

IEEE802.11b Wireless LAN Card Quick Installation Guide

WN3306A 2

Quick Installation Guide

IEEE802.11b Wireless LAN Card

11 Mbps Wireless LAN Card

WN3306A 2
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Introduction

The Wireless LAN Card is an 11 Mbps wireless network adapter that seamlessly integrates with existing Ethernet networks to support applications such as mobile users or temporary conferences. This solution offers a high data rate and reliable wireless connectivity with considerable cost savings over wired LANs (which include long-term maintenance overhead for cabling). Just install enough wireless access points to cover your network area, plug wireless cards into your notebooks, and start networking.

Using this card in conjunction with a wireless access point, you can create an instant network that integrates seamlessly with the existing 10/100 Mbps Ethernet LANs. Moreover, moving or expanding your network is as easy as moving or installing additional access points – no wires!

Features

- 1, 2, 5.5 and 11 Mbps data rate.
- Wireless connection without the hassles and cost of cabling
- Greater flexibility to locate or move networked PCs
- Integrates with or replaces wired LANs at dramatically lower cost than wired alternatives
- Seamless connectivity to wired Ethernet LANs augments existing networks quickly and easily
- Easy installation
- Working range up to 30 m (100 ft) at 11 Mbps, up to 100 m (300 ft) at 5.5 Mbps; or lower indoors
- Direct Sequence Spread-Spectrum (DSSS) technology provides robust, interference-resistant and secure wireless connection
- Supports a wide range of systems (Windows 98/Me/2000/XP)
- Provides a user-friendly interface for configuration
- Enhances your network security with WEP data encryption and WPA
- Built-in antenna
- Support multiple language in Card Configuration Manager Application Program
- Support Domain Channel Selection (DCS) for users traveling to different countries

Applications

Offers a fast, reliable, cost-effective solution for wireless client access to the network in applications like these:

- **Remote access to corporate network information**
E-mail, file transfer, and terminal emulation
- **Difficult-to-wire environments**
Historic or old buildings, asbestos installations, and open areas where wiring is difficult to employ
- **Frequently changing environments**
Retailers, manufacturers, and banks who frequently rearrange the workplace and change location
- **Temporary LANs for special projects or peak times**
Trade shows, exhibitions, and construction sites that need a temporary setup for a short time period. Retailers, airline, and shipping companies that need additional workstations for peak periods. Auditors who require workgroups at customer sites
- **Access to databases for mobile workers**
Doctors, nurses, retailers, office workers who need access to databases while being mobile in the hospital, retail store or office campus
- **SOHO (Small Office and Home Office) users**
SOHO users who need easy and quick installation of a small computer network

System Requirements

Before you install the Wireless LAN Card, check your system for the following:

- A laptop with a PCMCIA Type II slot
- Windows 98/Me/2000/XP (Prepare the Windows installation CD-ROM for use during installation)
- A minimum of 1500 Kbytes of free disk space for installing the driver and utility program
- Other IEEE 802.11b-compliant devices installed in your network area

Package Checklist

The Wireless LAN Card package includes:

- 1 Wireless LAN Card
- 1 Installation CD with Driver/Utility/User manual
- This Quick Installation Guide

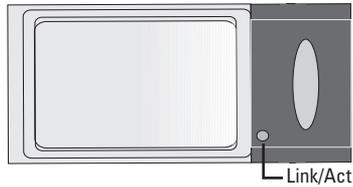
Please inform your dealer if there are any incorrect, missing, or damaged parts. If possible, retain the carton, including the original packing materials, if there is a need to return the product for repair.

Hardware Description

The Wireless LAN Card supports 1, 2, 5.5 and 11 Mbps connections to Ethernet networks. This card is fully compliant with 2.4 GHz DSSS CSMA/CA wireless networking as defined in IEEE 802.11b. It can be installed in any notebook with a Type II PCMCIA slot. It supports Windows 98/Me/2000/XP.

LED Indicator

The following figure and table describe the status LED indicator of the Wireless LAN Card.



LED	Status	Description
Link/Act	On	Indicates a valid connection with an access point.
	Flashing	Indicates that data is been transmitted

Hardware Installation

Warnings:

- Network cards are sensitive to static electricity. To protect the card, always touch the metal chassis of your computer before handling the card.
- Backup your Installation CD and use the copy as the working CD to protect the original from accidental damage.

To install the card:

1. Turn on your notebook and boot your operating system.
2. Find an available Type II PCMCIA slot in your notebook.
3. With the wireless card's 68-pin connector facing the PCMCIA slot, slide the card completely into the slot as shown below.



Note: The PCMCIA slot allows you to “hot swap” PC Cards any time.

4. Install the appropriate network driver for your operating system. Drivers can be found on the Installation CD. See “Driver and Utility Installation” on page 5 for more information.

Driver and Utility Installation

The Installation CD that comes with the package contains the software drivers and utilities for the Wireless LAN Card.

For Windows XP, see “Windows XP Installation” on page 7.

Windows 98/Me/2000 Installation

Note: You may find that the instructions here do not exactly match your version of Windows. This is because these steps and screenshots were created from Windows 98. Windows Millennium Edition and Windows 2000 are similar, but not identical, to Windows 98.

1. Insert the Wireless LAN Card into a standard Type II PCMCIA slot in your notebook.
2. Windows 98/Me/2000 will automatically detect the new hardware and prompt you to install the driver. Click Next.



3. Insert the Installation CD. Check the CD-ROM drive checkbox and click Next.



Wireless PC Card

4. Click Next.



Note: Windows may ask you for the Windows CD-ROM. If so, insert the disk and click OK.

5. When Windows has finish installing the software, click Finish.

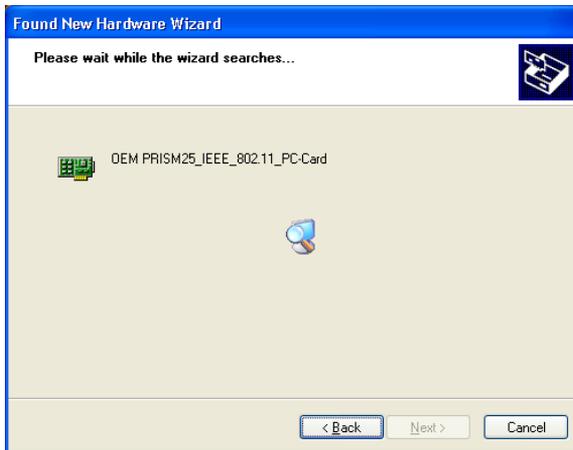


Windows XP Installation

1. Insert the wireless card into a standard Type II PCMCIA slot in your notebook.
2. Windows XP will automatically detect the new hardware and prompt you to install the driver. Insert the Installation CD and click Next to find the driver.



3. Windows XP will now search for the driver.

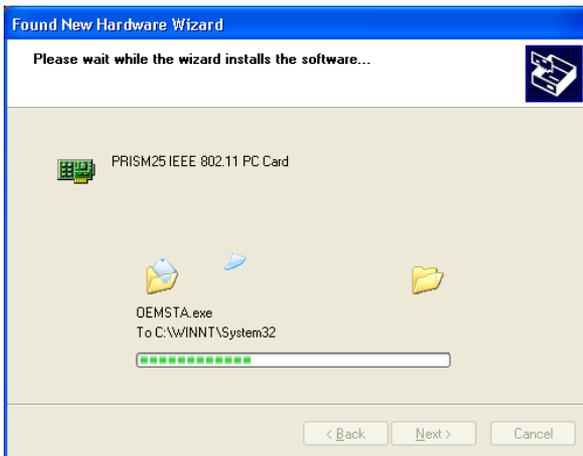


Wireless PC Card

4. Windows XP will show the following screen. Click Continue Anyway.



5. The Wizard will start to install the software as shown below.



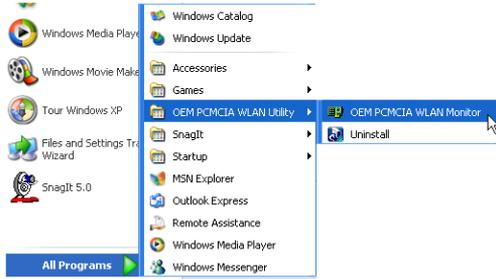
- When the wizard has finished installing the driver, the following screen will appear. Click Finish.



Utility Configuration

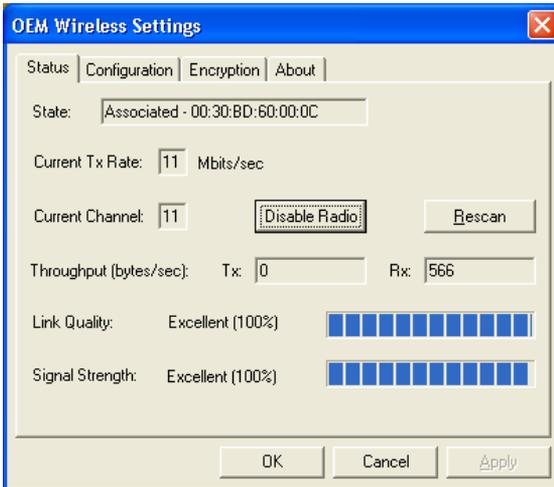
Using Monitor Utility

The configuration utility was installed at the same time the driver was installed. Double-click the icon at the bottom-right corner of the desktop to launch the utility. Or you can access from the Start menu, as shown below.



Status

When you start the Wireless LAN Card utility, the information window for the Wireless LAN Card is shown as in the figure below. By clicking the Rescan button, the wireless card will be forced to rescan the network signal spectrum and connect to an access point with the best available signal quality. If you want to disable the radio, click Disable Radio. (Radio Default: Enable)



State — Shows the MAC address of the associated access point (BSSID).

Current Tx Rate — Indicates the data transmission rate.

Current Channel — This is the radio channel through which the access point communicates to PCs in its BSS (Default: 11). A Basic Service Set (BSS) consists of a group of wireless PCs and an access point that is directly connected to the wired LAN. To establish an ad hoc network, make sure that Current Channel is set to the same radio channel as that used by the other wireless clients in your groups. However, if you are connecting to a network via an access point, the adapter will automatically set itself to the same channel as that used by the access point.

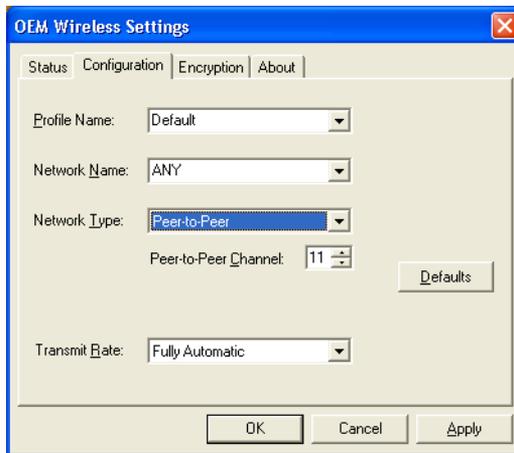
Throughput (bytes/sec) — Rx/Tx fragments signifies the current total number of Rx/Tx packets.

Link Quality — Shows the relative link quality (e.g., lack of frame errors) of the wireless connection to the access point.

Signal Strength — Shows the relative strength of the wireless connection to the access point.

Configuration

This utility allows you to configure wireless adapter parameters as shown in the screen below.



Profile Name — You may specify a profile name to save this profile under, e.g., home, work, etc. (Default: Default)

Network Name — Select the Network Name. (Default: ANY)

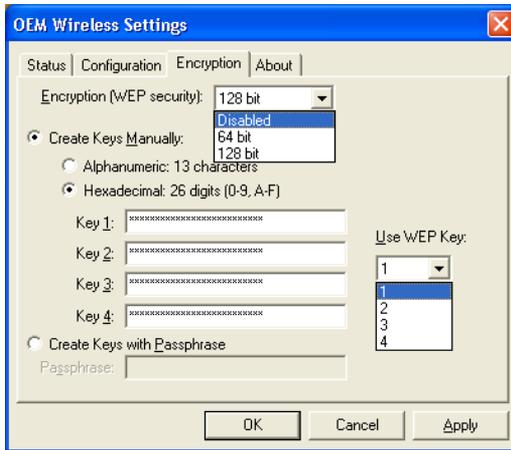
Network Type — Set to Peer-to-Peer or Access Point depending on the type of network to which you want to connect.

Peer-to-Peer Channel — After you have selected Peer-to-Peer, the Peer-to-Peer Channel field will become active and allow you to choose a channel.

Transmit Rate — Set the transmit rate you want from the pull-down menu. Click Apply after you have made your selection.

Encryption

WEP (Wired Equivalent Privacy) implemented in the Wireless LAN Card is based on the RC4 encryption algorithm. The security keys provided to ensure data confidentiality are four 10-bit keys for the 64-bit WEP setting and one 26-bit key for the 128-bit WEP setting. WEP security protects your wireless LAN against eavesdropping and unauthorized access by hackers or intruders. If WEP is in use, all wireless clients on the network must use the same WEP key in order to communicate.



Encryption (WEP security) — Select 128 bit or 64 bit from the drop-down list. For more secure data transmission, select 128 bit. (Default: Disabled)

To use the WEP function, take the following steps:

Step 1. Select 128 bit or 64 bit in the Encryption (WEP security) field.

Step 2. Check the Create Keys with Passphrase radio button, type a string in the Passphrase field and click Apply.

Or

Step 1. Check the Create Keys Manually radio button and enter text into one of the four key fields. Keys may be entered as regular text (Alphanumeric: 13 characters) or be in hexadecimal numerals [Hexadecimal: 26 digits (0~9, A~F)].

Step 2. Click Apply.

Create Keys Manually — This selection allows you to manually enter key elements.

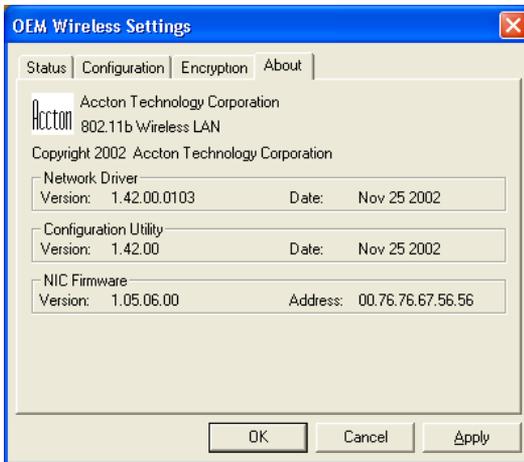
- Notes:**
1. Selecting the Alphanumeric radio button allows you to enter 5 alphanumeric characters for 64-bit encryption, or 26 alphanumeric characters for 128-bit encryption for each of the 4 keys.
 2. If you select the Hexadecimal radio button, you must enter 10 or 26 hexadecimal numbers (0~9, A~F, e.g., D7 0A 9C 7F E5) respectively for 64- and 128-bit encryption.

Use WEP Key — Choose the Key ID that has the encryption string you prefer. If you are using a key generated from the passphrase, you must use the same passphrase and key on each station.

Create Keys with Passphrase — Security keys for WEP encryption are generated from a passphrase string, so you must use the same passphrase on all the stations in your network.

About

This screen displays the information of Network Driver, Configuration Utility, and NIC Firmware Version.



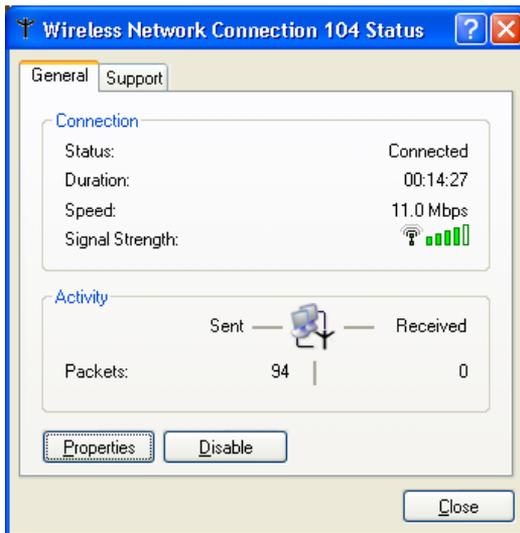
Using the Windows XP Configuration Tool

Basic Settings

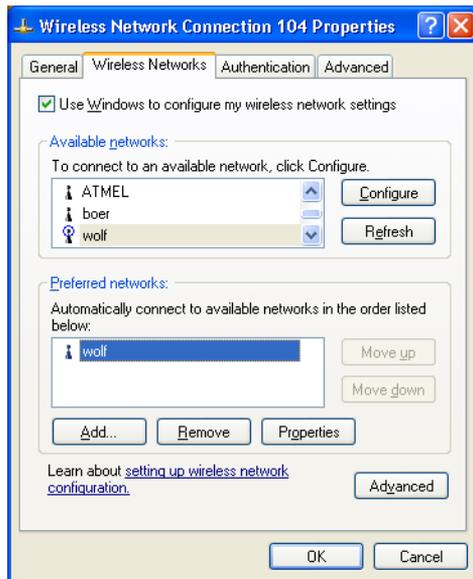
1. Right-click the network connection icon on the toolbar, and choose Open Network Connections.



2. The Wireless Network Connection Status box will open.



3. Click Properties. The Wireless Network Connection Properties window will open. Click the Wireless Networks tab.



4. In the lower section of the screen, click “Learn about setting up wireless network configuration” and complete the wireless configuration according to the Help and Support Center instructions.

Advanced Settings

Click the General tab (see the previous screen), and make sure that the adapter shown is the Wireless LAN Card.

1. Click Configure and then click the Advanced tab.
2. Set the Fragmentation Threshold. (The default 2,346 means Disabled)
3. Preamble Type offers a drop-down list with three options: Auto, Long, or Short. If you are not sure whether all the clients and access points in your wireless network support the Short RF preamble, then leave this setting on Auto (Default).
4. Rate is the data transmission/reception rate setting. It can be set to Auto, 1 Mbps, 2 Mbps, 5.5 Mbps, 11 Mbps. Usually this should be set to Auto. In a radio frequency hostile environment, a lower rate can provide more stable transmission quality.
5. Set the RTS Threshold to the same as that used by other devices in your network. (The default 2,347 means Disabled)

Network Configuration and Planning

This Wireless Solution supports a stand-alone wireless network configuration, as well as an integrated configuration with Ethernet LANs.

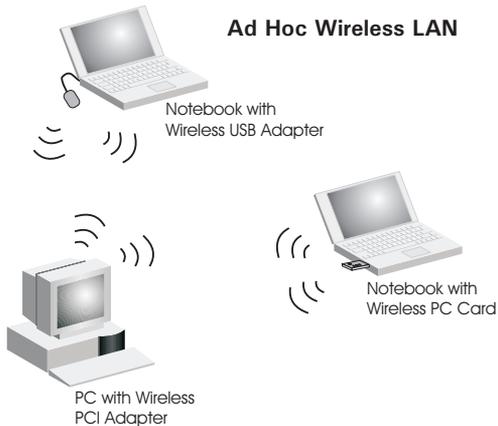
The Wireless LAN Card can be configured as:

- Ad hoc for departmental or SOHO LANs
- Infrastructure for enterprise LANs

Network Topologies

Ad Hoc Wireless LAN

An ad hoc wireless LAN consists of a group of computers, each equipped with a wireless adapter, connected via radio signals as an independent wireless LAN. Computers in a specific ad hoc wireless LAN must be configured to the same radio channel. An ad hoc wireless LAN can be used for a branch office or SOHO operation.

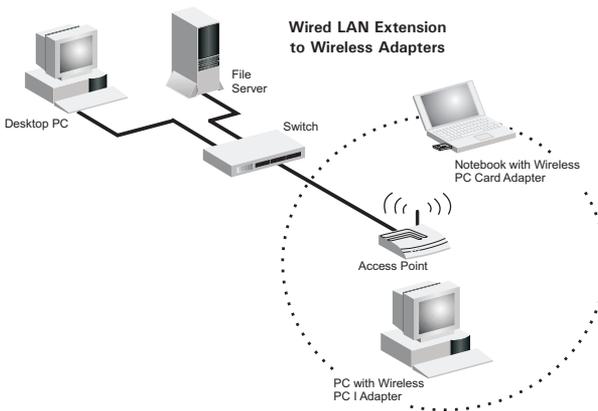


Infrastructure Wireless LAN

The Wireless PC Card can also provide wireless workstations with access to a wired LAN. An integrated wired and wireless LAN is called an Infrastructure configuration. A Basic Service Set (BSS) consists of a group of wireless PC users, and an access point that is directly connected to the wired LAN. Each wireless PC in this BSS can talk to any computer in its wireless group via a radio link, or access other computers or network resources in the wired LAN infrastructure via the access point.

The infrastructure configuration not only extends the accessibility of wireless PCs to the wired LAN, but also extends the effective wireless transmission range for wireless PCs by passing their signals through one or more access points.

A wireless infrastructure can be used for access to a central database, or for connection between mobile workers, as shown in the following figure.



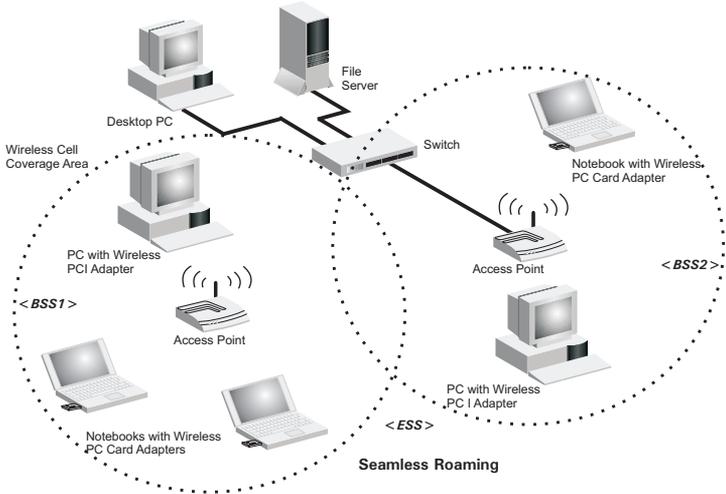
Setting the Communication Domain

Stationary Wireless PCs

The Basic Service Set (BSS) is the communication domain for each access point. For wireless PCs that do not need to support roaming, set the domain identifier (SSID) for the wireless card to the SSID of the access point you want to connect to. Check with your administrator for the SSID of the access point that you are connecting to.

Roaming Wireless PCs

A wireless infrastructure can also support roaming for mobile workers. More than one access point can be configured to create an Extended Service Set (ESS). By placing the access points so that a continuous coverage area is created, wireless users within this ESS can roam freely. All wireless adapters and access points within a specific ESS must be configured with the same SSID and to the same radio channel.



Troubleshooting

Check the following troubleshooting items before contacting Technical Support.

Adapter Installation Problems

If your laptop cannot find the Wireless LAN Card or the network driver does not install correctly, check the following:

- Make sure the adapter is securely seated in the PCMCIA slot. Check for any hardware problems, such as physical damage to the card's connector.
- Try the card in another PCMCIA slot. If this also fails, test your computer with another wireless card that is known to operate correctly.
- Make sure your computer is using the latest BIOS.
- If there are other network adapters in the notebook, they may be causing conflict. Remove the other network adapters from the notebook and test the wireless adapter separately.
- Check for a defective laptop or PCMCIA connection by trying the adapter in another laptop that is known to operate correctly.

If it still does not work, take out the wireless adapter. Delete OEMNDS.sys from:

Windows 98/Me: c:\windows\system.

Windows 2000: C:\winnt\system32\drivers

Windows XP: C:\windows\system32\drivers

Then go to "Control Panel" and delete the adapter from your network configuration menu. Restart your notebook and reinstall the card and driver.

Network Connection Problems

If the Link LED on the Wireless LAN Card does not light, or if you cannot access any network resources from the notebook, check the following:

- Make sure the correct software driver is installed for your operating system. If necessary, try reinstalling the driver.
- Make sure the computer and other network devices are receiving power.
- The access point you want to connect to may be defective. Try using another access point.
- If you cannot access a Windows or NetWare 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 configured your system for TCP/IP.

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

- Make sure the access point that the station is associated with is powered on.
- If you still cannot connect, change the access point and all the stations within the BSS to another radio channel.
- Make sure the SSID is the same as that used by the access point for a station with roaming disabled, or the same as that used by the access points in the extended service set (ESS).

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 or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the distance 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.

FCC Caution: To assure continued compliance, (example - use only shielded interface cables when connecting to computer or peripheral devices) any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

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.

IMPORTANT NOTE

FCC Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

CSA Statement (Canada)

This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of Industry Canada.

Le présent appareil numérique n'émet pas de bruits radio-électriques dépassant les limites applicables aux appareils numériques de la classe B prescrites dans le Règlement sur le brouillage radioélectrique édicté par l'Industrie.

VCCI Class B Compliance (Japan)

この装置は、情報処理装置等電波障害自主規制協議会（VCCI）の基準に基づくクラスB情報技術装置です。この装置は、家庭環境で使用することを目的としていますが、この装置がラジオやテレビジョン受信機に近接して使用されると受信障害を引き起こすことがあります。

取り扱い説明書に従って正しい取り扱いをして下さい。

CE Mark Declaration of Conformance for EMI and Safety (EEC)

This information technology equipment complies with the requirements of the Council Directive 89/336/EEC on the Approximation of the laws of the Member States relating to Electromagnetic Compatibility and 73/23/EEC for electrical equipment used within certain voltage limits and the Amendment Directive 93/68/EEC. For the evaluation of the compliance with these Directives, the following standards were applied:

- | | |
|-----------|---|
| RFI | <ul style="list-style-type: none"> • Limit class B according to EN 55022:1998 |
| Emission: | <ul style="list-style-type: none"> • Limit class B for harmonic current emission according to EN 61000-3-2:1995 • Limitation of voltage fluctuation and flicker in low-voltage supply system according to EN 61000-3-3:1995 |
| Immunity: | <ul style="list-style-type: none"> • Product family standard according to EN 55024:1998 • Electrostatic Discharge according to EN 61000-4-2:1995 (Contact Discharge: ± 4 kV, Air Discharge: ± 8 kV) • Radio-frequency electromagnetic field according to EN 61000-4-3:1996 (80 - 1000 MHz with 1 kHz AM 80% Modulation: 3 V/m) • Electrical fast transient/burst according to EN 61000-4-4:1995 (AC/DC power supply: ± 1 kV, Data/Signal lines: ± 0.5 kV) • Surge immunity test according to EN 61000-4-5:1995 (AC/DC Line to Line: ± 1 kV, AC/DC Line to Earth: ± 2 kV) • Immunity to conducted disturbances, Induced by radio-frequency fields: EN 61000-4-6:1996 (0.15 - 80 MHz with 1 kHz AM 80% Modulation: 3 V/m) • Power frequency magnetic field immunity test according to EN 61000-4-8:1993 (1 A/m at frequency 50 Hz) • Voltage dips, short interruptions and voltage variations immunity test according to EN 61000-4-11:1994 (>95% Reduction @10 ms, 30% Reduction @500 ms, >95% Reduction @5000 ms) |
| LVD: | <ul style="list-style-type: none"> • EN 60950 (A1/1992; A2/1993; A3/1993; A4/1995; A11/1997) |

Specifications

General Specifications

Functional Criteria

Data Rate	1, 2, 5.5, 11 Mbps
Operating Range	Up to 30 m (100 ft) at 11 Mbps Up to 100 m (300 ft) at 5.5 Mbps; or lower indoors

Radio Signal

Radio Technology	Direct Sequence Spread-Spectrum (DSSS)
Operating Channels	USA, Canada: 11 channels ETSI: 13 channels Spain: 2 channels France: 4 channels Japan: 14 channels
Modulation	DPBSK, DQPSK, CCK
Output Power	+17.0 dBm (minimum)

Physical Characteristics

Power Consumption	TX 240mA, RX 160mA, Sleep Mode 18mA
Dimensions	Type II PC Card + antenna 12.8 x 5.3 cm (5.04 x 2.09 in.)
Antenna	Built-in Antenna with 2.5 dBi antenna gain
LED Indicator	Link, Activity
Host Interface	Cardbus, PC Card Type II

Standards Conformance

Wireless Standard	IEEE 802.11b
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Environmental

Temperature	Operating: 0 to 50 °C (32 to 122 °F) Storage: 0 to 70 °C (32 to 158 °F)
Humidity	5 to 80% (non-condensing)
Vibration/Shock/Drop	IEC 68-2-34, IEC 68-2-27, IEC68-2-32

Certification

CE Mark	EN 50081-1, EN 55022 Class B EN 50082-1, EN 61000-4-2/3/4/6/11
Emissions	FCC Part 15(B), ETS 300-328, VCCI

Software Drivers

Drivers

Windows 98

Windows Me

Windows 2000

Windows XP

WN3306A 2-ZZ
E042003-R01
150200017600E