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Subject: IAFI response to TRAI Consultation Paper regarding Framework for Satellite Communication Network Authorisation

Ref: TRAI Consultation Paper No. 06/2026 dated 08 April 2026

Dear Sir,

The ITU-APT Foundation of India (IAFI) sincerely thanks TRAI for issuing the Consultation Paper regarding the "Framework for Satellite Communication Network Authorisation and Assignment of Spectrum to Satellite Communication Network Providers" and for inviting comments/suggestions from stakeholders. The Consultation Paper invites views on the legal and regulatory framework for the new SCN Authorization, including terms and conditions, service areas, technical obligations, and financial conditions such as entry fees, bank guarantees, and the methodology for spectrum charges.

IAFI has examined the issues raised in the Consultation Paper and, after due consultation with our industry partners, is pleased to forward our detailed comments and suggestions for your consideration. We would also be happy to participate in any Open House Discussion (OHD) or meeting, should TRAI deem it necessary for further clarification on our submission.

In addition, we are also pleased to enclose our recent submission to the ITU-R WP4C regarding Direct Connectivity between MSS and IMT (DC-MSS-IMT) in relation to Agenda item 1.13 of WRC-27 (ITU-R Document 4C/627-E)

We look forward to collaborating with TRAI and remain available for any further discussions that may be required.

Warm Regards,

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IAFI Comments/Suggestions on the TRAI Consultation Paper regarding Framework for Satellite Communication Network Authorisation, and Assignment of Spectrum to Satellite Communication Network (SCN) Providers

Brief summary

1. Regulatory Context and Reference - The Department of Telecommunications (DoT), via a reference dated 26.07.2024, sought recommendations from the Telecom Regulatory Authority of India (TRAI) on the terms and conditions—including fees and charges, for authorizations to establish, operate, maintain, or expand telecommunication networks under the Telecommunications Act, 2023. This Act replaces the legacy licensing regime with a modern authorization framework under Section 3.

2. Evolution of the Authorization Framework - Initially, TRAI recommended a separate "Satellite-based Telecommunication Service" authorization under Section 3(1)(a) in its recommendations dated 18.09.2024. However, the Government (DoT) moved toward a technology-neutral approach, deciding against a standalone satellite service authorization. Instead, the Government proposed permitting existing service providers (such as Access, Internet, or Long Distance providers) to utilize satellite media within their existing scopes.

3. Addressing the Regulatory Gap (The SCN Authorization) - The non-acceptance of a dedicated satellite service authorization created a potential regulatory gap for infrastructure providers. Consequently, the Government proposed the introduction of a Satellite Communication Network (SCN) Authorization under Section 3(1)(b).

- Purpose: This allows entities to build, operate, and maintain satellite network infrastructure (including Earth Station Gateways) and provide these network services to other authorized service providers.

- Spectrum Assignment: DoT has clarified that spectrum for SCN entities, covering both feeder links and user links, can be assigned administratively as per the First Schedule of the Telecommunications Act, 2023, for specific use cases such as VSAT, GMPCS, and In-flight/Maritime connectivity.

So, in light of these developments and a subsequent request from DoT on 29.08.2025, TRAI released a fresh Consultation Paper on 08.04.2026.

The paper invites stakeholder views on:

- The legal and regulatory framework for the new SCN Authorization.

- Terms and conditions including the service area and technical obligations.

- Financial conditions, such as entry fees, bank guarantees, and the methodology for spectrum charges.

This initiative aims to foster a robust, competitive satellite ecosystem in India while aligning with

the new statutory provisions of the Telecommunications Act, 2023.

Q-1 to Q-21- pertains to the authorisation framework and assignment of spectrum.

Q-22 to Q-43 - pertains to the spectrum charges and other financial conditions.

IAFI has comprehensively examined the Consultation Paper and presents its considered views and recommendations on the issues raised as below:

The ITU-APT Foundation of India (IAFI) commends the Authority for initiating this timely consultation on the Satellite Communication Network (SCN) Authorisation and D2D. As detailed across our responses, the success of this framework hinges on maintaining a strict functional separation between the network and service layers, ensuring that the SCN remains a highly efficient, wholesale infrastructure provider. Further, we support a carefully regulated introduction of D2D for IMT bands, while maintaining level playing field with terrestrial mobile networks, while non-IMT bands like L&S bands for D2D doesn't require any such consideration and can be administratively assigned. We hope these comprehensive inputs assist the Authority in formulating a forward-looking regulatory regime. Our expert technical members remain available for any further discussions or open house sessions to support the finalization of this vital framework.

ATTACHMENT 1

Q-1 to Q-21- Authorisation framework and assignment of spectrum.:

Q-1. 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.

IAFI Response:

Eligibility Conditions: The eligibility for SCN authorisation should be same as the conditions proposed for the SESG Provider authorisation to maintain regulatory consistency. The applicant must be an Indian company incorporated under the Companies Act. The entity must either be a space segment provider authorized by IN-SPACe/Department of Space, a subsidiary of such a provider, or an entity holding a valid agreement with an authorized space segment provider for establishing and operating the SCN in India.

Area of Operation: The authorisation should be granted at a National Level (All India). Satellite footprints inherently cover vast geographical area, and gateway earth stations established in one location can facilitate services nationwide. Making SSA/circle-wise fragmentation would be technically inefficient and economically unviable.

Validity Period: Consistent with standard telecom authorisations under the Telecommunications Act, 2023, the validity period should be 20 years, with provisions for renewal. This long duration is necessary to justify the high Capex required for deploying gateway infrastructure and securing satellite resources.

Scope of Authorisation: The scope should strictly functionally delink the network layer from the service layer. In addition to the scope of the proposed SESG Authorisation, SCN operators should be allowed to obtain the spectrum for feeder links. Accordingly, the scope may be as follows:

1. Establish, maintain, and operate satellite earth station gateways and baseband and allied systems.
2. Obtain necessary space segment capacity from IN-SPACe-authorized satellite operators.
3. Seek assignment of spectrum from the Central Government for feeder links.
4. Offer Satellite Communication Network as a Service (SCNaaS) to entities authorized under Section 3(1)(a).

Crucially, the SCN authorised entity must not be permitted to provide telecommunication services to end users unless they separately hold the requisite service authorisation.

User-link spectrum (FSS, MSS, IMT used for accessing end users) must remain

exclusively with service providers, preserving a clear separation between network-layer functions and service-layer obligations.

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.

IAFI Response:

General & Technical Conditions: SCN/SESG operators should be explicitly allowed to connect SESGs/SNPs (SNP-Satellite Network Portal like SESG for NGSO) with their Points-of-Presence (PoPs) – including via leased lines from licensed TSPs – without needing any additional licence/authorisation.

Spectrum & Operating Conditions: The entity must operate strictly within the frequency plan approved by the WPC Wing and provide self-certified antenna parameters to prevent harmful interference. They must also be responsible for interference monitoring and mitigation.

Security Conditions: All consumer-facing obligations, like KYC, should attach only to service providers, who hold the direct contractual relationship with end users. On the other hand, network layer-specific obligations should be applicable on SCN operators. For instance, the SCN provider must ensure that all traffic originating or terminating in India passes exclusively through the satellite earth station gateway located within Indian territory. There must be no direct inter-satellite routing of Indian traffic that bypasses the domestic gateway, nor any mirroring of user traffic to offshore servers.

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.

IAFI Response:

Permitted Entities: Only entities holding relevant service authorizations under the Unified License (UL) i.e. Access, Internet, NLD, Commercial VSAT CUG and GMPCS, or equivalent service authorisations for NSOs under the new authorisation regime, should be permitted to seek SCNaaS.

VNOs should not be permitted to obtain SCNaaS, as they are intended to operate purely at the service-layer as extensions of their parent NSOs and are not meant to control core

networks or spectrum.

Allowing VNOs to take SCNaaS directly would effectively enable them to serve end users without an NSO, blur the NSO–VNO distinction, create regulatory arbitrage and undermine the existing licensing construct.

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.

IAFI Response:

<u>No</u>, the SCN authorised entity establishing, operating, maintaining, or expanding the baseband system along with SCN should <u>not</u> 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.

SatCom/SCN deployments differ widely (GSO/NGSO, standalone vs hybrid, proprietary platforms), and many use-cases do not require such deep integration with the service provider. A blanket obligation could force operators to expose proprietary systems and commercially sensitive information unnecessarily, without any demonstrated market failure.

The extent of control, visibility and information exchange should be left to mutual commercial agreements between SCN operators and service providers, tailored to each technical/operational model. At this stage, there is no need for regulatory intervention on this aspect; flexibility will better support innovation and efficient SCNaaS arrangements.

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.

IAFI Response:

The Indian Space Policy 2023 paves the way for India becoming a leader in the SATCOM industry in the South Asian region by laying out a roadmap to encourage Indian entities to provide their services outside of India.

Specifically, the following clauses of the Space Policy mentioned under the head 'Non-Governmental Entities' need to be highlighted:

"*NGEs would be encouraged to:*

1. *offer national and international space-based communication services, through self-owned or procured or leased GSO/NGSO communication satellites.*
2. *...*
3. *use Indian Orbital Resources and/or Non-Indian Orbital Resources to establish space objects for communication services over India and outside India.*
4. ..."

The Indian Space Policy gives adequate recognition to the fact that satellite networks are inherently international. The same transponders are used to provide services in multiple countries. Further, just one SESG/SNP is capable of serving huge areas. It is, therefore, neither technically nor legally required that a satellite operator establish an SESG/SNP in every country it wishes to serve.

In this regard, the SESGs/SNPs established in India, too, could be capable of providing feeder-link connectivity to satellites as far as 2500 km from their locations, including satellites overseas. This means that an operator may be able to provide connectivity to all its customers – not just within the territorial boundaries of India but potentially the majority of the South Asian region.

In fact, even the Authority, in its Recommendations dated 18th September 2024 on the 'Framework for Service Authorisations to be Granted Under the Telecommunications Act, 2023', has recommended that operators should be permitted to use the SESGs/SNPs established in India for providing service in foreign countries after obtaining the Central Government's permission. Subsequently, DoT also published draft guidelines on the issue, for stakeholder comments. However, the final guidelines are still awaited.

In line with the vision of the Government of India encapsulated under the Space Policy as well as the Authority's Recommendations, the SESGs/SNPs established in India should be permitted to be used for providing feeder-link connectivity to satellites that provide connectivity to customers outside of India – under an enabling framework with no unnecessarily onerous requirements. Needless to say, the connectivity services in these other countries would be provided subject to their respective and applicable licensing/regulatory frameworks.

Therefore, the SESGs/SNPs established in India should be allowed to be used to provide feeder-link connectivity to satellites that are providing connectivity to customers outside of India.

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.

IAFI Response:

No, there is no need for mandating a reference agreement between the entities holding the proposed Satellite Communication Network authorisation and the authorised entities providing telecommunication service.

Technical and commercial models for SCNaaS vary significantly across operators and

use cases, making a one size fits all reference agreement impractical and potentially distortionary. In any case, SCN operators are wholesale, network layer entities supplying capacity to service providers; they do not offer substitute retail services, so classic foreclosure concerns justifying reference offers do not arise.

Further, no reference agreement is mandated today for comparable B2B/network layer arrangements (IP I, DCIP, CTN, IXP, NSO–VNO, IFMC–UL, spectrum trading/sharing, infrastructure sharing), where contracts are left to mutual negotiation.

Therefore, agreements between SCN operators and service providers should remain fully subject to commercial negotiation, with at most a simple requirement for SCN licensees to intimate DoT of executed agreements for oversight purposes.

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.

IAFI Response:

Currently, satellite-based telecommunications networks operate independently and separately from other telecom networks. There is no interconnection between SatCom and terrestrial networks. In fact, there is no interconnection even among the various SatCom operators inter-se. Each SatCom network – whether GSO or NGSO and MSS or FSS – operates as a standalone network.

While technological advancements in the future may require different SatCom networks to interconnect with each other as well as with terrestrial networks, a discussion on interconnection framework at this stage may be too premature.

Therefore, there is no need for an interconnection framework for satellite-based telecommunications networks with other telecom networks at this stage.

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

IAFI Response:

No comments

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.

IAFI Response:

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

All satellite communication services that service providers are permitted to offer using their own infrastructure should equally be permitted when using SCNaaS from SCN operators. Any restriction would create level playing field issues, encourage regulatory arbitrage, and defeat the purpose of introducing SCN Authorisation.

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.

IAFI Response:

D2D Service via satellite using IMT spectrum must be permitted at this stage itself. It should NOT be delayed until the conclusion of WRC-27.

Justification:

Preventing Technological Lag: The global telecommunications landscape is moving rapidly. As highlighted in the Consultation Paper, major economies and regulators (FCC in the USA, ISED in Canada, ACMA in Australia, and Ofcom in the UK) have already established dynamic regulatory frameworks enabling Supplemental Coverage from Space (SCS) using terrestrial IMT spectrum. Waiting for WRC-27 would place India years behind global technological adoption, severely delaying the socio-economic benefits of ubiquitous connectivity for Indian citizens.

Article 4.4 Provisions: As noted in the Consultation Paper, the ITU Radio Regulations (Article 4.4) already provide a mechanism for administrations to authorize such operations on a "no-interference, no-protection" basis. India can safely leverage this

provision domestically. Since D2D via IMT is primarily aimed at bridging coverage gaps within India's sovereign borders, domestic spectrum management can be handled via coordination between the SCN provider, the partnering MNO, and the WPC Wing without waiting for global harmonization.

Alignment with WRC-27 Preparations: Permitting D2D via IMT now aligns perfectly with India's active preparations for WRC-27 Agenda Item 1.13. This will generate invaluable real-world data and operational experience, significantly strengthening India's technical contributions and negotiating position at the ITU WP-4C and WP-5D meetings leading up to WRC-27.

Future Harmonization: TRAI can mandate that any early authorizations granted for D2D via IMT spectrum are subject to prospective alignment with the final outcomes of WRC-27. This ensures immediate domestic progress while maintaining a commitment to future international regulatory frameworks.

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:

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

Kindly provide a detailed response with justification.

IAFI Response:

SCN operators should be allowed to obtain feeder link spectrum and user link spectrum should be allocated to the respective service providers. Accordingly, from the perspective of holding spectrum for the feeder link and the user link on SCNs, Combination No. 2 should be permitted at the SCNs established by the proposed SCN authorised entities.

Why Combination 1, 3 and 4 are unsuitable

- Combination 1 (both feeder and user link with SCN) misfits a pure network-layer authorisation, gives SCN operators user-side spectrum they do not need, and blurs the intended separation between "network provider" and "service provider", complicating QoS, LI and customer-care responsibilities that must sit with the service providers.

- Combination 3 (feeder with service provider, user link with SCN) fails operationally: an SCN operator does not need user-link spectrum, and a service provider taking SCNaaS will not be running SESGs, so it has no use for feeder-link spectrum.

- Combination 4 (both links with the service provider) replicates the existing, vertically integrated regime and defeats the purpose of introducing a distinct SCN network-layer authorisation.

Why Combination 2 is ideal

- With feeder-link spectrum at SCN level and user-link spectrum with service providers, each party holds only what it needs, responsibilities are clearly split (network vs. service layer), and spectrum use is more efficient.

- This mirrors international practice, where satellite gateway/infrastructure providers typically hold feeder-link spectrum, while service providers hold end-user spectrum and all consumer-facing obligations.

Q-12. Which of the following types of spectrum bands 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.

IAFI Response:

As noted by the Authority itself in the instant Consultation Paper, feeder link spectrum in all kinds of satellite services – FSS, MSS as well as D2D – lies in the FSS bands. Since SCN operators may only require feeder link spectrum for their operations, only FSS bands may be relevant for them.

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

(b) **<u>GSO-based FSS</u>: 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.

IAFI Response:

Only spectrum in FSS bands, specifically for feeder links, should be assigned to SCN operators. Further, the terms and conditions for spectrum assignment, as recommended for service providers, should be made applicable to SCN authorised entities mutatis mutandis.

The Authority has, after extensive consultation, already provided a comprehensive framework for the assignment of spectrum for SatCom (including feeder link) – albeit for services provided directly by service providers using their own infrastructure/network. Since SCN operators would be facilitating similar SatCom services, extending the same framework to them will ensure continuity and regulatory certainty. It would also maintain competitive neutrality between service providers using their own infrastructure/network and service providers using SCNaaS – services offered to end users being identical.

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.

IAFI Response:

Only spectrum in FSS bands, specifically for feeder link, should be assigned to SCN operators. Such assignment may be done on administrative basis.

Entry 12 of the First Schedule to the Telecom Act, provides for administrative assignment for "*Radio backhaul for telecommunication services*". Further, the term 'radio backhaul' has been defined as "*the use of radio frequency only to interconnect telecommunication equipment, other than the customer equipment in telecommunication networks*". Since feeder link spectrum would only be used to connect SESGs with satellites, and not customer equipment, it would fall within the scope of 'radio backhaul'. Hence, in line with Section 4(4), such assignment may be done through administrative process only.

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.

IAFI Response:

Time-Bound Inter-Ministerial Clearances: A major historical bottleneck in satellite operations has been the delay in spectrum assignment post-application. The regulatory framework should establish a single-window portal integrating WPC, SMC, and IN-SPACe. The recommended 30-day timeline for spectrum assignment must be legally binding on the authorities once the SCN entity has submitted a complete, compliant application.

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.

IAFI Response:

SCN Authorisation is merely envisaged to be a network-layer authorisation. Services to end users may only be provided by service providers. Thus, assignment of feeder link to SCN operators may adequately serve their purposes. We do not foresee any situation or use case where the FSS/MSS spectrum assigned to service providers for user link, may be required to be used by the SCN operator.

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.

IAFI Response:

No comments

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 a framework? Kindly provide a detailed response with justification.

IAFI Response:

In case D2D service via satellite is allowed by using the spectrum in the frequency bands allocated for MSS such as L-band and S-band, the following considerations should be kept in mind:

Level playing field issues

- MSS-based D2D should not turn SatCom into a competing mass-market access layer on handsets and should not be permitted to go beyond its traditional complementary role to terrestrial mobile networks.
- D2D players should be subjected to the same regulatory, security and other conditions so that one particular player is not getting any undue advantage.

Standards and ecosystem considerations

- Device-ecosystem work for D2D is focused on IMT bands/L&S bands, not MSS; pushing D2D over MSS would need separate RF chains, fragment the handset ecosystem, increase costs and weaken economies of scale.

Misfit with traditional MSS usage

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

Auction of MSS spectrum

- If Government permits D2D via MSS, user-link MSS spectrum for such services should be auctioned transparently to service providers if the bands used are IMT while it should be administratively assigned for L&S bands which are non-IMT bands, and those providers should face licensing and security obligations equivalent to terrestrial mobile operators.
- Since traditional MSS services also require exclusive spectrum blocks, user-link MSS spectrum for those services should likewise be assigned via auctions for IMT bands while administrative for L&S bands which are non IMT bands to ensure efficient, non-discriminatory use of these scarce bands.

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.

IAFI Response:

(a) As mentioned in response to Q16, SCN Authorisation is envisaged to be a mere network-layer authorisation. Services to end users should only be provided by service providers. Thus, assigning just a feeder link to SCN operators should serve their purpose adequately. We do not foresee a situation or use case where the user link spectrum (including the IMT spectrum in the case of D2D services) assigned to service providers could be required for use by the SCN operator.

(b) Which frequency bands identified for IMT should be considered for this purpose? Specifically, whether only FDD-based frequency bands should be considered?

Reply: Only FDD-based mid-bands should be considered initially.

Why TDD and sub GHz should wait

- In TDD bands, uplink/downlink synchronisation issues can cause serious

interference to existing terrestrial TDD deployments; in sub GHz, large scale satellite downlinks could disturb IMT uplinks, and the already scarce sub GHz spectrum is unlikely to support both IMT and D2D adequately.

- These more complex bands can be revisited later, once global standards, coexistence studies and international experience for D2D in TDD and sub GHz bands are mature.

Why 1800/2100 MHz FDD are suitable now

- FDD inherently separates uplink and downlink into different bands, making interference scenarios more predictable and reducing the risk of satellite downlinks desensitising terrestrial uplinks (and vice versa) under appropriate technical conditions.
- 1800/2100 MHz are already widely deployed for nationwide coverage and are strongly supported in the global device/chipset ecosystem, enabling early D2D without bespoke hardware or fragmented band support.

Regulatory prudence and future flexibility

- Starting D2D only in 1800/2100 MHz lets the regulator gain operational experience, fine tune rules (power limits, beam footprints, protection criteria) and monitor interference, while keeping more sensitive TDD and sub GHz bands insulated during the learning phase.
- Once there is sufficient real world evidence and clearer global best practice for D2D in TDD and sub GHz, TRAI can consider a carefully controlled expansion through a separate consultation.

(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?

Reply: Yes, the NFAP must be modified
Proposed Modification: An India-specific footnote (IND footnote) should be added to the relevant IMT bands in the NFAP, officially allocating IMT-based D2D on a secondary basis. This allocation should be strictly conditional, explicitly stating that D2D operations shall operate on a "no-interference, no-protection" basis relative to primary terrestrial IMT operations. This mirrors the successful regulatory pathways forged by the FCC (USA) and ISED (Canada) and provides domestic legal certainty ahead of WRC-27.

(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?

Reply: No condition in addition to Article 4.4 of the ITU-Radio Regulations is required to be made applicable to mitigate the issues related to cross-border interference at this stage. The same may be reconsidered post the outcome of WRC-27.

(e) What regulatory framework should be established for ensuring interference-free

operation of D2D service via satellite by using IMT spectrum within the country?

Reply: In order to ensure that D2D services operate interference-free via satellite by using the IMT spectrum within the country, model no. (i) should be followed at this stage, i.e., D2D services should be permitted to operate only if a single partnering entity Service Provider) holds the relevant IMT frequency channel in all the 22 LSAs of the country.

Why Model (ii) should be avoided for now

- Allowing different operators to use the same satellite beams in different LSAs (Model (ii)) would require highly complex, real time coordination of beam footprints, power levels and handovers at every inter LSA boundary, increasing the risk of harmful interference, inconsistent user experience and disputes over responsibility for any impact on terrestrial IMT.

Advantages of Model (i) and need for harmonisation

- Model (i) offers the cleanest, lowest risk approach: a single nationwide holder of the band manages coexistence between its terrestrial and satellite use, in line with international practice where early D2D/NTN launches ride on nationwide or near nationwide holdings.
- This provides a single point of accountability for staying within technical limits, though in practice nationwide contiguity will often require spectrum harmonisation, which should be undertaken promptly.

Q-20. 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.

IAFI Response:

No comments

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.

IAFI Response:

No comments

Attachment 2

Q- 22 to Q- 43- Financial Issues:

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 utilization 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 utilization etc., which would form the basis of regulation? Please provide your response with justification.

IAFI Response:

No, there is no need to regulate the charges or mandate specific parameters for agreements between an SCN Authorised entity and a Service Authorised entity at this stage.

Justification**:** Satellite network owners and service providers act as partners in a supply chain, not direct competitors. Because they rely on each other, working together is naturally profitable for both sides. If regulators impose strict pricing and service rules upfront, it could slow down innovation and delay the launch of new satellite networks. Instead, the government should step back and let companies negotiate their own fair agreements. Regulators should only intervene later if there is clear proof of unfair practices or a breakdown in the market.

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 utilization of MSS spectrum assigned to the Service entity amongst other possible spectrum utilization 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 utilization etc., which would form the basis of regulation? Please provide your response with justification.

IAFI Response:

Response**:** Similar to standard FSS/MSS arrangements, there is no need to regulate the commercial charges for agreements concerning D2D services using MSS spectrum.

Justification**:** Direct-to-Device (D2D) satellite technology is a new and essential tool for connecting remote areas. However, upgrading the network infrastructure to support it is extremely expensive. If the government strictly regulates the business agreements between satellite network owners and service providers, it could discourage companies from making these massive investments. Instead, operators need the flexibility to negotiate their own contracts. This freedom allows them to test different business models, like sharing revenue or leasing capacity, to figure out how to make D2D services financially successful.

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 utilizing spectrum for feeder link assigned to the service entity, besides utilizing 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 utilization etc., which would form the basis of such regulation? Please provide your response with detailed justification.

IAFI Response:

Response**:** Commercially, there is no need to regulate the charges exchanged between the entities.

Justification**:** When a mobile provider uses its spectrum to offer satellite services through a partner, the government shouldn't control the prices they agree on. Leaving prices unregulated encourages companies to combine ground and space networks. Therefore, pricing should be left alone.

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.

IAFI Response:

Yes, these charges must absolutely be permitted as a deduction from the Applicable Gross Revenue (ApGR) of the Service Authorised entity.

Justification: Allowing this deduction is fundamentally necessary to avoid the cascading of levies and double taxation on the same revenue stream. The revenue earned from the end-user (R) should only be taxed once. If the Service Authorised entity pays a wholesale charge (P) to the SCN Authorised entity, that amount (X) will form the Gross Revenue of the SCN entity, upon which the SCN entity will pay its respective regulatory levies. Denying this deduction to the Service entity would mean taxing the "X' component twice. Permitting this deduction aligns perfectly with the established regulatory precedent under the Unified License (VNO) regime, where network and infrastructure costs paid to parent NSOs are allowed as deductions to ensure a fair and sustainable AGR-based fee structure.

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.

IAFI Response

Response**:** The optimal regulatory approach is to allow the pass-through deduction as argued in Q-25.

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 Authorized 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.

IAFI Response

Response**:** We wish to make the following submissions in respect of the definitions of GR, AGR and ApGR – applicable across all licenses/authorisations, including the proposed SCN Authorisation:

(i) The scope of revenue should be limited to revenue from licensed activities only. The activities that do not require authorisation under the Act should be excluded from the ambit of LF/SUC.

(ii) The scope of deduction should be increased to make it effective and should include charges paid by one operator to another operator to avoid the cascading effect of LF/SUC.

(iii) Co-existence of licensed telecom services with non-licensed services/products should not attract levy on composite products/services. DoT can protect its legitimate revenue by adopting a fair valuation approach.

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 authorized entities, what should be the broad financial terms & conditions of such an assignment?

IAFI Response

Response: Only feeder link spectrum in FSS bands should be assigned to the SCN authorised entities for provisioning of SCNaaS to Service authorised entities. Further, the terms and conditions, including the broad financial terms and conditions, as recommended for spectrum assignment to service providers, should apply with the necessary changes to SCN operators.

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.

IAFI Response

Response: Yes, the spectrum charges for SCN authorised entities should be based on the spectrum charging framework as per the Recommendations dated 09.05.2025 applicable for Satellite based commercial communications services.

The recommendations were arrived at after detailed consultations, already cover feeder-link spectrum, and extending the same framework to SCN operators will ensure continuity, regulatory certainty, and avoid reopening issues that have been thoroughly debated and settled.

Using the same charging principles for SCN operators and service providers will also maintain a level playing field between operators that deploy their own satellite infrastructure and those that rely on SCNaaS, so that functionally similar services face comparable spectrum costs. From an implementation standpoint, the 2025 framework can be applied to SCN entities with minimal tailoring, mainly to reflect that SCN operators hold only feeder-link spectrum in FSS bands, while user-link spectrum remains with service providers.

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.

IAFI Response

Response: Please refer to our response to Q27 for suggestions in respect of the definitions of GR/ApGR/AGR. For the purpose of determination of spectrum charges, the operational/non-operational revenue items arising from activities not involving spectrum, should be excluded.

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.

IAFI Response

Response: Please refer to our response to Q29 above. **The spectrum charging framework, as recommended for service providers, should apply to SCN operators – with necessary modifications to reflect that SCN operators hold only feeder link spectrum in FSS bands.**

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 utilized 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.

IAFI Response

Response: If the Government allows MSS-based D2D and assigns user-link MSS spectrum for IMT but not for L&S bands (non IMT bands) through transparent auctions, no extra D2D-specific charges should apply there, for the same reasons as in auctioned IMT spectrum provided in response to Q33 below.

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.

IAFI Response

Response: Absolutely no additional spectrum charges should be levied on the Service Authorised entity for utilizing its assigned IMT spectrum for D2D services.

Justification: The Service Authorised entity has already acquired this IMT spectrum through a transparent, market-determined auction process for the specific purpose of providing mobile telecommunications within a defined Licensed Service Area (LSA). Providing D2D connectivity via an SCN satellite is simply an alternative technological delivery mechanism, a "BTS in the sky", to serve the exact same users in the exact same LSA where terrestrial towers are unviable.

Because the spectrum cannot be used simultaneously for terrestrial and satellite links in the same location (to prevent interference), there is no "double usage" of the spectrum. Imposing an additional fee would unjustly penalize operators for extending coverage to rural areas and would directly contradict the strategic goals of seamless terrestrial and non-terrestrial network orchestration envisioned for IMT-2030.

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.

IAFI Response

Response: Please refer to our response to Q29 and Q31 above. **The spectrum charging framework, including the payment terms and minimum spectrum charges, as**

recommended for service providers, should apply to SCN operators – with necessary modifications to reflect that SCN operators hold only feeder link spectrum in FSS bands.

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.

IAFI Response

Response: Please refer to our response to Q29 and Q31 above. **The spectrum charging framework, including the payment terms and minimum spectrum charges, as recommended for service providers, should apply to SCN operators – with necessary modifications to reflect that SCN operators hold only feeder link spectrum in FSS bands.**

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.

Response: The Authority may recommend appropriate amounts for minimum equity, minimum networth requirements and entry fee for proposed SCN Authorisation – based on corresponding requirements for service providers, while taking into account the restricted scope of SCN Authorisation being merely a network-layer authorisation. The recommended levels should be such that only serious players enter the market, ensuring financial viability, deterring speculative applications, and protecting the efficient allocation of scarce spectrum resources.

Justification: Drawing upon the historical evolution of satellite licensing within the Department of Telecommunications, a carefully balanced approach is required here. While pure network authorisations, such as the previously recommended SESG Provider Authorisation, carried a NIL requirement for equity and networth, the proposed SCN authorisation introduces the critical element of spectrum assignment (FSS, MSS, or IMT for user/feeder links). Because spectrum is a scarce national resource, a baseline financial threshold is prudent to ensure that only serious entities capable of managing and deploying these resources apply.

However, the threshold must not be prohibitive. Establishing a very high threshold would unnecessarily stifle innovation.

As the industry works to shape preliminary views for global forums like the APT and prepares for complex WRC-27 agenda items concerning the seamless integration of satellite and terrestrial networks, it is evident that heavy regulatory financial barriers are counter-productive. The inherent capital expenditure required to establish FSS earth stations, procure space segment capacity, and deploy advanced NGSO constellations already serves as a massive natural barrier to entry.

Therefore, a moderate requirement for equity and networth strikes the optimal balance. It safeguards the administrative spectrum assignment process from non-serious actors while

actively encouraging the domestic and foreign investments necessary to advance the nation's next-generation satellite infrastructure.

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

Response: The Authority may recommend appropriate amounts for minimum equity, minimum networth requirements and entry fee for proposed SCN Authorisation – based on corresponding requirements for service providers, while taking into account the restricted scope of SCN Authorisation being merely a network-layer authorisation. The recommended levels should be such that only serious players enter the market, ensuring financial viability, deterring speculative applications, and protecting the efficient allocation of scarce spectrum resources.

Justification: The satellite communications sector, particularly with the advent of NGSO constellations and D2D capabilities, requires massive upfront capital expenditure (CAPEX) for space segments, earth stations, and gateway infrastructure. High entry fees act as a counterproductive barrier to entry. A rationalized, lower entry fee signals a progressive regulatory environment, welcoming both domestic and foreign investments to build the "BTS in the sky" required to connect India's remote and rural populations.

However, it is also important to keep the requirements meaningful enough to ensure that only financially credible players enter the market – thereby reducing the risk of non-deployment, spectrum hoarding or project failure.

Appropriately scaled thresholds will also protect the integrity of the wholesale market, give service providers confidence that their SCNaaS partners are stable long-term capacity providers, and avoid artificially favouring or penalizing outsourced versus vertically integrated models.

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.

IAFI Response

Response: The rate of Authorisation Fee, Minimum Authorisation Fee and payment terms & conditions for Authorisation Fees for an SCN authorised entity should be at par with similar service licensees.

Why SCN should be at par with service licensees

• SCN operators are network layer entities that establish and operate SESGs/SNPs with baseband and hold feeder link FSS spectrum to provide SCNaaS, performing essentially the same network infrastructure functions as the network arm of vertically integrated satellite service providers.

• Since they manage the same type of spectrum and face similar coordination and interference management obligations, the LF regime on their network operations should mirror that on service providers' network operations, avoiding artificial advantages or penalties for either integrated or outsourced models.

Technology and business model neutrality

• Telecom policy in India aims for technology and business model neutral levies; applying the same percentage of AGR LF (currently 8% including 5% USOF) to SCN operators and service providers ensures that the decision to build in house SCN capabilities or buy SCNaaS is driven by efficiency, not by tax arbitrage.

Rationalization, if any, must be uniform

• While the industry continues to seek overall rationalization of LF/USOF, any reduction should apply uniformly to both service providers and SCN operators to preserve a level playing field and stable investment incentives.

Q-39. 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.

IAFI Response

Response: Please refer to our response to Q38

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

IAFI Response

Response: Please refer to our response to Q38

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.

IAFI Response

Response: At the outset, we recommend that the requirement for a BG should be done away with – for the entire telecom industry.

The industry has matured over the last 30 years and the existing players have ably demonstrated their performance and experience. What they now expect from policymakers are less onerous financial obligations and the freeing up of precious capital/funds to be deployed into networks and services. To that extent, the 2021 Cabinet reforms already recognised this fact and reduced the BGs requirement.

The amount blocked in BGs benefits no one (neither TSPs nor the DoT), except perhaps the lenders. Rather, if such securities are released, it will free up the working capital flow for the TSPs and remove the infructuous payment of charges and generate value for the TSPs.

On the aspect of securitising Government dues, the risk to government dues is actually emerging more due to the high levels of recurring and sector-specific levies, i.e., LF/USOF levy/SUC rather than the failure of TSPs to pay the same. The time has come to substantially rationalise these levies and recover only the cost of administration of license. Moreover, the imposition of such BGs to securitise dues is not consistent with other statutory dues like tax dues – there is no requirement for BGs under the Income Tax Act or under GST laws to securitise such due payments.

Thus, we believe that the government can go a step further in having faith in sectoral players and, in the spirit of reform, do away with the BG requirements (PBG and FBG both) altogether. The time has come to enable industry to mobilise and deploy precious funds/capital in generating value for all stakeholders by putting more investments into digital infrastructure, networks and services rather than blocking those funds in the form of BG.

However, in case the Government still believes that the requirement of BG cannot be dispensed with, an appropriate amount may be recommended by the Authority – based on corresponding

requirement for service providers, while taking into account the restricted scope of SCN Authorisation being merely a network-layer authorisation.

In summary, we recommend the following:

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(i) The requirement for BGs (both PBG and FBG) should be done away with.

(ii) However, if the requirement of BGs is to be retained, an appropriate amount should be recommended by the Authority based on the corresponding requirements for service providers, while taking into account the restricted scope of the SCN Authorisation being merely a network-layer authorisation.

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.

IAFI Response

Response: The application processing fee for SCN authorised entity should be benchmarked to the corresponding requirement for service providers – while factoring in the restricted network-layer scope of SCN Authorisation.

This approach recognizes that DoT/WPC will still incur meaningful administrative effort in assessing technical and financial eligibility and proposed SESG/SNP infrastructure, while avoiding a fee level that assumes full service-layer scope and compliances.

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.

Response: No comments

Attachment 3

IAFI submission to ITU on DC-MSS-IMT (D2D)

Radiocommunication Study Groups

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English only

IAFI[1]

UPDATES TO THE WORKING DOCUMENT TOWARDS DRAFT CPM TEXT FOR WRC-27 AGENDA ITEM 1.13

1 Introduction

Working Party (WP) 4C started work on the draft CPM Report during the last WP 4C meeting. Annex 11 to WP 4C Chair's Report "Working document towards draft CPM text for WRC-27 agenda item 1.13" contains only the basic structure without substantive content. The document was marked as "not discussed" in the notes and attached to the Chair's Report.

In this context, we propose preliminary text for the working document toward the draft CPM text, based on Resolution **253 (WRC-23)**, as shown in the attachment to this document.

2 Discussions

The attachment below is based on the working document that was prepared in the last meeting of WP 4C and attached with the Chair's Report as Annex 11 to WP 4C Chair's Report and includes following proposals:

2.1 Proposed division of the frequency range 694/698 MHz and 2.7 GHz into 5 issues

As WRC-27 agenda item 1.13 covers a wide frequency range, we support subdividing the frequency range into five separate ranges and propose considering methods to satisfy this agenda item for each sub-frequency range as five distinct issues as below:

[1] ITU-APT Foundation of India (IAFI) is a sector member of ITU-R, ITU-D, ITU-T.

Frequency band(s)	Issue
694/698-960 MHz	Issue 1
1 427-1 518MHz	Issue 2
1 710-2 200 MHz	Issue 3
2 300-2 400 MHz	Issue 4
2 500-2 690 MHz	Issue 5

Based on this subdivision, subsections in section 4 of the CPM text are proposed to be established for each issue.

2.2 Methods to Satisfy the agenda item

Based on the discussions during the last WP 4C meeting, we support one or two methods for each issue; Depending on the frequency band, we propose either a "No change to the Radio Regulations," or "to allocate the band to Mobile-Satellite Service on a secondary basis for use by DC-MSS-IMT systems" or both. In addition, we have also proposed an accompanying WRC Resolution to set the pfd limits and other conditions for working of the DC-MSS-IMT and for protection of the terrestrial IMT stations.

2.3 Draft of the proposed Footnote

The footnote against each secondary MSS allocation included in the table of allocations is proposed as:

"The frequency band XXX is allocated to the Mobile Satellite service on a secondary basis for direct connectivity between Mobile satellite service space stations and International Mobile Telecommunications (IMT) terrestrial terminals (DC-MSS-IMT) to complement terrestrial IMT coverage. This identification does not preclude the use of these frequency bands by any application of other services to which the band is allocated and does not establish priority in the Radio Regulations. DC-MSS-IMT space stations shall not claim protection from stations operating in in accordance with the RR. Resolution **[A1-DC-MSS-IMT] (WRC-27)** shall apply. "The use of the frequency bands identified for International Mobile Telecommunications (IMT) by the mobile-satellite service (MSS) is limited to direct connectivity between MSS space stations and IMT stations (DC-MSS-IMT). DC-MSS-IMT operations shall not cause harmful interference to, nor claim protection from, stations operating under the mobile services, including IMT systems."

2.4 Elements for a draft new resolution

These elements include items on the role of DC-MSS-IMT being complementary, frequency arrangements, agreement between MNO & SNO being in place, limits to protect IMT and enable DC-MSS-IMT, cross border limits could be relaxed subject to bilateral agreements, placeholder for notification/verification/compliance measures.

3 Proposal

Based on the above discussions, we propose that the draft of the working document toward the draft CPM text in the attachment for consideration and further discussions during the WP 4C meeting.

Attachment: Working document.

ATTACHMENT

Working document towards draft CPM text for WRC-27 agenda item 1.13

CHAPTER 3

Mobile-satellite issues
(Agenda items 1.11, 1.12, 1.13, 1.14)

Agenda item 1.13

(WP 4C* / WP 3L, WP 3M, WP 4A, WP 4B, WP 5A, WP 5B, WP 5C, WP 5D*, WP 6A, WP 7B, WP 7C, WP 7D)

*1.13 to consider studies on possible new allocations to the mobile-satellite service for direct connectivity between space stations and International Mobile Telecommunications (IMT) user equipment to complement terrestrial IMT network coverage, in accordance with Resolution **253 (WRC-23)**;*
Resolution **253 (WRC-23)** – *Studies on possible new allocations to the mobile-satellite service for direct connectivity between space stations and International Mobile Telecommunications (IMT) user equipment to complement terrestrial IMT network coverage*

3/1.13/1 Executive summary

[Executive summary to describe briefly the purpose of the agenda item, summarize the results of the studies carried out and, most importantly, provide a brief description of the method(s) identified that may satisfy the agenda item; should be limited to no more than half a page of text (see also §§ A2.1, A2.3 , A2.5 and A2.6 of Annex 2 to Resolution ITU-R 2-9)]

3/1.13/2 Background

[Background section[1] to provide general information in a concise manner, in order to describe the rationale of the agenda items (or issue(s)) (see also §§ A2.2, A2.3, A2.5 and A2.6 of

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* Working Party 4C will carry out the studies on possible allocations to the MSS in the frequency bands between 694/698 MHz and 2.7 GHz provided by input contributions, including those from WP 5D based on the IMT frequency arrangements contained in the most recent version of Recommendation ITU-R M.1036.

Working Party 4C, in close collaboration with WP 5D, will conduct studies referred to in the resolves to invite the ITU Radiocommunication Sector to complete in time for the 2027 world radiocommunication conference 2.

Working Party 4C will carry out the studies requested in the further resolves 1 and 2. Working Party 5D is expected to provide studies which include regulatory considerations on the protection of terrestrial component of IMT.

Working Party 4C should take the lead in developing the draft CPM text by including the WP 5D's results on the regulatory considerations on the protection of terrestrial component of IMT. To facilitate the work, the Chairs of both WPs should coordinate the schedule of WPs meetings, as appropriate, and provide a note to both WPs in this regard.

[1] It shall not include advertisement, promotional and commercial information.

Annex 2 to Resolution ITU-R 2-9)]

WRC-27 agenda item 1.13 addresses the direct connectivity between satellites and standard mobile devices e.g. smartphones. The agenda calls for possible allocations to Mobile-Satellite Service (MSS) in frequency bands identified for IMT in the frequency range 694 MHz – 2.7 GHz taking into account the IMT frequency arrangements addressed in the most recent version of Recommendation ITU-R M.1036, to provide Direct Connectivity between MSS space stations and IMT user equipment (DC-MSS-IMT).

WRC Resolution 253 (WRC-23) invites ITU-R to:

1 studies on possible allocations to the MSS in the frequency range between 694/698 MHz and 2.7 GHz, taking into account the IMT frequency arrangements addressed in the most recent version of Recommendation ITU-R M.1036;

2 studies on spectrum requirements and on technical, operational and regulatory matters related to the implementation of the mobile-satellite service for direct connectivity to the IMT user equipment to complement the terrestrial IMT network coverage,

3 to conduct studies on sharing and compatibility between incumbent services, including in adjacent frequency bands, ensuring the protection of incumbent services in accordance with the Radio Regulations;

4 to study possible technical and operational measures to ensure that the stations in the MSS do not cause harmful interference to, or claim protection from, stations operating in the mobile service.

3/1.13/3 Summary and analysis of the results of ITU-R studies

[Summary of the technical and operational studies, including a list of relevant ITU-R Recommendations, and analysis of the results of studies relating to the possible methods of satisfying the agenda item (see §§ A2.3, A2.5 and A2.6 of Annex 2 to Resolution ITU-R 2-9)]

3/1.13/3.1 Results of studies on possible description and functionality of DC-MSS-IMT systems

[Editor's note: This section is a place holder for a summary of 4C/356 Annex 6.]

3/1.13/3.2 Results of sharing and compatibility studies

[Editor's note: This section is a place holder for a summary of 4C/356 Annex 7.]

3/1.13/3.3 Results of regulatory considerations to protect terrestrial IMT systems

[Editor's note: This section is a placeholder for summary of studies in WP5D.]

3/1.13/4 Methods to satisfy the agenda item

Two methods to satisfy the agenda item are proposed for each sub band; one is a NOC Method (no change to Radio Regulation), and the other is to allocate the Mobile-Satellite Service on a secondary basis for use by DC-MSS-IMT systems in Article 5 of the Radio Regulations.

The Frequency Range 694/698-2 690 MHz is divided into 5 bands, and each sub band is treated as a separate issue as shown in the table below:

Frequency band(s)	Issues	Methods to satisfy agenda item	
		No change to the Radio Regulations (RR)	**Allocation of the mobile satellite service on a secondary basis for use by DC-MSS-IMT systems along with an accompanying WRC Resolution**
694/698-960 MHz	1	1A	1B
1 427-1 518MHz	2	2A	2B
1 710-2 200 MHz	3	3A	3B
2 300-2 400 MHz	4	4A	4B
2 500-2 690 MHz	5	5A	4C

3/1.13/4.1 Issue 1: DC-MSS-IMT in the frequency band 694/698-960 MHz

3/1.13/4.1.1 Method 1A - NOC

3/1.13/4.1.2 Method 1B – This method proposes a secondary allocation with an associated footnote for DC-MSS-IMT in the frequency band 694/698-960 MHz or parts thereof. The footnote against each secondary MSS allocation included in the table of allocations is proposed as "The use of the frequency bands identified for International Mobile Telecommunications (IMT) by the mobile-satellite service (MSS) is limited to direct connectivity between MSS space stations and IMT stations (DC-MSS-IMT). DC-MSS-IMT operations shall not cause harmful interference to, nor claim protection from, stations operating under the mobile services, including IMT systems in accordance with Resolution B-XX."

3/1.13/4.2 Issue 2: DC-MSS-IMT in the frequency band 1 427-1 518 MHz

3/1.13/4.2.1 Method 2A - NOC

3/1.13/4.2.2 Method 2B – This method proposes a secondary allocation with an associated footnote for DC-MSS-IMT in the frequency band 1 427-1 518 MHz or parts thereof.. The footnote against each secondary MSS allocation included in the table of allocations is proposed as "The use of the frequency bands identified for International Mobile Telecommunications (IMT) by the mobile-satellite service (MSS) is limited to direct connectivity between MSS space stations and IMT stations (DC-MSS-IMT). DC-MSS-IMT operations shall not cause harmful interference to, nor claim protection from, stations operating under the mobile services, including IMT systems in accordance with Resolution B-XX."

3/1.13/4.3 Issue 3: DC-MSS-IMT in the frequency bands 1 710-2 025 MHz and 2 110-2 200 MHz

3/1.13/4.3.1 Method 3A - NOC

3/1.13/4.3.2 Method 3B – This method proposes a secondary allocation with an associated footnote for DC-MSS-IMT in the frequency band 1 710-2 025 MHz or parts thereof. The footnote against each secondary MSS allocation included in the table of allocations is proposed as "The use of the frequency bands identified for International Mobile Telecommunications (IMT) by the mobile-satellite service (MSS) is limited to direct connectivity between MSS space stations and IMT stations (DC-MSS-IMT). DC-MSS-IMT operations shall not cause

harmful interference to, nor claim protection from, stations operating under the mobile services, including IMT systems in accordance with Resolution B-XX."

3/1.13/4.4 Issue 4: DC-MSS-IMT in the frequency band 2 300-2 400 MHz

3/1.13/4.4.1 Method 4A – NOC

3/1.13/4.4.2 Method 4B – This method proposes a secondary allocation with an associated footnote for DC-MSS-IMT in the frequency band 2 300 -2 400 MHz or parts thereof. The footnote against each secondary MSS allocation included in the table of allocations is proposed as "The use of the frequency bands identified for International Mobile Telecommunications (IMT) by the mobile-satellite service (MSS) is limited to direct connectivity between MSS space stations and IMT stations (DC-MSS-IMT). DC-MSS-IMT operations shall not cause harmful interference to, nor claim protection from, stations operating under the mobile services, including IMT systems in accordance with Resolution B-XX."

3/1.13/4.5 Issue 5: DC-MSS-IMT in the frequency band 2 500-2 690 MHz

3/1.13/4.5.1 Method 5A – NOC

3/1.13/4.5.2 Method 5B – This method proposes a secondary allocation with an associated footnote for DC-MSS-IMT in the frequency band 2500 - 2690 MHz or parts thereof. The footnote against each secondary MSS allocation included in the table of allocations is proposed as "The use of the frequency bands identified for International Mobile Telecommunications (IMT) by the mobile-satellite service (MSS) is limited to direct connectivity between MSS space stations and IMT stations (DC-MSS-IMT). DC-MSS-IMT operations shall not cause harmful interference to, nor claim protection from, stations operating under the mobile services, including IMT systems in accordance with Resolution B-XX."

3/1.13/5 Regulatory and procedural considerations

[Example(s) of regulatory text relating to the Method(s) to satisfy the agenda item (see §§ A2.3, A2.4.6 and A2.5 of Annex 2 to Resolution ITU-R 2-9)]

1/1.13/5.1 For Issue 1 : DC-MSS-IMT in the frequency band 694/698-960 MHz

1/1.13/5.1.1 Method 1A

NOC to Vols. I and II of the Radio Regulations, the regulatory text below applies.

NOC

ARTICLES

NOC

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RESOLUTION 253 (WRC-23)

Resolution 253 (WRC-23) – Studies on possible new allocations to the mobile-satellite service for direct connectivity between space stations and International Mobile Telecommunications (IMT) user equipment to complement terrestrial IMT network coverage

1/1.13/5.1.2 Method 1B
Changes to the Radio Regulations, the regulatory text below applies.

ARTICLE 5

Frequency allocations

Section IV – Table of Frequency Allocations
(See No. **2.1**)

MOD

460-890 MHz

<table>
<tr><th colspan="3">Allocation to services</th></tr>
<tr><th>Region 1</th><th>Region 2</th><th>Region 3</th></tr>
<tr><td rowspan="4">470-694
BROADCASTING

5.149 5.291A 5.294 5.296 5.300 5.304 5.306 5.312</td><td>470-512
BROADCASTING
Fixed
Mobile
5.292 5.293 5.295</td><td rowspan="2">470-585
FIXED
MOBILE 5.296A
BROADCASTING

5.291 5.298</td></tr>
<tr><td>512-608
BROADCASTING
5.295 5.297</td></tr>
<tr><td>608-614
RADIO ASTRONOMY
Mobile-satellite except aeronautical mobile-satellite (Earth-to-space)</td><td>585-610
FIXED
MOBILE 5.296A
BROADCASTING
RADIONAVIGATION
5.149 5.305 5.306 5.307</td></tr>
<tr><td>614-698
BROADCASTING</td><td>610-890
FIXED
MOBILE 5.296A 5.313A 5.317A</td></tr>
</table>

694-790 MOBILE except aeronautical mobile 5.312A 5.317A BROADCASTING Mobile-satellite 5.1B 5.300 5.312	Fixed Mobile 5.293 5.308 5.308A 5.309	BROADCASTING Mobile-satellite 5.1B
790-862 FIXED MOBILE except aeronautical mobile 5.316B 5.317A BROADCASTING Mobile-satellite 5.1B 5.312 5.319	**698-806** MOBILE 5.317A BROADCASTING Fixed Mobile-satellite 5.1B 5.293 5.309	
862-890 FIXED MOBILE except aeronautical mobile 5.317A BROADCASTING 5.322 Mobile-satellite 5.1B 5.319 5.323	**806-890** FIXED MOBILE 5.317A BROADCASTING Mobile-satellite 5.1B 5.317 5.318	5.149 5.305 5.306 5.307 5.320

MOD

890-1 300 MHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
890-942 FIXED MOBILE except aeronautical mobile 5.317A BROADCASTING 5.322 Radiolocation Mobile-satellite 5.1B	**890-902** FIXED MOBILE except aeronautical mobile 5.317A Radiolocation Mobile-satellite 5.1B 5.318 5.325	**890-942** FIXED MOBILE 5.317A BROADCASTING Radiolocation Mobile-satellite 5.1B

5.323	**902-928** FIXED Amateur Mobile except aeronautical mobile 5.325A Radiolocation Mobile-satellite 5.1B 5.150 5.325 5.326 **928-942** FIXED MOBILE except aeronautical mobile 5.317A Radiolocation 5.325	5.327
942-960 FIXED MOBILE except aeronautical mobile 5.317A BROADCASTING 5.322 Mobile-satellite 5.1B 5.323	**942-960** FIXED MOBILE 5.317A ADD 5.1B4 Mobile-satellite 5.1B	**942-960** FIXED MOBILE 5.317A ADD 5.1B4 BROADCASTING Mobile-satellite 5.1B 5.320

ADD

5.1B The frequency band 698-960 MHz, in Regions 2 and 3 and the frequency band 694-960 MHz, in Region 1, is allocated to the Mobile Satellite service on a secondary basis for direct connectivity between Mobile satellite service space stations and International Mobile Telecommunications (IMT) terrestrial terminals (DC-MSS-IMT) to complement terrestrial IMT coverage. This identification does not preclude the use of these frequency bands by any application of other services to which the band is allocated and does not establish priority in the Radio Regulations. DC-MSS-IMT space stations shall not claim protection from stations operating in in accordance with the RR. Resolution [A1-DC-MSS-IMT] (WRC-27) shall apply. (WRC-27)

1/1.13/5.2 For Issue 2: DC-MSS-IMT in the frequency band 1 427-1 518 MHz

1/1.13/5.2.1 Method 2A

NOC to Vols. I and II of the Radio Regulations, the regulatory text below applies.

NOC

ARTICLES

NOC

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RESOLUTION 253 (WRC-23)

Resolution 253 (WRC-23) – Studies on possible new allocations to the mobile-satellite service for direct connectivity between space stations and International Mobile Telecommunications (IMT) user equipment to complement terrestrial IMT network coverage

1/1.13/5.2.2 Method 2B

Changes to the Radio Regulations, the regulatory text below applies.

ARTICLE 5

Frequency allocations

Section IV – Table of Frequency Allocations
(See No. **2.1**)

MOD

1 300-1 525 MHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
1 300-1 350	RADIOLOCATION AERONAUTICAL RADIONAVIGATION 5.337 RADIONAVIGATION-SATELLITE (Earth-to-space) 5.149 5.337A	
1 350-1 400 FIXED MOBILE RADIOLOCATION 5.149 5.338 5.338A 5.339	**1 350-1 400** RADIOLOCATION 5.338A 5.149 5.334 5.339	

1 400-1 427	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.341	
1 427-1 429	SPACE OPERATION (Earth-to-space) FIXED MOBILE except aeronautical mobile 5.341A 5.341B 5.341C Mobile-satellite 5.2B 5.338A 5.341	
1 429-1 452 FIXED MOBILE except aeronautical mobile 5.341A Mobile-satellite 5.2B 5.338A 5.341 5.342	**1 429-1 452** FIXED MOBILE 5.341B 5.341C 5.343 Mobile-satellite 5.2B 5.338A 5.341	
1 452-1 492 FIXED MOBILE except aeronautical mobile 5.346 BROADCASTING BROADCASTING-SATELLITE 5.208B Mobile-satellite 5.2B 5.341 5.342 5.345	**1 452-1 492** FIXED MOBILE 5.341B 5.343 5.346A BROADCASTING BROADCASTING-SATELLITE 5.208B Mobile-satellite 5.2B 5.341 5.344 5.345	
1 492-1 518 FIXED MOBILE except aeronautical mobile 5.341A Mobile-satellite 5.2B 5.341 5.342	**1 492-1 518** FIXED MOBILE 5.341B 5.343 Mobile-satellite 5.2B 5.341 5.344	**1 492-1 518** FIXED MOBILE 5.341C Mobile-satellite 5.2B 5.341
1 518-1 525 FIXED MOBILE except aeronautical mobile MOBILE-SATELLITE (space-to-Earth) 5.348 5.348A 5.348B 5.351A 5.341 5.342	**1 518-1 525** FIXED MOBILE 5.343 MOBILE-SATELLITE (space-to-Earth) 5.348 5.348A 5.348B 5.351A 5.341 5.344	**1 518-1 525** FIXED MOBILE MOBILE-SATELLITE (space-to-Earth) 5.348 5.348A 5.348B 5.351A 5.341

ADD

5.2B The frequency band 1427-1518 MHz, is allocated to the Mobile Satellite service on a secondary basis for direct connectivity between Mobile satellite service space stations and International Mobile Telecommunications (IMT) terrestrial terminals (DC-MSS-IMT) to complement terrestrial IMT coverage. This identification does not preclude the use of these frequency bands by any application of other services to which the band is allocated and does not establish priority in the Radio Regulations. DC-MSS-IMT space stations shall not claim protection from stations operating in in accordance with the RR. Resolution [A1-DC-MSS-IMT] (WRC-27) shall apply. (WRC-27)

1/1.13/5.3 For Issue 3: DC-MSS-IMT in the frequency band 1 710-2 200 MHz

1/1.13/5.3.1 For Method 3A: NOC to Vols. I and II of the Radio Regulations

NOC

ARTICLES

NOC

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RESOLUTION 253 (WRC-23)

Resolution 253 (WRC-23) – Studies on possible new allocations to the mobile-satellite service for direct connectivity between space stations and International Mobile Telecommunications (IMT) user equipment to complement terrestrial IMT network coverage

1/1.13/5.3.2 For Method 3B: DC-MSS-IMT in 1 710-2 200 MHz

ARTICLE 5

Frequency allocations

Section IV – Table of Frequency Allocations
(See No. **2.1**)

MOD

1 710-2 170 MHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
1 710-1 930	FIXED MOBILE 5.384A 5.388 5.388A Mobile-satellite 5.3B 5.149 5.341 5.385 5.386 5.387	
1 930-1 970 FIXED MOBILE 5.388 5.388A Mobile-satellite 5.3B	**1 930-1 970** FIXED MOBILE 5.388 5.388A Mobile-satellite (Earth-to-space) Mobile-satellite 5.3B	**1 930-1 970** FIXED MOBILE 5.388 5.388A Mobile-satellite 5.3B
1 970-1 980	FIXED MOBILE 5.388 5.388A Mobile-satellite 5.3B	
1 980-2 010	FIXED MOBILE 5.388 MOBILE-SATELLITE (Earth-to-space) 5.351A Mobile-satellite 5.3B 5.389A 5.389B 5.389F	
2 010-2 025 FIXED MOBILE 5.388 5.388A Mobile-satellite 5.3B	**2 010-2 025** FIXED MOBILE 5.388 MOBILE-SATELLITE (Earth-to-space) Mobile-satellite 5.3B 5.389C 5.389E	**2 010-2 025** FIXED MOBILE 5.388 5.388A Mobile-satellite 5.3B
2 025-2 110 (space-to-space)	SPACE OPERATION (Earth-to-space) (space-to-space) EARTH EXPLORATION-SATELLITE (Earth-to-space) FIXED MOBILE 5.391 SPACE RESEARCH (Earth-to-space) (space-to-space) Mobile-satellite 5.3B 5.392	
2 110-2 120	FIXED MOBILE 5.388 5.388A SPACE RESEARCH (deep space) (Earth-to-space) Mobile-satellite 5.3B	

2 120-2 160 FIXED MOBILE 5.388 5.388A Mobile-satellite 5.3B	**2 120-2 160** FIXED MOBILE 5.388 5.388A Mobile-satellite (space-to-Earth) Mobile-satellite 5.3B	**2 120-2 160** FIXED MOBILE 5.388 5.388A Mobile-satellite 5.3B
2 160-2 170 FIXED MOBILE 5.388 5.388A Mobile-satellite 5.3B	**2 160-2 170** FIXED MOBILE 5.388 MOBILE-SATELLITE (space-to-Earth) Mobile-satellite 5.3B 5.389C 5.389E	**2 160-2 170** FIXED MOBILE 5.388 5.388A Mobile-satellite 5.3B

2 170-2 200	FIXED MOBILE 5.388 MOBILE-SATELLITE (space-to-Earth) 5.351A Mobile-satellite 5.3B 5.389A 5.389F

ADD

5.3B The frequency band 1 710 -2 200 MHz is allocated to the Mobile Satellite service on a secondary basis for direct connectivity between Mobile satellite service space stations and International Mobile Telecommunications (IMT) terrestrial terminals (DC-MSS-IMT) to complement terrestrial IMT coverage. This identification does not preclude the use of these frequency bands by any application of other services to which the band is allocated and does not establish priority in the Radio Regulations. DC-MSS-IMT space stations shall not claim protection from stations operating in in accordance with the RR. Resolution [A1-DC-MSS-IMT] (WRC-27) shall apply. (WRC-27)

1/1.13/5.4 For Issue 4: DC-MSS-IMT in the frequency band 2 200 – 2 300 MHz

1/1.13/5.4.1 Method 4A: NOC to Vols. I and II of the Radio Regulations

NOC

ARTICLES

NOC

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RESOLUTION 253 (WRC-23)

Resolution 253 (WRC-23) – Studies on possible new allocations to the mobile-satellite service for direct connectivity between space stations and International Mobile Telecommunications (IMT) user equipment to complement terrestrial IMT network coverage

1/1.13/5.5 For Issue 5: DC-MSS-IMT in the frequency band 2 500 – 2 690 MHz

1/1.13/5.5.1 For Method 5A: NOC to Vols. I and II of the Radio Regulations

NOC

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NOC

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RESOLUTION 253 (WRC-23)

Resolution 253 (WRC-23) – Studies on possible new allocations to the mobile-satellite service for direct connectivity between space stations and International Mobile Telecommunications (IMT) user equipment to complement terrestrial IMT network coverage

1/1.13/5.6 For Issues 1, 2 and 3 : DC-MSS-IMT in the frequency band 694/698-2 690 MHz, or portions thereof

1/1.13/5.6.1 For Methods 1B, 2B, and 3B

ADD

RESOLUTION [A1-DC-MSS-IMT] (WRC-27)

Use of direct connectivity between Mobile satellite service space stations and International Mobile Telecommunications (IMT) (DC-MSS-IMT) in the frequency band 694/698-2 690 MHz, or portions thereof

The World Radiocommunication Conference (Shanghai, 2027),

considering

a) that there is growing demand for access to mobile broadband, requiring more flexibility in the approaches to expand the capacity and coverage provided by International Mobile Telecommunications (IMT) systems;

b) that direct connectivity between Mobile satellite service space stations and International Mobile Telecommunications (IMT) user terminals would complement the terrestrial IMT networks, to provide mobile-broadband connectivity to underserved communities, and in rural and remote areas;

c) that DC-MSS-IMT would offer a new means of providing IMT services with minimal network infrastructure as they are capable of providing service to a large footprint together with a dense coverage;

d) that DC-MSS-IMT stations could use the same frequency bands as ground-based IMT base stations in order to provide mobile-broadband connectivity to complement the terrestrial IMT networks

e) that the operation of DC-MSS-IMT in the same geographical area with existing services in the same and adjacent may create incompatibility and interference issues;

f) that it is necessary to adequately protect existing services and their development in these frequency bands,

g) that the user equipment to be served, whether by DC-MSS-IMT or ground-based IMT base stations, is the same, and currently supports a variety of the frequency bands identified for IMT;

h) that ITU-R has addressed sharing and compatibility between DC-MSS-IMT and existing systems of primary allocated services, and adjacent services in the frequency bands in the frequency range 694-2 690 MHz;

i) that administrations planning to implement DC-MSS-IMT may need to exchange information, on a bilateral basis, with other concerned administrations, including data items describing the DC-MSS-IMT characteristics, and whether flexibility on the DC-MSS-IMT platform altitude has been permitted by the administration;

recognizing

a) that, in Article **5** of the Radio Regulations, the frequency bands or parts of these frequency bands, within the frequency range 694-2 960 MHz, , are allocated, and are used on a primary and secondary basis, to various services;

c) that the use of spectrum for different services should take into account the need for sharing studies;

d) that the Radio Regulations provide that the identification of a given frequency band for DC-MSS-IMT does not preclude the use of that frequency band by any application of the services to which it is allocated and does not establish priority in the Radio Regulations;

h) that these bands are allocated to the fixed and mobile services on a co-primary basis,

noting

a) that DC-MSS-IMT operations are capable of providing mobile broadband connectivity directly from space to standard un-modified IMT user equipment providing complementary services to terrestrial IMT networks,

b) that, when the DC-MSS-IMT systems are deployed in the same frequency band, or in adjacent frequency bands, technical or operational measures are needed in order to avoid harmful interference;

resolves

1 that DC-MSS-IMT systems shall operate under the same frequency arrangements as the

terrestrial IMT systems, as listed in the table below:

Frequency range	Transmitting frequency bands of IMT user equipment (Earth-to-space)	Transmitting frequency bands of space stations in MSS (space-to-Earth)	Duplex mode	Relevant frequency arrangements in Rec. ITU-R M.1036-7
694/698-960 MHz	824-844 MHz	869-889 MHz	FDD	A1*
	890-915 MHz	935-960 MHz	FDD	A2*
	703-748 MHz	758-803 MHz	FDD	A5
1 427-1 518 MHz	1 427-1 470 MHz	1 475-1 518 MHz	FDD	G2
1 710-2 200 MHz	1 920-1 980 MHz	2 110-2 170 MHz	FDD	B1
	1 710-1 785 MHz	1 805-1 880 MHz	FDD	B2
	1 850-1 920 MHz	1 930-2 000	FDD	B3

*Note: Some countries have implemented both A1 and A2 arrangements differently in the band 694/698-960 MHz; that is 824-849 MHz (Uplink) paired with 869-894 MHz (Downlink) and 880-915 MHz ((Uplink) paired with 925-960 MHz (Downlink).

2 that DC-MSS-IMT space stations authorized to operate within the territory of an administration shall communicate only with authorised IMT user equipment and that IMT user equipment shall transmit to DC-MSS-IMT space stations only where authorised;

3 that the operation of DC-MSS-IMT within the territory of an administration shall operate only with the explicit agreement between the Satellite Network Operator (SNO) and the terrestrial Mobile Network Operator (MNO).

4 that, for the purpose of protecting IMT mobile stations in the territory of other administrations in the frequency range 694-2690 MHz, the power flux-density (pfd) level per DC-MSS-IMT produced at the surface of the Earth in the territory of other administrations shall not exceed the following limit, unless explicit agreement of the affected administration is provided:

Aggregate PFD limit [per system][per satellite] for protection of IMT UE (Note 1, 2)

Frequency range	694/698-960 MHz	1 427-1 518 MHz	1 710-2 200 MHz
Aggregate PFD limit per system dB(W/(m²·.MHz))	X1[TBD]	X2[TBD]	X3[TBD]

Note 1: The pfd values per system considers 3 dB multi-system aggregation factor

Note 2: The values consider protection of FWA CPE

5 that any explicit bilateral or multilateral agreement(s) allowing the application of limits less stringent than those specified in this Resolution shall not adversely affect administrations that are not party to such agreement,

invites administrations

instructs the Director of the Radiocommunication Bureau
to take all necessary measures to implement this Resolution.

_____