



承 认 书

SPECIFICATION FOR APPROVAL

客户名称 Customer Name	中科微电		
客户项目名 Customer Project Name	ZQC-P1	顺达成项目名 SDC Project Name	ZQC-P1
客户编码 Customer P/N		顺达成料号 SDC P/N	WG2548B-A
频段 Band	<u>WiFi2.4G/5.8G/BT</u>		
版本号 Version	A0		
设计人信息/Designer Information			
射频工程师 RF Engineer	杨永辉	研发主管 R&D Director	符学荣
结构工程师 ME Engineer	李瑶娜		

审批/ Approval				客户批准/Customer Approval	
	制作 Prepared By	审核 Checked By	批准 Approval By	审核 Checked By	批准 Approval By
签章 Signature	李瑶娜	符学荣	陈华明		
日期 Date	2022.9.5	2022.9.5	2022.9.5		

修订履历/Change Log				
版本 Version	修订内容 Change Description	责任人 Person in Charge	核准 Approval By	日期 Date



目录/Catalogue

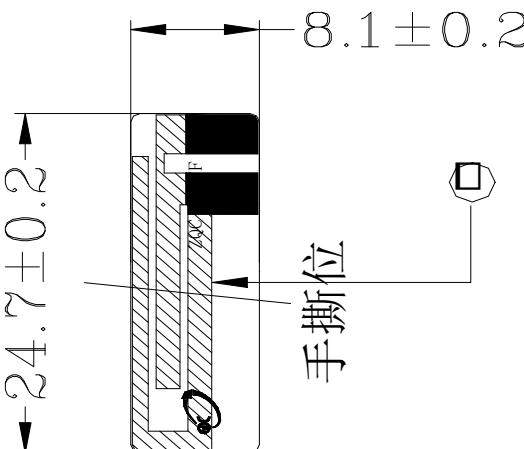
序号 No.	项目 Item	页码 Page No.
1	图纸或实物图片 Drawing or Product Image	3
2	尺寸测量报告 Dimensions Test Report	4
3	射频性能测试报告 RF Performance Test Report	5-7
4	可靠性测试报告 Reliability Test Report1	8
5	环境有害物质管控一览表 RoHS Control list for Sample	9
6	安装事宜或其它 Install Wizard or Other	9
7		



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产品图纸或实物图片

Drawing or Product Image

A	B	C	D	E	F	G												
1	2	3	4	5	6													
<table border="1"><tr><td>REV</td><td>DATE</td><td colspan="3">DESCRIPTION</td></tr><tr><td>A0</td><td>2022.9.5</td><td colspan="3">New Issue</td></tr></table>						REV	DATE	DESCRIPTION			A0	2022.9.5	New Issue					
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A0	2022.9.5	New Issue																
																		
<table border="1"><tr><td>1</td><td>FPC</td><td>FPC-黑油黑字 半对半基材，做电镀处理 3M 947 青胶</td><td>1</td><td>Q'TY</td><td>REMARK</td></tr><tr><td>NO</td><td colspan="3">DESCRIPTION</td><td colspan="2"></td></tr></table>						1	FPC	FPC-黑油黑字 半对半基材，做电镀处理 3M 947 青胶	1	Q'TY	REMARK	NO	DESCRIPTION					
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NO	DESCRIPTION																	
XX.	±5	APPROVED	CUSTOMER:	中科微电														
X.	±3.0	符学荣	PART NAME:	WG天线 (ZQC-P1) FPC (丝印 ZQC-P1 WG)														
		CHECKED																
.X	±1.0		SDC P/NO :	WG254BB-A														
.XX	±0.5	李丽娜	REV	UNIT	FILE :													
.XXX	±0.1	DRAWING																
		李丽娜	A0	m/m	SHEET : 1/3													



样品尺寸测量报告

Sample Dimensions Test Report

测试日期 Test Date	2022. 9. 5	样品数量 Sample Qty.	3	测试人 Inspector	许燕芳
尺寸编号 Dimension No.	标准 Standard	样品 1 Sample 1	样品 2 Sample 2	样品 3 Sample 3	Pass/NG
①长度	24. 7±0. 2mm	24. 7	24. 7	24. 7	Pass
②宽度	8. 1±0. 2mm	8. 1	8. 1	8. 1	Pass
③厚度	0. 1±0. 03mm	0. 1	0. 1	0. 1	Pass
④线长					
⑤					
⑥					
⑦					
最终结论 Conclusion					PASS
测试人&日期 Inspector & Date	许燕芳 2022. 9. 5	批准&日期 Approval & Date			



射频性能测量报告

RF Performance Test Report

天线测试设备简介

Antenna Test Equipment Introduction

测试天线输入特性使用 Agilent E5071C 和 Agilent 5062A 矢量网络分析仪；辐射特性利用广屏三维近场暗室进行测试，并分别使用 8960 E5515 和 Agilent E4438C 进行了分析。暗房的测试坐标如下：

Test of antenna input characteristics using Agilent E5071C and Agilent 5062A vector network analyzer; The radiation pattern of the antenna are tested using the guangping 3D near field Anechoic Chamber, and the instrument is used to agilent8960 E5515 and Agilent E4438C. The test coordinates of the darkroom are as follows:

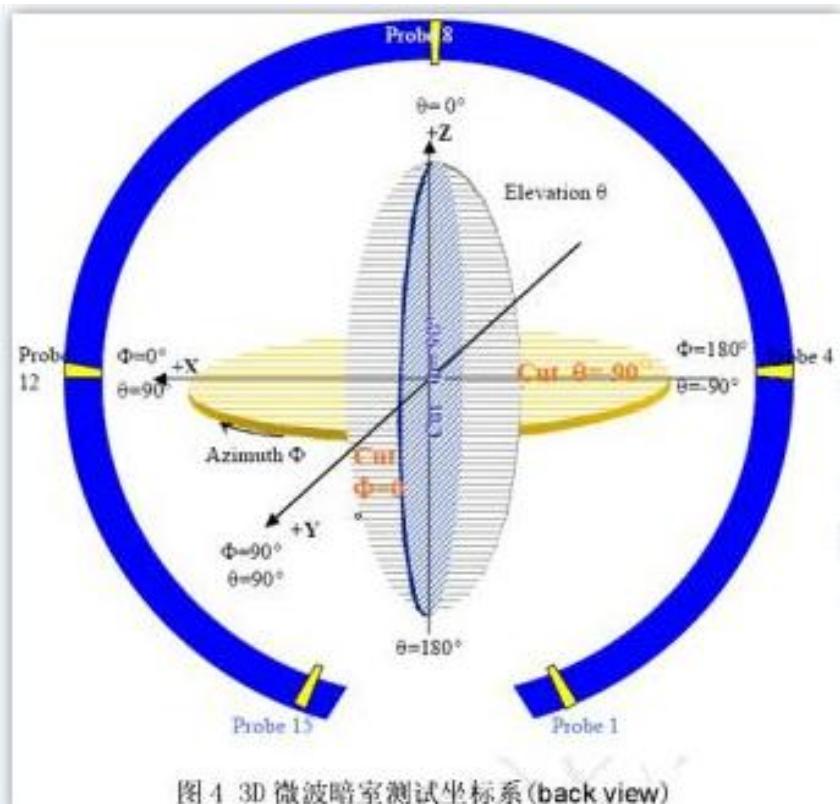


图 4 3D 微波暗室测试坐标系 (back view)

1. S11 参数测量/S11 Parameter-VSWR

使用一根 50Ω 同轴电缆连接到天线，然后该电缆连接到网络分析仪测量 S11 参数，被测量产品远离金属至少 20 厘米。

Measuring Method is a 50Ω coaxial cable is connected to the antenna. Then this cable is connected to a network analyzer to measure the S11 parameter, Keeping this fixture away from metal at least 20cm.

S11 Parameter-VSWR



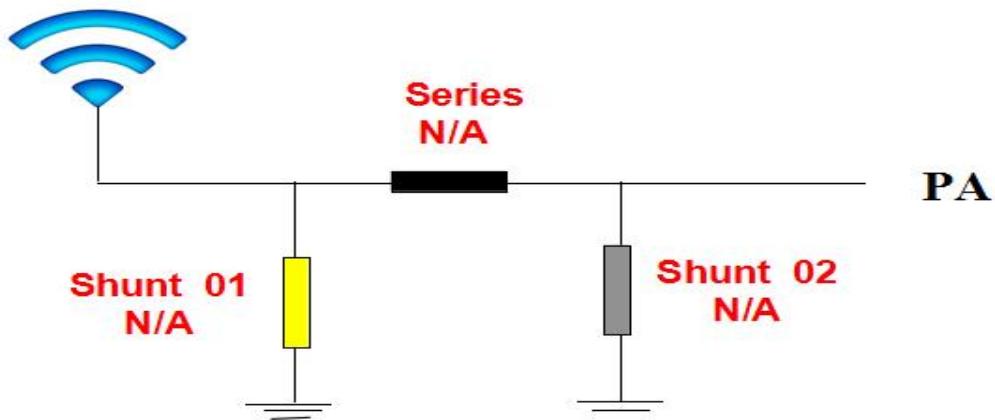
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频率 (MHZ)	2400	2450	2500	5150	5720	5850
驻波比	1.25	1.25	1.9	1.51	2	1.44



2. 天线匹配网络/Antenna Matching Network

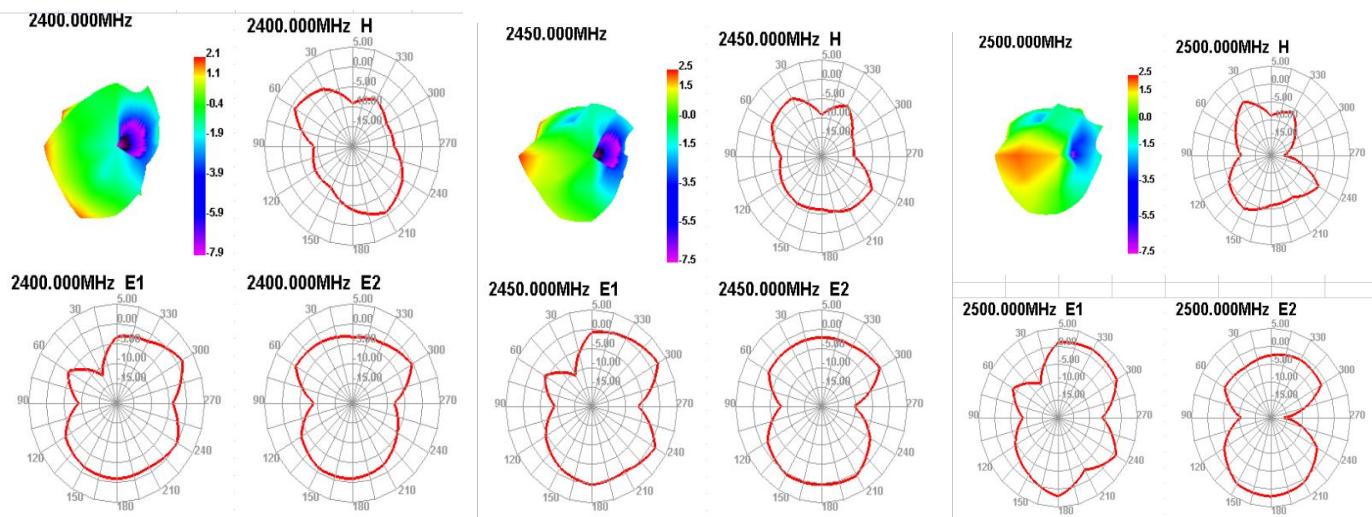
Antenna



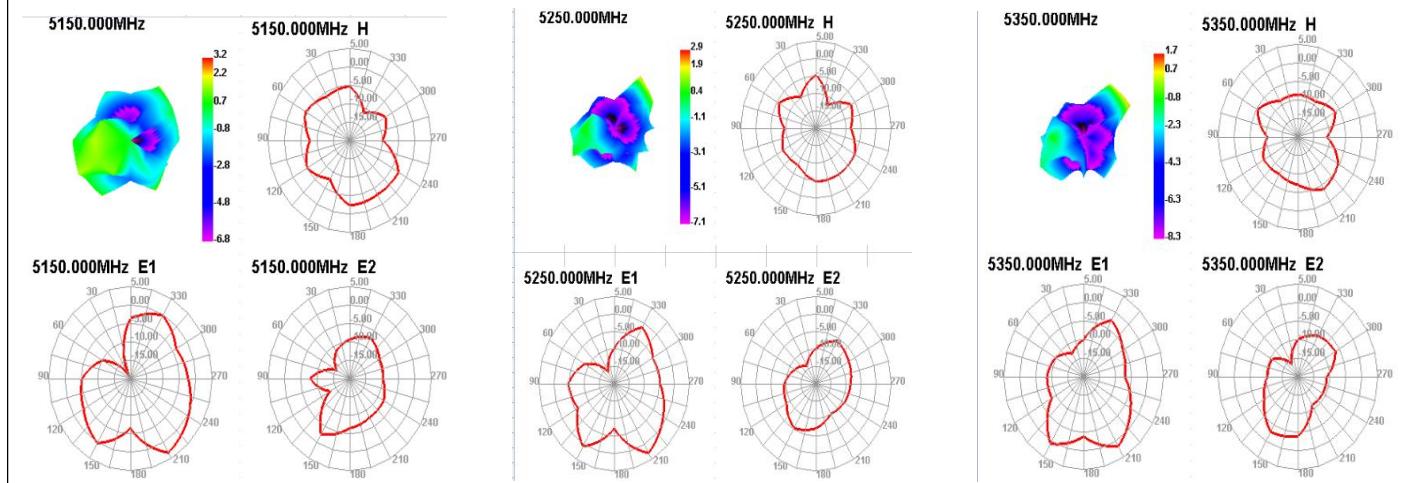


3. Gain & Efficiency

Passive Test For 2.4G												
Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)	Gain (dBd)	UHIS (%)	DHIS (%)	Max (dB)	Min (dB)	irectivit (dBi)	Beamwidth (3dB)	AttH (dB)	AttV (dB)
2400	46.33	-2.49	2.06	-0.09	26.642	29.686	2.06	-12.21	4.55	0	47.77	47.82
2425	45.47	-2.56	1.89	-0.26	25.554	29.914	1.89	-11.2	4.45	30	48.06	48.12
2450	49.29	-2.27	2.46	0.31	26.96	32.331	2.46	-11.52	4.73	30	48.56	48.53
2475	47.89	-2.37	2.6	0.45	25.861	32.025	2.6	-13.06	4.98	60	48.46	48.26
2500	48.39	-2.34	2.52	0.37	25.477	32.917	2.52	-15.97	4.86	0	48.42	48.12

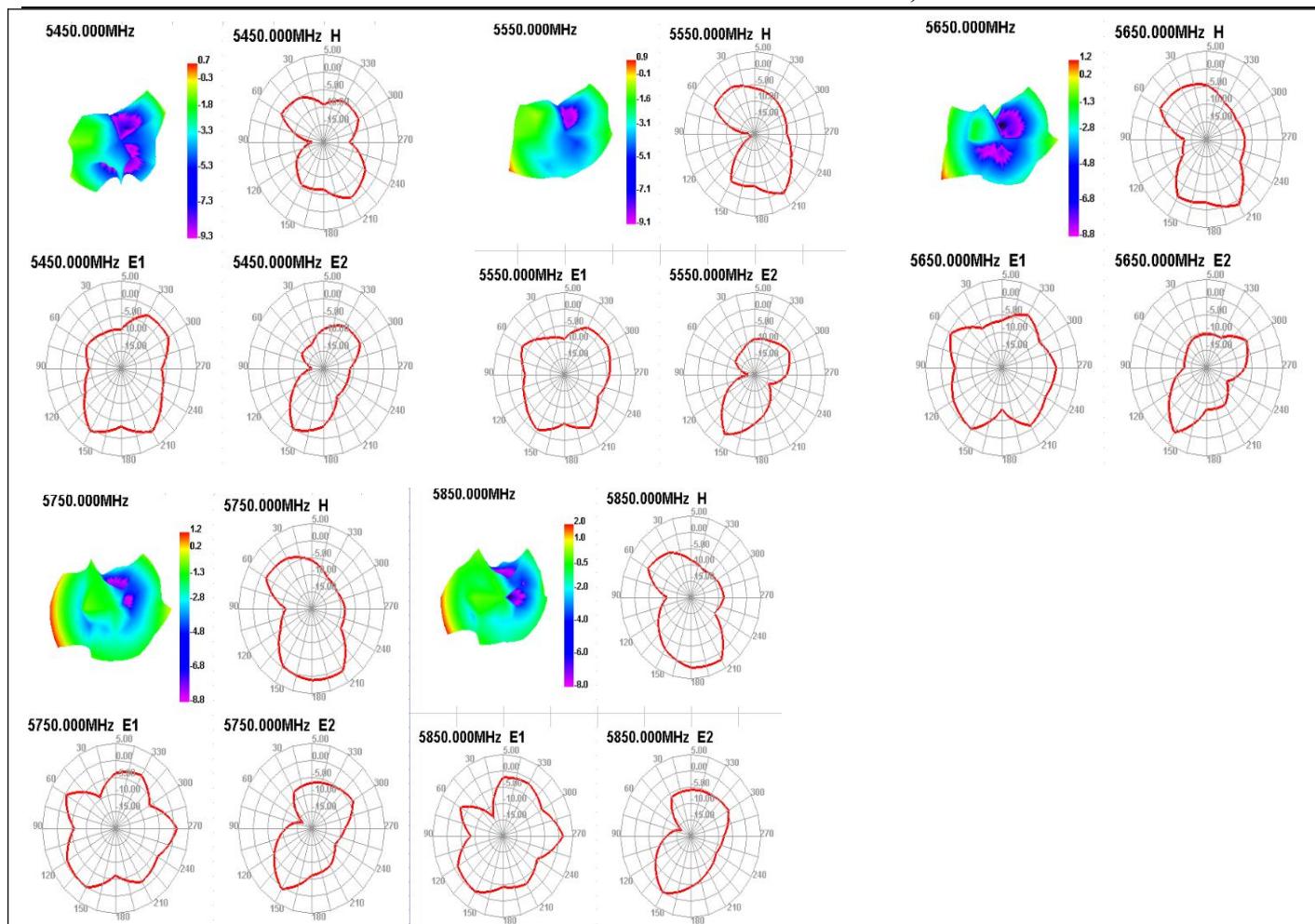


Passive Test For 5.8G												
Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)	Gain (dBd)	UHIS (%)	DHIS (%)	Max (dB)	Min (dB)	irectivit (dBi)	Beamwidth (3dB)	AttH (dB)	AttV (dB)
5150	40.29	-3.95	3.22	1.07	13.819	26.475	3.22	-21.65	7.17	30	58.6	58.01
5250	32.81	-4.84	2.89	0.74	10.959	21.849	2.89	-16.2	7.73	0	58.53	57.74
5350	37.08	-5.67	1.66	-0.49	8.676	18.408	1.66	-16.08	7.33	0	57.99	57.08
5450	38.77	-5.41	0.68	-1.47	11.252	17.523	0.68	-16.09	6.09	0	59.19	57.9
5550	36.05	-5.08	0.93	-1.22	13.257	17.792	0.93	-18.73	6.01	0	60.21	58.81
5650	35.99	-4.44	1.25	-0.9	14.61	21.381	1.25	-14.34	5.69	30	60.31	59.42
5750	39.86	-3.99	1.17	-0.98	17.494	22.366	1.17	-16.91	5.17	0	60.88	60.28
5850	40.32	-3.94	1.96	-0.19	19.19	21.132	1.96	-16.4	5.91	0	61.09	60.41





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4. WIFI OTA Data

2. 4G		802. 11b, (2. 4G) 11M		
Channel		CH1	CH6	CH11
TRP		12. 31	12. 58	12. 57
TIS		-77. 65	-77. 57	-77. 63
5. 8G		802. 11A, (5. 8G) 54M		
Channel		CH36	CH60	CH161
TRP		8. 41	8. 58	8. 65
TIS		-66. 57	-66. 54	-66. 34