WF-610User Manual

Version 2

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1 Quick Start

Thank you for buying this product. The following information aims to give you general information about product introduction, product overview and installation procedure and so on.

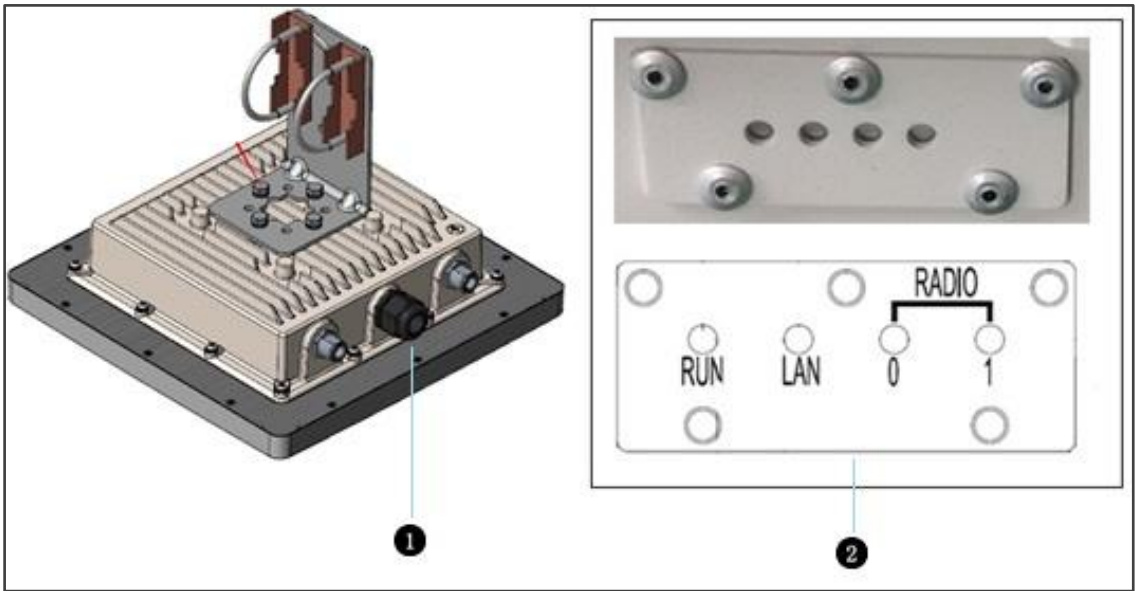
1. Introduction

WF-610 is a dual-band 2x2 outdoor Wi-Fi AP, which is complied with the IEEE802.11n/11ac standard and designed for high-density deployments in offices, schools, hospitals and hotels that require premium performance.
Having together MIMO (Multiple-in&Multiple-out) technology with high-throughput mode techniques, WF-610 works with most wireless terminals to builds a high capacity Wi-Fi network.

2. Package List

- AP x1
- L shaped clamp x 1
- Waterproof coverx 1
- Installation packagex 1

3. Product Overview



No.	Name	Function
❶	LAN Port	10/100/1000M Base-T Ethernet port (RJ-45), used as a WAN port and used for being powered by PoE function.
❷	LEDs	See LED Definition

4. Installation

To reduce the risk of bodily injury, electrical shock, fire, and equipment damage, read all warnings and precautions in this guide before installing or maintaining product.

Caution

⚠ To avoid risk of injury from electrical shock or energy hazard, installation and service of this product must be performed by qualified service personnel.

⚠ Make sure the AP fits securely on the ceiling rail when hanging the device in the ceiling, because poor installation could cause it to fall and make body injury and equipment damage.

Safety Statement

- To avoid the abnormal work, do not install the device near the power line, electric lamp, power grid, or in any forceful power grid place
- Ensure the power adapter is grounded well if install the device indoor.
- Install other lightning protection equipment near the device if necessary, because the lightning protection module inside the device is basic.
- Use the steady power grid to provide the power to the device, which is to avoid the abnormal work.
- Use a less than 50m network cable to connect the PoE port, which is to acquire the steady power. The network cable complies with the DC resistance definition in the YD/926.2 protocol.

Installation Environment

- Operating ambient temperature: -40℃ ~ +65℃
- Operating ambient humidity: 5% ~ 95%non-condensing

Installation mode:

- Pole mounting

Installation tool:

- Screws, screw-driver and wrench

Installation site:

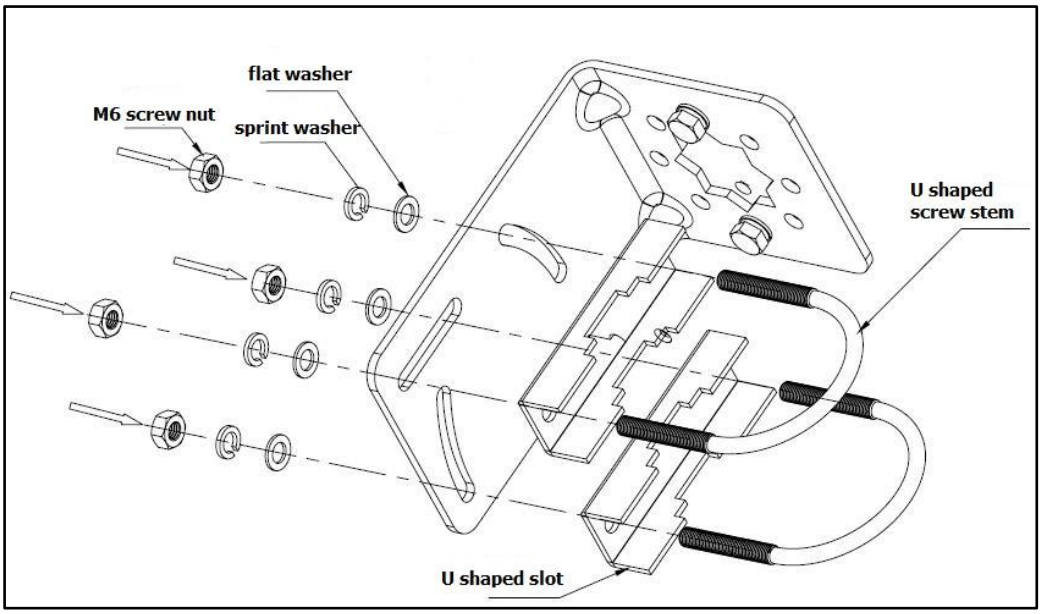
- Please ensure the visibility ofproduct and no tall buildings and woods block between them.

Installation procedure

Pole mounting

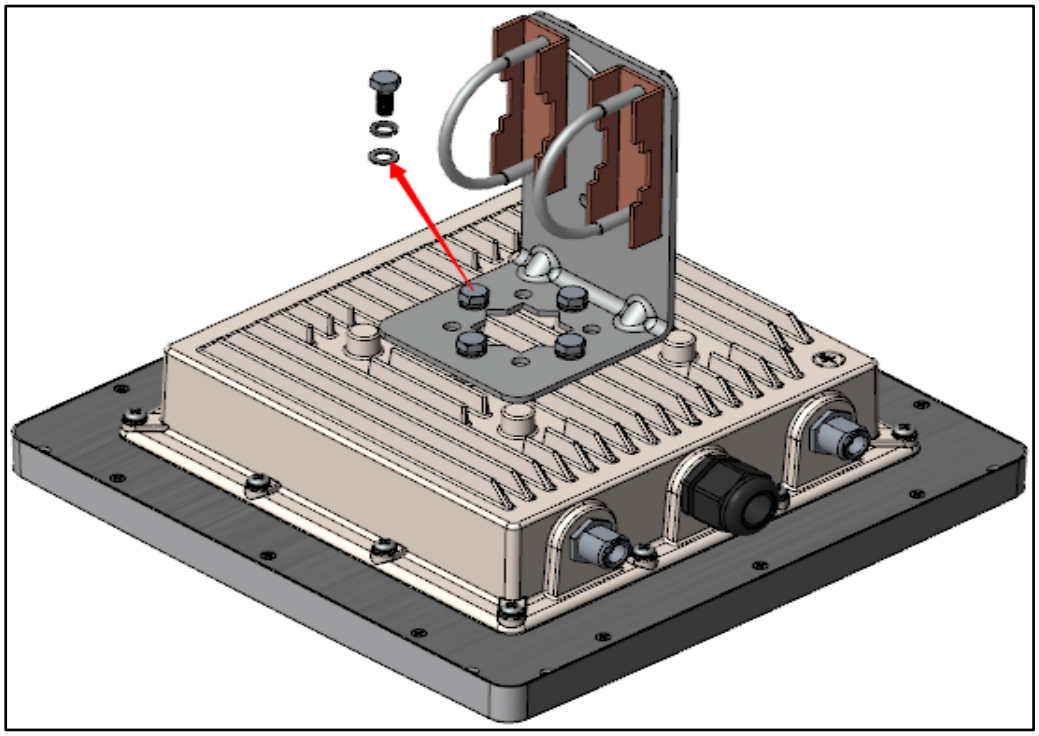
1. Firstly install the L shaped clamp, with M6 screw nut, spring washer and flat washer. Four screws need be installed.

2. Put the U shaped screw stem and U shaped slot into the hole. And then drive the M6 crew nut and M6 washer.

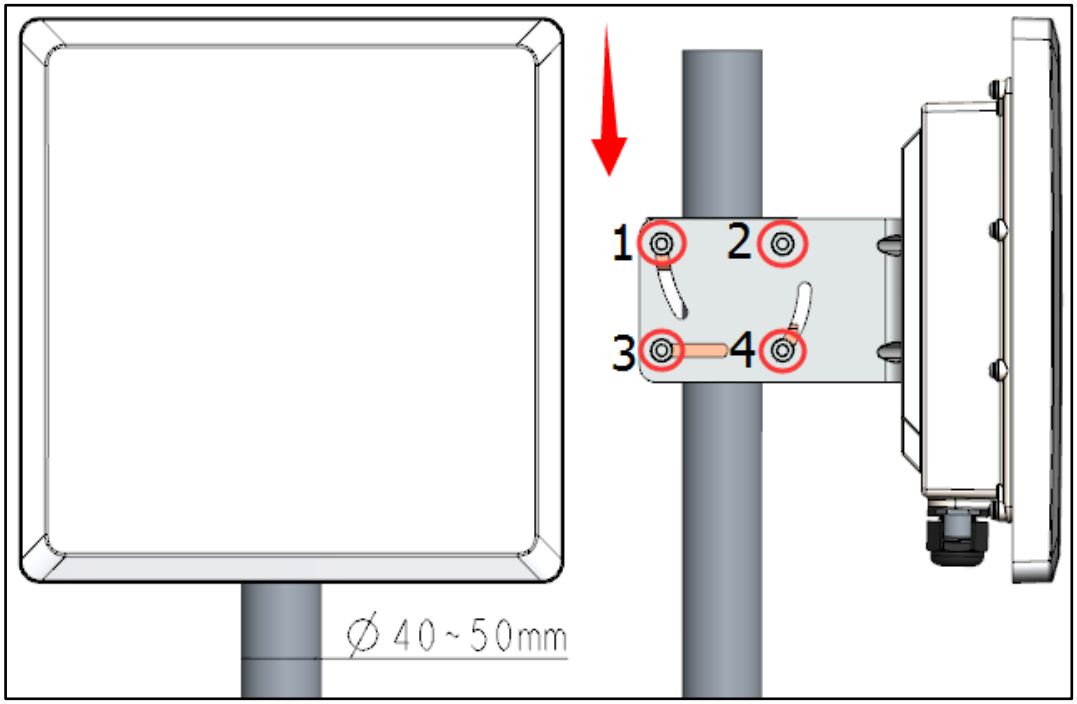


3. Install the clamp on the back of WF-610, with M6*12 screw bolt, M6 spring washer and M6 flat washer. Four screw bolts need be installed.

4. Input M6*12 screw bolt and M6 washer into the hole on the back and drive them.



5. Finally mount WF-610 on the pole as shown in the picture. And drive the screw nut tight with wrench.



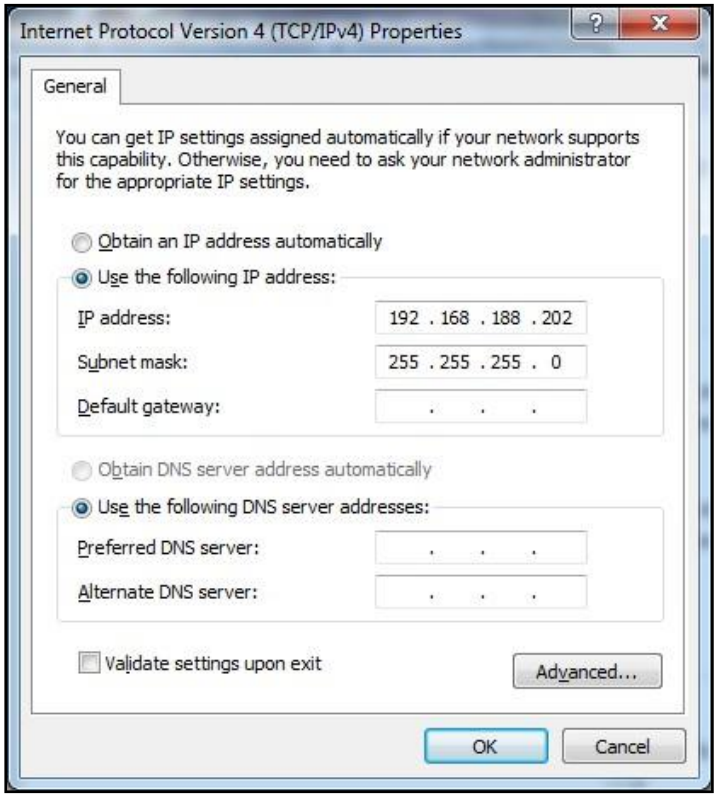
5. LED Definition

LED	Function	State-Color	Indication
RUN	AP power / ready status	Steady - Green	APis ready
		Red	AP hardware failure
		Off	No power to AP
LAN	Network Link Status	Steady - Green	1000Mbps Ethernet link negotiated
		Steady- Yellow	10/100Mbps Ethernet link negotiated
		Flashing	Ethernet link activity
		Off	Ethernet link unavailable
0	5G Hz Radio Status	Steady– Green	5GHz radio is enabled
		Off	5GHz radio is disabled
1	2.4G Hz Radio Status	Steady– Green	5GHz radio is enabled
		Off	5GHz radio is disabled

6. Software Installation

Logging in to the Web Page

1. To configure PC IP address, fill 192.168.188.x in “IP address” and 255.255.255.0 in “Subnet mask”(set Window7 as an example to show the properties)



2. Input the default IP address 192.168.188.251 in the address bar of the web browser and press Enter.
3. Enter username and password (username: admin, password: password), after password authentication is successful, the web page is displayed.

7. Product Specification

Physical specification

Dimensions	216.2mm x 216.2 mm x 71mm(L x W x H)
Weight	3.0kg
LED	RUN/ LAN/ RADIO 0/ RADIO 1
Ethernet interface	RJ-45 connector

Electrical specification

Power input	Standard 802.3at PoE
Power consumption	≤12.33W

Environmental specification

Working temperature	-40℃ ~ +65℃
Working humidity	5% ~ 95% non-condensing
Elevations	86kPa～106kP0061

Dustproof and waterproof	IP67
Lightning protection	6KV common mode surge

8. Product Proper Disposal

Waste of Electrical and Electronic Equipment

Directive 2002/96EC on Waste of Electrical and Electronic Equipment are designed to tackle the fast increasing waste stream of electrical and electronic equipment and complements European Union measures on landfill and incineration of waste. CIG products at end of life are subject to separate collection and treatment in the EU Member Statues and therefore are marked with the symbol.

European Union RoHS

EU Restriction and Hazardous Substances Directive 2011/65/EC (RoHS) restricts the use of specific hazardous materials in manufacture of electrical and electronic equipment. Specially, restricted materials are Lead, Cadmium, Mercury, Hexavalent Chromium, and Bromine. CIG products comply with this requirement and all marked with “RoHS” shown at the left.

China RoHS

WF-610complies with China environmental declaration requirements and is labeled with “EFUP 20” label shown as follows.

有毒有害物质声明

Hazardous Materials Declaration

部件名称（Parts）	有毒有害物质或元素（Hazardous Substance）					
	铅（Pb）	汞（Hg）	镉（Cd）	六价铬（Cr6+）	多溴联苯（PBB）	多溴二苯醚（PBDE）
电路模块（circuit modules）	×	O	O	O	O	O
电缆及电缆组件（Mechanicalassemblies）	x	O	O	O	O	O
金属部件（Metal Parts）	O	O	O	O	O	O
塑料和聚合物部件	O	O	O	O	O	O

（Plastic and Polymeric Parts）						

O：

表示该有毒有害物质在该部件所有均质材料中的含量在 SJ/T11363 － 2006 标准规定的限量要求下。
Indicates that the concentration of the hazardous substance in all homogeneous materials in the parts is below the relevant threshold of the SJ/T11363-2006 standard.

X：

表示该有毒有害物质至少在该部件的某一均质材料中的含量超出SJ/T11363-2006标准规定的限量要求。
Indicates that the concentration of the hazardous substance of at least one of all homogeneous materials in the parts is above the relevant threshold of the SJ/T11363-2006 standard.

对销售之日的所售产品，本表显示剑桥公司供应链的电子信息产品可能包含这些物质。注意：在所售产品中可能会也可能不会含有所有所列的部件。
This table shows where these substances may be found in the supply chain of CIG electronic information products, as of the date of sale of the enclosed product. Note that some of the component types listed above may or may not be a part of the enclosed product.

除非另外特别的标注，此标志为针对所涉及产品的环保使用期标志。某些零部件会有一个不同的环保使用期贴在其产品上。此环保使用期限只适用于产品是在产品手册中规定的条件下工作。
The Environment-Friendly Use Period (EFUP) for all enclosed products and their parts are per the symbol shown here, unless otherwise marked. Certain parts may have a different EFUPand so are marked to reflect such. The Environment-Friendly Use Period is valid only when the product is operated under the conditions defined in the product manual.

9. Safety and Regulatory compliance

WF-610has been tested and complied with the standards as follows:

- FCC DOC Part 15 Class B (US)
- FCC Part 15 Subpart C 15.247 (US)
- FCC Part 15 Subpart E 15.407 (US)

10. FAQs

FAQ	Solution
The RUN indicator is off	Check that the power adapter is plugged into a live AC outlet.
	Check the power cable for shorts or breaks.

FAQ	Solution
	Check whether the connection between the **LAN/POE** port of the combiner and the **LAN/POE** port is correct.
The LAN port indicator is off.	Check whether the connection between the **LAN/POE** port of the combiner and the **LAN/POE** port is correct.

11. Technical Support

CIG offers technical support 24 hours a day, 7 days a week. Use one of the following methods to contact CIG technical assistance center:

Hotline: +86 21 8023 300

Email: support@cambridgeig.com

12. Contact Information

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Phone: +852 2827 1778

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2388Chen Hang Road

Shanghai 201114, China

Phone: +86 21 8023 300

USA

Cambridge Industries Group

Techmart Center 5201 Great

AmericaParkway, Suite 320

Santa Clara CA 95054.

Tel: +1 408.730.6888

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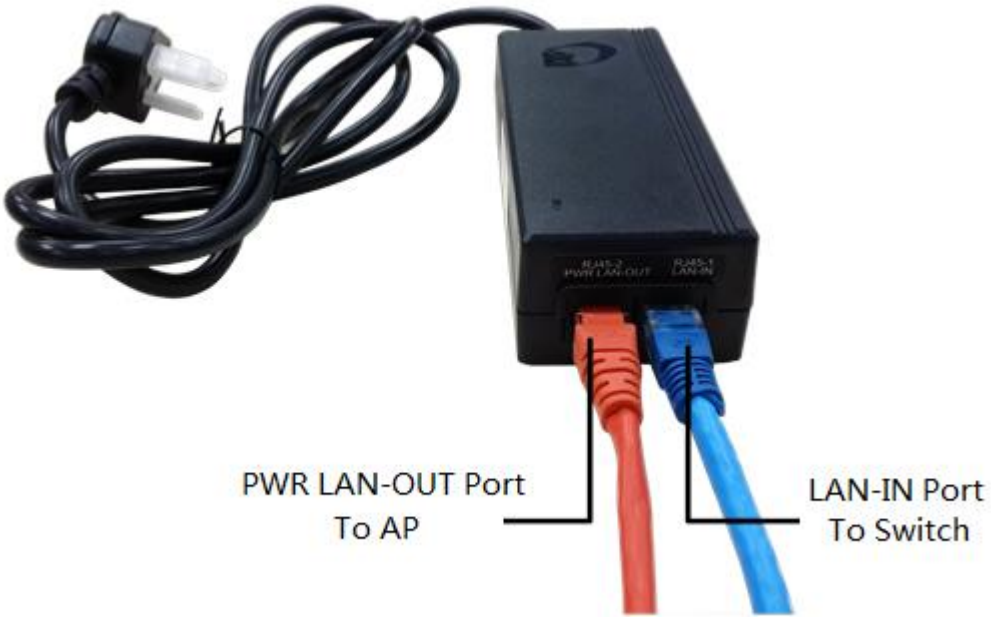
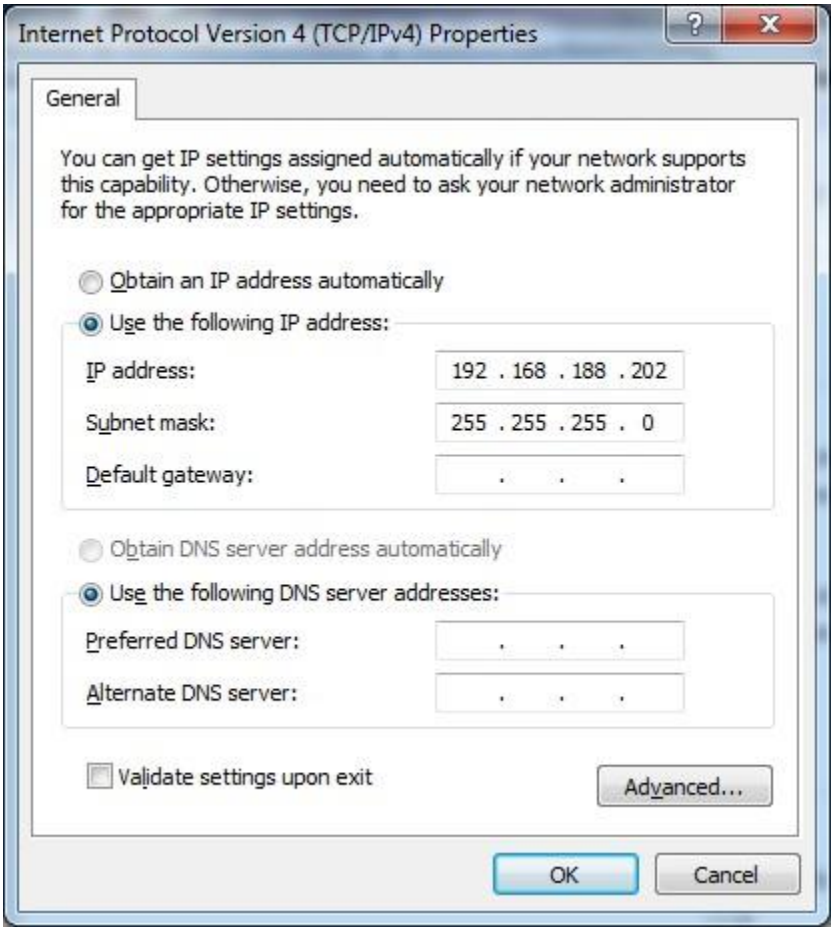
1.1 Connect PoE Adapter to WF-610



🕮Notes: Now WF-610 can be powered by standard 802.3af or 802.3at PoE PSE.Please connect the Ethernet Port labeled "PWR LAN-OUT" on PoE Adapter to "ETH" port of WF-610and the Ethernet Port labeled "LAN-IN" on PoE Adapter to your PC or Switch.

1.2 Configure PC's IP Address



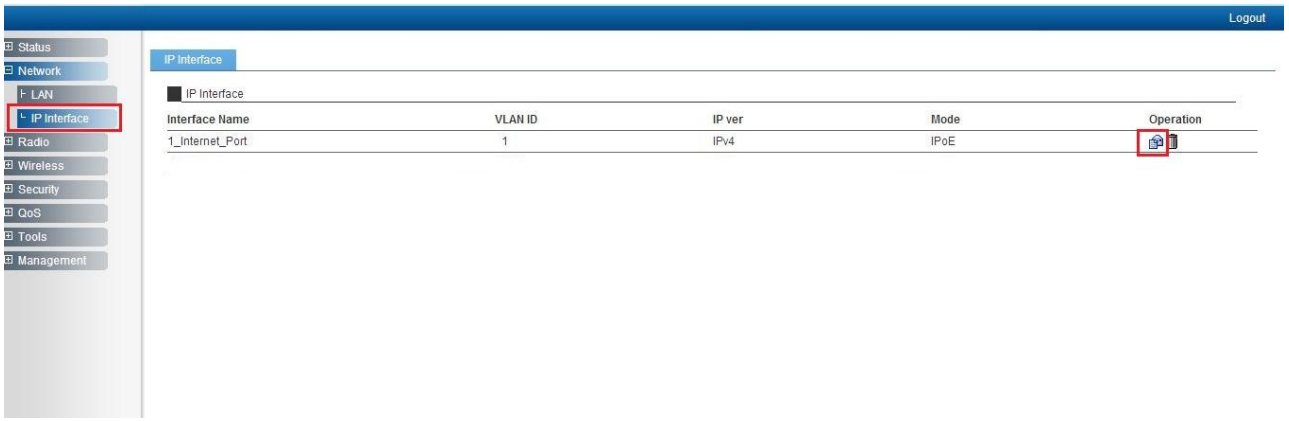
Notes: Connect your PC to the "LAN-IN" port on PoE Adapter of WF-610, manually configure your wired NIC with a static IP address on the 192.168.188.x subnet (e.g. 192.168.188.202).

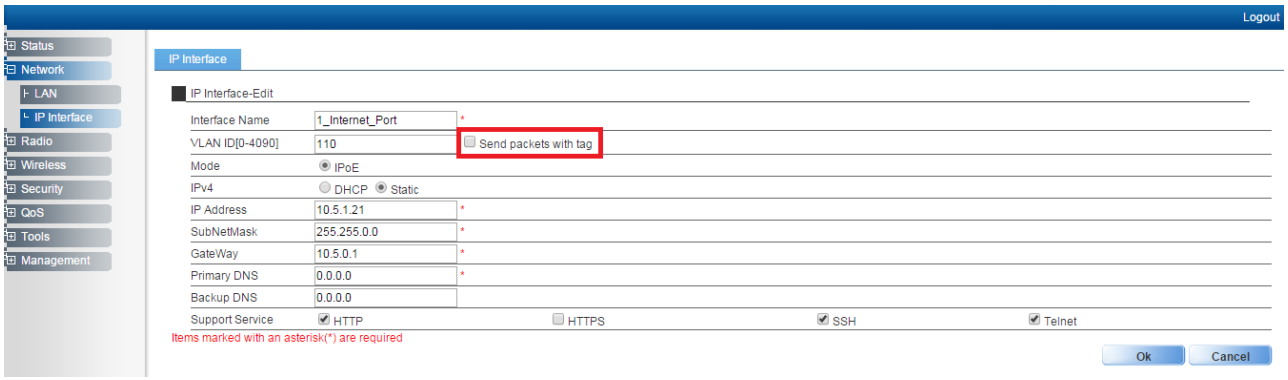
1.3 Visit WF-610 Web Page

Notes: Input the default IP address "192.168.188.251"in the address bar of browser. Then enter the

default username and password (username: admin, password: password) to enter the Web interface of AP.

1.4 Configure Management Interface for WF-610



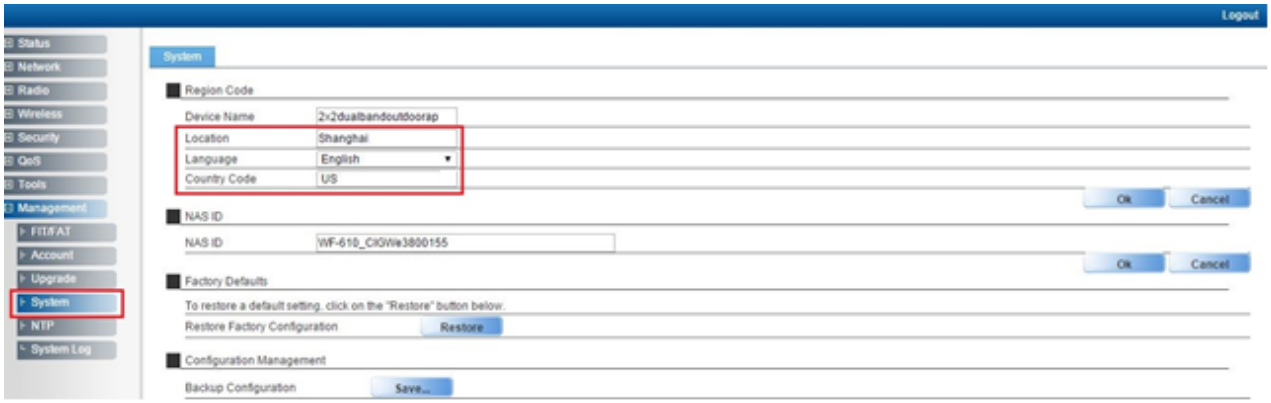


Notes: You can configure management IP/subnetmask/gateway/DNS here. By default, packets are sent without tag. Packets can be sent with tag by selecting the option as shown in the figure.

1.5 Connect WF-610 to Switch

Notes: Connect WF-610 to Switch and confirm it can visit Internet, then configure your PC to the same subnet and connect to the same Switch in order to continue to configure the WF-610.

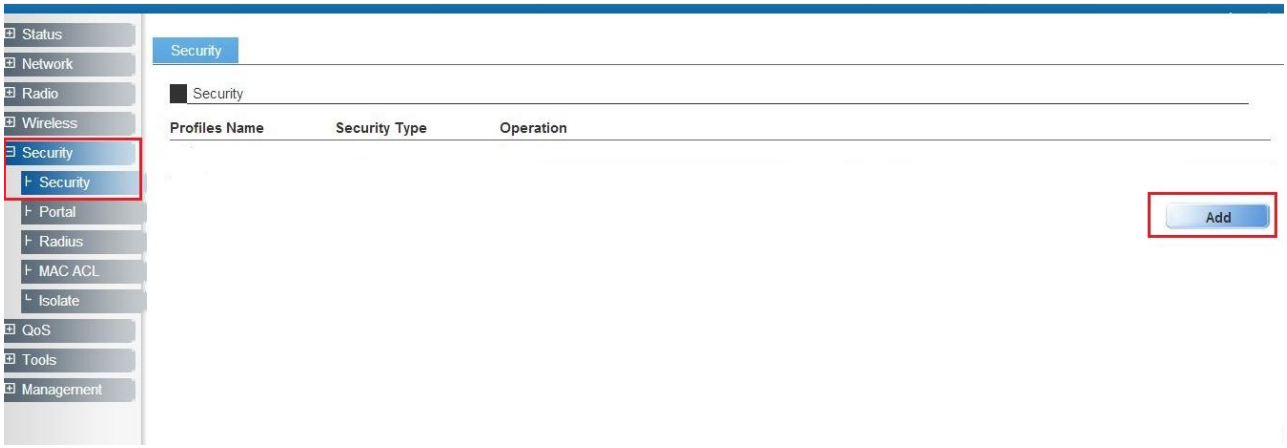
1.6 Configure Location, Language



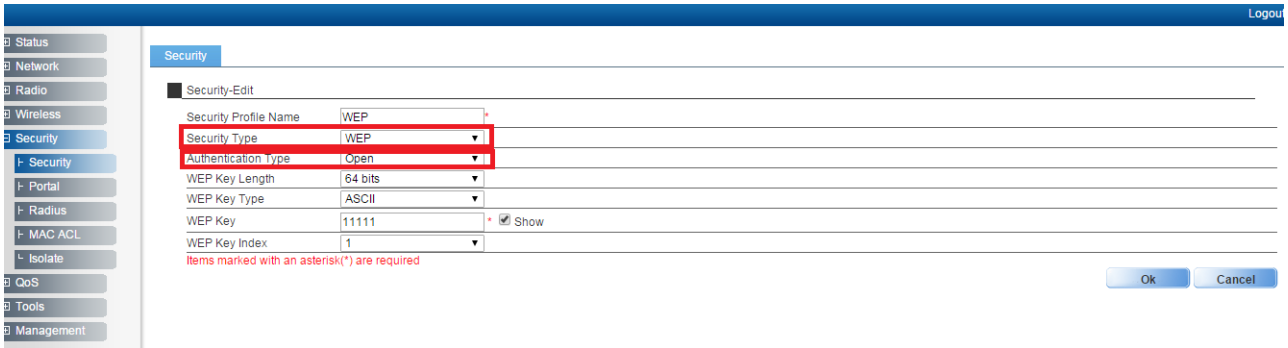
Notes:The country code is US and can't be modified.

1.7 Configure Security Profile for Different Authentication Types

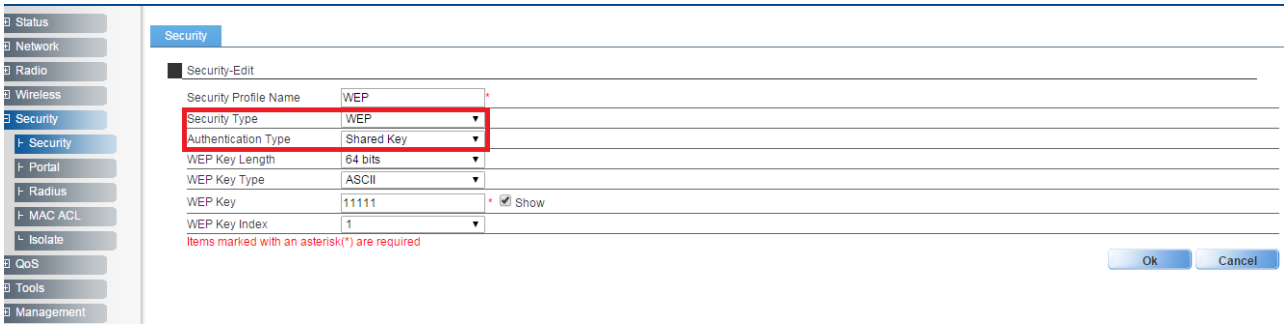
1.7.1 WEP



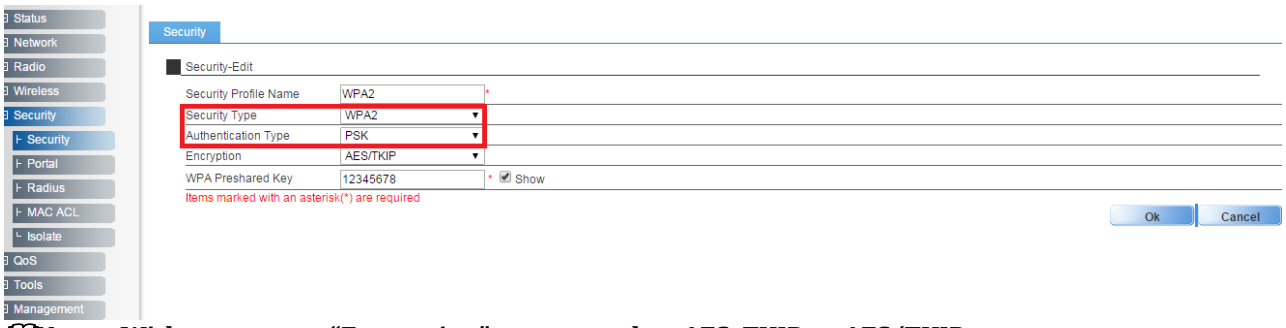
WEP-OPEN:



WEP-Shared Key:

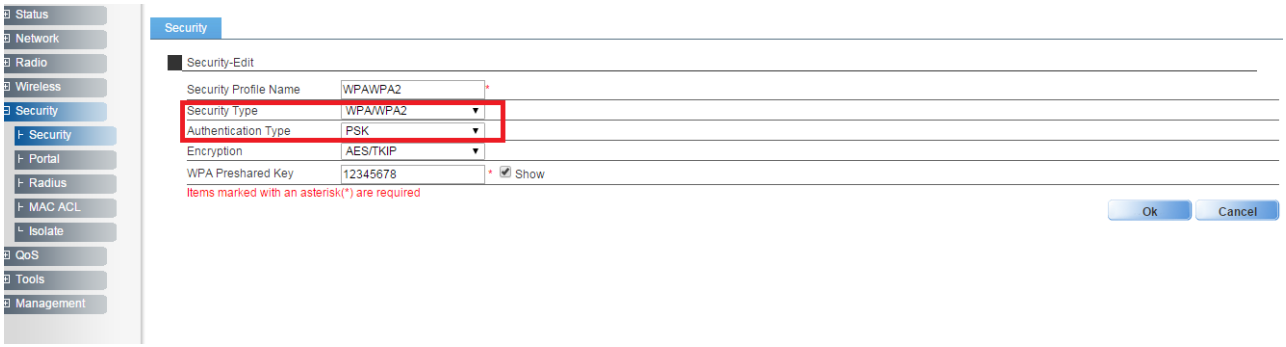


1.7.2 WPA2-PSK



Notes: With parameter "Encryption", you can select AES, TKIP or AES/TKIP.

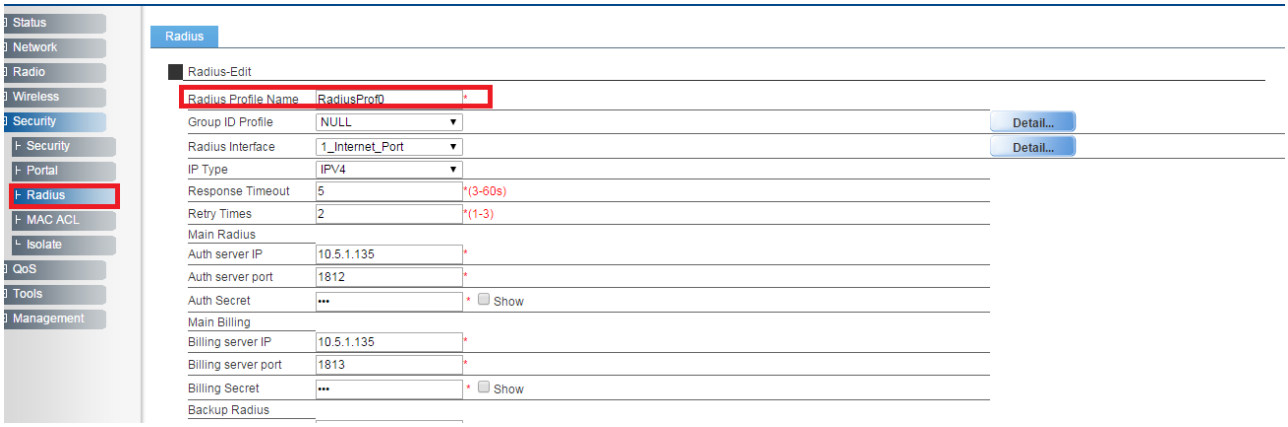
1.7.3 WPA/WPA2-PSK

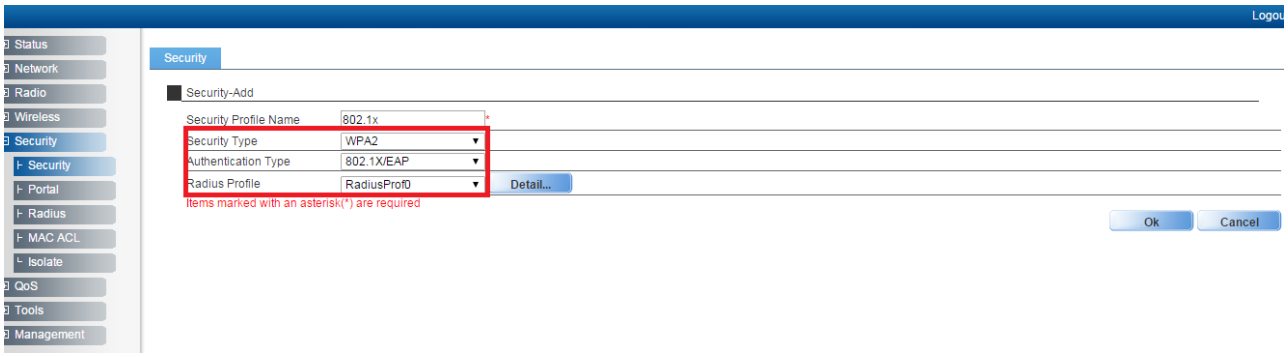


Notes: With parameter "Encryption", you can select AES, TKIP or AES/TKIP.

1.7.4 802.1X /EAP

If want to use the 802.1x authentication, it need to configure the Radius profile firstly. Then in the security profile, the radius profile will be cited by security profile.



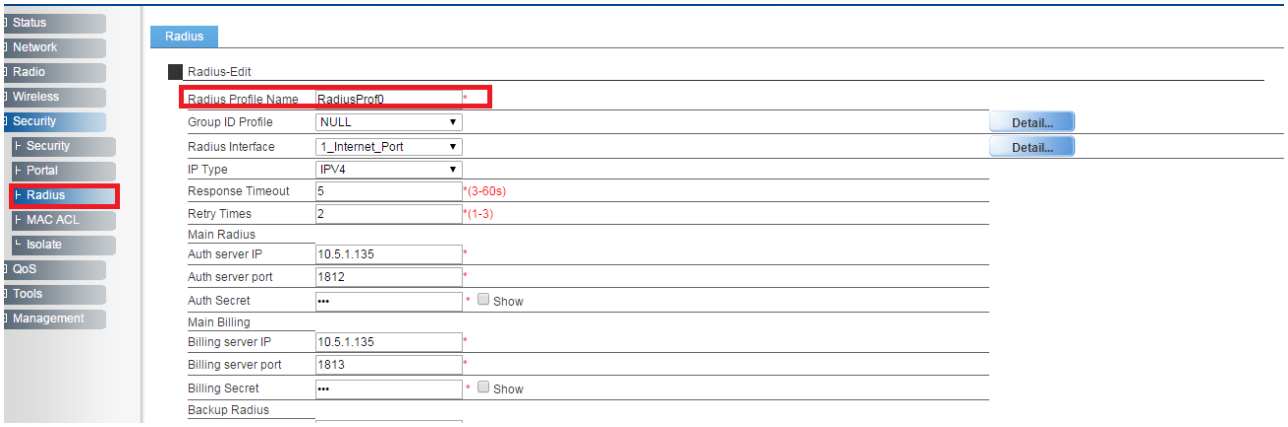


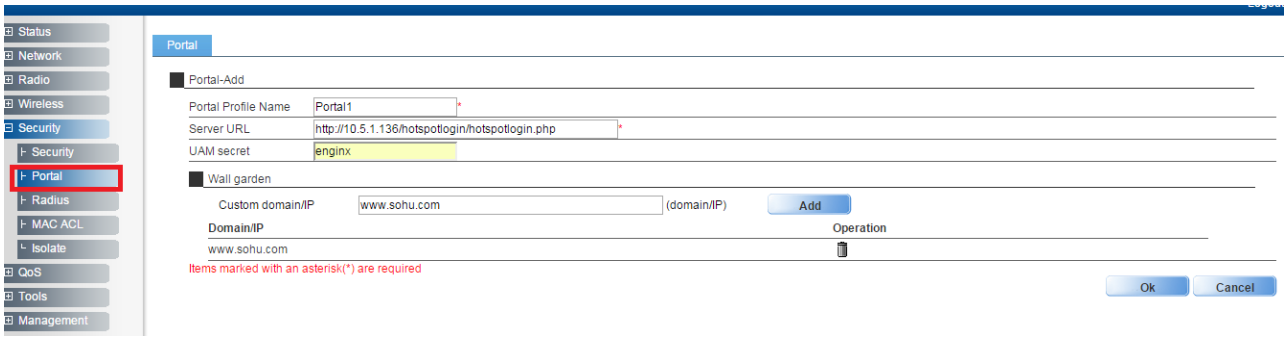
Notes:Security type can be WPA2 or WPA/WPA2.

1.7.5 WEB/MAC

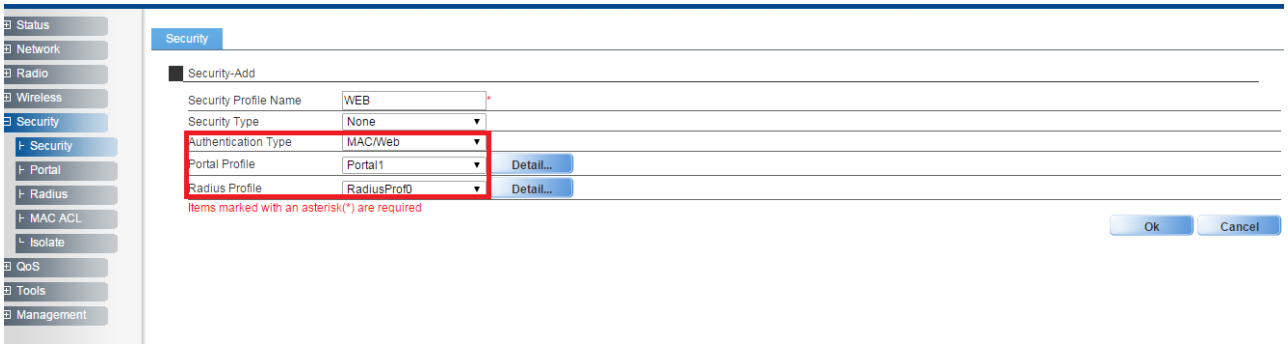
WF-610 supports Web/MAC authentication. If you want to use the Web/MAC authentication, it needs to configure the Portal profile and Radius profile firstly. Then in the security profile, the Portal profile and Radius profile will be cited.Above all, you need to setup a portal server and radius server.

Notes: MAC and WEB authentication have the same configuration. Afterreceiving auth request from station, WF-610 will firstly start MAC auth. If MAC auth is failed, WF-610 will change to WEB auth.



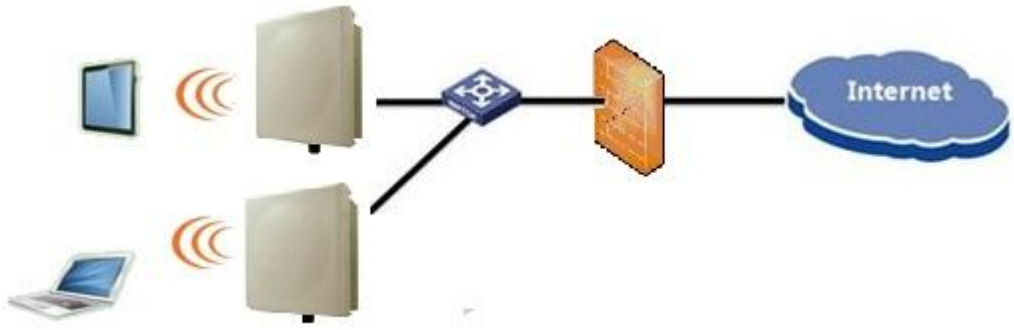


Notes: Wall garden can be configured by inputting custom domain or IP. User can visit these domains or IP listed in wall garden before authentication. For those domains or IP not contained in wall garden, they can be visited only after authentication.

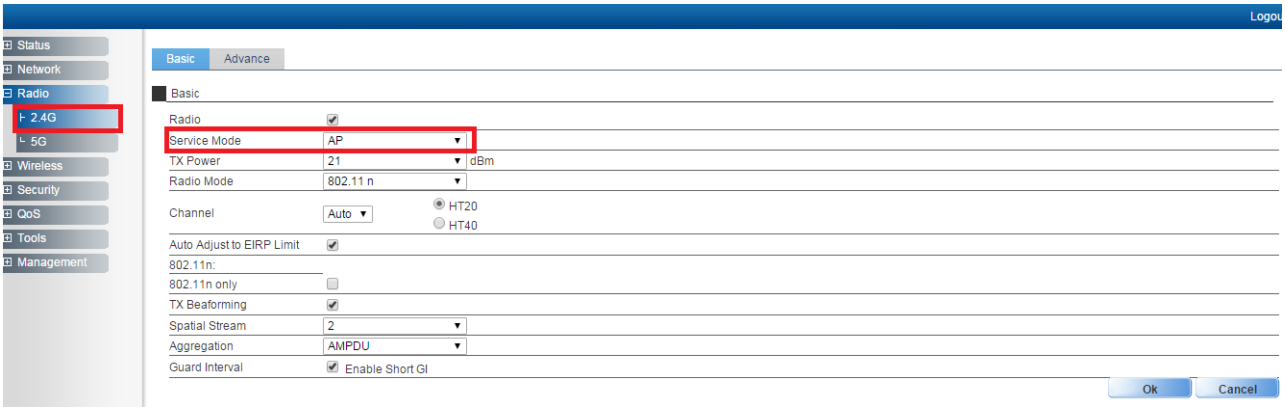


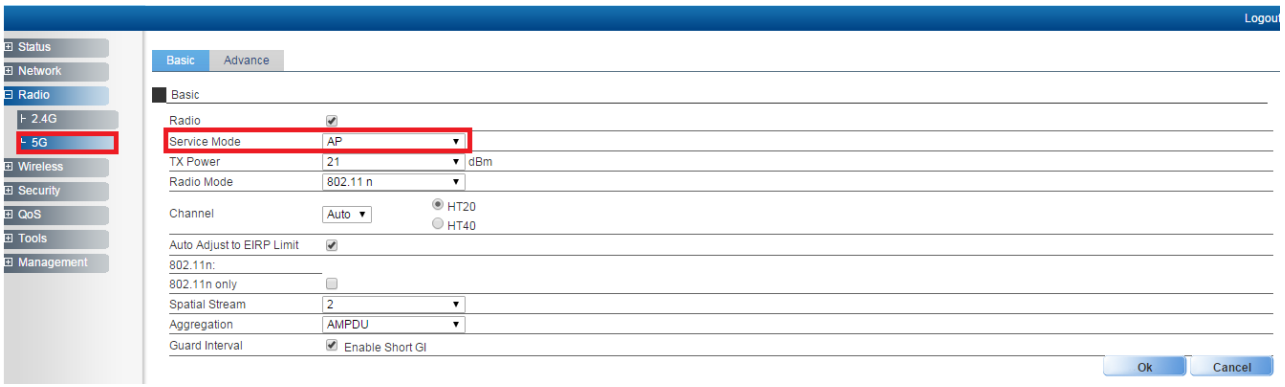
2 AP Mode

2.1 AP Network Topology

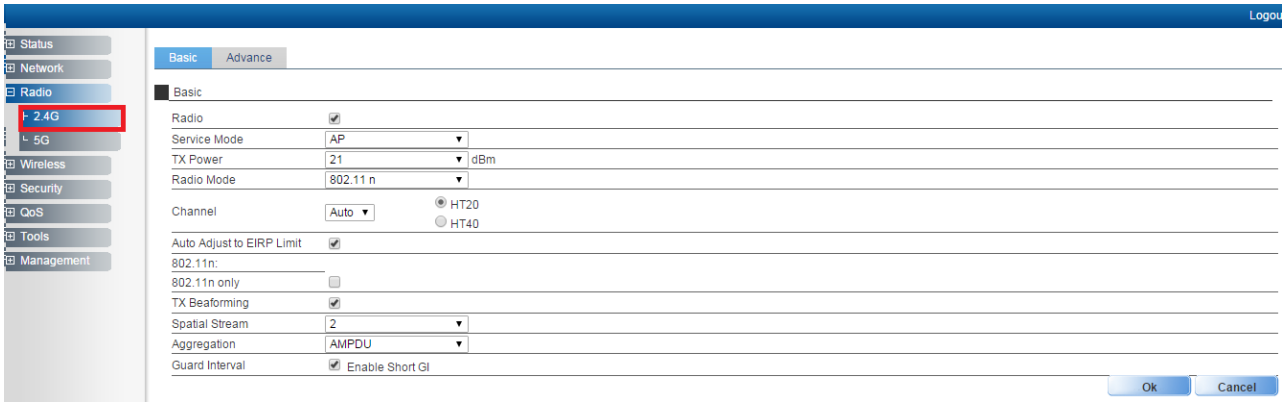


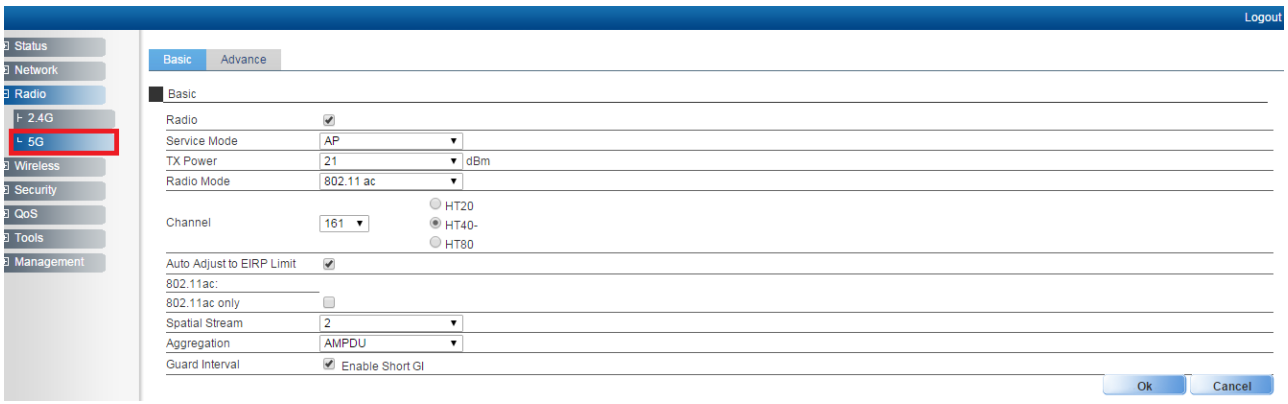
2.2 Enable AP Mode



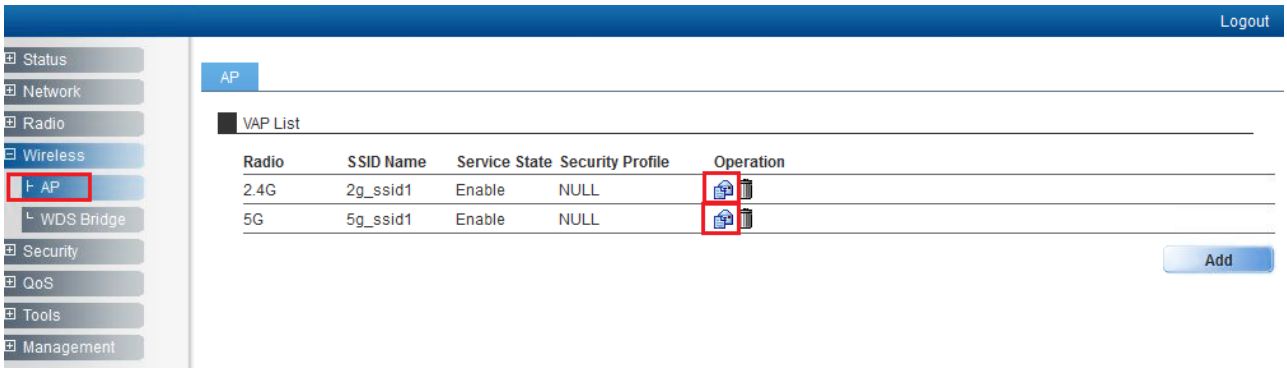


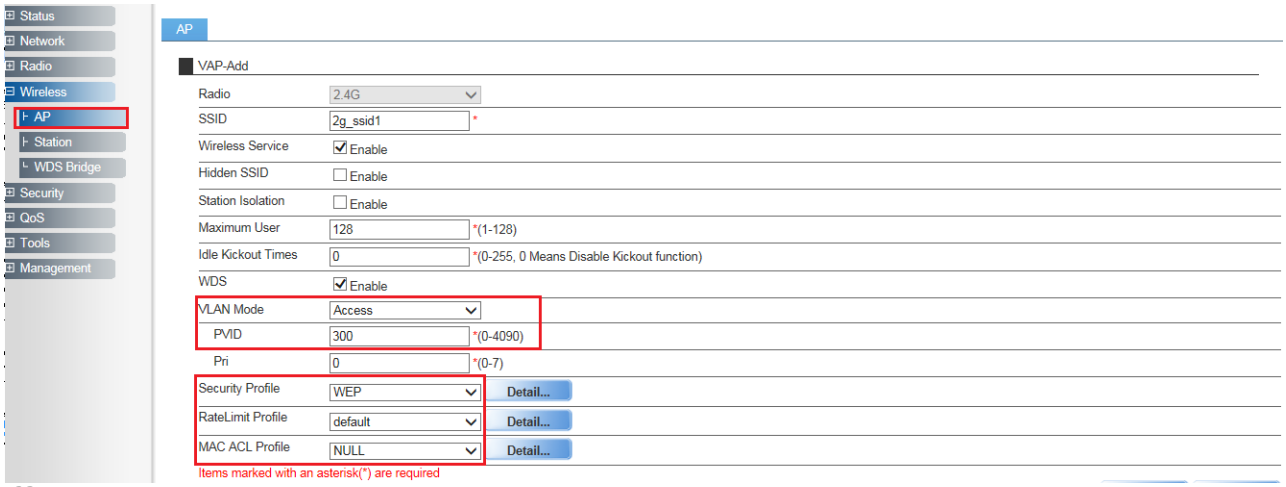
2.3 Configure Radio Parameters





2.4 Configure SSID



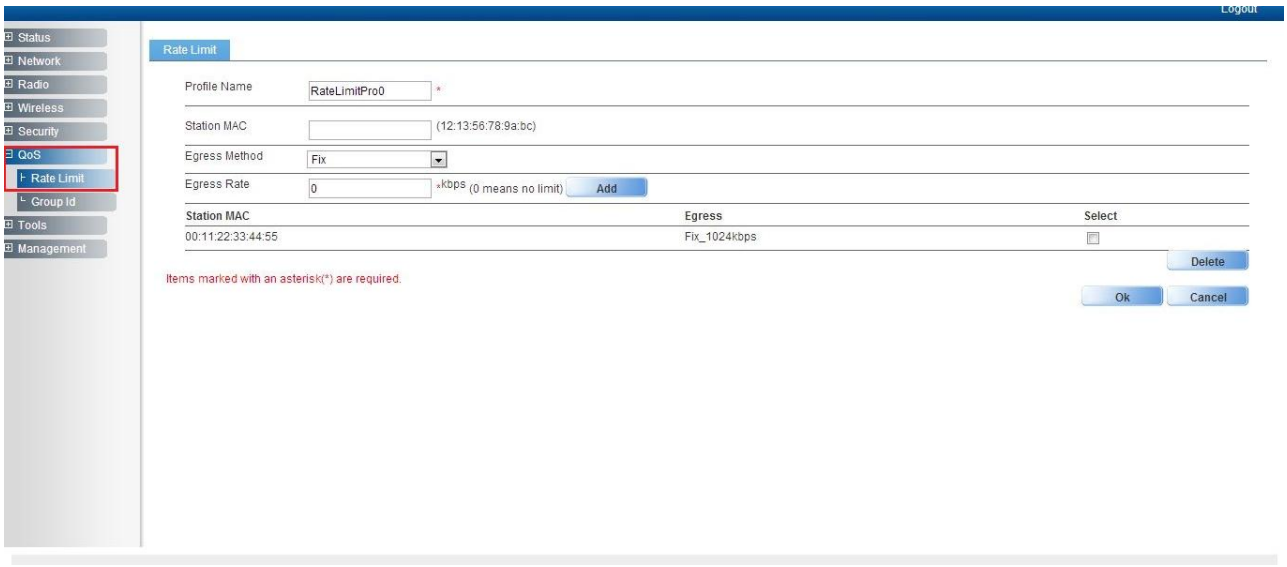


Notes:

1. ***You may apply the Security, Rate Limit or MAC ACL profiles which have been configured. After the above setting, wireless stations can connect to the SSID of AP and get IP address from DHCP server to visit Internet.***
2. ***VLAN mode and PVID used for Ethernet traffic can be configured here.***

2.5 Configure Rate Limit Rule (Optional)

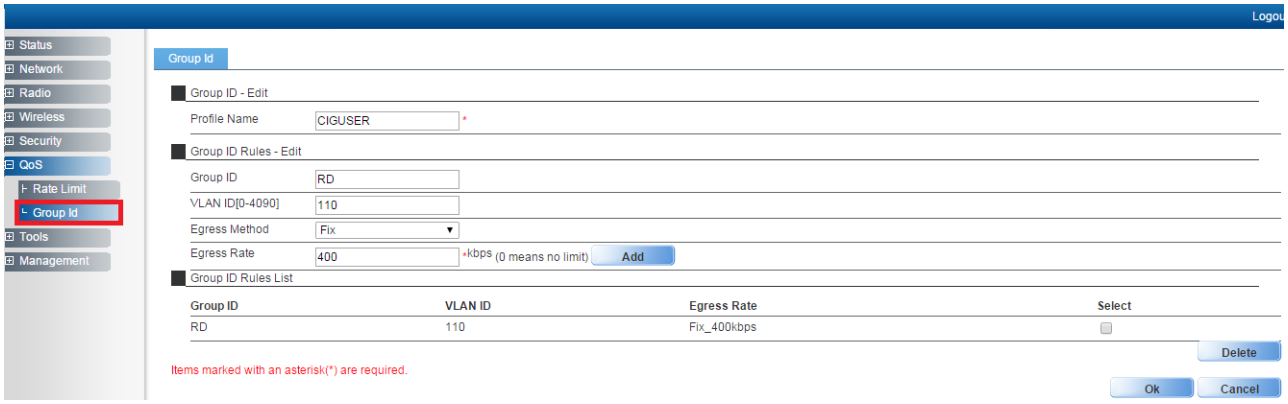
Notes: Rate Limit profile will be applied in the SSID configuration.

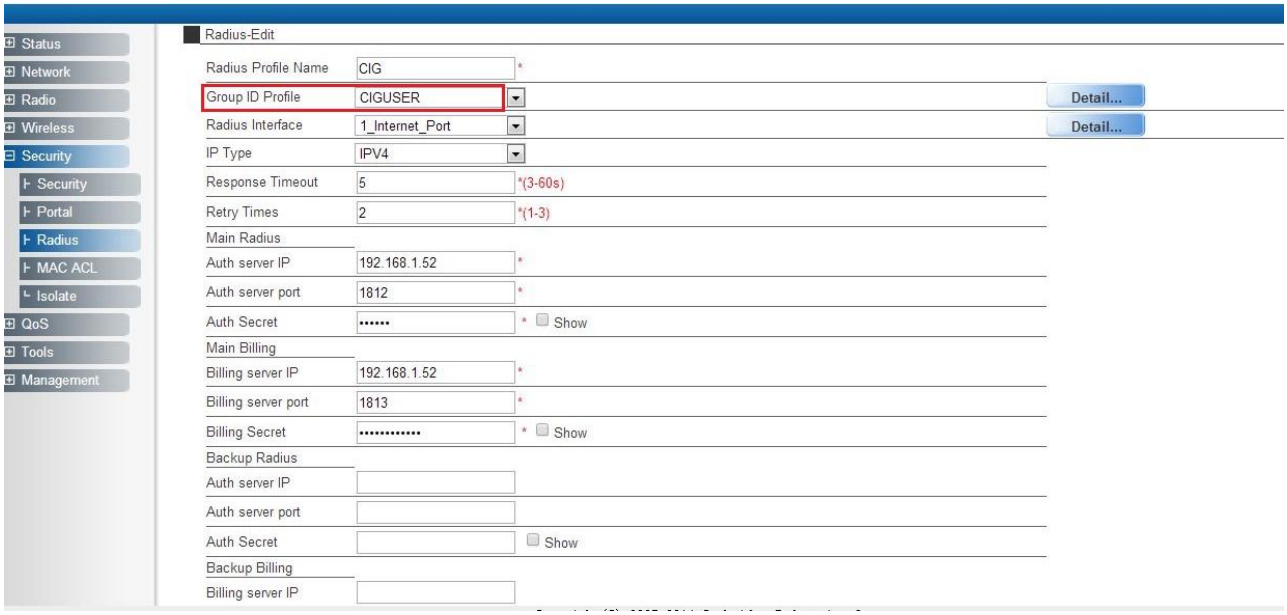


2.6 Configure Group ID (Optional)

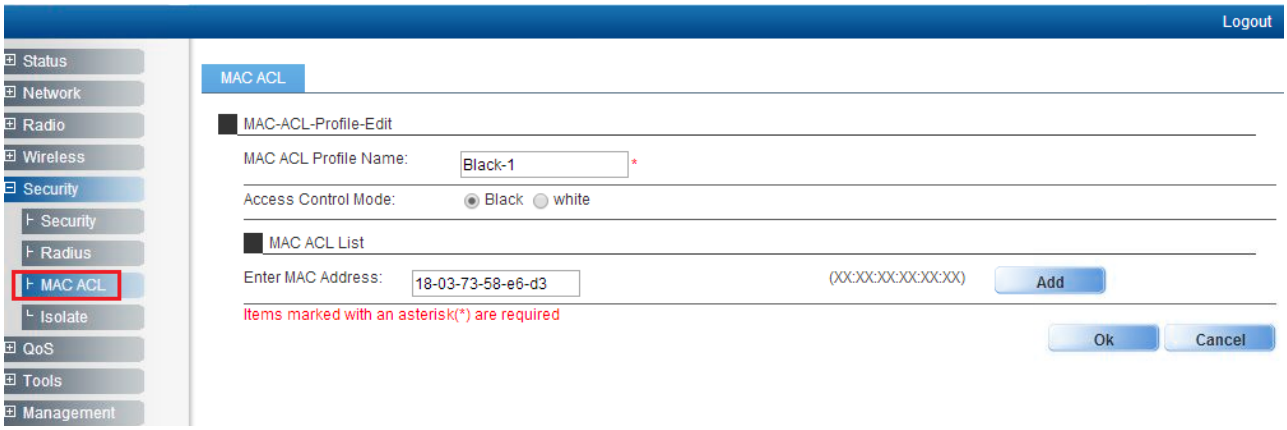
Notes: Group profile is used for 802.1x/Web/MAC authentication. Group is classifiedby Filter-ID attribute in radius access accept message. The Group is bound with the role of the user. Different group has different VLAN and rate limit configuration. When a station sends the username and password to the Radius server for authentication, the server can respond with a Filter-ID (optional) to the AP. After getting the Filter-ID attribute, AP will search the Filter-ID in the Group profiles. If the

Filter-ID can be matched with one profile, the traffic VLAN and rate limit will be applied to the station. The Group profile is applied in the Radius server profile.





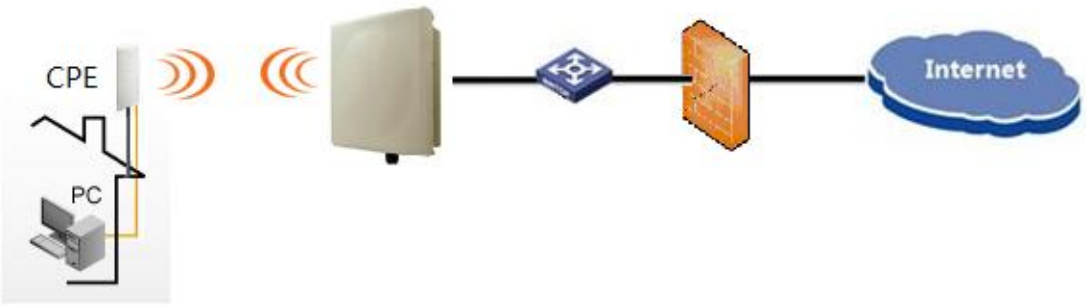
2.7 Configure MAC ACL Rule (Optional)



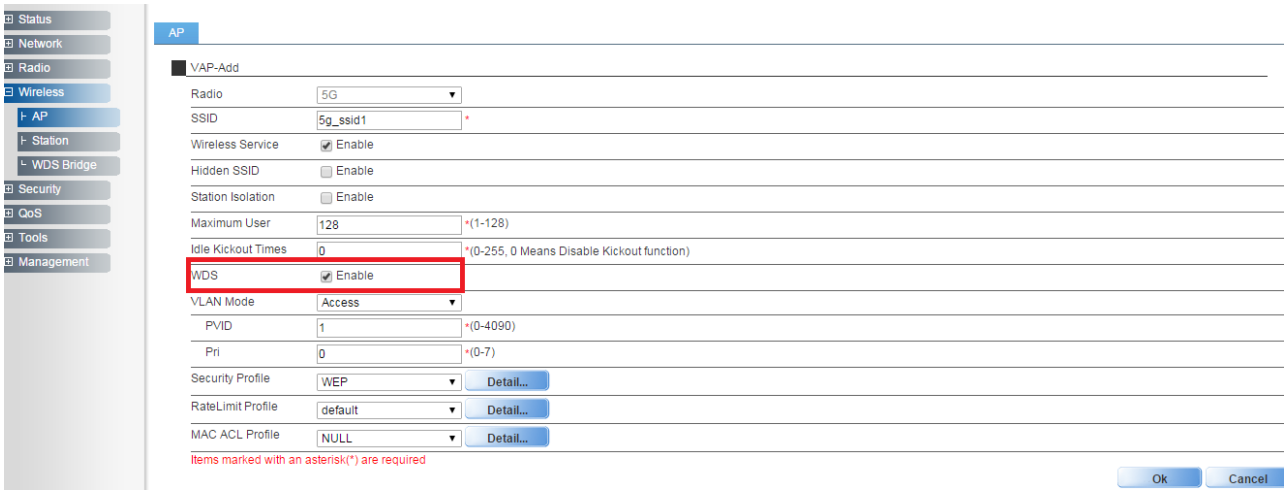
2.8 AP+WDS

WF-610 also supports AP+WDS mode.

2.8.1 AP+WDS Network Topology

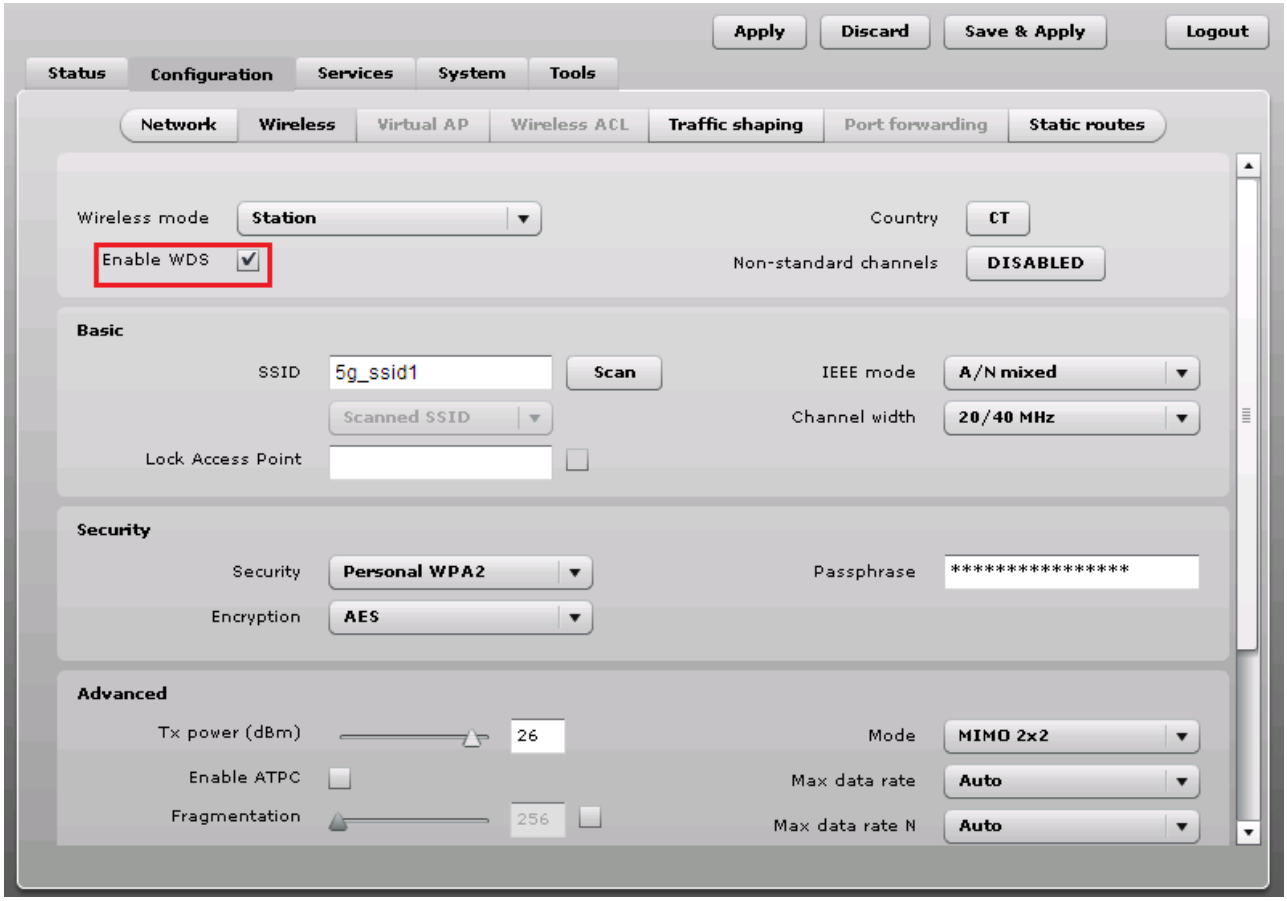


2.8.2 Enable WDS function



🕮Note: Enable WDS function when you configure SSID.

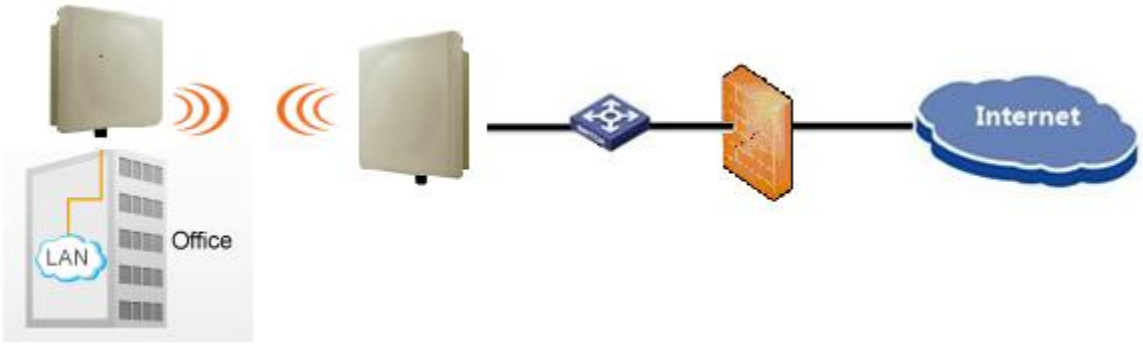
2.8.3 Configure CPE WDS



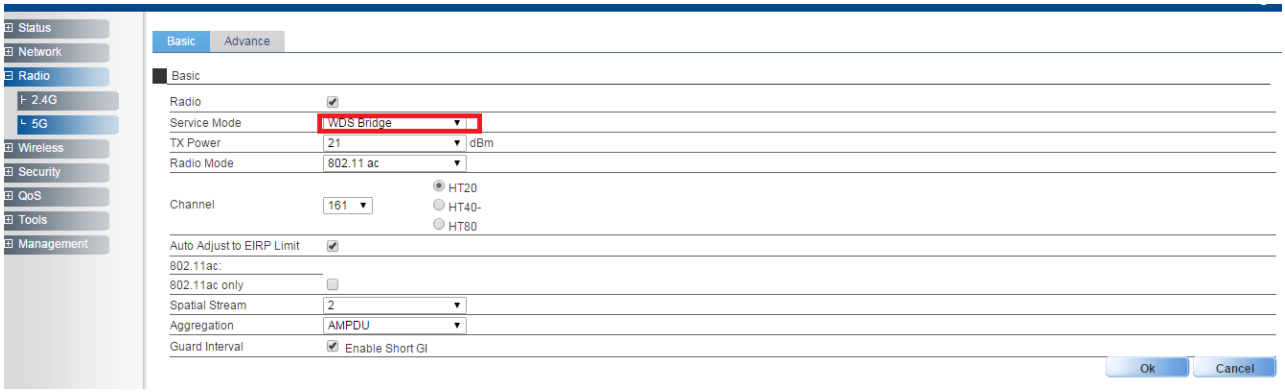
🕮Note: Enable WDS function too when you configure CPE to connect to AP.

3 WDS Bridge Mode

3.1 WDS Bridge Network Topology

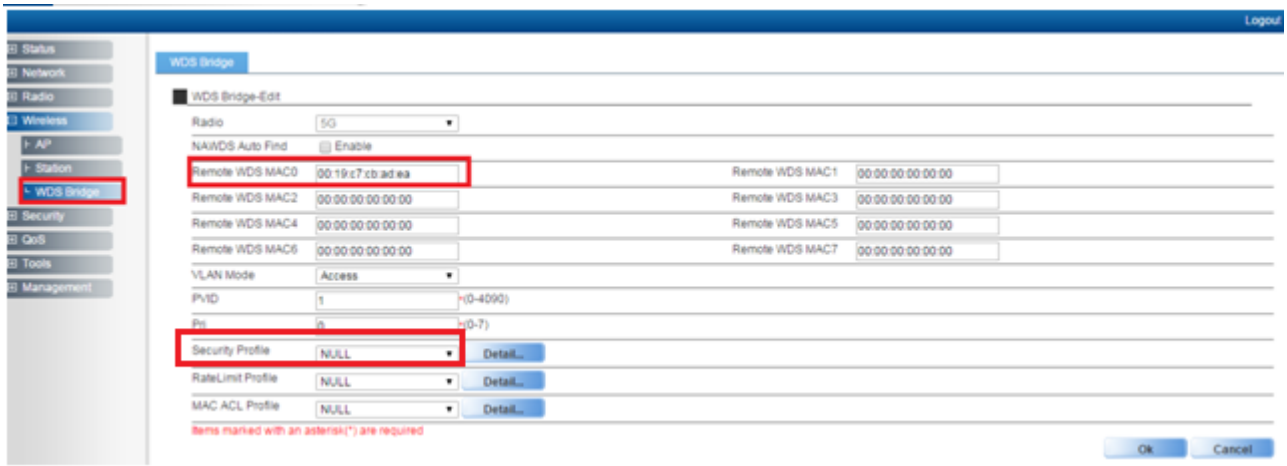


3.2 Enable WDS Bridge Mode



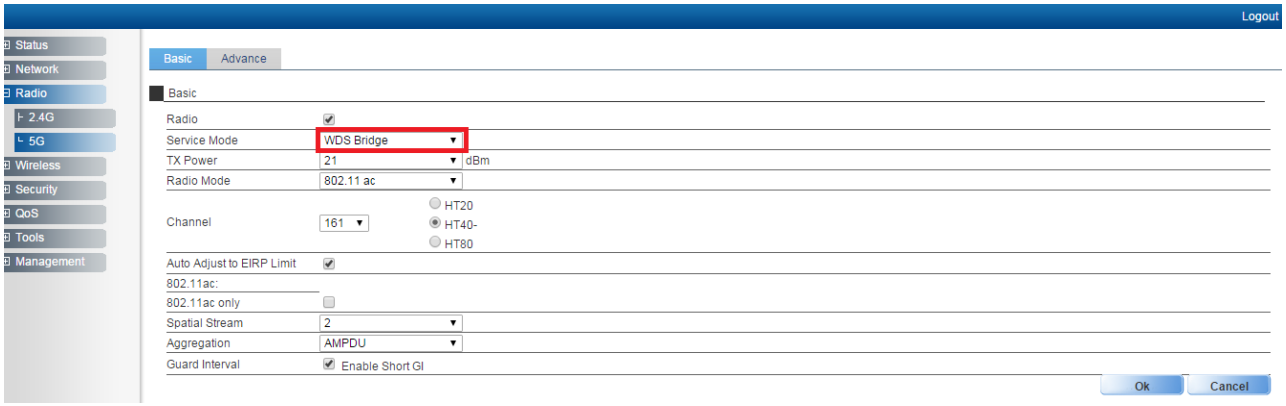
Note: Please select a specified Channel (for example 161) here.

3.3 Input Remote AP MAC

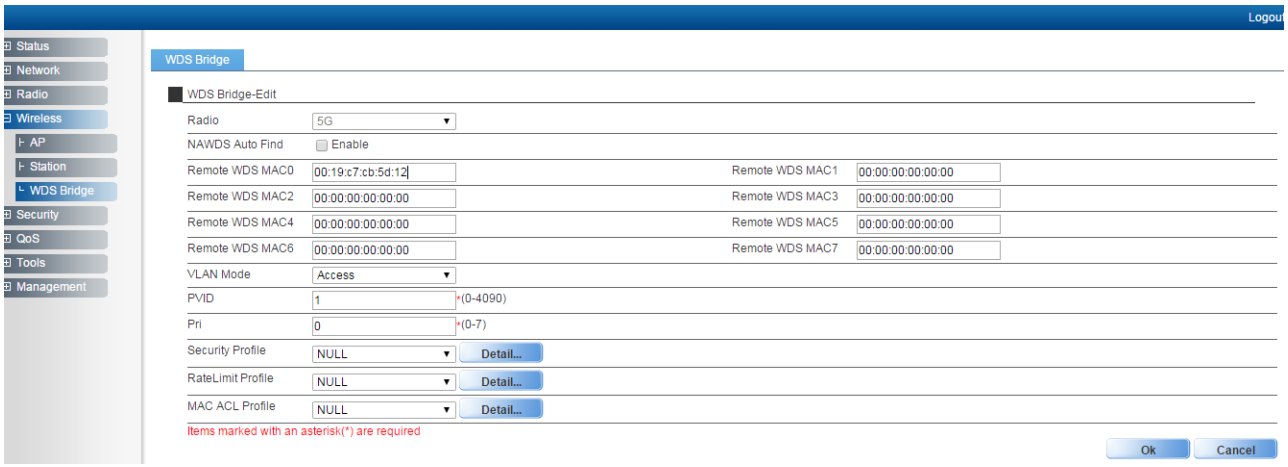


🕮Note:Security profile can be cited here, but only WEP auth and OPEN are supported for WDS bridge mode.

3.4 Configuration on Remote AP



🕮Note: Please select the same channel. For the WDS bridge mode, two APs should use the same channel and security encryption.

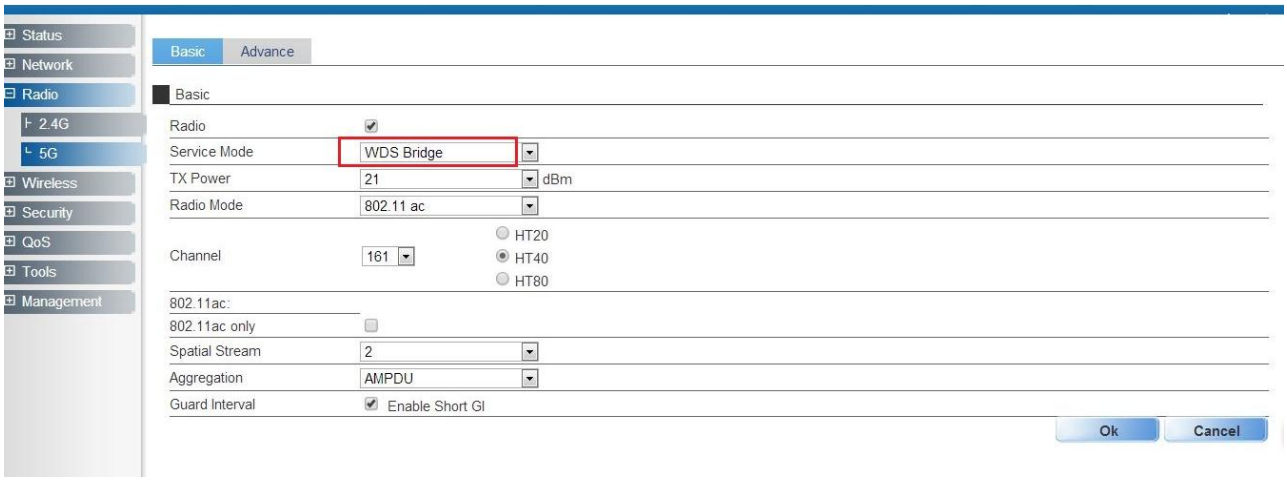


🕮Note: Please input the MAC address of AP which you want to connect via WDS.

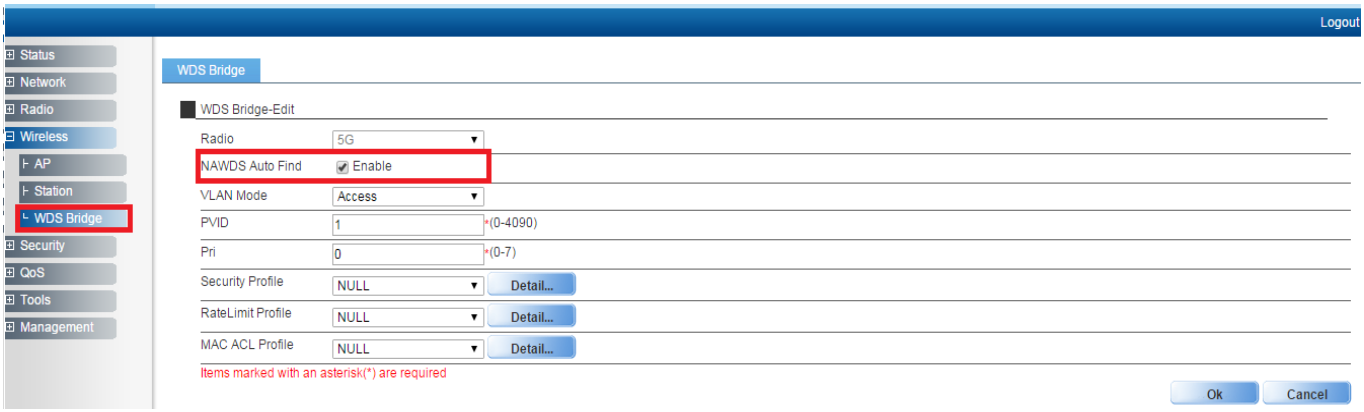
3.5 NAWDS Auto Find

WF-610 also supports “NAWDS Auto Find” function. Input the MAC address of the slave AP on the master AP. Then enable “NAWDS Auto Find” function in slave AP without inputting the MAC address.

Slave AP configuration:



Notes: Please select the same Channel as that of AP which you want to connect via WDS.

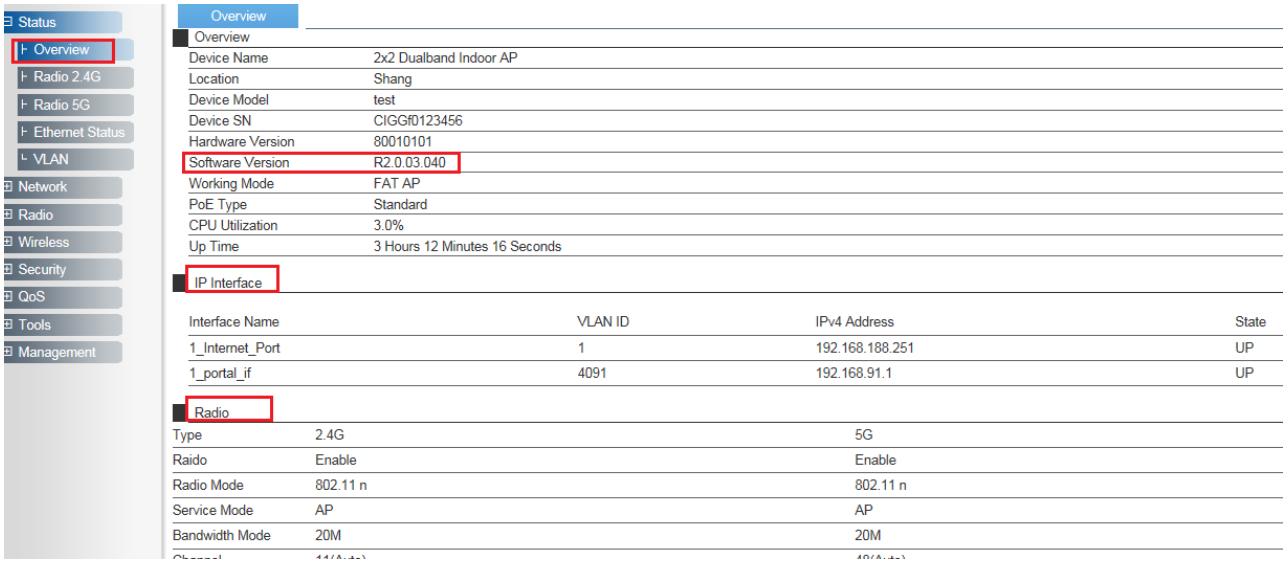


Notes: After you enable "NAWDS Auto Find" function, the AP will connect to the master AP via WDS automatically.

4 Status

4.1 Overview

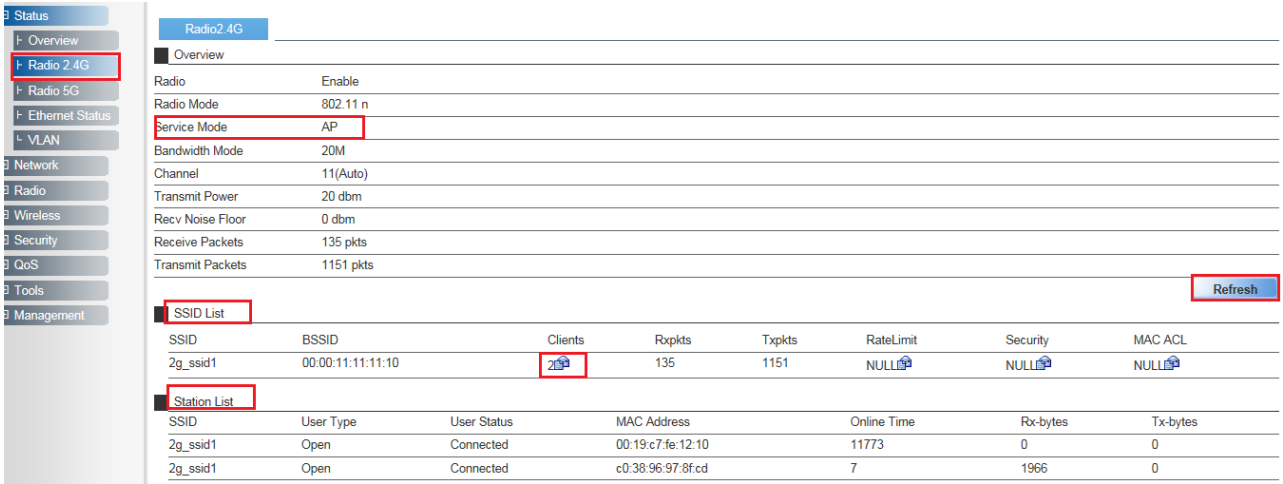
You can check some summary info here, for example, software version, ip interface and radio configuration.



4.2 Radio

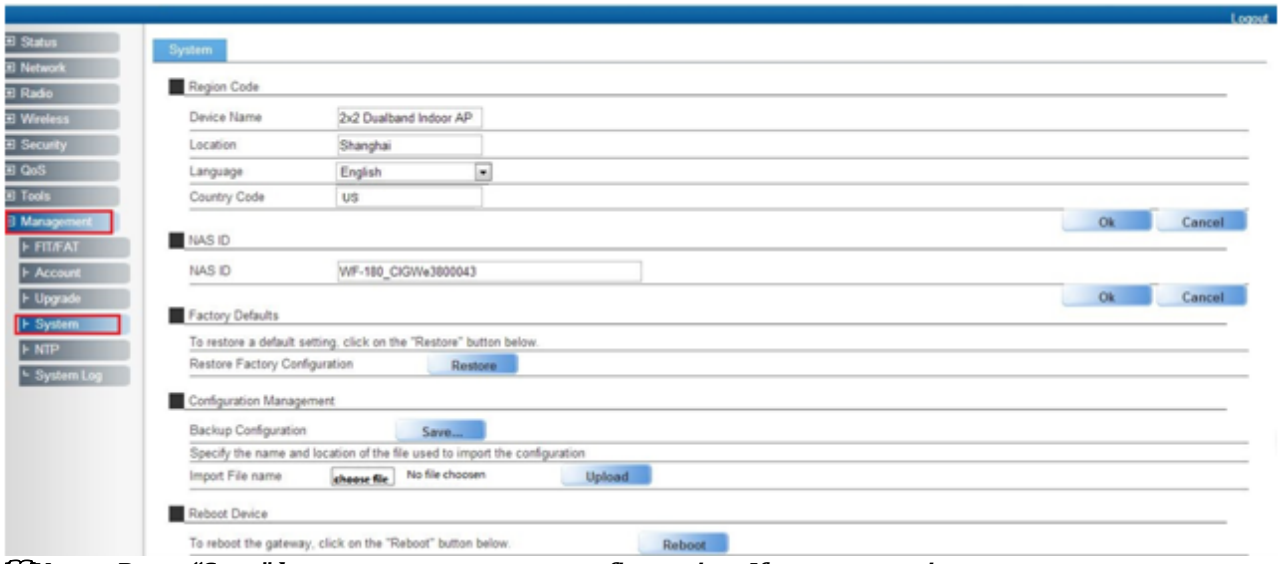
In this page, you can see service mode for radio 2.4G is AP mode. There is only one SSID “2g_ssid1” with BSSID 00:00:11:11:11:10 and totally two stations are connected to this radio. Information will be updated by clicking “Refresh” button. For radio 5G, you can open “status”-“Radio 5G” to check detailed information.

Something to mentioned, detailed information about station (e.g. auth type/MAC/online time/TX bytes/RX bytes) exists in “station list”.



5 Management

5.1 Backup/Import Configuration



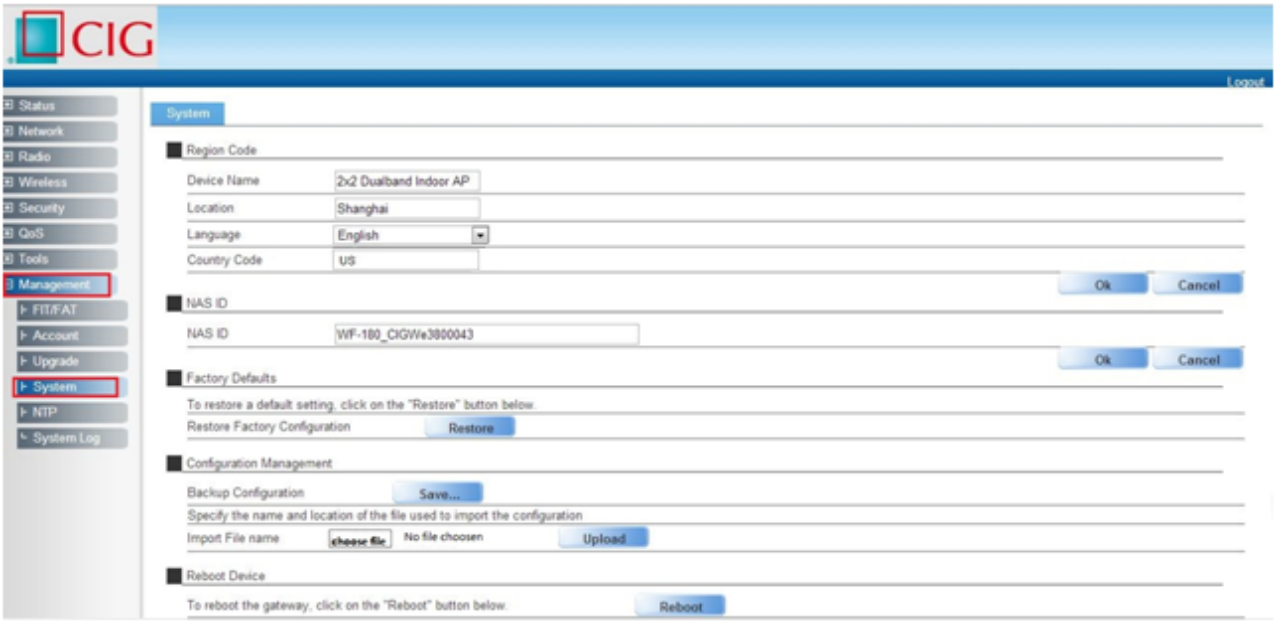
Notes: Press "Save" button to save current configuration. If you want to import one new configuration file, please click "choose file" to select the new file and then press "Upload" button to upload. After that, WF-610 will reboot.

5.2 Software Upgrade

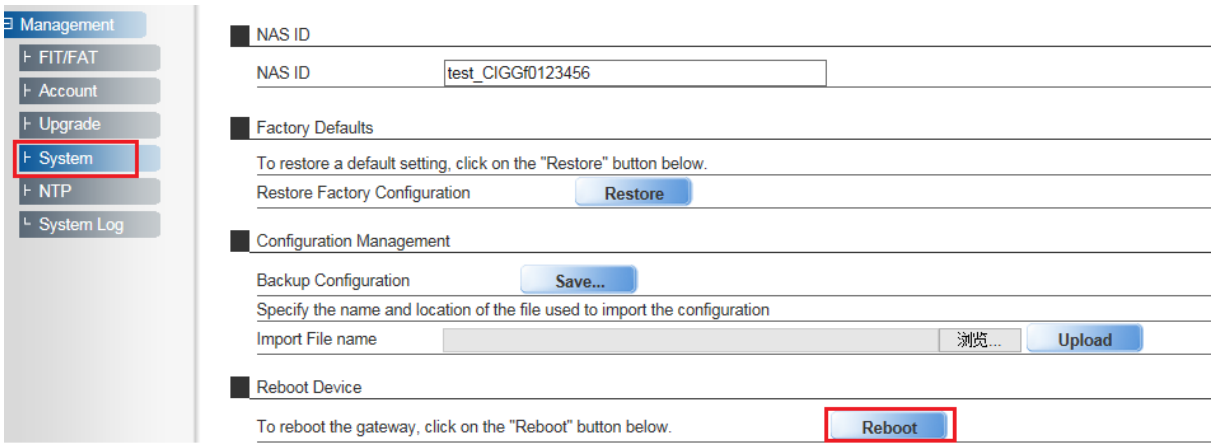
Notes: Press "Choose File" button to select firmware file that you want to upgrade, then press "Upgrade" button to upgrade.

5.3 Factory Reset via WEB

Click "Restore" button to do factory reset. All of the configuration will be restored to default.



5.4 Reboot via WEB



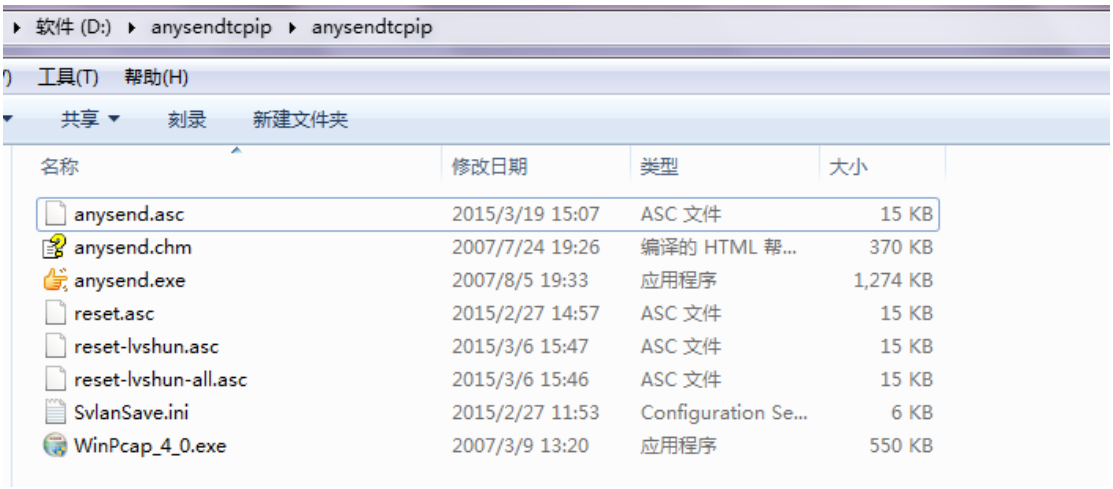
5.5 Factory Reset via Sending Special Packet

WF-610 has no reset button. If you forget WF-610's IP, you can use a simple tool—anysendtcpip to execute factory reset via sending special packet. After that, you can telnet WF-610 with default IP 192.168.188.251.

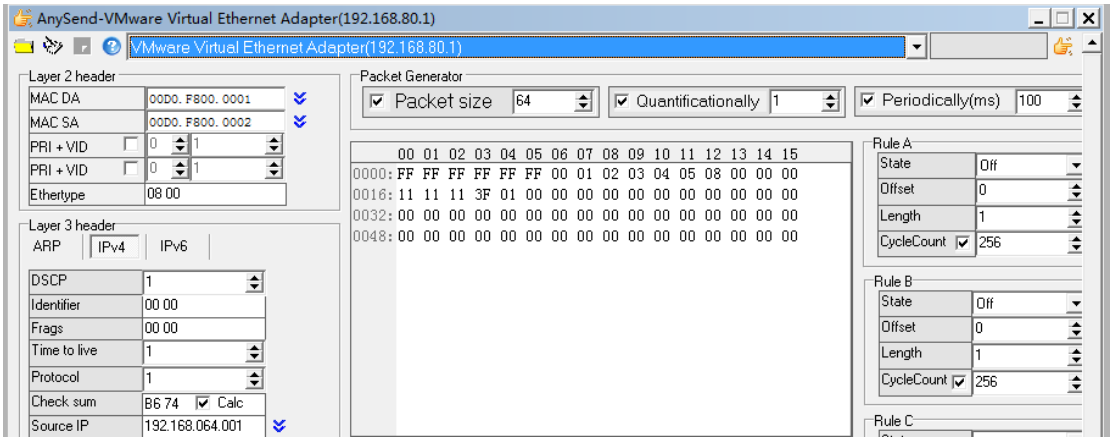
anysendtcpip.rar

5.5.1 Factory Reset One Single Device

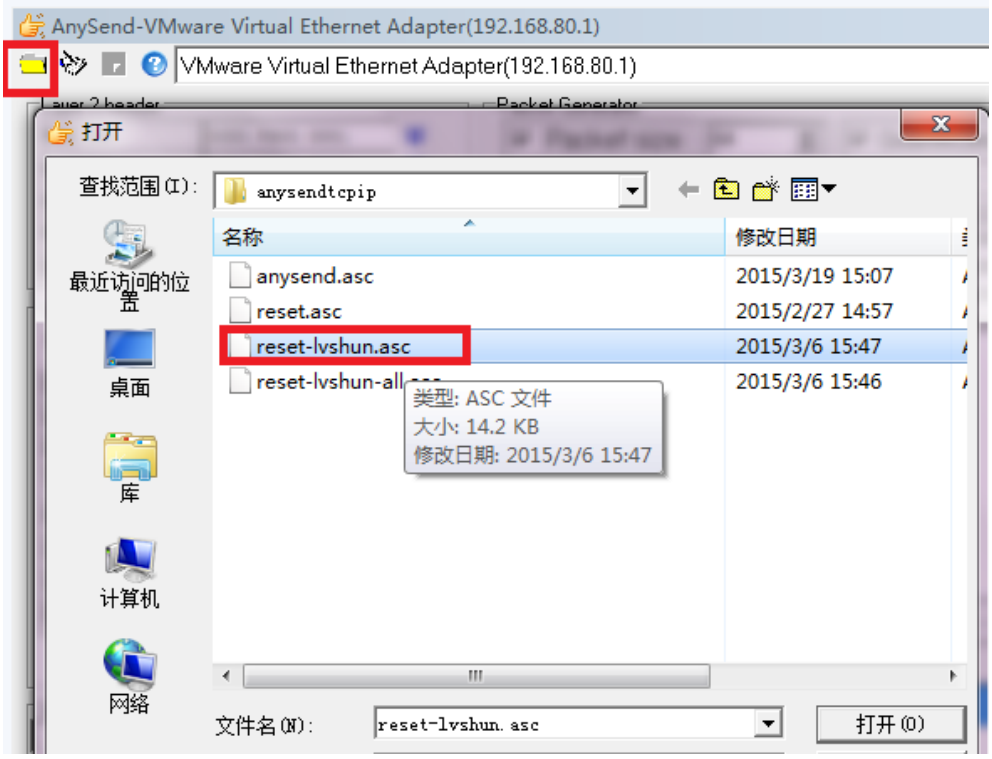
Open file folder<anysendtcpip>.



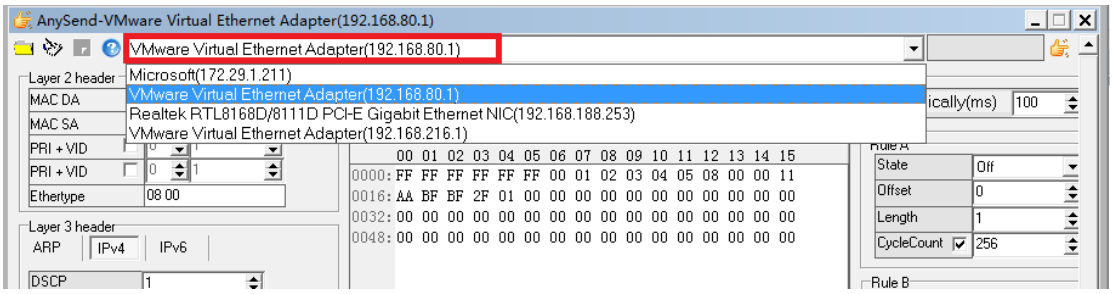
Double click anysend.exe.



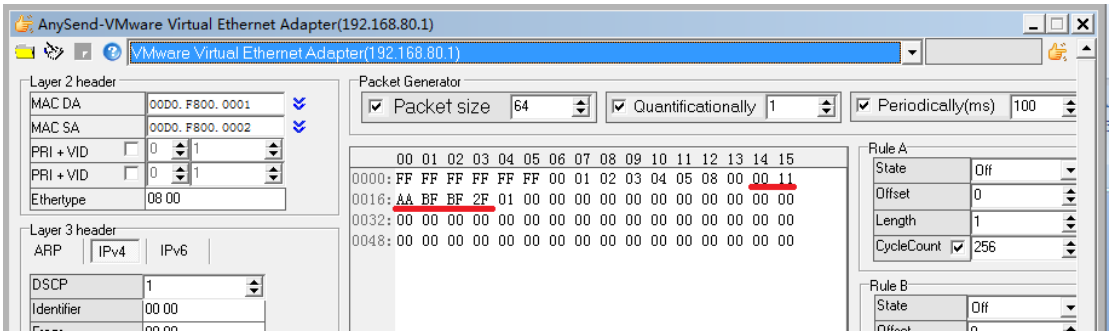
Click the yellow icon located top left corner，and select <reset-lvshun.asc>.



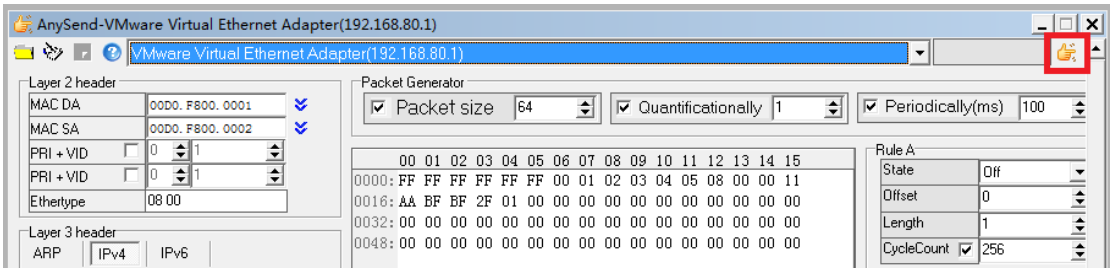
Select right network card which is used to send packet.



Modify the MAC address marked in red to beWF-610's MAC with which you want to do factory reset.

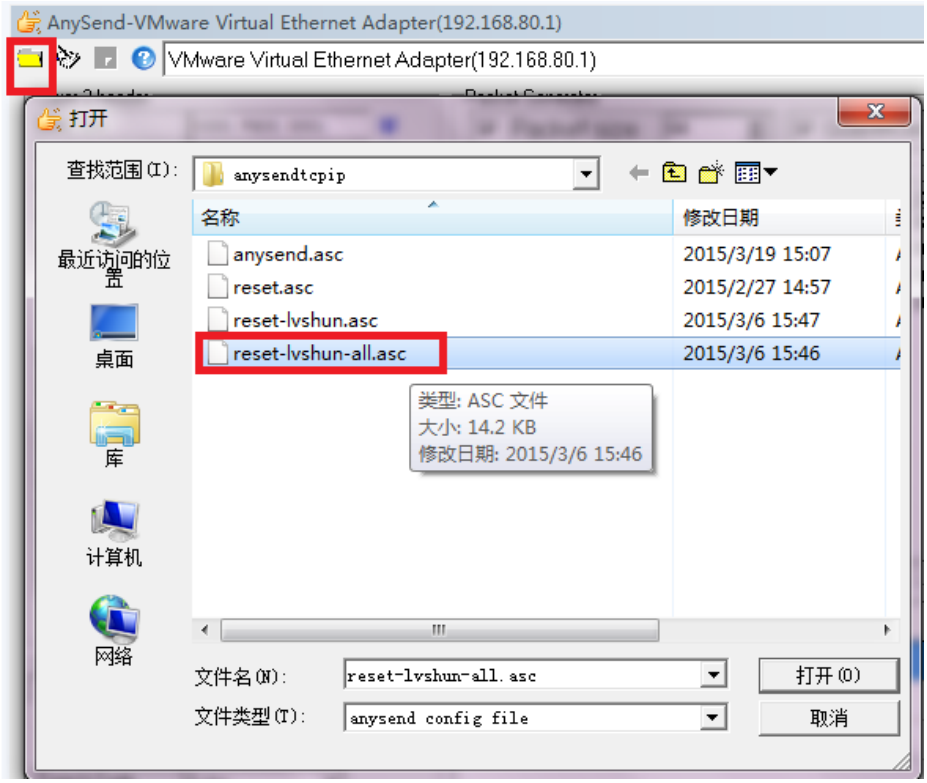


Click the yellow icon located top right corner, then it will start to send special broadcast packet. After devices receive the packet, they will check if it matches with their own MAC. If it does, device will execute factory reset. If not, device will do nothing.

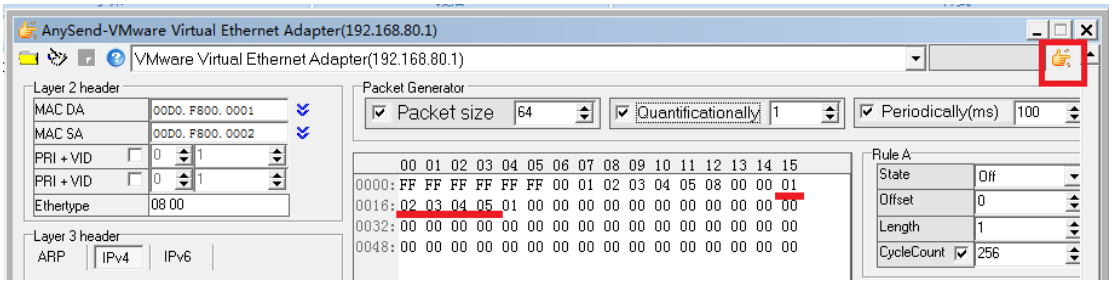


5.5.2 Factory Reset All Devices

Select and open <reset-lvshun-all.asc>.

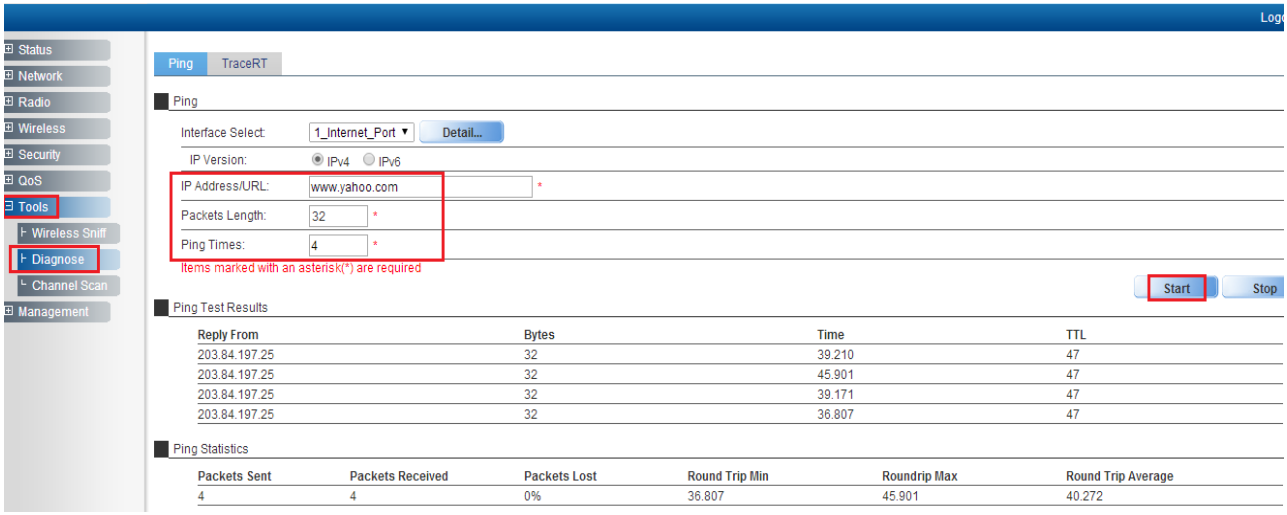


Here you can see one special default MAC address marked in red color whichis 00:01:02:03:04:05. You don't need to modify it. Select the right network card and click the yellow icon to send packet. After devices receive the packet, they won't check if it matches with their own MAC, and directly execute factory reset.

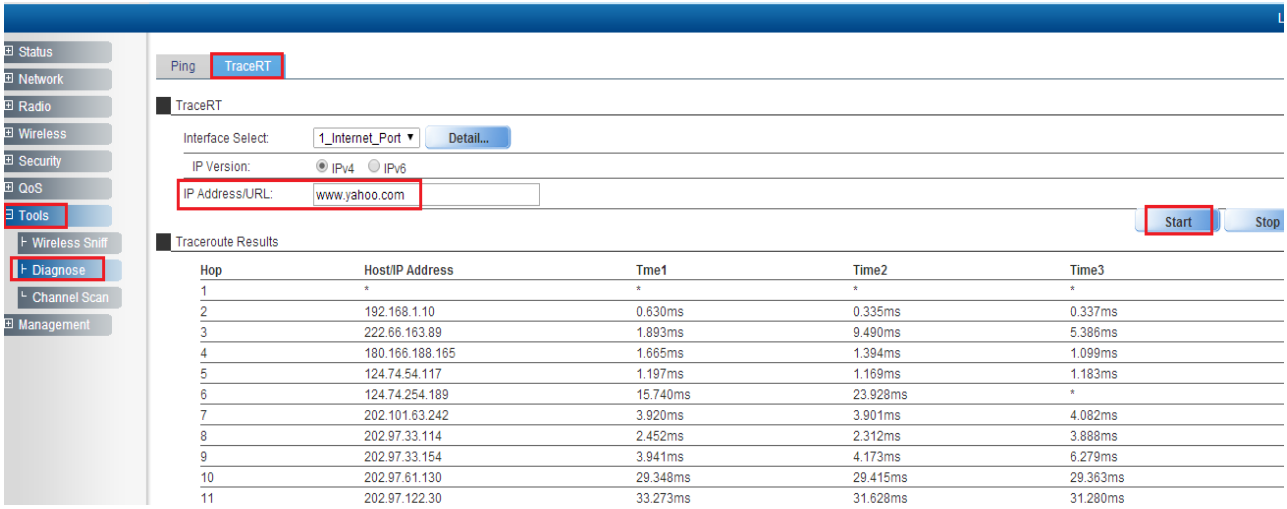


6 Troubleshooting

6.1 Ping Diagnose



6.2 TraceRT Diagnose



6.3 LED Definition

LEDs are defined as follows:

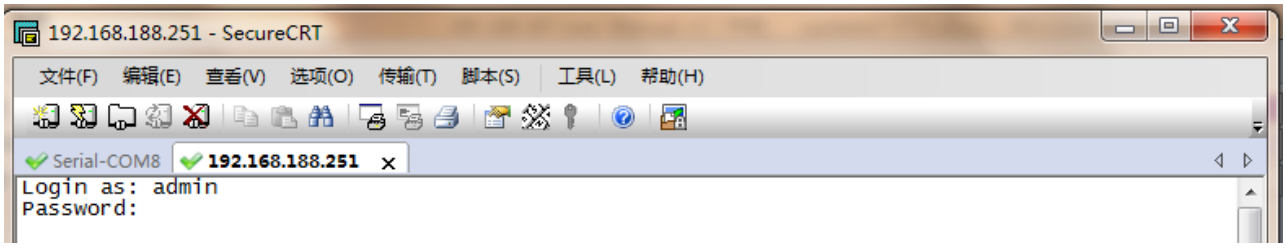
Label	Function	LED mode	Status
RUN	AP power / ready status	Off	No power to AP
		Red	Device hardware failure
		On - Green	Device ready
LAN	Ethernet Network Link Status / Activity (HW Control)	Off	Ethernet link unavailable
		On - Yellow	Link speed 10/100M
		On - Green	Link speed 1G
		Flashing	Ethernet activity
5G Radio	5G Hz Radio Status	Off	5G Hz radio disabled
		On – Green	5G Hz radio enabled
2.4G Radio	2.4G Hz Radio Status	Off	2.4G Hz radio disabled
		On – Green	2.4G Hz radio enabled

6.4 Debug via Telnet

You can debug WF-610 via Telnet.

Username: ***admin***

Password: ***password***



Federal Communications Commission (FCC) 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 generate, 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.

RF exposure warning
This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment must be installed and operated in accordance with provided instructions and the antenna(s) used for this transmitter must be installed to provide a separation distance of at least 118.97 cm from all persons and must not be collocated or operating in conjunction with any other antenna or transmitter.