
P802.16t

Submitter Email: pat.kinney@kinneyconsultingllc.com
Type of Project: Amendment to IEEE Standard 802.16-2017
Project Request Type: Modify / Amendment
PAR Request Date: 12 Oct 2020
PAR Approval Date:
PAR Expiration Date:
PAR Status: Submitted
Root PAR: P802.16t
Root PAR Approved on: 12 Feb 2020
Root Project: 802.16-2017

1.1 Project Number: P802.16t
1.2 Type of Document: Standard
1.3 Life Cycle: Full Use

2.1 Project Title: Standard for Air Interface for Broadband Wireless Access Systems Amendment - Fixed and Mobile Wireless Access in Narrowband Channels
Change To Title: Standard for Air Interface for Broadband Wireless Access Systems Amendment - Fixed and Mobile Wireless Access in Narrowband Channels

3.1 Working Group: Wireless Specialty Networks (WSN) Working Group(C/LM/802.15 WG)
3.1.1 Contact Information for Working Group Chair:
Name: PATRICK KINNEY
Email Address: pat.kinney@kinneyconsultingllc.com
3.1.2 Contact Information for Working Group Vice Chair:
Name: Richard Alfvín
Email Address: alfvín@ieee.org
3.2 Society and Committee: IEEE Computer Society/LAN/MAN Standards Committee(C/LM)
3.2.1 Contact Information for Standards Committee Chair:
Name: Paul Nikolich
Email Address: p.nikolich@ieee.org
3.2.2 Contact Information for Standards Committee Vice Chair:
Name: James Gilb
Email Address: gilb@ieee.org
3.2.3 Contact Information for Standards Representative:
Name: James Gilb
Email Address: gilb@ieee.org
3.3 Co-Stds Committee(s):
3.3.1 IEEE Microwave Theory and Techniques Society/Standards Coordinating Committee (MTT/SCC)
Contact Information for Standards Representative:
Name: Michael Janezic
Email Address: mjanezic@msn.com

4.1 Type of Ballot: Individual
4.2 Expected Date of submission of draft to the IEEE SA for Initial Standards Committee Ballot: Mar 2022
4.3 Projected Completion Date for Submittal to RevCom: Oct 2022

5.1 Approximate number of people expected to be actively involved in the development of this project: 15
5.2.a Scope of the complete standard:This standard specifies the air interface, including the medium access control layer (MAC) and physical layer (PHY), of combined fixed and mobile point-to-multipoint broadband wireless access (BWA) systems providing multiple services. The MAC is structured to support multiple PHY specifications, including WirelessMAN-SC, WirelessMAN-OFDM, and WirelessMAN-OFDMA PHY specifications, each suited to a particular operational environment.
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support the multiple PHY specifications, including ~~WirelessMAN-SC, WirelessMAN-OFDM~~ WirelessMAN-OFDM, and WirelessMAN-OFDMA PHY specifications, each suited to a particular operational environment.

5.2.b Scope of the project: This project specifies operation in licensed spectrum with channel bandwidths

greater than or equal to 5 kHz and less than 100 kHz. The project ~~will specify~~ specifies a new PHY, and changes to the MAC as necessary to support the PHY. The amendment is frequency independent but focuses on spectrum less than 2 GHz. The range and data rate supported by the narrower channels are commensurate with those of the base standard, as scaled by the reduced channel bandwidth. The project also amends IEEE Std 802.16 as required to support aggregated operation in adjacent and non-adjacent channels.

Change to scope of the project: This project specifies ~~Time Division Duplexing (TDD)~~ operation in licensed spectrum with channel bandwidths greater than or equal to 5 kHz and less than 100 kHz. The project will specify a new PHY, and changes to the MAC as necessary to support the PHY. The amendment is frequency independent but focuses on spectrum less than 2 GHz. The range and data rate supported by the narrower channels are commensurate with those of the base standard, as scaled by the reduced channel bandwidth. The project also amends IEEE Std 802.16 as required to support aggregated operation in adjacent and non-adjacent channels.

5.3 Is the completion of this standard contingent upon the completion of another standard? No

5.4 Purpose: This document will not include a purpose clause.

5.5 Need for the Project: Mission critical entities have a strong preference for private, licensed networks for their data communications needs.

Licensed channels from 5 kHz to 1 MHz may be available from the FCC and other regulators, or may be purchased in secondary markets at a lower cost than commercial channels. Examples of operating frequencies include 160 MHz, 450 MHz, 700 MHz, and 900 MHz. Furthermore, Very High Frequencies (VHF) and Ultra High Frequencies (UHF) ~~VHF/UHF~~ channels have superior propagation characteristics requiring less infrastructure and are capable of meeting capacity needs of private

networks. The amendment facilitates the development of innovative, cost-effective, and interoperable multivendor products for private licensed wireless access systems for mission critical networks. Applications include smart grids supporting generation, transmission, and distribution; field area networks; smart fields and smart pipes for oil and gas; intelligent transportation for rail systems; and federal, state and local uses for homeland security, environmental and seismic monitoring and military communications.

5.6 Stakeholders for the Standard: Stakeholders include users and customers in various markets, including electric, water, and natural gas utilities, oil and gas companies, transportation including commercial and public rail, and public sector entities including federal, state, and local governments. Stakeholders also include spectrum license holders, equipment and chipset manufacturers with an interest in standardized products to achieve economies of scale.

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

7.1 Are there other standards or projects with a similar scope? Yes

Explanation: Narrowband Internet of Things (NB-IoT) is part of the family of 3GPP standards first included in Release 13. NB-IoT is designed to operate in blocks of spectrum 180 KHz wide. NB-IoT cannot operate in contiguous spectrum less than 180 KHz.

7.1.1 Standards Committee Organization: 3GPP

Project/Standard Number: Release 13

Project/Standard Date: 06 Jan 2016

Project/Standard Title: LTE Advanced Pro

7.2 Is it the intent to develop this document jointly with another organization? No

8.1 Additional Explanatory Notes :

The reason for this modification to the PAR was to remove the PHY layer restriction requiring TDD operation, thus allowing Frequency Duplex Division as is used in the bands of interest.

3.1 The 802.15 working group has approved the assignment of this project to them.

5.2.a In the names of the WirelessMAN PHY alternatives, OFDM is used to signify Orthogonal Frequency-Division Multiplexing, OFDMA is used to signify Orthogonal Frequency-Division Multiple Access, and SC is used to signify Single Carrier.

5.2.b Private Land Mobile Radio (PLMR) channels are typically allocated with a channel size of 12.5 KHz, but the size may vary by regulatory region and application.

5.2b Aggregated operation means combining adjacent or non-adjacent channels (less than 100 kHz) into a single larger logical channel

5.5 The term "private wireless access" is used to describe wireless access systems in which the spectrum, infrastructure, and terminal devices

are all privately owned by a business or entity for purposes other than offering the wireless access as a commercial product. The term

"commercial channels" refers to spectrum used by a cellular operator to provide commercial wireless access and services.

5.5 IEEE 802.16 - [IEEE Standard for WirelessMAN-Advanced Air Interface for Broadband Wireless Access Systems](#), and thus this amendment, do not specify specific operating frequencies.