

样品承认书

Confirmation of products

客户名称 Customer					
项目名称 Project Name	DB2-PW	版本 Version	A. 2	日期 Date	2026/7/22
项目料号 Project NO.	03. 25. 01. 004	客户料号 Customer NO.	53. 05. 002. 0240		
频段 Frequency Range	868~915MHz 2400~2500MHz	备注 Notes	SUB 1G + WIFI		
设计 Designed By					
审核 Approved By					
客户确认 Clients' Approval					

设计单位：深圳市林荣科技有限公司

Designer: SHENZHEN 3GTX ANTENNA TECHNOLOGY CO.,LTD.

地 址：深圳市龙华区大浪街道华荣路联建工业园 A1 栋

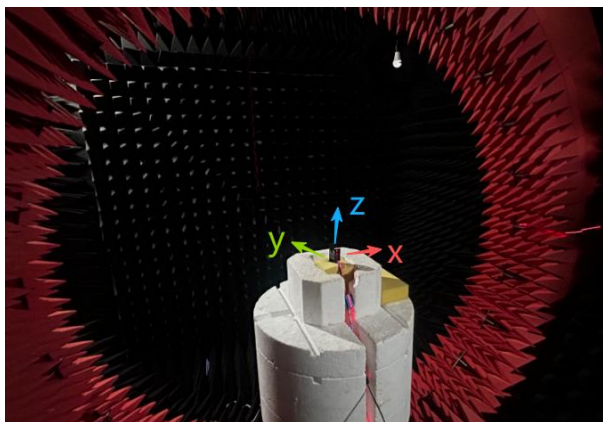
Building 1, 3 floors, Huarong Road, Dalang Street, Longhua District, Shenzhen

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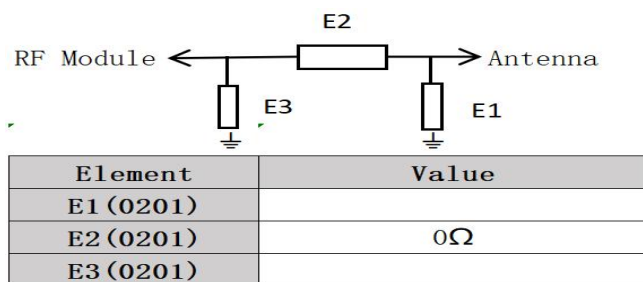
1、Specification

This report mainly provides the testing conditions of various electric and structural performance parameters for cell phone antenna ----DB2-PW Picture 1 shows the antenna designed by LR.



2 、 Matching circuit diagram

SUB 1G antenna:



3、 VSWR Testing

3.1 Testing connection

The **Return Loss** testing devices are connected in sequence: Agilent5071C Network Analyzer →Testing Cable → Customer-providing Devices.

3.2 VSWR

The following table expresses the vswr value of antenna's two edges of its frequency range. With regard to the relevant diagram of VSWR

DB2-PW SUB-1G VSWR		
Frequency (MHz)	868	915
VSWR	1.34	1.55

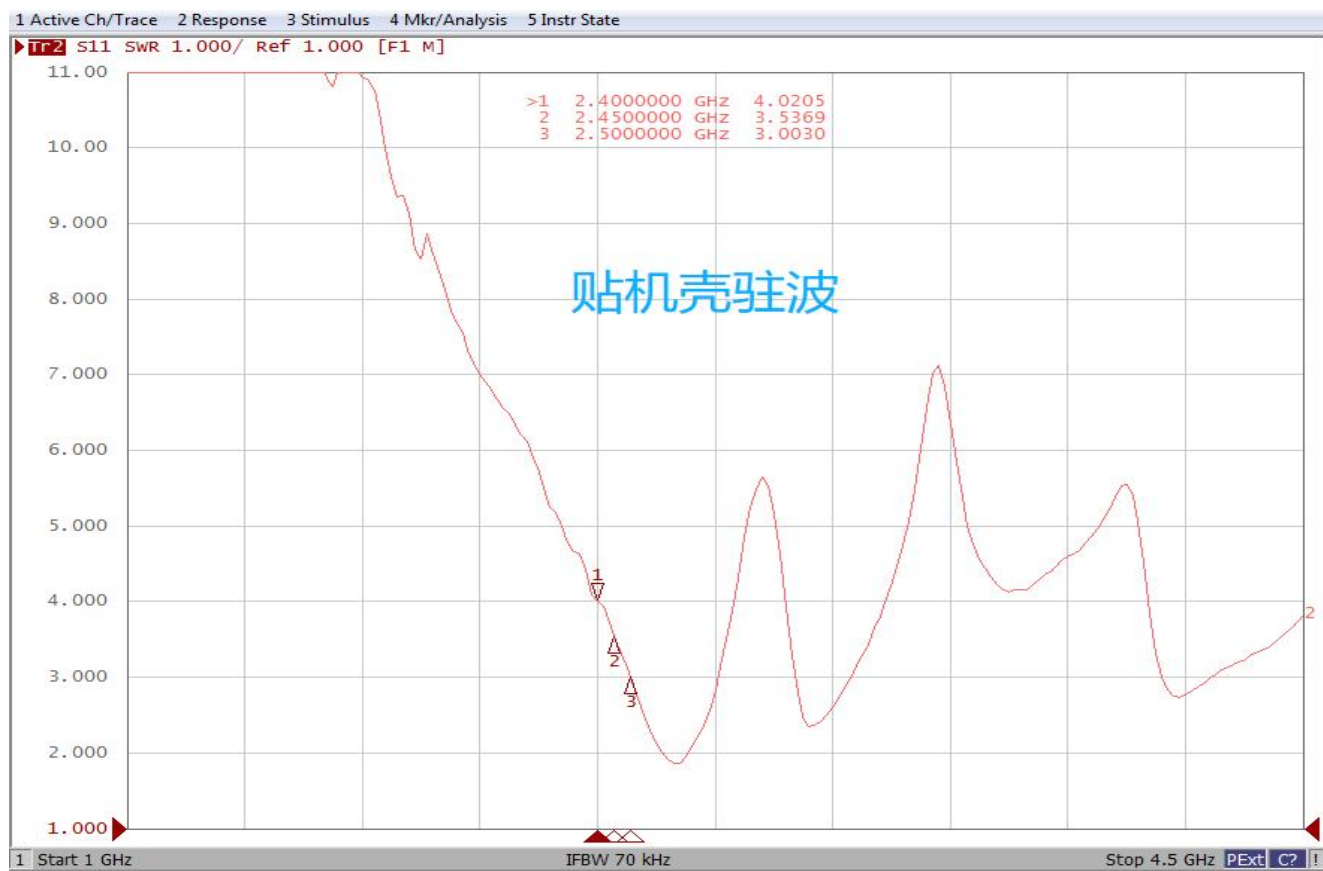
DB2-PW WIFI VSWR			
Frequency (MHz)	2400	2450	2500

VSWR	1.38	1.16	1.31
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3.3 Testing data



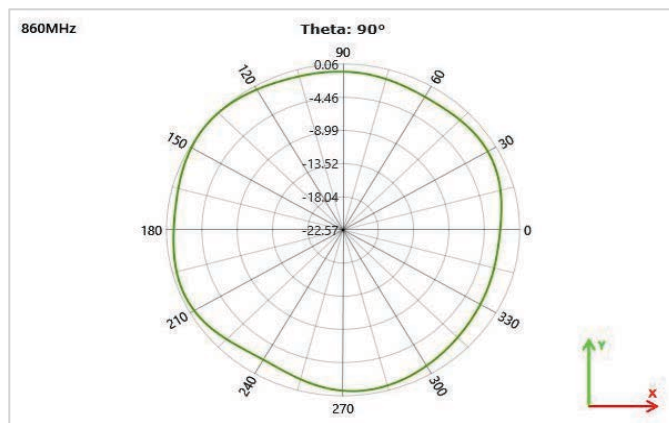
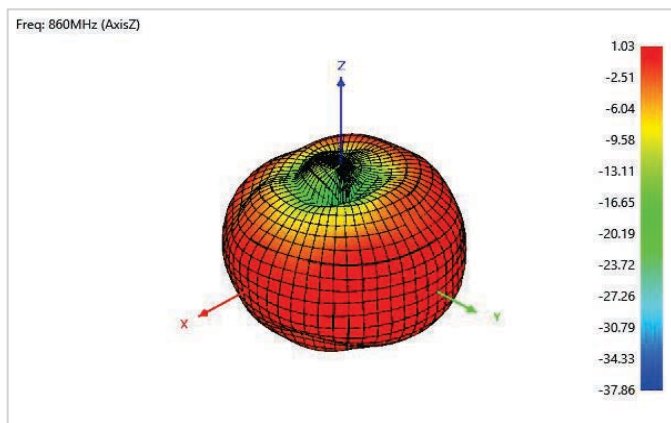
3.4 Single antenna test VSWR



2.4G WIFI antenna VSWR

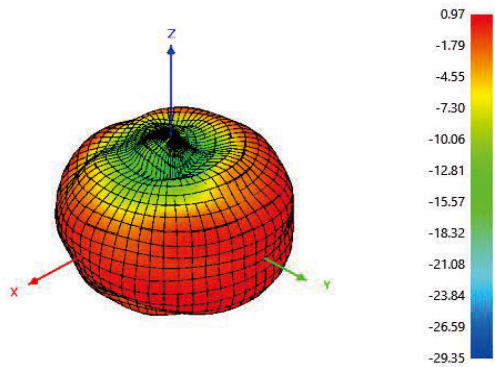
3.5 Antenna 3D pattern

860MHz

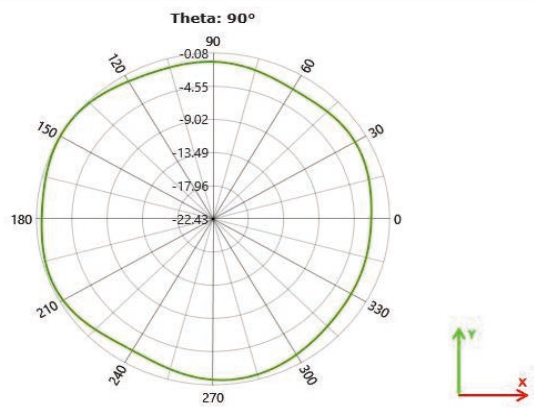


880MHz

Freq: 880MHz (AxisZ)

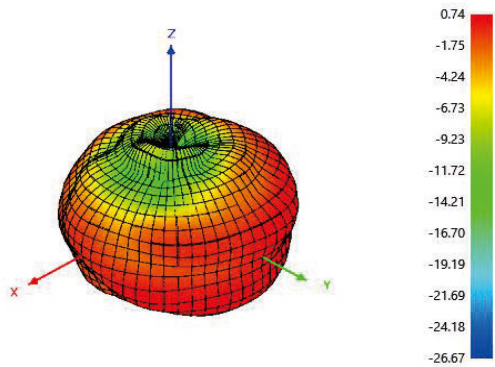


880MHz

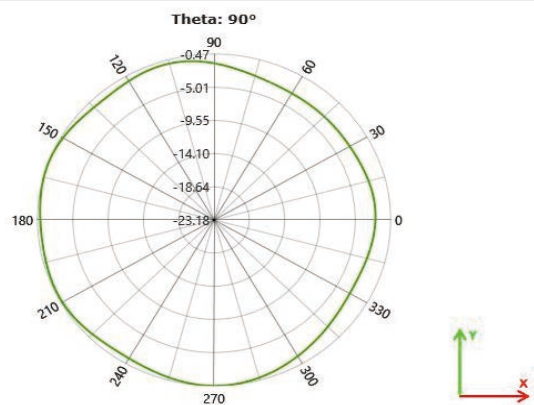


910MHz

Freq: 910MHz (AxisZ)

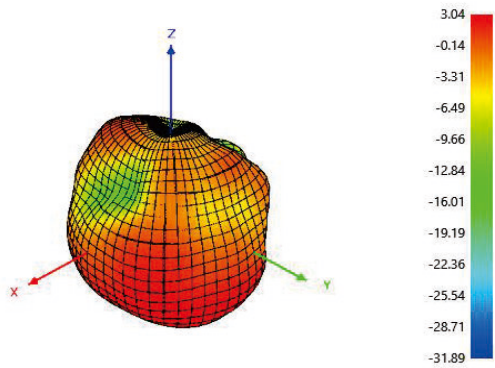


910MHz

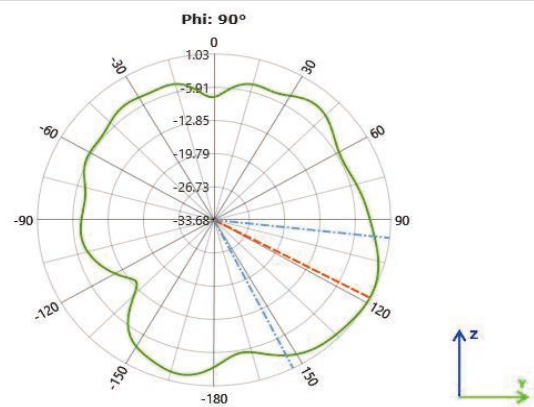


2400MHz

Freq: 2400MHz (AxisZ)

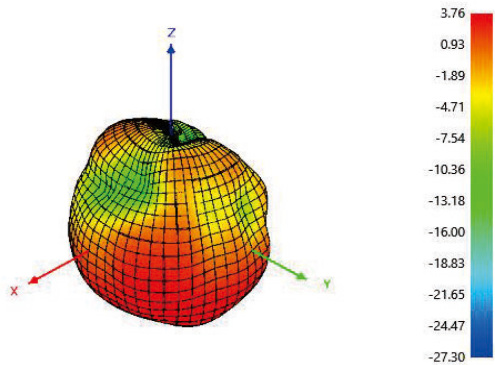


2400MHz

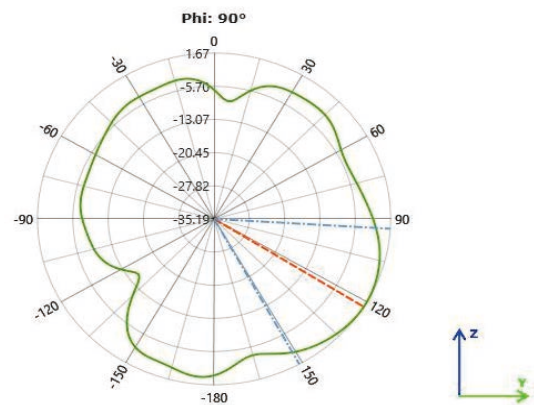


2450MHz

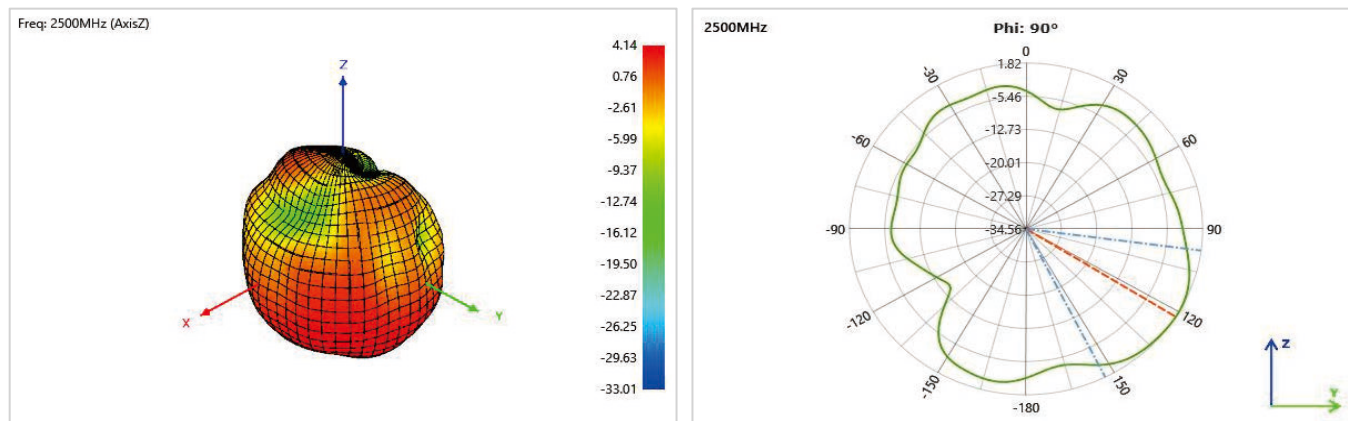
Freq: 2450MHz (AxisZ)



2450MHz



2500MHz



4、 Power、 Sensitivity Testing

4.1 Testing field

LR Microwave Anechoic Chamber : testing frequency ranges from 400MHz to 6GHz and the 40cm diameter spherical quiet zone, the chamber provides less than -90dB reflectivity from 400MHz—6GHz.

4.2 Testing results

The following table indicates the testing results related to Power and Sensitivity in Microwave Anechoic Chamber, concerning the relative diagram.

4.3 Active testing.

DB2-PW Sub-1G Antenna efficiency

Freq(MHz)	Gain(dBi)	Efficiency(%)	Freq(MHz)	Gain(dBi)	Efficiency(%)
830	0.10	47.28	885	0.78	52.68
835	0.20	48.86	890	0.71	53.41
840	0.38	49.55	895	0.61	52.58
845	0.61	51.05	900	0.52	52.32
850	0.78	52.21	905	0.55	51.15
855	1.04	54.63	910	0.74	51.71
860	1.03	54.57	915	0.91	51.48
865	1.03	54.79	920	0.99	51.19
870	1.06	55.19	925	1.15	51.65
875	0.82	52.53	930	1.19	50.17
880	0.97	54.60			

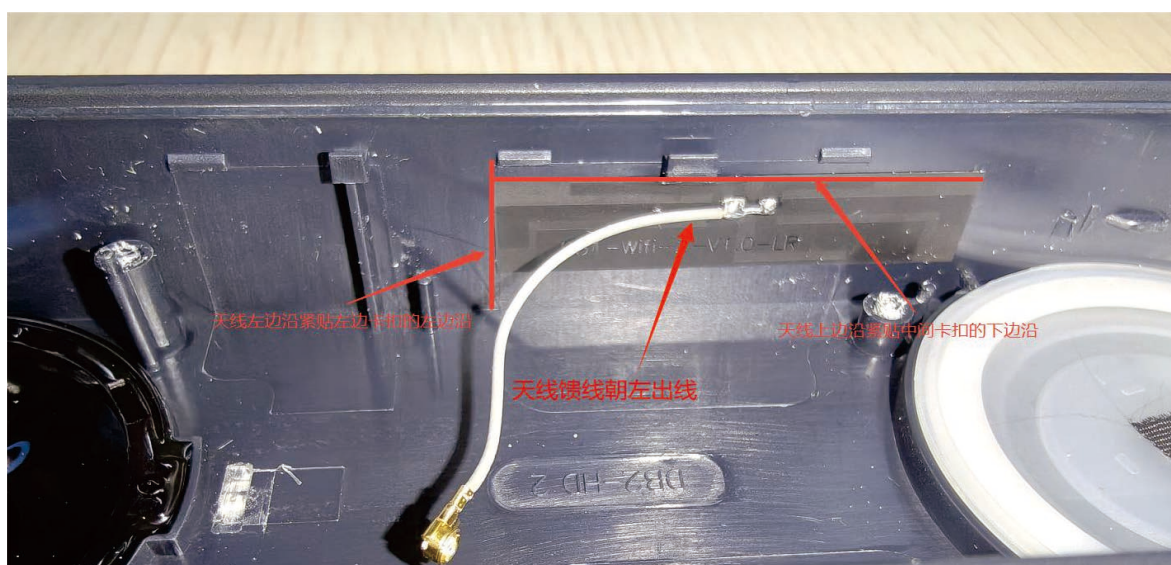
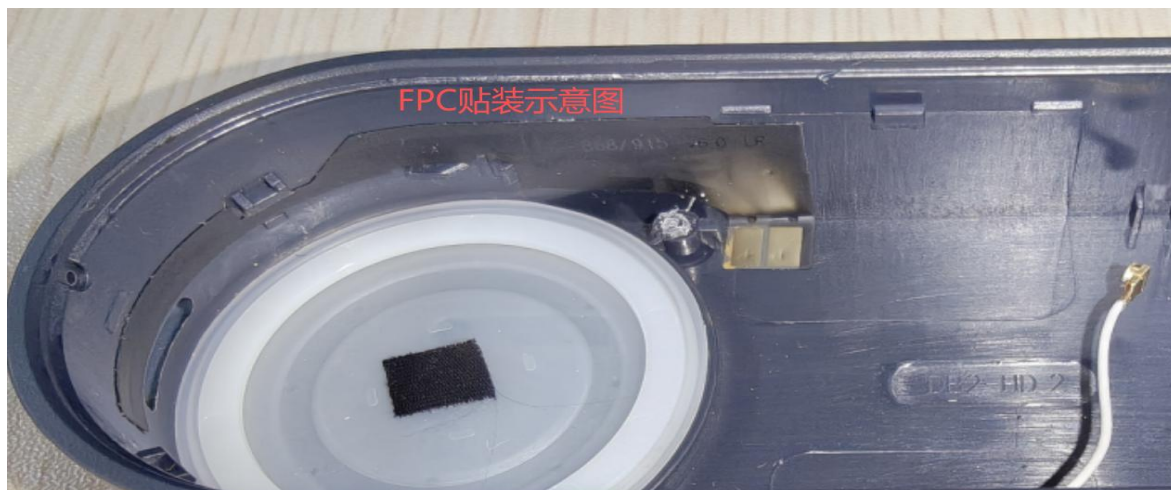
DB2-PW WIFI Antenna efficiency

Frequency (MHz)	Gain (dBi)	Efficiency (%)	Frequency (MHz)	Gain (dBi)	Efficiency (%)
2300	2.00	42.33	2460	3.94	60.06
2310	2.24	43.05	2470	4.05	60.79
2320	2.46	44.21	2480	4.18	61.55
2330	2.56	45.27	2490	4.17	60.98
2340	2.60	46.04	2500	4.14	60.52

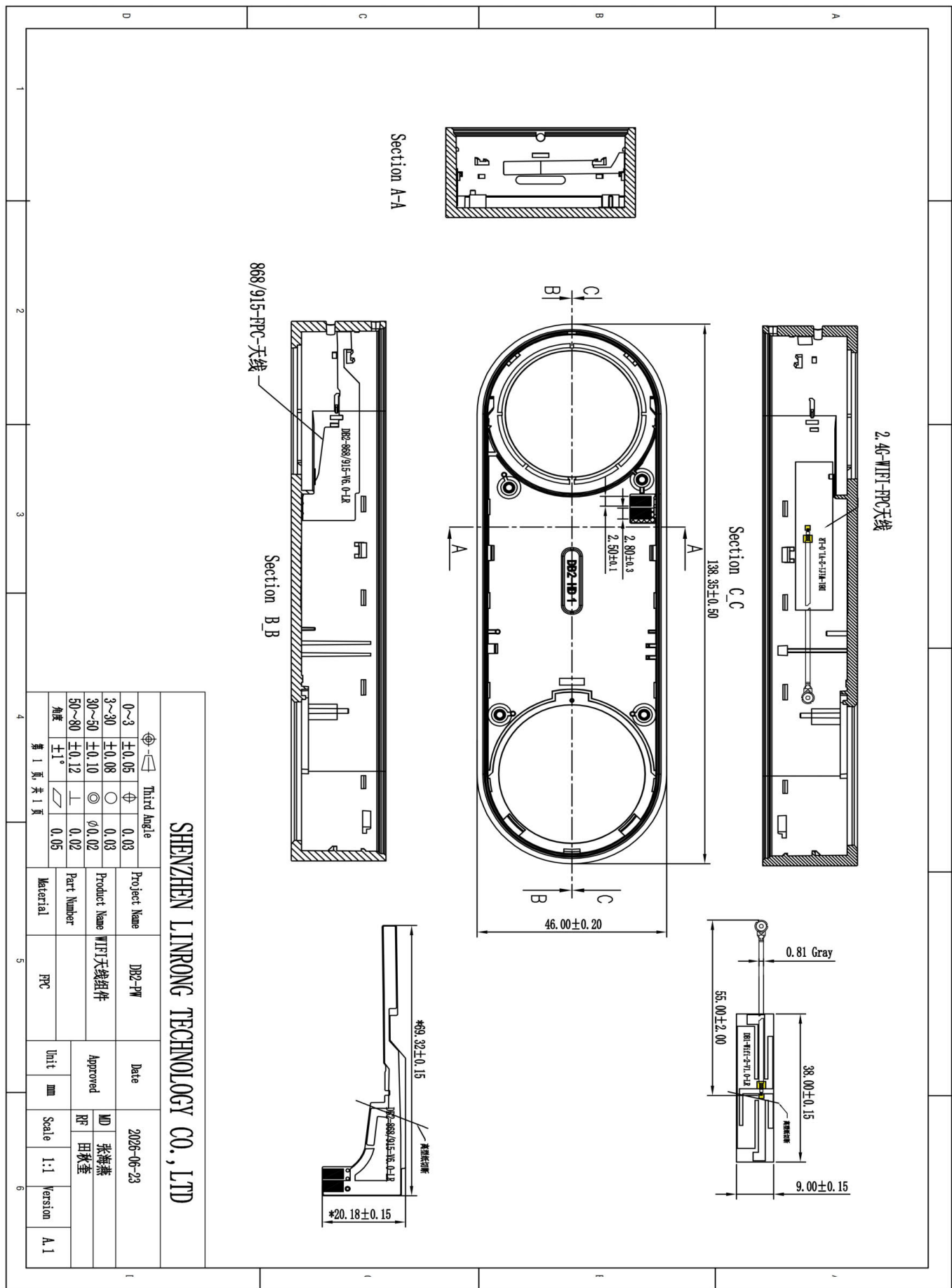
2350	2.54	46.81	2510	4.10	61.19
2360	2.58	47.91	2520	4.03	61.49
2370	2.67	49.12	2530	3.97	61.47
2380	2.79	50.50	2540	3.93	62.08
2390	2.96	52.39	2550	3.88	62.48
2400	3.04	53.61	2560	3.86	61.82
2410	3.18	55.17	2570	3.97	62.15
2420	3.27	56.52	2580	4.06	63.90
2430	3.39	57.21	2590	4.44	65.47
2440	3.54	57.95	2600	4.74	66.82
2450	3.76	59.10			

5、Environmental treatment

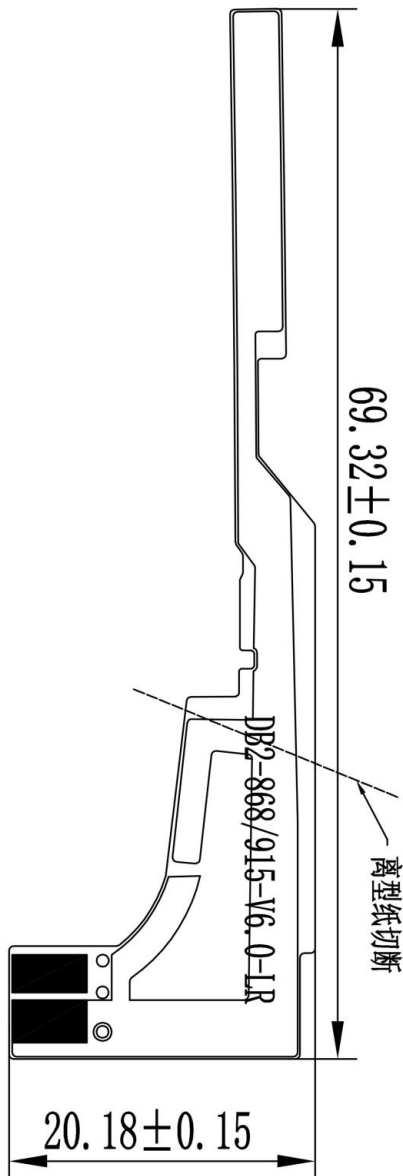
Environmental Control and Mounting Illustration for Final Assembly



6、Mechanical Dimension Drawing



丝印字码为亮黑色

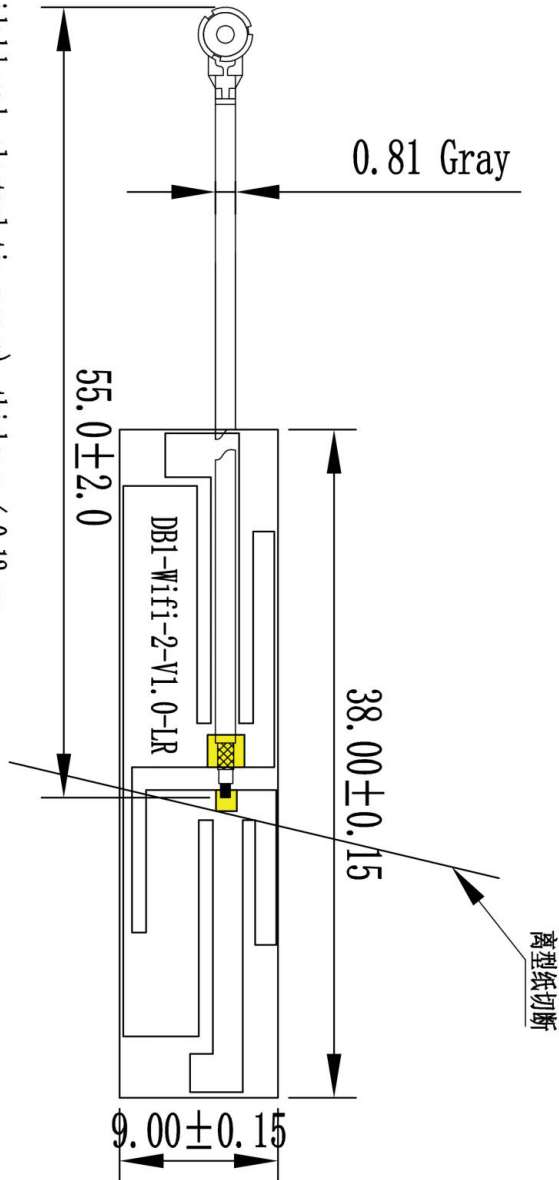


- Technical Requirements:**
- 1、Material: FPC (Single-sided, Electrolytic Copper), $T < 0.12\text{mm}$; PI 1825 Black Ink, 3M9471 adhesive on the back
 - 2、Plating: Gold thickness $\geq 1\mu$, Nickel thickness $80\mu - 240\mu$. No defects such as cracking, peeling, or poor conductivity after gold plating. Must pass 24-hour salt spray test.
 - 3、High/Low Temperature Test Conditions: -40°C to $+80^\circ\text{C}$, 2 cycles (24 hours per cycle).
 - 4、Dimensions: Dimensions marked with an asterisk (*) are critical. Unspecified tolerances shall follow the general tolerances in the title block; unspecified dimensions shall be verified against the film
 - 5、Appearance: The surface must be free of contaminants, scratches, and black spots.
 - 6、Compliance: Products must be RoHS compliant.
 - 7、Packaging: Shipped in full panels.

SHENZHEN LINRONG TECHNOLOGY CO., LTD									
第三视角			Project Name		Date				
0~3	± 0.05	ϕ	0.03	DB2					
3~30	± 0.08	ϕ	0.03						
30~50	± 0.10	ϕ	0.02	Product Name	868/915-FPC	Approved	MD	张海燕	
50~80	± 0.12	$\perp$	0.02	Part Number			RF	田秋奎	
角度	$\pm 1^\circ$	∇	0.05	Material	PI+电解铜	Unit	mm	Scale	1:1
第 1 页 共 1 页								Version	A.1

标记	签名	修改内容	日期

丝印字码为亮黑色



Technical Requirements:

- 1、Material:FPC (single-sided board, electrolytic copper), thickness < 0.12 mm; Polyimide (PI) 1825 with black solder mask; 3M 467 double-sided adhesive tape applied on the backside.
- 2、Gold Fingers:No gold plating—apply anti-oxidation treatment instead. The circuit area must not exhibit defects such as easy breakage or cracking. The product must pass a 24-hour salt spray test.
- 3、Electrical Performance Testing:100% VSWR (Voltage Standing Wave Ratio) consistency testing
- 4、Dimensional Tolerances:Dimensions marked with an asterisk (*) are critical control dimensions. All unspecified tolerances shall comply with the general tolerance specified in the drawing frame.
- 5、Surface Quality:The surface must be free of contaminants, scratches, black spots, or other visible defects.
- 6、Compliance:The product must comply with RoHS standards.
- 7、Packaging & Delivery:Ship in full-panel format (not depanelized).

SHENZHEN LINRONG TECHNOLOGY CO., LTD

	Third Angle	Project Name	Date	MD	张梅燕
0~3	±0.05	DB2-PW	2026-06-23	RF	田秋奎
3~30	±0.08	Product Name			
30~50	±0.10	2.445, 86-#FPI			
50~80	±0.12	Part Number			
角度	±1°	Material	FPC	Unit	mm

第 1 页 共 1 页

7、 Mechanical Dimension Testing report

全尺寸测量报告

Vendor(供应商)		材质名称		PPC		Part NO(料号)		03.25.01.004		Tool Number (模号)		Cav. Number(穴数)		Unit(单位)		Quality(品质签字)									
林荣科技		材质牌号		/		Part Name (零件名称)		DB2-PW WIFI天线		/		Rev(版本)		A.1		唐春艳									
日期		2026/6/24				MEASURED DIMENSION(实测尺寸)					% TOLERANCE USED (公差使用百分比)					DISPOSITION					ACCEPTABLE VARIANCE				
DIM. #	DIMENSION	DRAWING ZONE	+ TOL.	- TOL.	NOTE	SAMPLE 1	SAMPLE 2	SAMPLE 3	SAMPLE 4	SAMPLE 5	UPPER	LOWER	0%-25%	25%-50%	50%-75%	75%-100%	100%+	Re-Measure	Accept	Fix Tool	Accept With Variance	DIMENSION	+ TOL.	- TOL.	
1	55.00		2.00	(2.00)		56.00	55.00	56.00	56.00	55.00	50%	0%	x		x							55.00	56.00	55.00	
2	38.00		0.15	(0.15)		38.03	38.01	38.02	38.04	38.05	33%	0%	x	x								38.00	38.05	38.01	
3	9.00		0.15	(0.15)		9.02	9.00	9.01	9.04	8.98	27%	-13%	x	x								9.00	9.04	8.98	
4	0.81		0.05	(0.05)		0.81	0.82	0.81	0.82	0.81	20%	0%	x									0.81	0.82	0.81	
6	138.35		0.50	(0.50)		138.46	138.30	138.52	138.40	138.40	34%	-10%	x	x								138.35	138.52	138.30	
7	46.00		0.20	(0.20)		46.03	46.01	46.01	46.04	46.04	20%	0%	x									46.00	46.04	46.01	
8	以下空白																								
9																									
10																									
11																									
12																									
13																									

备注：除了上述标注的填写内容外，须输入的内容：
1. DIMENSION, +TOL, -TOL, SAMPLE1, SAMPLE2, SAMPLE3
2. 注意1中描述的内容输入时，请：
a. 在TOLERANCEUSED(公差使用百分比)中无论是UPPER还是LOWER>100%，须：
(1) 检查输入数据是否输入错误；(2) 测量数据是否有误或是仪器测量不准确；(3) 测量时间是否不适宜；(4) 排除了(1)(2)(3)外，仍然>100%，请设计师对每个尺寸的后面作出选择即从“Re-measure, Accept, Re Tool, Accept Vitrance”中选一，若是选Accept with vitrance, 必须完成后面的Dimension, +TOL, -TOL;
b. DIMENSION栏中的即尺寸前一栏中的DIM.#必须与图面上的一致；同时注意，在作Cpk的尺寸的编号与FAL全尺寸测量报告中的编号必须是相同的，且Cpk尺寸必须被用符号标注，此标注号必须表示的意思是该尺寸为重点管控尺寸，要做Cpk！
c. 测量工具代号Measure No.: A=callipers (0.00) B=micrometer (0.000) C=Pin Gauge (0.000) D=High Gauge (0.000) E=CNM (0.000) F=Plug Gauge (0.000) G=R Gauge (0.0) I=Deep Gauge (0.000)



深圳市林荣科技有限公司

QC工程图

文件名称 File Name			D82 868/915+WiFi -FPC天线		文件编号File NO		LR-3-PC-924		版本 Edition No.		A.1		页 码 Page		第1页, 共1页 1 of 1			
适用范围hold True Range			外置天线			产品料号		03.25.01.001 03.25.01.003		客户		睿联技术		生效日期 Operation Date			2026/1/25	
序号	流程图	工序名称	重要度	制程说明	生产设备	检验特性	检验项目	担当	品质管制方法			检验标准(重点)	异常处理	相关文件	备注			
1		来料检验 FPC/PCB		按《IQC检验指导书》 对来料进行检验	目视/ 卡尺	尺寸、 外观、 可靠性 、ROHS 符合性	IQC	数显卡尺、 百格刀、百 格胶	按AQL 抽样 MAJ:0.25 MIN:0.65	每批/次	IQC检验 报告	FPC/PCB无色差、脏污、划 伤 压 印、字模模糊、多料 、漏铜等。尺寸按照图纸要 求检验带*号尺寸, 相关的性 能测试按《FPC/PCB进料检验 规》所规定进行; 有SCS报 告、环保标签无漏贴	退货、挑 选或加工使用	《FPC/PCB进料检验规范》	加工选用类返工 产品必须出返工 方案,重新挑选 再送检,直至合 格为止			
3		组装/焊接		按《SOP》 对材料进行组装	目视/ 卡尺	焊点/ 超声波	员工	恒温烙铁/ 超声波	产线员工 全检	IPQC	生产日报 表	焊点是否有漏焊、虚焊、假 焊、超声未到位等	返工	《环保生产过程控制程序 》	返工产品必须出 返工方案,重新 挑选再送检,直 至合格为止			
4		RF测试		将外观\尺寸合格后的成品按 作业指导书作RF性能测试	网络分 析仪	电性能	RF测试 员	网络分析仪	RF测试员 全检	IPQC	每批/次	电性能是否达到规定(射频 频调试或评 审)	《RF测试作业指导书》	测试时注意调出 相应的测试通道 (用RF提供的标 准样件校准)				
5		组装/贴合		按《SOP》 对材料进行组装	目视/ 卡尺	FPC贴 合	员工	镊子	产线员工 全检	IPQC	生产日报 表	FPC是否有漏贴、贴偏、未贴 到位等	返工	《环保生产过程控制程序 》	返工产品必须出 返工方案,重新 挑选再送检,直 至合格为止			
6		出货检验		按《OQC检验指导书》 对成品进行检验	卡尺	外观、 尺寸、 ROHS符 合性	OQC	数显卡尺	按AQL 抽样 MAJ:0.25 MIN:1.0	每批/次	OQC检验 报告	FPC无缺胶、多胶等; 尺寸按 图纸要求检验; 相关的性能 测试按《OQC检验指导书》 所规定进行	返工或挑 选	《OQC检验指导书》《内 置天线成品检验标准》	抽检时注意有 无短数, 选用或返 工产品必须出返 工方案,重新挑 选再送检,直至 合格为止			
7		包装		按《包装作业指导书》 和《BOM》对检验合格 的成品进行包装	手工	数量、 标识、 材料、 配件	包装员	胶带 封胶机	/	每批/次	出货 日报表	包装材料无用错 无短装、漏配件、标识无误	重新包装或 补数量	《包装和标识作业(管 理)规范》《BOM》	包装时注意包装 材料无脏污			
7		出货		包装、标示、数量	目视	全检	标识包 装ROHS 符合性	仓管员	按AQL 抽样 MAJ:0.25 MIN:1.0	每批/次	出货 日报表	标识/包装/数量/产品规格、 名称、条码、物料编码等是 与出货通知单相对应	开箱检查或 重新包装	《出货通知单》	注意出货产品客 户是否有特殊求 如: 需附出货检 验报告或可靠性 试验报告等			

流程标记: 材料工程 准备工程 检验工程 作业工程 工位重要度: 重要 一般

拟定:

张海燕

审核: 王宇

批准: 严伦康

8、 Packaging standard

包装说明：具体包装数量以实物为准，图片只显示包装的方式，并非此项目实物。

Packaging Description: the specific packaging quantity is subject to the physical object. The picture only shows the way of packaging, not the physical object of the project



天线用吸塑盒包装

The top cover board, with PE film packaging



防潮防水 PET 袋封装，放于纸箱或胶筐内

Moistureproof waterproof PET bag packaging,
Put in the cartons



纸箱用胶带封口

Carton sealing with duct tape



包装箱整箱外观 ()

Cases appearance