

## 3x3 Wave-2 802.11ac/a/n Mini PCIe WiFi Module

Full size form factor with 80+80MHz bandwidth support

**Model: WLE1000V5-20**



### KEY FEATURES

- Qualcomm Atheros 'Beeliner' QCA9982
- 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 1.3Gbps
- Multi-user MIMO (MU-MIMO) beamformer
- 802.11ac explicit transmit beamforming (TxBF) and legacy implicit TxBF for both beamformer and beamformee
- 3 spatial streams (3SS) at 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                | QCA9982   |
| System Memory          | 256Kbit serial I <sup>2</sup> C bus EEPROM                                  |
| Host Interface         | Mini PCI Express 2.0 Standard   |
| Operating Voltage      | 3.3V  |
| Antenna Connector      | 3x U.FL   |
| Frequency Range        | 5.180 ~ 5.825 GHz   |
| Power Consumption      | 8.5W (Max)  |
| Modulation Techniques  | OFDM: BPSK, QPSK, 16-QAM, 64-QAM, 256-QAM                                   |
| Temperature Range      | Operating: -20°C to 70°C<br>Storage: -40°C to 90°C                          |
| Humidity               | Operating: 5% to 95% (non-condensing)<br>Storage: Max. 90% (non-condensing) |
| Dimensions (H x W x D) | 50.8mm x 29.9mm x 12.9mm  |

## RF Performance Table

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

|                              | Data Rate | RX Specifications Sensitivity | Tolerance |
|------------------------------|-----------|-------------------------------|-----------|
| 5GHz<br>802.11a              | 6Mbps     | TBA                           | ±2dB      |
|                              | 9Mbps     | TBA                           | ±2dB      |
|                              | 12Mbps    | TBA                           | ±2dB      |
|                              | 18Mbps    | TBA                           | ±2dB      |
|                              | 24Mbps    | TBA                           | ±2dB      |
|                              | 36Mbps    | TBA                           | ±2dB      |
|                              | 48Mbps    | TBA                           | ±2dB      |
|                              | 54Mbps    | TBA                           | ±2dB      |
| 5GHz<br>802.11n/ac<br>VHT20  | MCS 0     | TBA                           | ±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     | TBA                           | ±2dB      |
| 5GHz<br>802.11n/ac<br>VHT40  | MCS 0     | TBA                           | ±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     | TBA                           | ±2dB      |
| 5GHz<br>802.11ac<br>VHT80    | MCS 0     | TBA                           | ±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     | TBA                           | ±2dB      |
| 5GHz<br>802.11ac<br>VHT80+80 | MCS 0     | TBA                           | ±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     | TBA                           | ±2dB      |
| 5GHz<br>802.11ac<br>VHT80+80 | MCS 8     | TBA                           | ±2dB      |
|                              | MCS 9     | TBA                           | ±2dB      |