

**Response to the Consultation Paper on Licensing
Framework for Satellite-based connectivity for low bit
rate applications**

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Issues for Consultation

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 (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 (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 :

1 In our view the policy should make provisions for both the models of providing of Satellite Based connectivity for IOT and Low Bit rate applications be allowed

- a) Direct to satellite connectivity is must in certain cases where the creation of the LPWAN is not feasible, it will be in the regions which are sparsely populated like North East, Northern regions like Leh and even in the Central India. In the moving vehicles the direct to satellite is more effective till it there is line of sight.
- b) The LPWAN will help in the cases where there are clusters of houses around it can be served via a LPWAN or a local Wifi set up. This will help in
 - i) Lowering the per user terminal equipment cost
 - ii) The services can be provided to multiple users on their devices directly
 - iii) The fixed costs are spread over a number of users.
 - iv) The LPWAN can be upgraded in terms of the capacity by adding more terminals and redistributing the subscribers load on them.
 - v) This model as mentioned in consultation paper will take care of the fact that today many satellites are no equipped to handle so many sessions simultaneously and thus need aggregating the traffic at a point and then communicating with the satellite.

It will be prudent to have both the models in place so that service providers can choose which one is most economical and technically suited solution to a particular location.

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.

Response :

The policy should permit all types of satellites , the LEO and MEO constellations will take time to start providing the services, thus it will be in the interest of earlier start and per the business model of the service providers, all types of satellites may be permitted to be used. Eventually as the services mature and usage increases and LEO/MEO constellations come in place the business will drive it self to the appropriate and most efficient model.

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 :

The need will be to have a low cost terminal , which a consumer can install and maintain himself with ease, without the help of a trained technicians, phasor array antennas will become more cost effective and will be easy to deploy.

They will be self tuning type, the size of the antenna's in such cases will be critical and this will propel the need to have transmissions in Ku band or ka band.

Frequency reuse will be better in Ka band with the spot beams thus it will be more suitable for the application. Till a considerable capacity in the Ka band is available over the Indian Skies, it will be ku band which will be serving the purposes.

Though the rain fade attenuation impacts most on the Ku Band and Ka Band as compared to the C Band, however the antenna size has a huge impact on the initial equipment cost, set up cost, maintenance cost and space . The motorized tuning antenna in C band are prohibitively expensive.

Thus in our view the services may be allowed in Kuband and Ka band.

Use of Foreign Satellites

The use of the foreign satellites may be allowed subject to the coordination with ISRO, WPC and Department of Space. As most of the LEO/MEO constellations will be on foreign satellites thus the use of the foreign satellites will be necessitated. In the interest of the speedy roll out and ensuring the compliances with the local regulations and promote even competition, few

point which will need to be taken care of will be

- 1 The satellites which operator or permitted to provide services should be coordinated with ISRO.
- 2 The satellites companies should be free to deal directly with the Satellite Based Connectivity service providers.
- 3 The satellite companies should have a permanent establishment in India so that they pay tax on the income generated in India.
- 4 The cost of the bandwidth or the data which will be transferred to the international entity of the satellite operator should on a transparent basis.
- 5 ISRO /DOS/WPC should come out with a list of the approved satellites so that service providers can easily contract and effort should be to maximize the satellite approvals as the competition will enable the price to come down which will benefit the consumer ultimately

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

There should be new licensing framework , which should enable the fast roll out of the services with a single window clearances.

Since these most of the terminals are likely to be mobile also , thus the current policy of the VSAT should not be applicable, there should not be any annual charges payable per terminal or end user device, the License fee applicable should be equal to the Unified service License fee.

VSAT is a B2B oriented business where as the Satellite based connectivity will be B2B and B2C both and thus will need a different orientation.

It is true that Ground segment of the VSAT operators can be used/modified to provide the services, still to be more effective Satellite Based Connectivity needs a new approach and more liberal licensing regime.

The per terminal fee as being charged in the VSAT regime needs to be dispensed with.

For the parity of the business, the NOCC Charges, the Spectrum fee can be as per the current regime for the other services.

The entry fee for the services should be Rs 10cr so that serious players only

come in and they should have a data center in India which should be accessible to the security and monitoring agencies.

PBG and FBG Guarantees should be applicable for the Satellite Based Connectivity based service provider.

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

In our view and as suggested earlier in the response, there needs to be a separate License for the Satellite based connectivity service provision.

In case the existing GMPCS service providers wish to provide the Satellite based connectivity services, GMPCS service providers can then provide the same by obtaining a separate license.

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

i (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 (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.

Response:

As suggested in our response above, though the ground infrastructure created by VSAT service providers will give them an ease and faster go to market advantage, yet it will be good to have a separate licensing regime for the Satellite based connectivity. This will ensure that

- i) a new licensee or an existing VSAT service provider are governed by the same conditions.
- ii) This will ensure that both the services are kept separate and revenue share are clearly identifiable.

The service of the satellite based connectivity will not be restricted to a CUG or captive services only, it will be a B2C (Business to consumers) segment which will bring in the scale of the business and make it more cost effective and the full use of the technology will be made, the contribution of the Satellite based connectivity will be to take the digital penetration to the grass root level in the remote areas where the connectivity via conventional means is not feasible.

The consumer terminals with the solar connectivity will pave way for a new era in the remote areas and will ensure that benefits of the Digital services reach them.

The endeavor of all the stake holders, Licensor, Regulator, Service providers, Equipment manufacturers etc. should be that service and cost to the end user is minimal and then only it will take up , else it will remain again a service for elite, which may not make sense for any one.

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?

Response :

In our opinion the differentiation Captive License, CUG License and A generic license be abolished, there should be one license and all the conditions of the license should apply to all.

There needs to be an entry fee, there needs to be a net worth criteria, there needs to be adherence to the Security norms and all the other statutory requirements to apply. FDI norms will have to be 100% FDI allowed as it help the investment to come in and set up the ground infrastructures and distribution mechanism for the consumers.

The licensee shall pay the requisite NOCC charges, Spectrum Royalty and other costs related to the services.

In case services will be captive use , a cost based on the equitable use of the similar service can be ascertained and license fee payable for the same.

If the similar / equitable conditions are not applied to the networks then the chances are that networks may try to take the advantage of the same.

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

Response

INSAT Mobile Satellite System Reporting (MSS-R) was designed for specific purpose of the building a system where messages only can be send via a satellite, this was as mentioned in consultation paper that it was meant for the remote locations. This was never envisaged to a continuous connectivity and it lost its relevance as again the consumer end equipment's are expensive and need trained manpower to maintain it. This is the reason the services never took off as it was not making a business case. The permissible data capacity is also very low. The current requirements are much higher for IOT services.

In our opinion there should be separate license for the Satellite Based Connectivity , if any existing service provider wishes to enter the Satellite Based Connectivity , then the entity should take new license and operate the services on the same.

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 :

All service providers may be free to make the services available, however to ensure that there is a level playing field between all the players established or the new entrant a new licensing regime be made possible for providing Satellite based Connectivity for IOT devices. This will ensure that the revenue recordings are clearly ear marked and the AGR or License fee payable is clearly attributable to the services. The existing NLD service providers can take the services from their subsidiary or sister company holding the license for the Satellite Based Connectivity on an arms length.

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

The Licensees providing the Satellite Based connectivity service providers may be allowed to take the bandwidth from the foreign satellite service providers subject to the conditions that the Satellites have been coordinated with ISRO, the satellite companies have permanent establishments in India.

This will help in securing the bandwidth at the most economical costs, long term contracts can be signed , the benefit of the same will be going to the consumers as each service provider will be trying to offer the best to the consumers in terms of the price and services. The LEO and MEO satellite providers are for near foreseeable future will be foreign entities and thus

either they themselves directly will provide services and/or may tie up with local companies to distribute the services , in both cases the need to permit the use of the Foreign Satellites will have to be permitted.

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

The service providers should must have the Downlink Earth Station in India only and it should facilitate the monitoring to the security agencies, the Satellite Based Connectivity service provider should be able to disable or disbar the customers of it which engage in activities which are not permitted by law and /or comply with the instruction as such provided from time to time from the Licensor or the Regulator.

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.

Response

The cost of the Satellite based services have been on the higher side because of

- i) The satellite bandwidth costs have been expensive, though they have been coming down and will further fall down as the more and more LEO /MEO operators will come in operations, the
- ii) In India the Satellite Bandwidth has to be contracted through ISRO , where in two factors come in play one that the costs are higher as the contractual lengths are of short duration and secondly there is an overriding cost charged by the contracting agency.

The Service providers should be able to directly contract with the foreign service providers and this will ensure that the bandwidth prices are market driven and also a longer contractual length will enable better prices.

Hardware costs are another factor, the Consumer End Equipment's are today in the range of USD 300 to USD 500 and when imported into India there are impact of the the customs duty , local taxes etc. It is being predicted and few companies such as Curvanet have said that they will be able to bring down the cost of the equipment to the level of USD100 which will make the service take up more affordable . Local manufacturing will further help in reducing the

costs

There should not be any per terminal fee as those are then recovered from the customer only. The effort should be that customers should take up the service at least cost, Satellite Based Service providers are going to make revenue in the services and thus they are not hardware dealers and should not make margins on the hardware, they should allow the consumers to buy the approved hardware if they wish from any source. We need to ensure the end consumer level equipment is not locked so that end consumer is free to change his service provider in case he does not feel comfortable with one service providers cost or services.

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.

Response

The process of issuing licenses is fairly simple as most of the things have gone on line, the need is to be time defined and single window clearance, however in the case of Satellite Service provisions there will be multiple agencies such as NOCC, ISRO, WPC will be involved, it is thus recommended that ISRO, NOCC and WPC be on a common portal where in they need to respond in a time defined manner.