

## 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 MiniPCIe 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
2.4GHz 802.11n HT20	54Mbps	19dBm	22dBm	±2dB
	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
2.4GHz 802.11n HT40	MCS 7	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	22dBm	25dBm	±2dB
	MCS 5	20dBm	23dBm	±2dB
	MCS 6	19dBm	22dBm	±2dB
MCS 7	18dBm	21dBm	±2dB	

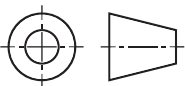
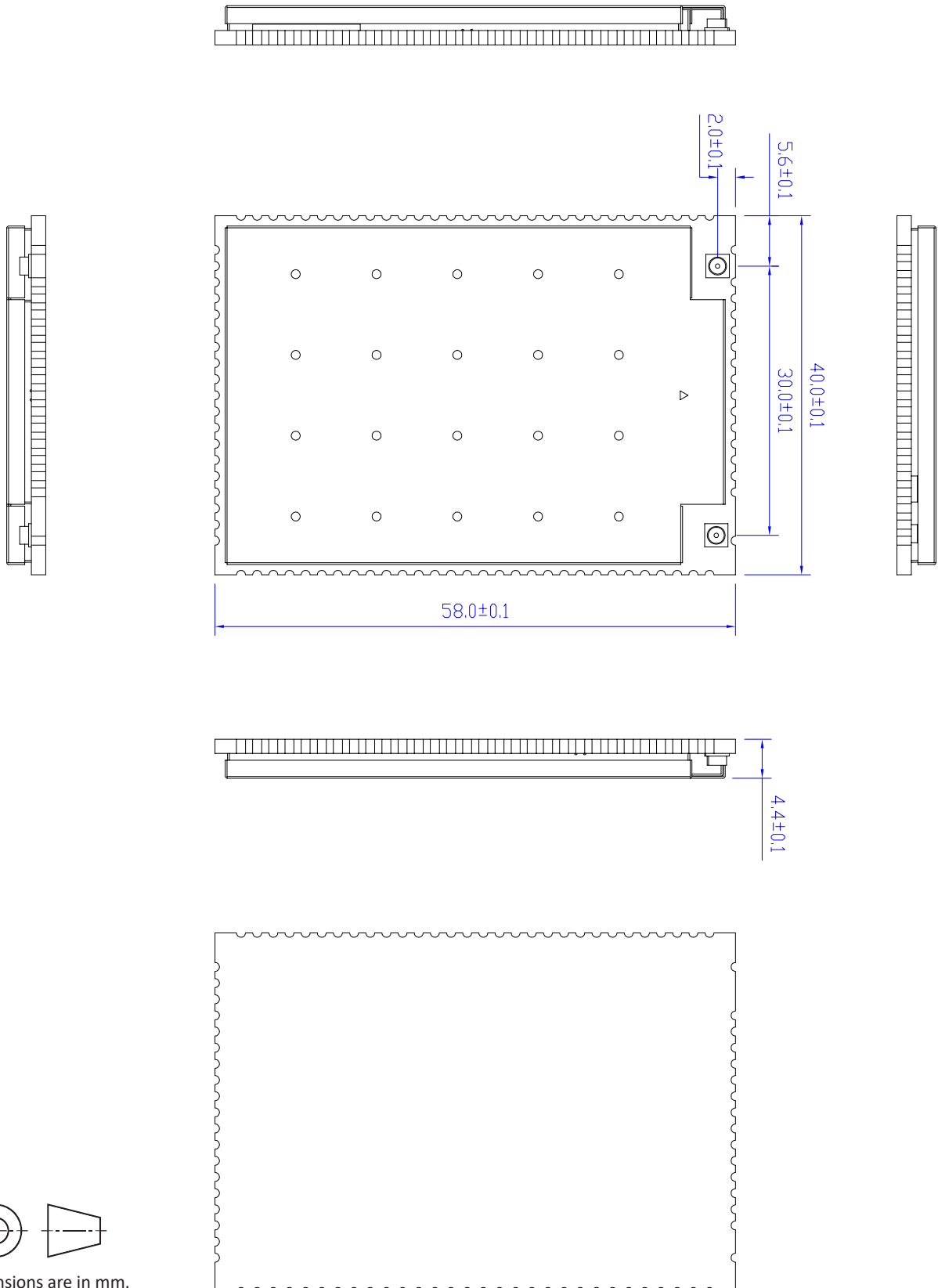
	Data Rate	RX Specifications Sensitivity	Tolerance
2.4GHz 802.11b	1Mbps	-96dBm	±2dB
	2Mbps	-94dBm	±2dB
	5.5Mbps	-92dBm	±2dB
	11Mbps	-90dBm	±2dB
2.4GHz 802.11g	6Mbps	-96dBm	±2dB
	9Mbps	-96dBm	±2dB
	12Mbps	-94dBm	±2dB
	18Mbps	-90dBm	±2dB
	24Mbps	-87dBm	±2dB
	36Mbps	-85dBm	±2dB
	48Mbps	-81dBm	±2dB
2.4GHz 802.11n HT20	54Mbps	-78dBm	±2dB
	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
2.4GHz 802.11n HT40	MCS 7	-74dBm	±2dB
	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
	MCS 7	19dBm	22dBm	±2dB
	MCS 8	18dBm	21dBm	±2dB
5GHz 802.11ac VHT80	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
	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	

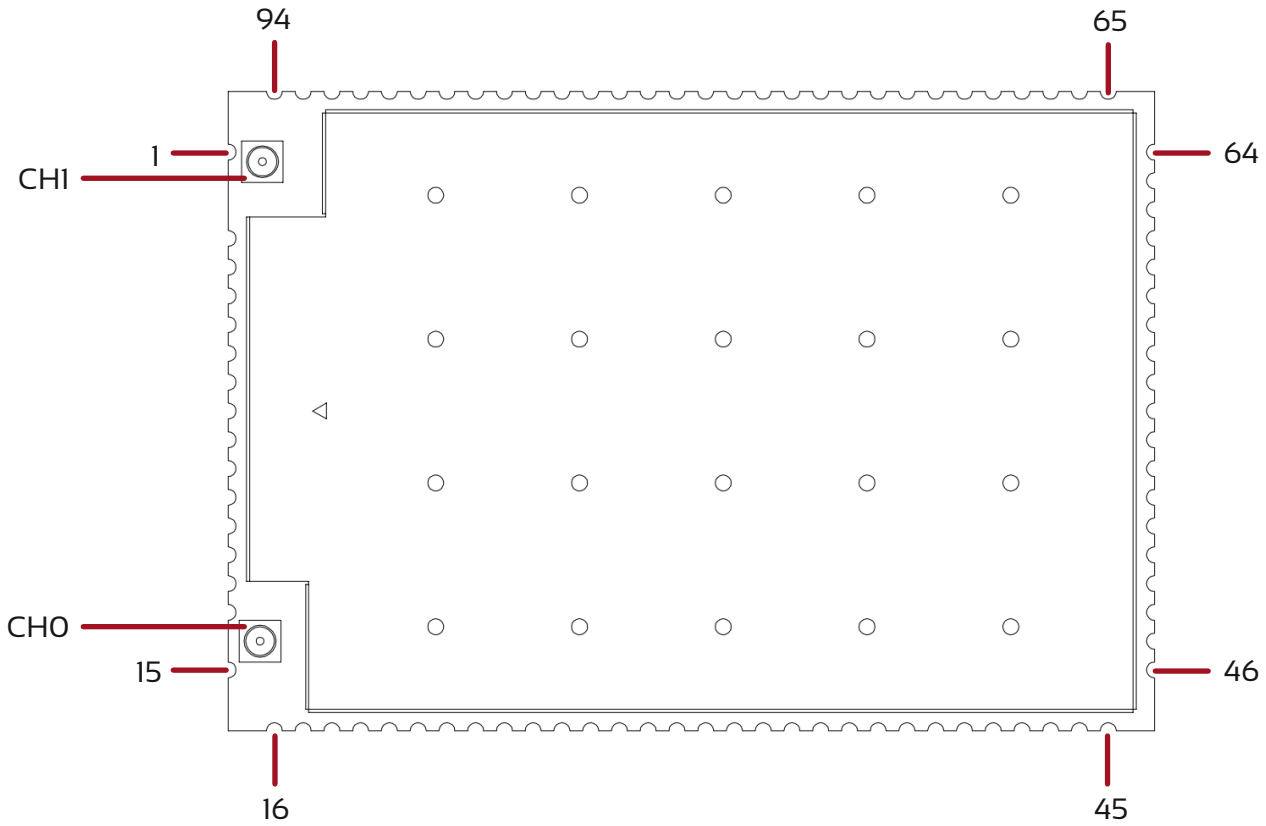
	Data Rate	RX Specifications Sensitivity	Tolerance
5GHz 802.11a	6Mbps	-93dBm	±2dB
	9Mbps	-92dBm	±2dB
	12Mbps	-91dBm	±2dB
	18Mbps	-88dBm	±2dB
	24Mbps	-87dBm	±2dB
	36Mbps	-84dBm	±2dB
	48Mbps	-81dBm	±2dB
	54Mbps	-79dBm	±2dB
5GHz 802.11n/ac VHT20	MCS 0	-91dBm	±2dB
	MCS 1	-90dBm	±2dB
	MCS 2	-88dBm	±2dB
	MCS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

## Mechanical Dimensions



All dimensions are in mm.

## Module Pinout Diagram



## Ordering Configuration

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