



# WMU6203

## 802.11ac 2T2R WIFI & BT Module

### Technical Specifications

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### System Information

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

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

Chipset: Realtek RTL8822BU

Antenna: U.FL x2 for 2T2R (2.4GHz & 5GHz dual band antenna)

### Data Rate

802.11b : 11Mbps

802.11a/g : 54Mbps

802.11n : 300Mbps

802.11ac : 867Mbps

### Operating Frequency

IEEE 802.11 b/g/n: 2.412GHz ~ 2.484GHz

IEEE 802.11 an/ac: 5.150GHz ~ 5.850GHz

### Interface

M.2 Key A+E (2230) for USB2.0 (WiFi+BT)

Antenna Ports : MHF4 x 2 for 2T2R

### Modulation

802.11a : BPSK, QPSK, 16-QAM, 64-QAM  
802.11b : DBPSK, DQPSK, CCK  
802.11g : BPSK, QPSK, 16-QAM, 64-QAM  
802.11n : BPSK, QPSK, 16-QAM, 64-QAM  
802.11ac : BPSK, QPSK, 16-QAM, 64-QAM, 256-QAM

### Recommended Operating Conditions

Operating Voltage: DC 3.3V  $\pm$  10%  
Operating Temperature Range: -20°C ~ 70°C  
Storage Temperature Range: -40° ~ 85°C  
Operating Humidity (non-condensing): 5% ~ 95%  
Storage Humidity (non-condensing): 5% ~ 90%  
Power consumption: 2W (MAX)  
Dimension (in mm): 22 x 30 mm

### Driver Support

**Platform Supported:**

Windows 7/8/10 (32bit/64bit)  
Linux (kernel 2.6.24~ 4.15)  
Android 1.6 ~ 2.3, 4.0 ~ 8.x

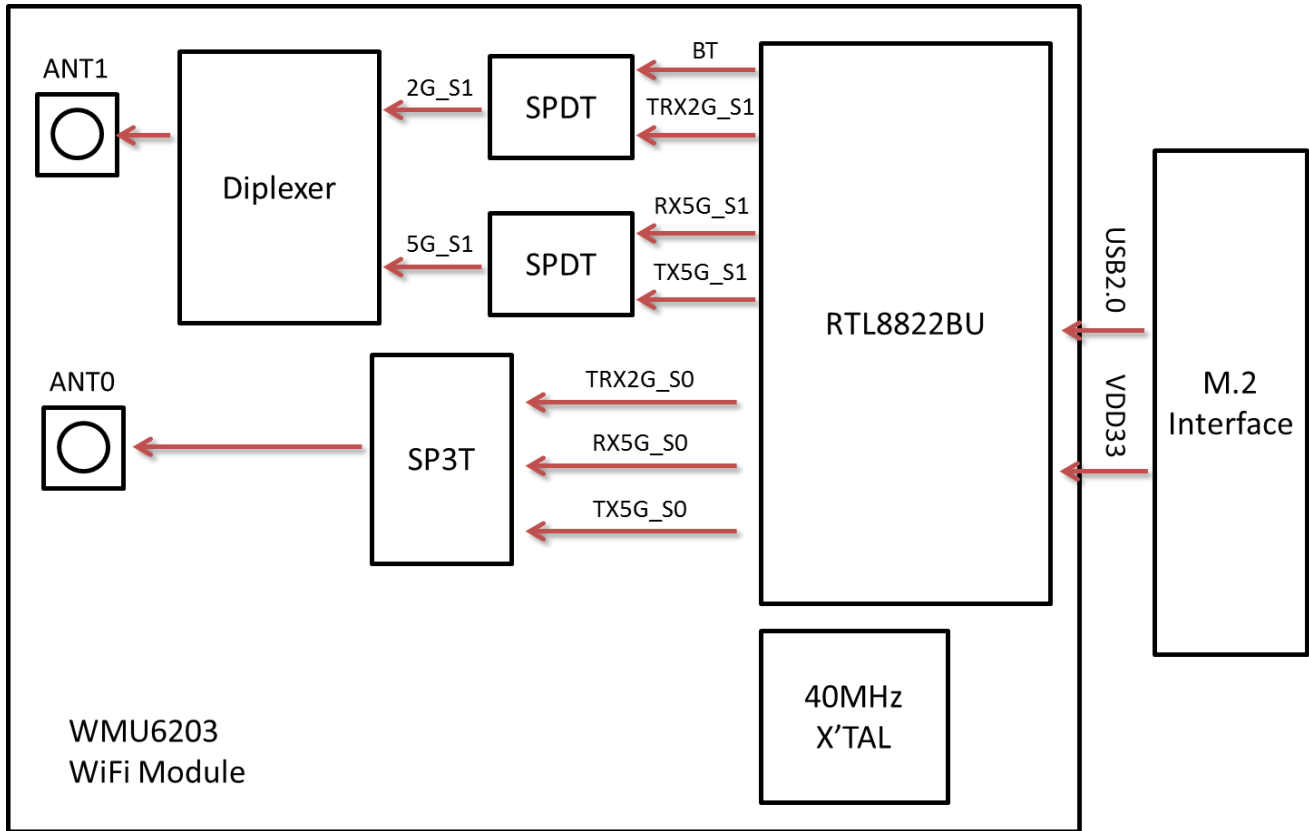
**CPU Supported:**

X86  
ARM  
MIPS

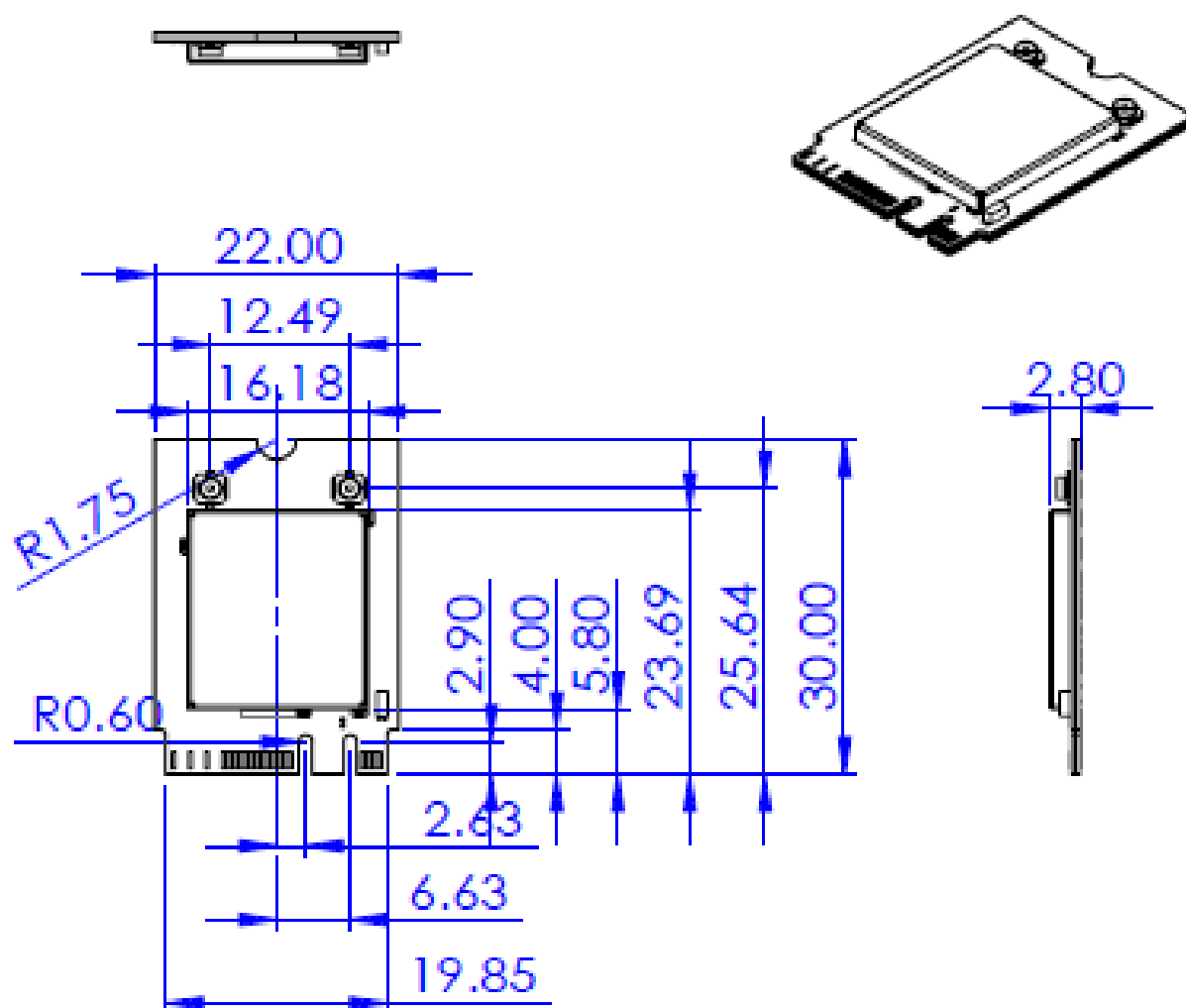
### Certification

FCC / CE / IC

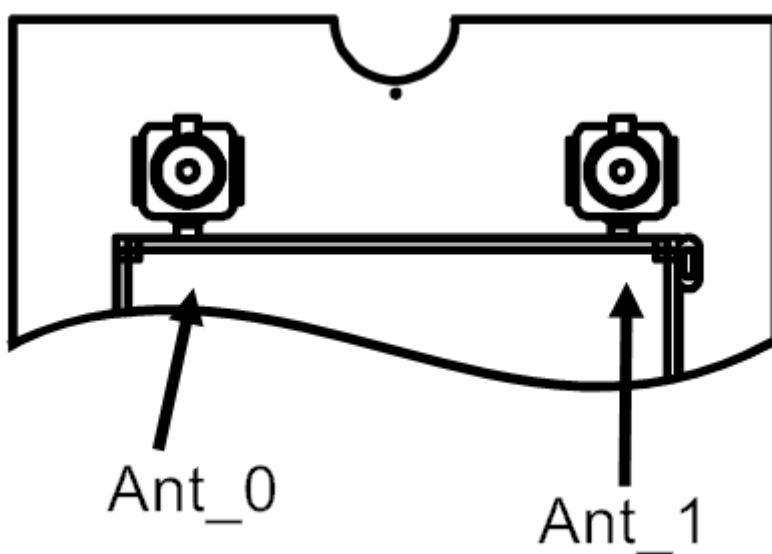
## Block Diagram



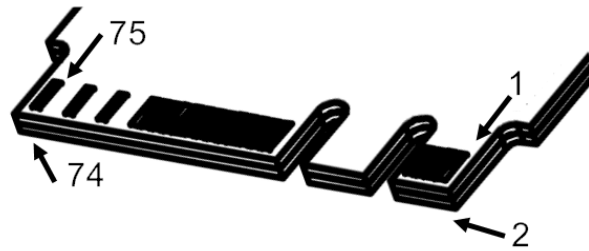
Dimension



## 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#	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

## Output Power & Sensitivity

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

802.11bg		
Data Rate	Tx +/- 2dB	Rx Sensitivity +/- 2dB
1~11Mbps	15dBm	-80dBm
24Mbps	15dBm	-70dBm
54Mbps	14dBm	-70dBm

802.11n / 2.4GHz			
Data Rate		Tx +/- 2dB (1TX)	Rx Sensitivity +/- 2dB
VHT 20	MCS 0	15dBm	-70dBm
	MCS 4	14dBm	-60dBm
	MCS 7	13dBm	-60dBm
VHT 40	MCS 0	15dBm	-70dBm
	MCS 4	14dBm	-60dBm
	MCS 7	13dBm	-60dBm

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

802.11n / 5GHz			
Data Rate		Tx +/- 2dB (1TX)	Rx Sensitivity +/- 2dB
VHT 20	MCS 0	14dBm	-70dBm
	MCS 4	13dBm	-60dBm
	MCS 7	12dBm	-60dBm
VHT 40	MCS 0	14dBm	-70dBm
	MCS 4	13dBm	-60dBm
	MCS 7	12dBm	-60dBm

802.11ac			
Data Rate		Tx +/- 2dB (1TX)	Rx Sensitivity +/- 2dB
VHT 20	MCS 0	14dBm	-70dBm
	MCS 4	13dBm	-60dBm
	MCS 8	12dBm	-60dBm
VHT 40	MCS 0	12dBm	-60dBm
	MCS 4	10dBm	-50dBm
	MCS 9	9dBm	-50dBm
VHT 80	MCS 0	12dBm	-60dBm
	MCS 4	10dBm	-60dBm
	MCS 9	9dBm	-50dBm