RW6852S-50

IEEE 802.11a/b/g/n/ac/ax 2T2R+Bluetooth 5.0

Combo Module

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1. Device Overview

1.1 Descriptions

The RW6852S-50 is a highly integrated module that supports 2T2R 802. 1 1 a/b/g/n/ac/ax with Wireless LAN (WLAN) SDIO (SDIO 1. 1/2.0/3.0) interface controller and Bluetooth 5.0 HS-UART interface controller. The high speed FFT/IFFT paths, combined with BPSK, QPSK, 16QAM, 64QAM, 256QAM and up to 1024QAM modulation of the individual subcarriers, and compatible coding rate of 1/2, 2/3, 3/4, 5/6, provide up to 1201Mbps for IEEE 802. 1 1ax MIMO OFDM. The RW6852S-50 MAC supports 802. 1 1e for multimedia applications, 802. 1 1i and WAPI for security.

The RW6852S-50 provides a complete solution for a high-performance integrated wireless and Bluetooth device.

1.2 Features

1.2.1 General Features

- Supports 3.3V power supply
- Supports 40MHz crystal frequency
- CMOS MAC, Baseband PHY and RF in a single module for IEEE 802. 11a/b/g/n/ac/ax compatible WLAN
- IEEE 802. 1 1i (WPA, WPA2). Open, shared key, and pair-wise key authentication services
- 2 antennas version(RW6852S-50B2) and 3 antennas version(RW6852S-50)

1.2.2 Wi-Fi Key Features

- IEEE 802. 11a/b/g/n/ac/ax compatible WLAN
- IEEE 802. 1 1ax MIMO OFDM
- IEEE 802. 1 1ac MIMO OFDM
- IEEE 802. 1 1n MIMO OFDM
- Supports 2.4Ghz and 5Ghz band channels
- 20MHz / 40MHz / 80MHz bandwidth transmission
- Maximum data rate 54Mbps in 802. 11g, 300Mbps in 802. 1 1n and 866.7Mbps in 802. 1 1ac, 1201Mbps in 802. 1 1ax
- OFDM with BPSK, QPSK, 16QAM, 64QAM and 256QAM and 1024QAM modulation. Convolutional Coding Rate: 1/2, 2/3, 3/4, and 5/6
- DSSS with DBPSK and DQPSK, CCK modulation with long and short preamble
- OFDM/DSSS/CCK receive diversity with MRC using up to 2 receive paths
- Complies with SDIO 1. 1/2.0/3.0 for WLAN with clock rate up to 208MHz

1.2.3 Bluetooth Key Features

- Supports Bluetooth 5.0 system
- Compatible with Bluetooth V2. 1+EDR
- Enhanced BT/Wi-Fi Coexistence Control to improve transmission quality in different profiles
- Dual Mode support: Simultaneous LE and BR/EDR
- Integrated internal Class 1, Class 2, and Class 3 PA
- Supports Enhanced Power Control
- Supports Bluetooth Low Energy
- Integrated 32K oscillator for power management
- Complies with HS-UART with configurable baud rate for Bluetooth

1.3 Functional Block Diagram

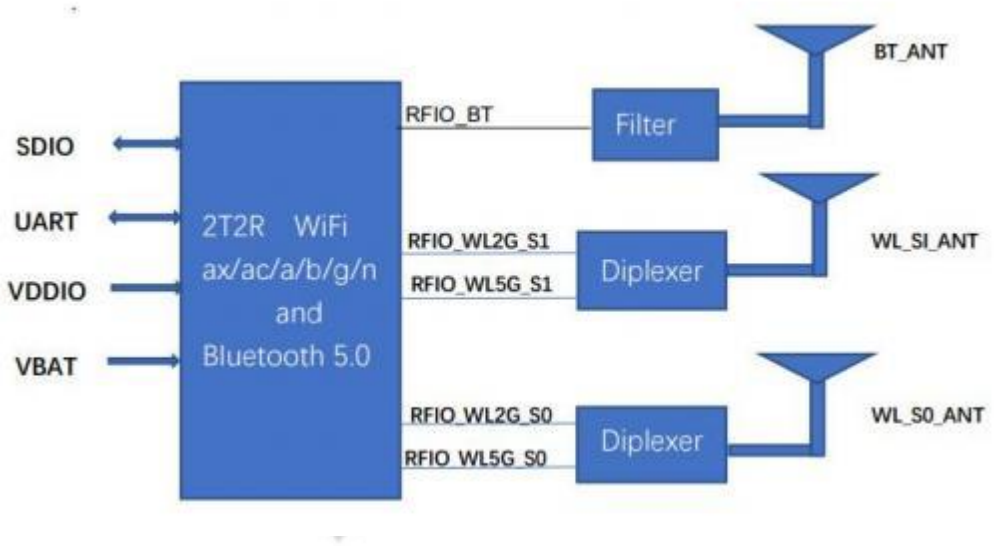


Figure 1. Block Diagram of RW6852S-50

2. Pin Configuration and Functions

2.1 Module Pin Diagram

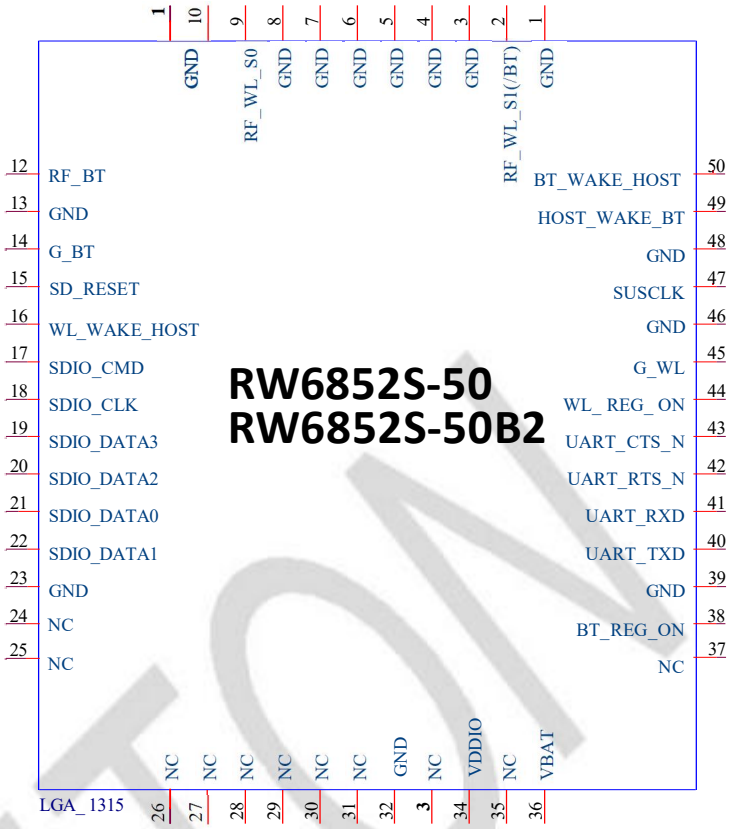


Figure 2.Pin Diagram of RW6852S-50

2.2 Pin Functions

Pin	Name	Description
1	GND	Ground
2	RF_WL_S1(BT)	RF input/output of path S1 WLAN(RW6852S-50) RF input/output of path S1 WLAN and BT(RW6852S-50B2)
3	GND	Ground
4	GND	Ground
5	GND	Ground
6	GND	Ground
7	GND	Ground
8	GND	Ground

9	RF_WL_S0	RF input/output of path S0 WLAN
10	GND	Ground
11	GND	Ground
12	RF_BT	RF input/output port for BT(RW6852S-50) No connect for RW6852S-50B2
13	GND	Ground
14	G_BT	No connect, keep floating
15	SD_RESET	SDIO reset, This pin can externally shut down the RW6852S-50 WLAN function when SD_RESET is pulled low. When this pin is pulled low, SDIO interface will be disabled
16	WL_WAKE_HOST	WLAN wake up the host
17	SDIO_CMD	SDIO command input
18	SDIO_CLK	SDIO clock input
19	SDIO_DATA3	SDIO port data 3
20	SDIO_DATA2	SDIO port data 2
21	SDIO_DATA0	SDIO port data 0
22	SDIO_DATA1	SDIO port data 1
23	GND	Ground
24	NC	No connect, keep floating
25	NC	No connect, keep floating
26	NC	No connect, keep floating
27	NC	No connect, keep floating
28	NC	No connect, keep floating
29	NC	No connect, keep floating
30	NC	No connect, keep floating
31	NC	No connect, keep floating
32	GND	Ground
33	NC	No connect, keep floating
34	VDDIO	VDD for GPIOs, SUS_CLK, EESK, CHIIP_EN
35	NC	No connect, keep floating
36	VBAT	3.3V power supply

37	NC	No connect, keep floating
38	BT_REG_ON	This pin can externally shut down the RW6852S-50 BT function when BT_REG_ON is pulled low, UART interface will be also disabled. This pin can be also defined as the BT Radio-off function with host interface remaining connected
39	GND	Ground
40	UART_TXD	High-Speed UART Data Out
41	UART_RXD	High-Speed UART Data In
42	UART_RTS_N	High-Speed UART RTS
43	UART_CTS_N	High-Speed UART CTS
44	WL_REG_ON	GPIO15. Recommended connect to GPIO of Host.
45	G_WL	No connect, keep floating
46	GND	Ground
47	SUSCLK	External 32K or RTC clock input
48	GND	Ground
49	HOST_WAKE_BT	Host wake up BT
50	BT_WAKE_HOST	BT wake up Host

3. Specifications

3.1 General Characteristics

Category	Descriptions
Dimension	L*W*H : 13.0mm (±0.3mm)*15.0mm (±0.3mm)*2.2mm (±0.2mm)
Chip-set	RTL8852BS
Standard	IEEE 802. 11a/b/g/n/ac/ax+BT 5.0
Modulation Type	CCK, OFDM (16 QAM/64 QAM/256 QAM//1024 QAM)
Frequency Band	2400~2500MHz,5150-5845MHz
Interface	WLAN: SDIO, Bluetooth: UART
Data Security	WEP, WPA/WPA2
Transmit Power	2.4G: 1 1b 1 1M: 19.5±2dBm 11g 54M: 18±2dBm 1 1n HT20 MCS7: 17±2dBm 1 1n HT40 MCS7: 17±2dBm 1 1ax HE20 MCS11 13±2dBm 1 1ax HE40 MCS11 13±2dBm 5G: 1 1a 54M: 18±2dBm 1 1n HT20 MCS7: 17±2dBm 1 1n HT40 MCS7: 17±2dBm 1 1ac VHT20 MCS8: 16±2dBm 1 1ac VHT40 MCS9: 15±2dBm 1 1ac VHT80 MCS9: 15±2dBm 1 1ax HE20 MCS11 13±2dBm 1 1ax HE40 MCS11 13±2dBm 1 1ax HE80 MCS11 13±2dBm
Rx Sensitivity	2.4G: 1 1b 11M:-91dBm@8% PER 11g 54M: -77dBm@10% PER 1 1n HT20 MCS7: -75dBm@10% PER 1 1n HT40 MCS7: -72dBm@10% PER 1 1ax HE40 MCS11: -62dBm@10% PER 5G: 1 1a 54M:-75dBm@10% PER 1 1n HT20 MCS7: -74dBm@10% PER

	1 1n HT40 MCS7: -71dBm@10% PER 1 1ac VTH80 MCS9:-62dBm@10% PER 1 1ax HE40 MCS11: -61dBm@10% PER 1 1ax HE80 MCS11: -58dBm@10% PER
Data Rate	802. 1 1b [1 1,5.5,2 and 1Mbps] 802. 11g [54,48,36,24, 18, 12,9&6Mbps] 802. 1 1n HT20:up to 144.4Mbps 802. 1 1n HT40:up to 300Mbps 802. 11ac VHT80:up to 866.7Mbps 802. 1 1ax HE20:up to 286.8Mbps 802. 1 1ax HE40:up to 573.6Mbps 802. 1 1ax HE80:up to 1201Mbps
Frequency Error	2.4GHz:<±25 ppm(11b),<±20 ppm(11g/n);5GHz:<±20 ppm
Ambient Temperature	0℃~70℃
Storage Temperature	-40℃~125℃
Antenna	External PF antenna
Operating System	Linux
Operating Voltage	VBAT:3.3V VDDIO:3.3V or 1.8V

3.2 RF Characteristics

All measurements are made under nominal supply voltage, room temperature and conducted conditions at each antenna port rather than antenna.

3.2.1 Receiver RF Specifications

Parameter	Conditions		Min.	Nom.	Max.	Unit
Receive input frequency						
2.4GHz	802. 11b/g/n/ax mode		2400	-	2500	MHz
Receiver sensitivity						
802. 1 1b	1Mbps	FER<8%, Packet size= 1,024bytes	-	-	-82	dBm
	2Mbps		-	-	-80	dBm
	5.5Mbps		-	-	-78	dBm
	11Mbps		-	-	-76	dBm
802. 11g	6Mbps	PER< 10%, Packet size= 1,024bytes	-	-	-82	dBm
	9Mbps		-	-	-81	dBm
	12Mbps		-	-	-79	dBm

	18Mbps		-	-	-77	dBm
	24Mbps		-	-	-74	dBm
	36Mbps		-	-	-70	dBm
	48Mbps		-	-	-66	dBm
	54Mbps		-	-	-65	dBm
802.11n (HT20)	MCS0.	PER< 10%, Packet size= 4,096bytes	-	-	-80	dBm
	MCS1.		-	-	-77	dBm
	MCS2		-	-	-75	dBm
	MCS3.		-	-	-72	dBm
	MCS4.		-	-	-68	dBm
	MCS5.		-	-	-64	dBm
	MCS6.		-	-	-63	dBm
	MCS7.		-	-	-62	dBm
802.11n (HT40)	MCS0.	PER< 10%, Packet size= 4,096bytes	-	-	-77	dBm
	MCS1.		-	-	-74	dBm
	MCS2		-	-	-72	dBm
	MCS3.		-	-	-69	dBm
	MCS4.		-	-	-65	dBm
	MCS5.		-	-	-61	dBm
	MCS6.		-	-	-60	dBm
	MCS7.		-	-	-59	dBm
802.11ax (HE20)	MCS0.	PER< 10%, Packet size= 4,096bytes	-	-	-82	dBm
	MCS1.		-	-	-79	dBm
	MCS2		-	-	-77	dBm
	MCS3.		-	-	-74	dBm
	MCS4.		-	-	-70	dBm
	MCS5.		-	-	-66	dBm
	MCS6.		-	-	-65	dBm
	MCS7.		-	-	-64	dBm
	MCS8.		-	-	-59	dBm
	MCS9.		-	-	-57	dBm
	MCS10.		-	-	-54	dBm
	MCS11.		-	-	-52	dBm
802.11ax (HE40)	MCS0.	PER< 10%, Packet size= 4,096bytes	-	-	-79	dBm
	MCS1.		-	-	-76	dBm
	MCS2		-	-	-74	dBm

	MCS3.		-	-	-71	dBm
	MCS4.		-	-	-67	dBm
	MCS5.		-	-	-63	dBm
	MCS6.		-	-	-62	dBm
	MCS7.		-	-	-61	dBm
	MCS8.		-	-	-56	dBm
	MCS9.		-	-	-54	dBm
	MCS10.		-	-	-51	dBm
	MCS11.		-	-	-49	dBm
Maximum input level						
802.11b	FER<8%		-10	-	-	dBm
802.11g	FER< 10%		-20	-	-	dBm
802.11n	FER< 10%		-30			dBm
802.11ax	FER< 10%		-20			dBm

Parameter	Conditions		Min.	Nom.	Max.	Unit
Receive input frequency						
5GHz	802.11a/n/ac/ax mode		5150	-	5845	MHz
Receiver sensitivity						
802.11a	6Mbps	FER< 10%, Packet size= 1,024bytes	-	-	-82	dBm
	9Mbps		-	-	-81	dBm
	12Mbps		-	-	-79	dBm
	18Mbps		-	-	-77	dBm
	24Mbps		-	-	-74	dBm
	36Mbps		-	-	-70	dBm
	48Mbps		-	-	-66	dBm
	54Mbps		-	-	-65	dBm
802.11n (HT20)	6Mbps	PER< 10%, Packet size= 4,096bytes	-	-	-80	dBm
	9Mbps		-	-	-77	dBm
	12Mbps		-	-	-75	dBm
	18Mbps		-	-	-72	dBm
	24Mbps		-	-	-68	dBm
	36Mbps		-	-	-64	dBm
	48Mbps		-	-	-63	dBm
	54Mbps		-	-	-62	dBm
802.11n	MCS0.		-	-	-77	dBm

(HT40)	MCS1.	PER< 10%, Packet size= 4,096bytes	-	-	-74	dBm
	MCS2		-	-	-72	dBm
	MCS3.		-	-	-69	dBm
	MCS4.		-	-	-65	dBm
	MCS5.		-	-	-61	dBm
	MCS6.		-	-	-60	dBm
	MCS7.		-	-	-59	dBm
802. 1 1ac (VHT80)	MCS0.	PER< 10%, Packet size= 4,096bytes	-	-	-76	dBm
	MCS1.		-	-	-73	dBm
	MCS2		-	-	-71	dBm
	MCS3.		-	-	-68	dBm
	MCS4.		-	-	-64	dBm
	MCS5.		-	-	-60	dBm
	MCS6.		-	-	-59	dBm
	MCS7.		-	-	-58	dBm
	MCS8.		-	-	-53	dBm
	MCS9.		-	-	-51	dBm
802. 1 1ax (HE80)	MCS0.	PER< 10%, Packet size= 4,096bytes	-	-	-76	dBm
	MCS1.		-	-	-73	dBm
	MCS2		-	-	-71	dBm
	MCS3.		-	-	-68	dBm
	MCS4.		-	-	-64	dBm
	MCS5.		-	-	-60	dBm
	MCS6.		-	-	-59	dBm
	MCS7.		-	-	-58	dBm
	MCS8.		-	-	-53	dBm
	MCS9.		-	-	-51	dBm
	MCS10.		-	-	-48	dBm
	MCS11.		-	-	-46	dBm
Maximum input level						
802. 1 1a	FER< 10%		-30	-	-	dBm
802. 1 1n	FER< 10%		-30	-	-	dBm
802. 1 1ac	FER< 10%		-30	-	-	dBm
802. 1 1ax	FER< 10%		-30	-	-	dBm

3.2.2 Transmitter RF Specifications

Parameter	Condition	Min.	Nom.	Max.	Unit.
Receive input frequency					
802. 11b/g/n/ax	2.4GHz	2400	-	2500	MHz
Transmit power					
802. 1 1b	11Mbps	17.5	19.5	21.5	dBm
802. 11g	54Mbps	16	18	20	dBm
802. 1 1n	HT20, MCS7	15	17	19	dBm
	HT40, MCS7	15	17	19	dBm
802. 1 1ax	HE20,MCS11	11	13	15	dBm
	HE40,MCS11	11	13	15	dBm
Spectrum mask					
802. 1 1b	f_c-22MHz<f<f_c- 11MHz&f_c+1 1MHz<f<f_c+22MHz	-	-	-30	dBr
	f_c-55MHz<f<f_c-22MHz&f_c+22MHz<f<f_c+55MHz	-	-	-50	dBr
802. 11g	f_c±9MHz	-	-	0	dBr
	f_c± 1 1MHz	-	-	-20	dBr
	f_c±20MHz	-	-	-28	dBr
	f_c±30MHz	-	-	-40	dBr
802. 1 1n	f_c±9MHz	-	-	0	dBr
	f_c± 1 1MHz	-	-	-20	dBr
	f_c±20MHz	-	-	-28	dBr
	f_c±30MHz	-	-	-45	dBr
802. 11ax (HE40)	f_c± 19.5MHz	-	-	0	dBr
	f_c±20.5MHz	-	-	-20	dBr
	f_c±40MHz	-	-	-28	dBr
	f_c±60MHz	-	-	-40	dBr
Center frequency tolerance					
802. 1 1b		-25	-	+25	pmm
802. 11g/n/ax		-20	-	+20	pmm
EVM (Error Vector Magnitude)*					
802. 1 1b	1Mbps	-	-	35	%
	2Mbps	-	-	35	%
	5.5Mbps	-	-	35	%
	11Mbps	-	-	35	%

802. 11g	6Mbps	_	_	-5	%
	9Mbps	_	_	-8	dB
	12Mbps	_	_	-10	dB
	18Mbps	_	_	-13	dB
	24Mbps	_	_	-16	dB
	36Mbps	_	_	-19	dB
	48Mbps	_	_	-22	dB
	54Mbps	_	_	-25	dB
802. 1 1n	MCS0.	_	_	-5	dB
	MCS1.	_	_	-10	dB
	MCS2	_	_	-13	dB
	MCS3.	_	_	-16	dB
	MCS4.	_	_	-19	dB
	MCS5.	_	_	-22	dB
	MCS6.	_	_	-25	dB
	MCS7.	_	_	-28	dB
802. 1 1ax	MCS0.	_	_	-5	dB
	MCS1.	_	_	-10	dB
	MCS2	_	_	-13	dB
	MCS3.	_	_	-16	dB
	MCS4.	_	_	-19	dB
	MCS5.	_	_	-22	dB
	MCS6.	_	_	-25	dB
	MCS7.	_	_	-27	dB
	MCS8.	_	_	-30	dB
	MCS9.	_	_	-32	dB
	MCS10.	_	_	-35	dB
	MCS11.	_	_	-35	dB

Remarks

EVM :

<Test condition>

Method: composite EVM method.

Phase correction: Symbol-by-symbol correction.

Channel estimation: Raw channel estimate Raw Long Symbols .

Symbol timing correction: on.

Frequency Sync: Long training symbol.

Parameter	Condition	Min.	Nom.	Max.	Unit.
Receive input frequency					
802. 11a/n/ac/ax	5GHz	5150	_	5845	MHz
Transmit power					
802. 1 1a	54Mbps	16	18	20	dBm
802. 1 1n	HT20, MCS7	15	17	19	dBm
	HT40, MCS7	15	17	19	dBm
802. 1 1ac	VHT20,MCS8	14	16	18	dBm
	VHT40,MCS9	13	15	17	dBm
	VHT80,MCS9	13	15	17	dBm
802. 1 1ax	HE20,MCS11	11	13	15	dBm
	HE40,MCS11	11	13	15	dBm
	HE80,MCS11	11	13	15	dBm
Spectrum mask					
802. 1 1a	f_c±9MHz	_	_	0	dBr
	f_c± 1 1MHz	_	_	-20	dBr
	f_c±20MHz	_	_	-28	dBr
	f_c±30MHz	_	_	-40	dBr
802. 1 1n	f_c±9MHz	_	_	0	dBr
	f_c± 1 1MHz	_	_	-20	dBr
	f_c±20MHz	_	_	-28	dBr
	f_c±30MHz	_	_	-45	dBr
802. 11ac (VHT80)	f_c±39MHz	_	_	0	dBr
	f_c±41MHz	_	_	-20	dBr
	f_c±80MHz	_	_	-28	dBr
	f_c± 120MHz	_	_	-40	dBr
802. 11ax (HE80)	f_c±39.5MHz	_	_	0	dBr
	f_c±40.5MHz	_	_	-20	dBr
	f_c±80MHz	_	_	-28	dBr
	f_c± 120MHz	_	_	-40	dBr
Center frequency tolerance					
802. 11a/n/ac/ax		-20	_	+20	pmm
EVM (Error Vector Magnitude)*					
802. 1 1a	6Mbps	_	_	-5	%
	9Mbps	_	_	-8	dB
	12Mbps	_	_	- 10	dB

	18Mbps	_	_	-13	dB
	24Mbps	_	_	-16	dB
	36Mbps	_	_	-19	dB
	48Mbps	_	_	-22	dB
	54Mbps	_	_	-25	dB
802.11n	MCS0.	_	_	-5	dB
	MCS1.	_	_	-10	dB
	MCS2	_	_	-13	dB
	MCS3.	_	_	-16	dB
	MCS4.	_	_	-19	dB
	MCS5.	_	_	-22	dB
	MCS6.	_	_	-25	dB
	MCS7.	_	_	-28	dB
802.11ac	MCS0.	_	_	-5	dB
	MCS1.	_	_	-10	dB
	MCS2	_	_	-13	dB
	MCS3.	_	_	-16	dB
	MCS4.	_	_	-19	dB
	MCS5.	_	_	-22	dB
	MCS6.	_	_	-25	dB
	MCS7.	_	_	-27	dB
	MCS8.	_	_	-30	dB
	MCS9.	_	_	-32	dB
802.11ax	MCS0.	_	_	-5	dB
	MCS1.	_	_	-10	dB
	MCS2	_	_	-13	dB
	MCS3.	_	_	-16	dB
	MCS4.	_	_	-19	dB
	MCS5.	_	_	-22	dB
	MCS6.	_	_	-25	dB
	MCS7.	_	_	-27	dB
	MCS8.	_	_	-30	dB
	MCS9.	_	_	-32	dB
	MCS10.	_	_	-35	dB
	MCS11.	_	_	-35	dB
Remarks					

EVM :

<Test condition>

Method: composite EVM method.

Phase correction: Symbol-by-symbol correction.

Channel estimation: Raw channel estimate Raw Long Symbols .

Symbol timing correction: on.

Frequency Sync: Long training symbol.

3.2.3 Bluetooth RF Specifications

Parameter	Conditions	Minimum	Typical	Maximum	Unit
Frequency range		2402		2480	MHz
RX sensitivity	1 Mbps	-	-82	-	dBm
	2 Mbps	-	-82	-	dBm
	3 Mbps	-	-82	-	dBm
Initial carrier frequency offset		-24	5	24	KHz
Output power	Class 1/GFSK	-	8	-	dBm
	Class 2/GFSK	- 6	4	4	dBm

4. Application and Implementation

4.1 Application Diagram

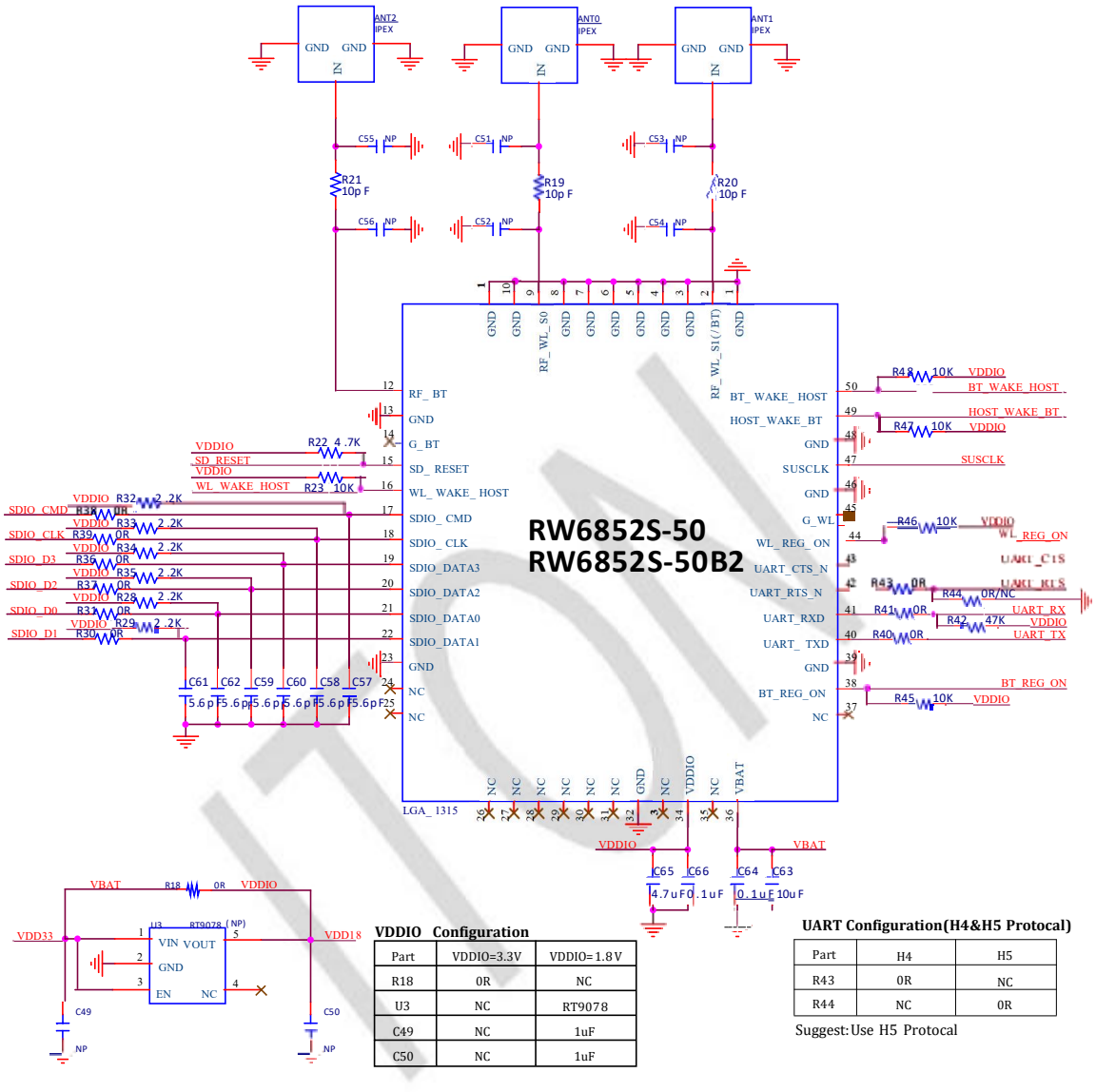
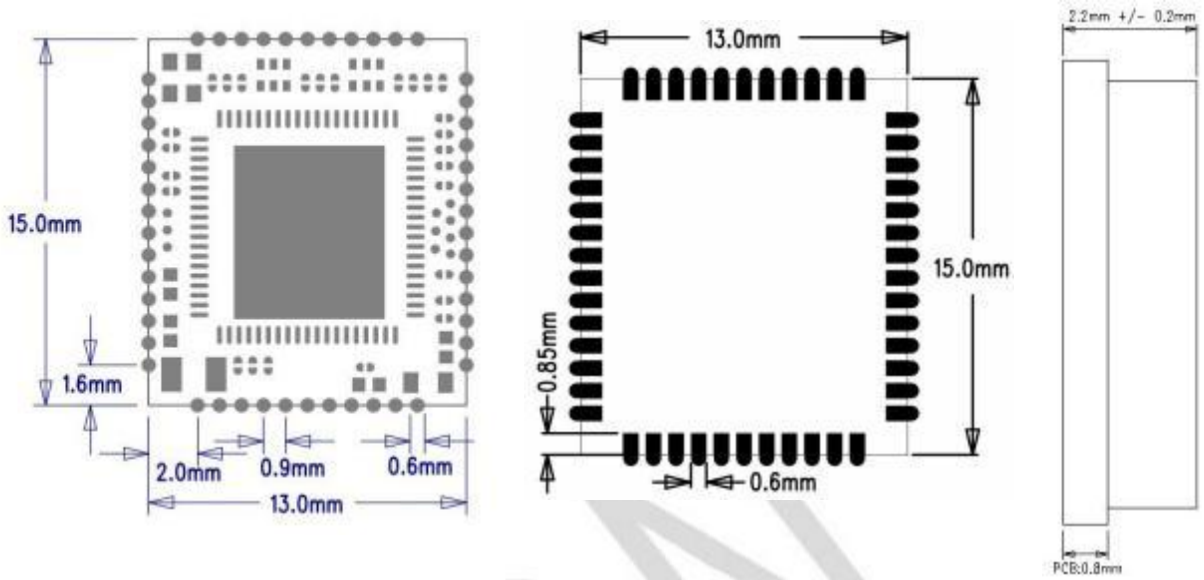


Figure 3. Application Schematic Diagram of RW6852S-50

5. Mechanical and Package

5.1 Mechanical Size



<Top View> <Bottom View> <Side View>

Figure 4. Mechanical Size of RW6852S-50

5.2 Recommended Land Pattern

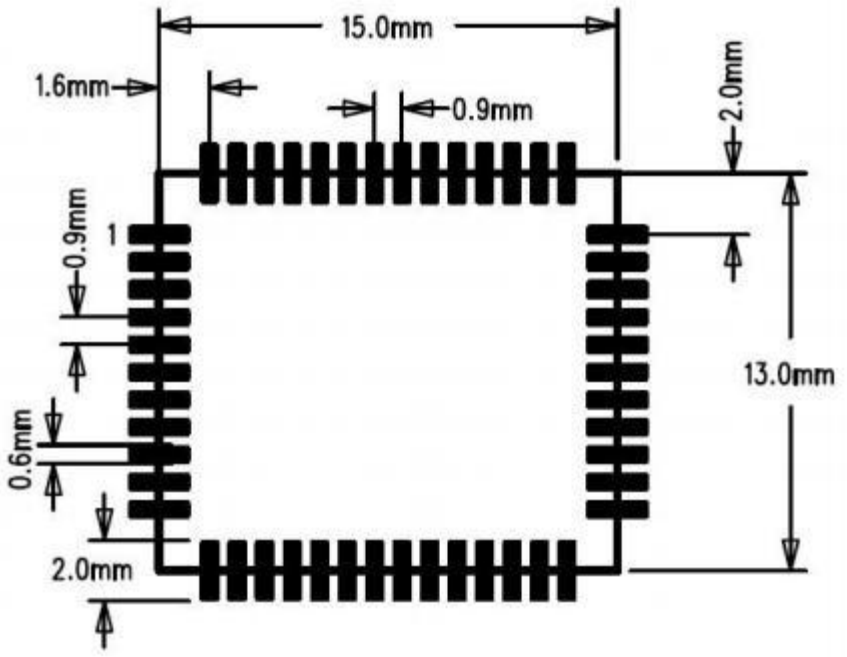


Figure 5. Recommended Land Pattern of RW6852S-50

5.3 Package Information

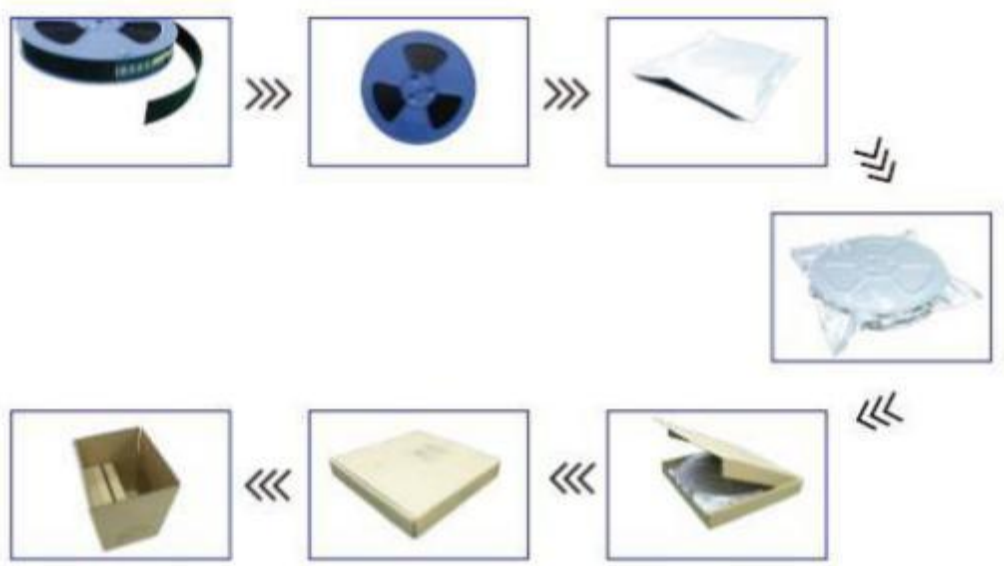


Figure 6. Brief Packaging Process of RW6852S-50 Modules

6. Thermal Reflow

Referred to IPC/ JEDEC standard.

Peak temperature: <250°C

Number of times: ≤2

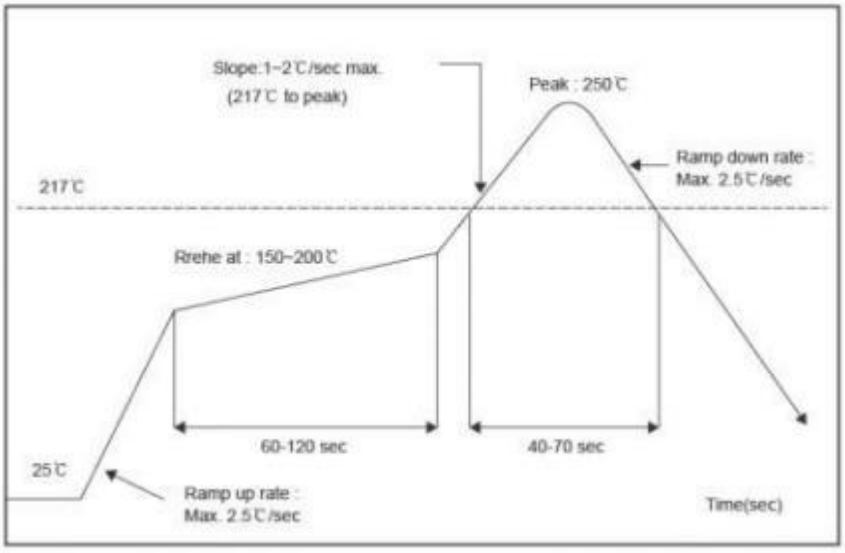


Figure 7. Recommended Reflow for Lead Free Solder

Note: The module is recommended not to go through reflow oven twice.

7. Ordering Information

Part NO.	Working Voltage	ANT	Shielding Cover	Remark
RW6852S-50	3.3V	External antenna	Included	3 antennas
RW6852S-50B2	3.3V	External antenna	Included	2 antennas

8. Revision History

Version	Change Content	Reviser	Date
V0 1	Draft Version	Lei Wang	2020 1 1 23
V0.2	Updated power parameters	Haizhou Ye	2020. 12. 15
V0.3	Updated Module Picture and Version	Haizhou Ye	2021. 1. 14
V0.4	Updated Application Diagram and Functional Block Diagram	Wang Dong	2021.9.27
V0.5	Updated Module thickness	Haizhou Ye	2022.02. 14
V1.0	Added RW6852S-50B2 version information	Haizhou Ye	2022.05. 16
V1. 1	Updated Application Diagram Added Bottom View of Module	Haizhou Ye	2022.05. 18
V1.2	Updated Module Pin44 Description	Haizhou Ye	2022.05.25

FCC

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:
-- Reorient or relocate the receiving antenna.
-- Increase the separation between the equipment and receiver.
-- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
-- Consult the dealer or an experienced radio/TV technician for help.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:
(1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment

***RF warning for Mobile device:**
This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

The OEM must certify the final end product to comply with unintentional radiators (FCC Sections 15.107 and 15.109) before declaring compliance of the final product to Part 15 of the FCC rules and regulations. Integration into devices that are directly or indirectly connected to AC lines must add with Class II Permissive Change.

The OEM must comply with the FCC labeling requirements. If the module's label is not visible when installed, then an additional permanent label must be applied on the outside of the finished product which states: "Contains transmitter module FCC ID:VYV-RW6852S- 50B2 ".
Additionally, the following statement should be included on the label and in the final product's user manual:
"This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:
(1) This device may not cause harmful interferences, and
(2) this device must accept any interference received, including interference that may cause undesired operation." The module is limited to installation in applications. Separate approval is required for all other operating configurations, including portable configuration with respect to Part 2.1093 and different antenna configurations. A module or modules can only be used without additional authorizations if they have been tested and granted under the same intended end - use operational conditions, including simultaneous transmission operations. When they have not been tested and granted in this manner, additional testing and/or FCC application filing may be required. The most straightforward approach to address additional testing conditions is to have the grantee responsible for the certification of at least one of the modules submit a permissive change application. When having a module grantee file a permissive change is not practical or feasible, the following guidance
provides some additional options for host manufacturers. Integrations using modules where additional testing and/or FCC application filing(s) may be required are: (A) a module used in devices requiring additional RF exposure compliance information (e.g., MPE evaluation or SAR testing); (B) limited and/or split modules not meeting all of the module requirements; and (C) simultaneous transmissions for independent collocated transmitters not previously granted together.
This Module is full modular approval, it is limited to OEM installation ONLY. Integration into devices that are directly or indirectly connected to AC lines must add with Class II Permissive Change. (OEM) Integrator has to assure compliance of the entire end product include the integrated Module.
Additional measurements (15B) and/or equipment authorizations (e.g. Verification) may need to be addressed depending on co-location or simultaneous transmission issues if applicable. (OEM) Integrator is reminded to assure that these installation instructions will not be made available to the end user

Product specification

PRODUCT NAME:2.4/5GAntenna

Model :RF11C02085S

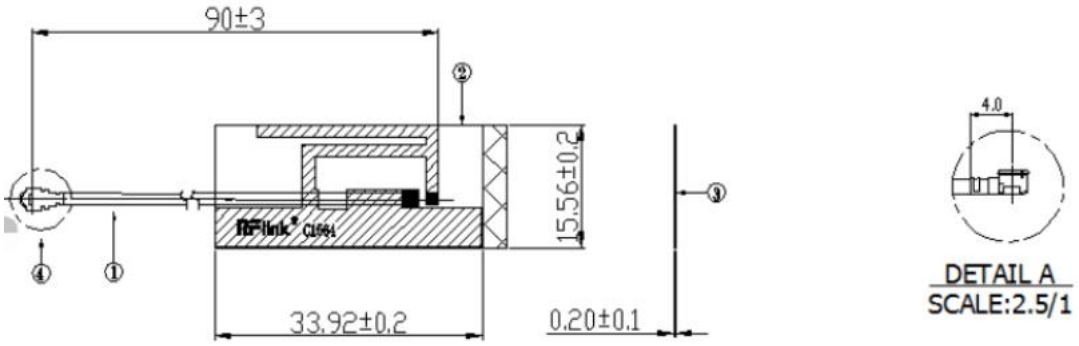
Applicant：ItonTechnologyCorp
Address：7 Floor East, Building C, Shenzhen International nnovation Center, No.1006 Shennan Rd. Futian Dis

Contents

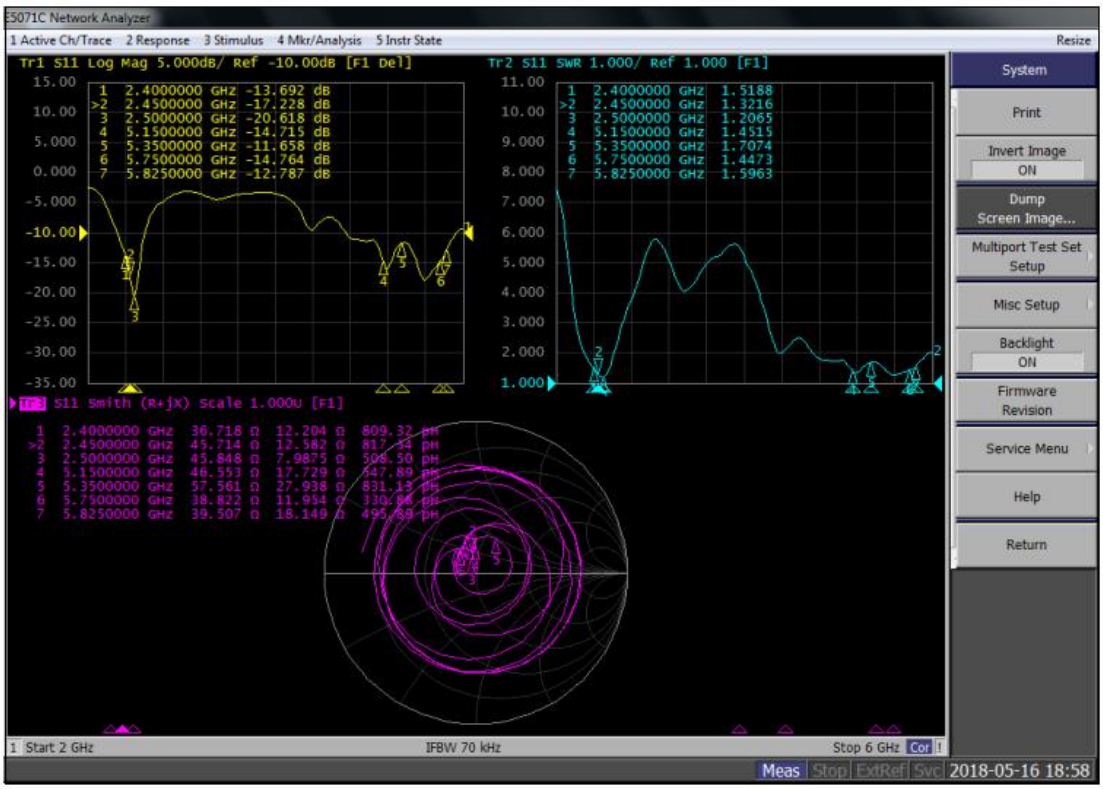
1.Specification

Main technical specifications	
Frequency Range (MHZ)	2400~2500,5150-5845
Impedance(Ω)	50
Peak Gain(dBi)	3.3
VSWR	≦2.0
Admitted Power	1W
Polarization	Linear,Vertical
Radiation	Omni-directional
Connector Type	Cable+Connector
Physical Properties	
Antenna cover	FPC
Operating Temp	-20℃~+70℃
Storage Temp	-20℃~+70℃

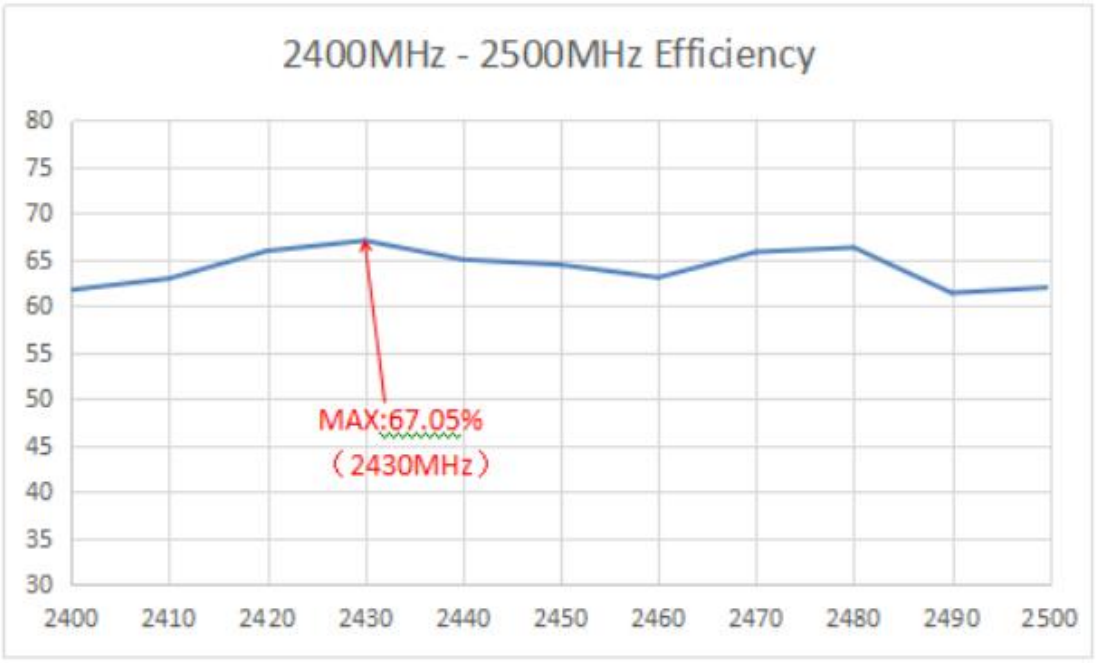
2.Finished picture

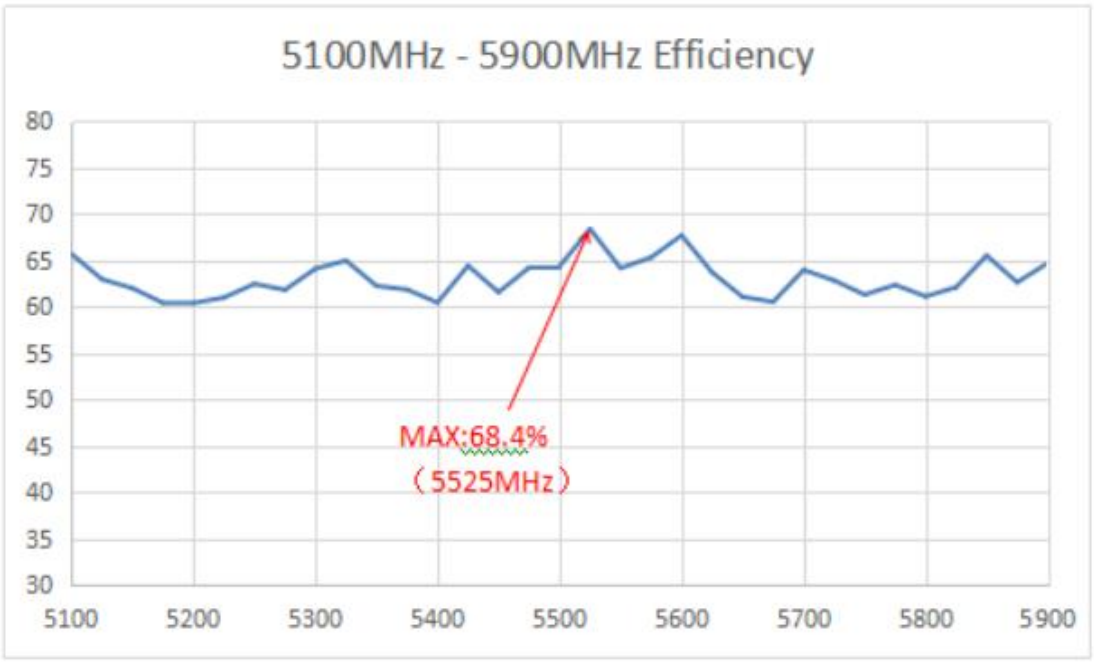


3.Network analyzer test data

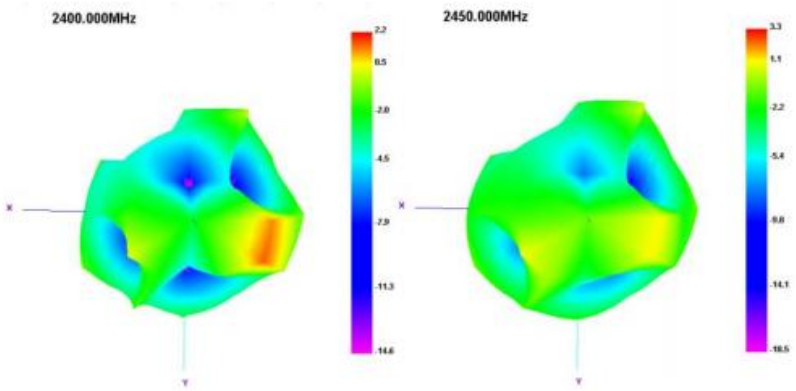


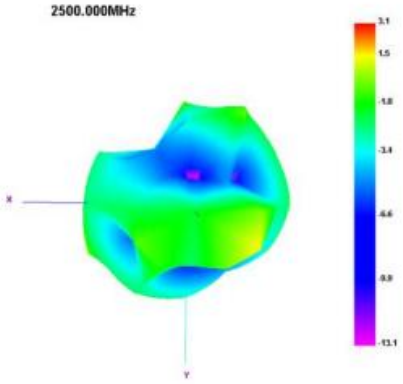
4.Efficiency

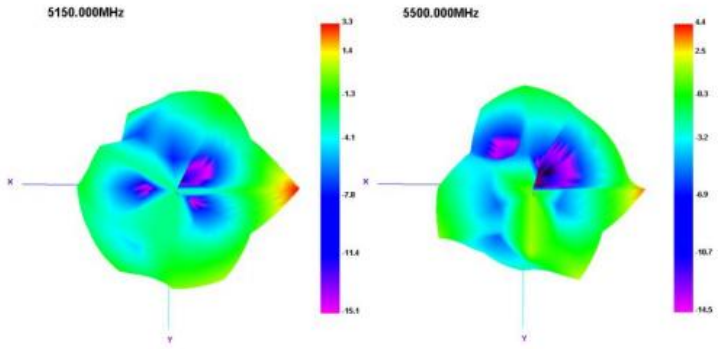


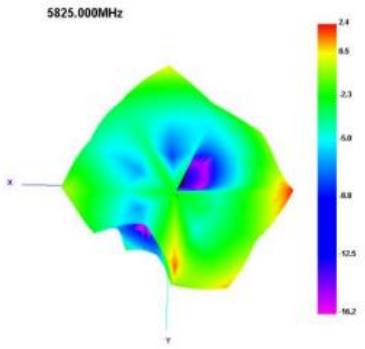


5.3D Raditation Pattern

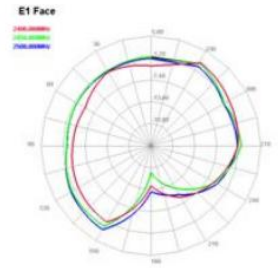




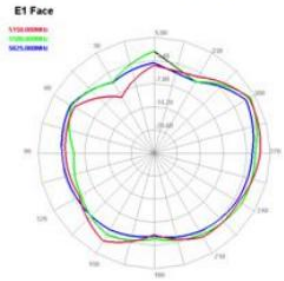


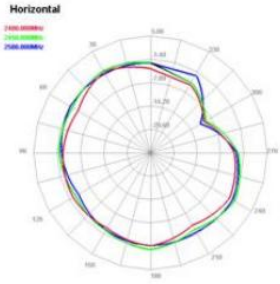


2.4G 高中低三个频点 XOZ 面（E1 面）增益图

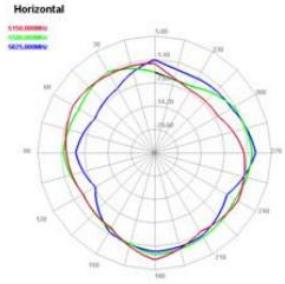


5G 高中低三个频点 XOZ 面（E1 面）增益图

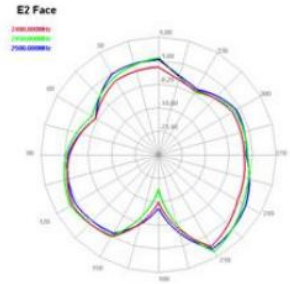




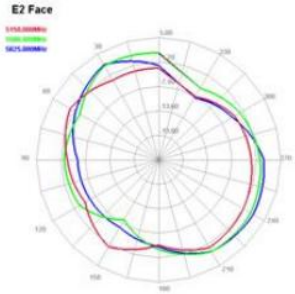
2.4G 高中低三个频点 XOY 面（H 面）增益图



5G 高中低三个频点 XOY 面（H 面）增益图



2.4 高中低三个频点 YOZ 面（E2 面）增益图



5G 高中低三个频点 YOZ 面（E2 面）增益图

Frequency	Gain	Frequency	Gain
2.4G Low	2.2	5G Low	3.3
2.4G Mid	3.3	5G Mid	3.3
2.4G High	3.1	5G High	2.4

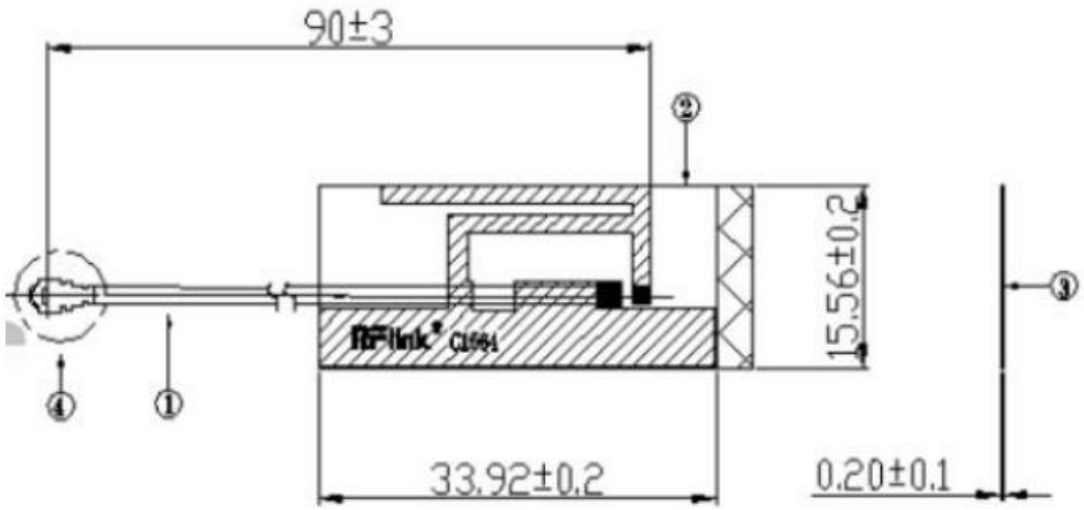
6.ROHS / Raw material list

RF11C02085S RoHS compliant

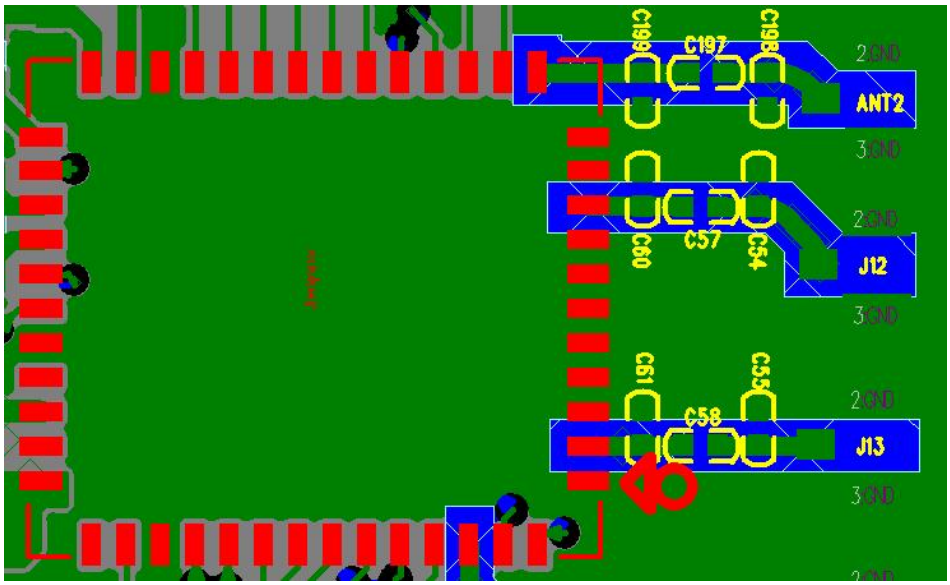
No.	Component Name	Raw material main material	Quantity	Unit	Material Manufacturers	UL certification No.	Remarks
1	1.13 cable	Tin plating/FPE	1	PCS	Kai Bo/Hai Lian Tong	/	
2	FPC	PI	1	PCS	Dong Zhi Yu/Ying Tong	/	
3	Connector	Copper	1	PCS	Ke Xin Cheng	/	

FPC antenna specification

You can see antenna size is 33.92mm*15.56mm* From below Specification.



Please refer to the chart below for PCB size of RF line terminal.



Scrape a GND off the side of the J12 ,J13 and ANT2,connect the FPC antenna to the PCB at the position of the J12 ,J13 and ANT2 connector.

[The line between the FPC antenna and the WiFi module] must be 50 ohm.

C57 ,C58 and C197 are 0R resistors.