



**IEEE Standard for
Information technology—
Telecommunications and information
exchange between systems—
Local and metropolitan area networks—
Specific requirements**

**Part 11: Wireless LAN Medium Access Control (MAC)
and Physical Layer (PHY) Specifications**

IEEE Computer Society

Sponsored by the
LAN/MAN Standards Committee

IEEE
3 Park Avenue
New York, NY 10016-5997, USA
12 June 2007

IEEE Std 802.11™-2007
(Revision of
IEEE Std 802.11-1999)

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Approved 8 March 2007

IEEE-SA Standards Board

Abstract: This revision specifies technical corrections and clarifications to IEEE Std 802.11 for wireless local area networks (WLANS) as well as enhancements to the existing medium access control (MAC) and physical layer (PHY) functions. It also incorporates Amendments 1 through 8 including a corrigendum.

Keywords: 2.4 GHz, 4.9 GHz, 5 GHz, advanced encryption standard, AES, carrier sense multiple access/collision avoidance, CCMP, Counter mode with Cipher-block chaining Message authentication code Protocol, confidentiality, CSMA/CA, DFS, dynamic frequency selection, international roaming, LAN, local area network, MAC, medium access controller, PHY, physical layer, QoS, quality of service, radio frequency, RF, temporal key integrity protocol, TKIP, TPC, transmit power control, wireless LAN, WLAN

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Print: ISBN 0-7381-5655-8 SH95708
PDF: ISBN 0-7381-5656-6 SS95708

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Introduction

This introduction is not part of IEEE Std 802.11-2007, IEEE Standard for Information Technology—Telecommunications and information exchange between systems—Local and metropolitan area network—Specific requirements—Part 11: Wireless LAN Medium Access Control (MAC) and Physical Layer (PHY) specifications.

This revision gives users, in one document, the IEEE 802.11 standard for wireless local area networks (WLANS) with all the amendments that have been published to date. The original standard was published in 1999 and reaffirmed in 2003. The following documents have been rolled into this revision and are, therefore, now retired along with the original, reaffirmed edition of IEEE Std 802.11:

- IEEE Std 802.11aTM-1999 (Amendment 1)
- IEEE Std 802.11bTM-1999 (Amendment 2)
- IEEE Std 802.11b-1999/Corrigendum 1-2001
- IEEE Std 802.11dTM-2001 (Amendment 3)
- IEEE Std 802.11gTM-2003 (Amendment 4)
- IEEE Std 802.11hTM-2003 (Amendment 5)
- IEEE Std 802.11iTM-2004 (Amendment 6)
- IEEE Std 802.11jTM-2004 (Amendment 7)
- IEEE Std 802.11eTM-2005 (Amendment 8)

In addition, this revision specifies technical corrections and clarifications to IEEE Std 802.11 as well as enhancements to the existing medium access control (MAC) and physical layer (PHY) functions. Such enhancements include improved data link security, codified vendor-specific extensions to the protocol, and incorporated interpretation requests.

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**IEEE Standard for
Information Technology—
Telecommunications and information
exchange between systems—
Local and metropolitan area networks—
Specific requirements**

**Part 11: Wireless LAN Medium Access Control (MAC)
and Physical Layer (PHY) Specifications**

1. Overview

1.1 Scope

The scope of this standard is to define one medium access control (MAC) and several physical layer (PHY) specifications for wireless connectivity for fixed, portable, and moving stations (STAs) within a local area.

1.2 Purpose

The purpose of this standard is to provide wireless connectivity to automatic machinery, equipment, or STAs that require rapid deployment, which may be portable or hand-held, or which may be mounted on moving vehicles within a local area. This standard also offers regulatory bodies a means of standardizing access to one or more frequency bands for the purpose of local area communication.

Specifically, this standard

- Describes the functions and services required by an IEEE 802.11™-compliant device to operate within ad hoc and infrastructure networks as well as the aspects of STA mobility (transition) within those networks.
- Defines the MAC procedures to support the asynchronous MAC service data unit (MSDU) delivery services.
- Defines several PHY signaling techniques and interface functions that are controlled by the IEEE 802.11 MAC.
- Permits the operation of an IEEE 802.11-conformant device within a wireless local area network (WLAN) that may coexist with multiple overlapping IEEE 802.11 WLANs.
- Describes the requirements and procedures to provide data confidentiality of user information being transferred over the wireless medium (WM) and authentication of IEEE 802.11-conformant devices.
- Defines mechanisms for dynamic frequency selection (DFS) and transmit power control (TPC) that may be used to satisfy regulatory requirements for operation in the 5 GHz band. The regulations and conformance tests are listed in Clause 2.

- Defines the MAC procedures to support local area network (LAN) applications with quality of service (QoS) requirements, including the transport of voice, audio, and video.