

Antenna Acknowledgement

Dongguan Hanyi Electronics Co., Ltd

Company address : No. 25, Puxin Lake Center 2nd Road,
Tangxia Town, Dongguan City

Hanyi Item No: 5G-240mm-4.4mm-tail 9.5mm antenna buckle

Specification Description: 5G copper tube antenna, line length
L: 240mm

Customer Name:

Customer Item Number:

Factory signature:

Write	Examine	Approval
Guo Wu	Yan Mei	Xiao Fang Wang

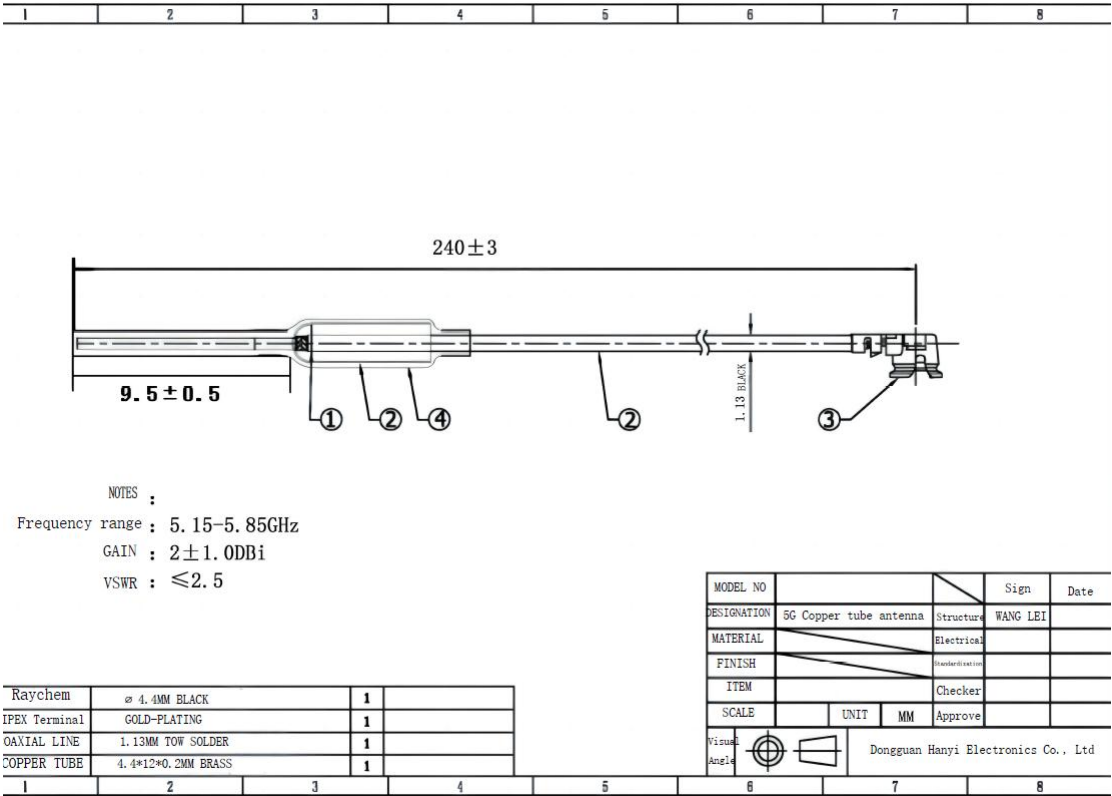
Customer Acknowledgement Signature:

Check	Examine	Approval
Shun Chen	Ying Liao	Xia Ying Gong

Content

1、Cover.....	1
2、Content.....	2
3、Product Picture.....	3
4、Specification.....	4
5、Test Equipment & Conditions.....	5-6
6、Radiation Report.....	7-8
7、Reliability Report.....	9-10

3 Product Picture



4 Specification)

Parameter	
Frequency	5015-5800MHz
Impedance	50 Ω
VSWR	≤ 2.5
Connector	Generation 1 terminal
Gain	$\geq 1.88\text{dBi}$
Mechanical Parameter	
Length	$240 \pm 3\text{mm}$
Cable	/
Salt Spray Test	24H
Environment Parameter	
Operation Temperature	$-20^{\circ}\text{C} \sim 65^{\circ}\text{C}$
Storage Temperature	$-30^{\circ}\text{C} \sim 75^{\circ}\text{C}$

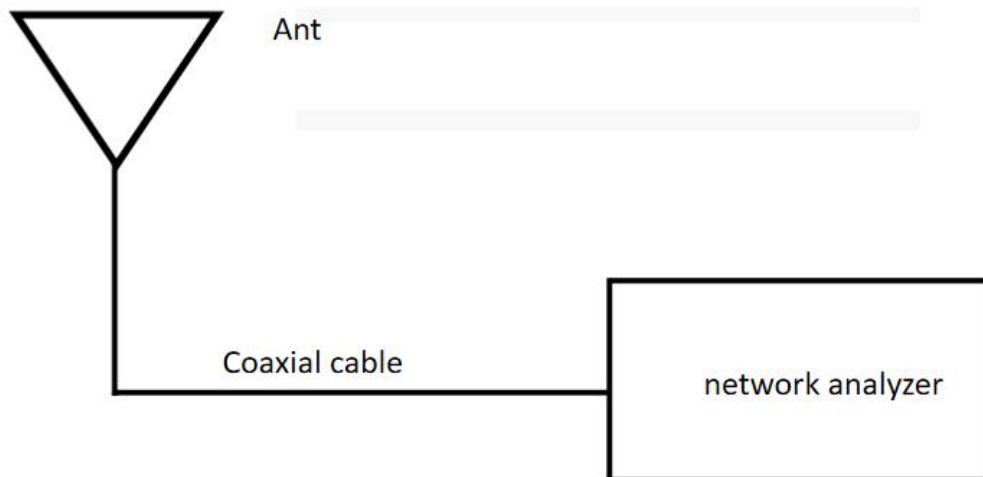
5 Test Equipment & Conditions

5.1 VSWR Test

5.1.1 Test equipment

Agilent5071C Network Analyzer.

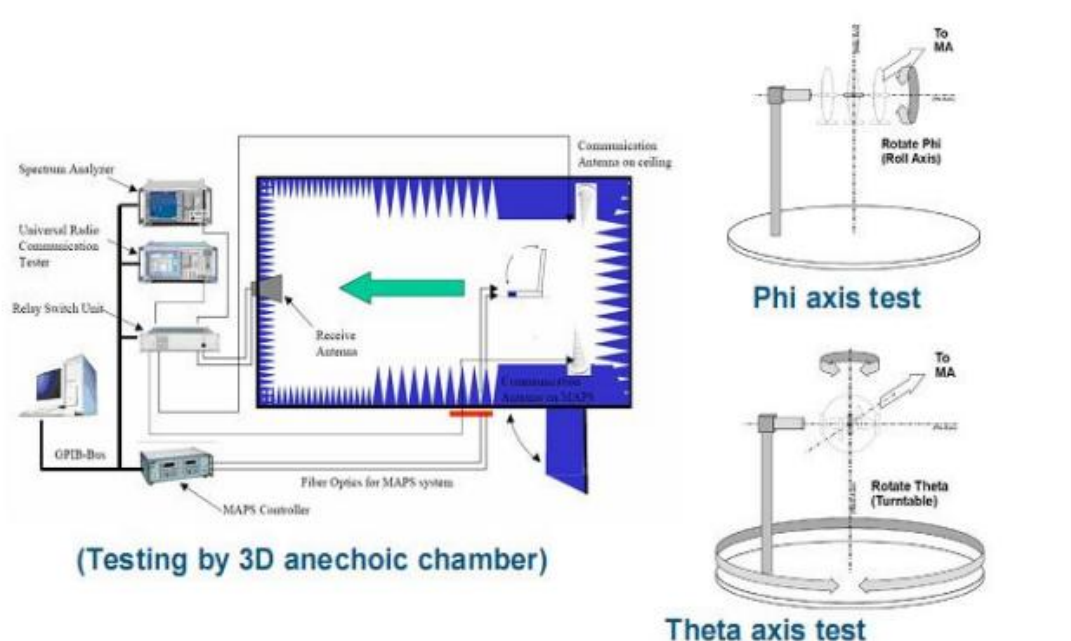
5.1.2 Test system



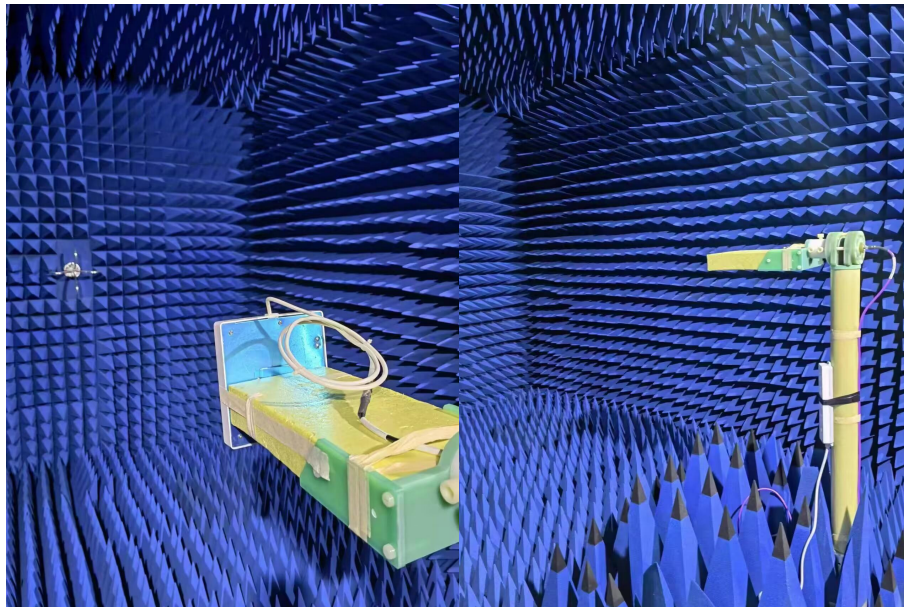
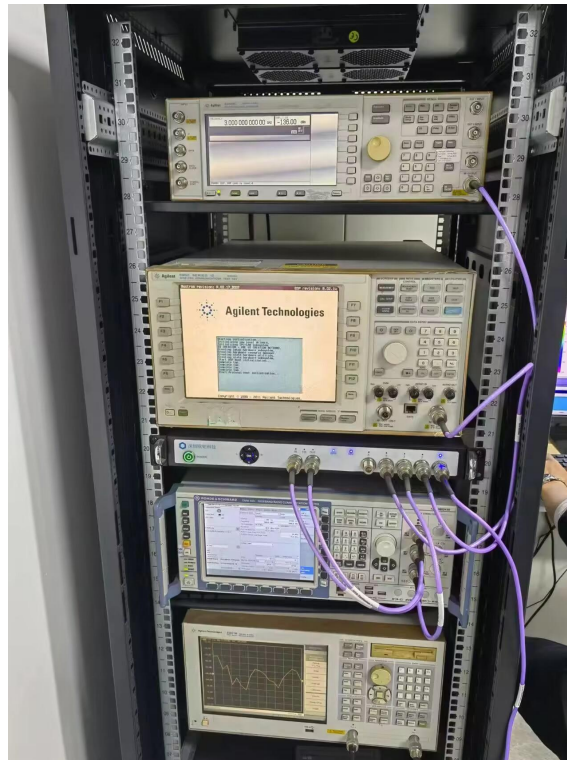
Antenna standing wave test equipment is connected in sequence:
Agilent 5071C network analyzer → test cable → antenna.

5.2 Radiation Pattern test

5.2.1 3D Chamber Test System



5.2.2 Radiation Pattern test environment

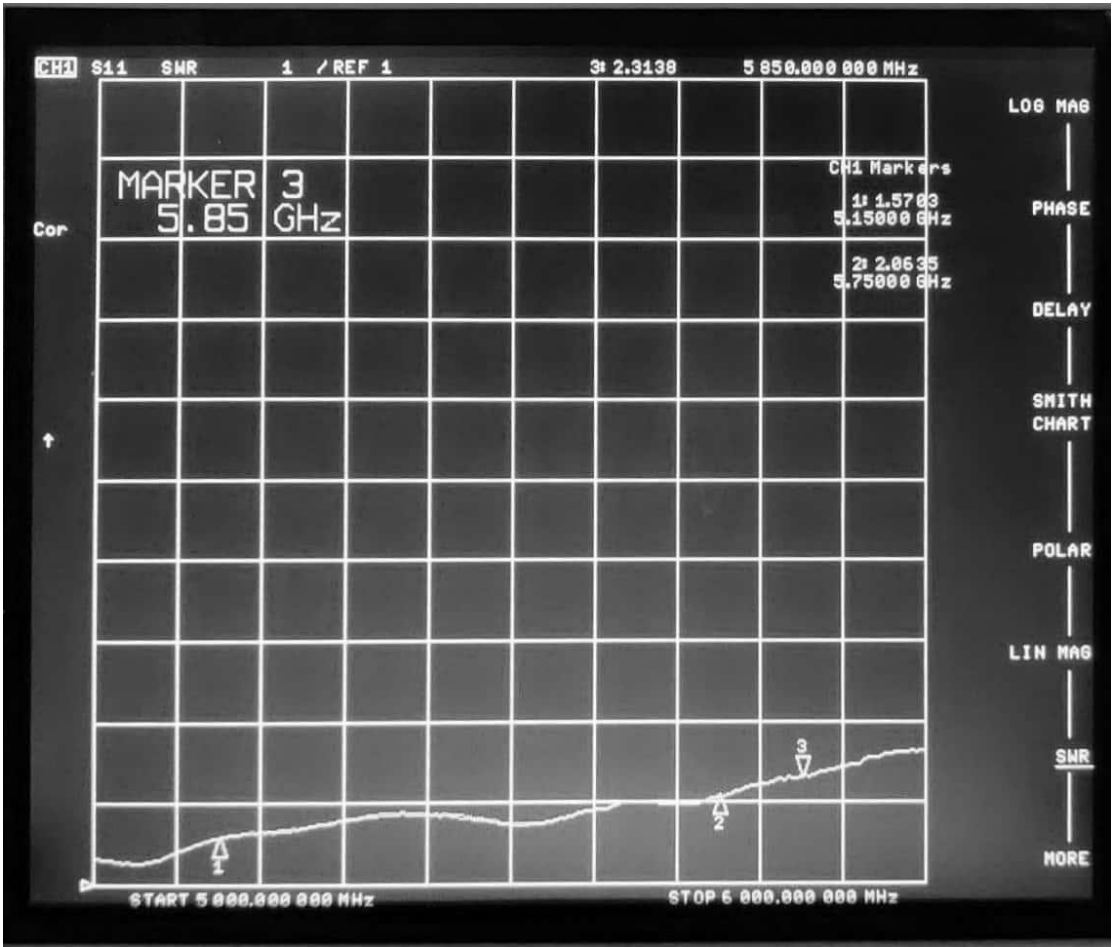


LR microwave anechoic chamber: The test frequency range is 400MHz to 6GHz, and in a spherical quiet zone with a diameter of 40cm, the anechoic chamber provides a reflectivity of less than - 90dB in the range of 400MHz to 6GHz.

6. Radiation Report

6.1 VSWR

6.1.1 VSWR Test waveform

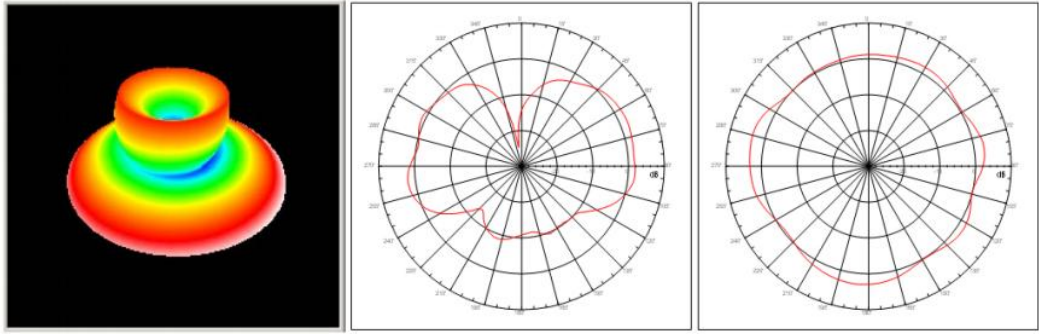


6.1.2 VSWR test result

Frequency	5015-5800MHz
VSWR	≤2.5

6.2 Radiation Pattern

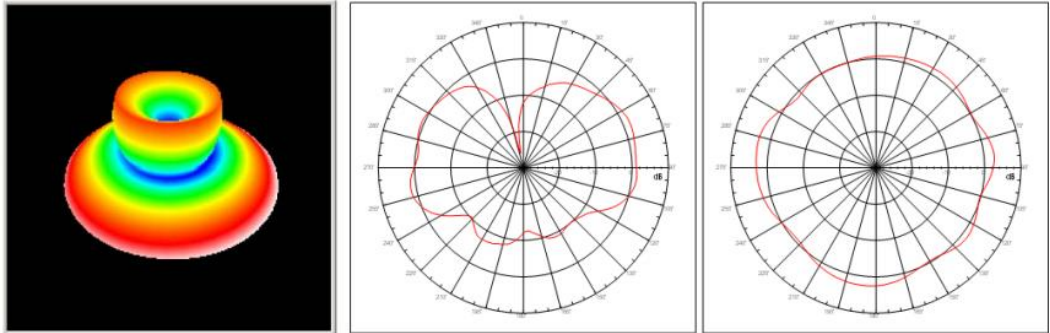
6.2.1 Radiation Pattern



5.15GHz

Gain:2.16

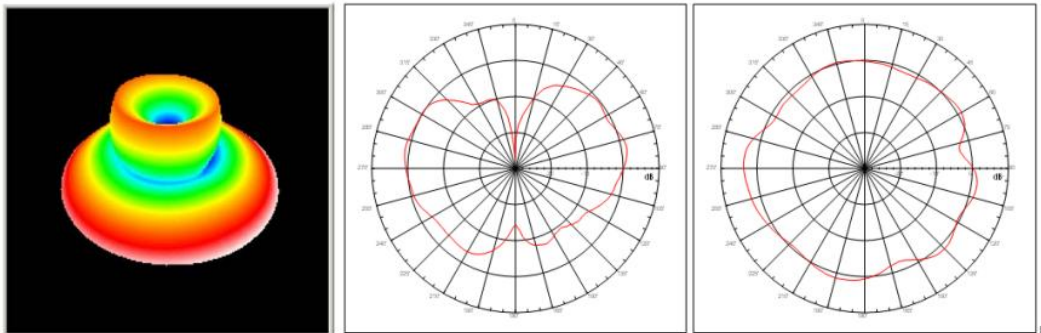
Efficiency:108.0%



5.35GHz

Gain:1.96dBi

Efficiency:95.0%



5.85GHz

Gain:1.88

Efficiency:94.0%

6.2.2 Radiation Pattern test result

Frequency	Gain	Effi
MHz	dBi	%
5150	2.16	108
5350	1.96	95
5850	1.88	94

7 Reliability Report**7.1 Constant Temperature and Humidity Test**

Project	Constant Temperature and Humidity Test		Check ID	
Product Name	Copper tube antenna		quantity:5PCS	
Date Of Test: 2022-05-24			Date of Complete: 2022-05-25	
Equipment For Test 1. Programmable Constant Temperature And Humidity Test Box. 2. 8753ES Network Analyser.				
Condition For Test 1. Under room temperature, 65% humidity. 2. Under 80° , 85%~90% humidity , 2 hour per circulation, total 24 hours.				
Test Result				
Standard 1、Shedding-free, Non-cracking, No separation on the surface of metal ;Non-fading, Non-cracking, Non-deforming on the surface of nonmetal. 2、Test result meet the technical requirements.				
Project	Before Test	After Test	Problem	Result
Appearance	shedding-free, Non-cracking, No separation	Non-fading, Non-cracking, Non-deforming	Void	Pass
performance	VSWR Pass	VSWR Pass	Void	Pass
Result: ☒ PASS ☐ FAIL ☐ Unable to judge				
Tested by: Liu Jie Reviewed by: Li Fei Approved by: Zhang Yunchun				

7.2 Salt Spray Test

Project	Salt Spray Test	Test ID																		
Project Name	Copper tube antenna	quantity: 5PCS																		
Date of test: 2021-05-26		Date of complete: 2022-05-28																		
Test equipment: 1. HL-60-SS Salt Spray Test Tester.																				
Test Condition: 1. $35\pm 2^{\circ}\text{C}$ in the salt spray test box; $22\sim 30^{\circ}\text{C}$ in the laboratory 2. PH=6.5/7.2, the concentration of the sodium chloride decade to $50\pm 10\text{g/L}$ after 24 hours on per 80 square centimeter.																				
Result: Pass <table border="1" data-bbox="285 1066 1334 1415"> <thead> <tr> <th>Number</th> <th>(Result</th> <th>Problem</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Pass</td> <td>Void</td> </tr> <tr> <td>2</td> <td>Pass</td> <td>Void</td> </tr> <tr> <td>3</td> <td>Pass</td> <td>Void</td> </tr> <tr> <td>4</td> <td>Pass</td> <td>Void</td> </tr> <tr> <td>5</td> <td>Pass</td> <td>Void</td> </tr> </tbody> </table>			Number	(Result	Problem	1	Pass	Void	2	Pass	Void	3	Pass	Void	4	Pass	Void	5	Pass	Void
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