

## WPEQ-261ACNI(BT)

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

Wi-Fi / Bluetooth 5.0 Combo

Half mini PCIe Module (WiFi 5)



### 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 5.0 combo mini PCIe module (WiFi 5), multiple output (MU-MIMO) with two spatial streams IEEE802.11 ac/a/b/g/n WLAN standards and Bluetooth 5.0+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 WiFi 5 solution. WPEQ-261ACNI(BT) is dual band AC on 2.4GHz+5GHz and incorporates the latest Bluetooth 5.0. 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 5.0 + 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

<b>Standards</b>	IEEE 802.11ac/a/b/g/n (2T2R) Bluetooth V5.0, V4.2, V4.0 LE, V3.0+HS, V2.1+EDR
<b>Chipset</b>	Qualcomm QCA6174A-5
<b>Data Rate</b>	802.11b: 11Mbps / 802.11a/g: 54Mbps / 802.11n: MCS0~15/ 802.11ac: MCS0~9 Bluetooth: 1 Mbps, 2Mbps and Up to 3Mbps
<b>Operating Frequency</b>	IEEE 802.11 ac/a/b/g/n ISM Band, 2.400GHz~2.497GHz, 4.900GHz~5.845GHz *Subject to local regulations
<b>Interface</b>	PCIe: WLAN / USB: Bluetooth
<b>Form Factor</b>	Half Mini PCIe
<b>Antenna</b>	2xIPEX connectors (ANT1 for WIFI+BT, ANT2 for WIFI)
<b>Modulation</b>	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)
<b>Power Consumption</b>	TX: 610mA / RX: 285mA
<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>	10%~95% (Storing)
<b>Dimension (in mm)</b>	29.85mm (±0.15mm) x 26.65mm (±0.15mm) x 2.65mm (±0.2mm)
<b>Weight (g)</b>	≤ 6g
<b>Driver Support</b>	Windows 7/8.1/10 Linux (Open Source), Recommend Kernel v4.0+
<b>Security</b>	64/128-bits WEP, WPA, WPA2, 802.1x

OUTPUT POWER & SENSITIVITY		
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802.11b		
Data Rate	Tx $\pm$ 2dBm	Rx Sensitivity
11Mbps	15dBm	$\leq$ -91dBm

802.11g		
Data Rate	Tx $\pm$ 2dBm	Rx Sensitivity
54Mbps	15dBm	$\leq$ -75dBm

802.11n / 2.4GHz				
	Data Rate	Tx $\pm$ 2dBm (1TX)	Tx $\pm$ 2dBm (2TX)	Rx Sensitivity
HT20	MCS7	13dBm	16dBm	$\leq$ -71dBm
HT40	MCS7	13dBm	16dBm	$\leq$ -69dBm

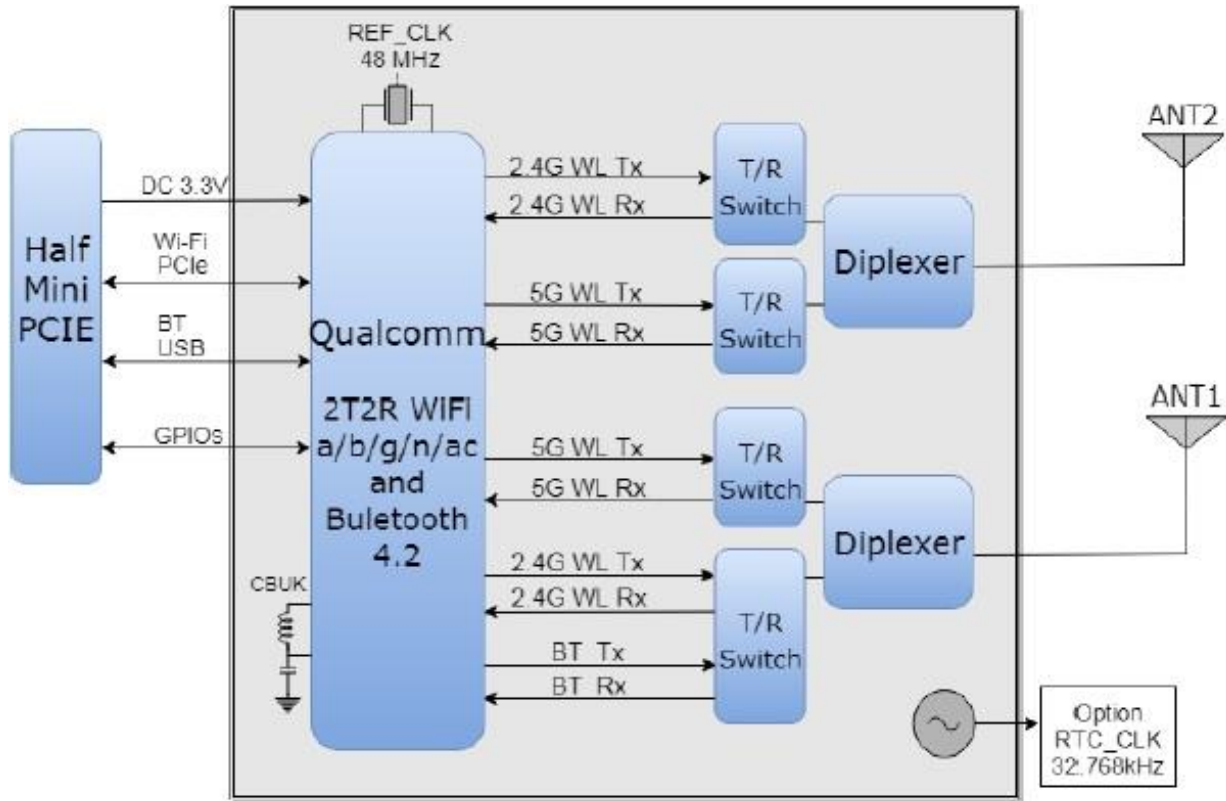
802.11a		
Data Rate	Tx $\pm$ 2dBm	Rx Sensitivity
54Mbps	13dBm	$\leq$ -65dBm

802.11n / 5GHz				
	Data Rate	Tx $\pm$ 2dBm (1TX)	Tx $\pm$ 2dBm (2TX)	Rx Sensitivity
HT20	MCS7	12.5dBm	15.5dBm	$\leq$ -74dBm
HT40	MCS7	12.5dBm	15.5dBm	$\leq$ -71dBm

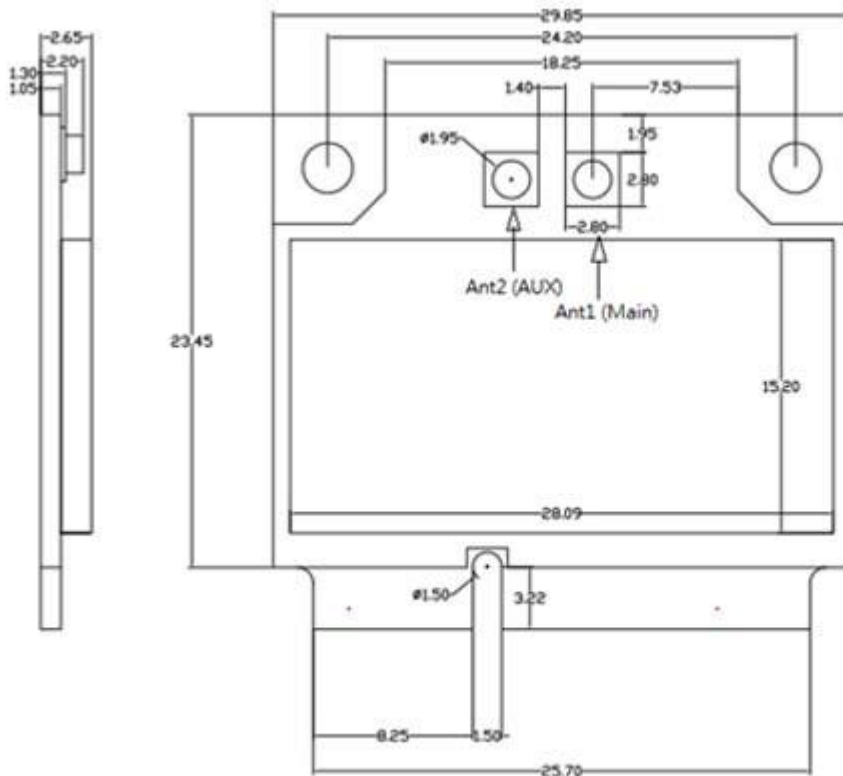
802.11ac				
	Data Rate	Tx $\pm$ 2dBm (1TX)	Tx $\pm$ 2dBm (2TX)	Rx Sensitivity
VHT80	MCS9	10dBm	13dBm	$\leq$ -63dBm

Bluetooth		
Data Rate	Tx $\pm$ 2dBm (Class 1 Device)	Rx Sensitivity
3Mbps	+3 $\leq$ Output Power $\leq$ +7dBm	<0.1% BR, BER at -83dBm

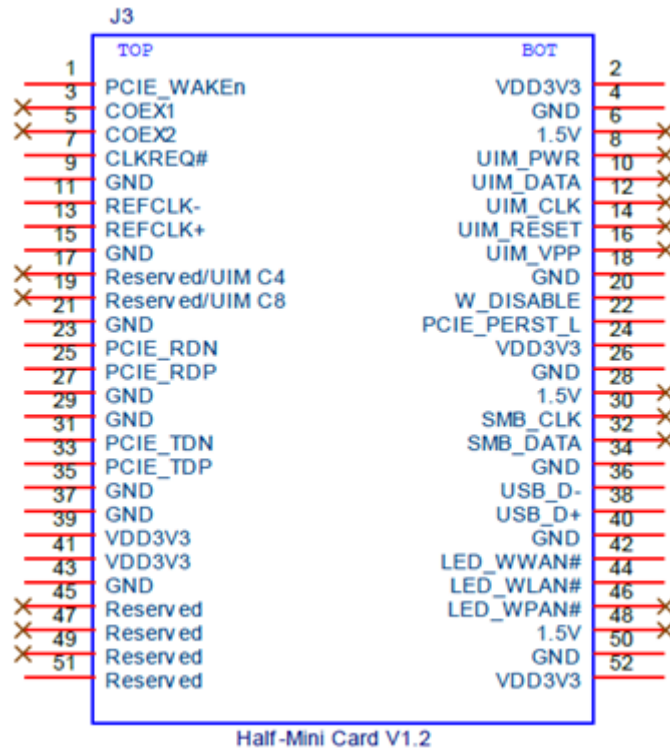
**Block Diagram**



**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_N	I	PCI Express differential clock input- Negative
13	PCIE_RCLK_P	I	PCI Express differential clock input- Positive
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_N	O	PCI Express transmit data- Negative
25	PCIE_TX_P	O	PCI Express transmit data- Positive
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.

- |   |  |
|---|--|
| <input checked="" type="checkbox"/> FCC | <input checked="" type="checkbox"/> CE (RED EN 300 328 V2.1.1 / EN 301 893 V2.1.1) |
| <input checked="" type="checkbox"/> IC  | <input checked="" type="checkbox"/> MIC  |
| <input type="checkbox"/> NCC            | <input type="checkbox"/> ASNZS   |

## Ordering Information

Product Name	Part Number	Description
<a href="#">WPEQ-261ACNI(BT)</a>	R9701890018	11ac/a/b/g/n Industrial Grade 2T2R WiFi + BT Half Mini PCIe

## Optional Accessory

Product Name	Part Number	Description
<a href="#">AD-103AG</a>	R3410110203	Dipole Antenna, 2dBi 2.4GHz/5GHz, RP-SMA(M) connector
<a href="#">AD-302N</a>	R3410110221	Dipole Antenna, 3dBi/2dBi 2.4G/5GHz, RP-SMA(M) connector
<a href="#">AD-303N</a>	R3410110222	Dipole Antenna, 3dBi/3dBi 2.4G/5GHz, RP-SMA(M) connector
<a href="#">AD-305N</a>	R3410110223	Dipole Antenna, 5dBi/5dBi 2.4G/5GHz, RP-SMA(M) connector
<a href="#">CBIRF-ME150</a>	R3470300023	RF Cable, I-PEX/MHF1 to RP-SMA(F); L:150mm; Coaxial 1.37 Black
<a href="#">CBIRF-ME250</a>	R3470300024	RF Cable, I-PEX/MHF1 to RP-SMA(F); L:250mm; Coaxial 1.37 Black