Multi-function IPQ8072A Embedded Board with on-board WiFi

2.5Gbps Port / Dual Band Dual Concurrent / 802.11ax MU-MIMO OFDMA

Model: WPQ872

KEY FEATURES

- Qualcomm Atheros IPQ8072A Quad Core ARM 64 bit A53 2.2GHz processor
- 4x4 on-board 2.4GHz radio, up to 1182Mbps physical data rate
- 4x4 on-board 5GHz radio, up to 2475Mbps physical data rate
- Supports Dynamic Frequency Selection (DFS)

APPLICATIONS

- 802.11ax MU-MIMO Access Point
- Mesh router supporting EasyMesh and Qualcomm's Self Organising Network (SON)
- Smart AP TWT

Specifications

Chipset	Qualcomm Atheros IPQ8072A Quad Core ARM 64 bit A53 2.2GHz processor 'Hawkeye' Series
Reference Design	Qualcomm Atheros HK09
System Memory	1x 512MB, DDR4 2400MHz 16-bit interface
NAND Flash	256MB
NOR Flash	8MB
Wireless	On-board 4x4 2.4GHz MU-MIMO OFDMA 802.11b/g/n/ax, max 17dBm per chain On-board 4x4 5GHz MU-MIMO OFDMA 802.11a/n/ac/ax, max 17dBm per chain 8x 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
MiniPCIe Slot	1x MiniPCIe Slot with PCIe 3.0
Interface	1x 1Gbps Ethernet Port, 1x 2.5Gbps Ethernet Port 1x USB 3.0 Port 1x JTAG 20 Pin Connector 1x Serial Port 4 Pin Connector
Reset Button	1x S/W Reset Button
LED	2x RGB LED Indicators
DC Power	1x DC Jack Connector: 12V
Power Consumption (Board only)	22.5W (Including Bluetooth)
Bluetooth	QCA4024 BLE 5.0
Certification	REACH and RoHS Compliance
Environmental Temperature	Operating: -20ºC to 70ºC, Storage: -40ºC to 90ºC
Environmental Humidity, Non-Condensing	Operating: 5% to 95%, Storage: Max. 90%
Dimensions (W x H x D) in mm	132 x 180 x 41.7

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.*

Last Updated: 29/01/2021

RF Performance Table for 2.4GHz

	Data Rate	TX Power (per chain)	TX Power (4 chains)	Tolerance
2.4GHz 802.11b	1Mbps	17dBm	23dBm	±2dB
	2Mbps	17dBm	23dBm	±2dB
	5.5Mbps	17dBm	23dBm	±2dB
	11Mbps	17dBm	23dBm	±2dB
2.4GHz 802.11g	6Mbps	17dBm	23dBm	±2dB
	9Mbps	17dBm	23dBm	±2dB
	12Mbps	17dBm	23dBm	±2dB
	18Mbps	17dBm	23dBm	±2dB
	24Mbps	15dBm	21dBm	±2dB
	36Mbps	15dBm	21dBm	±2dB
	48Mbps	15dBm	21dBm	±2dB
	54Mbps	15dBm	21dBm	±2dB
2.4GHz 802.11n HT20	MCS 0	17dBm	23dBm	±2dB
	MCS 1	17dBm	23dBm	±2dB
	MCS 2	17dBm	23dBm	±2dB
	MCS 3	17dBm	23dBm	±2dB
	MCS 4	17dBm	23dBm	±2dB
	MCS 5	15dBm	21dBm	±2dB
	MCS 6	15dBm	21dBm	±2dB
	MCS 7	15dBm	21dBm	±2dB
2.4GHz 802.11n HT40	MCS 0	16dBm	22dBm	±2dB
	MCS 1	16dBm	22dBm	±2dB
	MCS 2	16dBm	22dBm	±2dB
	MCS 3	16dBm	22dBm	±2dB
	MCS 4	16dBm	22dBm	±2dB
	MCS 5	14dBm	20dBm	±2dB
	MCS 6	14dBm	20dBm	±2dB
	MCS 7	14dBm	20dBm	±2dB

	Data Rate	RX Specifications Sensitivity	Tolerance
2.4GHz 802.11b	1Mbps	-102	±2dB
	2Mbps	-99	±2dB
	5.5Mbps	-97	±2dB
	11Mbps	-95	±2dB
2.4GHz 802.11g	6Mbps	-97	±2dB
	9Mbps	-95	±2dB
	12Mbps	-93	±2dB
	18Mbps	-91	±2dB
	24Mbps	-89	±2dB
	36Mbps	-87	±2dB
	48Mbps	-85	±2dB
	54Mbps	-83	±2dB
2.4GHz 802.11n HT20	MCS 0	-95	±2dB
	MCS 1	-93	±2dB
	MCS 2	-90	±2dB
	MCS 3	-87	±2dB
	MCS 4	-85	±2dB
	MCS 5	-82	±2dB
	MCS 6	-80	±2dB
	MCS 7	-78	±2dB
2.4GHz 802.11n HT40	MCS 0	-93	±2dB
	MCS 1	-90	±2dB
	MCS 2	-87	±2dB
	MCS 3	-94	±2dB
	MCS 4	-81	±2dB
	MCS 5	-78	±2dB
	MCS 6	-75	±2dB
	MCS 7	-73	±2dB

RF Performance Table for 2.4GHz

	Data Rate	TX Power (per chain)	TX Power (4 chains)	Tolerance
2.4GHz 802.11ax HE20	MCS 0	17dBm	23dBm	±2dB
	MCS 1	17dBm	23dBm	±2dB
	MCS 2	17dBm	23dBm	±2dB
	MCS 3	17dBm	23dBm	±2dB
	MCS 4	17dBm	23dBm	±2dB
	MCS 5	15dBm	21dBm	±2dB
	MCS 6	15dBm	21dBm	±2dB
	MCS 7	15dBm	21dBm	±2dB
	MCS 8	14dBm	20dBm	±2dB
	MCS 9	14dBm	20dBm	±2dB
	MCS 10	10dBm	16dBm	±2dB
	MCS 11	10dBm	16dBm	±2dB
2.4GHz 802.11ax HE40	MCS 0	16dBm	22dBm	±2dB
	MCS 1	16dBm	22dBm	±2dB
	MCS 2	16dBm	22dBm	±2dB
	MCS 3	16dBm	22dBm	±2dB
	MCS 4	16dBm	22dBm	±2dB
	MCS 5	14dBm	20dBm	±2dB
	MCS 6	14dBm	20dBm	±2dB
	MCS 7	14dBm	20dBm	±2dB
	MCS 8	14dBm	20dBm	±2dB
	MCS 9	14dBm	20dBm	±2dB
	MCS 10	11dBm	17dBm	±2dB
	MCS 11	11dBm	17dBm	±2dB

	Data Rate	RX Specifications Sensitivity	Tolerance
2.4GHz 802.11ax HE20	MCS 0	-95	±2dB
	MCS 1	-93	±2dB
	MCS 2	-91	±2dB
	MCS 3	-89	±2dB
	MCS 4	-86	±2dB
	MCS 5	-84	±2dB
	MCS 6	-82	±2dB
	MCS 7	-80	±2dB
	MCS 8	-77	±2dB
	MCS 9	-75	±2dB
	MCS 10	-72	±2dB
	MCS 11	-69	±2dB
2.4GHz 802.11ax HE40	MCS 0	-92	±2dB
	MCS 1	-90	±2dB
	MCS 2	-87	±2dB
	MCS 3	-85	±2dB
	MCS 4	-82	±2dB
	MCS 5	-80	±2dB
	MCS 6	-78	±2dB
	MCS 7	-77	±2dB
	MCS 8	-75	±2dB
	MCS 9	-72	±2dB
	MCS 10	-69	±2dB
	MCS 11	-66	±2dB

RF Performance Table for 5GHz

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

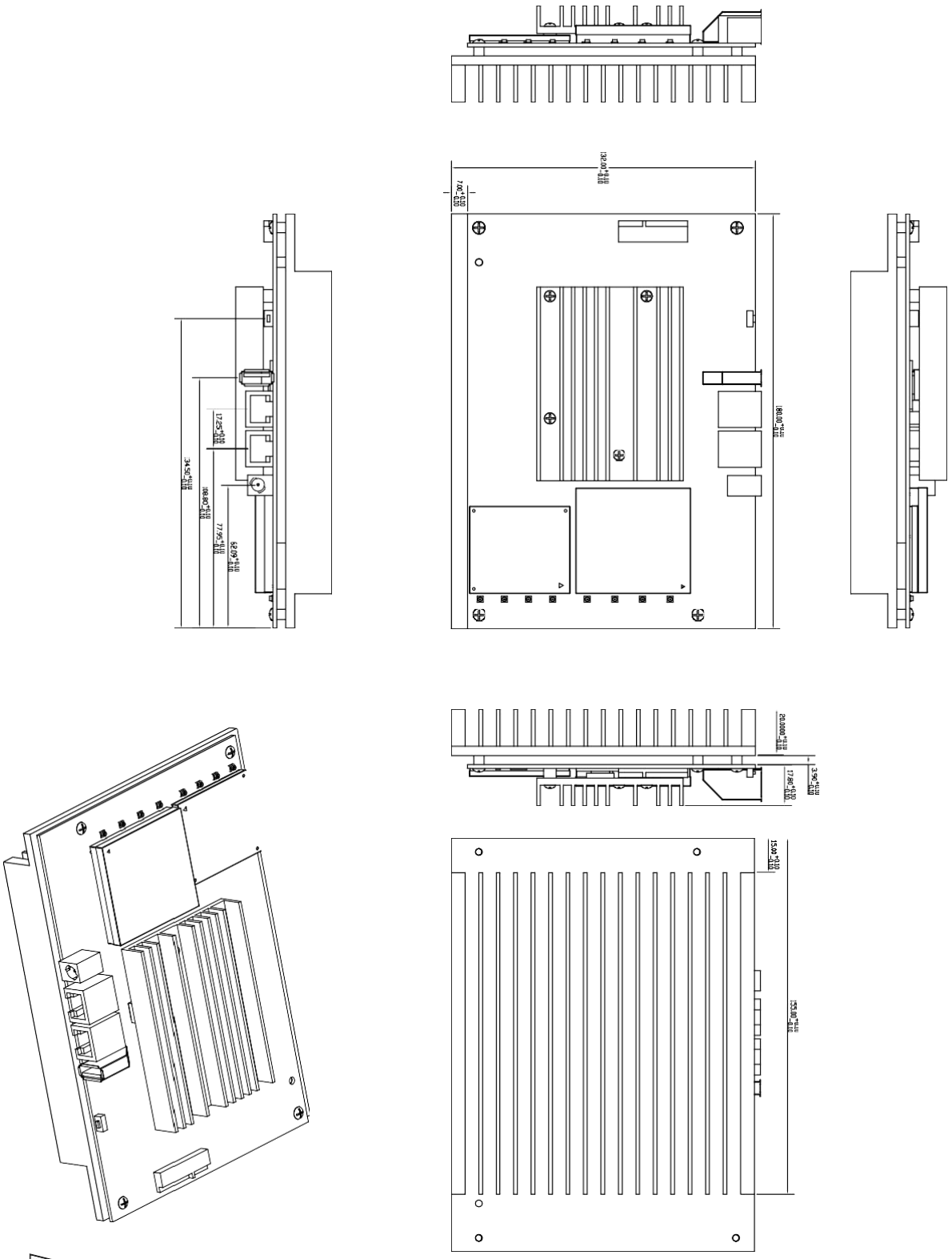
	Data Rate	RX Specifications Sensitivity	Tolerance
5GHz 802.11a	6Mbps	-97	±2dB
	9Mbps	-95	±2dB
	12Mbps	-93	±2dB
	18Mbps	-91	±2dB
	24Mbps	-89	±2dB
	36Mbps	-87	±2dB
	48Mbps	-85	±2dB
	54Mbps	-82	±2dB
5GHz 802.11n/ac VHT20	MCS 0	-97	±2dB
	MCS 1	-96	±2dB
	MCS 2	-94	±2dB
	MCS 3	-92	±2dB
	MCS 4	-90	±2dB
	MCS 5	-88	±2dB
	MCS 6	-85	±2dB
	MCS 7	-83	±2dB
	MCS 8	-81	±2dB
5GHz 802.11n/ac VHT40	MCS 0	-95	±2dB
	MCS 1	-93	±2dB
	MCS 2	-91	±2dB
	MCS 3	-89	±2dB
	MCS 4	-87	±2dB
	MCS 5	-85	±2dB
	MCS 6	-83	±2dB
	MCS 7	-80	±2dB
	MCS 8	-77	±2dB
	MCS 9	-74	±2dB
5GHz 802.11ac VHT80	MCS 0	-91	±2dB
	MCS 1	-89	±2dB
	MCS 2	-87	±2dB
	MCS 3	-85	±2dB
	MCS 4	-82	±2dB
	MCS 5	-79	±2dB
	MCS 6	-77	±2dB
	MCS 7	-75	±2dB
	MCS 8	-72	±2dB
	MCS 9	-69	±2dB

RF Performance Table for 5GHz

	Data Rate	TX Power (per chain)	TX Power (4 chains)	Tolerance
5GHz 802.11ac VHT80+80	MCS 0	17dBm	23dBm	±2dB
	MCS 1	17dBm	23dBm	±2dB
	MCS 2	17dBm	23dBm	±2dB
	MCS 3	17dBm	23dBm	±2dB
	MCS 4	17dBm	23dBm	±2dB
	MCS 5	14dBm	20dBm	±2dB
	MCS 6	14dBm	20dBm	±2dB
	MCS 7	14dBm	20dBm	±2dB
	MCS 8	11dBm	17dBm	±2dB
	MCS 9	11dBm	17dBm	±2dB
5GHz 802.11ax HE20	MCS 0	17dBm	23dBm	±2dB
	MCS 1	17dBm	23dBm	±2dB
	MCS 2	17dBm	23dBm	±2dB
	MCS 3	17dBm	23dBm	±2dB
	MCS 4	17dBm	23dBm	±2dB
	MCS 5	16dBm	22dBm	±2dB
	MCS 6	16dBm	22dBm	±2dB
	MCS 7	16dBm	22dBm	±2dB
	MCS 8	15dBm	21dBm	±2dB
	MCS 9	15dBm	21dBm	±2dB
	MCS 10	12dBm	18dBm	±2dB
	MCS 11	12dBm	18dBm	±2dB
5GHz 802.11ax HE40	MCS 0	17dBm	23dBm	±2dB
	MCS 1	17dBm	23dBm	±2dB
	MCS 2	17dBm	23dBm	±2dB
	MCS 3	17dBm	23dBm	±2dB
	MCS 4	17dBm	23dBm	±2dB
	MCS 5	15dBm	21dBm	±2dB
	MCS 6	15dBm	21dBm	±2dB
	MCS 7	15dBm	21dBm	±2dB
	MCS 8	14dBm	20dBm	±2dB
	MCS 9	14dBm	20dBm	±2dB
	MCS 10	12dBm	18dBm	±2dB
	MCS 11	12dBm	18dBm	±2dB
5GHz 802.11ax HE80	MCS 0	17dBm	23dBm	±2dB
	MCS 1	17dBm	23dBm	±2dB
	MCS 2	17dBm	23dBm	±2dB
	MCS 3	17dBm	23dBm	±2dB
	MCS 4	17dBm	23dBm	±2dB
	MCS 5	14dBm	20dBm	±2dB
	MCS 6	14dBm	20dBm	±2dB
	MCS 7	14dBm	20dBm	±2dB
	MCS 8	13dBm	19dBm	±2dB
	MCS 9	13dBm	19dBm	±2dB
	MCS 10	10dBm	16dBm	±2dB
	MCS 11	10dBm	16dBm	±2dB

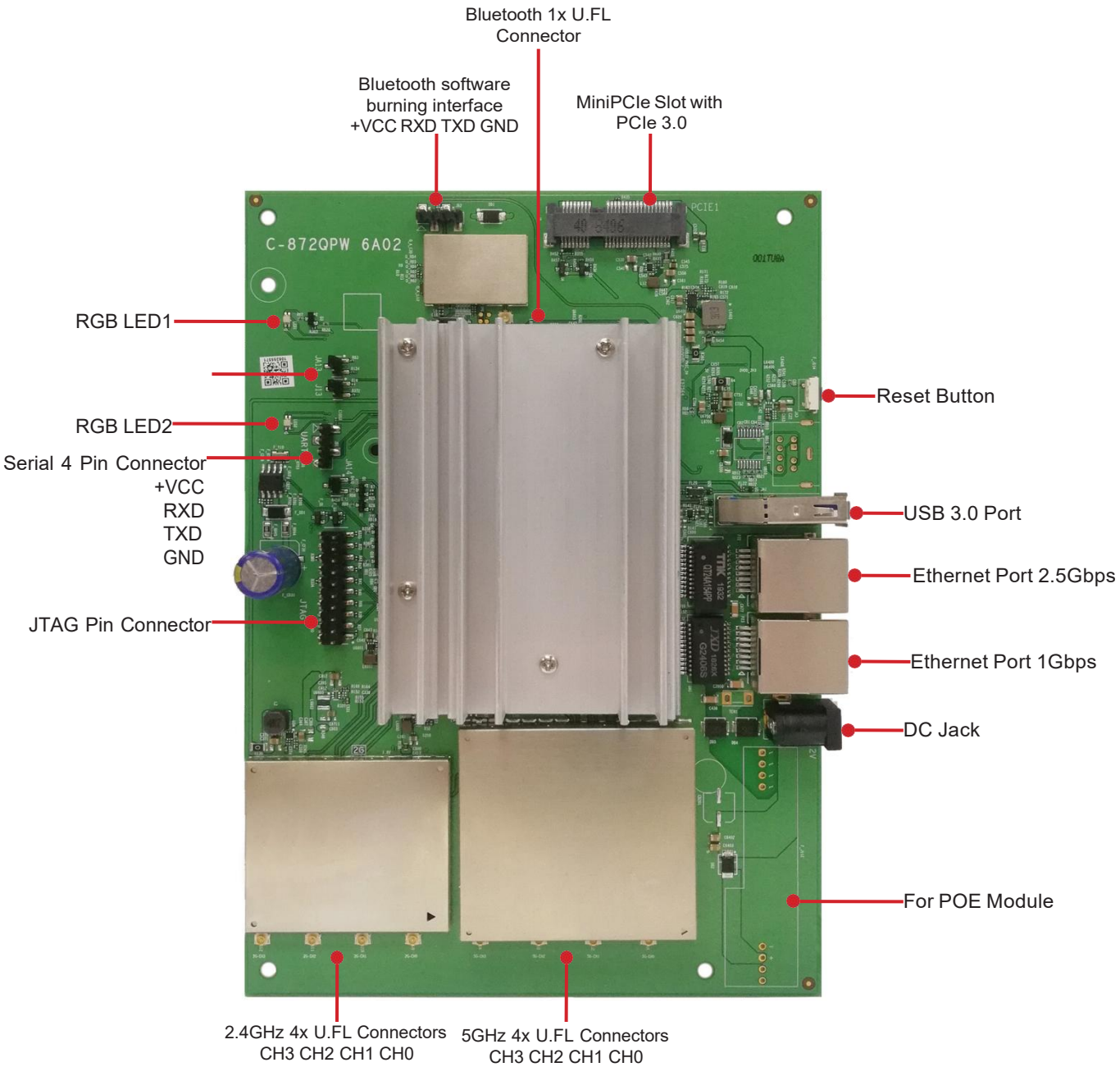
	Data Rate	RX Specifications Sensitivity	Tolerance
5GHz 802.11ac VHT80+80	MCS 0	-86	±2dB
	MCS 1	-84	±2dB
	MCS 2	-82	±2dB
	MCS 3	-80	±2dB
	MCS 4	-77	±2dB
	MCS 5	-74	±2dB
	MCS 6	-71	±2dB
	MCS 7	-68	±2dB
	MCS 8	-65	±2dB
	MCS 9	-63	±2dB
5GHz 802.11ax HE20	MCS 0	-96	±2dB
	MCS 1	-95	±2dB
	MCS 2	-93	±2dB
	MCS 3	-91	±2dB
	MCS 4	-89	±2dB
	MCS 5	-87	±2dB
	MCS 6	-85	±2dB
	MCS 7	-82	±2dB
	MCS 8	-79	±2dB
	MCS 9	-77	±2dB
	MCS 10	-74	±2dB
	MCS 11	-71	±2dB
5GHz 802.11ax HE40	MCS 0	-94	±2dB
	MCS 1	-93	±2dB
	MCS 2	-91	±2dB
	MCS 3	-89	±2dB
	MCS 4	-86	±2dB
	MCS 5	-83	±2dB
	MCS 6	-81	±2dB
	MCS 7	-79	±2dB
	MCS 8	-76	±2dB
	MCS 9	-74	±2dB
	MCS 10	-71	±2dB
	MCS 11	-68	±2dB
5GHz 802.11ax HE80	MCS 0	-91	±2dB
	MCS 1	-90	±2dB
	MCS 2	-88	±2dB
	MCS 3	-86	±2dB
	MCS 4	-84	±2dB
	MCS 5	-82	±2dB
	MCS 6	-79	±2dB
	MCS 7	-77	±2dB
	MCS 8	-74	±2dB
	MCS 9	-71	±2dB
	MCS 10	-69	±2dB
	MCS 11	-66	±2dB

Mechanical Dimensions



All dimensions are in mm.

Component Map



Firmware / Software

CompexWRT	V10.0
OpenWRT	Chaos Calmer 18.06

Ordering Options

Item Code	Processor	Power Solutions
WPQ872LV 6A02PR8F512R-TE	IPQ8072A	12V DC