



深圳市尚远科技有限公司

Shenzhen Sunnyway Technology Co.Ltd.

Antenna SPEC

Customer: WANLIDA		Project Name:
Working Band: WIFI 2.4/5.8		
Mainboard Version:		
Sunnyway BOM		
SPEC-Type	Model Name	Antenna Type
WIFI1 Antenna	SZ24168IB77-3	FPC

Change history			
Preparation/change date	change content	Changed by	version
2024.07.18	First edition	Xu Wei	A

Sunnyway Countersign Column				
R&D	ME:	Audit:	Quality Engineer:	Approval:
	RF:	Audit:		
Customer Countersign Column				
Electronic Engineer	Project Manager		Structural Engineer	Quality Engineer

Tel: +86-021-64842326 (Shanghai) ; +86-0755-82504258 (Shenzhen)

Fax: +86-021-64842328

Shanghai R & D center: Room 302, building 65, No.421, Hong Cao Road, Caohejing Development Zone, Shanghai.

Shenzhen R&D Center: Room 405, 4th Floor, Jinke Building, No.8 Qiongyu Road, Nanshan District, Shenzhen

ITEM

1 **TEST FIXTURE**

2 **MATCHING CIRCUIT**

3 **S11 TEST**

3.0 S11 test method

3.1 S11 parameter

3.2 Efficiency&Gain

4 **CHAMBER TEST DATA**

4.0 test equipment

4.1 active data

5 **GROUND HANDLING**

6 **MASS PRODUCTION ANTENNA SPEC**

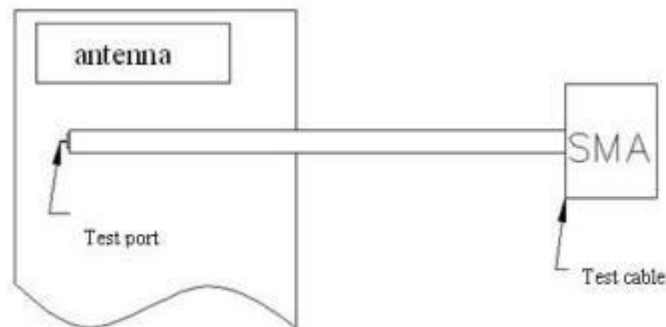
7 **Structural drawings**

8 **Environmental testing report**

1. TEST FIXTURE

Purpose: To test antenna passive parameters as accurately as possible.

methods: the fixture is to use a 50 ohm coaxial cable, one end is connected to the pad after the antenna's matching circuit (the front of the antenna switch) , and the other end is connected to the SMA connector.



2. MATCHING CIRCUIT

Antenna matching did not modify

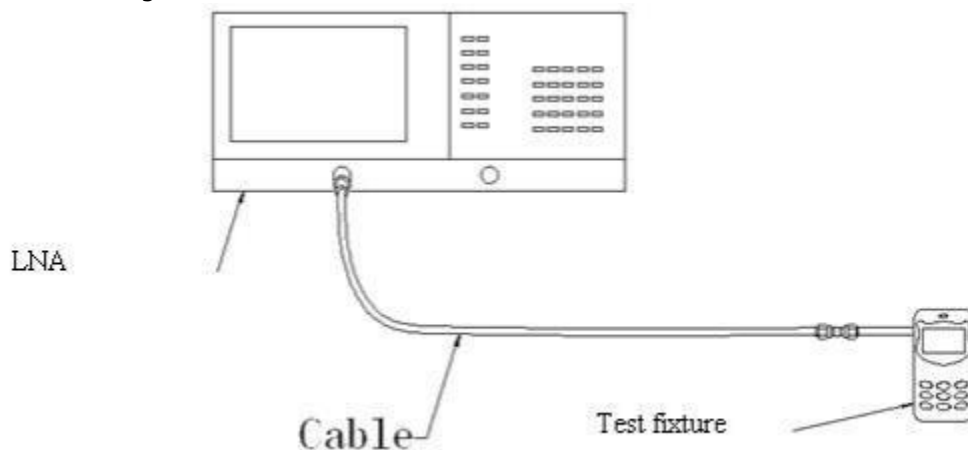
3. S11 test

3.0 S11 test method instructions

Test equipment: LNA (Agilent E5071B)

Test method: With a 50 ohm CABLE ,CABLE export from instrument testing port , After the calibration with calibration Key, connected to the SMA connector , Records the return loss and VSWR of the related frequency points.

Test schematic diagram is as follows:



Test schematic diagram

3.1 S11 parameter

WIFI ANT VSWR

频率 (Freq.) MHz	2400	2450	2500	5150	5850	7200
驻波比 VSWR	1.5	1.7	2.0	1.5	1.5	1.7



4 CHAMBER TEST DATA

Test equipment

Test system: chamber

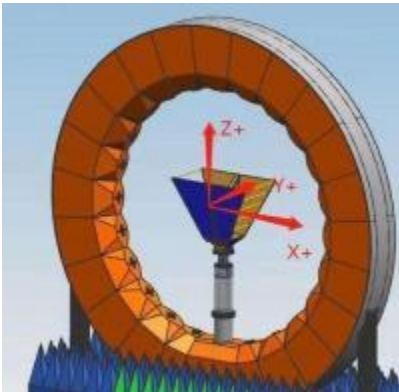
Test environment: the temperature of $22^{\circ}\text{C} + 3^{\circ}\text{C}$, humidity of 50% plus or minus 15%

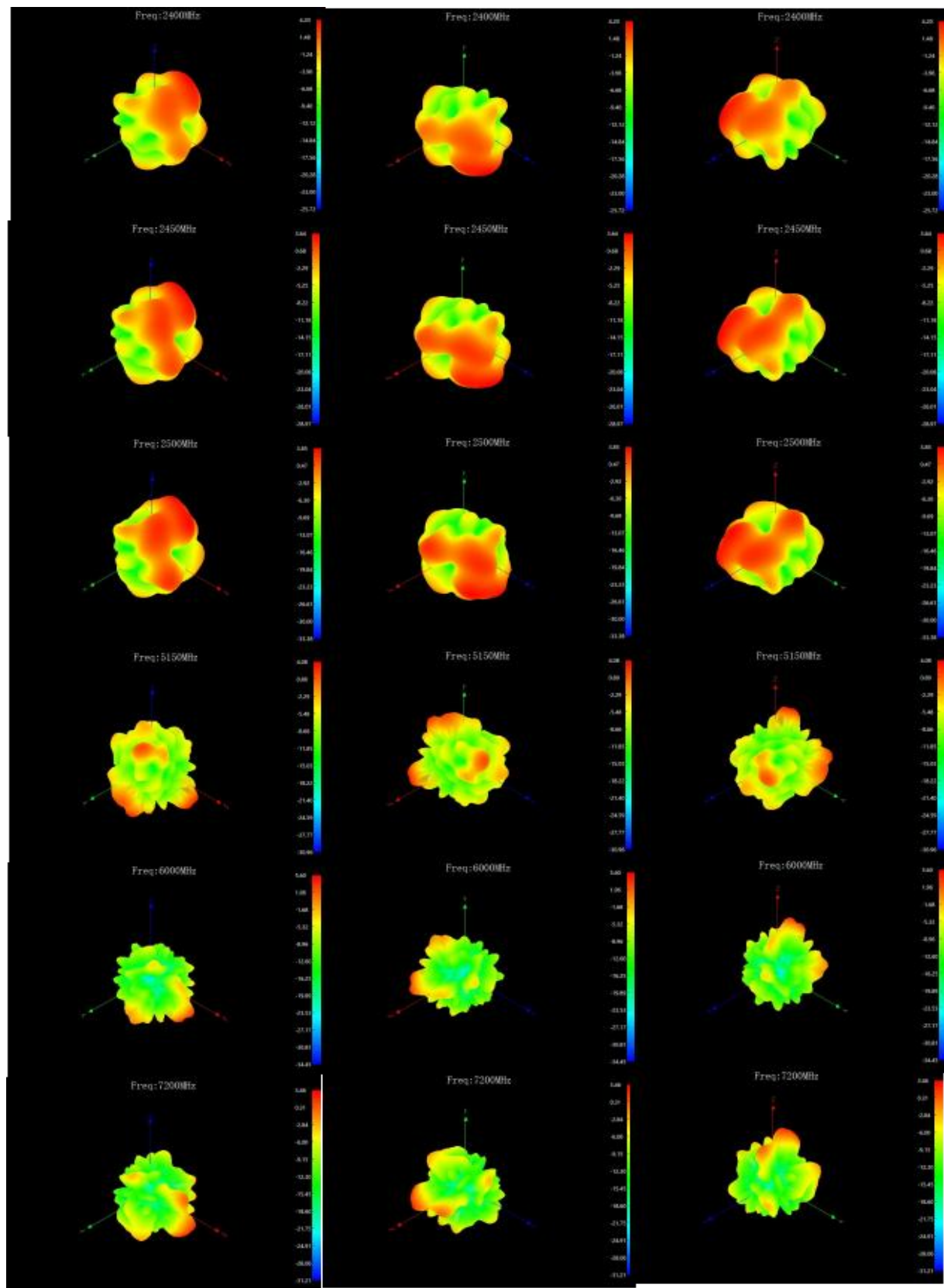
Test equipment: to test passive status , use Agilent 8960 Agilent E5071B to test active status, use CMW500

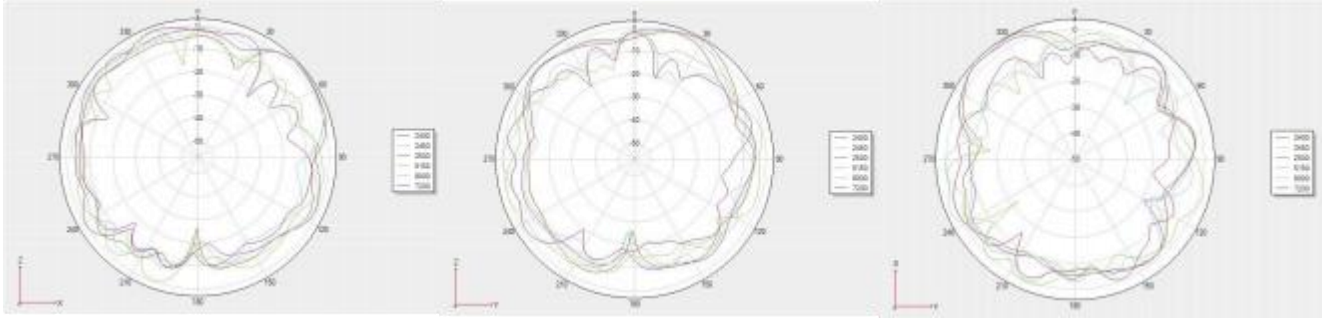
Test data

Frequency/Mhz	Efficiency / %	MaxGain/dBi	Frequency/Mhz	Efficiency / %	MaxGain/dBi
2400	49.58	4.2	5900	35.32	5.35
2410	48.95	4.1	5950	36.39	5.59
2420	48.21	3.83	6000	36.48	5.6
2430	47.6	3.79	6050	37.33	5.73
2440	49.2	3.62	6100	36.06	5.68
2450	48.83	3.64	6150	36.31	5.36
2460	49.33	3.55	6200	35.89	5.54
2470	49.83	3.8	6250	36.39	5.68
2480	50.21	3.72	6300	35.73	5.71
2490	50.46	3.93	6350	37.5	6.08
2500	51.62	3.85	6400	38.46	5.93
			6450	36.06	5.26
5150	42.85	4.08	6500	35.16	4.66
5200	42.95	4.59	6550	32.66	4.2
5250	41.98	5.13	6600	34.12	3.92
5300	40.83	4.91	6650	34.51	3.78
5350	39.72	4.29	6700	35.32	4.1
5400	39.54	3.99	6750	36.64	4.44
5450	38.46	4.32	6800	36.06	4.42
5500	35.32	5.24	6850	36.06	4.28
5550	33.27	5.7	6900	33.81	3.91
5600	32.06	6.27	6950	35.08	3.66
5650	33.73	6.57	7000	35.56	3.39
5700	33.04	6.43	7050	34.99	3.19
5750	33.11	6.22	7100	35.81	3.1
5800	33.96	5.85	7150	33.88	2.97
5850	34.99	5.7	7200	34.43	3.46

Field diagram







5. Ground handling

Measurement	Band	Channel	合路	WIFI 1
TRP	WIFI_B (11M)	1	14.61	10.03
TRP		6	14.71	10.16
TRP		11	13.32	9.85
TIS(EIRP)		11	-84.85	-82.09
TIS(EIRP)		1	-84.39	-82.42
TIS(EIRP)		6	-83.24	-82.11
TRP	WIFI_G (54M)	1	14.36	10.33
TRP		6	14.69	10.79
TRP		11	14.85	10.43
TIS(EIRP)		11	-70.74	-71.96
TIS(EIRP)		1	-70.41	-71.31
TIS(EIRP)		6	-70.3	-71.3
TRP	WIFI_N_ISM (65M)	1	14.58	10.87
TRP		6	14.36	10.39
TRP		11	13.87	9.44
TIS(EIRP)		11	-69.29	-69.64
TIS(EIRP)		1	-68.86	-69.92
TIS(EIRP)		6	-69.36	-68.27
TRP	WIFI_A (54M)	36	15.14	13.75
TRP		149	15.58	13
TRP		165	15.32	12.99
TIS(EIRP)		165	-76.14	-72.59
TIS(EIRP)		36	-75.74	-72.41
TIS(EIRP)		149	-75.21	-72.91
TRP	WIFI_N_UNII (65M)	36	15.25	12.64
TRP		149	14.35	11.91
TRP		165	14.85	11.56
TIS(EIRP)		165	-72.33	-70.63
TIS(EIRP)		36	-71.51	-69.24
TIS(EIRP)		149	-71.28	-69.84

6. Mass production antenna Spec

During Mass production, to test VSWR as production test standard

According to the difference of the project itself, the following specification:

频率 (MHz)	量产标准
2400--2500	VSWR (MP performance) < VSWR(Verify performance) ± 0.5
5150--5850	VSWR (MP performance) < VSWR(Verify performance) ± 0.5



8. Environmental testing report



SUNNYWAY

Sunnyway Technology (China) Co., Ltd.

Antenna Environment Test Report

Customer Name: WAN.LDM

entry name: MFD-Q001

sunnyway NO: SZ241681B77-3

Number of samples: 5PCS

Test time: 2024/7/18

Test time	测试项目Test items	测试条件和需求Test conditions and requirements	测试设备Test equipment	测试结果test result					
2023.10.10 - 2023.10.11	low temperature storage	Store in a incubator (-40 ℃ ± 5) for 24 hours; and then let it dry at room temperature for 2 hours before testing. The electrical performance (VSWR) and structural appearance	Standard temperature and humidity		1	2	3	4	5
					-40℃	-40℃	-40℃	-40℃	-40℃
				RF	OK	OK	OK	OK	OK
2023.10.10 - 2023.10.11	高温存储 high temperature	Store in a temperature box (80 ℃ ± 5) for 24 hours; and then let it dry at room temperature for 2 hours before testing. The electrical performance (VSWR) and structural appearance	Standard temperature and humidity	外观	OK	OK	OK	OK	OK
					1	2	3	4	5
					+85℃	+85℃	+85℃	+85℃	+85℃
2023.10.11 - 2023.10.12	Constant temperature and humidity	The temperature is 60 ℃ ± 5, the humidity is 90% -95% RH, and after 24 hours, it is required that the structure is undamaged and the electrical performance remains unchanged.	Standard temperature and humidity	RF	OK	OK	OK	OK	OK
				外观	OK	OK	OK	OK	OK
					1	2	3	4	5
2023.10.13 - 2023.10.14	耐盐雾实验 Salt spray resistance	NaCl solution with salt spray concentration of 5%, spray the antenna for 24 hours continuously at 35 ℃, then remove it for cleaning and dry it. The surface of the antenna should be free	Salt mist machine		60℃/95%	60℃/95%	60℃/95%	60℃/95%	60℃/95%
				RF	OK	OK	OK	OK	OK
				外观	OK	OK	OK	OK	OK
					1	2	3	4	5
					35℃/5%	35℃/5%	35℃/5%	35℃/5%	35℃/5%
				RF	OK	OK	OK	OK	OK
				外观	OK	OK	OK	OK	OK

审核 to examine: 林长青

确认confirm: 陈小平

测试 test: 韦月盟