P802.15.3e

As submitted to NesCom- based on DCN15-14-0715-04-003e-sg3e-draft-par

Submitter Email: bheile@ieee.org
Type of Project: Amendment to IEEE Standard 802.15.3-2003
PAR Request Date: 25-Jan-2015
PAR Approval Date:
PAR Expiration Date:
Status: Unapproved PAR, PAR for an Amendment to an existing IEEE Standard

1.1 Project Number: P802.15.3e
1.2 Type of Document: Standard
1.3 Life Cycle: Full Use

2.1 Title: Standard for Information technology-- Local and metropolitan area networks-- Specific requirements-- Part 15.3: Wireless Medium Access Control (MAC) and Physical Layer (PHY) Specifications for High Rate Wireless Personal Area Networks (WPAN) Amendment for high-rate close proximity point-to-point communications

3.1 Working Group: Wireless Personal Area Network (WPAN) Working Group (C/LM/WG802.15)
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3.2 Sponsoring Society and Committee: IEEE Computer Society/LAN/MAN Standards Committee (C/LM)
Contact Information for Sponsor Chair
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4.1 Type of Ballot: Individual
4.2 Expected Date of submission of draft to the IEEE-SA for Initial Sponsor Ballot: 11/2016
4.3 Projected Completion Date for Submittal to RevCom: 05/2017

5.1 Approximate number of people expected to be actively involved in the development of this project: 50

5.2.a. Scope of the complete standard: This standard defines PHY and MAC specifications for high data rate wireless connectivity with fixed, portable and moving devices. Data rates are high enough to satisfy a set of consumer multimedia industry needs, as well as to support emerging wireless switched point-to-point and high rate close proximity point to point applications

Changes in scope: This ~~project~~standard ~~will~~defines ~~define the~~ PHY and MAC specifications for high data rate wireless connectivity with fixed, portable and moving devices~~within or entering a Personal Operating Space (POS)~~. ~~A~~Data ~~goal~~rates ~~of~~are ~~the~~high ~~WPAN HR~~enough ~~(High Rate) Task Group will be~~ to ~~achieve~~satisfy a ~~level~~set of ~~interoperability~~consumer ~~or~~multimedia ~~coexistence~~industry ~~with~~needs, ~~other~~as ~~802.15~~well ~~Task~~as ~~Groups. It is also the intent of this project~~ to ~~work~~support ~~toward~~emerging ~~a level of coexistence with other~~ wireless ~~devices~~switched ~~in~~point-to-point ~~conjunction~~and ~~with~~high ~~Coexistence~~rate ~~Task~~close ~~Groups~~proximity ~~such~~point ~~as~~to ~~802~~point~~.~~ ~~15~~applications~~.2.~~

5.2.b. Scope of the project: This amendment defines a Physical (PHY) layer utilizing unlicensed 60GHz spectrum and additions to the Medium Access Control (MAC) layer which enable close proximity (typically 10cm or less), high rate (up to 100Gbps) communications with at least one mode of operation that is capable of achieving connection set up times of 2ms or less.

5.3 Is the completion of this standard dependent upon the completion of another standard: No

5.4 Purpose: The purpose of this standard is to provide for low complexity, low cost, low power consumption, high data rate wireless connectivity among devices supporting a variety of applications such as a set of consumer multimedia industry needs, wireless switched point-to-point applications in data centers, wireless backhaul/fronthaul intra-device communications and a wide variety of additional use cases such as rapid large multimedia data downloads and file exchanges between two devices in close proximity, including between mobile devices and stationary devices (kiosks, ticket gates, etc.), and/or wireless data storage devices.

Changes in purpose: ~~To~~The ~~provide~~purpose ~~a~~of this standard is to provide for low complexity, low cost, low power consumption, ~~(comparable to the goals of 802.15.1) and~~ high data rate wireless connectivity among devices ~~within~~supporting ~~or~~a ~~entering~~variety ~~the~~of ~~Personal~~applications ~~Operating~~such ~~Space~~as ~~(POS).~~a ~~The~~set ~~data~~of ~~rate~~consumer ~~will~~multimedia ~~be~~industry ~~high enough~~needs, ~~20~~wireless ~~Mbps~~switched ~~or~~point-to-point ~~more~~applications in data centers, ~~to~~wireless ~~satisfy~~backhaul/fronthaul intra-device communications and a ~~set~~wide variety of ~~consumer~~additional use cases such as rapid large multimedia ~~industry~~data ~~needs~~downloads ~~for~~and ~~WPAN~~file ~~communications.~~exchanges ~~The~~between ~~project~~two ~~will~~devices ~~also~~in ~~address~~close ~~the~~proximity, ~~Quality~~including ~~of~~between ~~Service~~mobile ~~capabilities~~devices ~~required~~and ~~to~~stationary ~~support~~devices ~~multimedia~~(kiosks, ticket gates, etc.), and/or wireless data ~~types~~storage devices.

5.5 Need for the Project: There is a growing need for systems supporting a rapid "touch and get" capability of large files such as feature length 4K HD movies as well as other types of large file transfers in environments where there is potentially a high density of co-located devices, and doing so in 250ms or less including connection setup and tear down. No existing wireless communications standard is capable of supporting all of these requirements today.

What is needed is a low complexity, low cost, low power consumption, communications system capable of quick connection setup and disconnection, the ability to deliver high data rate close proximity wireless connectivity among devices and also capable of operating in high device density environments with low levels of interference.

This amendment addresses the key requirements, namely transfer speeds up to 100Gbps, connection set-up times of 2ms or less, and close proximity only operation, needed to make such systems a reality including in environments with high device density.

5.6 Stakeholders for the Standard: Chip vendors, radio frequency (RF) equipment manufacturers, enterprise infrastructure providers, wireless operators and consumers.

Intellectual Property
6.1.a. Is the Sponsor aware of any copyright permissions needed for this project?: No
6.1.b. Is the Sponsor 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 Joint Development
Is it the intent to develop this document jointly with another organization?: No

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8.1 Additional Explanatory Notes (Item Number and Explanation): Clause 5.2A: The scope of the base standard has been updated here to reflect the base standard scope updates already proposed as part of the 802.15.3d PAR, but as of yet unpublished, as well as additions consistent with this amendment.

Clause: 5.2B: Explanatory items relating to the scope of this project
+General requirements include:
----Network topology always limited to point-to-point communications
----A method to determine whether a peer device drew apart and a procedure to promptly dissolve connection and change to a standby state when such determination is made

+Specific MAC additions that need to be addressed include:
----Connection setup without any network identifiers
----Fast connection setup time prior to active state to meet application requirements
----Not requiring Listen Before Talk (or CSMA) prior to data transmission
----No periodic management frame transmission after connection establishment.

+The PHY requirements include:
----A means of ensuring spatial division from other systems without beamforming
----PHY rates up to 100Gbps
----Limiting operation to close proximity

----Ability to operate in dense device environments without undue self interference or unacceptable interference with other devices operating in the 60GHz unlicensed bands

Clause 5.4 Purpose Statement: The purpose has been edited to reflect changes already proposed to the purpose statement in the 802.15.3d PAR, but as of yet unpublished, as well as additions supporting this amendment