

IEEE Standard for Air Interface for Broadband Wireless Access Systems—

Amendment 4: Fixed and Mobile Wireless Access in Channel Bandwidth up to 1.25 MHz

IEEE Computer Society
and the
IEEE Microwave Theory and Techniques Society

Sponsored by the
LAN/MAN Standards Committee

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IEEE Std 802.16s™-2017
(Amendment to
IEEE Std 802.16™-2012
as amended by
IEEE Std 802.16p™-2012,
IEEE Std 802.16n™-2013,
IEEE Std 802.16q™-2015)

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Abstract: WirelessMAN-OFDMA TDD operation in exclusively licensed spectrum with channel bandwidth from 100 kHz up to 1.25 MHz, including 1 MHz explicitly, is specified. This amendment targets operation in the 700 MHz band but also supports operation in other VHF/UHF bands. The project amends Clause 12 of IEEE Std 802.16-2012, 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.

Keywords: band AMC, critical infrastructure, IEEE 802.16™, IEEE 802.16s™, MAC, narrowband, OFDMA, PHY, smart grid, sub-1.25 MHz channels, utilities, VHF/UHF bands, WirelessMAN®

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Introduction

This introduction is not part of IEEE Std 802.16s-2017, IEEE Standard for Air Interface for Broadband Wireless Access Systems—Amendment 4: Fixed and Mobile Wireless Access in Channel Bandwidth up to 1.25 MHz.

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 are 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. This 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.

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.

This standard is an amendment to IEEE Std 802.16-2012, as amended by IEEE Std 802.16p-2012, IEEE Std 802.16n-2013, and IEEE Std 802.16q-2015.

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