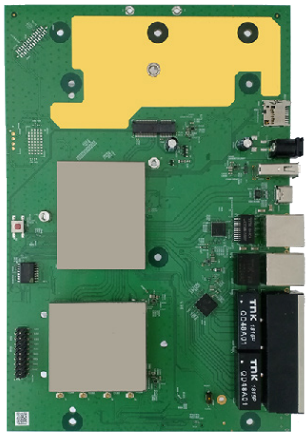
Multi-function IPQ6018 Embedded Board with on-board WiFi

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 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 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
	MCS 8	22dBm	25dBm	±2dB
5GHz 802.11n/ac VHT40	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
5GHz 802.11ac VHT80	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

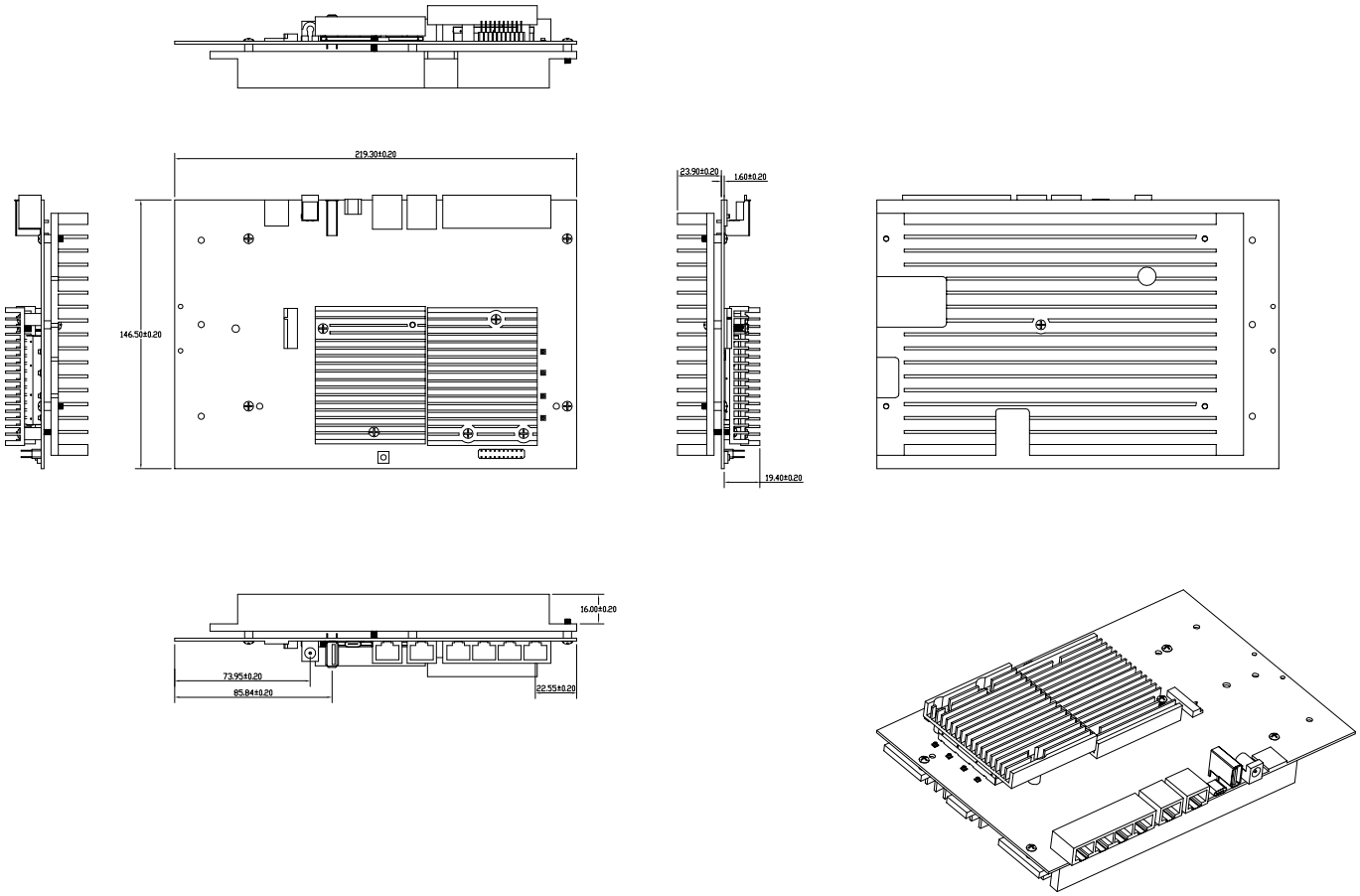
	Data Rate	RX Specifications Sensitivity	Tolerance
5GHz 802.11a	6Mbps	-95	±2dB
	9Mbps	-93	±2dB
	12Mbps	-91	±2dB
	18Mbps	-89	±2dB
	24Mbps	-86	±2dB
	36Mbps	-84	±2dB
	48Mbps	-82	±2dB
	54Mbps	-79	±2dB
5GHz 802.11n/ac VHT20	MCS 0	-95	±2dB
	MCS 1	-93	±2dB
	MCS 2	-91	±2dB
	MCS 3	-88	±2dB
	MCS 4	-85	±2dB
	MCS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

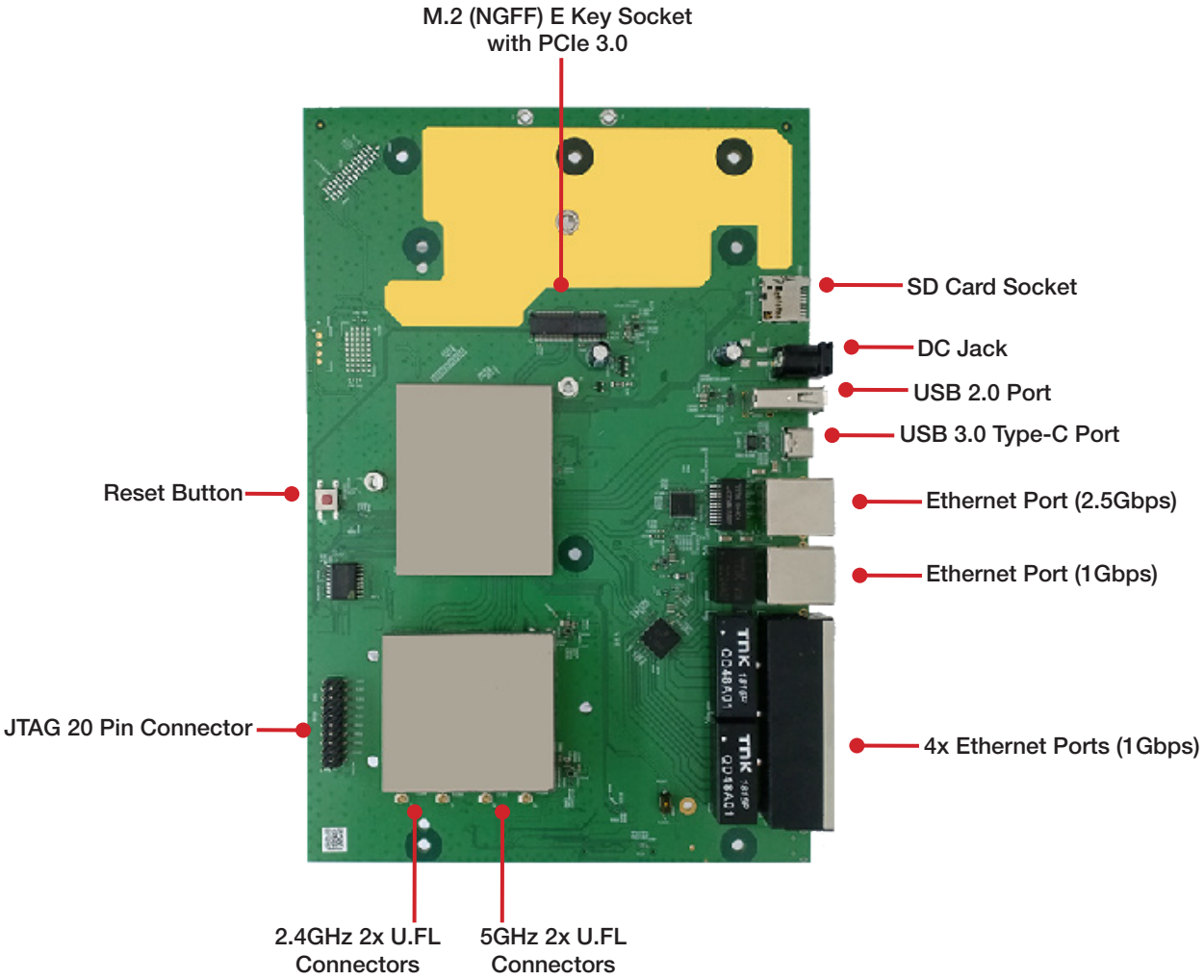
	Data Rate	RX Specifications Sensitivity	Tolerance
5GHz 802.11ax HE20	MCS 0	-94	±2dB
	MCS 1	-92	±2dB
	MCS 2	-90	±2dB
	MCS 3	-88	±2dB
	MCS 4	-86	±2dB
	MCS 5	-83	±2dB
	MCS 6	-80	±2dB
	MCS 7	-77	±2dB
	MCS 8	-74	±2dB
	MCS 9	-71	±2dB
	MCS 10	-68	±2dB
	MCS 11	-65	±2dB
5GHz 802.11ax HE40	MCS 0	-92	±2dB
	MCS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



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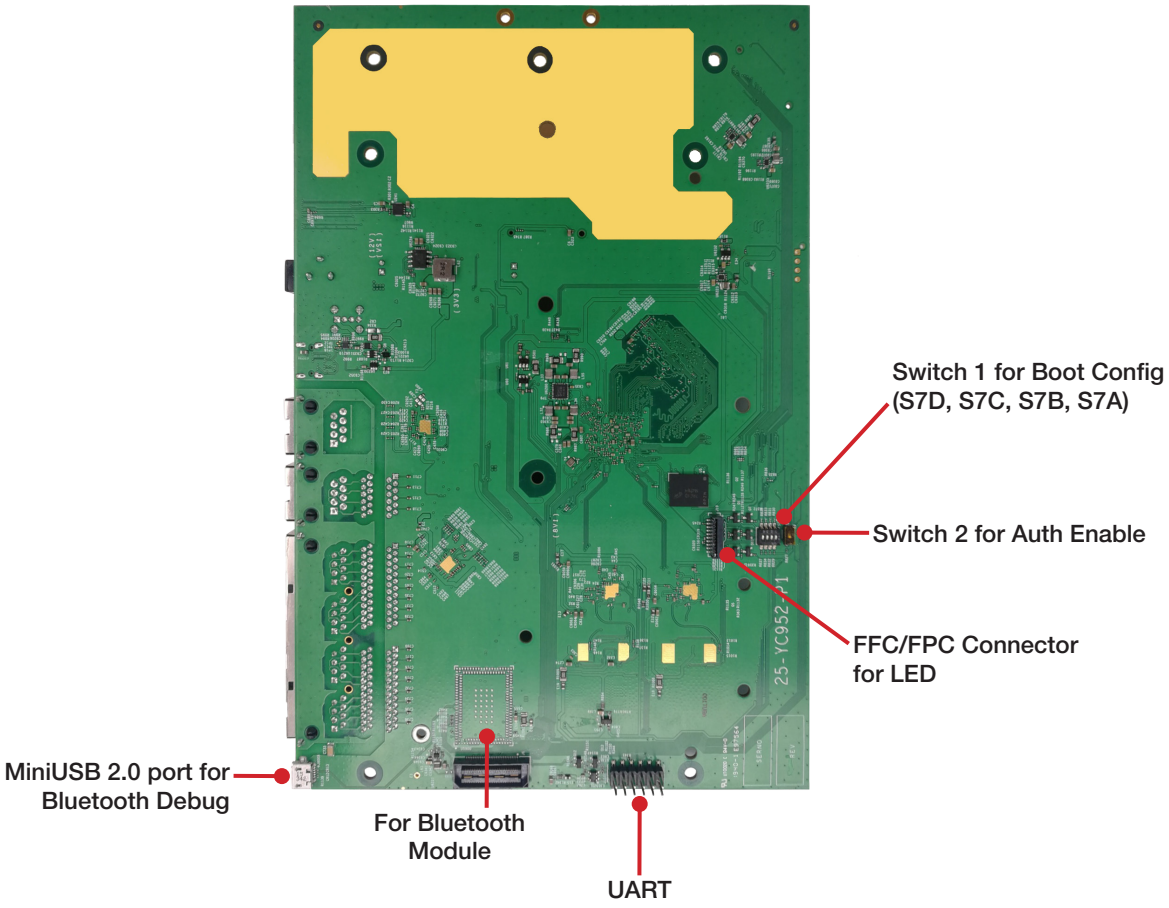

Software Information

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