



VIA ELECTRONIC FILING

October 11, 2018

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

Re: Ex Parte Presentation, Notice of Inquiry on Expanding Flexible Use in Mid-Band Spectrum Between 3.7 and 24 GHz. GN Docket No. 17-183

Dear Ms. Dortch:

On October 9, 2018, the following representatives from the Ultra Wide Band Alliance (“UWB Alliance”) met with staff from the FCC’s Wireless Office of Engineering and Technology (OET) to discuss the above-referenced proceeding.

Representatives from UWB Alliance included Tim Harrington and Ben Rolfe, and Kelli Emerick and Marc-Anthony Signorino (121 Strategies, consultant to UWB Alliance). Representatives from OET included Julius Knapp, Jamison Prime, Nicholas Oros, Bahman Badipour, and Karen Rackley. During the meeting, UWB Alliance discussed a proposal for spectrum coexistence that would allow for more flexible use in the 6 GHz band, while protecting incumbent licensees and existing unlicensed UWB users. Written material was also provided during the meeting, which has been attached to this letter.

UWB Alliance representatives explained that current proposed RLAN deployment, at the requested power levels, would effectively render many UWB products, services and applications useless. UWB Alliance asked the FCC to consider mitigation solutions that will continue to allow for unlicensed UWB technologies to successfully coexist with incumbent users in the 6 GHz band and provide valuable functionality.

Respectfully Submitted,

Timothy Harrington
Executive Director
UWB Alliance



PROMOTING COEXISTENCE IN THE 6 GHz BAND WILL PRESERVE INNOVATION

By encouraging the FCC to seek maximum spectrum efficiency, the government can ensure ground-breaking technologies continue to thrive in advanced manufacturing, automotive, aerospace, and communications.

The FCC recognized the need to share available bandwidth for radio frequency applications in an upcoming NPRM (GN Docket No. 17-183). Innovation is the key to adding virtual bandwidth for new applications, where requirements vary widely: from thousands of short bursts for locating to video streaming. However, of significance is the need to protect the numerous industrial and commercial applications that operate in the unlicensed 6 GHz band that will be negatively impacted should band-sharing schemes some commentators are proposing be considered. These applications, while not in the forefront of the consumer consciousness, are pivotal to the well-being of numerous industries comprising our newly resurgent innovation economy. The UWB Alliance holds grave concerns that the NPRM's proposed power levels and use of the entire 6 GHz band will halt all innovation other than another variation of the current Wi-Fi techniques.

When technologies play well with others, everybody wins.

Common consumer standards such as Wi-Fi, Bluetooth, and ZigBee all evolved to share the 2.4 GHz band to provide different services. Wi-Fi, an older technology, is optimized for moving large amounts of data, whereas UWB is optimized for bursts. The current regulations allow both UWB (15.517 – 15.519) and Wideband (15.250) to coexist, and as a result, they have stimulated innovation in UWB applications, such as: Smartphone ecosystems; Consumer home automation, including automated lawnmowers; Sports tracking and analytics, including every NFL stadium; Secure automated vehicle lock/unlock; Aviation manufacture/tool tracking, including throughout 30 buildings across Boeing's four campuses; Wireless USB; and Automated automotive manufacturing. The IEEE projects the expanding UWB market will exceed 3.1 billion devices by 2025. But most importantly UWB has only begun to evolve technically, including expanding device ranges up to 1,000 feet and techniques that will offer equivalent Wi-Fi services, but at power levels that won't threaten all other users of the band.

There is more to the story than what is reported by its proponents.

The UWB Alliance and others such as AT&T have performed an initial evaluation of coexistence between current users of the 6 GHz band. The results are not good. To date, there has been no thorough analysis performed to evaluate the threat to the UWB community, and the only study performed for licensed Fixed Service users by RFK Engineering Solutions is deeply flawed. The RFK study was commissioned by the RLAN proponents, and hence the results are predictable. The study by RFK's admission is incomplete and lacking thorough evaluations of other users in the frequency band. The results are analogous to all the studies that showed smoking was not detrimental to respiratory health that were commissioned by the cigarette industry in the 60's.

Coexistence is key to preserving innovation.

We believe that any rule change should consider new techniques, such as UWB, that can help the FCC achieve its goal without destructive increases in power and bandwidth utilization. The modulation technique and the power levels requested will cause interference with licensed operators in the 6 GHz band, and virtually destroy the usefulness of the band to all other unlicensed services. The refusal by the RLAN industry to operate in subject bands is a matter of technology choice. If maximum spectrum efficiency is the goal, then coexistence with other technologies is the key.

The Solution.

- No mobile hotspots. The largest volume applications – smartphones and keyless entry – can't coexist with AFC mapping because the devices are mobile.
- Significantly less power for all (or some). UWB installations such as Boeing show that high power is not required.
- In the alternative, allow IoT – including UWB devices – to occupy both standard and low power designated portions of the band at the low power level and density specified in the NPRM draft (23).



TECHNICAL NOTES OF INTEREST

Expanding Flexible Use in Mid-Band Spectrum Between 3.7 and 24 GHz, GN Docket No. 17-183.

- The UWB market is expanding and projected to exceed 3.1 billion devices by 2025: (ref IEEE 802.15-18-0486-01)
- Participants in the IEEE 802.15.4z Enhanced Impulse Radio Group (UWB) include:
 - Apple, Samsung
 - Smartphone and related ecosystems for vehicle and home automation, product releases expected 2020-21
 - BMW, Continental, Daimler
 - Vehicle secure lock/unlock
 - NXP, Microchip, Decawave
 - Chip suppliers for these applications
 - Hyundai, Toyota, Volkswagen
 - Multiple automotive applications
- Most importantly, UWB has only begun to evolve technically
 - UWB ranges are expanding beyond 1,000+ meters, which is the length of three Boeing 777s.
 - UWB shows no harmful interference to other users of the band (FS FSS) or itself at -41.3 dBm/MHz
 - High Spectral Efficiency maximizes available bandwidth for all uses
 - Techniques will evolve to provide to provide equivalent services to the current versions of Wi-Fi without the need for power levels that threaten all other users of the band (e.g., OFDM on UWB)
- Power levels and use of the entire 6 GHz band, as proposed in the NPRM, will halt all innovation other than another variation of the current Wi-Fi techniques.
- Proponent's request for high power does not match their described usage:
 - Nano/pico cells require low power for frequency reuse
 - Rural areas do not require 6 GHz, can be served by 2.4 and 5 GHz due to less congestion