

## 样品承认规格书

### PART SHEET FOR APPROVAL

制造商名称: Manufacturer:	深圳市英佳创电子科技有限公司 Shenzhen Yingjiachang Electronic Technology Co., LTD.
供应商名称 Supplier::	深圳市英佳创电子科技有限公司 Shenzhen Yingjiachang Electronic Technology Co., LTD.
产品名称: Part Description:	2. 4G/5G 内置金属插件天线(WIFI-L) 2. 4G/5G built-in metal plug-in antenna
规格型号: Model No:	YJC-6N000-B402
物料编码: Cust P/N:	
日期: Issued Date:	2022.10.28

#### 供应商确认 Supplier confirmation

承办 Made By	审核 Engineer	批准 Approver
吴佳雄	方文锋	肖汉

#### 承认原因:

Approval Reason:	<input type="checkbox"/> 新物料 New Part <input type="checkbox"/> 替代料 Substitute Part		
承办 Made By	审核 Engineer		批准 Approver
	品质 Quality	研发 R&D	业务 Sales

备注: 签名表明提交样品获得承认, 图纸规格已经受控。Note: Signature indicates that the submitted sample is approved and the drawing/specification is now the controlling document.



深圳市英佳创电子科技有限公司

<http://www.szsyjc.com>

# APPROVAL SHEET

## 承认书

CUSTOMER NAME 客户名称		
CUSTOMER P/N 客户料号		
PART NAME 品 名	2.4G/5G 内置金属插件天线 (WIFI-L) 2.4G/5G built-in metal plug-in antenna	
P/ N 料 号	YJC-6N000-B402	
APPROVAL REV. 版 次	A0	
DELIVERY DATE 送样日期	2022 年 10 月 28 日	
PREPARED BY 承 办	吴佳雄	
CHECKED BY 审 核	方文锋	
APPROVED BY 核 准	肖 汉	
Customer Approved 客 户 承 认		
Prepared By 承 办	Checked By 审 核	Approved By 核 准

**英佳创联系方式 (工厂) Contact Information (factory):**

公司地址: 深圳市光明区马田办石围社区将石油麻岗 11 号宏域光明谷 A.C 栋

Company address: guangming district, shenzhen city, ma tian ban shiwei community will petroleum magang 11 hongyu guangming valley A.C building

杭州办事处: 杭州市滨江区物联网街 369 号大华江虹国际创新园 B 幢 212

Hangzhou Office: 212, Building B, Dahua Jianghong International Innovation Park, No. 369 Internet of Things Street, Binjiang District, Hangzhou

电话 (phone) +86-755-27810060/23192199; 传真 (faxes): +86-0755-27810057

公司网址 (Website Address): <http://www.szsyjc.com> 电子信箱 (E-mail): [yjc@szsyjc.com](mailto:yjc@szsyjc.com)



## 目录 (Catalogue)

1、	封面 (Cover) .....	1
2、	目录 (Catalogue) .....	2
3、	履历表 (Resume) .....	3
4、	产品平面图 (Product plan) .....	4
5、	天线技术参数 (Antenna technical parameters) .....	5
6、	环境性能测试 (Environmental performance testing) .....	6
7、	天线贴附位置图 (Antenna attachment position diagram) .....	7
8、	天线性能测试图 (Antenna performance test diagram) .....	7
9、	隔离度测试图 (Isolation test chart) .....	8
10、	2D. 3D (2. 4G/5G) 测试数据 (Test data) .....	9-13
11、	吞吐量测试数据 (Throughput test data) .....	14-17
12、	OTA有源测试数据统计 (OTA active test data statistics) .....	18
13、	ROHS物料控制报告 (ROHS Material control report) .....	19

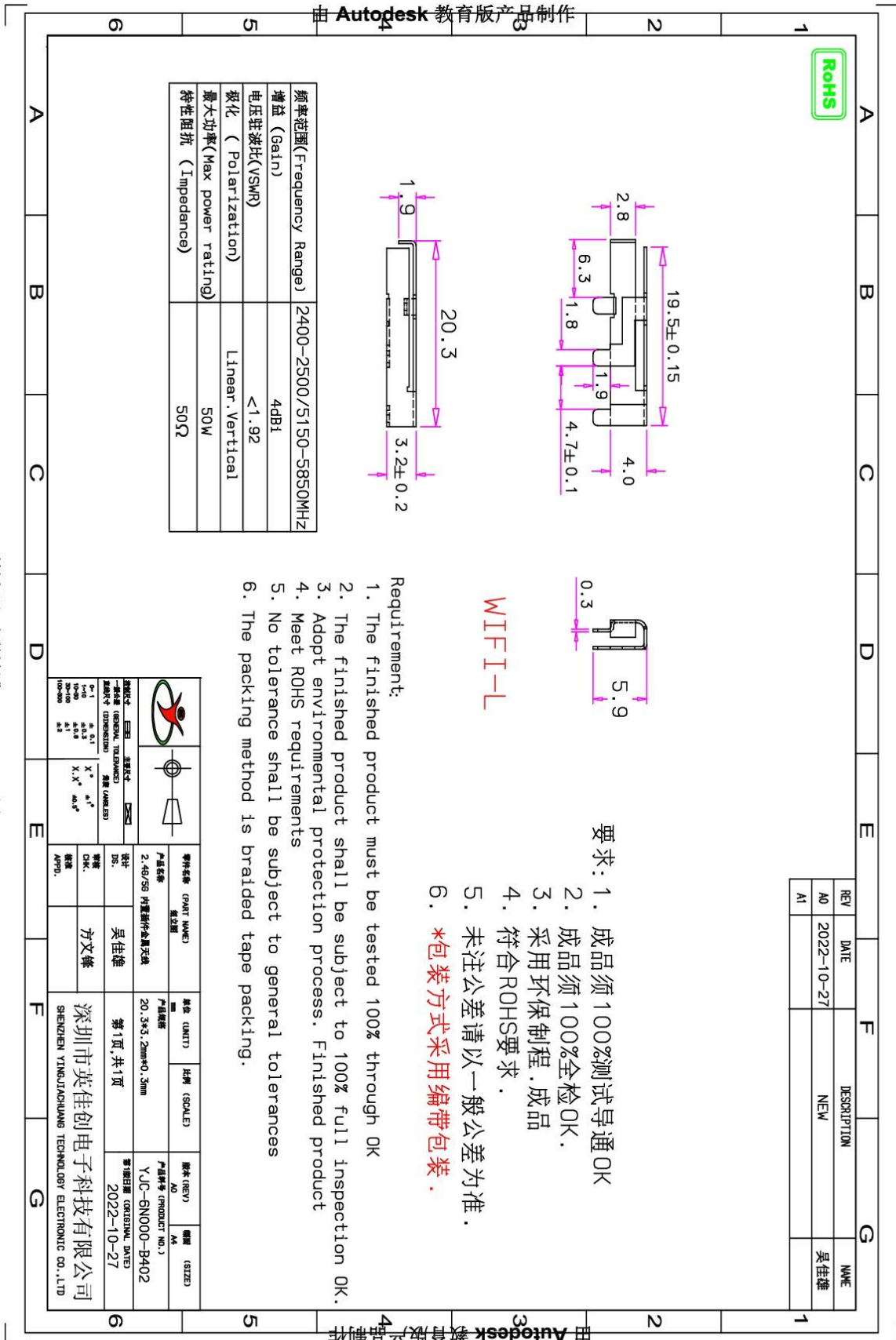


履历表(Resumer):

版本 Version	变更内容及更改原因 Changes and reasons	发行 publish	发行 publish
A/0	初版发行 (Issued)	2022 年 10 月 28 日 (October 28, 2022)	



产品平面图 (Product plan):



由 Autodesk 教育版产品制作

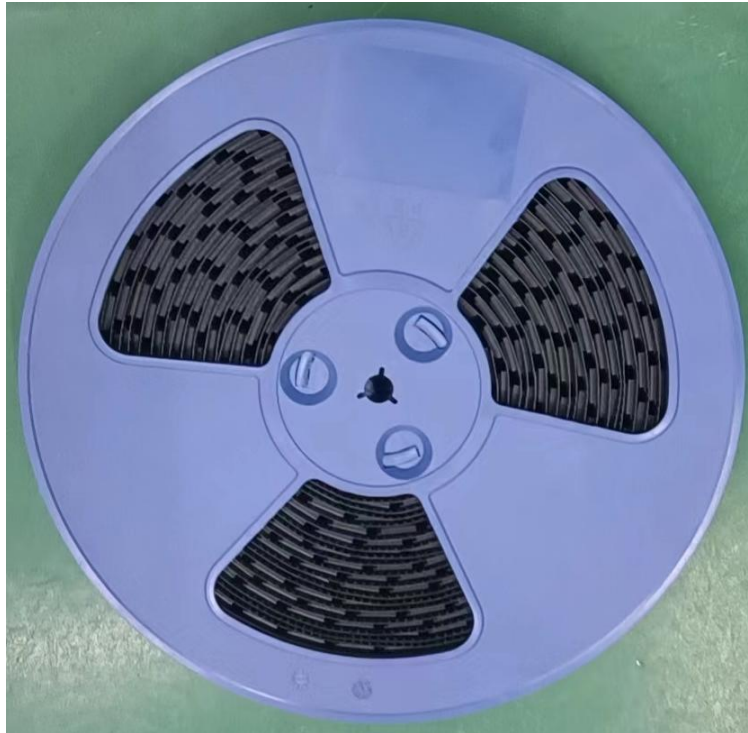
由 Autodesk 教育版产品制作



天线技术参数(Antenna technical parameters):

电气技术参数 (Electrical technical parameters)	
电性能指标 (Electrical Specifications)	
频率范围 (Frequency Range)	2400 -2500/5150-5850MHZ
电压驻波比 (VSWR)	<1.92
输入阻抗 (Input Impedance)	50 $\Omega$
方向 (Direction)	全向
增益 (Gain)	WiFi1: 2.4G $\geq$ 1.81dBi, 5G $\geq$ 2.09dBi
机械指标 (Mechanical Specifications)	
材质	304 不锈钢 (Stainless steel)
工作温度	-20 $^{\circ}$ C~+70 $^{\circ}$ C
工作湿度	20~80%

包装方式 (The packing way) :





环境性能测试(Environmental performance testing):

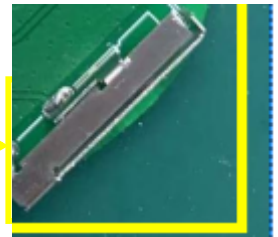
项目(Project)	测试条件(Test condition)	规格(Specification)
储存环境 Storage Conditions	In the absence of specified test temperature, humidity, air pressure is as follows: 在没有指定的情况下测试温度、湿度、气压如下: 1. Temperature is $-30\text{ }^{\circ}\text{C} \sim +80\text{ }^{\circ}\text{C}$ 1. 温度为 $-30^{\circ}\text{C} \sim +80^{\circ}\text{C}$ 2. Relative humidity of 45% to 85% 2. 相对湿度为45%-85% 3. Air pressure is 86 kpa to 106 kpa 3. 气压为86kpa-106kpa	Electrical and mechanical properties is normal 电气机械性能正常
高低温试验 high and low temperature test	Between $70\text{ }^{\circ}\text{C}$ and $-20\text{ }^{\circ}\text{C}$ for 5 loops, then 1-2 h under normal conditions, check the appearance quality. 在 $70^{\circ}\text{C}$ 与 $-20^{\circ}\text{C}$ 之间进行5次循环,然后在正常条件下1-2H,检查外观质量。	Size should meet the requirements and should satisfy the content with the electrical and mechanical properties 尺寸应满足规定并应满足于机械、电气性能
耐恒定 湿热试验 Constant damp and hot resistance test	95 + / - 3% relative humidity, temperature test: $40\text{ }^{\circ}\text{C}$ . Lasts 2 h after, try to take out the determination of electrical properties, within 5 min after try 1-2 h under article normal thing, check the appearance quality 相对湿度 $95 \pm 3\%$ , 试验温度: $40^{\circ}\text{C}$ . 持续2H作用后, 试品取出后5min之内测定电气性能, 试品在正常条件下1-2H, 检查外观质量	Size should meet the requirements and should satisfy the content with the electrical and mechanical properties 尺寸应满足规定并应于机械、电气性能
振动试验 vibration test	10-55 hz, vibration frequency range of displacement amplitude: 0.35 MM, acceleration amplitude: 50.0 M/S, sweep cycles: 30 times 振频范围10-55HZ, 位移幅值: 0.35MM, 加速度幅值: 50.0M/S, 扫频循环次数: 30次	Electrical and mechanical properties is normal 电气机械性能正常
跌落试验 fall down test	1 m high altitude in accordance with the perpendicular axis free drop 3 times 1M高空按照互相垂直的轴方向自由跌落3次	Electrical and mechanical properties is normal 电气机械性能正常



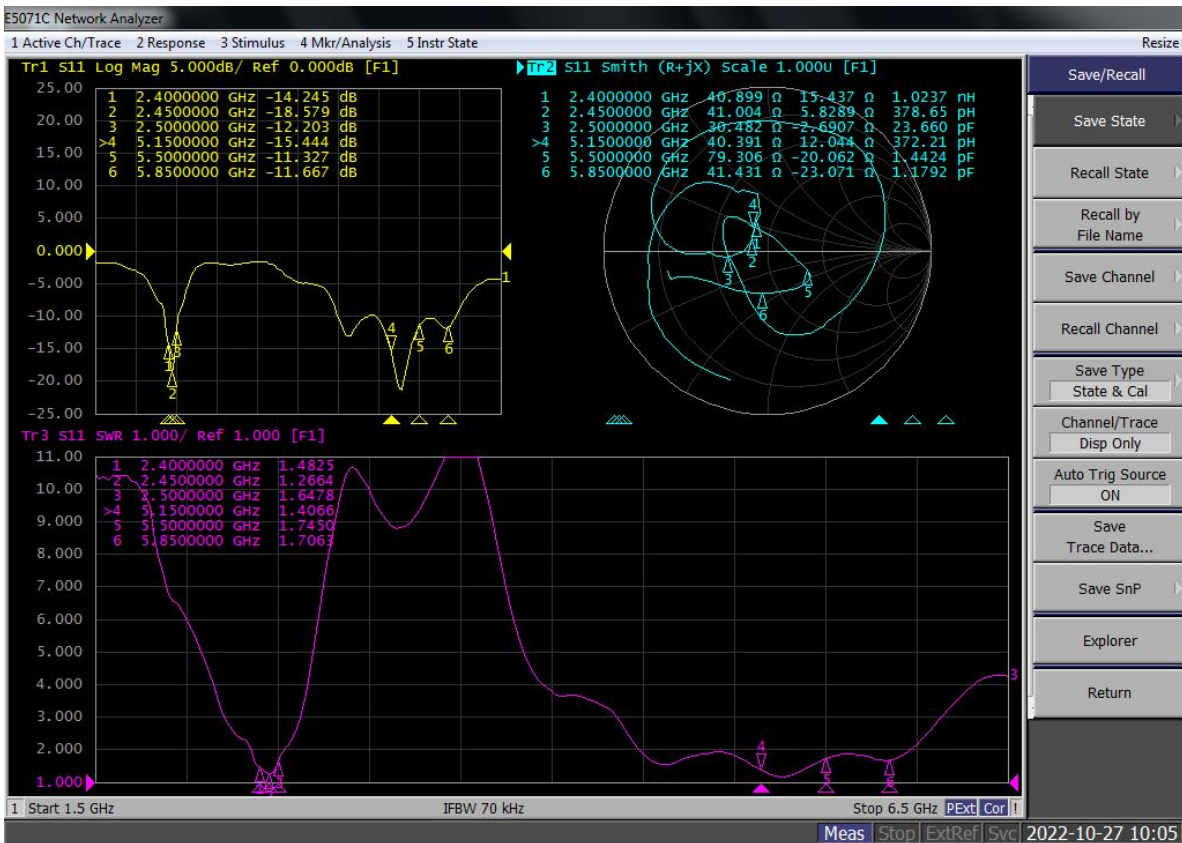


天线贴附位置图 (Antenna attachment position diagram) :

天线贴附位置图  
Antenna attachment position diagram



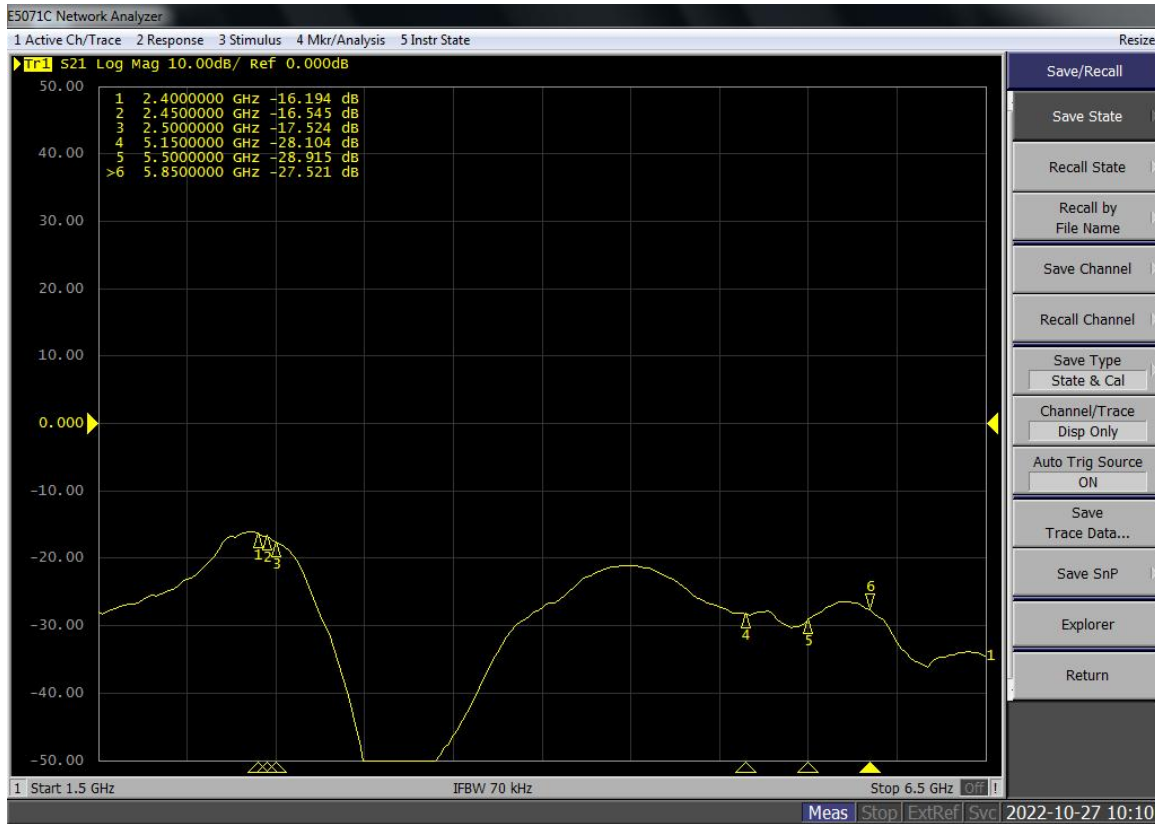
天线性能测试图 (Antenna performance test diagram) (WIFI1) :



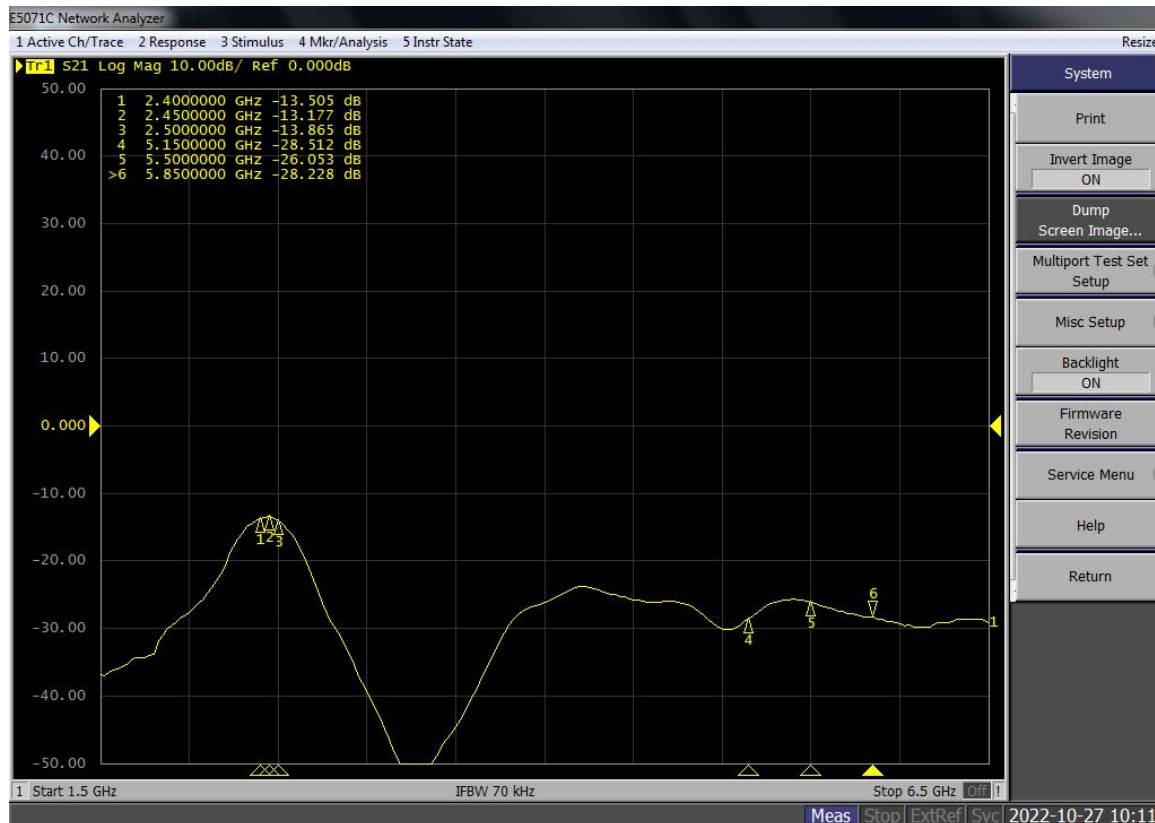




## WIFI 1--WIFI 2 隔离层



## WIFI 1--BT 隔离层





2D、3D 测试数据 Test data(WIFI 1: 2.4G/5G) :

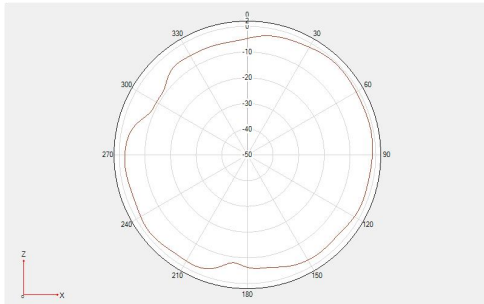
Frequency (MHz)	Efficiency (%)	Gain. (dBi)
2400	62.37	2.92
2410	61.24	2.78
2420	61.09	2.75
2430	59.7	2.6
2440	59.98	2.6
2450	58.75	2.52
2460	58.34	2.46
2470	57.02	2.16
2480	55.85	1.81
2490	54.95	2.05
2500	53.58	2.08
5000	64.27	2.09
5025	65.46	2.43
5050	65.92	2.76
5075	64.12	2.79
5100	64.86	2.99
5125	66.37	3.28
5150	64.42	3.3
5175	63.97	3.48
5200	64.57	3.69
5225	64.12	3.57
5250	63.68	3.43
5275	65.01	3.58
5300	67.61	3.99
5325	67.92	4.07
5350	67.76	4.04
5375	69.34	4.21
5400	69.34	4.34
5425	68.23	4.08
5450	67.61	3.93
5475	65.61	3.97
5500	63.97	3.9
5525	61.38	3.66
5550	60.95	3.58
5575	60.81	3.71
5600	58.61	3.81



Frequency (MHz)	Efficiency (%)	Gain. (dBi)
5625	58.08	3.77
5650	56.62	3.69
5675	54.45	3.7
5700	54.7	3.8
5725	54.58	3.73
5750	53.83	3.68
5775	53.83	3.83
5800	52	3.74

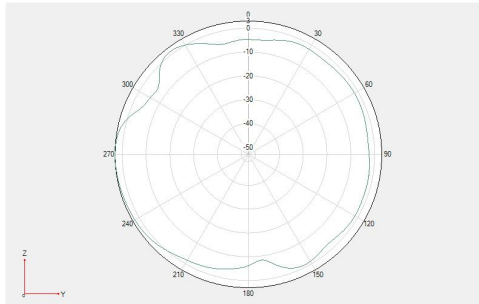
WIFI 1 天线方向图-2.4G/5G(Antenna direction diagram - 2.4G/5G)

Phi =0 freq=2400MHz  
(unit: dBi)



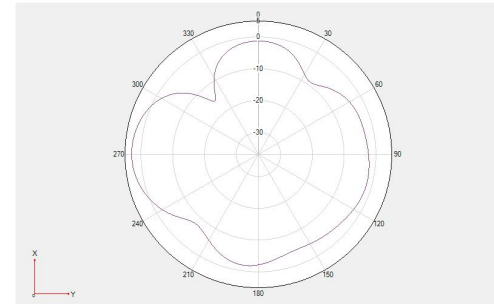
(unit: dBi)

Phi =90 freq=2400MHz  
(unit: dBi)

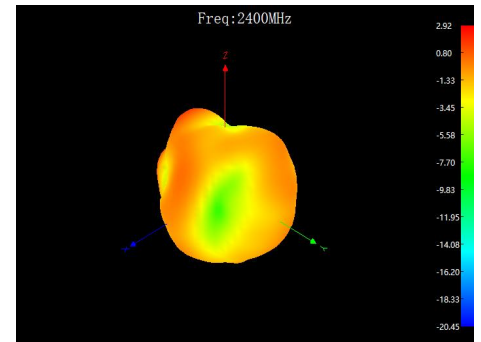
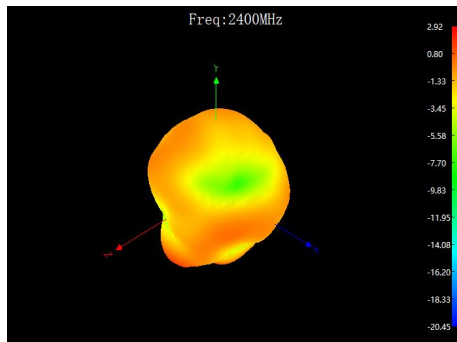
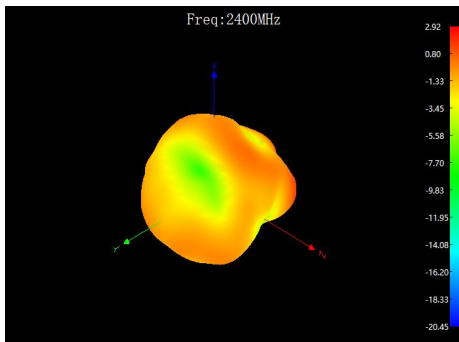


(unit: dBi)

Theta =90 freq=2400MHz  
(unit: dBi)

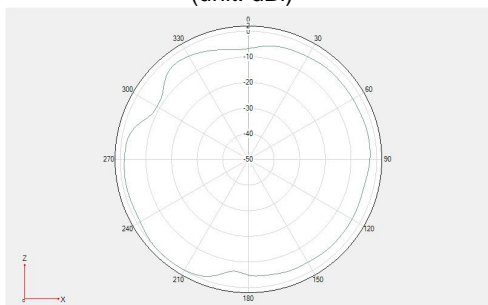


(unit: dBi)

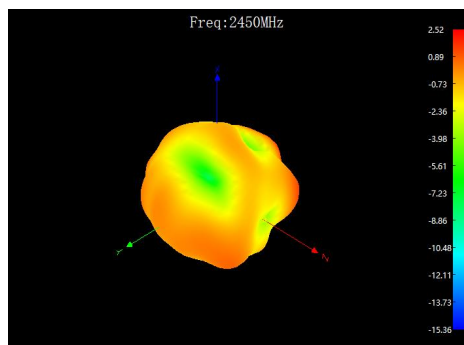




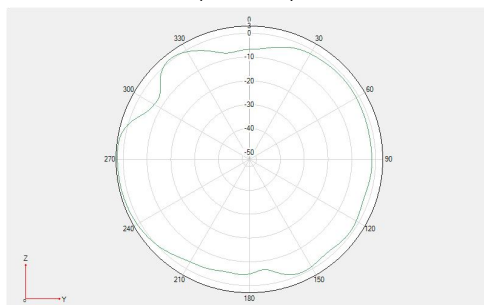
Phi =0 freq=2450MHz  
(unit: dBi)



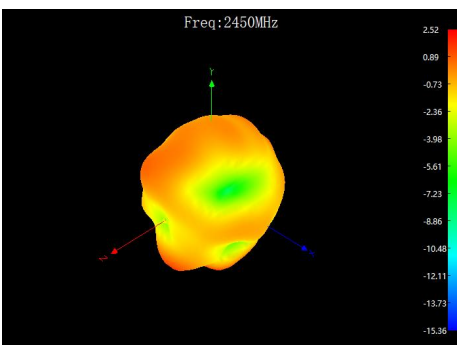
(unit: dBi)



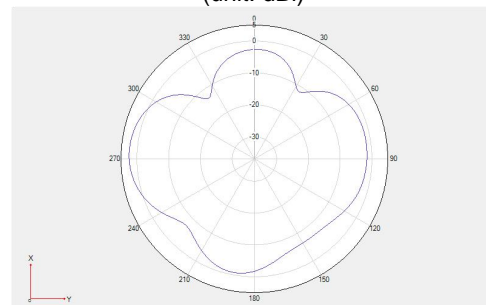
Phi =90 freq=2450MHz  
(unit: dBi)



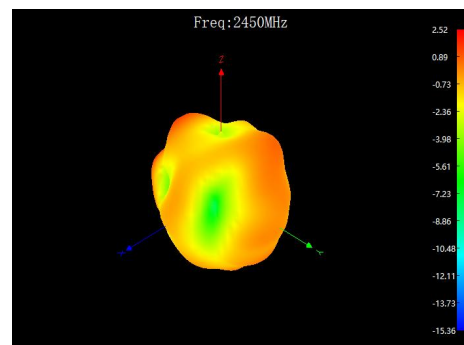
(unit: dBi)



Theta =90 freq=2450MHz  
(unit: dBi)

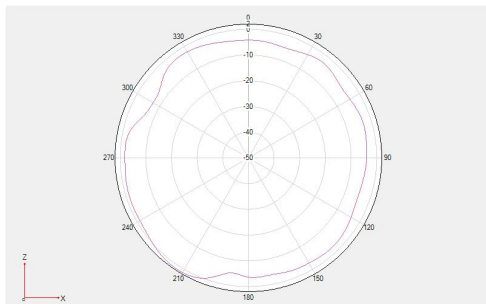


(unit: dBi)

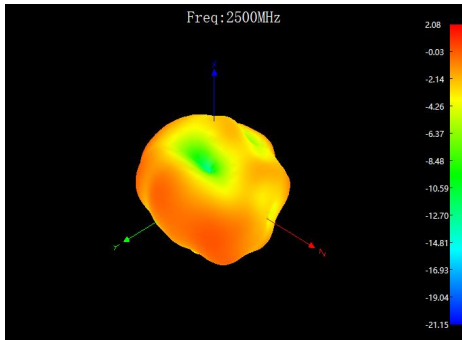


Phi =0 freq=2500MHz

(unit: dBi)

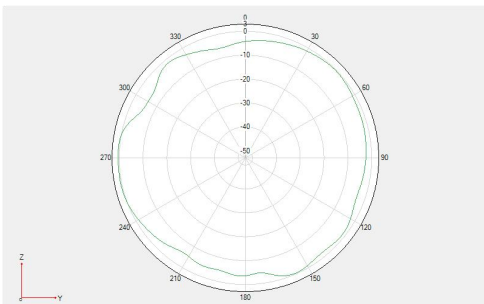


(unit: dBi)

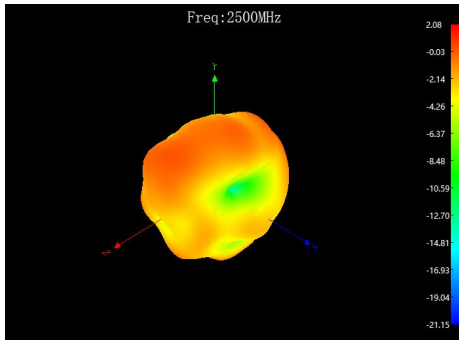


Phi =90 freq=2500MHz

(unit: dBi)

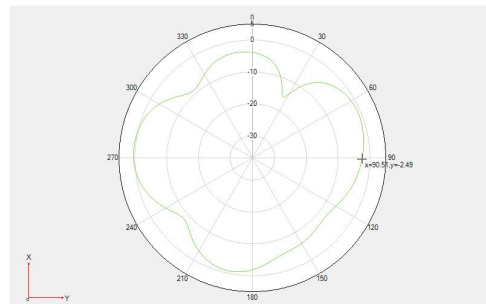


(unit: dBi)

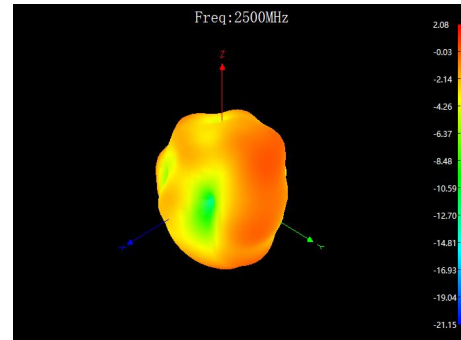


Theta =90 freq=2500MHz

(unit: dBi)

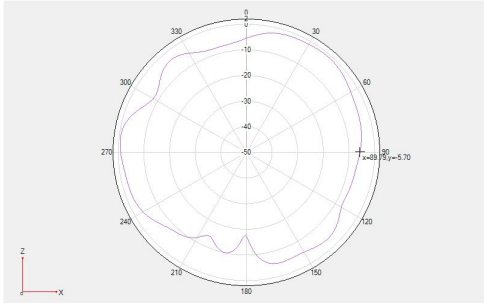


(unit: dBi)

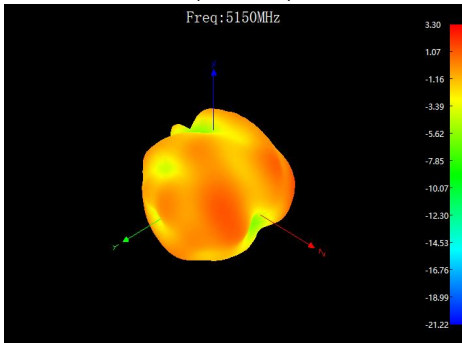




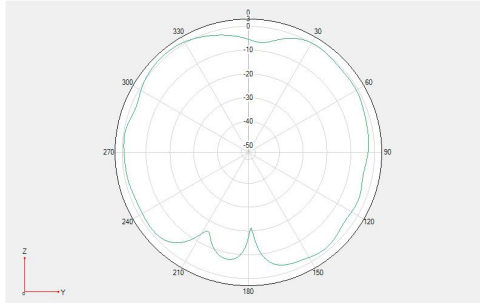
Phi =0 freq=5150MHz  
(unit: dBi)



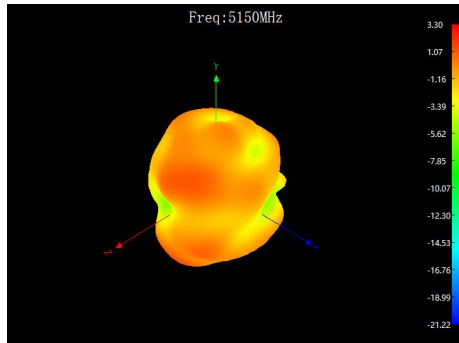
(unit: dBi)



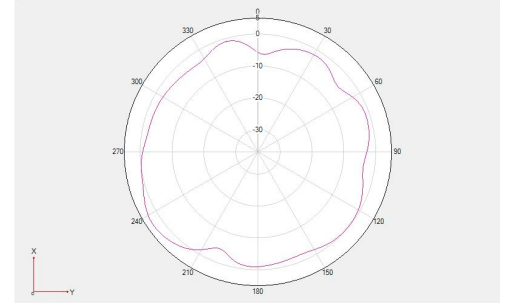
Phi =90 freq=5150MHz  
(unit: dBi)



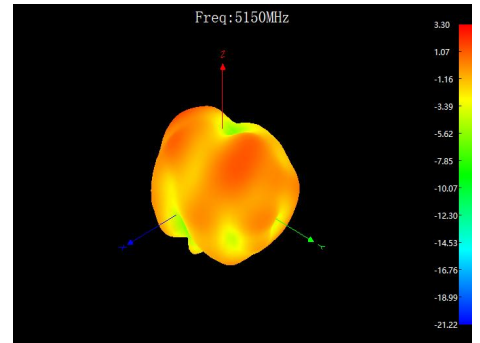
(unit: dBi)



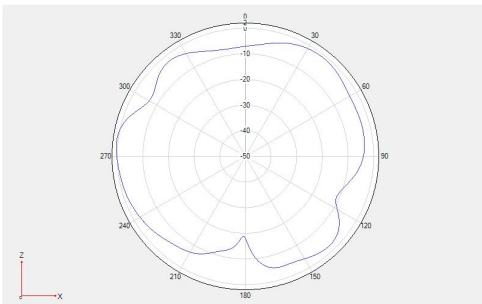
Theta =90 freq=5150MHz  
(unit: dBi)



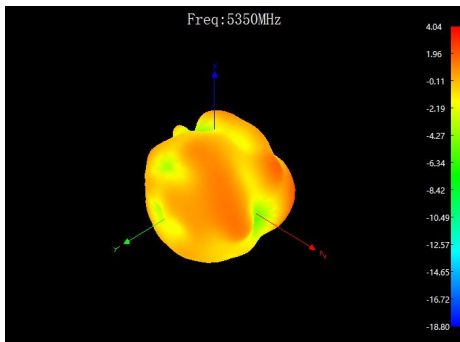
(unit: dBi)



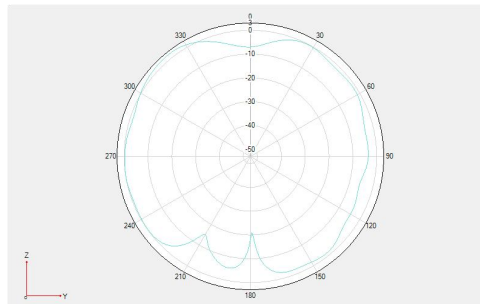
Phi =0 freq=5350MHz  
(unit: dBi)



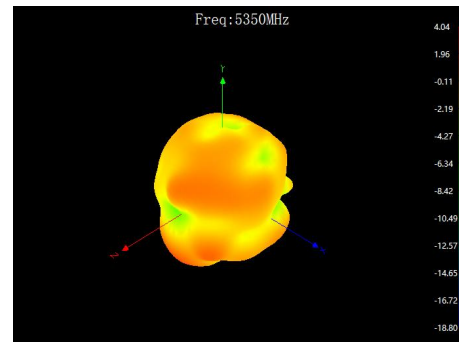
(unit: dBi)



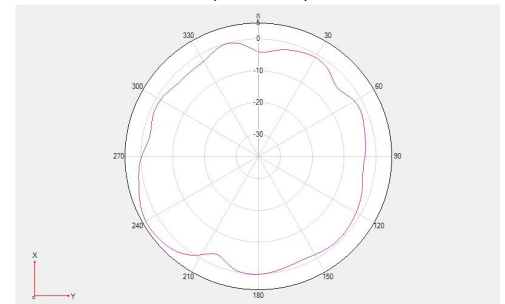
Phi =90 freq=5350MHz  
(unit: dBi)



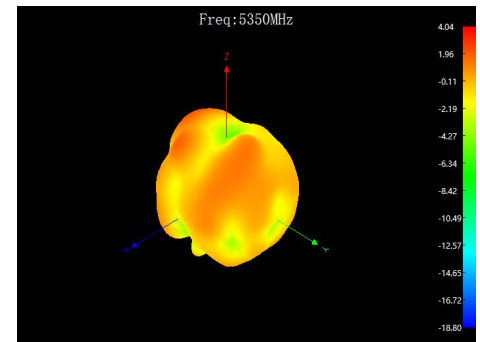
(unit: dBi)



Theta =90 freq=5350MHz  
(unit: dBi)

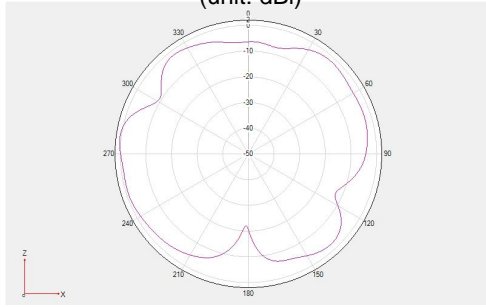


(unit: dBi)

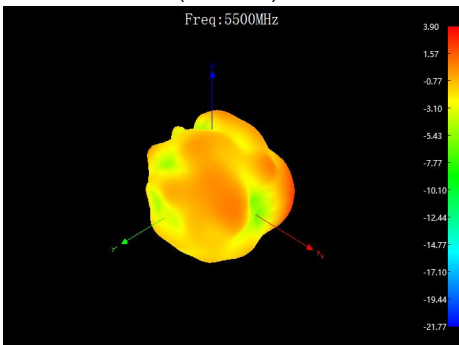




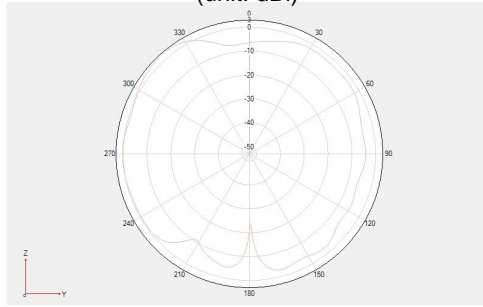
Phi =0 freq=5500MHz  
(unit: dBi)



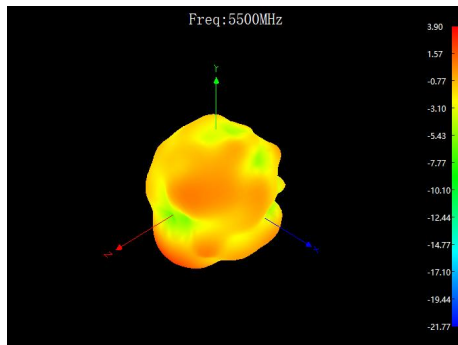
(unit: dBi)



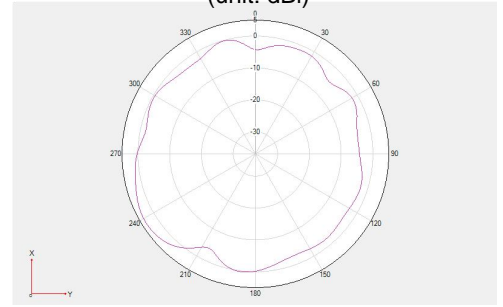
Phi =90 freq=5500MHz  
(unit: dBi)



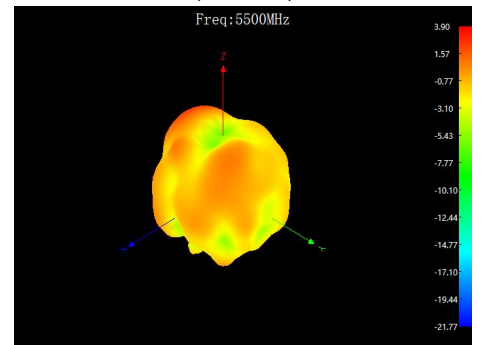
(unit: dBi)



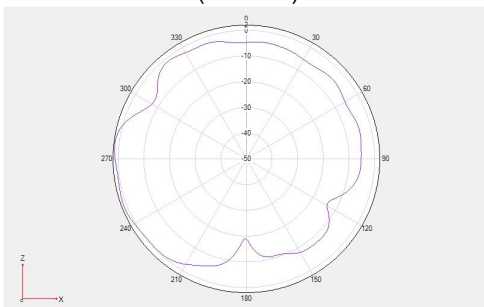
Theta =90 freq=5500MHz  
(unit: dBi)



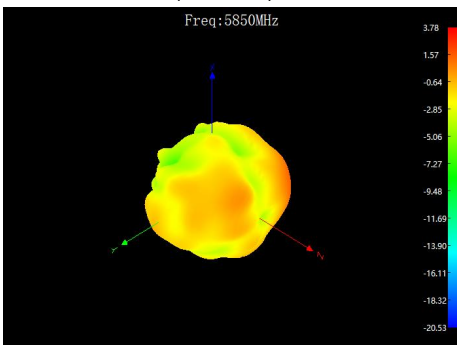
(unit: dBi)



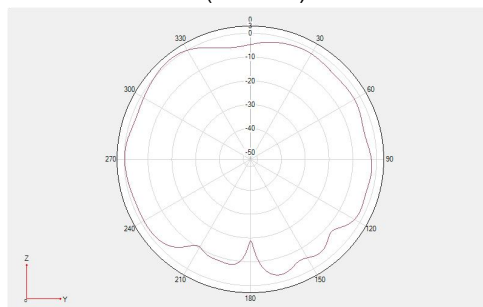
Phi =0 freq=5850MHz  
(unit: dBi)



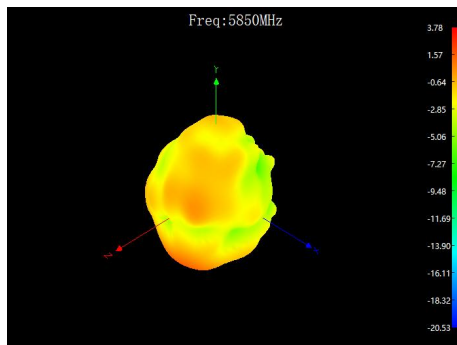
(unit: dBi)



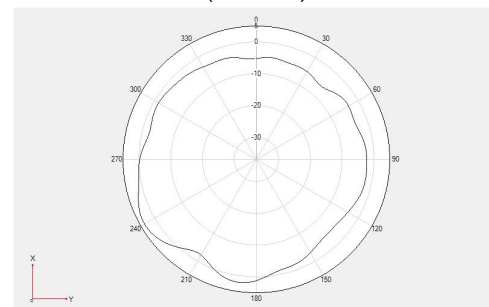
Phi =90 freq=5850MHz  
(unit: dBi)



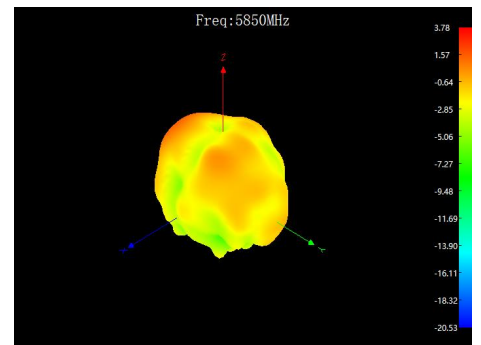
(unit: dBi)



Theta =90 freq=5850MHz  
(unit: dBi)



(unit: dBi)







吞吐量测试数据(Throughput test data):

**2.4G 11n HT20**

NO.	Item	CH	ATT (Unit:dB)	Standard	Throughput	
					RX (Unit:Mb)	TX (Unit:Mb)
1	Attenuation throughput test 11n HT20	1	0	RX>90M TX>70M	109	108
2			25	RX>80%Peak value TX>80%Peak value	113	108
3			45		33	98
4		6	0	RX>90M TX>70M	109	108
5			25	RX>80%Peak value TX>80%Peak value	112	107
6			45		44	102
7		11	0	RX>90M TX>70M	111	107
8			25	RX>80%Peak value TX>80%Peak value	112	107
9			45		31	99

**2.4G 11n HT40**

NO.	Item	CH	ATT (Unit:dB)	Standard	Throughput	
					RX (Unit:Mb)	TX (Unit:Mb)
1	Attenuation throughput test 11n HT40	1	0	RX>180M TX>140M	231	215
2			25	RX>70%Peak value TX>70%Peak value	227	211
3			45		27	162
4		6	0	RX>180M TX>140M	233	218
5			25	RX>70%Peak value TX>70%Peak value	221	217
6			45		62	175
7		11	0	RX>180M TX>140M	229	212
8			25	RX>70%Peak value TX>70%Peak value	220	211
9			45		43	164





5G 11ac HT80

NO.	Item	CH	ATT (Unit:dB)	Standard	Throughput	
					RX (Unit:Mb)	TX (Unit:Mb)
1	Attenuation throughput test 11ac HT80	36	0	RX>350M TX>250M	483	481
2			5	RX>80%Peak value TX>70%Peak value	476	480
3			25		209	439
4		64	0	RX>350M TX>250M	472	484
5			5	RX>80%Peak value TX>70%Peak value	462	481
6			25		159	433
7		100	0	RX>350M TX>250M	459	484
8			5	RX>80%Peak value TX>70%Peak value	446	486
9			25		104	337
10		161	0	RX>350M TX>250M	448	486
11			5	RX>80%Peak value TX>70%Peak value	456	483
12			25		243	351



2.4G 11n HT20

NO.	Item	Distance (Unit:m)	CH	Angle	ATT (Unit:dB)	RSSI (Unit:dBm)	Standard (Unit:Mb)	Throughput	
								RX	TX
								Average (Unit:Mb)	Average (Unit:Mb)
1	Angle throughput test 11n HT20	25	1	0°	0	-43	RX Tput>80 TX Tput>60	101	96
2				90°	0	-44		103	93
3				180°	0	-44		105	93
4				270°	0	-43		99	94
5			6	0°	0	-41	RX Tput>80 TX Tput>60	109	93
6				90°	0	-42		110	97
7				180°	0	-40		110	99
8				270°	0	-41		101	82
9			11	0°	0	-43	RX Tput>80 TX Tput>60	96	92
10				90°	0	-45		109	78
11				180°	0	-43		102	90
12				270°	0	-45		85	81

2.4G 11n HT40

NO.	Item	Distance (Unit:m)	CH	Angle	ATT (Unit:dB)	RSSI (Unit:dBm)	Standard (Unit:Mb)	Throughput	
								RX	TX
								Average (Unit:Mb)	Average (Unit:Mb)
1	Angle throughput test 11n HT40	25	1	0°	0	-43	RX Tput>140 TX Tput>120	180	187
2				90°	0	-43		174	166
3				180°	0	-43		204	187
4				270°	0	-41		161	164
5			6	0°	0	-40	RX Tput>140 TX Tput>120	206	171
6				90°	0	-44		201	173
7				180°	0	-43		197	146
8				270°	0	-45		174	178
9			11	0°	0	-43	RX Tput>140 TX Tput>120	169	166
10				90°	0	-43		173	183
11				180°	0	-44		187	188
12				270°	0	-47		170	154



5G 11ac HT80

NO.	Item	Distance (Unit:m)	CH	Angle	ATT (Unit:dB)	RSSI (Unit:dBm)	Standard (Unit:Mb)	Throughput	
								RX	TX
								Average (Unit:Mb)	Average (Unit:Mb)
1	Angle throughput test 11ac HT80	25	36	0°	0	-46	RXTput>320 TX Tput>220	457	465
2				90°	0	-41		428	462
3				180°	0	-43		446	463
4				270°	0	-42		436	460
5			64	0°	0	-52	RXTput>320 TX Tput>220	419	475
6				90°	0	-49		416	475
7				180°	0	-49		411	461
8				270°	0	-47		406	462
9			100	0°	0	-48	RXTput>320 TX Tput>220	408	474
10				90°	0	-49		384	453
11				180°	0	-52		382	467
12				270°	0	-51		391	475
13			161	0°	0	-42	RXTput>320 TX Tput>220	433	473
14				90°	0	-43		440	474
15				180°	0	-41		440	477
16				270°	0	-44		443	475

2.4G 11n HT20

Item	Bluetooth	CH	ATT (Unit:dB)	Standard	RX (Unit:Mb)	TX (Unit:Mb)
2.4G 11n HT20	Bluetooth speaker Disconnected to play audio	1	0	RX>90M TX>70M	109	108
		6	0	RX>90M TX>70M	109	108
		11	0	RX>90M TX>70M	111	107
	Bluetooth speaker Connected to play audio	1	0	RX>60%Peak value TX>60%Peak value &Smooth audio	109	108
		6	0	RX>60%Peak value TX>60%Peak value &Smooth audio	109	108
		11	0	RX>60%Peak value TX>60%Peak value &Smooth audio	110	108



OTA 有源测试数据统计(OTA active test data statistics):

Item	Measurement	Band	Channel	Frequency	Total
1	TRP	WIFI_B (11M)	1	2412	12.91
2	TRP	WIFI_B (11M)	6	2437	13.83
3	TRP	WIFI_B (11M)	11	2462	14.87
4	TIS FAST	WIFI_B (11M)	1	2412	-81.74
5	TIS FAST	WIFI_B (11M)	6	2437	-72.79
6	TIS FAST	WIFI_B (11M)	11	2462	-72.86
7	TRP	WIFI_A (54M)	36	5180	14.32
8	TRP	WIFI_A (54M)	64	5320	14.79
9	TRP	WIFI_A (54M)	100	5500	15.58
10	TRP	WIFI_A (54M)	161	5805	13.73
11	TIS FAST	WIFI_A (54M)	36	5180	-70.08
12	TIS FAST	WIFI_A (54M)	64	5320	-70.06
13	TIS FAST	WIFI_A (54M)	100	5500	-67.16
14	TIS FAST	WIFI_A (54M)	161	5805	-69.61
15	TRP	WIFI_N_ISM (65M)	1	2412	10.16
16	TRP	WIFI_N_ISM (65M)	6	2437	11.73
17	TRP	WIFI_N_ISM (65M)	11	2462	11.86
18	TIS FAST	WIFI_N_ISM (65M)	1	2412	-67.32
19	TIS FAST	WIFI_N_ISM (65M)	6	2437	-61.67
20	TIS FAST	WIFI_N_ISM (65M)	11	2462	-60.73
21	TRP	WIFI_N_UNII (65M)	36	5180	13.04
22	TRP	WIFI_N_UNII (65M)	64	5320	13.63
23	TRP	WIFI_N_UNII (65M)	100	5500	14.3
24	TRP	WIFI_N_UNII (65M)	161	5805	12.59
25	TIS FAST	WIFI_N_UNII (65M)	36	5180	-67.44
26	TIS FAST	WIFI_N_UNII (65M)	64	5320	-66.59
27	TIS FAST	WIFI_N_UNII (65M)	100	5500	-62.74
28	TIS FAST	WIFI_N_UNII (65M)	161	5805	-66.26



# 深圳市英佳创电子科技有限公司

<http://www.szsyjc.com>

## ROHS 物料控制报告 (ROHS Material control report)

兹证明向贵司交货的零组件、辅助材料所使用的原材料、以及生产工程中的添加剂等均符合 RoHS 限制使用有害物质指令的环保要求 (RoHS 指令 2011/65/EU)  
This is to certify that the components delivered to your company, the raw materials used for auxiliary materials, and the additives used in the production project all meet the environmental requirements of the RoHS directive on limiting the use of hazardous substances. (RoHS 指令 2011/65/EU)

关于零组件、辅助材料所使用的原材料、包装材料以及和产过程中使用的添加剂等的构成成份报告如下:

The report on the composition of raw materials, packaging materials, and additives used in the manufacturing process for component auxiliary materials is as follows

组成物料名称 Component /Part Name	组成材料 Material Composition	ICP 报告编号 ICP report #	测试机构 Test Org.	测试时间 Test Date	有害物质含量(ppm)						是否合格? PASS?
					Cd	Pb	Hg	Cr <sup>6+</sup>	PBB	PBDE	PASS
金属件	304 不锈钢 Stainless steel	SZXEC2200123701	SGS	22/01/18	ND	ND	ND	ND	ND	ND	PASS