WPEQ-160ACN(BT)

802.11ac/b/g/n Dual-Band

1T1R Wi-Fi+Bluetooth 4.1 Combo

Half Mini PCIe Module

Next-Generation High Throughput Enterprise Networking Solution

WPEQ-160ACN(BT) is an 802.11ac/abgn 2.4GHz+5GHz half-mini PCIe module based on Qualcomm QCA9377-7 chipset. It supports 1T1R with RX diversity technology, which runs up to 433Mbps, provides higher throughput performance and support Bluetooth 4.1+HS,, reliability and range. The WPEQ-160ACN(BT) supports 20/40/80MHz and 256-QAM to maximize bandwidth efficiency.

WPEQ-160ACN(BT) is a Wi-Fi+Bluetooth 4.1 Combo Half Mini PCIe Module form factor, but with USB bus interface. WPEQ-160ACN(BT) is a single-die wireless local area network (WLAN) solution to support 1x1 802.11ac/abgn WLAN standards, designed to deliver superior integration of WLAN and low-energy technology.

Embedded Application :

Applications include medical devices, security systems, industrial, PoS, digital signs, Gaming machine, Medical equipment, industrial tablet PC's, handheld devices, thin client devices, and many more.

Key Feature :

● Qualcomm Atheros QCA9377-7

● Antenna: 2xU.FL connectors, 1T1R

● Data Rates: Allows link speeds up to 433Mbps

● Support Win7/8.1/10

● Bluetooth V4.1,V4.0 LE, V3.0+HS, V2.1+EDR

Specification :

Standards:	IEEE 802.11ac/a/b/g/n (1T1R) Bluetooth V4.1,V4.0 LE, V3.0+HS, V2.1+EDR
Chipset:	Qualcomm Atheros QCA9377-7
Data Rate:	802.11b: 11Mbps / 802.11a/g: 54Mbps / 802.11n: MCS0~7/ 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~2.462GHz, 5.180MHz~5.240MHz, 5.745MHz~5.825MHz Bluetooth: 2.402GHz ~ 2.480GHz *Subject to local regulations
Interface:	USB
Form Factor:	Half Mini PCIe
Antenna:	2xU.FL connectors (main antenna 0 on, diversity antenna 1 off) for 1T1R Main antenna : WLAN TX ; Diversity antenna : BT TX
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) Bluetooth BR / EDR: GFSK ; Bluetooth LE: GFSK (1Mbps)
Power Consumption	TX: TBD / RX: TBD
Operating Voltage:	DC 3.3V
Operating Temperature Range:	-20°C~70°C
Storage Temperature Range:	-30°C~85°C
Humidity (Non-Condensing)	5%~90% (Operating) 5%~95% (Storing)
Dimension (in mm):	29.85mm x 26.3mm
Weight (g):	≦ 4.7g
Driver Support:	Windows7/8.1/10
Security	64/128-bits WEP, WPA, WPA2, 802.1x

OUTPUT POWER & SENSITIVITY

802.11b		
Data Rate	**Tx ± 2dBm**	**Rx Sensitivity**
11Mbps	21dBm	≦ -76dBm

802.11g		
Data Rate	**Tx ± 2dBm**	**Rx Sensitivity**
54Mbps	21dBm	≦ -74dBm

802.11n @ 2.4GHz			
	Data Rate	**Tx ± 2dBm**	**Rx Sensitivity**
HT20	MCS7	21dBm	≦-70dBm
HT40	MCS7	20dBm	≦-68dBm

802.11a		
Data Rate	**Tx ± 2dBm**	**Rx Sensitivity**
54Mbps	18dBm	≦-73dBm

802.11n/ac @ 5GHz			
	Data Rate	**Tx ± 2dBm**	**Rx Sensitivity**
HT20 / VHT20	MCS7 / MCS8	17dBm	≦-67dBm
HT40 / VHT40	MCS7 / MCS9	16dBm	≦-63dBm

802.11ac			
	Data Rate	**Tx ± 2dBm**	**Rx Sensitivity**
VHT80	MCS9	15dBm	≦-55dBm

Bluetooth		
Data Rate	**Tx ± 2dBm**	**Rx Sensitivity**
1Mbps, 3Mbps	-4≦Output Power≦ -1dBm	<0.1% BR, EDR at -70dBm
1Mbps	-4≦Output Power≦ +0dBm	<0.1% BLE at -70dBm

Pin Assignment

Pin#	Pin Name	Description	Pin#	Pin Name	Description
1	No Connection	-	2	+3.3V	+3.3V
3	No Connection	-	4	GND	GND
5	No Connection	-	6	No Connection	-
7	No Connection	-	8	No Connection	-
9	GND	GND	10	No Connection	-
11	No Connection	-	12	No Connection	-
13	No Connection	-	14	No Connection	-
15	GND	GND	16	No Connection	-
17	No Connection	-	18	GND	GND
19	No Connection	-	20	W_DISABLE_L	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	No Connection	-
23	No Connection	-	24	No Connection	-
25	No Connection	-	26	GND	GND
27	GND	GND	28	No Connection	-
29	GND	GND	30	No Connection	-
31	No Connection	-	32	No Connection	-

Pin Assignment

Pin#	Pin Name	Description	Pin#	Pin Name	Description
33	No Connection	-	34	GND	GND
35	GND	GND	36	USB D-	USB serial data
37	GND	GND	38	USB D+	USB serial data
39	3.3V	+3.3V	40	GND	GND
41	3.3V	+3.3V	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

Federal Communication Commission Interference Statement (to be placed on End Products)

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

FCC Caution: To assure continued compliance, any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment. (Example - use only shielded interface cables when connecting to computer or peripheral devices).

End Product Labeling

This transmitter module is authorized only for use in devices where the antenna may be installed such that 20 cm may be maintained between the antenna and users. The final end product must be labeled in visible area with the following: "Contains FCC ID: RYK-WPEQ160ACNBT"

End Product Manual Information

The user manual for end users must include the following information in a prominent location "IMPORTANT NOTE: To comply with FCC RF exposure compliance requirements, the antenna used for this transmitter must be installed to provide a separation distance of at least

20cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter." This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions

(1) This device may not cause harmful interference.

(2) This device must accept any interference received, including interference that may cause undesired operation.

IMPORTANT NOTE: In the event that these conditions cannot be met (for example certain laptop configurations or colocation with another transmitter), then the FCC authorization is no longer considered valid and the FCC ID cannot be used on the final product. In these circumstances, the OEM integrator will be responsible for reevaluating the end product (including the transmitter) and obtaining a separate FCC authorization. This device is intended only for OEM integrators under the following conditions: The antenna must be installed such that 20 cm is maintained between the antenna and users. As long as a condition above is met, further transmitter test will not be required. However, the OEM integrator is still responsible for testing their end product for any   additional compliance requirements required with this module installed   (for example, digital device emissions, PC peripheral requirements, etc.).