IEEE P802.15
Active RFID

Project	IEEE P802.15 Study Group for Active RFID
Title	IEEE P802.15 WPAN Active RFID
Date Submitted	[11 September, 2008]
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Re:	
Abstract	[During the November 2007 IEEE 802 Plenary the IEEE P802.15 working group formed the IEEE 802.15 RFID Study Group with the goal to determine whether there was interest in creating a Project Authorization Request for RFID. The first meeting of the RFID SG took place in January 2008 during the 802.15 Interim Meetings in Taipei, Taiwan. This document contains the 5 criteria.]
Purpose	[This document is supporting the submission of the PAR to the P802.15 Working Group]
Notice	
Release	

IEEE P802.15 Active RFID Standards Development Criteria

The IEEE P802.15 RFID Study Group for Active RFID Tags reviewed and completed the required IEEE Project 802 Functional Requirements, Standards Development Criteria (a.k.a. the Five Criteria). The IEEE 802.15 Five Criteria response is provided below.

1. BROAD MARKET POTENTIAL

a) Broad sets of applicability

There is a need for a common international standard for an active tag RFID system. The fact that multiple systems are in use today impedes the adoption of this technology as a global cross industry standard.

Examples of industries requiring active RFID applications include Aerospace, Civil Aviation, Logistics, Transportation, Railways, Oil & Gas (upstream & downstream), Chemicals, Mining, Automotive, Equipment Hire, Tolls, Beverage, Airport Operations, Port Operations.

Although these may seem like discrete industries with no direct connections in many instances their needs overlap considerably. For example, container transportation applies to each of these industries.

b) Multiple vendors and numerous users

If a true global standard were developed then it is highly likely that it would be used in all of the industries referred to above, which in turn would mean a very large user base.

That large user base would in turn generate interest from multiple vendors. Today those vendors are hesitant to proceed in this market because the smaller non standard user bases makes it extremely difficult for them to gain economies of scale and to recover their initial investment within a reasonable timeframe.

Consolidating the user bases into a common user base would provide the necessary incentive to entice multiple vendors to participate.

c) Balanced costs

Based on cost experience with 802.15.4 chip sets, the proposed amendment to 802.15.4 will be a small fraction of the cost of the tag 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 Active RFID Standard will be compatible with the IEEE 802 requirements for architecture, management, and inter-networking.

3. DISTINCT IDENTITY

a) Substantially different from other standards.
  The proposed standard functionality is not provided for today or by any other IEEE 802 standard. Both EPCglobal and ISO have interest in developing one and are interested in coordinating activities with 802. The goal here is to develop a common global standard.

b) One unique solution per problem (not two solutions to a problem).
  This proposed amendment to 802.15.4 will provide a common solution for the global market.

c) Easy for the document reader to select the relevant specification.
  The proposed amendment to 802.15.4 will be a clearly distinguishable specification.

4. TECHNICAL FEASIBILITY

a) Demonstrated system feasibility
  There are multiple technologies today that provide active tag solution. As one example, ISO 18000-7 (433 MHz) provides a protocol for active tagging which has been used for many years. So the issue is not one of technical feasibility. The issue is one of a standardized transceiver optimized for this space. The presence of multiple active tag technologies demonstrates that there is an issue with the lack of interoperability, global availability, and commonality.

b) Proven technology, reasonable testing
  There are examples of technology that exist today, which will allow design and fabrication of these systems.

c) Confidence in reliability
  The additional functionality to the MAC will be designed to meet relevant reliability standards. Existing products provide confidence in the reliability of the proposed project.

  A coexistence assurance document will be submitted to the 802.19 TAG.

5. ECONOMIC FEASIBILITY

a) Known cost factors, reliable data
  Active tag systems are already in use on a large scale but as proprietary systems. This indicates a certain level of cost tolerance is already in place in some markets. A common standard spread across a very large common user base and supported by more vendors would reduce costs from current levels.

b) Reasonable cost for performance
  Based on test results, prototype, and production solutions, the estimates meet expected size, cost, and power requirements. The system and devices are expected to work 24/7 in rugged outdoor conditions with the highest availability.

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