

# Nanjing MAXON O.E. TECH. CO., LTD

Add: 6/F, Building A3, Zidong International Creative Park, Zidong Road, Qixia District, Nanjing, China.

## MX-AB160-H1 AP/Router/Gateway Module 2T2R 802.11 a/b/g/n/ac/ax

### Features

- Qualcomm® Atheros IPQ6000 quad-core ARM 64-bit A53 1.8GHz processor
- Physical data rate up to 573Mbps (2.4GHz) & 1201Mbps (5GHz)
- Support Dynamic Frequency Selection (DFS)
- DDR3 memory up to 4GB
- SPI NOR Flash up to 256Mb (32MB)
- Up to 256MB of NAND Flash
- 1\*2.5G base-T, 1\*2.5G SGMII
- High-speed mini PCIe v2.0 support
- USB 2.0/3.0 and MicroSD support
- Uart/GPIO/LED support
- Adopt 401-55101-51 high-speed connector
- RF output 2.4G & 5.8G 4-way MMCX connector



### Description

The MX-AB160-H1 is a complete smaller size 802.11a/b/g/n/ac/ax Wi-Fi6 solution optimized for low power, low cost and highly integrated APs.

The module is based on an integrated quad-core ARM Cortex-A7 710MHz CPU and externalised FEM dual-band 802.11a/b/g/n/ac/ax 2x2 MIMO MAC/BB/radio.

It supports 802.11 ax with up to 1700 Mbps for 80MHz.

### Recommended Operating Ratings

OBJECT	MINIMUM	STANDARD	MAXIMUM	UNIT
OPERATING TEMPERATURE	-20	25	70	°C
	-4	77	158	°F
VDD 12V	9	12	15	V
VDDIO	1.6	1.8 or 3.3	3.6	V

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## DC characteristics

OBJECT	MINIMUM	STANDARD	MAXIMUM	UNIT
SPARE ITEMS	-	15	-	mA
TX CURRENT (4 CHAINS)	-	950	1200	mA
RECEIVE CURRENT (4 CHAINS)	-	250	380	mA

## Environmental Requirements

OPERATING TEMPERATURE	-20°C ~ 70°C / -4~158°F
STORAGE TEMPERATURE	-40°C ~ 90°C / -40~194°F
OPERATING HUMIDITY	5% ~ 95%
STORAGE HUMIDITY	5% ~ 95%

## VESD

HUMAN BODY MODEL	-2000V ~ +2000V
MACHINE MODE	-200V ~ +200V

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## Radio Frequency Parameters (2GHz)

	RATE	TRANSMIT POWER (PER CHAIN)	TRANSMIT POWER (DUAL CHAIN)	TOLERANCE	RECEIVE SENSITIVITY	TOLERANCE
2.4GHz 802.11b	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
2.4GHz 802.11g	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
2.4GHz 802.11n HT20	54Mbps	20dBm	23dBm	±2dB	-81dBm	±2dB
	MCS0	20dBm	23dBm	±2dB	-96dBm	±2dB
	MCS1	20dBm	23dBm	±2dB	-94dBm	±2dB
	MCS2	20dBm	23dBm	±2dB	-92dBm	±2dB
	MCS3	20dBm	23dBm	±2dB	-90dBm	±2dB
	MCS4	20dBm	23dBm	±2dB	-88dBm	±2dB
	MCS5	20dBm	23dBm	±2dB	-86dBm	±2dB
	MCS6	20dBm	23dBm	±2dB	-83dBm	±2dB
2.4GHz 802.11n HT40	MCS7	19dBm	22dBm	±2dB	-80dBm	±2dB
	MCS0	20dBm	23dBm	±2dB	-94dBm	±2dB
	MCS1	20dBm	23dBm	±2dB	-92dBm	±2dB
	MCS2	20dBm	23dBm	±2dB	-90dBm	±2dB
	MCS3	20dBm	23dBm	±2dB	-88dBm	±2dB
	MCS4	20dBm	23dBm	±2dB	-86dBm	±2dB
	MCS5	20dBm	23dBm	±2dB	-83dBm	±2dB
	MCS6	20dBm	23dBm	±2dB	-80dBm	±2dB
MCS7	19dBm	22dBm	±2dB	-77dBm	±2dB	

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	RATE	TRANSMIT POWER (PER CHAIN)	TRANSMIT POWER (DUAL CHAIN)	TOLERANCE	RECEIVE SENSITIVITY	TOLERANCE
2.4GHz 802.11ax HE20	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
2.4GHz 802.11ax HE40	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

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## Radio Frequency Parameters (5GHz)

	RATE	TRANSMIT POWER (PER CHAIN)	TRANSMIT POWER (DUAL CHAIN)	TOLERANCE	RECEIVE SENSITIVITY	TOLERANCE
5GHz 802.11a	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
5GHz 802.11n/ac VHT20	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
5GHz 802.11n/ac VHT40	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

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## Radio Frequency Parameters (5GHz)

	RATE	TRANSMIT POWER (PER CHAIN)	TRANSMIT POWER (DUAL CHAIN)	TOLERANCE	RECEIVE SENSITIVITY	TOLERANCE
5GHz 802.11ac VHT80	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
5GHz 802.11ax HET20	MCS0	20dBm	23dBm	±2dB	-94dBm	±2dB
	MCS1	20dBm	23dBm	±2dB	-92dBm	±2dB
	MCS2	20dBm	23dBm	±2dB	-89dBm	±2dB
	MCS3	20dBm	23dBm	±2dB	-86dBm	±2dB
	MCS4	20dBm	23dBm	±2dB	-83dBm	±2dB
	MCS5	20dBm	23dBm	±2dB	-80dBm	±2dB
	MCS6	20dBm	23dBm	±2dB	-77dBm	±2dB
	MCS7	19dBm	22dBm	±2dB	-74dBm	±2dB
	MCS8	18dBm	21dBm	±2dB	-71dBm	±2dB
	MCS9	18dBm	21dBm	±2dB	-68dBm	±2dB
	MCS10	16dBm	19dBm	±2dB	-65dBm	±2dB
	MCS11	15dBm	18dBm	±2dB	-62dBm	±2dB

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5GHz 802.11ax HE40	MCS0	20dBm	23dBm	±2dB	-89dBm	±2dB
	MCS1	20dBm	23dBm	±2dB	-87dBm	±2dB
	MCS2	20dBm	23dBm	±2dB	-85dBm	±2dB
	MCS3	20dBm	23dBm	±2dB	-83dBm	±2dB
	MCS4	20dBm	23dBm	±2dB	-81dBm	±2dB
	MCS5	20dBm	23dBm	±2dB	-78dBm	±2dB
	MCS6	20dBm	23dBm	±2dB	-75dBm	±2dB
	MCS7	19dBm	22dBm	±2dB	-72dBm	±2dB
	MCS8	18dBm	21dBm	±2dB	-69dBm	±2dB
	MCS9	18dBm	21dBm	±2dB	-66dBm	±2dB
	MCS10	16dBm	19dBm	±2dB	-63dBm	±2dB
	MCS11	15dBm	18dBm	±2dB	-60dBm	±2dB
5GHz 802.11ax HE80	MCS0	20dBm	23dBm	±2dB	-86dBm	±2dB
	MCS1	20dBm	23dBm	±2dB	-84dBm	±2dB
	MCS2	20dBm	23dBm	±2dB	-81dBm	±2dB
	MCS3	20dBm	23dBm	±2dB	-79dBm	±2dB
	MCS4	20dBm	23dBm	±2dB	-76dBm	±2dB
	MCS5	20dBm	23dBm	±2dB	-74dBm	±2dB
	MCS6	20dBm	23dBm	±2dB	-71dBm	±2dB
	MCS7	19dBm	22dBm	±2dB	-68dBm	±2dB
	MCS8	18dBm	21dBm	±2dB	-65dBm	±2dB
	MCS9	18dBm	21dBm	±2dB	-62dBm	±2dB
	MCS10	16dBm	19dBm	±2dB	-59dBm	±2dB
	MCS11	15dBm	18dBm	±2dB	-56dBm	±2dB

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## PIN Definition

PIN	PIN CODE DESCRIPTION	PIN	PIN CODE DESCRIPTION	PIN	PIN CODE DESCRIPTION
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	SD_LDO_EN_GPIO66	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				

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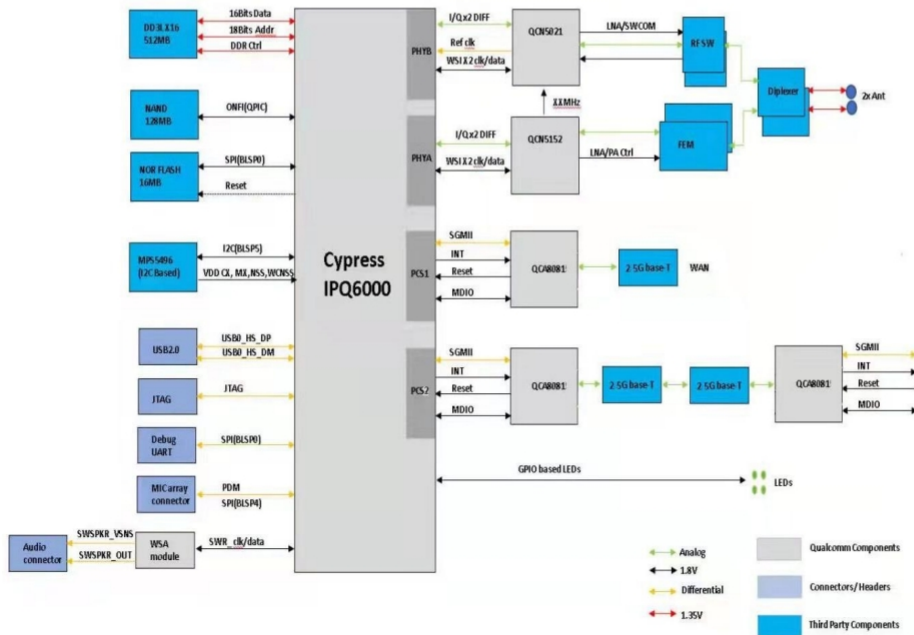
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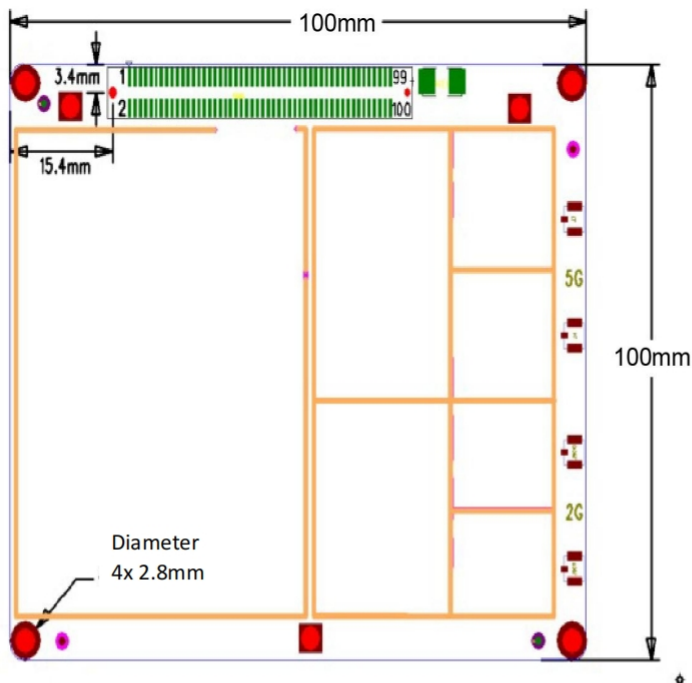
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### Electrical System Module View



### Products Dimensions



Products Dimensions Unit: MM, ±0.25mm, From Module Top

Remarks: MX-AB160-H1 is customized. This size is only estimated.