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Wireless Bridge

User Manual

ST508E/ST515N

V2.0

Be Honest & Do Best

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Content

1. Introduction

1.1. Overview

Our wireless bridge series is based on the Qualcomm solution, with the high output power and high sensitivity that come from the high-quality hardware and equipped with the intelligent dynamic polling protocol iPoll 3 which is based on TDMA technology.

The products have excellent anti-interference ability, even in high-density transmission scenarios with more than 64 stations, which can guarantee the stable transmission and higher throughput. Through iPoll 3, our products support the advanced wireless traffic optimization function, QoS priority supports DSCP mode under 802.1p and supports 4 priority queues, providing the most complete support for multiple services.

The product design meets IP64 to IP66 waterproof grades and industrial standards. It provides 2kv surge protection which can ensure the device work well in complex electrical environments. Our bridge products are widely used in various network communications and video surveillance scenarios such as agriculture, forestry, industry, transportation, docks, tower cranes and elevator monitoring.

1.2. Features

- IP64 or IP66 waterproof supported.
- Ultra-high output power and receive sensitivity.
- Ultra-wide available spectrum(4.9Ghz~6Ghz) and more flexible bandwidth(5/10/20/40Mhz).
- Smart station polling, smart auto-channel, adaptive auto modulation, automatic transmit power control (ATPC) supported.
- Supports point-to-point and point-to-multipoint (Up to 64 points).
- The max coverage distance is up to 3KM.
- QoS (L2/L3 or DSCP/COS) - supporting different priority traffic types.
- Professional and responsive HTML 5 graphical user interface.
- Built-in rich and practical toolset (Site survey, Spectrum analyzer, Link test, Antenna alignment, Ping Traceroute).
- Supports client isolation.
- Supports bridge, routing and repeater mode.
- Supports IPv6, scheduled reboot.

1.3. Specification

Model	ST508E	ST515N
Description	Compact size 5Ghz wireless bridge	High performance 5Ghz wireless bridge
Input voltage	12 - 24 VDC passive PoE	

Power adapter	100 – 240 VAC	
Max power consumption	4.5W	
Wi-Fi		
Protocol	802.11a/n, iPoll 3	
Output Power	Up to 29 dBm (country dependent)	
Receive sensitivity	Varying between -97 and -75 dBm (modulation dependent)	
Frequency	4.9Ghz ~ 6Ghz (country dependent)	
Channel bandwidth	5/10/20/40Mhz	
MIMO	2*2	
Modulation schemes	802.11 a/n: OFDM (64-QAM, 16-QAM, QPSK, BPSK)	
Max rate	300Mbps	
Error correction	FEC, Selective ARQ	
Antenna	Built-in, 8dBi	Built-in, 15dBi
Coverage Distance		
Point to point	Recommended: 1KM Max: 2KM	Recommended: 3KM Max: 5KM
Point to multiple points(same model)	Recommended: 0.5KM Max: 1KM	Recommended: 1KM Max: 3KM
Ethernet		
Ethernet	1*RJ45, 10/100M(PoE in)	
Software		
Wireless operating modes	Access point (auto WDS), access point (iPoll 3), station (WDS, iPoll 3), station (ARP NAT)	
Wireless techniques	Smart station polling, smart auto-channel, adaptive auto modulation, automatic transmit power control (ATPC)	
Wireless security	WPA/WPA2 personal, WPA/WPA2 enterprise, WACL, user isolation	
Wireless SoS	4 queues prioritization on iPoll 3	
Network operating modes	Bridge, router IPv4, router IPv6	
Network techniques	Routing with and without NAT, VLAN	
WAN protocols	Static IP, DHCP client, PPPoE client	
Service	DHCP server, SNMP, NTP client, router advertisement daemon, ping watchdog	
Management	HTTP(S) GUI, SSH, SNMP read, Telnet	
System monitoring	SNMP v1/2c/3 server, Syslogs, system alerts via e-mail and SNMP trap	
Wireless tools	Site survey, link test, antenna alignment	
Other	Scheduled reboot	
Physical Parameters		
Dimension	141*77.5*53mm(L*W*H)	158*97*38mm(L*W*H)
Weight	300g	165g
Installation	Pole Mounting, wall mounting	Pole Mounting
Operating Temperature	-40°C ~ +70°C	
Operating Humidity	0 ~ 90 %(non-condensing)	

1.4. Output power & receive sensitivity

Receive sensitivity (dBm)	802.11N/ iPoll (20/ 40 MHz)	15 Mbps	30 Mbps	45 Mbps	60 Mbps	90 Mbps	120 Mbps	135 Mbps	150 Mbps
		-97	-95	-93	-88	-85	-81	-79	-77
		30 Mbps	60 Mbps	90 Mbps	120 Mbps	180 Mbps	240 Mbps	270 Mbps	300 Mbps
		-94	-92	-89	-85	-82	-78	-77	-75
	802.11a	6 Mbps	9 Mbps	12 Mbps	18 Mbps	24 Mbps	36 Mbps	48 Mbps	54 Mbps
		-97	-97	-95	-93	-90	-86	-82	-81
Output power (dBm - combined)	802.11N/ iPoll (20/ 40 MHz)	15 Mbps	30 Mbps	45 Mbps	60 Mbps	90 Mbps	120 Mbps	135 Mbps	150 Mbps
		29	28	28	28	27	27	25	24
		30 Mbps	60 Mbps	90 Mbps	120 Mbps	180 Mbps	240 Mbps	270 Mbps	300 Mbps
		28	28	28	28	26	26	24	23
	802.11a	6 Mbps	9 Mbps	12 Mbps	18 Mbps	24 Mbps	36 Mbps	48 Mbps	54 Mbps
		29	29	29	29	29	27	26	25

1.5. Dimension

Unit: mm

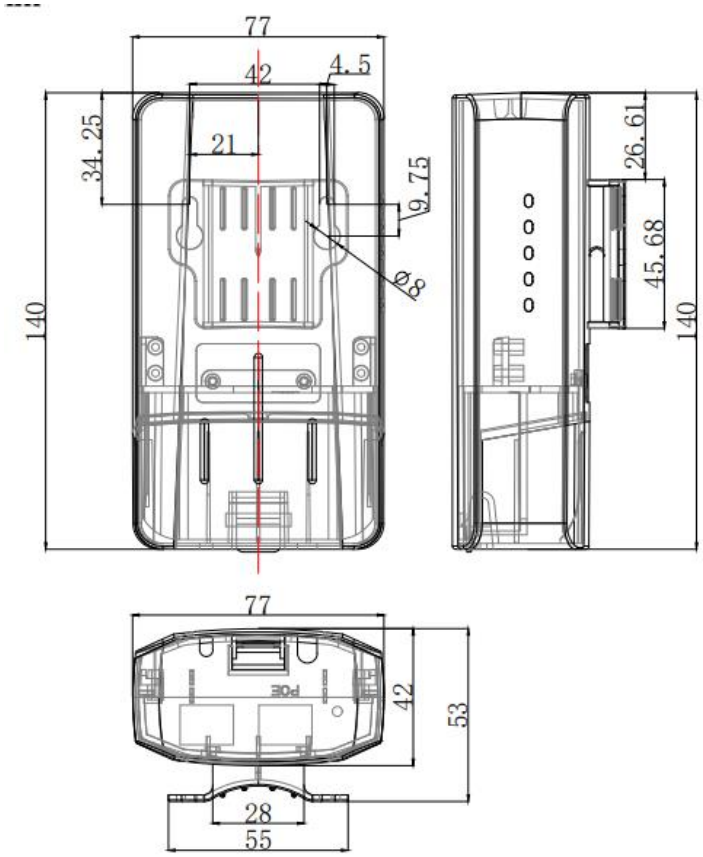

Figure 1. Dimension of ST508E

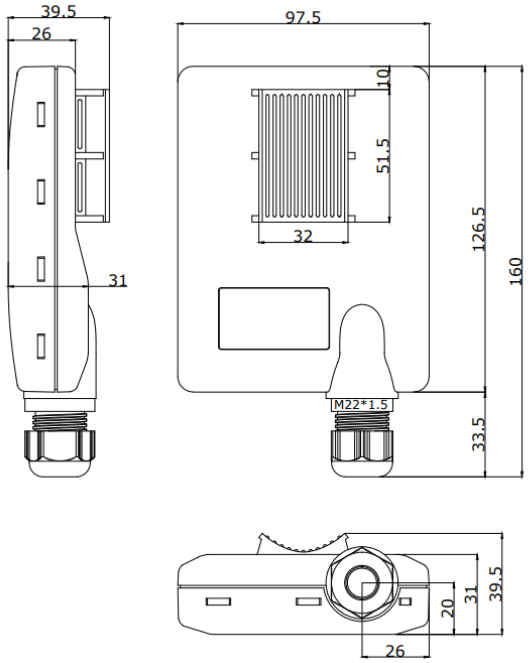

Figure 2. Dimension of ST515N

2. Get Started

2.1. Hardware interface introduction

Refer to the following figure to connect the wireless bridge to the computer through a PoE adapter and an Ethernet cable.

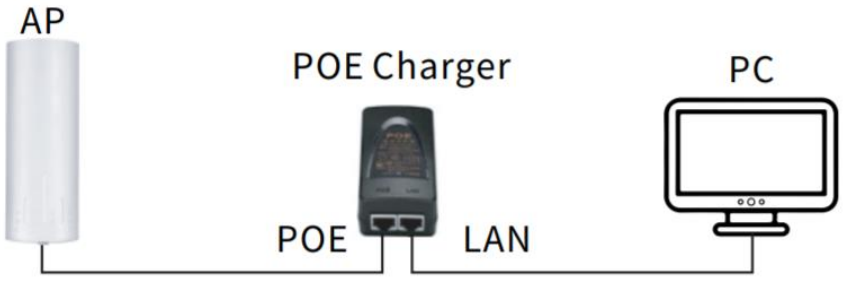

Figure 3. Hardware connection

2.2. Login setting page

Connect PC to the LAN port of the AP controller, and set the PC IP to static IP 192.168.2.xxx, such as 192.168.2.101. The IP should be on the same network segment as the wireless bridge.

Enter the default IP address of the wireless bridge 192.168.2.66 in the browser, and the browser will navigate to login page. The username is admin, the password is admin01.

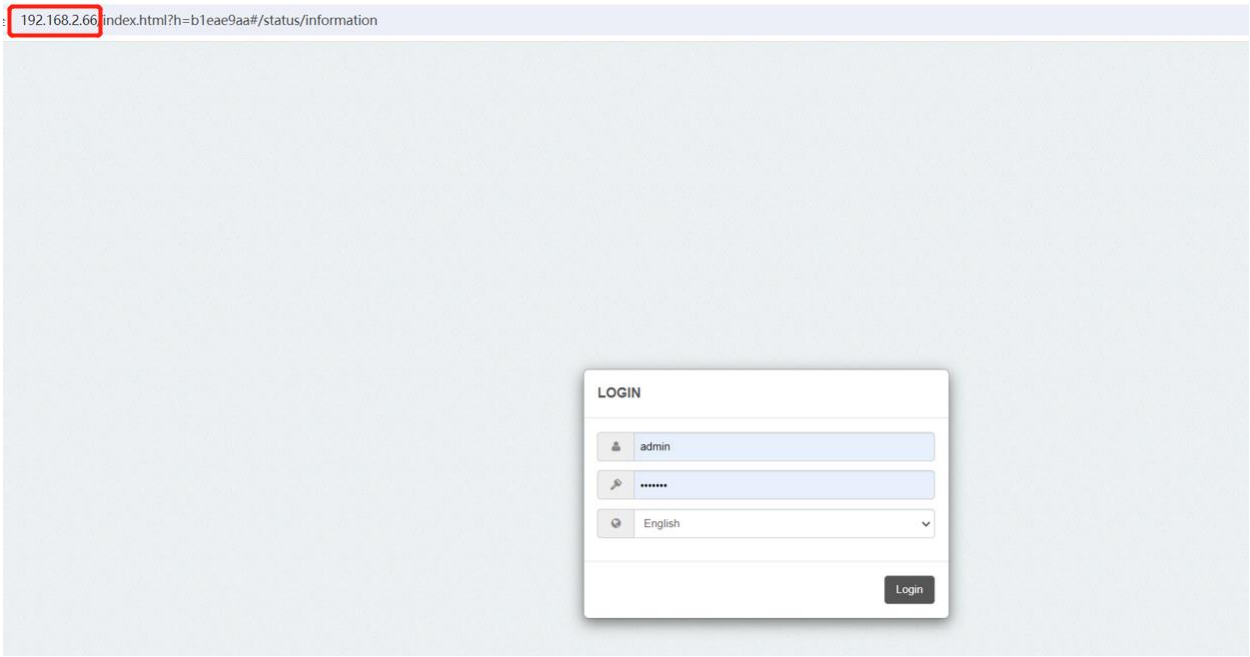

Figure 4. Login page

2.3. Initializing configuration

When you log in to the device for the first time, you need to read and agree to the user agreement. As different countries may have different requirements for equivalent omnidirectional power and equipment working channels, users can choose a country based on the actual situation and strictly abide by local laws and regulations when using the product.

If you need to open all the power and channels of the devices, please select the country as "Compliance testing", which is the test mode. In this mode, you can adjust the transmit power of the device to the maximum and enable all channels. The country code can also be changed on the configuration page after completing the initial configuration.

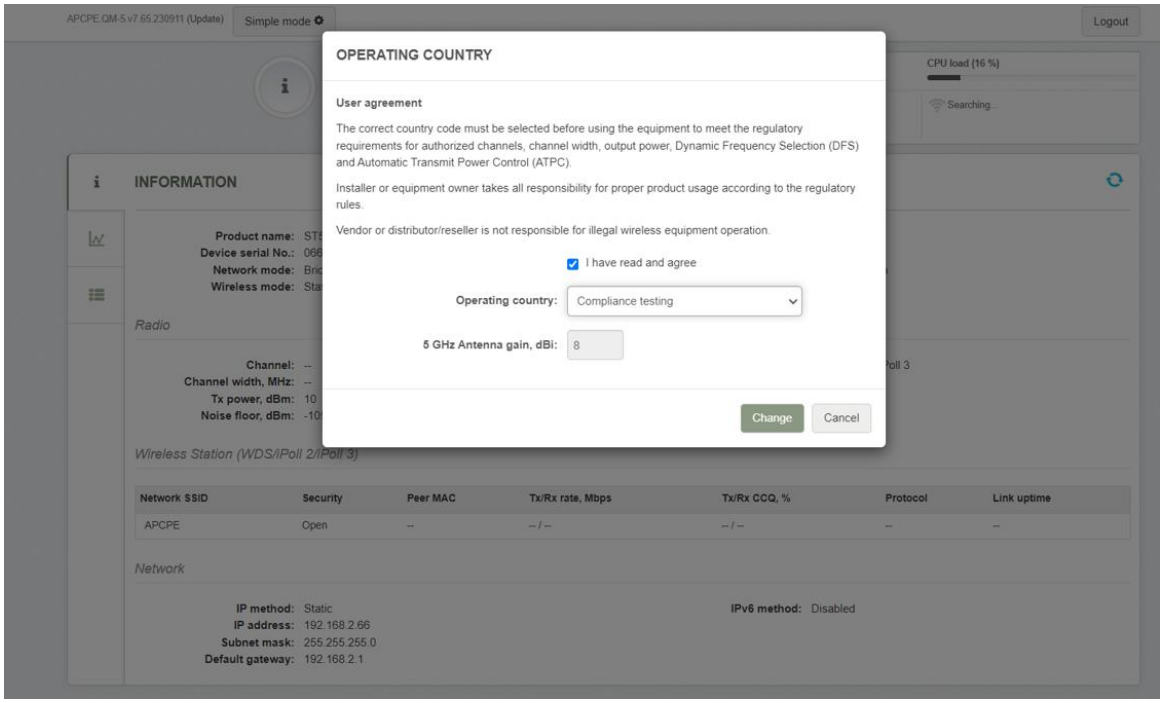

Figure 5. Initializing configuration

3. Configuration and parameter details

3.1. IP settings

This wireless bridge supports both static IP and DHCP client. The factory default is a static IP.

In static IP mode, please ensure the uniqueness of the IP address to avoid IP conflicts with other devices on the network.

In DHCP mode, the wireless bridge is assigned an IP address by the DHCP Server device

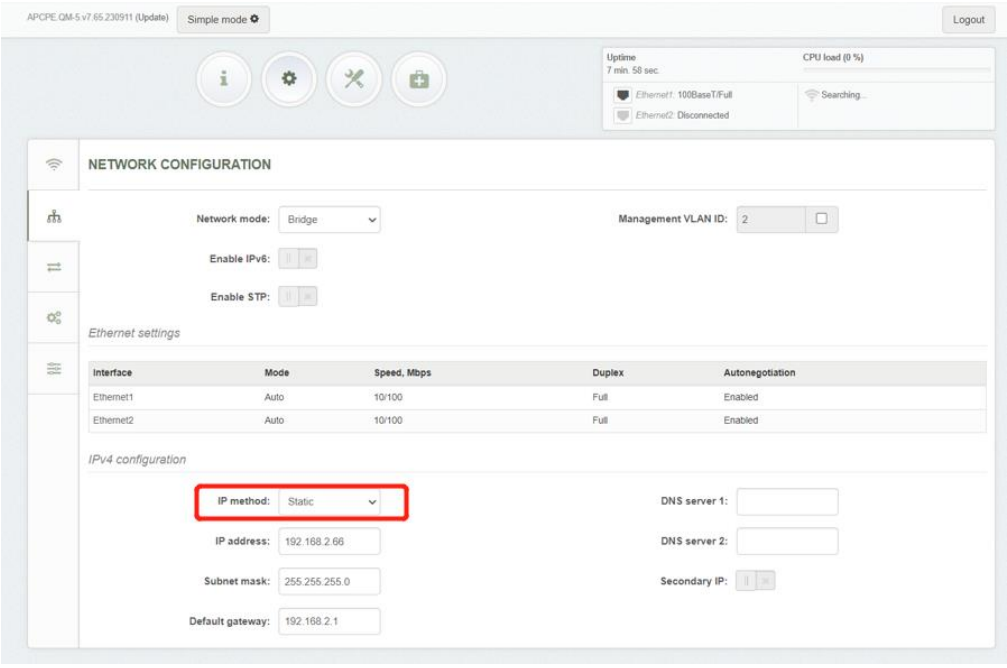

Figure 6. Static IP

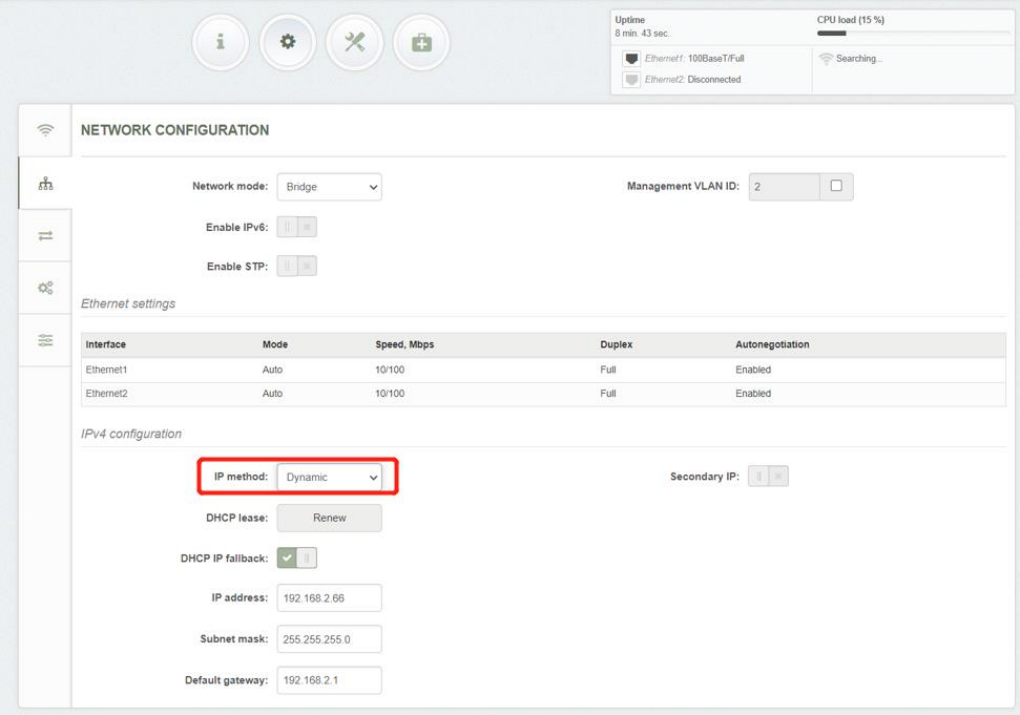

Figure 7. DHCP client

3.2. Wi-Fi settings

The Wi-Fi settings include Work Mode, TX power, SSID and Wi-Fi encryption.

3.2.1. Work mode & TX power

Work mode: The wireless bridge can work at Access Point or remote station mode.

TX power: The stronger the TX power, the stronger the signal, and the longer the transmission distance. You can adjust the TX power based on the needed transmission distance.

- Access point mode: For point-to-point pairing, the ipoll2 is recommended, while ipoll3 is recommended for point to multiple point pairing.

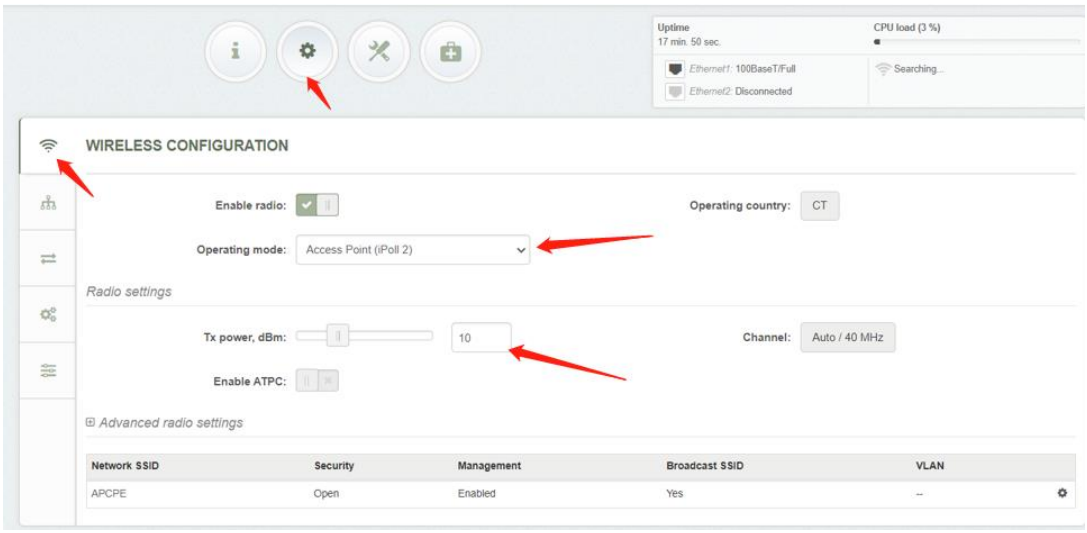

Figure 8. Access point mode

- Remote station mode: Set the remote station TX power according to the actual transmission distance.

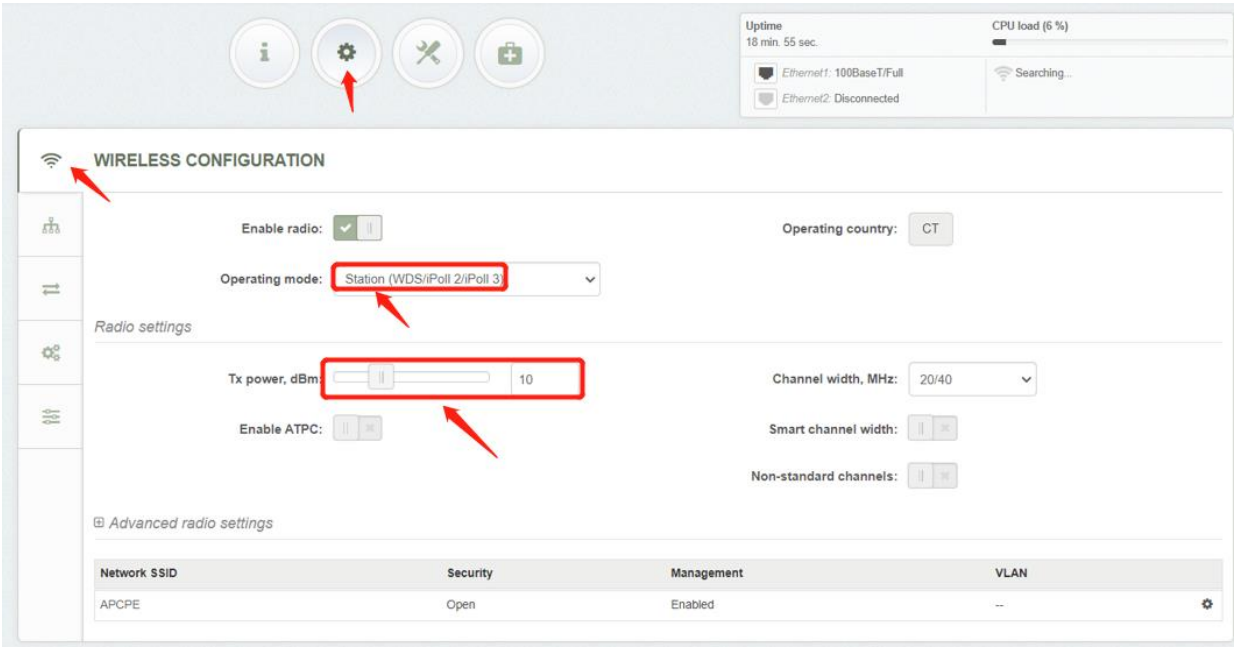

Figure 9. Remote station mode

3.2.2. Channel & bandwidth

- Access point mode: The default working channel is "Auto".

  When the device starts up, it will automatically scan the wireless signals in the environment and automatically select a channel that it thinks is relatively clean. Our 5Ghz equipment has rich spectrum resources (4.9Ghz~6.0Ghz), but in an environment with many wireless devices, it is still recommended to plan and use different fixed channels for multiple devices to avoid interference.

  Users can use the device's built-in "Wireless Environment Survey" and "Spectrum Analysis" tools to analyze the wireless channel occupancy in the environment to provide a reference for channel

planning.

The default bandwidth is 40Mhz. On the premise that the bandwidth can meet the transmission rate, it is recommended to reduce the bandwidth to 20Mhz. Lower bandwidth means better signal, stronger anti-interference capability and more non-overlapping available channels.

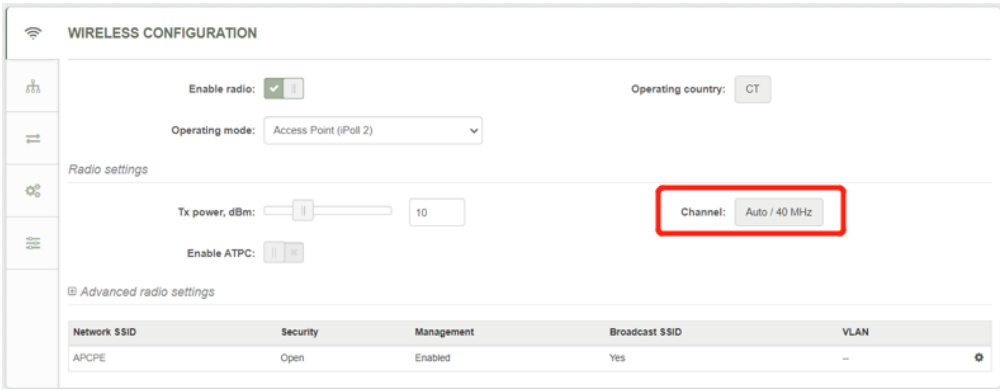

Figure 10. Auto channel

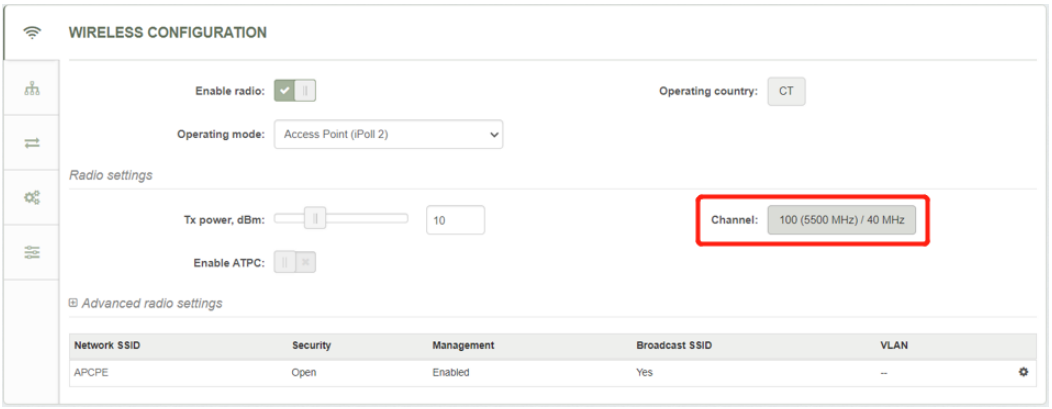

Figure 11. Fixed channel

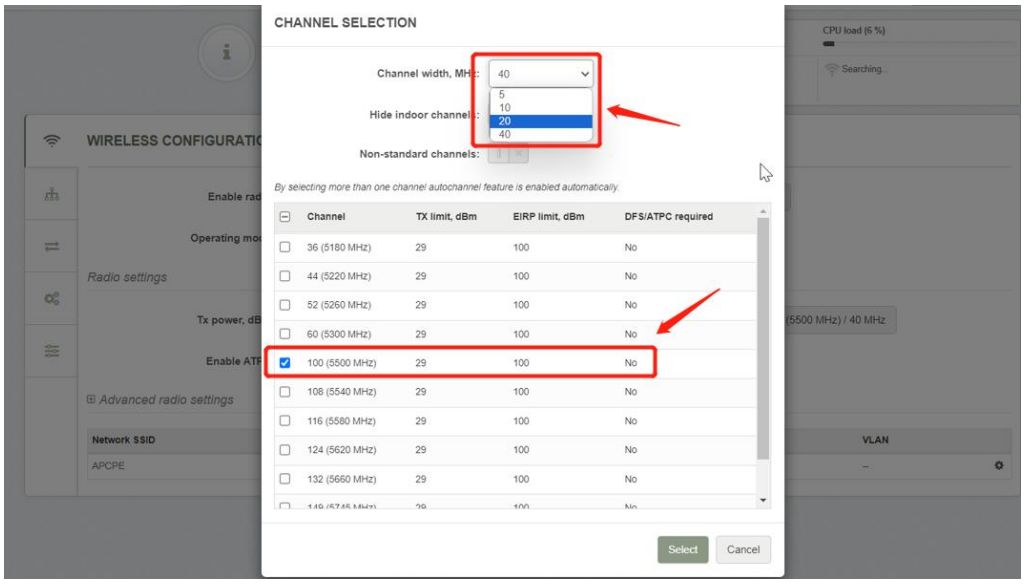

Figure 12. Channel selecting

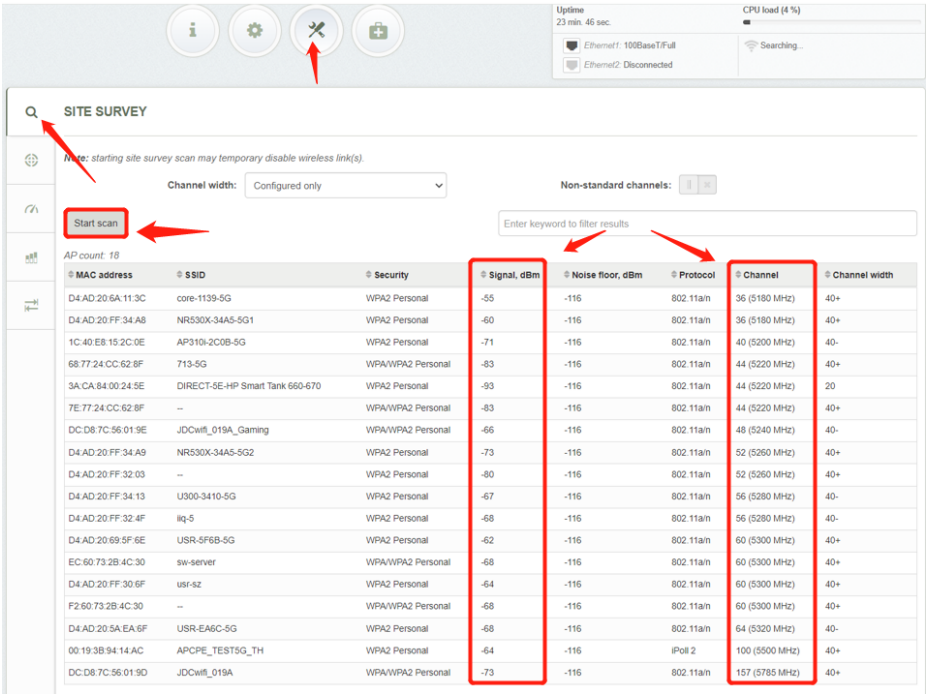

Figure 13. Site Survey

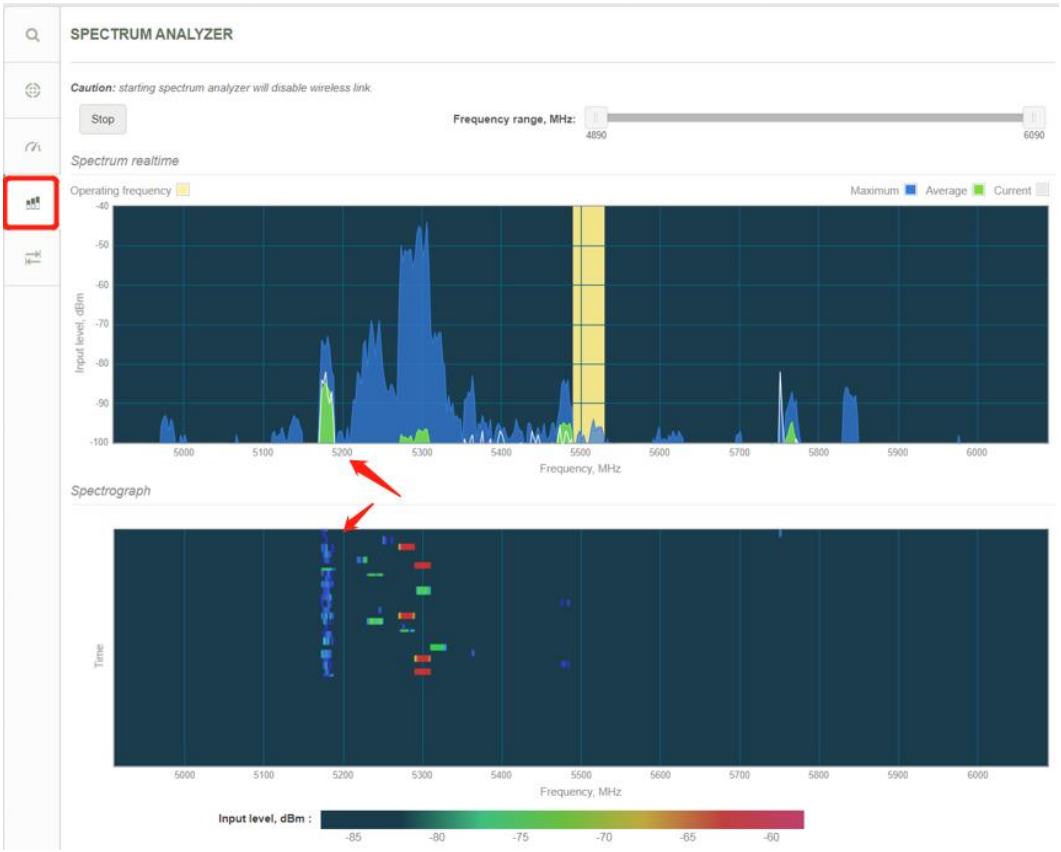

Figure 14. Spectrum Analyzer

- Remote station mode: In this mode, the wireless bridge will automatically adapt to the working channel and bandwidth of the master device. Generally, there is no need to set the bandwidth separately, just leave it as the default configuration.

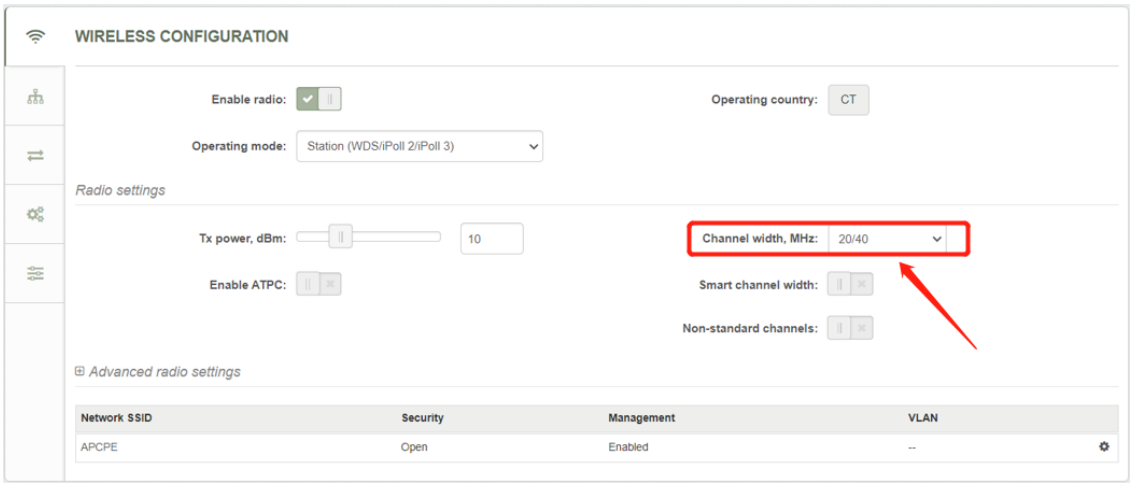

Figure 15. Channel Width

3.2.3. Wi-Fi SSID & encryption

The wireless bridge can work at Access Point or remote station mode. When used in pairing, the access point and site need to ensure that the wireless SSID and wireless security settings are consistent to establish a connection and realize wireless data transmission.

- Access point mode: Transmit wireless signals for site devices to connect. Please set the SSID and wireless security configuration according to actual needs so that the site and the access point can establish a connection. When setting the SSID, make sure the SSID name is unique so that the remote device can identify to avoid confusion and misconnection; wireless security refers to the wireless encryption method. It is recommended to enable encryption to better ensure data security. Please select the encryption method as "WPA2 Personal" and enter Password. After enabling wireless security, the site device can only establish a connection with the device by entering the same password as the local device.

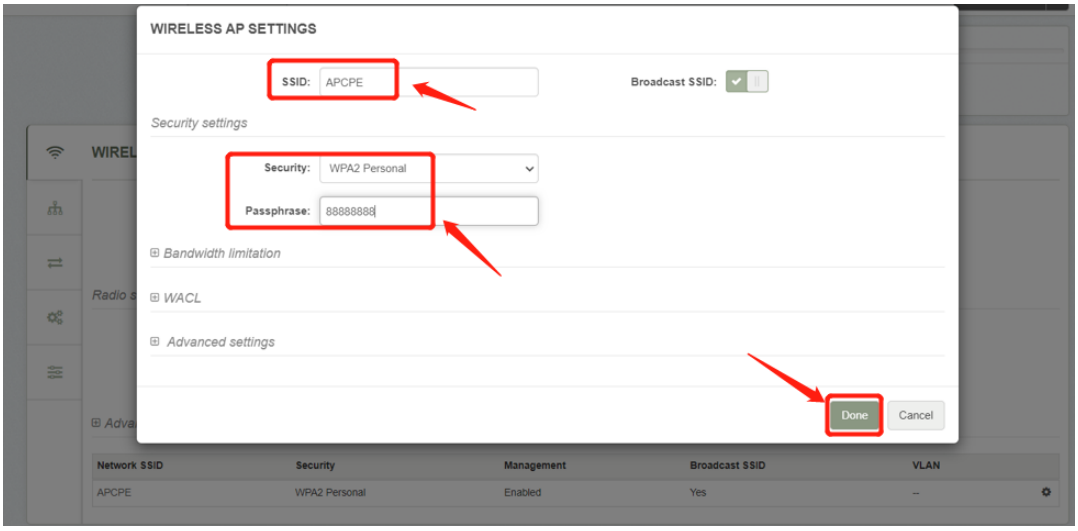

Figure 16. Wireless AP Settings

- Remote station mode: You need to set your own SSID and wireless security configuration according to the access point to ensure that a connection is established with the access point. When setting the SSID, you can manually enter the SSID name. If the access point has been configured and is powered on and running normally, you can also scan the SSID sent by the access point and select it from the discovery list; wireless security refers to wireless encryption method, please select the encryption method correctly and enter the password consistent with the access point.

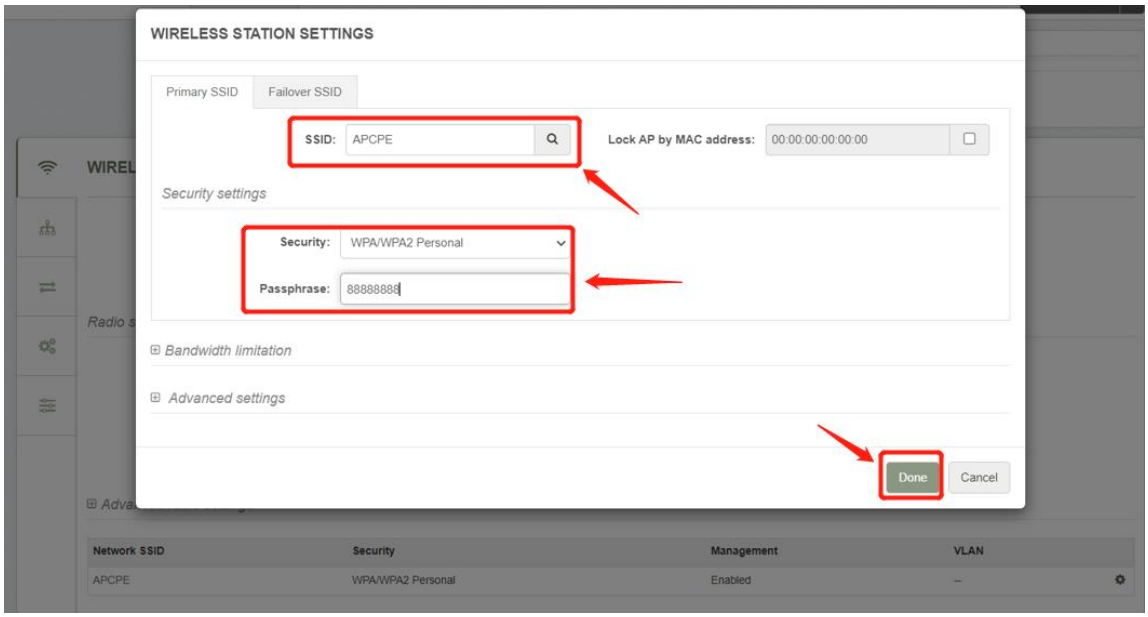

Figure 17. Enter the SSID and password

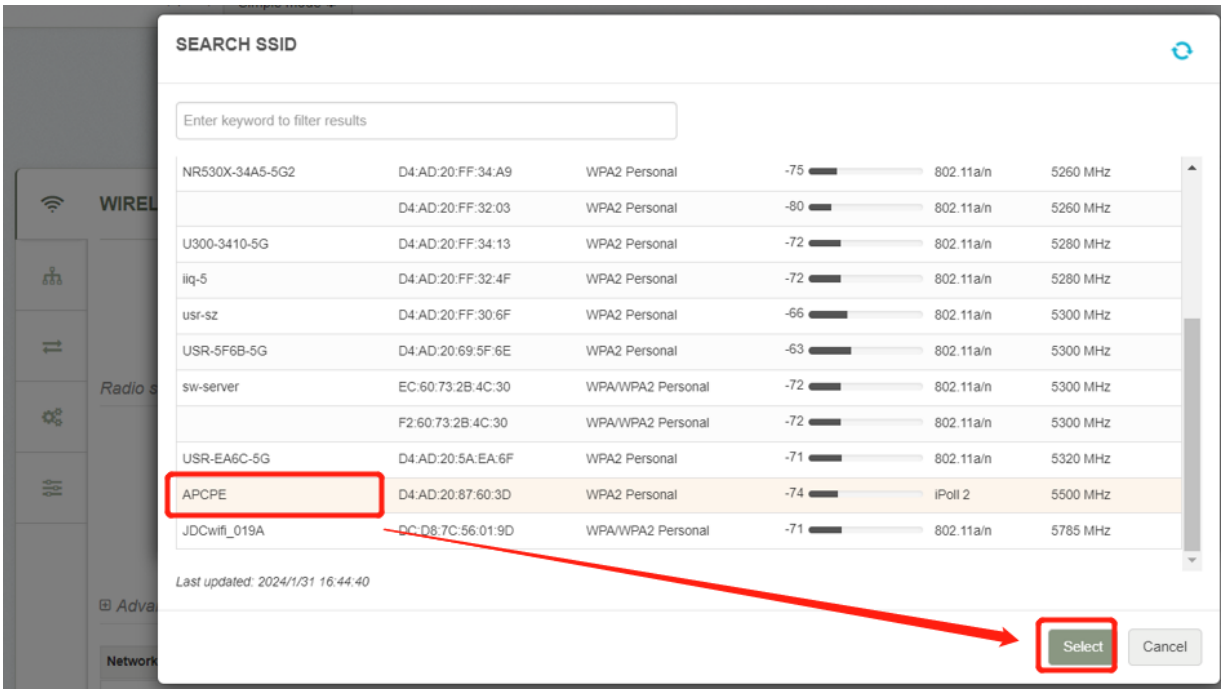

Figure 18. Auto scan

3.2.4. Saving the changes

After modifying the configuration, click the "Save Changes" button in the upper right corner. All configurations will take effect after saving.

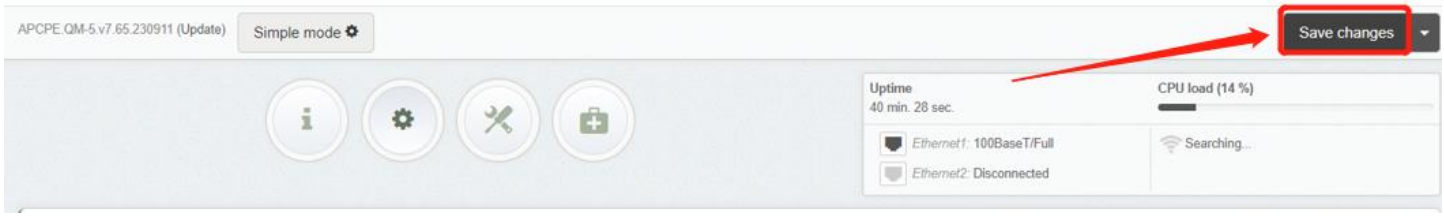

Figure 19. Saving changes

3.3. To check the wireless connection

If the connection is successfully established, the user can view relevant connection information on the status page, such as signal strength, speed, connection duration, etc.

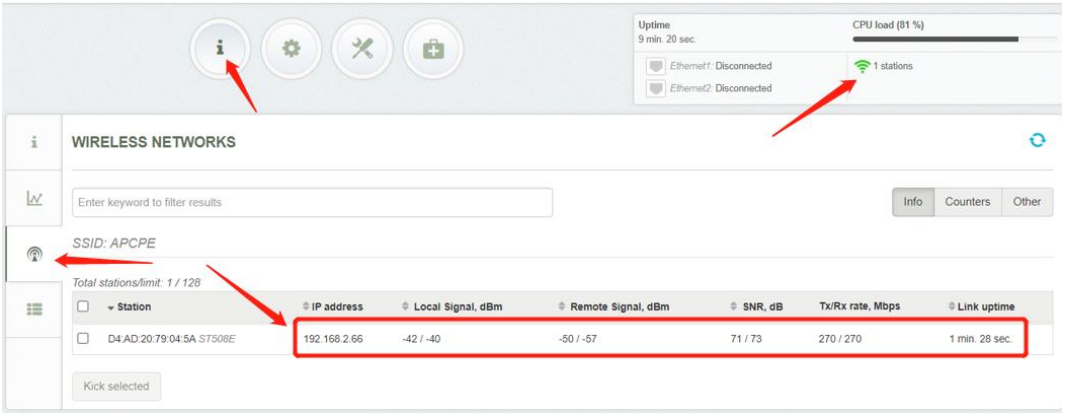

Figure 20. Wireless connection

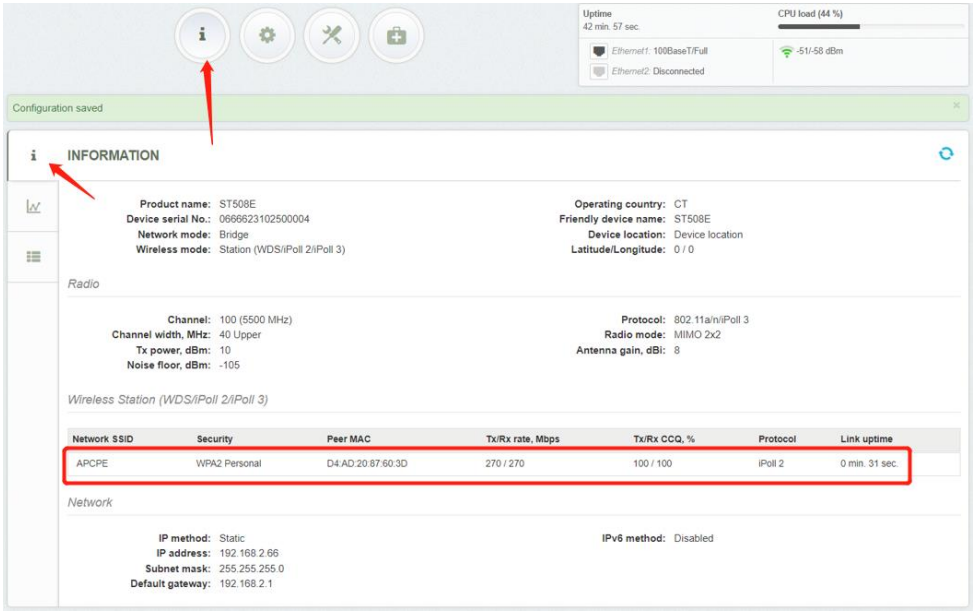

Figure 21. Connection information

4. Warranty

5. Contact Us

Jinan USR IOT Technology Limited

Address : Floor 12 and 13, CEIBS Alumni Industrial Building, No. 3 Road of Maolingshan, Lixia District, Jinan, Shandong, China

Official website:https://www.pusr.com

Official shop:https://shop.usriot.com

Technical support: http://h.usriot.com/

Email : sales@usriot.com

Tel : +86-531-88826739

Fax : +86-531-88826739-808

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7. Revision History

Version	Date	Author	Description
V1.0.0	2023-11-17		Established

V1.0.1	2024-01-27	May Liu	Translation

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