



承 认 书

APPROVAL SHEET

客户名称 Customer				
客户料号 Customer P/N				
项目名称 Project Name	Full-Band(Sub 6GHz) Rubber Antenna			
供应商名称 Supplier	上海圣丹纳无线科技有限公司 Shanghai Saintenna Wireless Technology Co., Ltd.			
圣丹纳物料型号 Saintenna P/N	SAA31379B			
是否符合 RoHS IF ROHS	Yes			
送样日期 Providing Date				
供应商 Supplier	制定 Prepared by	设计 Designer	品质 QA	批准 Approver
地址: 上海市宝山区宝祁路611号8号楼 Address: Building 8, No.611 Bao Qi Road, Bao Shan District, Shanghai, China				
电话/Tel: 086-021-36307272; 传真/Fax: 086-021-36307757				
客户 Customer	编制 Prepared by	审核 Checked by	批准 Approver	

注: 必须手工签字确认 (Note: Signature must be confirmed by hand)

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规格/Specification

1. 机械规格/Mechanical Specification

- 连接方式/Connect Type..... TNC-J
- 工作温度/Work Temperature..... $-40\sim 85^{\circ}$
- 存储温度/Storage Temperature..... $-40\sim 85^{\circ}$

2. 电性能参数/Electrical Specification

- 频段/Frequency Range..... 450MHz~6GHz
- 驻波比/VSWR..... Max2.65
- 效率/Efficiency..... Max78%
- 增益/Peak Gain..... Max4.94dBi
- 极化/Polarization..... Linear
- 特性阻抗/Input Impedance..... $50\ \Omega$
- 最大承载功率/Max Input Power..... 5W

Technical drawing of a 0.45-6G Antenna assembly, showing four views: Top View, Front View, Side View, and Bottom View. The drawing includes dimensions and a table of components.

Dimensions:

- Top View: Total length 200 ± 3 , tip diameter 18.6 , base diameter 21.6 ± 0.1 , and connector diameter $\phi 3 \pm 0.1$.
- Front View: Tip diameter 6.00 , base diameter 14.1 ± 0.1 , and total length 176 ± 2 .
- Side View: Total length 176 ± 2 , base diameter 36.96 , and connector diameter $\phi 3 \pm 0.1$.
- Bottom View: Total length 176 ± 2 , base diameter 36.96 , and connector diameter $\phi 3 \pm 0.1$.

Table 1: Component List

NO	Description	QTY	Remark
5	Connector	1	
4	Cable	1	
3	Bottom Base	1	
2	Upper Base	1	
1	Antenna Cap	1	

Table 2: Revision History

标记	签名	修改内容	日期

Table 3: Assembly Information

项目名称	0.45-6G-Antenna	日期	2020.06.16				
产品名称	0.45-6G天线组件	设计	MD	mayuxue			
产品料号	SAA31379B	批准	RF	qianrui			
第 1 页, 共 1 页		单位	mm	比例	FIT	版本	P1
第三视角							
0~3	± 0.05	ϕ	0.05				
3~30	± 0.10	$\bigcirc$	0.03				
30~50	± 0.15	$\odot$	0.02				
50~80	± 0.20	$\perp$	0.02				
角度	$\pm 1^\circ$	$\triangle$	0.05				

5	Connector	TNC-J	1	
4	Cable	RG178 Cable,Black ,50Ω	1	
3	Bottom Base	PBT+PC,Color,Black	1	
2	Upper Base	PC+PBT,Color,Black	1	
1	Antenna Cap	PC+PBT,Color,Black	1	
NO		Decription	QTY	Remark



上海圣丹纳无线科技有限公司

 第三视角				项目名称	0.45-6G-Antenna	日期	2020.06.16				
0~3	±0.05		0.05								
3~30	±0.10		0.03	产品名称	0.45-6G 天线组件	设计	MD	mayuxue			
30~50	±0.15		0.02				RF	qianrui			
50~80	±0.20		0.02								
角度	±1°		0.05	产品料号	SAA31379B	批准					
第 1 页, 共 1 页						单位	mm	比例	FIT	版本	P1



Full-Band(Sub 6GHz) Antenna Report

上海圣丹纳无线科技有限公司

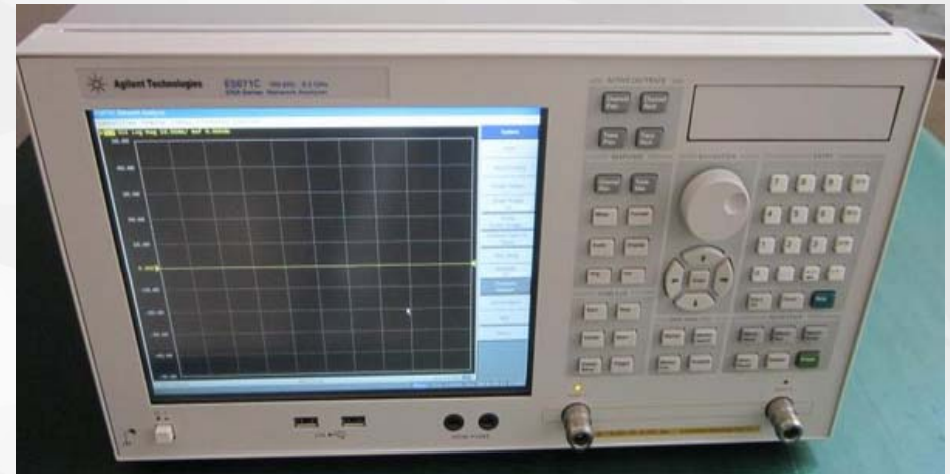
Shanghai Saintenna Wireless Technology Co.,LTD.

Project Information

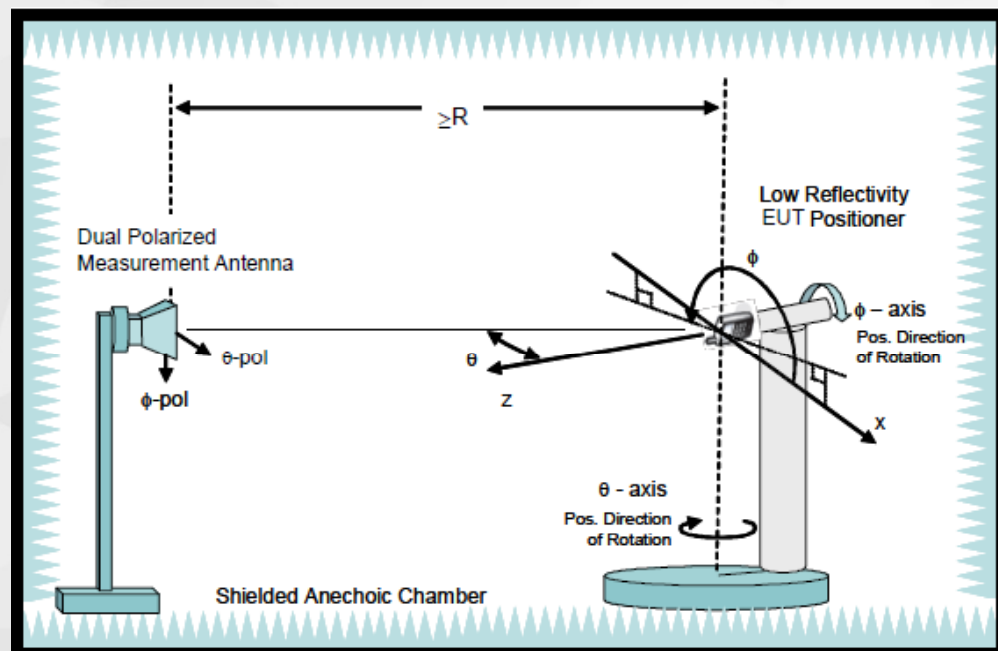
客户名称 Customer Name	Standard Antenna
项目名称 Project Name	Full-Band(Sub 6GHz) Rubber Antenna
工作频段 Working Band	452.5~467.5MHz&620~960MHz&GNSS Band &1710~2700&3400~3800&4000~6000MHz
规格 Description	TNC-J Connector (could be customized)
版本 Version	V1.0
日期 Date	2020.06.16

Debug Instrument

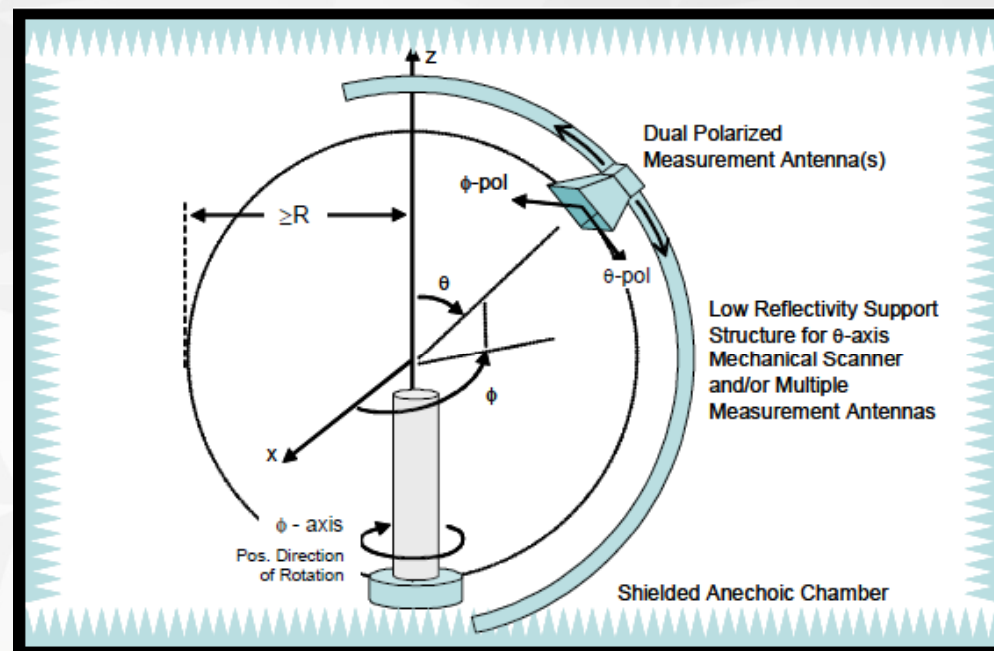
Network Analyzer	Agilent E5071C
Frequency Range	100KHz ~ 8.5GHz
Test Item	Return Loss/VSWR/Smith Chart /Isolation



Typical Setup for Test System

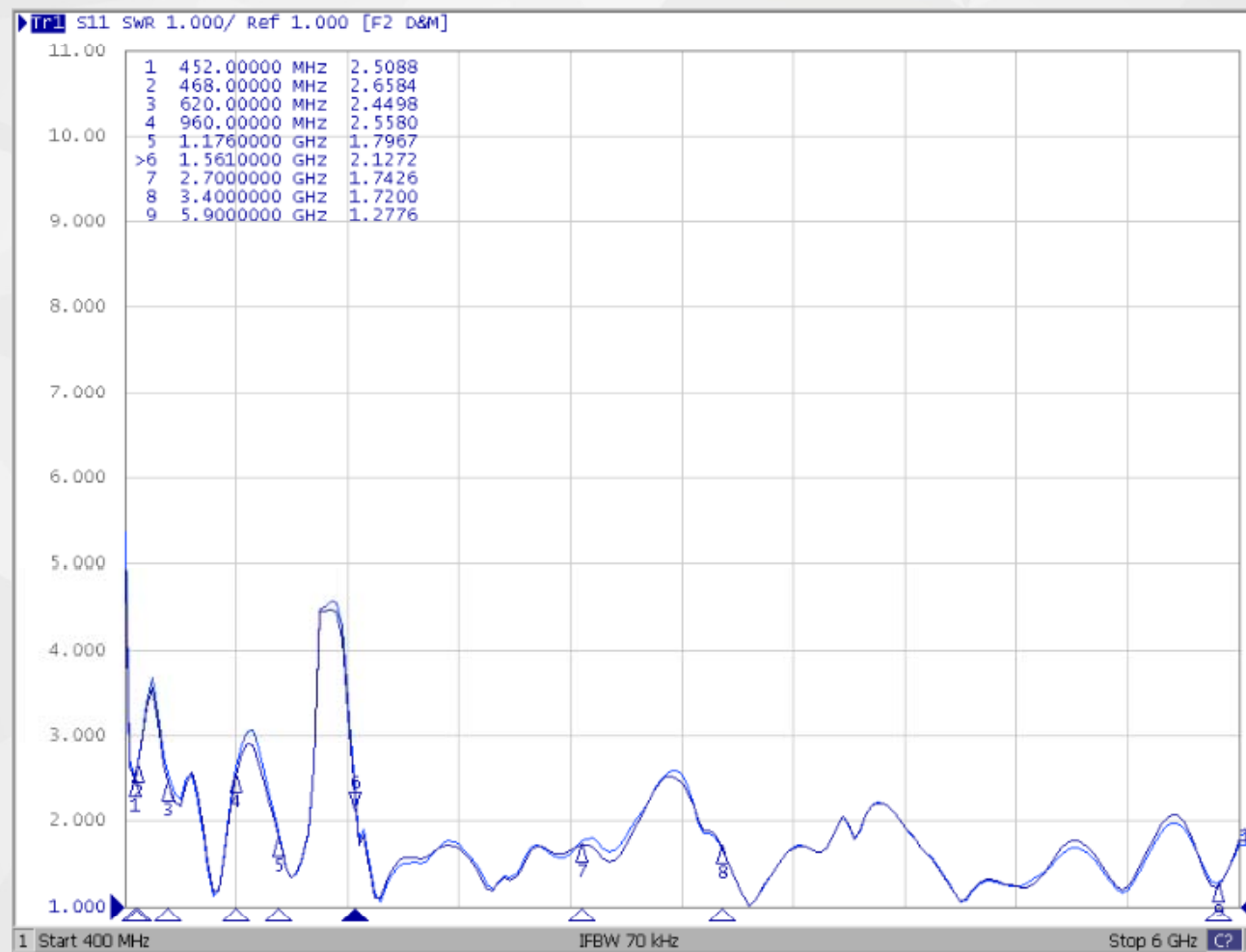


Combined-Axes System



Distributed-Axes System

VSWR

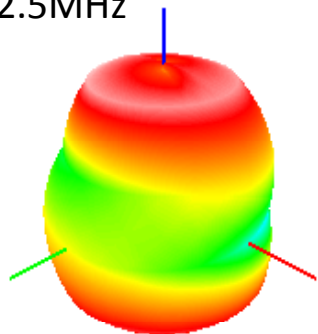


Test Result – Gain/Efficiency

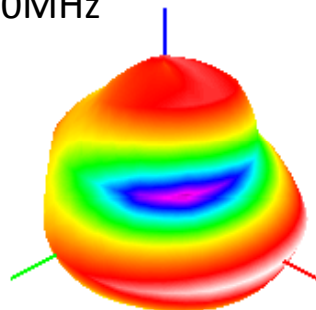
Freq.(MHz)	Gain(dBi)	Eff.	Freq.(MHz)	Gain(dBi)	Eff.	Freq.(MHz)	Gain(dBi)	Eff.	Freq.(MHz)	Gain(dBi)	Eff.
452.5	-1.46	36.1%	1560	0.85	48.3%	2110	3.35	67.2%	4000	0.49	35.2%
457.5	-1.17	38.2%	1580	1.18	56.7%	2130	3.12	65.9%	4100	0.40	39.2%
462.5	-1.40	35.1%	1600	2.87	70.3%	2150	3.10	65.9%	4200	0.87	46.5%
467.5	-1.58	33.8%	1620	3.30	70.7%	2170	2.80	65.8%	4300	1.39	47.8%
			1640	4.28	74.6%				4400	1.11	48.3%
620	0.46	40.7%	1660	4.74	78.0%	2300	0.50	59.7%	4500	1.10	48.4%
640	0.85	42.1%				2350	0.43	61.5%	4600	1.94	50.4%
660	1.14	42.5%	1710	4.72	76.4%	2400	1.68	61.6%	4700	2.96	56.1%
680	1.36	43.3%	1730	4.72	75.5%	2450	2.11	67.9%	4800	3.28	63.1%
700	1.32	51.6%	1750	4.94	74.4%	2500	2.24	63.7%	4900	2.55	69.3%
720	1.10	50.5%	1770	4.87	72.9%	2550	2.40	58.7%	5000	1.52	58.7%
740	1.72	58.2%	1790	4.73	71.0%	2600	1.82	56.8%	5100	1.79	65.0%
760	2.07	58.9%	1810	4.83	72.4%	2650	1.83	60.0%	5200	1.20	62.7%
780	1.76	64.5%	1830	4.68	68.7%	2700	2.37	65.0%	5300	1.82	74.6%
800	1.55	66.7%	1850	4.83	69.2%				5400	0.64	61.7%
820	1.63	69.1%	1870	4.63	66.7%	3400	1.31	64.8%	5500	0.73	55.4%
840	1.24	61.3%	1890	4.92	66.5%	3450	0.46	63.8%	5600	0.49	54.2%
860	1.36	62.1%	1910	4.90	68.5%	3500	0.47	66.5%	5700	0.88	47.2%
880	1.05	59.8%	1930	4.50	69.7%	3550	-1.02	65.6%	5800	0.78	47.7%
900	0.99	56.2%	1950	4.13	71.4%	3600	-1.04	63.7%	5900	1.36	44.3%
920	0.60	59.3%	1970	3.85	67.9%	3650	-0.98	62.2%	6000	0.95	35.6%
940	0.52	57.8%	1990	3.68	68.1%	3700	-0.99	64.3%			
960	0.25	57.7%	2010	3.83	70.0%	3750	0.50	55.7%			
			2030	3.78	69.9%	3800	0.49	52.0%			
1170	0.96	49.8%	2050	3.76	67.1%						
1175	0.72	47.7%	2070	3.40	66.1%						
1180	1.45	55.7%	2090	3.21	66.1%						

3D Radiation Pattern – typical frequency point

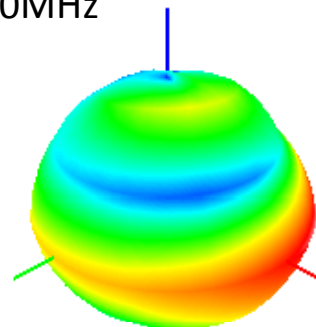
452.5MHz



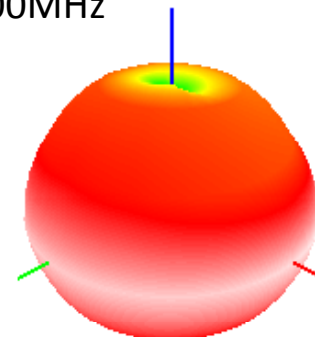
620MHz



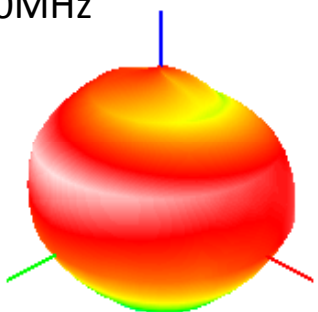
700MHz



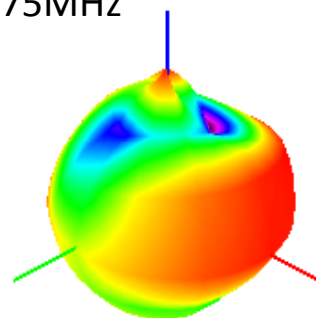
800MHz



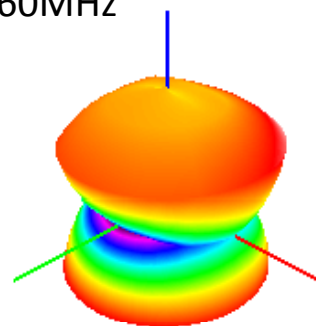
960MHz



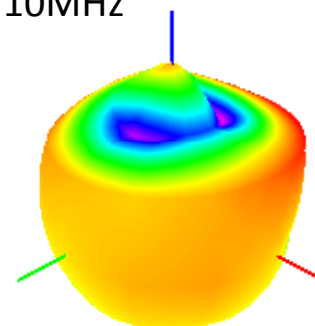
1175MHz



1560MHz

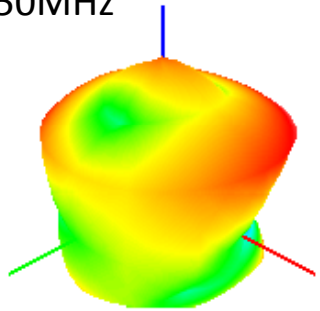


1710MHz

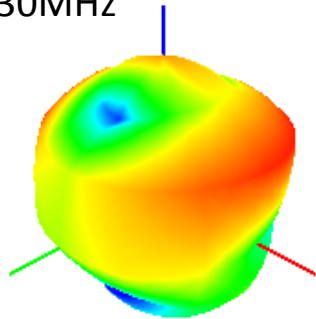


3D Radiation Pattern – typical frequency point

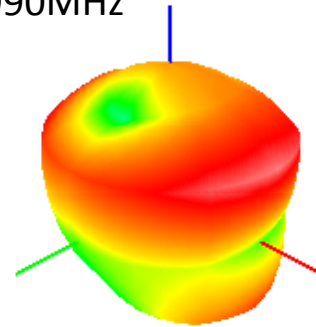
1850MHz



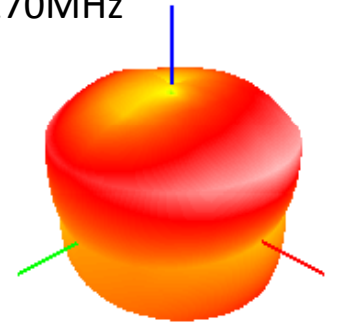
1930MHz



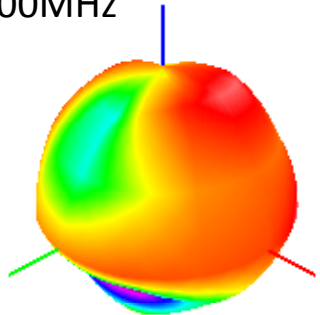
1990MHz



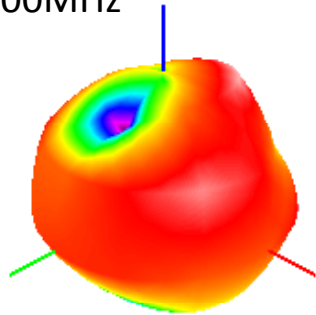
2170MHz



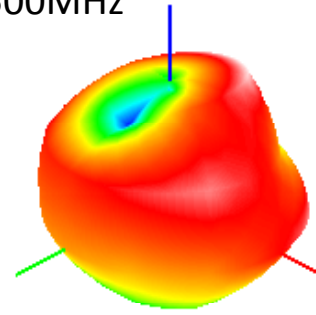
2300MHz



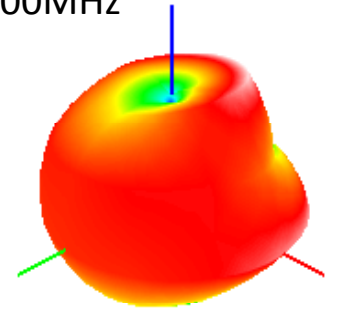
2400MHz



2500MHz

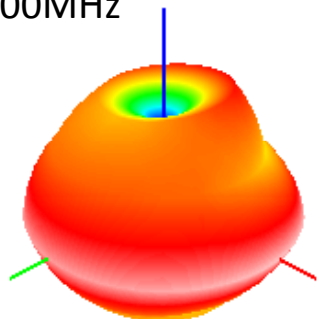


2600MHz

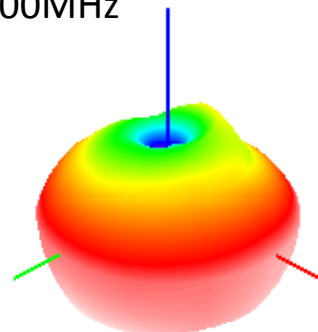


3D Radiation Pattern – typical frequency point

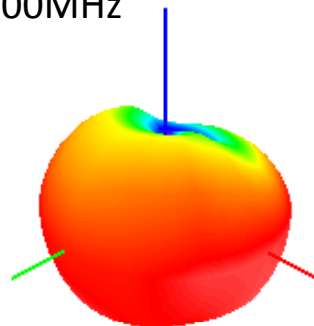
2700MHz



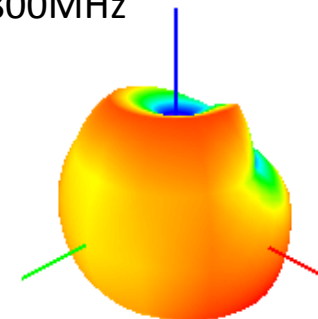
3400MHz



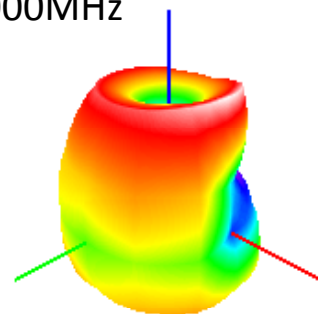
3600MHz



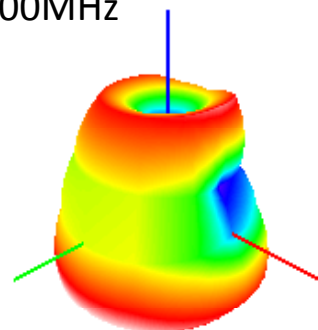
3800MHz



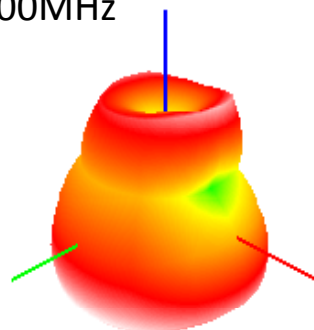
4000MHz



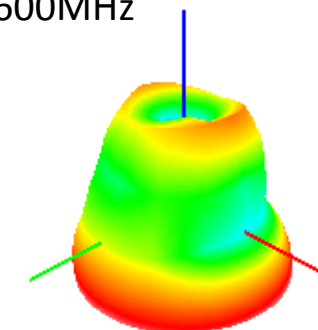
4200MHz



4400MHz

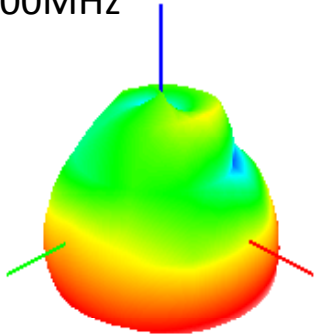


4600MHz

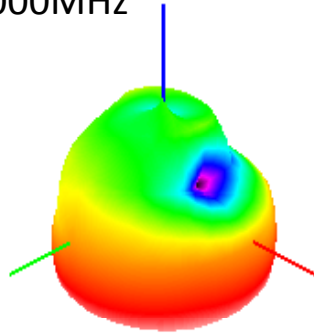


3D Radiation Pattern – typical frequency point

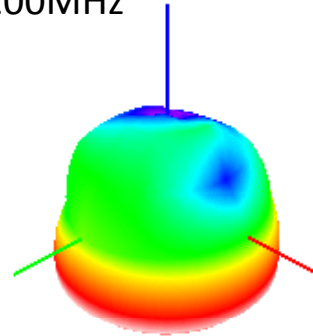
4800MHz



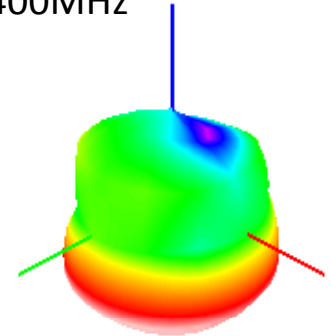
5000MHz



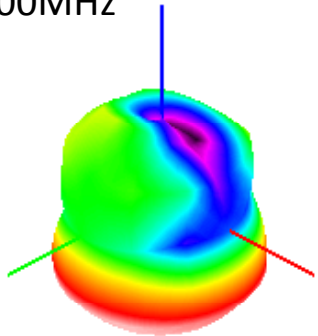
5200MHz



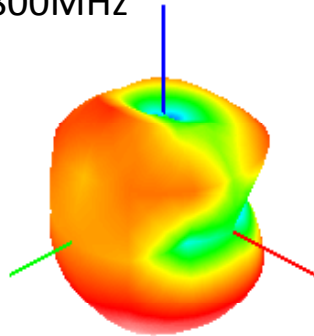
5400MHz



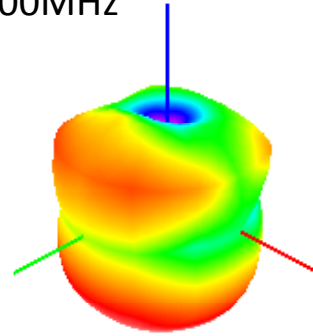
5600MHz



5800MHz



6000MHz



可靠性测试报告

Reliability Test Report

No.	Item	Test Condition	Remark
1	Humidity	The device shall be placed in 90%~95% relative humidity and at 60℃±3℃ for 48h, then place at 25℃±5℃ and less than 65% relative humidity for 2h	It shall fulfill the specification
2	High Temperature	The device shall be placed at 85℃ for 48h, then place at 25℃±5℃ and less than 65% relative humidity for 2h	It shall fulfill the specification
3	Low Temperature	The device shall be placed at -40℃ for 48h, then place at 25℃±5℃ and less than 65% relative humidity for 2h	It shall fulfill the specification
4	Temperature Cycle	The device shall be placed at -40℃ for 30 min then at 85℃ for 30 min. Cycling shall be repeated 5 times. At the room temperature for 1h	It shall fulfill the specification
5	Salt Spray Test	The device shall be placed in salt spray box (5% NaCl) at 25℃±5℃ for 24h.	It shall fulfill the specification
6	Vibration Test	The device shall be subjected to vibration for 2h each in x、 y and z axis with the amplitude of 1.5mm, the frequency shall be varied uniformly between the limits of 10Hz~55Hz.	It shall fulfill the specification
7	IP5X Test	The device shall be placed in the dust test machine, dust blowing mode, at 35℃ for 4 hours, then turn on dust floating mode, at 45℃ for 4 hours.	It shall fulfill the specification
8	IPX6 Test	The device shall be placed in spray water in all direction. Nozzle inner diameter 12.5mm, water flow 100±5L/min, for 3min	It shall fulfill the specification