

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

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Project	IEEE P802.15 Working Group for Wireless Personal Area Networks (WPANs)		
Title	<b>IEEE 802.15 Medical Body Area Networks Study Group 5 Criteria</b>		
Date Submitted	[13 <sup>th</sup> September, 2010]		
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Re:	[Request to 802.15 for an 802.15.4 MBAN amendment.]		
Abstract	[During the March 2010 IEEE 802 Plenary the Medical Body Area Networks Study Group was formed to study and submit a Project Authorization Request along with the supporting 5 Criteria.]		
Purpose	[Submit the PAR to the P802.15 Working Group]		
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## 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

*Wireless connectivity is already used 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. Applications include electrocardiography and the monitoring of pulse oximetry, blood pressure and glucose levels as well as other patient vital signs like respiration, heart rate and temperature.*

#### 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, medical equipment 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 in low data rate applications. Applications that will use the Medical Body Area Network (MBAN) spectrum will be for the transmission of data and most likely be for sensing and may also be used for 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 solution for the use of the MBAN spectrum that makes use of existing silicon solutions and targets both on and off body applications. 802.15 TG6 is also addressing BAN and is specifically targeting both low to high data rates for on body applications.*

#### **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 spectrum.*

### **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 that will be included as an Annex (E) in the IEEE 802.15.4 MBAN amendment.*

### **5. ECONOMIC FEASIBILITY**

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

*IEEE 802.15.4 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 802.15.4 solutions.*

**c) Consideration of installation costs**

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