

SUNNYWAY TECHNOLOGY(CHINA)

ANTENNA SPEC

Customer name : <u>PAX Computer Technology (Shenzhen)</u> <u>Co., Ltd</u>		Entry name : L920-BE
Working band: WiFi 2.4G/5.8G		
Motherboard version : L920-BE-MAIN-B 2019-12-27 (V20)		
L920PRO-BE 主板版本 : L920PRO-BE-MAIN-B 2019-12-27 (V01)		
Sunnyway Material specification		
Specification type	Sunnyway number	Customer number
WIFI Antenna	SZ200341B75-1	200212000000285

Revision history			
Date of preparation/change	Change content	Altered person	Edition
2020.06.17	New issue	ChenMin	A

Sunnyway Countersign column				
R&D	ME :	To examine :	QE :	Approval :
	RF :	To examine :		

Customer will sign the column			
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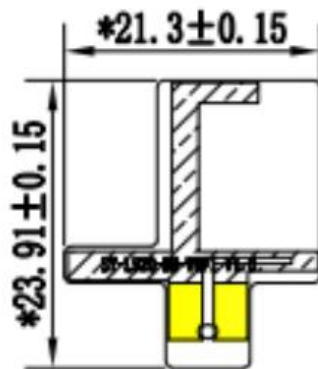
Directory

ANTENNA SPEC	1
1. Project information	3
1.1 Mockup picture	3
1.2 Antenna product picture	3
2. Matching circuit.....	3
3. Antenna passive testing data	3
3.1 S11 Description of the test method.....	3
3.2 S11 Test parameters	4
3.3 Antenna efficiency and gain	5
3.4 Antenna radiation pattern	
4. Antenna active testing data.....	11
4.1 Test the environment.....	11
4.2 OTA Active testing data.....	11
4.2.1 WIFI Testing data.....	11
5. Environmental treatment methods	12
6. Standard for mass production antennas	13

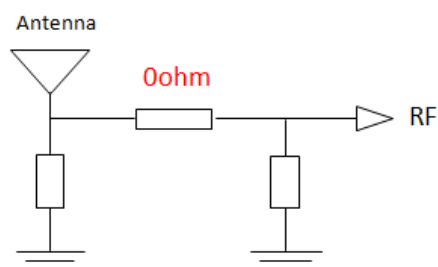
1. Project information

1.1 Mockup picture

1.2 Antenna product picture



2. Matching circuit



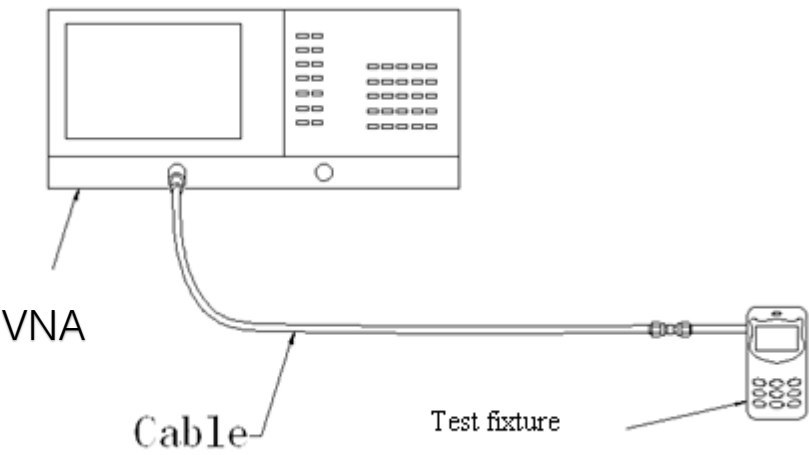
3. Antenna passive testing data

3.1 S11 Description of the test method

Test the equipment : Vector network analyzer (Agilent E5071C)

Test methodology : Use a 50 ohm CABLE cable to export from the instrument test port, use the calibration piece to calibrate and connect the SMA connector of the test fixture, and record the return loss and standing wave ratio corresponding to the relevant frequency point.

Below is a schematic picture of the test :

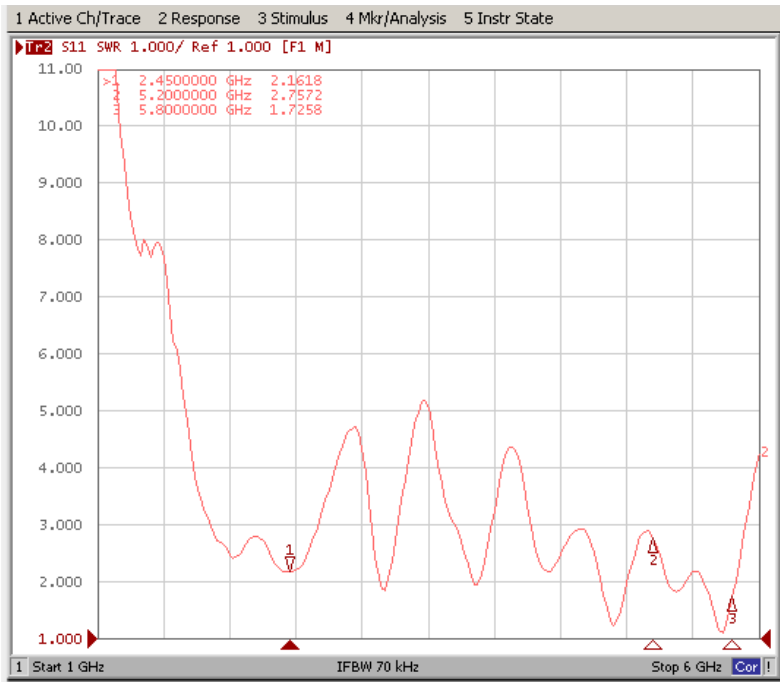


Test schematic diagram

3.2 S11 Test parameters

(Freq.) MHz	2450	5200	5850
VSWR	2.2	2.8	1.7

VSWR



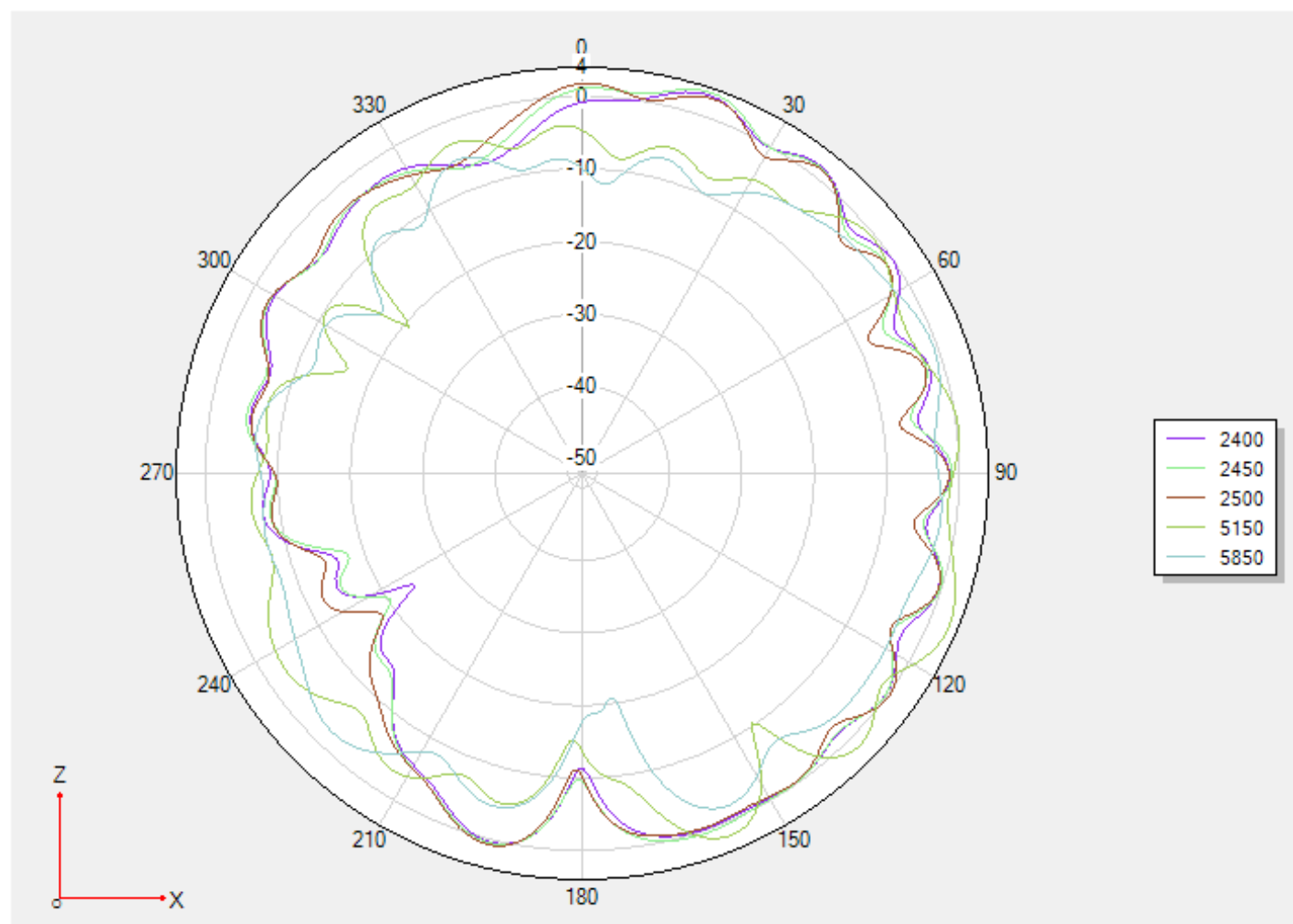
3.3 Antenna efficiency and gain

Freq (MHz)	Effi (%)	Gain (dBi)	Freq (MHz)	Effi (%)	Gain (dBi)	Freq (MHz)	Effi (%)	Gain (dBi)
2400	30.88	0.34	5150	30.16	-2.31	5480	36.9	-0.85
2410	29.41	0.09	5160	30.54	-2.13	5490	36.92	-1
2420	29.96	0.16	5170	30.96	-2.09	5500	36.8	-0.9
2430	31.54	0.45	5180	31.59	-2.00	5510	37.24	-0.77
2440	35.8	0.99	5190	32.23	-1.99	5520	37.08	-0.9
2450	37.32	1.22	5200	32.62	-1.94	5530	39.29	-0.4
2460	37.23	1.12	5210	32.51	-1.98	5540	40.27	-0.21
2470	37.16	1.13	5220	32.68	-1.83	5550	41.4	-0.02
2480	35.95	0.84	5230	31.72	-2.03	5560	39.51	-0.33
2490	37.48	1.01	5240	30.04	-2.47	5570	36.6	-0.82
2500	35.06	0.7	5250	28.98	-2.68	5580	38.74	-0.59
			5260	28.95	-2.75	5590	39.87	-0.35
			5270	29.36	-2.61	5600	40.59	-0.27
			5280	30.86	-2.15	5610	41.79	-0.11
			5290	31.56	-1.85	5620	40.53	-0.4
			5300	30.25	-2.17	5630	41.05	-0.43
			5310	29.24	-2.45	5640	43.75	0.04
			5320	29.84	-2.37	5650	45.73	0.28
			5330	30.3	-2.25	5660	50.58	0.95
			5340	30.94	-2.28	5670	51.02	0.86
			5350	32.56	-2	5680	51.2	0.83
			5360	32.77	-2.02	5690	51.63	0.8
			5370	32.8	-2.02	5700	49.05	0.43
			5380	32.86	-2.14	5710	51.14	0.72
			5390	31.55	-2.39	5720	50.01	0.78
			5400	36.13	-1.46	5730	49.36	0.84
			5410	34.27	-1.85	5740	48.64	0.93
			5420	33.42	-1.67	5750	48.38	1.11
			5430	32.7	-1.69	5760	48.36	0.96
			5440	30.61	-2.36	5770	47.51	0.83
			5450	32.09	-1.86	5780	48.6	0.99

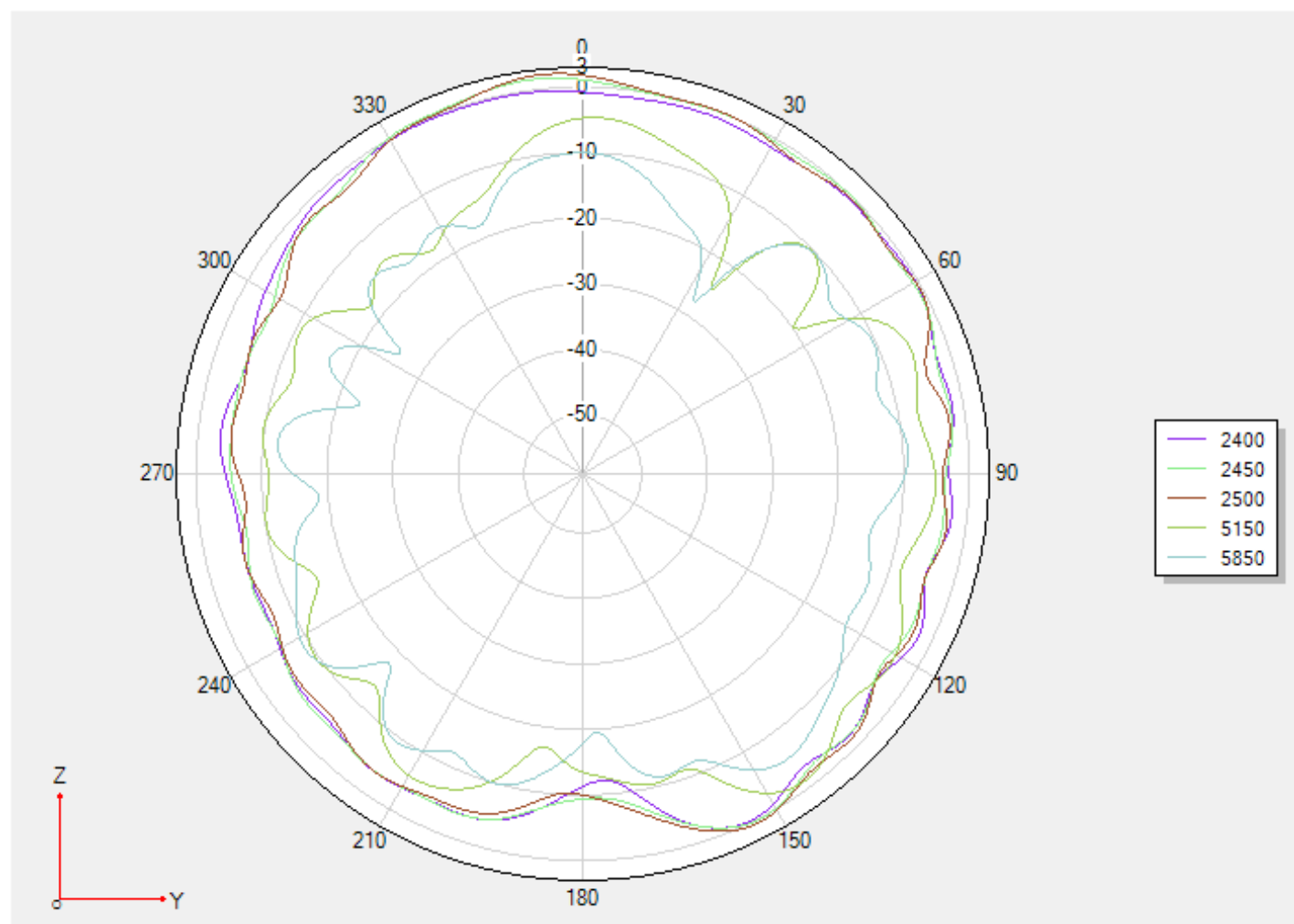
			5460	34.1	-1.47	5790	45.38	0.65
			5470	35.04	-1.16	5800	43.76	0.22

3.4 Antenna radiation pattern

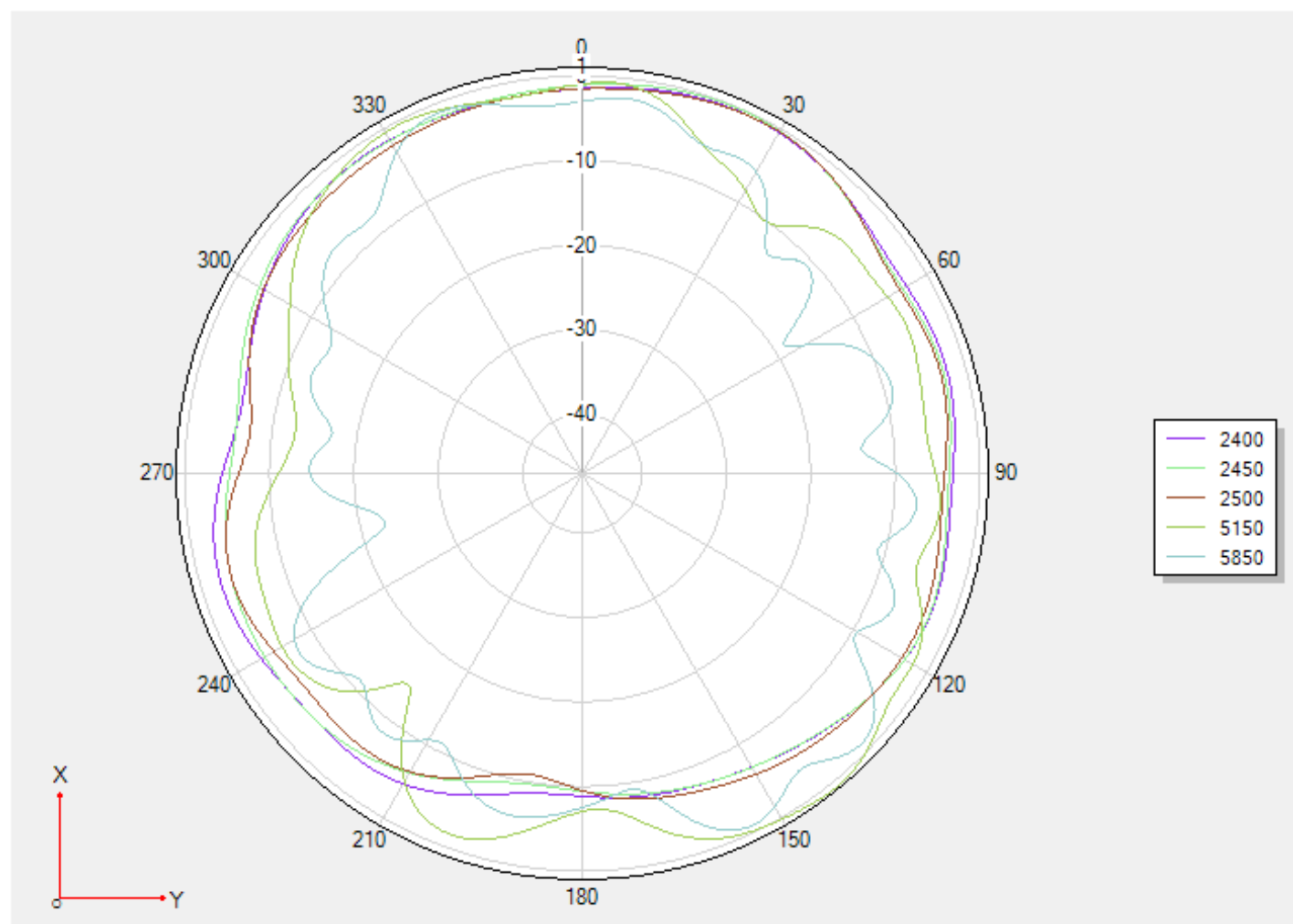
Phi 0 2D



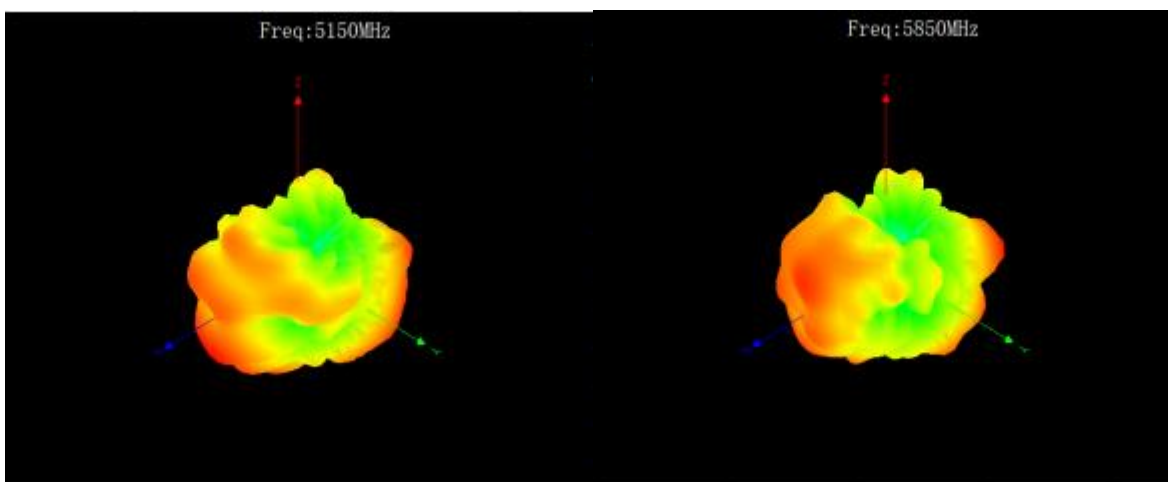
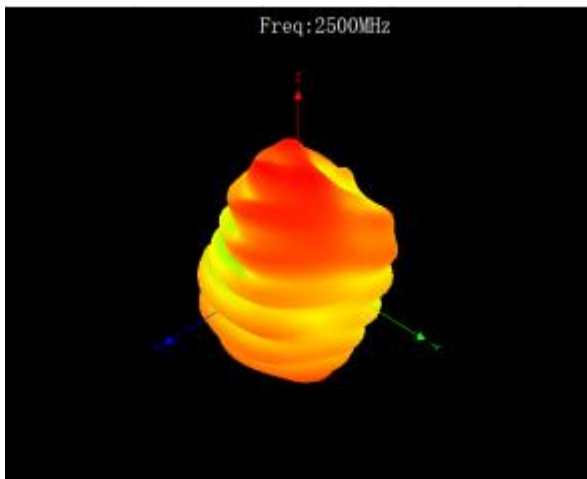
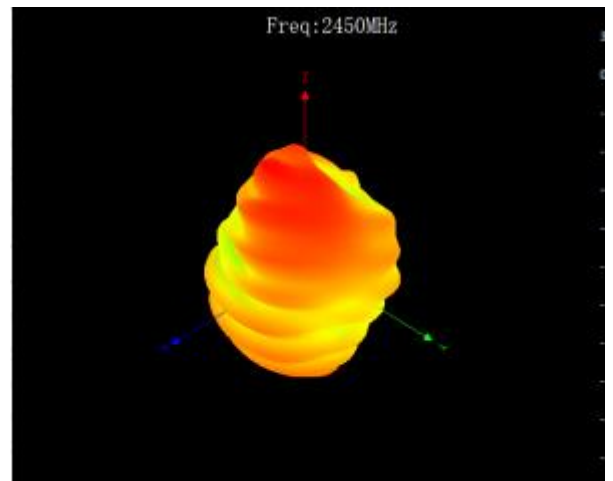
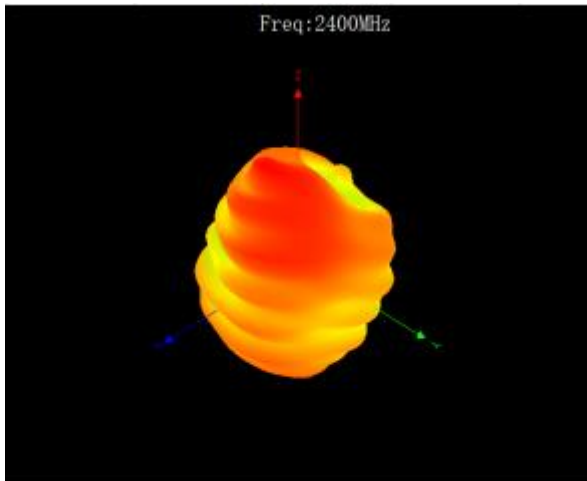
Phi 90 2D



Theta 90 2D



3D Etotal



4. Antenna active testing data

4.1 Test the environment

Test the system : Multi-probe OTA measurement system (XH-IoT)

Test the environment : Temperature $22^{\circ}\text{C}\pm 3^{\circ}\text{C}$, humidity $50\%\pm 15\%$

Test the equipment : When testing passive data, use the network analyzer R&S ZND/ Agilent E5071C
When testing active data, use the Agilent 8960/CMW500/SP9500E/SP8315

OTA实验室



综测仪器



SP9500-CTS-5G



CMW500



SP8315 NB-IoT
/eMTC

其他设备



OTA head hand



OTA ear hand



OTA arm hand

4.2 OTA Active testing data

4.2.1 WIFI Testing data

Band	Channel	TRP	TIS	Band	Channel	TRP	TIS
WIFI 2.4 B	1	14.87	-82.75	WIFI 5 A	36	12.6	-70.05
	6	14.81	-83.58		149	14.37	-72.61
	12	14.59	-81.07		165	13.26	-72.11
WIFI 2.4 G	1	13.67	-71.21	WIFI 5 N	36	12.33	-70.52
	6	13.51	-70.04		149	13.87	-72.31
	12	13.59	-70.14		165	13.4	-72.79
WIFI 2.4 N	1	13.14	-69.74				
	6	13.92	-69.97				
	12	13.15	-69.68				

L920PRO-EB

Band	Channel	TRP	TIS	Band	Channel	TRP	TIS
WIFI 2.4 B	1	14.87	-82.75	WIFI 5 A	36	12.6	-70.05
	6	14.81	-83.58		149	14.37	-72.61
	12	14.59	-81.07		165	13.26	-72.11
WIFI 2.4 G	1	13.67	-71.21	WIFI 5 N	36	12.33	-70.52
	6	13.51	-70.04		149	13.87	-72.31
	12	13.59	-70.14		165	13.4	-72.79
WIFI 2.4 N	1	13.14	-69.74				
	6	13.92	-69.97				
	12	13.15	-69.68				

5. Environmental treatment methods

Process according to the original machine environment without any changes

6. Standard for mass production antennas

When the antenna is mass-produced, the VSWR is used as the mass production test standard.

According to the differences in the project itself, the following criteria are given:

Freq. (MHz)	Mass production standards
2400-2500	$VSWR(\text{Production performance}) < VSWR(\text{Confirmed performance}) + 0.5$
5150-5850	$VSWR(\text{Production performance}) < VSWR(\text{Confirmed performance}) + 0.5$

