Outdoor 5G MIMO-OFDM Radio Series User Manual

Model Number : EL-N-1 / EL-N-2 / EL-N-3 / ML-N-1 / ML-N-2 / ML-N-3

IO-Power Technology Co., Ltd.

FCC Notices

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.

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 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:

--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.

CAUTION:

Any changes or modifications not expressly approved by the grantee of this device could void the user's authority to operate the equipment.

RF exposure warning:

The equipment complies with FCC RF exposure limits set forth for an uncontrolled environment.

Warning: the device should not be in durable use within 20cm of the human body.

一、Introduction

EUBO's **Outdoor 5G MIMI-OFDM Radio**, including single radio(EL-N-1 / ML-N-1)、dual radios(EL-N-2 / ML-N-2) and triple radios(EL-N-3 / ML-N-3) series products, to provide high-performance, high stability of outdoor wireless connectivity.

EL(ML)-N Features:

- Frequency: 5.745GHz ~ 5.825GHz(IEEE 802.11n channel 149 ~ channel 165)
- 2x2 MIMO Antenna System
- single radio、dual radios and triple radios models
- Up to three independent Access Points simultaneously
- 20MHz or 40MHz channel bandwidth
- Up to 200Mbps real TCP throughput
- Provides AES high security for wireless encryption
- IGMP Snooping(v2/v3)(Not available at ML series)
- 15 sets of VLAN-QoS mapping(Not available at ML series)
- Simple, clear and convenient WEB user interface

二、Login

Setup your PC’s IP to the same network subnet segment as the EL (ML) -N device. Open the web browser to connect to EL (ML) -N device.

■ The defaule EL(ML)-N IP address is：192.168.1.1. Connect to：http://192.168.1.1 to login the device.

■ The default EL(ML)-N login account and password is：admin / admin

三、Home

EL(ML)-N’s easy operation, simple and clear WEB GUI interface allows you to quickly and easily set up a wireless access system.

The EL(ML)-N home’s page:

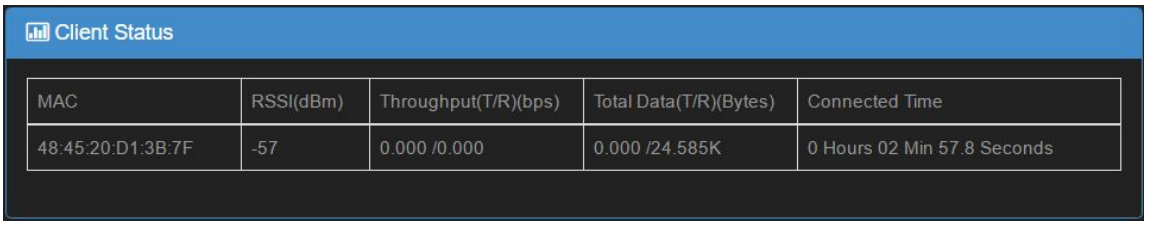
Or when you shrink the browser：

四、System Status

There are three parts in system status：Dashboard、Client Status and Information。

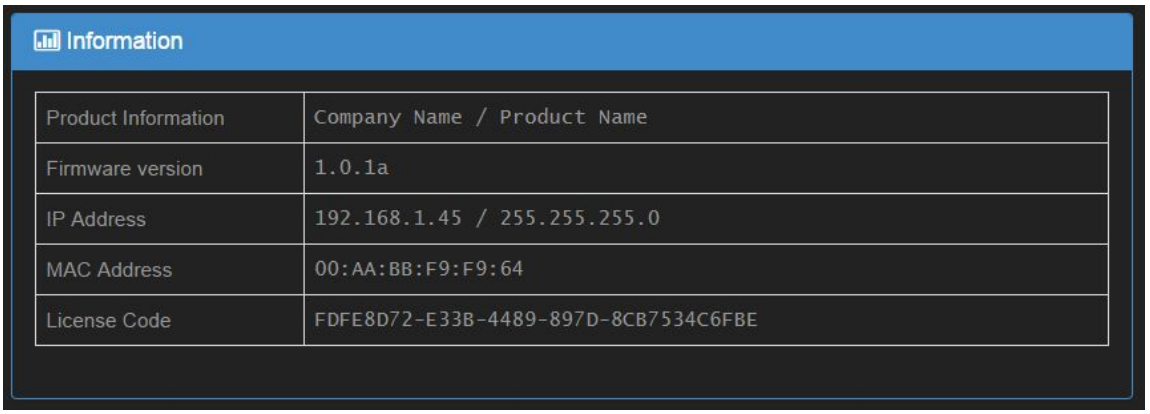
Dashboard：To provide the real-time system information

Client Status: To show connected clients



- MAC : Client MAC Address
- RSSI : Client Signal Level(dBm)
- Throughput : Real-time Tx/Rx throughput
- Total Data : Total Tx/Rx data bytes
- Connected Time : Client’ s Online Time

Information: Basic System Information

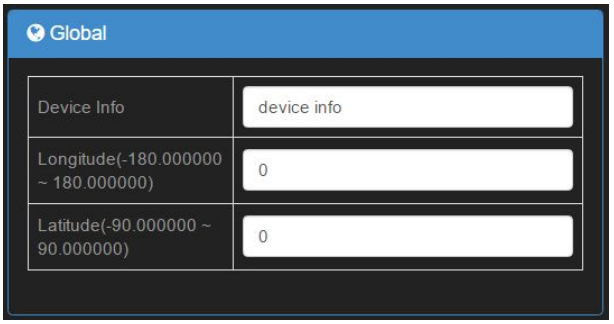


- Product Information : Vendor Name / Product Name
- Firmware version : Device’ s Firmware Version
- IP Address : Device’ s IP Address / Subnet
- MAC Address : Device’ s MAC Address
- License Code : License Code

五、Configuration

Three parts of configurations are : Global、Network and Radio。

Global：System parameters

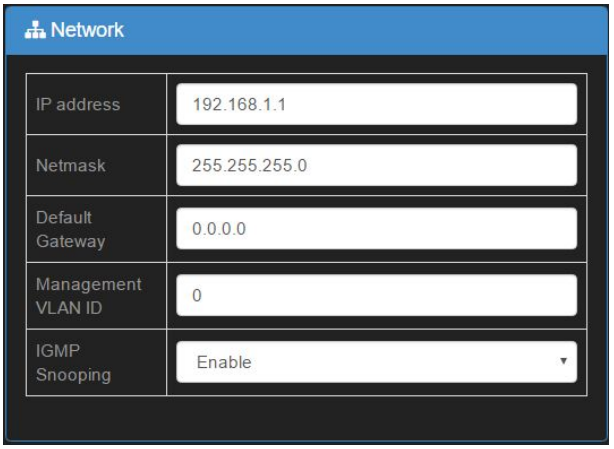


Device Info：Up to 128 characters

Longitude：WGS84 format

Latitude：WGS84 format

Network：Network Parameters



IP address：Device IP

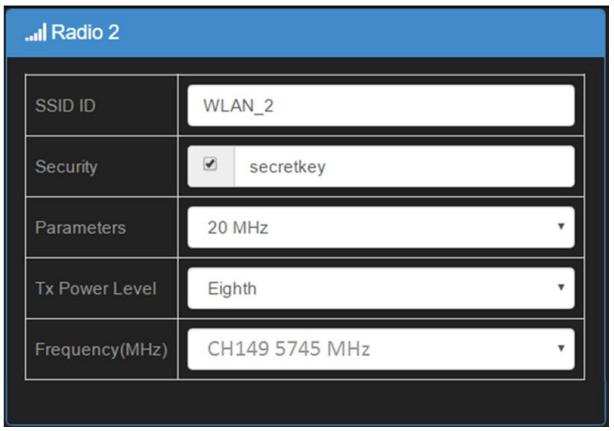
Netmask：Network Subnet

Default Gateway：Gateway IP

Management VLAN ID：For management use

IGMP Snooping：Enable / Disable(Not available at ML)

Radio：Radio Parameters



SSID ID：AP SSID

Security：Enable / Disable, and Security Key

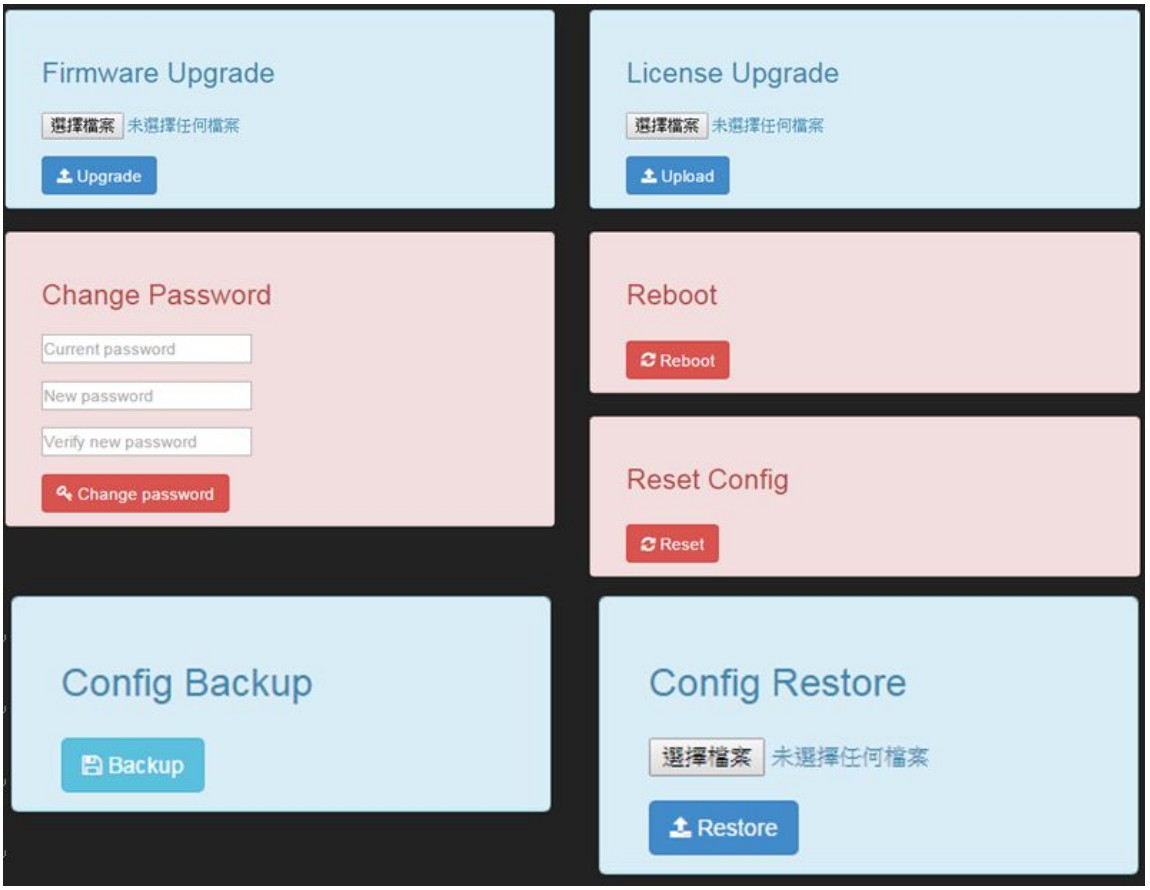
Parameters：Radio channel bandwidth to 20MHz or 40MHz

Tx Power Level：Transmit Power

Frequency(MHz)：Channel Selection

六、Management

Management: Provide several management utilities



■ Firmware upgrade : To upgrade/downgrade firmware

■ License upgrade : To change device' s license

■ Change Password : To change default login password

■ Reboot : To reboot device

■ Reset Config : To reset device to factory default configuration

■ Config Backup : To backup device configuration file

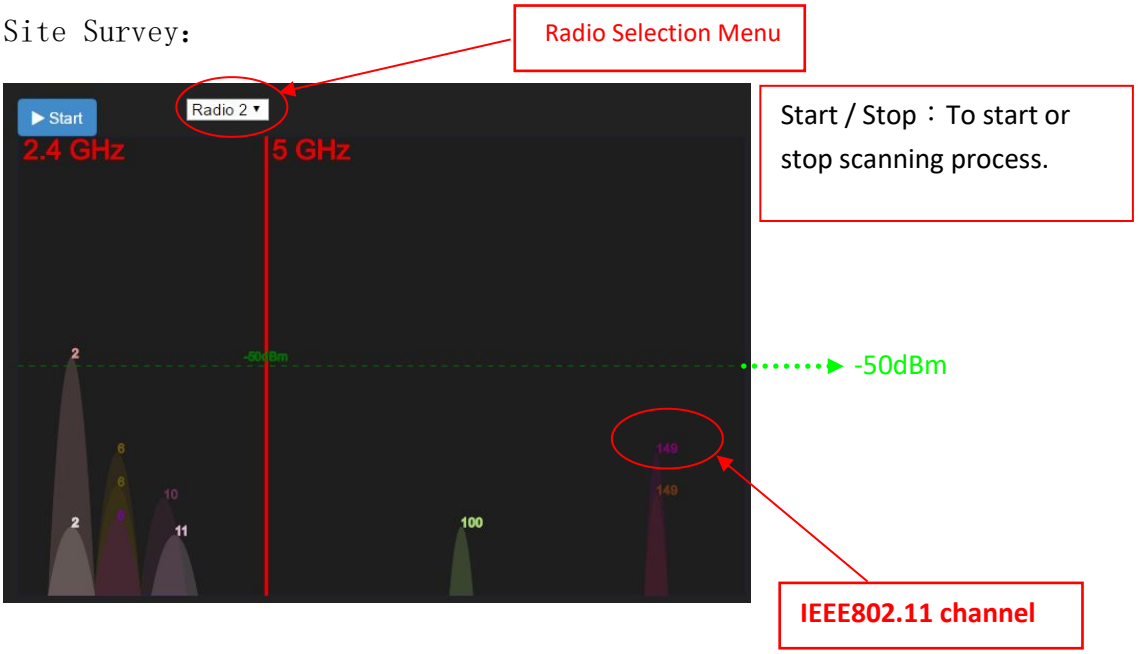
■ Config Restore : To upload a configuration file to device

⚠Notes: The system may reboot automatically after item changed!!

七、Advance

Advance parts provide “Site Survey”utility and “VLAN-QoS” mapping settings.

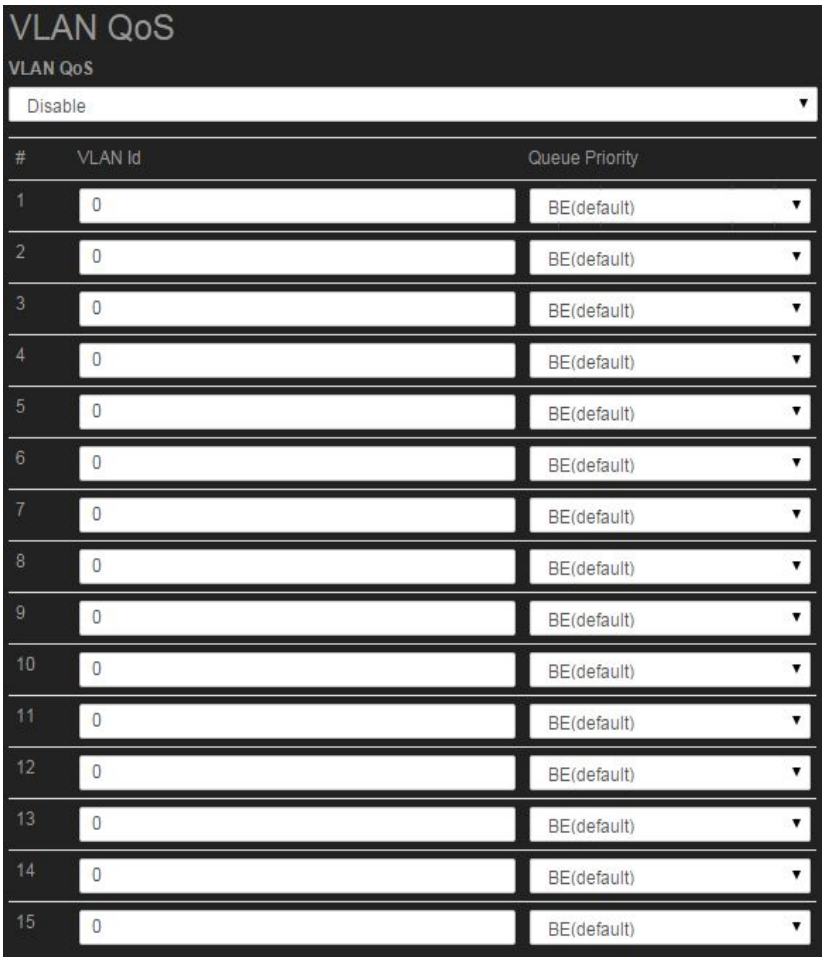
Site Survey：



Notes：

1. 15 seconds scanning process after starting.
2. Will list IEEE802.11 channels after scanning.

VLAN-QoS mapping: 15 sets of VLAN-QoS mapping config.



Enable / Disable VLAN-QoS mapping

VLAN Id：1 ~ 4095

Queue Priority：

0：BE(default)

1：BK ***(Lowest)***

2：VI ***(High)***

3：VO ***(Highest)***

Priority for wireless Tx is :

VO(3) > VI(2) > BE(0) > BK(1)

Notes: Not available at ML.

八、Specification

Product Specification

CPU	Atheros AR7161 680MHz
Memory	16 MB Flash / 128MB SDRAM
Wireless	Atheros AR9220 miniPCI, IEEE 802.11 a/n, 2x2 MIMO
Ethernet	10 / 100 / 1000M, Hlaf / Full, Auto MDI/MDIX
Connector	N-Type Female
Power	48V Passive PoE

Radio Specification

MCS Index	IEEE 802.11an /HT20		IEEE 802.11an /HT40	
	Output Power	Rx Sensitivit	Output Power	Rx Sensitivity
MCS8	23(±1.5) dBm	-93 dBm	22(±1.5) dBm	-90 dBm
MCS9	23(±1.5) dBm	-92 dBm	22(±1.5) dBm	-89 dBm
MCS10	23(±1.5) dBm	-89 dBm	22(±1.5) dBm	-86 dBm
MCS11	23(±1.5) dBm	-86 dBm	22(±1.5) dBm	-83 dBm
MCS12	23(±1.5) dBm	-83 dBm	22(±1.5) dBm	-80 dBm
MCS13	22(±1.5) dBm	-79 dBm	21(±1.5) dBm	-77 dBm
MCS14	21(±1.5) dBm	-78 dBm	20(±1.5) dBm	-75 dBm
MCS15	20(±1.5) dBm	-76 dBm	18(±1.5) dBm	-73 dBm

Mechanism Specification

Size(mm)	260 mm x 250 mm x 80 mm
Weight (g)	2000 g

Environment Specification

Temperature	- 40℃ ~ + 70℃
Humidity	0% ~ 95% Non-condensing