Ultra Wide Band (UWB) Alliance

comments to the

Telecom Regulatory Authority of India

on

Consultation Paper on the Auction of Radio Frequency Spectrum in the Frequency Bands Identified for International Mobile Telecommunications (IMT)

Consultation Paper No. 8/ 2025

About the UWB Alliance

The Ultra Wide Band (UWB) Alliance is a global not-for-profit organization that works to collectively establish ultra-wideband (UWB) technology as an open-standards industry. A coalition made up of vendors that either design, manufacture, or sell products that use ultra-wideband technology, the UWB Alliance aims to promote and protect the current allocation of bandwidth as well as promote the continuing globalization of the technology. As part of our mission, we advocate UWB technology and use cases to promote verticals showing the value of UWB for IoT and Industry 4.0 and to build a global ecosystem across the complete UWB value chain, from the silicon to the service. In addition, the Alliance is promoting and assuring interoperability through its work with Standards Development Organizations such as the IEEE and ETSI and then collaborating with members to define upper layers and testing to assure compliance. For more information, please visit us at www.UWBAlliance.org.

Contents

Introduction and Summary 3
Value of De-licensed Spectrum and UWB 3
Summary 4
Consultation Questions 4
- Q14 4
- Q15 5
- Q18 5
- Q20 6

Conclusion 6

Introduction and Summary

We commend the Telecom Regulatory Authority of India (TRAI) for this comprehensive Consultation Paper regarding the Auction of Radio Frequency Spectrum to provide new allocations in various bands for International Mobile Telecommunications (IMT).

Bands identified in the consultation cover the range 6425 MHz to 7125MHz which overlaps the frequency range authorized for Ultra Wide Band (UWB) operations in India. Many UWB systems operate in the 6–8.4 The use of UWB by consumer devices has grown rapidly since 2019 and contuse to grow at a rapid rate. UWB is providing significant value for consumers and is generating increasingly greater economic opportunity as use cases diversify and consumer value is increasingly recognized. This is made possible by the providing non-exclusive spectrum access on a licensed exempt basis, promoting sharing of the spectrum among a diverse set of users and uses. The availability of international standards such as IEEE Std 802.15.4 and the ETSI EN 02 065 series of standards supports a robust multi-vendor ecosystem.

UWB delivers precise communication, ranging, location, and sensing capabilities with minimal to no interference due to its extremely low power output. The introduction of significantly higher-powered systems in this band can disrupt efficient spectrum use by creating an imbalance, which may reduce usability of other technologies such as RLAN and UWB's. This can negatively impact the many valuable benefits provided. We respectfully ask TRAI to consider existing de-licensed UWB users when making decisions on IMT allocation.

Value of De-licensed Spectrum and UWB

UWB is authorized in India and has been. It enables precise, centimeter-level position tracking for consumer and industrial uses, including secure access control to buildings and vehicles. UWB offers energy-efficient, highly accurate sensing with much lower transmission power than Wi-Fi or Bluetooth. UWB complements these technologies by enhancing directional link communications such as Apple Airdrop. It also provides lossless, low-latency audio communications.

UWB is available in many millions of consumer devices in India today, providing significant, if often unrecognized, value with nearly undetectable interference footprint due to its exceptionally low transmitted power and Impulse Radio (IR) characteristics. This allows for high device density and extensive spectrum reuse. It supports diverse applications within the same frequency and area. UWB's transmit power is orders of magnitude lower than other de-licensed technologies like Bluetooth and Wi-Fi in India, enabling coexistence with most any low-power technologies. Disruption typically arises only when there is a substantial power difference. Spectrum sharing among various technologies and uses maximizes the value per MHz.

IMT uses much higher power than other de-licensed technologies. The potential for disrupting existing services is far greater. The very large transmit footprint of an IMT base station limits frequency reuse. The need of the mobile industry for ever increasing amounts of dedicated spectrum is largely do to the use of high transmit power. Exclusive licensing limits the potential uses to essentially one, which limits overall value to consumers and tends to limit innovation.

Summary

We encourage TRAI to consider not auctioning the spectrum in the 6425-7125 range for IMT at this time, nor considerate for future exclusive use licensing. We encourage TRAI to adopt technical standards and limits that promote multiple uses in this frequency range and preserve the usability of these bands for UWB. Limiting transmit power, requiring less than exclusive monopolization of the bands, and encouraging other coexistence methods will spur further innovation and extract the greatest value.

Consultation Questions

Q14

Q14. Whether the spectrum in 6425-6725 MHz and 7025-7125 MHz ranges in the upper 6 GHz band should be put to auction for IMT in the forthcoming auction?

The UWB Alliance recommends that these ranges in the upper 6 GHz band not be auctioned for IMT in the forthcoming auction. This range is presently in use under India's UWB rules. UWB is a non-disruptive technology that operates at power levels that assure no disruption to other uses, that provide for very high frequency reuse, support great diversity of uses, and thus readily harmonizes with many other users of the spectrum that operate at low transmit power levels. IMT power levels are far less compatible with other uses.

UWBA would favor new uses that remain compatible existing users, including the current licensed incumbents and de-licensed uses such as UWB. Limiting transmit power and including technical requirements that promote effective sharing provide greater diversity of use than IMT provides, which increases total value achieved.

As an example, we can endorse opening the upper 6 GHz band for expanded de-licensed use if power limits and other requirements promote fair and equitable sharing. While technologies such as RLAN and Bluetooth seem unable to perform at UWB power levels, they have proven useful at levels that are still low power, e.g. 1mW to 250mW or less.

Q15

Q15. In case you are of the opinion that the spectrum in 6425-6725 MHz and 7025-7125 MHz ranges should not be put to auction in the forthcoming auction, what should be the timelines for auctioning of this spectrum for IMT?

We are of the opinion that the spectrum in 6425-6725 MHz and 7025-7125 MHz can generate more total value to India via other uses than IMT. Thus we recommend removing from consideration auctioning these bands.

Instead we recommend allowing use at power levels and with technical conditions that are non-disruptive to current users, including UWB. Doing so avoids the requirement to clear the bands of many existing incumbent users, which will take considerable time and has a significant cost. Adopting limits and conditions that are incumbent and sharing friendly will encourage innovation, and stimulate the mobile industry to look at the many alternatives to exclusive use, high power/large coverage areas, and the high costs incurred.

Q18

Q18 In case it is decided to put the spectrum in 6425-6725 MHz and 7025-7125 MHz ranges in the forthcoming auction, -

(a) Whether the 3GPP band plan n104 should be adopted for the upper 6 GHz band? If no, which band plan should be adopted for the upper 6 GHz band?

(b) What amount of spectrum in the 6425-6725 MHz and 7025-7125 MHz ranges should be put to auction?

(c) Whether the spectrum in the 6425-6725 MHz and 7025-7125 MHz ranges should be auctioned on Telecom Circle/ Metro service area basis with a validity period of 20 years? If no, what should be the area and validity period of spectrum assignment in the 6425-6725 MHz and 7025-7125 MHz ranges?

(d) What should be the block size, minimum bid quantity, and roll-out obligations for the spectrum in these ranges?

(e) What should be the eligibility criteria and associated eligibility conditions for bidding for the spectrum in these ranges? Please provide a detailed response with justifications.

Regarding (b), as noted we recommend these frequency ranges are not be put to auction. We strongly suggest that other, lower power uses that are non-disruptive to current users, provide more value and greater opportunity in the long run.

Q20

Q20. Are there any other inputs/ issues related to the auction of spectrum in the upper 6 GHz band for the forthcoming auction? Suggestions may be made with detailed justifications.

We ask TRAI to consider existing uses, including de-licensed UWB, and adopting new allocations and rules that are compatible. We feel that shared use provides for the greatest benefit long-term.

We believe that there are alternatives for future mobile operations besides exclusive spectrum access at very high power levels. Technical conditions such as greatly reduced power limits, use of directional antenna to reduce interference footprint, frequency agility, and the ability to detect and share with other technologies are examples of technically feasible approaches available to the IMT industry today.

As we have detailed in other parts of this document, we feel these alternatives provide greater value from India's scare spectrum resources and provide incentives for technology innovation.

Conclusion

We thank TRAI for providing the opportunity to comment on this extensive and informative consultation. We encourage TRAI to consider the needs of the many users and uses of the subject frequency bands and especially consider conditions that preserve the usability for UWB.

Respectfully Submitted,

Tim Harrington, Chairman

Ultra Wide Band Alliance