VIL/RCA/PB/April/2021/641

April 23rd, 2021

The Advisor (Networks, Spectrum and Licensing)

Telecom Regulatory Authority of India,
Mahanagar Doorsanchar Bhawan,
Jawaharlal Nehru Marg, (Old Minto Road),
New Delhi – 110002

Kind Attn: Shri Syed Tausif Abbas

**Subject:** Comments on the TRAI Consultation Paper "Licensing Framework for Satellite-based connectivity for low bit rate applications" dated 12th March 2021

Dear Sir,

Kindly find enclosed herewith Vodafone Idea Ltd's comments to TRAI Consultation Paper "Licensing Framework for Satellite-based connectivity for low bit rate applications" dated 12th March 2021.

We hope our comments will merit your kind consideration please.

Thanking you,

For Vodafone Idea Limited

P. Balaji
Chief Regulatory & Corporate Affairs Officer

Encl: As stated above

C2 – Vodafone Idea Internal

## Vodafone Idea Ltd Response to the TRAI Consultation Paper on "Licensing Framework for Satellite-based connectivity for low bit rate applications"

---

At the outset, we are thankful to TRAI for giving us this opportunity to provide our comments to the TRAI Consultation Paper on "Licensing Framework for Satellite-based connectivity for low bit rate applications".

We would like to submit our comments for Authority's kind consideration, as follows:

1. Internet of Things (IoT) solutions have been around for years however, we are only in its very earliest stages. The number of objects connected today, may look unexciting in comparison to how many may be connected in just 5 years from now. IoT solutions launched by different enterprises across various sectors and its consumer experience, will continue to get enriched and revolutionised with technology advancement and proliferation.

2. For this IoT revolution to take place, all possible technologies should be allowed to play, in an equitable, fair, secured and transparent licensing and regulatory framework.

3. The use cases of IoT mentioned in the instant Consultation Paper as well as during the earlier consultation and recommendations on M2M communications dated 05.09.2017 are relatable and are very much part of the future growth areas of IoT ecosystem.

4. **Terrestrial and Satellite based IoT services are similar:** The communication services provided over satellite-based solutions of IoT are similar to the one being provided over existing terrestrial network based solutions, albeit the differentiation in coverage characteristics and deployment in far remote areas.

5. **UL (Access Authorisation) should apply:** As the services being provided are largely same, the satellite-based solutions would compete with present terrestrial solutions, for providing services to the enterprise and end customers. Thus, most robust approach would be that the IoT satellite-based solutions should be launched only under Unified License (Access Authorisation), directly or as complementary technology to terrestrial.

6. **Level Playing field**: If satellite technology based IoT services are to be aligned in other licensing framework than, it must be ensured that the difference in technology should not lead to any non-level playing field in licensing and/or

regulatory framework. The satellite based solutions should come under same licensing and regulatory framework, as it applies for providing communication services (IoT) through terrestrial solutions.

7. If satellite based IoT services are permitted in any license other than UL (Access authorisation), it would create an arbitrage and non-level playing field in licensing and regulatory norms. Various licensing and regulatory framework applicable on terrestrial mobile networks providing IoT services under UL (Access authorisation) including but, not limited to Security conditions, verification guidelines, Financial conditions including SUC, spectrum through auction route, Quality of service, technical and other conditions under M2M guidelines, E-SIM related provisions, equipment source provisions, numbering plan and EMF norms etc.

8. **Therefore, it is our considered view that licensing framework should be robust by keeping it technology agnostic as such, IoT communication services, whether terrestrial or satellite based, should come under Unified License (Access Authorisation) licensing framework only.**

## Question-wise Comments

**Q1. There are two models of provision of Satellite-based connectivity for IoT and low-bit- rate applications — (i) Hybrid model consisting of LPWAN and Satellite and (ii) Direct to satellite connectivity.**

**(i) Whether both the models should be permitted to provide satellite connectivity for IoT devices and low-bit-rate applications? Please justify your answer.**

**(ii) Is there any other suitable model through which the satellite-based connectivity can be provided for IoT devices? Please explain in detail with justifications.**

**VIL Response:**

There would be very less IoT use-cases for only Direct to satellite connectivity except use-cases serving very remote areas like High seas, deep forests, mountain regions etc. It would thus be the hybrid model which will find most of the use-cases. In our view, both models can be carried out under the UL (Access authorisation) and both should be permitted.

In addition to low power direct satellite connectivity, there are other technologies being developed and deployed with direct satellite connectivity using cellular frequencies and standard power[1]. These solutions complements the existing terrestrial networks as such, should be considered at par with the low-power solutions and permitted.

**Q2. Satellite-based low-bit-rate connectivity is possible using Geo Stationary, Medium and Low Earth orbit Satellites. Whether all the above type of satellites should be permitted to be used for providing satellite-based low-bit-rate connectivity? Please justify your answer.**

**VIL Response:**

No comments.

**Q3. There are different frequency bands in which communication satellites operate such as L-band, S-band, C-band, Ku-band, Ka- band and other higher bands. Whether any specific band or all the bands should be allowed to be used for providing satellite-based IoT connectivity? Please justify your answer.**

**VIL Response:**

a. The frequency bands mentioned for satellite based services are L-Band (1GHz-2GHz), S-band (2GHz-4GHz), S-band (2GHz-4GHz), C-band (4 GHz-8GHz), Ku band (12-18 GHz) and Ka-band (26.5 GHz-40 GHz).

b. Most of these frequency bands overlap with the frequency bands in which terrestrial mobile networks operate including the networks for upcoming 5G services, with an exception to Ku band.

c. Terrestrial networks are better suited for IOT connectivity from capacity, scalability as well as coverage perspective. Frequencies in L-band, C-band and S-band are crucial to mobile communication, earmarked for current and future IMT rollout and should not be considered for satellite communication services. These bands are being cleared world over from satellite services and are being consolidate in Ku and Ka bands. We suggest to permit Ku band (12-18 GHz) and Ka band (29.5 GHz to 37 GHz) for satellite services only post allocating

[1] https://urgentcomm.com/2021/04/09/life-saving-technology-ast-spacemobile-ceo-outlines-capabilities-of-direct-to-smartphone-leo-satellite-service

adequate spectrum for IMT to provide the world class IMT experience and proper coexistence feasibility studies.

d. The satellite based IoT services can be a good use case only for a niche segment of serving remote areas. It would not be proper to permit satellite based IoT services in all these bands, as it would lead to most inefficient way of blocking spectrum which is precious and scarce natural resource.

e. Frequencies and bands must be aligned with NFAP, which includes spectrum to be used for IMT services and its guard bands to ensure there is no interference to the radio signals of mobile networks.

f. Due to inherent risks of interference, satellite networks in the IMT bands should be allowed only after proper co-existence feasibility studies, which happens as part of standard ITU Process. Post this study only satellite network should be allowed to operate in-band or in the adjacent bands. On the interference, WRC-19 evaluated and proposed suitable co-existence mechanism for co-existence of IMT and satellite communication services in Ku-band (26GHz-29.5GHz) and Q-band (37.5 – 43.5 GHz). Also, NFAP-2021 is expected to provide clear guidelines for IMT use on these specific bands.

g. Also, upcoming 5G services will need sufficient spectrum availability across different frequency bands viz. <1 GHz, 3.3 GHz to 4.2 GHz, 24 to 28 GHz, V & E bands. Their respective availability should not be reduced by blocking part of such bands, for any niche service like Satellite based IoT services.

**h. Therefore, we would like to recommend following:**

i. Only Ku band to be permitted with specific frequency range. As the services would be low bit rate applications therefore, only few MHz could be made available for these.

ii. Spectrum being a precious and scarce resource, any frequencies to be used for commercial services, by private companies or Government entities, must be put to auction route for allocation.

iii. Spectrum which is part of IMT services under NFAP or is part of global roadmaps of terrestrial networks evolution, should not be blocked for satellite based IoT services, be it in small parts or large chunks.

iv. It must be ensured that usage of spectrum for communication services through satellite based technology, causes no interference with the terrestrial mobile networks. For this, a scientific assessment and co-existence study must be carried out and global examples be looked into,

before considering permitting use of any spectrum band/frequencies for IoT services.

**Q4 (i) Whether a new licensing framework should be proposed for the provision of Satellite - based connectivity for low-bit-rate applications or the existing licensing framework may be suitably amended to include the provisioning of such connectivity? Please justify your answer.**

**(ii) In case you are in favour of a new licensing framework, please suggest suitable entry fee, license fee, bank guarantee, NOCC charges, spectrum usage charges/royalty fee, etc.**

**and**

**Q5. The existing authorization of GMPCS service under Unified License permits the licensee for provision of voice and non-voice messages and data services. Whether the scope of GMPCS authorization may be enhanced to permit the licensees to provide satellite-based connectivity for IoT devices within the service area? Please justify your answer.**

**and**

**Q6. Commercial VSAT CUG Service authorization permits provision of data connectivity using VSAT terminals to CUG users.**

**(i) Whether the scope of Commercial VSAT CUG Service authorization should be enhanced to permit the use of any technology and any kind of ground terminals to provide the satellite-based low-bit-rate connectivity for IoT devices?**

**(ii) Whether the condition of CUG nature of user group should be removed for this authorization to permit provision of any kind of satellite-based connectivity within the service area? Please justify your answer.**

**and**

**Q7. (i) What should be the licensing framework for Captive licensee, in case an entity wishes to obtain captive license for using satellite-based low-bit-rate IoT connectivity for its own captive use?**

**(ii) Whether the scope of Captive VSAT CUG Service license should be modified to include the satellite-based low-bit-rate IoT connectivity for captive use?**

**(iii) If yes, what should be the charging mechanism for spectrum and license fee, in view of requirement of a large number of ground terminals to connect large number of captive IoT devices?**

**and**

**Q8. Whether the scope of INSAT MSS-R service authorization should be modified to provide the satellite-based connectivity for IoT devices? Please justify your answer.**

**and**

**Q9. (i) As per the scope mentioned in the Unified License for NLD service Authorization, whether NLD Service providers should be permitted to provide satellite-based connectivity for IoT devices.**

**(ii) What measures should be taken to facilitate such services? Please justify your answer.**

**VIL Response:**

For question no. 4 to 9, we would like to offer consolidated comments as follows.

We strongly recommend that satellite based IoT services should be offered only under Unified License (Access authorisation) and not under any other Authorisation, due to following reasons:

**a. Same service – One License:**

The services being mentioned in the paper for satellite based technology, are IoT services with low-bit-rate applications. At present, IoT/M2M services are already being provided by terrestrial mobile networks under Unified License (Access authorisation). While IoT is a big market and would provide opportunities for all technologies however, solutions from these two technologies i.e. satellite based and terrestrial would compete with each other in certain market segments, and differential licensing frameworks can provide undue advantage to one of the technology over other.

For a robust and fair licensing and regulatory framework, there should be only one license for a service (in this case IoT).

**b. Different license creates non-level playing field:**

Over a period of time, different licensing framework were formulated and issued by DoT to cater to different and distinct set of services. However, if different licenses are issued for same services, it would lead to non-level playing field and arbitrage in terms of financial/technical/operational obligations under respective license. There are various licensing and regulatory norms applicable on terrestrial mobile networks based IoT services over Unified License (Access authorisation) as detailed at point no. 7 above,

therefore, different obligations and provisions under respective licenses are bound to create arbitrage and thus non-level playing field.

**c. Terrestrial networks coverage:**

In our view, satellite based services will only be niche services in uninhabited areas as the present telecom networks are already providing coverage to more than 90% of the populated areas.

**d.** Satellite based solutions can complement existing terrestrial mobile networks and can work in tandem with cellular networks, for providing IoT services to end customers.

**e. IoT services can't be treated as captive/CUG services:**

IoT services are commercial services wherein data and traffic is exchanged between a retail customer and enterprise and with the service provider and thus, these services would not fall under the scope of Closed CUG or captive CUG.

In addition to above comments on licensing framework, following should also be considered:

**f. Auction route for Spectrum allocations:**

To ensure optimum utilisation of precious and scarce natural resource, spectrum to be used for satellite based services should be put to auction route only before allocations. Any other administrative allocations would cause huge loss to National exchequer.

**g. Licensing provisions to be equally applicable**

Equitable licensing and regulatory provisions as are applicable on terrestrial mobile networks should also apply for providing satellite based IoT services. Such equitable licensing and regulatory provisions must include but, not limited to license fee, privacy and security norms, verification, quality of services etc.

**h. Commercial communication services by Licensed entities only:**

- Any telecommunication networks or communication services including IoT should only be launched by entities, which are licensed by Department of Telecommunications under respective License and authorisation. There

shouldn't be any back-doors for any entity to create telecommunication networks citing captive use.

- Setting up of telecommunication networks citing captive use, will encroach upon the rights of the licensed operators and will also cause loss to national exchequer. Any telecommunications needs of fleet owners, railways etc. in their normal course of business, has to be fulfilled through licensed networks only.

- Further, it would be impossible to monitor services being provided by such unlicensed entities as well as interference being caused to licensed networks.

- The captive networks being mentioned would not be able to restrict radio frequencies within their closed wall premises and it will lead to radio frequencies being radiated in public places.

**Q10. Whether the licensees should be permitted to obtain satellite bandwidth from foreign satellites in order to provide low-bit-rate applications and IoT connectivity? Please justify your answer.**

**and**

**Q11. In case, the satellite transponder bandwidth has been obtained from foreign satellites, what conditions should be imposed on licensees, including regarding establishment of downlink Earth station in India? Please justify your answer.**

**VIL Response:**

a. Earth station should be mandated to be located in India.

b. Satellite bandwidth should only be permitted to be obtained from Indian satellites, as it would be:

   i. In line with various Government initiatives like Atmanirbhar Bharat, domestic manufacturing, localization etc.

   ii. Aligned with national security requirements as the domestic traffic (i.e. where origination and destination is in India) will remain in India

   iii. In parity with conditions on terrestrial networks.

iv. Also, cost of launching satellites is coming down steadily, with India being pioneer country having satellite launch capabilities with substantially lower costs.

**Q12. The cost of satellite-based services is on the higher side in the country due to which it has not been widely adopted by end users. What measures can be taken to make the satellite-based services affordable in India? Please elaborate your answer with justification.**

**VIL Response:**

a. The satellite based services should be permitted to complement terrestrial based networks, and to be launched under Unified License (Access Authorisation).

b. Post allocation of spectrum through auction route, a uniform Spectrum usage Charge (SUC) @ 1% should be levied to cover administrative costs on all spectrum acquired through auction route, irrespective of bands.

**Q13.Whether the procedures to acquire a license for providing satellite-based services in the existing framework convenient for the applicants? Is there any scope of simplifying the various processes? Please give details and justification.**

**VIL Response:**

Under Ease of doing business recommendations to DoT, TRAI has listed various steps to support simplification of processes in telecom industry, like paper-less processes, single window and time-bound clearances etc. These recommendations provides sufficient items for simplification and there is no need to separately look into simplification of processes for one technology.

**Q14. If there are any other issues/suggestions relevant to the subject, stakeholders are invited to submit the same with proper explanation and justification.**

**VIL Response:**

No comments.

x----------End of Document----------x