**IEEE P802.15**

**Wireless Personal Area Networks**

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| Project | IEEE P802.15 Working Group for Wireless Personal Area Networks (WPANs) |
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| Abstract | [This document aims to be a working draft on five criteria, in conjunction with the draft PAR for SRU in WPANs. This document bases on DCN15-13-0294-01-0sru, and provides some comments and discussion points. ] |
| Purpose | [ For SG discussions ] |
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**IEEE P802.15.4 Low Rate Wireless Personal Area Networks Study Group Functional Requirements Standards Development Criteria**

The IEEE P802.15.4 Interest Group for Wireless Personal Area Networks (WPANs) started to discuss and draft 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**

*Wide application spaces of the IEEE 802.15.4, including Hospital/Medical/Healthcare, Industrial Automation and Social Infrastructure systems, require a set of standardized definitions and protocol for Radio Resource Measurement and Management (RRMM), which enables each strategy and policy of Spectrum Resources Usage (SRU) for the reliable system operation. The SRU strategy and policy required by each application space may diverse and sometimes unique, while pertaining RRMM protocol for measurement and management has to be crafted such that maximize the commonality for each application spaces and eventually enhance the reliability, resilience and securities.*

**b) Multiple vendors and numerous users**

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

*There are at least 10 semiconductor manufacturers that are already providing chipsets for IEEE 802.15.4. The 802.15.4 based solutions have been used and are being used in a wide range of applications.*

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

*The proposed amendment to 802.15.4 will be developed with the aim such that the additional cost of RRMM capabilities could be a negligible fraction of the entire cost of target applications.*

**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.**

*This revision will not affect the IEEE 802.15 standards' compliance with the IEEE 802 Architecture, Management, and Interworking documents as required, and will be in conformance with the IEEE 802.1 Architecture, Management, and Interworking documents.*

**3. DISTINCT IDENTITY**

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

*IEEE 802.15.4 uniquely supports wireless sensors and control applications operating in shared spectrum bands. However, the existing 802.15.4 does not support mechanisms for adequate SRU particularly in shared spectrum bands. This amendment will maximise the efficiency of areal SRU by utilising acquired RRMM information.*

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

*The proposed amendment to IEEE 802.15.4 will provide a unique solution for the RRMM and eventual efficient SRU functions.*

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

*The proposed amendment to IEEE 802.15.4 will be a clearly distinguishable specification.*

**4. TECHNICAL FEASIBILITY**

**a) Demonstrated system feasibility**

*A variety of radio resource management mechanisms based on measurements have been deployed for the systems operating in shared spectrum bands. Those contribute to improve the efficiency of SRU. The concept of those is similar to the RRMM.*

**b) Proven technology, reasonable testing**

*Many examples of RRMM mechanisms have been published in the literature and demonstrated in laboratories worldwide. There are also examples that RRMM has been deployed in operational networks.*

**c) Confidence in reliability**

*There are variety of proprietary systems with RRMM mechanisms in operation today, and their reliability is factored into the services offered.*

**d) Coexistence of 802 wireless standards specifying devices for unlicensed operation**

*An appropriate coexistence assurance document will be created, which shows the effectiveness for the coexistence of IEEE802 wireless standards and the efficiency of SRU.*

**5. ECONOMIC FEASIBILITY**

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

*IEEE 802.15.4 devices implementing RRMM protocols will make use of the existing high volume applications in the shared and license exempt frequency bands including 2.4GHz and 915MHz bands. The incremental cost for implementation is expected to be reasonable.*

**b) Reasonable cost for performance**

*Performance and costs associated with the RRMM solutions are expected to be reasonable.*

**c) Consideration of installation costs**

*One of the IEEE 802.15 standard objectives includes low cost installation with minimal or no operator intervention. The RRMM in this amendment facilitates achieving the objectives.*