

# WF802BT-Mini PCIe

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

## 2T2R Wi-Fi+Bluetooth 4.1 Combo

## Half Mini PCIe Module



### Wi-Fi+Bluetooth Combo Solution Half 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 IEEE802.11 ac/b/g/n WLAN standards and Bluetooth 4.1+HS, 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 4.1. 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, robots, video streaming, PoS, digital signs, gaming machine, Medical equipment, tablet PC's, handheld devices, thin client devices, and many more.

#### **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 substate) interfaces
- Two-stream spatial multiplexing up to 867Mbps data rate

**Specification :**

Standards:	IEEE 802.11ac/a/b/g/n (2T2R) Bluetooth 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 802.11 ac/a/b/g/n ISM Band, 2.412GHz~2.483GHz, 5.150MHz~5.850MHz *Subject to local regulations
Interface:	WLAN: PCIe; USB: Bluetooth
Form Factor:	Half Mini PCIe
Antenna:	2xIPEX MHF4 connectors, 2T2R Support Wi-Fi/BT co-existence
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~70°C
Storage Temperature Range:	-40°C~85°C
Humidity (Non-Condensing)	5%~90% (Operating) 5%~90% (Storing)
Dimension (in mm):	26.65 mm X 29.85 mm x2.44mm(±0.5mm)
Weight (g):	≤ 6g
Driver Support:	Windows7/8.1/10
Security	64/128-bits WEP, WPA, WPA2, 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	15dBm	$\leq$ -65dBm

### 802.11n / 2.4GHz

	Data Rate	Tx $\pm$ 2dBm (1TX)	Tx $\pm$ 2dBm (2TX)	Rx Sensitivity
<b>HT20</b>	MCS7	15dBm	18dBm	$\leq$ -64dBm
<b>HT40</b>	MCS7	15dBm	18dBm	$\leq$ -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
<b>HT20</b>	MCS7	10dBm	13dBm	$\leq$ -64dBm
<b>HT40</b>	MCS7	10dBm	13dBm	$\leq$ -61dBm

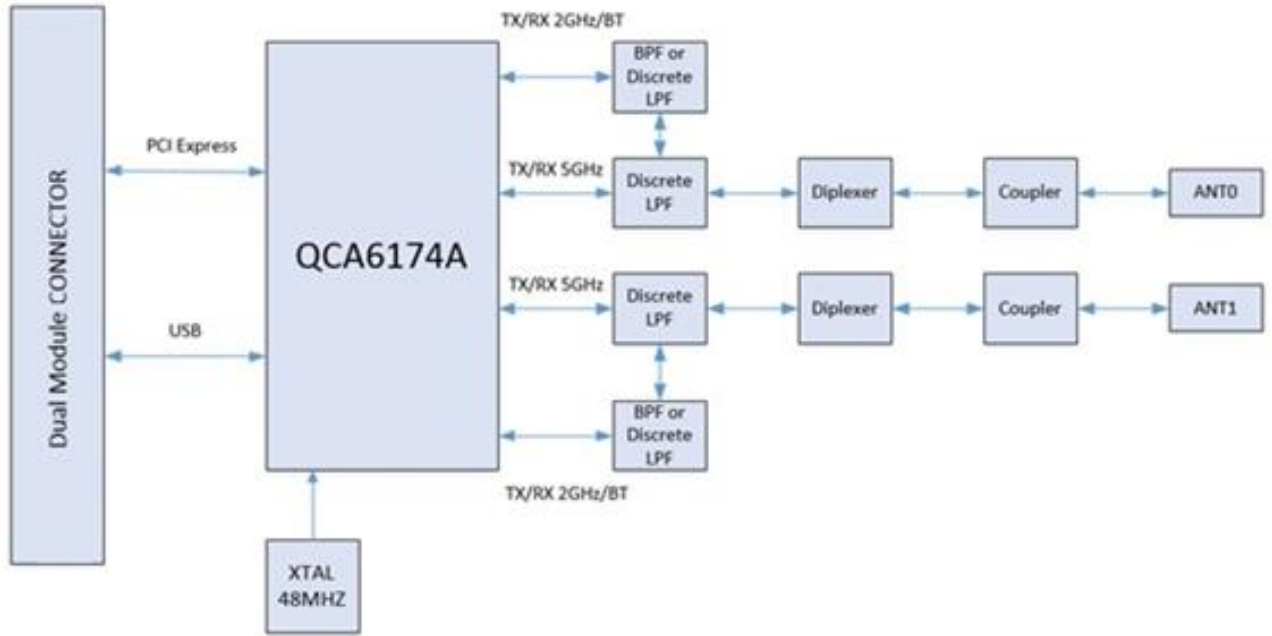
### 802.11ac

	Data Rate	Tx $\pm$ 2dBm (1TX)	Tx $\pm$ 2dBm (2TX)	Rx Sensitivity
<b>VHT80</b>	MCS9	6dBm	9dBm	$\leq$ -51dBm

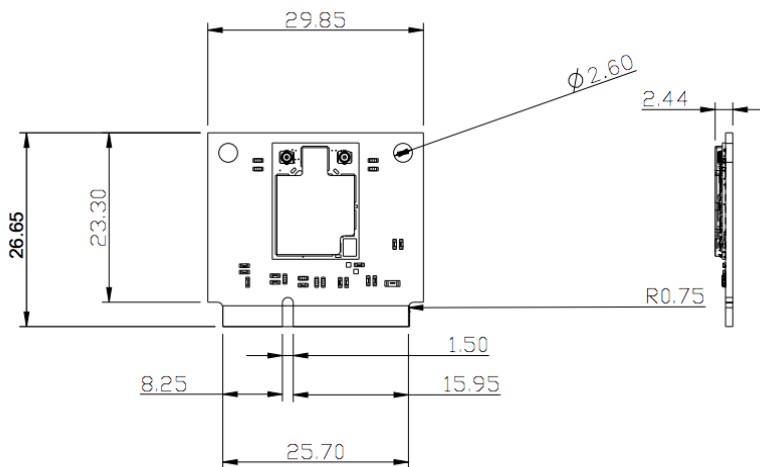
### Bluetooth

Data Rate	Tx $\pm$ 2dBm (Class 1 Device)	Rx Sensitivity
3Mbps	+4 $\leq$ Output Power $\leq$ +10dBm	<0.1% BER at -70dBm

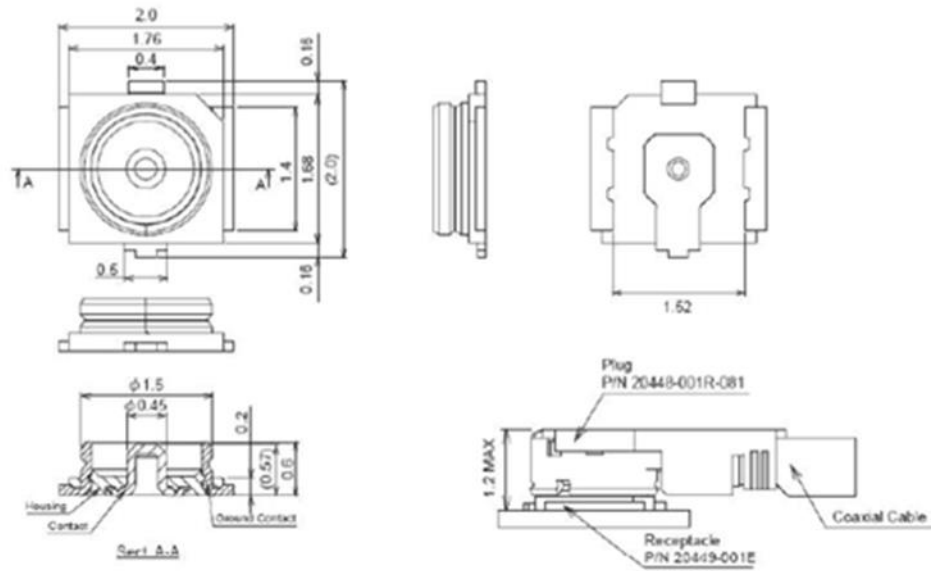
## Block Diagram



## Mechanical Dimension (mm)



## MHF4 connector SPEC



## 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
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

## Pin Assignment

Pin#	Pin Name	Description	Pin#	Pin Name	Description
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	LED_WPAN_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.

## Pin Assignment

Pin#	Pin Name	Description	Pin#	Pin Name	Description
47	No Connection	-	48	No Connection	-
49	No Connection	-	50	GND	GND
51	BT_DISABLE_L (OPT)	These pins are reserved for definition with future revisions of this specification.	52	+3.3V	+3.3V

**\*NA→ No active, OPT →Optional**