JWX6051

High performance 2x2 Dual-Band 802.11ac Wi-Fi with MU-MIMO and Bluetooth 5.0

JWW6051 is a 802.11ac wave2 2x2+BT5.0 M.2 2230 Module. It's highly integrated and cost effective and low-power consumption module which has all of the Wi-Fi and Bluetooth functionalities. It supports 2-stream 802.11ac solutions with Multi-user MIMO (Multiple-Input, Multiple-Output). It supports high-speed Wi-Fi connectivity and enriched media experiences. It is optimized for energy efficiency, which is critical to extending the battery life of portable devices.

Features

- Advanced 802.11ac features such as MU-MIMO and TX Beamforming to increase network capacity Mini PCIe 2.0 interface
- supports Classic Bluetooth as well as Bluetooth Low Energy hub and peripheral devices.
- Power saving techniques for low power consumption

System Information

Wireless: IEEE802.11ac wave2 Dual-Band 2T2R

MU-MIMO

Bluetooth v5.0, v4.2, v4.1, v4.0 LE, v3.0+HS, v2.1+EDR

Chipset: Qualcomm Atheros QCA6174A-5

Data Rate

802.11b: 11Mbps

802.11a/g: 54Mbps

802.11n: 300Mbps

802.11ac: 867Mbps

Operating Frequency

IEEE802.11bgn: 2.412GHz~2.484GHz

IEEE802.11ac: 5.180GHz~5.850GHz

Application

Smart TV and OTT Box, medical devices, PoS, digital signs, gaming machines, handheld devices, digital Scale, ect.

Specification

Standards	IEEE 802.11ac/a/b/g/n (2T2R) Bluetooth v5.0, v4.2, v4.1, v4.0 LE, v3.0+HS, v2.1+EDR
Chipset	Qualcomm QCA6174A-5
Interface	PCIe for WiFi, USB for BT
Form Factor	M.2 2230
Antenna	2x IPEX MHF4 connectors
Modulation	Wi-Fi: 802.11b: DSSS (DBPSK, DQPSK, CCK) 802.11g: OFDM (BPSK, QPSK, 16-QAM, 64-QAM) 802.11n: OFDM (BPSK, QPSK, 16-QAM, 64-QAM) 802.11a: OFDM (BPSK, QPSK, 16-QAM, 64-QAM) 802.11ac: OFDM (BPSK, QPSK, 16-QAM, 64-QAM, 256-QAM) Bluetooth: Header: GFSK, Payload 2M: π/4-DQPSK, Payload 3M: 8-DPSK
Power Consumption	TX: 806mA, RX: 205mA, Max: 3.5W
Operating Voltage	DC 3.3V ± %
Operating Temperature Range	-40°C~85°C
Storage Temperature Range	-45°C~135°C
Operating Humidity (Non-Condensing)	5%~95%
Storage Humidity (Non-Condensing)	5%~90%
Dimension L x W x H (in mm)	22.0mm x 30.0mm
Driver Support	Windows 7, Windows 8/8.1, Windows 10, Linux, Android
Security	64/128-bits WEP, WPA, WPA2, WPA3, 802.1x
Certification	FCC/CE/IC

Output Power & Sensitivity

802.11b/g		
Data Rate	**TX +/- 2dB**	**RX Sensitivity +/- 2dB**
1~11Mbps	18 dBm	-90~-85 dBm
6Mbps	18 dBm	-90 dBm
24Mbps	17 dBm	-83 dBm
54Mbps	16 dBm	-76 dBm

802.11n / 2.4GHz				
Data Rate		**TX +/- 2dB (1TX)**	**TX +/- 2dB (2TX)**	**RX Sensitivity +/- 2dB**
VHT 20	MCS0	17 dBm	20 dBm	-88 dBm
	MCS4	16 dBm	19 dBm	-77 dBm
	MCS7	15 dBm	18 dBm	-72 dBm
VHT 40	MCS0	17 dBm	20 dBm	-86 dBm
	MCS4	16 dBm	19 dBm	-76 dBm
	MCS7	15 dBm	18 dBm	-70 dBm

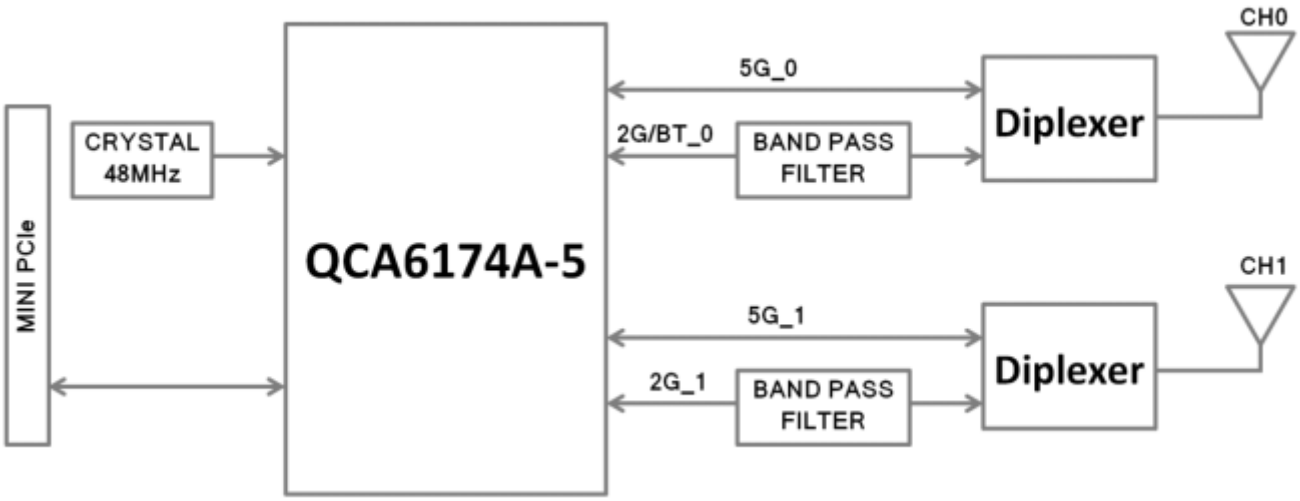
802.11a		
Data Rate	**TX +/- 2dB**	**RX Sensitivity +/- 2dB**
6Mbps	12 dBm	-90 dBm
24Mbps	11 dBm	-83 dBm
54Mbps	10 dBm	-76 dBm

802.11n / 5GHz				
Data Rate		**TX +/- 2dB (1TX)**	**TX +/- 2dB (2TX)**	**RX Sensitivity +/- 2dB**
VHT 20	MCS0	13 dBm	16 dBm	-88 dBm
	MCS4	11 dBm	14 dBm	-77 dBm
	MCS7	10 dBm	13 dBm	-72 dBm
VHT 40	MCS0	12 dBm	15 dBm	-86 dBm
	MCS4	11 dBm	14 dBm	-76 dBm
	MCS7	10 dBm	13 dBm	-70 dBm

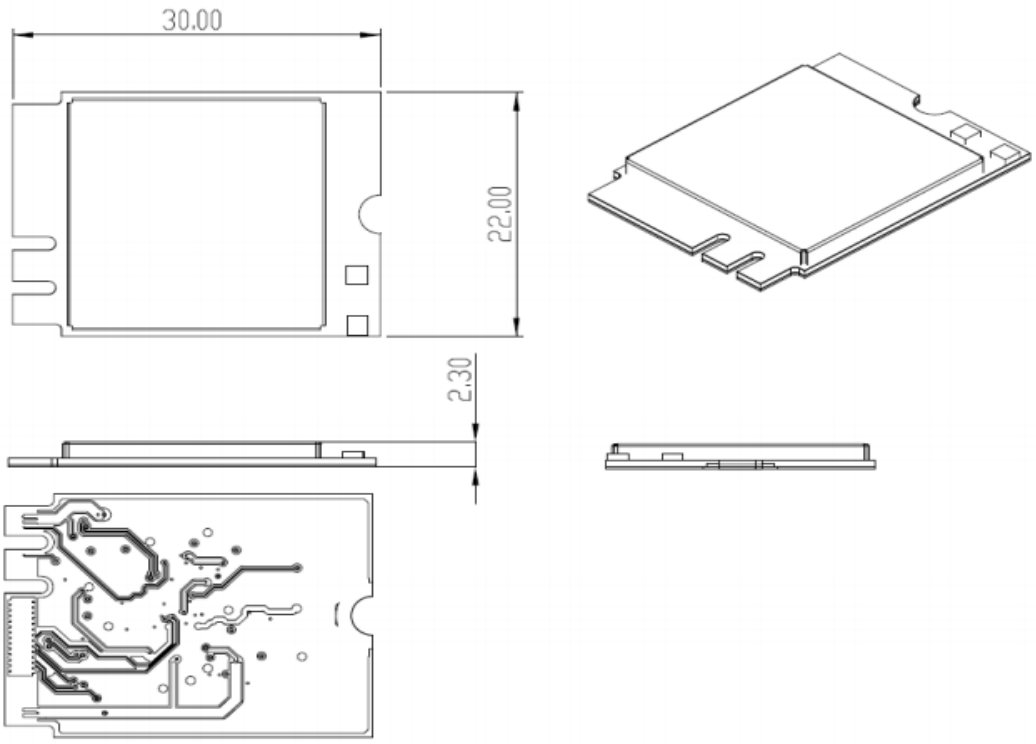
802.11ac				
Data Rate		TX +/- 2dB (1TX)	TX +/- 2dB (2TX)	RX Sensitivity +/- 2dB
VHT 20	MCS0	13 dBm	16 dBm	-90 dBm
	MCS4	12 dBm	15 dBm	-80 dBm
	MCS8	7 dBm	10 dBm	-70 dBm
VHT 40	MCS0	12 dBm	15 dBm	-90 dBm
	MCS4	12 dBm	15 dBm	-75 dBm
	MCS9	6 dBm	9 dBm	-65 dBm
VHT 80	MCS0	12 dBm	15 dBm	-85 dBm
	MCS4	12 dBm	15 dBm	-70 dBm
	MCS9	6 dBm	9 dBm	-60 dBm

Bluetooth		
Data Rate	Tx +/- 2dB	Rx Sensitivity +/- 2dB
3Mbps	0≦Output Power≦+4dBm	<0.1% BER at -70dBm

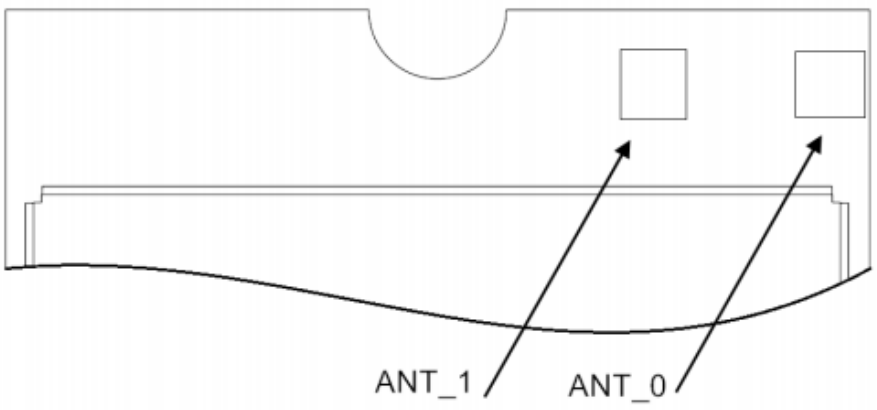
Block Diagram



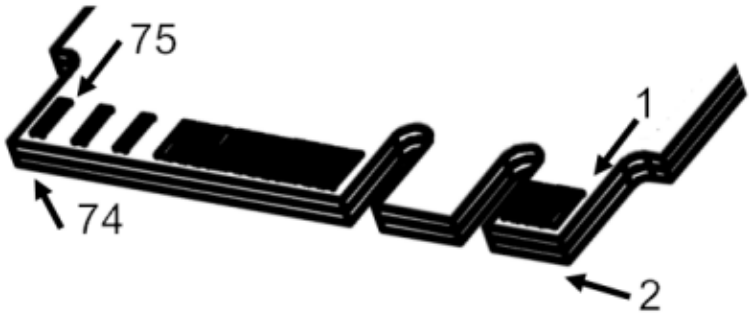
Dimension



Pin Assignment



Pin Name	Description
Ant_0	RF Antenna for WiFi 2.4GHz / 5GHz & Bluetooth
Ant_1	RF Antenna for WiFi 2.4GHz / 5GHz



Pin Assignment

PIN#	Pin Name	Design Status	PIN#	Pin Name	Design Status
1	GND	WAKE	2	3.3V	VDD33
3	USB_D+	CHP_PWD	4	3.3V	VDD33
5	USB_D-	NC	6	LED_1#	WiFi LED
7	GND	VLKREQ	8	Module Key A	
9	Module Key A		10	Module Key A	
11	Module Key A		12	Module Key A	
13	Module Key A		14	Module Key A	
15	Module Key A		16	LED_2#	BT_LED
17	NC	NC	18	GND	GND
19	NC	NC	20	UART WAKE	NC
21	NC	NC	22	UART TX	NC
23	NC	NC	24	Module Key E	
25	Module Key E		26	Module Key E	
27	Module Key E		28	Module Key E	
29	Module Key E		30	Module Key E	
31	Module Key E		32	UART RX	NC
33	GND	GND	34	UART RTS	NC
35	PERp0	PERp0	36	UART CTS	NC
37	PERn0	PERn0	38	VENDOOR DEFINED	NC
39	GND	GND	40	VENDOOR DEFINED	NC
41	PETp0	PETp0	42	VENDOOR DEFINED	NC
43	PETn0	PETn0	44	COEX3(I/O)	LTE_ACTIVE
45	GND	GND	46	COEX_TXD(O)	LTE_PRI
47	REFCLKp0	REFCLKp0	48	COEX_DXD(O)	LTE_SYNC
49	REFCLKn0	REFCLKn0	50	SUSCLK(32kHz)	32KHz_CLK_IN
51	GND	GND	52	PERST0#(I)	PERST

53	CLKREQ0#(I/O)	CLKREQ	54	W_DISABLE2#(I)	BT_RF_KILL_L
55	PEWAKE0#(I/O)	PEWAKE	56	W_DISABLE1@(I)	WLAN_RF_KILL_L
57	GND	GND	58	I2C DATA(I)	NC
59	PERp1	NC	60	I2C CLK(I)	NC
61	PERn1	NC	62	ALERT#(O)	NC
63	GND	GND	64	RESERVED	NC
65	PETp1	NC	66	RESERVED	NC
67	PETn1	NC	68	RESERVED	NC
69	GND	GND	70	RESERVED	NC
71	REFCLKp1	NC	72	3.3Vaux	3.3V
73	REFCLKn1	NC	74	3.3Vaux	3.3V
75	GND	GND			

Order Information

Product Name	Description
JWX6051	802.11ac/a/b/g/n 2x2 & BT5.0 M.2 2230 Module

