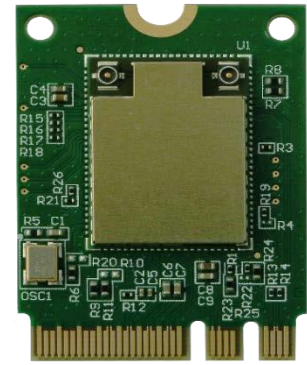


# WFBTBRMBR-M2-2-I

802.11ac/a/b/g/n 2T2R Industrial Grade  
Wi-Fi M.2 2230 Module



## Wi-Fi Solution M.2 2230 Module

WFBTBRMBR-M2-2-I is a complete 802.11ac/a/b/g/n dual band 2T2R Industrial Grade (-40°C to +85°C) WiFi with low power consumption M.2 2230 module. This module is a highly integrated wireless local area network (WLAN) solution to let users enjoy the digital content through the latest wireless technology without using the extra cables and cords. It enables a high performance, cost effective, low power, compact solution.

It can achieve up to a speed of 867Mbps with dual stream in 802.11n to connect the wireless LAN. In addition, all the rates specified in IEEE 802.11a/b/g/n are supported. The integrated module provides PCI-e interface for WiFi.

WFBTBRMBR-M2-2-I implements highly sophisticated enhanced collaborative coexistence hardware mechanisms and algorithms that ensure that WLAN collaboration is optimized for maximum performance.

devices, thin client devices, Gaming machine, tablets, etc.

### Embedded Application

Applications include medical devices, security systems, industrial PC, Point of Sale, digital signs, STB, embedded / tablet PC's, smart

### Key Feature

- 802.11a/b/g/n/ac dual-band radio with virtual-simultaneous dual-band operation
- Dual-stream spatial multiplexing up to 867Mbps data rate
- Supports Industrial grade Operating Temperature
  - Multiple drivers support windows 10, Linux, Android

## Specification

<b>Standards</b>	IEEE 802.11ac/a/b/g/n (2T2R)
<b>Chipset</b>	Broadcom
<b>Data Rate</b>	802.11b: 11Mbps / 802.11a/g: 54Mbps / 802.11n: MCS0~15/ 802.11ac: MCS0~9
<b>Operating Frequency</b>	IEEE 802.11 ac/a/b/g/n ISM Band, 2.400GHz~2.4835GHz, 5.15GHz~5.35GHz, 5.47GHz~5.725GHz, 5.725GHz~5.85GHz  *Subject to local regulations
<b>Interface</b>	PCIe M.2 Card: WLAN
<b>Form Factor</b>	M.2 2230
<b>Antenna</b>	2xIPEX MHF4 connectors
<b>Modulation</b>	802.11b : DQPSK、DBPSK、CCK 802.11g/n : OFDM /64-QAM、16-QAM、QPSK、BPSK 802.11a : OFDM /64-QAM,16-QAM, QPSK, BPSK 802.11n : OFDM /64-QAM,16-QAM, QPSK, BPSK  802.11ac : OFDM /256-QAM
<b>Power Consumption</b>	TX: 660mA / RX: 260mA
<b>Operating Voltage</b>	DC 3.3V
<b>Operating Temperature Range</b>	-40°C~+85°C
<b>Storage Temperature Range</b>	-40°C~+85°C
<b>Humidity</b>	10%~95% (Operating)
<b>(Non-Condensing)</b>	5%~95% (Storing)
<b>Dimension (in mm)</b>	22.1mm x 30.1mm x 2.62mm (± 0.5mm)
<b>Weight (g)</b>	≤ 4.5g
<b>Driver Support</b>	Windows 10, Linux, Android
<b>Security</b>	64/128-bits WEP, WPA, WPA2, 802.1x

**OUTPUT POWER & SENSITIVITY****802.11b**

<b>Data Rate</b>	<b>Tx ± 1.5dBm</b>	<b>Rx Sensitivity</b>
11Mbps	14dBm	≤-85dBm

**802.11g**

<b>Data Rate</b>	<b>Tx ± 1.5dBm</b>	<b>Rx Sensitivity</b>
54Mbps	15dBm	≤-74dBm

**802.11n / 2.4GHz**

<b>HT20</b>	<b>Data Rate</b>	<b>Tx ± 1.5dBm (1TX)</b>	<b>Tx ± 1.5dBm (2TX)</b>	<b>Rx Sensitivity</b>
	MCS7	13dBm	16dBm	≤-72dBm

**802.11a**

<b>Data Rate</b>	<b>Tx ± 1.5dBm</b>	<b>Rx Sensitivity</b>
54Mbps	13dBm	≤-71dBm

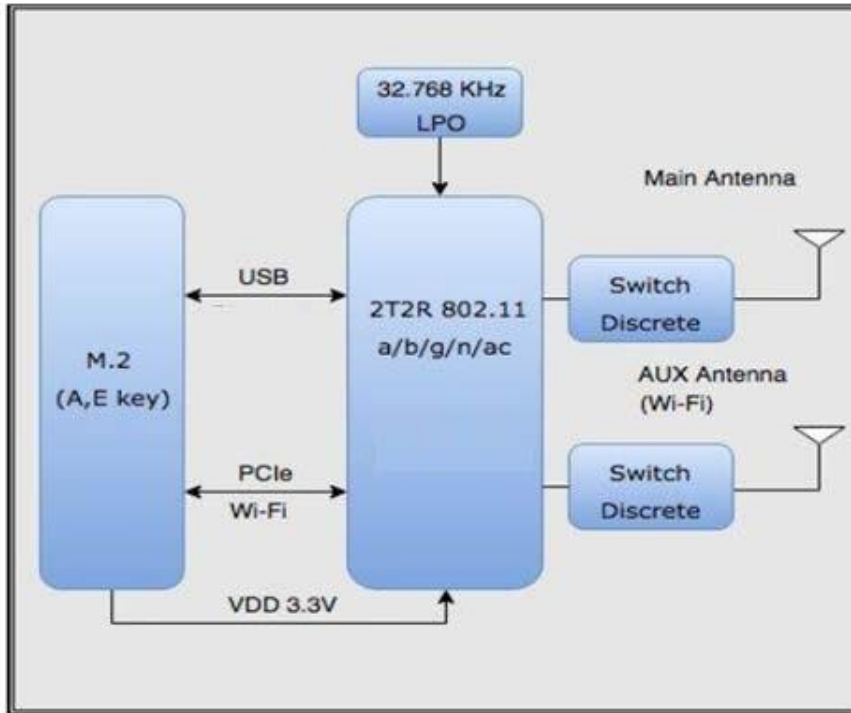
**802.11n / 5GHz**

<b>HT20</b>	<b>Data Rate</b>	<b>Tx ± 1.5dBm (1TX)</b>	<b>Tx ± 1.5dBm (2TX)</b>	<b>Rx Sensitivity</b>
	MCS7	12dBm	15dBm	≤-71dBm
<b>HT40</b>	MCS7	12dBm	15dBm	≤-69dBm

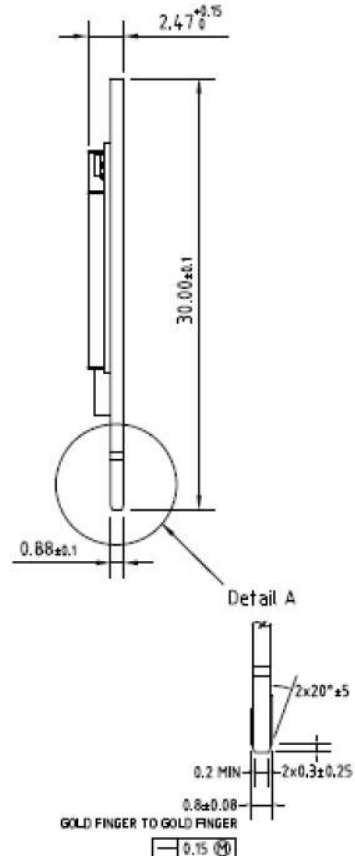
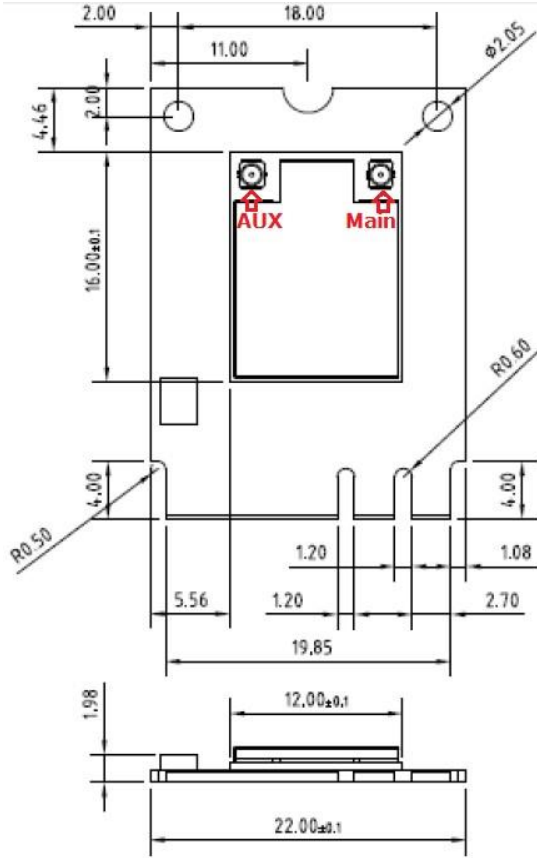
**802.11ac**

<b>VHT80</b>	<b>Data Rate</b>	<b>Tx ± 1.5dBm (1TX)</b>	<b>Tx ± 1.5dBm (2TX)</b>	<b>Rx Sensitivity</b>
	MCS9	10dBm	13dBm	≤-58dBm

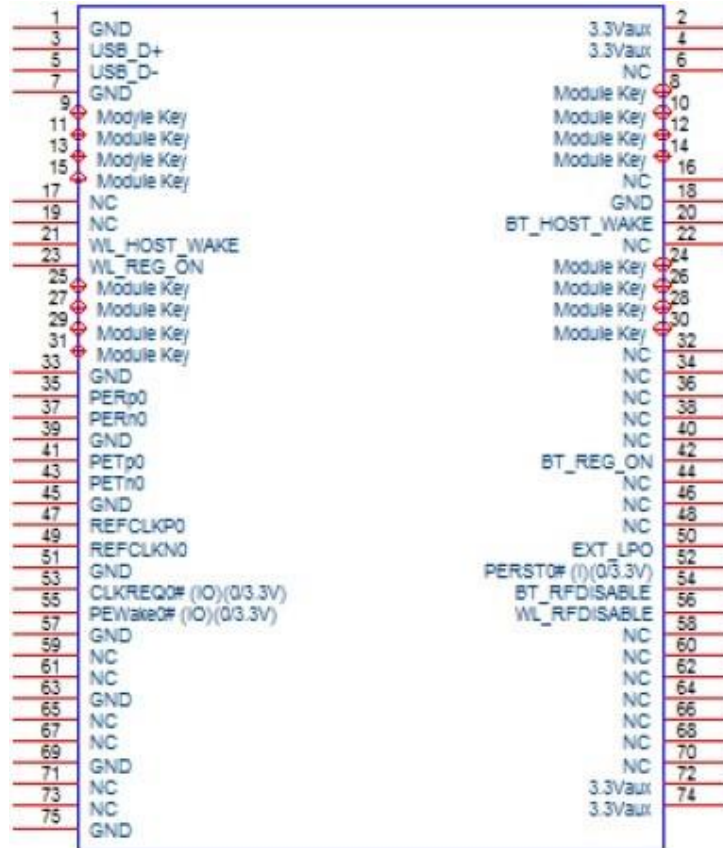
## Block Diagram



# Mechanical Diagram (mm)



## Pin Assignment



TOP			
Pin#	Pin Name	Type	Description
1	GND	G	Ground connections
3	USB_D+	I/O	USB serial differential data Negative
5	USB_D-	I/O	USB serial differential data Positive
7	GND	G	Ground connections
9	Module Key	-	Mechanical Key
11	Module Key	-	Mechanical Key
13	Module Key	-	Mechanical Key
15	Module Key	-	Mechanical Key
17	NC	-	No connect

19	NC	-	No connect
21	WL_HOST_WAKE	O	WLAN wake up HOST
23	WL_REG_ON	I	Used by PMU to power up or power down the internal module regulators used by the WLAN section
25	Module Key	-	Mechanical Key
27	Module Key	-	Mechanical Key
29	Module Key	-	Mechanical Key
31	Module Key	-	Mechanical Key
33	GND	G	Ground connections
35	PERp0	I	PCI Express receive data-Positive
37	PERn0	I	PCI Express receive data-Negative
39	GND	G	Ground connections
41	PETp0	O	PCI Express transmit data-Positive
<b>TOP</b>			
Pin#	Pin Name	Type	Description
43	PETn0	O	PCI Express transmit data-Negative
45	GND	G	Ground connections
47	REFCLKP0	I	PCI Express differential clock input-Positive
49	REFCLKN0	I	PCI Express differential clock input-Negative
51	GND	G	Ground connections
53	CLKREQ0#	I/O	PCIe clock request
55	PEWAKE0#	O	PCIe wake signal
57	GND	G	Ground connections
59	NC	-	No connect
61	NC	-	No connect

63	GND	G	Ground connections
65	NC	-	No connect
67	NC	-	No connect
69	GND	G	Ground connections
71	NC	-	No connect
73	NC	-	No connect
75	GND	G	Ground connections

BOTTOM			
Pin#	Pin Name	Type	Description
2	3.3Vaux	P	VDD system power supply input
4	3.3Vaux	P	VDD system power supply input
6	NC	-	No connect
8	Module Key	-	Mechanical Key
10	Module Key	-	Mechanical Key
12	Module Key	-	Mechanical Key
14	Module Key	-	Mechanical Key
16	NC	-	No connect
18	GND	G	Ground connections
20	BT_HOST_WAKE	O	BT wake up Host
22	NC	-	No connect
24	Module Key	-	Mechanical Key
26	Module Key	-	Mechanical Key
28	Module Key	-	Mechanical Key
30	Module Key	-	Mechanical Key



32	NC	-	No connect
34	NC	-	No connect
36	NC	-	No connect
38	NC	-	No connect
40	NC	-	No connect
42	BT_REG_ON	I	Used by PMU to power up or power down the internal module regulators used by the BT section

**BOTTOM**

Pin#	Pin Name	Type	Description
44	NC	-	No connect
46	NC	-	No connect
48	NC	-	No connect
50	EXT_LPO	I	External sleep clock input (32.768KHz)
52	PERST0#	I	PCIe host indication to reset the device
54	BT_RFDISABLE	I	BT_DEV_WAKE
56	WL_RFDISABLE	I	WL_DEV_WAKE
58	NC	-	No connect
60	NC	-	No connect
62	NC	-	No connect
64	NC	-	No connect
66	NC	-	No connect
68	NC	-	No connect
70	NC	-	No connect
72	3.3Vaux	P	VDD system power supply input
74	3.3Vaux	P	VDD system power supply input



## Certification

### Dipole Ant.

FCC

IC

NCC

CE (RED EN 300 328 V2.1.1 / EN 301 893 V2.1.1)

MIC

ASNZS

## Ordering Information

Product Name	Part Number	Description
WFBTBMRMBR-M2-2-I	R9701810005	11ac/a/b/g/n Industrial Grade 2T2R WiFi M.2 2230 Module

## Optional Accessory

Product Name	Part Number	Description
AD-103AG	R3410110203	Dipole Antenna, 2dBi 2.4GHz/5GHz, RP-SMA(M) connector
AD-302N	R3410110221	Dipole Antenna, 3dBi/2dBi 2.4G/5GHz, RP-SMA(M) connector
AD-303N	R3410110222	Dipole Antenna, 3dBi/3dBi 2.4G/5GHz, RP-SMA(M) connector
AD-305N	R3410110223	Dipole Antenna, 5dBi/5dBi 2.4G/5GHz, RP-SMA(M) coonector
CBIRF-NE150	R3470300025	RF Cable, I-PEX/MHF4 to RP-SMA(F); L:150mm; Coaxial 0.81 Black
CBIRF-NE250	R3470300026	RF Cable, I-PEX/MHF4 to RP-SMA(F); L:250mm; Coaxial 0.81 Black