

## WiFi 6 (802.11ax) 4x4 MU-MIMO OFDMA 2.4GHz Single Band Wireless Module

**Model: PN01.1**



### KEY FEATURES

- Qualcomm Atheros QCN9024/9074
- 2.4GHz, 4x4 MU-MIMO OFDMA Technology, up to 1376.4Mbps physical data rate
- Single Band 2.4GHz 4x4 WiFi 6 (802.11ax)
- M.2 E Key interface with PCIe 3.0
- 4 spatial streams (4SS)

## Specifications

Chipset	Qualcomm Atheros QCN9024/9074 'PINE' Series
System Memory	2Mbit serial I <sup>2</sup> C bus EEPROM
Reference Design	Qualcomm Atheros PN01.1
Host Interface	M.2 E Key interface with PCIe 3.0
Operating Voltage	5V
Power Consumption	15W
Wireless	2.4GHz 802.11b/g/n/ax, max 24dBm per chain 4x U.FL Connectors
Frequency Range	2.412~2.472GHz
Modulation Techniques	OFDMA: BPSK, QPSK, DBPSK, DQPSK, 16-QAM, 64-QAM, 256-QAM, 1024-QAM, 4096-QAM
Channel Spectrum Widths for WLAN	Supports 20/40MHz at 2.4GHz
Operating Systems	OpenWRT
Certification	REACH and RoHS Compliance
Environmental Temperature	Operating: -20°C to 70°C, Storage: -40°C to 90°C
Environmental Humidity, Non-Condensing	Operating: 5% to 95%, Storage: Max. 90%
Dimensions (W x H x D) in mm	57 x 60 x 6.3

\*Configurations are subject to change without notifications.

## RF Performance Table for 2.4GHz

	Data Rate	TX Power (per chain)	TX Power (4 chains)	Tolerance
2.4GHz 802.11b	1Mbps	24dBm	30dBm	±2dB
	2Mbps	24dBm	30dBm	±2dB
	5.5Mbps	24dBm	30dBm	±2dB
	11Mbps	24dBm	30dBm	±2dB
2.4GHz 802.11g	6Mbps	24dBm	30dBm	±2dB
	9Mbps	24dBm	30dBm	±2dB
	12Mbps	24dBm	30dBm	±2dB
	18Mbps	24dBm	30dBm	±2dB
	24Mbps	24dBm	30dBm	±2dB
	36Mbps	23dBm	29dBm	±2dB
	48Mbps	23dBm	29dBm	±2dB
2.4GHz 802.11n HT20	54Mbps	23dBm	29dBm	±2dB
	MCS 0	24dBm	30dBm	±2dB
	MCS 1	24dBm	30dBm	±2dB
	MCS 2	24dBm	30dBm	±2dB
	MCS 3	24dBm	30dBm	±2dB
	MCS 4	23dBm	29dBm	±2dB
	MCS 5	23dBm	29dBm	±2dB
	MCS 6	23dBm	29dBm	±2dB
2.4GHz 802.11n HT40	MCS 7	23dBm	29dBm	±2dB
	MCS 0	24dBm	30dBm	±2dB
	MCS 1	24dBm	30dBm	±2dB
	MCS 2	24dBm	30dBm	±2dB
	MCS 3	24dBm	30dBm	±2dB
	MCS 4	23dBm	29dBm	±2dB
	MCS 5	23dBm	29dBm	±2dB
	MCS 6	23dBm	29dBm	±2dB
2.4GHz 802.11ax HE20	MCS 7	23dBm	29dBm	±2dB
	MCS 0	24dBm	30dBm	±2dB
	MCS 1	24dBm	30dBm	±2dB
	MCS 2	24dBm	30dBm	±2dB
	MCS 3	24dBm	30dBm	±2dB
	MCS 4	23dBm	29dBm	±2dB
	MCS 5	23dBm	29dBm	±2dB
	MCS 6	23dBm	29dBm	±2dB
	MCS 7	23dBm	29dBm	±2dB
	MCS 8	22dBm	28dBm	±2dB
	MCS 9	22dBm	28dBm	±2dB
	MCS 10	21dBm	27dBm	±2dB
MCS 11	21dBm	27dBm	±2dB	

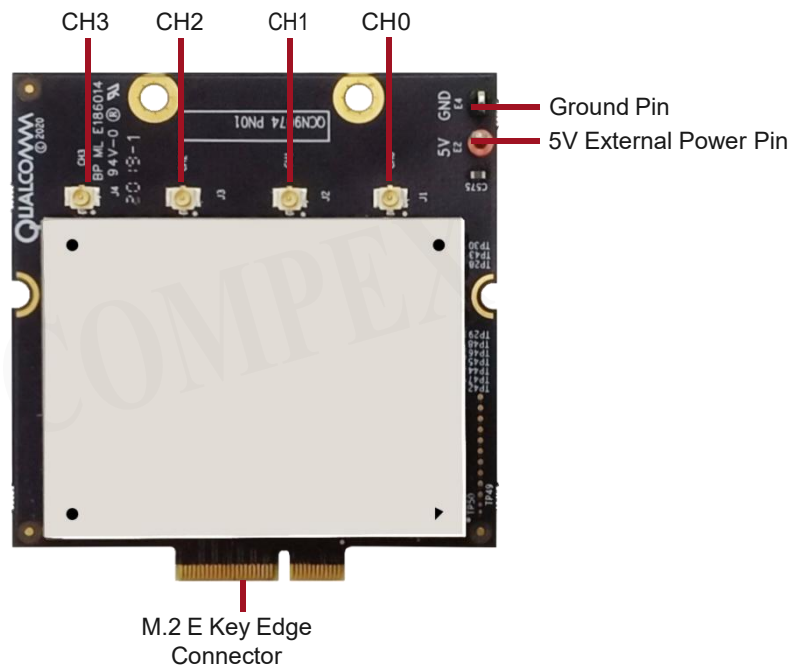
	Data Rate	RX Specifications Sensitivity	Tolerance
2.4GHz 802.11b	1Mbps	- 101 dBm	±2dB
	2Mbps	- 99 dBm	±2dB
	5.5Mbps	- 97 dBm	±2dB
	11Mbps	- 95 dBm	±2dB
2.4GHz 802.11g	6Mbps	- 96 dBm	±2dB
	9Mbps	- 94 dBm	±2dB
	12Mbps	- 94 dBm	±2dB
	18Mbps	- 92 dBm	±2dB
	24Mbps	- 90 dBm	±2dB
	36Mbps	- 87 dBm	±2dB
	48Mbps	- 84 dBm	±2dB
2.4GHz 802.11n HT20	54Mbps	- 81 dBm	±2dB
	MCS 0	- 96 dBm	±2dB
	MCS 1	- 94 dBm	±2dB
	MCS 2	- 92 dBm	±2dB
	MCS 3	- 89 dBm	±2dB
	MCS 4	- 86 dBm	±2dB
	MCS 5	- 84 dBm	±2dB
	MCS 6	- 82 dBm	±2dB
2.4GHz 802.11n HT40	MCS 7	- 80 dBm	±2dB
	MCS 0	- 94 dBm	±2dB
	MCS 1	- 92 dBm	±2dB
	MCS 2	- 90 dBm	±2dB
	MCS 3	- 87 dBm	±2dB
	MCS 4	- 84 dBm	±2dB
	MCS 5	- 82 dBm	±2dB
	MCS 6	- 80 dBm	±2dB
2.4GHz 802.11ax HE20	MCS 7	- 78 dBm	±2dB
	MCS 0	- 96 dBm	±2dB
	MCS 1	- 94 dBm	±2dB
	MCS 2	- 91 dBm	±2dB
	MCS 3	- 89 dBm	±2dB
	MCS 4	- 86 dBm	±2dB
	MCS 5	- 84 dBm	±2dB
	MCS 6	- 82 dBm	±2dB
	MCS 7	- 79 dBm	±2dB
	MCS 8	- 76 dBm	±2dB
	MCS 9	- 73 dBm	±2dB
	MCS 10	- 70 dBm	±2dB
MCS 11	- 67 dBm	±2dB	

## RF Performance Table for 2.4GHz

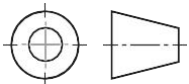
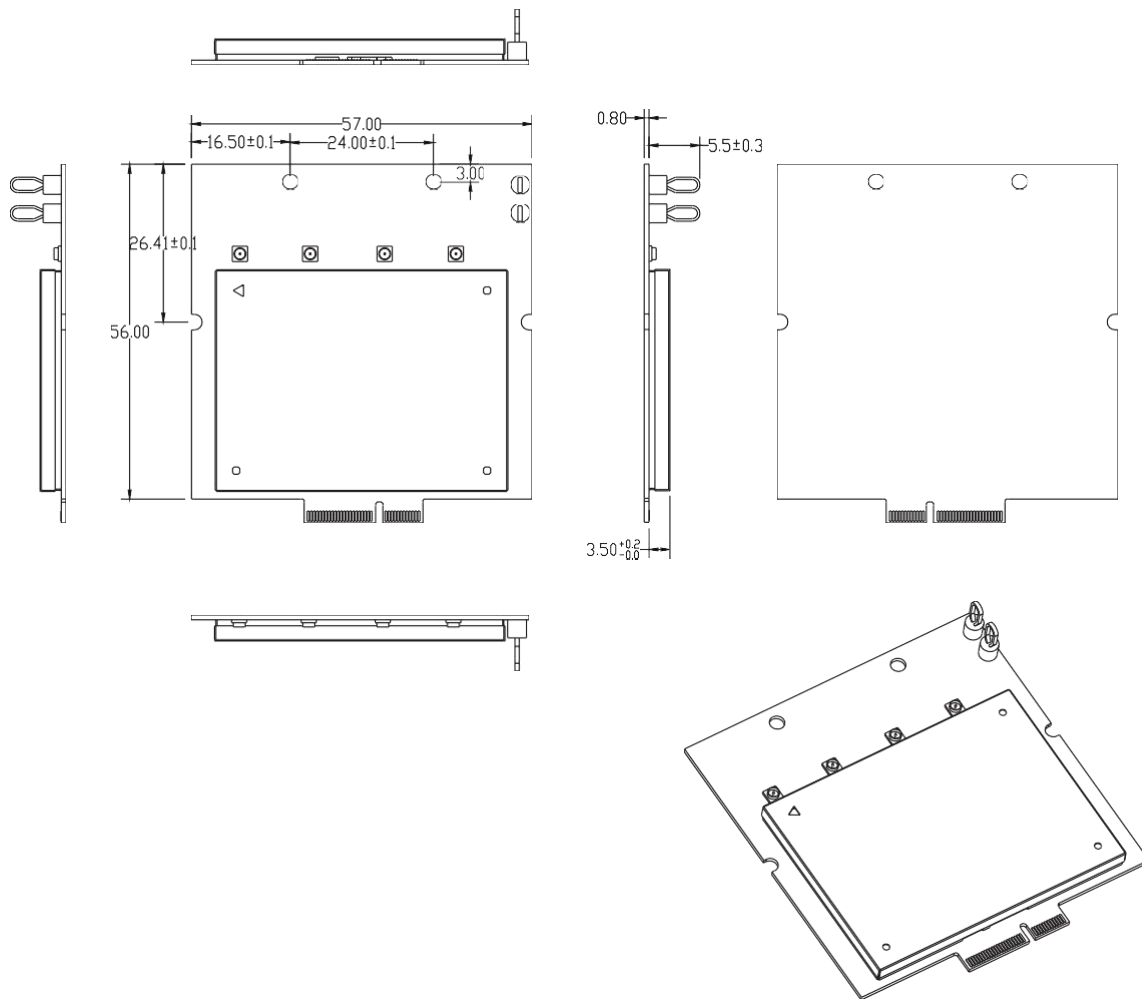
	Data Rate	TX Power (per chain)	TX Power (4 chains)	Tolerance
2.4GHz 802.11ax HE40	MCS 0	24dBm	30dBm	±2dB
	MCS 1	24dBm	30dBm	±2dB
	MCS 2	24dBm	30dBm	±2dB
	MCS 3	24dBm	30dBm	±2dB
	MCS 4	23dBm	29dBm	±2dB
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	MCS 6	23dBm	29dBm	±2dB
	MCS 7	23dBm	29dBm	±2dB
	MCS 8	22dBm	28dBm	±2dB
	MCS 9	22dBm	28dBm	±2dB
	MCS 10	21dBm	27dBm	±2dB
	MCS 11	21dBm	27dBm	±2dB

	Data Rate	RX Specifications Sensitivity	Tolerance
2.4GHz 802.11ax HE40	MCS 0	- 93 dBm	±2dB
	MCS 1	- 91 dBm	±2dB
	MCS 2	- 88 dBm	±2dB
	MCS 3	- 86 dBm	±2dB
	MCS 4	- 83 dBm	±2dB
	MCS 5	- 81 dBm	±2dB
	MCS 6	- 79 dBm	±2dB
	MCS 7	- 76 dBm	±2dB
	MCS 8	- 74 dBm	±2dB
	MCS 9	- 71 dBm	±2dB
	MCS 10	- 68 dBm	±2dB
	MCS 11	- 65 dBm	±2dB

## Component Map



## Mechanical Dimensions



All dimensions are in mm.

## Ordering Configuration

Item Code	Model	Description
RA.PN01.1 8A00PML-TE	PN01.1	4x4 802.11b/g/n/ax support 2.4GHz M.2 Module