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For Immediate Release

Telecom Regulatory Authority of India

TRAI releases Recommendations 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'.

New Delhi, 10th December 2025 – The Telecom Regulatory Authority of India (TRAI) has today released its **recommendations 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.'**

2. The Department of Telecommunications (DoT), Ministry of Communications, Government of India, through a reference letter dated 13.09.2024, requested TRAI to provide recommendations under Section 11(1)(a) of the TRAI Act, 1997 on assignment of E & V bands; and Microwave Access (MWA) & Microwave Backbone (MWB) spectrum in existing frequency bands i.e., 6 GHz (lower), 7 GHz, 13 GHz, 15 GHz, 18 GHz, and 21 GHz bands.

3. In this regard, TRAI, on 28.05.2025, issued a 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 for seeking comments and counter comments from stakeholders. In response, 24 stakeholders furnished comments, and eight stakeholders furnished counter comments. An open house discussion (OHD) on the consultation paper was held on 11.08.2025 through online mode.

4. Based on the comments received from stakeholders during the consultation process, and further analysis, TRAI has finalized its recommendations 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.

5. A typical public telecommunication network consists of the following components: (a) access network; (b) core network; and (c) backhaul links. "Access network" is the last mile connectivity to customer devices. "Core network" connects the access network to global public networks such as public Internet, public land mobile network (PLMN) and public switched telephone network (PSTN). "Backhaul links" are used to connect the access network with the core network. A wide range of technologies (such as microwaves, optical fiber cable, copper cable, and satellite) are available for backhauling the telecommunication traffic. At present, about 54% cellular mobile base stations are connected though microwaves.

6. The microwave spectrum in 6 GHz (lower), 7 GHz, 13 GHz, 15 GHz, 18 GHz, 21 GHz bands, E-band, and V-band can be used in backhaul links. The 6 GHz (lower), 7 GHz, 13 GHz, 15 GHz, 18 GHz, 21 GHz bands are collectively referred to as "traditional microwave backhaul bands". The spectrum in E-band was opened for radio backhaul purposes in the year 2022. The spectrum in V-band is yet to be opened for the licensed use in India.

7. Section 4(4) of the Telecommunications Act, 2023 states that *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*. The First Schedule of the Telecommunications Act, 2023 lists 19 items for the assignment of spectrum through the administrative process. The item at Serial No. 12 of the First Schedule is "*Radio backhaul for telecommunication services*". Meaning thereby, the spectrum for radio backhaul purposes shall be assigned through the administrative process. Notably, in the explanation under the item at Serial No. 12, the term 'radio backhaul' has been defined as "*the use of radio frequency only to interconnect telecommunication equipment, other than the customer equipment in telecommunication networks*".

8. While finalizing the recommendations, TRAI has taken note of the following key issues in the existing policy framework for the assignment of backhaul spectrum (i.e., spectrum for radio backhaul):

(a) The backhaul spectrum in traditional microwave backhaul bands as well as E-band was being assigned to wireless access service providers (i.e., access service providers holding access spectrum) on a provisional basis.

(b) Backhaul spectrum charges applicable for wireless access service providers in traditional microwave backhaul bands followed escalating per-carrier charges. Generally, wireless access service providers had obtained microwave carriers fewer than the prescribed ceiling on the number of carriers.

(c) The framework for the assignment of radio backhaul spectrum to the service providers other than wireless access service providers was not particularly conducive. Only a few government agencies and a state-owned operator had obtained microwave carriers for backhauling telecommunication traffic other than wireless access network traffic.

9. The present recommendations have been formulated keeping in view that the backhaul spectrum is an important enabler of telecommunication services, and therefore, a holistic framework is required to promote its optimal uptake and utilisation. To cater to the diverse requirements of different authorised entities including captive users, TRAI has recommended an enabling policy framework for the assignment of backhaul spectrum. These recommendations also comprehensively overhaul and rationalise the backhaul spectrum charging framework.

Key highlights of the TRAI's recommendations:

A. Recommendations related to terms and conditions for the assignment of backhaul spectrum:

10. Generally, wireless access service providers use the backhaul spectrum for connecting their cellular mobile base station sites with their core networks. As there is a massive deployment of cellular mobile base station sites across the length and breadth of licensed service areas (LSAs), TRAI has recommended a licensed service area-wide assignment (often referred to as "block-based assignment") of backhaul spectrum in relevant frequency bands to wireless access service providers for backhauling their wireless access network traffic. The block-based assignment of backhaul spectrum would enable wireless access service providers to autonomously plan, deploy and optimize large microwave backhaul networks.

11. While the networks for providing wireless access services are quite dense, the networks for providing other telecommunication services are much less spread out geographically. As compared to wireless access network networks, much fewer backhaul links are required in a licensed service area (LSA) to backhaul the telecommunication traffic other than wireless access network traffic. Considering this aspect, TRAI has recommended a point-to-point link-based assignment for backhauling the telecommunication traffic other than wireless access network traffic. The point-to-point link-based assignment for such purposes will allow precise and need-based deployment, encourage the re-use of the same spectrum by different entities and thereby, minimize under-utilization of spectrum.

12. Recognising the legacy deployments of backhaul spectrum in existing telecom networks, TRAI has examined the aspect of retention of the carriers already assigned to service providers. It has been observed that in case service providers are not granted the right to retain their existing carriers, it would result in not only significant cost implications for service providers but may also result in a temporary disruption of services, or deterioration of quality of service to the consumers during the process of changeover. Accordingly, TRAI has recommended that the existing spectrum assignees should be given the option to retain their existing backhaul carriers.

13. The broad framework recommended by TRAI for the assignment of backhaul spectrum is as below:

(a) The spectrum in the 6 GHz (lower) band should be assigned on a point-to-point link basis to all types of authorised entities, including captive users, for backhaul purposes. There should be a ceiling of two carriers, each of 28 MHz (paired) bandwidth, per link in the 6 GHz (lower) band.

(b) The spectrum in 13 GHz, 15 GHz and 18 GHz bands should only be assigned to wireless access service providers on a block-basis in the licensed service area for backhauling their wireless access network traffic. There should be a ceiling of eight carriers, each of 28 MHz (paired) bandwidth, which may be assigned to a wireless access service provider in such bands on a block-basis in a licensed service area. TRAI has recommended a uniform ceiling of eight carriers irrespective of the licensed service area category. Under the existing policy regime, there was a ceiling of eight carriers in Metro/ Category-A licensed

service areas, and a ceiling of six carriers in Category-B/ Category-C licensed service areas.

(c) The spectrum in the 21 GHz band should be earmarked for point-to-point link-based assignments. The spectrum in this band should be assigned to all types of authorised entities, including captive users, for backhauling telecommunication traffic other than wireless access network traffic. There should be a ceiling of four carriers, each of 28 MHz (paired) bandwidth, per link in the 21 GHz band.

(d) The spectrum in E-band (71-76 GHz paired with 81-86 GHz) should be assigned to wireless access service providers on a block-basis in the license service area for backhauling wireless access network traffic. There should be a ceiling of three carriers, each of 250 MHz (paired) bandwidth, which may be assigned to a wireless access service provider in E-band on a block-basis in a license service area. Under the existing policy regime, there was a ceiling of two carriers in E-band.

(e) Two carriers, each of 250 MHz (paired) bandwidth, in E-band should be earmarked for the assignment on a point-to-point link basis to all types of authorised entities, including captive users, for backhauling telecommunication traffic other than wireless access network traffic.

(f) The spectrum in V-band (57-66 GHz range) should be assigned on a point-to-point link basis to all types of authorised entities, including captive users, for backhaul purposes. There should be a ceiling of 20 carriers, each of 50 MHz (unpaired) bandwidth, per link in V-band.

(g) In parallel to the licensed fixed services (radio backhaul) in V-band, the license-exempt usage should also be permitted in V-band (57-66 GHz) for both low-power indoor and very low-power outdoor usage on a non-interference, non-protection, and shared (non-exclusive) basis.

B. Recommendations related to backhaul spectrum charging:

14. Under the existing policy regime for the assignment of backhaul spectrum in traditional microwave backhaul bands to wireless access service providers, the backhaul spectrum charging followed an escalating charging. With a view to provide affordable backhaul and

increase the uptake of backhaul carriers, TRAI has recommended a uniform per carrier charge for backhaul spectrum in traditional microwave backhaul bands.

15. Under the existing policy regime for the assignment of backhaul spectrum in traditional microwave backhaul bands to wireless access service providers, the spectrum charge for the first microwave carrier was 0.15% of adjusted gross revenue (AGR). Further, the spectrum charges for the subsequent microwave carriers (2^{nd}, 3^{rd}, 4^{th}, 5^{th} etc.) were progressively higher. TRAI has recommended that the spectrum charge per carrier in traditional microwave backhaul bands should be 0.1% of AGR. This would result in a substantial reduction in the backhaul spectrum charges, payable by wireless access service providers.

Explanation: Suppose a wireless access service provider holds five (5) carriers in traditional microwave backhaul bands in a licensed service area (LSA). Under the existing charging regime, it was required to pay a backhaul spectrum charge of 1.1% of AGR in the LSA as per the applicable (escalating) charging matrix. As TRAI has recommended a uniform spectrum charge of 0.1% per carrier, the wireless access service provider, in this example, will now have to pay a backhaul spectrum charge of only 0.5% of AGR in the LSA. This would result in a saving of 0.6% of AGR in the LSA to the wireless access service provider. In this example, the recommended backhaul spectrum charges would result in a saving of about 55% in backhaul spectrum charges to the wireless access service provider.

16. TRAI has also recommended the rationalization of the spectrum charges for point-to-point link-based assignments in traditional microwave backhaul bands. Earlier, spectrum charges for point-to-point links were governed by the DoT's order dated 11.12.2023 on 'Spectrum Charges for Assignment of Frequencies to Captive Users (being charged on formula basis) for different types of Radiocommunication Services and applications'. As per this order, the point-to-point link charge for a link of 5 to 25 km in 6 GHz (lower) and 7 GHz bands was Rs. 7,20,000 per carrier per annum. Further, as per this order, the point-to-point link charge for a link of 2 to 5 km in 13 GHz, 15 GHz, 18 GHz, and 21 GHz bands was Rs. 3,60,000 per carrier per annum. Through these recommendations, TRAI has substantially rationalized the backhaul spectrum charges for point-to-point links in traditional microwave backhaul bands. TRAI has recommended backhaul spectrum charges for point-to-point links in traditional microwave backhaul bands as below:

(a) Rs. 75,000 per carrier per annum for a point-to-point link in 6 GHz (lower) and 7 GHz bands

(b) Rs. 25,000 per carrier per annum for a point-to-point link in 13 GHz, 15 GHz, 18 GHz and 21 GHz bands

17. Under the existing policy regime for the assignment of backhaul spectrum on a block-basis to wireless access service providers, the spectrum charge per carrier in E-band was 0.15% of adjusted gross revenue (AGR). TRAI has recommended that the spectrum charge for E-band carriers, assigned to a wireless access service provider on a block-basis for backhauling wireless access network traffic, should be 0.10% of AGR for each carrier. This would result in a reduction of about 33% in the spectrum charge per carrier in E-band.

18. In respect of the point-to-point links to be assigned in E-band for backhauling the telecommunication traffic other than wireless access network traffic, TRAI has recommended backhaul spectrum charges as Rs. 25,000 per carrier per annum for any point-to-point link in E-band. It is noteworthy that under the existing policy regime, there was no provision for the assignment of the spectrum in E-band on a point-to-point link basis to any type of entity.

19. In respect of the spectrum in V-band to be assigned for radio backhaul purposes on a point-to-point link basis to any authorised entity, including captive users, TRAI has recommended backhaul spectrum charges as Rs. 2,500 per carrier per annum for a point-to-point link in V-band.

20. The recommendations have been placed on the TRAI's website (www.trai.gov.in). For any clarification/ information Shri Akhilesh Kumar Trivedi, Advisor (Networks, Spectrum and Licensing), TRAI may be contacted at Telephone Number +91-11-20907758.

10/12/25

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