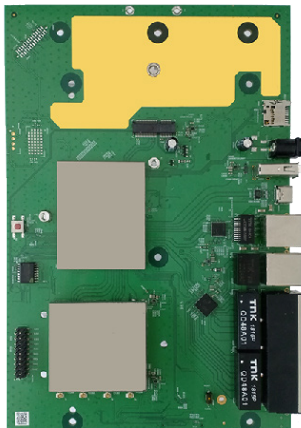


## Multi-function IPQ6018 Embedded Board with on-board WiFi 2.5Gbps Port / Dual Band Dual Concurrent / 802.11ax MU-MIMO OFDMA

Model: CP01



### KEY FEATURES

- Qualcomm Atheros IPQ6018 Quad Core ARM 64 bit A53 1.8GHz processor
- 2x2 on-board 2.4GHz radio, up to 573Mbps physical data rate
- 2x2 on-board 5GHz radio, up to 120Mbps 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 23dBm per chain On-board 2x2 5GHz MU-MIMO OFDMA 802.11a/n/ac/ax, max 23dBm 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) E Key Socket with PCIe 3.0
Interface	5x 1Gbps Ethernet Ports, 1x 2.5Gbps Ethernet Port 1x USB 2.0 Port 1x USB 3.0 Type-C Port 1x SD Card Slot 1x JTAG 20 Pin Connector 1x Serial Port 12 Pin Connector
Reset Button	1x H/W Reset Button
LED header	FFC/FPC Connector
DC Power	1x DC Jack Connector: 12V
Power Consumption (Board only)	17W (Max)
Onboard other Module	Support Bluetooth Module
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	146.5 x 219.3 x 44.9

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	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	23dBm	26dBm	±2dB
	48Mbps	23dBm	26dBm	±2dB
	54Mbps	23dBm	26dBm	±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	23dBm	26dBm	±2dB
	MCS 5	23dBm	26dBm	±2dB
	MCS 6	23dBm	26dBm	±2dB
	MCS 7	22dBm	25dBm	±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	23dBm	26dBm	±2dB
	MCS 5	23dBm	26dBm	±2dB
	MCS 6	23dBm	26dBm	±2dB
	MCS 7	22dBm	25dBm	±2dB

	Data Rate	RX Specifications Sensitivity	Tolerance
2.4GHz 802.11b	1Mbps	-101	±2dB
	2Mbps	-99	±2dB
	5.5Mbps	-96	±2dB
	11Mbps	-94	±2dB
2.4GHz 802.11g	6Mbps	-97	±2dB
	9Mbps	-95	±2dB
	12Mbps	-93	±2dB
	18Mbps	-91	±2dB
	24Mbps	-89	±2dB
	36Mbps	-86	±2dB
	48Mbps	-84	±2dB
	54Mbps	-81	±2dB
2.4GHz 802.11n HT20	MCS 0	-97	±2dB
	MCS 1	-95	±2dB
	MCS 2	-92	±2dB
	MCS 3	-90	±2dB
	MCS 4	-88	±2dB
	MCS 5	-86	±2dB
	MCS 6	-84	±2dB
	MCS 7	-81	±2dB
2.4GHz 802.11n HT40	MCS 0	-94	±2dB
	MCS 1	-92	±2dB
	MCS 2	-89	±2dB
	MCS 3	-87	±2dB
	MCS 4	-85	±2dB
	MCS 5	-83	±2dB
	MCS 6	-81	±2dB
	MCS 7	-78	±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	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	23dBm	26dBm	±2dB
	MCS 7	22dBm	25dBm	±2dB
	MCS 8	21dBm	24dBm	±2dB
	MCS 9	21dBm	24dBm	±2dB
	MCS 10	18dBm	21dBm	±2dB
	MCS 11	17dBm	20dBm	±2dB
2.4GHz 802.11ax HE40	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	23dBm	26dBm	±2dB
	MCS 7	22dBm	25dBm	±2dB
	MCS 8	21dBm	24dBm	±2dB
	MCS 9	21dBm	24dBm	±2dB
	MCS 10	21dBm	24dBm	±2dB
	MCS 11	19dBm	22dBm	±2dB

	Data Rate	RX Specifications Sensitivity	Tolerance
2.4GHz 802.11ax HE20	MCS 0	-97	±2dB
	MCS 1	-95	±2dB
	MCS 2	-93	±2dB
	MCS 3	-91	±2dB
	MCS 4	-88	±2dB
	MCS 5	-85	±2dB
	MCS 6	-82	±2dB
	MCS 7	-79	±2dB
	MCS 8	-76	±2dB
	MCS 9	-73	±2dB
	MCS 10	-71	±2dB
	MCS 11	-68	±2dB
2.4GHz 802.11ax HE40	MCS 0	-95	±2dB
	MCS 1	-93	±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
	MCS 8	-74	±2dB
	MCS 9	-71	±2dB
	MCS 10	-69	±2dB
	MCS 11	-66	±2dB

## RF Performance Table for 5GHz

	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	23dBm	26dBm	±2dB
	54Mbps	22dBm	25dBm	±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	23dBm	26dBm	±2dB
	MCS 6	23dBm	26dBm	±2dB
	MCS 7	22dBm	25dBm	±2dB
5GHz 802.11n/ac VHT40	MCS 8	22dBm	25dBm	±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	23dBm	26dBm	±2dB
5GHz 802.11ac VHT80	MCS 7	22dBm	25dBm	±2dB
	MCS 8	22dBm	25dBm	±2dB
	MCS 9	20dBm	23dBm	±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	23dBm	26dBm	±2dB
	MCS 7	22dBm	25dBm	±2dB
	MCS 8	22dBm	25dBm	±2dB
	MCS 9	20dBm	23dBm	±2dB

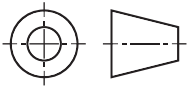
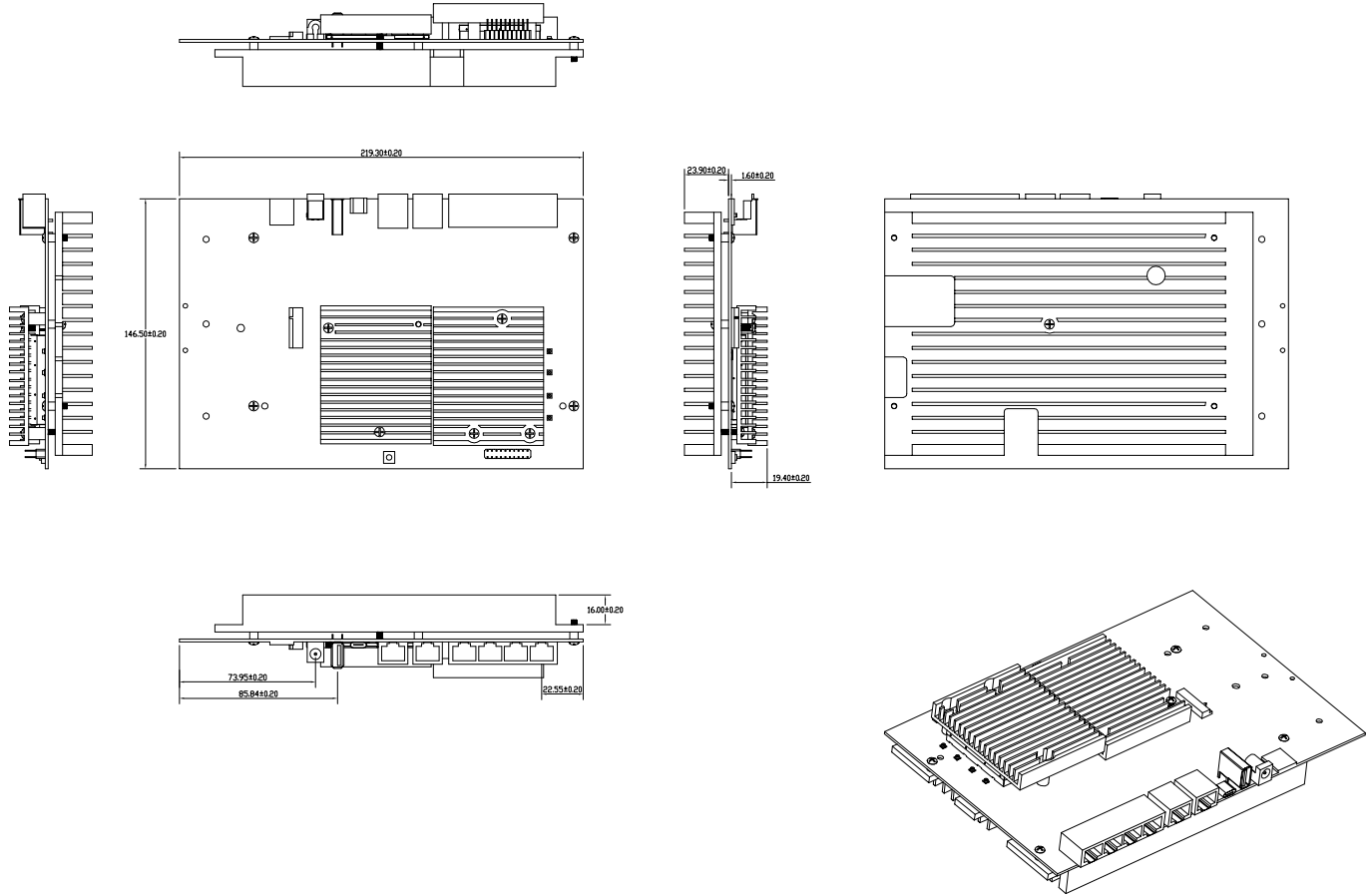
	Data Rate	RX Specifications Sensitivity	Tolerance
5GHz 802.11a	6Mbps	-95	±2dB
	9Mbps	-93	±2dB
	12Mbps	-91	±2dB
	18Mbps	-89	±2dB
	24Mbps	-86	±2dB
	36Mbps	-84	±2dB
	48Mbps	-82	±2dB
	54Mbps	-79	±2dB
5GHz 802.11n/ac VHT20	MCS 0	-95	±2dB
	MCS 1	-93	±2dB
	MCS 2	-91	±2dB
	MCS 3	-88	±2dB
	MCS 4	-85	±2dB
	MCS 5	-83	±2dB
	MCS 6	-81	±2dB
	MCS 7	-78	±2dB
5GHz 802.11n/ac VHT40	MCS 8	-75	±2dB
	MCS 0	-93	±2dB
	MCS 1	-91	±2dB
	MCS 2	-89	±2dB
	MCS 3	-87	±2dB
	MCS 4	-84	±2dB
	MCS 5	-82	±2dB
	MCS 6	-79	±2dB
5GHz 802.11ac VHT80	MCS 7	-76	±2dB
	MCS 8	-73	±2dB
	MCS 9	-70	±2dB
	MCS 0	-90	±2dB
	MCS 1	-88	±2dB
	MCS 2	-86	±2dB
	MCS 3	-83	±2dB
	MCS 4	-80	±2dB
	MCS 5	-77	±2dB
	MCS 6	-75	±2dB
	MCS 7	-72	±2dB
	MCS 8	-69	±2dB
	MCS 9	-66	±2dB

## RF Performance Table for 5GHz

	Data Rate	TX Power (per chain)	TX Power (2 chains)	Tolerance
5GHz 802.11ax HE20	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	23dBm	26dBm	±2dB
	MCS 7	22dBm	25dBm	±2dB
	MCS 8	22dBm	25dBm	±2dB
	MCS 9	20dBm	23dBm	±2dB
	MCS 10	19dBm	22dBm	±2dB
	MCS 11	17dBm	20dBm	±2dB
5GHz 802.11ax HE40	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	23dBm	26dBm	±2dB
	MCS 7	22dBm	25dBm	±2dB
	MCS 8	22dBm	25dBm	±2dB
	MCS 9	20dBm	23dBm	±2dB
	MCS 10	19dBm	22dBm	±2dB
	MCS 11	17dBm	20dBm	±2dB
5GHz 802.11ax HE80	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	23dBm	26dBm	±2dB
	MCS 7	22dBm	25dBm	±2dB
	MCS 8	22dBm	25dBm	±2dB
	MCS 9	20dBm	23dBm	±2dB
	MCS 10	19dBm	22dBm	±2dB
	MCS 11	17dBm	20dBm	±2dB

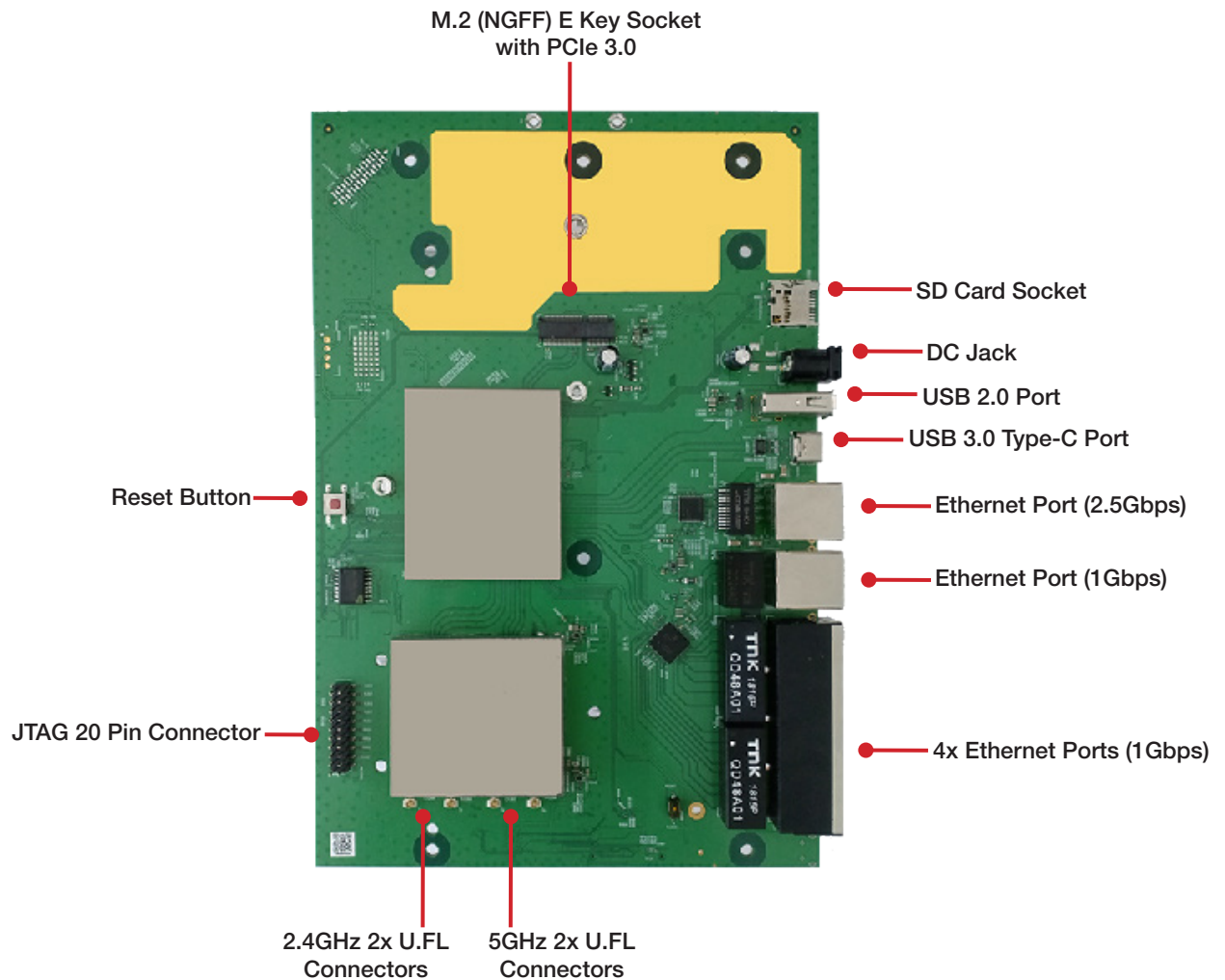
	Data Rate	RX Specifications Sensitivity	Tolerance
5GHz 802.11ax HE20	MCS 0	-94	±2dB
	MCS 1	-92	±2dB
	MCS 2	-90	±2dB
	MCS 3	-88	±2dB
	MCS 4	-86	±2dB
	MCS 5	-83	±2dB
	MCS 6	-80	±2dB
	MCS 7	-77	±2dB
	MCS 8	-74	±2dB
	MCS 9	-71	±2dB
	MCS 10	-68	±2dB
	MCS 11	-65	±2dB
5GHz 802.11ax HE40	MCS 0	-92	±2dB
	MCS 1	-90	±2dB
	MCS 2	-88	±2dB
	MCS 3	-86	±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	-63	±2dB
5GHz 802.11ax HE80	MCS 0	-90	±2dB
	MCS 1	-88	±2dB
	MCS 2	-85	±2dB
	MCS 3	-82	±2dB
	MCS 4	-80	±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

## Mechanical Dimensions

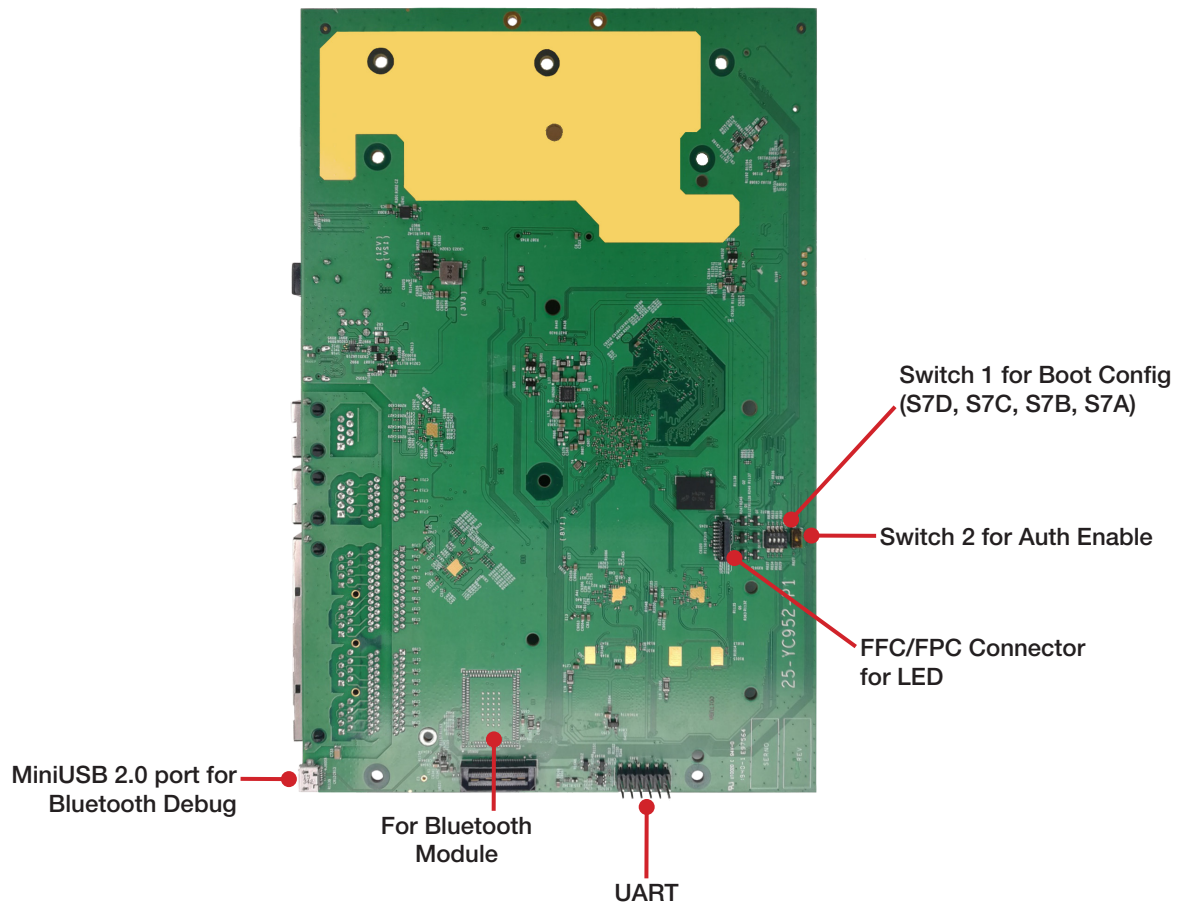


All dimensions are in mm.

## Component Map



## Component Map





## Software Information

Firmware

OpenWRT Barrier Breaker

## Development Kits

SDK

SDKs with QCA binary drivers are available for software developers.

Accessory

JTAG Programmer, Serial Converter, Power Supply Only if available

## Ordering Options

Item Code	Processor	Power Solutions
AP.CP01 PR321GBR1.00-TE	IPQ6018	12V DC