RJIL/TRAI/2021-22/43
23rd April 2021

To,
Sh. Syed Tausif Abbas
Advisor (NSL-II)
Telecom Regulatory Authority of India
Mahanagar Doorsanchar Bhawan
Jawahar Lal Nehru Marg, New Delhi – 110002

Subject: Comments on Consultation Paper dated 12th March 2021 on 'Licensing Framework for Satellite-based connectivity for low bit rate applications'.

Dear Sir,

Please find enclosed herewith comments of Reliance Jio Infocomm Ltd. (RJIL) on the Consultation Paper dated 12th March 2021 on 'Licensing Framework for Satellite-based connectivity for low bit rate applications'.

Thanking You,
For **Reliance Jio Infocomm Limited**,

Kapoor Singh Guliani
Authorised Signatory

Enclosure: As above.

Reliance Jio Infocomm Limited's comments on TRAI's Consultation Paper on "Licensing Framework for Satellite-based Connectivity for low bit rate Applications" (Consultation Paper no.1/2021 dated 12th March 2021)

1. We thank the Authority for issuing this consultation Paper to take stakeholders views on the appropriate licensing framework for Satellite-based Connectivity for low bit rate Applications.

2. The increased policy focus of Satellite based connectivity is evident from the series of activities in this regard, starting with National Digital Communications Policy – 2018 (NDCP-2018) declaring that *"**In order to expand mobile and broadband connectivity across the country**, it is necessary to explore and utilise the opportunities presented by next generation-networks like 5G and **other pioneering network access technologies including satellite communications**."*

3. This was followed by the Authority initiating Consultative process on leveraging satellite connect and capacity for cellular backhaul and Department of Space coming up with draft Spacecom policy in last one year. In view of this increased focus, we deem it appropriate to discuss all broader issues pertaining to the subject alongwith the ones framed in the Consultation Paper.

Narrowband Internet of Things (NBIOT) Technology

4. Reliance Jio Infocomm Limited (RJIL) is cognizant of the possibilities of leveraging Space based communication services, especially in wake of technological developments under 5G and IoT. However, we take this opportunity to **decouple the incorrect mythical association being built between Narrowband Internet of Things (NBIOT) and Satellite based communications.**

5. We submit that **NBIOT is a larger ecosystem and worldwide it is a mature service with terrestrial mobile communication technologies.** Therefore, it would not be prudent for the Authority and policy makers world-over, to lose focus on reaping the benefits of this strong mature ecosystem while chasing the Satellite based solutions for NBIOT.

6. We submit that with all sectors, industries and economic activity poised to leverage IOT, going forward IOT communications will have significant contribution towards economic growth and it would not be wise to have a narrow approach, especially when the existing robust terrestrial communications systems with already deployed massive networks can help the county become a strong digital force with scale and cost economics. Therefore, **while emerging broadband technologies through LEO and MEO satellite constellations should certainly be explored for its suitability for communication services at large and**

for M2M & IoT in particular, the same should not be done at the cost of the existing terrestrial network ecosystem that is globally accepted.

We submit that the policy thrust should be on **the promoting new services, agnostic of technology, its mode of delivery e.g., terrestrial or space, as has been the approach adopted by the Authority and Government over the years.** Thus, the scope of the consultation process should be broadened to focus of how to support and leverage the IOT technologies for Indian customers, irrespective of the technology being used or its mode of delivery etc.

Satellite based Communication Services

7. We further submit that the efforts such as licensing framework should be done on holistic levels and not on piecemeal on the basis of few limited use cases as proposed in the consultation paper. We submit that with the advent of data centric technologies 4G and 5G and related advancements in satellite communication technologies, **the use cases of these services are not limited to NBIOT. In fact the low latency/high bandwidth satellite communication services envisaged using LEO and MEO satellite are converging with the terrestrial communication services and being viewed as competition to the 4G/5G services. Further, 3GPP has already adopted satellite as one of the delivery mechanisms for 5G services.**

8. While the initial foray of satellite-based communication services is in providing global connectivity to IOT devices requiring low throughput and low latency, the technical thrust is evidently in direction of providing high throughput low latency data services at par with terrestrial networks. **Needless to state that the business case for same lies more in broadband communication services than pure play IoT/M2M services.** The business plans of major satellite communication service providers across the world, as evident from their websites and other communication and some of the beta testing going on, clearly indicates that the thrust is to offer services substitutable to terrestrial communication services. Some of the current and emerging use cases, as detailed below, demonstrate this approach.

   a. **Low power Low Latency IOT Connectivity:** This popular connectivity solution under satellite communications using point to multipoint connectivity. Many of the solutions are being developed in 'direct to satellite' mode, eliminating the dependency on terrestrial networks.

   b. **Low latency Broadband services:** Many satellite based companies are already offering low latency broadband service, leveraging LEO satellites working on same frequencies as that of terrestrial IMT networks.

c. **High Speed Transmission of Data:** While the data carrying capacities of satellites are generally assumed to be limited, the development of optical technologies to enable high capacity and immediate data transfer is also underway. This is a potential enterprise grade solution. While at the same time this can also be leveraged by Telcos for data transfer for fiber prohibitive locations.

d. **Emergency Response Communications**: The satellite services, because of its reach regardless of location or situation, are finding much of tractions for Emergency Response Communications. Its attractiveness is increased because of newer portable, quickly deployable plug-and-play solutions and compatibility with the narrowband communication tools used by first responders.

9. **Pertinently, most of these use cases are already offered under current 4G services and will be further enhanced with 5G technologies.**

Terrestrial and Satellite Services Policy - Same Service Same Rule

10. It is evident from the above discussion that with advent of technologies, the telecom services that are provided with satellite technologies are going to co-exist, complement, and compete with **terrestrial services both technically and commercially in medium and long term**.

11. 3GPP, the standards body for 4G and 5G services has also included in its specifications the 5G radio interface that can connect to satellites directly. Thus, going forward we can expect market development for an integrated satellite and terrestrial network infrastructure in the context of 5G. These developments also point towards the **convergence of terrestrial and Satellite services addressing the same market segments.**

12. Further as the 5G and Space based communication technologies are now being developed in same Spectrum space i.e. mmWaves including 26 GHz, 28 GHz, 40 GHz bands, it is evident that going forward there will be a co- existence between satellite and Terrestrial frequencies. Hence, **both the terrestrial carriers and Satellite based communication service providers will compete for right to use same electromagnetic spectrum.**

13. In this context, we submit that from a **level playing field and regulatory stability and predictability perspective**, it is well acknowledged that the policies and regulatory framework including the input cost mechanisms and levies should be **comparable for two different technology sectors offering substitutable service to essentially same customer base**.

14. Thus, it is important that the licensing framework for these services should be explored under the umbrella of Unified License by either amending the existing authorizations or by adding a new chapter, as long as the objectives as stated above are met at all the times.

15. We submit that there **should not be any disparity in statutory and regulatory charges for using the Spectrum frequencies. There should also not be a case of exemptions for societal satcom networks unless competitive exemptions are also offered to terrestrial networks in offering services in remote locations.**

16. Furthermore, from the legal aspect, in India, the allocation criteria for **any spectrum usable for providing communication services will have to comply with the Hon'ble Supreme Court Judgement on allocation of spectrum** in landmark 2G case in CWP 423 of 2010 dated 2nd February 2012, as also can be seen from the following relevant extracts.

> *"69. As natural resources are public goods, the doctrine of equality,* which *emerges from the concepts of justice and fairness, must guide the State in determining the actual mechanism for distribution of natural resources. In this regard, the doctrine of equality has two aspects: first,* ***it regulates the rights and obligations of the State vis-à-vis its people and demands that the people be granted equitable access to natural resources and/or its products and that they are adequately compensated for the transfer of the resource to the private domain; and second, it regulates the rights and obligations of the State vis-à-vis private parties seeking to acquire/use the resource and demands that the procedure adopted for distribution is just, non-arbitrary and transparent and that it does not discriminate between similarly placed private parties.***
>
> *89. In conclusion, we hold that the* ***State is the legal owner of the natural resources as a trustee of the people and although it is empowered to distribute the same, the process of distribution must be guided by the constitutional principles including the doctrine of equality and larger public good.***
>
> *95. …. When it comes to* ***alienation of scarce natural resources like spectrum etc., it is the burden of the State to ensure that a non-discriminatory method is adopted for distribution and alienation, which would necessarily result in protection of national/public interest****.*
>
> *96. In our view,* ***a duly publicised auction conducted fairly and impartially is perhaps the best method for discharging this burden ….****"*

17. We submit that with opening of the space segment, as envisaged under the new Spacecom Policy, more and more players, domestic as well as international, will be keen

to enter the sector. Thus, there will be a situation of large number of operators, including LEO, MEO, GEO based operators within the satellite-based communication provider fraternity in addition to terrestrial communication service provider, chasing the limited resource in terms of spectrum. Thus, it is imperative that the spectrum allocation policies for space segment are brought on even keel.

18. **If the current policies are continued, it would result into spectrum allocation for space segment on the basis of first-come-first serve, the very policy that has been criticized and junked by the Hon'ble Supreme Court.**

19. **Therefore, it is critical that the tried and tested policy of auction of Spectrum is persisted with for availing the Spectrum that can be deployed to offer communication services to Indian citizens, irrespective of the network deployed i.e., satellite or terrestrial communication networks.**

20. While one would argue that there exists a symbiotic linkage between satellite transponders and the spectrum band, but such linkage is relevant only in case of GEO satellite. In case of moving satellites, in LEO and MEO constellations, that covers whole earth or multiple countries, all local administrations are not expected to mandatorily allocate and assign the same frequencies for every satellite-based operator. Further, there cannot be any mandatory interlinkage between the satellite and the frequencies, therefore, every satellite provider is supposed to either get the frequencies allocated in advance from every administration on the basis of local policy such as auction/administrative allocation, at the time of planning and launching the satellite. Every country is free to decide use of the spectrum that is more suitable for IMT application for terrestrial communication and is not bound to allocate it for satellite at LEO/MEO constellation, just because some frequencies are allocated for FSS/ BSS.

21. Further, till now GEO satellites have been allocated spectrum administratively because these have been used for either strategic/CUG networks or pure backhaul services and therefore does not compete with terrestrial communication services such as 4G/5G provided by the operators who have obtained the spectrum through transparent auction process. But in the changing technological environment in which communication services provided through satellite-based network are going to perfect substitute and will compete with these 4G/5G networks, there is a need to abandon the present administrative regime for communication services and move to a fully transparent auction regime. The Authority shall bring a full-fledged consultation paper to discuss the modalities of the auction of the spectrum required by competing telecom services for terrestrial networks and satellites networks using LEO, MEO and GEO constellations.

Satellite Services – Security Aspects

22. We are aware that the Authority has advocated an 'Open Sky Policy' for over 15 years. However, we submit that there are also pitfalls of an unregulated 'Eye in Sky' with connect with terrestrial communication networks. Thus, the Authority should be conscious about **the key aspect of national security**. By its nature satellites will be having **wider footprints, which cannot be limited to any national boundaries**.

23. In addition to this, with opening of the satellite sector and **entry of foreign operators**, the national security aspects and its effective enforcement is required to be the foremost agenda for the Authority and Government before initiating any policy decisions on the sector, especially when it is working tirelessly to ensure **induction of only trusted products and trusted services** for the telecom sector.

Satellite Services – Other Issues

24. Indian Space segment has already faced a setback in commercializing the space assets, due to following a non-transparent and non-equitable process for allocating resources in the Devas-Antrix case that stalled the privatization for over 15 years. The Authority is requested to take adequate precautions to ensure that history is not repeated.

25. With regards to satellite based connectivity, we support a direct to satellite, and satellite to satellite connectivity model, wherein the service providers should be permitted to leverage any type of satellites, be it LEO, MEO, Geo Stationary or NGSO. Further, the fees and levies for all types of authorizations under the Unified License should be on similar, equitable and rational principles. Accordingly, to accommodate some of the upcoming services under the existing authorizations, minor adjustments in scope of service and levy of fee should be carried out.

26. **Conclusions**

1. **Satellite communication is welcome solution not only for NBIOT services but also for broadband communication; however, we must also not forget to leverage the developed 4G/5G ecosystem for NBIOT.**
2. **The policies for any communication service to be offered in the country should be technology/platform agnostic.**
3. **The principle of Same Service Same Rules should be adhered to for competing and substitutable technologies.**
4. **Auction derived market price-based mechanism should remain the only mode for alienating the Right to use Spectrum for communication services.**

5. **There should not be any disparity in Spectrum Usage Charges.**
6. **The underlying security concerns should be examined thoroughly before promoting/permitting any technology.**
7. **The Satellite Communication services should be permitted only under the umbrella of Unified License.**

Issue wise response:

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.

RJIL Response:

1. We submit that primary reason, as per the Consultation Paper, for devising the licensing framework for Satellite-based Connectivity for low bit rate applications is the possibility of wider connectivity in the areas that are not currently covered by terrestrial networks, thus keeping part of dependency of terrestrial hardware for the same connectivity seems odd with the objectives.

2. The availability of LPWAN, also indicates the possibility of availability of terrestrial networks in the concerned area. We submit that allowing satellite networks to provide connectivity to IOT devices using the already existing terrestrial network elements will defeat the entire purpose of the exercise and we will find that most service providers would prefer to continue with old technology and catering only the already connected areas and acting as backhaul provider only without any forays in technological advancements or in unconnected areas.

3. Therefore, we submit that only Direct to satellite connectivity should be permitted for IOT and low-bit applications. Further, the Authority has itself noted that the Direct-to-satellite connectivity is a preferred solution in scenarios where the deployments need to be fast and hardware dependency cannot be allowed to restrict the connectivity requirements, for instance in disaster or natural calamities. Thus, there is no doubt that only direct to satellite connectivity should be permitted.

4. We understand the Authority's concern that many of the existing satellite networks are not commercially suitable for direct to satellite connectivity, however, this is merely

because of the fact that these satellite network systems were not designed to connect millions of devices spread in wider areas. We are sure that the satellite/hardware upgrades will follow the demand.

5. Nevertheless, once the 'Same Service Same Rules' principle is adopted in provision of satellite communication services and all possibilities of policy and commercial arbitrage are removed, then it would not matter, what model is proposed. In fact, once the policy is stabilized, then the market forces should be allowed to come up with most conducive and beneficial model, instead of a mandated one.

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.

RJIL Response:

1. As the primary goal is to provide satellite based connectivity for low-bit rate applications in remote and unconnected areas, there seems no justification in discriminating on the basis of type of satellites. The only restrictions should be imposed to ensure compliance with license terms and conditions and security requirements, while ensuring commercial parity as detailed in the preamble.

2. Accordingly, we submit that all types of satellites should be permitted as different applications have different requirements. Some of the requirements will need permanent connections where Geo Stationary satellite will be required. In certain applications the latency will be important and hence Leo satellite may be required. Thus, the choice of type of satellite should be left to the service providers so that they can deploy the satellites as per their requirements.

3. **Further, there is no denial that all networks using LEO and MEO satellite constellation are being planned primarily for broadband/high throughput communication services. Though, these networks will also be capable to support Narrowband IoT/M2M(NBIoT) also, but the Authority should ensure that this should not be miused to get any special benefit or regulatory arbitrage to the networks using these constellations as the services provided through these constellations will be providing fully substitutable and competing services with 4G/5G.**

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.

RJIL Response:

1. As explained in our general comments, the satellite communications would be essentially competing to provide same services, be it low bit communication services to IOT devices or Broadband services, to same set of customers. Thus, it is imperative that no unnecessary policy imbalance should be created in provision of these services and a level playing field is maintained.

2. The availability of affordable user terminals/devices/handsets/sensors i.e. device ecosystem is a key factor in determining the suitability for any type of service and price of any spectrum band. For an administration to decide allocation of a spectrum band for the service, device ecosystem plays a major role and hence the allocation of spectrum need to be aligned with the global harmonization. Therefore, the IMT bands may be more suitable for Direct to satellite model, non-IMT bands will be more suitable for backhaul use with LPWAN. Therefore, no spectrum band that has been identified for IMT or being deliberated/likely to be adopted for IMT should not be used for satellite based backhaul networks.

3. The Spectrum allocation for any spectrum that can be deployed to provide communication services to Indian customers, irrespective of the technology deployed, should be allocated through transparent and open auction process, as also opined by Hon'ble Supreme Court. Therefore, we do not support reserving any Spectrum bands for any specific technology.

4. As the Broadband goals of the country are to be met primarily by IMT services, it is imperative that IMT applications should have the first right on spectrum in each of the bands identified for IMT use and allocated through auctions. Further, any spectrum bands capable to be used for mobile/competing services should be assigned strictly through auction and both terrestrial and satellite operators should be allowed to participate in that auction and then these operators should be free to choose whether they want to use it for terrestrial or satellite-based network.

5. Further, we should not rule out the Access Service Providers leveraging the hybrid terrestrial-satellite models for expanding the services to uncharted territories and to provide other innovative services, therefore they shall also have equal access to Spectrum exclusively identified for Satellite services, that should also be allocated through fair and transparent auction.

6. With regards to the low bit rate requirements using GEO satellite is concerned, the existing bands upto Ka should be sufficient to meet the requirements and there is no need

to block additional spectrum in the L & S– bands for exclusive use of Satellite services. It is reiterated that any spectrum being made available for satellite services should be coordinated after first taking care of the requirements of the Terrestrial networks. **Further, assignment of even Ka/Ku/C band spectrum for GEO/MEO satellite must be done through auction only.**

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.

RJIL Response:

1. We submit that the proposed services can be covered under the existing Unified Licensing framework with minor modifications and expansion of scope of service under existing satellite communication specific authorizations and there is no need to propose a new framework. Smaller players requiring the network for specific applications/smaller area can always become VNO/MVNO of Unified license/GMPCS licensee.

2. Further, the spectrum usage and service specific proposals/limitations can also be addressed through Notice Inviting Application for auction of Spectrum.

3. However, it is important to ensure that the Spectrum allocation for any spectrum that can be deployed to provide communication services to Indian customers, irrespective of the technology deployed, should be allocated through transparent and open auction process with necessary provisions in the Spacecomm policy or otherwise.

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.

RJIL Response:

1. We submit that scope of GMPCS service authorization under the Unified License covers for all types of mobile communications including voice and non-voice messages and data services. Thus, the communication services under this authorization covers the complete gamut of services being used by the IOT service providers, we are extracting and reproducing the relevant parts as herein below:

Clause 2.1 The licensee may provide, in its area of operation, all types of mobile services including voice and non-voice messages, data services by establishing GMPCS Gateway utilizing any type of network equipment including circuit and/or packet switches.

2. Evidently, the existing scope of service for GMPCS makes sufficient scope for offering Satellite-based Connectivity for low bit rate Applications. Therefore, there is no need to change the scope of GMPCS authorization.
3. Smaller players requiring the network for specific applications/enterprise customers/smaller area etc can always become VNO/MVNO of Unified license/GMPCS licensee.

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.

RJIL Response:

1. In line with the technology neutral nature of the Unified License, the VSAT CUG Service authorization holders using VSAT terminals should be permitted to use any technology and any kind of ground terminals only for backhaul connectivity.

2. Further, the CUG nature of user group should not be disturbed as removing this would defeat the basic purpose of this authorisation and would make this no different than an Access Services authorisation under which satellite usage is already allowed. Nonetheless the Licensees already have the option to acquire

3. Internet Services authorization to offer services directly to subscribers under the scope of authorization, thus, no additional restrictions are being proposed to the licensees and they are at liberty to extend the scope of services.

4. VSAT CUG licensee can also provide the backhaul connectivity to the LPWAN. Therefore, the present license conditions already allows use of VSAT terminals in Hybrid connectivity using LPWAN. As far as direct to satellite is concerned, we have already shared our views about LEO/MEO constellation in preface and response to earlier questions.

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?

RJIL Response:

1. We submit that captive VSAT CUG service license should be treated as a special case of Commercial VSAT CUG Service authorization only and the scope of this authorization can be expanded to permit the captive use of Satellite to Satellite connectivity under the Unified License regime only.

2. To avail this special facility, under the scope of Commercial VSAT CUG authorization, the service provider may be required to pay addition License fee, i.e. in addition to levies payable under Commercial VSAT CUG Service authorization, as per the following slab wise charges.

Number of Terminals	**License Fee**
1 to 1000 terminals	Rs 10 Lac per annum
1000 to 5000 terminals	Rs 50 Lac per annum
5000 to 10000 terminals	Rs 1Cr per annum
10000 to 50000 terminals	Rs 10 Cr per annum
Above 50000	Rs 20 Cr per annum

3. As for all other authorizations, these captive VSAT CUG service providers will also be required to obtain the right to use Spectrum at market price through auction based mechanism.

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.

RJIL Response:

1. We agree with the Authority's assessment that this authorization has several limitations if compared to the connectivity requirement of satellite-based connectivity for IoT

devices. Further, as evident from DoT's reference that there has been negligible uptake for this authorization.

2. Therefore, we recommend that this license authorisation should be disbanded as the current and prospective market requirements are being catered under other authorizations. With regards to the solitary existing non-operational licensee, it should be given an option to migrate to any other suitable and similar license authorisation like GMPCS.

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.

RJIL Response:

1. The NLD authorisation allows for satellite based backhaul connectivity, however, restricts it to inter-service area connectivity. We submit that backhaul connectivity requirements for connected devices under low bit rate Applications cannot be restricted to inter-service area and may require intra service area connectivity as well. This enablement will require a suitable license amendment.

2. Further, we reiterate our suggestions regarding charging mechanism, given to Authority in our response to Consultation Paper on "Provision of Cellular Backhaul Connectivity via Satellite through VSAT under commercial VSAT CUG service authorization". We reiterate that charging mechanism for spectrum should be same for the same/similar services provided under the Unified License using similar or different technologies, in view of technology agnostic nature of Unified License. Further, the charging mechanism should promote the viability and sustainability of service providers and the Authority should recommend doing away with multiple charging mechanisms in favour simple and nominal administrative spectrum usage charges regimes.

3. We further reiterate that, while we cannot stress enough on the need to reduce the spectrum levy burden on all service providers under the Unified License, it is imperative that procedural anomalies be done away with immediately. We reiterate that all spectrum charging should be uniform across service providers and the formula-based changing mechanism for spectrum should be done away in favour of AGR based charging.

4. In this context, we support the Authority's recommendation dated 28th July 2020 to *"Replacing the existing formula-based mechanism, Spectrum usage charges for using satellite frequencies under the NLD service license/authorization should be prescribed as*

1% of AGR excluding the revenue from the licensed services other than satellite-based services.". We understand that this will be an important measure to support Satellite connectivity under NLD Authorization.

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.
And
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.

RJIL Response:

1. The Authority's justifications for promoting 'Open-sky policy' are self-explanatory, however, the same have not been accepted by the Government despite multiple re-iterations. We understand that primary concern in using the foreign satellite bandwidth to provide communication services in India lie in the domain of national security, network security and integrity, and data privacy, especially when you do not have any control on the network service provider i.e. foreign satellite bandwidth provider, in this case. As these operators will be operating as bandwidth merchants with no imposable legal or regulatory restrictions, it is prudent to be more cautious in going whole heartedly for this approach.

2. We submit that all possible and plausible security risk scenarios may be examined before granting permission to use foreign satellite bandwidth. We should be wary of any adverse repercussions later on.

3. In this context, we submit that while there is no harm in obtaining resources from foreign satellite providers, it should be done post thorough due diligence on possible security risks and by building sufficient licensing and regulatory safe-guards to avert the same.

4. In fact, we welcome the thought process to leverage the low cost facilities and capacities available with foreign providers to make the services affordable while keeping the service provider viable, however, the same should not be restricted to a single technology. The Authority is aware that the TSPs have been making reasonable demands over the years in order to increase affordability of services while maintaining viability for service providers

and the same should be considered favourably, at the earliest. Under same service same rule, if these demands are met, it will also lead to reducing cost of satellite based services.

5. Further, we submit that capacities available with foreign satellites should be leveraged with sufficient precautions. The operators should be allowed to hire transponders directly from foreign satellite owners. However, the downlink earth station should be within India and any gateway connectivity to the Internet should also be within India only. CDOT may be mandated to put up monitoring system for this internet connectivity in the same manner as already done in case of Access and Internet service providers.

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.

RJIL Response:

1. We submit that measures pertaining to "ease of doing business", simplified single window clearances and preferably online and time-bound approval system, should percolate to all parts of the sector and Satellite based connectivity should not be an exception.

2. The reforms pertaining to starting a Satellite based services need to be included in the ongoing "ease of doing business" reforms by the Authority. The current process of first sending any new proposal to a committee having members from other ministries as well as ISRO for approval needs to be simplified and made time bound along with other such changes being proposed.

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

1. The Authority is aware that the connected devices are multiplying by the second, all around us. While there have been piecemeal efforts to regularize specific aspects pertaining to IOT, there is need of a comprehensive effort to regularize key aspects of IOT communications irrespective of the medium i.e. terrestrial and/or satellite.

2. In this regard, the Authority is requested to take up the critical item of providing a regulatory framework for the intermediaries in the IOT value chain i.e. the IOT service providers, who will be taking connectivity from the licensed service providers and would be providing service to end-users.

3. Another important aspect is the subscriber verification norms for IOT connections. The Authority is aware that the communication with IOT devices is drastically different from

the regular communication, thereby implying a need to have simplified subscriber verification norms for the IOT devices. We understand that the basic tenets of traceability etc. need not be disturbed, however, the onerous subscriber verification requirement for the mobile users should not be replicated for IOT devices. The current subscriber verification norms assume an individual behind any connection. In IOT the connection could be a device / machine and the data transfer could be machine to machine or device to device. Hence similar KYC norms as specified in 16th May 2018 circular of DOT for SIMs provided for M2M usage, need to be worked out for all the other licensees as well.

4. Another important aspect is regarding the approval process of devices which are expected to be in huge numbers. We submit that the NOCC validation of each ES/Antenna should be done away with. This exemption is already permissible under the Unified License vide the following provision

   "….In the absence of mandatory TEC standard, the Licensee may utilize only those equipment and products which meet the relevant standards set by International standardization bodies, such as, ITU, ETSI, IEEE, ISO, IEC etc.,; or set by International Fora, such as 3GPP, 3GPP-2, IETF, MEF, WiMAX, Wi-Fi, IPTV, IPv6, etc. as recognized by TEC and subject to modifications/adaptation, if any, as may be prescribed by TEC from to time. "

5. Further, the NOCC charges for space segment on per transponder per annum basis needs to be revised downwards. Overall functions of NOCC also need to be reviewed and stripped down in view of the "ease of doing business" principles.