**IEEE P802.15**

**Wireless Personal Area Networks**

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| Project | IEEE P802.15 Working Group for Wireless Personal Area Networks (WPANs) | | |
| Title |  | | |
| Date Submitted | [14 Sept 2017] | | |
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| Re: | [FCC mid-band spectrum NOI response] | | |
| Abstract | [Draft submission for discussion] | | |
| Purpose | [To present to the 802.15 WG this submission representing the view of the author, and solicit WG support for the position it presents, to be then taken as representing the view of the WG.] | | |
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**BACKGROUND**

The FCC public notice of inquiry, NOI, GN Docket No. 17-183, titled “Expanding Flexible Use in Mid-Band Spectrum between 3.7 and 24 GHz.” (FC 17-104, Released: August 3, 2017). This NOI is largely in response to lobbying by two separate coalitions of Wi-Fi manufactures who are seeking more bandwidth for their services.

Part of this “expansion of use” includes opening bands in the 6 GHz to 7 GHz range which is of concern to current 802.15 users of these bands under FCC PART 15 Subpart C Section 15.250, and/or under Subpart F.

This document was prepared to solicit 802.15 working group support of the viewpoint that it represents.

**Ultra-wideband and wideband applications in the 6 GHz TO 7 GHz band**

The FCC NOI and the proposed 802 response are in general representing the view of 802.11 Wi-Fi equipment manufacturers who are seeking more spectrum to offer additional service to their users and additional business opportunities. There are however manufacturers of 802.15 equipment utilizing 802.15.4a (2007), IEEE 802.15.6 (2012), IEEE 802.15.4f (2012), and soon IEEE 802.15.8, already operating in the licensed exempt UWB band between 6 GHz and 7 GHz under FCC PART 15 Subpart C Section 15.250, and/or under Subpart F depending on their characteristics. [These are the FCC regulations for wideband (WB) and ultra-wideband (UWB)]. Opening these bands to 802.11 or similar higher power license exempt radio uses would create substantial new in-band interferers that would be impossible for the existing deployed WB/UWB implementations to cope with under most circumstances. One of the main application areas of the current UWB deployments is real-time location systems, which include safety and security applications. Impairment of those systems could have serious consequences.

Hundreds of companies have invested massively in R&D over the past few years developing products using 802.15 IR-UWB modulations with various use-cases, including:

* Security of infants and geriatrics in a hospital/home setting
* Safety of personnel operating in proximity to machinery
* Guidance/safety of first responders, e.g. firefighters entering smoke filled buildings
* Automotive passive entry systems based on secure proximity detection
* Position based secure access to buildings, and, position based payment systems.
* Security of inmates/staff in a prison setting
* General indoor navigation, autonomous robot guidance, factory automation, smart home.

Using existing coexistence techniques, typical 802.11 (or similar) radios are unable to detect-and-avoid the deployed wideband and UWB devices, which have maximum transmit level of -41.3 dBm/MHz, unless the 802.11 (or similar) radios include specific demodulators for the deployed modulations. Unless there are effective demonstrated coexistence mechanisms and these mechanisms are made a mandatory part of any new 802.11 standard operating in these UWB bands, the IEEE 802.15 Working Group is opposed to opening up the 6 GHz to 7 GHz bands to additional license exempt use supporting 802.11 (or similar) modulations. Likewise the IEEE 802.15 Working Group is against any 802 position supporting this NOI unless language is included indicating that support is conditional on demonstrated coexistence mechanisms.