



---

13<sup>th</sup> May 2026

Shri Akhilesh Kumar Trivedi,  
Advisor (Networks, Spectrum and Licensing)  
Telecom Regulatory Authority of India  
New Delhi, India

**Subject: to the Consultation on the Framework for Satellite Communication Network Authorisation, and Assignment of Spectrum to Satellite Communication Network Providers**

GSOA is the global CEO-driven association representing the entire satellite ecosystem - from operators in all orbits, including communications and Earth Observation, to manufacturers, launch providers, and ground segment companies. We lead industry collaboration, drive visibility at the highest policy levels, and provide a strong, united voice for the satellite sector. GSOA promotes and advances the collective agenda of the satellite industry, helping shape the policies and frameworks that expand connectivity, fuel innovation and growth, and ensure long-term sustainability. Recognised globally as the leading advocate for satellite operators, GSOA influences key issues such as spectrum management, 5G/6G integration, non-terrestrial networks, space sustainability, and closing the digital divide.

GSOA and its members are pleased to provide satellite industry's view on this consultation.

**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.**

The eligibility conditions should not inadvertently impose foreign direct investment restrictions inconsistent with the 100% FDI permitted in the telecommunications sector under the extant FDI Policy.

Given that the SCN Authorisation is intended to support satellite communication services across India and enable provisioning of network services to authorised service providers, the area of operation should be national.

The SCN Authorisation should be granted for a period of 20 (twenty) years from the effective date in line with the proposed validity period for other authorisations under the

---

Telecommunications Act, 2023. The authorisation may be reviewed twelve months prior to expiry, and the renewed authorisation period may also be for 20 (twenty) years. This duration is appropriate given the capital-intensive nature of satellite constellation deployment.

**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.**

The following conditions shall be made applicable for satellite communication network authorisation:

- a) Provide for SCN Authorised entities to operate pursuant to lease or commercial agreements with authorised service providers, including MNOs, and in accordance with the technical and operational requirements specified under such agreements; and

Clear allocation of responsibility whereby the conditions associated with using satellite networks for service provision to their respective end users , including compliance with national security and data-related requirements, rest with the partnering authorised service providers. .

**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.**

SCNaaS access at the NSO level ensures clear accountability, alignment between network operation and security obligations, and simplified regulatory oversight; allowing VNOs to directly seek SCNaaS could introduce layered dependencies on underlying NSOs, fragment regulatory accountability, and increase contractual complexity and costs without adding technical value.

**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.**

- a) SCN Authorised entities should have the ability to determine and deploy baseband equipment and infrastructure, and provide access to Service Authorization holders;

---

b) Control arrangements should be implemented on mutually agreed terms with Service Authorization holders, in a manner compliant with their independent regulatory obligations. This architecture provides a natural and effective point for lawful interception and security compliance by the partnering service authorised entity MNO, without requiring their control of baseband equipment ; and

d) MSS Spectrum should be allocated directly to SCNs unlike the IMT spectrum.

**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.**

SCN Authorisation should recognise compliance with the Indian Space Policy, 2023 and the Norms, Guidelines and Procedures for Implementation of Indian Space Policy-2023 as a prerequisite for the use of satellite systems within an SCN.

**Q6. Whether there is any need for mandating a reference agreement between the entities holding the proposed Satellite Communication Network authorisation and the authorised entities providing telecommunication service? If yes, what should be the salient features of the reference agreement between such entities? Kindly provide a detailed response with justification.**

There is no need to mandate a standardised or regulator-prescribed reference agreement between SCN authorised entities and service-authorised entities.

Broadly, both the earlier Unified License framework and the current regime under Section 3(1)(b) of the Telecommunications Act, 2023 recognise that licensed and authorised entities should have the freedom to enter into commercial arrangements with each other, while remaining responsible for meeting their respective regulatory obligations.

**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.**

Interconnection-related obligations should continue to rest with the authorised entities providing telecommunication services to end users.

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

**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.**

All listed services should be permitted to be delivered using SCNs. As recognized under the draft rules released under Telecommunication Act, 2023 and TRAI Recommendations<sup>1</sup>, each main service authorization can be provided using satellite systems.

Further, in line with the technology-neutral approach adopted by the Department of Telecommunications, there should be no differentiation at the network level between MSS and D2D services delivered using MSS spectrum.

**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.**

D2D services via satellite using IMT spectrum should be permitted at this stage, without waiting for the outcome of WRC-2027.

D2D services are critical for remote, rural, uncovered, and underserved areas, as well as emergency communications and network resilience. Early enablement helps address these issues. While WRC-2027 may further refine technical or coordination rules, an interim domestic framework may be adopted in line with Article 4.4. of the ITU Radio Regulations. Outcomes of WRC-2027 can be incorporated later through adjustments to technical conditions or coordination requirements, without delaying initial enablement.

---

<sup>1</sup> TRAI on the Framework for Service Authorisations to be Granted Under the Telecommunications Act, 2023 dated February 28, 2025 (accessible [here](#)).

**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:**

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

**Kindly provide a detailed response with justification.**

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

**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.**

- 
- a) The spectrum in the frequency bands allocated for FSS and MSS should be eligible for assignment to SCN Authorised entities.
  - b) 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.
  - c) It is recommended, the First Schedule, Entry 16 of the Telecommunications Act, 2023 expressly include D2D services within the scope of satellite-based communication services.

**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) NGSO-based FSS and GSO/ NGSO-based MSS: 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 GSObased 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.**

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. In such cases, the SCN authorised entity functions as a network or infrastructure provider, rather than a retail service provider.

Applying per-subscriber or user-linked charges in these scenarios does not align with the network-layer role of SCN authorised entities and creates uncertainty as to whether such charges are intended to apply even where no user services are delivered over FSS spectrum.

Further, imposing user-based or subscriber-linked charges on network-layer entities may:

- (a) Introduce cost structures that are unrelated to actual spectrum usage for feeder links;
- (b) Increase the financial burden on satellite infrastructure providers, particularly where costs cannot be efficiently passed through the service chain; and

Create uneven market conditions, making it difficult for smaller or lower-capital service providers to participate in commercial arrangements, thereby affecting competition and market growth.

**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.**

MSS spectrum in the L- and S-bands should be assigned in sufficiently sized exclusive blocks, at least 10 MHz and preferably 15 MHz channels, to support broadband capabilities and meet the requirements of 3GPP standards. Adequate channel bandwidth enables SCN licensees to support a full range of services, from IoT to broadband, without inefficiently dedicating spectrum to isolated applications. While exclusivity is necessary in these bands due to their limited bandwidth, widespread device deployment, and narrow coordination margins, which make spectrum sharing impracticable, akin to mobile terrestrial spectrum, we are also comfortable with shared assignment subject to non-interference.

---

**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 purpose of providing SCNaaS to the partnering entity – 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 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.**

A light-touch regulatory framework should be adopted which balances both, regulatory transparency and commercial flexibility suited to technical and business models of the SCN Authorised entity and the partnering entity.

**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.**

**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.**

The use of L- and S-band MSS spectrum for D2D services shall be allowed and no separate or additional policy or regulatory framework is required for enabling or regulating such services.

D2D services using MSS spectrum represent a technical enhancement delivered over the same MSS spectrum allocations, without any change to the underlying licensing or authorisation framework applicable to MSS. Treating MSS-based D2D as part of the existing MSS regime is consistent with the principles of technological neutrality and avoids unnecessary

---

fragmentation of spectrum regulation. Creating a separate regulatory framework for MSS-based D2D would introduce artificial distinctions between handheld MSS, IoT-based MSS, and D2D-enabled MSS services, despite their shared spectrum and operational characteristics.

**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.**

If D2D services via satellite using IMT spectrum are permitted, the regulatory framework must be anchored in the principle that the entity to whom IMT spectrum is assigned remains the primary rights-holder and continues to bear all regulatory, interference management, and compliance obligations. Any utilization of such spectrum by an SCN Authorised entity should therefore be strictly on a contractual, non-transfer basis, without creating any independent spectrum rights in favour of the SCN entity. Accordingly, no separate or prescriptive regulatory framework is required to enable an SCN Authorised entity to utilise IMT spectrum assigned to a partnering Service Authorised entity for the provision of SCNaas. Such arrangements should be enabled through commercially negotiated agreements between authorised entities.

With respect to frequency bands, it is submitted that no ex-ante restriction should be imposed. Instead, band-specific suitability should be evaluated based on technical feasibility and ecosystem maturity.

**Q20. Whether there are any other inputs or suggestions with respect to the delivery of D2D services via satellite through SCNs established by the proposed SCN authorised entities? Kindly provide a detailed response with justification.**

Early enablement of Direct-to-Device (D2D) satellite services is key in current regulatory landscape, given their unique ability to extend connectivity directly to user devices in areas where terrestrial networks are absent or economically unviable. Large parts of rural, remote, hilly, island, border, and maritime regions continue to face persistent connectivity gaps, which D2D satellite services are uniquely positioned to address in the near term. D2D services can play a critical role in bridging the digital divide, by enabling basic broadband, messaging, and emergency communications in unserved areas. They can directly support public interest objectives such as telemedicine, remote education, disaster response, and network resilience, particularly where no alternative infrastructure exists.

---

The regulatory clarity and timely enablement of D2D use cases within existing licensing, spectrum, and network authorisation frameworks will be key to unlocking these benefits and supporting inclusive digital growth.

**Q21. Any other inputs or suggestions related to the use of spectrum on SCNs established by the proposed SCN authorised entities may be submitted with proper explanation and justification.**

**Q22. Regarding the agreement between SCN Authorised entity and a Service Authorised entity providing FSS/ MSS to the end user, 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 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 regulation? Please provide your response with justification.**

Charges exchanged between an SCN Authorised entity and a Service Authorised entity under agreements for the provision of SCNaaS need not be regulated. This position is supported by the established precedent in the Indian telecommunications sector, where charges paid by MNOs to passive infrastructure providers, such as tower companies including Indus Towers and ATC India, are not regulated by TRAI and are left to commercial negotiation. SCNaaS charges are functionally analogous: the SCN entity provides infrastructure (satellite network capacity), and the service provider pays for access. Regulatory intervention in infrastructure-to-service-provider pricing has consistently been limited in the Indian telecom context, and there is no basis for departing from this approach in the satellite domain. Any top-down approach of fixing charges will stifle growth of a nascent industry. Furthermore, price regulation of SCNaaS charges would deter the significant capital investment required to deploy and upgrade satellite constellations, creating a negative incentive precisely at the technology frontier where India seeks to attract global investment.

**Q23. In case of an agreement between an SCN 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 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 regulation? Please provide your response with justification.**

---

Even in D2D scenarios using MSS spectrum, the Service Authorised entity retains full control over end-user relationships, including tariffs, service plans, and compliance with applicable consumer protection and regulatory obligations. The SCN Authorised entity provides only the satellite network capability and does not provide telecommunication services directly to end-users.

Given this clear division of responsibilities, the commercial terms including charges, service levels, performance metrics and operational parameters are most appropriately determined through bilateral contractual arrangements between the parties. Any utilisation of MSS spectrum continues to be governed by applicable authorisation and spectrum assignment conditions.

In light of the above, it is submitted that regulation of charges under SCNaas agreements supporting D2D services using MSS spectrum is neither necessary nor proportionate, and that commercially negotiated arrangements, supported by contractual safeguards and light-touch regulatory oversight, provide sufficient protection while enabling efficient deployment of D2D services.

**Q24. In case of an agreement between an SCN 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 utilising spectrum for feeder link assigned to the service entity, besides utilising 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.**

Charges exchanged under SCNaas agreements supporting D2D services using IMT spectrum should not be regulated. The Feeder-link network operations remain unchanged and operates irrespective of whether the user-link spectrum is MSS- or IMT-based. Since, SCN authorised entity's role remains network-oriented hence there is no justification for modifying or regulating SCNaas charges.

**Q25. Should the charges paid by the Service Authorised entity (providing either FSS, MSS or D2D service to the end user) to SCN Authorised entity for provisioning of Satellite Communication Network as a Service (SCNaas), be permitted to be deducted from ApGR of the Service Authorised entity for the purpose of arriving at AGR for levy of License/ Authorisation Fees 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 determination of AGR of both the service authorised and SCN authorised entities, for purposes of levying Authorisation/ License fees & Spectrum Charges? Please provide your response with justification.**

**Q27. What should be the appropriate definition of GR, AGR, and ApGR for SCN Authorisation, including the relevant items of revenue, exclusions and deductions? Additionally, are there any operational or non-operational revenue elements specific to SCN Authorised entities**

**that should be considered within the scope of definitions of GR, AGR and ApGR? Please provide detailed response with specific line items of revenue, exemptions and deductions, and specific definitions for GR/ApGR/AGR.**

GSOA generally opposes regulatory and spectrum fees based on gross revenue or AGR

GSOA strongly advocates that licensing and spectrum fees should be strictly based on a cost-recovery model (i.e., recovering the actual administrative costs of managing and regulating the spectrum) rather than value-based or revenue-linked fees.

Assessing fees as a percentage of gross revenue acts as a barrier to market entry, distorts competition, and places a very high additional burden on smaller operators trying to provide satellite services.

**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 & conditions of such an assignment?**

The broad financial terms and conditions for assigning FSS, MSS, or other spectrum to Satellite Communication Network (SCN) entities providing wholesale capacity (such as SCNaas) to retail service providers should be anchored in Cost-Recovery Pricing Model.

Spectrum fees must be strictly based on a cost-recovery model, designed solely to recover the administrative expenses of managing, monitoring, and regulating the spectrum,. GSOA strongly cautions against value-based pricing or revenue-linked fees—such as those based on a percentage of Adjusted Gross Revenue (AGR) or turnover—because they act as barriers to market entry, distort competition, and hinder the deployment of capital-intensive satellite infrastructure.

---

Furthermore, to prevent duplicative regulation, entities that merely provide wholesale satellite capacity to duly licensed local service providers should not be subject to end-user retail licensing requirements, consumer-related obligations, or additional spectrum licenses. The regulatory and financial accountability for retail services should remain solely with the local internet or service provider contracting the capacity.

The financial terms should actively encourage market growth and digital inclusion by:

Reducing or waiving fees for deployments in rural and remote areas to incentivize the expansion of coverage to the unconnected areas.

Exempting applicants from annual fees during testing phases prior to a commercial launch, which fosters innovation and the deployment of advanced satellite technologies.

**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 communications services? Accordingly, what should be the appropriate spectrum charging framework and spectrum charges applicable for a SCN Authorised entity? Please provide your response with detailed justification.**

A minimum spectrum charges could distort competition, and places a very high additional burden on smaller operators trying to provide satellite services.

GSOA also opposes charging fees on a "per-terminal" based formula. Per-terminal fees are difficult to administer, require constant tracking of active devices, and create massive financial barriers for large-scale deployments like IoT networks or consumer broadband.

**Q30. If spectrum charges are to be levied on the basis of AGR of the SCN 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 basis of AGR of the SCN Authorised entity, what should be the appropriate spectrum charging mechanism and the corresponding level of spectrum charges applicable to Satellite Communication Network (SCN) authorised entities? Please provide your response with detailed justification.**

GSOA recommends, the appropriate spectrum charging mechanism for Satellite Communication Network (SCN) authorised entities is an administrative assignment based strictly on a cost-recovery model.

#### Appropriate Spectrum Charging Mechanism

The charging mechanism should be structured differently depending on the type of link being authorized, but both should adhere to administrative cost-recovery principles rather than value-based pricing:

- For Gateway Links (Infrastructure): Fees should be calculated as a reasonable fixed fee per gateway or based on an affordable bandwidth multiplying factor. However, applying strict per-MHz fees to satellite gateways can be detrimental, because satellite systems inherently require wide bandwidths to deliver high-capacity broadband; a per-MHz approach can lead to exorbitant and prohibitive costs.
- For User Links (VSATs, ESIMs, IoT terminals): Regulators should implement a blanket licensing regime subject to a single, fixed network fee. GSOA opposes charging fees on a "per-terminal" based formula. Per-terminal fees are difficult to administer, require constant tracking of active devices, and create massive financial barriers for large-scale deployments like IoT networks or consumer broadband in remote areas

#### Corresponding Level of Spectrum Charges

The actual level of the charges should be nominal and limited solely to recovering the actual technical and administrative costs incurred by the regulator to manage, monitor, and enforce compliance.

The level of satellite spectrum charges must not be based on the auction-determined prices of terrestrial 5G/IMT mobile spectrum. Terrestrial and satellite networks serve different target markets and have vastly different cost structures, making such comparisons inappropriate. If regulators use international administrative fees to benchmark their prices, they must carefully select comparable markets and normalize the unit price to account for cross-country economic differences. This normalization should utilize socio-economic factors such as Gross Domestic Product per capita (GDPPC) or Purchasing Power Parity (PPP).

To encourage investment, the level of charges can be reduced or waived entirely for deployments in rural/remote areas, or temporarily waived for testing and innovation purposes prior to commercial launch

Satellite networks require billions of dollars in upfront capital expenditure (manufacturing and launching spacecraft) and operate on long life cycles of 10 to 15 years. A cost-recovery framework offers the long-term predictability and financial stability that operators need to secure and recoup these massive investments

**Q32. In case D2D services are permitted to be provided using the MSS frequency bands such as L & 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.**

The appropriate spectrum charging framework for Direct-to-Device (D2D) services using Mobile Satellite Service (MSS) frequency bands, such as the L and S bands, should be an administrative cost-recovery model, utilizing a nominal fixed annual fee rather than auction-based, per-MHz, or revenue-linked pricing

The methodology should strictly follow these principles:

**Administrative Cost-Recovery:** Fees must be calculated solely to recover the actual administrative, technical, and regulatory costs incurred by the authority in managing and monitoring the spectrum.

**Fixed System-Level Fee:** Spectrum should be authorized under a blanket licensing regime with a single, fixed annual fee per satellite network or system. Regulators must explicitly avoid per-MHz pricing structures, which result in exorbitant, prohibitive costs that act as severe barriers to market entry and ubiquitous deployment.

D2D via satellite is fundamentally a complementary service designed to extend connectivity to areas where terrestrial infrastructure is economically challenging to deploy, such as oceans, deserts, and rural communities. It adds network resilience and emergency capabilities but does not replicate the high-capacity, low-latency urban experience of terrestrial mobile (IMT) networks due to inherent technical constraints and much narrower bandwidth allocations. Consequently, benchmarking D2D MSS fees directly against terrestrial 5G/IMT auction prices is highly inappropriate and risks stifling innovation in this emerging sector.

The development and launch of MSS systems require massive, multi-billion-dollar upfront investments and involve significant technological and financial risks. To ensure these long-lifecycle projects remain economically viable, operators require the financial predictability of a cost-based licensing framework. Applying the mobile economic model—such as high spectrum acquisition costs or turnover-based fees—places an undue financial burden on satellite operators, slowing the deployment of advanced D2D technologies.

---

High spectrum prices are ultimately passed on to end-users, making services unaffordable for the very communities they are meant to serve. Because satellite D2D uniquely addresses the connectivity needs of remote and underserved populations, regulators should prioritize the immense socio-economic value of digital inclusion and disaster resilience over the short-term goal of maximizing government revenue.

**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 detailed methodology for determination of such spectrum charges.**

No additional value-based spectrum charges should be levied on a Service Authorised entity (the partnering Mobile Network Operator or MNO) for utilizing its already-assigned IMT spectrum to provide satellite-based Direct-to-Device (D2D) services. Under the partnership model for D2D, satellite operations leverage the existing IMT spectrum holdings of the licensed MNO. Because the MNO has already been authorized for and paid for this IMT spectrum, imposing new spectrum fees for using the exact same underlying capacity would result in unjustified duplicate spectrum fee assessments. The regulatory framework should adapt to permit satellite use without introducing duplicative licensing or excessive administrative burdens.

D2D services operating in IMT bands act as a complementary layer to terrestrial networks, aimed at extending coverage to remote, maritime, aeronautical, or unserved areas where terrestrial infrastructure is not viable. The necessary regulatory adaptation is simply the flexibility to allow satellite transmissions to operate within these already assigned IMT bands, subject to commercial agreements between the satellite operator and the MNO. Because it relies on existing holdings and secondary use, it does not constitute a new primary spectrum assignment that warrants distinct spectrum charges.

**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 Satellite Communication Network (SCN) authorised entities? Please provide your response with justification.**

The core justification for predictable, simple, and non-burdensome payment terms lies in the unique economic and operational realities of the satellite industry:

- 
- **Long-Term Investment Horizons:** Satellite operators face massive upfront capital expenditures (manufacturing and launching space infrastructure) before any revenue is realized. They require long-term predictability (10 to 15-year horizons) to secure financing and recoup investments. Discretionary, variable, or heavy upfront payment terms inject severe planning risk into these projects.
  - **Consumer Affordability:** High upfront financial burdens or complex, layered regulatory costs significantly increase operational expenses (OPEX). These costs are inevitably passed on to end-users, making satellite broadband prohibitively expensive and undermining efforts to bridge the digital divide in remote and underserved areas.

GSOA strongly opposes requirements for massive upfront financial guarantees or security deposits. Requiring huge upfront investments creates severe market entry barriers, especially for smaller players and startups, and distorts competition. Such deposits are unnecessary because the annual regulatory fee, which is typically paid upfront each year, already serves as a sufficient financial guarantee for the regulator.

Regulators should avoid imposing a "multiplicity of fees" (e.g., separate application fees, initial fees, renewal fees, and regulatory fees) each with different payment deadlines. A fragmented payment structure creates significant financial and operational administrative burdens for satellite operators.

**Q35. In case Minimum Spectrum Charges are to be applicable for SCN authorised entities, what should be the payment terms for the minimum spectrum charges for SCN authorised entities? Please provide your response with detailed justification.**

A minimum spectrum charges could distort competition, and places a very high additional burden on smaller operators trying to provide satellite services. No minimum spectrum usage charges should be levied.

**Q36. What should be the minimum equity and minimum networth requirements for a Satellite Communication Network (SCN) authorised entity? Please provide detailed justification in support of your response.**

While some minimum eligibility criteria are necessary to deter speculative applications and ensure that only financially stable and committed companies enter the market, GSOA cautions against imposing heavy financial hurdles.

Assessment Based on Global Investment: Satellite technology operates on a regional or global scale, transcending national borders. Therefore, it is often impractical to expect operators to meet rigid national equity or investment criteria in every individual country they serve. Instead of strict national requirements, regulators should assess an entity's financial capacity by

considering the "total global investment made by satellite telecommunications companies" and their overall global infrastructure.

Furthermore, maintaining low financial barriers to entry is crucial for encouraging a vibrant, diverse market. Lower net worth and equity requirements attract small-scale operators, regional providers, and innovative space-tech startups, preventing the market from being monopolized by only the largest global players.

High entry costs—such as steep equity requirements, massive upfront security deposits, or excessive entry fees—significantly increase an operator's capital and operational expenses. These costs are inevitably reflected in the prices offered to consumers. Keeping financial barriers low directly supports the socio-economic goal of making satellite broadband affordable for the public, particularly in remote and low-income areas.

**Q37. What should be the entry fee for proposed Satellite Communication Network (SCN) authorisation? Please provide detailed justification in support of your response.**

Like the minimum spectrum charge above, a high entry fee places a very high additional burden on smaller operators trying to provide satellite services.

**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.**

The primary function of regulatory and authorisation fees must be to recover the costs of administrative activities required for compliance. The authorisation or entry fee for a Satellite Communication Network (SCN) authorised entity should be established at a low, proportionate level featuring "reasonably light financial obligations". GSOA strongly opposes using Authorisation fees as a mechanism for government revenue generation.

Rather than setting a universally fixed global price, the rate should be strictly determined by a transparent, cost-recovery model. This means the fee must be designed solely to recover the actual administrative, technical, and regulatory costs incurred by the authority in processing the application and managing compliance, and should never be used as a revenue-generating mechanism for the government.

**Q39. Should a Minimum Authorisation Fee be applicable for the proposed SCN Authorisation? If yes, what should be the Minimum Authorisation Fee be for the proposed SCN Authorisation? Please provide detailed justification in support of your response.**

---

The appropriate minimum authorisation fee should be determined strictly by an administrative cost-recovery model. High minimum fee places a very high additional burden on smaller operators trying to provide satellite services

**Q40. What should be the appropriate payment terms & conditions for Authorisation Fees? Please provide detailed justification in support of your response.**

In general, GSOA believes the appropriate payment terms and conditions for authorisation fees should include the following elements:

- Fee systems should be transparent and fixed, avoiding variable formulas that introduce budgeting uncertainty and financing friction. This predictability allows operators to plan and budget effectively in advance.
- Regulators should avoid imposing a "multiplicity of fees" (such as layering separate application fees, initial fees, renewal fees, and recurring annual regulatory fees) that each carry different payment deadlines. This fragmentation creates significant operational and administrative burdens for satellite operators.
- GSOA strongly opposes the requirement of huge upfront security deposits alongside authorisation fees. Regulators should recognize that an annual fee, which is typically paid upfront each year, already serves as a sufficient financial guarantee for the authority.
- The conditions surrounding fee payments should include reasonable grace periods before any penalties are imposed for non-compliance. Regulators should establish transparent dispute resolution mechanisms to handle disagreements over fee assessments, ensuring that critical satellite services are not abruptly suspended or revoked while a payment dispute is being resolved.

Regulatory conditions and fee structures must remain stable and predictable throughout the duration of the license (e.g., over a 10 to 15-year period), with any potential adjustments occurring only under exceptional circumstances following formal consultation.

**Q41. What should be the terms and conditions for Bank Guarantees, including both Performance Bank Guarantee (PBG) and Financial Bank Guarantee (FBG), for SCN authorised entities? Please provide detailed justification in support of your response.**

We believe requiring a separate security deposit or bank guarantee is redundant. Because the standard annual license or regulatory fee is typically paid upfront each year, that payment "can already serve as a guarantee" to the regulatory authority.

The satellite sector is already highly capital-intensive. Demanding a "huge upfront investment" in the form of a financial guarantee places a very high and unnecessary additional burden on operators. This practice ultimately creates severe market entry barriers—especially for smaller players—and distorts market competition.

Regulators often use financial guarantees to ensure an operator complies with rollout obligations or license terms. However, relying on heavy security deposits seems to be replacing the regulator's authority to enforce license conditions through standard, appropriate regulatory oversight and established administrative penalties.

GSOA is not aware of any such practice in other states, indicating that heavy financial guarantees for satellite authorizations fall outside of standard international regulatory norms.

**Q42. What should be the application processing fee for Satellite Communication Network (SCN) authorised entity? Please provide detailed justification in support of your response.**

The application processing fee for a Satellite Communication Network (SCN) authorised entity should be established strictly on a cost-recovery basis and kept to a nominal minimum. Regulators should avoid using application fees as a revenue-generating mechanism, and instead ensure that the fee is limited solely to recovering the actual administrative expenses incurred by the authority to process the application and issue the license.

**Q43. Apart from the financial provisions discussed earlier, are there any other financial terms and conditions that should be made applicable for the proposed Satellite Communication Network authorisation?**

**Kindly provide a detailed response with justifications.**

GSOA strongly opposes imposing blanket USF contribution requirements on satellite operators that simply mirror the obligations of terrestrial operators. Because satellite operators inherently fulfil universal service objectives by connecting remote, landlocked, and underserved areas where terrestrial networks are unviable, regulators should consider alternative funding mechanisms, including exemptions or reduced USF contribution rates for satellite operators. If satellite operators are required to contribute to the USF, the financial terms must ensure that they have fair, non-discriminatory access to those funds to support their infrastructure development and operations in rural areas.