

Material Acknowledgement

Suppliers: Shenzhen Maya Communication Equipment Co., Ltd

Model: A71

Product Name: On the antenna assembly

Specifications / Models: _____

Material Code: _____

Color: black

Address: _____

Contact / Phone: _____

Supplier (with official seal)

Structural Department	R&D Department	Quality Department	Project Department	

Customer review

ID Department	Structural Department / Special Project	Hardware Department	Packaging engineering	Quality Department
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Specifications

The report mainly provides A68 GSM +LTE,performance parameter test, antenna for built-in antenna:

2、Electrical performance

2-1Specification Standard

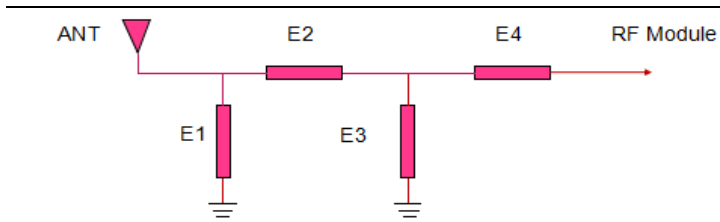
The A68 antenna operates in the LTE700/850/900 1800/1900/2100/2300/2700Mhz band, which generates resonances in this ;The following table shows the mass production performance test indicators for the A89 design antenna:

Band	VSWR	Band	VSWR
GSM850	≤ 1.8	LTE FDD, B26	≤ 1.8
GSM900	≤ 2.4	LTE FDD, B28	≤ 1.2
DCS1800	≤ 2.5	LTE FDD, B66	≤ 1.8
PCS1900	≤ 2.5	LTE TDD, B34	≤ 1.5
WCDMA1	≤ 1.5	LTE TDD, B38	≤ 1.8
WCDMA2	≤ 2.5	LTE TDD, B39	≤ 2.5
WCDMA4	≤ 2.5	LTE TDD, B40	≤ 2.4
WCDMA5	≤ 1.8	LTE TDD, B41	≤ 1.8
WCDMA6	≤ 1.8	CDMA BC0	≤ 1.8
WCDMA8	≤ 2.4	CDMA BC1	≤ 1.8
WCDMA19	≤ 1.8		
LTE FDD, B1	≤ 1.5		
LTE FDD, B2	≤ 2.5		
LTE FDD, B3	≤ 2.5		
LTE FDD, B4	≤ 2.5		
LTE FDD, B5	≤ 1.8		
LTE FDD, B7	≤ 1.8		
LTE FDD, B8	≤ 2.4		
LTE FDD, B12	≤ 1.2		
LTE FDD, B13	≤ 1.9		
LTE FDD, B17	≤ 1.2		
LTE FDD, B18	≤ 1.8		
LTE FDD, B19	≤ 1.8		
LTE FDD, B20	≤ 1.8		
LTE FDD, B25	≤ 2.5		

2-2antenna matching circuit

Antenna Matching circuit is designed to match the motherboard and antenna, so that the mobile phone in the operating frequency band to achieve the best RF performance.

EGSM+WCDMA+CDMA+LTE, antenna structure mode:



Element	Value
E1(0201)	1.0pF
E2(0201)	3nH
E3(0201)	9.1nH
E4(0201)	0 Ω

Main antenna

3.Standing Wave Ratio(VSWR)test

3-1 Test settings

The VSWR test units are connected in turn: E5071B Network Analyzer → 50 ohm coaxial

Cable → 156mm long copper tube /b110> → Test fixtures. Processing of the test fixture: A hard cable is used from the antenna 50 ohm test point on the pcb of the mobile phone to lead out the SMA-J connector, connect it to the copper tube with a choke, and then connect the other devices in turn.

3-2 VWR test

The following table shows the value of the standing wave ratio of the edge frequency point of the GSM+LTE antenna operating band, , the return loss, VSWR, and the relevant waveform plot is shown in the annex:

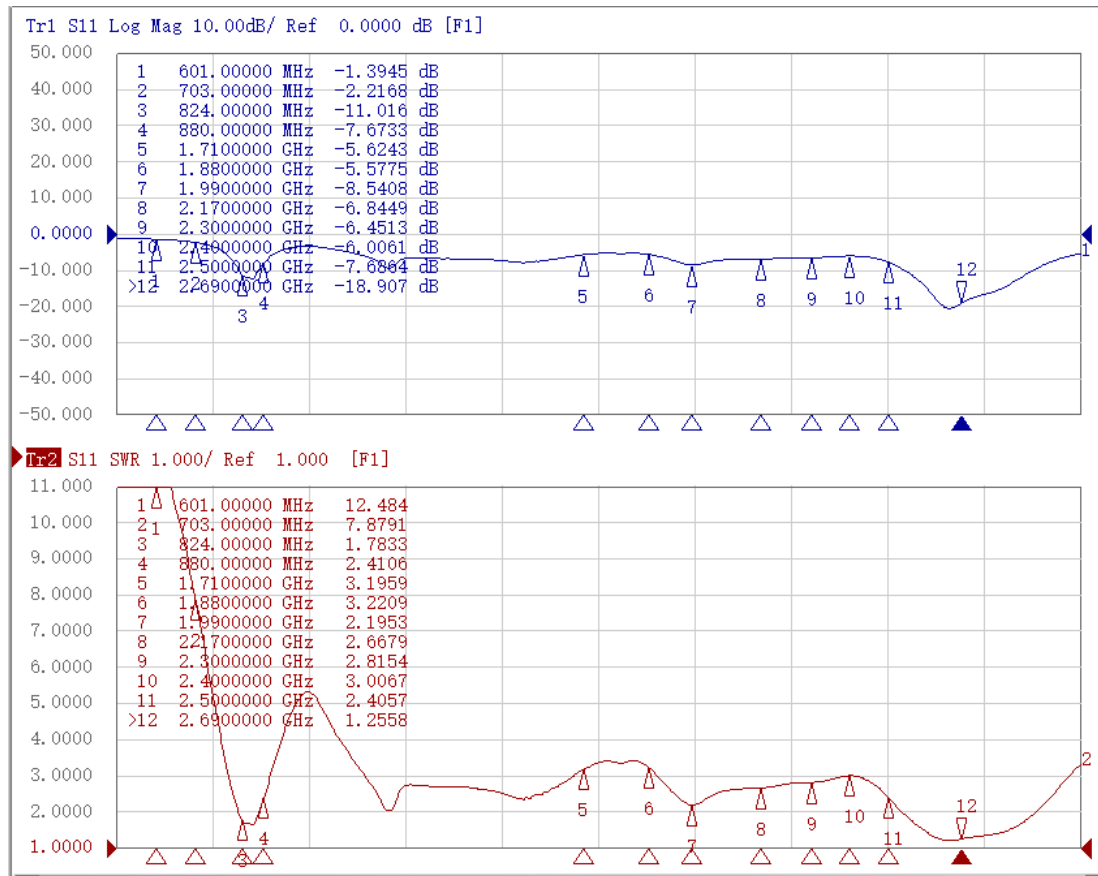
Main antenna VSWR								
Freq(MHz)	824	894	880	960	1710	1880	1950	1990
Free Space	1.8	1.7	2.4	4.7	2.5	2.5	2.5	3.2

Main antenna VSWR					
Freq(MHz)	2170	2300	2400	2500	2700
Free Space	1.9	2.3	2.4	1.8	1.4

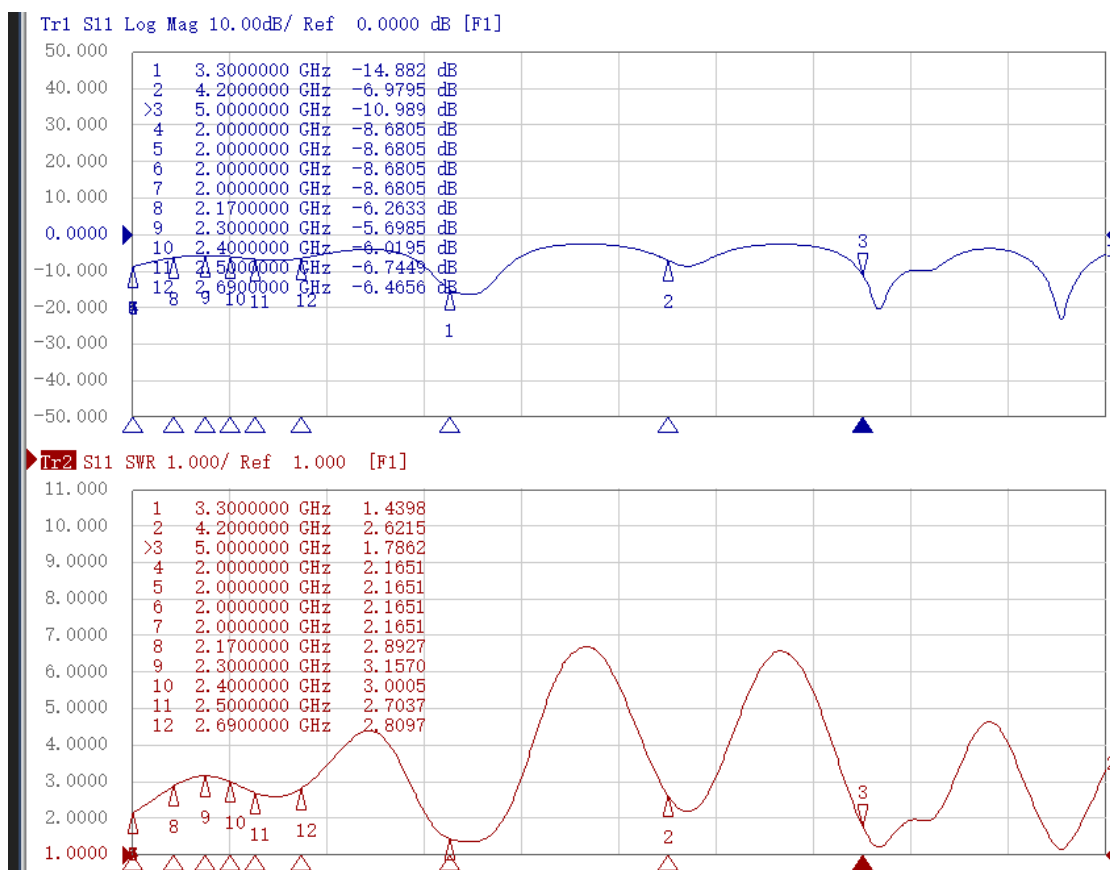
Xc r5ytyrtuuuyuururt66uyrtuytymn

3-3test results

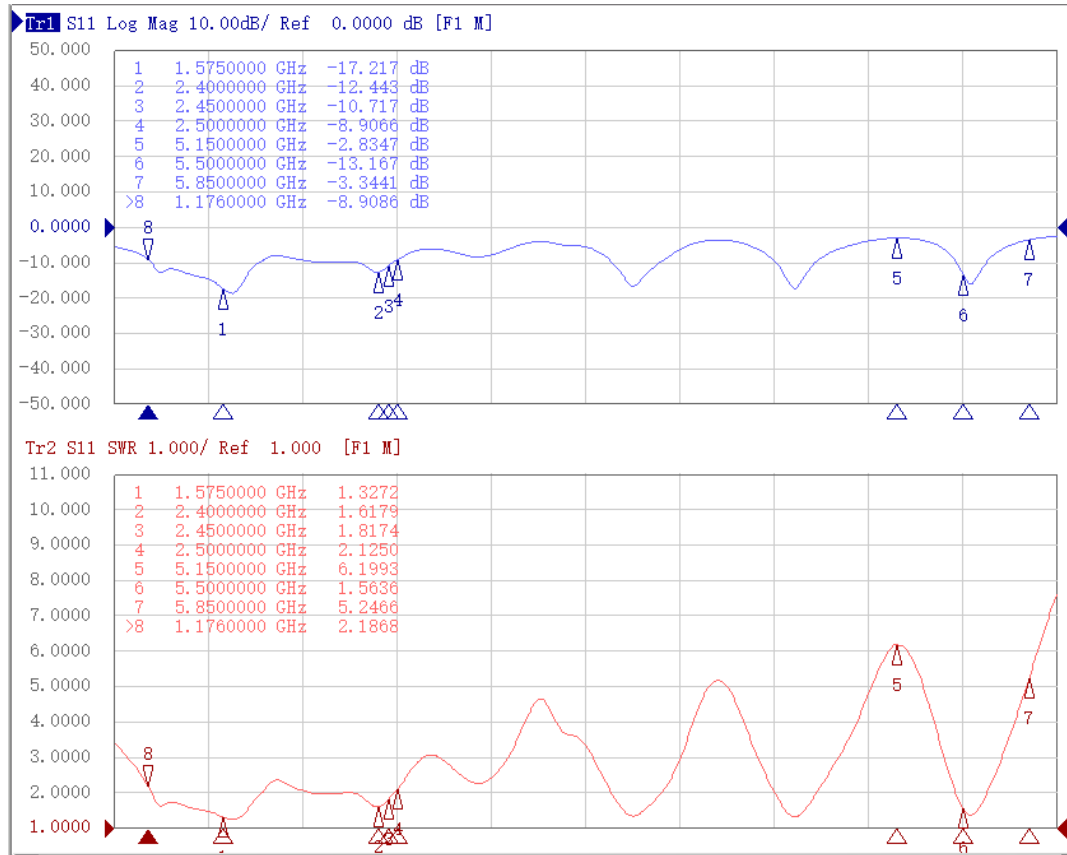
MAIN VSWR/Return Loss



5G MAIN VSWR/Return Loss



WiFi/GPS VSWR/Return Loss



3-4 gain test

WiFi/GPS Gain

Freq	Gain	Freq	Gain	Freq	Gain
1560	0.6	2400	0.79	5200	2.62
1570	0.4	2420	0.72	5300	1.64
1580	0.4	2440	0.71	5400	1.59
1590	0.3	2460	0.63	5500	1.27
		2480	0.62	5600	1.28
		2500	0.57	5700	1.53
				5800	1.51

MAIN Gain

Freq	Gain	Freq	Gain	Freq	Gain
700	-5.877447031	950	-2.423625114	2160	0.87
710	-5.384724512	960	-2.641699399	2180	0.96
720	-4.920134011	1700	-0.87	2300	1.12

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730	-4.938464012	1720	-0.656592268	2320	1.292676949
740	-5.207456278	1740	-1.190062812	2340	1.56340043
750	-5.236670126	1760	-1.595110668	2360	1.412436369
760	-5.434364951	1780	-2.403741898	2380	1.502208441
770	-5.39248591	1800	-2.652943304	2400	1.666104995
780	-5.578089334	1820	-2.541841972	2420	1.466418773
790	-5.334460847	1840	-1.666315974	2440	1.883301255
800	-4.125621588	1860	-1.173061828	2460	1.997687652
810	-3.897620386	1880	-0.655928801	2480	2.116724192
820	-3.742047203	1900	-0.619102337	2500	2.230547094
830	-3.82342651	1920	-0.998838623	2520	1.93761134
840	-3.973526102	1940	-0.665958144	2540	2.080530968
850	-3.949982145	1960	-0.856069045	2560	1.483138054
860	-4.202611117	1980	-0.698031845	2580	1.292676949
870	-4.224988447	2000	-0.440632701	2600	1.56340043
880	-3.629237622	2020	-0.455831177	2620	1.412436369
890	-3.561149293	2040	-0.451896311	2640	1.502208441
900	-3.639415484	2060	-0.281426696	2660	1.666104995
910	-3.432548837	2080	-0.243357324	2680	1.466418773
920	-3.194823296	2100	0.245611135	2700	1.64825144
930	-2.364928373	2120	0.35550257		
940	-2.606146164	2140	1.018434464		

5G MAIN Gain

Freq	Gain
3300	-0.634680573
3400	0.098113926
3500	0.76746649
3600	1.359787197
3700	1.704647124
3800	1.425582199
3900	1.566755992
4000	1.546926687
4100	1.57808065
4200	1.513976326

The active test units are connected in turn as follows: Agilent8960/8820C → 50 ohm

coaxial Cable → GTS Test System → sted.

4-1 Test site

GTS microwave anechoic chamber: the test frequency range is 400MHz-6GHz, the quiet zone range is 40cm circumference, and the reflectivity is less than -90 dB.

4-2 Test results

Maximum radiated power and maximum receive sensitivity reflect the antenna's maximum power radiated value and optimal reception performance over the entire radiation space. Δ 10> TRP and TIS reflect the average radiated power and average reception sensitivity of the antenna, that is, the overall reception performance of the antenna.

5. Environmental treatment

Original environment treatment.

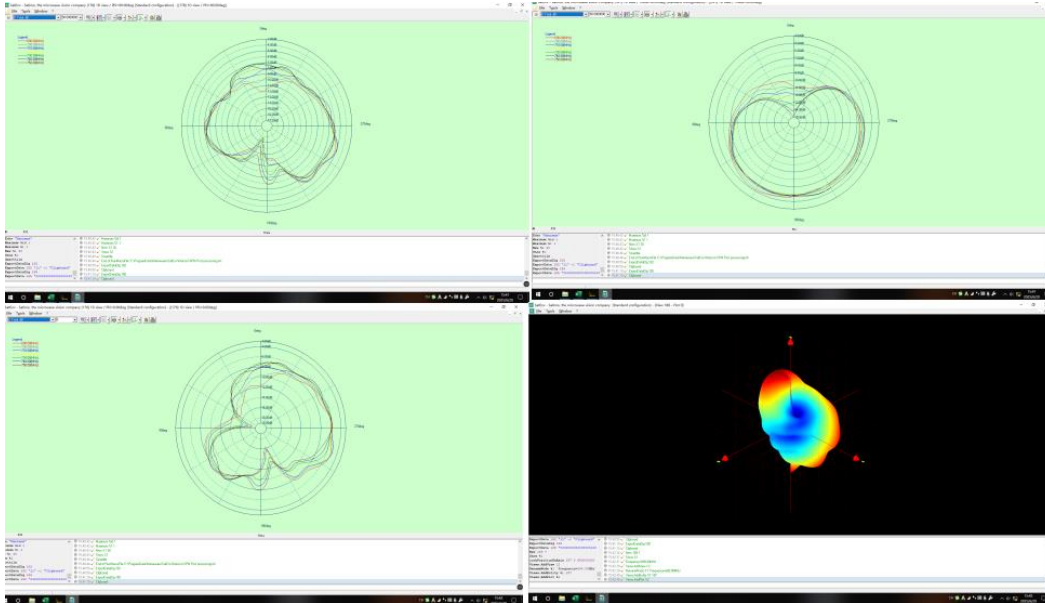
6. Recommendations and Conclusions

This report is based on the antenna electrical performance measured by the customer's final version of the A68. As can be seen from the above test data, this antenna provides better electrical performance.

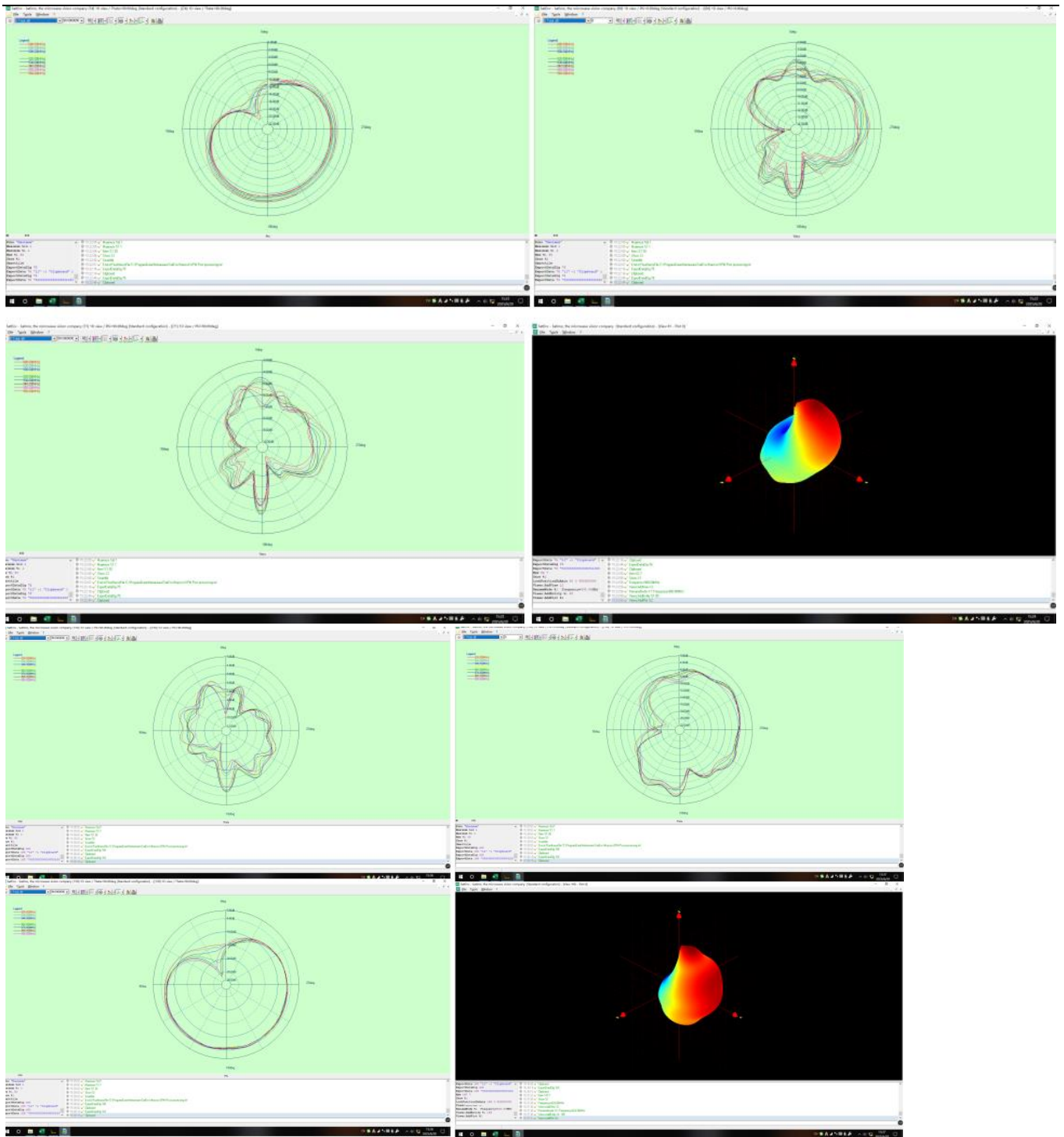
Fubang R&D looks forward to your confirmation, thank you for your cooperation!

7.Passive Pattern

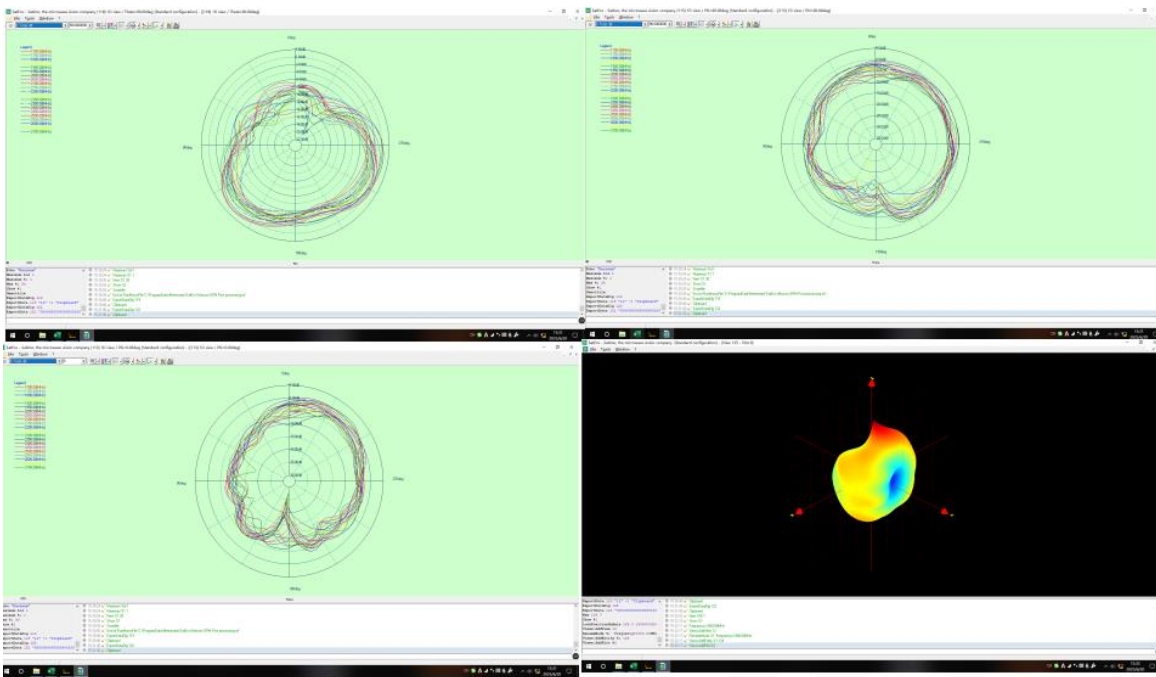
690-960MHz



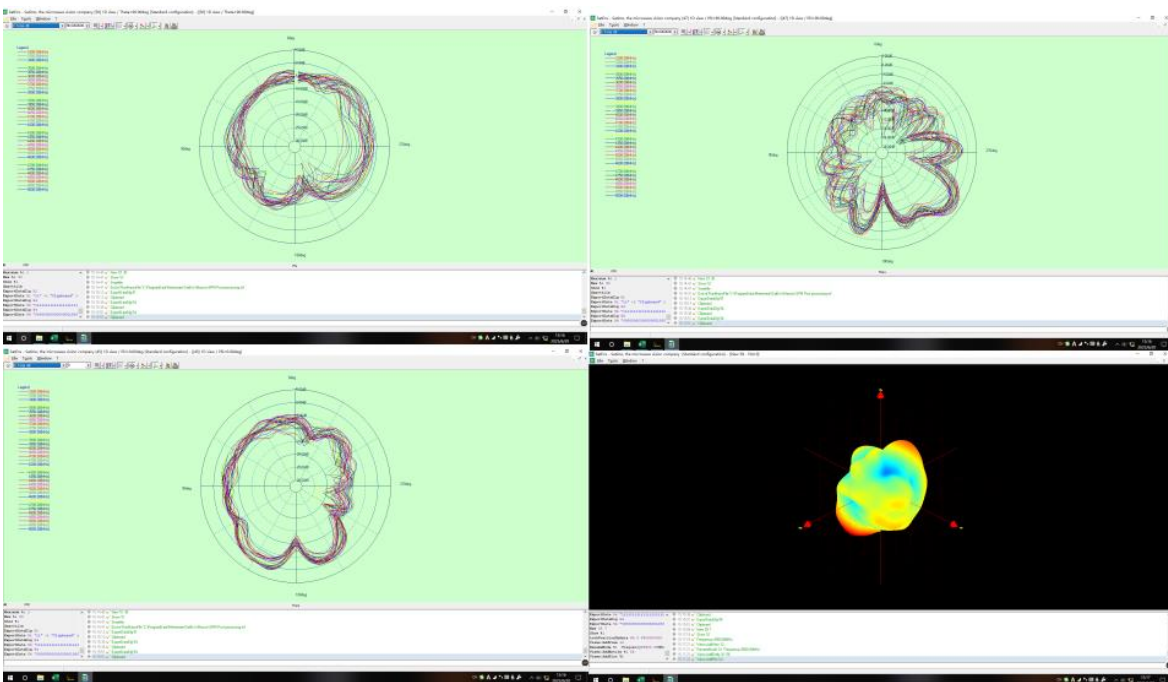
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1700-2700MHz

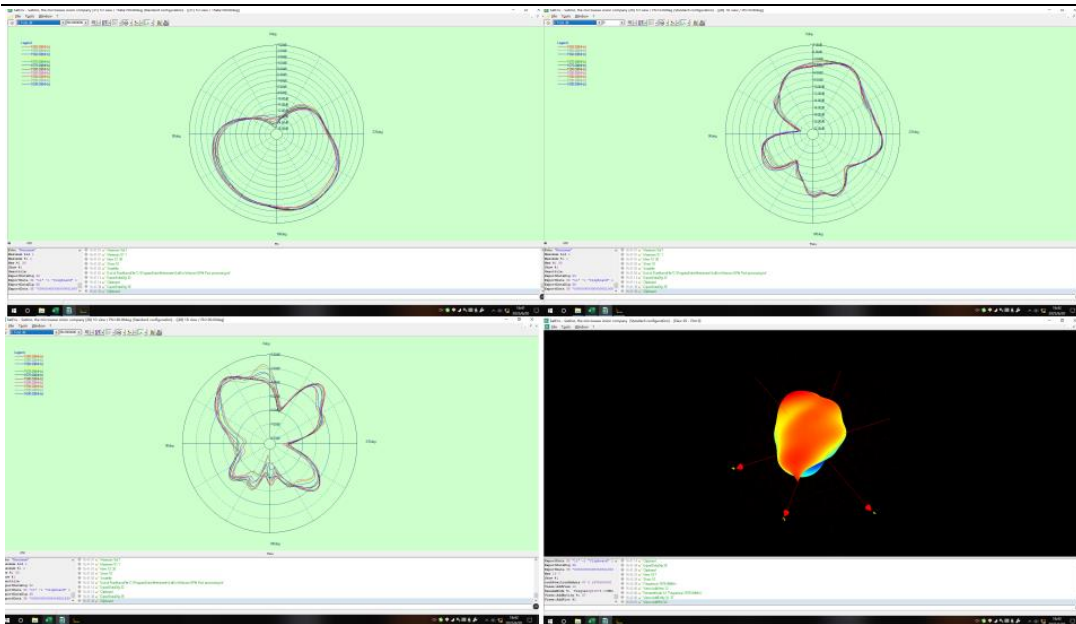


3300-4200MHz

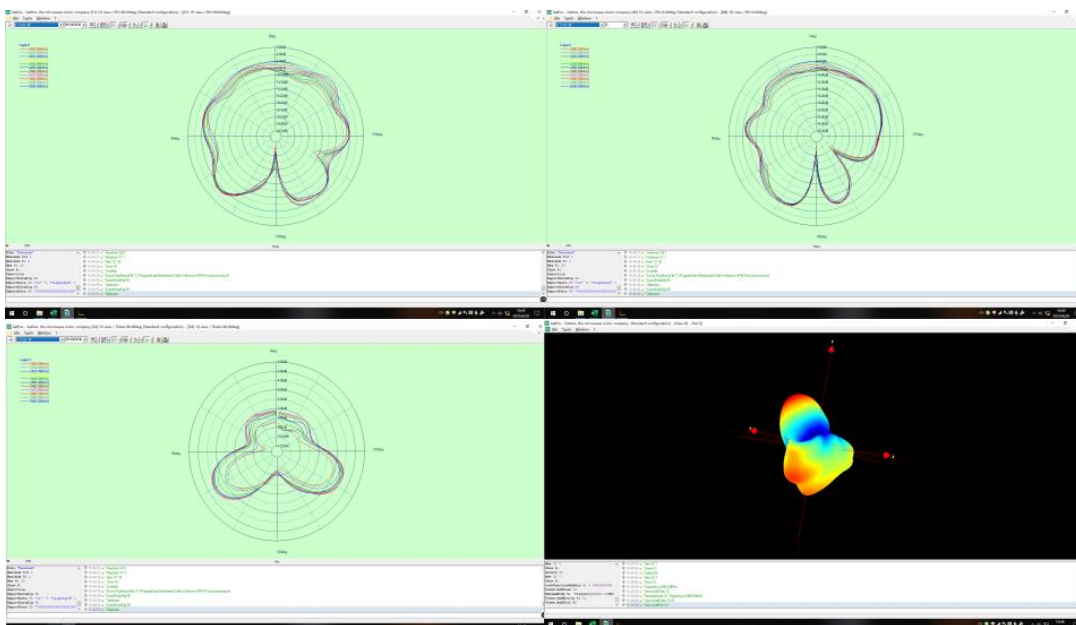


1570-1580MHz

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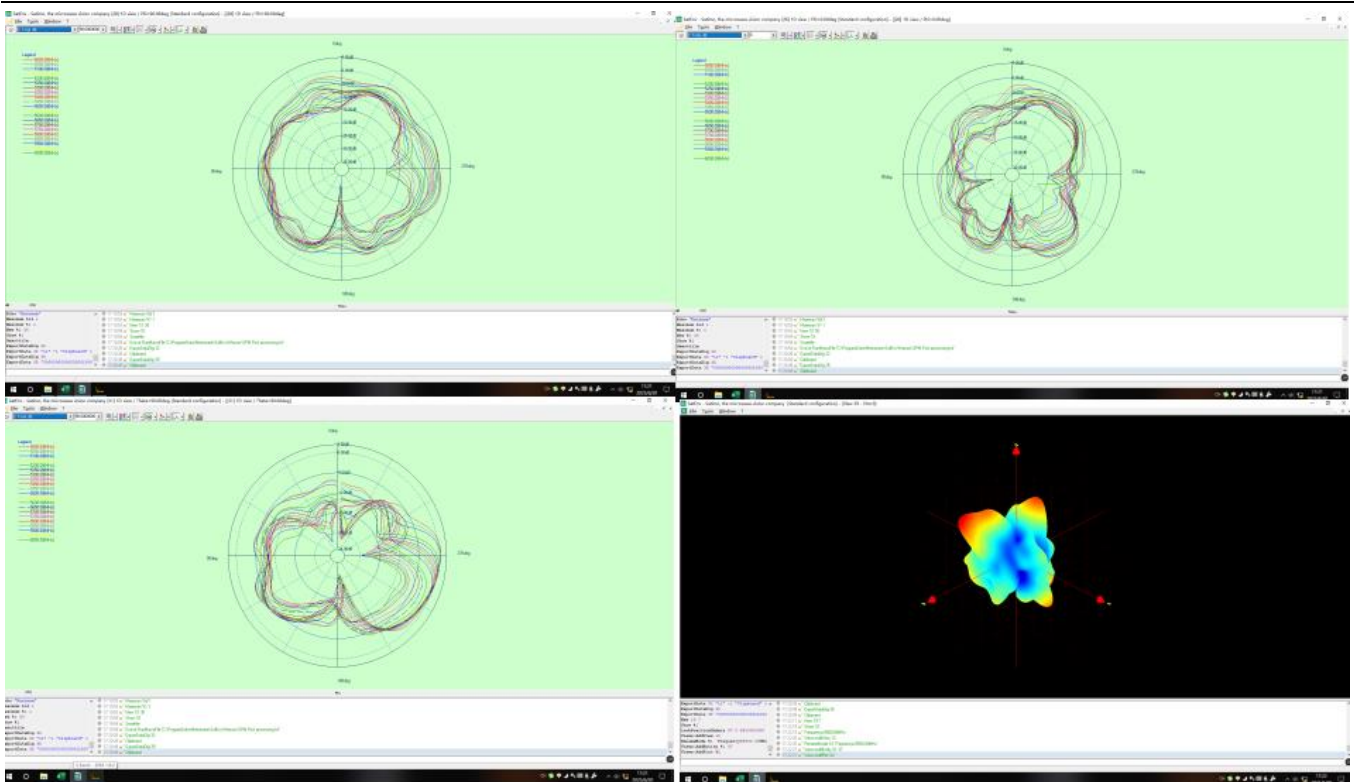


2400-2500MHz



5200-5800MHz

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8. Product drawings