

Qualcomm's IPQ6018 802.11ax (WiFi 6) Embedded Board 2.5Gbps Port / Dual Band Dual Concurrent / MU-MIMO OFDMA

Model: WPQ618



KEY FEATURES

- Qualcomm Atheros IPQ6018 Quad Core ARM 64bit A53 1.8GHz processor
- 2x2 on-board 2.4GHz radio, up to 573Mbps physical data rate
- 2x2 on-board 5GHz radio, up to 1201Mbps physical data rate
- Supports Dynamic Frequency Selection (DFS)

APPLICATIONS

- 802.11ax MU-MIMO OFDMA Access Point
- Mesh router supporting EasyMesh
- Smart AP TWT

Specifications

| | |
|--|--|
| Chipset | Qualcomm Atheros IPQ6018 Quad Core ARM 64 bit A53 1.8GHz processor 'Cypress' Series |
| Reference Design | Qualcomm Atheros CP01 |
| System Memory | 1GB (2x 512MB) DDR3L 16-bit interface with 32-bit memory bus design |
| NAND Flash | 256MB |
| NOR Flash | 32MB |
| Wireless | On-board 2x2 2.4GHz MU-MIMO OFDMA 802.11b/g/n/ax, max 20dBm per chain On-board 2x2 5GHz MU-MIMO OFDMA 802.11a/n/ac/ax, max 20dBm per chain 4x U.FL Connectors |
| Frequency Range | 2.412~2.472GHz, 5.150~5.825GHz |
| Modulation Techniques | OFDMA: BPSK, QPSK, 16-QAM, 64-QAM, 256-QAM, 1024-QAM |
| NGFF Slot | 1x M.2 (NGFF) B Key Socket with PCIe 3.0 1x M.2 (NGFF) B Key Socket with USB 3.0 |
| Interface | 4x 1Gbps Ethernet Ports, 1x 2.5Gbps Ethernet Port 1x USB 2.0 Port 4x SIM Card Slots 1x SD Card Slot 1x JTAG 20 Pin Connector 1x Serial Port Connector |
| Reset Button | 1x H/W Reset Button, 1x S/W Reset Button |
| Power over Ethernet (PoE) | Supports IEEE 802.3at 48~56V |
| DC Power | 1x DC Jack Connector: 12V |
| Power consumption | 17.5W (Max) (Including Bluetooth) |
| Bluetooth | CSR8811 BLE 4.2 |
| 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% |
| Dimension (W x H x D) in mm | 128 x 210 x 33.9 (With Heatsink) |

1. The Serial Port is a 4-pin header (TTL). A Serial Converter is available to change the TTL signals on the board to RS-232 signals for debugging.

2. The JTAG Port is a 20-pin header. A JTAG kit is for writing your self-developed loader and firmware directly.

*Configurations are subject to change without notifications.

RF Performance Table for 2.4GHz

| | Data Rate | TX Power (per chain) | TX Power (2 chains) | Tolerance |
|---------------------------|-----------|----------------------|---------------------|-----------|
| 2.4GHz 802.11b | 1Mbps | 20dBm | 23dBm | ±2dB |
| | 2Mbps | 20dBm | 23dBm | ±2dB |
| | 5.5Mbps | 20dBm | 23dBm | ±2dB |
| | 11Mbps | 20dBm | 23dBm | ±2dB |
| 2.4GHz 802.11g | 6Mbps | 20dBm | 23dBm | ±2dB |
| | 9Mbps | 20dBm | 23dBm | ±2dB |
| | 12Mbps | 20dBm | 23dBm | ±2dB |
| | 18Mbps | 20dBm | 23dBm | ±2dB |
| | 24Mbps | 20dBm | 23dBm | ±2dB |
| | 36Mbps | 20dBm | 23dBm | ±2dB |
| | 48Mbps | 20dBm | 23dBm | ±2dB |
| | 54Mbps | 20dBm | 23dBm | ±2dB |
| 2.4GHz 802.11n HT20 | MCS 0 | 20dBm | 23dBm | ±2dB |
| | MCS 1 | 20dBm | 23dBm | ±2dB |
| | MCS 2 | 20dBm | 23dBm | ±2dB |
| | MCS 3 | 20dBm | 23dBm | ±2dB |
| | MCS 4 | 20dBm | 23dBm | ±2dB |
| | MCS 5 | 20dBm | 23dBm | ±2dB |
| | MCS 6 | 20dBm | 23dBm | ±2dB |
| | MCS 7 | 19dBm | 22dBm | ±2dB |
| 2.4GHz 802.11n HT40 | MCS 0 | 20dBm | 23dBm | ±2dB |
| | MCS 1 | 20dBm | 23dBm | ±2dB |
| | MCS 2 | 20dBm | 23dBm | ±2dB |
| | MCS 3 | 20dBm | 23dBm | ±2dB |
| | MCS 4 | 20dBm | 23dBm | ±2dB |
| | MCS 5 | 20dBm | 23dBm | ±2dB |
| | MCS 6 | 20dBm | 23dBm | ±2dB |
| | MCS 7 | 19dBm | 22dBm | ±2dB |

| | Data Rate | RX Specifications Sensitivity | Tolerance |
|---------------------------|-----------|-------------------------------|-----------|
| 2.4GHz 802.11b | 1Mbps | -101 | ±2dB |
| | 2Mbps | -99 | ±2dB |
| | 5.5Mbps | -97 | ±2dB |
| | 11Mbps | -94 | ±2dB |
| 2.4GHz 802.11g | 6Mbps | -97 | ±2dB |
| | 9Mbps | -95 | ±2dB |
| | 12Mbps | -92 | ±2dB |
| | 18Mbps | -90 | ±2dB |
| | 24Mbps | -87 | ±2dB |
| | 36Mbps | -85 | ±2dB |
| | 48Mbps | -83 | ±2dB |
| | 54Mbps | -81 | ±2dB |
| 2.4GHz 802.11n HT20 | MCS 0 | -96 | ±2dB |
| | MCS 1 | -94 | ±2dB |
| | MCS 2 | -92 | ±2dB |
| | MCS 3 | -90 | ±2dB |
| | MCS 4 | -88 | ±2dB |
| | MCS 5 | -86 | ±2dB |
| | MCS 6 | -83 | ±2dB |
| | MCS 7 | -80 | ±2dB |
| 2.4GHz 802.11n HT40 | MCS 0 | -94 | ±2dB |
| | MCS 1 | -92 | ±2dB |
| | MCS 2 | -90 | ±2dB |
| | MCS 3 | -88 | ±2dB |
| | MCS 4 | -86 | ±2dB |
| | MCS 5 | -83 | ±2dB |
| | MCS 6 | -80 | ±2dB |
| | MCS 7 | -77 | ±2dB |

RF Performance Table for 2.4GHz

| | Data Rate | TX Power (per chain) | TX Power (2 chains) | Tolerance |
|----------------------------|-----------|----------------------|---------------------|-----------|
| 2.4GHz 802.11ax HE20 | MCS 0 | 20dBm | 23dBm | ±2dB |
| | MCS 1 | 20dBm | 23dBm | ±2dB |
| | MCS 2 | 20dBm | 23dBm | ±2dB |
| | MCS 3 | 20dBm | 23dBm | ±2dB |
| | MCS 4 | 20dBm | 23dBm | ±2dB |
| | MCS 5 | 20dBm | 23dBm | ±2dB |
| | MCS 6 | 20dBm | 23dBm | ±2dB |
| | MCS 7 | 19dBm | 22dBm | ±2dB |
| | MCS 8 | 18dBm | 21dBm | ±2dB |
| | MCS 9 | 18dBm | 21dBm | ±2dB |
| | MCS 10 | 16dBm | 19dBm | ±2dB |
| | MCS 11 | 15dBm | 18dBm | ±2dB |
| 2.4GHz 802.11ax HE40 | MCS 0 | 20dBm | 23dBm | ±2dB |
| | MCS 1 | 20dBm | 23dBm | ±2dB |
| | MCS 2 | 20dBm | 23dBm | ±2dB |
| | MCS 3 | 20dBm | 23dBm | ±2dB |
| | MCS 4 | 20dBm | 23dBm | ±2dB |
| | MCS 5 | 20dBm | 23dBm | ±2dB |
| | MCS 6 | 20dBm | 23dBm | ±2dB |
| | MCS 7 | 19dBm | 22dBm | ±2dB |
| | MCS 8 | 18dBm | 21dBm | ±2dB |
| | MCS 9 | 18dBm | 21dBm | ±2dB |
| | MCS 10 | 16dBm | 19dBm | ±2dB |
| | MCS 11 | 15dBm | 18dBm | ±2dB |

| | Data Rate | RX Specifications Sensitivity | Tolerance |
|----------------------------|-----------|-------------------------------|-----------|
| 2.4GHz 802.11ax HE20 | MCS 0 | -97 | ±2dB |
| | MCS 1 | -95 | ±2dB |
| | MCS 2 | -92 | ±2dB |
| | MCS 3 | -90 | ±2dB |
| | MCS 4 | -87 | ±2dB |
| | MCS 5 | -84 | ±2dB |
| | MCS 6 | -81 | ±2dB |
| | MCS 7 | -78 | ±2dB |
| | MCS 8 | -75 | ±2dB |
| | MCS 9 | -72 | ±2dB |
| | MCS 10 | -69 | ±2dB |
| | MCS 11 | -66 | ±2dB |
| 2.4GHz 802.11ax HE40 | MCS 0 | -95 | ±2dB |
| | MCS 1 | -93 | ±2dB |
| | MCS 2 | -90 | ±2dB |
| | MCS 3 | -87 | ±2dB |
| | MCS 4 | -84 | ±2dB |
| | MCS 5 | -81 | ±2dB |
| | MCS 6 | -78 | ±2dB |
| | MCS 7 | -75 | ±2dB |
| | MCS 8 | -72 | ±2dB |
| | MCS 9 | -69 | ±2dB |
| | MCS 10 | -66 | ±2dB |
| | MCS 11 | -64 | ±2dB |

RF Performance Table for 5GHz

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

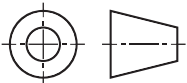
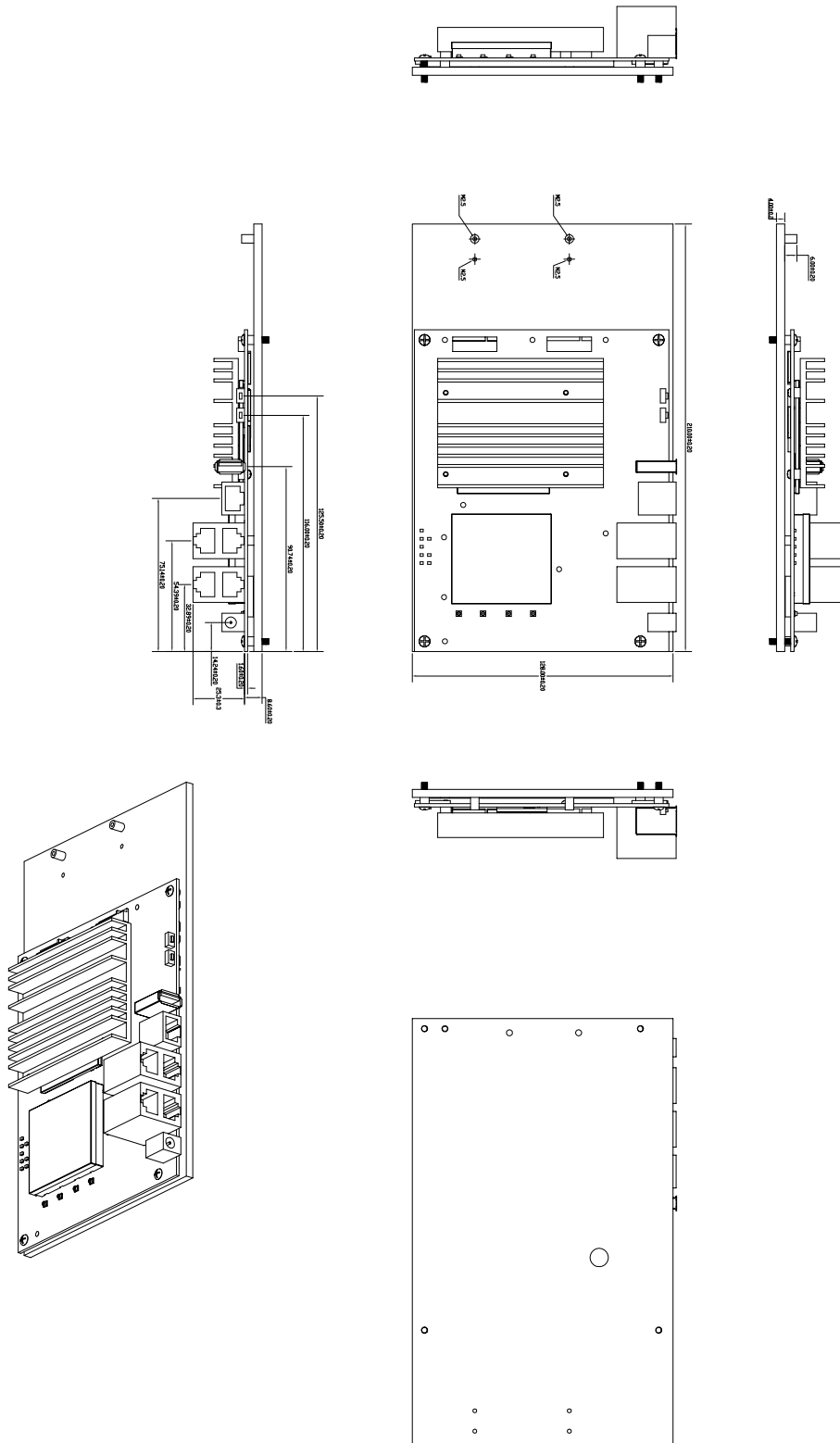
| | Data Rate | RX Specifications Sensitivity | Tolerance |
|-----------------------|-----------------------|-------------------------------|-----------|
| 5GHz 802.11a | 6Mbps | -94 | ±2dB |
| | 9Mbps | -92 | ±2dB |
| | 12Mbps | -89 | ±2dB |
| | 18Mbps | -87 | ±2dB |
| | 24Mbps | -85 | ±2dB |
| | 36Mbps | -83 | ±2dB |
| | 48Mbps | -80 | ±2dB |
| | 54Mbps | -78 | ±2dB |
| | 5GHz 802.11n/ac VHT20 | MCS 0 | -94 |
| MCS 1 | | -92 | ±2dB |
| MCS 2 | | -89 | ±2dB |
| MCS 3 | | -87 | ±2dB |
| MCS 4 | | -85 | ±2dB |
| MCS 5 | | -83 | ±2dB |
| MCS 6 | | -80 | ±2dB |
| MCS 7 | | -77 | ±2dB |
| MCS 8 | | -75 | ±2dB |
| 5GHz 802.11n/ac VHT40 | MCS 0 | -92 | ±2dB |
| | MCS 1 | -90 | ±2dB |
| | MCS 2 | -88 | ±2dB |
| | MCS 3 | -85 | ±2dB |
| | MCS 4 | -82 | ±2dB |
| | MCS 5 | -79 | ±2dB |
| | MCS 6 | -76 | ±2dB |
| | MCS 7 | -73 | ±2dB |
| | MCS 8 | -70 | ±2dB |
| | MCS 9 | -67 | ±2dB |
| 5GHz 802.11ac VHT80 | MCS 0 | -87 | ±2dB |
| | MCS 1 | -85 | ±2dB |
| | MCS 2 | -83 | ±2dB |
| | MCS 3 | -80 | ±2dB |
| | MCS 4 | -78 | ±2dB |
| | MCS 5 | -75 | ±2dB |
| | MCS 6 | -73 | ±2dB |
| | MCS 7 | -70 | ±2dB |
| | MCS 8 | -67 | ±2dB |
| | MCS 9 | -64 | ±2dB |

RF Performance Table for 5GHz

| | Data Rate | TX Power (per chain) | TX Power (2 chains) | Tolerance |
|--------------------------|-----------|----------------------|---------------------|-----------|
| 5GHz 802.11ax HE20 | MCS 0 | 20dBm | 23dBm | ±2dB |
| | MCS 1 | 20dBm | 23dBm | ±2dB |
| | MCS 2 | 20dBm | 23dBm | ±2dB |
| | MCS 3 | 20dBm | 23dBm | ±2dB |
| | MCS 4 | 20dBm | 23dBm | ±2dB |
| | MCS 5 | 20dBm | 23dBm | ±2dB |
| | MCS 6 | 20dBm | 23dBm | ±2dB |
| | MCS 7 | 19dBm | 22dBm | ±2dB |
| | MCS 8 | 18dBm | 21dBm | ±2dB |
| | MCS 9 | 18dBm | 21dBm | ±2dB |
| | MCS 10 | 16dBm | 19dBm | ±2dB |
| | MCS 11 | 15dBm | 18dBm | ±2dB |
| 5GHz 802.11ax HE40 | MCS 0 | 20dBm | 23dBm | ±2dB |
| | MCS 1 | 20dBm | 23dBm | ±2dB |
| | MCS 2 | 20dBm | 23dBm | ±2dB |
| | MCS 3 | 20dBm | 23dBm | ±2dB |
| | MCS 4 | 20dBm | 23dBm | ±2dB |
| | MCS 5 | 20dBm | 23dBm | ±2dB |
| | MCS 6 | 20dBm | 23dBm | ±2dB |
| | MCS 7 | 19dBm | 22dBm | ±2dB |
| | MCS 8 | 18dBm | 21dBm | ±2dB |
| | MCS 9 | 18dBm | 21dBm | ±2dB |
| | MCS 10 | 16dBm | 19dBm | ±2dB |
| | MCS 11 | 15dBm | 18dBm | ±2dB |
| 5GHz 802.11ax HE80 | MCS 0 | 20dBm | 23dBm | ±2dB |
| | MCS 1 | 20dBm | 23dBm | ±2dB |
| | MCS 2 | 20dBm | 23dBm | ±2dB |
| | MCS 3 | 20dBm | 23dBm | ±2dB |
| | MCS 4 | 20dBm | 23dBm | ±2dB |
| | MCS 5 | 20dBm | 23dBm | ±2dB |
| | MCS 6 | 20dBm | 23dBm | ±2dB |
| | MCS 7 | 19dBm | 22dBm | ±2dB |
| | MCS 8 | 18dBm | 21dBm | ±2dB |
| | MCS 9 | 18dBm | 21dBm | ±2dB |
| | MCS 10 | 16dBm | 19dBm | ±2dB |
| | MCS 11 | 15dBm | 18dBm | ±2dB |

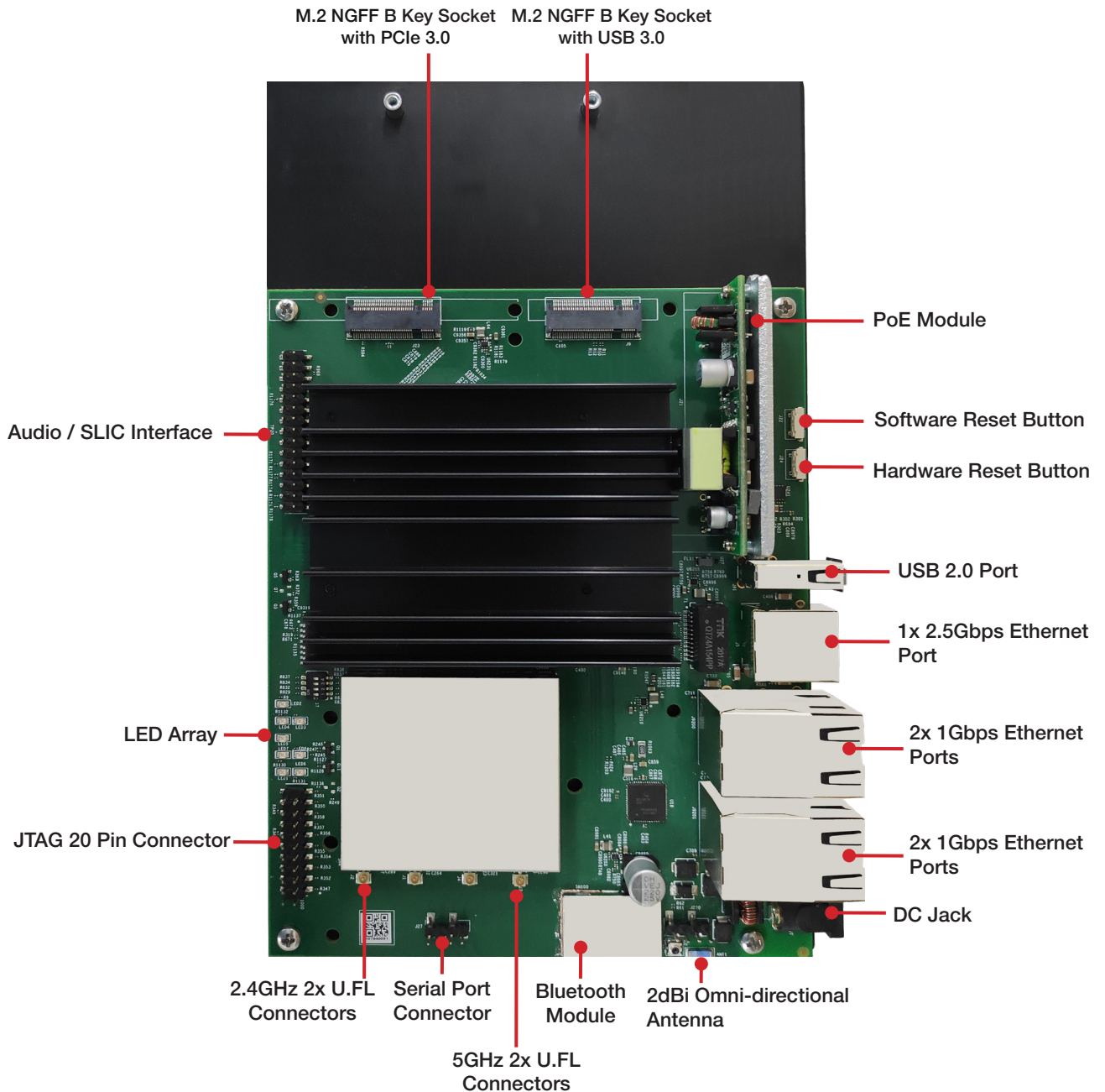
| | Data Rate | RX Specifications Sensitivity | Tolerance |
|--------------------------|-----------|-------------------------------|-----------|
| 5GHz 802.11ax HE20 | MCS 0 | -94 | ±2dB |
| | MCS 1 | -92 | ±2dB |
| | MCS 2 | -89 | ±2dB |
| | MCS 3 | -86 | ±2dB |
| | MCS 4 | -83 | ±2dB |
| | MCS 5 | -80 | ±2dB |
| | MCS 6 | -77 | ±2dB |
| | MCS 7 | -74 | ±2dB |
| | MCS 8 | -71 | ±2dB |
| | MCS 9 | -68 | ±2dB |
| | MCS 10 | -65 | ±2dB |
| | MCS 11 | -62 | ±2dB |
| 5GHz 802.11ax HE40 | MCS 0 | -89 | ±2dB |
| | MCS 1 | -87 | ±2dB |
| | MCS 2 | -85 | ±2dB |
| | MCS 3 | -83 | ±2dB |
| | MCS 4 | -81 | ±2dB |
| | MCS 5 | -78 | ±2dB |
| | MCS 6 | -75 | ±2dB |
| | MCS 7 | -72 | ±2dB |
| | MCS 8 | -69 | ±2dB |
| | MCS 9 | -66 | ±2dB |
| | MCS 10 | -63 | ±2dB |
| | MCS 11 | -60 | ±2dB |
| 5GHz 802.11ax HE80 | MCS 0 | -86 | ±2dB |
| | MCS 1 | -84 | ±2dB |
| | MCS 2 | -81 | ±2dB |
| | MCS 3 | -79 | ±2dB |
| | MCS 4 | -76 | ±2dB |
| | MCS 5 | -74 | ±2dB |
| | MCS 6 | -71 | ±2dB |
| | MCS 7 | -68 | ±2dB |
| | MCS 8 | -65 | ±2dB |
| | MCS 9 | -62 | ±2dB |
| | MCS 10 | -59 | ±2dB |
| | MCS 11 | -56 | ±2dB |

Mechanical Dimensions



All dimensions are in mm.

Component Map



Ordering Options

| Item Code | Model | Description |
|--------------------------|--------|---|
| WPQ618HV 6A02PR321GBR-TE | WPQ618 | 802.11ax Dual Band Dual Concurrent Embedded Board |