

Qcom

SPECIFICATIONS

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

2 Ant Combo M.2 Key-A-E Card

ZNF802XRACB

Ver. 1A

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Revision History

<i>Revision</i>	<i>Updated</i>	<i>Notes</i>
1.0.1	10/21/2014	Initial Release

QCCOMM

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QCCOMM

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

Operating Systems: Windows 7/8/10, Linux, Android per request

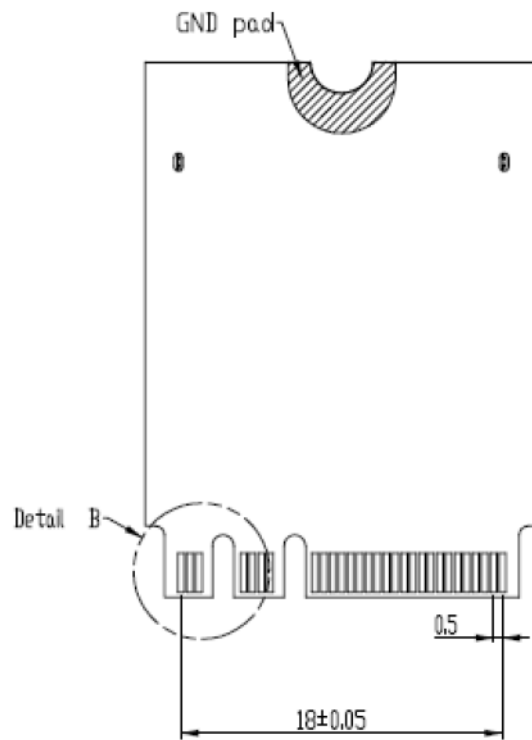
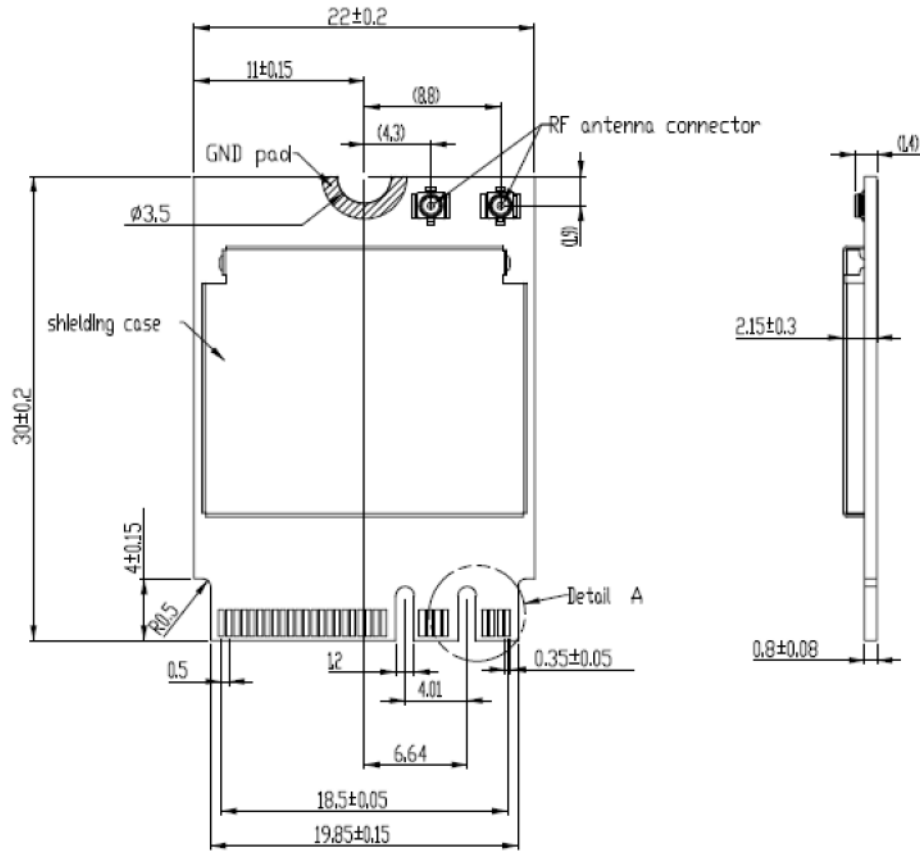
2. General Specification

Product Specification					
Model Name	ZNF802XRACB				
Solution	Realtek RTL8821AE				
Form Factor	M.2 type2230 Key-A-E				
WLAN					
WLAN Standard	IEEE 802.11 ABGN/AC				
Host interface	PCI express 1.1				
PCIe VID	10EC				
PCIe DID	8821				
PCIe SVID	10EC				
PCIe SSID	8821				
Region Domain	WW13 (20h)				
MP kit version	Updated by Realtek				
Antenna connectors	2 RF coaxial connectors for external antenna application				
➤ Dimensions					
		Minimum	Typical	Maximum	Unit
	Length	29.85	30	30.15	mm
	Width	21.85	22	22.15	mm
	Height	1.85	2.15	2.45	mm
	Weight		TBD		g
➤ 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	13	15	17	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

Specification of 802.11 ABGN/AC WiFi + BT 2Ant Combo Mini-Card

5G Lower/ Middle Band		Minimum	Typical	Maximum	Unit
802.11a Mode	54MHz	11	13	15	dBm
802.11n Mode	HT20-MCS7	8	10	12	dBm
802.11n Mode	HT40-MCS7	8	10	12	dBm
802.11ac Mode	VHT80-MCS9	6	8	10	dBm
5G Upper Band		Minimum	Typical	Maximum	Unit
802.11a Mode	54MHz	6	8	10	dBm
802.11n Mode	HT20-MCS7	6	8	10	dBm
802.11n Mode	HT40-MCS7	6	8	10	dBm
802.11ac Mode	VHT80-MCS9	4	6	8	dBm
> Receiver Sensitivity					
2.4G Band		Minimum	Typical	Maximum	Unit
802.11b Mode	11Mbps			-70	dBm
802.11g Mode	54Mbps			-65	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			-65	dBm
802.11n Mode	HT20-MCS7			-64	dBm
802.11n Mode	HT40-MCS7			-61	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	0821				
Frequency Band	2400-2483.5 MHz				
Data Rate	Up to 2169kbps				
Channel	79 sub-channels				
Transmission	FHSS (Frequency Hopping Spread Spectrum)				
Modulation	GFSK@1Mbps; $\pi/4$ DQPSK@2Mbps; 8DPSK@3Mbps				
Output Power	0~20dBm				
Receiver Sensitivity	-70dBm				

3. Mechanical Dimensions



4. Connector Pin-out Definitions

Pin	Definition	Description
1	GND	
2	3.3V	
3	USB_D+	
4	3.3V	
5	USB_D-	
6	LED_WLAN	
7	GND	
8	NOTCH	DNE
9	NOTCH	DNE
10	NOTCH	DNE
11	NOTCH	DNE
12	NOTCH	DNE
13	NOTCH	DNE
14	NOTCH	DNE
15	NOTCH	DNE
16	LED_BT	
17	SDIO DATA2	DNE
18	GND	
19	SDIO DATA3	DNE
20	UART WAKE	DNE
21	SDIO WAKE	DNE
22	UART RX	DNE
23	SDIO RESET	DNE
24	NOTCH	DNE
25	NOTCH	DNE
26	NOTCH	DNE
27	NOTCH	DNE
28	NOTCH	DNE
29	NOTCH	DNE
30	NOTCH	DNE
31	NOTCH	DNE
32	UART TX	DNE
33	GND	
34	UART CTS	DNE
35	PETp0	
36	UART RTS	DNE

Pin	Definition	Description
37	PETn0	
38	Reserved	DNE
39	GND	
40	Reserved	DNE
41	PERp0	
42	Reserved	DNE
43	PERn0	
44	COEX0	DNE
45	GND	
46	COEX1	DNE
47	REFCLKP	
48	COEX2	DNE
49	REFCLKN	
50	SUSCLK	
51	GND	
52	PETST0	
53	CLKREQ0	
54	BT Disable#	
55	PEWake0	
56	WiFi_Disable#	
57	GND	
58	I2C DATA	DNE
59	2nd Lane PETp1	DNE
60	I2C CLK	DNE
61	2nd Lane PETn1	DNE
62	ALERT	DNE
63	GND	DNE
64	Reserved	DNE
65	2nd Lane PERp1	DNE
66	Reserved	DNE
67	2nd Lane PERn1	DNE
68	Reserved	DNE
69	GND	
70	Reserved	DNE
71	Reserved	DNE
72	3.3Vaux	DNE
73	Reserved	DNE
74	3.3Vaux	DNE
75	GND	