**Proposed Project Authorization Request P802.16s**

**Submitter Email:** [r.b.marks@ieee.org](mailto:r.b.marks%40ieee.org)

**Type of Project:** Amendment to IEEE Standard 802.16-2016

**PAR Request Date:** 19-March-2016

**PAR Approval Date:**

**PAR Expiration Date:**

**Status:** Unapproved PAR, PAR for an Amendment to an existing IEEE Standard

**1.1 Project Number:** P802.16s

**1.2 Type of Document:** Standard

**1.3 Life Cycle:** Full Use

**2.1 Title:** Standard for Air Interface for Broadband Wireless Access Systems – Amendment: Fixed and Mobile Wireless Access in Channel Bandwidth up to 1.25 MHz

**3.1** **Working Group:** Broadband Wireless Access Working Group (C/LM/WG802.16)

**Contact Information for Working Group Chair**

**Name:** [provided by IEEE-SA]

**Email Address:**

**Phone:**

**Contact Information for Working Group Vice-Chair**

**Name:** [provided by IEEE-SA]

**Email Address:**

**Phone:**

**3.2** **Sponsoring Society and Committee:** IEEE Computer Society/LAN/MAN Standards Committee (C/LM)

**Contact Information for Sponsor Chair**

**Name:** [provided by IEEE-SA]

**Email Address:**

**Phone:**

**Contact Information for Standards Representative**

**Name:** [provided by IEEE-SA]

**Email Address:**

**Phone:**

**3.3** **Joint Sponsor:** IEEE Microwave Theory and Techniques Society/Standards Coordinating Committee (MTT/SCC)

**Contact Information for Sponsor Chair**

**Name:** [provided by IEEE-SA]

**Email Address:**

**Phone:**

**Contact Information for Standards Representative**

**Name:** [provided by IEEE-SA]

**Email Address:**

**Phone:**

**4.1 Type of Ballot:** Individual

**4.2 Expected Date of submission of draft to the IEEE-SA for Initial Sponsor Ballot:** 03/2017

**4.3 Projected Completion Date for Submittal to RevCom:** 10/2017

**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 the WirelessMAN-SC, WirelessMAN-OFDM, and WirelessMAN-OFDMA PHY specifications, each suited to a particular operational environment.

**5.2.b. Scope of the project:** This project specifies WirelessMAN-OFDMA TDD operation in exclusively-licensed spectrum with channel bandwidth from 100 kHz up to 1.25 MHz, including 1 MHz explicitly. The amendment will target operation in the 700 MHz band but will also support operation in other VHF/UHF bands. The project amends Clause 12 of IEEE Std 802.16, adding a new system profile and amending other clauses as required to support the narrower channel widths. The range and data rate supported by the added profile are commensurate with those of the base standard, as scaled by the reduced channel bandwidth.

**5.3 Is the completion of this standard dependent upon the completion of another standard:** Yes:802.16-201x

**5.4 Purpose:** 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; electric and gas utilities; smart fields and smart pipes for oil, gas and hazardous materials transport; intelligent transportation for rail and highway systems; and federal, state and local uses for homeland security and environmental and seismic monitoring.

**5.5 Need for the Project:** Mission critical entities have a strong preference for private, licensed networks in VHF/UHF frequencies for their data communications needs.

VHF/UHF licensed channels narrower than 1.25 MHz are readily available in the secondary markets at a lower cost than commercial wideband channels. Example operating frequencies include 217 MHz, 700 MHz, 900 MHz, and 1.4 GHz. The base standard, and thus this amendment, is not limited to specific operating frequencies. Furthermore, VHF/UHF channels have superior propagation characteristics requiring less infrastructure and are capable of meeting capacity needs of private networks.

**5.6 Stakeholders for the Standard:** Stakeholders include users and customers in multiple markets, including electric 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 and equipment manufacturers with an interest in standardized products to achieve economies of scale.

**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

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

**If yes, please explain below:**

Narrowband IoT LTE is a proposed standard of LTE to be included in 3GPP Release 13. Its targets are very low data rate, very low power consumption and low cost. It is proposed to use 180 kHz channel bandwidth, with OFDMA downlink and FDMA or GMSK uplink, and to support a massive number of low-power, low-throughput devices. In comparison, IEEE 802.16s is proposed for higher-power, high reliability, secure, and critical communications requiring higher data rates. The objectives are very different. In addition, LTE infrastructure carries a cost and complexity overhead based on its primary application in commercial cellular networks.

Sponsor Organization: 3GPP

Project/sponsor number: Unknown

Project Standard date: Proposed, not complete

Project/Standard Title: Narrowband IoT LTE

**7.2 Joint Development** – **Is it the intent to develop this document jointly with another organization?:** No

Information from 7.3 - 7.4 is captured for potential follow up and coordination but will not appear on the final PAR view.

**7.3 International Standards Activities**

**A. Adoptions - Is there potential for this standard to be adopted by another organization?:** No

**B. Harmonization - Are you aware of another organization that may be interested in portions of this document in their standardization development efforts?:** Yes (WiMAX Forum)

**7.4 Does the sponsor foresee a longer term need for testing and/or certification services to assure conformity to the standard?:** Yes

**Additionally, is it anticipated that testing methodologies will be specified in the standard to assure consistency in evaluating conformance to the criteria specified in the standard?:** No

**7.5 indicate if you would like IEEE-SA staff to submit your project to the American National Standards Institute (ANSI) for approval consideration as an american national standard:** Yes

**8.1 Additional Explanatory Notes (Item Number and Explanation):**

**3.3** In accordance with §5.1.2.2 of the IEEE-SA Standards Board Operations Manual, the co-sponsor of the base standard has provided a statement of concurrence <https://mentor.ieee.org/802.16/dcn/16/16-16-0014-00.pdf> with the PAR**.**

**5.4** 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

**7.1** Other standards and projects, including the one in 7.1, and others, such as IEEE 802.20, exhibit surface similarities to this focused amendment project, but are technically quite different.

**7.2** The co-sponsorship specified under "3.3 Joint Sponsor" is not a Joint Development activity. Instead, it reflects the ongoing co-sponsorship of IEEE Std 802.16 per the IEEE-SA Standards Board Operations Manual, 5.1.2.2 ("Co-sponsored projects").