authorised entity and partnering service provider.

2.194 The Authority notes that, based on TRAI's recommendations dated 17.02.2025 on the Terms and Conditions of Network Authorisations to be Granted Under the Telecommunications Act, 2023[71], DoT, through the Telecommunications (Authorisation for Telecommunication Network) Rules, 2026 dated 20.07.2026, has stipulated the following provision in respect of satellite earth station gateway (SESG) provider authorisation:

[71] Through the recommendations dated 17.02.2025 on the Terms and Conditions of Network Authorisations to be Granted Under the Telecommunications Act, 2023, TRAI had recommended, *inter alia*, as below:
"… for configuration and provisioning purposes, the SESG Provider authorised entity should be permitted to utilize the spectrum of its partnering service authorised entity on its SESGs. Such configuration and provisioning should be done on behalf of the partnering service authorised entity, and the right to use of spectrum should remain with the partnering service authorised entity."

"The new authorised entity may utilise the spectrum assigned to the partnering entity for the limited purpose of configuration of satellite earth station gateway, while the right to use of spectrum shall remain with the partnering entity."

2.195 The Authority is of the view that on the matter of utilising the spectrum, assigned to the partnering service provider, by the SCN provider authorised entity; the regulatory approach should be the same as that applicable to SESG provider authorised entity. Accordingly, it would be suitable to permit the SCN provider authorised entity to utilise the FSS/ MSS spectrum assigned to the partnering service provider entity on similar lines as stipulated for the SESG provider authorised entity through the Telecommunications (Authorisation for Telecommunication Network) Rules, 2026 dated 20.07.2026. Therefore, the SCN provider authorised entity should be permitted to utilise – (a) the FSS spectrum held by the partnering service provider for using it in the feeder links; and (b) the FSS/ MSS spectrum held by partnering service provider for using it in the user links - for the limited purpose of provisioning satellite communication network as a service (SCNaaS) to the partnering service provider, while the right to use of spectrum should remain with the partnering service provider. In this regard, the following aspects are worth emphasis:

(a) While the SCN provider gets to utilize the FSS/ MSS spectrum held by its partnering service provider, the spectrum rights and obligations continue to vest with the partnering service provider (the assignee of the FSS/ MSS spectrum).

(b) The SCN provider gets to utilise the FSS/ MSS spectrum held by a partnering service provider for provisioning SCNaaS only to that partnering service provider. In other words, by utilizing the FSS/ MSS spectrum assigned to a partnering service provider (say 'P1'), the SCN provider authorised entity cannot provide SCNaaS to any other service provider.

2.196 As an extension to part (b) of the previous paragraph, the SCN provider authorised entity should be permitted to provide SCNaaS to multiple partnering service providers (say, 'P1', 'P2', etc.) by utilizing the FSS/ MSS spectrum assigned to the respective partnering service providers in its SCN.

2.197 Further, considering the comments of stakeholders, the Authority is of the following view:

(a) For providing SCNaaS to partnering service providers by utilizing the FSS/ MSS spectrum assigned to them, SCN provider authorised entities should enter into formal agreements with partnering service providers.

(b) A copy of the agreement with the terms of usage of the FSS/ MSS spectrum of the partnering service provider such as duration of the agreement (start date and end date), frequency range(s) to be utilized, and geographical areas in which spectrum is be utilized should be submitted jointly by the SCN provider authorised entity and the partnering service provider entity to DoT and TRAI within seven working days from the date of entering into the agreement.

2.198 Keeping the above in view, **the Authority recommends that –**

(a) The SCN provider authorised entity should be permitted to enter into an agreement with any eligible partnering service authorised entity ("partnering entity") to utilise –

(i) the FSS spectrum held by the partnering entity for using the spectrum in feeder links; and

(ii) the FSS/ MSS spectrum held by its partnering entity for using the spectrum in user links -

for the limited purpose of providing satellite communication network as a service (SCNaaS) to the partnering entity, while the right to use of spectrum should remain with the partnering entity.

(b) The SCN provider authorised entity should be permitted to enter into such agreements with multiple partnering entities:

Provided that the FSS/ MSS spectrum held by a partnering entity (say 'P1') can be used to provide SCNaaS to only that partnering entity (P1).

(c) The SCN provider authorised entity and the partnering entity should jointly submit a copy of the agreement for such utilisation of FSS/MSS spectrum to DoT and TRAI within seven working days of entering into the agreement. The agreement should cover, *inter alia*, the following aspects:

(i) Duration of the agreement (start date and end date);

(ii) Frequency range(s) of FSS/ MSS spectrum of the partnering entity to be utilized; and

(iii) Geographical areas in which the spectrum of the partnering entity is to be utilized.

(iv) Services to be provided by the partnering service authorised entity under the agreement.

D. Regulatory Framework for D2D service

2.199 Through the Consultation Paper dated 08.04.2026, the Authority had raised separate questions for MSS-based D2D service and IMT-based D2D service for consultation with stakeholders. These aspects will be dealt in the following sub-sections D.1 and D.2 respectively.

D.1 Regulatory framework for D2D service via satellite by using MSS spectrum

2.200 Through Q18 of the Consultation Paper dated 08.04.2026, the Authority solicited comments from stakeholders on the regulatory framework for

D2D service via satellite by using MSS spectrum. Q18 is reproduced below:

"Q18. In case it is decided to permit D2D service via satellite by using the spectrum in the frequency bands allocated for MSS such as L-band and S-band, whether there is a need to establish a policy and regulatory framework for enabling and regulating such a service? If yes, kindly suggest a broad framework for this purpose and the key terms and conditions to be included under such a framework? Kindly provide a detailed response with justification."

Comments from stakeholders on Q18

2.201 In response to Q18, many stakeholders have opined that there is a need to establish a policy and regulatory framework for enabling and regulating 'D2D service via satellite by using the spectrum in the frequency bands allocated for MSS such as L-band and S-band' (hereinafter, also referred to as "MSS-based D2D service"). On the other hand, many other stakeholders have contended that no separate regulatory framework is required for MSS-based D2D service. A few other stakeholders have stated that there is no need to permit MSS-based D2D service at this stage.

2.202 A gist of comments of stakeholders who have supported establishing a policy and regulatory framework for enabling and regulating MSS-based D2D services is given below:

(a) MSS-based D2D service differs from traditional MSS in device density and scale, potential integration with consumer electronics (smartphones, wearables), and service expectations (emergency alerts, messaging, resilience). MSS-based D2D service introduces new technical, operational, security and consumer protection considerations that require regulatory clarity. A dedicated policy and regulatory framework for MSS-based D2D service will provide

clarity on how these services are enabled and regulated without ambiguity.

(b) The policy and regulatory framework for MSS-based D2D service should include the following elements:

(i) MSS-based D2D service should be permitted only in ITU's MSS allocations, including L-band and S-band.

(ii) Usage must be strictly in accordance with ITU Radio Regulations and National Frequency Allocation Plan (NFAP).

(iii) MSS-based D2D service should follow globally accepted standards, including relevant 3GPP Non-Terrestrial Network (NTN) specifications, where applicable.

(iv) All MSS-based D2D traffic originating from or terminating in India must be routed through India-based satellite gateways.

(v) MSS-based D2D services should be subject to regulatory obligations comparable to terrestrial mobile services and should comply with applicable lawful interception and monitoring requirements.

(c) The framework should recognise that MSS-based D2D service requires either native device support (currently limited to select Apple iphone, Samsung, Google pixel models etc.) or companion devices. The framework should encourage chipset manufacturers to include L-band and S-band support in future handsets sold in India.

(d) The service provider should be allowed to be able to serve multiple service providers, to make full use of the spectrum and technology, and provide substantial benefits to the consumers at large.

(e) The framework for MSS-based D2D service should ensure protection of adjacent IMT operations.

(f) D2D traffic should be home-routed through the core network of Indian mobile network operator to satisfy any emergency, lawful-interception, and data-sovereignty requirements, which is an approach consistent with international moves to enable D2D services.

2.203 A gist of comments of stakeholders who have contended that no separate regulatory framework for MSS-based D2D service is required in the country is given below:

(a) MSS-based D2D services should continue to be regulated under the existing MSS licensing framework, as they constitute only a technical enhancement or evolution of existing MSS services rather than a distinct service category requiring a dedicated regulatory framework. Maintaining technological neutrality would avoid artificial distinctions between different MSS service types.

(b) India already prescribes granular security and regulatory conditions for satellite telephony. These existing requirements provide a sufficient regulatory framework and can be complied within the D2D context through the service authorisation and partnership model.

(c) MSS-based D2D services would be provided by service authorised entities, including mobile network operators (MNOs), to users and would therefore remain subject to the same regulatory, security, lawful interception, and compliance obligations applicable to tower-based connectivity.

(d) Existing ITU-RR and national GMPCS guidelines are adequate for enabling MSS-based D2D services. The existing MSS/ GMPCS frameworks already provide services similar to D2D service.

2.204 A gist of comments of stakeholders, who have stated that there is no need to permit MSS-based D2D service at this stage, is given below:

(a) MSS bands were planned for specialised, lower-density satellite-phone services with strong protection requirements. The mass-market handset D2D service in MSS bands would fundamentally change interference and loading assumptions, risking degradation of existing MSS services.

(b) Globally, 3GPP NTN standards and device-ecosystem efforts for D2D are focused on the IMT spectrum, not on the MSS spectrum. Forcing D2D service via the MSS spectrum would require separate

device radio frequency (RF) chains and frequency band combinations. It would also fragment the handset ecosystem, raise costs and undermine economies of scale. Therefore, India's regulatory framework should align with the dominant global standards path, i.e., D2D service via the IMT spectrum – rather than encouraging D2D service via the MSS spectrum, which will likely have weaker vendor and device support. This alignment with the mainstream 3GPP trajectory is also important for ensuring that Indian users benefit from globally competitive multi-vendor chipsets and devices. Pushing for MSS-centric D2D service risks locking India into niche solutions with limited supplier diversity, higher unit costs and slower feature evolution.

(c) The preferred approach at this stage would be to enable D2D services only through IMT spectrum. However, if the Government decides to also permit D2D services using MSS spectrum, strict regulatory parity with terrestrial mobile operators should be ensured across all parameters, including know-your-customer (KYC), quality of service (QoS), lawful interception, security obligations and spectrum assignment framework, so as to maintain a level playing field.

Analysis of issues raised through Q18

2.205 In the recent past, Direct-to-Device (D2D) service via satellite has emerged as a potential solution to extend mobile connectivity to unserved areas. At its core, D2D service via satellite enables smartphones to connect directly to satellites at places where terrestrial cellular mobile network is unavailable. D2D service via satellite has two variants viz. (a) D2D service via satellite by using MSS spectrum, and (b) D2D service via satellite by using IMT spectrum. Hereinafter, for convenience, these variants will also be referred to as 'MSS-based D2D service', and 'IMT-based D2D service'. As discussed earlier in this chapter, each of the two variants of D2D service can act as a

complementary service for filling up network coverage gaps and thereby enabling ubiquitous connectivity in the country.

2.206 At present, MSS-based D2D service uses the MSS spectrum in L-band and S-band. In Release-17 and Relase-18, 3GPP has identified three bands in L-band and S-band as NR NTN satellite bands viz. n254, n255, and n256.[72] The 3GPP band-description of NR NTN satellite bands in L-band and S-band is given in the first three rows of the following table:

Table 2.2: NR NTN satellite bands in L-band and S-band

REL	***WI***	***NR band***	***Uplink (UL) operating band Satellite Access Node receive / UE transmit*** $F_{UL,low}$ – $F_{UL,high}$	***Downlink (DL) operating band Satellite Access Node transmit / UE receive*** $F_{DL,low}$ – $F_{DL,high}$	***Remarks***
REL-17	*NR_NTN_solutions*	*n256*	*1980 – 2010 MHz*	*2170 – 2200 MHz*	*FR1, FDD, S-band*
REL-17	*NR_NTN_solutions*	*n255*	*1626.5 – 1660.5 MHz*	*1525 – 1559 MHz*	*FR1, FDD L-band*
REL-18	*NR_NTN_LSband*	*n254*	*1610 – 1626.5 MHz*	*2483.5 – 2500 MHz*	*FR1, FDD, LS-band*
REL-18	*NR_NTN_enh*	*n512*; n511*; n510**	*27.5 – 30.0 GHz* *28.35 – 30.0 GHz* *27.5 – 28.35 GHz*	*17.3 – 20.2 GHz* *17.3 – 20.2 GHz* *17.3 – 20.2 GHz*	*FR2, FDD, Ka-band*

**Under discussion*

[72] Source: https://www.3gpp.org/technologies/ntn-overview

2.207 Internationally, there are many cellular mobile phone handsets available in the market which provide support for 3GPP NTN bands, therefore, can be used for MSS-based D2D services using 3GPP NTN standard.

2.208 The following figure depicts a typical diagram of MSS-based D2D service:

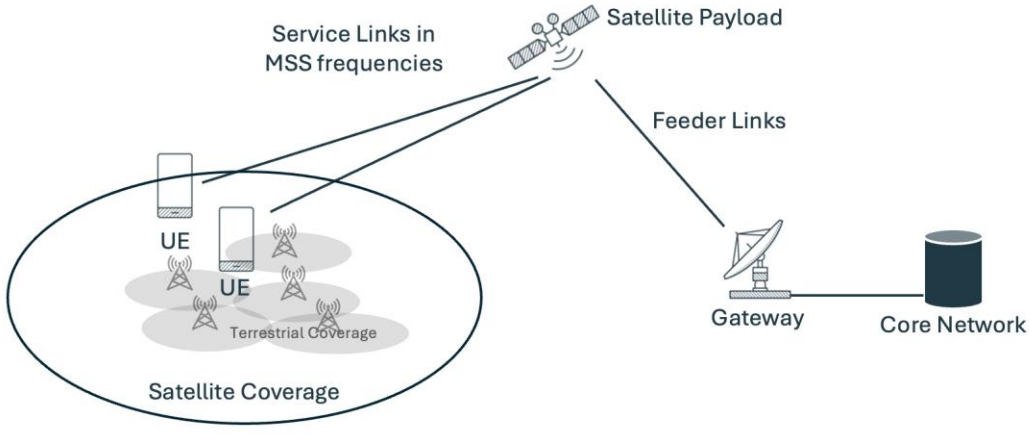


Figure 2.1: Typical diagram of MSS-based D2D service[73]

2.209 Terrestrial cellular mobile networks make use of IMT spectrum. As IMT spectrum is completely distinct from MSS spectrum in L-band and S-band, it is possible to operate terrestrial and satellite coverage concurrently by using MSS-based D2D services in the same geographical areas without mutual harmful interference. Owing to this characteristic, MSS-based D2D services can fill the coverage gaps in terrestrial networks without the need for establishing 'separation zones' between terrestrial networks and satellite networks. Besides, MSS-based D2D services can be used in any geographical area in which the terrestrial

[73] Source: ECC Report 373 *"Exploring the regulatory and technical elements with respect to national authorisation of satellite based Direct-to-Device (D2D) communications via existing available smartphones"*

network experiences an outage. In short, MSS-based D2D services can be provided in any geographical area without impacting the mobile network operators' capability to extend terrestrial coverage in such geographical areas using IMT spectrum.

2.210 Considering the above, the Authority is of the view that permitting MSS-based D2D service can facilitate ubiquitous connectivity, fill critical coverage gaps in rural and remote areas of the country, and introduce network resilience during emergency situations when terrestrial networks tend to become unavailable.

2.211 The frequency bands for MSS are internationally coordinated through the ITU framework and are subject to the provisions of ITU Radio Regulations and the corresponding allocations in the national frequency allocation plan (NFAP). At present, the regulatory environment for MSS in the L-band and S-band is well established globally.

2.212 In India, MSS services have been authorised only in the L-band till date. Bharat Sanchar Nigam Limited (BSNL), which is a state-owned telecom service provider in India, provides MSS services in L-band using the satellite network of INMARSAT (now Viasat) under the License for Provision and Operation of Satellite Based Services Using Gateway Installed in India Under '*Sui-Generis*' Category. Under the License, the MSS service is restricted/ barred in certain areas of the country for ordinary users due to national security reasons. In this regard, the Authority is of the view that the SCN provider authorised entity and its partnering access service provider should have provision for restricting the MSS-based D2D service in the barred areas notified by the Central Government. Further, the Authority is of the view that in case there are no alternative mechanisms to ensure adequate checks on the use of MSS-based D2D services, DoT in consultation with Ministry of Home Affairs (MHA), may impose a condition for restricting/ barring the MSS-

based D2D services in the geographical areas where there are security concerns.

2.213 As per the extant telecommunication regulatory framework in the country, only the entities which are authorised to provide access service (also referred to as "access service providers") are eligible to provide cellular mobile services through their public land mobile networks (PLMNs)[74]. Smartphone users seek subscription of access service providers to avail cellular mobile services after filling customer application form supported with know-your-customer (KYC) documents. The subscription to cellular mobile services is provided to users after due verification. In case subscribers of cellular mobile service are enabled with MSS-based D2D service, they will continue to receive connectivity at places where PLMNs of their access service providers are absent. Therefore, it would be logical to permit the entities authorised to provide access service to also provide MSS-based D2D service in their respective authorised service area by availing SCNaaS from SCN provider authorised entities, thereby extending their existing mobile service footprint into uncovered regions. The Authority is of the view that the entities, authorised to provide access services, should be permitted to seek SCNaaS from the SCN provider authorised entities for providing MSS-based D2D services.

2.214 The MSS based D2D services[75] also come under the purview of Chapter VII of the Telecommunication (Authorisation for Provision of Principal Telecommunication Services) Rules, 2026. The applicable provisions with respect to routing of traffic from satellite earth station gateways,

[74] At present, the entities holding (i) unified service authorisation or access service authorisation under the Telecommunications (Authorisation for Provision of Principal Telecommunication Services) Rules, 2026, (ii) access service authorisation under unified license and unified access service license (UASL) can provide cellular mobile services under the scope of their authorisations in the authorised service area.

[75] Rule:58: Every new authorised entity intending to provide or providing principal telecommunication service using satellite network, and all such new authorised entities shall adhere to the conditions of Chapter VII Specific Conditions for Provision of Principal Telecommunication Services Using Satellite Network of the Telecommunication (Authorisation for Provision of Principal Telecommunication Services) Rules, 2026.

lawful interception and traffic monitoring requirements, restriction of services in certain areas shall also be made applicable to SCN provider authorised entities and its partnering entities seeking SCNaaS for providing MSS based D2D services. Hence, the Authority is of the view that MSS based D2D services should be subjected to the same technical, operating and security conditions as applicable to the existing MSS based services.

2.215 Current availability of user devices for consumption of MSS based D2D services is limited to some OEMs offering this capability on select models of handsets. Eventually, the MSS based D2D service model is expected to gain more traction with clear advantages of fillings gaps in service areas of terrestrial access services. The availability of compatible user devices is expected to increase in future. Hence, the Authority is of the view that once these recommendations are accepted, the Central Government should encourage smartphone handset manufacturers to include the necessary modules for supporting the applicable MSS bands in future smartphone handsets sold in India.

2.216 In view of the inputs received from stakeholders and its analysis, **the Authority recommends the following with respect to MSS-based D2D services [i.e. direct-to-device (D2D) services via satellite by using the spectrum in L-band and S-band allocated for mobile satellite service (MSS)]:**

(a) MSS-based D2D services using globally harmonized standards such as 3GPP NTN should be permitted in India.

(b) The entities authorised to provide access service should be permitted to seek SCNaaS from SCN provider authorised entities for providing MSS-based D2D services. For this purpose, the SCN provider authorised entity and its partnering access service provider should enter into a service agreement prior to provisioning MSS-based D2D

services in the country. SCN provider authorised entity and the partnering access service provider should intimate Central Government and TRAI within seven working days of the agreement.

(c) Any SCN provider authorised entity should be permitted to enter into service agreements with multiple entities authorised to provide access service for the provision of SCNaaS to provide MSS-based D2D services.

(d) The provision of MSS-based D2D service should be governed by regulatory framework for MSS under ITU Radio Regulations and National Frequency Allocation Plan (NFAP).

(e) All MSS-based D2D traffic originating from or terminating in India should be routed through the satellite earth station gateways in India.

(f) MSS-based D2D services should comply with the lawful interception and traffic monitoring requirements.

(g) The SCN provider authorised entity and its partnering access service provider should have provision for restricting the MSS-based D2D service in the barred areas notified by the Central Government.

(h) After acceptance of these recommendations, the Central Government should encourage smartphone handset manufacturers to include the necessary modules for supporting the applicable MSS bands in future smartphone handsets sold in India.

D.2 Regulatory Framework for D2D Service via satellite using IMT spectrum

2.217 Through Q19 of the Consultation Paper dated 08.04.2026, the Authority solicited comments from stakeholders on the regulatory framework for D2D service via satellite using IMT spectrum. Q19 is reproduced below:

"Q19. In case with a view to enable D2D service via satellite using IMT spectrum, it is decided to permit the proposed SCN authorised entity to utilize IMT spectrum assigned to a service authorised entity ("partnering entity") for the purpose of providing SCNaaS to the partnering entity, -

(a) whether there is a need to establish a policy and regulatory framework for enabling the SCN authorised entity to enter into an agreement/ arrangement with the partnering entity to utilize IMT spectrum assigned to such partnering entity for the purpose of providing SCNaaS to the partnering entity? If yes, what should be the terms and conditions under such a framework? If no, in what manner such arrangements should be enabled and regulated?

(b) Which frequency bands identified for IMT should be considered for this purpose? Specifically, whether only FDD-based frequency bands should be considered?

(c) For the frequency bands identified for IMT where D2D is decided to be permitted, whether the National Frequency Allocation Plan (NFAP) should be modified to include MSS on a secondary basis? If yes, kindly furnish your suggestion for the proposed modification(s).

(d) To mitigate the issues related to cross-border interference, whether any other condition in addition to Article 4.4 of the ITU-Radio Regulations is required to be made applicable?

(e) What regulatory framework should be established for ensuring interference-free operation of D2D service via satellite by using IMT spectrum within the country? Specifically, which of the following methods should be followed:

(i) *The SCNs established by SCN authorised entities should be permitted to be used to provide D2D service via satellite by using IMT spectrum only if a single partnering entity (access service provider) holds the relevant IMT frequency channel in all the 22 LSAs of the country and agrees to permit the usage*

of its IMT frequency channel by the SCN authorised entity at its SCN for the purpose of providing SCNaaS; or

(ii) *The SCNs established by SCN authorised entities should be permitted to be used to provide D2D service via satellite by using IMT spectrum if one or more access service providers – together holding the assignment of the relevant IMT frequency channel across all 22 licensed service areas of the country – agree to allow the usage of their IMT frequency channel by the SCN authorised entity at its SCN for the purpose of providing SCNaaS; or*

(iii) *Any other method?*

Kindly provide a detailed response with justification."

Comments of stakeholders on Q19 (a)

2.218 In the consultation process, stakeholders have expressed divergent views with respect to the need to establish a policy and regulatory framework for enabling the SCN provider authorised entity to enter into an agreement with the partnering service provider to utilize IMT spectrum assigned to such partnering entity for the purpose of providing SCNaaS to the partnering entity. A few stakeholders have opined that a policy and regulatory framework is not required for this purpose. On the other hand, many stakeholders have supported establishing an enabling policy and regulatory framework to provide regulatory clarity on the subject.

2.219 A gist of comments of stakeholders who have opined that there is no need to establish a policy and regulatory framework for enabling IMT-based D2D services is given below:

(a) The time is not opportune for D2D services via satellite using IMT spectrum. These issues may be considered post outcome of WRC 2027.

(b) D2D using IMT spectrum should be treated as an extension of terrestrial mobile networks, and not as a standalone service.

2.220 A gist of comments of stakeholders who have expressed that there is a need to establish a policy and regulatory framework for enabling the SCN provider authorised entity to enter into an agreement with the partnering service provider to utilize IMT spectrum assigned to such partnering entity is given below:

(a) A dedicated regulatory framework is essential before permitting SCN provider authorised entities to utilise IMT spectrum for D2D services. IMT bands are critical for terrestrial 4G, 5G and 6G networks; any premature authorisation without safeguards risks interference, covert payload activation, and sovereignty breaches.

(b) A regulatory framework is required as IMT spectrum is auction-assigned, carries defined service obligations, supports critical national mobile infrastructure, and requires strict interference management and enforcement clarity.

(c) There is a need for clear guidelines on agreements between SCN provider authorised entities and partnering service providers to ensure compliance with the Telecommunications Act, 2023 for sharing spectrum and infrastructure between SCN providers and access service providers to ensure optimal usage and security.

2.221 A gist of comments of stakeholders on the terms and conditions under the regulatory framework for enabling the SCN provider authorised entity to enter into an agreement/ arrangement with the partnering service provider to utilize IMT spectrum assigned to such partnering entity is given below:

(a) IMT-based D2D service should be permitted only through access service providers holding the relevant IMT spectrum under commercial agreements. Any utilization of IMT spectrum by an SCN provider authorised entity should be strictly on a contractual, non-

transfer basis, without creating independent spectrum rights in favour of the SCN provider authorised entity. SCN provider authorised entities should not be assigned IMT spectrum directly.

(b) All spectrum rights and associated obligations, QoS requirements, consumer obligations, and regulatory liabilities should remain with the spectrum holding access service providers. The agreements should define the scope of satellite use of IMT spectrum, technical parameters and operational controls, and security responsibilities. SCN provider authorised entities should remain responsible for satellite network operations, and compliance with agreed technical parameters and security obligations.

(c) Overly prescriptive conditions should be avoided under the regulatory framework for IMT-based D2D service. There should be no reference agreement, or tariff regulation. There should be no need for *ex ante* approval of agreements.

(d) IMT-based D2D services should be enabled through a calibrated, light-touch, and partnership-based regulatory framework that preserves spectrum integrity, ensures coexistence with terrestrial mobile networks, and aligns with international developments, including outcomes of WRC-2027.

Comments of stakeholders on Q19 (b)

2.222 In response to Q19(b), while a few stakeholders have opined that no *ex ante* restriction should be imposed with respect to the duplexing scheme for the implementation of IMT-based D2D services, many other stakeholders have favoured the use of FDD- bands for the implementation of IMT-based D2D services.

2.223 The stakeholders who have opined that no *ex ante* restriction should be imposed with respect to the duplexing scheme for the implementation of IMT-based D2D services have stated that this aspect should be evaluated based on technical feasibility and ecosystem maturity.

2.224 A gist of comments of stakeholders who have favoured the use of FDD-based IMT frequency bands for IMT-based D2D services is given below:

(a) In TDD bands, uplink/ downlink synchronisation issues can cause serious interference to existing terrestrial TDD deployments. Operation of D2D services in TDD bands may result in complex cross-border coordination challenges. These bands may be considered only after technical studies, operational experience, international harmonisation and the outcomes of WRC-27.

(b) FDD bands, inherently, provide uplink - downlink separation into different frequency ranges, making interference scenarios more predictable and reducing the risk of satellite downlinks desensitising terrestrial uplinks (and vice versa) under appropriate technical conditions. Besides FDD bands have improved compatibility with satellite NTN architectures.

2.225 The views of stakeholders on the question as to which IMT frequency bands should be considered for IMT-based D2D services may be classified into three groups as below:

(a) <u>View#1: All frequency bands identified for IMT should be permitted to be used</u>:

A few stakeholders have opined that all IMT frequency bands should be made available for D2D services so that mobile network operators can determine the appropriate frequency bands through commercial agreements based on deployment requirements.

(b) <u>View#2: All FDD-bands below 3 GHz should be permitted to be used</u>: Many stakeholders have suggested that all FDD-bands below 3 GHz may be used for implementing IMT-based D2D services as these frequency bands have an established global device

ecosystem, favourable interference characteristics and better compatibility with satellite NTN deployments.

(c) View#3: Sub-1GHz bands should not be permitted to be used; only 1800 MHz and 2100 MHz bands should be permitted to be used:
Many other stakeholders have stated that sub-1 GHz IMT bands should not be considered initially, as large-scale satellite downlinks may affect terrestrial IMT uplinks and the limited availability of spectrum in these frequency bands may not adequately support both terrestrial IMT and satellite D2D services; 1800 MHz and 2100 MHz bands should be considered initially as these bands are already widely deployed for nationwide mobile services, and are well supported by the global device and chipset ecosystem.

Comments of stakeholders on Q19(c)

2.226 The views of stakeholders - on the question as to whether the national frequency allocation plan (NFAP) should be modified to include MSS on a secondary basis in the IMT frequency bands in which D2D is decided to be permitted – may be classified broadly in two groups as below:

(a) View#1: The NFAP should be modified to include secondary allocation for MSS in the relevant IMT frequency bands:
Many stakeholders have opined that the modification of the NFAP to include MSS on a secondary basis in the relevant IMT bands will be helpful for facilitating IMT-based D2D services in the country; such a modification would ensure legal clarity and international alignment; this regulatory approach would mirror the successful regulatory pathways forged by some countries example FCC (USA) and ISED (Canada) and provide domestic regulatory certainty ahead of WRC-27. Some of the stakeholders have suggested a nuanced approach – they have suggested that an IND footnote

(India specific footnote) should be added in the NFAP for making secondary allocation for IMT-based D2D service in the relevant IMT frequency bands.

(b) View#2: Any modification to include secondary allocation for MSS in the relevant IMT frequency bands is not required at this stage.

A few stakeholders have suggested that any modification in the NFAP should not be undertaken at this stage to include MSS on a secondary basis in IMT bands; secondary allocation for MSS in IMT bands is under international consideration at WRC-2027; premature NFAP modification at this stage could create regulatory uncertainty, complicate international coordination, and undermine long-term spectrum planning; the aspect of NFAP modifications should be revisited after WRC-2027 based on international outcomes; meanwhile, limited enabling provisions may be considered for D2D operations.

Comments of stakeholders on Q19 (d)

2.227 On the question as to whether any other condition in addition to Article 4.4 of the ITU-Radio Regulations is required to be made applicable to mitigate the issues related to cross-border interference, the stakeholders have broadly expressed two kinds of views:

(a) View#1: Provisions of Article 4.4 of ITU Radio Regulations are sufficient.

Many stakeholders have opined that the Article 4.4 of the ITU Radio Regulations is adequate at this stage to address cross-border interference concerns for D2D services using IMT spectrum. Several of such stakeholders have suggested that any additional measures should be considered after the outcome of WRC-27.

(b) View 2: Supplementary safeguards should be applied in addition to the Article 4.4 of ITU Radio Regulations.

A few stakeholders have suggested supplementary safeguards such as geofencing, emission limits near borders, coordination mechanisms between administrations, harmonisation of technical parameters, ability to suspend transmissions if harmful interference occurs, harmonisation of IMT spectrum for D2D satellite services, and adherence to 3GPP standards.

Comments of stakeholders on Q19 (e)

2.228 In response to Q19(e), a few stakeholders have suggested that while the provisions of Article 4.4 of the ITU Radio Regulations would be sufficient for mitigating cross-border interference arising from the D2D service via satellite using IMT spectrum, additional conditions might require to be imposed for mitigating interference within the country. A stakeholder has stated that the D2D service via satellite using IMT spectrum should be considered only under non-interference, non-protection basis and under defined regulatory measures to ensure the protection of incumbent IMT services based on methodologies whose compliance can be validated and enforced to avoid any interference, burden or limitations to the deployment of IMT in India or in neighbouring countries. Another stakeholder has opined that conservative coexistence conditions with aggregate field-strength or power flux density (PFD)-based safeguards should be imposed on the D2D service via satellite using IMT spectrum to ensure interference-free operation of the incumbent services.

2.229 With respect to the methods indicated in the Q19(e) for mitigating interference within the county, stakeholders have expressed divergent views. Many stakeholders have supported method (i) under which only a single partnering entity (access service provider) holds the same relevant IMT frequency channel in all the 22 LSAs of the country and

agrees to permit the usage of its IMT frequency channel by the SCN provider authorised entity at its SCN for the purpose of providing SCNaaS. Many other stakeholders have supported method (ii) under which one or more access service provider – together holding the assignment of the same relevant IMT frequency channel across all 22 LSAs to the country – agree to allow the usage of their IMT frequency channel by the SCN provider authorised entity at its SCN for the purpose of providing SCNaaS.

2.230 A gist of comments of stakeholders who have supported the method (i) is given below:

(a) Method (ii) would create complex interference management and coordination challenges and therefore, it should be avoided for ease of implementation, at least at this initial stage. Allowing different operators to use the same satellite beams or spots in different LSAs would require intricate, real-time coordination of beam footprints, power levels and handover behaviour at every inter-LSA boundary, substantially increasing the risk of harmful interference, inconsistent user experience and disputes over who is responsible for any degradation of terrestrial IMT services.

(b) Method (i) would provide the simplest and cleanest solution for initial deployment, as intra-country border-coordination issues would be avoided and responsibility would be placed clearly on one operator for managing the coexistence between terrestrial and satellite use of its IMT block. However, a single service provider would be holding the same spots across all LSAs in very rare circumstances. Accordingly, harmonisation of assigned IMT frequency bands may be required to facilitate method (i) for achieving assignment of same relevant IMT frequency channel across all 22 LSAs.

2.231 A gist of comments of stakeholders who have supported the method (ii) is given below:

(a) Method (ii) reflects the actual structure of IMT spectrum holdings in India. It will enable competition and collaboration without mandating a single nationwide holder. It will provide nationwide spectrum continuity essential for satellite D2D.

(b) No single mobile network operator in India holds the same IMT frequency channel across all 22 LSAs in all relevant bands. Requiring a single operator to hold pan-India spectrum in a single channel as a precondition would render the D2D-IMT model practically unworkable. Additionally, with sufficiently small beams, there is no reason to prefer the method (i) from an interference perspective.

(c) In other jurisdictions, such as USA and Canada, where a single access service provider is unlikely to hold nationwide licenses for a single band, regulators have permitted D2D using IMT with operator partnerships as long as the licensee does not cause harmful interference to co-channel neighbouring licensees.

(d) Limiting the SCN partnership with only one access service provider holding the same IMT spectrum across all 22 LSAs will be impractical and create rigidity in the partnership choices available. Method (ii) ensures nationwide coverage and avoids monopoly risks.

2.232 A stakeholder has opined that the successful deployment of D2D via IMT spectrum does not require a single access service provider to hold the relevant IMT frequency channel in all 22 LSAs, nor does it require multiple access service providers collectively to cover all 22 LSAs before the service can begin. Instead, an SCN provider should be permitted to provide D2D service in any LSA where the partner access service provider holds the applicable IMT spectrum rights and authorizes the use of that spectrum for D2D. This LSA-by-LSA approach avoids unnecessary deployment delays, preserves access service provider flexibility, and allows D2D coverage to scale progressively across India.

Analysis of issues raised through Q19

2.233 The D2D service via satellite using IMT spectrum (also referred to as "IMT-based D2D service") offers a transformative solution for meeting the objective of providing ubiquitous connectivity. It can expand the reach of telecommunication services, particularly emergency services - in remote and underserved areas - where terrestrial expansion is techno-commercially unviable or difficult. The prime advantage of IMT-based D2D service is the use of unmodified handsets.

2.234 IMT-based D2D service is delivered through hybrid satellite-terrestrial networks leveraging TN-NTN integration as defined in 3GPP Release 17 and beyond. The integration of terrestrial network (TN) and non-terrestrial network (NTN) is referred to "TN-NTN integration". As per 3GPP, non-terrestrial networks (NTN) are networks or segments of networks that use either Uncrewed Aircraft Systems (UAS) operating typically between 8 and 50 km altitudes, including High Altitude Platforms (HAPs) or satellites in different constellations to carry a transmission equipment relay node or a base station.[76] For NTN, two types of modes or "payload" can be distinguished:

(a) Non-regenerative payload**:** This mode is also called "transparent mode" or "bent-pipe payload" mode, considering the path from the gateway via spaceborne/ airborne platform to the user equipment (UE). A spaceborne/ airborne platform with no on-board processing capabilities that changes the frequency carrier of the received uplink radio frequency (RF) signal, filters and amplifies it before transmitting it on the downlink, i.e. the platform corresponds to an analogue RF repeater.

[76] Reference: https://www.3gpp.org/technologies/ntn-overview

(b) Regenerative payload (or non-transparent mode): a spaceborne/ airborne platform that has on top of RF filtering, frequency conversion and amplification also on-board processing capabilities (for demodulation/decoding, switching and/or routing, coding/modulation) so this spaceborne/airborne platform has base station functions on board.

2.235 The following figure depicts transparent mode and regenerative payload mode:

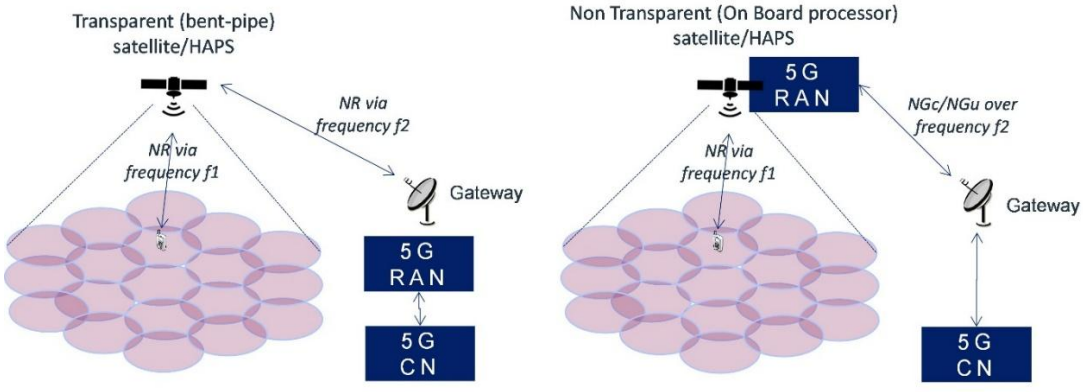


Figure 2.2: Transparent vs. Regenerative payload mode[77]

2.236 At present, terrestrial networks and non-terrestrial networks operate in silos and are being established by separate set of operators. Towards authorising IMT-based D2D services, many countries have permitted collaboration between satellite operators and terrestrial service providers holding IMT spectrum to offer connectivity directly to consumer handsets. The aim of such policies is to enable telecom consumers in areas not covered by terrestrial networks to be covered using their existing handsets via satellite-based communications.

[77] High Altitude Platform Station (HAPS), New Radio (NR), Radio Access Network (RAN), Core Network (CN), Next Generation control plane (NGc) and Next Generation user plane (NGu)

2.237 In the present consultation process, while stakeholders have expressed divergent views on the necessity of a separate regulatory framework for IMT-based D2D service, many of them have emphasized that regulatory certainty is essential to protect auctioned spectrum rights and provide a robust mechanism for interference management. The Authority notes that many countries have already developed dedicated regulatory framework for IMT-based D2D service. In this regard, the Authority is of the view that enabling IMT-based D2D service through a dedicated, proportionate regulatory framework will help in an orderly and sustainable growth of the service; which in turn, will support the policy goal of expanding the reach of telecommunication services, particularly emergency services, in remote, uncovered and underserved areas.

2.238 Considering the international practices, the Authority is of the view that IMT-based D2D service in India should be offered through partnership between the SCN provider authorised entity and the access service provider holding IMT spectrum ("partnering entity"); IMT spectrum should not be assigned to the SCN provider authorised entity.

2.239 As per the extant practice, the entities holding Unified Access Service License (UASL) and Access Service Authorization under Unified License are permitted to provide access service and to seek the assignment of IMT spectrum. As per the Telecommunications (Authorisation for Provision of Principal Telecommunication Services) Rules, 2026 under the Telecommunications Act, 2023, the entities holding unified service authorisation and access service authorisation are permitted to provide access service.

2.240 Considering the extant practice, the entities holding the following types of licenses/ authorisation would be permitted to provide access services and to obtain IMT spectrum:

(a) UASL;

(b) Access Service Authorization under Unified License;

(c) unified service authorisation under the Telecommunications (Authorisation for Provision of Principal Telecommunication Services) Rules, 2026; and

(d) access service authorisation under the Telecommunications (Authorisation for Provision of Principal Telecommunication Services) Rules, 2026.

2.241 For the sake of convenience, the entities holding the licenses/ authorisations mentioned in the preceding paragraph, will be, hereinafter, collectively referred to as "access service providers".

2.242 As only access service providers are permitted to obtain IMT spectrum as per the extant practice, only access service providers should be permitted to provide D2D service via satellite using IMT spectrum under a partnership arrangement with the SCN provider authorised entity. Under the partnership arrangement, the SCN provider authorised entity would deploy the IMT spectrum of its partnering access service provider in user links of the satellite(s) forming part of the SCN. From the perspective of users, satellite(s) would appear as a 'base station in the sky'. From the perspective of the partnering access service provider, the entire SCN would appear to be embedded into its access service network. Under such a partnership, the broad roles of the SCN provider authorised entity and the access service provider holding IMT spectrum would be as below:

(a) The partnering entity manages both the IMT spectrum resource and the customer relationship. It enables the use of a part of its IMT spectrum ("IMT spectrum block") to the SCN provider authorised entity.

(b) The SCN provider authorised entity manages its SCN and deploys the IMT spectrum block in the user link of its SCN to enable the partnering entity to offer IMT-based D2D service to its users.

2.243 Intuitively, there could be two possible methods of providing IMT-based D2D service:

(a) The IMT-based D2D service is provided on the shared IMT spectrum with geographical separation between – (i) areas served by IMT spectrum through terrestrial base stations, and (ii) areas served by IMT spectrum through satellites.

(b) The IMT-based D2D service is provided on dedicated non-shared IMT frequency band in the same geographical area where IMT services are also available in different IMT bands.

The following figures depict the afore-mentioned methods of providing IMT-based D2D service:

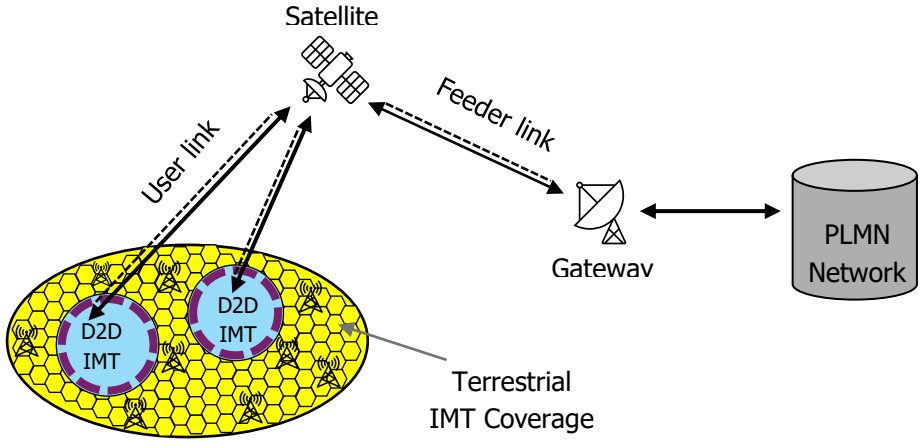


Figure: 2.3: IMT-based D2D service using the shared IMT spectrum with geographical separation

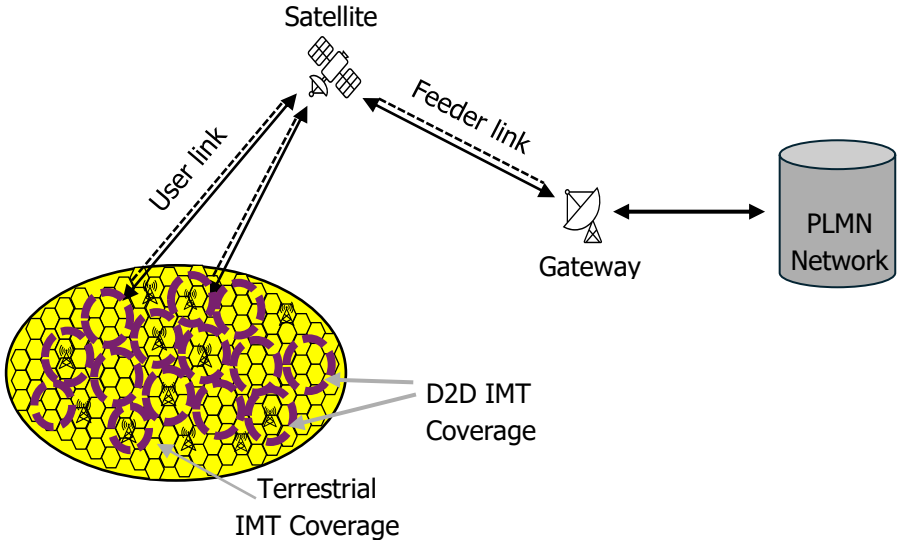


Figure: 2.4: IMT-based D2D service using dedicated non-shared IMT spectrum in the same geographical area where IMT services are also available in different IMT bands.

2.244 The choice between the afore-mentioned two methods will purely depend on the partnership arrangement between the SCN provider authorised entity and the partnering entity.

2.245 As mentioned above, at present, IMT spectrum is assigned in India to access service providers on licensed service area (LSA)-basis through auction process in India. Upon the assignment of IMT spectrum in an LSA to an access service provider, the access service provider receives the exclusive right to use the spectrum in that LSA until the expiry of the validity period of spectrum. Certain regulatory duties (obligations) including interference management are also imposed on the access service provider upon the assignment of spectrum. If any access service provider, holding IMT spectrum, partners with an SCN provider authorised entity for the provision of IMT-based D2D service, such access service provider would continue to hold the right to use the IMT spectrum and would continue to be subjected to the regulatory obligations associated with the IMT spectrum.

Frequency bands for IMT-based D2D service

2.246 The Authority notes that, internationally, the telecom regulators, which have permitted the IMT-based D2D service in their respective countries, have identified certain frequency bands for the IMT-based D2D service. For this purpose, such regulators have, generally, identified IMT frequency bands from 600 MHz band to 2100 MHz under frequency division duplexing (FDD) arrangement. In the present consultation process, many stakeholders have suggested to consider the IMT frequency bands which are assigned under FDD arrangement in India. They have opined that IMT frequency bands under FDD arrangement are preferable for initial implementation due to their superior uplink/ downlink separation, more predictable interference characteristics and better compatibility with satellite NTN deployments. They have also stated that in TDD bands, uplink/ downlink synchronisation issues can cause serious interference to existing terrestrial TDD deployments, and therefore, TDD bands may be considered only after technical studies, operational experience, international harmonisation and the outcomes of WRC-27.

2.247 At present, the following IMT frequency bands are assigned under FDD arrangement in India:

(a) 600 MHz band;
(b) 700 MHz band;
(c) 800 MHz band;
(d) 900 MHz band;
(e) 1800 MHz band; and
(f) 2100 MHz band.

2.248 DoT[78] has provided the band description of the afore-mentioned IMT frequency bands in India as below:

Table 2.3: IMT frequency bands under FDD arrangement

Frequency band	Uplink frequency (in MHz)		Downlink frequency (in MHz)	
	From	To	From	To
600 MHz band	663	703	612	652
700 MHz band	703	748	758	803
800 MHz band	824	844	869	889
900 MHz band	890	915	935	960
1800 MHz band	1710	1785	1805	1880
2100 MHz band	1920	1980	2110	2170

2.249 Considering that IMT frequency bands under FDD arrangement exhibit superior uplink/ downlink separation and more predictable interference characteristics, whereas there are concerns related to uplink/ downlink synchronisation under TDD arrangement, the Authority is of the view that it would be appropriate to identify 600 MHz, 700 MHz, 800 MHz, 900 MHz, 1800 MHz, and 2100 MHz bands under FDD arrangement for the purpose of IMT-based D2D service, at this stage.

2.250 As the IMT-based D2D service is offered by way of providing connectivity between satellites (formally, "space stations") and mobile user equipment on Earth, it is essentially a mobile satellite service in the scheme of ITU's Radio Regulations 2024. For a ready reference, the

[78] Reference: https://www.dot.gov.in/static/uploads/2026/02/092d793d6ea912a5dd79bf0c26ea1a84.pdf

definition of mobile satellite service as provided by ITU's Radio Regulations 2024[79] is given below:

"1.25 mobile-satellite service: A radiocommunication service: between mobile earth stations and one or more space stations, or between space stations used by this service; or between mobile earth stations by means of one or more space stations. This service may also include feeder links necessary for its operation."

2.251 Considering the above, for permitting IMT-based D2D service in any IMT frequency band, it would normally be necessary that MSS allocations are formally made in that frequency band under ITU's Radio Regulations, and/ or in National Frequency Allocation Plan (NFAP). ITU's Radio Regulations have not included MSS allocations in IMT frequency bands as yet. In the WRC-27, which will held in October-November 2027 at Shanghai, the agenda item 1.13[80] will "*consider studies on possible new allocations to the mobile-satellite service for direct connectivity between space stations and International Mobile Telecommunications (IMT) user equipment to complement terrestrial IMT network coverage, in accordance with Resolution 253 (WRC-23)*".[81]

2.252 The Authority notes that certain telecom regulators such as FCC in USA and ISED in Canada, which have permitted IMT-based D2D service

[79] Source: https://www.itu.int/hub/publication/r-reg-rr-2024/
[80] Source: https://www.itu.int/en/ITU-R/study-groups/rcpm/Pages/wrc-27-studies.aspx

[81] Resolution 253 of WRC-2023 includes the following studies:
(a) studies on possible allocations to the MSS in the frequency range between 694/698 MHz and 2.7 GHz, taking into account the IMT frequency arrangements addressed in the most recent version of Recommendation ITU-R M.1036;
(b) studies on spectrum requirements and on technical, operational and regulatory matters related to the implementation of the mobile-satellite service for direct connectivity to the IMT user equipment to complement the terrestrial IMT network coverage,
(c) studies on sharing and compatibility between incumbent services, including in adjacent frequency bands, ensuring the protection of incumbent services in accordance with the Radio Regulations;
(d) study on possible technical and operational measures to ensure that the stations in the MSS do not cause harmful interference to, or claim protection from, stations operating in the mobile service.

ahead of WRC-27, have added Mobile Satellite Service (MSS) allocations on a secondary basis to the frequency bands identified for IMT-based D2D service in their respective national frequency allocation tables.

2.253 ACMA, Australia in September 2024 published 'Regulatory guide on the operation of IMT satellite direct-to-mobile services"[82]. This document states the following,

"Spectrum licensing and allocations in the Spectrum Plan

The Australian Radiofrequency Spectrum Plan provides that a service operating under a spectrum licence is taken to be a primary service unless the spectrum licence specifies that it is a secondary service. This means that operation of a mobile phone under a spectrum licence used in an IMT satellite direct-to-mobile service is consistent with the Spectrum Plan.

Currently there are no conditions in existing spectrum licences specifying that earth or earth receive services are secondary services. This means that a mobile phone operating under a spectrum licence in relation to an IMT satellite direct-to-mobile service would be doing so as part of a primary service." [Emphasis added]

2.254 ACMA states that services operating under a spectrum licence are generally treated as primary services, unless the licence specifically designates them as secondary. In Australia, IMT-based D2D services are not considered for secondary MSS allocation citing that satellite direct-to-mobile operation using mobile phones under a spectrum licence would be considered part of a primary service and is therefore consistent with the Spectrum Plan.

[82] Source: https://www.acma.gov.au/sites/default/files/2025-05/Regulatory%20guide_Operation%20of%20an%20IMT%20satellite%20direct-to-mobile%20service_0.pdf

2.255 Ofcom, U.K. in its December 2025 final statement 'Enabling satellite Direct to Device services in Mobile spectrum bands'[83] has not adopted the approach of secondary MSS allocation of IMT frequency bands, considered for IMT-based D2D services. However, Ofcom plans to review the authorisation framework after the World Radiocommunication Conference in 2027 (WRC-27). Ofcom states that the D2D network should not cause harmful interference to other services and cannot claim protection from interference from other services. The Authority notes that, this aspect of D2D service of operating under non-interference and non-protection basis to other services implies the secondary nature of IMT based D2D services permitted by Ofcom, U.K.

2.256 In the present consultation process, many stakeholders have suggested to include MSS on a secondary basis in the relevant IMT bands in the National Frequency Allocation Plan in India to provide regularity certainty and alignment with the international practices on the matter. The Authority notes that some of the stakeholders have suggested that an India specific footnote should be added in the NFAP for making secondary allocation for IMT-based D2D service in the relevant IMT frequency bands.

2.257 The Authority notes that the section 1.8 of National Frequency Allocation Plan -2025 (NFAP 2025) provides, *inter alia*, the following description in respect of secondary allocation:

"Where a frequency band is allocated to more than one radiocommunication service, each service using the band is categorised either as a "primary" service or a "secondary" service. A station in a

[83] Source: https://www.ofcom.org.uk/siteassets/resources/documents/consultations/category-1-10-weeks/consultation-enabling-satellite-direct-to-device-services-in-mobile-spectrum-bands/main-documents/dec2025/statement---enabling-satellite-direct-to-device-connectivity-in-mobile-spectrum-bands.pdf?v=408872

secondary service can't cause harmful interference to stations of primary services, nor can it claim protection from harmful interference originating from stations of primary services, irrespective of the date the stations in the primary services begin operating." [Emphasis added]

2.258 In case the frequency allocation table of the NFAP is amended to include MSS as a secondary service in any frequency band identified for IMT-based D2D service, the satellite(s) and user equipment making use of IMT spectrum for the delivery of the IMT-based D2D service cannot cause harmful interference to stations of primary services in such frequency bands, nor can they claim protection from harmful interference originating from stations of primary services. Such an amendment would be necessary to ensure that the IMT-based terrestrial service and other incumbent services in such frequency bands can operate without having to deal with harmful interference from the IMT-based D2D service. Further, to provide regulatory certainty on the matter, it would be necessary to expressly mention in the NFAP that the IMT-based D2D service in the relevant frequency bands is being permitted on a non-interference and non-protection basis to services operating within India and operating outside India.

2.259 Considering the above, the Authority is of the following view:

(a) The frequency allocation table of the NFAP should be amended to include MSS as a secondary service in the frequency bands identified for IMT-based D2D service.

(b) An India-specific footnote should be introduced to clarify that secondary MSS operations in such frequency bands will be limited to the IMT-based D2D service, which will operate on a non-interference and non-protection basis to both domestic and cross-border operations.

Interference management

2.260 Technically, there could be four scenarios of potential interference from the operation of IMT-based D2D service as shown in the following table:

Table 2.4: Scenarios of potential interference from the operation of IMT-based D2D service

Classification	**IMT frequency block for the IMT-based D2D service**	
	In-block	**Out-of-block**
Within India	(1) Wanted emissions inside India within the frequency block	(2) Unwanted emissions inside India outside the frequency block
Outside India	(3) Unwanted emissions outside India within the frequency block	(4) Unwanted emissions outside India outside the frequency block

Note#1: The term "IMT frequency block for the IMT-based D2D service" refers to the specific chunk of IMT spectrum which is used for providing the IMT-based D2D service.

Note#2: The term "In-block" refers to the telecom operations within the frequency range of the specific chunk of IMT spectrum used for providing the IMT-based D2D service.

Note#3: The term "Out-of-block" refers to the telecom operations outside the frequency range of the specific chunk of IMT spectrum used for providing the IMT-based D2D service.

2.261 Scenario (1): As IMT spectrum is assigned on an exclusive basis in a licensed service area (LSA), the telecom operations within the frequency range of the specific chunk of IMT spectrum used for providing the IMT-based D2D service would essentially be the terrestrial IMT service of the

partnering service provider. The operations of the terrestrial IMT service of the partnering access service provider in the relevant frequency block can be duly protected against the interference from the operations of its own IMT-based D2D service in that frequency block by way of geographical separation utilising its own arrangement with SCN provider. Accordingly, there appear to be no regulatory concerns in respect of the scenario (1) of the above table.

2.262 Scenarios (2), (3) and (4): With reference to the scenario (2), (3) and (4), it would be necessary to stipulate emission limits on the operation of the IMT-based D2D service. These aspects will be considered under Agenda Item 1.13 of WRC-27 in accordance with Resolution 253 (WRC-23)". Resolution 253 of WRC-2023 includes the following studies:

(a) studies on possible allocations to the MSS in the frequency range between 694/698 MHz and 2.7 GHz, taking into account the IMT frequency arrangements addressed in the most recent version of Recommendation ITU-R M.1036;

(b) studies on spectrum requirements and on technical, operational and regulatory matters related to the implementation of the mobile-satellite service for direct connectivity to the IMT user equipment to complement the terrestrial IMT network coverage;

(c) studies on sharing and compatibility between incumbent services, including in adjacent frequency bands, ensuring the protection of incumbent services in accordance with the Radio Regulations;

(d) study possible technical and operational measures to ensure that the stations in the MSS do not cause harmful interference to, or claim protection from, stations operating in the mobile service.

[Emphasis added]

2.263 Ahead of WRC-27, certain administrations, such as FCC in USA and Ofcom in UK, have defined emission limits for the protection of incumbent services from the operation of IMT-based D2D service. For

illustration purposes, the relevant extracts from the orders of FCC, USA and Ofcom, UK are reproduced below:

(a) Relevant extracts from the 'report and order and further notice of proposed rulemaking' dated 15.03.2024 on 'Single Network Future: Supplemental Coverage from Space' issued by FCC, USA[84]:

"198. At the boundaries of a GIA[85], however, including at international borders or boundaries extending into water, certain limits might be necessary and applicable. Although the introduction of SCS into spectrum licensed for terrestrial networks should have no impact to other radio systems operating in the band within the same or nearby geographical areas, we adopt a rule to limit the signal levels from SCS at and beyond the terrestrial operator's licensed area to be the same as those defined for terrestrial operation in each respective band. More specifically, we maintain the existing market area boundary limits established in parts 22, 24, and 27 of the Commission's rules. These limits have also been used and shown to be feasible for operations similar to SCS. The limits, which should be aggregate signal from all beams, are 40 dBμV/m for the 600 MHz, 700 MHz, and 800 MHz bands, and 47 dBμV/m for the AWS-H Block and Broadband PCS.

199. Further, as the Commission explained in the Notice, the terrestrial bands eligible for SCS are not allocated for international MSS use. SCS can therefore only be deployed on the condition that stations using these frequencies will not cause harmful interference to, or claim protection from harmful interference caused by, an

[84] Source: https://docs.fcc.gov/public/attachments/FCC-24-28A1.pdf

[85] FCC, USA in its 'report and order and further notice of proposed rulemaking' dated 15.03.2024 on 'Single Network Future: Supplemental Coverage from Space' has authorised SCS operations in the following six geographical independent areas (GIA) (1) the contiguous United States (CONUS); (2) Alaska; (3) Hawaii; (4) American Samoa; (5) Puerto Rico/U.S. Virgin Islands; and (6) Guam/Northern Mariana Islands.

international station operating in accordance with the provisions of the Constitution, the Convention, and the ITU Radio Regulations.

200. We recognize that managing time varying signal levels from SCS space stations, which may be moving and utilizing multibeam transmissions, will require careful and dynamic management of power level and beams. Satellite operators must also account for multiple overlapping and changing satellites or beams covering the same areas, as well as leakage and interference from side beams. Therefore, the power limit for interference protection at any given point or area should be applied to aggregation of power received across all visible beams and satellites at all times as they move over any given point or area….

205. …. In consideration of the record, and in line with our goal to create a simple requirement, we adopt an aggregate out-of-band PFD limit of -120 dBW/m^2/MHz for the 600MHz, 700MHz, 800MHz, and PCS 1990-1995 MHz bands. We also specify that this PFD limit will apply at 1.5 meters above ground level, a height frequently associated with terrestrial device usage that has been used by the Commission when developing interference protection criteria for other wireless services. We believe that this limit represents an equitable—and technologically feasible—middle ground between the positions expressed in the record and will effectively protect adjacent band operations across the SCS Bands." [Emphasis added]

(b) Relevant extracts from the final statement dated 09.12.2025 on 'Enabling satellite Direct to Device services in Mobile spectrum bands' issued by Ofcom, UK[86]:

"Technical conditions to enable coexistence

[86] This document is available at https://www.ofcom.org.uk/siteassets/resources/documents/consultations/category-1-10-weeks/consultation-enabling-satellite-direct-to-device-services-in-mobile-spectrum-bands/main-documents/dec2025/statement---enabling-satellite-direct-to-device-connectivity-in-mobile-spectrum-bands.pdf?v=408872

4.9 We confirmed that we will apply the aggregate PFD limits for each of the bands, necessary to protect other spectrum users in the UK, as proposed in the March 2025 consultation, as shown in Table 4.1. The relevant PFD limit will be inserted into clause 9(a) of the D2D licence schedule and we have replicated Table 4.1 in the D2D licence schedule.

We also set out that we would require the limits in Table 4.1 to be met at the borders and coastlines of neighbouring countries and territories (including the Channel Islands and the Isle of Man) to protect mobile users in those areas. [Emphasis added]

Table 4.1 | Power limits for D2D satellite unwanted emissions in mobile downlink spectrum. These power limits apply at the surface of the Earth.

Mobile band	*PFD Limit in mobile downlink spectrum*
MHz	*dBW / MHz / m^2*
700, 800, 900	*-119*
1400	*-113*
1800, 2100	*-111*
2600	*-108*

2.264 In the present consultation process, stakeholders have suggested that while the provisions of Article 4.4 of the ITU Radio Regulations would be generally sufficient for mitigating cross-border interference arising from the D2D service via satellite using IMT spectrum, conditions such as operation on non-interference, non-protection basis and power flux density (PFD)-based safeguards should be imposed for mitigating interference within the country.

2.265 Considering the above, the Authority is of the view that while permitting the operation of the IMT-based D2D service in the country ahead of WRC-27, it would be essential to ensure due protection of the incumbent

services (including IMT services) from any harmful interference arising out of the operation of the IMT-based D2D service. The Authority is further of the view that for ensuring protection of incumbent services, it would be appropriate to prescribe emission limits for the operation of the IMT-based D2D service.

2.266 The Authority notes that while permitting the IMT-based D2D service in March 2024, the FCC, USA imposed limits on (a) electric field strength of aggregate signal from all beams and (b) out-of-band emissions for protecting the incumbent services. Further, Authority notes that FCC, USA has not mandated any minimum elevation angle limits for D2D satellite downlinks while citing this parameter as system dependent and a non-requirement for minimizing the risk of harmful interference. The Authority has carefully perused the limits imposed by FCC and is of the view that similar technical limits should be imposed on the operation of the IMT-based D2D service in India. The Authority also notes that while commercial IMT-based D2D services are functioning in USA for more than a year now, such services have been launched in UK in 2026 itself.

2.267 In view of the above, the Authority is of the view that for protecting the incumbent services operating in the country from any harmful interference arising from the IMT-based D2D service, the limits on (a) electric field strength of aggregate signal from all beams and (b) out-of-band emissions should be made applicable to the IMT-based D2D service in India at this stage similar to the limits imposed by FCC through its 'report and order and further notice of proposed rulemaking' dated 15.03.2024 on 'Single Network Future: Supplemental Coverage from Space'. Meanwhile, DoT, through the Telecom Engineering Centre (TEC), should carry out India specific trials for determining the emission limits and other conditions for mitigating the interference from the IMT-based D2D service on the incumbent services. Thereafter, the emission limits, determined through such trials, should be made applicable to

IMT-based D2D service. In any case, this aspect should be revisited based on the outcome of WRC-27 on the matter.

2.268 The Authority notes that FCC has prescribed separate limits on electric field strength of aggregate signal from all beams for the following groups of frequency bands:

(a) Group-1: 600 MHz band, 700 MHz band, and 800 MHz band, and

(b) Group-2: AWS-H block (1915-1920/ 1995-2000 MHz) and Broadband PCS (1850-1915/ 1930-1995 MHz).

2.269 In this regard, it is noteworthy that the Authority in para 2.246 above has expressed its view that 600 MHz, 700 MHz, 800 MHz, 900 MHz, 1800 MHz, 2100 MHz bands under FDD arrangement should be identified for IMT-based D2D services, at this stage.

2.270 The Authority notes that the frequency ranges of 800 MHz and 900 MHz bands in India are as below:

(a) 800 MHz band: 824-844/ 869-889 MHz; and

(b) 900 MHz band: 890-915/ 935-960 MHz

2.271 Considering that (a) FCC has prescribed a uniform limit on the electric field strength of aggregate signal from all beams for 600 MHz band, 700 MHz band, and 800 MHz band, and (b) 800 MHz band 900 MHz band are adjacent bands, the Authority is of the view that it would be appropriate to keep a uniform limit of 40 dBµV/m on the electric field strength of aggregate signal from all beams in respect of all sub-1GHz bands viz. 600 MHz band, 700 MHz band, 800 MHz band and 900 MHz band, at this stage.

2.272 Further, the Authority notes that the frequency ranges of 1800 MHz and 2100 MHz bands in India are as below:

(a) 1800 MHz band: 1710-1785/ 1805-1880 MHz

(b) 2100 MHz band: 1920-1980/ 2110-2170 MHz.

2.273 As may be seen, the frequency ranges of 1800 MHz and 2100 MHz bands in India are quite close to/ overlapping with AWS-H block (1915-1920/ 1995-2000 MHz) and Broadband PCS band (1850-1915/ 1930-1995 MHz) in USA. Accordingly, the Authority is of the view that it would be appropriate to keep a uniform limit of 47 dBµV/m on the electric field strength of aggregate signal from all beams in respect of 1800 MHz band and 2100 MHz band, at this stage.

2.274 As far as the limits on the aggregate out-of-band PFD limit on emissions from IMT-based D2D services is concerned, the Authority is of the view that considering the prevalent practice of FCC, it would be appropriate to prescribe a limit of -120 dBW/m^2/MHz on 600 MHz, 700 MHz, 800 MHz, 900 MHz, 1800 MHz and 2100 MHz bands, at this stage.

2.275 As far as the matter of mitigating cross-border interference arising out of the IMT-based D2D service is concerned, the Authority notes that Article 4.4 of the ITU Radio Regulations provides that "*Administrations of the Member States shall not assign to a station any frequency in derogation of either the Table of Frequency Allocations in this Chapter or the other provisions of these Regulations, except on the express condition that such a station, when using such a frequency assignment, shall not cause harmful interference to, and shall not claim protection from harmful interference caused by, a station operating in accordance with the provisions of the Constitution, the Convention and these Regulations.*".

2.276 To address the issue of cross-border interference, many countries have allowed the operation of the IMT-based D2D service only on the condition that such operations would adhere to the provisions of Article 4.4 of the ITU Radio Regulations. In the present consultation process,

many stakeholders have opined that the provisions of Article 4.4 of the ITU Radio Regulations are adequate to address the concerns related to cross-border interference arising from the IMT-based D2D service.

2.277 Considering the above, the Authority is of view that pending the outcome of WRC-27, the operation of the IMT-based D2D service should be subject to the provisions of Article 4.4 of the ITU Radio Regulations for addressing the concerns related to cross-border interference arising from the IMT-based D2D service. This aspect should be revisited based on the outcome of WRC-27 on the matter.

Addressing the concerns of interference arising from the operation of the IMT-based D2D service in the country

2.278 With a view to ensure interference-free operation of IMT-based D2D service in the country, the Authority solicited comments from stakeholders on the suitability of the following methods:

(a) Method (i) under which only a single partnering entity (access service provider) holds the relevant IMT frequency channel in all the 22 LSAs of the country and agrees to permit the usage of its IMT frequency channel by the SCN provider authorised entity at its SCN for the purpose of providing SCNaaS;

(b) Method (ii) under which one or more access service provider(s) – together holding the assignment of the relevant IMT frequency channel across all 22 LSAs of the country – agree to allow the usage of their IMT frequency channel by the SCN provider authorised entity at its SCN for the purpose of providing SCNaaS; or

(c) Any other method.

2.279 The method (i) would require that a single access service provider holds the same block of IMT spectrum in all 22 LSAs. A hypothetical example with respect to method (i) could be that an access service provider holds

the IMT spectrum in 612-622 MHz (downlink) and 663-673 MHz (uplink) in all 22 LSAs of the country. In this case, the access service provider may partner with the SCN provider authorised entity for the use of the IMT spectrum in 612-622 MHz (downlink) and 663-673 MHz (uplink) for the provision of the IMT-based D2D service.

2.280 An example of method (ii) could be that an access service provider (ASP-A) holds the IMT spectrum in 612-622 MHz (downlink) and 663-673 MHz (uplink) in 15 of the 22 LSAs and another access service provider (ASP-B) holds the same IMT spectrum of 10 MHz in 7 of the 22 LSAs of the country. In such a scenario, ASP-A and ASP-B together would hold the same IMT spectrum in all 22 LSAs and can together agree for allowing the usage of the IMT spectrum for the provision of the IMT-based D2D services.

2.281 The Authority notes that at present, there is a limited availability of pan-India harmonised IMT spectrum block (i.e. the same chunk of IMT spectrum in all 22 LSAs) assigned to a single access service provider. Only one access service provider holds harmonised IMT spectrum block in all 22 LSAs that too in only two IMT frequency bands viz. 700 MHz band and 800 MHz band. In other IMT frequency bands viz. 900 MHz, 1800 MHz, 2100 MHz band, pan-India harmonised IMT spectrum block is not held by any access service provider. In such a scenario, the method (i) can be exercised by only one access service provider in 700 MHz band and 800 MHz band.

2.282 In the present consultation process, many stakeholders have opined that the method (i) would provide the simplest solution for initial deployment, as there would be no inter-LSA coordination issues under the method (i). Many other stakeholders have supported the method (ii) citing that no single mobile network operator in India holds the same IMT frequency channel across all 22 LSAs in all relevant frequency bands; requiring a single operator to hold pan-India spectrum in a single channel as a

precondition would render the D2D-IMT model practically unworkable. Such stakeholders have also emphasized that in other jurisdictions, such as USA, regulators have permitted IMT-based D2D service if one or more mobile network operators – together holding relevant frequency channel throughout a defined geographical area – agree to provide the IMT-based D2D service in that frequency channel.

2.283 In this regard, the Authority has perused the relevant documents of FCC, USA. The Authority notes that in the year 2023, FCC, USA issued the Notice of Proposed Rulemaking (NPRM) in the matter of 'Single Network Future: Supplemental Coverage from Space' for public comment.[87] In the NPRM on Supplemental Coverage from Space (SCS), the FCC stated, *inter alia*, that "*[i]n this Notice of Proposed Rulemaking (Notice), we propose a novel framework for SCS that would provide coverage to a terrestrial mobile service licensee's subscribers operating in underserved and/or unserved areas within a terrestrial mobile service licensee's license area, only through a collaboration between an existing NGSO operator and a terrestrial mobile service licensee, involving transmissions between space stations and mobile end-user devices on spectrum that is currently allocated and licensed exclusively on a terrestrial basis. Specifically, given the complexity of this undertaking, and particularly due to technical considerations, we confine our initial proposal to spectrum and locations where (1) there is only a single terrestrial entity that holds, either directly or indirectly, all co-channel licenses for the relevant frequencies in a given geographically independent area (GIA), such as CONUS; and (2) there are no primary, non-flexible-use legacy incumbent operations (whether federal or nonfederal) in the band. As discussed below, we also seek comment on potentially extending our proposed framework to a range of alternative*

[87] Source: https://docs.fcc.gov/public/attachments/FCC-23-22A1.pdf

licensing scenarios that do not currently meet our proposed entry criteria, including instances where multiple co-channel terrestrial licensees are authorized in a given GIA."

2.284 After the public consultation on the matter, the FCC issued its report and order dated 22.02.2024 on Single Network Future: Supplemental Coverage from Space [88]. Through the report and order dated 22.02.2024, the FCC stated that *"[s]ome commenters suggest the proposal in the Notice, wherein a single terrestrial licensee must hold all co-channel licenses in a given GIA, would limit SCS to large carriers with nationwide authority over a block of spectrum, or otherwise exclude smaller or regional terrestrial operators from participation in the framework. We are sensitive to these concerns, and in response, we expand our entry criteria so that multiple terrestrial service providers may work with a satellite operator to provide SCS, as long as together those service providers hold all the licenses in the relevant channel throughout a GIA. These more expansive entry criteria than what the Commission proposed in the Notice help provide an opportunity for broader deployment of SCS both spectrally and geographically, and allows additional licensees to participate, while still minimizing the risk of harmful interference."* [Emphasis added]

2.285 Considering the foregoing discussion and the fact that the method (i) can be exercised by only one access service provider in 700 MHz band and 800 MHz band, the Authority is of the view that the approach suggested in the method (ii) is preferable as it will create flexibility in the partner choices available to the SCN provider authorised entities. This method will avoid monopoly risks, ensure nationwide coverage of the IMT-based D2D service, and minimize the risk of interference from the operation of the IMT-based D2D service within the country.

[88] Source: https://docs.fcc.gov/public/attachments/DOC-400678A1.pdf

2.286 In view of the above, **the Authority recommends the following for Direct to Device service via satellite using IMT spectrum (hereinafter, referred to as "IMT-based D2D service"):**

(a) Any entity authorised to provide access service and holding IMT spectrum, should be permitted to provide the IMT-based D2D service by availing SCNaaS from any SCN provider authorised entity. Conversely, any SCN provider authorised entity should be permitted to provide SCNaaS to any entity, which is authorised to provide access service and holds IMT spectrum:

Provided **that the provision of IMT-based D2D service is permitted only if one or more entities authorised to provide access service – together holding the assignment of the same relevant IMT frequency channel across all 22 licensed service areas of the country – agree to allow the usage of their IMT frequency channel by the SCN provider authorised entity for the purpose of providing SCNaaS to only such entity (ies):**

Provided **also that the SCN provider authorised entity and its partnering access service provider(s) providing the IMT-based D2D service should enter into a service agreement prior to provisioning of IMT-based D2D service. The SCN provider authorised entity and the partnering access service provider(s) should jointly intimate about the service agreement to the Central Government and TRAI within seven working days of the agreement.**

(b) The IMT frequency bands under frequency division duplexing (FDD) arrangement viz. 600 MHz, 700 MHz, 800 MHz, 900 MHz, 1800 MHz, and 2100 MHz band should be permitted to be used for providing the IMT-based D2D service.

(c) The frequency allocation table of the National Frequency Allocation Plan (NFAP) should be amended to include Mobile Satellite Service (MSS) as a secondary service in the frequency bands identified for the IMT-based D2D service. An India-specific footnote should be introduced to clarify that the secondary MSS operations in such frequency bands will be limited to the IMT-based D2D service, which will operate on a non-interference and non-protection basis to both domestic and cross-border operations.

(d) All IMT-based D2D traffic originating from or terminating in India should be routed through the satellite earth station gateways in India.

(e) IMT-based D2D services should comply with the lawful interception and traffic monitoring requirements.

(f) For protecting the incumbent services operating in the country from any harmful interference arising from the IMT-based D2D service, the limits on electric field strength of aggregate signal from all beams should be as below:

(i) 40 dBµV/m for the 600 MHz, 700 MHz, 800 MHz and 900 MHz bands and

(ii) 47 dBµV/m for 1800 MHz and 2100 MHz bands

Further, out-of-band PFD limits should be -120 dBW/m2/MHz for the 600 MHz, 700 MHz, 800 MHz, 900 MHz, 1800 MHz and 2100 MHz bands.

(g) Meanwhile, DoT, through the Telecom Engineering Centre (TEC), should carry out India specific trials for determining the emission limits and other conditions for mitigating the interference from the IMT-based D2D service on the incumbent services. Thereafter, emission limits, determined through such trials, should be made applicable to IMT-based D2D service. In any case, this aspect should be revisited based on the outcome of WRC-27 on the matter.

(h) Pending the outcome of World Radiocommunication Conference-2027 (WRC-2027), the operation of the IMT-based D2D service should be subject to the provisions of Article 4.4 of the ITU's Radio Regulations for addressing the concerns related to cross-border interference arising from the IMT-based D2D service. This aspect should be revisited based on the outcome of WRC-27 on the matter.

D.3 Other inputs or suggestions

Comments of Stakeholders on Q20

2.287 A gist of comments of stakeholders on Q20 about any other inputs or suggestions with respect to the delivery of D2D services via satellite is given below:

(a) Existing Unified License (Access Service authorization) should be enabled to provide D2D service, by directly establishing gateways and using satellite media or else by partnering with SCNs.

(b) The entities authorised under Section 3(1)(a) of the Telecommunications Act, and existing Unified License holders that establish satellite communications network infrastructure to provide the services as per the scope of their service should also be allowed to function as an SCN provider authorised entity.

(c) Satellite D2D services should initially be exempted from terrestrial QoS benchmarks, with separate QoS parameters reflecting satellite network characteristics and transparent consumer disclosures.

Comments of Stakeholders on Q21

2.288 A gist of comments of stakeholders on Q21 about any other inputs or suggestions related to the use of spectrum on SCNs established by the SCN provider authorised entities is given below:

(a) The issue of inter-satellite links (ISLs) in optical and RF bands for LEO constellation operations should be addressed.

(b) The Q/V-band and E-band should also be assigned as feeder link spectrum.

Analysis of issues w.r.t. Q20 and Q21

2.289 While examining the comments of a few stakeholders that the existing Unified License (Access Service authorisation) holders should be enabled to provide D2D service by directly establishing satellite earth station gateways and using satellite media, the Authority has taken note of the following aspects:

(a) An entity holding access service authorization under the Unified License is permitted to provide access service, which could be on wireline and/ or wireless media with full mobility, limited mobility and fixed wireless access.

(b) An entity holding access service authorisation under the Telecommunications (Authorisation for Principal Telecom Services) Rules, 2026 is permitted to provide access service through wireline or wireless terrestrial networks, satellite networks or submarine networks.

2.290 Essentially, an entity holding access service authorisation under the Telecommunications (Authorisation for Principal Telecom Services) Rules, 2026 is permitted to use, *inter alia*, satellite communication networks for the provision of access services. However, in the access service authorization under the Unified License, there is no express provision for the use of satellite communication network for the provision of access service.

2.291 With a view to enable the existing access service providers to participate in the satellite eco-system, the Authority is of the opinion that it would be appropriate to expressly permit the use of satellite communication

network for the provision of access service in the scope of Access Service authorization under Unified License. Further, the entities holding Access Service authorization under Unified License should be permitted to seek SCNaaS from the satellite communication network provider authorised entity. The Authority is of the view that such enablement should also be extended to Internet Service Provider Authorisation under Unified License.

2.292 Accordingly, **the Authority recommends that-**

(a) **the scope of Access Service authorization and Internet Service authorization under Unified License should be amended to include the use of, *inter alia*, satellite communication network for the provision of respective services.**

(b) **Any entity holding Access Service authorization, or Internet Service authorization under Unified License should be permitted to seek SCNaaS from the satellite communication network provider authorised entity for the provision of respective services.**

2.293 A few stakeholders have suggested that the entities authorised under Section 3(1)(a) of the Telecommunications Act, and existing Unified License holders that establish satellite communications network infrastructure to provide the services as per the scope of their service should also be allowed to function as an SCN provider authorised entity. While analyzing this suggestion, the Authority has taken note of the following aspects:

(a) The entities authorised under Section 3(1)(a) of the Telecommunications Act, 2023 [i.e. the entities holding unified service authorisation, access service authorisation, internet service authorisation and long distance service authorisation] are

permitted to provide services as per their scope of authorisation through, *inter alia*, satellite networks

(b) The entities holding NLD service authorization, Commercial VSAT CUG service authorization and GMPCS service authorization under Unified License are permitted to provide satellite communication services.

(c) The entity holding License for Provision and Operation of Satellite Based Services Using Gateway Installed in India Under 'Sui-Generis' Category for providing MSS services is permitted to establish, operate and maintain satellite-based services through gateway installed in India.

2.294 The Authority, through para 2.292 above, has already recommended that the scope of Access Service authorization and Internet Service authorization under Unified License should be amended to include the use of, *inter alia*, satellite communication network for the provision of respective services.

2.295 Considering the above, the Authority is of the view that apart from SCN provider authorised entities, any entity holding any of the afore-mentioned licenses/ authorisations may also be permitted to provide SCNaaS to any licensee or authorised entity that is permitted to provide satellite-based communication services or provide telecommunication services through satellite network - if it fulfils the eligibility criteria for obtaining SCN provider authorisation and undertakes to abide by the technical and operating conditions, roll out obligations, and security conditions applicable to SCN provider authorisation.

2.296 Considering the above, **the Authority recommends that apart from SCN provider authorised entities, any entity holding any of the following licenses/ authorisations should also be permitted to provide SCNaaS to any authorised entity or licensee that is**

permitted to provide satellite-based communication services or provide telecommunication services through satellite network:

(a) Unified service authorisation, access service authorisation, internet service authorisation, long distance service authorisation under the Telecommunications (Authorisation for Principal Telecom Services) Rules, 2026; and

(b) Access Service authorization, Internet Service authorization, NLD Service authorization, Commercial VSAT CUG Service authorization and GMPCS Service authorization under Unified License; and

(c) License for Provision and Operation of Satellite Based Services Using Gateway Installed in India Under 'Sui-Generis' Category for providing MSS services:

***Provided that* such entity fulfils the eligibility criteria for obtaining SCN provider authorisation and undertakes to abide by the technical and operating conditions, roll out obligations, and security conditions applicable to SCN provider authorisation.**

For this purpose, the scope of Access Service authorization, Internet Service authorization, NLD Service authorization, Commercial VSAT CUG Service authorization, and GMPCS Service authorization under Unified License, and License for Provision and Operation of Satellite Based Services Using Gateway Installed in India Under 'Sui-Generis' Category for providing MSS services should be suitably amended.

2.297 As mentioned earlier in this chapter, based on TRAI's recommendations, DoT has included the following provision in the rule 60 of Chapter VII (specific conditions for provision of principal telecommunication services using satellite network) of the Telecommunications (Authorisation for Provision of Principal Telecommunication Services) Rules, 2026 dated 23.06.2026:

(2) Every new authorised entity may, subject to the prior permission of the Central Government in writing, for which an application may be submitted in such form and manner and subject to such terms and conditions as specified on the portal,—

(a) use its satellite earth station gateway established in India for providing telecommunication services to users located outside India, subject to—

(i) obtaining all clearances, by whatever name called, as may be required to provide such telecommunication services in the relevant jurisdiction where the user is located, and

(ii) compliance with such directions as issued by the Central Government in this behalf; or

(b) enter into arrangements with entities providing telecommunication services, in areas outside India, after obtaining all clearances, by whatever name called, as may be required to provide such telecommunication services in the relevant jurisdiction where the user is located, for enabling use of the new authorised entity's satellite earth station gateway established in India for uplink and downlink of signals to and from satellites, subject to compliance with such directions as issued by the Central Government in this behalf."

2.298 In this context, based on its analysis, the Authority has, through para 2.83 above, recommended that an analogous provision requires to be included under SCN provider authorisation as well.

2.299 The Authority notes that at present, while the entities holding unified service authorisation, access service authorisation, internet service authorisation and long-distance authorisation are permitted to (a) use their satellite earth station gateway established in India for providing telecommunication services to users located outside India; and (b) enter into arrangements with entities providing telecommunication services, in areas outside India, for enabling use of their satellite earth station

gateway established in India in accordance to the provisions of the rule 60 of Chapter VII of the Telecommunications (Authorisation for Provision of Principal Telecommunication Services) Rules, 2026 dated 23.06.2026, there is no such express provision under the Unified License or License for Provision and Operation of Satellite Based Services Using Gateway Installed in India Under 'Sui-Generis' Category for providing MSS services.

2.300 As the permission to use of satellite earth station gateway established in India for providing telecommunication services to users located outside India will benefit the Indian space industry, the Authority is of the view that Access Service authorization, Internet Service authorization, NLD Service authorization, Commercial VSAT CUG Service authorization, and GMPCS Service authorization under Unified License and License for Provision and Operation of Satellite Based Services Using Gateway Installed in India Under 'Sui-Generis' Category for providing MSS services should also be enabled with such a permission.

2.301 Considering the above, **the Authority recommends that under Access Service authorization, Internet Service authorization, NLD Service authorization, Commercial VSAT CUG Service authorization, and GMPCS Service authorization under Unified License; and License for Provision and Operation of Satellite Based Services Using Gateway Installed in India Under 'Sui-Generis' Category for providing MSS services, a licensee -**

(a) **may subject to the prior permission of the Central Government, use its satellite earth station gateway established in India for providing telecommunication services to users located outside India, subject to obtaining all clearances, by whatever name called, as may be required to provide such telecommunication services in the relevant jurisdiction where the user is located, and**

compliance with such directions as issued by the Central Government in this behalf; and

(b) **may also enter into arrangements with entities providing telecommunication services, in areas outside India, after obtaining all clearances, by whatever name called, as may be required to provide such telecommunication services in the relevant jurisdiction where the user is located, for enabling use of its satellite earth station gateway established in India for uplink and downlink of signals to and from satellites, subject to compliance with such directions as issued by the Central Government in this behalf.**

2.302 A few stakeholders have suggested that satellite-based D2D services should initially be exempt from terrestrial Quality of Service (QoS) benchmarks and instead be subject to separate parameters reflecting the characteristics of satellite networks. In this regard it may be noted that, TRAI has notified the 'Standards of Quality of Service of Access (Wireline and Wireless) and Broadband (Wireline and Wireless) Service Regulations, 2024' on 02.08.2026, which came into force on 1 October 2024. Among other provisions, sub-regulation (3) of regulation 1 states as follows:

"(3) These regulations shall apply to all service providers, having-
(i) Unified Access Service License;
(ii) Unified License with authorization for Access Service;
(iii) Internet Service Authorization under any License; and
(iv) Authorization under the Telecommunications Act, 2023 for providing Access or Broadband Service:
Provided that nothing contained in these regulations shall apply to an Internet Service Provider whose total number of subscribers as on last day of the preceding financial year does not exceed ten thousand or as notified by Authority by an order or direction."

2.303 With respect to Quality of Service (QoS) benchmark for IMT-based D2D services, the Authority is of the view that after the introduction of IMT-based D2D services by the Central Government, TRAI will examine the appropriateness of applying the provisions of the Standards of Quality of Service of Access (Wireline and Wireless) and Broadband (Wireline and Wireless) Service Regulations, 2024 to such services, and assess whether any modification to the existing QoS benchmarks is warranted.

2.304 A few stakeholders have suggested that the issue of inter-satellite links (ISLs), in optical and RF bands for LEO constellation operations should be addressed as part of these recommendations. In this regard, the Authority notes that through rule 60 of the Telecommunications (Authorisation for Provision of Principal Telecommunication Services) Rules, 2026 dated 23.06.2026 provides as below:

"60. Technical and operating conditions.—(1) A new authorised entity permitted to use satellite network under rule 59 shall adhere to the following technical and operating conditions, namely:—

(a) ensure that all traffic on the satellite network originating from or terminating on the user terminals located in India shall pass through a satellite earth station gateway, located in India, of such new authorised entity;

(b) ensure that no traffic originating from or terminating at a user terminal located in India is routed via satellite earth station gateways located outside India, directly or through inter-satellite communication links, including during failure of satellite earth station gateway located in India or as part of telecommunication network optimisation;

(c) ensure that the telecommunication traffic shall not be mirrored to any satellite network or telecommunication network located outside India through inter-satellite communication links or through any other means….;" [Emphasis added]

2.305 The Authority is of the view that the afore-mentioned provisions (a), (b) and (c) of rule 60 of the Telecommunications (Authorisation for Provision of Principal Telecommunication Services) Rules, 2026 may be made applicable to SCN provider authorised entities as well. Accordingly, such provisions have been included in Annexure 2.1 (Technical and operating conditions, roll out obligations and security conditions applicable to SCN provider authorisation) of these recommendations.

2.306 A few stakeholders have opined that the Q/V-band and E-band should also be assigned as feeder link spectrum. In this regard, it may be noted that the Authority, through its recommendations dated 09.05.2025 (read with TRAI response dated 08.12.2025), has already recommended the use of Q/V band for the NGSO FSS and GSO/ NGSO MSS. Regarding the assignment of E-band for feeder links, the Authority, through its recommendations dated 09.05.2025 (read with TRAI response dated 08.12.2025), has mentioned that *"[t]aking note of Agenda Item 1.10 under WRC-27, the Authority is of the view that E-band spectrum should be considered for satellite-based communication services at a later date, in accordance with the outcome of WRC-27."*

2.307 The following chapter analyses the financial aspects of the subject matter.

CHAPTER III: FINANCIAL FRAMEWORK

A. Background

3.1 This Chapter examines the financial framework to be made applicable to the proposed Satellite Communication Network (SCN) provider authorisation. At a broad level, the proposed financial framework seeks to balance the objectives of facilitating investment and innovation, promoting the efficient utilisation of spectrum resources, ensuring a level playing field among entities providing satellite-based communication services, and safeguarding the legitimate revenue interests of the Government.

3.2 In this regard, the financial framework applicable to the SCN Provider Authorised entity needs to take into account the distinct characteristics of satellite communication networks, which have been discussed in detail at Section B of Chapter I. The deployment and operation of satellite networks generally involves significant capital expenditure and long development and deployment cycles. Accordingly, the financial conditions applicable to SCN Provider Authorised entities are expected to be proportionate to the scope of the authorisation and the nature of the commercial activities undertaken thereunder, while providing appropriate incentives for investment, network deployment and efficient utilisation of spectrum and other resources.

3.3 In addition to these structural considerations, as discussed in Chapter I, the satellite communication ecosystem is undergoing rapid technological and commercial evolution. Developments such as High Throughput Satellites (HTS), Non-Geostationary Satellite Orbit (NGSO) constellations, Direct-to-Device (D2D) communication and satellite-terrestrial (TN-NTN) integration are giving rise to new network architectures and business models. The proposed SCN Provider authorisation framework, therefore,

needs to be sufficiently flexible to accommodate such developments and different models for provisioning satellite communication networks to Service Authorised entities. The associated financial conditions are expected to be technology, application and device neutral to the extent possible, so that they do not impede emerging applications, while ensuring that entities undertaking comparable activities are subject to appropriate, transparent and proportionate financial obligations.

3.4 The proposed SCN Provider authorisation is distinct in nature and scope from a Service Authorisation or any existing Network Authorisation covering satellite network. As discussed in Section A.2 of Chapter II regarding scope of the proposed Authorisation, an SCN Provider Authorised entity may establish, operate, maintain, or expand gateway earth station(s) and provide Satellite Communication Network as a Service (SCNaaS) to Service Authorised entities. The same would be implemented under a commercial service agreement between the Service Authorided entity and the SCN Provider Authorised entity and would include charges for provision of SCNaaS ("SCNaaS charges") paid by Service Authorised entity to the SCN Provider Authorised entity. For establishing communication links in its satellite communication network, the SCN Provider Authorised entity may seek assignment of spectrum from the Central Government. At Section A.2 and further detailed at Section B.3 and B.4 of Chapter II, it has been recommended that SCN Provider Authorised entities should be permitted to seek the assignment of (a) FSS spectrum for feeder link; and (b) FSS spectrum and/or MSS spectrum for user link from the Government. Alternatively, SCN Provider Authorised entity may enter into an agreement with an eligible service authorised entity (partnering entity) to utilise the spectrum assigned to such partnering entity for the limited purpose of providing SCNaaS to the partnering entity. Further, an SCN Provider Authorised entity is not envisaged to provide telecommunication services directly to end users, thus restricting such entities to the network layer.

3.5 Thus, the scope of activity of SCN Provider Authorised entities primarily involves an end-to-end provision of SCNaaS to eligible Service authorised entities under a commercial service agreement, which broadly involves provision of network services both on the Feeder and User link segments of the satellite network. It is observed that the scope of SCN Provider Authorisation, including provision for assignment of spectrum, makes it distinct from a strictly network entity to be established under the existing SESG Provider Authorisation, and makes the scope of activity of SCN Provider Authorisation considerably broader. From the Telecommunications (Authorisation for Telecommunication Network) Rules, 2026, it can be seen that the scope of SESG Provider Authorisation is restricted to establishing, operating, maintaining or expanding the satellite earth station gateway, which is utilized for the feeder link segment of the satellite network, and it may utilise spectrum assigned to the partnering entity for the limited purpose of configuration of satellite earth station gateway. Further, SESG Provider Authorised entities shall not be assigned any spectrum directly from the Government. This difference in the scope of SCN Provider Authorisation vis-à-vis the SESG Provider Authorisation is an important factor guiding the overall financial framework for the SCN Provider Authorised entity proposed below.

3.6 In view of the above discussion, this Chapter examines the following financial aspects relating to the proposed SCN Provider authorisation:

- Section B: Permissibility of deduction of SCNaaS charges paid by Service Authorised Entity to SCN Provider Authorised Entity as per commercial service agreements

- Section C: Financial Conditions of the SCN Provider Authorisation, including:
    i. Definition of Gross Revenue (GR), Applicable Gross Revenue (ApGR) and Adjusted Gross Revenue (AGR)
    ii. Authorisation Fee & associated payment terms

iii. Other Financial Conditions:

a) Minimum Equity and Net Worth

b) Entry Fee

c) Bank Guarantee

d) Application Processing Fee

- Section D: Spectrum Charges & associated payment terms

- Section E: Regulation of commercial Service Agreements, including SCNaaS charges, between SCN Provider Authorised Entity and Service Authorised Entity

B. Permissibility of deduction of SCNaaS charges paid by Service Authorised Entity to SCN Provider Authorised Entity as per commercial service agreements

3.7 Under the proposed SCN Provider authorisation, an SCN Provider Authorised Entity would provide Satellite Communication Network as a Service (SCNaaS) to a Service Authorised Entity, which would utilise such network capability to provide satellite-based communication services to end-users. The satellite-based communication services envisaged for this purpose in the present exercise, as per details in Chapter I & II, are: GSO based FSS, NGSO based FSS, GSO based MSS, NGSO based MSS, D2D service using MSS spectrum and D2D service using IMT spectrum. The service agreements for the provision of SCNaaS between an SCN Provider Authorised Entity and a Service Authorised Entity may also include arrangements for the utilisation of spectrum assigned to either the Service Authorised Entity or the SCN Provider Authorised Entity or both. Accordingly, the charges payable by the Service Authorised Entity to the SCN Provider Authorised entity for SCNaaS ("SCNaaS charges") would arise from the provision of network capability and such commercial service agreement could also involve arrangement for spectrum utilisation.

3.8 The treatment of such SCNaaS charges assumes particular significance for determining Gross Revenue (GR), Applicable Gross Revenue (ApGR) and Adjusted Gross Revenue (AGR) for the purpose of levy of Authorisation/License Fee and Spectrum Charges. Against this background, the Consultation Paper dated 08.04.2026 sought stakeholders' views on whether charges paid by a Service Authorised entity to an SCN Provider Authorised entity for provisioning of SCNaaS should be permitted as deduction from the ApGR of the Service Authorised entity while computing AGR for the purpose of levy of Authorisation/License Fee and Spectrum Charges.

Q25 *Should the charges paid by the Service Authorised entity providing FSS, MSS or D2D services to end-users to an SCN Provider Authorised entity for provisioning of Satellite Communication Network as a Service (SCNaaS) be permitted as a deduction from ApGR of the Service Authorised entity for the purpose of arriving at AGR for levy of Authorisation/License Fee and Spectrum Charges? Please provide your response with justification.*

Q26 *If the answer to the above question is no, please suggest the methodology for considering such charges in the determination of AGR of both the Service Authorised entity and the SCN Provider Authorised entity for the purpose of levying Authorisation/License Fee and Spectrum Charges. Please provide your response with justification.*

Comments of stakeholders on Q25 and Q26

3.9 Most stakeholders have submitted that charges paid by a Service Authorised entity to an SCN Provider Authorised entity for provisioning of SCNaaS should be permitted as a deduction from ApGR while arriving at AGR. They have argued that such charges represent wholesale payments for underlying satellite network infrastructure and should therefore be

treated as pass-through costs, so that regulatory levies apply only to the value retained by each authorised entity. Allowing such deductions would avoid double incidence or cascading of regulatory levies, since SCNaaS charges would form part of the revenue of the SCN Provider Authorised entity and be subject to applicable levies. They have submitted that including the same amount in the AGR of the Service Authorised entity would effectively subject the same economic value to regulatory levies twice, increasing the regulatory burden on satellite-based services.

3.10 Some stakeholders have submitted that SCNaaS charges are analogous to recognised pass-through network costs, such as interconnection usage and roaming charges and, under the VNO framework, payments by VNOs to NSOs. They have therefore sought comparable treatment for SCNaaS to ensure regulatory consistency across terrestrial and satellite communication frameworks and to support the separation of network and service layers under the Telecommunications Act, 2023. Stakeholders have also suggested that such deductions may be subject to safeguards, including bona fide payments under valid SCNaaS agreements, appropriate documentation, arm's-length arrangements and audit requirements, and should apply uniformly to FSS, MSS and D2D services.

Analysis of the issues raised through Q25 and Q26

3.11 The Authority has examined the submissions received from stakeholders regarding the treatment of SCNaaS charges for the purpose of determining AGR. All stakeholders have supported permitting SCNaaS charges paid by a Service Authorised entity to an SCN Provider Authorised entity as a deduction from the ApGR of the Service Authorised entity while computing AGR. A few stakeholders have also suggested safeguards to prevent misuse of such deduction.

3.12 For the provision of SCNaaS, the Authority, in Section B.3 of Chapter II, has recommended that SCN Provider Authorised Entities should be

permitted to seek assignment from the Government of (a) FSS spectrum for feeder links; and (b) FSS spectrum and/or MSS spectrum for user links, as applicable. In addition to utilising spectrum assigned by the Government, SCN Provider Authorised Entities would also be permitted, under the proposed authorization framework, to utilise spectrum assigned to Service Authorised Entities pursuant to commercial service agreements between the parties. In this regard, the Authority at Section C of Chapter II has recommended that an SCN Provider Authorised Entity should be permitted to enter into agreement(s) with Service Authorised Entities (partnering entities) for utilising the FSS and/or MSS spectrum assigned to such partnering Service Authorised entities for providing SCNaaS. However, the FSS and/or MSS spectrum assigned to a partnering entity (P1) may be utilised by the SCN Provider Authorised Entity for providing SCNaaS only to that partnering entity (P1).

3.13 Notwithstanding the different spectrum utilisation arrangements that may be adopted or the nature of end service being provided by the Service Authorised entity, the underlying commercial relationship between an SCN Provider Authorised entity and a Service Authorised entity involves the provision of SCNaaS by the former to the latter, in exchange for SCNaaS charges. Thus, the SCNaaS arrangement represents a B2B wholesale relationship between two authorised entities performing distinct functions within the satellite communication value chain. The Service Authorised entity utilises the satellite communication network capability provided by the SCN Provider Authorised entity to deliver satellite-based communication services to end-users. From a financial perspective, this relationship involves two distinct revenue flows. The Service Authorised entity earns revenue from end-users for providing satellite-based communication services and in turn, pays charges (SCNaaS charges) to the SCN Provider Authorised entity for provisioning of SCNaaS. SCNaaS charges constitute consideration for the satellite communication network capability (SCNaaS) provided by the SCN Provider Authorised entity and may include charges for satellite network capacity, feeder link support,

user/service link support, baseband processing, resource management, gateway or interconnection support, network monitoring, agreed SLA support etc., as applicable under the arrangement between the parties. The quantum and structure of the SCNaaS charges may vary depending on the terms mutually agreed between the parties, including related to SLA parameters, capacity requirements, network resources etc. The charges may also reflect the nature of end service being provided by the Service Authorised entity and extent to which the SCN Provider Authorised entity contributes its own spectrum or utilises spectrum assigned to the partnering Service Authorised entity. However, the economic character of the SCNaaS service agreement remains the same irrespective of the particular spectrum utilisation model adopted or the end service being provided. Whether the arrangement involves FSS/MSS services or D2D services using MSS or IMT spectrum, the payment made by the Service Authorised entity represents consideration for procuring a wholesale network input from the SCN Provider Authorised entity.

3.14 The objective of the AGR framework is to levy Authorisation/License Fee and Spectrum Charges on the revenue attributable to the activities undertaken by an authorised entity and not on amounts that pass through the value chain as consideration for procuring wholesale network resources from another authorised entity. The SCNaaS charges paid by the Service Authorised entity constitute revenue of the SCN Provider Authorised entity and represent consideration for the satellite communication network capability provided by it. Consequently, if such charges remain included in the AGR of both entities, the same economic value would effectively become subject to regulatory levies twice. Such an outcome would be inconsistent with the underlying principle of avoiding duplication in the levy of regulatory charges and would unnecessarily increase the regulatory burden on satellite communication services.

3.15 Further, the proposed SCN Provider Authorised entity belongs to the network layer of the telecom ecosystem, while a Service Authorised entity could be operating at both network and service layers or only the service layer. An analogy of the charges transacted between a Service Authorised entity and SCN Provider Authorised entity, which belong to different layers of the telecom ecosystem, can be drawn with the charges paid by Virtual Network Operators (VNOs) under the UL (VNO) license, a pure Service Authorised entity, to Network service operators (NSOs), which are operating at both network and service layers. Though these charges are of nature of infrastructure/network costs, they have been allowed as deductions for the VNO operators, under virtually all the authorisations under the UL (VNO) license.

The item of deduction as per the License Agreement is mentioned below:

Charges paid to NSOs towards Bulk/Wholesale bandwidth, leased line and bandwidth charges, minutes and SMSs. However, these charges should be governed by a written agreement, a copy of which must be provided along with the proof of actual payment for the deduction to be allowed

Thus, these network/ infrastructure costs paid by VNO to parent NSO are allowed as deductions for the VNO, for the purpose of determination of AGR for the VNO. The underlying rationale is that, considering the vertical nature of the relationship between the two entities and the need to promote unbundling of service and network provisioning, such payments represent wholesale network costs incurred by one authorised entity to procure essential network capability from another authorised entity. Further, avoidance of double charging of same revenue is the other ground for the same.

3.16 In view of the above, permitting deduction of SCNaaS charges from the ApGR of the Service Authorised entity would appropriately reflect the economic substance of the transaction and the nature of relationship

between a Service Authorised entity and SCN Provider Authorised entity. The Service Authorised entity would be subject to regulatory levies on the revenue attributable to the services it provides after accounting for the permitted deduction, while the corresponding SCNaaS receipts would be recognised for the purpose of determining the GR/ApGR/AGR of the SCN Provider Authorised entity in accordance with the applicable framework. Such treatment would avoid duplication of regulatory levies while ensuring that the SCN Provider Authorised entity's corresponding receipts are appropriately accounted for.

As is the general norm for deductions, all such SCNaaS charges claimed as deductions should be bona fide payments under valid SCNaaS agreements with appropriate documentation at end of both the SCN Provider Authorised entity and Service Authorised entity, and subject to verification and audit. Thus, in line with the present Unified Licensing and the new Authorisations framework, such SCNaaS charges which are actually paid in a quarter by the Service Authorised entity to SCN Provider Authorised entity would be permitted as deductions for the quarter, subject to necessary verification.

3.17 Further, it could be possible that a Service Authorised entity is providing multiple satellite-based services and is utilizing SCNaaS for one or more of them. As has been discussed in detail later in the section on GR/ApGR/AGR, in the interests of reconciliation of deductions claimed by Service Authorised entities with revenue reported by SCN entities, the Service Authorised entity should segregate the SCNaaS charges paid for each quarter, on the basis of the nature of end service provided, and the segregation should be reported in its quarterly/ annual Statement of Revenue as well as reported to the SCN Provider Authorised entity within 07 days from the end of each quarter. Such segregation for reporting of deductions of SCNaaS charges paid by Service Authorised entities should, inter-alia, contain the following breakup, as applicable:

i. SCNaaS charges incurred and paid for providing GSO-based FSS to end users

ii. SCNaaS charges incurred and paid for providing GSO-based MSS to end users.

iii. SCNaaS charges incurred and paid for providing NGSO-based FSS to end users, with further segregation of such charges for providing service for urban and rural areas (along with number of urban subscribers served if required for calculating per subscriber charge in urban areas), as required per the spectrum charging framework finalized by DoT.

iv. SCNaaS charges incurred and paid for providing NGSO-based MSS to end users.

v. SCNaaS charges incurred and paid for providing D2D services via satellite using MSS spectrum to end users.

vi. SCNaaS charges incurred and paid for providing D2D services via satellite using IMT spectrum to end users.

3.18 There is also a need to examine the treatment of SCNaaS charges in cases where an eligible Virtual Network Operator (VNO) procures SCNaaS from an SCN Provider Authorised entity for providing satellite-based communication services to end-users. As discussed in Section A.4 of Chapter II, the Authority has recommended that all licensees and authorised entities permitted to provide satellite-based communication services through a satellite network should be eligible to seek SCNaaS from SCN Provider Authorised entities. This would include eligible VNOs under the Authorisation regime as well as the Unified Licence framework, subject to the respective scope of service and applicable authorisation conditions.

Under the existing Unified License as well as the new Authorisations framework, a VNO is primarily a service delivery operator and provides telecommunication services to end-users by utilising the network of its parent NSO. In this regard, the framework governing the computation of AGR for a VNO permit the deduction of charges paid to its parent NSO towards applicable access charges, such as carriage charges, termination charges and roaming charges. The framework also permits the exclusion of charges paid to NSOs towards bulk/wholesale bandwidth, leased line and bandwidth charges, minutes and SMSs, subject to the requirement that such charges are governed by a written agreement and that a copy of the agreement, along with proof of actual payment, is furnished for the deduction to be allowed. These provisions recognise that payments made by a VNO to an NSO for procuring network resources and associated services constitute essential costs incurred in obtaining the network capability required for delivering communication services to end-users and are hence permitted as deductions for VNO while being accounted for as revenue of the NSO. Including such charges in the VNO's AGR, without permitting the corresponding deduction, would result in the same economic value being subjected to regulatory levies at both levels of the service delivery chain.

The same rationale would apply where an eligible VNO would procure SCNaaS from an SCN Provider Authorised entity for providing satellite-based communication services. SCNaaS would be a wholesale network service through which the VNO would obtain the satellite communication network capability required for delivering services to its end-users. The charges paid for such network services (SCNaaS) are comparable, in their essence and purpose, to the payments made by a VNO to its parent NSO for bandwidth and other wholesale network resources. The distinction only lies in the nature of the network capability, namely, a terrestrial network in the latter case and a satellite communication network in the former. SCNaaS charges paid by VNO would constitute consideration for

the satellite network capability provided by the SCN Provider Authorised entity and are to be accounted for in determining the revenue of the SCN Provider Authorised entity in accordance with the applicable framework. Therefore, the underlying economic rationale for permitting deductions in respect of wholesale network charges remains the same, irrespective of whether the network capability is procured through a terrestrial or a satellite communication network.

Accordingly, where an eligible VNO procures SCNaaS under an arrangement with an SCN Provider Authorised entity, the charges paid for such services should also be permitted as a deduction from its ApGR, subject to appropriate documentation, including the requisite agreement and proof of payment, and verification and audit requirements. This would ensure that the treatment of wholesale network costs remains consistent across terrestrial and satellite communication networks.

It is further noted that a VNO may be making separate payments made in respect of distinct network resources procured, including terrestrial network resources from an NSO and SCNaaS from an SCN Provider Authorised entity or an NSO, as applicable. Such eligible VNO using both terrestrial and satellite networks for providing its services should, therefore, be permitted to claim deductions for the respective charges actually paid, provided that each deduction relates to a distinct and bona fide payment and is supported by the requisite agreement and proof of actual payment.

3.19 Accordingly, **the Authority recommends the following:**

(a) The SCNaaS Charges paid by a eligible Service Authorised entity (including eligible VNOs) to an SCN Provider Authorised entity, under a commercial service agreement for provisioning of SCNaaS, should be permitted as deduction from the ApGR of the Service Authorised entity while computing AGR for the purpose

of levy of Authorisation/License Fee and Spectrum Charges, irrespective of whether such agreement relates to FSS/MSS services, D2D services using MSS spectrum, or D2D services using IMT spectrum, and irrespective of the spectrum utilization provisions under the agreement.

(b) The SCNaaS charges received by an SCN Provider Authorised entity from a Service Authorised entity should form part of the GR of the SCN Provider Authorised entity and be considered for computation of its AGR in accordance with the applicable authorisation framework.

(c) The deduction permitted should be restricted to bona fide SCNaaS charges actually paid for each quarter by eligible Service Authorised entity (including eligible VNOs) to an SCN Provider Authorised entity for provisioning of SCNaaS under valid agreement between the authorised entities. The concerned entities should maintain duly executed commercial service agreements, and other relevant documentation and make such records available for verification and audit, as and when required. Further, the Service Authorised entities should segregate the SCNaaS charges paid for each quarter on the basis of the end service provided, and the segregation should be reported in its quarterly/ annual Statement of Revenue as well as reported to the SCN Provider Authorised entity within 07 days from the end of each quarter. Such segregation for reporting of deductions of SCNaaS charges paid by Service Authorised entities should, inter-alia, contain the following breakup, as applicable:

i. **SCNaaS charges incurred and paid for providing GSO-based FSS to end users**

ii. **SCNaaS charges incurred and paid for providing GSO-based MSS to end users.**

iii. **SCNaaS charges incurred and paid for providing NGSO-based FSS to end users, with further segregation of such charges for providing service for urban and rural areas (along with number of urban subscribers served, if required for calculating per subscriber charge in urban areas), as required per the spectrum charging framework finalized by DoT.**

iv. **SCNaaS charges incurred and paid for providing NGSO-based MSS to end users.**

v. **SCNaaS charges incurred and paid for providing D2D services via satellite using MSS spectrum to end users.**

vi. **SCNaaS charges incurred and paid for providing D2D services via satellite using IMT spectrum to end users.**

(d) Eligible VNOs, if using both terrestrial and satellite networks for providing communication services, should be permitted to claim separate deductions for the charges paid for terrestrial network resources including bulk/wholesale bandwidth, leased line and bandwidth charges, minutes and SMSs etc. to NSO and SCNaaS charges paid for satellite network resources to SCN Provider Authorised entity or any Service Authorised entity permitted to provide SCNaaS, as the case may be, provided that each deduction relates to a distinct and bona fide payment and is supported by the requisite agreement and proof of actual payment.

C. Financial Conditions applicable to the SCN Provider Authorisation

C.1 Definitions of Gross Revenue (GR), Applicable Gross Revenue (ApGR) and Adjusted Gross Revenue (AGR)

3.20 The determination of the appropriate revenue base is an important component of the applicable financial framework for the Authorisation. The definitions of Gross Revenue (GR), Applicable Gross Revenue (ApGR) and Adjusted Gross Revenue (AGR) determine the revenues that are brought within the scope of reporting requirements. Also, the applicable Authorisation Fee and Spectrum Charges are frequently determined as a percentage of AGR. It is therefore necessary that these definitions appropriately reflect the nature and scope of activities undertaken under the relevant Authorisation.

3.21 Under the existing licensing framework, GR represents the broad measure of revenue accruing to an authorised entity from its operations. Specific exclusions are then applied to arrive at ApGR, followed by specified deductions from ApGR to determine AGR.

The concept of ApGR was introduced by the Authority in its Recommendations dated 06.01.2015 on "Definition of Revenue Base (AGR) for the Reckoning of License Fee and Spectrum Usage Charges", as an intermediate stage between GR and AGR for identifying the revenues that should form part of the regulatory levy base. Broadly speaking, the concept excludes the revenues arising from non-licensed/ non-telecom activities from GR to arrive at ApGR, thus moving such revenues out of the ambit of regulatory charges. The Telecom Reforms of 2021 subsequently incorporated this framework in the revised licensing arrangements, and the Rules under the Telecommunications Act, 2023 have incorporated the concept of ApGR.

Further, AGR is derived from ApGR after excluding specific deductions, which are in the nature of charges paid to other entities, as allowed for the particular Authorisation. AGR constitutes the actual revenue base on which the applicable License or Authorisation Fee and Spectrum Charges are levied.

3.22 The proposed SCN Provider authorisation has a distinct character from either a Service Authorisation or an existing Network Authorisation like the SESG Provider Authorisation. An SCN Provider Authorised entity is envisaged primarily as a network-layer entity that would establish, operate, maintain or expand a Satellite Communication Network and provide SCNaaS to eligible Service Authorised entities under Section 3(1)(a) of the Telecommunications Act, 2023. The SCN Provider Authorised entity would not provide telecommunication services directly to end-users but provide Satellite Communications Network-as-a-Service to Service Authorised entities for further provisioning of various satellite-based communications services to the end user. The revenue stream of SCN Provider Authorised entity would therefore primarily arise from the provision of SCNaaS to Service Authorised entities, with managed services including provisioning of satellite network capacity, feeder link support, user/service link support, baseband processing, resource management, gateway or interconnection support, network monitoring, agreed SLA support etc. Depending upon the terms of the commercial service agreement, such revenues may also include consideration relating to the utilisation of spectrum and other network resources.

3.23 Accordingly, the Consultation Paper dated 08.04.2026 sought stakeholders' views on the appropriate definitions of GR, ApGR and AGR for the proposed SCN Provider authorisation, including the relevant revenue streams, exclusions and deductions, and whether any operational or non-operational revenue elements specific to SCN Provider Authorised entities require distinct treatment. The issues raised through the consultation are examined below with a view to determining a revenue

framework appropriate to the wholesale, network-oriented nature of the SCN Provider authorisation, while maintaining regulatory certainty, consistency and avoiding duplication of regulatory levies.

Q27. What should be the appropriate definitions of GR, ApGR and AGR for SCN Provider Authorisation, including the relevant items of revenue, exclusions and deductions? Additionally, are there any operational or non-operational revenue elements specific to SCN Provider Authorised entities that should be considered within the scope of the definitions of GR, ApGR and AGR? Please provide a detailed response, including specific revenue items, exemptions and deductions, and proposed definitions of GR, ApGR and AGR.

Comments of Stakeholders on Q27

3.24 Several stakeholders have suggested that the definitions of GR, ApGR and AGR for SCN Provider authorisation should broadly align with the existing telecom licensing framework, with suitable adaptation accounting for the network-layer nature of SCN entities, while ensuring simplicity, regulatory certainty and avoidance of ambiguity. They have submitted that GR of SCN Provider Authorised entities should primarily comprise revenues from SCNaaS including satellite network capacity, feeder and user/service link support, baseband processing, resource management, gateway operations, network monitoring and SLA support, while revenues from non-authorised activities, activities outside India and unrelated income should remain outside the regulatory levy base.

3.25 Several stakeholders have further submitted that, in determining AGR, appropriate deductions should be allowed for payments that represent pass-through costs or payments made for procurement of underlying network resources. As per the submissions, this should include payments for satellite network capacity and related space segment infra, including

transponder bandwidth and orbital capacity, procured from domestic or foreign satellite operators; payments for procurement of spectrum usage rights, where applicable; and payments made to other authorised entities towards underlying network infrastructure or services. According to these stakeholders, such treatment would ensure that the AGR of an SCN Provider Authorised entity reflects the economic value attributable to its authorised network operations in India, rather than pass-through payments to foreign satellite operators.

3.26 Stakeholders have further suggested that ApGR should exclude non-operational and non-telecom income, including interest, dividend, capital gains, foreign exchange gains, insurance claims, rental income, investment income and other specified receipts, as well as revenues from non-authorised products, services and ancillary activities. A few stakeholders have also proposed broader reforms to the existing AGR framework. They have submitted that the current definitions introduced after the 2021 Telecom Reforms continue to include certain non-authorised or non-revenue items within ApGR/ AGR while permitting only limited exclusions from GR. Further, they have sought broadening of scope of deductions to be allowed for arriving at AGR. Also, they have advocated for co-existence of licensed telecom services with non-licensed services/products, in a way that the non-licensed products/ services should not attract levy on composite products/services.

Analysis of the issues raised through Q27

3.27 The Authority has examined the views expressed by stakeholders regarding the appropriate definitions of Gross Revenue (GR), Applicable Gross Revenue (ApGR) and Adjusted Gross Revenue (AGR) for the proposed SCN Provider Authorisation. A broad consensus emerges that the definitions of GR, ApGR and AGR for the SCN Provider Authorised entity should follow the existing Licensing and Authorisation framework,

while incorporating such modifications as may be necessary to account for the specific scope and characteristics of the SCN Provider Authorisation. Stakeholders have also emphasised the need for regulatory certainty, simplicity and avoidance of double levy across different layers of the telecommunications value chain.

3.28 In view of the scope of the SCN Provider authorisation as recommended in Section A.2 of Chapter II, the past Recommendations as well as extant licensing provisions and Authorisation Rules have been examined to formulate appropriate definition of GR, ApGR and AGR applicable to an SCN Provider Authorised entity.

A. The Authority in its Recommendations dated 19.08.2021 on "Recommendations on Enabling Unbundling of Different Layers Through Differential Licensing," examined the need for enabling unbundling of different layers of the digital communications ecosystem, such as infrastructure, network, services and application layers, through differential licensing. The Authority observed that enabling such unbundling could facilitate greater investments and innovation in the digital communications sector and would require a review of the existing licensing, regulatory and resource allocation frameworks. As part of these recommendations, the Authority recommended creation of a separate authorisation under Unified License for Access Network Provider (network layer) (ANP) to provide network services on wholesale basis. Under this authorisation for Network layer only, the Access network provider was not permitted to directly provide services to the end users. The Authority observed the following regarding the regulatory levies:

> *"The Authority concurs with the views of the stakeholders that there is a need of rationalization of regulatory levies; however, for ordered growth of the sector, level playing needs to be maintained between similar players in the market. Therefore, any change in*

levies for Network only layer should also be made for UL licensees. Prescription of differential (reduced) levies for Network Operator could create a possibility of arbitrage. Thus, to maintain level-playing field and to mitigate any possibility of arbitrage opportunity, it is important that the Government taxes and levies are kept same for the existing (integrated) licensing regime and proposed unbundled license regime. Therefore, the Authority recommends that the License Fee and Spectrum Usage charges applicable for the Access Network Provider Authorization should be the same as that applicable to the Access Service Authorization under Unified License."

Thus, the Authority had noted the importance of maintaining a level playing field between integrated Service Authorised entities and unbundled shared network regime, for the orderly growth of the sector, even while emphasizing the need for growth of Network entities and overall unbundling of network and services. It was observed that differential regulatory levies could create opportunities for arbitrage between existing integrated authorised entities and unbundled network-only entities. Accordingly, it was recommended that the License Fee and Spectrum Usage Charges applicable to an Access Network Provider should be the same as those applicable to the Access Service Authorisation under the Unified License.

The said Recommendations with respect to the proposed Access Network Provider (ANP) authorisation may be particularly relevant in understanding and determining the financial conditions for SCN Provider Authorised entity, since the scope of both Access Network provider and SCN Provider Authorised entity is limited to provision of network only and does not include provision of service directly to the subscribers. Also, both the proposed SCN Provider Authorised entity and previously contemplated ANP have the added eligibility for assignment of spectrum, which makes them distinct from a infrastructure only entity such as the newly created SESG

Provider Authorisation under Telecommunications Network Rules, 2026, which has not been permitted for the same.

It is noted that the said Recommendation did not specifically prescribe the definitions of GR, ApGR and AGR for network-layer entities. However, this principle of maintaining a level playing field and avoidance of regulatory arbitrage shall guide the current discussion, as well as the overall framework for financial conditions.

B. The Authority in its Recommendations dated 18.09.2024 on the "Framework for Service Authorisations to be granted under the Telecommunications Act, 2023" recommended the financial conditions, including the definition of GR, ApGR and AGR, as well as the broad guidelines for determining the same in case of various Authorisations, including the recommended Satellite based Telecommunication Service Authorisation:

> *"3.152 In view of the above, the Authority recommends the following:*
>
> *(a) The extant definitions of Gross Revenue (GR), Applicable Gross Revenue (ApGR) and Adjusted Gross Revenue (AGR) for the existing Service Authorisations should continue.*
> *(b) In case of merged/ clubbed / new Service Authorisations, the definitions should be aligned accordingly.*
> *(c) The applicable definitions for GR, AGR and ApGR have been given under the respective Service Authorisations.*
> *(d) The clarification dated 17.07.2023 issued by DOT regarding the definitions of GR and AGR should be considered alongwith the applicable definitions for GR, AGR and ApGR as have been given under the respective Service Authorisations.*
> *(e) Any further orders/instructions/clarifications on the definitions of Gross Revenue, Applicable Gross Revenue and Adjusted Gross*

Revenue may be issued by DOT after obtaining recommendations from TRAI."

In the above Recommendations, the Authority had recommended that the scope of the existing GMPCS Service Authorisation and Commercial VSAT CUG Service Authorisation be merged into a single authorisation, namely the Satellite-based Telecommunication Service Authorisation, under the Telecommunications Act, 2023. It was further recommended that the extant definitions of Gross Revenue (GR), Applicable Gross Revenue (ApGR), and Adjusted Gross Revenue (AGR), as provided in the Unified License (UL) agreement, may be continued, with the recommendation that in case of merged/clubbed/new Service Authorisations, the definitions should be aligned accordingly.

In view of the proposed merger of the GMPCS Service Authorisation and the Commercial VSAT CUG Service Authorisation into a single authorisation, revised definitions of GR, ApGR, and AGR were also prescribed in the Chapter-XI under Annexure 2.3 of said Recommendations. The same is placed at Annexure 3.2.

The Recommendation dated 18.09.2024, however, pertained to Service Authorisations having a materially different scope of permitted activities and functions from network-layer authorisation such as the proposed SCN Provider Authorisation. The principles underlying the revenue definitions nevertheless remain relevant to the extent that they provide for a broad revenue base followed by specified exclusions for determining the revenue on which regulatory levies are to be imposed.

C. Further, the Telecommunications (Authorisation for Provision of Principal Telecommunication Services) Rules, 2026, notified by DoT on 23.06.2026 have not provided for a separate Satellite-based Telecommunication Service Authorisation as recommended by the Authority in its Recommendations dated 18.09.2024. Instead, entities

holding Unified Service Authorisation, Access Service Authorisation, Internet Service Authorisation and Long-Distance Service Authorisation have been permitted to provide services within the scope of their respective authorisations through satellite networks as well. The definitions of GR/ApGR/AGR have been prescribed in a broad manner under Chapter IV of the Rules, as stated below:

(1) "For the purposes of this Chapter the expressions—

(a) "gross revenue" of the new authorised entity shall include all types of revenues accrued to such new authorised entity from its operations and activities and all income accrued from any source whatsoever, including but not limited to, interest, dividend, rent, profit on sale of fixed assets and miscellaneous income, without any set-off for related items of expenses;

(b) "applicable gross revenue" means the revenue which shall be equal to gross revenue of the new authorised entity as reduced by the items listed below,—
(i) revenue from operations other than telecommunication activities or operations;
(ii) revenue from activities under an authorisation, permission or registration issued by the Ministry of Information and Broadcasting;
(iii) receipts from the Digital Bharat Nidhi; and
(iv) revenue falling under the following items, namely:—
(A) income from dividend;
(B) income from interest;
(C) capital gains on account of profit on sale of fixed assets and securities;
(D) gains from foreign exchange rates fluctuations;
(E) income from property rent;
(F) insurance claims;
(G) bad debts recovered; and

(H) excess provisions written back:

Provided that the Central Government may specify the description and conditions applicable to these revenue sources and the manner of their computation.

(c) "adjusted gross revenue",—

(i) in relation to a network service operator, shall be calculated by excluding the following from the applicable gross revenue, namely:—

(a) interconnection usage charges, related to calls and short message service, paid to other new authorised entities or licensees.

(b) roaming revenues paid to other new authorised entities or licensees within India and telecommunication service providers outside India; and

(ii) in relation to a virtual network operator, shall be calculated by excluding from the applicable gross revenue the charges paid by the virtual network operator to its one or more parent network service operator under a contract for such bandwidth, leased circuits, call minutes and short message services, as may be necessary for provision of principal telecommunication services to users of virtual network operator, subject to submission of a copy of such contract specifying such charges, accompanied by a document evidencing payment of such charges, to the Central Government;"

It is noted that no separate definitions of GR, ApGR and AGR have been prescribed in the Telecommunications (Authorisation for Provision of Principal Telecommunication Services) Rules, 2026 for satellite-based provisioning of telecommunication services. The revenue recognition is linked primarily to the authorisation under which the activity is undertaken, rather than to the technological mode, i.e. satellite or terrestrial, through which a service is provided.

D. The Telecommunications (Authorisations for Telecommunication Network) Rules, 2026 have only prescribed definitions of GR, ApGR and AGR in respect of the Mobile Number Portability Provider Authorisation under Section 3(1)(b) of the Telecommunications Act, 2023. Rule 59 provides, inter alia, as follows:

"59. Fees and charges.—

(a) For the purposes of this Chapter, the expressions— (a) "gross revenue" of the new authorised entity shall include all types of revenues accrued to such new authorised entity from its operations and activities and all income accrued from any source whatsoever, including but not limited to, interest, dividend, rent, profit on sale of fixed assets and miscellaneous income, without any set-off for related items of expenses.

(b) "applicable gross revenue" means the revenue which shall be equal to gross revenue of the new authorised entity as reduced by the items listed below,—

(i) revenue from operations other than telecommunication activities or operations;

(ii) revenue from activities under an authorisation, permission or registration issued by the Ministry of Information and Broadcasting;

(iii) receipts from the Digital Bharat Nidhi; and

(iv) revenue falling under the following items, namely:—

(A) income from dividend;

(B) income from interest;

(C) capital gains on account of profit on sale of fixed assets and securities;

(D) gains from foreign exchange rates fluctuations;

(E) income from property rent;

(F) insurance claims;

(G) bad debts recovered; and

(H) excess provisions written back:

Provided that the Central Government may specify the description and conditions applicable to these revenue sources and the manner of their computation;

(c) "adjusted gross revenue" shall be equivalent to applicable gross revenue."

As may be seen from above, the Telecommunications (Authorisations for Telecommunication Network) Rules, 2026 only prescribed definitions of GR, ApGR and AGR specifically for the Mobile Number Portability Provider Authorisation. No specific definitions of GR, ApGR and AGR pertaining to the Satellite Earth Station Gateway Provider Authorisation have been prescribed in the Telecommunications (Authorisations for Telecommunication Network) Rules, 2026 since there are no recurring regulatory levies prescribed for the SESG Provider Authorisation.

Thus, while having considered the regulatory principles emerging from the Recommendations dated 19.08.2021, the Recommendations dated 18.09.2024, the Telecommunications (Authorisation for Provision of Principal Telecommunication Services) Rules, 2026 and the Telecommunications (Authorisations for Telecommunication Network) Rules, 2026, the definitions of GR, ApGR and AGR for SCN Provider Authorisation should be directly derived with reference to the scope of activities and functions permitted under the SCN Provider Authorisation. However, the principle of ensuring level playing field and avoiding regulatory arbitrage between network-layer and service-layer authorisation, as noted in Recommendation dated 19.08.2021, points to determination of definitions of GR, ApGR and AGR for the proposed SCN Provider authorisation using the same principles as those applicable to Service Authorised entities. The specific aspects pertaining to Gross Revenue, Applicable Gross Revenue and Adjusted Gross Revenue are discussed below.

3.29 Regarding definition of GR, some stakeholders have proposed restricting GR at the threshold itself to revenues arising from authorised SCN activities. The existing regulatory framework, however, adopts a broad definition of GR, followed by specified exclusions while arriving at ApGR and AGR. This structure provides a clear and uniform methodology, ensures reporting of revenues accruing to the authorised entity, and permits revenue which is not intended to form part of the regulatory base to be excluded at the stage of determining ApGR. It also reduces disputes regarding whether a particular receipt forms part of the initial revenue base. Accordingly, it is considered that Gross Revenue for an SCN Provider Authorised entity should include all revenues accruing to the Authorised Entity on account of provision of SCNaaS and other revenue from network-related activities, without any set-off for related items of expenditure.

Further, the Authority also does not find merit in prescribing an exhaustive enumeration of revenue streams of SCN Provider Authorised entity in the definition of GR. The business models and commercial arrangements through which satellite communication network resources is provided may evolve over time. An exhaustive enumeration of revenue streams could therefore inadvertently result in uncertainty regarding the treatment of receipts arising from new or evolving forms of authorised activity.

3.30 At this stage of determining scope of GR, in view of the recommendations made in Section A.6 of Chapter II, the treatment of revenue arising from the provision of SCNaaS to entities providing telecommunication services in areas outside India should also be considered. Since the same would earn revenue for the SCN Provider Authorised entity based in India and would use domestic resources, including gateway established in India and feeder link spectrum assigned by the Central Government, such revenue should be reported as part of Gross Revenue, and further, should not be excluded for levy of Authorisation Fees and Spectrum Charges for SCN Provider Authorised entity.

3.31 The definition of GR/ApGR/AGR also needs to be clear & detailed from the perspective of accounting and reconciliation of SCNaaS charges claimed as deduction of Service Authorised entities and reported as revenue of SCN Provider Authorised entity and further, for proper determination of Authorisation Fees & Spectrum Charges. It is anticipated that a SCN Provider Authorised entity could be providing SCNaaS to multiple Service Authorised entities for provision of different satellite based services to end users. Further, in these arrangements, as has been discussed at Section C of Chapter II, there could be varying spectrum utilisation provisions, with SCN Provider Authorised entity using its assigned spectrum (FSS/MSS) in some cases on either user or feeder link or both, and solely using the assigned spectrum of Service Authorised entities in other cases.

Accordingly, it is considered prudent that the reporting of revenue by SCN Provider Authorised entity, which is primarily the SCNaaS charges earned by the SCN Provider Authorised entity from Service Authorised entities, should be detailed based on the end service provided by Service Authorised entity to users. Such satellite based commercial communication services considered in the present Recommendations have been delineated as GSO based FSS/ NGSO based FSS/ GSO based MSS/ NGSO based MSS/ D2D using MSS / D2D using IMT spectrum.

3.32 Following the above discussion, revenue reporting by SCN Provider Authorised entity also needs to consider any specific revenue reporting required for proper implementation of regulatory levies, whether Authorisation Fee or Spectrum Charges. In Section D of this Chapter on Spectrum Charges, the Authority has recommended same rate of AGR as Spectrum Charges for SCN Provider Authorised entities as would be finalised by the Government for Satellite Based Commercial Communication Services on consideration of the Recommendation dated 09.05.2025, mainly in view of maintaining regulatory parity between integrated service model and shared unbundled network model. Also, as was proposed in the Recommendations dated 09.05.2025, for the purpose

of disincentivizing diversion of NGSO based FSS to urban areas at the expense of rural areas, it has been recommended presently that differential spectrum charges for urban and rural areas for NGSO based FSS, as decided by DoT for satellite based commercial communication services, should also apply to the SCN Provider Authorised entity. The detailed discussion and rationale for the same may be referred to in the Section on Spectrum Charges.

3.33 Thus, as per the recommended spectrum charging framework for SCN Provider Authorisation, in case SCNaaS is used for provision of NGSO based FSS by the Service Authorised entity, it would be necessary for segregation of such SCNaaS revenue, earned from NGSO based FSS as the end service, for urban and rural categories. Further, depending upon the spectrum charging framework finalized by DoT, the number of urban subscribers would also be required to determine the additional per-subscriber charge.

Since an SCN Provider Authorised Entity provides satellite network capability on a wholesale basis to a Service Authorised Entity and may not ordinarily have direct access to information regarding the location and number of end-users served by the Service Authorised entity, the requisite information would need to be furnished by the Service Authorised Entity availing SCNaaS for providing NGSO-based FSS to end-users.

Accordingly, where an SCN Provider Authorised Entity provides SCNaaS to a Service Authorised Entity for provision of NGSO-based FSS, the Service Authorised Entity should furnish, on a quarterly basis, the segregation of SCNaaS charges paid by itself for urban and rural categories, along with the corresponding number of subscribers in urban category (if so required depending on the spectrum charging framework finalized by DoT for NGSO based FSS) to the SCN Provider Authorised entity. This information should be furnished within 07 days from the end of the respective quarter. There should also be proper maintenance of relevant records and

supporting documentation by both parties, to be made available for verification and assessment as and when required by the Assessing Authorities for Spectrum Charge & Authorisation Fee. Accordingly, in such cases, the SCN Provider Authorised entity should segregate, within its Gross Revenue, the revenue attributable to urban areas and rural areas, as well as the number of urban subscribers served (if so required for calculating per subscriber charge in urban areas), depending upon the finalised spectrum charging framework by DoT. The details regarding the same are covered under the discussion on commercial agreement between Service Authorised Entity and SCN Provider Authorised entity, at Section E of this Chapter.

3.34 In view of the considerations above, the revenue earned by an SCN Provider Authorised entity, for providing SCNaaS to eligible Service Authorised Entities for the provision of services to end users, should be reported in its Statement of Revenue according to the nature of the end service, with segregation as follows, depending on applicability:

i. Revenue earned from the provision of SCNaaS to eligible Service Authorised Entities providing GSO-based FSS to end users

ii. Revenue earned from the provision of SCNaaS to eligible Service Authorised Entities providing GSO-based MSS to end users.

iii. Revenue earned from the provision of SCNaaS to eligible Service Authorised Entities providing NGSO-based FSS to end users, with further segregation of such revenue for urban and rural areas (along with number of urban subscribers served, if required for calculating per subscriber charge in urban areas), as required per the spectrum charging framework finalized by DoT.

iv. Revenue earned from the provision of SCNaaS to eligible Service Authorised Entities providing NGSO-based MSS to end users.

v. Revenue earned from the provision of SCNaaS to eligible Service Authorised Entities providing D2D services via satellite using MSS spectrum to end users.

vi. Revenue earned from the provision of SCNaaS to eligible Service Authorised Entities providing D2D services via satellite using IMT spectrum to end users.

3.35 Regarding definition of ApGR, the submissions seeking exclusion of non-operational and non-telecom income have been considered. As noted above, under the existing licensing framework, GR represents the broad measure of revenue accruing to an authorised entity from its operations. Specific exclusions are then applied to arrive at ApGR, followed by specified deductions from ApGR to determine AGR. The concept of ApGR was introduced by the Authority in its Recommendations dated 06.01.2015 on "Definition of Revenue Base (AGR) for the Reckoning of License Fee and Spectrum Usage Charges", as an intermediate stage between GR and AGR for identifying the revenues that should form part of the regulatory levy base. Broadly speaking, the concept excludes the revenues arising from non-licensed/ non-telecom activities from GR to arrive at ApGR, thus moving such revenues out of the ambit of regulatory charges. The Telecom Reforms of 2021 subsequently incorporated this framework in the revised licensing arrangements. The revenue framework prescribed in the Recommendations dated 18.09.2024 and subsequently in the Telecommunications (Authorisation for Provision of Principal Telecommunication Services) Rules, 2026 and Telecommunications (Authorisations for Telecommunication Network) Rules, 2026, provides an established mechanism for determination of ApGR by excluding revenues from activities which are outside the relevant telecom authorisation, as well as specified categories of income which are not intended to form part of the regulatory revenue base.

Therefore, while the scope of SCN Provider Authorisation is different from the Authorisations notified in the Telecommunications (Authorisations for Telecommunication Network) Rules, 2026, the established principle of excluding specified revenue from operations other than telecom activities or operations at the ApGR stage remains relevant.

3.36 In view of the above, while arriving at ApGR, the following should, inter alia, be excluded from GR:

(i) revenue from operations other than telecommunication activities or operations;
(ii) revenue from activities under an authorisation, permission or registration issued by the Ministry of Information and Broadcasting;
(iii) receipts from the Digital Bharat Nidhi; and
(iv) revenue falling under the following items, namely:
    (A) income from dividend;
    (B) income from interest;
    (C) capital gains on account of profit on sale of fixed assets and securities;
    (D) gains from foreign exchange rates fluctuations;
    (E) income from property rent;
    (F) insurance claims;
    (G) bad debts recovered; and
    (H) excess provisions written back: subject to the applicable conditions.

3.37 In respect of determination of AGR, stakeholders' submissions regarding payments for satellite capacity and related space-segment resources, including transponder bandwidth, orbital capacity and other upstream network resources, to be treated as pass-through charges and deducted while arriving at AGR has been examined. In this regard, two considerations are relevant in determining whether payments for satellite

capacity and other upstream space-segment resources should be permitted as deductions from ApGR.

a. First, it is noted that the entities supplying such satellite or space-segment resources are not entities operating under the telecom authorisation framework or subject to the corresponding AGR regime. Consequently, the revenues accruing to such upstream space-segment entities are not subject to a corresponding Authorisation Fee or Spectrum Charges under the AGR framework. Therefore, there is no case of cascading or double incidence of the same revenue being counted twice across AGR bases. Accordingly, deductions for such upstream payments made by SCN Provider Authorised entity to Space segment provider entities would inappropriately reduce the revenue base of SCN Provider Authorised entity and cannot be provided on the grounds of preventing double charging of same revenue.

b. Second, satellite capacity and space-segment resources constitute essential inputs for the operations of an SCN Provider Authorised Entity. Such inputs are integral to the SCN Provider's authorised operations and represent costs retained by the SCN Provider Authorised entity in establishing and operating its network & operations and hence should not qualify as permissible pass-through charges for deduction purposes.

It is therefore considered that payments made for procurement or use of satellite capacity, space-segment infrastructure, transponder bandwidth, orbital capacity or other similar upstream resources should not be allowed as deductions from ApGR while arriving at AGR.

3.38 The stakeholders' submissions seeking deductions for payments made by an SCN Provider Authorised Entity towards procurement or use of spectrum have also been considered. Spectrum-related payments, including regulatory levies such as Spectrum Charges, form part of the regulatory obligations applicable to the authorised entity. The existing

licensing framework does not provide for deduction of such regulatory levies from the revenue base. Accordingly, there is no basis for providing a separate deduction for spectrum-related payments, including Spectrum Charges, while arriving at AGR for an SCN Provider Authorised Entity.

3.39 As has been mentioned under Section A.4 of Chapter II, considering the provisions of the Rule 52(3) of the Telecommunications (Authorisation for Telecommunication Network) Rules, 2026, SCN Provider Authorised entities have been recommended to be permitted to seek telecommunication network [which comprises mainly satellite earth station gateway(s)] from SESG provider Authorised entities for providing SCNaaS to the eligible service authorised entities. Further, as a natural corollary to permitting any SCN Provider Authorised entity to obtain satellite earth station gateway(s) from SESG Provider Authorised entities for providing SCNaaS, such SCN Provider Authorised entity have also been recommended to be permitted to seek satellite earth station gateway(s) from another SCN Provider Authorised entity for providing SCNaaS to the eligible service authorised entities.

It is expected that such network resources, which comprise mainly satellite earth station gateway(s), would require payment of charges for the same from a SCN Provider Authorised entity to another SCN Provider Authorised entity or a SESG Provider Authorised entity, as the case may be. Such charges would be accounted for as revenue by the SCN Provider or SESG Provider Authorised entity, as the case may be, who would be providing the satellite earth station gateway. It is essential to ensure that double charging on such amounts transacted between the entities is avoided.

It is noted that as per Telecommunications (Authorisation for Telecommunication Network) Rules, 2026, the SESG Provider Authorisation does not have any regulatory levies, and hence the question

of double charging does not arise in case the satellite earth station gateway is being provided by SESG Provider Authorised entity. However, in case the gateway is being provided by SCN Provider Authorised entity, who would be receiving charges for the same and is subject to Authorisation Fee & Spectrum Charges as per prescribed framework, there would be double charging on such amount, if the SCN Provider Authorised entity seeking the gateway resource is not permitted deductions for the same. Accordingly, such charges paid by a SCN Provider Authorised entity to another SCN Provider Authorised entity for utilization of satellite earth station gateway(s) should be allowed as deduction, subject to necessary documentation, including valid payment proofs, and further verification and audit.

3.40 Goods and Services Tax (GST) paid to the Government, if the Gross Revenue (GR)/ Applicable Gross Revenue (ApGR) had included the component of GST, should be allowed to be excluded from the ApGR to arrive at AGR.

3.41 Further, the recommendation at Section D.3 of Chapter II has been noted, wherein entities holding Unified Service Authorisation, Access Service Authorisation, Internet Service Authorisation, Long Distance Service Authorisation under the new Principal Service Authorisation Rules, 2026 or Access Service authorization, ISP authorization, NLD Service authorization, Commercial VSAT CUG Service authorization and GMPCS Service authorization under Unified License or a License for Provision and Operation of Satellite Based Services Using Gateway Installed in India Under '*Sui-Generis*' Category', should be permitted to provide SCNaaS to other authorised entities or licensees permitted to use satellite networks, subject to their fulfilment of the eligibility criteria for SCN Provider Authorisation and compliance with the applicable technical, operational, rollout and security conditions.

These existing Service Authorised Entities would have multiple sources of revenue, mainly from provision of principal telecommunication services (either through their terrestrial or satellite networks) to end-users, while the charges earned from provision of SCNaaS to other authorised entities would constitute only a subset of their total revenue reported in their respective AGR. For purposes of accounting and reconciliation and clear application of regulatory levies on such Service Authorised entities, revenue arising from provision of SCNaaS by eligible Service Authorised entities should be separately reported within the Gross Revenue of the Service Authorised entity, in the same format as applicable for reporting of SCNaaS charges by a SCN Provider Authorised entity. Such revenue should thereafter be subjected to the applicable exclusions and deductions, as allowed for a SCN Provider Authorised entity, while arriving at ApGR and AGR pertaining to the activities as an SCN Provider, under the relevant authorisation.

3.42 In consideration of the above discussion on GR/ ApGR/ AGR for SCN Provider authorisation, **the Authority recommends the following:**

(a) Gross Revenue (GR)

"Gross Revenue (GR)" shall include all revenues accruing to the SCN Provider Authorised Entity for provision of Satellite Communications Network-as-a-Service (SCNaaS) to eligible Service Authorised Entities for the provision of satellite based services to end users, and any other revenue from network-related activities, without any set-off for related items of expenditure. The revenue earned from provision of SCNaaS to the Service Authorised entities should be reported separately according to the nature of the end service, with segregation as follows, depending on applicability:

i. **Revenue earned from the provision of SCNaaS to eligible Service Authorised Entities providing GSO-based FSS to end users.**

ii. **Revenue earned from the provision of SCNaaS to eligible Service Authorised Entities providing GSO-based MSS to end users.**

iii. **Revenue earned from the provision of SCNaaS to eligible Service Authorised Entities providing NGSO-based FSS to end users, with further segregation of such revenue for urban and rural areas (along with number of urban subscribers served, if required for calculating per subscriber charge in urban areas), as required per the spectrum charging framework finalized by DoT.**

iv. **Revenue earned from the provision of SCNaaS to eligible Service Authorised Entities providing NGSO-based MSS to end users.**

v. **Revenue earned from the provision of SCNaaS to eligible Service Authorised Entities providing D2D services via satellite using MSS spectrum to end users.**

vi. **Revenue earned from the provision of SCNaaS to eligible Service Authorised Entities providing D2D services via satellite using IMT spectrum to end users.**

(b) Applicable Gross Revenue (ApGR)

"Applicable Gross Revenue (ApGR)" shall be equal to Gross Revenue (GR) of the Authorised Entity as reduced by the items listed below:

(i) revenue from operations other than telecom activities or operations;

(ii) revenue from activities under a license/ permission issued by the Ministry of Information and Broadcasting;

(iii) receipts from the Digital Bharat Nidhi; and

(iv) List of other income* to be excluded from GR to arrive at ApGR

a. income from dividend;

b. income from interest;

c. capital gains on account of profit on sale of fixed assets and securities;

d. gains from foreign exchange rate fluctuations;

e. income from property rent;

f. insurance claims;

g. bad debts recovered; and

h. excess provisions written back,

***Subject to conditions given in Annexure-3.1**

(c) Adjusted Gross Revenue (AGR):

For the purpose of arriving at the "Adjusted Gross Revenue (AGR)", following shall be allowed as deductions from the Applicable Gross Revenue (ApGR):

i. **Charges paid to another SCN Provider Authorised entity for utilization of satellite earth station gateway(s)**
ii. **Goods and Service Tax (GST) paid to the Government, if the reported Gross Revenue (GR)/ Applicable Gross Revenue (ApGR) had included the component of GST**

(d) For Service Authorised entities eligible to provide SCNaaS to other authorised entities or licensees permitted to use satellite networks, subject to prescribed conditions, the revenues arising from provision of SCNaaS by such eligible Service authorised

entities should be reported separately within the Gross Revenue of the entity, in accordance with the framework recommended above regarding GR/ApGR/AGR for SCN Provider Authorisation. Such revenue should thereafter be subjected to the applicable exclusions and deductions, as allowed for an SCN Provider Authorised entity, while arriving at ApGR and AGR pertaining to the activities as an SCN Provider, under the relevant authorisation.

C.2 Authorisation Fee & associated payment terms

3.43 Authorisation Fee constitutes an important component of the financial framework governing an authorised entity and is a recurring–financial obligation arising from the grant of authorisation. Accordingly, determination of the appropriate rate of Authorisation Fee, including whether a minimum Authorisation Fee should apply, requires consideration of the nature and scope of the authorisation, the revenue-generating capacity of the authorised entity, and the financial framework applicable to similarly placed entities.

3.44 In view of the above, the Consultation Paper dated 08.04.2026 sought stakeholders' views on the appropriate rate of Authorisation Fee for SCN Provider Authorised entities, the applicability and quantum of any Minimum Authorisation Fee, and the appropriate payment terms and conditions. The stakeholder comments and the Authority's analysis thereof are set out below.

Q38. What should be the rate of Authorisation Fee for a Satellite Communication Network (SCN) authorised entity? Please provide detailed justification in support of your response.

Q39. Should a Minimum Authorisation Fee be applicable for the proposed SCN Provider Authorisation? If yes, what should be the Minimum

Authorisation Fee for the proposed SCN Provider Authorisation? Please provide detailed justification in support of your response.

Q40. What should be the appropriate payment terms and conditions for Authorisation Fees? Please provide detailed justification in support of your response.

Comments of stakeholders on Q38, Q39 and Q40

3.45 The stakeholders have generally submitted that the Authorisation Fee for SCN Provider Authorisation should be proportionate to the nature and scope of SCN operations. Several stakeholders have suggested that no Authorisation Fee should be levied, drawing a parallel with other network-only Authorisations such as SESG Provider Authorisation, as SCN entities would provide SCNaaS to Service Authorised entities rather than directly serving end users. If a fee is imposed, some stakeholders have suggested that it should be nominal, cost-recovery based, and significantly lower than the fee applicable to retail service providers.

3.46 Some stakeholders have proposed an AGR-based fee of 1% to 3% during the initial phase, with periodic review. One stakeholder proposed 3% of AGR, comprising 1% for the Government exchequer and 2% for Digital Bharat Nidhi. In contrast, some stakeholders have supported parity with service authorised entities, including the existing 8% AGR-based framework, to maintain competitive neutrality between vertically integrated and shared-network business models. Stakeholders have also suggested that any AGR-linked fee should apply only to revenues generated from the Indian market, while USOF contributions should not apply to network entities supporting connectivity in underserved areas.

3.47 Regarding the Minimum Authorisation Fee, several stakeholders have recommended that no minimum fee should be imposed, particularly where an AGR-linked fee is already applicable, as this would provide a

proportionate linkage to actual commercial activity. They have highlighted that a fixed minimum fee could create entry barriers for start-ups and new entrants during the initial deployment phase, when substantial capital expenditure is incurred before revenues are generated.

3.48 Several stakeholders have suggested that, if considered necessary, the minimum fee should be nominal, proportionate, and limited to recovery of administrative and regulatory costs, preferably assessed at the network level rather than based on the number of satellites, terminals, or spectrum bandwidth. Some stakeholders have also suggested reduction or waiver of such fee during the early deployment period and reviewed after initial period, particularly to support investment, competition and satellite connectivity.

3.49 On payment terms, many stakeholders have emphasised that the framework should be simple, transparent, predictable, and suited to the long gestation periods and phased deployment of satellite networks. Several stakeholders have suggested alignment with existing frameworks such as quarterly payment of applicable fees through established reporting mechanisms, while also suggesting that a suitable moratorium or relaxation may be provided to new entrants during the initial years of deployment when revenues have yet to materialize. A few stakeholders have suggested that the existing payment terms applicable to telecom operators may be replicated for SCN entities to maintain consistency, while ensuring that the framework remains suitable for the specific characteristics of satellite communication networks.

Analysis of the issues raised through Q38, Q39 and Q40

3.50 The Authority has considered the views expressed by stakeholders regarding the appropriate Authorisation Fee for SCN Provider Authorised entities. The submissions broadly range from a NIL or nominal fee, currently applicable for Network Authorisations under the

Telecommunications (Authorisations for Telecommunication Network) Rules, 2026, to parity with the 8% AGR-based fee applicable to service-level authorisations applicable under Unified Licensing Regime or new Authorisations framework as per Telecommunications (Authorisation for Provision of Principal Telecommunication Services) Rules, 2026.

3.51 Stakeholders supporting a NIL or nominal fee have drawn similarities between SCN Provider Authorisation and SESG Provider Authorisation on account of the network-layer nature of both and the absence of direct service provision to end users. They have also stressed the need to promote investments in the developing satellite network sector. In contrast, stakeholders supporting parity have emphasised the need to prevent regulatory arbitrage between vertically integrated Service Authorised entities and the standalone network entities and ensure that differences in regulatory levies do not influence the choice between alternative business models.

3.52 It is noted that the network-layer nature of SCN Provider Authorised entity and the absence of direct service provision to end users are relevant factors in determining the financial conditions applicable to SCN Provider Authorisation. An SCN Provider Authorised entity would establish and operate satellite communication networks and provide SCNaaS to eligible Service Authorised entities, which would, in turn, provide communication services to end users. The SCN Provider authorisation is therefore intended to facilitate the development and operation of satellite network capabilities rather than the direct provision of retail telecommunication services. At the same time, it is considered that the appropriate authorization fee cannot be determined solely by reference to whether an entity operates at the network or service layer. The scope of the functions and rights conferred by the Authorisation, as well as the need to maintain regulatory neutrality are also relevant. In this context, the past Recommendations as well as extant licensing provisions and Authorisation rules have been examined as possible reference point.

A. Under the extant Unified License framework, the annual License Fee is prescribed at 8% of AGR, inclusive of applicable USO levy of 5% of AGR, subject to the prescribed Minimum License Fee of 10% of the Entry Fee of the respective authorised service and service area from second year of the effective date of respective authorization.

B. In the Recommendations dated 06.01.2015 on "Definition of Revenue Base (AGR) for the Reckoning of License Fee and Spectrum Usage Charges", the Authority had recommended that that the component of USO (now DBN) levy in License Fee should be reduced from the present 5% to 3% of AGR for all licenses with effect from 1st April 2015, leading to an overall rate of License Fee of 6% (from the present 8%) of AGR. There was no recommendation for change in the 3% of LF that directly accrues to the Government. The same reduction was reiterated in the Recommendations on Enabling Unbundling of Different Layers Through Differential Licensing dated 19.08.2021.

In response, DoT in 2022 had rejected the said Recommendations stating that Government of India has revised and expanded its USOF targets since then, from providing optical fibre connectivity to 2.5 lakh gram panchayats to reaching 6 lakh villages, which required USOF funds to be increased rather than decreased.

C. In its Recommendations dated 19.08.2021 on "Enabling Unbundling of Different Layers Through Differential Licensing", while considering the proposed Access Network Provider (ANP), the Authority examined the possibility of applying differential levies to network-only entities. The Authority observed the following:

> *"The Authority concurs with the views of the stakeholders that there is a need of rationalization of regulatory levies; however, for ordered growth of the sector, level playing needs to be maintained*

between similar players in the market. Therefore, any change in levies for Network only layer should also be made for UL licensees. Prescription of differential (reduced) levies for Network Operator could create a possibility of arbitrage. Thus, to maintain level-playing field and to mitigate any possibility of arbitrage opportunity, it is important that the Government taxes and levies are kept same for the existing (integrated) licensing regime and proposed unbundled license regime. Therefore, the Authority recommends that the License Fee and Spectrum Usage charges applicable for the Access Network Provider Authorization should be the same as that applicable to the Access Service Authorization under Unified License."

Thus, the Authority had noted the importance of maintaining a level playing field between integrated service and unbundled shared network regime, for the orderly growth of the sector, while emphasizing the need for growth of Network entities and overall unbundling of network and services. It was observed that differential regulatory levies could create opportunities for arbitrage between existing integrated authorised entities and unbundled network-only entities. Accordingly, it was recommended that the License Fee and Spectrum Usage Charges applicable to an Access Network Provider Authorisation should be the same as those applicable to the Access Service Authorisation under the Unified License. The underlying principle was that the regulatory levies should remain neutral to the manner in which the network and service functions are organised, so that unbundling of functions does not result in a differential regulatory burden.

D. Subsequently, in Recommendations dated 17.02.2025 on the "Terms and Conditions of Network Authorisations to be Granted Under the Telecommunications Act, 2023", the Authority had recommended that no Authorisation Fee should be levied for SESG Provider Authorisation. Considering the scope associated with SESG Provider Authorisation, the

Authority had noted that it does not involve the provision of services directly to end customers. Instead, the provision of networks under this authorisation are intended only for telecom service providers. Therefore, the Authority had arrived at the view that it is appropriate not to levy any authorisation fee for SESG Provider Authorisation.

Although both the proposed SCN Provider Authorisation and existing SESG Provider Authorisation frameworks contemplate network-layer entities providing satellite-based network resources to Service Authorised entities rather than directly to end users, their respective scope and eligibility conditions are materially different. The scope of SCN Provider Authorisation is considerably broader than the SESG Provider Authorisation. An SCN Provider Authorised entity is permitted to provision an end-to-end SCNaaS capability encompassing both feeder links and user links. Depending on the applicable commercial and structural arrangements, the SCNaaS may be utilised for provision of D2D using MSS spectrum, as well as provision of D2D using IMT spectrum, along with traditional FSS and MSS spectrum. Even where an SCN Provider Authorised entity does not hold spectrum in either feeder and/or user link, the scope of its permitted activities extends substantially beyond the limited purpose of operating a satellite earth station gateway contemplated under the SESG Provider Authorisation. In addition, an SCN Provider Authorised entity would be eligible for assignment of spectrum, subject to the applicable framework. In contrast, the SESG Provider Authorisation permits the authorised entity to utilise spectrum assigned to the partnering entity only for the limited purpose of configuring the satellite earth station gateway, with the right to use the spectrum remaining with the partnering entity. Accordingly, it is held that the SESG Provider Authorisation cannot be considered as the principal reference point for determining the Authorisation Fee for SCN Provider Authorisation.

It is further noted that the Telecommunications (Authorisation for Telecommunication Network) Rules, 2026 have subsequently been notified and provide for no Authorisation Fee for the SESG Provider Authorisation.

E. In its Recommendations dated 18.09.2024 on the "Framework for Service Authorisations to be Granted under the Telecommunications Act, 2023", considering that the DoT in 2022 had rejected the Recommendations dated 06.01.2015 pertaining to reduction in License/ Authorisation Fee, the Authority took the view that the rate of Authorisation fee may continue to be the same as present, without any further change at this stage. In view of the same, the Authority recommended that the Authorisation Fee for the proposed Satellite based Telecom Service Authorisation should be aligned with the existing rate applicable to other Main Service Authorisations, i.e. 8 percent of AGR, including the 5 percent levy towards Digital Bharat Nidhi.

F. Chapter IV of the Telecommunications (Authorisation for Provision of Principal Telecommunication Services) Rules, 2026 provides that every new authorised entity shall pay an annual Authorisation Fee for each authorisation from the effective date of such authorisation, at 8% of AGR.

3.53 Stakeholders' submissions that the absence of direct retail revenues could warrant a substantially lower fee for SCN Provider Authorised entities have also been considered. It is noted that the SCN entities would operate at the wholesale/network layer and that their business models would differ from those of Service Authorised entities. However, the Authorisation Fee should not be determined solely by reference to end-user operations. It is a regulatory levy associated with the activities permitted under the scope of Authorisation. The absence of a direct end-user interface therefore should not, on its own, justify a lower rate where differential treatment could create opportunity for arbitrage between the network and service layers.

3.54 Similarly, while examining the stakeholder's submissions that the Authorisation Fee should be determined solely on a cost-recovery basis, it is observed that the prevailing regulatory framework adopts a revenue-linked Authorisation Fee rather than a pure cost-recovery model. The rate of Authorisation Fee at 8% of AGR applicable to Principal Telecommunication Services under the Telecommunications (Authorisation for Provision of Principal Telecommunication Services) Rules, 2026 reflects the prevailing policy framework. As discussed above, in light of the principle of regulatory parity and avoidance of potential for arbitrage, it is not considered appropriate to adopt a separate cost-recovery-based model exclusively for SCN Provider Authorised entities.

3.55 The principle of regulatory parity, between integrated service and shared unbundled network models, recognised in the Recommendations dated 19.08.2021, which pertained to separation of service and network layer in the Access service sector, is considered particularly relevant. The proposed SCN Provider authorization, similar to the proposed Access Network provider in the Recommendations dated 19.08.2021, would be a network layer entity providing network capabilities to a Service Authorised entity, while the latter would provide communication services to end users. Elaborating on the same, the SCNaaS charges paid by Service Authorised entity to SCN Provider Authorised entity have been proposed be allowed as deduction for the Service Authorised entity, subject to the prescribed conditions. Here, prescribing a lower Authorisation Fee for an SCN Provider Authorised entity vis-a-vis Service Authorised entity results in a lower regulatory incidence on the SCN Provider Authorised entity. Furthermore, adding up the levy for the service & network entities in this unbundled shared network model, the overall incidence of Authorisation fee combined from both Network and Service Authorised entities involved, would be lower than the Authorisation Fee levy on an integrated Service Authorised entity who would be using its own network to provide the satellite-based service. This would result in regulatory disparity between

the integrated service model, where the service provider uses its own network to provide services to end users, and the shared unbundled network model, where the service provider is using a standalone network entity, viz. SCN Provider Authorized entity, to provide the user services. Thus, the rate of Authorisation Fee being same for a standalone network entity as for an integrated service entity is crucial for upholding regulatory parity and a level playing field between the vertically integrated and shared network business models of delivering satellite-based services, so as to avoid potential regulatory arbitrage arising from differences in the manner in which such functions are organised. Accordingly, the Authorisation Fee for an SCN Provider Authorised entity should be kept at 8% of AGR, consistent with the rate prescribed for new authorised entities under the Telecommunications (Authorisation for Provision of Principal Telecommunication Services) Rules, 2026.

3.56 Further, in view of the recommendation at Section D.3 of Chapter II, entities holding Unified Service Authorisation, Access Service Authorisation, Internet Service Authorisation, Long Distance Service Authorisation under the new Principal Service Authorisation Rules, 2026 or Access Service authorization, ISP authorization, NLD Service authorization, Commercial VSAT CUG Service authorization and GMPCS Service authorization under Unified License or a License for Provision and Operation of Satellite Based Services Using Gateway Installed in India under '*Sui-Generis*' Category', are allowed to provide SCNaaS to other authorised entities or licensees permitted to use satellite networks, subject to fulfilment of the eligibility criteria for SCN Provider Authorisation and compliance with the applicable technical, operational, rollout and security conditions. It is noted that the Authorisation Fee applicable to such Service Authorised entities is already linked to AGR. Hence, revenue earned by such entities from the provision of SCNaaS would also be included in AGR and be subject to the applicable Authorisation Fee. Further, the rate of Authorisation Fee of SCN Provider Authorisation has been recommended at the same level as Service Authorised entities viz.

8% of AGR. Thus, overall, there is no need to prescribe any separate Authorisation Fee framework for the scenario where Service Authorised entities are providing SCNaaS to other entities.

Minimum Authorisation Fee

3.57 The stakeholders' submissions of prescribing NIL Minimum Authorisation Fee have been considered. It has been submitted that a NIL Minimum Authorisation Fee could reduce the financial burden on an SCN Provider Authorised entity during the initial phase of deployment, particularly as substantial investment may be required before revenues are generated.

3.58 A Minimum Authorisation Fee represents a fixed financial obligation payable irrespective of the actual revenue generated by an authorised entity. The discussion on Minimum Authorisation Fee is quite relevant in the case of an SCN Provider Authorised entity, as satellite networks may involve long gestation periods, phased deployment, capacity ramp-up and significant upfront investment before commercial operations attain scale. In this context, the past Recommendations as well as extant licensing provisions and Authorisation rules have been examined.

A. Under the extant Unified License, Minimum license Fee is prescribed at 10% of Entry fee of respective authorisation. The provisions relating to Minimum License fee prescribed in Chapter III of Unified License is reproduced below:

"18.2 License Fee:

18.2.1 In addition to the Entry Fee, an annual License fee as a percentage of Adjusted Gross Revenue (AGR) shall be paid by the Licensee service-area wise, for each authorized service from the effective date of the respective authorization. The License fee shall

be 8% of the AGR, inclusive of USO Levy which is presently 5% of AGR.

Provided that from Second Year of the effective date of respective authorization, the License fee shall be subject to a minimum of 10% of the Entry Fee of the respective authorized service and service area as in Annexure-II."

B. It is noted that the Recommendations dated 18.09.2024 on the "Framework *for Service Authorisations to be Granted under the Telecommunications Act, 2023*" also prescribed the same provisions for Minimum Authorisation fee, as applicable under Unified Licensing regime, for all Main Services Authorisations, including Satellite-based Telecommunication Service Authorisation.

C. Chapter IV of the Telecommunications (Authorisation for Provision of Principal Telecommunication Services) Rules, 2026 provides that every new authorised entity shall pay a Minimum Authorisation Fee at thirty per cent of the applicable Entry fee for respective authorisation. The relevant provisions are reproduced below:

"(2) Every new authorised entity shall pay an annual authorisation fee for each authorisation, from the effective date of such authorisation, which shall be eight per cent. of the adjusted gross revenue subject to the amounts specified in sub-rules (3) to (7), as applicable.

(3) From the second year of the effective date of the authorisation and for each subsequent year, the authorisation fee shall be higher of—

(a) eight per cent. of the adjusted gross revenue; or
(b) thirty per cent. of the applicable entry fee as specified in Schedule A.

(4) In the event of renewal of an authorisation, the authorisation fee from the effective date of renewal shall be higher of—

(a) eight per cent. of the adjusted gross revenue; or

(b) thirty per cent. of the applicable entry fee as specified in Schedule A"

D. It is further noted that the Telecommunications (Authorisation for Telecommunication Network) Rules, 2026 have prescribed NIL Authorisation Fee for the SESG Provider Authorisation, and no Minimum Authorisation Fee is envisaged. However, as has been established above, the scope of SESG Provider Authorisation is materially different from the proposed SCN Provider authorisation, even though both are essentially Network layer Authorisations. Accordingly, as observed in earlier Section on Authorisation Fee, the provisions of SESG Provider Authorisation regarding Minimum Authorisation Fee are not considered relevant to guiding the current discussion.

3.59 It is noted here that the Minimum Authorisation Fee is linked to the Entry Fee under both existing Unified License regime as well as the new Authorisations framework. It is essentially a fixed charge, without any linkage with the revenue and deductions framework. The principle of regulatory parity between integrated service and shared network models, which has been upheld in determination of financial framework for the SCN Provider Authorised entity, is implemented through the same rate of revenue-based regulatory levies along with deductions and revenue framework. Herein, the SCNaaS charges paid by the Service Authorized entity to the SCN Provider Authorised entity are claimed as deductions by the Service Authorised entity and same are reported as revenue by the SCN Provider Authorised entity. With same rate of regulatory levies for integrated service and standalone network entity, the overall service revenue is charged at the same rate irrespective of the locus of charging, with the combined levies in case of a shared network model remaining at

the same level as that for a integrated service model. As can be seen, the fixed charge nature of Minimum Authorisation fee makes it irrelevant from the point of view of regulatory parity between the integrated service and shared network model of providing satellite services.

Further, SCN Provider Authorised entity earns SCNaaS charges from Service Authorised entity for provision of SCNaaS and does not directly provide service to end users. Thus, it is not liable for the levels of service revenue collected, which is based on the operational and commercial decisions of the service provider. In such a case, there does not seem to be any requirement for subjecting the SCN Provider Authorised entity to a Minimum Authorisation Fee to incentivise an adequate level of performance and revenue collection.

Payment Terms

3.60 With respect to payment terms and conditions, the Authority has considered stakeholder suggestions for simple, transparent and predictable payment arrangements, including alignment with the prevailing telecom regulatory framework. In this context, the past Recommendations as well as extant licensing provisions and Authorisation rules have been examined as possible reference point.

A. The schedule of payment of annual license fee and other dues prescribed in the Unified License provides for quarterly payment of License Fee, payment within fifteen days of completion of each of the first three quarters, advance payment for the last quarter by 25 March, subsequent adjustment against actual dues, annual reconciliation and audit, and payment of interest in case of delay. The provisions relating to schedule of payment prescribed in Chapter III of Unified License is reproduced below:

"20. Schedule of payment of ANNUAL LICENSE FEE and other dues:

20.1 License Fee shall be payable in four quarterly installments during each financial year (FY) commencing 1st of April.

20.2 The quarter in which the effective date of license/authorization falls, shall end on the usual end date of that quarter for the purpose of license fee. The quarters where the minimum license fee or license fee based on presumptive AGR becomes applicable, and the last quarter of the license period, may not be of full three months, but of part period only.
[Explanation:
(i) For license/authorization with effective date on 13th July, the quarter will end on 30th September.
(ii) In such case the minimum license fee would become applicable w.e.f. 13th of July next year and the quarter shall end on the following 30th September.]

20.3 The minimum license fee or the license fee based on presumptive AGR, as may be applicable, as per conditions 18.2.1 and 18.2.2, for the above part-periods, shall be charged on pro-rata basis, based on actual number of days in the part period of the Quarter.

20.4 License Fee shall be payable in four quarterly installments during each financial year (FY). Quarterly installment of license fee for the first three quarters of a financial year shall be paid within 15 days of the completion of the relevant quarter. The AGR based license Fee shall be paid by the Licensee on the basis of revenue on accrual basis for the quarter, duly certified with an affidavit by a representative of the Licensee who is authorized by the Board Resolution coupled with General Power of Attorney. However, for the last quarter of the financial year, the Licensee shall pay the License Fee by 25th March on the basis of expected revenue for

the quarter, subject to a minimum payment equal to the revenue share paid for the previous quarter.

20.5 The Licensee shall adjust and pay the difference between the advance payment made and actual amount duly payable for the last quarter of financial year within 15 days of the end of the quarter.

20.6 The quarterly payment shall be made with an affidavit as at Annexure-A of the respective Chapter of service authorization together with a STATEMENT OF REVENUE SHARE AND LICENSE FEE separately for each service and service area in the Proforma prescribed at Appendix-II to Annexure-A of the respective chapter of the service, showing the computation of revenue and License fee payable. The aforesaid quarterly STATEMENTS of each year shall be required to be audited by the Auditors (hereinafter called Licensee's Auditors) appointed by the Licensee under Section 224 of the Companies' Act, 2013. The report of the Auditor should be in the prescribed form as per Appendix-I to Annexure-A of the respective Chapter of service authorization.

20.7 Any delay in payment of License Fee or any other dues payable under the License, beyond the stipulated period will attract interest at a rate which will be 2 % above the one year Marginal Cost of Lending Rate (MCLR) of State Bank of India existing as on the beginning of the Financial Year (namely 1st April) in respect of the license fees or any other dues pertaining to the said Financial Year. The interest shall be compounded annually. A part of the month shall be reckoned as a full month for the purpose of calculation of interest. A month shall be reckoned as an English calendar month.

20.8 Final adjustment of the License fee for the year shall be made on or before 30th June of the following year, based on the gross

revenue figures, the minimum License Fee or the License fee based on Presumptive AGR, which shall be submitted by the Licensee, duly certified by the AUDITORS of the Licensee in accordance with the provision of the Companies' Act, 2013.

20.9 A reconciliation between the figures appearing in the quarterly statements submitted in terms of the Condition 20.4 of the License Agreement with those appearing in annual accounts shall be submitted along with a copy of the published annual accounts audit report and duly audited quarterly statements within 7 (seven) Calendar days of the date of signing of the audit report. The annual financial account and the statement as prescribed above shall be prepared following the norms as prescribed in Annexure-B of the respective Chapter of service authorizations. The statements and accounts submitted shall be assessed and verified by the Licensor and through its units namely Offices of Controller of Communication Accounts in respective service areas, as may be notified from time to time.

20.11 All the charges relating to spectrum shall be payable at such time(s) and in such manner as prescribed from time to time by the Licensor/WPC Wing.

20.12 All sums becoming due and payable as mentioned in this License Agreement shall be paid by the Licensee, service and service area wise, through e-transfers or demand draft or Pay Order payable at New Delhi, drawn on any Scheduled Bank, in favour of the Pay & Accounts Officer (HQ), DOT or at the designated office of the Controller of Communication Accounts in service areas as may be designated by the Licensor from time to time.

20.13 The Licensee shall separately pay the access charges for carriage of calls originating in its network but carried and

terminated in the other Telecom Service Providers' networks. The Licensee shall also separately pay charges for network resources obtained by the Licensee from other licensed service providers. This will be governed by mutual agreement and/ or determination of TRAI, if any."

B. Chapter IV of the Telecommunications (Authorisation for Provision of Principal Telecommunication Services) Rules, 2026 prescribes the framework governing payment of Authorisation Fee by service authorised entities. The relevant provisions are reproduced below:

"24. Schedule of payment

(1) The authorisation fee or spectrum charges linked to adjusted gross revenue determined under these rules shall be payable by every new authorised entity in four quarterly instalments during each financial year commencing from the first of April, and fee for any duration of authorisation that is less than a quarter shall be calculated on pro-rata basis based on actual number of days in the relevant quarter.

(2) Every new authorised entity shall make payment of the quarterly instalments of the authorisation fee and spectrum charges linked to adjusted gross revenue in the following manner, namely:

(a) the quarterly instalment in respect of each of the first three quarters of a financial year shall be paid within fifteen days of completion of the relevant quarter; and

(b) the quarterly instalment for the last quarter shall be paid in advance by the twenty-fifth of March, calculated on the basis of expected revenue for that quarter, subject to a minimum amount equal to the authorisation fee and spectrum charges linked to adjusted gross revenue paid for the previous quarter:

Provided that the new authorised entity shall adjust and pay the difference between the advance payment made for the last quarter and the actual amount duly payable for such quarter by the fifteenth of April of the next financial year.

(3) Payments pursuant to sub-rule (2) shall be calculated on the basis of revenue on accrual basis for the relevant quarter, and shall be accompanied, in such form and manner as specified on the portal, by a self-certificate and a statement of revenue for each authorisation held by the new authorised entity, that are signed and electronically verified by a representative of such new authorised entity who has been duly authorised by a board resolution and general power of attorney.

(4) Every new authorised entity shall, on or before the thirtieth of June of each calendar year—
(a) submit statement of revenue for all quarters of the previous financial year, in such form and manner as specified on the portal, duly audited and signed by its auditor appointed under the Companies Act, 2013 (18 of 2013); and
(b) make the final adjustment of the authorisation fee and spectrum charges linked to adjusted gross revenue, including applicable interest as per sub-rule (5), for the previous financial year, based on sub-rule (2).

(5) In the event of any delay in payment of authorisation fee or spectrum charges linked to adjusted gross revenue or any other dues payable by a new authorised entity beyond the period specified for such payment, such new authorized entity shall also be liable to pay interest calculated at the rate of one-year marginal cost of funds based lending rate of State Bank of India as existing at the beginning of the relevant financial year, namely first of April,

plus two per cent. compounded annually, provided that any part of a month shall be construed as a full month for the purpose of calculation of interest.

(6) Every new authorised entity shall submit a reconciliation statement between the figures appearing in the submitted quarterly statements of revenue under sub-rule (3) with those appearing in annual accounts, duly audited and signed by its auditor appointed under the Companies Act, 2013 (18 of 2013), accompanied by a copy of the published annual accounts and audit report within seven days of the date of signing of the audit report or within the timeline provided under the Companies Act, 2013 (18 of 2013) for filing of annual financial statements, whichever is earlier:

Provided that the annual financial statements, the statement of revenue and the reconciliation statement shall be prepared in accordance with such norms or orders or directions as may be specified on the portal.

(7) All sums of money becoming due and payable under these rules shall be paid by the new authorised entity, in such manner as specified on the portal."

C. The Telecommunications (Authorisation for Telecommunication Network) Rules, 2026 prescribe no Authorisation Fee for SESG Provider Authorisation and, consequently, do not give rise to any corresponding payment schedule for that authorisation.

3.61 In view of the above recommendation to levy an Authorisation Fee, the structure of payment and related financial compliance applicable to the AGR-linked Authorisation Fee needs to be specified. In this regard, the extant Unified License and the Telecommunications (Authorisation for Provision of Principal Telecommunication Services) Rules, 2026 have been

examined. Both largely follow the same structure and prescribe a detailed framework for payment of Authorisation Fee/ License Fee, including quarterly instalments, advance payment for the last quarter, subsequent adjustment, submission of Statement of Revenue, Reconciliation and audit requirements, and interest for delayed payment. In interests of consistency, the payment framework prescribed under Chapter IV of the Telecommunications (Authorisation for Provision of Principal Telecommunication Services) Rules, 2026 is considered an appropriate basis for SCN Provider Authorisation.

3.62 In view of the above**, the Authority recommends the following:**

(a) Authorisation Fee for SCN Provider Authorised entities should be 8% of the Adjusted Gross Revenue. There should be no Minimum Authorisation Fee for the same.

(b) The schedule of payment prescribed in Chapter IV of the Telecommunications (Authorisation for Provision of Principal Telecommunication Services) Rules, 2026 should be made applicable on the SCN Provider Authorised entities for payment of Authorisation Fee.

C.3 Other Financial Conditions

3.63 In addition to Authorisation Fee, other financial conditions pertaining to an Authorisation such as Minimum Equity and Net Worth requirements, Entry Fee, Bank Guarantee requirements, and Application Processing Fee are relevant for determining the overall financial obligations applicable to the proposed SCN Provider Authorisation. For examining the appropriate financial conditions for the proposed SCN Provider authorisation, reference can be made to the existing licensing framework, earlier recommendations of the Authority, and the Authorisation Rules framed under the Telecommunications Act, 2023. The applicability of such

references needs to be considered having regard to the specific scope and nature of the proposed SCN Provider authorisation. Accordingly, the Consultation Paper dated 08.04.2026 sought stakeholders' views on the appropriate financial conditions for the proposed SCN Provider Authorisation, including Minimum Equity and Minimum Net Worth, Entry Fee, Bank Guarantees and Application Processing Fee. The stakeholder comments and the Authority's analysis thereof are set out below.

Q36. What should be the Minimum Equity and Minimum Net Worth requirements for a Satellite Communication Network (SCN) Authorised entity? Please provide detailed justification in support of your response.

Q37. What should be the Entry Fee for the proposed Satellite Communication Network (SCN) Authorisation? Please provide detailed justification in support of your response.

Q41. What should be the terms and conditions for Bank Guarantees, including both Performance Bank Guarantee (PBG) and Financial Bank Guarantee (FBG), for SCN Provider Authorised entities? Please provide detailed justification in support of your response.

Q42. What should be the application processing fee for a Satellite Communication Network (SCN) authorised entity? Please provide detailed justification in support of your response.

Q43. Apart from the financial provisions discussed earlier, are there any other financial terms and conditions that should be made applicable to the proposed Satellite Communication Network Authorisation? Kindly provide a detailed response with justifications.

Comments of Stakeholders on Q36, Q37, Q41, Q42 and Q43

3.64 Several stakeholders submitted that the financial conditions applicable to SCN Provider Authorised entities should reflect their role as wholesale network-layer providers rather than retail service providers. They submitted that SCN entities would not serve the end-users or undertake subscriber acquisition, retail billing, customer support and consumer-level QoS obligations. Accordingly, stakeholders favoured minimal or no Minimum Equity, Minimum Net Worth, Entry Fee and Bank Guarantee requirements, particularly during the nascent stage of the satellite sector.

3.65 On Minimum Equity and Minimum Net Worth, several stakeholders proposed that no minimum thresholds be prescribed, with financial, technical and managerial capability instead assessed through business plans, deployment commitments and demonstrated ability to meet regulatory obligations. Others supported moderate thresholds to ensure financially credible entities, deter speculative applications, spectrum hoarding and non-deployment, and provide confidence to Service Authorised entities relying on SCNaaS. Suggested thresholds included Minimum Equity of Rs. 10 crore and Minimum Net Worth of Rs. 25 crore, Minimum Equity and Minimum Net Worth of around Rs. 25-30 crore, or benchmarking with existing authorisations, suitably calibrated to the network-only nature of SCN operations. One stakeholder suggested that minimum equity and net worth requirements can be aligned with those prescribed for Internet Service Authorisation for data services, while requirements for entities providing voice services via MSS should align with Access Service Authorisation.

3.66 Regarding the Entry Fee and Application Processing Fee, stakeholders broadly favoured nominal, one-time and cost-oriented charges rather than revenue-generating fees. They suggested benchmarking these against comparable network Authorisations rather than retail service Authorisations. Suggested Entry Fee levels included Rs. 10 lakh and Rs. 1 crore, while some stakeholders proposed waiver or a nominal fee for narrowband IoT services. For application processing, suggestions included

a nominal fee of around Rs. 10,000 largely oriented towards cost recovery. Stakeholders considered lower or waived charges important for encouraging participation by smaller operators and new entrants and for avoiding additional financial burdens alongside infrastructure investment, Authorisation fees and spectrum-related charges.

3.67 On PBG and FBG, several stakeholders recommended that both should be dispensed with for SCN Provider Authorised entities, given their network-layer and wholesale character and absence of direct consumer-facing obligations. They submitted that Bank Guarantees could block capital otherwise available for infrastructure, innovation and network expansion, while substantial investment in satellites, gateways, baseband systems and connectivity infrastructure itself demonstrates long-term commercial commitment. If bank guarantees are retained, stakeholders suggested that they should be proportionate to the scale and nature of the SCN business, benchmarked against comparable network authorisations and limited to a modest level, such as one or two times the applicable Authorisation Fee. Few stakeholders have also proposed alternative mechanisms to Bank Guarantees, including regulatory oversight, compliance reporting, undertakings by authorised entities, and other proportionate enforcement mechanisms. One stakeholder suggested that undertaking on non-judicial stamp paper for payment of dues could adequately safeguard Government interests without blocking operator capital.

Analysis of issues raised through Q36, Q37, Q41, Q42 and Q43

3.68 Broadly, stakeholders have sought lighter financial conditions on account of the network-layer nature of the proposed SCN Provider authorisation, under which the SCN Provider Authorised entity would establish and operate a satellite communication network and provide Network-as-a-Service to Service Authorised entities, rather than provide telecommunication services directly to end users. The Authority has

considered the comments and broadly agrees that the financial conditions for SCN Provider Authorisation need to be determined having regard to the nature and scope of the proposed network-layer authorisation, while also considering regulatory comparison with financial conditions for other satellite-based network or Service Authorised entities.

3.69 Some stakeholders have suggested that NIL Minimum Equity, Minimum Net Worth, Entry Fee or Bank Guarantee should be prescribed for SCN Provider Authorised entities, considering the network-layer and wholesale nature of the proposed Authorisation. The Authority recognises the need to avoid financial conditions that may create an undue barrier to entry, particularly in a nascent and capital-intensive sector. At the same time, prescribing NIL financial requirements may also facilitate potential entrants that do not possess adequate financial capacity or a genuine commitment to establish and operate an SCN, and may increase the risk of speculative or non-serious applications and subsequent deployment challenges. Minimum Equity and Minimum Net Worth requirements provide an objective indication of the financial capacity and continuing commitment of an authorised entity, while an Entry Fee and Application Processing Fee may provide a safeguard against non-serious applications and recover the administrative costs associated with processing and grant of Authorisation. Accordingly, these requirements should not be viewed merely as barriers to entry, but as proportionate safeguards to balance ease of entry with financial credibility, while taking due account of the network-only nature of the SCN Provider authorisation.

3.70 As regards Bank Guarantees, the Authority has examined the stakeholders' submissions that Bank Guarantees may unnecessarily lock up capital that could otherwise be deployed towards network establishment and expansion. In this regard, the Authority has also examined the existing Unified Licensing Regime as well as the Telecommunications (Authorisation for Provision of Principal Telecommunication Services) Rules, 2026 and Telecommunications

(Authorisations for Telecommunication Network) Rules, 2026 for appropriate procedures regarding the deposit, maintenance and renewals of Bank Guarantees as well as the amount of Bank Guarantee required:

A. It is noted that, under the extant Unified License framework, separate Performance Bank Guarantees (PBGs) and Financial Bank Guarantees (FBGs) are prescribed. The Telecom Reforms of 2021 have significantly rationalised the Bank Guarantee framework. Among other reforms related to submission & maintenance, the amount of FBGs held against License Fee and Spectrum Charges payable for two quarters and other dues not otherwise securitized and the PBGs held as per the License Agreement, were reduced to 20% of the then prevailing stipulated requirements. These reforms have to a large extent already addressed the concerns regarding the effect of bank guarantees on availability of capital.

B. Further, with the transition towards the Authorisation framework under the Telecommunications Act, 2023, the current Telecommunications (Authorisation for Provision of Principal Telecommunication Services) Rules, 2026 and Telecommunications (Authorisations for Telecommunication Network) Rules, 2026 provide for a single Bank Guarantee rather than separate PBG and FBG. The governing provisions for Bank Guarantees are placed below:

> *25. Guarantee requirements for authorisation.—*
> *(1) Every new authorised entity shall, for the purpose specified in sub-rule (2), submit an unconditional and irrevocable guarantee, in such form and manner as specified on the portal, of any of the following types, namely:*
> > *(a) a bank guarantee from any scheduled commercial bank or public financial institution, with a minimum validity period of one year from the date of its issuance;*
> > *(b) a performance bond, issued by an Indian insurance company, in accordance with the guidelines made under the*

Insurance Regulatory and Development Authority Act, 1999 (41 of 1999), with a minimum validity period of one year from the date of its issuance; or

(c) non-interest-bearing cash deposit with the Central Government.

(2) The purpose of the guarantee as specified in sub-rule (1) is to provide security for compliance of all the terms and conditions of the authorisation, including but not limited to payment of authorisation fee, spectrum charges linked to adjusted gross revenue, penalty imposed for contravention or breach of any of the terms and conditions of the authorisation or non-compliance of the orders or directions or guidelines issued by the Central Government and any other dues payable under the authorisation.

(3) The guarantee submitted under sub-rule (1) shall be subject to annual review by the Central Government and the new authorised entity shall maintain a valid guarantee throughout the duration of authorisation, or until all dues under the authorisation are cleared, whichever is later:

Provided that the initial guarantee pursuant to the letter of intent shall be for the amount as specified in respect of each relevant authorisation in Schedule A or for an amount referred to in sub-rule (6) of rule 6, and for each subsequent year of authorisation, the guarantee shall be for an amount determined by the Central Government, based on the higher of— (a) the amount of initial guarantee as specified in respect of each relevant authorisation in Schedule A; or

(b) twenty per cent. of combined estimated sum, calculated in accordance with the procedure as may be specified on the portal, of the following, namely:—

(i) authorisation fee payable for two quarters;
(ii) spectrum charges linked to adjusted gross revenue payable for two quarters; and
(iii) any other dues that are not otherwise secured.

(4) Every new authorised entity shall extend the validity period of the guarantee submitted under this rule by a minimum of one year, at least one month prior to the date of its expiry, without any demand or notice from the Central Government.

(5) Failure to maintain a valid guarantee at any time throughout the duration of authorisation, or until all dues under the authorisation are cleared, whichever is later, shall entitle the Central Government to encash the bank guarantee, claim the performance bond or appropriate the cash deposit, without any notice to the new authorised entity

Thus, in the new Authorisations framework, the amount of the continuing Bank Guarantee has been kept in line with the Telecom Reforms of 2021 i.e. at 20% of combined estimated sum of Authorisation Fee & Spectrum Charges payable for two quarters and any other dues not otherwise securitized.

3.71 On examination of the above facts, it is clear that requiring separate PBG and FBG for an SCN Provider Authorised entity, as per the extant Unified Licensing Regime, would make the provisions inconsistent with the new Authorisations framework, which is also going to be the guiding regime in the future and also govern the SCN Provider Authorisation. Thus, the Authority considers that a single Bank Guarantee is appropriate for the SCN Provider authorisation as well. Further, again for purposes of consistency with the overall Authorisations framework, the maintenance of Bank Guarantee, including the amount, renewal, review etc., over the lifetime of the SCN Provider Authorised entity should also be governed by

the existing provisions of the Telecommunications (Authorisation for Provision of Principal Telecommunication Services) Rules, 2026 and Telecommunications (Authorisations for Telecommunication Network) Rules, 2026.

Further, question remains regarding determination of appropriate amount of the Initial Bank Guarantee, which is dealt with below, along with examination of the other financial conditions of Minimum Equity, Minimum Net Worth, Entry Fee and Application Processing Fee.

3.72 In this regard, the following relevant past Recommendations and extant Licensing/ Authorisations provisions are noted:

A. In its Recommendations dated 19.08.2021 on *"Enabling Unbundling of Different Layers Through Differential Licensing"*, the Authority considered the regulatory framework for the proposed Access Network Provider (ANP), including the question of differential regulatory levies for a network-only entity. The Authority observed the following:

"2.96 The Authority concurs with the views of the stakeholders that there is a need of rationalization of regulatory levies; however, for ordered growth of the sector, level playing needs to be maintained between similar players in the market. Therefore, any change in levies for Network only layer should also be made for UL licensees. Prescription of differential (reduced) levies for Network Operator could create a possibility of arbitrage. Thus, to maintain level-playing field and to mitigate any possibility of arbitrage opportunity, it is important that the Government taxes and levies are kept same for the existing (integrated) licensing regime and proposed unbundled license regime. Therefore, the Authority recommends that the License Fee and Spectrum Usage charges applicable for the Access Network Provider Authorization should be the same as that applicable to the Access Service Authorization under Unified License.

2.97 Further, since scope of network provider is limited to provision of network and it does not include provision of service directly to the subscribers, the financial conditions such as entry fee, net worth requirement, bank guarantee, etc., for the Access Network authorization should be rationalized accordingly and be kept slightly lower than that of Access Service authorization under Unified License. It is noted that not much time has elapsed after introduction of existing licensing regime (UL was introduced in 2013 and UL (VNO) in 2016), wherein the requirement of entry fee, net worth requirement, bank guarantee, etc., were also mentioned. Creation of separate authorization for Access Network Provider is an attempt to segregate network only layer from the integrated (Network + Service) layer for Access service provision, and service delivery layer has already been introduced in 2016 in the form of VNO. Since, the combined scope of Access Network Provider and UL-VNO (Access service) is equal to the scope of a Licensee with Access Service authorization under UL, the Authority is of the view that the financial conditions' requirements such as Minimum Equity, Minimum Net worth, Entry Fee, and FBG/PBG requirements for the proposed Access Network provider authorization may be arrived at by deducting the amounts prescribed for UL (VNO-Access Service) from the amount prescribed for UL-Access Service authorization.

2.98 In view of the above, the Authority recommends that since the combined scope of Access Network Provider and UL-VNO (Access service) is equal to the scope of a Licensee with Access Service authorization under UL, the Minimum Equity, Minimum Net worth, Entry Fee and FBG/PBG requirements for the proposed Access Network provider authorization may be arrived at by deducting the amounts prescribed for UL (VNO-Access Service) from the amount prescribed for UL-Access Service authorization."

Thus, in regard to the other financial conditions, the Authority recognized that these financial conditions applicable to the proposed ANP, a network-only entity, should be lower than those applicable to ASP, the corresponding integrated Service Authorised entity, having regard to the limited scope of activities of the network entity compared to an integrated Service Authorised entity. The Authority recommended that since the combined scope of the proposed ANP and UL-VNO-Access Service was equivalent to the scope of the UL Access Service, the Minimum Equity, Minimum Net Worth, Entry Fee and FBG/PBG requirements for the ANP Authorisation could be arrived at by deducting the corresponding requirements prescribed for UL-VNO (Access Service) authorization from those prescribed for the UL Access Service authorisation.

B. The Authority has also considered the financial conditions recommended for the Satellite Earth Station Gateway (SESG) Provider Authorisation in its Recommendations dated 29.11.2022 on *"Licensing Framework for Establishing and Operating Satellite Earth Station Gateway (SESG)"*, and subsequently in its Recommendations dated 17.02.2025 on *"Terms and Conditions of Network Authorisations to be Granted Under the Telecommunications Act, 2023"*. The Authority had recommended relatively light financial conditions for SESG Provider Authorisation, including NIL Minimum Equity and Minimum Net Worth, NIL PBG/FBG, an Entry Fee of Rs. 10 lakh and an Application Processing Fee of Rs. 10,000.

Following the Recommendations, the Telecommunications (Authorisations for Telecommunication Network) Rules, 2026 in schedule A have prescribed the following financial conditions, apart from NIL Minimum Equity & Networth requirements, for Network authorisations including SESG Provider Authorisation as follows:

Table 3.1

PROCESSING FEE, ENTRY FEE, AND INITIAL GUARANTEE FOR AUTHORISATIONS FOR TELECOMMUNICATION NETWORKS

Sl. N	Network Authorisation	Entry fee (in Rs.)	Initial Guarantee (in Rs.)	Processing fee (in Rs.)
1	Infrastructure provider authorisation	NIL	NIL	10,000
2	Digital connectivity infrastructure provider authorisation	10 Lakh	NIL	10,000
3	Internet exchange point provider authorisation	NIL	NIL	10,000
4	Satellite earth station gateway provider authorisation	10 Lakh	NIL	10,000
5	Cloud-hosted telecommunication network provider authorisation	10 Lakh	NIL	10,000
6	Mobile number portability provider authorisation	50 Lakh	40 Lakh	10,000

As discussed earlier, the SESG Provider Authorisation is substantially narrower in scope than the proposed SCN Provider Authorisation. The SCN Provider Authorisation framework contemplates establishment and operation of a satellite communication network, eligibility for assignment of satellite spectrum and provision of end-to-end network capabilities on a Network-as-a-Service basis to Service Authorised entities. In contrast, the SESG framework is principally concerned with establishment and operation of a satellite earth station gateway. Therefore, while the financial conditions applicable to SESG demonstrate that lighter conditions

are appropriate for network-layer authorisations, the financial conditions for SESG Provider Authorisation cannot be adopted as is for the proposed SCN Provider Authorisation.

3.73 The regulatory position taken for financial obligations of standalone network entities vis-à-vis integrated Service Authorised entities in Recommendations dated 19.08.2021 was taken with regard to determining the framework for proposed Access Network provider (ANP) Authorisation in comparison to existing Access Service Provider License/ Authorisation. However, the principle of keeping the financial obligations of standalone network authorization lower than that of integrated service authorization, in consonance with the respective scope of activities, can be helpful in determining the financial obligations for SCN Provider Authorisation as well. As mentioned above, the Recommendations dated 19.08.2021 also provide a basis for determining the extent of rationalization of financial obligations for pure network authorization vis-à-vis integrated service authorization. The Authority had observed that the combined scope of the proposed Access Network Provider (ANP), a pure network layer authorisation and UL-VNO (Access Service), a pure service layer authorization, was equivalent to the scope of the existing Access Service Provider (ASP) Authorisation, which was an integrated service and network authorization operating at both the network and service layers. Accordingly, the Authority recommended that the financial conditions for the ANP Authorisation could be arrived at by deducting the corresponding financial conditions prescribed for UL-VNO (Access Service) from those prescribed for the UL Access Service Authorisation.

Thus, the Recommendations dated 19.08.2021 provide both the principle that financial conditions for a network-only authorisation should be lower than that of integrated service authorisation, and the approach for determining the reduction by reference to the scope of activities under integrated service & network authorization, standalone network authorization and standalone service authorization.

3.74 Since the proposed SCN Provider authorisation also belongs to the network layer, hence the financial conditions for this new Authorisation can be kept appropriately lower in comparison with the financial conditions of satellite based service authorisations, using the principles espoused in the Recommendations dated 19.08.2021, having regard to the limited scope of activities of this network only entity compared to an integrated Service Authorised entity. Having established this guiding framework based on Recommendations dated 19.08.2021, the Authority has examined the financial conditions applicable to or recommended for relevant satellite-based service authorisations to identify an appropriate benchmark for determining the financial conditions of the proposed SCN Provider Authorisation.

3.75 In this regard, the financial conditions applicable for GMPCS and VSAT services under the Unified License, the financial conditions recommended for the Satellite-based Telecommunication Service Authorisation in the Recommendations dated 18.09.2024, and the financial conditions prescribed for Principal Telecommunication Services under the Telecommunications (Authorisation for Provision of Principal Telecommunication Services) Rules, 2026, have been examined:

A. The Unified License has prescribed Application Processing Fee, Entry Fee and Bank Guarantee and Minimum Equity and Minimum Networth requirements for various service Authorisations. The financial conditions prescribed in the Unified License, for the relevant service Authorisations viz. Commercial VSAT & GMPCS, are given below:

Table 3.2

Details of Minimum Equity, Minimum Networth, Entry Fee, PBG, FBG and Application Processing Fee for various service authorisations

Sl No.	Service	Minimum Equity (Rs)	Minimum Networth (Rs)	Entry Fee (Rs)	PBG (Rs)	FBG (Rs)	Application Processing Fee (Rs)
1	VSAT (National Area)	Nil	Nil	30 lakh	10 lakh	6 lakh	10000
2	GMPCS (National Area)	2.5 crore	2.5 crore	1 crore	50 lakh	20 lakh	10000

B. The Authority's Recommendations dated 18.09.2024 on *"Framework for Service Authorisations to be Granted under the Telecommunications Act, 2023"* proposed the merger of the GMPCS and VSAT Authorisations into a Satellite-based Telecommunication Service Authorisation. The financial conditions prescribed for the proposed Satellite-based Telecommunication Service Authorisation is given below:

Table 3.3

Details of financial conditions Proposed Satellite-based Telecommunication Service Authorisation (as per TRAI Recommendations dated 18.09.2024)

Sl No.	Service Authorisation	Minimum Equity (Rs.)	Minimum Networth (Rs)	BG for the initial year (Rs)	Entry fee (Rs)	Application processing fee (Rs.)
1	Proposed Satellite-based Telecommunication Service Authorisation (as per TRAI Recommendations dated 18.09.2024)	Rs 1 crore	Rs 1 crore	Rs 50 lakh	Rs 50 lakh	Rs 10,000

C. The Telecommunications (Authorisation for Provision of Principal Telecommunication Services) Rules, 2026 prescribe financial conditions for Principal Telecommunication Service Authorisations, including those for Network Service Operators and Virtual Network Operators. The relevant provisions in Schedules A and C are given below:

Table 3.4

SCHEDULE A & C of Telecommunications (Authorisation for Provision of Principal Telecommunication Services) Rules, 2026

Sl. No.	Category of principal telecommunication service	Service Authorisation	Service Area	Processing Fee (in Rs.) per Authorisation	Entry Fee (in Rs.) per Authorisation	Initial Guarantee (in Rs.) per Authorisation	Minimum Equity (in Rs.) per Authorisation	Minimum Networth (in Rs.) per Authorisation
1.	Principal Telecommunication Service (network service operator)	Unified service authorisation	National service area	1 lakh	12 crores	44 crores	25 crores	25 crores
2.		Access service authorisation	Telecom circle or metro service area	10,000	50 lakh (25 lakh for North East and Jammu and Kashmir)	2 crores	2.5 crores	2.5 crores
3.		Internet service authorisation	National service area	10,000	10 lakh	4 lakh	10 Lakh	Nil
4.		Internet service	Telecom circle or metro	10,000	50,000 (25,000 for North East and	20,000	1 Lakh	Nil

		authorisation	service area		Jammu and Kashmir)			
5.		Long distance service authorisation	National service area	10,000	1 crore	1 crore	2.5 Crores	2.5 crores
6.		Unified service authorisation	National service area	1 lakh	3 crores	4.4 crores	10 crores	10 crores
7.		Access service authorisation	Telecom circle or metro service area	10,000	12.5 lakh (6.25 lakh for North East and Jammu and Kashmir)	20 lakh	1 crore	1 crore
8.	Principal Telecommunication Service (virtual network operator)	Wireline access service authorisation	Telecom circle or metro service area	10,000	50,000 (25,000 for North East and Jammu and Kashmir)	10,000	1 lakh	Nil
9.		Internet service authorisation	National service area	10,000	10 lakh	1 lakh	10 lakh	Nil

10		Internet service authorisation	Telecom circle or metro service area	10,000	50,000 (25,000 for North East and Jammu and Kashmir)	10,000	1 lakh	Nil
11		Long distance service authorisation	National service area	10,000	25 lakh	50 lakh	1 crore	1 crore

It is noted that the Telecommunications (Authorisation for Provision of Principal Telecommunication Services) Rules, 2026, do not prescribe a separate Satellite-based Telecommunication Service Authorisation as recommended by the Authority in its Recommendations dated 18.09.2024. Instead, holders of Unified Service, Access Service, Internet Service and Long-Distance Service Authorisations have been permitted to provide services within the scope of their respective authorisations through satellite networks. Consequently, the Rules do not have any separate financial conditions for a distinct satellite based service authorization which can be used as the service-layer benchmark for determining the financial conditions of the proposed SCN Provider Authorisation.

3.76 As mentioned above, the need to determine an appropriate service layer authorisation as a guiding framework arises in view of the principle espoused in the Recommendations dated 19.08.2021 for comparison of integrated Service Authorised entity and standalone network entity. In summary, the SESG Provider Authorisation is not considered as an appropriate benchmark since it's a network layer authorisation whose scope is substantially narrower compared to SCN Provider authorisation.

Second, the Telecommunications (Authorisation for Provision of Principal Telecommunication Services) Rules, 2026 do not prescribe a separate satellite-based service authorisation. Accordingly, it is considered that the financial conditions proposed in Recommendations dated 18.09.2024 for the Satellite-based Telecommunication Service Authorisation provide an appropriate service-layer benchmark for determining the financial conditions of the proposed SCN Provider Authorisation.

3.77 As discussed earlier, having established that the financial conditions for proposed SCN provider authorisation should be appropriately lower than the financial conditions proposed in Recommendations dated 18.09.2024 for the Satellite-based Telecommunication Service Authorisation, the next issue is to determine the proportionate extent to which the financial conditions applicable to the satellite-based telecom service authorisation should be reduced to arrive at the financial conditions applicable for the proposed SCN Provider Authorisation. As discussed earlier, the Recommendations dated 19.08.2021 also provide a basis for determining the extent of such rationalization applicable to a Network entity vis-à-vis an integrated Service Authorised entity, by referring to the scope of permitted services. For the appropriate proportionate reduction, we could look at the financial conditions of the Access Service Authorisation (NSO) and the Access Service Authorisation (VNO) under the Telecommunications (Authorisation for provision of Principal Telecommunication Services) Rules, 2026. An ASP-VNO, a pure Service Authorised entity, provides services to end users using the network capabilities leased from the ASP-NSO, which is an integrated entity operating both the network and service layers. It is therefore considered that the extent of proportionate reduction in financial conditions for standalone network authorisation vis-à-vis integrated service authorization could be determined by deducting the financial conditions applicable to ASP VNO authorisation from those applicable to ASP NSO Authorisation, thereby arriving at the financial conditions applicable to the

proposed ANP Authorisation. The proportionate percentage reduction in the financial conditions is given below:

Table 3.5

ENTRY FEE, INITIAL GUARANTEE, MINIMUM EQUITY & MINIMUM NETWORTH for proposed ANP Authorisation

S. No.	Authorisation	Entry Fee (in Rs.)	Initial Guarantee (in Rs.)	Minimum Equity (in Rs.)	Minimum Net worth (in Rs.)
1	ASP NSO	50,00,000	2,00,00,000	2,50,00,000	2,50,00,000
2	ASP VNO	12,50,000	20,00,000	1,00,00,000	1,00,00,000
3	Proposed ANP Authorisation (as per Recommendation dated 19.08.2021) (1-2)	37,50,000	1,80,00,000	1,50,00,000	1,50,00,000
	% Reduction [(1-3)/1]*100]	25%	10%	40%	40%

3.78 The table above shows the hypothetical financial conditions for the proposed ANP Authorisation derived by deducting the amounts prescribed under the financial conditions applicable to existing ASP NSO Authorisation from those applicable to existing ASP VNO Authorisation, both taken from the Telecommunications (Authorisation for provision of Principal Telecommunication Services) Rules, 2026. These derived financial conditions of the proposed ANP Authorisation are then compared with those of existing ASP NSO Authorisation to arrive at the percentage reduction applicable to proposed ANP Authorisation vis-à-vis existing ASP NSO Authorisation.

Further, in line with the principles and approach contained in the Recommendations dated 19.08.2021, the proportion of percentage reduction observed in the financial conditions applicable to the proposed ANP Authorisation (derived as per approach contained in Recommendations dated 19.08.2021) vis-a-vis ASP-NSO Authorisation under the Telecommunications (Authorisation for Provision of Principal Telecommunication Services) Rules, 2026, are held as a reasonable basis for determining proportionate reduction in the financial conditions of proposed Satellite based Telecom Service Authorisation as per Recommendations dated 18.09.2024, to arrive at the financial conditions applicable to the proposed SCN Provider Authorisation. The financial conditions applicable to the SCN Provider Authorisation after applying the proportionate reduction to the financial conditions prescribed for the Satellite-based Telecommunication Service Authorisation in the Recommendations dated 18.09.2024 are given below:

Table 3.6

ENTRY FEE, INITIAL GUARANTEE, MINIMUM EQUITY & MINIMUM NETWORTH for proposed SCN Provider Authorisation					
S. No.	**Authorisation**	**Entry Fee (in Rs.)**	**Initial Guarantee (in Rs.)**	**Minimum Equity (in Rs.)**	**Minimum Net worth (in Rs.)**
1.	**Satellite-based Telecommunication Service Authorisation (proposed as per Recommendations dated 18.09.2024)**	**50,00,000**	**50,00,000**	**1,00,00,000**	**1,00,00,000**
2.	**Proportionate % Reduction**	**25%**	**10%**	**40%**	**40%**
3.	**SCN Provider Authorisation**	**37,50,000**	**45,00,000**	**60,00,000**	**60,00,000**

The above approach ensures that the Recommendations dated 18.09.2024 regarding proposed Satellite-based Telecommunication Service Authorisation remain the substantive benchmark for the proposed SCN Provider Authorised entity under examination, while the comparison of the financial conditions applicable to ASP-NSO Authorisation and proposed ANP (as per Recommendations dated 19.08.2021) is referred to for determining the extent of proportionate reduction to be applied for arriving at financial conditions for the proposed SCN Provider Authorisation, in line with principles established in the Recommendations dated 19.08.2021 regarding the financial framework applicable to a standalone network authorisation vis-à-vis a Integrated service authorisation.

3.79 Regarding Entry Fee, there is also the further question of need for Entry fee at the time of renewal. In its Recommendations on "Rationalization of Entry Fee and Bank Guarantees" dated 19.09.2023, the Authority has recommended that entry fee should be levied only at the time of entry and not at the time of renewal of license. The same has also been endorsed in the Recommendations on Authorisations framework dated 18.09.2024 & 17.02.2025. On perusal of the Telecommunications (Authorisation for provision of Principal Telecommunication Services) Rules, 2026 and Telecommunications (Authorisations for Telecommunication Network) Rules, 2026, it is noted that there is no particular rule regarding Entry Fee requirement at the time of renewal. Accordingly, for the proposed SCN Provider Authorised entity as well, it is recommended that Entry Fee should be levied only at the time of entry and not at the time of renewal of license.

3.80 The Application Processing Fee for SCN Provider Authorisation may continue to be Rs. 10,000, as recommended for the proposed Satellite-based Telecommunication Service Authorisation in the Recommendations dated 18.09.2024, since it is an administrative processing charge and is

distinct from the financial conditions that have been determined to be proportionate with the scope of operation of an authorisation.

3.81 In view of the above, **the Authority recommends the following:**

(a) An entity seeking SCN Provider Authorisation should be required to have Minimum Equity of Rs. 60 Lakhs and a Minimum Net Worth of Rs. 60 Lakhs.

(b) The Entry Fee for SCN Provider Authorisation should be Rs. 37,50,000.

(c) The Entry Fee for SCN Provider Authorisation should be levied only at the time of grant of authorisation and not at the time of renewal of the authorisation.

(d) The Application Processing fee for SCN Provider Authorisation should be Rs. 10,000.

(e) The amount of initial Bank Guarantee (BG) should be Rs. 45,00,000. Further, the continued maintenance of Bank Guarantee during lifetime of a SCN Provider Authorised entity should be subject to the detailed provisions/ conditions included in the Financial Conditions contained in Chapter IV of Telecommunications (Authorisation for Provision of Principal Telecommunication Services) Rules, 2026.

D. Spectrum Charges

3.82 At Section B.3 of Chapter II, the Authority has recommended that four types of services, namely, GSO/NGSO based FSS, GSO/NGSO based MSS, D2D service using MSS spectrum, and D2D service using IMT spectrum, should be permitted to be provided by Service Authorised entities using

SCNs established by SCN Provider Authorised entities. For provision of these services, SCN Provider Authorised entities may seek assignment of (a) FSS spectrum for feeder links; and (b) FSS and/or MSS spectrum for user links from the Government. In case of D2D services, D2D using MSS spectrum would require MSS spectrum for the user link, which could be assigned to either the SCN Provider Authorised entity or the Service Authorised entity, whereas D2D using IMT spectrum would use IMT spectrum assigned to the Service Authorised entity in the user link. An SCN Provider Authorised entity may also utilise spectrum assigned to a Service Authorised entity for the limited purpose of providing SCNaaS to that entity.

3.83 The Consultation Paper dated 08.04.2026 sought stakeholder comments on spectrum charging under three broad scenarios. First, determination of spectrum charges where FSS/MSS spectrum is assigned to an SCN Provider Authorised entity for provision of SCNaaS to Service Authorised entity providing FSS/MSS services to end-users. Second, determination of spectrum charges where MSS spectrum is assigned to an SCN Provider Authorised entity for provision of SCNaaS to Service Authorised entity providing D2D services using MSS spectrum to end user. Third, determination of any additional spectrum charges on IMT Spectrum assigned to a Service Authorised entity, where such IMT spectrum is utilised for provision of D2D services by Service Authorised entity utilizing SCNaaS from the SCN Provider Authorised entity. The spectrum charging framework in case of usage of SCNaaS for provisioning of conventional FSS/MSS is dealt with in the immediate sub-section, while the same for D2D services using MSS spectrum and D2D services using IMT spectrum is dealt with in the succeeding sub-sections.

D.1 Spectrum Charging for SCN Provider Authorised entity in case SCNaaS is used for providing conventional FSS/ MSS:

3.84 The relevant questions, stakeholder comments and the Authority's analysis thereof, are set out below:

Q28. In case FSS/MSS or any other spectrum is assigned to the Satellite Communication Network (SCN) Authorised entities for provisioning of SCNaaS to Service Authorised entities, what should be the broad financial terms and conditions of such an assignment?

Q29. Should the spectrum charges for Satellite Communication Network (SCN) Authorised entities be based on the spectrum charging framework as per the Recommendations dated 09.05.2025 applicable for satellite-based commercial communication services? Accordingly, what should be the appropriate spectrum charging framework and spectrum charges applicable for an SCN Provider Authorised entity? Please provide your response with detailed justification.

Q30 If spectrum charges are to be levied on the basis of AGR of the SCN Provider Authorised entity, are there any specific operational/non-operational revenue items that should be excluded from AGR for the purpose of determination of spectrum charges? Please provide your response with detailed justification.

Q31 If the spectrum charges are not to be levied on the basis of AGR of the SCN Provider Authorised entity, what should be the appropriate spectrum charging mechanism and the corresponding level of spectrum charges applicable to SCN Provider Authorised entities? Please provide your response with detailed justification.

Comments of stakeholders on Q28, Q29, Q30 and Q31

3.85 In response to Q28, several stakeholders have submitted that the financial terms and conditions for assignment of FSS, MSS or other satellite spectrum to SCN Provider Authorised entities should reflect the wholesale, network-enablement nature of SCN operations and support investment, long-term regulatory certainty and efficient spectrum use. Stakeholders favoured proportionate, predictable and investment-friendly charges, with many supporting an AGR-based revenue-sharing mechanism, although suggested rates varied, including around 1% of AGR on one hand and adoption of the Authority's Recommendations dated 09.05.2025 on the other. In contrast, some stakeholders favoured a cost-recovery approach, limiting charges to the administrative costs of spectrum management and regulation. They advocated a light-touch, cost-recovery-based approach, stating that satellite spectrum should not be valued using terrestrial IMT spectrum prices or auction benchmarks given the differences in technical characteristics, business models, cost structures and market objectives. They suggested limiting charges to regulatory, administrative and spectrum-management costs, through a fixed annual fee or modest capacity-based/per-MHz charge.

3.86 Several stakeholders suggested that SCN Provider Authorised entities should generally be assigned only feeder-link spectrum, with user-link spectrum remaining with Service Authorised entities, and that feeder-link charges should be minimal given their backhaul-like and limited geographic use. A few stakeholders also proposed permitting multi-tenant/shared use of spectrum for serving multiple Service Authorised entities, with spectrum charges levied only once at the SCN level, irrespective of the number of downstream service providers.

3.87 In response to Q29, several stakeholders supported using the spectrum charging framework recommended by the Authority in its Recommendations dated 09.05.2025 as the starting point, citing

regulatory continuity and certainty, while suggesting modifications to reflect the wholesale and network-layer nature of SCN Provider Authorised entities, particularly where only feeder-link spectrum is assigned. Several stakeholders expressed differing views on the level and basis of spectrum charges. Some supported a cost-recovery model, while others favoured low AGR-linked charges, generally in the range of 0.1% to 1% of AGR, particularly during the initial growth phase, with review after five years. For emerging satellite IoT and narrowband services, some stakeholders suggested an initial waiver followed by modest fixed annual charges based on service type and scale.

3.88 In response to Q30, stakeholders have generally submitted that, where spectrum charges are based on AGR, the AGR base should cover only revenues directly attributable to SCN operations and should reflect the wholesale, network-layer nature of SCN Provider Authorisation. A large number of stakeholders recommended excluding pass-through transactions and recoveries, including satellite space-segment lease charges, gateway/teleport usage charges, interconnection and transit charges, statutory levies, and other wholesale input costs. Revenues already subjected to license or spectrum charges elsewhere in the value chain were also proposed for exclusion to avoid multiple charging of the same economic transaction.

3.89 Some stakeholders also proposed excluding revenues unrelated to spectrum or SCN operations, such as non-satellite and non-telecom activities, hardware sales/leasing, installation and maintenance, co-location, value-added services not requiring spectrum, dark fibre and similar ancillary services. Stakeholders also suggested that various forms of non-operational income, such as interest, dividends, treasury income, capital gains, asset-sale proceeds, foreign exchange gains, insurance claims, grants/subsidies, extraordinary income, bad-debt recoveries, provision write-backs and non-telecom rental income, should not form part of the AGR for spectrum charging. Stakeholders suggested retaining

net revenues from SCNaaS, wholesale network capacity, managed network services, infrastructure/capacity charges, gateway support, resource management, recurring connectivity and other SCN operational activities. Some stakeholders further suggested that appropriate accounting and verification safeguards could be adopted to ensure that the treatment of such revenues and deductions remains transparent and verifiable.

3.90 In response to Q31, if spectrum charges are not to be based on AGR, stakeholders have suggested a simple, transparent, predictable and proportionate mechanism suited to the wholesale and network-oriented nature of SCN operations. In such cases, a fixed-fee or administrative pricing framework, such as a flat charge per MHz could be considered.

Analysis of the issues raised through Q28, Q29, Q30 and Q31

3.91 The Authority has examined the stakeholder views regarding the appropriate spectrum charging mechanism for spectrum assigned to SCN Provider Authorised entities for provision of SCNaaS to Service Authorised entities. Regarding the revenue base for spectrum charges, and various items of exclusions and deduction, the issue has already been dealt with under the Section on GR/ApGR/AGR above. The principal issue to address here is whether spectrum charges should be subject to a formula-based/per-MHz charge or AGR-based charges, and the quantum of the spectrum charges.

3.92 Stakeholders generally agreed that the financial framework should recognise the wholesale and network-enablement nature of the proposed SCN Provider Authorisation and promote investment, regulatory certainty, ease of doing business and transparency. The SCN Provider Authorised entity establishes and operates the satellite communication network and provides SCNaaS to Service Authorised entities, which in turn provide telecommunication services to end-users. Thus, the proposed SCN

Provider authorisation envisages operations in the network layer and provisioning of network services to Service Authorised entities, rather than providing telecommunication services directly to end-users**.** The SCN Provider Authorised entity may seek appropriate satellite spectrum, including FSS and/or MSS spectrum, for provision of SCNaaS. It may also utilise spectrum assigned to a partnering Service Authorised entity.

3.93 The treatment of spectrum charges for such a network-layer entity needs to be considered not only with reference to its role as network-as-a-service provider, but also in the context of the regulatory treatment envisaged for integrated service and unbundled shared network models. In this regard, the extant Spectrum Charging Orders, the Licensing regime and past Recommendations have been examined.

3.94 For Commercial VSAT CUG service authorisation, the spectrum charges are being levied quarterly as a percentage of Adjusted Gross Revenue (AGR), ranging from 3-4% of AGR, based on range of data rate, as per DoT's order no. R-11014/9/2001-LR dated 16th April 2003.

In this regard through the Recommendations on "Spectrum Usage Charges and Presumptive Adjusted Gross Revenue for Internet Service Providers and Commercial Very Small Aperture Terminal Service Providers" dated 07.03.2017, it was recommended that the Spectrum Usage Charges for Commercial VSAT CUG license *should not be more than 1% of AGR irrespective of the data rate*. The same has not been accepted by DoT so far.

3.95 Spectrum Charges for MSS/FSS are presently being levied as per DoT's order issued vide letter no. P-11014/34/2009-PP dated 11th December 2023 (erstwhile DoT's order dated 22nd March 2012). As per Schedule VII of the Order, spectrum charges for satellite services are levied in two parts i.e.

Part-I: Royalty Charges and

Part II: License Fee for wireless stations.

The Annual Royalty charges for satellite-based services, as specified in Part-I of Schedule VII of DOT's order dated 11th December 2023, are calculated as given below:

Annual Royalty (R) (in Rs.) = 35000 x Bs;

where (Bs) is the Bandwidth Factor for Satellite Communications. For the table on bandwidth factors corresponding to different slabs of assigned bandwidth, reference may be made to said Order placed at Annexure-3.3.

The License Fee for wireless stations operating under Satellite Services (FSS, BSS, MSS), including standby sets is specified in Part-II of Schedule VII of the Order and may be referred to from the said Order placed at Annexure-3.3.

As per the said Order, it is applicable for assignment of spectrum to the satellite-based services including Fixed Satellite Services (FSS), Broadcasting Satellite Services (BSS), Mobile satellite Services (MSS) and Earth Exploration Satellite Services (EESS).

Thus, the prevalent framework has both formula-based and revenue-based approaches for different satellite-based services, basically AGR based charging for Commercial VSAT CUG Service and Formula based charging for other types of satellite services.

3.96 The Authority examined the appropriateness of formula-based charging methodology under DoT's order dated 11.12.2023 for Satellite based commercial communication services, as well as the varying methodologies prevalent for charging, in its Recommendations dated 09.05.2025 on "Terms and Conditions for the Assignment of Spectrum for Certain Satellite-Based Commercial Communication Services". Therein, the

Authority has examined the suitability of per-MHz and formula-based charging for satellite-based commercial communication services.

The Authority noted that the valuation of terrestrial access/IMT spectrum is based on financial, market and technical parameters such as revenue, subscriber base, cost and spectrum holding, supported by historical data and market projections. Such data, however, is limited or unavailable for several satellite-based communication services based on FSS/ MSS spectrum bands, particularly in the nascent NGSO segment. Accordingly, it was felt that determining spectrum value on a per-MHz basis with limited data for FSS/ MSS bands could result in spectrum charges that do not reflect the paying capacity of satellite services, market size or revenue potential of satellite service providers and overall economic values of satellite spectrum, and could adversely affect entry, competition, investment and growth.

Further, as an alternative method, on comparability with spectrum pricing for terrestrial access spectrum, the Authority noted that satellite and terrestrial access spectrum differ substantially in their manner of utilisation, revenue potential, subscriber base and service characteristics. The market-determined prices of terrestrial access spectrum therefore cannot appropriately serve as a benchmark for satellite spectrum. Applying a spectral or technical efficiency factor derived from terrestrial spectrum would similarly not provide a reliable basis for determining the economic value of FSS/MSS spectrum. The Authority also noted that the spectrum utilised for satellite-based communication services has characteristics distinct from terrestrial access spectrum. In particular, the manner in which satellite spectrum is utilised, the relatively limited subscriber base and revenue potential of satellite services, and the nascent stage of the NGSO segment make a direct reference to terrestrial access spectrum inappropriate.

The Authority therefore considered that, given the limited availability of financial and market data and distinctness from terrestrial access spectrum, AGR-based charging would be a more appropriate approach for satellite-based commercial communication services. Such an approach links the spectrum charges to the revenue generated from spectrum use and the ability of the service provider to pay. It was also considered consistent with the AGR linked spectrum charges already applicable to Commercial VSAT and certain satellite services under the sui generis category.

Thus, following a detailed discussion with reasoned arguments, and considering all extant charging regimes and past Recommendations, the Authority had recommended moving away from current segregated modes of charging viz. AGR based for Commercial VSAT CUG Service and formula based for other MSS/ FSS such as GMPCS, towards AGR based charging mechanism for all Satellite based commercial communication services, which is tabulated below for easy reference:

Table 3.7

<table>
<tr><th>Satellite Communication Service</th><th>Annual spectrum charge (as per Recommendations dated 09.05.2025)</th></tr>
<tr><td>GSO-based Fixed Satellite Services</td><td rowspan="2">Max (4% of AGR, Annual minimum spectrum charge)</td></tr>
<tr><td>GSO/NGSO-based Mobile Satellite Services</td></tr>
<tr><td>NGSO-based Fixed Satellite Services</td><td>Max {(4% of AGR + 500 X Nu), Annual minimum spectrum charge} where Nu refers to Number of subscribers in urban areas</td></tr>
<tr><td colspan="2">Annual minimum spectrum charge = Rs. 3,500 per MHz</td></tr>
</table>

From the above table, it is observed that the level of spectrum charges recommended is uniform at 4% of AGR for all satellite communication services. In the case of NGSO-based Fixed Satellite Services, an additional per-subscriber charge of INR 500 per annum is recommended to be levied for urban areas. The detailed rationale for spectrum charges for various services can be referred to in Section C of the Recommendations dated 09.05.2025.

Further, the Authority had also recommended that the Annual Minimum Spectrum Charges for GSO/NGSO-based Fixed Satellite Services and GSO/NGSO-based Mobile Satellite Services should be Rs. 3,500 per MHz. The detailed rationale for the same can be referenced at Section C of the Recommendations dated 09.05.2025.

3.97 The above Recommendations had been considered by the DoT and a back reference dated 12.11.2025, seeking reconsideration of specific recommendations/ sub-sections of recommendations, was received by the Authority. DoT stated regarding the Recommendation no. 4.16 placed at Para 3.152 (summarising the recommendations for Spectrum charging of GSO/ NGSO based FSS & MSS) that the same has not been accepted, in light of the observations of DoT regarding NGSO based FSS & relevant *Sui-Generis*' license of BSNL. Thus, for NGSO based FSS, wherein the Authority had recommended rate of 4% of AGR with an additional spectrum charge of INR 500 per urban subscriber, DoT suggested a higher base Spectrum Charge of 5% for NGSO based FSS (instead of 4%), with a discount of 1% if a certain percentage (say 5%) of overall customers enrolled in the year are from borders/ hills/ island areas of the country. The Authority, after examination of the reference, had reiterated its recommendations regarding spectrum charges for all categories of satellite-based services.

It is pertinent to note that the Recommendations dated 09.05.2025 are presently under consideration by the DoT.

While perusing the above Recommendations in the context of the present exercise, it should be kept in mind that the above recommendations pertain to Satellite based commercial communication services, while SCN Provider Authorised entities are proposed as essentially network authorised entities which do not directly serve subscribers. Thus, they are differing in scope of service from satellite based commercial communications services which interface directly with end users.

3.98 In its Recommendations dated 19.08.2021 on "Enabling Unbundling of Different Layers Through Differential Licensing", while considering the proposed Access Network Provider (ANP), the Authority examined the possibility of applying differential levies to network-only entities. The Authority observed the following:

> *"The Authority concurs with the views of the stakeholders that there is a need of rationalization of regulatory levies; however, for ordered growth of the sector, level playing needs to be maintained between similar players in the market. Therefore, any change in levies for Network only layer should also be made for UL licensees. Prescription of differential (reduced) levies for Network Operator could create a possibility of arbitrage. Thus, to maintain level-playing field and to mitigate any possibility of arbitrage opportunity, it is important that the Government taxes and levies are kept same for the existing (integrated) licensing regime and proposed unbundled license regime. Therefore, the Authority recommends that the License Fee and Spectrum Usage charges applicable for the Access Network Provider Authorization should be the same as that applicable to the Access Service Authorization under Unified License."*

Thus, the Authority had noted the importance of maintaining a level playing field between integrated Service Authorised entities and standalone network operators in the proposed unbundled service and network regime for access services, for the orderly growth of the sector, even while emphasizing on the need for growth of Network entities and overall unbundling of network and services. The Authority observed that differential or reduced levies for a network layer entity could create a potential for regulatory arbitrage and recommended that the License Fee and Spectrum Usage Charges applicable to the proposed Access Network Provider Authorisation should be the same as those applicable to the corresponding Access Service Authorisation under the Unified License. The underlying principle was that the financial conditions should remain neutral to the manner in which the network and service functions are organised, so that unbundling of functions does not result in a differential regulatory burden.

3.99 The said Recommendations with respect to the proposed Access Network Provider (ANP) authorisation have been helpful in understanding the comparative regulatory levies of a standalone network entity and an integrated service entity and hence are a useful basis for determining the regulatory levies for SCN Provider Authorised entity. This principle of maintaining regulatory parity between vertically integrated service and unbundled shared network regime is applicable to the present exercise as well, for comparing the financial framework of standalone network entities and integrated Service Authorised entities in the satellite sector. It is considered that for maintaining a level playing field and avoidance of regulatory arbitrage, the charging framework for spectrum being used to provide satellite services should remain the same, irrespective of whether the spectrum is assigned to the integrated Service Authorised entity or the SCN Provider Authorised entity, or whether the service is being provided directly by the Service Authorised entity using its own satellite network or through the usage of network operated by a SCN Provider Authorised entity. Accordingly, the AGR-based spectrum charging

methodology recommended by the Authority on 09.05.2025 for satellite based commercial communication services by integrated Service Authorised entities, is considered an appropriate basis for determination of spectrum charges for an SCN Provider Authorised entity.

3.100 There is also a need to examine whether spectrum charges should be levied on the SCNaaS charges (revenue) earned in case SCN Provider Authorised entity is providing SCNaaS without obtaining a separate assignment of FSS and/or MSS spectrum from the Central Government for the same, and thus not using its own assigned spectrum. In examining this issue, three considerations are important.

First, the principle of regulatory parity, recognised in the Recommendations dated 19.08.2021 and discussed above, requires that the regulatory levies should not differ whether the service delivery is performed by an integrated service entity or through a shared unbundled network model. To elaborate, in the case of an integrated Service Authorised Entity providing satellite-based services to end-users, the entity would use its own satellite network and spectrum to provide such services to the end user, and it would pay spectrum charges on the whole revenue earned from such satellite service. In case of shared network model, these functions would be performed by two separate entities forming together the whole value chain: an SCN Provider Authorised Entity, which provides satellite network capability in the form of SCNaaS, and a Service Authorised Entity, which uses that network capability to provide services to end-users. Also, as noted at Section B of this Chapter, the SCNaaS charges, paid by a Service Authorised Entity to an SCN Provider Authorised Entity for availing of SCNaaS, which form the revenue for the SCN Provider Authorised entity are proposed to be allowed as deductions for the Service Authorised entity. In such a case, if this revenue earned by the SCN Provider Authorised Entity from providing SCNaaS were not charged because it does not have assigned spectrum for the arrangement and utilises spectrum assigned to the partnering

Service Authorised entity, then the overall incidence of spectrum charge for both service and network entities combined in this model would be lesser than the spectrum charge in case of an integrated Service Authorised entity. Further, it would lead to a complete exemption of Spectrum Charges on that portion of Service Authorised entity's revenue which is paid as SCNaaS charges, at end of both Service Authorised entity and SCN Provider Authorised entity, leading to unjustifiable reduction in Spectrum Charges and a loss of revenue to the Government. In such a case, thus, the regulatory treatment of integrated service and shared unbundled network models would differ on account of the manner in which the network and service functions are organised and the spectrum is utilised. Such a difference would not be consistent with the principle of regulatory parity.

Second, the SCN Provider Authorised Entity and the Service Authorised Entity perform complementary functions in the provision of satellite-based communication services to end-users. The SCN Provider Authorised Entity provides the satellite network capability required for the service, while the Service Authorised Entity uses that capability to deliver services to end-users. Where the SCN Provider Authorised Entity utilises spectrum assigned to the partnering Service Authorised Entity under a permitted commercial agreement, such utilisation forms part of the overall commercial arrangement through which the satellite-based service is delivered to end-users. Accordingly, the regulatory treatment of SCNaaS revenue should be determined having regard to the respective functions performed by the two entities in providing end-to-end satellite-based communication services.

In view of the above, it is considered that Spectrum Charges should be levied on the revenue earned by an SCN Provider Authorised Entity from providing SCNaaS, irrespective of usage of spectrum assigned to the Service Authorised entity or SCN Provider Authorised entity or both for provision of the particular SCNaaS, subject to the applicable framework

for determining the revenue base as discussed at Section on GR/ApGR/AGR and Spectrum Charges framework as prescribed.

3.101 Having established the suitability of AGR-linked spectrum charges and its applicability, the appropriate rate of spectrum charge for an SCN Provider Authorised Entity needs to be considered. As noted above, the Recommendations dated 09.05.2025 prescribe spectrum charges at 4% of AGR for GSO-based FSS as well as for GSO/NGSO-based MSS. For NGSO-based FSS, the said Recommendations prescribe spectrum charges at 4% of AGR, along with an additional per-subscriber charge of Rs. 500 per annum for urban subscribers, subject to the applicable annual minimum spectrum charge. These Recommendations dated 09.05.2025 are presently under consideration by DoT.

3.102 At this juncture, the Authority recommends upholding of principle of level playing field for avoidance of regulatory arbitrage between integrated Service Authorised entities and standalone network entities, while deciding on the Recommendations dated 09.05.2025 and the present Recommendations by DoT, as far as spectrum charging for Satellite based Commercial Communication Services and the proposed SCN Provider Authorised entities is concerned. Since the Recommendations dated 09.05.2025 involving the detailed spectrum charges for Satellite based Commercial Communication Services including for NGSO based FSS are under consideration by DoT, the Authority does not consider it appropriate to recommend the exact rate of AGR for spectrum charging for the proposed SCN Provider Authorised entities at this stage, as the detailed spectrum charging framework for proposed SCN entities would be subject to decision of DoT regarding spectrum charging for satellite based commercial communication services. Instead, the Authority recommends that the spectrum charging framework as decided by the Government for satellite based commercial communication services, based on the Recommendations dated 09.05.2025, should be applicable for the proposed SCN Provider Authorised entity as well.

3.103 The spectrum charging framework detailed in the Recommendations dated 09.05.2025 included a separate charging framework in case of NGSO based FSS. It was noted in the said Recommendations that NGSO-based FSS has certain competitive advantages over GSO-based FSS, including better coverage, lower latency, higher speeds and greater operational flexibility. Consequently, the economic value of FSS spectrum for NGSO-based FSS was expected to be higher than that for GSO-based FSS. The Authority had therefore considered that the spectrum charging for NGSO based FSS should be higher than GSO based FSS.

Further, the other major concern while recommending the spectrum charging for NGSO based FSS was also to incentivize the proliferation of NGSO based FSS in rural areas to address the substantial connectivity gap in these areas. It was acknowledged that satellite-based services are particularly important for extending connectivity to rural, remote, unserved and underserved areas, where terrestrial connectivity may be limited or unavailable. The Authority was mindful of the fact that given the relatively higher purchasing power of subscribers in urban areas compared to rural areas and hence the high demand/consumption of data in these regions, it is possible that NGSO-based FSS providers may focus more on urban areas. This could potentially undermine the goal of bridging the digital divide in rural areas. Thus, it was clear that an effort had to be made to incentivise the proliferation of NGSO based FSS in rural areas, through differential spectrum charging between the rural and urban areas for NGSO based FSS.

Thus, for keeping higher spectrum charges for NGSO based FSS vis-à-vis GSO based FSS, while incentivizing proliferation of NGSO based FSS in rural areas, there could be the following possible options:

a. Keeping the spectrum charges for NGSO based FSS in rural areas same as GSO based FSS, while increasing the spectrum charge for service

provided in urban areas – either by an additional per subscriber charge for NGSO based FSS in urban areas (as was finally included in the Recommendations dated 09.05.2025) or increasing the percentage of spectrum charge for NGSO based FSS in urban areas.

b. Conversely, the base spectrum charge for NGSO based FSS could be kept higher than GSO based FSS, and a discount could be given for service in rural areas, to bring it at same as GSO based FSS in case of these areas only.

On balance of considerations, to disincentivize diversion of satellite resources and connectivity to urban areas at the expense of rural areas, a per subscriber charge of Rs 500 for NGSO based FSS in urban areas, while exempting subscribers in rural areas from such additional charge, was proposed in the Recommendations dated 09.05.2025.

3.104 The rationale provided in the Recommendations dated 09.05.2025 for the differential charging of NGSO based FSS vis-à-vis GSO based FSS, as well as the regulatory goals of prioritizing NGSO based FSS in rural areas are equally relevant where NGSO-based FSS is provided as the end service through an SCN Provider Authorised Entity, rather than by an integrated Service Authorised entity using its own satellite network capabilities. The distinction between provision of satellite based services by an integrated Service Authorised Entity or through an SCN Provider Authorised Entity lies in the manner in which network and service functions are organised and should not impact the economic value of the spectrum being utilized or the priorities of regulation. The principle of regulatory parity requires that the higher spectrum charges for NGSO based FSS spectrum vis-à-vis GSO based FSS, with an orientation towards incentivizing its proliferation in rural areas, as applicable to the integrated Service Authorised Entity, should also be reflected in the spectrum charges applicable to an SCN Provider Authorised Entity when its SCNaaS is used for providing NGSO based FSS to end user. The objective of incentivizing focus on rural areas

for proliferation of NGSO based FSS could be diluted in case SCN Provider Authorised entities are exempted from a differential charge for urban vs rural areas in case its SCNaaS is used for providing NGSO based FSS in urban areas.

Accordingly, the differential spectrum charging for NGSO based FSS vis-à-vis GSO based FSS, with a differentiation between rural and urban areas, as would be finalized by DoT for provision of NGSO based FSS by Service Authorised entities, should also be extended to an SCN Provider Authorised Entity where the SCNaaS is utilized by the Service Authorised Entity for providing NGSO based FSS to the end users.

3.105 For operationalizing either of the two options mentioned above, the SCN Provider Authorised Entity would need to identify separately the SCNaaS revenue attributable to urban and rural/remote subscribers of the NGSO based FSS, as has been discussed in the Section C on GR/ApGR/AGR. Additionally, in case the differentiation between urban and rural areas is implemented through a per subscriber charge for urban subscribers, there would also be need to determine the number of urban subscribers for calculating the additional per subscriber charge. The related information should be furnished by the Service Authorised Entity to the SCN Provider Authorised Entity under their commercial agreement. The reporting and documentation necessary for this purpose are discussed in Section C & E of this chapter.

3.106 Further, pursuant to the recommendation at Section D.3 of Chapter II, Unified Service Authorisation, Access Service Authorisation, Internet Service Authorisation, Long Distance Service Authorisation under the new Principal Service Authorisation Rules, 2026 or Access Service authorization, ISP authorization, NLD Service authorization, Commercial VSAT CUG Service authorization and GMPCS Service authorization under Unified License or a License for Provision and Operation of Satellite Based Services Using Gateway Installed in India under '*Sui-Generis*' Category',

have been allowed to provide SCNaaS to other authorised entities or licensees permitted to use satellite networks, subject to fulfilment of the eligibility criteria for SCN Provider Authorisation by the Service Authorised entity and compliance with the applicable technical, operational, rollout and security conditions.

In order to maintain regulatory parity and a level playing field between a standalone satellite network entity and an integrated service authorised entity, the same rate of spectrum charges, as applicable for satellite based commercial communication services, has been recommended for an SCN Provider Authorised Entity as set out above. Thus, there is no need to prescribe a separate spectrum charging framework for revenue earned by existing Service Authorised Entities from provision of SCNaaS to other authorised entities, provided that the spectrum charging framework for satellite spectrum assigned to Service Authorised entities and the SCN entities is the same.

These eligible Service Authorised Entities would have multiple sources of revenue, mainly from provision of principal telecommunication services (either through their terrestrial or satellite networks) to end-users, while the charges earned from provision of SCNaaS to other authorised entities would constitute only a subset of their total revenue reported in their respective AGR. For the terrestrial network-based services, along with spectrum auction instalments for the IMT spectrum (if applicable), there would also be recurring spectrum charges, as per the mode of assignment and relevant charging orders/ guidelines. Accordingly, it is clarified that spectrum charges for satellite based services by these Service providers should be levied only on that portion of their AGR which is derived from FSS & MSS (including MSS to normal & specialized phones), and further, spectrum charges for SCNaaS provided by these service providers should be levied only on that portion of their AGR as derived from provisioning of SCNaaS, and not on their satellite service based AGR or the entire AGR.

3.107 It has been recommended in Chapter II at Para 2.167 that the FSS spectrum and MSS Frequency spectrum should be assigned to SCN Provider Authorised entities for a period of up to five years. However, considering the market conditions, the Government may extend it for a further period of up to two years. The terms and conditions, including spectrum charges, for assignment of FSS spectrum and MSS spectrum to SCN Provider Authorised entities, have also been recommended to remain valid for a period of five years from the date of notification of the policy regime by the Central Government, further extendable by a period of upto two years. Accordingly, the spectrum charging framework recommended in this section should remain valid for a period of five years from the date of notification of the policy regime by the Central Government, further extendable by a period of up to two years. Any revision in the terms and conditions, including spectrum charging, for assignment of FSS spectrum and MSS spectrum to SCN Provider Authorised entities, notified by the Central Government after a period of five years from the date of notification of the policy regime, should become applicable to all SCN Provider Authorised entities including the existing SCN Provider Authorised entities.

3.108 In view of the above, **the Authority recommends the following:**

a. Spectrum Charges for an SCN Provider Authorised entity should be based on AGR, with a differential between urban and rural areas for NGSO based FSS (which can be a per subscriber additional charge for urban area) and should have the same charging rate and framework as that applicable for satellite based commercial communication services.

b. Spectrum charges for providing satellite-based services by eligible Service Providers under existing Unified License or new Telecommunications (Authorisation for Provision of Principal Telecommunication Services) Rules 2026, should be levied only

on that portion of their AGR as derived from FSS & MSS (including MSS to normal & specialized phones).

c. Further, Spectrum charges for SCNaaS provided by eligible Service Providers should be levied only on that portion of their AGR as derived from provisioning of SCNaaS.

D.2 Spectrum Charging for SCN Provider Authorised entity in case SCNaaS is used for providing D2D using MSS Spectrum:

Comments of stakeholders were sought on the following question in the Consultation paper 08.04.2026:

Q32. In case D2D services are permitted to be provided using the MSS frequency bands such as L and S bands, what should be the appropriate spectrum charging framework for such bands when utilised for provision of D2D satellite-based services? Please provide detailed justification for your response, including the methodology for determination of such spectrum charges, if required.

Comments of Stakeholders on Q32

3.109 A majority of stakeholders supported applying the same spectrum charging framework as recommended for MSS spectrum used for traditional MSS, noting that use of MSS spectrum for D2D services does not alter its fundamental nature or classification.

3.110 Several stakeholders opposed per-device, per-user or revenue-linked charges for D2D, citing administrative complexity and increased deployment costs, particularly for large-scale IoT and consumer connectivity applications. They instead suggested that charges, if any, should be based on factors such as bandwidth, geographic coverage, assignment duration and service type rather than the number of terminals

or users. One stakeholder suggested a revenue-linked framework similar to existing MSS arrangements for administratively assigned MSS-based D2D spectrum, while ensuring that Service Authorised entities are not subjected to double charging on D2D revenues.

Analysis of the issues raised through Q32

3.111 In view of the recommendation of the Authority at Section B.1 of Chapter II permitting D2D via satellite using MSS spectrum, the Authority has examined the stakeholder comments regarding the appropriate spectrum charging framework for D2D satellite-based services using MSS frequency bands such as the L and S bands. Stakeholders favoured the AGR-based spectrum charging framework recommended by the Authority in its Recommendations dated 09.05.2025 for FSS/MSS spectrum, rather than introducing a separate spectrum charging framework for D2D services using MSS spectrum. Stakeholders also submitted that there should be no distinction in spectrum charging between MSS spectrum used for conventional MSS services and MSS spectrum used for D2D services, noting that the use of MSS spectrum for D2D does not alter its fundamental nature or classification. Stakeholders' views have been considered in examining whether any separate or additional spectrum charging framework is warranted for D2D services using MSS spectrum.

3.112 The Authority was cognizant of the fact that the MSS services could be available throughout the geography, and the D2D services using MSS bands could include potential users with compatible handsets and necessary subscription. However, in view of the current limitations of MSS services vis-à-vis terrestrial IMT services and cost implications for the users for such subscriptions, it has been considered that D2D services using MSS spectrum would primarily provide supplemental coverage in the near term, by extending connectivity to areas where terrestrial networks are unavailable, intermittent or inadequate. Such services are particularly relevant in rural, remote, maritime, wilderness and other

areas, especially during natural disasters or emergency situations, where deployment or availability of terrestrial networks may be limited. Given this supplemental coverage nature, D2D using MSS spectrum primarily serves as an extension or gap-filling layer to existing terrestrial connectivity in the near term.

3.113 Further, even in case of provision of D2D service using MSS, the SCN Provider Authorised entity provides SCNaaS as a wholesale network-layer service to the Service Authorised entity which is providing the end service. As discussed in the preceding Section, the Authority has recommended a proportionate and easy-to-administer AGR-based spectrum charging framework, under which the spectrum charge is linked to the revenue earned by the SCN Provider Authorised entity from provision of SCNaaS. Such an AGR-based spectrum charging framework also appropriately reflects the ability of the SCN Provider Authorised entity to pay and would be equally effective irrespective of the nature of the end service.

3.114 In view of the above discussion and having regard to the nature of D2D service using MSS, particularly their expected role in providing primarily supplemental coverage in the near term, it is considered that provision of D2D services using MSS spectrum bands (L & S bands) should not attract any differential/ additional charging for MSS spectrum, when used for providing D2D service as against conventional MSS on specialized phones. It follows that, whether the Service Authorised entity is providing D2D service using MSS bands using its own network resources, or where SCNaaS is used by Service Authorised entity for providing D2D using MSS to end user, there should not be any additional spectrum charge over and above the AGR-based spectrum charge already recommended for either the Service Authorised entity or the SCN Provider Authorised entity.

3.115 As already recommended at Chapter II at Para 2.167, the terms and conditions, including spectrum charges, for assignment of FSS spectrum and MSS spectrum to SCN Provider Authorised entities, should remain

valid for a period of five years from the date of notification of the policy regime by the Central Government, further extendable by a period of up to two years. Accordingly, the spectrum charging framework, for MSS bands in case of D2D services, recommended in this section, should also remain valid for a period of five years from the date of notification of the policy regime by the Central Government, further extendable by a period of up to two years. Any revision in the terms and conditions notified by the Central Government after a period of five years from the date of notification of the policy regime should become applicable to all SCN Provider Authorised entities including the existing SCN Provider Authorised entities.

3.116 In view of the foregoing**, the Authority recommends that in case MSS spectrum (L/S band) is used for providing D2D service, the spectrum charging framework should be the same as when used for providing conventional MSS on specialized devices. Accordingly, the spectrum charging framework applicable to the SCN Provider Authorised entity & Service Authorised entity, in case SCNaaS to a Service Authorised entity is used for providing D2D services using MSS spectrum to the end user or the Service Authorised entity is providing D2D services using MSS spectrum with its own network resources, should remain the same as recommended at Para 3.108 above.**

D.3 Additional spectrum charges payable by the Service Authorised entity for D2D services using IMT Spectrum

Comments of stakeholders were sought on the following question in the Consultation paper 08.04.2026:

Q33. In case D2D services are permitted to be provided using the IMT spectrum assigned to the Service Authorised entity ("partnering entity") providing D2D satellite-based telecommunication services, should any

additional spectrum charges be levied on the Service Authorised entity ("partnering entity") for use of IMT spectrum in the provision of satellite-based D2D services? If yes, what should be the basis and quantum of such additional spectrum charges payable by the Service Authorised entity to the Government? In either case, please provide detailed justification for your response, including the methodology for determination of such spectrum charges.

Comments of stakeholders on Q33

3.117 Stakeholders opposed any additional spectrum charges on a Service Authorised entity for using its assigned IMT spectrum to provide satellite-based D2D services. They emphasised that IMT spectrum has already been assigned through the applicable assignment mechanism and is subject to existing spectrum-related obligations, including spectrum usage charges and License fees, wherever applicable. An additional charge for using the same spectrum through a satellite-based delivery mechanism would amount to double charging for the same spectrum resource.

3.118 Several stakeholders submitted that D2D using IMT spectrum should be treated as an extension of existing terrestrial services, consistent with the technology- and service-neutral nature of IMT spectrum assignment. They noted that satellite-based D2D is an alternative network architecture for delivering connectivity and should not result in additional pricing or revaluation of already-assigned spectrum. Since the partnering Service Authorised entity has already paid the applicable market-determined price for the IMT spectrum and continues to bear the associated obligations, spectrum-related liability should remain with the original spectrum holder. The SCN Provider Authorised entity only provides satellite network capability and does not acquire or hold rights over the IMT spectrum.

3.119 Stakeholders also noted that additional charges could adversely affect the commercial viability and timely deployment of D2D services, particularly

for extending connectivity to rural, remote, maritime, disaster-prone and otherwise underserved areas. They emphasised that charging neutrality would avoid distorting technology choices and allow operators to determine the most efficient combination of terrestrial and satellite technologies within their existing spectrum holdings. They further noted that D2D does not involve any additional spectrum assignment or exclusive allocation and that commercial arrangements between Service Authorised entities and SCN entities should be left to the parties, subject to applicable regulatory and spectrum-use conditions.

3.120 A few stakeholders suggested that implementation should take into account international developments, including the outcomes of WRC-27 and India-specific trials. However, they maintained that, once D2D using IMT spectrum is permitted, no additional spectrum charges should be levied.

Analysis of the issues raised through Q33

3.121 At Sections B.1 and B.2 of Chapter II, D2D services via satellite using IMT spectrum have been permitted to be provided by eligible Access Service Providers utilizing SCNaaS provided by SCN Provider Authorised entity. Further, as discussed in Section D.2 of Chapter II, IMT spectrum remains assigned to the partnering access service provider, which continues to hold the spectrum rights and associated regulatory obligations. The SCN Provider Authorised entity does not acquire or hold the IMT spectrum but provides satellite network capability under the commercial service arrangement. Further, as a practical eligibility condition, D2D using IMT spectrum is permitted only where one or more access service providers, together holding the relevant IMT frequency channel across all 22 LSAs, agree to its use by the SCN Provider Authorised entity for provision of SCNaaS.

3.122 The Authority has examined the views of stakeholders regarding the levy of additional spectrum charges on access service providers (partnering entities) for use of their assigned IMT spectrum for satellite-based D2D services. Stakeholders have opposed additional spectrum charges, submitting that IMT spectrum has already been assigned to access service providers and is subject to the applicable spectrum-related financial obligations. In their view, imposing an additional charge because the same spectrum is used through a satellite-based network architecture could result in double charging for the same IMT spectrum.

3.123 The issue under consideration from spectrum charging standpoint is the use of IMT spectrum for the provision of non-terrestrial services, i.e., Direct-to-Device (D2D) satellite-based telecommunication services by the service authorised entities. This does necessitate consideration of whether any additional spectrum charges should be payable by the Service Authorised entity to the Government.

3.124 One argument could be that if the IMT spectrum is used for provision of non-terrestrial (satellite) services, it would earn an additional revenue which would not have been viable with only terrestrial expansion of network. Such use of IMT spectrum could therefore be considered to enhance the economic value derived from the existing IMT spectrum and justify an additional spectrum charge. Hence, an additional spectrum charge can be held to be payable on the IMT spectrum blocks used for provision of D2D services.

3.125 Conversely, it could be argued that there need not be any additional Spectrum charges for Service authorised entities if the IMT spectrum is used for providing D2D satellite-based services, based on following grounds:

(i) The Service Authorised entity holds exclusive rights over the service area for the IMT spectrum acquired through due process, and the

end use covers mobile telecommunications. The SCN Provider Authorised entity provides only infrastructure in the form of BTS in the sky.

(ii) The technical characteristics of deployment of D2D services using IMT spectrum discussed in Section D.2 of Chapter II also supports this position. The IMT frequency channel earmarked by the partnering entity for the provision of satellite-based telecommunication services within a given geographical area/Licensed Service Area (LSA) for D2D services cannot simultaneously be used for terrestrial services in the same geographical area where such simultaneous use is precluded by interference-management requirements. Thus, D2D services using IMT spectrum does not result in an additional, simultaneous use of the same spectrum frequency channel in the same area.

(iii) Further, Satellite-based communication services are expected to primarily provide connectivity in remote, rural, and otherwise uncovered or underserved areas where terrestrial networks are either not available or are economically unviable to deploy and thus have relatively limited revenue potential. The IMT spectrum utilised for satellite-based communications is expected to essentially provide supplementary coverage and further the goal of universal digital connectivity by extending communication services to areas beyond the reach of conventional terrestrial networks. Such coverage is otherwise being extended by the government by incurring expenditure from Digital Bharat Nidhi (DBN).

(iv) Further prescribing an additional spectrum charge for D2D services using IMT spectrum could also create an artificial distinction between different technology deployments using the same IMT spectrum holding and adversely affect technology neutrality. Such additional spectrum charge could also discourage partnering

entities from entering into partnering agreements with SCN Provider Authorised entities to extend connectivity through D2D services using IMT spectrum, thereby affecting investment, innovation and deployment of hybrid terrestrial-satellite connectivity solutions.

3.126 Further, it is noted that in case IMT spectrum is used for provision of D2D satellite services, it would necessarily involve the deployment for FSS spectrum in the feeder link segment of the satellite network. This would attract spectrum charges for the same, payable by the Service authorised entity in case it is using its own satellite network to provide the D2D service or payable between Service Authorised entity and the SCN Provider Authorised entity in case SCNaaS provided by the SCN Provider Authorised entity is used for the same. In either case, additional spectrum charges, as per finalized spectrum charging framework, for utilizing the FSS spectrum in the feeder link get accrued to the government, in case the IMT spectrum gets utilized in the user link for providing satellite based D2D services.

3.127 Overall, it is considered that D2D services using IMT spectrum are complementary extension of terrestrial networks, aimed at enhancing overall network reach and service availability, and should not be seen as a source of additional revenue for the government. Thus, it is felt that the existing spectrum charging framework applicable to the IMT spectrum, together with the technical and regulatory safeguards prescribed in Section D.2 of Chapter II, adequately addresses the regulatory requirements associated with such use. In such a case, the access service provider continues to hold the spectrum and bear the applicable spectrum-related obligations. Accordingly, the existing spectrum charging framework applicable to the IMT spectrum should continue to apply without an additional charge on account of its use for provision of satellite-based D2D services.

3.128 In view of the foregoing**, the Authority recommends the following:**

(a) No additional spectrum charges should be levied on the partnering Access Service Providers for utilisation of assigned IMT spectrum for provision of satellite-based D2D services using IMT spectrum for the user link.

(b) The existing spectrum charging framework applicable to the assigned IMT spectrum assigned to the partnering Access Service Provider, as well as the conditions and safeguards at Para 2.286 above, should continue to apply.

D.4 Minimum Spectrum Charges & Payment terms for Spectrum Charges payable by SCN Provider Authorised entities

3.129 Minimum spectrum charges and the associated payment terms constitute an important component of the financial obligations applicable to an authorised entity. These aspects are particularly relevant in the case of SCN Provider Authorised entities, considering the capital-intensive and long-gestation nature of satellite communication networks. In this context, the applicability and level of Minimum Spectrum Charges and the appropriate payment terms for spectrum charges need to be considered having regard to the existing regulatory framework and Authorisation rules.

3.130 Against this background, the Consultation Paper dated 08.04.2026 sought stakeholders' views on the applicability of Minimum spectrum charge and appropriate payment terms for spectrum charges payable by SCN Provider Authorised entities. The stakeholder comments and the Authority's analysis are set out below.

Q34. In case spectrum is assigned to Satellite Communication Network (SCN) Authorised entities, what should be the appropriate payment terms

for spectrum charges payable by SCN Provider Authorised entities? Please provide your response with justification.

Q35. In case Minimum Spectrum Charges are to be applicable for SCN Provider Authorised entities, what should be the payment terms for the Minimum Spectrum Charges for SCN Provider Authorised entities? Please provide your response with detailed justification.

Comments of Stakeholders on Q34 and Q35

3.131 Regarding minimum spectrum charges, some stakeholders opposed the same noting that such spectrum is not capacity-constrained and that minimum charges could burden operators during the initial deployment phase. They argued that such charges could distort competition, increase the financial burden on smaller operators, and discourage new entrants, particularly during the initial phase when revenues may be limited.

3.132 Several stakeholders expressed the view that, if Minimum Spectrum Charges are introduced for SCN Provider Authorised entities, they should be proportionate, predictable, and should not create barriers to entry or early deployment of satellite services. Few stakeholders suggested that, if Minimum Spectrum Charges are prescribed, they should be nominal and should operate only as a floor to promote efficient spectrum utilisation. They further suggested that such charges should be proportionate to actual spectrum management costs and should not be linked to the number of satellites, terminals, devices, or downstream service providers.

3.133 Some stakeholders proposed providing relief during the initial deployment phase. They suggested that Minimum Spectrum Charges could either be waived or significantly reduced for the first few years of operation, taking into account the early stage of commercial development of satellite services. With regard to the payment methodology of Minimum Spectrum charges, a few stakeholders suggested that, if applicable, Minimum

Spectrum Charges should be payable annually, with advance payment to provide certainty of Government revenue while maintaining administrative simplicity for operators. Another stakeholder suggested aligning the payment terms with existing frameworks applicable to telecommunication and IFMC operators, with simple and non-burdensome payment processes.

3.134 One stakeholder supported the application of a Minimum Spectrum Charge of Rs. 3,500 per MHz per annum, as recommended by the Authority, payable in advance within 30 days of the commencement of the financial year. According to the stakeholder, such an approach would provide certainty of Government revenue while remaining manageable for SCN entities, particularly during the initial years when commercial revenues may still be developing.

3.135 Several stakeholders emphasised that the payment terms for spectrum charges applicable to SCN Provider Authorised entities should be simple, predictable, and aligned with the capital-intensive and long-gestation nature of satellite communication networks. A few stakeholders suggested that the payment terms applicable to SCN Provider Authorised entities should be aligned with the existing frameworks applicable to telecommunication and satellite service providers. Some proposed adopting quarterly payment mechanisms consistent with the Unified License framework and the Authority's Recommendations dated 09.05.2025. They submitted that quarterly payments based on self-assessment would provide predictability, align with standard financial reporting cycles, and reduce the administrative burden on both the regulator and authorised entities. Another stakeholder suggested that the payment framework should follow the Telecommunications (Authorisation for Provision of Principal Telecommunication Services) Rules 2026, with clearly defined payment obligations, timelines, reconciliation mechanisms, and provisions consistent with the duration of spectrum assignment.

3.136 Some stakeholders supported extending the spectrum payment framework applicable to Service Authorised entities to SCN Provider Authorised entities, with suitable modifications to reflect their network-only role. They submitted that the principles governing payment terms and Minimum Spectrum Charges could be extended to SCN entities while recognising that such entities would primarily hold feeder-link spectrum and provide wholesale network services.

Analysis of the issues raised through Q34 and Q35

3.137 The spectrum charging framework applicable to SCN Provider Authorised entities has been considered in the preceding Sections wherein AGR linked spectrum charges, at parity with the charges applicable to satellite based commercial communication services, have been recommended on spectrum assigned to an SCN Provider Authorised entity. It is noted that applicability and determination of Minimum Spectrum Charges requires a separate discussion from the determination of the AGR-based spectrum charge. An AGR-based spectrum charge links the spectrum liability to the revenue generated from the use of such spectrum, whereas a Minimum Spectrum Charge provides a floor below which the spectrum charges would not fall, irrespective of the level of AGR. However, here too, the principle of regulatory parity between shared network and integrated service models should hold good, since Minimum Spectrum Charge is also a regulatory levy and varying conditions could provide an unintended signal to the market.

3.138 In its Recommendations dated 09.05.2025, the Authority considered the rationale for prescribing a Minimum Spectrum Charge in the context of Satellite-based Commercial Communication Services. It was noted that, where spectrum charges are linked to AGR, a minimum charge provides an incentive for efficient utilisation of assigned spectrum, discourages unnecessary acquisition or retention of spectrum and encourages timely commencement of services. Such a mechanism is particularly relevant

where entities may otherwise retain spectrum rights despite generating little or no revenue from the assigned spectrum.

At the same time, the Authority had recognised that the Minimum Spectrum Charge should not be set at a level that could become a barrier to entry for new players in the satellite communication sector. High minimum spectrum charges could adversely affect smaller satellite operators and entities providing essential services, including public utilities, emergency communications and connectivity in rural areas as well as emerging services such as IoT & M2M. Such high minimum spectrum charges could discourage investment, market entry and deployment of satellite-based services.

The Authority had therefore considered that the Minimum Spectrum charge at 5% of the existing annual royalty charge of Rs. 70,000 per MHz for satellite-based services, as specified in the DoT order dated 11.12.2023, would be appropriate. On this basis, the Authority had recommended an annual Minimum Spectrum Charge of Rs. 3,500 per MHz for GSO/NGSO-based Fixed Satellite Services and GSO/NGSO-based Mobile Satellite Services.

3.139 In line with the principle of regulatory parity upheld through this exercise, these considerations discussed above for satellite based services are also relevant to spectrum assigned to an SCN Provider Authorised entity. Although an SCN Provider Authorised entity operates at the network layer and provides SCNaaS on a wholesale basis to the service authorised entity, the spectrum assigned to the SCN Provider Authorised entity constitutes a resource that an SCN Provider Authorised entity is authorised to use for establishing and operating the satellite communication network. The rationale for ensuring efficient utilisation of assigned spectrum and discouraging unnecessary retention of spectrum therefore remains relevant at the network layer as well.

3.140 Accordingly, it is considered that minimum spectrum charges should be applicable to the SCN Provider Authorised entity, in case the SCN Provider Authorised entity acquires FSS/ MSS spectrum from the Central Government. Further, the principle of regulatory parity requires that the quantum of such charges should remain aligned with those applicable to satellite-based commercial communication services. Thus, the minimum spectrum charge of Rs. 3,500 per MHz per annum, as recommended in the Recommendations dated 09.05.2025, are held applicable to SCN Provider Authorised entity as well. Accordingly, where FSS/ MSS spectrum is assigned to a SCN Provider Authorised entity by the Central Government, the annual spectrum charge should be determined as the higher of the AGR-linked charge and the applicable Minimum Spectrum Charge.

Payment terms

3.141 Having determined that the Minimum Spectrum Charge should apply to spectrum assigned to an SCN Provider Authorised entity, the payment terms for the Spectrum Charges, including the Minimum Spectrum Charge need to be considered.

3.142 The AGR-linked component varies with the revenue earned during the relevant period and therefore requires periodic payment and subsequent reconciliation. In contrast, the Minimum Spectrum Charge is determined with reference to the quantity of spectrum assigned and is independent of the revenue earned by the SCN Provider Authorised entity. It can therefore be determined at the time of assignment and at the beginning of each financial year. Accordingly, it was prescribed in the Recommendations dated 09.05.2025, that the Minimum Spectrum Charge be paid upfront at the time of assignment of spectrum and at the beginning of every year, with the Spectrum Charge payable for the

relevant year being adjusted against the Minimum Spectrum Charge already paid.

3.143 Further, DoT in back reference dated 12.11.2025 in respect of Recommendations dated 09.05.2025 sought reconsideration of specific recommendations/ sub-sections of recommendation. With regard to Payment terms, DoT accepted the recommendations with the condition that TRAI may refer to Financial Conditions, in particular Rule 27, of Draft Telecommunications Rules 2025 circulated on 09.09.2025, and ensure that the payment terms for Spectrum charges are in sync with the Authorisation rules being framed. The Authority, after examination of the reference, had recommended the following in its Response dated 08.12.2025 to the Back Reference:

"2.37.5 Regarding the AGR-based charges (as mentioned at (a) above), the Authority takes note of the schedule of payment prescribed by DoT in the Draft Rules and agrees with DoT that instead of advance payment, the schedule of payment as given in the Draft Telecommunications (Authorisation for Provision of Main Telecommunication Services) Rules, 2025 framed by DOT, can be followed to be in sync with the authorisation Rules.

2.37.6 The Authority further notes that the Draft Rules on Schedule of payment notified under Section 3 of the Telecommunications Act, 2023 prescribe only for the schedule of payment related to the spectrum charges that are linked to AGR. These Rules do not cover the minimum spectrum charges based on per MHz or the fixed charge recommended by the Authority.

2.37.7 The Authority, therefore, is of the view that the payment condition related to minimum spectrum charges based on per MHz and fixed per subscriber charge be suitably inserted while finalizing the Draft Rules on Schedule of payment notified under Section 3 of

the Telecommunications Act, 2023 and / or the yet to be framed Rules for Section 4 of the Telecommunication Act, 2023, as applicable.

2.37.8 In view of the foregoing discussion, the Authority agrees with DoT's views on Recommendations 4.17(i) and reiterates its Recommendations 4.17(ii) and 4.17(iii)."

3.144 Further, the Telecommunications (Authorisation for Provision of Principal Telecommunication Services) Rules, 2026 were notified on 23.06.2026 and prescribe a comprehensive and uniform payment schedule for Authorisation fee and Spectrum charges linked to Adjusted Gross Revenue (AGR). The relevant provisions are reproduced below:

"Schedule of payment

(1) The authorisation fee or spectrum charges linked to adjusted gross revenue determined under these rules shall be payable by every new authorised entity in four quarterly instalments during each financial year commencing from the first of April, and fee for any duration of authorisation that is less than a quarter shall be calculated on pro-rata basis based on actual number of days in the relevant quarter.

(2) Every new authorised entity shall make payment of the quarterly instalments of the authorisation fee and spectrum charges linked to adjusted gross revenue in the following manner, namely:—
(a) the quarterly instalment in respect of each of the first three quarters of a financial year shall be paid within fifteen days of completion of the relevant quarter; and
(b) the quarterly instalment for the last quarter shall be paid in advance by the twenty-fifth of March, calculated on the basis of expected revenue for that quarter, subject to a minimum amount equal to the authorisation fee and spectrum charges linked to adjusted gross revenue paid for the previous quarter:

Provided that the new authorised entity shall adjust and pay the difference between the advance payment made for the last quarter and the actual amount duly payable for such quarter by the fifteenth of April of the next financial year.

(3) Payments pursuant to sub-rule (2) shall be calculated on the basis of revenue on accrual basis for the relevant quarter, and shall be accompanied, in such form and manner as specified on the portal, by a self-certificate and a statement of revenue for each authorisation held by the new authorised entity, that are signed and electronically verified by a representative of such new authorised entity who has been duly authorised by a board resolution and general power of attorney."

As was observed by TRAI, in its Response dated 08.12.2025, regarding the Draft Rules, the now notified Rules also pertain only to payment schedule for AGR linked Spectrum Charges, and do not contain any separate provision regarding payment for Minimum Spectrum Charges.

3.145 In line with the Recommendation dated 09.05.2025 as well as Response dated 08.12.2025, the Authority reiterates the payment schedule for the Minimum Spectrum Charges and per subscriber charge for urban areas (if so decided to be applicable), as was proposed in the Recommendations dated 09.05.2025 as well as in Response dated 08.12.2025 to the Back Reference dated 12.11.2025, for both satellite-based services (FSS & MSS) as well as for proposed SCN Provider Authorisation.

3.146 In view of the foregoing, **the Authority recommends the following:**

(a) Spectrum assigned to an SCN Provider Authorised entity should attract an annual Minimum Spectrum Charge of Rs. 3,500 per MHz.

(b) The Spectrum Charges linked to AGR should be payable in accordance with the payment schedule prescribed under the Telecommunications (Authorisation for Provision of Principal Telecommunication Services) Rules 2026.

(c) The Minimum Spectrum Charge should be paid in advance at the time of the assignment of spectrum and at the beginning of every year. The quarterly/annual adjustment of payment due shall be made with the minimum spectrum charge for the particular year only.

(d) The additional per subscriber charges for urban areas (if so decided by DoT to be applicable for Service Authorised entity providing NGSO based FSS and consequently, for SCN Provider Authorised entity in case SCNaaS is used for providing NGSO based FSS by Service Authorised entity) should also be paid on quarterly basis along with Spectrum Charges linked to AGR.

E. Regulation of commercial Service Agreements, including SCNaaS charges, between SCN Provider Authorised Entities and Service Authorised Entities

3.147 Under the proposed SCN Provider authorisation, an SCN Provider Authorised Entity would provide Satellite Communication Network as a Service (SCNaaS) to a Service Authorised Entity, which would utilise such network capability to provide satellite-based communication services to end-users. The service agreements for the provision of SCNaaS between an SCN Provider Authorised Entity and a Service Authorised Entity may involve only the provision of satellite network capability by the SCN Provider Authorised Entity or may also include arrangements for the utilisation of spectrum assigned to either the Service Authorised Entity or the SCN Provider Authorised Entity or both. Accordingly, the charges payable by the Service Authorised Entity for SCNaaS would arise from the

provision of network capability and such commercial agreement could also involve arrangement for spectrum utilisation. This Section examines whether, and to what extent, such charges should be subject to regulatory oversight.

3.148 For the provision of SCNaaS, the Authority, in Section B.3 of Chapter II, has recommended that SCN Provider Authorised Entities should be permitted to seek assignment from the Government of (a) FSS spectrum for feeder links; and (b) FSS spectrum and/or MSS spectrum for user links, as applicable. In addition to utilising spectrum assigned by the Government, SCN Provider Authorised Entities would also be permitted, under the proposed authorization framework, to utilise spectrum assigned to Service Authorised Entities pursuant to commercial agreements between the parties. In this regard, the Authority at Section C of Chapter II has recommended that an SCN Provider Authorised Entity should be permitted to enter into agreement(s) with Service Authorised Entities (partnering entities) for utilising the FSS and/or MSS spectrum assigned to such partnering entities for providing SCNaaS. However, the FSS and/or MSS spectrum assigned to a partnering entity (P1) may be utilised by the SCN Provider Authorised Entity for providing SCNaaS only to that partnering entity (P1).

3.149 Against this background, the Consultation Paper dated 08.04.2026 sought stakeholders' views on whether charges exchanged between SCN Provider Authorised entities and Service Authorised entities should be subject to regulatory oversight and, if so, the appropriate basis and extent of such regulation. Accordingly, the issues raised in Q22, Q23 and Q24, together with the submissions received from stakeholders, have been examined in this Section.

Q22. *Regarding the agreement between an SCN Provider Authorised entity and a Service Authorised entity providing FSS/MSS services to end-users, for provision of SCNaaS to the Service Authorised entity, which may*

or may not include provisions for utilisation of FSS/MSS spectrum assigned to the Service Authorised entity, is there a need to regulate charges exchanged between the two entities under such an agreement? If yes, what would be the possible parameters, including SLA parameters, spectrum utilisation, etc., which would form the basis of such regulation? Please provide your response with justification.

Q23. *In case of an agreement between an SCN Provider Authorised entity and a Service Authorised entity providing D2D services using MSS spectrum, for provision of SCNaaS to the Service Authorised entity, which may or may not include provisions for utilisation of MSS spectrum assigned to the Service Authorised entity, amongst other possible spectrum utilisation arrangements, is there a need to regulate charges exchanged between the two entities under such an agreement? If yes, what would be the possible parameters, including SLA parameters, spectrum utilisation, etc., which would form the basis of such regulation? Please provide your response with justification.*

Q24 In case of an agreement between an SCN Provider Authorised entity and a Service Authorised entity providing D2D services using IMT spectrum, for provision of SCNaaS to the Service Authorised entity, which may or may not include utilisation of feeder-link spectrum assigned to the Service Authorised entity, in addition to utilisation of IMT spectrum assigned to the Service Authorised entity, is there a need to regulate charges exchanged between the two entities under such an agreement? If yes, what would be the possible parameters, including SLA parameters, spectrum utilisation, etc., which would form the basis of such regulation? Please provide your response with detailed justification.

Comments of Stakeholders on Q22, Q23 and Q24

3.150 Stakeholders submitted that there is no need to regulate the charges exchanged between an SCN Provider Authorised entity and a Service

Authorised entity under agreements for the provision of SCNaaS, irrespective of whether such arrangements relate to FSS/MSS services, D2D services using MSS spectrum, or D2D services using IMT spectrum. According to these stakeholders, such arrangements are business-to-business (B2B) wholesale transactions between authorised entities, and their commercial terms should be determined through mutual negotiations and market forces. They submitted that the underlying service configuration or spectrum arrangement does not alter the wholesale nature of the relationship and therefore does not warrant ex-ante regulation of wholesale charges. Several stakeholders further argued that the existing regulatory forbearance applicable to comparable telecommunications infrastructure arrangements, together with competition law and ex-post regulatory intervention, provides adequate safeguards against anti-competitive conduct without requiring tariff regulation.

3.151 Stakeholders emphasised that SCNaaS arrangements may differ substantially based on satellite constellation architecture, spectrum and gateway configuration, service category, geographical coverage, QoS requirements, traffic characteristics, capacity commitments, agreement duration, customer use cases, terrestrial network integration and other commercial factors. For D2D services, the characteristics would also differ depending on whether MSS or IMT spectrum is used. Stakeholders submitted that it would be neither practical nor appropriate to prescribe a uniform charging methodology or standardised pricing framework. SLAs, QoS commitments, performance benchmarks, capacity allocation, availability, latency, restoration timelines, reporting mechanisms and spectrum utilisation arrangements should likewise remain matters for commercial negotiation, reflecting the technology, service model, customer requirements, risk allocation and operational architecture.

3.152 Many stakeholders also emphasised that satellite communication networks, including emerging D2D capabilities, require substantial upfront

investment in satellite constellations, gateways, ground infrastructure, network management systems, device integration and supporting technologies, together with continuous technological development and relatively long investment recovery periods. According to these stakeholders, regulation of wholesale charges at this early stage of market development could create uncertainty regarding cost recovery, discourage domestic and foreign investment, reduce incentives for technological innovation, consisting experimentation with new commercial models such as capacity leasing and revenue sharing, and delay the rollout of satellite communication services. They therefore proposed that market-driven commercial pricing be allowed to evolve naturally, with regulatory intervention, if required, being limited to cases of demonstrated market failure or anti-competitive conduct.

3.153 Some stakeholders further submitted that any regulation regarding charges must be ex-post and issue-based, not ex-ante or tariff-driven. Further, SCN operators could be mandated to intimate DoT regarding the agreements entered into with service providers. Provision for ex-post regulatory intervention, where warranted, could be undertaken under the Telecommunications Act, 2023 in cases of demonstrated market failure, anti-competitive conduct or non-compliance, instead of imposing ex-ante tariff regulations.

3.154 One stakeholder, however, submitted that some degree of regulatory oversight over wholesale charges may be necessary, particularly where an SCN Provider Authorised entity enjoys significant market power or where commercial arrangements involve utilisation of assigned spectrum. According to this stakeholder, regulation could help ensure fair and non-discriminatory wholesale access, appropriate treatment of spectrum utilisation arrangements, reasonable pricing of network resources and compliance with statutory obligations governing spectrum utilisation. The stakeholder further suggested that broad regulatory parameters relating to service quality, spectrum utilisation, rollout obligations, financial

arrangements and legal compliance could be prescribed while permitting commercial flexibility in end-user pricing. At the same time, the stakeholder acknowledged that determining a fair regulated wholesale price would be inherently a problem of extraordinary difficulty, given the diversity of technical and commercial arrangements and absence of comparable international benchmarks.

Analysis of the issues raised through Q22, Q23 and Q24

3.155 The views expressed by stakeholders regarding the need to regulate SCNaaS charges paid by a Service Authorised entity to SCN Provider Authorised entity under SCNaaS arrangements covering provision of FSS/MSS, D2D services using MSS spectrum and D2D services using IMT spectrum, have been examined. Most stakeholders have opposed ex-ante regulation of such charges across the various types of service agreements, while agreeing that regulatory intervention could be warranted in cases of demonstrated market failure, anti-competitive conduct or non-compliance.

3.156 The Authority has taken note of all submissions. The issue regarding regulation of commercial agreements, including SCNaaS charges exchanged between SCN Provider Authorised Entities and Service Authorised Entities, pertains to the framing of appropriate regulations under the TRAI Act, 1997. Accordingly, post implementation of the SCN Provider Authorisation by DoT, if and when considered warranted, the issue would be addressed separately through the regulatory framework.

3.157 At this stage, regarding the service agreements between a SCN Provider Authorised entity and Service Authorised entity for the provision of SCNaaS, there is a need to examine whether such agreements should contain provisions for information required for the proper implementation of the applicable spectrum charging and/ or authorization fee framework. As discussed in preceding sections of this Chapter, the revenue earned by

an SCN Provider Authorised Entity for provision of SCNaaS to Service Authorised entities would form a major part of its GR/ApGR/AGR, which would be the base for determining its Authorisation Fee and Spectrum Charges. While the need for SCN Provider Authorised entity to segregate its SCNaaS revenue as per the nature of the end service provided by the Service Authorised entity has been addressed separately in Section C of this Chapter, it is noted that such segregation by SCN Provider Authorised entity would also require a segregated reporting of SCNaaS charges by the Service Authorised entity to the SCN Provider Authorised entity. Accordingly, the service agreement between the SCN Provider Authorised entity and Service Authorised entity for provision of SCNaaS should include clear provisions for reporting of SCNaaS charges incurred and paid, based on each category of end service for which SCNaaS has been used, on a quarterly basis, by the Service Authorised entity to SCN Provider Authorised entity.

3.158 Further, the differential spectrum charging framework for NGSO-based FSS, discussed in Section D of this Chapter, necessitates requirement of additional information regarding the urban and rural segregation of revenue and could also require number of urban subscribers served by the Service Authorised entity through the SCNaaS. As discussed in Section D of this Chapter, the Authority has considered that the differential spectrum charges applicable to NGSO-based FSS, with an objective of disincentivizing the diversion of satellite services to urban areas at the expense of rural areas, should also be applicable to SCN Provider Authorised entities, where the SCNaaS provided is used for provision of NGSO based FSS as the end service. For operationalization of these differential spectrum charges for NGSO based FSS, the SCN Provider Authorised Entity would need to segregate the SCNaaS revenue, earned from Service Authorised entity providing NGSO-based FSS services, for urban and rural categories. Further, depending upon the spectrum charging framework finalized by DoT, the number of urban subscribers would also be required to determine the additional per-subscriber charge.

Since an SCN Provider Authorised Entity provides satellite network capability on a wholesale basis to a Service Authorised Entity and may not ordinarily have direct access to information regarding the location and number of end-users served by the Service Authorised entity, the requisite information would need to be furnished by the Service Authorised Entity availing SCNaaS for providing NGSO-based FSS to end-users.

Accordingly, where an SCN Provider Authorised Entity provides SCNaaS to a Service Authorised Entity for the provision of NGSO-based FSS, the commercial agreement between the parties should require the Service Authorised Entity to furnish, on a quarterly basis the segregation of SCNaaS charges incurred and paid by itself for urban and rural categories, along with the corresponding number of subscribers in urban category (if so required depending on the spectrum charging framework finalized by DoT for NGSO based FSS) to the SCN Provider Authorised entity. This information should be furnished within 07 days from the end of the respective quarter. The commercial agreement should also provide for the maintenance of relevant records and supporting documentation by both parties under the agreement, to be made available for verification and assessment as and when required by the Assessing Authorities for Spectrum Charge & Authorisation Fee.

Thus, the Service Agreement should require the Service Authorised entity to provide an account of the SCNaaS charges, incurred and paid for that quarter, on the basis of the nature of end service for which SCNaaS has been utilized by the Service Authorised Entity. Such segregated account should, inter-alia, provide the following breakup, as applicable:

i. SCNaaS charges incurred and paid for providing GSO-based FSS to end users

ii. SCNaaS charges incurred and paid for providing GSO-based MSS to end users.

iii. SCNaaS charges incurred and paid for providing NGSO-based FSS to end users, with further segregation of such charges for providing service for urban and rural areas (along with number of urban subscribers served if required for calculating per subscriber charge in urban areas), as required per the spectrum charging framework finalized by DoT.

iv. SCNaaS charges incurred and paid for providing NGSO-based MSS to end users.

v. SCNaaS charges incurred and paid for providing D2D services via satellite using MSS spectrum to end users.

vi. SCNaaS charges incurred and paid for providing D2D services via satellite using IMT spectrum to end users.

The SCN Provider Authorised entity should use this segregation of the SCNaaS charges while filing the quarterly/ annual Statement of Revenue and making the payment for Authorisation Fee and Spectrum Charges. The segregation would assist in the reconciliation of the deductions claimed by Service providers for SCNaaS charges, which are to be permitted on paid basis only, with the revenue earned by the SCN Entities. It would also facilitate the implementation of the area-based component of spectrum charging, in case the end service provided is NGSO based FSS, applicable for both Service Authorised entities and SCN Entities

3.159 Accordingly, **the Authority recommends the following:**

(a) The service agreement between the SCN Provider Authorised Entity and the Service Authorised Entity should

include the provision that the Service authorised entity should furnish to the SCN Provider Authorised entity, within 07 days from the end of each quarter, the SCNaaS charges incurred and paid for each category of end service, for that quarter, (GSO based FSS/ NGSO based FSS/ GSO based MSS/ NGSO based FSS/ D2D using MSS/ D2D using IMT) for which SCNaaS has been used.

(b) In case an SCN Provider Authorised Entity provides SCNaaS to the Service authorised entity for providing NGSO based FSS to the end user, the service agreement should also require the Service Authorised Entity to furnish to the SCN Provider Authorised entity within 07 days from the end of each quarter, the SCNaaS charges incurred and paid, for that quarter, for NGSO based FSS provided for urban and rural areas separately (along with number of urban subscribers served if required for calculating per subscriber charge in urban areas) as required per the spectrum charging framework finalized by DoT.

(c) Accordingly, the Service Agreement should require the Service Authorised entity to provide an account of the SCNaaS charges incurred and paid for each quarter on the basis of the nature of end service for which SCNaaS has been utilized by the Service Authorised Entity. Such segregated account should, inter-alia, provide the following breakup, as applicable:

i SCNaaS charges incurred and paid for providing GSO-based FSS to end users

ii SCNaaS charges incurred and paid for providing GSO-based MSS to end users.

iii SCNaaS charges incurred and paid for providing NGSO-based FSS to end users, with further segregation of such charges for providing service for urban and rural areas (along with number of urban subscribers served, if required for calculating per subscriber charge in urban areas) as required per the spectrum charging framework finalized by DoT.

iv SCNaaS charges incurred and paid for providing NGSO-based MSS to end users.

v SCNaaS charges incurred and paid for providing D2D services via satellite using MSS spectrum to end users.

vi SCNaaS charges incurred and paid for providing D2D services via satellite using IMT spectrum to end users.

3.160 The following chapter provides a summary of recommendations.

CHAPTER IV: SUMMARY OF RECOMMENDATIONS

4.1 The Authority recommends that –

(a) The Central Government should introduce a new authorisation for satellite communication network under section 3(1)(b) of the Telecommunications Act, 2023. The new authorisation should be termed as "satellite communication network provider authorisation".

(b) In line with the Authority's recommendations dated 18.09.2024 on 'the Framework for Service Authorisations to be Granted under the Telecommunications Act, 2023', the Central Government should reconsider the introduction of satellite-based telecommunication service authorisation under the Telecommunications (Authorisation for Provision of Principal Telecommunication Services) Rules, 2026.

[Para 2.16]

4.2 The Authority recommends that –

(a) <u>Eligibility</u>: Apart from the general eligibility conditions for applying to obtain authorisation to establish, operate, maintain or expand telecommunication network given in rule 5 of the Telecommunications (Authorisations for Telecommunication Network) Rules, 2026, the applicant entity should also fulfil the following criteria, namely: —

(i) a company that has the satellite or space segment capacity authorised by the Department of Space in the Government of India, or any other designated agency specified for this purpose;

(ii) a subsidiary of an entity under sub-clause (i); or

(iii) a company having agreement with a company under sub-clause (i), for establishing, maintaining,

operating or expanding satellite earth station gateway in respect of the satellite network of such entity in India.

(b) Network Area: The network area for SCN provider authorisation should be national area.

(c) Duration: The maximum duration of SCN provider authorisation should be 20 years.

(d) Renewal: There should be an option for renewal of SCN provider authorisation for upto 20 years.

(e) Scope: The scope of SCN provider authorisation should be as below:

(i) SCN provider authorised entity may establish, operate, maintain, or expand gateway earth station(s) for such satellite or space segment capacity which is authorised by the Department of Space in the Government of India, or any other designated agency specified for this purpose. It may also deploy baseband systems for such satellite or space segment capacity.

(ii) SCN provider authorised entity may seek appropriate satellite spectrum from the Central Government for providing satellite communication network as a service (SCNaaS) to eligible entities.

(iii) SCN provider authorised entity may enter into an agreement with an eligible service authorised entity (partnering entity) to utilize the spectrum assigned to such partnering entity for the limited purpose of providing SCNaaS to the partnering entity.

(iv) SCN provider authorised entity cannot provide telecommunication services directly to users.

[Para 2.39]

4.3 The Authority recommends that in addition to the conditions specified in Chapter III: General Conditions, Chapter IV: Technical and Operating Conditions and Chapter V: Security Conditions of the Telecommunication (Authorisation for Telecommunication Network) Rules, 2026, the SCN provider authorisation shall be subject to specific technical and operating conditions, roll out obligations and security conditions as specified in Annexure 2.1 'Technical and operating conditions, roll out obligations and security conditions applicable to SCN provider authorisation'.

[Para 2.46]

4.4 The Authority recommends that-

(a) The satellite communication network provider authorised entity may provide its telecommunication network to any licensee or authorised entity that is permitted to provide satellite-based communication services or provide telecommunication services through satellite network.

(b) All licensees and authorised entities - that are permitted to provide satellite-based communication services or provide telecommunication services through satellite network – should be permitted to seek satellite communication network as a service (SCNaaS) from satellite communication network provider authorised entities. For this purpose, the scope of all licenses and authorisations – under which the provision of satellite-based communication services, or the provision of telecommunication services through satellite network is permitted - should be suitably amended.

(c) The SCN provider authorised entity should be permitted to seek satellite earth station gateway(s) from (i) SESG

provider authorised entities, and (ii) other SCN provider authorised entities, for providing SCNaaS.

[Para 2.64]

4.5 The Authority recommends that under the technical and operating conditions of satellite communication network provider authorisation, a provision should be included that satellite communication network provider authorised entity that establishes, operates, maintains or expands a baseband system shall extend control, visibility, resource allocation and management of telecommunication services being provisioned using satellite communication network to users to the partnering entity on mutually agreed terms and conditions.

[Para 2.75]

4.6 The Authority recommends that the SCN provider authorised entity may, subject to the prior permission of the Central Government in writing, enter into arrangements with entities providing telecommunication services, in areas outside India, after obtaining all clearances, by whatever name called, as may be required to provide such telecommunication services in the relevant jurisdiction where the user is located, for enabling use of the SCN provider authorised entity's satellite earth station gateway established in India for uplink and downlink of signals to and from satellites, subject to compliance with such directions as issued by the Central Government in this behalf.

[Para 2.83]

4.7 The Authority recommends that FSS, MSS, D2D service via satellite using MSS spectrum, and D2D service via satellite using IMT spectrum should be permitted to be provided by using the SCNs established by SCN provider authorised entities.

[Para 2.109]

4.8 The Authority recommends that

(a) D2D service via satellite by using IMT spectrum should be permitted in the country on non-interference, non-protection basis under the provisions of Article 4.4 of ITU Radio Regulations without waiting for the outcome of WRC-27; and

(b) The decision, if any, taken by the Government of India on the matter of D2D service via satellite using IMT spectrum after the conclusion of WRC-2027 should be made applicable to D2D service via satellite using IMT spectrum at that stage.

[Para 2.118]

4.9 The Authority recommends that SCN provider authorised entities should be permitted to seek the assignment of (a) FSS spectrum for feeder link; and (b) FSS spectrum and/or MSS spectrum for user link from the Government.

[Para 2.138]

4.10 The Authority recommends the following regulatory framework for the grant of FSS/ MSS spectrum to SCN provider authorised entities on an administrative basis:

(a) The SCN provider authorised entity should be assigned FSS spectrum for deploying in the feeder link on an administrative basis.

(b) For seeking administrative assignment of FSS/ MSS spectrum for deploying in user links, SCN provider authorised entity should demonstrate that the intended service to be provided by its partnering service provider(s) by using the spectrum falls in the First Schedule of the Telecommunications Act, 2023. For this purpose, the SCN

provider authorised entity should submit the following details:

(i) name of its partnering service authorised entity (ies);

(ii) license/ authorisation held by the partnering service authorised entity under which the intended services will be provided; and

(iii) intended services to be provided by using the spectrum.

(c) The FSS/ MSS spectrum sought by the SCN provider authorised entity should correspond to the satellite or space segment capacity authorised, by the Department of Space in the Government of India or any other designated agency specified for this purpose, to the SCN provider authorised entity or its subsidiary company or a company having agreement with it. For this purpose, the SCN provider authorised entity should submit the supporting documentary evidence to the Government at the time of submitting application for the assignment of FSS/ MSS spectrum.

[Para 2.157]

4.11 The Authority recommends that subject to alignment with the allocations in NFAP 2025 (as amended from time to time), spectrum should be assigned to SCN provider authorised entities in the following frequency bands:

Type of Service	Type of Satellites	Frequency band for user link	Frequency band for feeder link
FSS	GSO	C band, Ku band, Ka band and Q/V band	
	NGSO	Ku band, Ka band, and Q/V band	
MSS	GSO	L band and S band	C band, Ku band, Ka band and Q/V band
	NGSO		

[Para 2.162]

4.12 The Authority recommends that-

(a) FSS spectrum and MSS Frequency spectrum should be assigned to SCN provider authorised entities for a period of up to five years. However, considering the market conditions, the Government may extend it for a further period of up to two years.

(b) Terms and conditions, including pricing, for assignment of FSS spectrum and MSS spectrum to SCN provider authorised entities, recommended through these recommendations, should remain valid for a period of five years from the date of notification of the policy regime by the Central Government, further extendable by a period of upto two years.

(c) Any revision in the terms and conditions, including pricing, for assignment of FSS spectrum and MSS spectrum to SCN provider authorised entities, notified by the Central Government after a period of five years from the date of notification of the policy regime recommended through these recommendations, should become applicable to all SCN provider authorised entities including the existing SCN provider authorised entities.

(d) The following roll-out obligations should be made applicable to the SCN provider authorised entity upon assignment of spectrum for feeder link and/or user link associated with any satellite system to it:

(i) SCN provider authorised entity should, by using its satellite earth station gateway(s), demonstrate operational feeder link with that satellite system within 12 months from the date of assignment of spectrum for feeder link and/ or

(ii) SCN provider authorised entity should, by using its satellite earth station gateway(s), demonstrate

operational user link with that satellite system within 6 months from the date of assignment of spectrum for user link.

[Para 2.167]

4.13 The Authority recommends that the recommendation No. 4.3 of the TRAI's recommendations dated 09.05.2025 should be made applicable to SCN provider authorised entities as well.

[Para 2.169]

4.14 The Authority recommends that the recommendation No. 4.4 of the TRAI's recommendations dated 09.05.2025 should be made applicable to SCN provider authorised entities as well.

[Para 2.171]

4.15 The Authority recommends that recommendation No. 4.5 of the TRAI's recommendations dated 09.05.2025 should be made applicable to SCN provider authorised entities as well.

[Para 2.173]

4.16 The Authority recommends that with a view to mitigating the risk of scarcity of gateway sites, Satellite Earth Station Gateway(s) should be installed and commissioned within 12 months from the date of permission granted to the SCN provider authorised entities by the Central Government for the establishment of the Satellite Earth Station Gateway(s):
Provided that if the satellite earth station gateway is installed and commissioned by the SCN provider authorised entity within thirty days of the expiry of the due date for complying with such obligations, the Central Government should consider the same as fulfilment of the obligation, without treating it as a breach of terms and conditions of the authorisation.

[Para 2.176]

4.17 The Authority recommends that SCN provider authorised entities should be permitted to surrender the right to use of frequency spectrum assigned to them before the expiry of the validity period. For this purpose, the following should be the broad terms and conditions:

(a) The SCN provider authorised entity should serve a notice to the Central Government and TRAI at least 30 days prior to the proposed date of surrender of right to use the frequency spectrum along with the relevant details, including the precise frequency range(s) proposed to be surrendered. However, in case the surrender of right to use of spectrum by an SCN provider authorised entity is likely to result in a disruption or closure of services for the consumers of its partnering service providers, the SCN provider authorised entity should be required to serve an advance notice six months prior to the proposed date of surrender of the right to use of frequency spectrum to the Central Government and TRAI as well as each of its partnering service providers, whose consumer services might be disrupted or closed due to the surrender of spectrum.

(b) DoT may charge a reasonable processing fee to recover administrative charges, if any, for the surrender of the right to use of frequency spectrum.

[Para 2.180]

4.18 The Authority recommends that the Central Government should grant spectrum to SCN provider authorised entity within a defined timeline, not exceeding 30 days from the date of application for FSS/ MSS spectrum, along with necessary documents as recommended to be submitted under the regulatory framework for the grant of FSS/ MSS spectrum to

SCN provider authorised entities on an administrative basis, provided that the in-principle clearances, necessary if any for the satellite network, along with security clearance (if any required) has been given by the Central Government. In case of any objection, the same may be communicated to the concerned SCN provider authorised entity within such window of 30 days from the date of application, for necessary action.

[Para 2.183]

4.19 The Authority recommends that the Central Government should explore the possibility of assigning FSS/ MSS spectrum to SCN provider authorised entities on a block basis rather than on a carrier-by-carrier basis.

[Para 2.185]

4.20 The Authority recommends that –

(a) The SCN provider authorised entity should be permitted to enter into an agreement with any eligible partnering service authorised entity ("partnering entity") to utilise –

(i) the FSS spectrum held by the partnering entity for using the spectrum in feeder links; and

(ii) the FSS/ MSS spectrum held by its partnering entity for using the spectrum in user links -

for the limited purpose of providing satellite communication network as a service (SCNaaS) to the partnering entity, while the right to use of spectrum should remain with the partnering entity.

(b) The SCN provider authorised entity should be permitted to enter into such agreements with multiple partnering entities:

Provided that the FSS/ MSS spectrum held by a partnering entity (say 'P1') can be used to provide SCNaaS to only that partnering entity (P1).

(c) The SCN provider authorised entity and the partnering entity should jointly submit a copy of the agreement for such utilisation of FSS/MSS spectrum to DoT and TRAI within seven working days of entering into the agreement. The agreement should cover, *inter alia*, the following aspects:

(i) Duration of the agreement (start date and end date);

(ii) Frequency range(s) of FSS/ MSS spectrum of the partnering entity to be utilized; and

(iii) Geographical areas in which the spectrum of the partnering entity is to be utilized.

(iv) Services to be provided by the partnering service authorised entity under the agreement.

[Para 2.198]

4.21 The Authority recommends the following with respect to MSS-based D2D services [i.e. direct-to-device (D2D) services via satellite by using the spectrum in L-band and S-band allocated for mobile satellite service (MSS)]:

(a) MSS-based D2D services using globally harmonized standards such as 3GPP NTN should be permitted in India.

(b) The entities authorised to provide access service should be permitted to seek SCNaaS from SCN provider authorised entities for providing MSS-based D2D services. For this purpose, the SCN provider authorised entity and its partnering access service provider should enter into a service agreement prior to provisioning MSS-based D2D services in the country. SCN provider authorised entity and the partnering access service provider should intimate Central Government and TRAI within seven working days of the agreement.

(c) Any SCN provider authorised entity should be permitted to enter into service agreements with multiple entities

authorised to provide access service for the provision of SCNaaS to provide MSS-based D2D services.

(d) The provision of MSS-based D2D service should be governed by regulatory framework for MSS under ITU Radio Regulations and National Frequency Allocation Plan (NFAP).

(e) All MSS-based D2D traffic originating from or terminating in India should be routed through the satellite earth station gateways in India.

(f) MSS-based D2D services should comply with the lawful interception and traffic monitoring requirements.

(g) The SCN provider authorised entity and its partnering access service provider should have provision for restricting the MSS-based D2D service in the barred areas notified by the Central Government.

(h) After acceptance of these recommendations, the Central Government should encourage smartphone handset manufacturers to include the necessary modules for supporting the applicable MSS bands in future smartphone handsets sold in India.

[Para 2.216]

4.22 The Authority recommends the following for Direct to Device service via satellite using IMT spectrum (hereinafter, referred to as "IMT-based D2D service"):

(a) Any entity authorised to provide access service and holding IMT spectrum, should be permitted to provide the IMT-based D2D service by availing SCNaaS from any SCN provider authorised entity. Conversely, any SCN provider authorised entity should be permitted to provide SCNaaS to any entity, which is authorised to provide access service and holds IMT spectrum:

Provided **that the provision of IMT-based D2D service is permitted only if one or more entities authorised to provide access service – together holding the assignment of the same relevant IMT frequency channel across all 22 licensed service areas of the country – agree to allow the usage of their IMT frequency channel by the SCN provider authorised entity for the purpose of providing SCNaaS to only such entity (ies):**

Provided **also that the SCN provider authorised entity and its partnering access service provider(s) providing the IMT-based D2D service should enter into a service agreement prior to provisioning of IMT-based D2D service. The SCN provider authorised entity and the partnering access service provider(s) should jointly intimate about the service agreement to the Central Government and TRAI within seven working days of the agreement.**

(b) The IMT frequency bands under frequency division duplexing (FDD) arrangement viz. 600 MHz, 700 MHz, 800 MHz, 900 MHz, 1800 MHz, and 2100 MHz band should be permitted to be used for providing the IMT-based D2D service.

(c) The frequency allocation table of the National Frequency Allocation Plan (NFAP) should be amended to include Mobile Satellite Service (MSS) as a secondary service in the frequency bands identified for the IMT-based D2D service. An India-specific footnote should be introduced to clarify that the secondary MSS operations in such frequency bands will be limited to the IMT-based D2D service, which will operate on a non-interference and non-protection basis to both domestic and cross-border operations.

(d) All IMT-based D2D traffic originating from or terminating in India should be routed through the satellite earth station gateways in India.

(e) IMT-based D2D services should comply with the lawful interception and traffic monitoring requirements.

(f) For protecting the incumbent services operating in the country from any harmful interference arising from the IMT-based D2D service, the limits on electric field strength of aggregate signal from all beams should be as below:

(i) 40 dBµV/m for the 600 MHz, 700 MHz, 800 MHz and 900 MHz bands and

(ii) 47 dBµV/m for 1800 MHz and 2100 MHz bands

Further, out-of-band PFD limits should be -120 dBW/m2/MHz for the 600 MHz, 700 MHz, 800 MHz, 900 MHz, 1800 MHz and 2100 MHz bands.

(g) Meanwhile, DoT, through the Telecom Engineering Centre (TEC), should carry out India specific trials for determining the emission limits and other conditions for mitigating the interference from the IMT-based D2D service on the incumbent services. Thereafter, emission limits, determined through such trials, should be made applicable to IMT-based D2D service. In any case, this aspect should be revisited based on the outcome of WRC-27 on the matter.

(h) Pending the outcome of World Radiocommunication Conference-2027 (WRC-2027), the operation of the IMT-based D2D service should be subject to the provisions of Article 4.4 of the ITU's Radio Regulations for addressing the concerns related to cross-border interference arising from the IMT-based D2D service. This aspect should be revisited based on the outcome of WRC-27 on the matter.

[Para 2.286]

4.23 The Authority recommends that-

(a) the scope of Access Service authorization and Internet Service authorization under Unified License should be

amended to include the use of, *inter alia*, satellite communication network for the provision of respective services.

(b) Any entity holding Access Service authorization, or Internet Service authorization under Unified License should be permitted to seek SCNaaS from the satellite communication network provider authorised entity for the provision of respective services.

[Para 2.292]

4.24 The Authority recommends that apart from SCN provider authorised entities, any entity holding any of the following licenses/ authorisations should also be permitted to provide SCNaaS to any authorised entity or licensee that is permitted to provide satellite-based communication services or provide telecommunication services through satellite network:

(a) Unified service authorisation, access service authorisation, internet service authorisation, long distance service authorisation under the Telecommunications (Authorisation for Principal Telecom Services) Rules, 2026; and

(b) Access Service authorization, Internet Service authorization, NLD Service authorization, Commercial VSAT CUG Service authorization and GMPCS Service authorization under Unified License; and

(c) License for Provision and Operation of Satellite Based Services Using Gateway Installed in India Under '*Sui-Generis*' Category:

***Provided that* such entity fulfils the eligibility criteria for obtaining SCN provider authorisation and undertakes to abide by the technical and operating conditions, roll out obligations, and security conditions applicable to SCN provider authorisation.**

For this purpose, the scope of Access Service authorization, Internet Service authorization, NLD Service authorization, Commercial VSAT CUG Service authorization, and GMPCS Service authorization under Unified License, and License for Provision and Operation of Satellite Based Services Using Gateway Installed in India Under '*Sui-Generis*' Category should be suitably amended.

[Para 2.296]

4.25 The Authority recommends that under Access Service authorization, Internet Service authorization, NLD Service authorization, Commercial VSAT CUG Service authorization, and GMPCS Service authorization under Unified License, and License for Provision and Operation of Satellite Based Services Using Gateway Installed in India Under '*Sui-Generis*' Category', a licensee -

(a) may subject to the prior permission of the Central Government, use its satellite earth station gateway established in India for providing telecommunication services to users located outside India, subject to obtaining all clearances, by whatever name called, as may be required to provide such telecommunication services in the relevant jurisdiction where the user is located, and compliance with such directions as issued by the Central Government in this behalf; and

(b) may also enter into arrangements with entities providing telecommunication services, in areas outside India, after obtaining all clearances, by whatever name called, as may be required to provide such telecommunication services in the relevant jurisdiction where the user is located, for enabling use of its satellite earth station gateway established in India for uplink and downlink of signals to and from satellites, subject to compliance with such

directions as issued by the Central Government in this behalf.

[Para 2.301]

4.26 The Authority recommends the following:

(a) The SCNaaS Charges paid by a eligible Service Authorised entity (including eligible VNOs) to an SCN Provider Authorised entity, under a commercial service agreement for provisioning of SCNaaS, should be permitted as deduction from the ApGR of the Service Authorised entity while computing AGR for the purpose of levy of Authorisation/License Fee and Spectrum Charges, irrespective of whether such agreement relates to FSS/MSS services, D2D services using MSS spectrum, or D2D services using IMT spectrum, and irrespective of the spectrum utilization provisions under the agreement.

(b) The SCNaaS charges received by an SCN Provider Authorised entity from a Service Authorised entity should form part of the GR of the SCN Provider Authorised entity and be considered for computation of its AGR in accordance with the applicable authorisation framework.

(c) The deduction permitted should be restricted to bona fide SCNaaS charges actually paid for each quarter by eligible Service Authorised entity (including eligible VNOs) to an SCN Provider Authorised entity for provisioning of SCNaaS under valid agreement between the authorised entities. The concerned entities should maintain duly executed commercial service agreements, and other relevant documentation and make such records available for verification and audit, as and when required. Further, the Service Authorised entities should segregate the SCNaaS charges paid for each quarter on the basis

of the end service provided, and the segregation should be reported in its quarterly/ annual Statement of Revenue as well as reported to the SCN Provider Authorised entity within 07 days from the end of each quarter. Such segregation for reporting of deductions of SCNaaS charges paid by Service Authorised entities should, inter-alia, contain the following breakup, as applicable:

i. **SCNaaS charges incurred and paid for providing GSO-based FSS to end users**

ii. **SCNaaS charges incurred and paid for providing GSO-based MSS to end users.**

iii. **SCNaaS charges incurred and paid for providing NGSO-based FSS to end users, with further segregation of such charges for providing service for urban and rural areas (along with number of urban subscribers served, if required for calculating per subscriber charge in urban areas), as required per the spectrum charging framework finalized by DoT.**

iv. **SCNaaS charges incurred and paid for providing NGSO-based MSS to end users.**

v. **SCNaaS charges incurred and paid for providing D2D services via satellite using MSS spectrum to end users.**

vi. **SCNaaS charges incurred and paid for providing D2D services via satellite using IMT spectrum to end users.**

(d) Eligible VNOs, if using both terrestrial and satellite networks for providing communication services, should be permitted to

claim separate deductions for the charges paid for terrestrial network resources including bulk/wholesale bandwidth, leased line and bandwidth charges, minutes and SMSs etc. to NSO and SCNaaS charges paid for satellite network resources to SCN Provider Authorised entity or any Service Authorised entity permitted to provide SCNaaS, as the case may be, provided that each deduction relates to a distinct and bona fide payment and is supported by the requisite agreement and proof of actual payment.

[Para 3.19]

4.27 The Authority recommends the following:

(a) Gross Revenue (GR)

"Gross Revenue (GR)" shall include all revenues accruing to the SCN Provider Authorised Entity for provision of Satellite Communications Network-as-a-Service (SCNaaS) to eligible Service Authorised Entities for the provision of satellite based services to end users, and any other revenue from network-related activities, without any set-off for related items of expenditure. The revenue earned from provision of SCNaaS to the Service Authorised entities should be reported separately according to the nature of the end service, with segregation as follows, depending on applicability:

i. **Revenue earned from the provision of SCNaaS to eligible Service Authorised Entities providing GSO-based FSS to end users.**

ii. **Revenue earned from the provision of SCNaaS to eligible Service Authorised Entities providing GSO-based MSS to end users.**

iii. **Revenue earned from the provision of SCNaaS to eligible Service Authorised Entities providing NGSO-based FSS to end users, with further segregation of such revenue for urban and rural areas (along with number of urban subscribers served, if required for calculating per subscriber charge in urban areas), as required per the spectrum charging framework finalized by DoT.**

iv. **Revenue earned from the provision of SCNaaS to eligible Service Authorised Entities providing NGSO-based MSS to end users.**

v. **Revenue earned from the provision of SCNaaS to eligible Service Authorised Entities providing D2D services via satellite using MSS spectrum to end users.**

vi. **Revenue earned from the provision of SCNaaS to eligible Service Authorised Entities providing D2D services via satellite using IMT spectrum to end users.**

(b) Applicable Gross Revenue (ApGR)

"Applicable Gross Revenue (ApGR)" shall be equal to Gross Revenue (GR) of the Authorised Entity as reduced by the items listed below:

(i) revenue from operations other than telecom activities or operations;

(ii) revenue from activities under a license/ permission issued by the Ministry of Information and Broadcasting;

(iii) receipts from the Digital Bharat Nidhi; and

(iv) List of other income* to be excluded from GR to arrive at ApGR

a. income from dividend;

b. income from interest;

c. capital gains on account of profit on sale of fixed assets and securities;

d. gains from foreign exchange rate fluctuations;

e. income from property rent;

f. insurance claims;

g. bad debts recovered; and

h. excess provisions written back,

***Subject to conditions given in Annexure-3.1**

(c) Adjusted Gross Revenue (AGR):

For the purpose of arriving at the "Adjusted Gross Revenue (AGR)", following shall be allowed as deductions from the Applicable Gross Revenue (ApGR):

i. **Charges paid to another SCN Provider Authorised entity for utilization of satellite earth station gateway(s)**
ii. **Goods and Service Tax (GST) paid to the Government, if the reported Gross Revenue (GR)/ Applicable Gross Revenue (ApGR) had included the component of GST**

(d) For Service Authorised entities eligible to provide SCNaaS to other authorised entities or licensees permitted to use satellite networks, subject to prescribed conditions, the revenues arising from provision of SCNaaS by such eligible Service authorised entities should be reported separately within the Gross Revenue of the entity, in accordance with the framework recommended above regarding GR/ApGR/AGR for SCN Provider Authorisation. Such revenue should thereafter be subjected to the applicable exclusions and deductions, as allowed for an SCN Provider Authorised entity, while arriving at ApGR and AGR pertaining to the activities as an SCN Provider, under the relevant authorisation.

[Para 3.42]

4.28 The Authority recommends the following:

(a) Authorisation Fee for SCN Provider Authorised entities should be 8% of the Adjusted Gross Revenue. There should be no Minimum Authorisation Fee for the same.

(b) The schedule of payment prescribed in Chapter IV of the Telecommunications (Authorisation for Provision of Principal Telecommunication Services) Rules, 2026 should be made applicable on the SCN Provider Authorised entities for payment of Authorisation Fee.

[Para 3.62]

4.29 The Authority recommends the following:

(a) An entity seeking SCN Provider Authorisation should be required to have Minimum Equity of Rs. 60 Lakhs and a Minimum Net Worth of Rs. 60 Lakhs.

(b) The Entry Fee for SCN Provider Authorisation should be Rs. 37,50,000.

(c) The Entry Fee for SCN Provider Authorisation should be levied only at the time of grant of authorisation and not at the time of renewal of the authorisation.

(d) The Application Processing fee for SCN Provider Authorisation should be Rs. 10,000.

(e) The amount of initial Bank Guarantee (BG) should be Rs. 45,00,000. Further, the continued maintenance of Bank Guarantee during lifetime of a SCN Provider Authorised entity

should be subject to the detailed provisions/ conditions included in the Financial Conditions contained in Chapter IV of Telecommunications (Authorisation for Provision of Principal Telecommunication Services) Rules, 2026.

[Para 3.81]

4.30 The Authority recommends the following:

(a) Spectrum Charges for an SCN Provider Authorised entity should be based on AGR, with a differential between urban and rural areas for NGSO based FSS (which can be a per subscriber additional charge for urban area) and should have the same charging rate and framework as that applicable for satellite based commercial communication services.

(b) Spectrum charges for providing satellite-based services by eligible Service Providers under existing Unified License or new Telecommunications (Authorisation for Provision of Principal Telecommunication Services) Rules 2026, should be levied only on that portion of their AGR as derived from FSS & MSS (including MSS to normal & specialized phones).

(c) Further, Spectrum charges for SCNaaS provided by eligible Service Providers should be levied only on that portion of their AGR as derived from provisioning of SCNaaS.

[Para 3.108]

4.31 The Authority recommends that in case MSS spectrum (L/S band) is used for providing D2D service, the spectrum charging framework should be the same as when used for providing conventional MSS on specialized devices. Accordingly, the spectrum charging framework applicable to the SCN Provider Authorised entity & Service Authorised entity, in case SCNaaS

to a Service Authorised entity is used for providing D2D services using MSS spectrum to the end user or the Service Authorised entity is providing D2D services using MSS spectrum with its own network resources, should remain the same as recommended at Para 3.108 above.

[Para 3.116]

4.32 The Authority recommends the following:

(a) No additional spectrum charges should be levied on the partnering Access Service Providers for utilisation of assigned IMT spectrum for provision of satellite-based D2D services using IMT spectrum for the user link.

(b) The existing spectrum charging framework applicable to the assigned IMT spectrum assigned to the partnering Access Service Provider, as well as the conditions and safeguards at Para 2.286 above, should continue to apply.

[Para 3.128]

4.33 The Authority recommends the following:

(a) Spectrum assigned to an SCN Provider Authorised entity should attract an annual Minimum Spectrum Charge of Rs. 3,500 per MHz.

(b) The Spectrum Charges linked to AGR should be payable in accordance with the payment schedule prescribed under the Telecommunications (Authorisation for Provision of Principal Telecommunication Services) Rules 2026.

(c) The Minimum Spectrum Charge should be paid in advance at the time of the assignment of spectrum and at the beginning of every year. The quarterly/annual adjustment of payment due shall be made with the minimum spectrum charge for the particular year only.

(d) The additional per subscriber charges for urban areas (if so decided by DoT to be applicable for Service Authorised entity providing NGSO based FSS and consequently, for SCN Provider Authorised entity in case SCNaaS is used for providing NGSO based FSS by Service Authorised entity) should also be paid on quarterly basis along with Spectrum Charges linked to AGR.

[Para 3.146]

4.34 The Authority recommends the following:

(a) The service agreement between the SCN Provider Authorised Entity and the Service Authorised Entity should include the provision that the Service authorised entity should furnish to the SCN Provider Authorised entity, within 07 days from the end of each quarter, the SCNaaS charges incurred and paid for each category of end service, for that quarter, (GSO based FSS/ NGSO based FSS/ GSO based MSS/ NGSO based FSS/ D2D using MSS/ D2D using IMT) for which SCNaaS has been used.

(b) In case an SCN Provider Authorised Entity provides SCNaaS to the Service authorised entity for providing NGSO based FSS to the end user, the service agreement should also require the Service Authorised Entity to furnish to the SCN Provider Authorised entity within 07 days from the end of each quarter, the SCNaaS charges incurred and paid, for that quarter, for NGSO based FSS provided for urban and rural areas

separately (along with number of urban subscribers served if required for calculating per subscriber charge in urban areas) as required per the spectrum charging framework finalized by DoT.

(c) Accordingly, the Service Agreement should require the Service Authorised entity to provide an account of the SCNaaS charges incurred and paid for each quarter on the basis of the nature of end service for which SCNaaS has been utilized by the Service Authorised Entity. Such segregated account should, inter-alia, provide the following breakup, as applicable:

i. SCNaaS charges incurred and paid for providing GSO-based FSS to end users

ii. SCNaaS charges incurred and paid for providing GSO-based MSS to end users.

iii. SCNaaS charges incurred and paid for providing NGSO-based FSS to end users, with further segregation of such charges for providing service for urban and rural areas (along with number of urban subscribers served, if required for calculating per subscriber charge in urban areas) as required per the spectrum charging framework finalized by DoT.

iv. SCNaaS charges incurred and paid for providing NGSO-based MSS to end users.

v. SCNaaS charges incurred and paid for providing D2D services via satellite using MSS spectrum to end users.

vi. SCNaaS charges incurred and paid for providing D2D services via satellite using IMT spectrum to end users.

[Para 3.159]

ANNEXURES

Annexure 1.1: DoT's Reference dated 17.10.2024

F. No. 20-1350/2024 AS-I (Vol.-II)
Government of India
Ministry of Communications
Department of Telecommunications
(Licensing Policy Division)
20-Ashoka Road, New Delhi-110001

Dated: 17.10.2024

Subject: Seeking recommendations of TRAI on terms and conditions, including fees or charges, for authorisation to establish, operate, maintain or expand telecommunication network as per the provisions of the Telecommunications Act 2023 – regarding

Reference: Reference vide F. No. 20-1350/2024 AS-I (Vol.-II) dated 26.07.2024 for seeking recommendations of TRAI on terms and conditions, including fees or charges, for authorisation to establish, operate, maintain or expand telecommunication network as per the provisions of the Telecommunications Act 2023 (enclosed)

1. As per the background note of the reference dated 26.07.2024, in para 7(ii), TRAI has been requested to consider its earlier recommendations on Satellite Earth Station Gateway (SESG) also, while formulating the recommendations sought vide reference dated 26.07.2024.

2. In this regard, keeping in view the increasing use of NTN (Non terrestrial networks) including satellite communication networks in provisioning of FSS (Fixed Satellite Services) including VSAT services and MSS (Mobile Satellite Services), TRAI may consider an authorisation for satellite communication network under section 3(1)(b) of the Telecommunications Act 2023 along with the following:

    a. Terms and conditions relating to such authorisation
    b. Provision of assignment of spectrum for both feeder link as well as user link under such authorisation
    c. Service area of such authorisation

3. This authorisation for satellite communication network under section 3(1)(b) of the Telecommunications Act 2023 may be used to provide services to entities authorised under section 3(1)(a) of the Telecommunications Act 2023.

4. It is also requested to expedite the recommendations sought vide reference dated 26.07.2024 as the statutory 60 days period has already expired.

5. This issues with the approval of competent authority.

Encl: As above

17/10/24

(Sunil Kumar Singhal)
Deputy Director General (LP)
Phone: 23036836

To,

The Secretary
Telecom Regulatory Authority of India
7th Floor, Tower-F,
World Trade Centre, Nauroji Nagar,
New Delhi: 110029

Annexure 1.2: DoT's letter dated 29.08.2025

Government of India
Ministry of Communications
Department of Telecommunications
Sanchar Bhawan, 20, Ashoka Road, New Delhi - 110001
(Licensing Policy Wing)
****

F.No.: 20-1353/2025 - LPA Dated: 29.08.2025

Subject: Request for expeditious submission of terms and conditions of proposed Satellite Communication Network (SCN) Authorisation, including spectrum assignment, under Section 3(1)(b) of the Telecommunications Act, 2023 – reg.

This has reference to TRAI's response dated 13.08.2025 to the DoT's back reference dated 03.07.2025 regarding TRAI's recommendations on *"the Terms and Conditions of Network Authorisations to be Granted under the Telecommunications Act, 2023"*.

2. Attention is particularly invited to paragraphs 2.131.7 & 2.131.8 in Section-B of Chapter II of the said response, which pertains to the proposed Satellite Communication Network (SCN) Authorisation under section 3(1) (b) of the Telecommunications Act, 2023. The relevant extracts are reproduced below:

> *"2.131.7 In this regard, the Authority has decided to initiate a fresh process of consultation with stakeholders to solicit views on terms and conditions for Satellite Communication Network (SCN) authorisation, including the provision of assignment of spectrum for both feeder link as well as user link under such authorisation. Upon the conclusion of the consultation process, the Authority would provide its recommendations on the matter to the Government.*
>
> *2.131.8 In case upon the conclusion of the consultation process, the Authority recommends that the spectrum for feeder link and/ or user link should be assigned under SCN Authorisation, the Government may thereafter, if deemed fit, seek the recommendations of the Authority on the terms and conditions for the assignment of spectrum under SCN Authorisation."*

3. It is stated that, as highlighted in TRAI's recommendations dated 17.02.2025, the matter related to the proposed authorisation for satellite communication network (SCN) has already been subjected to a consultation process through the *Consultation Paper issued* by TRAI on 22.10.2024. Further, a considerable period has elapsed since the DoT's reference on the introduction of a Satellite Communication Network (SCN) Authorisation under section 3(1) (b) of the Act dated 17.10.2024 and requesting TRAI to provide terms and conditions for Satellite Communication Network (SCN) authorisation including provision of assignment of spectrum for both feeder link as well as user link and service area under such authorisation.

4. Keeping in view the above, and the need to frame the rules under the Telecommunications Act, 2023 in a time-bound manner, it is desired that the matter be expedited and the complete terms and conditions for the proposed SCN Authorisation,

along with terms and conditions relating to the assignment of spectrum, be provided in a consolidated form, covering all aspects all together at once as sought earlier, within 60 days.

5. This has the approval of the Hon'ble Minister for Communications.

29/08/25

(Sunil Kumar Singhal)
Deputy Director General (Licensing Policy)
Phone: 23036836

To,

The Secretary
Telecom Regulatory Authority of India
7th Floor, Tower-F,
World Trade Centre, Nauroji Nagar,
New Delhi: 110029

Annexure 1.3: DoT's letter dated 07.10.2025

F. No. 20-443/2023-AS-I(Vol.-III)
Government of India
Ministry of Communications
Department of Telecommunications
(Licensing Policy Wing)
20-Ashoka Road, New Delhi-110001
****

Dated: 07-10-2025

Subject: Clarification on TRAI's Letter regarding DoT's Reference on terms and conditions of the proposed Satellite Communication Network (SCN) Authorisation, including spectrum assignment

This is in reference to your letter No. R-13/1/(2)/2025-NSL-II(E-16802) dated 22.09.2025 seeking clarification on spectrum related issues mentioned under para 7 and 8.

2. With reference to para 7, it is submitted that, the First Schedule of The Telecommunications Act, 2023, is a list of entries based on use of the spectrum. Where the use of the spectrum is covered within the scope of an entry in the First Schedule, the assignment of such spectrum may be undertaken by administrative process.

2.1 An entity holding a SCN (Satellite Communication Network) authorisation seeks assignment of spectrum for use that falls within the scope of any of the entries of the First Schedule, it can be assigned spectrum through administrative method. Accordingly, an SCN Authorised Entity seeking to use spectrum for In-flight Maritime Connectivity, may apply for administrative assignment under Entry 14 of the First Schedule. An SCN Authorised Entity seeking to use spectrum for the satellite-based services under Entry 16, such as Very Small Aperture Terminal, Global Mobile Personal Communication by Satellites, National Long Distance, International Long Distance, Mobile Satellite Services in L & S bands, can apply for spectrum assignment under Entry 16.

2.2 It may also be possible that a SCN Authorised Entity without seeking spectrum may enter into sharing agreements with another authorised entity availing of its satellite network (the "partnering entity"), to utilise the spectrum assigned to such partnering entity for the limited purpose of providing the service of its satellite-based networks.

3. With reference to para 8, at present, spectrum assignments for different kind of telecommunication services are being made in the L, C, Ku and Ka bands. Also, based on the TRAI recommendations dated 09.05.2025, other frequency bands i.e. Q-band and V-band are also being considered for different kind of

telecommunication services.

This has the approval of the competent authority.

Digitally signed by
Rajat Jain
Date: 07-10-2025
16:36:04

(Rajat Jain)
ADET (LPA)
Email: adet1.lpa-dot@gov.in

To,

The Secretary
Telecom Regulatory Authority of India
7th Floor, Tower-F,
World Trade Centre, Nauroji Nagar,
New Delhi: 110029

Annexure 2.1: Technical and operating conditions, roll out obligations, and security conditions applicable to SCN provider authorisation

A. Technical and operating conditions

1. Technical and operating conditions on SCN provider authorisation should include, *inter alia*, the following conditions:

   (a) The SCN provider authorised entity shall seek prior approval for establishing any satellite earth station gateway from the Central Government or the designated agency. For this purpose, SCN provider authorised entity shall provide the details, including location and technical details of such gateway.

   (b) The SCN provider authorised entity shall ensure that all traffic on the satellite communication network originating from or terminating on the user terminals located in India, of partnering authorised entities, shall pass through a satellite earth station gateway, located in India, of such new authorised entity.

   (c) The SCN provider authorised entity shall ensure that no traffic originating from or terminating at a user terminal located in India, of partnering authorised entities, is routed via satellite earth station gateways located outside India, directly or through inter-satellite communication links, including during failure of satellite earth station gateway located in India or as part of telecommunication network optimisation.

   (d) The SCN provider authorised entity shall ensure that the telecommunication traffic of partnering authorised entities shall not be mirrored to any satellite network or telecommunication network located outside India through inter-satellite communication links or through any other means.

   (e) The SCN provider authorised entity shall provide real-time traffic monitoring facility to ensure the compliance of clause (b) to clause (d) above.

(f) The SCN provider authorised entity shall ensure that no direct communication shall take place between two or more user terminals of partnering authorised entities through one or more satellites, without routing the telecommunication traffic through satellite earth station gateway.

(g) The SCN provider authorised entity shall furnish information and conduct interference monitoring tests as required by the Central Government and shall take all necessary measures, as directed by the Central Government, to mitigate such interference.

(h) Very small aperture terminal or any other fixed satellite service user terminal used for providing backhaul link to a base station or connectivity to an internet node or any other telecommunication equipment, shall be located in the service area of the partnering authorised entity having such base station or internet node or any other telecommunication equipment:

Provided that the corresponding satellite earth station gateway may be located anywhere in India and the connecting transmission link from such satellite earth station gateway to the core telecommunication network of the partnering authorised entity using such backhaul link or connectivity shall be established as per the applicable rules.

Explanation.— It is clarified that any transmission using the backhaul link or connectivity between the satellite earth station gateway and the corresponding core telecommunication network of the partnering authorised entity shall not be considered as inter service area traffic.

(i) The SCN provider authorised entity may, subject to the prior permission of the Central Government in writing, enter into arrangements with entities providing telecommunication services, in areas outside India, after obtaining all clearances, by whatever name called, as may be required to provide such telecommunication services in the relevant jurisdiction where the

user is located, for enabling use of the SCN provider authorised entity's satellite earth station gateway established in India for uplink and downlink of signals to and from satellites, subject to compliance with such directions as issued by the Central Government in this behalf.

(j) The Central Government may, subject to its assessment of the application made under clause (i) after making such inquiry as it deems fit, require the applicant to furnish such information as it may call for, and may grant such permission as requested by the SCN provider authorised entity under clause (i), subject to such terms and conditions as it may specify while granting permission, including the following, namely:—

(i) messages between the satellite earth station gateway established in India and telecommunication network of foreign carriers shall be confined to only such satellite earth station gateway so as to enable transmission of such messages directly to the telecommunication network of foreign carriers, and shall not be transmitted into or received from a telecommunication network or user terminal located in India; and

(ii) messages between the satellite earth station gateway established in India and telecommunication network of foreign carriers shall be routed through authorised international long distance gateway.

(k) SCN provider authorised entity shall indemnify the Central Government against any and all claims that may arise from the implementation of the arrangements covered under clause (i), and (j).

B. Rollout obligations

2. The following roll-out obligations should be made applicable to the SCN provider authorised entity upon assignment of spectrum for feeder link and/or user link associated with any satellite system to it:

(a) SCN provider authorised entity should, by using its satellite earth station gateway(s), demonstrate operational feeder link with that satellite system within 12 months from the date of assignment of spectrum for feeder link and/or

(b) SCN provider authorised entity should, by using its satellite earth station gateway(s), demonstrate operational user link with that satellite system within 6 months from the date of assignment of spectrum for user link.

Provided that if the rollout obligations are complied with within thirty days of the expiry of the due date for complying with such obligations, the Central Government may consider the same as timely fulfilment of rollout obligations.

C. Security conditions

3. Security conditions on SCN provider authorisation should include, *inter alia*, the following conditions:

(a) The operation, maintenance and control facility for the satellite communication network of the SCN provider authorised entity and user terminals of the partnering authorised entity connected with the satellite communication network of the SCN provider authorised entity shall be located in India.

(b) SCN provider authorised entity shall ensure that the permitted satellite network be used only for providing telecommunication services for which the partnering entity is authorised and such satellite network is not used for any unauthorised activities

including surveillance and electronic warfare, or in a manner that may prejudice the sovereignty and security of India.

(c) SCN provider authorised entity shall report to the Central Government, any attempt to access or use the satellite network by a user terminal not registered with the partnering entity, accompanied by the information about such user terminal and its location.

(d) SCN provider authorised entity shall undertake such technical measures as may be required to ensure due compliance with clause (c).

Annexure 3.1

List of other income to be excluded from GR to arrive at ApGR

Sl. No.	Item/ Head of 'Other Income'	Description and conditions applicable
a.	Income from Dividend	Income from dividend is return on investment made by the company. Such investment is made out of surplus funds available with the company. Companies Act, 2013 and Accounting Standard-9 classified dividend income as 'other income' i.e., distinct from the core operations of the entity. Therefore, income from dividend shall not be part of ApGR for the purpose of computation of authorisation fee.
b.	Income from Interest	Income from interest is return on investment made by the company in bank deposits, corporate deposits, debentures etc. Such investment is made out of surplus funds available with the company. Also sometimes, Authorised Entity receives interest from Tax Authorities on advance tax or refundable tax. Companies Act, 2013 and Accounting Standard-9 classified interest income as 'other income' i.e., distinct from the core operations of the entity. At the same time, Authorised Entity accepts refundable deposits from users, telecom vendors and other Authorised Entities. These deposits essentially are part of telecom operations. The interest income earned on such amounts should be recorded and certified by statutory auditors. Therefore, income from interest shall not be part of ApGR for the purpose of computation of authorisation fee. However, interest earned on refundable deposits from users, telecom vendors and other Authorised Entities shall be considered in ApGR for the purpose of computation of authorisation fee. Also, any refundable deposit received by the Authorised

		Entity on the strength of telecom service viz. linkage with tariff, advance rental etc. shall also have similar treatment for inclusion in ApGR.
c.	Capital gains on account of profit on sale of fixed assets and securities	Capital gain earned by the Authorised Entity on the account of profit on sale of assets and securities, are of from investing activities instead of from telecom operations. Therefore, the revenue on account of sale of immovable property, securities, warrants or debt instruments, other items of fixed assets shall not be part of ApGR for the purpose of computation of authorisation fee.
d.	Gains from Foreign Exchange rates fluctuations	Foreign Exchange differences arise when actual rates at the time of settlement differs from those at which they were initially recorded in the books. The provisions contained in the Accounting Standard-11 require a notional entry for exchange differences in respect of liabilities at the closing date of the AFSs. The foreign exchange gains reflected in the profit and loss statement of Authorised Entity could arise from reduction of payment liability or increase in the value of foreign exchange accounts receivables. In other words, foreign exchange fluctuation is a contingency which has impact on every business which may have something to do with foreign exchange and is not specific and unique to telecom business. Therefore, revenue/profit arising out of upward valuation or devaluation on account of fluctuation of foreign exchange shall not be part of ApGR for the purpose of computation of authorisation fee.
e.	Income from property rent	Authorised Entity may rent or lease part of their properties and earn revenue in the form of rent. Some Authorised Entity as part of staff welfare measure provides staff quarters to their employees and receive rent from such staff. Revenue from rent cannot be distinctly treated as only from telecom business.

		Therefore, revenue/income from property rent shall not be part of ApGR for the purpose of computation of authorisation fee. In case property is let out for 'establishing, maintaining and working of telecommunication', then revenue/income from such rent shall be considered in ApGR for the purpose of computation of authorisation fee.
f.	Insurance claims	A receipt from Insurance company against loss of property/fixed assets is basically a reimbursement in nature for the loss occurred by the Authorised Entity. Receipt of insurance claim from insurance company shall not be part of ApGR for the purpose of computation of authorisation fee.
g.	Bad Debts recovered	Bad debt is an amount owed by a debtor that is unlikely to be received/ realized and recognized as an expense in the books of accounts. Bad Debts recovered represents reversal of debits (i.e. bad debts) appearing in the profit and loss account of previous year(s). This basically represents an adjustment to the amount of an expense (i.e. bad debts) as estimated in an earlier year(s) in which it had already recorded as part of revenue from operations. Therefore, income on account of bad debts recovered shall not be part of ApGR for the purpose of computation of authorisation fee.
h.	Excess Provisions written back	Excess Provisions written back represent the reversal of excess provision made for any liability or expenses in any previous year. On settlement, this excess provision is written back into books of accounts as other income. This basically represents an adjustment instead of actual revenue earned. Therefore, income on account of excess provisions written back shall not be part of ApGR for the purpose of computation of authorisation fee.

Annexure 3.2

(Annexure 2.3 of the Recommendations dated 18.09.2024 on the "Framework for Service Authorisations to be granted under the Telecommunications Act, 2023")

Chapter XI:

Satellite-based Telecommunication Service Authorisation

5. Financial conditions:

Satellite-based Telecommunication Service authorisation-NSO

(1) Gross Revenue:

The Gross Revenue shall include all revenues accruing to the Authorised Entity on account of goods supplied, services provided, leasing/hiring of infrastructure, revenue from permissible sharing of infrastructure, use of its resources by others, installation charges, application fee, call charges, late fees, sale proceeds of instruments (or any terminal equipment including accessories), hardware/software for satellite-based telecommunication, fees on account of Annual Maintenance Contract, income from value added services, access or interconnection charges and any other miscellaneous item including interest, dividend, supplementary services etc. without any set-off of related item of expense.

(2) Applicable Gross Revenue:

ApGR shall be equal to Gross Revenue (GR) of the Authorised Entity as reduced by the items listed below:

(a) Revenue from operations other than telecom activities/ operations.
(b) Revenue from activities under a license/ permission issued by Ministry of Information and Broadcasting.
(c) Receipts from the Digital Bharat Nidhi.
(d) List of other income* to be excluded from GR to arrive at ApGR
    (i) Income from Dividend
    (ii) Income from Interest
    (iii) Capital Gains on account of profit of Sale of fixed assets and securities
    (iv) Gains from Foreign Exchange rates fluctuations
    (v) Income from property rent
    (vi) Insurance claims
    (vii) Bad Debts recovered

(viii) Excess Provisions written back

*Subject to conditions given in **Annexure-1.3.4**

(3) Adjusted Gross Revenue:

For the purpose of arriving at the "Adjusted Gross Revenue (AGR)", following shall be excluded from the Applicable Gross Revenue (ApGR):

(a) PSTN/PLMN/ GMPCS related call charges (Access Charges) paid to other eligible/entitled telecommunication service providers within India;

(b) Charges of pass through nature paid to other Telecom service provider(s) to whose network, the Authorised Entity's network is interconnected for carriage of data, and;

(c) Roaming revenues passed on to other telecom service providers.

Satellite-based Telecommunication Service authorisation-VNO

(1) Gross Revenue:

The Gross revenue shall include all revenues accruing to the Authorised Entity on account of goods supplied, services provided, leasing/hiring of infrastructure, revenue from permissible sharing of infrastructure, use of its resources by others, application fees, installation charges, call charges, late fees, sale proceeds of instruments (or any terminal equipment including accessories), hardware/software for satellite-based telecommunication, fees on account of annual maintenance contract, income from value added services, supplementary services, revenue earned from parent NSO, etc. and any other miscellaneous item including interest, dividend, etc. without any set-off of related item of expense etc.

(2) Applicable Gross Revenue:

ApGR shall be equal to Gross Revenue (GR) of the Authorised Entity as reduced by the items listed below:

(a) Revenue from operations other than telecom activities/ operations.

(b) Revenue from activities under a license/ permission issued by Ministry of Information and Broadcasting.

(c) Receipts from the Digital Bharat Nidhi.

(d) List of other income* to be excluded from GR to arrive at ApGR

(i) Income from Dividend

(ii) Income from Interest

(iii) Capital Gains on account of profit of Sale of fixed assets and securities

(iv) Gains from Foreign Exchange rates fluctuations
(v) Income from property rent
(vi) Insurance claims
(vii) Bad Debts recovered
(viii) Excess Provisions written back

*Subject to conditions given in **Annexure-1.3.4**

(3) Adjusted Gross Revenue:

For the purpose of arriving at the "Adjusted Gross Revenue (AGR)", following shall be excluded from the Applicable Gross Revenue (ApGR):

(a) Charges paid to its parent NSO(s) towards applicable access charges such as carriage charges, termination charges and roaming charges.

(b) Charges paid to NSOs towards Bulk/Wholesale bandwidth, leased line and bandwidth charges, minutes and SMSs. However, these charges should be governed by a written agreement, a copy of which must be provided along with proof of actual payment for the deduction to be allowed.

Annexure 3.3: Extract of DoT's Order dated 11.12.2023

Government of India
Ministry of Communications
Department of Telecommunications
Wireless Planning and Coordination Wing
20, Ashoka Road, Sanchar Bhawan, New Delhi

No. P-11014/34/2009-PP Dated: 11.12.2023

ORDER

Subject: Spectrum Charges for Assignment of Frequencies to Captive Users (being charged on formula basis) for different types of Radiocommunication Services and applications.

In pursuance of the powers conferred under section 4 of the Indian Telegraph Act, 1885 (13 of 1885) and in supersession of this Ministry's Orders Nos. P-11014/34/2009-PP (I), (II), (III) & (IV) each dated 22.03.2012, the Central Government has decided that assignment of radio frequency spectrum to all users to whom radio frequency assignment is made through administrative process and spectrum charges are calculated based on a formulae, shall be made as per the methodology defined in this order.

2. Upon successful processing of application for assignment of radio frequency, a Letter of Intent (LoI) will be issued to the applicant which include, among others, information about the license fee and royalty charge (collectively called spectrum charges) required to be paid. Spectrum charges shall be informed for the full period of the assignment requested. If the request for assignment is for a period more than one year, the applicant can opt to pay the license fee and royalty annually, in advance for each year.

3. Immediately thereafter, but in any case not later than sixty (60) days from the date of issue of the LoI, the applicant shall pay the spectrum charges for issue of Decision Letter (DL), if otherwise permissible.

3.1 If the payment is not received within 60 days from the date of LoI, the application shall be treated as cancelled and the frequency shall be freed for assignment to other applicants. The applicant will have to submit a fresh application if they still want the frequency assignment.

4. A Construction Period of three months is permitted for the purpose of import of the equipment, site preparedness, deployment, etc. and spectrum charges be levied, after three months' period from the 1st day of the month of date of issue of LoI.

4.1 Three months' construction period shall not be applicable for temporary frequency assignment (assignment issued for the period less than one year). In such cases, spectrum charges shall be applicable from the 1st day of the month of date of issue of LoI.

5. Initially, DL shall be issued with a validity of 15 months (one year plus three months of construction period) from the 1st day of the month of date of issue of LoI that can be further extended for a period of another one year subject to payment of annual spectrum charges, in advance. For example: If date of issue of initial LoI is 20th August 2023, the spectrum charges will be levied from 1st November 2023 and the initial DL will be valid upto 31st October 2024. Further extension of one year will be expired on 31st October 2025.

5.1 In no case DL be renewed further, however, extension of another one year may be considered for Government users under certain circumstances subject to payment of annual spectrum charges, in advance.

6. The spectrum charges, comprises of Royalty and License fee, shall be calculated for following radiocommunication services as per the enclosed schedules:

Schedule No.	Radiocommunication Services and applications	Page No.
I	Terrestrial Broadcasting service	6-7
II	Land Mobile Service (up to 375 kHz)	8-13
III	Maritime Mobile Service	14-16
IV	Aeronautical Service	17-18
V	Radar under Radionavigation Service and Radiolocation Service	19-20
VI	Fixed and Mobile Service (Multi-channels Multiplexed)	21-23
VII	Satellite Based Services (FSS, BSS, MSS, EESS)	24-26

6.1 All the above services have been defined in the National Frequency Allocation Plan of India (NFAP). The latest NFAP is available in DoT's website (www.dot.gov.in).

6.2 Spectrum charges, mentioned in all the schedules, are annual charges, unless otherwise specified.

6.3 Royalty charge has been made independent of numbers of equipment/set, unless otherwise specified. However, license fee will be applicable on them. Therefore, any increase/ decrease in the number of equipment (Fixed/ Mobile) in the existing frequency assignment shall require prior permission.

6.4 The spectrum charges due for different period shall be determined as follows:

License Period	**License Fee Payable**	**Royalty payable after three months period from the 1st day of the month of date of issue of LOI**	**Method of Payment**
One calendar month or less	At specified rate given in various schedules	Annual Royalty divided by 12	Full License fee and Royalty to be paid in advance at the time of issue of DL/frequency assignment.
More than one calendar month but less than 12 months	At specified rate given in various schedules	On pro-rata basis. However, part of a month shall be taken as one month.	--do--
More than one year	At specified rate given in various schedules	On pro-rata basis. However, part of a month shall be taken as one month.	Pay the License Fee plus Royalty for the entire duration in advance at the time of issue of DL/ frequency assignment or pay it in annual advance instalments.

7. Generally, there shall be no limit on number of frequency(ies) applied for any type of services. However, number of frequency(ies) shall be assigned subject to availability, technical justification, regulatory feasibility etc.

8. **Renewal of Frequency Assignment:**

8.1 The assignee shall be responsible for keeping the frequency assignment current and up to date until its surrender/ cancellation. To this effect, the assignee shall, at least 30 days before the end date of the validity of the frequency assignment, pay through Saral Sanchar Portal, the spectrum charges for the renewal of his/her existing frequency assignment.

9. **Frequency assignment/ authorization Modification Fee:**

9.1. Applicable fees for modification in the frequency authorization/ frequency assignment shall be charged at the rate of Rs. 1000/- per modification.

10. **Cancellation/ Surrender of Frequency Assignment:**

10.1 The assignee shall surrender the frequency assignment, if no longer required. To this effect the assignee shall apply for cancellation through Saral Sanchar Portal in accordance with OM No. L-14027/210/2020-WF dated 27.07.2023. Failure to surrender a frequency assignment within the stipulated time shall result in accrual of spectrum charges and late fee.

10.2 Non-purchase of equipment/ non-utilization of frequency assignment shall not be ground for exemption from payment of spectrum charges.

10.3 On surrender of frequency assignment, after adjustment of due spectrum charges, the balance amount will be either adjusted against other active frequency assignments or refunded to the applicant.

11. **Late fee for delayed payment of Spectrum Charges:**

11.1 Late fee shall be payable by the assignee on the frequency assignment for delay in payment of spectrum charges (Royalty and License fee) or any other dues payable against the frequency assignment. In this regard, any payment reflected in DoT's account after the midnight (2400 Hrs.) of the end date will be considered as a delay in payment irrespective of the date on which such transaction was initiated by the assignee of the frequency assignment.

11.2 The rate at which Late Fee is levied for a Financial Year shall be 2% added to one-year Marginal Cost of Lending Rate (MCLR) of State Bank of India, on the beginning of the Financial Year i.e. 1st April.

11.3 The Late Fee shall be compounded annually, subject to minimum annual Late Fee of Rs. 250/- per Frequency Assignment. A part of the month shall be considered as a full month for the purpose of calculation of Late Fee. A month shall be an English calendar month.

12. The applications for the frequency assignment shall continue to be processed through DoT's online portal (Saral Sanchar portal). Further, all renewals, cancellations, import permission, surrenders will also be issued through online portal (Saral Sanchar) as per prevailing instructions issued from time to time.

13. Any issue either arising due to interpretation of this Order or new uses/ applications not covered in the said Order shall be referred to the Standing Committee constituted vide WPC Wing OM of even No. dated 11.12.2023.

14. This Order issues with the approval of competent authority.

15. This Order shall come into force with effect from 01st April 2024. However, the revised spectrum charges on existing frequency assignments shall be applicable from the date of next renewal cycle.

Enclosure: As above.

11.12.2023

(P S M Tripathi)
Sr. Deputy Wireless Adviser to the Govt. of India

पी.एस.एम. त्रिपाठी/P.S.M. TRIPATHI
वरिष्ठ उप वैसार सलाहकार
Senior Deputy Wireless Adviser
दूरसंचार विभाग, भारत सरकार
Deptt. of Telecom, Govt. of India
नई दिल्ली/New Delhi

To,

1. All concerned.
2. Wireless Finance Division
3. Wireless Monitoring Organisation
4. IT cell, DoT - for publication on DoT Website
5. ITPC, BSNL, Pune to send text messages to all licensee informing them about the new orders on frequency assignment.

Schedule-VII: Satellite based Services.

General:

(i) Satellite based Service includes Fixed Satellite Services (FSS), Broadcasting Satellite Services (BSS), Mobile satellite Services (MSS) and Earth Exploration Satellite Services (EESS)

(ii) The standard annual royalty factor shall be Rs. 35,000/- per frequency. The same rates will be applied for all applications under FSS, BSS, MSS and EESS together with the relevant Bandwidth Factor (Bs) given in Table-1 below to arrive at the amount of Annual Royalty (R) per frequency payable for an Uplink or Downlink.

(iii) Royalty charges shall not be applicable on remote terminals of Data collection platforms. Only the license fee will be paid.

(iv) Bandwidth factor for the bandwidth will be calculated in the multiple of 500 kHz and the remainder will be calculated using increments of 100 kHz.

(v) The royalty will be charged on the total bandwidth assigned i.e., including any guard bands etc.

(vi) The royalty charges for Earth-Exploration Satellite Services / Meteorological Satellite Service, will be calculated only once for every frequency carrier used by the remote users under these services.

(vii) For Space Operation Services (TTC operation), the fixed royalty charges of Rs 1,50,000/- per Earth Station per annum will be levied.

(viii) Royalty charges will be levied in respect of frequencies transmitted from or into Indian territory.

(ix) For DSNG/SNG, the royalty charges will be levied for the frequencies used on both uplinks and downlinks. In case the same frequency carrier is used by the user from different OB vans belonging to licensee, additional royalty @ 25% of the basis royalty will be charged. However, if the additional OB vans are deployed within the same venue, e.g. a stadium, additional royalty @ 25% of the basis royalty will not be charged.

(x) For temporary Up linking, a minimum royalty equivalent to that for one month will be charged.

Part-I (Royalty Charges)

1. Annual Royalty Charges for Satellite Based Services:

Annual Royalty (R) = Rs. 35000xBs.

Table-1: Calculation of Bandwidth Factor (Bs)

S. No.	Total Assigned Bandwidth		Bandwidth Factor (B_s)			
			For uplink		For downlink	
			Broadcast*	Others	Broadcast	Others
(i)	Up to and including 500 kHz, B_s is either of these three	Up to and including 100 kHz [i.e., BW ≤ 100 kHz]	0.25	0.20	Nil	0.20
(ii)		More than 100 kHz to up to and including 250 kHz [i.e., 100 kHz < BW ≤ 250 kHz]	0.60	0.50	Nil	0.50
(iii)		More than 250 kHz to up to and including 500 kHz [i.e., 250 kHz < BW ≤ 500 kHz]	1.25	1.00	Nil	1.00
(iv)	More than 500 kHz [i.e., BW > 500 kHz]		Total B_s			

*Broadcast in this case means those uses that are related to transmission of television content through satellite, and include, teleports, DSNG vans, DTH, HITS etc.

Total B_s = [Appropriate B_s from row (iii) above × bandwidth in number of multiple of 500 kHz] + [Appropriate B_s from row (i) above × number of multiple of 100KHz or part thereof in balance bandwidth]

where,

Balance bandwidth = remainder of [bandwidth/ 500 kHz]

Part-II (License fee)

License Fee for wireless stations operating under Satellite Services (FSS, BSS, MSS) including Standby sets

S. No.	Type of Wireless station License	Annual License Fee (in Rs.)
1	Fixed Earth station DTH/ Teleport/ DSNG/NLD/ILD/DCP/IP-II	1000 per station
2	Captive VSAT/Inmarsat Earth Station	500 per station
3	Vehicle Mobile/Handheld Mobile station	250/- per station

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ACRONYMS

AFS	Annual Financial Statements
3GPP	3rd Generation Partnership Project
ACMA	Australian Communications and Media Authority
AGR	Adjusted Gross Revenue
ANP	Access Network Provider
ApGR	Applicable Gross Revenue
ASP	Access Service Provider
AWS-H	Advanced Wireless Services H Block
B2B	Business-to-business
BG	Bank Guarantee
BSNL	Bharat Sanchar Nigam Limited
BSS	Broadcasting Satellite Services
BTS	Base Transceiver Station
CDN	Content Delivery Network
CDR	Call Detail Record
CEPT	European Conference of Postal and Telecommunications Administrations
CMRTS	Captive Mobile Radio Trunking Service
CMSP	Cellular Mobile Service Provider
CMTS	Cable Modem Termination System
CNPN	Captive Non-Public Network
CTFA	Canadian Table of Frequency Allocation
CUG	Closed User Group
D2D	Direct-to-Device
D2M	Direct-to-Mobile
DBN	Digital Bharat Nidhi
DoS	Department of Space
DoT	Department of Telecommunications
DTH	Direct-To-Home

EESS	Earth Exploration Satellite Services
EPFD	Equivalent Power Flux Density
FBG	Financial Bank Guarantee
FCC	Federal Communications Commission
FDD	Frequency Division Duplexing
FDI	Foreign Direct Investment
FDL	Feeder Downlink
FSS	Fixed Satellite Service
FY	Financial Year
GEO	Geostationary Earth Orbit
GIA	Geographically Independent Area
GMPCS	Global Mobile Personal Communication by Satellite
GR	Gross Revenue
GSPS	Global Satellite Phone Service
GSO	Geostationary Orbit
GST	Goods and Services Tax
HAPS	High Altitude Platform Stations
HTS	High Throughput Satellites
ICT	Information and Communication Technology
IFMC	In-Flight and Maritime Connectivity
ILD	International Long Distance
IMT	International Mobile Telecommunications
INR	Indian Rupees
IN-SPACe	Indian National Space Promotion and Authorisation Centre
IoT	Internet of Things
IP	Infrastructure Provider
IPDR	Internet Protocol Detail Record
ISED	Innovation, Science and Economic Development
ISL	Inter-Satellite Link
ISP	Internet Service Provider

ISRO	Indian Space Research Organisation
ITU	International Telecommunication Union
ITU-RR	ITU Radio Regulations
IUC	Interconnection Usage Charges
IXP	Internet Exchange Point
LEA	Law Enforcement Agency
LEO	Low Earth Orbit
LF	License Fee
LSA	Licensed Service Area
M2M	Machine to Machine
MBIE	Ministry of Business, Innovation and Employment
MCLR	Marginal Cost of Lending Rate
MEO	Medium Earth Orbit
MHA	Ministry of Home Affairs
MNO	Mobile Network Operator
MNP	Mobile Number Portability
MSS	Mobile Satellite Service
NASA	National Aeronautics and Space Administration
NFAP	National Frequency Allocation Plan
NGE	Non-Government Entity
NGSO	Non-Geostationary Orbit
NLD	National Long Distance
NLDO	National Long Distance Operator
NR	New Radio
NSO	Network Service Operator
NTN	Non-Terrestrial Network
OEM	Original Equipment Manufacturer
OHD	Open House Discussion
PCS	Personal Communications Service
PBG	Performance Bank Guarantee
PLMN	Public Land Mobile Network

PM-WANI	Prime Minister Wi-Fi Access Network Interface
PMRTS	Public Mobile Radio Trunking Service
PoP	Point of Presence
PSTN	Public Switched Telephone Network
QoS	Quality of Service
RAN	Radio Access Network
RF	Radio Frequency
RSPG	Radio Spectrum Policy Group
SACFA	Standing Advisory Committee on Frequency Allocation
SCN	Satellite Communication Network
SCNaaS	Satellite Communication Network as a Service
SCS	Supplemental Coverage from Space
SDL	Supplementary Downlink
SDR	Software-Defined Radio
SESG	Satellite Earth Station Gateway
SIM	Subscriber Identity Module
SMCS	Supplemental Mobile Coverage by Satellite
SMC	Satellite Monitoring Centre
SMP	Significant Market Power
TDD	Time Division Duplexing
TDSAT	Telecom Disputes Settlement and Appellate Tribunal
TEC	Telecommunication Engineering Centre
TRAI	Telecom Regulatory Authority of India
UAS	Unified Access Service
UE	User Equipment
UL	Unified License
UK	United Kingdom
USA	United States of America
USO	Universal Service Obligation
USOF	Universal Service Obligation Fund

VNO	Virtual Network Operator
VSAT	Very Small Aperture Terminal
WAN	Wide Area Network
WLAN	Wireless Local Area Network
WPAN	Wireless Personal Area Network
WPC	Wireless Planning & Coordination Wing
WRC	World Radiocommunication Conference