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Respected Sir:

Juniper Networks is pleased to provide this input in response to the Telecom Regulatory Authority of India's Consultation Paper on Auction of Spectrum in Frequency Bands Identified for IMT/5G. This Consultation Paper demonstrates TRAI's thoughtful approach to spectrum policy, and we would like to provide recommendations on one issue it raises. Juniper Networks recommends that TRAI, like what other national spectrum regulators have done, authorize enterprises to obtain cost effective licenses individually or on a shared basis (like CBRS in the United States) to spectrum in the 3.5 GHz band.

Juniper Networks is a global and trusted developer of networking infrastructure solutions spanning routing, switching, security, network access, and network management hardware and software. We are particularly proud of our presence in India, which features our India Excellence Centre (IEC). The IEC hosts over 3,000 employees in Bengaluru providing services to in-country service providers and enterprises, including all Tier 1 service providers, the Indian Railways ticketing system, and the National Knowledge Network.

It is clear from the Consultation Paper that TRAI is taking a very careful and thoughtful approach to 5G spectrum issues. The comprehensive background in the Introduction is very helpful and gives industry providers such as Juniper a clear sense of TRAI's in-depth consideration. We appreciate that TRAI continues to seek input on these important matters.

Q. 5 For 3300-3670 MHz frequency range, which band plan should be adopted in India? Kindly justify your response.

Based on our experience in other markets, we recommend that TRAI consider for private captive networks a 150 MHz-wide band in the 3.5 GHz band, specifically from 3550 MHz

to 3700 MHz, Spectrum regulators in other nations have opened spectrum in this band or near this band for private 5G licenses for enterprises. Developing a policy in line with other regulators would make it easier for service providers, radio developers, and others to offer solutions on a global basis without needing to address numerous localized requirements.

Q. 12 What should be optimal block size and minimum quantity for bidding in 3300-3670 MHz band? Kindly justify your response.

To solve IoT use cases in manufacturing and other enterprise segments, 150 MHz total with 10 MHz channel bandwidths would provide flexibility in bonding channels together for different uplink and downlink speeds and latency.

Q. 71 Whether some spectrum should be earmarked for localized private captive networks in India? Kindly justify your response.

Juniper believes that TRAI should earmark the 3550 MHz-3700 MHz band for private captive networks. As is the case in other global markets, enterprises should have access to this spectrum – either sharing with others or as individual licensees.

Private captive networks would offer significant benefits to Indian providers, businesses, and consumers, primarily through increased innovation and development nationwide. For example, manufacturing plants that have location-specific licenses build networks to manage and monitor equipment efficiently through wireless technology. Similarly, large-scale agricultural operations and farms could build 5G networks to guide machinery and other operations. Please note that the deployment of these networks will subsequently enable deployment of machine learning and other emerging technologies.

Thank you again for issuing the Consultation Paper and for considering our views. If you have any questions about this submission, please feel free to reach me at rbfriday@juniper.net or 1-408-936-5956.

Very Respectfully,
Robert J Friday
Robert Friday

Bob Friday
Vice President and Chief Technology Officer
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