802.11b WLAN USB Adapter

User's Guide

Version: 1.0 — Jan. 2003

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Regulatory Information

Note! *Please use USB extension cable or swivel adapter to avoid human contact or approach of your 802.11b WLAN USB Adapter during normal operation.*

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: 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 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.

Table of Contents

1. Welcome

Thank you for purchasing our 802.11b WLAN USB Adapter, and welcome to
Wireless LAN—the easy way to wireless networking.
This user's guide introduces to you the 802.11b WLAN USB Adapter and describes
the most common configurations, which will help you connect to your network easily.
Please read this manual to get familiar with the IEEE802.11b Wireless LAN. This
manual contains detailed instructions in operation of this product.　Please keep this
manual for future reference.
As this product is designed to run under Microsoft Windows, it is recommended that
to be installed by people who are familiar with the installation procedures for network
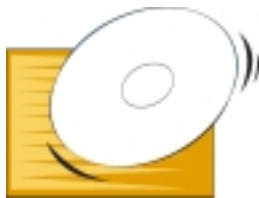operating systems under Microsoft Windows.

1.1 Kit Contents

The 802.11b WLAN USB Adapter kit should include the following items: One 802.11b WLAN USB Adapter, one CD and one Quick Start Guide.

a. One 802.11b WLAN USB Adapter

b. One Software CD including:

1. Utility & Driver Installation Software

2. Acrobat Reader

3. User Manual PDF File

c. Quick Start Guide

If any of the items mentioned above are damaged or missing, please contact your distributor.

1.2 Main Features of 802.11b WLAN USB Adapter

A   B

A. Status LED

- **Off:** Power Off.
- **Blinking:** The USB adapter is powered on but no wireless connection is made yet.
- **Steady Green:** Wireless connection is linked.

B. USB Connector

802.11b WLAN USB Adapter features:

1. High-speed wireless connection, up to 11 Mbps
2. IEEE802.11b (DSSS) standard for 2.4 GHz Wireless LAN
3. Plug-and-Play installation
4. Solid design with an integrated antenna
5. Full mobility and seamless cell-to-cell roaming
6. Automatic scale back at per packet level

802.11b WLAN USB Adapter supports:

1. Automatic load balancing for optimized bandwidth
2. Advanced power management
3. Windows98SE, ME, 2000, XP and Windows CE (subject to availability).

1.3 Wireless Networking Scenarios

As our 802.11b WLAN USB Adapter is interoperable and compatible with other IEEE 802.11b compliant products from other manufacturers, it offers you the most freedom to establish your ideal wireless network.   Therefore, after installing 802.11b WLAN USB Adapter, you can connect your computer to:

a. A Peer-to-Peer Workgroup of IEEE802.11b compliant wireless devices.
b. A LAN (Local Area Network) constructed by Access Point(s) or other IEEE802.11b compliant systems.
c. Share your Internet access by using just one connection, share printers and other peripheral devices, share data and image files between networked PCs, play multi-player games, and use other network enabled sharing resources.

A. Peer-to-Peer Networking:

An Ad Hoc Network could be easily set up with some PCs and this 802.11b WLAN USB Adapter or our other WLAN devices.   Therefore, it is very suitable to build a network for temporary use, such as for demonstration in exhibition, for new sales point/branch use and alike.

B. Cooperate LAN (Local Area Networking):

With some 802.11b WLAN USB Adapters and Access Points, it is easy to construct a LAN with access to Internet for enterprise use.

The construction is quite easy that the 802.11b WLAN USB Adapter and Access Point will automatically work at the most suitable frequency when Access Point is set within the proper range.

In addition, commonly manufacturers will bundle the Site-Survey tool for users to check the communication quality.
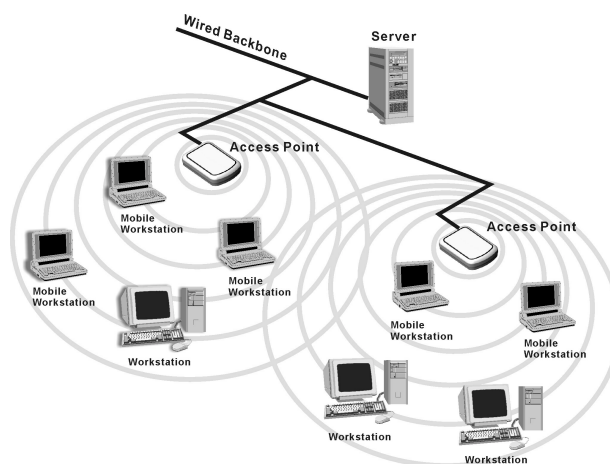
1.4 Advantages for Using Wireless Network

802.11b WLAN USB Adapter can wirelessly transmit and receive data, minimizing the need for wired connections, at a speed of up to eleven megabit per second. With the 802.11b WLAN USB Adapter you can locate your PC wherever you want without wires and cables.

The 802.11b WLAN USB Adapter provides LAN users with an access to real-time information anywhere in their organization. The mobility provides effectiveness and efficiency, which are not available under wired networks.

The 802.11b WLAN USB Adapter configuration is easy to switch between peer-to-peer networks, suitable for a small number of users, and full infrastructure networks of thousands of users that allow roaming around a broad area.

Therefore, you may see many advantages for adopting Wireless Networking as follows:

- *Less Space Limits*: The 802.11b WLAN USB Adapter provides access to network services without wires; therefore, it gives you more freedom to allocate and style your living and working space. In addition, in some areas where is hard or expensive to connect to wired networks, such as historic buildings, classrooms or mobile connectivity, then you can count on wireless networking.

- *Flexible Workgroups and Lower Cost*: For workspaces that are frequently reconfigured for temporarily use such as demo in exhibitions, wireless networking is easy to set up of lower total cost—and all equipments are recyclable. You do not have to remove the old wires and then build up the new ones again and again.

- *Networked Conference Rooms*: Users can access the network as they move from a meeting to another, getting the access to information/data and the ability to communicate decisions while "on the go".

- *Ad Hoc Networking*: On site consulting and small workgroups may increase productivity with quick network setup and collaboration software.

- *Branch office Networking*: With an Access Point to bridge between the LAN and Internet, wireless networking provides an easy to install, use and maintain network for a remote or sales office.

- *Campus-Wide Network Mobility:* The roaming capabilities allow enterprise to set up easy to use wireless networks that cover the entire campus transparently.

2. Quick Start to Wireless Networking

2.1 Installation

1. **Insert the installation CD.** It automatically starts the setup program for WLAN Utility and Driver.

2. **Follow the installation wizard** to complete the software installation process.

3. **Connect the 802.11b WLAN USB Adapter** to your PC/notebook PC. To adjust the direction or position of the 802.11b WLAN USB Adapter, please use the USB extension cable or the swivel adapter.
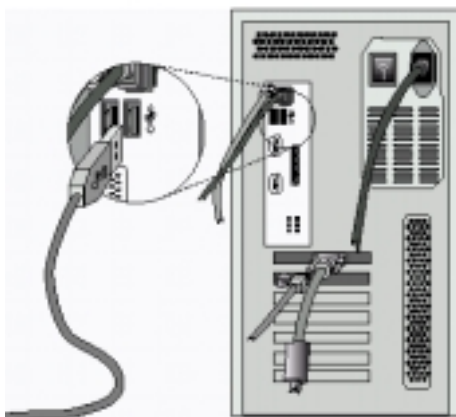
    Note! *Please use USB extension cable or swivel adapter to avoid human contact or approach of your 802.11b WLAN USB Adapter during normal operation.*

4. Operation System will detect new device and verify the driver automatically. You may check it in "<u>Device Manager</u>". See details of verifying the driver in User's Guide Chapter 3.2.

Note! *During installation procedure, each operating system may prompt different specific options:*

Windows 98SE: The system will request the original Windows CD during the installation process. When the installation is finished, you'll have to restart your computer.

Windows Me: Please restart your computer when the installation is finished.

Windows 2000/XP: Select "Install the software automatically" when the window with this option appears, and then click "Next" to continue installation.

Note! *In Windows XP, it is recommended that you use the IEEE802.11b WLAN Utility. Please check Chapter 3.1.2 to disable the Zero-Configuration before using the Utility.*

2.2 Connecting to an Exiting Network

1. **Double click the shortcut icon.** The IEEE 802.11b WLAN Utility window
    appears.   You can also see a small red icon in Windows System Tray.


Disconnected
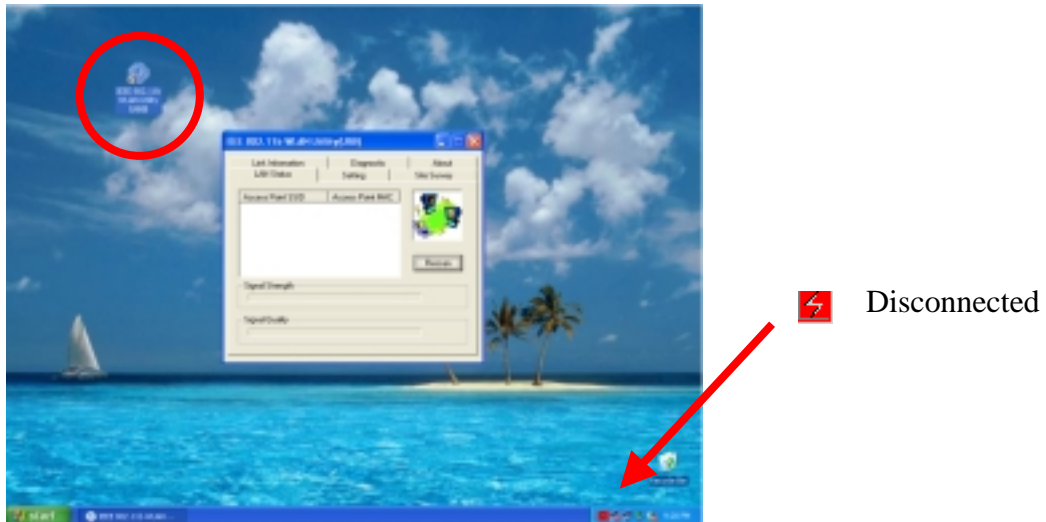
2. Select "Site Survey" tab.   From the list, you can check the informations of each
    network, and then choose one network to join.
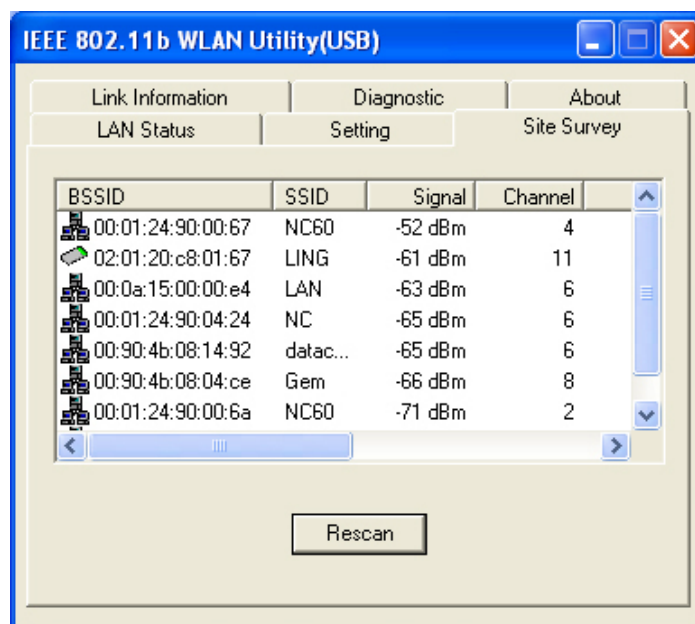
3. Select "Setting" tab. Enter the chosen SSID, select a proper Network Type and then click "Apply". Click "OK" button when appears.
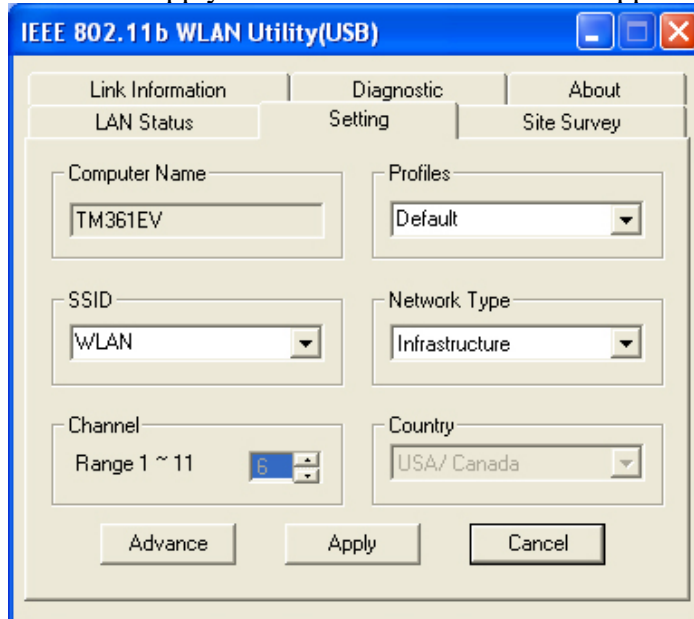
4. In the "LAN Status" tab, you can check the Access Point SSID, Access Point MAC, Signal Strength and Signal Quality of the connected network. Once connected, the Status Icon in the Windows System Tray will then change the color accordingly.
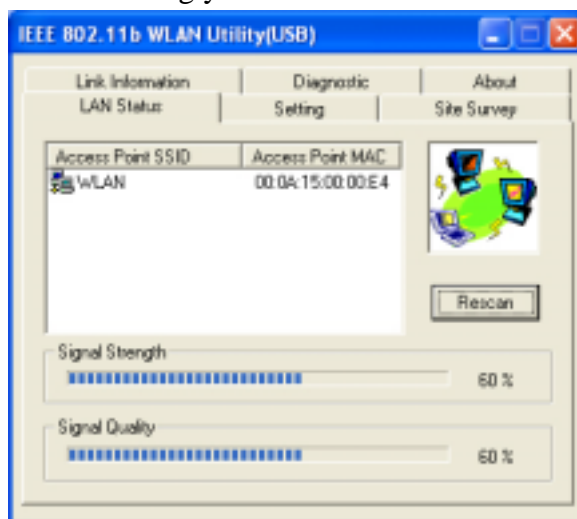
5. For details of each tab in IEEE802.11b WLAN Utility, please read User's Guide Chapter 4.

3. Step-by-Step Installation Guide

This section will lead you through the installation of 802.11b WLAN USB Adapter and IEEE802.11b WLAN software in detail.   People who are familiar with the installation and settings of wireless device may refer to quick start guide to establish a network in a snap.

To establish your wireless network connection, the following steps should be executed:

1.   Install the software by using the installation CD.
2.   Install the 802.11b WLAN USB Adapter.
3.   Install the required network protocols to communicate with your network. Mostly, you will need to set the TCP / IP protocol.

The product is designed to operate under Windows 98SE, ME, 2000, XP and Windows CE (subject to availability).   The installation procedure is about the same. Please follow up the installation wizard that provided by your system to install the software.

3.1 Install the IEEE802.11b WLAN Driver / Utility

Note! *Please install the IEEE802.11b WLAN Driver & Utility before inserting the 802.11b WLAN USB Adapter.*
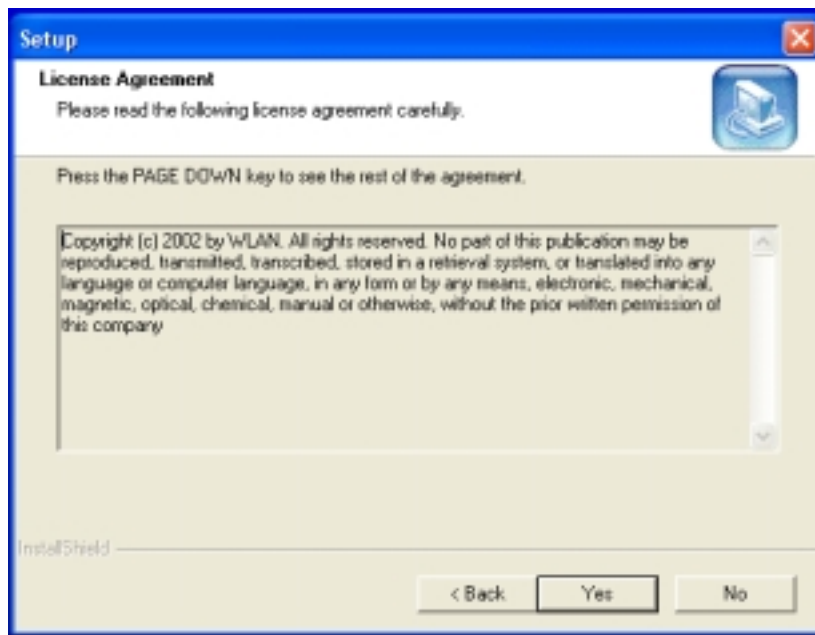
1. **Insert the installation CD.**   Insert the installation CD into your CD-ROM drive.   The setup program automatically starts.

2. **Click "Next".** Select "Install IEEE802.11b WLAN Driver and Utility" and then click "Next" to go on the installation.
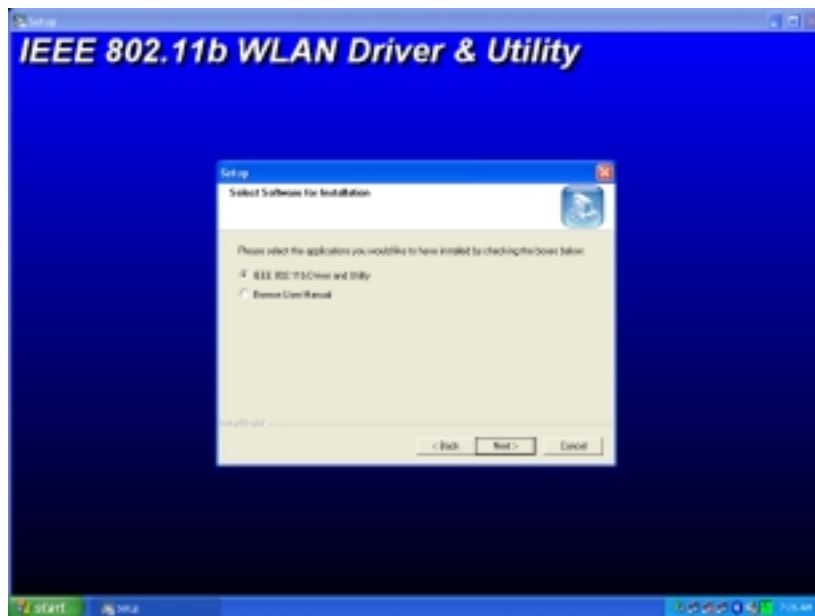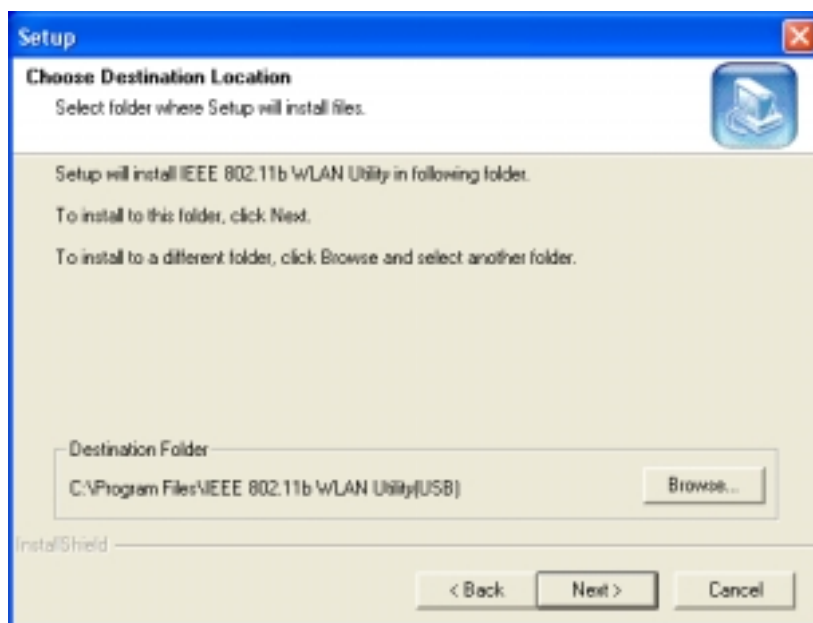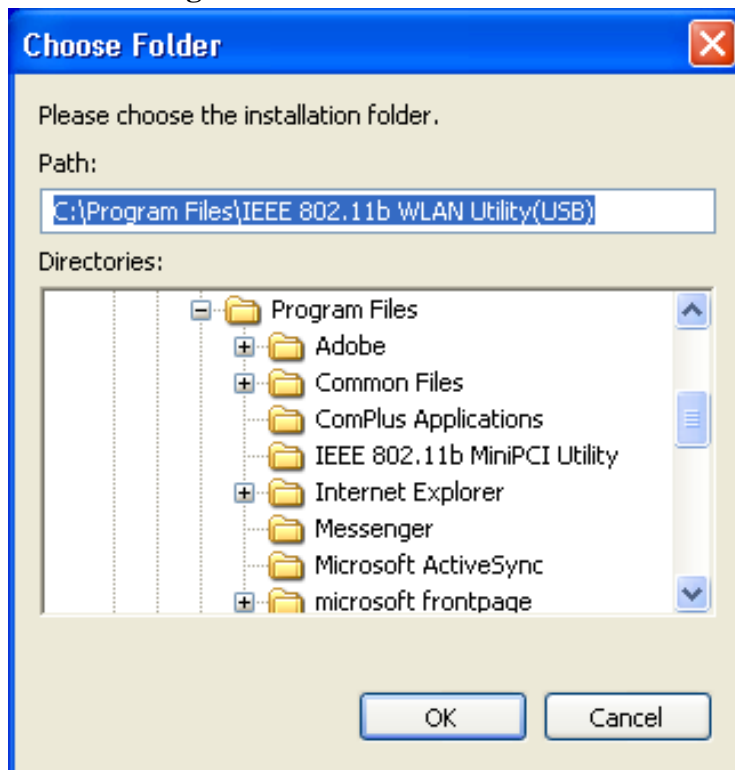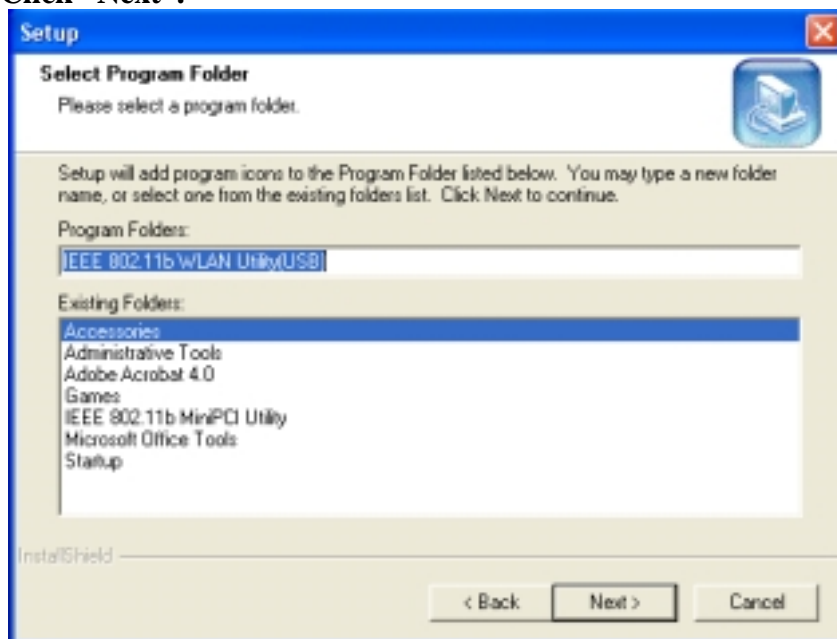

3. **Click "Next".**
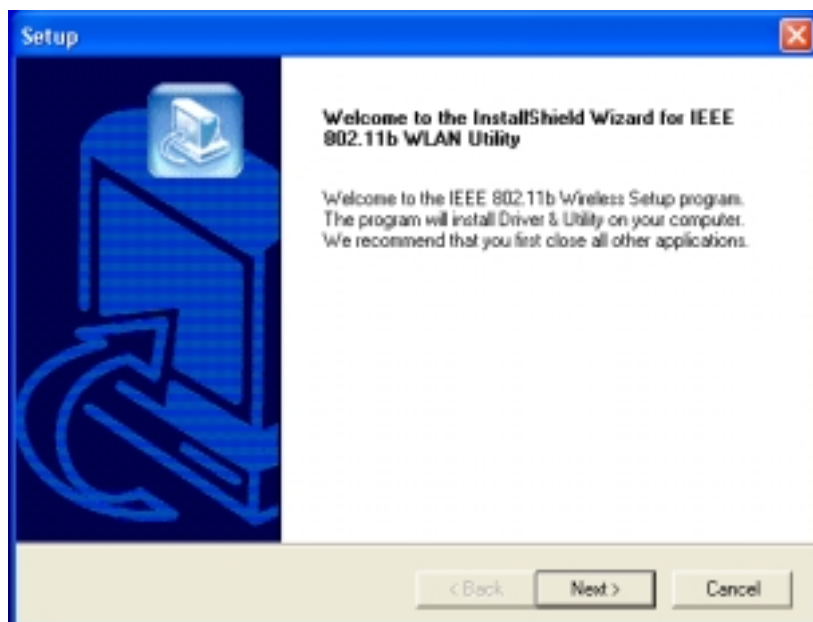
4. **Click "Yes".**

5. **Read the destination folder and click "Next".** The default destination folder is displayed in the setup dialog box. Click "Next" to go on to Step 7. You may change the default folder by clicking "Browse" to select the destination folder you prefer (go on to Step 6). Click " Next" to go to the next screen.
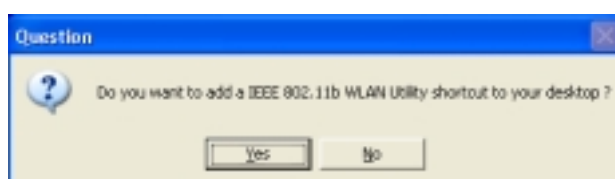
6. **Select the Program Folder and click "Next".**


7. **Click "Next".**

8. **Click "Yes".** You are asked whether to add an IEEE802.11b WLAN Utility shortcut to your desktop. Click "Yes" to create one.

9. The user manual is published in Portable Document Format (PDF). If Acrobat Reader does not exist in your system, the following message will be prompted to automatically enter the Acrobat Reader installation screen. Please follow the instructions to complete the Acrobat Reader installation.

10. **Click "Finish".** The installation is complete.
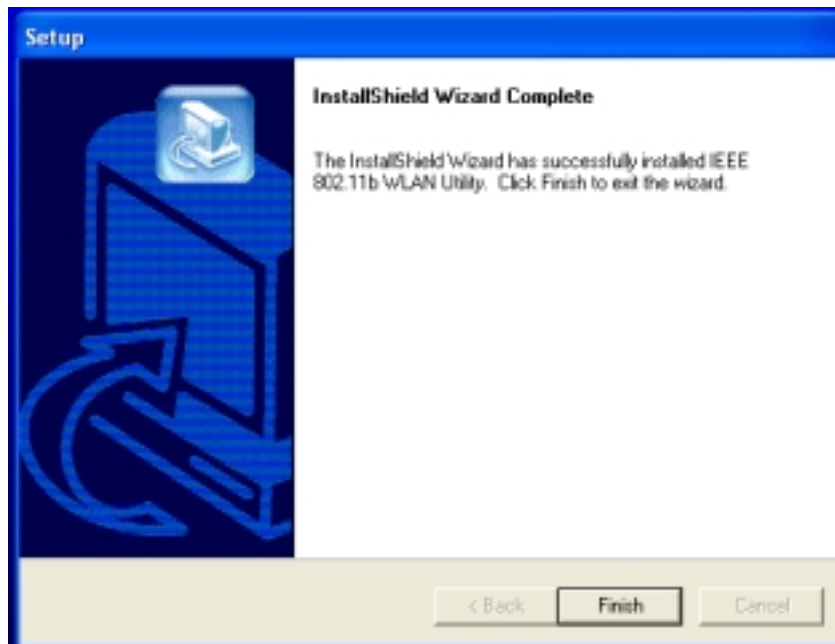
11. **After software installation, connect the 802.11b WLAN USB Adapter** to your PC/notebook PC. To adjust the direction or position of the 802.11b WLAN USB Adapter, please use the USB extension cable or the swivel adapter.
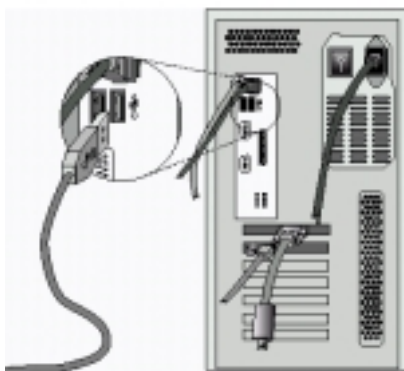
Note!   *Please use USB extension cable or swivel adapter to avoid human contact or approach of your 802.11b WLAN USB Adapter during normal operation.*

## 3.1.1 Additional Setup Processes

During software installation procedure, each operating system may prompt different specific options.　Mostly, you will be asked to add some necessary protocols and to edit some networking settings.

1. **Windows 98SE:** The system may request the original Windows CD during the installation process.　Please check with the network administrator for the values of the settings.　When the installation is finished, you'll have to restart your computer.

2. **Windows Me:** Please check with the network administrator for the values of the settings.　Please restart your computer when the installation is finished.

3. **Windows 2000:** Please check with the network administrator for the values of the settings.　Select "Install the software automatically" when the window with this option appears, and then click "Next" to continue installation.

4. **Windows XP:** Select "Install the software automatically" when the window with this option appears, and then click "Next" to continue installation.　Note that before using the IEEE802.11b WLAN Utility, please disable the Windows XP Zero-Configuration first.

3.1.2 Disable Windows XP Zero-Configuration

In Windows XP, it is recommended that you use the IEEE 802.11b WLAN Utility. Right after the installation, before opening the Utility, please follow the steps below to disable the Windows XP Zero Configuration:

1. Go to "Control Panel" and double click "Network Connections".

2. Right-click "Wireless Network Connection" of 802.11b WLAN USB Adapter, and select "Properties".

3. Select "Wireless Networks" tab, and uncheck the check box of "Use Windows to configure my wireless network settings", and then click "OK".
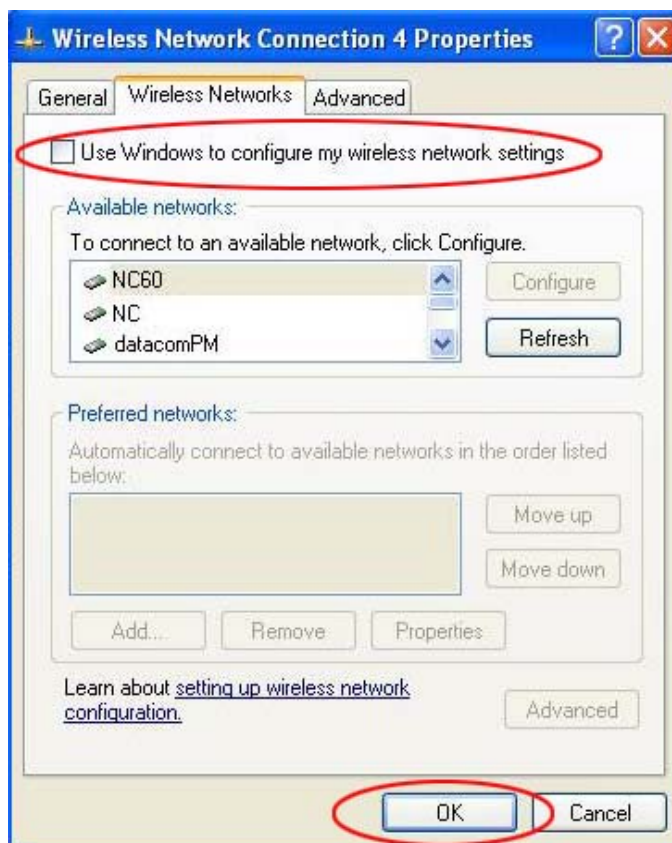
3.2 Verifying the Driver/Utility

1. Windows 98SE/Me:

Step 1.　Right-click "My Computer" icon on the desktop and choose "Properties".

Step 2.　Select "Device Manager" tab and open "Network adapters".　You should see your 802.11b WLAN USB Adapter in the list.　Highlight it and click "Properties" button.

Step 3.　From the "Device status", you should see the line "This device is working properly".　If, instead, you see error messages displayed, please remove this Adapter (highlight this Adapter and click "Remove" button).　Restart your PC and go through the installation process again.

2. Windows 2000:

Step 1.　Right-click "My Computer" icon on the desktop and choose "Properties".

Step 2.　Select "Hardware" tab and click "Device Manager".　Open "Network adapters".　You should see your 802.11b WLAN USB Adapter in the list. Right-click this Adapter and choose "Properties".

Step 3.　From the "Device status", you should see the line "This device is working properly".　If, instead, you see error messages displayed, please uninstall this Adapter (right-click this Adapter from the "Network adapters" list and choose "Uninstall").　Restart your PC and go through the installation process again.

3. Windows XP:

Step 1.　Click "Start>Control Panel> System".

Step 2.　Select "Hardware" tab, and click "Device Manager".　Open "Network adapters".　You should see your 802.11b WLAN USB Adapter in the list. Right-click this Adapter and choose "Properties".

Step 3.　From the "Device status", you should see the line "This device is working properly".　If, instead, you see error messages displayed, please uninstall this Adapter (right-click this Adapter from the "Network adapters" list and choose "Uninstall").　Restart your PC and go through the installation process again.

3.3 IEEE802.11b WLAN Utility

802.11b WLAN USB Adapter has its own management software, named IEEE802.11b WLAN Utility, and users can control all functions provided with it. The Utility icon appears in the Windows System Tray after clicking the IEEE802.11b WLAN Utility shortcut on your desktop. The Utility includes six tabs: LAN Status, Setting, Site Survey, Link Information, Diagnostic and About.

The definition of the color of the Utility icon is as follows:

Connected (Green)

Low quality (Yellow)

Disconnected (Red)

In Ad Hoc mode, in one workgroup, the Channel and SSID of each station must be the same—therefore they can communicate with each other within the local LAN properly. Moreover, all connected computers should have the same net ID and subnet ID.

To open IEEE802.11b WLAN Utility, you may double click the status icon in the Windows System Tray.

3.4 Basic Setting for Infrastructure Mode

To connect with an Access Point, please follow the process below:

1. Select the "Setting" tab

2. Select "Infrastructure" for Network Type

3. Select or enter the correct SSID

4. Press the "Apply" button.

   ◆ **SSID** is the group name that will be shared by every member of your wireless network .You will only be able to connect with an Access Point (AP), which has the same SSID. Note that the SSID will be case sensitivity.

   ◆ **Channel** is not active in Infrastructure Mode.

   ◆ **Profiles** allows you to save five sets of default settings.   After entering the values of the settings (SSID, Network Type, Channel etc.), set a name in the Profiles field.   Click "Apply" button.
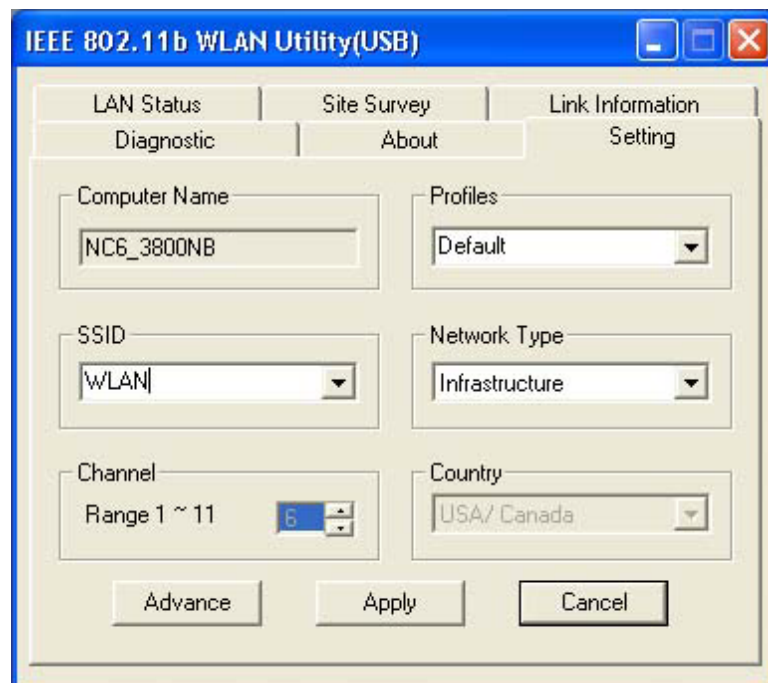
3.5 Basic Setting for 802.11Ad Hoc Mode/Ad Hoc Mode

If you have more computers and only want to place them in a local area network, or you want to communicate directly without using an Access Point or any connection to a wired network, then you can select the "802.11 Ad Hoc" mode or "Ad Hoc" mode on your WLAN Utility.

"802.11 Ad Hoc" is the official standard set by IEEE Organization whereas "Ad Hoc" is a pre-standard.   Therefore we recommend you to select the "802.11 Ad Hoc" mode.

Please note that "802.11 Ad Hoc" mode and "Ad Hoc" mode are not compatible.   If you select the "802.11 Ad Hoc" mode, then all computers of your workgroup should be set as the "802.11 Ad Hoc"—vice versa with the "Ad Hoc" mode.

A. 802.11 Ad Hoc

Please follow the procedures below to set the "802.11 Ad Hoc":

1.   Select "Setting" tab.
2.   Select "802.11 Ad Hoc" for Network Type.
3.   Type in the SSID and set a channel, which you want to use in your 802.11 Wireless LAN.
4.   Press the "Apply" button.

  ◆   Every member of your peer-to-peer network must set to the same channel and SSID, which is case sensitive.
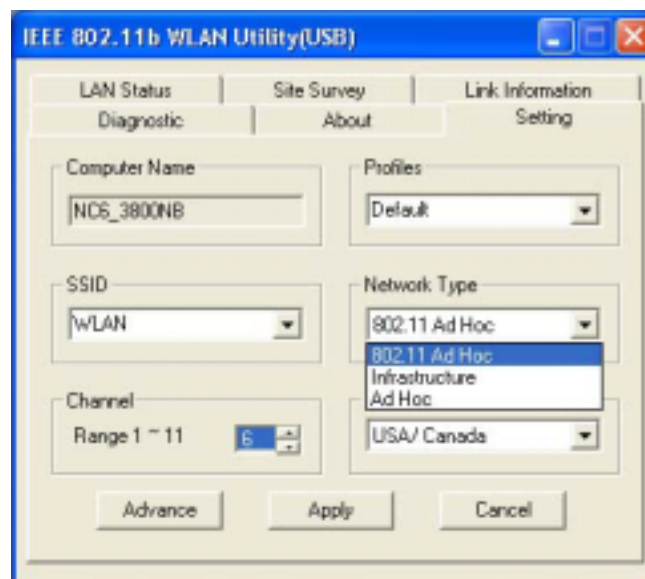
✦ *You must select a SSID if you use the 802.11 Ad hoc.*

✦ *If you have trouble connecting other brands' IEEE 802.11b devices using the "802.11 Ad Hoc" mode, please try "Ad Hoc" mode. The next section shows you the basic setting of the "Ad Hoc" mode.*

B. Ad Hoc Mode

Please follow the procedures below to set the "Ad Hoc" Mode:

1. Select the "Setting" tab.
2. Select "Ad Hoc" for Network Type.
3. Select the correct channel. (The channel of all computers in one workgroup must be the same.)
4. Press the "Apply" button.
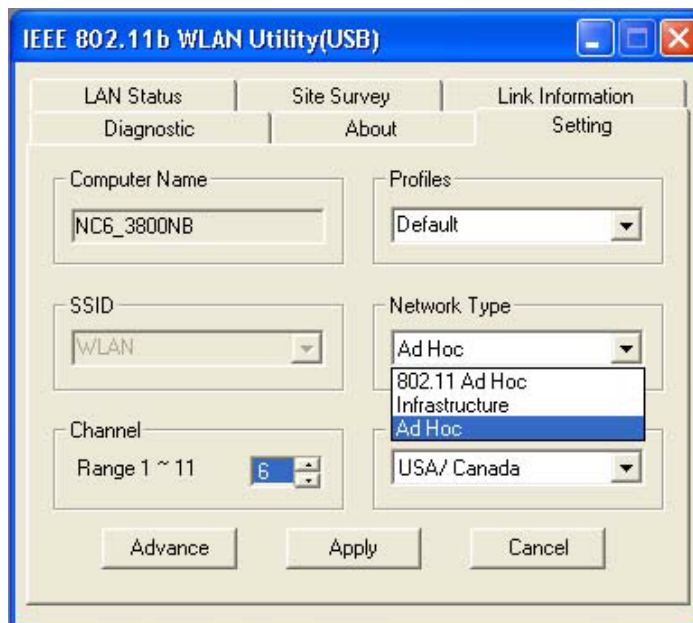
◆ **Channel** shows radio channel numbers used for networking. Channel number must be the same between stations so computers can communicate in the same local LAN. It can be changed only under the Ad Hoc Mode.

3.6 Advanced Settings

Click the "Advance" button in the Setting page to edit the advanced settings for your 802.11b WLAN USB Adapter.
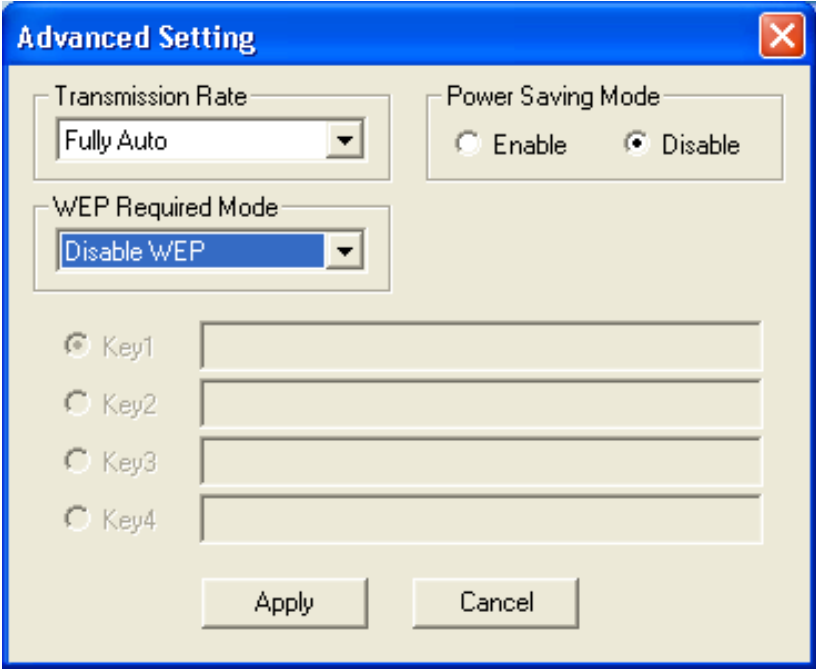
Regarding the transmission rate, there are four options:

A. Fully Auto (Default)
B. Fixed 11Mbps
C. Fixed 5.5Mbps
D. Auto 1 or 2 Mbps

You may select and change transmission rate by clicking the pull-down button.

If you enable the "Power Saving" mode, the 802.11b WLAN USB Adapter can work with low power consumption but the throughput may slow down.

Note! *Power Saving Mode is useless in Ad Hoc mode.*

3.7 Encryption Function

You may enhance the security of your network by enabling the "Encryption" function. The WEP Required Mode enables you to define the encryption keys that your 802.11b WLAN USB Adapter should use.

Caution:

If you wish to enable the "Encryption" function, you must enable this function for all computers of your network, and the WEP key needs to be the same for all IEEE802.11b stations.
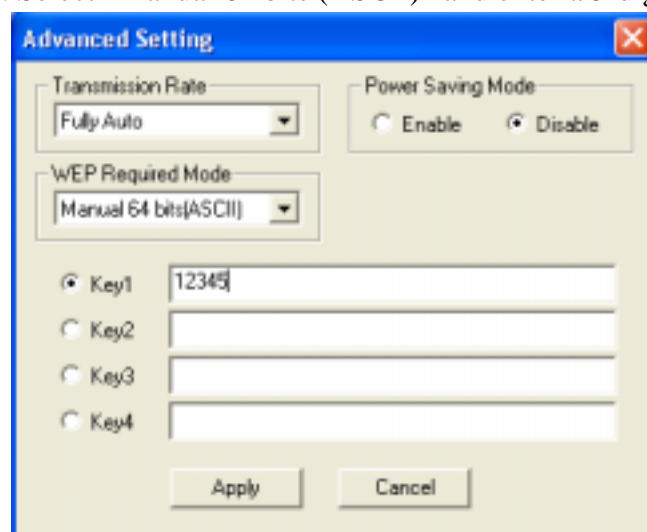
Follow the steps below to set your WEP Required Mode:

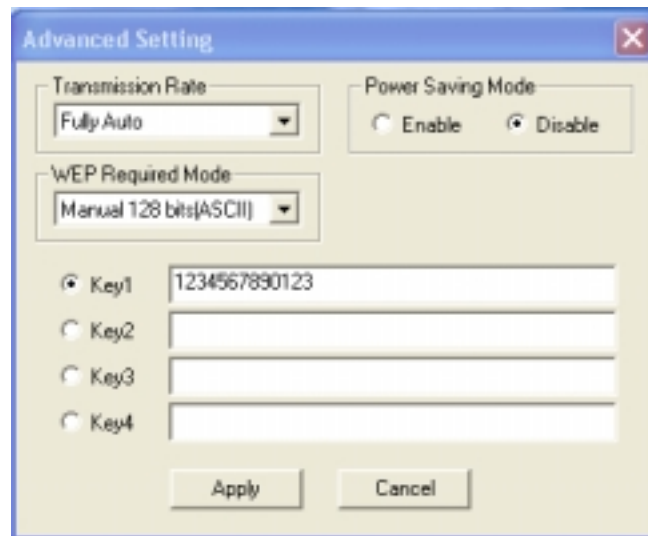(1) Select one mode from the drop down menu of WEP required Mode and set the WEP key.   Four modes are available:

    A. Manual 64 bits (ASCII)

    B. Manual 128 bits (ASCII)

    C. Manual 64 bits

    D. Manual 128 bits

(2) Press "Apply" button when finish the WEP setting.

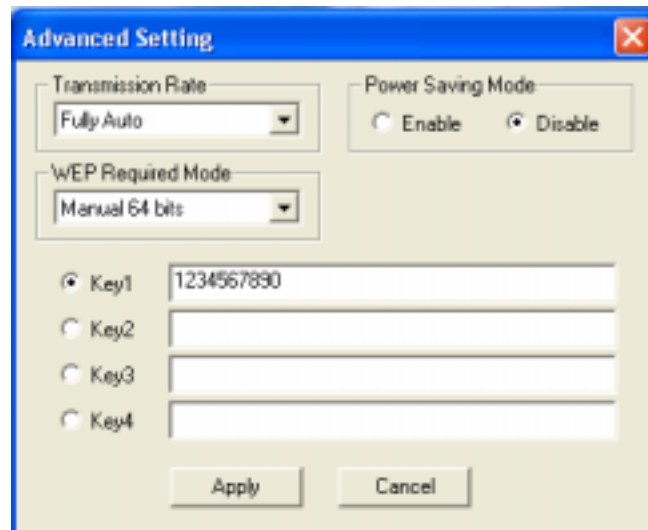a. Select "Manual 64 bits (ASCII)" and enter a 5-digit WEP Key.

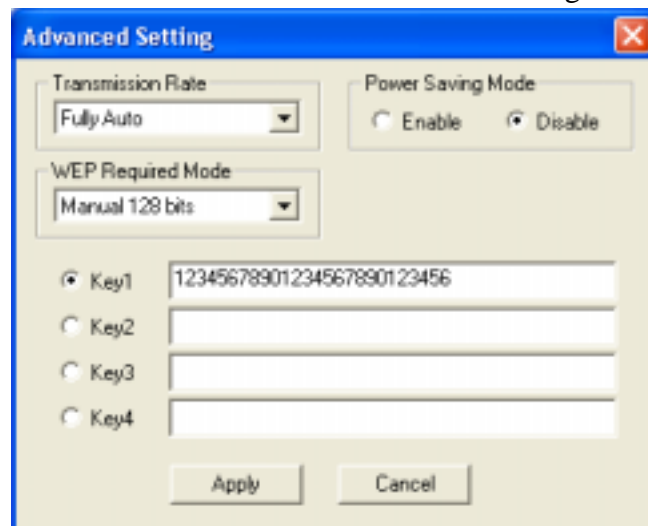b. Select "Manual 128 bits (ASCII)" and enter a 13-digit WEP Key.

c. Select "Manual 64 bits" and enter a 10-digit WEP Key.

d. Select "Manual 128 bits" and enter a 26-digit WEP Key.

3.8 Remove your 802.11b WLAN USB Adapter

If you do not need the wireless connectivity of your 802.11b WLAN USB Adapter, you can unplug and remove your 802.11b WLAN USB Adapter directly.

Note*!*   *When removing the 802.11b WLAN USB Adapter, you will lose your connection to the network. Make sure you have closed all files and network applications (such as e-mail) prior to removing the 802.11b WLAN USB Adapter.*

3.9 Uninstall the IEEE802.11b WLAN Utility / Driver

1. Make sure the **Utility is closed**.

2. **Open Control Panel,** and then **click Add or Remove Programs > IEEE802.11bWLAN Utility > Remove**
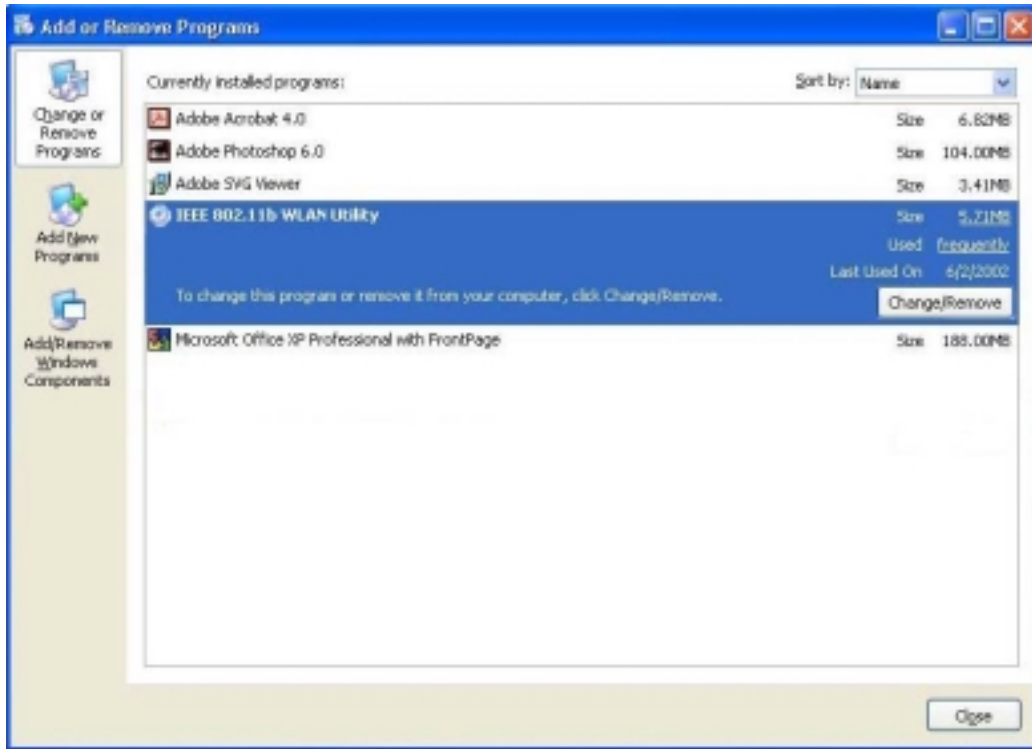
3. **Follow the uninstall wizard** to complete the uninstallation.

4. **Click "Finish"** when uninstallation is completed.

4. Using the Utility

4.1 LAN Status Tab

If you want to know the connecting status in Infrastructure Mode or 802.11 Ad Hoc Mode, choose LAN Status tab in IEEE802.11b WLAN Utility window.
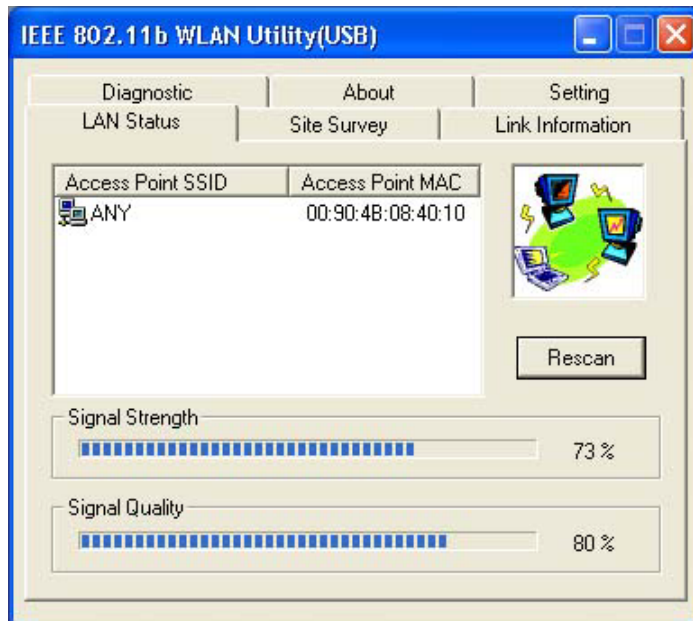

1. Infrastructure Mode:

- The SSID and MAC of the access Point, which your computer connects to, will appear in the screen if you choose the Infrastructure Mode.

- Double click the Access Point SSID (under the Infrastructure Mode) to access to the Microsoft Network Neighborhood folder to find other on-line computers.

- You can see the status of the Link Quality and Signal Strength under the LAN status page.

2. 802.11 Ad Hoc Mode / Ad Hoc Mode:

- The station Name and MAC address of your station will appear if you choose the 802.11 Ad Hoc Mode (or Ad Hoc Mode).

- Double click the right name to display the content of your computer or double click Network Neighbors to access to the Microsoft Network Neighborhood folder to find other on-line computers.

- Click "Rescan" to find current available computers in the network.

4.2 Link Information Tab

The Link Information tab shows information of Current Channel, Current Transmission Rate, Own MAC Address, Current Connection State, Wireless Network Adapter IP Address, Wireless Network Adapter Subnet Mask, and Wireless Network Adapter Default Gateway.
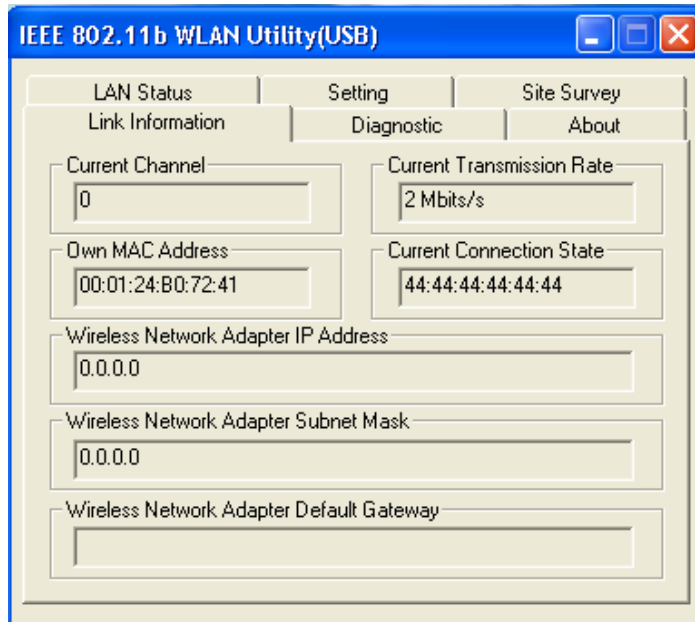
4.3 Site Survey Tab

This tab gives you all the information of each Access Point within the communication range, so that you can select the Access Point with the strongest signal for better performance.
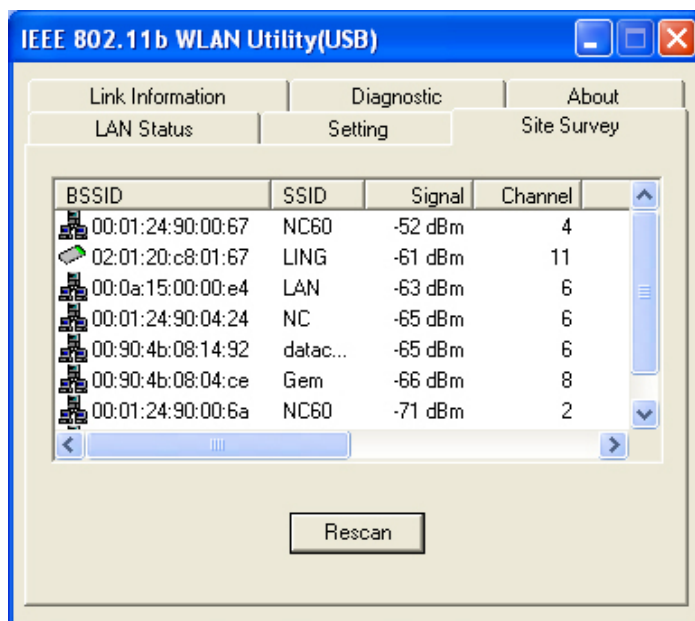
4.4 Diagnostic Tab

Click "Start Diagnostic" button to check errors in hardware, firmware, and software of your 802.11b WLAN USB Adapter. In case of any errors occur, please click "View Error details" button and print it out to present to your dealer or distributor.
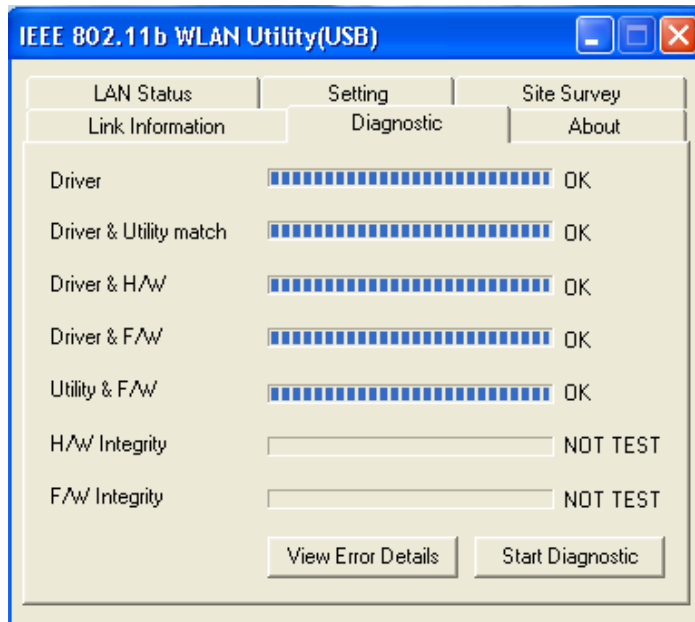
4.5 About Tab

This tab provides you the version information of Firmware, Driver and Utility.

5. Network Application

This section consists of the network applications of 802.11b WLAN USB Adapter, including:

- To Survey the network neighborhood
- To Share Your Folder with Your Network Member(s)
- To Share Your Printer with Your Network Member(s)
- To Access the Shared Folder(s)/File(s) of Your Network Members(s)
- To Use the Shared Printer(s) of Your Network Member(s)
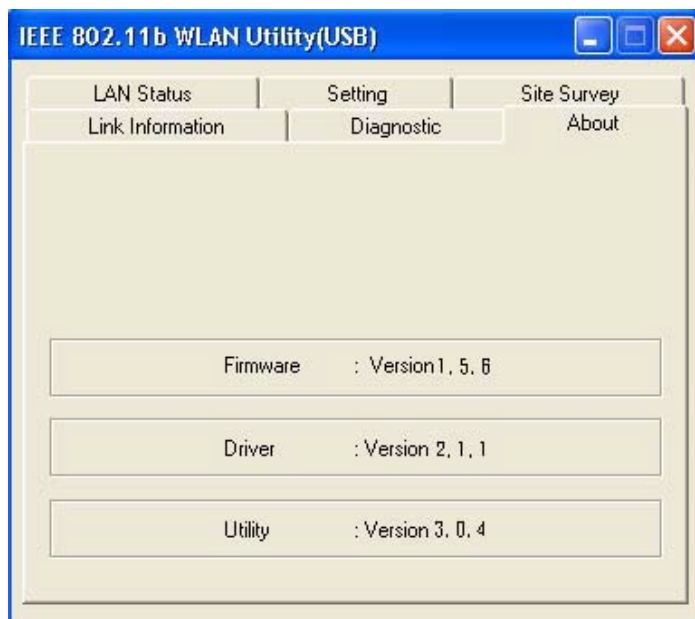
In fact, the network applications of 802.11b WLAN USB Adapter are the same as they are in a wired network environment. You may refer to the following 3 examples of Surveying the Network Neighborhood, File Sharing and Using the Shared Folder.

5.1 Surveying the Network Neighborhood

When multiple base stations are up and running in your wireless network, you can use the procedure described below to display the other computers:

1. **Double-click My Network Places** to display all stations in your Microsoft Windows Network Group.
2. To display other workgroups in the network environment, **double-click Entire Network**.
3. If there is a **second network operating system** running in your network environment (for example a Novell NetWare network), the "Entire Network" window will also display available servers running under the second network operating system. If you click on these servers, you may be asked to **enter your user name and password** that applies to the other network operating system. If you cannot find it, verify whether the other wireless computers are:
   - Powered up and logged on to the network.
   - Configured to operate with identical Microsoft Network settings concerning:
     - Networking Protocol.
     - Wireless Network Name.

To enable the sharing of **Internet access**, you should set your IEEE802.11b WLAN mode as **"Infrastructure"** and connect to the access point.

5.2 File Sharing

802.11b WLAN USB Adapter allows the sharing of files between computers that are logged onto the same wireless network. If you want to share your folder "My Documents" with other computers of the wireless network, please **highlight the folder "My Documents" and drag it to Shared Documents folder**.
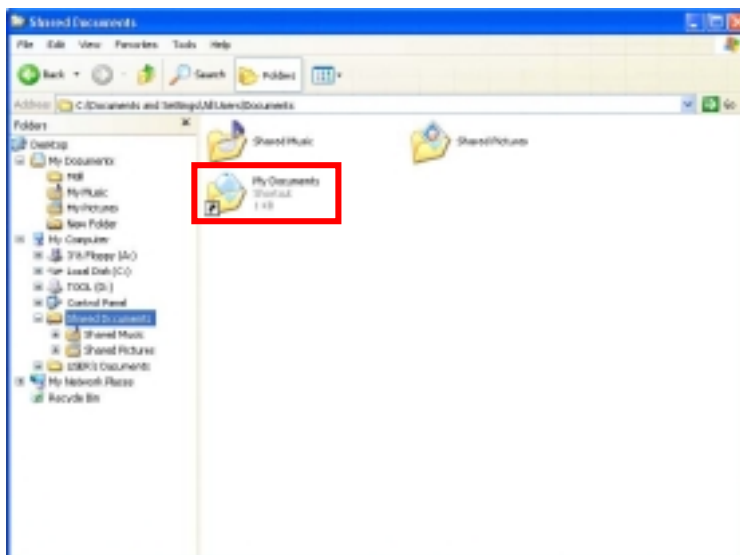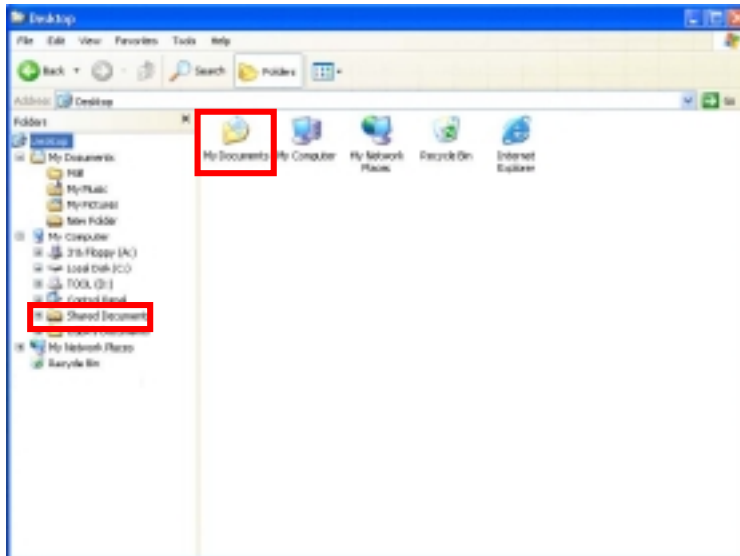
Sharing files in the IEEE802.11b wireless network will be like sharing files on a wired LAN.

5.3 Using the Shared Folder

If you would like to access a shared folder stored in other stations of same network, please follow the process below:

1. Double-click the "My Network Places" icon, and then double-click the computer where the shared folder is located.

2. Double-click the folder you want to connect to.

3. Now you may open the needed file(s).

Note! *If a password is required, the Windows will prompt a password column to you. Then you need to enter the password that had been assigned to this shared folder.*

6. Product Specifications

Frequency range	2.4G ~ 2.4835Ghz
Modulation technique	DSSS (Direct Sequence Spread Spectrum) with BPSK (1Mbps), QPSK (2Mbps), and CCK (5.5 and 11Mbps)
Core Logic	Intersil Prism 3.0 ➤ MAC+BB: ISL3871 (upgrade to 3871A) ➤ Direct Down Conversion Transceiver: ISL3684 ➤ VCO: ISL3084 ➤ Power Amplifier: ISL3984
Host interface	USB V1.1
Dimension	- external: 26mm(W)*77.2mm(L)*10.9mm(H)
Weight	- external: 20g
Form factor	-MiniUSB type B
Operation voltage	5V +/- 10%
Power consumption	- Transmission mode: 250mA (Max.) - Receives mode: 250mA (Max.) - Power saving mode: 100mA (Max.)
Multipath delay	125ns at 11Mbps, 250ns at 5.5Mbps
Output power	13-17dBm
Operation range	- Indoor: 35 ~100 meter @ 11Mbps (Estimated) - Outdoor: 300 meter @ 11Mbps (Estimated)
Sensitivity	@PER <0.08 11Mbps < -84dBm 5.5Mbps < -86dBm 2Mbps < -88dBm 1Mbps < -90dBm
Operation system	Windows 98SE, Me, 2K, XP, and Windows CE (subject to availability)
Security	64-bit, 128-bit WEP encryption
Transfer data rate	11Mbps, 5.5Mbps, 2Mbps, 1Mbps, auto-rate
Operation temperature range	$0^{o}C \sim 60^{o}C$
Storage temperature range	$-20^{o}C \sim 65^{o}C$
Humidity	5% ~90%

(non-condensing)	
Warranty	1 year standard warranty, 3 years optional
EMC certificate	- FCC Class B part 15.247 (USA) - IC RSS210 (Canada) - ETSI 300 328, ETSI300 826 (Europe) - ARIB STD-T66, RCR STD-33 (Japan, subject to customer's request)
Media access protocol	CSMA/CA with ACK
LED indicator	WLAN LED: indicates networking activity **- Off:** Power Off. **-Blinking:** The USB adapter is powered on but no wireless connection is made yet. **- Steady Green:** Wireless connection is linked.
Antenna	Alone device: single antenna
User friendly	1.1 meters USB extension cable to extend connection