

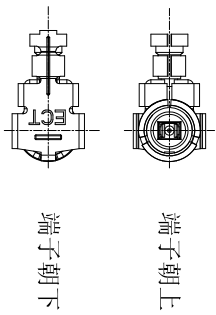
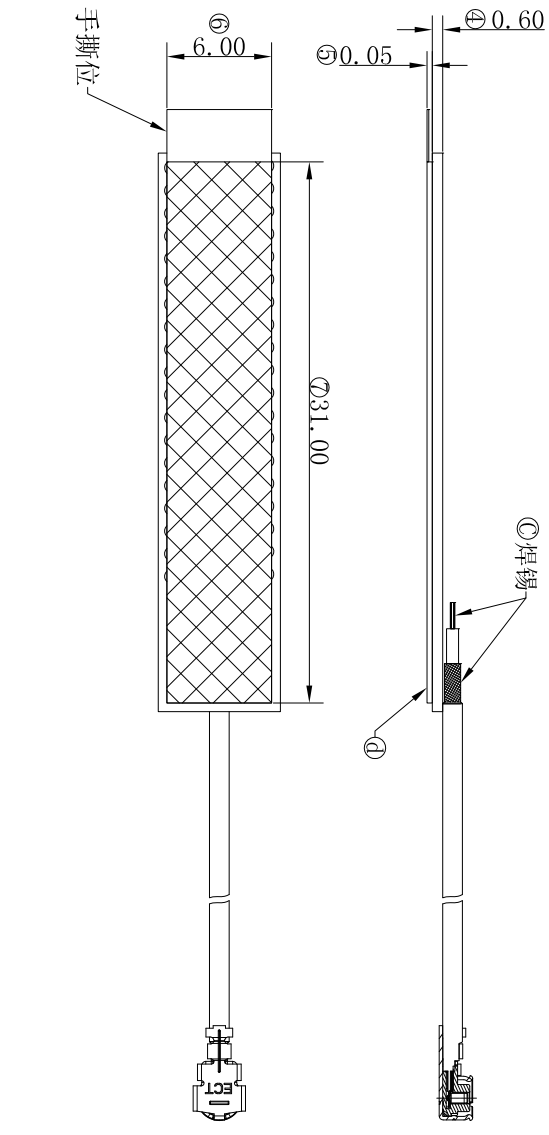
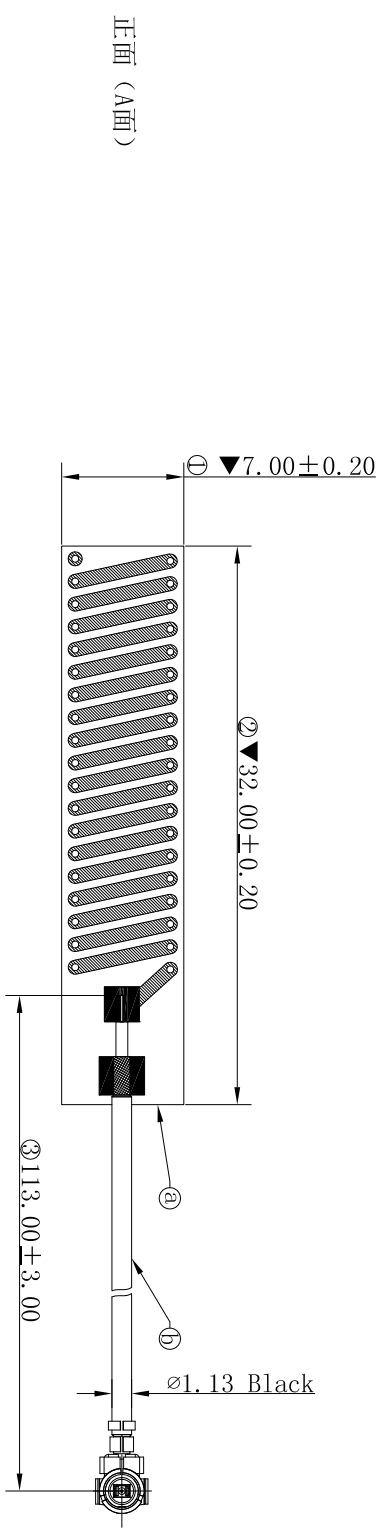
1. Antenna Specification/天线标准

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	470MHz-510MHz	
Impedance/阻抗	50 (Ω)	
VSWR/驻波比	470MHz-510MHz \leq 2.5	
Directional/辐射方向	Omni directional	
Polarization/极化形式	Vertical	
Peak Gain/峰值增益	-0.83(dBi)	
Test condition/测试条件	passive test	
Total Efficiency/无源效率	\geq 25%	
Mechanical Specification/机械指标		
Antenna type/天线类型	PCB+CABLE	
Connector Type/连接器类型	USS RF I 镀金 (089)	
RF Cable Type/射频线型号	OD1.37(Black)	
Connector Torque Test/连接器扭力	N/A	
Connector Pull Test/连接器拉力	\geq 1.0Kgf	
Salt Spray/盐雾测试	48 H	
Environmental Specification /环境指标		
Operating temp/工作温度	-40°C ~ +70°C	
Storage temp/存储温度	-40°C ~ +70°C	

2. Antenna Picture/天线图片



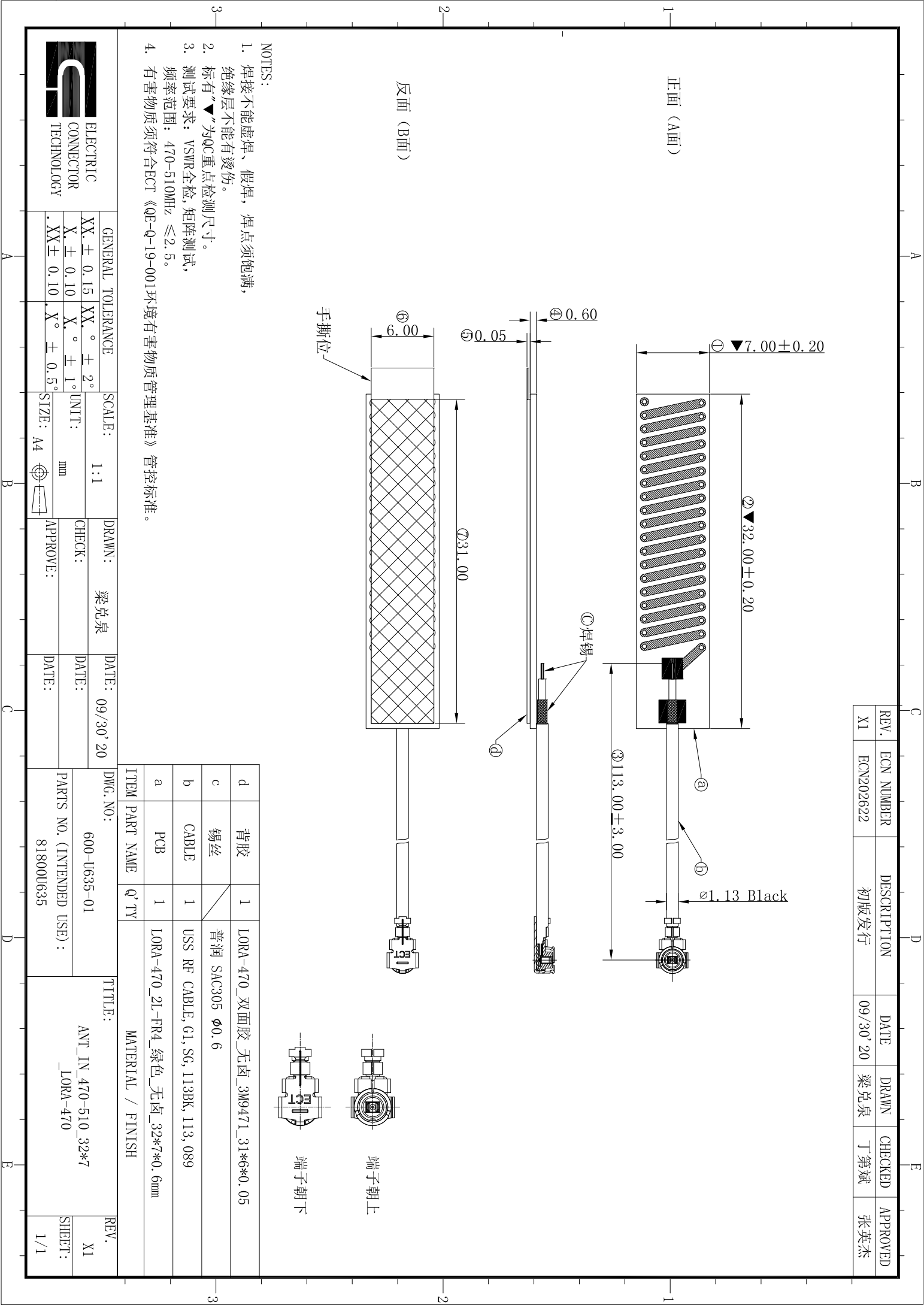
REV.	ECN NUMBER	DESCRIPTION	DATE	DRAWN	CHECKED	APPROVED
X1	ECN202622	初版发行	09/30'20	梁克泉	丁第斌	张英杰



- NOTES:
1. 焊接不能虚焊、假焊，焊点须饱满，绝缘层不能有烫伤。
 2. 标有“▼”为QC重点检测尺寸。
 3. 测试要求：VSWR全检，矩阵测试，频率范围：470-510MHz ≤2.5。
 4. 有害物质须符合ECT《QB-Q-19-001环境有害物质管理基准》管控标准。

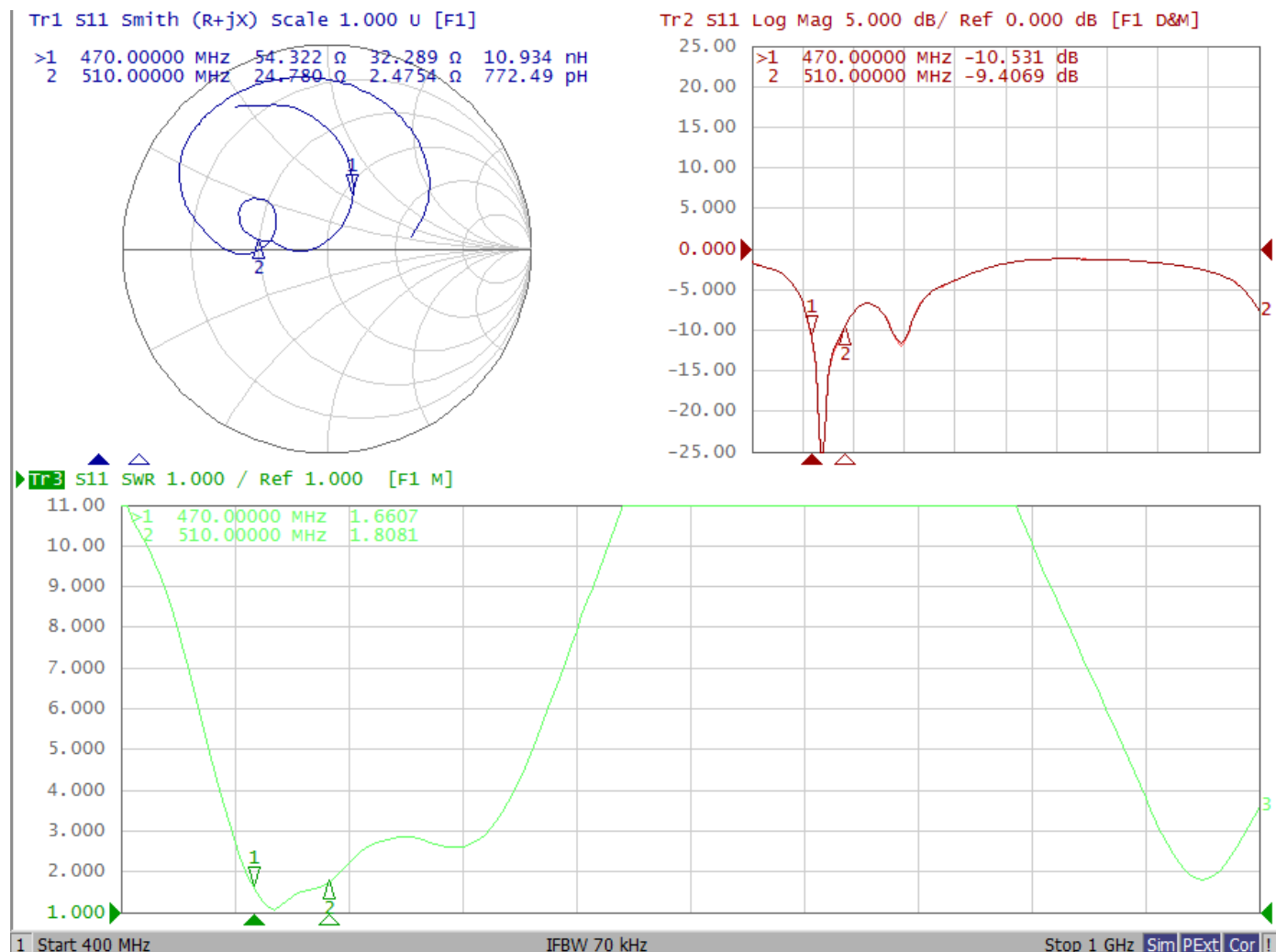
d	背胶	1	LORA-470_双面胶_无卤_3M9471_31*6*0.05
c	锡丝	1	普润 SAC305 ϕ 0.6
b	CABLE	1	USS RF CABLE, G1, SG, 113BK, 113, 089
a	PCB	1	LORA-470_2L-FR4_绿色_无卤_32*7*0.6mm

GENERAL TOLERANCE		SCALE: 1:1		DRAWN: 梁克泉		DATE: 09/30'20	
XX. ± 0.15	XX. ° ± 2°	UNIT: mm		CHECK:		DATE:	
X. ± 0.10	X. ° ± 1°	SIZE: A4		APPROVE:		DATE:	
.XX ± 0.10	.X° ± 0.5°	DWG. NO: 600-U635-01		PARTS NO. (INTENDED USE): 81800U635		TITLE: ANT_IN_470-510_32*7_LORA-470	
ELECTRIC CONNECTOR TECHNOLOGY		REV. X1		SHEET: 1/1			



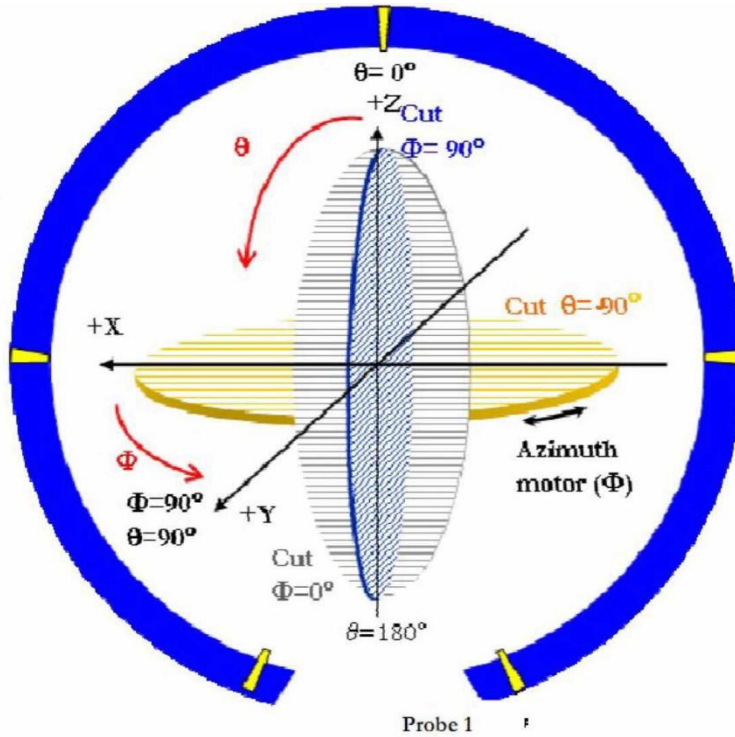
4. Antenna test result/测试结果

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

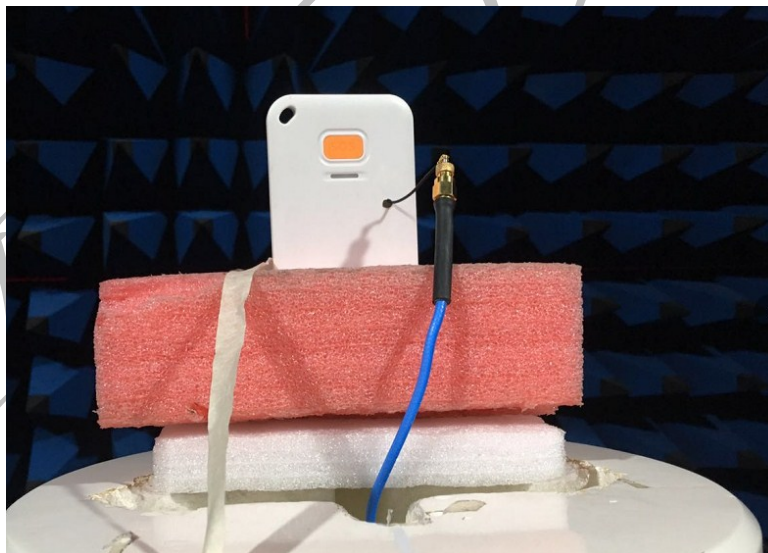


4.2 The gain and total efficiency test/增益和效率测试

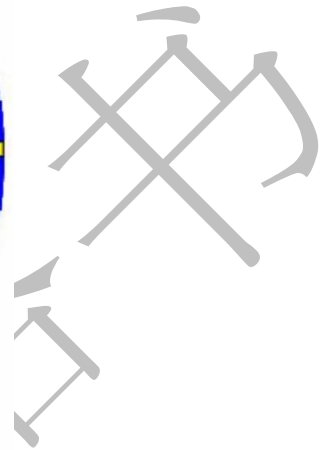
4.2.1 The definition of coordinate system/坐标系定义-Satimo SG24



The coordinate system of Chamber/暗室坐

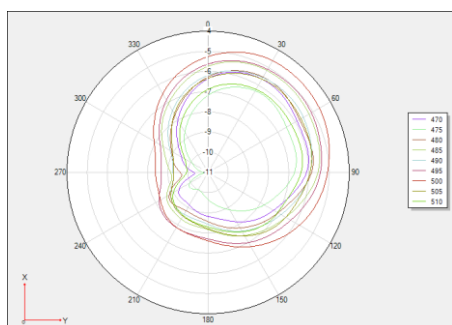
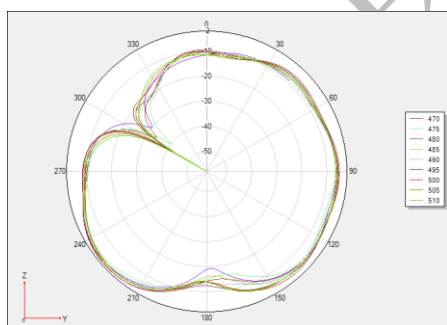
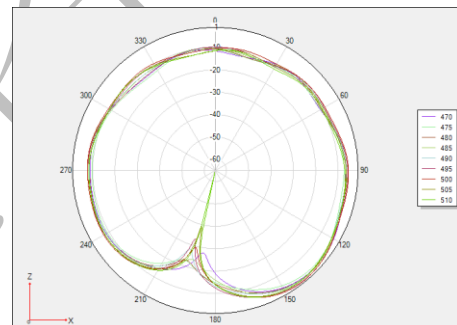
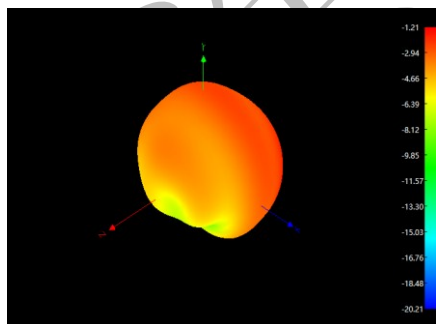
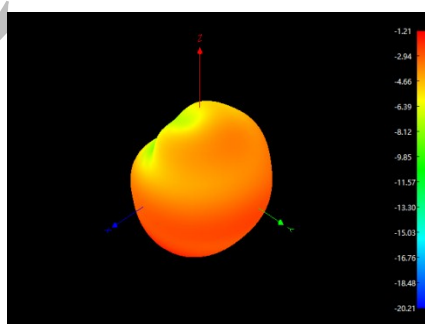
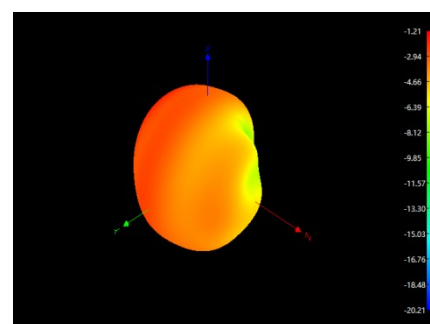


The production test position/天线测试放置位置



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

Frequency / MHz	Efficiency / %	Gain/ dB
470	26.79	-1.56
475	25.64	-2.49
480	28.38	-1.50
485	27.42	-1.21
490	27.29	-1.81
495	27.80	-0.95
500	27.10	-0.83
505	25.23	-1.67
510	25.47	-1.78

4.2.3 The antenna radiation pattern(2D)/天线辐射方向图 (2D)
470-510MHz

XOY

YOZ

XOZ
4.2.4 The antenna radiation pattern(3D)/天线辐射方向图 (3D)
Frequency/频点 485MHz

XOY

YOZ

XOZ