



***802.11b/g WLAN  
Mini-PCI Card  
User's Guide***



## **FCC Compliance and Advisory Statement**

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.

The equipment has been certified to comply with the limits for a Class B computing 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, users, and can radiate radio frequency energy and, if not installed or 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 switching the equipment off and on. The user can try to correct the interference by the following measures:

1. Reorient or relocate the receiving antenna.
2. Increase the separation between the equipment and receiver.
3. Connect the equipment to an outlet on a circuit different from that to which the receiver is connected.
4. Consult the dealer or an experienced radio/TV technician for help.

Changes or modification not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.



This device complies with EMC Directive 89/336/EEC, Low Voltage 73/23/EEC and R&TTE Directive 995/5/EC.


The product has been approved for LVD and Covers the following countries:

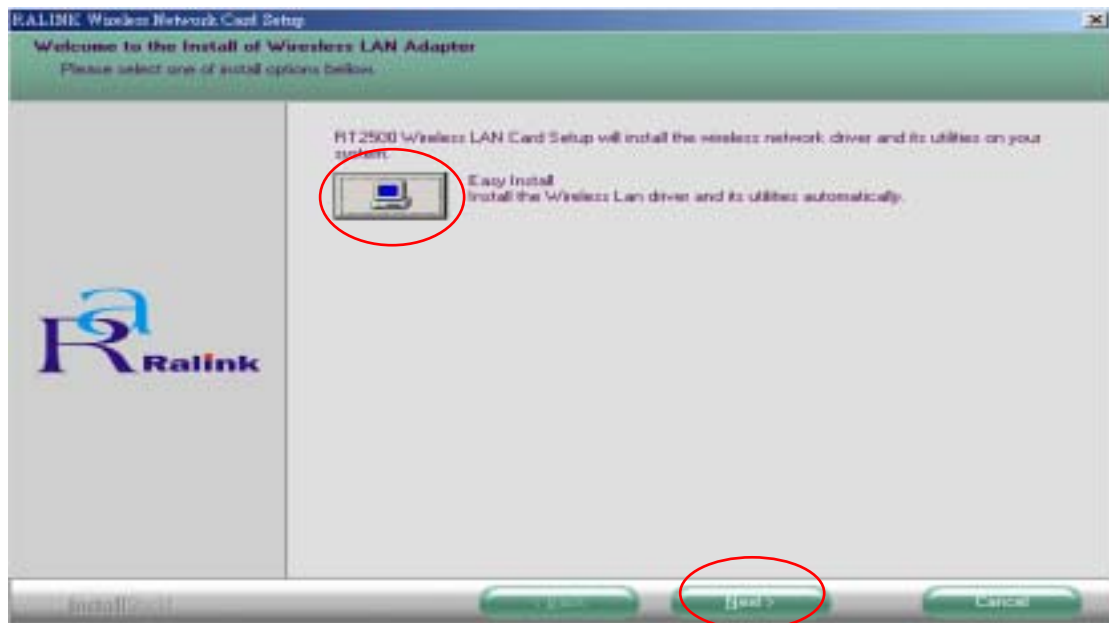
- Austria
- Belgium
- Denmark
- France
- Finland
- Germany
- Greece
- Ireland
- Italy
- Luxembourg
- Netherlands
- Spain
- Sweden
- Switzerland
- U.K.

## Contents

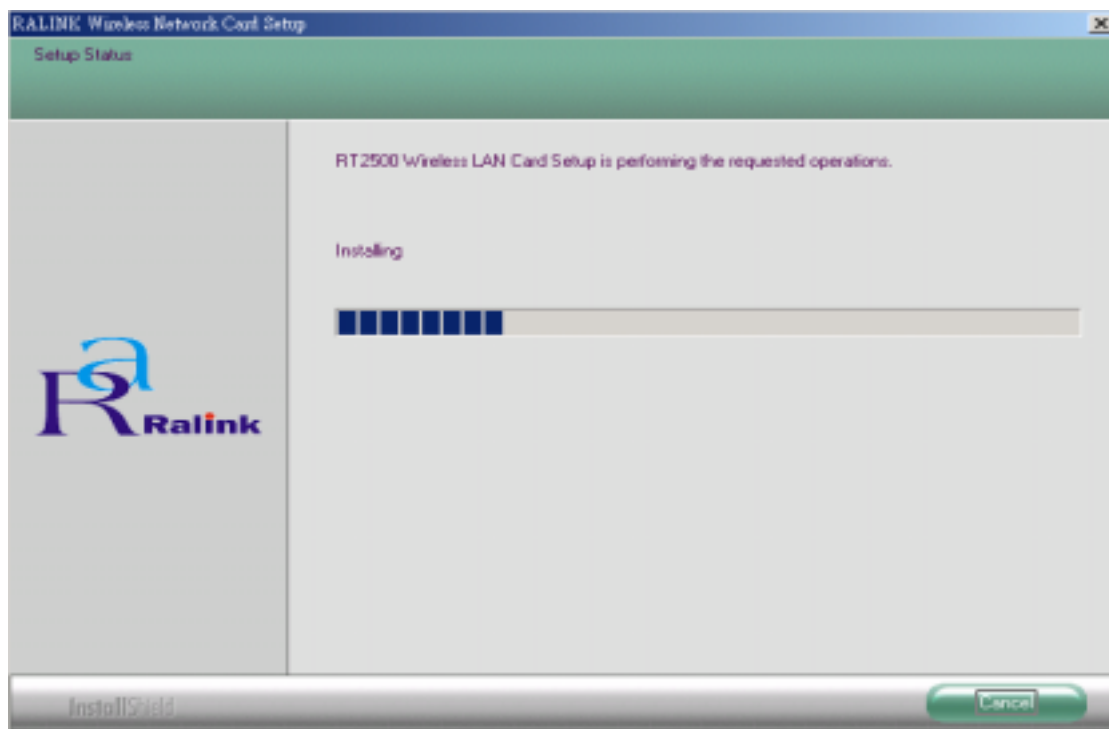
1 .	Installation.....	4
2 .	Un-installation.....	6
3 .	Configuring.....	7
4 .	Wireless settings.....	10
5 .	Connect Settings.....	12
5.1	General Settings.....	13
5.2	Authentication and Encryption.....	15
6 .	Connect status.....	17
7 .	Annex.....	18

## 1. Installation

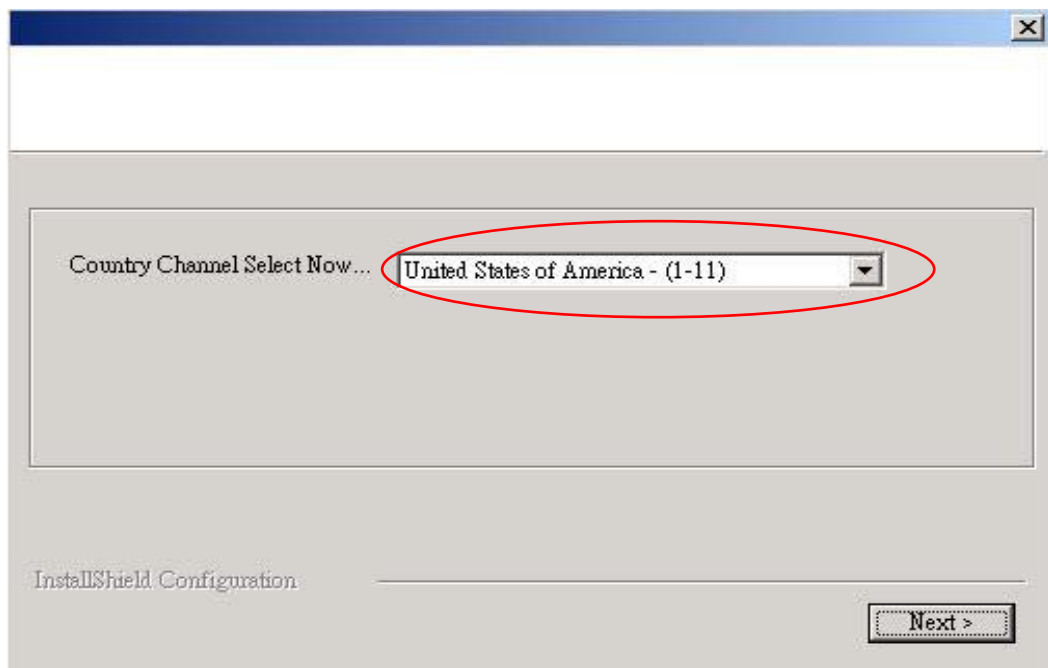
- (1) Execute  file
- (2) Push “Easy Install” or “Next” button



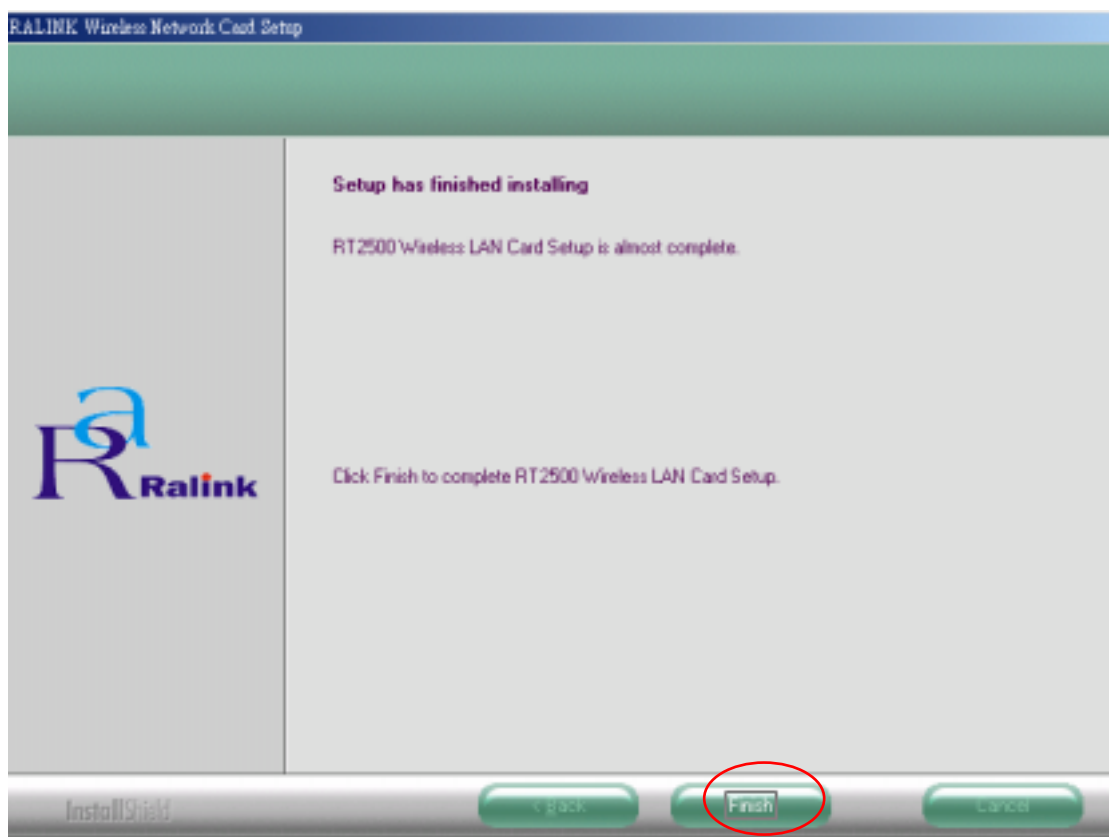
- (3) Wait a moment.




(4) Select Country channel

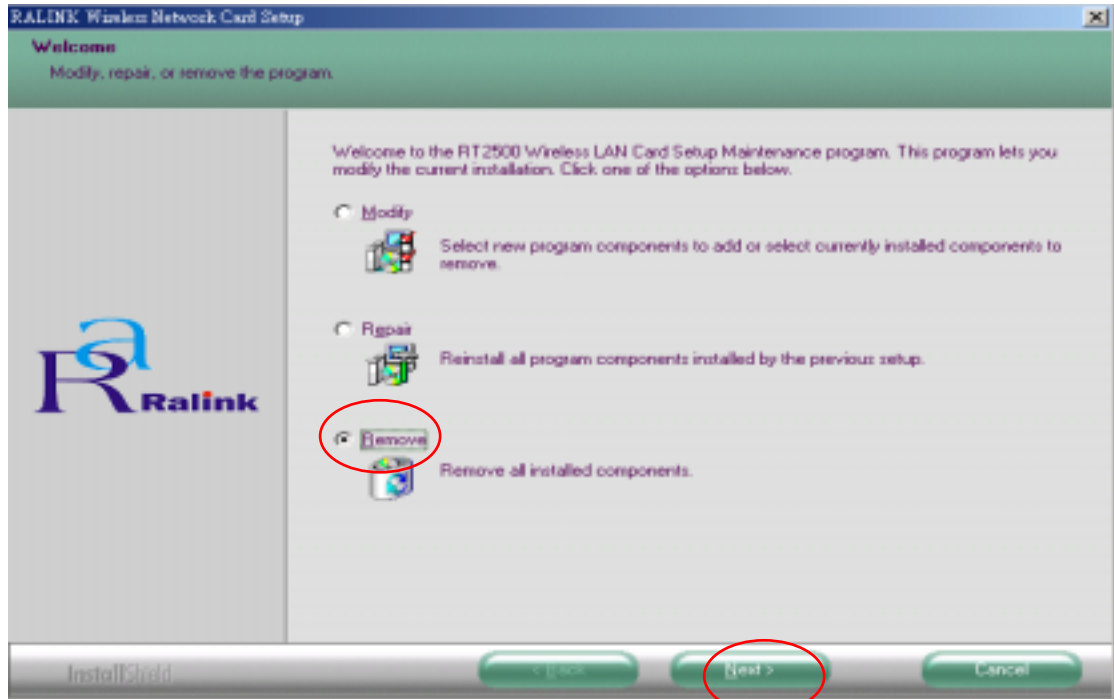


(5) Push "Finish" button to finish statement

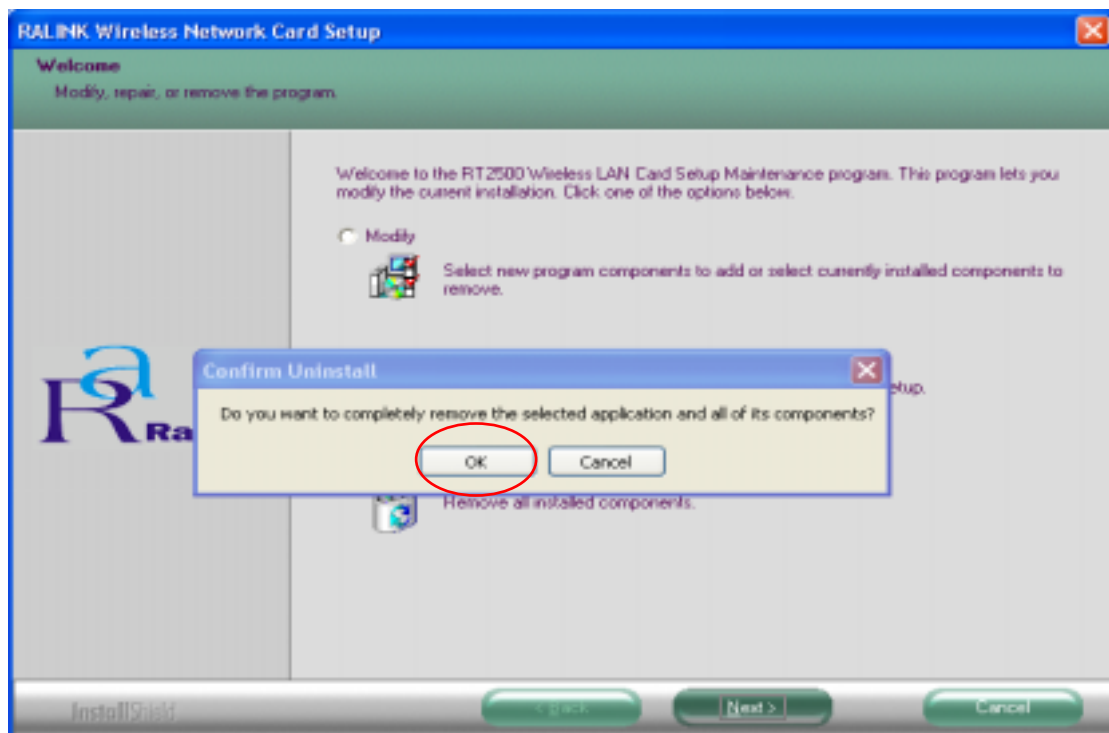


## 2. Un-installation

- (1) Execute  file to
- (2) After select “Remove”, to push “Next” bottom

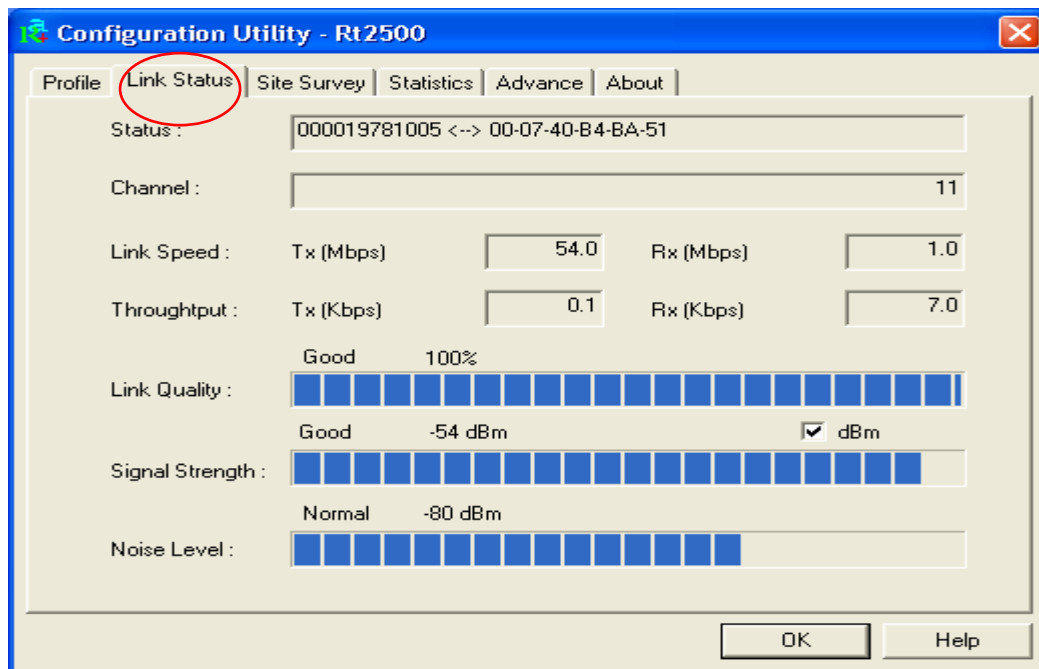


- (3) Push “OK” bottom to completely remove

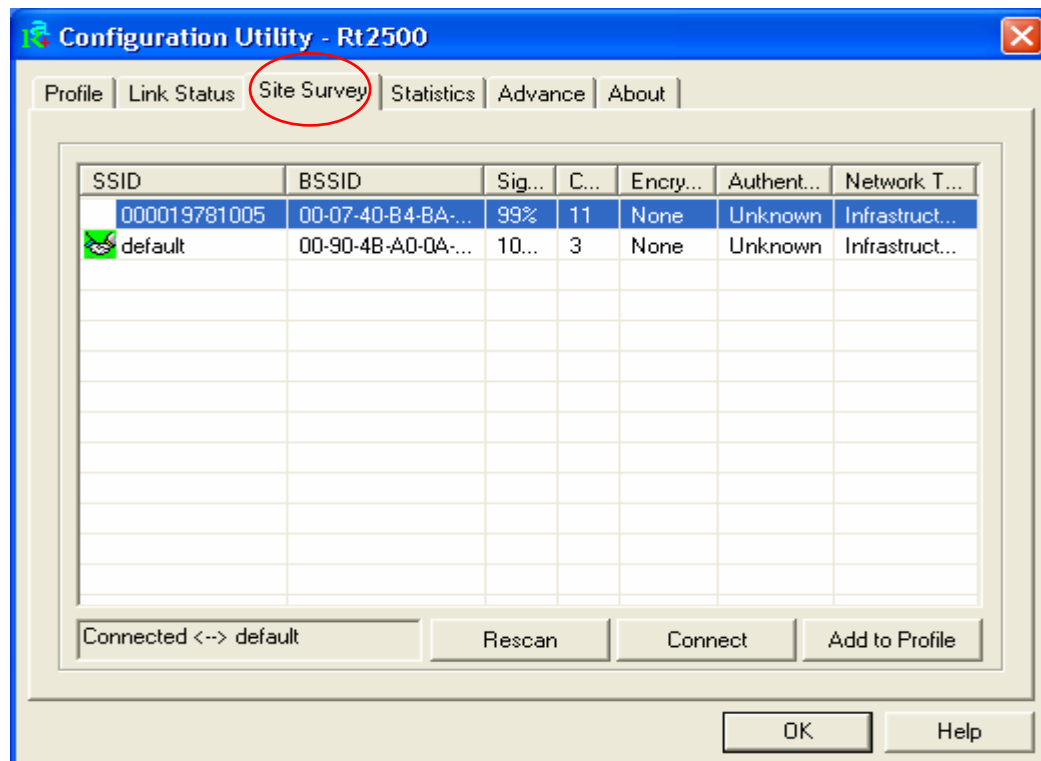


### 3. Configuring

- (1) **Profile:** To save often used connection information.
- (2) **Link Status:** Display connection information now.

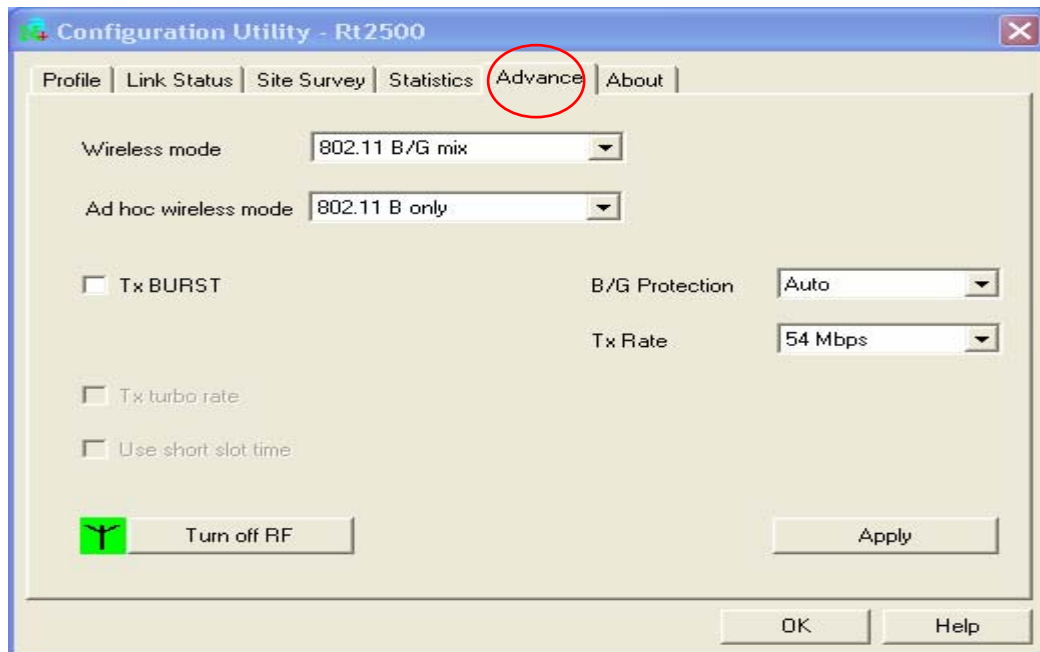


(3) **Site Survey:** Indicate scanned AP

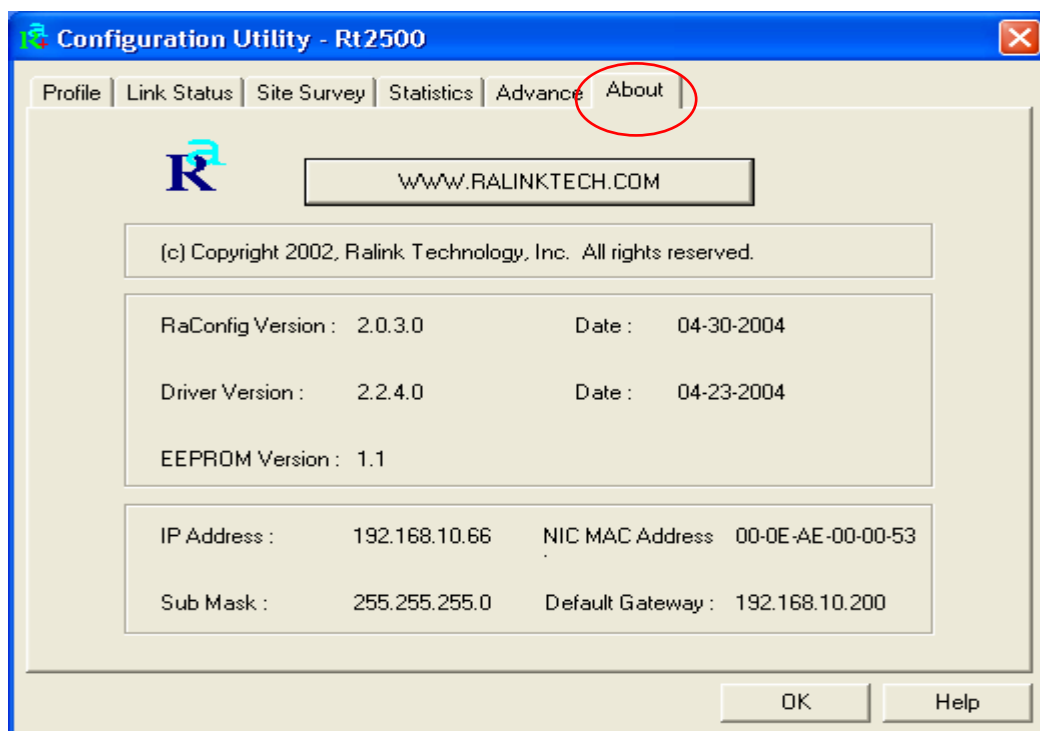




- (4) **Statistics:** Count all transmit and receive packets
- (5) **Advance:** Advanced settings, such as mode or speed.....



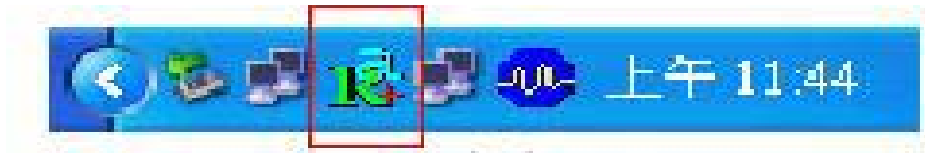
- (6) **About:** Indicate company information and driver version.



## Viewing Signal Strength and Speed

Whenever you start Windows, you should be able to find the wireless monitor icon loaded in the system tray, located near the clock on the task bar

While connected, you can place your cursor over the icon to see the pop-up text that gives link information about the connection and signal strength.



The graphic of the wireless icon changes to indicate your wireless connection quality. Possible radio connection quality and procedures to take are described in the table below:



: Your Wireless LAN Card has an excellent radio connection with the network, allowing excellent network communication at the highest transmit rate. (Good)



: Your Wireless LAN Card has a good radio connection with the network, allowing normal network communication. (Normal)



: The radio signal is low. You can move your device closer to your target Access Point or wireless station for better signal strength. (Weak)



: Disconnect. Wireless network connection unavailable. (Lost)



: Radio if off. You manually disable the RF signal.

#### 4. Wireless Settings

After you successfully connect to the Access Point or Wireless LAN Card, double-click the icon in the system tray again. This will open the Wireless Network Connection Status windows where you can see the general data of the Wireless LAN Card, such as Status, Speed, Signal Strength, etc.

AP information include : SSID、BSSID、signal strength、channel、encryption、authenticating、network type.

**SSID** : AP SSID

**BSSID** : AP Mac Address

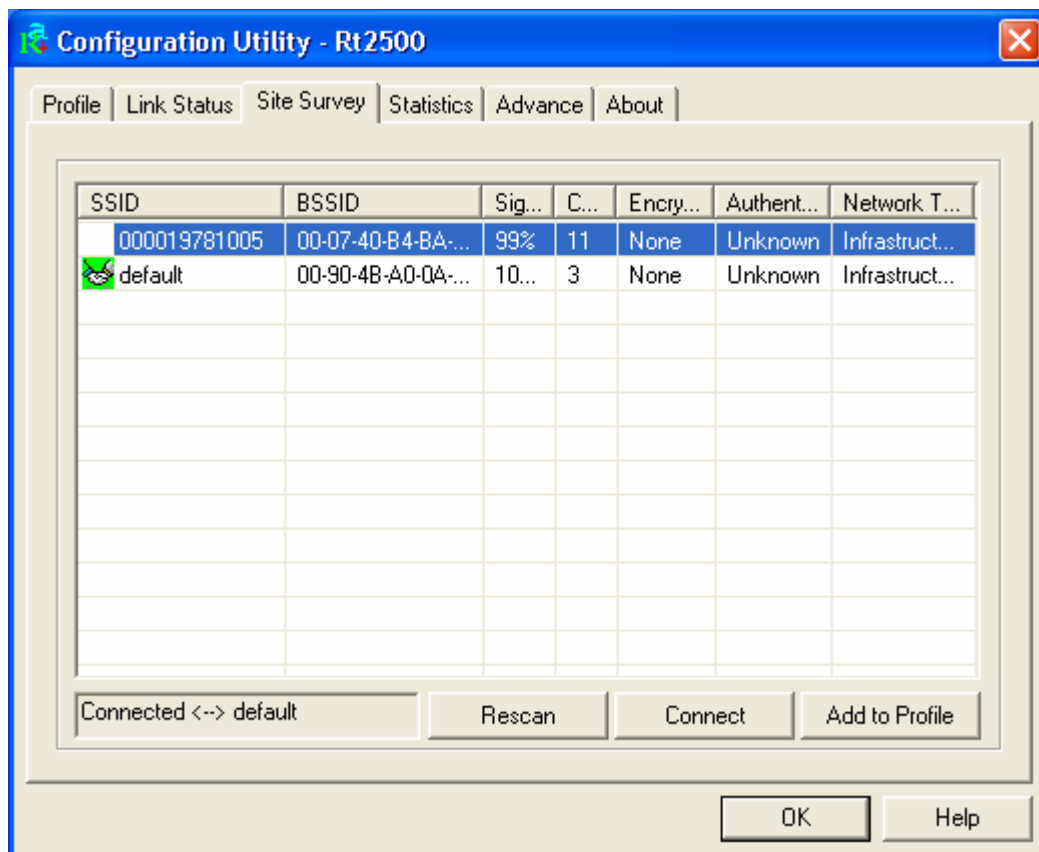
**Signal** : Show the signal strength ratio.

**Channel** : The operating radio channel number.

**Encryption** : Displays if encryption is enabled or disabled on the AP

**Authentication** : Displays if authenticating is enabled or disabled on the AP

**Network Type** : Indicates whether the operating mode is Infrastructure (Access Point) or Ad-Hoc(wireless station).



The function described in below :

Connected <--> default

: When you successfully connect to the Access Point, it shows AP SSID. If disconnect then display “Disconnected ”。

Rescan

: This Button allows you to update the list.

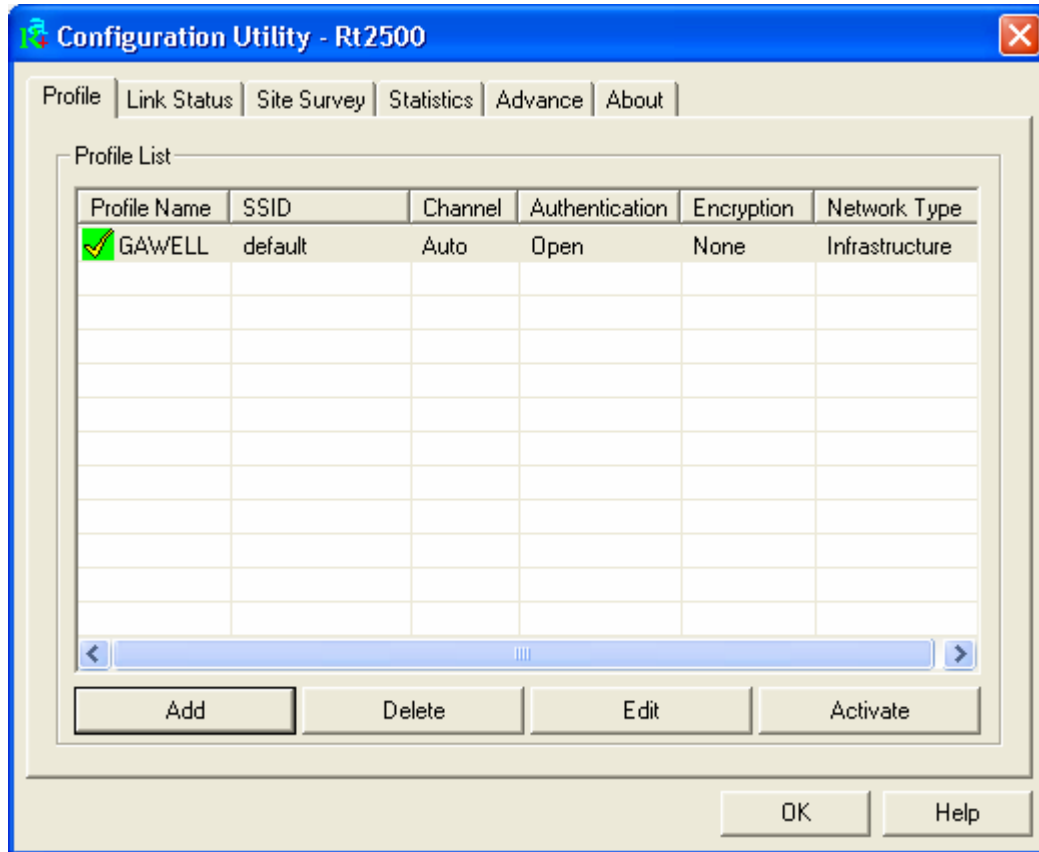
Connect

: Select AP to connecting.

Add to Profile

: Add AP to update the list.

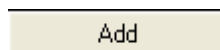
## 5. Connect Settings



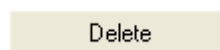
: Display Activate Profile setting successfully connect to AP



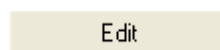
: Display Activate Profile setting failed connect to AP



: Add a new connection setting



: Delete a connection setting



: Edit a connection setting

## 5.1 General settings

You can save multiple profiles for different network environment and easily retrieve the required one as needed.

**Add Profile**

Configuration | Authentication and Security

Profile Name: PROF1 SSID: [Dropdown]

PSM

☒ CAM (Constantly Awake Mode) ☐ PSM (Power Saving Mode)

☐ CAM only in AC power

Network Type: Infrastructure TX Power: Auto

Preamble: Auto

☐ RTS Threshold 0 [Slider] 2312 [2312]

☐ Fragment Threshold 256 [Slider] 2312 [2312]

OK Cancel Apply Help

**Profile Name** : Used different AP settings to define connect settings name.

**SSID** : Select scanned AP name from the drop-down menu or fill on yourself.  
Connecting to other Wireless LAN Cards (Ad-Hoc Mode)

**PSM** : For uninterrupted data communication, you may leave this option blank to disable power saving features. To enable power saving features for your Wireless LAN Card, please check this box.

**Network Type** : You can connect your computer to a network in one of the following two ways. Refer to sequential sections for configuration:

(1)**Ad Hoc** : Connecting to other Wireless LAN Card equipped computers, forming a wireless network.

(2)**Infrastructure** : Connecting to a wired/wireless network through an Access Point.

The screenshot shows the 'Add Profile' dialog box with the 'Authentication and Security' tab selected. The 'Profile Name' field contains 'PROF1'. The 'SSID' field is empty. Under the 'PSM' section, the 'CAM (Constantly Awake Mode)' radio button is selected, and the 'CAM only in AC power' checkbox is unchecked. The 'Network Type' dropdown is set to 'Infrastructure', and the 'TX Power' dropdown is set to 'Auto'. The 'Preamble' dropdown is set to 'Auto'. The 'RTS Threshold' is set to 0, and the 'Fragment Threshold' is set to 256. Both thresholds have a range from 0 to 2312. The 'OK', 'Cancel', 'Apply', and 'Help' buttons are at the bottom.

**RTS Threshold** : When set (in bytes), it specifies the packet size beyond which the Wireless LAN Card invokes its RTS/CTS mechanism. Packets that exceed the specified RTS threshold trigger the RTS/CTS mechanism. The NIC transmits smaller packets without using RTS/CTS.

**Fragment Threshold** : The Fragmentation threshold, which is specified in bytes, determines whether packets will be fragmented and at what size. On an 802.11 wireless LAN, packets exceed the fragmentation threshold are fragmented, i.e., split into, smaller units suitable for the circuit size. Packets smaller than the specified fragmentation threshold value are not fragmented.

## 5.2 Authentication and Encryption

This tab allows you to configure the authentication settings of your Wireless LAN Card. The most important setting for the Wireless LAN Card is to disable Enable network access control using IEEE802.1X to ensure successful connection between the Wireless LAN Cards and Access Points or other Wireless LAN Card (Ad-Hoc mode). You must disable this function for any reason. Otherwise, there may be some problems happening during connection. For other setting, we recommend you keep the default settings to minimize the problems during connection.

The screenshot shows a Windows-style dialog box titled "Add Profile" with a close button (X) in the top right corner. It has two tabs: "Configuration" and "Authentication and Security", with the latter being the active tab. The "Authentication and Security" tab contains the following settings:

- Authenticaiton Type :** A dropdown menu set to "Open". To its right are two buttons: "Disable 802.1x" and "802.1x Setting".
- Encryption :** A dropdown menu set to "WEP".
- WPA Preshared Key :** An empty text input field.
- Wep Key:** A section containing four radio buttons labeled "Key#1", "Key#2", "Key#3", and "Key#4". "Key#1" is selected. Each radio button is followed by a "Hex" dropdown menu and an empty text input field for the key value.

At the bottom of the dialog box are four buttons: "OK", "Cancel", "Apply", and "Help".

**Authentication Type:** Authentication Type from Open System, Shared Key, WPA and WPA-PSK.



**Encryption** : Encryption technology is used to enhance wireless media security. If you are not to use encryption, got to “**Encryption**” tab and select “None” from the “**Encryption**” drop-down menu. To enable encryption, do the referencing table 4-1:

Table 4 - 1

Authentication Type	Encryption settings	Key settings	Set 802.1x
Open System	Unused	none	yes
	WEP	Key settings	
Shared Key	Unused	none	yes
	WEP	Key settings	
WPA	TKIP	none	yes
	AES	none	
WPA-PSK	TKIP	WPA-PSK Key	no
	AES	WPA-PSK Key	

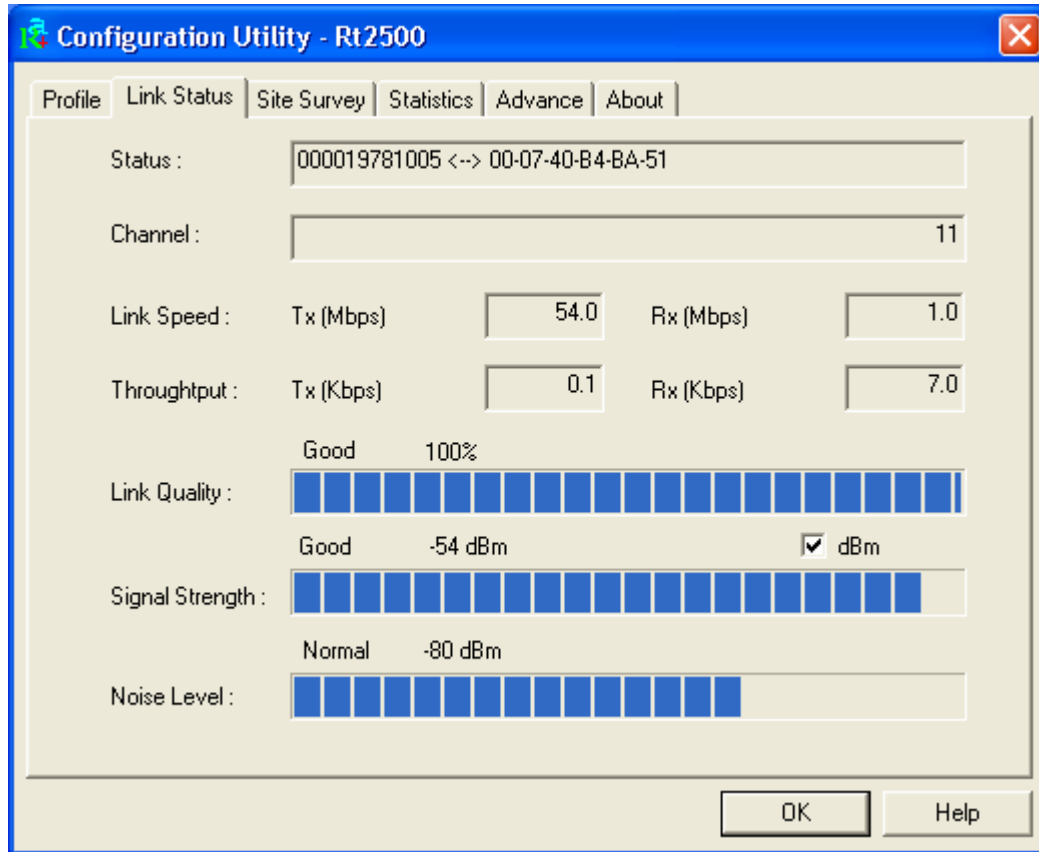
**WEP Key** : For flexibility, you can enter the WEP Keys in either HEX or ASCII format. Enable the preferred format and then enter the key values in the KEY#1-4 fields.

If using HEX format, the utility converts two entered characters into its corresponding ASCII code and vice versa. Note that when using HEX format, only digits 0-9 and letters A-F are allowed. Valid key length is as below:

- (1) Hexadecimal : 26 hexadecimal digits
- (2) ASCII : 13 ASCII characters

## 6. Connect Status

Display connection information



The screenshot shows the 'Configuration Utility - Rt2500' window with the 'Link Status' tab selected. The window contains several fields and indicators for connection status:

- Status:** A text field displaying '000019781005 <-> 00-07-40-B4-BA-51'.
- Channel:** A text field displaying '11'.
- Link Speed:** Two text fields: 'Tx (Mbps)' with '54.0' and 'Rx (Mbps)' with '1.0'.
- Throughput:** Two text fields: 'Tx (Kbps)' with '0.1' and 'Rx (Kbps)' with '7.0'.
- Link Quality:** A bar graph showing 'Good' quality at '100%'. The bar is filled with blue segments.
- Signal Strength:** A bar graph showing 'Good' signal strength at '-54 dBm'. A checkbox labeled 'dBm' is checked. The bar is filled with blue segments.
- Noise Level:** A bar graph showing 'Normal' noise level at '-80 dBm'. The bar is filled with blue segments.

At the bottom right, there are 'OK' and 'Help' buttons.

**Link Status :** Display connection status. When you successfully connect to the Access Point, it shows AP SSID and BSSID.

**Channel :** Display used channel number now.

**Link Speed(Mbps) :** Display highest speed communication between Station and AP.

**Throughput (Kbits/sec) :** Indicate data (Tx) and (Rx) efficiency, Unit is Kbits/sec.

**Link Quality :** Indicate connecting quality.

**Signal Strength :** Display received signal strength, and you can select “ dBm ” to show.

**Noise Level :** Noise strength.

<b>Model Name</b>	<b>GW-WCMPRG-1</b>
Product Name	Wireless LAN 11g Mini-PCI Adapter
Chipset	Ralink RT2560 + RT2525
Standard	IEEE 802.11b, IEEE 802.11g
Frequency Band	2.4GHz ~ 2.497GHz unlicensed ISM band
Spread Spectrum	IEEE 802.11b : DSSS (Direct Sequence Spread Spectrum)
	IEEE 802.11g : OFDM (Orthogonal Frequency Division Multiplexing)
Modulation Method	IEEE 802.11b : DBPSK / DQPSK / CCK
	IEEE 802.11g : BPSK, QPSK, 16QAM, 64QAM
Data Rate	IEEE 802.11b : 1, 2, 5.5, 11Mbps
	IEEE 802.11g : 6, 9, 12, 18, 24, 36, 48, 54Mbps
Operation Mode	Ad hoc
	Infrastructure (Access Points is needed)
Transmitter Power	13 dBm
Receive Sensitivity	Operating at 11Mbps: -80 dBm @ 8% FER
Operating Range	100 - 400m, depending on surrounding environment
Antenna	External antenna
Supply Voltage	DC 3.3V
Power Consumption	Transmit : < 350mA.
	Receive : < 260mA.
Security	64-bit or 128-bit WEP (Wired Equivalent Privacy) /WPA
	TKIP (Temporal Key Integrity Protocol)
I/O Interface	MiniPCI
Operating System	Windows 98SE, Me, 2000, XP
Regulation	FCC part 15B/C for North America.
	CE for Europe.
Operating Temperature	0 ~ 55 celsius
Storage Temperature	-20 ~ 70 celsius
Humidity	5 ~ 90% (non-condensing)
Size	60(L) x 44.5(W) x 3.5(H) mm