IEEE P802.15.3e™/D03
Draft Standard for High Data Rate Wireless Multi-Media Networks

Amendment 3: High-Rate Close Proximity Point-to-Point Communications

Prepared by the

LAN/MAN Standards Committee
of the
IEEE Computer Society

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Abstract: This amendment defines an alternative physical layer (PHY) and a modified medium access control (MAC) layer for IEEE Std 802.15.3c-2009.
Two PHY modes have been defined that enable data rates up to 100 Gb/s using the 60 GHz band. MIMO and aggregation methods have been defined to increase the maximum achievable communication speeds. Stack acknowledgment has been defined to improve the medium access control (MAC) efficiency when used in a P2P (point-to-point) topology between two devices.

Keywords: 60 GHz, P2P, close proximity, IEEE P802.15.3™, fast setup, millimeter wave, wireless.

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Introduction

IEEE Std 802.15.3e-2017 is an amendment to IEEE Std 802.15.3-2003 that defines an alternative physical layer operating in the millimiter wave band along with the necessary MAC changes to support this PHY. Some of the key features and additions are as follows:

— Operation in the 60 GHz band.
— New data rates, with the highest reaching 100 Gb/s.
— Limiting communication range to 10 centimeters or less.
— Use of a Stack ACK mechanism to simplify and optimize the MAC.
— Selectable PHY modes (single carrier and OOK) to achieve either high-speed operation or system simplicity.

Interest in developing a close proximity version of a 60GHz millimeter wave PHY band MAC egan in 2014. Activity was initially conducted as part of Task Group 3d, formed in May 2014, which covered switched, point-to-point connections operating in the frequencies from 60 GHz up to the lower terahertz bands. The ARD, TRD, channel models and regulatory issues for close proximity scenarios were reviewed in July 2014. Discussions began to separate the close proximity efforts from the other longer-range activities in September 2014 and a decision was made in November 2014 to split the Task Group 3d into two, one optimized for under 10 centimeters (3e) and another covering several meters or more (3d). The first meeting of 3e as a task group was held in March 2015 in Berlin, Germany, where the PAR and CSD were approved. At the May 2015 meeting, the ARD and TRD were combined as a single TGD and proposals were reviewed in the July and September 2015 sessions, including the selection of two PHY modes. The group entered working group letter ballot in January 2016. After two working group recirculation ballots, sponsor ballot started in July 2016. A total of xx sponsor recirculation ballots were held, leading to approval of IEEE Std 802.15.3e-2017 by the IEEE-SA Standards Board on xx March 2017.

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