



深圳市蜂蜗科技有限公司

Shenzhen Besnel Technology Ltd

承 认 书

APPROVAL SHEET

Address: A2201, Jinpingguo Innovation Park, No. 9 Ganli 2nd Road, Gankeng Community, Jihua Street, Longgang District, Shenzhen, China

产品描述 Part Description	生产厂家: 深圳市信维通信股份有限公司 规格型号/版本: A0 Manufacturer: SHENZHEN SUNWAY COMMUNICATION CO., LTD Description: 供货商 深圳市信维通信股份有限公司 所承认项目: B838(WTH13) Supplier: SHENZHEN SUNWAY COMMUNICATION CO., LTD Project: 产品名称: 主(LTE)天线 物料代码:144-00047 Product Name: LTE Part No.						
附件: Attachments	☒ 规格书 Spec ☐ CPK 报告 Cpk Report ☐ 材质证明书 Material Verification Sheet ☒ 工程图面 Drawing ☒ FAI全尺寸报告 FAI Report ☒ 包装方式 Packing Content ☒ 样品 Sample ☒ 可靠性测试报告 Reliability Report ☐ 产线详细数据 Product detail data						
品质控制项目 Item of quality control							
承认条件: Approval condition	☐ 承认 Approved ☐ 条件承认 Condition Approved ☐ 临时承认 Temporary Approved ☐ 拒绝承认 Reject 需满足条件: _____ 限量_____Pcs 采购						
确认: Approval by	项目经理		结构部		硬件部		中试部
	DQA		项目总监		品质经理		
分发部门: Distribute	☐ 供应商 ☐ 公司 ☐ 工厂 ☐ 售后						

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深圳市信维通信股份有限公司

SHENZHEN SUNWAY COMMUNICATION CO.,LTD

B838 LTE Antenna Approval Sheet

Antenna name	B838 LTE antenna	Frequency band	700MHZ-960MHZ 1710MHZ-2690MHZ
Batch No.	144-00047	Version	A0
Color	Black	Date	2025-7-11
Structure confirmation	夏赞波	RF confirmation	陈章福
QC confirmation	陆常周	Approval	
Customer confirmation:			

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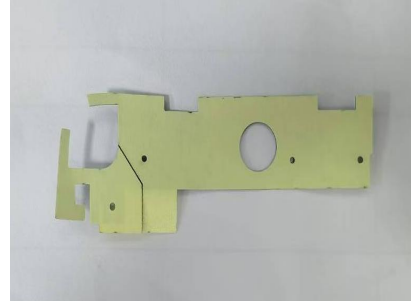
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1. Specifications

This report mainly provides the status of various electrical and structural performance parameters of the B838 antenna.

Figure 1 shows the antenna designed by SUNWAY.



MAIN
Antenna FPC (Figure 1)

1.1 Antenna Description



MAIN

Note that the above figures show the wire routing and feed point, respectively.

Antenna Matching:

$R1702=0\ \Omega$, $R1703=0\ \Omega$, $R1704=15\text{nH}$, $R1705=0\ \Omega$, $R1706=1.2\text{nH}$, $R1708=0\ \Omega$

$C1703=\text{N/A}$, $C1704=\text{N/A}$, $C1706=\text{N/A}$

MXD8545A (U1702)		
RF1	C1702	$0\ \Omega$
RF2	L1701	0.5pF
RF3	L1702	12nH
RF4	L1703	5.6pF

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2 Antenna Test

2.1 Connection Test

S11 The test setup is connected as follows : AgilentE5071B Vector network analyzer(VNA) →

Connection line → Test fixture

2.1.1 S11

The obtained S11 results from the test is shown in Figure 2.

S-Parameters:

MAIN

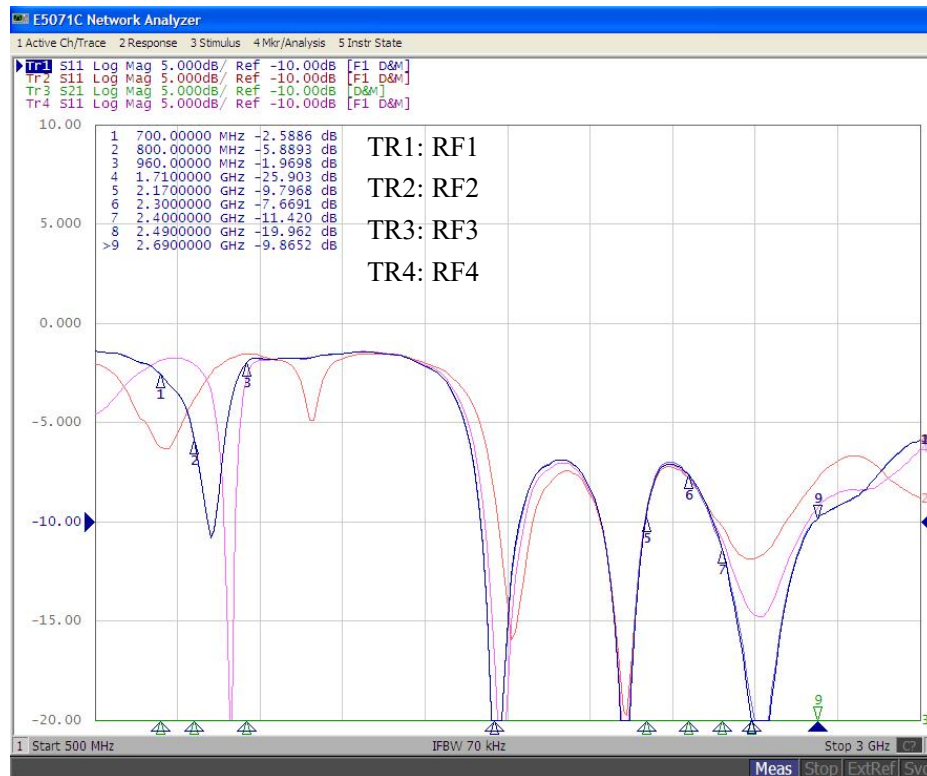


Figure 2.

2.2 Gain and Efficiency Test

2.2.1 Test site

SUNWAY Anechoic chamber: The test frequency range is 700Hz-6GHz, the electrostatic zone range is 50cm circumference, and the reflectivity is less than -50 dB.

2.2.2 Test Equipment

Agilent E5071B Vector network analyzer、standard horn antenna、American ETS AMS8500 antenna test system, etc.

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2.2.3 Test Data

MAIN:700MHZ-960MHZ&1710MHZ-2690MHZ

Freq(MHz)	700	710	720	730	740	750	760	770	780	790
Eff(dB)	-4.88	-4.45	-4.3	-4.2	-4.17	-4.21	-4.05	-3.91	-3.95	-3.95
Gain(dBi)	-3.07	-2.57	-2.45	-3.09	-4.2	-2.67	-2.22	-1.95	-1.61	-1.63

Freq(MHz)	800	810	820	830	840	850	860	870	880	890
Eff(dB)	-4.77	-4.34	-4.12	-4.1	-4.02	-3.87	-3.8	-4.03	-6.84	-6.56
Gain(dBi)	-2.75	-2.61	-2.82	-2.42	-1.77	-1.1	-0.91	0.33	-0.61	-0.58

Freq(MHz)	900	910	920	930	940	950	960			
Eff(dB)	-5.98	-5.35	-4.99	-5.07	-5.59	-6.56	-7.82			
Gain(dBi)	-0.96	-1.26	-1.63	-2.22	-2.8	-3.13	-3.85			

Freq(MHz)	1710	1730	1750	1770	1790	1850	1870	1890	1910	1930
Eff(dB)	-3.84	-4.13	-4.27	-4.4	-4.68	-4.65	-4.58	-4.34	-4.28	-4.21
Gain(dBi)	-0.11	-0.14	-0.18	-0.56	-0.9	-0.73	-0.85	-0.86	-0.65	-0.91

Freq(MHz)	1950	1970	1990	2110	2130	2150	2170	2190	2210	2290
Eff(dB)	-4.29	-4.46	-4.65	-4.35	-4.25	-4.3	-4.44	-4.88	-5.54	-5.79
Gain(dBi)	-0.76	-0.45	-0.46	-0.9	-1.47	-2	-2.17	-1.74	-1.38	-1.95

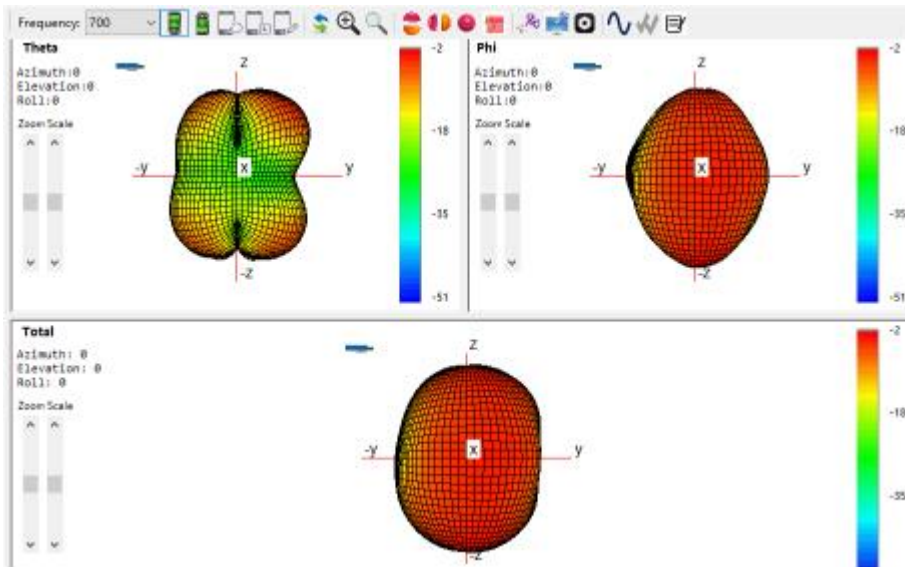
Freq(MHz)	2310	2330	2350	2370	2390	2410	2490	2510	2530	2550
Eff(dB)	-5.16	-4.74	-4.43	-4.2	-4.08	-3.78	-3.71	-3.68	-3.71	-3.75
Gain(dBi)	-1.38	-0.97	-0.44	-0.21	0.11	0.61	0.73	0.94	1.01	0.89

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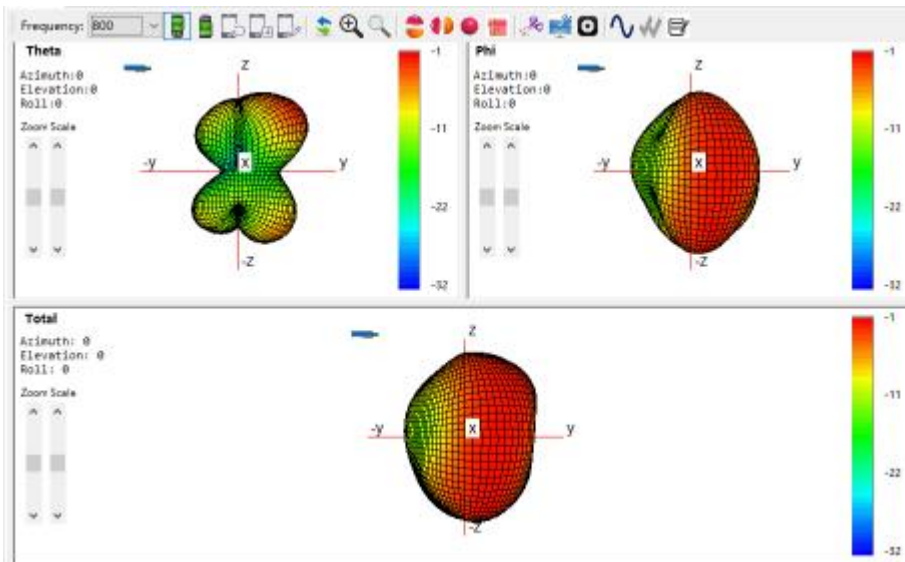
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Freq(MHz)	2570	2590	2610	2630	2650	2670	2690			
Eff(dB)	-4.01	-4.39	-4.68	-4.78	-4.76	-4.92	-4.71			
Gain(dBi)	0.73	0.61	0.49	0.32	0.19	0.08	-0.03			

3D for 700MHz



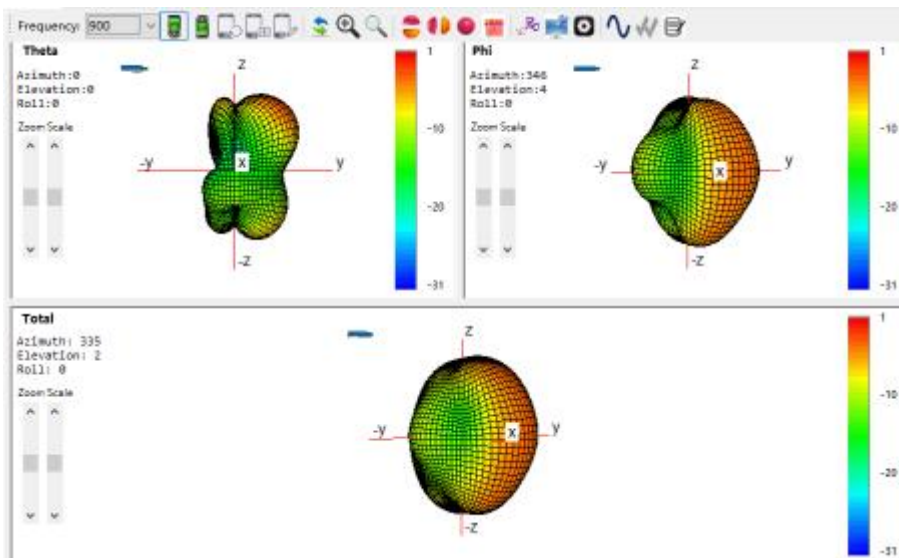
3D for 800MHz



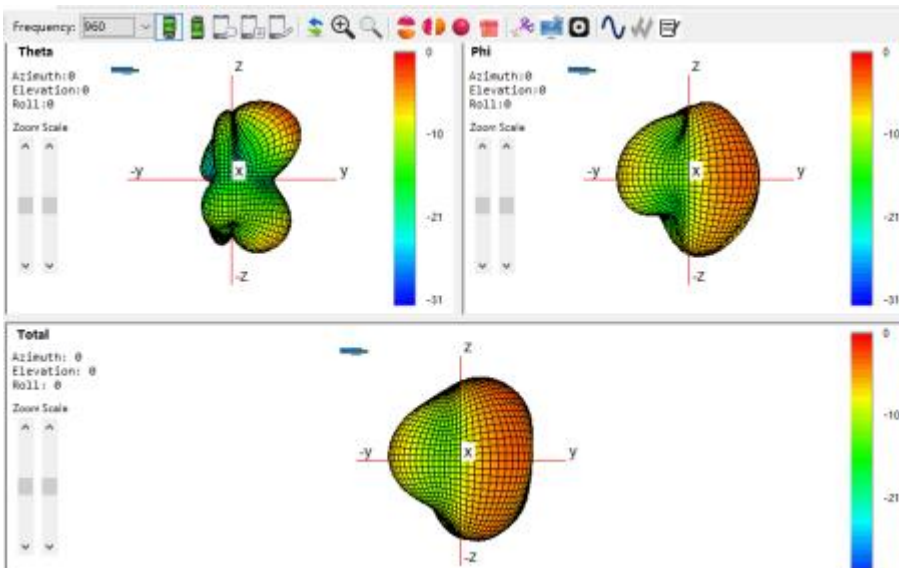
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3D for 900MHz



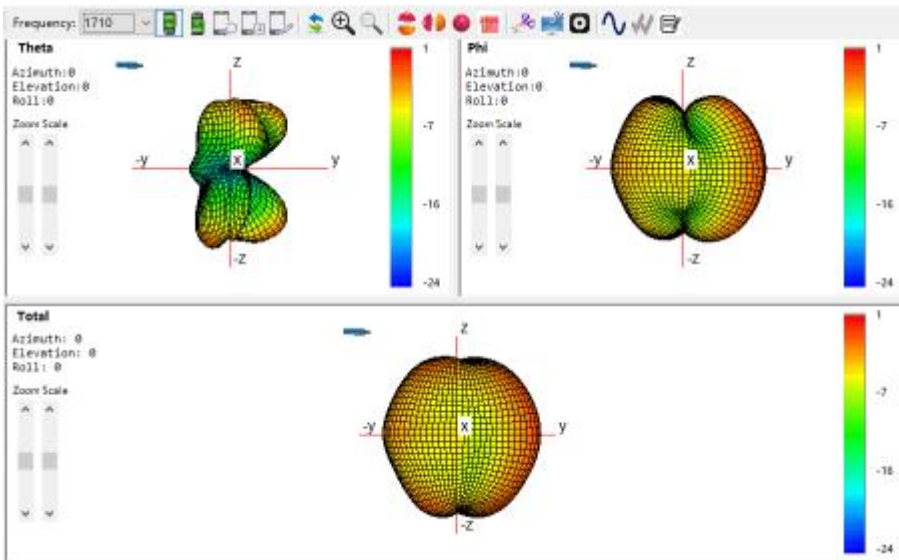
3D for 960MHz



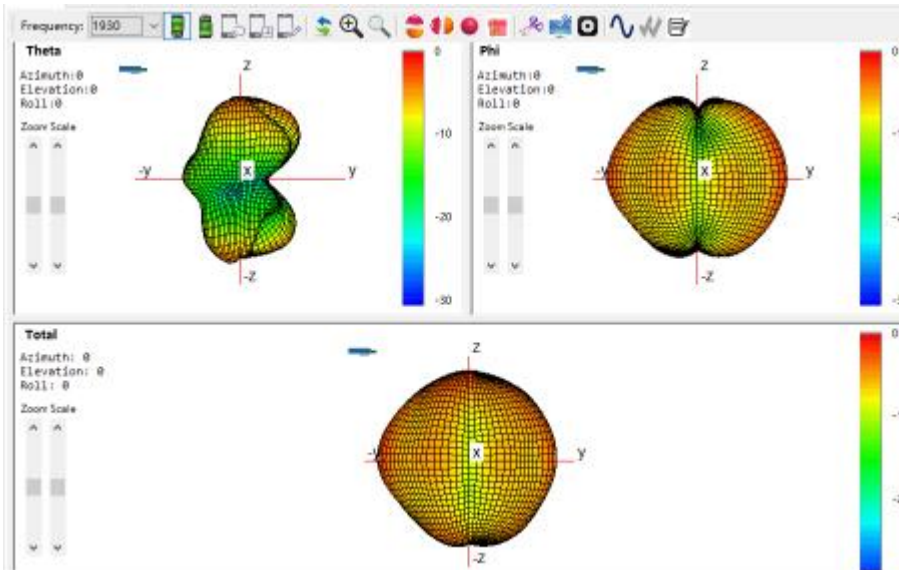
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3D for 1710MHz



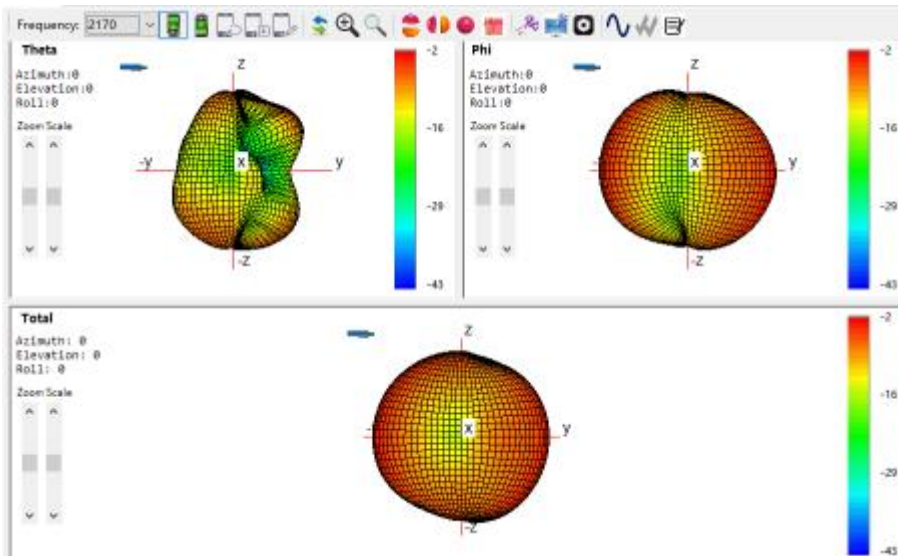
3D for 1930MHz



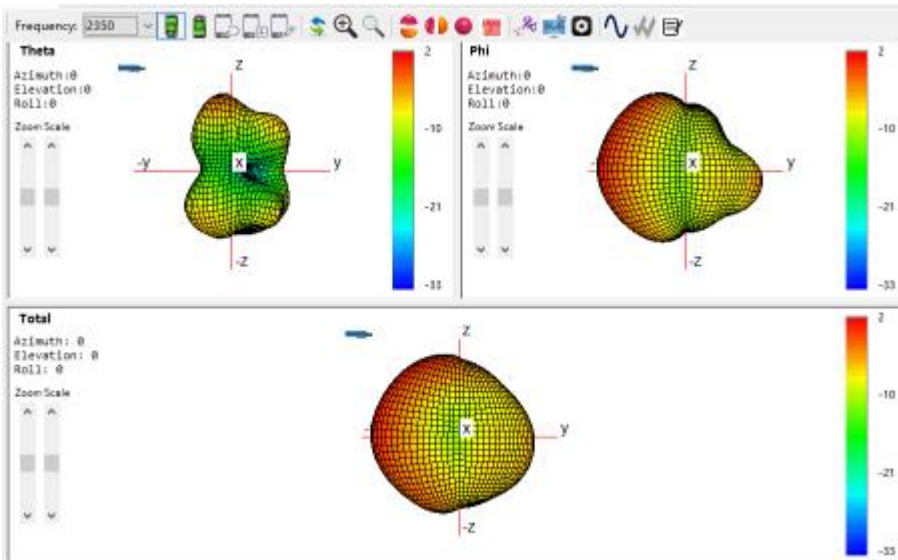
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3D for 2170MHz



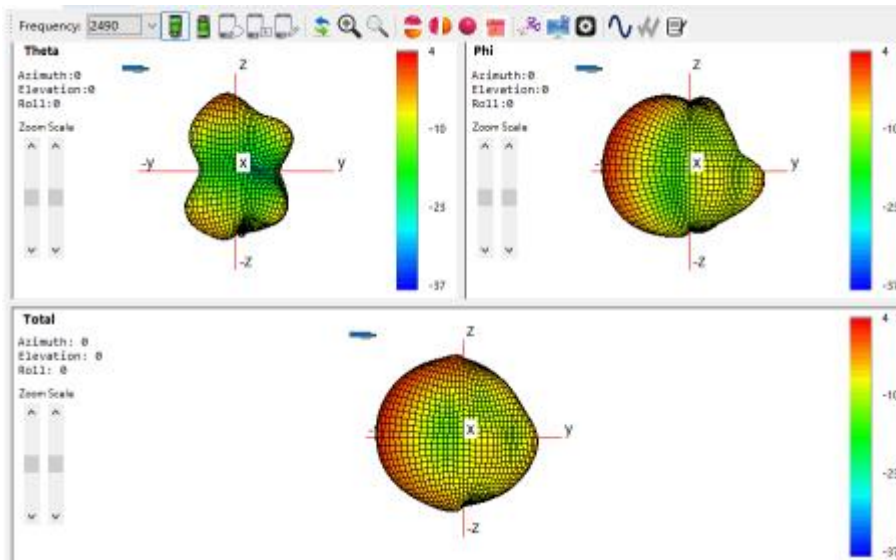
3D for 2350MHz



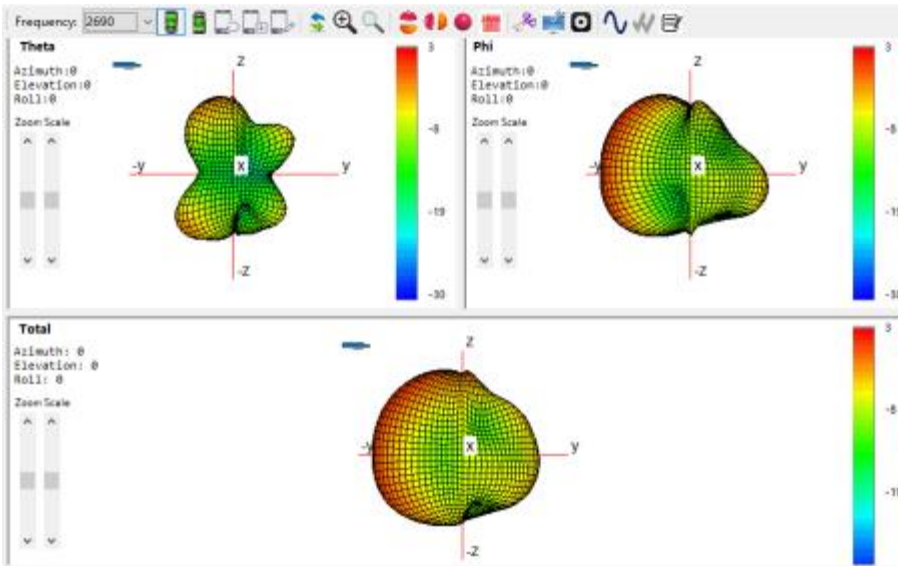
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3D for 2490MHz



3D for 2690MHz



RF1: B5/B18/B19/B20/B26

RF2: B2/B7/B25/B38/B41

RF3: B12/B13/B17/B28

RF4: B1/B3/B4/B8/B40/B66

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2.3 Power (TRP) 、Sensitivity (TIS) Test

2.3.1 Test site

SUNWAY Anechoic chamber: The test frequency range is 700Hz-6GHz, the electrostatic zone range is 50cm circumference, and the reflectivity is less than -50 dB.

2.3.2 Test Equipment

Agilent E5071B Vector network analyzer、standard horn antenna、American ETS AMS8500 antenna test system, etc.

2.3.3 Test results

The tested values related to the power and sensitivity in the microwave anechoic chamber are shown in the following table :

MAIN+DIV (Free Space)			
Frequency band	Channel	TRP (dBm)	TIS (dBm)
LTE Band 1 (10MHz)	18050	20.18	
	18300	20.02	
	18550	19.69	-97.62
LTE Band 2 (10MHz)	18650	20.25	
	18900	19.97	
	19150	20.01	-97.55
LTE Band 3 (10MHz)	19250	20.11	
	19575	20.12	
	19900	20.01	-96.52
LTE Band 4 (10MHz)	20000	20.01	
	20175	20.07	
	20350	20.12	-97.11
LTE Band 5 (10MHz)	20450	19.56	
	20525	19.84	
	20600	19.9	-94.52
LTE Band 7 (10MHz)	20850	19.29	
	21100	19.94	
	21350	20.28	-97.52
LTE Band 8 (10MHz)	21500	19.66	
	21625	20.15	
	21750	20.55	-92.03
LTE Band 12 (5MHz)	23035	19.21	
	23095	19.51	
	23155	19.74	-95.34
LTE Band 13 (10MHz)			
	23230	18.95	-92.89

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LTE Band 17 (10MHz)	23780	20.68	
	23790	20.78	
	23800	20.99	-93.01
LTE Band 18 (10MHz)	23900	19.45	
	23925	19.61	
	23950	19.68	-92.58
LTE Band 19 (10MHz)	24050	19.65	
	24075	19.79	
	24100	19.79	-92.04
LTE Band 20 (10MHz)	24200	20.07	
	24300	20.18	
	24400	20.23	-94.62
LTE Band 25 (5MHz)	26065	19.72	
	26365	19.65	
	26665	19.71	-98.37
LTE Band 26 (5MHz)	26715	19.46	
	26865	19.76	
	27015	19.9	-92.57
LTE Band 28 (10MHz)	27260	19.55	
	27410	19.92	
	27450	19.85	-93.21
LTE Band 38 (20MHz)	37850	20.54	
	38000	20.8	
	38150	20.84	-96.31
LTE Band 40 (20MHz)	38750	18.55	
	39150	19.43	
	39550	19.65	-95.64
LTE Band 41 (20MHz)	40340	19.07	
	40620	19.59	
	41140	19.72	-94.13
LTE Band 66 (10MHz)	132022	19.42	
	132322	19.83	
	132622	19.54	-94.52

3 Conclusion

This antenna is designed based on the prototype provided by the customer.

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4 Structure Drawing:

◇ Process Capability Studies Required (CPK尺寸, CPK≥1.33) ◆ Statistical Process Capability Studies Required (SPC尺寸)		信维机密，未经许可不得扩散
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正面 (走线+金手指+字符)

反面 (背胶)

丝印说明 (白色字符)

制程公差

Investigation 尺寸	公差
X, X	±0.16
X, XX	±0.08
X, XXX	±0.04
ANGLE	±0.5°

Note:

- 零件清单见表格;
- FPC镀点镀金厚度≥0.05um, 镀镍厚度3-8um;
- 未注尺寸公差按照一般公差表, "Φ"为FAL尺寸, "*"为重点尺寸;
- 产品表面无油污、刮伤、压伤等外观不良;
- 包装方式: 厂商未料包装;
- 环保要求: 所有物料满足《信维环境管控物质管理规范》要求。

<Sunway Environmental Protection & Hazardous Material Control Regulation>

Shenzhen Sunway

SCALE 1:1		UNITS mm		DESIGN/DATE	
比例	A4	单位	1 of 1	设计/日期	
THIRD ANGLE 第三角制		SHEET 页码		CNO/DATE 审核/日期	
PROJECT SF705-M1		COLOR 颜色 黑色		APPRO/DATE 批准/日期	
PART NO. 1100021959		PART NAME SF705-M1-LTE-FPC_成品		REV 版本 A0	

5.Dimension Report



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SHENZHEN SUNWAY COMMUNICATION CO.,LTD
尺寸检测报告
Dimension Inspection Report

项目编号 Project NO.		SFW05	零件编号 Part NO.		/		零件名称 Part Name			SFW05-M2-LTE-FPC			零件数量 quantity		3	FAI 尺寸数		CPK 尺寸数		3	NG 尺寸数		0
检测类型 Test type		制样测量	生产班次 Shift		A班		料号 Part NO			1100021959			图纸版本 Drawing rev		A0	测量员 Inspect.		审核 Check.		日期 Date		2024/8/1	
SPC No.	FAI No.	标称值 Nominal	正公差 Usl Tol	负公差 Lsl Tol	上限 Upper	下限 Lower	实测值 Measurement value			判定 Judge	量具 Gauge	最大值 MAX.	最小值 MIN.	平均值 Mean	% Tolerance		标准差 Std Dev	CP	CPK	备注 Remark			
3		63.85	0.18	-0.18	64.03	63.67	63.805	63.812	63.807	OK	OMM	63.812	63.805	63.808	0%	25%	0.004	16.641	12.758				
4		14.05	0.18	-0.18	14.23	13.87	14.035	14.027	14.021	OK	OMM	14.035	14.021	14.028	0%	16%	0.007	8.542	7.483				
5		0.12	0.03	-0.03	0.15	0.09	0.117	0.115	0.11	OK	OMM	0.117	0.11	0.114	0%	33%	0.004	2.774	2.219				

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7 Reliability Test Report

B838 LTE						
序号	试验项目	数量	试验条件	试验设备	判定标准	测试结论
1	温度冲击	3PCS	将产品置入冲击试验箱中，要求：冷热冲击-40℃ 30 分钟，85℃ 30 分钟，72 个循环。	冷热冲击试验箱	样品无氧化、变形、开裂现象，无分层异常，性能符合规格要求。	pass
2	高温高湿	3PCS	高温高湿 80℃/80%RH；恒温恒湿箱中保持 120H；静置 2H；	恒温恒湿试验箱	样品无氧化、变形、开裂现象，无分层异常，性能符合规格要求。	pass
3	盐雾测试	3PCS	盐雾试验浓度 5%，35℃，连续喷雾 48H	盐雾测试仪	样品无变形、开裂现象；样品无分层现象；金面无氧化、露底铜、明显变色，性能符合规格要求	pass
4	弯折测试	3PCS	1. 测试前先检查产品外观及性能； 2. 放置于弯折测试机弯折 15 次； 3. 弯折角度：±180 度； 4. 实验完成后取出产品，检查外观及性能；	弯折治具	1. 弯折区域无 <u>coverlay</u> 或油墨无开裂现象； 2. 线路切片无裂纹； 3. 性能符合规格书要求；	pass
5	耐磨测试	3PCS	1. 测试前先检查产品外观及性能； 2. 用专用的橡皮(橡皮型号：130686)，施加 175g 的载荷，以 20 次/分钟~30 次/分钟的速度，以 20mm 的行程，在样本表面来回磨擦 5 个循环； 3. 实验完成后取出产品，检查外观及性能； 4. 测试位置：条码，FPC 丝印文字	橡皮型号 130686	1. 图层文字不可有明显脱落，允许字体/油墨有轻微的磨损及退色，但要求字体/油墨内容仍完整且清晰可认； 2. 性能符合规格书要求；	pass
6	图层、文字附着力测试	3PCS	1. 测试前先检查产品外观及性能； 2. 用 3M600#胶带粘贴被测试区，并用橡皮擦用 500g 力擦拭胶带，以加强胶带与被测试区接触面积的力度； 3. 用手抓住胶带的另一端，以垂直(90 度)瞬间提起胶带，相同位置重复 2 次测试； 4. 实验完成后取出产品，检查外观及性能；	3M600#胶带/橡皮擦	1. 镀层/字体/油墨层不可明显脱落 2. 性能符合规格书要求；	pass

8 Manufacturer and Address

Manufacturer:

SHENZHEN SUNWAY COMMUNICATION CO., LTD

Address:

1013, Xihuan Rd., Shajing Town, Bao'an District, Shenzhen, P.R. China

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