百一電子股份有限公司
Prime Electronics & Satellitics Inc.

WLAN Module WA254T
User Manual

No.	Item	Specification				Test Method/Condition
		Condition	Min.	Typ.	Max.	
1.	**General specification**					
1-1.	Standard	IEEE 802.11b				
1-2.	Frequency Band(MHz)		2400		2497	
1-3.	No. of Selectable Channels	11 Channels (US, Canada) 13 Channels (Europe) 14 Channel (Japan)				
1-4.	Channel Spacing (MHz)			5		
1-5.	Modulation Technique	DSSS (CCK, DQPSK, DBPSK)				
1-6.	Spreading	11-chip Barker Sequence				
1-7.	Media Access Protocol	CSMA/CA(collision Avoidance) with ACK				
1-8.	Interface	60 pin connector				
1-9.	Reset Switch	Push for normal reset				
1-10.	LED Indicators	Power : Green for Power ON Ethernet : Green for Link ,Blink for active WLAN :Green Blinking for Active				
1-11.	Antenna	One External 2 dBi Dipole Antenna				
1-12.	Dimensions	110 x 37 x 8 mm				
2.	**Standard Test Condition**					
2-1.	Supply voltage(V)			4.5		
3.	**Electrical Specification**					Temperature Range：0 ~ 55℃ Humidity：95 % (Non-condensing)
3-1.	Power Consumption (mA)	@+4.5V		470	550	Receiver Mode
				650	750	Transmit Mode
3-2	Receive Sensitivity (dBm)[FER < 8%]		-76	-78	-82	@ 11 Msps ,Through-Put > 4 Mbps
			-78			@ 5.5 Msps
			-81			@ 2 Msps
			-84			@ 1 Msps
3-3.	Range(Meters)	Indoor	30			@ 11 Msps
			100			@ 1 Msps
		Outdoor	150	180	250	@ 11 Msps
			300			@ 1 Msps
3-4.	Average Output Power(dBm)	Ch1~Ch13	14	15	18	@30 dBc difference between the signal level at center frequency and higher first side lobe
		Ch 14	14	15	18	@25 dBc difference between the signal level at center frequency and higher first side lobe
3-5	Frequency Accuracy(ppm)		- 25		+ 25	

4.	Frequency channel plan							
		Regulation Domains						
Channel_ID	Frequency (Mhz)	FCC (0x00)	IC (0x01)	ETSI (0x02)	Spain (0x03)	France (0x04)	MKK (0x05)	MKK2 (0x06)
1	2412	X	X	X				X
2	2417	X	X	X				X
3	2422	X	X	X				X
4	2427	X	X	X				X
5	2432	X	X	X				X
6	2437	X	X	X				X
7	2442	X	X	X				X
8	2447	X	X	X				X
9	2452	X	X	X				X
10	2457	X	X	X	X	X		X
11	2462	X	X	X	X	X		X
12	2467			X		X		X
13	2472			X		X		X
14	2484						X	X

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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 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 or more of the following measures:

1. Reorient or relocate the receiving antenna.

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

FCC Caution

This equipment complies with FCC radiation exposure limits. However, in order to avoid the possibility of exceeding the FCC exposure limits, this device and its antenna should not be co-located or operating in conjunction with any other antenna or transmitter."

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.

Any changes or modifications not expressly approved by the party responsible for compliance could void the authority to operate equipment.

This device is intended only for OEM integrators under the following conditions:
1) The antenna must be installed such that 20 cm is maintained between the antenna and users, and
2) The transmitter module may not be co-located with any other transmitter or antenna.

As long as the 2 conditions above are met, further transmitter test will not be required. However, the OEM integrator is still responsible for testing their end product for any additional compliance requirements required with this module installed (for example, digital device emissions, PC peripheral requirements, etc.).

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

End Product Labeling

This transmitter module is authorized only for use in device where the antenna may be installed such that 20 cm may be maintained between the antenna and users (for example, access points, routers, wireless ADSL modems, and similar equipment). The final end product must be labeled in a visible area with the following: "Contains TX FCC ID: PQP-WA254T".

Manual Information for End Users

The end user must not have manual instructions to remove or install the device. The user manual for end users must include the following information in a prominent location.

"IMPORTANT NOTE:

To comply with FCC RF exposure compliance requirements, the antenna used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter."

R&TTE Compliance Statement

This equipment complies with all the requirements of DIRECTIVE 1999/5/CE OF THE EUROPEAN PARLIAMENT AND THE COUNCIL of March 9, 1999 on radio equipment and telecommunication terminal Equipment and the mutual recognition of their conformity (R&TTE)

The R&TTE Directive repeals and replaces in the directive 98/13/EEC (Telecommunications Terminal Equipment and Satellite Earth Station Equipment) As of April 8, 2000.

Safety

This equipment is designed with the utmost care for the safety of those who install and use it. However, special attention must be paid to the dangers of electric shock and static electricity when working with electrical equipment. All guidelines of this and of the computer manufacture must therefore be allowed at all times to ensure the safe use of the equipment.

EU Countries Intended for Use

The ETSI version of this device is intended for home and office use in Austria Belgium, Denmark, Finland, France, (with Frequency channel restrictions) Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, Sweden, and the United Kingdom.

The ETSI version of this device is also authorized for use in EFTA member states: Iceland, Liechtenstein, Norway, and Switzerland.

EU Countries Not intended for use

None.

Potential restrictive use

France: Only channels 10, 11, 12, and 13

Configuring the Wireless LAN Module

The APM Utility helps you configure the Wireless LAN Module through the Ethernet port.

3.1 Installing the APM Utility

A. Power on your computer and allow Window 98/Me/2000/XP to load fully. Insert the driver CD into the CD-ROM and execute the **"Setup.exe"** program. (It may be found in the APM folder.) The wizard box will then appear, click **"Next"** to continue.
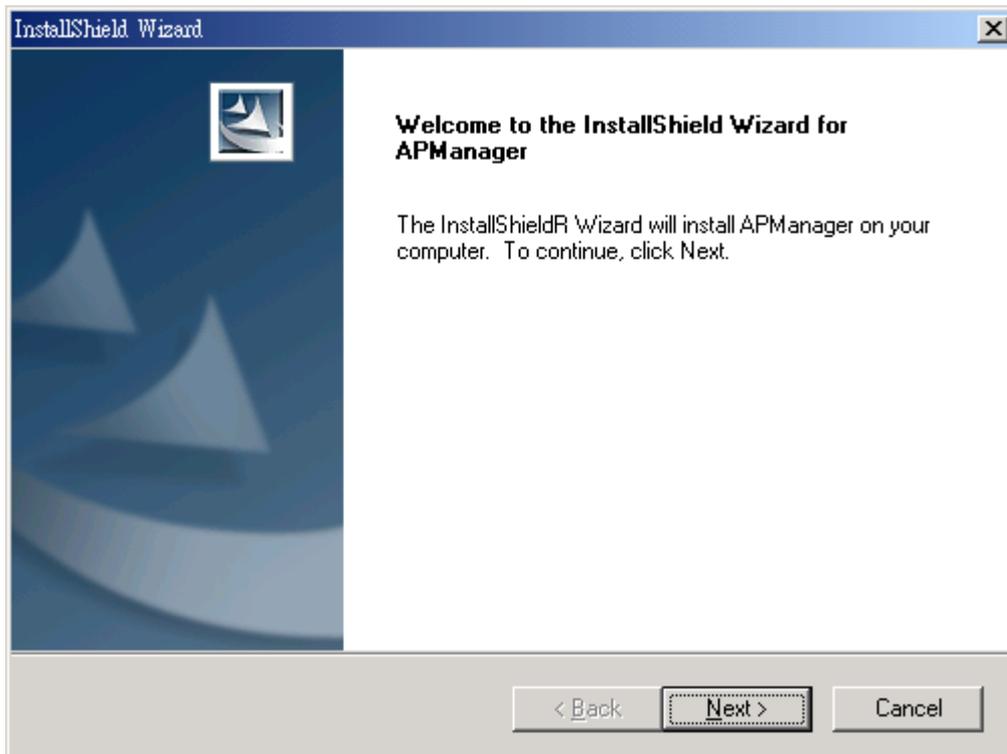
B. Click **"Browse"** to choose the folder where you want to locate the driver, click **"Next"**.
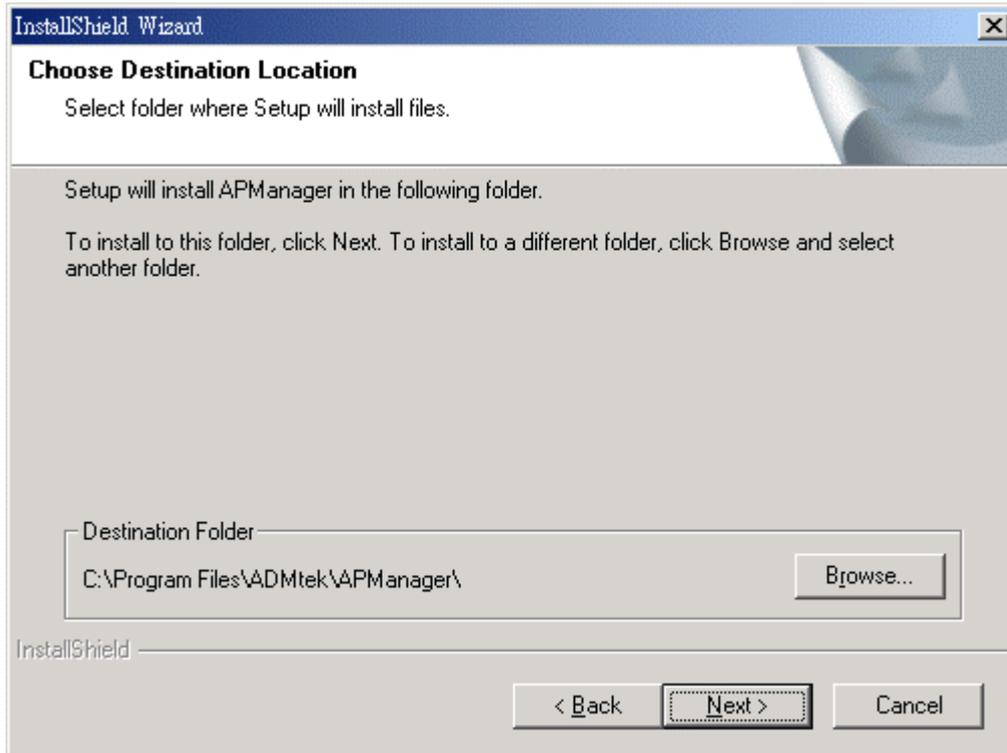
C. After Windows finishes copying files, it will show that **"Setup has finished installing APManager on your computer."** Click **"Finish"** to complete the procedure.
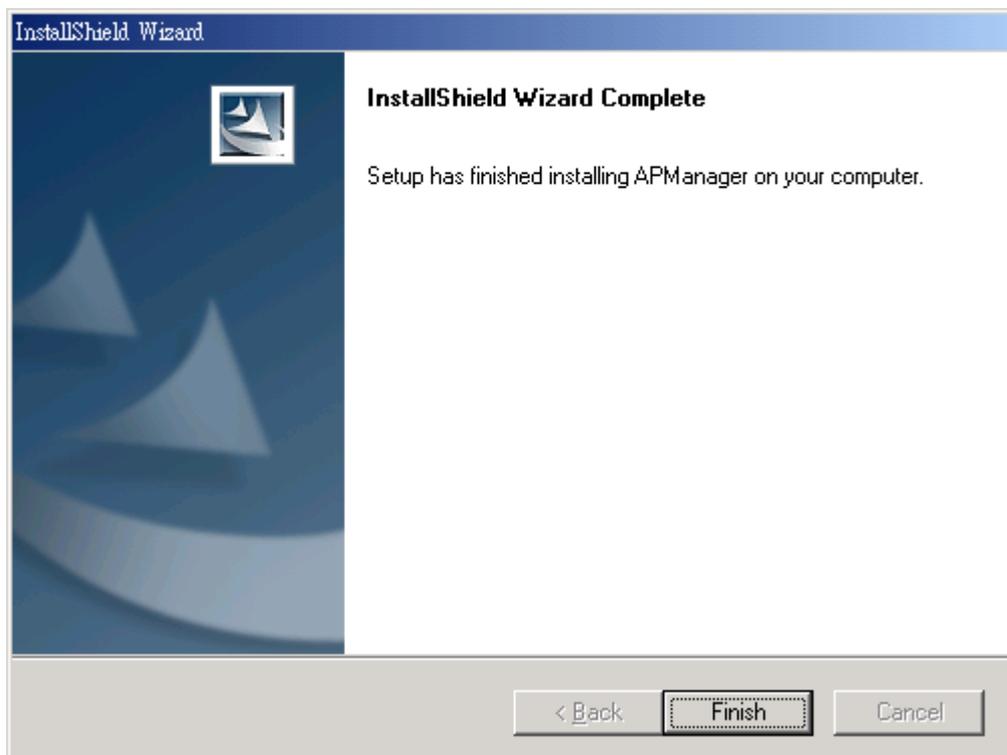
D. Connect the AP to the Ethernet port and boots up the APM utility to start the configuration.

3.2 Configuring the Wireless LAN Module with the APManager

On the Windows Start Menu, choose **"Start Programs" -> "APManager"** Using this option you can directly connect to the AP.

● **Find the Module**

1) This submenu allows you to find and connect to the Module without knowing its IP address. Click "Discovery" in order to find the Module. Window appears indicating the IP Address of the Module and select "IP Address". Then click "Configuration" to configure the Module.

Note: In order to find Module, Module and computers must resident in the same subnet. The default IP of Module is "192.168.1.1". You will also need to set your IP address of your PC to "192.168.x.x" and subnet to "255.255.0.0".
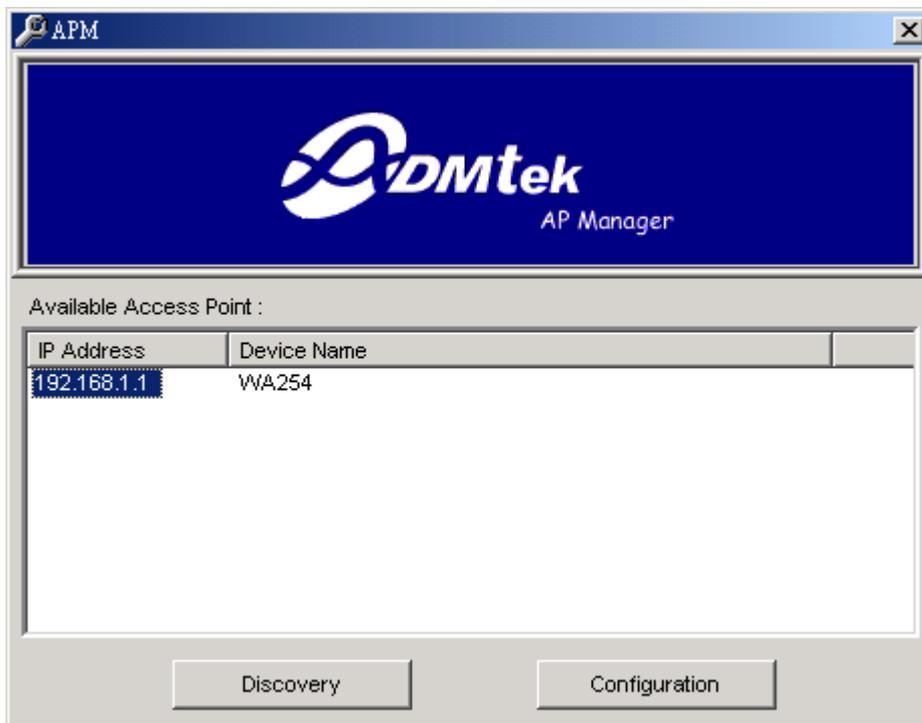
2) It indicates a successful connection to the Module if the dialog below appears. Enter password and press "OK". (Default Password : private)
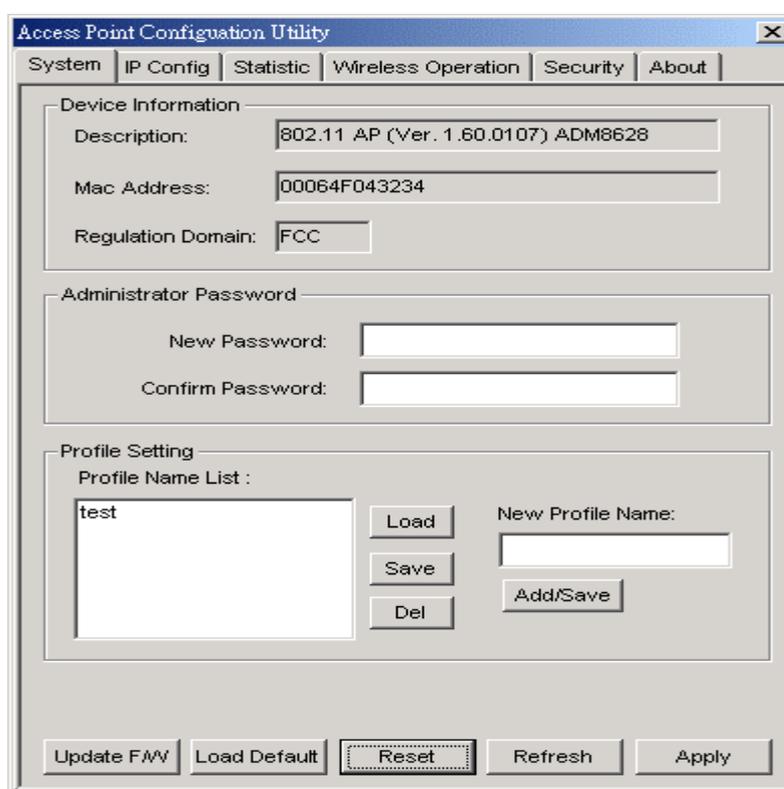

3) It indicates an unsuccessful connection to AP if the below error message appears. Please check whether the Module has an appropriate IP address and has been connected to the network.

● **Table Menu**

The table menu contains the following enabled submenus:

1) System:

  ☐ **Device Information**：show the description, Mac address, Regulation Domain.

 ☐ **Administrator Password**：change the password that APM control Module.

☐ **Profile Name List**：Using "Add/Save" button to add new profile name；using "Load", "Save", "Del" button to modify the profile name.

☐ **Update F/W**：Click the button to update the firmware of Module.
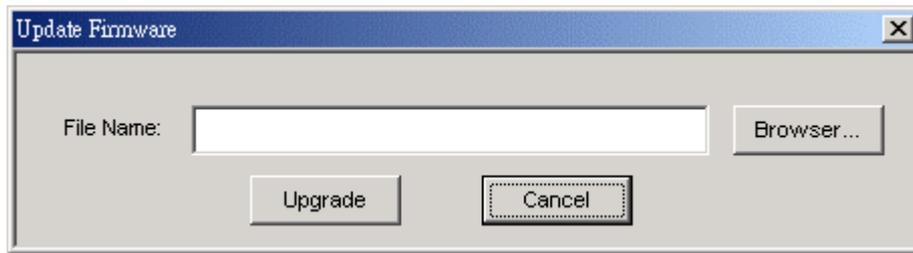
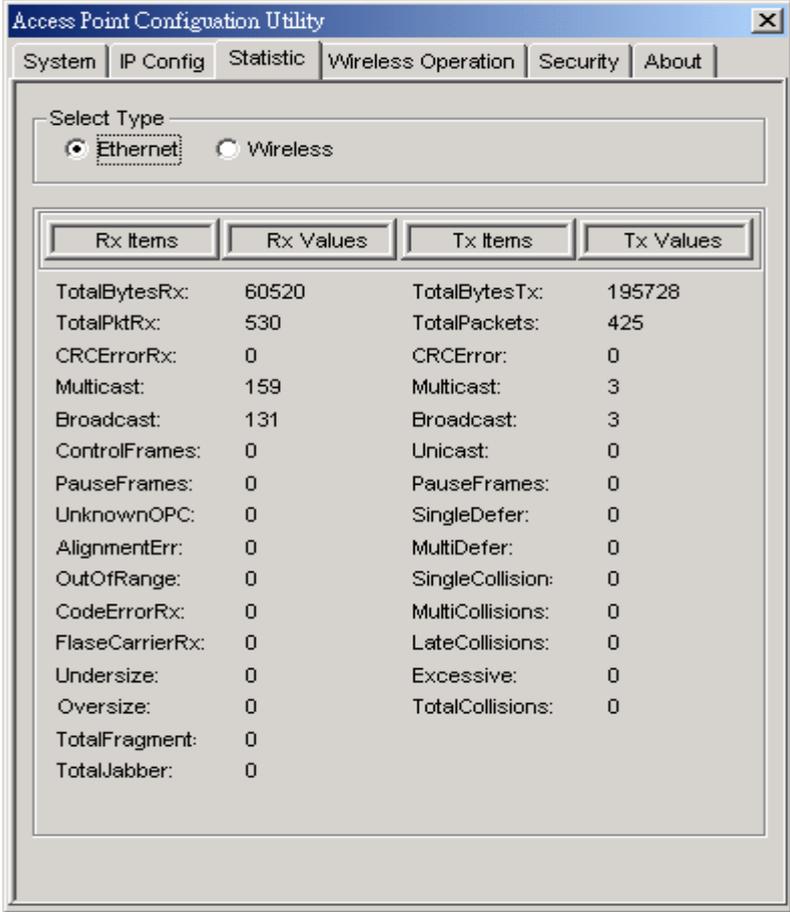Click **"Browser"** to choose **.dlf** firmware, then click **"Upgrade"** button to update firmware.

☐ **Load Default**：Click the button to assign the default data.

☐ **Reset**：Click the button to reset the Module.

☐ **Refresh**：Click the button to reload the data from Module.

☐ **Apply**：Click the button to assign new data to Module.

2) IP Config:
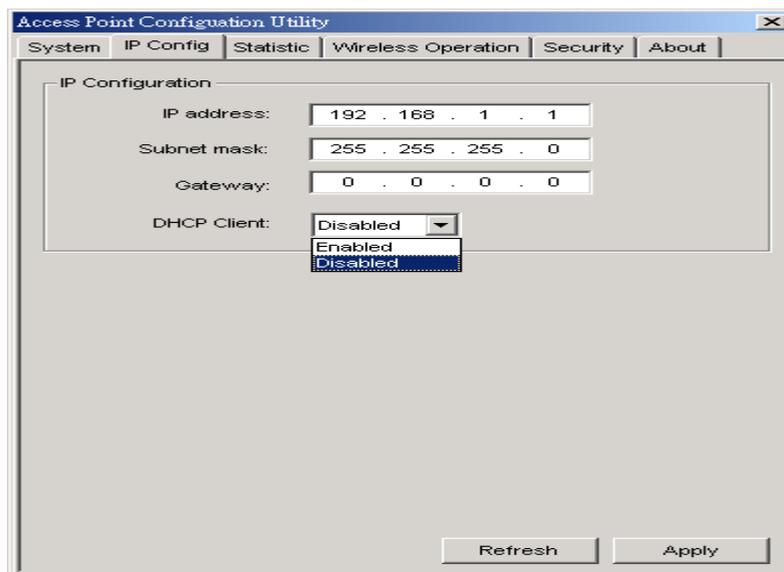
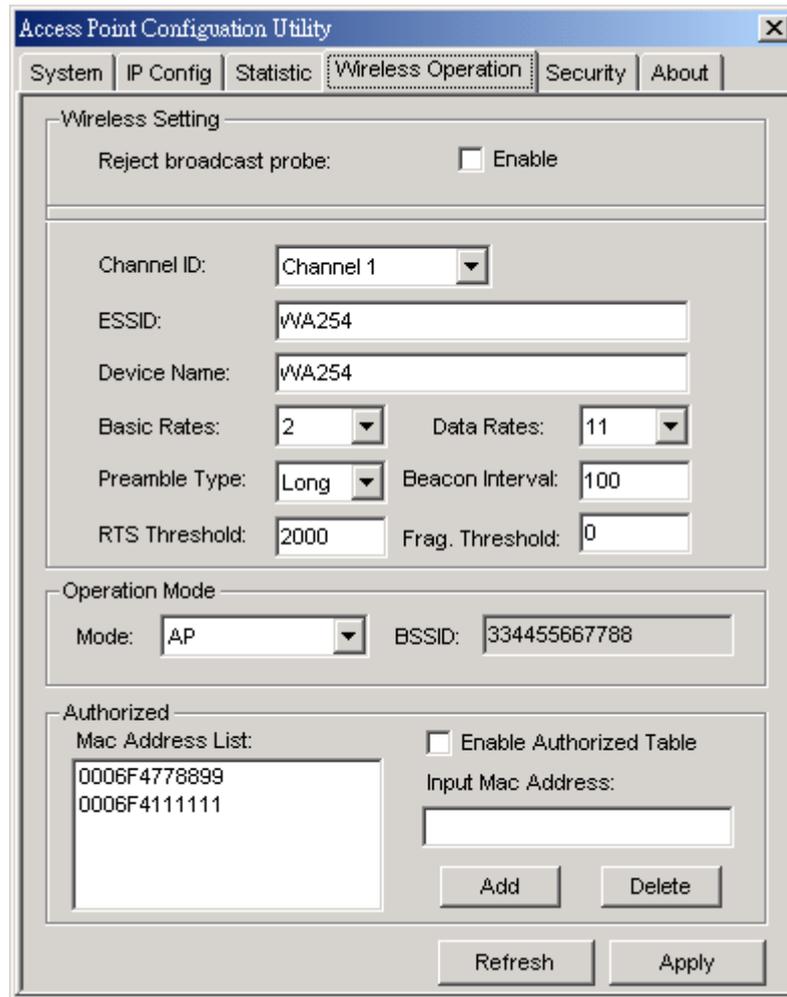In this page you can see and change the IP Address, IP Mask and Gateway of the Module.

3) Statistic:

In this page you can see the statistic of the Module linking in Ethernet or Wireless.

4) Wireless Operation:

Using this option you can either view or modify the Wireless LAN parameters of the Module. These parameters are described below:

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☐ **Wireless Setting：**

- **Reject broadcast probe:** When checked the Module broadcasts the ESSID to the stations, if not checked then the stations must know the Module ESSID in advance.

- **Channel ID:** There are 14 channels available. The channels differ from country to country. Select the channel to be used.

- **ESSID:** It is an ASCII string up to 32 characters used to identify a WLAN that prevents the unintentional merging of two co-located WLANs. The ESSID value must be the same in all stations and AP in the extended WLAN. Select the ESSID to be used.

- **Device Name:** The name of the Module.

- **Rate:** By default the unit adaptively selects the highest possible rate for transmission. Select the Basic & Data rates to be used among the following options: 1, 2, 5.5, 11(Mbps).

- **Preamble Type (Short / Long):** Preamble is the first sub-field of the PPDU. It's an appropriable frame format for transmission between PHY (Physical layer). There are two preamble types: short and long. The Short Preamble option improves throughput performance.

- **Beacon Interval:** Set the Beacon Period parameter, which specifies the duration between Beacon packets (milliseconds). The range for the Beacon Period is between the range 20-1000 with a typical value of 100.

- **RTS Threshold:** Minimum packet size to require an RTS Request To Send. For packets smaller than this threshold, an RTS is not sent and the packet is transmitted directly to the WLAN. This is the option for the RTS Threshold activation.

- **Frag. Threshold:** The size at which packets will be fragmented. Choose a setting within a range of 256 to 2346 bytes.