WNFQ-255ACN(BT)

802.11ac/a/b/g/n Dual-Band

2T2R Wi-Fi M.2 Module



WiFi M.2 Module Solution

The WNFQ-255ACN(BT) is powered by Qualcomm Atheros radio chip and features 2x2 11ac/a/b/g/n technology for higher throughput performance, reliability and range. It is designed to meet the demanding performance requirements of critical embedded applications. It supports 2T2R (Support Wi-Fi/BT co-existence) technology, which runs up to 867Mbps and 1~3Mbps EDR for BT. The WNFQ-255ACN(BT) supports 20/40/80MHz and 256-QAM to maximize bandwidth efficiency.

The QCA6174A is a single-die wireless local area network (WLAN) solution to support 2x2 multi-user multiple input, multiple output (MU-MIMO) with two spatial streams IEEE802.11ac/a/b/g/n WLAN standards. It's engineered to deliver lower power consumption 1, improved RF coexistence 1, and complete Microsoft Windows 10 support.

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 QCA6174
- Antenna: 2 x IPEX MHF4 connectors, 2T2R
- Wi-Fi using mini PCIe interface
- Enterprise level security supporting: WPA, WPA2
- Support 2 transmission and 2 receiving, transmission rate can up to 867Mbps (Physical Rate) in downstream and upstream

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Specification

Standards:	IEEE 802.11ac/a/b/g/n (2T2R)
Chipset:	Qualcomm Atheros QCA6174
Data Rate:	802.11b: 11Mbps 802.11a/g: 54Mbps 802.11n: 300Mbps 802.11ac: 867Mbps
Operating Frequency:	IEEE 802.11ac/a/b/g/n ISM Band: 2.412GHz~2.4835GHz, 5.150GHz ~ 5.850GHz *Subject to local regulations
Interface:	WLAN: PCIe
Form Factor:	M.2 (NGFF) 1630
Antenna:	2 x IPEX MHF4 connectors
Modulation:	Wi-Fi: 802.11b: DSSS (DBPK, 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)
Power Consumption:	TX mode: 605mA RX mode: 214mA
Operating Voltage:	DC 3.3V
Operating Temperature Range	0°C~70°C
Storage Temperature Range	-40°C~80°C
Humidity **(Non-Condensing)**	5%~90% (Operating) 5%~95% (Storing)
Dimension L x W x H (in mm)	30mm(±0.15 mm) x 16.5mm(±0.15 mm) x 2.0mm(±0.3mm)
Weight (g):	2g
Driver Support:	Win7/8.1/10
Security	64/128-bits WEP, WPA, WPA2, 802.1x

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OUTPUT POWER & SENSITIVITY		
802.11b		
Data Rate	**Tx ± 2dBm**	**Rx Sensitivity**
11Mbps	19dBm	≦-76dBm

802.11g		
Data Rate	**Tx ± 2dBm**	**Rx Sensitivity**
54Mbps	16dBm	≦-65dBm

802.11n / 2.4GHz				
HT20	**Data Rate**	**Tx ± 2dBm (1TX)**	**Tx ± 2dBm (2TX)**	**Rx Sensitivity**
	MCS7	16dBm	19dBm	≦-64dBm
HT40	MCS7	16dBm	19dBm	≦-61dBm

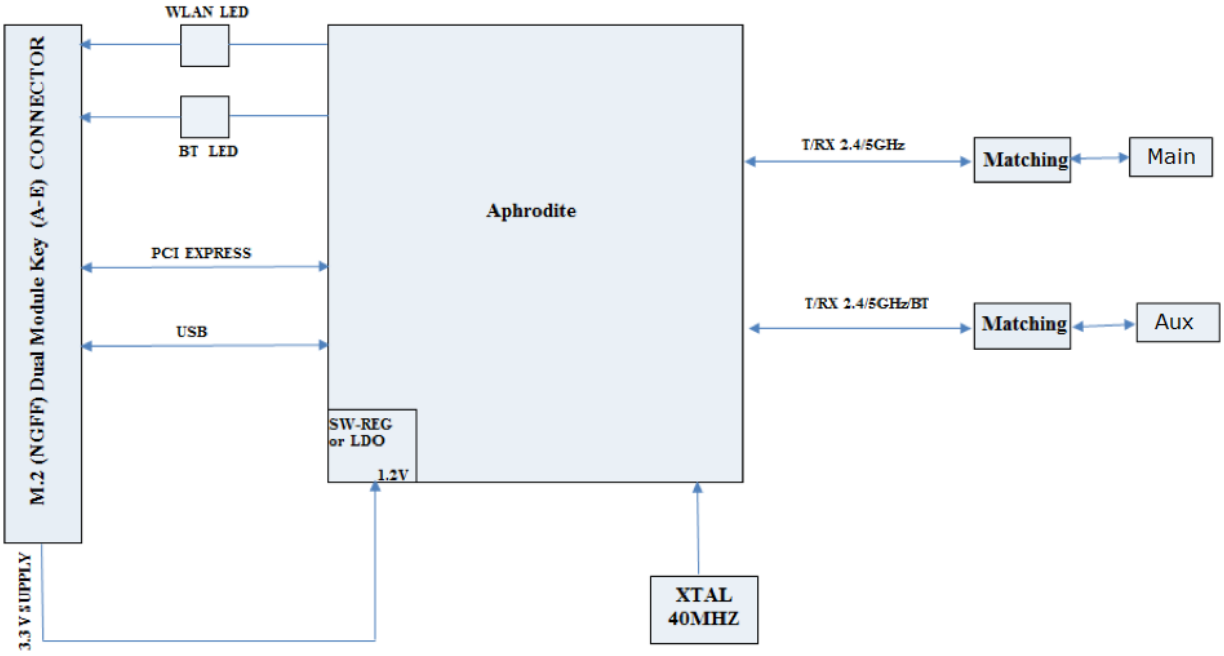
802.11a		
Data Rate	**Tx ± 2dBm**	**Rx Sensitivity**
54Mbps	11dBm	≦-65dBm

802.11n / 5GHz				
HT20	**Data Rate**	**Tx ± 2dBm (1TX)**	**Tx ± 2dBm (2TX)**	**Rx Sensitivity**
	MCS7	10dBm	13dBm	≦-64dBm
HT40	MCS7	10dBm	13dBm	≦-61dBm

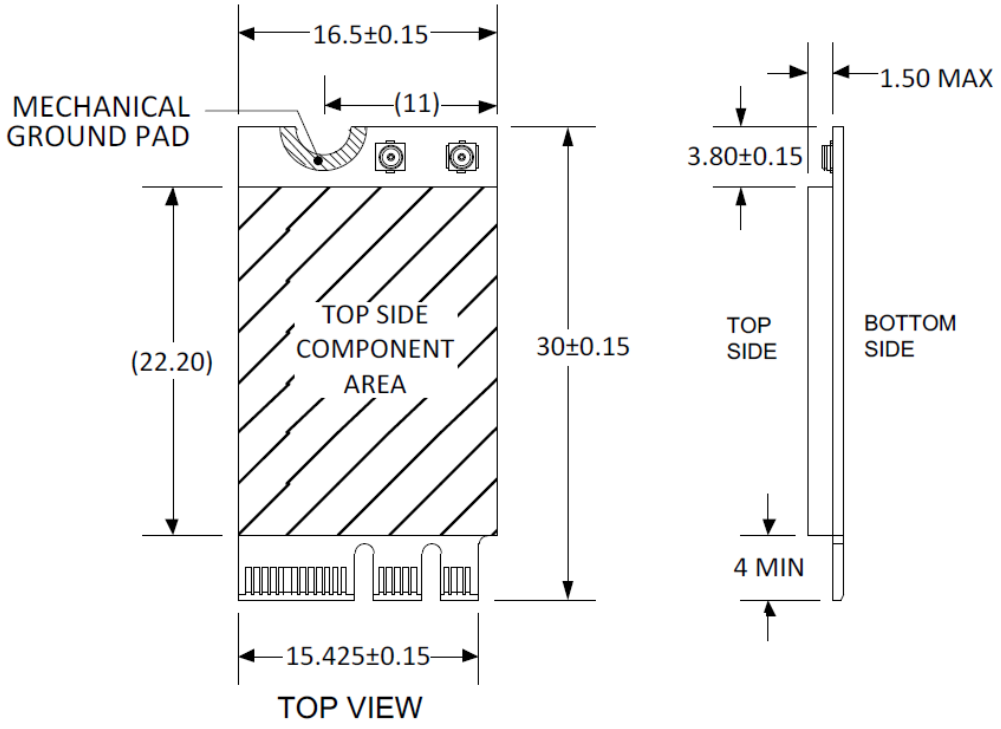
802.11ac				
VHT80	**Data Rate**	**Tx ± 2dBm (1TX)**	**Tx ± 2dBm (2TX)**	**Rx Sensitivity**
	MCS9	6dBm	9dBm	≦-51dBm

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Block Diagram

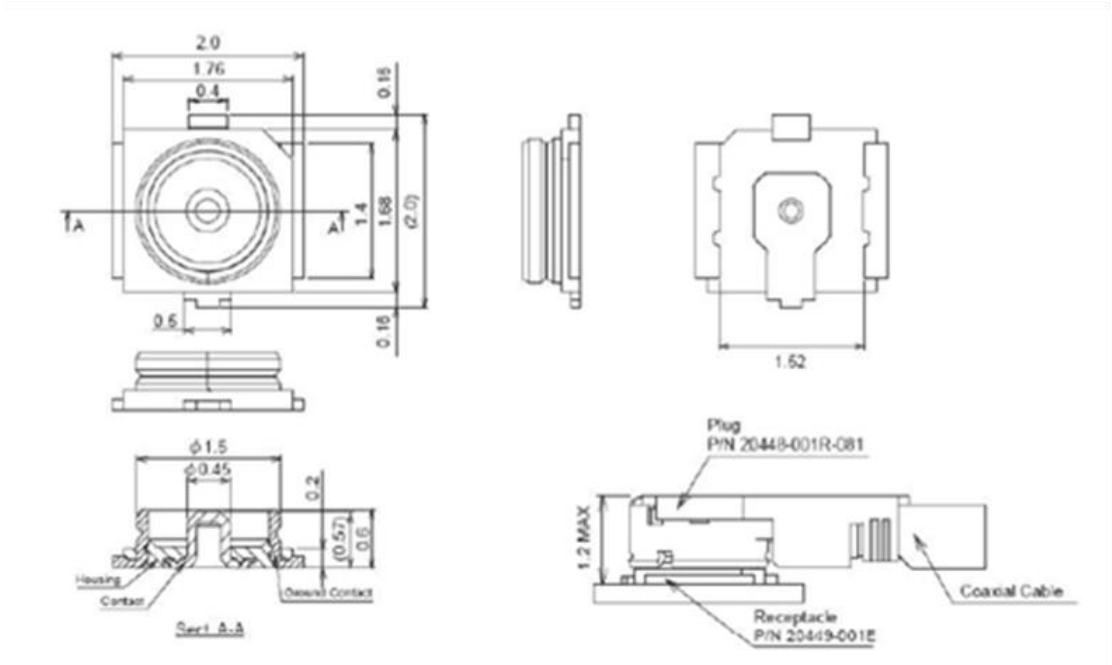


Mechanical Dimension (mm)



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MHF4 connector spec.



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Pin Assignment

Pin#	Pin Name	Description	Pin#	Pin Name	Description
1	GND	GND	2	+3.3V	+3.3V
3	USB_D+	USB_D+	4	+3.3V	+3.3V
5	USB_D-	USB_D-	6	LED_WLAN_L (OPT)	Defined in the PCI Express Mini card specification and it is an open drain, active low signal, used to allow the PCIe Mini Card add-in card to provide status indicators via LED devices that will be provided by the system.
7	GND	GND	8	No Connection	-
9	No Connection	-	10	No Connection	-
11	No Connection	-	12	No Connection	-
13	No Connection	-	14	No Connection	-
15	No Connection	-	16	BT_LED_2#	Status indicators via LED devices that will be provided by the system and it is an open drain.
17	No Connection	-	18	GND	GND
19	No Connection	-	20	No Connection	-
21	No Connection	-	22	No Connection	-
23	No Connection	-	24	No Connection	-
25	No Connection	-	26	No Connection	-
27	No Connection	-	28	No Connection	-
29	No Connection	-	30	No Connection	-
31	No Connection	-	32	No Connection	-
33	GND	GND	34	No Connection	-
35	PERp0	PCI Express x1 data interface: one differential receive pair	36	No Connection	-
37	PERn0	PCI Express x1 data interface: one differential receive pair	38	Reserved	-
39	GND	GND	40	Reserved	-
41	PETp0	PCI Express x1 data interface: one differential transmit pair	42	Reserved	-
43	PETn0	PCI Express x1 data interface: one differential transmit pair	44	COEX3_PRI	No Connection
45	GND	GND	46	COEX2_ACTIVE	No Connection

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Pin Assignment

Pin#	Pin Name	Description	Pin#	Pin Name	Description
47	REFCLK+	Input signal for PCI Express differential reference clock (100 MHz)	48	COEX1_SYNC	No Connection
49	REFCLK-	Input signal for PCI Express differential reference clock (100 MHz)	50	SUSCLK(OPT)	32.768 kHz clock supply input that is provided by PCH to reduce power and cost for the module. SUSCLK will have a duty cycle that can be as low as 30% or as high as 70% 200ppm.
51	GND	GND	52	PERST_L	Input signal for functional reset to the card
53	CLKREQ_L	Output for reference clock request signal	54	BT_ DISABLE_L (OPT)	These pins are reserved for definition with future revisions of this specification.
55	WAKE_L(OPT)	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.	56	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
57	GND	GND			

***NA→No active, OPT →Optional**

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Certification

PIFA Ant.

- ■ FCC
- ☐ CE
- ☐ IC
- ☐ MIC
- ☐ NCC
- ☐ ASNZS

Dipole Ant.

- ☐ FCC
- ☐ CE
- ☐ IC
- ■ MIC
- ☐ NCC
- ☐ ASNZS

Ordering Information

Product Name	Part Number	Description
WNFQ-255ACN(BT)	R9701810002	802.11ac/b/g/n Wi-Fi M.2 Card, QCA6174,2T2R SPK CER

Optional Accessory

Product Name	Part Number	Description
AD-103AG	R3410110203	2dBi Dipole RP-SMA 5G/2.4GHz
AD-300N	R3410110219	3dBi/5dBi 2.4G/5GHz Dipole RP-SMA
CBIRF-NE150	R3470300025	RF Cable, I-PEXMHF4 to RP-SMA(F); L150mm; Coaxial 0.81 Black
CBIRF-NE250	R3470300026	RF Cable, I-PEXMHF4 to RP-SMA(F); L250mm; Coaxial 0.81 Black

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