User Manual

ARGTEK GM5 WLAN 802.11b/g/n USB adapter

ARG-0812

Contents

Chapter 1 Getting Start

Minimum System Requirements

- Pentium® 300 MHz or higher compatible processor
- At least one available USB 2.0 or 1.1 port
- The installation CD
- 5Mbytes free hard disk space.
- Windows 2000, XP, XP professional, Vista, or Windows 7.

If you do not have a USB 2.0 port on your computer, the throughput of the USB adapter will be limited to the 14 Mbps of the USB 1.1 standard.

Note *Windows XP users must install SP2 or above for the Hot fix which fixes the USB 2.0 Host controller driver.*

Before you proceed with the installation, please notice the following descriptions.

If you have installed the WLAN USB driver & utility before, please uninstall the old version first.

Note *The following installation was operated under Windows XP. (Procedures are similar for Windows 98SE/Me/2000.)*

Note *The installation guide herein is operated under Windows system. For Linux or Mac driver installation guide, please refer to the instruction in README at directory the driver has stored in CD-Rom.*

Optimize Wireless Performance

The speed and wireless coverage range of your connection can vary significantly based on the location of AP/router. You should choose a location for your AP/router that will maximize the network performance.

You can refer to the following methods to maximize AP/router performance.

Choose placement carefully for your AP/Router.

Place your AP/router at the center among your computers.

Place your AP/router at an elevated location.

Avoid obstacles to wireless signals.

 Keep your wireless devices far away from metallic file cabinets, refrigerators, pipes, metal ceilings, reinforced concrete, and metal partitions.

 Keep away from large amounts of water such as fish tanks and water coolers.

Reduce interference

 Keep away from computers, cordless phones, cell phone, coping machine and fax machines.

 Keep away from microwave oven.

 Site survey nearby wireless devices to determine your operating channel.

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.

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

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.

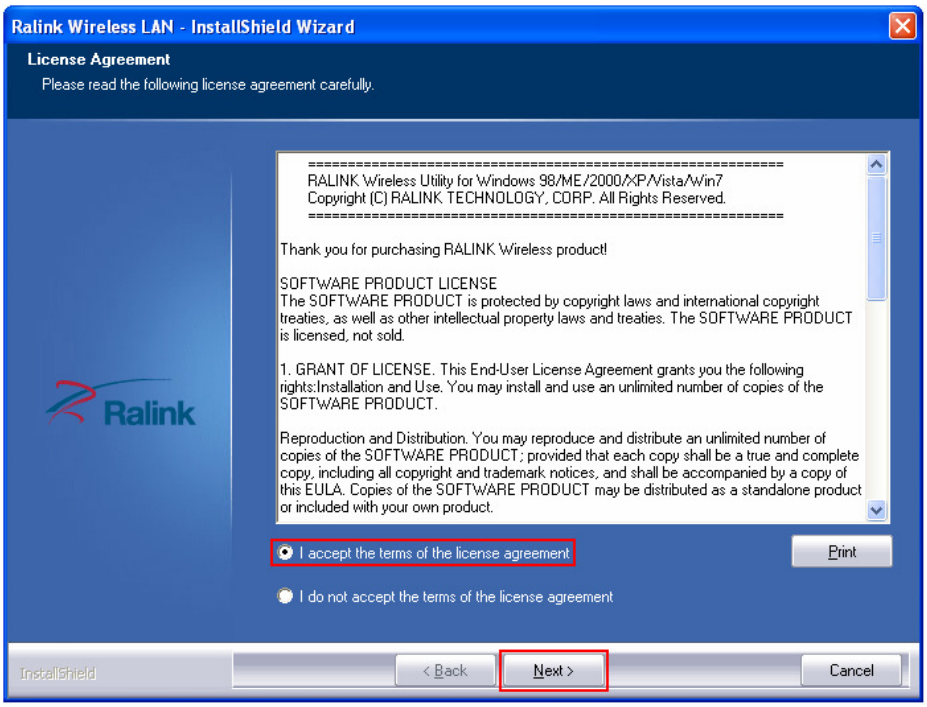
Installation

1. If you insert the Wireless LAN USB Adaptor into your computer USB port, the following hardware setup wizard will pop up. Click **Cancel** to install driver from installation CD.

2. Insert your installation CD into CD drive of your computer. An installation page will pop up for you to install. Click **Utility Driver**.

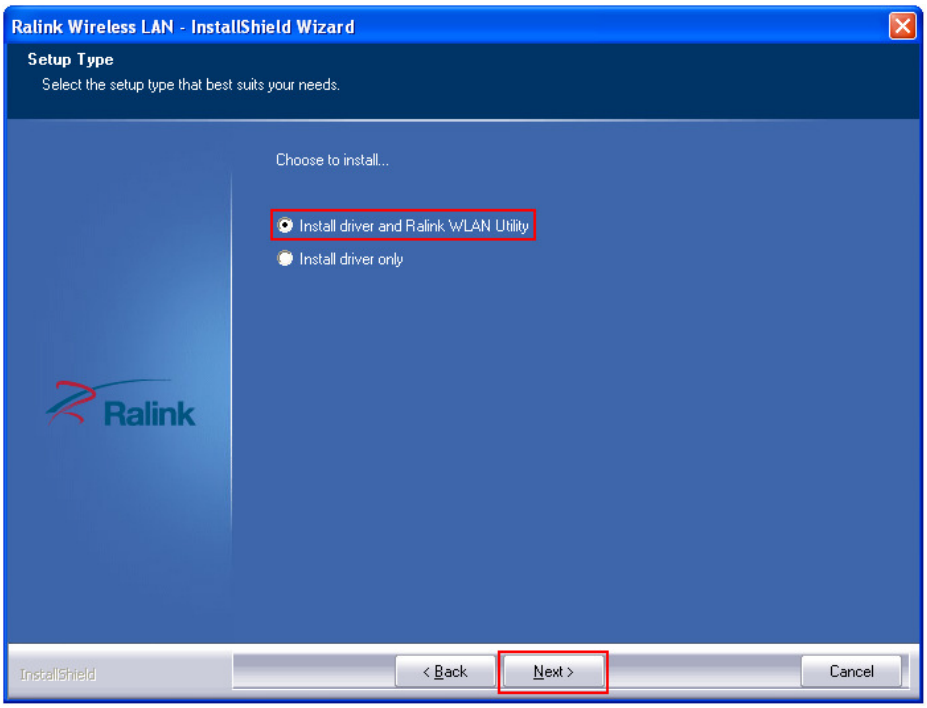
   If the installation page does not appear, double click CD-ROM drive the installation CD was inserted to, or open the CD-ROM drive then click **Autorun.exe**

3. Clink checkbox to accept the terms of license agreement, then click **Next**



4. Select setup type for installing both driver and WLAN utility or install driver only. Choose Install driver and WLAN utility, then click **Next**

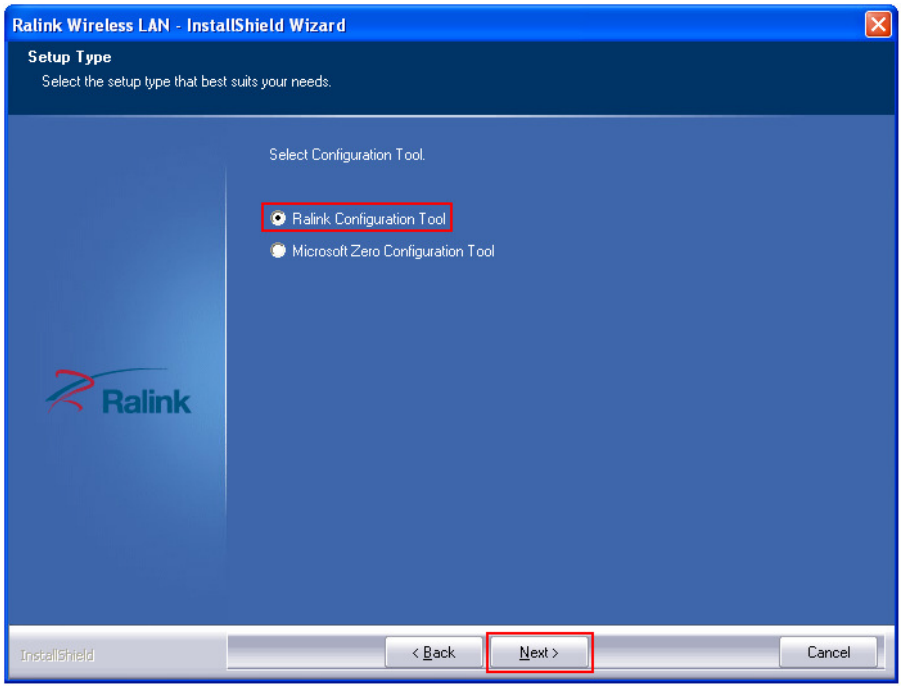
Note *If you choose to install driver only, refer to the note on next step.*



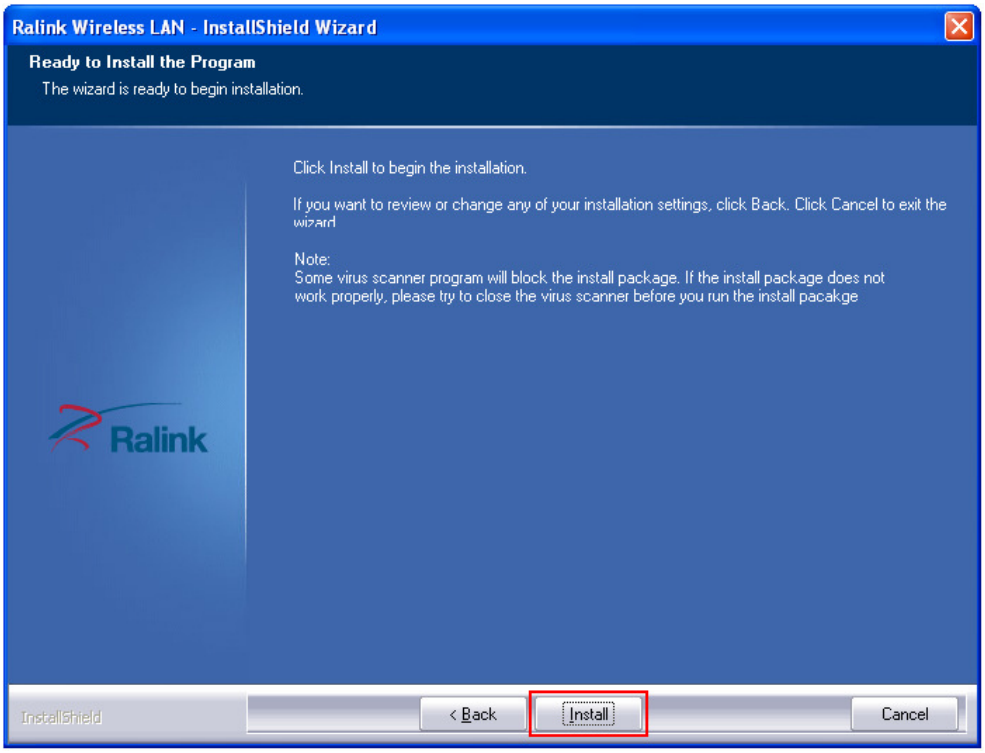
5. Select if you are going to configure your wireless network with WLAN utility or with Microsoft Zero Configuration tool. Choose WLAN Utility then click next.

Note *Type of configuration tool can be changed after installing this software.*

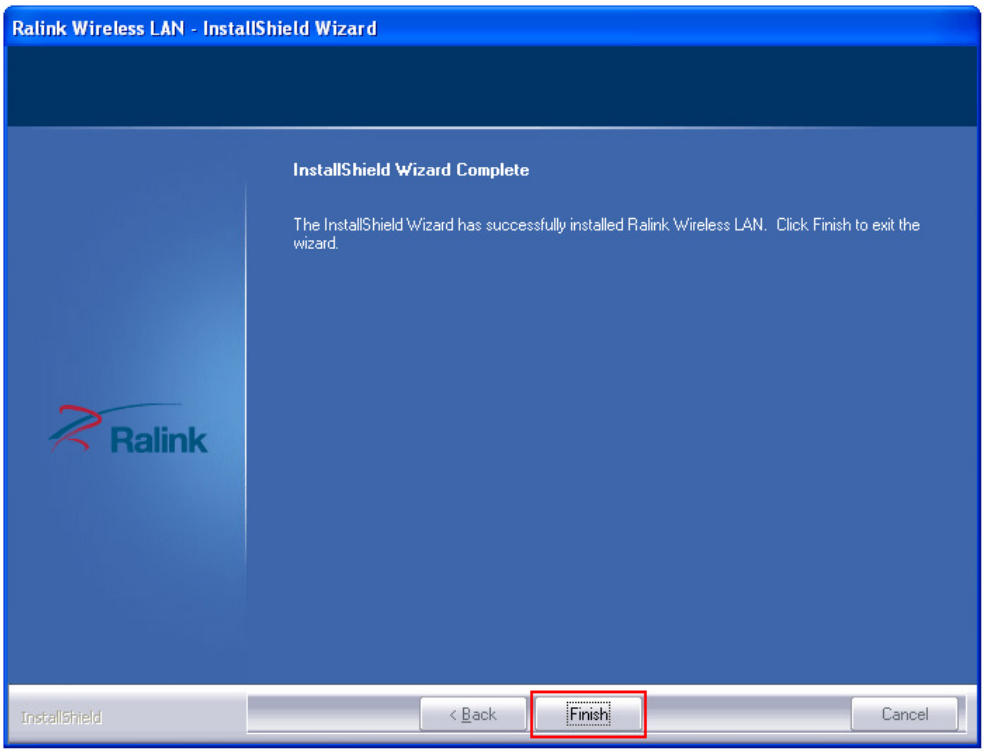
Note *If you choose to install driver only on step 4, the installation will skip this step. Windows Zero Configuration will be the default and only tool for managing your wireless network.*



6. Click **Install** to begin the installation.

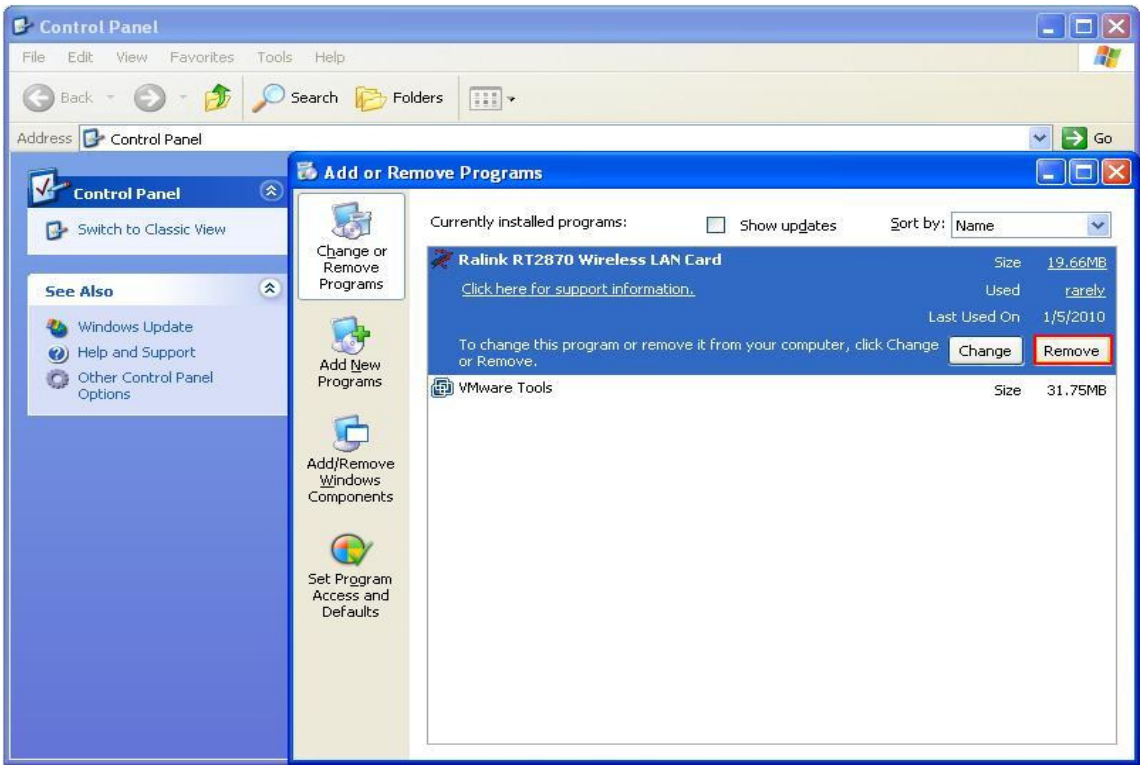


7. Click **Finish** to complete installation.



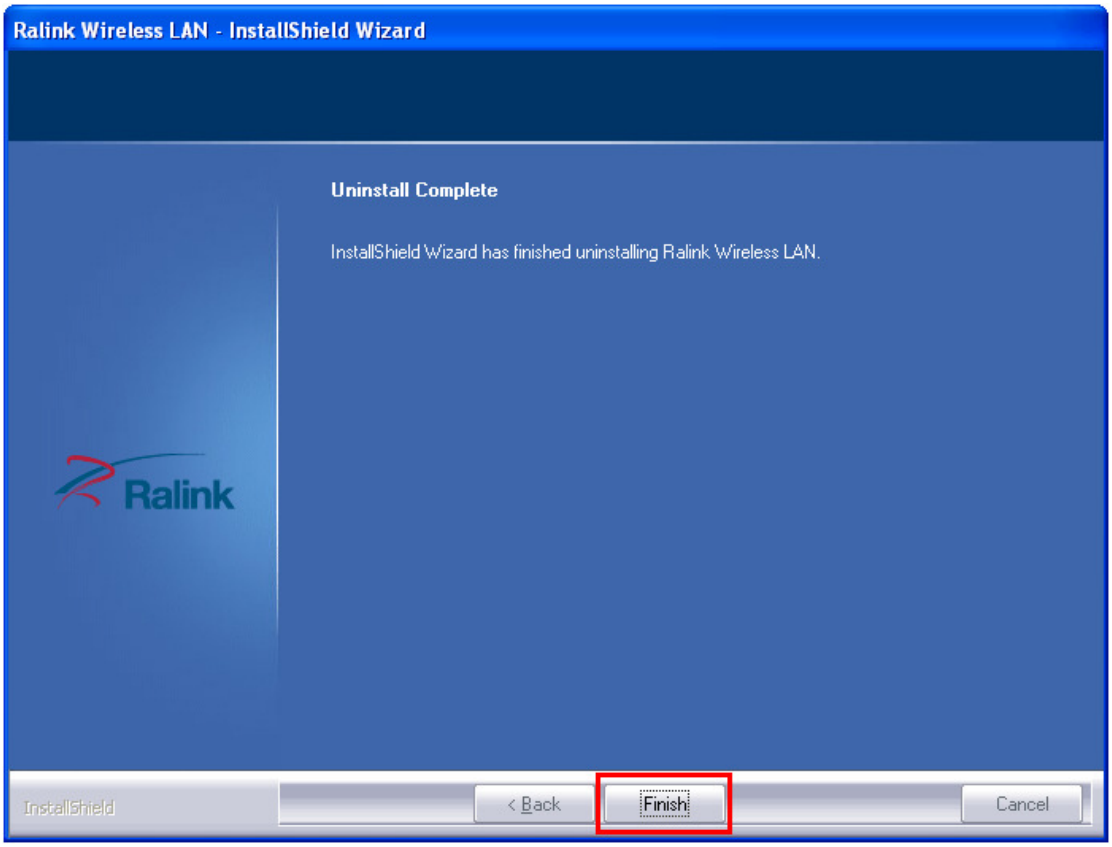
Uninstall

A. Uninstall the WLAN USB Adaptor Driver from **start menu**, **All Programs**, **Ralink Wireless**, click **Uninstall** or **Control Panel**, **Add or Remove Programs**, **Ralink RT2870 Wireless LAN Card**, click **Remove** to remove Wireless LAN USB Adaptor driver.



B. Click **Yes** if you want to remove Wireless LAN USB Adaptor driver.

C. Click **Finish** to complete uninstall.



Chapter 2 Management Guide

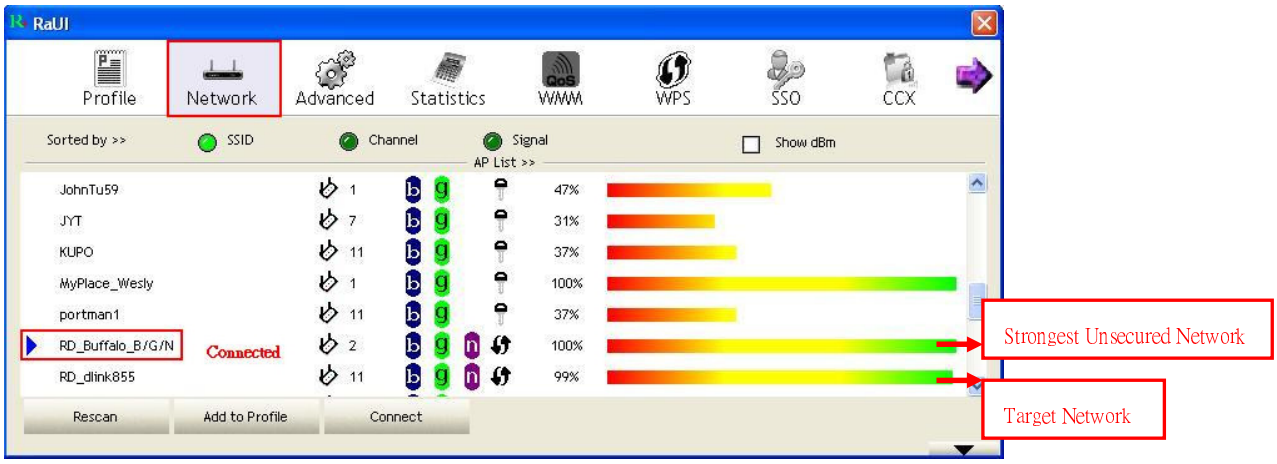
Making a Basic Network Connection

Select a configuration tool

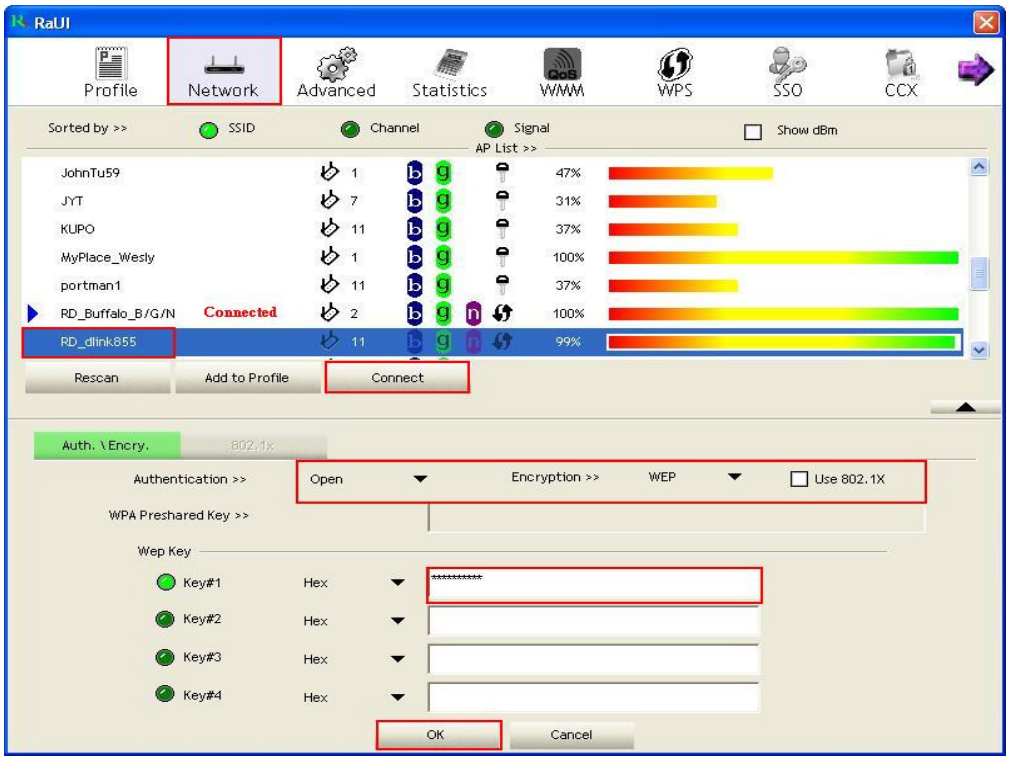
In the following instruction for making a network connection, we use WLAN utility to configure your wireless network settings that was installed as the steps in previous chapter.

To connect with 802.11 bgn Wireless LAN Utility

As default, the WLAN Utility is started automatically upon starting your computer and connects to the first available network. It is typically a network with the best signal strength among unsecured network. To change the connection to your own network, right click the icon on system tray and select **Launch Config Utility**. The pop up WLAN configuration utility allows you to quickly connect the network you intend to.

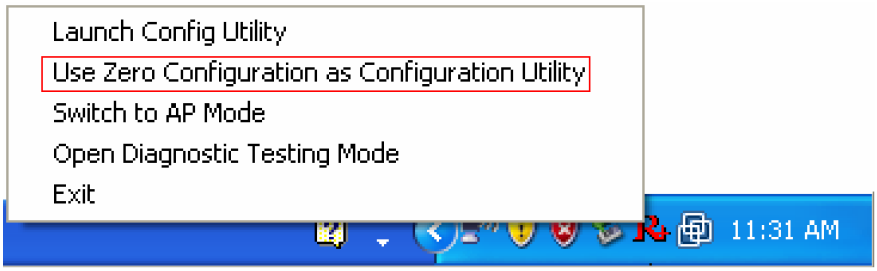


To join your target network, in Network tab, click on target network then **Connect**. Choose the security type of your network and type your security key, click on **OK** to complete a basic network connection.

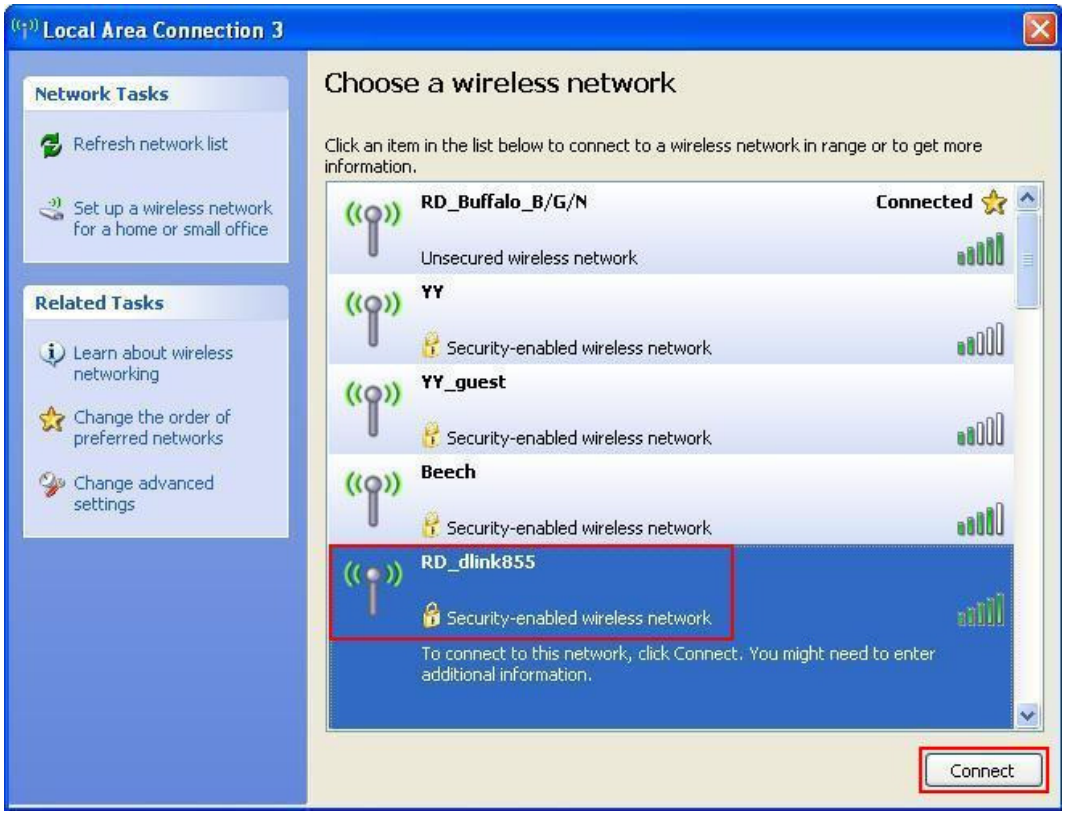


To connect with Microsoft Zero Configuration

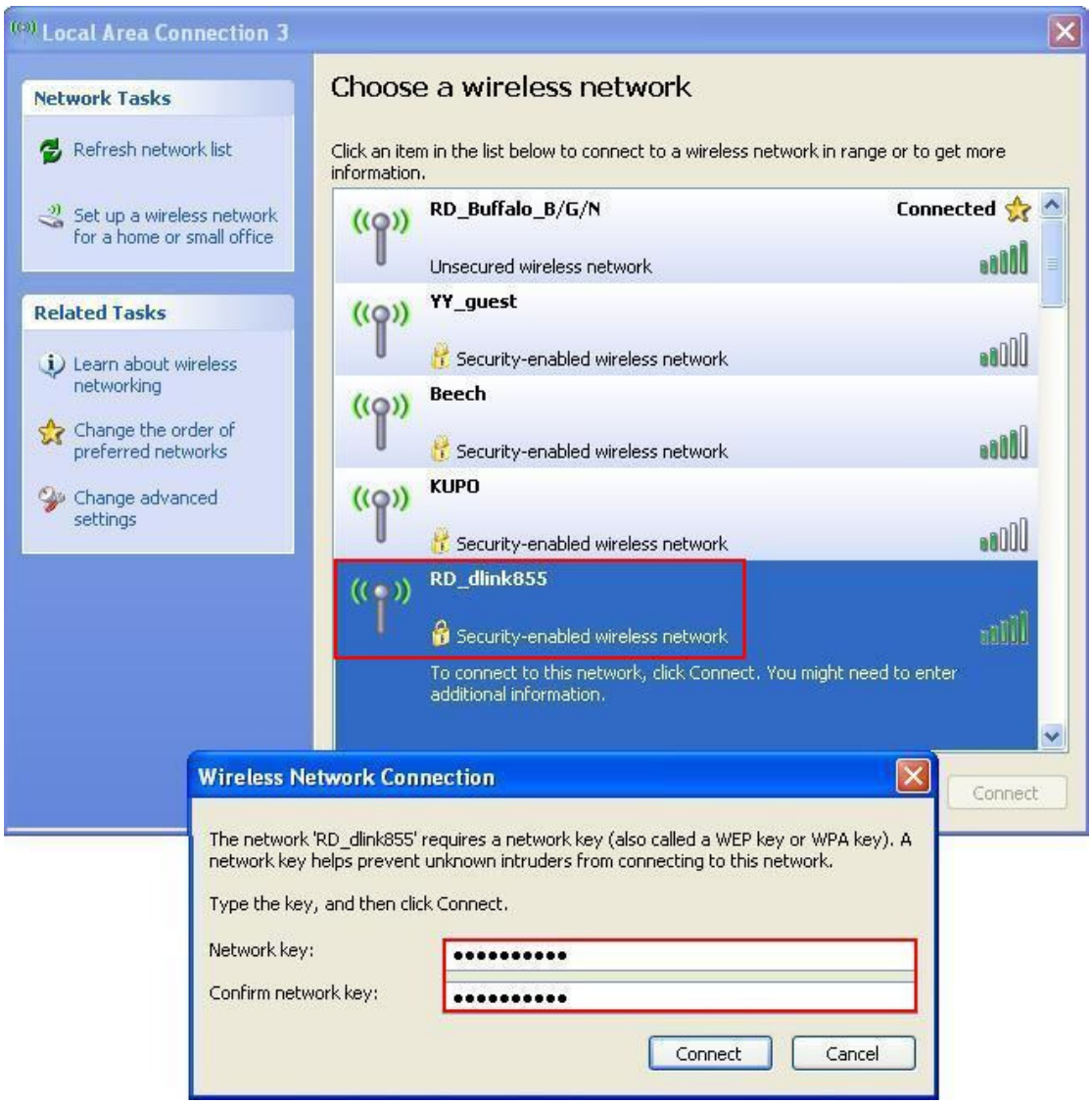
To switch between the configuration tools, please right click on the icon  on system tray. Select **Use Zero Configuration as Configuration Utility**



, double click on  icon on system tray. The Zero Configuration pop up and show available wireless networks. Select your demanding network and click **Connect**



A pop up dialog allow you to setup your security key, then click **Connect** to join a network by Zero configuration.

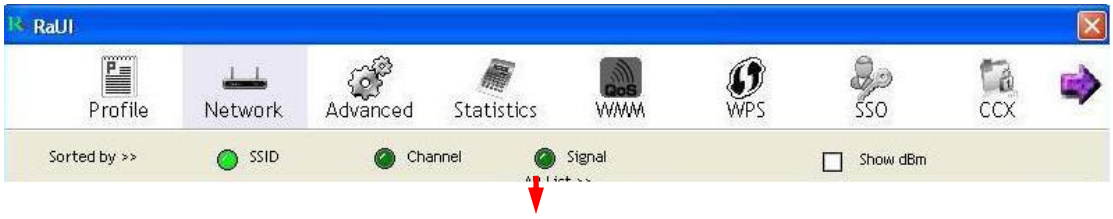


Chapter 3 Introduction to the Wireless LAN Utility

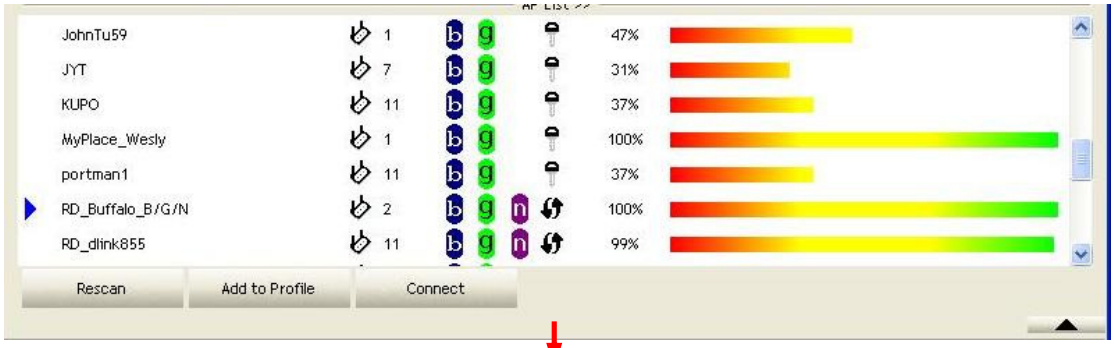
Utility Interfaces

This Utility is basically consisted of three parts:

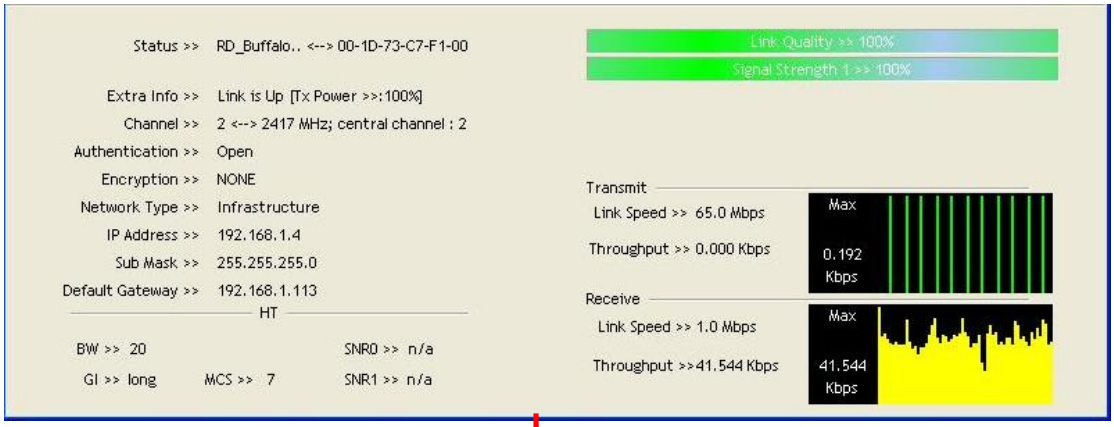
1. Button Section: on top of the window. Include buttons for selecting the Profile page, Network page, Advanced page, Statistics page, WMM page, WPS page, the About button, Radio On/Off button and Help.
2. Function Section: center of the Utility window. Appears to present information and options related to the button.
3. Status Section: bottom of the utility window. This section includes information about the link status, authentication status, AP's information and configuration, and retrying the connection when authentication is failed.



Button Section



Function Section



Status Section

When starting utility, a small utility icon  appears in the system tray of the taskbar. You can double click it to maximize the dialog box if you selected to close it earlier. You may also use the mouse's right button to close utility.

Additionally, the small icon will change color to reflect current wireless network connection status. The status is shown as follows:

 : Indicates the connected and signal strength is good.

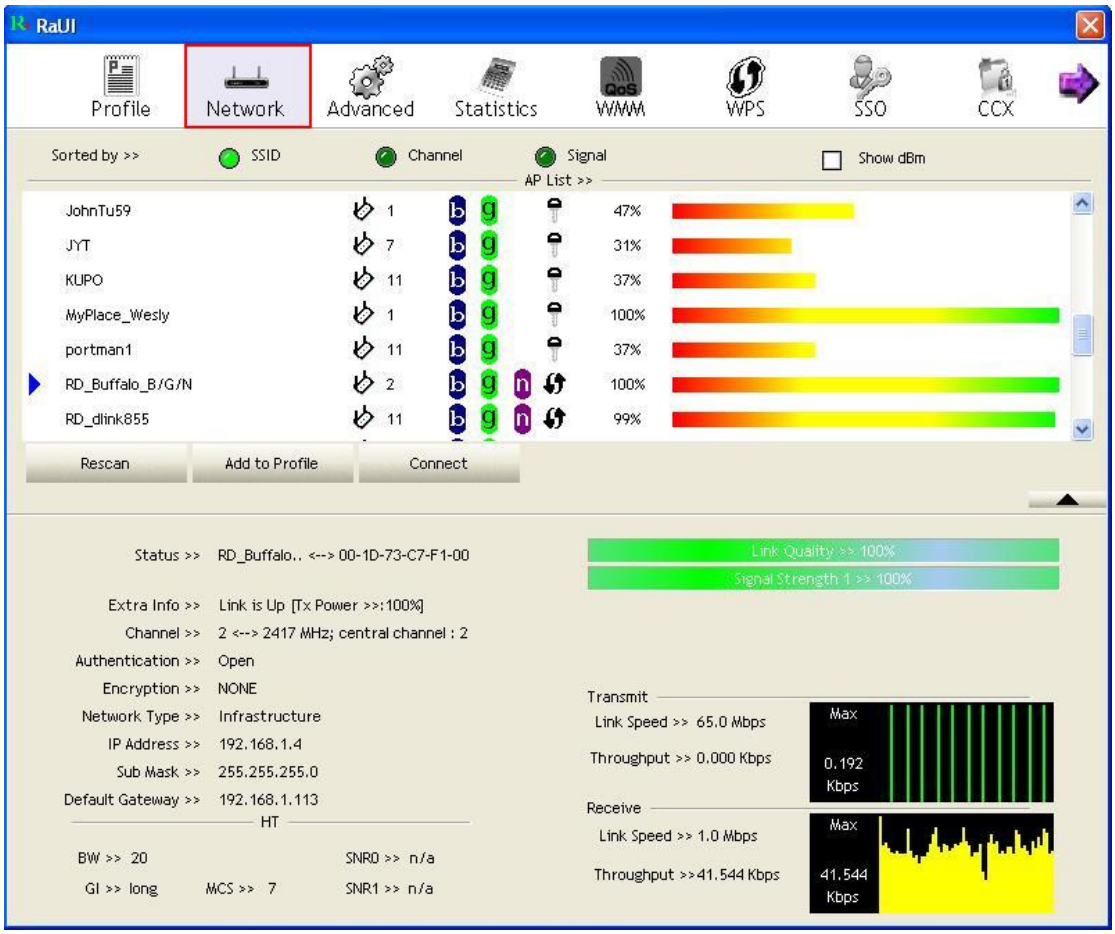
 : Indicates the connected and signal strength is normal.

 : Indicates that it is not yet connected.

 : Indicates that a wireless NIC can not be detected.

 : Indicates that the connection and signal strength is weak.

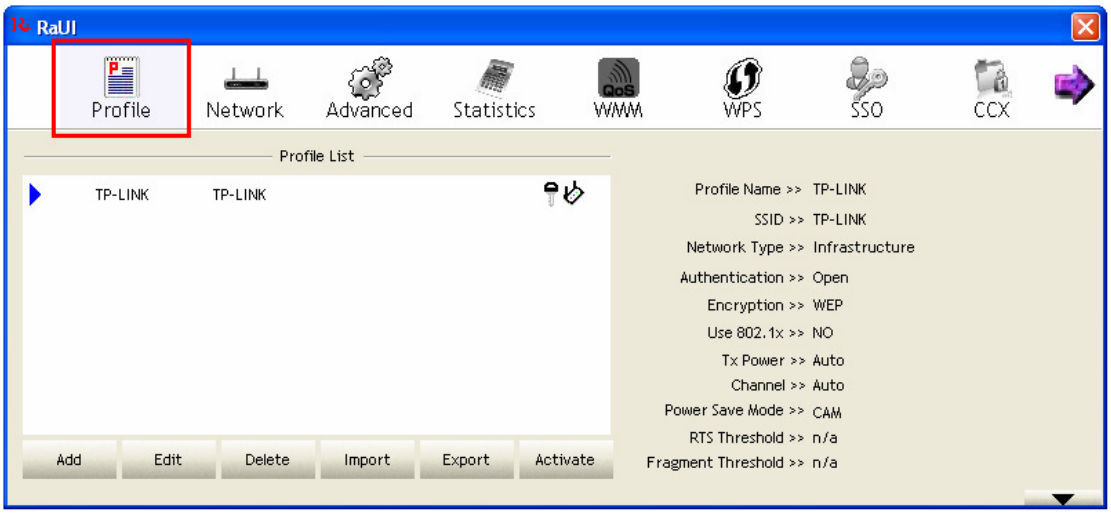
Network



Items	Information
Status	Shows the connecting status. Also shows the SSID while connecting to a valid network.
Extra Info	Display link status in use.
Channel	Display current channel in use.
Authentication	Authentication mode in use.
Encryption	Encryption type in use.
Network Type	Network type in use.
IP Address	IP address of current connection.
Sub Mask	Subnet mask of current connection.
Default Gateway	Default gateway of current connection.
Link Speed	Show current transmit rate and receive rate.
Throughput	Display transmit and receive throughput in Mbps.
Link Quality	Display connection quality based on signal strength and TX/RX packet error rate.
Signal Strength 1	Receive signal strength 1, user can choose to display as percentage or dBm format.
Signal Strength 2	Receive signal strength 2, user can choose to display as percentage or dBm format.
Signal Strength 3	Receive signal strength 3, user can choose to display as percentage or dBm format.
Noise Strength	Display noise signal strength.
HT	Display current HT status in use, containing BW, GI, MCS, SNR0, and SNR1 value.

Profile

This profile page allows users to save different wireless settings, which helps users to get access to wireless networks at home, office or other wireless network environments quickly.



Items	Information
Profile Name	Choose a name for this profile, or use default name defined by system.
SSID	Fill in the intended SSID name or use the drop list to select from available Aps.
Network Type	There are two types, infrastructure and 802.11 Ad-hoc modes. Under Ad-hoc mode, you could also choose the preamble type; the available preamble type includes auto and long. In addition to that, the channel field will be available for setup in Ad-hoc mode.
Authentication	Authentication mode.
Encryption	Encryption mode.
Use 802.1x	Whether or not use 802.1x feature.
Channel	Channel in use for Ad-Hoc mode.
Power Save Mode	Choose from CAM (Constantly Awake Mode) or PSM (Power Saving Mode).
Tx Power	Transmit power, the amount of power used by a radio transceiver to send the signal out.
RTS Threshold	For adjusting the RTS threshold number by sliding the bar or key in the value directly. The default value is 2347.
Fragment Threshold	Adjust the Fragment threshold number by sliding the bar or key in the value directly. The default value is 2346.

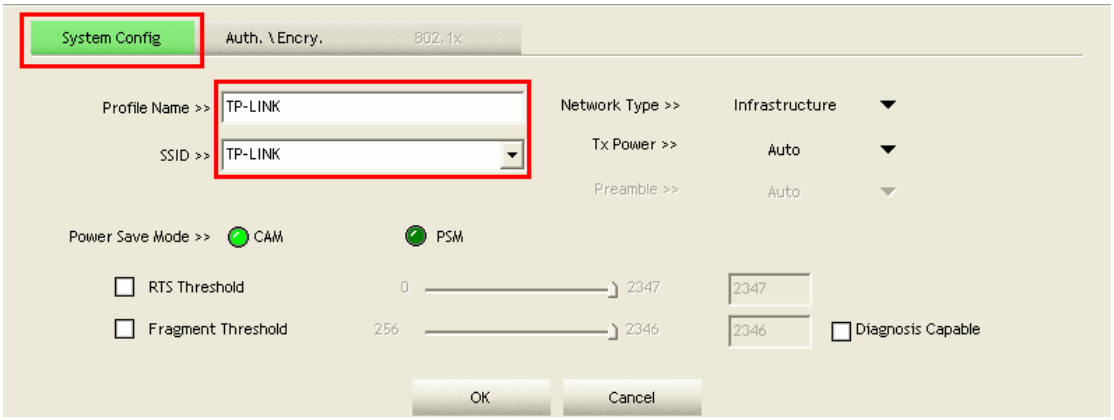
To add a new profile:

Click the **Add** button. The add profile dialog pops up.

Note you could also add a new profile quickly by selecting an available network in the **Network** function then click the **Add to Profile** button.

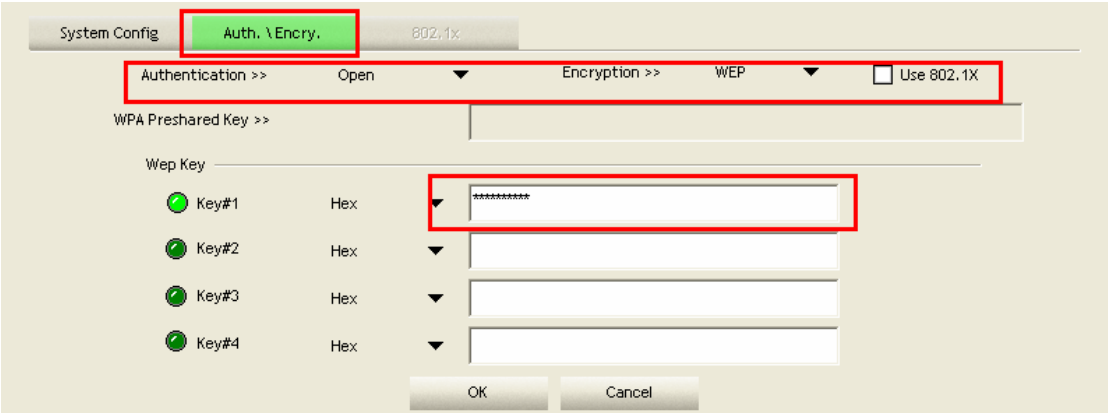
There are three sub-tabs for fill in information:

1. **System Config**: to fill in wireless information of the network

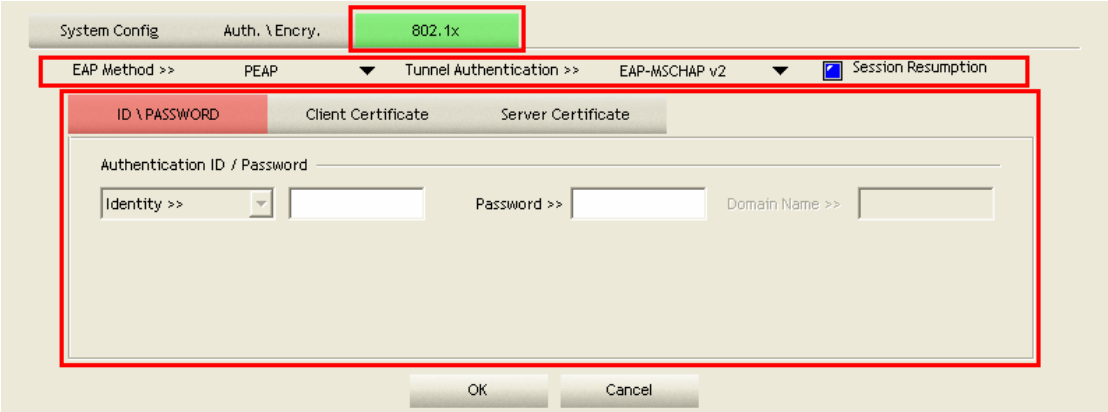


2. **Auth./Encry.**: to fill in wireless encryption or authentication information.

Note Click **Use 802.1X** checkbox will enable **802.1x** tab

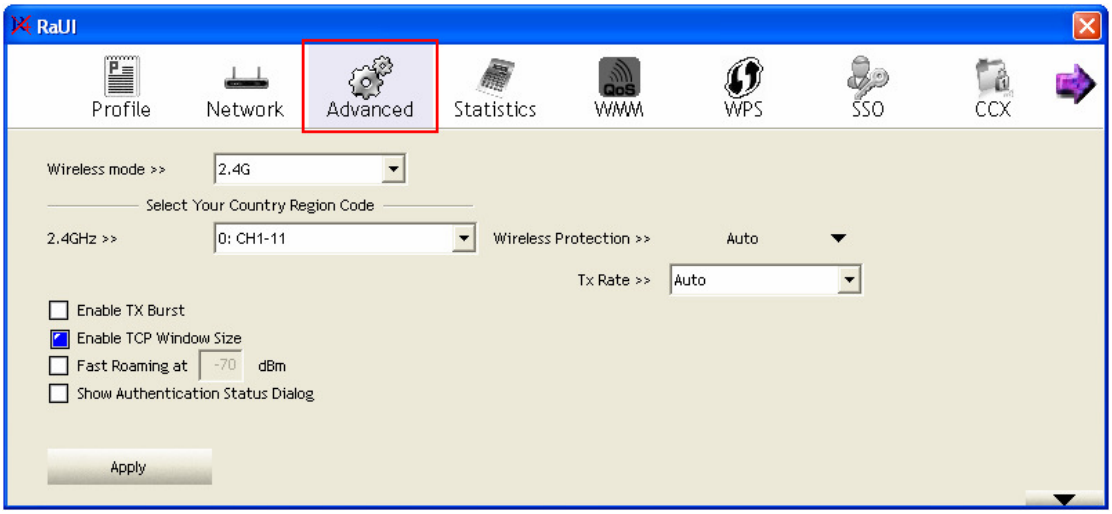


3. **802.1x**: to configure the authentication information for **802.1x**



Advanced

This page provides advanced configurations to this adapter. Please refer to the following chart for definitions of each item.

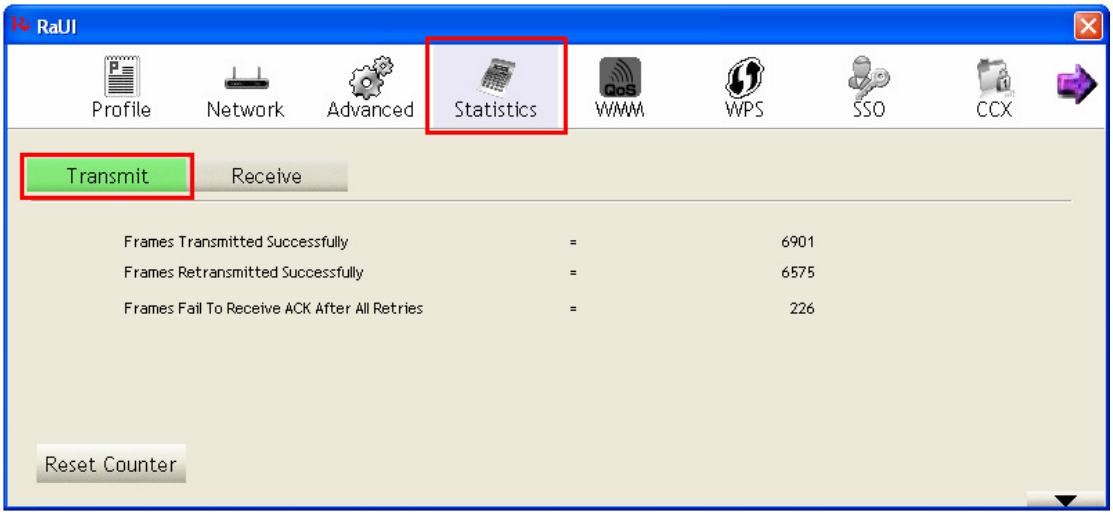


Items	Information
Wireless mode	Click the drop list to select a wireless mode.
Enable TX Burst	Select to enable connecting to a TX Burst supported device.
Enable TCP Window Size	Mark the checkbox to enable TCP window size, which help enhance throughput.
Fast Roaming at __ dBm	Mark the checkbox to enable fast roaming. Specify the transmit power for fast roaming.
Show Authentication Status Dialog	Mark the checkbox to show "Authentication Status Dialog" while connecting to an AP with authentication. Authentication Status Dialog displays the process about 802.1 x authentications.
TX Rate	Manually select the transfer rate. The default setting is auto. (802.11n wireless cards do not allow the user to select the TX Rate.)
Select Your Country Region Code	Eight countries to choose. Channel list: Classification — Range 0: FCC (Canada) — CH1 ~ CH11 1: ETSI — CH1 ~ CH13 2: SPAIN — CH10 ~ CH11 3: FRANCE — CH10 ~ CH13 4: MKK — CH14 ~ CH14 5: MKKI (TELEC) — CH1 ~ CH14 6: ISRAEL — CH3 ~ CH9 7: ISRAEL — CH5 ~ CH13

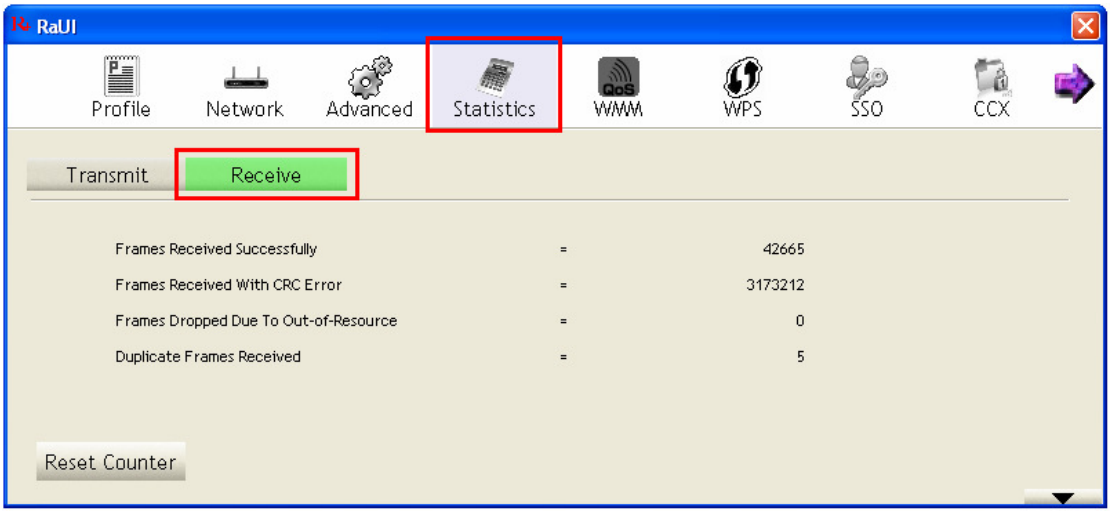
Note: The country code selection is for non-US model only and is not available to all US model. Per FCC regulation, all WiFi product marketed in US must fixed to US operation channels only.

Statistics

Statistics page displays the detail counter information based on 802.11 MIB counters. This page translates the MIB counters into a format easier for user to understand.



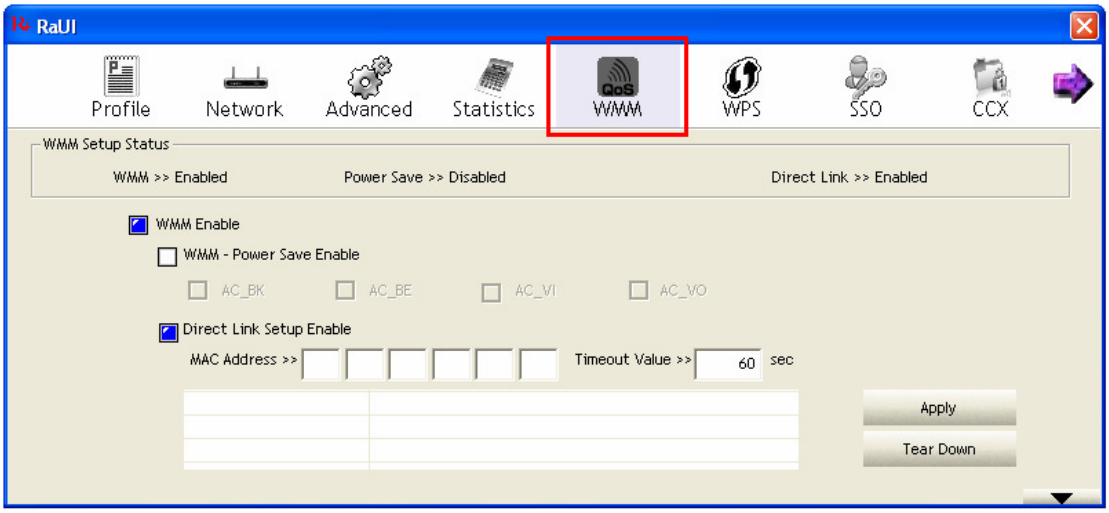
Items	Information
Frames Transmitted Successfully	Frames successfully sent.
Frames Retransmitted Successfully	Successfully retransmitted frames numbers.
Frames Fail To Receive ACK After All Retries	Frames failed transmit after hitting retry limit.
Reset Counter	Reset counters to zero.



Items	Information
Frames Received Successfully	Frames received successfully.
Frames Received With CRC Error	Frames received with CRC error.
Frames Dropped Due To Out-of-Resource	Frames dropped due to resource issue.
Duplicate Frames Received	Duplicate received frames.
Reset Counter	Reset counters to zero.

WMM

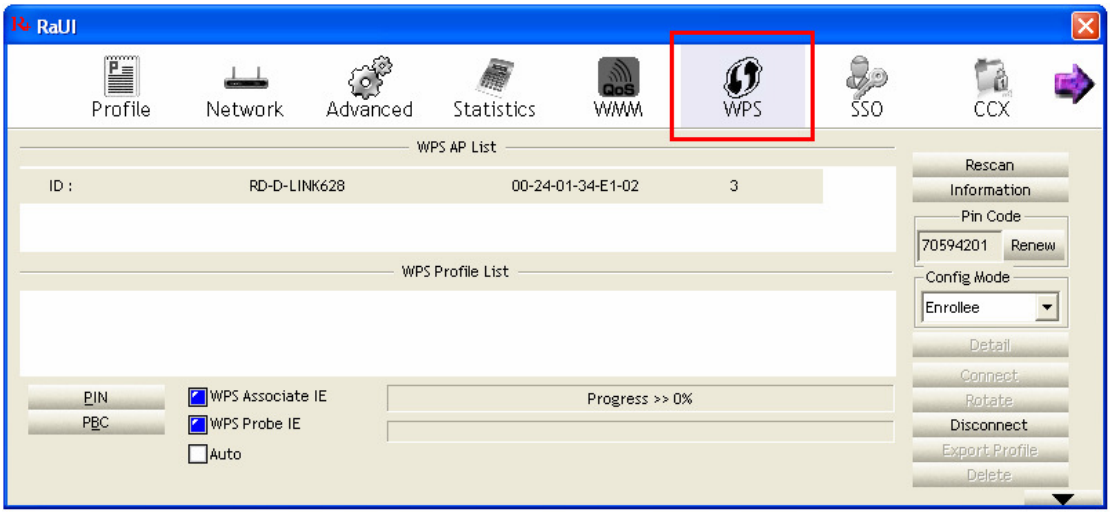
This page allows users to activate the WMM function for this device. Please note that this function only works while connecting to a WMM compatible device.



Items	Information
WMM Enable	Enable Wi-Fi Multi-Media.
WMM - Power Save Enable	Enable WMM Power Save. Please enable WMM before configuring this function.
Direct Link Setup Enable	Enable DLS (Direct Link Setup). Please enable WMM before configuring this function.
MAC Address	Fill in the blanks of Direct Link with MAC Address of STA.
Timeout Value	Time of automatically disconnect after some seconds. The value is integer. The integer 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 / Tear Down	After fill in the "MAC Address" and "Timeout Value", click "Apply" button to save your configuration. The result will appear in the blanks. To remove the configuration, please select the configuration in the blanks and then click "Tear Down" button.

WPS

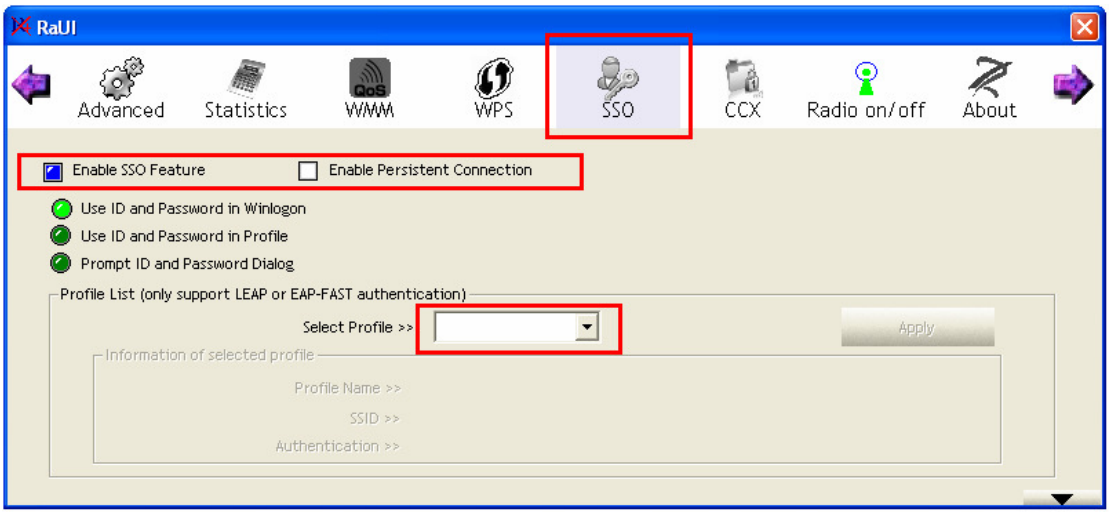
WPS Configuration: The primary goal of WiFi Protected Setup (WiFi Simple Configuration) is to simplify the security setup and management of WiFi networks. This adapter supports the configuration setup using PIN configuration method or PBC configuration method through an internal or external Registrar.



Items	Information
WPS AP List	Display the information of surrounding APs with WPS IE from last scan result. List information includes SSID, BSSID, Channel, ID (Device Password ID), and Security-Enabled.
Rescan	Click to rescan the wireless networks.
Information	Display the information about WPS IE on the selected network. List information includes Authentication Type, Encryption Type, Config Methods, Device Password ID, Selected Registrar, State, Version, AP Setup Locked, UUID-E and RF Bands.
Pin Code	8-digit numbers. It is required to enter PIN Code into Registrar using PIN method. Each Network card has only one PIN Code of Enrollee. Click on the Renew button to renew the PIN code.
Config Mode	The station serving as an Enrollee or an external Registrar.
WPS Profile List	Display all of credentials got from the Registrar. List information includes SSID, MAC Address, Authentication and Encryption Type. If STA Enrollee, credentials are created as soon as each WPS success. If STA Registrar, Utility creates a new credential with WPA2-PSK/AES/64Hex-Key and doesn't change until next switching to STA Registrar.
Detail	Information about Security and Key in the credential.
Connect	Command to connect to the selected network inside credentials.
Rotate	Command to connect to the next network inside credentials.
Disconnect	Stop WPS action and disconnect this active link. And then select the last profile at the Profile Page of Utility if exists. If there is an empty profile page, the driver will select any non-security AP.
Delete	Delete an existing credential. And then select the next credential if exist. If there is an empty credential, the driver will select any non-security AP.
PIN	Start to add to Registrar using PIN configuration method. If STA Registrar, remember that enter PIN Code read from your Enrollee before starting PIN.
PBC	Start to add to AP using PBC configuration method.
WPS associate IE	Send the association request with WPS IE during WPS setup. It is optional for STA.
WPS probe IE	Send the probe request with WPS IE during WPS setup. It is optional for STA.
Progress Bar	Display rate of progress from Start to Connected status.
Status Bar	Display currently WPS Status.
Auto	Starts to add to AP by using to select the AP automatically in PIN method.

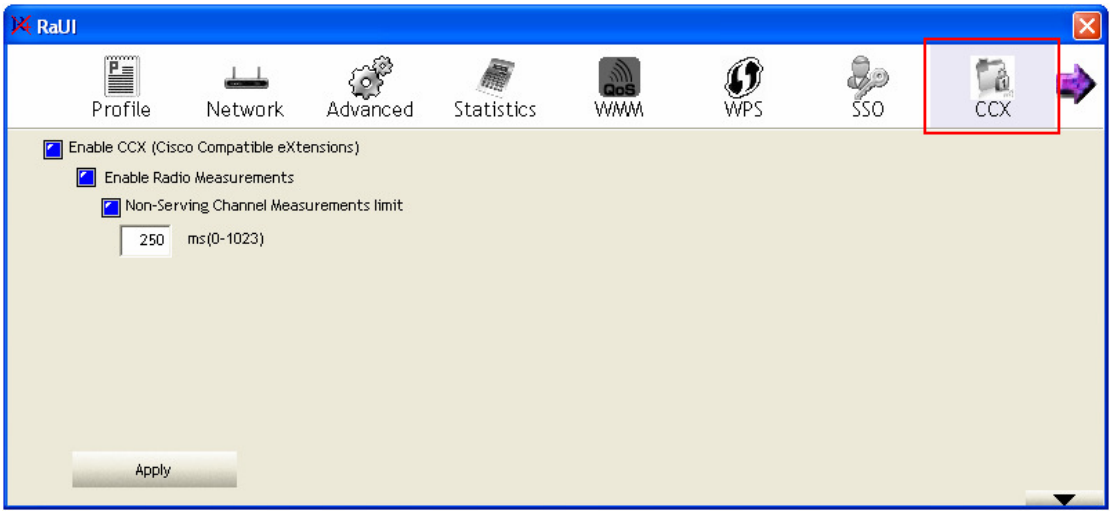
When you click PIN or PBC, please don't do any rescan within two-minute connection. If you want to abort this setup within the interval, restart PIN/PBC or click Disconnect to stop WPS action.

SSO



Items	Information
Enable SSO feature	Choose which SSO methods to log on
Use ID and Password in Winlogon:	Use the ID and password in Windows logon
Use ID and Password in Profile	Use the ID and password in RaUI profile settings
Use ID and Password in Dialog	Use the ID and password in pop-up authentication dialog
Enable Persistent Connection	Use ID and Password in the previous activated Profile and not show any authentication dialog
Profile List	**Select Profile:** Select a profile containing LEAP or EAP-Fast authentication **Information of selected profile:** Profile information, such as profile name, SSID.
Apply	Hit the Apply button to make the settings effective

CCX

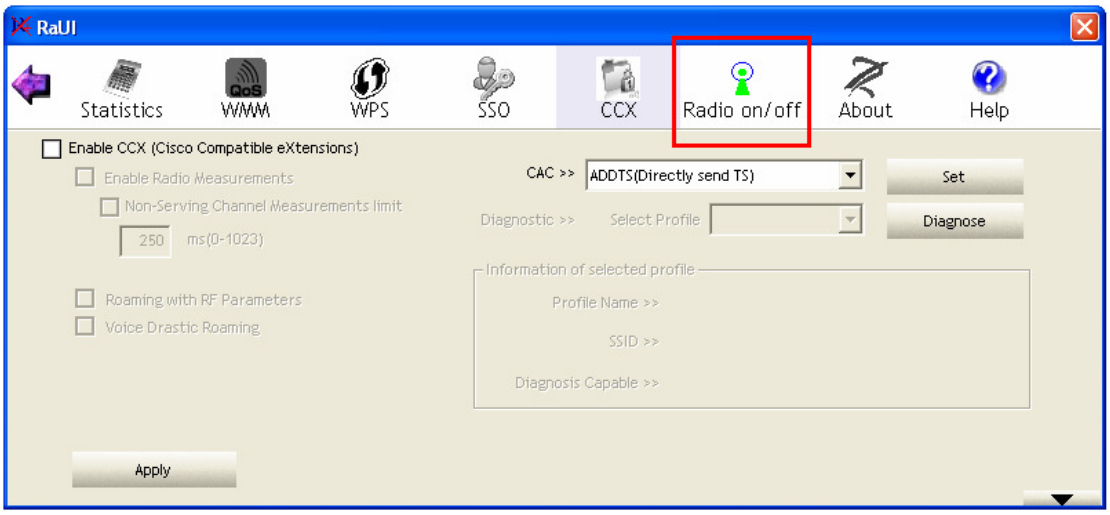


Items	Information
Enable CCX (Cisco Compatible eXtensions)	Choose whether Cisco Compatible eXtensions are supported or not.
Enable Radio Measurement	Enable the radio measurement; the non-serving channel measurement limit is between 0 and 1023 milliseconds.
Apply	Hit the Apply button to make the settings effective

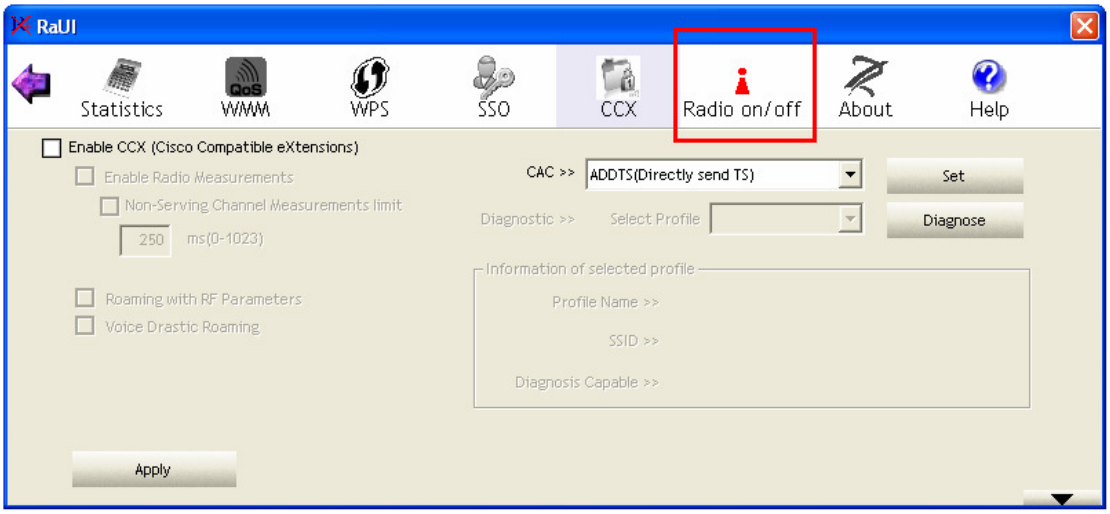
Radio On/Off

Click on the button to enable/disable wireless connection status.

Radio power on



Radio power off

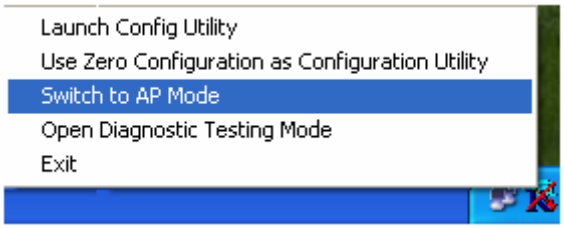


About

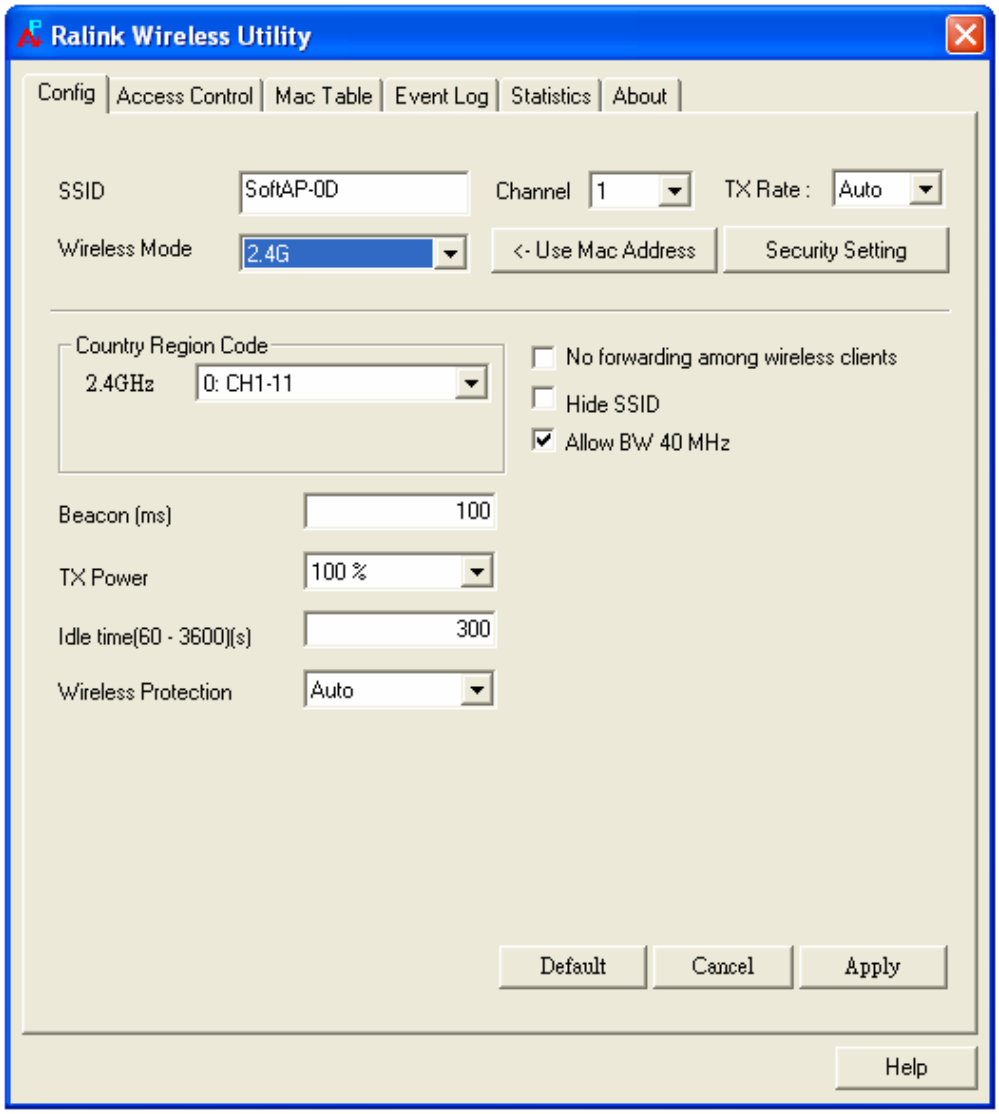
Display Configuration Utility, Driver, and EEPROM version information. Display Wireless NIC MAC address.

Chapter 4 AP mode management guide

Clicking  will bring up the selection window and let the user make a selection. It can switch to AP mode as shown figure.



If "Switch to AP mode" is selected, the system will display default information when switching to AP mode. The dialog box is shown in figure



Note: The country code selection is for non-US model only and is not available to all US model. Per FCC regulation, all WiFi product marketed in US must fixed to US operation channels only.

There are six tabs to configure the settings.

- **Config Settings**: This tab is used to configure Soft AP.
- **Access Control**: This tab is used to edit the access control list.
- **Mac Table**: This tab displays the stations which are currently connected to Soft AP.
- **Event Log**: This tab displays the Soft AP events.
- **Statistics**: This tab displays the packet counters.
- **About**: This tab displays the Ralink driver and utility information.

Control Menu

When starting Soft AP utility, a small  icon appears within the system tray in winows taskbar. Double click it to bring up the main menu if the Soft AP utility menu was closed earlier. The user can also right-click the icon to bring up the control menu. There are three actions available.

- **Launch Config Utilities:** Restore Ralink Soft AP utility window
- **Switch to Station Mode:** Switch to Station mode
- **Exit:** End Soft AP utility

The icon changes color to reflect the current wireless network connection status. The status is indicated as follows:

 : Indicate connected and signal strength is good.

 : Indicate connected and signal strength is normal.

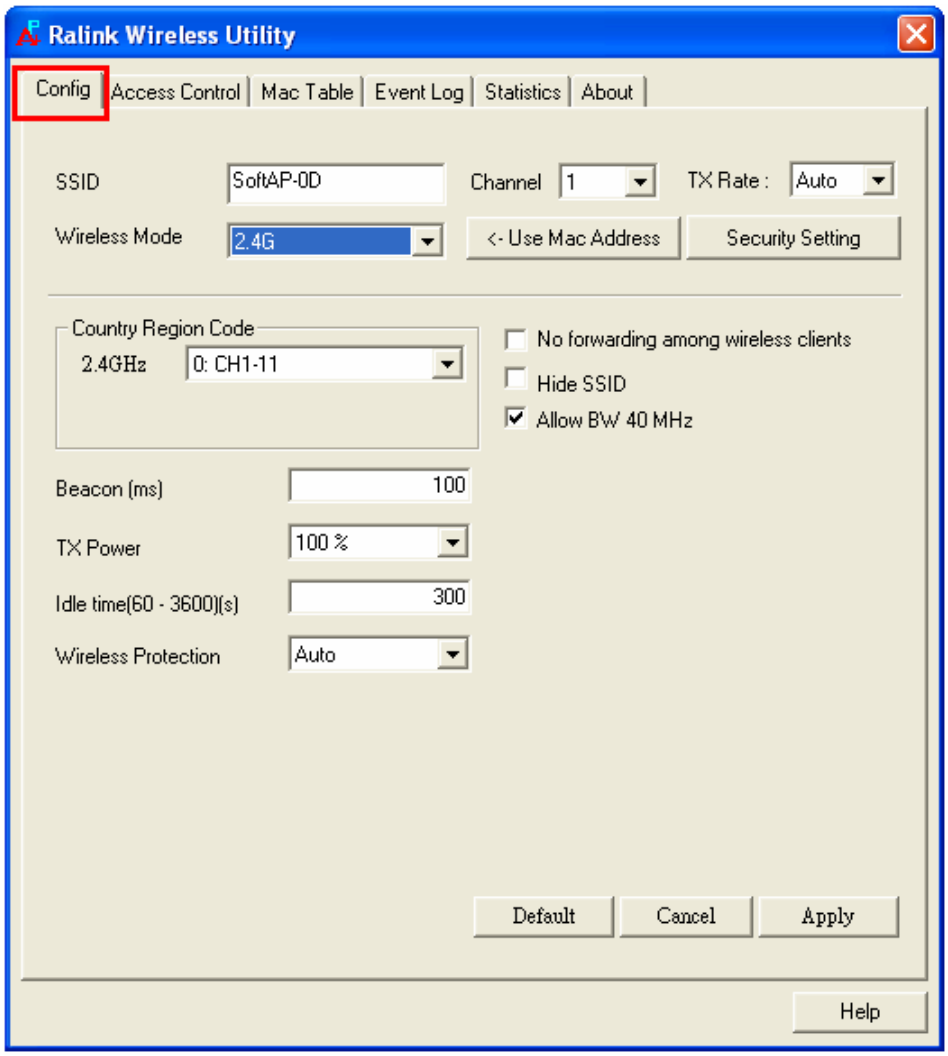
 : Indicate connected and signal strength is weak.

 : Indicate wireless NIC not detected.

 : Indicate not connected yet.

Config Setting

User can set and display detailed Soft AP information in this dialog box.



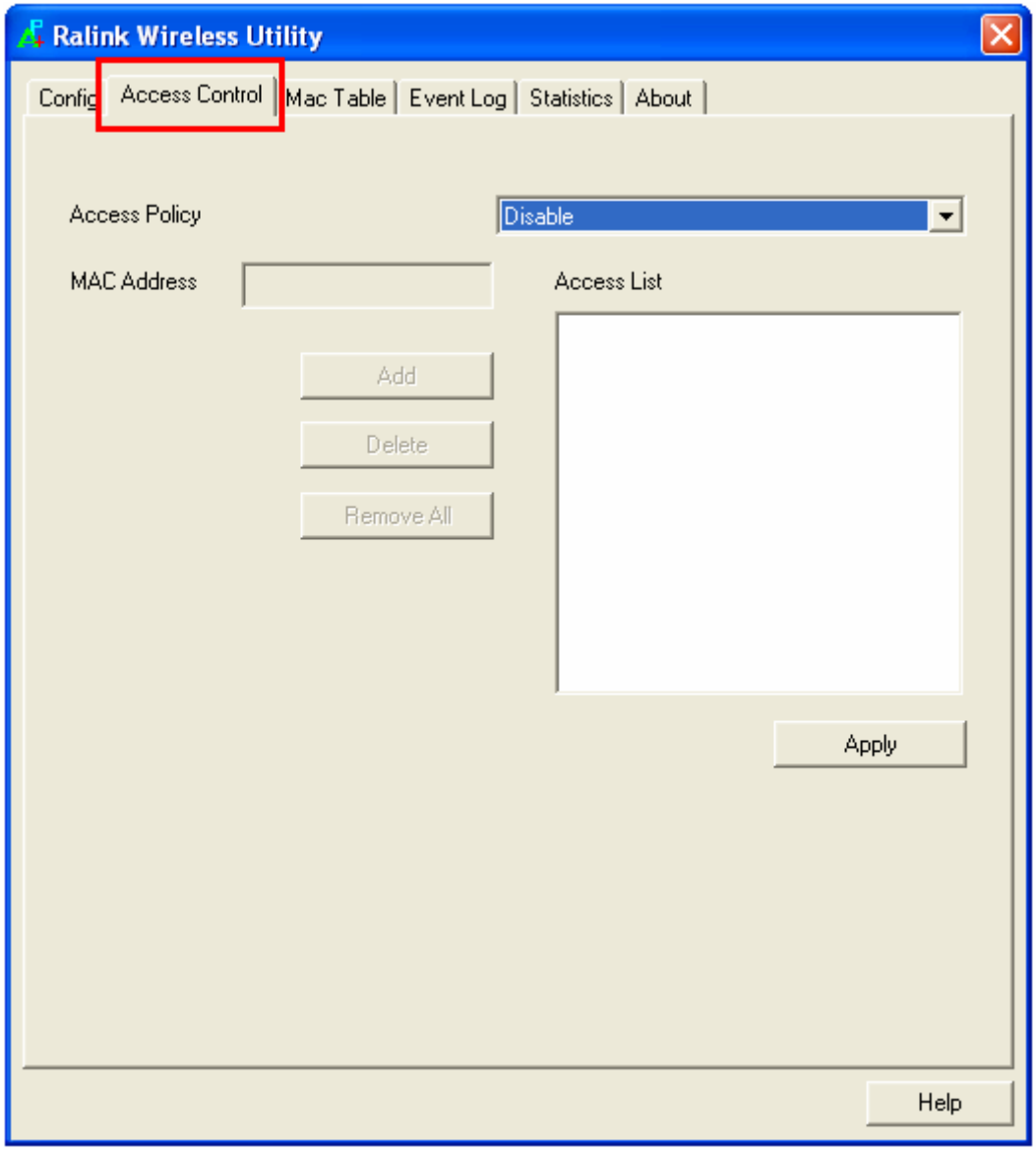
Items	Information
SSID	AP name of user type. The user also can select [Use Mac Address] to display it. System default is SoftAP-XX (XX is last two numbers of MAC address).
Wireless Mode	Select wireless mode. 2.4G and 5G are supported. System default is 2.4G. (802.11 B/G/N mix selection item only exists for B/G/N adapter)
Country Region Code	The Country Region Code allows the user to specify the available channel list based on their country's regulations.
Beacon (ms)	The time span between two successive4 beacons. System default is 100 ms.
TX Power	The transmitting power of Soft AP. System default is 100%.
Idle Time	The allowed idle time before proceeding with the authentication. The default is 300.
Wireless Protection	The user can chose from Auto, on, and off. System default is auto. (802.11n wireless cards don't support wireless protection.) a. Auto: STA will dynamically change according to the AP. b. On: Always send frames with protection. c. Off: Always send frames without protection.
Channel	Select the AP's operating channel manually. System default is channel 1.
TX Rate	The transmitting rate. The default is auto. (802.11n wireless cards don't support TxRate.)

Note: The country code selection is for non-US model only and is not available to all US model. Per FCC regulation, all WiFi product marketed in US must fixed to US operation channels only.

Use Mac Address	Use the MAC address of wireless card as the AP's name. System default is APX. (X is last number of Mac Address.)
Security Setting	Authentication mode and encryption algorithm used by the AP. The system default is no authentication and encryption.
No forwarding among wireless clients	If there is no beacon among the wireless clients, they can't share information with each other. The system default is no forwarding.
Hide SSID	Don't display the AP name. The system default is to not hide the SSID.
Allow BW40 MHz	Allow BW40 MHz capability.
Default	Use system default values.
Cancel	Cancel the any changes without saving.
Apply:	Apply the any changes made. If using default values, it will be shown as in below figure

Access Control

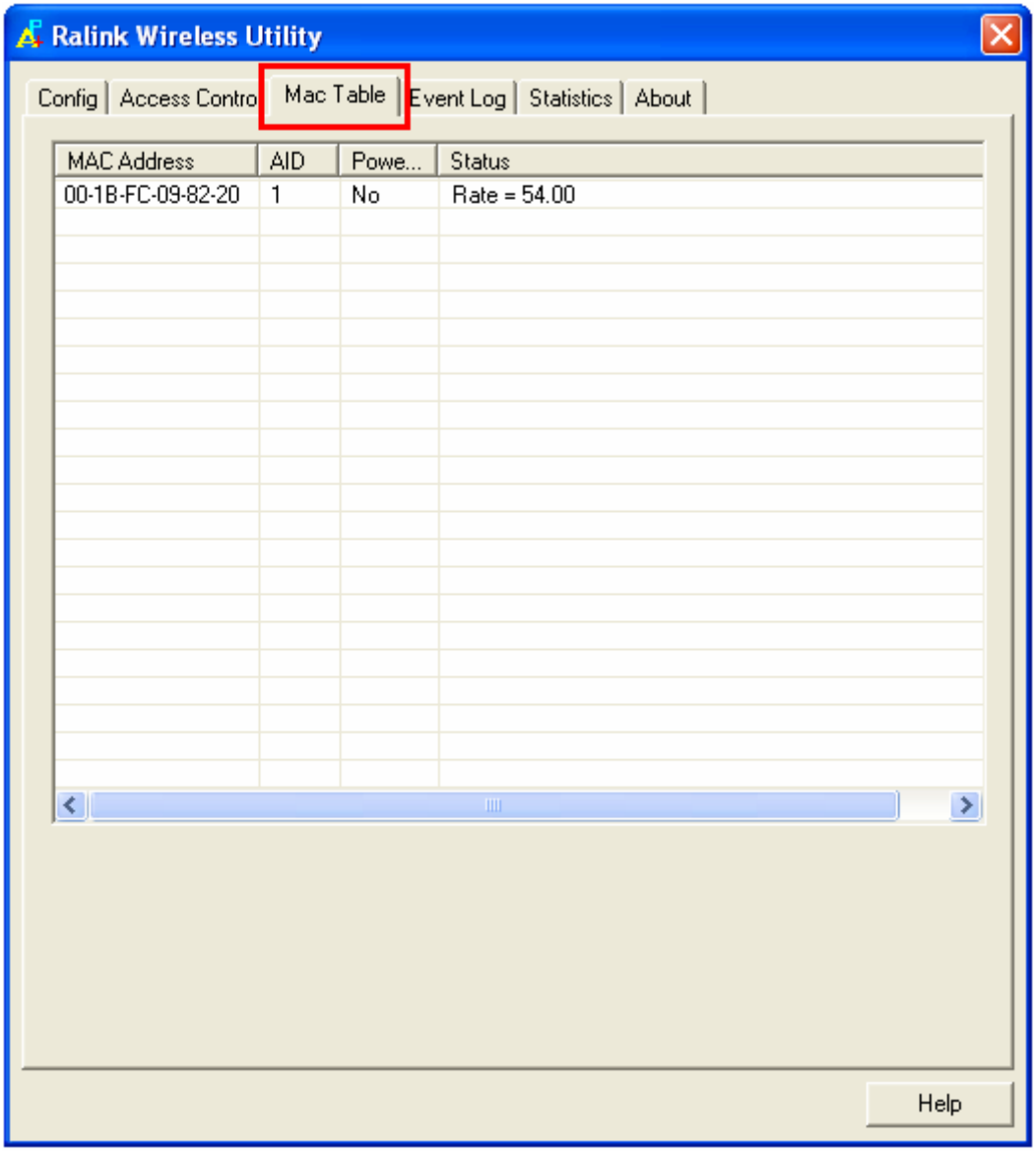
AP connected or can't connect with Mac address that user setting.



Items	Information
Access Policy	There are three policies available in the drop-down list. They are Disable, Allow All, and Reject All. System default is disabled.
Mac Address	In order to add an entry into the access control list, the user should input the MAC address without "-" in the text box and then click the "Add" button.
Access List	Display all Mac Addresses that the user has set.
Delete	Delete the Mac address set by user.
Remove All	Remove all Mac addresses in [Access List].
Apply	Apply the above changes.

MAC Table

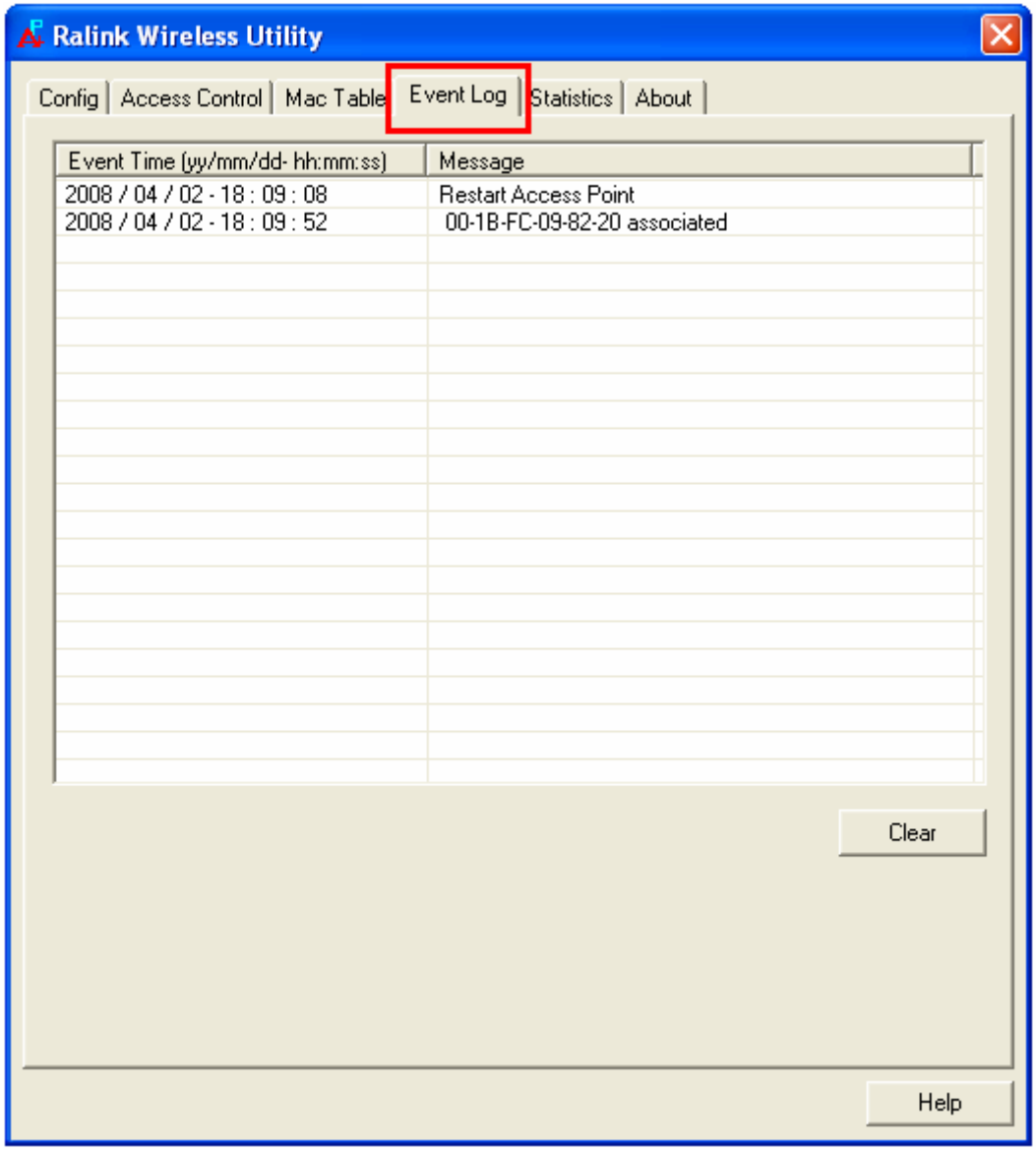
Shows link status. It displays detailed station information of current connection.



Items	Information
MAC Address	The station's Mac address of the current connection.
AID	The association identifier of the client.
Power Saving Mode	Support Power Saving Mode on the currently connected station.
Status	The link status of the current connection. (Only 802.11n wireless cards support)

Event Log

A record of all events, times and messages.

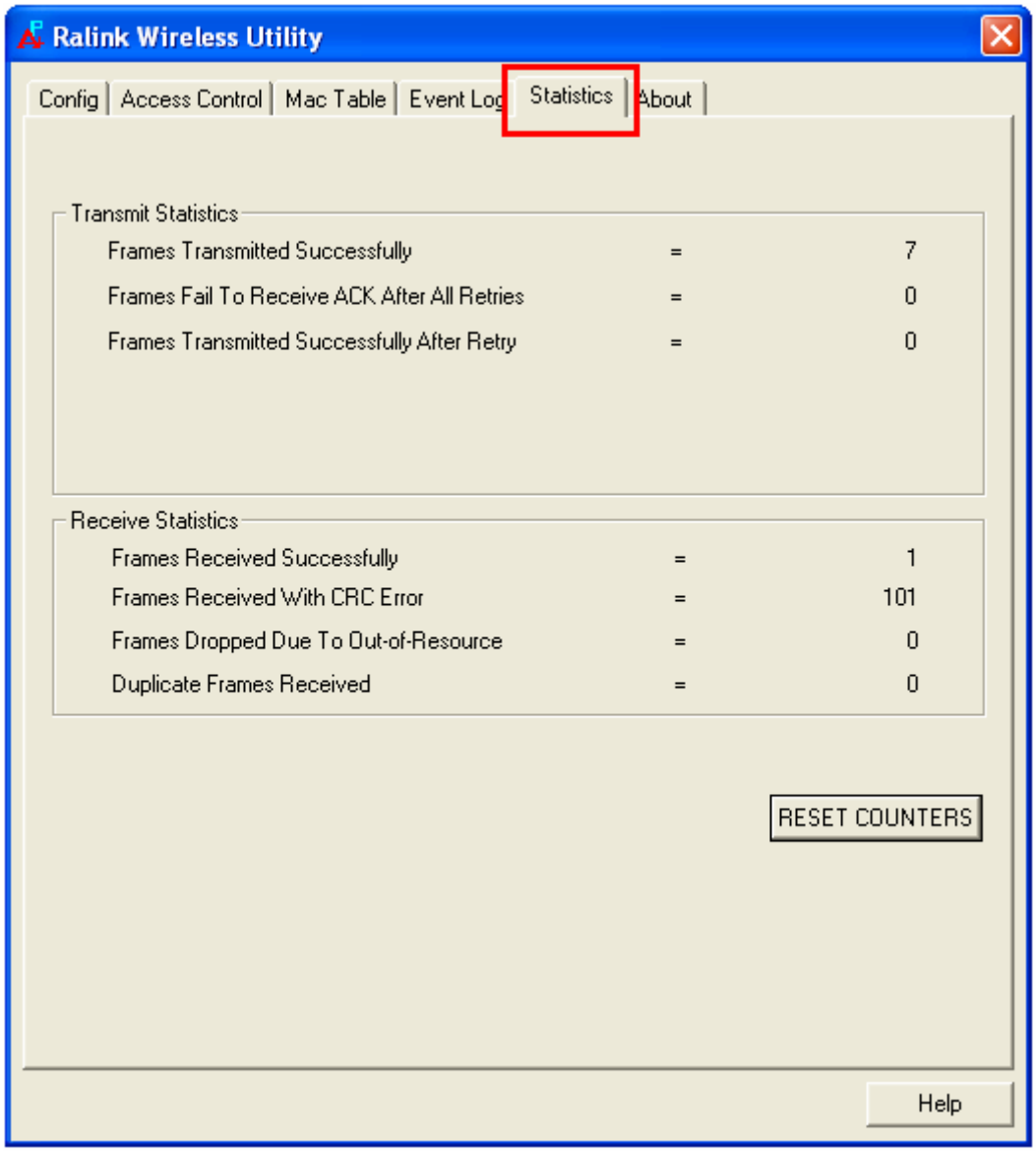


Items	Information
Event Time (yy/mm/dd-hh:mm:ss)	Specifies when the event occurred.
Message	All event messages.

Statistics

The statistics page displays detailed counter information based on the 802.11 MIB counters.

The information is translated into a format easier for the user to understand.



Transmit Statistics

Items	Information
Frames Transmitted Successfully	The number of frames sent successfully.
Frames Fail To Receive ACK After All Retries	The number of frames failed to transmit after hitting the retry limit
Frames Retransmitted Successfully	The number of successfully retransmitted frames.

Receive Statistics

Items	Information
Frames Received Successfully	The number of frames received successfully.
Frames Received With CRC Error	The number of frames received with a CRC error.
Frames Dropped Due To Out-of-Resource	The number of frames stopped due to insufficient resources
Duplicate Frames Received	The number of duplicate frames received.
Reset counters	Reset counters to zero.

About

The About page displays the wireless card and driver version information, displays Configuration Utility, driver and EEPROM version information, displays Wireless NIC MAC address.