

Shenzhen Yosong Communication Technology Co., Ltd

Antenna specification

Customer : _____ softwin _____

Project Name : _____ FPC _____

Material name : _____ FPC-YS -MAIN/cable_L 72mm_black _____

Material Part Number : _____ YSWINDOWSBLEFBV1 _____

Maximum Gain : _____ 2.94dBi _____

Prepared Date : _____ 2021 11 21 _____

Yosong Technology				Customer			
RF	MD	QE	Approved by	Engineering	PM	Quality	Approved by
ChenChao qing	Heye	Yaoxuechun	Zhouhao				

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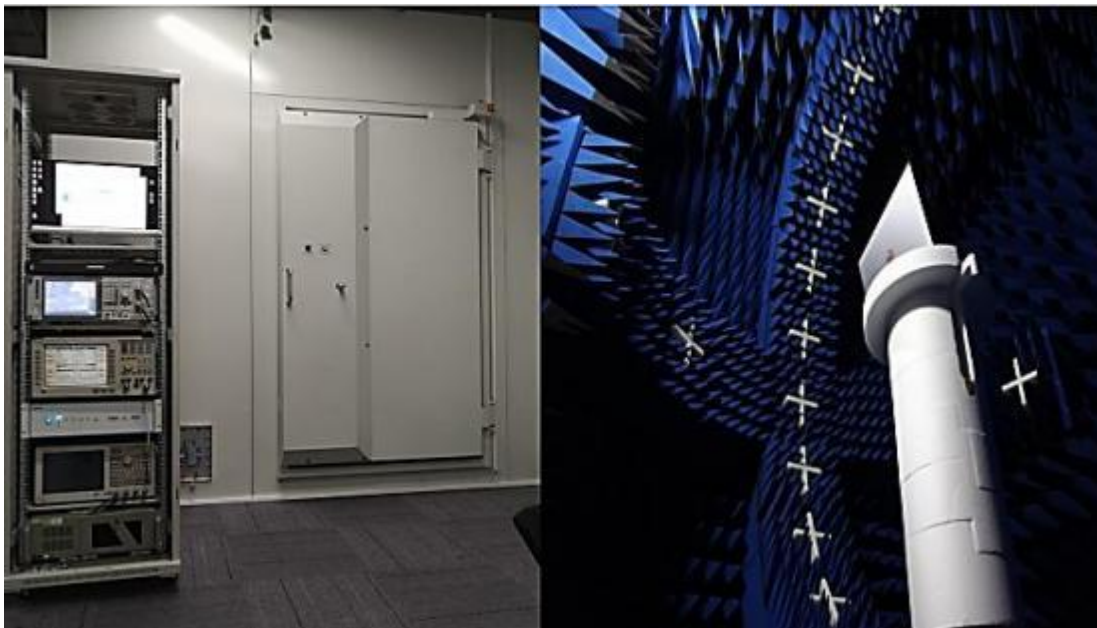
1. RF performance test

1.1 Photo of the physical terminal product sample



1.2 Test equipment and environment

RF test equipment	CMW500 ,ANRITSU MT8820C,AGILENT E5071C
Cabinet	Atenlab M3
Test Engineer	Chen Chaoqing
Temp,	25°C
Humidity	60% (RH)

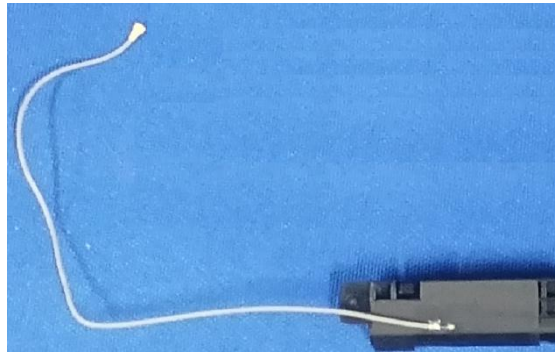


1.3 S11 Measurement

The S11 parameter was performed using a Hewlett Packard 5071B Network Analyzer and YoSong's test fixture that was using customer-providing device. We use a 30cm long ferrite de-coupling sleeve to mitigate surface currents on the outside of the testing cable. The matching circuit was shown below:

Material	FPC
Matched Circuit	No change

1.4 Diagram reference

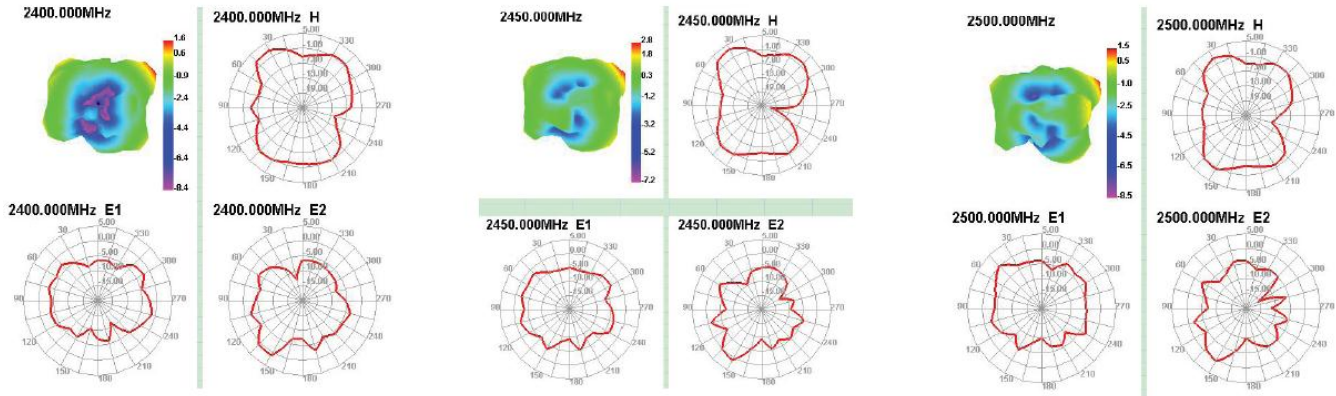


1.5 Antenna Return Loss(RL) and SWR



Frequency (MHZ)	2400	2500	5150	5850
VSWR	1.52	1.29	1.68	1.23
Return Loss (DB)	-13.58	-17.85	-11.91	-19.59

Passive Test For 2.4G												
Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)	Gain (dBd)	UHIS (%)	DHIS (%)	Max (dB)	Min (dB)	Directivity (dBi)	Beamwidth (3dB)	AttH (dB)	AttV (dB)
2400	43.16	-3.65	1.6	-0.55	19.258	23.901	1.6	-14.49	5.25	30	52.44	52.61
2410	40.88	-3.88	1.71	-0.44	18.078	22.804	1.71	-13.66	5.6	30	52.37	52.53
2420	42.89	-3.68	2.36	0.21	18.982	23.912	2.36	-13.73	6.04	30	52.38	52.56
2430	43.06	-3.66	2.61	0.46	19.058	24.005	2.61	-15.45	6.27	75	52.56	52.67
2440	42.84	-3.68	2.75	0.6	19.084	23.76	2.75	-18.19	6.43	75	52.86	53.02
2450	43.68	-3.6	2.94	0.68	19.5	24.177	2.54	-21.11	6.43	75	52.73	52.84
2460	41.24	-3.85	2.55	0.4	18.664	22.574	2.55	-23.09	6.4	75	52.67	52.76
2470	39.49	-4.03	2.23	0.08	17.852	21.64	2.23	-23.28	6.26	30	52.57	52.66
2480	40.29	-3.95	2.13	-0.02	18.457	21.831	2.13	-19.88	6.08	30	52.78	52.88
2490	41.55	-3.81	1.91	-0.24	18.904	22.65	1.91	-18.13	5.73	15	53.06	53.25
2500	41.63	-3.81	1.54	-0.61	19.381	22.247	1.54	-15.63	5.35	15	52.92	53.06



1.6 Antenna passive test data

Passive Test			Passive Test For 5G		
Freq (MHz)	Effi (%)	Effi (dB)	Freq (MHz)	Effi (%)	Effi (dB)
2400	41.43	-3.83	5000	45.28	-3.44
2450	38.51	-4.14	5100	44.79	-3.49
2500	34.76	-4.59	5200	43.32	-3.63
			5300	42.54	-3.71
			5400	41.38	-3.83
			5500	40.49	-3.93
			5600	39.56	-4.03
			5700	38.47	-4.15
			5800	37.05	-4.31

2. Physical dimensions inspection report

Project			Material					Date	
ANT			FPC					2021.11.20	
Inspection item		Criteria	Inspection data					Result	Remarks
			1	2	3	4	5		
Appearance	Scratch	Refer to the internal inspection standard	OK	OK	OK	OK	OK	OK	
	Damaged		OK	OK	OK	OK	OK	OK	
	Contamination		OK	OK	OK	OK	OK	OK	
	Deformed		OK	OK	OK	OK	OK	OK	
	Others		OK	OK	OK	OK	OK	OK	
Physical MD dimension	A1	44.53±0.2	44.55	44.56	44.53	44.53	44.52	OK	
	A2	7.34±0.2	7.36	7.35	7.34	7.33	7.34	OK	
	A3								
	A4								
	A5								
	A6								

3. Reliability test report

Test Item	Test condition	Test result	Test date	Result
Bending test	Bending times : 20times ; Bending angle : Left-right at 180 degree ; Pivot diameter : 0.8-1.0mm ; Bending Frequency : 45 次/min	Test OK No open-short circuit after test	20/11/2021	OK
Salt fog test	a.35±2°C , H.D. >85%,PH=6.5~7.2 , 5% ± 1% NaCl salt fog sprayed for 48 H ; b. Recover to ambient Temp. after test to check the golden finger and soldering pad	Test OK No rust cosmetic issue	20/11/2021	OK
Thermal Shock test	a. (1) -40 °C (30min) ;(2)25°C (30min) ; (3)85°C (30min) ; (4)25°C (30min) ; b. Recover to ambient Temp. after test to check the appearance	Test OK No layer peeling off	20/11/2021	OK
Golden finger peel-off performance test	a. Use the specialized equipment b. Stiffener : >1.0 Kgf/cm ² ; c. Cover film : >0.65 Kgf/cm ² ; d. Base material : >1.0 Kgf/cm ² ;	Stiffener :1.2 Kgf/cm ² Cover film : 0.7 Kgf/cm ² 以上 ; Base material : 1.2 Kgf/cm ²	20/11/2021	OK
Adhesive test	a. 3M600# tape; b. Printing character test: No peeling off; c. Golden pad test : No metal layer peeling off ;	Test OK	20/11/2021	OK
High Temp. test	a. Baking Temp.:155°C ~165°C ; b. Duration : 60min ; c. Oven Temp. : 260°± 5°; d. Still duration : 10sec ; No layer or bubble after test	Test OK	20/11/2021	OK
Soldering test	a. Baking Temp : 260°± 5°; b. Still duration : 3-5sec ; c. Soldering area≥95% ;	Test OK Soldering area>95%	20/11/2021	OK

4. Regulation report

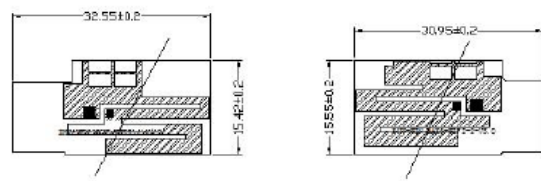
Enclose the material RoSH/MSDS documents and report(Within expiration)

MSDS		
材料名称	ROHS	MSDS
CVL		
CCL		
PI		

5. Engineering drawing




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由 Autodesk 教育版产品制作



由 Autodesk 教育版产品制作

注:

1: 金手指镀镍金	
1: 布铜区域	
2: 基材区域	

5. 请放采用32 50XLS. 数据在3000P以上, 无漏测项, 请放将单与材料一致, 要在密封背面, 面做做半读;

4. FPC材料电绝缘, 绝缘层, 厚度为一对半毫米, 柔软性要好;

6. 产品表面应做180°折弯来无毛刺现象, 柔软性要好;

6. 金手指表面镀镍金“Ni”, 不可有氧化现象, 以铜箔在表面, 经180°折弯之后无断裂、不导电现象, 弯折后可不导电;

7. 公差及其精度公差范围: ±0.05mm, 外形尺寸公差控制在0.1mm以内;

8. 未标注尺寸按GB2101执行1:1; 公差;

9. 未开模产品打样外形需按图加工, 如用手工切割, 要注意外形要圆滑一些, 已开模产品打样外形要用模具冲切;

10. 用兴泰材料, 是要做好表面处理, 在这时到兴泰;

11. 装订符号, 具体内容及位置见图

手撕位

FPC黑色 丝印亮黑色字码

深圳市鑫恒阳科技有限公司

图号	第三角法	比例	材料	日期	图例	1 of 1
0~10	±0.10	0.02	名称	设计	审核	
10~20	±0.12	0.03	牌号			
20~40	±0.15	0.04	材质	FPC	工程	
40~	±0.20	0.04	表面处理		确认	
		0.02	表面处理		单位	
			比例	1:1	版本	EXP1A

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6. Packaging

Follow the customer packaging requirement, if not conduct Yosong internal standard.

7. Others

FPC 使用说明

Instruction of FPC

S/N	注意事项 Note
1	严禁裸手接触镀层，易使产品镀层变色 No touching the plating with naked hand for it may easily destroys it's color.
2	FPC 拿放须保持平整、轻拿、轻放，搬运中严禁折弯 Lightly handle and no bend in the delivery.
3	FPC 镀层及根部不能作为弯折点，易使镀层断裂 No bend on the plating surface or the end of the plating area or the plating is easily broken
4	贮存期限：<6 个月，建议 3 个月内完成上线使用，以达到最佳效果 Storage Period: No more than six months and has the best effect with three months.
5	品质保证期限：FPC 品质从出货日期起保证期限 < 6 个月。 Quality Assurance Period: Less than six months from the delivery.
6	贮存要求：温度 $20^{\circ}\text{C} \pm 2^{\circ}\text{C}$ ，相对湿度 $\leq 70\%$ ， Storage: :Temp $20^{\circ}\text{C} \pm 2^{\circ}\text{C}$ Relative Humidity $\leq 70\%$