Bharti Airtel Limited
India & South Asia
Airtel Center, Plot No. 16,
Udyog Vihar, Phase-IV,
Gurugram - 122015
www.airtel.in
Call + 91 124 4222222
Fax + 91 124 4243252

Ref No: RP/FY 21–22/ 062/ 937
Dated: 23.04.2021

To,

Shri Syed Tausif Abbas,
Advisor (Networks, Spectrum and Licensing)
Telecom Regulatory Authority of India,
Mahanagar Door Sanchar Bhawan,
Jawaharlal Nehru Marg,
New Delhi - 110002
advmn@trai.gov.in

Sub: Response to consultation paper on '*Licensing Framework for Satellite-based connectivity for low bit rate applications*'

Dear Sir,

In reference to the captioned consultation paper, we are pleased to enclose our response for your kind consideration.

We hope that our submission will merit your kind consideration.

Thanking you,
Yours sincerely,

For **Bharti Airtel Limited**

Rahul Vatts
Chief Regulatory Officer

Encl: a.a.

Licensing Framework for Satellite based connectivity for low bit rate applications

Preamble:

Airtel welcomes the Authority's timely consultation on the satellite based connectivity for low bit rate applications.

Earlier last year, the Indian government (Department of Space or "DoS") published its draft Spacecom Policy[1], a positive step to enable private participation in the domain of Indian space activities. **The historic reforms for re-invigorating India's Space Agenda initiated by the Prime Minister supports the vision of Digital India of the government**; every individual, in any corner of the country will have get access to connectivity. **Bharti Airtel being the first participant in the telecom revolution understands the challenges in reaching the last mile to provide connectivity**.

We strongly believe that this consultation is very important and the recommendations coming out of **this paper should seamlessly complement the Prime Minister's vision and the DoS policy** to provide satellite-based services more so when India has set a vision (and has rightful capabilities) to be a pioneer in this field.

The provision of mobile broadband connectivity is a challenge in inaccessible/rural/remote areas due to unavailability of backhaul media[2]. The new generation of satellite backhaul solutions could be a more sustainable and effective way to provide mobile broadband coverage to such rural areas.

We believe that a good mix of commercial potential, the latency and capacity to deliver useful mobile internet connectivity to rural and remote areas will help the satellite communications ecosystem flourish. Therefore **provision of backhaul with Satellite as a media needs to be liberalized as well as made affordable** keeping in view the Government's keenness on delivering mobile as well as broadband connectivity to every nook and corner of India.

It is important that in order to enable that, **the market forces are allowed to play their role with reasonable oversight and clear licensing framework**. This one reform has potential to integrate satellite based services into the wider communications ecosystem.

A consistent, clear and predictable policy and regulatory environment that gives the mobile industry the ability upgrade and innovate, as well as the confidence needed to make significant, long-term network investments is key for its success. This is especially vital for rural mobile coverage as the time needed to make a return on network investment can be significant, so unnecessary risks and limitations create major obstacles in terms of incentivising investment. **Same goes true for Satellite communications as well.**

---

[1] Space based Communications Policy 2020 and the draft Norms, Guidelines and Procedures; published by Department of Space (DoS), 15th October 2020.

[2] Currently over 40,000 villages in the country are still to be connected digitally.

We also strongly believe that the **time has come for the TRAI and DoT to recommend bold reforms by bringing clarity on licensing, procedures, gateway/earth stations, reduction in costs**. It is also important since the TRAI paper recognises that in some of the existing licenses for satellite services, there have been hardly any players in last two decades. This makes it imperative to identify bottlenecks and allow growth of services. In this background, we submit that:

- **There is a need to simplify licensing for satellite connectivity based services specially in wake of opening of space sector for private participation.**

- **The GMPCS license is the most suitable national authorisation under the Unified License (UL) that has a fully relevant scope. Its current scope permits all types of voice, text and data services that means it includes low-bit rate applications.**

- **The NLD license is also a suitable license to offer satellite based low bit rate applications. Wherever necessary, further clarity may be provided in scope of other such licenses as well.**

- **LEO constellations hold one of most promising potential for connectivity solutions through higher throughput and low latency.**

- **The Hybrid (LPWAN + Satellite) model offers best opportunity for ecosystem to flourish.**

- **Satellite providers should have flexibility to offer bandwidth and work with Telecom (Mobile/Fixed) operators on aggregating the sites traffic and carry data over backhaul wherever feasible on mutual commercial basis.**

- **Restricting the scope of Satellite based services to a specific data service like 'IoT services' will be inefficient application. This should be left with service providers. As regards existing licenses, the GMPCS covers data services as well so that would include low-bit rate services**

- **Contiguous and harmonised spectrum in sufficient quantity be made available as per national frequency allocation plans. <u>The system of advance publication, coordination and notification under the ITU Radio Regulations should be followed.</u> The DoT and DoS should introduce a mechanism involving flexibility to seek information in oder to ensure that the project for which the applicant has applied is real and progressing to bring into use the assignments in the national ITU filings.**

- **The entire process for approval of satellite based licensing should be online with a single window clearance (all ministries and departments) and within a defined timeframe. This must include license and clearance for gateway and land earth stations preferably 60 days).**

- **To reduce the cost of bandwidth, the multiple charges (NOCC, SACFA and other WPC charges) should be unified and made to recover only administrative cost of license.**

We believe that the Authority should consider these inputs while making its recommendations on the subject. Detailed justifications of our above submissions are provided in subsequent sections.

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-based 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.

Response:

In our opinion, the Hybrid model (LPWAN + Satellite) integrates the advantages of both conventional satellite networks and terrestrial broadband networks. This is also evident in the TRAI consultation[3], which in our view (using LPWA technologies and deployed spectrum bands) offers a ready ecosystem and opportunities for all players (Telcos and Satellite providers) to participate in this space, and holds the promise for the overall ecosystem to grow further.

However in some use cases (e.g. disaster management or coastal areas connectivity) direct to satellite models are currently operating, so they should also be allowed to continue.

The new framework must be deployment architecture agnostic giving necessary flexibility to the telecom players and satellite service providers to find best way to collaborate and deliver services.

Policy should not preclude any existing or emerging model of deployment by way of regulatory prescription more so when the wider sector is being opened up to entrepreneurs and innovation. This is critically important considering that sector is now at an evolution stage and being overly prescriptive than necessary will only hinder the growth of segment and ecosystem. Also, since in last two decades of various satellite licenses, the uptake in the services have been limited and restricted as well (e.g. scope restrictions in licenses), it is time now to relook and boldly reform those limitations, and allow the players to innovate, develop and deploy solutions as per market demand.

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

Response:

The global developments in space technologies are opening up new territories of services and solutions. While demand for bandwidth has soared, the satellite technology has advanced to serve more use cases like rural coverage and backhaul connectivity among others.

Significant investments are being poured into and planed by firms (established and start-ups) and investors to make it possible to fund large constellations e.g. LEO satellites. Considering the promising potential the private space segment holds, clear policy and licensing guidelines with time bound

[3] Para 2.8 till 2.11 of the extant TRAI consultation

administrative clearance processes to use LEO Constellations and related new technologies by simplifying the procedures to approve foreign capacity provisions into India.

The licensing regime should provide flexibility in terms of acceptance of modifications in technology as satellite technology is constantly improving. For example, in GEO satellites during design and construction, changes may be required which would not change the fundamental parameters of the satellite. Similarly, non-GEO systems are also under constant technological improvement and changes to the constellation may occur over time.

We must consider that today such services are still evolving. A LEO operator today may wish to enter tomorrow into MEO/GEO space and vice versa, depending upon the use case developments, user requirements, service and commercial consideration. Hence providing flexibility is important.

In our view, among various satellite types, the LEO constellation holds the most promise.

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.

Response:

We believe all the existing Satellite Frequency bands, as per the frequency plan of the country, should be exploited to provide satellite services.

Since India is on the cusp of bringing the 5G to masses, ensuring right quantum of sufficient spectrum for 5G services at affordable prices to mobile networks should remain the priority specially in the existing IMT bands or bands with high 5G potential.

The band that has been considered in the NFAP under technical coexistence between commercial mobile and satellite services, should continue to remain so with reasonable and fair protection parameters for either services.

Further, the ITU system of advance publication, coordination and notification under the ITU Radio Regulations should be followed. The DoT and DoS should introduce a mechanism involving flexibility to seek information to ensure that the project for which the applicant has applied is real and progressing to bring into use the assignments in the national ITU filings.

Therefore, a swift mechanism enabling faster approvals and a simpler regime will make it possible to be an early applicant for allocation of orbit. An intra agency consultation mechanism is suggested for ensuring timeliness and transparency in approvals.

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.

Response:

We believe that the Authority needs to recommend some bold reforms to simplify processes and procedures to match the national aspirations and intent of opening the space sector to private participation and investments.

From the consultation paper it is evident that the GMPCS license has the widest scope covering voice, text and data services under it. Considering the extant scope, the GMPCS authorisation under the UL is best suited to deliver low-bit-rate applications under its ambit. This will also obviate the need to have an altogether new licensing framework and ensuing potential complexities related to license fee, spectrum charges among others. This will help India to usher in a reformed landscape fairly quickly without losing precious time to compete globally as well.

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.

Response:

As mentioned in our previous response above, we believe that GMPCS authorisation under the UL is the right option under the UL. The main reason for the same is its wider scope compared to other licenses that have various different restrictions, as explained in the paper.

As regards including low-bit rate applications under the scope, since low bit rate applications are nothing but data services of different throughput levels, they are allowed under the GMPCS. The current scope of GMPCS permits all types of services including IoT / low bit rate applications and connecting with various IoT devices on ground to enable that.

An important aspect is of defined timelines and simplified procedures. The DoT, in coordination with DoS and ISRO should set out clear time frame for issuance of license and clearance for gateway and land earth stations. Currently these approvals take inordinately long time. To promote ease of doing business a clear time frame of 60-90 days (max) for final clearance should be specified.

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 and use of any technology 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 to permit provision of any kind of satellite-based connectivity within service area? Please justify your answer.

Response: Appropriate clarity in the scope wherever required, may be brought-in e.g. permitting use of any technology, any kind of ground terminals to provide the satellite-based low-bit-rate connectivity for low-bit rate applications and devices.

Also, Requirement of 'antenna on moving platform' should be considered under CUG license.

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

Response:

Appropriate clarity in the scope wherever required, may be brought-in.

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.

Response: The TRAI consultation paper acknowledges[4] that provision of satellite-based connectivity to IoT devices is well within the purview of scope of NLD service authorization. However, the licensee must have Hub station, that is, satellite Earth station in order to facilitate such connectivity.

In view of the above we believe that NLD service providers are permitted to provide satellite based low-bit rate applications, however appropriate clarity may still be provided in the scope of NLD license wherever deemed necessary.

[4] Para 3.21 of the Consultation

In addition, the current formula-based spectrum charging needs to be revised and simplified. The current calculation method is very complex and leads to exorbitant charges. This issue is also recognized in the TRAI consultation[5] paper.

For an example, the new generation low cost MFTDMA VSAT (which replaces traditional & expensive SCPC VSATs) based Cellular Backhauls supports 500 Mbps outbound/inbound bandwidth sharing over multiple sites to effectively use the bandwidth. If the formula-based spectrum charging is applied for MFTDMA based system with a greater number of sites, it will lead to exorbitant charges which will make the entire MFTDMA VSAT solution economically unattractive. In some cases, the formula-based spectrum charges will be higher than the satellite charges depending on the number of sites.

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.

Response:

Yes. With the opening of the space sector to private (and foreign) participation now, the telecom licensees should be allowed to obtain bandwidth from domestic and foreign satellites alike. This will create supply side competition among satellite players and help bring down the bandwidth cost.

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.

Response:

We believe that once foreign satellites have been included to compete in the space sector, there should not be any additional condition on licensees compared to that of a domestic licensee. The conditions should be uniform for both.

Tremendous demand for Internet, data, voice, video and other essential services is best addressed by policies that permit open and direct access to all satellite resources while ensuring that these resources have been properly coordinated through ITU. This non-discriminatory approach by domestic and non-domestic satellite service providers to have direct access to all available satellite resources and to the markets constitutes the policy referred to as Open Skies which also finds reference in global regulations for satellite communications.

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.

[5] Para 3.20 of the Consultation

Response:

We submit the following in this regard:

One single levy to recover administrative cost of licensing: Currently, all the existing levies that include WPC, NOCC, SACFA add-up to the cost of bandwidth. Such expensive bandwidth pricing is limiting the VSAT operators from leveraging the satellite capabilities to serve the unconnected rural villages in India as it is commercially unviable. Therefore, existing regulatory charges should be rationalized and unified into one single levy, and to recover only the cost of administering licensing activities.

Same charges for similar services: The provision of similar services under different licenses (CUG VSAT/NLD) should attract same levy based on the AGR.
Reduction on custom duty: In order to promote use of satellite technologies, custom duties and levies on satellite based devices, user terminals and equipment necessary for set up of gateway earth stations should be reduced.

Revenue: The actual revenue generated by the satellite capacity used only should be counted for the purpose of AGR calculations.

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

Response:

This is a major area that must be addressed to bring ease of doing business and to bring the costs down. The current process of issuing licenses including the time taken to grant the license adds to significant time and cost delays.

Integrated, in-built coordinated end to end single window approval process: We strongly urge the government to integrate entire license application to approval process end-to-end with close cooperation among various departments and ministries with an inbuilt intra-agency consultation and coordination mechanism. This will ensure timeliness and transparency of approvals. All the satellite bandwidth related regulatory clearance should be single window clearance.

Flexibility in terms of acceptance of modifications in technology - As the satellite technology is constantly improving, the procedure for modification in technology should be kept reasonably flexible.

Gateway Earth Stations- For setting up gateway earth stations, the satellite operators should be incentivised since such an operation requires huge bandwidth and is assigned for particular location. Open access to earth stations would also promote cost reduction, increase demand and bring in more competition and avoid wasteful infra-structural duplication.

For the Gateways, the approvals should be issued quickly at a reasonable fee.

The access to earth station facilities can either be through co-location or through provision of backhaul services. An enabling provision for entering into lease agreements with the satellite networks/systems which a private player may want to access should be provided. Entities seeking access should be allowed to either self-provide backhaul service –satellite earth station – or to acquire backhaul from another operator.

Rely on trust and industry compliance. For example, the terminals and gateway equipment should not require separate DoS monitoring to avoid duplicity in the approval process.

TEC guidelines – Due to evolving technological progresses, the current prescriptive TEC guidelines related to antenna size and limitations on the data rate with respect to the antenna size should be done away with. The data rate, antenna size and transmitter power should be left to be decided by the satellite operator with respect to each satellite/beam EIRP & G/T. Service Providers should be allowed to decide on Antenna size and RF size based on the link budget approval from the Satellite Operator. TEC GR should be amended from time to time to incorporate the developments in the field.

SACFA - SACFA clearance should be modified. The existing uplink VSAT permission rule should convert as notification only, considering number of connected devices will be more and may be moving also. Considering long delay in obtaining SACFA-WOL, the VSAT Uplink/frequency clearance should be permitted based on SACFA reporting itself.

Spectrum - Issuance of necessary services and spectrum license by DoT for Satellite services should be quick and easy. For example, in many European countries, for the provision of service, a registration of a satellite services company to the competent authority is the only requirement.

Coverage – A licensee should be allowed to serve the all nation which will be able to cover from India using the respective satellite.

Type approvals for import licenses -Import license for Radio equipment should be based on "Type Approval" with an approved standard of a recognized international body (e.g., ETSI), rather than obtaining approval every time for similar equipment. Thereafter, it is recommended that WPC may provide a license exemption to the operator/service provider for the use of spectrum.

Mechanism of coordination as per ITU-R framework – To bring ease of doing business, global best practice, the system of advance publication, coordination and notification under the ITU Radio Regulations should be respected. Any issue related to Satellite spectrum (Interference/unauthorized use) should also be dealt by the Satellite operator as followed globally.

A swift mechanism enabling faster approvals and a simpler regime will make it possible to be an early applicant for allocation of orbit. An intra agency consultation mechanism is suggested for ensuring timeliness and transparency in approvals.

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

Response:
We recommend some further policy reforms in this regard:

Infrastructure sharing: Allow infrastructure sharing between DTH/VSAT/Teleport/Telecom, operating on the same satellite, in order to synergies the resources for effective utilization. Allow service providers to use/share the hired Satellite spectrum for any application (VSAT/DTH/Teleport/DSNG/NLD/ILD/IOT other Telecom businesses) or sub-lease the hired satellite bandwidth based on business requirements.

Same Service, Same Rule: The regulatory levies on provision of similar services under different licenses should be charged similarly.

Satellite revenue and need to reduce regulatory levies: The actual revenue generated by the satellite capacity used only should be counted under revenue for AGR calculations. Further, the WPC spectrum usage charges and NOCC charges mechanism needs revision with the likely onset of LEO constellations as the present charging mechanism is derived on the basis of cost analysis of GEO satellite.

****