



Shenzhen Huachuangyilian Electronics Co., Ltd.

Industrial 1800Mbps WiFi6 5G/4G

Router

Model: HC851



Simple Introduction

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

HC851 is a **WiFi6 5G Router**. It accesses the Internet through 5G/4G mobile communication dial-up or 1000Mbps WAN port, then shares the Internet network through wireless WiFi 6 and 1000Mbps wired LAN.

Product Feature

- Using MT7621A MIPS dual-core CPU, main frequency is up to 880MHZ
- Using independent WIFI6 chip, MT7905D and MT7975D, wireless rate is up to 1800Mbps
- Using 16MB Nor Flash+256MB DDR3 RAM, Max up to 32MB Flash+512MB DDR3 RAM
- 1 Gigabit WAN Port+3 Gigabit LAN Ports, support Auto MDI/MDIX, 1 USB 3.0 Port
- Built-in one M.2/Mini-PCIE interface, support 5G mobile connection
- 1 SIM card (Nano SIM Card) interface and built-in eSIM (QFN-8 6mmx5mm) card interface, support SIM/USIM card
- Support 9V-36V Power supply, 48V POE in as optional
- External high-gain WIFI antenna, wireless signal 360 degrees without dead angle



Introduction to the hardware interface

Ports	1*10/100/1000Mbps WAN Port(Auto MDI/MDIX) IEEE 802.3/802.3u/802.ab
	3*10/100/1000Mbps LAN Port(Auto MDI/MDIX) IEEE 802.3/802.3u/802.ab
SIM slot	1* Nano SIM slot, 2*QFN-8(6mmx5mm) eSIM, Support SIM/USIM
USB Port	1*USB 3.0 port
Power	12V 2A DC5.0*2.1MM power adapter, support 9v-36v voltage, 48V POE in as optional
Button	1*Reset button
Antennas	2*Omnidirectional External 5dbi Wifi antennas
	4*Omnidirectional External 5dbi 5G/4G antennas

Introduction to the hardware platform

Processor	MT7621A MIPS Dual Core CPU, 880MHZ main frequency
WIFI chipset	MT7905D+MT7975D, IEEE 802.11n/g/b/a/ac/ax, max speed up to 1800Mbps
RAM	DDR3 256MB (Max.512MB)
Flash	Nor Flash 16MB (Max. 32MB)
	NAND Flash (Reserved Design)Max.1GB

5G/4G mobile communication function

This product has built-in one M.2/MiniPCIE interface, which can be used to expand 5G/4G mobile communication functions. The built-in M.2/PCIE interface supports USB3.0 and USB 2.0 buses. 5G mobile communication supports NSA or SA.

Power supply and power consumption description

Item	Testing Condition	Minimum	Rating	Maximum
Working voltage(V)	T A = 25°C	9	12	35
Absolute operating voltage(V)	T A = 25°C	8		36



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Working Current(A)	VIN=12V T A = 25°C	0.3	0.9	1.5
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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. If the battery or vehicle power supply is used for power supply, please make anti-static and anti surge countermeasures.

Introduction to WIFI wireless parameters

WIFI EVM standard

	Mode description	Index parameter
EVM standard(dBm)	802.11B 11Mbps	≤ -15 dB
	802.11G 54 Mbps	≤ -25 dB
	802.11N HT20@ MCS7	≤ -28 dB
	802.11N HT40@ MCS7	≤ -28 dB
	802.11AC VHT20@ MCS8	≤ -30 dB
	802.11AC VHT40@ MCS9	≤ -32 dB
	802.11AC VHT80@ MCS9	≤ -32 dB
	802.11AX HE20@MCS 11	≤ -35 dB
	802.11AX HE40@MCS 11	≤ -35 dB
	802.11AX HE80@MCS 11	≤ -35dB

WIFI 2.4G

Compatible with IEEE 802.11 b/g/n/ac/ax, supports 20MHz, 40MHz, modulation method 1024-QAM / OFDMA, adopts 2T2R MU-MIMO antenna technology, and the highest connection rate is up to 573.5Mbps. The following is an explanation of 2.4G WIFI's power frequency, receiving sensitivity, and transmitting power.

Item	Instruction	Maximum Value	Rating	Minimum Value
Working Frequency(MHz)		2484		2412
Receiving sensitivity(dBm)	802.11B 11Mbps	-86	-87	-88
	802.11G 54 Mbps	-69	-71	-73
	802.11N HT20@ MCS7	-67	-69	-71



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	802.11N HT40@ MCS7	-65	-67	-69
	802.11AC VHT20@ MCS8	-63	-65	-67
	802.11AC VHT40@ MCS9	-61	-63	-65
	802.11AX HE20@MCS11	-62	-64	-66
	802.11AX HE40@MCS11	-60	-62	-64
Transmit power(dBm)	802.11B 11Mbps	22	21	20
	802.11G 54 Mbps	20	19	18
	802.11N HT20@ MCS7	19	18	17
	802.11N HT40@ MCS7	19	18	17
	802.11AC VHT20@ MCS8	18	17	16
	802.11AC VHT40@ MCS9	18	17	16
	802.11AX HE20@MCS11	17	16	15
	802.11AX HE40@MCS11	17	16	15

WIFI 5.8G

Compatible with IEEE 802.11 a/ac/ax, supports 20MHz, 40MHz, 80MHz, modulation method 1024-QAM / OFDMA, adopts 2T2R MU-MIMO antenna technology, and the highest connection rate is up to 1201Mbps. The following is an explanation of the power frequency, receiving sensitivity, and transmitting power of 5.8G WIFI.

Item	Instruction	Maximum Value	Rating	Minimum Value
Working Frequency(MHz)		5825		5180
Receiving sensitivity(dBm)	802.11G 54 Mbps	-69	-71	-73
	802.11N HT20@ MCS7	-67	-69	-71
	802.11N HT40@ MCS7	-65	-67	-69
	802.11AC VHT20@ MCS8	-63	-65	-67
	802.11AC VHT40@ MCS9	-61	-63	-65
	802.11AC VHT80@ MCS9	-59	-61	-63
	802.11AX HE20@MCS 11	-57	-59	-61
	802.11AX HE40@MCS 11	-55	-57	-59
	802.11AX HE80@MCS 11	-53	-55	-57
Transmit power(dBm)	802.11G 54 Mbps	20	19	18
	802.11N HT20@ MCS7	19	18	17
	802.11N HT40@ MCS7	18	17	16
	802.11AC VHT20@ MCS8	18	17	16
	802.11AC VHT40@ MCS9	17	16	15
	802.11AC VHT80@ MCS9	16	15	14
	802.11AX HE20@MCS 11	18	17	16
	802.11AX HE40@MCS 11	17	16	15
	802.11AX HE80@MCS 11	16	15	14



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8 Introduction to structural parameters and accessories

Color	Gray
Packing List	HC851 1PCS
	12V 2A power adapter 1PCS
	Cat 5 Patch cable 1PCS
	Mounting Brackets 1SET

9 Product working environment 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

10 Software configuration information

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

The above is the general default configuration information of the product. Please refer to the product description for other detailed software functions.