

Multi-function IPQ4019 System on Module with 2.4/5GHz WLAN 710MHz CPU / Dual Band / 802.11ac Wave 2

Model: WSB419 7A02 Wasabi-A



KEY FEATURES

- Qualcomm Atheros IPQ4019 710MHz CPU
- 2x2 on-board 2.4GHz radio, up to 400Mbps physical data rate
- 2x2 on-board 5GHz radio, up to 867Mbps physical data rate
- Additional MiniPCle for additional 3rd WiFi radio support
- Supports Dynamic Frequency Selection (DFS)

APPLICATIONS

- 802.11n/ac MU-MIMO Access Point
- Point-to-MultiPoint High Capacity Wireless Bridge
- Transportation Access Point

Specifications

| | |
|--|--|
| Chipset | Qualcomm Atheros IPQ4019 Quad-core ARM Cortex-A7 710MHz processor 'Dakota' Series |
| Reference Design | Qualcomm Atheros DK04 |
| System Memory | 256MB (supports up to 1GB) |
| NAND Flash | 128MB |
| NOR Flash | 16MB |
| Wireless | On-board 2x2 2.4GHz OFDM 802.11b/g/n, max 23dBm per chain On-board 2x2 5GHz OFDM 802.11a/n/ac, max 23dBm per chain 2x U.FL Connectors, diplexer allows dual band concurrent operation |
| Frequency Range | 2.412~2.472GHz and 5.150~5.825GHz, simultaneous dual band |
| Modulation Techniques | 802.11b: DSSS (DBPSK/DQPSK/CCK) 802.11a/g: OFDM (BPSK/QPSK/16-QAM/64-QAM) 802.11ac/n: OFDM (BPSK/QPSK/16-QAM/64-QAM/256-QAM) |
| Interface | Supports Gigabit Ethernet LAN/WAN Supports Mini PCI Express v2.0 Supports Serial Port UART and H-UART Supports JTAG Debug Interface Supports MicroSD Card Slot Supports USB 2.0 and USB 3.0 |
| Reset Button | Supports Reset Button |
| LED | Supports LAN/WAN LED |
| Power Consumption (Board only) | 12W (Max) |
| 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% |
| Dimensions (W × H × D) in mm | 40 × 58 × 4.4 |

*Configurations are subject to change without notifications.

RF Performance Table for 2.4GHz (5V PA)

| | Data Rate | TX Power (per chain) | TX Power (2 chains) | Tolerance |
|---------------------------|-----------|-------------------------|------------------------|-----------|
| 2.4GHz 802.11b | 1Mbps | 23dBm | 26dBm | ±2dB |
| | 2Mbps | 23dBm | 26dBm | ±2dB |
| | 5.5Mbps | 23dBm | 26dBm | ±2dB |
| | 11Mbps | 23dBm | 26dBm | ±2dB |
| 2.4GHz 802.11g | 6Mbps | 23dBm | 26dBm | ±2dB |
| | 9Mbps | 23dBm | 26dBm | ±2dB |
| | 12Mbps | 23dBm | 26dBm | ±2dB |
| | 18Mbps | 23dBm | 26dBm | ±2dB |
| | 24Mbps | 23dBm | 26dBm | ±2dB |
| | 36Mbps | 22dBm | 25dBm | ±2dB |
| | 48Mbps | 20dBm | 23dBm | ±2dB |
| | 54Mbps | 19dBm | 22dBm | ±2dB |
| 2.4GHz 802.11n HT20 | MCS 0 | 23dBm | 26dBm | ±2dB |
| | MCS 1 | 23dBm | 26dBm | ±2dB |
| | MCS 2 | 23dBm | 26dBm | ±2dB |
| | MCS 3 | 23dBm | 26dBm | ±2dB |
| | MCS 4 | 22dBm | 25dBm | ±2dB |
| | MCS 5 | 20dBm | 23dBm | ±2dB |
| | MCS 6 | 19dBm | 22dBm | ±2dB |
| | MCS 7 | 18dBm | 21dBm | ±2dB |
| 2.4GHz 802.11n HT40 | MCS 0 | 23dBm | 26dBm | ±2dB |
| | MCS 1 | 23dBm | 26dBm | ±2dB |
| | MCS 2 | 23dBm | 26dBm | ±2dB |
| | MCS 3 | 23dBm | 26dBm | ±2dB |
| | MCS 4 | 22dBm | 25dBm | ±2dB |
| | MCS 5 | 20dBm | 23dBm | ±2dB |
| | MCS 6 | 19dBm | 22dBm | ±2dB |
| | MCS 7 | 18dBm | 21dBm | ±2dB |

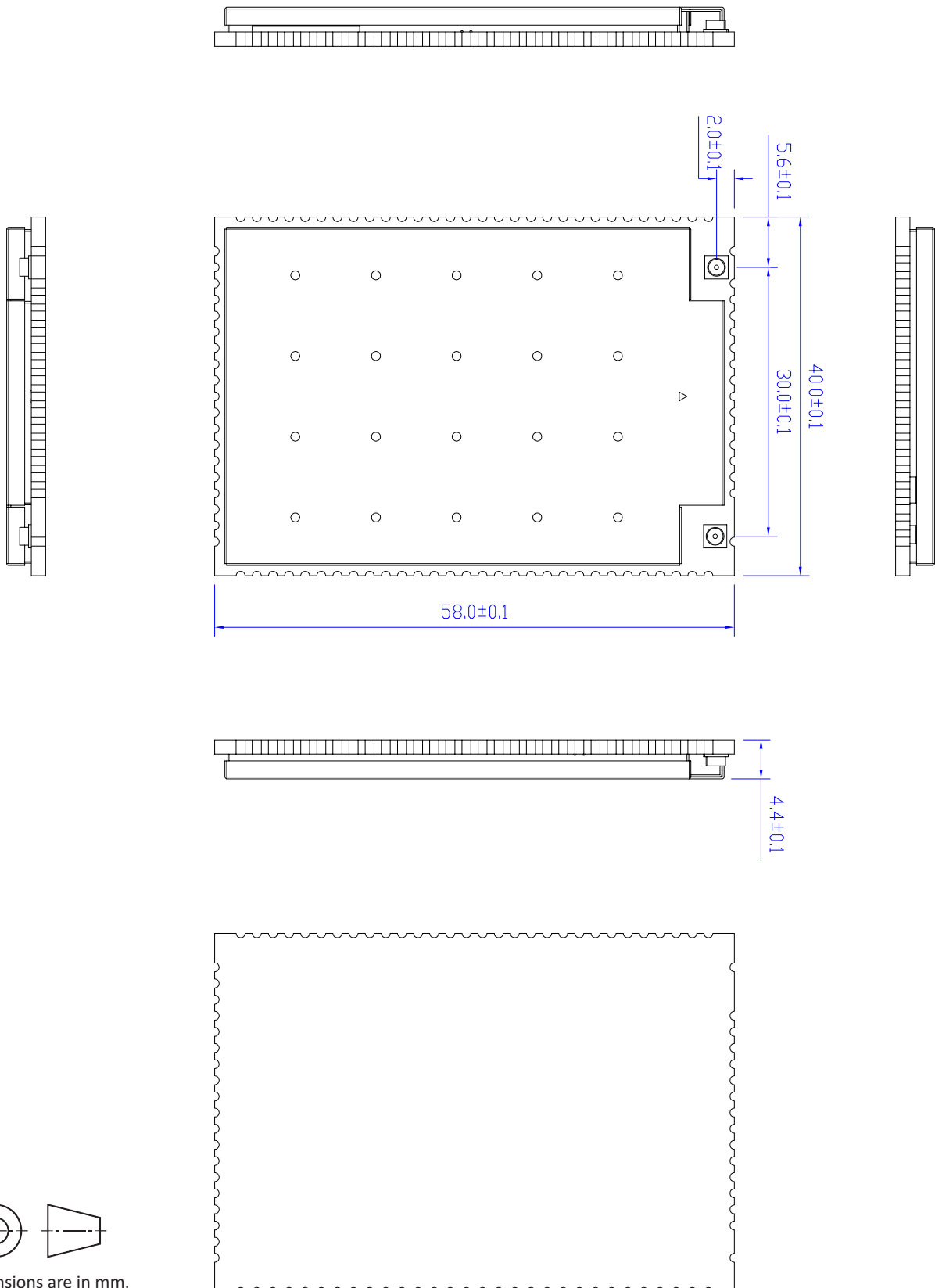
| | Data Rate | RX Specifications Sensitivity | Tolerance |
|---------------------------|-----------|----------------------------------|-----------|
| 2.4GHz 802.11b | 1Mbps | -96dBm | ±2dB |
| | 2Mbps | -94dBm | ±2dB |
| | 5.5Mbps | -92dBm | ±2dB |
| | 11Mbps | -90dBm | ±2dB |
| 2.4GHz 802.11g | 6Mbps | -96dBm | ±2dB |
| | 9Mbps | -96dBm | ±2dB |
| | 12Mbps | -94dBm | ±2dB |
| | 18Mbps | -90dBm | ±2dB |
| | 24Mbps | -87dBm | ±2dB |
| | 36Mbps | -85dBm | ±2dB |
| | 48Mbps | -81dBm | ±2dB |
| | 54Mbps | -78dBm | ±2dB |
| 2.4GHz 802.11n HT20 | MCS 0 | -94dBm | ±2dB |
| | MCS 1 | -93dBm | ±2dB |
| | MCS 2 | -90dBm | ±2dB |
| | MCS 3 | -87dBm | ±2dB |
| | MCS 4 | -84dBm | ±2dB |
| | MCS 5 | -81dBm | ±2dB |
| | MCS 6 | -77dBm | ±2dB |
| | MCS 7 | -74dBm | ±2dB |
| 2.4GHz 802.11n HT40 | MCS 0 | -92dBm | ±2dB |
| | MCS 1 | -89dBm | ±2dB |
| | MCS 2 | -86dBm | ±2dB |
| | MCS 3 | -84dBm | ±2dB |
| | MCS 4 | -79dBm | ±2dB |
| | MCS 5 | -75dBm | ±2dB |
| | MCS 6 | -72dBm | ±2dB |
| | MCS 7 | -71dBm | ±2dB |

RF Performance Table for 5GHz (5V PA)

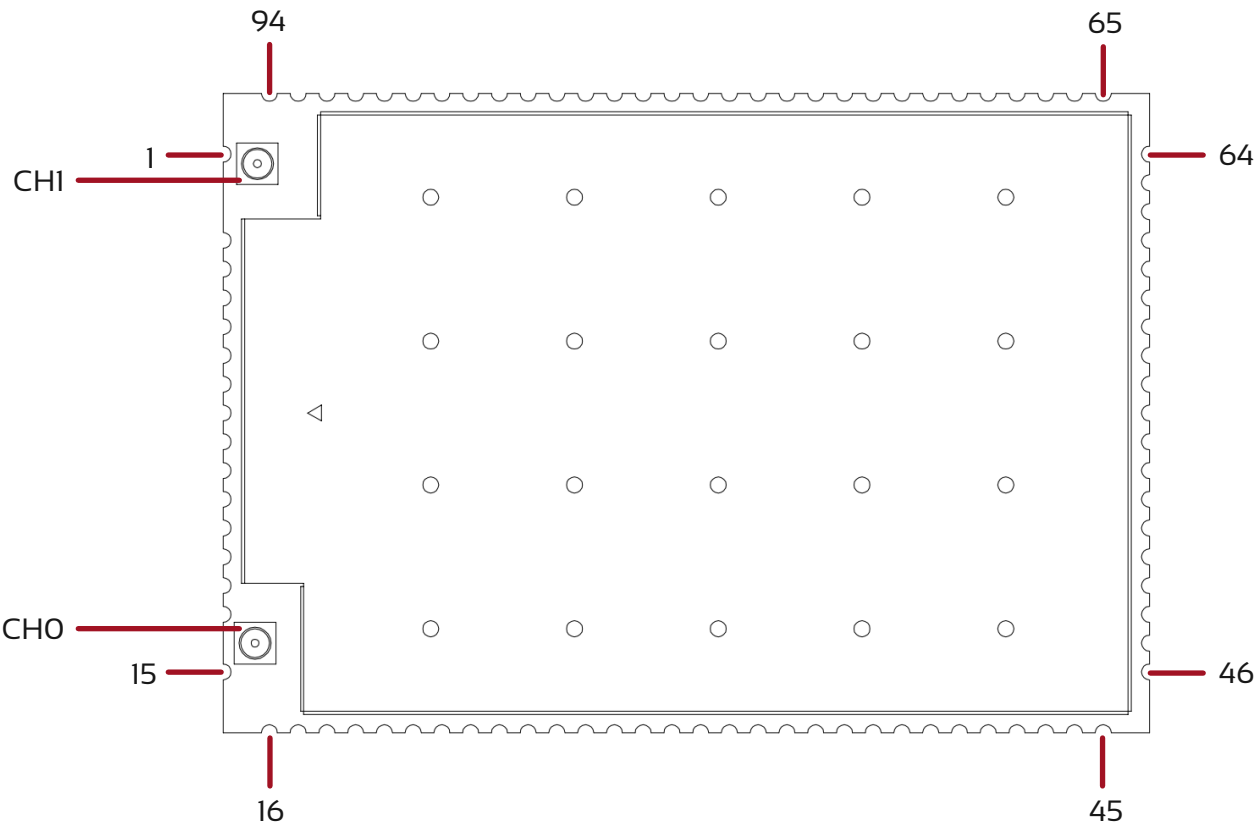
| | Data Rate | TX Power (per chain) | TX Power (2 chains) | Tolerance |
|-----------------------------|-----------|-------------------------|------------------------|-----------|
| 5GHz 802.11a | 6Mbps | 23dBm | 26dBm | ±2dB |
| | 9Mbps | 23dBm | 26dBm | ±2dB |
| | 12Mbps | 23dBm | 26dBm | ±2dB |
|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

| | Data Rate | RX Specifications Sensitivity | Tolerance |
|-----------------------------|-----------|----------------------------------|-----------|
| 5GHz 802.11a | 6Mbps | -93dBm | ±2dB |
| | 9Mbps | -92dBm | ±2dB |
| | 12Mbps | -91dBm | ±2dB |
| | 18Mbps | -88dBm | ±2dB |
| | 24Mbps | -87dBm | ±2dB |
| | 36Mbps | -84dBm | ±2dB |
| | 48Mbps | -81dBm | ±2dB |
| | 54Mbps | -79dBm | ±2dB |
| 5GHz 802.11n/ac VHT20 | MCS 0 | -91dBm | ±2dB |
| | MCS 1 | -90dBm | ±2dB |
| | MCS 2 | -88dBm | ±2dB |
| | MCS 3 | -86dBm | ±2dB |
| | MCS 4 | -82dBm | ±2dB |
| | MCS 5 | -79dBm | ±2dB |
| | MCS 6 | -76dBm | ±2dB |
| | MCS 7 | -73dBm | ±2dB |
| 5GHz 802.11n/ac VHT40 | MCS 8 | -70dBm | ±2dB |
| | MCS 0 | -92dBm | ±2dB |
| | MCS 1 | -90dBm | ±2dB |
| | MCS 2 | -88dBm | ±2dB |
| | MCS 3 | -86dBm | ±2dB |
| | MCS 4 | -85dBm | ±2dB |
| | MCS 5 | -83dBm | ±2dB |
| | MCS 6 | -79dBm | ±2dB |
| 5GHz 802.11ac VHT80 | MCS 7 | -75dBm | ±2dB |
| | MCS 8 | -73dBm | ±2dB |
| | MCS 9 | -70dBm | ±2dB |
| | MCS 0 | -86dBm | ±2dB |
| | MCS 1 | -85dBm | ±2dB |
| | MCS 2 | -83dBm | ±2dB |
| | MCS 3 | -79dBm | ±2dB |
| | MCS 4 | -76dBm | ±2dB |
| 5GHz 802.11ac VHT80 | MCS 5 | -73dBm | ±2dB |
| | MCS 6 | -71dBm | ±2dB |
| | MCS 7 | -69dBm | ±2dB |
| | MCS 8 | -67dBm | ±2dB |
| | MCS 9 | -66dBm | ±2dB |

Mechanical Dimensions



Module Pinout Diagram



Ordering Configuration

| Item Code | Model | Description |
|----------------------|-------------|-------------|
| WSB419 7A02BO16256BR | WSB419 7A02 | Wasabi-A |