WBA Comments on TRAI's Roadmap to Promote Broadband Connectivity and Enhanced Broadband Speed Public Consultation

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Wireless Broadband Alliance (WBA®) submits these comments in response to the Telecom Regulatory Authority of India's ("TRAI") Public Consultation on "Roadmap to Promote Broadband Connectivity and Enhanced Broadband Speed."[1] Recommendations herein will help fulfill TRAI's "Connect India" mission by dramatically increasing wireless connectivity data rates to end-users,[2] harmonize spectrum allocation,[3] and accelerate 5G services deployment. Rural India residents, who are approximately 70% of India's population and are at the forefront of the 'mobile first' phenomenon, will be able to get cost-effective broadband connectivity without waiting for years for the 5G rollout.

1. Introduction

WBA's mission is to enable collaboration between service providers, technology companies and organizations to achieve broad technology adoption by showcasing User benefits and by supplementing with specifications to enable widespread technology adoption.[4] WBA's membership consists of major operators and leading technology companies.[5] WBA will be happy to engage with TRAI in any follow-on discussions related to recommendations below.

2. Technologies to Address Today's Challenges & to Innovate for the Future

License-exempt technologies in the mid-band have been proven to deliver high public and economic value. Mid-band spectrum offers a good balance between coverage range and

[1] TRAI Consultation, 20 August 2020 - https://trai.gov.in/sites/default/files/Broadband_CP_20082020.pdf
[2] TRAI Consultation at 1.27 a, b, c
[3] TRAI Consultation at 2.15 i
[4] WBA OpenRoaming - https://wballiance.com/openroaming/
[5] WBA members: http://www.wballiance.com/join-us/current-members/

utility via technologies such as Wi-Fi and Bluetooth. Wi-Fi, for one, is arguably one of the most successful technologies we have seen to date. While 2.4 GHz and 5 GHz bands have been in use for license-exempt communications for over two decades, they are vastly oversubscribed today and in dire need for additional radio spectrum capacity. Current COVID-19 related lockdowns have put a spotlight on these technologies and how they play a key role in keeping us connected to our work and keep children connected to their classrooms. Many have experienced bandwidth bottlenecks however when multiple users need to video conference with bandwidth requirements for both upstream and downstream -and specially when they are connected to the same Access Point.

In India, up to 80% of the consumer network traffic is for videos. With 4k video equipment now becoming mainstream, and with original equipment manufacturers already working on enabling 8k, significant bandwidth increases will be required to support the additional data load.

To enable the next chapter of innovation in these uniquely successful technologies, 1200 MHz in the 6 GHz band ("5925 MHz to 7125 MHz") is ideally suited for future license-exempt ecosystem growth. From education and work to home entertainment -- and from telemedicine with point-of-care equipment to augmented reality (AR) equipment to assist in a surgery, the next generation of devices will be a significant source of data generation and consumption. ABI Research has projected 73% compounded annual growth rate (CAGR) just for the AR use cases spread across nearly every vertical industry.[6]

[6] *Augmented and Mixed Reality Market Data Devices Use Cases Verticals,* ABI Research, Q4 2019

WBA's annual report shows that 78% of the member respondents consider opening of the 6 GHz band to Wi-Fi to be a key component of their network strategy. This report also shows the role of Wi-Fi as a prominent Radio Access Technology, with 66% planning to deploy Wi-Fi 6 connectivity compared to 35% 5G NR-U.[7] The report offers strong evidence that Wi-Fi, if not dominant, is at least a key component of the connectivity ecosystem. Adopting rules that unlock the full potential of the 6 GHz band and next-generation Wi-Fi is needed to grow the license-exempt ecosystem into the future. WBA, thus, strongly encourages TRAI to adopt rules that make the 6 GHz band available for license-exempt use and keep its spectrum policies aligned with the World's leading economies.

3. Spectrum Allocation for Innovative Technologies

License-exempt technologies have proven time & again that they are cost effective, quickest to deploy, and ready to power the next generation of use-cases. Fostering a ubiquitous ecosystem is key to widespread deployment. Wi-Fi in 2.4 GHz and 5 GHz bands has reached its capacity. These bands enable mostly 20 MHz - 80 MHz wide communication channels. 6 GHz band will enable up to seven 160 MHz channels, and form the basis for many high density and high throughput applications. 160 MHz bandwidth means two times the data rate and half the latency. With the next generation of immersive experiences, 6 GHz band promises revolutionary innovation in the way we will work and interact with each other. Furthermore, enabling seven 160 MHz channels in 6 GHz will permit high density deployments. Network cells can be deployed without repeating the same channel in adjacent cells thereby reducing chance of

[7] WBA Annual Industry Report, https://wballiance.com/resource/wba-industry-report-2020/

transmission collisions across users. It also means that Access Points supporting multiple high bandwidth clients can all communicate with the Access Point without interfering with each other. Greater number of high bandwidth channels is key in dense and challenging environments like transportation hubs, apartment units, sports arenas, stadiums, and business complexes,[8] as well as, are key to enabling Small-Cell Access Points in rural settings for broadband applications.

Approximately three years down the road, IEEE 802.11be will also be ready for deployment. This newest standard defines up to 320 MHz wide channels. A 6 GHz license-exempt band will future-proof TRAI spectrum policy and lay the groundwork for this high bandwidth technology to be deployed for years to come.

1200 MHz in the 6 GHz band (5925 MHz to 7125 MHz) will keep spectrum allocation harmonized across different regions and keep equipment costs low. Part of the reason license-exempt technologies have been more economical is because the spectrum is mostly harmonized. Economies of scale go a long way towards lower cost equipment and time for deployment.

4. IoT Applications Considerations

Machine-to-machine communications are expected to be 25% of the wireless connections in India by 2022. Use cases are expected to cover smart cities, smart homes & enterprises. IoT technologies leveraging a ubiquitous connectivity ecosystem will be more successful in proliferating automation of everyday items. Enabling an ecosystem within the license-exempt band will create synergistic pull and lead to even broader adoption. With 6 GHz license-exempt operation, TRAI could follow the model adopted by Ofcom in the United Kingdom, where 6

[8] "Wi-Fi 6 is the fastest standard yet. Wi-Fi 6E will be even better," by Ry Crist, CNET, 11 Sept. 2020 https://www.cnet.com/how-to/wi-fi-6-is-the-fastest-yet-but-wi-fi-6e-will-be-even-better-6-ghz/

GHz IoT applications are enabled via higher in-band power spectral density (PSD) for narrow band transmissions. This approach extends reach of 6 GHz connectivity for IoT equipment that may not be able to connect with wider channels and keeps connectivity seamless and ubiquitous by leveraging standard Wi-Fi protocols. A ubiquitous ecosystem is key to low deployment & to extend the impact from IoT use cases.

5. Conclusion

WBA believes that the opening of the 6 GHz band for license-exempt use should be a key broadband roadmap goal for the TRAI. It will serve as a catalyst for accelerating broadband coverage and to spur innovation. It will harmonize global spectrum allocation and will be a critical enabler for growth and delivery of advanced 5G broadband services to consumers, enterprises, and carriers as well as create new opportunities for innovation and new businesses.

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