Response to TRAI Consultation Paper No. 06/2026

Framework for Satellite Communication Network Authorisation, and Assignment of Spectrum to Satellite Communication Network Providers

Submitted by: Satelio IOT Services India Private Limited
Date: 6 May 2026
Contact: Elisabet Fonalleras — elisabet.fonalleras@sateliot.com
Regulatory: regulatory@sateliot.com
Reference: TRAI Consultation Paper No. 06/2026 dated 08.04.2026

1. About Sateliot

Sateliot is a Spanish satellite operator specialising in narrowband IoT (NB-IoT) connectivity via a Low Earth Orbit (LEO) constellation. We have established a local entity in India and are actively pursuing market entry to bring affordable, standards-based satellite IoT connectivity to Indian industries, critical infrastructure, and underserved regions.

Our service is built on 3GPP NB-IoT standards and operates in Mobile Satellite Service (MSS) spectrum bands. We provide direct device-to-satellite connectivity — enabling sensors, meters, trackers, and other IoT devices to communicate without terrestrial infrastructure, complementing Mobile Network Operators coverage. This positions our service at the intersection of the MSS regulatory framework and the rapidly emerging Non-Terrestrial Network (NTN) category.

We welcome TRAI's consultation on the Satellite Communication Network (SCN) Authorisation framework. This is a critical moment for India's satellite IoT ecosystem, and we are committed to contributing constructive, technically grounded inputs.

2. Executive Summary

Sateliot's response focuses on five strategic priorities:

- The scope of the SCN Authorisation must explicitly include NB-IoT and M2M services delivered via MSS spectrum — not only broadband or voice services.
- IoT-focused satellite network operators should face proportionate entry conditions, reflecting the narrowband, low-revenue nature of NB-IoT services.
- The regulatory interface between the SCN Authorisation (Section 3(1)(b)) and the service authorisations (Section 3(1)(a)) must be clearly defined — particularly for operators who combine network and service roles.
- Internet Service Authorisation, and not Unified Service Authorisation, should be the appropriate service authorisation under (Section 3(1)(a)) for entities using MSS/NTN spectrum to deliver IoT data connectivity.
- The spectrum assignment framework for SCN entities must accommodate MSS L-band, S-band frequency bands.

3. Responses to Issues under 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?*

Eligibility Conditions

We support a technology-neutral eligibility framework that enables both GEO and non-GEO operators, and both broadband and narrowband service providers. Specifically, we recommend the following:

- Eligibility should not be limited by minimum satellite payload power, bandwidth, or orbit class. Narrowband IoT constellations operate under fundamentally different technical parameters than broadband LEO operators.
- Foreign-owned entities with an Indian incorporated subsidiary should be eligible, subject to compliance with FDI norms under the Telecommunications Act, 2023.
- No minimum fleet size or coverage percentage should be required at authorisation stage - phased rollout commitments are more appropriate for LEO constellations.

Area of Operation

We support a pan-India area of operation for SCN authorised entities. Satellite networks, by their nature, provide coverage across national boundaries from orbit. Restricting operational areas at the authorisation level would be technically unworkable for NGSO constellations.

We note that DoT's reference envisages SCN entities providing supplemental coverage using MSS spectrum to areas with limited or no terrestrial coverage. This directly aligns with Sateliot's use case: NB-IoT connectivity for remote sensors, agricultural monitors, logistics trackers, and utility meters in areas where terrestrial networks are absent or economically unviable.

Validity Period

We recommend a minimum validity period of 20 years, consistent with the operational lifecycle of satellite constellations. Shorter validity periods create financing uncertainty and discourage long-term capital commitment in infrastructure. An option to renew for a further period of 20 years on equivalent terms should be included.

Scope - Critical Point for IoT Operators

This is the most important aspect of Q1 for NTN based NB-IOT.

The consultation paper discusses the SCN scope primarily in terms of Fixed Satellite Service (FSS), Mobile Satellite Service (MSS), and Direct-to-Device (D2D) services. We urge TRAI to explicitly confirm that the SCN scope includes:

- Narrowband IoT (NB-IoT) connectivity via satellite, delivered using MSS spectrum bands (L-band, S-band)
- Machine-to-Machine (M2M) data communications via satellite;
- Low-power, low-throughput telemetry and sensor data services, as distinct from broadband internet access.

Without explicit inclusion, narrowband IoT services risk falling into a regulatory grey area — neither clearly within the FSS/VSAT framework nor within the broadband mobile satellite category.

We therefore recommend that the SCN scope definition include a specific sub-category for NB-IoT / M2M Satellite Service, with proportionate technical and financial conditions tailored to narrowband operators.

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?*

General Terms

We support the application of standard telecom authorisation conditions to SCN entities, adapted where necessary for the satellite network layer. We highlight the following priorities:

- Security and lawful interception obligations must be technically feasible for the SCN network layer. TRAI should clarify which entity — the SCN authorised entity or the partnering service provider — holds primary responsibility for lawful intercept compliance. For IoT services, the data payload is typically encrypted end-to-end by the application layer; interception at the satellite link level may not yield intelligible content.
- Network localisation requirements should account for the technical architecture of LEO satellite systems. Requiring satellite control or baseband processing to be exclusively India-based would be technically disproportionate.
- NB-IOT players have smaller constellations, hence should be permitted sharing of gateway infrastructure with other authorisation holders.
- Rollout obligations should be phased and tied to constellation deployment milestones, not to fixed calendar dates.

Technical Terms

We recommend that technical conditions for SCN authorisations reference ITU Radio Regulations and 3GPP standards as the baseline, rather than prescribing India-specific technical parameters that may diverge from international norms. This is particularly important for NB-IoT services, where 3GPP Release 17 NTN specifications define the technical interface between devices and satellite networks.

Financial Conditions - Proportionality for Narrowband Operators

We encourage TRAI to design financial conditions that reflect the economic reality of narrowband IoT satellite services. The revenue model for NB-IoT is fundamentally different from broadband satellite services. In our case, we work on a revenue share model with the partnering MNO and we expect a low revenue per device (typically USD 1-2 per device per month), and commercial viability depends on scale across millions of devices.

Specifically, we request that:

- **Entry fees** for SCN authorisation be set at a level proportionate to narrowband service revenues — not derived from entry fees applicable to broadband or voice service authorisations.

- **Licence fees** (AGR-based) be calculated on revenues generated from the Indian market only, excluding revenues from satellites passing over India that serve users in other jurisdictions.
- **Spectrum usage charges** for MSS narrowband assignments be assessed per MHz-MHz-pop metric only on the bands actually assigned, not on the full MSS allocation.

Q3. ***Which type of authorised entities should be permitted to seek SCNaaS from the entities holding the proposed SCN authorisation? Whether virtual network operators (VNOs) should also be permitted to seek SCNaaS?***

We support a broad and inclusive definition of partnering entities eligible to seek SCNaaS. Restricting SCNaaS to a narrow category of large service authorised entities would limit competition and slow adoption of satellite IoT in India.

Specifically, we recommend that the following categories be eligible to seek SCNaaS:

- Entities holding Unified Authorization
- Entities holding Internet Service Authorisation (ISP authorization), for the provision of satellite-based data connectivity;
- Virtual Network Operators (VNOs) — we strongly support VNO eligibility. India's IoT ecosystem includes many specialist application providers and sector-specific operators who would benefit from accessing satellite connectivity via a VNO model, without the cost burden of a full service authorisation.
- Entities holding Access Service Authorisation, for supplemental coverage use cases.
- All eligible and licensed Section 4 license holders under the extant Telegraph Act 1885.

VNO access to SCNaaS is particularly important for the IoT sector. Many industrial IoT deployments in India — in agriculture, logistics, utilities, and smart infrastructure — are led by specialised companies that are not traditional telecom operators. Enabling VNO access to SCNaaS would unlock these segments at scale.

SCN Authorisation holders are network operators and they should be permitted to share this infrastructure to all license / authorisation holder under Department of Telecommunications. This includes all NSO and VNO service providers under the extant / new regime.

Q9. ***Which of the following services should be permitted to be provided by using the SCNs established by the proposed SCN authorised entities: (a) FSS; (b) MSS; (c) D2D via satellite using MSS spectrum; (d) D2D via satellite using IMT spectrum?***

We support the inclusion of all four service categories within the SCN scope, with the following observations:

(a) Fixed Satellite Service (FSS)

We support FSS inclusion. Standard VSAT and broadband FSS services are well understood and should be permitted without restriction.

(b) Mobile Satellite Service (MSS)

MSS inclusion is essential. Sateliot's NB-IoT service is delivered using MSS spectrum. We urge TRAI to confirm that MSS within the SCN scope includes narrowband IoT applications in L-band, S-band, in addition to broadband MSS and traditional satellite telephony.

(c) D2D via satellite using MSS spectrum

We support this inclusion. D2D via MSS spectrum is technically established and commercially deployed in several markets. For NB-IoT, the device-to-satellite link is the fundamental service model — there is no terrestrial base station in the signal path. Permitting this under the SCN framework is necessary for IoT operators like Sateliot to operate legally in India.

(d) D2D via satellite using IMT spectrum

We recommend a cautious approach to D2D via IMT spectrum at this stage. The ITU WRC-27 process (Agenda Item 1.13) is ongoing, and international allocations for satellite use of IMT bands have not yet been finalised. We agree with TRAI's suggestion (Q10) that this matter be re-examined following WRC-27 outcomes. Premature authorisation could create interference risks and regulatory inconsistency.

We note that this limitation does not affect Sateliot's current service model, which operates exclusively in MSS-allocated bands.

All the above should not differ from the fact that a complementary Service Authorization might also be needed. It would just depend on the business model who will hold it.

Q12–13. ***Which types of spectrum should be assigned to SCN authorised entities, and what should be the broad policy framework for such assignment?***

We support assignment of both FSS and MSS spectrum to SCN authorised entities, with the following specific recommendations for MSS:

- L-band (1–2 GHz) and S-band (2–4 GHz) MSS assignments should be available to SCN entities providing NB-IoT and M2M services. These bands are ITU-allocated for MSS and are the primary bands used by NB-IoT satellite operators globally.
- Spectrum assignment should be by administrative process (not auction) for MSS bands, consistent with DoT's clarification of 07.10.2025 and Entry 16 of the First Schedule of the Telecommunications Act, 2023.
- Assignment fees and annual spectrum charges for narrowband MSS should be significantly lower than for broadband assignments, reflecting the negligible impact on spectrum utilisation from narrowband IoT transmissions.

We urge TRAI to ensure that TRAI's recommendations dated 09.05.2025 on spectrum assignment terms, when applied to SCN entities, include specific provisions for narrowband IoT use cases. A one-size-fits-all approach derived from broadband satellite parameters would be disproportionate and could effectively preclude NB-IoT satellite operators from the Indian market.

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.***

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.***

Our response is specific to **narrowband NTN-IoT** services.

SCN Authorisation has been envisaged as essentially network entities, with the added eligibility for assignment of spectrum for enabling provision of Network as a Service (NaaS) to a Service Authorised entity.

No applicability of License fee on Network entities

The license fee / authorisation fee is applicable to Service Authorised entities as they provide service to the end user. There is no applicability of license fee / authorisation fee on Network entities and they create infrastructure for further utilisation by Service entities. Hence, the definition of GR, AGR, ApGR are not applicable to Network entities.

In the eventuality, the Authority decides to levy a minimal license fee, we specifically request that:

- **Entry fees** for SCN authorisation be set at a level proportional to narrowband service revenues — not derived from entry fees applicable to broadband or voice service authorisations.
- **Licence fees** (AGR-based) are calculated on revenues generated from the Indian market only, excluding revenues from satellites passing over India that serve users in other jurisdictions.
- **Spectrum usage charges** for MSS narrowband assignments are assessed per MHz-MHz-pop metric only on the bands actually assigned, not on the full MSS allocation.

The NTN-IoT services are available in rural areas, hilly areas, and underserved areas, thus the Universal Service Obligation Fund (USOF) levy @5% of AGR should not be applicable on such network entities.

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 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 authorised entities? Please provide detailed justification in support of your response.***

The financial conditions should be proportionate to the narrowband applications where the spectrum requirement is on the order of 1-5 MHz.

Financial Conditions - Proportionality for Narrowband Operators

We encourage TRAI to design financial conditions that reflect the economic reality of narrowband IoT satellite services. The revenue model for NB-IoT is fundamentally different from broadband satellite services. In our case, we work on a revenue share model with the partnering MNO and we expect a low revenue per device (typically USD 1-2 per device per month), and commercial viability depends on scale across millions of devices.

- **Entry fees** for SCN authorisation be set at a level proportionate to narrowband service revenues — not derived from entry fees applicable to broadband or voice service authorisations.

We request the Authority to continue with the Minimum Equity, Minimum Networth, Entry Fee, PBG, FBG and Application Processing Fee for M2M service under extant regime for **narrowband NTN-IoT** services under SCN Authorisation.

Service	Minimum Equity (Rs. Cr.)	Minimum Networth (Rs. Cr.)	Entry Fee (Rs. Cr.)	PBG (Rs. Cr.)	FBG (Rs. Cr.)	Application Processing Fee(Rs. Cr.)
Machine to Machine 'A' (National Area)	Nil	Nil	0.30	0.400	0.020	0.001

1 Cr = INR 10,000,000 (INR 10 Million)

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.*

No applicability of License fee on Network entities

The license fee / authorisation fee is applicable to Service Authorised entity as they provide service to end user. There is no applicability of license fee / authorisation fee on Network entities and they create infrastructure for further utilisation by Service entities.

In the eventuality, the Authority decides to levy a minimal license fee, we specifically request that:

- **Licence fees** (AGR-based) be calculated on revenues generated from the Indian market only, excluding revenues from satellites passing over India that serve users in other jurisdictions.
- The NTN-IoT services are available in rural areas, hilly areas, and under served areas, thus the Universal Service Obligation Fund (USOF) levy @5% of AGR should not be applicable on such network entities.

---

4. Broader Regulatory Concern:

Service Authorisation Classification for MSS IoT

We wish to draw TRAI's attention to a regulatory issue that, while not directly addressed by this consultation, is directly connected to it and materially affects Sateliot's market entry.

Under the current framework derived from the Unified License regime, entities providing satellite-based services using MSS spectrum are typically required to hold a Unified Service Authorisation (or its equivalent under the Telecommunications Act, 2023) rather than an Internet Service Authorisation. The financial obligations associated with Unified Service Authorisation — including entry fees and minimum net worth requirements — are disproportionate for a narrowband IoT connectivity provider.

The SCN Authorisation framework being designed in this consultation creates a new network layer. However, the service layer — the entity that ultimately provides IoT connectivity to end users — still requires an appropriate service authorisation. If that service authorisation is classified as Unified (rather than Internet Service), the financial barrier remains.

We strongly recommend that TRAI address this issue within the scope of its recommendations on the SCN framework, by clarifying that:

- Entities using SCNaaS to provide IoT/M2M data connectivity to end users should be eligible for Internet Service Authorisation, not Unified Service Authorisation.
- The use of MSS spectrum by the SCN layer (Section 3(1)(b)) should not automatically trigger a requirement for Unified Service Authorisation at the partnering service layer (Section 3(1)(a)), provided the services delivered are data-only IoT/M2M applications.

This clarification would align the regulatory framework with the economic reality of satellite IoT services and remove a significant barrier to market entry for operators like Sateliot.

5. Conclusion

Sateliot welcomes TRAI's initiative to create a dedicated SCN Authorisation framework. India's satellite IoT opportunity is significant — across agriculture, logistics, utilities, disaster management, and smart infrastructure. A well-designed regulatory framework can unlock this potential.

We ask TRAI to ensure that the SCN framework is built to be genuinely inclusive of narrowband IoT operators, not only broadband satellite providers. The technical parameters, financial conditions, and spectrum assignment framework must all reflect the distinct economics of NB-IoT satellite services.

We are available to provide additional technical inputs, participate in open house discussions, and meet with TRAI's technical team to clarify any aspects of our submission.

Elisabet Fonalleras Nadal

Head of Regulatory Affairs and Global Licensing

Satelio IoT Services India Private Limited

elisabet.fonalleras@sateliot.com | regulatory@sateliot.com