

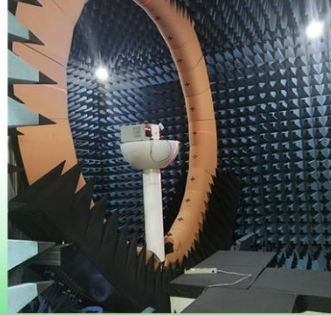
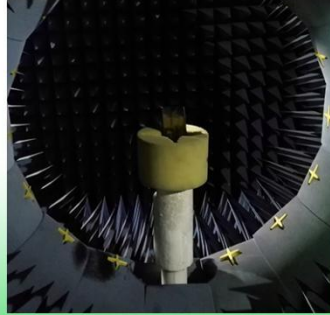
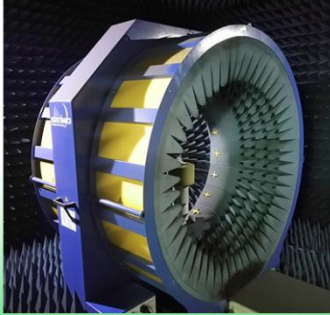
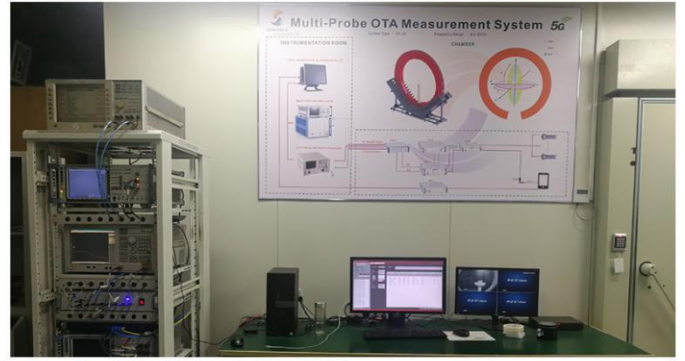
ANWEI commnuication Equipment Co.,Ltd

APPROVAL SHEET

Customer	Yunji	Specs	S186
Part Number		Frequency Band	GSM:(B2/B3/B5/B8) WCDMA:(B1/B2/B4/B5/B8) LTE-TDD:(38.40.41) FDD:(1.2.3.4.5.7.8.12.17. 20.25.26.28.66.) N1/N3/N5/N7/N8/N20/N26/N28/N66/N38/N41 /N77/N78
Color	Black	Edition	REV:A0
Salesperson	Mr.Xie	Design	WUXI
Structure	Qin Yun Lin	Confirm	
Date	2026.5.28	Signing Date	

address: 2nd Floor, East Building 5, Yifenghua Industrial Zone, Dalang, Longhua New District, Shenzhen

Project development environment



安威无线一直都是您值得信赖且优秀的合作伙伴，我们为您提供全方位一站式的产品以及技术服务！

“质量第一，服务至上”是安威一直以来的发展宗旨

主天线暗室数据

	Channel	TRP (dBm)	TIS (dBm)	亮屏		Channel	TRP (dBm)	TIS (dBm)	亮屏
GSM 850	128	24.31		-99.30	W 1	LOW	17.55		-102.2
	190	24.04				medium	17.34		
	251	23.84	-101.0			high	16.51	-103.6	
GSM 900	1	24.30		-99.52	W 2	LOW	17.14		-102.4
	62	24.19				medium	17.24		
	124	24.24	-101.5			high	17.53	-103.4	
DCS 1800	512	24.24		-101.21	W 4	LOW	16.76		-101.5
	698	24.31				medium	17.14		
	885	24.35	-103.3			high	17.2	-103.6	
PCS 1900	512	24.64		-101.0	W 5	LOW	14.47		-99.3
	661	24.50				medium	14.83		
	810	24.35	-103.0			high	15.09	-101.0	
					W 8	LOW	15.39		-99.1
						medium	15.33		
						high	15.51	-101.5	

	Channel	TRP (dBm)	TIS (dBm)	亮屏		Channel	TRP (dBm)	TIS (dBm)	亮屏		Channel	TRP (dBm)	TIS (dBm)	亮屏
FDD B1	LOW	17.1		-89.0	FDD B17	LOW	14.41		-85.52	FDD B66	LOW	16.76		-89.4
	medium	16.75				medium	14.15				medium	16.04		
	high	17.02	-90.6			high	14.06	-88.4			high	16.24	-90.25	
FDD B2	LOW	17.22		-89.2	FDD B18	LOW	14.62		-86.16	TDD B38	LOW	17.66		-88.0
	medium	17.18				medium	15.03				medium	17.67		
	high	17.39	-90.6			high	15.20	-88.6			high	17.21	-89.1	
FDD B3	LOW	17.33		-89.4	FDD B19	LOW	14.63		-86.02	TDD B40	LOW	18.01		-90.2
	medium	17.08				medium	15.04				medium	18.17		
	high	18.02	-90.0			high	15.28	-88.4			high	18.03	-91.0	
FDD B4	LOW	17.11		-88.0	FDD B20	LOW	15.32		-86.0	TDD B41	LOW	17.41		-89.3
	medium	17.09				medium	15.21				medium	17.16		
	high	17.2	-90.2			high	15.19	-89			high	17.08	-89.0	
FDD B5	LOW	15.31		-86.5	FDD B25	LOW	17.02		-88.5					
	medium	15.19				medium	17.26							
	high	15.17	-88.08			high	17.86	-90.0						
FDD B7	LOW	17.51		-88.5	FDD B26	LOW	14.55		-85.5					
	medium	17.42				medium	14.17							
	high	16.57	-90.1			high	14.86	-88.5						
FDD B8	LOW	15.21		-85.52	FDD B28A	LOW	14.19		-85.64					
	medium	15.11				medium	14.48							
	high	15.04	-88.1			high	14.07	-88.36						
FDD B12	LOW	13.55		-85.39	FDD B28B	LOW	14.59		-85.46					
	medium	14.07				medium	14.31							
	high	14.08	-88.03			high	13.83	-88.5						

	Channel	TRP (dBm)	TIS (dBm)	亮屏		Channel	TRP (dBm)	IS (dBm)	亮屏		Channel	TRP (dBm)	TIS (dBm)	亮屏
NR N1	LOW	17.04		-69.0	NR N28	LOW	14.24		-66.25	NR N38	LOW	16.55		-87.31
	medium	16.07				medium	14.04				medium	17.09		
	high	16.26	-90.5			high	15.19	-87.5			high	16.47	-89.6	
NR N3	LOW	16.39		-69.1	NR N66	LOW	17.14		-67.08	NR N40	LOW	18.16		-88.4
	medium	16.05				medium	16.26				medium	18.34		
	high	16.26	-90.2			high	16.24	-88.0			high	18.22	-89.64	
NR N5	LOW	14.16		-86.44						NR N41	LOW	17.81		-83.64
	medium	14.73									medium	17.04		
	high	15.27	-88.0								high	17.77	-84.04	
NR N7	LOW	16.98		-88.51						NR N77	LOW	19.03		-84.28
	medium	17.02									medium	19.16		
	high	16.08	-90.5								high	18.62	-85.54	
NR N8	LOW	15.18		-85.34						NR N78	LOW	19.11		-84.24
	medium	15.49									medium	19.23		
	high	14.55	-88.1								high	18.76	-85.64	
NR N12	LOW	14.73		-85.4										
	medium	14.22												
	high	14.09	-87.5											
NR N20	LOW	14.05		-86.0										
	medium	14.6												
	high	14.3	-88.0											
NR N25	LOW	16.06		-87.24										
	medium	16.13												
	high	16.11	-89.5											

GPS测试结果



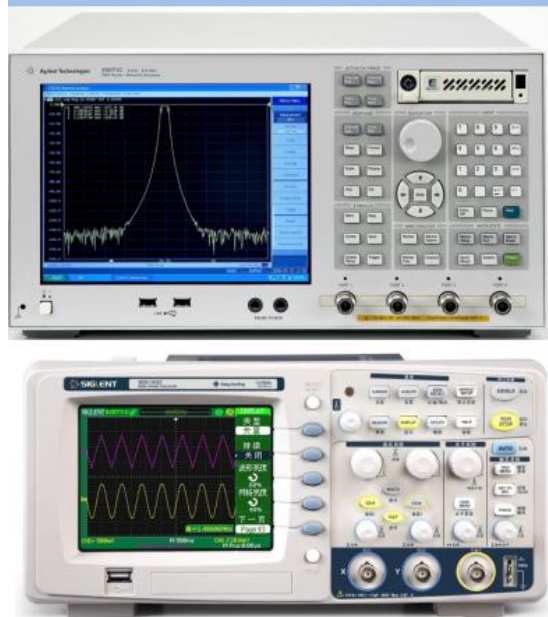
WIFI测试效果:

BAND	2.4GWIFI			5.G WIFI		
CHANNEL	low	medium	high	low	medium	high
TRP (dBm)	11.50	11.28	11.52	10.35	10.24	10.16
TIS (dBm)	-80.54	-79.81	-80.42	-70.28	-70.36	-71.0

BT测试效果:

BAND	BT		
CHANNEL	low	medium	high
TRP (dBm)	3.16	3.50	3.29
TIS (dBm)	-83.12	-83.42	-83.29

一. NFC无源设备



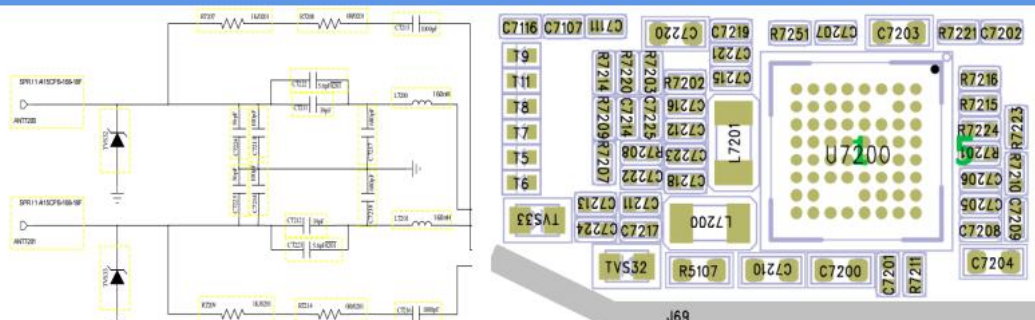
二. NFC无源调试



三. NFC Q值

Step 2	Antenna:	linear view	unit	annotation
	$L_a =$	1.100E-06	[H]	equivalent inductance at f=1MHz
	$R_s =$	1.256E+00	[Ω]	equivalent resistance at f=1MHz
	$R_p =$	2.027E+03	[Ω]	equivalent resistance at self resonance frequency
	$f_{ra} =$	3.261E+07	[Hz]	self resonance frequency of the antenna
	$R_p (13.56\text{MHz}) =$	3.143E+03	[Ω]	Skin effect included
	$R_a =$	4.051	[Ω]	
	$C_a =$	2.166E-11	[F]	
	$Q_a =$	23.137		

四. NFC匹配调试



注意：需要修改的匹配参数如下表（备注：EVT试产无改动）

位号	调整后	备注		
C7225/C7224	NC	封装: 0201 ,	品牌: 村田,	误差 5% 50V
C7213/C7214	100PF电容	封装: 0201 ,	品牌: 村田,	误差 5% 50V
C7223/C7222	68PF电容	封装: 0201 ,	品牌: 村田,	误差 5% 50V
C7212/C7211	22PF电容	封装: 0201 ,	品牌: 村田,	误差 5% 50V
C7217/C7218	820PF	封装: 0201 ,	品牌: 村田,	误差 5% 50V
C7212/C7211	15PF电容	封装: 0201 ,	品牌: 村田,	误差 5% 50V
C7225/C7224	68PF电容	封装: 0201 ,	品牌: 村田,	误差 5% 50V

五. NFC读卡距离

卡类型	距离 (cm)	天线材质
T 512) (Topaz- P1	3.5	FPC + 铁氧体
T Ultralight) (Mifare- P2	3.0	
T Felica) (Sony- P3	2.5	
T Desfire) (Mifare- P4	1.8	
T (ISO15693) (P5	3.5	
卡模拟	3.5	
身份证	1.8	



六. 产品分析与总结

4.1、读卡距离跟卡片的兼容性有关，以上距离只针对测试卡片

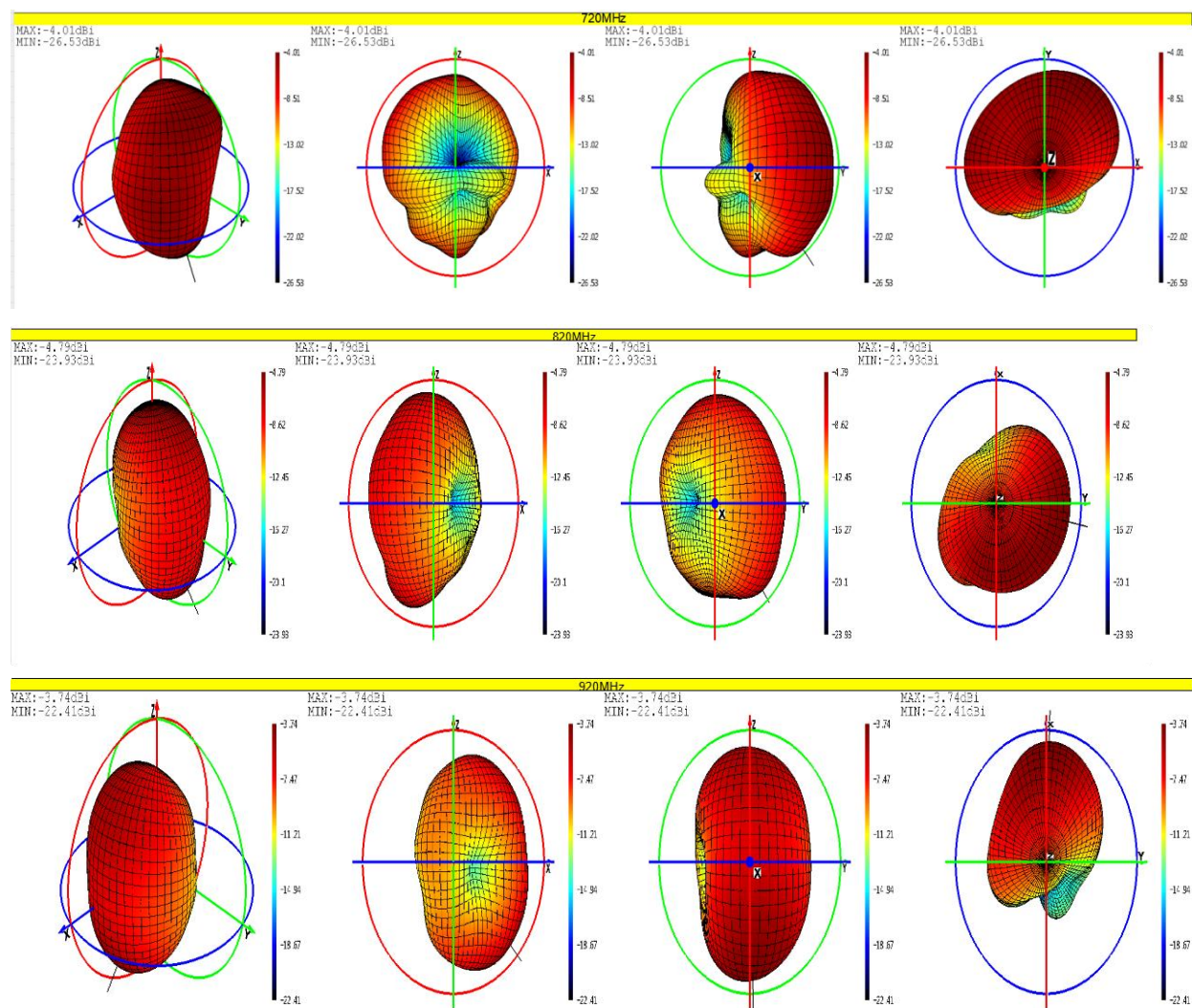
4.2、电容的精度建议采用高些的

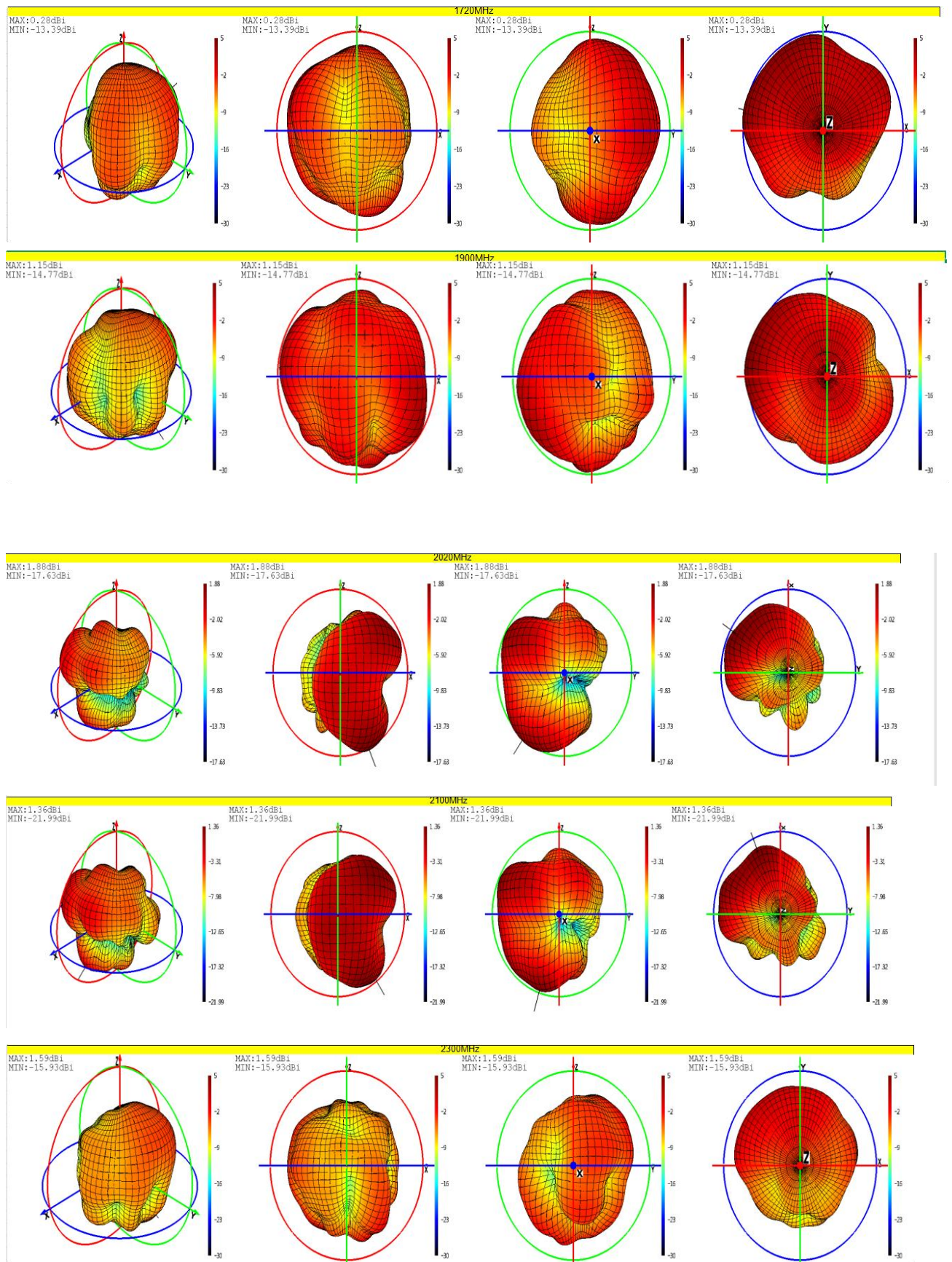
天线增益(Antenna gain)

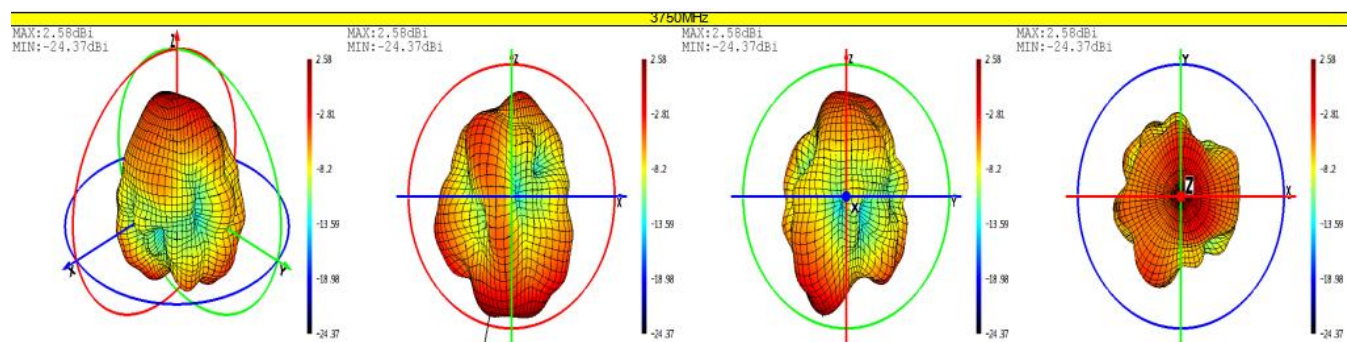
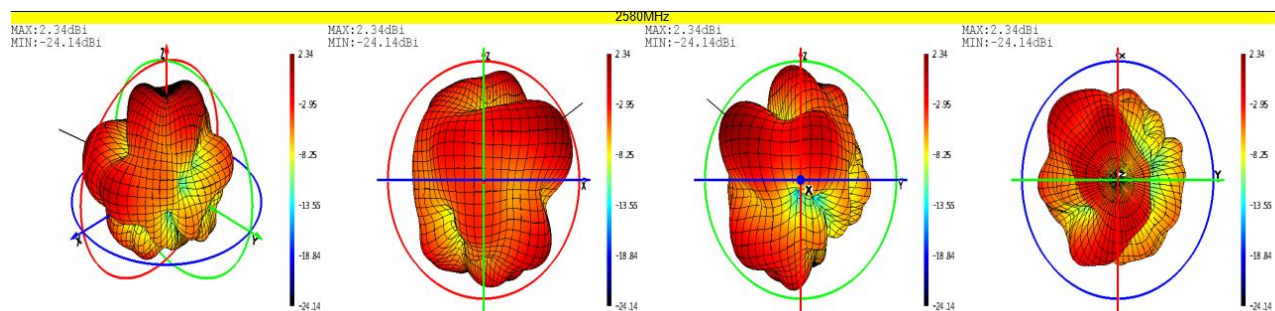
Standard	Band (LTE)	Band(NR)	Frequency	Gain(dbi)
TDD_LTE	TDD_B34		2020	1.88
TDD_LTE	TDD_B38	NR -N38	2580	2.34
TDD_LTE	TDD_B39		1900	1.15
TDD_LTE	TDD_B40	NR -N40	2300	1.59
TDD_LTE	TDD_B41	NR -N41	2580	2.34
FDD_LTE	FDD_B1	NR -N1	2100	1.36
FDD_LTE	FDD_B2		1900	1.15
FDD_LTE	FDD_B3	NR -N3	1720	0.28
FDD_LTE	FDD_B4		1720	0.28
FDD_LTE	FDD_B5	NR -N5	820	-4.79
FDD_LTE	FDD_B7	NR -N7	2580	2.34
FDD_LTE	FDD_B8	NR -N8	920	-3.74
FDD_LTE	FDD_B12	NR -N12	720	-4.01
FDD_LTE	FDD_B17		720	-4.01
FDD_LTE	FDD_B18		820	-4.79
FDD_LTE	FDD_B19		820	-4.79
FDD_LTE	FDD_B20	NR -N20	820	-4.79
FDD_LTE	FDD_B25	NR -N25	1900	1.15
FDD_LTE	FDD_B26		820	-4.79
FDD_LTE	FDD_B28	NR -N28	720	-4.01
FDD_LTE	FDD_B66	NR -N66	1720	0.28
WCDMA	WCDMA_B1		2100	1.36
WCDMA	WCDMA_B2		1900	1.15
WCDMA	WCDMA_B4		1720	0.28
WCDMA	WCDMA_B5		820	-4.79
WCDMA	WCDMA_B8		920	-3.74
GSM	GSM850		820	-4.79
GSM	GSM900		920	-3.74
GSM	DCS1800		1720	0.28
GSM	PCS1900		1900	1.15

NR	NR -N77	3700	2.58
NR	NR -N78	3700	2.58
2.4G WIFI		2450	-0.56
5G WIFI		5300	1.84
GPS	L1	1575	0.56
BT		2450	-0.56

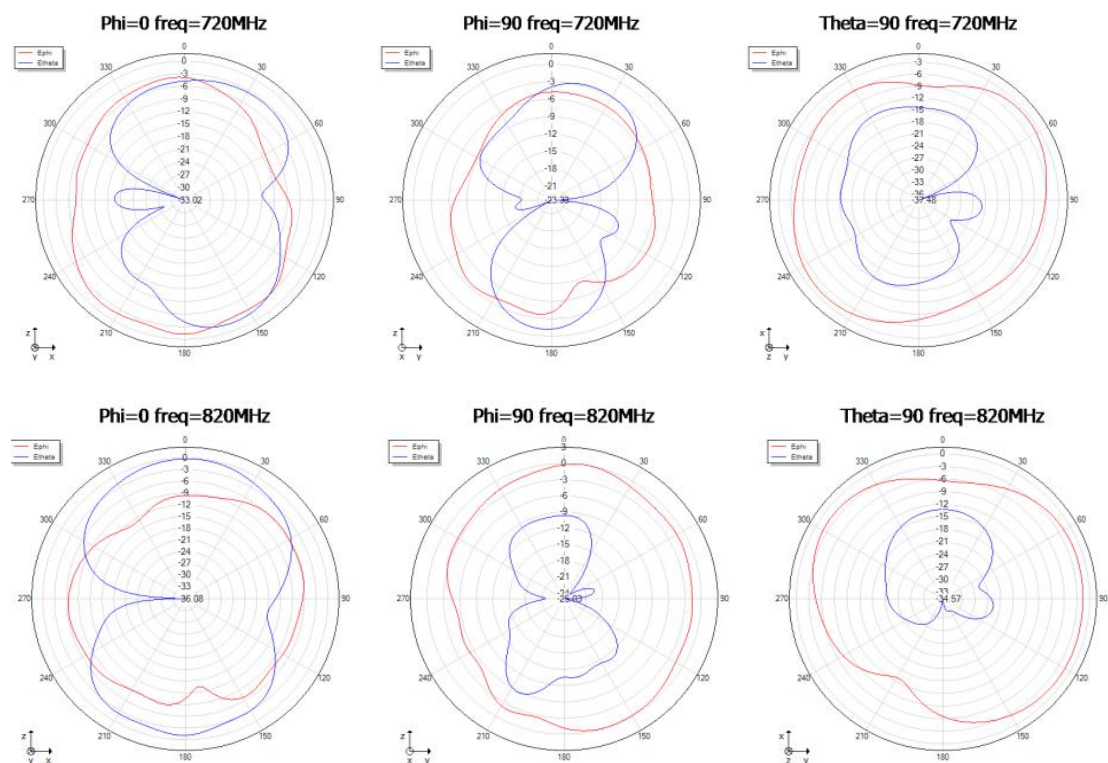
MIMO antenna apple map

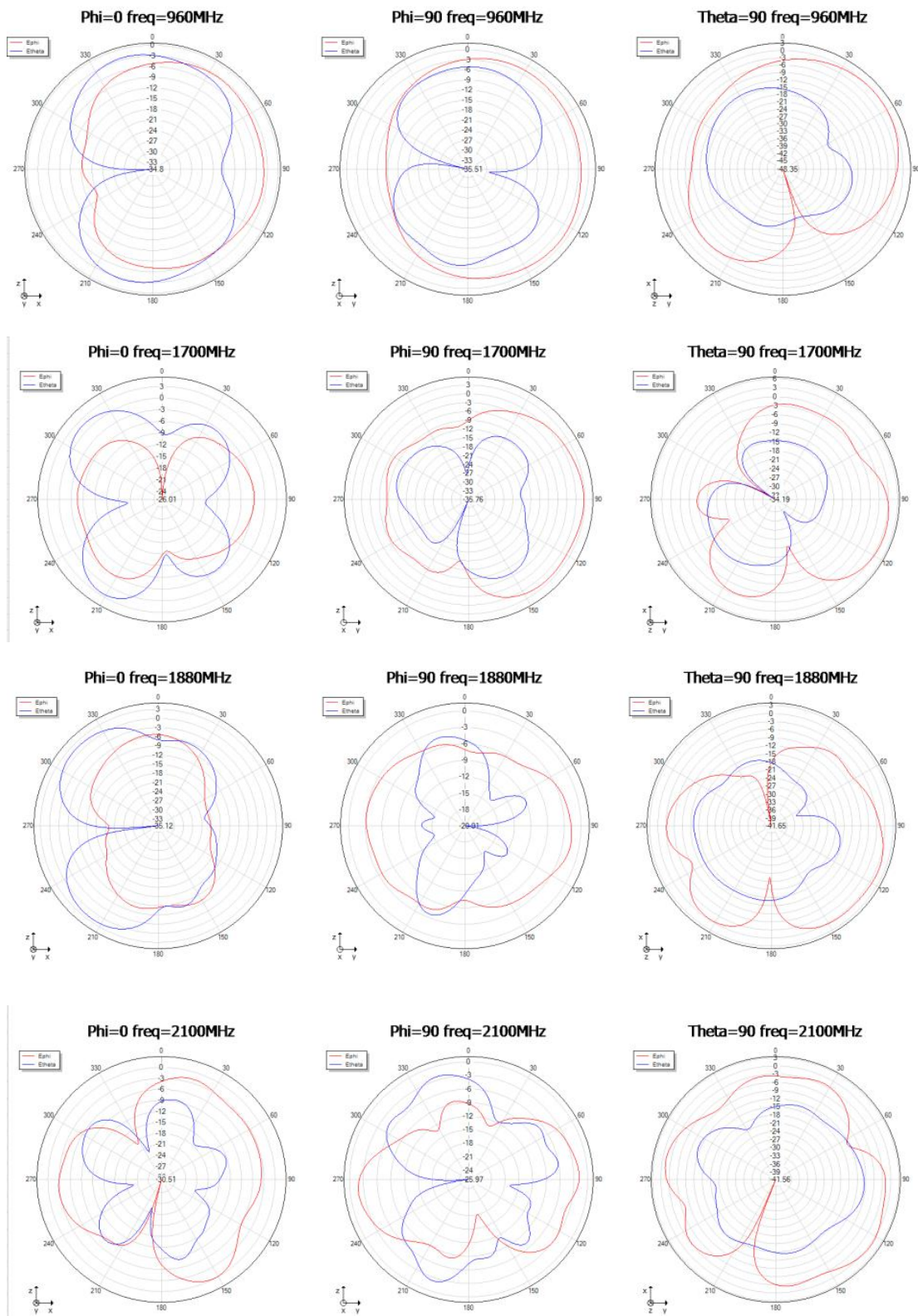


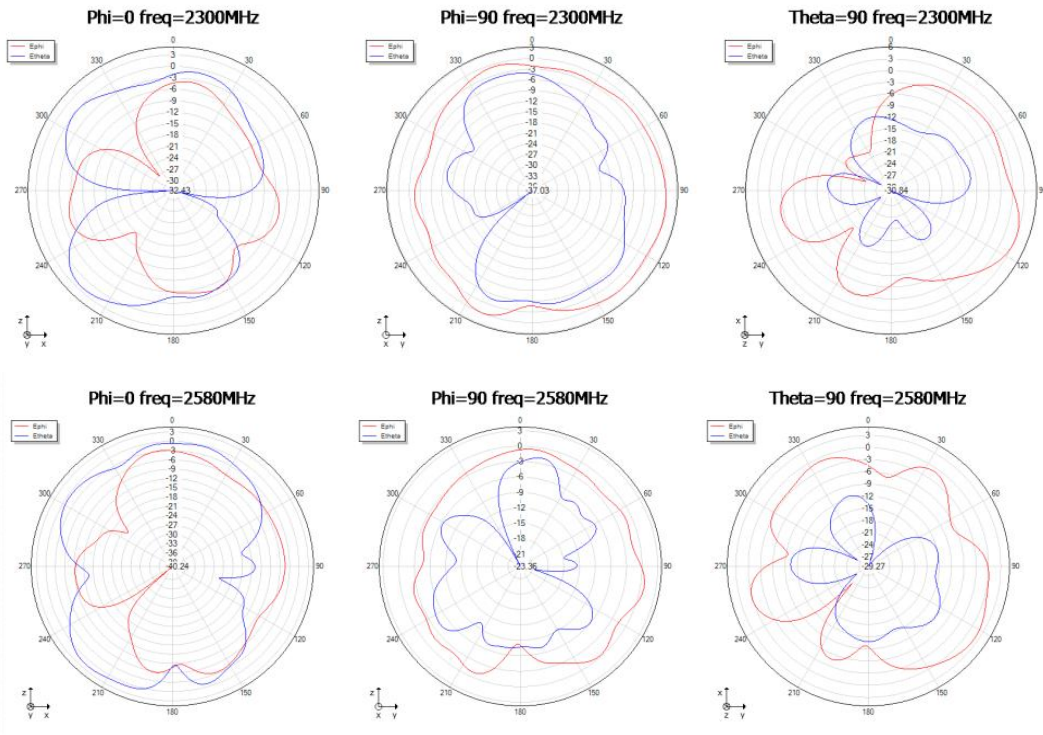




(MIMO antenna) PolarGraphs/EtotalGraphs

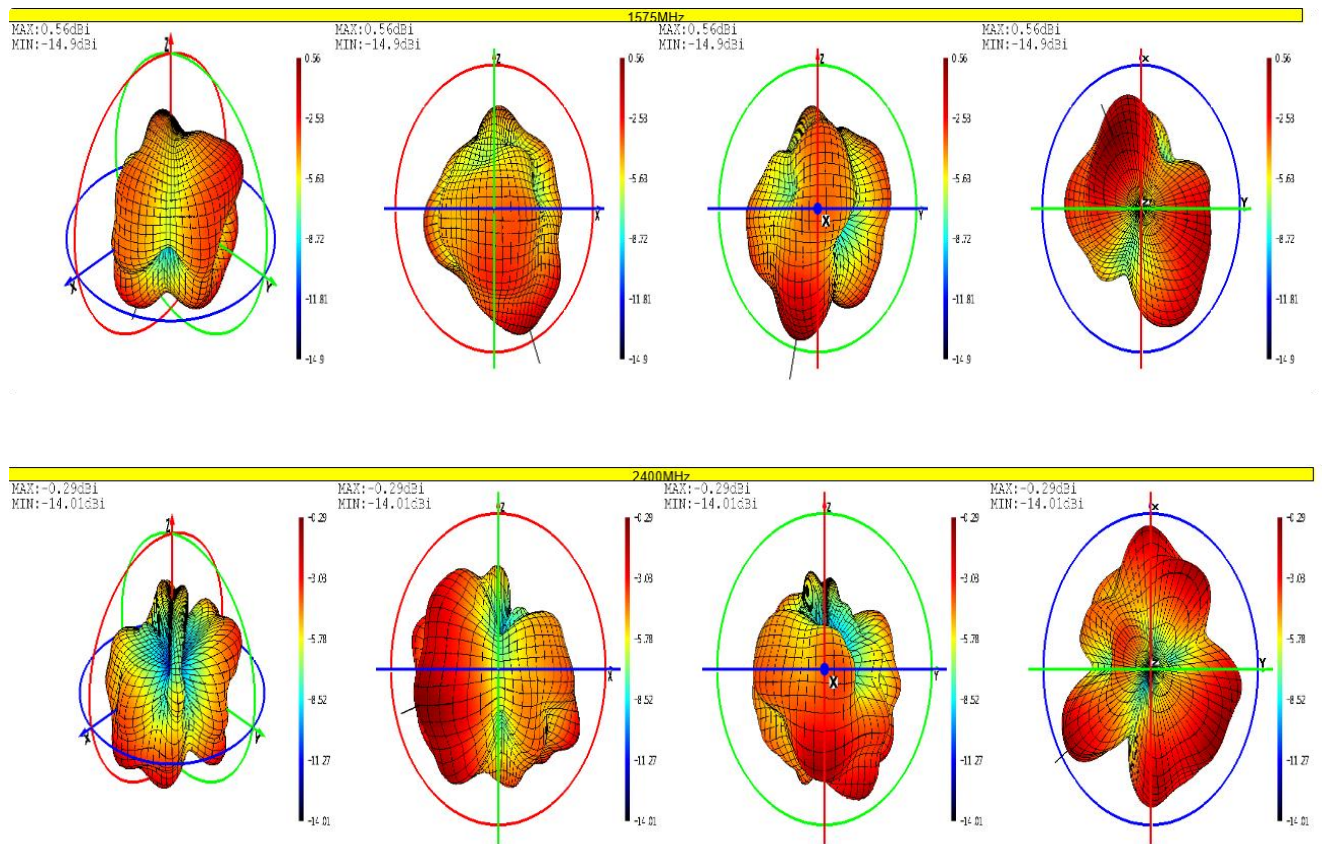


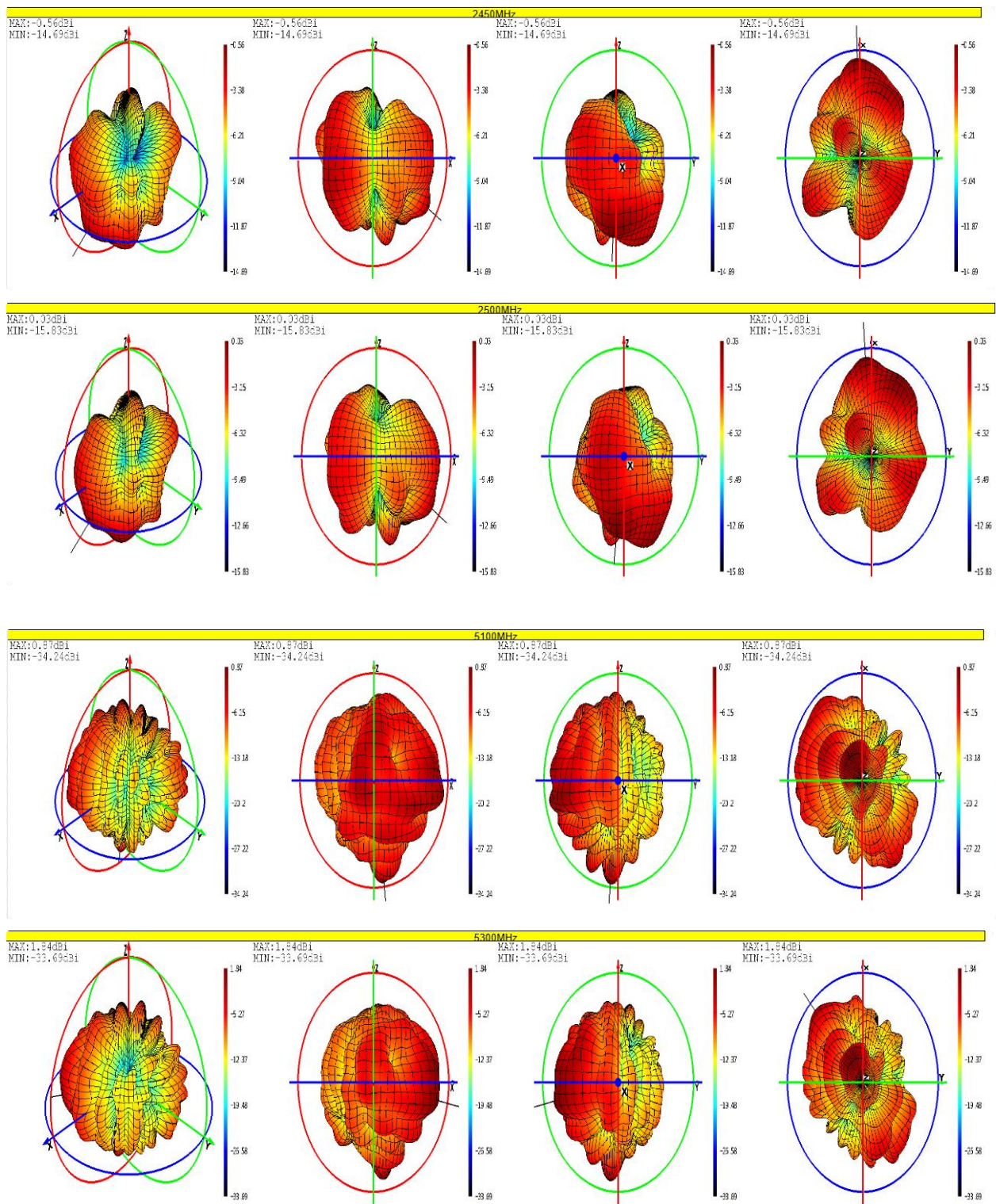


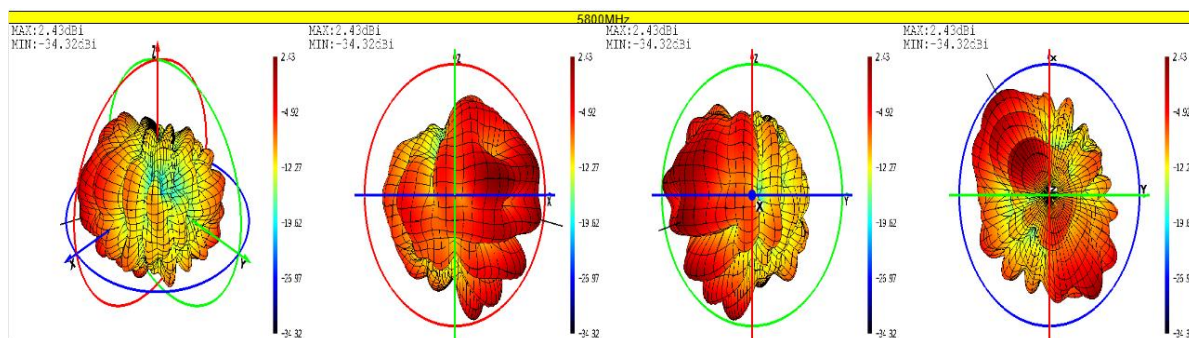


(GPS antenna) + (2.4G/5G WIFI/BT antenna) apple

Map

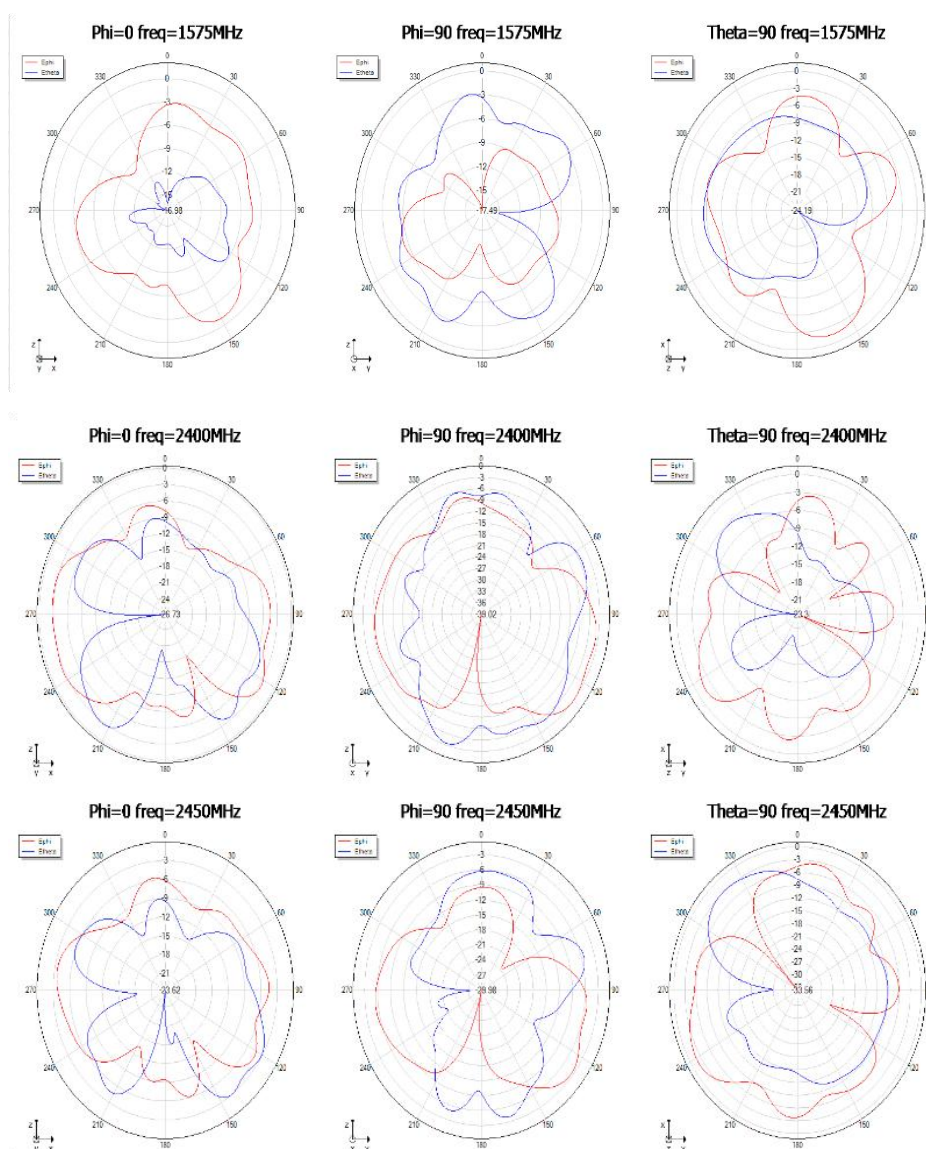


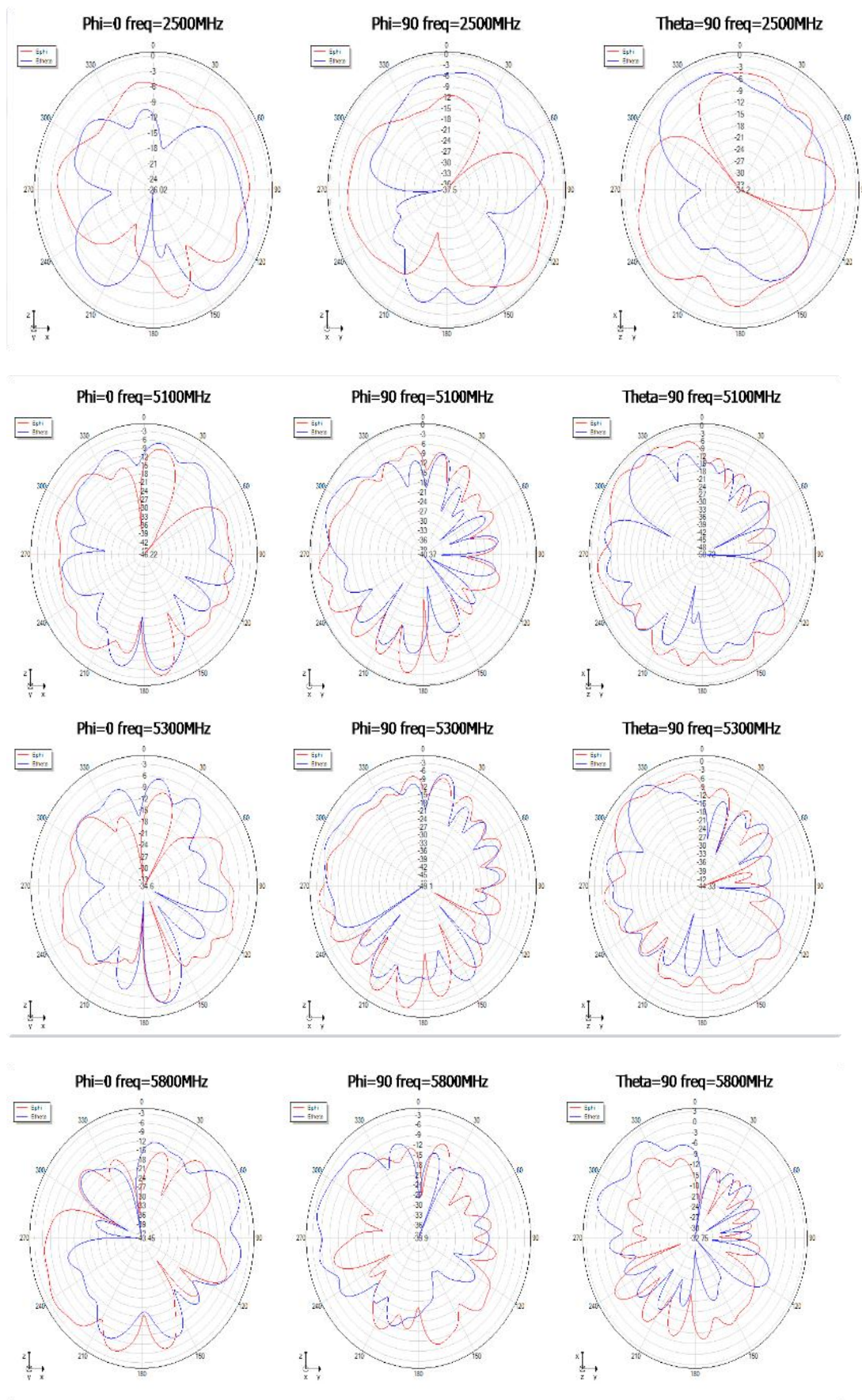


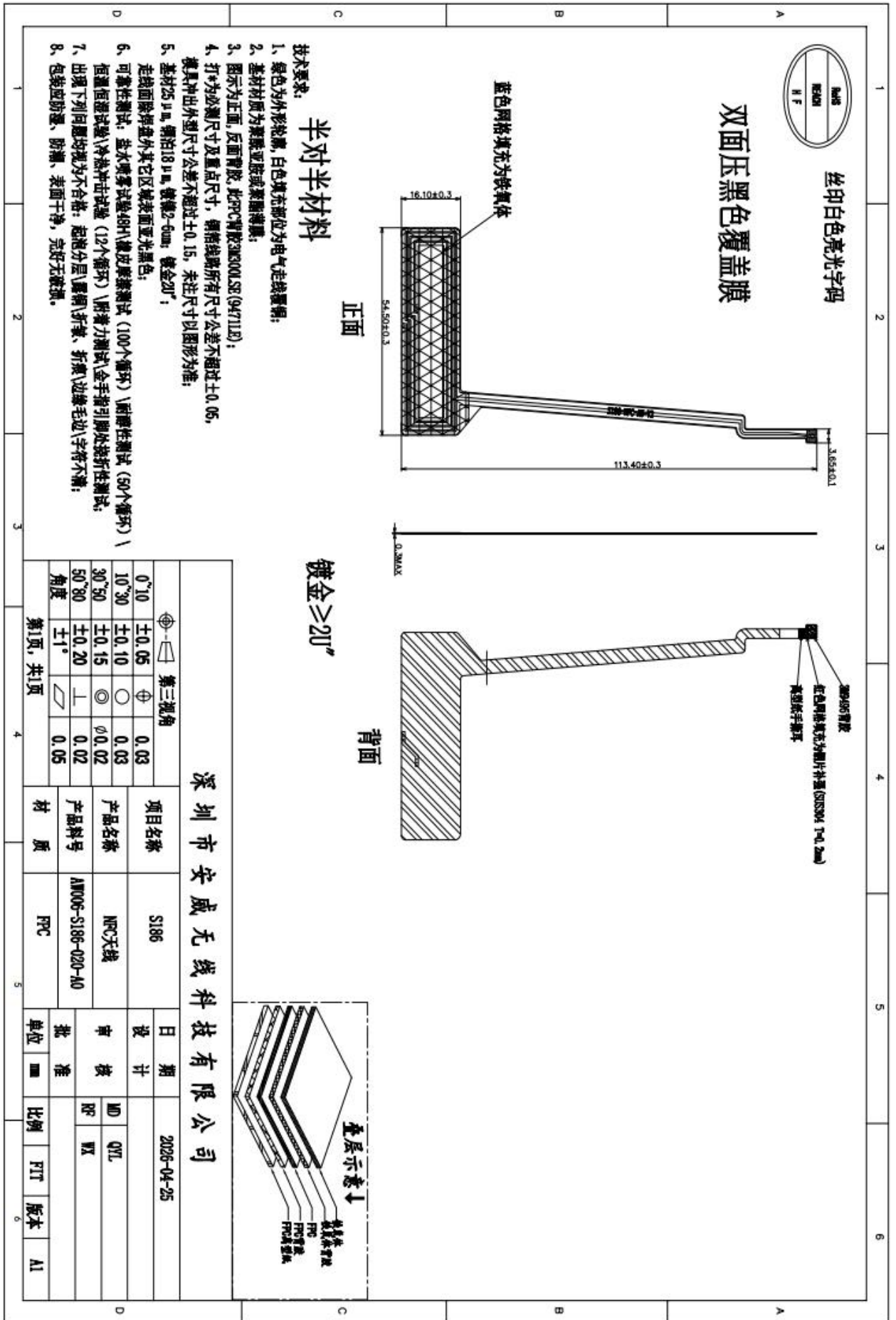


(GPS antenna) + (2.4G/5G WIFI/BT antenna)

PolarGraphs/EtotalGraphs



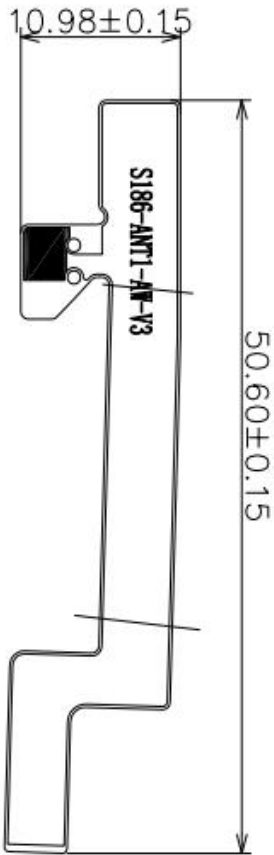






丝印白色亮光字码

正面压黑色覆盖膜



1对半材料

技术要求:

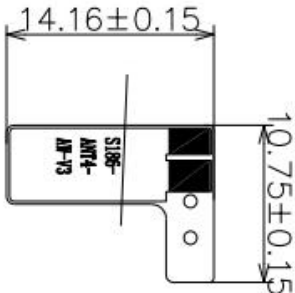
- 1、绿色为外形轮廓,白色填充部位为电气走线覆铜;
- 2、基材材质为聚酰亚胺或聚酰亚胺薄膜;
- 3、图示为正面,反面背胶,此FPC背胶3M300LSE (9471LE);
- 4、打*为必须尺寸及重点尺寸; 铜箔线路所有尺寸公差不得超过±0.05, 模具冲出外型尺寸公差不得超过±0.15, 未注尺寸以图形为准;
- 5、基材25 μm, 铜箔18 μm, 微蚀2-6um; 镀金20*;
- 6、走线面除焊盘外其它区域表面无光黑色;
- 7、可靠性测试: 盐雾试验48H\橡皮擦测试 (100个循环) \耐刮性测试 (50个循环) \恒温恒湿试验\冷热冲击试验 (12个循环) \附着力测试\金手指引脚处折性测试;
- 8、出现下列问题均视为不合格: 起翘\分层\露铜\折痕、折裂\边缘毛边\字符不清;
- 9、包装应防潮、防潮、表面干净,完好无破损。

深 圳 市 安 威 无 线 科 技 有 限 公 司									
 第三视角									
0°~10°	±0.05	⊕							
10°~30°	±0.10	○	产品名称	ANT1天线		设 计			
30°~50°	±0.15	◎	产品料号	AW006-S186-021-A0		审 核			
50°~80°	±0.20	⊥	材 质	FPC	批 准		MD QTL		
角度	±1°	∇			RF WX				
第1页, 共1页			单 位	mm	比 例	FIT	版 本	AI	



丝印白色亮光字码

正面压黑色覆盖膜



I对半材料

- 技术要求:
1. 绿色为外形轮廓, 白色填充部位为电气走线覆铜;
 2. 基材材质为聚酰亚胺或聚醚醚酮;
 3. 图示为正面, 反面覆胶, 此FPC背胶3M300LSE(9471LE);
 4. 打 ϕ 为必须尺寸及重点尺寸, 铜箔线路所有尺寸公差不得超过 ± 0.05 , 模具冲出外型尺寸公差不得超过 ± 0.15 , 未注尺寸以图形为准;
 5. 基材 $25\mu m$ 铜箔 $18\mu m$ 镀镍 $2-6um$ 镀金 $20''$;
 6. 走线面除焊盘外其它区域表面应为黑色;
 7. 可靠性测试: 盐雾试验48H\膜厚测试(100个循环)\耐摩擦测试(50个循环)\恒温恒湿试验\冷热冲击试验(12个循环)\附着力测试\金手指引脚处折性测试;
 8. 出现下列问题均视为不合格: 起翘分层\露铜\折裂\边缘毛边\字符不清;
 9. 包装应防潮、防漏、表面干净, 完好无破损。

深圳市安威无线科技有限公司																	
第三视角				项目名称		SI86		日期		2026-03-19							
								设计									
0°~10°	±0.05	φ		产品名称		ANT4天线		审核		MD		QTL					
10°~30°	±0.10	○															
30°~50°	±0.15	◎															
50°~80°	±0.20	┘		产品料号		AM006-SI86-022-A0		批准		RP		VX					
角度	±1°	∠															
第1页, 共1页				材 质		FPC		单位		比例		FIT		版本		AI	

