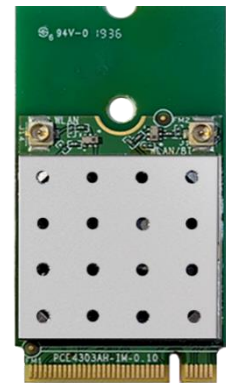


# WNFQ-262ACNI(BT)High Power

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

Industrial-Grade

2T2R Wi-Fi module M.2 2242 B Key Module



## Industrial-Grade Wi-Fi Solution

SparkLAN WNFQ-262ACNI(BT) is an 802.11ac/a/b/g/n Dual-Band Wi-Fi M.2 2242 B key module based on Qualcomm Atheros QCA6174A chipset. This highly integrated module supports most of WLAN capabilities with seamless roaming and advanced security for enterprise application. The wireless module complies with IEEE 802.11ac/a/b/g/n 2x2 MIMO. The integrated module provides PCIe Interface for Wi-Fi. The download speed are 300Mbps on N networks and 867Mbps on AC network.

Adopting the latest 802.11ac solution. WNFQ-262ACNI(BT) is ideal for next-generation high throughput enterprise networking and Industrial-graded (-40°C~+85°C) solution. Incorporated with advanced security encryption, such as WEP, WPA, WPA2, WPA3 and 802.1x, it helps prevent user's devices from malicious attacks.

### 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

- Tiny size 22mm x 42mm M.2 B key
- Support MU-MIMO
- Wi-Fi Supports Low Power PCIe (w/ L1 substrate) interfaces
- Two-stream spatial multiplexing up to 867Mbps data rate

**Specification**

<b>Standards</b>	IEEE 802.11ac/a/b/g/n (2T2R)
<b>Chipset</b>	Qualcomm Atheros QCA6174A-5
<b>Data Rate</b>	802.11b: 11Mbps 802.11a/g: 54Mbps 802.11n: MCS0~15 802.11ac: MCS0~9
<b>Operating Frequency</b>	IEEE 802.11ac/a/b/g/n ISM Band: 2.412GHz~2.484GHz, 5.150GHz~5.850GHz *Subject to local regulations
<b>Interface</b>	WLAN: PCIe
<b>Form Factor</b>	M.2 2242 B key
<b>Antenna</b>	2 x IPEX MHF1 connectors Support WLAN/BT co-existence Ant 1 for WLAN, Ant 2 for WLAN/ BT
<b>Modulation</b>	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)
<b>Power Consumption</b>	TX mode: 610mA(Max.) RX mode: 298mA(Max.)
<b>Operating Voltage</b>	DC 3.3V
<b>Operating Temperature Range</b>	-40°C~85°C
<b>Storage Temperature Range</b>	-45°C~90°C
<b>Humidity (Non-Condensing)</b>	5%~90% (Operating) 5%~90% (Storing)
<b>Dimension L x W x H (in mm)</b>	42mm(±0.3mm) x 22mm(±0.3mm) x 2.78mm(±0.3mm)
<b>Weight (g)</b>	3.8g
<b>Driver Support</b>	Windows 7/8.1/10 Linux (Open Source), Recommend Kernel v4.0+
<b>Security</b>	64/128-bits WEP, WPA, WPA2, WPA3, 802.1x

**OUTPUT POWER & SENSITIVITY**
**802.11b**

Data Rate	Tx $\pm$ 2dBm	Rx Sensitivity
11Mbps	18dBm	$\leq$ -85dBm

**802.11g**

Data Rate	Tx $\pm$ 2dBm	Rx Sensitivity
54Mbps	14.5dBm	$\leq$ -71dBm

**802.11n / 2.4GHz**

	Data Rate	Tx $\pm$ 2dBm (1TX)	Tx $\pm$ 2dBm (2TX)	Rx Sensitivity
HT20	MCS7	14dBm	17dBm	$\leq$ -67dBm
HT40	MCS7	13.5dBm	16.5dBm	$\leq$ -65dBm

**802.11a**

Data Rate	Tx $\pm$ 2dBm	Rx Sensitivity
54Mbps	14dBm	$\leq$ -75dBm

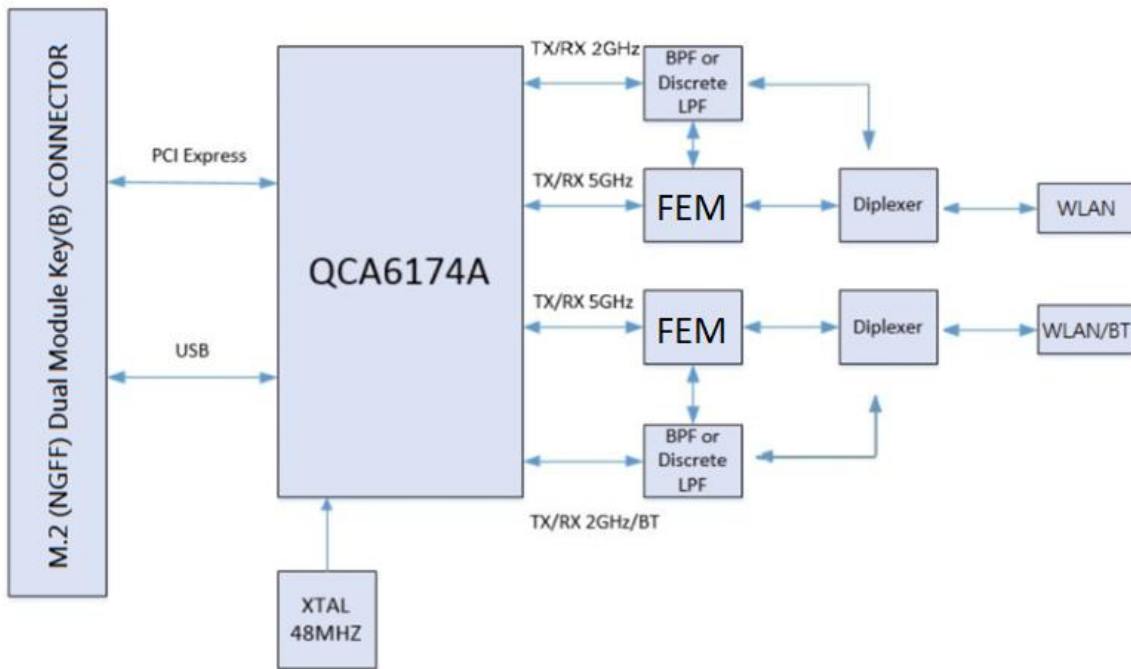
**802.11n / 5GHz**

	Data Rate	Tx $\pm$ 2dBm (1TX)	Tx $\pm$ 2dBm (2TX)	Rx Sensitivity
HT20	MCS7	13dBm	16dBm	$\leq$ -71dBm
HT40	MCS7	13dBm	16dBm	$\leq$ -67dBm

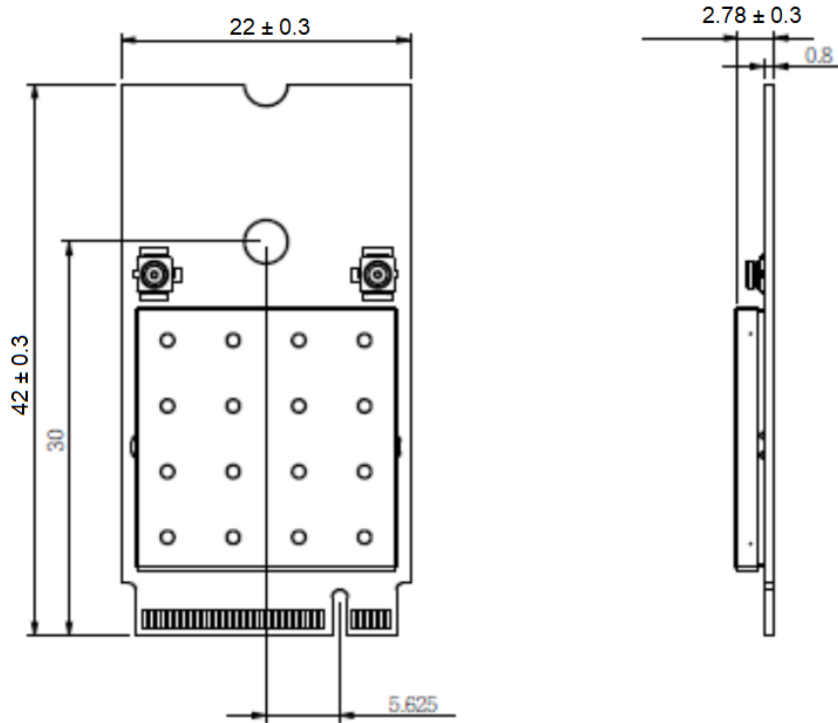
**802.11ac**

	Data Rate	Tx $\pm$ 2dBm (1TX)	Tx $\pm$ 2dBm (2TX)	Rx Sensitivity
VHT80	MCS9	11dBm	14dBm	$\leq$ -57dBm

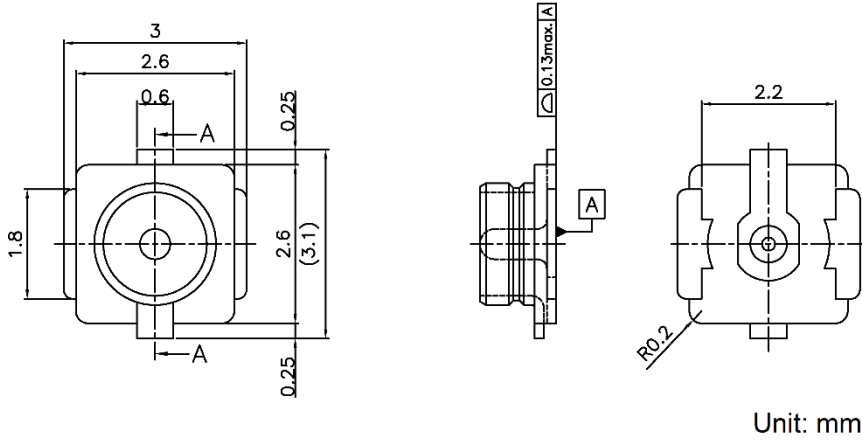
**Block Diagram**



**Mechanical Dimension (mm)**



**MHF1 connector spec.**



## Pin Assignment

Pin#	Pin Name	Description	Pin#	Pin Name	Description
1	CONFIG_3	GND(default)	2	+3.3V	+3.3V
3	GND	GND	4	+3.3V	+3.3V
5	GND	GND	6	No Connection	-
7	USB_D+	USB_D+	8	W_DISABLE_L	No Connection
9	USB_D_	USB_D+	10	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.
11	GND	GND	12	No Connection	-
13	No Connection	-	14	No Connection	-
15	No Connection	-	16	No Connection	-
17	No Connection	-	18	No Connection	-
19	No Connection	-	20	No Connection	-
21	CONFIG_0	GND(default)	22	BT_LED	Status indicators via LED devices that will be provided by the system and it is an open drain.
23	No Connection	-	24	No Connection	-
25	No Connection	-	26	BT_DISABLE_L (OPT)	These pins are reserved for definition with future revisions of this specification.
27	GND	GND	28	No Connection	-
29	No Connection	-	30	No Connection	-
31	No Connection	-	32	No Connection	-
33	GND	GND	34	No Connection	-
35	No Connection	-	36	No Connection	-
37	No Connection	-	38	No Connection	-
39	GND	GND	40	No Connection	-
41	PETn0	PCI Express x1 data interface: one differential transmit pair	42	No Connection	-
43	PETp0	PCI Express x1 data interface: one differential transmit pair	44	No Connection	-

## Pin Assignment

Pin#	Pin Name	Description	Pin#	Pin Name	Description
45	GND	GND	46	No Connection	-
47	PERn0	PCI Express x1 data interface: one differential receive pair	48	No Connection	-
49	PERp0	PCI Express x1 data interface: one differential receive pair	50	PERST_L	Input signal for functional reset to the card
51	GND	GND	52	CLKREQ_L	Output for reference clock request signal
53	REFCLK-	Input signal for PCI Express differential reference clock (100 MHz)	54	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.
55	REFCLK+	Input signal for PCI Express differential reference clock (100 MHz)	56	No Connection	-
57	GND	GND	58	No Connection	-
59	No Connection	-	60	COEX3_ACTIVE	No Connection
61	No Connection	-	62	COEX2_PRI	No Connection
63	No Connection	-	64	COEX1_SYNC	No Connection
65	No Connection	-	66	No Connection	-
67	No Connection	-	68	No Connection	-
69	CONFIG_1	GND(default)	70	+3.3V	+3.3V
71	GND	GND	72	+3.3V	+3.3V
73	GND	GND	74	+3.3V	+3.3V
75	CONFIG_2	No Connection			

\*NA→No active

\*OPT →Optional

(This is optional as the function may or may not work under all platform configurations, to ensure this product performs the feature you need, please contact our Sales first with your platform design and configuration details before implementing layout design.)

## Certification

### 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
WNFQ-262ACNI(BT)	R9701810012	11ac/a/b/g/n Industrial Grade 2T2R Wi-Fi+BT High Power M.2 Module

## Optional Accessory

Product Name	Part Number	Description
AD-103AG	R3410110203	Dipole Antenna, 2dBi 2.4GHz/5GHz, RP-SMA(M) connector
AD-300N	R3410110219	Dipole Antenna, 3dBi/5dBi 2.4G/5GHz RP-SMA
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