

Dual Band 2.4/5GHz 3x3 802.11ac Wave 1 MiniPCle WiFi Module Designed for Dual Band High Speed Wireless Access Points

Model: WLE900VX-I



KEY FEATURES

- Qualcomm Atheros QCA9890
- 2.4GHz, 3x3 MIMO OFDM Technology, up to 600Mbps physical data rate
- 5GHz, 3x3 MIMO OFDM Technology, up to 1300Mbps physical data rate
- Dual Band 2.4/5GHz 3x3 WiFi 5 (802.11ac Wave 1)
- MiniPCle interface with PCIe 1.1
- IEEE 802.11ac compliant & backward compatible with 802.11a/b/g/n
- 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, v time stamp, and w standards
- Supports Dynamic Frequency Selection (DFS)
- Cards are individually calibrated for Quality Assurance
- Supports 4.9 GHz operation

Specifications

Chipset	Qualcomm Atheros QCA9890 'Peregrine' Series
Reference Design	Qualcomm Atheros XB140
Host Interface	MiniPCle interface with PCIe 1.1
Operating Voltage	3.3V
Power Consumption	5W (Max)
Wireless	2.4GHz 802.11b/g/n, max 21dBm per chain 5GHz 802.11a/n/ac, max 20dBm per chain 3x U.FL Connectors
Frequency Range	2.412~2.472GHz, 4.920~5.825GHz, selectable dual band
Modulation Techniques	OFDM: BPSK, QPSK, DBPSK, DQPSK, 16-QAM, 64-QAM, 256-QAM
Channel Spectrum Widths for WLAN	Supports 20/40MHz at 2.4GHz, Supports 20/40/80MHz at 5GHz
ESD Sensitivity	Class 1C
Supported Operating System	Supported by CompexWRT with Qualcomm Atheros reference wireless drivers or OpenWRT/LEDE with ath10k wireless drivers, on WPJ344, WPJ558, WPJ563, WPJ564, WPQ864, and WPQ865.
Certification	FCC, CE Certified, REACH and RoHS Compliance
Environmental Temperature (Industrial Grade)	Operating: -40°C to 70°C*, Storage: -40°C to 90°C *The wireless module can operate up to 90°C. For long term reliability, it is recommended that a 20°C safety margin be maintained.
Environmental Humidity, Non-Condensing	Operating: 5% to 95%, Storage: Max. 90%
Dimensions (W x H x D) in mm	29.85 x 50.8 x 3.2

*Configurations are subject to change without notifications.

RF Performance Table for 2.4GHz

	Data Rate	TX Power (per chain)	TX Power (3 chains)	Tolerance
2.4GHz 802.11b	1 Mbps	20 dBm	25 dBm	± 2 dB
	2 Mbps	20 dBm	25 dBm	± 2 dB
	5.5 Mbps	20 dBm	25 dBm	± 2 dB
	11 Mbps	20 dBm	25 dBm	± 2 dB
2.4GHz 802.11g	6 Mbps	21 dBm	26 dBm	± 2 dB
	9 Mbps	21 dBm	26 dBm	± 2 dB
	12 Mbps	21 dBm	26 dBm	± 2 dB
	18 Mbps	21 dBm	26 dBm	± 2 dB
	24 Mbps	21 dBm	26 dBm	± 2 dB
	36 Mbps	20 dBm	25 dBm	± 2 dB
	48 Mbps	19 dBm	24 dBm	± 2 dB
	54 Mbps	18 dBm	23 dBm	± 2 dB
2.4GHz 802.11n HT20	MCS 0	21 dBm	26 dBm	± 2 dB
	MCS 1	21 dBm	26 dBm	± 2 dB
	MCS 2	21 dBm	26 dBm	± 2 dB
	MCS 3	20 dBm	25 dBm	± 2 dB
	MCS 4	20 dBm	25 dBm	± 2 dB
	MCS 5	20 dBm	25 dBm	± 2 dB
	MCS 6	18 dBm	23 dBm	± 2 dB
	MCS 7	16 dBm	21 dBm	± 2 dB
2.4GHz 802.11n HT40	MCS 0	20 dBm	25 dBm	± 2 dB
	MCS 1	20 dBm	25 dBm	± 2 dB
	MCS 2	20 dBm	25 dBm	± 2 dB
	MCS 3	19 dBm	24 dBm	± 2 dB
	MCS 4	19 dBm	24 dBm	± 2 dB
	MCS 5	19 dBm	24 dBm	± 2 dB
	MCS 6	18 dBm	23 dBm	± 2 dB
	MCS 7	16 dBm	21 dBm	± 2 dB

	Data Rate	RX Specifications Sensitivity	Tolerance
2.4GHz 802.11b	1 Mbps	-95 dBm	± 2 dB
	2 Mbps	-94 dBm	± 2 dB
	5.5 Mbps	-92 dBm	± 2 dB
	11 Mbps	-90 dBm	± 2 dB
2.4GHz 802.11g	6 Mbps	-94 dBm	± 2 dB
	9 Mbps	-93 dBm	± 2 dB
	12 Mbps	-92 dBm	± 2 dB
	18 Mbps	-90 dBm	± 2 dB
	24 Mbps	-88 dBm	± 2 dB
	36 Mbps	-85 dBm	± 2 dB
	48 Mbps	-81 dBm	± 2 dB
	54 Mbps	-80 dBm	± 2 dB
2.4GHz 802.11n HT20	MCS 0	-94 dBm	± 2 dB
	MCS 1	-91 dBm	± 2 dB
	MCS 2	-89 dBm	± 2 dB
	MCS 3	-84 dBm	± 2 dB
	MCS 4	-83 dBm	± 2 dB
	MCS 5	-78 dBm	± 2 dB
	MCS 6	-78 dBm	± 2 dB
	MCS 7	-76 dBm	± 2 dB
2.4GHz 802.11n HT40	MCS 0	-92 dBm	± 2 dB
	MCS 1	-88 dBm	± 2 dB
	MCS 2	-85 dBm	± 2 dB
	MCS 3	-82 dBm	± 2 dB
	MCS 4	-79 dBm	± 2 dB
	MCS 5	-75 dBm	± 2 dB
	MCS 6	-75 dBm	± 2 dB
	MCS 7	-73 dBm	± 2 dB

RF Performance Table for 5GHz

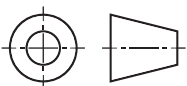
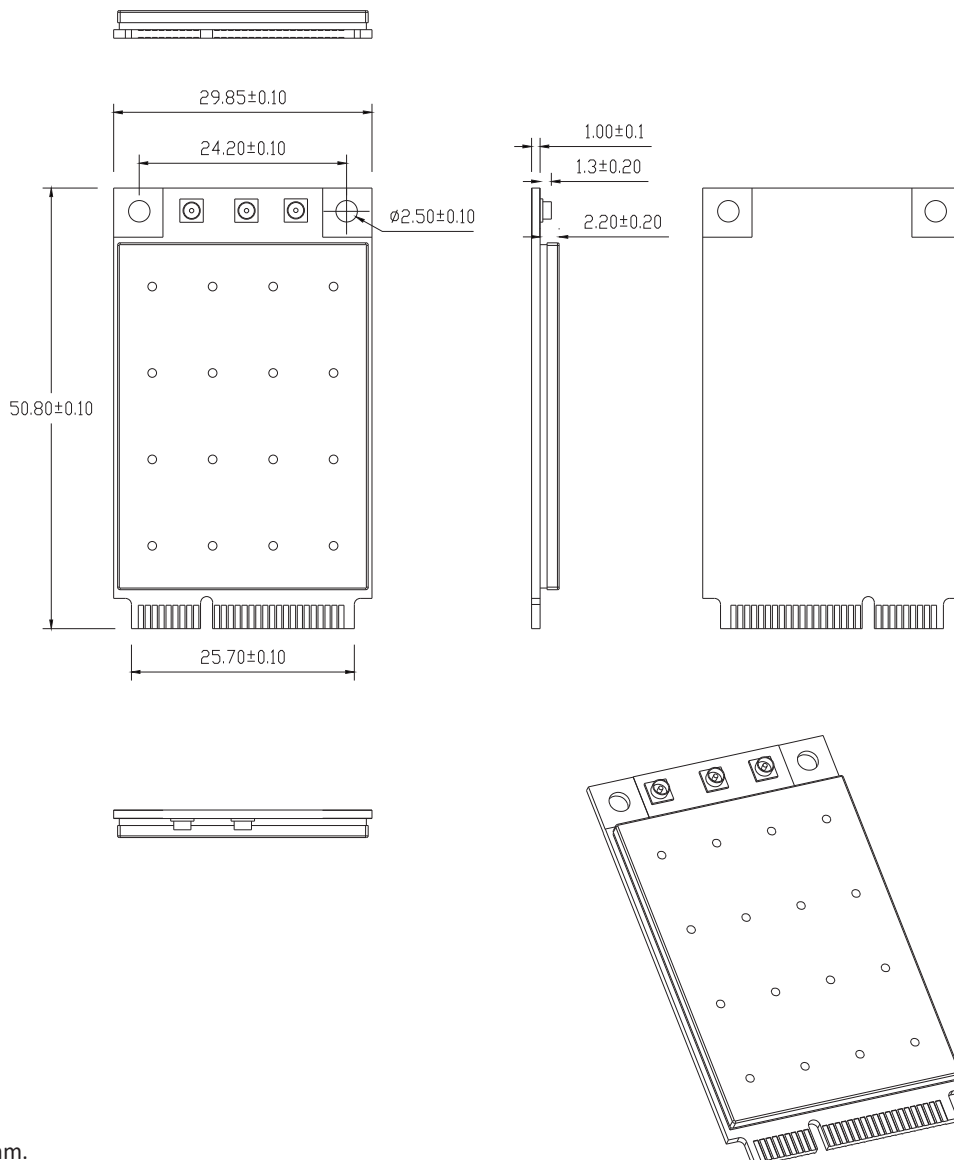
	Data Rate	TX Power (per chain)	TX Power (3 chains)	Tolerance
5GHz 802.11a	6 Mbps	20 dBm	25 dBm	± 2 dB
	9 Mbps	20 dBm	25 dBm	± 2 dB
	12 Mbps	20 dBm	25 dBm	± 2 dB
	18 Mbps	20 dBm	25 dBm	± 2 dB
	24 Mbps	20 dBm	25 dBm	± 2 dB
	36 Mbps	18 dBm	23 dBm	± 2 dB
	48 Mbps	16 dBm	21 dBm	± 2 dB
	54 Mbps	15 dBm	20 dBm	± 2 dB
5GHz 802.11n/ac VHT20	MCS 0	19 dBm	24 dBm	± 2 dB
	MCS 1	19 dBm	24 dBm	± 2 dB
	MCS 2	19 dBm	24 dBm	± 2 dB
	MCS 3	18 dBm	23 dBm	± 2 dB
	MCS 4	18 dBm	23 dBm	± 2 dB
	MCS 5	17 dBm	22 dBm	± 2 dB
	MCS 6	16 dBm	21 dBm	± 2 dB
	MCS 7	14 dBm	19 dBm	± 2 dB
	MCS 8	13 dBm	18 dBm	± 2 dB
5GHz 802.11n/ac VHT40	MCS 0	18 dBm	23 dBm	± 2 dB
	MCS 1	18 dBm	23 dBm	± 2 dB
	MCS 2	18 dBm	23 dBm	± 2 dB
	MCS 3	17 dBm	22 dBm	± 2 dB
	MCS 4	17 dBm	22 dBm	± 2 dB
	MCS 5	16 dBm	21 dBm	± 2 dB
	MCS 6	15 dBm	20 dBm	± 2 dB
	MCS 7	14 dBm	19 dBm	± 2 dB
	MCS 8	13 dBm	18 dBm	± 2 dB
	MCS 9	13 dBm	18 dBm	± 2 dB
5GHz 802.11ac VHT80	MCS 0	18 dBm	23 dBm	± 2 dB
	MCS 1	18 dBm	23 dBm	± 2 dB
	MCS 2	18 dBm	23 dBm	± 2 dB
	MCS 3	17 dBm	22 dBm	± 2 dB
	MCS 4	17 dBm	22 dBm	± 2 dB
	MCS 5	16 dBm	21 dBm	± 2 dB
	MCS 6	15 dBm	20 dBm	± 2 dB
	MCS 7	14 dBm	19 dBm	± 2 dB
	MCS 8	13 dBm	18 dBm	± 2 dB
	MCS 9	13 dBm	18 dBm	± 2 dB

	Data Rate	RX Specifications Sensitivity	Tolerance
5GHz 802.11a	6 Mbps	-94 dBm	± 2 dB
	9 Mbps	-94 dBm	± 2 dB
	12 Mbps	-92 dBm	± 2 dB
	18 Mbps	-90 dBm	± 2 dB
	24 Mbps	-86 dBm	± 2 dB
	36 Mbps	-84 dBm	± 2 dB
	48 Mbps	-81 dBm	± 2 dB
	54 Mbps	-80 dBm	± 2 dB
5GHz 802.11n/ac VHT20	MCS 0	-93 dBm	± 2 dB
	MCS 1	-90 dBm	± 2 dB
	MCS 2	-87 dBm	± 2 dB
	MCS 3	-83 dBm	± 2 dB
	MCS 4	-80 dBm	± 2 dB
	MCS 5	-77 dBm	± 2 dB
	MCS 6	-74 dBm	± 2 dB
	MCS 7	-73 dBm	± 2 dB
	MCS 8	-71 dBm	± 2 dB
5GHz 802.11n/ac VHT40	MCS 0	-90 dBm	± 2 dB
	MCS 1	-88 dBm	± 2 dB
	MCS 2	-85 dBm	± 2 dB
	MCS 3	-82 dBm	± 2 dB
	MCS 4	-79 dBm	± 2 dB
	MCS 5	-75 dBm	± 2 dB
	MCS 6	-73 dBm	± 2 dB
	MCS 7	-73 dBm	± 2 dB
	MCS 8	-69 dBm	± 2 dB
	MCS 9	-67 dBm	± 2 dB
5GHz 802.11ac VHT80	MCS 0	-88 dBm	± 2 dB
	MCS 1	-86 dBm	± 2 dB
	MCS 2	-84 dBm	± 2 dB
	MCS 3	-81 dBm	± 2 dB
	MCS 4	-77 dBm	± 2 dB
	MCS 5	-74 dBm	± 2 dB
	MCS 6	-73 dBm	± 2 dB
	MCS 7	-70 dBm	± 2 dB
	MCS 8	-67 dBm	± 2 dB
	MCS 9	-66 dBm	± 2 dB

Component Map



Mechanical Dimensions



All dimensions are in mm.

Ordering Configuration

Item Code	Model	Description
WLE900VX 7BA000S-I	WLE900VX-I	Industrial Grade 3x3 802.11 a/b/g/n/ac 2.4GHz/5GHz miniPCIe card