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**Akhilesh Kumar Trivedi**

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Telecom Regulatory Authority of India

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**GSMA's Counter-comments to the TRAI Consultation Paper on "Terms and Conditions for the Assignment of Spectrum for Certain Satellite-Based Commercial Communication Services"**

Dear Mr. Trivedi,

The GSMA welcomes the opportunity to provide its comments on the consultation paper. While TRAI's consultation has examined issues pertaining to space-based communication, we believe that the concerns regarding a level playing field have been overlooked. Additionally, some elements discussed may have implications for the efficient use and availability of spectrum for IMT services.

We believe that the continued availability of spectrum and developing a long-term roadmap for 5G/IMT services remains essential for driving digital growth in the country. This will also provide regulatory certainty, fostering investment and supporting operators in making informed decisions regarding spectrum acquisition and network deployment nationwide. Given the critical role of mobile networks in bridging the digital divide, we emphasize the need to balance the spectrum allocation for space-based services while safeguarding the availability of sufficient spectrum for IMT services.

In view of the above, we would like to bring to the attention of the TRAI selected issues which could impact IMT services and availability of spectrum for its growth. We hope our submission will be factored into final recommendations of TRAI on this important subject.

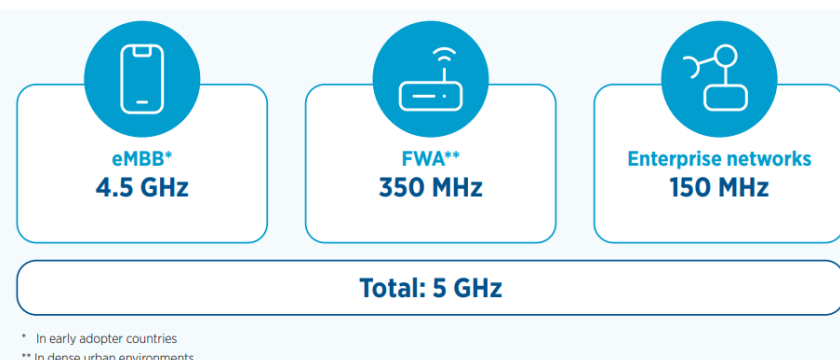
## 1. Availability of 27.5-29.5 GHz frequency range for IMT

In the consultation paper, TRAI deliberates on the feasibility of several frequency bands for provision of satellite-based communication services which also includes the frequency range 27.5-29.5 GHz. In India, the frequency range 27.5-28.5 GHz is already identified for IMT and 28.5-29.5 GHz being studied for Captive Non-Public Networks. Further, in the consultation paper for assignment of spectrum for space-based communication services issued by the TRAI in 2023, TRAI had deliberated on the feasibility of flexible use of spectrum in 27.5-28.5 GHz band and 28.5-29.5 GHz frequency ranges i.e., mechanism for sharing of auctioned frequency bands in which both IMT/ CNPN and satellite-based services (both user terminal and Gateways) can be provided in a flexible manner.

Access to sufficient spectrum across the full range of frequency bands is the key to realising the full range of 5G use cases and maximising the socio-economic benefits from mobile-enabled services and innovation. This includes not just low and mid-band spectrum, but also high-band or mmWave spectrum above 24 GHz.

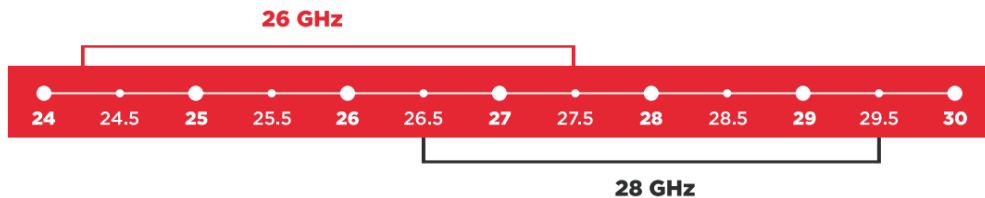
High band spectrum is essential for the deployment of high-capacity, low-latency 5G networks. It complements low and mid-band spectrum implementations in dense urban areas and provides fibre-like connectivity to suburban areas, and households in rural towns through 5G fixed wireless access (FWA) technologies. It also helps ensure secure, reliable and low-latency networks in contexts such as manufacturing plants or high-density locations e.g. stadia and travel hubs capacity for use cases that require higher speeds and ultra-low latency, including for innovative enterprise networks and FWA.

The GSMA Intelligence estimates<sup>1</sup> that, current 5G network capacity worldwide, , will not be sufficient to satisfy demand for 5G services by 2030, and an average of 5 GHz of mmWave spectrum will be needed by 2030 per market to satisfy demand for different 5G use cases, including eMBB, FWA and enterprise networks.



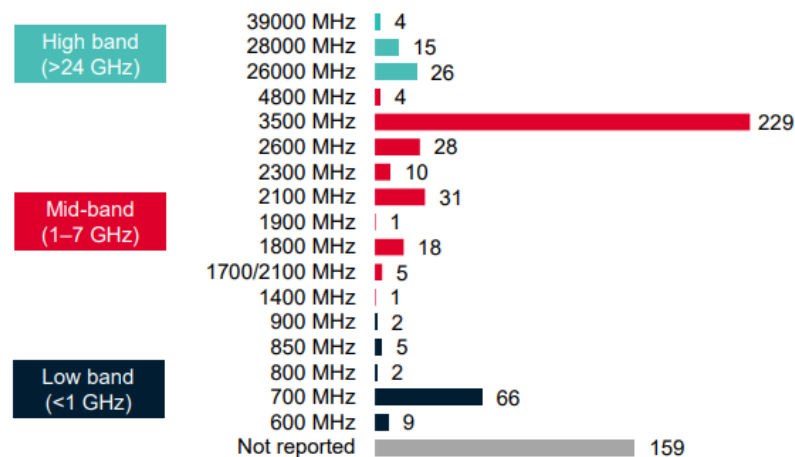
<sup>1</sup> <https://www.gsma.com/spectrum/wp-content/uploads/2022/06/5G-mmWave-Spectrum.pdf>

26 GHz and 28 GHz have emerged as two of most important band in the mmWave range and may offer the widest harmonization with minimised user equipment complexity. As shown in the chart below, the whole range between 24.25 GHz to 29.5 GHz is important to enable operators to meet the speed, latency, reliability and capacity requirement of 5G.



The GSMA would like to emphasise that the 28 GHz band has already been assigned for IMT/5G in many countries including Australia, Hong Kong, Japan, South Korea, Singapore and US. By the end of June 2024, mmWave spectrum has been assigned in 24 countries for 5G with APAC having the highest number of assignment (9) and 5 countries are further expected to assign 26/28 GHz mmWave band till the end of 2024. Further, the status of 5G network launches by frequency bands (as on June, 2024) highlights that the 28 GHz band is the second most used band in the mmWave range after 26 GHz.

**5G network launches by spectrum frequency (to Q2 2024)**



Therefore, the whole range between 24.25 GHz and 29.5 GHz is important, which will enable operators to meet the speed, latency, reliability and future capacity requirements of 5G. In making available mmWave spectrum, regulators need to ensure that licensing framework is investment -friendly, for example longer licence validity and reasonable, flexible obligations.

While the Government has already auctioned the 26 GHz range i.e., 24.25-27.5 GHz in the auctions held in 2022 and 2024, the remaining part of this whole range i.e.,

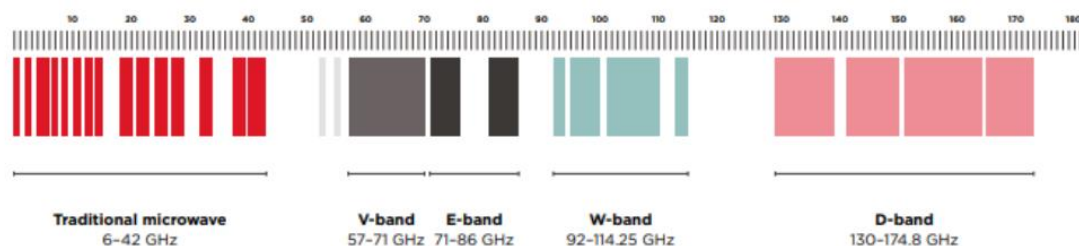
from 27.5-29.5 GHz is not yet completely available for 5G/IMT. We request TRAI that availability of this band on flexible use basis will not affect 5G/IMT services.

## 2. Backhaul Spectrum

The consultation paper also deliberates on the use of lower part of V-band (37.5 to 52.4 GHz) for user links as well as gateway links and E-band (71-76 GHz/ 81-86 GHz) for gateway links.

The rollout of 5G services in India and ever-increasing demand for mobile broadband is leading to manifold increase in internet traffic and operators are looking to upgrade their backhaul networks to support this demand. Mobile backhaul can be delivered through different technologies, with the choice depending on factors such as capacity, cost, reach, latency and geography. While fibre is often considered the most suitable due to its longevity, high capacity, high reliability, and ability to support very high-capacity traffic, its deployment is costly and time-consuming. Further, the present status of BTS/tower fiberisation in India is not sufficient (~35%) to meet 5G expectations.

The current/traditional wireless backhaul bands in India still play an important role, however, wider channel sizes are necessary to maintain relevance in the 5G era given the need for high capacity backhaul. The V-band (57–71 GHz) and, in particular, the E-band (71–86 GHz) are becoming more important as these have wide channel bandwidths, allowing 10–25 Gbps data throughput.



Source: GSMA Intelligence, ITU

As per the forecast from GSMAi, wireless backhaul solutions accounted for more than 60% of macrocell and small cell backhaul links globally in 2021<sup>2</sup>. Although wireless's share will drop slightly over the period to 2027, it will remain the dominant mobile backhaul technology throughout the forecast period.

When considering future satellite spectrum, it is also important for TRAI to take account of the growth of wireless backhaul demand in India and timely availability of

<sup>2</sup> [Scaling 5G in Asia Pacific: the importance of wireless backhaul \(gsmaintelligence.com\)](https://www.gsmaintelligence.com)

sufficient amount of affordable terrestrial backhaul spectrum preferably in E- and V-bands with reasonable terms and conditions for licensed mobile network operators (MNOs).

We would also request TRAI to refer to our detailed submission<sup>3</sup> on the importance of E & V bands, in response to TRAI consultation paper on “Assignment of Spectrum in E&V Bands, and Spectrum for Microwave Access (MWA) & Microwave Backbone (MWB)” in December 2023.

### **3. Protection of IMT Services**

Advancements in Mobile-Satellite Service (MSS) technologies, now enables satellite-based networks to complement terrestrial networks by enabling direct connectivity between satellites and mobile equipment. MSS bands under consideration for this purpose lie mainly within the frequency range of 700 MHz to 2700 MHz, overlapping with several IMT/mobile service bands. These efforts are intended to extend coverage in underserved areas, promoting seamless integration between space-based and terrestrial networks. Some questions raised in the consultation paper, particularly Q1 and Q2, also attempt to explore the suitability of frequency bands for satellite-based communication.

In this regard, we would like to emphasise that a careful selection of frequency bands is essential to ensure efficient spectrum use and operational feasibility. The coexistence of MSS and IMT services within these shared bands requires extensive compatibility studies to assess potential interference risks. These studies will help identify appropriate technical and operational measures to ensure that new satellite services do not degrade the performance of existing mobile networks.

Protecting IMT services from interference is crucial to maintaining reliable connectivity for billions of users and supporting future expansions. Ensuring uninterrupted mobile operations is vital, especially given the reliance on terrestrial networks for high-quality communication services.

WRC-27 will look at these technical conditions and how satellite and mobile can use the same spectrum in bands from 700 MHz to 2700 MHz range. A clear definition of potential interference scenarios will be required both at the ITU, including the work of WRC-27. Subsequently, at a national level, licensing mechanisms will require renovation and new definitions for regulatory frameworks governing hybrid NTN services will need to be developed.

Therefore, GSMA emphasises the need for ongoing collaboration with industry stakeholders to achieve a balanced approach. By participating in these studies by all

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<sup>3</sup> [https://traigov.in/sites/default/files/GSMA\\_14122023.pdf](https://traigov.in/sites/default/files/GSMA_14122023.pdf)

stakeholders from Government and Industry, GSMA seeks to foster innovation in satellite services while safeguarding the integrity of IMT operations, benefiting both current users and communities in underserved regions.

#### **4. Level playing field in policy/regulatory treatment**

Finally, the GSMA would recommend that a cohesive regulatory framework that ensures coexistence between terrestrial and non-terrestrial networks is critical. DoT's reference highlights the need to consider a level playing field, hence it is important that the regulatory framework around NTN solutions should be clear and consistent with the regulatory framework of existing networks. Additionally, aspects such as consumer protection, service quality, rollout obligation, regulatory arbitrage, license validity, data privacy, or other policy priority, are comprehensively consulted with all stakeholders. This is a significant consideration to protect and promote competition, innovation and consumer protection.

India is well positioned to be a leader in this area – as its release of guidelines for the implementation of the Indian Space Policy have provided much needed clarity for the sector. This clarity is an important step in expanding and deepening partnerships between terrestrial and non-terrestrial networks.

The GSMA trusts that the submission will merit your kind consideration before taking any final decision in the matter. We would appreciate the opportunity to discuss and work together to ensure the benefits of mobile infrastructure continue to advance the interests of the citizens of India.

We also remain available for any questions and further information/ clarification that may be required in this regard.

Sincerely,



Jeanette Whyte  
Head of Public Policy, APAC  
GSMA

#### **Copy to:**

1. Mr. Anil Kumar Lahoti, Chairman, TRAI
2. Mr. Atul Kumar Chaudhary, Secretary, TRAI
3. Mr. Sheo Bhadra Singh, Principal Advisor, NSL, TRAI