P802.15.6a

Submitter Email:
Type of Project: Amendment to IEEE Standard 802.15.6-2012
Project Request Type: Initiation / Amendment
PAR Request Date:
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PAR Status: Draft
Root Project: 802.15.6-2012

1.1 Project Number: P802.15.6a
1.2 Type of Document: Standard
1.3 Life Cycle: Full Use

2.1 Project Title: IEEE Standard for Local and metropolitan area networks - Part 15.6: Wireless Body Area Networks Amendment: Dependable Human and Vehicle Body Area Networks.

3.1 Working Group: Wireless Specialty Networks (WSN) Working Group(C/LM/802.15 WG)
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4.1 Type of Ballot: Individual
4.2 Expected Date of submission of draft to the IEEE SA for Initial Standards Committee Ballot: May 2022
4.3 Projected Completion Date for Submittal to RevCom: Mar 2023

5.1 Approximate number of people expected to be actively involved in the development of this project: 12
5.2.a Scope of the complete standard: This is a standard for short-range, wireless communication in the vicinity of, or inside, a human body (but not limited to humans). It uses existing industrial scientific medical (ISM) bands as well as frequency bands approved by national medical and/or regulatory authorities. Support for quality of service (QoS), extremely low power, and data rates up to 10 Mbps is required while simultaneously complying with strict noninterference guidelines where needed. This standard considers effects on portable antennas due to the presence of a person (varying with male, female, skinny, heavy, etc.), radiation pattern shaping to minimize specific absorption rate (SAR) into the body, and changes in characteristics as a result of the user motions.
5.2.b Scope of the project: This amendment enhances the Ultra-Wideband (UWB) physical layer (PHY) and medium access control (MAC) to support enhanced dependability to human body area networks (HBAN) and adds support for vehicle body area networks (VBAN), operating under strict compliance to standards and limits for electromagnetic compatibility (EMC) and electromagnetic interference (EMI). Areas of enhancement: multiple piconets coexisting, which includes intra-BAN interference and inter-piconets interference. Simpler and more reliable MAC protocol. Sensing and feedback control loop delay. Enhancements to dependability against interference and contention in such critical use cases as overlaid same and/or different piconets, and to support higher performance requirement of reliability, security, coexistence and efficiency in the operation and maintenance of HBAN and VBAN. Support for station-to-infrastructure protocols and infrastructure synchronization mechanisms. This amendment includes

safeguards so that the high throughput data use cases will not cause significant disruption to low duty-cycle ranging use cases.

5.3 Is the completion of this standard contingent upon the completion of another standard? No
5.4 Purpose: The purpose is to provide an international standard for a short range, low power and highly reliable wireless communication for use in close proximity to, or inside, a human body and/or a vehicle body. Data rates can be offered to satisfy an evolutionary set of entertainment and healthcare services. Current Personal Area Networks (PANs) do not meet the medical (proximity to human tissue) and relevant communication regulations for some application environments. They also do not support the combination of reliability (QoS), low power, data rate and noninterference required to broadly address the breadth of body area network applications.
Additionally this standard provides enhanced dependability for medical and automotive use cases including remote medical healthcare monitoring and therapy to help combat pandemics and to support quality of life (QoL) in aging population.
Change to Purpose: The purpose is to provide an international standard for a short ~~-range (i.e., about human body~~ range ~~)~~ , low power ~~,~~ and highly reliable wireless communication for use in close proximity to, or inside, a human body ~~. Data~~ and/or ~~rates,~~ a ~~typically~~ vehicle ~~up~~ body. ~~to~~ Data ~~10Mbps,~~ rates can be offered to satisfy an evolutionary set of entertainment and healthcare services. Current ~~personal~~ Personal ~~area~~ Area ~~networks~~ Networks (PANs) do not meet the medical (proximity to human tissue) and relevant communication regulations for some application environments. They also do not support the combination of reliability ~~,~~ (QoS) , low power, data rate ~~,~~ and noninterference required to broadly address the breadth of body area network applications. Additionally this standard provides enhanced dependability for medical and automotive use cases including remote medical healthcare monitoring and therapy to help combat pandemics and to support quality of life (~~BAN~~ QoL) ~~applications~~ in aging population .
5.5 Need for the Project: This project provides dependability against interference and contention in such critical use cases as overlaid with the same and/or different piconets. Focus use cases: multiple BANs, where user's devices cross each other among different BANs within range. Multiple piconets, where narrowband and wideband devices cross each other within the same coverage range. Interference management among BANs. This amendment for enhanced dependability supports automotive use (vehicular body area network) with primary medical use for a human body and additionally non-medical use with common enhanced dependability. This amendment helps remote medical healthcare monitoring and therapy to combat Covid-19 pandemic and to support QoL in aging population and people with medical conditions.
5.6 Stakeholders for the Standard: The stakeholders include silicon vendors, manufacturers and users of telecom, medical and automotive. Manufacturers and users of environmental sensors and actuators. Consumer electronics equipment manufacturers and users of equipment involving the use of wireless sensor and control networks.

6.1 Intellectual Property

6.1.1 Is the Standards Committee aware of any copyright permissions needed for this project? No

6.1.2 Is the Standards Committee aware of possible registration activity related to this project? No

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7.1 Are there other standards or projects with a similar scope? No
7.2 Is it the intent to develop this document jointly with another organization? No

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8.1 Additional Explanatory Notes: P802.15.6a addresses EMC and EMI for both HBAN and VBAN.

Support for synchronization infrastructure, for instance 802.1 TSN MAC Bridge, to enhance dependability and reliable latency.

5.4 Purpose
Coexistence with other UWB-based standard implementations, and with other piconets sharing the same frequency band. Feedback sensing and controlling loop dependability for remote sensing and diagnosis loop and a remote vehicle sensing and actuators with robotics controlling loop. More flexible network topology. Capability of ranging and positioning.