

BT1053 Antenna test report

on board ANT(PCB Antenna)

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Revision History

Released Date	Version	Record	Tester
Aug.21th,2023	V1.0	Frist Turning	xilie Lai

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Requirements of Antenna Design and Measuremen

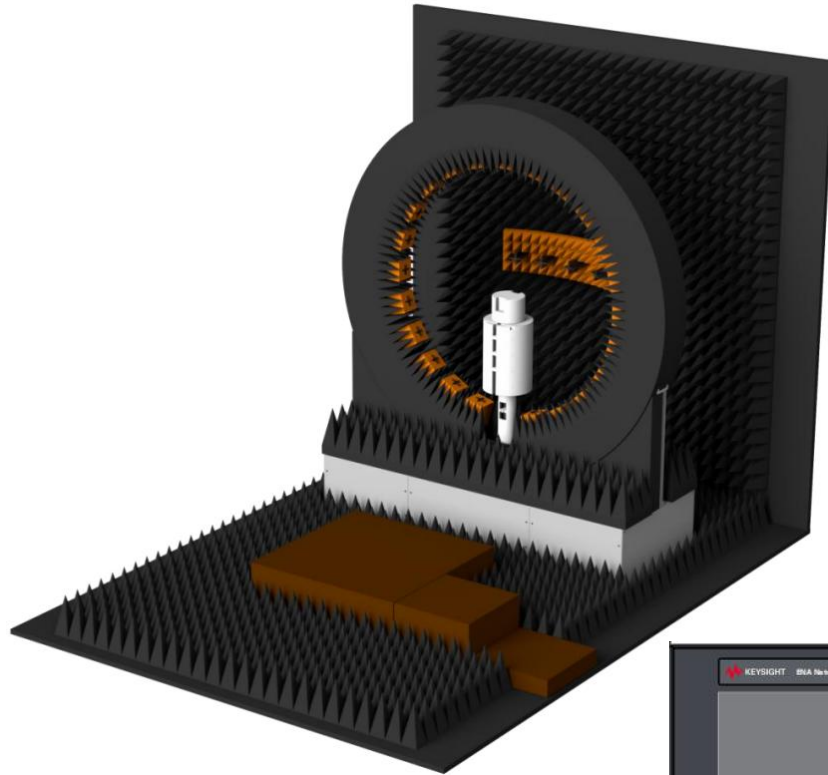
Requirements of Antenna Design(From Customer Demand)

RF Function	Number of ANT	Frequency Band	Remark
ANT	1	Bluetooth	2400-2485MHz

Requirements of Measurement

Test Item	Specification (Free Space)	Remark
VSWR	VSWR<2.0	
Directional patten	/	
Antenna efficiency	efficiency>50%	PCB ANT
Antenna Isolation	/	
Over the air Performance	TRP>3dBm TIS < -95dBm	

Test Setup for Radiation Pattern Measurement



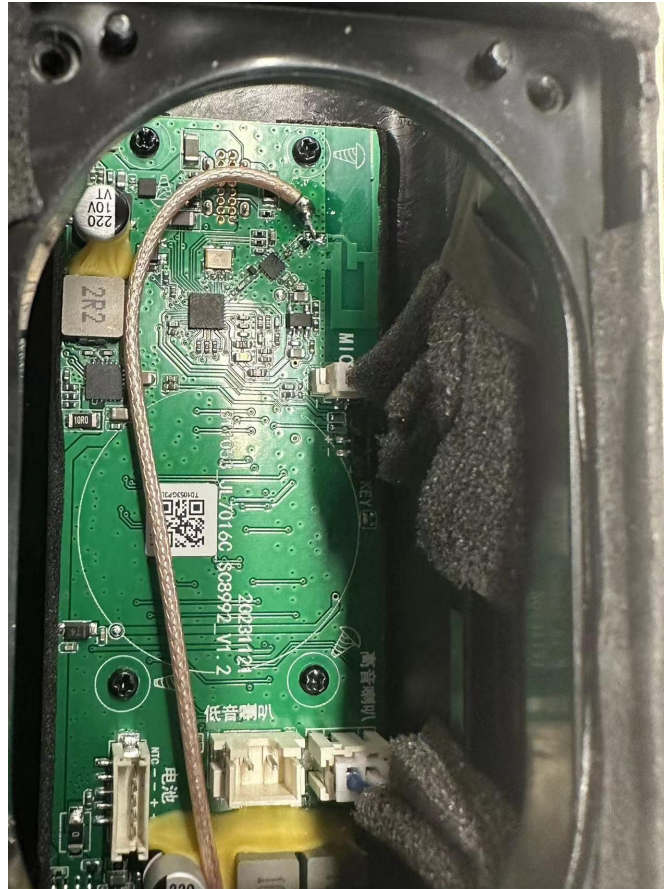
QUIPMENT	BRAND	MODULE TYPE
Network Analyzer	KEYSIGHT	E5071C 9k~8.5G
Signal Generator	R&S	CMW 500
Microwave anechoic chamber	XH-IOE	ATS-300



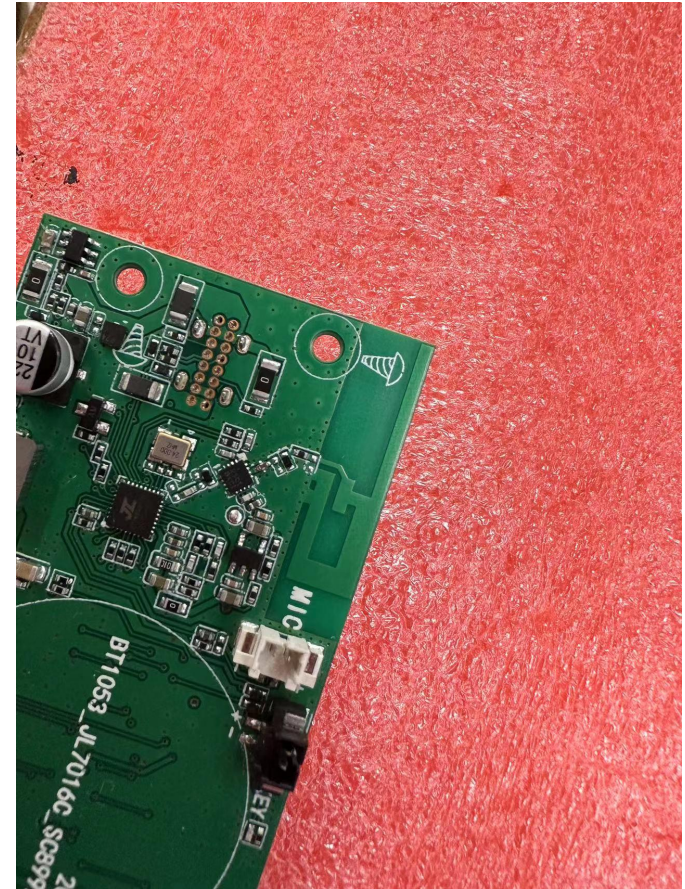
Antenna Placement & Antenna environment Solution



Product picture

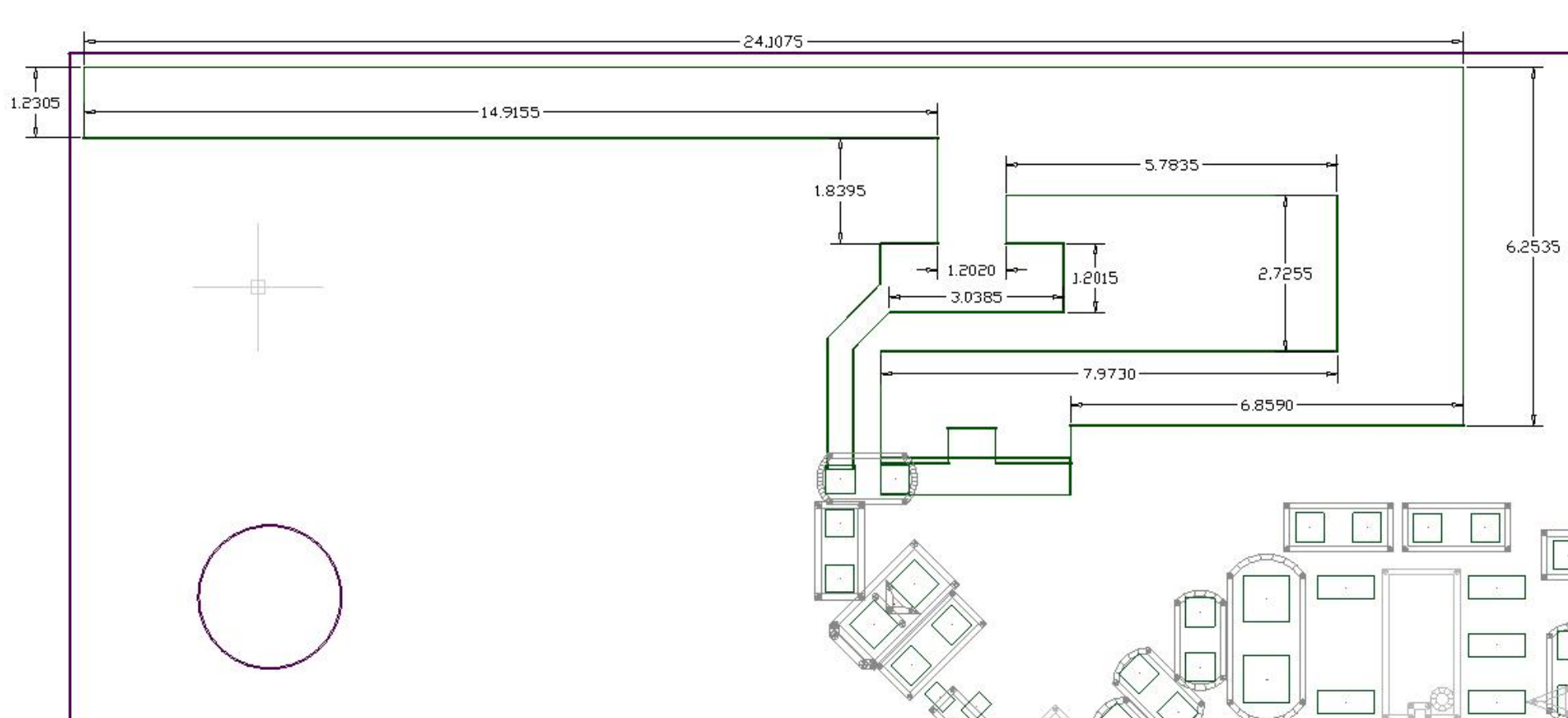


Product internal picture



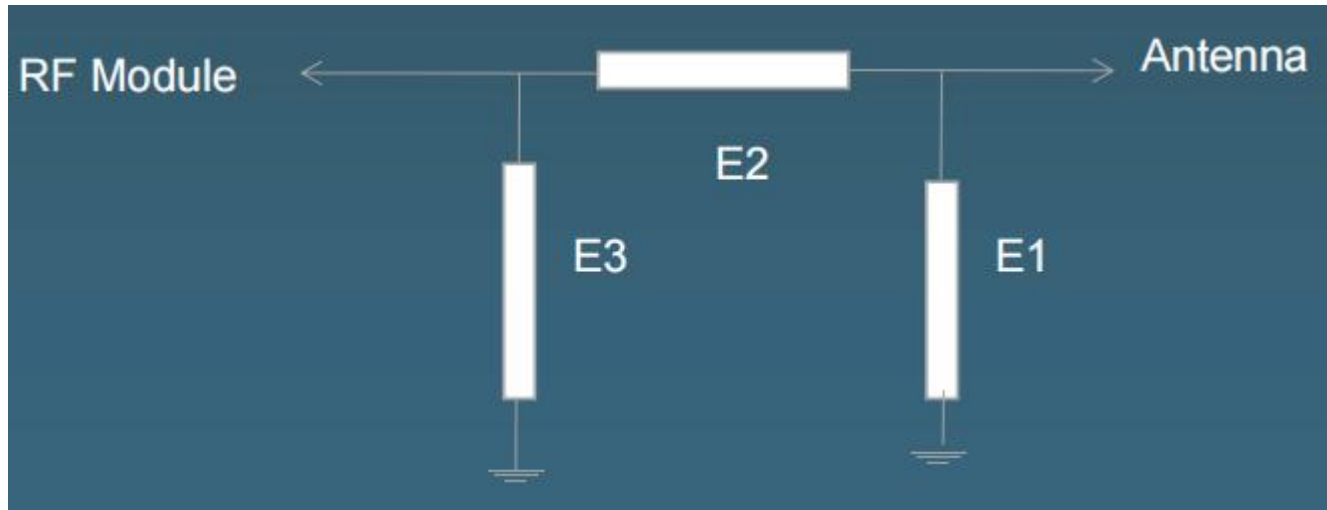
Antenna close-up

Antenna size (Outline drawing)



unit: mm

Microphone antenna matching circuit

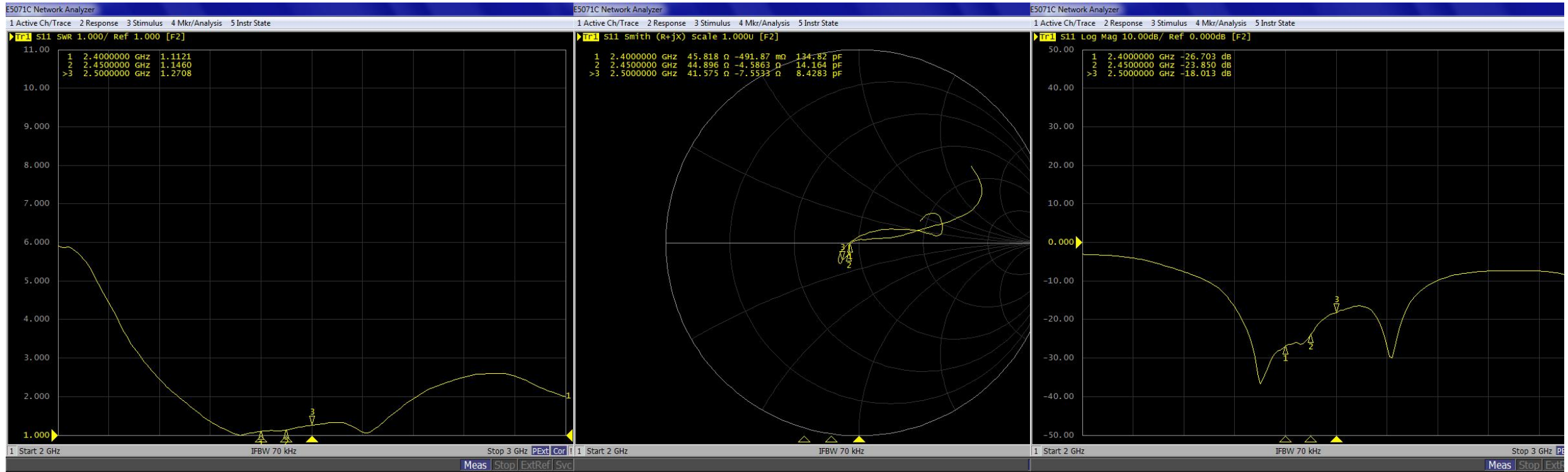


Any changes: No change
Modified

✓

Element	Value
E1(0402)	NC
E2(0402)	0R
E3(0402)	NC

VSWR Results/Smith chart

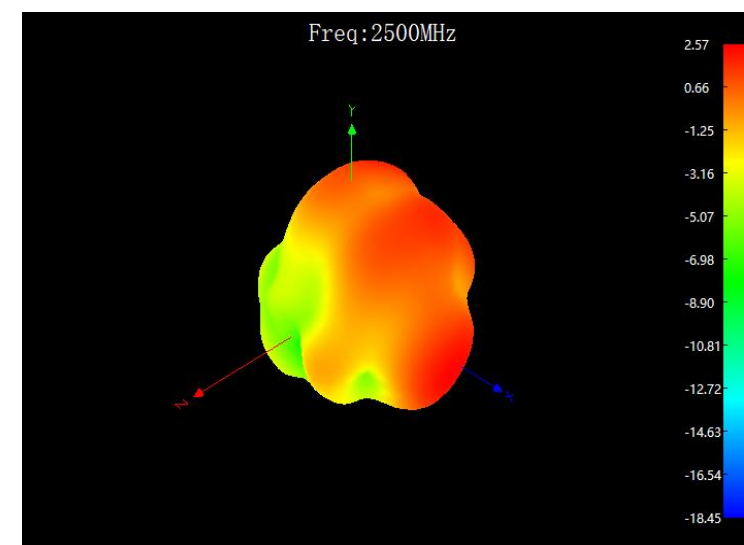
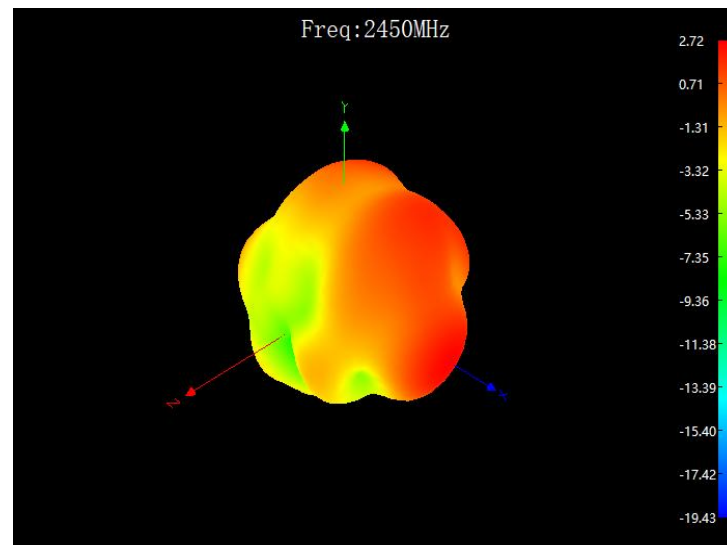
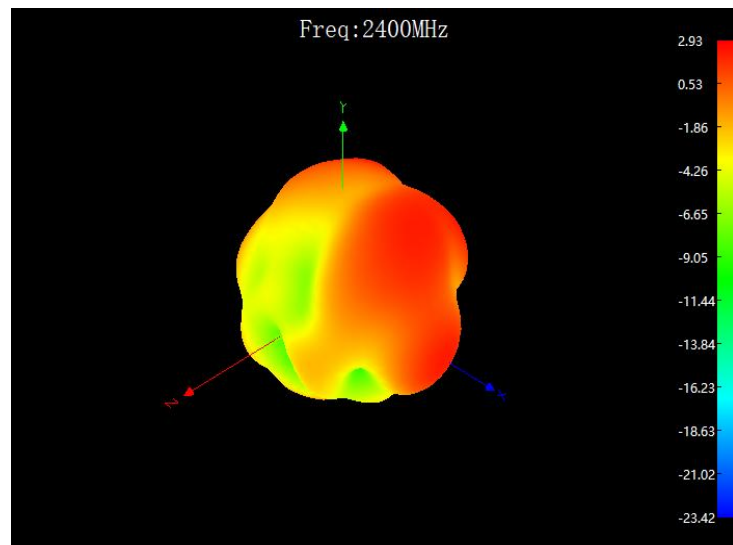


VSWR

Smith char

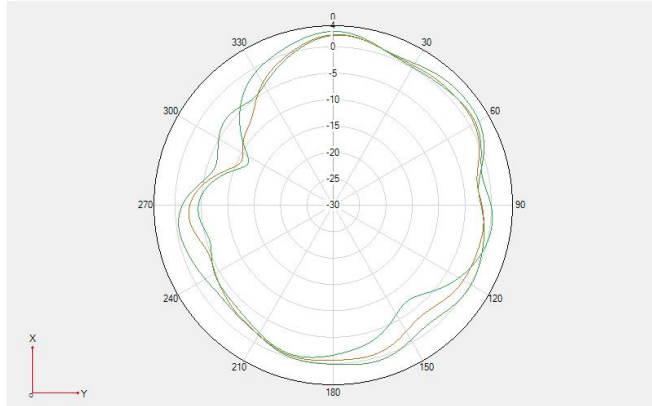
Return loss

3D Radiation Pattern Results unit:dBi

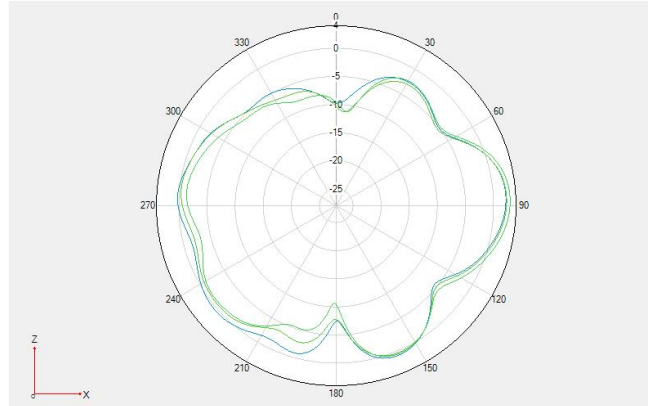


2D Radiation Pattern Results unit:dBi

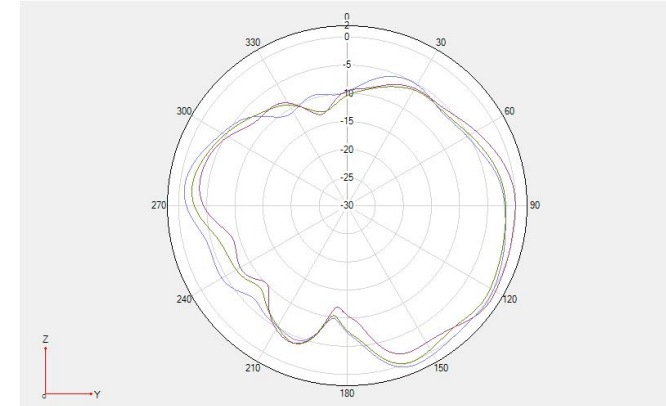
theta 90
2400
2440
2480



phi 0
2400
2440
2480



phi 90
2400
2440
2480



Results Summary-Peak Gain & Efficiency

BT-CAIN & Efficiency			
Frequency/Mhz	Efficiency / dB	Efficiency / %	MaxGain/dBi
2400	-1.84	65.46	2.93
2405	-1.73	67.14	2.97
2410	-1.89	64.71	2.72
2415	-1.95	63.83	2.59
2420	-1.8	66.07	2.64
2425	-1.69	67.76	2.41
2430	-1.83	65.61	2.13
2435	-1.96	63.68	2.29
2440	-1.97	63.53	2.39
2445	-1.91	64.42	2.62
2450	-1.87	65.01	2.72
2455	-1.94	63.97	2.59
2460	-2.02	62.81	2.5
2465	-1.97	63.53	2.74
2470	-2.09	61.8	2.98
2475	-2.13	61.24	3.03
2480	-2.11	61.52	2.96
2485	-2.09	61.8	2.95
2490	-1.95	63.83	3.05
2495	-2.02	62.81	2.8
2500	-2.16	60.81	2.57

Conclusion

- 1.The passive efficiency of the antenna meets the requirements.
- If there is any change in the machine, the antenna performance needs to be re-verified.

重要说明 NOTICE



1

请贵司注意报告中的匹配是否更改、环境处理是否可行；这直接影响天线性能，若有异议请及时与本司联系；

Please pay attention to whether the matching in the report has changed and whether the environmental treatment is feasible; This will directly affect the antenna performance, if you have any objections, please contact us in time;

2

若贵司机器有更换物料、更新软件、环处理变更等，须及时提供最新状态机器来我司验证；

If your driver has replacement materials, updated software, environmental processing changes, etc., you must provide the latest status machine to our company for verification in time

3

若贵公司机器需送第三方验证或送检，请最好提供送测机器来我司测试验证OK后方可送测（因为主板、环境处理、天线组装等一致性会影响天线性偏差）

If your company's machine needs to be sent to a third party for verification or inspection, it is best to provide the test machine to our company to test and verify OK before sending it for testing (because the consistency of the motherboard, environmental treatment, antenna assembly and so on will affect the antenna deviation)