P802.15.4t

Submitter Email: bheile@ieee.org
Type of Project: Amendment to IEEE Standard 802.15.4-2011
PAR Request Date: 14-Sep-2015
PAR Approval Date:
PAR Expiration Date:
Status: Unapproved PAR, PAR for an Amendment to an existing IEEE Standard

1.1 Project Number: P802.15.4t
1.2 Type of Document: Standard
1.3 Life Cycle: Full Use

2.1 Title: Standard for Local and metropolitan area networks--Part 15.4: Low-Rate Wireless Personal Area Networks (LR-WPANs) Amendment for a High(er) Rate Physical (PHY) Layer

3.1 Working Group: Wireless Personal Area Network (WPAN) Working Group (C/LM/WG802.15)
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3.2 Sponsoring Society and Committee: IEEE Computer Society/LAN/MAN Standards Committee (C/LM)
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4.1 Type of Ballot: Individual
4.2 Expected Date of submission of draft to the IEEE-SA for Initial Sponsor Ballot: 02/2017
4.3 Projected Completion Date for Submittal to RevCom: 08/2017

5.1 Approximate number of people expected to be actively involved in the development of this project: 100

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. Physical layers (PHYs) are defined for devices operating various license-free bands in a variety of geographic regions

Changes in scope: 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. ~~typically~~In ~~operating~~addition, ~~in~~ the ~~personal~~standard ~~operating~~provides ~~space~~modes ~~(POS)~~that ~~of~~allow ~~10~~for ~~m~~precision ranging. Physical layers (PHYs) are defined for ~~–~~devices ~~Devices~~ operating ~~in~~various ~~the~~ license-free ~~868-868.6 MHz, 902-928 MHz, and 2400-2483.5 MHz~~ bands ~~–~~in ~~Devices~~a ~~with~~variety ~~precision ranging, extended range, and enhanced robustness and mobility – Devices operating according the Chinese regulations, Radio Management~~ of ~~P.~~geographic ~~R~~regions~~. of China doc. #6326360786867187500 or current document, for one or more of the 314-316 MHz, 430-434 MHz, and 779-787 MHz frequency bands – Devices operating in the 950-956 MHz allocation in Japan and coexisting with passive tag systems in the band~~

5.2.b. Scope of the project: This amendment defines a physical layer for IEEE Std. 802.15.4 current revision, capable of supporting 2 Mbps data rates, utilizing the 2400 - 2483.5 MHz band, having backwards-compatibility to, and the same occupied bandwidth as, the present 2450 MHz O-QPSK physical layer, and capable of simple implementation. This amendment defines modifications to the Medium Access Control (MAC) layer needed to support this new physical layer.

5.3 Is the completion of this standard dependent upon the completion of another standard: Yes
If yes please explain: This amendment assumes the completion of the 15.4 Revision Project currently underway.

5.4 Purpose: The standard provides for ultra low complexity, ultra low cost, ultra low power consumption, and low data rate wireless connectivity among inexpensive devices. In addition, one of the alternate PHYs provides precision ranging capability that is accurate to one meter. Multiple PHYs are defined to support a variety of frequency bands.

Changes in purpose: The standard provides for ultra low complexity, ultra low cost, ultra low power consumption, and low data rate wireless connectivity among inexpensive devices. ~~The raw data rate is high enough (250 kb/s) to satisfy a set of applications but is also scaleable down to the needs of sensor and automation needs (20 kb/s or below) for wireless communications.~~ In addition, one of the alternate PHYs provides precision ranging capability that is accurate to one meter. Multiple PHYs are defined to support a variety of frequency bands~~including – 868-868.~~6 MHz – 902-928 MHz – 2400-2483.5 ~~MHz – 314-316 MHz, 430-434 MHz, and 779-787 MHz band for LR-WPAN systems in China – 950-956 MHz in Japan~~

5.5 Need for the Project: The IEEE Std. 802.15.4 enables implementations with low energy consumption by operating in short, high-speed bursts, followed by relatively long sleep periods, resulting in a low-rate network with good battery life. When the original IEEE Std. 802.15.4 was published in 2003, the performance of embedded microcomputers and other sources and sinks of data was such that the 250 kb/s raw data rate of its 2450 MHz O-QPSK PHY was considered to be the highest rate practically attainable as well as more than sufficient to support typical monitoring and control traffic and meta data in what we now call the Internet of Things (IoT).

In today's world, however, there is growing need for higher data rates while, at the same time, supporting backward compatibility and continuing to reduce the energy consumption of IEEE Std. 802.15.4 devices even further. This enhanced performance is needed to help IEEE Std. 802.15.4 maintain its leadership position and compete against other loT oriented communication protocols that are expected to emerge in the near future.

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

Intellectual Property
6.1.a. Is the Sponsor aware of any copyright permissions needed for this project?: No
6.1.b. Is the Sponsor aware of possible registration activity related to this project?: No

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7.1 Are there other standards or projects with a similar scope?: No
7.2 Joint Development
Is it the intent to develop this document jointly with another organization?: No

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8.1 Additional Explanatory Notes (Item Number and Explanation): 5.2a: This is the scope as it appears in the revision PAR project which is currently in sponsor ballot and which will be completed and published before this amendment
5.4: This is the purpose as it appears in the revision PAR project which is currently in sponsor ballot and which will be completed and published before this amendment