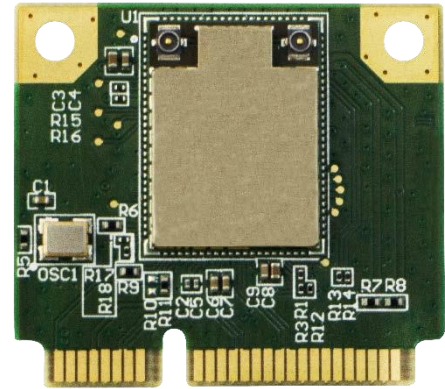


WFBTBRMBR-MPCI-2-I

802.11ac/a/b/g/n 2T2R Industrial Grade
Wi-Fi / Bluetooth 4.1 Combo Half Mini
PCIe Module



Wi-Fi / Bluetooth Combo Solution Half Mini PCIe Module

WFBTBRMBR-MPCI-2-I is a high performance 802.11ac/a/b/g/n dual band 2T2R Industrial Grade (-40°C to +85°C) WiFi / Bluetooth 4.1 combo with low power consumption mini PCIe 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 is fully compliant to Bluetooth 4.1 and v2.1 and supports EDR of 2Mbps and 3Mbps for data and audio communications. It works in Windows, Linux and android operation system.

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 802.11ac/a/b/g/n are supported. The integrated module provides PCI-e interface for WiFi, USB interface for Bluetooth.

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

Embedded Application

Applications include IPC/ medical equipment/
Tablets/ Smart devices/ manufacture automatic /
Intelligent Projector Pico/ transportation/ POS
machine/ Vehicle mounted front/ Rear Terminal
UAV/ Robot/ Intelligent Gateway/ Smart city and
other electronic products.

Key Feature

- Dual-stream spatial multiplexing up to 867 Mbps data rate
- 802.11ac/a/b/g/n dual-band radio with virtual-simultaneous dual-band operation
- Supports standard PCIe interfaces
- Support Bluetooth 4.1 compliant with Bluetooth 3.0, Bluetooth 2.1+EDR and Low Energy (BLE)

Specification

Standards	IEEE 802.11ac/a/b/g/n (2T2R) Bluetooth V4.1,V4.0 LE, V3.0+HS, V2.1+EDR
Chipset	Broadcom
Data Rate	802.11b: 11Mbps / 802.11a/g: 54Mbps / 802.11n: MCS0~15/ 802.11ac: MCS0~9 Bluetooth: 1 Mbps, 2Mbps and Up to 3Mbps
Operating Frequency	IEEE 802.11 ac/a/b/g/n ISM Band, 2.400GHz~2.497GHz, 4.900GHz~5.845GHz *Subject to local regulations
Interface	PCIe: WLAN / USB: Bluetooth
Form Factor	Half Mini PCIe
Antenna	2xIPEX MHF4 connectors (Main for WIFI+BT, AUX for WIFI)
Modulation	802.11b: DSSS (DBPSK, DQPSK, CCK) 802.11a/g: OFDM (BPSK, QPSK, 16-QAM, 64-QAM) 802.11n: OFDM (BPSK, QPSK, 16-QAM, 64-QAM) 802.11ac: OFDM (256-QAM)
Power Consumption	TX: 660mA / RX: 260mA
Operating Voltage	DC 3.3V
Operating Temperature Range	-40°C~+85°C
Storage Temperature Range	-40°C~+85°C
Humidity (Non-Condensing)	10%~95% (Operating) 5%~95% (Storing)
Dimension (in mm)	29.85mm (± 0.15mm) x 26.65mm (± 0.15mm) x 2.64mm (± 0.2mm)
Weight (g)	≤ 6g
Driver Support	Windows 10, Linux, Android
Security	64/128-bits WEP, WPA, WPA2, 802.1x

OUTPUT POWER & SENSITIVITY

802.11b

Data Rate	Tx \pm 1.5dBm	Rx Sensitivity
11Mbps	14dBm	\leq -86dBm

802.11g

Data Rate	Tx \pm 1.5dBm	Rx Sensitivity
54Mbps	15dBm	\leq -75dBm

802.11n / 2.4GHz

HT20	Data Rate	Tx \pm 1.5dBm (1TX)	Tx \pm 1.5dBm (2TX)	Rx Sensitivity
	MCS7	13dBm	16dBm	\leq -71dBm

802.11a

Data Rate	Tx \pm 1.5dBm (1TX)	Rx Sensitivity
54Mbps	13dBm	\leq -72dBm

802.11n / 5GHz

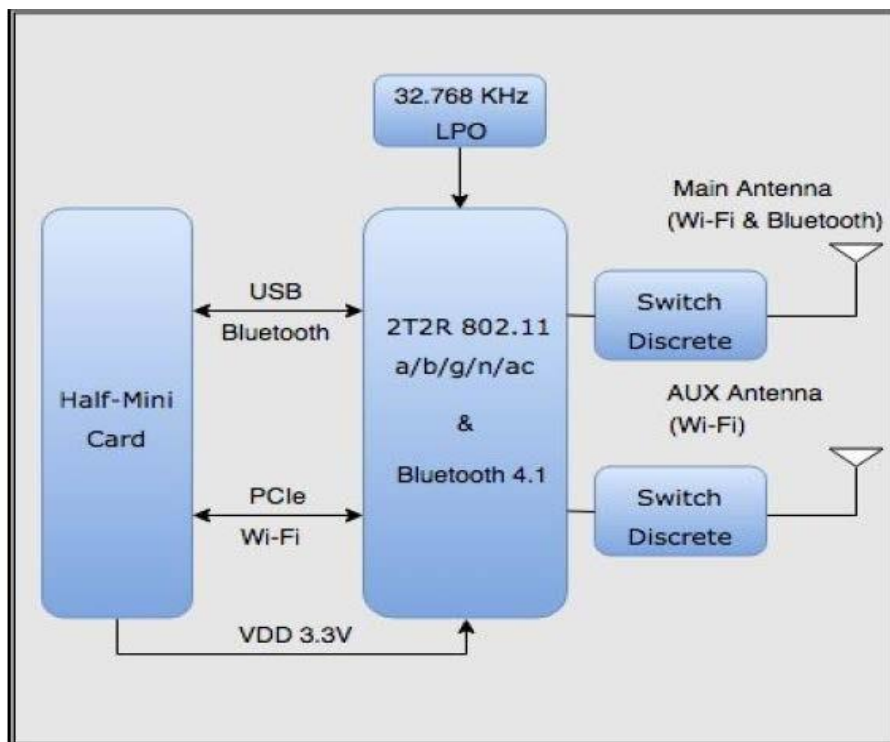
HT20	Data Rate	Tx \pm 1.5dBm (1TX)	Tx \pm 1.5dBm (2TX)	Rx Sensitivity
	MCS7	12dBm	15dBm	\leq -72dBm
HT40	MCS7	12dBm	15dBm	\leq -70dBm

802.11ac

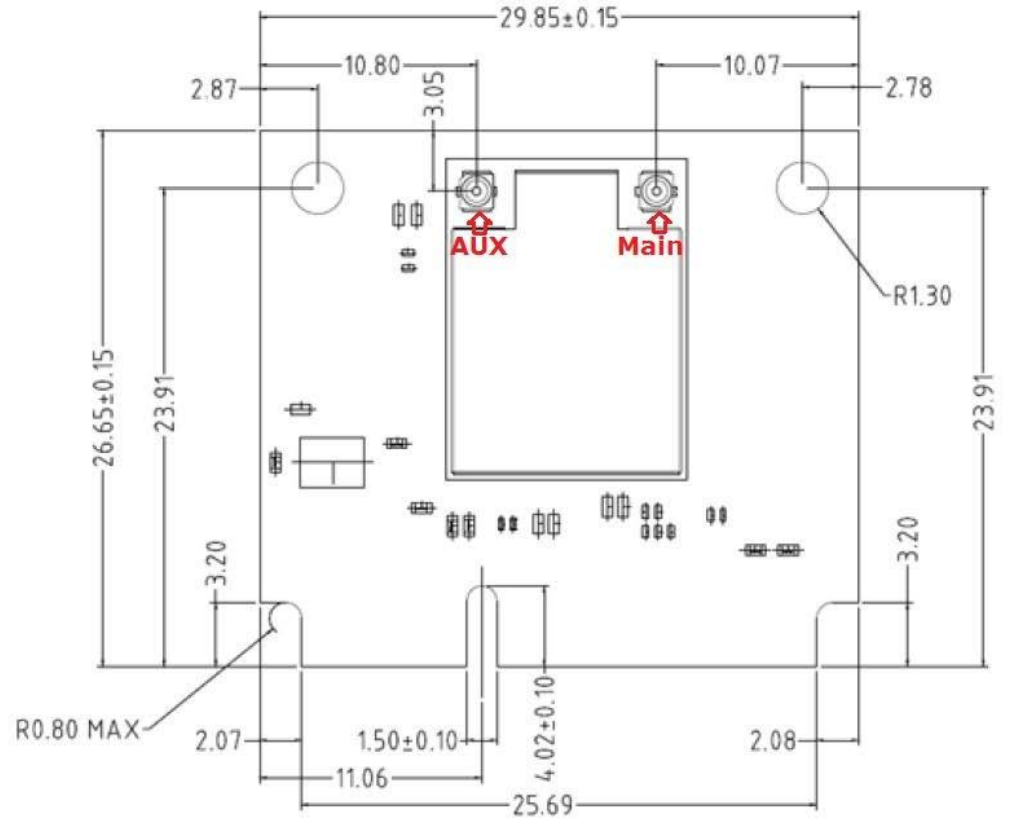
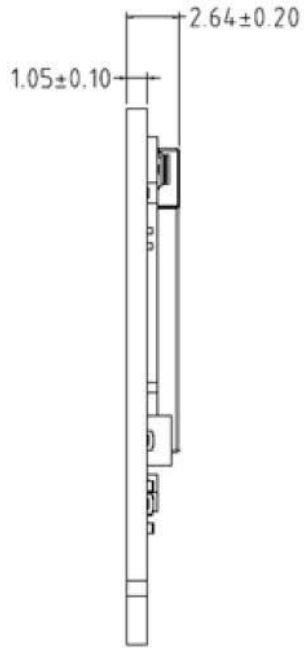
VHT80	Data Rate	Tx ± 1.5dBm (1TX)	Tx ± 1.5dBm (2TX)	Rx Sensitivity
	MCS9	10dBm	13dBm	≤-60dBm

Bluetooth		
Data Rate	Tx ± 1.5dBm (Class 1 Device)	Rx Sensitivity
1Mbps	+0 ≤ Output Power ≤ +7dBm	<0.1% BR, BER at -80dBm
3Mbps	+0 ≤ Output Power ≤ +7dBm	<0.1% BER at -78dBm

Block Diagram



Mechanical Diagram (mm)



Pin Assignment

TOP		BOT	
1	PCIE_WAKEn	VDD3V3	2
3	NC	GND	4
5	NC	NC	6
7	CLKREQ#	NC	8
9	GND	NC	10
11	REFCLK-	NC	12
13	REFCLK+	NC	14
15	GND	NC	16
17	NC	NC	18
19	NC	GND	20
21	NC	WL_REG_ON	22
23	GND	PCIE_PERST_L	24
25	PCIE_RDN	VDD3V3	26
27	PCIE_RDP	GND	28
29	GND	NC	30
31	GND	NC	32
33	PCIE_TDN	NC	34
35	PCIE_TDP	GND	36
37	GND	USB_D-	38
39	GND	USB_D+	40
41	VDD3V3	GND	42
43	VDD3V3	NC	44
45	GND	LED_WLAN#	46
47	NC	LED_WPAN#	48
49	NC	NC	50
51	NC#	GND	52
	BT_REG_ON	VDD3V3	

Pin Assignment

TOP			
Pin#	Pin Name	Type	Description
1	PCIE_WAKEn	O	PCIE wake signal
3	NC	-	No connect
5	NC	-	No connect
7	PCIE_CLKREQ#	I/O	PCIE clock request
9	GND	-	Ground connections
11	REFCLK-	I	PCIE differential clock input-Negative
13	REFCLK+	I	PCIE differential clock input-Positive
15	GND	-	Ground connections
17	NC	-	No connect

TOP			
Pin#	Pin Name	Type	Description
19	NC	-	No connect
21	GND	-	Ground connections
23	PCIE_RDN	O	PCIE receive data-Negative
25	PCIE_RDP	O	PCIE receive data-Positive
27	GND	-	Ground connections
29	GND	-	Ground connections
31	PCIE_TDN	O	PCIE transmit data-Negative
33	PCIE_TDP	O	PCIE transmit data-Positive
35	GND	-	Ground connections
37	GND	-	Ground connections
39	VDD_3V3	I	VDD system power supply input
41	VDD_3V3	I	VDD system power supply input
43	GND	-	Ground connections
45	NC	-	No connect
47	NC	-	No connect
49	NC#	O	Option WL Host wake
51	BT_REG_ON ONONON	I	Low asserting reset for Bluetooth core

BOTTOM			
Pin#	Pin Name	Type	Description
2	VDD_3V3	I	VDD system power supply input
4	GND	-	Ground connections
6	NC	-	No connect

8	NC	-	No connect
10	NC	-	No connect
12	NC	-	No connect
14	NC	-	No connect
16	NC	-	No connect
18	GND	-	Ground connections
20	WL_REG_ON	I	Low asserting reset for WiFi core
22	PCIE_PERST_L	I	PCIE host indication to reset the device
24	VDD_3V3	I	VDD system power supply input
26	GND	-	Ground connections
28	NC	-	No connect
30	NC	-	No connect
32	NC	-	No connect
34	GND	-	Ground connections
36	USB_D-	I/O	USB serial differential data Negative
38	USB_D+	I/O	USB serial differential data Positive
40	GND	-	Ground connections
42	NC	-	No connect
44	LED_WLAN#	-	WiFi LED
BOTTOM			
Pin#	Pin Name	Type	Description
46	LED_WPAN#	-	BT LED
48	NC	-	No connect
50	GND	-	Ground connections
52	VDD_3V3	I	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
WPEB-263ACNI(BT)	R9701890016	11ac/a/b/g/n Industrial Grade 2T2R WiFi / BT Half Mini PCIe

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) connector
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