**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 | 12 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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**802.15.15**

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

**Project Request Type:** Initiation

**PAR Request Date:** July 2020

**PAR Approval Date:**

**PAR Expiration Date:**

**PAR Status:**

**Root Project:** 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 Ultra Wideband Wireless Networks

**Change to Title:**

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

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

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**Name:** Clint Powell

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

**3.2.1 Contact Information for Standards Committee Chair:**

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**3.2.3 Contact Information for Standards Representative:**

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**4.1 Type of Ballot:** Individual

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

Jan 2022

**4.3 Projected Completion Date for Submittal to RevCom:** 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 medium access control (MAC) sublayer specifications for ultra wideband (UWB) wireless connectivity with fixed, portable, and moving devices with no battery or very limited battery consumption requirements, and supports precision ranging. PHYs are defined for devices operating in a variety of geographic regions.

**Change to scope of proposed standard:**

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

**5.4 Purpose:** The standard provides for ultra-low complexity, ultra-low cost, ultra-low power consumption, and wireless connectivity among inexpensive devices, with ultra wideband PHYs 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:** 802.15.4-2020 has evolved into a large and complex standard with many PHYs. The wide range of PHYs and their capabilities has led to the inclusion of MAC features to support specific PHYs, which has further led to many of the MAC features being mutually exclusive. The 802.15.4 standard has become extremely difficult to understand, unimplementable in its entirety, and very complex to amend or enhance. The participants of 802.15, and others who are building implementations of different parts of 802.15.4 have agreed that the partitioning of the 802.15.4 standard 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.

**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.

**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?**

Yes

**Explanation:** 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

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

**8.1 Additional Explanatory Notes:**

Currently the 802.15.4 standard is extensively implemented for an increasingly diverse range of applications including low complexity, very low cost, very low power consumption, and low data rate wireless connectivity among inexpensive devices, especially targeting the communications requirements of what is now commonly referred to as the Internet of Things. 802.15.4 specifies a range of PHYs which are suitable for vastly different applications. These include higher data rate PHYs for lower latency applications, and low data rate with increased link budget for challenging environments. In addition, some of the alternate PHYs provide precision ranging capability that is accurate to much better than one meter. Multiple PHYs are currently defined to support a variety of frequency bands.

802.15.4 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.

Recently it has become clear that the functionality and features defined in the 802.15.4 standard 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 FSK, DSSS and OFDM. The content of 802.15.4 has become increasingly complex to support these 2 categories [more content here]