User Manual

Wi-Fi HaLow™ Gateway

PN : AP7688-WHM

V 1.2 2023/10/18

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A. Introduction

AP7688-WHM is a small-size 9 x 11.5cm, Wi-Fi 4 & Wi-Fi HaLow™ IoT Gateway for industrial control.

The Main parts are Wi-Fi 4 Router and Wi-Fi HaLow™, each one operates individually.

Wi-Fi HaLow™ is the best solution for long distance IoT applications and Video stream transmission. Wi-Fi HaLow™ throughput reaches 20Mbps provide standard surveillance system could have a long distance linking with perfect quality.

Wi-Fi HaLow™ linking distance is more than 1 KM, which is 10 times farther than 2.4 GHz Wi-Fi 4 or Bluetooth along with 100M the coverage of traditional Wi-Fi networks, making it perfect for warehouses, factories, retail stores and other large campus environments.

Matter/BLE/Zigbee is optional in near future.

HaLow™ Gateway

Sub 1GHz
Distance > 1km / 0.625mi

Modes: AP, Client

1	RESET
2	WAN / LAN
3	USB
4	RS232
5	POWER

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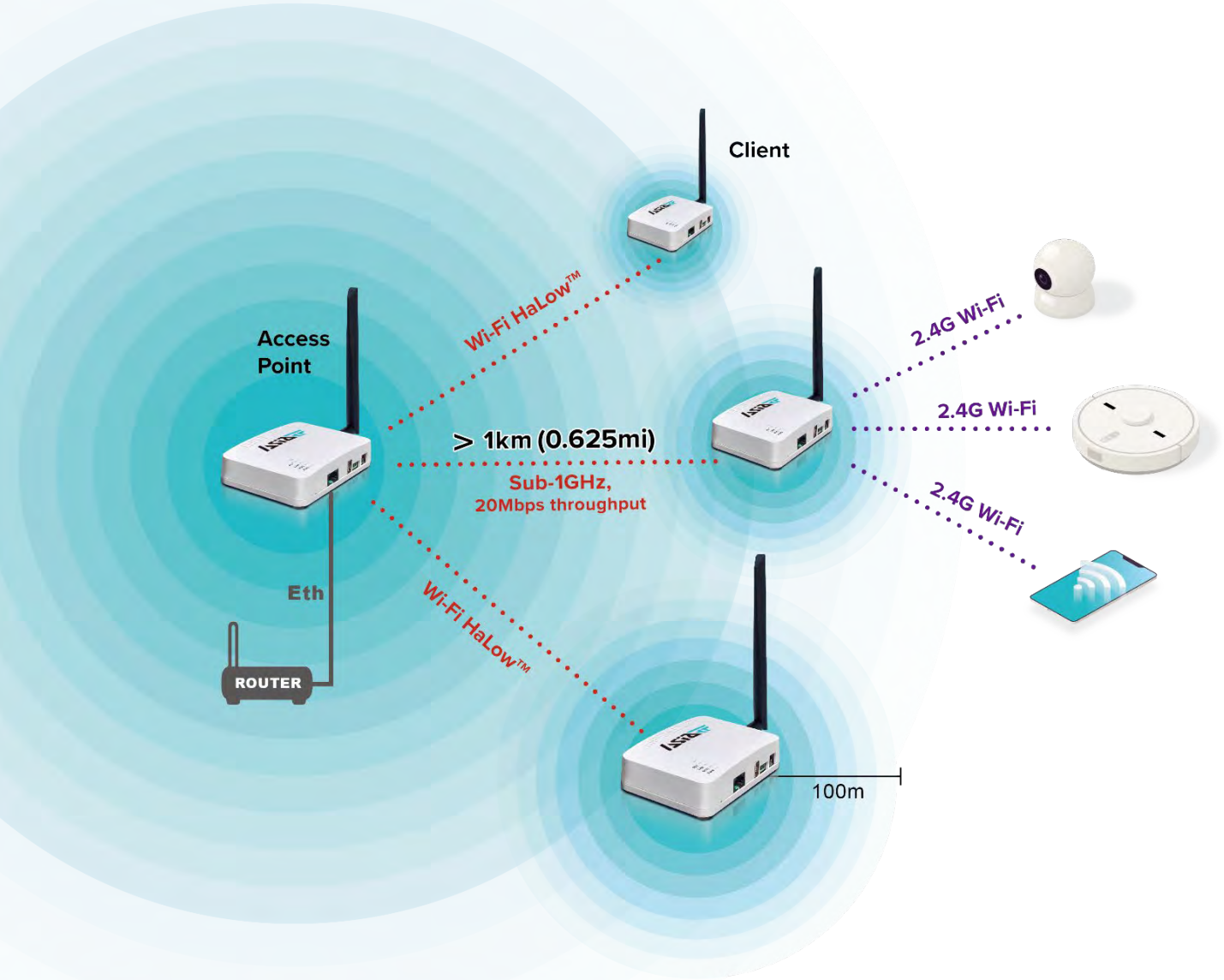
B. Star Topology Network

The Wi-Fi HaLow™ Gateway has significant advantages for the arrangement of high-rise buildings. The star topology network allows multiple station access points to be placed within a 1 km radius from the center of the access point in concentric circles, effectively providing network connectivity to every corner of multiple floors.



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C. Hardware Information

C.1 Contents

1. Box x 1
2. Wi-Fi HaLow™ Gateway x 1
3. Wi-Fi HaLow™ Antenna x 1
4. 12V / 1A Power Adaptor x 1

1.

2.

3.

4.

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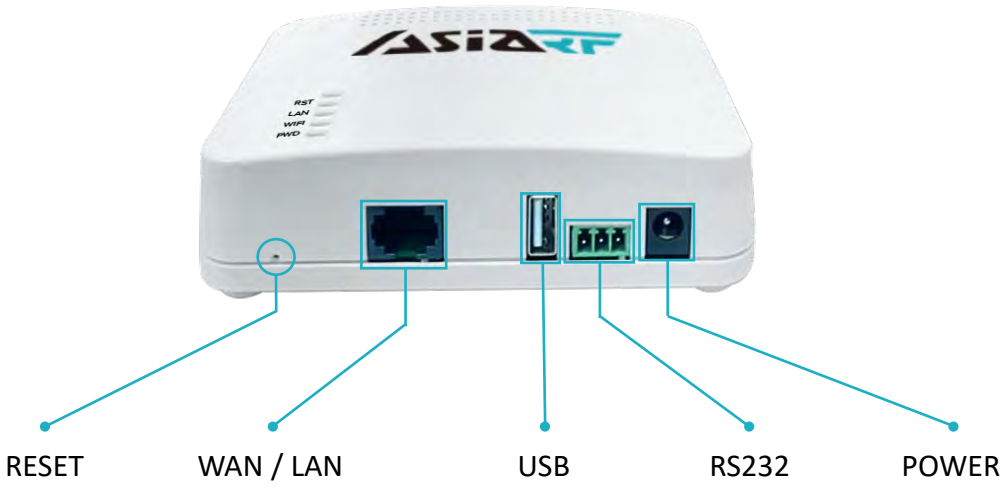
C.2 LED Indicators

LED light meaning

NAME	ACTION	DESCRIPTION
Power (Blue)	ON	Power on
Wi-Fi (Orange)	Blinking	Wi-Fi ready
LAN (Green)	Blinking	Linked up
RES (Green)	OFF	System ready

C.3 Interfaces



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D. Software Setting

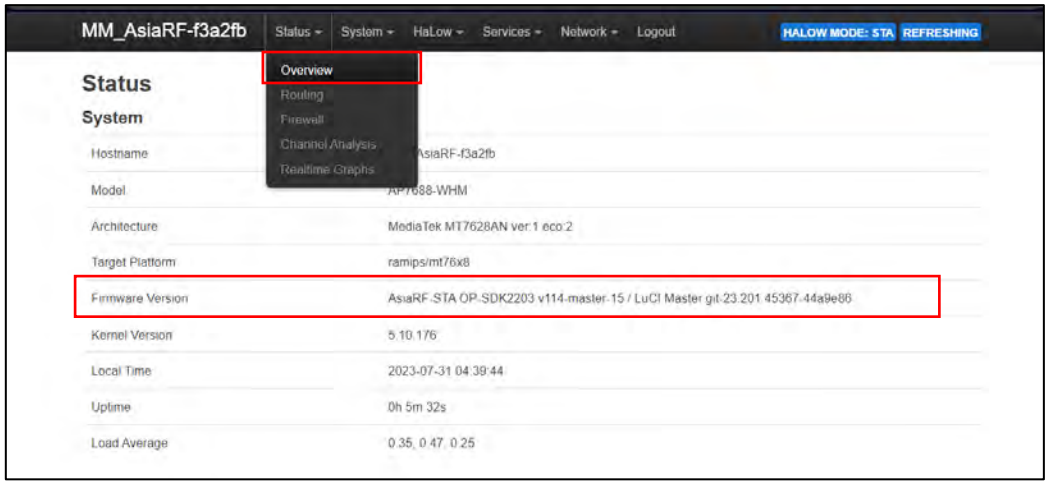
D.1 Firmware Information

Introduce about firmware information on our device, it can improve our communication with you.

D.1.1 Firmware Version

You can know how to get firmware version. When you have any problem on our product, provide us your firmware version for the best after-sale service.

Click “Overview” in the “Status” tab.



You can get a firmware version. For example, AsiaRF-STA OP-SDK2203 v114-master-16 / LuCI Master git-23.201.45367-44a9e86.

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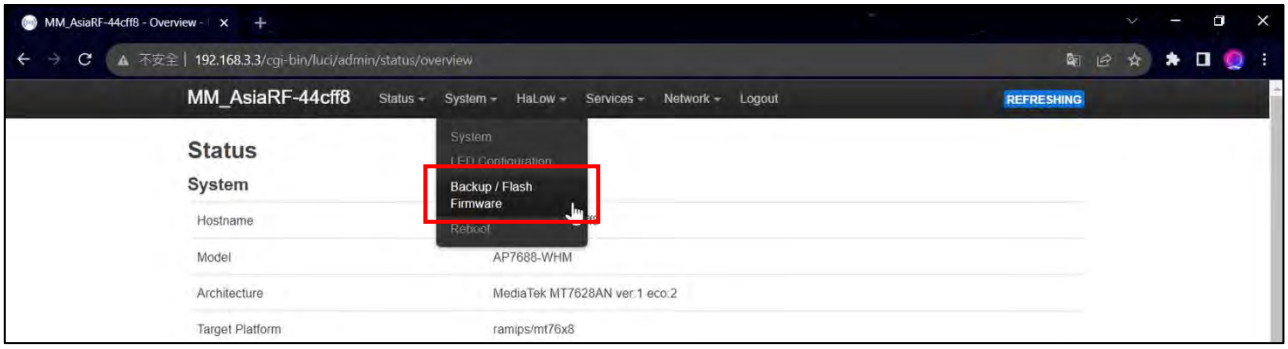
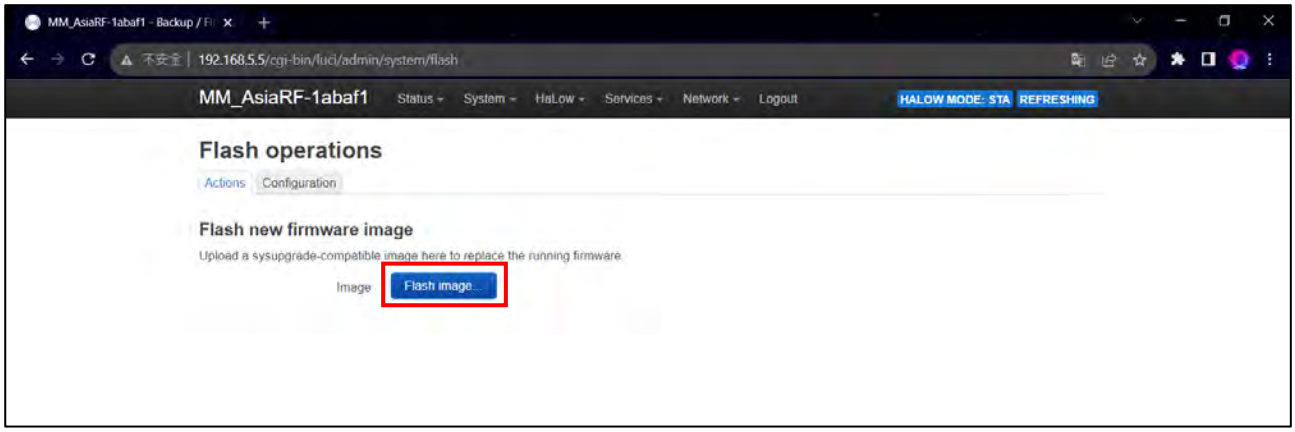
D.1.2 Firmware Upgrade

Weather we have new firmware for customers, follow this chapter to upgrade your device for your best experience.

Click “Overview” in the “Status” tab.



Click “Flash image”.



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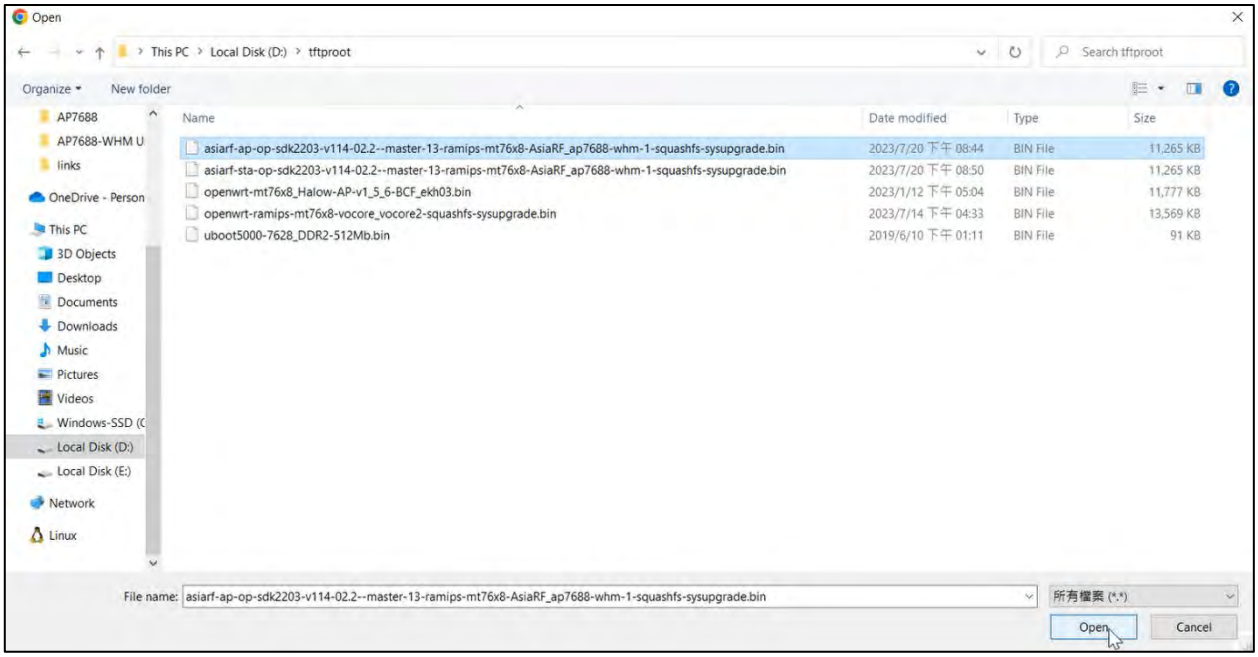
Click to choose your firmware.



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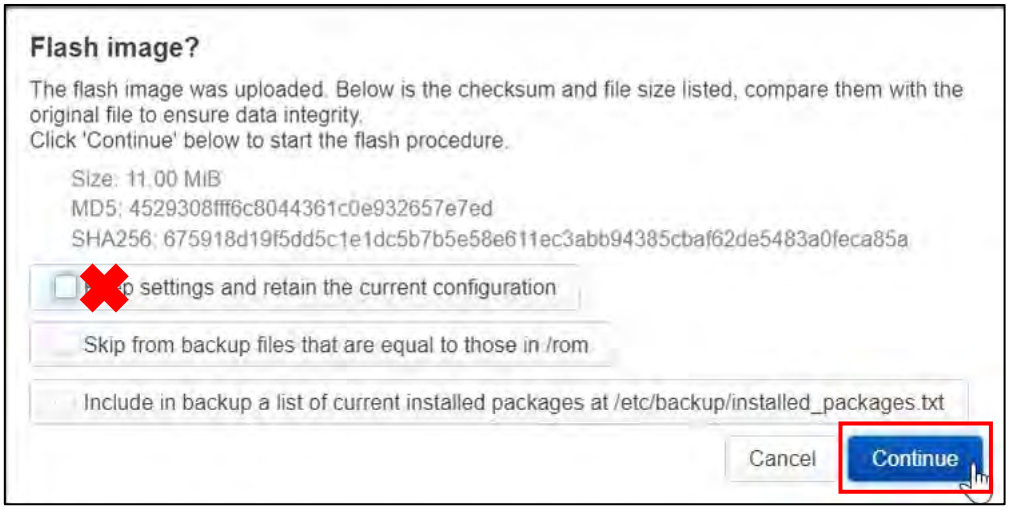
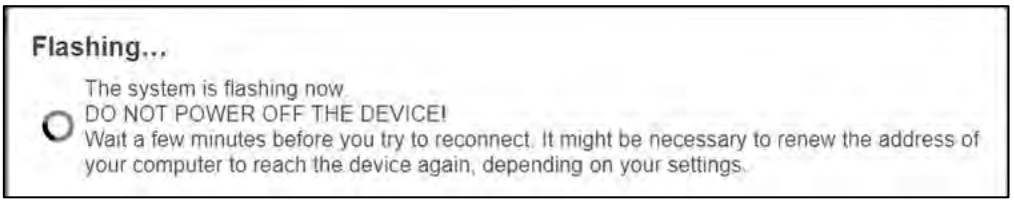
Do not choose any option!!!

And click “Continue” start to upgrade.





It will reboot as soon as after flash the image. This will take about four minutes to finish booting.

Don’t forget our default IP address is 192.168.3.3 (AP) and 192.168.5.5 (Client), default Wi-Fi SSID is “AsiaRF_HaLow-AP/STA” and password is “12345678”.

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D.2 HaLow AP settings (AP - mode)

The Gateway inside have two Main parts, which are Wi-Fi 4 Router and Wi-Fi HaLow™, each one operates individually.
We will use one of gateways to be a **HaLow AP** as a **master data center**, the rest are **HaLow Client**, you can call them **client devices** too.
HaLow AP gateway and HaLow Client gateway settings we separate to two sections.

D.2.1 Internet Network (WAN)

D.2.1.1 Internet network relationship

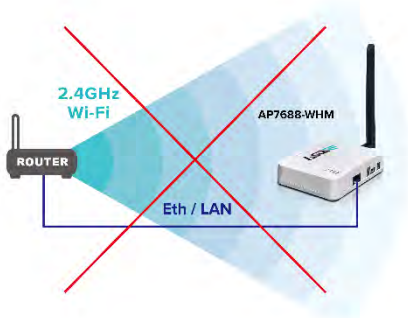
The Gateway inside have 2 Main parts, which are Wi-Fi 4 Router and Wi-Fi HaLow™, each one operates individually.

Important:
You can use HaLow AP Gateway to link with Main Home Router by two ways.

1. **By LAN cable**
2. **By Wi-Fi linking**

You can choose **one way to link only**, if you use two ways in the meantime, the network will be locked and cannot access internet.

You can choose one way to link only.
If you connect two links simultaneously,
it will cause a routing conflict loop and
prevent access to the internet.



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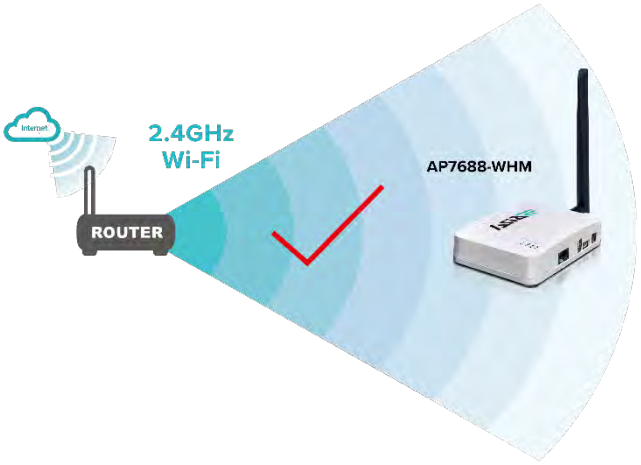
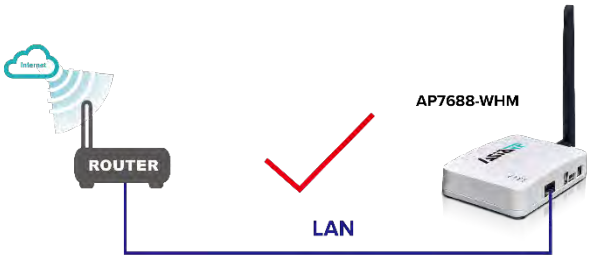
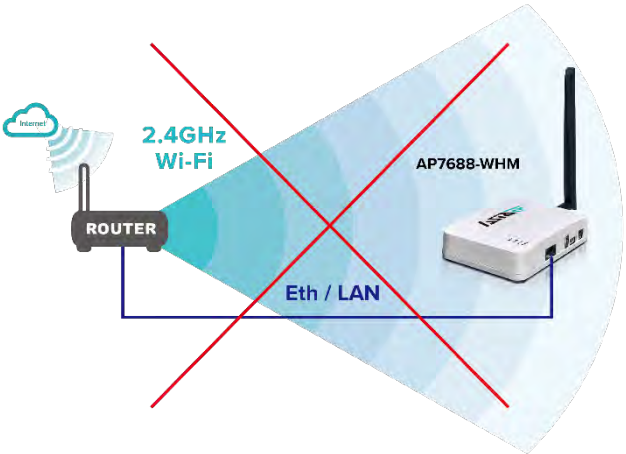
1. **Link with router by LAN cable**



2. **Link with router by Wi-Fi linking**



3. **You can choose one way to link only. If you connect two links simultaneously, it will cause a routing conflict loop and prevent access to the internet.**



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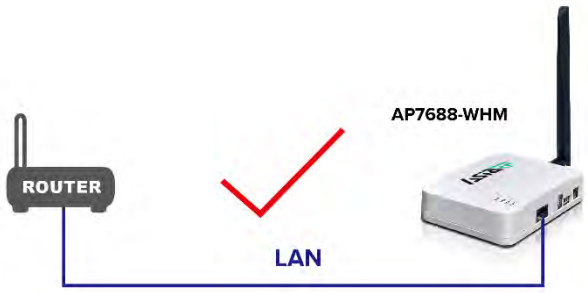
D.2.1.2 Internet linking by LAN cable

Plug in the power and start to set.

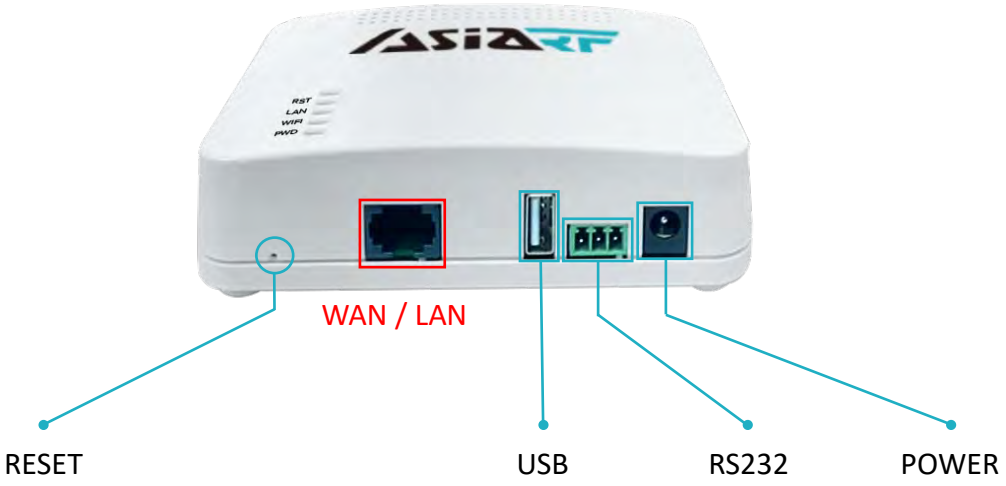
After plug in the power on device and wait for about 2 minutes. Device finish booting once the fourth LED light(green) turns off and second LED light(orange) turns on.

*****LAN and Wi-Fi two settings need to choose one only. *****

***** Switch linking setting you need to power off and power on again! *****



Use CAT5 / CAT6 Cable plug in the AP mode gateway's RJ45 port.



Use PC or Mobile phone connect to the Wi-Fi (SSID: AsiaRF_Halow-AP, Password: 12345678), and check whether network is operating successfully.

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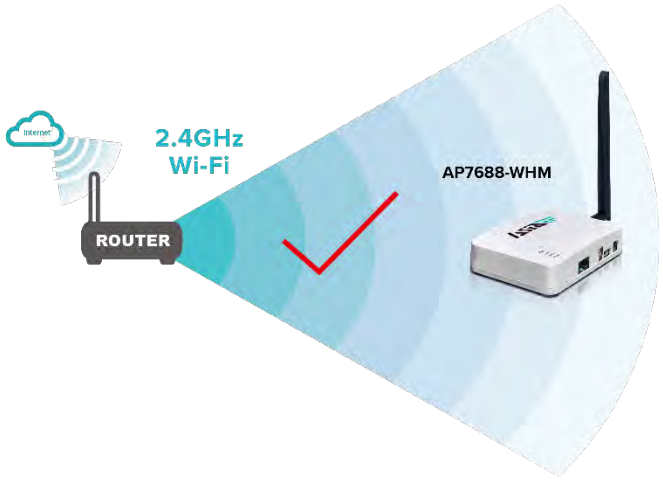
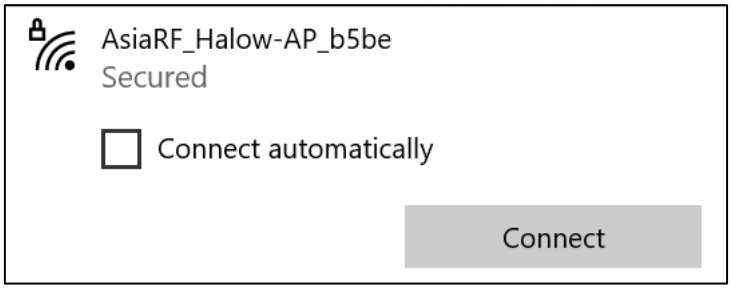
D.2.1.3 Internet linking by Wi-Fi 4 wireless

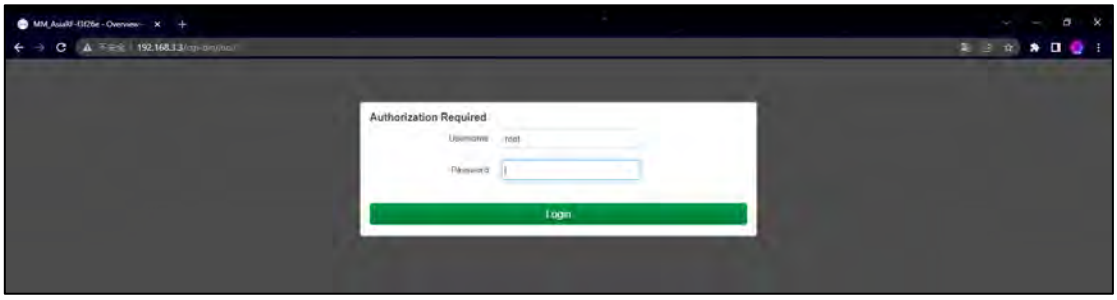


*** If you are going to re-connect a new Wi-Fi, check the trouble shooting Case 1 first***

Use PC or mobile phone connect to the Wi-Fi.
(SSID: AsiaRF_Halow-AP_xxxx, Password: 12345678).



Open the browser and type “192.168.3.3”. Click “Login” (No password in default).



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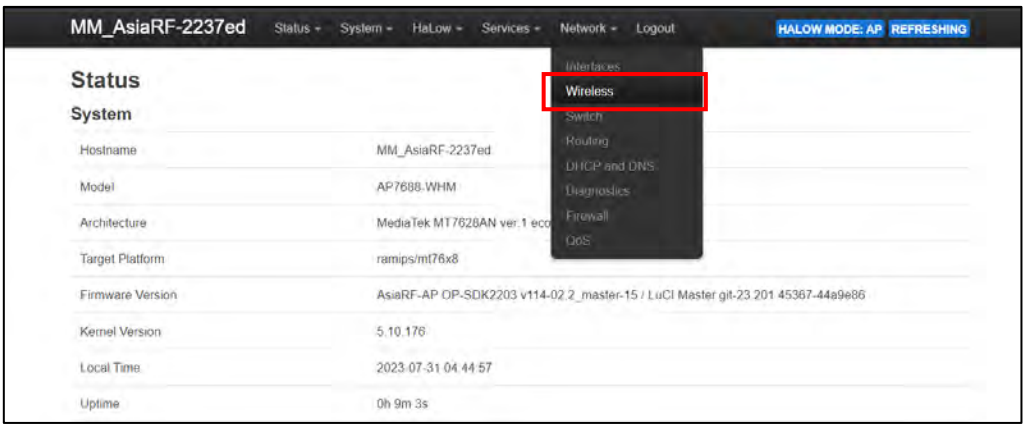
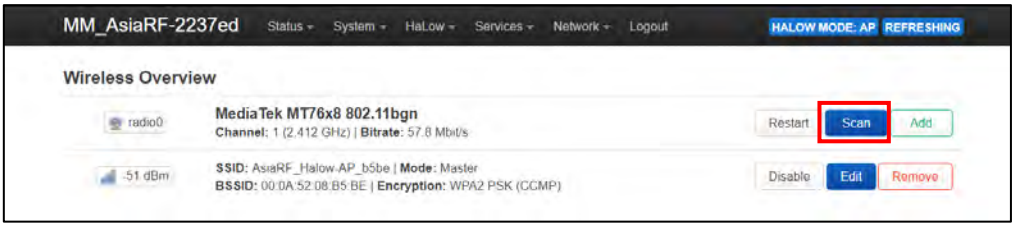
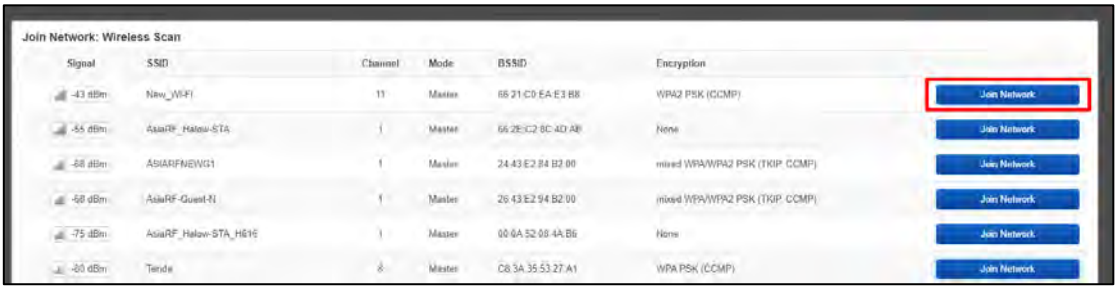
Click “Wireless” in the “Network” tab.



Click “Scan” to scan Wi-Fi.



Select the Wi-Fi which you want.



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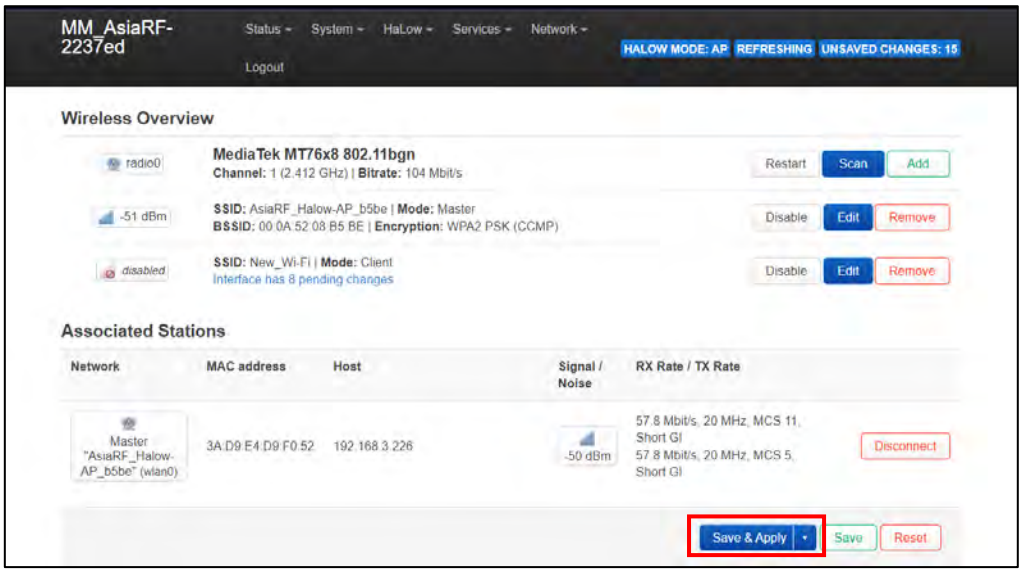
Input your Home Wi-Fi password in the “WPA passphrase” section and Click “Submit”.

Click “Save & Apply” to save the configuration.



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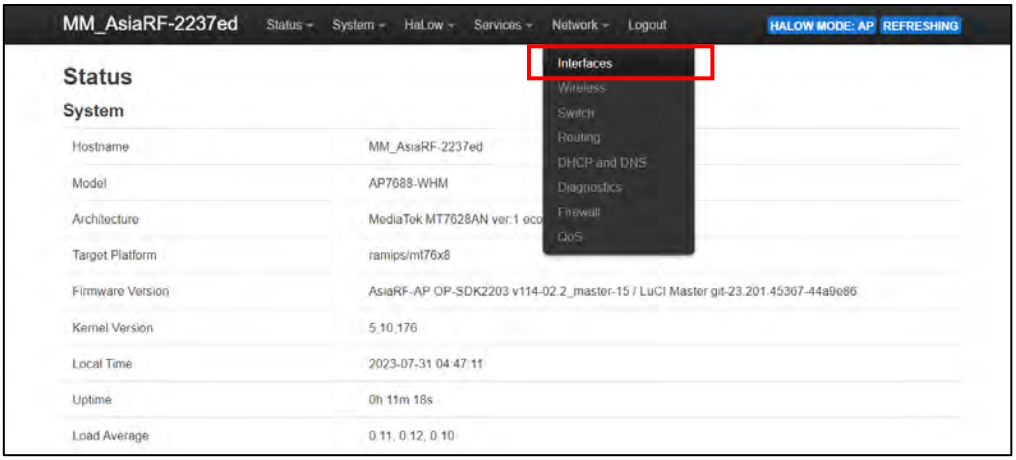
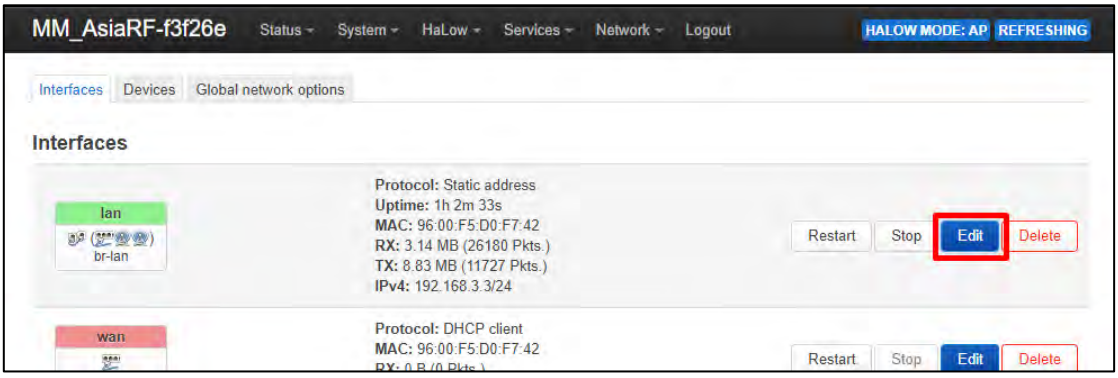
D.2.2 Internet Network (LAN)

D.2.2.1 BR-LAN settings (def: 192.168.3.3)

Click the “Interfaces” in the “Network” tab.



Click the “Edit” in the br-lan interface.



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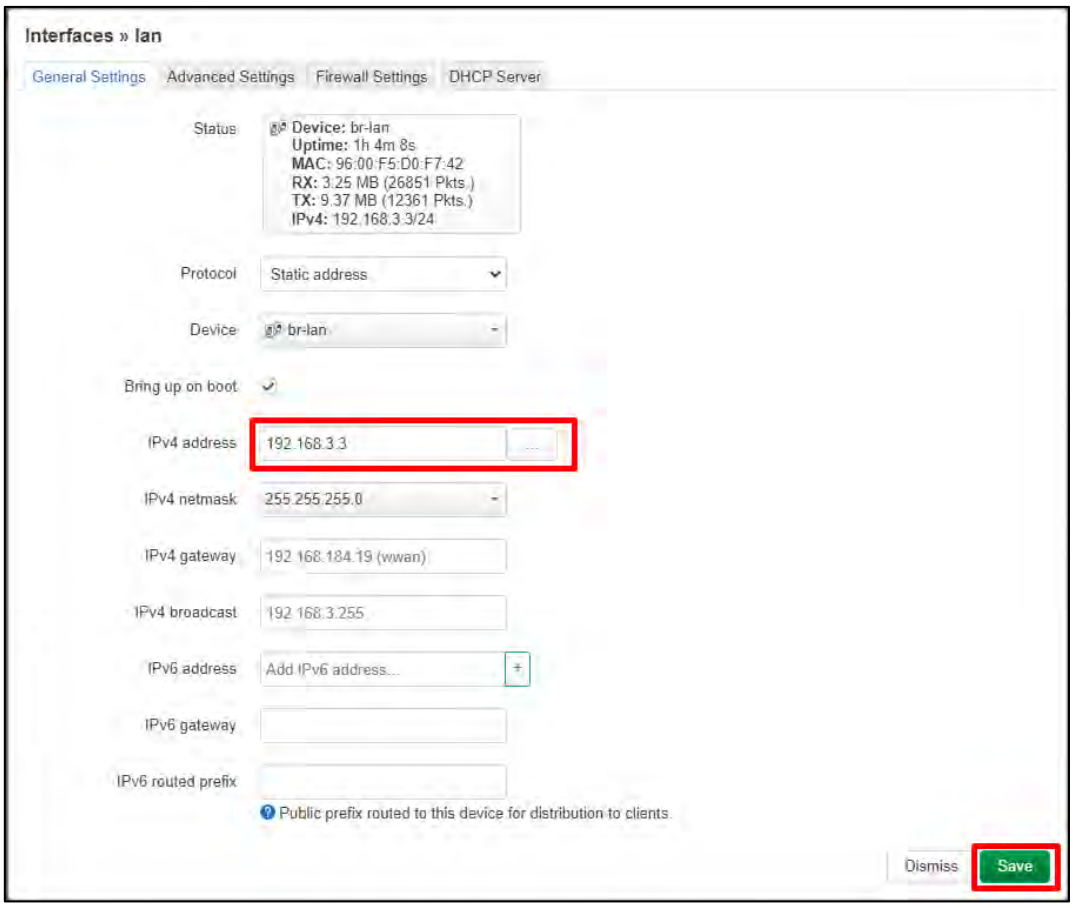
Change your own IPv4 address and click "Save".



Click the “Save & Apply” button to save the configuration.

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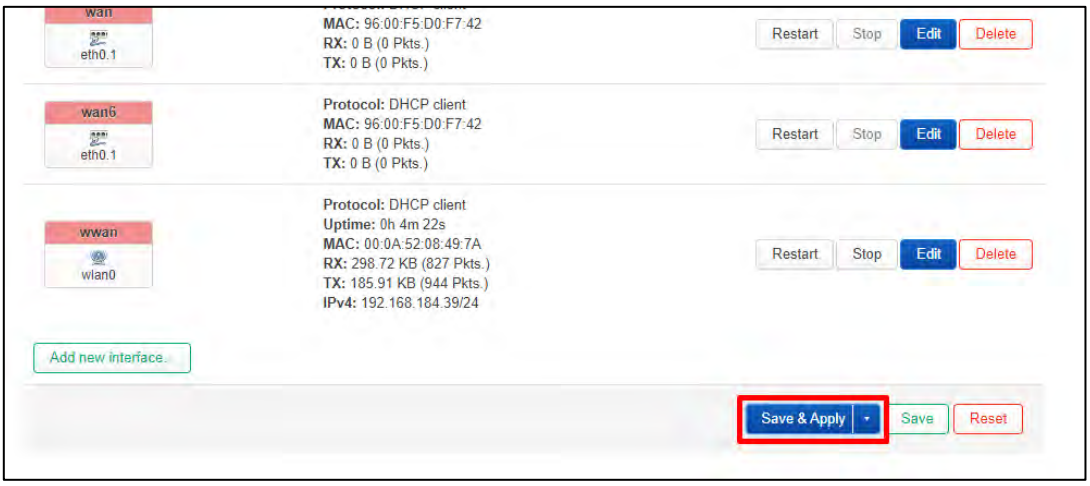
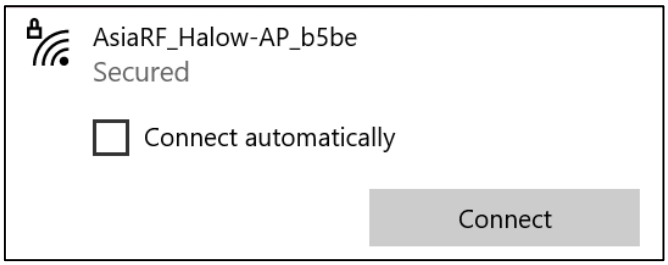


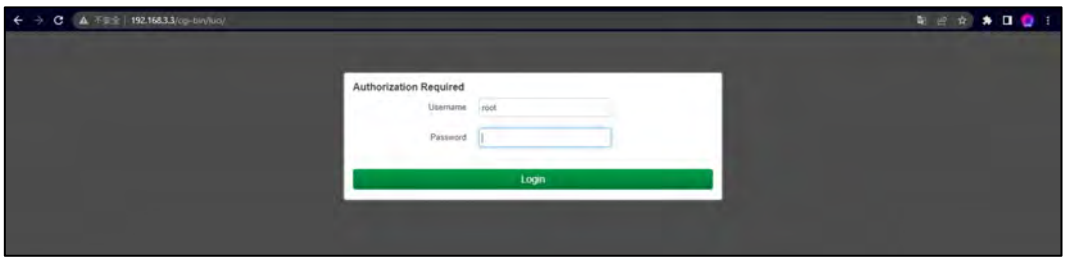
D.2.2.2 Wi-Fi 4 AP settings (def: AsiaRF_Halow-AP_xxxx)

Our product is a pair of AP7688-WHM. It has default setting with Wi-Fi HaLow™. If you don't need to set HaLow in special configuration, you can skip this chapter.

Use PC or mobile phone and connect to the Wi-Fi (SSID: AsiaRF_Halow-AP_xxxx, Password:12345678)



Open the browser and type "192.168.3.3".
Click "Login" (No password in default).



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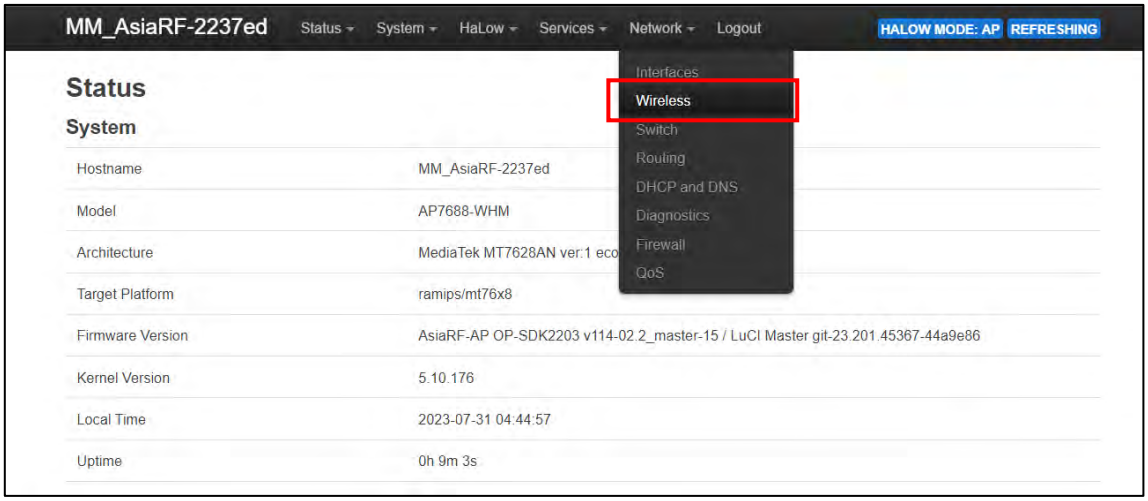
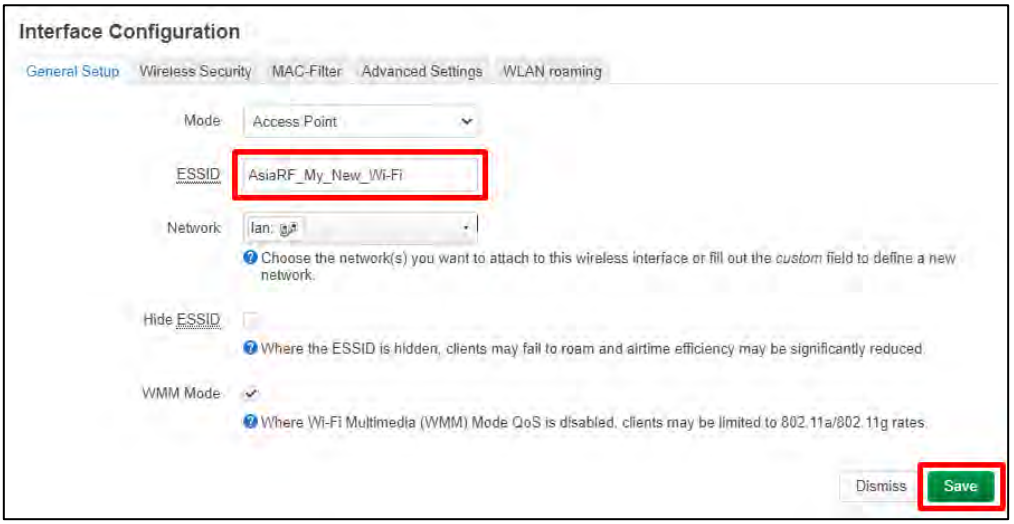
Click the “Wireless” in the “Network” tab.



Click the “Edit” button.

Change ESSID to your new name.



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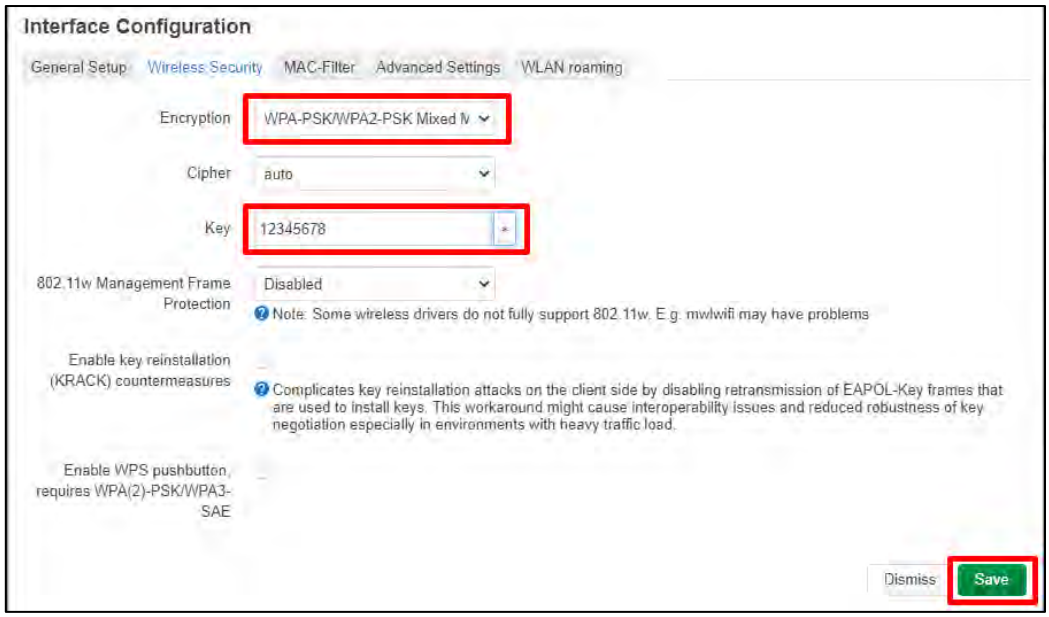
***** If you don't need to set the Wi-Fi password. *****
***** You can press the "Save" button to skip the next step. *****

Click "Wireless Security" and choose one of the encryption types.
Ex. "WPA-PSK/WPA2-PSK Mixed Mode(medium security)"
Input your WI-Fi password in "Key" field and don't forget it.
Click the "Save" button to save your configuration.



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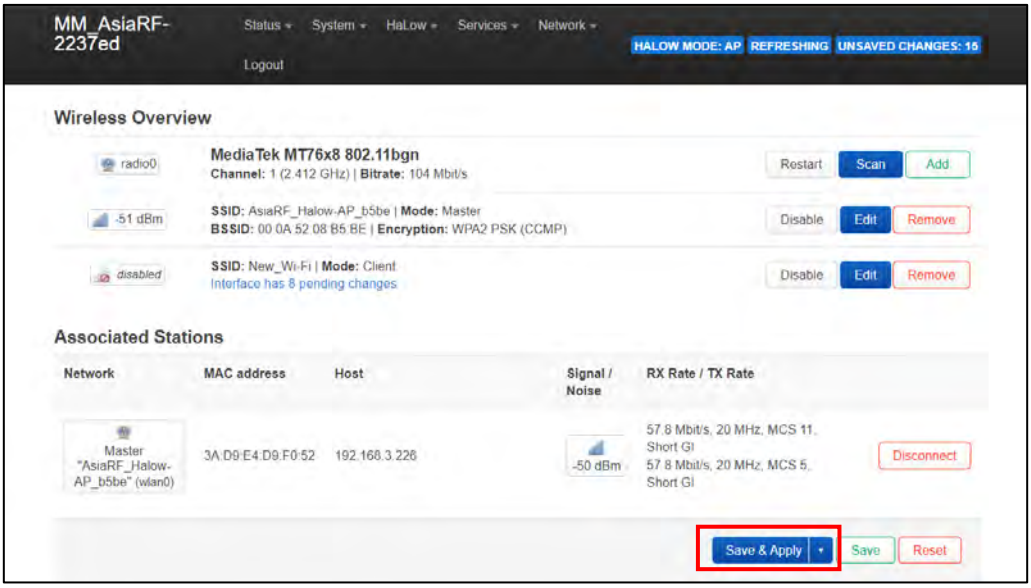
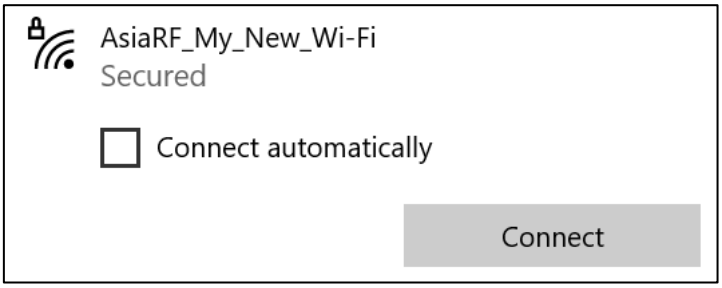
Click the “Save & Apply” button to save the configuration.



It will reset your Wi-Fi interface. Find the new Wi-Fi and enter your password. And it will finish your Configuration.



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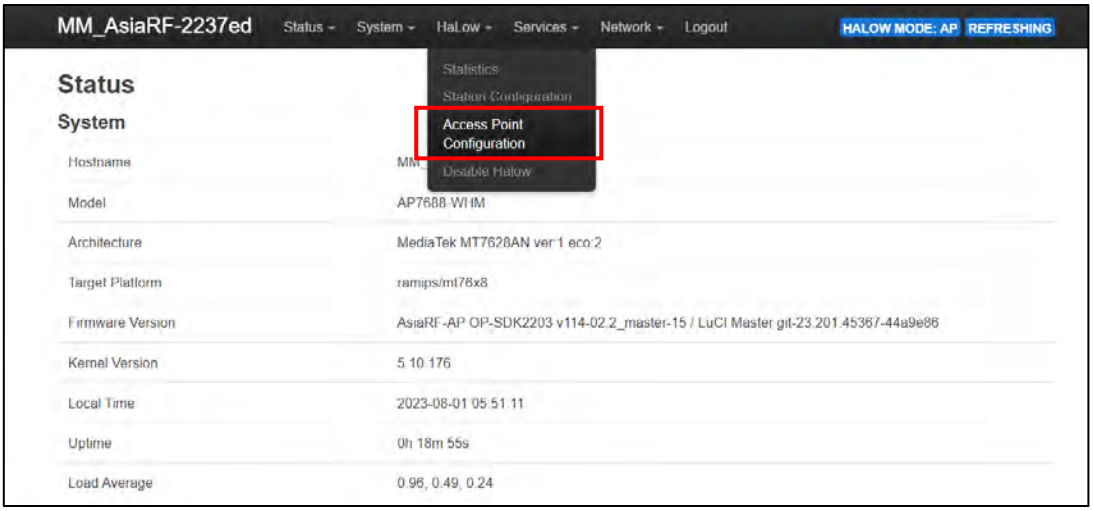
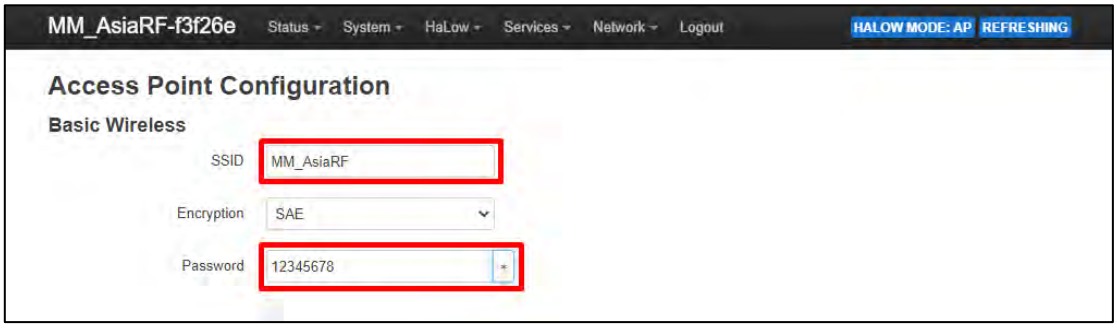
D.2.3 HaLow Network

D.2.3.1 HaLow AP settings (def: MM_AsiaRF)

Click “Access Point Configuration” in the “**HaLow**” tab.



Setting your Wi-Fi HaLow™ SSID and password.



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Set your own region and channel and click “Save” to save your configuration.

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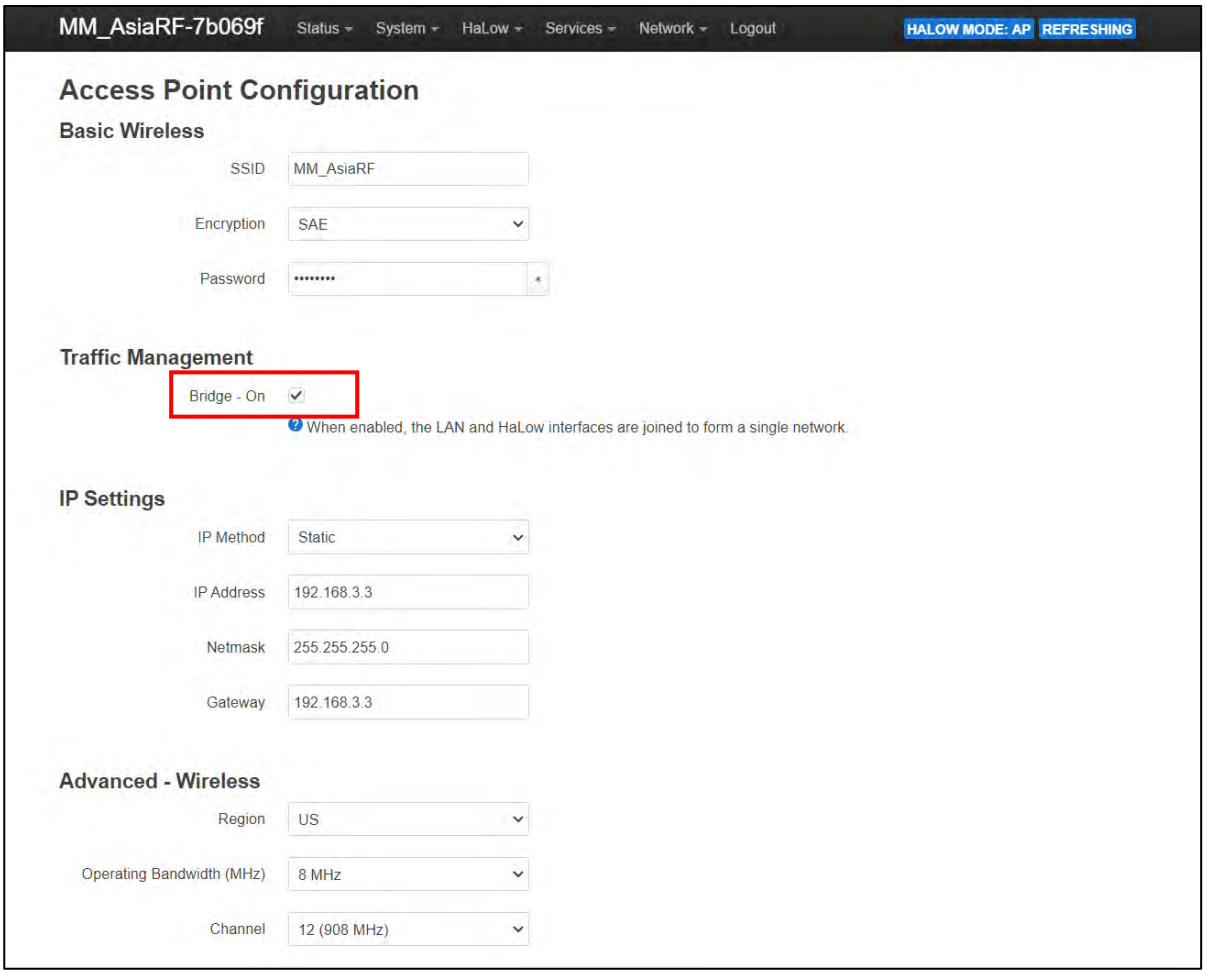
D.2.3.2 Bridge Actitve

In Traffic Management, which is in Wi-Fi HaLow setting, there is an option “Bridge – On/Off” to active Bridge mode for AP device. When you click the checkbox to enable it, it will show as “Bridge - On”.



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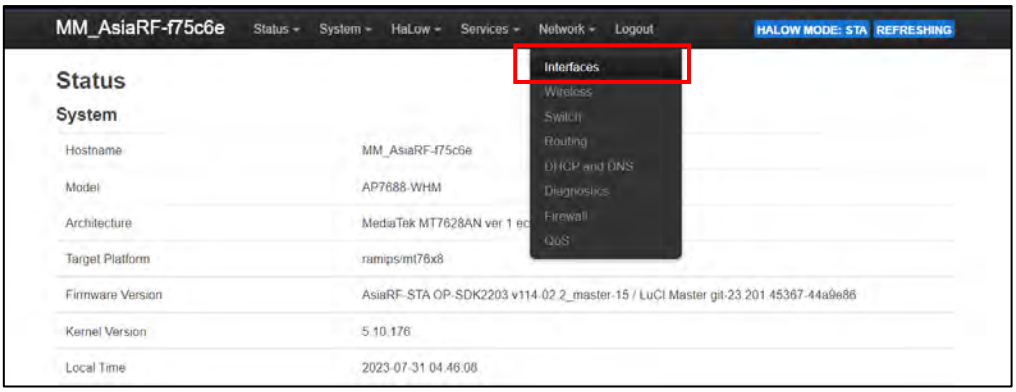
D.3 HaLow Client Settings (Client - Mode)

D.3.1 Internet Network (LAN)

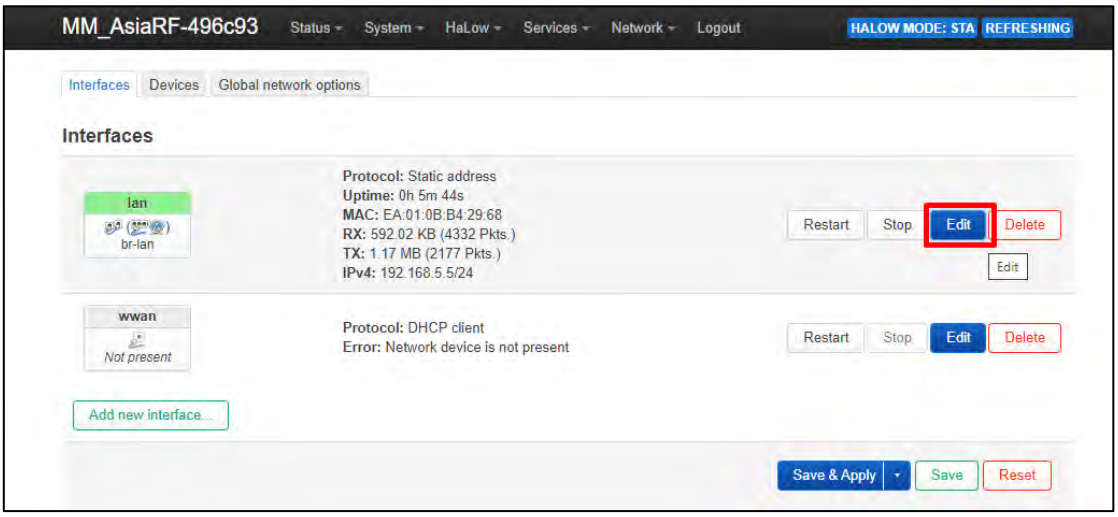
Our product is a pair of AP7688-WHM. It has default setting with Wi-Fi HaLow™. If you don't need to set HaLow in special configuration, you can skip this chapter.

D.3.1.1 BR-LAN settings (def: 192.168.5.5)

Click the "Interfaces" in the "Network" tab.



Click the "Edit" in the br-lan interface.



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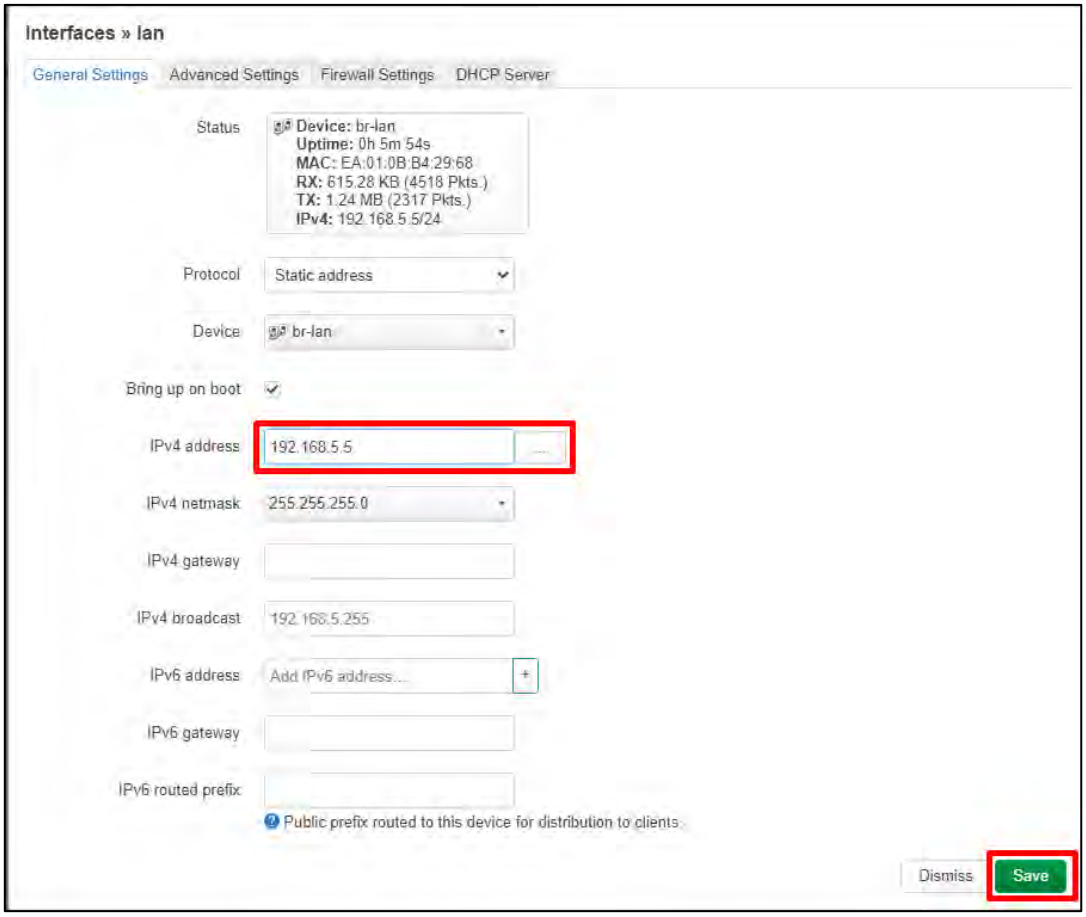
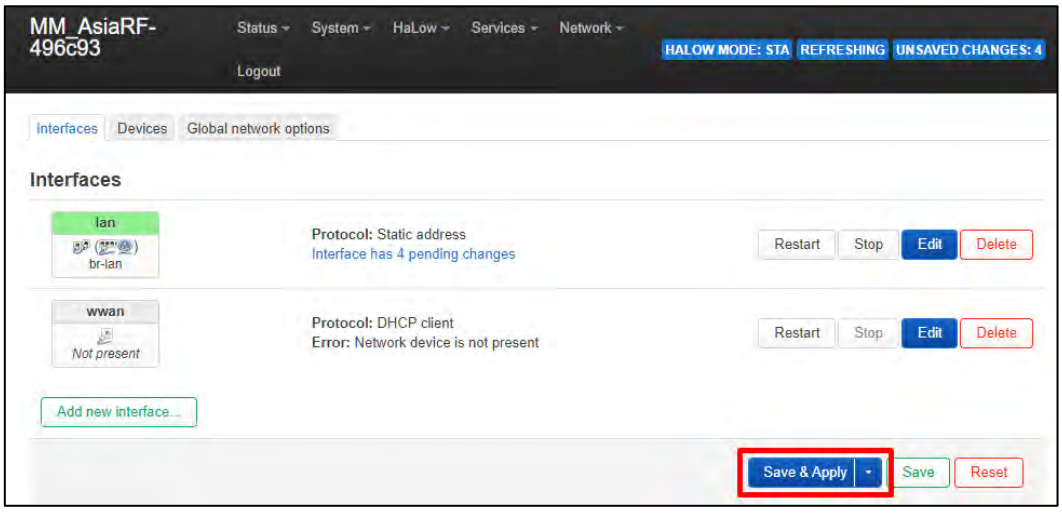
Change your own IPv4 address and click "Save".



Click the “Save & Apply” button to save the configuration.



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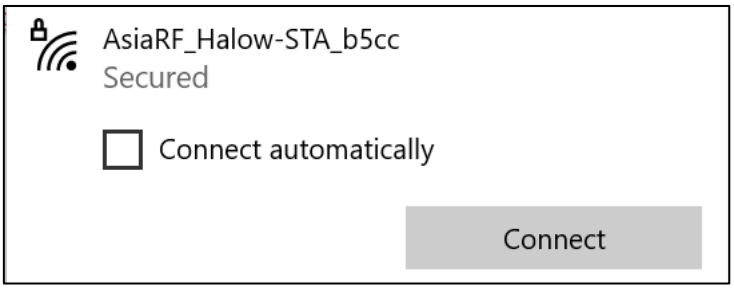
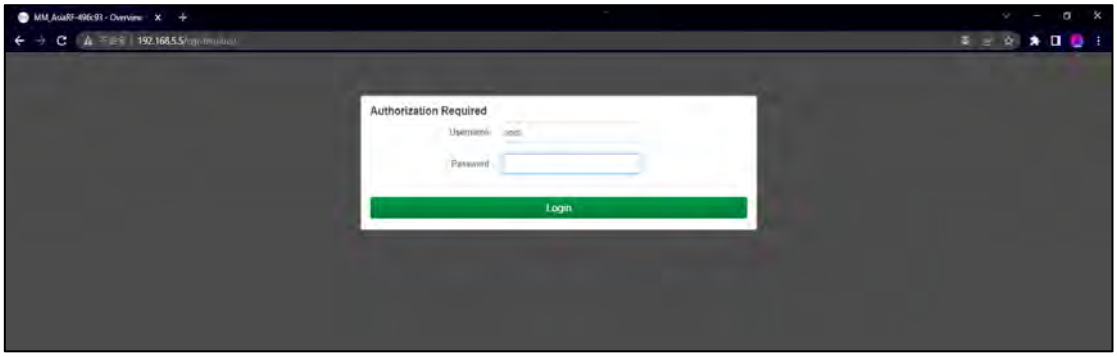
D.3.1.2 Wi-Fi 4 AP settings (def: AsiaRF_Halow-STA_xxxx)

Use PC or mobile phone and connect to the Wi-Fi.
(SSID: AsiaRF_Halow-STA_xxxx, Password: 12345678)



Open the browser and type “192.168.5.5”.
Click “Login” (No password in default).



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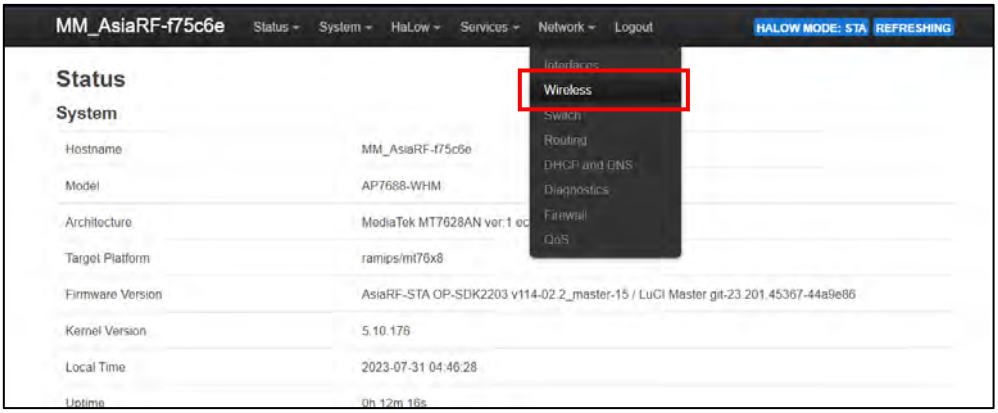
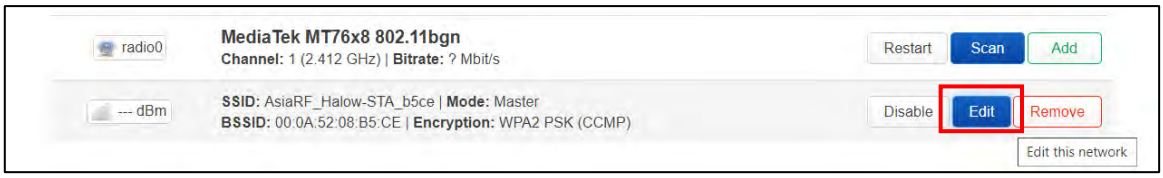
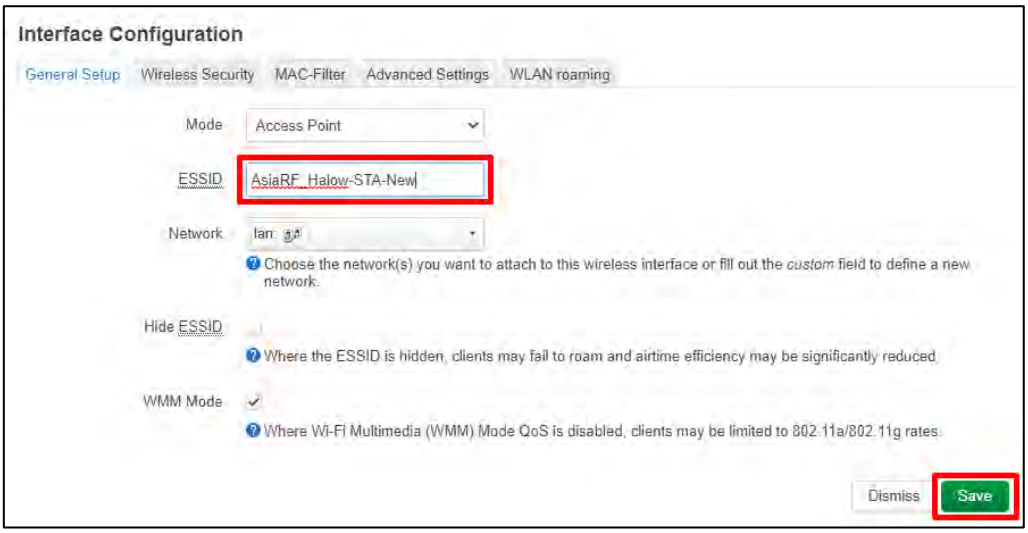
Click the “Wireless” in the “Network” tab.



Click the “Edit” button.



Change ESSID to your new name.



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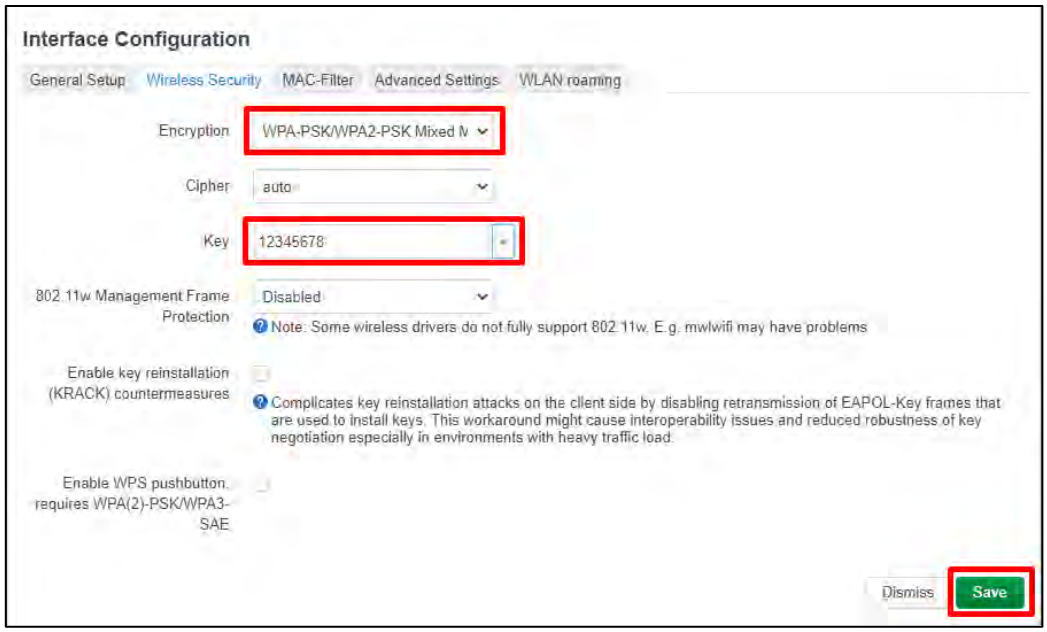
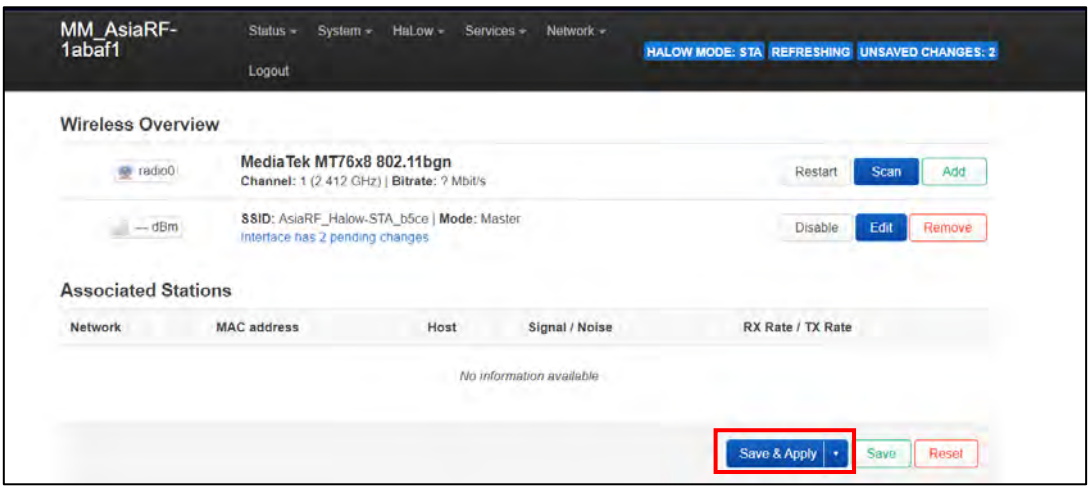
***** If you don't need to set the Wi-Fi password. *****

***** You can press the "Save" button to skip the next step. *****

Click "Wireless Security" and choose one of the encryption types.
Ex. "WPA-PSK/WPA2-PSK Mixed Mode (medium security)"
Input your Wi-Fi password in "Key" field and don't forget it.



Click the "Save & Apply" button to save the configuration.



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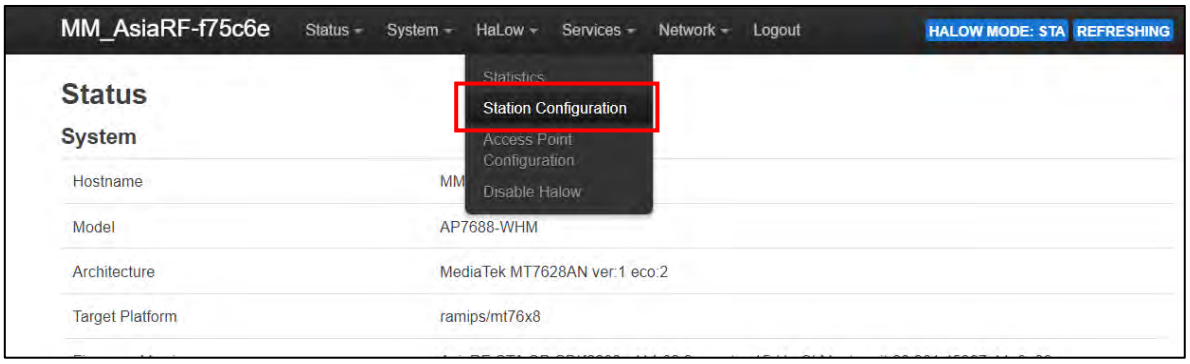
D.3.2 HaLow Network

D.3.2.1 HaLow Client settings (def: MM_AsiaRF)

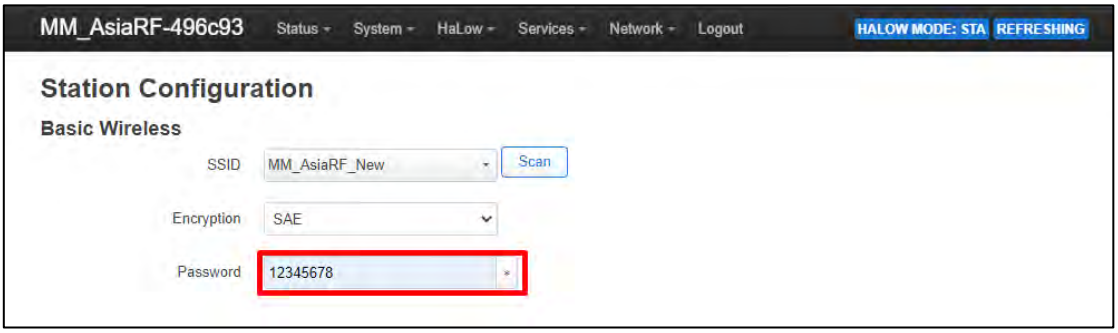
Click “Station Configuration” in the “Morse” tab.



The Wi-Fi HaLow default connect SSID is “MM_AsiaRF”.

You can click “Scan” button to scan the Wi-Fi HaLow™ AP around it.

It will choose the Wi-Fi HaLow™ AP around you, or you can choose one in the list. Don’t forget to input the password. Ex. SSID: MM_AsiaRF_2



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Click “Save” button to save the configuration.

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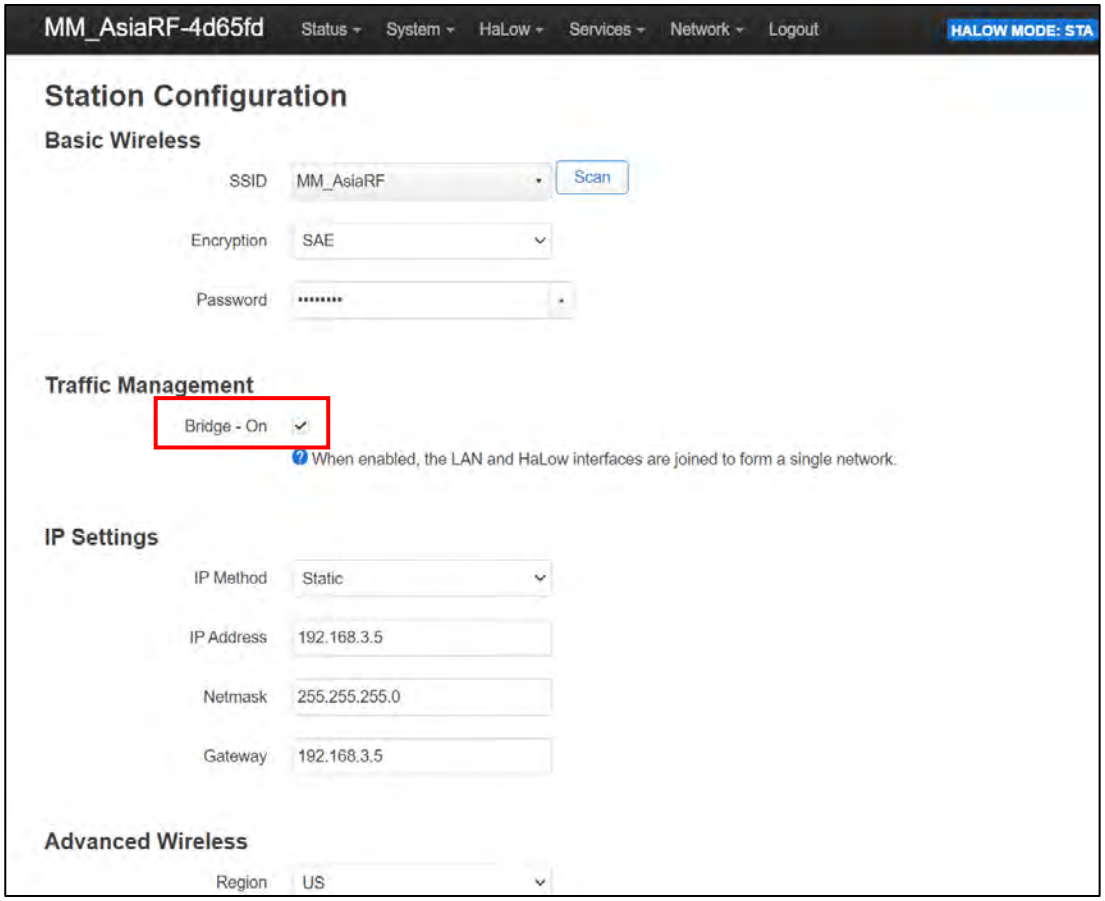
D.3.2.2 Bridge active

In Traffic Management, which is in Wi-Fi HaLow setting, there is an option “Bridge – On/Off” to active Bridge mode for Client device. When you click the checkbox to enable it, it will show as “Bridge - On”.



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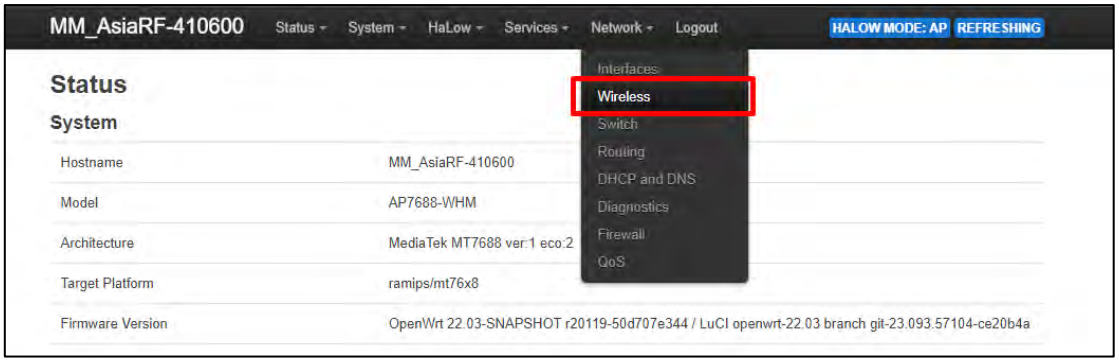
E. Trouble shooting

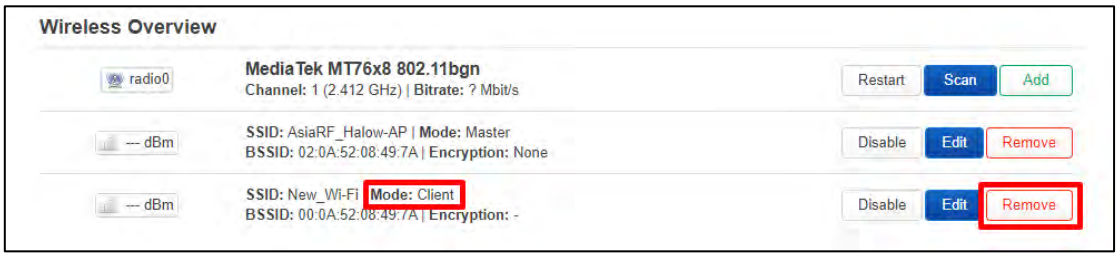
E.1 Case 1

Problem：AP gateway re-connect to new Wi-Fi.
Solution：Follow the steps below first to remove the old one and continue the chapter D.1.1.3.

Use PC or mobile phone and connect to the AP-side Wi-Fi.
Click “Wireless” in the “Network” tab.



Check the previous connection of Wi-Fi.
Remove the interface with "Mode: Client" at the bottom if it exists.
And click “Save & Apply” to save your configuration.



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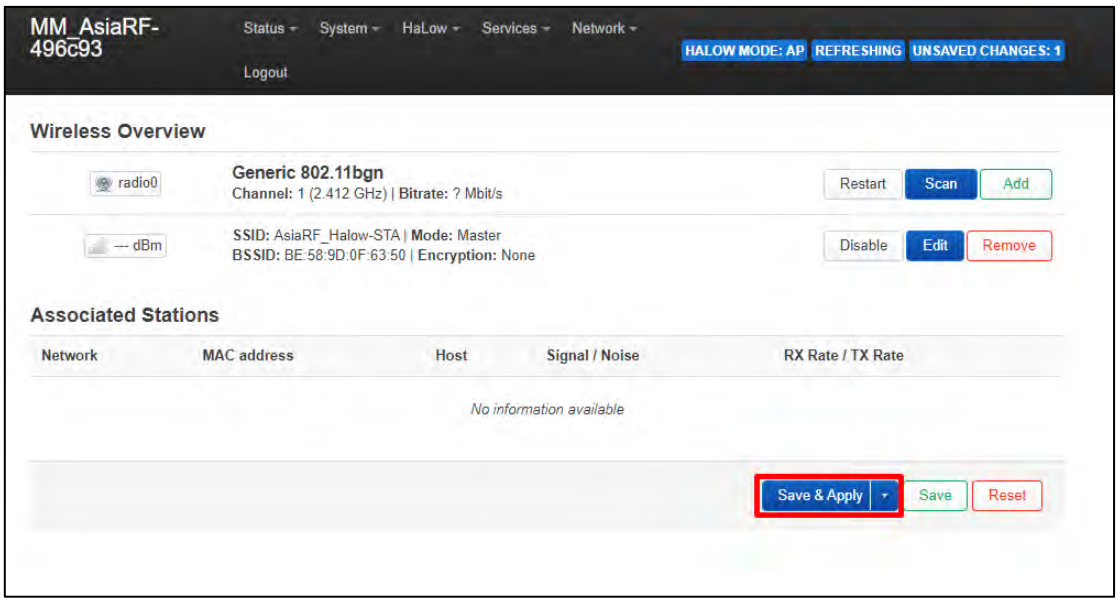

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