**IEEE P802.15**

**Wireless Personal Area Networks**

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| Project | IEEE P802.15 Working Group for Wireless Personal Area Networks (WPANs) |
| Title |  |
| Date Submitted | [11 March, 2010] |
| Source | [][][64-68 London Road, Redhill, UK] | Voice: [ +44 1737 788216 ]Fax: [ ]E-mail: [ david.evans@philips.com ] |
| Re: | [Request to 802.15 for an 802.15.4 MBAN amendment.] |
| Abstract | [The FCC is in the process of allocating spectrum for MBAN. 802.15.4 is widely available and has a well established eco-system. An opportunity now exists to develop a 15.4 amendment to exploit the benefits of 802.15.4 in spectrum that is reserved for MBAN use. This document outlines a draft PAR and 5C to support of the request to 802.15 for an 802.15.4 MBAN amendment.] |
| Purpose | [This draft PAR and 5C is provided in support of the request to 802.15 for an 802.15.4 MBAN amendment, document number 15-10-0129-01-wng0.] |
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| 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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| **Draft PAR Confirmation Number:**  |
| **Submittal Email:** david.evans@philips.com |
| **Type of Project:** Amendment to an Existing Standard 802.15.4 |
| **1.1 Project Number:** P802.15.4 |
| **1.2 Type of Document:** Standard for |
| **1.3 Life Cycle:** Full |
| **1.4 Is this project in ballot now?** NO |

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| **2.1 Title of Standard:**Title of the base standard: Standard for Information Technology - Telecommunications and Information Exchange Between Systems - Local and MetropolitanArea Networks - Specific Requirements - Part 15.4: Wireless Medium Access Control (MAC) and Physical Layer (PHY) Specifications for Low Rate Wireless Personal Area Networks (WPANs)Amendment: Alternative Physical Layer Extension to support Medical Body Area Networks (MBAN) operating in the 2360-2400 MHz band. |

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| **3.1 Name of Working Group:** Wireless Personal Area Network (WPAN) Working Group   |
| **Contact information for Working Group Chair** Robert F HeileEmail: bheile@ieee.orgPhone: 781-929-4832 |
| **Contact Information for Working Group Vice Chair** Email: Phone:  |
| **3.2 Sponsoring Society and Committee:** IEEE Computer Society/Local and Metropolitan Area Networks (C/LM)**Contact information for Sponsor Chair:** Paul NikolichEmail: p.nikolich@ieee.orgPhone: 857-205-0050**Contact information for Standards Representative:**Email: Phone:  |
| **3.3 Joint Sponsor:**/ ()**Contact information for Sponsor Chair:** Email: Phone: **Contact information for Standards Representative:** Email: Phone:  |
| **4.1 Type of Ballot:** Individual  |
| **4.2 Expected Date of Submission for Initial Sponsor Ballot:**  |
| **4.3 Projected Completion Date for Submittal to RevCom:**  |
| **5.1 Approximate number of people expected to work on this project:**  |

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| **5.2 Scope of Proposed Standard:**This amendment defines an alternate 15.4 PHY and modifications to the MAC needed to support this PHY that complies with the FCC MBAN regulations. |

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| **5.3 Is the completion of this standard is dependent upon the completion of another standard:** NO**If yes, please explain:** |

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| **5.4 Purpose of Proposed Standard:**This amendment describes support for Medical Body Area Networks (MBAN) operating in the band from 2360 to 2400 MHz. The FCC will define rules for the use of the MBAN band. The definition of this 15.4 PHY amendment will allow 15.4 and MAC amendments such as 15.4e to be used in the MBAN band. Medical devices will be less subject to interference when operating in this band compared to the 2.4 GHz band. |

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| **5.5 Need for the Project:**802.15.4 has always supported operation in appropriate bands and an opportunity is now available to extend the operation of 15.4 into a band that is reserved for MBAN use. The FCC will allocate the band 2360 to 2400 MHz for this purpose and will loosely define channel parameters and access rules along with a frequency coordination model to minimize interference to incumbent users in the band. This amendment will define an alternate PHY and the necessary modifications to the MAC that are needed to support the PHY operation according to the FCC rules in the MBAN band.  |
| **5.6 Stakeholders for the Standard:**Given the expected growth in wireless networks to provide the flexible deployment patient monitoring and home healthcare provision, the stakeholders include healthcare providers both within hospitals and in residential environments along with service providers that offer remote support facilities.  |
| **Intellectual Property** **6.1.a.** Has the IEEE-SA policy on intellectual property been presented to those responsible for preparing/submitting this PAR prior to the PAR submittal to the IEEE-SA Standards Board? YES/NOIf yes, state date: If no, please explain: **6.1.b.** Is the Sponsor aware of any copyright permissions needed for this project? If yes, please explain: NO**6.1.c.** Is the Sponsor aware of possible registration activity related to this project? If yes, please explain: NO |
| **7.1 Are there other standards or projects with a similar scope?** NOIf yes, please explain: **and answer the following:** Sponsor Organization: Project/Standard Number: Project/Standard Date: 0000-00-00Project/Standard Title: |
| **7.2 Future Adoptions****Is there potential for this standard (in part or in whole) to be adopted by another national, regional, or international organization?** Do not know at this time.If Yes, the following questions must be answered:Technical Committee Name and Number: **Other Organization Contact Information:** **Contact person:** **Contact Email address:**  |
| **7.3 Will this project result in any health, safety, security, or environmental guidance that affects or applies to human health or safety?** NOIf yes, please explain:  |
| **7.4 Additional Explanatory Notes: (Item Number and Explanation)**  |
| **8.1 Sponsor Information:**Is the scope of this project within the approved scope/definition of the Sponsor's Charter? YESIf no, please explain:  |

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Contact the NesCom Administrator

**IEEE P802.15 Low Rate Wireless Personal Area Networks Study Group Functional Requirements Standards Development Criteria**

The IEEE P802.15.4? Study Group for Wireless Personal Area Networks (WPANs) reviewed and completed the required IEEE Project 802 Functional Requirements, Standards Development Criteria (a.k.a. the Five Criteria). The IEEE 802.15 WPAN Five Criteria response is in Italics below.

**1. BROAD MARKET POTENTIAL**

**a) Broad sets of applicability**

There is increasing use of wireless connectivity for healthcare applications both within hospitals and in residential situations. This provides flexibility to clinicians and healthcare providers and mobility and convenience for the patients. Low Rate Wireless Personal Area Networks (WPAN-LR) are already widely being used for this.

**b) Multiple vendors and numerous users**

The membership of 802.15 demonstrates the interest in this class of WPANs. Members include international wireless industry leaders, academic researchers, semiconductor manufacturers, system integrators and end users.

There are at least 4 semiconductor manufacturers that are already providing system on chip semiconductor solutions for 802.15.4.

Industry consortiums are actively addressing the requirements of ultra low power, low data rate wireless PAN class networks and are promoting the current standard for healthcare applications.

**c) Balanced costs (LAN versus attached stations)**

The proposed amendment to 802.15.4 will be developed with the aim that the connectivity costs will be a reasonably small fraction of the cost of the target application devices.

**2. COMPATIBILITY**

**IEEE 802 defines a family of standards. All standards shall be in conformance with IEEE 802.1 Architecture, Management and Interworking. All LLC and MAC standards shall be compatible with ISO 10039, MAC Service Definition1, at the LLC/MAC boundary. Within the LLC Working Group there shall be one LLC standard, including one or more LLC protocols with a common LLC/MAC interface. Within a MAC Working Group there shall be one MAC standard and one or more Physical Layer standards with a common MAC/Physical layer interface. Each standard in the IEEE 802 family of standards shall include a definition of managed objects, which are compatible with OSI systems management standards.**

Note: This requirement is subject to final resolution of corrections and revision to current ISO 10039, currently inconsistent with ISO 8802 series standards.

The MAC (Medium Access Control) Layer of the Wireless Personal Area Network (WPAN) Standard will be compatible with the IEEE 802 requirements for architecture, management, and inter-networking.

**3. DISTINCT IDENTITY**

**a) Substantially different from other IEEE 802 standards.**

802.15.4 inherently supports wireless sensor and control applications. Applications that will use the MBAN spectrum will be for the transmission of data and most likely be for either sensing or controls. However without this amendment 802.15.4 will not support the new MBAN spectrum allocation.

**b) One unique solution per problem (not two solutions to a problem).**

The proposed amendment to 802.15.4 will provide a unique solution for the MBAN spectrum.

**c) Easy for the document reader to select the relevant specification.**

The proposed amendment for 802.15.4 will be clearly identified as a specification for the MBAN.

**4. TECHNICAL FEASIBILITY**

**a) Demonstrated system feasibility**

This amendment will use the established wireless system functions of 802.15.4. The MBAN spectrum is adjacent to the 2.4 GHz band and minimal change is expected in radio performance. Likewise any additional features in the MAC such as primary user protection mechanisms are already being used in other frequency bands.

**b) Proven technology, reasonable testing**

The technology that will use MBAN spectrum is the same as that for the 2.4 GHz band and many examples of this are already readily available.

**c) Confidence in reliability**

The use of the MBAN spectrum will increase the reliability of 802.15.4 for medical and healthcare applications since this band will be less subject to interference. However 802.15.4 will eventually coexist with 802.15.6 in the MBAN spectrum and so coexistence between the two systems needs to be addressed. An appropriate coexistence assurance document will be created.

**5. ECONOMIC FEASIBILITY**

**a) Known cost factors, reliable data**

MBAN devices will make use of the existing high volume applications in the 2.4 GHz band.

**b) Reasonable cost for performance**

Performance and costs are already known from 2.4 GHz 80.15.4 solutions.

**c) Consideration of installation costs**

One of the 802.15.4 standard objectives includes low cost installation with minimal to no operator intervention.