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Ref. No.....

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To,
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Re: TRAI's Consultation Paper on "Assignment of Spectrum for Space-based Communication Services" dated 06.04.2023

- I. Over the years, telecommunication networks have played a crucial role in the economic growth of the country. Similar to reliance of economy on roads and rails for transportation of goods, the Digital economy relies on telecommunication network for transportation of information relating to businesses, education and social welfare. Initially, the country lagged in the growth of fixed line infrastructure but wireless networks helped in bridging the gap and became the main drivers for the Digital inclusion.
- II. However, the Satellite based communication services are set to usher a new revolution in the telecommunication sector. Satellite networks have been until now playing a limited role in telecommunication services by providing coverage in far-flung areas mainly to enterprises or Government establishments. This is set to change as new technologies in satellite communications have the ability to serve as an alternative to terrestrial connectivity both in urban and remote areas for providing voice and data services directly to consumers. Furthermore, as evident from market developments, satellites have the ability to connect directly to mobile phones.
- III. A critical aspect of the telecommunication services is the latency i.e. time taken by the information to travel from source to destination and vice versa. This was limiting factor in using the satellites for communication services. However, as Consultation paper mentions, in LEO and MEO constellations, latency is almost same as terrestrial networks. Moreover, new satellite systems have narrow spot beams that increase system capacity by reusing the same frequencies.
- IV. These technological advancements are certainly going to enhance the role of satellite networks; however, these developments also require changes in regulatory framework to support the introduction of new technologies and provide a level playing field to terrestrial and satellite services. Therefore, this consultation is an important step in shaping the future of entire telecommunication sector and not only satellite communication services.
- V. Spectrum is scarce resource whose supply is limited and commands a high demand in both terrestrial and satellite networks. Therefore, assignment of spectrum requires a transparent process that provides equal opportunities to all stakeholders, is non-discriminatory, facilitates entry of new entrants and provides a fair value to National


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Exchequer based on market-determined price. The auction-based assignment is the only method that achieves these objectives. The legal and regulatory framework in India also requires assignment of spectrum through auctions. The Judgment of Hon'ble Supreme Court in the 2G case has discarded the administrative assignment i.e. first come first approach.

- VI. However, it is also relevant to some of the frivolous claims of some stakeholders that auctioning of spectrum for satellite services would be detrimental to sector and investments. These frivolous claims are completely contrary to what country has witnessed in mobile services sector under the auction regime. The country has reaped immense benefits from spectrum auction regime in the mobile services as this regime has attracted huge investments that has enabled provisioning of services at one of the most affordable tariffs. This stems from the fact that auction of spectrum leads to growing investor confidence due to the long-term certainty and assurance of level playing field.
- VII. Furthermore, many argue that it is not possible to assign spectrum for satellite-based communication services for exclusive use as unlike terrestrial networks, spectrum for satellite communication services is a shared resource. However, in reality, users in the satellite networks are spread across geography and sharing of spectrum is impossible. Thus, it is essential to assign to make exclusive assignment of spectrum for both user link and feeder links as enunciated below:-

(i) **User link spectrum:**

- a. For services utilizing NGSO constellations achieving shared use of spectrum by a coordination through Government is practically impossible as these constellations contains several thousands of satellites and millions of user terminals spread across the geography which would invariably result in in-line interference issues. **Thus, exclusive assignment of frequencies to service providers by segmenting the band becomes imperative for NGSO based satellite services.**
- b. For services utilizing GSO constellation, the satellites remain in a fixed position relative to earth, hence the issue of in-line interference can be avoided. Furthermore, it is possible for two satellites placed at different orbital slots to share and utilize the same frequencies. **Hence, the same frequencies can be awarded for various GSO satellites user links on exclusive basis through auction depending upon their position in the geo-stationary orbit.**

(ii) **Feeder links Spectrum:**

Since gateway locations serving both GSO/NGSO constellations aggregate traffic from all user terminals, these locations require high bandwidth. Thus, at a gateway location the service provider would require the entire available spectrum in a band to meet his capacity needs. Hence, the entire spectrum within a band needs to be made available on exclusive basis to an operator in each of the gateway location assignment areas. Hence, the Government can auction identified gateway locations by creating an isolated areas across India.

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- VIII. The service provider who acquired spectrum in auction should be permitted to enter into sharing/leasing arrangements with other players in the market, without the involvement of Government. Such sharing/leasing between operators should be based on their mutual agreements is applicable to terrestrial services also and can thus be applied to satellite communication services. Any interference management should be the sole responsibility of the sharing entities and be handled as per their mutual agreements.
- IX. In summary, spectrum for satellite communication services for both the user links and feeder links needs to be assigned only through auctions that will unlock true potential of this sector.

Looking forward to a positive response from your end.

Yours truly

Authorized Signatory

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