

Ref. No. SIA-India/TRAI-CP 6/CC/23 /2023

Dated 22 June 2023

To

Shri Akhilesh Kumar Trivedi
Advisor (Networks, Spectrum and Licensing)
TRAI, Mahanagar Doorsanchar Bhawan,
Jawahar Lal Nehru Marg, New Delhi- 110002

Sub: SIA-India counter-comments on TRAI Consultation Paper No. 6/2023 on Assignment of Spectrum for Space-based Communication Services.

Dear Sir,

In continuation to our letter dated 01st June 2023 on the above subject, please find enclosed our counter-comments (Annexure-1) for your kind perusal and due consideration.

We are of the firm belief that TRAI, in its wisdom, will give due weightage to the majority views of the respondents to the consultation, who have unequivocally support administrative mode of spectrum allocation on non-exclusive basis for satellite-based communication services and also preserve the crucial the 28 GHz Ka-band (27.5-29.5 GHz) exclusively for satellite sector to sustain the growth.

Accordingly, we earnestly appeal to TRAI to make necessary recommendations to DoT by keeping the above crucial points in mind, which will immensely help to accelerate the momentum recently gained through bold reforms in the space sector in India.

Yours sincerely,



Anil Prakash
Director General
SIA-India
Mob: +91-98682 62969

Encl: As above



Annexure-1

SIA-India's Counter-Comments to TRAI Consultation (No.06/2023) on Assignment of Spectrum for Space-based Communication Services

22-06-2023

1. Prelude:

Having perused the comments of all the respondents to TRAI CP on the assignment of spectrum for satellite-based communications, SIA-India, as a Trade Association established to echo and safeguard the interests of the satellite community in India, is pleased to offer the counter comments as:

- i. It is pertinent to take cognizance that most of the respondents (nearly 47 out of 61) significantly oppose the concept of auctions or exclusive assignment of satellite spectrum in-principle. Thus, the submissions from most of the respondents including SIA-India evidently reveal that auctions of satellite spectrum are not a prudent idea and the practice is abandoned or deprecated by all major space-faring nations. Instead, a vibrantly competitive satellite industry has emerged around the world consisting of multiple satellite operators using the same spectrum administratively assigned under well-established international frameworks for frequency reuse. Therefore, we are of the firm conviction that DoT would reconsider and rescind the concept of auctioning the satellite spectrum and continue to assign through administrative mode on non-exclusive basis in line with the extant practice around the world based on the outcomes of TRAI consultation.

- ii. It is a fallacy to note the comments of one of the respondents that satellite operators are competing with terrestrial communication services. In this context, it is to be noted with concern that the TSPs have miserably failed to meet the national broadband goals to the majority of the Indian population living in the rural and remote corners of the country for the last two to three decades. Despite having sufficient resources and Government support including USOF and many other incentives, the TSPs could not penetrate these far-flung areas, as their sole motive was only profit maximization in the lucrative market. Under these circumstances, the satellite operators, with their inherent capabilities, are willingly extending their support to achieve the national broadband mission of the Government of India. ESIMs in air and water cannot be provided by terrestrial networks. Similarly, terrestrial networks get impacted and are unable to offer services during natural calamities or in the event of disaster situations. The recent

train accident in Orissa highlights the value of satellite communications when the terrestrial network was unable to cope with the traffic situation and most of the relief and disaster management agencies had to rely on satellite communications. Should this be branded as a “competition” or should we say as a genuine “supplement or complementary role” to help and support the Government achieve its long-pending goals of providing broadband access to millions of the population across the country. To address the digital divide, a nation needs all types of services as fallback resilient options.

- iii. It would not be out of context to mention that the spectrum, analogous to transport infrastructure, such as railway tracks, expressways, or air routes, demonstrates how different radio services utilize specific spectrum portions and emphasizes the importance of adhering to their designated domains. Just as a high-speed train cannot fly or a car cannot navigate on railway tracks, different technologies have their own limitations and rules. For instance, a bullock cart cannot access an expressway, and a bus cannot use certain lanes. While these technologies share the common goal of transportation, distinct rules ensure the efficient and safe operation of the system. In summary, the analogy highlights the coexistence of diverse technologies within defined spectrum "lanes" to enable connectivity and communication services.
- iv. SIA-India firmly believes that TRAI, in its well-experienced and sagacious wisdom, will give due weightage to the tenable, cogent and valid reasons provided by the majority of the genuine respondents to the TRAI consultation process and accordingly recommend the continuance of administrative pricing regime to allocate the spectrum for satellite services. At this crucial juncture of visible transitions happening around the space sector, this will pave the way for the sustainable growth of the space industry that will help the Government to achieve its national broadband mission, besides the expected tremendous economic contribution from the space sector to India.
- v. SIA-India is surprised at the many myths erroneously advanced by one of the respondents and hence it is incumbent on us to provide the rebuttals in the succeeding paras against each of the myths, fallacies and false narratives.

2. Counter Comments-1 to the TRAI CP

- i. **Comments:** NGSO satellite operators are competing with terrestrial communication service providers thus instigating competition. So, the assignment rules for networks offering competing services are uniform and

fair, without granting any stakeholder preferential treatment solely based on network topology or architecture. Auctioning satellite spectrum, therefore, emerges as the sole viable strategy to guarantee a balanced and competitive landscape amongst competing providers.

SIA-India Counter Comments:

- India should rather welcome and encourage competitive entry by satellite operators, as this advances its goals of the National Digital Communications Policy (NDCP-2018) and its new India Space Policy 2023.
 - New HTS and NGSO systems herald a new era of affordable broadband everywhere, including areas unserved by the terrestrial networks, with huge benefits for the Indian economy and society.
 - New entrants in the Indian space sector need access to the satellite spectrum to provide innovative services and create value from their investments in infrastructure.
 - Auctions or exclusive assignment of satellite spectrum threaten the achievement of these goals by limiting access to or raising the costs of satellite spectrum.
 - It is beyond logic to suggest that spectrum auctions are somehow necessary to ensure competitive parity between different communications technologies. On that flawed reasoning, the wavelengths of light in a fibre optic cable would need to be auctioned to ensure fair competition with mobile operators. But that would be absurd as there is no technical limitation or scarcity.
- If anything, exclusive assignment of satellite spectrum through auctions is likely to distort competition by enabling deep-pocketed incumbents to preclude entry by potential competitors. Indeed, it is perhaps telling that most of the small number of commenters supporting auctions in this consultation are from incumbent mobile network operators (or their affiliates) concerned about the prospect of new competition.
- In the present scenario, the orbital slots (5-6 numbers) at the Geostationary arc allocated to India, through WPC / ISRO are already fully occupied by ISRO satellites operating in S, C, Ex-C, Ku and Ka frequency bands and are already using the full spectrum. The spectrum is already allocated to the VSAT service providers for commercial usage, government departments/agencies/NGEs for their captive CUG networks

and the broadcasters for TV/DTH service. How can these agencies be asked to repurchase the spectrum from the would-be new owner of the spectrum (suppose the spectrum is auctioned) and at what price, as the price would be revised (mostly on the upper side). Many of the agencies would like to abandon satellite-based services as they would be too costly to operate. This will create legal/economic issues. It shall amount to killing the usage of satellite-based initiatives. The new owner of the Satellite Spectrum, again, would go for the profitable regions as he has to recover the cost of the spectrum paid for purchase of the spectrum through a bidding process. In that scenario, who will take care of Rural/Remote/low density population areas which are generally low revenue/profit areas. Therefore, the objective of Government of India for minimising the digital divide will never be achieved. Therefore, the auction of Satellite spectrum is neither feasible nor desirable, as it shall defeat the objectives set by Government of India' s Digital divide minimising policy and the India Space Policy 2023.

- ii. **Comments on Myths & Truths:** One of the respondents to TRAI CP misrepresented some facts to advance their arguments supporting the assignment of spectrum to satellite services through auction with twisted logic in the name of "*myths and truths*" and quoted verbatim here under in "*italicized letter*". These are nothing but mere fallacies and conjectures and accordingly SIA-India, in response, presents the following:

Myth #1: *Satellite spectrum authorization is assigned by the ITU, and therefore National Regulatory Authorities (NRAs) cannot assign the spectrum through auctions.*

Truth: *The assignment of spectrum within a nation's jurisdiction is an inherent sovereign right. Neither the ITU Constitution nor the ITU's Radio Regulations impose any limitations on the methodology used for spectrum assignment. The primary role of the ITU-R is focused on the allocation of orbital slots and the management of interference. It does not establish rules or guidelines regarding the methodology for spectrum assignment or the pricing decisions made by sovereign states.*

SIA-India Counter-comments:

- This statement suggests an artificial misconception designed to provide a particular response. The fact is that ITU allocates spectrum to services and in the case of satellite/global spectrum, the spectrum is co-assigned with orbital slot parameter as part of MIFR that assigns "usage rights" and not "property rights". It is certainly the prerogative of the national administrations to assign spectrum for various radio services via a preferred mode, however, administrations across the world resort to assigning

satellite spectrum through a non-exclusive administrative mode and this part has been conveniently blocked out by the respondent. Furthermore, the few who have tried to auction domestic orbital locations in the past (e.g., U.S., Brazil) have abandoned the practice as inefficient and unsuitable. The result has been a vibrantly competitive satellite industry around the world with multiple operators re-using the same satellite spectrum repeatedly under well-established rules, and without the artificial scarcity created by auctions or exclusive assignment.

- It is important to acknowledge that space-based services are global in nature and on the global level, the ITU-R undertakes the regulation and coordination of satellite spectrum as per provisions contained in the Radio Regulations time-to-time, if needed, as amended through WRC process. In this regard, the frequency bands for space-based communications are internationally agreed by the ITU-R, and the use of these frequencies is not independent of the orbit parameters and planned service areas. This is why it is referred to as “spectrum-orbit resource” by ITU. Article 44 of the ITU Constitution states that spectrum-orbit resources are shared among all countries and must be used in conformity with the Radio Regulations.
- “Coordination” as a process must also be acknowledged, wherein it is an ongoing process of avoiding interference whereby satellite operators, working through administrations, exchange information about proposed satellites, work through the potential interference scenarios and agree on mitigation measures to avoid harmful interference. This coordination process helps alleviate the complexity of spectrum sharing because satellite operators do all the technical heavy lifting to maintain successful sharing of satellite spectrum.

Myth #2 *Spectrum designated for satellite services should be allocated administratively, as it will only be utilized by a few gateway stations.*

Truth: *The deployment and utilization of user terminals across the country, in addition to the gateways, make it imperative to assign spectrum on a pan-India basis through auctions.*

SIA-India Counter-comments:

- Contrary to the implication of this “*truth*”, auctions are not necessary for the assignment of spectrum for user terminals and gateways around the country. As an example, the United States has assigned earth station blanket licenses for ubiquitous/mobile user terminals and multiple gateways across the country by administrative method in the same frequency band to various satellite operators (Ku/Ka, GSO/NGSO). Most European Union

countries have even adopted a “license-exempt” regime to enable ubiquitous deployment of satellite user terminals that meet certain technical criteria in number of microwave frequency bands. Clearly, other countries have been able to license satellite earth stations and spectrum without having to resort to auctions.

Myth #3 *Exclusive grant of spectrum through auction will prevent satellite earth station gateways from accessing the complete band.*

Truth: *Due to the widespread installation of user terminals across the country, it is essential to assign different frequencies to each service provider to mitigate interference. Therefore, exclusive spectrum assignments for user links have to be based on band segmentation.*

SIA-India Counter-comments:

- As explained above and mentioned in TRAI Consultation paper, other countries have tried and consequently failed in their attempts to auction or exclusive assignment methods to assign satellite spectrum for user terminals or gateways to limited operators. Instead, all nations (as) have resorted to assign satellite spectrum administratively on a non-exclusive basis to multiple operators, relying on well-established international frameworks that enable satellite spectrum to be reused.

Myth #4: *Acquiring spectrum through auctions is futile without corresponding transponder capacity.*

Truth: *Like terrestrial service provider, any bidder for satellite spectrum will participate in auctions only if it already has the space assets directly or having capacity through valid agreement with satellite operators or has plans for the same.*

SIA-India Counter-comments:

- Like any satellite operator, the access service operator wishing to operate satellite can do so by having orbit-spectrum resource registered in MIFR, participate in coordination process with other operators and share the spectrum in the same band with appropriate authorizations and regulatory approvals in place. Of course, some of the flexible techniques deployed in terrestrial operations to further increase throughputs like carrier aggregation (from different spectrum bands) or multiple use like integrated access backhaul may not be available when wearing the cap of a satellite service operator. Hence, in case of satellite services, full spectrum requirement is not just an add on or a choice, rather an essential requirement.

- Having an agreement with a satellite operator has no bearing on whether auctions or exclusive assignment of satellite spectrum is good idea. Generally, countries (including all major space-faring nations) have concluded that it is not.
- As explained in SIA-India's comments, exclusive assignment of satellite spectrum by auction does create unnecessary complications, risks and artificial inflexibility that is simply a non-issue in all other countries that have adopted non-exclusive administrative methods of assignment.
- For example, exclusive auctions create a risk that the operator of a satellite or satellite constellation is unable to secure access to some or all of the spectrum necessary to provide service in India because the spectrum resource has been obtained by another party through auction. This is simply a non-issue in all of the countries that use a non-exclusive, administrative method of assigning satellite spectrum.
- In addition, exclusive auctions create artificial inflexibility. In all of the countries that have adopted non-exclusive, administrative methods of assignment, a service provider can apply for and seek to use more spectrum whenever necessary as their business grows. Under an exclusive auction system, the service provider would be artificially constrained if the additional spectrum had been assigned exclusively to another party or may have to wait until the next auction cycle before securing additional spectrum. This is a non-issue in countries that use non-exclusive, administrative assignment methods.

Myth #5: *Satellite broadband will be complementary, primarily improving connectivity in rural and remote areas.*

Truth: *A majority of NGSO players have presented business cases and strategic roadmaps that clearly demonstrate the competitive nature of the services both in urban and rural/remote areas. Importantly, neither the policy nor the license imposes any restrictions on satellite-based service provider from providing services in areas already covered by terrestrial networks. This allows them to operate freely and compete with the terrestrial providers in same regions.*

SIA-India Counter-comments:

- Satellite operators serve a wide variety of customer segments, essentially serving in remote areas, unserved areas and underserved areas- all distinct. They may or may not overlap with a terrestrial

network and generally classified as unreachable or blind spot within the existing network. The theoretical wider service footprint and practical footprint of IMT service differs by a good margin. Any single access technology dependence is a sure shot way of promoting exclusivity that will kill innovation, deprive citizens from reaping benefits of a global technology and practically create limited/inefficient service scenarios.

- India, in its national interests, should welcome the entry and active participation of satellite operators as it advances its national broadband goals (NDCP-2018) and its new space policy goals (ISP-2023), as the TSPs could not do for more than two decades.
- Exclusive auctions of satellite spectrum would only limit competitive entry to the detriment of the public interest.
- It is perhaps telling that the few commenters that support auctions in this proceeding consist mostly of mobile network operators (or their affiliates) who misconstrued satellite services as potential competition and whereas on the contrary in fact these two services (terrestrial mobile and satellite) complementary/synergetic.
- In other countries, the assignment of satellite spectrum on a non-exclusive, administrative basis has brought many benefits, even when those same countries have auctioned terrestrial mobile spectrum.

Myth #6: *Auctioning satellite spectrum may exacerbate the digital divide and hinder broadband connectivity for millions.*

Truth: *Auctions ensure a fair, transparent allocation process and promote efficient use of a precious resource. Competitive bidding fosters innovative business models and improved services, ultimately benefiting end users.*

SIA-India Counter-comments

- The National Digital Communications Policy, 2018, recognises the important role that satellites will play in closing the digital divide in India. Satellite technology, with its ubiquitous coverage and increasingly high throughput, is an incredibly cost-effective way to advance India's goal of universal broadband.
- Auctioning satellite spectrum on an exclusive basis will unnecessarily raise the costs of universal broadband, preclude or limit the number of new satellite services and technologies available in India, and/or create a spectrum "gatekeeper" that all other operators or service providers would have to deal with, in a non transparent manner, if they wish to provide service in India. These are all disbenefits of an auction that are need not be

incurred from a spectrum management perspective, and can be easily avoided with the kind of non-exclusive administrative assignment process prevalent in other countries.

- Auctions are not the only fair and transparent allocation process for allocating spectrum. Other countries have adopted administrative methods of assigning satellite spectrum that are equally fair and transparent, without the additional overhead and complexity of having to set reserve prices, minimum lot sizes, and auction methods.

Myth #7: *Satellite spectrum is not auctioned anywhere globally, rendering market allocation mechanisms infeasible.*

Truth: *Several countries have embraced diverse transparent and competitive auction methodologies to assign satellite frequencies in various ways. Successful examples of such practices can be seen in countries like Saudi Arabia¹⁵ and Thailand^{16 17}, where spectrum for satellite services has been auctioned. Additionally, India has emerged as a global leader in spectrum auctions for terrestrial services since 2010. The policy framework and auction methodology implemented by India have been widely adopted by numerous countries worldwide, highlighting its effectiveness and influence in shaping international practices.*

SIA-India Counter-comments

- The few proponents of auctions in this proceeding name two countries that have recently conducted “auctions” for satellite spectrum (Thailand is auctioning domestic orbital locations, not spectrum). They neglect to mention the hundreds of countries around the world, including major space faring nations such as the Australia, Brazil, France, Japan, the United Kingdom and the United States, that assign satellite spectrum by administrative process on a non-exclusive basis.
- They also neglect to mention that major space faring nations that have tried auctioning domestic orbital locations in early 2000s (e.g. United States and Brazil) have abandoned the practice, preferring instead to use administrative methods of assignment.
- If India were to auction satellite spectrum, it is certain that the country will not realize the benefits of its recent satellite policy reforms and will likely to decelerate the development of India’s satellite sector for many years to come.

Myth #8: *Administrative allocation bolsters investment and investor confidence.*

Truth: *The administrative assignment of spectrum refers to an approach where spectrum is allocated on a first-come, first-served basis. However, this methodology has faced criticism and scrutiny, including from the Hon'ble Supreme Court.*

SIA-India Counter-comments:

- The Supreme Court of India has not concluded that every first-come-first-served system would be unconstitutional. Rather, in Special Reference No.1, the Supreme Court explained that the 2G Case was “specifically evaluating the validity of those methods adopted in the distribution of spectrum from September 2007 to March 2008” (Special Reference No.1 of 2012, at para. 78). In other words, the court evaluated the first-come-first-served procedure used at the time to grant exclusive rights to 2G spectrum and concluded that the process did not meet constitutional standards of fairness, transparency, rationality and non-discrimination (see 2G Case at paras. 95-96).
- The Supreme Court of India also did not require all natural resources to be auctioned. As it explained in Special Reference No.1 of 2012, “the recommendation of auction for alienation of natural resources [in the 2G Case] was never intended to be taken as an absolute or blanket statement applicable across all natural resources, but simply a conclusion made at first blush over the attractiveness of a method like auction in disposal of natural resources” (Special Reference No.1 at para. 78). In other words, administrative assignment is allowable, provided the process meets constitutional standards of fairness, transparency, rationality and non-discrimination (see 2G Case at paras. 95-96).
- Many countries have designed and implemented simple, fair, and transparent methods of assigning satellite spectrum on a non-exclusive basis, subject to the ITU framework. Indeed, it would be much easier to design a system that meets constitutional standards when assignment is a non-exclusive basis, since a prior grant would not automatically preclude any later grants.

Myth #9: *Satellite spectrum is used in a shared mode wherein the same spectrum is re-used by multiple satellite-based service providers. Whereas auction will lead to exclusive use by only some service providers and will deprive spectrum access to others.*

Truth:

(i) Gateway Links: Given that gateways are limited in number and require

the entire spectrum band to support aggregated traffic, the assignment can be carried out exclusively for specific geographical areas. These designated areas would serve as exclusion zones for IMT/backhaul. Consequently, ensuring the exclusivity of spectrum assignment through a transparent auction process becomes crucial.

(ii) User Links: Due to the widespread geographic distribution of user terminals, it would be infeasible for terminals deployed by different service providers to operate on the same frequency. Even if some service providers attempt to coordinate and use the same frequencies, it would be exceedingly challenging to co-ordinate millions of user terminals, thousands of satellites, and tens of satellite operators effectively. Exclusive assignment of spectrum is therefore necessary for user links, to ensure that each satellite constellation and user terminal can operate without interference. Further, if a group of service providers want to enhance their spectral efficiency by sharing their spectrum, they can be allowed to do so through private contractual agreements, subject to mutual coordination. This approach would not impose any liability on the Government or create administrative priorities through a "first come, first serve" process.

SIA-India Counter-comments

- Proponents of this "myth/truth" fundamentally misconstrued how satellite systems work and share spectrum.
- Satellite spectrum can be assigned non-exclusively to multiple parties in the same geographic location for gateways and/or user terminals without conflict. It is done all the time in countries with administrative processes for assigning satellite spectrum. This level of spectrum sharing is routinely achieved because these multiple operators in the same location are typically using the same frequency in the same uplink or downlink direction and pointing their earth stations (whether gateway or user terminal) at different satellites in different parts of the sky, thanks also to the directivity of the antennas.
- There is in any case a well-established international framework administered by the ITU-R to address coordination/coexistence. For example, in the Ku- and most of the Ka-band frequencies, the ITU-R prescribes EPFD limits to protect GSO satellites from NGSO satellites. In other situations, e.g. as between NGSO systems, a well-understood system of date priority and frequency coordination enables co-existence.
- The ITU-R system provides a clear framework for multiple operators to make (and continue making) large investments in multiple satellite

systems (GSO and NGSO) using the exact same frequencies, resulting in the competitive entry of many new, innovative satellite systems over the last decade. International experience shows that auctions are simply not necessary to resolve these perceived “problems” with co-existence.

- iii. **Comments: The ‘Same Service Same Rule’ principle** fosters fair competition while encouraging innovation and growth. Therefore, it is crucial to establish ‘Same Service Same Rule’ as the foundation of the regulatory regime for communication services. International precedents are irrelevant to the matter of spectrum assignment for communication services provided to Indian customers, as India maintains a stable and predictable legal stance on the subject.

SIA-India Counter-comments

- As for “same service, same rule,” satellite services may provide a competitive alternative to terrestrial technologies (e.g. fibre, point-to-point microwave links) in some market segments, such as backhaul, but not to terrestrial mobile services to end customers. In any case, the idea that they should be subject to the same rules is nonsensical. Just as optic fiber cables may compete with coaxial cable or fixed/mobile wireless services in some contexts does not mean that they must all be subject to exactly the same rules for the sake of competitive parity. In particular, hundreds of countries assign satellite spectrum administratively while assigning terrestrial mobile spectrum by auction. In all of these countries, satellites have conferred pro-competitive benefits for the nation in terms of increased coverage and increased choice.

- iv. **Utilization by both IMT and space-based services in flexible manner based on the market requirements in the band 27.6-29.5 GHz (28 GHz)**

SIA-India Counter Comments:

The proponent of various myths has indicated that 3GPP has designated the 28 GHz band under n257 and hence the entire 28 GHz band should be preserved without any fragmentation for IMT use. In this regard, it should be noted that 3GPP is a standard specification body for cellular telecommunication services and is nothing to do with radio frequency spectrum identification whereas it is in the domain of ITU-RR and NFAP provisions. Hence, 3GPP specifications does not offer any special rights over this band for IMT.

Furthermore, the proponents of auction suggest that auctions are needed to deal with co-existence with terrestrial services, such as IMT or backhaul. In response, SIA-India would challenge the presumption that all satellite spectrum

bands are or should be shared with terrestrial services. Certainly, in the 27.5-29.5 GHz band, for example, SIA-India has provided strong reasons for dedicating the band to satellite services, given the lacklustre interest in building out the band evident in other countries. But even in satellite bands historically shared with the terrestrial services, the key to successful sharing has been clear protection criteria and priority rules to enable frequency coordination. There is nothing inherent in the auction mechanism that facilitates sharing; protection criteria will still be required.

SIA-India strongly advocates that the entire 28 GHz (27.5 to 29.5 GHz) should be fully earmarked and preserved for satellite services.

Hence, we hope that TRAI recommendations to DoT would pave the way for the growth of satellite industry in India
