



VIA ELECTRONIC FILING

April 13, 2020
Ms. Marlene H. Dortch, Secretary
Federal Communications Commission
445 Twelfth Street, SW
Washington, DC 20554

Re: Ex Parte Communication
GN Docket No. 17-183, *Expanding Flexible Use in Mid-Band Spectrum Between 3.7 and 24 GHz* ET Docket No. 18-295, *Unlicensed Use of the 6 GHz Band*

Dear Ms. Dortch:

The Ultra Wide Band Alliance (UWB Alliance) would like to respectfully draw the Commission's attention to a data point cited in the FCC's recently published *Report and Order and Further Notice of Proposed Rulemaking on Unlicensed Use of the 6 GHz Band*¹ (R&O), regarding the estimated global market value of the ultra-wideband (UWB) industry in 2022.

Our concern is that the Commission came to its present conclusion in the R&O by relying on a singular market report founded on outdated data. The reality of the UWB marketplace shows the relied-upon estimates to be grossly underestimated by several orders of magnitude. By relying on one report using data from 2016 which misrepresents the true market value of ultra-wideband as it stands today, the Commission unfairly disadvantaged the UWB industry in the present proceeding. In fact, the ecosystem of products incorporating UWB will create a market that far eclipses the \$85.4 million value as stated in the R&O², which by conservative estimates, will reach a value of \$240 billion by 2022.

Ultra-wideband adoption has changed dramatically since 2016 and the underlying assumptions in that forecast are no longer valid. We would like to update these assumptions with data and projections that more closely align to the economic value that is currently being created by the expanding UWB ecosystem. The revenue streams resulting from new applications that are evolving have tremendously increased the current and evolving market for UWB.

The ultra-wideband industry is exploding into mainstream acceptance for multiple consumer markets, including 5G IoT, that are already driving huge volumes and resulting economic value. UWB's incorporation into the Apple iPhone 11 was the first of many such significant milestones for the current exponential-growth of UWB technology into high-

¹ *FCC Report and Order and Further Notice of Proposed Rulemaking on Unlicensed Use of the 6 GHz Band*, Page 79, dated April 2, 2020. Also, see Footnote 561.

² "While we are unable to precisely estimate the value of U.S. ultra-wideband and wideband, one market research firm cited the global value of the ultra-wideband industry will be \$85.4 million in 2022." *Ibid*.

volume consumer applications. Other smart phone manufacturers are incorporating UWB into their products as indicated by participation in standards development organizations (SDOs) such as the IEEE, and other industry associations.

iPhone 11 sales provide an indication of the trajectory of growth of UWB uptake accounting for an estimated \$31.7 billion from 39.2 million devices estimated sold in Q4 of 2019 alone.³ Conservatively, we expect this to drive a global ecosystem with an estimated \$84.1 billion of revenue during 2020 from an estimated 104 million devices equipped with UWB.

Based on the number of smartphone companies participating in the development of updated UWB standards development and their projected investments in this technology, we foresee a plethora of new UWB equipped smartphones from all of the well-known brands. This growth is happening in parallel with adoption of UWB in the vehicular automated entry market. Once again, there are many OEM and Tier 1 automotive companies participating in standards development work and announcing incorporation of UWB technology into vehicle systems.

Additionally, UWB deployments are not limited to smartphone and automotive verticals. For instance, there are medical applications in use today that are providing crucial “No Touch” monitoring for critical care patients, used for contactless monitoring of essential metrics such as pulse, temperature, and breathing rate for the care of patients with diseases such as COVID-19. These systems can also provide early detection of other maladies such as baby sleep apnoea and SIDS. Patient tracking applications (e.g., senior citizen fall monitoring) and mapping the location of high value medical equipment are also enabled by UWB.

The breadth of UWB applications include guiding robotic lawnmowers, providing tools for wall exploration, universal smart remote controls, sports tracking (NFL), professional audio, smart factories for automotive and industrial production, stock animal health and tracking, tank level radar sensing, airport baggage handling, and bus and train control and communication. Many of these uses have value to the public that is far beyond dollar value of the equipment used to provide it.

Based on all of this consumer activity, we conservatively expect these developments to drive a worldwide Total Available Market (TAM) of ultra-wideband-enabled products to exceed \$240 billion by 2022.

UWB’s unique properties provide features and performance that work synergistically with other wireless technologies. No other technology can pinpoint and actively track locations with the minimal power requirements and sub-inch tracking capabilities of UWB. It is an essential piece of the matrix of capabilities that are required to meet the IoT expectations of next generation 5G wireless customers. Regrettably, considering the decisions proposed in the Report and Order it is far from clear how this can all be achieved.

³ [“CIRP: iPhone 11 Dominated US iPhone Sales This Quarter”](#), AppleInsider.com, January 20, 2020 (accessed April 14, 2020).

The members of the UWB Alliance are strong supporters of Wi-Fi. Our goal is and always has been to promote solutions that encourage maximizing the use of the available spectrum for all users. Our mission is continued co-existence with the licensed incumbents and to promote a coexistence strategy with Wi-Fi in a way that expands rather than limits user experience.

We view our proposals for reduced power, limited duty cycle, increased sensitivity and tightened out of band emissions as requirements helpful to the entire wireless user community including the Wi-Fi industry. In order to achieve the Wi-Fi industries own goals of providing seamless connectivity and enhanced capabilities these changes can benefit all consumers particularly in densely packed areas. In particular, we see great promise in the Very Low Power (VLP) concept and are preparing recommendations that will promote innovation, meet the stated objectives of the Wi-Fi community for VLP, and maximize the capacity of our scarce spectrum resource.

In light of the stark difference between our estimated UWB-enabled ecosystem \$240 billion value and the \$85.4 million cited in the outdated 2017 report, we respectfully request that the Commission adopt the updated figures that are based on these significant developments within the UWB market. We also recommend the removal of the phrase *“In addition, we note that revenues from a non-exhaustive list of U.S. firms producing ultra-wideband products, among others, imply that even if costs are incurred, they will be significantly less than the hundreds of billions of dollars of economic value created”*⁴ as the more current figures show that this is not a valid conclusion. Finally, seeing that the Commission relied in part on a wholly inaccurate valuation of the UWB market in its determination to impact unlicensed incumbents in the spectrum, we respectfully request the Commission reconsider its findings and decision in light of this corrected estimate of the true value of the global UWB-enabled marketplace.

Respectfully Submitted,

Timothy Harrington
Executive Director
UWB Alliance

⁴ FCC Report & Order, Pg. 79.