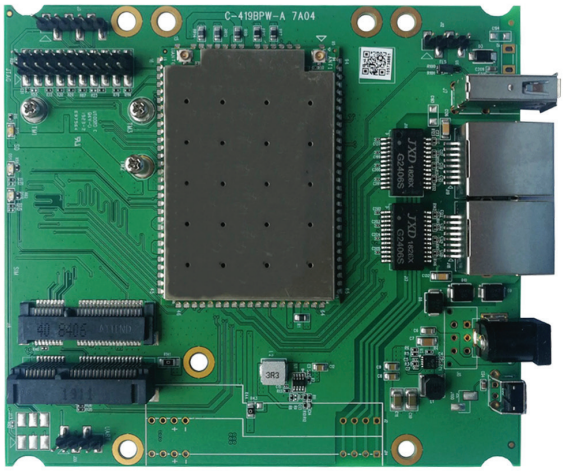
Multi-function IPQ4019 Embedded Board with on-board Wireless

710MHz CPU / 2x GE Port / Dual Band / 802.11ac Wave 2

Model: WPJ419 7A04



KEY FEATURES

- Qualcomm Atheros IPQ4019 710MHz CPU
- 2x2 MU-MIMO Technology, up to 400Mbps
- 2x2 MU-MIMO Technology,up to 867Mbps

APPLICATIONS

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

Specifications

Chipset	Qualcomm-Atheros IPQ4019
CPU Frequency	Quad-core ARM Cortex-A7 at 710 MHz
System Memory	256MB(Up to 1GB)
Nand Flash	128MB
Nor Flash	16MB
Ethernet Port	2x Gigabit Ethernet Port (LAN/WAN)
MiniPCIe slot	1x Mini PCI Express v2.0 Slot at 9.9mm Height 1x LTE module slot at 2.0mm Height
SIM Card Slot	1x SIM Card slot
MicroSD Card Slot	1x MicroSD Card slot
PoE (Power Over Ethernet)	Support 802.3 af/at POE, IEEE802.3af/IEEE802.3at(48-56V)
DC Jack Input	1x DC Jack Connector: 12V, 2A
Power consumption (Board only)	12W (Max)
On board radio	2 radios (Dual band concurrent radio)
2.4GHz	2x2 802.11bgn, 2.4GHz 1Mbps datarate 23dBm/per chain for 802.11b; 2.4GHz 802.11g 6M 23dBm/per chain
5GHz	2x2 802.11a/n/ac 5GHz (6Mbps datarate 23dBm/per chain) 5GHz 802.11a 6M 23dBm/per chain
2.4GHz Data Rate	2x2 MU-MIMO Technology,up to 400Mbps
5GHz Data Rate	2x2 MU-MIMO Technology,up to 867Mbps
Dual Band	Yes
LED	3x LED Indicators

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.

Continued on Page 2...

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Specifications

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USB /header	2x USB 2.0 (port/header)
Serial Port	2x Serial Port (UART and H-UART)
JTAG Debug Interface	1x JTAG 20 Pin Connector
Push Button Reset	1x F/W Reset
Reference Design	DK04
Host Interface	1x Mini PCI Express v2.0 Slot at 9.9mm Height 1x 4G module slot at 2.0mm Height
Operating Voltage	DC 12V
Frequency Range	2.412~2.472GHz, 5.180~5.825GHz
Modulation Techniques	802.11b: DSSS (DBPSK / DQPSK / CCK) 802.11a/g: OFDM (BPSK / QPSK / 16QAM / 64QAM) 802.11ac/n: OFDM (BPSK / QPSK / 16QAM / 64QAM/256QAM)
Supports Dynamic Frequency Selection (DFS)	Yes
Certification	REACH&RoHS Compliance
Humidity	Operating: 5% to 95% (non-condensing) Storage: Max. 90% (non-condensing)
Temperature Range	Operating: -20°C to 70°C Storage: -40°C to 90°C
Dimension (W x H x D)	120mm x105 mm x15 mm

**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	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	-94dBm	±2dB
	2Mbps	-93dBm	±2dB
	5.5Mbps	-93dBm	±2dB
	11Mbps	-91dBm	±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

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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	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
	MCS 8	18dBm	21dBm	±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	20dBm	23dBm	±2dB
	MCS 7	19dBm	22dBm	±2dB
	MCS 8	18dBm	21dBm	±2dB
	MCS 9	17dBm	20dBm	±2dB
5GHz 802.11ac VHT80	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
	MCS 8	-70dBm	±2dB
5GHz 802.11n/ac VHT40	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
	MCS 9	-70dBm	±2dB
5GHz 802.11ac VHT80	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

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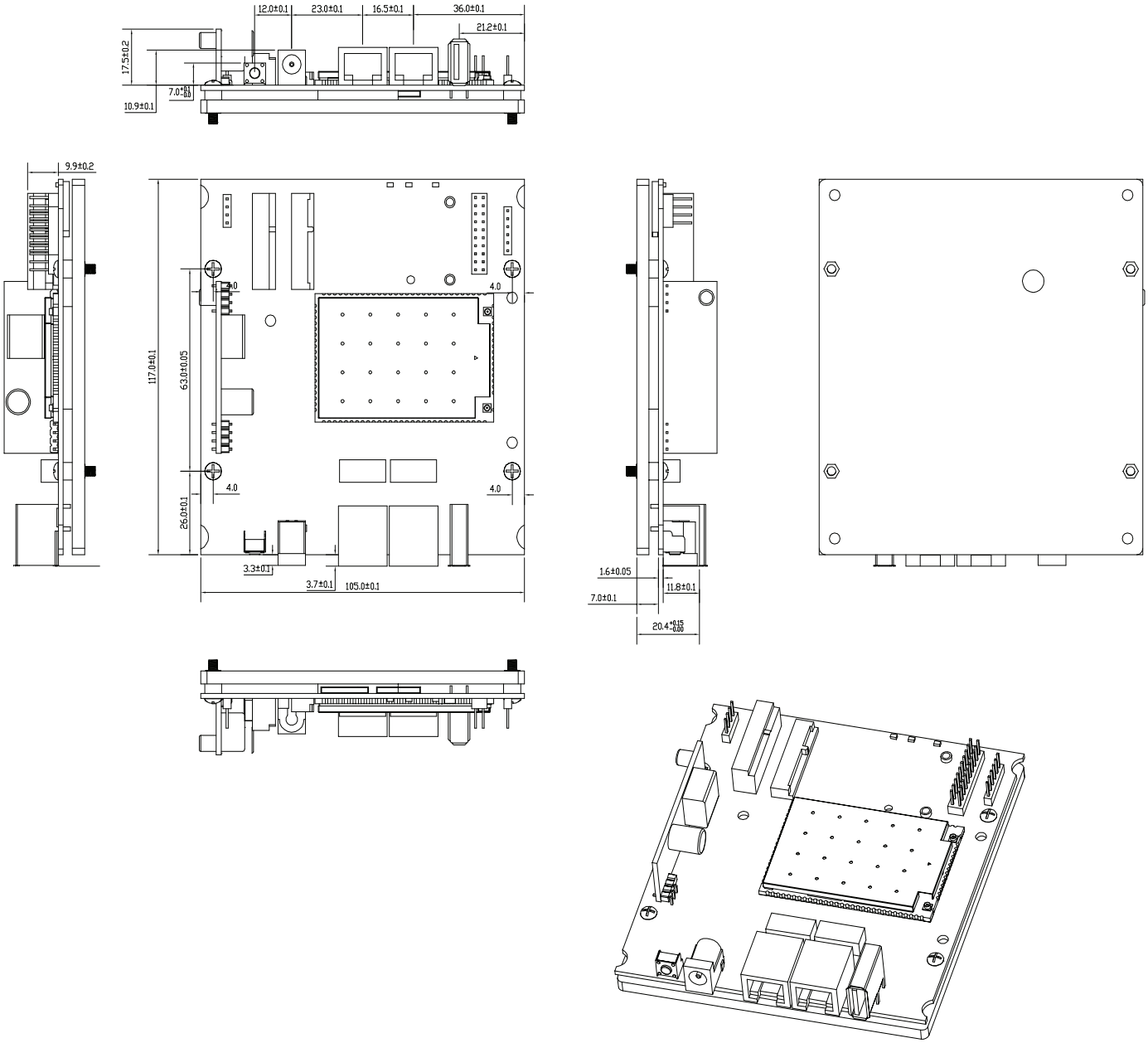
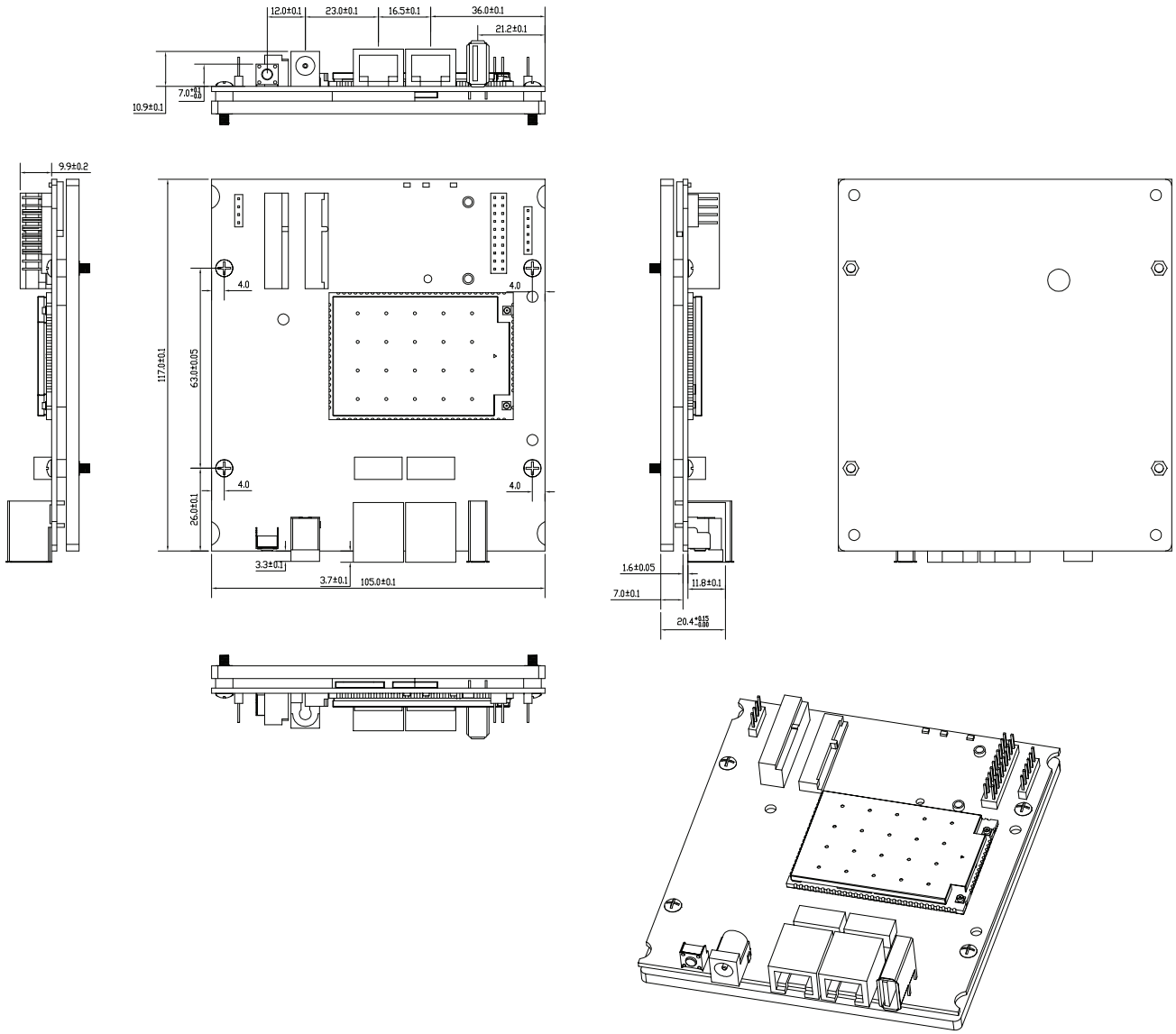
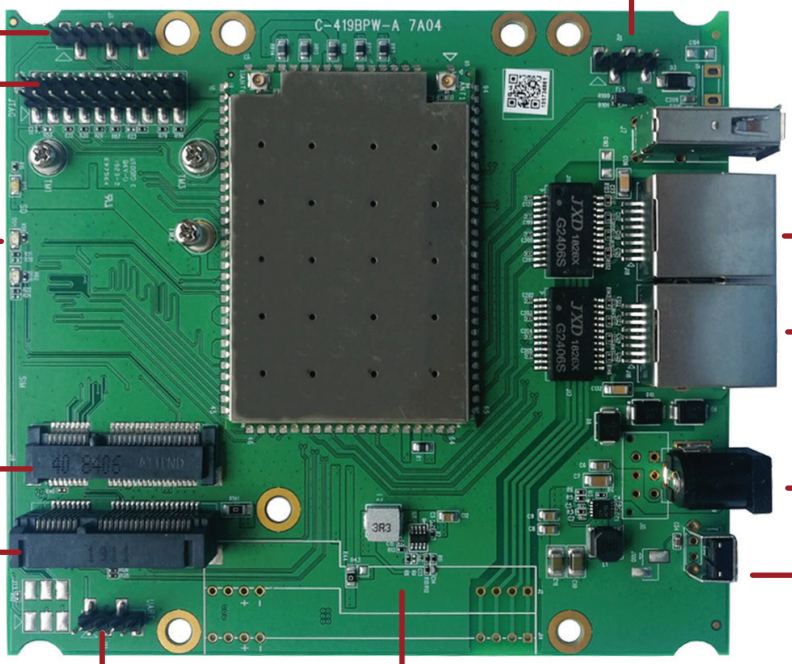
Mechanical Dimensions for HV Version

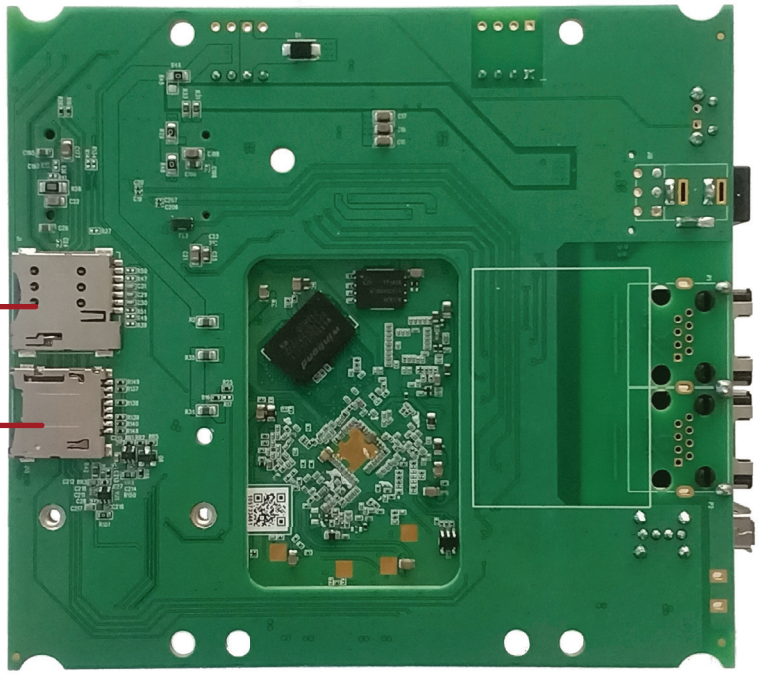


Mechanical Dimensions for LV Version



Component Map





Firmware/Software

The WPJ419 is shipped with QCA reference firmware. SDKs with QCA wireless drivers are available for software developers.

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	Firmware	Processor	Power Solutions
WPJ419LV 7A04	QCA Reference Firmware	IPQ4019	DC 12V
WPJ419HV 7A04	QCA Reference Firmware	IPQ4019	DC 12V or 802.3af/at PoE, IEEE802.3af/IEEE802.3at (48-56V)

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