



**WLAN 11g PCMCIA Card**  
**WLAN 11g PCI Card**

User Manual

ver 1.0

# INFORMATION TO USER

Product Name: X-Micro WLAN 11g PCMCIA Card  
X-Micro WLAN 11g PCI Card  
Model Name : XWL-11GPAR  
XWL-11GCAR



## 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.

The 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 instruction, may cause harmful interference to radio communication. However, there is no grantee 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.

**Notice:** The Part 15 radio device operates on a non-interference basis with other devices operating at this frequency. Any changes or modification not expressly approved by the party responsible could void the user's authority to operate the device.

## REGULATORY INFORMATION

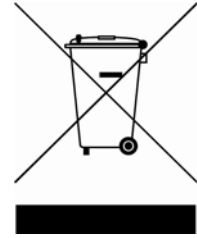
X-Micro 11g WLAN PCMCIA Card and X-Micro 11g WLAN PCI Adapter must be installed and used in strict accordance with the manufacturer's instructions. This device complies with the following radio frequency and safety standards.

### USA - Federal Communications Commission (FCC)

This device complies with Part 15 of FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference.
2. This device must accept any interference that may cause undesired operation.

# CE 0470 !



## Europe - R&TTE Directive

This device complies with the specifications listed below

- ETS 300-826 General EMC requirements for Radio equipment.
- ETS 300-328 Technical requirements for Radio equipment.
- EN60950 Safety Requirements for Radio equipment

The channel identifiers, channel center frequencies, and regulatory domains of each 22-MHz-wide channel are shown in following Table.

COUNTRY		CHANNELS	MAX. OUT POWER	
			INDOOR	OUTDOOR
Spain	2400-2483.5 MHz	1-13	< 100 mW EIRP	< 100 mW EIRP
France	2400-2454 MHz	1-8	< 100 mW EIRP	< 100 mW EIRP
France	2454-2483.5 MHz	9-13	< 100 mW EIRP	< 10 mW EIRP
Italy	2400-2483.5 MHz	1-13	< 100 mW EIRP	< 100 mW EIRP
UK	2400-2483.5 MHz	1-13	< 100 mW EIRP	< 100 mW EIRP
Netherlands	2400-2483.5 MHz	1-13	< 100 mW EIRP	< 100 mW EIRP
Germany	2400-2483.5 MHz	1-13	< 100 mW EIRP	< 100 mW EIRP
Austria	2400-2483.5 MHz	1-13	< 100 mW EIRP	< 100 mW EIRP
Belgium	2400-2483.5 MHz	1-13	< 100 mW EIRP	< 100 mW EIRP
Switzerland	2400-2483.5 MHz	1-13	< 100 mW EIRP	< 100 mW EIRP
Luxemburg	2400-2483.5 MHz	1-13	< 100 mW EIRP	< 100 mW EIRP
Russia	2400-2483.5 MHz	1-13	<10 mW EIRP	<10 mW EIRP
Ireland	2400-2483.5 MHz	1-13	< 100 mW EIRP	< 100 mW EIRP
Portugal	2400-2483.5 MHz	1-13	< 100 mW EIRP	< 100 mW EIRP
Norway	2400-2483.5 MHz	1-13	< 100 mW EIRP	< 100 mW EIRP
Denmark	2400-2483.5 MHz	1-13	< 100 mW EIRP	< 100 mW EIRP
Finland	2400-2483.5 MHz	1-13	< 100 mW EIRP	< 100 mW EIRP
Iceland	2400-2483.5 MHz	1-13	< 100 mW EIRP	< 100 mW EIRP
Greece	2400-2483.5 MHz	1-13	< 100 mW EIRP	< 100 mW EIRP
Lichtenstein	2400-2483.5 MHz	1-13	< 100 mW EIRP	< 100 mW EIRP
Sweden	2400-2483.5 MHz	1-13	< 100 mW EIRP	< 100 mW EIRP

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# **INTRODUCTION**

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Congratulations on your purchase of this 108Mbps IEEE 802.11g Wireless PCMCIA /PCI Adapter.

This manual helps to get familiar with the Wireless PCMCIA /PCI Adapter. This manual contains detailed instructions in operation of this product. Please keep this manual for future reference.

With a Wireless (IEEE 802.11g) PCMCIA /PCI Adapter, a laptop computer or a station can communicate with another computer in a wireless way. Easy-to-use utilities are bundled with Wireless PCMCIA /PCI Adapter for configuration, monitoring, and diagnosis purposes.

Wireless PCMCIA /PCI Adapter can wirelessly transmit and receive data, minimizing the need for wired connections, at a speed of up to fifty-four megabit per second. With Wireless PCMCIA /PCI Adapter, you can locate your Notebook PC or station wherever you want without wires and cables.

Wireless PCMCIA /PCI Adapter provides users with an access to real-time information anywhere in their organization. The mobility provides productivity and service, which are not available under wired networks. The Wireless PCMCIA /PCI Adapter configuration is easy to change from peer-to-peer networks, suitable for a small number of users, to full infrastructure networks of thousands of users that allow roaming around a broad area.

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## **Purpose**

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This guide discusses how to install your 108M 802.11g Wireless LAN PCMCIA /PCI Adapter.

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## **Terms/Usage**

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In this guide, the term “the WLAN PCMCIA /PCI Adapter” refers to your 108M 802.11g Wireless LAN PCMCIA /PCI Adapter.

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## **Overview of this User’s Guide**

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**Introduction.** Describes the WLAN PCMCIA /PCI Adapter

**Unpacking and Setup.** Helps you get started with the basic installation of the WLAN PCMCIA /PCI Adapter.

**Hardware Installation.** Describes the LED indicators of the Adapter.

**Software Installation.** Tells how to setup the driver and the utility setting.

**Technical Specifications.** Lists the technical (general, physical and environmental) specifications of the WLAN PCMCIA /PCI Adapter.

## ***UNPACKING AND SETUP***

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This chapter provides unpacking and setup information for the Wireless PCMCIA /PCI Adapter.

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### **Unpacking**

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Open the box of the Wireless PCMCIA /PCI Adapter and carefully unpack it. The box should contain the following items:

- ◆ One 108Mbps IEEE 802.11g Wireless PCMCIA /PCI Adapter
- ◆ One Driver & Utility with User's Guide CD-ROM

If any item is found missing or damaged, please contact your local reseller for replacement.

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### **Setup**

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The setup of the Wireless PCMCIA /PCI Adapter can be performed using the following steps:

- ◆ Visually inspect the PCMCIA /PCI Adapter and make sure that it is fully plugged in to the CardBus slot / PCI slot.
- ◆ Make sure that there is a well environment that there is no much intrusion to have a better connection.

# **HARDWARE INSTALLATION**

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## **LED Indicator**

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### **Power (PWR)**

The PWR indicator lights green while the Wireless PCMCIA /PCI Adapter is connecting to the CardBus /PCMCIA or PCI slot, otherwise, it is off.

### **ACT (Activity)**

The ACT indicator blinks green when the Wireless PCMCIA /PCI Adapter is connected to a network successfully and transmitting data. Otherwise the indicator is off while the Wireless LAN is stand by.

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## **Check the installation**

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The LEDs of the Wireless PCMCIA /PCI Adapter are clearly visible and the status of the network link can be seen instantly:

1. Once the device is plugged to the station's CardBus/PCMCIA or PCI slot, the PWR LED of the Wireless PCMCIA /PCI Adapter will light up indicating a normal status.
2. When the device plugged to the station's CardBus/PCMCIA or PCI slot and the driver was installed, the ACT and PWR LED will start alternate blinking, it means that the device is starting to scan the wireless devices near the Wireless PCMCIA /PCI Adapter.
3. While the Wireless PCMCIA /PCI Adapter linked up and transmitting data to the Access Point or to other Wireless LAN station, the ACT LED will start blinking.

# SOFTWARE INSTALLATION

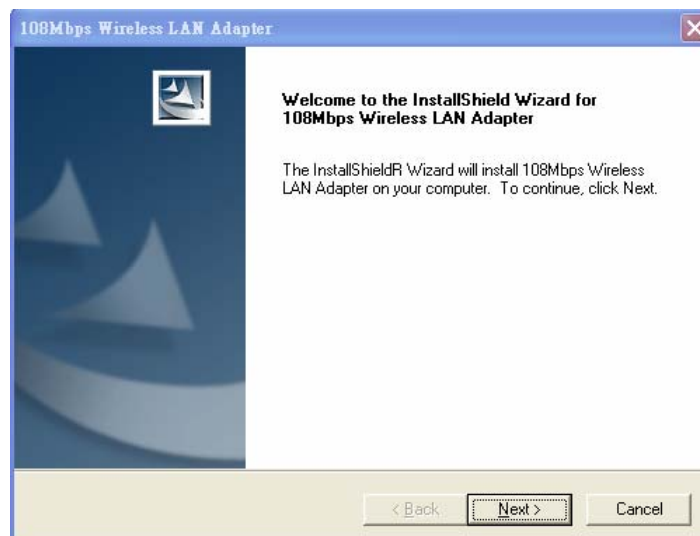
This section will lead you to install the driver and utility of the Wireless PCMCIA /PCI Adapter.

## Windows 98se/ME/2000/XP Utility and Driver Installation

1. Insert the Wireless PCMCIA /PCI Adapter Driver & Utility CD-ROM into computer's CD-ROM Drive and it will automatically run a setup menu and install the driver and the utility. In some specific setting on Windows system, you may need to proceed the software manually, go to your Windows Start menu and choose **Run**, type "D:\Utility\Setup.exe" in the dialog box (D:\ will depend on where your CD-ROM drive is located) and click **OK**.
2. If you need to install the driver manually, refer each Windows OS to the following CD-Rom directory path: D:\Driver\\net5211.inf.  
**Note:** (D:\ will depends on where the CD-ROM drive is located and <Windows OS> will depend on the Windows OS you are using).



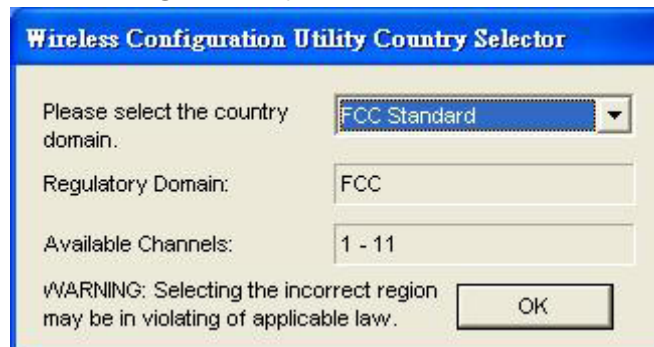
3. The Install Shield Wizard screen will appear. Click "**Next**" to continue.



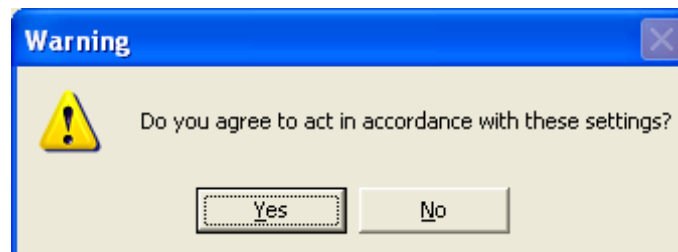
4. The installation program will help you to setup the Wireless PCMCIA /PCI Adapter utility.

***Be noted that the Windows XP have its own Wireless Utility; you can either use the utility of Windows XP or the provided utility.***

5. After finish the installation, plugged in the WLAN PCMCIA /PCI Adapter, you will see Wireless Configuration Utility Country Selector, select the country where you are using this Wireless device, users are responsible for ensuring that the channel set configuration is in compliance with the regulatory standards of these countries.



***Warning: Be noted that selecting the incorrect region may result in a violation of applicable law; you will need to select the correct domain.***



6. When the WLAN PCMCIA /PCI Adapter was installed, you will see the icon on the Windows task bar.



When the icon in the toolbar represents in green color, it is properly connected to the network and if it represents in red color, then it is not connected to the network.

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## Wireless Utility Setting

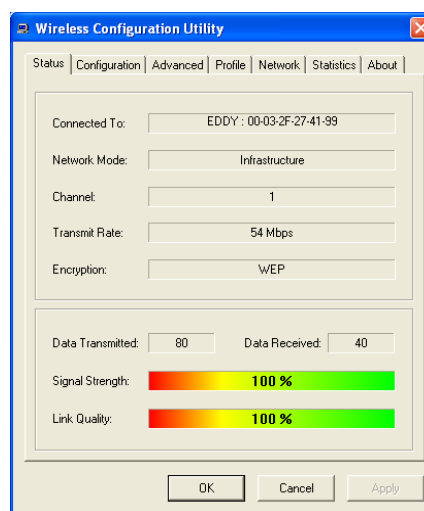
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With the WLAN PCMCIA /PCI Adapter utility, users can configure all the functions provided by the Wireless Monitor Utility. Double-click the utility icon that appears in the taskbar.

The Wireless Monitor Utility includes seven tabs: Status, Configuration, Advanced, Profile, Network, Statistics and About.

### Status

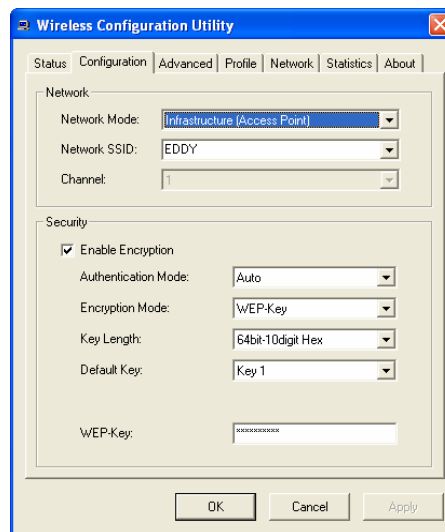
The Status screen shows you the status of the PCMCIA /PCI Adapter, it shows that where the device is connected to, the Network mode, the Channel, the transmit rate and the encryption mode.



There is another dialog box showing the data transmitted and data received. The two signal lines show the Signal Strength and the Link Quality of the device

## Configuration

The Configuration function helps you to configure the Network and the Security.



**Network:** the setting of the *Network mode*, the *Network SSID* and the *Channel*:

➤ **Network Mode:**

If you want to connect with an Access Point, please set to “Infrastructure” mode. If you have more stations and just want to set them as local network, please set the mode to “802.11 Ad-Hoc” mode.

➤ **Network SSID:**

The SSID differentiates one Wireless LAN group name from another; so all access points and all devices attempting to connect to a specific Wireless LAN group name must use the same SSID. A device will not be permitted to join the BSS unless it can provide the unique SSID.

➤ **Channel:**

It shows radio channel numbers that used for Wireless LAN networking.

The channel number can be set only under the Ad-Hoc operation mode. In Ad-Hoc mode stations, each station must have the same channel numbers and SSID.

In Infrastructure mode, the WLAN PCMCIA /PCI Adapter will automatically detect the channel number of the Access Point.

**Security:** the setting of the Network Encryption:

This function is used to protect wireless communication from eavesdropping. A secondary function of encryption is to prevent unauthorized access to a wireless network, and it can be achieved by

using the Encryption function.

➤ **Enable Encryption:**

**Enable** or **Disable** the WLAN encryption on the WLAN PCMCIA /PCI Adapter.

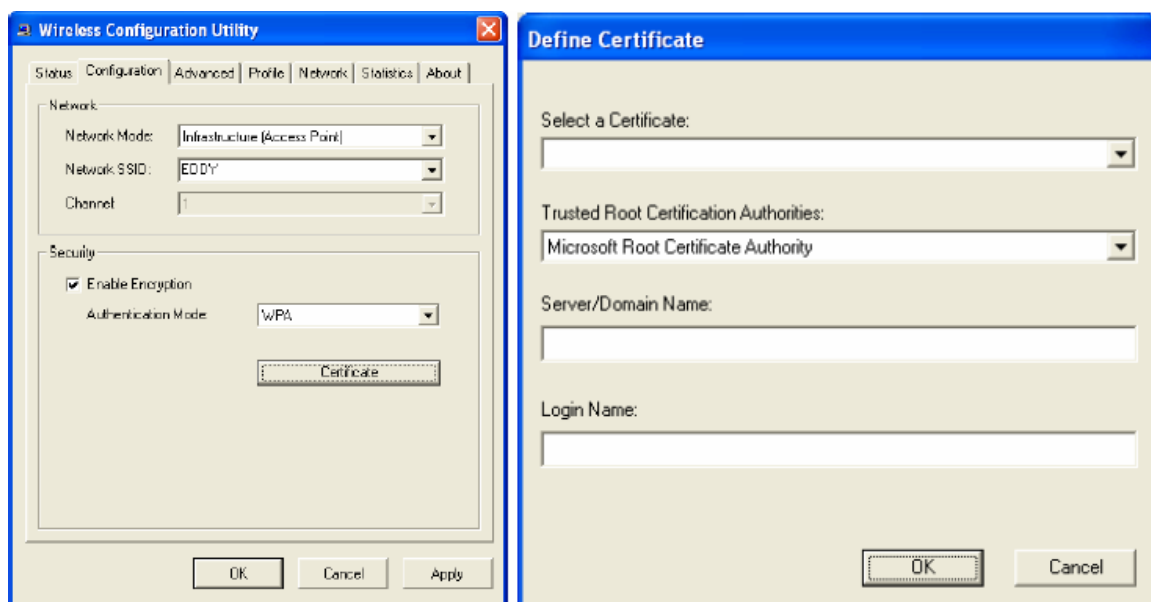
➤ **Authentication Mode:**

**Auto:** Will automatically adjust to the Authentication mode of the WLAN PCMCIA /PCI Adapter.

**Open System:** with the same WEP key between the stations, the stations don't need to be authenticated, and this algorithm was set to default.

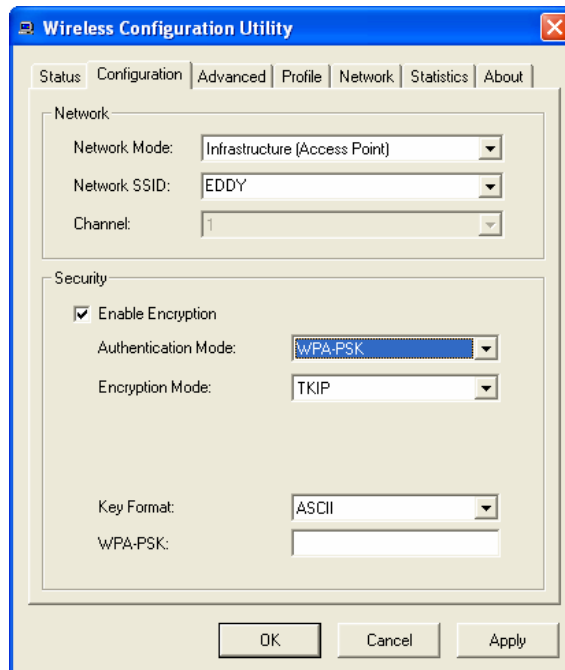
**Shared Key:** with the same WEP key between the stations in this Authentication algorithm, this type will use packets with encryption by transferring a challenge text which will be acknowledge by both side of the stations. In order to choose which authentication algorithm will be used, you must know which one the station supports this algorithm first.

**WPA: WPA (Wi-Fi Protected Access)** security is selected, configuration is enabled. Please click the **“Certificate”** button. The below window is pop up. Then, please select the certificate that user wants to use and enter the server name and login name.

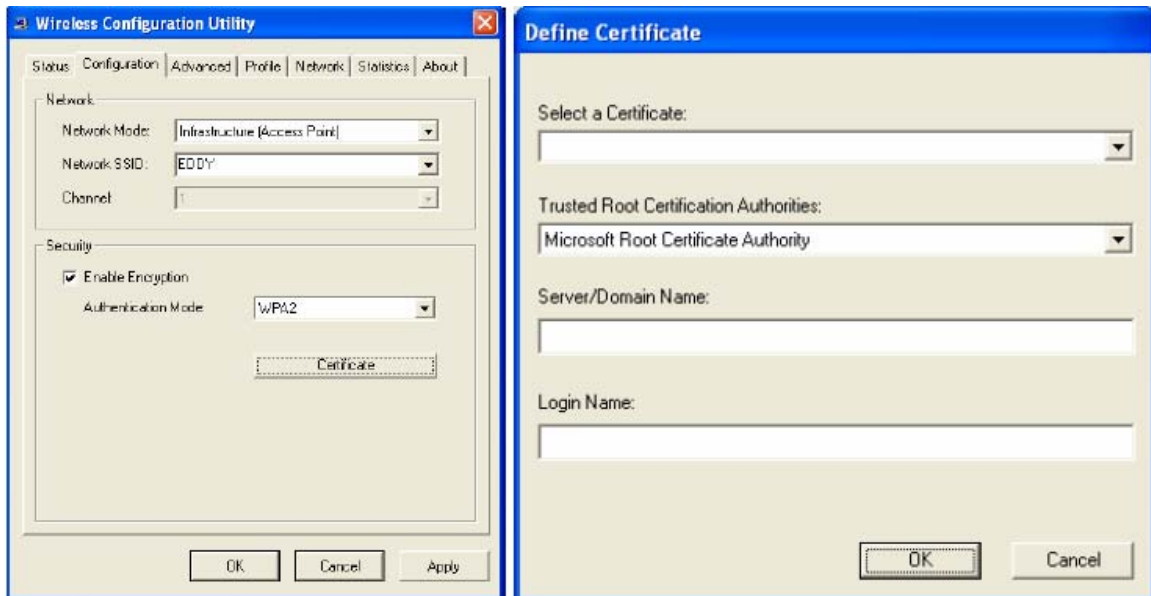


**WPA-PSK:** WPA-PSK (Wi-Fi Protected Access pre-shared key) is a simpler version that does not support 802.1x and requires a separate RADIUS server for mutual authentication.

Enter a Passphrase in the WPA-PSK dialog box. This Passphrase must be the same on each computer that is connected to the wireless network.

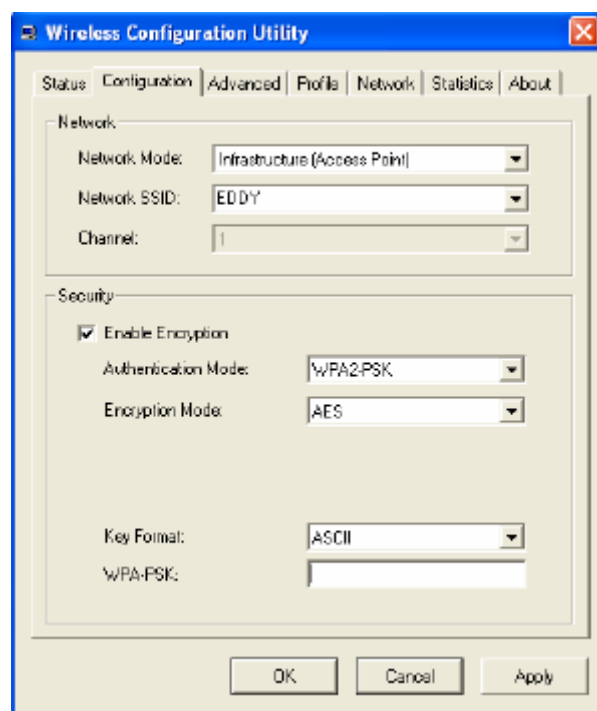


**WPA2: WPA2 (Wi-Fi Protected Access 2)** is the second generation of WPA; providing enterprise and consumer Wi-Fi user with a high level of assurance that only authorized user can access their wireless networks. WPA2 is based on the final IEEE802.11i amendment to the 802.11 standard and is eligible for FIPS 140-2 compliant. WPA2 is select, configuration is enabled. Please click the “**Certificate**” button. The below window is pop up. Then, please select the certificate that user wants to use and enter the server name and login name.



**WPA2-PSK:** WPA-PSK2 (Wi-Fi Protected Access pre-shared key) is a simpler version that does not support 802.1x and requires a separate RADIUS server for mutual authentication.

Enter a Passphrase in the WPA2-PSK dialog box. This Passphrase must be the same on each computer that is connected to the wireless network.



It is recommended to select **“Auto”** if you are not familiar with the setting.

➤ **Encryption Mode:**

There are two kinds of encryption mode, **WEP encryption** and **WPA-Passphrase..**

Click the **Enable Encryption** to activate the security of the PCMCIA

/PCI Adapter.

**WEP-Key:** WEP (Wired Equivalent Privacy) relies on a secret key that is shared between a mobile station and a base station (Access Point).

**WEP-Passphrase:** the Passphrase in the dialog box helps you to create a group of WEP key in the Key Setting.

➤ Default Key (Key 1 ~ Key 4):

You can type the key that you want to use from Key#1 to Key #4, and the key that you type will be the encryption between the stations that you connected with.

➤ Key Length, Key Format and WEP Key:

If you select 64bit in Hex format, you must type 10 values in the following range (0~F, hexadecimal), or 64bit in ASCII format, you must type 5 values in the following range (0~9, A~Z and a~z Alphanumeric).

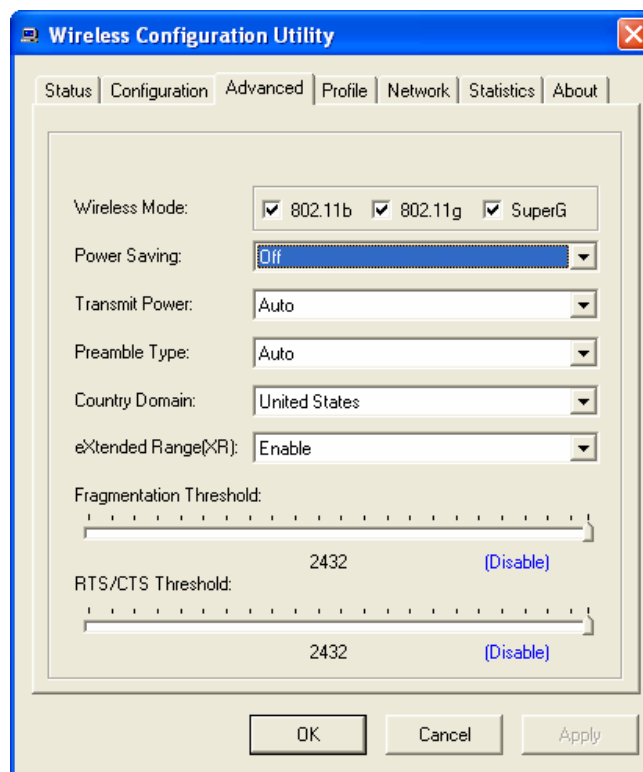
If you select 128bit in Hex format, you must type 26 values (0~F, hexadecimal), or 128bit in ASCII format, you must type 13 values in the following range (0~9, A~Z and a~z Alphanumeric).

Be sure that the PCMCIA /PCI Adapter and the wireless station were set in the same key.

**Note: After all the settings are completed, click Apply to save the setting.**

### Advanced

The Advanced settings help you to control the PCMCIA /PCI Adapter to adjust with wireless devices in certain environment.



- **Wireless Mode:**

You can check of the wireless modes; 802.11b, 802.11g and SuperG:

**IEEE 802.11b:** checked to support IEEE 802.11b wireless mode, at this mode the bandwidth is up to 11Mbps.

**IEEE 802.11g:** checked to support IEEE 802.11g wireless mode, at this mode the bandwidth is up to 54Mbps.

**SuperG:** checked this mode to support Super-G wireless mode, at this mode the bandwidth is up to 108Mbps.
- **Power Saving:**

To set your Wireless PCMCIA /PCI Adapter as power saving mode, select “Off”, “Normal” or “Maximum”.
- **Transmit Power:**

By selecting the Transmit Power, you can select the Radio Frequency output power from Minimum, 12.5%, 25%, 50%, 100% or Auto.
- **Preamble Type:**

The usage of the preamble is to limit the packet size of the data to transmit. It is recommended to choose the short preamble when the link quality is bad, it is to prevent the wasting time of resending a long packet that is lost. The Default is Auto which access short and long preamble.
- **Country Domain:**

This is the channel selection of each country regulatory domain, select the country where you are using this wireless device, users are responsible for ensuring that the channel set configuration is in compliance with the regulatory standards of these countries.
- **eXtended Range(XR):**

Enable or Disable the eXtended Range function.
- **Fragment Threshold:**

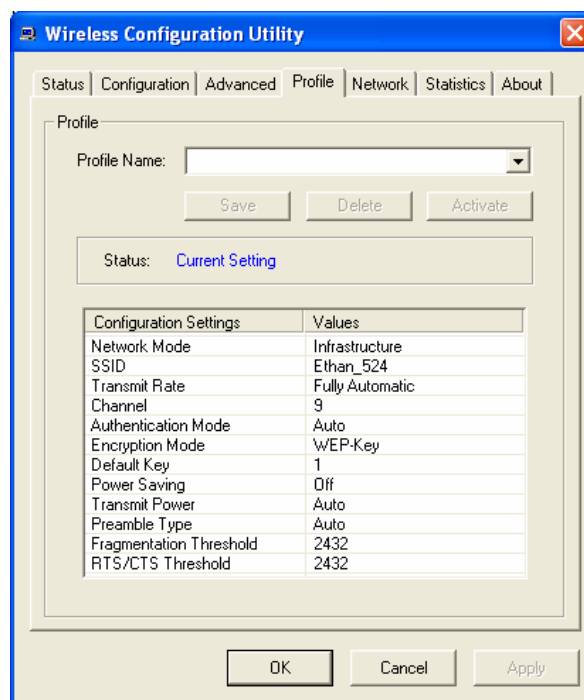
Fragmentation Threshold is a way of transmitting the packets that will be fragmented. Choose a setting within a range of 256 to 2432. It is recommended to fragment the packet when the link quality is bad, it is to prevent the wasting time of resending a long packet that is lost.

➤ **RTS/CTS Threshold:**

The RTS/CTS Threshold is a station initiates the process by sending a RTS frame, the other ends receives the RTS and responds with a CTS frame, the station must receive a CTS frame before sending the data frame. This is to prevent the collisions by each station. Choose a setting within a range of 256 to 2432. It is recommended limiting a long packet to prevent each station waiting too long to transmit a data.

## Profile

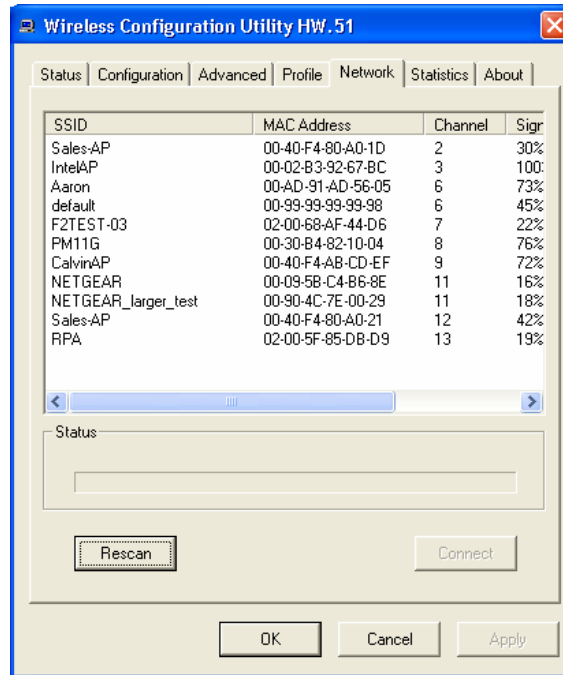
The Profile section allows you to set values for all parameters by selecting a previously defined profile. Type a name in the Profile Name field to create a profile, click “Save” and click “Apply” when a profile is done. You can click Delete if the profile is no longer used, to activate other profile, choose a profile name in the Profile Name field and click Activate.



## Network

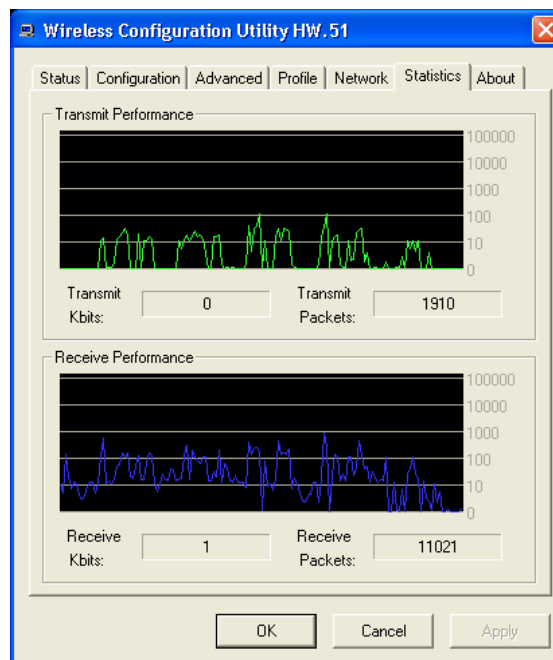
The screen shows all the Wireless devices around your Wireless PCMCIA /PCI Adapter. The information of the wireless devices includes the SSID, MAC Address, Channels, Signal, the Security type and the Network mode.

You can click the Rescan button to find the new wireless devices, and double-click the device to choose the wireless station that you want to connect with.



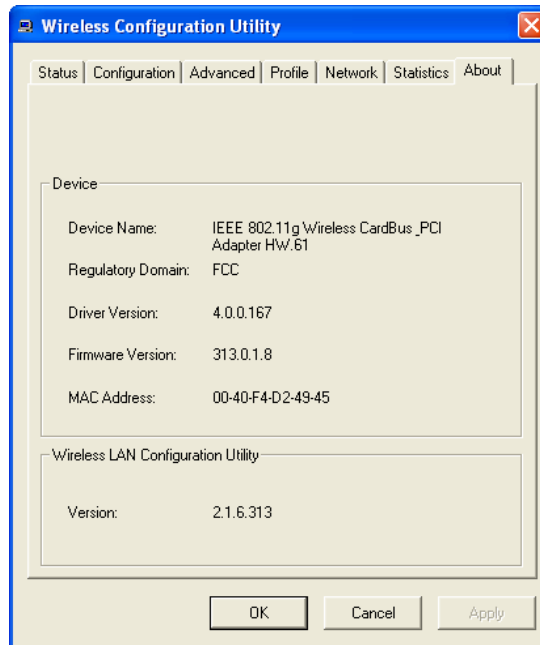
## Statistic

The Statistic section shows the real-time transmit and receive packets of the PCMCIA /PCI Adapter.



## About

The About section shows the Device Name, Regulatory Domain, Driver Version, Firmware Version, MAC Address and the Utility version.



## TECHNICAL SPECIFICATIONS

General	
Radio Technology	IEEE 802.11b Direct Sequence Spread Spectrum (DSSS) IEEE 802.11g Orthogonal Frequency Division Multiplexing (OFDM)
Interface	CardBus Type II specification 32bit data bus (PCMCIA) 32-bit PCI interface (PCI)
Data Transfer Rate	1, 2, 5.5, 6, 9, 11, 12, 18, 24, 36, 48, 54Mbps (auto sense)
Receiver Sensitivity	54Mbps: Typical -73dBm @ 10% PER (Packet Error Rate) 11Mbps: Typical -85dBm @ 8% PER (Packet Error Rate)
Transmit Rate	802.11g: 14dBm typically 802.11b: 17dBm typically
Frequency Range	2412 ~ 2484 MHz ISM band (channels 1 ~ 14)
Modulation Schemes	DBPSK/DQPSK/CCK/OFDM
Channels	1~11 channels (FCC), 1~13 channels (ETSI), 1~14 channels (MKK-Japan)
Media Access Protocol	CSMA/CA with ACK
Security	64/128-bits WEP Encryption, WPA
Diagnostic LED	PWR (Power) & LNK (Link status)
Antenna	Integrated Microstrip dual diversity antennas
Physical and Environmental	
Driver Support	Windows 98SE, Windows 2000, Windows ME, Windows XP
Continuous Current Consumption	250mA typ. for receive mode, 350mA typ. for transmit mode
Temperature	Operating: 0° ~ 40° C, Storage: -10° ~ 70° C
Humidity	10% ~ 95% RH, no condensation
Dimensions	118 x 54 x 7 mm (W x H x D)

Certifications	FCC Part 15.247 for US, ETS 300 328 for Europe,
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