**IEEE P802.15**

**Wireless Personal Area Networks**

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| Project | IEEE P802.15 Working Group for Wireless Personal Area Networks (WPANs) | |
| Title | IG NG-UWB PAR Drafting Notes | |
| Date Submitted | 29-January-2021 | |
| Source | [Benjamin Rolfe] [Blind Creek Associates]  [Benjamin A. Rolfe]  [BCA] | E-mail: [ben.rolfe @ ieee.org ] |
| Re: | Working draft of PAR content | |
| Abstract | Working draft for developing PAR content | |
| Purpose | Get the PAR done | |
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NG-UWB as 802.15.4 Amendment PAR Draft

1.1 Project Number: P802.15.4ab

1.2 Type of Document: Standard

1.3 Life Cycle: Full Use

2.1 Project Title: Standard for Low-Rate Wireless Networks

Amendment: Enhanced Ultra Wide-Band (UWB) Physical Layers (PHYs) and Associated MAC Enhancements.

3.1 Working Group: Wireless Specialty Networks (WSN) Working Group (C/LM/802.15 WG)

[Boiler plate contact info etc]

4.1 Type of Ballot: Individual

4.2 Expected Date of submission of draft to the IEEE SA for Initial Standards Association Ballot: Jan 2022

4.3 Projected Completion Date for Submittal to RevCom: Dec 2022

5.1 Approximate number of people expected to be actively involved in the development of this project : 10

5.2.a Scope of the complete standard:

This standard defines the physical layer (PHY) and medium access control (MAC) sublayer specifications for low-data-rate wireless connectivity with fixed, portable, and moving devices with no battery or very limited battery consumption requirements. In addition, the standard provides modes that allow for precision ranging. PHYs are defined for devices operating in a variety of geographic regions.

5.2.b Scope of the project:

This amendment defines enhancements to the Impulse Radio (IR) Ultra wideband (UWB) PHYs and related MAC enhancements to support for ranging, localization, sensing and [low latency data communication | time sensitive] [and leverage precise timing available from the ranging capable PHY], very low power operation, highly scalable and flexible topologies and management of the user experience. The enhancements will retain compatibility with legacy Enhanced Ranging Capable Devices (ERDEVs) and include mechanisms to minimize risk of disruption to legacy 802.15.4 UWB and support techniques to improve performance in presence of other wireless communications systems operating in overlapping unlicensed bands. This amendment includes support for hybrid and multi-link support. The amendment expands the data rates available to include lower rates and higher data rates available to support with PHY rates [of [from lower bound] at least 75 Mbits/sec] | [support trading between range, rate and power levels] [with link range from less than 1m to over 100m]

5.3 Is the completion of this standard dependent upon the completion of another standard? No

5.4 Purpose: [purpose of 802.15.4]

5.5 Need for the Project:

The application of UWB has expanded rapidly and has become part of high volume consumer platforms, and is being applied to an ever wider range of applications using the unique capabilities of UWB to provide very accurate ranging, localization, sensing and data communication with excellent coexistence properties. New applications require flexibility and scalability in network topologies, varying in size, shape and number of devices from a few devices within a meter or less of each other to hundreds or more devices up to 100m distant. Expanding data rates available to both lower rates with greater distances than current rates, and higher rates at short distances. This expands the options for trading distance, range and energy consumption.

The inherently low impact coexistence characteristics of UWB makes it attractive to use in conjunction with other wireless technologies. Many applications are addressed with non-standard technologies. This amendment expands the usability of the standard to enable standards-based solutions in a wider range of applications to meet the demands of users in the consumer, public health, industrial and transportation sectors by expanding data rate capability to both lower and higher data rates than the previous standard, supporting wider trade-off space, and other PHY enhancements to improve performance in widely varying environments and support a greater density of devices operating effectively in the same area. MAC enhancements improve handling of new kinds of data content combined with high precision ranging and sensing in both static and dynamic environments, add support for coordinated use of multiple PHYs and multiple links, and enhances support for integration within the 802 architecture. Compatibility and positive coexistence with legacy ERDEVs is provided to enhance without disruption the capabilities provided by already deployed devices.

5.6 Stakeholders for the Standard:

Chip Vendors, Product Manufacturers in consumer, industrial, transportation, public health and organizations and users of such products.

6.1 Intellectual Property

6.1.1 Is the Standards Committee aware of any copyright permissions needed for this project? No

6.1.2 Is the Standards Committee aware of possible registration activity related to this project? No

7.1 Are there other standards or projects with a similar scope? No

7.2 Is it the intent to develop this document jointly with another organization? No

8.1 Additional Explanatory Notes: