Network Type: There are two types, infrastructure and 802.11 Ad-Hoc mode. Under Ad-Hoc mode, user can 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.

Tx Power: You can select the wireless output power here. If you're not too far from AP (good signal reception), you can select a lower output power to save energy; for a distant access point, you can select a higher output power. It's suggested to select "Auto" to let setup utility decide the best output power for you.

Preamble: Select the preamble for Ad hoc mode here. Available option are "Auto" and "Long".

RTS Threshold: User can adjust the RTS threshold number by sliding the bar or key in the value directly. The default value is 2347.

Fragment Threshold: User can adjust the Fragment threshold number by sliding the bar or key in the value directly. The default value is 2346.

Channel: Only available for setting under Ad-Hoc mode. User can choose the channel frequency to start their Ad-Hoc network.

Authentication Type: There are 7 type of authentication modes supported by RaUI. They are Open, Shared, LEAP, WPA, WPA-PSK, WPA2, WPA2-PSK.

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.

802.1x Setting: It is an authentication for WPA and WPA2 certificate to server.

WPA Pre-Shared Key: This is the shared secret between AP and STA. For WPA-PSK and WPA2-PSK authentication mode, this field must be filled with character longer than 8 and less than 32 lengths.

WEP Key: Only valid when using WEP encryption algorithm. The key must matched AP's key. There are several formats to enter the keys:

➔ Hexadecimal – 40bits: 10 Hex characters

➔ Hexadecimal – 128bits: 26 Hex characters.

➔ ASCII – 40bits: 5 ASCII characters

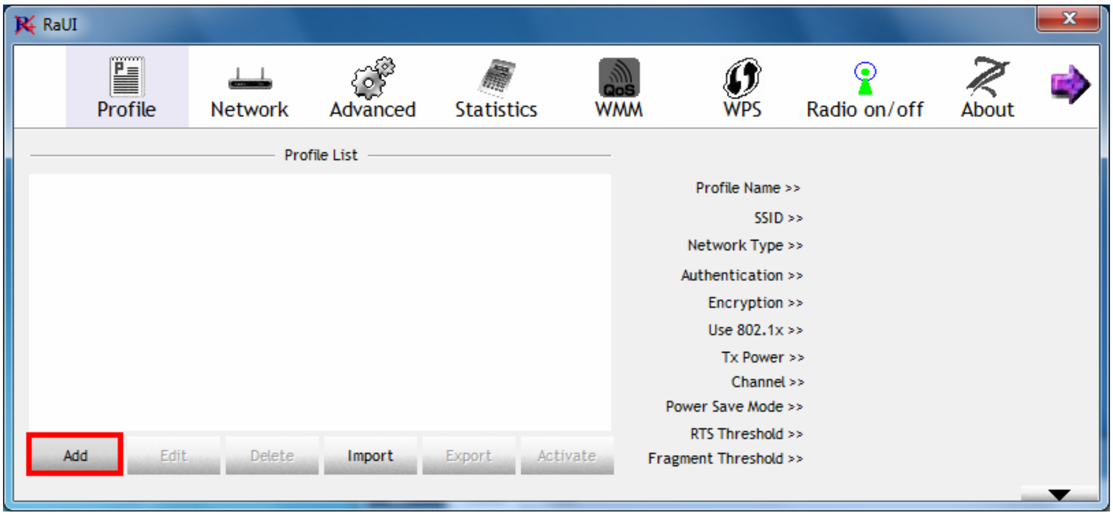
➔ ASCII – 128bits: 13 ASCII characters

Show Password: Check this box and all passphrases or security keys you inputted will be displayed as you type, but not replace your input with asterisk.

Use 802.1x: If the access point you wish to connect requires 802.1x authentication, please click on 'Use 802.1x' box, then click '802.1X' tab to set 802.1x parameters.

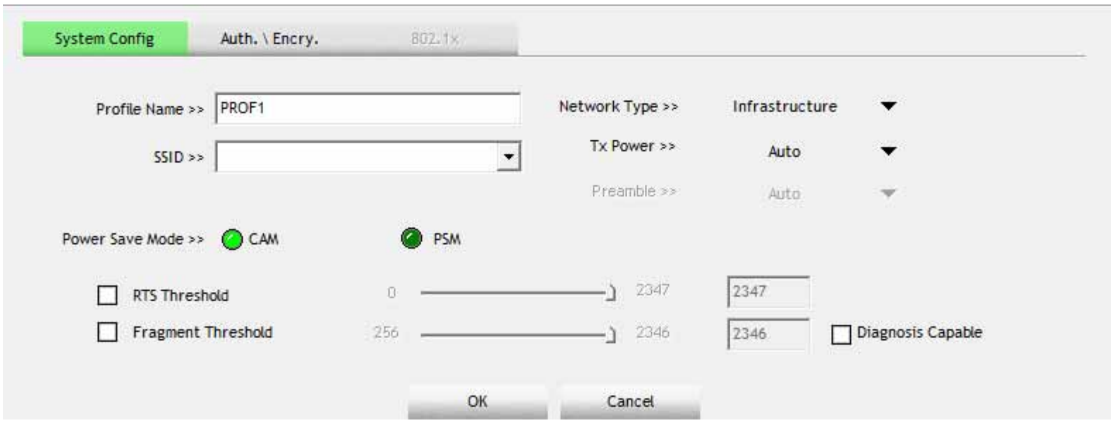
3.3.2 Example to Add Profile in Profile

Step 1: Click **Add** in Profile function



Profile Name >>
SSID >>
Network Type >>
Authentication >>
Encryption >>
Use 802.1x >>
Tx Power >>
Channel >>
Power Save Mode >>
RTS Threshold >>
Fragment Threshold >>

Step 2: **Add Profile** page will pop up.



Profile Name >> PROF1

SSID >>

Network Type >> Infrastructure

Tx Power >> Auto

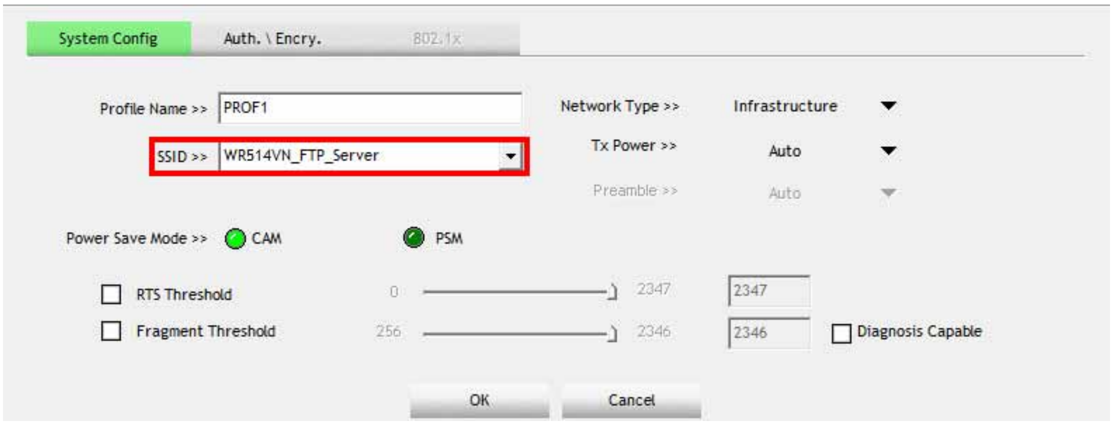
Preamble >> Auto

Power Save Mode >> ● CAM ● PSM

□ RTS Threshold 0 2347 2347

□ Fragment Threshold 256 2346 2346 □ Diagnosis Capable

Step 3: Change profile name to what you want to connect. Pull down the SSID and select one intended AP. The AP list is the result of last Network.



Profile Name >> PROF1

SSID >> WR514VN_FTP_Server

Network Type >> Infrastructure

Tx Power >> Auto

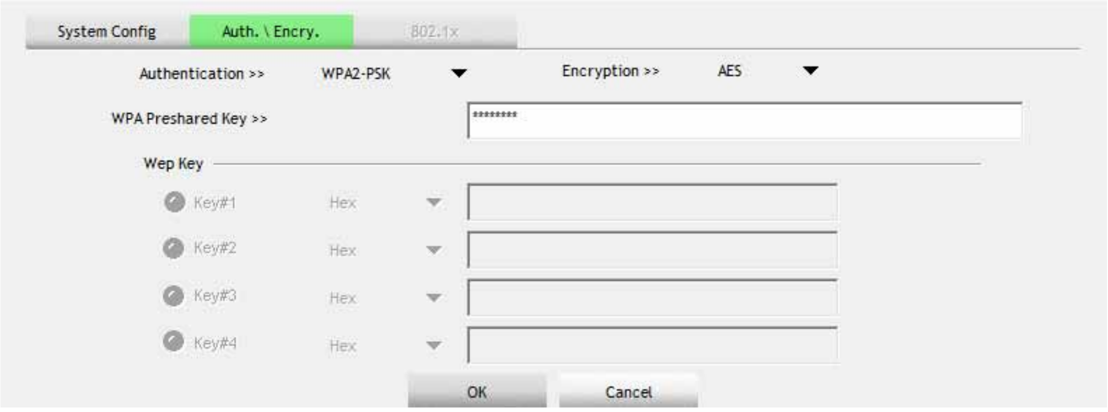
Preamble >> Auto

Power Save Mode >> ● CAM ● PSM

□ RTS Threshold 0 2347 2347

□ Fragment Threshold 256 2346 2346 □ Diagnosis Capable

Step 4: To set authentication/encryption information for the access point, please click "Auth.\Encry." Tab.



Authentication >> WPA2-PSK

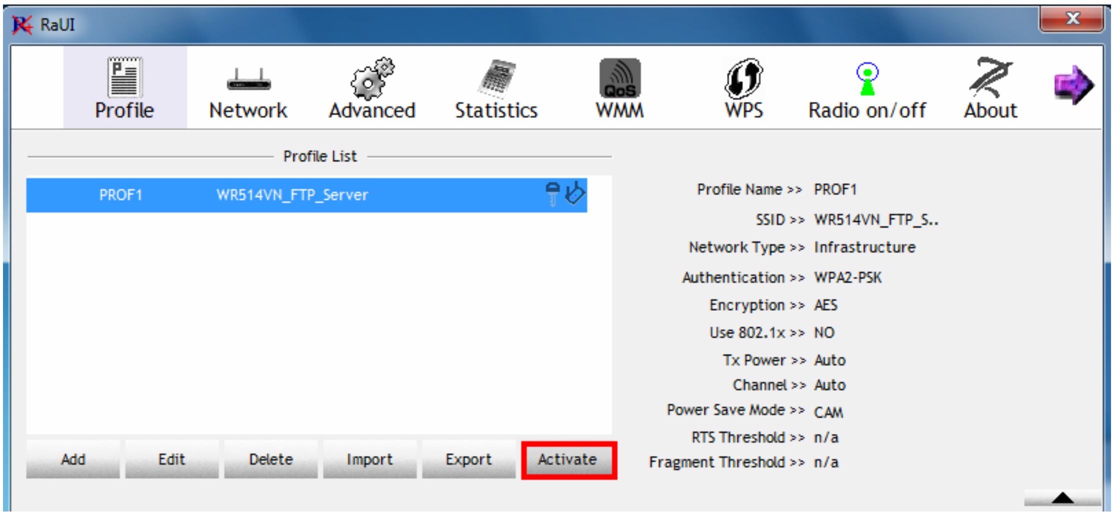
Encryption >> AES

WPA Preshared Key >> ********

Wep Key

○ Key#1	Hex	
○ Key#2	Hex	
○ Key#3	Hex	
○ Key#4	Hex	

Step 5: Then, you can see the profile which you set appear in the profile list. Click "**Activate**" to activate the profile setting.



PROF1	WR514VN_FTP_Server

Profile Name >> PROF1

SSID >> WR514VN_FTP_S..

Network Type >> Infrastructure

Authentication >> WPA2-PSK

Encryption >> AES

Use 802.1x >> NO

Tx Power >> Auto

Channel >> Auto

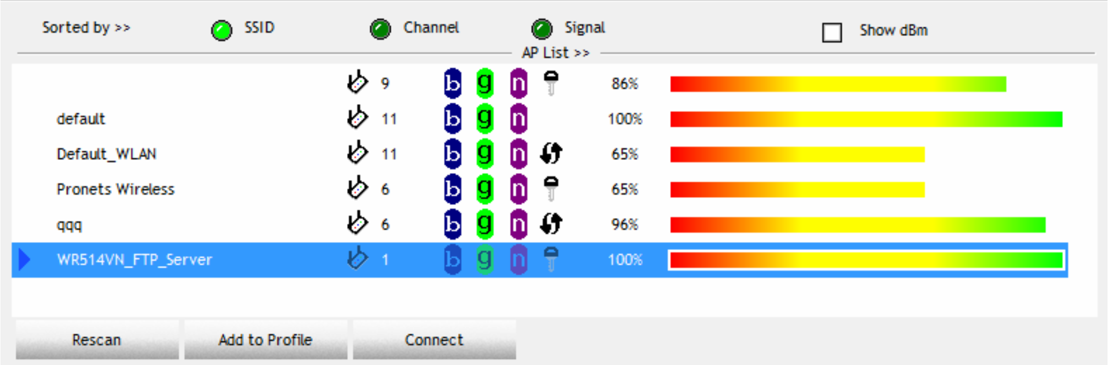
Power Save Mode >> CAM

RTS Threshold >> n/a

Fragment Threshold >> n/a

3.4 Network

Under the Network function, system will display the information of surrounding APs from last scan result. List information includes SSID, BSSID, Signal, Channel, Encryption algorithm, Authentication and Network type as below:



	9	b	g	n	86%	
default	11	b	g	n	100%	
Default_WLAN	11	b	g	n	65%	
Pronets Wireless	6	b	g	n	65%	
qqq	6	b	g	n	96%	
WR514VN_FTP_Server	1	b	g	n	100%	

[Definition of each field]

Sorted by >>: You can decide how to sort all listed access point by SSID, Channel, Signal (Signal strength).

Show dBm: Check this box to show the signal strength of access point, instead of percentage.

Rescan: Click this button to rescan access points. You can click this button for several times, if the access point you wish to use does not show in the list.

Add to Profile: You can store a specific access point to profile, so you can link to that access point directly next time without inputting authentication key again.

Connect: Connect to a selected access point. You have to select an access point from the list first and then click "Connect" to connect to the selected access point.

[Icons & Buttons]

▶ ➔ Indicate connection is successful.

📡 ➔ Indicate network type is infrastructure mode.

💻 ➔ Indicate network type is Ad-Hoc mode.

🔑 ➔ Indicate security-enabled wireless network.

a ➔ Indicate 802.11a wireless mode

b ➔ Indicate 802.11b wireless mode.

g ➔ Indicate 802.11g wireless mode.

n ➔ Indicate 802.11n wireless mode.

➔ Indicate the AP lists are sorted by SSID, Channel, or Signal.

➔ Command to connect to the selected network.

➔ Issue a rescan command to wireless NIC to update information on surrounding wireless network.

➔ Add the selected AP to Profile setting. It will bring up profile page and save user's setting to a new profile.

[Connected Network]

(1) When RaUI first ran, it will select the best AP to connect automatically.

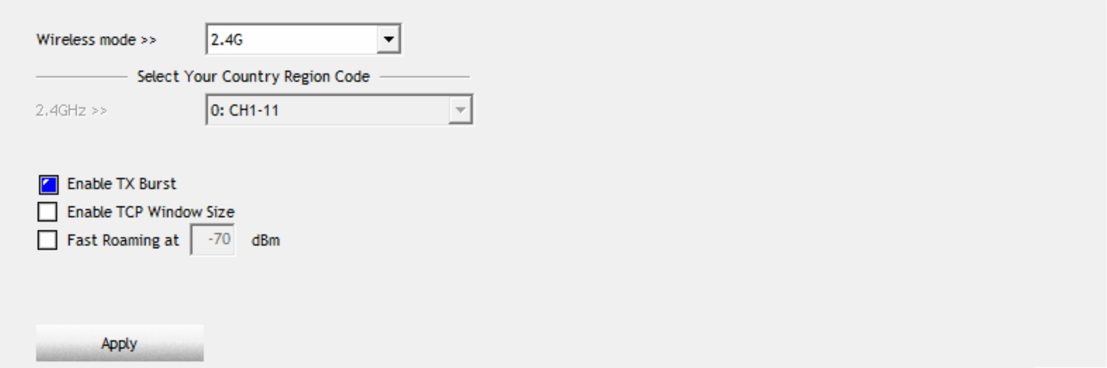
(2) If user wants to connect to other AP, He can click "Connect: button for the intended AP to make connection.

(3) If the intended network has encryption other than "Not Use", RaUI will bring up the security page appropriate information to make the connection.

(4) When you double-click on the intended AP, you can see AP's detail information.

3.5 Advanced

This wireless network card provides several advanced settings for experienced wireless users. You can change these settings to increase data transfer performance, or change operation mode.



Wireless mode >> 2.4G

Select Your Country Region Code

2.4GHz >> 0: CH1-11

☑ Enable TX Burst

□ Enable TCP Window Size

□ Fast Roaming at -70 dBm

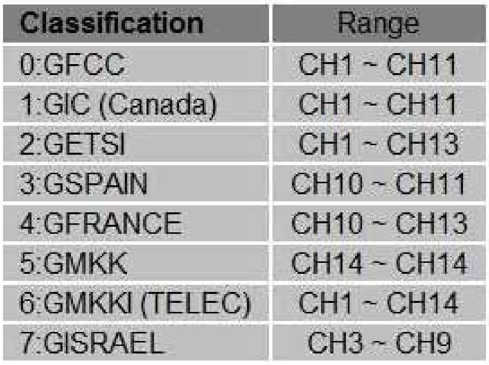
Wireless Mode: Select wireless mode. Support 2.4G only.

Enable Tx Burst: Ralink's proprietary frame burst mode.

Enable TCP Windows Size: Enhance throughout.

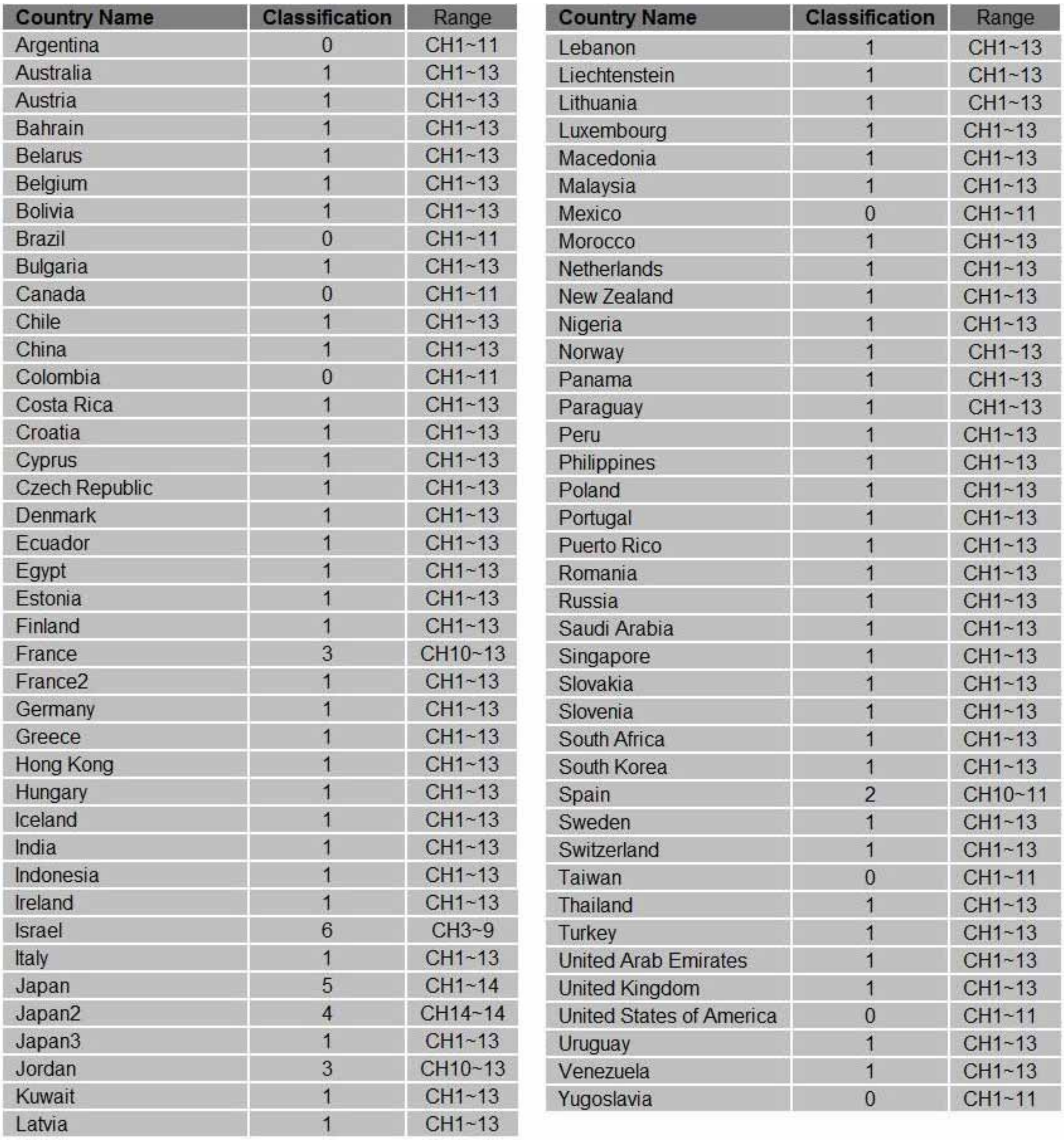
Fast Roaming at: Fast to roaming, setup by transmit power.

Select your Country Region Code: The available channel differs from different countries. For example: USA (FCC) is channel 1-11, Europe (ETSI) is channel 1-13. The operating frequency channel will be restricted to the country user located before importing. If you are in different country, you have to adjust the channel setting to comply the regulation of the country. Supporting region code for this section has CH1-11, CH1-13, CH10-11, CH10-13, CH14, CH1-14, CH3-9, and CH5-13. Please refer to below Channel Classification and range, Country Channel list to select your Country Region Code:



Classification	Range
0:GFCC	CH1 ~ CH11
1:GIC (Canada)	CH1 ~ CH11
2:GETSI	CH1 ~ CH13
3:GSPAIN	CH10 ~ CH11
4:GFRANCE	CH10 ~ CH13
5:GMKK	CH14 ~ CH14
6:GMKKI (TELEC)	CH1 ~ CH14
7:GISRAEL	CH3 ~ CH9

Figure 1: Channel Classification and range



Country Name	Classification	Range
Argentina	0	CH1~11
Australia	1	CH1~13
Austria	1	CH1~13
Bahrain	1	CH1~13
Belarus	1	CH1~13
Belgium	1	CH1~13
Bolivia	1	CH1~13
Brazil	0	CH1~11
Bulgaria	1	CH1~13
Canada	0	CH1~11
Chile	1	CH1~13
China	1	CH1~13
Colombia	0	CH1~11
Costa Rica	1	CH1~13
Croatia	1	CH1~13
Cyprus	1	CH1~13
Czech Republic	1	CH1~13
Denmark	1	CH1~13
Ecuador	1	CH1~13
Egypt	1	CH1~13
Estonia	1	CH1~13
Finland	1	CH1~13
France	3	CH10~13
France2	1	CH1~13
Germany	1	CH1~13
Greece	1	CH1~13
Hong Kong	1	CH1~13
Hungary	1	CH1~13
Iceland	1	CH1~13
India	1	CH1~13
Indonesia	1	CH1~13
Ireland	1	CH1~13
Israel	6	CH3~9
Italy	1	CH1~13
Japan	5	CH1~14
Japan2	4	CH14~14
Japan3	1	CH1~13
Jordan	3	CH10~13
Kuwait	1	CH1~13
Latvia	1	CH1~13
Lebanon	1	CH1~13
Liechtenstein	1	CH1~13
Lithuania	1	CH1~13
Luxembourg	1	CH1~13
Macedonia	1	CH1~13
Malaysia	1	CH1~13
Mexico	0	CH1~11
Morocco	1	CH1~13
Netherlands	1	CH1~13
New Zealand	1	CH1~13
Nigeria	1	CH1~13
Norway	1	CH1~13
Panama	1	CH1~13
Paraguay	1	CH1~13
Peru	1	CH1~13
Philippines	1	CH1~13
Poland	1	CH1~13
Portugal	1	CH1~13
Puerto Rico	1	CH1~13
Romania	1	CH1~13
Russia	1	CH1~13
Saudi Arabia	1	CH1~13
Singapore	1	CH1~13
Slovakia	1	CH1~13
Slovenia	1	CH1~13
South Africa	1	CH1~13
South Korea	1	CH1~13
Spain	2	CH10~11
Sweden	1	CH1~13
Switzerland	1	CH1~13
Taiwan	0	CH1~11
Thailand	1	CH1~13
Turkey	1	CH1~13
United Arab Emirates	1	CH1~13
United Kingdom	1	CH1~13
United States of America	0	CH1~11
Uruguay	1	CH1~13
Venezuela	1	CH1~13
Yugoslavia	0	CH1~11

Figure 2: Country Channel list

Apply: Save the save changes

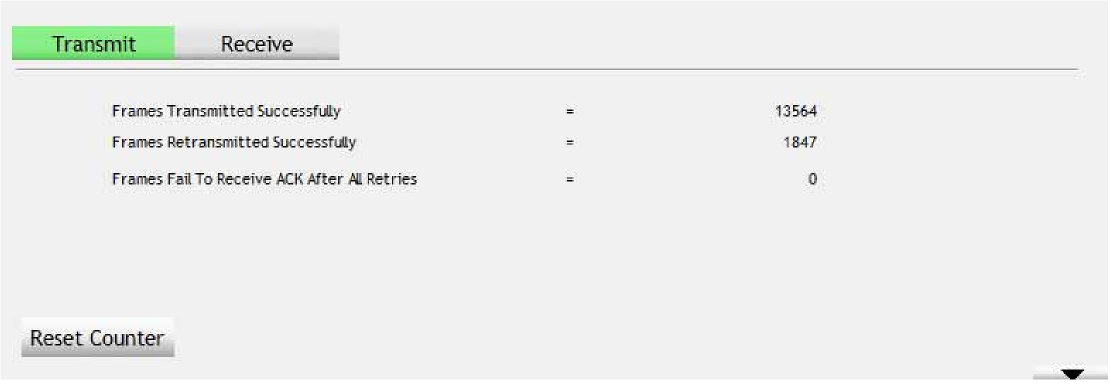
▼ → Show the information of Status Section

▲ → Hide the information of Status Section

3.6 Statistics

The configuration utility provides information about network statistics and link status. If you want to know how your wireless network card works, you can use these functions to get detailed information about the wireless connection you’re using.

[Transmit Statistics]



Frames Transmitted Successfully	=	13564
Frames Retransmitted Successfully	=	1847
Frames Fail To Receive ACK After All Retries	=	0

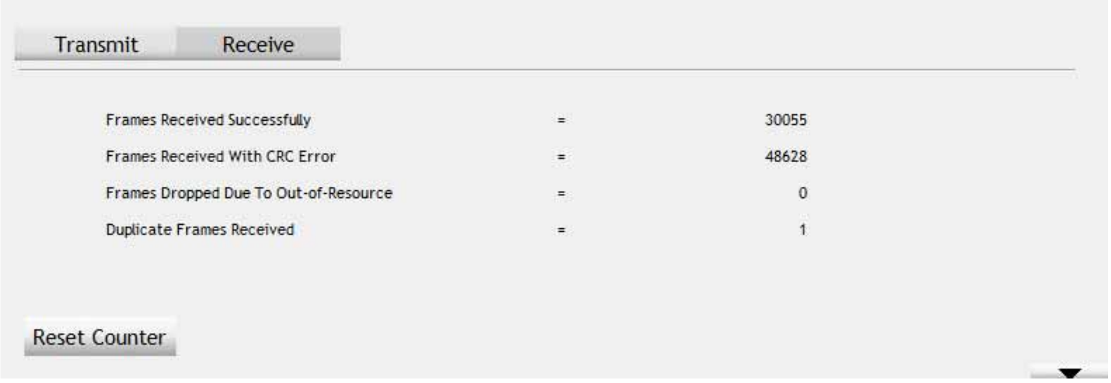
Frames Transmitted Successfully: Frames successfully sent.

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

[Receive Statistics]



Frames Received Successfully	=	30055
Frames Received With CRC Error	=	48628
Frames Dropped Due To Out-of-Resource	=	0
Duplicate Frames Received	=	1

Frames Received Successfully: Frames received successfully.

Frames Received With CRC Error: Frames receive 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

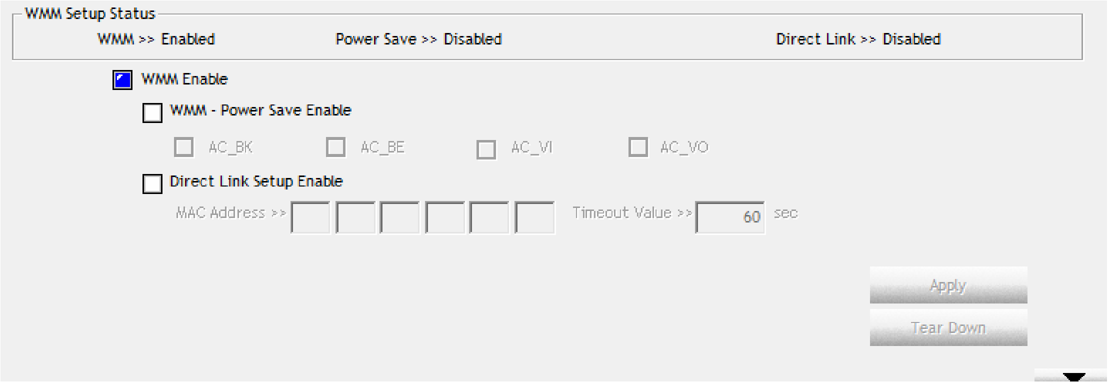
▼ → Show the information of Status Section

▲ → Hide the information of Status Section

All connection-related statistics is displayed here. You can click '**Transmit**' or '**Receive**' tab, to view the statistics of transmitted or received packets. You can also click '**Reset Counter**' button, to reset the statistics of all items back to 0.

3.7 WMM

This wireless network card provides WMM (Wi-Fi Multimedia) function, which can improve the performance of certain network applications, like audio/video streaming, network telephony (VoIP), and others. When you enable the WMM function of this network card, you can define the priority of different kinds of data, to give higher priority to applications which require instant responding. Therefore you can improve the performance of such network applications.



WMM Setup Status
WMM >> Enabled Power Save >> Disabled Direct Link >> Disabled

☑ WMM Enable
□ WMM - Power Save Enable
□ AC_BK □ AC_BE □ AC_VI □ AC_VO
□ Direct Link Setup Enable
MAC Address >> Timeout Value >> 60 sec

WMM Enable: Check this box to enable WMM function. Please click 'Apply' button on the right of this check box after you check or uncheck this box, so corresponding settings in this window will be activated or deactivated respectively.

WMM-Power Save Enable: Check this box to enable WMM power saving mode to save energy, and let your computer's battery live longer. You also have to select WMM power save modes here:

AC_BE: Best Performance

AC_BK: Worst Performance

AC_VI: Video data has priority

AC_VO: Voice data has priority

Direct Link Setup Enable: If you have another WMM-enabled wireless device, you can enter its MAC address here, then click '**Apply**' button, and this network card will establish a direct link to the wireless device you specified here.

You also have to specify the timeout value of this directly-linked wireless device. Valid values are from 1 to 65535 (seconds), and input '0' for infinity.

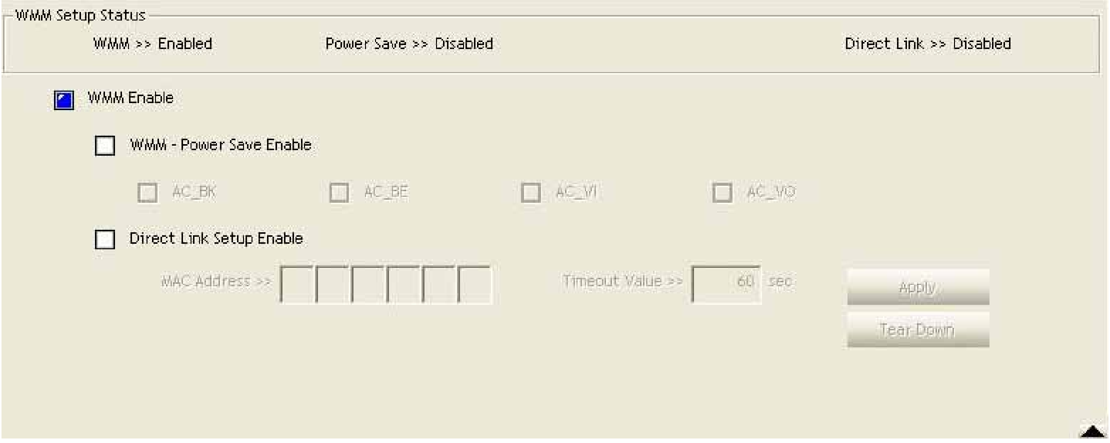
If you want to remove a specific wireless device from direct link table, select the device and click this button to remove it.

[WMM Enable – Enable Wi-Fi Multi-Media]

If you want to use "WMM-Power Save" or "Direct Link Setup" you must enable WMM.

The setting methods of enabling WMM indicating as follow:

Step 1: Click "**WMM Enable**"



WMM Setup Status

WMM >> Enabled   Power Save >> Disabled   Direct Link >> Disabled

☑ WMM Enable

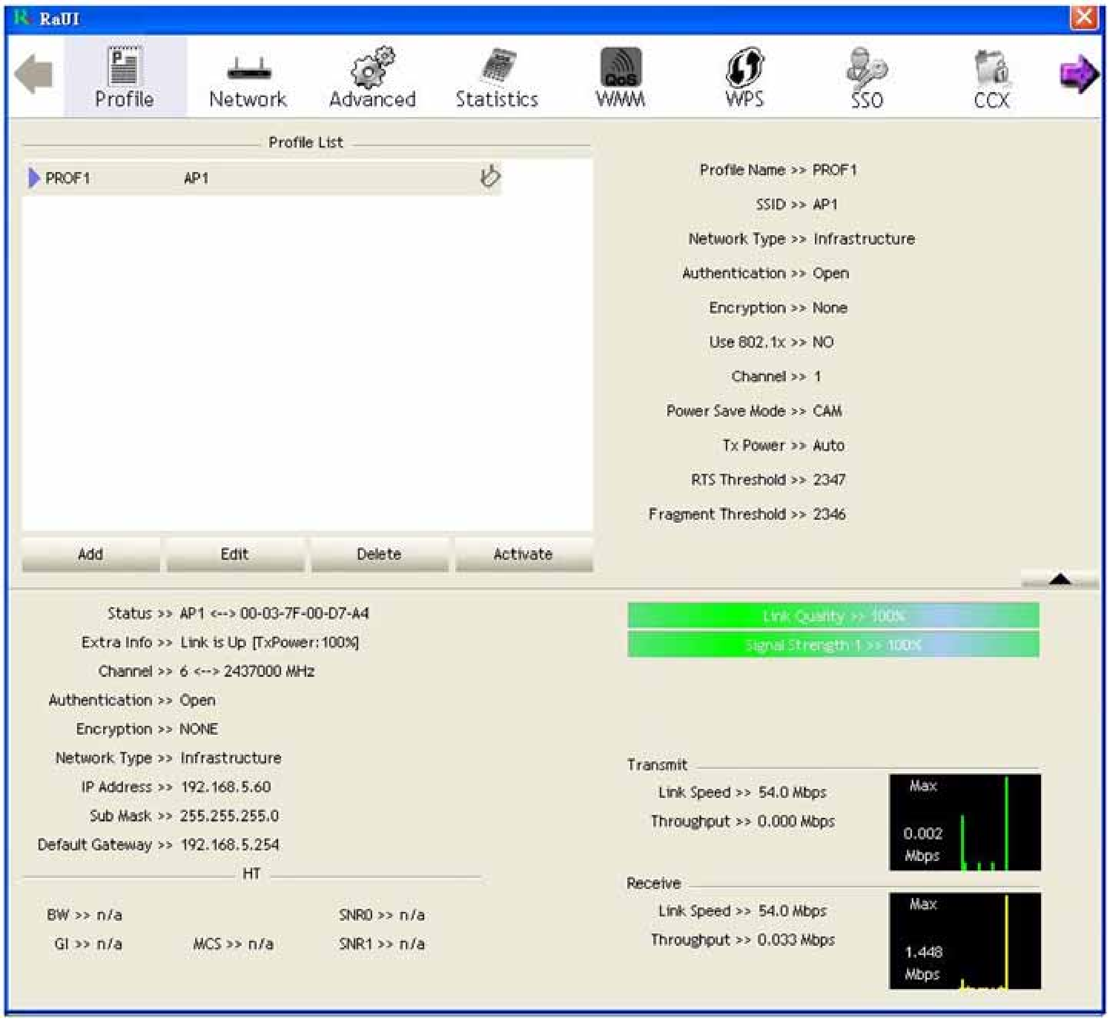
□ WMM - Power Save Enable

□ AC_BK   □ AC_BE   □ AC_VI   □ AC_VO

□ Direct Link Setup Enable

MAC Address >>   Timeout Value >> 60 sec

Step 2: Change to "**Network**" function. And add an AP that supports WMM features to a **Profile**. The result will look like the below figure in **Profile** page.



PROF1	AP1

Profile Name >> PROF1

SSID >> AP1

Network Type >> Infrastructure

Authentication >> Open

Encryption >> None

Use 802.1x >> NO

Channel >> 1

Power Save Mode >> CAM

Tx Power >> Auto

RTS Threshold >> 2347

Fragment Threshold >> 2346

Status >> AP1 <--> 00-03-7F-00-D7-A4

Extra Info >> Link is Up [TxPower:100%]

Channel >> 6 <--> 2437000 MHz

Authentication >> Open

Encryption >> NONE

Network Type >> Infrastructure

IP Address >> 192.168.5.60

Sub Mask >> 255.255.255.0

Default Gateway >> 192.168.5.254

Link Quality >> 100%

Signal Strength 1 >> 100%

HT

BW >> n/a   SNR0 >> n/a

GI >> n/a   MCS >> n/a   SNR1 >> n/a

Transmit

Link Speed >> 54.0 Mbps

Throughput >> 0.000 Mbps

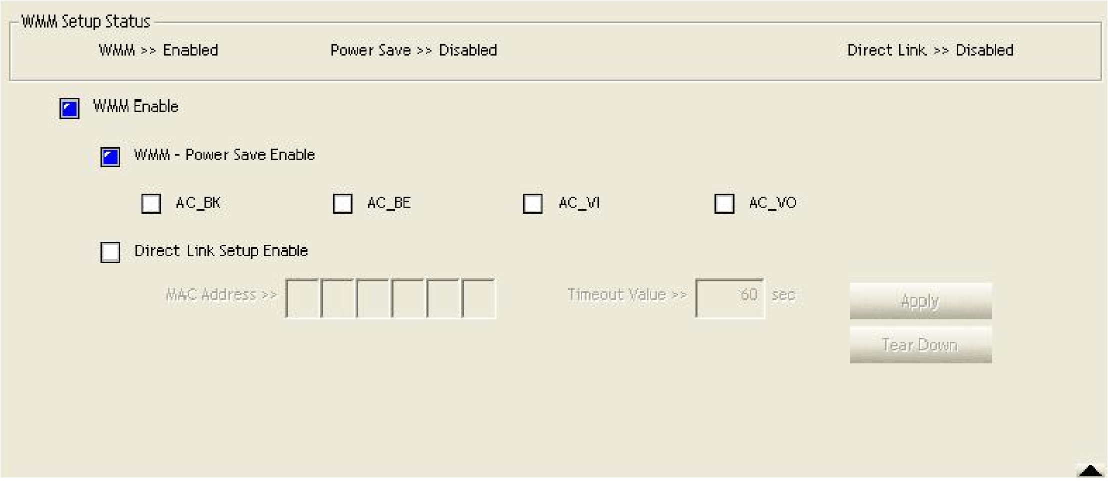
Receive

Link Speed >> 54.0 Mbps

Throughput >> 0.033 Mbps

[WMM-Power Save Enable – Enable WMM Power Save]

Step 1: Click "**WMM-Power Save Enable**"



WMM Setup Status

WMM >> Enabled   Power Save >> Disabled   Direct Link >> Disabled

☑ WMM Enable

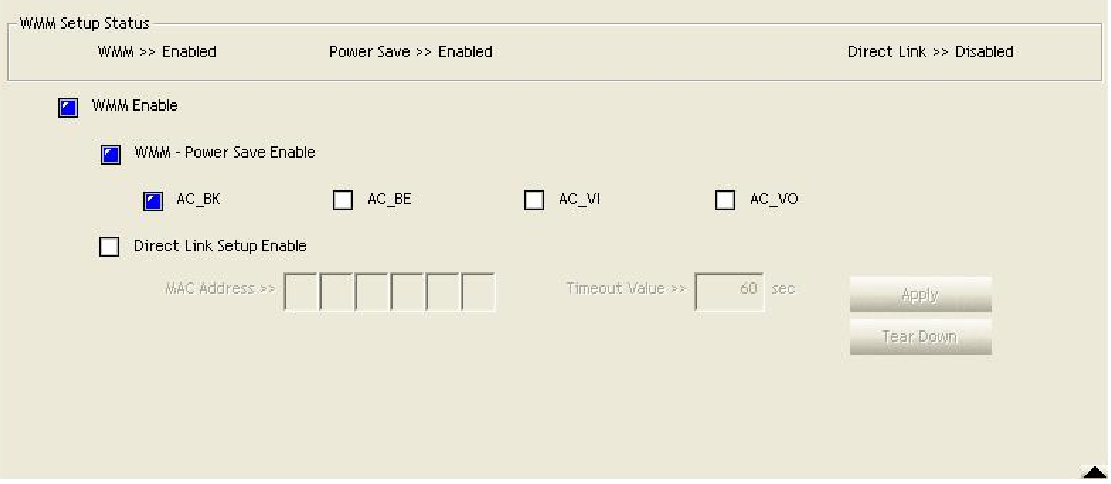
☑ WMM - Power Save Enable

□ AC_BK   □ AC_BE   □ AC_VI   □ AC_VO

□ Direct Link Setup Enable

MAC Address >>   Timeout Value >> 60 sec

Step 2: Please select which ACs you want to enable. The setting of enabling WMM-Power Save is successfully.



WMM Setup Status

WMM >> Enabled   Power Save >> Enabled   Direct Link >> Disabled

☑ WMM Enable

☑ WMM - Power Save Enable

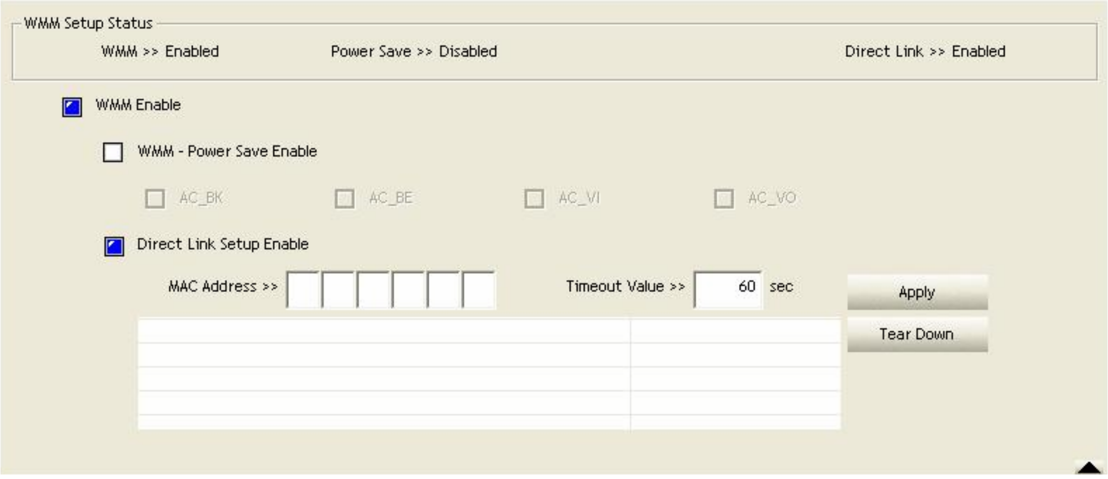
☑ AC_BK   □ AC_BE   □ AC_VI   □ AC_VO

□ Direct Link Setup Enable

MAC Address >>   Timeout Value >> 60 sec

[Direct Link Setup Enable – Enable DLS (Direct Link Setup)]

Step 1: Click "**Direct Link Setup Enable**"



WMM Setup Status

WMM >> Enabled   Power Save >> Disabled   Direct Link >> Enabled

☑ WMM Enable

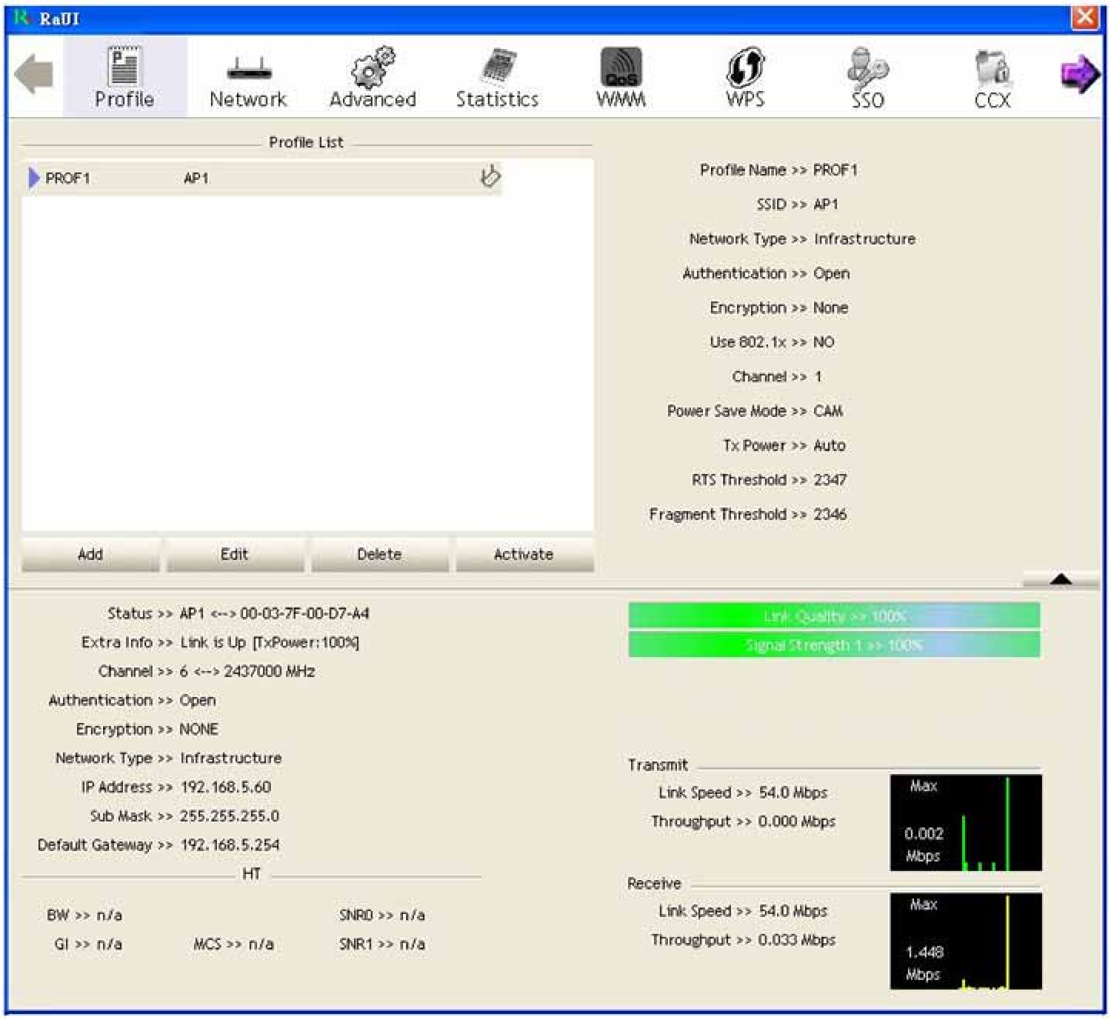
□ WMM - Power Save Enable

□ AC_BK   □ AC_BE   □ AC_VI   □ AC_VO

☑ Direct Link Setup Enable

MAC Address >>   Timeout Value >> 60 sec

Step 2: Change to "**Network**" function. And add an AP that supports DLS features to a **Profile**. The result will look like the below figure in **Profile** page.



PROF1 AP1

Profile Name >> PROF1
SSID >> AP1
Network Type >> Infrastructure
Authentication >> Open
Encryption >> None
Use 802.1x >> NO
Channel >> 1
Power Save Mode >> CAM
Tx Power >> Auto
RTS Threshold >> 2347
Fragment Threshold >> 2346

Status >> AP1 <--> 00-03-7F-00-D7-A4
Extra Info >> Link is Up [TxPower:100%]
Channel >> 6 <--> 2437000 MHz
Authentication >> Open
Encryption >> NONE
Network Type >> Infrastructure
IP Address >> 192.168.5.60
Sub Mask >> 255.255.255.0
Default Gateway >> 192.168.5.254

BW >> n/a
GI >> n/a
MCS >> n/a
SNR0 >> n/a
SNR1 >> n/a

Link Quality >> 100%
Signal Strength 1 >> 100%

Transmit
Link Speed >> 54.0 Mbps
Throughput >> 0.000 Mbps
0.002 Mbps

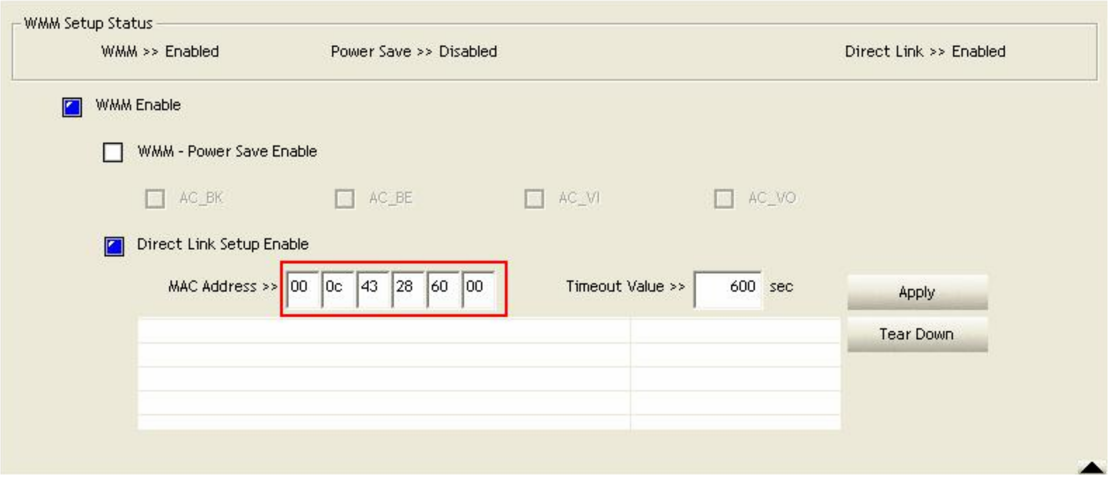
Receive
Link Speed >> 54.0 Mbps
Throughput >> 0.033 Mbps
1.448 Mbps

The Setting of DLS indicates as follow:

(1) Fill in the blanks of Direct Link with MAC address of STA. The STA must conform to 2 conditions as follow:

➔ Connect with the same AP that support DLS features.

➔ Have to enable DLS



WMM Setup Status

WMM >> Enabled   Power Save >> Disabled   Direct Link >> Enabled

☑ WMM Enable

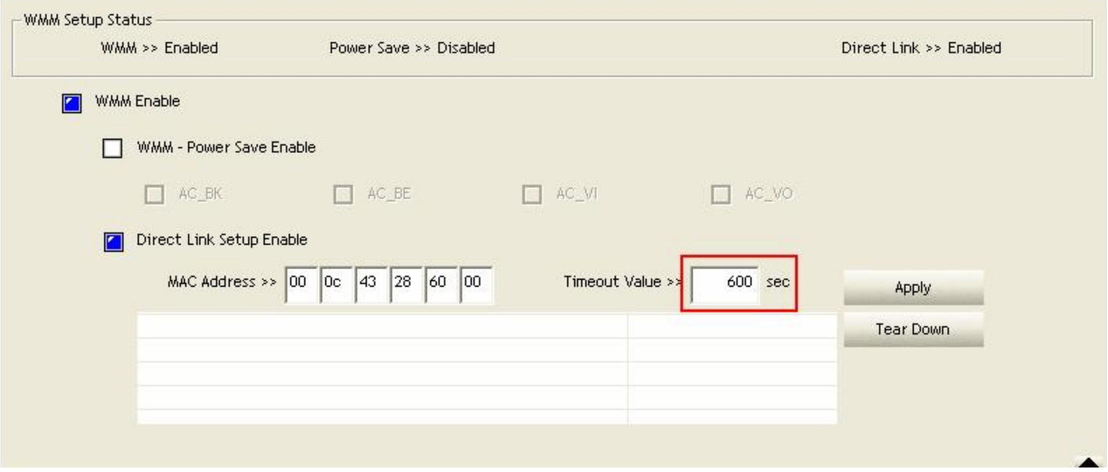
☐ WMM - Power Save Enable

☐ AC_BK   ☐ AC_BE   ☐ AC_VI   ☐ AC_VO

☑ Direct Link Setup Enable

MAC Address >> 00 0c 43 28 60 00   Timeout Value >> 600 sec

(2) Timeout Value represent that it disconnect automatically 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.



WMM Setup Status

WMM >> Enabled   Power Save >> Disabled   Direct Link >> Enabled

☑ WMM Enable

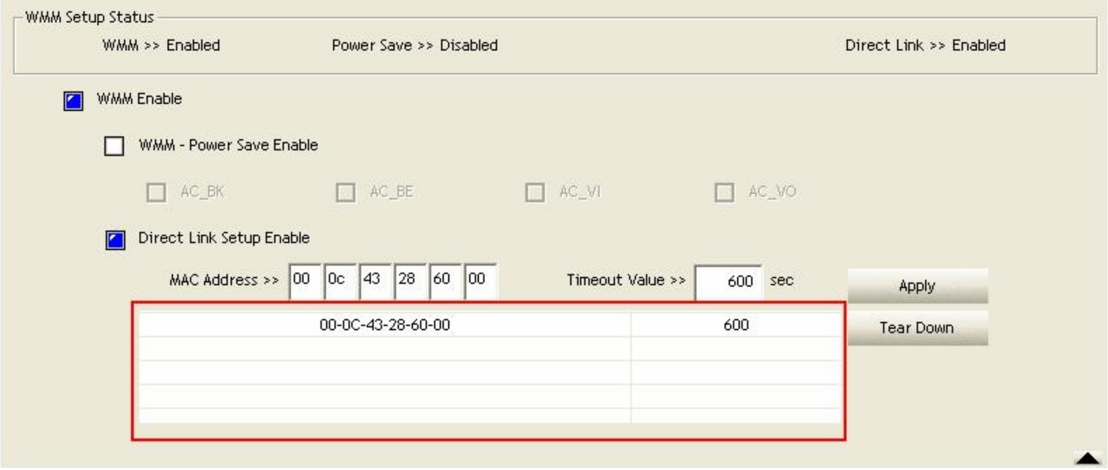
☐ WMM - Power Save Enable

☐ AC_BK   ☐ AC_BE   ☐ AC_VI   ☐ AC_VO

☑ Direct Link Setup Enable

MAC Address >> 00 0c 43 28 60 00   Timeout Value >> 600 sec

(3) Click "**Apply**" button. The result will look like the below figure.



WMM Setup Status

WMM >> Enabled   Power Save >> Disabled   Direct Link >> Enabled

☑ WMM Enable

☐ WMM - Power Save Enable

☐ AC_BK   ☐ AC_BE   ☐ AC_VI   ☐ AC_VO

☑ Direct Link Setup Enable

MAC Address >> 00 0c 43 28 60 00   Timeout Value >> 600 sec

00-0C-43-28-60-00	600

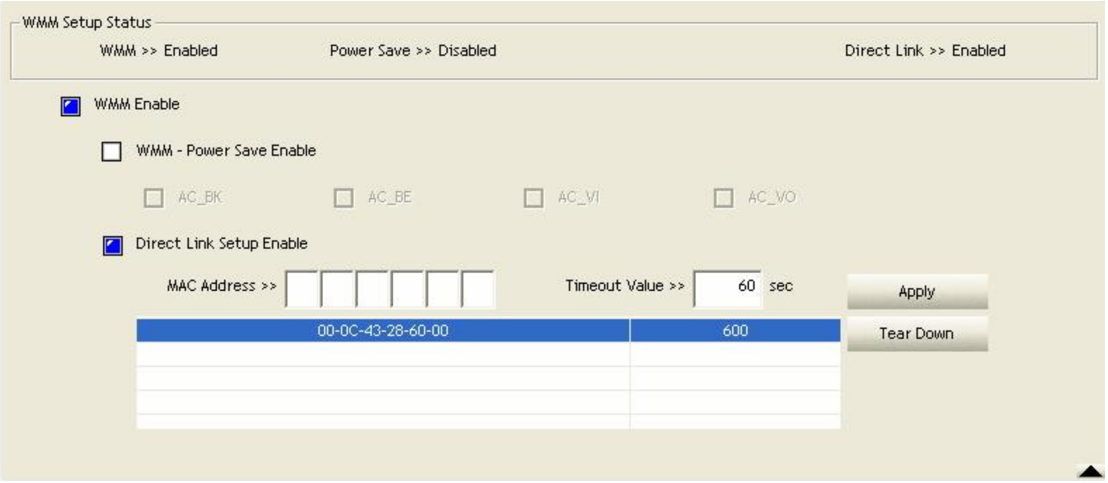
Describe "DLS Status" as follow:

(1) As the up figure, after configuring DLS successfully, show MAC address of the

opposite side and Timeout Value of setting in “**DLS Status**”. In “**DLS Status**” of the opposite side, it shows MAC address of itself and Timeout Value of setting.

(2) Display the values of “**DLS Status**” to “**Direct Link Setup**” as follow:

Step 1: In “**DLS Status**”, select a direct link STA what you want to show its values in “**Direct Link Setup**”.



WMM Setup Status

WMM >> Enabled Power Save >> Disabled Direct Link >> Enabled

☑ WMM Enable

☐ WMM - Power Save Enable

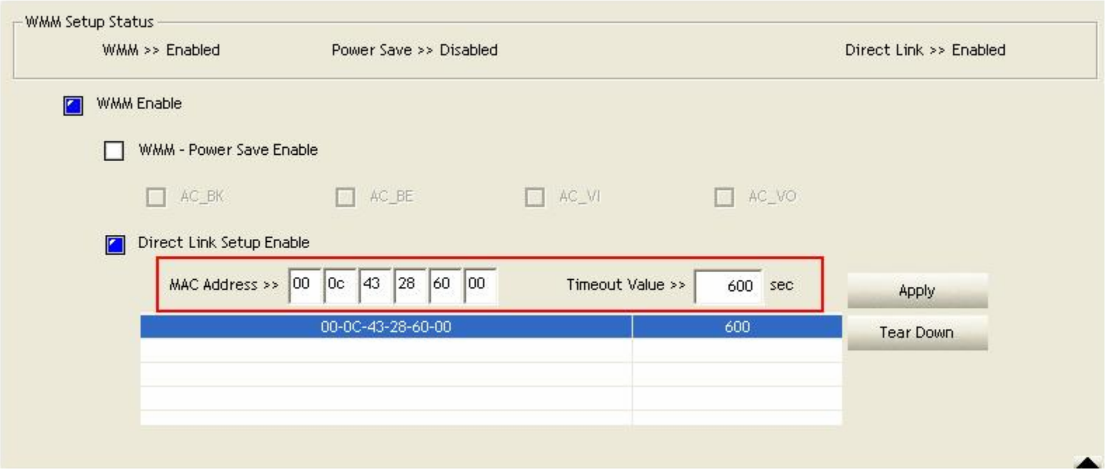
☐ AC_BK ☐ AC_BE ☐ AC_VI ☐ AC_VO

☑ Direct Link Setup Enable

MAC Address >> Timeout Value >> 60 sec

00-0C-43-28-60-00	600

Step 2: Double-Click and the result will look like the below figure.



WMM Setup Status

WMM >> Enabled Power Save >> Disabled Direct Link >> Enabled

☑ WMM Enable

☐ WMM - Power Save Enable

☐ AC_BK ☐ AC_BE ☐ AC_VI ☐ AC_VO

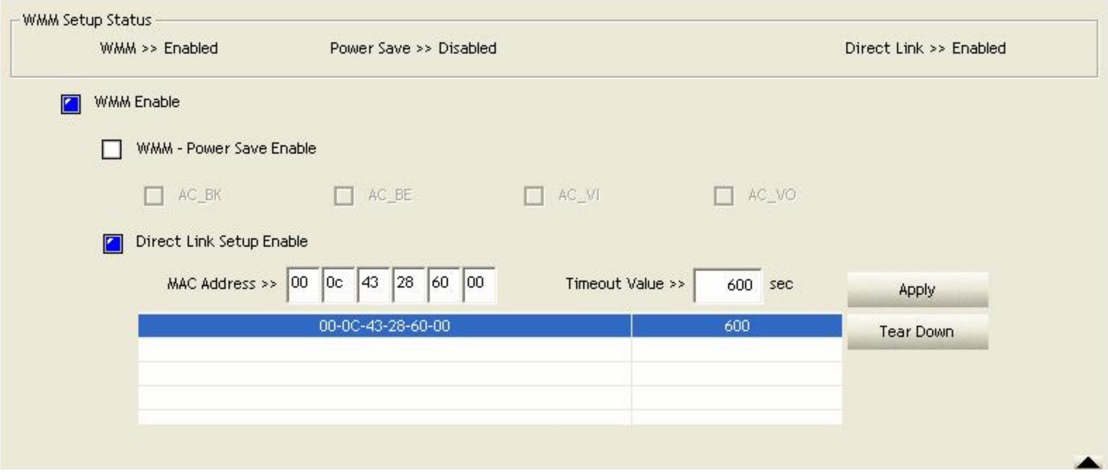
☑ Direct Link Setup Enable

MAC Address >> 00 0c 43 28 60 00 Timeout Value >> 600 sec

00-0C-43-28-60-00	600

(3) Disconnect Direct Link Setup as follow:

Step 1: Select a direct link STA.



WMM Setup Status

WMM >> Enabled   Power Save >> Disabled   Direct Link >> Enabled

☑ WMM Enable

□ WMM - Power Save Enable

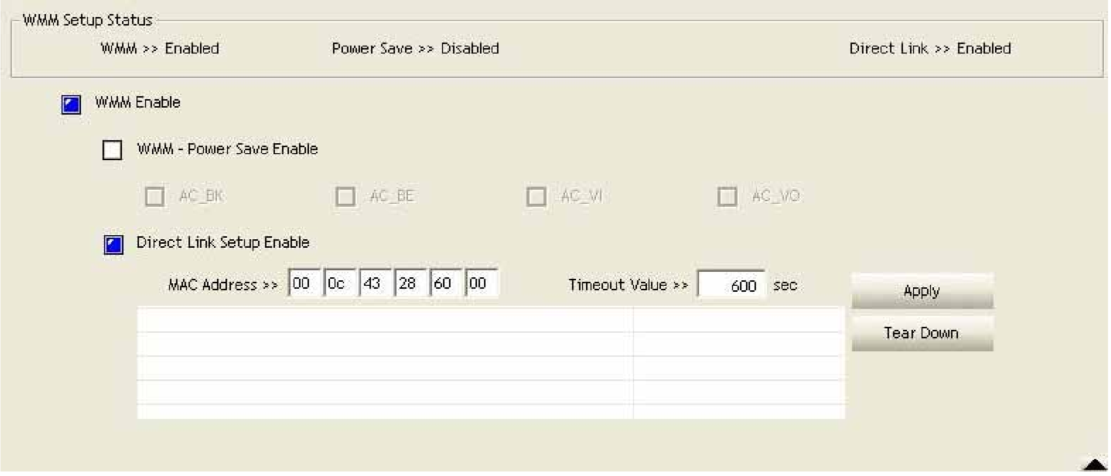
□ AC_BK □ AC_BE □ AC_VI □ AC_VO

☑ Direct Link Setup Enable

MAC Address >> 00 0c 43 28 60 00   Timeout Value >> 600 sec

00-0C-43-28-60-00	600

Step 2: Click “**Tear Down**” button. The result will look like the below figure.



WMM Setup Status

WMM >> Enabled   Power Save >> Disabled   Direct Link >> Enabled

☑ WMM Enable

□ WMM - Power Save Enable

□ AC_BK □ AC_BE □ AC_VI □ AC_VO

☑ Direct Link Setup Enable

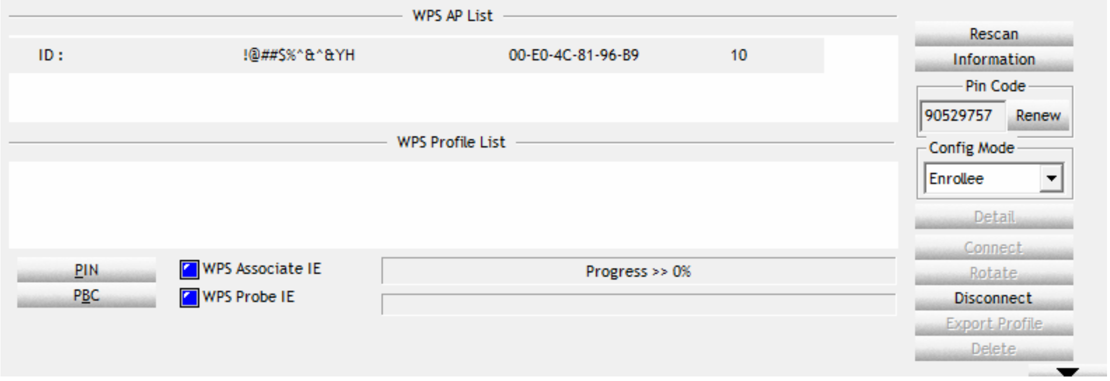
MAC Address >> 00 0c 43 28 60 00   Timeout Value >> 600 sec

3.8 WPS

Wi-Fi Protected Setup (WPS) is the latest wireless network technology which makes wireless network setup become very simple. If you have WPS-enabled wireless access point, and you want to establish a secure connection to it, you don’t have to configure the wireless access point and setup data encryption by yourself. All you have to do is to go to the WPS setup page of this wireless card, click a button, and then press a specific button or enter a set of 8-digit code on the wireless access point you wish to establish a secure connection - just three simple steps!

For older wireless access points, it’s possible to perform a firmware upgrade to become a WPS-enabled access point. Since they may not have a hardware button to press for WPS setup, you can use an alternative WPS setup method - input the pin code. Every WPS-compatible wireless network card support pin code configuration method; you can just input the code to wireless access point, and the wireless access point and wireless network card will do the rest for you.

This wireless network card is compatible with WPS. To use this function, the wireless access point you wish to connect to must support WPS function too. Now, please follow the following instructions to establish secure connection between WPS-enabled wireless access point and your wireless network card.



ID : !@##$%^&^&YH 00-E0-4C-81-96-B9 10

Pin Code: 90529757

Config Mode: Enrollee

☑ WPS Associate IE

☑ WPS Probe IE

Progress >> 0%

WPS Configuration: The primary goal of Wi-Fi Protected Setup (Wi-Fi Simple Configuration) is to simply the security setup and management of Wi-Fi networks. Ralink STA as an Enrollee or external Registrar supports the configuration setup using PIN configuration method or PBC configuration setup using PIN configuration method or PBC configuration method through an internal or external Registrar.

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), Security-Enabled.

Rescan: Issue a rescan command to wireless NIC to update information on surrounding wireless network.

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 NIC Wireless has only one PIN Code of Enrollee.

Config Mode: Our station role-playing 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, RaUI creates a new credential with WPA2-PSK/AES/64Hex-Key and doesn't change until next switching to STA Registrar.

Control items on WPS Profile List:

➔ Detail: Information about Security and Key in the credential

➔ Connect: Command to connect to the selected network inside credentials. The active selected credential is as like as the active selected Profile.

➔ Rotate: Command to rotate to connect to the next inside credentials

➔ Disconnect: Stop WPS action and disconnect this active link. And then select the last profile at the Profile Page of RaUI if exist. 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 you Enrollee before starting PIN.

PBC: Start to add to AP using PBC configuration 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 press **Disconnect** to stop WPS connection.

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.

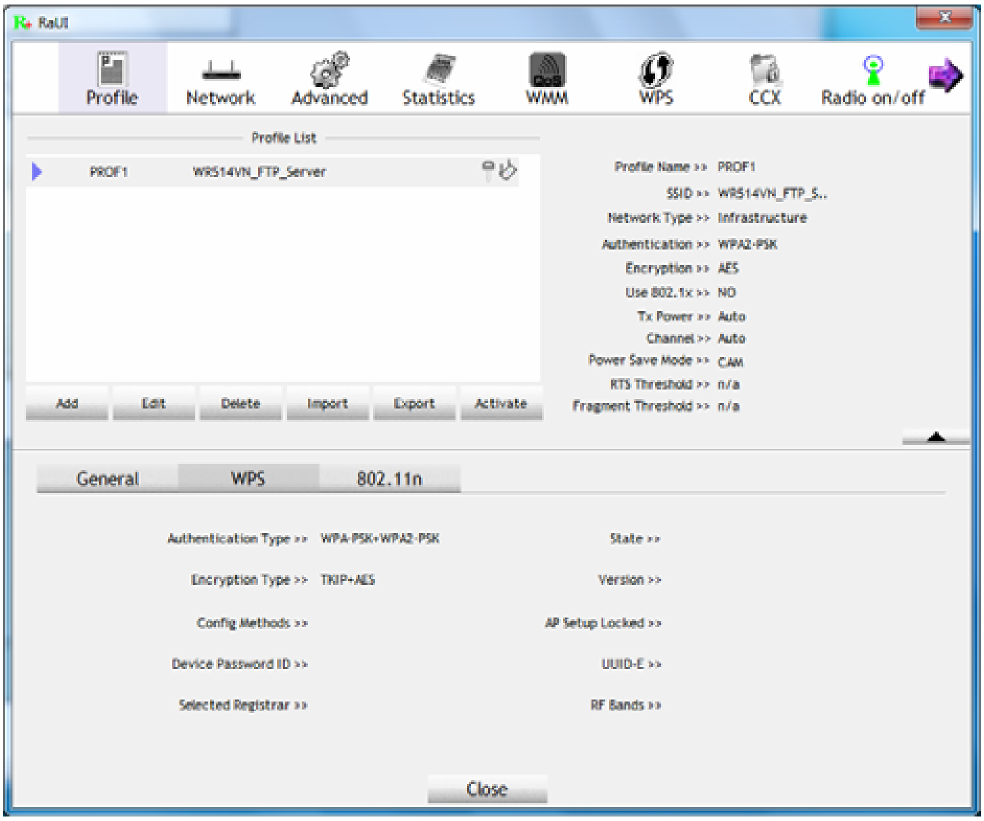
Status Bar: Display currently WPS Status.

[WPS Information on AP]

WPS information contain 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 three types of authentication modes supported by RaConfig. There are Open, Shared, WPA-PSK, and WPA system.

Encryption Type: For Open and shared authentication mode, the selection of encryption are None and WEP. For WPA, WPA2, WPA-PSK, and WPA2-PSK authentication mode, the encryption type supports both TKIP and AES.



PROF1 WR514VN_FTP_Server

Profile Name >> PROF1
SSID >> WR514VN_FTP_S..
Network Type >> Infrastructure
Authentication >> WPA2-PSK
Encryption >> AES
Use 802.1x >> NO
Tx Power >> Auto
Channel >> Auto
Power Save Mode >> CAM
RTS Threshold >> n/a
Fragment Threshold >> n/a

Authentication Type >> WPA-PSK+WPA2-PSK
Encryption Type >> TKIP+AES
Config Methods >>
Device Password ID >>
Selected Registrar >>
State >>
Version >>
AP Setup Locked >>
UUID-E >>
RF Bands >>

Config Methods: Correspond to the methods the AP supports as an Enrollee for adding external Registrars. (A bitwise OR of values)

Value	Hardware Interface
0x0001	USBA (Flash Drive)
0x0002	Ethernet
0x0004	Label
0x0008	Display
0x0010	External NFC Token
0x0020	Integrated NFC Token
0x0040	NFC Interface
0x0080	Push Button
0x0100	Keypad

Device Password ID: Indicate the method or identifies the specific password that the selected Registrar intends to use. AP in PBC mode must indicate 0x0004 within two-minute Walk time.

Value	Description
0x0000	Default (PIN)
0x0001	User-specified
0x0002	Rekey
0x0003	Display
0x0004	PushButton (PBC)
0x0005	Registrar-specified
0x0006-0x000F	Reserved

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 value are "Unconfigured" and "Configured".

Version: WPS specified version.

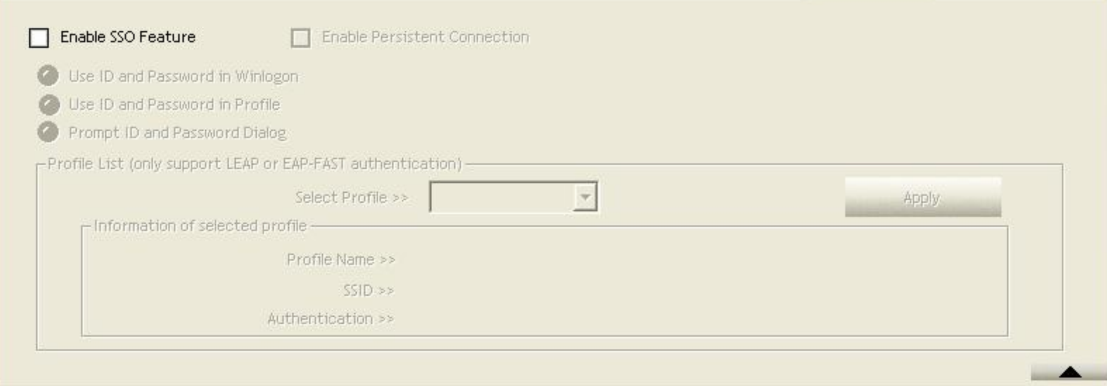
AP Setup Locked: Indicate if AP has entered a setup locked state.

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"

3.9 SSO

Single Sign-On (SSO) is a session/user authentication process that permits a user to enter one name and password in order to access multiple applications. The process authenticates the user for all the applications they have been given rights to and eliminates further prompts when they switch applications during a particular session. *(**Note:** This feature **doesn't** available Windows7 and Vista OS)*


□ Enable SSO Feature
□ Enable Persistent Connection
○ Use ID and Password in Winlogon
○ Use ID and Password in Profile
○ Prompt ID and Password Dialog
Profile List (only support LEAP or EAP-FAST authentication)
Select Profile >>
Apply
Information of selected profile
Profile Name >>
SSID >>
Authentication >>

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.
- **Prompt ID and Password Dialog:** Use the ID and Password in pop-up authentication dialog.

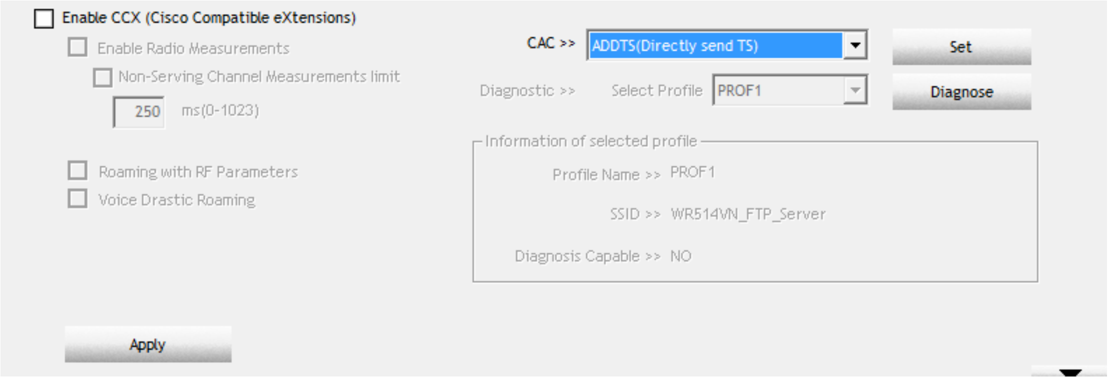
Enable Persistent Connection: Use DI and Password in the previous activate Profile and not show any authentication dialog.

Profile List (only Support LEAP or EAP-FAST authentication):

- **Select Profile:** Select a profile containing LEAP or EAP-FAST authentication.
- **Information** of selected profile: Profile information, such as Profile name, SSID or Authentication.

3.10 CCX

(***Note:*** *This feature* ***doesn't*** *available Windows7 and Vista OS)*



☐ Enable CCX (Cisco Compatible eXtensions)

☐ Enable Radio Measurements

☐ Non-Serving Channel Measurements limit

250 ms(0-1023)

☐ Roaming with RF Parameters

☐ Voice Drastic Roaming

CAC >> ADDTS(Directly send TS)

Diagnostic >> Select Profile PROF1

Information of selected profile

Profile Name >> PROF1

SSID >> WR514VN_FTP_Server

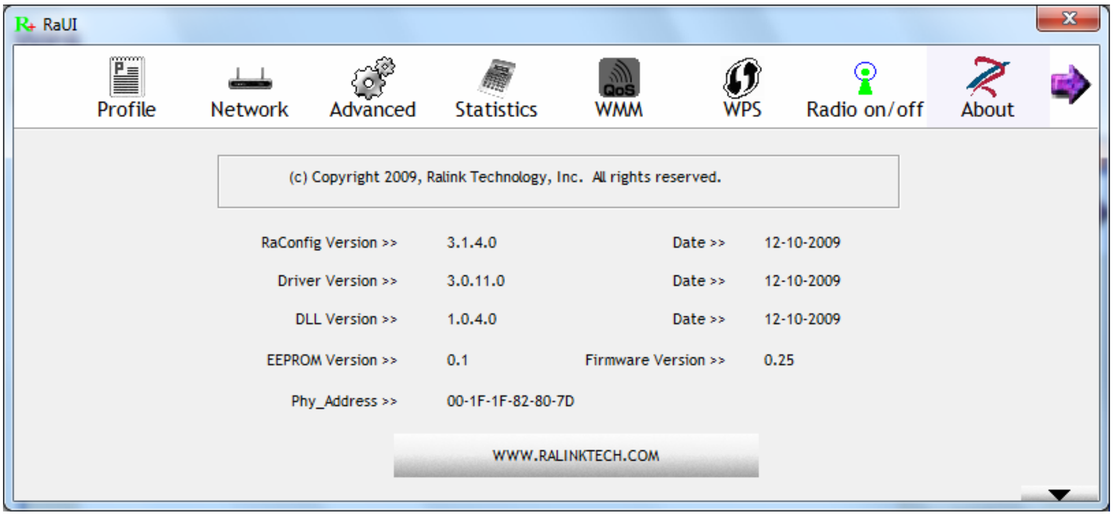
Diagnosis Capable >> NO

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 0~1023 milliseconds.
- Roaming with RF Parameters: Roaming by a set of RF parameters from AP
- Voice Drastic Roaming: Diagnose roaming function by voice traffic test.
- CAC(Tolerance): Enable the call admission control.
- Diagnostic: Select a profile which the user want to diagnose, then hit the Diagnose button to perform the diagnostic test.

3.11 About

About function display the wireless card and driver version information.



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RaConfig Version >> 3.1.4.0 Date >> 12-10-2009

Driver Version >> 3.0.11.0 Date >> 12-10-2009

DLL Version >> 1.0.4.0 Date >> 12-10-2009

EEPROM Version >> 0.1 Firmware Version >> 0.25

Phy_Address >> 00-1F-1F-82-80-7D

WWW.RALINKTECH.COM

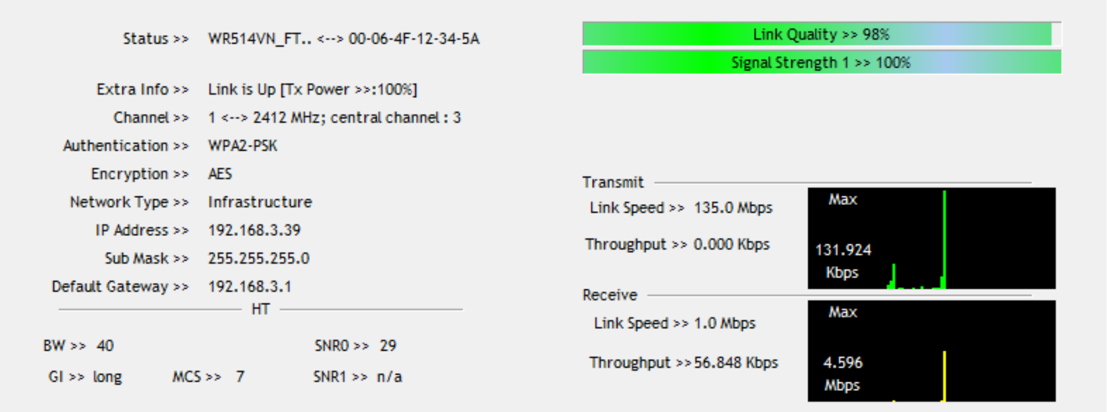
(1) Connect to Ralink's Website: WWW.RALINKTECH.COM

(2) Display Configuration Utility, Driver, and EEPROM version information

(3) Display Wireless NIC MAC Address.

3.12 Link Status

Link Status displays the detail information current connection



Status >> WR514VN_FT.. <--> 00-06-4F-12-34-5A

Extra Info >> Link is Up [Tx Power >>:100%]

Channel >> 1 <--> 2412 MHz; central channel : 3

Authentication >> WPA2-PSK

Encryption >> AES

Network Type >> Infrastructure

IP Address >> 192.168.3.39

Sub Mask >> 255.255.255.0

Default Gateway >> 192.168.3.1

HT

BW >> 40 SNR0 >> 29

GI >> long MCS >> 7 SNR1 >> n/a

Link Quality >> 98%

Signal Strength 1 >> 100%

Transmit

Link Speed >> 135.0 Mbps

Throughput >> 0.000 Kbps

Receive

Link Speed >> 1.0 Mbps

Throughput >> 56.848 Kbps

Status: Current connection status. If no connection, it will show Disconnected. Otherwise, the SSID and BSSID will show here.

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 about current connection.

Sub Mask: Sub Mast about current connection.

Default Gateway: Default gateway about current connection.

Link Speed: Show current transmit rate and receive rate.

Throughout: Display transmits and receive throughput in unit of 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.

HT: Display current HT Status in use, containing BW, GI, MCS, SNR0, and SNR1 value. (Show the information only for 802.11n wireless card)

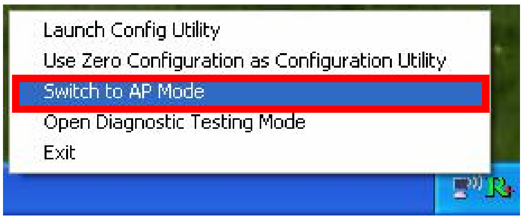
4. Soft-AP Function

Excepting become a wireless client of other wireless access points, this wireless card can act as a wireless service provider also! You can switch this wireless card's operating mode to 'AP' mode to simulate the function of a real wireless access point by software, and all other computers and wireless devices can connect to your computer wirelessly, even share the internet connection you have!

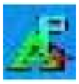
Please follow the instructions in following chapters to use the AP function of your wireless card.

4.1 Switch to AP mode and Basic Configuration

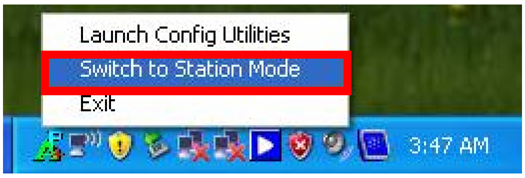
The operating mode of the wireless card is '**Station Mode**' (becoming a client of other wireless access points) by default. If you want to switch to AP mode, please right-click Ralink utility icon, and select '**Switch to AP Mode**'.


Launch Config Utility
Use Zero Configuration as Configuration Utility
Switch to AP Mode
Open Diagnostic Testing Mode
Exit

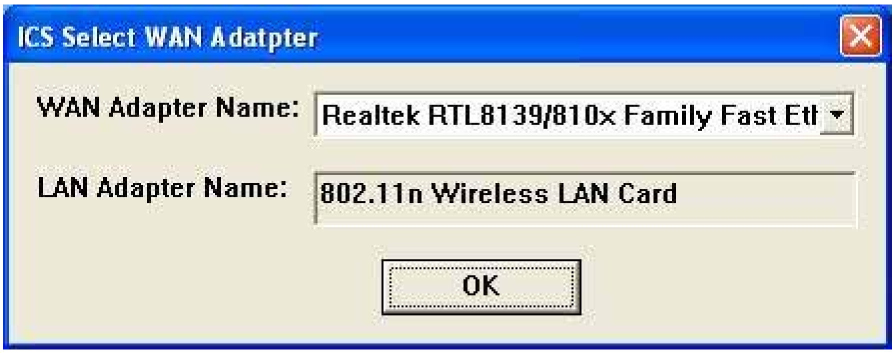
After you select '**Switch to AP Mode**', the Ralink utility icon will be changed to:



If you want to switch the wireless card back to station mode (become a client of other wireless access points), click '**Switch to Station Mode**'.



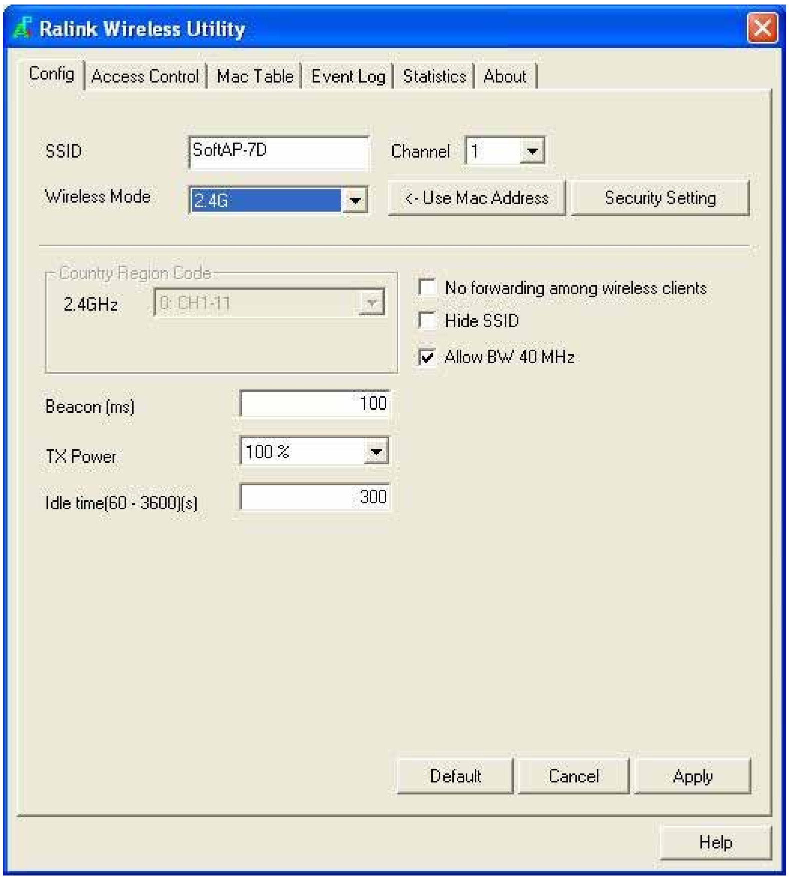
A configuration window will appear after you switch the operation mode to '**AP**', which asks you to assign an existing network card with internet connection



WAN Adapter Name: Realtek RTL8139/810x Family Fast Etl

LAN Adapter Name: 802.11n Wireless LAN Card

After you click '**OK**', you'll see the basic configuration menu of the AP function.



SSID: SoftAP-7D

Channel: 1

Wireless Mode: 2.4G

Country Region Code: 2.4GHz: 0: CH1-11

□ No forwarding among wireless clients

□ Hide SSID

☑ Allow BW 40 MHz

Beacon (ms): 100

TX Power: 100 %

Idle time(60 - 3600)(s): 300

SSID: Please input the SSID (the name used to identify this wireless access point) here. Up to 32 numerical characters can be accepted here, excepting space.

Channel: Please select the wireless channel you wish to use. The number of channels available here will vary depends on the setting of 'C**ountry Region Code**'.

Wireless Mode: Select the operation mode of the access point here.

Use Mac Address: Click this button to use the MAC address of the wireless card as SSID. A prefix '**AP**' will be added automatically

Security Setting: Set the security options (wireless data encryption). Please refer to chapter 4-2 'Security Settings' for details.

Country Region Code: Please select the country code of the country or region you live. Available options are 0-7, which will affect the available wireless channels you can use:

0: FCC (US, Canada, and other countries uses
FCC radio communication standards)
1: ETSI (Europe)
2: SPAIN
3: FRANCE
4: MKK
5: MKKI (TELEC)
6: ISERAL (Channel 3 to 9)
7: ISERAL (Channel 5 to 13)

Please note that only change the country code if you are in different country. For example: when operating this product in US, only channels 1~11 can be operated. Selection of other channels is not permitted under FCC regulations.

No forwarding among wireless clients: Check this box and wireless clients will not be able to share data with each other.

Hide SSID: Check this box and the SSID will not be broadcasted to the public. Your wireless clients must know the exact SSID to be able to connect to your computer. This option is useful to enhance security level.

Allow BW 40 MHz: Check this box to allow BW 40MHz capability.

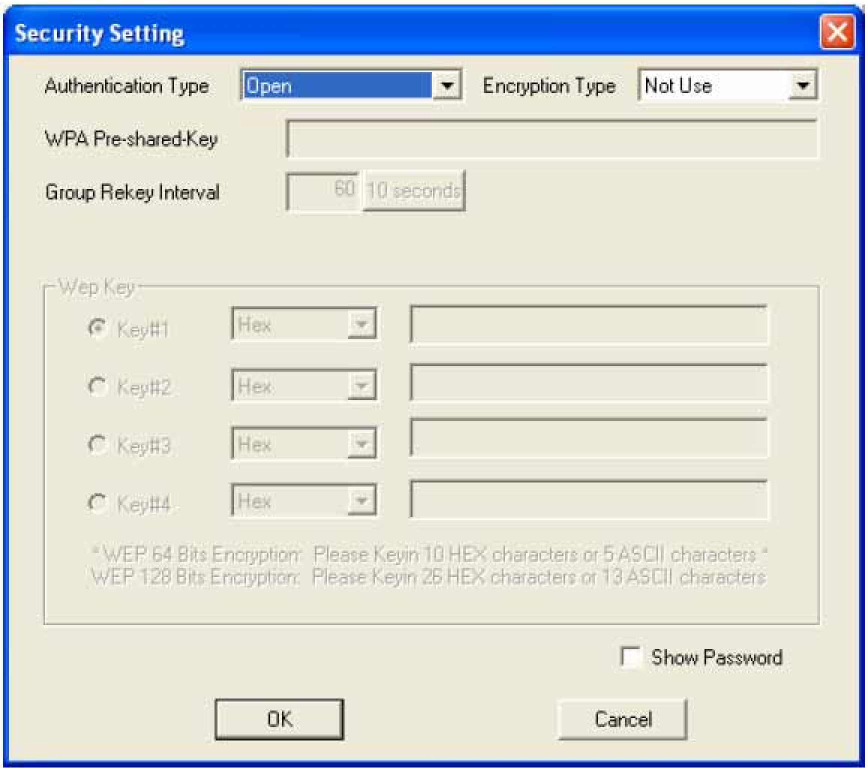
Beacon(ms): You can define the time interval that a beacon signal should be send. Default value is 100. Do not modify this value unless you know what will be affected.

TX Power: You can select the wireless output power here. Please select a proper output power setting according to your actual needs. You may not need 100% of output power if other wireless clients are not far from you.

Idle Time: Select the idle time for the wireless access point. Default value is 300. Do not modify this value unless you know what will be affected.

To save changes, click '**Apply**' button. Or you can click '**Default**' to reset all values to factory default value.

4.2 Security Settings



Security Setting

Authentication Type: Open

Encryption Type: Not Use

WPA Pre-shared-Key:

Group Rekey Interval: 60 10 seconds

Wep Key

● Key#1 Hex

○ Key#2 Hex

○ Key#3 Hex

○ Key#4 Hex

* WEP 64 Bits Encryption: Please Keyin 10 HEX characters or 5 ASCII characters *
WEP 128 Bits Encryption: Please Keyin 26 HEX characters or 13 ASCII characters

□ Show Password

Authentication Type: Please select a wireless authentication type you wish to use. Available options are 'Open', 'Shared', WPA-PSK', 'WPA2-PSK', and 'WPA-PSK / WPA2-PSK'. If you want to disable wireless data encryption, you must select 'Open'.

Encryption Type: Please select an encryption mode. The available options in this setting item will vary depending on the authentication type you select. If you select 'Not Use', data will not be encrypted and people with some networking knowledge will be able to read the data you transfer with proper tool.

WPA Pre-shared Key: Please input the WPA pre-shared key here. Only clients with the same pre-shared key you inputted here will be able to connect to your computer. This setting is only available when you select one of WPA encryptions

Group Rekey Interval: You can specify the time interval to re-issue the key to your wireless clients here. You can click the button '10 seconds' or 'Kpackets' to change the unit of time interval. (every 10 seconds or a thousand data packets times the value you specified in 'Group Rekey Interval' field).

Wep Key: Please input the WEP encryption key here when you select 'WEP' as encryption type. There are 2 types of WEP key: Hex (number 0 to 9, and ASCII characters A to F) and ASCII (all alphanumerical characters plus symbols). Please select the type of WEP key first, and then input the WEP key according to the type of WEP key you selected. If you want to use WEP 64 bits encryption, please input 10 characters if you select HEX, or input 5 characters if you select ASCII. If you want to use WEP 128bits encryption, please input 26 characters if you select HEX, or input 13 characters if you select ASCII. 128 bits encryption

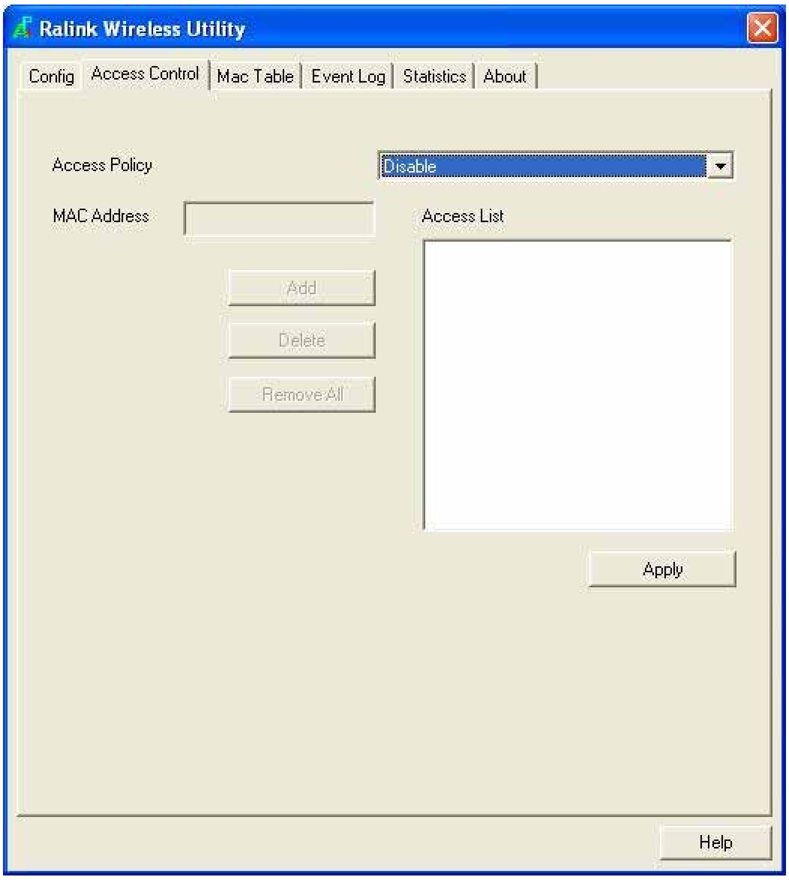
is safer then 64 bits, but the data transfer speed will be slightly reduced.

Show Password: Check this box and the WPA pre-shared key or WEP key you inputted will be shown, but not replaced by asterisk (*).

When you finish with setting and want to save changes, click 'OK' button, or click 'Cancel' button to discard all changes you made.

4.3 Access Control

If you're not going to open your computer and wireless resources to the public, you can use MAC address filtering function to enforce your access control policy, so only wireless clients with MAC address you defined by this function can be connected to your software access point



Access Policy: Disable

MAC Address:

Access Policy: Select the policy type of your access rule.

Disable: Allow any wireless client with proper authentication settings to connect to this access point.

Allow All: Only allow wireless clients with MAC address listed here to connect to this access point.

Reject All: Reject wireless clients with MAC address listed here to be connected to this access point.

MAC address: Input the MAC address of the wireless client you wish to allow or reject here. No colon (:) or hyphen (-) required.

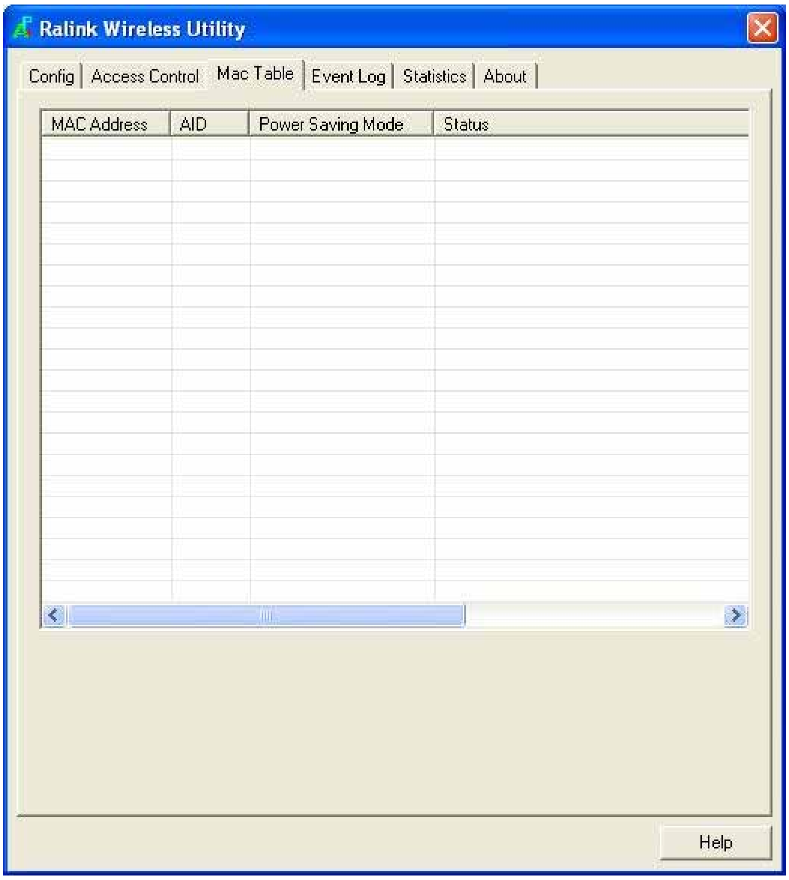
Add: Add the MAC address you inputted in 'MAC address' field to the list

Delete: Please select a MAC address from the list, then click 'Delete' button to remove it.

Remove All: Delete all MAC addresses in the list

4.4 MAC Table

If you want to see the list of all wireless clients connected to this access point, please select '**Mac Table**' tab from the utility



MAC Address: Displays the MAC address of this wireless client.

AID: The serial number of this wireless connection.

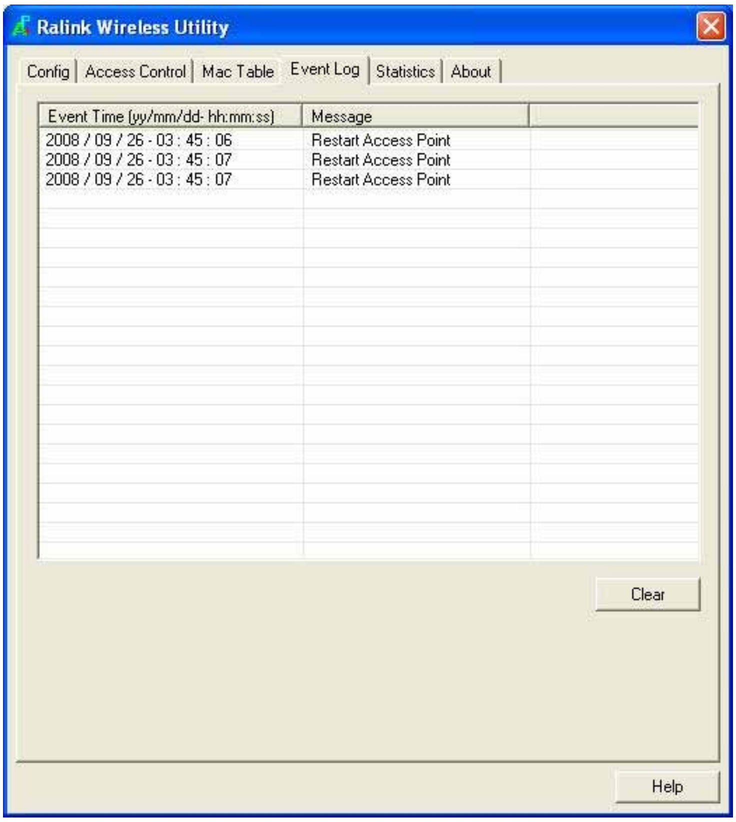
Power Saving Mode: Displays the capability of power-saving function of this wireless client.

Status: Displays additional information of this wireless Connection, like current wireless operating mode and data transfer rate.

4.5 Event Log

This software access point will log all wireless-related activities as a log. Click ‘Event Log’ tab, and the event log will be displayed.

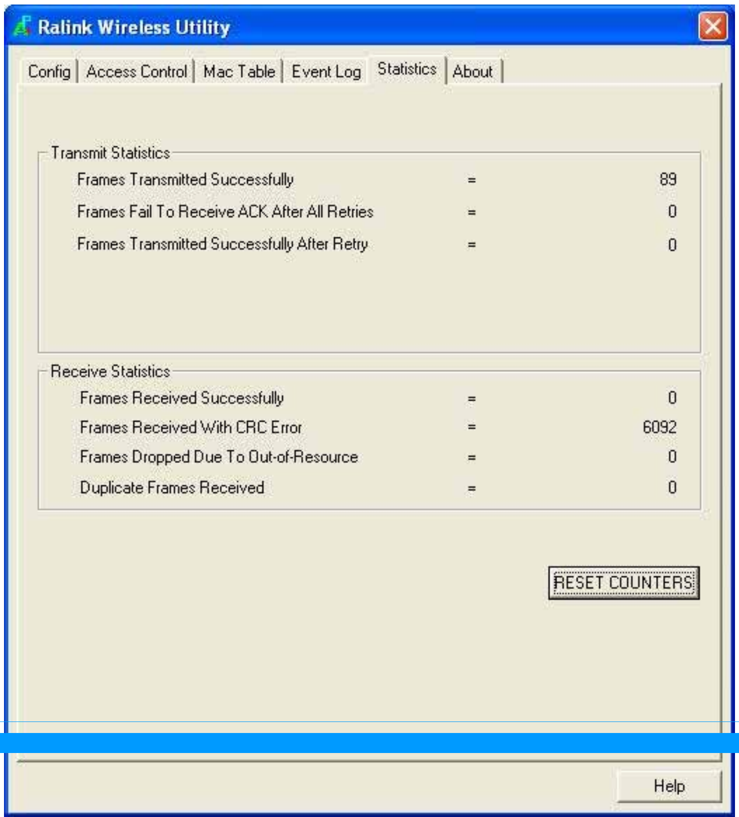
You can click ‘Clear’ to remove all entries in the log.



Event Time (yy/mm/dd- hh:mm:ss)	Message
2008 / 09 / 26 - 03 : 45 : 06	Restart Access Point
2008 / 09 / 26 - 03 : 45 : 07	Restart Access Point
2008 / 09 / 26 - 03 : 45 : 07	Restart Access Point

4.6 Statistics

If you want to know detailed information about how your software access point works, click ‘Statistics’ tab, and the event log will be displayed. Click ‘RESET COUNTERS’ button to reset all counters to zero.



Transmit Statistics

Frames Transmitted Successfully = 89

Frames Fail To Receive ACK After All Retries = 0

Frames Transmitted Successfully After Retry = 0

Receive Statistics

Frames Received Successfully = 0

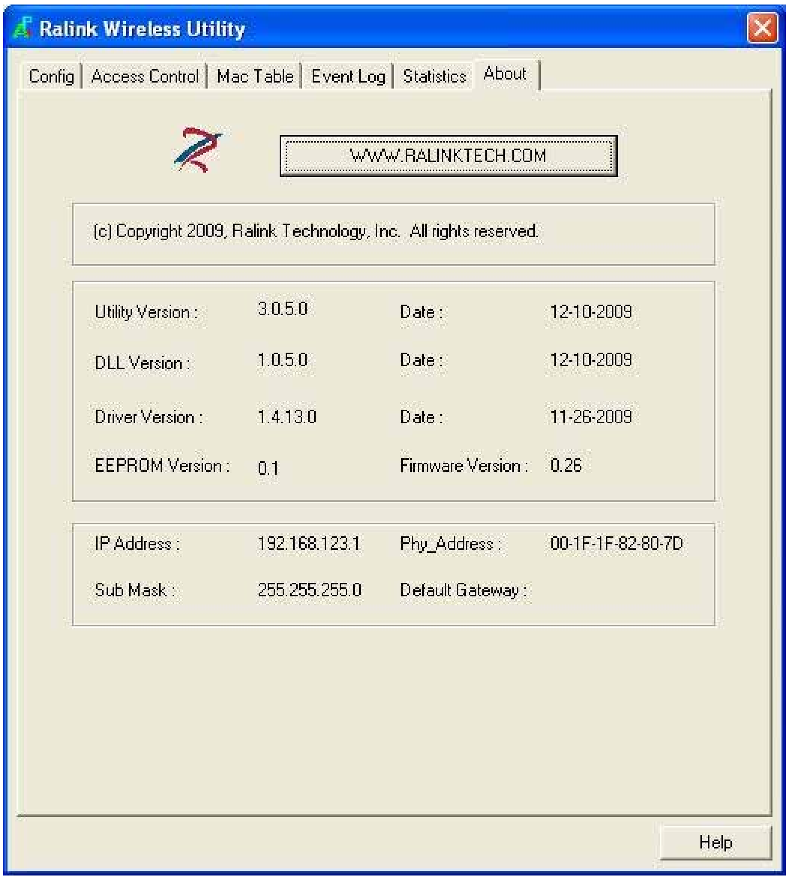
Frames Received With CRC Error = 6092

Frames Dropped Due To Out-of-Resource = 0

Duplicate Frames Received = 0

4.7 About

The ‘About’ tab provides you the information about version number of the configuration utility, driver, and other important information about your wireless access point.



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Utility Version : 3.0.5.0 Date : 12-10-2009

DLL Version : 1.0.5.0 Date : 12-10-2009

Driver Version : 1.4.13.0 Date : 11-26-2009

EEPROM Version : 0.1 Firmware Version : 0.26

IP Address : 192.168.123.1 Phy_Address : 00-1F-1F-82-80-7D

Sub Mask : 255.255.255.0 Default Gateway :