

WPEQ-261ACN(BT)

802.11ac/a/b/g/n Dual-Band

2T2R Wi-Fi+Bluetooth 5.0 Combo

Half Mini PCIe Module



V2

Wi-Fi+Bluetooth Combo Solution Half Mini PCIe Module

WPEQ-261ACN(BT) is a single-die wireless local area network (WLAN) and Bluetooth combo solution to support 2x2 multi-user multiple input, multiple output (MU-MIMO) with two spatial streams IEEE 802.11ac/a/b/g/n WLAN standards and Bluetooth 5.0, designed to deliver superior integration of WLAN+Bluetooth and low energy technology.

WPEQ-261ACN(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-261ACN (BT) integrates the Bluetooth transmission technology for voice and data transfers between devices in a short distance. WPEQ-261ACN (BT) is designed properly for any wireless enabled devices with Half Mini PCIe slot.

Embedded Application

Applications include medical devices, security systems, industrial PC, Point of Sale, digital signs, set-top/net-top box, embedded/ tablet PC's, handheld devices, thin client devices, Gaming machine, notebook computer, etc.

Key Feature

- Qualcomm Atheros QCA6174A-5
- BT transmission speed including 1M, 2M and 3Mbps EDR operations
- Supports for Simple Pairing (SP) and Enhanced Inquiry Response (EIR) function
- HCI USB interface to work with Windows upper layer stack
- Support MU-MIMO
- Wi-Fi Supports Low Power PCIe (w/L1 substrate) interfaces

Specification

Standards	IEEE 802.11ac/a/b/g/n (2T2R) Bluetooth V5.0, V4.2, V4.1, V4.0 LE, V3.0+HS, V2.1+EDR
Chipset	Qualcomm Atheros 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 802.11ac/a/b/g/n ISM Band: 2.412GHz~2.484GHz, 5.150GHz~5.850GHz *Subject to local regulations
Interface	WLAN: PCIe Bluetooth: USB
Form Factor	Half Mini PCIe
Antenna	2 x IPEX MHF4 connectors Support WLAN/BT co-existence Main: WLAN Aux: WLAN /BT
Modulation	Wi-Fi: 802.11b: DSSS (DBPSK, DQPSK, CCK) 802.11g: OFDM (BPSK, QPSK, 16-QAM, 64-QAM) 802.11n: OFDM (BPSK, QPSK, 16-QAM, 64-QAM) 802.11a: OFDM (BPSK, QPSK, 16-QAM, 64-QAM) 802.11ac: OFDM (BPSK, QPSK, 16-QAM, 64-QAM, 256-QAM) Bluetooth: Header: GFSK Payload 2M: $\pi/4$ -DQPSK Payload 3M: 8-DPSK
Power Consumption	TX mode: 610mA RX mode: 285mA
Operating Voltage	DC 3.3V

Operating Temperature Range	-40°C~70°C
Storage Temperature Range	-40°C~85°C
Humidity (Non-Condensing)	5%~90% (Operating) 5%~90% (Storing)
Dimension L x W x H (in mm)	30mm(±0.3mm) x 26.8mm(±0.3mm) x 2.5mm(±0.3mm)
Weight (g)	2.6g
Driver Support	Windows 7/8.1/10 Linux (Open Source), Recommend Kernel v4.0+
Security	64/128-bits WEP, WPA, WPA2, WPA3, 802.1x

OUTPUT POWER & SENSITIVITY		
802.11b		
Data Rate	Tx \pm 2dBm	Rx Sensitivity
11Mbps	18dBm	\leq -76dBm

802.11g		
Data Rate	Tx \pm 2dBm	Rx Sensitivity
54Mbps	16dBm	\leq -65dBm

802.11n / 2.4GHz				
	Data Rate	Tx \pm 2dBm (1TX)	Tx \pm 2dBm (2TX)	Rx Sensitivity
HT20	MCS7	16dBm	19dBm	\leq -64dBm
HT40	MCS7	16dBm	19dBm	\leq -61dBm

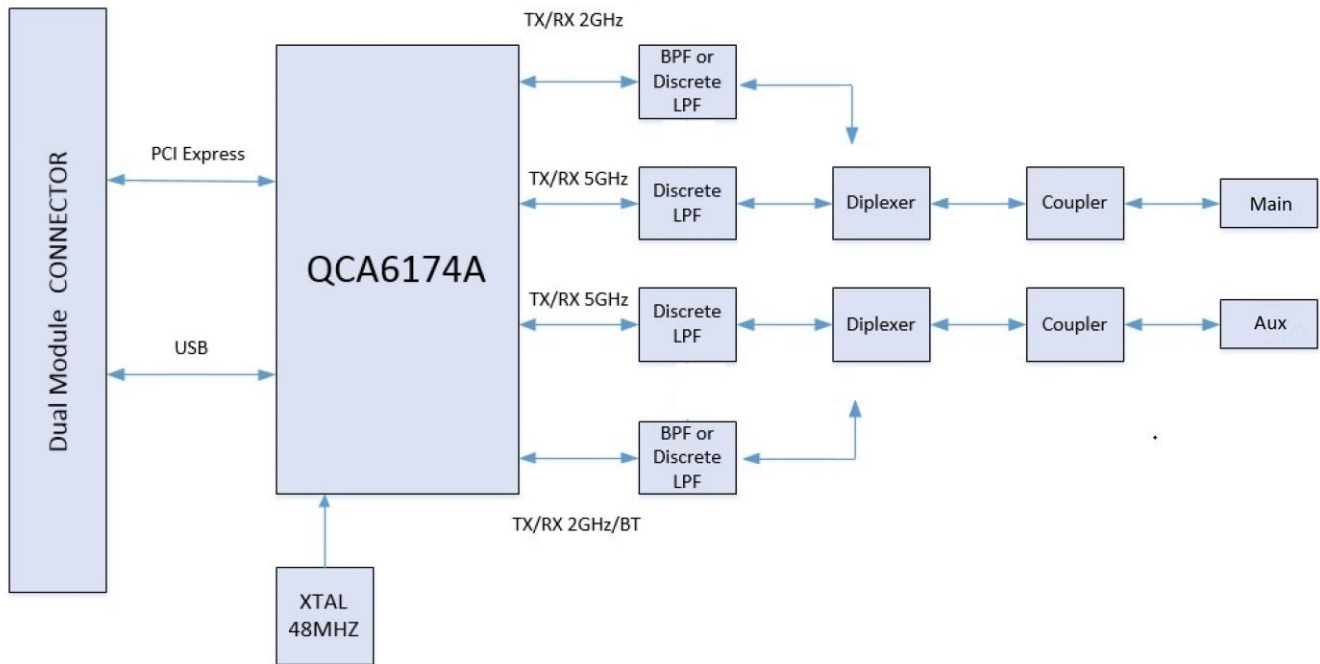
802.11a		
Data Rate	Tx \pm 2dBm	Rx Sensitivity
54Mbps	10.5dBm	\leq -65dBm

802.11n / 5GHz				
	Data Rate	Tx \pm 2dBm (1TX)	Tx \pm 2dBm (2TX)	Rx Sensitivity
HT20	MCS7	10dBm	13dBm	\leq -64dBm
HT40	MCS7	10dBm	13dBm	\leq -61dBm

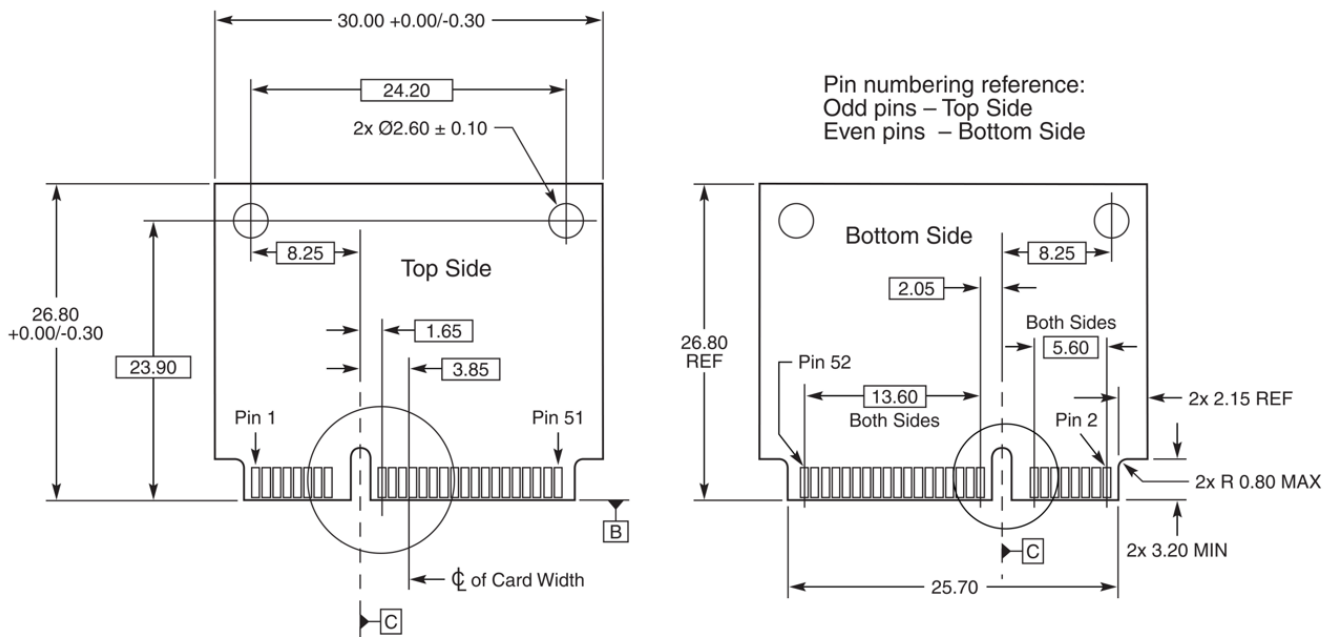
802.11ac				
	Data Rate	Tx \pm 2dBm (1TX)	Tx \pm 2dBm (2TX)	Rx Sensitivity
VHT80	MCS9	6dBm	9dBm	\leq -51dBm

Bluetooth		
Data Rate	Tx \pm 2dBm (Class 1 Device)	Rx Sensitivity
3Mbps	0 \leq Output Power \leq 10dBm	<0.1% BR, BER at -70dBm

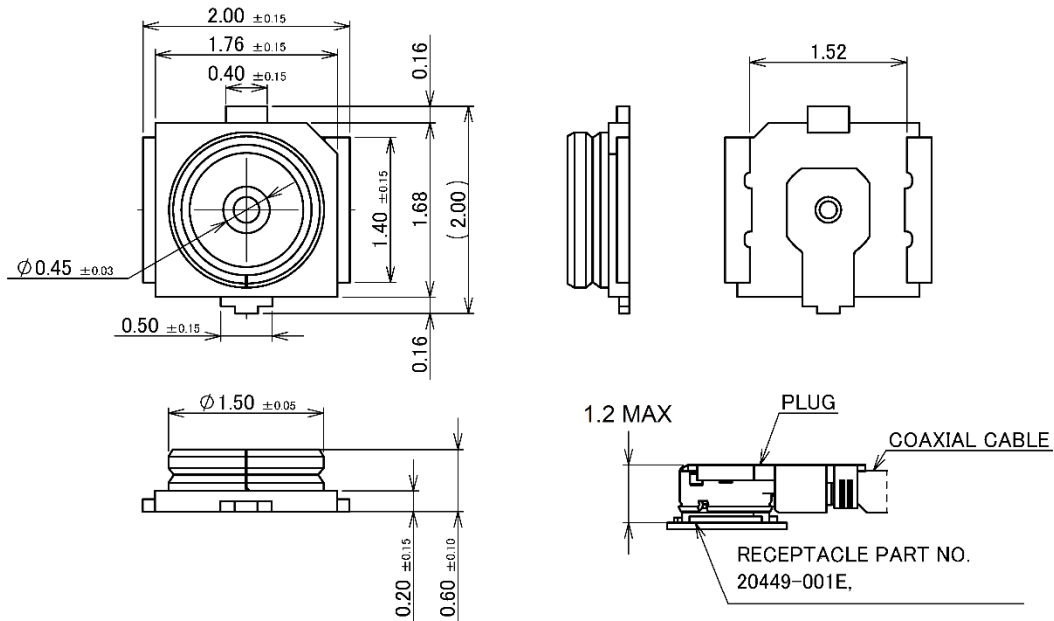
Block Diagram



Mechanical Dimension (mm)



MHF4 connector Spec.



Unit: mm

Pin Assignment

Pin#	Pin Name	Description	Pin#	Pin Name	Description
1	WAKE_L(OPT)	Output and open Drain active Low signal. This signal is used to request that the system return from a sleep/suspended state to service a function initiated wake event.	2	+3.3V	+3.3V
3	No Connection	-	4	GND	GND
5	No Connection	-	6	No Connection	-
7	CLKREQ_L	Output for reference clock request signal	8	No Connection	-
9	GND	GND	10	No Connection	-
11	REFCLK-	Input signal for PCI Express differential reference clock (100 MHz)	12	No Connection	-
13	REFCLK+	Input signal for PCI Express differential reference clock (100 MHz)	14	No Connection	-
15	GND	GND	16	No Connection	-
17	No Connection	-	18	GND	GND

Pin Assignment

Pin#	Pin Name	Description	Pin#	Pin Name	Description
19	No Connection	-	20	W_DISABLE_L (OPT)	Input and active low signal. This signal is used by the system to disable radio operation on add-in cards that implement radio frequency applications. When implemented, this signal requires a pull-up resistor on the card.
21	GND	GND	22	PERST_L	Input signal for functional reset to the card
23	PERn0	PCI Express x1 data interface: one differential receive pair	24	No Connection	-
25	PERp0	PCI Express x1 data interface: one differential receive pair	26	GND	GND
27	GND	GND	28	No Connection	-
29	GND	GND	30	No Connection	-
31	PETn0	PCI Express x1 data interface: one differential transmit pair	32	No Connection	-
33	PETp0	PCI Express x1 data interface: one differential transmit pair	34	GND	GND
35	GND	GND	36	USB D-	USB_D-
37	GND	GND	38	USB D+	USB_D+
39	No Connection	-	40	GND	GND
41	No Connection	-	42	No Connection	-
43	GND	GND	44	LED_WLAN_L (OPT)	Output and open drain active low signal. This signal is used to allow the PCI Express Mini Card add-in card to provide status indicators via LED devices that will be provided by the system.
45	No Connection	-	46	No Connection	-
47	No Connection	-	48	No Connection	-
49	No Connection	-	50	GND	GND
51	No Connection	-	52	+3.3V	+3.3V

Certification

PIFA Ant.

- FCC
- IC
- NCC
- CE (RED EN 300 328 V2.2.2 / EN 301 893 V2.1.1)
- MIC
- ASNZS

Dipole Ant.

- FCC
- IC
- NCC
- CE (RED EN 300 328 V2.2.2 / EN 301 893 V2.1.1)
- MIC
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Ordering Information

Product Name	Part Number	Description
WPEQ-261ACN(BT)	R9701890021	802.11ac/a/b/g/n Wi-Fi+BT Combo Half Mini PCIe Module

Optional Accessory

Product Name	Part Number	Description
AD-103AG	R3410110203	2dBi Dipole RP-SMA 5G/2.4GHz
AD-300N	R3410110219	3dBi/5dBi 2.4G/5GHz Dipole RP-SMA
CBIRF-NE150	R3470300025	RF Cable, I-PEXMHF4 to RP-SMA(F); L150mm; Coaxial 0.81 Black
CBIRF-NE250	R3470300026	RF Cable, I-PEXMHF4 to RP-SMA(F); L250mm; Coaxial 0.81 Black