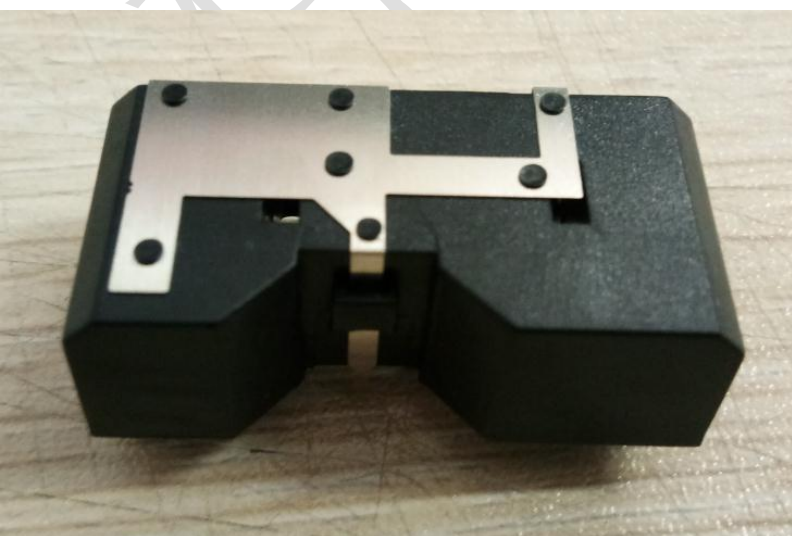
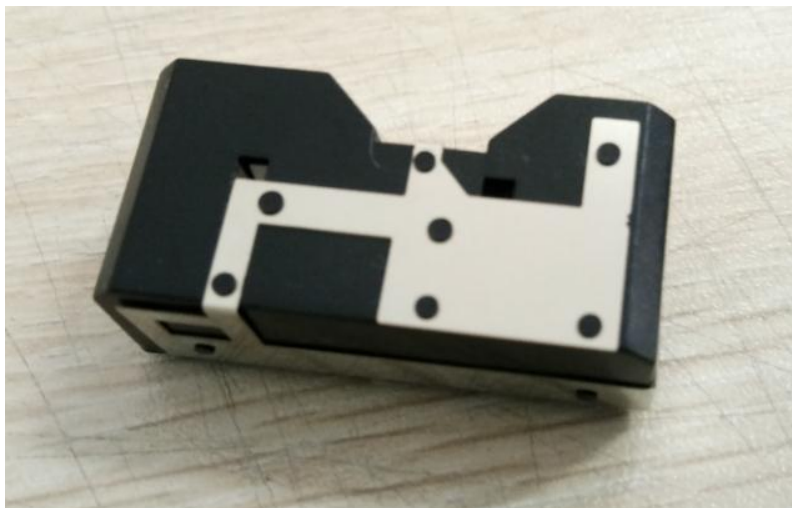


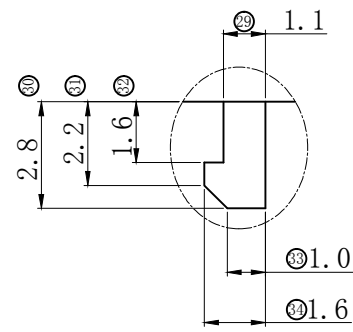
1. Antenna Specification/天线标准

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	791-960/1710-1880(MHz)	
Impedance/阻抗	50 (Ω)	
VSWR/驻波比	791-960 MHz \leq 2.5 1710-1880 MHz \leq 2.5	
Directional/辐射方向	Omni directional	
Polarization/极化形式	Vertical	
Peak Gain/峰值增益	2.9 (4dBi)/4.0(dBi)	
Test condition/测试条件	passive test (无源测试)	
Total Efficiency/无源效率	> 35%/45%	
Mechanical Specification/机械指标		
Antenna type/天线类型	Plastic bracket+Steel sheet	
Connector Type/连接器类型	N/A	
RF Cable Type/射频线型号	N/A	
solderability /可焊性	Solder iron: 60W 380 \pm 20 $^{\circ}$ C; Duration:5 S	
Salt Spray/盐雾测试	48 (H)	
Environmental Specification /环境指标		
Operating temp/工作温度	-40 $^{\circ}$ C ~ +80 $^{\circ}$ C	
Storage temp/存储温度	-40 $^{\circ}$ C ~ +85 $^{\circ}$ C	

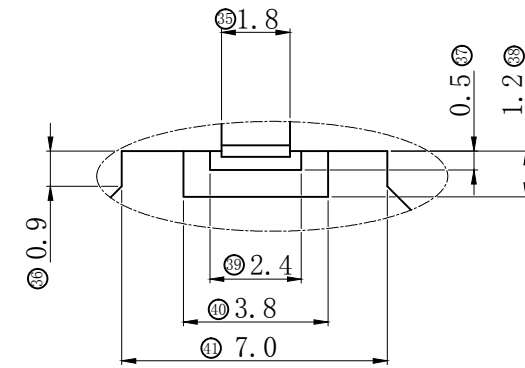
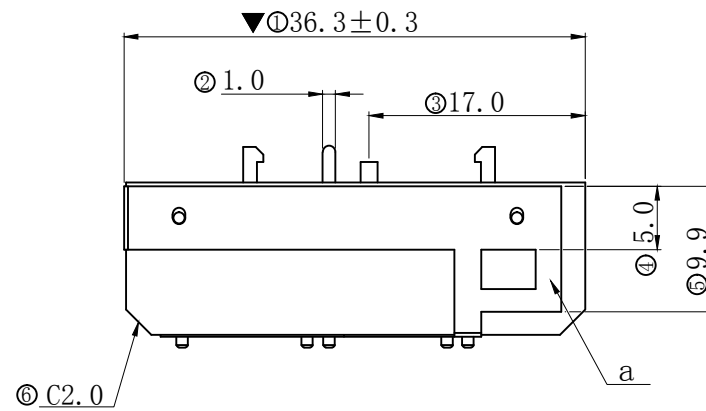
2. Antenna Picture/天线图片



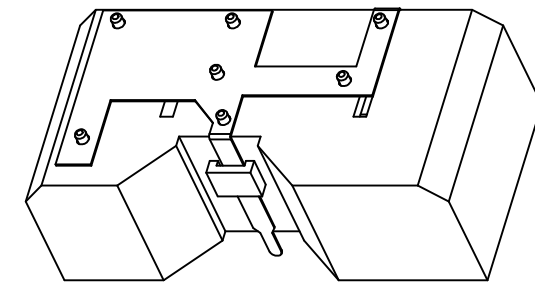
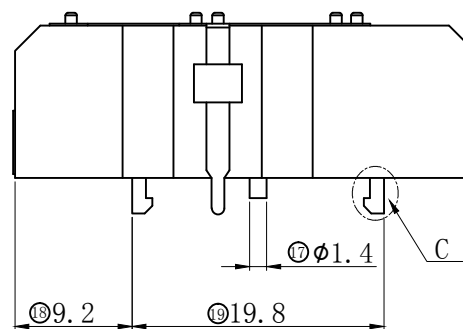
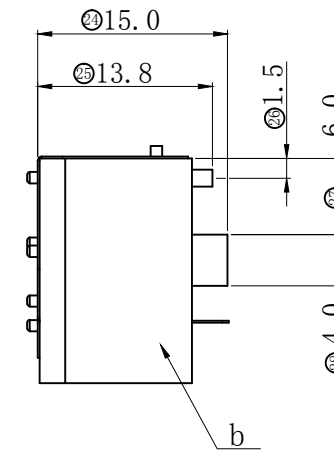
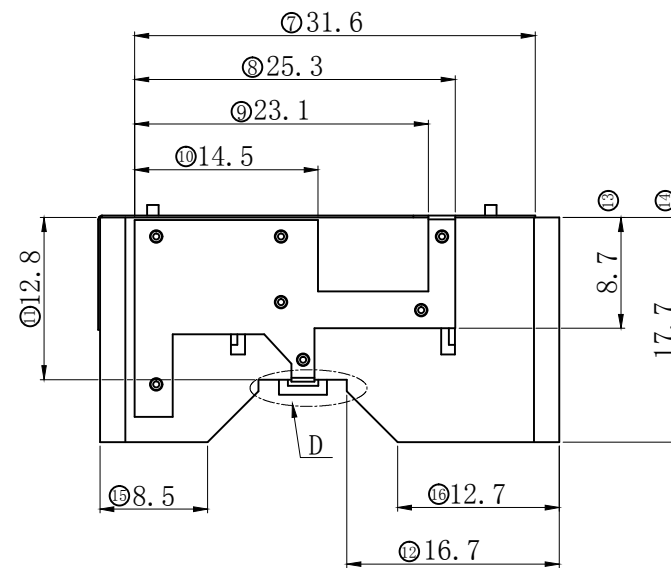
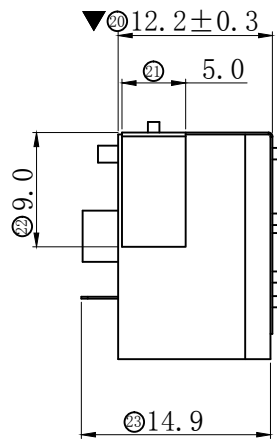
REV.	ECN NUMBER	DESCRIPTION	DATE	DRAWN	CHECKED	APPROVED
X1	ECN192130	FIRST RELEASE	10/24' 19	丁第斌	张英杰	牛宝星



DETAIL C
SCALE 3:1



DETAIL D
SCALE 3:1



NOTES:

1. After the parts assembly appearance without clear off color, must level off, clean, NO scratches, deformation, etc.
2. After the hot melt height: 0.5 MAX
3. Marked with "▼" for QC key size detection.
4. Frequency: 791-960/1710-1880 MHz
VSWR: 2.5 Max
5. Test equipment: matrix tests.
6. Product must conform to the requirements of the ROHS related ECT to test.

ITEM	PART NAME	Q'TY	PART #	DWG #	MATERIAL / FINISH
b	stents	1	605060101	351-T777-01	Ceuts02 shrapnel
a	shrapnel	1			Normal16 shrapnel



GENERAL TOLERANCE	
X. ± 0.30	XXX. ° ± 2°
. X ± 0.20	XX. ° ± 1°
. XX ± 0.10	

SCALE:	1:1
UNIT:	mm
SIZE:	A4

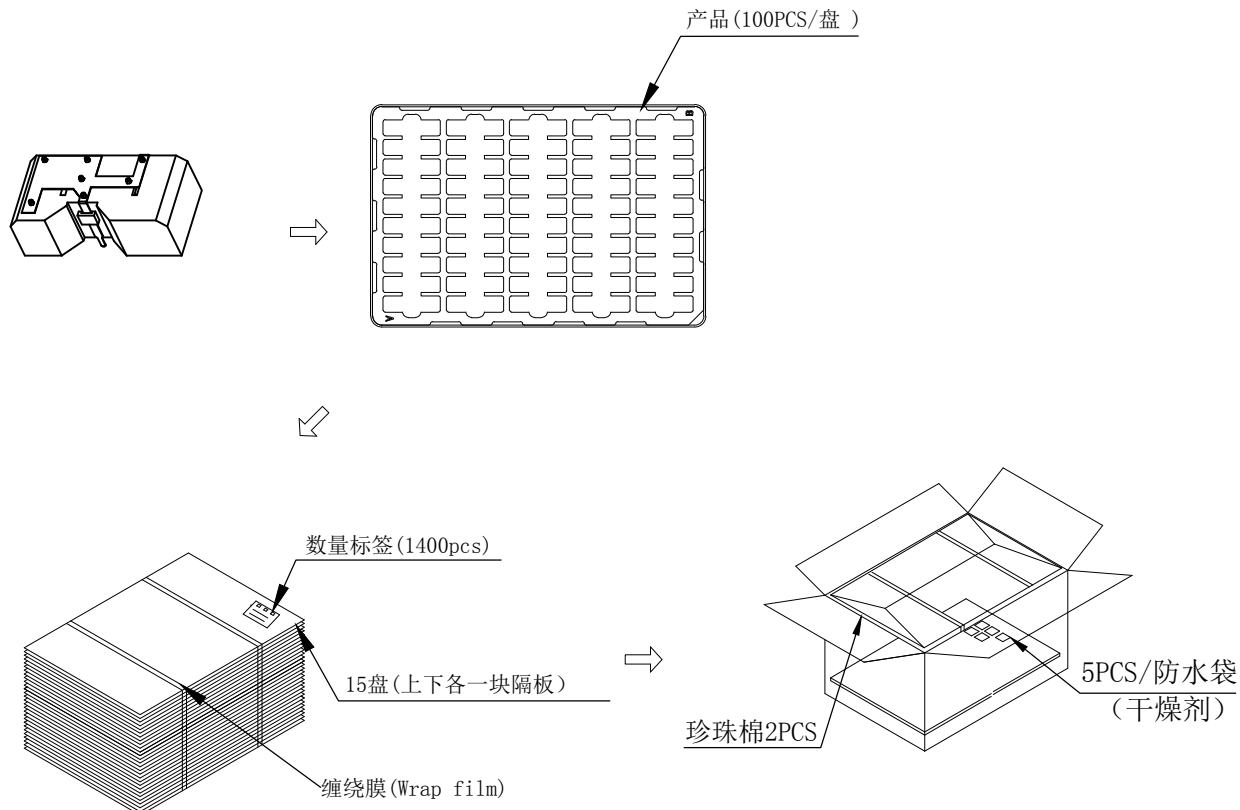
DRAWN:	丁第斌
CHECK:	
APPROVE:	

DATE:	10/24' 19
DWG. NO:	600-U325-01
PARTS NO. (INTENDED USE):	81800U325

TITLE:	ANE_IN_EMTC/NB_shrapnel_ Nomra16_Three Product figure
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REV.	X1
SHEET:	1/1

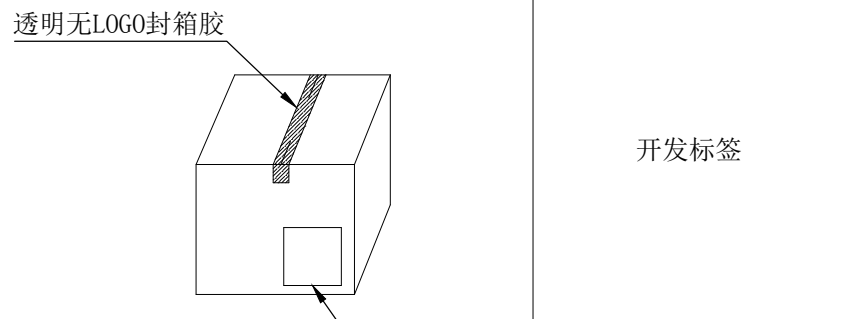
REV.	ECN NUMBER	DESCRIPTION	DATE	DRAWN	CHECKED	APPROVED
X1	ECN192130	FIRST RELEASE	10/24' 19	丁第斌	张英杰	牛宝星



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. 包装载带断裂时不可用人工连接.
4. 检查是否有产品被压死, 检查整摞层数是否正确.
5. 若有未装满之零数箱, 须以缓冲材塞满.
6. 防水袋封口须密封.
7. 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.

项目	料号	数量	产品包装容量		产品包装重量				
			pcs/盘	盘/外箱	pcs/外箱	单重(kg)	净重(kg)	总重(kg)	
外纸箱	604010008	1	100	14	1400				
吸塑盘	604060153	15	每一叠最上面放1个空吸塑盘						
防水袋	840000501	1							
干燥剂		5							
珍珠棉		2							
二维标签									
散料标签									
清单标签									



GENERAL TOLERANCE	
XX. ± 0.25	XX. ° ± 2°
X. ± 0.20	X. ° ± 1°
.X ± 0.13	.X° ± 0.5°
.XX ± 0.05	

SCALE: 1:1

UNIT: mm

SIZE: A4

DRAWN: 丁第斌

CHECK:

APPROVE:

DATE: 10/24' 19

DATE:

DATE:

DWG. NO: 551-U325-01

PARTS NO. (INTENDED USE): 81800U325

TITLE: ANE_IN_EMTC/NB_shrapnel_Nomra16_Three 包装规范图

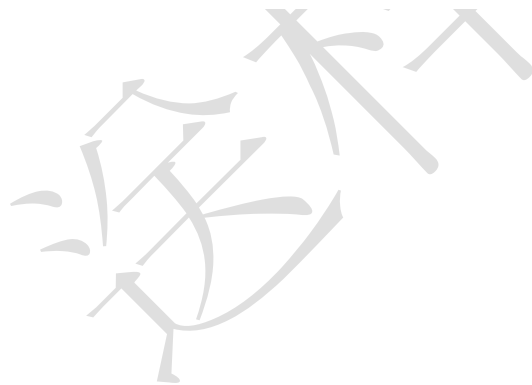
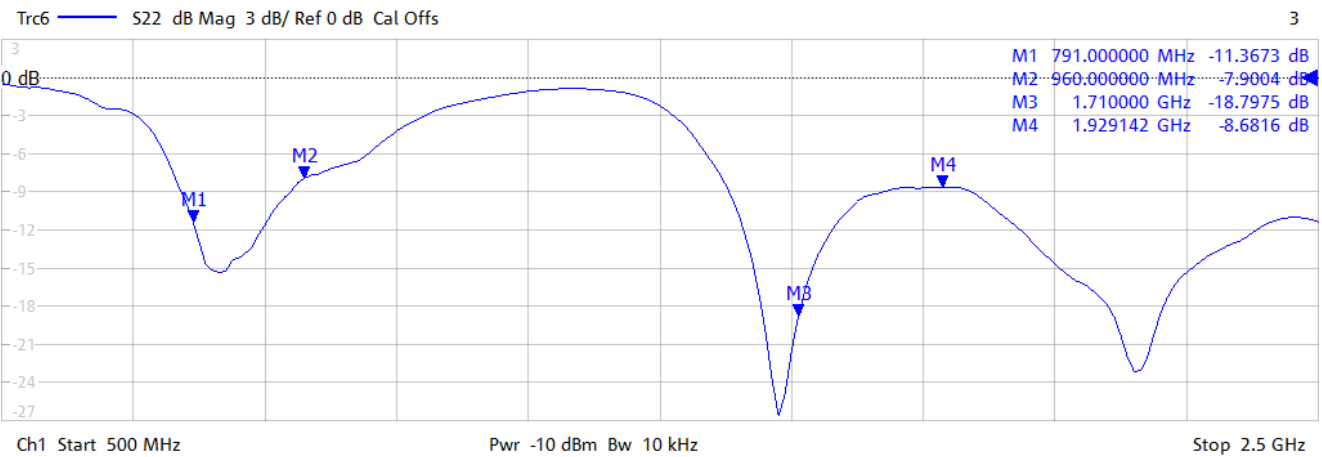
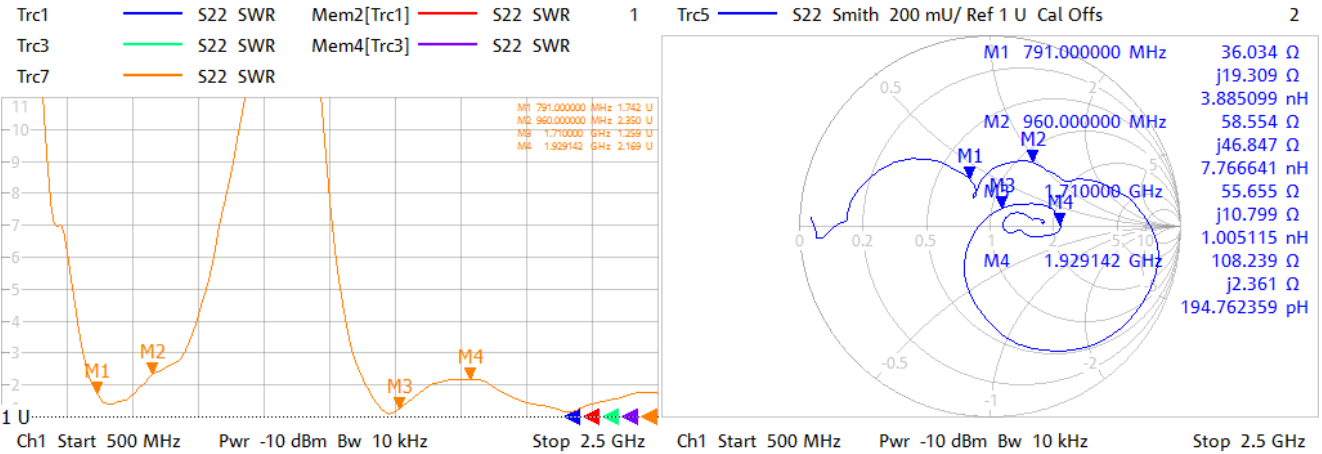
REV. X1

SHEET: 1/1

5. Antenna test result/测试结果

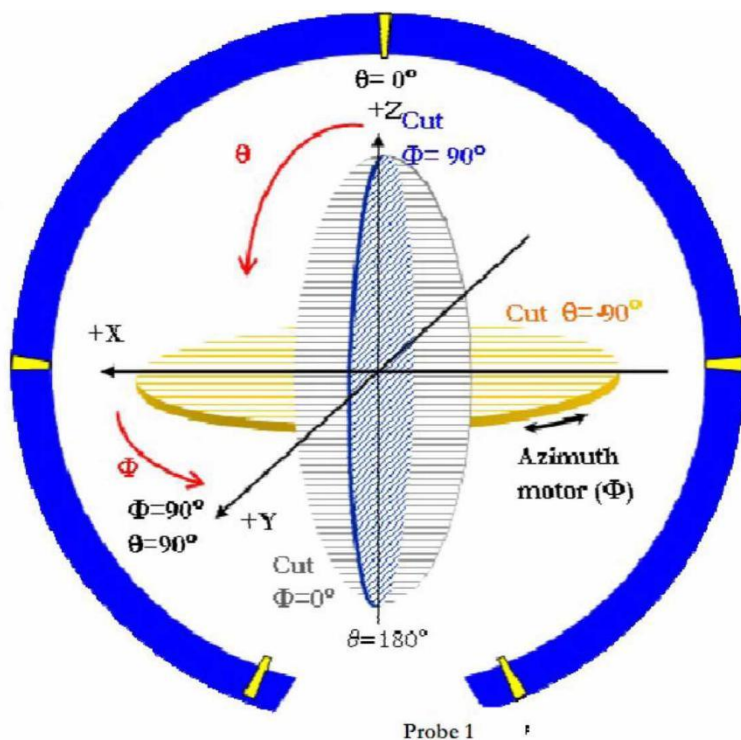
5.1 Return loss/Smith chart/VSWR/回波损耗/史密斯图/驻波比

10/17/2019 4:24:54 PM
1328.5170K92-101247-Tw

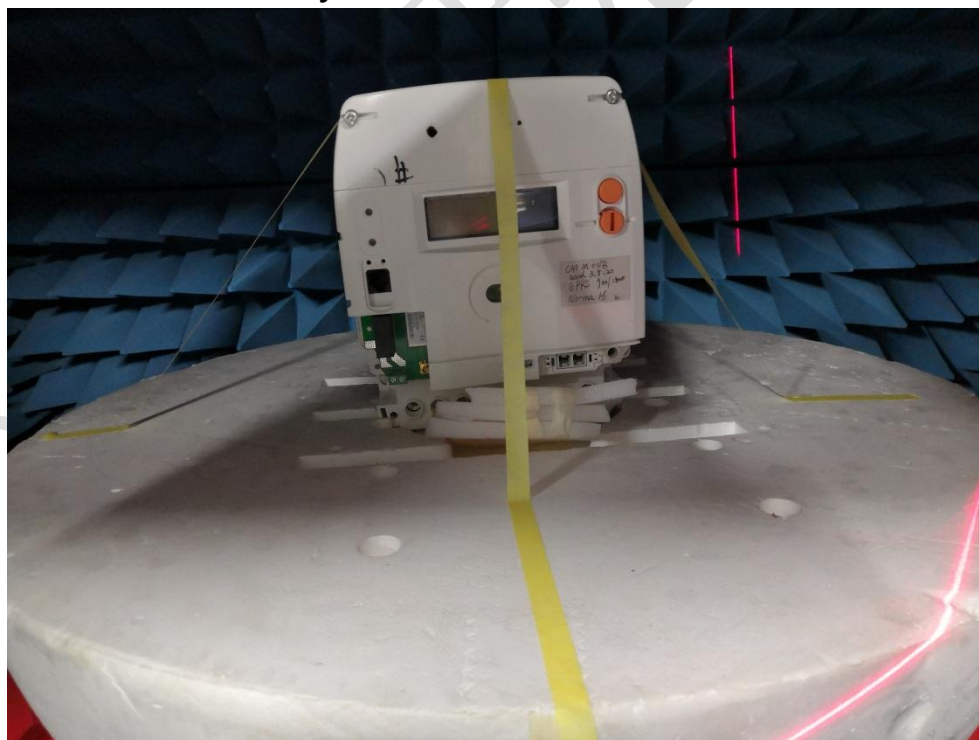


5.2 The gain and total efficiency test/增益和效率测试

5.2.1 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

5.2.2 The test result of total efficiency and total gain/天线效率及增益测试结果
790MHz-960MHz

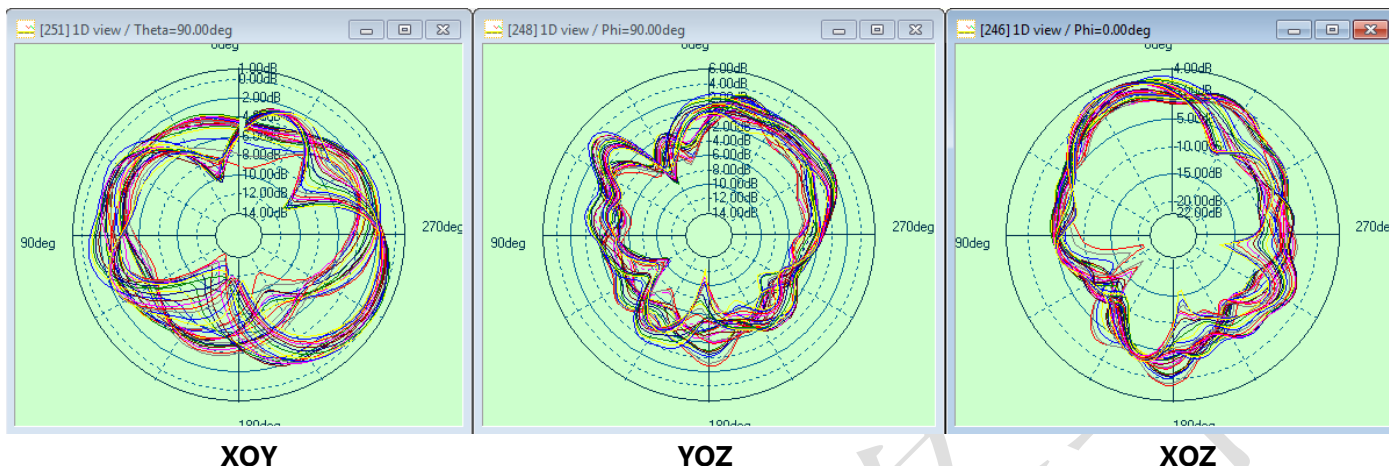
Frequency	Efficiency(%)	Gain (dBi)
790MHz	42%	2.0
800MHz	43%	2.5
810MHz	45%	2.6
820MHz	48%	2.9
830MHz	48%	2.8
840MHz	49%	2.8
850MHz	47%	2.5
860MHz	46%	2.3
870MHz	44%	2.2
880MHz	44%	2.2
890MHz	44%	2.1
900MHz	43%	1.9
910MHz	43%	1.7
920MHz	41%	1.3
930MHz	40%	1.0
940MHz	38%	0.8
950MHz	37%	0.5
960MHz	37%	0.4
AVG	43%	1.9

1710MHz-1880MHz

Frequency	Efficiency(%)	Gain (dBi)
1710MHz	60%	4.0
1720MHz	56%	3.5
1730MHz	57%	3.4
1740MHz	56%	3.3
1750MHz	55%	3.2
1760MHz	56%	3.3
1770MHz	52%	2.9
1780MHz	53%	2.8
1790MHz	53%	2.5
1800MHz	52%	2.4
1810MHz	51%	2.5
1820MHz	50%	2.5
1830MHz	49%	2.5
1840MHz	47%	2.5
1850MHz	47%	2.5
1860MHz	46%	2.4
1870MHz	47%	2.3
1880MHz	46%	2.1
AVG	52%	2.8

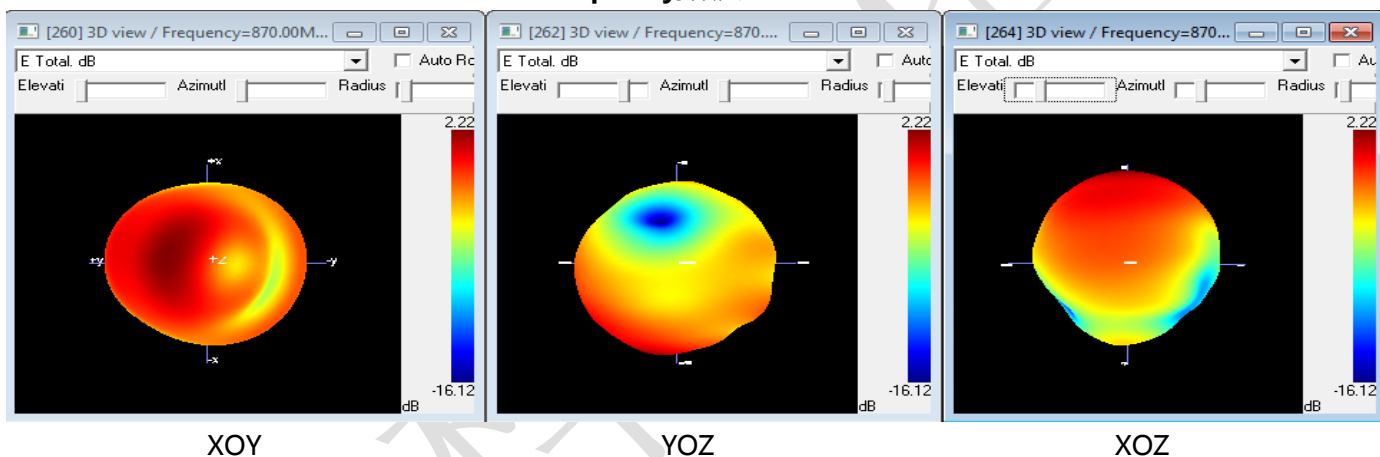
5.2.3 The antenna radiation pattern(2D)/天线辐射方向图 (2D)

790-1880MHz

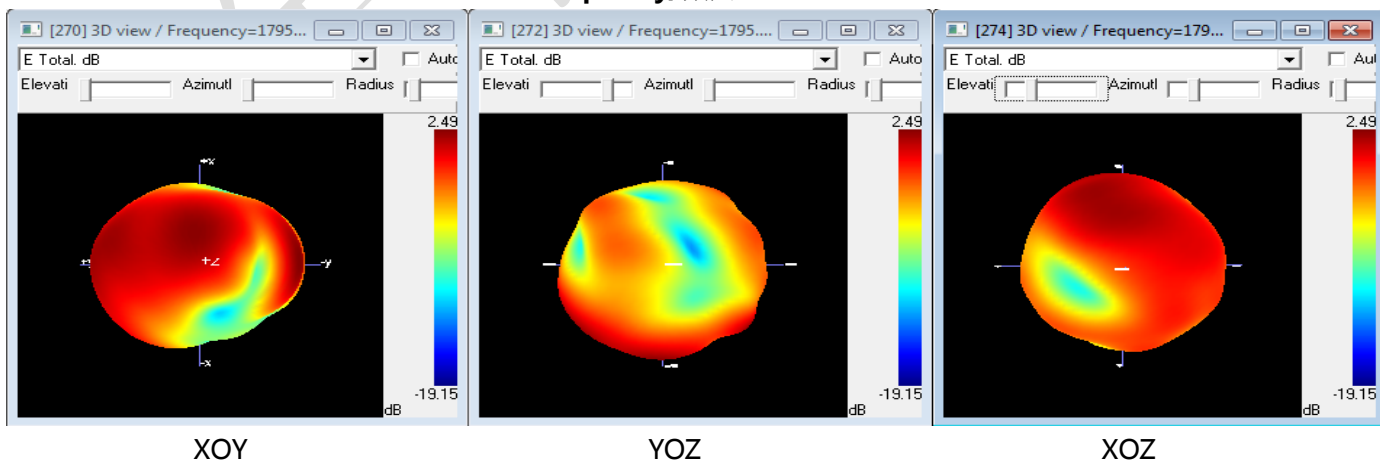


5.2.4 The antenna radiation pattern(3D)/天线辐射方向图 (3D)

Frequency/频点 870MHz



Frequency/频点 1920MHz



6. OTA test result/OTA 测试结果

EMTC	TRP	TIS
Band 3	19.7	-99.55
	19.9	-99.68
	19.5	-99.25
Band 8	18.6	-97.76
	18.2	-97.39
	18.3	-97.69
Band 20	19.3	-96.82
	19.3	-97.93
	18.9	-98.69

NB-IoT	TRP	TIS
Band 3	20.12	-107.41
	20.31	-109.99
	20.04	-108.24
Band 8	19.79	-108.14
	18.92	-108.3
	19.83	-108.39
Band 20	19.5	-107.85
	19.47	-108.23
	19.4	-109.13

GPRS	TRP	TIS
GSM 900	30.76	-105.61
	30.02	-105.21
	29.76	-104.64
GSM 1800	26.61	-105.12
	27.05	-106.32
	26.6	-104.3