

WPEQ-268AXI(BT)

WiFi 6/6E 2x2 MU-MIMO

802.11ax/ac/a/b/g/n Tri-band 2.4GHz/5GHz/6GHz

Industrial-Grade, 2T2R Wi-Fi+Bluetooth 5.2 Half Mini PCIe Module

Industrial-Grade Wi-Fi +Bluetooth Combo Solution Mini PCIe Module

WPEQ-268AXI(BT), first Qualcomm based WiFi-6 (802.11ax) mini PCIe module, running PCIe (Wifi) and USB (Bluetooth), supports DBDC (Dual-band, Dual-concurrent) mode, but with Tri-band capability (2.4GHz, 5GHz, and 6GHz). WPEQ-268AXI(BT) is able to concurrently run 2.4GHz with 5GHz, or 6GHz, and support full IEEE802.11 ax/ac/a/b/g/n protocol, up to 160MHz mode.

WPEQ-268AXI(BT) designed with 2 spatial streams (2T2R, or 2x2) in MU-MIMO mode. With a standard mini PCIe formfactor, WPEQ-268AXI(BT) can accommodate to all existing platform that has mini PCIe Adaptor pre-integrated, no extra work with platform design.

Software wise WPEQ-268AXI(BT) support Windows, with Linux (Open Source) in the near future. The module is capable to run on both x86 platform and ARM based platform, and supports STA mode and Soft AP Mode*, recommend to run on application includes: digital signage/POS, rugged computer / tablets, fanless automation PC and other industrial environment applications that requires high speed data transmission.

Embedded Application

Applications include IPC/ Advertising machine/ OTT/ IPTV/ DVB/ STB / DV/ Mini Driving Recorder/ Intelligent Projector Pico/ VR/ AR terminal/ POS machine/ Vehicle mounted front/ Rear Terminal UAV/ Robot/ Intelligent Gateway/ Smart city and other electronic products.

Key Feature

- Compliant with IEEE 802.11 ax/ac/a/b/g/n
- Supports 2x2 Multi-User Multiple-Input Multiple-Output (MU-MIMO)
- Dual Band Simultaneous (DBS), up to 3.6 Gbps data rate (2x2+2x2 11ax DBS)
- Tri-band 2.4 GHz/5 GHz/6 GHz support
- 20 MHz/40 MHz channel bandwidth for 2.4 GHz and 20 MHz/40 MHz/80 MHz/160 MHz channel bandwidth for 5 GHz/6 GHz

Specification

Standards	IEEE 802.11ax/ac/a/b/g/n (2T2R) Bluetooth V5.2, V5.1, V5.0, V4.2, V4.1, V4.0LE, V3.0, V2.1+EDR
Chipset	Qualcomm Atheros WCN6856
Data Rate	802.11b: 11Mbps 802.11a/g: 54Mbps 802.11n: MCS0~15 802.11ac: MCS0~9 802.11ax: HE0~11 Bluetooth: 1 Mbps, 2Mbps and Up to 3Mbps
Operating Frequency	IEEE 802.11ax/ac/a/b/g/n ISM Band, 2.412GHz~2.484GHz, 5.150GHz~5.850GHz, 5.925 GHz ~7.125GHz *Subject to local regulations
Interface	WLAN: PCIe Bluetooth: USB
Form Factor	Half Mini PCI-e
Antenna	2 x IPEX MHF1 connectors(TBD) (Ant 1 for WLAN/BT, Ant 2 for WLAN)
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) 802.11ax: OFDMA (BPSK, QPSK, 16-QAM, 64-QAM, 256-QAM, 1024-QAM) BT: Header: GFSK Payload 2M: $\pi/4$ -DQPSK Payload 3M: 8-DPSK
Power Consumption	TX mode: TBD mA RX mode: TBD mA
Operating Voltage	DC 3.3V
Operating Temperature Range	-40°C~75°C(TBD)
Storage Temperature Range	-45°C~90°C

Humidity (Non-Condensing)	5%~90% (Operating) 5%~90% (Storing)
Dimension L x W x H (in mm)	29.85mmx 26.65mmx 2.5mm(TBD)
Weight (g)	3.2g
Driver Support	Windows 10, Linux (Open Source)(TBD)
Security	64/128-bits WEP, WPA, WPA2, WPA3, 802.1x

Preliminary

OUTPUT POWER & SENSITIVITY		
802.11b (TBD)		
Data Rate	Tx $\pm$ 2dBm	Rx Sensitivity
11Mbps	18 dBm	$\leq$ -90 dBm

802.11g (TBD)		
Data Rate	Tx $\pm$ 2dBm	Rx Sensitivity
54Mbps	17.5 dBm	$\leq$ -76.5 dBm

802.11n / 2.4GHz(TBD)				
HT20	Data Rate	Tx $\pm$ 2dBm (1TX)	Tx $\pm$ 2dBm (2TX)	Rx Sensitivity
	MCS7	16.5 dBm	19.5 dBm	$\leq$ -76 dBm
HT40	MCS7	16.5 dBm	19.5 dBm	$\leq$ -73 dBm

802.11a(TBD)		
Data Rate	Tx $\pm$ 2dBm	Rx Sensitivity
54Mbps	17.5 dBm	$\leq$ -97.5 dBm

802.11n / 5GHz(TBD)				
HT20	Data Rate	Tx $\pm$ 2dBm (1TX)	Tx $\pm$ 2dBm (2TX)	Rx Sensitivity
	MCS7	17 dBm	20 dBm	$\leq$ -76.5 dBm
HT40	MCS7	17 dBm	20 dBm	$\leq$ -75.5 dBm

802.11ac(TBD)				
VHT80	Data Rate	Tx $\pm$ 2dBm (1TX)	Tx $\pm$ 2dBm (2TX)	Rx Sensitivity
	MCS9	15 dBm	18 dBm	$\leq$ -62 dBm
VHT160	MCS9	15 dBm	18 dBm	$\leq$ -62 dBm

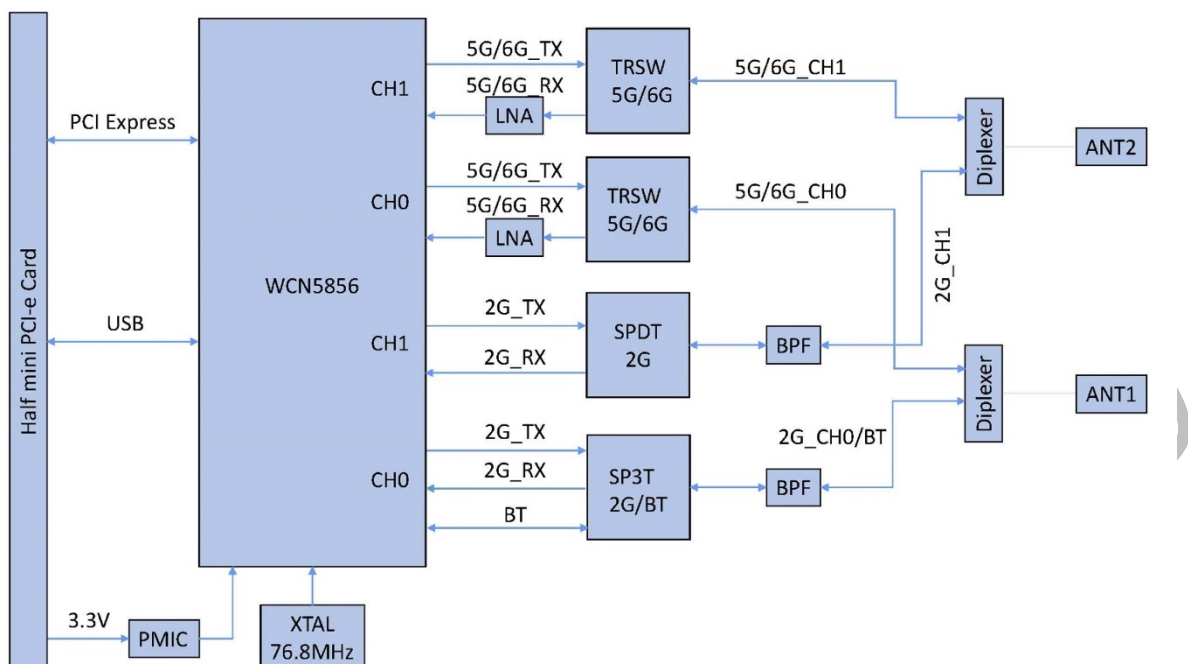
802.11ax / 2.4 GHz(TBD)				
HE40	Data Rate	Tx $\pm$ 2dBm (1TX)	Tx $\pm$ 2dBm (2TX)	Rx Sensitivity
	MCS9	14 dBm	17 dBm	$\leq$ -67 dBm

802.11ax / 5GHz(TBD)				
HE20	Data Rate	Tx $\pm$ 2dBm (1TX)	Tx $\pm$ 2dBm (2TX)	Rx Sensitivity
	HE11	12.5 dBm	15.5 dBm	$\leq$ -64.5 dBm
HE40	HE11	12 dBm	15 dBm	$\leq$ -63.5 dBm
HE80	HE11	9.5 dBm	12.5 dBm	$\leq$ -59 dBm
HE160	HE11	9 dBm	12 dBm	$\leq$ -56.5 dBm

802.11ax / 6GHz(TBD)				
HE20	Data Rate	Tx $\pm$ 2dBm (1TX)	Tx $\pm$ 2dBm (2TX)	Rx Sensitivity
	HE11	10.5 dBm	13.5 dBm	$\leq$ -63 dBm
HE40	HE11	10 dBm	13 dBm	$\leq$ -61 dBm
HE80	HE11	9.5 dBm	12.5 dBm	$\leq$ -58 dBm
HE160	HE11	9 dBm	12 dBm	$\leq$ -55 dBm

Bluetooth		
Data Rate	Tx $\pm$ 2dBm (Class 1 Device) TBD	Rx Sensitivity
3Mbps	0 $\leq$ Output Power $\leq$ 14 dBm (TBD)	<0.1% BR, BER at -70dBm (TBD)

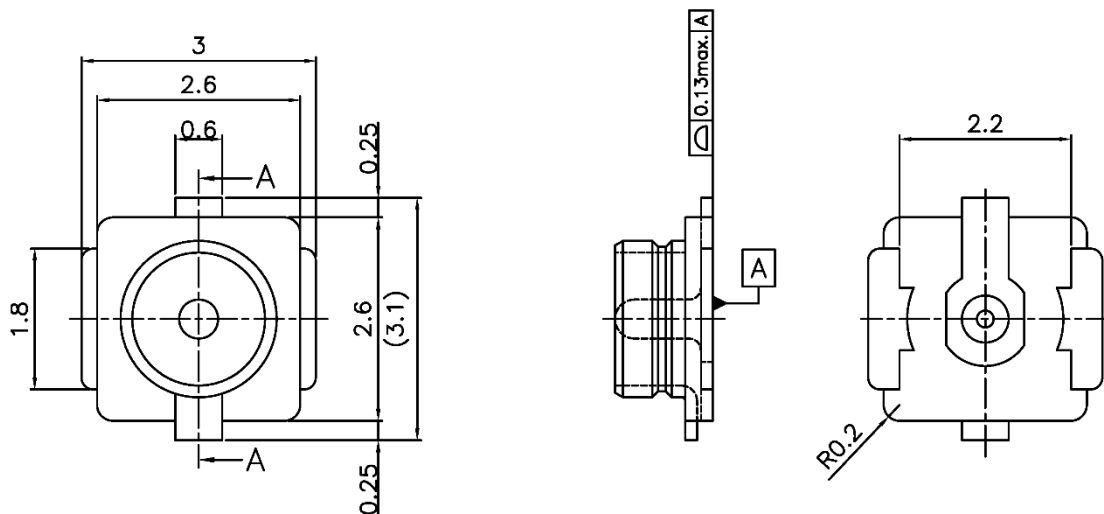
Block Diagram(TBD)



Preliminary

Mechanical Dimension (mm) (TBD)

MHF1 connector spec.



Unit: mm

Pin Assignment (TBD)

The following section illustrate signal pin-outs for the module connector.

Certification (TBD)

Dipole Ant.

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

Ordering Information

Product Name	Part Number	Description
WPEQ-268AXI(BT)	R9701A90007(TBD)	11ax/ac/a/b/g/n Industrial Grade 2T2R Wi-Fi+BT Min PCIe Module

Optional Accessory(TBD)

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
CBIRF-ME150	R3470300023	I-PEX/MHF1 to RP-SMA Female; L:150mm; Coaxial 1.37 Black
CBIRF-ME250	R3470300024	I-PEX/MHF1 to RP-SMA Female; L:250mm; Coaxial 1.37 Black