

Antenna Specification

Customer Name:	WAH LUNG TOYS Co., Ltd
Project Name:	Hf01
New Material Model:	M02-0600040ROA
Old Material Model:	M1G.0096-ROA
Product Name:	2.4G external rod antenna
Customer Number:	
Antenna Type:	Monopole
Version:	D

supplier		customer	
Prepared by		Purchase	
Checked by		Engineering	
Approved by		Quality	
☒ The new material ☐ Recycle (The number to be recycled)			
Cachet : 2024-03-01		Cachet:	

ShenZhen MyAntenna RF Technology Co.,Ltd

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[illegible]

4. The performance parameters

Electrical performance index	
Frequency range	2400–2500MHZ
2.4GHz VSWR	≤ 1.9
Gain	$\leq 4.23\text{dBi}$ (Different darkroom and different environment location, the gain will be different)
Radiation direction	omnidirectional
The input impedance	$50\ \Omega$
Polarization mode	Linear polarization
The most powerful	2W
Mechanical performance index	
Interface form	SMA Male and female
The antenna material	PCB+hardware+plastic
Working temperature	$-40^{\circ}\text{C}-85^{\circ}\text{C}$
Working humidity	5%–95%

5. Engineering Drawing

A	B	C	D
8			8
7			7
6			6
5			5
4			4
3			3
2			2
1			1
A	B	C	D

RoHS
Compliant
G P

please refer to operation description.

REMARKS:

1. ALL MATERIALS ARE RoHS COMPLIANT.

4	SMA connector		black	17*2 13.0mm	1	
3	Under the base	ABS	black	14.5*φ 13mm	1	
2	On the base	ABS	black	18*φ 13mm	1	
1	The shell	TPE	black	156*φ 13mm	1	
No.	Name	Material	Color	size	Amount	

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Third Angle	Project	Hf01	Designed by	
0~10 ±0.10	Part Name	2.4G external external antenna	Date	
10~18 ±0.15	Part No.	M02-0600040R0A	Checked by	RF
18~30 ±0.20	Material		Date	
30~40 ±0.25	DWG No.	00000216	Approved by	
40~ ±0.30	Unit	mm	Scale	1:1

Rev	Description	Date	Remark	Location
A0	New drawing	20210423		

6. Antenna Test

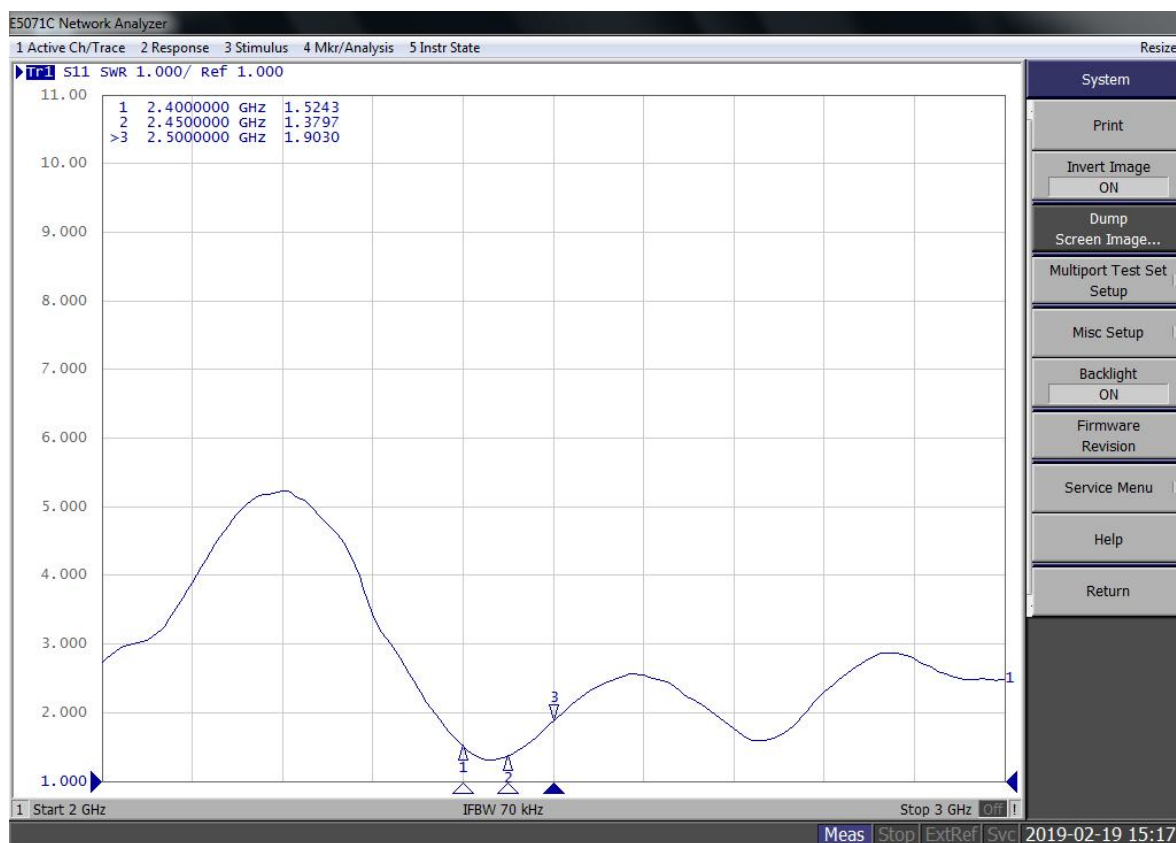
6.1 Processing Mode

6.1.1 Matching Circuit (Nothing)

6.1.2 Environmental Treatment (Nothing)

6.2 Performance Testing

6.2.1 VSWR



Standing wave ratio data

Freq	2.4GHz	2.45GHz	2.5GHz
VSWR	1.52	1.37	1.90

6.2.2 Active Antenna Test (Nothing)

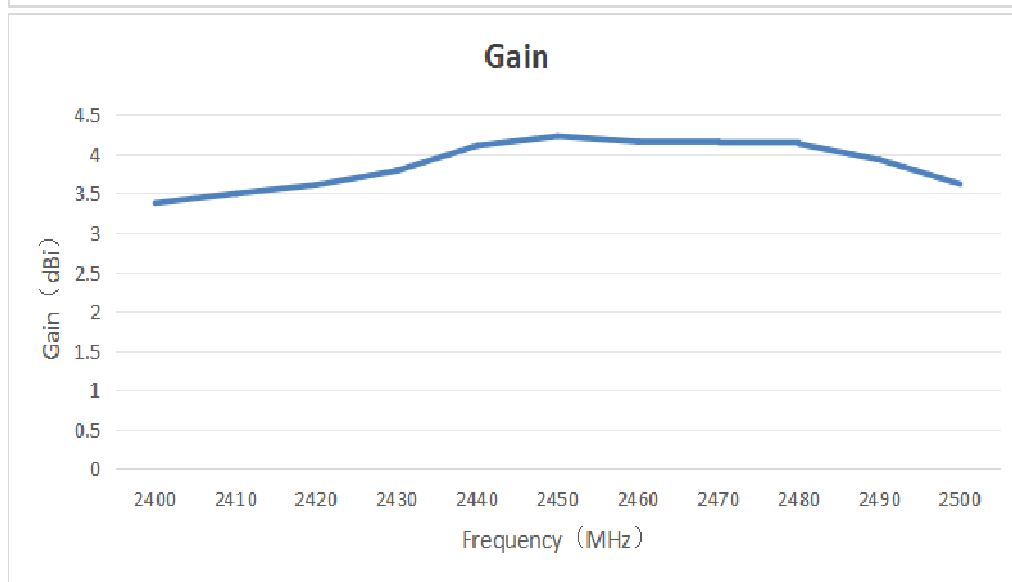
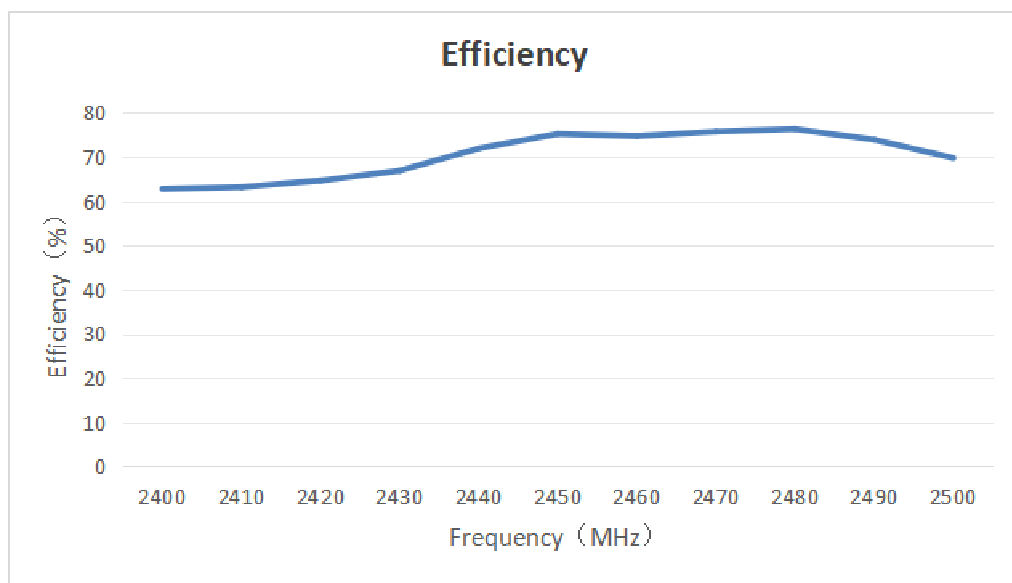
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6.2.3 Passive Antenna Test



Frequency (MHz)	Gain (dBi)	Efficiency (%)	Frequency (MHz)	Gain (dBi)	Efficiency (%)
2400	3.38	62.78	2460	4.16	74.70
2410	3.50	63.19	2470	4.15	75.69
2420	3.61	64.65	2480	4.13	76.24
2430	3.79	66.90	2490	3.93	73.86
2440	4.11	71.89	2500	3.62	69.73
2450	4.23	75.18			

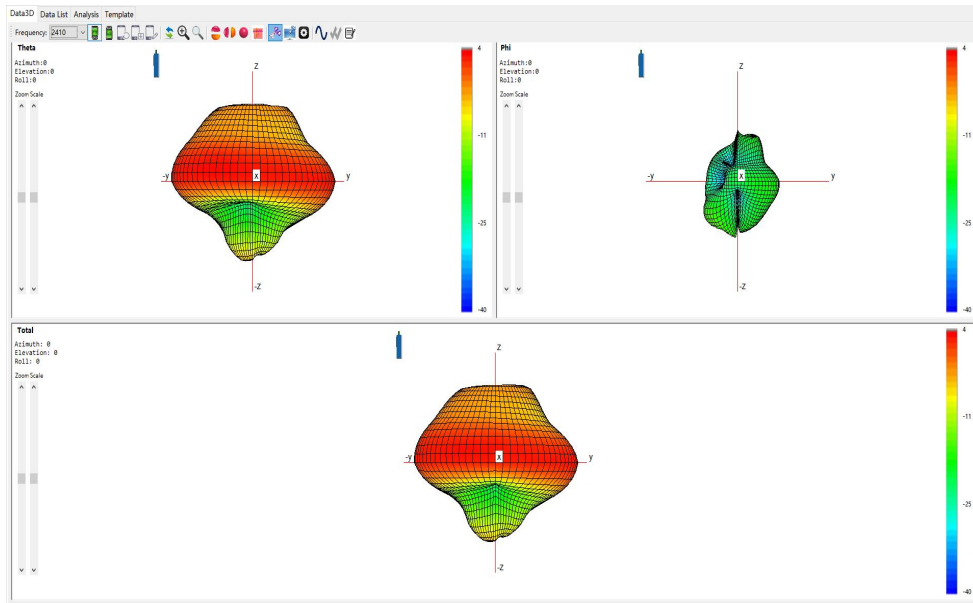
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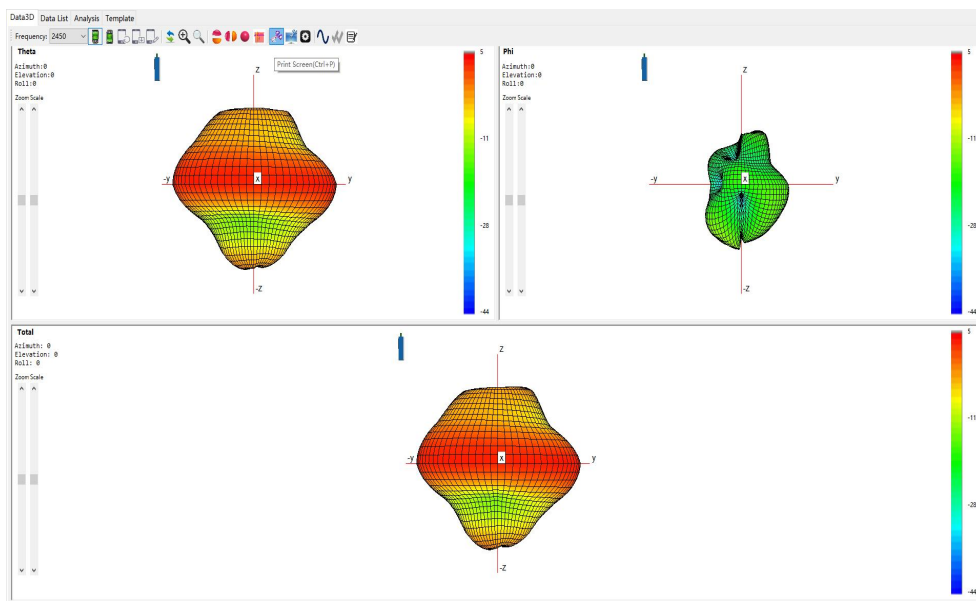
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6.2.4 3D graphics



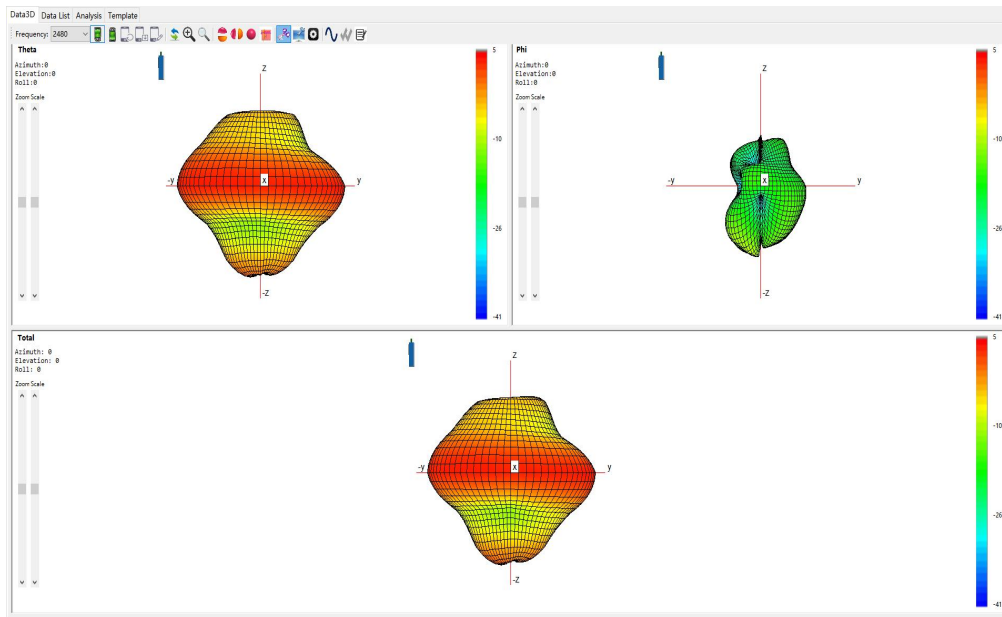
2410MHz

Gain=3.5dBi



2450MHz

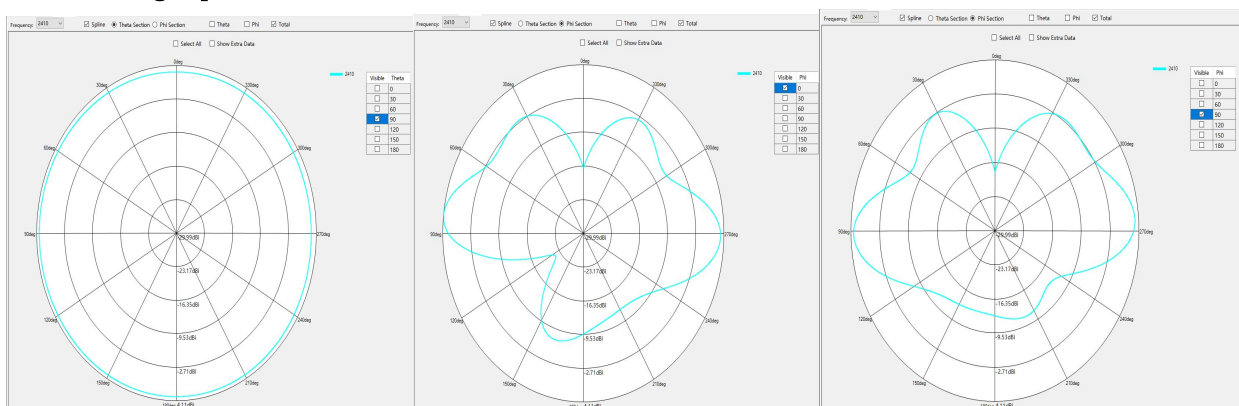
Gain=4.23dBi



2480MHz

Gain=4.13dBi

6.2.5 2D graphics



2410MHz

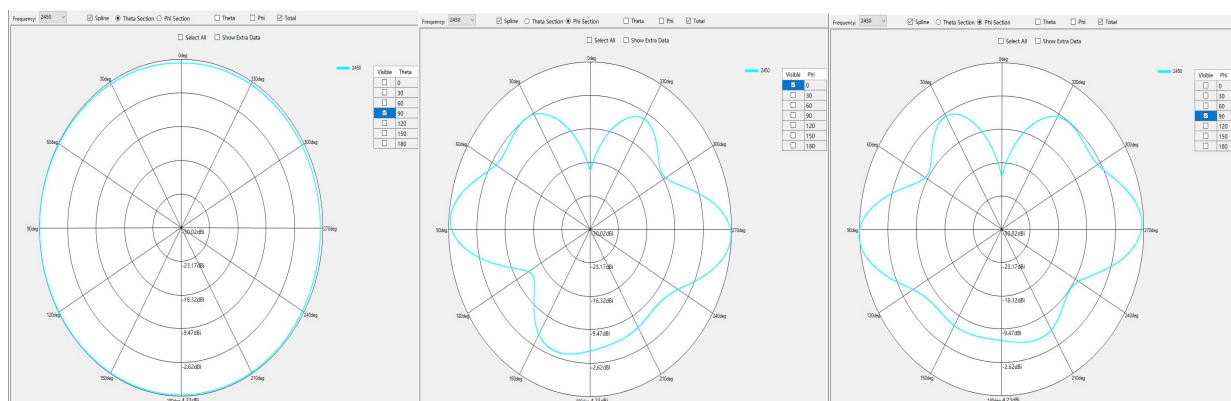
Gain=3.5dBi

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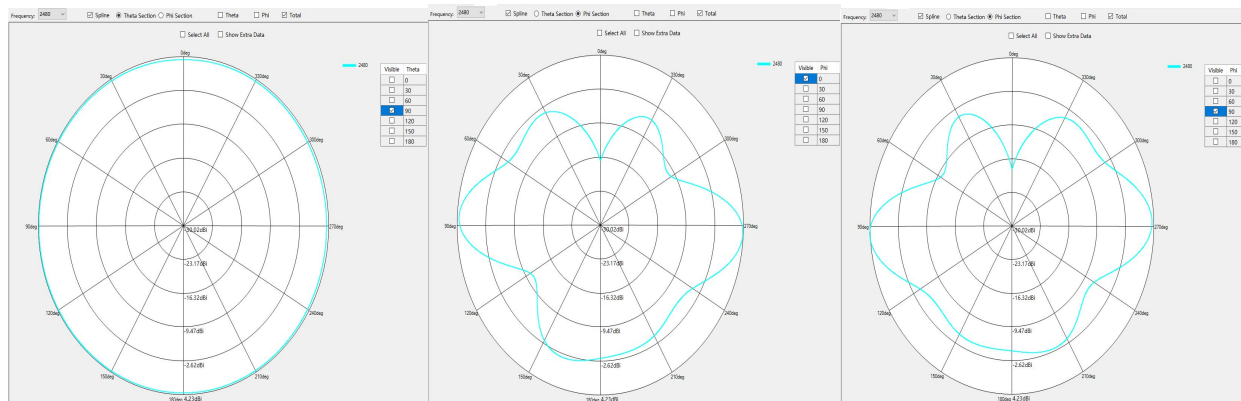
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2450MHz

Gain=4.23dBi



2480MHz

Gain=4.13dBi

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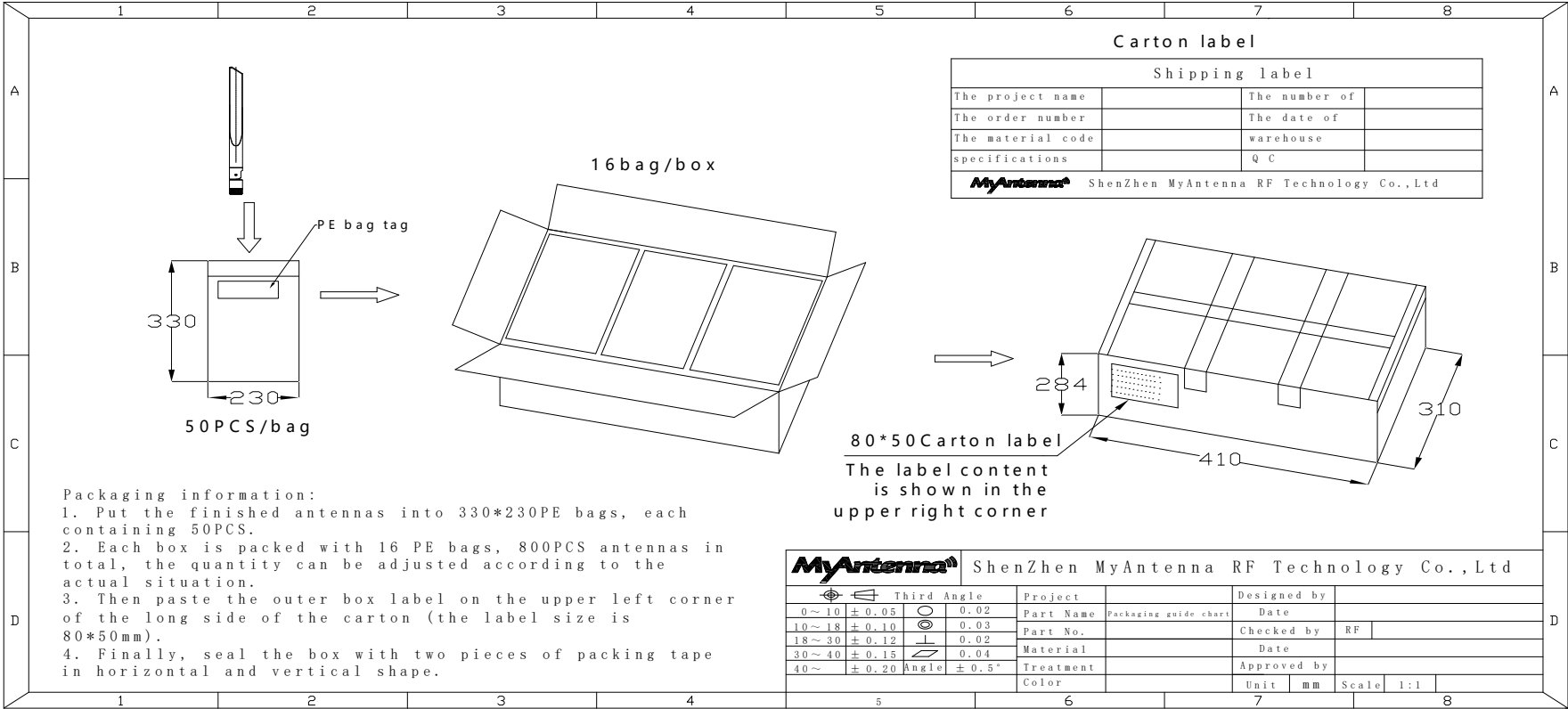
7. Antenna placement diagram

please refer to internal photos.

8. Inspection Report

Project Name		Hf01		Antenna Type	2.4G external rod antenna	Inspection Date	2024-03-01		
Appearance Standard				1、No abnormality on the antenna surface					
Dimension Standard				2、Within the required tolerances based on the drawing					
No	Inspection subject	Standard	Inspection tool	Sampling number	Result	Remark			
1	Appearance	As Above	Visually	6PCS	OK				
2	Dimension	As Below Chart	Vernier Caliper	6PCS	OK				
No	Inspection Subject	Dimension	Tool	Test Results (Recorded six groups of testing data includes the highest & lowest values)					
				1	2	3	4	5	1
1	Dimension	$\Phi 13 \pm 0.3$	Caliper	13.05	13.08	13.09	13.01	13.03	13.07
2		195.0 ± 5.0		196.4	195.9	196.8	195.2	196.3	195.2
3									
Remark									
Supervisor: SAM		Audit: CHEN			Inspector: JOYCE				

9.Packing specification diagram



10. QC engineering drawing

 QC engineering drawing			The file number	MA-QCW-2206-006	The file name	2.4G external rod antenna			To compile	zhao
			version	A					audit	
			The release date	2022-06-11	Effective date	2022-06-11	The page number	1/2	approval	xu
The serial number	process	The name of the process	Make technical parameters/quality characteristics	Use equipment fixture	Testing equipment	Check the method	Check the frequency	Using the record	undertaker	The relevant documents
1		Incoming inspection	Inspection standards/drawings	caliper	/	visual	AQL sampling	IQC inspection report	IQC	
2		Production of picking	Production task list	/	/	/	/	Material requisition	Warehouse operator	
3		Unpacking (unpacking) confirm quantity	Delivery note	/	/	/	/	Delivery note	The operator	
4		First appearance	Sealed samples samples	/	visual	visual	/	IPQC first inspection	IPQC	

		confirmation						record		
5	  	First piece performance test	The product meets the requirements in the design specification	/	Network analyzer	Test visual	/	IPQC first inspection record	IPQC	
6	 	Assemble the SMA head	Technical documents/drawings/BOM	/	manual	visual	All inspection	Daily production report	The operator	
7		inspection	IPQC process inspection regulations	/	visual	visual	2H	IPQC process inspection record	IPQC	
8	 	Soldering PCB	Technical documents/drawings/BOM	/	manual	visual	All inspection	Daily production report	The operator	
9	 	inspection	IPQC process inspection regulations	/	visual	visual	2H	IPQC process inspection record	IPQC	
10	  	Assemble the shell	Technical documents/drawings/BOM	/	manual	visual	All inspection	Daily production report	The operator	
11		inspection	IPQC process inspection regulations	/	visual	visual	2H	IPQC process inspection record	IPQC	
12		Appearance all inspection	Technical documents/drawings/appearance criteria	/	visual	visual	All inspection	Daily production report	The inspector	

13		Test	Technical documents/drawings	/	Network analyzer	Test visual	All inspection	Daily production report	The operator	
14		Packing (bag) quantity confirmation	Drawing/BOM	/	/	visual	All inspection	Daily production report	The operator	
15		inspection	IPQC process inspection regulations	/	visual	visual	2H	IPQC process inspection record	IPQC	
16		Put in storage	Production task list	/	/	/	/	Warehouse receipt of products	Warehouse operator	
17		Pre-shipment inspection	Shipping note	Network analyzer		measurement	AQL sampling	/	OQC	
instructions: □ Said operation、 processing; ◇ It means confirm, check, judge, approve; ▽ Put into storage; ↓ Said handling										
mark	Modify the content				version	The date of		modifier	The examination and approval	