

# P802.15.4s

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**Type of Project:** Amendment to IEEE Standard 802.15.4-2011

**PAR Request Date:** 08-Jun-2014

**PAR Approval Date:** 21-Aug-2014

**PAR Expiration Date:** 31-Dec-2018

**Status:** PAR for an Amendment to an existing IEEE Standard

**Root Project:** 802.15.4-2011

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**1.1 Project Number:** P802.15.4s

**1.2 Type of Document:** Standard

**1.3 Life Cycle:** Full Use

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**2.1 Title:** Standard for Low-Rate Wireless Networks: Amendment Enabling Spectrum Resource Measurement Capability

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**3.1 Working Group:** Wireless Personal Area Network (WPAN) Working Group (C/LM/WG802.15)

**Contact Information for Working Group Chair**

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

**Contact Information for Sponsor Chair**

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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:** 07/2016

**4.3 Projected Completion Date for Submittal to RevCom:** 05/2017

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**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 allow for~~ ~~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~~ ~~doe.~~ ~~#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 to IEEE Std 802.15.4 defines MAC related functions to enable spectrum resource management. It specifies

- spectrum resource measurements and network performance metrics, such as packet error ratio, delay, etc,
- information elements and data structures to capture these measurements,
- procedures for collecting and exchanging spectrum resource measurement information with higher layers or other devices.

**5.3 Is the completion of this standard dependent 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 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 sealeable 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:** As various wireless systems are deployed in the shared and license exempt frequency bands including 2.4GHz and 915MHz bands, heavy interference has limited performance of the wireless systems. In order for these wireless systems to operate more effectively, a standardized set of spectrum resource measurements is needed that will facilitate management functions in these networks.

**5.6 Stakeholders for the Standard:** The stakeholders include 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.

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## 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):** Section 5.2a: The scope included here is the scope as it appears in the PAR for the in process revision of 15.4 scheduled for completion in December 2014.

Section 5.4: The purpose included here is the purpose as it appears in the PAR for the in process revision of 15.4 scheduled for completion in December 2014.