

# MX-AB160-H1

## AP/路由器/网关 Wi-Fi 6

## 2T2R 11 a/b/g/n/ac/ax 模块



### 产品概述

MX-AB160-H1是一个完整的小尺寸802.11 a/b/g/n/ac/ax Wi-Fi6解决方案，针对低功耗、低成本和高度集成的AP和消费类电子设备进行了优化。

该模块基于集成四核ARM Cortex-A7 710MHz CPU和带有外部FEM的双频802.11a/b/g/n/ac/ax 2x2 MIMO MAC/BB/无线电。

它支持802.11 ax操作，对于80MHz，最高可达1700 Mbps。

### 产品特征

- 高通Atheros IPQ6000四核ARM 64位A53 1.8GHz处理器
- 物理数据速率高达573Mbps ( 2.4GHz ) & 1201Mbps ( 5GHz )
- 支持动态频率选择 ( DFS )
- DDR3内存高达4GB
- SPI NOR闪存最高可达256Mb ( 32MB )
- 高达256MB的NAND闪存
- 1\*2.5G base-T, 1\*2.5G SGMII
- 高速迷你PCIe v2.0支持
- USB 2.0/3.0和MicroSD支持
- Uart/GPIO/LED支持
- 采用401-55101-51高速连接器
- 射频输出2.4G&5.8G 4路MMCX连接器

### 推荐运行额定值

要素	最小值	标准值	最大值	单位
工作温度	-20	25	70	Deg.c
VDD 12V	9	12	15	V
VDD IO	1.6	1.8 or 3.3	3.6	V

### 直流特性

要素	最小值	标准值	最大值	单位
备用物品	-	15	-	mA
Tx 电流 ( 4 通道 )	-	950	1200	mA
接收电流 ( 4 通道 )	-	250	380	mA

### 环境条件

温度	工作温度： -20 deg.C ~ 70 deg.C
	存储温度： -40 deg.C ~ 90 deg.C
湿度	工作湿度： 5% ~ 95%
	存储湿度： 5% ~ 95%
VESD	人体模型： -2000V ~ +2000V
	机器模式： -200V ~ +200V

## 射频参数 ( 2.4GHz )

	速率	发射功率 ( 单通道 )	发射功率 ( 双通道 )	公差	接收灵敏度	公差
<b>2.4GHz 802.11b</b>	1Mbps	20dBm	23dBm	±2dB	-101dBm	±2dB
	2Mbps	20dBm	23dBm	±2dB	-99dBm	±2dB
	5.5Mbps	20dBm	23dBm	±2dB	-97dBm	±2dB
	11Mbps	20dBm	23dBm	±2dB	-94dBm	±2dB
<b>2.4GHz 802.11g</b>	6Mbps	20dBm	23dBm	±2dB	-97dBm	±2dB
	9Mbps	20dBm	23dBm	±2dB	-95dBm	±2dB
	12Mbps	20dBm	23dBm	±2dB	-92dBm	±2dB
	18Mbps	20dBm	23dBm	±2dB	-90dBm	±2dB
	24Mbps	20dBm	23dBm	±2dB	-87dBm	±2dB
	36Mbps	20dBm	23dBm	±2dB	-85dBm	±2dB
	48Mbps	20dBm	23dBm	±2dB	-83dBm	±2dB
<b>2.4GHz 802.11n HT20</b>	54Mbps	20dBm	23dBm	±2dB	-81dBm	±2dB
	MCS 0	20dBm	23dBm	±2dB	-96dBm	±2dB
	MCS 1	20dBm	23dBm	±2dB	-94dBm	±2dB
	MCS 2	20dBm	23dBm	±2dB	-92dBm	±2dB
	MCS 3	20dBm	23dBm	±2dB	-90dBm	±2dB
	MCS 4	20dBm	23dBm	±2dB	-88dBm	±2dB
	MCS 5	20dBm	23dBm	±2dB	-86dBm	±2dB
	MCS 6	20dBm	23dBm	±2dB	-83dBm	±2dB
MCS 7	19dBm	22dBm	±2dB	-80dBm	±2dB	
<b>2.4GHz 802.11n HT40</b>	MCS 0	20dBm	23dBm	±2dB	-94dBm	±2dB
	MCS 1	20dBm	23dBm	±2dB	-92dBm	±2dB
	MCS 2	20dBm	23dBm	±2dB	-90dBm	±2dB
	MCS 3	20dBm	23dBm	±2dB	-88dBm	±2dB
	MCS 4	20dBm	23dBm	±2dB	-86dBm	±2dB
	MCS 5	20dBm	23dBm	±2dB	-83dBm	±2dB
	MCS 6	20dBm	23dBm	±2dB	-80dBm	±2dB
	MCS 7	19dBm	22dBm	±2dB	-77dBm	±2dB

## 射频参数 ( 2.4GHz )

	速率	发射功率 (单通道)	发射功率 (双通道)	公差	接收灵敏度	公差
<b>2.4GHz 802.11ax HE20</b>	MCS 0	20dBm	23dBm	±2dB	-97dBm	±2dB
	MCS 1	20dBm	23dBm	±2dB	-95dBm	±2dB
	MCS 2	20dBm	23dBm	±2dB	-92dBm	±2dB
	MCS 3	20dBm	23dBm	±2dB	-90dBm	±2dB
	MCS 4	20dBm	23dBm	±2dB	-87dBm	±2dB
	MCS 5	20dBm	23dBm	±2dB	-84dBm	±2dB
	MCS 6	20dBm	23dBm	±2dB	-81dBm	±2dB
	MCS 7	19dBm	22dBm	±2dB	-78dBm	±2dB
	MCS 8	18dBm	21dBm	±2dB	-75dBm	±2dB
	MCS 9	18dBm	21dBm	±2dB	-72dBm	±2dB
	MCS 10	16dBm	19dBm	±2dB	-69dBm	±2dB
	MCS 11	15dBm	18dBm	±2dB	-66dBm	±2dB
<b>2.4GHz 802.11ax HE40</b>	MCS 0	20dBm	23dBm	±2dB	-95dBm	±2dB
	MCS 1	20dBm	23dBm	±2dB	-93dBm	±2dB
	MCS 2	20dBm	23dBm	±2dB	-90dBm	±2dB
	MCS 3	20dBm	23dBm	±2dB	-87dBm	±2dB
	MCS 4	20dBm	23dBm	±2dB	-84dBm	±2dB
	MCS 5	20dBm	23dBm	±2dB	-81dBm	±2dB
	MCS 6	20dBm	23dBm	±2dB	-78dBm	±2dB
	MCS 7	19dBm	22dBm	±2dB	-75dBm	±2dB
	MCS 8	18dBm	21dBm	±2dB	-72dBm	±2dB
	MCS 9	18dBm	21dBm	±2dB	-69dBm	±2dB
	MCS 10	16dBm	19dBm	±2dB	-66dBm	±2dB
	MCS 11	15dBm	18dBm	±2dB	-64dBm	±2dB

# 射频参数 ( 5GHz )

	速率	发射功率 (单通道)	发射功率 (双通道)	公差	接收灵敏度	公差
<b>5GHz 802.11a</b>	6Mbps	20dBm	23dBm	±2dB	-94dBm	±2dB
	9Mbps	20dBm	23dBm	±2dB	-92dBm	±2dB
	12Mbps	20dBm	23dBm	±2dB	-89dBm	±2dB
	18Mbps	20dBm	23dBm	±2dB	-87dBm	±2dB
	24Mbps	20dBm	23dBm	±2dB	-85dBm	±2dB
	36Mbps	20dBm	23dBm	±2dB	-83dBm	±2dB
	48Mbps	20dBm	23dBm	±2dB	-80dBm	±2dB
	54Mbps	20dBm	23dBm	±2dB	-78dBm	±2dB
<b>5GHz 802.11n/ac VHT20</b>	MCS 0	20dBm	23dBm	±2dB	-94dBm	±2dB
	MCS 1	20dBm	23dBm	±2dB	-92dBm	±2dB
	MCS 2	20dBm	23dBm	±2dB	-89dBm	±2dB
	MCS 3	20dBm	23dBm	±2dB	-87dBm	±2dB
	MCS 4	20dBm	23dBm	±2dB	-85dBm	±2dB
	MCS 5	20dBm	23dBm	±2dB	-83dBm	±2dB
	MCS 6	20dBm	23dBm	±2dB	-80dBm	±2dB
	MCS 7	19dBm	22dBm	±2dB	-77dBm	±2dB
	MCS 8	18dBm	21dBm	±2dB	-75dBm	±2dB
<b>5GHz 802.11n/ac VHT40</b>	MCS 0	20dBm	23dBm	±2dB	-92dBm	±2dB
	MCS 1	20dBm	23dBm	±2dB	-90dBm	±2dB
	MCS 2	20dBm	23dBm	±2dB	-88dBm	±2dB
	MCS 3	20dBm	23dBm	±2dB	-85dBm	±2dB
	MCS 4	20dBm	23dBm	±2dB	-82dBm	±2dB
	MCS 5	20dBm	23dBm	±2dB	-79dBm	±2dB
	MCS 6	20dBm	23dBm	±2dB	-76dBm	±2dB
	MCS 7	19dBm	22dBm	±2dB	-73dBm	±2dB
	MCS 8	18dBm	21dBm	±2dB	-70dBm	±2dB
	MCS 9	18dBm	21dBm	±2dB	-67dBm	±2dB
<b>5GHz 802.11ac VHT80</b>	MCS 0	20dBm	23dBm	±2dB	-87dBm	±2dB
	MCS 1	20dBm	23dBm	±2dB	-85dBm	±2dB
	MCS 2	20dBm	23dBm	±2dB	-83dBm	±2dB
	MCS 3	20dBm	23dBm	±2dB	-80dBm	±2dB
	MCS 4	20dBm	23dBm	±2dB	-78dBm	±2dB
	MCS 5	20dBm	23dBm	±2dB	-75dBm	±2dB
	MCS 6	20dBm	23dBm	±2dB	-73dBm	±2dB
	MCS 7	19dBm	22dBm	±2dB	-70dBm	±2dB
	MCS 8	18dBm	21dBm	±2dB	-67dBm	±2dB
	MCS 9	18dBm	21dBm	±2dB	-64dBm	±2dB

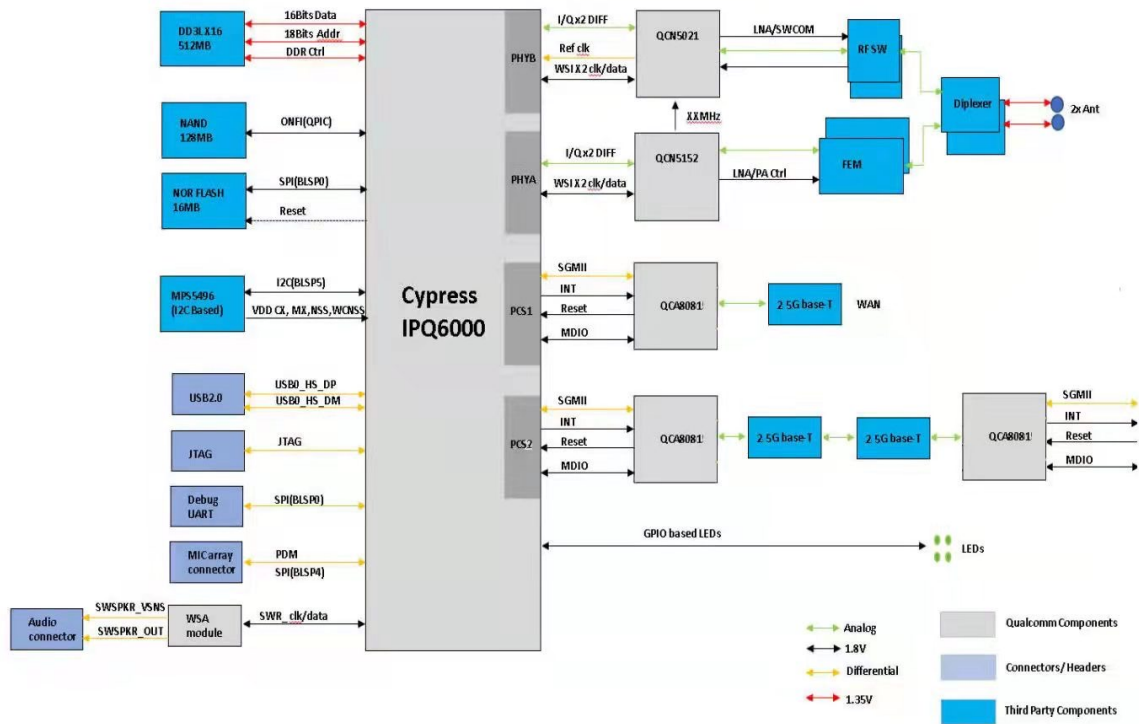
## 射频参数 ( 5GHz )

	速率	发射功率 ( 单通道 )	发射功率 ( 双通道 )	公差	接收灵敏度	公差
<b>5GHz 802.11ax HET20</b>	MCS 0	20dBm	23dBm	±2dB	-94dBm	±2dB
	MCS 1	20dBm	23dBm	±2dB	-92dBm	±2dB
	MCS 2	20dBm	23dBm	±2dB	-89dBm	±2dB
	MCS 3	20dBm	23dBm	±2dB	-86dBm	±2dB
	MCS 4	20dBm	23dBm	±2dB	-83dBm	±2dB
	MCS 5	20dBm	23dBm	±2dB	-80dBm	±2dB
	MCS 6	20dBm	23dBm	±2dB	-77dBm	±2dB
	MCS 7	19dBm	22dBm	±2dB	-74dBm	±2dB
	MCS 8	18dBm	21dBm	±2dB	-71dBm	±2dB
	MCS 9	18dBm	21dBm	±2dB	-68dBm	±2dB
	MCS 10	16dBm	19dBm	±2dB	-65dBm	±2dB
	MCS 11	15dBm	18dBm	±2dB	-62dBm	±2dB
<b>5GHz 802.11ax HE40</b>	MCS 0	20dBm	23dBm	±2dB	-89dBm	±2dB
	MCS 1	20dBm	23dBm	±2dB	-87dBm	±2dB
	MCS 2	20dBm	23dBm	±2dB	-85dBm	±2dB
	MCS 3	20dBm	23dBm	±2dB	-83dBm	±2dB
	MCS 4	20dBm	23dBm	±2dB	-81dBm	±2dB
	MCS 5	20dBm	23dBm	±2dB	-78dBm	±2dB
	MCS 6	20dBm	23dBm	±2dB	-75dBm	±2dB
	MCS 7	19dBm	22dBm	±2dB	-72dBm	±2dB
	MCS 8	18dBm	21dBm	±2dB	-69dBm	±2dB
	MCS 9	18dBm	21dBm	±2dB	-66dBm	±2dB
	MCS 10	16dBm	19dBm	±2dB	-63dBm	±2dB
	MCS 11	15dBm	18dBm	±2dB	-60dBm	±2dB
<b>5GHz 802.11ax HE80</b>	MCS 0	20dBm	23dBm	±2dB	-86dBm	±2dB
	MCS 1	20dBm	23dBm	±2dB	-84dBm	±2dB
	MCS 2	20dBm	23dBm	±2dB	-81dBm	±2dB
	MCS 3	20dBm	23dBm	±2dB	-79dBm	±2dB
	MCS 4	20dBm	23dBm	±2dB	-76dBm	±2dB
	MCS 5	20dBm	23dBm	±2dB	-74dBm	±2dB
	MCS 6	20dBm	23dBm	±2dB	-71dBm	±2dB
	MCS 7	19dBm	22dBm	±2dB	-68dBm	±2dB
	MCS 8	18dBm	21dBm	±2dB	-65dBm	±2dB
	MCS 9	18dBm	21dBm	±2dB	-62dBm	±2dB
	MCS 10	16dBm	19dBm	±2dB	-59dBm	±2dB
	MCS 11	15dBm	18dBm	±2dB	-56dBm	±2dB

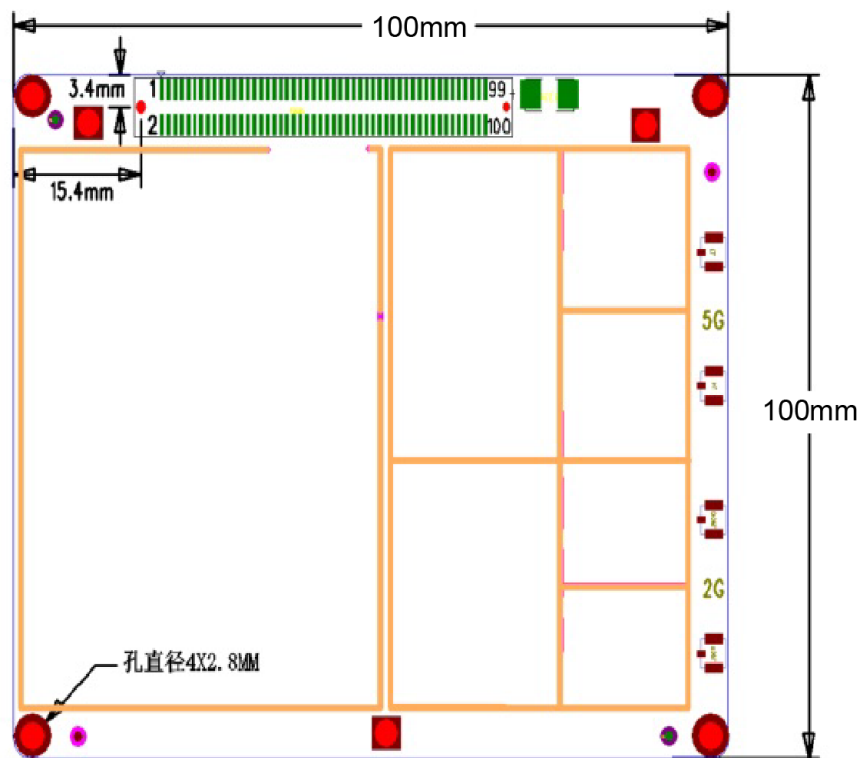
# PIN 定义

Pin	Pin 码描述	Pin	Pin 码描述	Pin	Pin 码描述
1	GPIO45-UART-TX	2	GPIO44-UART-RX	3	WPS-GPIO9
4	GPIO42	5	GPIO43	6	BT_ACT_PTA10_GPIO53
7	GPIO50	8	LED_5GM_GPIO35	9	PCIE0-WAKE-GPIO36
10	WLA_ACTI_PTA12_GPIO52	11	GPIO37	12	BT_PRIORITY_PTA11_GPIO51
13	GND	14	GND	15	PCIE_REFCLKP
16	PCIE_REFCLKN	17	PCIE_TX_N	18	PCIE_TX_P
19	PCIE_RX_P	20	PCIE_RX_N	21	GND
22	GND	23	SD_WP-GPIO63	24	SD_DET_GPIO62
25	PCIE0_RSTN_GPIO60	26	PCIE0_CLK_REQ_GPIO59	27	SDC1_CLK
28	SDC1_CMD	29	SDC1_DATA_0	30	SDC1_DATA_1
31	SDC1_DATA_2	32	SDC1_DATA_3	33	GND
34	GND	35	USB0_SS_RXP	36	USB0_SS_RXN
37	USB1_HS_DM	38	USB1_HS_DP	39	USB0_SS_TXP
40	USB0_SS_TXN	41	USB0_DP	42	USB0_DM
43	GND	44	GND	45	CLK_50M_N_NAPA1
46	CLK_50M_P_NAPA1	47	GND	48	GND
49	USXGMII0_RXP	50	USXGMII0_RXN	51	USXGMII0_TXN
52	USXGMII0_TXP	53	GND	54	GND
55	P4_TRX3-	56	P4_TRX3+	57	P4_TRX2-
58	P4_TRX2+	59	P4_TRX1-	60	P4_TRX1+
61	P4_TRX0-	62	P4_TRX0+	63	P3_TRX3-
64	P3_TRX3+	65	P3_TRX2-	66	P3_TRX2+
67	P3_TRX1-	68	P3_TRX1+	69	P3_TRX0-
70	P3_TRX0+	71	P0_TRX3-	72	P0_TRX3+
73	P0_TRX2-	74	P0_TRX2+	75	P0_TRX1-
76	P0_TRX1+	77	P0_TRX0+	78	P0_TRX0-
79	GND	80	GND	81	P4_1000_LED
82	P3_1000_LED	83	P0_1000_LED	84	QTZ_RESET_GPIO79
85	NAPA_RESET_GPIO77	86	QTZ_INT_GPIO78	87	SPI_CLK_UART_RTSN_GPIO69
88	SPI_CS_UART_CTSN_GPIO70	89	SPI_MOSI_UART_TX_GPIO72	90	SD_LDO_EN_GPIO66
91	SPI_MISO_UART_RX_GPIO71	92	GPIO48_	93	GND
94	GND	95	OUT 1.8V	96	OUT-3.3V
97	IN-DC12V	98	IN-DC12V	99	IN-DC12V
100	IN-DC12V				

# 电路系统块图



# 产品尺寸



Unit: MM,  $\pm 0.25$ mm, From Module Top

备注：此产品为定制产品，实际尺寸以布局后为准，当前尺寸仅为预估尺寸。