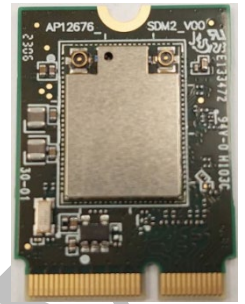


WNFS-267AXI(BT)

WiFi 6/6E 2x2 MU-MIMO

802.11ax/ac/a/b/g/n Tri-band 2.4GHz/5GHz/6GHz

Industrial-Grade, 2T2R Wi-Fi+Bluetooth 5.3 M.2 module



Industrial-Grade Wi-Fi +Bluetooth Combo Solution M.2 Module

WNFS-267AXI(BT) is a fully Wi-Fi 6E(2.4/5/6 GHz) and Bluetooth 5.3 functionalities 2230 M.2 card (KEY E) with seamless roaming capabilities and advance security, also it could interact with different vendors' 802.11a/b/g/n/ac/ax 2x2 Access Points with MIMO standard and can accomplish up to speed of 1200Mbps with dual stream in 802.11ax to connect the wireless LAN. Furthermore WNFS-267AXI(BT) included SDIO interface for Wi-Fi, UART/ PCM interface for Bluetooth

In addition, this compact module is a total solution for a combination of Wi-Fi + Bluetooth technologies. The module is specifically developed for tablet, OTT box and portable devices.

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

- Compliant with IEEE 802.11 ax/ac/a/b/g/n
- Supports 2x2 Multi-User Multiple-Input Multiple-Output (MU-MIMO)
- Dual-stream spatial multiplexing up to 1200 Mbps data rate
- Tri-band 2.4 GHz/5 GHz/6 GHz support
- 20 MHz/40 MHz channel bandwidth for 2.4 GHz and 20 MHz/40 MHz/80 MHz channel

Specification

Standards	IEEE 802.11ax/ac/a/b/g/n (2T2R) Bluetooth V5.3, V5.1, V5.0, V4.2, V4.1, V4.0LE, V3.0, V2.1+EDR
Chipset	Synaptics
Data Rate	802.11b: 11Mbps 802.11a/g: 54Mbps 802.11n: MCS0~15 802.11ac: MCS0~9 802.11ax: HE0~13 Bluetooth: 1 Mbps, 2Mbps and Up to 3Mbps
Operating Frequency	IEEE 802.11ax/ac/a/b/g/n ISM Band, 2.412GHz~2.484GHz, 5.150GHz~5.850GHz, 5.925~7.115GHz *Subject to local regulations
Interface	WLAN: SDIO 3.0 / 2.0. Bluetooth: UART / PCM
Form Factor	M.2 2230 E Key
Antenna	2 x IPEX MHF4 connectors Ant 0 for WLAN/BT, Ant 1 for WLAN
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) 802.11ax: OFDMA (BPSK, QPSK, 16-QAM, 64-QAM, 256-QAM, 1024-QAM) BT: Header: GFSK Payload 2M: $\pi/4$ -DQPSK Payload 3M: 8-DPSK
Power Consumption	TX mode: TBD RX mode: TBD
Operating Voltage	DC 3.3V
Operating Temperature Range	-40°C~85°C
Storage Temperature Range	-45°C~125°C
Humidity	10%~90% (Operating)

(Non-Condensing)	5%~90% (Storing)
Dimension L x W x H (in mm)	30mm(± 0.15mm) x 22mm(± 0.15mm) x 3.0mm(max)
Weight (g)	≤ 3.5g
Driver Support	Linux, Android
Security	64/128-bits WEP, WPA, WPA2, WPA3, 802.1x

Preliminary

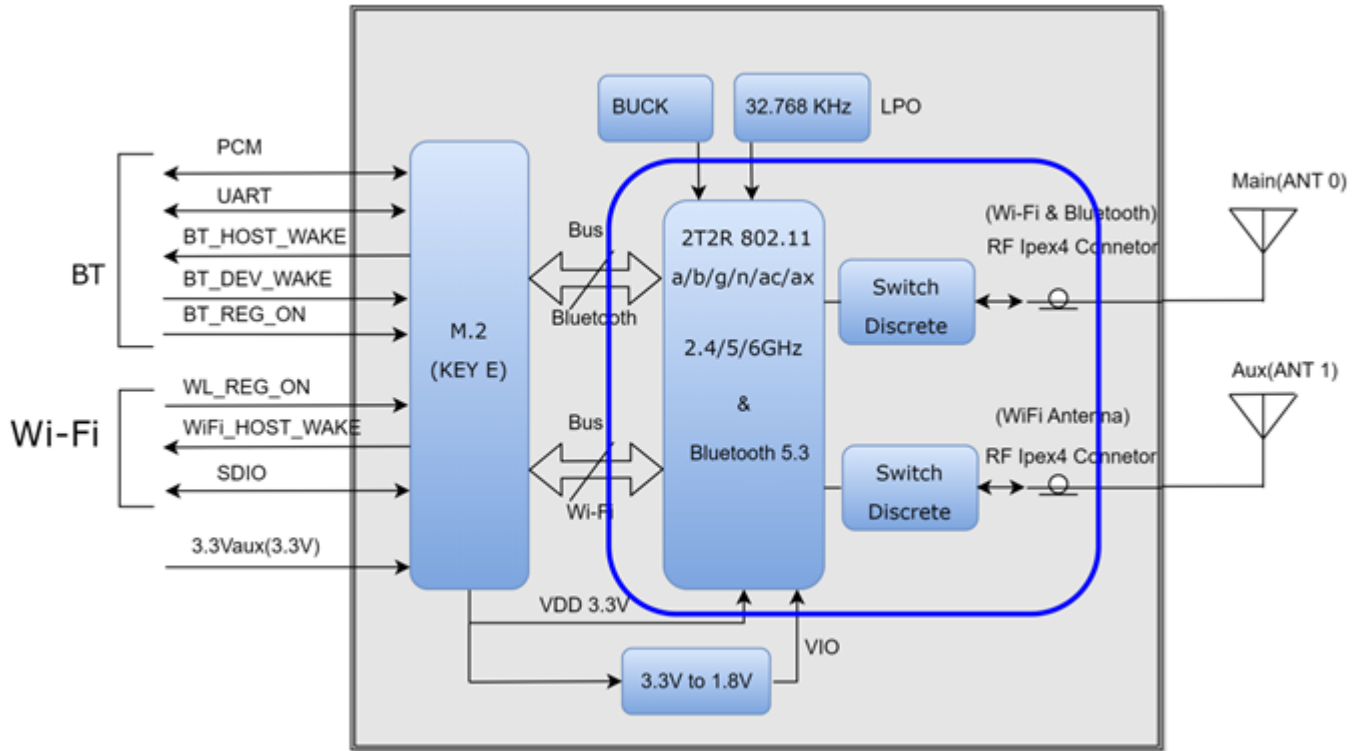
OUTPUT POWER & SENSITIVITY				
802.11b				
Data Rate		Tx \pm 2dBm		Rx Sensitivity
11Mbps		19 dBm		\leq -88 dBm
802.11g				
Data Rate		Tx \pm 2dBm		Rx Sensitivity
54Mbps		16.5 dBm		\leq -75.5 dBm
802.11n / 2.4GHz				
HT20	Data Rate	Tx \pm 2dBm (1TX)	Tx \pm 2dBm (2TX)	Rx Sensitivity
	MCS7	16 dBm	19 dBm	\leq -74.5 dBm
802.11a				
Data Rate		Tx \pm 2dBm		Rx Sensitivity
54Mbps		15dBm		\leq -75.5 dBm
802.11n / 5GHz				
HT20	Data Rate	Tx \pm 2.5dBm (1TX)	Tx \pm 2.5dBm (2TX)	Rx Sensitivity
	MCS7	14 dBm	17 dBm	\leq -70.5 dBm
HT40	MCS7	13.5 dBm	16.5 dBm	\leq -68 dBm
802.11ac				
HT20	Data Rate	Tx \pm 2.5dBm (1TX)	Tx \pm 2.5dBm (2TX)	Rx Sensitivity
	MCS7	14 dBm	17 dBm	\leq -70 dBm
HT40	MCS7	14 dBm	17 dBm	\leq -68.5 dBm
VHT80	MCS9	10 dBm	13 dBm	\leq -60.5 dBm
802.11ax / 2.4 GHz				
HT20	Data Rate	Tx \pm 2dBm (1TX)	Tx \pm 2dBm (2TX)	Rx Sensitivity
	HE9	15 dBm	18 dBm	\leq -70 dBm

802.11ax / 5GHz				
HE20	Data Rate	Tx \pm 2.5dBm (1TX)	Tx \pm 2.5dBm (2TX)	Rx Sensitivity
	HE11	10 dBm	13 dBm	\leq -55 dBm
HE40	HE11	8 dBm	11 dBm	\leq -54.5 dBm
HE80	HE11	8 dBm	11 dBm	\leq -51 dBm

802.11ax / 6GHz				
HE20	Data Rate	Tx \pm 2.5dBm (1TX)	Tx \pm 2.5dBm (2TX)	Rx Sensitivity
	HE11	8.5 dBm	11.5 dBm	\leq -55 dBm
HE40	HE11	7 dBm	10 dBm	\leq -53 dBm
HE80	HE11	7 dBm	10 dBm	\leq -51 dBm

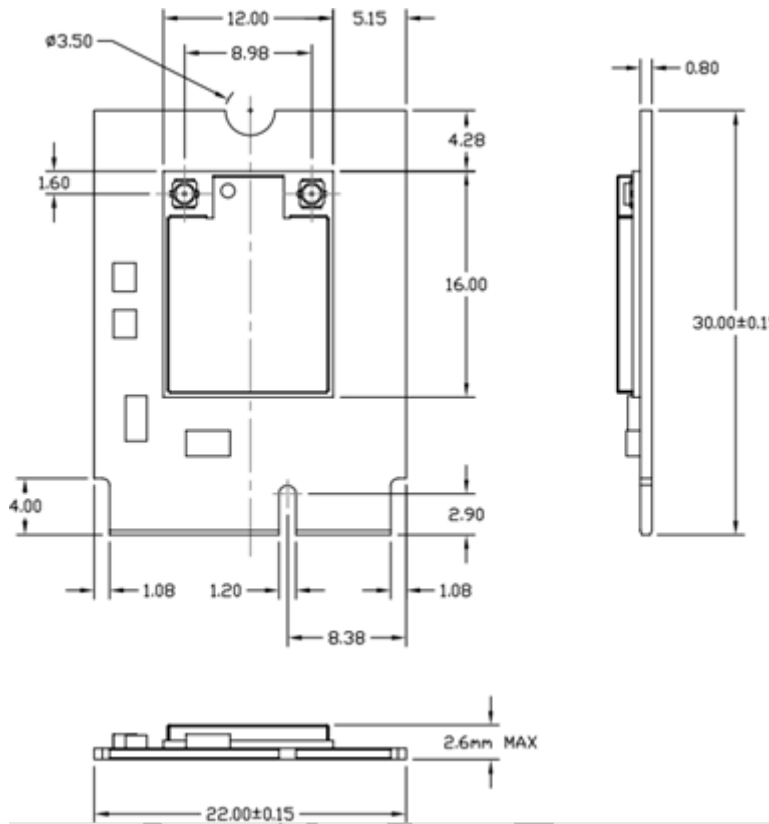
Bluetooth		
Data Rate	Tx \pm 2dBm (Class 1 Device)	Rx Sensitivity
3Mbps	$0 \leq$ Output Power \leq 10 dBm	<0.1% BR, BER at -84 dBm

Block Diagram

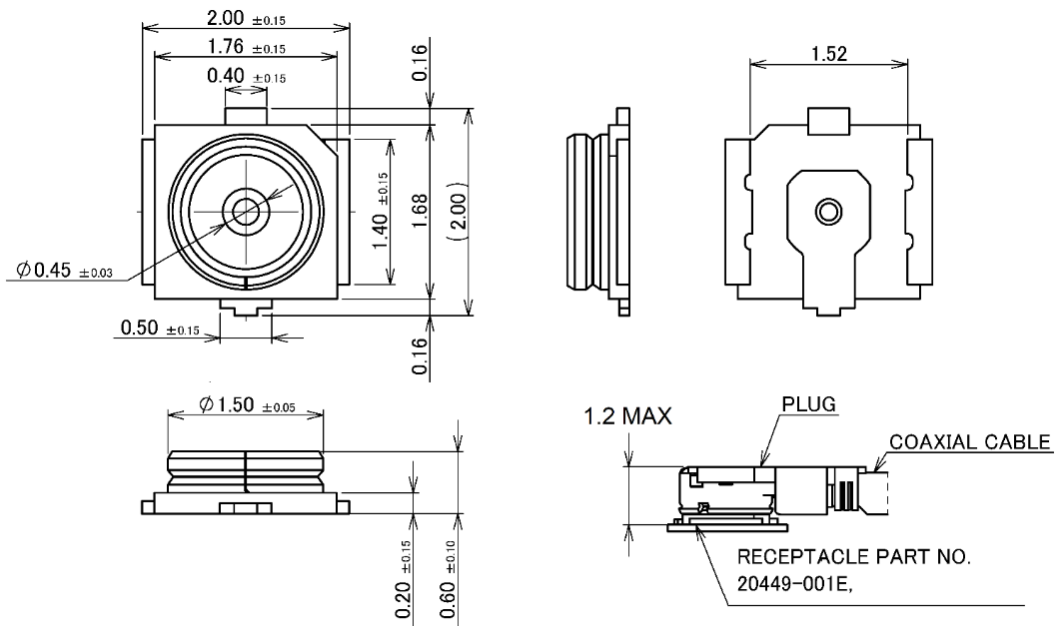


Preliminary

Mechanical Dimension (mm)



MHF4 connector spec.



Unit: mm

Pin Assignment (TBD)

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

TOP			
Pin#	Pin Name	Type	Description
1	GND	G	Ground connections
3	NC	—	No connect
5	NC	—	No connect
7	GND	G	Ground connections
9	SDIO_CLK	I	SDIO clock line
11	SDIO_CMD	I/O	SDIO command line
13	SDIO_DATA_0	I/O	SDIO data line 0
15	SDIO_DATA_1	I/O	SDIO data line 1
17	SDIO_DATA_2	I/O	SDIO data line 2
19	SDIO_DATA_3	I/O	SDIO data line 3
21	NC	—	No connect
23	NC	—	No connect
25	Module Key	—	Mechanical Key
27	Module Key	—	Mechanical Key
29	Module Key	—	Mechanical Key
31	Module Key	—	Mechanical Key
33	GND	G	Ground connections
35	NC	—	No connect
37	NC	—	No connect
39	GND	G	Ground connections
41	NC	—	No connect
43	NC	—	No connect
45	GND	G	Ground connections
47	NC	—	No connect
49	NC	—	No connect
51	GND	G	Ground connections
53	NC	—	No connect
55	NC	—	No connect
57	GND	G	Ground connections
59	NC	—	No connect

61	NC	—	No connect
63	GND	G	Ground connections
65	NC	—	No connect
67	NC	—	No connect
69	GND	G	Ground connections
71	NC	—	No connect
73	NC	—	No connect
75	GND	G	Ground connections

Pin Assignment

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

BOTTOM			
Pin#	Pin Name	Type	Description
2	3.3Vaux	P	VDD system power supply input
4	3.3Vaux	P	VDD system power supply input
6	NC	—	No connect
8	PCM_CLK (1.8V)	I/O	PCM clock
10	PCM_SYNC (1.8V)	I/O	PCM sync signal
12	PCM_OUT (1.8V)	O	PCM Data output
14	PCM_IN (1.8V)	I	PCM data input
16	NC	—	No connect
18	GND	G	Ground connections
20	BT_HOST_WAKE (1.8V)	O	Bluetooth wake up Host
22	UART_TXD (1.8V)	O	Bluetooth UART interface
24	Module Key	—	Mechanical Key
26	Module Key	—	Mechanical Key
28	Module Key	—	Mechanical Key
30	Module Key	—	Mechanical Key
32	UART_RXD (1.8V)	I	Bluetooth UART interface
34	UART_RTS_N (1.8V)	O	Bluetooth UART interface
36	UART_CTS_N (1.8V)	I	Bluetooth UART interface
38	BT_DEV_WAKE (1.8V)	I	HOST wake-up Bluetooth device
40	WL_HOST_WAKE (1.8V)	O	WLAN wake up HOST
42	WL_GPIO1(1.8V)	I/O	GPIO
44	WL_GPIO2(1.8V)	I/O	GPIO

46	GPIO11(1.8V)	I/O	UART Debug TX
48	GPIO10(1.8V)	I/O	UART Debug RX
50	NC	—	No connect
52	NC	—	No connect
54	BT_REG_ON (1.8V)	I	Used by PMU to power up or power down the internal module regulators used by the Bluetooth section.
56	WL_REG_ON (1.8V)	I	Used by PMU to power up or power down the internal module regulators used by the WLAN section.
58	NC	—	No connect
60	NC	—	No connect
62	NC	—	No connect
64	NC	—	No connect
66	NC	—	No connect
68	NC	—	No connect
70	NC	—	No connect
72	3.3Vaux	P	VDD system power supply input
74	3.3Vaux	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)