**IEEE P802.15**

**Wireless Personal Area Networks**

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| Project | IEEE P802.15 Working Group for Wireless Personal Area Networks (WPANs) | |
| Title | **SG14 PAR - Working Draft** | |
| Date Submitted | [14 May 2021] | |
| Source | [Clint Powell, Facebook] | E-mail: [cpowell@ieee.org] |
| Abstract | Draft PAR for NS-UWB project. | |
| Purpose | Prepare PAR for submission | |
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**802.15.14**

**Submitter Email:** pat.kinney@kinneyconsultingllc.com

**Type of Project:** New IEEE Standard based on IEEE 802.15.4-2020

**Project Request Type:** New

**PAR Request Date:** July 2020

**PAR Approval Date:**

**PAR Expiration Date:**

**PAR Status:** Draft

**Root Project:** IEEE 802.15.4-2020

**1.1 Project Number:** 802.15.14

**1.2 Type of Document:** Standard

**1.3 Life Cycle:** Full Use

**2.1 Project Title:** IEEE Standard for Impulse Radio Ultra Wideband Wireless Networks

**Change to Title:**

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

**Contact Information for Working Group Chair:**

**Name:** PATRICK KINNEY

**Email Address:**

**Phone:**

**Contact Information for Working Group Vice Chair:**

**Name:** Rick Alfvin

**Email Address:**

**3.2 Sponsoring Society and Committee:** IEEE Computer Society/LAN/MAN Standards Committee(C/LM)

**Contact Information for Sponsor Chair:**

**Name:** Paul Nikolich

**Email Address:**

**Phone:**

**Contact Information for Standards Representative:**

**Name:** James Gilb

**Email Address:**

**Phone:**

**4.1 Type of Ballot:** Individual

**4.2 Expected Date of submission of draft to the IEEE SA for Initial Sponsor Ballot:**

Jan 2022

**4.3 Projected Completion Date for Submittal to RevCom:**

**Note: Usual minimum time between initial sponsor ballot and submission to Revcom is 6 months:** Jul 2022

**5.1 Approximate number of people expected to be actively involved in the development of this project:** 25

**5.2 Scope of proposed standard:** This standard defines the physical layer (PHY) and data link layer specifications for impulse radio ultra wideband (UWB) wireless connectivity with fixed, portable, and moving devices with limited energy consumption requirements, and supports precision ranging. PHYs are defined for devices operating in a variety of geographic regions.

**Change to scope of proposed standard:** [none]

**5.3 Is the completion of this standard contingent upon the completion of another standard?** No

**5.4 Purpose:** The standard provides for low complexity, low cost, low power consumption, and wireless connectivity among inexpensive devices, with impulse radio UWB PHY and data link layers providing precision ranging capability that is accurate to much better than one meter, especially targeting the communications requirements of what is now commonly referred to as the Internet of Things. Multiple PHYs are defined to support multiple bands.

**Change to Purpose:** [none]

**5.5 Need for the Project:** The 802.15.4-2020 standard, including the 805.15.4w-2020, 802.15.4y-2021, and 802.15.4z-2020 amendments, hereafter referred to collectively as 802.15.4-2020, is overly complex and the end-users (industry) will benefit by partitioning it into to two simple focused specifications, enabling improved multi-vendor interoperability and market growth.

**5.6 Stakeholders for the Standard:** The stakeholders include manufacturers and users of telecom, medical, environmental, energy, automobile, and consumer electronics equipment and manufacturers and users of equipment involving the use of wireless sensor and control networks.

**Intellectual Property**

**6.1a Is the Sponsor aware of any copyright permissions needed for this project?**

No

**6.2a Is the Sponsor aware of possible registration activity related to this project?**

Yes

**If yes please explain:** This standard specifies the use of the 64-bit Extended Unique Identifier (EUI- 64) and the Company ID (CID).

**7.1 Are there other standards or projects with a similar scope?** Yes

**If yes please explain:** As specified in the need for the project, 802.15.4-2020 will be split into 2 different projects, IEEE P802.15.14 and IEEE P802.15.15.

**7.2 Joint Development**

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

**8.1 Additional Explanatory Notes:**

Currently 802.15.4-2020 is extensively implemented for an increasingly diverse range of applications referred to as the Internet of Things.

802.15.4-2020 has been adopted for a diverse range of applications which includes utility, smart city, industrial, entertainment, and other consumer products including smart phones, automotive, and the list keeps growing.

However, 802.15.4-2020 has become extremely difficult to understand and very complex to amend or enhance. Recently it has become clear that the functionality and features defined in 802.15.4-2020 can be divided broadly into 2 categories, namely i) PHY functionality and MAC features implemented for UWB, and ii) PHY functionality and MAC features implemented for frequency shift keying (FSK), direct sequence spread spectrum (DSSS), and orthogonal frequency-division multiplexing (OFDM). The content of 802.15.4-2020 has become increasingly complex to support these 2 categories. The participants of 802.15, and others who are building implementations of different parts of 802.15.4-2020, have agreed that the partitioning of 802.15.4-2020 into 2 derived standards will improve the accessibility and comprehension of each new standard and enable further amendments and enhancements to each part without encumbrance.

List of standards referenced in the PAR are as follows:

IEEE 802.15.4-2020, IEEE Standard for Low-Rate Wireless Networks

IEEE 802.15.4w-2020, IEEE Standard for Low-Rate Wireless Networks Amendment for a Low Power Wide Area Network (LPWAN) extension to the Low Energy Critical Infrastructure Monitoring (LECIM) Physical layer (PHY)

IEEE 802.15.4y-2021, IEEE Standard for Low-Rate Wireless Networks Amendment Defining Support for Advanced Encryption Standard (AES)-256 Encryption and Security Extensions

IEEE 802.15.4z-2020, IEEE Standard for Low-Rate Wireless Networks Amendment: Enhanced Ultra Wideband (UWB) Physical Layers (PHYs) and Associated Ranging Techniques

IEEE P802.15.15, … (need to fill in once finalized by Phil)