MW600-B-LO

Wireless 802. 11b/g wireless PCI-E Adapter Card

User Manual

Rev 1.0

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.

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.

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 equipment should be installed and operated with minimum distance 20cm between the radiator & your body.
This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

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

Manual Information To the End User

The OEM integrator has to be aware not to provide information to the end user regarding how to install or remove this RF module in the user's manual of the end product which integrates this module.

The end user manual shall include all required regulatory information/warning as show in this manual.

USERS MANUAL OF THE END PRODUCT:

In the users manual of the end product, the end user has to be informed to keep at least 20cm separation with the antenna while this end product is installed and operated. The end user has to be informed that the FCC radio-frequency exposure guidelines for an uncontrolled environment can be satisfied. The end user has to also be informed that any changes or modifications not expressly approved by the manufacturer could void the user's authority to operate this equipment.

The FCC part 15.19 statement below has to also be available in the manual:

This device complies with Part 15 of 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.

LABEL OF THE END PRODUCT:

The final end product must be labeled in a visible area with the following " Contains TX FCC ID: N89-MW600BLO ".

This device is intended only for OEM integrators under the following conditions:

1)   The antenna must be installed such that 20 cm is maintained between the antenna and users, and

2)   The transmitter module may not be co-located with any other transmitter

or antenna,

3) For all products market in US, OEM has to limit the operation channels in CH1 to CH11 for 2.4G band by supplied firmware programming tool. OEM shall not supply any tool or info to the end-user regarding to Regulatory Domain change.

As long as 3 conditions above are met, further transmitter test will not be required. However, the OEM integrator is still responsible for testing their end-product for any additional compliance requirements required with this module installed (for example, digital device emissions, PC peripheral requirements, etc.).

IMPORTANT NOTE: In the event that these conditions can not be met (for example certain laptop configurations or co-location with another transmitter), then the FCC authorization is no longer considered valid and the FCC ID can not be used on the final product. In these circumstances, the OEM integrator will be responsible for re-evaluating the end product (including the transmitter) and obtaining a separate FCC authorization.

Manual Information To the End User

The OEM integrator has to be aware not to provide information to the end user regarding how to install or remove this RF module in the user's manual of the end product which integrates this module.

The end user manual shall include all required regulatory information/warning as show in this manual.

Important Information

Please read the information below before using the WM600-B-LO 11b/g wireless PCI- Express card on your system.

What's New

The latest generation PCI (Peripheral Component Interconnect) bus architecture called PCI Express, uses a 2.5- GHz serial Input/Output structure for higher bandwidth and better scalability than its previous architectures. .

Features

- PCI Express PCIe interface.
- X1-lane 2.5Gbps PCI Express host interface, Low profile
- IEEE 802.11g compliant.
- Backward compatible with IEEE 802.11b standard.
- Delivers data rate up to 54 Mbps.
- LED for Link and Activity
- External detachable antenna
- 801.11g: Dynamically shifts between 54, 48, 36, 24, 18, 12, 9 and 6 Mbps network speed, based on signal strength, for maximum availability and reliability of connection.
- 802.11b: Dynamically shifts between 11M, 5.5M, 2M, and 1 Mbps network speed, based on signal strength, for maximum availability and reliability of connection.
- Allows users move between Access Points without resetting their connection reconfiguration.
- Supports most popular operating systems: Window 2000/ME/XP/Vista.   Linux (TBD).
- Ensures great security by providing the 64/128bits Wired Equivalent Privacy (WEP) defined in the IEEE 802.11 standard.
- WEP, WEP2, WPA Personal, WPA2 Personal, WMM, WMM-PS (UA-PSE), TKIP-support.   AES hardware acceleration.
- 802.11i standards support
- Meets PCI Power Management Interface version 1.1 (ACPI)

System Hardware Requirements

Before Using the WM600-B-LO, check to be sure your system meets the following minimum requirements:

- Available PCI-Express card slot

- 64 MB of System Memory

- 150 MHz or faster processor

- The most recent BIOS version for your system

Hardware Driver Compatability

To ensure optimal performance, it is recommended that you download the latest hardware drivers for all your particular adapters from the manufacturer's web site.

It is recommended that you install the latest Service Packs and/or Hot Fixes from Microsoft prior to installing WM600-B-LO PCI-Express Card Software. Refer to the Release Notes for the latest list of Service Packs and/or Hot Fixes that are required.

LED Indicators

The WM600-B-LO features two LED indicators:
2 LED (One is orange, another is green)

- Orange: still orange after power on.
- Green: blinking slowly when link with AP and blinking quickly when have data transfers

Introduction

Overview of the Product

The adapter gives you the flexibility to install your PC in the most convenient location available, without the cost of running network cables.
The adapter's auto-sensing capability allows high packet transfer rate of up to 54Mbps for maximum throughput, or dynamic range shifting to lower speeds due to distance or operating limitations in an environment with a lot of electromagnetic interference. It can also interoperate with all 11Mbps wireless products.   Your wireless communications are protected   by up to 152-bit WEP and WPA encryption for high security.

Features

Complies with IEEE802.11g, IEEE802.11b standards, Supports WPA/WPA2 data security, authentication, TKIP/AES encryption, 64/128/152-bit WEP encryption Supports 54/48/36/24/18/12/9/6Mbps or 11/5.5/3/2/1Mbps wireless LAN data transfer rates. Provide 32-bit PCI E interface. Supports Ad-Hoc and Infrastructure modes Supports roaming between access points when configured in Infrastructure mode Ease to configure and provides monitoring information. Supports Windows 98SE, Me, 2000, XP, Vista Detachable reverse SMA connector antenna.

Wireless Configuration methods

You can configure connections to wireless networks, known as wireless profiles, for a computer running Windows Vista with the following methods:

- **Connect to a network** dialog box

  This is the principal method by which individual users will configure connections to wireless networks.

- Group Policy

  Network administrators can use Group Policy settings in an Active Directory® directory service environment to centrally configure and deploy wireless network settings and automatically configure domain member computers.

The following section describes in detail how to connect to a wireless network using the **Connect to a network** dialog box in Windows Vista.

The Connect to a network dialog box

You can access the **Connect to a network** dialog box from many locations in Windows Vista, including the following:

- By clicking **Start**, and then **Connect to** from the Windows Vista desktop

- From the **Manage wireless connections** dialog box

- From the **Connect/Disconnect** context menu option of a wireless network adapter in the Network Connections folder

The following figure shows the **Connect to a network** dialog box.
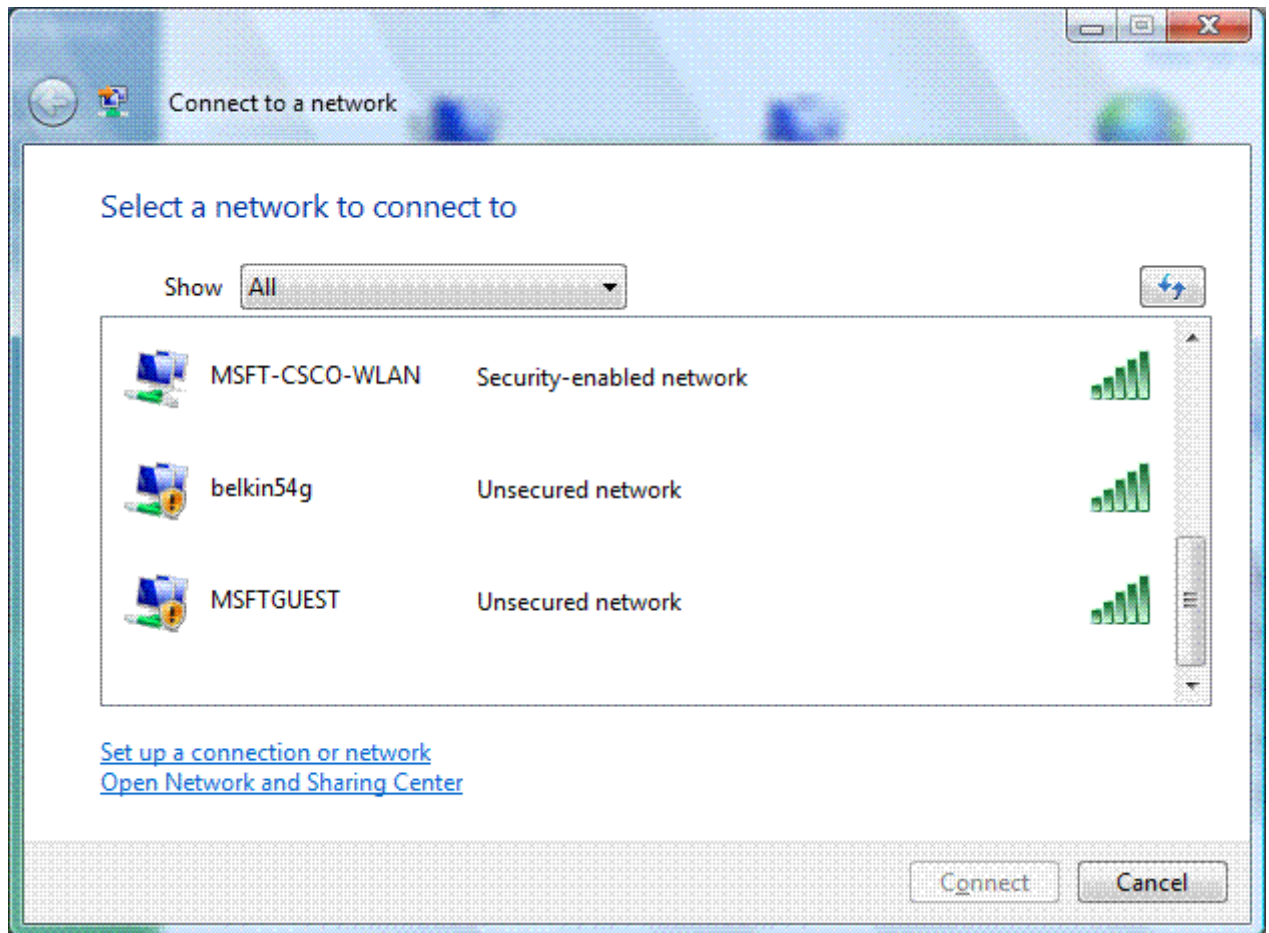
The new **Connect to a network** dialog box is a redesigned version of the **Choose a wireless network** dialog box in Windows XP with Service Pack 2 (SP2). This new dialog also supports virtual private network (VPN) and dial-up connections (including Connection Manager and Point-to-Point Protocol over Ethernet [PPPoE]).

In **Show**, you can select the following:

- **All** Wireless, dial-up, and VPN connections.

- **Wireless** Only wireless connections.

- **Dial-up and VPN** Only dial-up and VPN connections.

By default, **All** is selected and the list of networks consists of wireless networks that have been detected and dial-up and VPN connections that have been configured. A non-broadcast network appears in the list with the name "Unnamed Network." The list of available networks is subject to the allowed wireless networks configured through Group Policy or the command line and the types of wireless networks being detected, such as infrastructure mode or ad hoc mode networks.

- Infrastructure mode: PC use wireless to connect to Router then to the internet
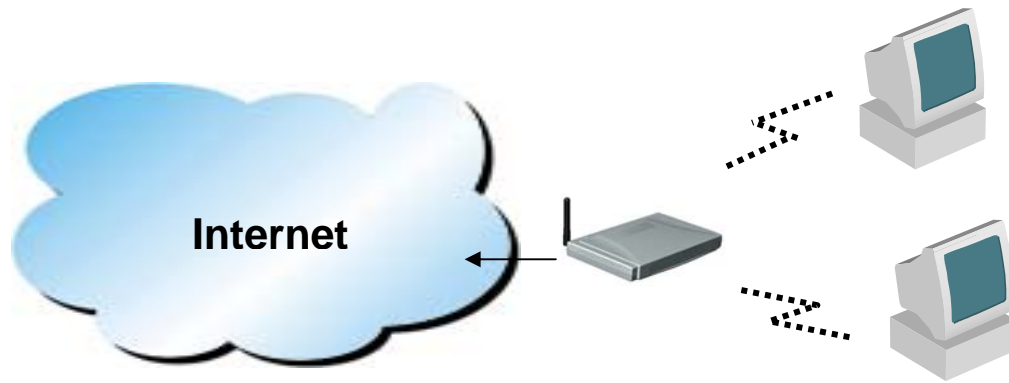
Ad Hoc mode: PC use wireless to connect to each otherb
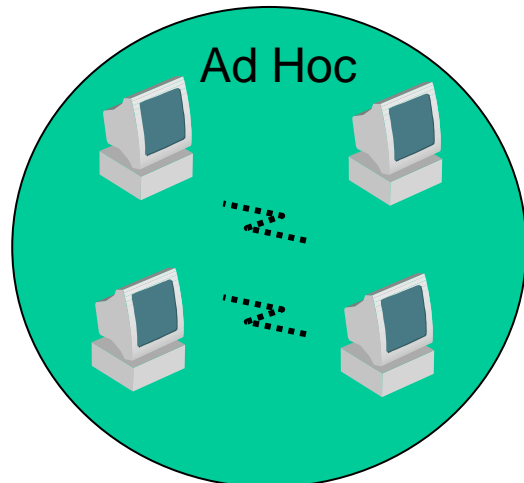
To connect to a wireless network that is listed in the **Connect to a network** dialog box, double-click the network name or click the network name and then click **Connect**. For a non-broadcast network, you will be prompted to type the wireless network name. If the connection attempt is not successful, use Windows Network Diagnostics to diagnose the problem and suggest a solution.

If the wireless network you want to connect to is not listed, click **Set up a connection or network**. Windows Vista displays the following page.
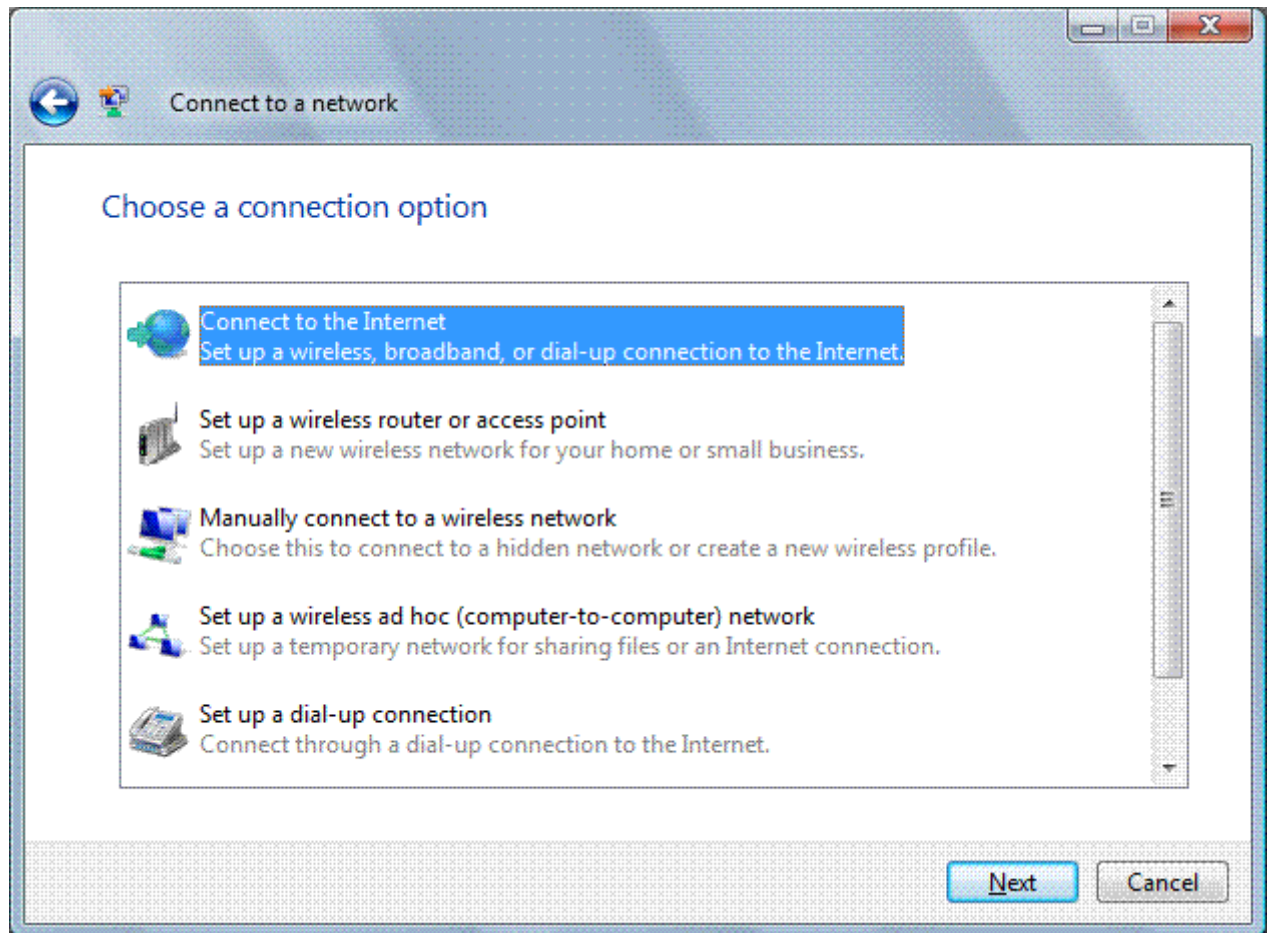
On the **Select a connection option** page, you can select the following:

- Connect to the Internet

- Set up a wireless router or access point

- Manually connect to a wireless network

- Set up a wireless ad hoc (computer-to-computer) network

- Set up a dial-up connection

- Connect to a workplace

The **Choose a connection option** dialog box is a central location to configure wireless, dial-up, and VPN connections and is a consolidation of the Create a New Connection and Wireless Network Setup wizards in Windows XP with SP2.

To manually configure the wireless settings for a wireless network, click **Manually connect to a wireless network**, and then click **Next**. Windows Vista displays the following page.

Note If the Manually connect to a wireless network option is not present in the **Choose a connection option** dialog box, make sure that your wireless network adapter appears in the Network Connections folder as a wireless connection and is enabled. If your wireless network adapter appears in the Network Connections folder as a wired connection, ensure that you have installed the latest driver for your adapter that is designed for Windows Vista.

On the **Enter information for the wireless network you want to add** page, configure the following:

- **Network name** Type the name of the wireless network.

- **Security type** Select the method used to authenticate a connection to the wireless network. The choices are the following:

  - **No authentication (Open)** Open system authentication with no encryption.

  - **WEP** Open system authentication with Wired Equivalent Privacy (WEP).

  - **WPA2-Personal** Wi-Fi Protected Access 2 (WPA2) with a preshared key (also known as a passphrase).

  - **WPA-Personal** Wi-Fi Protected Access (WPA) with a preshared key.

- **WPA2-Enterprise** WPA2 with IEEE 802.1X authentication.

- **WPA-Enterprise** WPA with IEEE 802.1X authentication.

- **802.1x** IEEE 802.1X authentication with WEP (also known as dynamic WEP).

  The choices listed depend on the capabilities of your wireless network adapter that are reported to Windows.

  The shared key authentication method is not listed. Microsoft strongly discourages its use because it provides weak security for your wireless network. To configure shared key authentication, select **No authentication (Open)** here and then select **Shared** from the **Security** tab in the properties of the wireless network (described later in this article).

- **Encryption type** Select the method used to encrypt data frames sent over the wireless network. The choices depend on the selected security type.

  - When the **No authentication (Open)** security type is selected, you can select **None**.

  - When the **WEP** security type is selected, you can select **WEP**.

  - When the **802.1x** security type is selected, you can select **WEP**.

  - When the **WPA2-Personal**, **WPA2-Enterprise**, **WPA-Personal**, **WPA-Enterprise** security types are selected, you can select **TKIP**.

  The choices listed depend on the capabilities of your wireless network adapter that are reported to Windows.

- **Security Key/Passphrase** Type the WEP key (if you selected the **WEP** security type), the WPA preshared key (if you selected the **WPA-Personal** security type), or the WPA2 preshared key (if you selected the **WPA2-Personal** security type). For the **WPA2-Enterprise**, **WPA-Enterprise**, and **802.1x** security types, the security key is determined automatically when Windows Vista performs wireless authentication.

- **Display characters** Specifies whether you want to view the value typed in **Security Key/Passphrase**.

- **Start this connection automatically** Specifies whether Windows Vista will automatically connect to this wireless network. If you clear this checkbox, you must manually connect to the wireless network from the **Connect to a network** dialog box.
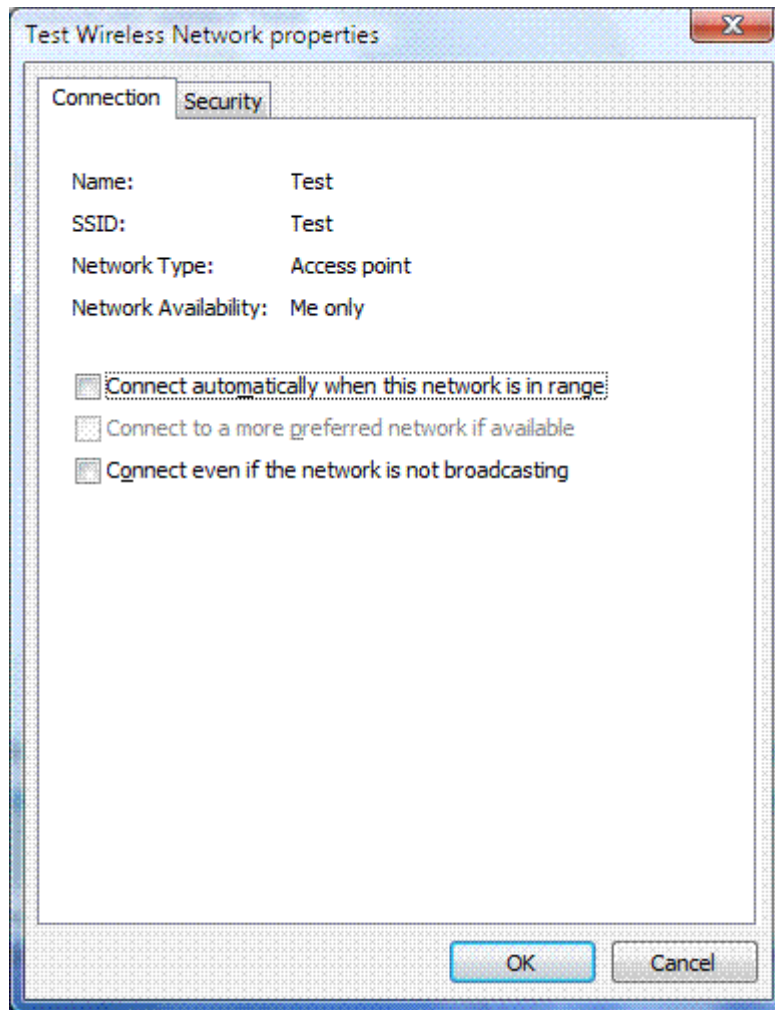
- **Connect even if the network is not broadcasting** Specifies whether Windows should attempt to connect even if the wireless network is not broadcasting its name. This will cause Windows Vista to send Probe Request frames to locate the wireless network. These probe request frames can be used by malicious users to determine the name of the non-broadcast network. For more information about the privacy issues of non-broadcast networks, see Non-broadcast Wireless Networks with Microsoft Windows.

When you click **Next**, Windows Vista displays the following page.
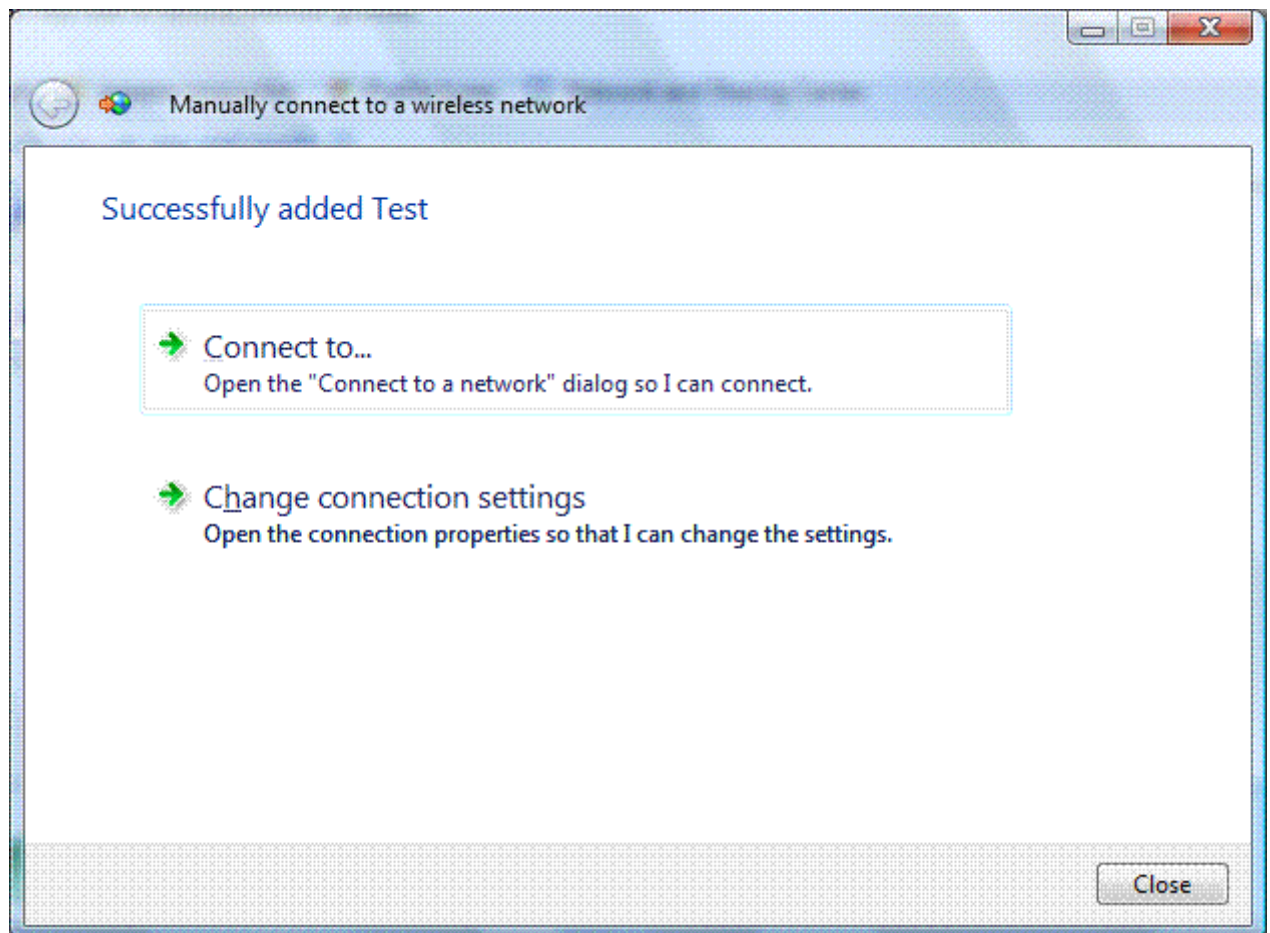
To connect to the wireless network that you just created, click **Connect to**, and then double-click the newly created wireless network in the **Connect to a network** dialog box.

To configure the properties of the wireless network you have just created, click **Change connection settings**. Windows Vista displays the following dialog box.

From the **Connection** tab, you can view the wireless network's name, SSID, and network type (either **Access point** for infrastructure mode networks or **Computer-to-computer** for ad hoc mode networks). You can also configure the following:

- Connect automatically when this network is in range

- Connect to a more preferred network if available

  Specifies whether Windows Vista will automatically disconnect from this wireless network if a more preferred wireless network comes within range.

- Connect even if the network is not broadcasting

The following figure shows the **Security** tab.
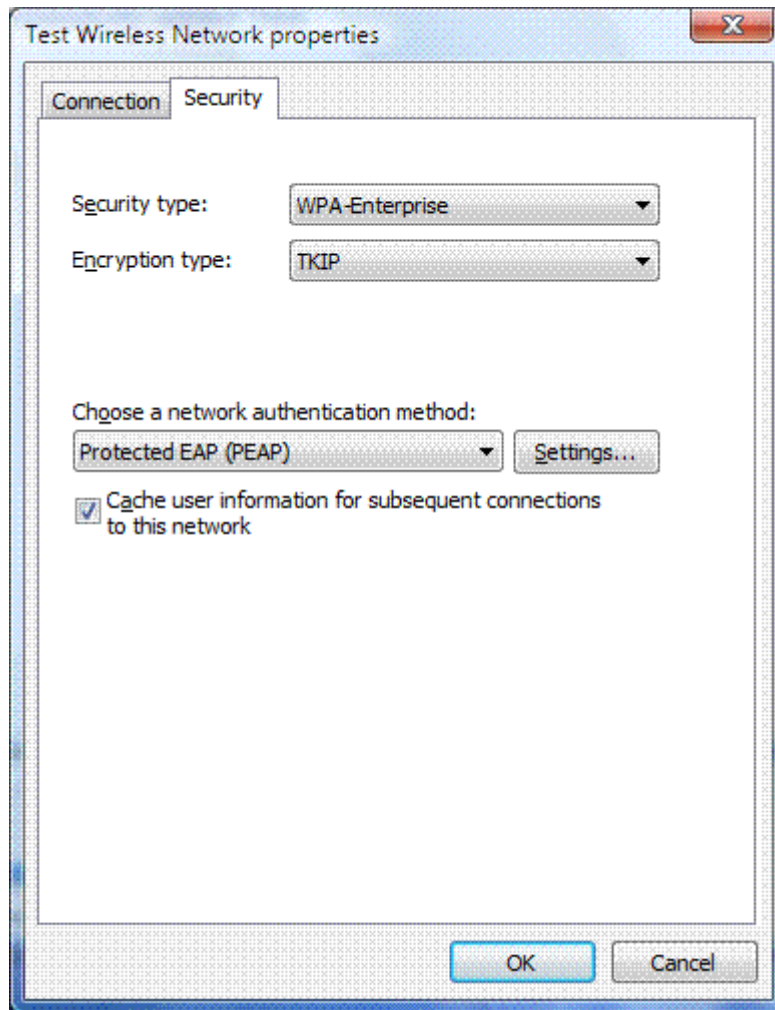
On the **Security** tab, you can specify the following security types:

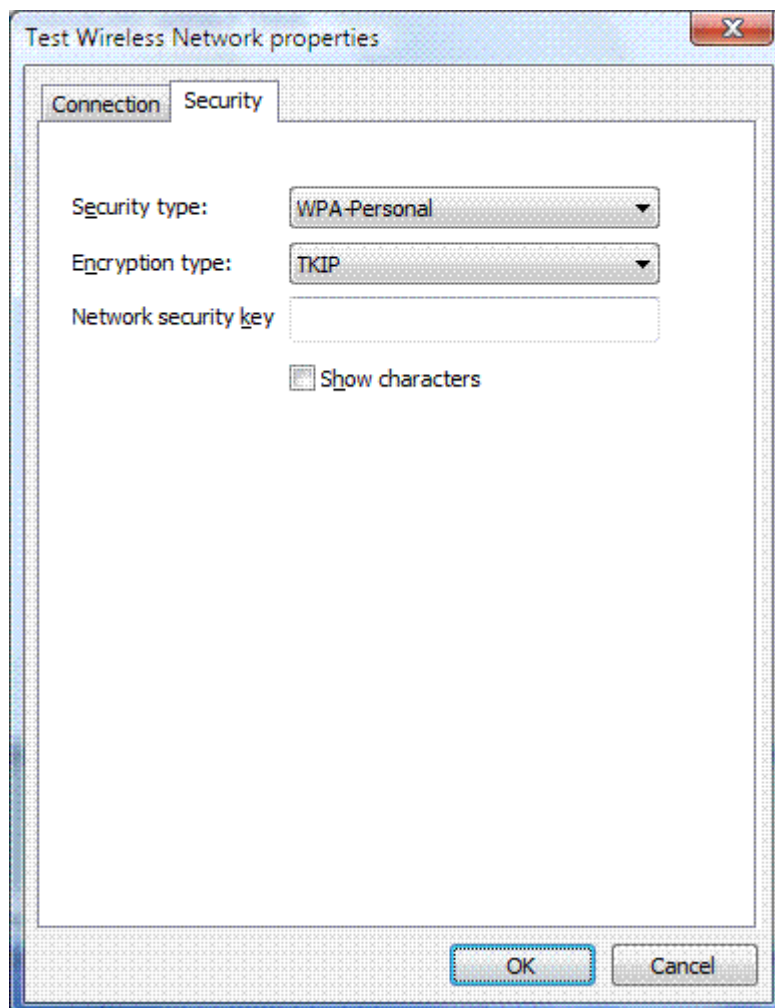- No authentication (Open)

- Shared

  Shared key authentication. The **Security** tab is the only location where you can configure shared key authentication because its use is highly discouraged.

- WPA2-Personal

- WPA-Personal

- WPA2-Enterprise

- WPA-Enterprise

- 802.1x

Based on the selected security type, you can configure either a network security key or specify and configure a network authentication method. If you specify **WPA-Enterprise**,

WPA2-Enterprise, or **802.1x** as your security type, you must configure the following (as shown in the previous figure):

- **Choose a network authentication method** Select an Extensible Authentication Protocol (EAP) method and click **Settings** to configure the EAP type as needed.

- **Cache user information for subsequent connections to this network** Specifies that when the user logs off, the user credential data is removed from the registry. The result is that when the next user logs on, they will be prompted for their credentials (such as user name and password).

If you specify the use of **WPA-Personal** or **WPA2-Personal** as your security type or **No authentication (Open)** or **Shared** as your security type with WEP as your encryption type, you must configure a network security key, as shown in the following figure.


You do not need to configure a network security key for the WPA2-Enterprise, WPA-Enterprise, and 802.1X security types because the key is determined automatically when Windows Vista performs wireless authentication.

After you have configured your wireless networks, you can manage them from the **Manage Wireless Networks** dialog box. To display the **Manage Wireless Networks** dialog box, do the following:

1. Click Start, right-click **Network**, and then click **Properties**.
2. In the task list of the **Network and Sharing Center** dialog box, click **Manage wireless networks**.

The following figure shows an example.
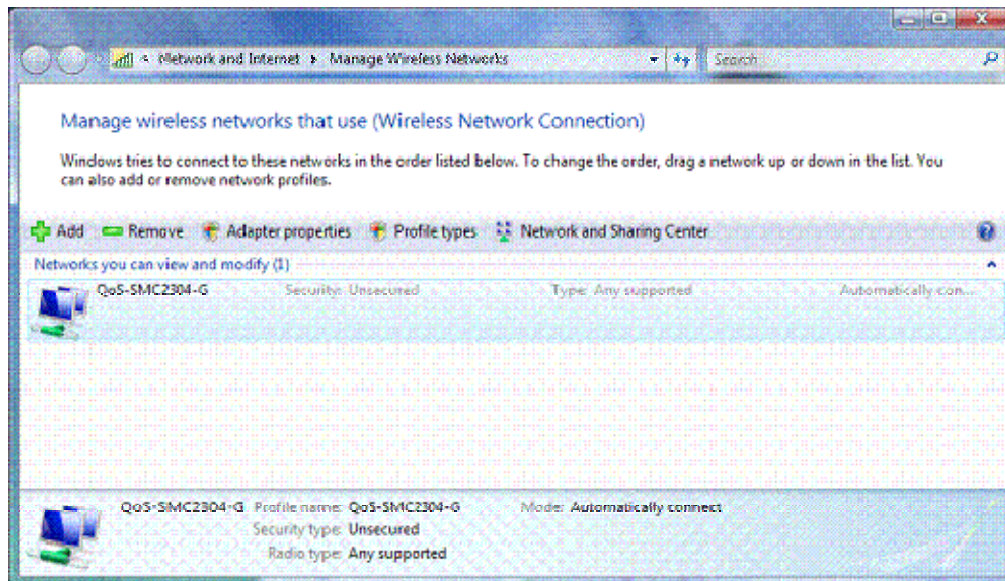
From the Manage Wireless Networks dialog box, you can add a new wireless network, remove a selected wireless network, obtain the properties of the wireless network adapter, and choose the type of profile to assign to new wireless networks (applies to all users or the current user). To view or modify the properties of an existing wireless network, double-click the wireless network name.

Appendix A

Specifications

Product Name	Wireless 802. 11b/g wireless PCI-E Adapter Card
Interface	PCI Express® Rev 1.1, X1-lane 2.5Gbps PCIe Motherboard Slot
Network Standard	IEEE802.11g/b COMPLIANT
Data Rate	54Mbps, automatic fallback to 48, 36, 24,18,12,9 and 6 Mbps
Modulation	802.11g---- 54, 48, 36,24,18,12,9,6Mbps (OFDM) 802.11b---- CCK (11Mbps, 5.5Mbps), DQPSK (2Mbps), DBPSK (1Mbps)
Operating Frequency	2.412 ~ 2.462 GHz: North America 2.412 ~ 2.472 GHz: Europe ETSI 2.412 ~ 2.477 GHz: Japan
Operating Channels	2.4GHz: 1~11 for N. America, 1~13 for Europe (ETSI), 1-14 for Japan
RF Output Power	14 ± 1.5 dBm (54Mbps, OFDM, typical) 16 ± 1.5 dBm (11Mbps, CCK, QPSK, BPSK, typical)
Antenna	External Dipole (detachable, Gain: 2dBi) with a mating the RP-SMA connector on the bracket.

LED Indicators	2 LED, one orange color another one is green color
	
	Orange color LED:
	
	    Solid light: Indicates wireless LAN enabled and connect.
	
	Green color LED:
	
	    Slow Flashing: Indicates wireless LAN search AP
	
	    Fast Flashing: WiFi traffic.

Coverage Area	Indoor: 802.11b: 50M@11Mbps
	            802.11g: 30M@54Mbps
	Outdoor: 802.11b: 350M@11Mbps
	            802.11g: 100M@54Mbps

Receiver Sensitivity	-70 dBm @ 54M (OFDM, 10% PER) -87 dBm @ 6M (OFDM, 10% PER) -84 dBm @ 11M (CCK, 8% PER)
Power Consumption	TX power consumption: <480 mA RX power consumption: <470 mA
WEP	Support 64/128 bit encryption
Support OS	Microsoft Windows XP, Vista premium/basic English/Chinese version.
Operating Temperature	0 to 60 ℃
Humidity	20% to 95% Non-condensing
Dimensions (mm)	(W) 19mm × (D) 167.65mm × (H) 68.9mm
Weight (g)	50 without antenna and cable (TBD)
Voltage	3.3V +/- 5%