

Tianin Intelligent Internet of Things
Technology (Shenzhen) Co., LTD

acknowledgement

Name	material
Household	household
Guest	guest guest

Said: cast beauty

Type: X5 projector

No.:

Description: Built-in antenna Antenna/2.4G-WiFi/3dBi/50ohm/FPC

10 10+10 00..... /554 10..... 11 11.....

Confirmation of signature and seal

Tianfrequency intelligent confirmation customer confirmation

Sample preparation audit approval verification audit approval

Signature and seal of the customer

Date 2022-11-23 Date 2022- -

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2. Document formulation / revision / abolition of the resume

[illegible]

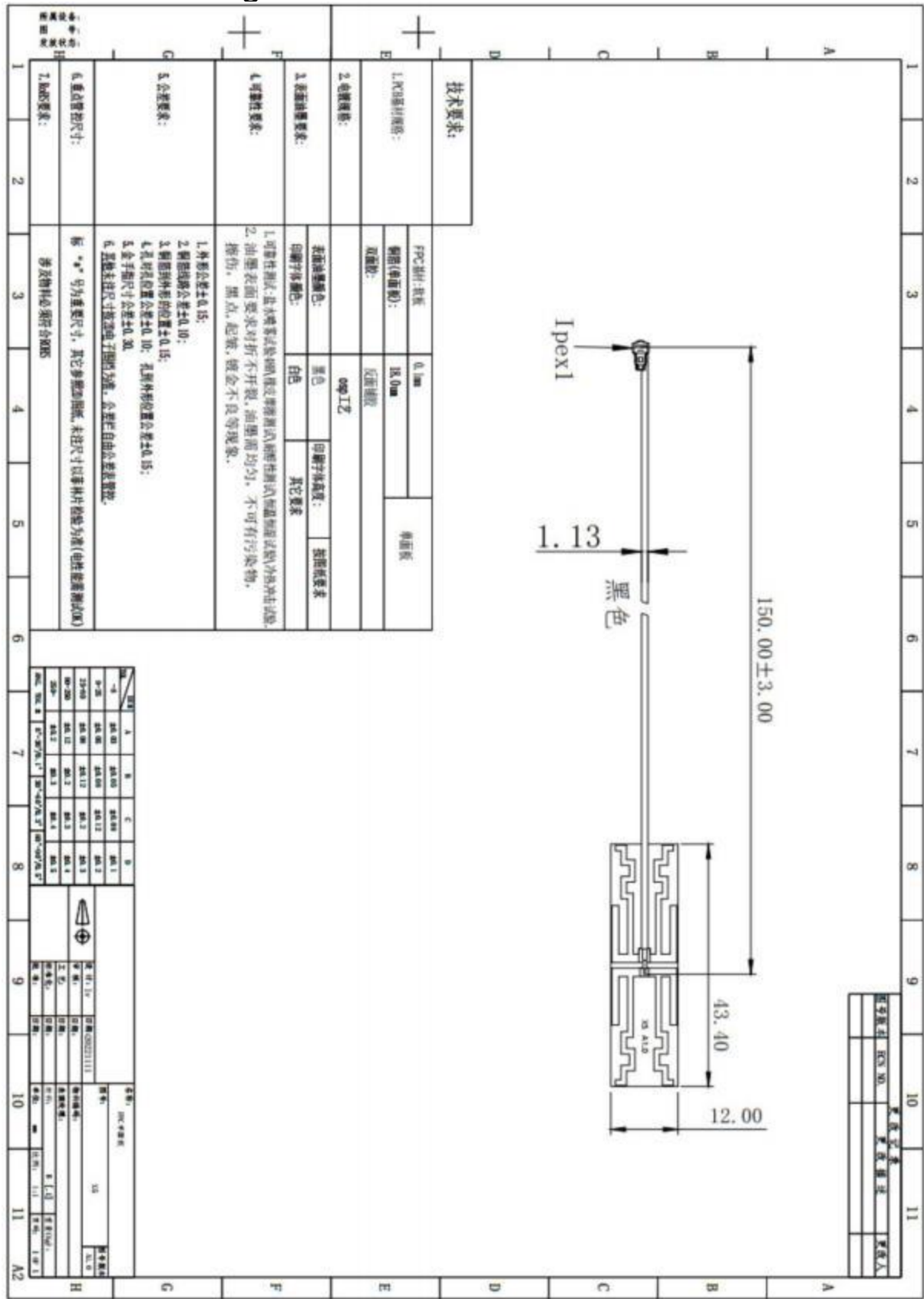
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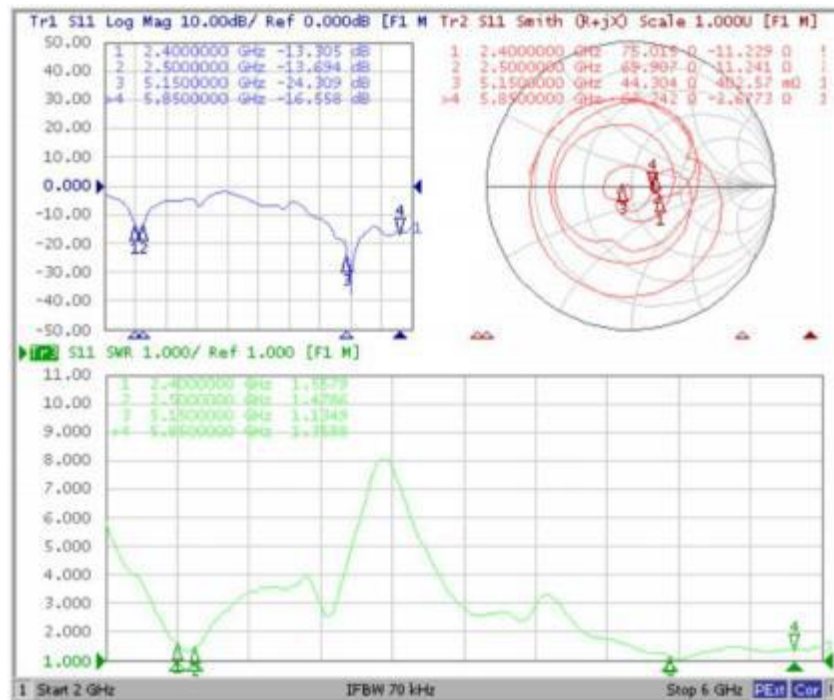
4. Product drawings



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5. passive performance test parameters

S11



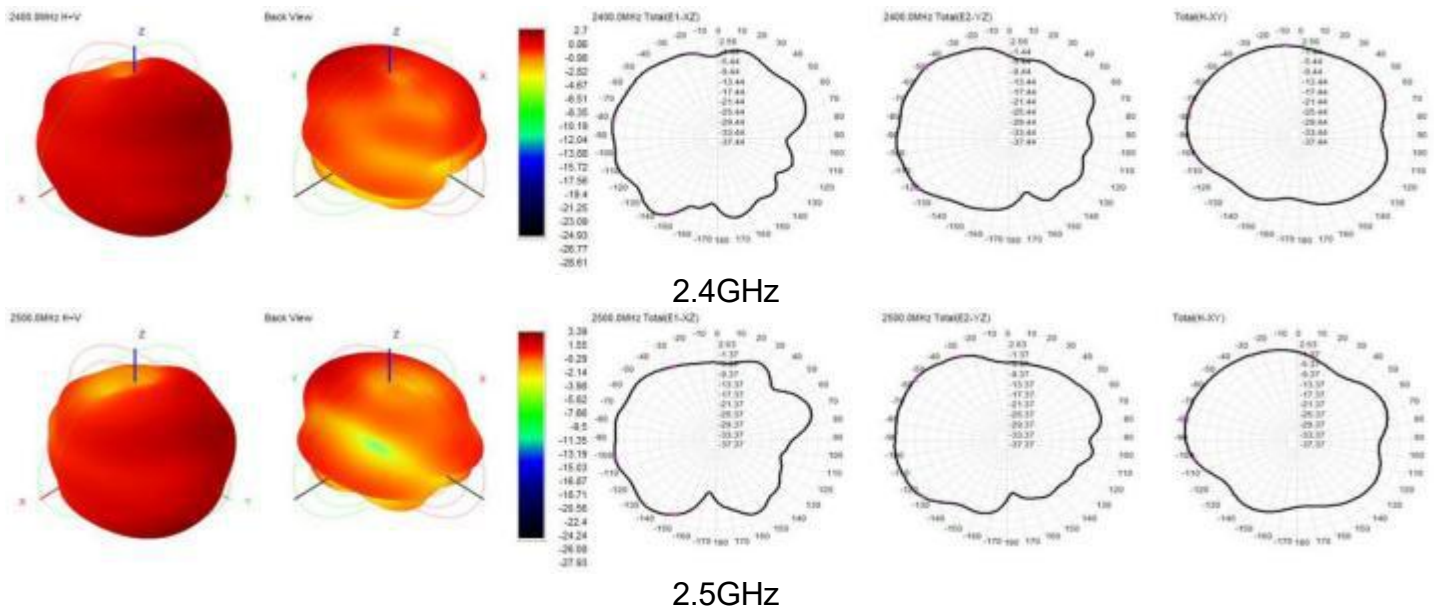
Fre(GHz)	2.4	2.5
ReeturnLoss	-13.30	-13.69
VSWR	1.55	1.47

Efficiency, gain, and direction diagram



Frequency ID	1	3	5	7	9	11	12	14	16	18	20	22	24	26
Frequency (MHz)	2400.0	2420.0	2440.0	2460.0	2480.0	2500.0	5150.0	5250.0	5350.0	5450.0	5550.0	5650.0	5750.0	5850.0
Efficiency (dBi)	-2.60	-2.61	-3.08	-3.39	-3.03	-2.61	-4.71	-4.91	-3.51	-3.51	-4.15	-4.60	-4.46	-4.21
Gain (dBi)	2.70	2.75	2.63	2.54	2.65	3.39	2.86	2.48	4.01	4.09	3.53	3.30	3.28	3.18
Efficiency (%)	54.95	54.81	49.21	45.78	49.77	54.86	33.80	32.28	44.58	44.59	38.50	34.67	35.81	37.97
Directivity (dB)	5.30	5.36	5.70	5.94	5.68	6.00	7.57	7.39	7.52	7.60	7.67	7.90	7.74	7.38
Peak Gain Position (Theta)	96.00	110.00	98.00	96.00	101.00	108.00	99.00	68.00	96.00	71.00	70.00	69.00	70.00	99.00
Peak Gain Position (Phi)	71.00	62.00	70.00	72.00	69.00	65.00	64.00	91.00	74.00	87.00	89.00	87.00	84.00	63.00
Efficiency ThetaPol (%)	44.13	43.69	39.28	37.66	40.31	44.84	30.68	28.07	40.36	40.98	34.90	30.84	32.28	34.08
Efficiency PhiPol (%)	10.82	11.12	9.93	8.11	9.46	10.02	3.12	4.20	4.23	3.61	3.60	3.83	3.53	3.90
Upper Hem. Efficiency (%)	31.68	30.27	26.30	25.46	28.01	29.56	20.11	17.97	25.14	25.47	22.73	20.81	21.25	22.10
Lower Hem. Efficiency (%)	23.27	24.54	22.92	20.32	21.76	25.31	13.69	14.31	19.44	19.12	15.76	13.86	14.56	15.88

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6. Electrical performance parameters		spray test
		working temperature
frequency range	input impedance	
standing-wave ratio		
gain	2.4GHz	
	5.8GHz	
Polarization mode		
radiation direction		
Connector model		
wire length		
Mainten		
ance		
force		

coaxial
cable
salt

polarized
omnidire
ctional

lp ex1

o

-40~85℃

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Contact person: Wang Jianguo Mobile phone: 13424341872

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7. Reliability test report

7.1. Constant temperature and humidity test

Test / test items	steady temperature damp test	Inspection sheet number
Product name / specification	2.4G-FPC RF1.13mm Line, line length of 150mm, Ip ex1	Number of tests: 5 PCS
Inspection date: November 29,2022		Completion date: 20-2022
Test / inspection equipment: 1. Program-type constant temperature and humidity test box 2.8753 ES network analyzer		
Test / Inspection Conditions: 1. Test for 12H at constant temperature-40℃ 2. + 65 ° 65 ~ 70% RH test 12H, a total of 24 hours;		
end of test		
requirement: 1. No cracks and separation on the metal surface; the non-metallic part should not have discoloration, cracking, deformation, glue and other bad; 2. The electrical test meets the standard requirements; the voltage ratio test is qualified		
Test / inspection determination: ☒ qualified ☐ unqualified ☐ Do not make judgment		

Test: Audit:

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7.2. Cold and cold shock at high and low temperature

Test / test items	Cold and cold shock at high and low temperature 2.4G-FPC RF1.13mm Line, line length of 150mm, Ip ex1	Inspection sheet number Number of tests: 5 PCS Completion date: 20-November, 2022
Inspection date: November 29,2022		
Test / inspection equipment: 1. High and low temperature are alternating with humid heat 2.8753 ES Network Analyzer		
Test / Inspection Conditions: -40℃ (2H) - -80℃ (2H) interval, 6 cycles, a total of 24 hours;		
end of test		
requirement: 3. The metal surface coating shall not be peeling, cracking, separation, etc.; the non-metallic part shall not have discoloration, cracking, deformation, bonding and other bad; 4. The electrical test meets the standard; the voltage wave ratio test is qualified.		
Test / inspection determination: ☒ qualified ☐ unqualified ☐ Do not make judgment		

Test: Audit:

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8. Packaging specifications

Product material number:

Product specification: built-in antenna Antenna/2.4G-WiFi/3dBi/50ohm/FPC
43.40*12.00mm/RF1.13mm black coaxial axis L=150mm + Ip ex1

1. labeling requirement

Inner label length 45 wide 70				matters need attention:	Outer label long 45 wide 70			
demand					demand			
supplier	Tianfrequency Intelligent Internet of Things				supplier	Tianfrequency Intelligent Internet of Things		
	Technology (Shenzhen) Co., LTD					Technology (Shenzhen) Co., LTD		
Customer order number					Customer order			
Custom	50 PCS					Custome		
er			5000 PCS				r	
material			2. Packaging			examination clerk	material	
number							number	
material					date of manufacture	material		
code						code		
product					product			
name					name			
specific					specifica			
ation					tion			
Quantity / unit					Quantity / unit			
remarks					remarks			

2. The packing requirements

1. Internal packaging products

date of manufacture

examination clerk

Tianfrequency Intelligent Internet of Things Technology (Shenzhen) Co., LTD

Contact person: Wang Jianguo Mobile phone: 13424341872
