

## 1. Antenna Specification/天线标准

### Antenna Specification/天线技术参数

#### Electrical Specification/电气特性

Item/目录	Specification/规格	Comment/备注
Freq. Range/频段范围	700 MHz -960 MHz 1710 MHz -2690 MHz	
Impedance/阻抗	50 ( $\Omega$ )	
VSWR/驻波比	700 MHz -960 MHz $\leq$ 3.0 1710 MHz -2690 MHz $\leq$ 3.0	
Directional/辐射方向	Omni directional	
Polarization/极化形式	Vertical	
Peak Gain/峰值增益	7.13(dBi)	
Average Gain/平均增益	4.59(dBi)	
Test condition/测试条件	passive test ( 无源测试 )	
Total Efficiency/无源效率	700 MHz -960 MHz > 47% 1710 MHz -2690 MHz > 43%	

#### Mechanical Specification/机械指标

Antenna type/天线类型	吸盘天线	
Connector Type/连接器类型	SMA-J	
RF Cable Type/射频线型号	S-1.5DS	
Connector Pull Test/连接器拉力	$\geq$ 3.0Kgf	
Salt Spray/盐雾测试	72 (H)	

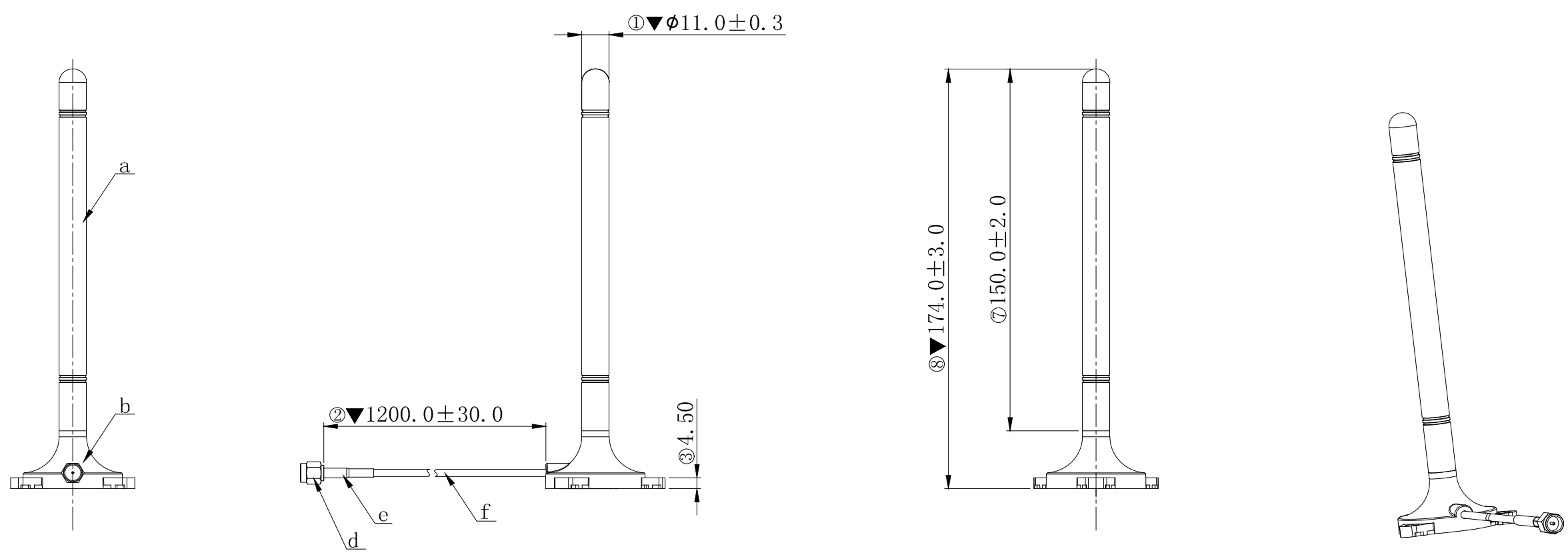
#### Environmental Specification /环境指标

Operating temp/工作温度	-40°C ~ +80°C	
Storage temp/存储温度	-40°C ~ +85°C	

## 2. Antenna Picture/天线图片



REV.	ECN NUMBER	DESCRIPTION	DATE	DRAWN	CHECKED	APPROVED
X1		FIRST RELEASE	06/03' 20	丁第斌	张英杰	牛宝星



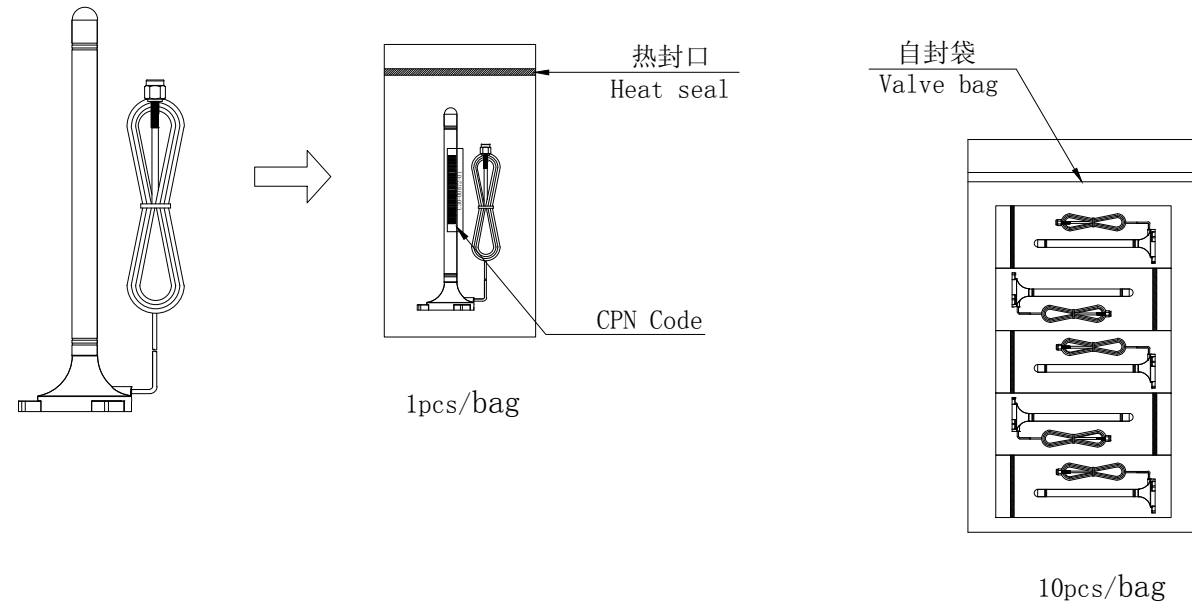
NOTES:

- 产品表面整洁，无刮伤、破皮等现象；Cable线丝印清晰；
- 未标尺寸以此电子档实测为准。
- 标有“▼”为QC重点检测尺寸。
- 频率范围：700-960/1710-2690 MHz；  
增益：4.59 dBi  
驻波比：3.0/3.0 Max  
测试仪器：矢量网络分析仪；
- 所有材质必须符合我司RoHS(无卤素管控要求)，及相关可靠性测试等要求。
- 产品过72H盐雾。

ITEM	PART NAME	Q' TY	MATERIAL / FINISH
a	Antenna	1	Came1 01 DCU, magnet, 4G, S-1.5, 1.2M, SMA-J

	GENERAL TOLERANCE		SCALE: 1:1	DRAWN: 丁第斌	DATE: 06/03' 20	DWG. NO: 600-U549-01	TITLE: ANT_EX_4G_S-1.5_1.2M TO SMA-J_CAMELO1DCU	REV. X1
	. X ± 0.30	XX. ± 2°	UNIT: mm	CHECK:	DATE:			PARTS NO. (INTENDED USE): 81800U549
	. XX ± 0.10	X. ± 1°	SIZE: A4	APPROVE:	DATE:			

REV.	ECN NUMBER	DESCRIPTION	DATE	DRAWN	CHECKED	APPROVED
X1		FIRST RELEASE	06/03' 20	丁第斌	张英杰	牛宝星

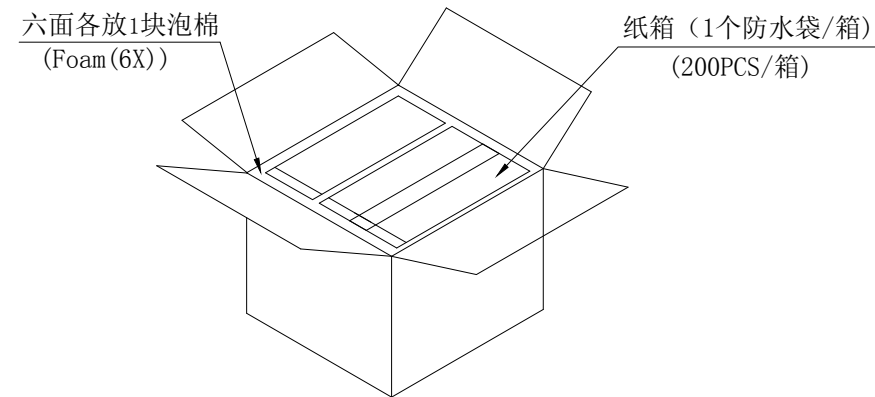


NOTES:

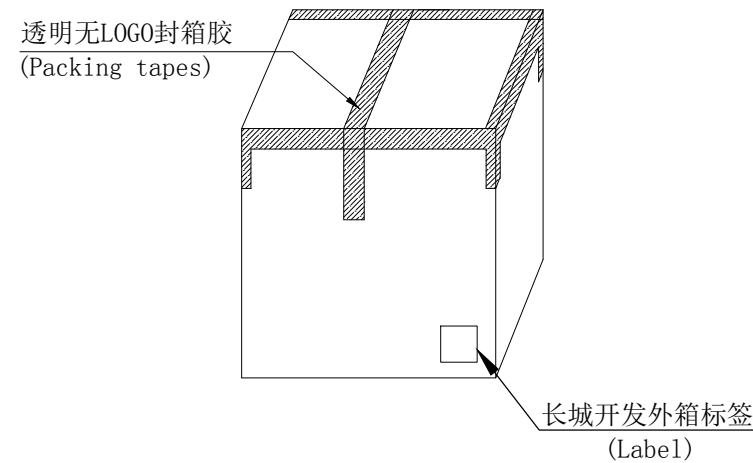
1. 包装时产品轻拿轻放, 避免产品变形.
2. 整盘包装好后, 检查是否有漏装, 产品的放置方向是否正确.
3. 检查是否有产品被压死, 检查整摞层数是否正确.
4. 若有未装满之零数箱, 须以缓冲材塞满.
5. 整箱封好后, 检查标签是否贴好, 干净, 字迹清晰, 标签内容是否正确, 完善.
6. 纸箱: 内尺寸540\*410\*280mm, 七层纸, K三K, 加强芯, 含ECT LOGO.

NOTES:

1. Packing product light , avoid the product deformation
2. The tape packaging, check for leaks installs, product placement direction is correct
3. Check the whole stack of layers is correct
4. If not filled with null box, cushion material should be related to fill
5. After sealed the whole case, check the label content is correct
6. Size: 540\*410\*280mm mm.



Project	M/No.	Q' TY	Amount of packing			Weight of packing		
			pcs/bag	bag/Carton	U/Carton	Unit weigh(g)	Net weight(kg)	GW(kg)
Carton	604010073	1	10	20	200			
PE-bag	604020010	1						
PE-bag		200						
PE-bag	604020037	20						
Foam		6						

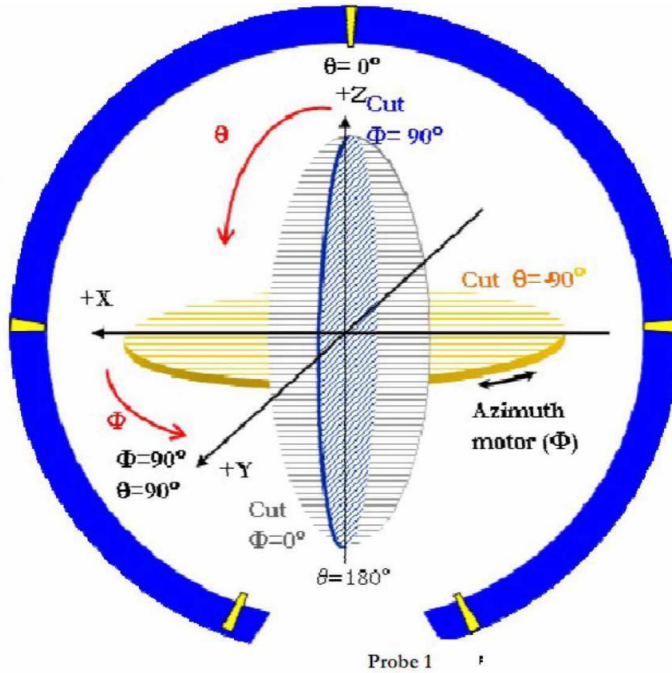


	GENERAL TOLERANCE		SCALE:	DRAWN:	DATE:	DWG. NO:	TITLE:	REV.
	XX. ± 0.25	XX. ° ± 2°	1:1	丁第斌	06/03' 20	551-U549-01	ANT_EX_4G_S-1.5_1.2M TO SMA-J_CAMELOIDCU 包规图	X1
	X. ± 0.20	X. ° ± 1°	UNIT:	CHECK:	DATE:	PARTS NO. (INTENDED USE):		SHEET:
	.X ± 0.13	.X° ± 0.5°	mm	APPROVE:	DATE:	81800U549	1/1	
	.XX ± 0.05		A4					

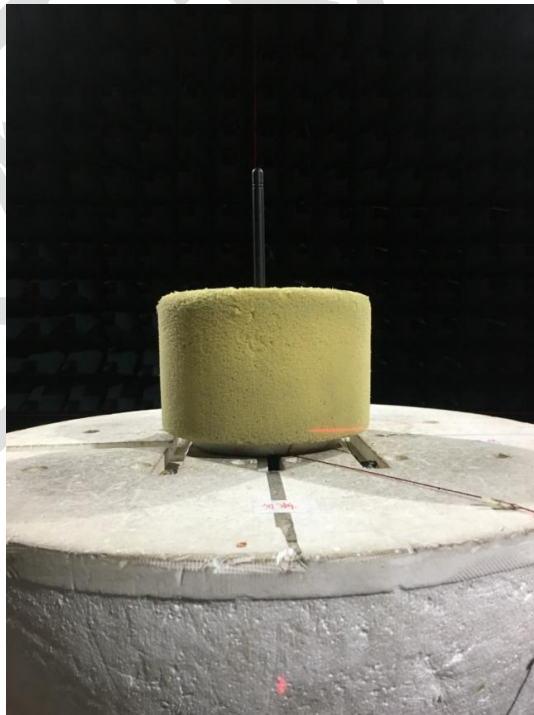
**5. Antenna test result/测试结果**

**5.1 The gain and total efficiency test/增益和效率测试**

**5.1.1 The definition of coordinate system/坐标系定义-Satimo SG24**



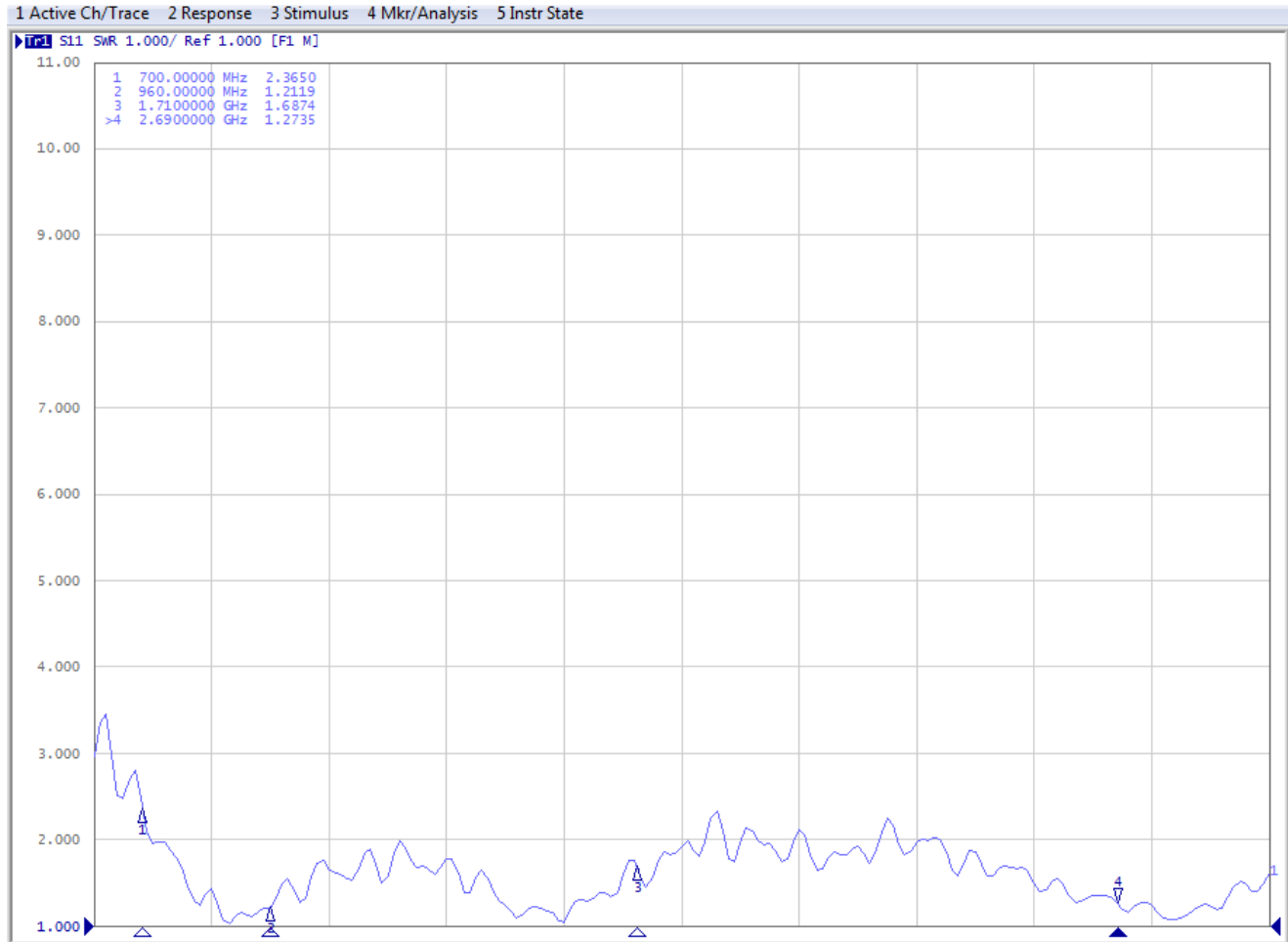
The coordinate system of Chamber/暗室坐标系



The production test position/天线测试放置位置

## 5.2 Antenna test result/测试结果

### 5.2.1 Return loss/Smith chart/VSWR/回波损耗/史密斯图/驻波比



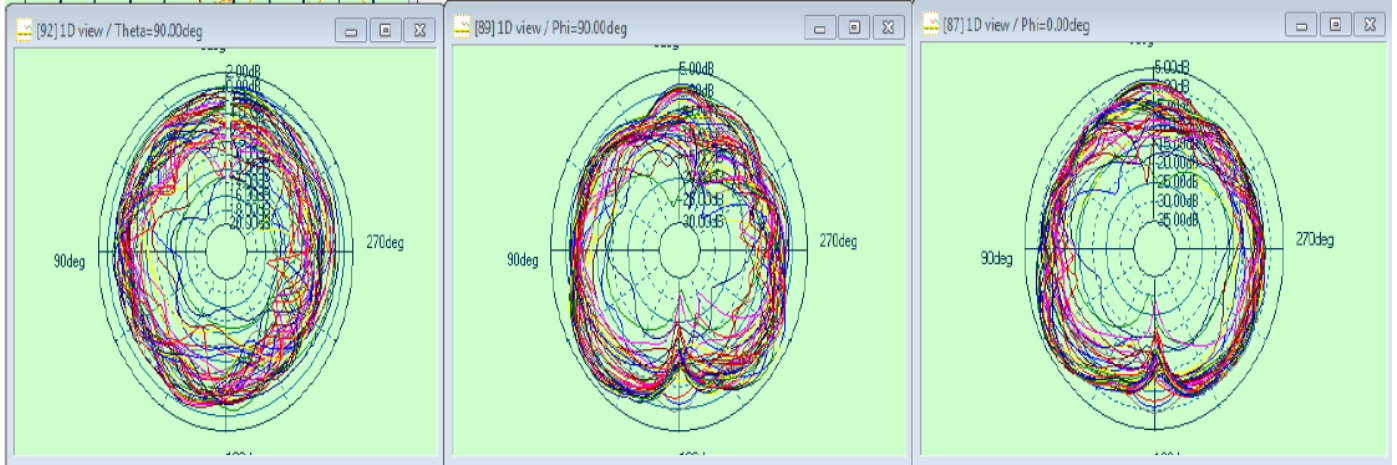
## 5.2.2 The test result of total efficiency and total gain/天线效率及增益测试结果

### 700-960MHz/1710-2690MHz

Frequency	Efficiency	Gain(dB)	Frequency	Efficiency	Gain(dB)
700MHz	48%	2.60	1910MHz	55%	5.65
710MHz	47%	2.34	1930MHz	51%	5.37
720MHz	54%	2.77	1950MHz	46%	4.93
730MHz	64%	3.47	1970MHz	50%	5.08
740MHz	72%	4.01	1990MHz	54%	5.44
750MHz	72%	3.84	2010MHz	54%	6.26
760MHz	64%	3.13	2030MHz	50%	5.97
770MHz	67%	3.13	2050MHz	48%	5.68
780MHz	68%	3.58	2070MHz	52%	6.37
790MHz	65%	3.77	2090MHz	59%	6.98
800MHz	58%	3.72	2110MHz	57%	7.13
810MHz	58%	4.01	2130MHz	49%	6.23
820MHz	62%	4.58	2150MHz	48%	6.45
830MHz	64%	5.03	2170MHz	51%	6.58
840MHz	61%	5.01	2300MHz	45%	5.29
850MHz	58%	4.85	2310MHz	45%	5.40
860MHz	57%	4.63	2320MHz	45%	5.12
870MHz	61%	4.78	2330MHz	44%	5.10
880MHz	68%	5.12	2340MHz	47%	5.47
890MHz	71%	5.23	2350MHz	49%	5.91
900MHz	73%	5.39	2360MHz	49%	6.12
910MHz	68%	4.91	2370MHz	49%	6.14
920MHz	63%	4.28	2380MHz	48%	6.02
930MHz	61%	3.76	2390MHz	46%	5.76
940MHz	60%	3.37	2400MHz	46%	5.80
950MHz	67%	3.68	2500MHz	46%	4.29
960MHz	70%	3.89	2520MHz	47%	4.23
1710MHz	53%	2.92	2540MHz	48%	4.03
1730MHz	59%	3.23	2560MHz	46%	3.96
1750MHz	58%	3.47	2580MHz	46%	3.96
1770MHz	49%	3.06	2600MHz	45%	3.76
1790MHz	46%	2.92	2620MHz	46%	4.13
1810MHz	52%	3.79	2640MHz	45%	3.89
1830MHz	54%	4.34	2660MHz	44%	3.73
1850MHz	45%	3.87	2680MHz	45%	3.85
1870MHz	43%	4.14	2700MHz	44%	3.30
1890MHz	49%	5.08			

### 5.2.3 The antenna radiation pattern(2D)/天线辐射方向图 (2D)

700-960MHz/1710-2690MHz



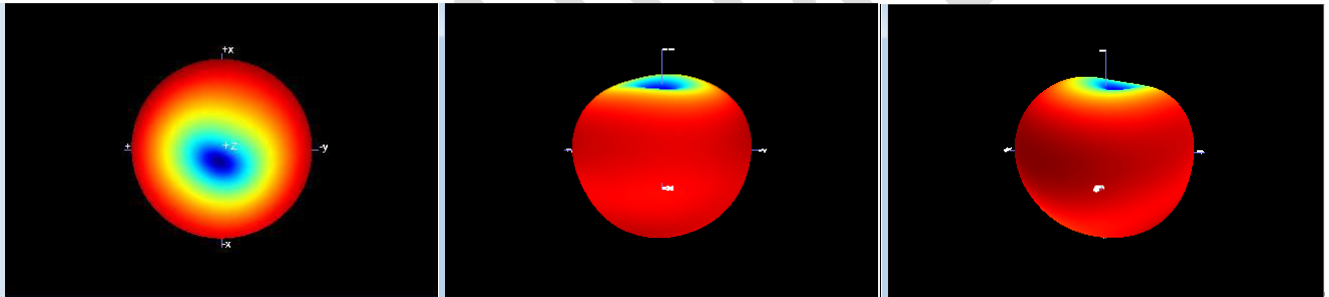
XOY

YOZ

XOZ

### 5.2.4 The antenna radiation pattern(3D)/天线辐射方向图 (3D)

Frequency/频点 960MHz

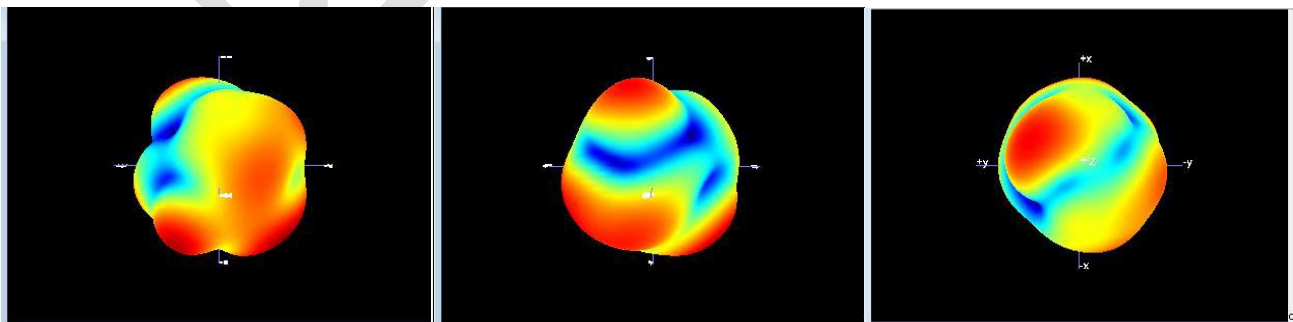


XOY

YOZ

XOZ

Frequency/频点 1710MHz



XOY

YOZ

XOZ



## 6. Reliability Test / 可靠性测试

Test Items		Test Condition and Procedure	Requirements
1	Vibration	Amplitude:0.76mm Freq:10 to 55Hz 2 hours for each direction	1.No Visual Damage 2.Frequency Tol.≤5%
2	Random Drop	Height:1.2m; 3 directions; 1 time for each direction	1.No parts separated 2.Frequency Tol.≤5%
3	Terminal-Pull Test	Holding with individual specification; force applied To axis of terminal	1.Directive DUT specification 2.Frequency Tol.≤5%
4	Salt Spray	Temp:35°C; RH:≥ 85%; NaCl solution:≥ 5%; Time:72hours	After 2 Hours Recovery 1.No Visual Damage 2.Frequency Tol.≤5%
5	Thermal Shock	Cycle:-40°C±2°C(1 hours) to +85°C±2°C (1hours) Cycles:24 times	After 2 Hours Recovery 1.No Visual Damage 2.Frequency Tol.≤5%
6	Low Temp	Temp:-40°C±3°C; Time:24 hours	After 2 Hours Recovery 1.No Visual Damage 2.Frequency Tol.≤5%
7	High Temp	Temp:85°C±3°C; Time:24 hours	After 2 Hours Recovery 1.No Visual Damage 2.Frequency Tol.≤5%
8	Temperature and Humidity Chamber	Temp: 85°C±3°C; RH: ≥85%; Time: 500 hours	After 2 Hours Recovery 1.No Visual Damage 2.Frequency Tol.≤5%
9	RoHS	With Reference to IEC62321 with flow chart Directive RoHS2015/863	Directive RoHS 2015/863/EU