VIL/P&O/TRAI/AK/2025/063
July 16, 2025

Advisor (Networks, Spectrum and Licensing)
Telecom Regulatory Authority of India,
4th, 5th, 6th & 7th Floor, Tower-F,
World Trade Centre, Nauroji Nagar,
New Delhi – 110029

Kind Attn: Shri Akhilesh Kumar Trivedi

Subject: Counter Comments on the TRAI's "Consultation Paper on Assignment of the Microwave Spectrum in 6 GHz (lower), 7 GHz, 13 GHz, 15 GHz, 18 GHz, 21 GHz Bands, E-Band, and V-Band" issued on May 28, 2025.

Dear Sir,

This is in reference to the TRAI's Consultation Paper on "Consultation Paper on Assignment of the Microwave Spectrum in 6 GHz (lower), 7 GHz, 13 GHz, 15 GHz, 18 GHz, 21 GHz Bands, E-Band, and V-Band" issued on May 28, 2025.

In furtherance to the comments submitted by us vide our letter no. VIL/P&O/TRAI/AK/2025/059 dated 02.07.2025, kindly find enclosed herewith counter-comments from Vodafone Idea Limited on the above-said consultation paper.

We hope our submission will merit Authority's kind consideration.

Thanking you,

Yours sincerely,

For **Vodafone Idea Limited**

Ambika Khurana
Chief Regulatory and Corporate Affairs Officer

Enclosed: As stated above

VIL Counter Comments to the TRAI Consultation Paper on "Assignment of Spectrum Assignment of the Microwave Spectrum in 6 GHz (lower), 7 GHz, 13 GHz, 15 GHz, 18 GHz, 21 GHz Bands, E-Band, and V-Band"

This is with reference to the TRAI Consultation Paper on "Assignment of Spectrum Assignment of the Microwave Spectrum in 6 GHz (lower), 7 GHz, 13 GHz, 15 GHz, 18 GHz, 21 GHz Bands, E-Band, and V-Band" dated 28.05.2025 and the comments from various stakeholders on this paper, as uploaded on TRAI's website.

Vodafone Idea Limited (VIL) has submitted comments to the questions raised in the above-said consultation paper. Further, we have also gone through the comments of various stakeholders on the above-said consultation paper and would like to submit our counter-comments for Authority's kind consideration, as given below:

1. Importance of Wireless Backhaul to Telecom networks

a. The Telecom service providers are considered a vital backbone of a country driving innovation, enabling Digital connectivity, rural connectivity, widespread high-capacity, low-latency, and secure networks to its consumers relentlessly. The role of the TSPs may not be overlooked since they serve millions of people and businesses in the mainstream market, however, the satellite providers and CNPNs serve only a niche market.

b. As of 31.03.2025, the TSPs are serving approx. 1200mn subscribers in India, out of which, a significant portion are the Broadband subscribers contributing to 944.12 mn as on FY 2024-25[1].The number of Broadband subscribers has been increasing substantially, it has increased from 924.07 million at the end of Mar-24 to 944.12 million at the end of Mar-25.

c. The, mobile data traffic in India jumped 23% (y-o-y) in last five years and has reached 21.5 EB per month in 2024, while the average data per user per month grew over 14% to reach 27.5 GB. It is expected that with 5G as the new accelerator, the 5G data traffic may surpass 4G data traffic by Q1 2026[2].

d. To meet the demands for an increasingly aspirational country, TSPs have been making substantial investments towards growing their network infrastructure, these

[1] Source: https://www.trai.gov.in/sites/default/files/2025-07/YIR_08072025_0.pdf
[2] Source: https://www.nokia.com/about-us/company/worldwide-presence/india/mbit-index/

investments include and are not limited to the initial rollout of 4G, 5G and further for the upcoming technologies.

e. Apart from these investments in network infrastructure and other cost implications the Authority may acknowledge the fact that the TSPs have been working relentlessly 24/7, in all situations, and even in extreme situations like Covid-19 pandemic in the year 2020. In spite of strict restrictions, including curfew/lockdowns, enforced in various parts of the country as well as thereafter, under different waves of said pandemic, which had put significant strain on the human resources, the TSPs have been instrumental in providing continuity of services.

f. The COVID-19 pandemic has highlighted the crucial role of the TSPs in keeping businesses, governments, and communities connected and working. As a result of the pandemic's socio-economic devastation, people all across the world have relied on technology for knowledge, social communication, and work from home. The use of the Internet, cloud-based applications, and online communication tools has been spurred exponentially since the pandemic emerged in 2019. The telecom sector, in particular, has proven to be essential for businesses and individuals during this unprecedented time, and it has helped society thrive.

g. The world has witnessed the benefits of connectivity in this hard time, which has not only kept people connected but has also opened new horizons for innovation and sustainability.

h. In order to cater to this increasing consumption levels of 4G and 5G services, the backhaul has to either move to fiber or to a dedicated high-bandwidth multiple spectrum band. However, fiberization has its own challenges such as high laying cost, time consuming deployment, fiber cuts/disruptions, RoW policy. Hence, the backhaul spectrum bands including E-band, V-band, Traditional microwave backhaul bands or MWA and MWB would gain more prominence and would be highly useful.

i. The evolution of backhaul will accommodate growing traffic and new network capabilities providing significantly higher data speeds improved resiliency, a greater variety of network deployments and for extending coverage further into rural areas.

j. In today's scenario, where data consumption is increasing year on year leading to growth of 5G ecosystem which in turn is paving the way for accelerated 4G and 5G adoption. This evolution of advanced 5G networks poses significant challenges to radio backhaul, as with the evolution of advanced technology and increased users, it becomes necessary that the backhaul must also evolve.

k. Considering the importance and criticality of having a superior, evolved and future-proof wireless backhaul network (and spectrum) to support access network, all the backhaul spectrum bands including E-band, V-band, Traditional microwave backhaul bands (MWA and MWB) are required by access service providers to offer superior customer experience.

l. **Therefore, we strongly urge that all the radio backhaul spectrum bands i.e. E-band, V-band as well as traditional microwave backhaul bands (MWA and MWB) should be kept exclusively for radio backhaul by access service providers only.**

2. Protecting Existing holdings in traditional microwave backhaul bands

a. In the comments, VIL has urged the Authority for protecting Existing holdings in traditional microwave backhaul bands. Many other stakeholders also support the same view and have mentioned in their comments that:

> *"Allowing TSPs to retain their currently held microwave carriers is not only essential for continuity but also for ensuring that India's ongoing 4G and 5G rollout is not derailed by regulatory disruptions."*
>
> *"Apart from the above, a lot of existing & planned inventory will go waste as new equipment hardware will be required. To prevent such adverse consequences, it is essential that the TSPs are allowed to retain their existing MWA/MWB carriers."*
>
> *"As previously explained, any modification to the existing frequency allocations assigned to MWA and MWB carriers would necessitate a complete overhaul of the legacy backhaul infrastructure. This process is likely to result in temporary service disruptions and degraded performance during the migration period."*
>
> *"Yes- they should be allowed to retain the current carriers allotted to them because the operators would have already procured and deployed a lot of equipment working on these spots Any change in the carriers (spots), would lead to replacement of equipment at many BTS sites which would result in disruption in network performance and service to the customers."*

b. **Therefore, we submit that the existing holdings in traditional microwave backhaul bands must be protected. Further, voluntary harmonisation between TSPs for current holdings should also be allowed.**

3. Consequences of losing existing MWA-MWB carriers

a. One of the stakeholders has mentioned in their comments that:

> *"The DoT has already made it amply clear that the MWA/MWB assignment is temporary in nature, the assignees would have contingency plans in place to prevent disruption of services. Therefore, principally, we do not support the proposal to ensure that the newly assigned frequency carriers to a TSP are supported by the existing equipment of the TSP.*
>
> *However, if it is decided to provide an option to telecom service providers already holding carriers in traditional microwave backhaul bands to retain the existing carriers, then there should be no permission to add new links."*

b. It appears that the comments have been given with just an ideological thought and it is devoid of any deeper examination of the impact of change of holdings.

c. Indian telecom networks have evolved over the period of time basis administratively assigned MWA-MWB spectrum and there are multiple OEM and equipment deployed in the administratively assigned frequencies. Equipment deployed in existing network does not support the entire range of frequencies available in a particular band.

d. Firstly, allocation of different frequencies even in the same band would lead to change in equipment.

e. Secondly, allocation of different frequencies in a different band would lead to a catastrophic impact as it would not only lead to change in equipment but, also change in network design across the LSA considering different propagation characteristics of each band requiring change in locations of hops, number of hops, number of carriers, their orientations etc.

f. For example, if a TSP is unable to get the frequencies in the same band as being deployed presently like 15 GHz, it would cause humungous challenges of change in network design and planning, service disruption and capex requirements, because there would also be change in propagation characteristics and would render existing equipment being not compatible to bands other than 15 GHz. Almost 70-80% of the hops deployed in our network are in 15 GHz bands.

g. Table given below illustrates the complexity of frequencies supported by various equipment types for different OEMs.

Frequency Band	Frequency Spot	OEM (A)_Type1	OEM (A)_Type2	OEM (A)_Type3	OEM (B)_Type1	OEM (C)_Type1	OEM (C)_Type2
15 GHz	14515/14935	O-21/25	N-A11/A15	11L/11H	Type 1	Sub band_A	Sub band_A
15 GHz	14543/14963	O-21/25	N-A11/A15	11L/11H	Type 1	Sub band_A	Sub band_A
15 GHz	14571/14991	O-21/25	N-A11/A15	11L/11H	Type 1	Sub band_A	Sub band_A
15 GHz	14599/15019	O-21/25	N-A11/A15	11L/11H	Type 1	Sub band_A	Sub band_A
15 GHz	14627/15047	O-22/26	N-A11/A15 & N-A12/A16	11L/11H & 12L/12H	Type 1	Sub band_B	Sub band_A
15 GHz	14655/15075	O-22/26	N-A11/A15 & N-A12/A16	11L/11H & 12L/12H	Type 1	Sub band_B	Sub band_A
15 GHz	14683/15103	O-22/26	N-A12/A16	12L/12H	Type 1	Sub band_B	Sub band_A
15 GHz	14711/15131	O-22/26	N-A12/A16	12L/12H	Type 1 & Type 2	Sub band_B	Sub band_A
15 GHz	14739/15159	O-23/27	N-A13/A17	13L/13H	Type 2	Sub band_C	Sub band_B
15 GHz	14767/15187	O-23/27	N-A13/A17	13L/13H	Type 2	Sub band_C	Sub band_B
15 GHz	14795/15215	O-23/27	N-A13/A17	13L/13H	Type 2	Sub band_C	Sub band_B
15 GHz	14823/15243	O-23/27	N-A13/A17	13L/13H	Type 2	Sub band_C	Sub band_B
15 GHz	14851/15271	O-24/28	N-A13/A17	13L/13H	Type 2	Sub band_D	Sub band_B
15 GHz	14879/15299	O-24/28	N-A13/A17	13L/13H	Type 2	Sub band_D	Sub band_B
15 GHz	14907/15327	O-24/28	N-A13/A17	13L/13H	Type 2	Sub band_D	Sub band_B

Note:

i. To ensure support across the entire frequency band, different types of outdoor units (ODUs) are required, as no OEM provides a single ODU covering the entire spectrum

ii. Example 1: OEM (A) Type 1 ODU can support frequency range of 4 spots only from entire 15GHz. If the frequency spots change, the specific type of ODU installed in a circle arrangement may not function with different spots.

iii. Example 2: OEM (C) has provided 2 different variants of ODUs across time frame in Network, with each variant have different set up Frequency spot support.

iv. Above scenario and example also applicable for 18 GHz and 21 GHz

h. Therefore, change in frequencies would create following two major impacts:

i. **Unimaginable heavy disruption of existing services to consumers**, for a prolonged period; and

ii. **Humungous financial impact in terms of additional capex requirements and sunk costs of existing equipment.**

i. Such huge changes are technically not recommended for evolved and stable networks, as are available in India.

j. **Therefore, VIL once again strongly urge the Authority for recommending protection of the existing radio backhaul spectrum assignments of TSPs, as it is extremely**

critical for continued undisrupted services to the consumers as well as for the financial health of the sector.

4. **Review of usage of 7GHz and 15 GHz due to WRC**

   a. Most of the stakeholders have recommended that the review of these bands should be carried out after WRC 27 conclusion. In this regard, we once again reiterate the importance of backhaul links being utilised in existing bands especially 15 GHz band.

   b. **Irrespective of the outcome of WRC 27, the 15 GHz band is a primary band for backhaul purposes and must be kept entirely for radio backhaul purposes only. However, in case of 7 GHz band, the same can be kept for IMT except the utilised slots.**

5. **Assignment of Spectrum for Radio Backhaul OR for both Radio Backhaul and Access**

   a. One of the stakeholders has commented that the traditional microwave backhaul bands and E/V bands should be assigned through auction in technology and service agnostic manner and spectrum be allowed to be used in both access and backhaul networks.

   b. **We strongly oppose this as it is not supported by the law of land and is also not in sync with global deployments.** The idea of Integrated access backhaul is only being promoted, to discourage the assignment of radio backhaul through administrative assignment under the Telecommunication Act 2023, bringing the radio backhaul spectrum in auction domain and increasing the cost of taking said spectrum.

   c. Some of the stakeholders have mentioned in their comments that:

      "As submitted above, E-Band is highly useful for access, backhaul and IAB and can be used interchangeably and there is demand for different type of service providers for different usage of this band. Thus, evidently, there is ample competition for this band and therefore there is no case for not auctioning this band. Any other approach than auction would amount to pilfering this valuable band and would be in violation of legal principles set forth by the Hon'ble Supreme Court judgement and would also be in violation of Telecommunications Act 2023. Therefore, we request the Authority to nip such proposals in the bud and assign this spectrum through auction for full LSA."

"Allowing Integrated Access and backhaul in the E-band must be seen with the availability of device ecosystem. In Future with densification of 5G network, the usability of IAB will be prominent and efficient. IAB can be allowed on trial basis to the TSPs having access service authorization. As the usage and scope with IAB will be different, so it will be treated as access spectrum. The set of rules for allowing IAB should be different than the current usage of E-band spectrum. The rules to be set only after trial and feasibility study is completed. For the time being a part of spectrum say 500 MHz can be considered for study and trial of IAB."

d. **We do not support the above views and recommend that E-Band should be allocated as backhaul spectrum only**. Currently the 26 GHz allocated for Access is grossly underutilised and whereas the E Band, is having higher pathloss than 26 GHz band, further restricting utilization of E band for access coverage.

e. **We strongly recommend to retain E band spectrum exclusively for radio backhaul for access service providers. For meeting demand of areas other than radio backhaul, V band spectrum from 64 -66 GHz can be considered.**

f. **There is absolutely no case for having the spectrum for integrated use as it is not supported by law of land, creates valuation complications etc, as detailed in points given below.**

g. **Legislative provisions:**

i. The Telecommunication Act 2023 ("the Act") gives abundant clarity in assignment mechanism of spectrum for access and radio backhaul purposes. The extract of Section 4.4 of the Act is given as follows:

"4.4 The Central Government shall assign spectrum for telecommunication through auction except for entries listed in the First Schedule for which assignment shall be done by administrative process.
Explanation.—For the purposes of this sub-section,—
(a) "administrative process" means assignment of spectrum without holding an auction;
(b) "auction" means a bid process for assignment of spectrum."

ii. Further the First Schedule of the Act related to Assignment of Spectrum through Administrative process, provides following item at Sr. No. 12

"12. Radio backhaul for telecommunication services.

Explanation.—The term "radio backhaul" shall mean the use of radio frequency only to interconnect telecommunication equipment, other than the customer equipment in telecommunication networks."

iii. Above two extracts of legislation clearly show that spectrum for radio backhaul has to be assigned through administrative process only. Any spectrum which is not mentioned in the First Schedule has to be assigned through auction process only. Thus, the legislature has carved out the usage of spectrum which will fit into said processes and it would not be legally tenable to mix the different spectrum usages to bypass the provisions of the Act.

iv. Further, the DoT reference dated 13.09.2024 has not sought any recommendations for change in the provisions of the Telecommunications Act 2023.

v. **Therefore, we strongly urge the Authority to keep separate spectrum for the usage as radio backhaul (i.e. through administrative assignment under First Schedule) and for access services (i.e. through auction under Section 4(4)).**

h. Valuation complications in integrated use:

i. At present, the access spectrum is given through auction and there is a clear methodology followed by TRAI for valuation of the spectrum. The same valuation methodology has been used by the TRAI for some new spectrum bands as well.

ii. In case of radio backhaul spectrum also, a clear methodology of per carrier AGR based pricing has been followed.

iii. **Providing spectrum for both access and radio backhaul will complicate the valuation exercise. It will also lead to inflating the prices of spectrum if the intended use is only radio backhaul.**

i. Spectrum caps complications:

i. Providing some spectrum carriers for IAB will complicate the calculation of spectrum caps, both on access side as well as on radio backhaul side.

ii. This complication may possibly end up creating regulatory arbitrage and give disproportionate advantage to certain players by having access to spectrum beyond existing spectrum caps. Therefore, to that extent, allowing IAB on some or all carriers would be anti-competitive as well.

j. **Global deployments:** As per our understanding, IAB has not got any substantial global deployments and all over the world the spectrum is being assigned separately for access and backhaul. **Even one of the global OEM has mentioned in their comments that E-band presents notable advantage for radio backhaul and hence, should continue to be used only for radio backhaul.**

6. **Rationalization of Pricing for Radio backhaul**

a. Most of the stakeholders have commented that pricing of radio backhaul spectrum has to be made more affordable. We echo this point and again reiterate that **substantial rationalisation is required in the pricing of radio backhaul spectrum, from the present rate of 0.15% of AGR** (having non-linear increments for additional carriers).

b. Pricing rationalisation will help the TSPs to invest more in building networks and infrastructure and thus, provide better services to the consumers. Moreover, there is an increase in the spectrum needs over the last decade, due to the increased consumer mobile data demand, which the TSPs are fulfilling with higher value services inspite of low tariffs being charged from consumers. In all regions, the average consumer now pays less for mobile connectivity services than a decade ago. Average revenue per GB of data also declined by 96% between 2016 and 2024. Most of the additional value brought by new generations of mobile networks has been captured by consumers or other digital ecosystem players, such as content and application providers. The average revenue that operators generate per MHz of spectrum declined by 67% between 2014 and 2024. This reduction highlights the need to assess how spectrum prices have responded to changing market conditions[3].

c. One of the stakeholders has mentioned in their comments that:

> *"Thus, as long as market price has been paid for a spectrum through a fair and transparent auction, there should not be any service or usage type restrictions on the spectrum. Therefore, all traditional backhaul bands should be assigned through auction in a technology and service agnostic manner and this spectrum can be used in both access and backhaul networks"*

d. **We do not agree with above comment from the stakeholder, and reiterate that as the backhaul spectrum in itself is a non-revenue generating spectrum, along with**

[3] Source: https://www.gsma.com/connectivity-for-good/spectrum/wp-content/uploads/2021/02/wireless-backhaul-spectrum-positions.pdf

the administrative allocation, two carriers of radio backhaul should be bundled with the different bands of access spectrum being provided through the auctions e.g. 40 MHz of 5G spectrum in 3300 MHz giving 2 carriers of E-band bundles, 5 MHz of spectrum in 1800 MHz giving 2 blocks of MWA/MWB carriers.

e. Also, the radio backhaul spectrum should neither be provided through auction, nor it be mixed with access usage.

f. Considering the detailed inputs given above, we also disagree with the comments of the same stakeholder that the valuation of spectrum in E/V band may be arrived at by using the Auction determined price of a spectrum to be used for access services.

g. **Beyond the bundled carriers, the current charges should be rationalised to a rate not more than 0.05% of AGR per carrier, for additional carriers.**

h. Also, the current practice of a non-linear increase for additional carriers should be done away with and uniform rate of not more than 0.05% per carrier should be made applicable for every additional radio backhaul carrier being taken by a TSP.

7. <u>Carrier Size</u>

a. One of the stakeholders has mentioned in their comments that:

> *"We believe that the carrier sizes should be aligned to meet the requirements of new technologies rather than legacy requirements. We understand the predicament of changing the status quo, however, is required to provide wider channel sizes to support data technologies like 5G and beyond, as is also evident from the GSMA report referred by the Authority. Therefore 56 MHz carrier size is optimum for traditional microwave backhaul bands."*

b. **However, we are not in agreement with the same and we suggest to continue 28 MHz as unit carrier size with aggregation possibility of n x 28 MHz.** Changing the unit is not a practically achievable solution considering the current situation.

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