

WMU6203



High performance 2x2 Dual-Band 802.11ac

Wi-Fi with MU-MIMO and Bluetooth 4.2

WMU6203 is a highly integrated single-chip that supports 2-stream 802.11ac solutions with Multi-user MIMO (Multiple-Input, Multiple-Output) and Wireless LAN (WLAN) with integrated Bluetooth 4.2 USB-multi interface controller. It combines a WLAN MAC, a 2T2R capable WLAN baseband, and RF in a single chip. The WMU6203 provides a complete solution for a high-performance integrated wireless and Bluetooth M.2 2230 Module.

Features

- 802.11ac 2x2, Wave-2 compatible with MU-MIMO
- Data rates: 173.3Mbps using 20MHz bandwidth, 400Mbps using 40MHz bandwidth, and 866.7Mbps using 80MHz bandwidth.
- It supports Multiple drivers (Android/ Windows/ Linux) for various application.

System Information

Wireless : IEEE 802.11a/b/g/n/ac (2T2R)

Bluetooth: v2.1/v3.0/v4.1/v4.2

Chipset : Realtek RTL8822BU-CG

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

TV and Set-top box, medical devices, PoS, digital signs, gaming machines, handheld devices, digital Scale, ect.

Specification

Standards	IEEE 802.11ac/a/b/g/n (2T2R) Bluetooth v4.2, v4.1, v4.0 LE, v3.0+HS, v2.1+EDR
Chipset	Realtek RTL8822BU-CG
Interface	USB for WiFi, USB for BT
Form Factor	M.2 2230
Antenna	2x IPEX MHF4 connectors
Modulation	<p>Wi-Fi:</p> <p>802.11b: DSSS (DBPSK, DQPSK, CCK)</p> <p>802.11g: OFDM (BPSK, QPSK, 16-QAM, 64-QAM)</p> <p>802.11n: OFDM (BPSK, QPSK, 16-QAM, 64-QAM)</p> <p>802.11a: OFDM (BPSK, QPSK, 16-QAM, 64-QAM)</p> <p>802.11ac: OFDM (BPSK, QPSK, 16-QAM, 64-QAM, 256-QAM)</p> <p>Bluetooth:</p> <p>Header: GFSK, Payload 2M: $\pi/4$-DQPSK, Payload 3M: 8-DPSK</p>
Power Consumption	2W
Operating Voltage	DC 3.3V \pm %
Operating Temperature Range	-20°C~70°C
Storage Temperature Range	-45°C~85°C
Operating Humidity (Non-Condensing)	5%~95%
Storage Humidity (Non-Condensing)	5%~90%
Power Consumption	2W (Max)
Dimension L x W x H (in mm)	22 x 30mm
Driver Support	Windows 7, Windows 8, Windows 10, Linux, Android
Security	64/128-bits WEP, WPA, WPA2
Certification	FCC/CE/IC

Output Power & Sensitivity

802.11b/g		
Data Rate	TX +/- 2dB	RX Sensitivity +/- 2dB
1~11Mbps	15 dBm	-80 dBm
24Mbps	15 dBm	-70 dBm
54Mbps	14 dBm	-70 dBm

802.11n / 2.4GHz				
Data Rate		TX +/- 2dB (1TX)	TX +/- 2dB (2TX)	RX Sensitivity +/- 2dB
VHT 20	MCS0	15 dBm	18 dBm	-70 dBm
	MCS4	14 dBm	17 dBm	-60dBm
	MCS7	13 dBm	16 dBm	-60 dBm
VHT 40	MCS0	15 dBm	18 dBm	-70dBm
	MCS4	14 dBm	17 dBm	-60 dBm
	MCS7	13 dBm	16 dBm	-60 dBm

802.11a		
Data Rate	TX +/- 2dB	RX Sensitivity +/- 2dB
6Mbps	18 dBm	-90 dBm
24Mbps	18 dBm	-80 dBm
54Mbps	16 dBm	-70 dBm

802.11n / 5GHz				
Data Rate		TX +/- 2dB (1TX)	TX +/- 2dB (2TX)	RX Sensitivity +/- 2dB
VHT 20	MCS0	14 dBm	17 dBm	-70 dBm
	MCS4	13 dBm	16 dBm	-60 dBm
	MCS7	12 dBm	15 dBm	-60 dBm
VHT 40	MCS0	14 dBm	17 dBm	-70 dBm
	MCS4	13 dBm	16 dBm	-60 dBm
	MCS7	12 dBm	15 dBm	-60 dBm

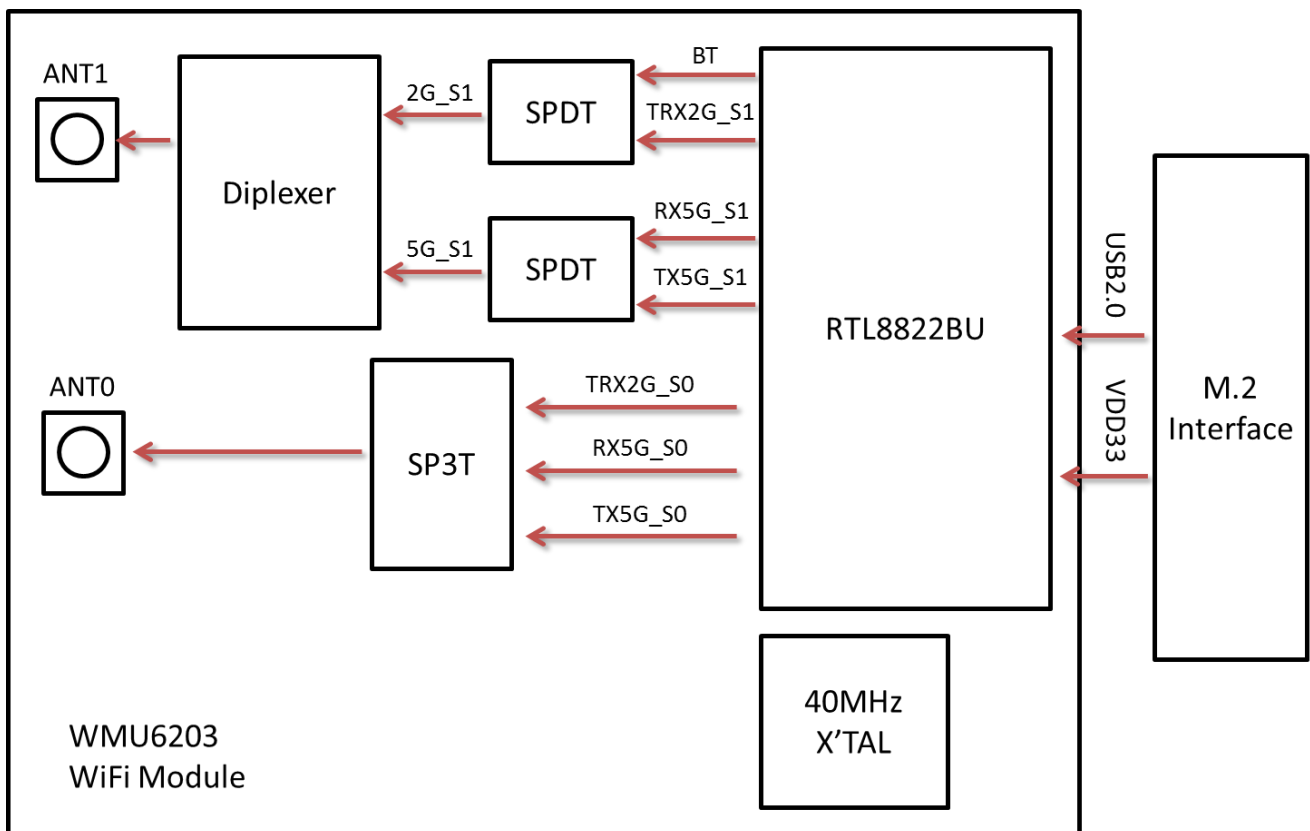
802.11ac

Data Rate		Tx +/- 2dB (1TX)	Tx +/- 2dB (2TX)	RX Sensitivity +/- 2dB
VHT 20	MCS0	14 dBm	17 dBm	-70 dBm
	MCS4	13 dBm	16 dBm	-60 dBm
	MCS8	12 dBm	15 dBm	-60 dBm
VHT 40	MCS0	12 dBm	15 dBm	-60 dBm
	MCS4	10 dBm	13 dBm	-50 dBm
	MCS9	9 dBm	12 dBm	-50 dBm
VHT 80	MCS0	12 dBm	15 dBm	-60 dBm
	MCS4	10 dBm	13 dBm	-60 dBm
	MCS9	9 dBm	12 dBm	-50 dBm

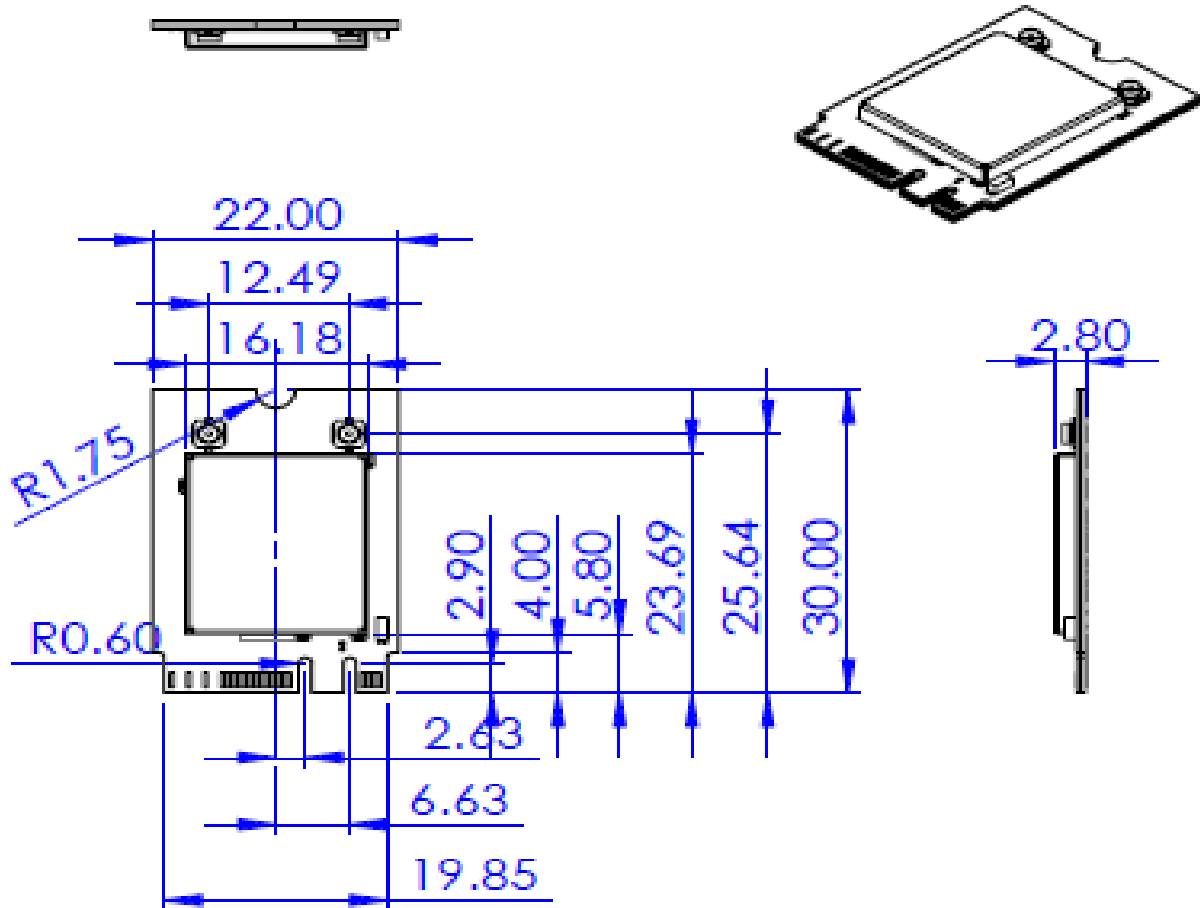
Bluetooth

Data Rate	Tx +/- 2dB	Rx Sensitivity +/- 2dB
3Mbps	$0 \leq \text{Output Power} \leq +4\text{dBm}$	<0.1% BER at -70dBm

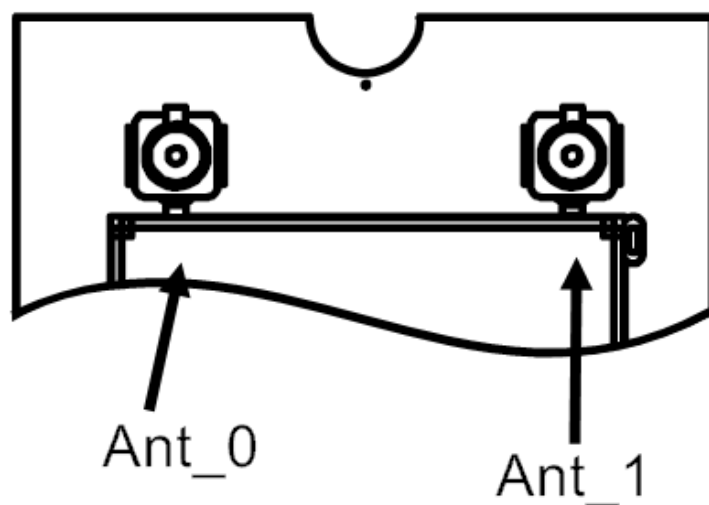
Block Diagram



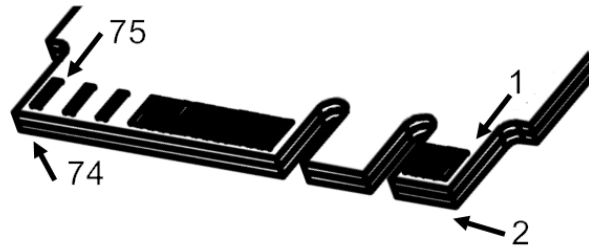
Dimension



Pin Assignment



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



Pin Assignment

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

49	REFCLKn0	NC	48	COEX_RXD(O)	NC
51	GND	GND	50	SUSCLK(32kHz)	NC
53	CLKREQ0#(I/O)	NC	52	PERST0#(I)	NC
55	PEWAKE0#(I/O)	NC	54	W_DISABLE2#(I)	NC
57	GND	GND	56	W_DISABLE1#(I)	NC
59	PERp1	NC	58	I2C DATA(I)	NC
61	PERn1	NC	60	I2C CLK(I)	NC
63	GND	GND	62	ALERT#(O)	NC
65	PETp1	NC	64	RESERVED	NC
67	PETn1	NC	66	RESERVED	NC
69	GND	GND	68	RESERVED	NC
71	REFCLKp1	NC	70	RESERVED	NC
73	REFCLKn1	NC	72	3.3Vaux	NC
75	GND	GND	74	3.3Vaux	NC

Order Information

Product Name	Description
WMU6202	802.11ac/a/b/g/n 2x2 & BT4.2 Half Mini PCIe Module