

# **54G Wireless LAN CardBus Card**

## **User 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.

## **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.

## **About this manual**

This manual describes how to install and operate your Wireless LAN card. Please read this manual before you install the product.

This manual includes the following topics:

- Product description, features and specifications.
- Hardware installation procedure.
- Software installation procedure.
- Trouble shooting procedures

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# *Chapter 1*

## **Introduction**

Thank you for purchasing the 54G WLAN card. This high-speed Wireless LAN card provides you with an innovative wireless networking solution. The Card is easy to set up and use. With this innovative wireless technology, you can share files and printers on the network—without inconvenient wires!

### **Features**

- 54Mbps solution in the 2.4GHz band, compliant with the IEEE 802.11b and draft 802.11g standards
- Wi-Fi certifiable for IEEE 802.11b interoperability
- Wire-free access to networked resources from anywhere beyond the desktop
- Delivers data rate up to 54 Mbps
- Antenna is built in to the card with LEDs indicating Power and Link
- Ensures great security by providing the Wired Equivalent Privacy (WEP) defined in the IEEE 802.11 standard
- Lowest CPU utilization design that leaves system resources available for other functions
- Seamless Microsoft XP zero-config integration with advanced utilities and common GUI for legacy OSs
- Driver support Window XP, 2000, ME & 98

# What is Wireless LAN?

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

Using radio frequency (RF) technology, WLANs transmit and receive data through the air. WLANs 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 WLANs, 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:** WLANs 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:** WLANs 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.

# WLAN Modes

Wireless LANs can be configured in one of two ways:

<b>Ad-hoc Networking</b>	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.
<b>Infrastructure Networking</b>	<p>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.</p> <p>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.</p> <p>Infrastructure networking has the following advantages over ad-hoc networking:</p> <ul style="list-style-type: none"><li>• <b>Extended range:</b> each wireless LAN computer within the range of the access point can communicate with other wireless LAN computers within range of the access point.</li><li>• <b>Roaming:</b> the access point enables a wireless LAN computer to move through a building and still be connected to the LAN.</li><li>• <b>Wired to wireless LAN connectivity:</b> the access point bridges the gap between wireless LANs and their wired counterparts.</li></ul>

## 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 54G WLAN card.

## *Chapter 2*

# **Hardware installation**

This chapter covers inserting your Wireless LAN card in the CardBus slot of notebook, and connecting the card to a network.

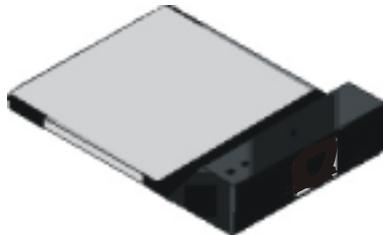
## **What's in the package**

Please ensure that the following items are included in your package. If any items are missing, contact your dealer.

- 54G Wireless LAN CardBus card
- CD-ROM (includes utility, drivers, and this manual)
- Quick installation guide

## **Hardware description**

The 54G WLAN card is encased in a stainless compact frame and has a 68-pin connector for attaching to the CardBus port of notebook.



## Inserting the 54G WLAN card

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### Note!



*These instructions apply to most notebook computers. For detailed information on inserting PC cards into your notebook, consult the notebook manual.*

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Follow the procedure below to install the 54G WLAN card.

1. With 68-pin connector of the card facing the CardBus slots on notebook, slide the card all the way into an empty slot.



2. Connect to a network.

### Note!

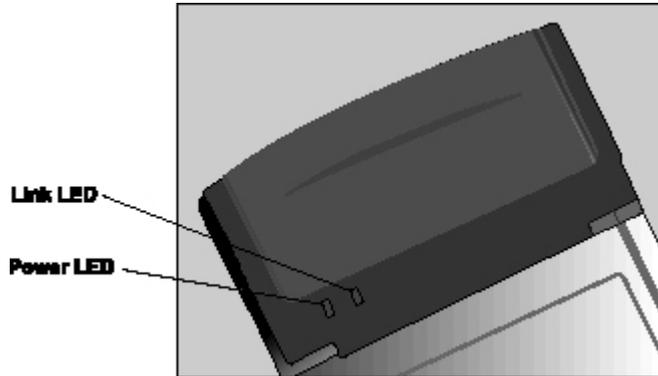


*For information on connecting your Card to the WLAN, contact your system administrator.*

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## Status LEDs

The following table describes the meaning of the LEDs:



LED Def.	Color	Description
POWER	Green	Indicates that the card is powered on when the LED lights up.
LINK	Green	Indicates link status. The LED lights up while the wireless connection is linked. If there is wireless data transmitting / receiving, the light is blinking.

## Ejecting the 54G WLAN card

After disconnecting from the WLAN, you can eject the 54G WLAN card from the PC Card slot of notebook.

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**Note!**

*In Win XP/2000/ME/98 operating systems, you do not have to power down the notebook to remove the card. The card is hot-swappable—you can remove the card when the notebook is powered on. However, Microsoft recommends that you stop the card. Refer to your Windows XP/2000/ME/98 online help for information on stopping the 54G WLAN card.*

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Most notebooks have an eject lever or button for ejecting PC cards from the PC slots. Consult your notebook manual for details.

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**Warning!**

To prevent data loss, do not eject the 54G WLAN card when a data transmission is taking place. Exit your communications program normally, stop the card if necessary, and then remove the card.

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This concludes Chapter 2. The next chapter covers driver installation for Windows XP/2000/ME/98 operating systems.

## Chapter 3

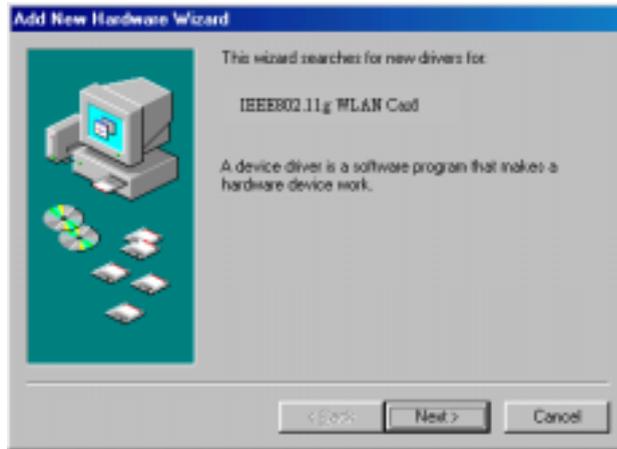
# Driver installation for Windows

The following sections cover Wireless LAN card driver installation in the Windows XP/2000/ME/98 operating systems.

## Driver installation for Windows 98

Follow the steps below to install the 54G WLAN card drivers for Windows 98.

1. Insert the 54G WLAN card into an available CardBus slot on your notebook (refer to page 6 - Inserting the 54G WLAN card).
2. After Windows 98 detects the 54G WLAN card, the *Add New Hardware Wizard* window appears:



3. Click **Next** to continue the installation. A screen appears prompting you to select an installation method:



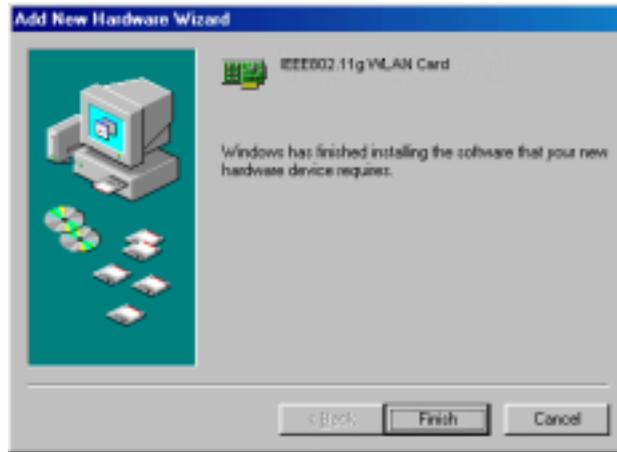
4. Select **Search for the best driver for your device. (Recommended)** and click **Next**. The following screen appears:



5. Ensure that the **CD-ROM drive** box is checked.
6. Insert the driver CD-ROM into your CD-ROM drive and click **Next**. The following screen appears:



7. Click **Next**. Windows 98 copies files to your hard disk drive, and you see the following screen:



8. Click **Finish**. You should reboot your system to finish the installation.

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**Note!**



*Windows 98 may need to copy required system files and will prompt you to input the path to the files. Follow the instructions on your screen, and then click **OK** to continue.*

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After you have rebooted the computer, system will start to install Wireless utility automatically. Please refer to procedures at Chapter 4.

## Driver installation for Windows 2000

Follow the steps below to install the 54G WLAN card drivers for Windows 2000.

1. Insert the 54G WLAN card into an available CardBus slot on your notebook (refer to page 6 - Inserting the 54G WLAN card).
2. After Windows 2000 detects the 54G WLAN card, the *Found New Hardware Wizard* window appears:



3. Click **Next** to continue the installation. A screen appears prompting you to select an installation method:



4. Select **Search for a suitable driver for my device (recommended)** and click **Next**. The following screen appears:



5. Ensure that the **CD-ROM drivers** box is checked and insert the driver disc into CD-ROM drive. Click **Next** to continue. The following screen appears:



6. Click **Next** to continue. The following screen appears:



7. Click **Yes** to continue. The following screen appears:



8. Click **Finish** to complete the installation.
9. Then system will start to install Wireless utility automatically. Please refer to procedures at Chapter 4.

## Driver Installation for Windows ME

Follow the steps below to install the 54G WLAN card drivers for Windows ME.

1. Insert the 54G WLAN card into an available CardBus slot on your notebook (refer to page 6 - Inserting the 54G WLAN card).
2. After Windows ME detects the 54G WLAN card, the *Add New Hardware Wizard* window appears:



3. Select **Automatic search for a better driver (Recommended)** and insert the driver disc into CD-ROM drive. Click **Next** to continue.
4. The system will find the setup files and follow the instruction of the setup file to copy drivers. After the drivers were copied, the following screen appears:



5. Click **Finish**. You should reboot your system to finish the installation.

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**Note!**



*Windows ME may need to copy required system files and will prompt you to input the path to the files. Follow the instructions on your screen, and then click **OK** to continue.*

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After you have rebooted the computer, system will start to install Wireless utility automatically. Please refer to procedures at Chapter 4.

## Driver installation for Windows XP

Follow the steps below to install the 54G WLAN Card drivers for Windows XP.

1. Insert the 54G WLAN card into an available CardBus slot on your notebook (refer to page 6 - Inserting the 54G WLAN card).
2. After Windows XP detects the 54G WLAN Card, the *Found New Hardware Wizard* window appears. Select **Install the software automatically [Recommended]** and insert the driver CD-ROM into CD-ROM drive and click **Next** to continue.



3. Click **Continue Anyway** to continue the installation.



4. The Windows has finished installing software for the device. Click **Finish** to finish the installation



Then system will start to install Wireless LAN Utility. Please refer to procedures at Chapter 4.

## Chapter 4

# Using the Wireless Utility

The following sections cover the 54G WLAN card utility installation and usage.

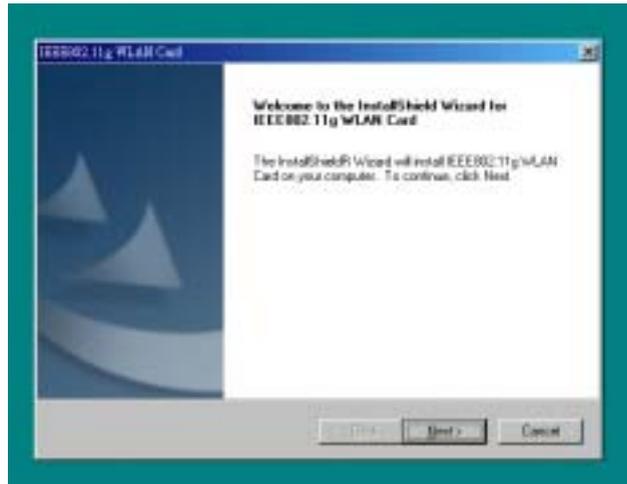
## Installation in Windows

After you have installed the 54G WLAN card driver and have re-booted the computer. Please follow the steps below.

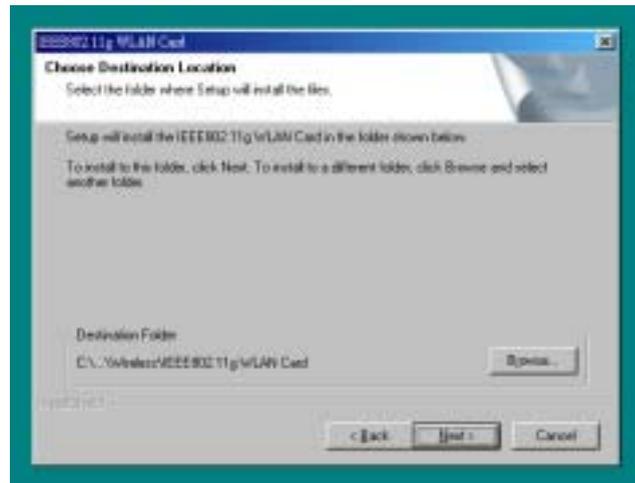
1. Execute **WLSetup.exe** in your CD-ROM drive.



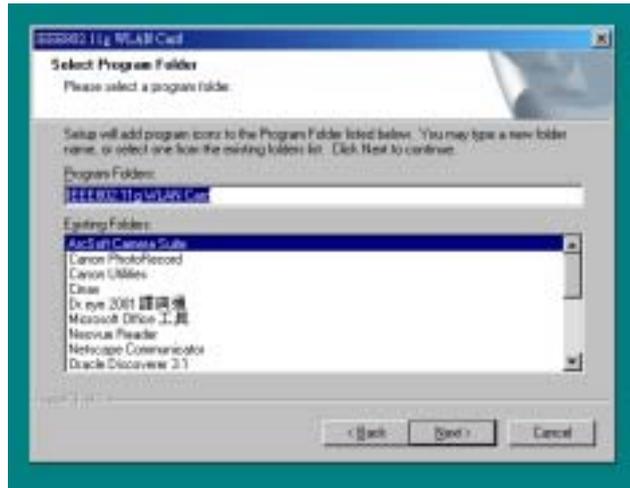
2. The following screen appears:



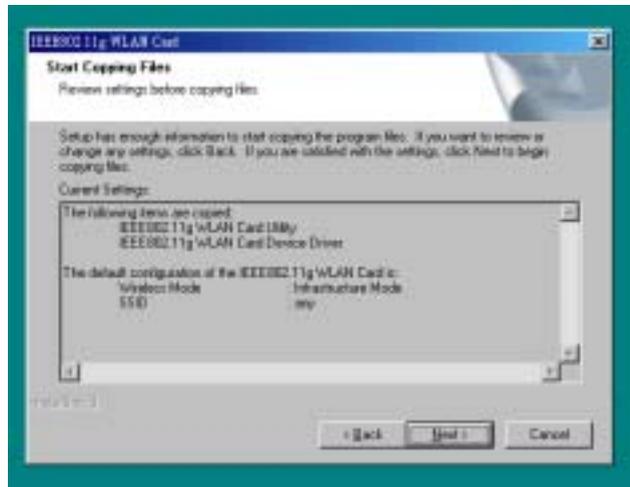
3. Click **Next** to continue.



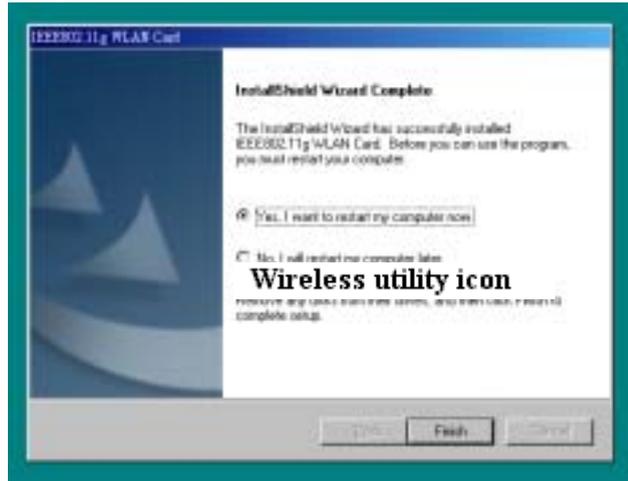
4. Select the default path for the wireless utility or **browse** to an alternate path. Then click **Next**. The following screen appears:



5. Type in a Program Folder name or select the default name and click **Next**. Setup installs the software and the following screen appears:



6. Click **Next** to continue.



7. Click **Finish** to restart your computer.

After you have installed the utility and have restarted your computer, you will see the wireless utility icon in the Windows taskbar:



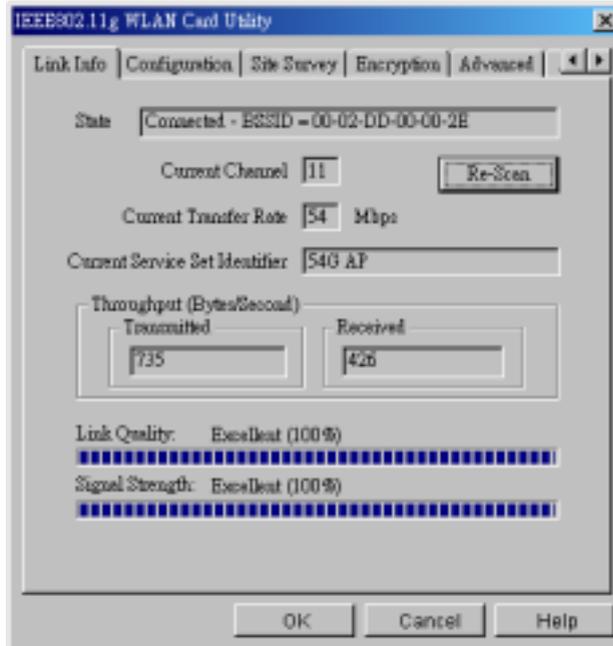
**Wireless Utility Icon**

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.

You can double-click the icon to open the wireless LAN card utility.

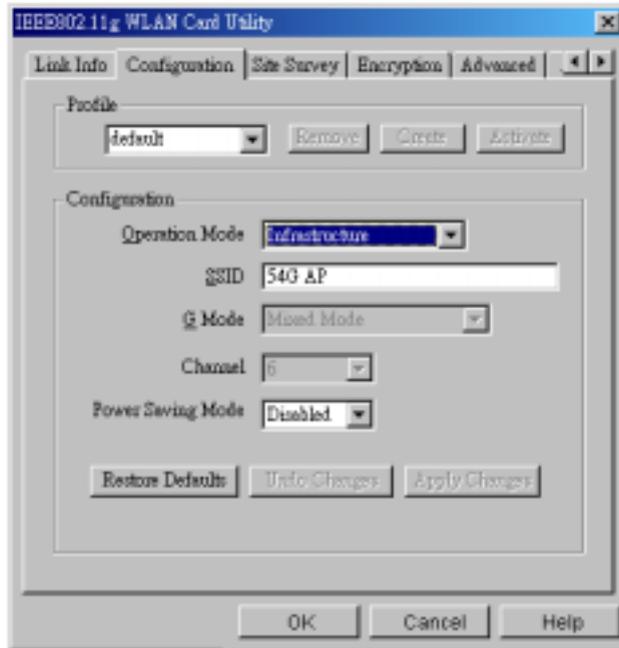
## Configuring the WLAN Card

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



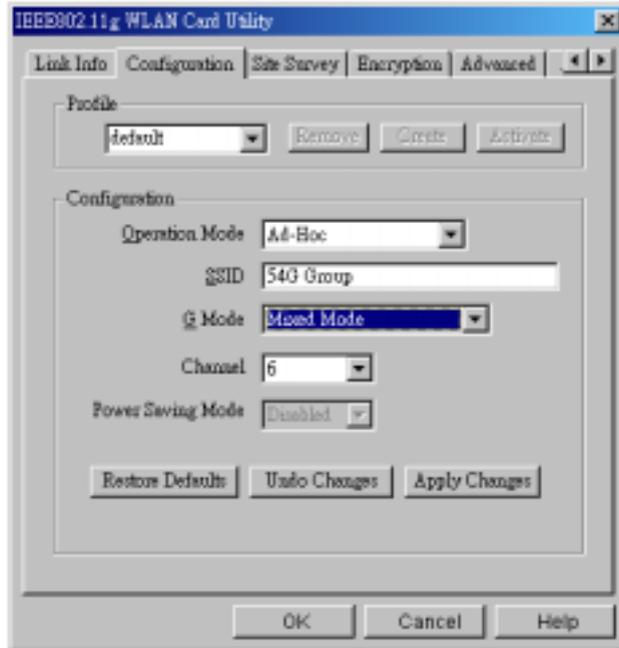
2. Select the “**Configuration**” tab. The **profile** setting allows you to save configurations in different profiles for different working environments. The default profile will contain the initial configuration setting when you install the Card. Under the **Operating Mode** drop-box, you may choose either **Infrastructure** or **Ad-Hoc**. The Infrastructure mode allows a wireless card to communicate with a wired network employ-

ing 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. Under **Power Saving Mode**, you can select **Enabled** to allow your adapter to go to sleep mode while the Card doesn't proceed the data transmission. Or select **Disabled** to make the Card never go to sleep mode.



3. If you choose **Ad-Hoc**, all clients should share the same **SSID** name and should use the same channel. You may also select which **G Mode** you wish to use: **Mixed Mode** or **802.11G only**. Select **Mixed Mode** on the Ad-Hoc mode will allow both 802.11b and 802.11g computers on the network. But the speed will be reduced. You can select **802.11G only** for

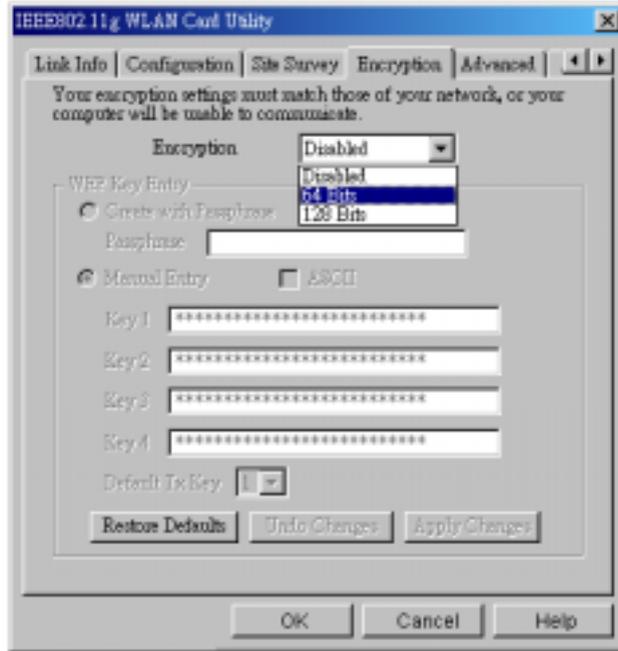
maximum speed on the Ad-Hoc mode, but no 802.11g users will be allowed on the network. Click **Apply** to save the settings.



4. 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.

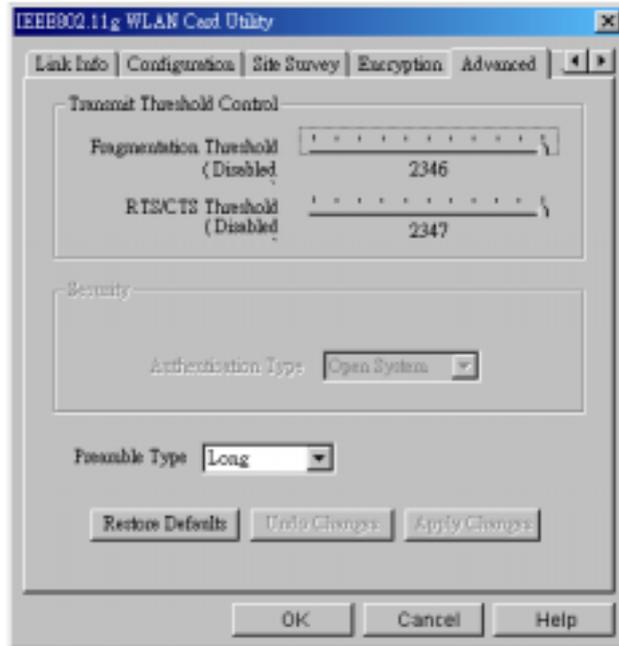


5. Click on the “**Encryption**” tab. Under the drop-box, you can choose to have WEP encryption **Disabled, 64-Bit, or 128-Bit**. Wired Equivalent Privacy (WEP) is an encryption scheme used to protect wireless data communication. The Disabled setting prevents the sharing of data with other computers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

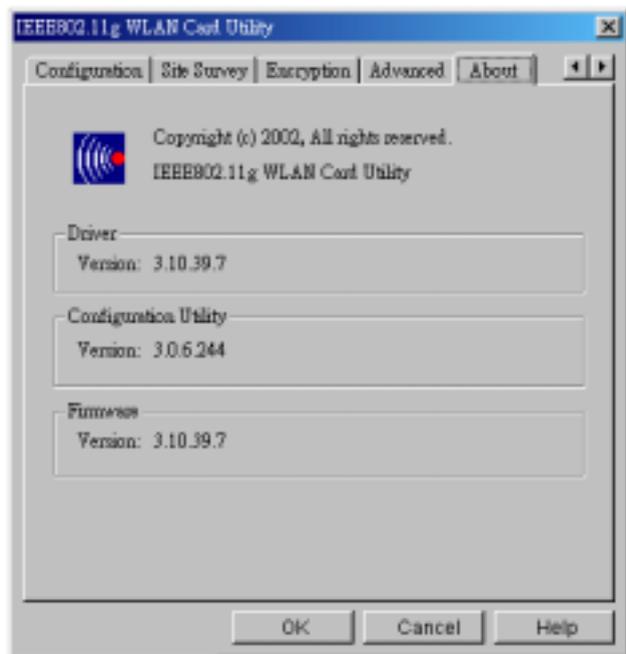


6. Select the “**Advanced**” tab. You can choose the **fragmentation threshold** to define the maximum data frame size your adapter will transmit. When the packet error rate is high, you may set the threshold value to transmit shorter frames. You may select **RTS/CTS threshold** to define when will your 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**, it’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.



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



# *Appendix A*

## **Troubleshooting**

### **Q&A**

**Problem:** Windows can not recognize the card.

**Solution:** Please check if PC Card support is installed. Double-click the PC Card icon on Control Panel. If PC Card support is not activated, you should activate it now.

**Problem:** Ejecting the card from the CardBus socket hangs or reboots the computer.

**Solution:** To prevent this phenomenon from occurring, stop the card by using the PC Card tool in the Control Panel or the PC Card icon on the taskbar before you remove the card.

**Problem:** The card cannot be detected when reinserted.

**Cause:** This is caused by certain unstable CardBus status lines when the card is removed and reinserted. The Windows drivers may read an incorrect status during this period of signal instability, and fail to detect the correct status of the card.

**Solution:** The card can be detected by clicking **Refresh** in Device Manager.

**Question:** What is the Microsoft digital signature?

**Answer:** Drivers that pass Microsoft Windows XP/2K/ME certification receive a digital signature file from Microsoft. The 54G WLAN card does not have such a digital signature, however it is fully compatible with Windows XP/2K/ME.

**Question:** The Wireless Utility icon on system tray is always red.

**Answer:** Please make sure that all clients & AP have the same SSID. The SSID is case sensitive. And make sure you are within range of an Access Point or client.

**Question:** Can not connect to one of the clients in the network.

**Answer:** First of all, make sure that all clients are up and running with a green Wireless Utility icon. And please check your TCP/IP setup is correct for your network.

**Question:** What is WEP?

**Answer:** As described in the IEEE 802.11 standard, WEP (Wired Equivalent Privacy) is a data privacy mechanism based on a 64-bit or 128-bit shared key algorithm.

## Appendix B

### Specifications

<b>Product Name</b>	54Mbps Wireless LAN CardBus Card
<b>Type</b>	3.3V 32-bit CardBus
<b>Standards</b>	IEEE802.11b standard and IEEE802.11g draft Standard
<b>Network Architectures</b>	Infrastructure and Ad-Hoc Mode
<b>Operating Frequencies</b>	2.412-2.497GHz
<b>Operating Channels</b>	802.11b : 11 Channels (North America) Draft 802.11g : 11 Channels (North America)  802.11b : 13 Channels (Europe) Draft 802.11g : 13 Channels (Europe)
<b>Data Rate</b>	802.11b: 11, 5.5, 2, 1Mbps 802.11g: 54, 48, 36, 24, 18, 12, 9, 6 Mbps
<b>Security</b>	64/128-bit WEP
<b>Operating Temperature</b>	0 ~ 50
<b>Storage Temperature</b>	-20~75
<b>Relative humidity</b>	5% to 95%