**IEEE P802.15**

**Wireless Personal Area Networks**

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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 & 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 is well suited for networks which are sharing same frequency bands in same areas and are managed utilizing acquired RRMM information. This amendment to 802.15.4 for low rate WPANs maximizes the areal SRU efficiency and minimizes performance degradation due to mutual interference.*

*[note: The RRMM function is to be specified in the proposed amendment. It is a bit confusing with the current statement, that this amendment is only an enhancement in SRU efficiency.]*

**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.*

*[note: The corroborative descriptions as a unique solution will be added here.]*

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

*The proposed amendment for IEEE 802.15.4 will include the definitions of RRMM parameters as well as the communication protocol.*

*[note: Need to clarify the definitions of RRMM parameters and protocols: SAP, I/F?]*

**4. TECHNICAL FEASIBILITY**

1. **Demonstrated system feasibility**

*A variety of network management entities utilizing the proprietary RRMM information have been deployed as the utilitarian exercise in order to improve the efficiency of SRU in operational networks.*

*[note: Examples of the deployed network management entities with RRMM should be to be added.]*

**b) Proven technology, reasonable testing**

*Many examples of the RRMM information utilization have not only been published in the literature and demonstrated in laboratories worldwide, but have deployed in operational networks.*

*[note: Some specific examples should be to be provided. Also we should describe the difference in positioning of the prior-art technologies and this proposed standard amendment.]*

**c) Confidence in reliability**

*Confidence in reliability by RRMM protocol has been consistently demonstrated in currently deployed IEEE802 based solutions other than IEEE802.15.4, for example IEEE802.11k.*

*[note: Do we really want to explain this item by taking an example of 802.11k? In this case, we again need to describe the difference in positioning of 802.11k and this proposed standard amendment.]*

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

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

*[note: This doesn’t seem to be very clear…]*

**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 minimal.*

*[note: Rationale for the incremental cost to be minimal may be described.]*

**b) Reasonable cost for performance**

*Performance and costs associated with RRMM solutions have been shown to be minimal.*

*[note: A specific case showing the minimised performance and costs should be provided. ]*

**c) Consideration of installation costs**

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

*[note: This is an objective. Is it sufficient as a consideration on this item?]*