MCR-AP8400 User Manual

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1. Overview

This guide tells the user who purchased the MCR-AP8400 how to install the product and how to solve problems after installation.
Before handling this product, please read this manual carefully and follow the instructions to use the product properly.

In addition, after reading the manual, keep it well and make it available before and after installation and handling, and when the manager changes, be sure to give it to your successor manager so that you can use the product correctly.

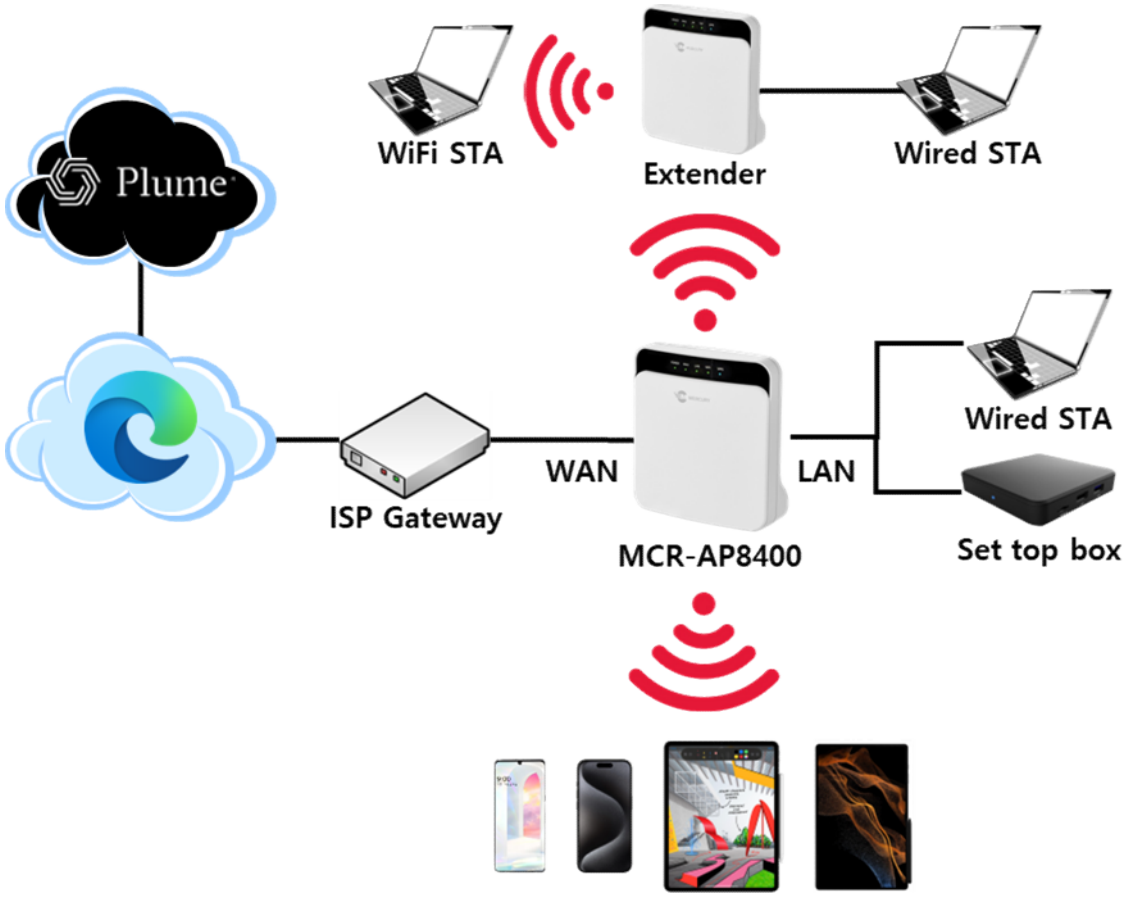
※ The contents of this manual and illustrations are subject to change without notice.

※ The contents of this guide are protected by copyright law. Therefore, the contents of the guide cannot be changed without permission.

※ Do not disassemble, repair or modify this product as it may cause personal injury and property damage due to electric shock, malfunction, malfunction, static electricity. If repair is required, please contact us.

1.1Diagram

All configuration is completed by connecting the rear WAN port of MCR-AP8400 and the Internet line using a UTP cable.



1.2Interface

Item	Feature
Platform	- CPU : MT7986AV Quad-core 2GHz - Wireless : MT7976GN / MT7975AN / MT7976AN, 802.11a/b/g/n/ac/ax - Giga Switch : MT7531AE 10/100/1000 Mbps Ethernet Transceiver - 2.5G PHY : GPY211 10/100/1000/2500 Mbps Ethernet Transceiver
Interface	- WAN : 10/100/1000/2500 Base-TX 1port - LAN 1 : 10/100/1000/2500 Base-TX 1port - LAN 2,3 : 10/100/1000 Base-TX 2port - WLAN : 802.11a/b/g/n/ac/ax
Operation Condition	- DC Power : 12V/4A - Operating Temperature : 0℃ ~ +50℃ - Surface Temperature : 45℃under (External temperature 25℃ standard) - Humidity : 10% ~ 90%
Frequency	WiFi (802.11a/b/g/n/ac/ax) - 2.4GHz : 2412MHz ~ 2462MHz - 5GHz : 5180MHz ~ 5825MHz - 6GHz : 5925MHz ~ 7125MHz Bluetooth (BLE 5.0)
Bandwidth	- 2.4GHz : 20/40MHz - 5GHz : 20/40/80 - 6GHz : 20/40/80/160MHz
Memory	SDRAM : DDR4 1GB, Flash Memory 512MB
SIZE	182mm X 65mm X 192mm (W x D x H), 780g
Antenna	Tri band Internal Antenna 6 EA

2 Product Configuration

2.1 Appearance

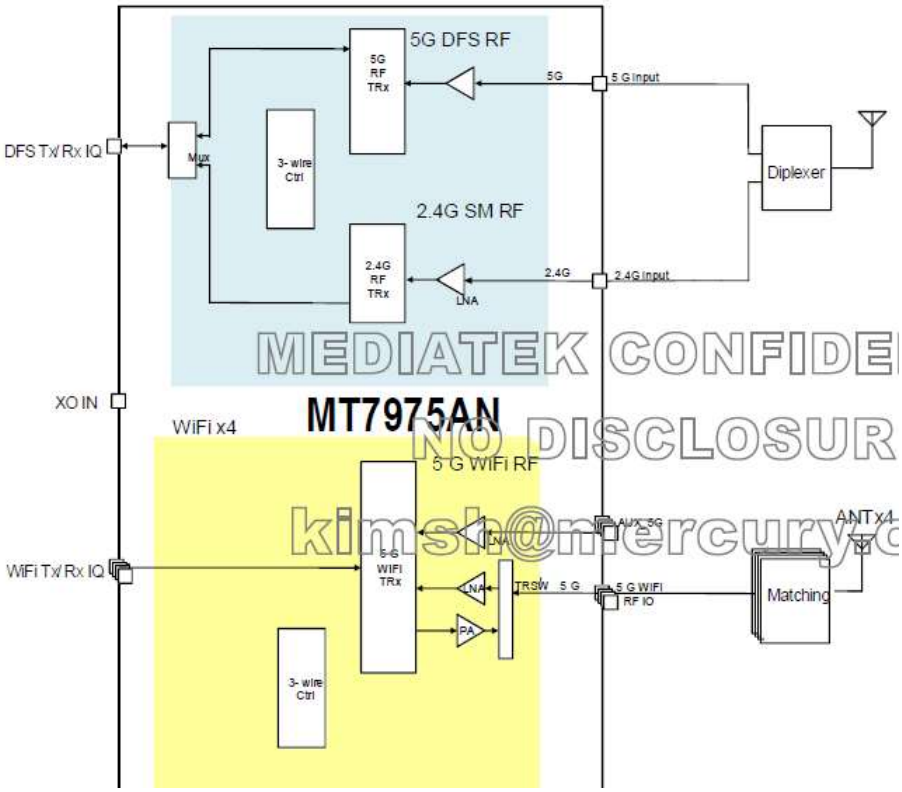
2.2 LED

Item	Color	Status	Description
POWER	Yellow Green	On	Power on
		Off	Power off
WAN	Yellow Green	On	Cloud onboarding completed
		Off	Not connected, Before cloud onboarding
LAN	Yellow Green	On	Connected
		Off	Not connected
WiFi	Yellow Green	On	WiFi operating
		Off	WiFi off
WPS	Yellow Green + Blue	Blink	WPS operating
		Off	WPS off

3 Circuit Description

3.1 5GHz (MT7975AN)

MT7975AN is an IEEE 802.11ax 4x4 MIMO and Wi-Fi chip which contains 5 GHz Wi-Fi transceiver front-ends in a DRQFN package. Dedicated Dynamic Frequency Selection (DFS) receivers is included to support coexist with 5GHz radar or other The top control logics control each subsystem independently. Each subsystem also has dedicated LDOs. A thermal sensor and a low-speed ADC (Analog-to-Digital Converter) are provided to monitor MT7975AN's temperature variation. MT7975AN have its dedicated crystal oscillator (XO) circuit. Besides, XO circuit provides an external clock source to other chips in the platform. The transceiver front-ends are on MT7975AN while the ADC/DAC (Analog-to-Digital Converter/Digital-to-Analog Converter) is in the companion modem chip. The interface drivers/receiver buffers are designed to drive PCB trace loading. MT7975AN exhibits the following new features: (1) WiFi 5GHz support MIMO 11ax (2) Dedicated
5GHz DFS receiver to monitor environment without throughput degradation (3) Dedicated BT frontend for variant application



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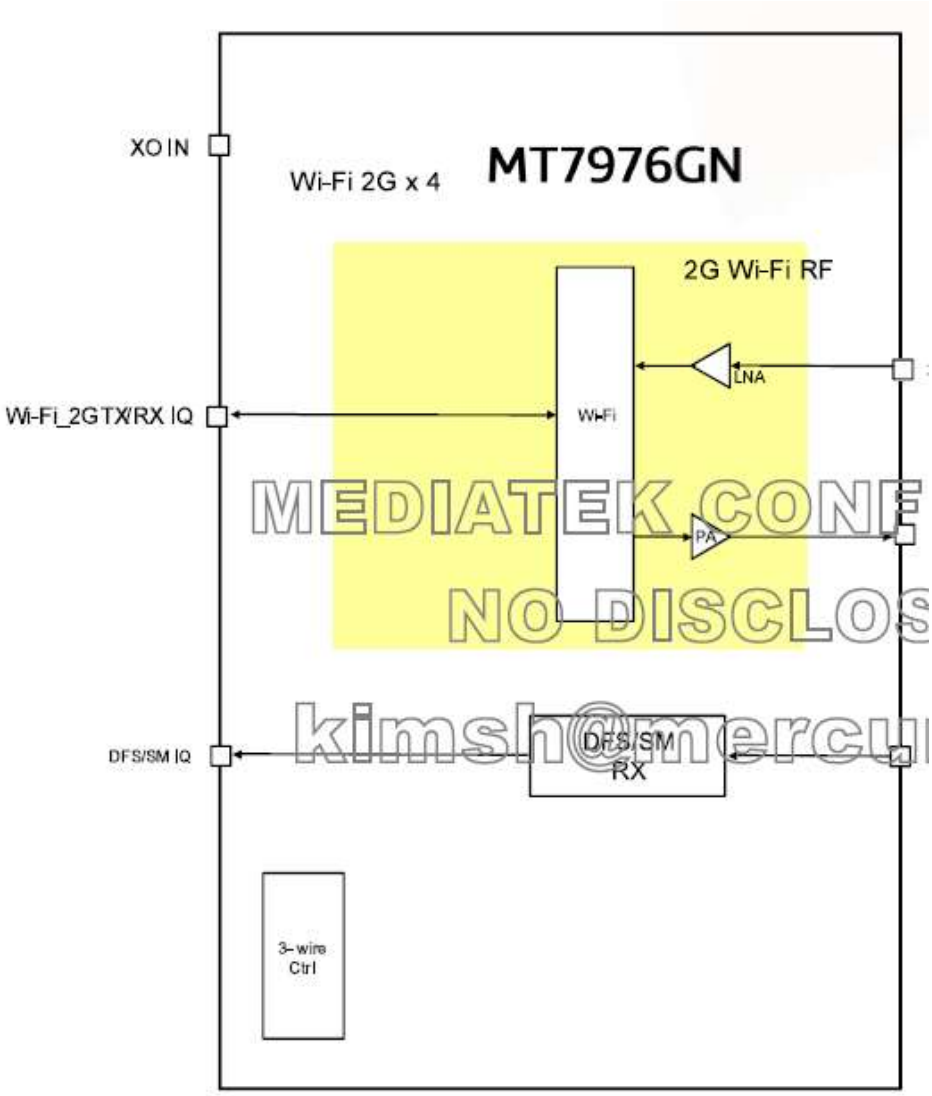
3.2 2.4GHz (MT7976GN)

The MT7976GN is an IEEE Wi-Fi 6 MIMO RF chip that contains 2.4 GHz Wi-Fi transceiver front-ends in a DRQFN package. The top control logics control each subsystem independently. Each subsystem also has dedicated LDOS. A thermal sensor and a low-speed ADC (Analog-to-Digital Converter) are provided to monitor MT7976GN's temperature variation. The MT7976GN has its dedicated crystal oscillator (XO) circuit. The XO circuit provides an external clock source to other chips in the platform



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3.3 6GHz (MT7976AN)

MT7976AN is an IEEE WiFi 6 MIMO RF chip which contains 6 GHz WI-Fi transceiver front-ends in a DRQFN package. The top control logics control each subsystem independently. Each subsystem also has dedicated LDOs. A thermal sensor and a lowspeed ADC (Analog-to-Digital Converter) are provided to monitor MT7976AN's temperature variation. MT7976AN has its dedicated crystal oscillator (XO) circuit. Besides, XO circuit provides an external clock source to other chips in the platform. The transceiver front-ends are on MT7976AN while the ADC/DAC (Analog-to-Digital Converter/Digital-to-Analog Converter) is in the companion modem chip. The interface drivers / receiver buffers are designed to drive PCB trace loading

3.4 BLE (EFR32BG22)

The EFR32BG22 Wireless Gecko features a highly configurable radio transceiver supporting the Bluetooth Low Energy wireless protocol.

The EFR32BG22 contains a high performance, low phase noise, fully integrated fractional-N frequency synthesizer. The synthesizer is used in receive mode to generate the LO frequency for the down-conversion mixer. It is also used in transmit mode to directly generate the modulated RF carrier.

The fractional-N architecture provides excellent phase noise performance, frequency resolution better than 100 Hz, and low energy consumption. The synthesizer's fast frequency settling allows for very short receiver and transmitter wake up times to reduce system energy consumption.

The Radio Controller controls the top level state of the radio subsystem in the EFR32BG22. It performs the following tasks:

- Precisely-timed control of enabling and disabling of the receiver and transmitter circuitry
- Run-time calibration of receiver, transmitter and frequency synthesizer
- Detailed frame transmission timing, including optional LBT or CSMA-CA

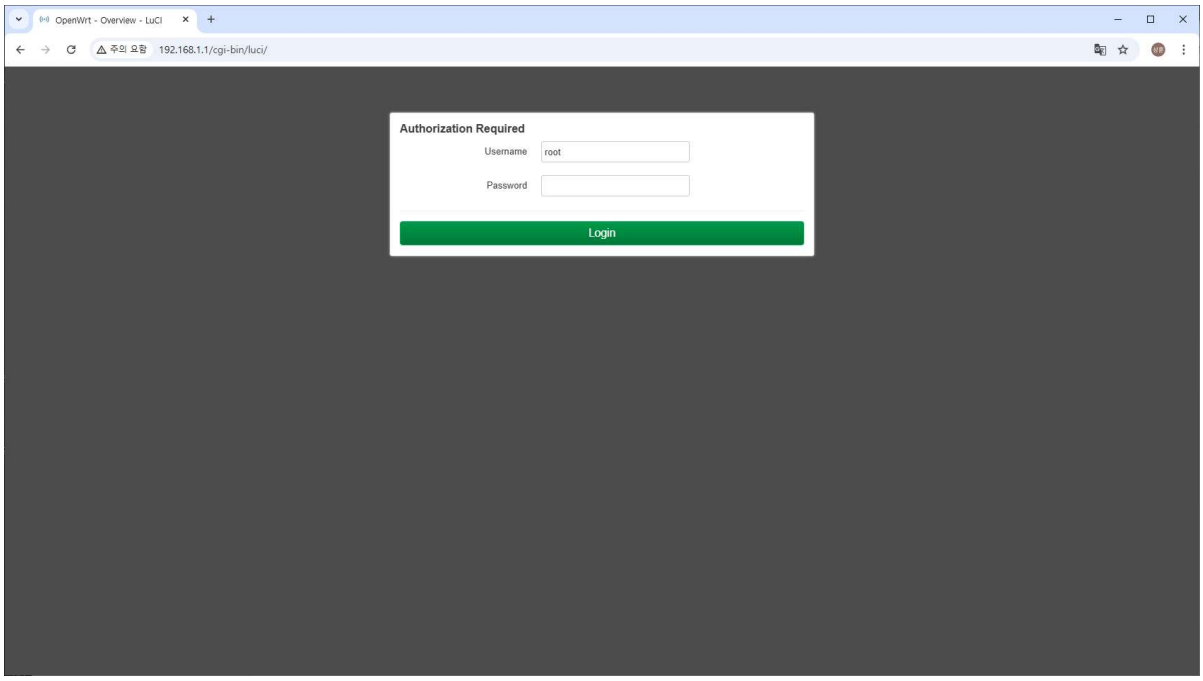
4. Web Setting

4.1 Login

Set your PC's IP to 192.168.1.x for device setup and connect the LAN Cable to the PC and the device's LAN ports.

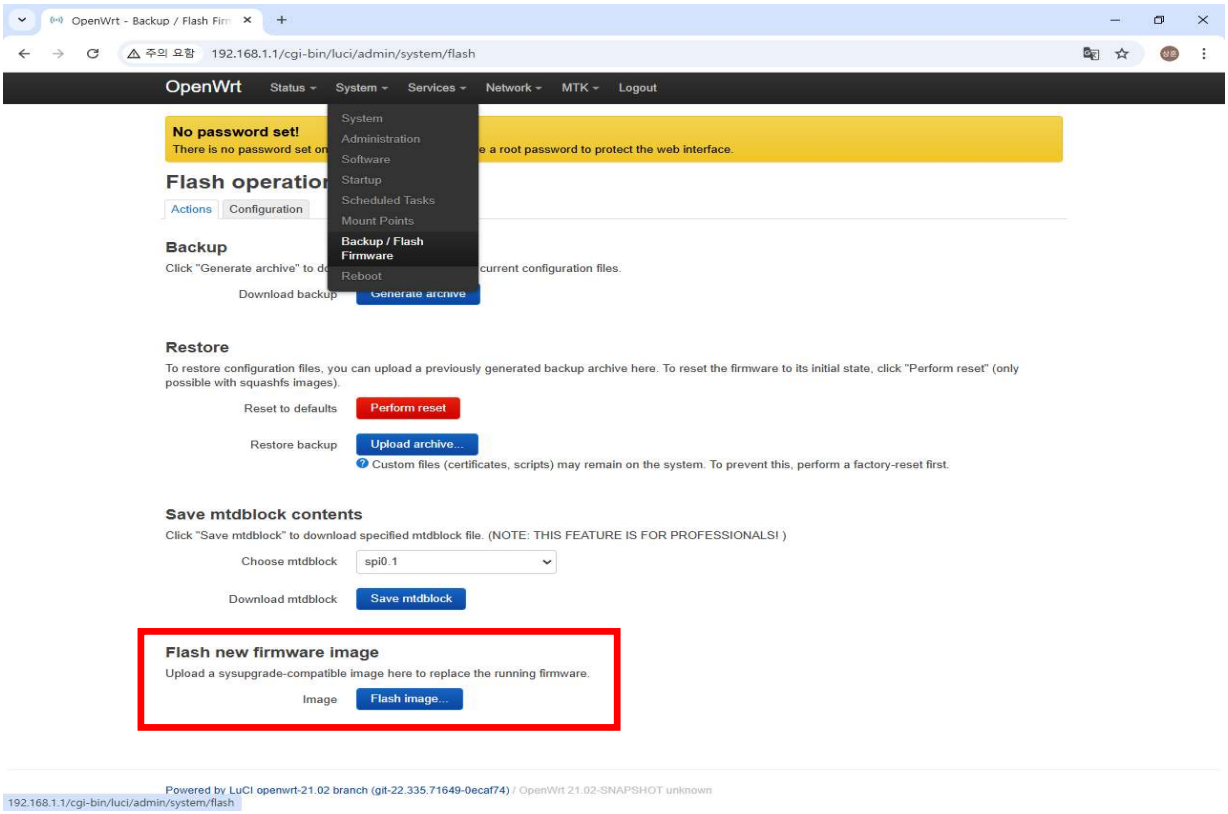
Type http://192.168.1.1 in the web browser and the screen below appears.

You can set the user password after entering it. (Username/Password : root/none)



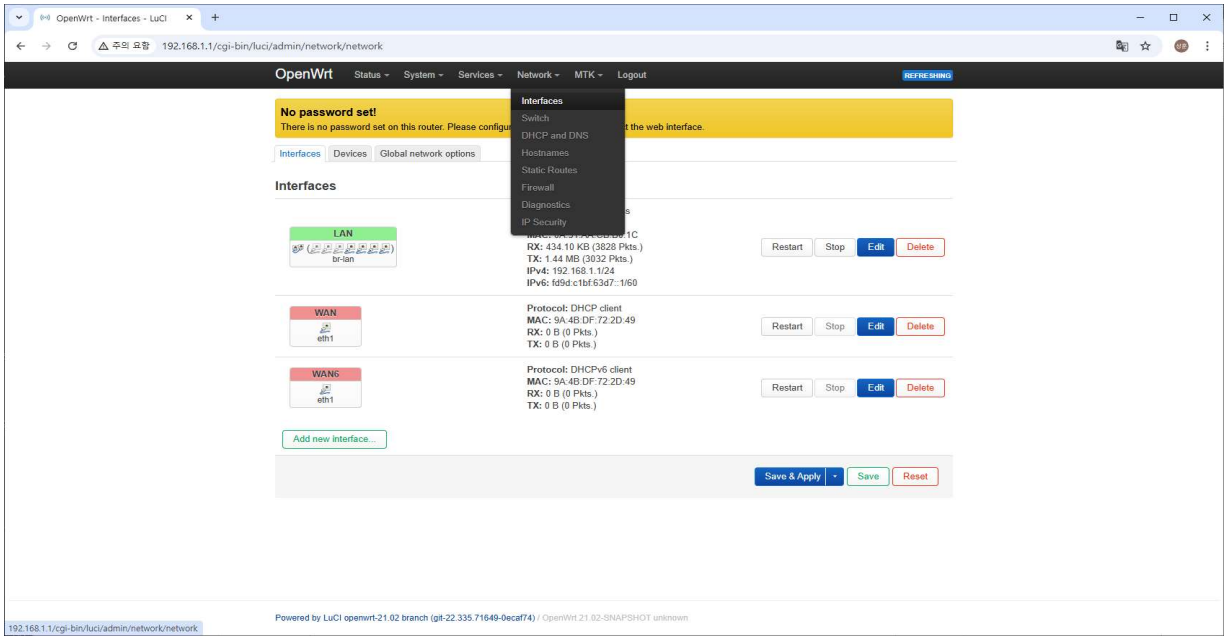
4.2 System -> Backup / Flash Firmware

You can back up or upgrade firmware



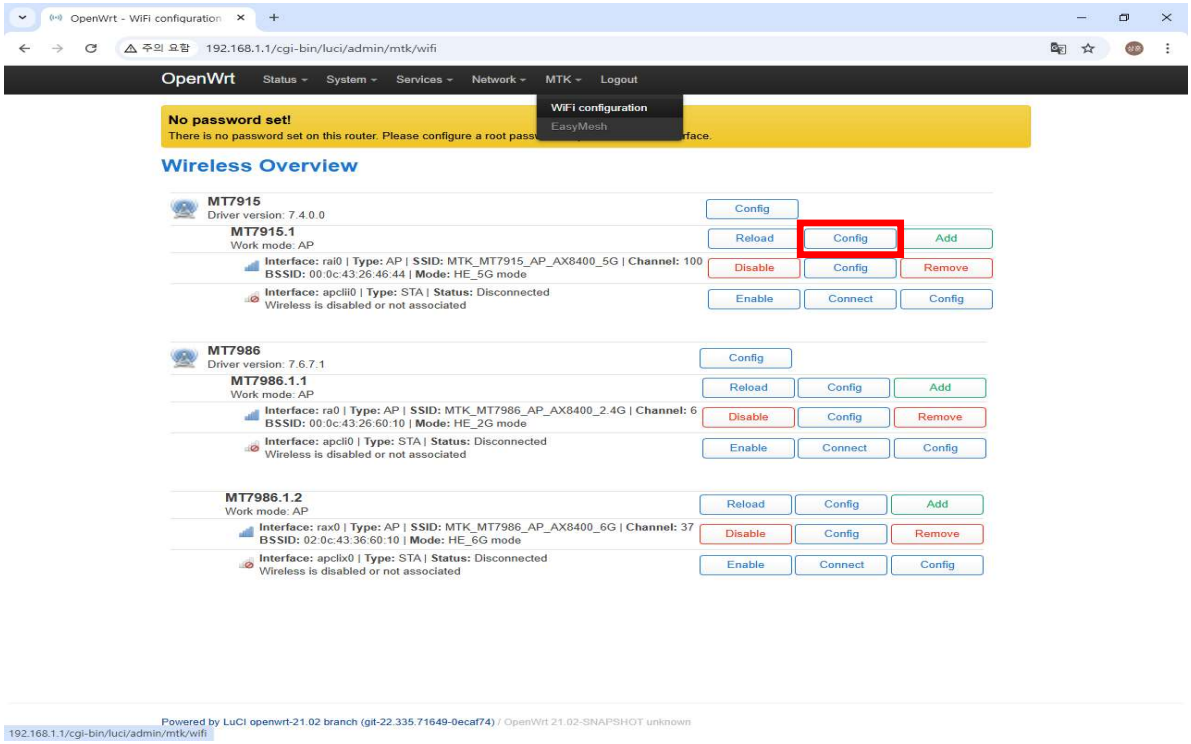
4.3 Network -> Interfaces

You can change LAN and Internet connection settings.

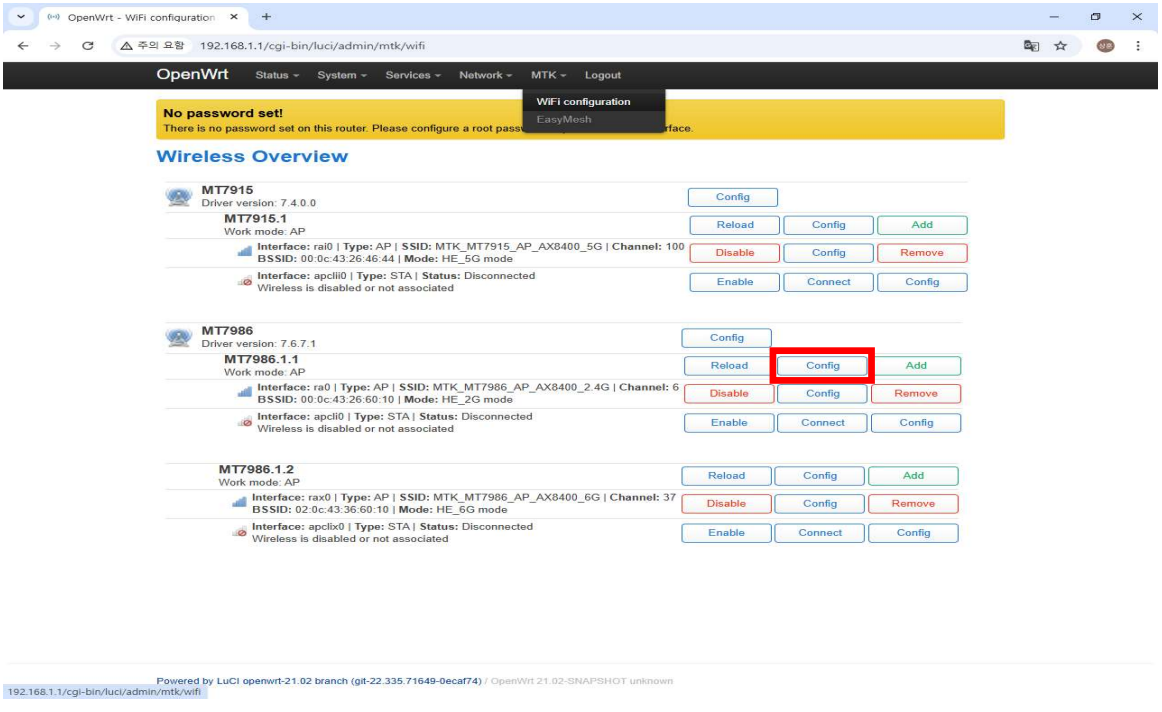


4.4 MTK -> WiFi configration

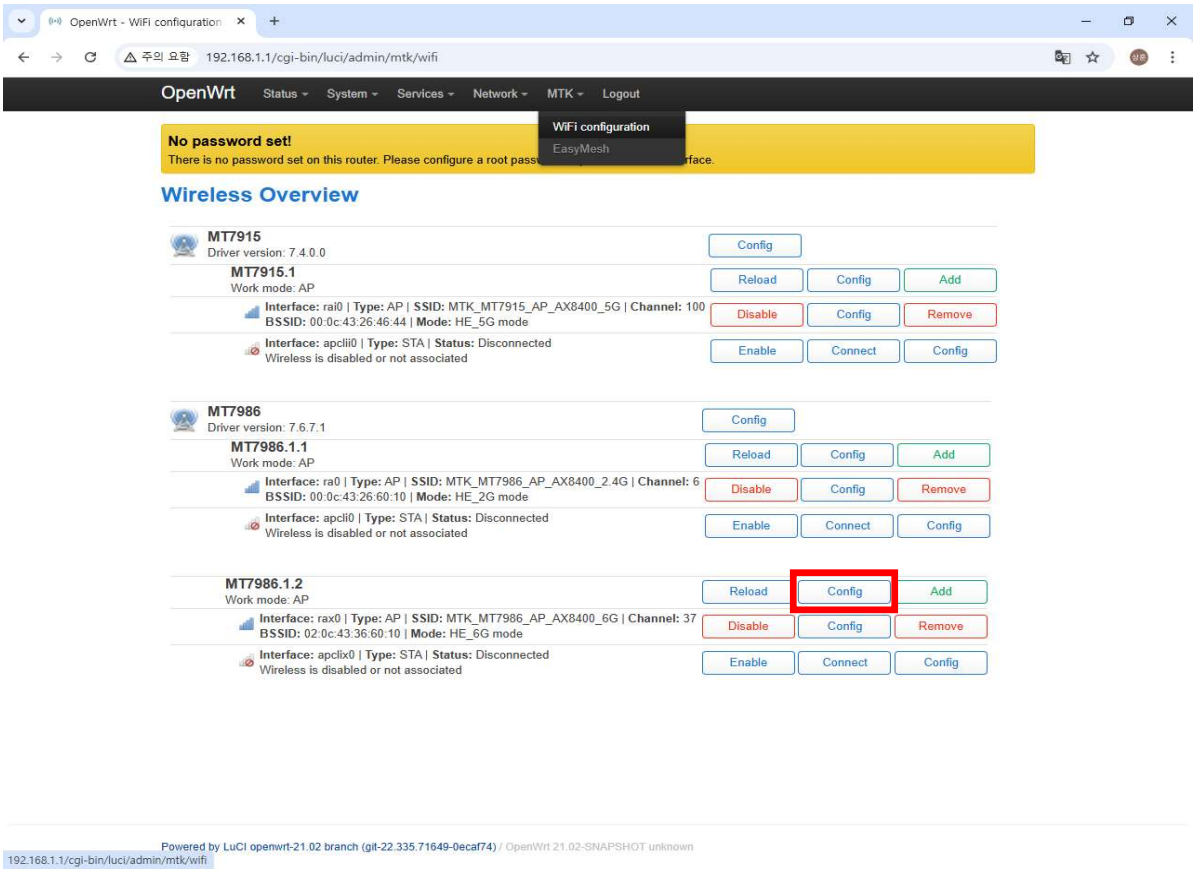
5GHz wireless settings: You can set parameters such as basic settings and advanced settings



2.4GHz wireless settings: You can set parameters such as basic settings and advanced settings.



6GHz wireless settings: You can set parameters such as basic settings and advanced settings.



5.FCC 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 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

Any changes or modifications to this device not expressly approved by the party responsible f or compliance could void your authority to operate the equipment.

This device should be installed and operated with minimum 20 cm between the radiator and your body.

The device user manual must contain the following information. The user manual must be filed as an exhibit in the application filing.

- FCC regulations restrict the operation of this device to indoor use only.
- The operation of this device is prohibited on oil platforms, cars, trains, boats, and aircraft, except that operation of this device is permitted in large aircraft while flyin g
  above 10,000 feet in the 5.925-6.425 GHz band.
- Operation of transmitters in the 5.925-7.125 GHz band is prohibited for control of or communications with unmanned aircraft systems.