

**To:** Shri Akhilesh Kumar Trivedi, Advisor (Networks, Spectrum and Licensing)

**From:** Dua Associates

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**Subject:** Written Comments on behalf of Stakeholders

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**Table of Contents**

Q1–Q10: Framework and Services (including D2D) .....	1
Q11–Q21: Spectrum / Architecture.....	7
Q22–Q26: Commercial Arrangements .....	14
Q28–Q33: Spectrum Charging .....	17
Q34–Q43: Financial Conditions .....	21

***Q1–Q10: FRAMEWORK AND SERVICES (INCLUDING D2D)***

**Dua Associates: Overall Approach to Submissions to Q1 to Q10 below:**

A unified and flexible Satellite Communication Network (SCN) framework should be adopted with a technology-neutral approach that accommodates satellite as well as hybrid models, while enabling Fixed Satellite Services (FSS), Mobile Satellite Services (MSS), and Direct-to-Device (D2D) services.

The framework should support a hybrid MSS-IMT model, recognize MSS as a key enabler for early deployment, and facilitate flexible partnerships with mobile network operators to accelerate service rollout. It is important to support standard and unmodified devices and to ensure alignment with evolving 3GPP standards, particularly for MSS D2D services, and, also for IMT D2D services while also leveraging existing regulatory and technical frameworks wherever relevant.

At this stage, the primary objective should be to encourage the growth and adoption of SatCom services across FSS, MSS, and IMT D2D segments so that increasing scale and volumes can help reduce tariffs and improve affordability. To achieve this, policy and regulatory support in the form of light-touch licensing, regulatory certainty, and a simplified compliance environment will be critical. At the same time, unnecessary complexity that could delay deployment should be avoided, and as ITU regulations continue to evolve, a fully technology-

neutral approach across MSS D2D, IMT D2D, and hybrid models should be progressively enabled, with 3GPP standards serving as the preferred framework for implementation.

**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.**

**Dua Associates Comments:**

We suggest the following:

- ITU allocation priority should be followed for all MSS D2D allocations
- D2D services only to be based on standardized 3GPP protocols. Should support existing and future generations as a must
- Strictly follow NFAP allocation plan and assignments should be made in accordance with NFAP and ITU guidelines to eliminate interference to existing and future systems
- Partnership with Indian entity for providing the MSS D2D services
- Support pan-India SCN authorization, avoiding LSA-based restrictions
- Ensure long-term validity (e.g. aligned with satellite lifecycles) to support investment as per the existing terrestrial allocations (20 years)
- Allow satellite-only and hybrid (satellite + mobile) models
- Cover FSS, MSS, and D2D services under a single authorization
- Align with existing telecom frameworks (e.g. licensing/ authorization, security, lawful interception), where relevant
- Avoid regulatory complexity (e.g. multiple approvals or overlapping requirements) that could delay deployment
- In sum, we suggest *light touch predictable regulation* and *licensing/ authorization* to allow growth of the service and affordable tariffs with volumes. Long term period of validity of authorization – with a minimum 10 years with possibility of extension, together with administrative assignment of spectrum, at the initial phases, would be best recommended for capital intensive satellite networks, together with single window clearance and time-bound approvals. MSS for D2D would have to be as per ITU's international standards
- It is agreed that LSA wise licensing is not practical for satellite systems since they have wide coverage

**Q-2 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.**

**Dua Associates Comments:**

We suggest the following:

- Keep terms balanced and not overly prescriptive, avoiding unnecessary technical constraints
- Keep requirements which hamper security like data residency, ground station and core networks

- TT&C and other spacecraft operations can be done centrally anywhere in the globe
- Ensure compliance with security and lawful interception requirements
- Support 3GPP standards to enable interoperability and device compatibility seamless experience for end users with all MNOs
- Allow flexibility for different technical models (including hybrid satellite-terrestrial architectures)
- Align with existing telecom frameworks (e.g. licensing, security, network management), where relevant
- Avoid requirements (e.g. duplicative approvals or technical constraints) that could delay deployment (Eg: TEC, NOCC)
- Light touch regulation and licensing/ authorization, to allow growth of the service and affordable tariffs with volumes; and single window clearance with time-bound approvals process
- The provision of TT&C services from outside India may be possible to negotiate, at the same time also note that the presence of Gateway/ Ground Station in India is essential for providing service in India and that negotiations in this regard are very difficult

**Q-3 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.**

**Dua Associates Comments:**

We suggest the following:

- Permit a broad range of authorized entities to access SCNaaS
- Companies having tie-up with satellite constellation companies to provide service as a primary SCN in India. Such SCN can appoint SCNaaS to distribute services to smaller companies and drive innovation
- Primary SCN to be responsible for all compliance
- Allow VNOs to access SCNaaS to support competition and service innovations
- Maintain a flexible framework for partnerships and service delivery models (e.g. *wholesale, hybrid satellite-terrestrial*)
- It is recognized that due to the complexity of satellite communications, the SCNaaS Operator would have to be responsible for all compliances
- However, if the SCNaaS Operator is providing only passive infrastructure, the responsibility for compliances could also rest on the SCN Operators that would be relatively large entities and collaborating with the SCNaaS Operator
- The question of VNOs for satellite-based services must be considered very cautiously, due to the many complexities including international liabilities for the country

**Q-4 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.**

**Dua Associates Comments:**

We suggest the following:

- Do not mandate strict control or management requirements between SCN and partnering entities very similar to currently being done with MNOs
- Allow control, visibility, and resource management to be commercially agreed as between parties based on license, traffic and market requirements
- Ensure that the service provider has sufficient visibility to manage customers and service quality and provide support
- Maintain flexibility across different partnerships and operating models (e.g., wholesale, hybrid satellite-terrestrial)
- An Agreement between SCNaas Operator and the collaborating SCN Operator(s) defining the relationship including obligations, rights & responsibilities would have to be very cautiously drawn out, not in the least due to the complexity of satellite communications, including international liabilities for the country

**Q-5 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.**

**Dua Associates Comments:**

We suggest the following:

- Align SCN authorization with the space sector frameworks; and avoid duplication with telecom licensing frameworks
- Continue administrative allocation of spectrum resources to SCN
- Ensure compliance with national security, licensing, and regulatory requirements
- Allow flexibility for satellite operations and architecture
- Support integration with terrestrial networks and new age IoT applications
- Avoid overlapping or duplicative conditions between space and telecom frameworks that could delay deployment
- INSPACE authorization & other requirements should be part of Terms & Conditions for SCN authorization
- Light Touch Authorization would allow flexibility and market forces to play in context to agreement between SCNaas and SCN Operators
- It is reiterated that unambiguous and clear guidelines with time bound approvals processes are essential

**Q-6 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.**

**Dua Associates Comments:**

We suggest the following:

- Do not mandate a standard or reference agreement between SCN and service providers
- If introduced, keep any reference framework non-binding and indicative, without restricting commercial flexibility
- Allow parties to commercially agree on terms (pricing, service levels, resource allocation) as the technology is nascent and developing
- Ensure flexibility for different partnerships and operating models (wholesale, hybrid satellite-terrestrial).
- Light Touch Authorization would allow flexibility and market forces to play in context to agreement between SCNaas and SCN Operators

**Q-7 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.**

**Dua Associates Comments:**

We suggest the following:

- Ensure interconnection with existing/all mobile and fixed networks;
- Define clear interconnection responsibilities between SCN and service providers (e.g. traffic routing, QoS, fault management)
- Support standards-based interconnection (3GPP, IP-based interfaces) to ensure interoperability
- Avoid additional interconnection requirements beyond existing TRAI frameworks that could delay deployment
- Continue the existing zero IUC (Interconnect usage charges) regime
- Due to capital intensive nature of SatCom services and very large differences in tariffs and volumes of traffic of SatCom & other services, particularly in the initial stages, zero IUC (Interconnect usage charges) may not serve the interests of SatCom service providers at the initial stages. Therefore, zero IUC (Interconnect usage charges) may be considered subsequently in due course after SatCom services have grown to a reasonable level.

**Q-8 Any other inputs or suggestions relevant to the proposed Satellite Communication Network authorisation may kindly provided with detailed justification.**

**Dua Associates Comments:**

We suggest the following:

- Support a simple and unified SCN framework and avoid regulatory fragmentation across multiple authorizations.
- Single license for Pan India
- Spectrum allocation on Pan India basis including land and territorial waters.
- Ensure regulatory certainty and predictability (e.g. clear timelines, stable licensing conditions) to support investment.
- Enable early deployment by minimizing approval timelines and regulatory bottlenecks.
- Align with international standards and practices (ITU, 3GPP, 3GPP spectrum bands)
- Support integration with mobile networks -hybrid satellite-terrestrial and D2D models
- Light Touch Regulation and Licensing/ Authorisation, time bound approvals, Regulatory Certainty, are essential, single pan India license/ authorization, are essential for the desired growth of the SatCom services and consequential reduction of their tariffs, to affordable levels.

**Q-9 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.**

**Dua Associates Comments:**

We suggest the following:

- Support (a) FSS and (b) MSS as core services under the SCN framework
- Support (c) D2D using MSS spectrum, enabling early deployment using existing L-band and S-band allocations
- Support (d) D2D using IMT spectrum, with the partnering MNO using its assigned spectrum
- Enable a hybrid MSS-IMT approach, treating D2D as an extension of terrestrial mobile networks
- Avoid unnecessary delays in enabling D2D services, while allowing consideration of evolving international frameworks such as WRC-2027
- Above suggestions are based on available devices with consumers and eliminate cost barriers to use D2D services

- SCN Operators should be permitted to provide all SatCom services, as per their choice. Arrangements for sharing IMT spectrum should be made between the SCN Operators and IMT Operators, subject to security and other mandatory requirements including payments to be complied.

**Q-10 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.**

**Dua Associates Comments:**

We suggest the following:

- Support enabling D2D via satellite using IMT spectrum, subject to an appropriate regulatory framework
- Support a hybrid MSS-IMT approach, treating satellite D2D as an extension of terrestrial mobile networks
- Enable the use of IMT spectrum by partnering MNOs using their assigned spectrum
- Avoid unnecessary delays, while allowing consideration of WRC-2027 outcomes as needed
- Apply appropriate coordination and interference management measures
- The use of IMT spectrum for D2D services should be left to mutual agreement between SCN and IMT Operators, as such, D2D service should be treated as an extension of IMT service.

***Q11–Q21: SPECTRUM / ARCHITECTURE***

**Dua Associates Overall Guidance for Q11 to Q21 below:**

The regulatory framework for SatCom services should support the administrative assignment of spectrum in line with the provisions of the Telecommunications Act, 2023, including the Schedule of the said Act, while ensuring efficient and flexible spectrum utilization.

A streamlined single-window mechanism with time-bound approvals is essential to avoid delays in service deployment and to create a predictable and investment-friendly ecosystem.

The framework should also recognize MSS spectrum as a globally coordinated and harmonized resource and support a hybrid MSS-IMT approach to enable seamless integration between satellite and terrestrial networks.

In addition, regulatory alignment with evolving ITU frameworks should be maintained to ensure global interoperability and consistency, while avoiding regulatory fragmentation that could hinder innovation, scale, and the rapid growth of satellite communication services.

**Q-11 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><i>Combination No.</i></b>	<b><i>Spectrum for the feeder link held by -</i></b>	<b><i>Spectrum for the user link held by -</i></b>
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.**

**Dua Associates Comments:**

We suggest the following:

- Support flexibility with the IMT Operator & SCN Operators for their agreement regarding holding and use of IMT D2D spectrum, meant for user links
- SCN Operator, which will hold all remaining spectrum (for feeder links as well as user links) should also be responsible for fulfilling regulatory compliances, considering international coordination of FSS, MSS & other SatCom spectrum.
- Allow partnering entities -MNOs- to hold user link spectrum, particularly for IMT-based and D2D services
- Allow SCN entities to hold and manage feeder link spectrum, to ensure efficient satellite network operation
- Enable models where user link spectrum is held by service providers and feeder links by SCN entities
- Avoid rigid approaches that could limit hybrid MSS-IMT models or delay deployment

**Q-12 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.**

**Dua Associates Comments:**

We suggest the following:

- Any allocation should be based on ITU filing priority
- Support assignment of (a) FSS and (b) MSS spectrum to SCN entities, based on service requirements

- Support MSS spectrum for mobile-integrated and D2D use cases (e.g. L-band and S-band for early deployment)
- Allow (c) other spectrum bands, where technically justified and aligned with service needs
- Maintain a flexible, technology-neutral approach enabling both satellite-only and hybrid MSS-IMT models as soon as may become feasible

**Q-13 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 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.**

**Dua Associates Comments:**

We suggest the following:

- Build on existing TRAI recommendations with targeted adaptations for SCN-specific use cases - SCNaas, hybrid models
- Maintain a consistent framework across NGSO-based FSS and GSO/NGSO-based MSS, with flexibility for different system architectures
- For GSO-based FSS, apply a similar approach, with adjustments to reflect capacity-based and service-specific characteristics
- Ensure the framework supports evolving models -hybrid MSS-IMT, partnership-based services.
- Avoid additional complexity or duplicative conditions that could delay deployment

**Q-14 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.**

**Dua Associates Comments:**

We suggest the following:

- Allocation based on ITU filing priority for MSS allocation
- Standardized 3GPP protocol adherence
- Keep eligibility clear and technology-neutral, without favoring specific satellite systems or architectures.
- Allow SCN entities to access FSS and MSS spectrum, subject to applicable regulatory approvals
- Base eligibility on objective criteria - technical capability, regulatory compliance, coordination requirements
- Avoid restrictive conditions such as excessive entry barriers or procedural requirements that could delay deployment
- Light Touch Licensing/ Authorization, and eligibility criteria that is not cumbersome, are essential for the growth of SatCom services in the country

**Q-15 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.**

**Dua Associates Comments:**

We suggest the following:

- Support the administrative assignment of FSS and MSS spectrum, consistent with global satellite practices
- Keep the framework flexible and service-driven, allowing spectrum use based on actual service requirements
- Ensure alignment with international practices and ITU frameworks, like Radio Regulations and coordination procedures
- Avoid conditions -restrictive usage rules or additional approvals- that could delay rollout or limit future evolution
- Alignment with ITU Radio Regulations and NFAP (generally following ITU RR) is desirable for economy of scales (for network and user equipment)

**Q-16 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.**

**Dua Associates Comments:**

We suggest the following:

- We agree that it is necessary to establish a flexible framework to enable SCN entities to use the spectrum assigned to partnering entities for SCNaaS provisioning services.
- Allow terms to be commercially agreed including spectrum use, service levels, capacity allocation- subject to regulatory compliance, provided that overall responsibility for regulatory compliances cannot be delegated to other entities nor diluted in any other way.
- Ensure clear allocation of responsibilities as between parties - e.g. spectrum rights, interference management, regulatory obligations
- Avoid overly prescriptive rules or approval requirements that could delay deployment or limit partnership models
- The responsibility for all regulatory compliances – spectrum use, ITU coordination, interference management & service quality, etc. – should rest with the entity (*Satcom Operator in this case*), which has spectrum assignment
- Single Window processing & Clearance with time bound approvals is imperative

**Q-17 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.**

**Dua Associates Comments:**

We suggest the following:

- Keep agreements commercially negotiated and flexible, allowing parties to define terms based on service needs
- Ensure clear roles and responsibilities for spectrum use, service delivery and regulatory compliance
- Address interference management and coordination requirements, including alignment with applicable regulatory frameworks
- Avoid additional approval requirements or prescriptive conditions that could delay implementation

**Q-18 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 it? Kindly provide a detailed response with justification.**

**Dua Associates Comments:**

We suggest the following:

- Establish a clear and flexible framework for D2D using MSS spectrum, aligned with existing MSS regulatory approaches
- Support the use of MSS L-band and S-band for early D2D deployment, leveraging existing allocations
- Ensure alignment with 3GPP NTN specification, and existing MSS licensing frameworks and for IMT D2D service
- Apply proportionate conditions, avoiding additional licensing burdens or requirements beyond traditional MSS frameworks

**Q-19 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.**

#### **Dua Associates Comments:**

We suggest the following:

- Enable D2D using IMT spectrum through partnering MNOs using their assigned spectrum
- Treat satellite D2D as an extension of terrestrial mobile networks, rather than a standalone service – for IMT D2D
- Establish a light-touch regulatory framework, enabling commercial arrangements between SCN and service providers
- Allow use of IMT bands (including FDD bands, where appropriate) based on service and deployment requirements, preferably mid band range which allows device manufacturers to optimize antenna characteristics for both MSS and IMT for NTN purposes
- Allowing one or more partnering entities across service areas may be considered
- Avoid additional licensing burdens or spectrum charges for SCN entities in IMT-based D2D
- Ensure appropriate interference management and coordination, aligned with national and ITU frameworks

**Q-20 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.**

#### **Dua Associates Comments:**

We suggest the following:

- We do not support direct regulation of charges between SCN and service providers

- Instead, as already states in earlier responses, allow charges to be commercially agreed upon as between SCN and service providers including pricing, service levels, and capacity arrangements
- If needed, apply a light-touch framework, limited to transparency and basic service parameters
- Avoid prescriptive requirements or pricing controls that could limit partnerships or delay deployment

**Q-21 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.**

**Dua Associates Comments:**

We suggest the following:

- Maintain a flexible and technology-neutral approach supporting both satellite-only and hybrid MSS-IMT models
- Ensure alignment with international frameworks - ITU Radio Regulations, coordination procedures
- Support efficient and shared spectrum use, particularly in partnership-based and hybrid deployments
- Avoid additional regulatory conditions or constraints that could delay deployment or limit service evolution
- RE: IMT D2D - The collaborating IMT Operator and SCN Operator should be allowed flexibility in their mutual agreement/ arrangement for spectrum usage, as long as they follow the general guidelines and do not interfere with other operators

**Q22–Q26: COMMERCIAL ARRANGEMENTS**

**Dua Associates: Overall Approach to Submissions to Q22 to Q26 below:**

Commercial arrangements between stakeholders in the SatCom ecosystem should be left to be negotiated on a market-driven and commercial basis between the concerned parties, with minimal regulatory intervention in pricing and commercial terms wherever possible.

The framework should provide sufficient flexibility to accommodate different partnership and business models, while encouraging clear, transparent, and mutually agreed contractual arrangements.

At the same time, overly prescriptive requirements that could restrict partnerships, reduce innovation, or delay deployment should be avoided. In addition, a simple, predictable, and consistent approach to revenue treatment, including Adjusted Gross Revenue (AGR) considerations, should be ensured to support ease of doing business and promote long-term growth and investment in the sector.

**Q-22 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.**

**Dua Associates Comments:**

We suggest the following:

- We do not support direct regulation of charges between SCN and service providers for SCNaas
- Allow charges to be commercially agreed upon, such as pricing, SLAs, capacity, and usage arrangements
- If needed, apply a light-touch framework, limited to transparency and basic service parameters
- Avoid prescriptive pricing controls or approval requirements that could delay deployment or limit commercial flexibility

**Q-23 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.**

**Dua Associates Comments:**

We suggest the following:

- As stated earlier, avoid direct regulation of charges for D2D services using MSS spectrum
- Allow charges to be commercially agreed such as pricing, service levels, and capacity arrangements
- Maintain flexibility across different service and partnership models for MSS-based D2D and integrated mobile services
- Similarly, we also recommend that same for IMT D2D – i.e., allowing collaborating IMT Operator and SCN Operator the flexibility to reach mutual agreement/ arrangement for spectrum usage, subject to compliance with the general guidelines and non-interference with other providers

- Avoid additional regulatory or pricing requirements that could delay rollout or limit scalability
- We recommend that it would be in the interest of all operators for market driven forces prevail

**Q-24 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.**

**Dua Associates Comments:**

We suggest the following:

- Avoid direct regulation of charges for D2D services using IMT spectrum
- Allow charges to be commercially agreed between SCN entities and partnering MNOs (e.g. pricing, service levels, capacity arrangements)
- Maintain flexibility to support hybrid MSS-IMT models, with D2D treated as an extension of terrestrial mobile networks
- Avoid additional pricing controls or regulatory requirements that could limit scalability or delay deployment

**Q-25 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.**

**Dua Associates Comments:**

We suggest the following:

- Yes, allow SCNaas charges paid by service providers to be deducted from ApGR, to avoid double-counting in AGR calculations.
- In the interest of clarity regarding accounting of AGR, we suggest that a reasonable cap for such charges should be considered.
- Ensure no duplication of revenue recognition between SCN and service providers
- Establish a clear and consistent approach to AGR treatment, aligned with partnership-based models

- Support efficient commercial arrangements, particularly for hybrid and SCNaaS-based service delivery.

**Q-26 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.**

**Dua Associates Comments:**

We suggest the following:

- Establish a clear and consistent methodology to allocate revenues between SCN and service providers
- Ensure no double-counting of revenues, with distinct treatment of SCNaaS and end-user service revenues
- Clearly define revenue attribution principles (e.g. wholesale vs retail, pass-through treatment)
- Keep the approach simple, transparent, and aligned with existing AGR frameworks
- We also reiterate our submissions to Q25 above in respect of this Q26

**Q-27 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.**

**Dua Associates Comments:**

We suggest the following:

- Align definitions of GR, ApGR, and AGR with existing telecom frameworks, while adapting for SCN-specific models
- Ensure a clear and consistent approach to revenue classification, distinguishing between SCNaaS (wholesale) and end-user (retail) revenues
- Exclude pass-through charges and revenues already accounted for at another level, to avoid double counting
- Ensure treatment reflects the partnership-based nature of SCNaaS (e.g. SCN as wholesale provider to service entities)
- Keep the framework simple, transparent, and aligned with existing AGR principles

**Q28–Q33: SPECTRUM CHARGING**

**Dua Associates: Overall Approach to Submissions to Q28 to Q33 below:**

The spectrum charging framework for SatCom services should be predictable, transparent, and proportionate, ensuring that regulatory costs remain reasonable and aligned with the objective of promoting sector growth.

Approaches that could impose excessive financial burdens on operators should be avoided, particularly in the context of emerging and evolving services such as Direct-to-Device (D2D) communications. The pricing framework should support continued investment, innovation, and sustainable deployment of satellite communication infrastructure while maintaining consistency with relevant international practices and principles.

In addition, the framework should remain simple, clear, and easy to implement, without introducing unnecessary or additional charges that could hinder affordability, scalability, or the adoption of next-generation SatCom services.

**Q-28 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?**

**Dua Associates Comments:**

We suggest the following:

- SCN is bridging the digital divide hence no additional burden of spectrum charges should be levied. Consider compensation by the govt through USO (DBN) fund
- Keep financial terms clear and proportionate, reflecting SCN's role as a wholesale/enablement layer
- Ensure conditions support investment and long-term deployment (e.g. predictable payment obligations)
- Avoid excessive upfront or recurring charges that could affect the business case
- Maintain consistency with existing satellite frameworks (e.g. FSS/MSS practices)
- In line with the spectrum charging approach of revenue share for other Telecom services, the Revenue Share model could be adopted for SatCom services also.
- Furthermore, to encourage growth of this service, the Revenue share should be considered at a maximum of 1%
- It is suggested that any perceived loss on account of this low share of revenue would be more than made up of by the socio-economic development of the remote areas, as well as GST on the growing revenue
- Our suggestion for consideration is objective and in the interest of encouraging growth of this service

**Q-29 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.**

**Dua Associates Comments:**

We suggest the following:

- Build on TRAI's 09.05.2025 recommendations, with adjustments for SCN-specific models
- Specifically, it is suggested that the Revenue share during the initial phase could be 1% of AGR, subject to be reviewed after 5 years, depending on the growth of service
- Ensure the charging framework is predictable and proportionate to SCN's role
- Reflect the intermediate/wholesale nature of SCNaas in the value chain
- Avoid approaches that could distort investment incentives or delay deployment

**Q-30 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.**

**Dua Associates Comments:**

We suggest the following:

- Exclude pass-through revenues and wholesale SCNaas components from AGR calculations
- The revenue from the SatCom services only should be counted in ApGR
- Ensure no double counting of revenues across SCN and service providers
- Reflect the partnership-based nature of SCNaas (wholesale vs retail separation)
- Keep AGR treatment clear, consistent, and aligned with existing frameworks
- Only AGR based and no fixed charges per device

**Q-31 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.**

**Dua Associates Comments:**

We suggest the following:

- If not AGR-based, adopt a simple and predictable charging mechanism (e.g. flat or capacity-based per MHz)
- Ensure charges remain proportionate and investment-friendly
- Avoid complex or uncertain methodologies that could impact deployment decisions
- Aligning the approach with long-term sustainability of SCN deployments

**Q-32 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.**

**Dua Associates Comments:**

We suggest the following:

- Avoid additional financial burden on MSS spectrum used for D2D services
- Ensure charging supports early deployment (e.g. L-band, S-band use cases)
- Apply a proportionate and simple charging approach, aligned with traditional MSS frameworks
- Avoid pricing structures that could slow adoption of emerging D2D services
- Avoid pricing structure which makes services unaffordable to end users as it is a cost sensitive market
- It is submitted that MSS in L & S bands is akin to D2D services. Hence, spectrum charging for MSS in L & S bands (Revenue Share) can be adopted for D2D services as well
- It may be noted that once the MSS in L & S bands gets added to the IMT Smart phones, it will immensely benefit the public at large, leading to immense socio-economic growth/development

**Q-33 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.**

**Dua Associates Comments:**

We suggest the following:

- Avoid additional spectrum charges on partnering MNOs for IMT spectrum used in D2D
- Treat D2D via IMT as an extension of terrestrial networks, not a new spectrum use case
- Ensure any charging approach is clear, proportionate, and justified
- Avoid additional charges that could delay rollout or limit scalability of hybrid MSS-IMT models
- The IMT Spectrum has been acquired by IMT Operators through Auction. They should be allowed to use it for IMT D2D services, without any further financial burden, but within the overall guidelines to encourage the growth of SatCom services

**Q34–Q43: FINANCIAL CONDITIONS**

**Dua Associates: Overall Approach to Submissions to Q34 to Q43 below:**

The financial framework for SatCom services should ensure that obligations and conditions remain reasonable, proportionate, and aligned with the objective of promoting growth and participation in the sector. Requirements that could create unnecessary barriers to entry or discourage stakeholder participation should be avoided, while the overall framework should encourage investment, innovation, and long-term sustainability.

Financial obligations should be clear, predictable, and transparent to provide regulatory certainty and facilitate efficient business planning. In addition, excessive guarantees, high upfront commitments, or burdensome financial requirements that could adversely impact timely deployment and expansion of services should be avoided.

Wherever relevant, the framework should also maintain consistency with existing regulatory and licensing structures, while ensuring that duplication of obligations or overlapping compliance requirements is minimized.

**Q-34 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.**

**Dua Associates Comments:**

We suggest the following:

- Keep payment terms clear and predictable (e.g. defined timelines, periodic payments)
- Align payment structure with cash flow realities of satellite deployment cycles
- Avoid front-loaded payment obligations that could impact rollout
- Adopt a simple and predictable charging mechanism (e.g. flat or capacity-based per MHz)
- Revenue share model followed by other Telecom Services should be followed by other SatCom services. For instance, as already suggested, a 1% Revenue Share during the initial phase subject to review after the services have grown to a reasonable level

**Q-35 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.**

**Dua Associates Comments:**

We suggest the following:

- If minimum spectrum charges apply, ensure they are reasonable and proportionate to actual usage

- Avoid high fixed charges that could create barriers for early-stage deployment
- Maintain predictable and simple payment structures
- The minimum spectrum charges (along with Revenue Share) should be different for different frequency bands and be related to govt. expenditure on Spectrum Management

**Q-36 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.**

**Dua Associates Comments:**

We suggest the following:

- Keep minimum equity and net worth requirements proportionate to SCN business models
- Avoid thresholds that could exclude new or emerging players
- Ensure requirements reflect capital intensity and phased deployment nature of satellite systems
- As stated before, the Terms & Conditions for SCN (& SCNaas) should not be burdensome. This applied applies to Equity & Net worth requirements
- It is suggested that only serious players should be allowed

**Q-37 What should be the entry fee for proposed Satellite Communication Network (SCN) authorisation? Please provide detailed justification in support of your response.**

**Dua Associates Comments:**

We suggest the following:

- Keep entry fees reasonable and align the same with market entry objectives
- Avoid high upfront costs that could delay participation
- Support a framework that encourages competition and investment

**Q-38 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.**

**Dua Associates Comments:**

We suggest the following:

- Keep authorization fees (i.e., license fee) proportionate and predictable. It is suggested that such a fee should be a fraction of 1%, to encourage growth of this service during the initial phase, subject to review in due course.
- Reflect SCN's role as a wholesale/enabler layer in the value chain
- Avoid fee levels that could impact investment or deployment incentives

**Q-39 Should a Minimum Authorisation Fee be applicable for the proposed SCN Authorisation? If yes, what should be the Minimum Authorization Fee for the proposed SCN Authorization? Please provide detailed justification in support of your response.**

**Dua Associates Comments:**

We suggest the following:

- There should be no authorization fee imposed as no resources are used. This, in turn, will encourage the service providers to use innovative approaches to bring down tariffs, which in turn will lead to large growth of service
- Avoid fixed fee burdens that do not reflect actual scale or usage
- Ensure consistency with partnership-based and evolving business models

**Q-40 What should be the appropriate payment terms & conditions for Authorisation Fees? Please provide detailed justification in support of your response.**

**Dua Associates Comments:**

We suggest the following:

- Keep payment terms simple and predictable (e.g. periodic payments, clear obligations)
- Avoid complex payment structures or conditional triggers
- Align terms with long-term deployment timelines

**Q-41 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.**

**Dua Associates Comments:**

We suggest the following:

- Keep bank guarantee requirements proportionate and risk-based
- Avoid excessive PBG/FBG levels that could create barriers to entry
- Ensure guarantees are linked to actual obligations and phased deployment

**Q-42 What should be the application processing fee for Satellite Communication Network (SCN) authorised entity? Please provide detailed justification in support of your response.**

**Dua Associates Comments:**

We suggest the following:

- Keep application processing fees low, and administrative in nature not exceeding Rs. 50,000/-
- Avoid using fees as a barrier to participation

- Ensure fees remain transparent and cost-based

**Q-43 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.**

**Dua Associates Comments:**

We suggest the following:

- Avoid introducing additional financial conditions unless clearly justified
- Keep the framework simple, proportionate, and predictable
- Ensure financial conditions support investment, scalability, and timely deployment
- The payment should not be upfront loaded and should be distributed over the later part of license tenure to encourage early deployment

Sincerely,

Dr. Ranjana Kaul  
Partner,  
Dua Associates

\*\*\*END OF DOCUMENT\*\*\*