# *USB 2.0 802.11g Wireless Network Adapter*

## User's Manual

Rev 1.0

# Regulatory compliance

**FCC Warning**

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 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.

You are cautioned that changes or modifications not expressly approved by the party responsible for compliance could void your authority to operate the equipment.

**IMPORTANT NOTE:**

**Federal Communications Commission (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.

**CE Mark Warning**

This is a Class B product. In a domestic environment, this product may cause radio interference, in which case the user may be required to take adequate measures.

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

CyberTAN declared that UW604-E is limited in CH1-CH11 by specified firmware controlled in USA

# About this manual

This User's Manual describes how to install and operate your USB Wireless Network Adapter. Please read this manual before you install the product.

This manual includes the following topics:

- Product description and features.
- Hardware installation procedure.
- Software installation procedure.
- FAQ

# Table of Contents

# Chapter 1 - Introduction

Thank you for purchasing the USB 2.0 802.11g Wireless Network Adapter. This high-speed USB 2.0 802.11g Wireless Network Adapter provides you with an innovative wireless networking solution. The Adapter is easy to set up and use. With this innovative wireless technology, you can share files and printers on the network—without inconvenient wires! Now you can carry the LAN in your pocket!

The adapter is a WLAN network adapter with a rate of 1, 2, 5.5, and 11 Mbps (802.11b CCK mode), and 6, 9, 12, 18, 24, 36, 48, and 54 Mbps (802.11g OFDM mode) operating as well in the 2.4 GHz ISM band using Direct Sequence Spread Spectrum (DSSS) transmission implementing the IEEE 802.11b/g standards. This adapter provides Device Drivers for Windows ME, 2000 and Windows XP. It also provides graphic based tools for the configuration of the adapter. The tool, as well as the installation steps of the plug-and-play procedure for the Microsoft Windows ME, Windows 2000 and Windows XP operating systems, is described in this document.

## Features

The USB 2.0 802.11g Wireless Network Adapter offers compliance with the IEEE 802.11b/g specification. This feature allows them to communicate with other wireless devices that support the standard. Features of the adapter are:

- Host interface: USB 2.0 compliant
- Compatible to IEEE802.11g and 802.11b standards
- Up to 54Mbps of data transfer rate
- Higher Data Encryption (64 and 128-bit), WPA (firmware upgradeable)
- IEEE 802.11 infrastructure and ad-hoc modes (CSMA/CA)
- Support graphic based user interface that eases setup, configuration and monitoring
- Uses 2.4GHz frequency band 2.412~2.484 GHz, which complies with worldwide requirement
- Support channels – 11 channels (USA, Canada), 14 channels (Japan)
- Frequency selection (DFS): comply with 802.11h (firmware upgradeable)
- Transmit power control (TPC): comply with 802.11h (firmware upgradeable)
- Delivers data rate up to 54Mbps.
- Dynamic and automatic network speed shift based on signal strength, for maximum availability and reliability of connections.
- Authentication: support IEEE 802.1x and RADIUS
- QoS: comply with draft of IEEE 802.11e EDCF and HCF polling (firmware upgradeable)

# What is Wireless LAN?

Wireless Local Area Network (WLAN) systems offer a great number of advantages over traditional wired systems. WLAN is flexible and easy to setup and manage. They are also more economical than wired LAN systems.

Using radio frequency (RF) technology, WLAN transmit and receive data through the air. WLAN combine data connectivity with user mobility. For example, users can roam from a conference room to their office without being disconnected from the LAN.

Using WLAN, users can conveniently access-shared information, and network administrators can configure and augment networks without installing or moving network cables.

WLAN technology provides users with many convenient and cost saving features:

- **Mobility:** WLAN provide LAN users with access to real-time information anywhere in their organization, providing service opportunities that are impossible with wired networks.
- **Ease of Installation:** Installing is easy for novice and expert users alike, eliminating the need to install network cables in walls and ceilings.
- **Scalability**: WLAN can be configured in a variety of topologies to adapt to specific applications and installations. Configurations are easily changed and range from peer-to-peer networks suitable for a small number of users to full infrastructure networks of thousands of users roaming over a broad area.

# Wireless LAN Modes

Wireless LANs can be configured in one of two ways:

| | |
|---|---|
| **Ad-hoc Networking** | Also known as a peer-to-peer network, an ad-hoc network is one that allows all workstations and computers in the network to act as servers to all other users on the network. Users on the network can share files, print to a shared printer, and access the Internet with a shared modem. However, with ad-hoc networking, users can only communicate with other wireless LAN computers that are in the wireless LAN workgroup, and are within range. |
| **Infrastructure Networking** | Infrastructure networking differs from ad-hoc networking in that it includes an access point. Unlike the ad-hoc structure where users on the LAN contend the shared bandwidth, on an infrastructure network the access point can manage the bandwidth to maximize |

| | |
|---|---|
| | bandwidth utilization.<br>Additionally, the access point enables users on a wireless LAN to access an existing wired network, allowing wireless users to take advantage of the wired networks resources, such as Internet, email, file transfer, and printer sharing.<br>Infrastructure networking has the following advantages over ad-hoc networking:<br>• **Extended range:** each wireless LAN computer within the range of the access point can communicate with other wireless LAN computers within range of the access point.<br>• **Roaming:** the access point enables a wireless LAN computer to move through a building and still be connected to the LAN.<br>• **Wired to wireless LAN connectivity:** the access point bridges the gap between wireless LANs and their wired counterparts. |

## Notes on Wireless LAN Configuration

When configuring a wireless LAN (WLAN), be sure to note the following points:

- Optimize the performance of the WLAN by ensuring that the distance between access points is not too far. In most buildings, WLAN cards operate within a range of 100 ~ 300 feet, depending on the thickness and structure of the walls.
- Radio waves can pass through walls and glass but not metal. If there is interference in transmitting through a wall, it may be that the wall has reinforcing metal in its structure. Install another access point to circumvent this problem.
- Floors usually have metal girders and metal reinforcing struts that interfere with WLAN transmission.

This concludes the first chapter. The next chapter deals with the hardware installation of the Adapter.

# Chapter 2 - Hardware Installation

This chapter covers connecting your USB 2.0 802.11g WLAN Network Adapter to USB port of desktop / notebook PC.

## Package Contents

Please make sure that items below are included on package.

- ✓ One USB 2.0 802.11g Wireless Network Adapter
- ✓ One USB 2.0 cable
- ✓ One CD containing drivers and documentation
- ✓ One Quick Installation Guide

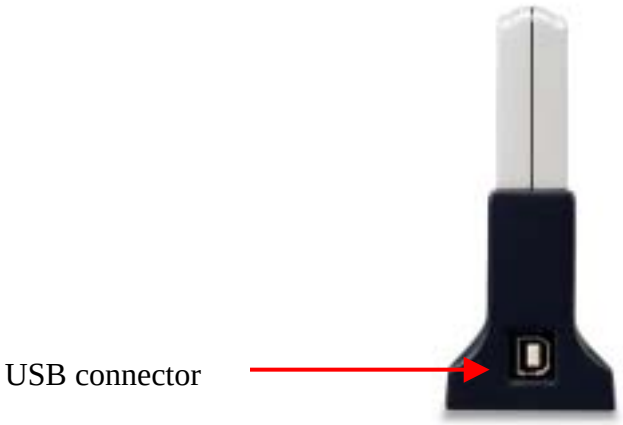
## System Requirements for the Adapter

- Operating System: MS Windows ME/2000 & Windows XP
- Desktop PC or notebook PC with CD-ROM drive
- One free USB 2.0 port
- Pentium-Class 800 MHz or higher

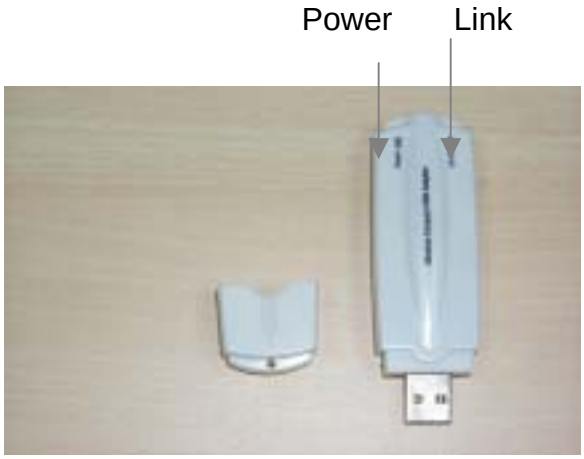
## Connecting the USB Adapter

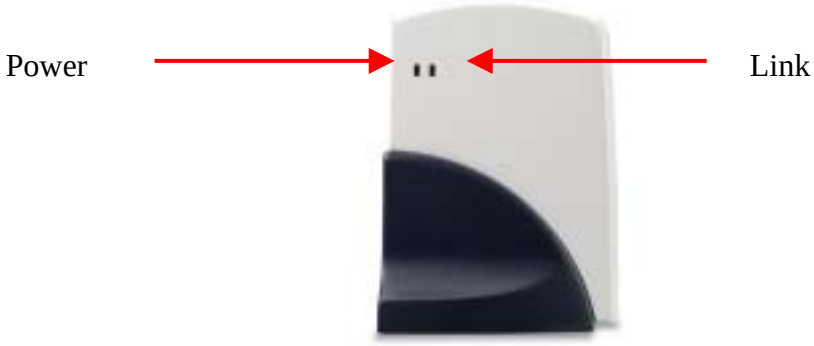
| | |
|---|---|
| **Note!** | These instructions apply to most desktop/notebook computers. For detailed information on inserting USB adapters into your desktop/notebook PC, consult the desktop/notebook PC User's Manual. |

The Adapter's USB connector.




## LED Indicators




The following table describes the meaning of LED indicators:

| LED | MEANING |
|---|---|
| **Power** | Indicates that the Adapter is powered on when the LED lights up. |

| | |
|---|---|
| **Link** | Indicates link status. The LED lights up while the wireless connection is linked. If the light is blinking, it is disconnected, and is scanning the wireless network. |

## Disconnecting the USB Adapter

In Windows ME/2000/XP operating systems, you do not have to power down your notebook/desktop PC to remove the Adapter. The Adapter is hot swappable—you can remove the Adapter when your notebook/desktop PC is powered on.

| | |
|---|---|
| **WARNING:**  | *Do not remove the USB 2.0 802.11g WLAN Network Adapter when a data transmission is taking place. Exit your communications program normally, stop the Adapter if necessary, and then remove the adapter.* |

# *Chapter 3 – Driver Installation for Windows*

The following sections cover the USB 2.0 802.11g Wireless Network Adapter driver installation in the Windows ME/2000/XP operating systems.

| Note! | **You have to install your hardware first before you begin to install the drivers.** |
|---|---|

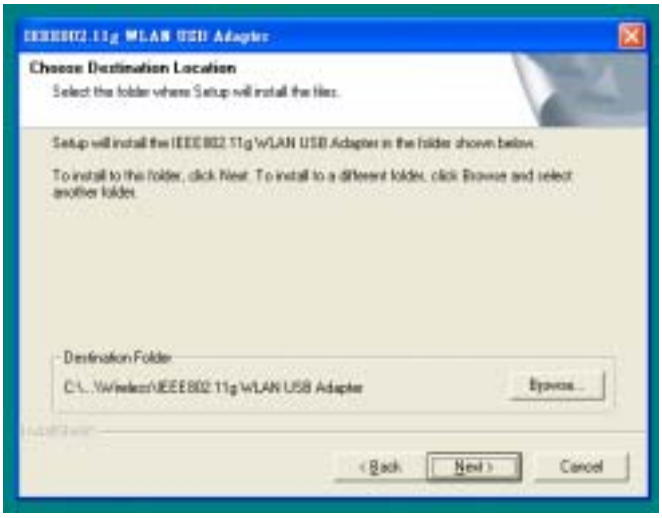
## Driver installation for Windows XP & 2000

Follow the steps below to install the USB 2.0 802.11g Wireless Network Adapter drivers for Windows 2000.

1. Run "**setup.exe**" file in USB 2.0 802.11g Wireless Network Adapter utility CD-ROM. Windows will pop-up


   Click "**Next**".

2. Choose a preferable destination location and program folder name for USB 2.0 802.11g Wireless Network Adapter driver. Click "**Next**".




Click "**Next**" to start copying all the driver files to the folder.

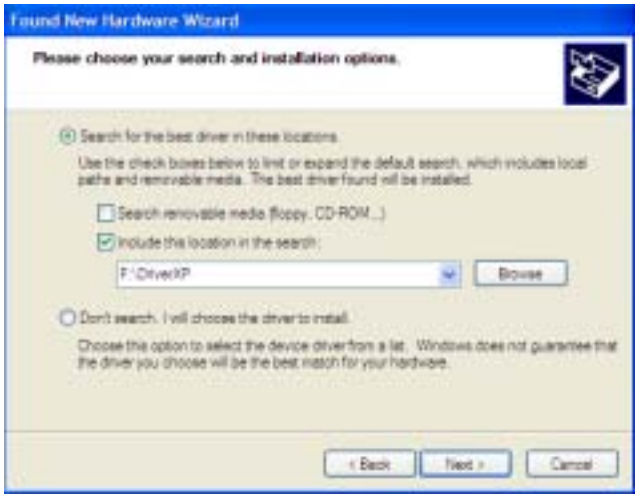
3. When following dialog pops-up


Click "**Continue Anyway**" button.
(Currently this driver hasn't pass Microsoft WHQL certification yet)

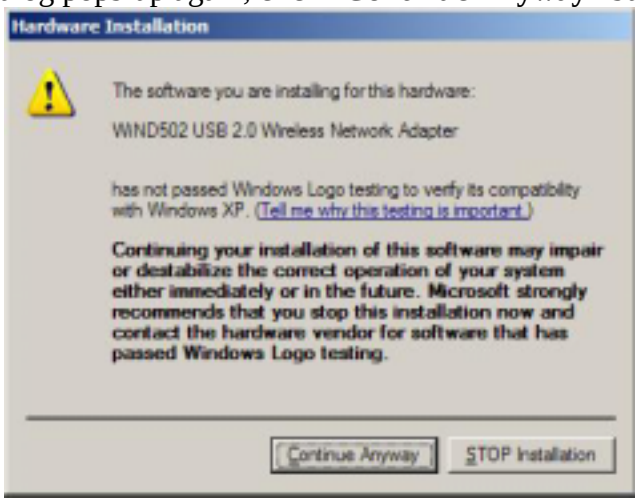
4. When finish copying driver, connect USB 2.0 802.11g Wireless Network Adapter to PC/laptop's USB 2.0 port. Following dialog will be popped-up.

Select "**Install from a list or specific location (Advanced)**", then click "**Next**".

5. Tick "**Include this location in the search:**" and enter the folder location and name specified at step 2, then "**Next**".




6. When following dialog pops-up again, click "**Continue Anyway**" button.




7. Press "**Finish**" to complete driver installation.

## Driver installation for Windows ME

(To be added)

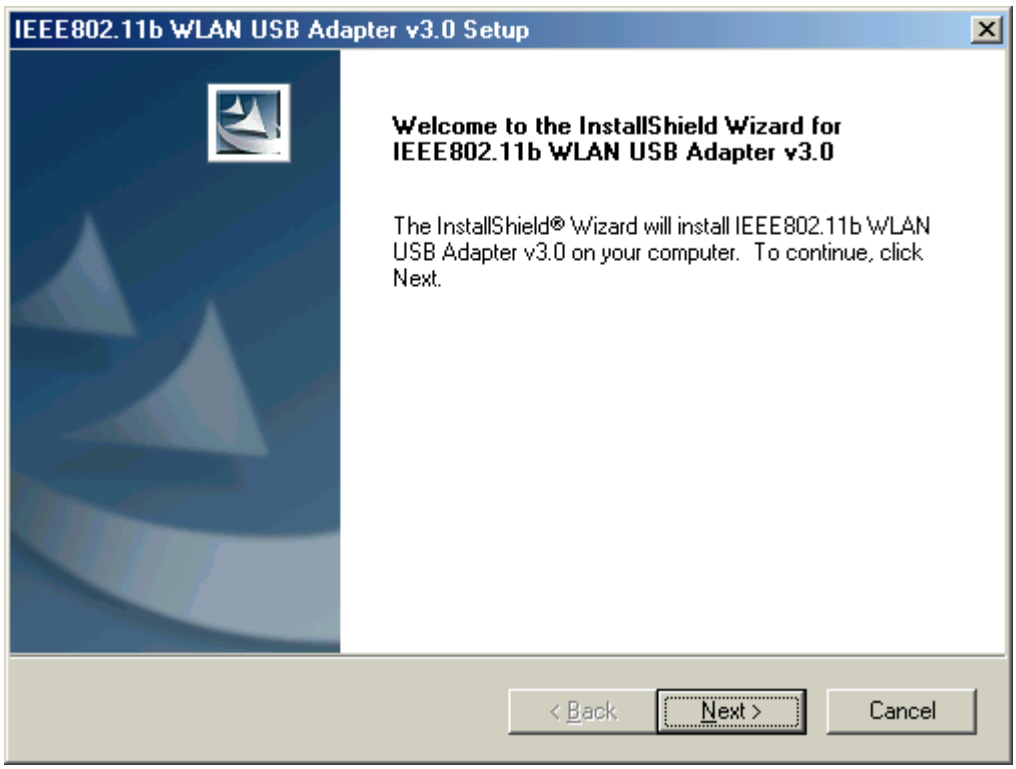
# *Chapter 4 – Installing and Using the Wireless Utility*

The following sections cover the USB Wireless Network Adapter utility installation and configuration.

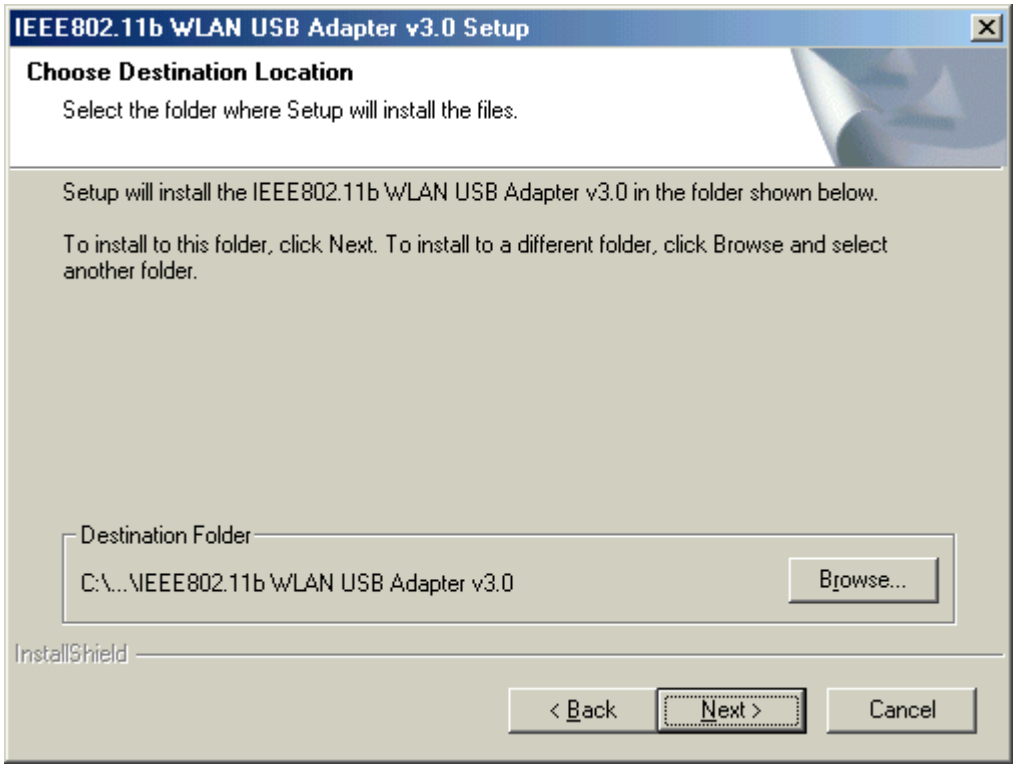
## Installation in Windows

After you have installed the USB Wireless Network Adapter driver and have rebooted the computer, system will start to install Wireless utility automatically. Please follow the steps below to install the wireless utility.

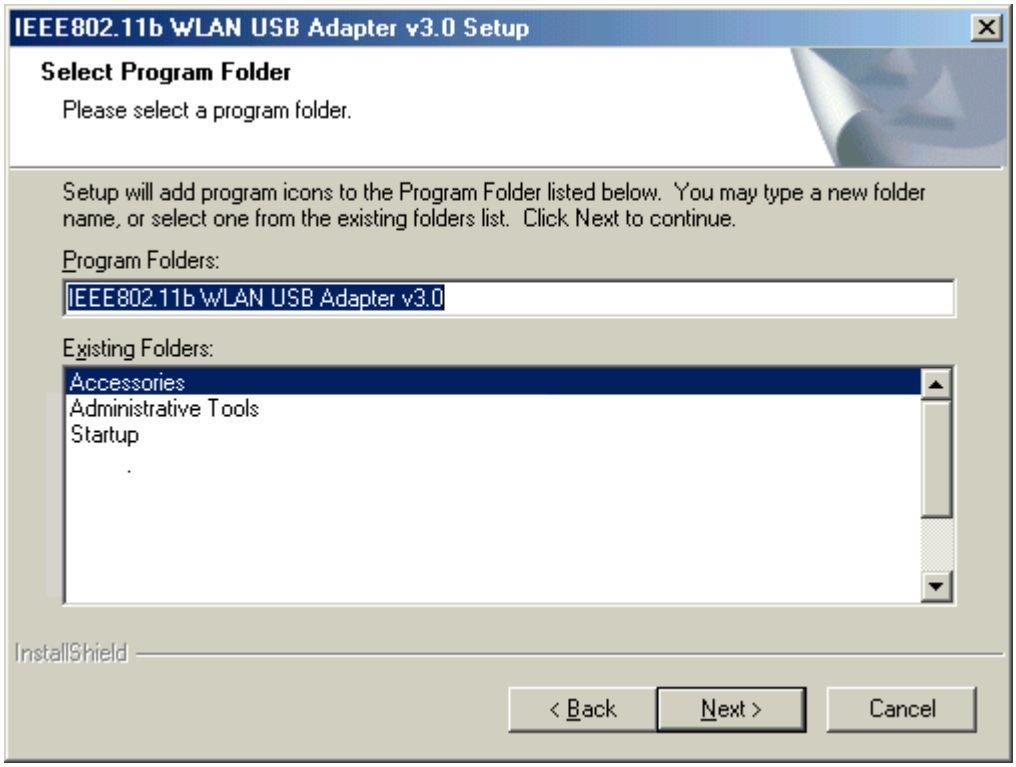
1. Once you see the following screen, click **Next** to continue.



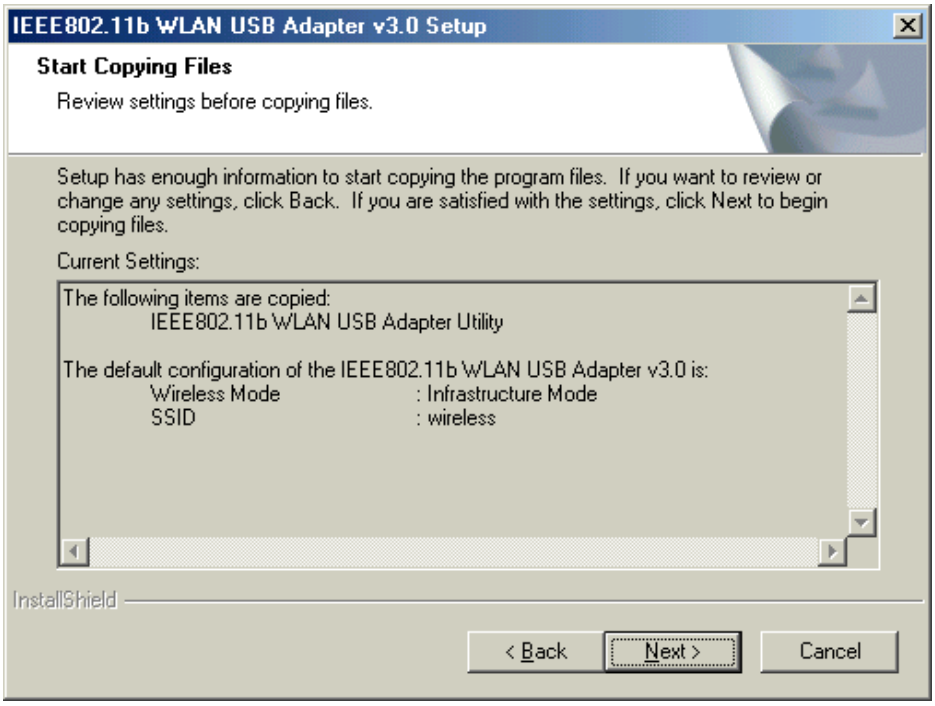

2. The screen will show you the default destination chosen by the utility. Click **Next** to continue or click the **Browse** button to select an alternate destination.



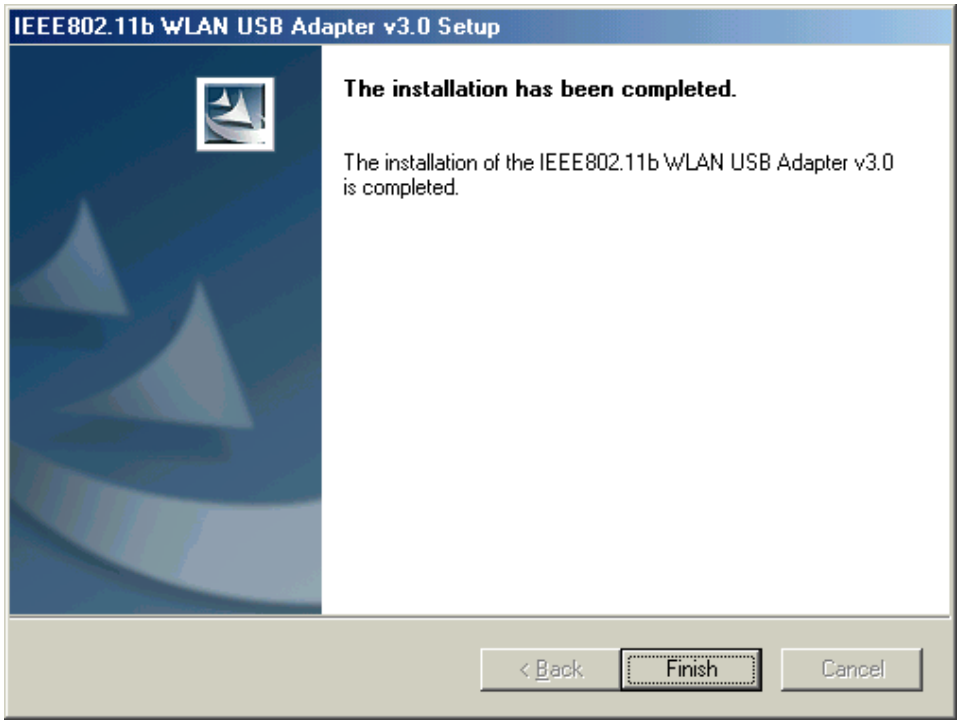
3. The following screen will add program icons to the Program Folder. You may type a new folder name or select one from the existing folders list. Click **Next** to continue or click **Back** to review or change any settings.




4. The following screen will start to copy the program files. Click **Next** to continue or click **Back** to review or change any settings.

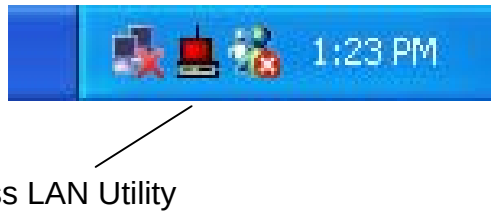


5. The Setup Wizard has finished the installation of Wireless LAN Utility. Click **Finish** to exit.




After you have installed the utility, you will see the wireless utility icon in the Windows taskbar.

# Using Wireless Utility In Windows XP




There are two ways to configure USB Wireless Network Adapter. One is Wireless LAN Utility; the other one is Windows Wireless Network Configuration.

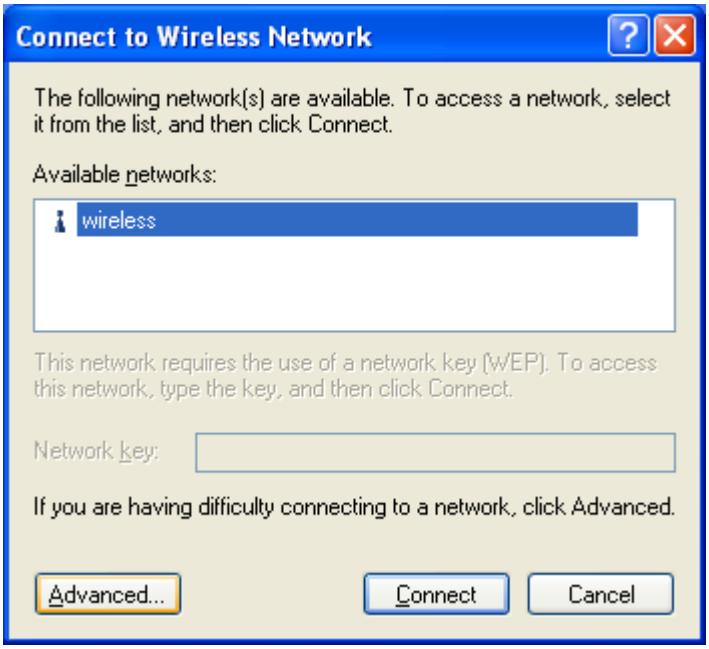
## Use Windows Wireless Network Configuration

1. Click the right key of the mouse and Exit Wireless LAN Utility.

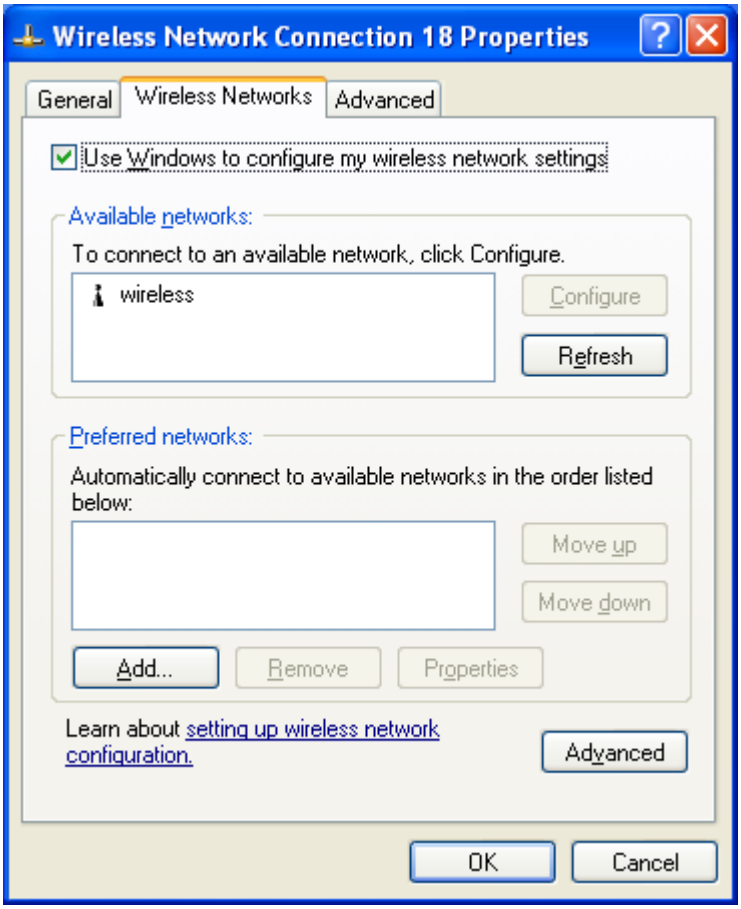

2. Click Windows Wireless Network Configuration icon.


Windows Wireless Network Configuration

3. Click Advanced button.



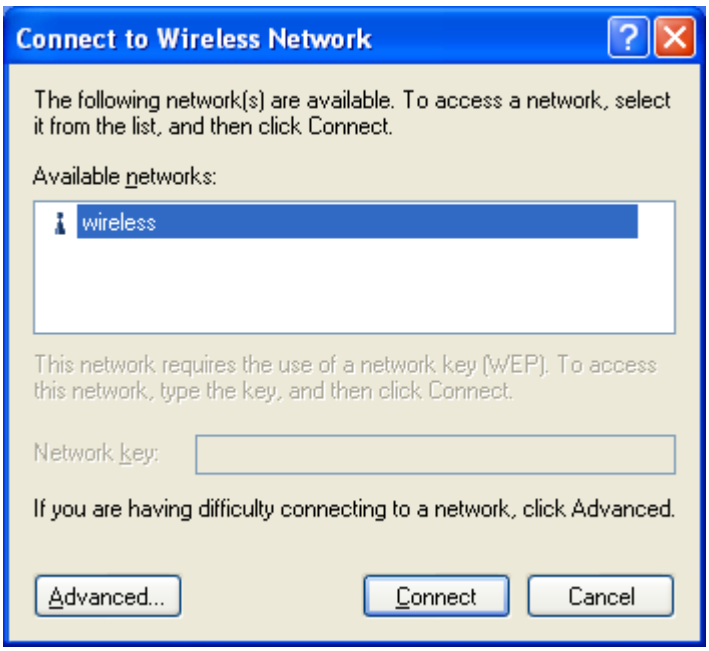

4. Make sure "Use Windows to configure my wireless network settings" is checked and click OK.




5. Click the Windows Wireless Network Configuration icon again to open the Windows Wireless Network Configuration.


Windows Wireless Network Configuration

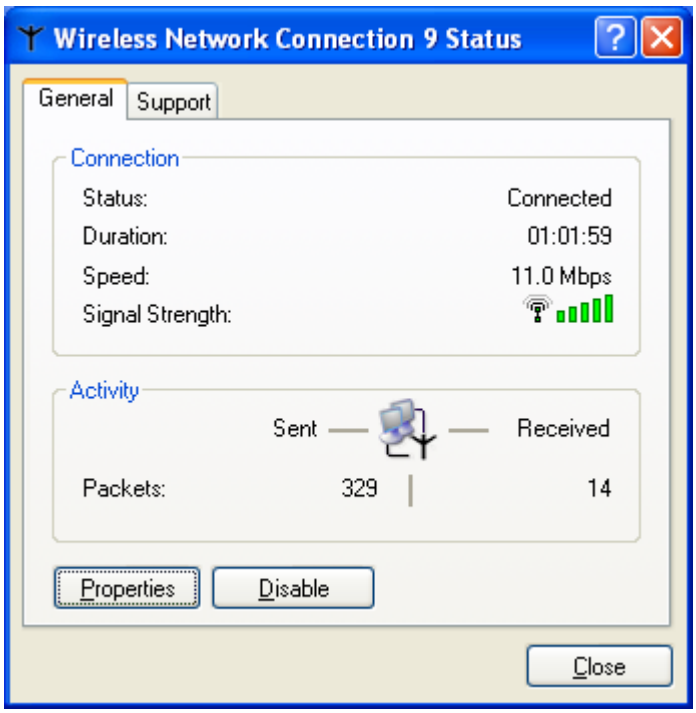
6. Select an available network and click Connect button.




7. The Windows Wireless Network Configuration will be enabled. Click the Windows Wireless Configure icon.


Windows Wireless Network Configuration is enabled

8. Click Properties to start Windows Wireless Network Configuration.



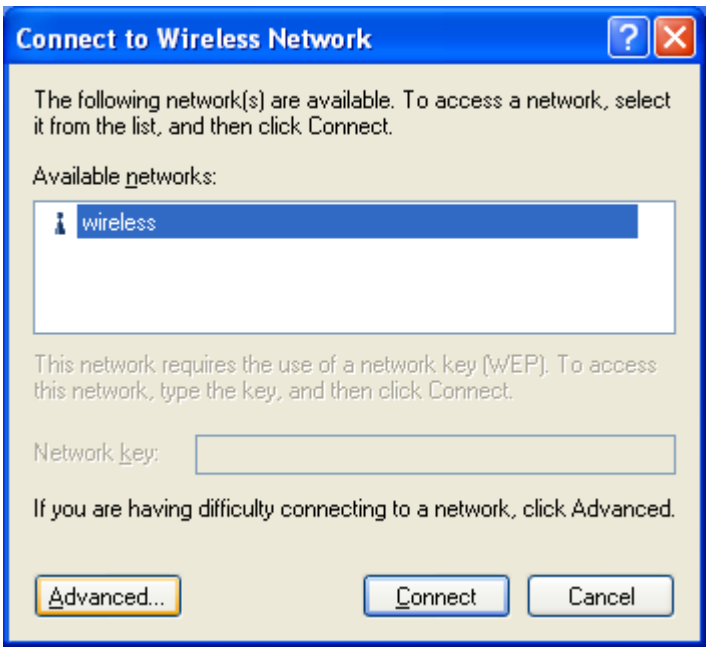

## Use Wireless LAN Utility

1. Exit the Wireless LAN Utility.

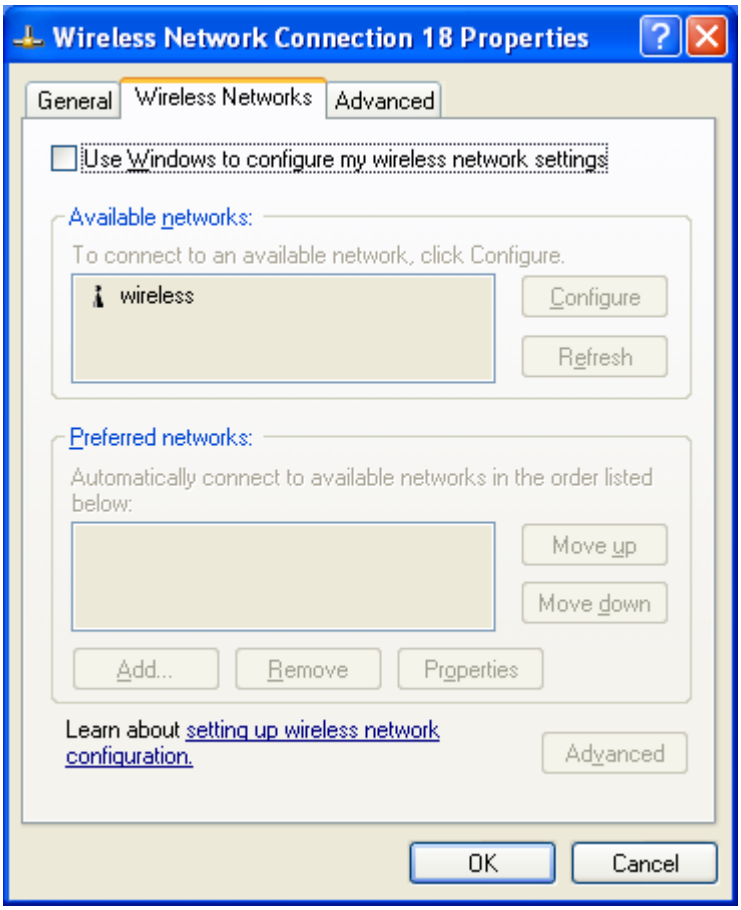

2. Click Windows Wireless Network Configuration icon.


Windows Wireless Network Configuration

3. Click Advanced button.




4. Make sure "Use windows to configure my wireless network settings" is unchecked and then click OK button.

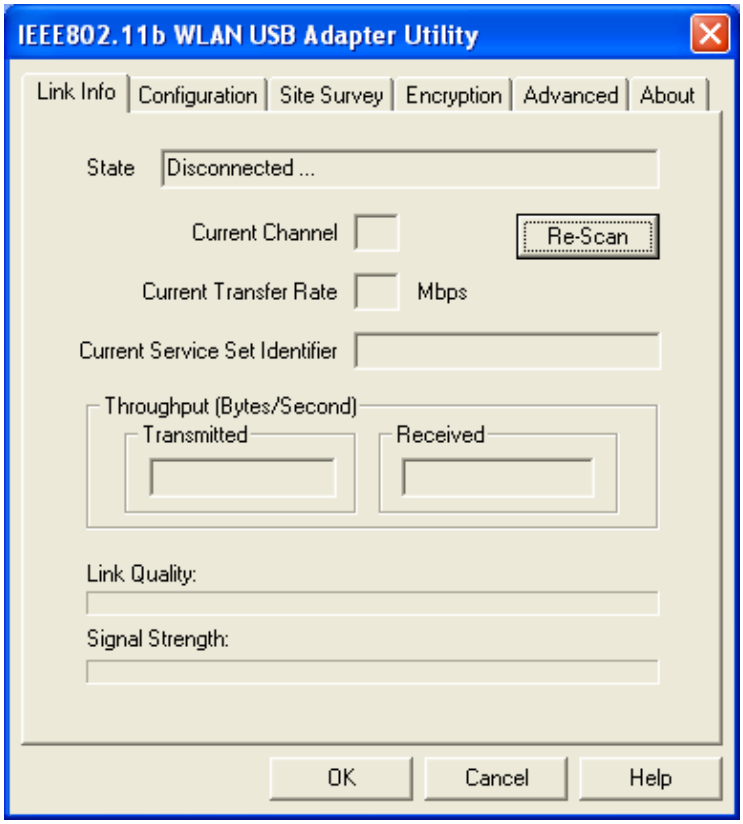


5. Click Start -> All Programs -> IEEE802.11b WLAN USB Adapter v3.0 then click IEEE802.11b WLAN USB Adapter Utility to restart Wireless LAN Utility.


6. The Wireless LAN Utility will appear, Double-click the icon to open the configuration utility.


Wireless LAN Utility

7. Click Re-Scan button to start Wireless LAN Utility. (Refer to Configuring the USB Wireless Network Adapter.)




# Use Wireless LAN Utility In Windows ME and 2000

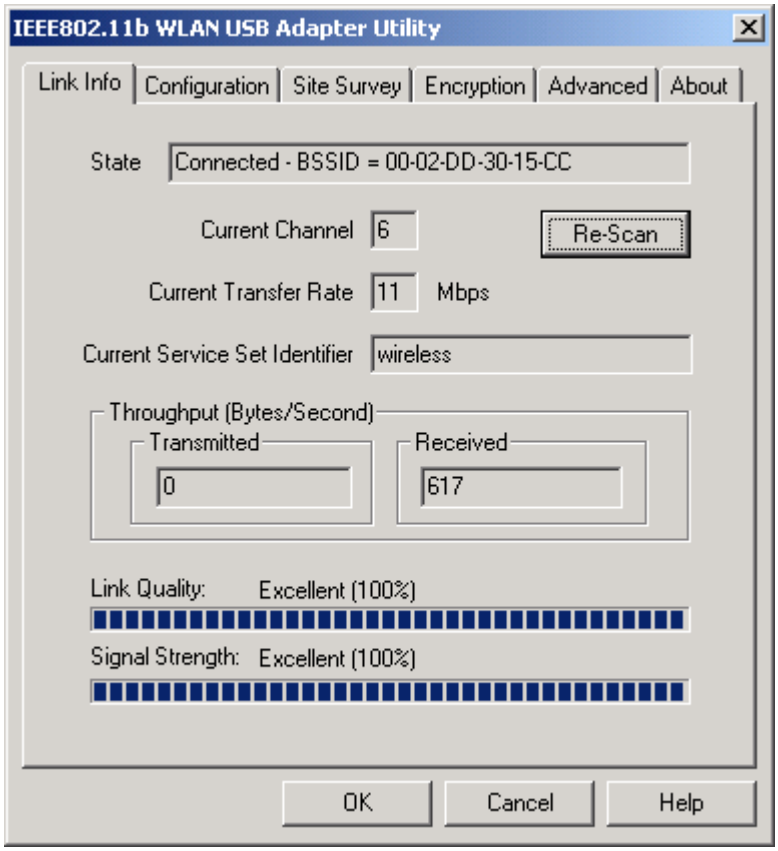

Wireless LAN Utility icon

| Icon | Meaning |
|---|---|
|  | Green: indicates a connection is linked to a wireless network. |
|  | Red: indicates that the wireless LAN card is looking for an available access point. |

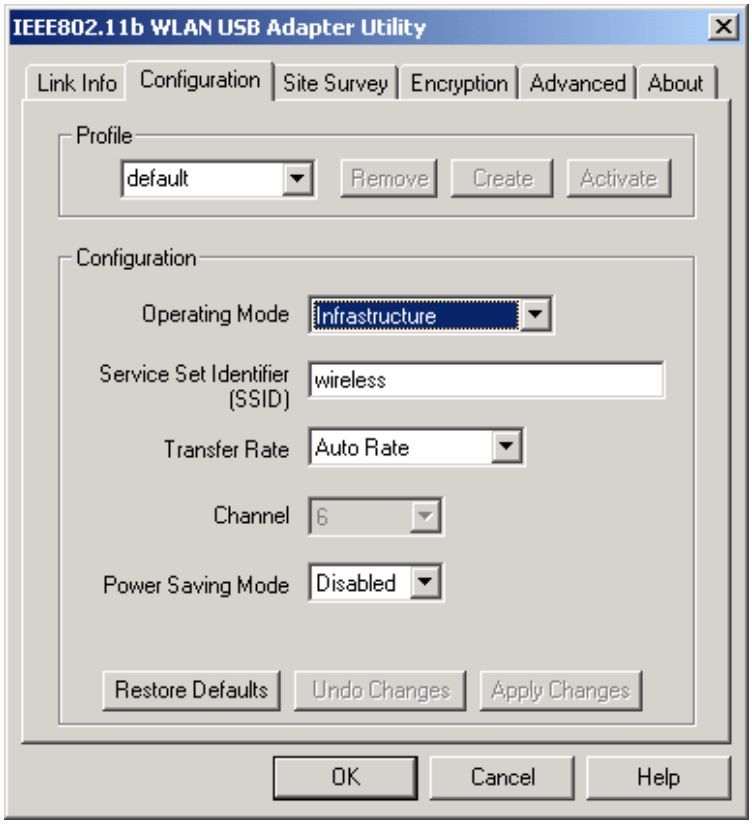
Double-click the icon to open the Wireless LAN Utility. (Refer to Configuring the USB Wireless Network Adapter.)

# Configuring the USB Wireless Network Adapter

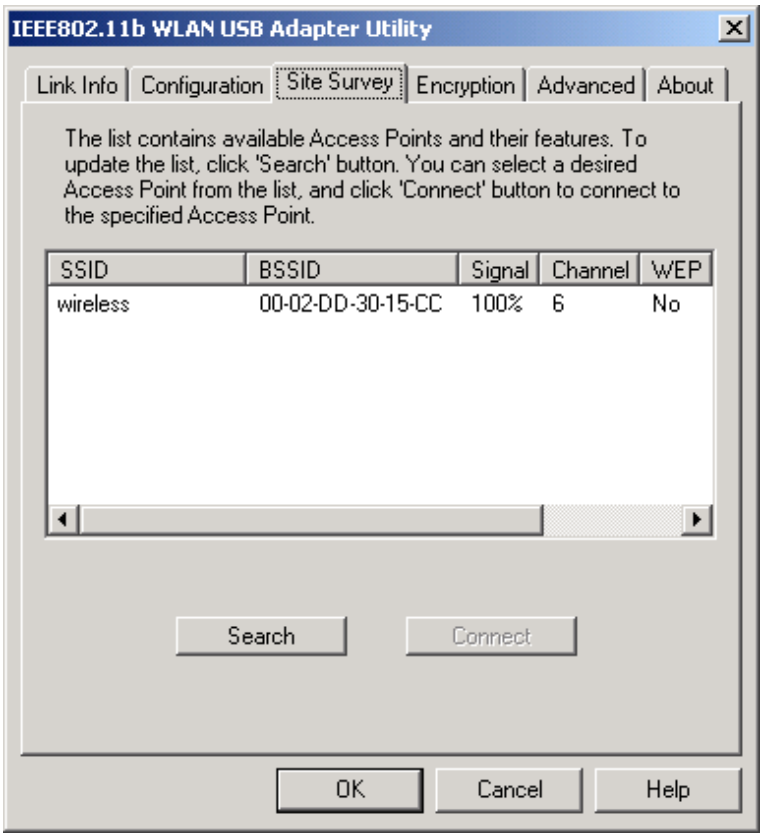
1. This screen shows you the status of your current connection. Click **Re-Scan** to search for wireless connection (the adapter will search for the connection automatically when it is activated).



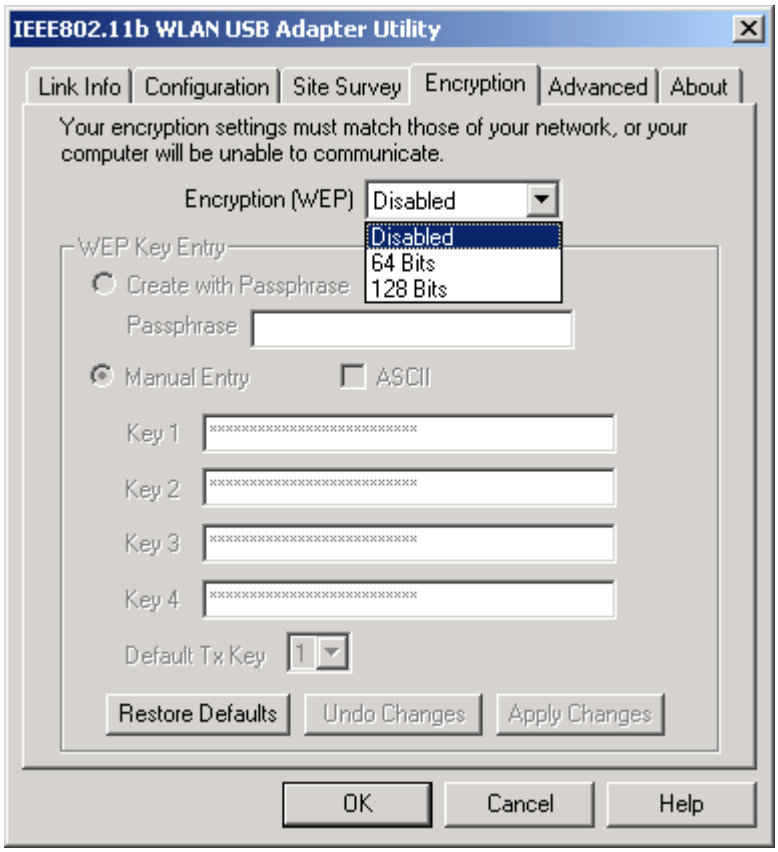

2. Select the "**Configuration"** tab. The **profile** setting allows you to save configurations in different profiles for different working environments. The default profile will contain the initial configuration setting when you install the Card. Under the **Operating Mode** drop-box, you may choose either Infrastructure or Ad-Hoc. The Infrastructure mode allows a wireless adapter to communicate with a wired network employing an Access Point, while the Ad-Hoc mode allows wireless-to-wireless, peer-to-peer communication. If you choose Infrastructure, the **SSID** should have the same name as the Access Point. If you choose **Ad-Hoc**, all clients should share the same **SSID** name. You may also select which **Transfer Rate** you wish to use: **1, 2, 5.5, 11Mbps** or **Auto Rate**. Under **Power Saving Mode**, you can select **Enabled** to allow your adapter to go to sleep mode while the adapter doesn't precede the data transmission. Or select **Disabled** to make the adapter never go to sleep mode. Click **Apply** to save the settings.



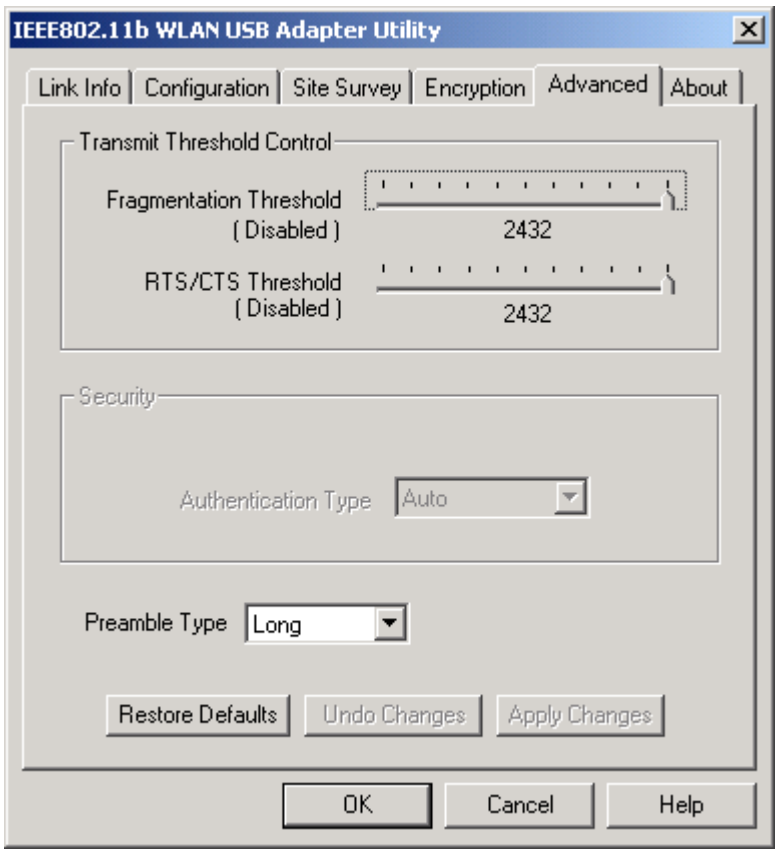

3. Select the "**Site Survey"** tab. The list on the adjacent screen shows you available Access Points and their features. Click on the desired Access Point, then click **Connect** to connect or **Search** to search for more Access Points. Click **OK** when you are finished.



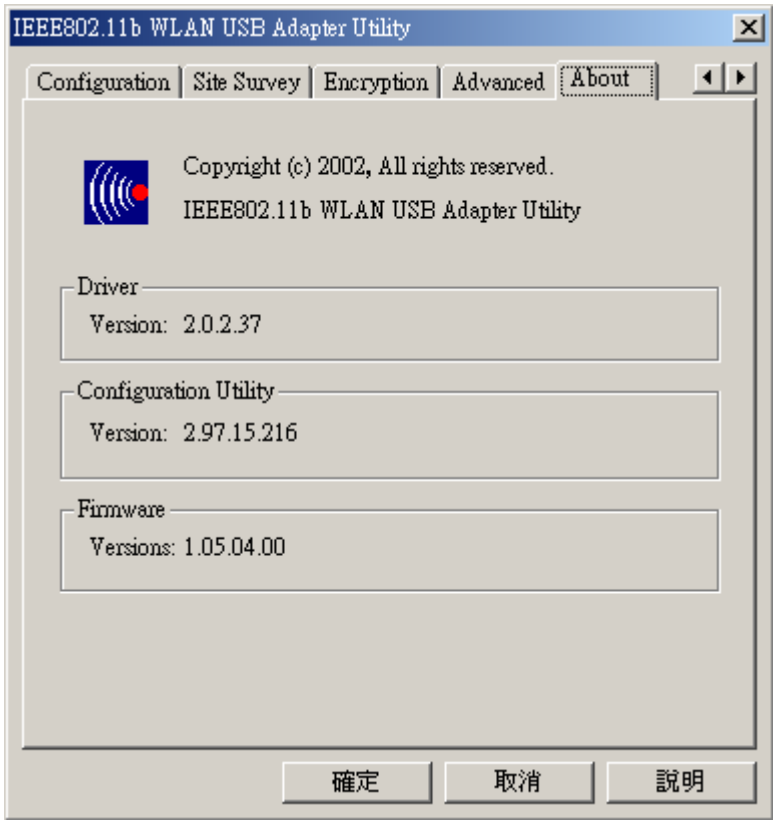
4. Click on the "**Encryption"** tab. Under the drop-box, you can choose to have WEP encryption **Disabled, 64-Bit, or 128-Bit.** Wired Equivalent Privacy (WEP) is an encryption scheme used to protect wireless data communication. The Disabled setting prevents the sharing of data with other computers on the WEP network. For data sharing to be enabled, select the level of encryption desired, either 64 or 128-bit.




5. Select the "**Advanced**" tab. You can choose the **fragmentation threshold** to define the maximum data frame size your adapter will transmit. When the packet error rate is high, you may set the threshold value to transmit shorter frames. You may select **RTS/CTS threshold** to define when will your adapter send out RTS/CTS frames to reserve bandwidth for transmission. By using the RTS/CTS function, you may request bandwidth from AP to allow you have better chance to send out your data. For the **Security, i**t's only applicable while WEP is enabled. For the **Authentication Type,** the current supported algorithms are Open System, Shared Key, and Auto. The algorithm will be invoked when associated to Access Point. To associate to the desired Access Point you must set the same algorithm as the one of the desired Access Point. When select Auto mode, the driver can auto detect the Authentication Type of the Access Point you are going to associate. You can also select **Preamble Type**, which is for framing synchronization. The possible settings are Long and Short. The setting must be the same as the setting of the Access Point you are going to associate.




6. The **"About"** tab shows you copyright and version information about the driver, the configuration utility, and the firmware. Click **OK** to complete the configuration.



# *Chapter 5 – Installing Network Protocols*

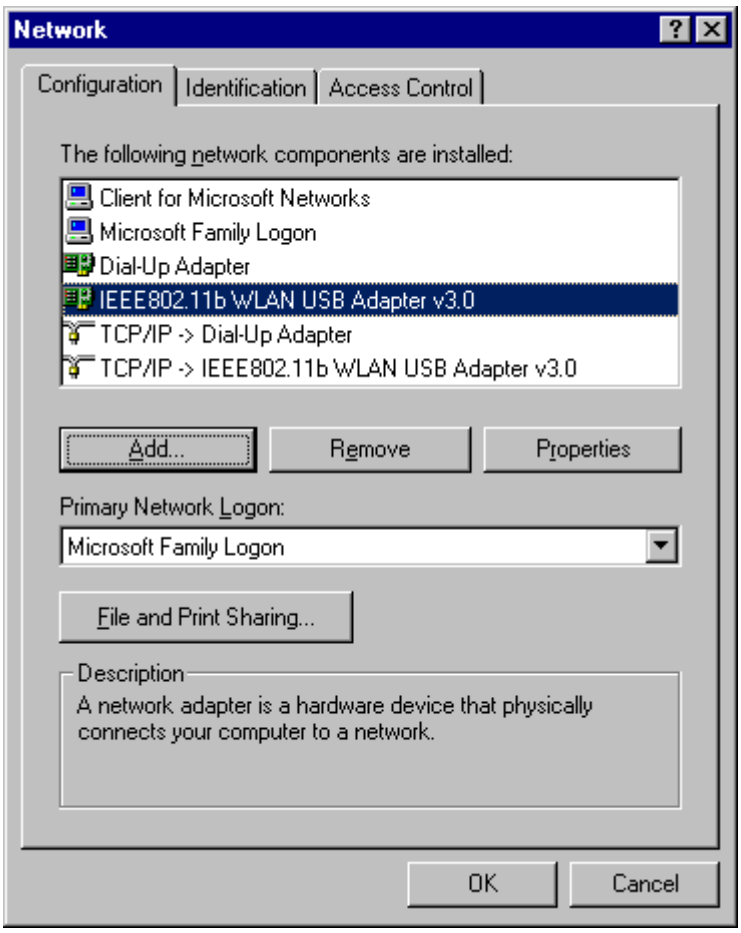
Protocols are necessary for computers to be recognized on your network. Windows 2000/XP users need to check their Windows User Guides for protocol installation.

## Installing the Network Protocols for Windows 98 and ME

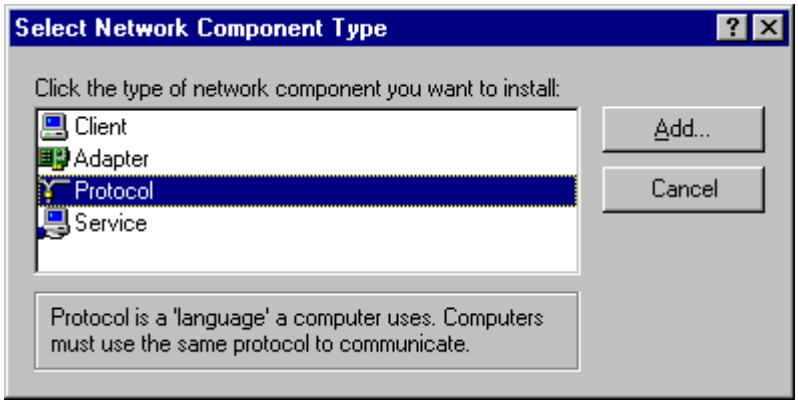
1. From the **Start** Menu, select **Settings** and bring up the **Control Panel**. From the Control Panel, double-click on the **Network** icon.


| Note! | *Before adding any network protocols, verify that the protocol is not already installed. Never install duplicate protocols.* |
|---|---|

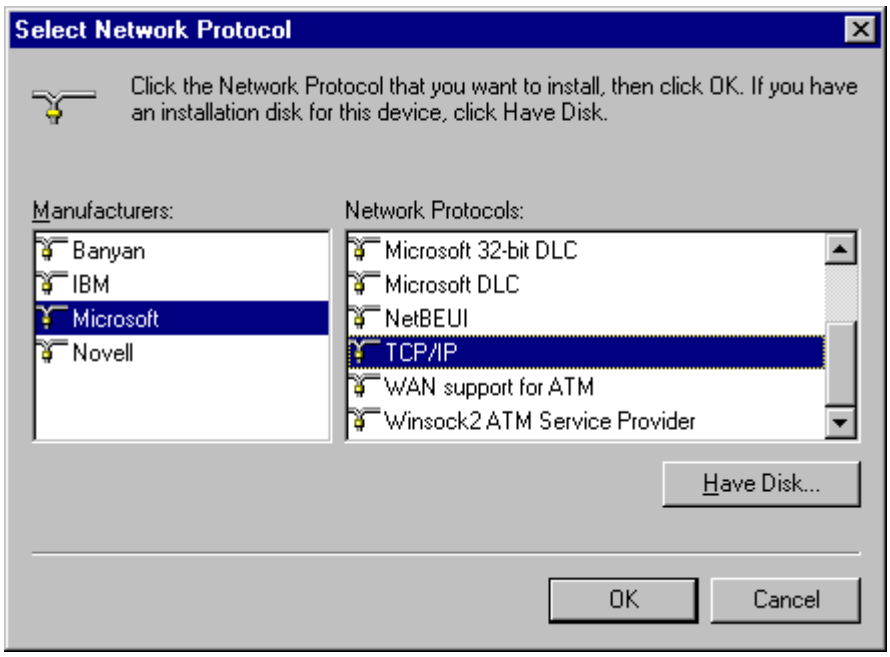
2. Select *IEEE802.11b WLAN USB Adapter v3.0* from the list and click the **Add** button.




3. Highlight **Protocol** and click the **Add** button.



4. Select **Microsoft** from the list of "Manufacturers" and **TCP/IP** from the list of "Network Protocols" and click the **OK** button to finish the installation.



# *Appendix A – FAQ*

**1. What is IEEE 802.11 standard?**

- The IEEE 802.11 is a wireless LAN industry standard, and the objective of IEEE 802.11 is to make sure that different manufactures' wireless LAN devices can communicate to each other.

**2. What is WEP?**

- As described in the IEEE 802.11 standard, WEP (Wired Equivalent Privacy) is a data privacy mechanism based on a 40 bit shared key algorithm.

**3. My notebook / desktop PC cannot recognize the USB Wireless Network Adapter.**

- Please make sure that the Adapter is inserted into the USB port of your notebook / desktop PC properly.
- And also make sure that the USB controller is enabled in the BIOS of your notebook / desktop PC.

**4. How to check that the USB controller on my notebook / desktop PC is working properly?**

- Right click on **My Computer** and select **Properties.** Click on the **Device Manager** tab and select the **Universal Serial Bus Controllers.** Click on **Properties** button. In the **General** tab, check under "**Device status**" that the USB controller is working properly.

**5. The Adapter does not work properly.**

- Check that the Adapter drivers are loaded properly. You can easily check it through the **Network Adapter** (Right click on **My Computer** and select **Properties.** Click on the **Device Manager** tab and select the **Network Adapter**). If there is a yellow exclamation mark on USB Wireless Network Adapter, the resource may be conflicting. Please uninstall the Adapter and restart your notebook / desktop PC. The repeat hardware and software installation as specified in this manual.

**6. In Infrastructure mode, my notebook / desktop PC cannot communicate with the others PCs on the network.**

- First, make sure that the SSID is same as the others PC.
- Check that your Adapter is configured on the same channel & WEP as the others PCs on the network.

# *Appendix B – Specifications*

| | |
|---|---|
| **Standards:** | IEEE 802.11b/g<br>USB 2.0 |
| **Channels:** | 11 Channels (US, Canada)<br>13 Channels (Europe)<br>14 Channels (Japan) |
| **Antenna:** | Antenna inside |
| **Frequency:** | 2.412 to 2.4835GHz (Industrial Scientific Medical Band) |
| **Data Rate:** | up to 54Mbps |
| **Temperature:** | Operating: 0° ~ 55° C<br>Storage: -25° ~ 70° C |
| **Humidity:** | 10% to 90% (non-condensing) |

**Main features:**

- Host interface: USB 2.0 compliant
- Compatible to IEEE802.11g and 802.11b standards
- Up to 54Mbps of data transfer rate
- Higher Data Encryption (64 and 128-bit), WPA
- IEEE 802.11 infrastructure and ad-hoc modes (CSMA/CA)
- Support graphical based user interface that eases setup, configuration and monitoring
- Frequency selection (DFS): comply with 802.11h (firmware upgradeable)
- Transmit power control (TPC): comply with 802.11h (firmware upgradeable)
- Dynamic and automatic network speed shift based on signal strength, for maximum availability and reliability of connections.
- Authentication: support IEEE 802.1x and RADIUS
- QoS: comply with draft of IEEE 802.11e EDCF and HCF polling (firmware upgradeable)

**RF Spec**

- **Modulation:**
  802.11g: OFDM with BPSK, QPSK and 16/64-QAM sub-carrier modulations
  802.11b: DBPSK, DQPSK, CCK
- **Data rate:**
  802.11g (OFDM): 6, 9, 12, 18, 24, 36, 48, 54 Mbps
  802.11b: 1, 2, 5.5, 11 Mbps
- **RF output power:**
  OFDM: 13 dBm (typical)
  CCK: 17 dBm (typical)

- **RX Sensitive level**

| | |
|---|---|
| 802.11g (OFDM): | 54 Mbps: -71 dBm |
| | 48 Mbps: -72 dBm |
| | 36 Mbps: -76 dBm |
| | 24 Mbps: -80 dBm |
| | 18 Mbps: -83 dBm |
| | 12 Mbps: -85 dBm |
| | 9 Mbps: -87 dBm |
| | 6 Mbps: -88 dBm |
| 802.11b (CCK/DSS): | 11 Mbps: -85 dBm |
| | 5.5 Mbps: -88 dBm |
| | 2 Mbps: -91 dBm |
| | 1 Mbps: -94 dBm |