



Sample Acknowledgment
Letter

Specification For Approval

Rayleigh Material Code/Part No: RL11W
0000420; Factory Material Code/Part No: RT
404-10006-A; Material Name/Product: Antenna

Material Model/MFN: Built-in PCB antenna (RT-PCB169 V0.0), 2.4 GHz, ϕ 1.13 mm, Gray, L = 56 mm, with IPEX foam padding, double-sided adhesive backing, ROHS compliant

Manufacturer/MFG: Dongguan Ant Co-
mmunications Co., Ltd.; Agent/AGNT:

Project Model/Application: B
016; Software Version:

Material Classification: ☐ electronic component ☐ electroacoustic device ☐ structure
☐ Accessories/Supplementary Materials ☐ Packaging Material ☒ Other

Recognition Category: ☒ New Material Recognition ☐ Specification Change Approval (requires a Change Notice)

Customer Approval	Verify (Engineer)	Inspection (Quality)	Approval (Project)	Acknowledgment Date Date

Supplier Name:				
Supplier Confirmation – Provider Approval	Fabrication Drawn	Examine and verifyCheck	Approval Approval	Sample submission date Date
	Jiang Wenxiang	Song Yifeng	Liu Yunhai	October 9, 2023

Supplier Address: Building E, Delang Industrial Innovation Park, Shalong Road, Shatang Industrial Zone, Houjie Town, Dongguan
City
Tel: 0769-85833836
Fax: 0769-82582573

SPECIFICATION FOR APPROVAL

Customer (Customer Name)	Shenzhen Ruili Acoustic Technology Co., Ltd.							
CS P/N (Client Model)	RL11W0000420							
PART NAME	Built-in PCB antenna (RT-PCB169 V0.0), 2.4 GHz, ϕ 1.13 mm, Gray, L = 57 mm, with IPEX socket and loose foam insulation – ROHS compliant							
Frequency	2.4–2.5GHz							
RTANT NO. (Material Number)	RT404-10006-A							
DATE (Date)	2023. 10. 09							
Sample Sign-off <table border="1"> <tr> <td>APPROVED BY – Approved</td> <td>CHECKED BY – Conf-irm</td> <td>DR-ED BY AWm-ake Do</td> </tr> <tr> <td>Liu Yunhai</td> <td>Song Yifeng</td> <td>Wanxiang</td> </tr> </table>			APPROVED BY – Approved	CHECKED BY – Conf-irm	DR-ED BY AWm-ake Do	Liu Yunhai	Song Yifeng	Wanxiang
APPROVED BY – Approved	CHECKED BY – Conf-irm	DR-ED BY AWm-ake Do						
Liu Yunhai	Song Yifeng	Wanxiang						
Note:								
Customer Acknowledgment and Signature <table border="1"> <tr> <td>APPROVED BY – Approved</td> <td>CHECKED BY – Conf-irm</td> <td>TESTED BY</td> </tr> <tr> <td></td> <td></td> <td></td> </tr> </table>			APPROVED BY – Approved	CHECKED BY – Conf-irm	TESTED BY			
APPROVED BY – Approved	CHECKED BY – Conf-irm	TESTED BY						
Sign (Customer Confirmation Signature and Seal): _____								

Dongguan Ante Communications Co., Ltd.

Tel: 0769-85833836

Fax: 0769-82582573

Http://www.rtant.com

Address: Building E, Delang Industrial Innovation Park, Shalong Road, Shatang Industrial Zone, Houjie Town, Dongguan City

1. Contents – Project Schedule

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Appendix	2D product diagram	Appendix

2. Revision History

Revision Version	Datedate	Change Content
X0	23. 08. 21	New edition
A1	23. 10. 09	Change foam thickness

3. Product Image



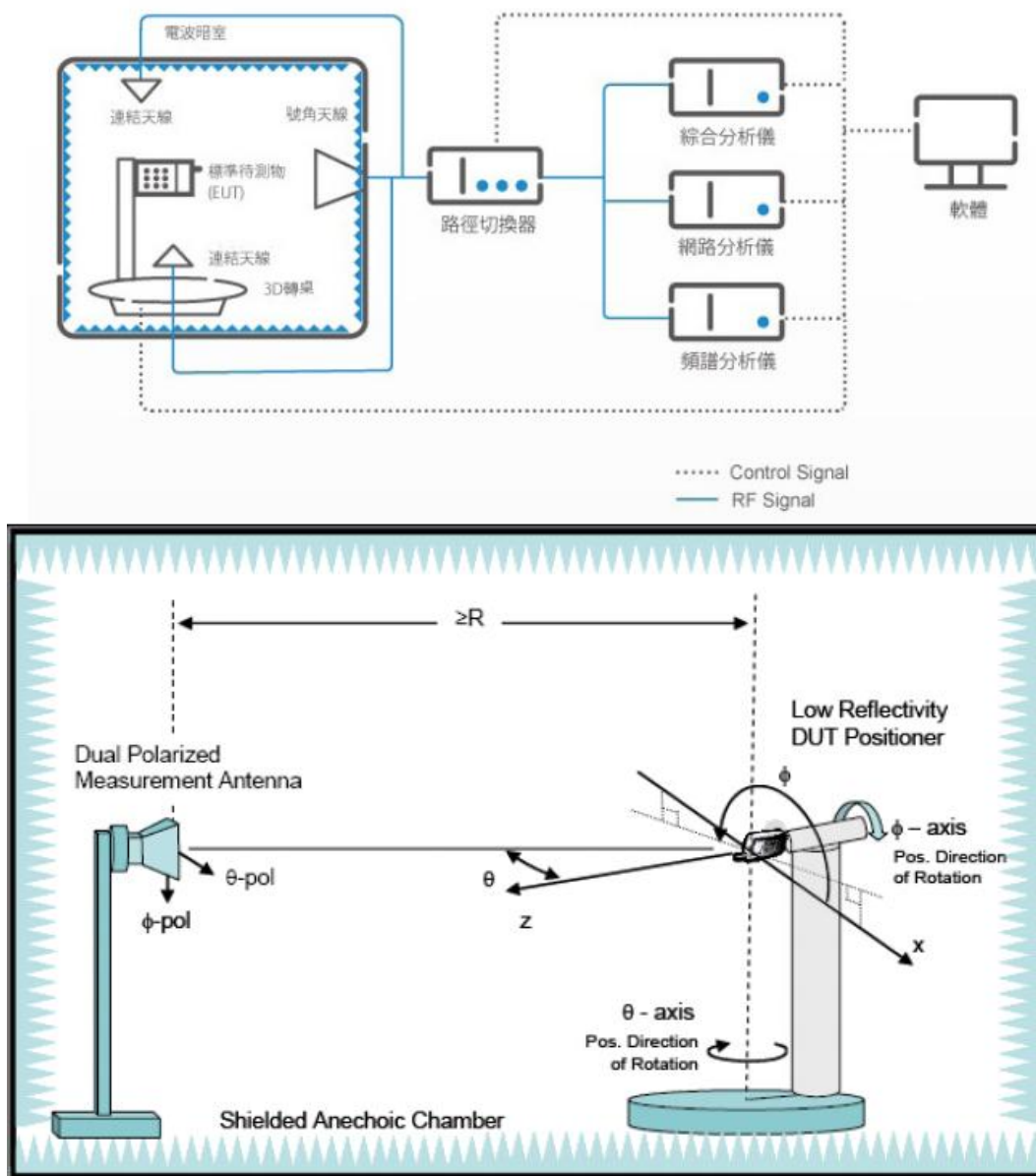
4. Specification Table

A. Electrical Properties	
Frequency Range	2.4-2.5GHz
Impedance – Characteristic Impedance	50 Ω Nominal
VSWR – Voltage Standing Wave Ratio	2.0 Max.(With charger box)
Gain (Peak) Gain (Peak Value)	4.21dBi
Efficiency	>40%
Out of roundness	3.0dB (Max.)
Radiation method	Omni-Directional/Full-Directional
Polarization method	Linear Vertical
B. Physical Properties	
Connector Type – Connection Method	IPEX
Cablewire stock	Φ 1.13 mm – Gray
Antenna Radiator – Antenna Element Body	PCB
Antenna – Plastic Antenna	Body: Holder:
C. Environmental	
Storage Temp – Storage Environment Range	-40°C ~ +85°C
Operating Temperature – Work Environment	-10°C ~ +60°C
Storage humidity	95%
Working humidity	5% ~ 95%

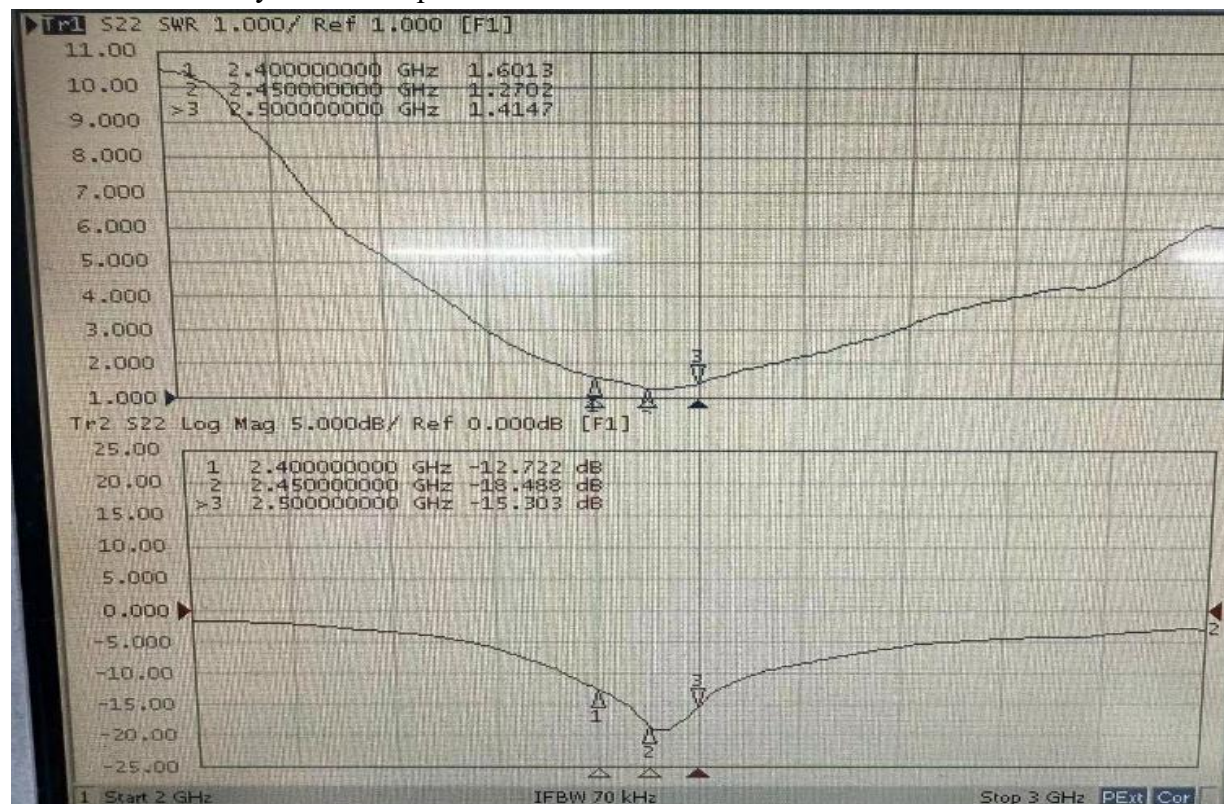
5. Electrical Test Report

5.1 Test equipment

OTA 系統架構圖



5.2 Network Analyzer Test Report



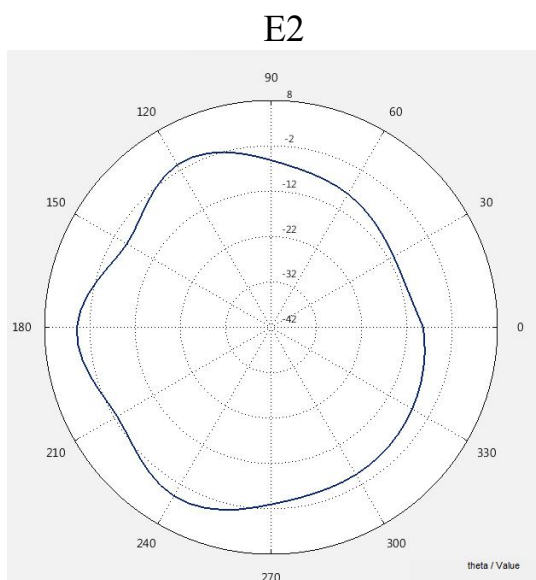
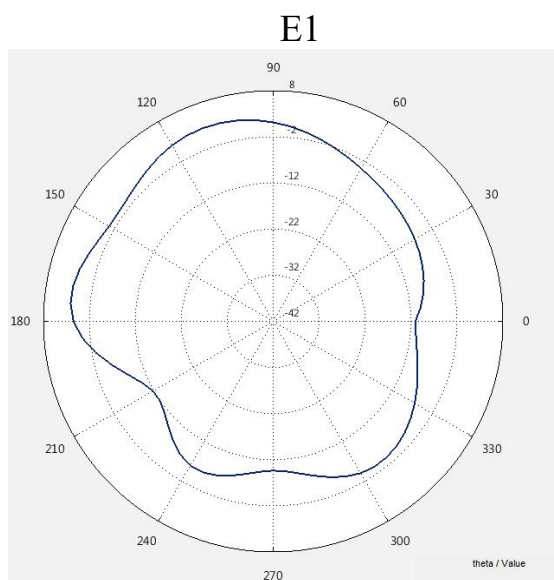
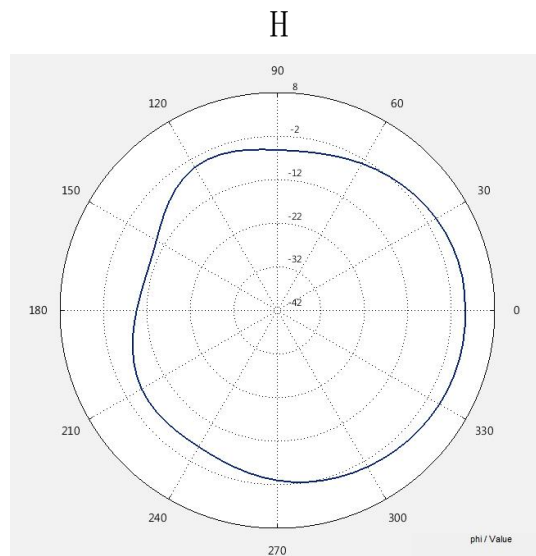
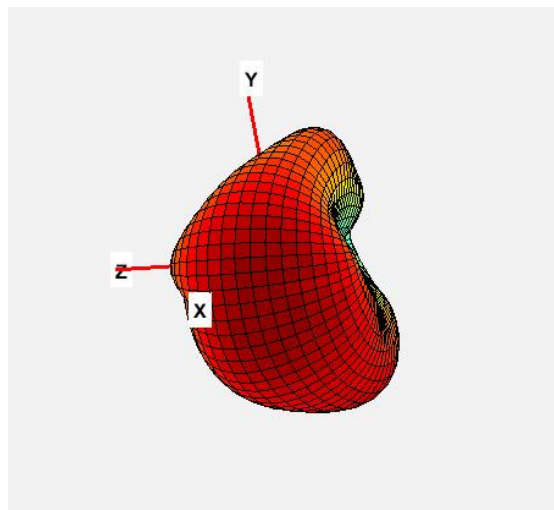
Frequency range	2. 4G	2. 45G	2. 5G
Standing wave ratio	1. 60	1. 27	1. 41

5.3 Darkroom Passive Test Data

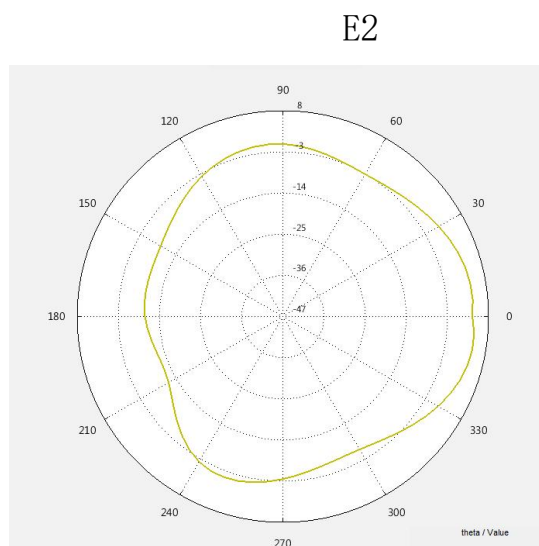
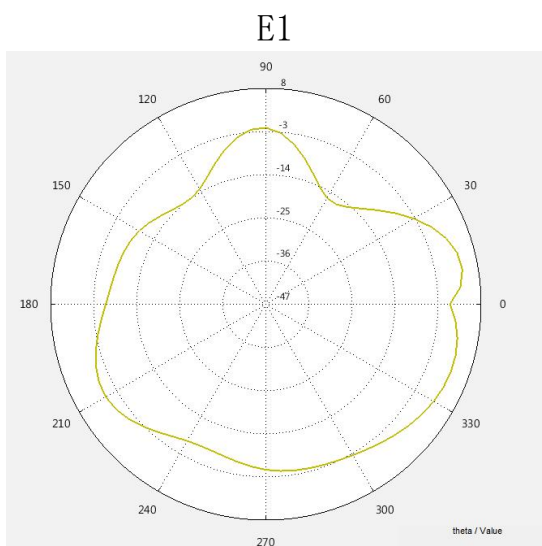
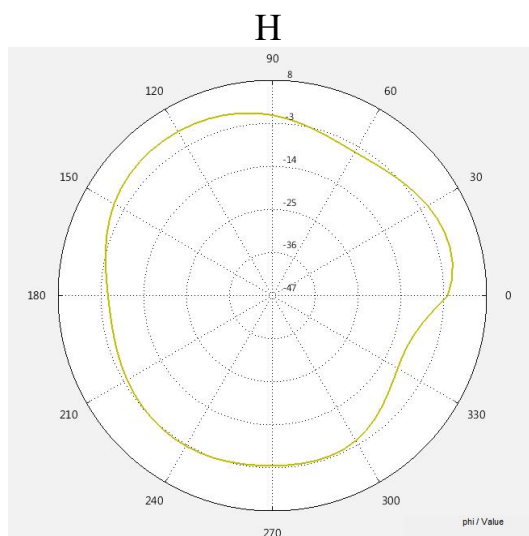
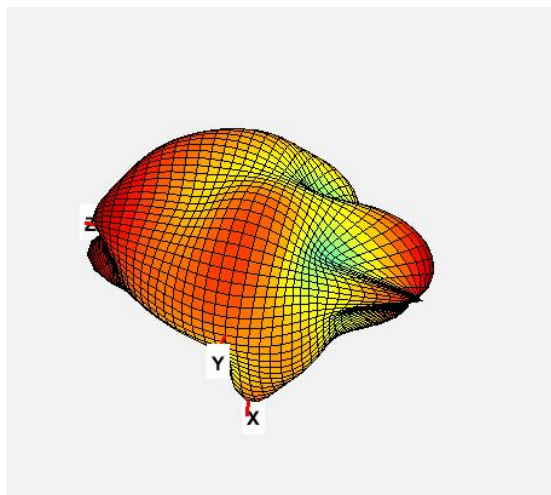
Frequency	Efficiency (%)	Gain (dBi)
2.4GHz	42.84	3.39
2.41GHz	43.29	3.53
2.42GHz	43.7	3.68
2.43GHz	44.94	3.75
2.44GHz	45.51	3.97
2.45GHz	45.93	4.03
2.46GHz	47.88	4.19
2.47GHz	45.15	4.21
2.48GHz	44.56	3.97
2.49GHz	44.89	4.02
2.5GHz	43.38	3.92

5.4 directional diagram

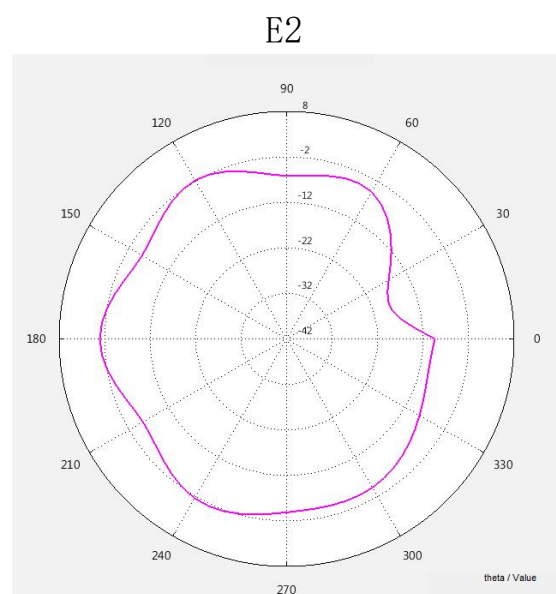
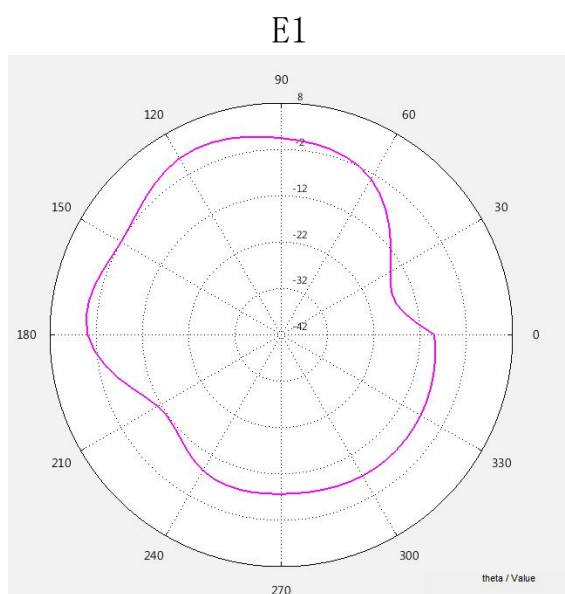
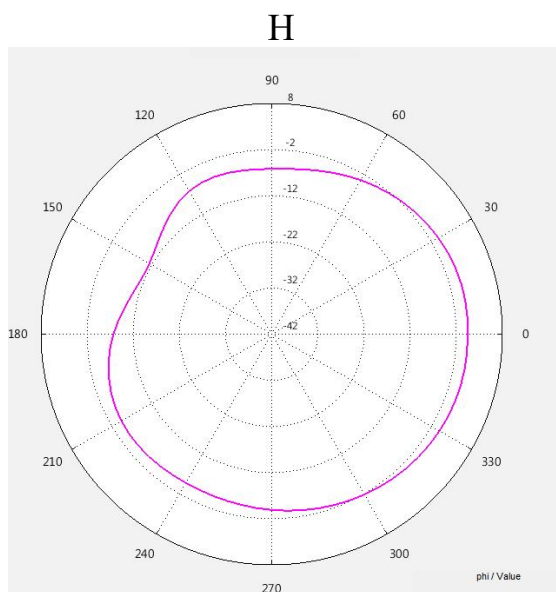
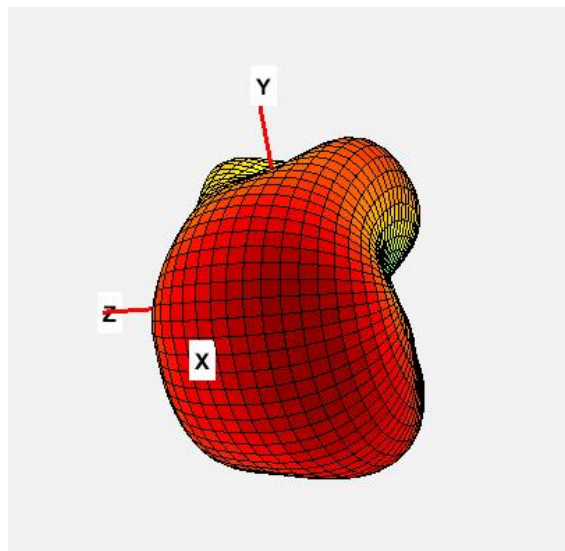
2400MHz



2450MHz



2500MHz



6. Reliability Sample Inspection Report

Date: October 9, 2023

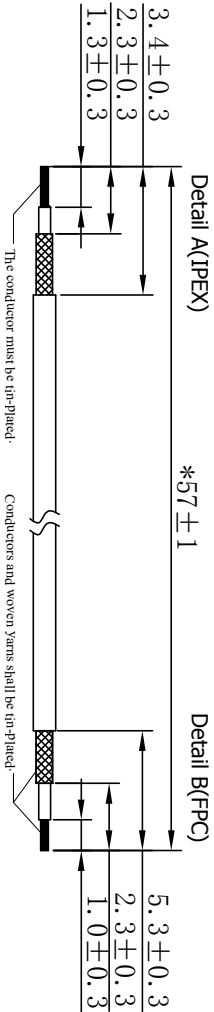
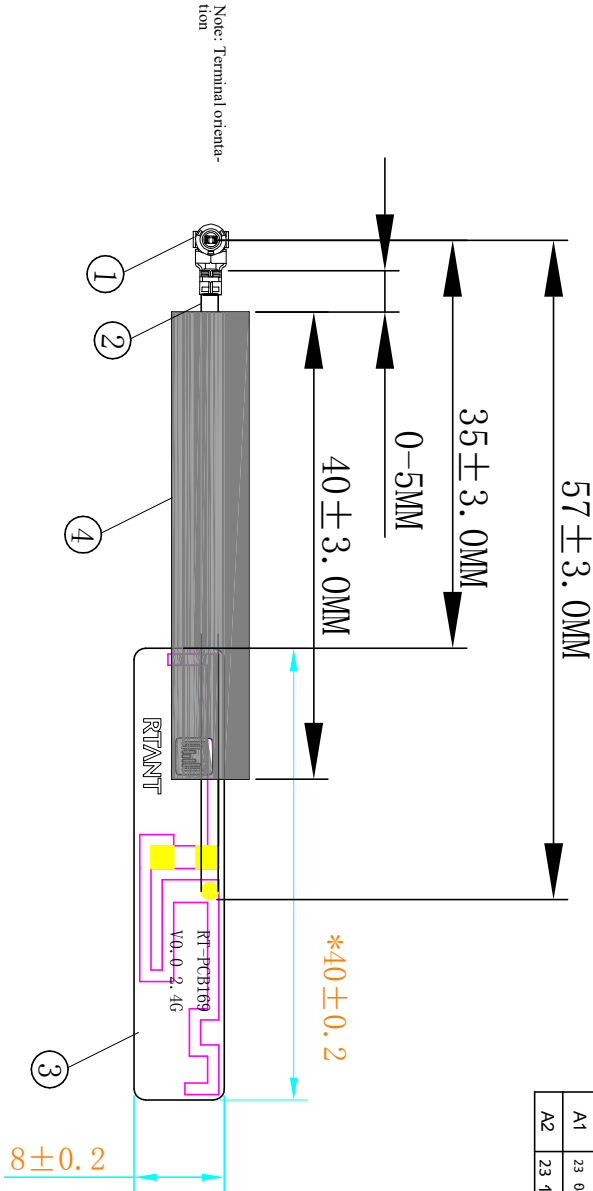
Sample submission quantity		5PCS	Qualified quantity		5PCS			
Inspecting item		Testing Standards and Instructions	Result					Judge
			No. 1	No. 2	No. 3	No. 4	No. 5	
Surface	Wire stock	No color variation, no dirt, no damage, and no scratches.	pass	pass	pass	pass	pass	☒ OK ☐ NG
	Connect	No color variation, no dirt, no damage, and no scratches.	pass	pass	pass	pass	pass	☒ OK ☐ NG
	Plastic	No color variation, no dirt, no damage, and no scratches.						☐ OK ☐ NG
	Weld	After welding, cold welding, false soldering, solder spiciness, solder beads, or missed soldering are not permitted.	pass	pass	pass	pass	pass	☒ OK ☐ NG
	Soldering	After soldering, there shall be no solder spicules or protruding solder balls; the surface shall be free from incomplete soldering or deformation.						☐ OK ☐ NG
	Other							☐ OK ☐ NG
Key dimension	1	0-5mm	1.0	1.0	2.0	3.0	2.0	☒ OK ☐ NG
	2	35±3.0MM	35.0	35.0	35.0	35.0	35.0	☒ OK ☐ NG
	3	57±3.0MM	57.0	57.0	57.0	57.0	57.0	☒ OK ☐ NG
	4	40±3.0MM	40.0	40.0	40.0	40.0	40.0	☒ OK ☐ NG
	5	40±0.2MM	40.0	40.0	40.0	40.0	40.0	☒ OK ☐ NG
	6	8±0.2MM	8.0	8.0	8.0	8.0	8.0	☒ OK ☐ NG
Test								
Electrical and Functional Testing	Frequency Rang	2.4-2.5GHz						
	VSWR	<2.0	pass	pass	pass	pass	pass	☒ OK ☐ NG
Mechanical behavior	Terminal tension	>1.0KG	1.7	1.6	1.6	1.8	1.9	☒ OK ☐ NG
Remarks								
Final determination		☒ Qualified ☐ Non-compliant ☐ Conditional Approval						

Reviewed by: Zhang Chaochao

Inspection: Lei Juanlan

Engineering
Drawings

SIGN	DATE	DESCRIPTION	APPROVER
A0	23-08-14	New drawing	Jiang Wenxiang
A1	23-08-24	Change cutting dimensions	Jiang Wenxiang
A2	23-10-09	Change foam dimensions	Jiang Wenxiang



Wire stripping dimension:

- NOTE:
- 1. The**is the key controlled dimension;
 - 2. electrical legends;
 - Frequency: 2.4~2.5 GHz; VSWR: ≤2.0 MAX (with housing)
 - 3. Working environment:-40℃~+85℃
 - 4. Environmental requirements: ROHS.

No.	Part Number	Name	Material	Describe	Qty
5	Q40-010078-A	Double-Sided Adhesive	---	L40+3 (3 mm hand-tear width) * W8+0	1
4	Q40-010082-A	Foam	---	L40.0*W15.0*T4.0mm	1
3	Q70-010189-A	PCB	FR-4	Label: "RT-PCB169 V0.0 2.4G"	1
2	W10-080009-A	Ø1 13mm CABLE	Tin-plated copper	50 Ω - Gray - ROHS	1
1	Q20-160024-A	PEX CONN#	CU	13 Gold-plated	1

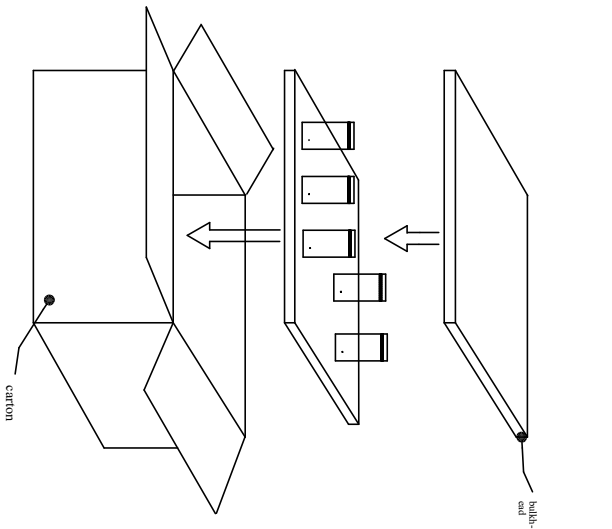
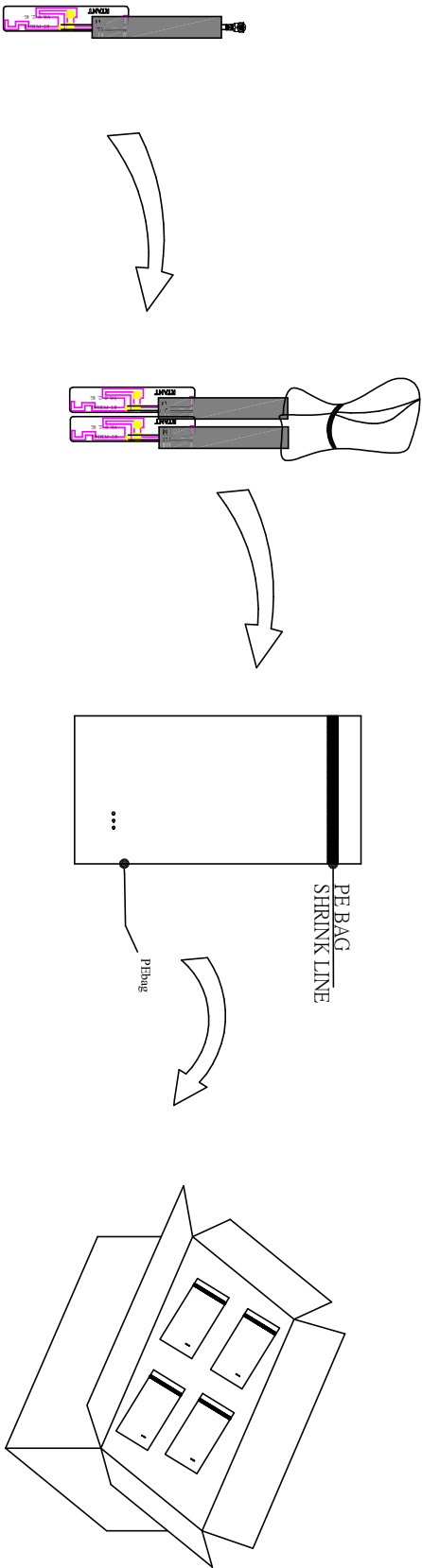
TITLE: Built-in PCB		DRAW NO.: 404-10006-A		SHEET: 1/1		SCALE: NONE		APPROVED	
P/N: antenna RL11W		CUSTOMER: 0000420-Rayleigh RT		TOLERANCE: 一般公差		UNIT: mm		CHECKED	
				XXX ±0.1		XXX ±0.5		UNIT: mm	
				.XX ±0.5		.X ±1.0		RE/X0	
				X. ±3.0				DRAWED	



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RoHS

SIGN	DATE	DESCRIPTION	APPROVER
A0	23.08.14	New drawing	Jiang Wenxiang



TITLE:	Built-in PCB anti-
P/N:	0000420
CUSTOMER:	Rayleigh
DRAW NO.:	RT404-10006-A
DIMENSIONS TOLERANCES UNLESS OTHERWISE NOTED	
一般公差	
TOLERANCE	
SHEET: 1/1	SCALE: NONE
UNIT: mm	REV: A0
DRAWN	CHECKED
APPROVED	DRAWN



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