

承 认 书

SPECIFICATION APPROVAL SHEET

客 户 :

CUSTOMER

客 户 料 号 :

CUS PART NO

版次:

REV X1

品 名 / 规格 : RF Antenna(White)2.4~2.5/5.15~5.85GHz

SPECIFICATION

5dBi L=300mm(Ø1.13白色+MHF)

单重:

weight 15.5g

供 方 料 号 : 刀形,白色,PCB+弹簧,(杆套+固定座)

SUP PART NO

SLEingA200140300-C06

日 期 :

DATE

2020.01.08

厂 商 核 准 :

SUP APPROVED

核准 APPROVED	审核 CHECKED	品保审核 QA CHECKED	承办 DESIGNED
<i>Jerry Per</i>	<i>JBX</i>	<i>ZQ</i>	<i>Xiang</i>

客 户 核 准 :

CUS APPROVED

核准 APPROVED	审核 CHECKED	品保审核 QA CHECKED	承办 DESIGNED

东莞市森岭智能科技有限公司

DONGGUAN CITY SLEing INTEL-TECH CO., LTD

中国广东省东莞市松山湖工业东路24号现代企业加速器6栋402

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正本由承办单位保存



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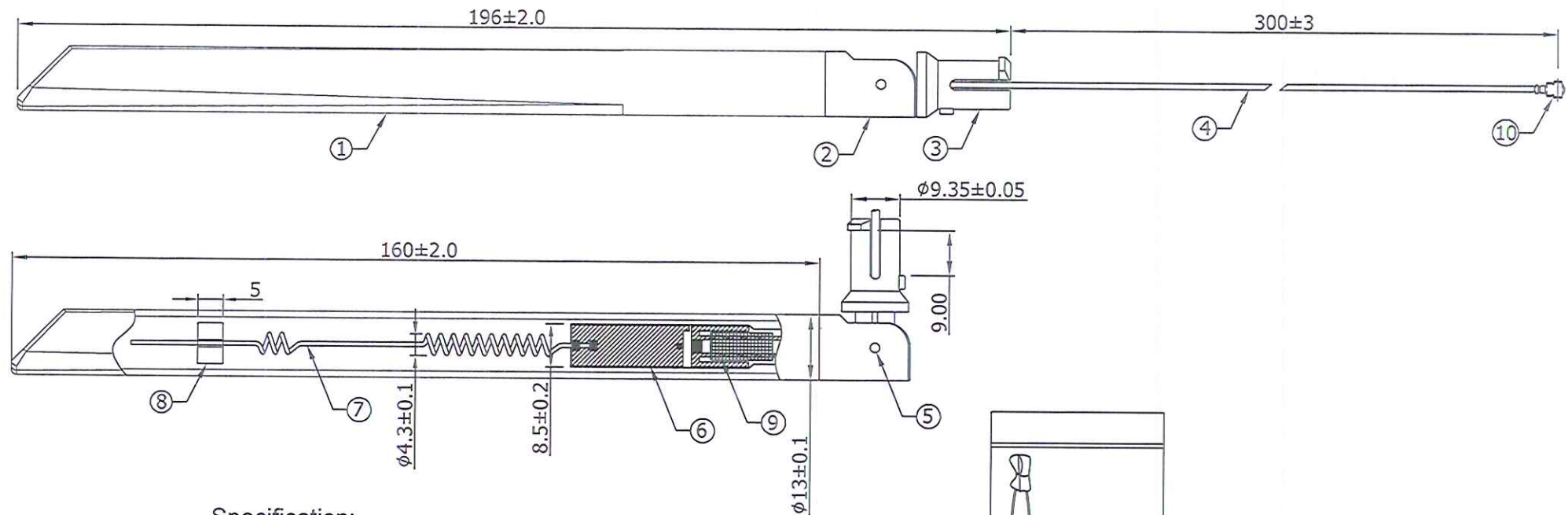
承认书项目表

序号	项目	附件资料		备注
		有	无	
1	承认书封面 (Spec Cover)	☐	☐	1. 封面需注明产品料号、品名规格 2. 经主管核准后加盖公司印章
	客户满意度 (Customer satisfaction)	☐	☐	请客户对我司给予真诚的评价
2	承认书项目表 (Spec Item)	☐	☐	
3	工程成品图 (Drawing)	☐	☐	
4	电性测试报告 (Test Reports)	☐	☐	
5	S参数测试 (S Parameter)	☐	☐	与产品一致
6	方向图(Patten)/测试效率 (Test Efficiency)	☐	☐	与产品一致
7	SGS报告 (SGS Report)	☐	☐	1. 需依产品材质类别及颜色分别提供 2. 报告有效期为一年
8	其它	☐	☐	依贵司具体要求另行说明
9		☐	☐	
10		☐	☐	
11		☐	☐	

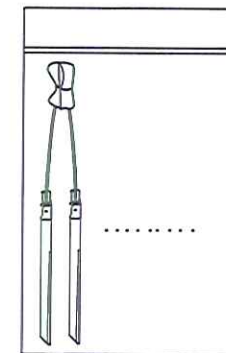
说明:

1. 承认书内容需依查核表项目依顺序排列。
2. 承认书依客户要求打印份数, SGS报告需加盖工程章.
3. 所有材料一律经过客户确认后, 任何材料/制程/可能影响产品品质及环境品质的变更, 都必需重新送样给客户确认后方可导入。
4. SGS报告有效期为一年。
5. 依实际承认书所附件内容在查核表中勾选: “有” 为已提供, “无” 根据客户要求提供。

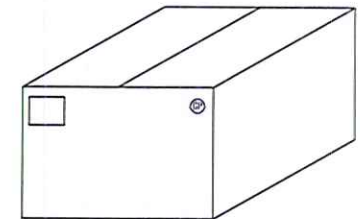
REV.	CONTENT	DATE
X1	First Sample	2020.01.08



Specification:
Frequency Rang:2.4~2.5/5.15~5.85GHz
Return Loss:-10dB or less
VSWR:1.92 Max
Gain:5.0±0.5 dBi



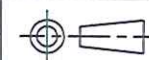
25pcs/Bundle
Packing:50pcs/bag



外箱须贴GP标签与物料标签各1PCS

10	Connector	MHF Plug for $\Phi 1.13$ Cable		1
9	Foma	L10*W5*H2.0mm,Black		1
8	Foma	L9.0*W8.0*T5.0mm,Black		1
7	Helix	L92.3* $\Phi 4.3$ mm,Brass		1
6	PCB	FR4,L47.7W8.5T0.4mm,Black		1
5	Rivet	POM,Color:White		2
4	Cable	$\Phi 1.13$ mm Coaxial Cable White,50 Ω		1
3	Bottom Base	PC,Color:White		1
2	Upper Base	PC,Color:White		1
1	Antenna Cap	TPEE,Color:White		1
NO	PART NAME	DESCRIPTION	REMARK	Q'TY

SLEing® 森岭
东莞市森岭智能科技有限公司
DONGGUAN SLEing INTEL-TECH CO.,LTD



TOLERANCE UNLESS
OTHERWISE SPECIFIED

UNIT:mm

SHEET: 1/1

SCALE: 1/1

ANGLES $\pm 0.5^\circ$

XX ± 0.05

XXX. ± 2.0

CUSTOMER			
PART NO			
TITLE		RF ANTENNA CABLE ASSEMBLY	
S.L P/NO		SLEingA200140300-C06	
SIZE	DRAWN	CHECKED	APPROVED
A4	Xi	2020.01.08	Touy

电性测试报告

Test Reports

Electrical Properties	
Frequency	2.4~2.5/5.15~5.85GHz
Impedance	50 Ohm Nominal
V.S.W.R	≤ 1.92
Return Loss	-10 dB Max
Radiation	Omni-directional
Gain (Peak)	5 $\pm$ 0.5dBi
Polarization	Linear, Vertical
Admitted Power	2 W
Connector	MHF
Physical Properties	
Antenna Material	TPEE/PC/POM
Antenna Color .	White
Cable Type	Φ 1.13mm White
Operating Temp	-40 ~ +85 °C
Storage Temp	-40 ~ +85 °C

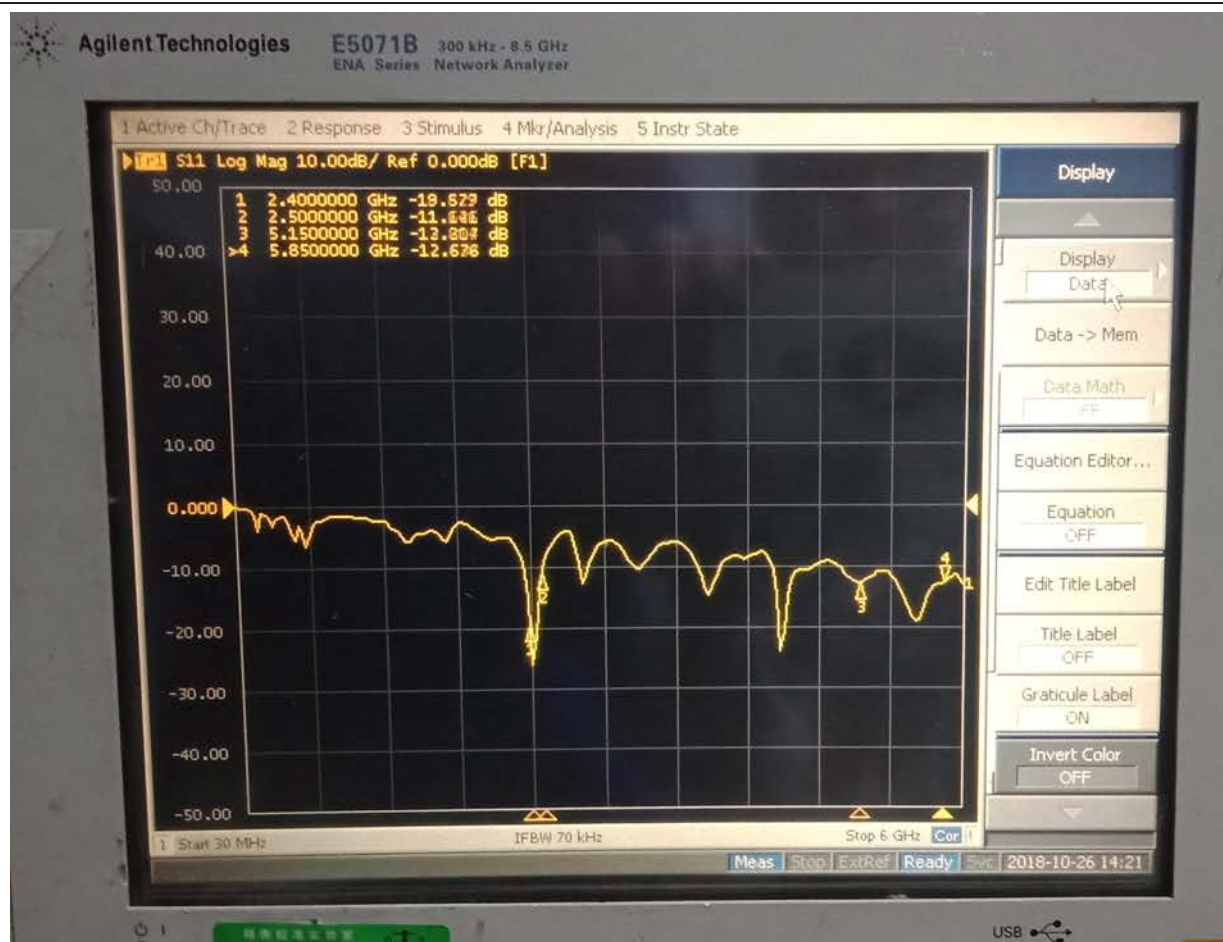
S 参数测试

S Parameter Test

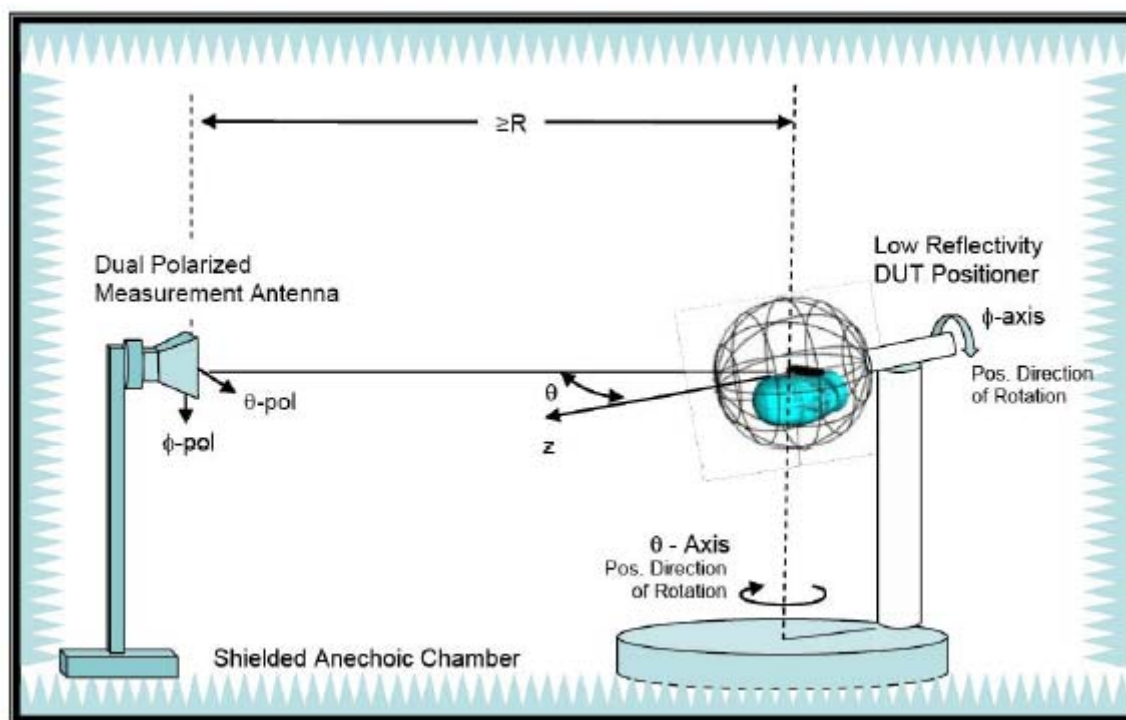
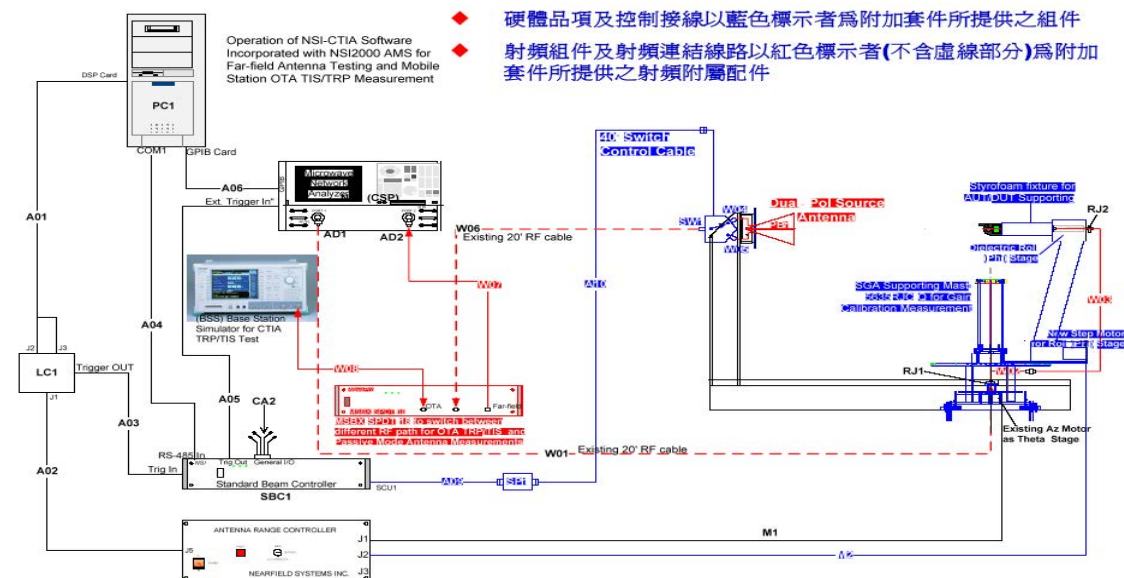
Agilent E5071C Network Analyzer



RF Antenna (NO. 1)



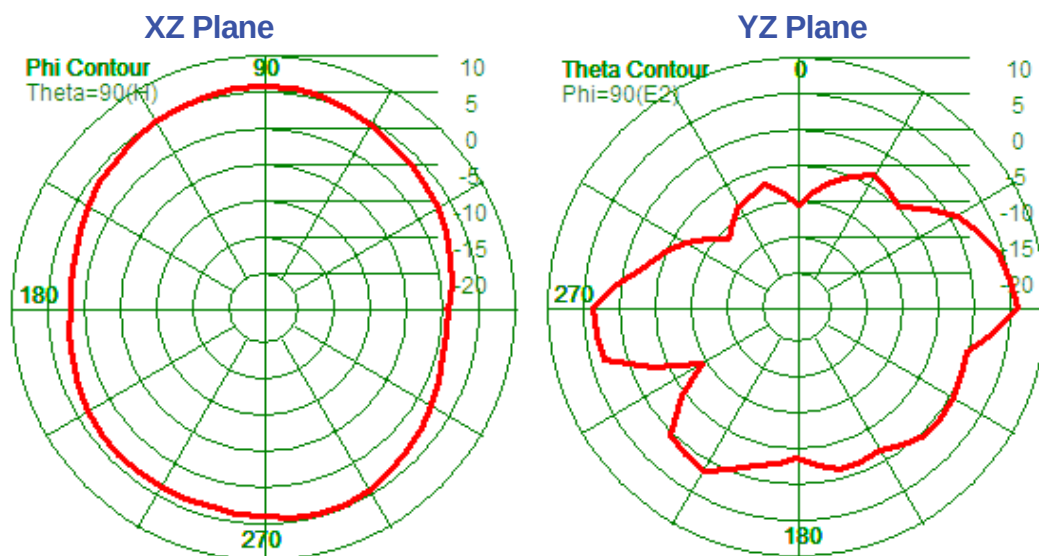
1.2 Test Setup



Configuration of 3D Chamber

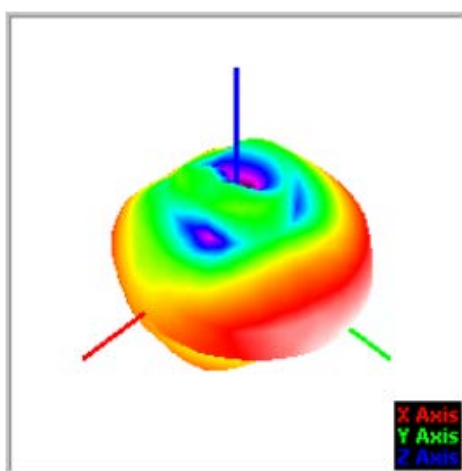
方向图 2.4G Patten

1.3 2D Radiation patterns test results (Passive Antenna)



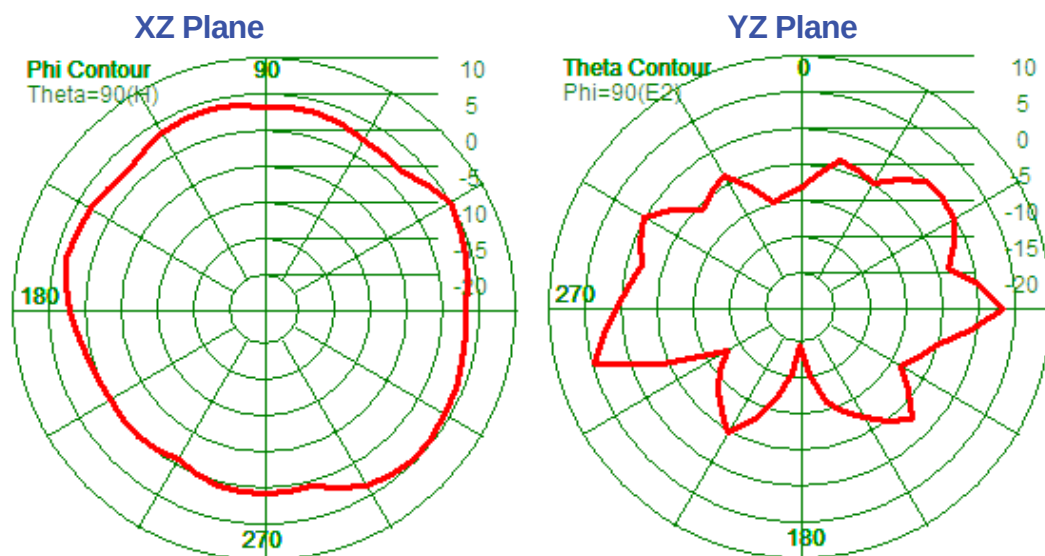
1.5 3D Radiation patterns test results (Passive Antenna)

3D



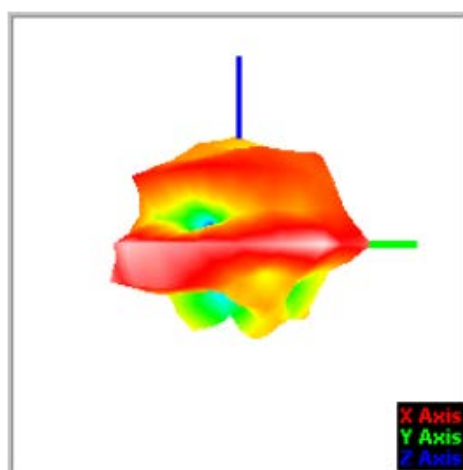
方向图 5.8G Patten

1.3 2D Radiation patterns test results (Passive Antenna)



1.5 3D Radiation patterns test results (Passive Antenna)

3D



测试效率

Test Efficiency

2. 4G

Test Point ID	Freq. (MHz)	TRP (dBm)	Gain (dBi)	Directivity (dBi)	Efficiency (dB)	Efficiency (%)	Max (dBm)	Theta of Max	Phi of Max	Min (dBm)	Theta of Min	Phi of Min	AVG (dBm)	Max/Min (dB)	Max/AVG (dB)	Min/AVG (dB)
1	2400.0	2400.00	5.81	6.04	94.9%	-0.23	5.81	90	90	-12.24	0	0	-0.54	18.05	6.36	-11.70
2	2410.0	2410.00	5.72	5.98	94.3%	-0.26	5.72	90	90	-11.86	0	0	-0.68	17.58	6.40	-11.18
3	2420.0	2420.00	5.45	5.99	88.2%	-0.54	5.45	90	90	-11.57	0	0	-0.97	17.02	6.42	-10.60
4	2430.0	2430.00	5.21	6.04	82.6%	-0.83	5.21	90	90	-11.28	0	0	-1.19	16.49	6.41	-10.09
5	2440.0	2440.00	5.24	5.97	84.6%	-0.73	5.24	90	90	-10.91	0	0	-1.18	16.15	6.42	-9.73
6	2450.0	2450.00	4.81	5.95	76.8%	-1.14	4.81	90	75	-11.29	0	120	-1.67	16.10	6.48	-9.62
7	2460.0	2460.00	4.87	5.88	79.2%	-1.01	4.87	90	75	-11.24	0	0	-1.71	16.11	6.57	-9.54
8	2470.0	2470.00	4.62	5.91	74.4%	-1.29	4.62	90	75	-11.52	0	0	-2.00	16.15	6.62	-9.53
9	2480.0	2480.00	4.93	5.84	81.0%	-0.91	4.93	90	75	-11.69	135	135	-1.66	16.62	6.59	-10.03
10	2490.0	2490.00	4.64	5.84	75.9%	-1.20	4.64	90	75	-12.41	135	135	-1.93	17.05	6.57	-10.48
11	2500.0	2500.00	4.46	5.79	73.6%	-1.33	4.46	90	75	-12.39	135	135	-2.06	16.85	6.52	-10.33
12	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

5. 8G

Test Point ID	Freq. (MHz)	TRP (dBm)	Gain (dBi)	Directivity (dBi)	Efficiency (dB)	Efficiency (%)	Max (dBm)	Theta of Max	Phi of Max	Min (dBm)	Theta of Min	Phi of Min	AVG (dBm)	Max/Min (dB)	Max/AVG (dB)	Min/AVG (dB)
1	5150.0	5150.00	5.14	6.02	81.5%	-0.89	5.14	105	225	-22.33	180	60	-2.33	27.47	7.47	-20.00
2	5250.0	5250.00	4.22	5.65	72.1%	-1.42	4.22	90	315	-26.52	180	45	-3.16	30.74	7.38	-23.36
3	5350.0	5350.00	4.87	6.28	72.2%	-1.41	4.87	90	315	-18.59	180	15	-2.50	23.46	7.37	-16.09
4	5450.0	5450.00	3.70	6.10	57.5%	-2.40	3.70	90	300	-23.19	180	0	-3.55	26.89	7.25	-19.64
5	5550.0	5550.00	3.47	5.61	61.0%	-2.15	3.47	75	45	-17.41	120	210	-3.91	20.87	7.37	-13.50
6	5650.0	5650.00	5.40	5.95	88.1%	-0.55	5.40	75	45	-15.00	15	180	-2.37	20.40	7.77	-12.64
7	5750.0	5750.00	4.62	5.84	75.6%	-1.22	4.62	90	270	-17.58	105	180	-2.69	22.21	7.32	-14.89
8	5850.0	5850.00	4.31	5.14	82.6%	-0.83	4.31	90	270	-16.69	135	15	-2.38	21.00	6.68	-14.31
9	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

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Reliability Test Report

Product Name : RF ANTENNA ASSEMBLY

SL Part. No:

SLEingA200140300-C06

Date :2020/01/08

Antenna Specification:

a.Frequency :2.4-2.5/5.15~5.85GHz

b.Mark-piont selected at 2.4GHz、2.5GHz、5.15 GHz、5.85GHz

c.Return Loss :< -10 dB

Test Results : ☒ PASS ☐ NG

Review By	Prepared By
	王星刚

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Test Index :

No.	Test Item	Specification	Refer STD	Sample Q'ty(pcs)	Result
1	High Temperature Test	80℃ 24 hours	Follow Customer STD	3	OK
2	Low Temperature Storage Test	- 40℃ 8 hours	Follow Customer STD	3	OK
3	Thermal Shock Test	- 40~80℃ 30min 10 cycles	JIS C 0025	3	OK

1.Test Item : High Temperature Test

1-1 Test equipment : Thermal Shock Test Chamber

1-2 Test ambience : Temperature : 25±5℃

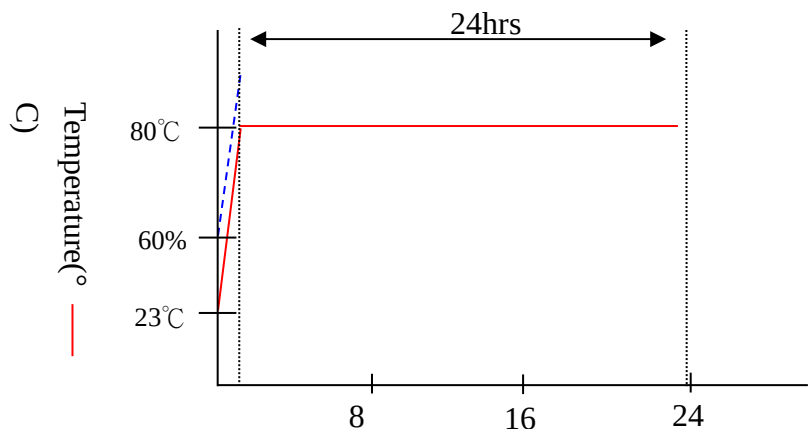
Humidity(R.H) : 30~65%

1-3 Sample quantity : 3 pcs

1-4 Test method : Follow Customer STD

Temperature: 80℃

Total Time: 24 Hrs



1-5 Test result : ☒ PASS ☐ NG

1-5-1. Visual inspection : ☒ PASS ☐ NG

1-5-2 Frequency :2.4-2.5/5.15~5.85GHz

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Mark-piont selected at 2.4-2.5/5.15~5.85GHz。

Return Loss :< -10 dB

1-5-3. Functional test as below :

Sample	Before test (unit :dB)				After test (unie:dB)				Result
	Test frequency				Test frequency				
	2. 4GHz	2. 5GHz	5. 15GHz	5. 85GHz	2. 4GHz	2. 5GHz	5. 15GHz	5. 85GHz	(RL<-10dB)
01	-13. 88	-15. 24	-14. 32	-12. 23	-13. 64	-12. 88	-11. 29	-14. 01	PASS
02	-12. 55	-12. 34	-13. 54	-13. 27	-13. 38	-11. 55	-13. 09	-19. 22	PASS
03	-13. 96	-13. 63	-12. 16	-13. 92	-14. 15	-13. 82	-11. 88	-14. 37	PASS

1-5-4. Test condition :



High Temperature Test

2.Test Item : Low Temperature Storage Test

2-1 Test equipment : Thermal Shock Test Chamber

2-2 Test ambience : Temperature : $25\pm 5^{\circ}\text{C}$

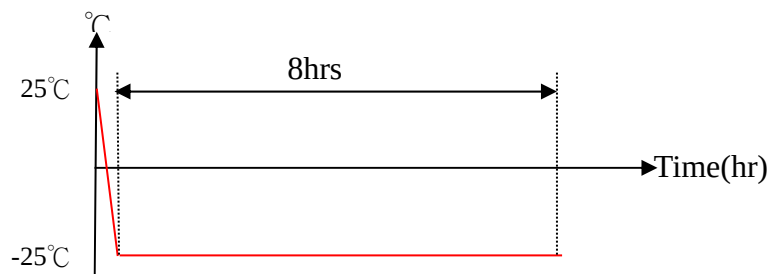
Humidity(R.H) : 30~65%

2-3 Sample quantity : 3 pcs

2-4 Test method : Follow Customer STD

Temperature: - 25°C

Total Time: 8 Hrs



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2-5 Test result : ☒ PASS ☐ NG

2-5-1. Visual inspection : ☒ PASS ☐ NG

2-5-2 Frequency :2.4-2.5/5.15~5.85GHz

Mark-point selected at 2.4GHz、2.5GHz、5.15GHz、5.85GHz

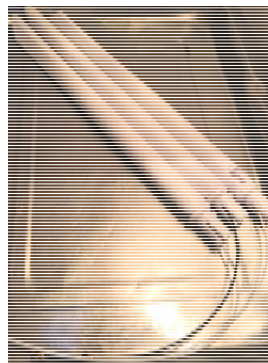
Return Loss :< -10 dB

2-5-3. Functional test as below :

Sample	Before test (unit :dB)				After test (unie:dB)				Result
	Test frequency				Test frequency				
	2. 4GHz	2. 5GHz	5. 15GHz	5. 85GHz	2. 4GHz	2. 5GHz	5. 15GHz	5. 85GHz	(RL<-10dB)
1	-13. 64	-12. 88	-11. 29	-14. 01	-13. 87	-13. 76	-11. 93	-14. 28	PASS
2	-13. 38	-11. 55	-13. 09	-19. 22	-13. 85	-13. 58	-12. 35	-13. 91	PASS
3	-14. 15	-13. 82	-11. 88	-14. 37	-13. 98	-12. 54	-12. 94	-12. 88	PASS

2-5-4. Test condition

Low Temperature Storage Test



3.Test Item : Thermal Shock Test

3-1 Test equipment : Thermal Shock Test Chamber

3-2 Test ambience : Temperature : 25±5℃

Humidity(R.H) : 30~65%

[illegible]

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3-5-4. Test condition :



Thermal Shock Test

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ADD: 中国广东省东莞市松山湖工业东路现代企业加速器6-402-5

摇摆测试记录报告

PART NO.	:SLEingA200140300-C06				
DATE OF INSPECTION	: 2020-01-08				
INSPECTION ITEM	: 摇摆测试				
TEST EQUIPMENT	: 摇摆机				
SPECIFICATION	: 天线摆动测试				
测试项目:					
1.测试天线摆动后，固定座与杆套的松紧度状况。					
测试条件:					
1.天线90°、45° 摇摆200次后，距铆钉80.0mm、160.0mm分别吊重25g、20g砝码静止10秒钟。					
					
					
测试样品	1#	2#	3#		
摇摆次数	200	200	200		
测试结果	天线杆套没有掉落，OK.	天线杆套没有掉落，OK.	天线杆套没有掉落，OK.		
备注:					

审核：刘长兴

制作：张青