Antenna test Report

Customer: GHH

Project Name: FOX

Report version：Dec.28th,2023 A3

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Record

Version	Report date	Remark
A0	2022.10.19	Preliminary simulation report
A1	2022.12.01	Antenna simulation report
A2	2023.08.09	Antenna test report
A3	2023.12.28	Active test report
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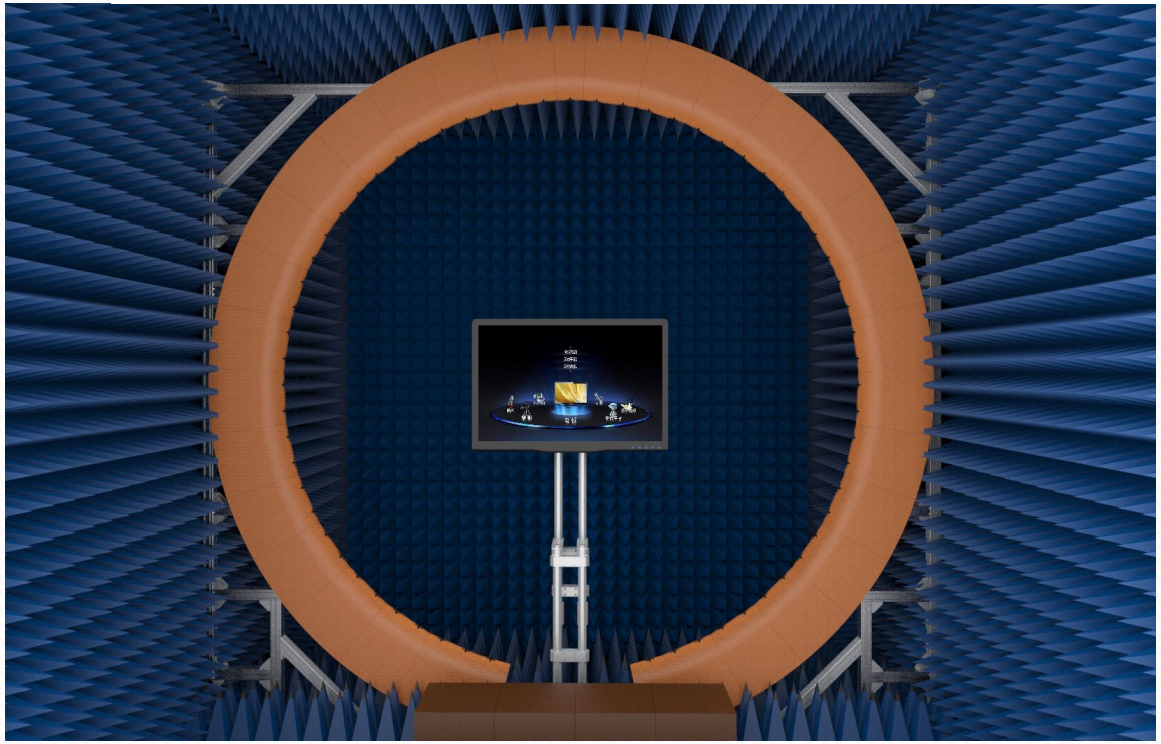
Company Profile And Test Environment

Sunnyway Technology (China) Co., Ltd. (hereafter referred to as Sunnyway) was founded in 2009. The headquarter is located in Shanghai. Shanghai, Shenzhen, and Chongqing all have R&D centers and and set up production base in Huizhou. 10 OTA Chambers which are dedicated to provide antenna's R&D, design, production, and sales services for Internet of Things/cell phones to domestic and foreign users. After years of development, it has become an industry leading brand, including antenna simulation, assessing, designing, production, sales and service.

Sunnyway Technology R&D and sales products are mainly used in consumer electronics products such as smart phones/tablets/notebooks/smart wearable, etc., and are deeply involved in the field of Internet of Things products, and are gradually expanding to smart cities (smart water meters/smart covers, etc.). Smart traffic (smart car lock/smart parking/4G cloud rearview mirror, etc.), smart home (smart door lock/smart lamp), security protection (smart monitor/smart alarm), smart medical, stuff tracking, industrial control (equipment monitoring, production Monitoring, etc.,) help the intelligent development of the Internet of Things.

Sunnyway Technology, a senior IoT antenna expert nearby you.

Company Profile And Test Environment



The industry's top 64 sensors OTA chamber

Frequency range: 400MHz-11GHz

Device Llimitation: 2M

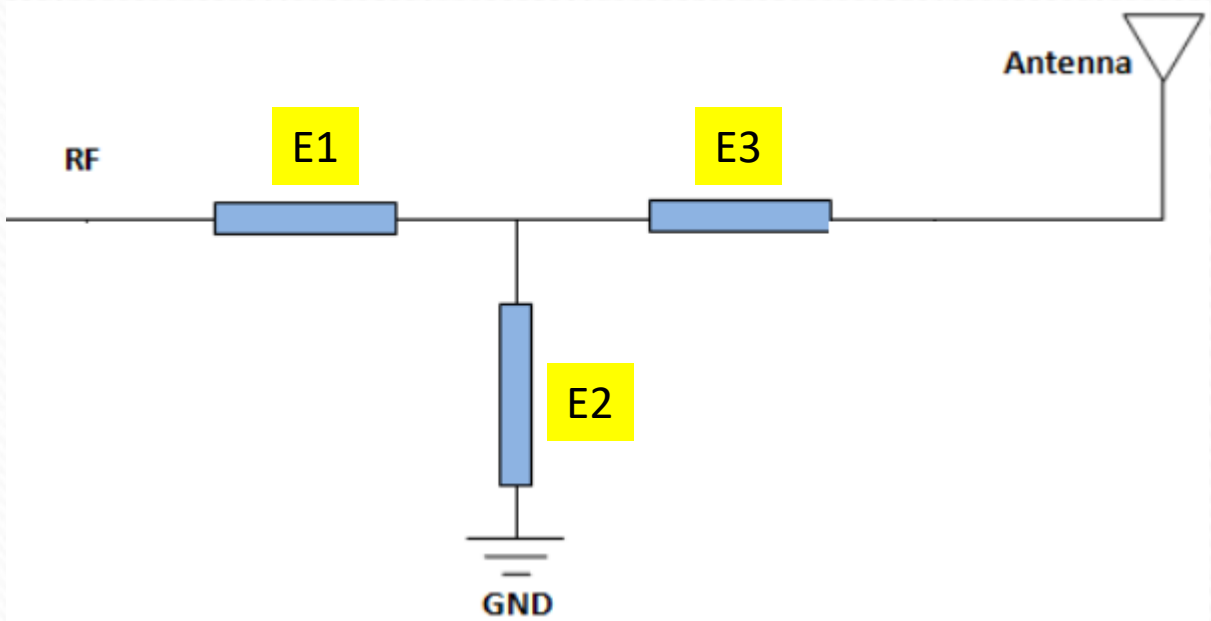
Load-bearing limitation:100KG

Equipments Items	Total Quantity	Quantity for Shanghai R&D	Quantity for Shenzhen R&D	Quantity for ChongQing R&D
OTA chamber	10	4	5	1
5G Tester（SP9500-CTS）	3	1	1	1
R&S Tester（high configuration CMW500）	6	3	2	1
Japan Anritsu Tester（Dual Channel 8820）	4	2	2	--
NB-IoT Tester (SP8315)	3	1	1	1
Agilent Tester（8960）	9	4	4	--
Agilent Network Analyzer（E5062A）	7	3	3	1
Agilent Network Analyzer（E5071C 8.5GHZ)	11	5	5	1
Agilent Network Analyzer（E5071B 8.5GHZ)	7	3	3	1
R&S Network Analyzer（ZND）	9	4	4	1
R&S Network Analyzer（ZVB）	3	1	1	1
OTA head hand / ear hand / arm hand	5	2	2	1
GPS/WIFI active test equipment	5	2	2	1

Project Information

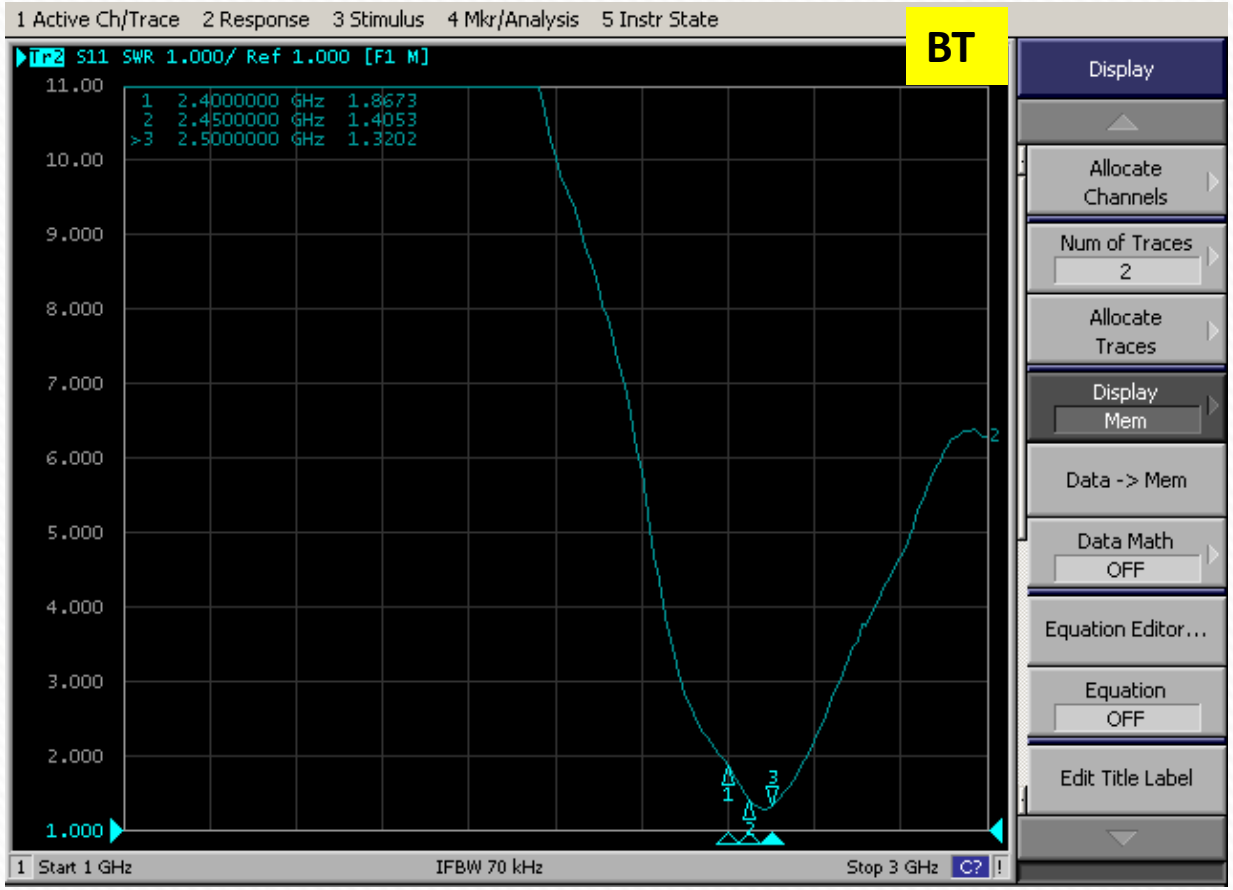
Prototype status	
Device type	BT
Number of antennas	
Frequency band	BT 2.4G
	/
	/
	/
Structural style	Metals
Environment adjustment	No change
Matching modification	At the output of the antenna, a 8.2nH inductor is connected in parallel and a 0.5pF capacitor is connected in series

Match Circuit



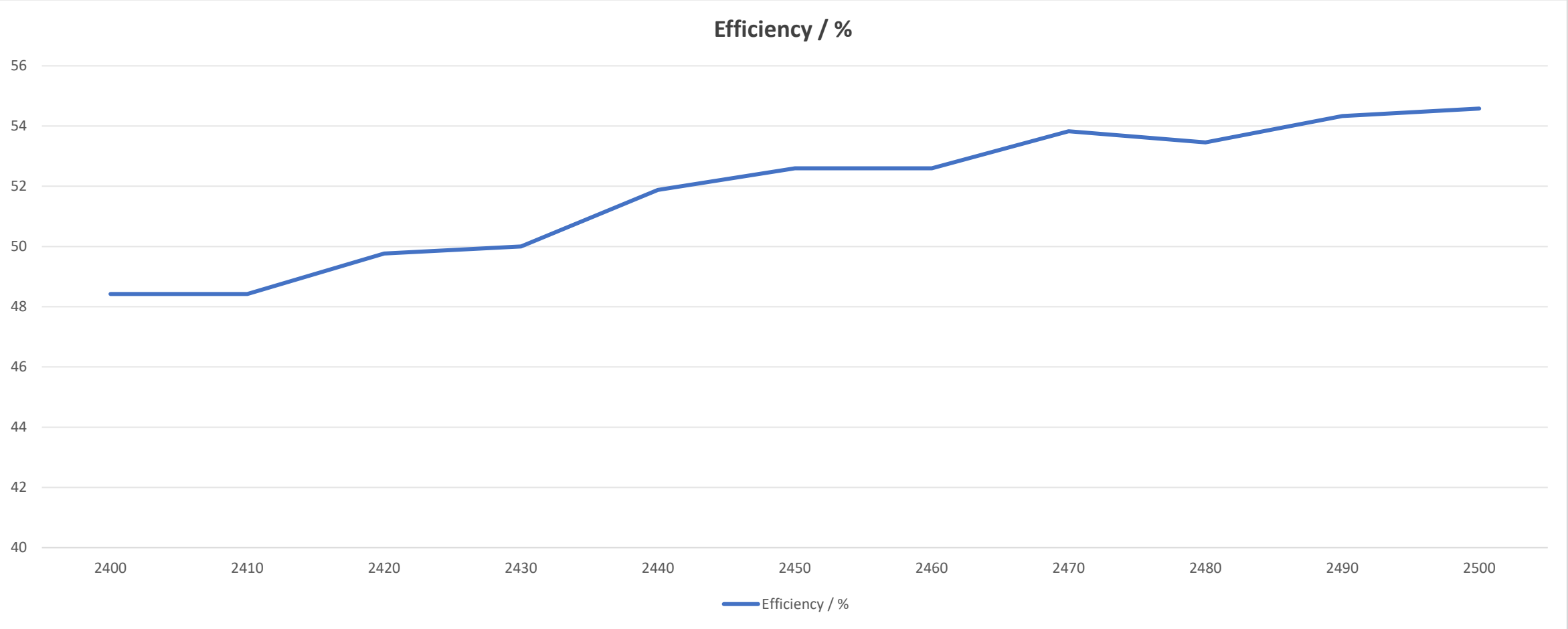
Element	Value	规格
E1	0Ω	0402
E2	8.2nH	0402
E3	0.5pF	0402

VSWR



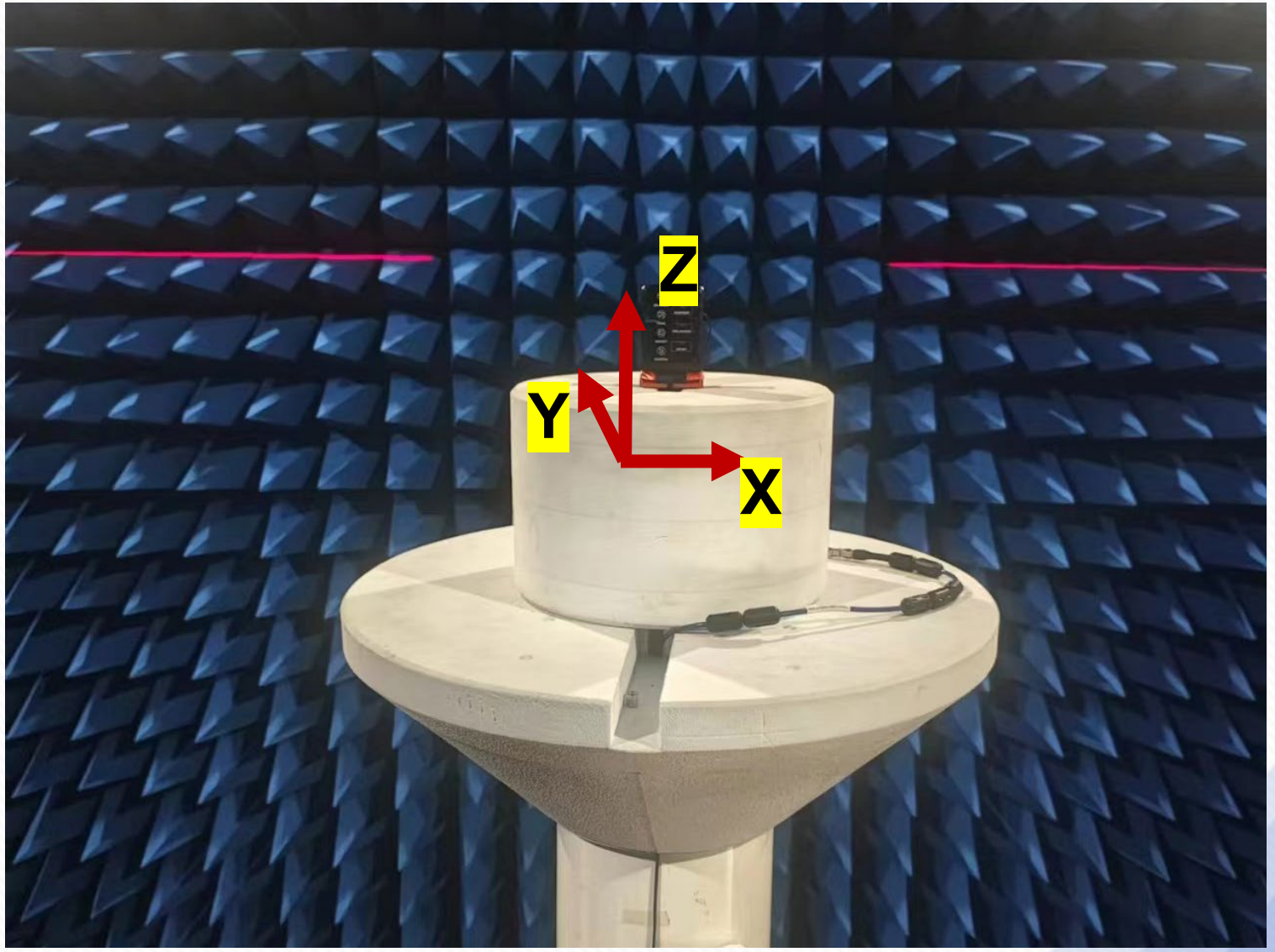
Frequency（MHz）	VSWR
2400	1.86
2450	1.41
2500	1.32

Passive Efficiency



Freq. (MHz)	2400	2450	2500
Effi(%)	48.42	52.6	54.58
Peak Gain(dBi)	2.56	2.23	2.46

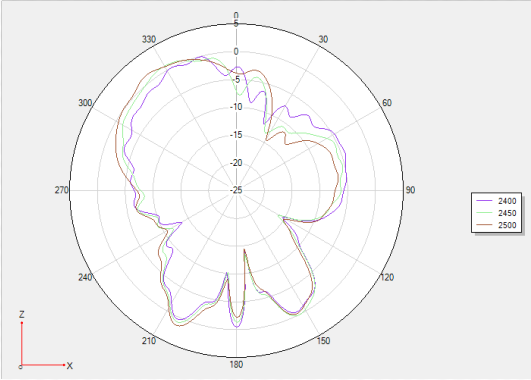
Chamber Coordinate Definition



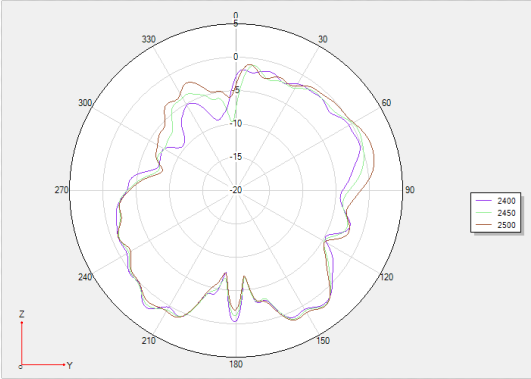
Antenna Radiation Pattern

2D Gain Pattern

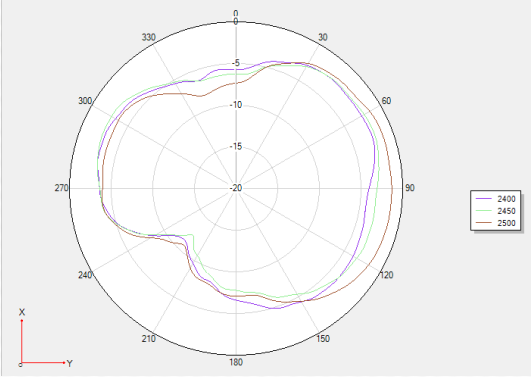
E1-Plane



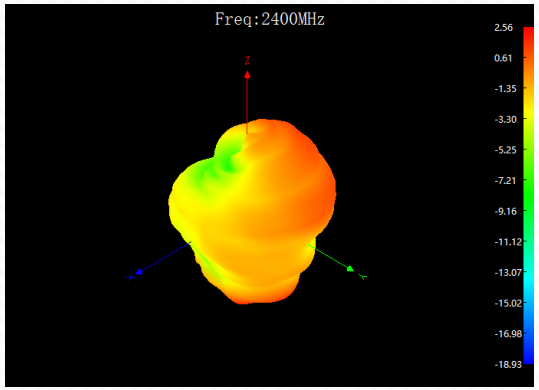
E2-Plane

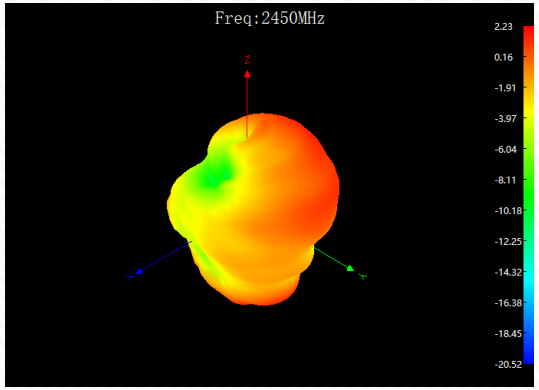


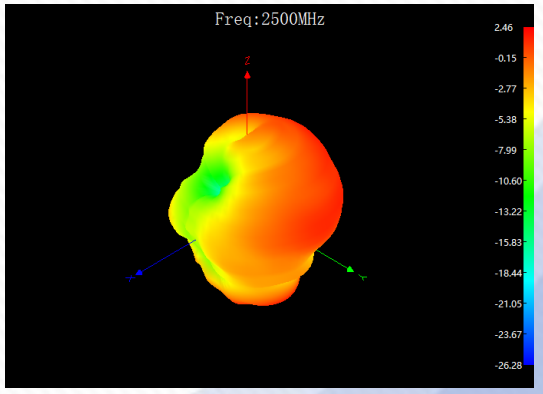
H-Plane



3D Gain Pattern







Active data

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TRP/TIS

Item	Measurement	Standard	Band	Channel	Frequency	Total
1	TRP	BLUETOOTH	BLUETOOTH	0	2402	-3.01
2	TRP	BLUETOOTH	BLUETOOTH	39	2441	-3.45
3	TRP	BLUETOOTH	BLUETOOTH	78	2480	-2.85
4	TIS(EIRP)	BLUETOOTH	BLUETOOTH	0	2402	-90.07
5	TIS(EIRP)	BLUETOOTH	BLUETOOTH	39	2441	-88.44
6	TIS(EIRP)	BLUETOOTH	BLUETOOTH	78	2480	-90.72

****Conducted Power: 0dbm****

Conclusions and Suggestions

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The data shows that:

I VSWR<2.0：The performance of the antenna meets the use conditions of this type of product.

II Efficiency >48%：The performance of the antenna meets the design requirements of similar projects.

III Matching：a 8.2nH inductor is connected in parallel and a 0.5pF capacitor is connected in series

IV Active test TRP > -3.5dBm, TIS< -88dBm.

Thank You

Shanghai R&D Center: 1st Floor, Building 4, No. 99, Lane 215, Gaoguang Road, Qingpu District, Shanghai.

Shenzhen R&D Center: 6th Floor, Building 5, Nam Tai Inno Park, Guangming District, Shenzhen.

Chongqing R&D Center: 1F, ARM Ecological Industrial Park, 19 Datagu East Road, Xiantao, Yubei District, Chongqing.

Huizhou factory address: Floor 4-6, Building 8, Xiongtao Technology City, No.15 Qingli 2nd Road, Shuikou Street, Huicheng District, Huizhou City

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