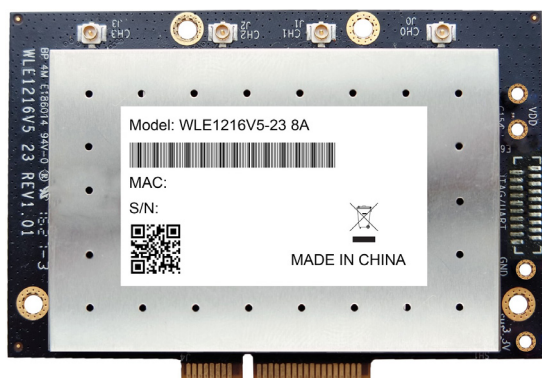


## 4x4 Wave-2 802.11ac/a/n Mini PCIe WiFi Module

With 160MHz and 80+80MHz bandwidth support

**Model: WLE1216V5-23**



### KEY FEATURES

- Qualcomm Atheros 'Cascade' QCA9984
- CUS239 Reference Design
- 5GHz max 23dBm output power (per chain)
- IEEE 802.11ac compliant & backward compatible with 802.11a/n, up to 1.73Gbps
- 2 spatial streams (2SS) MIMO 160MHz and 80+80MHz bandwidth support
- 4 spatial streams (4SS) Multi-user MIMO (MU-MIMO)
- 802.11ac explicit transmit beamforming (TxBF) and legacy implicit TxBF for both beamformer and beamformee
- MiniPCI 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

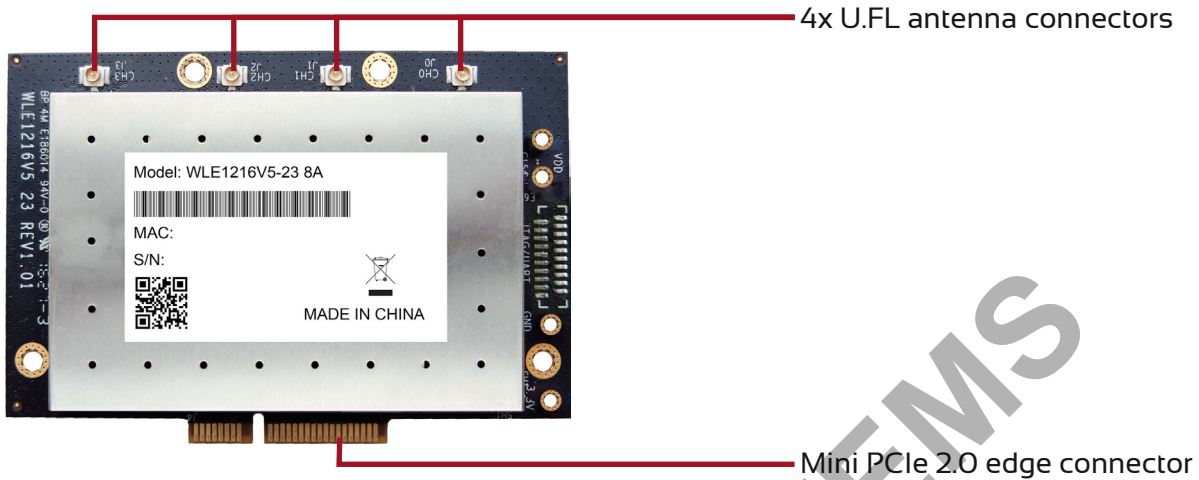
Chipset	QCA9984
Host Interface	MiniPCI-Express 2.0 Standard
Operating Voltage	5V
Antenna Connector	4x U.FL
Frequency Range	5.180 ~ 5.825 GHz
Power Consumption	13W (Max)
Supported Operating System	CompexWRT or OpenWRT/LEDE
Modulation Techniques	OFDM: BPSK, QPSK, 16-QAM, 64-QAM, 256-QAM
Certification	RoHS Compliant
Temperature Range	Operating: -20°C to 70°C Storage: -40°C to 90°C
Humidity	Operating: 5% to 95% (non-condensing) Storage: Max. 90% (non-condensing)
Dimensions (W x H x D)	73.7 x 51.0 x 5.5 mm

## RF Performance Table

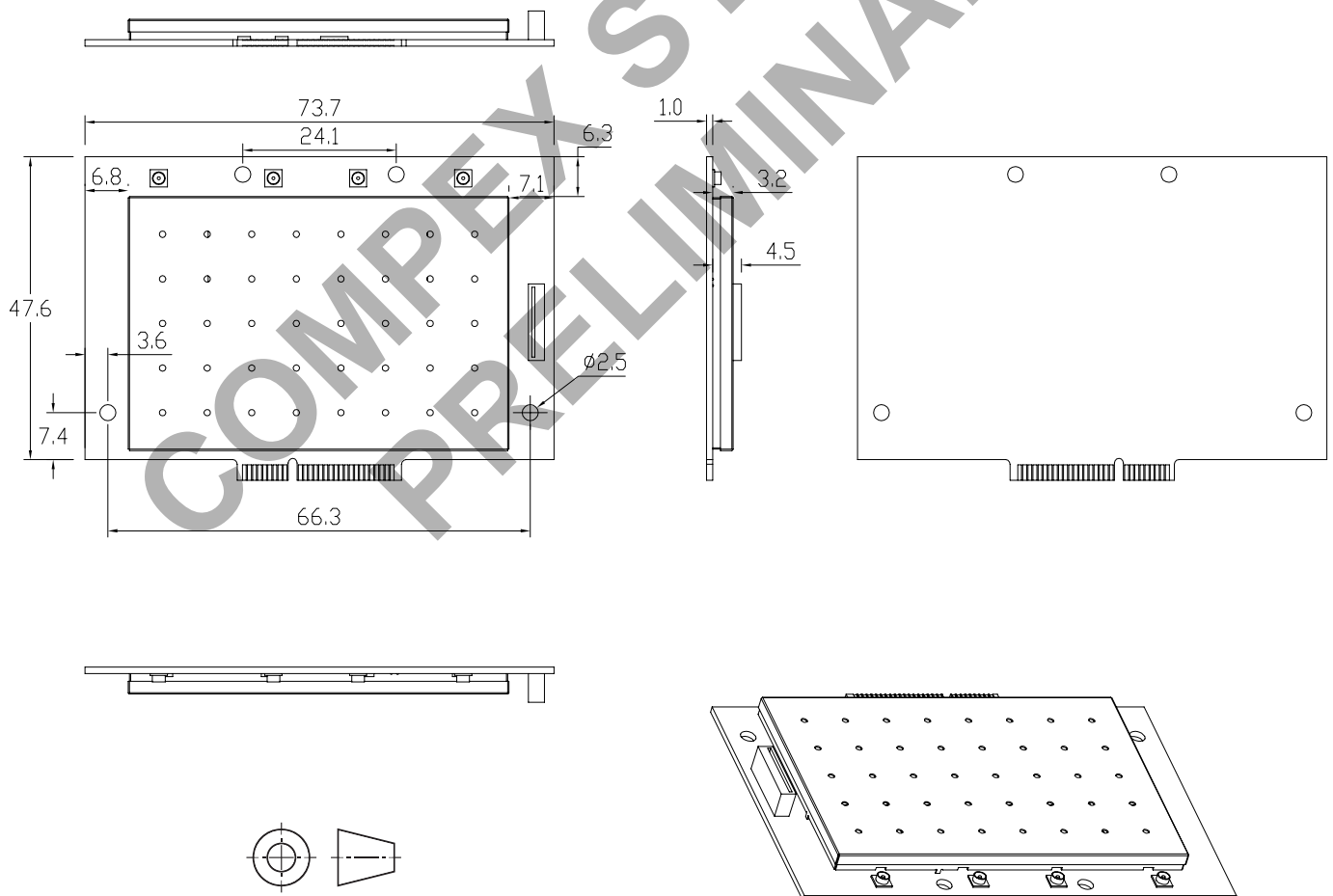
	Data Rate	Tx Power (per chain)	Tx Power (4 chains)	Tolerance
5GHz 802.11a	6Mbps	23dBm	29dBm	±2dB
	9Mbps	23dBm	29dBm	±2dB
	12Mbps	23dBm	29dBm	±2dB
	18Mbps	23dBm	29dBm	±2dB
	24Mbps	23dBm	29dBm	±2dB
	36Mbps	23dBm	29dBm	±2dB
	48Mbps	23dBm	29dBm	±2dB
	54Mbps	22dBm	28dBm	±2dB
5GHz 802.11n/ac VHT20	MCS 0	23dBm	29dBm	±2dB
	MCS 1	23dBm	29dBm	±2dB
	MCS 2	23dBm	29dBm	±2dB
	MCS 3	23dBm	29dBm	±2dB
	MCS 4	23dBm	29dBm	±2dB
	MCS 5	23dBm	29dBm	±2dB
	MCS 6	22dBm	28dBm	±2dB
	MCS 7	21dBm	27dBm	±2dB
5GHz 802.11n/ac VHT40	MCS 8	20dBm	26dBm	±2dB
	MCS 0	23dBm	29dBm	±2dB
	MCS 1	23dBm	29dBm	±2dB
	MCS 2	23dBm	29dBm	±2dB
	MCS 3	23dBm	29dBm	±2dB
	MCS 4	23dBm	29dBm	±2dB
	MCS 5	23dBm	29dBm	±2dB
	MCS 6	22dBm	28dBm	±2dB
	MCS 7	21dBm	27dBm	±2dB
	MCS 8	20dBm	26dBm	±2dB
5GHz 802.11ac VHT80	MCS 9	20dBm	26dBm	±2dB
	MCS 0	23dBm	29dBm	±2dB
	MCS 1	23dBm	29dBm	±2dB
	MCS 2	23dBm	29dBm	±2dB
	MCS 3	23dBm	29dBm	±2dB
	MCS 4	23dBm	29dBm	±2dB
	MCS 5	23dBm	29dBm	±2dB
	MCS 6	22dBm	28dBm	±2dB
	MCS 7	21dBm	27dBm	±2dB
	MCS 8	20dBm	26dBm	±2dB
5GHz 802.11ac VHT160	MCS 9	20dBm	26dBm	±2dB
	MCS 0	23dBm	29dBm	±2dB
	MCS 1	23dBm	29dBm	±2dB
	MCS 2	23dBm	29dBm	±2dB
	MCS 3	23dBm	29dBm	±2dB
	MCS 4	23dBm	29dBm	±2dB
	MCS 5	23dBm	29dBm	±2dB
	MCS 6	22dBm	28dBm	±2dB
	MCS 7	21dBm	27dBm	±2dB
	MCS 8	20dBm	26dBm	±2dB

	Data Rate	RX Specifications Sensitivity	Tolerance
5GHz 802.11a	6Mbps	-96dBm	±2dB
	9Mbps	TBA	±2dB
	12Mbps	TBA	±2dB
	18Mbps	TBA	±2dB
	24Mbps	TBA	±2dB
	36Mbps	TBA	±2dB
	48Mbps	TBA	±2dB
	54Mbps	-82dBm	±2dB
5GHz 802.11n/ac VHT20	MCS 0	-96dBm	±2dB
	MCS 1	TBA	±2dB
	MCS 2	TBA	±2dB
	MCS 3	TBA	±2dB
	MCS 4	TBA	±2dB
	MCS 5	TBA	±2dB
	MCS 6	TBA	±2dB
	MCS 7	-80dBm	±2dB
5GHz 802.11n/ac VHT40	MCS 8	-76dBm	±2dB
	MCS 0	-93dBm	±2dB
	MCS 1	TBA	±2dB
	MCS 2	TBA	±2dB
	MCS 3	TBA	±2dB
	MCS 4	TBA	±2dB
	MCS 5	TBA	±2dB
	MCS 6	TBA	±2dB
	MCS 7	-78dBm	±2dB
	MCS 8	TBA	±2dB
5GHz 802.11ac VHT80	MCS 9	-72dBm	±2dB
	MCS 0	-89dBm	±2dB
	MCS 1	TBA	±2dB
	MCS 2	TBA	±2dB
	MCS 3	TBA	±2dB
	MCS 4	TBA	±2dB
	MCS 5	TBA	±2dB
	MCS 6	TBA	±2dB
	MCS 7	-75dBm	±2dB
	MCS 8	TBA	±2dB
5GHz 802.11ac VHT160	MCS 9	-68dBm	±2dB
	MCS 0	-89dBm	±2dB
	MCS 1	TBA	±2dB
	MCS 2	TBA	±2dB
	MCS 3	TBA	±2dB
	MCS 4	TBA	±2dB
	MCS 5	TBA	±2dB
	MCS 6	TBA	±2dB
	MCS 7	-75dBm	±2dB
	MCS 8	TBA	±2dB

## Feature Guide



## Mechanical Dimensions



## Packaging Content

Item	Quantity
WLE1216V5-23 Wireless Module	1

## Ordering Configuration

Item Code	Chipset	Form Factor	Card Information
WLE1216V5-23 8A00001.01	Atheros 9984	Wide size card	4x4 802.11ac 5GHz

## Packaging Information

Packaging	Dimension	Weight	Dimensional Weight
Packing Box (40pcs)	385 x 207 x 76 mm	0.64 kg	1.2 kg
Carton Box (200pcs)	422 x 410 x 240 mm	5.51 kg	8.3 kg

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