

# RE: IMPLEMENTATION OF THE NATIONAL SPECTRUM STRATEGY

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National Telecommunications and Information Administration  
U.S. Department of Commerce  
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FiRa<sup>®</sup> Consortium, Inc. (“FiRa”) <sup>1</sup> thanks the National Telecommunications and Information Administration (“NTIA”) for their leadership in the development and release of the U.S. National Spectrum Strategy and welcomes the opportunity to provide input on its implementation.<sup>2</sup> FiRa shares the aim of the Strategy to promote U.S. innovation in the wireless technology sector and in shared use of spectrum in particular. To that end, FiRa encourages NTIA to explore opportunities to maximize spectrum sharing and versatile use in bands identified for near-term study, including the 7125-8400 MHz band.

## **I. UWB TECHNOLOGY AND FIRA CONSORTIUM ARE TRANSFORMING USE OF RADIO TECHNOLOGY IN EVERYDAY LIFE**

The FiRa Consortium is an Oregon-based coalition of leading semiconductor manufacturers, consumer electronics manufacturers, physical access security companies, and technology companies that have aligned to define the next generation location and positioning experiences using ultra-wideband (“UWB”) ranging and positioning technologies. The FiRa name, which stands for “fine ranging”, highlights UWB technology’s unique ability to deliver unprecedented accuracy and security when measuring the distance to a target or determining position. UWB technology can transform and enrich the way people use radio spectrum to experience beneficial use cases beyond connectivity. It will power solutions to find people and devices, facilitate navigation and hands-free payments, and sensing use cases, including vehicle safety measures that detect children left in cars, enhanced security for car key fobs that help to reduce auto theft, and hands-free access to buildings or devices requiring log in. These use cases create a big demand for

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<sup>1</sup> See FiRa Consortium, Inc., About FiRa, <https://www.firaconsortium.org/about/consortium>.

<sup>2</sup> See Department of Commerce, National Telecommunications and Information Administration, Implementation of the National Spectrum Strategy, Notice of Opportunity for Public Input (rel. Nov. 29, 2023).

UWB capability in high-volume consumer devices, such as smartphones, tablets, and location tags. It is anticipated that by end of 2025, UWB smartphone accessories will result in every smartphone having embedded UWB capabilities, and that there will be more than 1 billion UWB devices sold per year<sup>3</sup>.

FiRa certified UWB devices currently operate in spectrum between 6.0 and 10.6 GHz on an unlicensed basis and without causing interference to existing radio services. This deployment is the result of standards setting by organizations like the IEEE<sup>4</sup> and the adoption of technical rules by the Federal Communications Commission,<sup>5</sup> which allow for the utilization of low-power short duration pulses with large transmission bandwidths. Because transmissions occur at such a low power, UWB technologies are well-suited to share spectrum with other wireless services.

FiRa is committed to the widespread adoption of these important UWB applications based on the IEEE 802.15.4 standard. FiRa does this by driving the development of technical specifications and certification to guarantee multi-vendor interoperability, advocating for effective and versatile regulations that optimize the use of our critical spectrum resource, and by defining a broad set of use cases for UWB.

FiRa currently has more than 120 member companies interested in fine ranging based on UWB technology. FiRa board members include Allegion, Apple, Bosch, Cisco, Google, HID/ASSA ABLOY, NXP, Qorvo, Qualcomm, Samsung Electronics, and Thales.<sup>6</sup>

## II. INNOVATION AND SPECTRUM

FiRa supports the National Spectrum Strategy. FiRa and its members recognize the growing demand for spectrum and appreciate that this requires greater focus on innovative ways of sharing spectrum. Spectrum scarcity will only increase over time. Industry will therefore need to adapt to this scarcity. Any solution to this challenge should be fully investigated, fostered, and supported, by all stakeholders, including industry, academia, and regulators.

The FCC embodied the kind of spectrum leadership and vision called for in the National Spectrum Strategy when it introduced UWB regulations years before any other global administration.<sup>7</sup> FiRa and its members

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<sup>3</sup> See Fira Consortium, Inc., “Unleashing the Potential of UWB: regulatory considerations”, August 2022, <https://www.firaconsortium.org/sites/default/files/2022-12/Unleashing-the-Potential-of-UWB-Regulatory-Considerations-December-2022.pdf>

<sup>4</sup> The IEEE 802.15.4z standard released in 2020, for example, has become the baseline for high volume UWB applications in mobile phones and car keys. In less than three years, UWB technology has been included in approximately one billion devices with an increasing number of vendors supporting the new standard.

<sup>5</sup> See *Revision of Part 15 of the Commission’s Rules Regarding Ultra-Wideband Transmission Systems*, First Report and Order, 17 FCC Rcd 7435 (2002) (“*UWB Order*”).

<sup>6</sup> See FiRa Consortium, Inc., *Our Members*, <https://www.firaconsortium.org/about/members>.

<sup>7</sup> See *UWB Order*.

have worked as well to advance the industry by investing in spectrum innovations and is eager to continue doing so. Close cooperation between companies involved in the UWB space and NTIA will enable this.

True innovations take time. To confidently invest in innovative research and solutions, industry requires a consistent regulatory environment that is friendly to innovative ideas and the innovation process.

FiRa supports the goal of having clear criteria for investigating a spectrum pipeline. We expect this to include an evaluation of the current and potential future use of spectrum based on elements like the volume of devices in the field, the value of the current and future uses of the spectrum, consideration of the innovation provided, satisfying the most important public needs and interests, as well as the feasibility of repurposing or sharing the spectrum.

From a technical perspective, FiRa believes the spectrum decision-making process should evaluate solutions in terms of their support for coexistence and sharing, taking into account the amount of interference caused and the solution's tolerance to interference created by others inside or outside the band they are using. Minimizing the interference footprint should be a goal of industry, and it should be furthered through spectrum policy.

FiRa would also like to encourage NTIA to consider wider spectrum regions in addition to individual frequency bands. Minimizing transmit power is a key element to reducing the interference footprint. The sensitive receivers required for this would benefit from low interference spectrum regions. In turn, having dedicated low interference spectrum regions will encourage innovators to find suitable solutions to make the best use of this spectrum.

While FiRa sees the value of dynamic spectrum sharing, we would also like to highlight the need for other innovative sharing mechanisms and especially for resource-constrained device classes that do not necessarily have a network connection. Opening spectrum for low-power operations and exploring low interference spectrum regions, as discussed above, are viable solutions worthy of consideration.

### **III. FIRA ENCOURAGES NTIA TO EXPLORE OPPORTUNITIES FOR WIRELESS BROADBAND TO COEXIST IN THE 7125-8400 MHZ BAND WITH UWB AND OTHER INCUMBENT OPERATIONS**

The Strategy aims to provide spectrum for terrestrial wireless broadband, innovative space services, and unmanned aviation, and other autonomous vehicle operations. UWB can provide value to each of these applications. In many cases, first solutions are currently being investigated or even introduced to the market.

As NTIA evaluates the 7125-8400 MHz band for potential wireless broadband use, FiRa encourages the agency to consider the impact of any such use on existing operations — including UWB with its most widely used 500 MHz channel centered on 7987.2 MHz — and the opportunities for coexistence. Wireless broadband and incumbent operations like UWB technologies are not necessarily incompatible. It may be feasible, for example, for very low power modes of future technologies or highly directive fixed wireless access services to share spectrum with incumbent users under certain conditions.

Since UWB operates below the noise floor, it is designed to not cause harmful interference to other spectrum users. Importantly, it can do so without the need for the relocation of existing services and therefore, the continued use of necessary spectrum for crucial Federal services is not impacted. This is based solely on the extremely low power spectral density emitted by UWB transmitters, which avoids the need to coordinate between Federal and non-Federal users and the security risks this entails.

#### **IV. FIRA STANDS READY TO SUPPORT IMPLEMENTATION OF THE NATIONAL SPECTRUM STRATEGY**

FiRa strongly believes that UWB has a place in the implementation of this Strategy. We are ready to work with NTIA, FCC, and other industries and organizations on its implementation. Our members have been active in the IEEE standardization group that is the basis for the current success of UWB technology. Together FiRa members are driving the interoperability standardization and certification that has put UWB capabilities in one billion devices already. FiRa members are also eager to contribute equipment to the national testbed called for in the Strategy.

FiRa wants to share its knowledge of UWB technology with policy makers, academic institutions, and federal agencies. Working with NTIA technical staff, FiRa is currently involved in studies on the effect of UWB on other spectrum users. We would like to contribute our experience with these and other spectrum engineering studies to the critical National Spectrum Strategy implementation efforts.

Respectfully Submitted,

/s/ Clint Chaplin

FiRa Consortium Board Chair