

WPEQ-261ACNI(BT)

802.11ac/a/b/g/n 2T2R Industrial-Grade

Wi-Fi / Bluetooth 4.2 Combo

Half mini PCIe Module



Industrial-Grade Wi-Fi / Bluetooth Combo Solution

WPEQ-261ACNI(BT) is high performance 802.11ac/a/b/g/n dual band 2T2R Industrial-Grade (-40°C ~+85°C) Wi-Fi / Bluetooth 4.2 combo mini PCI-e module, multiple output (MU-MIMO) with two spatial streams IEEE802.11 ac/a/b/g/n WLAN standards and Bluetooth 4.2+HS, designed to deliver superior integration of WLAN / Bluetooth and low energy technology.

It supports Windows and Linux Drivers solution. WPEQ-261ACNI(BT) is using a QCA6174A-5 along with Windows and Linux driver which provide excellent solution for Automation / Robotic various applications. Adopting the latest 802.11ac solution. WPEQ-261ACNI(BT) is dual band AC on 2.4GHz+5GHz and incorporates the latest Bluetooth 4.2. The download speed are 300Mbps on N networks and 867Mbps on AC network. WPEQ-261ACNI (BT) is integrates the Bluetooth transmission technology for voice and data transfers between devices in a short distance.

Embedded Application

Applications include medical devices, security systems, industrial PC, Point of Sale, digital signs, set-top/net-top box, embedded / tablet PC's, Vehicle mounted front, Robot/ Intelligent Gateway, Gaming machine, etc.

Key Feature

- Supports low power PCIe (w/L1 substate) interfaces for WLAN and USB1.1 interface for Bluetooth.
- Support Bluetooth 4.2 + HS, BLE, ANT+ and be backwards compatible with Bluetooth 1.2, 2.X + enhanced data rate.
- Supports 20/40 MHz at 2.4 GHz and supports 20/40/80 MHz at 5 GHz (SW PL determines 2.4 GHz HT40/VHT40 support)
- Compatible for 5 GHz 802.11ac, or 2.4/5 GHz 802.11n WLAN applications.

Specification

Standards	IEEE 802.11ac/a/b/g/n (2T2R) Bluetooth V4.2, V4.0 LE, V3.0+HS, V2.1+EDR
Chipset	Qualcomm QCA6174A-5
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 connectors (ANT1 for WIFI+BT, ANT2 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 (BPSK, QPSK, 16-QAM, 64-QAM, 256-QAM)
Power Consumption	TX: 610mA / RX: 285mA
Operating Voltage	DC 3.3V
Operating Temperature Range	-40°C~+85°C
Storage Temperature Range	-40°C~+85°C
Humidity (Non-Condensing)	5%~90% (Operating) 5%~90% (Storing)
Dimension (in mm)	29.85mm (±0.15mm) x 26.65mm (±0.15mm) x 2.65mm (±0.2mm)
Weight (g)	≤ 6g
Driver Support	Win7/8.1/10, Linux 4.9+
Security	64/128-bits WEP, WPA, WPA2, 802.1x

OUTPUT POWER & SENSITIVITY
802.11b

Data Rate	Tx $\pm$ 2dBm	Rx Sensitivity
11Mbps	18dBm	≤ -91 dBm

802.11g

Data Rate	Tx $\pm$ 2dBm	Rx Sensitivity
54Mbps	15dBm	≤ -75 dBm

802.11n / 2.4GHz

HT20	Data Rate	Tx $\pm$ 2dBm (1TX)	Tx $\pm$ 2dBm (2TX)	Rx Sensitivity
	MCS7	14dBm	17dBm	≤ -71 dBm
HT40	MCS7	14dBm	17dBm	≤ -69 dBm

802.11a

Data Rate	Tx $\pm$ 2dBm	Rx Sensitivity
54Mbps	13dBm	≤ -65 dBm

802.11n / 5GHz

HT20	Data Rate	Tx $\pm$ 2dBm (1TX)	Tx $\pm$ 2dBm (2TX)	Rx Sensitivity
	MCS7	12.5dBm	15.5dBm	≤ -74 dBm
HT40	MCS7	12.5dBm	15.5dBm	≤ -71 dBm

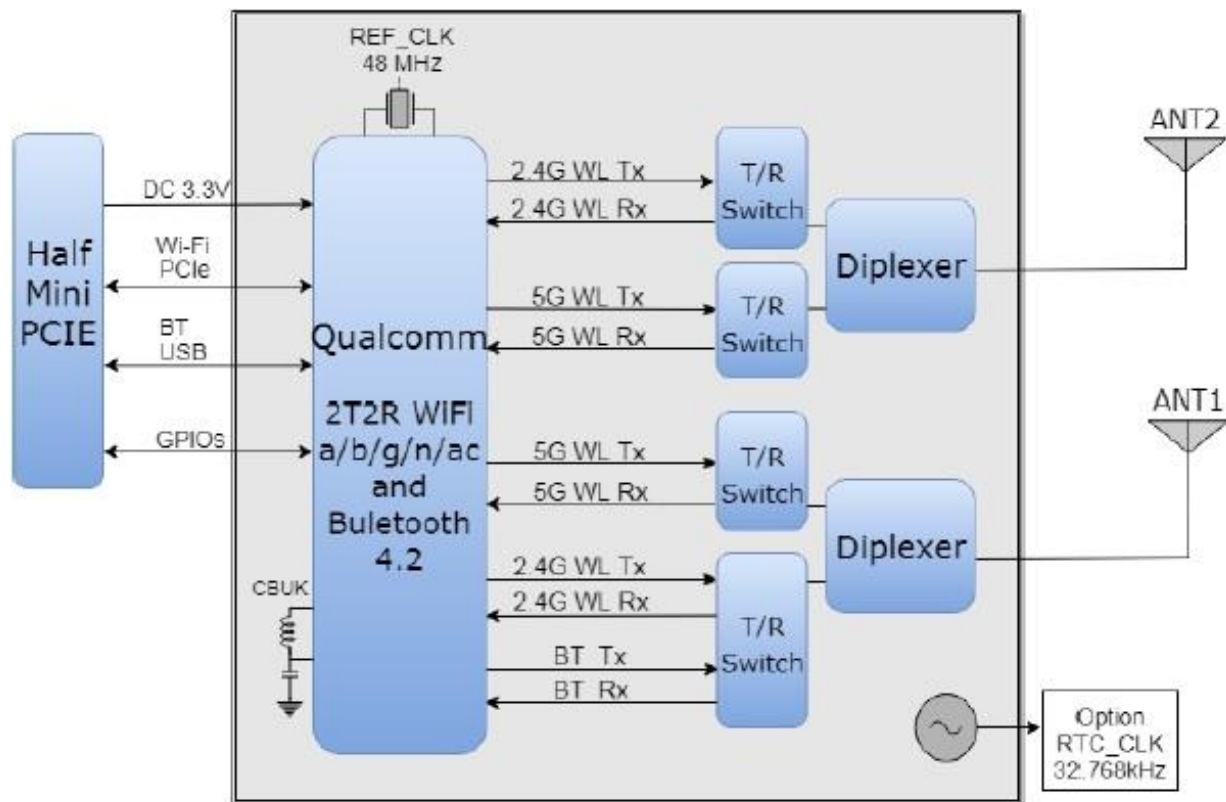
802.11ac

VHT80	Data Rate	Tx $\pm$ 2dBm (1TX)	Tx $\pm$ 2dBm (2TX)	Rx Sensitivity
	MCS9	10dBm	13dBm	≤ -63 dBm

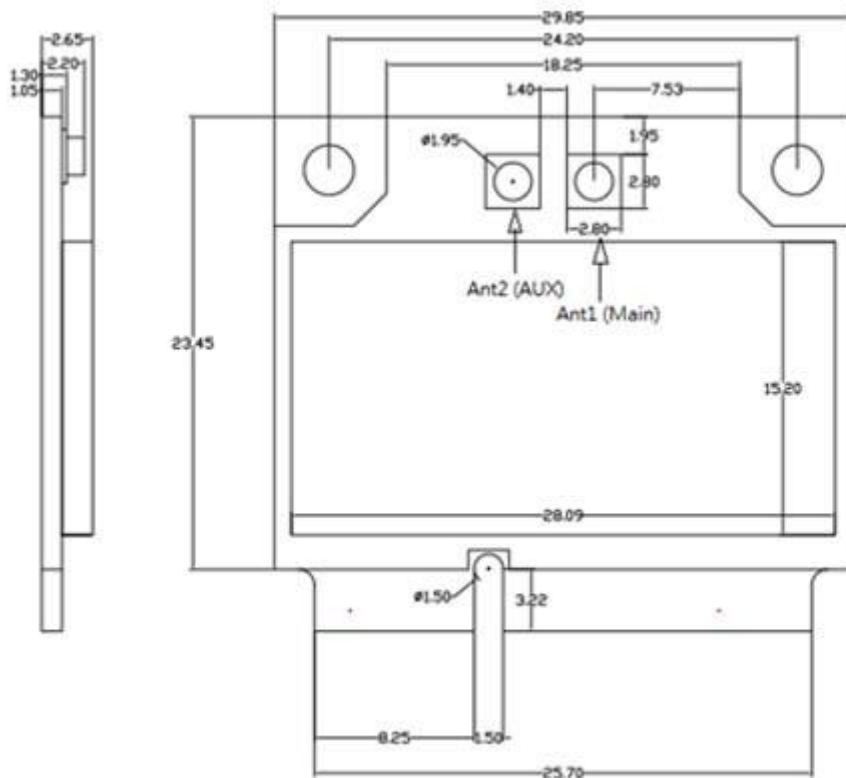
Bluetooth

Data Rate	Tx $\pm$ 2dBm (Class 1 Device)	Rx Sensitivity
3Mbps	+4 $\leq$ Output Power $\leq$ +8dBm	<0.1% BR, BER at -83dBm

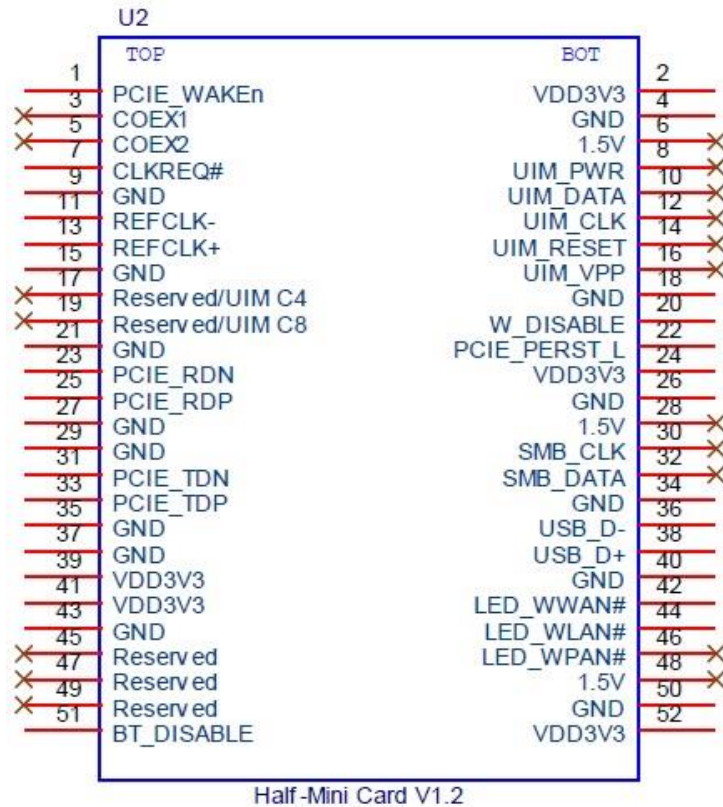
Block Diagram



Mechanical Dimension (mm)



Pin Assignment



Pin Assignment

TOP			
Pin#	Pin Name	Type	Description
1	PCIE_WAKE_L	O	PCIe wake signal
3	NC	-	No connect
5	NC	-	No connect
7	PCIE_CLKREQ_L	I/O	PCIe clock request
9	GND	-	Ground connections
11	PCIE_RCLK_P	I	PCI Express differential clock input- Positive
13	PCIE_RCLK_N	I	PCI Express differential clock input- Negative
15	GND	-	Ground connections
17	NC	-	No connect

Pin Assignment

TOP			
Pin#	Pin Name	Type	Description
19	NC	-	No connect
21	GND	-	Ground connections
23	PCIE_TX_P	O	PCI Express transmit data- Positive
25	PCIE_TX_N	O	PCI Express transmit data- Negative
27	GND	-	Ground connections
29	GND	-	Ground connections
31	PCIE_RX_N	I	PCI Express receive data-Negative
33	PCIE_RX_P	I	PCI Express receive 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	-	No connect
51	BT_RF_KILL_L	-	Turn off BT RF analog and front-end. Active low

Pin Assignment

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	WLAN_RF_KILL_L	I	Turn off WLAN RF analog and front-end. Active low.
22	PCIE_PERST_L	I	PCIe host indication to reset the device Active low.
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	WLAN_LED	OD	WLAN LED
44	BT_LED	OD	Bluetooth LED

Pin Assignment

BOTTOM			
Pin#	Pin Name	Type	Description
46	NC	-	No connect
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
WPEQ-261ACNI(BT)	R9701890018	11ac/a/b/g/n Industrial Grade 2T2R WiFi + BT Half Mini PCIe

Optional Accessory

Product Name	Part Number	Description
AD-302N	R3410110221	3dBi/2dBi 2.4G/5GHz Dipole RP-SMA Male
AD-303N	R3410110222	3dBi/3dBi 2.4G/5GHz Dipole RP-SMA Male
AD-305N	R3410110223	5dBi/5dBi 2.4G/5GHz Dipole RP-SMA Male
CBIRF-M150	R3470300004	I-PEX/MHF1 to RP-SMA Female; L:150mm; Coaxial 1.37 Black