



## Waterproof Wifi6 Outdoor 5G/4G

CPE Router

Model: HC851-H



### Simple

This document describes the electrical characteristics, RF performance, size and application environment of HC851-H. With the introduction of this document, end users or developers can quickly understand the hardware functions of HC851-H.

HC851-H is a 5g + WiFi 6 outdoor CPE product. It accesses the Internet through 5G and Gigabit WAN port dial-up, and then shares the Internet network through wireless WiFi 6 and Gigabit wired LAN.

### Product Feature

- Adopt MTK7621 scheme, with Dual-Core MIPS CPU, main frequency up to 880MHz
- Independent WiFi chip is adopted, with MT7905D for 2.4Ghz and MT7975D for 5.8Ghz
- 2.4Ghz rate up to 573.5mbps, 5.8Ghz rate up to 1201mbps, collectively referred to as 1800 Mbps
- Support MU-MIMO, and WiFi modulation mode supports 1024-QAM and OFDMA
- High speed 256MB DDR3 with 16MB Nor flash storage
- One gigabit external self-adaption LAN port ,support automatic flip (auto MDI / MDIX)
- External LAN port support standard POE-PD function,comply with IEEE802.3af/at standard
- One built-in M.2/MINI PCIE interface for connect 5G/4G communication module, and the module power



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supply is independently controlled through GPIO

- Internal standard SIM card interface, supporting SIM / USIM card
- With watchdog function, which automatically restarts in case of crash
- When multiple products are used at the same time, MESH automatic networking is supported
- With fully sealed metal shell to achieve heat dissipation and waterproof functions, meeting IP67 standards

## Product Datasheet

### Hardware interface

Ethernet Port	1*10/100/1000Mbps WAN/LAN port (Support Auto MDI/MDIX), IEEE 802.3/ 802.3u/ 802.ab
Power port	Standard POE
Buttons	1*Reset button
SIM card slot	1*Standard SIM card Slot, Support SIM/USIM
Antennas	2*Undetachable 2.4G+5G fiberglass antennas
	2*Undetachable 5.8G+5G fiberglass antennas
M.2 interface	Built-in M.2*1, Support USB3.0 and PCIE Bus, support 5G/4G module

### Hardware Platform Introduction

Main Chip	MTK7621 Dual-core MIPS CPU, 880MHZ main frequency
2.4G WIFI chip	MT7905D IEEE 802.11ax/n/g/b, up to 573.5Mbps, 2T2R
5.8G WIFI chip	MT7975D IEEE 802.11ax/ac/a, up to 1201Mbps, 2T2R
RAM	DDR3 256MB (Max.512MB)
Flash	16MB NOR FLASH (Max. 32MB)
	NAND FLASH

### Indicator Function Introduction

Power LED	It is always on when power supply is connected, but not on when power supply is faulty or not connected
SYS LED	1.Red color when startup,green color or off after boot 2.Press Mesh button,ready for Mesh pairing, green light flash per seconds,other



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	indicators not work 3.The network of the main device is normal,Green and blue lights go on at the same time(cyan color) 4.The slave device MESH is connected successfully, when it's little far away,green and red lights go on(orange),green and blue lights go on when proper distance(cyan)
5G LED	The light is always on when the routing system identifies and successfully mounts the mobile communication module, and is not on when the mobile communication module is faulty or not connected to the 5G mobile communication module
WAN LED	When connected to the network, it is always on and blinks when there is data communication, the port has LED
LAN1 LED	When connected to the network, it is always on and blinks when there is data communication, the port has LED
LAN2 LED	When connected to the network, it is always on and blinks when there is data communication, the port has LED
LAN3 LED	When connected to the network, it is always on and blinks when there is data communication, the port has LED

All the above indicator lights are built into the housing

## 5G Module interface description of 5G

This product built-in M.2 interface, which can be used to expand 5G mobile communication function. M.2 interface supports USB3.0 and PCIe bus. Whether 5g mobile communication supports NSA or SA and frequency bands is determined by the selected 5G module.

## Introduction of wireless parameters

### WIFI EVM index

	Mode description	Index parameters	Unit
EVM index	802.11B 11Mbps	$\leq -15$ dB	dBm
	802.11G 54 Mbps	$\leq -25$ dB	dBm
	802.11N HT20@ MCS7	$\leq -28$ dB	dBm
	802.11N HT40@ MCS7	$\leq -28$ dB	dBm
	802.11AC VHT20@ MCS8	$\leq -30$ dB	dBm



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	802.11AC VHT40@ MCS9	≤ -32 dB	dBm
	802.11AC VHT80@ MCS9	≤ -32 dB	dBm
	802.11AX HE20@MCS 11	≤ -35 dB	dBm
	802.11AX HE40@MCS 11	≤ -35 dB	dBm
	802.11AX HE80@MCS 11	≤ -35dB	dBm

## WIFI 2.4G

Compatible with IEEE 802.11 b / g / n / ac / ax, support 20MHz or 40MHz, modulation mode 1024-qam / OFDMA, adopt 2T2R MU-MIMO antenna technology, and the maximum connection rate is up to 573.5mbps. The following is the description of working frequency, receiving sensitivity and transmitting power of 2.4G WiFi.

	Description	Maximum value	Rating value	Minimum value	Unit
Working Frequency		2484		2412	MHz
Receiving Sensitivity	802.11B 11Mbps	-86	-87	-88	dBm
	802.11G 54 Mbps	-69	-71	-73	dBm
	802.11N HT20@ MCS7	-67	-69	-71	dBm
	802.11N HT40@ MCS7	-65	-67	-69	dBm
	802.11AC VHT20@ MCS8	-63	-65	-67	dBm
	802.11AC VHT40@ MCS9	-61	-63	-65	dBm
	802.11AX HE20@MCS11	-62	-64	-66	dBm
	802.11AX HE40@MCS11	-60	-62	-64	dBm
Transmitting Power	802.11B 11Mbps	22	21	20	dBm
	802.11G 54 Mbps	20	19	18	dBm
	802.11N HT20@ MCS7	19	18	17	dBm
	802.11N HT40@ MCS7	19	18	17	dBm
	802.11AC VHT20@ MCS8	18	17	16	dBm
	802.11AC VHT40@ MCS9	18	17	16	dBm



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802.11AX HE20@MCS11	17	16	15	dBm
802.11AX HE40@MCS11	17	16	15	dBm

## WIFI 5.8G

Compatible with IEEE 802.11 A / AN / AC / AX, supports 20MHz, 40MHz, 80MHz, modulation mode 1024-QAM / OFDMA, adopts 2T2R MU-MIMO antenna technology, and the maximum connection rate is up to 1201mbps. The following is the description of working frequency, receiving sensitivity and transmitting power of 5.8G WiFi.

	Description	Maximum value	Rating value	Minimum value	Unit
Working Frequency		5825		5180	MHz
Receiving Sensitivity	802.11G 54 Mbps	-69	-71	-73	dBm
	802.11N HT20@ MCS7	-67	-69	-71	dBm
	802.11N HT40@ MCS7	-65	-67	-69	dBm
	802.11AC VHT20@ MCS8	-63	-65	-67	dBm
	802.11AC VHT40@ MCS9	-61	-63	-65	dBm
	802.11AC VHT80@ MCS9	-59	-61	-63	dBm
	802.11AX HE20@MCS 11	-57	-59	-61	dBm
	802.11AX HE40@MCS 11	-55	-57	-59	dBm
	802.11AX HE80@MCS 11	-53	-55	-57	dBm
Transmitting power	802.11G 54 Mbps	20	19	18	dBm
	802.11N HT20@ MCS7	19	18	17	dBm
	802.11N HT40@ MCS7	18	17	16	dBm
	802.11AC VHT20@ MCS8	18	17	16	dBm
	802.11AC VHT40@ MCS9	17	16	15	dBm



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802.11AC MCS9	VHT80@	16	15	14	dBm
802.11AX 11	HE20@MCS	18	17	16	dBm
802.11AX 11	HE40@MCS	17	16	15	dBm
802.11AX 11	HE80@MCS	16	15	14	dBm

## Description of power supply and power consumption

	Testing Condition	Minimum Value	Rating Value	Maximum Value	Unit
Working Voltage(V)	T A = 25°C	9	12	35	V
Absolute operating voltage(V)	T A = 25°C	8		36	V
Working Current(A)	VIN=12V, T A = 25°C	0.3	0.9	2	A

Please use the standard power adapter to supply power to this product. If you do not use the standard power supply, please supply power to this product in strict accordance with the above power specifications and parameters, otherwise the product will be damaged.

## Introduction of structural parameters and accessories

Enclosure size	L*W*H=232MM*255MM*110MM	
Color	Silver Grey	
Accessories	Power Adapter	Standard POE Power, NO adapter
	Network cable	1pc Cat 5 network cable

## Product working condition requirements

Working Temperature	-20°C - 60°C
Storage Temperature	-40°C - 70°C
Working Humidity	10% - 90%RH Non condensing
Storage Humidity	5% - 90%RH Non condensing

## Software configuration information

Default IP	192.168.1.1
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User name/ Password	root/admin
2.4G SSID	WIFI6-XXXXXX (X is the last 6 bits of MAC address), no password by default
5.8G SSID	WIFI6-5G-XXXXXX (X is the last 6 bits of MAC address), no password by default

Above information is general default configuration of the product. WiFi SSID maybe different with our firmware or OpenWrt firmware, but default IP and web login name/password of the product remain same. Please refer to the product description for more software functions.