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**Subject: Counter comments on TRAI Consultation paper 8/2021 on “Auction of Spectrum in frequency bands identified for IMT/5G.”**

Dear Sir,

On behalf of the board and the management of SIA-India, we would like to convey our best wishes to you, TRAI Chairman and its officers at the Authority.

Further to our comments submitted to the TRAI Consultation paper no 8/2021 on Auction of Spectrum in frequency bands identified for IMT/5G and having reviewed the inputs of some of the stakeholders to the said consultation submission, SIA-India takes this opportunity of providing further clarifications and comments concerning some aspects of the points raised, in addition to our initial submission.

At SIA-India, as a vibrant body for the satellite communications ecosystem, we aim to present the industry's interest to the Government, Regulators, Policymakers and domestic and international standard bodies for policymaking, regulatory and licensing matters. We are happy to provide any further clarifications that may be required.

Please accept, Sir, the assurances of our highest consideration.

Respectfully



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**Encl. SIA-India Counter Comments - Auction of Spectrum in frequency bands identified for IMT/5G**

## **SIA-INDIA RESPONSE TO TRAI ISSUES FOR CONSULTATION**

While only 27% of households in India have access to the internet, terrestrial IMT/5G proponents concerns about the terrestrial IMT/5G auction remain centred on their future balance sheets and on limiting competition instead of solving the digital divide in India and unleashing the potential of India's digital economy. Exclusive spectrum rights sold at auction to mobile operators, while excluding others from using that spectrum for two to three decades, are tradable assets in the mobile operators' balance sheet<sup>1</sup>. Expanding exclusive spectrum rights of mobile operators into the globally shared and reused satellite spectrum bands is not a cost-efficient way to connect the unconnected. This would create more significant costs to India<sup>2</sup>, as this is more likely to widen the digital divide in India, and it will likely make 5G haves and 5G have-nots. Lack of consensus amongst terrestrial IMT/5G proponents on what the outcome of the 5G auction should achieve highlights the very high risk of this process not resulting in a successful public policy outcome. Meanwhile, the entire population of India relies on terrestrial and space-based broadband for their digital future and economic development.

### **1. Reallocating mmWave spectrum from satellite to 5G will worsen the digital divide in India and significantly increase the costs of providing broadband access to the unconnected**

As stated by Reliance Jio (page 39, Q.53, 1&2):

*"1. The mmWave band is quite unlike any of the bands auctioned so far in India, and we may be required to go purely by international benchmarks for its valuation. This spectrum will be used majorly to provide high-speed data capacities in dense locations and is **unlikely to be used to provide uniform coverage owing to limited coverage by mmWave radio, which is limited to 50-100 meters and requires lot many radios in a small cluster to provide hotspot coverage.**"*

*"2. Further, the **mmWave Radio cost is high because of: (1) High-Frequency Front End (2) waveguide connection between RF front and antenna. Thus, even if we consider hotspot deployment, the cost of laying such a network will be 100s multiple of current spectrum bands deployed in the country.**"*

As stated by Reliance Jio's own views, terrestrial IMT/5G networks in mmWave have technical impediments to provide broadband coverage while being 100 times more expensive to deploy. This makes terrestrial IMT/5G in mmWave bands a poor option in prioritising spectrum for terrestrial IMT/5G in India. Cellular licenses are unlikely to meet national broadband objectives using this spectrum. International research confirms mmWave bands are not an option being prioritised globally for terrestrial IMT/5G:

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<sup>1</sup> RJIL annual report 2019-2020: <https://www.ril.com/getattachment/5afeebf6-f47f-4a9b-903b-a18785fb470c/Annual-Report-for-the-year-2019-20.aspx>.

<sup>2</sup> Study on cost effectiveness of 5G in mmWave and satellite broadband in 28 GHz: <http://www.strategies.nzl.com/industry-comment/dedicating-28ghz-spectrum-band-to-satellite-services/>.

National terrestrial IMT/5G strategy.

According to FCC Chairwoman Jessica Rosenworcel, the FCC made a mistake a few years ago when it focused all of its energy in the early 5G days on millimetre wave:

***“I think that the FCC made a mistake a few years ago when it focused all of its energies in the early 5G days on the spectrum called millimetre wave. Those are airwaves that are really high up there they have lots of capacity but their signals don't travel very far. And so what that means is that you have to have lots of ground-based facilities to make those signals viable. And that's a really costly thing to do. And so, if we just relied on millimeter wave spectrum we'd actually grow the digital divide with 5G.”*** -

FCC Chairwoman Jessica Rosenworcel.

India should prioritize using the 28 GHz for satellite, rather than for 5G/IMT because doing so will help India achieve universal broadband much more cost-effectively<sup>3</sup>, as illustrated below.

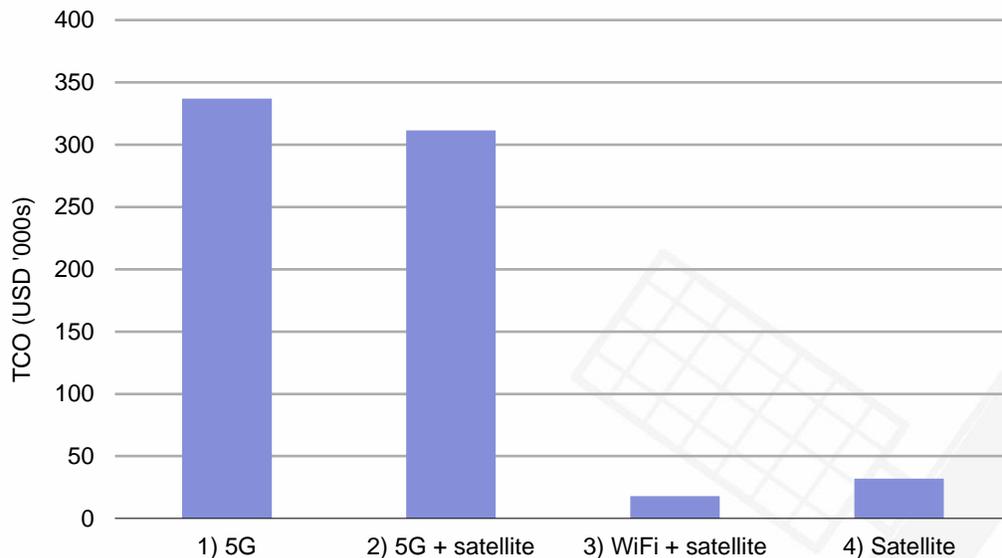


Fig.1 Comparative Total cost of Ownership (TCO) in 28 GHz between 5G broadband and satellite-powered broadband: satellite-powered broadband is significantly more cost-effective than terrestrial 5G.

Due to the high costs of deploying mmWave 5G nationwide, it will likely only be used as a “capacity” band to provide more 5G in areas that will already have 5G. There is more than enough mmWave spectrum in 26 GHz to meet this “capacity” requirement in urban areas. As a result, the net benefit of preserving the 28 GHz for satellite nationwide for the advancement of universal broadband goals will far exceed the net benefit of re-allocating the spectrum for 5G/IMT.

<sup>3</sup> Study on cost effectiveness of 5G in mmWave and satellite broadband in 28 GHz:  
<http://www.strategies.nzl.com/industry-comment/dedicating-28ghz-spectrum-band-to-satellite-services/>.

**2. Mobile operators disagree all bands consulted should be offered at auction.**

Reliance Jio and Vodafone Idea claim that the 27.5-29.5 GHz (28 GHz) band is necessary for India to develop a 5G ecosystem (Jio, page 4-g, VIL, page 15, 4). However, Airtel (Airtel, page 12) disagrees and proposes a pragmatic and more balanced approach, recognising the benefits of satellite broadband for India in the 28 GHz band. Airtel's recommendation is in line with international harmonisation of spectrum for terrestrial IMT/5G that for India consider the 26 GHz band (24.25-27.5 GHz) only for terrestrial IMT/5G and the entire 28 GHz (27.5-29.5 GHz) band for satellite broadband (e.g., European Union, Australia, China, Russia and over 100 countries)

Meanwhile, the views provided by the cellular associations COAI and GSMA lack unified membership support in expressing views on behalf of their Indian member on the issue of auctioning the 28 GHz band to cellular providers. Despite COAI and GSMA not having unified membership support to speak on behalf of the cellular industry on this matter, these associations have nonetheless stated on the record in the consultation a view that does not represent all their members. Therefore, the views of COAI and GSMA should not be considered as industry views, but the views of a few.

**3. Terrestrial IMT/5G proponents do not know the fair value for exclusive spectrum use, nor what method should be used to set fair spectrum value for their exclusive use.**

Spectrum ownership provides for the exclusive use of spectrum rights sold at auction. MNOs secure spectrum exclusivity for decades through auctions (two to three decades in some cases), which also restrains the possibility of new entrants or other broadband users from using the spectrum rights sold to MNOs. In a way, auctions can be considered the cost to MNOs for locking in spectrum tenure for two to three decades and keeping it out of reach from others. Hence, the Government is responsible for finding a fair value for the reserve price of spectrum rights sold **exclusively to each mobile operator** at auction.

Terrestrial IMT/5G proponents are unclear about the fair value for their exclusive spectrum use. Reliance Jio (page 31, Q.41) submits valuations "past exercises remain relevant" and should observe "contingent factors like international benchmarking". Vodafone Idea (page 36, Q.41) proposes that pricing should be looked at considering "DCF of incremental cash flow", while COAI (page 15, Q.41, No 1) states "spectrum pricing requires a comprehensive re-look". Meanwhile, GSMA provides no answer on fair spectrum value and only includes a list of different methodologies. No consensus seems to be possible on the approach to fair spectrum pricing for exclusive use amongst MNOs, indicating there is no clarity on the fair value for exclusive spectrum rights for terrestrial IMT/5G amongst in India.

**4. Internationally, the practice of auctioning satellite orbital slots has largely failed or been abandoned**

While the consultation paper itself has critical issues to be addressed that have foundational implications for the communications infrastructure for the country, it is also an essential SIA-India intent to respond with this submission to the comments provided by Reliance Jio Infocomm Ltd. (“Reliance Jio”) related to issue of spectrum allocation for satellite services through auction. Within this consultation process and other vital issues for consultation that TRAI engages the industry with, the case of auction of satellite spectrum has often been inserted, irrespective of its relevance to the subject under discussion. It is important to address this issue and get it out of the way so that the core issue of identification of spectrum for 5G/IMT and other services including satellite services gets the seriousness of attention that it deserves.

In their counter comments to consultation paper 6/2021, Reliance Jio states *“We submit that contrary to what is being pedalled by many stakeholders in the response to the consultation paper, administrative allocation is no longer the only mode of allocating spectrum to satellite, and associated activities and auction of spectrum is being increasingly favoured across the world. We reiterate that administrative allocation is a relic of competition free past and as the sector is getting more and more competitive the auction is becoming the preferred choice, as is evident from the following details of countries where spectrum auction for satellite services has been announced or held recently.”*

While no definitive documents are submitted to substantiate this assertion, names of countries are floated within consultation papers and outside of the process in public media.

SIA-India has done extensive research across the policies of these mentioned countries and concluded that this statement could not be farther from the truth. SIA-India would like to clarify that the examples of countries presented by Reliance Jio do not, in any way, lead to the conclusions above.

Contrary to Reliance Jio’s submission, administrative allocation of satellite spectrum is the norm around the world and not a “relic”. International experience shows that auctions has only ever been attempted in a small number of countries and only for domestic satellite orbitals slots, and that nearly all of those countries have abandoned the practice.

Furthermore, even the very few examples of auctions for domestic filing/GSO orbital slots have been unsuccessful. Details for these countries are provided below:

United States	The United States last conducted a satellite auction in 2004 for three domestic orbital slots for broadcasting services. <sup>4</sup> Since then, it has abandoned satellite
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<sup>4</sup> See <https://www.fcc.gov/auction/52>.

	auctions completely for legal and policy reasons. Both domestic and foreign satellites are authorized administratively. <sup>5</sup>
Brazil	Brazil abandoned satellite auctions for Brazilian orbital slots in 2020 <sup>6</sup> , noting its inefficiency and the fact that virtually no country in the world uses this method for assigning satellite spectrum. <sup>7</sup> Authorizations to use satellite capacity/spectrum can now be applied and obtained administratively both for Brazilian and foreign satellites <sup>8</sup>
Thailand	Thailand attempted to auction Thai orbital slots in 2021 for the first time, but it was cancelled twice <sup>9</sup> . The Government is now considering allocating the Thai orbital slots directly to National Telecom. <sup>10</sup>
Mexico	Mexico is one of the few countries that still has a requirement to auction domestic satellite slots. <sup>11</sup> However, the last time Mexico did an auction for orbital slots allotted to Mexico was in 2014 and it failed. <sup>12</sup> Moreover, in relation to foreign

<sup>5</sup> See 47 U.S. Code of Federal Regulations, Part 25.

<sup>6</sup> See Brazil, Law No. 9,472 of July 16, 1997, § 172, as amended by Law No. 13,879 of October 3, 2019 (in Portuguese) (replacing satellite auctions with administrative process), at <https://informacoes.anatel.gov.br/legislacao/leis/2-lei-9472#livroIIItituloVcapIII>.

<sup>7</sup> See, e.g., ANATEL, Analysis No. 241/2020/MM, *Public Consultation regarding the General Satellite Regulation - Item No. 37 of the Regulatory Agenda for the 2019-2020 biennium* (17 Dec. 2020) (in Portuguese), at ¶¶ 4.70-4.81, available at [https://sei.anatel.gov.br/sei/modulos/pesquisa/md\\_pesq\\_documento\\_consulta\\_externa.php?eEP-wqk1skrd8hSlk5Z3rN4EVg9uLJqrLYJw\\_9INcO6WoeHMBfhEpsGdV8m3dD4wT0piDpc-gcaIS61R3UjJd\\_ZLKrutrh6DuXQLXjN9HUfMZ9RrUBhEkSkb\\_KXbDORK](https://sei.anatel.gov.br/sei/modulos/pesquisa/md_pesq_documento_consulta_externa.php?eEP-wqk1skrd8hSlk5Z3rN4EVg9uLJqrLYJw_9INcO6WoeHMBfhEpsGdV8m3dD4wT0piDpc-gcaIS61R3UjJd_ZLKrutrh6DuXQLXjN9HUfMZ9RrUBhEkSkb_KXbDORK)

<sup>8</sup> Title II, Chapter I, Article 16 of Resolution 748/2021 (General Regulation of Satellite Exploration, issued after the Public Consultation referred below) states:

**Art. 16.** In order to obtain, amend or extend the Brazilian or Foreign Satellite Exploitation Rights, the Satellite Operator or its legal representative, in the case of Foreign Satellite, must formalize a request before the Agency, through its own electronic form, contained in the Agency's computerized system, and meet the following general conditions:

- I - be a legal entity, under public or private law, incorporated under Brazilian law and with headquarters and administration in the country;
- II - not being prohibited from bidding or contracting with the Government, not having been declared disreputable or having not been punished, in the previous 2 (two) years, with the decree of expiry of a concession, permission or authorization of telecommunications service, or of expiry of the right to use radio frequencies or Satellite Exploration;
- III - have legal and technical qualifications for satellite exploration, economic and financial capacity and fiscal regularity with the Federal Treasury and be in good standing with the Guarantee Fund for Length of Service (FGTS);
- IV - present a simplified technical design of the satellite communication system, keeping it up to date; and
- V - submit a statement of compliance with the applicable regulations and of awareness of the grant conditions.

<sup>9</sup> <https://www.bangkokpost.com/business/2167347/auction-for-satellite-orbital-slot-cancelled-again>  
<https://www.bangkokpost.com/business/2207283/satellite-bid-in-limbo>

<sup>10</sup> <https://www.bangkokpost.com/business/2249691/talks-aim-for-solution-to-stalled-orbital-slots>.

<sup>11</sup> See Reglamento de Comunicación Vía Satélite, Art. 4, available at <http://www.ift.org.mx/transparencia/marco-normativo/reglamentos>.

<sup>12</sup> <https://www.elfinanciero.com.mx/empresas/ift-declara-desierto-proceso-de-licitacion-de-posiciones-orbitales/>.

	<p>satellites, service providers can apply for administratively for authorization to provide service in Mexico.</p> <p>The list of authorized providers in the various frequency bands and for the various satellite systems is available online<sup>13</sup></p>
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The only other example cited by Reliance Jio is the case of Saudi Arabia,<sup>14</sup> which recently announced that it intended to auction domestic MSS spectrum in the 2GHz band. This is different, as MSS spectrum in the 2GHz band, similarly to spectrum allocated to mobile terrestrial operators, is not so easily shared amongst satellite operators in the same location. Even then, countries such as the United States have found ways to assign this spectrum by administrative process rather than auction.<sup>15</sup>

On the other hand, assignment by auction for satellite spectrum that can be shared between operators, such as the C/Ku/Ka bands, would lead to unnecessary segmentation and a very inefficient use of spectrum. For this reason, there are no precedents of spectrum assignment by auction to satellite services in these bands in any country.

In any event, the international trend is clear, and it is against auctions. Very few countries have ever thought that auctions are an appropriate method even for assigning domestic satellite slots. The few who have, have either abandoned the practice (e.g. US, Brazil) or discovered the difficulties of such auctions (e.g. Thailand, Mexico).

SIA-India request TRAI that the non-issue of the auction of satellite spectrum be dismissed for what it is, a distraction to the core issue of identification of spectrum for 5G/IMT and other complementary services including Satellite broadband services.

## **5. Spectrum for space-based communications should not be auctioned.**

Reliance Jio cites “*same service, same rules*” (page 52, 11) and that spectrum in the band 24.25-29.5 GHz (which is used on a shared basis by satellite services) should be auctioned (page 51, 5). **These propositions are outside the scope of consultation on the upcoming auction.** Nevertheless, they provide a window into Reliance Jio’s mind-set on augmenting their market power by expanding their exclusive spectrum ownership at the expense of creating significantly greater costs to India for providing broadband to the unconnected.

<sup>13</sup> <https://rpc.ift.org.mx/vrpc/>

<sup>14</sup> [https://www.citc.gov.sa/ar/new/publicConsultation/Documents/PublicConsultationon\\_EN\\_144303.pdf](https://www.citc.gov.sa/ar/new/publicConsultation/Documents/PublicConsultationon_EN_144303.pdf)

<sup>15</sup> See FCC, *Establishment of Policies and Services Rules for the Mobile Satellite Service in the 2 GHz Band*, FCC 00-302, Report and Order (25 Aug. 2000).

Competition Commission of India (CCI) has debunked<sup>16</sup> the argument of “*same service, same rules*”, and legal precedent exists that not all communication services in India are considered “*same services*”. The CCI also states that “spectrum ownership creates a competitive advantage for operators providing wireless access services”. Hence, CCI’s view links spectrum ownership to market competition. Spectrum ownership, as a practice, concerns the exclusive tenure (spectrum rights) of spectrum by mobile services within the jurisdiction of India. This is not the case with the extensively reused spectrum by space-based communications networks.

Other factors have precluded spectrum auctions from being used in the satellite’s spectrum bands, apart from the fact that reused spectrum cannot be granted to any single party on an exclusive basis. Other factors include international treaty obligations; satellite spectrum is managed globally by the ITU and international coordination obligations unique to space-based communications networks. For this reason, only a few countries experimented and later abandoned market-based ideas for the globally reused orbital-spectrum resource.

The Satellite Industry has reiterated the fact that the parallel between “access spectrum” for terrestrial and satellite networks in microwave frequencies does not stand, as the spectrum sharing mechanism is completely different. For terrestrial mobile services spectrum has to be managed by a single operator in a given geographic area and, therefore, cannot be shared amongst the operators, while in the case of satellites, the same spectrum can be used by multiple operators to serve the same geographic area.

While their spectrum use is non-exclusive and reused globally, the satellite industry is supportive and active participant in the evolution of the 5G ecosystem. SIA members support the deployment of terrestrial IMT/5G in India in the spectrum bands internationally harmonised for IMT by the ITU. The 26 GHz (24.25 to 27.5 GHz) spectrum is one such band that can more than adequately serve the four MNOs in India in line with the best practices of other countries.

Proposals from terrestrial IMT/5G proponents to expand their exclusive rights into the globally harmonised 28 GHz satellite spectrum band would foreclose the ability to provide the whole of India with satellite-powered broadband to millions of Indians. According to a report by India Today, in 2021 “only 27% of Indian households have access to the internet”.<sup>17</sup> Even when the spectrum MNOs enjoy is sold to them as exclusive spectrum rights for decades to rollout services, the task of bridging India's digital divide services mission remains monumental.

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<sup>16</sup> CCI report, *Telecom Sector in India* (22 Jan. 2021), [https://www.cci.gov.in/sites/default/files/whats\\_newdocument/Market-Study-on-the-Telecom-Sector-In-India.pdf](https://www.cci.gov.in/sites/default/files/whats_newdocument/Market-Study-on-the-Telecom-Sector-In-India.pdf).

<sup>17</sup> *Learning Spiral survey, internet access for students in India* (17 Feb. 2021), <https://www.indiatoday.in/education-today/latest-studies/story/more-than-50-of-indian-students-in-rural-and-urban-areas-don-t-have-access-to-internet-survey-1770308-2021-02-17>

SIA recommends avoiding the pitfalls that would place India on the wrong path for achieving cost-effective national connectivity, worsening the digital divide. TRAI must consider the benefits of infrastructure optionality by securing infrastructure assets for both terrestrial and space-based broadband by making the entire 28 GHz (i.e., 27.5-29.5 GHz) band available for satellite-powered broadband in India harmonised in accordance with ITU- radio regulations.

## **6. In-Conclusion**

SIA-India would request TRAI to maintain its focus on the process to allocate spectrum for IMT/5G services and not to include all the bands in the auction. When considering the millimetre band, SIA-India would urge the use of 26 GHz bands through its auction process based on fair value. That the available spectrum of 3.25 GHz in 26 GHz (24.25-27.5 GHz) band would be ample for the four MNOs in the medium to long term based on the current take-up of 26 GHz experience internationally. SIA-India considers that preserving 28 GHz for Satellite broadband services far exceeds the benefit of allocating it for terrestrial IMT/5G due to the satellite's ability to help close the digital divide in line with the PM's vision and the Government policy.

SIA wishes to thank TRAI for considering the information and references provided and remains available for any additional clarifications.

