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25th October 2024

Shri Akhilesh Kumar Trivedi
Advisor (Networks, Spectrum and Licensing)
Telecom Regulatory Authority of India,
World Trade Centre, Nauroji Nagar,
New Delhi – 110029

Subject : **Bharti Airtel's Comments on Consultation Paper on *Terms and Conditions for the Assignment of Spectrum for Certain Satellite-Based Commercial Communication Services***

Reference : **TRAI's Consultation Paper dated 27th September 2024**

Dear Sir,

This is in reference to TRAI's Consultation Paper on *Terms and Conditions for the Assignment of Spectrum for Certain Satellite-Based Commercial Communication Services* dated 27.09.2024.

In this regard, we are pleased to enclose our comments on the said consultation paper for your kind consideration.

Thanking You,

Yours' Sincerely,
For **Bharti Airtel Limited**

Rahul Vatts
Chief Regulatory Officer

Encl: a.a

Response to CP on *Terms and Conditions for the Assignment of Spectrum for Certain Satellite-Based Commercial Communication Services*

Preamble

Airtel thanks the Authority for giving it the opportunity to provide its comments on the Consultation Paper (**"CP"**) on *Terms and Conditions for the Assignment of Spectrum for Certain Satellite-Based Commercial Communication Services*.

Over the past 30 years, terrestrial operators have made remarkable strides in building extensive networks across the country. However, as a pan-India terrestrial network operator, Airtel understands the techno-commercial challenges that terrestrial networks face in connecting unconnected, rural, and remote areas. Still, approximately 25% of India's geography – including hilly terrains, remote areas, protected forest zones, rural communities, and certain stretches of our long coastline – remains "dark" or unconnected. Furthermore, many sensitive border areas lack terrestrial networks, presenting significant challenges for Defence, paramilitary, and other security agencies.

This is where satellite communication (SatCom) can emerge as a game-changer, bridging the digital divide and providing vital connectivity to these underserved regions. Additionally, SatCom can support the advancement of the Government's socio-economic development agenda in rural and remote areas. It can serve as a complementary solution to connect schools, Common Service Centres (CSCs), and primary and tertiary healthcare centres in locations where terrestrial networks are unable to reach. This, in turn, will open up new opportunities for education, healthcare, and the delivery of Government functions.

In these regions, SatCom can not only complement existing terrestrial networks by providing backhaul solutions but also act as a powerful enabler for various critical use cases. It can effectively serve non-retail customers, such as Defence and various government agencies, while also supporting public sector undertakings (PSUs) in rural and remote areas. By harnessing the potential of satellite communication, we can ensure that every corner of India is connected, empowering communities and fostering growth in even the most challenging terrains.

A. Recent Developments in SatCom: Ensuring a Level Playing Field with Terrestrial Operators:

While SatCom services have been around for over two decades and have catered to traditional markets i.e., rural and remote access, they were not substitutable for terrestrial services due to limitations in capacity and higher latency in GSO satellites. However, as with the evolution from 2G to 5G and beyond in the case of terrestrial services, there have been technological advancements in the SatCom sector as well.

NGSO, especially LEO constellations, now offers speeds comparable to terrestrial networks, enabling some SatCom operators to provide services to retail customers. This shift means SatCom can now effectively compete with terrestrial access service providers for individual subscribers in the retail and urban markets.

For instance, some satellite operators are positioning satellite broadband as a viable alternative to traditional broadband access, especially in urban and suburban areas where competition among terrestrial networks is already fierce. This emerging dynamic raises urgent regulatory concerns about maintaining a level playing field, as the lines between satellite and terrestrial access services increasingly blur for direct consumer access.

Even the DoT, in its reference letter preceding this Consultation Paper, has explicitly requested TRAI to provide its recommendations on the terms and conditions (T&Cs) of spectrum assignment, including spectrum pricing, while **"accounting for a level playing field with terrestrial access services."**

Airtel firmly believes that the issue of creating a level playing field is crucial for the balanced growth of the entire ecosystem.

While it is important to encourage SatCom services in traditional markets and for traditional use cases, it is equally vital to safeguard the significant investments made by terrestrial operators over the past three decades. These operators have built extensive networks that serve customers across the country, operate under DoT licence, pay licence fees, and comply with all regulatory obligations, including rollout and security requirements.

Over the years, lakhs of crores of rupees have been invested by terrestrial operators to acquire spectrum usage rights alone. Moreover, continual efforts and resources are devoted to bringing the latest technologies and improved services to customers. Indian telcos have rolled out one of the fastest 5G networks in the world, and discussions on 6G are now underway.

Thus, while SatCom should be encouraged to serve traditional markets (rural and remote areas) and for traditional use cases (serving Defence, various government agencies, PSUs, cellular backhaul, disaster, etc.) to bridge the digital divide, it is essential to address the issue of level playing field. Therefore, driving the adoption of SatCom must go hand in hand with ensuring a level playing field, fostering healthy competition that benefits consumers and the industry alike.

B. Spectrum charging methodology: promoting SatCom adoption in traditional markets, while ensuring level playing field in other cases:

As discussed in the previous paragraph, it is essential for the Government and regulatory bodies actively promote SatCom services in traditional markets and for traditional use cases. However, it is equally important to address the concerns regarding a level playing field, particularly when SatCom services begin to compete directly with terrestrial networks for retail customers in urban areas and other regions where the competition among terrestrial operators is already fierce.

Accordingly, **TRAI and the Government should price the satellite spectrum in a manner that addresses the concerns on level playing field with terrestrial operators qua some satellite operators offering services directly to customers in urban areas/retail customers. However, the traditional use cases of satellite services for the traditional market i.e. in rural and remote areas and for Government agencies, including Defence, disaster recovery, cellular backhaul in rural and remote areas, etc., can be priced differently (say, no spectrum charge)**.

Such an approach would drive the adoption of SatCom in traditional markets i.e. rural and remote areas while also ensuring a level playing field with terrestrial operators.

C. Validity of spectrum assignment for SatCom operators should be a maximum of 3 to 5 years:

Airtel has always favoured the assignment of spectrum for a longer period say 20 years. However, SatCom, especially NGSO-based services, is quite nascent and its potential repercussions on the entire ecosystem

– both terrestrial and satellite – are not yet known, more-so with its emerging ability to compete with terrestrial access services in retail market.

Therefore, we suggest that **satellite spectrum may be assigned for a validity of 3-5 years now, and the situation may be reassessed thereafter**. In any case, the immediate need in India is connecting the hitherto unconnected areas, and a validity of 3-5 years is adequate to encourage SatCom for this purpose and to evaluate whether there is a need to review the assignment and pricing methodology, considering the fast technological changes.

D. Privacy & Security: sine qua non:

Telecom operators are subject to strict security guidelines related to verification of customers, procurement of equipment and lawful interception and monitoring. In the case of satcom operators, in some countries there have been cases of networks being used for delivering messages for propaganda. Therefore, as a security and level playing field requirement, the entire traffic of satcom operators should pass through Indian ground stations to prevent uncensored broadcasts. They should also be subject to the National Security Directive for Telecom Services (NSDTS).

In summary:

- ✓ *The provision of SatCom in traditional markets i.e. hitherto unconnected rural/remote areas & Government/ Defence/non-retail users/backhaul, etc. is in furtherance of critical national interests, as these requirements are currently not fully addressed by terrestrial operators.*
- ✓ *However, there is another set of use cases – serving the individual customers directly in the retail category – for which SatCom and terrestrial access operators are in direct competition. For this category, it is essential to maintain parity between SatCom and terrestrial operators.*
- ✓ *The Authority may decide an appropriate spectrum usage charges (SUC) for SatCom services, given the use case i.e. whether the spectrum is used to serve typical traditional market, or for retail subscribers in urban areas as well – in order to ensure a level playing field with terrestrial operators. There are different charging models such as a per-UT charge, or AGR based or per-MHz based, etc., that the Authority may choose from.*
- ✓ *The frequency bands for space-based communications services should continue to be governed based on International Telecommunications Union's Radio Regulations ("ITU-RR"). Access to the entire frequency range in the Ku and Ka bands on a shared basis is necessary for providing FSS SatCom services.*
- ✓ *Spectrum for both NGSO-based FSS for providing data communication and Internet services and GSO/NGSO based MSS for providing voice, text, data and Internet services should be initially assigned for a period of 3-5 years. The situation may be reviewed thereafter, depending upon the technological and market evolution of the NGSO and its impact on wider terrestrial and SatCom market.*

- ✓ *For assigning spectrum or NGSO-based communication services, every ITU filing should not necessarily be treated as a separate satellite system. It should depend on the requirements of the respective operators. The operators should only be required to file a written declaration as to which ITU filings will be used by them – thus providing the requisite flexibility for different types of business cases and technologies.*

- ✓ *There is already a global-level coordination framework put in place by the ITU for the purposes of preventing harmful interference and encouraging coordination, which has been working efficiently. There is no need to prescribe any additional conditions. Therefore, Airtel recommends that interference mitigation among satellite operators should continue to be left to mutual coordination as per the ITU framework.*

- ✓ *For satellite earth station gateways of different satellite systems operating in the same frequency range, an appropriate 'coordination distance' may be prescribed between the gateways of GSO and NGSO systems and between the gateways of NGSO systems to avoid interference from each other.*

- ✓ *Presently, there is no need to prescribe any conditions to mitigate the risk of scarcity of satellite gateway sites. This is because SatCom services are still at a nascent stage and the number of gateway locations required by operators would be limited.*

- ✓ *A SatCom operator should be required to cover, within a year of assignment of spectrum, a certain geography comprising of areas which have no terrestrial footprint, failing which its spectrum should automatically revert to the Wireless Planning & Coordination (WPC) Wing. The Government may also incentivize such coverage through USOF.*

- ✓ *A reasonable timeline should be prescribed for the processing of spectrum assignment applications for NGSO-based FSS.*

- ✓ *The requirement of in-principle clearance of IMC-SNC for establishing/modifying satellite-based communication networks should be done away with. The requirement of a carrier plan approval from NOCC for SatCom services should also be done away with and replaced with a simple intimation-based process.*

Airtel now provides its replies to the specific questions asked, in the sections that follow.

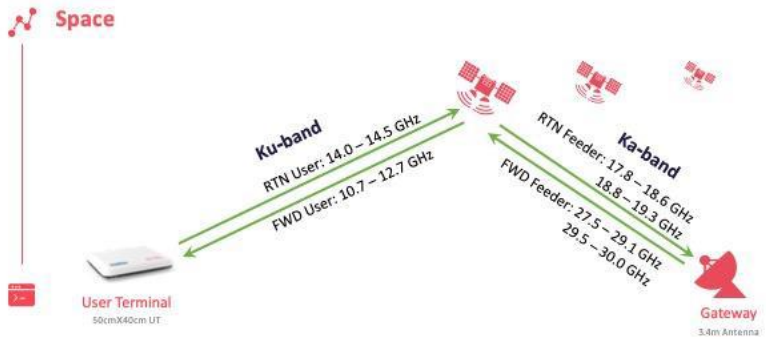
Q1. Which frequency band(s)/range(s) should be considered for the assignment to NGSO based Fixed Satellite Services for providing data communication and Internet service? Please provide a detailed response separately for the user link and feeder link.

Airtel Response:

The allocation of spectrum for satellite services is governed by international treaties and agreements, established by the ITU, so coordination at a global level is critical for their provision.

Therefore, **the frequency bands for space-based communications services should continue to be governed based on International Telecommunications Union's Radio Regulations ("ITU-RR").** In fact, DoT itself uses the ITU-RR as the basis of the National Frequency Allocation Plan ("NFAP").

Typically, the NGSO based satellite systems like OneWeb use the following spectrum:



Type of Link and Direction	Frequencies
UT to satellite (Earth-to-space)	14.0-14.5 GHz
Satellite to UT (Space-to-earth)	10.7-12.7 GHz
Gateway to Satellite (Earth-to-space)	27.5-29.1 GHz; 29.5-30.0 GHz
Satellite to Gateway (Space-to-earth)	17.8-18.6 GHz; 18.8-19.3 GHz

Table 1: OneWeb GEN-1 frequencies

The design of such satellite systems necessitate access to the entire Ku and Ka band spectrum as specified in Table 1 above. Providing access to only a portion of the spectrum would have grave consequences for the network's overall performance and could lead to inefficiencies and gaps in coverage.

Therefore, to ensure that NGSO satellite networks can deliver optimal performance and uninterrupted coverage, the full Ku and Ka band spectrum should be made available for use, albeit on a shared basis with other satellite operators. This will enable operators to continue providing vital satellite services and play a pivotal role in bridging the digital divide in India and beyond.

Q2. Which frequency band(s)/range(s) should be considered for the assignment to GSO/NGSO based Mobile Satellite Services for providing voice, text, data, and Internet service. Please provide a detailed response separately for the user link and feeder link.

Airtel Response:

The frequency in the L and S bands, i.e., the frequencies between 1.5/1.6 and 2.0/2.2 GHz, should be considered for service links, for the assignment to GSO/NGSO based Mobile Satellite Services for providing voice, text, data and Internet service.

For feeder links, C/Ka band FSS allocations could be considered.

Q3. What should be the maximum period of assignment of spectrum for –

(a) NGSO based Fixed Satellite Services for providing data communication and Internet services, and
(b) GSO/NGSO based Mobile Satellite Services for providing voice, text, data, and Internet services?

Please provide a detailed response alongwith international practice in this regard.

Airtel Response:

As submitted in the Preamble, it is essential for the Government and TRAI to promote SatCom services in traditional markets and for traditional use cases. However, it is equally important to address concerns regarding a level playing field, particularly as SatCom services begin to compete directly with terrestrial networks for retail customers in urban areas and other regions where competition among terrestrial operators is already intense.

While Airtel has consistently advocated for longer validity periods for spectrum assignments, it also recognises that SatCom—particularly NGSO-based services—remains in an early stage of development. Different global satellite operators are at various stages of rollout, with distinct constellation sizes, capacities, and generations of satellites, as well as differing business models, including B2B and B2C offerings. Moreover, it is evident that in many markets, satellite operators are positioning their services as direct competitors to terrestrial operators with differential retail pricing (varying from one market to another).

Therefore, given the evolving nature of this Industry, **we propose that a shorter validity period of 3 to 5 years for satellite spectrum assignments is the most prudent approach.** Such a period would not only adequately incentivise the deployment of SatCom to meet the urgent need for connectivity in traditional markets for conventional use cases, but it would also provide an opportunity to evaluate whether reassessments of spectrum pricing methodologies are necessary at a later stage depending upon the market conditions.

Q4. For assigning spectrum for NGSO-based communication services, whether every ITU filing should be treated as a separate satellite system? Please provide a detailed response alongwith international practice in this regard.

Airtel Response:

For assigning spectrum or NGSO-based communication services, every ITU filing should not necessarily be treated as a separate satellite system. It should depend on the requirements of the respective operators. Accordingly, the operators should only be required to file a written declaration as to which ITU filings will be used by them – thus providing the requisite flexibility for different types of business cases and technologies.

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; and
(b) GSO/NGSO based Mobile Satellite Services for providing voice, text, data, and Internet services?

Please provide a detailed response alongwith international practice in this regard.

Airtel Response:

The provisions of ITU-RR are sufficient to resolve interference-related challenges and coordination issues. There is no need for prescribing any additional conditions while assigning frequency spectrum for NGSO-based Fixed Satellite Services for providing data communication and Internet services and GSO/NGSO-based Mobile Satellite Services for providing voice, text, data and Internet services.

As noted by the Authority itself in the instant CP, the ITU already has an elaborate framework for coordination and interference mitigation among satellite systems (both GSO and NGSO). It needs to be mandatorily complied with by all satellite operators.

This framework is based on the principle that the right to use orbital and spectrum resources for a satellite network or system is acquired through negotiations concerned with the actual usage. This principle has proven to be the most effective means of achieving rational, cost-effective and efficient spectrum and orbital resource management.

By adhering to the current ITU framework and coordination procedures, 99.95% of spectrum assigned to satellite networks has been free from reported harmful interference. This impressive statistic demonstrates the robustness of the existing framework.

Because there is already a global-level coordination framework put in place by the ITU for the purposes of preventing harmful interference and encouraging coordination, and because it has been working

efficiently thus far, there is no need to prescribe additional conditions to resolve interference-related challenges and coordination issues.

Therefore, Airtel recommends that interference mitigation among satellite operators should continue to be left to mutual coordination as per the ITU framework.

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 –

(a) Between the gateways of GSO and NGSO systems; and
(b) Between the gateways of NGSO systems?

If yes, please provide a detailed response alongwith international practice in this regard.

Airtel Response:

For satellite earth station gateways of different satellite systems operating in the same frequency range, an appropriate **'coordination distance'** may be prescribed between the gateways of GSO and NGSO systems, and between the gateways of NGSO systems, to avoid interference from each other.

Generally, two gateway stations operating in the same direction of transmission and reception do not interfere with each other. However, there is a possibility of interference when gateway stations of different satellite networks operate nearby.

In order to prevent harmful interference, an appropriate 'coordination distance' may be prescribed, requiring an operator wishing to set up a new gateway station within such distance of an existing gateway station to coordinate with such existing gateway station.

Q7. In case the spectrum assigned for satellite gateway links is also assigned to terrestrial networks such as Fixed Service, IMT etc., what protection 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? Please provide a detailed response alongwith international practice in this regard.

Airtel Response:

In case the spectrum assigned for satellite gateway links is also assigned to terrestrial networks such as Fixed Service, IMT, etc., the protection distance or criterion to be included in the terms and conditions of the assignment of spectrum for satellite gateway links to protect them from interference to/from terrestrial networks, **would depend on the technical characteristics of the satellite earth station and the co-located IMT Base Station, keeping into account the propagation models of both the system in that specific terrain.**

Any presence of IMT or other services including satellite user terminals, fixed or mobile, within the vicinity of the gateway locations could create potential interference. It is advisable that instead of a coordination threshold distance, a power flux-density (PFD) threshold or another technical threshold for such coordination be adopted.

Further, as captured in TRAI's Consultation Paper "Assignment of Spectrum for Space-based Communication Services" dated 06.04.2023, DoT has stated that, "***Coexistence of satellite networks or satellite-based communication within the country is ensured through various provisions in RR, ITU recommendations, WRC Resolutions, NFAP and License conditions for the satellite and MW services.*** *… Moreover, as per the current practice to assign spectrum administratively, all frequency assignments/operations are issued on non-interference/non-protection basis*." Airtel concurs with DoT in this regard.

To mitigate interference, ITU prescribes varying measures in ITU-RR which have been duly captured by the Authority in the instant Consultation Paper. In view of the above, there are **sufficient mechanisms and processes that exist under the ITU framework[1] and global best practices that can and should be leveraged.**

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? Please provide a detailed response alongwith international practice in this regard.

Airtel Response:

In case the spectrum assigned to the satellite user link is also assigned to terrestrial networks such as Fixed Service, the criterion to be included in the terms and conditions of the assignment of spectrum for satellite user links so as to be protected from interference to/from terrestrial networks, would **depend on the type of UT**.

- **For fixed UTs, a 'protection distance' may be proposed** around a terrestrial link, where no fixed UTs can be installed. Such a protection distance is usually in the order of a few/tens of kilometers.

  In addition, **a 'coordination distance' may also be prescribed**, wherein coordination would be required between the two services.

- For land mobility UTs, it is difficult to coordinate as the UTs are moving around. Hence, **the spectrum already assigned to terrestrial networks, such as Fixed Service, should not be the same frequency bands as to be used by land mobility UTs**.

[1] For detailed coordination of terrestrial stations operating in the bands shared with space service, visit https://www.itu.int/en/ITU-R/terrestrial/fmd/Pages/coordination.aspx.

- **For aero and maritime UTs, PFD limits may be prescribed**, in case the same spectrum is assigned to terrestrial networks, such as Fixed Service, as well.

  For instance, the European (licensing) Decision ECC (18)05 for the Ku-band FSS allocation to NGSO systems provides for a Max EIRP of the satellite terminal of 54.5 dBW. Further, its Annex 1 provides for PFD limits for all earth stations on moving platforms (land, aero and maritime). Such PFD limits protect the terrestrial microwave links from co-frequency and co-located operations.

Q9. Whether there is a need to prescribe any conditions to mitigate the risk of scarcity of satellite gateway sites? If yes, please provide a detailed response alongwith international practice in this regard.

Airtel Response:

There is no need to prescribe any conditions to mitigate the risk of scarcity of satellite gateway sites.

Considering that SatCom services are still at a nascent stage, the number of gateway locations required by operators would be limited. Consequently, scarcity of such locations may not be a relevant concern at this stage. DoT should rather focus on measures for enabling the advancement of SatCom services in the country – in line with the Government's vision as encapsulated in the Indian Space Policy, 2023. However, based on the entry of satellite operators and the number of satellite gateways being established, a suitable policy can be framed post consultation at the appropriate time.

Therefore, Airtel recommends that there is presently no need to prescribe any conditions to mitigate the risk of scarcity of satellite gateway sites.

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 –

(a) NGSO based Fixed Satellite Services for providing data communication and Internet services;
(b) GSO/NGSO based Mobile Satellite Services for providing voice, text, data, and Internet services?

Please provide a detailed response alongwith international practice in this regard.

Airtel Response:

Yes, there is a need to impose certain additional roll-out obligations 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, for the assignment of frequency spectrum for NGSO based Fixed Satellite Services for providing data communication and Internet services and GSO/NGSO based Mobile Satellite Services for providing voice, text, data and Internet services.

The roll-out obligations recommended by the Authority for Satellite-based Telecom Service Authorisation are in line with the roll-out obligations currently prescribed for GMPCS and Commercial VSAT CUG Service Authorisations under the UL. An operator is required to commission, within twelve months of spectrum assignment, a Satellite Earth Station Gateway Switch in case of GMPCS, and a Hub Station or at least two VSAT terminals (depending on the network configuration) in case of Commercial VSAT CUG.

As noted by the Authority itself in the instant Consultation Paper, the above roll-out of obligations is drawn up with respect to the operationalisation of the satellite earth station gateway, i.e., feeder link frequency spectrum. As for the spectrum assigned for user links, no separate roll-out obligations have been prescribed.

Considering that the new generation satellite systems, including NGSO-based satellite systems, require a large quantum of frequency spectrum, certain additional roll out obligations are needed to **ensure that only serious and long-term players seek the assignment of spectrum instead of the entry of non-serious players for the purposes of hoarding the spectrum, and also that the immediate needs of the country are fulfilled**.

Therefore, **there should be a condition that the satellite service provider cover, within a year of the assignment of spectrum, a certain geography comprising of areas which have no terrestrial footprint, failing which its spectrum should automatically revert to the Wireless Planning & Coordination (WPC) Wing. The Government may also incentivize such coverage through USOF.**

This will ensure that only genuine operators who are committed to connecting the hitherto unconnected areas seek the assignment of spectrum for the launch of their services.

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;
(b) GSO/NGSO based Mobile Satellite Services for providing voice, text, data, and Internet services?

If yes, what should be the process, and associated terms and conditions such as minimum period of spectrum holding, notice period, surrender fee, etc.? Please provide a detailed response with justifications.

Airtel Response:

Yes, there is a need to introduce a provision for the surrender of frequency spectrum prior to the expiry of the period of validity of spectrum assigned for NGSO-based Fixed Satellite Services for providing data communication and Internet services.

As per the extant guidelines, a TSP may surrender the spectrum administratively assigned to it (including MWA/MWB carriers), by serving an advance notice of 30 days to DoT. There is no minimum period of spectrum holding. Further, no surrender fee is charged. Since spectrum for NGSO-based FSS would also be assigned administratively, a similar process should be adopted for surrender in that case.

Therefore, Airtel recommends that operators should be allowed to surrender the spectrum assigned for NGSO-based FSS broadband services after giving 30 days' notice, with no minimum period of spectrum holding and no surrender fee – in line with the extant guidelines for surrender of administratively assigned spectrum.

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;
(b) GSO/NGSO based Mobile Satellite Services for providing voice, text, data, and Internet services?

Please provide a detailed response with justifications.

Airtel Response:

Yes, there is a need to prescribe timelines for processing the applications for the assignment of frequency spectrum for NGSO-based Fixed Satellite Services for providing data communication and Internet services.

As noted by the Authority itself in the instant Consultation Paper, SatCom operators usually seek spectrum assignment from DoT only after the satellite-based network is ready for operation. Consequently, a delay in spectrum assignment would result in the non-utilisation of satellite resources.

Considering that the effective life of satellite resources is rather limited (with the life of a LEO satellite only being 5-7 years generally), any delays in granting approval mean that the operators in question are denied the opportunity to fully capitalise on the huge investments they have made to establish the requisite infrastructure in space. Hence, it is important that spectrum is assigned to operators within a reasonable timeframe.

Therefore, Airtel recommends that a reasonable timeline should be prescribed for processing of spectrum assignment applications for NGSO-based FSS.

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;
(b) GSO/NGSO based Mobile Satellite Services for providing voice, text, data, and Internet services?

Please provide a detailed response with justifications.

Airtel Response:

While Airtel has provided its inputs regarding the various terms and conditions of spectrum assignment for SatCom services in its responses to the questions above, it would also like to make the following submissions regarding simplifying the process of spectrum assignment and improving the ease-of-doing business with respect to the SatCom sector:

(i) Requirement of In-Principle Clearance from Inter-Ministerial Committee for SatCom Networks

As part of the 2022 SatCom reforms, the Government took several very welcome steps with regard to satellite-based services like the removal of MPVT charges and scope enhancement of Commercial VSAT. However, the sector still yearns for more crucial reforms to be initiated such as doing away with the requirement of in-principle clearance from the Inter-Ministerial Committee – Satellite Network Clearance (IMC-SNC) for various activities.

Even after obtaining the license/authorisation, the satellite operator is still required to obtain in-principle clearance from IMC-SNC for the following activities:

- Establishing any satellite-based communication network.
- Starting totally new service/network or change in the service/network.
- Use of new technology for the first time, change of technology.
- Setting up of additional hub/gateway station.
- Change of frequency band.
- Any proposal not exactly similar to a previously cleared proposal or not scrutinised and approved by the IMC-SNC for any other licensee.

Airtel believes that these requirements are archaic, not in sync with the liberalised times of the sector, serve no purpose and, hence, should be done away with.

Moreover, there is no corresponding requirement for obtaining such a clearance from an Inter-Ministerial Committee, not even in the case of the vast terrestrial networks deployed across India that provide services to over a billion customers, operate millions of BTSs, operate in multiple spectrum bands (e.g. 700MHz/900MHz/1800MHz/2.1GHz/ 2.3GHz/2.5GHz/3.3GHz/26GHz) and

multiple technologies (2G/3G/4G/5G) and manage interference with other operators at circle levels, with unlicensed operators and various government users.

As SatCom will remain a very niche segment relative to terrestrial, there is no point in continuing with such onerous requirements for SatCom. This reform will boost investor confidence, simplify the procedure and still meet the objectives of the Government, without impacting the precious time to launch service.

Therefore, Airtel recommends that the requirement of in-principle clearance from IMC-SNC for establishing/modifying satellite-based communication networks should be done away with.

(ii) Requirement of a Carrier Plan Approval from NOCC for SatCom

Currently, a SatCom operator is required to obtain a carrier plan approval from NOCC.

We understand that this requirement flows from GSO-based networks, where the same satellite is shared among multiple operators, thus necessitating interference monitoring by NOCC.

However, in the case of NGSO, the whole constellation serves only one entity, which is the satellite operator itself. Hence, there is no case for interference monitoring by a third party.

Even interference with adjacent satellites is a non-issue, as ITU already has well-defined processes for coordination among different satellite systems, with which all satellite operators have to mandatorily comply.

In case it is still felt that the submission of information regarding carrier plans, antenna parameters, etc. is necessary, NGSO operators could continue to provide the same on the Saral Sanchar portal on a self-intimation basis – rather than having to seek an approval.

Therefore, Airtel recommends that the requirement of carrier plan approval from NOCC for SatCom services should be done away with and replaced with a simple intimation-based process.

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 Adjusted Gross Revenue (AGR) basis, or
iii. Through some other methodology?

Please provide a detailed justification for your answer.

&

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 (please specify)?**

Please provide a detailed justification to support your answer.

&

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 AGR?**
ii. **Should a minimum spectrum charge be specified to address the issue of inefficient utilization of spectrum? If yes, what methodology may be used to determine the amount of the minimum spectrum charge?**
iii. **Is there an alternative approach that could be followed to address the issue of inefficient spectrum utilization?**

Please provide a detailed justification for your answers.

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Q17. Considering the Adjusted Gross Revenue (AGR) based charging methodology currently followed for Commercial VSAT and in view of the enhanced scope of the Satellite service authorisation, what should be the spectrum charge, as a percentage of AGR, that should be levied on GSO-based FSS? Or,
Should some alternative spectrum charging methodology be used for determining spectrum charges for GSO-based FSS?
Please provide a detailed justification for your answer.

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Q18. Should spectrum charges for GSO and NGSO-based MSS that provide voice, text, data, and Internet services be levied:

i. **On a per MHz basis,**
ii. **On a percentage of AGR basis, or**
iii. **Through some other methodology?**

Please provide a detailed justification for your answer.

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Q19. If it is determined that spectrum charges for GSO/NGSO-based MSS providing voice, text, data, 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 (please specify)?

Please provide a detailed justification to support your answer.

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Q20. If it is decided that spectrum charges for GSO/NGSO-based MSS providing voice, text, data, and Internet services should be levied on a percentage of AGR basis:

i. What should be the appropriate percentage?
ii. Should a minimum spectrum charge be specified to address the issue of inefficient utilization of spectrum? If yes, what methodology may be used to determine the amount of the minimum spectrum charge?
iii. Is there an alternative approach that could be followed to address the issue of inefficient spectrum utilization?

Please provide a detailed justification for your answers.

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Q21. Whether there are any other issues/suggestions relevant to the spectrum charging for:

i. NGSO/GSO based FSS providing data communication and Internet services.
ii. NGSO/GSO based MSS providing voice, text, data, and Internet services.

The response may be submitted with proper explanation and justification.

Airtel Response:

As submitted in the Preamble, it is essential for the Government and regulatory bodies to actively promote SatCom services in traditional markets and for traditional use cases. However, it is equally important to address the concerns regarding a level playing field, particularly when SatCom services begin to compete directly with terrestrial networks for retail customers in urban areas and other regions where the competition among terrestrial operators is already fierce.

Accordingly, **any spectrum charging methodology should be such that it addresses the concerns on level playing field with terrestrial operators qua some SatCom operators offering services directly to**

customers in urban areas/retail customers. However, the traditional use cases of satellite services for the traditional market i.e. in rural and remote areas and for Government agencies, including Defence, disaster recovery, cellular backhaul in rural and remote areas, etc., can be priced differently (say, no spectrum charge).

Such an approach would drive the adoption of SatCom in traditional markets i.e. rural and remote areas while also ensuring a level playing field with terrestrial operators.

As regards the specific methodology to be adopted for charging of spectrum for SatCom in India, the Authority has itself put forward multiple options in the Consultation Paper.

While there is the option of a having a revenue share basis regime – where spectrum charges are levied as a percentage of AGR, there is also an option of per-MHz charging – where charges are levied on the basis of the quantum of spectrum assigned to an operator. There are also international precedents for charging based on the number of UTs deployed by an operator.

Different jurisdictions around the world follow different approaches, depending on their respective requirements.

Therefore, Airtel recommends that the Authority may consider an appropriate spectrum methodology – revenue share or charges based on quantum of spectrum or per-UT charging or any other alternative approach – taking into account the need to encourage SatCom in traditional markets and traditional use cases, while also ensuring a level playing field with terrestrial operators in urban areas/retail customer market.