4x4 Wave-2 802.11ac Wave 2 Mini PCIe WiFi Module
Full size form factor with 80+80MHz bandwidth support

Model: WLE1216V5-20-I

KEY FEATURES

- Qualcomm Atheros 'Cascade' QCA9984
- 5GHz max 20dBm output power (per chain)
- Heat sink allows free air operation
- IEEE 802.11ac compliant & backward compatible with 802.11a/n, up to 1733Mbps data rate
- Multi-user MIMO (MU-MIMO) beamformer
- 4 spatial streams (4SS) at 80MHz
- 2 spatial streams (2SS) at 80+80MHz
- Mini PCI Express 2.0 interface
- Supports Spatial Multiplexing, Cyclic-Delay Diversity (CDD), Low-Density Parity Check (LDPC) Codes, Maximal Ratio Combining (MRC), Space Time Block Code (STBC)
- Supports IEEE 802.11d, e, h, i, j, k, r, u, v time stamp, w , and z standards
- Supports Dynamic Frequency Selection (DFS)
- Designed for High Bandwidth Enterprise Wireless Access Points

Specifications

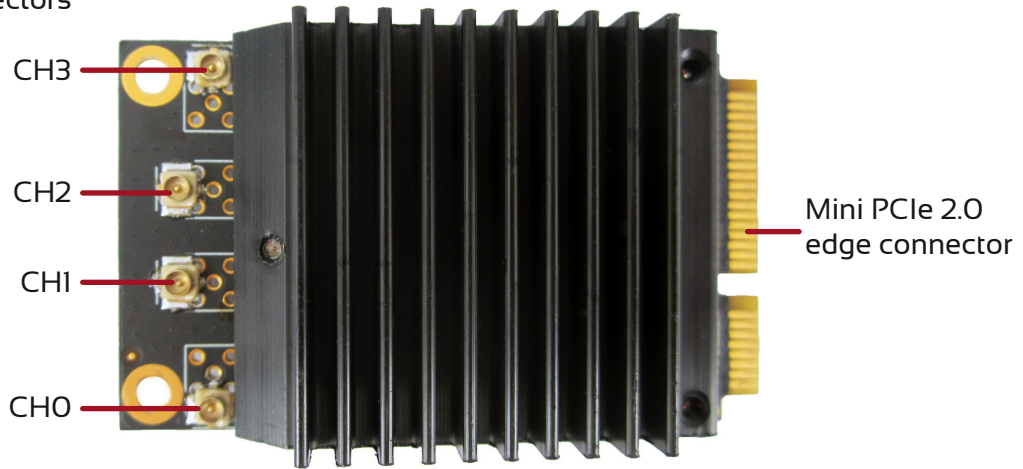|	
Chipset	QCA9994
System Memory	256Kbit serial I²C bus EEPROM
Host Interface	Mini PCI Express 2.0 Standard
Operating Voltage	3.3V
Antenna Connector	4x U.FL
Frequency Range	5.180 ~ 5.825 GHz
Certification	FCC and CE Certified
Power Consumption	8.5W (Max)
Supported Operating System	Supported by CompexWRT (v3.x and above) with Qualcomm Atheros reference wireless drivers; on WPJ558, WPJ563, and WPJ564: throughput up to 800Mbps; on WPQ864 and WPQ865: throughput up to 1300Mbps; or OpenWRT/LEDE with ath10k wireless drivers.
Modulation Techniques	OFDM: BPSK, QPSK, 16-QAM, 64-QAM, 256-QAM
Temperature Range	Operating: -20ºC to 70ºC Storage: -40ºC to 90ºC
Humidity	Operating: 5% to 95% (non-condensing) Storage: Max. 90% (non-condensing)
ESD Sensitivity	Class 1B
Dimensions (W x H x D)	29.9 x 50.8 x 12.9 mm

RF Performance Table

Data Rate	TX Power (per chain)	TX Power (4 chains)	Tolerance
5GHz 802.11a			
6Mbps	21dBm	27dBm	±2dB
9Mbps	21dBm	27dBm	±2dB
12Mbps	21dBm	27dBm	±2dB
18Mbps	21dBm	27dBm	±2dB
24Mbps	20dBm	26dBm	±2dB
36Mbps	19dBm	25dBm	±2dB
48Mbps	18dBm	24dBm	±2dB
54Mbps	17dBm	23dBm	±2dB
5GHz 802.11n/ac VHT20			
MCS 0	21dBm	27dBm	±2dB
MCS 1	21dBm	27dBm	±2dB
MCS 2	21dBm	27dBm	±2dB
MCS 3	20dBm	26dBm	±2dB
MCS 4	19dBm	25dBm	±2dB
MCS 5	18dBm	24dBm	±2dB
MCS 6	17dBm	23dBm	±2dB
MCS 7	16dBm	22dBm	±2dB
MCS 8	15dBm	21dBm	±2dB
5GHz 802.11n/ac VHT40			
MCS 0	21dBm	27dBm	±2dB
MCS 1	21dBm	27dBm	±2dB
MCS 2	21dBm	27dBm	±2dB
MCS 3	20dBm	26dBm	±2dB
MCS 4	19dBm	25dBm	±2dB
MCS 5	18dBm	24dBm	±2dB
MCS 6	18dBm	24dBm	±2dB
MCS 7	17dBm	23dBm	±2dB
MCS 8	16dBm	22dBm	±2dB
MCS 9	15dBm	21dBm	±2dB
5GHz 802.11ac VHT80			
MCS 0	20dBm	26dBm	±2dB
MCS 1	20dBm	26dBm	±2dB
MCS 2	20dBm	26dBm	±2dB
MCS 3	20dBm	26dBm	±2dB
MCS 4	19dBm	25dBm	±2dB
MCS 5	18dBm	24dBm	±2dB
MCS 6	18dBm	24dBm	±2dB
MCS 7	17dBm	23dBm	±2dB
MCS 8	16dBm	22dBm	±2dB
MCS 9	15dBm	21dBm	±2dB
5GHz 802.11ac VHT80+80			
MCS 0	20dBm	26dBm	±2dB
MCS 1	20dBm	26dBm	±2dB
MCS 2	20dBm	26dBm	±2dB
MCS 3	20dBm	26dBm	±2dB
MCS 4	19dBm	25dBm	±2dB
MCS 5	18dBm	24dBm	±2dB
MCS 6	18dBm	24dBm	±2dB
MCS 7	17dBm	23dBm	±2dB
MCS 8	16dBm	22dBm	±2dB
MCS 9	15dBm	21dBm	±2dB

Data Rate	RX Specifications Sensitivity	Tolerance
5GHz 802.11a		
6Mbps	-94dBm	±2dB
9Mbps	-93dBm	±2dB
12Mbps	-92dBm	±2dB
18Mbps	-89dBm	±2dB
24Mbps	-86dBm	±2dB
36Mbps	-84dBm	±2dB
48Mbps	-79dBm	±2dB
54Mbps	-77dBm	±2dB
5GHz 802.11n/ac VHT20		
MCS 0	-94dBm	±2dB
MCS 1	-91dBm	±2dB
MCS 2	-90dBm	±2dB
MCS 3	-86dBm	±2dB
MCS 4	-83dBm	±2dB
MCS 5	-80dBm	±2dB
MCS 6	-77dBm	±2dB
MCS 7	-75dBm	±2dB
MCS 8	-71dBm	±2dB
5GHz 802.11n/ac VHT40		
MCS 0	-91dBm	±2dB
MCS 1	-88dBm	±2dB
MCS 2	-85dBm	±2dB
MCS 3	-82dBm	±2dB
MCS 4	-79dBm	±2dB
MCS 5	-75dBm	±2dB
MCS 6	-73dBm	±2dB
MCS 7	-72dBm	±2dB
MCS 8	-69dBm	±2dB
MCS 9	-66dBm	±2dB
5GHz 802.11ac VHT80		
MCS 0	-88dBm	±2dB
MCS 1	-85dBm	±2dB
MCS 2	-83dBm	±2dB
MCS 3	-79dBm	±2dB
MCS 4	-76dBm	±2dB
MCS 5	-71dBm	±2dB
MCS 6	-69dBm	±2dB
MCS 7	-69dBm	±2dB
MCS 8	-65dBm	±2dB
MCS 9	-62dBm	±2dB

Feature Guide

U.FL connectors

CH3

CH2

CH1

CH0

Mini PCIe 2.0
edge connector

Mechanical Dimensions

29.90

24.20

50.80

1.00

9.00

2.50

2.90

9.10

36.00

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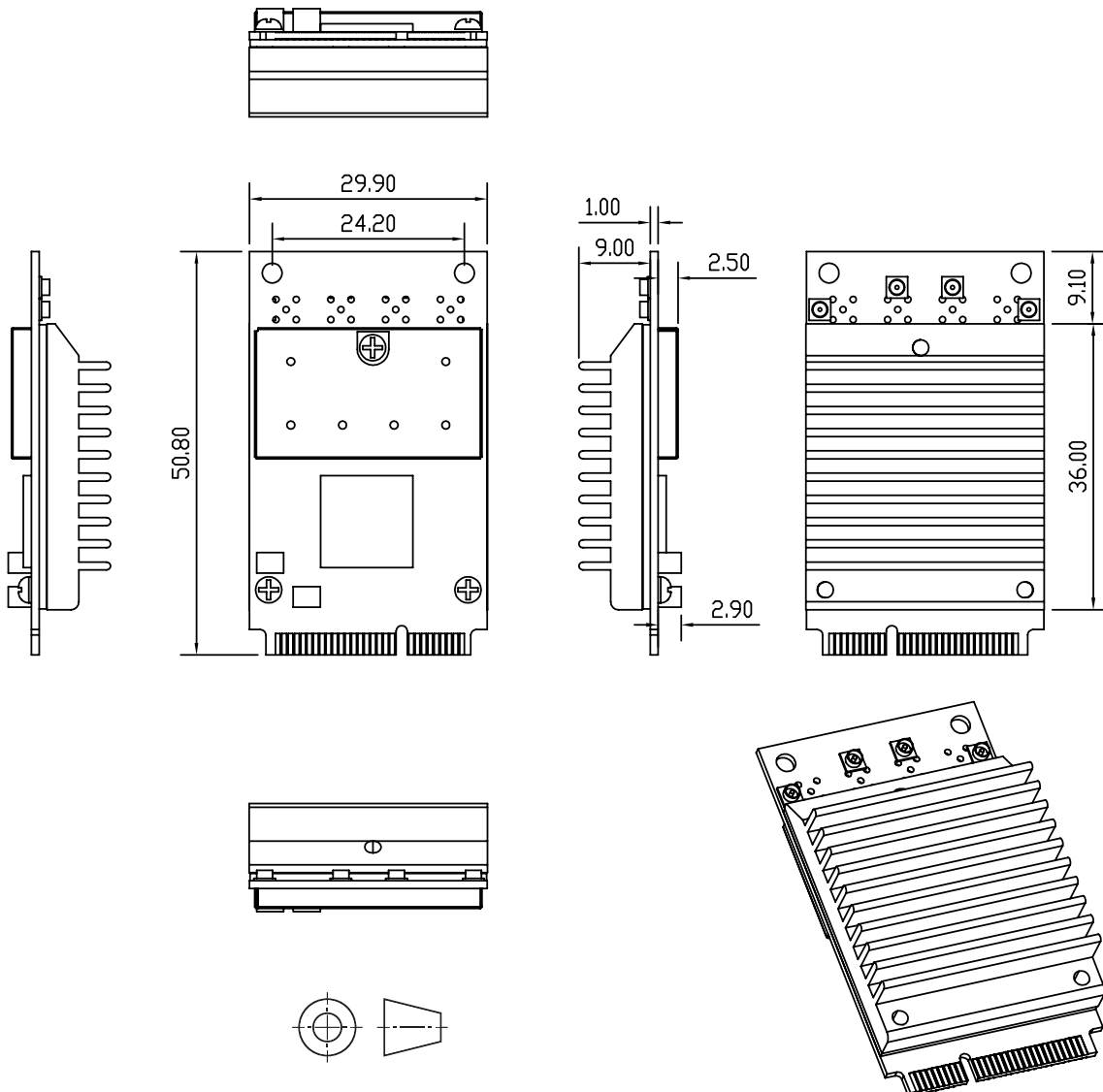
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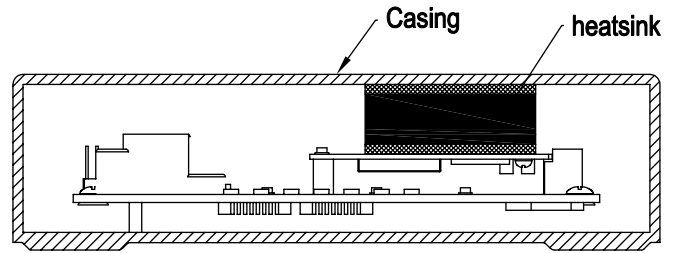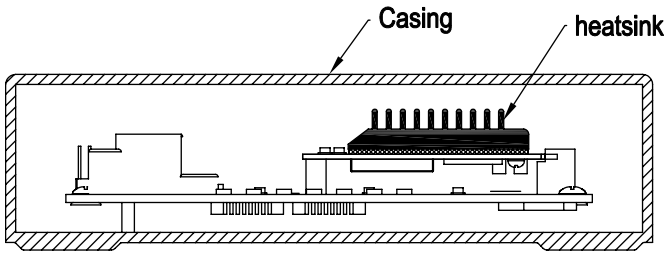
Ordering Configuration

Item Code	Model	Description
WLE1216V5-20 7B00001.03-I	WLE1216V5-20-I	Industrial Grade 4x4 802.11ac/a/n 5GHz Wave 2 miniPCIe card

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