

S6652S2-T2

IEEE 802.11a/b/g/n/ac/ax 2T2R + Bluetooth 5.4 Combo Module



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Contents

- 1. Device Overview 3
 - 1.1. Features 3
 - 1.1.1. General Features 3
 - 1.1.2. Wi-Fi Key Features 3
 - 1.1.3. Bluetooth Key Features 3
 - 1.2. Applications 3
 - 1.3. Descriptions 4
 - 1.4. Functional Block Diagram 4
- 2. Pin Configuration and Functions 5
 - 2.1. Module Pin Diagram 5
 - 2.2. Pin Functions 5
- 3. Specifications 7
 - 3.1. General Characteristics 7
 - 3.2. Temperature Range 8
 - 3.3. RF Characteristics 8
 - 3.3.1. Receiver RF Specifications 8
 - 3.3.2. Transmitter RF Specifications 10
 - 3.3.3. Bluetooth RF Specifications 13
 - 3.4. DC Characteristics 13
 - 3.4.1. Absolute Maximum Ratings 14
 - 3.4.2. Recommended Operating Conditions 14
 - 3.5. Power Sequence 14
- 4. Application, Implementation, and Layout 15
 - 4.1. Application Diagram 15
 - 4.2. Layout Guideline 15
- 5. Mechanical and Package 16
 - 5.1. Module Size 16
 - 5.2. Package Information 16
- 6. Thermal Reflow 16
- 7. Certification Information 17
- 8. Ordering Information 17
- 9. Revision History 17

1. Device Overview

1.1. Features

1.1.1. General Features

- Supports VBAT range from 3.0V to 3.6V
- Supports WPA,WPA2,WPA3,WAPI
- Supports WOW
- Supports TCP/UDP checksum offload
- Package:LGA-50Pin.15.0mm*13.0mm

1.1.2. Wi-Fi Key Features

- IEEE 802.11 a/b/g/n/ac/ax (supports wave-2)
- Supports IEEE 802.11 d/e/h/i/k/mc/r/v/w
- Dual-stream spatial multiplexing data rate of up to 1200 Mbps
- Supports multiple single-mode operation modes such as Wi Fi STA, AP, P2P, TDLS
- Supports multi-mode coexistence modes such as DBDC and DBSC
- Supports 2G 40MHz bandwidth, 5G 80MHz bandwidth
- Supports two antennas
- Supports up to 1024QAM modulation, supports LDPC, STBC
- Supports UL/DL OFDMA、 Supports UL/DL MU-MIMO
- Supports QoS, Supports WFA WMM, WMM PS
- Supports RSSI and CSI reporting
- Supports as a Beamformer, supporting 2x2/2x1 Tx Beamforming
- Supports as a Beamformee and supports 4X2 Tx Beamforming
- Supports features such as BSS Color and Spatial Reuse to improve air port utilization
- Supports TWT
- Supports high-precision indoor positioning function
- Supports standard SDIO v3.0, compatible with SDIO v2.0 HOST interfaces.

1.1.3. Bluetooth Key Features

- Supports Bluetooth (BT+BLE) v2.1、 v3.0、 v4.2、 v5.4
- Supports HS-UART/SDIO interface for BT data transmission
- Supports PCM/I2S interface for audio data transfer, supports VOHCI
- Supports BR/EDR/LE 1M/LE 2M/LE LR
- Supports SCO and eSCO links
- Supports low power mode (sniff、 sniff sub-rating)
- Supports AOA/AOD
- Supports LE Audio
- Supports coexistence schemes for BT Share and BT Standalone antenna modes

1.2. Applications

- Tablet Computer
- OTT Box
- Portable Devices

1.3. Descriptions

The S6652S2-T2 is a highly integrated module that supports 2T2R 802.11 a/b/g/n/ac/ax with Wireless LAN (WLAN) SDIO3.0 interface controller and Bluetooth 5.4 HS-UART interface controller. It 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 802.11ax MIMO OFDM. In addition, this compact module is a total solution for a combination of Wi-Fi + BT technologies. The module is specifically developed for tablet, OTT box and portable devices.

1.4. Functional Block Diagram

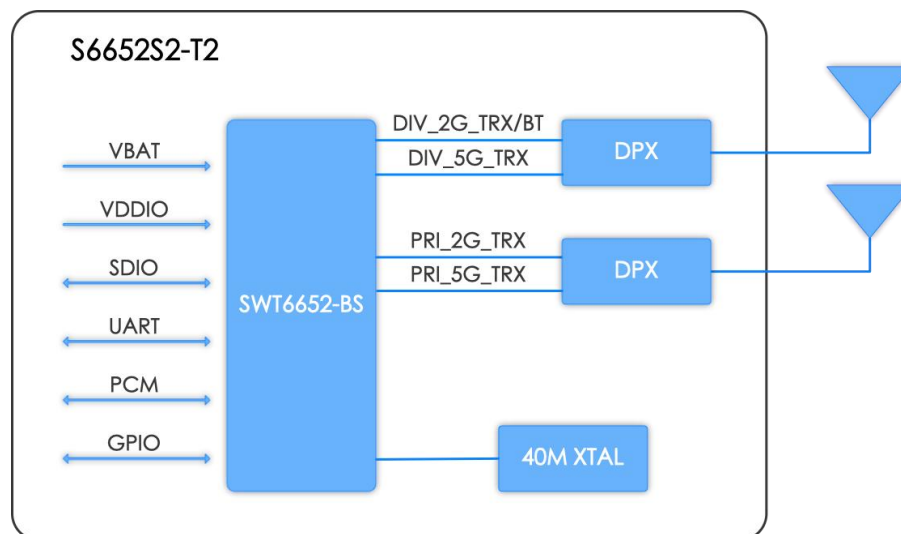


Figure 1. Block Diagram of S6652S2-T2

2. Pin Configuration and Functions

2.1. Module Pin Diagram

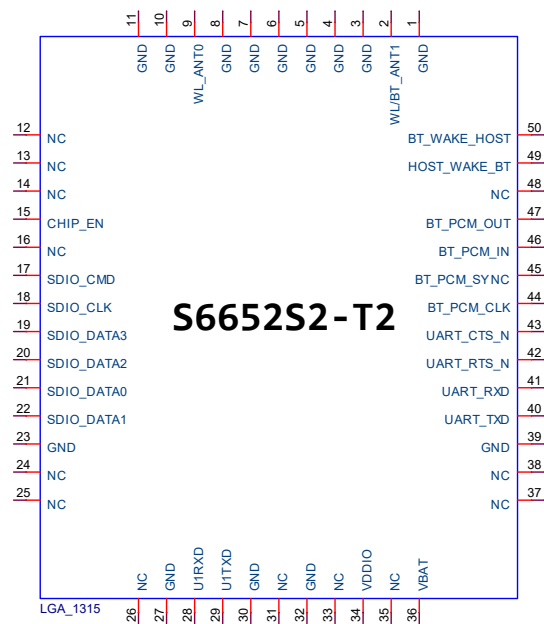


Figure 2. Pin Diagram of S6652S2-T2

2.2.Pin Functions

Pin	Name	Description
1	GND	Ground
2	WL/BT_ANT1	RF input/output of path DIV WLAN and BT
3	GND	Ground
4	GND	Ground
5	GND	Ground
6	GND	Ground
7	GND	Ground
8	GND	Ground
9	WL_ANT0	RF input/output of path PRI WLAN
10	GND	Ground
11	GND	Ground
12	NC	No connect, keep floating
13	NC	No connect, keep floating
14	NC	No connect, keep floating
15	CHIP_EN	Chip enable.
16	NC	No connect, keep floating
17	SDIO_CMD	SDIO command line
18	SDIO_CLK	SDIO clock line
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	GND	Ground
28	U1RXD	UART1 RXD,just for test on PC.
29	U1TXD	UART1 TXD,just for test on PC.
30	GND	Ground
31	NC	No connect, keep floating
32	GND	Ground
33	NC	No connect, keep floating
34	VDDIO	Digital/Bluetooth/SDIO/ I/O Voltage
35	NC	No connect, keep floating
36	VBAT	Power supply Voltage
37	NC	No connect, keep floating
38	NC	No connect, keep floating
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	BT_PCM_CLK	PCM clock
45	BT_PCM_SYNC	PCM sync signal
46	BT_PCM_IN	PCM data input
47	BT_PCM_OUT	PCM data output
48	NC	No connect, keep floating
49	HOST_WAKE_BT	Host wake up BT
50	BT_WAKE_HOST	BT wake up Host

3. Specifications

Caution! The absolute maximum ratings in the following table indicates voltages levels where permanent physical damage to the device can occur, even if these limits were exceeded for only a brief duration. General Characteristics.

3.1. General Characteristics

Category	Descriptions	
Dimension	L*W*H :15.0mm (±0.2mm)*13.0mm (±0.2mm)*1.6mm (±0.1mm)	
Chip-set	SWT6652-BS	
Standard	IEEE 802.11a/b/g/n/ac/ax+BT 5.4	
Modulation Type	CCK, DBPSK, DQPSK, OFDM, OFDMA	
Frequency Band	2402~2484MHz, 5180~5825MHz	
Interface	WLAN: SDIO, Bluetooth: SDIO	
Data Security	WPA, WPA2, WPA3, WAPI	
Transmit Power	2.4G: 11b 11M: 18dBm±2dBm 11g 54M: 16dBm±2dBm 11n HT20 MCS7: 16dBm±2dBm 11n HT40 MCS7: 16dBm±2dBm 11ax HE20 MCS11: 12dBm±2dBm 11ax HE40 MCS11: 12dBm±2dBm	5G: 11a 54M: 16dBm±2dBm 11n HT20 MCS7: 16dBm±2dBm 11n HT40 MCS7: 16dBm±2dBm 11ac VHT20 MCS8: 14dBm±2dBm 11ac VHT40 MCS9: 14dBm±2dBm 11ac VHT80 MCS9: 13dBm±2dBm 11ax HE20 MCS11: 12dBm±2dBm 11ax HE40 MCS11: 12dBm±2dBm 11ax HE80 MCS11: 11dBm±2dBm
Rx Sensitivity	2.4G: 11b 11M: -89dBm @8% PER 11g 54M: -76dBm @10% PER 11n HT20 MCS7: -73 dBm @10% PER 11ax HE20 MCS11: -64 dBm @10% PER	5G: 11a 54M: -76 dBm @10% PER 11n HT20 MCS7: -73 dBm @10% PER 11n HT40 MCS7: -72 dBm @10% PER 11ac VTH20 MCS8: -68 dBm @10% PER 11ac VTH40 MCS9: -64 dBm @10% PER 11ac VTH80 MCS9: -61 dBm @10% PER 11ax HE20 MCS11: -62 dBm @10% PER 11ax HE40 MCS11: -60 dBm @10% PER 11ax HE80 MCS11: -57 dBm @10% PER
Data Rate	802.11b [11, 5.5, 2 and 1Mbps] 802.11g [54, 48, 36, 24, 18, 12, 9 & 6Mbps] 802.11n HT20: up to 144.4Mbps 802.11n HT40: up to 300Mbps 802.11ac VHT80: up to 866.7Mbps 802.11ax HE20: up to 286.8Mbps 802.11ax HE40: up to 573.6Mbps 802.11ax HE80: up to 1201Mbps	
Frequency Error	<±20 ppm	
Storage Humidity	Less than 60%	
Antenna	External antenna	
Operating System	Linux, Android	
Operating Voltage	VBAT: 3.0V~3.6V (Typical: 3.3V) ; VDDIO: 1.62V~1.92V (Typical: 1.8V)	

3.2. Temperature Range

Category	Descriptions
Operating Temperature	-30°C~+70°C
Storage Temperature	-40°C~+85°C

3.3. RF Characteristics

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

3.3.1. Receiver RF Specifications

Parameter	Conditions		Minimum	Typical	Maximum	Unit
Receive Input Frequency 2.4GHz	802.11b/g/n/ax mode		2412	-	2484	MHz
Receiver Sensitivity						
802.11b	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	-	-	-82	dBm
	MCS1.		-	-	-79	dBm
	MCS2.		-	-	-77	dBm
	MCS3.		-	-	-74	dBm
	MCS4.		-	-	-70	dBm
	MCS5.		-	-	-66	dBm
	MCS6.		-	-	-65	dBm
	MCS7.		-	-	-64	dBm
802.11n (HT40)	MCS0.	PER<10%, Packet size=4,096bytes	-	-	-79	dBm
	MCS1.		-	-	-77	dBm
	MCS2.		-	-	-74	dBm
	MCS3.		-	-	-71	dBm
	MCS4.		-	-	-67	dBm
	MCS5.		-	-	-63	dBm
	MCS6.		-	-	-62	dBm
	MCS7.		-	-	-61	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
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		Minimum	Typical	Maximum	Unit
Receive Input Frequency 5GHz	802.11a/n/ac/ax mode		5180	-	5825	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)	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
802.11n (HT40)	MCS0.	PER<10%, Packet size=4,096bytes	-	-	-79	dBm
	MCS1.		-	-	-77	dBm
	MCS2.		-	-	-74	dBm
	MCS3.		-	-	-71	dBm
	MCS4.		-	-	-67	dBm
	MCS5.		-	-	-63	dBm
	MCS6.		-	-	-62	dBm
	MCS7.		-	-	-61	dBm

802.11ac (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
802.11ax (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						
802.11a	FER<10%		-30	-	-	dBm
802.11n	FER<10%		-30	-	-	dBm
802.11ac	FER<10%		-30	-	-	dBm
802.11ax	FER<10%		-30	-	-	dBm

3.3.2. Transmitter RF Specifications

Parameter	Conditions	Minimum	Typical	Maximum	Unit
Receive Input Frequency					
802.11b/g/n/ax	2.4GHz	2412	-	2484	MHz
Transmit Power					
802.11b	11Mbps	16	18	20	dBm
802.11g	54Mbps	14	16	18	dBm
802.11n	HT20, MCS7	14	16	18	dBm
	HT40, MCS7	14	16	18	dBm
802.11ax	HE20, MCS11	10	12	14	dBm
	HE40, MCS11	10	12	14	dBm
Spectrum Mask					
802.11b	$f_c - 22\text{MHz} < f < f_c - 11\text{MHz} \& f_c + 11\text{MHz} < f < f_c + 22\text{MHz}$	-	-	-30	dBm
	$f_c - 55\text{MHz} < f < f_c - 22\text{MHz} \& f_c + 22\text{MHz} < f < f_c + 55\text{MHz}$	-	-	-50	dBm
802.11g	$f_c \pm 9\text{MHz}$	-	-	0	dBm
	$f_c \pm 11\text{MHz}$	-	-	-20	dBm

	$f_c \pm 20\text{MHz}$	-	-	-28	dBr
	$f_c \pm 30\text{MHz}$	-	-	-40	dBr
802.11n	$f_c \pm 9\text{MHz}$	-	-	0	dBr
	$f_c \pm 11\text{MHz}$	-	-	-20	dBr
	$f_c \pm 20\text{MHz}$	-	-	-28	dBr
	$f_c \pm 30\text{MHz}$	-	-	-45	dBr
802.11ax (HE20)	$f_c \pm 9.75\text{MHz}$	-	-	0	dBr
	$f_c \pm 10.5\text{MHz}$	-	-	-20	dBr
	$f_c \pm 20\text{MHz}$	-	-	-28	dBr
	$f_c \pm 30\text{MHz}$	-	-	-40	dBr
Center Frequency Tolerance					
802.11b		-20	-	+20	ppm
802.11g/n/ax		-20	-	+20	ppm
EVM (Error Vector Magnitude)*					
802.11b	1Mbps	-	-	35	%
	2Mbps	-	-	35	%
	5.5Mbps	-	-	35	%
	11Mbps	-	-	35	%
802.11g	6Mbps	-	-	-5	dB
	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
802.11ax	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

Parameter	Conditions	Minimum	Typical	Maximum	Unit
Receive Input Frequency					
802.11a/n/ac/ax	5 GHz	5180	-	5825	MHz
Transmit Power					
802.11a	54Mbps	14	16	18	dBm
802.11n	HT20, MCS7	14	16	18	dBm
	HT40, MCS7	14	16	18	dBm
802.11ac	VHT20, MCS8	12	14	16	dBm
	VHT40, MCS9	12	14	16	dBm
	VHT80, MCS9	11	13	15	dBm
802.11ax	HE20, MCS11	10	12	14	dBm
	HE40, MCS11	10	12	14	dBm
	HE80, MCS11	9	11	13	dBm
Spectrum Mask					
802.11a	$f_c \pm 9\text{MHz}$	-	-	0	dBr
	$f_c \pm 11\text{MHz}$	-	-	-20	dBr
	$f_c \pm 20\text{MHz}$	-	-	-28	dBr
	$f_c \pm 30\text{MHz}$	-	-	-40	dBr
802.11n	$f_c \pm 9\text{MHz}$	-	-	0	dBr
	$f_c \pm 11\text{MHz}$	-	-	-20	dBr
	$f_c \pm 20\text{MHz}$	-	-	-28	dBr
	$f_c \pm 30\text{MHz}$	-	-	-45	dBr
802.11ac (VHT80)	$f_c \pm 39\text{MHz}$	-	-	0	dBr
	$f_c \pm 41\text{MHz}$	-	-	-20	dBr
	$f_c \pm 80\text{MHz}$	-	-	-28	dBr
	$f_c \pm 120\text{MHz}$	-	-	-40	dBr
802.11ax (HE80)	$f_c \pm 39.5\text{MHz}$	-	-	0	dBr
	$f_c \pm 40.5\text{MHz}$	-	-	-20	dBr
	$f_c \pm 80\text{MHz}$	-	-	-28	dBr
	$f_c \pm 120\text{MHz}$	-	-	-40	dBr
Center Frequency Tolerance					
802.11a/n/ac/ax		-20	-	+20	ppm
EVM (Error Vector Magnitude)*					
802.11a	6Mbps	-	-	-5	dB
	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

3.3.3. Bluetooth RF Specifications

Parameter	Conditions	Minimum	Typical	Maximum	Unit
Frequency Range		2402		2480	MHz
RX Sensitivity	Sensitivity@BER=0.1% for GFSK(1Mbps)	-	-94	-	dBm
	Sensitivity@BER=0.01% for $\pi/4$ -DQPSK(2Mbps)	-	-92	-	dBm
	Sensitivity@BER=0.01% for 8DPSK (3Mbps)	-	-87	-	dBm
	Sensitivity@PER=30.8% for LE (1Mbps)	-	-97	-	dBm
	Sensitivity@PER=30.8% for 2LE (2Mbps)	-	-94	-	dBm
Output Power	BDR	-	10	-	dBm
	EDR	-	10	-	dBm
	BLE	-	10	-	dBm

3.4. DC Characteristics

3.4.1. Absolute Maximum Ratings

Rating	Symbol	Maximum	Unit
DC Supply For VBAT	VBAT	5.25	V
DC Supply Voltage For Digital/Bluetooth/SDIO I/O	VDDIO	5.25	V

3.4.2. Recommended Operating Conditions

Parameter	Symbol	Value			
		Minimum	Typical	Maximum	Unit
DC Supply For VBAT	VBAT	3.0	3.3	3.6	V
DC Supply Voltage For Digital/Bluetooth/SDIO I/O	VDDIO	1.62	1.8	1.98	V
		3.0	3.3	3.6	V

3.5. Power Sequence

- Power on/off and Reset timing

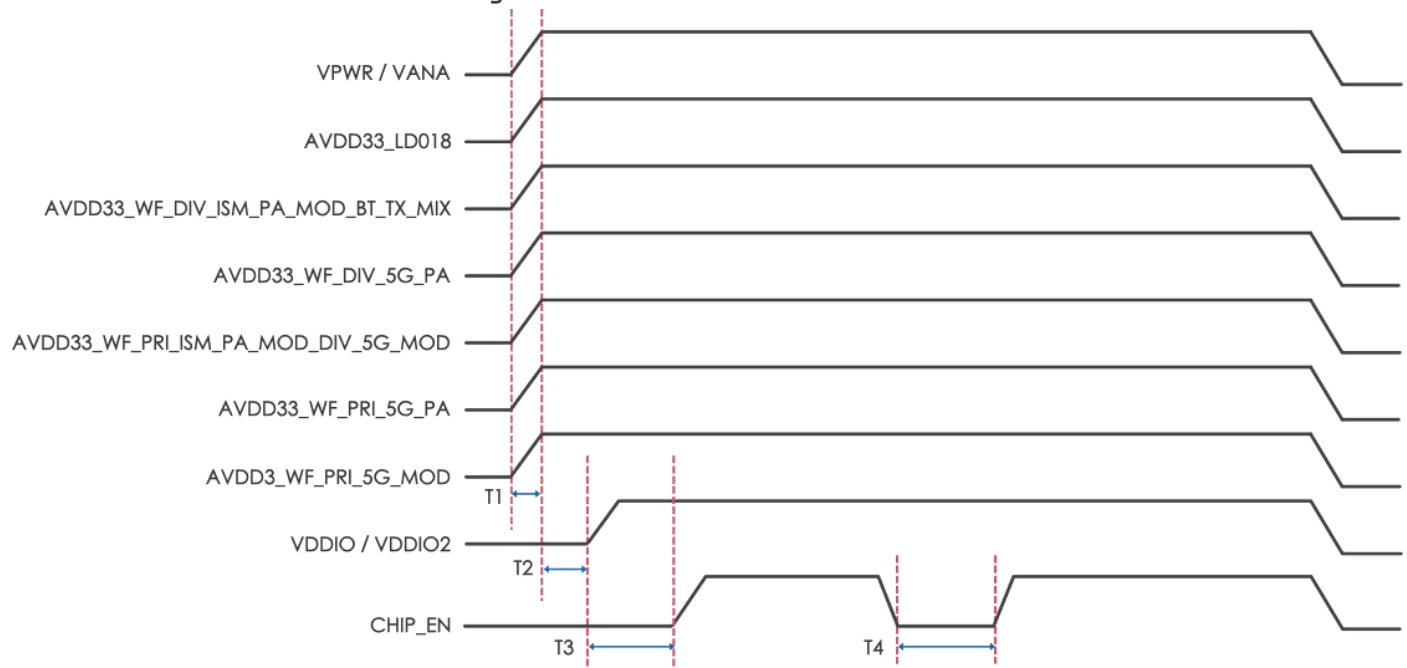


Figure 3. Power on/off and Reset timing of S6652S2-T2

Parameter	Description	Minimum	Typical	Maximum
T1	3.3V Ramp up time	200us	500us	-
T2	VDDIO/VDDIO2 should be powered on after 3.3V is powered on	0	-	-
T3	CHIP_EN should be powered on after VDDIO/VDDIO2 is powered on	0	-	-
T4	CHIP_EN reset time	50ms	-	-

4. Application, Implementation, and Layout

4.1. Application Diagram

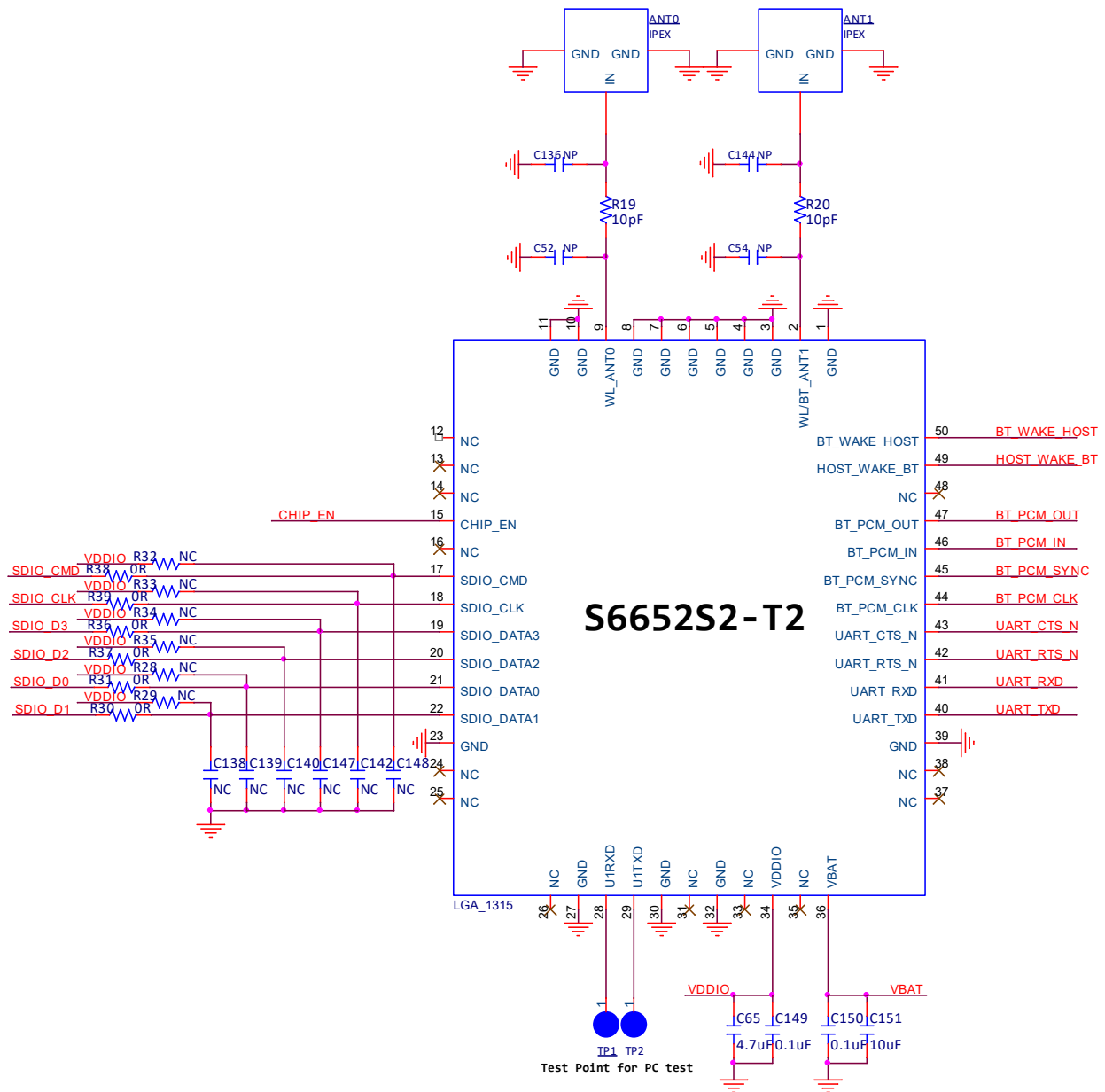


Figure 4. Application Schematic Diagram of S6652S2-T2

4.2. Layout Guideline

- Keep RF traces with 50 Ohm impedance.
- The antenna needs to have enough clearance area.
- The filter capacitor should be as close as possible to the module.
- Do not place strong interference lines under the module.

5. Mechanical and Package

5.1. Module Size

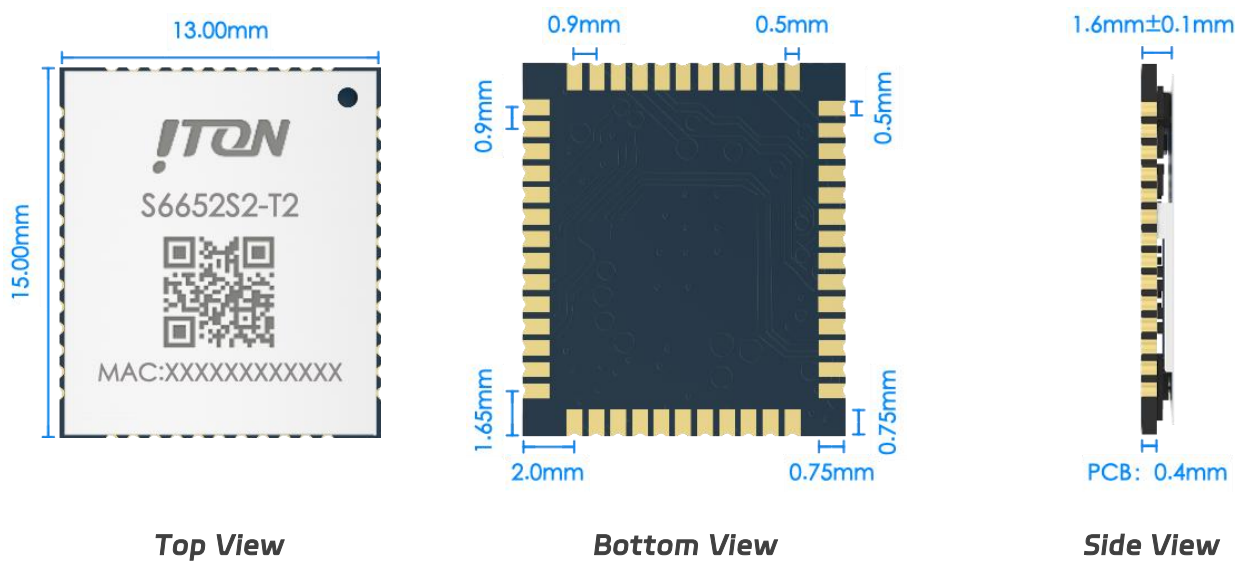


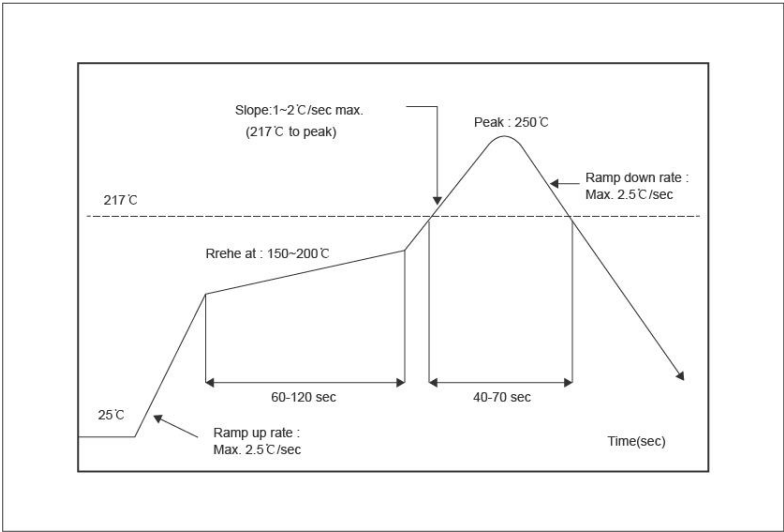
Figure 5. Module Size of S6652S2-T2

5.2.Package Information

Part NO.	MOQ(PCS)	Shipment Packaging	No. of Modules Per Reel	No. Of Reels Per Case
S6652S2-T2	6000	Tape & Reel	1000	6

6. Thermal Reflow

- Referred to IPC/JEDEC standard.
- Peak temperature: <250°C
- Number of times: ≤2



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

7. Certification Information

- None

8. Ordering Information

Part NO.	ANT	Shielding Cover	Remark
S6652S2-T2	External Antenna	Included	2 Antennas

- The Key Material List

Item	Part Name	Description	Manufacturer
1	PCB	S6652S2-T2,FR4,4L	Xusheng.HS
2	Chipset	SWT6652-BS. QFN68L	Seekwave
3	Crystal	2016,40M,9pF	YL
4	Diplexer	1608,2.4G&5G	FTR. Sunlord

9. Revision History

Version	Change Content	Reviser	Date
V1.0	Initial Version	Phil	2024.11.05
V1.1	Typographical Updates	Molly	2025.07.25

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:

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: VYVS6652S2-T2".

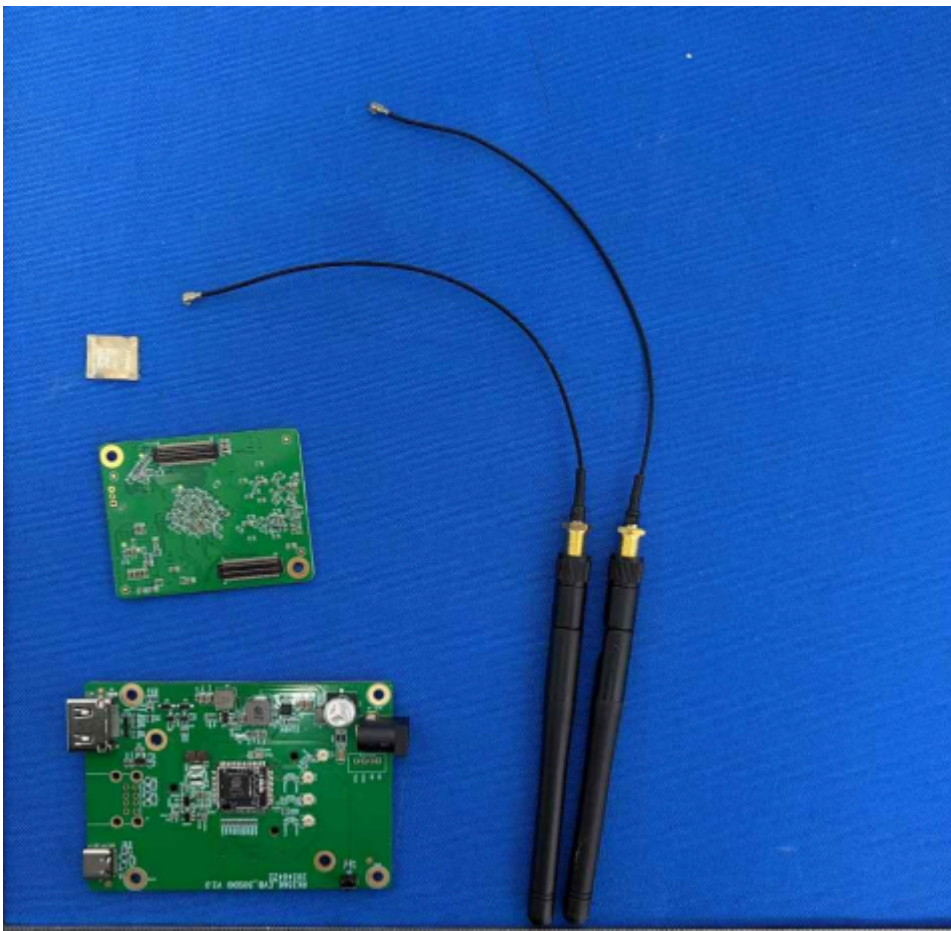
Additionally, the following statement should be included on the label and in the final product's user manual:

"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.



Manufacturer: Shenzhen Jie Xuntong Wireless Technology Co., LTD

Antenna gain

Frequency (MHz)	2400	2450	2500	5150	5350	5700	5900
ReturnLoss	-27.36	-17.27	-13.04	-5.19	-8.83	-12.56	-26.25
VSWR	1.16	1.42	1.68	3.50	2.17	1.53	1.14

Antenna gain efficiency and direction diagram of small rubber rod:

Fq (MHz)	2400	2410	2420	2430	2440	2450	2460	2470	2480	2490	2500
Gain (dBi)	1.40	1.78	2.02	2.15	2.40	2.53	2.48	2.29	1.95	1.72	1.75
Efficie (%)	57.2	59.1	59.7	60.6	62.1	64.4	66.2	67.1	65.6	64.2	63.2
Fq (MHz)	5150	5200	5250	5300	5350		5700	5750	5800	5850	
Gain (dBi)	1.07	1.83	1.87	1.28	2.11		2.93	3.16	2.67	2.27	
Efficie (%)	50.2	50.6	51.5	50.8	51.4		57.3	58.2	54.1	52.7	