

WPEA-252NIRB

802.11a/b/g/n 2T2R

Industrial Grade Mini PCIe Module



Industrial High Performance Mini PCIe Module

The WPEA-252NIRB is powered by Qualcomm Atheros AR9592 is a highly integrated single-chip solution for 2.4 or 5GHz 802.11n wireless local area networks that enables high-performance 2x2 MIMO with 2 Spatial Stream configuration for wireless applications demanding the highest robust link quality and maximum throughput and range. The WPEA-252NIRB implements half-duplex OFDM, CCK, and DSSS baseband process, supporting up to 150 Mbps for 20 MHz and 300 Mbps for 40 MHz channel operations, and IEEE 802.11a/b/g data rates.

It is reliable design for outdoor and rugged environments. High interference immunity for Wi-Fi congested environment and regulatory modular certifications to expedite system integration. WPEA-252NIRB supports frame data transfer to and from the host using a PCIe interface providing interrupt generation and reporting, power save, and status reporting.

Embedded Application :

Being able to function in tough environmental conditions, it is ideal for devices such as Industrial PC, outdoor military applications, and in-vehicle communication systems, Aviation , Traffic controller, Fleet management, Outdoor surveillance, etc.

Key Feature :

- Qualcomm Atheros QCA9592-AR1B
- Military Temp Range: -40°C to +85°C
- Data Rates: allows link speeds up to 300Mbps.
- Support Linux driver

Specification

Standards	IEEE 802.11abgn (2T2R)
Chipset	Qualcomm Atheros QCA9592-AR1B
Data Rate	802.11b: 11Mbps / 802.11a/g: 54Mbps / 802.11n: 300Mbps
Operating Frequency	IEEE 802.11 a/b/g/n ISM Band, 2.400GHz ~ 2.4835GHz, 5.1500MHz ~ 5.825MHz *Subject to local regulations
Interface	Mini PCI Express
Form Factor	Mini PCIe
Antenna	2 x IPEX 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)
Power Consumption	Continue TX: 700mA / Continue RX: 300mA
Operating Voltage	3.3V ± 9% I/O supply voltage
Operating Temperature Range	-40°C ~ +85°C
Storage Temperature Range	-50°C ~ +90°C
Humidity (Non-Condensing)	10%~85% (Operating) , 5%~90% (Storing)
Dimension (in mm)	29.85 x 50.8 x 2.86 mm (± 0.5mm)
Weight (g)	8g
Driver Support	Linux
Security	64/128-bits WEP, WPA, WPA2, 802.1x

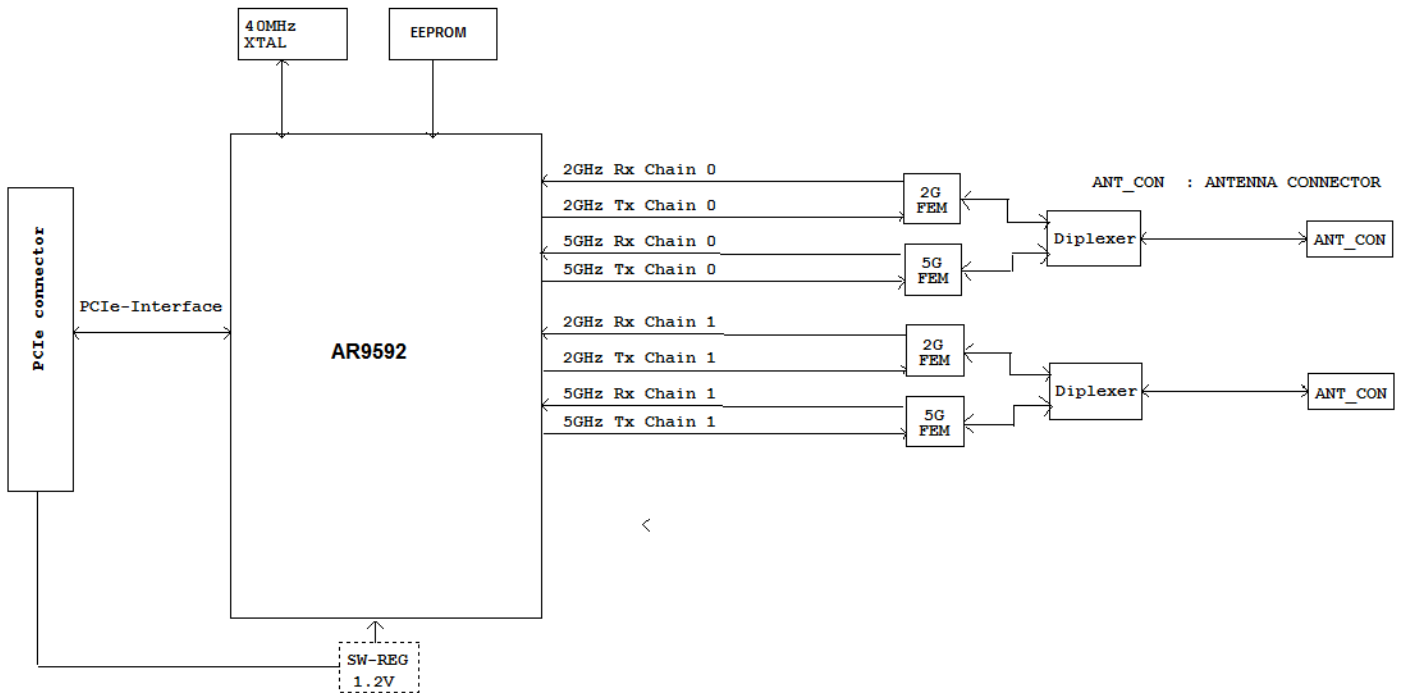
OUTPUT POWER & SENSITIVITY		
802.11g		
Data Rate	Tx \pm 2dBm	Rx Sensitivity
54Mbps	16dBm	\leq -77dBm

802.11n / 2.4GHz				
	Data Rate	Tx \pm 2dBm (1TX)	Tx \pm 2dBm (2TX)	Rx Sensitivity
HT20	MCS7	15dBm	18dBm	\leq -74dBm
HT40	MCS7	14dBm	17dBm	\leq -71dBm

802.11a		
Data Rate	Tx \pm 2dBm	Rx Sensitivity
54Mbps	14dBm	\leq -77dBm

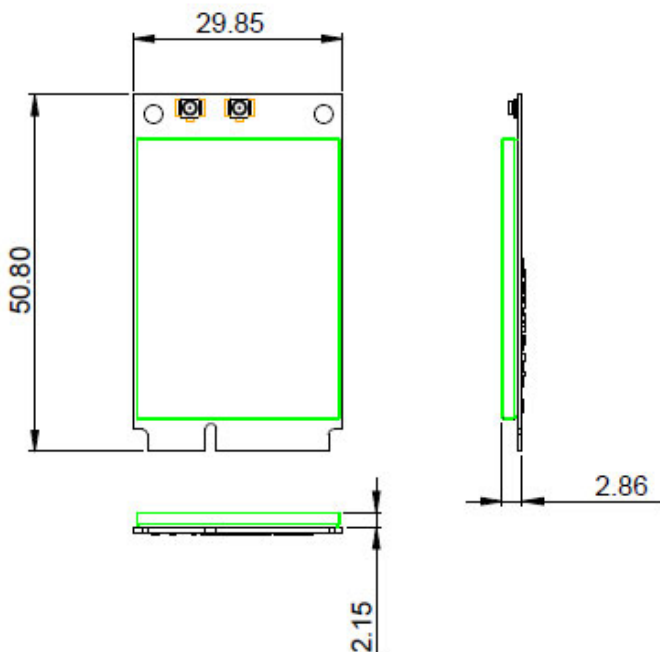
802.11n / 5GHz				
	Data Rate	Tx \pm 2dBm (1TX)	Tx \pm 2dBm (2TX)	Rx Sensitivity
HT20	MCS7	12dBm	15dBm	\leq -73dBm
HT40	MCS7	11dBm	14dBm	\leq -70dBm

Block Diagram



Mechanical Diagram (mm)

Dimension: 50.8mm * 29.85mm * 4.1mm(±0.5mm)



Pin Assignment

Pin#	Pin Name	Description	Pin#	Pin Name	Description
1	WAKE_L(NA)	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	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

Pin#	Pin Name	Description	Pin#	Pin Name	Description
23	PERn0	Signal for PCI Express x1 data interfaces: one differential receive pair	24	No Connection	-
25	PERp0	Signal for PCI Express x1 data interfaces: 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	No Connection	-
37	GND	-	38	No Connection	-
39	+3.3V	+3.3V	40	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	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	GPIO15(OPT)	These pins are reserved for definition with future revisions of this specification	52	+3.3V	+3.3V

*NA→No active, OPT →Optional

Certification

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

Ordering Information

Product Name	Part Number	Description
WPEA-252NIRB	R9701790006	802.11a/b/g/n 2T2R Industrial Grade Mini PCIe Module

Optional Accessory

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