

WNFT-237ACN(BT)

802.11ac Wave 2 Compliant with MU-MIMO

2T2R Wi-Fi+ Bluetooth 4.2 Combo M.2 Module



Support Multiple Drivers (Android/ Windows/ Linux)

Sparklan WNFT-237ACN(BT) is an 802.11ac/a/b/g/n Dual -Band WiFi + Bluetooth M.2 (Key A,E) module based on Realtek RTL8822CE chipset, **It supports Multiple drivers (Android/ Windows/ Linux) for various platform.** This module support MU-MIMO two streams on dual band 2.4GHz or 5GHz operating and incorporates the Bluetooth 4.2, the data rate up to 867Mbps on ac mode. The WNFT-237ACN(BT) is designed by M.2 2230 slot type form factor.

The WNFT-237ACN(BT) is using highly integrated single-chip MIMO (Multiple In, Multiple Out) wireless local area network (WLAN) RTL8822CE solution to let users enjoy the high digital content through the latest wireless technology without using cables and cords. RTL8822CE combines a WLAN MAC, a 2T2R capable WLAN baseband, and RF in a single chip. WNFT-237ACN(BT) module enables a high performance, cost effective, low power, compact solution that easily fits in the PCI Express and USB M.2 2230 A-E Key module which is Incorporated with advanced security encryption WEP, WPA, WPA2, WPS, and 802.1x, it will prevent user's devices from malicious attacks.

Embedded Application

WNFT-237ACN(BT) key applications include:
 Tablet/ Notebook/ Advertising machine/ OTT
 Box/ IPTV/ DVB/ STB / DV/ IPC/ Mini Driving
 Recorder/ Doorbell / Smart TV/ Intelligent
 Projector Pico/ VR/ AR terminal/ Wireless
 storage/ Printer/ POS machine/ Vehicle mounted
 front/ Rear Terminal UAV/ Robot/ Intelligent
 Gateway/ Smart city and other consumer
 electronic products.

Key Feature

- Support Multiple drivers (Android/Windows/Linux)
- Support Bluetooth 4.2 system
- Supports for Simple Pairing (SP) and Enhanced Inquiry Response (EIR) function
- Support 802.11ac 2X2 Wave2 compliant with MU-MIMO
- Wi-Fi Supports Low Power PCIe (w/ L1 substate) interfaces
- Two-stream spatial multiplexing up to 867Mbps data rate

Specification

Standards	IEEE 802.11ac/a/b/g/n (2T2R) Bluetooth V4.2, V4.1 LE, V3.0+HS, V2.1+EDR
Chipset	Realtek RTL8822CE
Data Rate	802.11b: 11Mbps 802.11a/g: 54Mbps 802.11n: MCS0~15 802.11ac: MCS0~9 Bluetooth: 1 Mbps, 2Mbps and Up to 3Mbps
Operating Frequency	IEEE 802.11ac/a/b/g/n ISM Band, 2.412GHz~2.484GHz, 5.150GHz~5.850GHz *Subject to local regulations
Interface	WLAN: PCIe / Bluetooth: USB
Form Factor	M.2 2230-S3-A-E Key
Antenna	2 x IPEX MHF4 connectors Support WLAN/BT co-existence Main: WLAN, Aux: WLAN/ BT
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)
Power Consumption	TX mode (VHT20,11ac): 606mA (Average) RX mode (VHT80,11ac): 302mA (Average)
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%~90% (Storing)
Dimension L x W x H (in mm)	30mm(±0.15mm) x 22mm(±0.15mm) x 2.15mm(±0.3mm)
Weight (g)	2.5g

Driver Support	Windows 10, Linux, Android
Security	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	17dBm	\leq -74dBm

802.11n / 2.4GHz

	Data Rate	Tx \pm 2dBm (1TX)	Tx \pm 2dBm (2TX)	Rx Sensitivity
HT20	MCS7	16dBm	19dBm	\leq -70dBm
	MCS7	16dBm	19dBm	\leq -67dBm

802.11a

Data Rate	Tx \pm 2dBm	Rx Sensitivity
54Mbps	17dBm	\leq -68dBm

802.11n / 5GHz

	Data Rate	Tx \pm 2dBm (1TX)	Tx \pm 2dBm (2TX)	Rx Sensitivity
HT20	MCS7	16dBm	19dBm	\leq -67dBm
	MCS7	16dBm	19dBm	\leq -64dBm

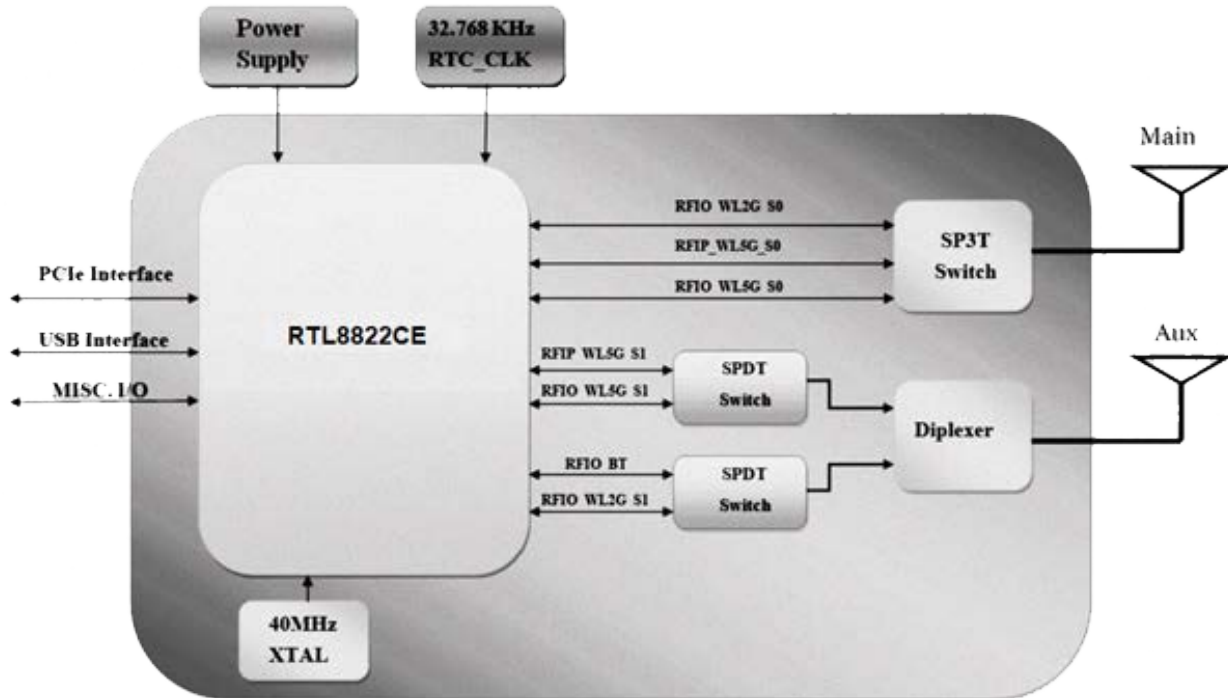
802.11ac

	Data Rate	Tx \pm 2dBm (1TX)	Tx \pm 2dBm (2TX)	Rx Sensitivity
VHT80	MCS9	14dBm	17dBm	\leq -54dBm

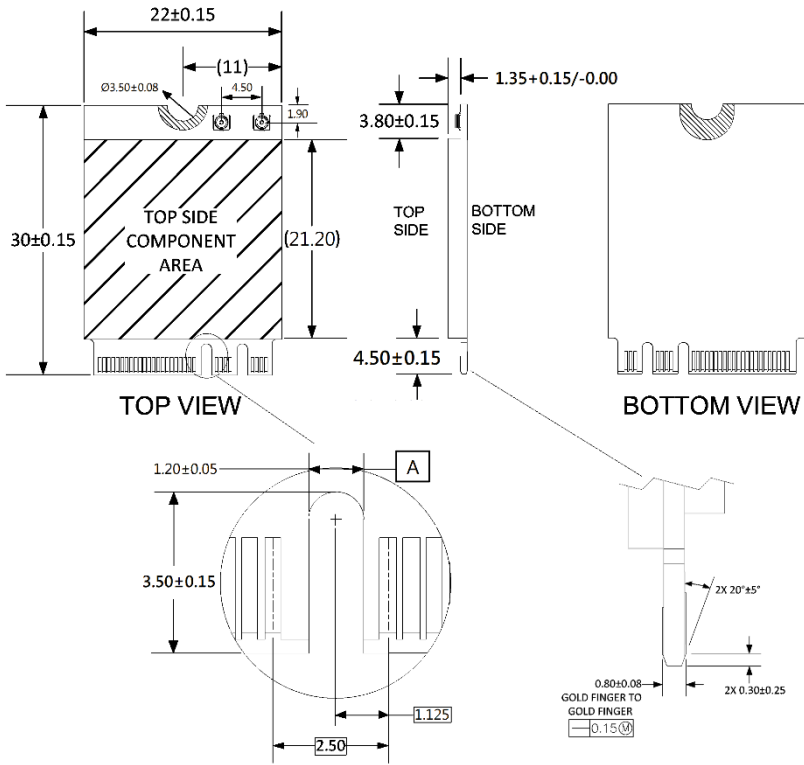
Bluetooth

Data Rate	Tx \pm 2dBm (Class 1 Device)	Rx Sensitivity
3Mbps	+0 \leq Output Power \leq +6 dBm	<0.1% BR, BER at -70dBm

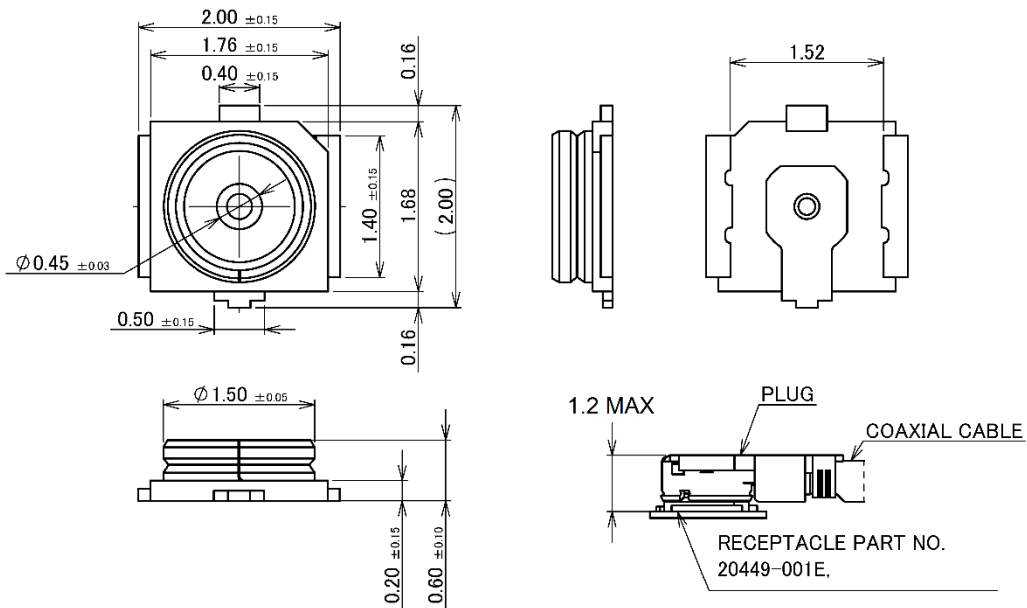
Block Diagram



Mechanical Diagram (mm)



MHF4 Connector spec.



Unit: mm

Pin Assignment

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

TOP			
Pin#	Pin Name	Type	Description
1	GND	G	Ground connections
3	USB_D+	I/O	USB serial differential data Positive
5	USB_D-	I/O	USB serial differential data Negative
7	GND	G	Ground connections
9	NOTCH FOR KEY A	NC	No Connection
11	NOTCH FOR KEY A	NC	No Connection
13	NOTCH FOR KEY A	NC	No Connection
15	NOTCH FOR KEY A	NC	No Connection
17	NC	NC	No Connection
19	NC	NC	No Connection
21	NC	NC	No Connection
23	NC	NC	No Connection
25	NOTCH FOR KEY E	NC	No Connection
27	NOTCH FOR KEY E	NC	No Connection
29	NOTCH FOR KEY E	NC	No Connection
31	NOTCH FOR KEY E	NC	No Connection
33	GND	G	Ground connections
35	PERp0	I	PCI Express receive data-Positive
37	PERn0	I	PCI Express receive data-Negative
39	GND	G	Ground connections
41	PETp0	O	PCI Express transmit data- Positive
43	PETn0	O	PCI Express transmit data- Negative
45	GND	G	Ground connections
47	REFCLKp0	I	PCI Express differential clock input- Positive
49	REFCLKn0	I	PCI Express differential clock input- Negative
51	GND	G	Ground connections
53	CLKREQ0#	I/O	PCIe clock request
55	PEWAKE0#	O	PCIe wake signal
57	GND	G	Ground connections
59	RESERVED	NC	No Connection
61	RESERVED	NC	No Connection
63	GND	G	Ground connections

Pin Assignment

TOP			
Pin#	Pin Name	Type	Description
65	RESERVED	NC	No Connection
67	RESERVED	NC	No Connection
69	GND	G	Ground connections
71	RESERVED	NC	No Connection
73	RESERVED	NC	No Connection
75	GND	G	Ground connections

Pin Assignment

BOTTOM			
Pin#	Pin Name	Type	Description
2	3.3V	P	VDD system power supply input
4	3.3V	P	VDD system power supply input
6	LED_1#	O	WLAN LED
8	NOTCH FOR KEY A	NC	No Connection
10	NOTCH FOR KEY A	NC	No Connection
12	NOTCH FOR KEY A	NC	No Connection
14	NOTCH FOR KEY A	NC	No Connection
16	LED_2#	O	Bluetooth LED
18	GND	G	Ground connections
20	NC	DNC	Do Not Connect
22	NC	DNC	Do Not Connect
24	NOTCH FOR KEY E	NC	No Connection
26	NOTCH FOR KEY E	NC	No Connection
28	NOTCH FOR KEY E	NC	No Connection
30	NOTCH FOR KEY E	NC	No Connection
32	NC	DNC	Do Not Connect
34	NC	DNC	Do Not Connect
36	NC	DNC	Do Not Connect
38	VENDOR DEFINED	DNC	Do Not Connect
40	VENDOR DEFINED	NC	No Connection
42	VENDOR DEFINED	NC	No Connection
44	COEX3	DNC	Do Not Connect
46	COEX_TXD	DNC	Do Not Connect

Pin Assignment

BOTTOM			
Pin#	Pin Name	Type	Description
48	COEX_RXD	DNC	Do Not Connect
50	SUSCLK	I	32.768KHz CLOCK INPUT
52	PERST0#	I	PCIe host indication to reset the device Active low.
54	W_DISABLE2#	I	Turn off BT RF analog and front-end. Active low.
56	W_DISABLE1#	I	Turn off WLAN RF analog and front-end. Active low.
58	I2C_DATA	NC	No Connection
60	I2C_CLK	NC	No Connection
62	ALERT#	NC	No Connection
64	RESERVED	NC	No Connection
66	UIM_SWP	DNC	Do Not Connect
68	UIM_POWER_SNK	DNC	Do Not Connect
70	UIM_POWER_SRC	DNC	Do Not Connect
72	3.3V	P	VDD system power supply input
74	3.3V	P	VDD system power supply input

Note: Power (P), Ground (G), Open-Drain (OD), Input (I), Output (O), Do Not Connect (DNC), No Connection (NC)

Certification

Dipole Ant.

- | | |
|---|--|
| <input checked="" type="checkbox"/> FCC | <input checked="" type="checkbox"/> CE (RED EN 300 328 V2.2.2 / EN 301 893 V2.1.1) |
| <input checked="" type="checkbox"/> IC | <input checked="" type="checkbox"/> MIC |
| <input type="checkbox"/> NCC | <input checked="" type="checkbox"/> ASNZS |

Ordering Information

Product Name	Part Number	Description
WNFT-237ACN(BT)	R9701810009	802.11ac/b/g/n Wi-Fi + BT M.2 Card, RTL8822CE,2T2R 2230

Optional Accessory

Product Name	Part Number	Description
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