



产品型号: Z5001AX-M2-T

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产品规格书

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1 review

1.1 brief overview

This document describes the electrical characteristics, RF performance, dimensions and application environment of Z5001AX-M2-T. With the introduction of this document, end users or developers can quickly understand the hardware functions of Z5001AX-M2-T.

Z5001AX-M2-T is a 5G+WIFI6 3000Mbps router. It accesses the Internet through 5G or WAN port dial-up, and then shares the Internet network through wireless WiFi 6 and 1000Mbps wired LAN.

1.2 Guideline

Related standard specifications:

- USB3.0/USB2.0 bus standard
- PCI-Express bus standard
- SIM/USIM interface standard
- IEEE802.11n/g/b/a/ac/ax
- IEEE802.3/802.3u/802.ab
- PCI Express M.2 Specification Rev1.1
- 5G mobile communication standard, specifically determined by the selected 5G mobile communication module



2 Product Picture





3 Product Main Features

- Adopt IPQ5018 solution, 4-core ARM Cortex A53 CPU, main frequency up to 1.0 GHz
- Adopt independent 5.8G WIFI chip QCN6102, support 160MHz bandwidth
- 2.4G rate up to 573.5Mbps, 5.8G rate up to 2402Mbps, collectively referred to as 3000Mbps
- Support MU-MIMO, and the WIFI modulation mode supports 1024-QAM and OFDMA
- High-speed 512MB DDR3L, with 128MB NAND FLASH storage
- Support 1WAN3LAN full 1000M adaptive network port, support automatic flip (Auto MDI/MDIX)
- Built-in M.2 interface, connected to 5G communication module, module power supply is independently controlled by GPIO
- External standard SIM card interface, support SIM/USIM card
- IPQ5018 chip comes with a watchdog function, which automatically restarts in extreme cases of crashes
- When multiple products are used at the same time, it supports MESH automatic networking

4 Hardware Function

4.1 Hardware interface introduction

Ethernet port	1 WAN port, 1000Mbps supports automatic flip (Auto MDI/MDIX) complies with IEEE 802.3/802.3u/802.ab
	3 LAN ports, 1000Mbps support automatic flip (Auto MDI/MDIX) Compliant with IEEE 802.3/802.3u/802.ab
Power Interface	DC5.5-2.1MM
Button	1*Reset button, 1*MESH button
SIM card port	1*Standard SIM card interface, support SIM/USIM
Antennas	2pcs External undetachable 2.4G antennas
	2pcs External undetachable 5.8G antennas
	4pcs External detachable 5G antennas
M.2	1*Built-in M.2 interface, support USB3.0, can be used to expand 5G module

4.2 Hardware Platform Introduction

Processor	IPQ5018 4-core ARM Cortex A53 CPU, 1.0GHZ main frequency
2.4G WIFI Chip	IPQ5018 integrates 2.4G baseband IEEE 802.11ax/n/g/b, the highest rate is 573.5Mbps, 2T2R
5.8G WIFI Chip	QCN6102 IEEE 802.11ax/ac/a, maximum rate 2402Mbps, 2T2R
Ram	DDR3 256MB
Flash	128MB NAND FLASH

4.3 Indicator light function introduction

Power LED	It is always on when the power is connected, and it is off when the power fails or is not connected to the power
MESH LEDs RGB 3colors	1. The red light is on during the boot process, the boot is complete, the red light is off and the green light is on 2. Press the mesh button to enter the mesh pairing state, the green light flashes once a second, and the other lights are off



	3. The network of the main device is normal, and the green light and blue light are on at the same time (cyan) 4. After the MESH connection of the device is successful, the blue light and green light are on at the same time in the normal range, and the effect is cyan; the long-distance green light and red light are on at the same time, and the effect is orange.
5G LED	It is always on when the routing system recognizes and successfully mounts the mobile communication module, and it is off when the mobile communication module fails or is not connected to the 5G mobile communication module
WAN LED	Connected to the network port is always on, flashes when there is data communication, the network port has its own LED
LAN1 LED	Connected to the network port is always on, flashes when there is data communication, the network port has its own LED
LAN2 LED	Connected to the network port is always on, flashes when there is data communication, the network port has its own LED
LAN3 LED	Connected to the network port is always on, flashes when there is data communication, the network port has its own LED

4.4 Watchdog function introduction

When the routing system is running normally but the dialing of the 5G module is abnormal, the routing system will control the power supply of the 5G module through GPIO, and the 5G module will automatically restart to fix the abnormality of the 5G dialing.

When the system behaves abnormally, the watchdog function of IPQ5018 will restart the whole system.

4.5 5G Module interface description

This product has a built-in M.2 interface, which can be used to expand the 5G mobile communication function. The built-in M.2 interface supports USB3.0.



4.6 5G Module technical parameters

The module of this product adopts the Sub-6 GHz 5G module specially designed for IoT/eMBB applications. It adopts the 3GPP Release 15 specification and supports 5G NSA and SA modes at the same time.

4.7 5G Other features of the module

DFOTA: Support

Card detection: Optional

SIM卡: SIM/USIM all support

Supply voltage: 3.3~4.3V, typically 3.8V

Working temperature: -20~+60°C

Operator certification: mobile warehousing / China Unicom warehousing / telecom warehousing

Compulsory certification: CCC/SRRC/NAL (China)

Other certifications: RoHS

5 WIFI Wireless Parameter Introduction

5.1 5.8G and 2.4G WIFI EVM Index

	Mode Description	Index parameter	Unit
EVM index	802.11B 11Mbps	≤ -15 dB	dBm
	802.11G 54 Mbps	≤ -25 dB	dBm
	802.11N HT20@ MCS7	≤ -28 dB	dBm
	802.11N HT40@ MCS7	≤ -28 dB	dBm



	802.11AC VHT20@ MCS8	≤ -30 dB	dBm
	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	≤ -35 dB	dBm

5.2 2.4G WIFI Index

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

	illustrate	Max	rated value	Min	Unit
Working frequency		2484		2412	MHz
Receiver sensitivity	802.11B 11Mbps	-86	-87	-88	dBm
	802.11G 54 Mbps	-72	-74	-76	dBm
	802.11N HT20@ MCS7	-70	-72	-74	dBm
	802.11N HT40@ MCS7	-70	-72	-74	dBm
	802.11AC VHT20@ MCS8	-68	-70	-72	dBm
	802.11AC VHT40@ MCS9	-66	-68	-70	dBm
	802.11AX HE20@MCS11	-66	-68	-70	dBm
	802.11AX HE40@MCS11	-64	-65	-66	dBm
transmit power	802.11B 11Mbps	19	18	17	dBm
	802.11G 54 Mbps	18	17	16	dBm
	802.11N HT20@ MCS7	18	17	16	dBm



	802.11N HT40@ MCS7	17	16	15	dBm
	802.11AC VHT20@ MCS8	17	16	15	dBm
	802.11AC VHT40@ MCS9	16	15	14	dBm
	802.11AX HE20@MCS11	17	16	15	dBm
	802.11AX HE40@MCS11	16	15	14	dBm

5.3 5.8G WIFI Index

Compatible with IEEE 802.11 a/an/ac/ax, supports 20MHz, 40MHz, 80MHz, 160MHz, modulation method 1024-QAM / OFDMA, adopts 2T2R MU-MIMO antenna technology, and the maximum connection rate is up to 1201Mbps. The following is a description of the power frequency, receiving sensitivity, and transmitting power of 5.8G WIFI.

	illustrate	Max	rated value	Min	Unit
Working frequency		5825		5180	MHz
Receiver sensitivity	802.11G 54 Mbps	-72	-73	-74	dBm
	802.11N HT20@ MCS7	-70	-72	-74	dBm
	802.11N HT40@ MCS7	-70	-72	-74	dBm
	802.11AC VHT20@ MCS8	-68	-70	-72	dBm
	802.11AC VHT40@ MCS9	-66	-68	-70	dBm
	802.11AC VHT80@ MCS9	-62	-64	-66	dBm
	802.11AX HE20@MCS 11	-66	-68	-70	dBm
	802.11AX HE40@MCS 11	-62	-64	-66	dBm
	802.11AX HE80@MCS 11	-60	-62	-64	dBm
	802.11AX HE160@MCS 11	-60	-62	-64	dBm
transmit power	802.11G 54 Mbps	24	23	22	dBm



	802.11N HT20@ MCS7	23	22	21	dBm
	802.11N HT40@ MCS7	22	21	20	dBm
	802.11AC VHT20@ MCS8	21	20	19	dBm
	802.11AC VHT40@ MCS9	20	19	18	dBm
	802.11AC VHT80@ MCS9	19	18	17	dBm
	802.11AX HE20@MCS 11	21	20	19	dBm
	802.11AX HE40@MCS 11	20	19	18	dBm
	802.11AX HE80@MCS 11	19	18	17	dBm
	802.11AX HE160@MCS 11	19	18	17	dBm

6 Power Supply And Power Consumption Description

	Test Conditions	Max	rated value	Min	Unit
Operating Voltage	T A = 25° C	6	12	14	V
Absolute working voltage	T A = 25° C	5.5		16	V
Working current	VIN=12V, T A = 25° C	0.6	0.8	2	A

Please use the ZBT standard power adapter to power this product. If you do not use the ZBT standard power supply, please strictly follow the above power specification parameters to power this product, otherwise the product will be damaged. If you use batteries or vehicle power supplies, please take anti-static and anti-surge measures.

7 Structural Parameters And Accessories Introduction

Weight	TBD
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(KG)		
Enclouse size	L*W*H=240*135*25mm	
Color	Black	
Accessories	Power adapter	12V/2A 1PCS
	Manual	1PCS
	Certificate	1PCS
	Cable	8P8C Network cable 1PCS

8 Product Working Environment Requirements

Operating temperature	0℃ to 40℃
storage temperature	-40℃to 70℃
Working humidity	10% to 90%RH non-condensing
storage humidity	5% to 90%RH non-condensing

9 Software Configuration Information

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

The above is the general default configuration information of the product. The WIFI SSID of our OS firmware or OPENWRT firmware may be different, but the default IP, WEB login name and password of this product remain unchanged. For other detailed software functions, please refer to the product description.