

IEEE P802.15
Wireless Personal Area Networks

Project	IEEE P802.15 Working Group for Wireless Personal Area Networks (WPANs)		
Title	Medical Body Area Networks for Chinese Medical Frequency Bands Study Group 5 Criteria		
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Re:	[Request to 802.15 for an 802.15.4 MBAN amendment.]		
Abstract	[During the November 2011 IEEE 802 Plenary 802.15 SG-CMB was formed to study and submit a Project Authorization Request along with the supporting 5 Criteria for the Chinese medical bands]		
Purpose	[Submit the PAR to the 802.15 Working Group]		
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IEEE P802.15.4n-China Medical Bands-- 5 Criteria

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. 802.15.4 is 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. In China as in the US, 802.15.4/LR-WPAN is part of the growing Internet of Things Industries; it is being applied in hospital areas for medical and related info communications and this amendment is expected to enhance its usability.

b) Multiple vendors and numerous users

The membership of IEEE 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 12 semiconductor manufacturers that are already providing system on chip semiconductor solutions for IEEE Std. 802.15.4.

Industry consortiums are actively addressing the requirements of ultra low power, LR-WPAN class networks and are promoting the current standard for healthcare applications.

Medical Organizations are planning to adopt LR-WPAN technologies to provide more convenient and low-cost services to patients.

c) Balanced costs (LAN versus attached stations)

The proposed amendment to IEEE Std. 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 the IEEE 802.1 Architecture, Management, and Interworking documents as follows: 802 Overview and Architecture, 802.1D, 802.1Q, and parts of 802.1f. If any variances in conformance emerge, they shall be thoroughly disclosed and reviewed with 802.

Each standard in the IEEE 802 family of standards shall include a definition of managed objects which are compatible with systems management 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.

If needed, this amendment will include a definition of managed objects which are compatible with systems management standards.

3. DISTINCT IDENTITY

a) Substantially different from other IEEE 802 standards.

There is no other standard in 802 which addresses optimized wireless sensor and control oriented medical applications operating in these Chinese medical bands as defined in the Chinese Radio Administration rules doc. # 423-2005.

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

This proposed amendment to IEEE Std. 802.15.4 is unique in that it will provide a solution for the use in the Chinese medical bands.

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

The proposed amendment for IEEE Std. 802.15.4 will be clearly identified as a specification for the Chinese medical bands.

4. TECHNICAL FEASIBILITY

a) Demonstrated system feasibility

This amendment will use the established wireless system functions of IEEE 802.15.4. These approved Chinese medical bands are close to the 780MHz band and minimal change is expected in radio design. 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 used for the Chinese medical bands is the same as that for the 780 MHz band and many examples of this are readily available.

c) Confidence in reliability

The use of the Chinese medical bands will increase the reliability of IEEE Std. 802.15.4 for medical and healthcare applications since these bands will be less subject to interference.

Coexistence of 802 wireless standards specifying devices for unlicensed operation

If needed, a Coexistence Assurance document will be created but in all likelihood one will not be necessary since there are currently no other IEEE 802 standards defined for use in these bands.

5. ECONOMIC FEASIBILITY

a) Known cost factors, reliable data

IEEE Std. 802.15.4 Chinese medical devices will make use of the existing high volume applications in the Chinese medical bands. As a result cost factors and reliable data are well known.

b) Reasonable cost for performance

Performance and costs are known from a multitude of existing IEEE 802.15.4 solutions.

c) Consideration of installation costs

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