

# STARLINK

20<sup>th</sup> December 2021

**Shri ST Abbas**

Advisor (Network, Spectrum & Licensing)  
Telecom Regulatory Authority of India

Sir,

Subject: **Responses to the “Consultation Paper on Licensing Framework for Establishing Satellite Earth Station Gateway” dated 15 November 2021**

We provide here Starlink Satellite Communications Private Limited's responses to the Consultation Paper on the “Licensing Framework for Establishing Satellite Earth Station Gateway” dated 15 November 2021 (“**Consultation Paper**”).

## **About SpaceX**

Starlink Satellite Communications Private Limited is a subsidiary of Space Exploration Technologies Corp. (“**SpaceX**”). Founded in 2002 to revolutionize space technologies, SpaceX designs, manufactures, and launches the world's most advanced rockets, spacecraft, and satellites, and now offers broadband service over the world's largest non-geosynchronous, low-earth orbit satellite constellation (“**Starlink**”).

Designed to provide global coverage, the Starlink service can serve remote and rural areas that tend to be unserved or underserved, and is already delivering high-speed, low-latency Internet service to over 140,000 users across more than 20 countries. With nearly 2000 satellites already deployed, Starlink is a demonstration of the investment scale, commitment, swift execution, engineering excellence, and rapid innovation foundational to SpaceX.

## **Overall Recommendations**

We welcome the various steps taken by the Telecom Regulatory Authority of India (“**TRAI**”) to create an enabling framework that promotes satellite-based services in India.

The Internet is now a crucial equalizer in providing access to opportunities for citizens across the world. As individuals, businesses, and governments utilise the Internet for an ever-increasing number of services, ensuring connectivity everywhere is more essential each day. As the past year and a half has made clear, no one can be left unconnected and 100% broadband access has become a necessary condition for development.

The government of India has championed this cause with significant success. Starlink's goal is aligned with this vision and our aim is to provide high-capacity, high-speed, low-latency satellite Internet to Indians – even those in rural or remote areas – in the very near future.

Overall, we welcome any changes that ease the rapid expansion of connectivity across technologies to enable universal Internet access. We would respectfully recommend the following for TRAI to ensure all Indians are connected as quickly as possible, no matter where they live:

- Provide flexibility to service licensees and satellite operators to establish gateways in India and support robust competition for services and applications that result in greater benefits to citizens.
- Consider that high costs and charges (such as for grant and administration of spectrum) force providers to increase prices for consumers and ultimately make services unaffordable to many Indians.

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- Rely on global standards and norms for grant and administration of spectrum, as well as use of equipment, as this improves access by enabling the crucial economies of scale that can drive down prices for consumers.
- Authorise service licensees to establish and operate services through gateways and user terminals so that operators can quickly provide new services across India.
- Create a stable, predictable, and low-cost method for grant and administration of spectrum for satellite services with clear performance metrics to incentivise efficient use that enhances competition.

## Our responses

We are also providing some key principles and comments specifically in response to the questions raised in the Consultation Paper.

### 1. Establishing gateways to provide broadband internet services in India

In response to Questions 1, 2, and 3, SpaceX supports a free and competitive market for satellite-based services. This competitive market will allow rapid deployment of advanced technology that can provide high-speed, low-latency internet across India, particularly in areas that have been difficult-to-serve thus far.

Both service licensees as well as satellite providers should be permitted to deploy gateways to provide satellite-based services in India. To ensure a competitive market, the ability to establish gateways should be available to subsidiaries of satellite operators, as well as entities that operate via tie-in arrangements with satellite operators.

SpaceX makes significant investments each year to grow and enhance its satellite network to provide services across the world. The price paid by users today represents only a fraction of the actual costs incurred to develop, operate, and continually upgrade this technology. To ensure that services are both affordable and high-quality, our recommendation is that any licensing framework ensures that -

- (i) regulatory costs and charges such as frequency monitoring and coordination charges are kept nominal and administrative in nature with a focus on cost-recovery; and
- (ii) the licensing framework relies on internationally recognised technical standards and norms (such as those proposed by ITU, ETSI, and IEEE) for the grant and use of frequency as well as deployment of equipment (including gateway technology). Next-generation satellite systems like the one used by Starlink, are developing at a rapid clip. Given the quick iteration of the underlying technology, prescribing mandatory local standards at this juncture will provide little benefit, but can risk delaying development and deployment of upgrades, which in turn may harm both quality and affordability for Indian users.

### 2. Access to satellite capacity

In response to Question 4 of the Consultation Paper, providing parties the flexibility to access both satellite resources from operators as well as gateway infrastructure on mutually-agreed and commercially-determined terms should be sufficient criteria. Specifically, access to satellite-based resources forms part of the commercial terms directly negotiated with satellite service providers. Maintaining parties' flexibility to enter into arrangements best-suited to them will service competition and provide better choices for consumers.

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### 3. Frequency allocation for satellite services in India

In response to Question 7, 8, 9 and 10, we recommend that the TRAI should recognise how expanding access to Internet services requires assigning spectrum for gateways and satellite services in a manner that is low-cost, long-term, and incentivises efficient utilisation of spectrum.

Next-generation satellite systems have unprecedented potential to bring high-quality broadband to otherwise unserved Indians, no matter where they live. Such cutting-edge systems require significant upfront investment. Unfortunately, frequencies can currently be assigned in a manner that is short-term, provisional, and subject to being withdrawn if the spectrum is to be reassigned in the future through auction. Without the certainty that the frequencies on which these networks operate will be available for the life of the network, operators of these new systems are unable to make the large capital outlays required to serve India.

This regulatory risk does not just implicate spectrum allocated exclusively for terrestrial services — it even hangs over frequency ranges where satellite services are the primary allocation under the Indian national frequency allocation plan. This uncertainty on the ability to use frequency on a long-term basis deters the investment necessary to deploy service across India, and will limit the growth of satellite-based internet services to all Indians.

Providing long-term predictability will allow operators of such systems to invest at the scales required to further universal availability, while also ensuring benefits to end-users through prices that do not have to incorporate the risk of uncertainty. Any spectrum assignment rules should thus also transparently provide notice to prospective users of spectrum-sharing obligations to ensure that no technology is precluded from being deployed. This will also reduce any price deflating uncertainty at the time of assignment of frequency to terrestrial users.

Furthermore, the threat to rapid deployment is not limited to regulatory uncertainty. The nature of cutting-edge satellite internet systems (aided by the lack of extensive ground infrastructure requirements) allows service provision to unconnected users much faster. Unfortunately, these advantages can be negated by exorbitant frequency charges that may make it prohibitively expensive to extend broadband to unserved regions. With respect to costs, we thus recommend that the regulatory framework imposes nominal charges (subsumed within AGR-based fees) as spectrum use charges to ensure affordable access to services. The current formula-based pricing methods, as highlighted also by the TRAI in the past, are better suited for captive use and not for the provision of services to end-users at scale.

Given that satellite-based internet is increasingly one of the most viable solutions for providing high-speed broadband internet access to unserved and underserved areas, frequency assignment policies should be designed to incentivise efficient utilisation of spectrum, rather than revenue maximisation in the short-term that will ultimately cost consumers.

We welcome the opportunity to provide our comments in response to the consultation and hope to continue engaging with you in this regard.

Sincerely,



**Parnil Urdhwaresh**

(On behalf of Starlink Satellite Communications Private Limited)