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(Submitted electronically to [advmn@traai.gov.in](mailto:advmn@traai.gov.in))

**Subject: Viasat India Private Limited Counter-Comments on Telecom Regulatory Authority of India (TRAI) Consultation Paper No. 1/2021: "[Licensing Framework for satellite-based connectivity for low bit rate applications](#)"**

Dear Sir,

On behalf of Viasat, I am pleased to provide the following counter-comments in response to the TRAI Consultation Paper No. 1/2021.

Sincerely,

A handwritten signature in black ink, appearing to read "Ryan Johnson", with a long horizontal flourish extending to the right.

Ryan Johnson  
Sr. Director, Regulatory Affairs  
Viasat, Inc.

## VIASAT COUNTER-COMMENTS

Viasat India Private Limited (Viasat) thanks the Telecom Regulatory Authority of India (TRAI) for the opportunity to submit these counter-comments in response to the TRAI's Consultation Paper on the "Licensing Framework for satellite-based connectivity for low bit rate applications" ("Consultation"). Viasat respectfully requests that the TRAI carefully consider these counter-comments to correct inaccurate information in comments submitted by Vodafone Idea Limited ("Vodafone") and Reliance Jio Infocomm Limited ("Reliance Jio") regarding international allocation of the 27.5-29.5 GHz (28 GHz) band and co-existence between satellite and terrestrial IMT/5G services in the band.

In their comments, Vodafone and Reliance Jio incorrectly assert that there will be co-existence between satellite and terrestrial IMT/5G services in the 28 GHz band. Vodafone, incorrectly referencing the "Ku-band" instead of the Ka band, states that "WRC-19 evaluated and proposed suitable co-existence mechanisms for co-existence of IMT and satellite communication services in Ku-band (26 GHz-29.5 GHz)..."<sup>1</sup> Separately, Reliance Jio incorrectly states that "as the 5G and Space based communication technologies are now being developed in the same Spectrum space i.e. mmWaves including 26 GHz, 28 GHz, 40 GHz bands, it is evident that going forward there will be a co-existence between satellite and Terrestrial frequencies."<sup>2</sup> Both of these comments contain mis-statements of the facts about satellite and terrestrial IMT/5G co-existence and the international trends in the 28 GHz band. Below, Viasat corrects the record in this Consultation to ensure that TRAI has accurate information and urges India to maintain the entire 28 GHz band for satellite broadband services and accommodate terrestrial IMT/5G in the vast amount of separate spectrum that is internationally harmonized for that purpose.

As Viasat explained in its comments to this Consultation, today's advanced ultra-high-throughput satellite (UHTS) networks are providing a variety of fixed and mobile applications in the Ka band frequencies, including the 28 GHz band, with small, easy-to-install, satellite terminals that provide affordable IOT and broadband connectivity.<sup>3</sup> Contrary to what Vodafone and Reliance Jio suggest, the international consensus provides for the 27.5-31 GHz (Earth-to-space) and 17.7-21.2 GHz (space-to-Earth) bands to be used extend satellite broadband connectivity throughout the world. In a series of actions over the past six years, the international community has affirmed the importance of retaining the 27.5-31 GHz uplink band --- including the *full* 28 GHz band --- for satellite-powered connectivity to end users.

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<sup>1</sup> Vodafone comments, p. 4.

<sup>2</sup> Reliance Jio comments, p. 3.

<sup>3</sup> Viasat comments, p. 5-6.

The first two steps occurred in 2015 in (i) an ITU decision that validated use of the 29.5-30 GHz segment to extend satellite broadband connectivity to earth stations in motion (ESIM), including the types of end user terminals that enable Wi-Fi connectivity on airplanes,<sup>4</sup> and (ii) another ITU decision that directed that the adjacent 28 GHz segment also be validated for ESIM use in order to extend global broadband connectivity by satellite.<sup>5</sup>

The third step occurred in 2015 when, in identifying possible spectrum for terrestrial IMT/5G services, the ITU expressly rejected consideration of the 28 GHz portion of the Ka Band for those purposes, because of the existing use of that spectrum for satellite broadband services, and the unique needs of terrestrial IMT/5G services, which are not compatible with satellite broadband services.<sup>6</sup>

The fourth and fifth steps occurred in 2019 when the ITU (i) decided to locate terrestrial IMT/5G services into over 17 gigahertz of separate spectrum specifically designated for that purpose, including the adjacent, but separate, 24.25-27.5 GHz band,<sup>7</sup> and (ii) validated ESIM use of the entire 28 GHz band, as well as the paired 17.7-19.7 GHz band, in order to extend global broadband connectivity by satellite.<sup>8</sup> Importantly, these decisions, as reflected in the ITU Radio Regulations, are binding international treaty obligations in accordance with the ITU Constitution to which India is a signatory.<sup>9</sup>

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<sup>4</sup> ITU Resolution 156 (WRC-15) “Use of the frequency bands 19.7-20.2 GHz and 29.5-30 GHz by earth stations in motion communicating with geostationary space stations in the fixed-satellite service.”

<sup>5</sup> ITU Resolution 158 (WRC-15), considering “d” (“there is a need for mobile communications, including global broadband satellite services, and that some of this need can be met by allowing earth stations in motion to communicate with space stations of the FSS operating in the frequency bands 17.7-19.7 GHz (space-to-Earth) and 27.5-29.5 GHz (Earth-to-space)); considering further “a” (“a consistent approach to deployment of these earth stations in motion will support these important and growing global communication requirements”).

<sup>6</sup> <http://interactive.satellitetoday.com/how-wrc-15-led-to-the-big-c-band-decision>. At WRC-15, only the 27.5-29.5 GHz band was discussed, and rejected, as a possible 5G candidate band. 29.5-31 GHz was not even considered.

<sup>7</sup> ITU Press Release, WRC-19 identifies additional frequency bands for 5G, Nov. 22, 2019 (“While identifying the frequency bands 24.25-27.5 GHz, 37-43.5 GHz, 45.5-47 GHz, 47.2-48.2 and 66-71 GHz for the deployment of 5G networks, WRC-19 also took measures to ensure an appropriate protection of the Earth Exploration Satellite Services, including meteorological and other passive services in adjacent bands. In total, 17.25 GHz of spectrum has been identified for IMT by the Conference, in comparison with 1.9 GHz of bandwidth available before WRC-19. Out of this number, 14.75 GHz of spectrum has been harmonized worldwide, reaching 85% of global harmonization.”) <https://news.itu.int/wrc-19-agrees-to-identify-new-frequency-bands-for-5g/>.

<sup>8</sup> ITU Resolution 169 (WRC-19) “Use of the frequency bands 17.7-19.7 GHz and 27.5-29.5 GHz by earth stations in motion communicating with geostationary space stations in the fixed-satellite service.”

<sup>9</sup> ITU Convention, Article 4, No. 31 “[t]he provisions of both this Constitution and the Convention are further complemented by those of the Administrative Regulations, enumerated below, which regulate the use of telecommunications and shall be binding on all Member States: [] – Radio Regulations.”

Additionally, WRC-23 will consider adopting allocations that support even further satellite use of the band, including ESIM for NGSO networks (WRC-23 Agenda Item 1.16) and Satellite-to-Satellite links (WRC-23 Agenda Item 1.17), while additional IMT/5G spectrum discussions have consolidated around lower bands including the 3300-3400 MHz, 3600-3800 MHz, 6425-7025 MHz, 7025-7125 MHz, 10.0-10.5 GHz bands (WRC-23 Agenda Item 1.2).

As a result of the actions of the last six years, satellite operators have designed, constructed, and deployed satellite broadband networks around the world, including in and around India, based on these ITU decisions, and the longstanding global allocations for satellite services in the 27.5-31 GHz and 17.7-21.2 GHz bands.

That global consensus continues to be affirmed. Over 120 countries (a rising number) have expressed their intention to follow the ITU decisions and preserve the 27.5-31 GHz and 17.7-21.2 GHz bands for satellite broadband services. By way of example, Europe's "5G Roadmap" affirms this determination, recognizing the critical nature of this spectrum for satellite broadband, and expressing its policy: "Signal clearly that Europe has harmonised the 27.5-29.5 GHz band for broadband satellite and is supportive of the worldwide use of this band for ESIM. This band is therefore not available for 5G."<sup>10</sup>

Approximately 3.5 billion people represented by Europe, Indonesia, Australia, China, Russia, Bangladesh, Nigeria, Kenya, Brazil, Mexico and virtually all of Latin America, to name a few, support preserving the 28 GHz bands for satellite and accommodating terrestrial IMT/5G needs in separate spectrum. Of course, this will drive scale for use of the 28 GHz bands by satellite systems and end users, and similarly will drive scale for terrestrial IMT/5G equipment in separate spectrum.

As reflected in the ITU decisions and the European 5G Roadmap, this is not an issue of choosing one technology over another. A wide range of opportunities exist to accommodate terrestrial IMT/5G in other spectrum that specifically has been identified for terrestrial IMT/5G, and that would not have any of the adverse effects the ITU considered in deciding to accommodate terrestrial IMT/5G spectrum needs in spectrum that is separate from the 28 GHz band: (i) changing the sharing situation regarding the satellite broadband services for which the 28 GHz band is already allocated; (ii) impairing the ability of satellite broadband services to continue to develop; (iii) constraining the evolving needs of satellite broadband services; or (iv) imposing any additional regulatory or technical constraints on satellite broadband services.<sup>11</sup>

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<sup>10</sup> See European Conference of Postal and Telecommunications Administrations (CEPT), *Spectrum for wireless broadband – 5G*, Section B.3 (Version 10, Revised 6 March 2020) at [https://www.cept.org/Documents/ecc/57839/ecc-20-055-annex-15\\_cept\\_5g\\_roadmap](https://www.cept.org/Documents/ecc/57839/ecc-20-055-annex-15_cept_5g_roadmap).

<sup>11</sup> See ITU Resolution 238 (WRC-15) "Studies on frequency-related matters for International Mobile Telecommunications identification including possible additional allocations to the mobile services on a primary basis in portion(s) of the frequency range between 24.25 and 86 GHz for the future development of International Mobile Telecommunications for 2020 and beyond."

Viasat urges TRAI to disregard any attempts by the terrestrial IMT/5G proponents to seek identification of the 28 GHz band in India for terrestrial IMT/5G and to instead preserve access to the 28 GHz band for satellite broadband services and identify the 26 GHz and other mmWave and low- and mid-bands for terrestrial IMT/5G.