WPEA-251N(BT)

802.11abgn Dual-Band 2T2R WiFi + Bluetooth Half Mini PCIe Module

WiFi Bluetooth Combo Module Solution

The WPEA-251N(BT) is powered by Qualcomm Atheros radio chip and features 2x2 11abgn MIMO technology for higher throughput performance, reliability and range. It is designed to meet the demanding performance requirements of critical embedded applications. In addition, by supporting the latest Bluetooth 4.0 technology, it helps to extend voice and data transfers between devices to a broader coverage area.

Embedded Application :

Applications include medical devices, security systems, industrial PC, PoS, digital signs, automation, handheld devices, thin client devices and many more.

Key Feature :

- Qualcomm Atheros AR9462
- Antenna: U.FL * 2 for 2T2R
- Concurrent Wi-Fi (802.11n) and BT (4.0 LE/ 3.0 HS/ 2.1 EDR) antenna co-existence
- Support Windows XP, Vista, Win7, Win8.1, Win10,Linux

Specification :

Standards:	IEEE 802.11abgn (2T2R) / Bluetooth V4.0 LE/ V3.0+HS/ V2.1+EDR
Chipset:	Qualcomm Atheros AR9462
Data Rate:	802.11b: 11Mbps / 802.11a/g: 54Mbps / 802.11n: 300Mbps
Operating Frequency:	IEEE 802.11 abgn ISM Band, 2.400GHz ~ 2.4835GHz, 5.15MHz ~ 5.85MHz Bluetooth: 2.402GHz ~ 2.480GHz *Subject to local regulations
Interface:	WLAN: Mini PCI Express / Bluetooth: USB
Form Factor:	Half Mini PCI-e
Antenna:	2 x UFL connector for 2T2R
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) Bluetooth :Header: GFSK / Payload 2M: 4-DQPSK / Payload 3M: 8-DPSK
Operating Voltage:	3.3V ± 9% I/O supply voltage
Power Consumption:	TX: Max. 523mA / RX: Max.202mA
Temperature Range:	0°C to +75°C (Operating) / -40°C to +85°C (Storage)
Humidity (Non-Condensing)	5% ~ 90% (Operating) / 5% ~ 95% (Storage)
Dimension (in mm):	30 x 26.8 x3.05mm (±0.5mm)
Weight (g):	≦ 4.7g
Driver Support:	Windows XP, Vista, Win7, Win10, Linux
Security	64/128-bits WEP, WPA, WPA2

OUTPUT POWER & SENSITIVITY		
802.11g		
Data Rate	Tx ± 2dBm	Rx Sensitivity
54Mbps	15dBm	≦-74dBm

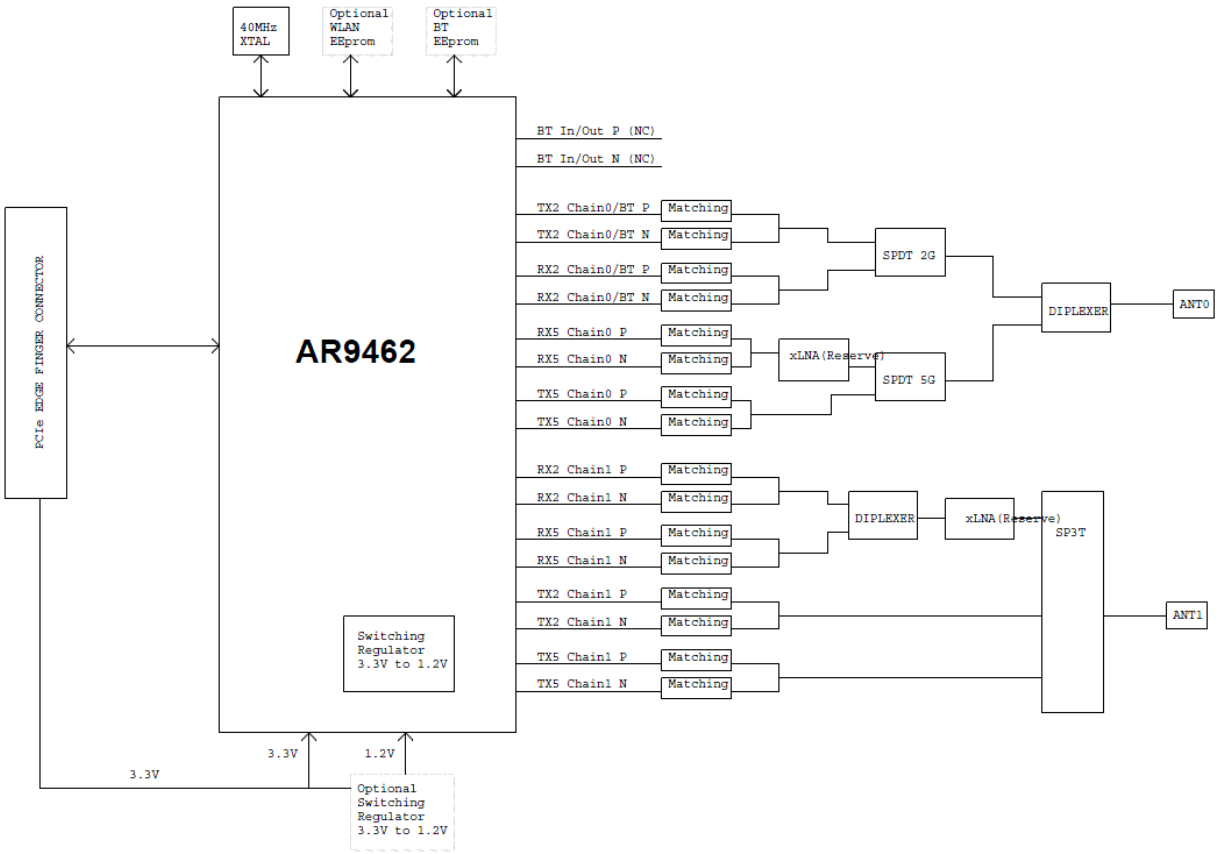
802.11n / 2.4GHz				
HT20	Data Rate	Tx ± 2dBm (1TX)	Tx ± 2dBm (2TX)	Rx Sensitivity
	MCS7	14dBm	17dBm	≦- 72dBm
HT40	MCS7	14dBm	17dBm	≦- 69dBm

802.11a		
Data Rate	Tx ± 2dBm	Rx Sensitivity
54Mbps	11dBm	≦-73dBm

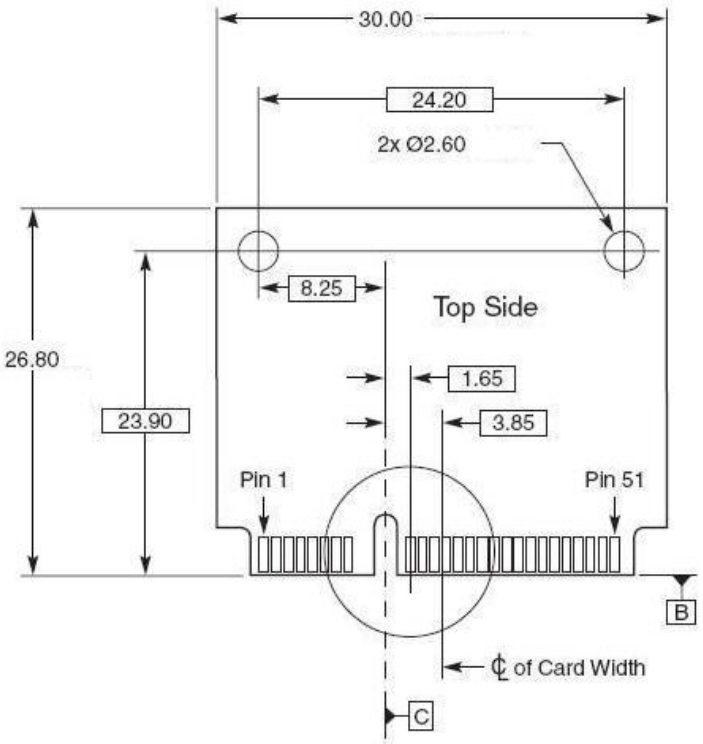
802.11n / 5GHz				
HT20	Data Rate	Tx ± 2dBm (1TX)	Tx ± 2dBm (2TX)	Rx Sensitivity
	MCS7	10dBm	13dBm	≦- 69dBm
HT40	MCS7	10dBm	13dBm	≦- 68dBm

Bluetooth		
Data Rate	Tx ± 2dBm (Class 2Device)	Rx Sensitivity
3Mbps	-6≦Output Power≦+4dBm	<0.1% BER at -70dBm

Block Diagram



Mechanical Dimension (mm)



Pin Assignment

Pin#	Pin Name	Description	Pin#	Pin Name	Description
1	No Connection	-	2	+3.3V	+3.3V
3	GPIO12(OPT)	This pin is reserved for definition with future revisions of this specification.	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
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	No Connection	-	38	USB_D+	USB_D+
39	3.3V	+3.3V	40	No Connection	-
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.

Pin#	Pin Name	Description	Pin#	Pin Name	Description
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.
47	GPIO13(OPT)	These pins are reserved for definition with future revisions of this specification.	48	No Connection	-
49	GPIO14(OPT)	These pins are reserved for definition with future revisions of this specification.	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**