



## COMMENTS OF TELESAT

In response to the TRAI consultation paper on  
*Terms and Conditions for the Assignment of Spectrum for Certain Satellite-  
Based Commercial Communication Services*  
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## Introduction

Telesat wishes to compliment TRAI for the extensive and well documented consultation covering fundamental aspects that will shape the future regulatory framework for satellite service provision in India.

Telesat is also relieved by the disappearance of any consideration for possible auctions of satellite spectrum, the drawbacks of which became quite apparent.

At the same time, Telesat notes a focus on NGSO systems. While this is clearly an emerging technology, NGSO FSS systems will provide similar services to GSO FSS networks. As such, there should be no difference in terms of spectrum assignment/pricing.

In any case, Telesat is very grateful for the opportunity to participate in this consultation and respectfully provides the replies to some of the questions, with the focus on Ka-band. Replies have been kept short and to the point, as similar arguments have already been made in relation to previous consultations.

### **Q1 Which frequency band(s)/ range(s) should be considered for assignment to NGSO based Fixed Satellite Services for providing data communications and Internet Service?**

Spectrum access directly affects NGSO satellite capacity and thus the ability to serve India in a cost-effective manner. As such, Telesat is of the view that the frequency ranges for assignment should largely be consistent with those assigned to the GSO Fixed Satellite Services in India, unless stated otherwise in the ITU Radio Regulations. This allows NGSO satellite operators to have equal access to the satellite spectrum available for the provision of services.

In consideration that some NGSO satellite operators use the same frequency bands for feeder and user links, Telesat does not propose segmenting the satellite frequency bands specifically for either links. These novel satellite constellations have the ability to optimize the allocation of resources, including spectrum, to the user and feeder links, thereby efficiently and dynamically allocating spectrum, as and when required.

In the case of the Ka-band, Telesat proposes the following frequency ranges:

<b>Feeder Link (GHz)</b>	
<b>Earth-to-space</b>	<b>Space-to-Earth</b>
17.7 – 18.6	27.5 – 29.1
18.8 – 20.2	29.5 – 30.0

<b>User Link</b>	
<b>Earth-to-space</b>	<b>Space-to-Earth</b>
17.7 – 18.6	27.5 – 29.1
18.8 – 20.2	29.5 – 30.0

**Q3 What should be the maximum period of assignment of spectrum for -**

**(a) NGSO based Fixed Satellite Services for providing data communications and Internet Services**

To ensure certainty in continuity of satellite service and reduce any administrative overheads, Telesat is of the view that the validity of spectrum assignment for NGSO-based FSS should be 20 years in line with the period of validity of the service authorization. In fact, the longevity of any constellation can be guaranteed by replacing satellites as needed when they reach the end of life.

Furthermore, contrary to the *other views* reflected in this consultation paper stating that the *(NGSO) business potential would emerge after some years of operations*, the business potential for NGSO is already apparent and is further supported in various articles<sup>1</sup> given the benefits that NGSO satellite systems can bring.

**Q4 For assigning spectrum for NGSO-based communication services, whether every ITU filing should be treated as a separate satellite system?**

NGSO satellites could be supported by several ITU satellite filings. A new satellite filing may be submitted when additional satellites are launched to augment the capacity of the existing NGSO filings.

On that note, Telesat is of the view that every ITU filing should not be treated as a separate NGSO satellite system.

**Q5 Whether the provisions of ITU-RR are sufficient to resolve interference related challenges and coordination issues? If not, what additional conditions should be prescribed while assigning frequency spectrum for -**

**(a) NGSO based Fixed Satellite Services for providing data communication and Internet services**

Telesat is of the view that the existing provisions prescribed in the ITU-RR (and highlighted in this consultation paper) are fully sufficient for the protection of GSO and terrestrial services.

**Q6 For satellite earth station gateways of different satellite systems operating in the same frequency range, whether there is a need to prescribe a protection distance or any other measures to avoid interference from each other -**

Telesat is of the view that there is no need for the prescription of any additional conditions including separation distances between gateways of satellite systems. Coordination of gateways are typically left to satellite operators during site selection.

**Q7 In case the spectrum assigned for satellite gateway links is also assigned to terrestrial networks such as Fixed Service, IMT etc, what protection**

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<sup>1</sup> <https://spacenews.com/ngso-revenue-to-overtake-geostationary-market-by-2028/>

**distance or criterion should be included in the terms and conditions of the assignment of spectrum for satellite gateway links to avoid any interference to/from terrestrial networks?**

Fixed Service and Gateways can be coordinated as locations are known.

The 28 GHz band is not internationally identified for IMT and, as mentioned in the replies to other consultations, Telesat believes that deployment of IMT in this band would lead to a very inefficient use of the spectrum, due to the poor terrestrial mobile coverage. In any case, terrestrial sharing studies were conducted by Task Group 5/1 for WRC-19 for the 26 GHz band. The results of the studies<sup>2</sup> showed maximum separation distance of up to 10km between FSS earth stations and IMT stations.

For the 28 GHz band, it is expected for this separation distance to be even lower due to the higher attenuation along the propagation path.

**Q8 In case the spectrum assigned to the satellite user link is also assigned to terrestrial networks such as Fixed Service, what criterion should be included in the terms and conditions of the assignment of spectrum for satellite user links to avoid any interference to/from terrestrial networks?**

In the case Very Small Aperture Terminals (VSATs) at known locations or Gateway earth stations, they can be coordinated with the Fixed Services.

In the case of Earth Stations in Motion (ESIM), sharing conditions can be adopted from relevant resolutions such as Res **123 (WRC-23)** and Res **169 (WRC-19)** for protection of terrestrial services in the Ka-band for NGSO and GSO ESIMs.

**Q9 Whether there is a need to prescribe any conditions to mitigate the risk of scarcity of satellite gateway sites?**

There should not be a need to prescribe any conditions to mitigate the risk of scarcity of satellite gateway sites.

Contrary to what stated in Paragraph 3.32, Telesat is of the view that there is no need for a predefined minimum distance as this decision should be left to operators as part of the coordination process, considering the specific characteristics of the systems involved.

**Q10 In addition to the roll-out conditions recommended by TRAI for satellite-based Telecommunication Service Authorisation through its recommendations on the Framework for Service Authorisations to be Granted under the Telecommunications Act, 2023 dated 18.09.2024, whether there is a need to impose certain additional roll-out obligations for the assignment of frequency spectrum for –**

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<sup>2</sup> Please refer to [CPM19-2 report page 172 Section 2/1.13/3.2.1.3](#)

**(a) NGSO based Fixed Satellite Services for providing data communication and Internet services;**

It will be the satellite operators' inherent interest to commence service provision as soon as possible for revenue generation. Furthermore, satellite operators, differently from terrestrial mobile one, can share spectrum. Hence, Telesat is of the view that there is no need to impose roll-out obligations for the assignment of frequency spectrum.

**Q11 Whether there is a need to introduce a provision for surrender of frequency spectrum prior to the expiry of the period of validity of spectrum assigned for –**

**(a) NGSO based Fixed Satellite Services for providing data communication and Internet services;**

Yes, there should definitely be such possibility, as it's typically the case in other countries

**Q12 Whether there is a need to prescribe timelines for processing the applications for the assignment of frequency spectrum for –**

**(a) NGSO based Fixed Satellite Services for providing data communication and Internet services;**

Telesat is of the view that there is a need for the prescription of a reasonable timeline for the processing of applications for assignment of frequency spectrum as this will allow the satellite operators to prepare and plan in advance in anticipation for service commencement in any commercial agreement.

**Q13 Whether there are any other suggestions related to assignment of spectrum for-**

**(a) NGSO based Fixed Satellite Services for providing data communication and Internet services**

Telesat is of the view that there should not be any unnecessary provisions or regulations related to the assignment of spectrum that could inevitably translate to higher operating costs for the use of NGSO satellites.

More importantly, provisions relating to the assignment of spectrum for NGSO FSS should be consistent and similar to that of GSO FSS to prevent any unwarranted differentiation.

**Q14 Should spectrum charges for NGSO-based FSS providing data communication and Internet services, be levied:**

- i. On a per MHz basis,**
- ii. On a percentage of the Adjusted Gross Revenue (AGR) basis, or**
- iii. Through some other methodology**

Telesat is of the view that spectrum charges could either be based on a percentage of the AGR (e.g. 1% as already previously recommended also by TRAI) or on a per MHz basis provided that the fees are reasonable and sustainable for NGSO operations on the long-term basis, bearing in mind the large bandwidths utilized in the higher frequency bands by newer satellite systems. It is clear that, for instance, the formula Royalty, R (in Rs.) = 35000 x Bs would lead to astronomical amounts in the case of bandwidths in the order of GHz. Furthermore, Telesat is of the view that multiple user terminals (VSATs or ESIM) should be covered by a single "blanket license" (i.e. avoiding cumbersome individual terminal-by-terminal licenses). In any case, there should be no differentiation between spectrum charges for NGSO and GSO FSS providing data communication and internet services.

**Q15 In case it is decided that spectrum charges for NGSO-based FSS providing data communication and Internet services should be levied on a per MHz basis, should these charges be calculated based on:**

- i. The Department of Telecommunications (DoT) order dated December 11, 2023, or**
- ii. An alternative approach?**

As mentioned in Q14, the formula Royalty, R (in Rs.) = 35000 x Bs applied to bandwidths in the order GHz leads to unsustainable fees. Also, there is no reason why spectrum charges for NGSO FSS should be different from GSO FSS.

**Q16 If it is decided that spectrum charges for NGSO-based FSS providing data communication and Internet services should be levied on a percentage of AGR basis:**

- i. What should be the appropriate percentage of the AGR?**
- ii. Should a minimum spectrum charge be specified to address the issue of inefficient utilization of spectrum?**
- iii. Is there an alternative approach that could be followed to address the issue of inefficient spectrum utilization?**

As also mentioned in Q14, Telesat is of the view that the appropriate percentage of the AGR should be 1% and this charge should be applicable to both GSO and NGSO based FSS providing data communication and internet services.

Furthermore, it is clearly of the interest of satellite operations to use spectrum efficiently to maximise service provision. Also considering satellite operators can share spectrum thanks to coordination, there is no need for any unnecessary charges to be specified to address the concern on the use of inefficient utilization of spectrum.