WLAN 802.11g Cardbus

User Manual

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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:

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

Wistron NeWeb declare that RB1 (WLAN 802.11g Cardbus) is limited in CH1~CH11 in USA.

Table of Contents

1. Introduction

1.1 The WLAN 802.11g Cardbus

802.11g is the 54Mbps wireless networking standard that's almost five times faster than the widely deployed 802.11b products found in homes, businesses, and public wireless hotspots around the country — but since they share the same 2.4GHz radio band, 802.11g devices can also work with existing 11Mbps 802.11b equipment. The new 802.11g Cardbus has both standards built in, so you can connect your notebook to existing 802.11b infrastructure, and also the new screaming fast 802.11g networks. The included Setup Wizard will walk you through configuring the cardbus to your network's settings, step by step. Then just slide it into your notebook's PC Card slot and enjoy network access with your notebook computer, while retaining true mobility.

Once you're connected, you can keep in touch with your e-mail, access the Internet, and share files and other resources such as printers and network storage with other computers on the network, wherever you wander. At home, you can surf the web or use instant messaging to chat with friends while sitting out on the patio. You'll also be able to connect with any of the growing number of public wireless hotspots springing up in coffee shops, airport lounges, hotels and convention centers. And as those hotspots upgrade to the new high-speed 802.11g standard, you'll be ready to take advantage of the increased speeds. Get connected to current-standard 802.11b networks today, and be prepared for the future with the 802.11g Cardbus.

1.2 Features

- 54Mbps High-Speed Wireless Transfer rate
- Up to 5X Faster than 802.11b WLANs
- Proprietary turbo mode provides high 72Mbps throughput
- Backward complaint with 802.11b
- 32-bit Cardbus
- Roaming support
- Supports up to 128-bit WEP
- Ad-Hoc mode and infrastrucure mode access
- Longer range support than 802.11a-based WLAN

1.3 Kit Contents

- WLAN 802.11g Cardbus

- Installation Software CD with User's Manual

- Quick Start Guide

1.4 The Cardbus LEDs
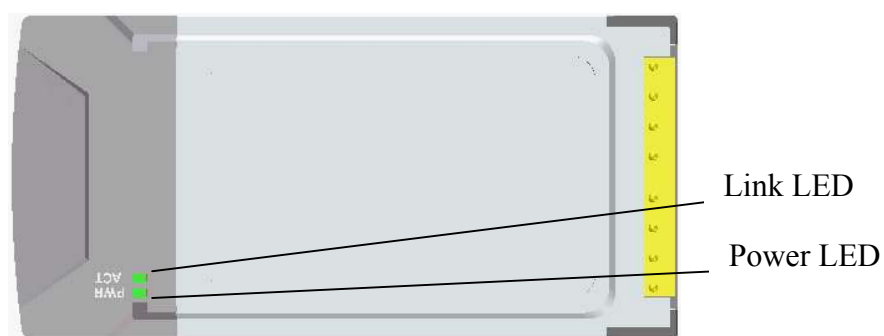
Link LED

Power LED

Power	*Green*. The Power LED lights up when the Cardbus is powered on.
Link	*Green*. The Link LED lights up and stays solid when the Cardbus is inserted correctly and a link is established with the Notebook. The LED flashes when data is transmitted or received..

2. Planning Your Wireless Network

2.1 Network Topology

A wireless local area network (WLAN) is exactly like a regular local area network (LAN), except that each computer in the WLAN uses a wireless device to connect to the network. Computers in a WLAN share the same frequency channel and SSID, which is an identification name for wireless devices.

2.2 Ad-Hoc versus Infrastructure Mode

Unlike wired networks, wireless networks have two different modes in which they may be set up: **infrastructure** and **ad-hoc**. An infrastructure configuration is a WLAN and wired LAN communicating to each other through an access point. An ad-hoc configuration is wireless-equipped computers communicating directly with each other. Choosing between these two modes depends on whether or not the wireless network needs to share data or peripherals with a wired network or not.

If the computers on the wireless network need to be accessed by a wired network or need to share a peripheral, such as a printer, with the wired network computers, the wireless network should be set up in **infrastructure** mode. (See Figure 2-1.) The basis of infrastructure mode centers around an *access point*, which serves as the main point of communications in a wireless network. Access points transmit data to PCs equipped with wireless network cards, which can *roam* within a certain radial range of the access point. Multiple access points can be arranged to work in succession to extend the roaming range, and can be set up to communicate with your Ethernet (wired) hardware as well.
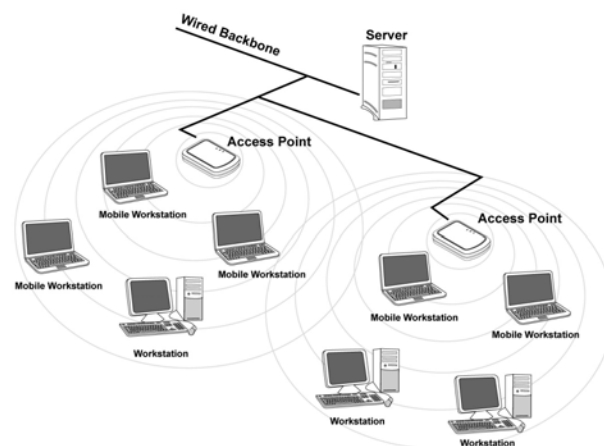
Figure 2-1

If the wireless network is relatively small and needs to share resources only with the other computers on the wireless network, then the **ad-hoc** mode can be used. (See Figure 2-2.) Ad-hoc mode allows computers equipped with wireless transmitters and receivers to communicate directly with each other, eliminating the need for an access point. The drawback of this mode is that, in Ad- Hoc mode, wireless-equipped computers are not able to communicate with computers on a wired network. And, of course, communication between the wireless-equipped computers is limited by the distance and interference directly between them.

Figure 2-2

3. Software Installation and Uninstallation

Note! The Installation Section in this User Manual describes the first-time installation for Windows. To re-install the driver, please first uninstall the previously installed driver. See Chapter 3.2 "Uninstallation" section in this User Manual.

Note! **Do Not** insert the Cardbus into the Cardbus slot before the driver installation.

Note! If you have inserted the Cardbus into the Cardbus slot before installing the driver, a warning message pops up informing you that the software has not yet been installed. Please click "Cancel" to close the warning message. Remove the Cardbus, and then start to install the driver.
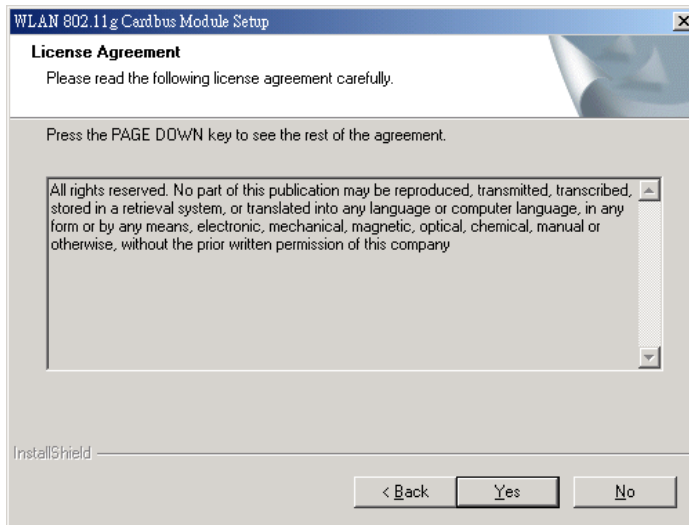
3.1 Setup Wizard Installation

Follow the steps below to complete the driver/utility installation:

1. Insert the **Installation Software CD** into the CD-Rom Drive.

2. Click **"Next"**.
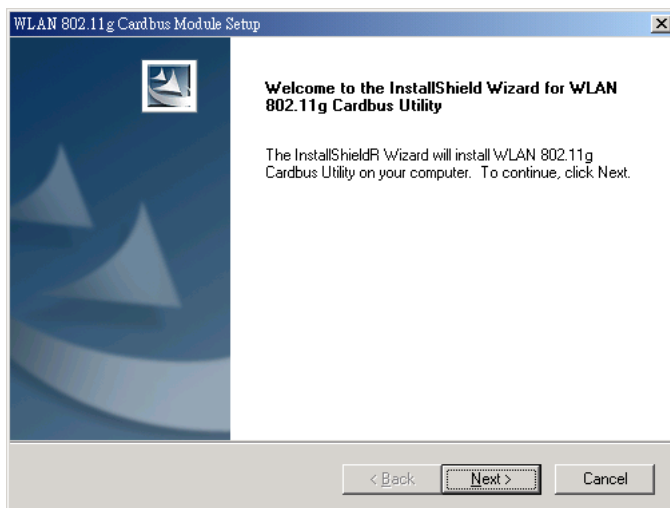
3. Read the **License Agreement** and click **"Yes"**.

4. Click **"Next"** to continue or click **"Browse"** to choose a destination folder.

5. Click **"Next"**.

9
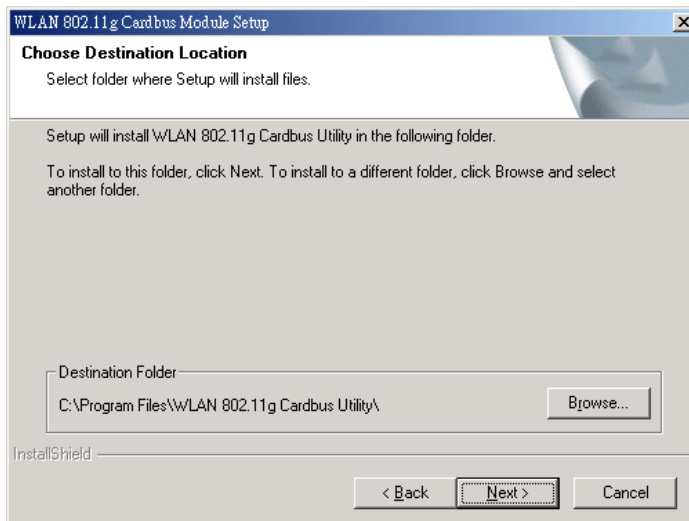
6. Click "**Yes**"

7. Click **"Finish"**.

8. You may now see the WLAN 802.11g Cardbus shortcut on the desktop.

9. Insert the **Cardbus** with the Cardbus's label facing up into the Cardbus slot

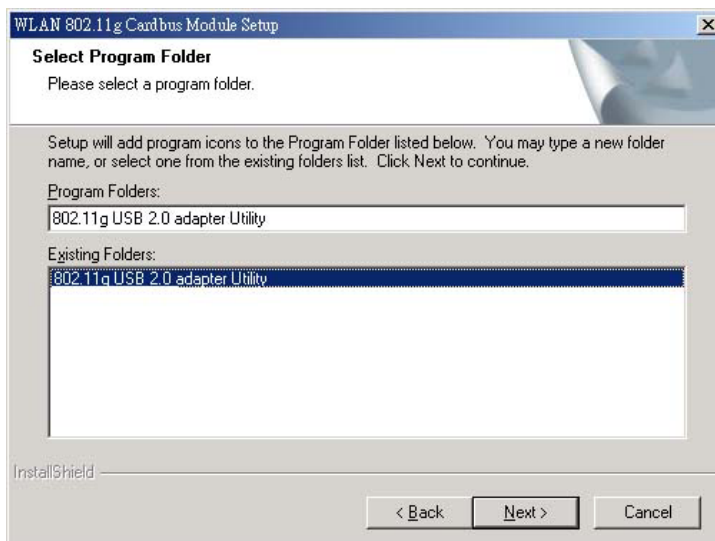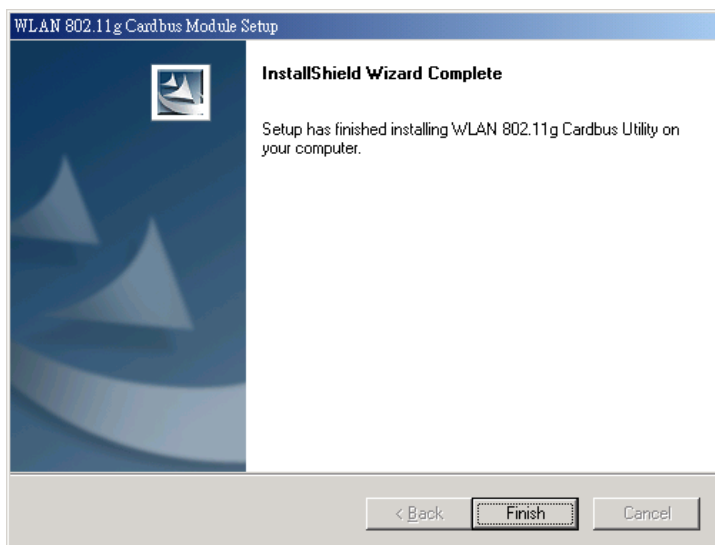## 3.2 Additional Setup Processes

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 WLAN 802.11g Cardbus Utility, please disable the Windows XP Zero-Configuration first.

3.3 Disable Windows XP Zero-Configuration

In Windows XP, it is recommended that you use the WLAN 802.11g Cardbus 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 WLAN 802.11g Cardbus, 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".
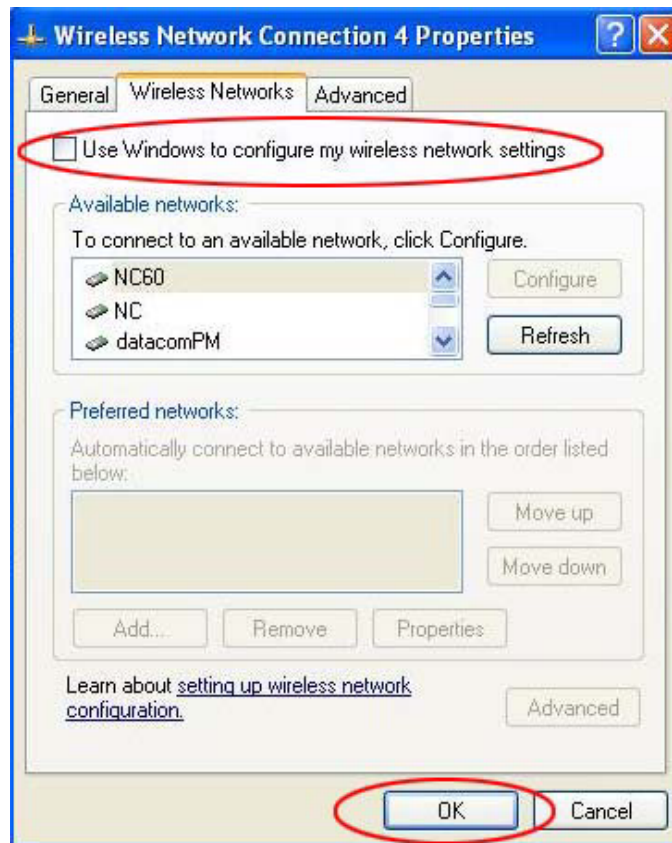
3.4 Uninstallation

Note! Before uninstallation, please close all running programs.

1. Click Start>Programs>WLAN 802.11g Cardbus Utility>Uninstall WLAN 802.11g Cardbus.
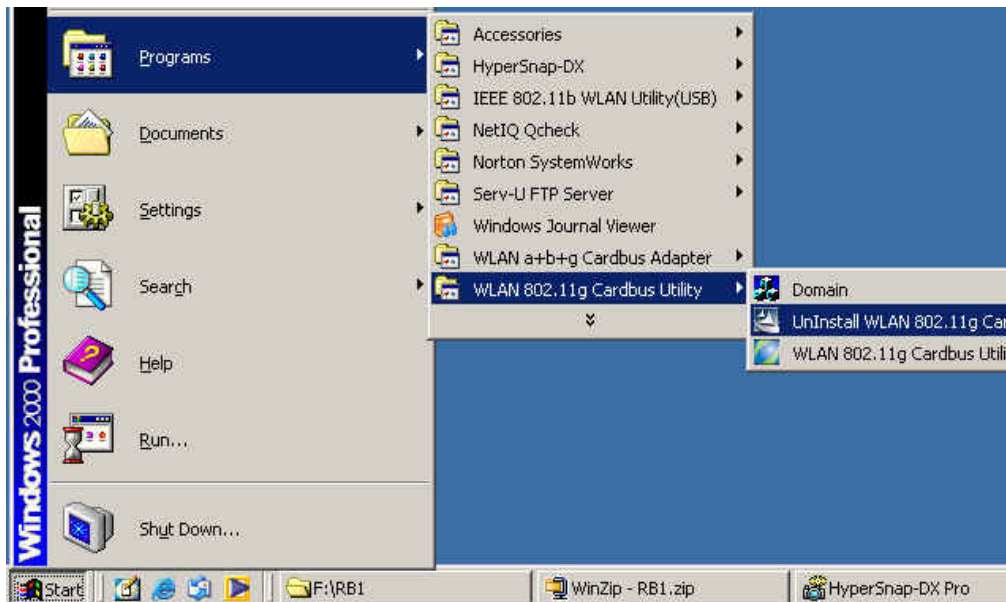
2. Choose **"Remove"**. Click **"Next"**.

3. Click **"OK"** to start **Uninstall**.
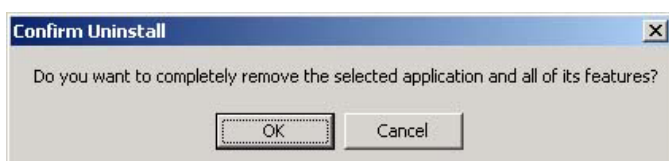
4. Click **"Finish"**. **Uninstall** is now completed.
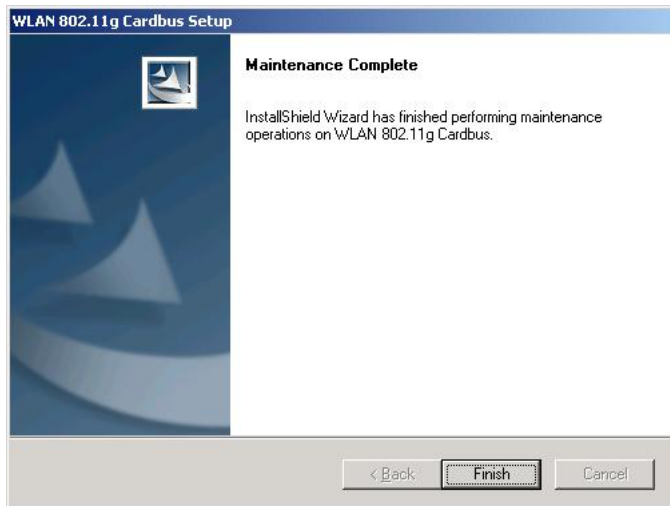
4. Using the Configuration Utility

4.1 Overview

Use the Configuration Utility to search for available wireless networks, connect to wireless network, or check the link status.

4.2 Accessing the Configuration Utility

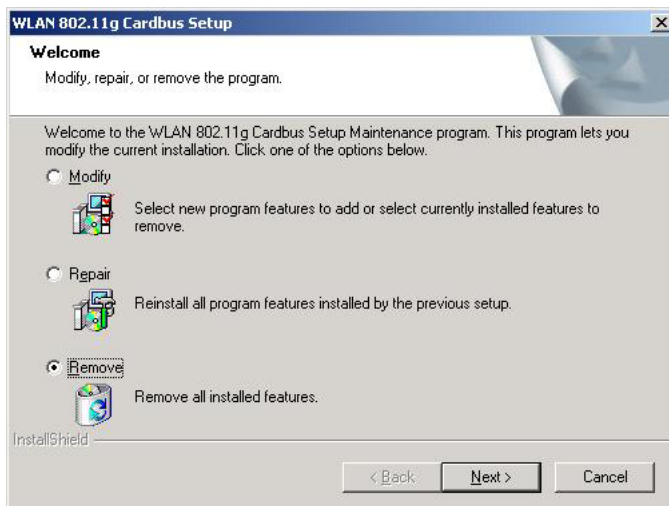1. After installing the Cardbus, the WLAN 802.11g Cardbus Configuration Utility icon will appear in your desktop. In Windows XP, please first close the XP Zero Configuration function. Doubleclick the icon.

2. The WLAN 802.11g Cardbus Utility will appear and automatically link with the available network which has strong signal and is not WEP encrypted. If all the available network (Access Point) is WEP encrypted, please contact with MIS administrator for the WEP key.

   The Link Information Tab show the link status, including SSID, channel, Mac Address, IP address, Link Quality and Signal Strength.
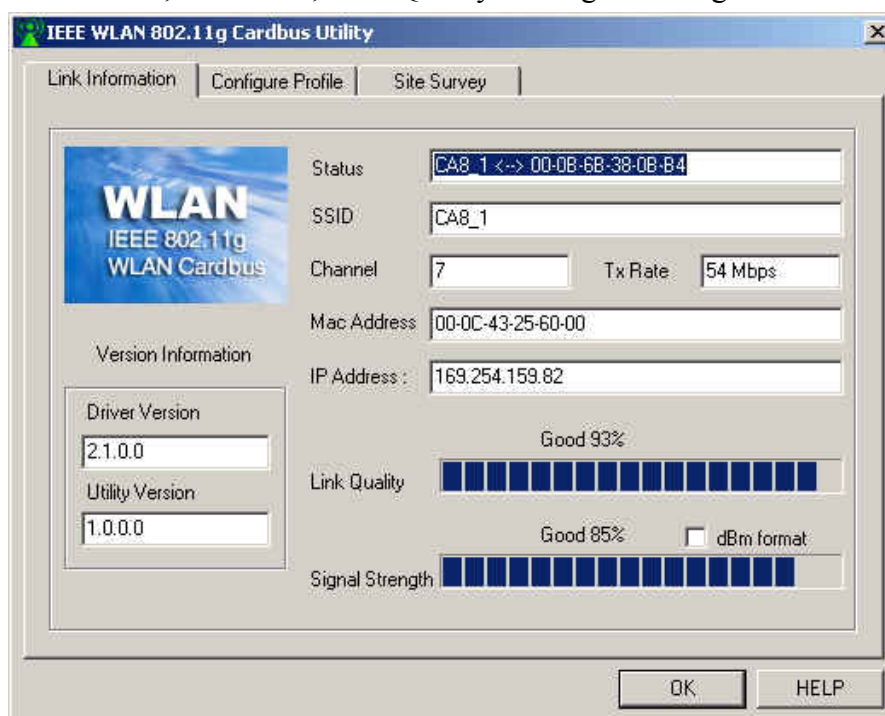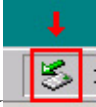
   Note: Once connected, the WLAN 802.11g Cardbus icon will become

Note: Suggest to **Radio OFF** the Cardbus by clicking right bottom of your
mouse on the WLAN 802.11g Cardbus icon in the windows system tray
while you are on the airplane or in the hospital to prevent from
interference.

Note: To take the WLAN 802.11g Cardbus from your notebook,

please click in windows systray.

4.3 Configure Profile

The Configure Profile tab is for you to create and configure the profile (Network) that you frequently use to link per your requirement. The profile records the system configuration and Authentication & Security.

<u>**Create Profile**</u>:

1. Click "**ADD**".
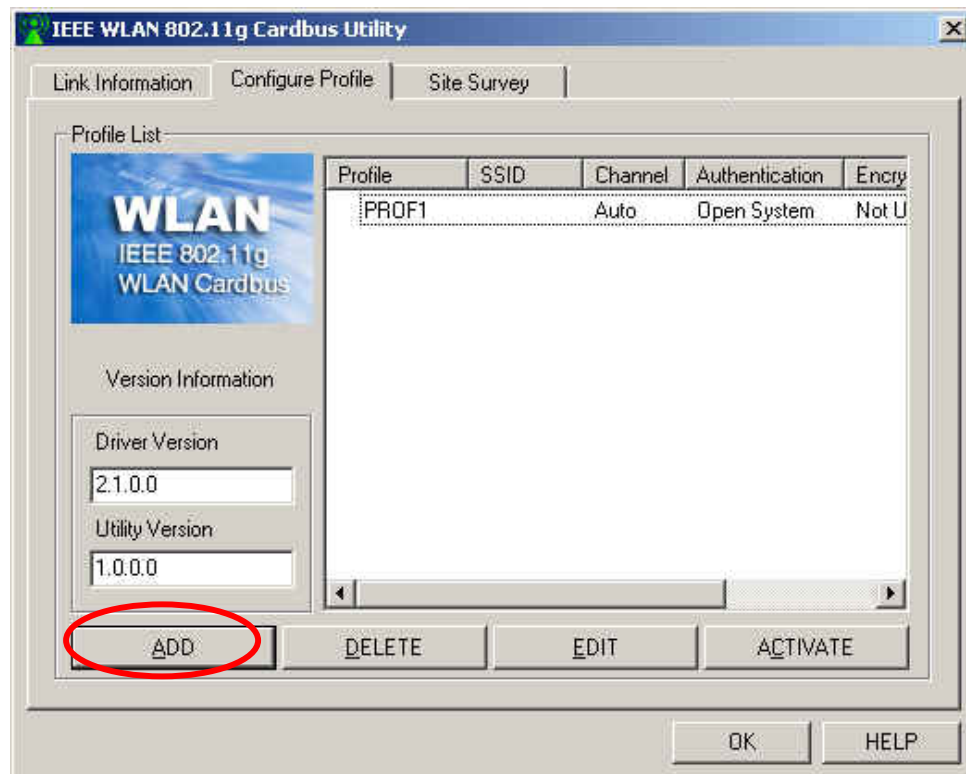
2. Name the **Profile Name** and choose the **SSID**.
3. In System Configuration tab, suggest to choose Power Saving Mode for infrastructure network type and CAM(Constantly Awake Mode) for 802.11 Ad Hoc.
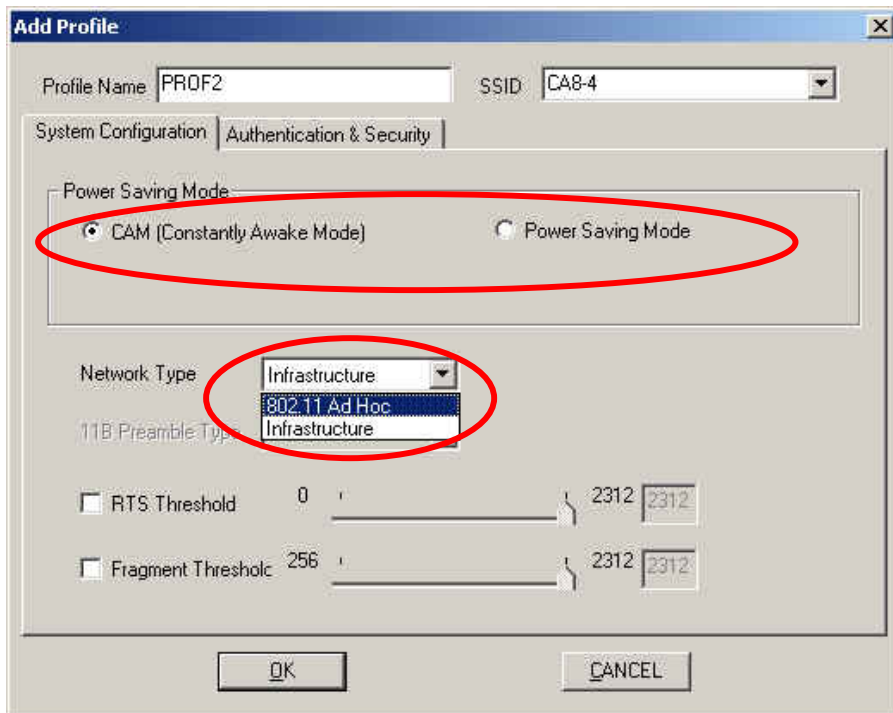
4. In Authentication & Security tab, please contact with MIS administrator for WEP
   Key if the AP (SSID) you choose is WEP encrypted.
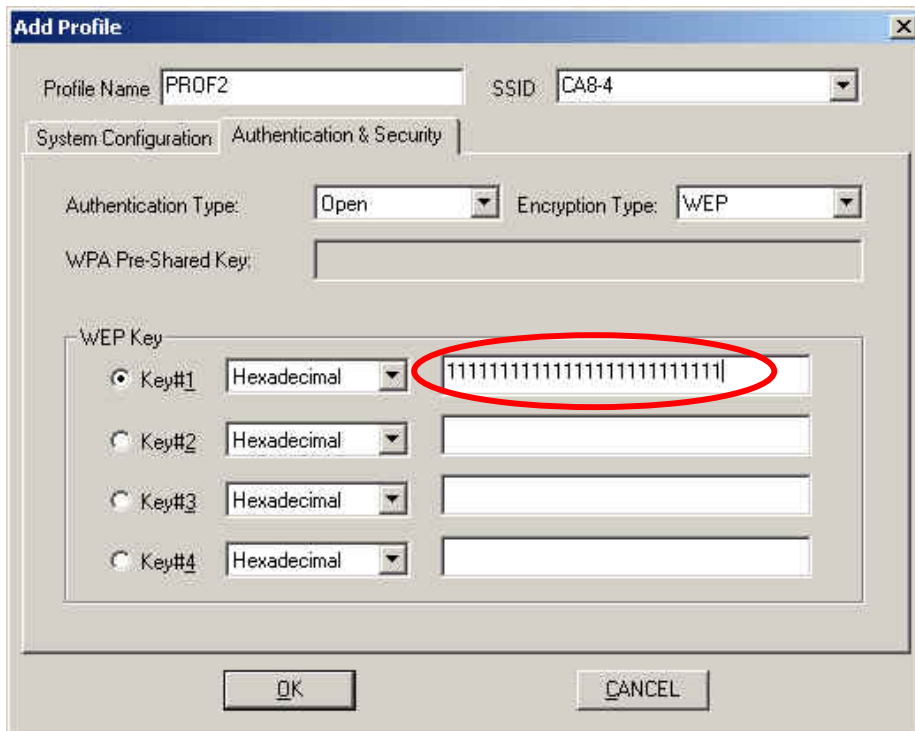
5. Click "**OK**".

4.4 Site Survey

This tab gives you the information of all the available Access Points in the network, such as their signal strength and WEP status, so that you can select the Access Point with the strongest signal for better performance.
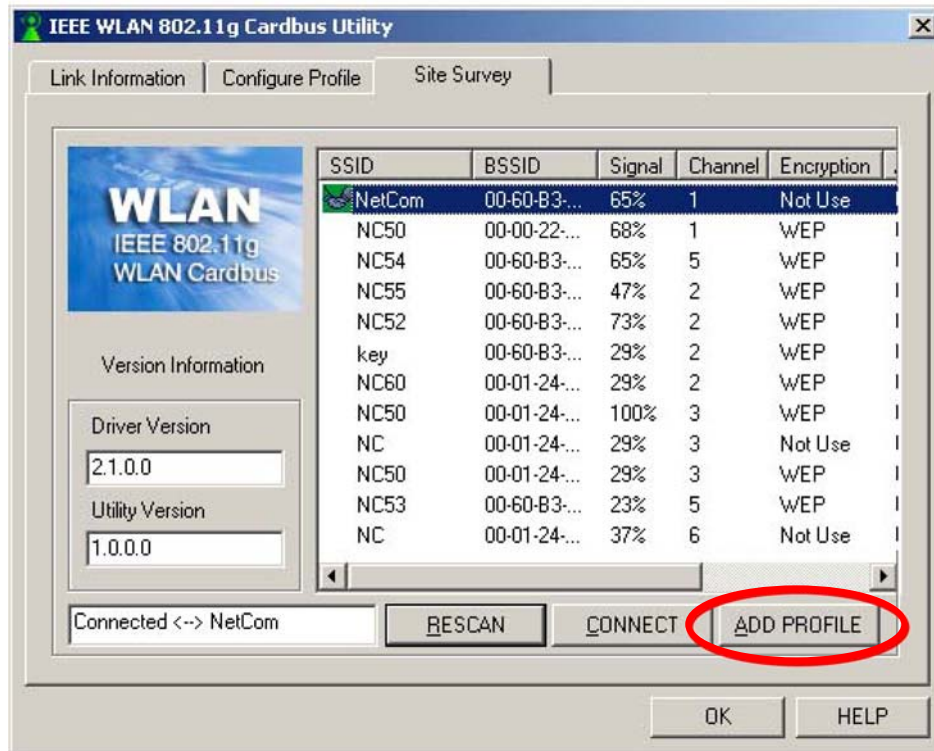
You may select the appropriated "**SSID**" and click"**Add Profile**" to set the profile.

Appendix A: Troubleshooting

Common Problems and Solutions

This chapter provides solutions to problems that may occur during the installation and operation of the WLAN 802.11g Cardbus. Read the descriptions below to solve your problems.

1. My computer does not recognize the Cardbus.
• Make sure the Cardbus is properly inserted into the CardBus slot. Note that the Cardbus can be inserted either way, but is correctly only when it is inserted so that the "Instant Wireless" logo on the front of the Cardbus cannot be seen. If in doubt, try inserting the Cardbus both ways. The Cardbus will slide in further when it is correct.

2. The Cardbus does not work properly.
• Reinsert the Cardbus into your notebook's CardBus slot. A beep should be heard if the Cardbus is properly inserted.
• For non-Windows environments, make sure that a CARDBUS card service driver is installed on your PC.
• Open the **Control Panel** and click the **PC Card**. Check whether it has a Cardbus in one of the sockets or not. If you find the Cardbus in one of the sockets, it means that the Cardbus has been detected properly. If you see a yellow question mark, the resources are in conflict.
• Right-click **My Computer** and select **Properties**. Select **Device Manager** and click the **Network Adapter**. You will find the WLAN 802.11g Cardbus if it is installed successfully. If you see the yellow exclamation mark, the resources are in conflict. Click **Cardbus** and then click **Cardbus service**. You will see the status of the Cardbus. If there is a yellow question mark please check the following:
• Make sure that your notebook has a free IRQ.
• Make sure that you have inserted the right Cardbus and installed the proper driver.

If the Cardbus does not function after attempting the above steps, remove the Cardbus and do the following:
• Uninstall the driver software from your PC.
• Restart your PC and repeat the hardware and software installation as specified in this User Guide.

3. I cannot communicate with a wired computer linked via an access point in the infrastructure configuration.

• Make sure that the notebook PC is powered on.

• Make sure that the Cardbus is configured with the same SSID and security options as the other computers in the infrastructure configuration.

Frequently Asked Questions

1. Can I run an application from a remote computer over the wireless network?

This will depend on whether or not the application is designed to be used over a network. Consult the application's user guide to determine if it supports operation over a network.

2. Can I play computer games with other members of the wireless network?

Yes, as long as the game supports multiple players over a LAN (local area network). Refer to the game's user guide for more information.

3. What is Spread Spectrum?

Spread Spectrum technology is a wideband radio frequency technique developed by the military for use in reliable, secure, mission-critical communications systems. It is designed to trade off bandwidth efficiency for reliability, integrity, and security. In other words, more bandwidth is consumed than in the case of narrowband transmission, but the trade-off produces a signal that is, in effect, louder and thus easier to detect, provided that the receiver knows the parameters of the spread-spectrum signal being broadcast. If a receiver is not tuned to the right frequency, a spread-spectrum signal looks like background noise. There are two main alternatives, Direct Sequence Spread Spectrum (DSSS) and Frequency Hopping Spread Spectrum (FHSS).

4. What is DSSS? What is FHSS? And what are their differences?

Frequency-Hopping Spread-Spectrum (FHSS) uses a narrowband carrier that changes frequency in a pattern that is known to both transmitter and receiver. Properly synchronized, the net effect is to maintain a single logical channel. To an unintended receiver, FHSS appears to be short-duration impulse noise. Direct-Sequence Spread-Spectrum (DSSS) generates a redundant bit pattern for each bit to be transmitted. This bit pattern is called a chip (or chipping code). The longer the chip, the greater the probability that the original data can be recovered. Even if one or more bits in the chip are damaged during transmission, statistical techniques embedded in

the radio can recover the original data without the need for retransmission. To an unintended receiver, DSSS appears as low power wideband noise and is rejected (ignored) by most narrowband receivers.

5. Would the information be intercepted while transmitting on air?
WLAN features two-fold protection in security. On the hardware side, as with Direct Sequence Spread Spectrum technology, it has the inherent security feature of scrambling. On the software side, WLAN offers the encryption function (WEP) to enhance security and access control.

6. What is WEP?
WEP is Wired Equivalent Privacy, a data privacy mechanism based on a 64-bit or 128-bit shared key algorithm, as described in the IEEE 802.11 standard.

7. What is infrastructure mode?
When a wireless network is set to infrastructure mode, the wireless network is configured to communicate with a wired network through a wireless access point.

8. What is roaming?
Roaming is the ability of a portable computer user to communicate continuously while moving freely throughout an area greater than that covered by a single access point. Before using the roaming function, the workstation must make sure that it is the same channel number with the access point of dedicated coverage area.

To achieve true seamless connectivity, the wireless LAN must incorporate a number of different functions. Each node and access point, for example, must always acknowledge receipt of each message. Each node must maintain contact with the wireless network even when not actually transmitting data. Achieving these functions simultaneously requires a dynamic RF networking technology that links access points and nodes. In such a system, the user's end node undertakes a search for the best possible access to the system. First, it evaluates such factors as signal strength and quality, as well as the message load currently being carried by each access point and the distance of each access point to the wired backbone. Based on that information, the node next selects the right access point and registers its address. Communications between end node and host computer can then be transmitted up and down the backbone. As the user moves on, the end node's RF transmitter regularly checks the system to determine whether it is in touch with the original access point or whether it should seek a new one. When a node no longer receives acknowledgment from its

original access point, it undertakes a new search. Upon finding a new access point, it then re-registers, and the communication process continues.

9. What is ISM band?

The FCC and their counterparts outside of the U.S. have set aside bandwidth for unlicensed use in the ISM (Industrial, Scientific and Medical) band. Spectrum in the vicinity of 2.4 GHz, in particular, is being made available worldwide. This presents a truly revolutionary opportunity to place convenient high-speed wireless capabilities in the hands of users around the globe.

10. What is the IEEE 802.11g standard?

Approved in June, 2003 as an IEEE standard for wireless local area networks (WLANs), 802.11g offers wireless transmission over relatively short distances at up to 54 megabits per second (Mbps) compared with the 11 megabits per second of the 802.11b (Wi-Fi) standard. Like 802.11b, 802.11g operates in the 2.4 GHz range and is thus compatible with it.

Appendix B: Glossary

802.11b – One of the IEEE standards of wireless networking hardware. Products that adhere to a specific IEEE standard will work with each other, even if they are manufactured by different companies. The 802.11b standard specifies a maximum data transfer rate of 11Mbps, an operating frequency of 2.4GHz, and WEP encryption for security.   802.11b networks are also referred to as Wi-Fi networks.

802.11g – Refers to the proposed extension of the IEEE 802.11 standard for wireless networking, which has not been ratified by IEEE. The 802.11g specifications specifies a maximum data transfer rate of 54Mbps using OFDM modulation, an operating frequency of 2.4GHz, backward compatibility with IEEE 802.11b devices and WEP encryption for security.

Ad-hoc Network - An ad-hoc network is a group of computers, each with a wireless adapter, connected as an independent 802.11 wireless LAN. Ad-hoc wireless computers operate on a peer-to-peer basis, communicating directly with each other without the use of an access point. Ad-hoc mode is also referred to as an Independent Basic Service Set (IBSS) or as peer-to-peer mode, and is useful at a departmental scale or SOHO operation.

CTS (**C**lear **T**o **S**end) – An RS-232 signal sent from the receiving station to the transmitting station that indicates it is ready to accept data.

Default Gateway - The router used to forward all traffic that is not addressed to a station within the local subnet.

DHCP (**D**ynamic **H**ost **C**onfiguration **P**rotocol)- A protocol that lets network administrators manage centrally and automate the assignment of Internet Protocol (IP) addresses in an organization's network. Using the Internet's set of protocol (TCP/IP), each machine that can connect to the Internet needs a unique IP address. When an organization sets up its computer users with a connection to the Internet, an IP address must be assigned to each machine. Without DHCP, the IP address must be entered manually at each computer and, if computers move to another location in another part of the network, new IP address must be entered. DHCP lets a network administrator supervise and distribute IP address from a central point and automatically sends a new IP address when a computer is plugged into a different place in the network.

DHCP uses the concept of a "lease" or amount of time that a given IP address will be valid for a computer. The lease time can vary depending on how long a user is likely to require the Internet connection at a particular location. It's especially useful in education and other environments where users change frequently. Using very short lease, DHCP can dynamically reconfigure networks in which there are more computers than there are available IP address.

DHCP supports static addresses for computers containing Web servers that need a permanent IP address.

DNS – The domain name system (DNS) is the way that Internet domain name are located and translated into Internet Protocol (IP) addresses. A domain name is a meaningful and easy-to-remember "handle" for an Internet address.

DSSS (**D**irect-**S**equence **S**pread **S**pectrum) – DSSS generates a redundant bit pattern for all transmitted data. This bit pattern is called a chip (or chipping code). Even if one or more bits in the chip are damaged during transmission, statistical techniques embedded in the receiver can recover the original data without the need for retransmission. To an unintended receiver, DSSS appears as low power wideband noise and is rejected(ignored) by most narrowband receivers. However, to an intended receiver (i.e. another wireless LAN endpoint), the DSSS signal is recognized as the only valid signal, and interference is inherently rejected (ignored).

Dynamic IP Address – An IP address that is automatically assigned to a client station in a TCP/IP network, typically by a DHCP server. Network devices that serve multiple users, such as servers and printers, are usually assigned static IP addresses.

ESS (**E**xtended **S**ervice **S**et) – A set of more than two or more BSSs (multiple access points) forming a single network.

Firmware – Code that is written onto read-only memory (ROM) or programmable read-only memory (PROM). Once firmware has been written onto the ROM or PROM, it is retained even when the device is turned off.

IEEE – The Institute of Electrical and Electronics Engineers. The IEEE describes itself as "the world's largest technical professional society – promoting the development and application of electro-technology and allied sciences for the benefit of humanity, the advancement of the profession, and the wellbeing of our members." The IEEE fosters the development of standards that often become national and

international standards. The organization publishes a number of journals, has many local chapters, and several large societies in special areas, such as the IEEE Computer Society.

Infrastructure Network – An Infrastructure network is a group of computers or other devices, each with a wireless adapter, connected as an 802.11 wireless LAN. In infrastructure mode, the wireless devices communicate with each other and to a wired network by first going through an access point. An infrastructure wireless network connected to a wired network is referred to as a Basic Service Set (BSS). A set of two or more BSS in a single network is referred to as an Extended Service Set(ESS). Infrastructure mode is useful at a corporation scale, or when it is necessary to connect the wired and wireless networks.

IP Address – In the most widely installed level of the Internet Protocol(IP) today, an IP address is a 32 – binary digit number that identifies each sender or receiver of information that is sent in packet across the Internet. When you request   an HTML page or send e-mail, the Internet Protocol part of   TCP/IP includes your IP address in the message (actually, in each of the packets if more than one is required) and sends it to the IP address that is obtained by looking up the domain name in the Uniform Resource Locator you requested or in the e-mail address you're sending a note to. At the other end, the recipient can see the IP address of the Web page requester or the e-mail sender and can respond by sending another message using the IP address it received.

IPCONFIG – A utility that provides for querying, defining and managing IP addresses within a network. A commonly used utility, under Windows NT and 2000, for configuring networks with static IP addresses.

ISP – An ISP (Internet service provider) is a company that provides individuals and companies access to the Internet and other related services such as Web site building and virtual hosting.

LAN – A local area network (LAN) is a group of computers and associated devices that share a common communications line and typically share the resource of a single processor or server within a small geographic area (for example, within an office building).

MAC Address – The MAC (Media Access Control) address is your computer's

unique hardware number.

mIRC – mIRC runs under Windows and provides a graphical interface for logging onto IRC servers and listing, joining and leaving channels.

Network Mask – also known as the "Subnet Mask".

OFDM – Developed for wireless applications, Orthogonal Frequency Division Multiplexing (OFDM) technology offers superior performance-increased data rates and more reliable transmissions- than previous technologies, such as DSSS. OFDM is a scheme in which numerous signals of different frequencies are combined to form a single signal for transmission on the medium. OFDM works by breaking one high-speed data stream into a number of lower-speed data streams, which are than transmitted in parallel. Each lower speed stream is used to modulate a sub-carrier. Essentially, this creates a multi-carrier transmission by dividing a wide frequency band or channel into a number of narrower frequency bands or sub-channels. OFDM is also used for other applications, including powerline networking.

Roaming - In an infrastructure mode wireless network, this refers to the ability to move out of one access point's range and into another and transparently reassociate and reauthenticate to the new access point. This reassociation and reauthentication should occur without user intervention and ideally without interruption to network connectivity. A typical scenario would be a location with multiple access points, where users can physically relocate from one area to another and easily maintain connectivity.

SSID (**S**ervice **S**et **I**dentifier) - An identification name that wireless devices use to make connections. In order for wireless devices to communicate, they must all be set to the same channel and they all must use the same SSID. For instance, if you are using an access point to connect two computers using wireless devices, the access point and each of the wireless devices must use the same SSID. Even if they are set to the same channel, they cannot communicate unless the SSID is the same.

Static IP Address - A permanent IP address that is assigned to a node in a TCP/IP network.

Subnet Mask - The method used for splitting IP networks into a series of subgroups,

or subnets. The mask is a binary pattern that is matched up with the IP address to turn part of the host ID address field into a field for subnets.

TCP (**T**ransmission **C**ontrol **P**rotocol) - A method (protocol) used along with the IP (Internet Protocol) to send data in the form of message units (datagram) between network devices over a LAN or WAN. While IP takes care of handling the actual delivery of the data (routing), TCP takes care of keeping track of the individual units of data (called packets) that a message is divided into for efficient delivery over the network. TCP is known as a "connection oriented" protocol due to requiring the receiver of a packet to return an acknowledgment of receipt to the sender of the packet resulting in transmission control.

TCP/IP (**T**ransmission **C**ontrol **P**rotocol/**I**nternet **P**rotocol) - The basic communication language or set of protocols for communications over a network (developed specifically for the Internet). TCP/IP defines a suite or group of protocols and not only TCP and IP.

UDP (**U**ser **D**atagram **P**rotocol) - A method (protocol) used along with the IP (Internet Protocol) to send data in the form of message units (datagram) between network devices over a LAN or WAN. While IP takes care of handling the actual delivery of the data (routing), UDP takes care of keeping track of the individual units of data (called packets) that a message is divided into for efficient delivery over the network. UDP is known as a "connection-less" protocol due to NOT requiring the receiver of a packet to return an acknowledgment of receipt to the sender of the packet (as opposed to TCP). **WEP** (**W**ired **E**quivalent **P**rivacy) - A data privacy mechanism based on a 64- bit shared key algorithm, as described in the IEEE 802.11b standard. **WINIPCFG** - Configuration utility based on the Win32 API for querying, defining and managing IP addresses within a network. A commonly used utility under Windows 95, 98SE, and Me.

WLAN (**W**ireless **L**ocal **A**rea **N**etwork) - A group of computers and associated devices that communicate with each other wirelessly.

Appendix C: Specification

Item	Key specifications
Dimension (estimated)	110(L) × 54(w) × 6(H) mm
LED status (TBD)	Power Supply LED: (PWR) • Green Solid – Normal Operation • OFF – No Power Date Link LED: (LINK) • Green solid – When insert and link successfully • Green Flashing – Data is transmitted or received.
Antenna	Printing Antenna
Weight	~ 45g
MAC/BB	Ralink RT2560
RF	Ralink RT2525
Power Amplifier	RFIC AP1091
EEPROM	Atmel AT93C66
Host Interface	32-bit cardbus
Operation Voltage	3.3V +/- 5%
Frequancy Range	2.412 ~ 2.497Ghz
Channel Support	US/Canada: 11 (1~11) Europe: 13 (1~13) France: 4 (10~13) Japan: 13 (1~13)
Standard Compliance	802.11b, 802.11g
Modulation	802.11b: CCK(11Mbps), DQPSK(2Mbps), DBPSK(1Mbps) 802.11g: OFDM
Power Consumption (estimated)	Tx: < 380mA @3.3VDC Rx: < 230mA @3.3VDC Idle Mode: < 5mA @3.3VDC
Transmission Rate	802.11b: 1, 2, 5.5, 11Mbps 802.11g: 6, 9, 12, 18, 24, 36, 48, 54Mbps
Access Mode	Ad-Hoc and Infrastructuremode
Security	64-bit/128-bit WEP AES WPA CCX 1.0/2.0
Oprating System	Windows 98SE, 2K, ME, XP, Linux

Operation Range (estimated)	Indoor: 20m @54Mbps 60m @18Mbps 75m @11Mbps 125m @1Mbps Outdoor: 50m @54Mbps 150m @18Mbps 180m @11Mbps 570m @1Mbps
Operation Voltage	3.3V
Storage Temperature	-20 @ 72 hrs ~ 80°C @ 72hrs
Operating Temperature	-10 @ 24 hrs ~ 70°C @ 24 hrs
EMI Certification	◆ FCC part 15 (USA) ◆ Telec (Japna) ◆ CE (Europe)
Wi-Fi Complaint	
WHQL	Windows 98, 2000, ME, XP

* The supplier reserves the rights to change any information in this manual without notice.