灰度科技
HUIDU TECHNOLOGY

Sample certificate of conformity

Manufacturer name： Shenzhen Huidu Technology Co., Ltd.

Gray scale
official part number： F03.02.0026

Gray scale
Sample part number：

name of a part： 2.4G Surface mount antenna

specifications and models ： ZK-2.4G-SMAJ-1M

Important parameter description：

date： 2024.03.04

	purchase	Hardware/ engineering	character
Customer seal			

SPECIFICATION FOR APPROVAL

Manufacturer name: Shenzhen Huidu Technology Co., Ltd.

Customer number: F03.02.0026

Company number: A103451

Specification: ZK-2.4G-SMAJ-1M

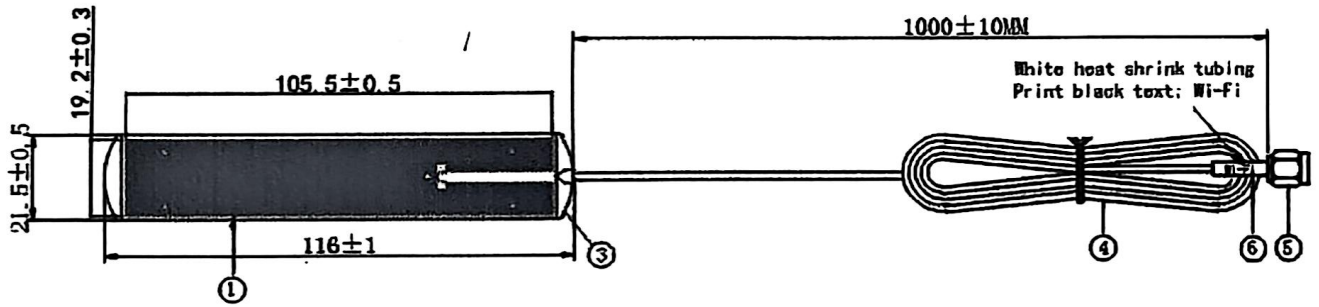
DATA : 2024.03.04

	Approval	Engineering	quality
Signature	Wu Haiyuan	Zhang shibing	Jiang Zhenhua

1. Electrical and mechanical properties

Electrical Specifications	
Frequency Range	2400-2500MHZ
VSWR	≤1.7
GAIN	≤2.8DBI
Radiation	OMNI
Polarizatin	LINEAR
Input Impedance	50 Ω
Mechanical Specifications	
Input connector	SMA-J
Antenna materia	PCB
Working Temperature	-30℃~+80℃
Working Humidity	40~85%

2. Antenna structure size diagram



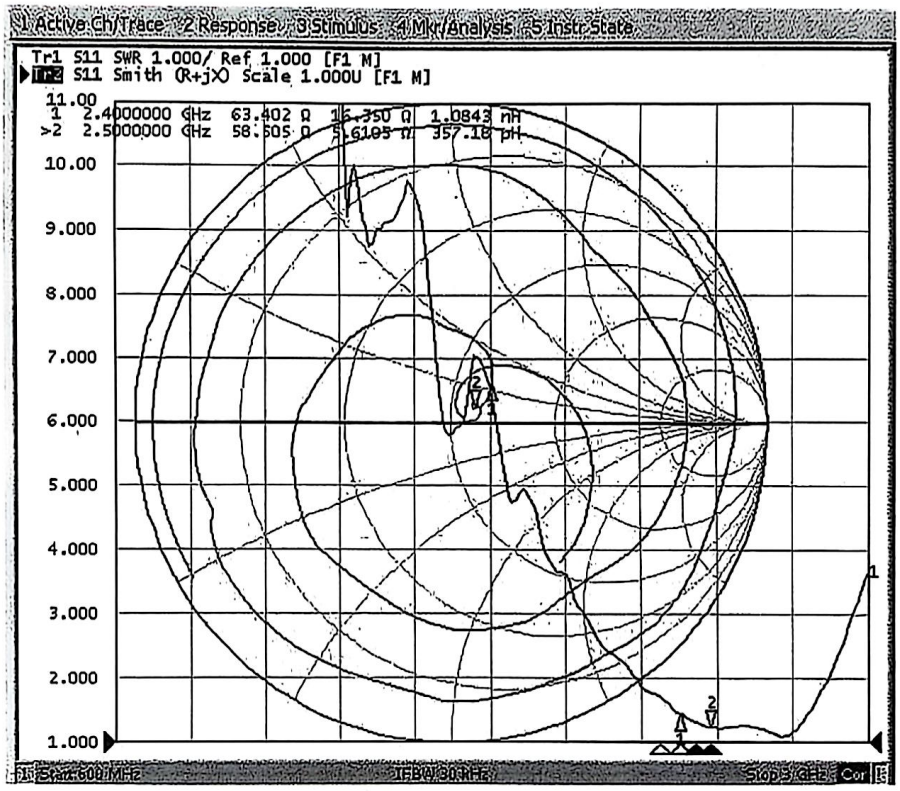
Component Material and Process Description:

number	Material name	product description	quantity
①	Antenna element	FR-4, 105.5MM*19.2MM*0.6MM	1
②	nstallation method	3M foam double-sided tape without words, T=6MM	1
③	Shell material	ABS BLACK	1
④	CABLE	RG174 COAXIAL CABLE 50ohm	1
⑤	CONNECTOR	SMA J	1
⑥	H.S TUBE	HEAT SHRINK TUBE	1

Remarks
1 The size marked in the picture is the required IQC size
2 The assembly of parts must be firm and reliable
3 The finished signal parameters must reach the specified value
4 The product needs to be packed in a fixed number accordingthe requirements , and there should be no obvious signs ofextrusion deformation during transportation

					ZK P/N	A103451	Customer P/N	F03.02.0026	
					Name	2.4G patch antenna			
Change Record		DATE	Changer	Version	Model	ZK-2.4G-SMAJ-1M			
Graphic method	Proportion	1:1	Paper	A4	plotting	ZHANG	DATE	2025.04.10	
	Unit	MM	Version	A	Auditing		Page	1/1	

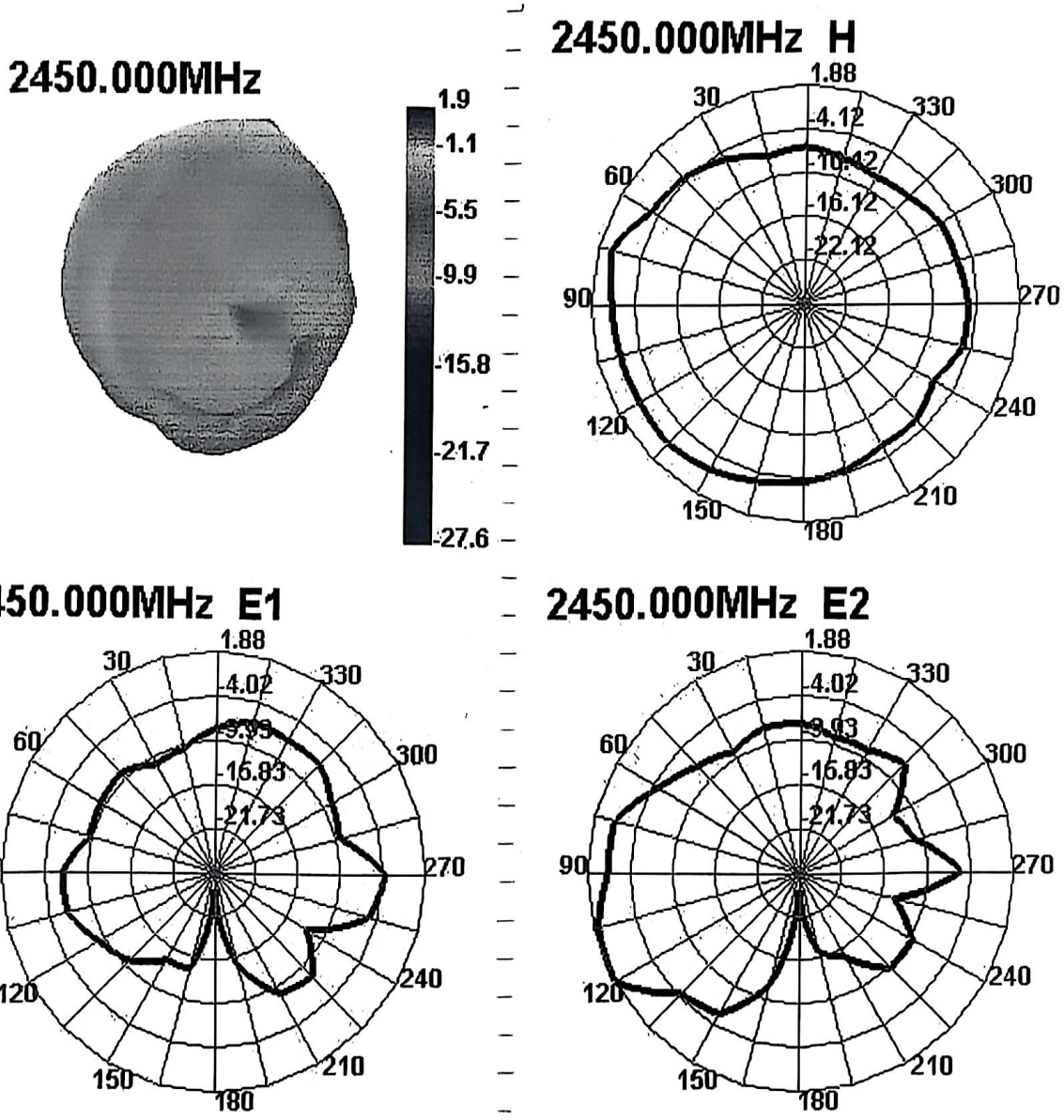
3. Passive test data



4. Gain efficiency test data

Freq (MHz)	Eff. (%)	Eff. (dB)	Gain (dBi)	Gain (dBd)
2400	29.52	-5.3	0.69	-1.46
2405	28.15	-5.51	1.21	-0.94
2410	25.77	-5.89	-0.77	-2.92
2415	25.97	-5.86	0.29	-1.86
2420	25.28	-5.97	-0.08	-2.23
2425	27.53	-5.6	0.75	-1.4
2430	22.62	-6.46	0.32	-1.83
2435	23.36	-6.32	0.86	-1.29
2440	24.55	-6.1	1.71	-0.44
2445	25.69	-5.9	1.34	-0.81
2450	26.43	-5.78	1.88	-0.27
2455	27.02	-5.68	1.96	-0.19
2460	27.6	-5.59	2.29	0.14
2465	33.37	-4.77	2.99	0.84
2470	29.99	-5.23	2.66	0.51
2475	30.6	-5.14	2.6	0.45
2480	30.17	-5.2	2.84	0.69
2485	31.17	-5.06	2.98	0.83
2490	32.25	-4.91	3.17	1.02
2495	32.18	-4.92	2.97	0.82
2500	33.32	-4.77	3.06	0.91

5. Directional test data



6. Reliability test report

test item; test project		test method	ask	bear fruit
C1	V.S.W.R.	Design netanalyzer parameters for testing	Directive DUT specification	pass
M1	antenna gain	Design the parameters of the antenna dark chamber for testing	Directive DUT specification	pass
M2	Vibration	GB / T2423.48-2008 Amplitude: 0.03 inch (1.5mm); Freq: 20 to 80to 20 Hz3 directions; 2 hours for each direction	1. No Visual Damage 2. Frequency Tol.≤5%	pass
M6	Random Drop	GB / T2423.8-1995 Single: Height: 1.0 Meter; 3 directions; 1 time for each direction	1. No parts separated、fracture 2. Frequency Tol.≤5%	pass
E3	Dimension	Inspection of dimension, color, material, package, surface process.	Directive DUT specification	pass
E4	Temperature and Humidity Chamber	GB / T 2423.3-2006 Temp: 80°C / 12 H; -40°C / 12H RH: ≥ 90%; Time: 24H temperature 80°C	After 2 Hours Recovery 1. No Visual Damage 2. Frequency Tol.≤5%	pass
E5	Thermal Shock	GB / T 2423.22 - 2008 - 40°C (30 minutes) to + 80°C(30 minutes); Cycles:24-40°C	After 2 Hours Recovery 1. No Visual Damage 2. Frequency Tol.≤5%频率偏移≤5%	pass
R1	Aging test	GB /T 2423.2-2008 Temp: 80°C; Time: 24 hours	After 2 Hours Recovery 1. No Visual Damage 2. Frequency Tol.≤5%	pass
M1	RoHS	With Reference to IEC 62321:2008 with flow chart	Directive RoHS 2015/863/EU	pass

7. Product packaging specifications

Product name / specification:

1、 labeling requirement

******	
Purchase order number	**********
material code	**********
Product name specification	*******
Quantity	*****
remarks	**********

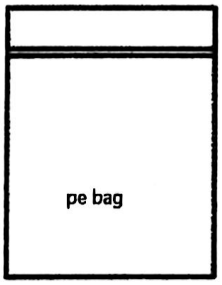
******	
Purchase order number	**********
material code	**********
Product name specification	*******
Quantity	*****
remarks	**********

2、The packing requirements

job description :

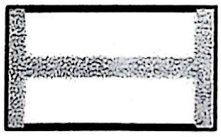
1). inner packing:

Product____PCS in a small bag

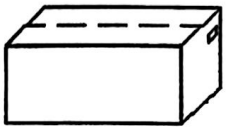


2). external packing:

Determine the quantity / box according to the actual quantity



carton



3、matters need attention:

1). Whether to add a partition board, pearl cotton;

2). Attachment of labels, such as ROHS;