

September 18, 2014

IEEE P802. 15-14-0581-00-0000

**IEEE P802.15  
Wireless Personal Area Networks**

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Project	IEEE P802.15 Working Group for Wireless Personal Area Networks (WPANs)		
Title	802.15.4q PAR modification		
Date Submitted	September 18, 2014		
Source	[James Gilb] [] [San Diego, CA]	Voice: Fax: E-mail:	[858-229-4822] [] [last name at ieee dot org]
Re:			
Abstract	Modification of PAR for 802.15.4q.		
Purpose			
Notice	This document has been prepared to assist the IEEE P802.15. It is offered as a basis for discussion and is not binding on the contributing individual(s) or organization(s). The material in this document is subject to change in form and content after further study. The contributor(s) reserve(s) the right to add, amend or withdraw material contained herein.		
Release	The contributor acknowledges and accepts that this contribution becomes the property of IEEE and may be made publicly available by P802.15.		

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# P802.15.4q

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**Submitter Email:** [gilb@ieee.org](mailto:gilb@ieee.org)

**Type of Project:** Modify Existing Approved PAR

**PAR Request Date:** 18-Sep-2014

**PAR Approval Date:**

**PAR Expiration Date:**

**Status:** Unapproved PAR, Modification to a Previously Approved PAR for an Amendment

**Root PAR:** P802.15.4q **Approved on:** 05-Dec-2012

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

**1.2 Type of Document:** Standard

**1.3 Life Cycle:** Full Use

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**2.1 Title:** Standard for Local and metropolitan area networks--Part 15.4: Low-Rate Wireless Personal Area Networks (LR-WPANs) Amendment for an Ultra Low Power Physical Layer

**Changes in title:** ~~IEEE~~ Standard for Local and metropolitan area networks--Part 15.4: Low-Rate Wireless Personal Area Networks (LR-WPANs) Amendment for an Ultra Low Power Physical Layer

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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:** 06/2015

**4.3 Projected Completion Date for Submittal to RevCom:** 10/2015

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**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 typically operating in the personal operating space (POS) of 10 m.

Physical layers (PHYs) are defined for

-- Devices operating in the license-free 868-868.6 MHz, 902-928 MHz, and 2400-2483.5 MHz bands

-- Devices with precision ranging, extended range, and enhanced robustness and mobility

-- Devices operating according the Chinese regulations, Radio Management of P. R. 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 an ultra low power (ULP) physical layer operating in sub 1 GHz and 2.4 GHz license exempt bands supporting data rates of at least 100 kbps at a

**Changes in scope of the project:** This amendment defines an ultra low power (ULP) physical layer operating in sub 1 GHz and 2.4 GHz license exempt bands supporting ~~typical~~ data rates ~~up of to at least~~

range of typically 100 m. This amendment also defines the necessary MAC changes required for supporting the new ULP physical layer. The desired peak power consumption for the PHY should be typically less than 5 mW and the energy per bit transmitted should be less than 5 nJ.

100 kbps at a range of typically 100 m. This amendment also defines the necessary MAC changes required for supporting the new ULP physical layer. The desired peak power consumption for the PHY should be typically less than 5 mW and the energy per bit transmitted should be less than 5 nJ.

**5.3 Is the completion of this standard dependent upon the completion of another standard:** No

**5.4 Purpose:** This document will not include a purpose clause.

**5.5 Need for the Project:** Emerging applications in sensor networks demand increasingly small form factor, low power consumption and low cost solutions. From a power consumption perspective, this amendment addresses solutions making it possible to achieve a battery life of several years when connected to coin cell batteries and/or making it possible to use harvested energy sources while meeting the targeted data rates and continuing to support the small form factor, low cost attributes of 802.15.4.

**5.6 Stakeholders for the Standard:** Chip vendors, Equipment manufacturers, wireless sensor application developers and users

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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):** 5.2b Discussion in the working group revealed that the scope did not sufficiently constrain the problem, for example, by specifying the desired range. In addition, The current state of the art in low power radios is lower than 15 mW. Battery life depends on the energy per bit which was not specified in the previous PAR.