



Antenna Scififications



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1、 (Model Information)

Manufacturer	Jianhaitong		
Model Name	MG1011		
Antenna Type	Internal Antenna	Technology	WIFI 2.4/5.8G/GPS LTE 2.G.3G.4G

2、 (Passive and Matching)

2.1 Passive Test Schematic Diagram

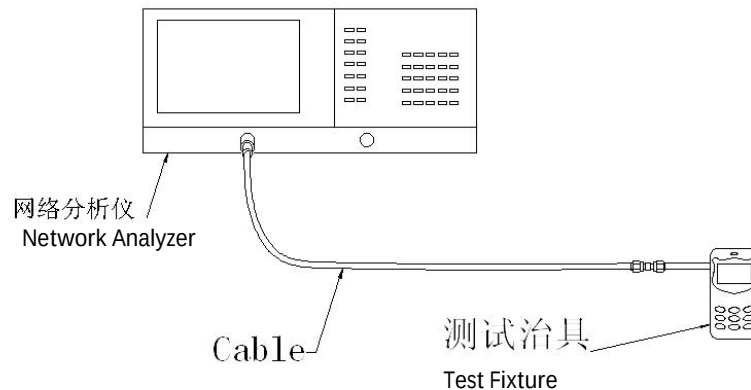
S11 Testing Methodology Explanation

Testing equipment:

Network Analyzer (E5071C, 30 kHz–8.5 GHz)

test method:

Connect a 50 Ω cable from the instrument's test port; after calibrating with a calibration component, connect it to the SMA connector of the sample prototype fixture, and record the return loss and standing wave ratio corresponding to the relevant frequency points.



Shenzhen Jianhaitong Antenna Technology Co., Ltd.

Specializing in the research and development, manufacturing, and sales of antennas.

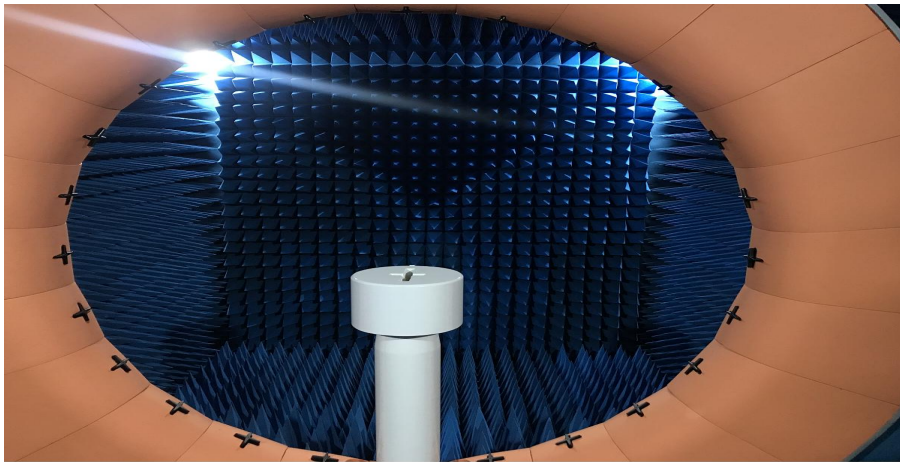
2.2 Active Test Schematic Diagram

3D Testing System: Shielded Darkroom

Test environment: Temperature $22^{\circ}\text{C} \pm 3^{\circ}\text{C}$; Humidity $50\% \pm 15\%$

Test equipment: For testing passive data, use an Agilent E5071C network analyzer.

When testing active data, use the Comprehensive Test Instrument 8960/CMW500.



总全向辐射功率 (TIRP)

$$TIRP \equiv \frac{\pi}{2NM} \sum_{i=1}^{N-1} \sum_{j=0}^{M-1} [Eirp_{\theta}(\theta_i, \phi_j) + Eirp_{\phi}(\theta_i, \phi_j)] \sin(\theta_i)$$

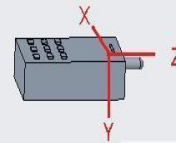
总全向辐射灵敏度 (TIRS)

$$TIRS \equiv \frac{2NM}{\pi \sum_{i=1}^{N-1} \sum_{j=0}^{M-1} \left[\frac{1}{EIS_{\theta}(\theta_i, \phi_j)} + \frac{1}{EIS_{\phi}(\theta_i, \phi_j)} \right]} \sin(\theta_i)$$

E1: XZ的切面 PHI=0

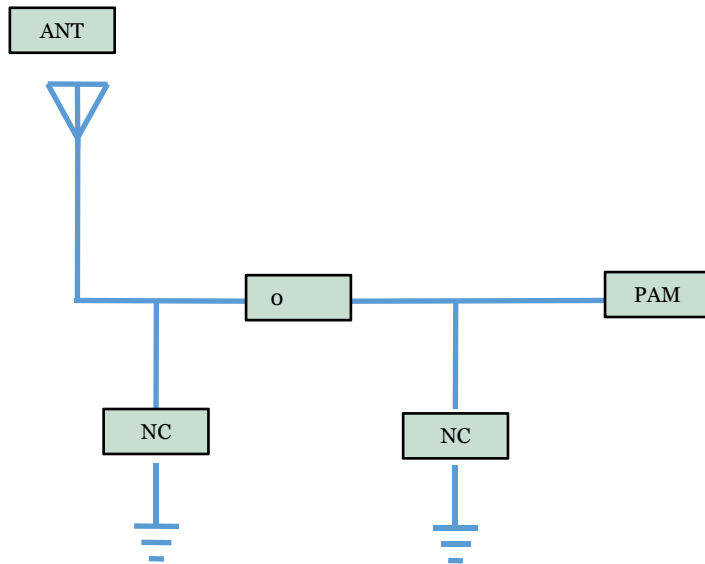
E2: YZ的切面 PHI=90

H: XY的切面 Theta=90



reference for horn antenna

2.3 (Matching Circuit)

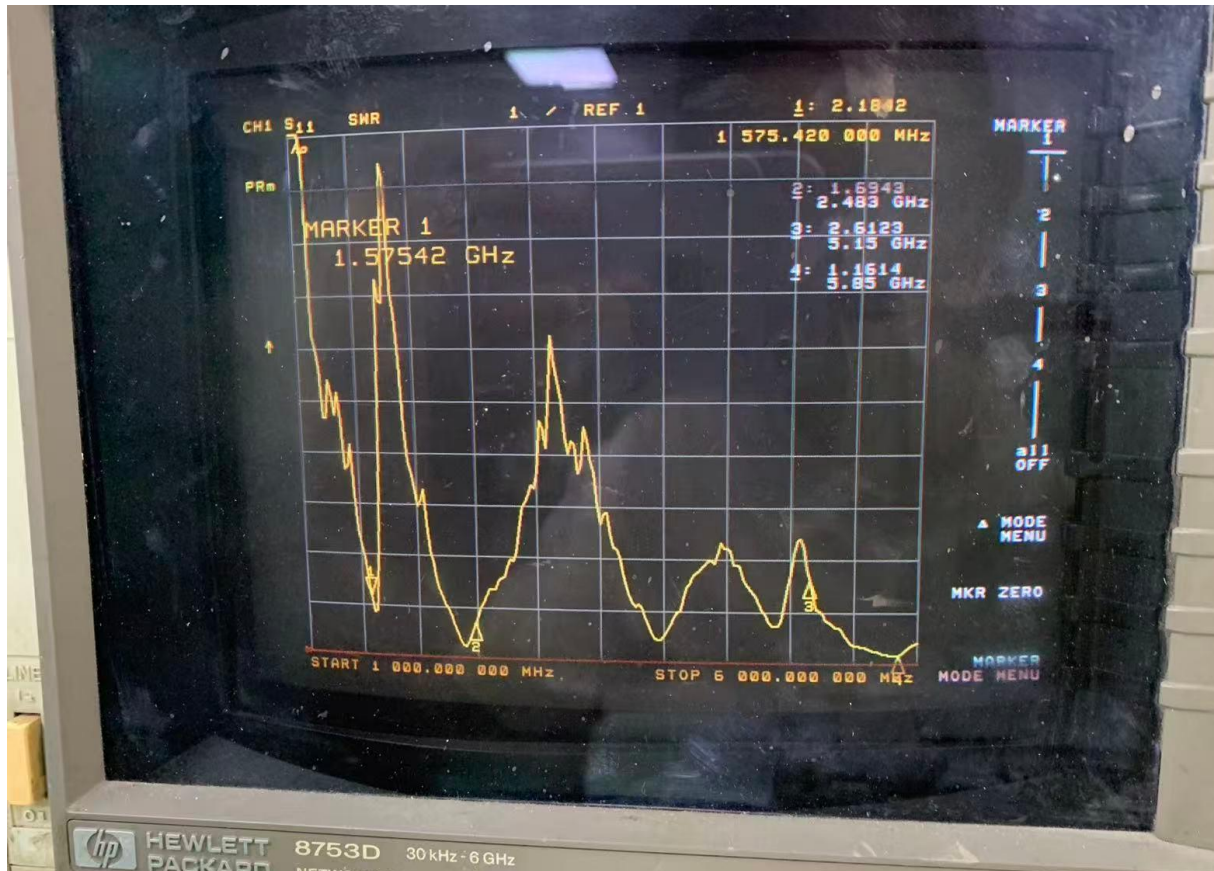


The motherboard configuration has not been modified.

注: The original series resistance is 0 Ω , originating from the antenna.-----

Serial 0-ohm resistor -----PA

3.WIFI S11 Test





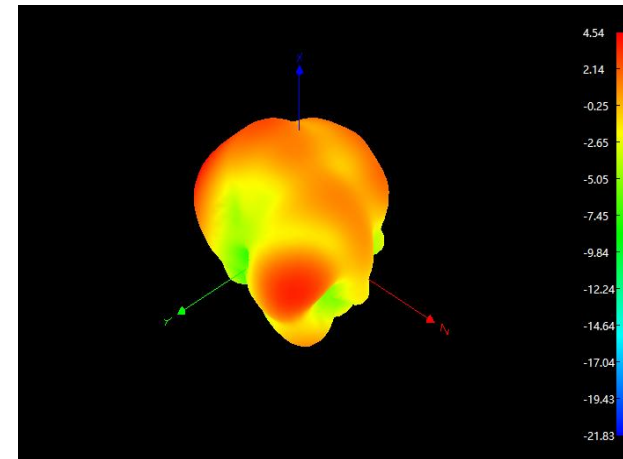
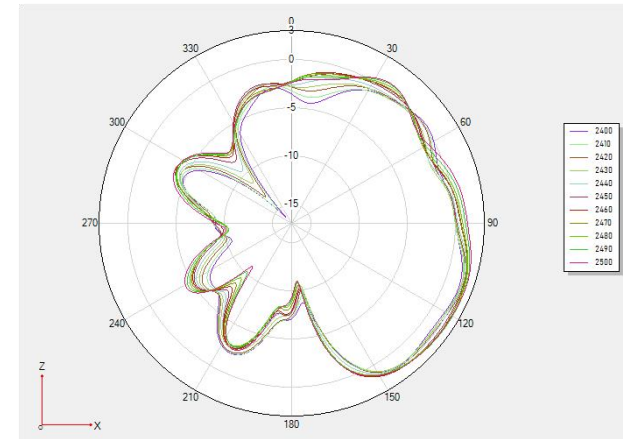
3.1 WIFI Test OTA

Band	Channel	TRP	TIS
802.11b (11Mbps)	L	13.1	-82.39
	M	13.76	-81.65
	H	14.16	-81.78
802.11g (54Mbps)	L	11.28	-72.49
	M	11.59	-71.4
	H	11.9	-71.66
802.11n (MCS7-65Mbps)	L	11.94	-68.3
	M	12.11	-66.91
	H	12.36	-67.58
802.11a (54Mbps)	L	12.1	-72.99
	M	12.54	-73.37
	H	12.69	-70.98



3.2 WIFI 2.4G Passive testing

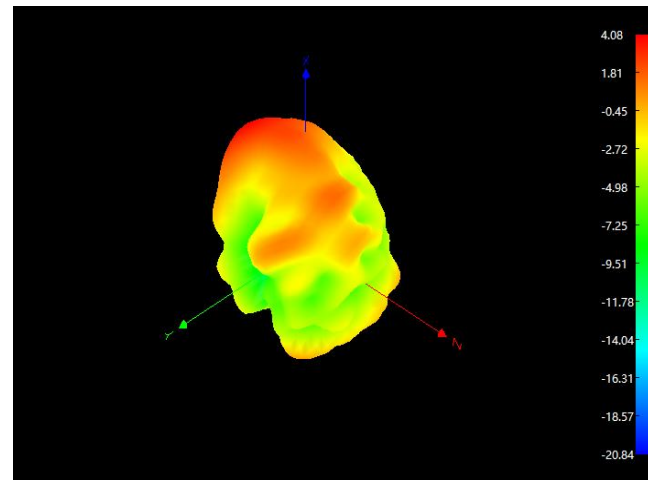
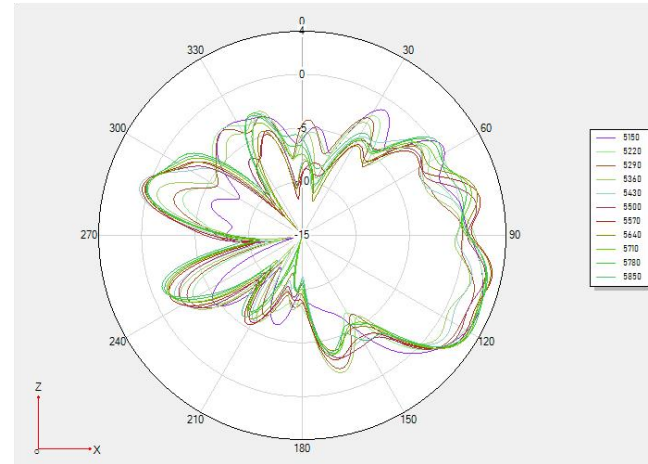
Frequency / MHz	Gain/ dB	Efficiency / %
2400	3.97	53.33
2410	3.98	54.33
2420	4.13	56.62
2430	4.01	55.34
2440	4.25	56.36
2450	4.54	58.61
2460	4.51	58.08
2470	4.25	57.02
2480	4.12	56.62
2490	4.08	56.62
2500	3.96	56.1





3.3 WIFI 5.8G Passive testing

Frequency / MHz	Gain/ dB	Efficiency / %
5150	3.95	47.32
5220	4.08	47.42
5290	3.65	46.24
5360	2.57	45.71
5430	2.5	42.85
5500	2.76	45.5
5570	3.37	47.21
5640	3.37	45.29
5710	3.63	45.6
5780	3.82	47.86
5850	3.87	48.08



4 . GPS measured drawing



4.1 GPS measured drawing



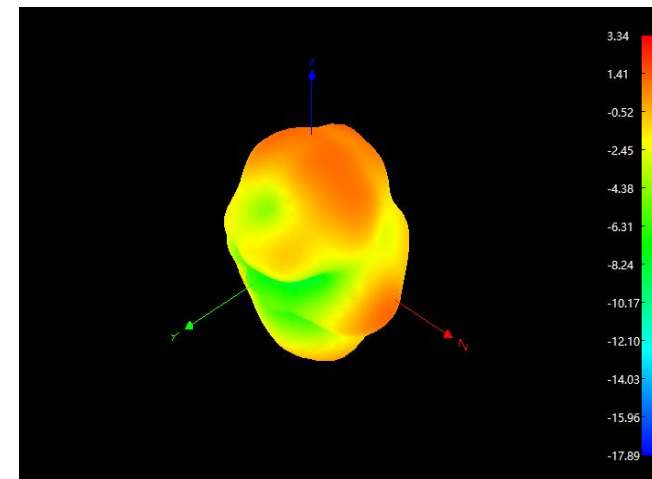
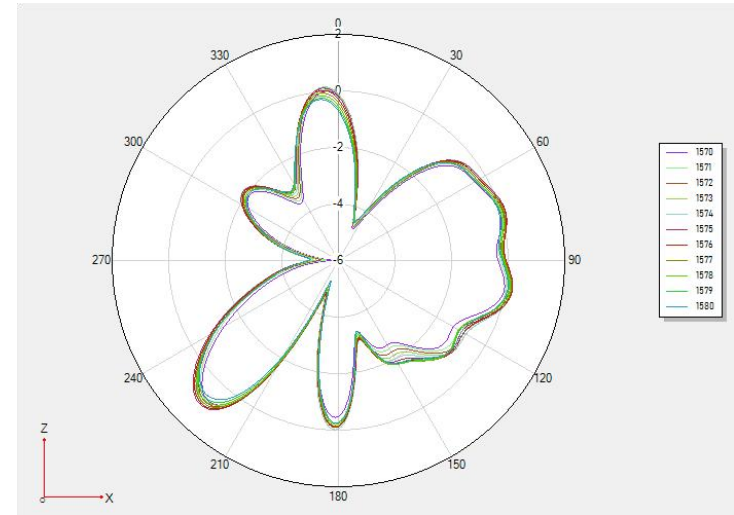


4.2 GPS measured drawing

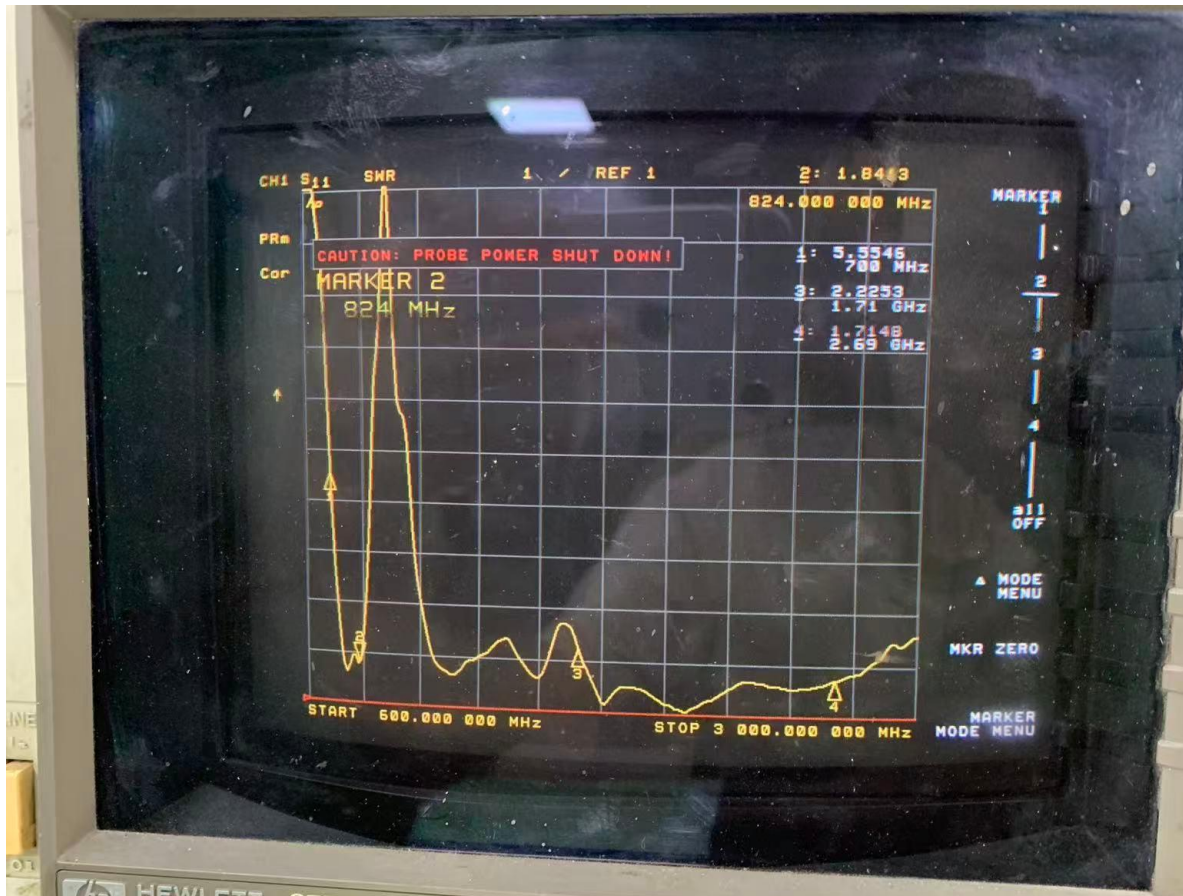


4.3 GPS Passive Testing

Frequency / MHz	Gain/ dB	Efficiency / %
1570	2.91	39.17
1571	3.05	40.18
1572	3.17	41.11
1573	3.28	41.78
1574	3.34	42.17
1575	3.34	42.27
1576	3.32	41.88
1577	3.26	41.4
1578	3.17	40.93
1579	3.07	40.55
1580	2.98	40.27



5、LTE S11 Test





5.1、LTE test

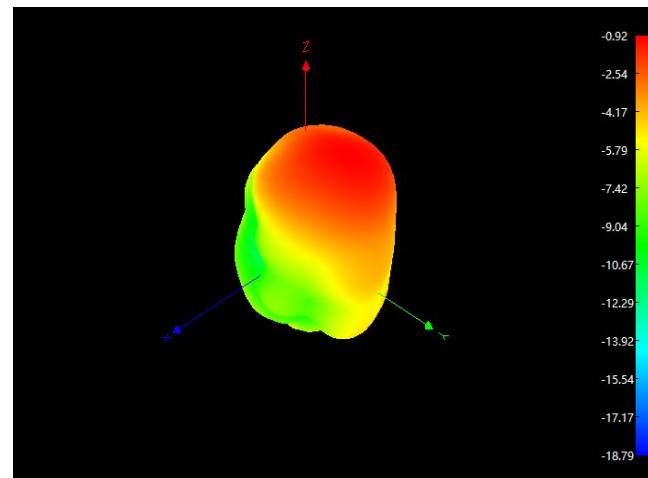
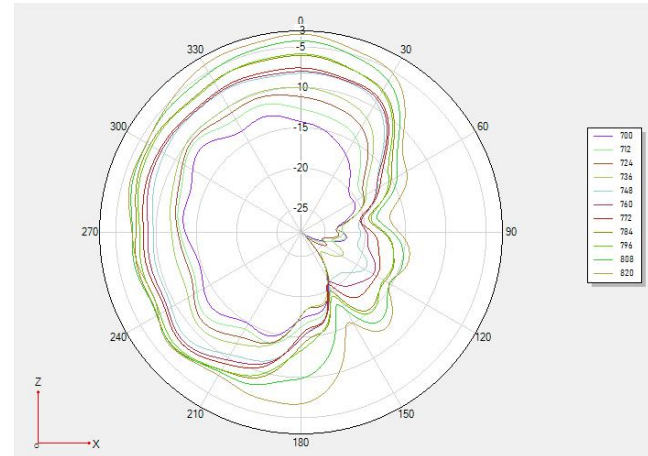
channel	900			850			1800			1900		
	1	62	124	128	190	251	512	698	885	512	661	810
TRP	23.2	22.47	21.16	26.26	24.6	24.37	25.65	26.25	26.54	26.23	26.27	26.12
TIS			-100.3			-102.35			-104.09			-103.19

channel	WCDMA B2			WCDMA B5		
	CH9262	CH9400	CH9538	CH4132	CH4183	CH4233
TRP	19.27	19.35	18.8	18.33	17.91	17.88
TIS			-105.08			-103.15

channel	LTE B2			LTE B4		
	CH18650	CH18900	CH19150	CH20000	CH20175	CH20350
TRP	18.98	18.14	18.48	18.57	18.96	18.61
TIS			-92.89			-93.42

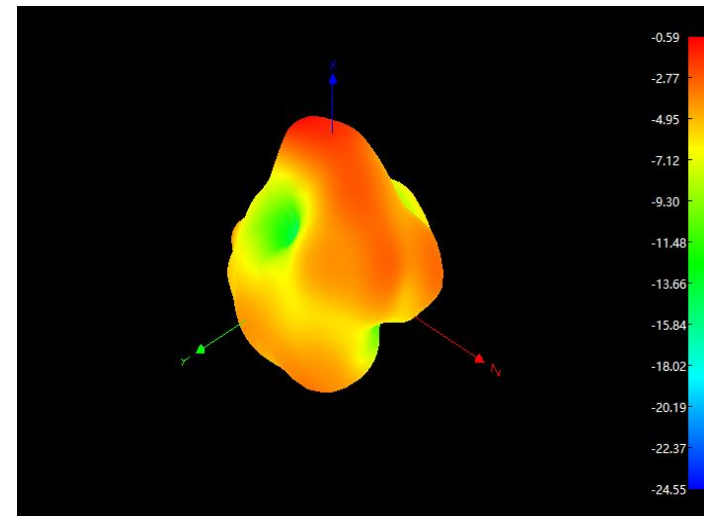
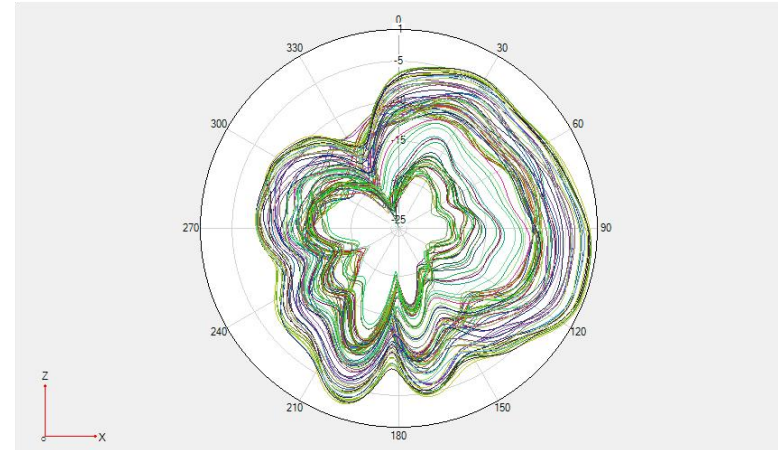
5.2、LTE Passive Testing

Frequency / MHz	Gain/ dB	Efficiency / %
700	-7.23	12.47
712	-6.78	13.28
724	-5.05	14.06
736	-5.75	14.5
748	-5.74	14.97
760	-5.89	15.71
772	-5.29	15.1
784	-3.98	12.94
796	-3.8	12.33
808	-2.3	14.96
820	-0.92	16.67



5.3、LTE Passive Testing

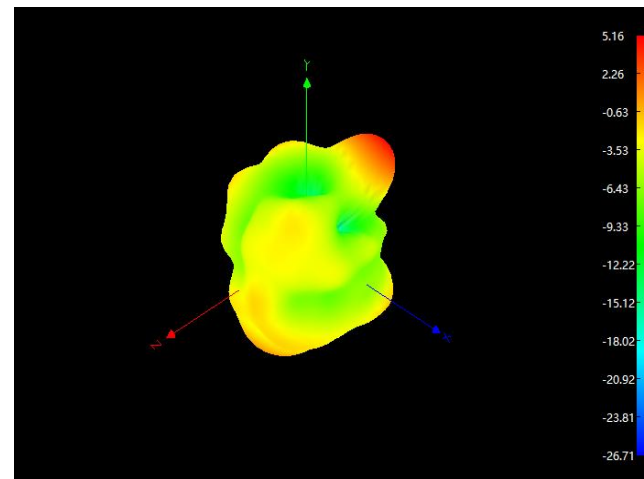
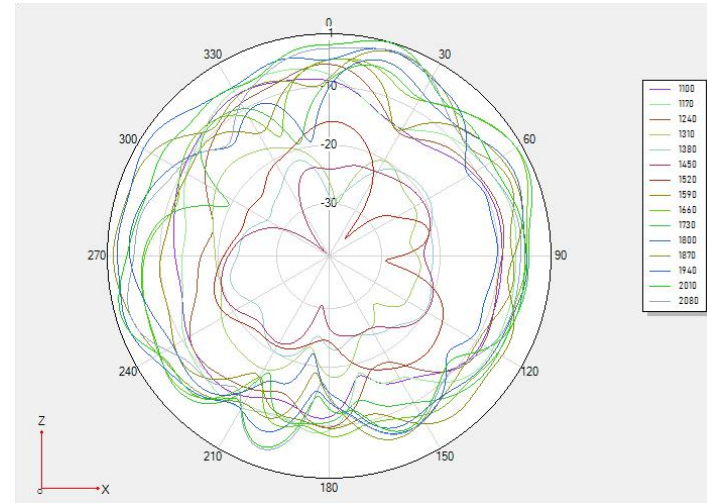
Frequency / MHz	Gain/ dB	Efficiency / %
820	-0.92	16.67
830	-0.93	16.71
840	-0.59	22.28
850	-0.82	22.8
860	-0.85	23.77
870	-0.63	23.33
880	-1.12	28.44
890	-0.75	29.92
900	-1.39	28.71



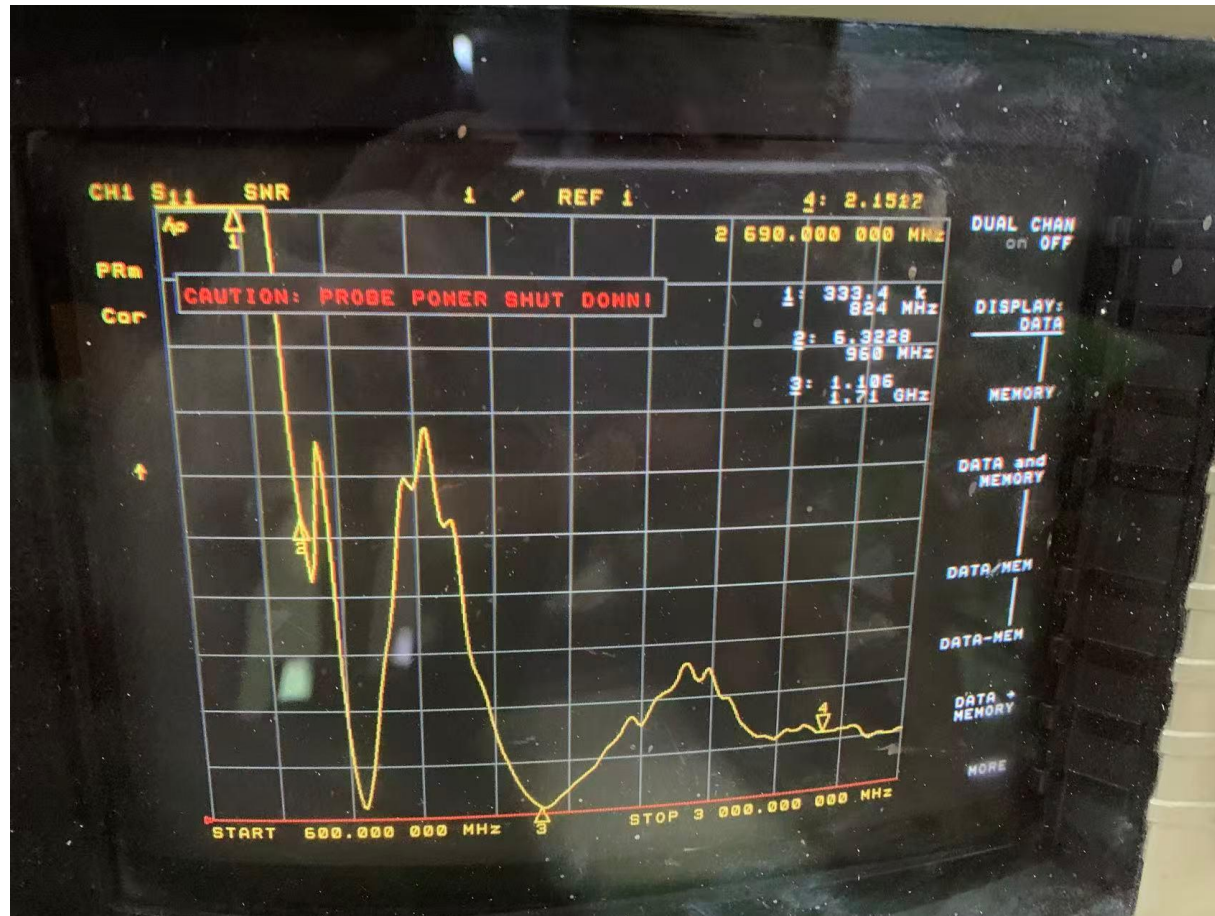


5.4、LTE Passive Testing

Frequency / MHz	Gain/ dB	Efficiency / %
1660	1.47	25.88
1730	1.95	23.6
1800	1.13	25
1870	2.88	32.96
1940	2.67	42.27
2010	5.16	48.75
2080	2.33	34.99



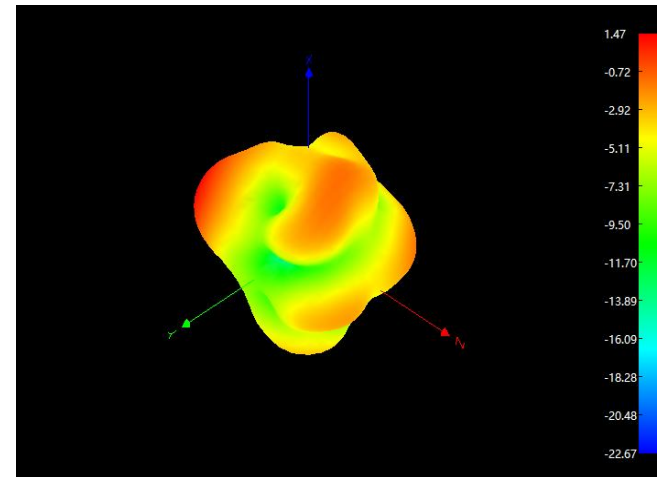
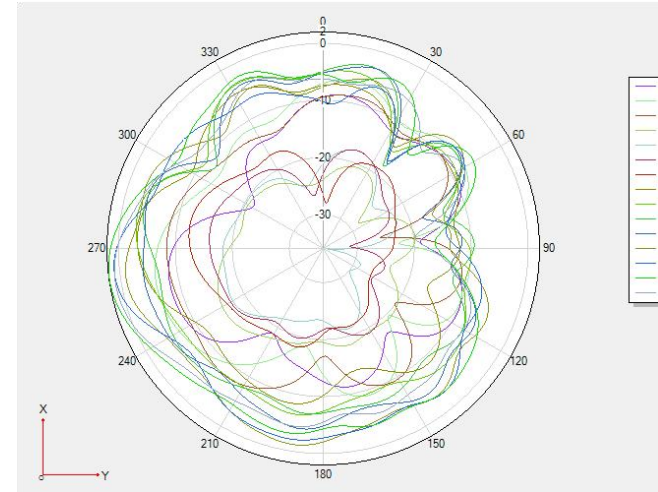
6、DIV S11 Test



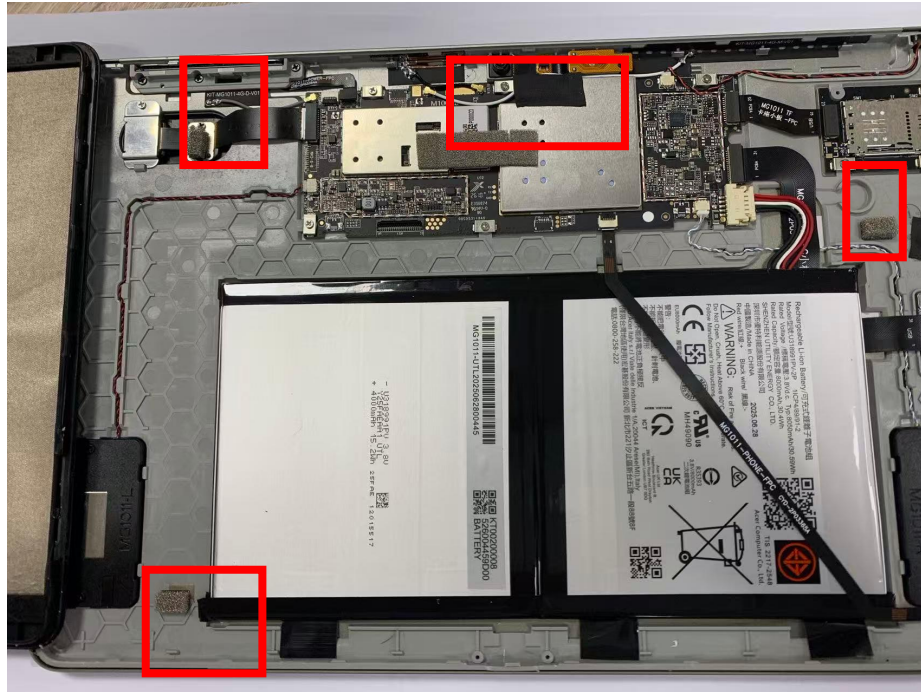


6.1、DIV Passive Test

Frequency / MHz	Gain/ dB	Efficiency / %
1700	0.32	23.65
1800	0.54	24.68
1900	0.6	25.12
2000	0.68	25.72
2100	0.52	25.19
2200	0.92	26.35
2300	1.02	27.15
2400	1.23	28.1
2500	1.3	27.31
2600	0.98	26.59
2700	0.87	24.9

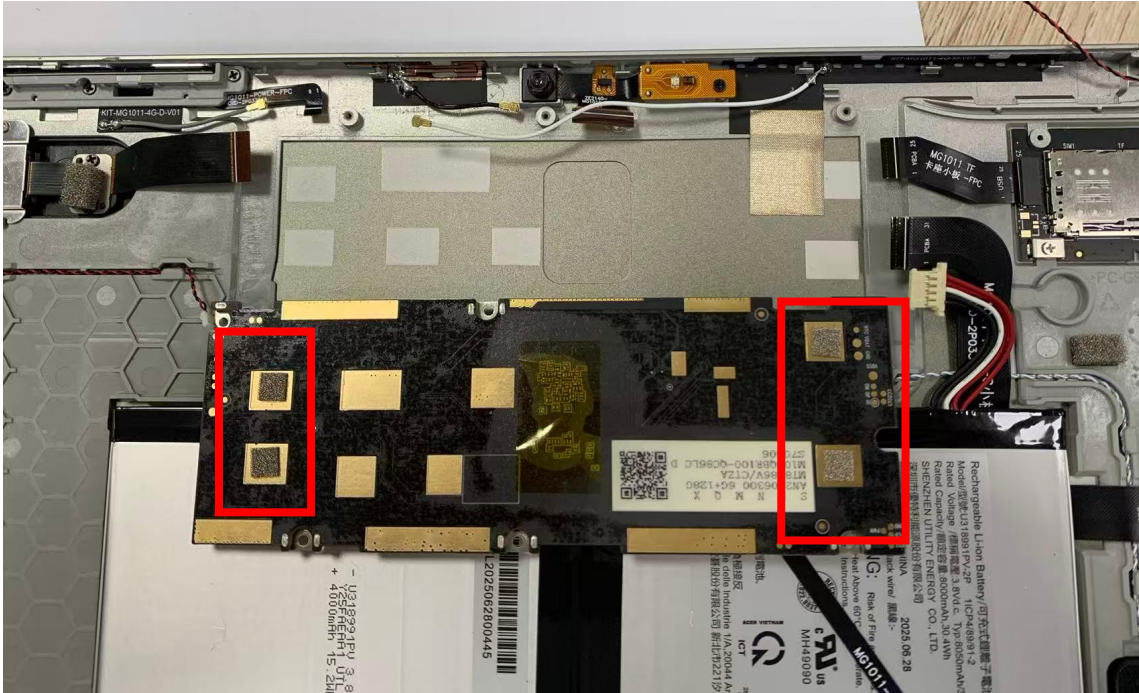


7、Environmental treatment



The motherboard uses conductive foam for grounding, while the screen's back is grounded to metal.

7.1、 environmental treatment



Mainboard uses conductive foam and metal grounding.

8、Antenna Assembly Instructions



