DONGGUAN HUANGJIE COMMUNICATION TECHNOLOGY CO., LTD.

SPECFICATION FOR APPROVAL

CUSTOMER	
CUS. CODE	
CUS. MODEL	
HJ-Tech CODE	3N0101BK-026
PRO. NAME	RF ANTENNA COMPONENT
SPECIFICATION DESCRIPTION	Built in antenna OD1.13 Cable, P1 copper tube, P2 MHF-1-PLUG, product length L=300mm
DATE	2026/8/18

SUPPLIER		
PREPARER	CHECKER	APPROVER
S.He	XIU HE	LFY

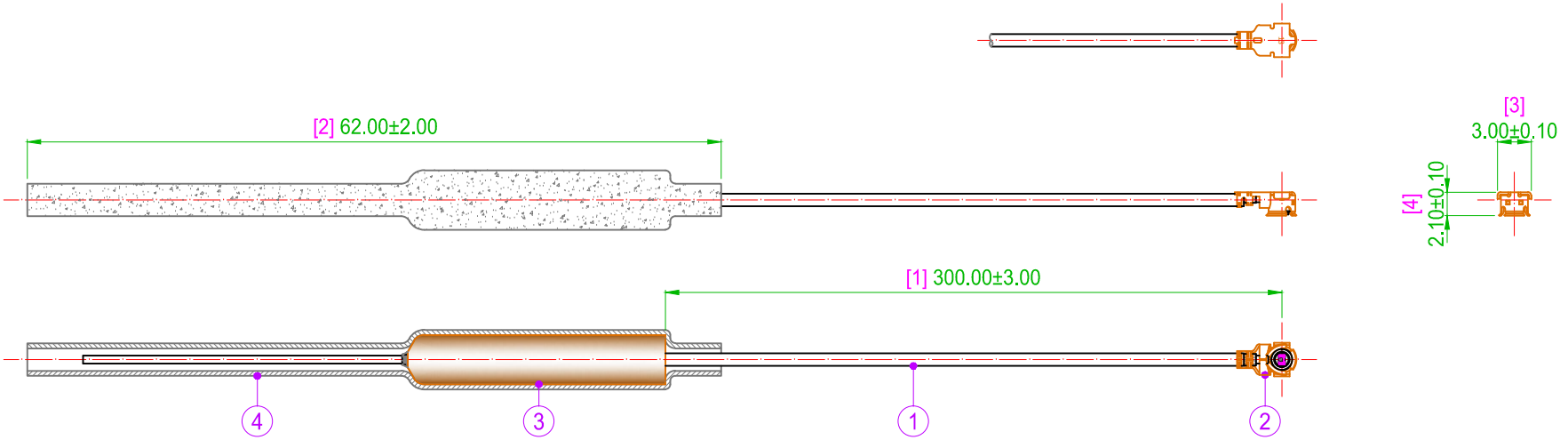
CUSTOMER		
TRANSCTOR	CHECKER	APPROVER

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REV.	RELEASE AND CHANGE SUMMARY	DATE
A	First Release	2024.11.19
B	Update of Dimension Control Marks	2025.11.24



No.	PART NUMBER	PART NAME AND DESCRIPTION	Q'TY
4	2TA040BK1-062	Heat shrinkable sleeve: Ø4.00*L62.00, halogen free flame retardant, 125H2 general type, black	1
3	2YG013	Copper tube: Ø4.40*L23.00*Ø1.10, bullet nose type, brass, tin plated	1
2	2LM10P113600	RF Connector: MHF 1 PLUG FOR OD1.13 CABLE	1
1	2C5M11312BK1	Micro coaxial cable: OD1.13, 50Ω, double tinned wire, black	1

BOM 物料清单

Technical Requirements
1. Assembly Requirement: The terminal has no orientation requirement.
2. Electrical Characteristics:
Characteristic Impedance: 50Ω; Operating Frequency: 2.4~2.5GHz; VSWR: 2.0 MAX. (after assembly test).
Inspection Method: 100% testing of single antenna units by network analyzer; waveform comparison within 2-3GHz.
3. Cable Retention Force:
Pull-out force between cable and connector: minimum 1.30 kgf.
Test Method: Along the central axis of the cable, lift the 1.30kg weight vertically off the table at a speed of approximately 253 mm/min; the unit is deemed qualified if the weight is lifted.
4. Dimension Inspection:Control items.
[F]FAI (First Article Inspection), [I]Key item for In-process Inspection, [O]Outgoing Inspection, [CPK], [SPC] Statistical Process
5. Visual Inspection: 100% visual inspection. No scratches, damage or contamination on product surface; plating shall be bright and uniform without oxidation.
6. Packaging Specification: //
7. Environmental Requirement: All materials used in the product and manufacturing process shall comply with EU RoHS Directive.

GENERAL TOLERANCE:
UNLESS OTHERWISE SPECIFIED
LINEAR:
0.5 < L ≤ 6 ± 0.05
6 < L ≤ 30 ± 0.10
30 < L ≤ 120 ± 0.20
ANGULAR:
0 < L ≤ 10 ± 1°30'
10 < L ≤ 50 ± 1°00'
50 < L ≤ 120 ± 0°30'

FILE TYPE: Product Drawing
DRA./DATE: S.He 24.11.19
CHE./DATE:
APP./DATE:
FILE FORM: HJ-QR-E-03 22.09.01

Dongguan HUANGJIE Communication Technology Co., Ltd.
东莞市皇捷通讯科技有限公司
TITLE: RF Antenna Assembly
2.4G Internal Antenna, OD1.13 black double tinned wire, P1 end soldered with copper tube, P2 end crimped with MHF 1 PLUG, exposed cable length L=300mm
CODE: 3N0101BK-026

SIZE:	UNIT:	PRO.:	SCALE:	PAGE:
A4	mm	3rd	1:0.6	1/1

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WIFI 2.4G&5.8G FLEX CABLE BUILT-IN ANTENNA

1 SCOPE

1.1 CONTENTS

This Product Specification covers the mechanical, electrical and environmental performances specification for wifi 2.4-2.5GHz flex cable built-in antenna.

1.2 QUALIFICATION

When tests are performed the specification shall be used. All inspections shall be performed using the applicable inspection plan and product drawing.

2 APPLICABLE DOCUMENTS AND FORMS

The associated product documents and forms constitute a part of this specification to the extent specified herein. Unless otherwise indicated, the latest edition of the document applies. In the event of conflict between the requirements of this specification and the product drawing, the product drawing shall take precedence. In the event of conflict between the requirements of the specification and the reference documents, this specification shall take precedence.

3 TEST AND ACCEPTANCE REQUIREMENTS

3.1 GENERAL

3.1.1 Dimensional Characteristics

Part construction shall conform to the dimensions, shape, and detail attributes specified on the latest revision of the applicable part drawing(s).

3.1.2 Material Characteristics

All material used in each test sample shall conform to the material specifications shown on the latest revision of the applicable part drawing(s).

3.2 RATING

Frequency Range	Nominal Impedance	Return Loss	Peak Gain	Operating Temperature
2.4~2.5GHz	50Ω	< -10 dB	3dBi	-40℃ ~ +85℃

3.3 TEST CONDITION

Unless otherwise specified, all tests and measurements shall be performed under the following conditions.

Temperature	Atmospheric Pressure	Relative Humidity
+15℃ ~ +35℃	866hPa ~ 1066hPa	45% ~ 75%

3.4 Electrical Performance

No.	Items	Test Condition	Specifications
		GENERAL	
1	Contact Resistance	Solder the receptacle connector to the test board and mate the plug connector together, then measure the contact resistance as shown in figure 1 by the four terminal method. Open circuit voltage: 20mV MAX Circuit current: 10mA MAX	Inner contact: Initial: 20mΩ MAX After: 25mΩ MAX Ground contact: Initial: 20mΩ MAX After: 25mΩ MAX
2	Insulation Resistance	Mate the plug and receptacle connector Together,and then, apply DC 200 V Voltage between the inner contact and the ground contact in accordance with EIA 364-21F	Initial: 500 MΩ MIN After: 100 MΩ MIN
3	Dielectric Withstanding Voltage	Mate the plug and receptacle connector together, and then apply AC 200 V between the inner contact and the ground contact in accordance with EIA 364-20F	No flashover, No sparkover, No excess leakage, No breakdown
4	V.S.W.R	Measure V.S.W.R with a network analyzer from 0 to 6GHz(Install in plastic housing and test)	1.8MAX.
		MECHANICAL	
5	Un-mating Force	Solder the receptacle to the test board and mate the plug into it. Test the withdrawal force with an insertion-extraction force tester at a rate of 25 ± 3 mm/min	1.Initial:4N MIN 2.After 30 Cycle:2N MIN

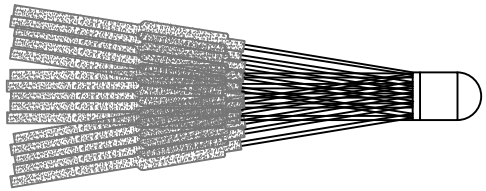
6	Durability	Solder the receptacle onto the test board, interlock the male and female connectors using a mating tester for 30 cycles, and then test the parameters.	Appearance: No AbnormalityContact Resistance: Shall meet 3.4.1/2/3/4
7	Cable retention	1 It is considered qualified if a 1.30 kg weight is lifted vertically from the table along the central axis of the cable at a speed of approximately 25 ± 3 mm/min.	No detachment or looseness at the crimp joint between the wire and the connector. Shall meet 3.4.1/2/3/4
ENVIRONMENTAL			
8	Humidity	Apply the following environment to themating connector in accordance with EIA364-31 Method III Test Condition B Temperature:25~65℃ Humidity : 90~95% R.H Duration: 96 hours	Appearance: No damage Contact Resistance: Shall meet 3.4.1 Insulation Resistance: Shall meet 3.4.2 Dielectric Withstanding Voltage: Shall meet 3.4.3
9	High Tempera-ture Test	Apply the following environment to themating connector Temperature : 90±2℃ Duration : 96 hours	Appearance: No damage Contact Resistance: Shall meet 3.4.1 Insulation Resistance: Shall meet 3.4.2 Dielectric Withstanding Voltage: Shall meet 3.4.3
10	Thermal Shock	Perform the following test conditions on mated connectors in accordance with Test Method III, Condition B of EIA-364-32: Temperature: -55°C to 85°C Transfer time: 5 min max. Number of cycles: 5	Appearance: No damage Contact Resistance: Shall meet 3.4.1 Insulation Resistance: Shall meet 3.4.2 Dielectric Withstanding Voltage: Shall meet 3.4.3
11	Salt Spray	EIA 364-26 Test Condition A Apply the following environment to the mating connector Temperature : 35±2℃ Relative Humidity : 90~98%R.H Salt water density: 5±1% Duration : 24 hours	Appearance: No damage Contact Resistance: Shall meet 3.4.1

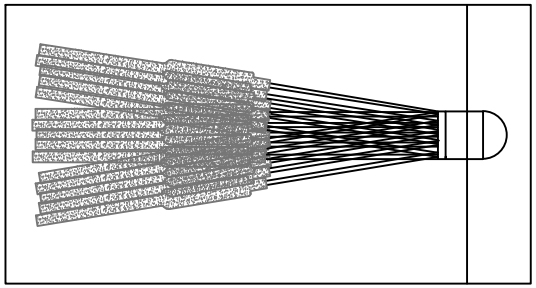
3.5 CHANGE LOG

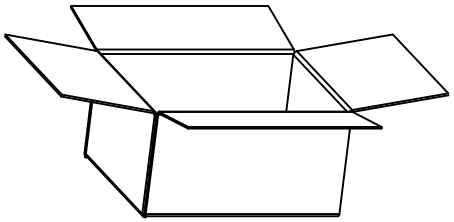
Revision	Release and Change Summary	Date	Tabulator	Checker	Approver
A		2026.08.11	S.He	XIU HE	LFY

REV.	RELEASE AND CHANGE SUMMARY	DATE
A	//	2025.02.19









Packaging specifications:

1. 50 pieces per bundle, secured with bubble wrap and rubber bands for terminals.
2. 10 packs per case, sealed after packaging in PE bags.
3. A material card/eco-label must be affixed to each PE bag containing 500PCS of product.
4. Paper spacer: 2 pieces per carton. Place one paper spacer at the bottom of the carton before packing, and another before sealing.
5. 5,000 pieces per carton, carton dimensions: 360*360*145, carton size can be adjusted according to material dimensions and quantity.
6. The sealing method adopts an "I"-shaped design, with identical configurations on both the top and bottom.
7. The material is insufficient to fill the carton, requiring the use of filler material.
8. Material card labels and month labels shall comply with the customer-specified standards.

GENERAL TOLERANCE:
UNLESS OTHERWISE SPECIFIED
LINEAR:
0.5 < L ≤ 6 ± 0.05
6 < L ≤ 30 ± 0.10
30 < L ≤ 120 ± 0.20
ANGULAR:
0 < L ≤ 10 ± 1°30'
10 < L ≤ 50 ± 1°00'
50 < L ≤ 120 ± 0°30'

FILE TYPE:	包装图
DRA./DATE:	S.He 25.02.19
CHE./DATE:	
APP./DATE:	
FILE FORM:	HJ-QR-E-03 22.09.01

Dongguan HUANGJIE Communication Technology Co., Ltd.
东莞市皇捷通讯科技有限公司

TITLE: Packaging Specification

CODE: 3N0101BK-026

SIZE:	UNIT:	PRO.:	SCALE:	PAGE:
A4	mm	3rd	1:1	2/2

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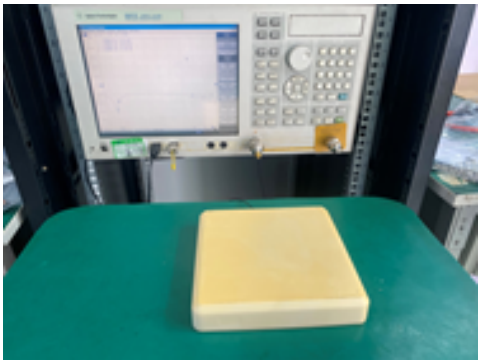
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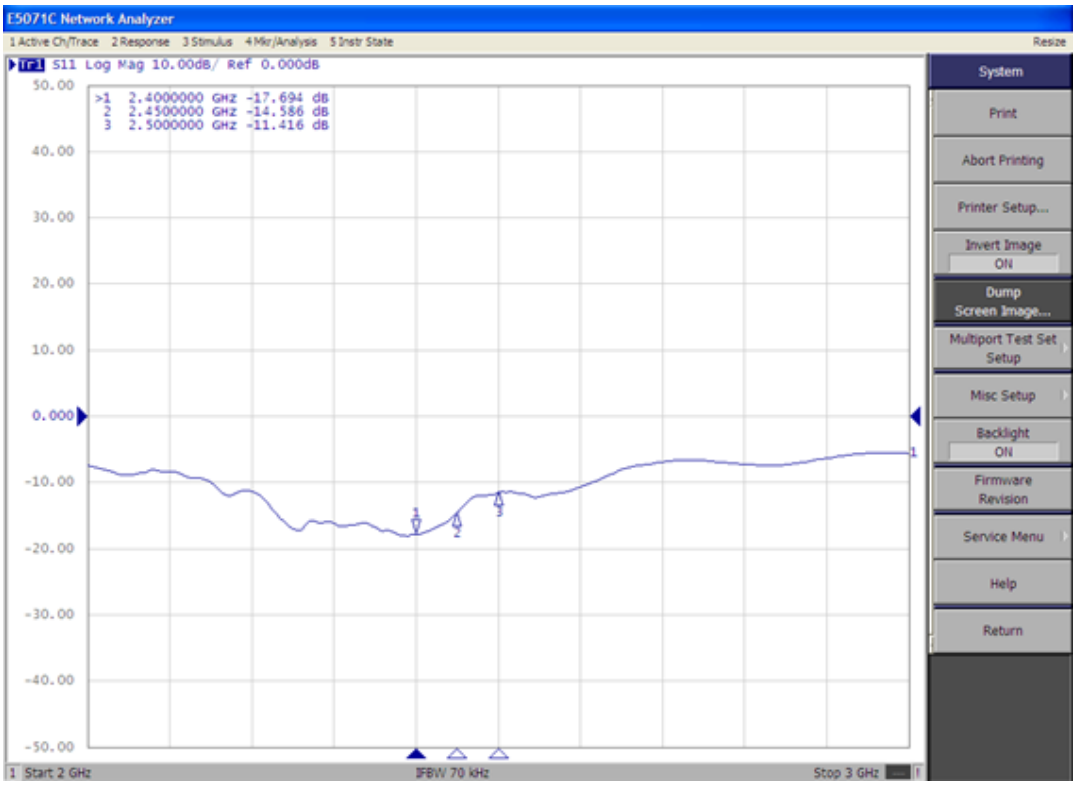
Antenna Electrical Characteristic Test Report

DOC NO.:HJ-QR-Q-22 Rev:A0

Part Number:	3N0101BK-026	Item	Spec	Judge
Part Name:	Built in antenna OD1.13 Cable, P1 copper tube, P2 MHF-1-PLUG, product length L=300mm	VSWR	≤1.8	pass
Test Equipment	Agilent E5071C/OTA Chamber	Characteristic impedance	50Ω	pass
Quantity	5pcs			
Test Date	2026/8/11			



1 RETURN LOSS



Checker: XIU HE **Tester: S.He**

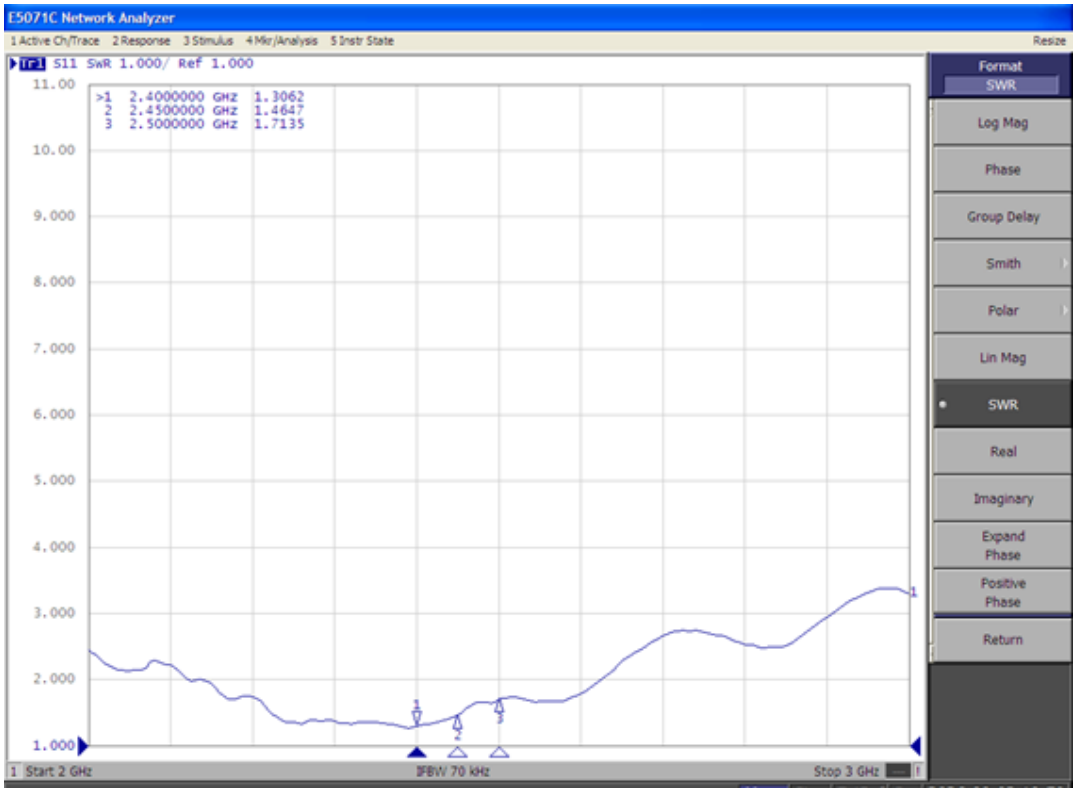
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Antenna Electrical Characteristic Test Report

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Part Number:	3N0101BK-026	Item	Spec	Judge
Part Name:	Built in antenna OD1.13 Cable, P1 copper tube, P2 MHF-1-PLUG, product length L=300mm	VSWR	≤1.8	pass
Test Equipment	Agilent E5071C/OTA Chamber	Characteristic impedance	50Ω	pass
Quantity	5pcs			
Test Date	2026/8/11			

2 VSWR



Checker: XIU HE **Tester: S.He**

DONGGUAN HUANGJIE COMMUNICATION TECHNOLOGY CO., LTD.

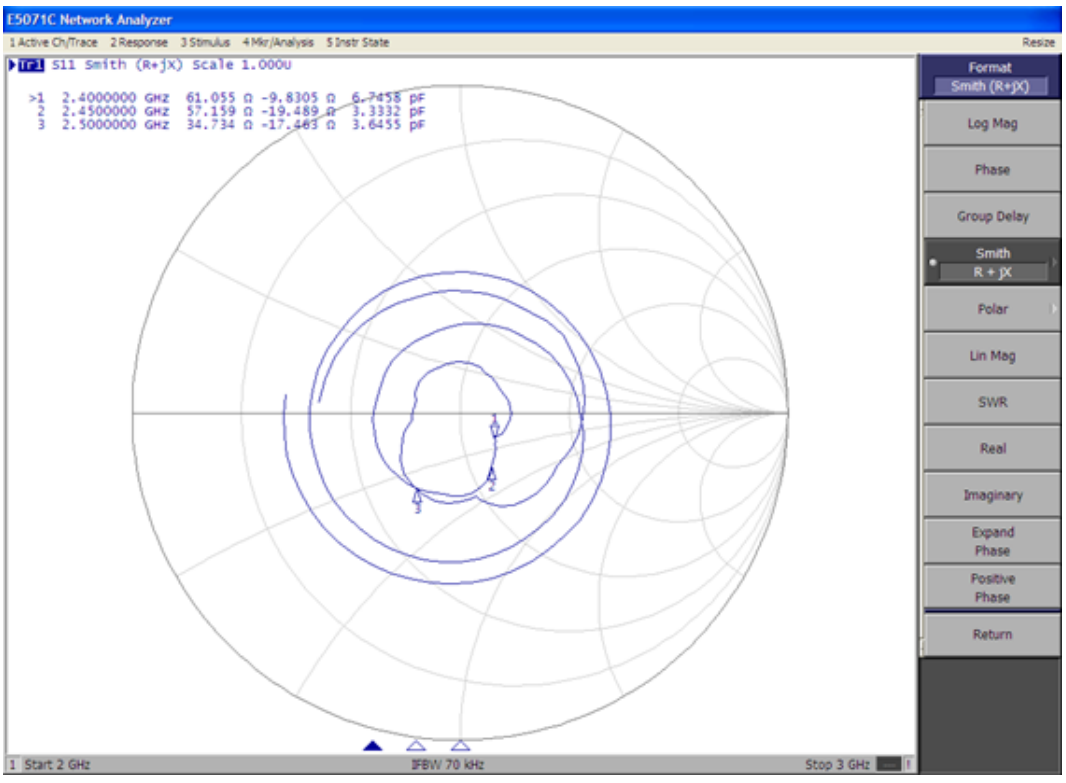
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Part Name:	Built in antenna OD1.13 Cable, P1 copper tube, P2 MHF-1-PLUG, product length L=300mm	VSWR	≤1.8	pass
Test Equipment	Agilent E5071C/OTA Chamber	Characteristic impedance	50Ω	pass
Quantity	5pcs			
Test Date	2026/8/11			

3 SMITH(R+JX)



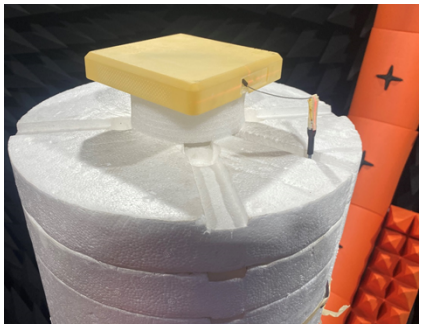
Checker: XIU HE **Tester: S.He**

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Antenna Electrical Characteristic Test Report

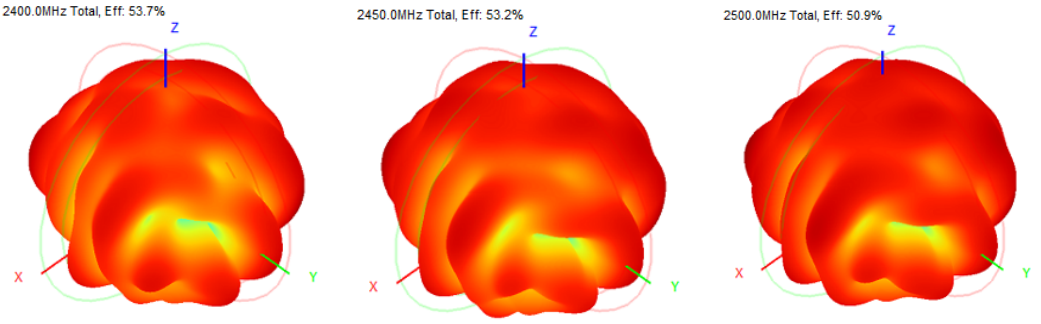
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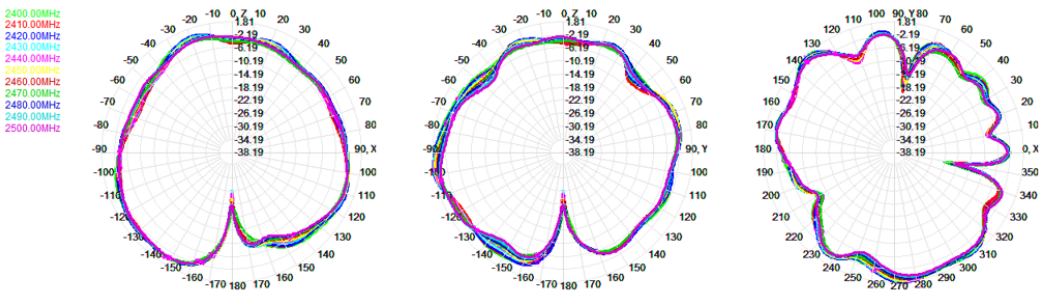
Part Number:	3N0101BK-026	Item	Spec	Judge
Part Name:	Built in antenna OD1.13 Cable, P1 copper tube, P2 MHF-1-PLUG, product length L=300mm	Gain	2DBI	pass
Test Equipment	Agilent E5071C/OTA Chamber	Characteristic impedance	50Ω	pass
Quantity	5pcs			
Test Date	2026/8/11			



4 2D/3D RADIATION PATTERN

序号	1	2	3	4	5	6	7	8	9	10	11
频率(MHz)	2400.0	2410.0	2420.0	2430.0	2440.0	2450.0	2460.0	2470.0	2480.0	2490.0	2500.0
效率 (dBi)	-2.70	-2.71	-2.53	-2.58	-2.62	-2.74	-2.93	-2.96	-2.74	-2.94	-2.93
增益 (dBi)	2.39	2.17	2.33	2.14	1.91	1.93	1.66	1.51	1.75	1.38	1.14
效率 (%)	53.70	53.56	55.89	55.25	54.72	53.18	50.92	50.57	53.20	50.79	50.94
方向性(dB)	5.09	4.88	4.86	4.72	4.53	4.68	4.59	4.47	4.49	4.32	4.07





Checker: XIU HE **Tester: S.He**