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For the kind attention of:  
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Advisor (Networks, Spectrum and Licensing)  
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**Re: Consultation Paper on “Auction of Spectrum in frequency bands identified for IMT/5G.”  
(No. 8/2021)**

The Global Satellite Operators Association (“GSOA”)<sup>1</sup> hereby submits its counter comments in the above-referenced consultation paper. Without abandoning any of the points made in its earlier comments, GSOA makes the following additional points.

## 1. C-band

GSOA and other satellite industry members have demonstrated that the 3600-3700 MHz band should be preserved for satellite services.<sup>2</sup> As the India Broadcasting and Digital Foundation (“IBDF”) confirms, the satellite use of the C-band frequencies above 3600 MHz remains crucial to India’s 685-billion-rupee broadcasting sector.<sup>3</sup> There is no cause for constraining the continued use of these frequencies by the satellite and broadcasting sectors when there is enough spectrum in the 3300-3600 MHz, 2300 MHz and 2500 MHz bands to meet India’s 5G mid-band spectrum requirements. UK Ofcom has demonstrated that 40 MHz of mid-band spectrum is enough for an MNO to provide virtually all 5G applications.<sup>4</sup> The 300 MHz of spectrum in the 3300-3600 MHz band can give each of India’s four MNOs with 75 MHz each (nearly double the minimum 40 MHz), or 80 MHz to each of the three private MNOs that serve 90% of the market and 60 MHz to the state-owned MNO that serves the remainder. Additional unassigned mid-band spectrum is also available in the 2300 MHz and 2500 MHz bands.<sup>5</sup>

Wherever the line is drawn between 5G and satellite in the C-band frequencies, India will need to develop effective adjacent band protection rules to ensure that sensitive satellite earth station receivers do not suffer harmful interference from 5G emitters in the adjacent band. Otherwise, the satellite and broadcast sectors using the remaining C-band frequencies will suffer disruption from 5G emitters in the adjacent band. Some combination of a suitable guard band, out-of-band emission limits, and filters will be required to ensure such protection.

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<sup>1</sup> <https://gsoasatellite.com/>

<sup>2</sup> See, e.g., GSOA/AVIA/APSCC/GVF Comments at 3-5; Satcom Industry Association of India Comments at 3-4, Responses to Q.5 and Q.8; SES Comments at 6-7; AsiaSat Comments at 5-6; IBDF Comments at 1-2.

<sup>3</sup> IBDF Comments at 1-2.

<sup>4</sup> Ofcom, *Award of the 700 MHz and 3.6-3.8 GHz spectrum bands – Conclusions to further consultation on modelling and technical matters*, at ¶ 1.4 (3 Aug. 2020), available at [https://www.ofcom.org.uk/data/assets/pdf\\_file/0034/199717/statement-sut-modelling-700mhz-3.6-3.8ghzspectrum.pdf](https://www.ofcom.org.uk/data/assets/pdf_file/0034/199717/statement-sut-modelling-700mhz-3.6-3.8ghzspectrum.pdf).

<sup>5</sup> TRAI, Consultation Paper No. 8/2021, *Auction of Spectrum in frequency bands identified for IMT/5G* (Nov. 2021), at ¶¶ 1.33-1.36, available at <https://www.traf.gov.in/consultation-paper-auction-spectrum-frequency-bands-identified-imt5g>.

## 2. 28 GHz Band

As GSOA and other commenters in this proceeding have submitted, the entire 27.5-29.5 GHz band should be preserved for satellite services nationwide.<sup>6</sup> This position is supported by several Indian satellite service providers, a major mobile network operator (“MNO”) and several associations.<sup>7</sup> Preserving the 28 GHz band for satellite use will yield the highest benefits for India, especially given the satellite industry’s demonstrated ability to help close the digital divide in India in a timely and cost-effective way and provide users throughout the country with access to much needed connectivity and broadband offerings. GEO, and non-GEO satellites have deployed and continue to deploy their systems around the globe to provide a wide variety of satellite services in the 28 GHz band, including broadband services, expansion of 4G (and 5G) network coverage, broadband to aircraft and ships, and direct connectivity to cloud computing centres, among other services. Such assets can be brought to bear in India to accelerate universal broadband and enhance service offerings to users throughout India.

In contrast, reallocating the 28 GHz band away from satellites in favour of 5G will yield minimal benefits and worsen the digital divide in India. The mobile industry concedes that the mmWave bands (such as the 28 GHz band) will not be used to provide nationwide coverage of 5G, but will only be used as a capacity band to provide additional 5G service in ultra-dense areas that already have access to 5G<sup>8</sup> (which will only worsen the digital divide and not offer other opportunities to users throughout the country to access much needed connectivity and broadband offerings). The business case for even such limited use of the mmWave band for 5G is uncertain, as international experience clearly demonstrates. Even in South Korea, a prominent proponent of 5G deployments in the mmWave bands, MNOs have struggled to justify making significant investments in the 28 GHz band. In the three years since these MNOs obtained 800 MHz of the 26/28 GHz band at auction, fewer than 200 base stations have been deployed nationwide as against a rollout obligation of about 45,000 base stations.<sup>9</sup> Similarly, attempts in Brazil to auction the 26 GHz band for 5G in 2021 failed due to a lack of interest from bidders owing to uncertainties in the business model.<sup>10</sup> In the same vein, Europe’s 5G Observatory has noted a distinct lack of demand in the 26 GHz band for 5G.<sup>11</sup>

Accordingly, India should not reassign the 28 GHz spectrum from in-demand satellite services in order to meet the uncertain demand for 5G services in this frequency band. As the satellite industry

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<sup>6</sup> See, e.g., GSOA/AVIA/APSCC/GVF Comments at 16-20; Satcom Industry Association of India Comments at 4-5, Responses to Q.6, Q.7, Q.8; India Space Association Comments at 1-6; OneWeb Comments at 2-5; SES Comments at 2-5; Telesat Comments at 1-4; ViaSat Comments at 1-7; AsiaSat Comments at 12-13.

<sup>7</sup> See, e.g., Hughes Comments at 2-4; Bharti Airtel Comments at 11-14; Nelco Comments at 1-2.

<sup>8</sup> See Reliance Jio Comments at 39 (“This [mmWave] spectrum will be used majority 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 small cluster to provide hotspot coverage.”); Vodafone Idea Comments at 3-4 (“the mm Band is a Capacity Band”), at 23 (“there are significant capacity benefits of having mmWave spectrum bands supporting 5G services. 24.25 - 28.5 GHz (mmWave) has a lower coverage owing to higher propagation losses.”).

<sup>9</sup> *Telcos lag in mmWave 5G equipment installation: lawmaker*, Korea Herald, 10 Sep. 2021, available at <http://www.koreaherald.com/view.php?ud=20210910000417>.

<sup>10</sup> *Brazil to reschedule auction for unsold 5G spectrum, minister says*, Reuters, 5 Nov. 2021, (“The minister and Anatel official Abraao Albino said the 26GHz spectrum did not attract interest due to uncertainties in the business model.”), available at <https://www.reuters.com/business/media-telecom/brazil-reschedule-auction-unsold-5g-spectrum-minister-says-2021-11-05/>.

<sup>11</sup> EU 5G Observatory, *26 GHz holds back achievement of EU 5G goals: The lack of demand for this band was identified in the latest 5G Observatory quarterly report* (8 Dec. 2021), available at <https://5gobservatory.eu/26-ghz-holds-back-achievement-of-eu-5g-goals/>.

has shown, there is more than enough mmWave spectrum in the 26 GHz band already identified for IMT/5G to support any near-term 5G requirements in mmWave bands, with up to 800 MHz available for India's four MNOs, or 1000 MHz for each of the three private MNOs that serve 90% of India's mobile market and 600 MHz for the state-owned MNO that serves the remainder. Reallocating the 27.5-28.5 GHz for 5G would therefore provide no additional benefit but will undermine the ability of India to close the digital divide through the use of Ka-band satellites.

For these reasons, Reliance Jio's request should also be dismissed.<sup>12</sup> Given the critical need of the 27.5-29.5 GHz band for satellite broadband services as demonstrated in, recent economic benefits report by Plum group estimating for India (USD184.6 billion per annum,<sup>13</sup> and the lack of data supporting a need for additional 5G spectrum at 28 GHz band, the entire 27.5-29.5 GHz for should remain available for broadband satellite services which provides an essential step in addressing the digital divide. If a data-based analysis shows that it is sufficient demand for 5G in mmWave bands in India, it can be met in the 26 GHz band or another appropriate band that has been so identified globally.

### 3. Auctions of Spectrum for Space-based Communications

Contrary to the submissions of Reliance Jio,<sup>14</sup> auctions of satellite spectrum are not necessary under some "same service, same rules" principle. Spectrum for satellite use is qualitatively different from spectrum for terrestrial use owing to the ITU regulatory framework for their assignment and coordination and the typical lack of exclusivity associated with the use of spectrum for satellite services. It is common for multiple GEO and non-GEO satellites to be authorized to use the same spectrum simultaneously under the ITU framework enabling efficient use of the radio spectrum resource. Introducing exclusivity through auctions would be inefficient and unnecessary for the management of satellite spectrum and would preclude satellite systems from sharing spectrum among themselves.

Nor is it clear, as Reliance contends, that the Supreme Court of India requires spectrum to be auctioned. In Special Reference No.1 of 2012, the Supreme Court noted the following regarding the 2G Case relied upon by Reliance (at ¶ 78):

It has been observed [in the 2G case] that "a duly publicized auction conducted fairly and impartially is *perhaps* the best method for discharging this burden." We are conscious that a judgment is not to be read as a statute. Still, at the same time, we cannot be oblivious that when it is argued with a vehemence that the judgment lays down auction as a constitutional principle, the word "perhaps" gains significance. This suggests that the recommendation of the auction for alienation of natural resources was never intended to be taken as an absolute or blanket statement applicable across all natural resources. Still, merely a conclusion made at first blush over the attractiveness of a method like an auction in the disposal of natural resources. The choice of the word 'perhaps' suggests that the learned Judges considered situations requiring a way other than auction as conceivable and desirable.

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<sup>12</sup> Reliance Jio Comments at 4 (proposing the auction of the remaining 28.5-29.5 GHz for flexible/mixed use).

<sup>13</sup> Plum Consulting study: *Expanding digital connectivity through satellite broadband in the 28 GHz band, 2021*: <https://plumconsulting.co.uk/expanding-digital-connectivity-through-satellite-broadband-in-the-28-ghz-band/>.

<sup>14</sup> Reliance Jio Comments at 52-53.

Moreover, contrary to Reliance Jio's counter comments in a related consultation,<sup>15</sup> satellite spectrum is **not** "being auctioned around the world." In fact, administrative assignment of satellite spectrum is the standard and proven method of assignment in virtually all countries globally.

In the past, a limited and very small number of countries have attempted to auction access to GEO satellite orbital slots administered at the ITU by those administrations, and this approach has primarily been abandoned. Specifically, the United States<sup>16</sup> and Brazil<sup>17</sup> have abandoned all satellite auctions for sound legal and policy reasons. While Mexico retains a satellite auction rule, it has not conducted any such auctions since 2014 (which failed)<sup>18</sup> and auctions are not required for foreign satellite operators to provide services to users in the country.<sup>19</sup> While Thailand recently attempted to auction GEO satellite orbital slots, the auction failed twice<sup>20</sup>, and the government of Thailand is considering an administrative allocation process instead.<sup>21</sup> Finally, while Saudi Arabia has announced an intention to auction the 2100 MHz spectrum for mobile satellite service use, the sharing mechanism in this lower frequency band is different. Even then, countries such as the United States have assigned such spectrum by administrative process rather than by auction.<sup>22</sup> In any event, and this is hardly evidence of a global practice or even a trend in favour of satellite spectrum auctions in all frequency bands and certainly not for broadband satellite use.

#### 4. Conclusion

GSOA thanks the TRAI for the opportunity to provide its counter comments in this Consultation and stands ready to provide additional information on any of the topics discussed in this contribution if the TRAI would find that helpful.

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#### About GSOA

GSOA is the global platform for collaboration between satellite operators. As the world's only CEO-driven satellite association, GSOA leads the sector's response to global challenges and opportunities. It offers a unified voice for the world's largest operators, important regional operators and other companies that engage in satellite-related activities. GSOA is recognised as the representative body for satellite operators by international, regional, and national bodies including regulators, policymakers, standards-setting organisations such as 3GPP and international organisations such as the International Telecommunications Union (ITU) and the World Economic Forum (WEF).

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<sup>15</sup> Reliance Jio Counter Comments at 3-5 (3 Jan. 2022), *submitted in* TRAI, Consultation Paper No. 6/2021, *Licensing Framework for Establishing Satellite Earth Station Gateway* (Nov. 2021).

<sup>16</sup> The last satellite auction in the United States for certain domestic orbital slots and services was in 2004. Since then, the Federal Communications Commission ("FCC") has abandoned auctions for all satellite spectrum. See 47 U.S. Code of Federal Regulations Part 25 (providing for administrative assignment of satellite spectrum).

<sup>17</sup> See 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), *available at* <https://informacoes.anatel.gov.br/legislacao/leis/2-lei-9472#livroIIltituloVcapIII>.

<sup>18</sup> See *IFT declara desierto proceso de licitación de posiciones orbitales*, *El Financiero*, 5 Nov. 2014 (in Spanish), *available at* <https://www.elfinanciero.com.mx/empresas/ift-declara-desierto-proceso-de-licitacion-de-posiciones-orbitales/>.

<sup>19</sup> Compare Ley Federal de Telecomunicaciones y Radiodifusión, Arts. 92-93 (public bidding for Mexican orbital slots) and Art. 170 (administrative process for foreign satellites) (in Spanish).

<sup>20</sup> *Auction for satellite orbital slot cancelled again*, *Bangkok Post*, 18 Aug. 2021, *available at* <https://www.bangkokpost.com/business/2167347/auction-for-satellite-orbital-slot-cancelled-again>;

<sup>21</sup> *Talks aim for solution to stalled orbital slots*, *Bangkok Post*, 19 Jan. 2022, *available at* <https://www.bangkokpost.com/business/2249691/talks-aim-for-solution-to-stalled-orbital-slots>.

<sup>22</sup> See FCC, *Establishment of Policies and Service Rules for the Mobile Satellite Service in the 2 GHz Band*, FCC 00-302, Report and Order (2000), *available at* <https://docs.fcc.gov/public/attachments/FCC-00-302A1.pdf>.