

WUS622C-A

**300 Mbps N Wireless USB
Adapter
User Guide**

September 2011

COMPLIANCES

FEDERAL COMMUNICATION COMMISSION INTERFERENCE STATEMENT

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

- ◆ Reorient or relocate the receiving antenna
- ◆ Increase the separation between the equipment and receiver
- ◆ Connect the equipment into an outlet on a circuit different from that to which the receiver is connected
- ◆ Consult the dealer or an experienced radio/TV technician for help

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

IMPORTANT NOTE:

FCC RADIATION EXPOSURE STATEMENT

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. End users must follow the specific operating instructions for satisfying RF exposure compliance. To maintain compliance with FCC RF exposure compliance requirements, please follow operation instruction as documented in this manual.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

IEEE 802.11b, 802.11g or 802.11n operation of this product in the U.S.A. is firmware-limited to channels 1 through 11.

ABOUT THIS GUIDE

PURPOSE This guide details the hardware features of the wireless USB adapter, including its physical and performance-related characteristics, and how to install the device and use its configuration software.

AUDIENCE This guide is for PC users with a working knowledge of computers. You should be familiar with Windows operating system concepts.

CONVENTIONS The following conventions are used throughout this guide to show information:

NOTE: Emphasizes important information or calls your attention to related features or instructions.

CAUTION: Alerts you to a potential hazard that could cause loss of data, or damage the system or equipment.

WARNING: Alerts you to a potential hazard that could cause personal injury.

RELATED PUBLICATIONS The following publication gives basic information on how to install and use the wireless USB adapter.

The *WUS622C-A Quick Installation Guide*

Also, as part of the wireless USB adapter's software, there is an online web-based help that describes all configuration related features.

REVISION HISTORY This section summarizes the changes in each revision of this guide.

AUGUST 2011 REVISION

This is the first revision of this guide.

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INTRODUCTION

The WUS622C-A is a Wi-Fi (IEEE 802.11b/g/n) Wireless USB Adapter that enables wireless connectivity for your PC. The device provides a Wi-Fi client solution for PCs using a USB 2.0 interface. The USB adapter also includes a comprehensive configuration, site survey, and profile management utility that can be installed on a Windows 2000, Windows XP or Windows Vista system.

Figure 1: WUS622C-A

KEY FEATURES

The Wireless USB Adapter supports the following features:

- ◆ Wi-Fi compliant with IEEE 802.11n and IEEE 802.11b/g standards
- ◆ High-speed connection up to 300 Mbps in 802.11n mode
- ◆ Dynamic data rate scaling from 1 to 300 Mbps
- ◆ Low interference and high susceptibility to guarantee reliable

Performance



- ◆ Supports WEP, WPA-PSK, WPA2-PSK security

USB Connector Power Indicator Activity Indicator

CHAPTER 1 | Introduction

Description of Hardware Capabilities

- ◆WMM (Wi-Fi Multimedia)
- ◆Windows 2000, XP and Vista drivers
- ◆WHQL certified
- ◆WLAN site survey and profile management utility

DESCRIPTION OF HARDWARE CAPABILITIES

WUS622C-A Wireless USB Adapter supports wireless communications at up to 300 Mbps. This adapter operates in the 2.4 GHz band and is fully compliant with IEEE 802.11b/g and 802.11n. It can be installed in a notebook or desktop PC with a USB port. Support is provided for Windows 2000, Windows XP, and Windows Vista.

SYSTEM REQUIREMENTS

Before you install the WUS622C-A Wireless USB Adapter, check your system meets the following requirements:

- ◆2.4 GHz 802.11n or 802.11b/g wireless network.
- ◆Microsoft Windows 2000, XP or Vista.
- ◆A Notebook or desktop computer with:
 - 300 MHz CPU or above
 - Available USB 2.0 port
 - 20 MB of available hard disk space

PACKAGE CONTENTS

The Wireless USB Adapter package includes these items:

- ◆WUS622C-A N Wireless USB 2.0 Adapter (WUS622C-A)
- ◆Quick Installation Guide

CHAPTER 1 | Introduction

Hardware Description

Inform your dealer if there are any incorrect, missing or damaged items. If possible, retain the carton, including the original packing materials. Use them to repack the product in case there is a need to return it.

HARDWARE DESCRIPTION

WUS622C-A Wireless USB Adapter supports wireless communications at up to 300 Mbps. This adapter operates in the 2.4 GHz band and is fully compliant with IEEE 802.11b/g and 802.11n. It can be installed in a notebook or desktop PC with a USB port. Support is provided for Windows 2000, Windows XP, and Windows Vista.

LED INDICATORS The Wireless USB Adapter includes two status LED indicators, as described

in the following figure and table.

Figure 2: LEDs

Table 1: LED Behavior

LED Status Description

Power On Indicates the power is on.

Off Indicates the power is off.

Activity Flashing Green Indicates the power is on, and the 802.11b/g/n radio is enabled. Flashing indicates wireless network activity.

Off Indicates the power is off, or the 802.11b/g/n radio is disabled

WINDOWS 2000/XP INSTALLATION

The USB driver and software utility are inside of the Wireless USB Adapter which support Auto-Installation function .

The installation screens are similar for Windows 2000, Windows XP and Windows Vista. The installation interface for Windows XP is shown in this user guide.

To install the Wireless USB Adapter's driver and utilities for Windows 2000 and Windows XP, follow these steps:

- 1.** Turn on your PC and wait until the Windows system has completely started.
- 2.** Plug USB adapter in USB port.
- 3.** The driver will start the installation automatically

Figure 3: WUS622C-A – auto-installation Screen

CHAPTER 2 | Windows 2000/XP Installation

4. Wait for the software installation procedure to complete.

CHAPTER 2 | Windows 2000/XP Installation

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WINDOWS 2000/XP CONFIGURATION

ACCESSING THE Zero-config

Once the driver installation is complete, You can use Windows Zero-config to link on WiFi AP.

TROUBLESHOOTING

USB ADAPTER INSTALLATION PROBLEMS

If your computer cannot find the WUS622C-A Wireless USB Adapter or the network driver does not install correctly, check the following items:

- ◆ Make sure the adapter is connected to the USB port. Check for any hardware problems, such as physical damage to the adapter's connector.
- ◆ Try the adapter in another USB port. If this also fails, try using another WUS622C-A wireless adapter that is known to operate correctly.
- ◆ Check for a defective computer or USB port by trying the adapter in another computer that is known to operate correctly.

NETWORK CONNECTION PROBLEMS

If the Link/Activity LED on the USB adapter is not lit, or if you cannot access network resources from the computer, check the following:

- ◆ Make sure the correct software driver is installed. Try reinstalling the driver.
- ◆ Make sure the computer and other network devices are receiving power.
- ◆ The access point you want to connect to may not be functioning correctly. Try using another access point.
- ◆ If you cannot access a Windows service on the network, check that you have enabled and configured the service correctly. If you cannot connect to a particular server, be sure that you have access rights and a valid ID and password.
- ◆ If you cannot access the Internet, be sure you have currently configured your system for TCP/IP.

If your wireless station cannot communicate with a computer on the Ethernet LAN when configured for Infrastructure mode, check the following:

Uninstalling the Utility

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- ◆ Make sure the access point that the station is associated with is powered on.
- ◆ Check that the wireless settings (i.e., security, SSID, Channel) match the access point or other stations to which you are attempting to connect.
- ◆ If you still cannot connect, change the access point and all the stations within the BSS to another radio channel.

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HARDWARE SPECIFICATIONS

INTERFACE USB version 2.0 compliant

POWER +5V DC, 0.5A over USB connection

RADIO SPECIFICATIONS IEEE 802.11n

IEEE 802.11b/g

FREQUENCY North America/Taiwan NCC: 2.412 - 2.462 GHz

Japan: 2.412 - 2.484 GHz

Europe: 2.412 - 2.472 GHz

MODULATION 802.11b: CCK, QPSK, BPSK

802.11g: BPSK, QPSK, 16QAM, 64QAM

802.11n: BPSK, QPSK, 16QAM, 64QAM

OPERATING CHANNELS North America Certification: FCC&Taiwan Certification: NCC

Certification: FCC; Channel: 1~11

DATA RATE SHIFTING 802.11b: 11, 5.5, 2, 1 Mbps per channel

802.11g: 54, 48, 36, 24, 18, 12, 9, 6 Mbps.

802.11n: up to 300 Mbps

ANTANNA Two internal antenna

Frequency Range: 2.4 - 2.5 GHz

Gain: 1 dBi

VSWR: 2.0 Max

Polarization: Linear

Impedance: 50 Ohm

Antenna Type: Printed

CHAPTER B | Hardware Specifications

LED INDICATORS Power, Link/Activity

TX OUTPUT POWER(AV)

(TYPICAL)

802.11b: 21.28 dBm

802.11g: 22.04 dBm (at 54Mbps)

802.11n HT20: 20.17 dBm

802.11n HT40: 20.05 dBm

RX SENSITIVITY

(TYPICAL)

-85 dBm @ 11 Mbps

-68 dBm @ 54 Mbps

-64 dBm @ 64-QAM, 20MHz channel spacing

-61 dBm @ 64-QAM, 40MHz channel spacing

PHYSICAL SIZE 25 x 67 x 13 mm (0.98 x 2.63 x 0.51 in.)

WEIGHT 25 g (0.88 oz)

TEMPERATURE Operating: -0 to 40 °C (32° to 104°F)

Storage: -20 to 70 °C (-4° to 158°F)

HUMIDITY Operating: 5%~95% Non-condensing

Storage: 10%~90% Non-condensing

EMC FCC: Part15 subpart C

RADIO FCC: Part15 subpart B

FCC : SAR

GLOSSARY

10BASE-T IEEE 802.3-2005 specification for 10 Mbps Ethernet over two pairs of Category 3 or better UTP cable.

100BASE-TX IEEE 802.3-2005 specification for 100 Mbps Fast Ethernet over two pairs of Category 5 or better UTP cable.

1000BASE-T IEEE 802.3ab specification for 1000 Mbps Gigabit Ethernet over four pairs of Category 5 or better UTP cable.

ACCESS POINT An internetworking device that seamlessly connects wired and wireless

networks. Access points attached to a wired network, support the creation of multiple radio cells that enable roaming throughout a facility.

AES Advanced Encryption Standard: An encryption algorithm that implements symmetric key cryptography. AES provides very strong encryption using a completely different ciphering algorithm to TKIP and WEP.

AUTHENTICATION The process to verify the identity of a client requesting network access.

IEEE 802.11 specifies two forms of authentication: open system and shared key.

BACKBONE The core infrastructure of a network. The portion of the network that transports information from one central location to another central location where it is unloaded onto a local system.

BSS Basic Service Set: A set of 802.11-compliant stations and an access point that operate as a fully-connected wireless network.

BEACON A signal periodically transmitted from the access point that is used to identify the service set, and to maintain contact with wireless clients.

GLOSSARY

BROADCAST KEY Broadcast keys are sent to stations using dynamic keying. Dynamic broadcast key rotation is often used to allow the access point to generate a random group key and periodically update all key-management capable wireless clients.

DHCP Dynamic Host Configuration Protocol: Provides a framework for passing configuration information to hosts on a TCP/IP network. DHCP is based on the Bootstrap Protocol (BOOTP), adding the capability of automatic allocation of reusable network addresses and additional configuration options.

ENCRYPTION Data passing between the access point and clients can use encryption to protect from interception and eavesdropping.

ETHERNET A popular local area data communications network, which accepts transmission from computers and terminals.

FTP File Transfer Protocol: A TCP/IP protocol used for file transfer.

HTTP Hypertext Transfer Protocol: HTTP is a standard used to transmit and receive all data over the World Wide Web.

ICMP Message Protocol: A network layer protocol that reports errors in processing IP packets. ICMP is also used by routers to feed back information about better routing choices.

IEEE 802.11B A wireless standard that supports wireless communications in the 2.4 GHz band using Direct Sequence Spread Spectrum (DSSS). The standard provides for data rates of 1, 2, 5.5, and 11 Mbps.

IEEE 802.11G A wireless standard that supports wireless communications in the 2.4 GHz band using Orthogonal Frequency Division Multiplexing (OFDM). The standard provides for data rates of 6, 9, 12, 18, 24, 36, 48, 54 Mbps. IEEE 802.11g is also backward compatible with IEEE 802.11b.

IEEE 802.11N A wireless standard that supports wireless communications in the 2.4 GHz band using Orthogonal Frequency Division Multiplexing (OFDM). The standard provides for data rates of 27, 54, 81, 108, 162, 216, 243, 270, 300 Mbps. IEEE 802.11n is also backward compatible with IEEE 802.11b/g.

IEEE 802.1X Port Authentication controls access to the switch ports by requiring users to first enter a user ID and password for authentication.

GLOSSARY

INFRASTRUCTURE An integrated wireless and wired LAN is called an infrastructure configuration.

LAN Local Area Network: A group of interconnected computer and support devices.

MAC ADDRESS The physical layer address used to uniquely identify network nodes.

NTP Network Time Protocol: NTP provides the mechanisms to synchronize time across the network. The time servers operate in a hierarchical-masterslave configuration in order to synchronize local clocks within the subnet and to national time standards via wire or radio.

OPEN SYSTEM A security option which broadcasts a beacon signal including the access point's configured SSID. Wireless clients can read the SSID from the beacon, and automatically reset their SSID to allow immediate connection to the nearest access point.

ODFM Orthogonal Frequency Division Multiplexing: OFDM allows multiple users to transmit in an allocated band by dividing the bandwidth into many narrow bandwidth carriers.

ROAMING A wireless LAN mobile user moves around an ESS and maintains a continuous connection to the infrastructure network.

RTS THRESHOLD Transmitters contending for the medium may not be aware of each other.

RTS/CTS mechanism can solve this "Hidden Node Problem." If the packet size is smaller than the preset RTS Threshold size, the RTS/CTS mechanism will NOT be enabled.

SSID Service Set Identifier: An identifier that is attached to packets sent over the wireless LAN and functions as a password for joining a particular radio cell; i.e., Basic Service Set (BSS).

SHARED KEY A shared key can be used to authenticate each client attached to a wireless network. Shared Key authentication must be used along with the 802.11 Wireless Equivalent Privacy algorithm.

SNMP Simple Network Management Protocol: The application protocol in the Internet suite of protocols which offers network management services.

GLOSSARY

SNTP Simple Network Time Protocol: SNTP allows a device to set its internal clock based on periodic updates from a Network Time Protocol (NTP) server. Updates can be requested from a specific NTP server, or can be received via broadcasts sent by NTP servers.

TKIP Temporal Key Integrity Protocol: A data encryption method designed as a replacement for WEP. TKIP avoids the problems of WEP static keys by dynamically changing data encryption keys.

TFTP Trivial File Transfer Protocol: A TCP/IP protocol commonly used for software downloads.

WI-FI PROTECTED

ACCESS

WPA employs 802.1X as its basic framework for user authentication and dynamic key management to provide an enhanced security solution for 802.11 wireless networks.

WEP Wired Equivalent Privacy: WEP is based on the use of security keys and the popular RC4 encryption algorithm. Wireless devices without a valid WEP key will be excluded from network traffic.

PSK WPA Pre-shared Key: PSK can be used for small office networks that may not have the resources to configure and maintain a RADIUS server, WPA provides a simple operating mode that uses just a pre-shared password for network access.

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