802.11n 1x1 Wireless LAN USB module

WLU5110-D50(ROHS)

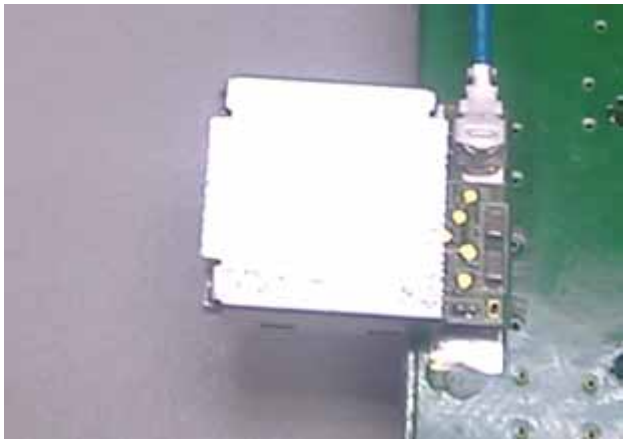
User’s Manual

Hardware Quick Installation Guide..... 3
INTRODUCTION 4
SOFTWARE INSTALLATION 6
NETWORK CONNECTION 10
Regulatory statement 32
Federal Communication Commission Interference Statement.. 32
Industry Canada Statement 34
NCC Statement ..... 錯誤! 尚未定義書籤。

Hardware Quick Installation Guide

Installing the 802.11n 1x1 Wireless LAN USB module

1. Power down the computer.
2. Plug the 802.11n 1x1 Wireless LAN USB module board to motherboard slot
3. Connect antennas used I-PEX connector for WiFi antenna.
4. Power on the computer.



Un-installing the 802.11n 1x1 Wireless LAN USB module

1. Power down the computer
2. Removed WiFi antenna
3. Carefully removed the802.11n 1x1 Wireless LAN USB module from the motherboard slot.
4. Power on the computer.

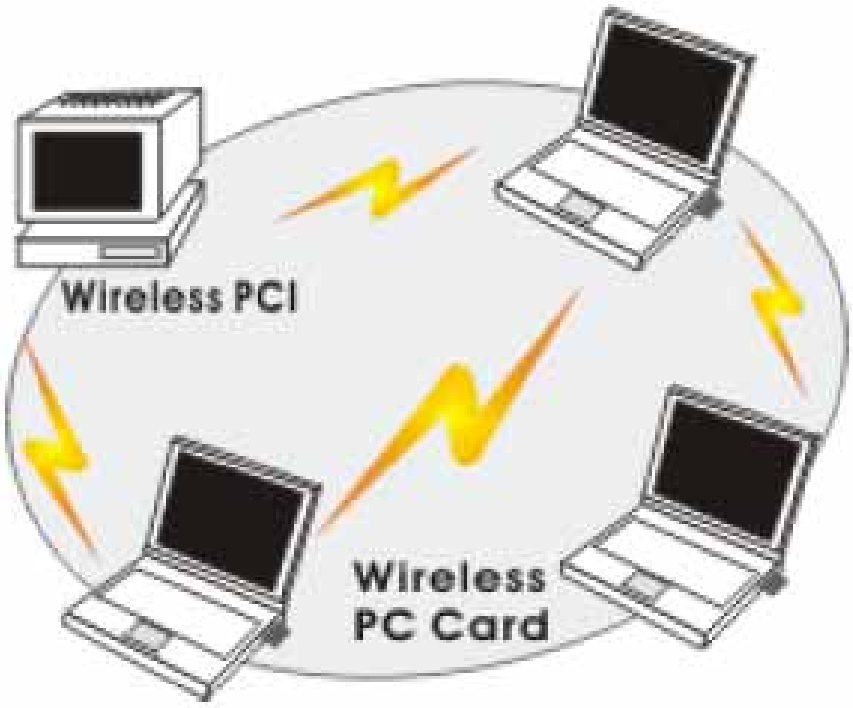
INTRODUCTION

The 802.11n 1x1 Wireless LAN USB module is a device that allows you connect your computer to a wireless local area network (LAN). A wireless LAN allows your system to use wireless Radio Frequency (RF) technology to transmit and receive data without physically attaching to the network. The Wireless protocols that come with this product ensure data security and isolation from interference generated by other radio frequencies. This card also allows you to take full advantage of your computer's mobility with access to real-time information and online services anytime and anywhere. In addition, this device eliminates the bother of pulling cable through walls and under furniture. It even allows you to place your system in locations where cabling is impossible. Modifying and augmenting networks has never been so easy.

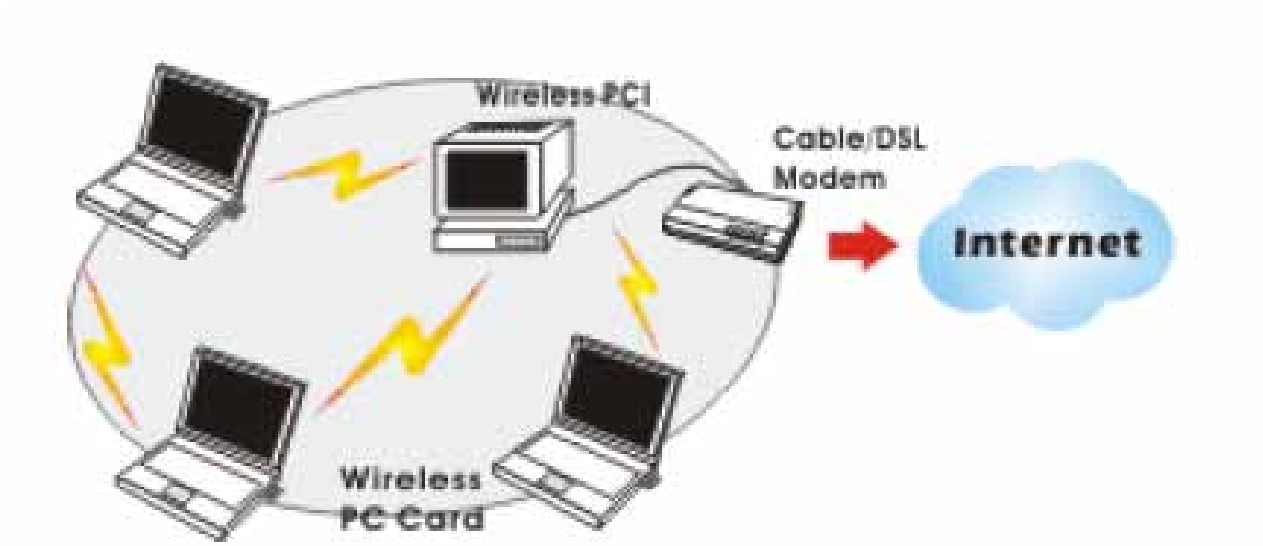
Wireless Network Options

The Peer-to-Peer Network

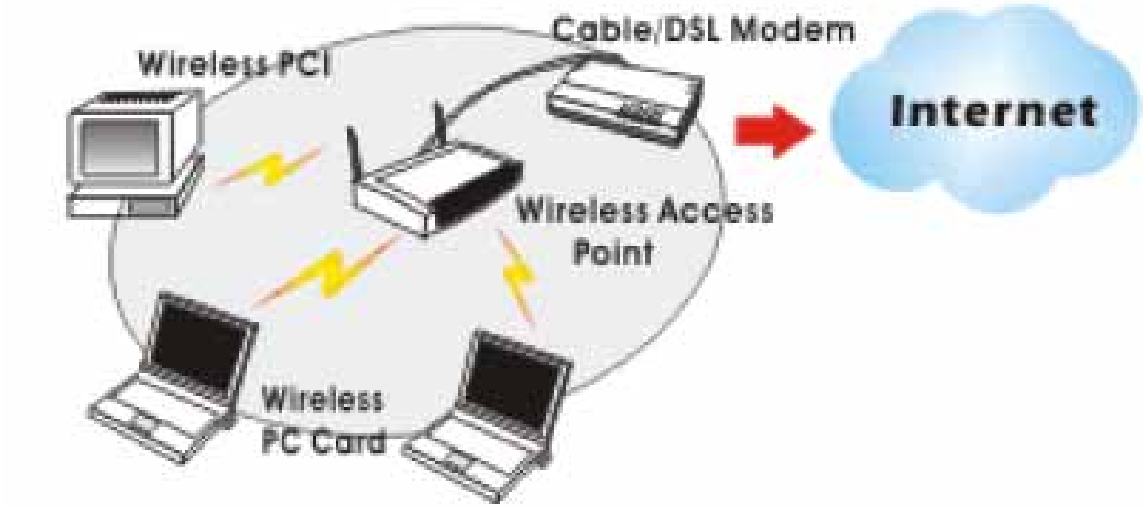
This network installation lets you set a small wireless workgroup easily and quickly. You can share files and printers between each PC and laptop.



You can also use one computer as an Internet Server to connect to a wired global network and share files and information with other computers via a wireless LAN.



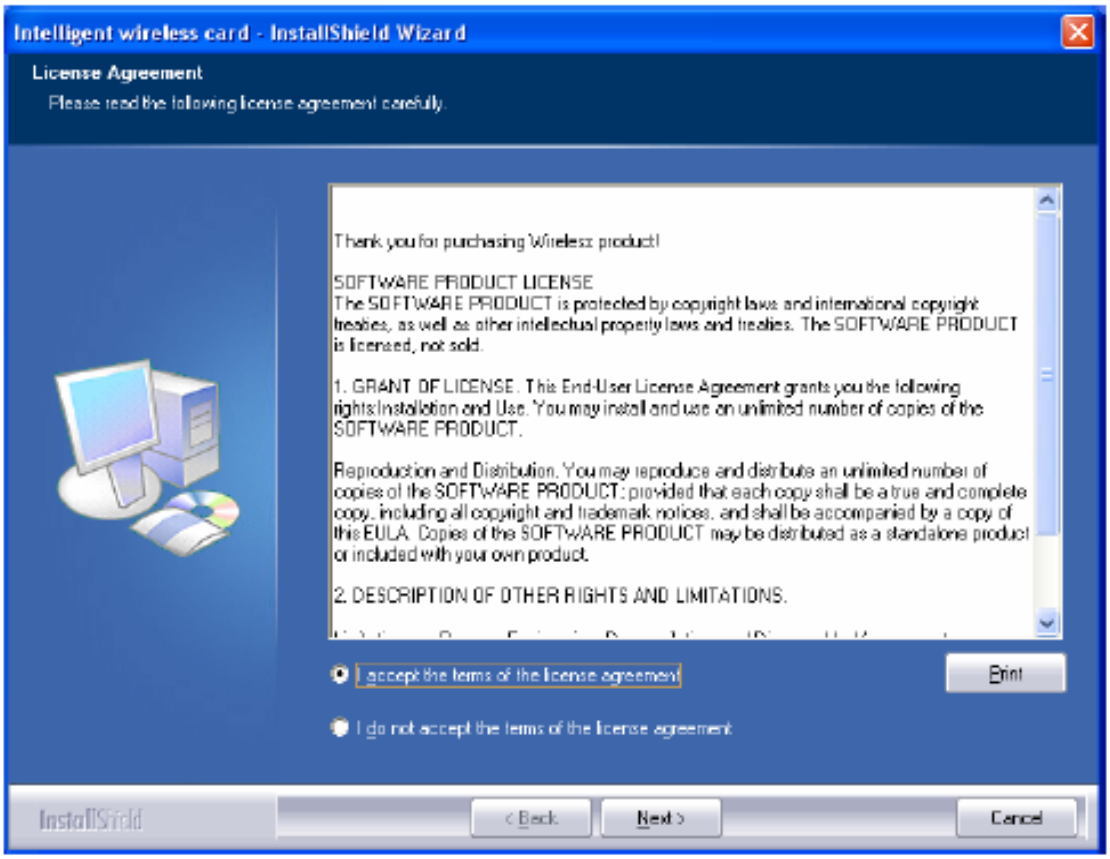
The Access Point Network The network installation allows you to share files, printers, and Internet access much more conveniently. With Wireless LAN Cards, you can connect wireless LAN to a wired global network via an Access Point.



SOFTWARE INSTALLATION

1. Exit all Windows programs. Insert the included CD-ROM into your computer. The CD-ROM will run automatically.

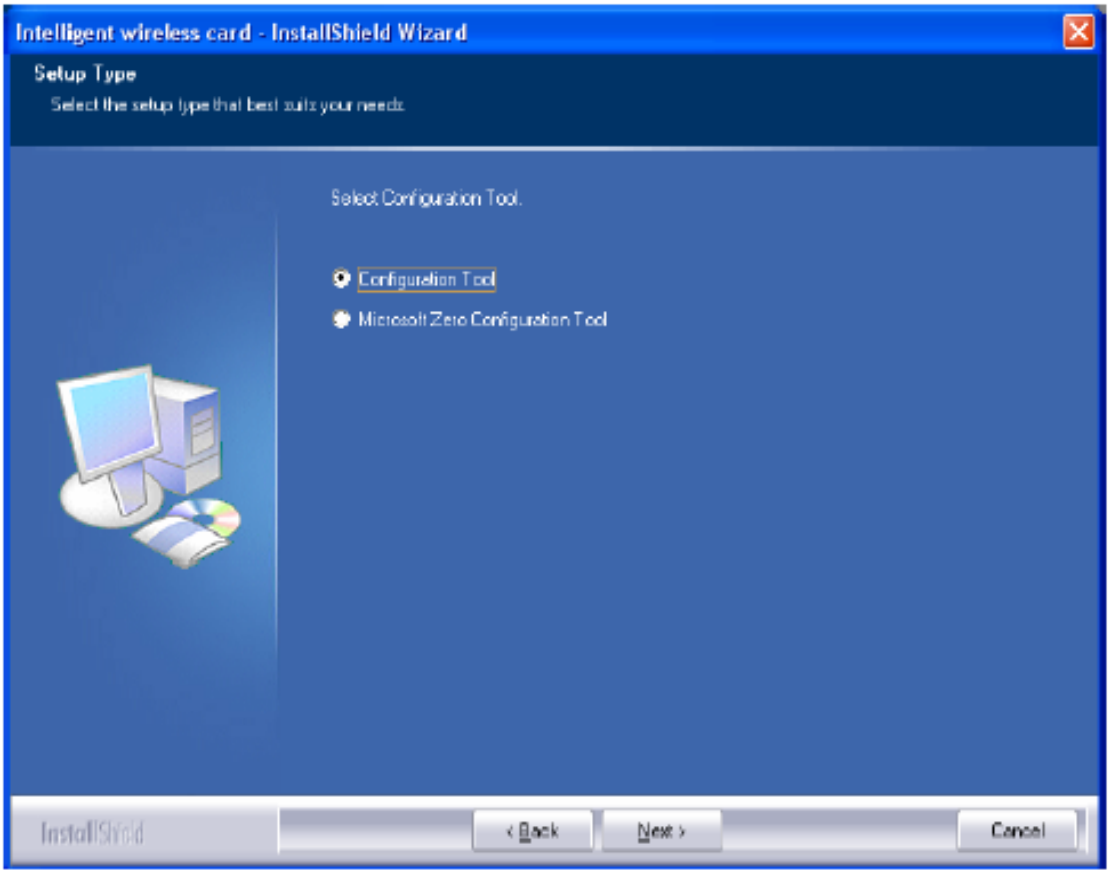
2. When the License Agreement screen appears, please read the contents and select “I accept the terms of the license agreement “ then click Next to continue.



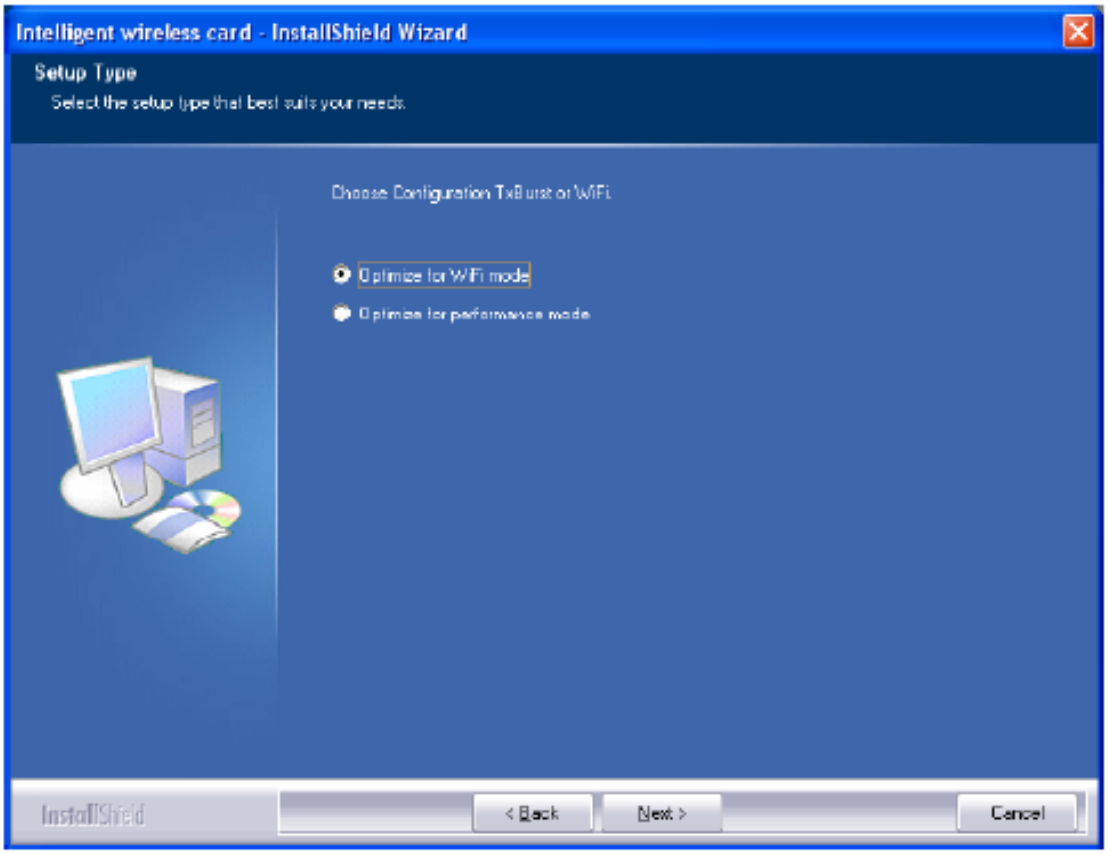
3. Select the check box to choose a Configuration Tool from the listed two choices.

- Configuration Tool: Choose to use our configuration utility.
- Microsoft Zero Configuration Tool: Choose to use Windows XP’s built-in Zero Configuration Utility (ZCU).

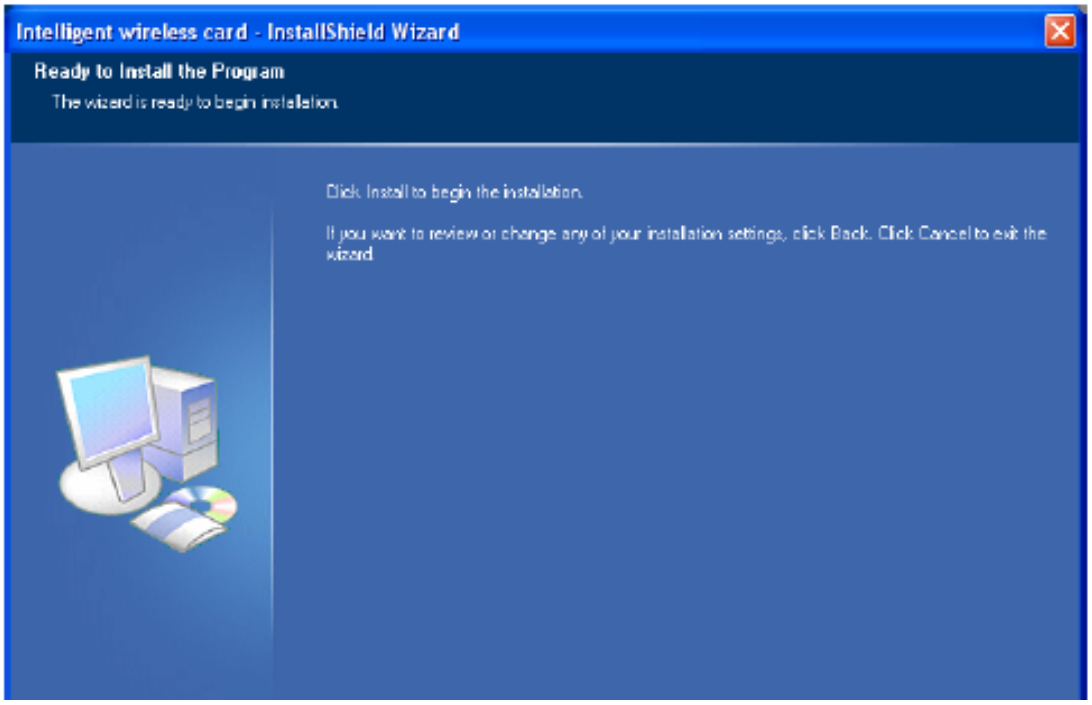
Click Next to continue.



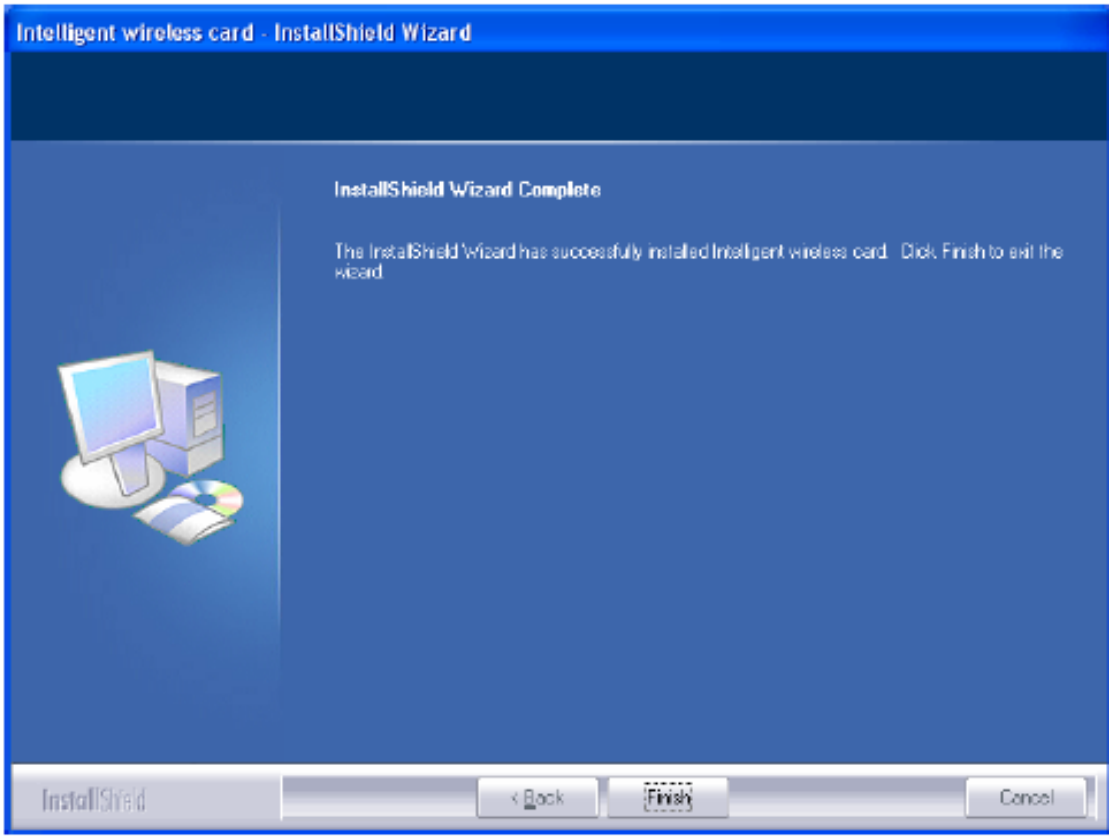
4. There are two modes for you to choose in this screen, either choose WiFi mode or performance mode (TxBurst mode). This mode selection screen is set for the default mode shown in the utility screen, you can still change its mode later in the utility screen. Click Next to continue.



5. When you are prompted the following message, please click Install to begin the installation.



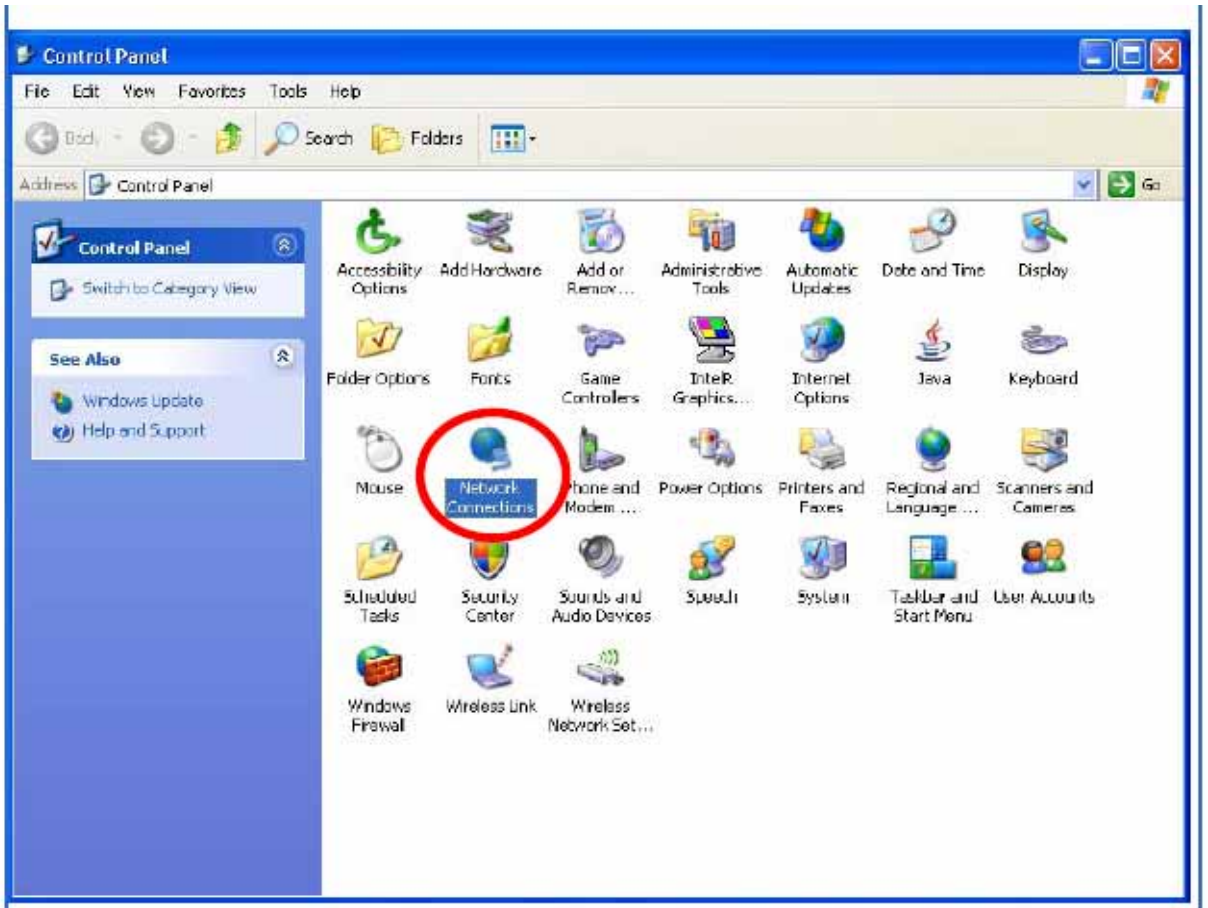
6. When the following screen appears, click Finish to complete the software installation.



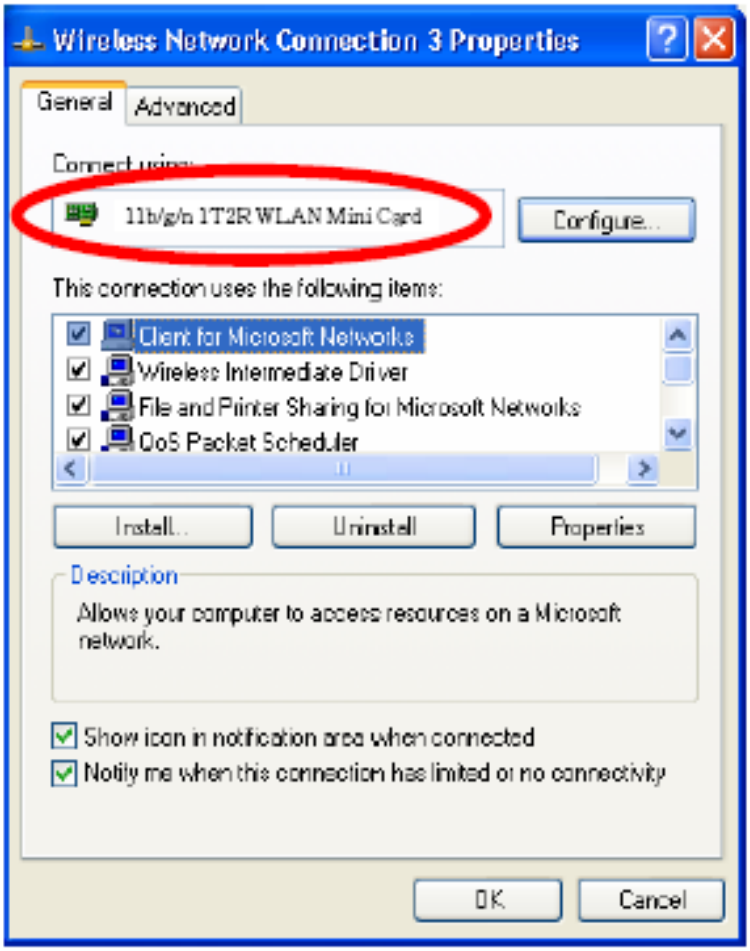
NETWORK CONNECTION

Once the device driver is well installed, a network setting described in the following should be also established.

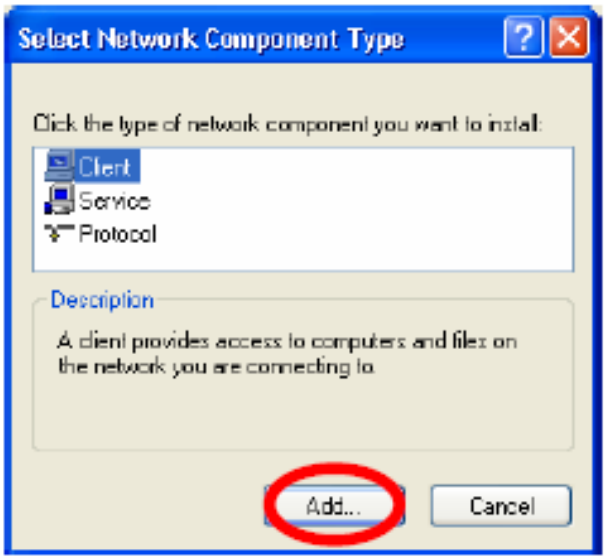
1. (In Windows 2000) Go to Start → Settings → Control Panel → Network and Dial-up Connections Local Area Connection → Properties.
2. (In Windows XP) Go to Start → Control Panel → Network and Internet Connections → Network Connections → Wireless Network Connection → Properties.



2. Make sure that all the required components are installed.



3. If any components are missing, click on the Install… button to select the Client/Service/Protocol required. After selecting the component you need, click Add… to add it in.



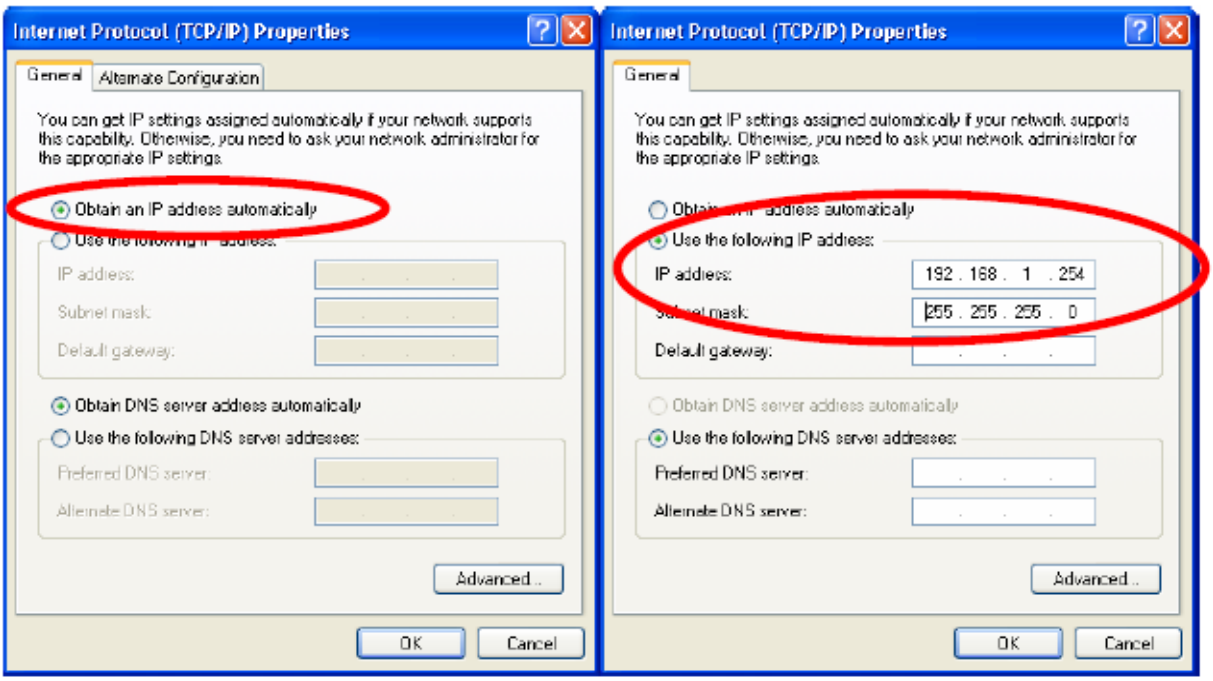
4. For making your computer visible on the network, make sure you have installed File and Printer Sharing for Microsoft Networks.

IP Address

Note: When assigning IP Addresses to the computers on the network, remember to have the IP address for each computer set on the same subnet mask. If your Broadband Router use DHCP technology, however, it won't be necessary for you to assign Static IP Address for your computer.

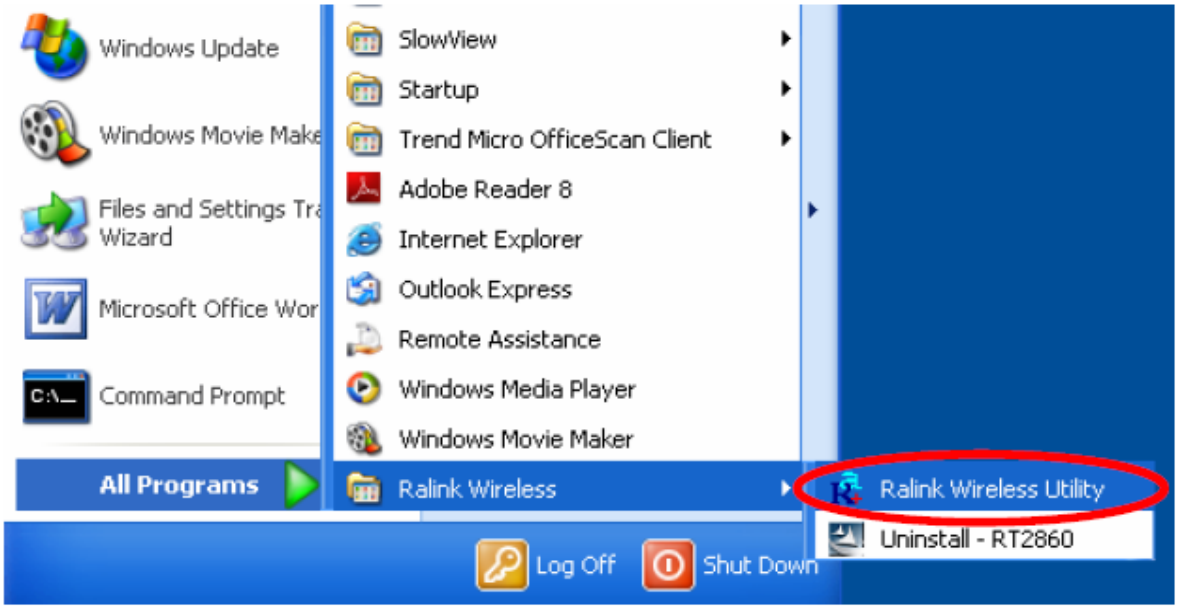
1. To configure a dynamic IP address (i.e. if your broadband Router has the DHCP technology), check the Obtain an IP Address Automatically option.

2. To configure a fixed IP address (if you broadband Router is not DHCP supported, or when you need to assign a static IP address), check the Use the following IP address option. Then, enter an IP address into the empty field; for example, enter 192.168.1.254 in the IP address field, and 255.255.255.0 for the Subnet Mask.

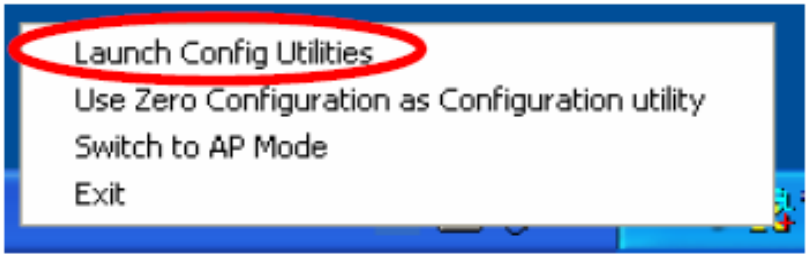


CONFIGURATION UTILITY

After the Wireless adapter has been successfully installed, users can use the included Configuration Utility to set their preference. Go to Start→ (All) Programs→ Ralink Wireless →Ralink Wireless Utility.



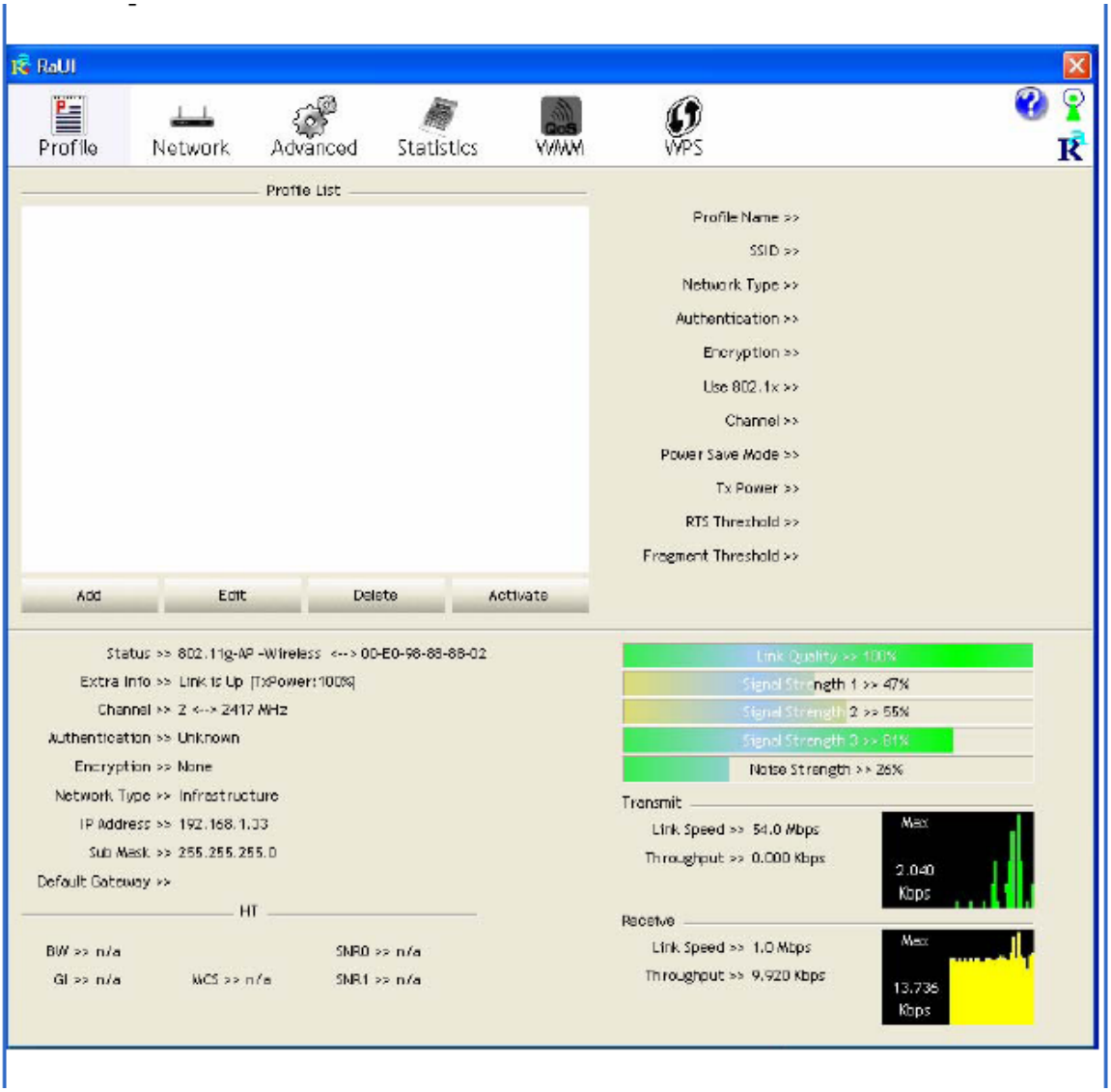
You can also open the Configuration Utility by double clicking the icon or right clicking to select Launch Config Utilities.



Intelligent Wireless Utility

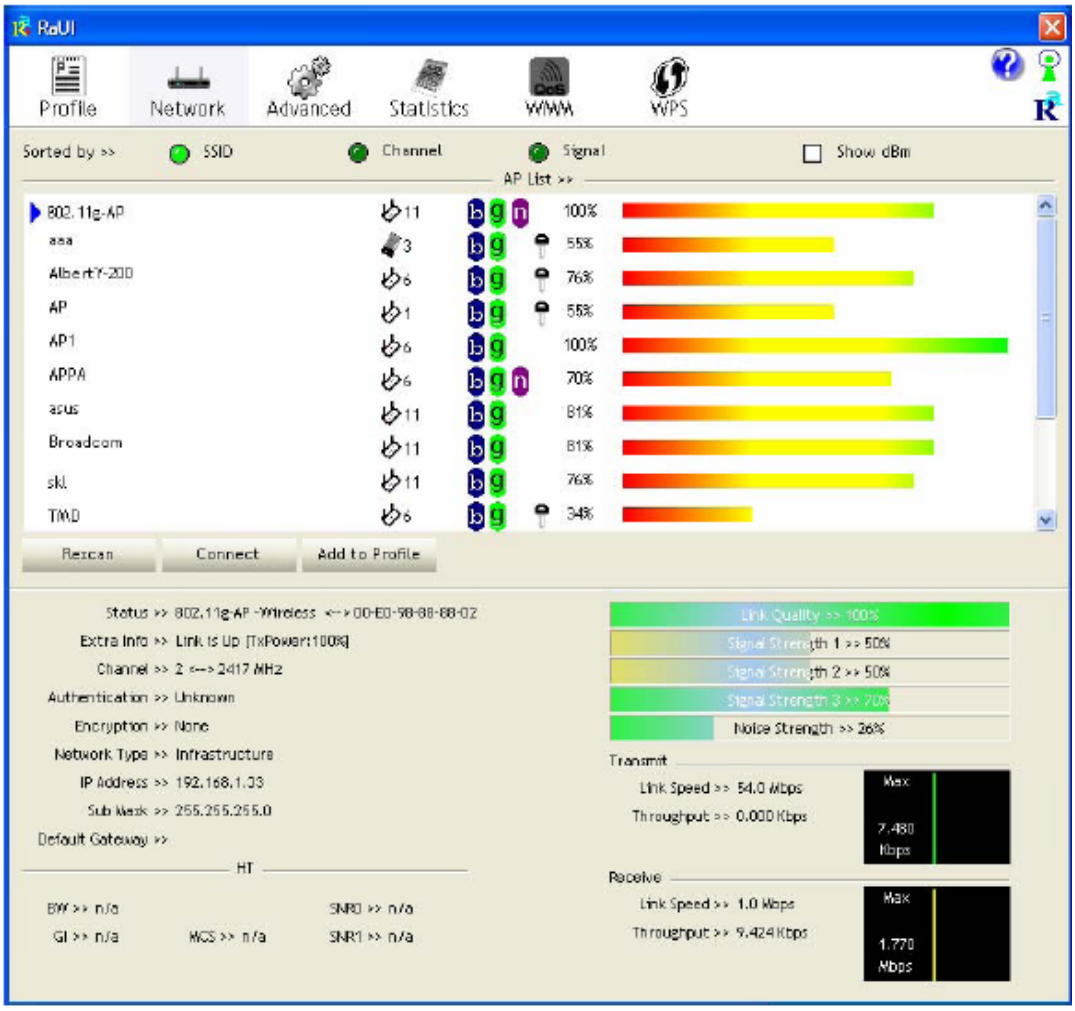
Profile

Profile can book keeping your favorite wireless setting among your home, office, and other public hot-spot. You may save multiple profiles, and activate the correct one at your preference. The Profile manager enables you to Add, Edit, Delete and Activate profiles.

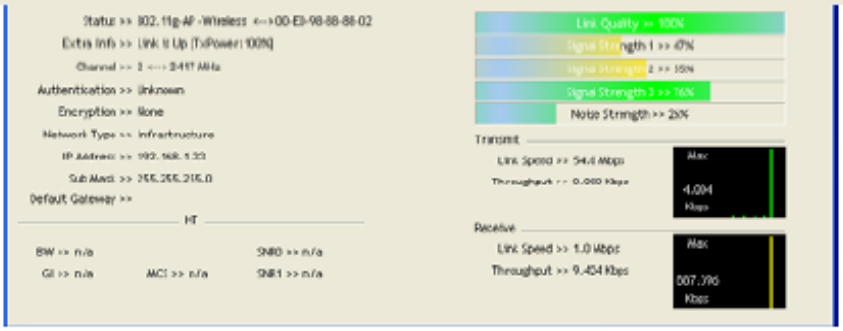


Profile Tab	
Profile Name	You may enter a distinctive name of profile in this column. The default is PROF# (# 1, #2, #3....)
SSID	The **SSID** is the unique name shared among all points in your wireless network.
Network Type	Shows the network type of the device, including infrastructure.
Authentication	Shows the authentication mode.
Encryption	Shows the encryption type.
Use 802.1x	Whether or not use 802.1x feature.
Channel	Shows the selected channel that is currently in use. (There are 13 channels available, depending on the country.)
Power Save Mode	Choose from CAM (Constantly Awake Mode) or Power Saving Mode.
Tx Power	Transmit power, the amount of power used by a radio transceiver to send the signal out.
RTS Threshold	Shows the RTS Threshold of the device.
Fragment Threshold	Shows the Fragment Threshold of the device.
Add	Click to add a profile from the drop-down screen. **System Configuration tab:**

Network The Network page displays the information of surrounding APs from last scan result. The tab lists the information including SSID, Network type, Channel, Wireless mode, Security-Enabled and Signal.



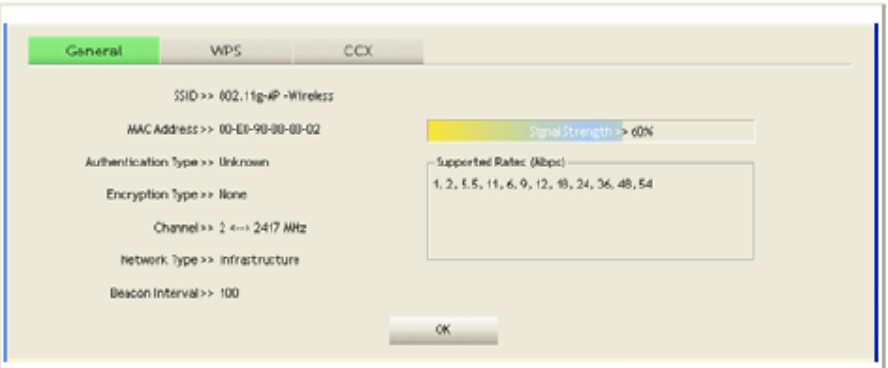
Network Tab	
Sorted by	Indicate that AP list are sorted by SSID, Channel or Signal.
Show dBm	Check the box to show the dBm of the AP list.
SSID	Shows the name of BSS network.
Network Type	Network type in use, Infrastructure for BSS.
Channel	Shows the currently used channel.
Wireless mode	AP support wireless mode. It may support 802.11a, 802.11b, 802.11g or 802.11n wireless mode.

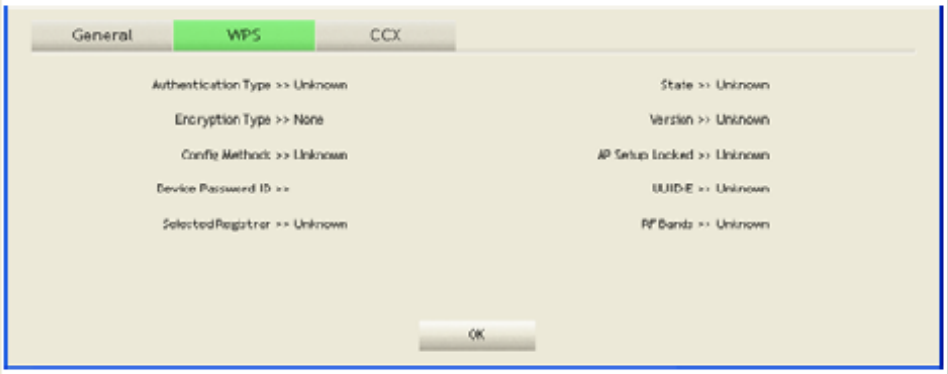
Encryption	Shows the encryption type currently in use. Valid value includes WEP, TKIP, AES, and Not Use.
Signal	Shows the receiving signal strength of specified network.
Rescan	Click to refresh the AP list.
Connect	Select an item on the list and then click to make a connection.
Add to Profile	Select an item on the list and then click to add it into the profile list.
Link status	
Status	Shows the current connection status. If there is no connection existing, it will show Disconnected.
Extra Info	Shows the link status.
Channel	Shows the current channel in use.
Authentication	Authentication mode used within the network, including Unknown, WPA-PSK, WPA2-PSK, WPA and WPA2.
Encryption	Shows the encryption type currently in use. Valid value includes WEP, TKIP, AES, and Not Use.
Network Type	Network type in use, Infrastructure for BSS.
IP Address	Shows the IP address information.
Sub Mask	Shows the Sub Mask information.
Default Gateway	Shows the default gateway information.
Link Quality	Shows the connection quality based on signal strength and

	TX/RX packet error rate.
Signal Strength 1, 2 and 3	Shows the Receiving signal strength, you can choose to display as percentage or dBm format.
Noise Strength	Shows the noise signal strength.
Transmit	Shows the current Link Speed and Throughput of the transmit rate.
Receive	Shows the current Link Speed and Throughput of receive rate.
Link Speed	Shows the current transmitting rate and receiving rate.
Throughput	Shows the transmitting and receiving throughput in the unit of K bits/sec.

AP information

When you double click on the intended AP, you can see AP's detail information that divides into three parts. They are General, WPS, CCX information. The introduction is as following:

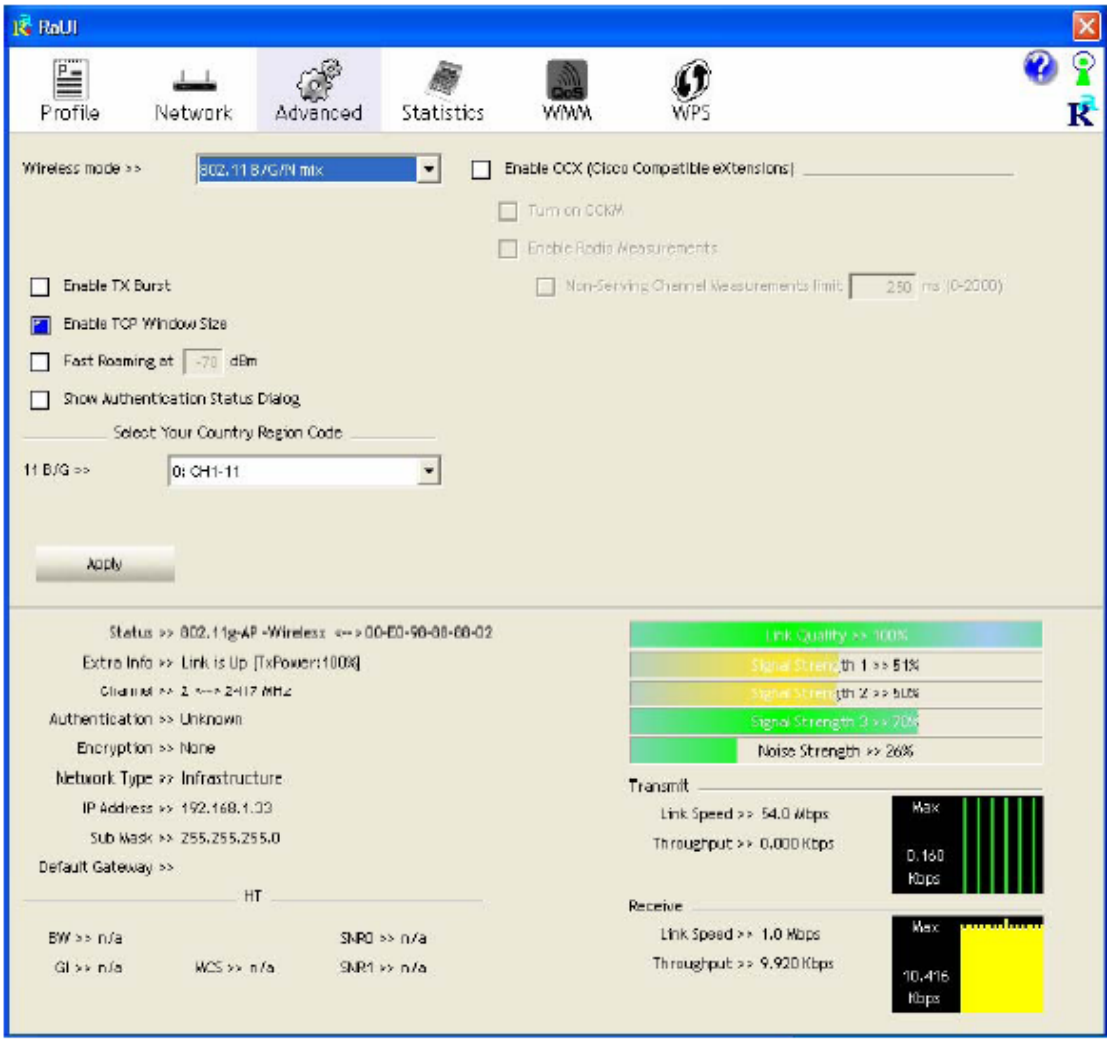
General	 General information contain AP's SSID, MAC address, Authentication Type, Encryption Type, Channel, Network Type, Beacon Interval, Signal Strength and Supported Rates. **OK**: Click this button to exit the information screen.

WPS	 WPS information contains Authentication Type, Encryption Type, Config Methods, Device Password ID, Selected Registrar, State, Version, AP Setup Locked, UUID-E and RF Bands. **Authentication Type**: There are four types of authentication modes supported by RaConfig. They are open, Shared, WPA-PSK and WPA system. **Encryption Type**: For open and shared authentication mode, the selection of encryption type are None and WEP. For WPA, WPA2, WPA-PSK and WPA2-PSK authentication mode, the encryption type supports both TKIP and AES. **Config Methods**: Correspond to the methods the AP supports as an Enrollee for adding external Registrars. **Device Password ID**: Indicate the method or identifies the specific password that the selected Registrar intends to use. **Selected Registrar**: Indicate if the user has recently activated a Registrar to add an Enrollee. The values are "TRUE" and "FALSE". **State**: The current configuration state on AP. The values are "Unconfigured" and "Configured". **Version**: WPS specified version. **AP Setup Locked**: Indicate if AP has entered a setup locked state. **UUID-E**: The universally unique identifier (UUID) element generated by the Enrollee. There is a value. It is 16 bytes. **RF Bands**: Indicate all RF bands available on the AP. A dual-band AP must provide it. The values are "2.4GHz" and "5GHz". **OK**: Click this button to exit the information screen.

CXX	 CCX information contains CCKM, Cmic and Ckip information. **OK**: Click this button to exit the information screen.

Advanced

This Advanced page provides advanced and detailed settings for your wireless network.

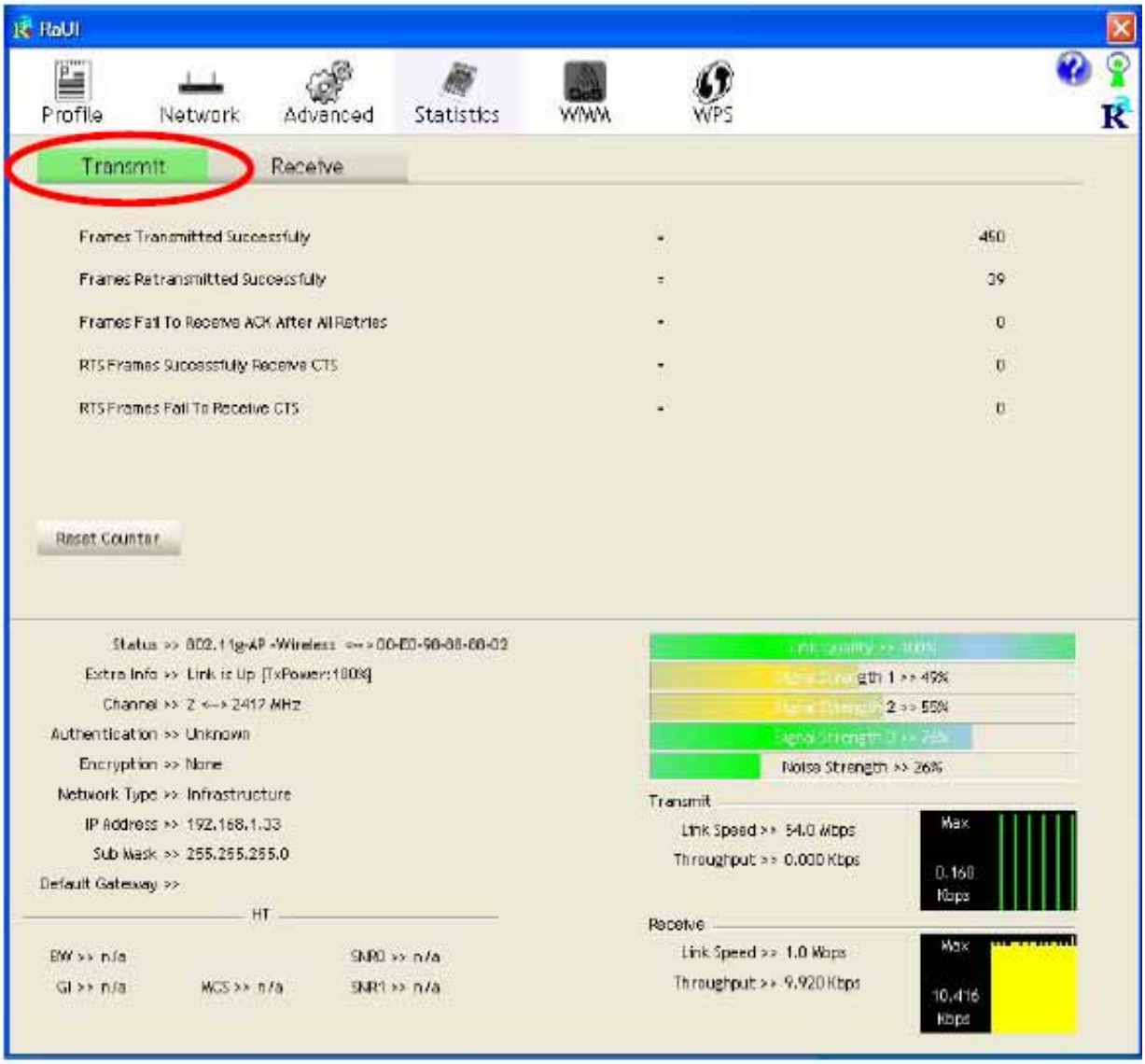


Advanced Tab	
Wireless mode	Select wireless mode. There are 802.11b/g/n mixed, 802.11b only and 802.11b/g mixed modes are supported. Default mode is 802.11b/g/n mixed.
Enable Tx Burst	Check to enable the burst mode.
Enable TCP Window Size	Check to increase the transmission quality.
Fast Roaming at	Check to set the roaming interval, fast to roaming, setup by transmits power.
Show	When you connect AP with authentication, choose

Authentication Status Dialog	whether show "Authentication Status Dialog" or not. Authentication Status Dialog displays the process about 802.1x authentications.
Select Your Country Region Code	Select your country region code from the pull-down menu.
Enable CCX (Cisco Compatible extensions)	Check to enable the CCX function. • Turn on CCKM • Enable Radio Measurements: Check to enable the Radio measurement function. • Non-Serving Measurements limit: User can set channel measurement every 0~2000 milliseconds. Default is set to 250 milliseconds.
Apply	Click to apply above settings.

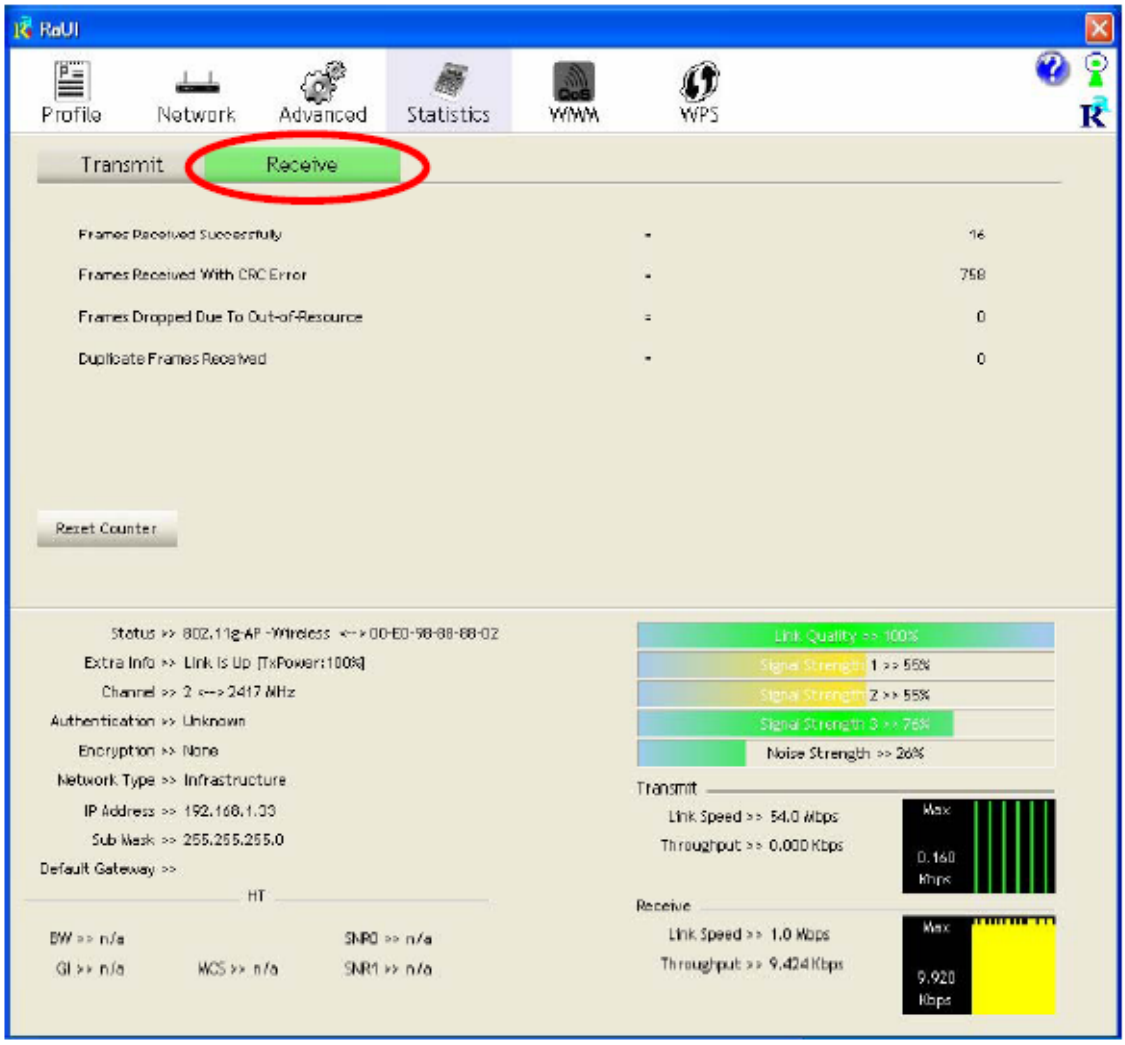
Statistics

The Statistics screen displays the statistics on your current network settings.



Transmit	
Frames Transmitted Successfully	Shows information of frames successfully sent.
Frames Retransmitted Successfully	Shows information of frames successfully sent with one or more reties.
Frames Fail To Receive ACK After All Retries	Shows information of frames failed transmit after hitting retry limit.
RTS Frames Successfully Receive CTS	Shows information of successfully receive CTS after sending RTS frame

RTS Frames Fail To Receive CTS	Shows information of failed to receive CTS after sending RTS.
Reset Counter	Click this button to reset counters to zero.

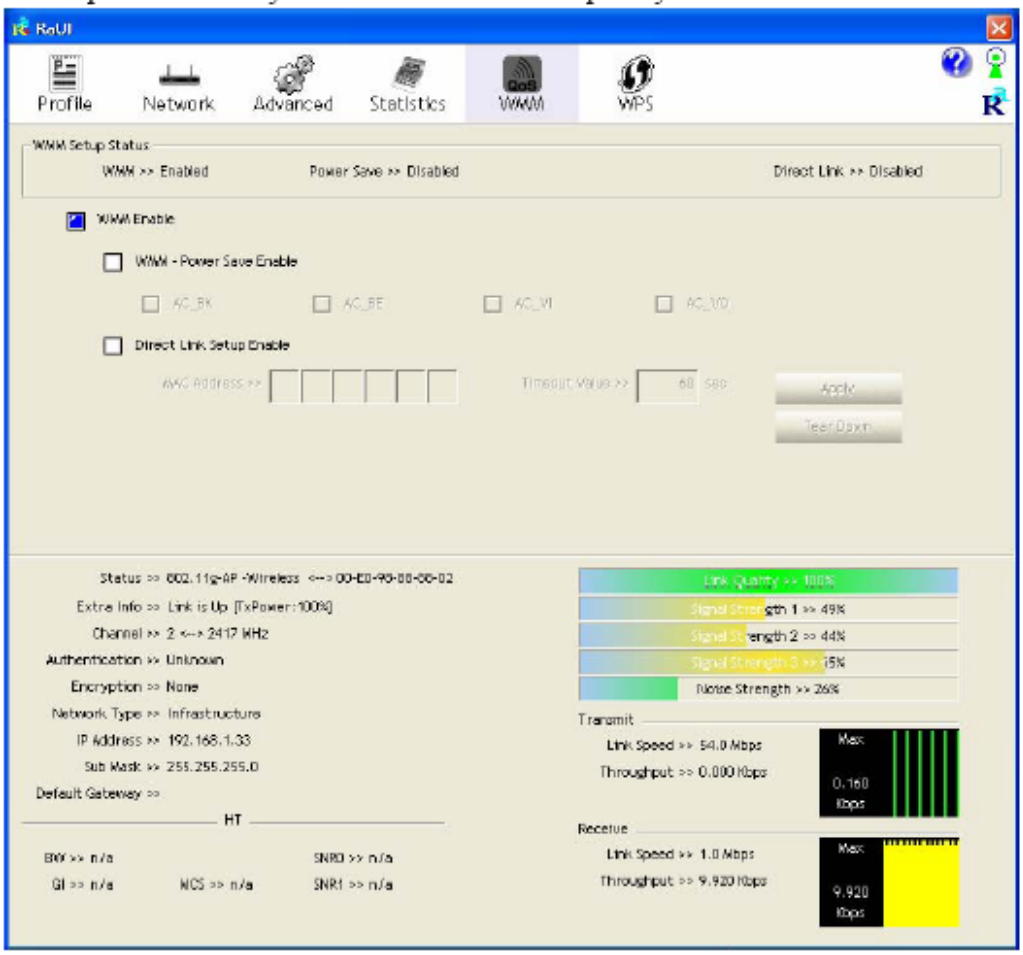


Receive Statistics	
Frames Received Successfully	Shows information of frames Received Successfully.
Frames Received With CRC Error	Shows information of frames received with

	CRC error.
Frames Dropped Due To Out-of-Resource	Shows information of frames dropped due to resource issue.
Duplicate Frames Received	Shows information of duplicate received frames.
Reset Counter	Click this button to reset counters to zero.

WMM / QoS

The WMM page shows the Wi-Fi Multi-Media power save function and Direct Link Setup that ensure your wireless network quality.



WMM Enable	Check the box to enable Wi-Fi Multi-Media function.
WMM- Power Save Enable	Select which ACs you want to enable.
Direct Link Setup Enable	Check the box to enable Direct Link Setup.
MAC Address	The setting of DLS indicates as follow : Fill in the blanks of Direct Link with MAC Address of STA, and the STA must conform to two conditions: • Connecting with the same AP that supports DLS feature. • DSL enabled.
Timeout Value	Timeout Value represents that it disconnect automatically after few seconds. The value is integer that must be between 0~65535. It represents that it always connects if the value is zero. Default value of Timeout Value is 60 seconds.
Apply	Click this button to apply the settings.
Tear Down	Select a direct link STA, then click "Tear Down" button to disconnect the STA.

WPS

The primary goal of Wi-Fi Protected Setup (Wi-Fi Simple Configuration) is to simplify the security setup and management of Wi-Fi networks. The STA as an Enrollee or external Registrar supports the configuration setup using PIN (Personal Identification Number) configuration method or PBC (Push Button Configuration) method through an internal or external Registrar.

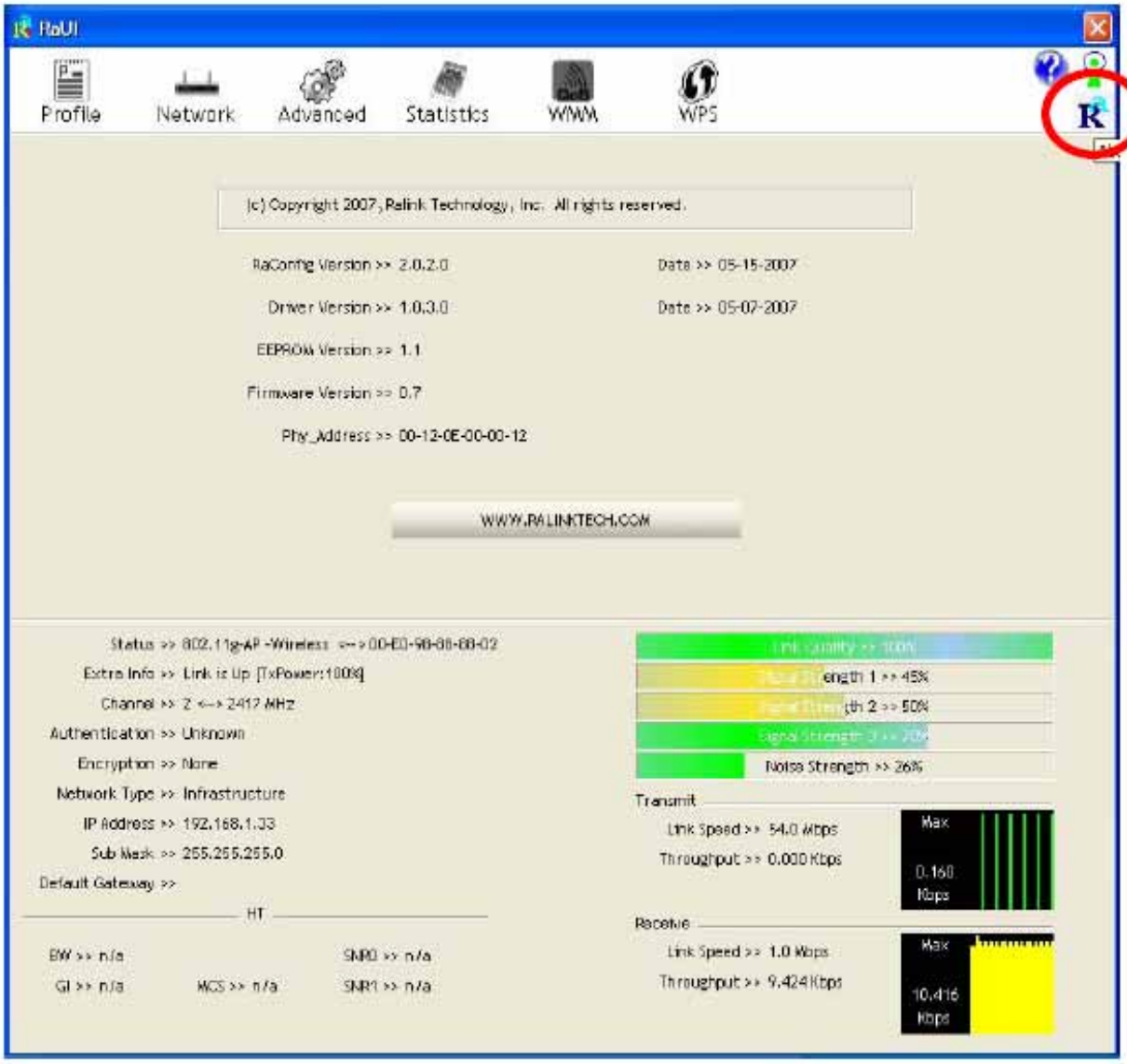
Radio On/Off

Click this icon to turn on radio function.

Click this icon to turn off radio function.

About

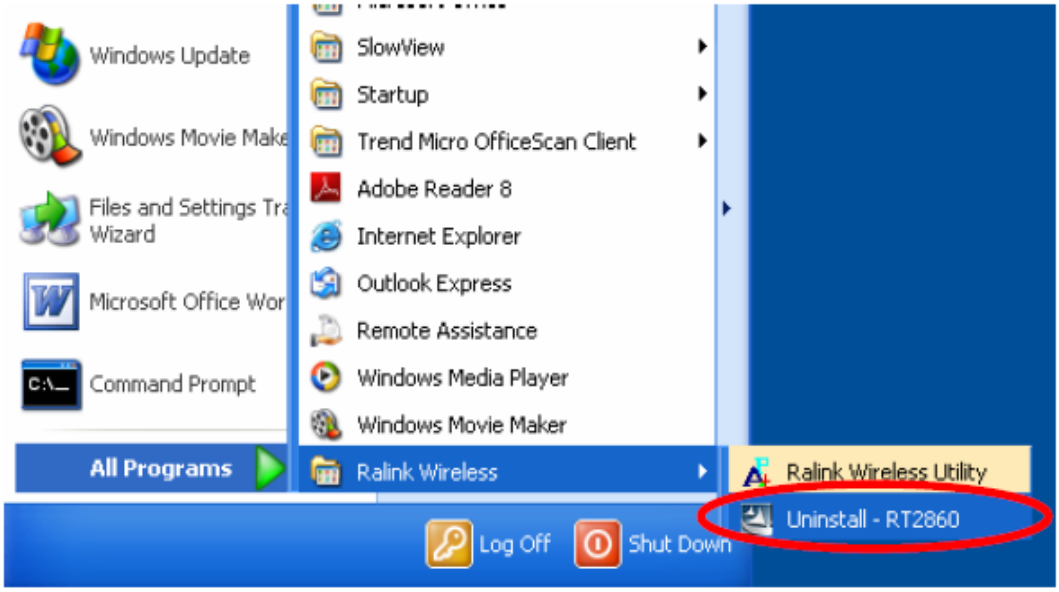
Click this button to show the information of the wireless card including, RaConfig Version/ Date, Driver Version/ Date, EEPROM Version, Firmware Version and Phy_Address.


RaUI
Profile
Network
Advanced
Statistics
WMM
WPS
(c) Copyright 2007, Ralink Technology, Inc. All rights reserved.
RaConfig Version >> 2.0.2.0
Date >> 05-15-2007
Driver Version >> 1.0.3.0
Date >> 05-07-2007
EEPROM Version >> 1.1
Firmware Version >> 0.7
Phy_Address >> 00-12-0E-00-00-12
WWW.RALINKTECH.COM
Status >> 802.11g-AP -Wireless <--> 00-E0-98-88-88-02
Extra Info >> Link is Up [TxPower:100%]
Channel >> 2 <--> 2417 MHz
Authentication >> Unknown
Encryption >> None
Network Type >> Infrastructure
IP Address >> 192.168.1.33
Sub Mask >> 255.255.255.0
Default Gateway >>
HT
BW >> n/a
SNR0 >> n/a
GI >> n/a
MCS >> n/a
SNR1 >> n/a
Noise Strength >> 26%
Transmit
Link Speed >> 54.0 Mbps
Throughput >> 0.000 Kbps
Max
0.160
Kbps
Receive
Link Speed >> 1.0 Mbps
Throughput >> 9.424 Kbps
Max
10.416
Kbps

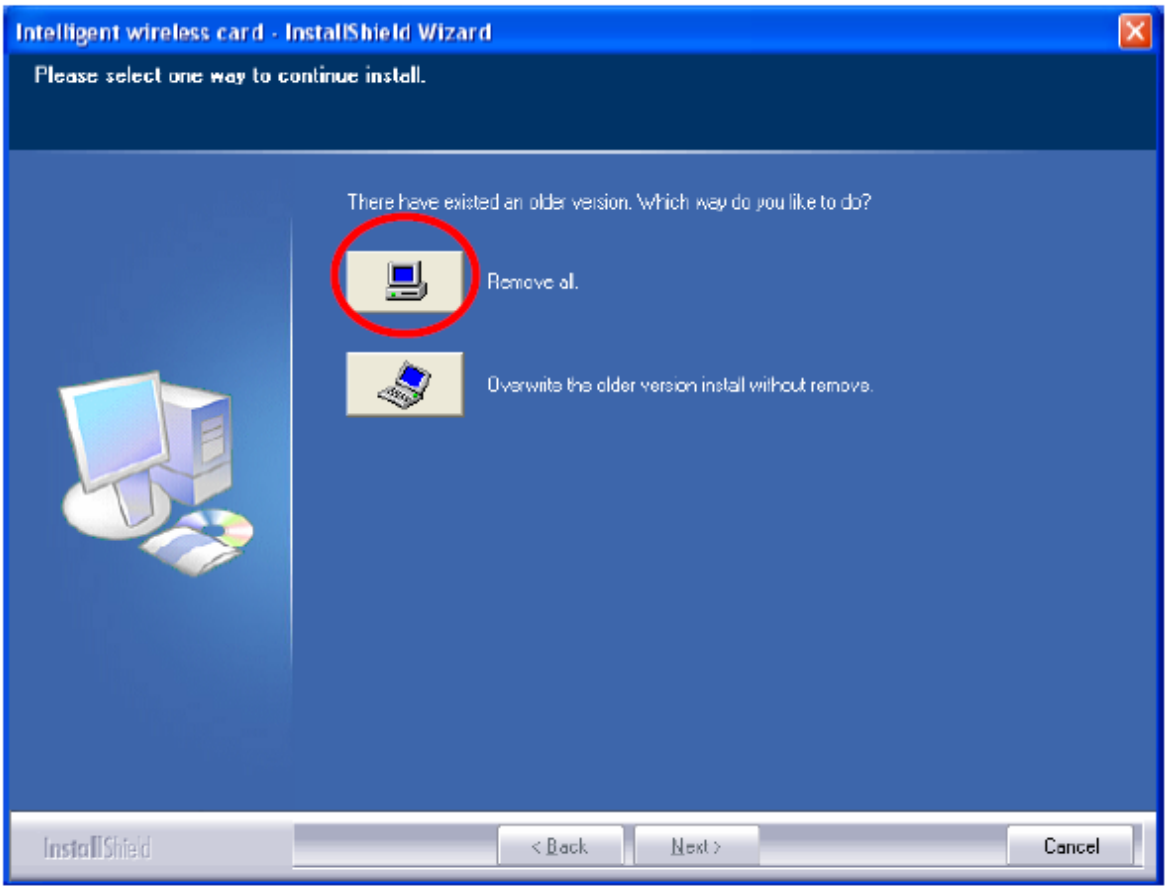
UNINSTALLATION

In case you need to uninstall the utility and driver, please refer to below steps. (As you uninstall the utility, the driver will be uninstalled as well.)

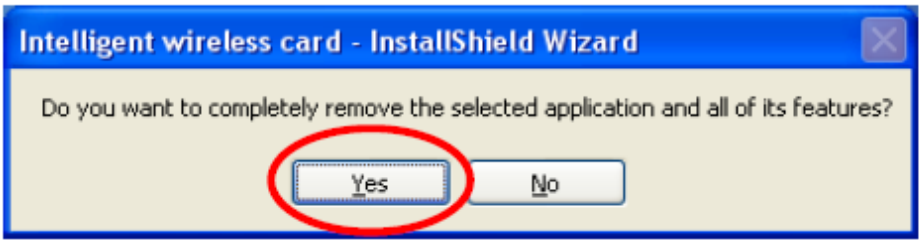
1. Go to **Start → Programs →Ralink Wireless → Uninstall.**



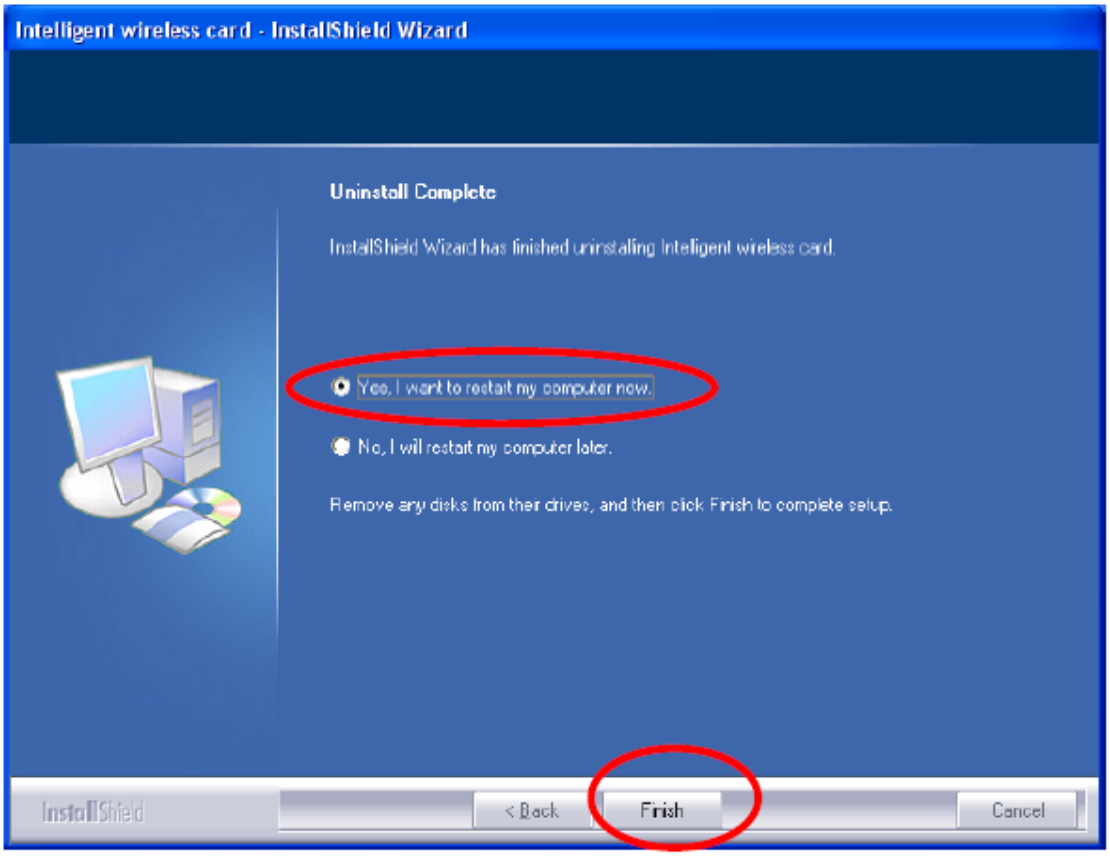
2. Select **Remove all** button and click **Next** to start uninstalling.



3. Click **Yes** to complete remove the selected application and all of its features.



4. Select "**Yes, I want to restart my computer now**" and then click **Finish** to complete the uninstallation.



Regulatory statement

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.

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.

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

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.

IEEE 802.11b or 802.11g operation of this product in the U.S.A. is firmware-limited to channels 1 through 11.

This device is intended only for OEM integrators under the following conditions:

1) The antenna must be installed such that 20 cm is maintained between the antenna and users, and

2) The transmitter module may not be co-located with any other transmitter or antenna,

3) For all products market in US, OEM has to limit the operation channels in CH1 to CH11 for 2.4G band by supplied firmware programming tool. OEM shall not supply any tool or info to the end-user regarding to Regulatory Domain change.

As long as 3 conditions above are met, further transmitter test will not be required. However, the OEM integrator is still responsible for testing their end-product for any additional compliance requirements required with this module installed (for example, digital device emissions, PC peripheral requirements, etc.).

IMPORTANT NOTE: In the event that these conditions can not be met (for example certain laptop configurations or co-location with another transmitter), then the FCC authorization is no longer considered valid and the FCC ID can not be used on the final product. In these circumstances, the OEM integrator will be responsible for re-evaluating the end product (including the transmitter) and obtaining a separate FCC authorization.

End Product Labeling

This transmitter module is authorized only for use in device where the antenna may be installed such that 20 cm may be maintained between the antenna and users. The final end product must be labeled in a visible area with the following: “Contains FCC ID: EJE-WL0025”.

Manual Information To the End User

The OEM integrator has to be aware not to provide information to the end user regarding how to install or

remove this RF module in the user’s manual of the end product which integrates this module.

The end user manual shall include all required regulatory information/warning as show in this manual.

This device is restricted to indoor use when operated in the 5.15 to 5.25 GHz frequency range.

Industry Canada Statement

This device complies with Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.
This device is restricted to indoor use when operated in the 5.15 to 5.25 GHz frequency range.

This device has been designed to operate with an antenna having a maximum gain of 4.67dBi for 2.4GHz and 5.1dBi for 5GHz.
Antenna having a higher gain is strictly prohibited per regulations of Industry Canada. The required antenna impedance is 50 ohms.

To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the EIRP is not more than required for successful communication.

IMPORTANT NOTE:

IC Radiation Exposure Statement:

This equipment complies with IC 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 device is intended only for OEM integrators

under the following conditions:

1. The antenna must be installed such that 20 cm is maintained between the antenna and users, and
2. The transmitter module may not be co-located with any other transmitter or antenna,
3. For all products market in CANADA, OEM has to limit the operation channels in CH1 to CH11 for 2.4GHz band by supplied firmware programming tool. OEM shall not supply any tool or info to the end-user regarding to Regulatory Domain change.

As long as 3 conditions above are met, further transmitter test will not be required. However, the OEM integrator is still responsible for testing their end-product for any additional compliance requirements required with this module installed (for example, digital device emissions, PC peripheral requirements, etc.).

IMPORTANT NOTE: In the event that these conditions can not be met (for example certain laptop configurations or co-location with another transmitter), then the IC authorization is no longer considered valid and the IC ID can not be used on the final product. In these circumstances, the OEM integrator will be responsible for re-evaluating the end product (including the transmitter) and obtaining a separate IC authorization.

End Product Labeling

The final end product must be labeled in a visible area with the following: “Contains IC : 337J-WL0025”.

Manual Information That Must be Included

The OEM integrator has to be aware not to provide information to the end user regarding how to install or remove this RF module in the user's manual of the end product which integrates this module.

The end user manual shall include all required regulatory information/warning as show in this manual.

NCC Statement

以下警語適用台灣地區

1. 經型式認證合格之低功率射頻電機，非經許可，公司、商號或使用者均不得擅自變更頻率、加大功率或變更原設計之特性及功能。

2. 低功率射頻電機之使用不得影響飛航安全及干擾合法通信;經發現有干擾現象時，應立即停用，並改善至無干擾時方得繼續使用。前項合法通信，指依電信法規定作業之無線電通信。低功率射頻電機須忍受合法通信或工業、科學及醫療用電波輻射性電機設備之干擾。

3. 5.25-5.35GHz 頻帶內操作之無線資訊傳輸設備，限於室內使用。

4. 本產品內含射頻模組 CCAF11LP0520T2