

Shenzhen Tianyiyuan Elec& Technology co., Ltd

Recognition book

SPECIFICATION FOR APPROVAL



Project Information

<u>Customer</u>	Shenzhen Huaxin Zhiying Technology Co., Ltd
<u>Project</u>	CT319 (Dual-band antenna)
<u>Band</u>	2450/5250/5800MHz
TTY <u>Part number</u>	TTY-TX3508-3
<u>Version</u>	01
<u>RF</u>	Mike tang
<u>ME</u>	Jake Jian
<u>Date</u>	2024.12.07
<u>project Version</u>	V1.0
<u>Customer part number</u>	

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1、Specifications

The report provides a test of the electrical performance parameters of the TYY-TX3508-3 antenna, which is a science and technology model. TYY-TX3508-3 WIFI Built in antenna, WIFI Antenna is made by copper pipe+RF Line composition. (As follows 1 Shown)

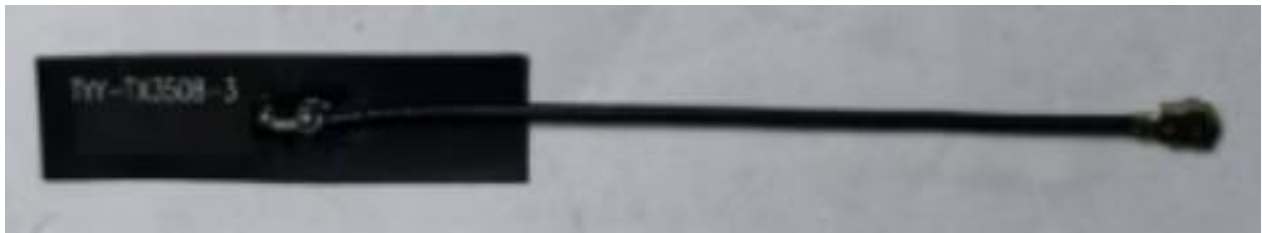
Electrical technical parameters			
电 性 能 指 标		Electrical Specifications	
频率范围	2400~2500MHZ 5180-5745MHz	Frequency Range	2400~2500MHZ 5180-5745MHz
电压驻波比	≤2.0	VSWR	≤2.0
增益	3.78dBi	GAIN	3.78dBi
输入阻抗	50 Ω	Input Impedance	50 Ω
机 械 指 标		Mechanical Specifications	
天线颜色	黑色	Antenna Color	BLACK
接口形式	IPEX-1	Input connector	IPEX-1
线长度	75mm	Cable length	75mm
工作温度	-40℃~+85℃	Working Temperature	-40℃~+85℃
工作湿度	20~80%	Working Humidity	20~80%

Chart 1 TYY-TX3508-3Product size



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Chart 2 TYY-TX3508-3 Antenna finished



Line length 60+/-2mm.

Chart 3 Location of antenna patch



First, fasten the terminal socket, then peel off the adhesive tape on the back of the antenna. The antenna must be attached to the plastic shell and kept away from metal components and objects.

Chart 4 Model appearance diagram

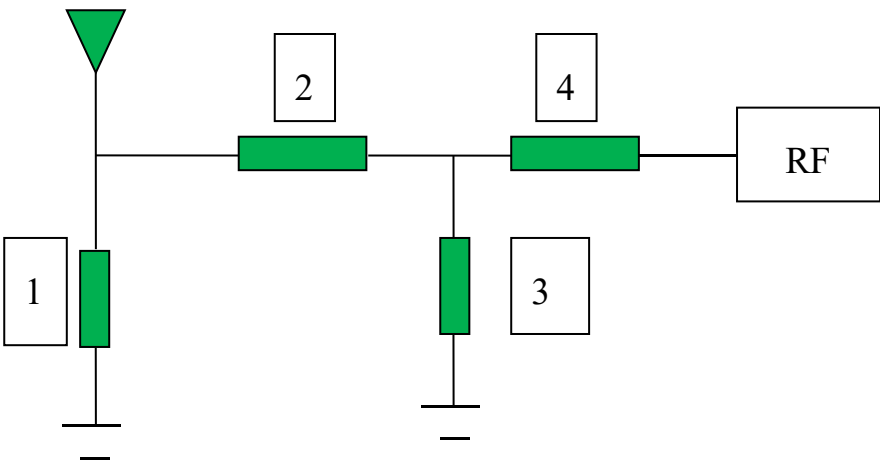


Chart 5 Actual measurement test chart (download speed 12.1 M/S per second)



2. Electrical properties

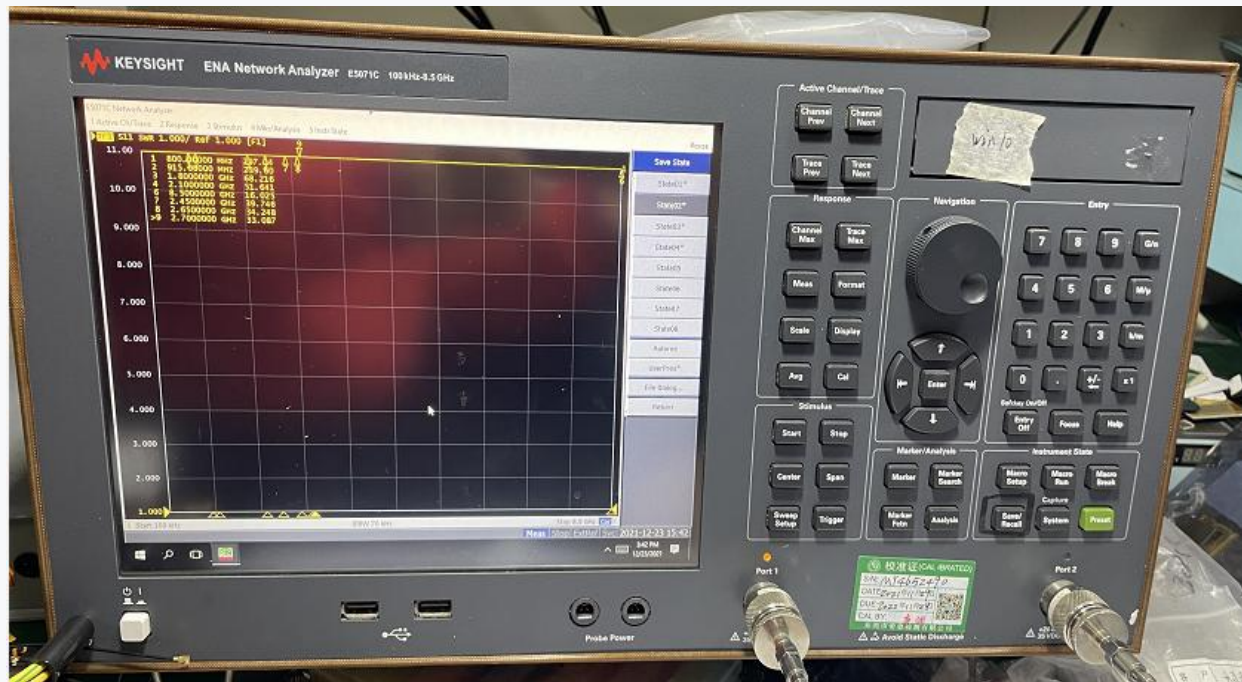
2.1WIFI Antenna matching circuit This item matching circuit is provided by the customer。



Element number	1	2	3	4
WIFI optimum	NC	0 ohm	NC	
Original (spare)	50 ohm matching (inductance capacitance / sunlord Darfon)			

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Chart 6 Agilent E5071C network analyzer



OTA microwave anechoic chamber: The test frequency range is 800MHz-8.5 GHz, the quiet zone range is 50cm circumference, and the reflectivity is less than -90 dB.

2.4.2 Instruments tested

Agilent E5071C network analyzer, log-periodic antenna, computer, transmitting turntable, receiving antenna, printer, jacket choke (in order to reduce the loss of signal connection lines).

Chart 7 OTA Microwave dark room



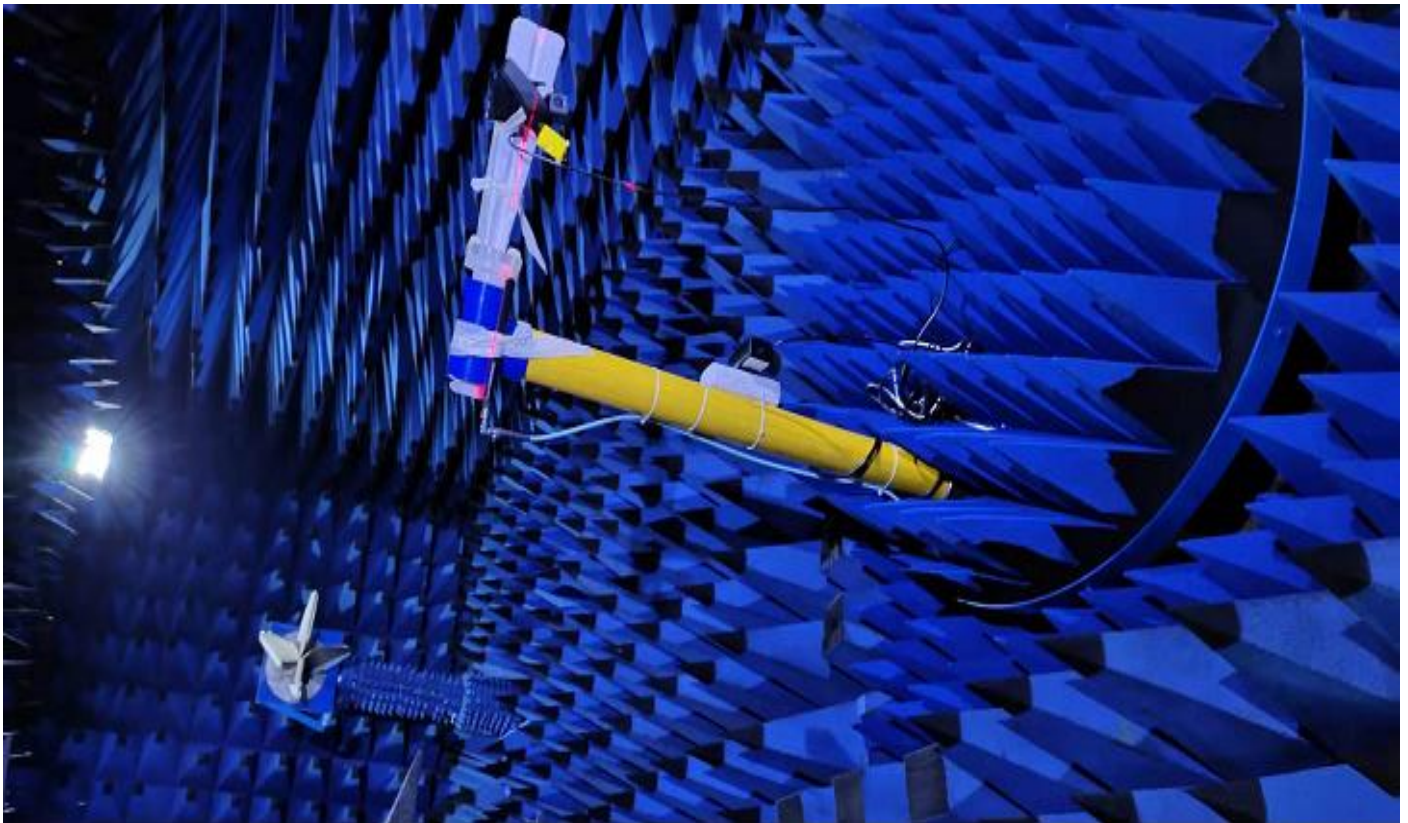
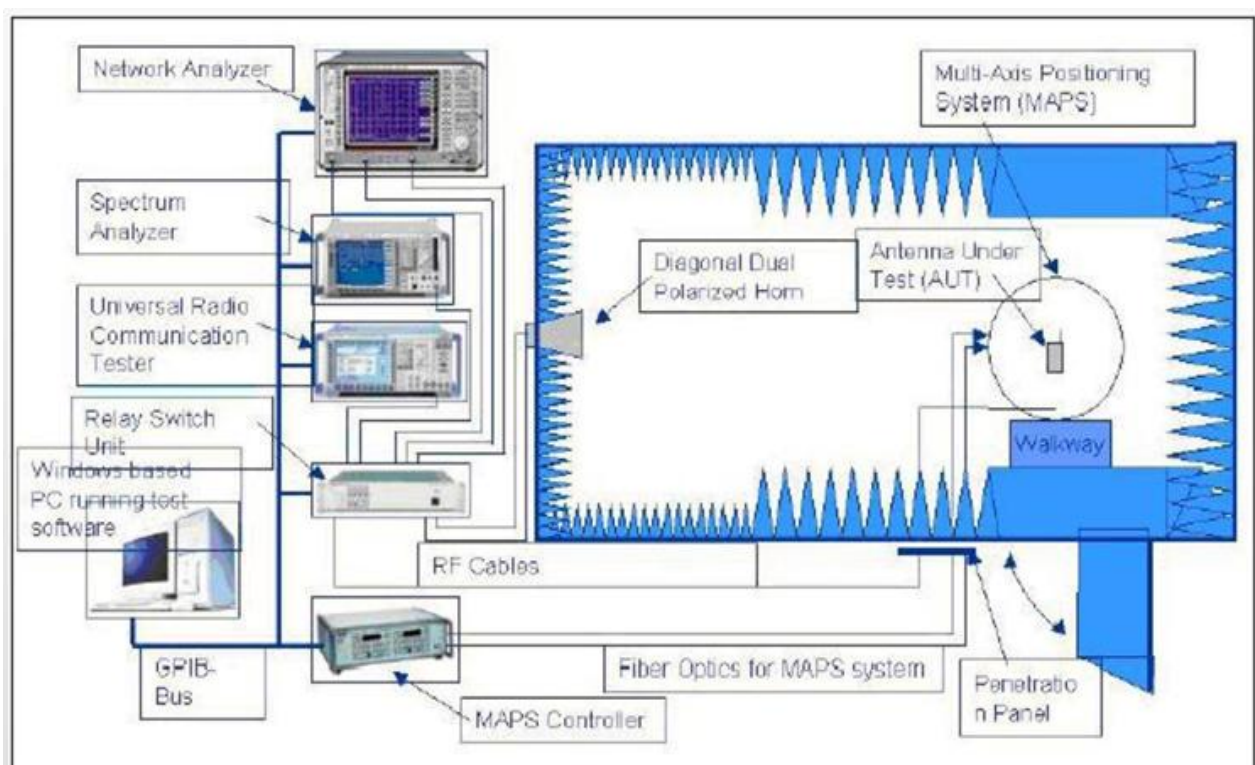


Chart 8 Test system

Test environment: OTA743 darkroom, W500/8960/8753ES /5071C, the machine is placed with its back to the turntable 4 meters away from the standard horn

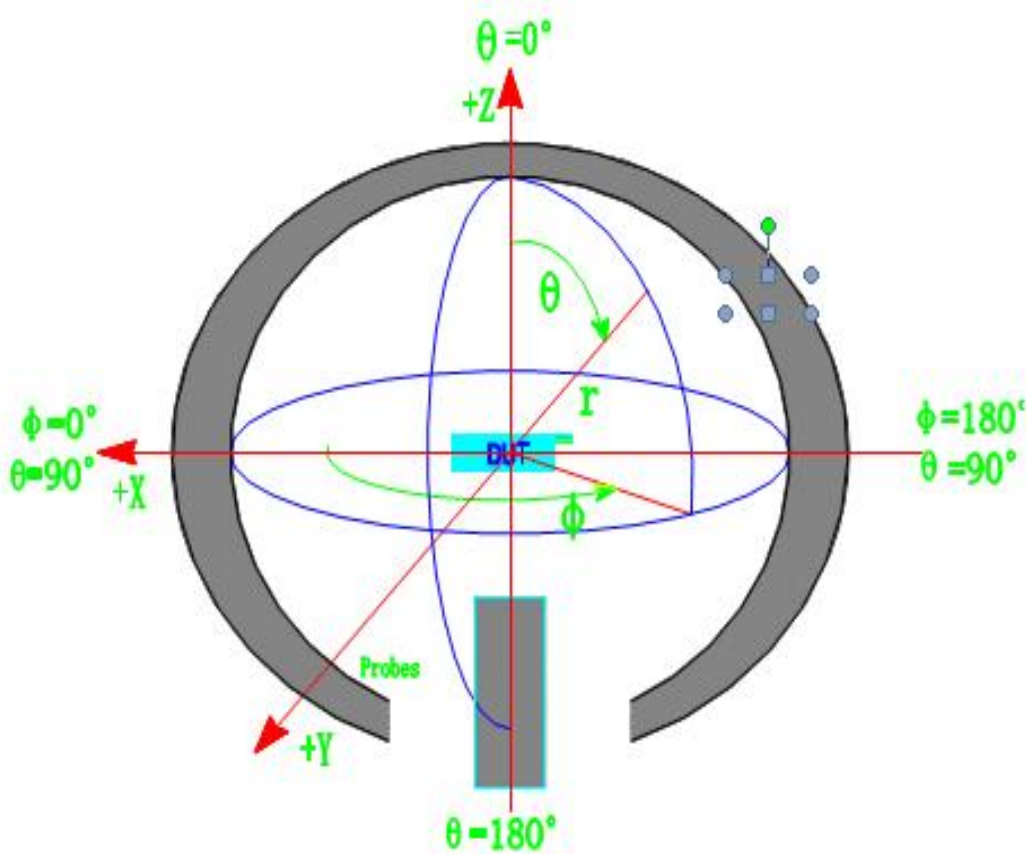


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2.3.1. Test setup

Connect the VSWR test device are: Agilent E5071C network analyzer from 50 ohm coaxial Cable 120mm long Brass & test fixture Processing test fixture: 50 ohm antenna leads to SMA-J connector from the test point on the plate PCB with a rigid cable, and a Connect the choke tube, and then sequentially connected with other devices.

Chart 9 Return loss

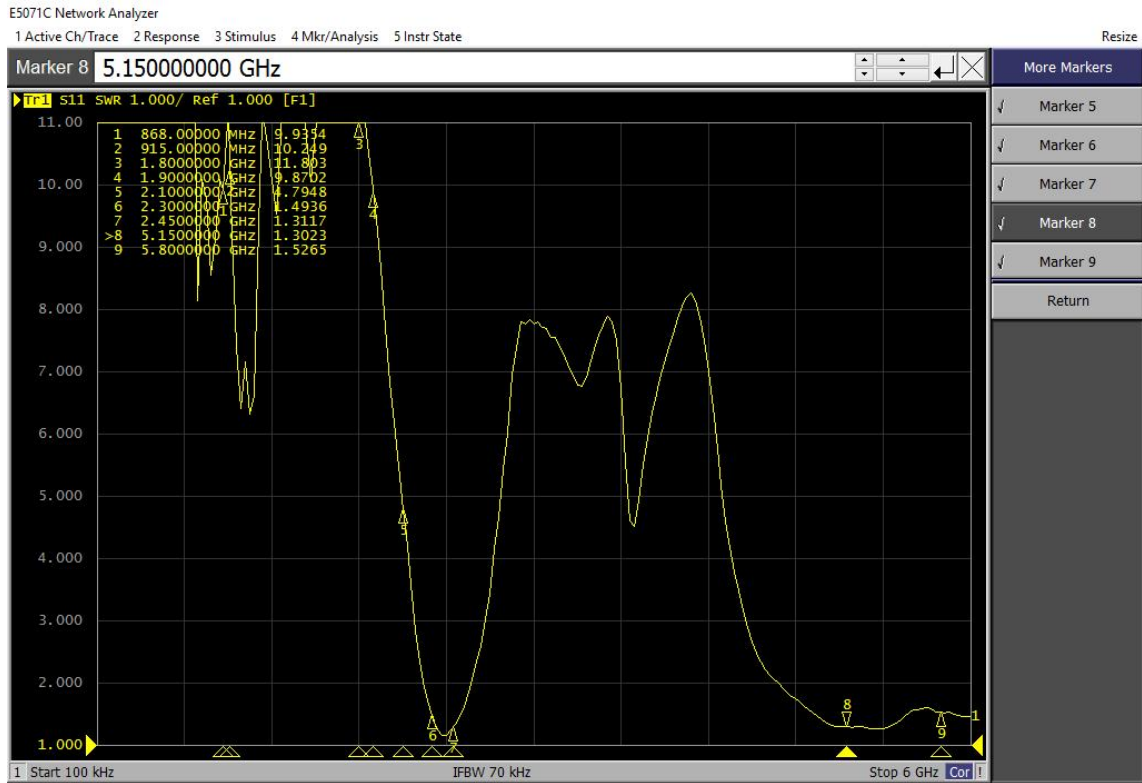


4.1 Test site

TCT microwave anechoic chamber: the test frequency range is 800MHz-6GHz, the quiet zone range is 50cm circle, and the reflectivity is less than -90 dB.

Chart 10 WIFI VSWR

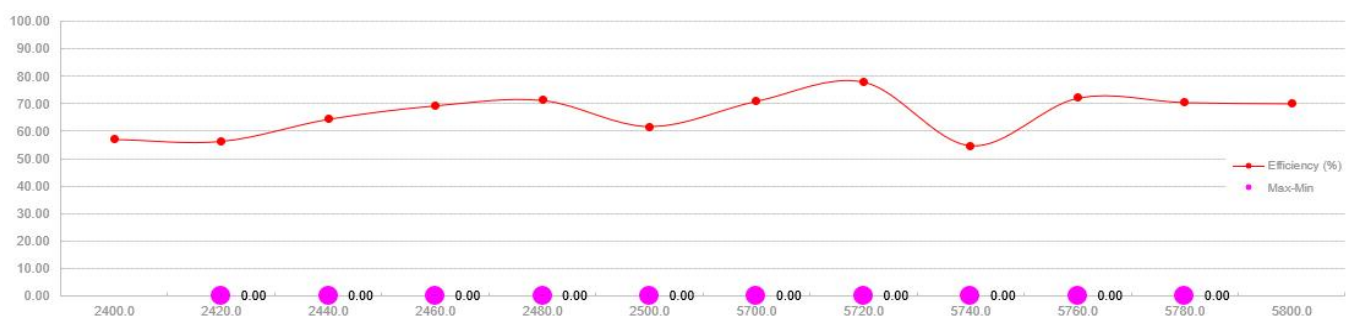
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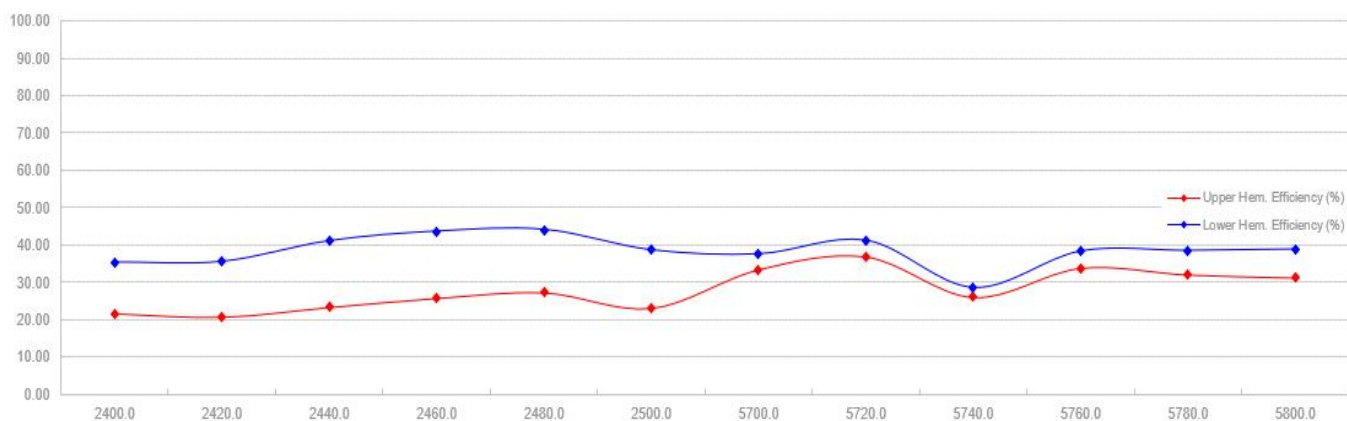
standard	Low frequency		High frequency		
frequency (MHz)	2412	2445	5700	5800	
VSWR	1.3	1.4	1.3	1.5	

Elevation map coverage

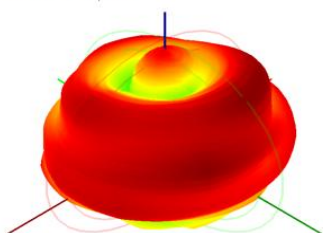
FEITUKEJI												
Frequency ID	1	3	5	7	9	11	12	14	16	18	20	22
Frequency (MHz)	2400.0	2420.0	2440.0	2460.0	2480.0	2500.0	5700.0	5720.0	5740.0	5760.0	5780.0	5800.0
Efficiency (dBi)	-2.44	-2.50	-1.91	-1.59	-1.47	-2.10	-1.49	-1.08	-2.62	-1.42	-1.52	-1.55
Gain (dBi)	2.22	2.61	3.43	3.80	2.91	2.38	3.39	4.13	2.22	3.61	3.78	2.82
Efficiency (%)	57.02	56.28	64.38	69.33	71.29	61.70	71.01	78.01	54.67	72.14	70.49	70.06
Directivity (dB)	4.66	5.11	5.34	5.39	4.38	4.48	4.88	5.21	4.85	5.03	5.30	4.37
Peak Gain Position (Theta)	144.00	141.00	144.00	124.00	144.00	145.00	80.00	127.00	79.00	86.00	141.00	81.00
Peak Gain Position (Phi)	180.00	180.00	180.00	210.00	180.00	180.00	90.00	90.00	90.00	270.00	60.00	90.00
Efficiency ThetaPol (%)	39.41	39.00	45.30	49.26	50.37	43.36	22.93	23.88	24.09	23.92	23.84	23.39
Efficiency PhiPol (%)	17.60	17.28	19.08	20.07	20.92	18.34	48.08	54.13	30.58	48.22	46.65	46.67
Upper Hem. Efficiency (%)	21.62	20.70	23.32	25.75	27.24	23.07	33.45	36.85	26.01	33.82	32.02	31.23
Lower Hem. Efficiency (%)	35.39	35.57	41.06	43.58	44.04	38.62	37.56	41.16	28.66	38.32	38.47	38.83



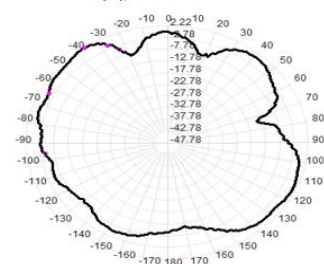
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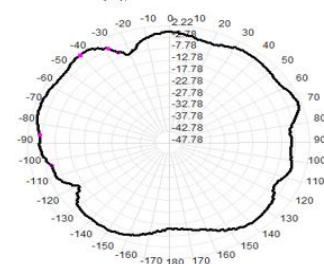
2400.0MHz H+V, Eff: 57.0%



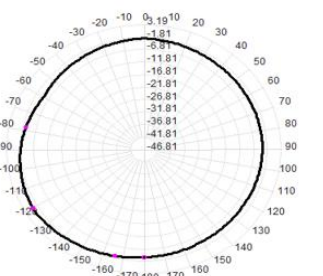
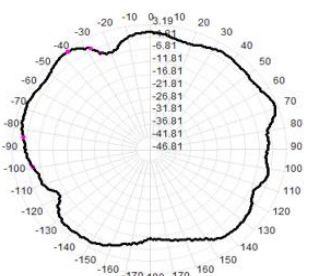
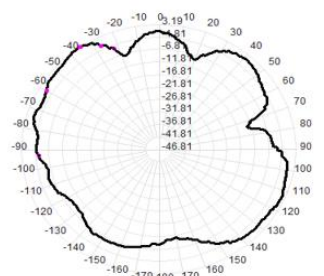
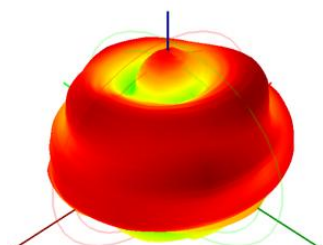
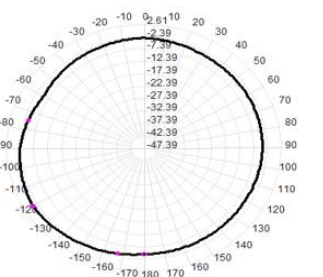
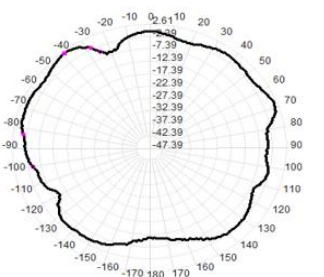
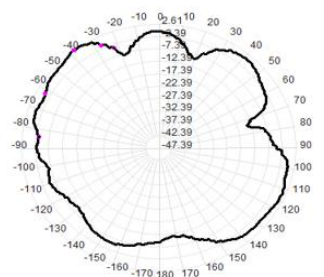
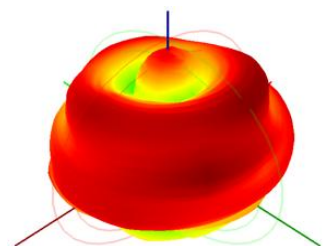
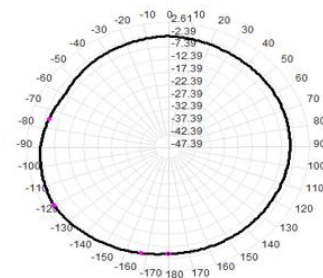
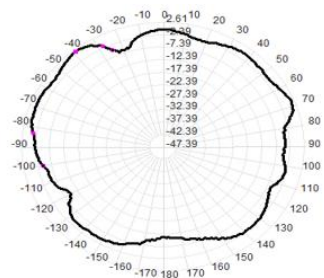
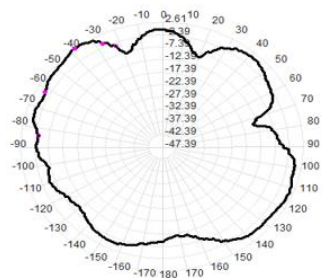
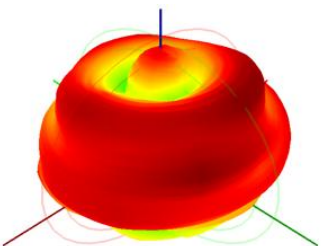
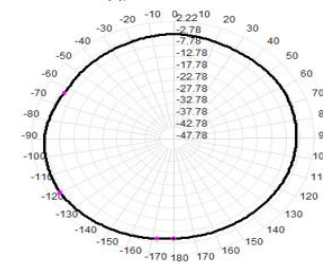
2400.0MHz Total(E1), Max= 2.22dBi

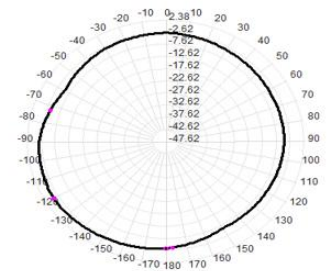
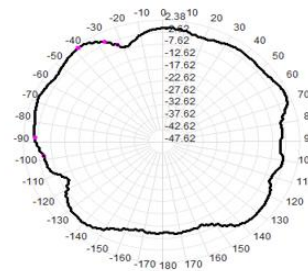
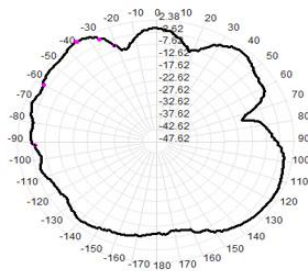
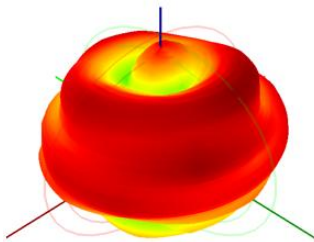
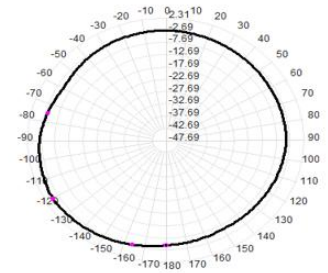
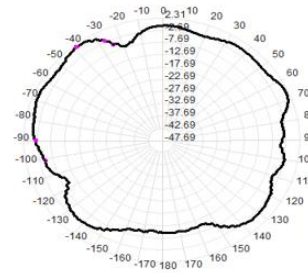
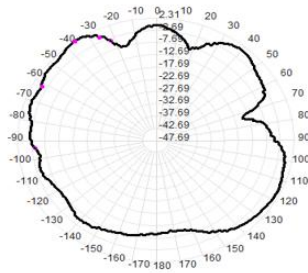
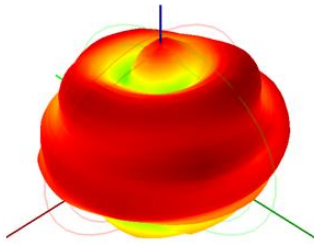


2400.0MHz Total(E2), Max= 1.02dBi



2400.0MHz Total(H), Max= -1.62dBi





3, recommendations and conclusions

This report is based on the antenna electrical performance measured by the customer based on the final version of the model project of Shenzhen Huaxin Zhiying Technology Co., Ltd As can be seen from the above test data, the antenna provides good electrical performance.

Tianyiyuan is looking forward to your confirmation. Thank you for your cooperation!

Thank You !

