

WNFT-237ACN(BT)

802.11ac Wave 2 Compliant with MU-MIMO

2T2R Wi-Fi + Bluetooth 5.0 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 latest Bluetooth 5.0, 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 5.0 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 V5.0, 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 802.11 ac/a/b/g/n ISM Band, 2.412GHz~2.484GHz, 5.150MHz~5.850MHz *Subject to local regulations
Interface	PCIe: WLAN / USB: Bluetooth
Form Factor	M.2 2230-S3-A-E
Antenna	2 x I.PEX MHF4 connector Support WiFi / BT co-existence Main: WiFi ; Aux: WiFi / BT
Modulation	802.11b: DSSS (DBPSK, DQPSK, CCK) 802.11a/g: OFDM (BPSK, QPSK, 16-QAM, 64-QAM) 802.11n: OFDM (BPSK, QPSK, 16-QAM, 64-QAM) 802.11ac: OFDM (BPSK, QPSK, 16-QAM, 64-QAM, 256-QAM)
Power Consumption	TX mode (VHT20,11ac): 260mA (Average) RX mode (VHT80,11ac): 130mA (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 (in mm)	22mm x 30mm x 2.0mm
Weight (g)	≤2.5g
Driver Support	Windows 7/8.1/10, Linux, Android
Security	64/128-bits WEP, WPA, WPA2, 802.1x, 802.11i

OUTPUT POWER & SENSITIVITY

802.11b		
Data Rate	Tx ± 2dBm	Rx Sensitivity
11Mbps	18dBm	≤-85dBm

802.11g		
Data Rate	Tx ± 2dBm	Rx Sensitivity
54Mbps	17dBm	≤-74dBm

802.11n / 2.4GHz				
	Data Rate	Tx ± 2dBm (1TX)	Tx ± 2dBm (2TX)	Rx Sensitivity
HT20	MCS7	16dBm	19dBm	≤-70dBm
	MCS7	16dBm	19dBm	≤-67dBm

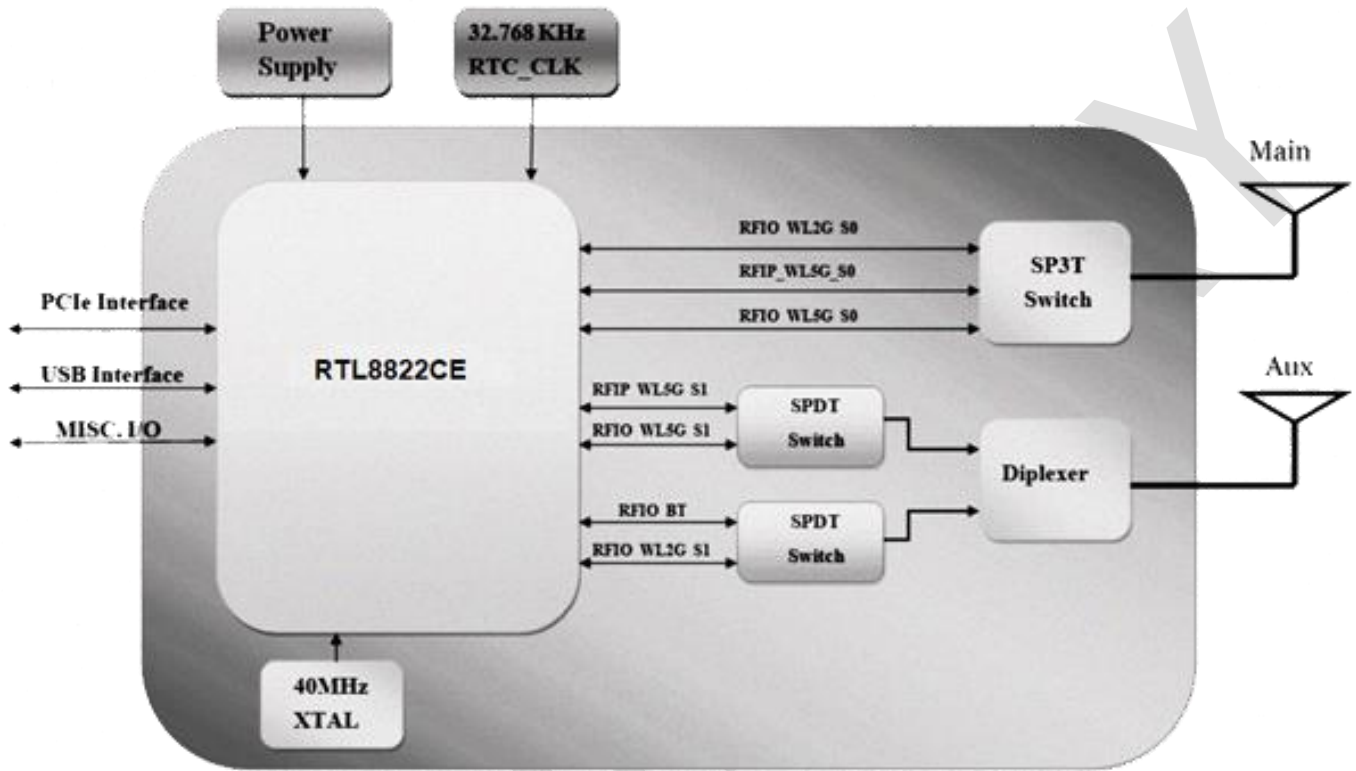
802.11a		
Data Rate	Tx ± 2dBm	Rx Sensitivity
54Mbps	17dBm	≤-68dBm

802.11n / 5GHz				
	Data Rate	Tx ± 2dBm (1TX)	Tx ± 2dBm (2TX)	Rx Sensitivity
HT20	MCS7	16dBm	19dBm	≤-67dBm
	MCS7	16dBm	19dBm	≤-64dBm

802.11ac				
	Data Rate	Tx ± 2dBm (1TX)	Tx ± 2dBm (2TX)	Rx Sensitivity
VHT80	MCS9	14dBm	17dBm	≤-54dBm

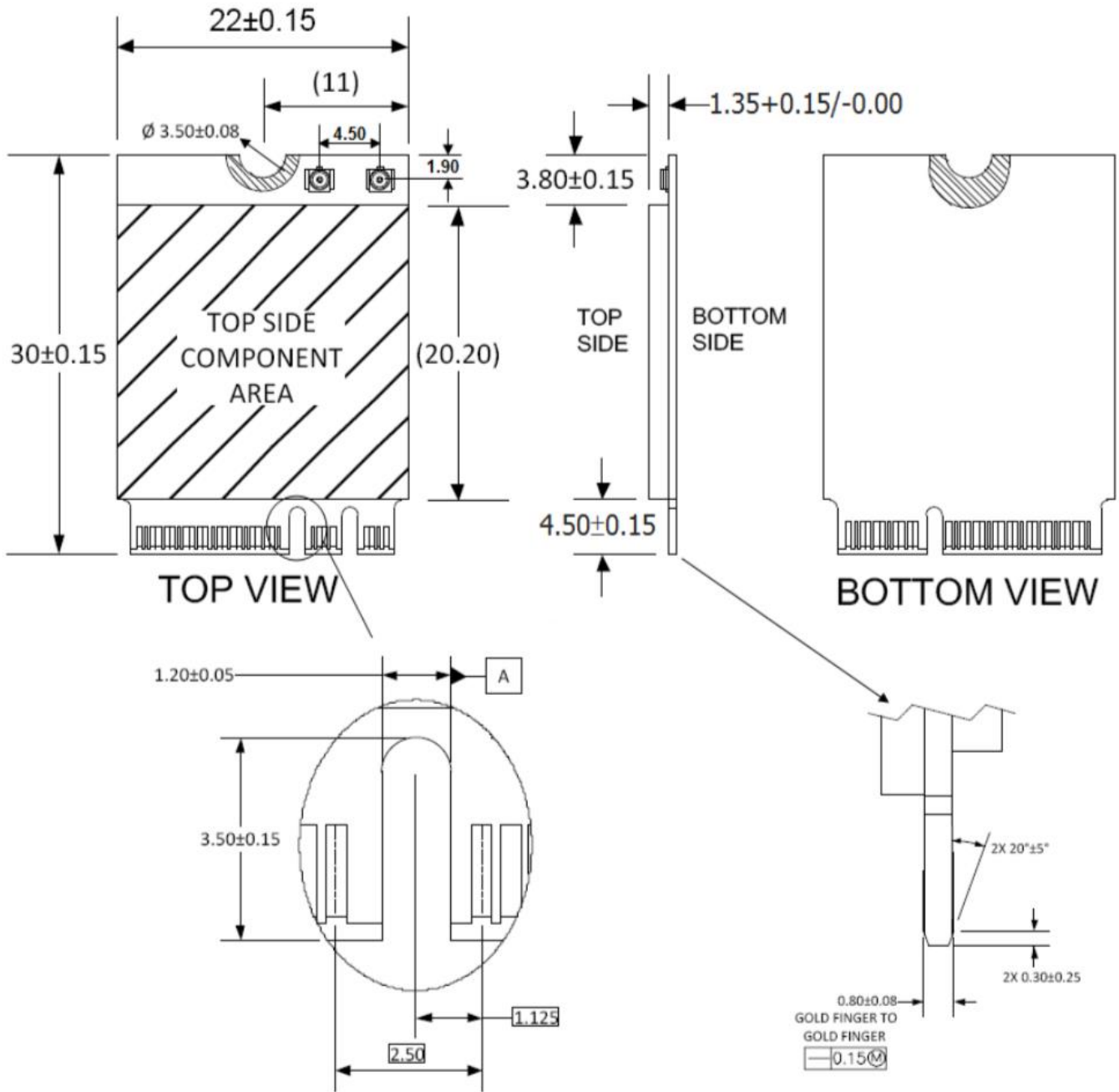
Bluetooth		
Data Rate	Tx ± 2dBm (Class 1 Device)	Rx Sensitivity
3Mbps	+0 ≤ Output Power ≤ +6.5dBm	<0.1% BR, BER at -70dBm

Block Diagram

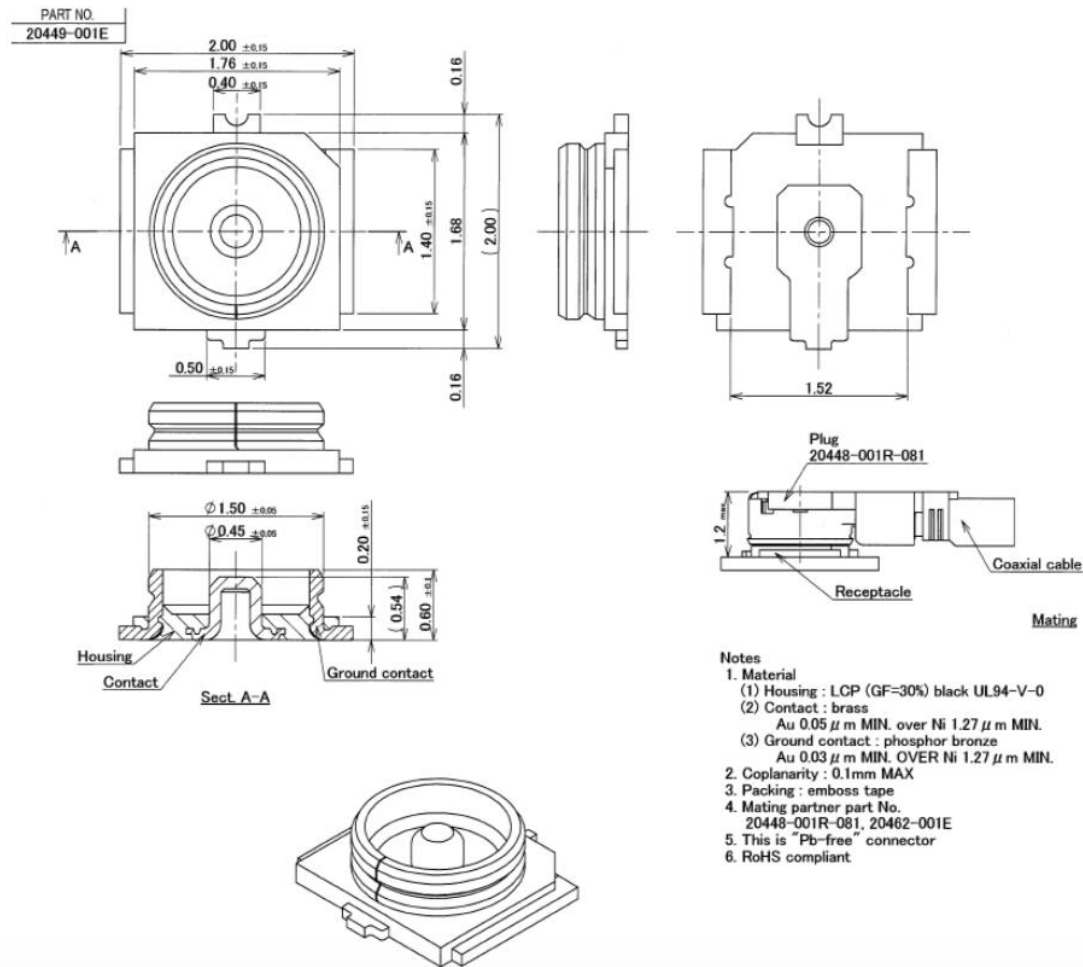


PRELIMINARY

Mechanical Diagram (mm)



MHF4 Connector



Pin Assignment (TBD)

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.

Pin Assignment (TBD)

Pin#	Pin Name	Description	Pin#	Pin Name	Description
7	GND	GND	8	No Connection	No Connection
9	No Connection	No Connection	10	No Connection	No Connection
11	No Connection	No Connection	12	No Connection	No Connection
13	No Connection	No Connection	14	No Connection	No Connection
15	No Connection	No Connection	16	BT_LED	Status indicators via LED devices that will be provided by the system and it is an open drain.
17	No Connection	No Connection	18	GND	GND
19	No Connection	No Connection	20	No Connection	No Connection
21	No Connection	No Connection	22	No Connection	No Connection
23	No Connection	No Connection	24	No Connection	No Connection
25	No Connection	No Connection	26	No Connection	No Connection
27	No Connection	No Connection	28	No Connection	No Connection
29	No Connection	No Connection	30	No Connection	No Connection
31	No Connection	No Connection	32	No Connection	No Connection
33	GND	GND	34	No Connection	No Connection
35	PERp0	PCI Express x1 data interface: one differential receive pair	36	No Connection	No Connection
37	PERn0	PCI Express x1 data interface: one differential receive pair	38	No Connection	No Connection
39	GND	GND	40	Reserved	-
41	PETp0	PCI Express x1 data interface: one differential transmit pair	42	Reserved	-

Pin Assignment (TBD)

Pin#	Pin Name	Description	Pin#	Pin Name	Description
43	PETn0	PCI Express x1 data interface: one differential transmit pair	44	COEX3_ACTIVE (OPT)	No Connection
45	GND	GND	46	COEX2_PRI(OPT)	No Connection
47	REFCLK+	Input signal for PCI Express differential reference clock (100 MHz)	48	COEX1_SYNC (OPT)	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

Pin Assignment (TBD)

Pin#	Pin Name	Description	Pin#	Pin Name	Description
57	GND	GND	58	No Connection	No Connection
59	Reserved	-	60	No Connection	No Connection
61	Reserved	-	62	No Connection	No Connection
63	GND	GND	64	No Connection	No Connection
65	Reserved	-	66	Reserved	-
67	Reserved	-	68	Reserved	-
69	GND	GND	70	Reserved	-
71	Reserved	-	72	+3.3V	+3.3V
73	Reserved	-	74	+3.3V	+3.3V
75	GND	GND			

*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

FCC

IC

NCC

CE (RED EN 300 328 V2.1.1 / EN 301 893 V2.1.1)

MIC

ASNZS

Ordering Information

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