Model：Z6001AX-M2-T

Version：V1.1

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产品规格书

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1 Overview

1.1 Brief overview

This document describes the electrical characteristics, RF performance, size and application environment of Z6001AX-M2-T. With the introduction of this document, end users or developers can quickly understand the hardware functions of Z6001AX-B, which is a 5g + WiFi 6 home CPE product. It accesses the Internet through 1000Mbps WAN port dial-up, and then shares the Internet network through wireless WiFi 6 and 1000Mbps wired LAN.

1.2 Reference standard

Relevant standards and 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

2 Picture

3 Main Features

- IPQ6000 scheme is adopted, with 4-core arm cortex a53s CPU, and the main frequency is up to 1.2 GHz
- Independent WiFi chip is adopted, with qcn5022 for 2.4G and qcn5052 for 5.8G
- The 2.4G rate is up to 573.5mbps, and the 5.8G rate is up to 1201mbps, collectively referred to as 1800 Mbps
- Support MU-MIMO, and WiFi modulation mode supports 1024-qam and OFDMA
- Each WiFi channel is independently equipped with high-power FEM, which is combined with high gain antenna to achieve super WiFi coverage
- High speed 256MB DDR3 with 128MB NAND flash storage
- Full 1000m adaptive network interface of 1wan and 3lan, supporting automatic flip (auto MDI / mdix)
- A built-in m.2 interface is used to connect 5g communication module, and the module power supply is independently controlled through GPIO
- External standard SIM card interface, supporting SIM / USIM card
- IPQ6000 has its own watchdog function, which automatically restarts in case of

crash

- When multiple products are used at the same time, mesh automatic networking is supported

4 Hardware

4.1 Hardware interface

Ethernet Port	WAN*1, 1000Mbps(Auto MDI/MDIX), IEEE 802.3/802.3u/802.ab
	LAN*3, 1000Mbps(Auto MDI/MDIX, IEEE 802.3/802.3u/802.ab
Power Port	DC5.5*2.1MM
Buttons	Reset Button* 1, MESH Button*1
SIM Card	Standard SIM card Slot *1, Support SIM/USIM
Antennas	Omnidirectional 3dbi 2.4G antenna*2
	Omnidirectional 3dbi 5.8G antenna*2
	Omnidirectional 3dbi 5Gantennas*4, support 4G/3G/2G bands
M.2 Slot	Built-in M.2*1, Support USB3.0 and PCIE Bus, support 5G module

4.2 Introduction to hardware platform

Processor	IPQ6000,4-Core ARM Cortex A53s CPU, 1.2GHZ Main Frequency
2.4GWIFI chipset	QCN5022,IEEE 802.11ax/n/g/b,Speed up to 573.5Mbps,2T2R
5.8GWIFI chipset	QCN5052 IEEE 802.11ax/ac/a,Speed up 1201Mbps,2T2R
Ram	DDR3 256MB(One DDR matches 32bit firmware）
Flash	128MB NAND FLASH

4.3 Watchdog function

When the routing system runs normally, but the 5g module dialing is abnormal, the routing system will control the power supply of the 5g module through GPIO to restart the 5g module automatically to repair the 5g dialing abnormality.

When the system moves abnormally, the watchdog function of ipq6000 will restart the whole system.

4.5 5G Module interface description

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

5 Introduction to wireless parameters

5.1 WIFI EVM standard

	Mode description	Index parameters	unit
EVM Standard	802.11B 11Mbps	≤ -1 5 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	≤ -35dB	dBm

5.2 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 power frequency, receiving sensitivity and transmitting power of 2.4G WiFi.

	Instraction	Maximum Value	Rating	minimum value
Working Frequency		2484MHz		2412MHz
Receiving sensitivity	802.11B 11Mbps	-86dBm	-87dBm	-88dBm
	802.11G 54 Mbps	-72dBm	-74dBm	-76dBm
	802.11N HT20@ MCS7	-70dBm	-72dBm	-74dBm
	802.11N HT40@ MCS7	-70dBm	-72dBm	-74dBm
	802.11AC VHT20@ MCS8	-68dBm	-70dBm	-72dBm
	802.11AC VHT40@ MCS9	-66dBm	-68dBm	-70dBm
	802.11AX HE20@MCS11	-66dBm	-68dBm	-70dBm
	802.11AX HE40@MCS11	-64dBm	-65dBm	-76dBm
Transmit power	802.11B 11Mbps	26dBm	25dBm	24dBm
	802.11G 54 Mbps	24dBm	23dBm	22dBm
	802.11N HT20@ MCS7	23dBm	22dBm	21dBm
	802.11N HT40@ MCS7	22dBm	21dBm	20dBm

	802.11AC VHT20@ MCS8	22dBm	21dBm	20dBm
	802.11AC VHT40@ MCS9	21dBm	20dBm	19dBm
	802.11AX HE20@MCS11	21dBm	20dBm	19dBm
	802.11AX HE40@MCS11	20dBm	19dBm	18dBm

5.3 WIFI 5.8G

It is 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 power frequency, receiving sensitivity and transmitting power of 5.8G WiFi.

	Instraction	Maximum Value	Rating	Minimum Value
Working Frequency		5825		5180
Receiving sensitivity	802.11G 54 Mbps(MHz)	-72	-73	-74
	802.11N HT20@ MCS7(dBm)	-70	-72	-74
	802.11N HT40@ MCS7(dBm)	-70	-72	-74
	802.11AC VHT20@ MCS8(dBm)	-68	-70	-72
	802.11AC VHT40@ MCS9(dBm)	-66	-68	-70
	802.11AC VHT80@ MCS9(dBm)	-62	-64	-66
	802.11AX HE20@MCS 11 (dBm)	-66	-68	-70
	802.11AX HE40@MCS 11(dBm)	-62	-64	-66
	802.11AX HE80@MCS 11(dBm)	-60	-62	-64
Transmit power	802.11G 54 Mbps (dBm)	24	23	22
	802.11N HT20@ MCS7(dBm)	23	22	21
	802.11N HT40@ MCS7(dBm)	22	21	20
	802.11AC VHT20@ MCS8(dBm)	21	20	19

	802.11AC VHT40@ MCS9(dBm)	20	19	18
	802.11AC VHT80@ MCS9(dBm)	19	18	17
	802.11AX HE20@MCS 11 (dBm)	21	20	19
	802.11AX HE40@MCS 11(dBm)	20	19	18
	802.11AX HE80@MCS 11(dBm)	19	18	17

6 Description of power supply and power consumption

	Testing Condition	Minimum	Rating	Maximum
Working voltage(V)	T A = 25° C	6	12	14
Absolute operating voltage(V)	T A = 25° C	5.5		16
Working Currency(A)	VIN=12V，T A = 25° C	0.6	0.8	2

Please use the ZBT standard power adapter to supply power to this product. If you do not use the ZBT 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.

7 Introduction to structural parameters and accessories

Enclosure Size	L*W*H=170MM*108.5MM*27MM	
Color	Grey	
Accessories	Power Adapter	12V/2.0A 1PCS
	User Manual	1PCS

	certificate	1PCS
	Ethernet cable	Cat 5 network cable 1PCS

8 Product working environment requirements

Working temperature	0℃ - 40℃
Storage temperature	-40℃ - 70℃
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. The WiFi SSID using our OS firmware or openwrt firmware may be different, but the default IP and web login name and password of the product remain unchanged. Please refer to the product description for other detailed software functions.