东莞市一佳电子通讯科技有限公司
DONGGUAN YIJIA ELECTRONICS COMMUNICATION TECHNOLOGY CO., LTD

规 格 承 认 书

SPECIFICATION FOR APPROVAL

日 期 Date	2025/06/04
编 号 File No	25060404
版 本 Revision	1.0

客 户 CUSTOMER: 天波

客户料号 CUSTOMER NO: S104

品 名 PART NAME: WIFI Antenna L=85mm MHF

供方料号 SUPPLIER NO: YJW01.076.313.304A

送样日期Date: 送样数量Q'TY:

客户确认CUSTOMER APPROVED BY		
APPROVAL	CHIEF	SUPERVISOR

供方确认 SUPPLIER SIGNATURE		
APPROVAL	CHECK	DESIGN
ChenGuoqiang	XieLi	ChenXingyi

YJ-RD-F04-A

东莞市长安镇沙头社区木鱼路59号 Tel:0769-82586086 Fax:0769-82586086
Address: No. 59 Muyu Road, Shatou Community, Chang'an Town, Dongguan, China

承认书项目表

NO.	内 容（Contents）	页 数（Number of Page）	页 码（Page Code）
1	承认书封面（Spec Cover）	1	1
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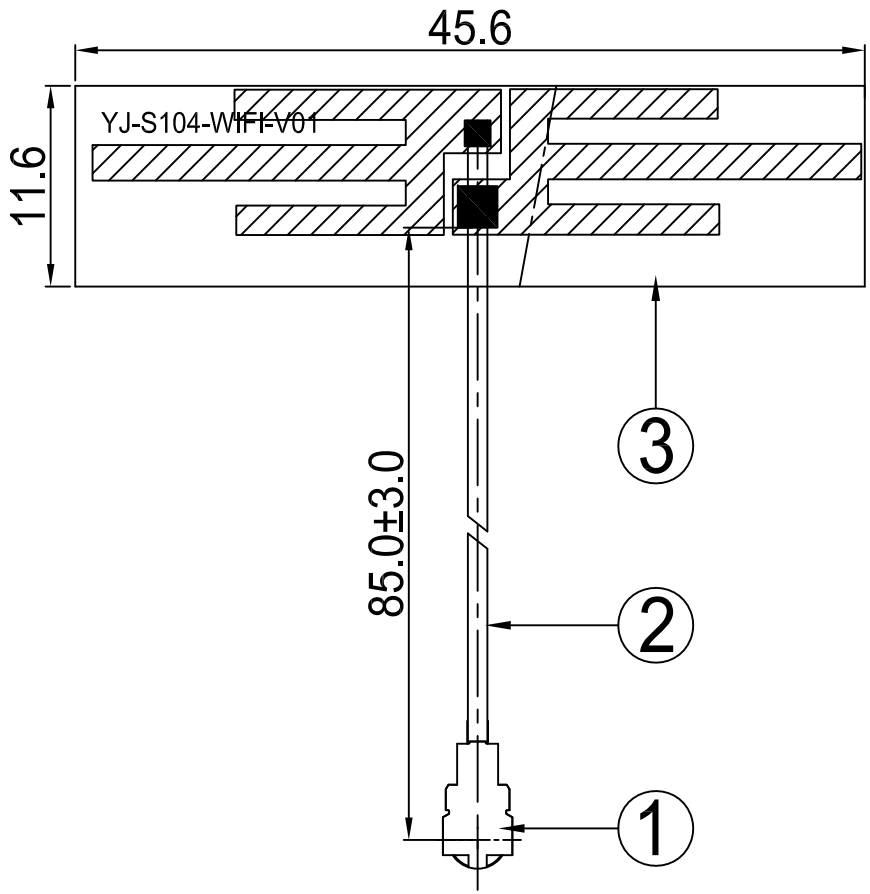
3	工程成品图 （Drawing）	1	3
4	天线规格（Antenna Specification）	1	4
5	S参数测试 （S Parameter ）	1	5
6	无源测试 （Passive Test ）	3	6 ~ 8
7	方向图（Radiation Pattern ）	2	9 ~ 10
8	有源测试 （Active Test ）	1	11
9	天线装配图（Antenna Profile）	2	12 ~ 13
10	材质证明（ Material Certificate ）	40	14 ~ 53
11	RoHS报告（ RoHS Test Report ）	**	**
12	N/A	N/A	N/A
13	-	-	-

RoHS Compatible

CUSTOMER	
PART NO	

REV.	DESCRIPTION	DATE
A	首次发行	2024-11-29



NO	PART NAME	DESCRIPTION	Material	Q.TY
3	FPC	45.6*11.6mm	FPC	1
2	Coaxial Cable	O.D.1.13 Black Low loss	O.D.1.13	1
1	Mini Connector	Au Plated 1代	Cu	1

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DONGGUAN YIJIA ELECTRONICS COMMUNICATION TECHOLOGY CO., LTD

PART NAME: WIFI Antenna L=85mm MHF

PART NO.: YJW01.076.313.304A

DATE: 2024-11-29

APPROVED BY	CHECKED BY	DESIGNED BY	
覃健宇	唐明亮	廖光喜	UNITS: mm SCALE: 1/1 REVISION: A

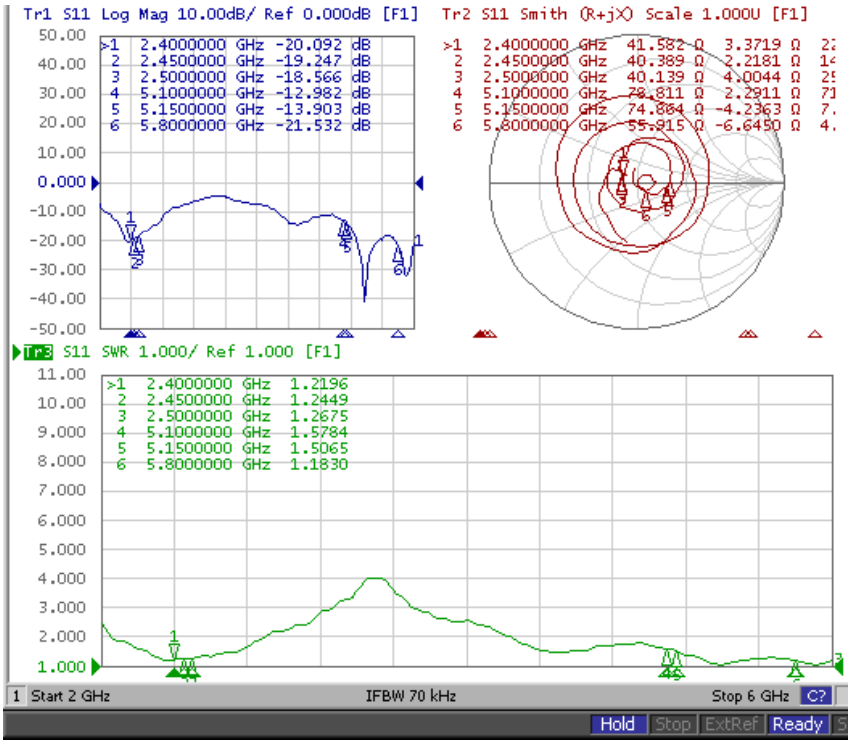
Tolerance
X.X ±0.50
X.XX±0.15
X° ±3°

天线规格
Antenna Specification

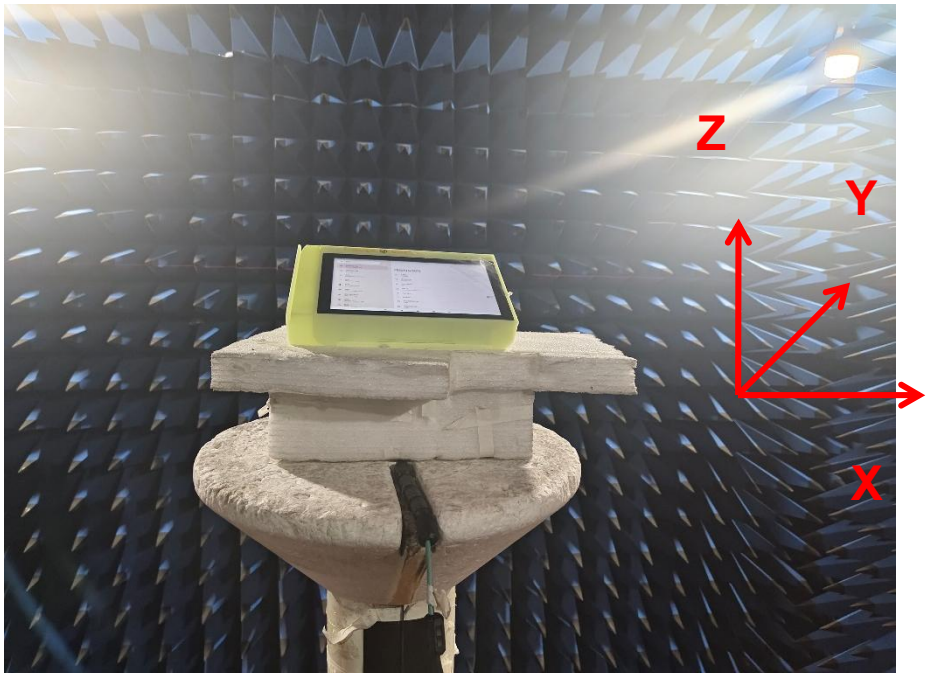
Electrical Properties	
Frequency	2.4-2.5GHz 5.1-5.8GHz
Impedance	50 Ohm Nominal
V.S.W.R	2.0 Max
Gain	5.9 dBi@2.4-2.5GHz 6.4 dBi@5.1-5.8GHz
Radiation	Omni-directional
Polarization	Linear
Physical Properties	
Connector	1代IPEX
Cable Type	O.D.1.13mm Low loss
Cable Length	85mm
Cable Color	Black
Operating Temp.	-40 ~ +85 ˚C
Storage Temp / Humidity	25±5˚C / <70%

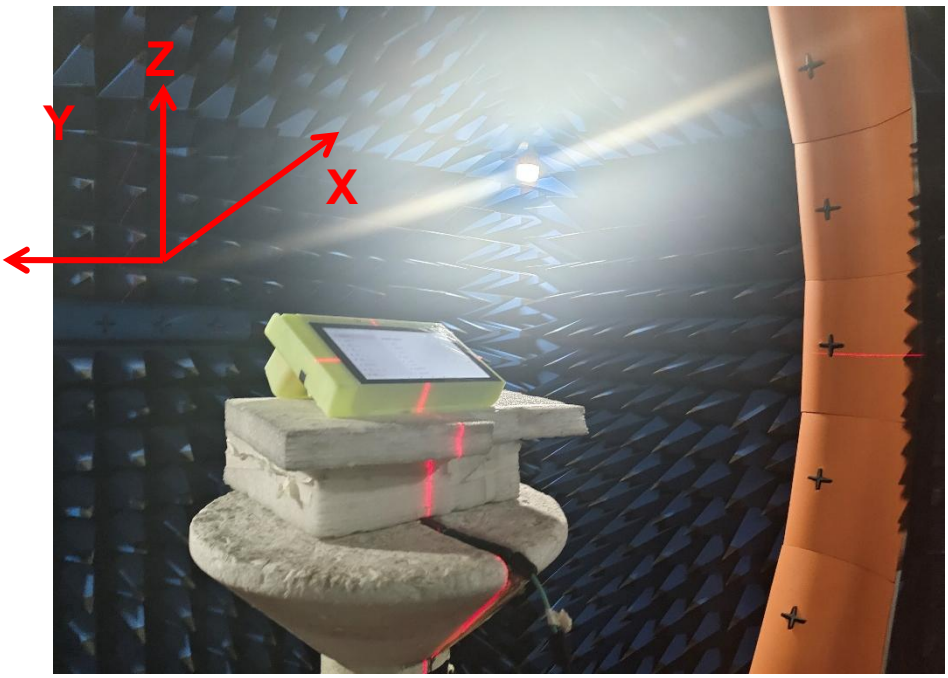
Antenna Performance Test

Agilent E5071C S Parameter Test // WiFi Antenna



Antenna Passive Test

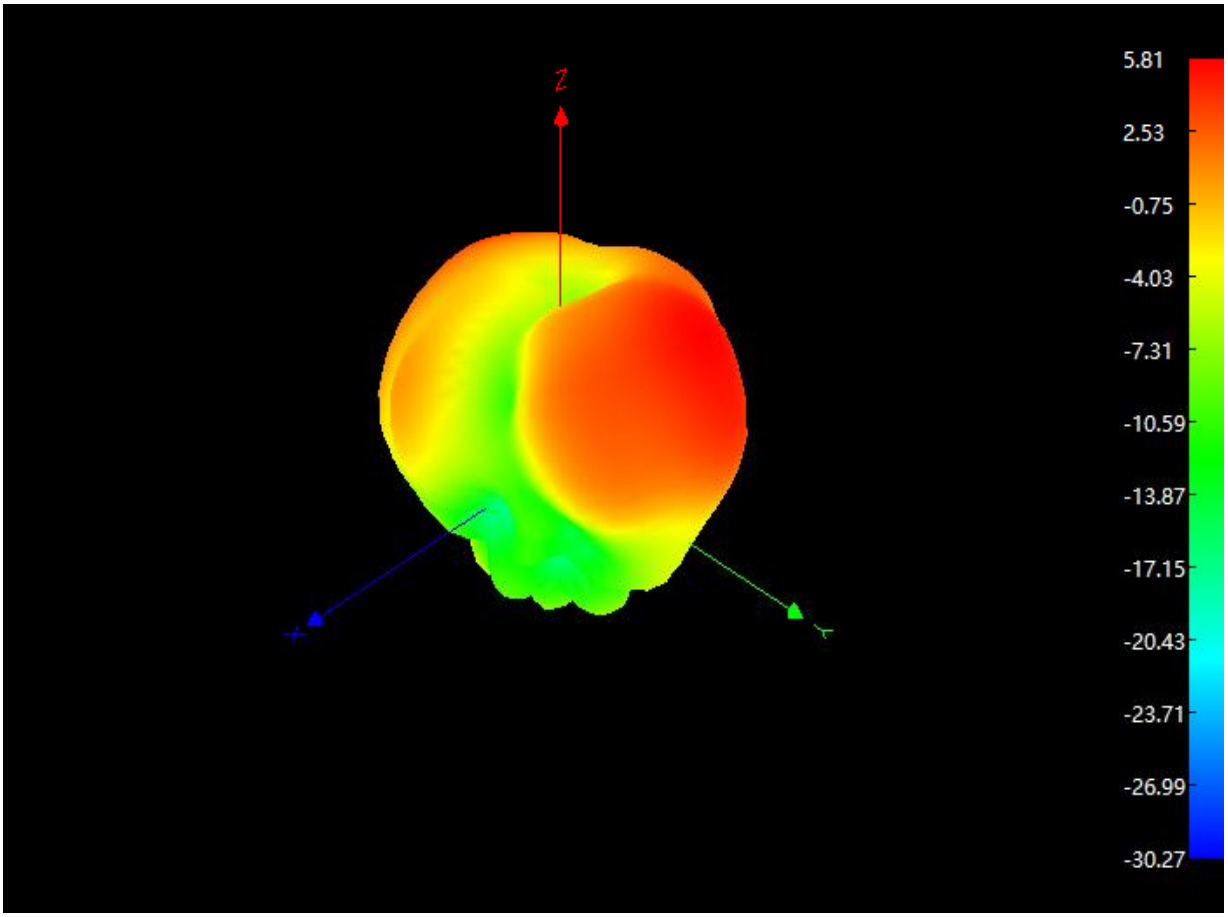




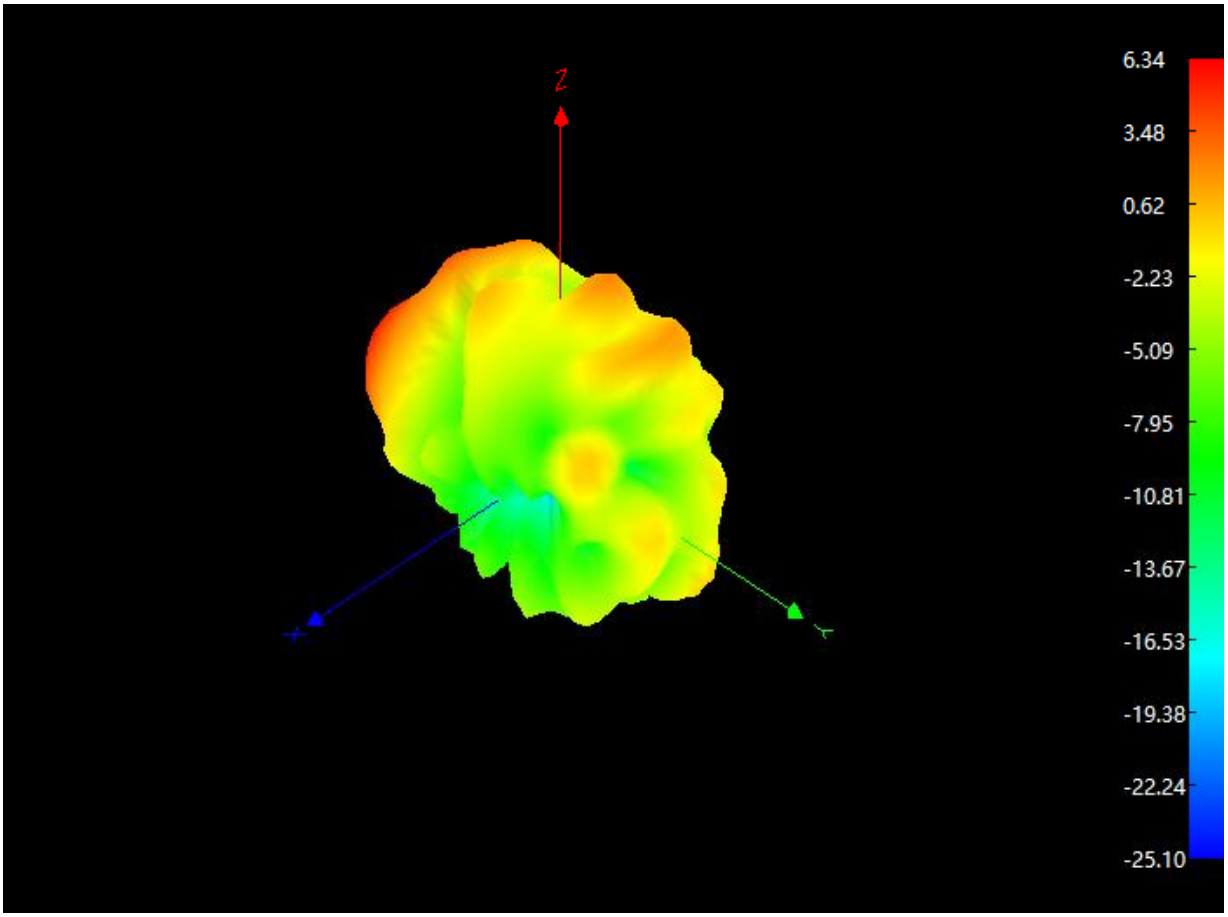
Passive Test For WiFi Antenna(2.4G)			
Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)
2400	58.1	-2.4	5.8
2410	57.7	-2.4	5.7
2420	57.2	-2.4	5.7
2430	56.9	-2.4	5.9
2440	57.3	-2.4	5.7
2450	58.2	-2.4	5.8
2460	57.5	-2.4	5.9
2470	56.9	-2.4	5.8
2480	55.9	-2.5	5.7
2490	56.2	-2.5	5.8
2500	54.8	-2.6	5.6

Passive Test For WiFi Antenna(5.8G)			
Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)
5150	63.2	-2.0	6.3
5200	61.5	-2.1	6.4
5250	59.2	-2.3	5.7
5300	58.4	-2.3	5.4
5350	59.0	-2.3	5.0
5400	60.7	-2.2	5.3
5450	58.4	-2.3	4.8
5500	54.6	-2.6	4.5
5550	59.6	-2.3	4.7
5600	57.3	-2.4	4.2
5650	56.9	-2.4	3.4
5700	58.5	-2.3	3.7
5750	59.8	-2.2	4.3
5800	55.6	-2.6	3.9
5850	55.5	-2.6	4.0

Radiation Pattern For WiFi Antenna(2450MHz)

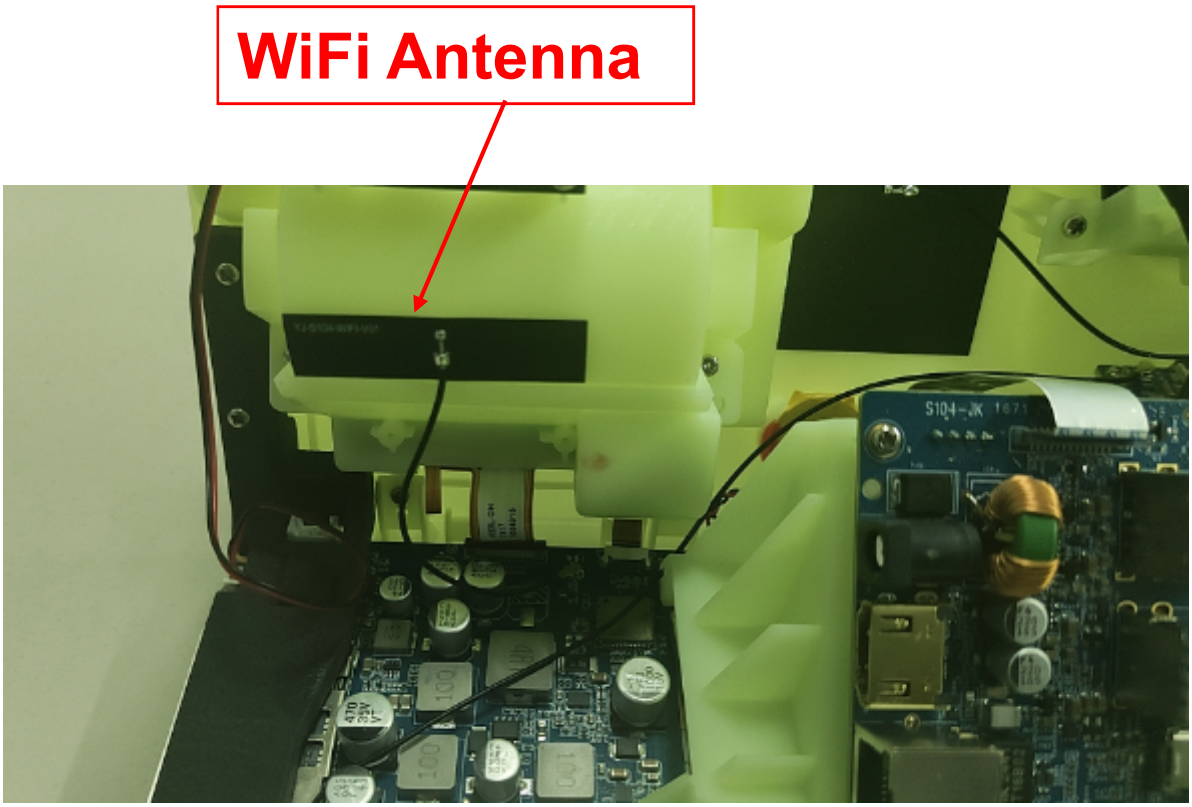


Radiation Pattern For WiFi Antenna(5150MHz)



Active Test For WiFi Antenna					
Band	**Channel**	**Data Rate**	**TRP**	**Data Rate**	**TIS**
WIFI 2.4G 802.11b	1	11Mbps	15.7	11Mbps	-84.1
	6		15.2		-84.1
	11		15.2		-83.7
WIFI 2.4G 802.11g	1	6Mbps	15.9	54Mbps	-73.7
	6		15.5		-73.5
	11		15.6		-72.8
WIFI 2.4G 802.11gn	1	MCS0	14.9	MCS7	-65.9
	6		15.6		-65.3
	11		15.6		-65.2
WIFI 5G 802.11a	36	6Mbps	14.6	54Mbps	-72.4
	149		14.3		-72.1
	165		14.5		-72.3

Device	
WiFi Antenna	


WiFi Antenna

东莞市一佳电子通讯科技有限公司
DONGGUAN YIJIA ELECTRONICS COMMUNICATION TECHNOLOGY CO., LTD

规 格 承 认 书

SPECIFICATION FOR APPROVAL

日 期 Date	2025/06/04
编 号 File No	25060401
版 本 Revision	1.0

客 户 CUSTOMER: 天波

客户料号 CUSTOMER NO: S104

品 名 PART NAME: 4G MAIN Antenna L=330mm MHF

供方料号 SUPPLIER NO: YJW01.076.313.301A

送样日期Date: 送样数量Q'TY:

客户确认CUSTOMER APPROVED BY		
APPROVAL	CHIEF	SUPERVISOR

供方确认 SUPPLIER SIGNATURE		
APPROVAL	CHECK	DESIGN
ChenGuoqiang	XieLi	ChenXingyi

YJ-RD-F04-A

东莞市长安镇沙头社区木鱼路59号 Tel:0769-82586086 Fax:0769-82586086
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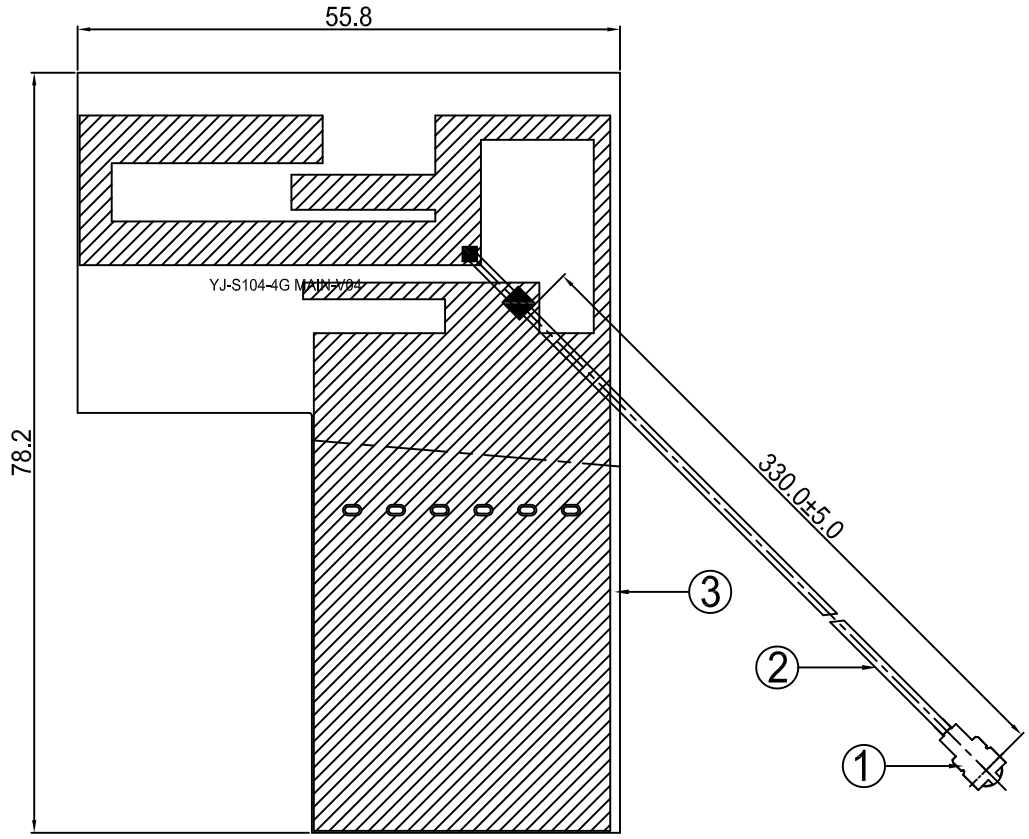
7	方向图（Radiation Pattern ）	2	10 ~ 11
8	有源测试 （Active Test ）	3	12 ~ 14
9	天线装配图（Antenna Profile）	3	15 ~ 17
10	材质证明（ Material Certificate ）	40	18 ~ 57
11	RoHS报告（ RoHS Test Report ）	**	**
12	N/A	N/A	N/A
13	-	-	-

RoHS Compatible

CUSTOMER	
PART NO	

REV.	DESCRIPTION	DATE
A	首次发行	2024-11-29
B	修改FPC及线长	2025-02-24



NO	PART NAME	DESCRIPTION	Material	Q.TY
3	FPC	78.2*55.8mm	FPC	1
2	Coaxial Cable	O.D.1.13 Black Low loss	O.D.1.13	1
1	Mini Connector	Au Plated 1代	Cu	1

东莞市一佳电子通讯科技有限公司
DONGGUAN YIJIA ELECTRONICS COMMUNICATION TECHOLOGY CO., LTD

PART NAME: 4G MAIN Antenna L=330mm MHF

PART NO.: YJW01.076.313.301A | DATE: 2025-02-24

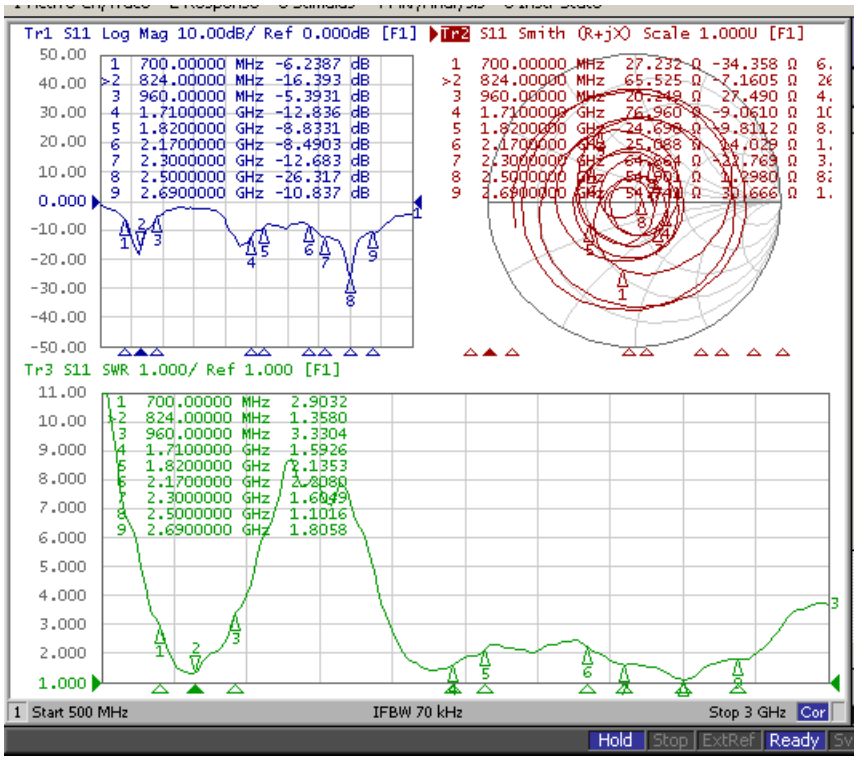
APPROVED BY	CHECKED BY	DESIGNED BY	
覃健宇	唐明亮	廖光喜	UNITS: mm SCALE: 1/1 REVISION: B

Tolerance
X.X ±0.50
X.XX±0.15
X° ±3°

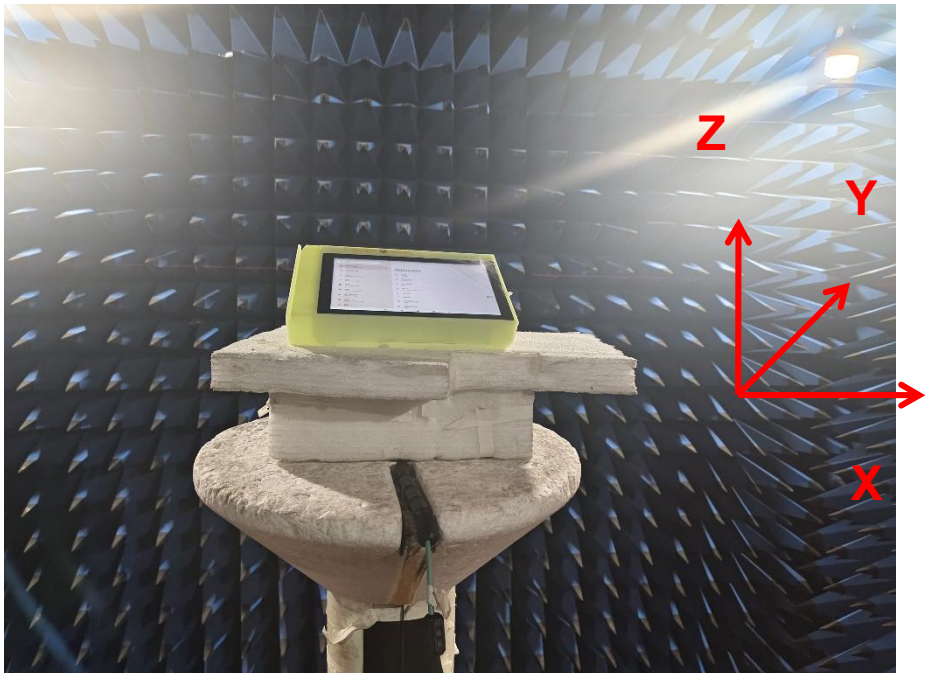
天线规格
Antenna Specification

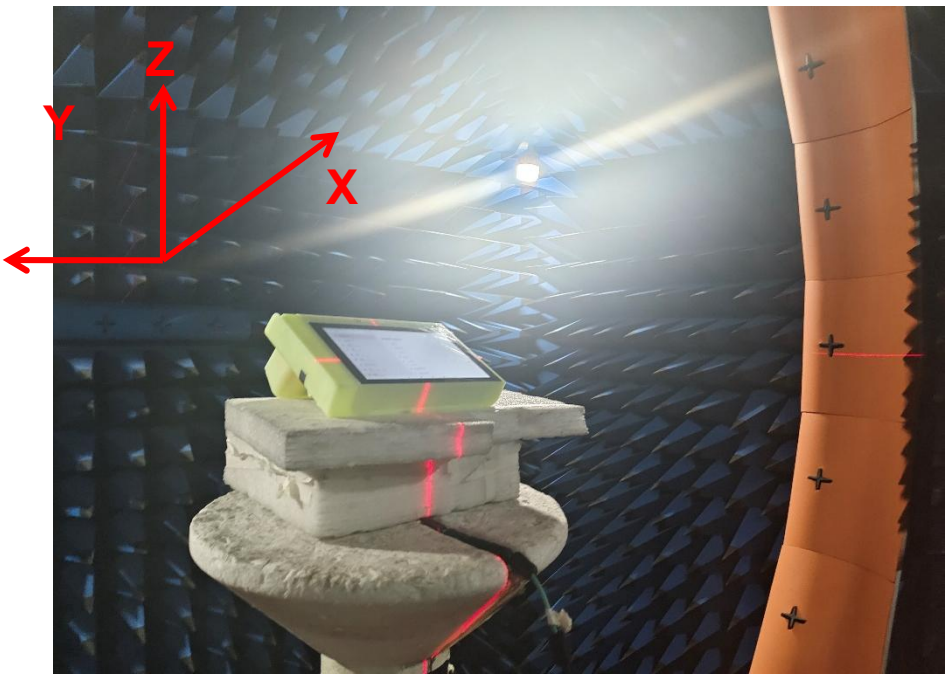
Electrical Properties	
Frequency	700-960MHz 1710-2690MHz
Impedance	50 Ohm Nominal
V.S.W.R	3.5 Max@700-960MHz 2.5 Max@1710-2690MHz
Gain	2.8 dBi@700-960MHz 3.1 dBi@1710-2690MHz
Radiation	Omni-directional
Polarization	Linear
Physical Properties	
Connector	1代IPEX
Cable Type	O.D.1.13mm Low loss
Cable Length	330mm
Cable Color	Black
Operating Temp.	-40 ~ +85 ˚C
Storage Temp / Humidity	25±5˚C / <70%

Agilent E5071C S Parameter Test // LTE main Antenna



Antenna Passive Test



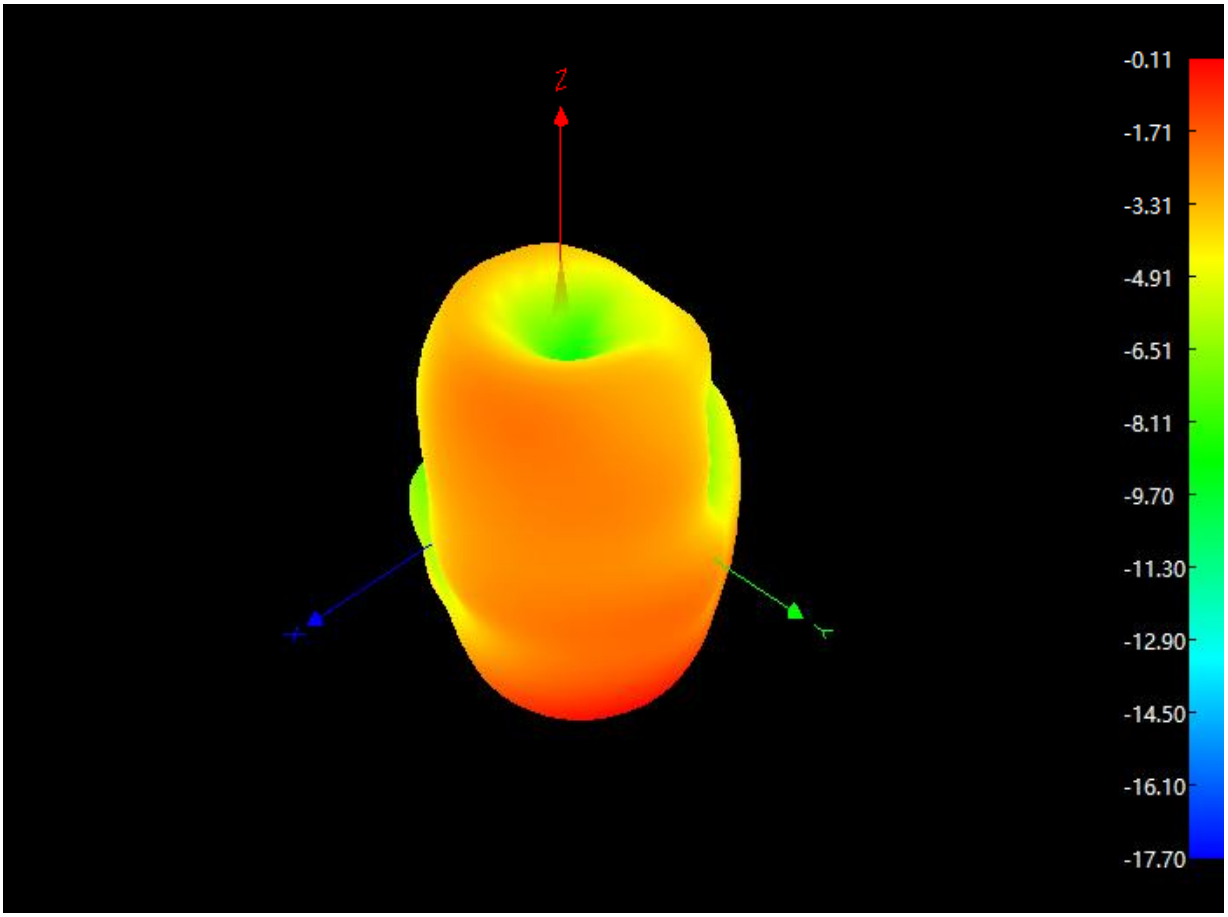


Passive Test For LTE main Antenna			
Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)
700	29.2	-5.3	0.5
720	33.4	-4.8	0.4
740	35.7	-4.5	0.8
760	37.7	-4.2	2.5
780	40.8	-3.9	2.8
800	39.0	-4.1	2.0
820	34.6	-4.6	1.3
840	33.4	-4.8	1.4
860	32.5	-4.9	0.5
880	30.9	-5.1	-0.1
900	30.8	-5.1	-0.4
920	30.2	-5.2	-0.9
940	29.3	-5.3	-0.4
960	28.4	-5.5	-0.9

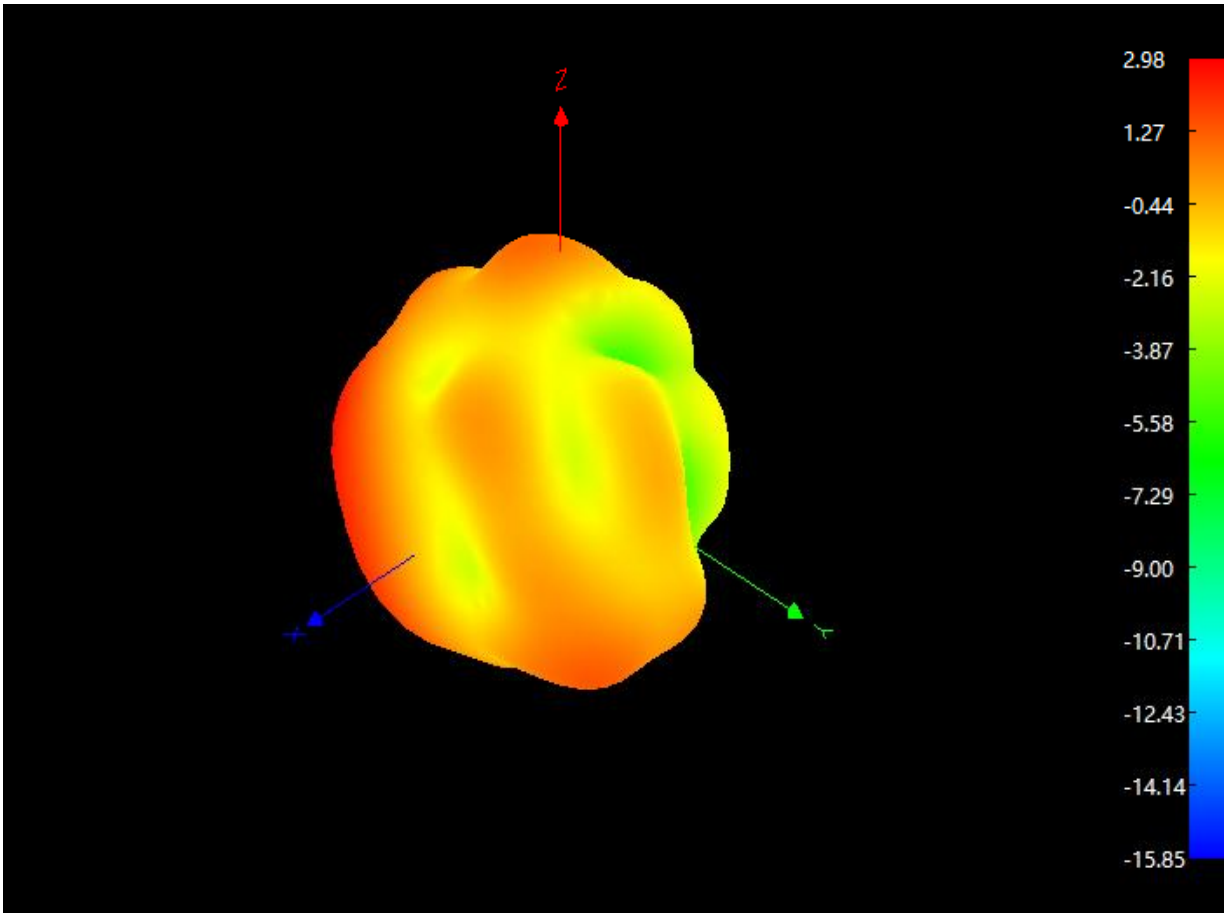
Passive Test For LTE main Antenna			
Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)
1700	48.2	-3.2	3.0
1740	47.1	-3.3	2.9
1780	45.4	-3.4	2.0
1820	44.3	-3.5	1.6
1860	41.9	-3.8	0.7
1900	45.3	-3.4	1.2
1940	45.5	-3.4	0.7
1980	46.5	-3.3	1.0
2020	43.2	-3.6	0.0
2060	43.5	-3.6	0.3
2100	44.7	-3.5	0.3
2140	44.8	-3.5	0.6
2180	46.0	-3.4	0.9

Passive Test For LTE main Antenna			
Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)
2300	49.2	-3.1	2.5
2340	50.3	-3.0	2.2
2380	52.1	-2.8	2.2
2420	51.5	-2.9	2.6
2460	51.3	-2.9	3.0
2500	48.0	-3.2	3.1
2540	47.2	-3.3	3.1
2580	45.6	-3.4	3.1
2620	43.6	-3.6	2.9
2660	43.8	-3.6	2.6
2700	42.2	-3.8	2.2

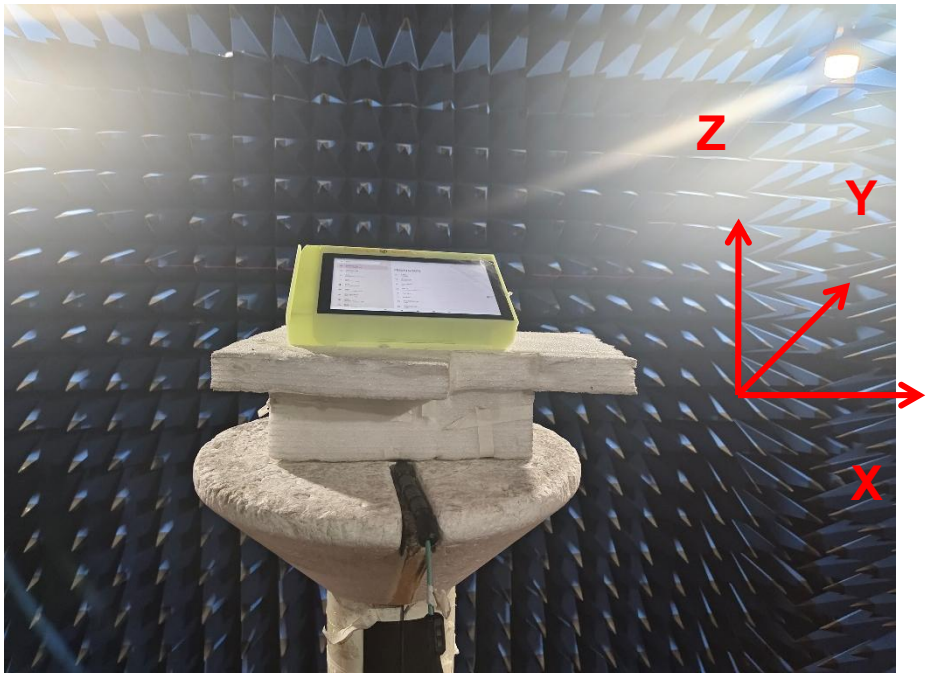
Radiation Pattern For LTE main Antenna（880MHz）

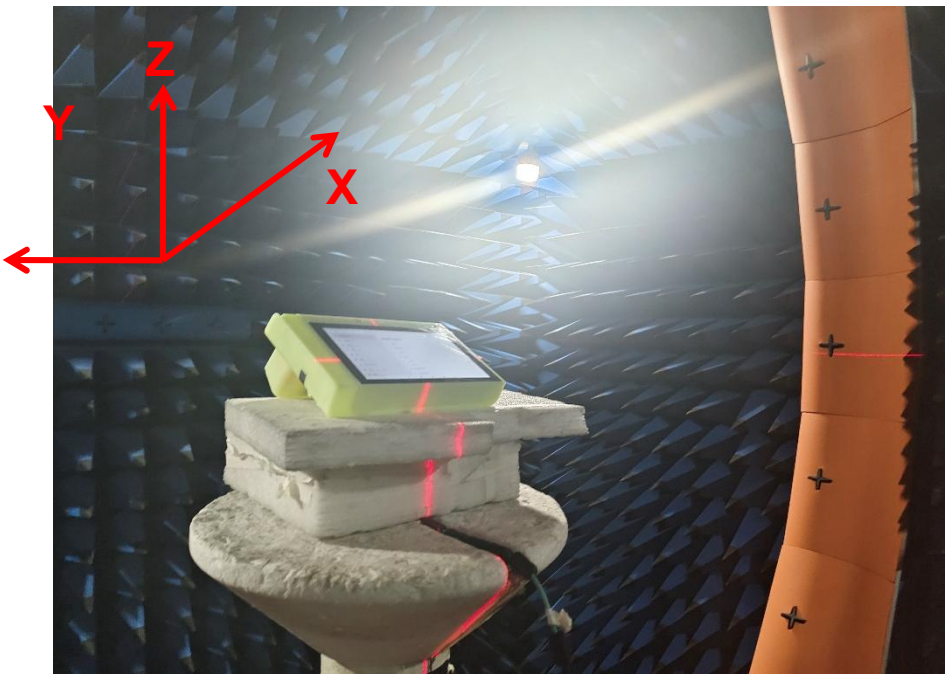


Radiation Pattern For LTE main Antenna（1700MHz）



Antenna Passive Test

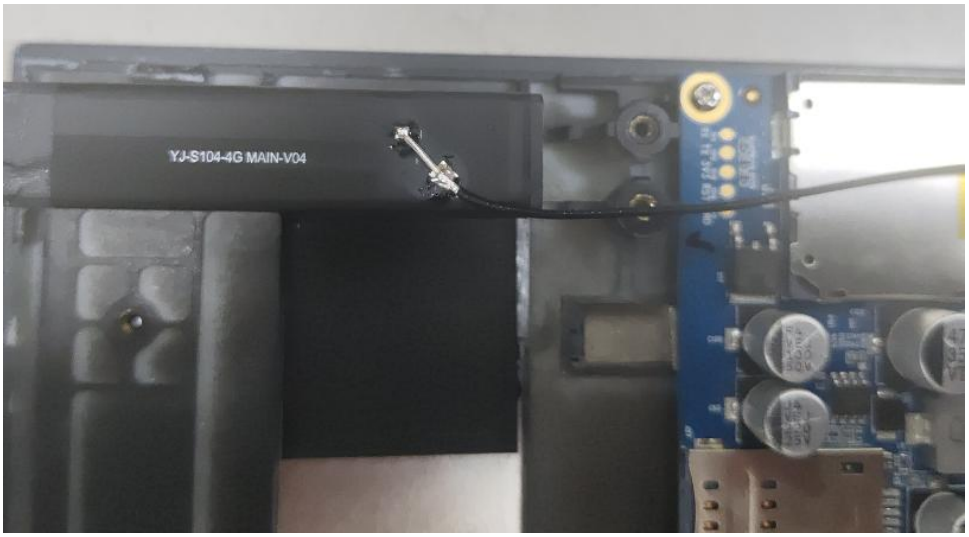


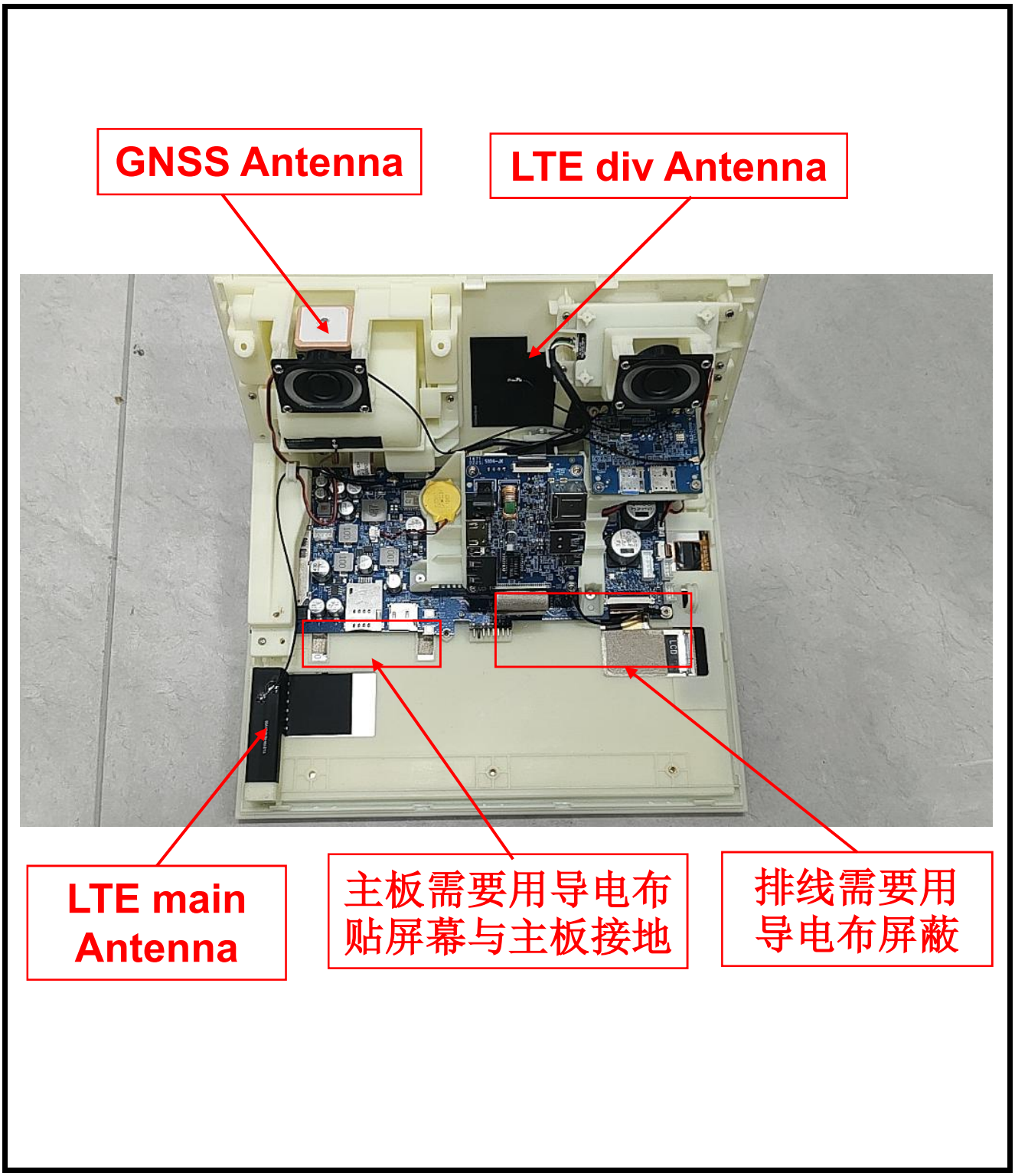


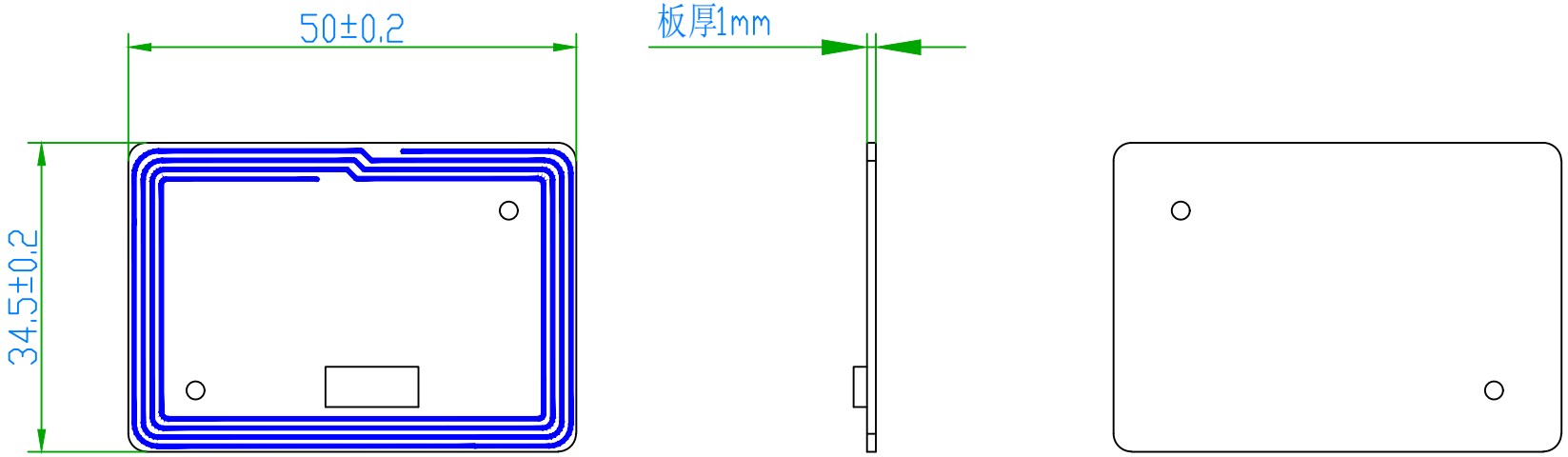
Active Test For LTE main Antenna			
Band	**Channel**	**TRP**	**TIS**
FDD LTE Band 1	18050/50	20.5	-95.6
	18300/300	19.6	-95.5
	18550/550	19.6	-95.3
FDD LTE Band 2	18650/650	19.8	-95.2
	18900/900	20.6	-95.1
	19150/1150	19.2	-94.8
FDD LTE Band 3	19250/1250	17.2	-94.5
	19575/1575	18.7	-94.2
	19900/1900	17.5	-93.7
FDD LTE Band 4	20000/2000	18.4	-95.3
	20175/2175	18.0	-95.1
	20350/2350	19.2	-95.1
FDD LTE Band 5	20450/2450	17.5	-89.7
	20525/2525	18.7	-89.3
	20600/2600	17.3	-89.6
FDD LTE Band 8	21500/3500	17.4	-88.9
	21625/3625	18.6	-88.9
	21750/3750	17.6	-89.4
FDD LTE Band 20	24200/6200	18.1	-89.8
	24300/6300	18.7	-89.5
	24400/6400	17.7	-89.3
FDD LTE Band 28	27260/9260	17.1	-89.6
	27435/9435	17.3	-89.2
	27610/9610	17.5	-88.7

Active Test For LTE main Antenna			
Band	**Channel**	**TRP**	**TIS**
FDD LTE Band 66	132022/66536	19.5	-94.0
	132322/66786	18.0	-94.0
	132622/67036	19.5	-95.0
FDD LTE Band 7	20800/2800	17.2	-93.8
	21100/3100	17.2	-94.2
	21400/3400	17.2	-94.2
TDD LTE Band 38	37850	17.9	-94.5
	38000	18.2	-94.2
	38150	18.1	-93.8
TDD LTE Band 40	38750	17.8	-94.8
	39150	18.8	-94.6
	39550	18.4	-94.5
TDD LTE Band 41	40340	18.1	-93.3
	40620	18.1	-93.1
	40960	17.2	-92.9

Device	

LTE Antenna	


GNSS Antenna
LTE div Antenna
LTE main Antenna
主板需要用导电布贴屏幕与主板接地
排线需要用导电布屏蔽



Telepower Communication Co., Ltd.

Bldg.5, Zone A, Hantian Science & Technology Park, Foshan City, Guangdong, China

Model: S104 Intelligent Terminal NFC Antenna

We statement that All measurements were performed radiated and therefore additional antenna gain documentation is not required.

技术要求:

1、产品未注公差参照附表

2、符合ROHS、REACH

广东天波信息技术股份有限公司

Telepower Communication Co., Ltd

Tolerance of linear Dimensions

Fine ISO 2768 (未注形位公差按 ISO 2768)

Dimension(尺寸)	Tolerance(公差)	
Level(精度等级)	F(精密级)	M(中等级)
0.5~3.0	±0.05	±0.10
3.0~6.0	±0.05	±0.10
6.0~30	±0.10	±0.20
30~120	±0.15	±0.30
120~400	±0.20	±0.50
Select(等级选用)	■	□

Flatness of shape tolerance (形状公差—平面度)

Dimension(尺寸)	Tolerance(公差)	
Level(精度等级)	K(中等级)	L(一般级)
0~10	0.05	0.10
10~30	0.10	0.20
30~100	0.20	0.40
100~300	0.40	0.80
Select(等级选用)	■	□

DRAWN BY(设计)	DATE(日期)	V.4				
-	-	V.3				
		V.2				
		V.1				
CHKD BY(审核)	DATE(日期)	VER(版本)	NOTE(备注)		DATE(日期)	
-	-	PROJECT NAME(项目名称)		S104		
APPD BY(批准)	DATE(日期)	PART NO. (零件编号)		PART NAME(零件名称)		
-	-	2630113-10101		S104智能终端NFC板		
UNIT(单位)	SIZE(大小)	MATERIALS(材质)	QTY(数量)	SCALE(比例)	SHEET(页数)	
MM	A4	电路板	-	1:1	1/1	