Qcom

SPECIFICATIONS

IEEE802.11 ABGN/AC 1T1R & BT4.0

2 Ant Combo Mini-Card

ZQ802XRACB

Ver. 1A

Date: 02/20/2014

Prepared by : **Qcom Technology Inc.**
Approved by :

Revision History

Revision	*Updated*	*Notes*
1.0.1	*02/20/2014*	*Initial Release*

Contents:

1. Product Features

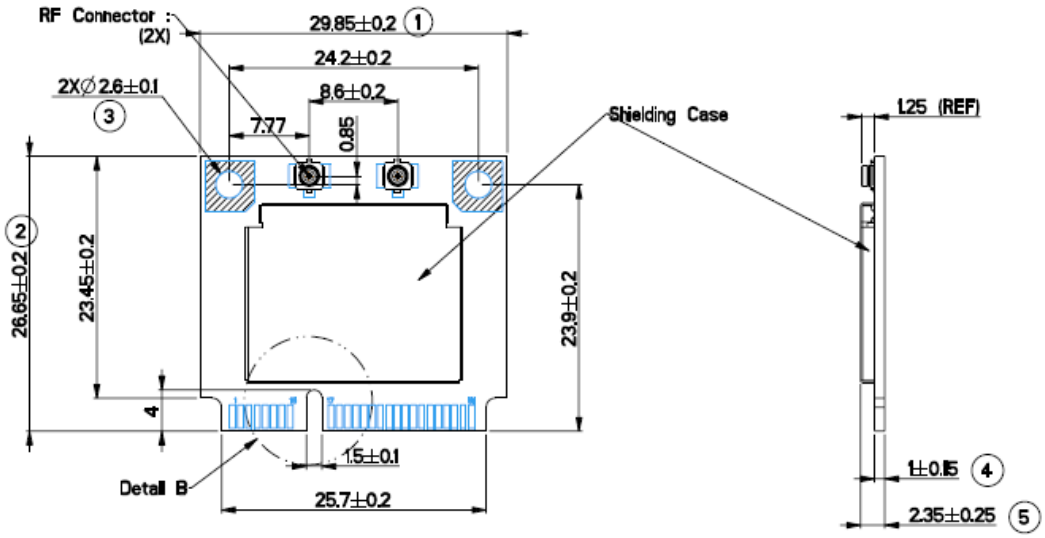
- Combo module compatible with IEEE802.11 a/b/g/n/ac draft2.0 1T1R and BT4.0 + BLE.
- Complies with PCI Express Base Specification Revision 1.1 for WLAN
- Complies with USB1.1 Specification for Bluetooth
- PCIe LTR/OBFF/L1.Off state supported
- 72.2Mbps receive PHY rate and 72.2 Mbps transmit PHY rate using 20Mhz bandwidth
- 150Mbps receive PHY rate and 150Mbps transmit PHY rate using 40MHz bandwidth
- 433.3Mbps transmit/receive PHY rate using 80Mhz bandwidth
- 802.11ac Draft 2.0 compatible WLAN
- 802.11e QoS Enhancement(WMM)
- 802.11i (WPA, WPA2). Open, shared key, and pair-wise key authentication services
- WAPI supported
- Frame aggregation for increased MAC efficiency (A-MSDU, A-MPDU)
- Low latency immediate High-Throughput Block Acknowledgement (HT-BA)
- PHY-level spoofing to enhance legacy compatibility
- Multi MAC ID support with Fast Channel switch
- Channel management and co-existence
- Transmit Opportunity (TXOP) Short Inter-Frame Space (SIFS) bursting for higher multimedia bandwidth
- WiFi Direct supports wireless peer to peer applications
- Support Wake-On-Wlan via Magic Packets and Wake-up frames
- Support S3/S4 AES/TKIP group key update
- Support Win8 Network List Offload
- CCA on secondary through RTS/ CTS handshake
- Support TCP/UDP/IP checksum offload
- Integrated MCU to execute Bluetooth protocol stack

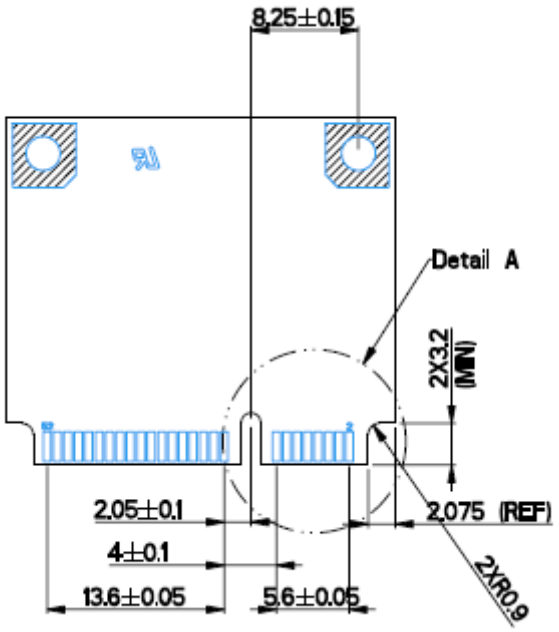
2. General Specification

Product Specification					
Model Name	**ZQ802XRACB**				
Solution	Realtek RTL8821AE				
Configuration	WLAN/ BT antenna diversity with DPDT RF switch				
WLAN					
WLAN Standard	IEEE 802.11 ABGN/AC				
Host interface	Half Mini-Card complies with PCI express 1.1				
PCIe VID	10EC				
PCIe DID	8821				
PCIe SVID	10EC				
PCIe SSID	8821				
Region Domain	2G_Worldwide13/5G_US_5G				
MP kit version	Updated by Realtek				
Antenna connecters	2 miniature coaxial RF connecters				
➢ **Dimensions**					
		Minimum	**Typical**	**Maximum**	**Unit**
	Length	29.85	30	30.15	mm
	Width	21.85	22	22.15	mm
	Height	2.1	2.35	2.6	mm
	Weight		TBD		g
Antenna Connector	2 Ultra-Miniature coaxial RF connectors				
➢ **Operating Condition**					
		Minimum	**Typical**	**Maximum**	**Unit**
Operation voltage	DC	3.15	3.3	3.45	V
Operation temperature		0		70	°C
Storage temperature		-20		70	°C
Humidity Non-Operating		10		80	%
➢ **Electrical Specification**					
Frequency range	2.4GHz and 5GHz band				
➢ **Output power**					
2.4G Band		**Minimum**	**Typical**	**Maximum**	**Unit**
802.11b Mode	11MHz	14	16	18	dBm
802.11g Mode	54MHz	12	14	16	dBm
802.11n Mode	HT20-MCS7	10	12	14	dBm
802.11n Mode	HT40-MCS7	10	12	14	dBm

5G Band		Minimum	Typical	Maximum	Unit
802.11a Mode	54MHz	10	12	14	dBm
802.11n Mode	HT20-MCS7	8	10	12	dBm
802.11n Mode	HT40-MCS7	8	10	12	dBm
802.11ac Mode	VHT20-MCS8	8	10	12	dBm
802.11ac Mode	VHT40-MCS9	7	9	11	dBm
802.11ac Mode	VHT80-MCS9	6	8	10	dBm
➢ **Receiver Sensitivity**					
2.4G Band		**Minimum**	**Typical**	**Maximum**	**Unit**
802.11b Mode	11Mbps			-76	dBm
802.11g Mode	54Mbps			-68	dBm
802.11n Mode	HT20 MCS7			-64	dBm
802.11n Mode	HT40 MCS7			-61	dBm
5G Band		**Minimum**	**Typical**	**Maximum**	**Unit**
802.11a Mode	54MHz			-68	dBm
802.11n Mode	HT20-MCS7			-64	dBm
802.11n Mode	HT40-MCS7			-61	dBm
802.11ac Mode	VHT20-MCS8			-59	dBm
802.11ac Mode	VHT40-MCS9			-54	dBm
802.11ac Mode	VHT80-MCS9			-51	dBm
➢ **Bluetooth**					
Radio Standard	Bluetooth Class II v4.0				
Host interface	USB2.0				
USB VID	0BDA				
USB PID	8821				
Frequency Band	2400-2483.5 MHz				
Data Rate	Up to 2169kbps				
Channel	79 sub-channels				
Transmission	FHSS (Frequency Hopping Spread Spectrum)				
`Modulation	GFSK@1Mbps; π/4 DQPSK@2Mbps; 8DPSK@3Mbps				
Output Power	-6 ~ +4dBm				
Max Input Level	0dBm				
Receiver Sensitivity	-70dBm				

3. Mechanical Dimensions





4. Connector Pin-out Definitions

Pin	Definition	Type	Description
1	WAKE#	I	PCIE_WAKE_L
2	+3.3Vaux	P	No connection
3	COEX1		No connection
4	GND	P	Ground.
5	COEX2		No connection
6	+1.5V		No connection
7	CLKREQ#	O	Reference clock request signal.
8	UIM_PWR		No connection
9	GND	P	Ground.
10	UIM_DATA		No connection
11	REFCLK-	I	Differential reference clock.
12	UIM_CLK		No connection
13	REFCLK+	I	Differential reference clock.
14	UIM_RESET		No connection
15	GND	P	Ground.
16	UIM_VPP		No connection
17	UIM_C8		No connection
18	GND	P	Ground.
19	UIM_C4		No connection
20	WLAN DISABLE#	I	Low Disable WLAN; High Enable WLAN.
21	GND	P	Ground.
22	PERST#	I	PCI express reset signal: Active low.
23	PERn0	O	PCI express transmit differential signal.
24	+3.3Vaux	P	No connection
25	PERp0	O	PCI express transmit differential signal.
26	GND	P	Ground.
27	GND	P	Ground.
28	+1.5V		No connection
29	GND	P	Ground.
30	SMB_CLK		No connection

Pin	Definition	Type	Description
31	PETn0	I	PCI express receive differential signal.
32	SMB_DATA		No connection
33	PETp0	I	PCI express receive differential signal.
34	GND	P	Ground.
35	GND	P	Ground.
36	USB_D-	I/O	USB Differential Signal
37	GND	P	Ground.
38	USB_D+	I/O	USB Differential Signal
39	+3.3Vaux	P	No connection
40	NC		No connection
41	+3.3Vaux	P	No connection
42	LED_WWAN#		No connection
43	GND	P	Ground.
44	LED_WLAN#	O	LED signal.
45	Reserved		No connection
46	LED_WPAN#	O	LED signal.
47	Reserved		No connection
48	+1.5V		No connection
49	Reserved		No connection
50	GND	P	Ground.
51	BT_DISABLE#	I	Low Disable BT; High Enable BT.
52	+3.3Vaux	P	3.3V power supply input
P: Power/Ground; I: Input; O: Output.			