Shenzhen Cicent Communication Technology Co., Ltd.

Antenna Specification

Project Number: Liesheng N79

Customer Part Number:

Product Name: N79 Antenna

Cicent Project Number: SX231220-279E

Cicent Signature：

Issued by	Review	Approval	Date
Zhong Huazhi	Liu Jianli	Hong Yangxin	2024/01/30

I.Antenna Basic Parameter

1.1 Type of Antenna: Loop Antenna

1.2 Model: N79

1.3 Dimension: Length, Width and Line width are 10.08mm, 4.23mm and 0.5mm

1.4 Frequency range: 2400MHz ~ 2480MHz

1.5 Gain: Left Ear, -3.12dBi; Right Ear, -2.90dBi

1.6 VSWR: ≤2

1.7 Return Loss: ≤-9dB

1.8 Polarization: Linear

1.9 Radiation: Omni-directional

1.10 Manufacturer: Shenzhen Cicent Communication Technology Co., Ltd.

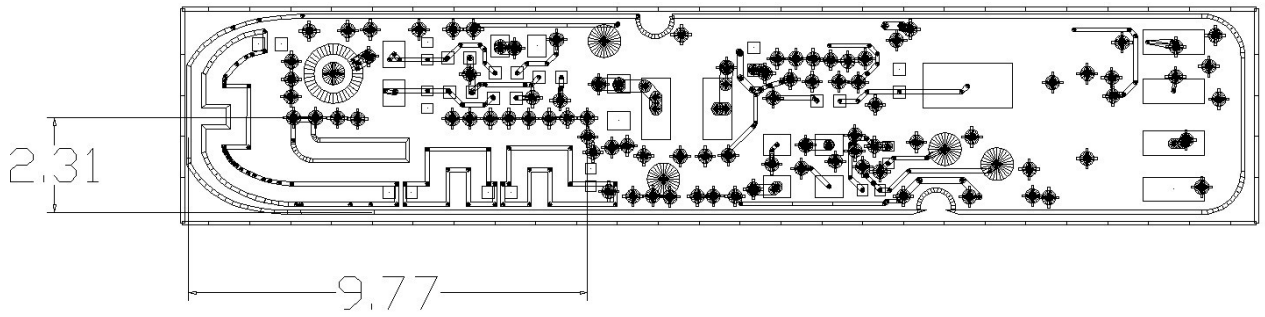
1.11 Headquarters Add: 505-506 ,ABlock,Donglian Building,Chuangye 2 road,Baoan District,Shenzhen,Guangdong,P.R china

1.12 Factory Add:9th Floor, Building 6, Times Thinking ,No. 159 Luwu Sanlian Road, Changping Town, Dongguan City, Guangdong Province

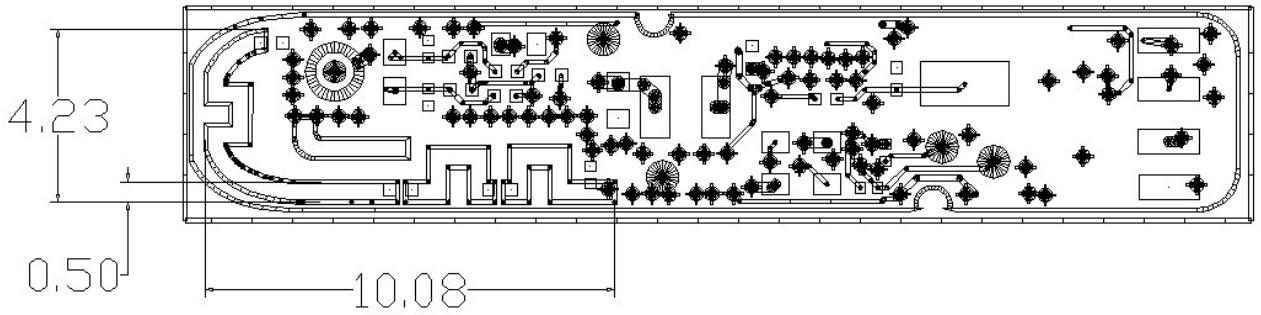
II.Antenna Dimension

2.1 Antenna drawings (Same for left and right ears)

Clearance area：



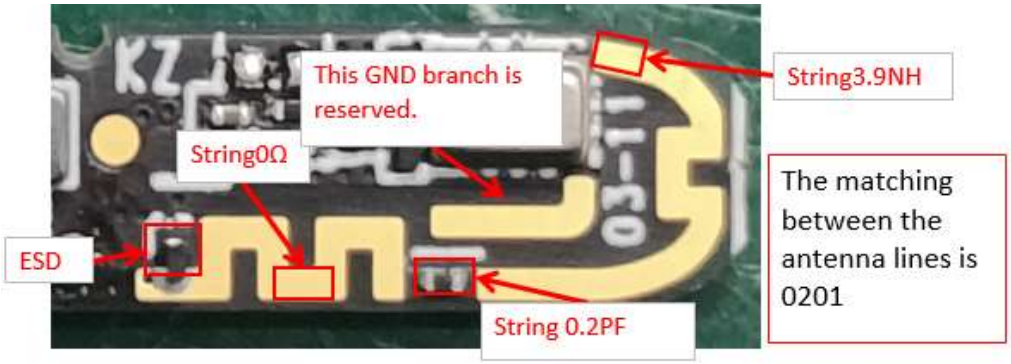
Antenna size：

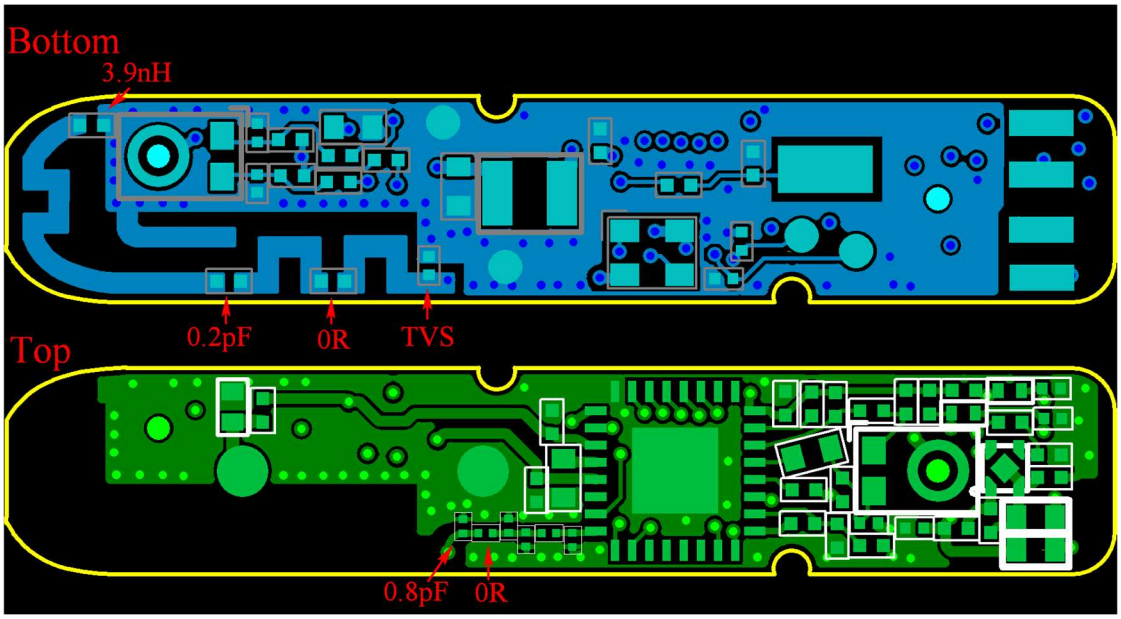


III.Electricity Performance

3.1 Antenna Matching

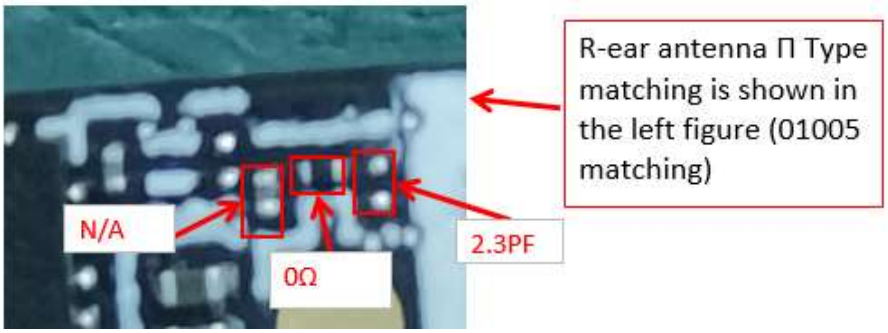
L：

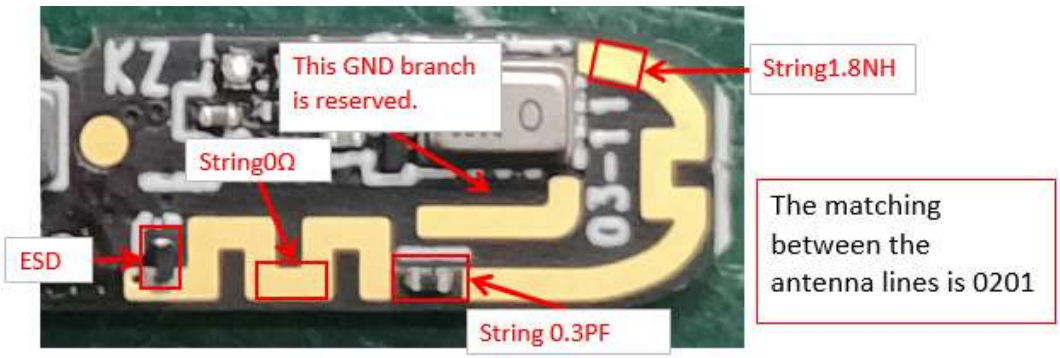


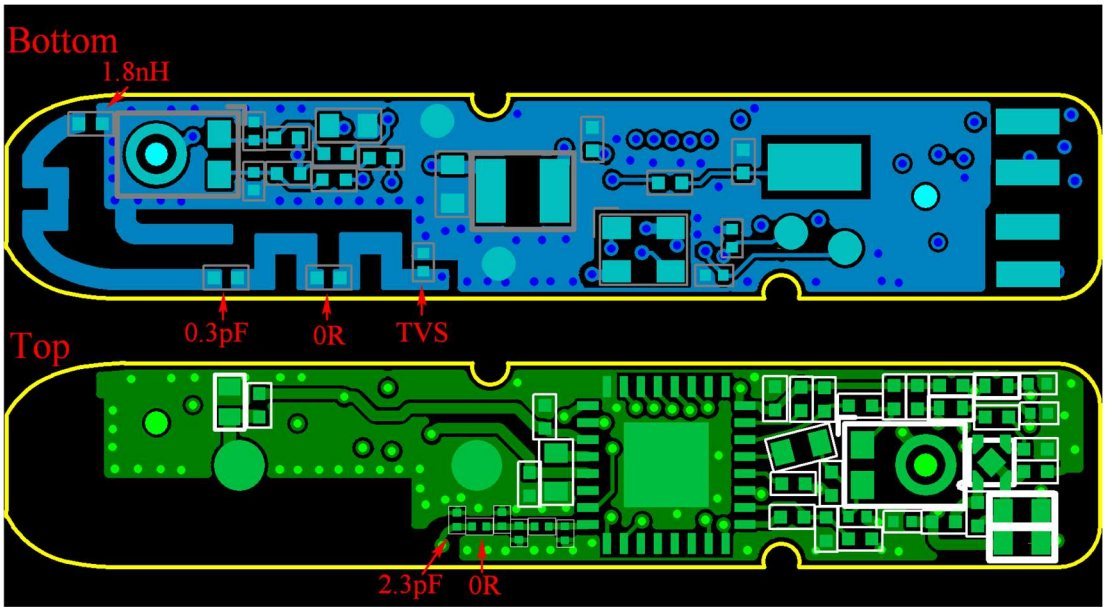


The material values attached to the original state on the P1.1 motherboard are shown in the above figure

R：



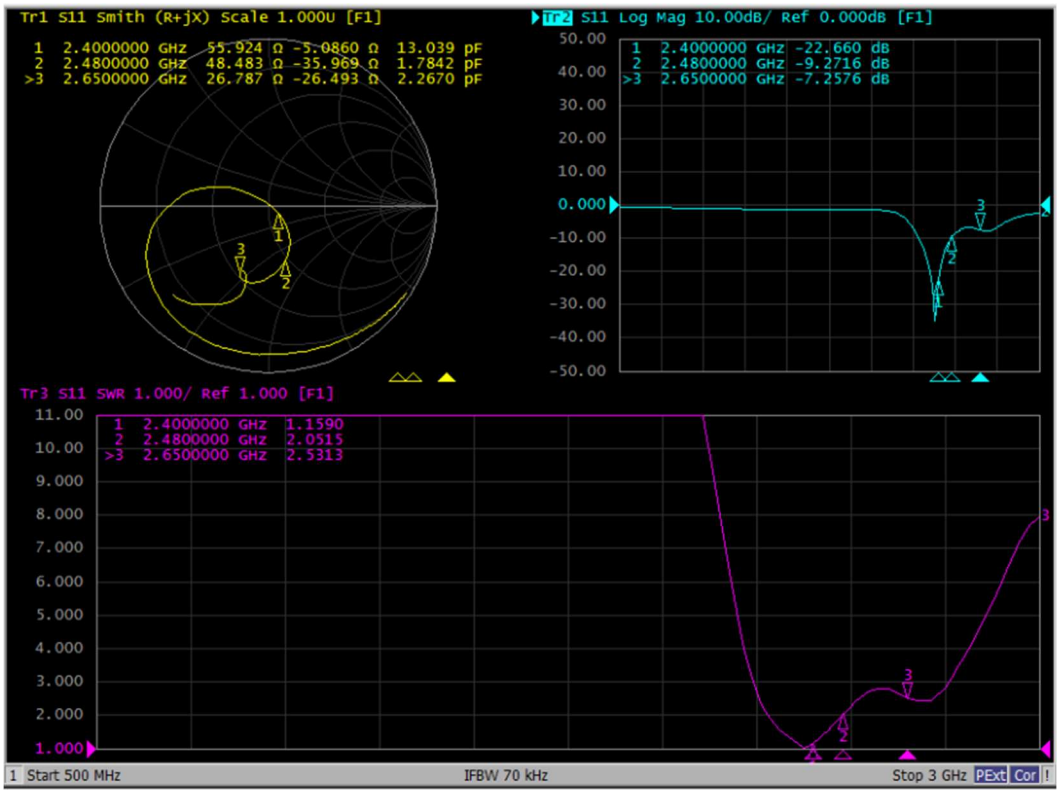




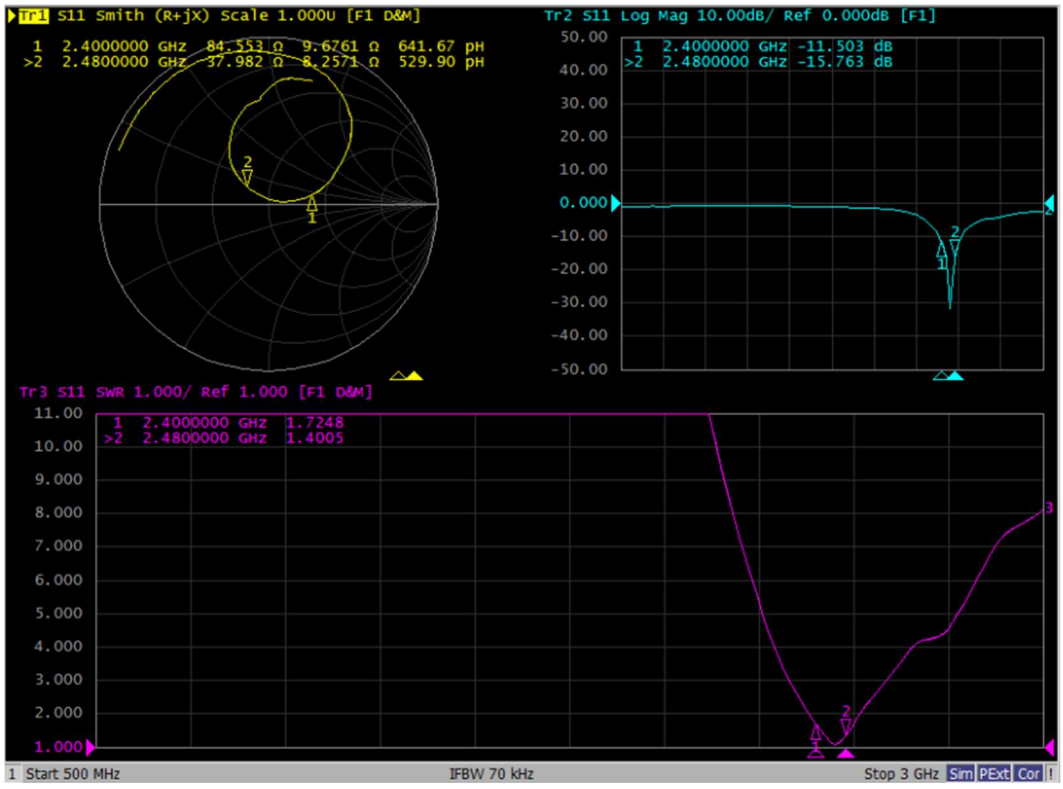
The material values attached to the original state on the P1.1 motherboard are shown in the above figure

3.2 Return Loss

The figure below shows the return loss value of the antenna operating band.



Left ear



Right ear

3.3 Antenna Efficiency

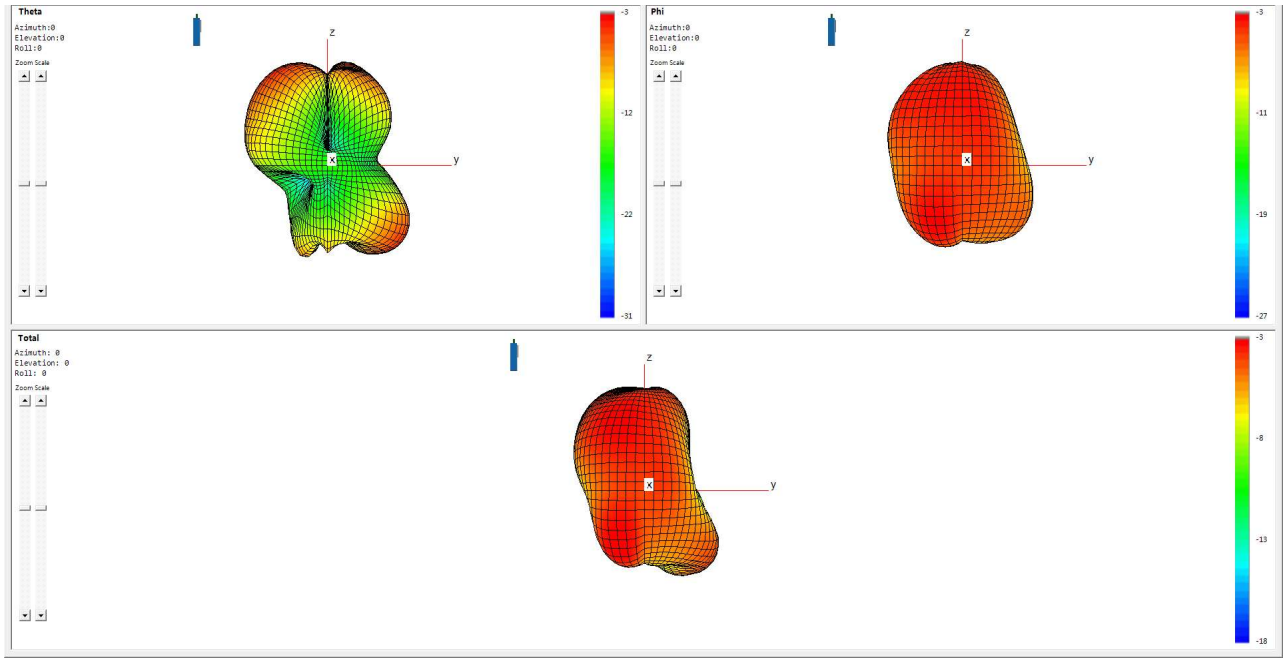
L			
Frequency (MHz)	Efficiency	Efficiency (dB)	Gain (dBi)
2400	25.3%	-5.97	-3.16
2410	24.7%	-6.08	-3.40
2420	23.9%	-6.22	-3.41
2430	24.4%	-6.13	-3.36
2440	23.9%	-6.22	-3.62
2450	25.7%	-5.90	-3.33
2460	27.6%	-5.59	-3.12
2470	26.8%	-5.73	-3.46
2480	26.6%	-5.75	-3.50
Average value	25.4%	-5.95	-3.37

R			
Frequency (MHz)	Efficiency	Efficiency (dB)	Gain (dBi)
2400	23.6%	-6.27	-3.32
2410	24.1%	-6.18	-3.18
2420	24.6%	-6.10	-3.00
2430	23.9%	-6.21	-3.05
2440	23.1%	-6.37	-3.16
2450	23.4%	-6.31	-3.04
2460	22.5%	-6.48	-3.15
2470	23.3%	-6.32	-2.90
2480	23.5%	-6.29	-2.97
Average value	23.6%	-6.28	-3.09

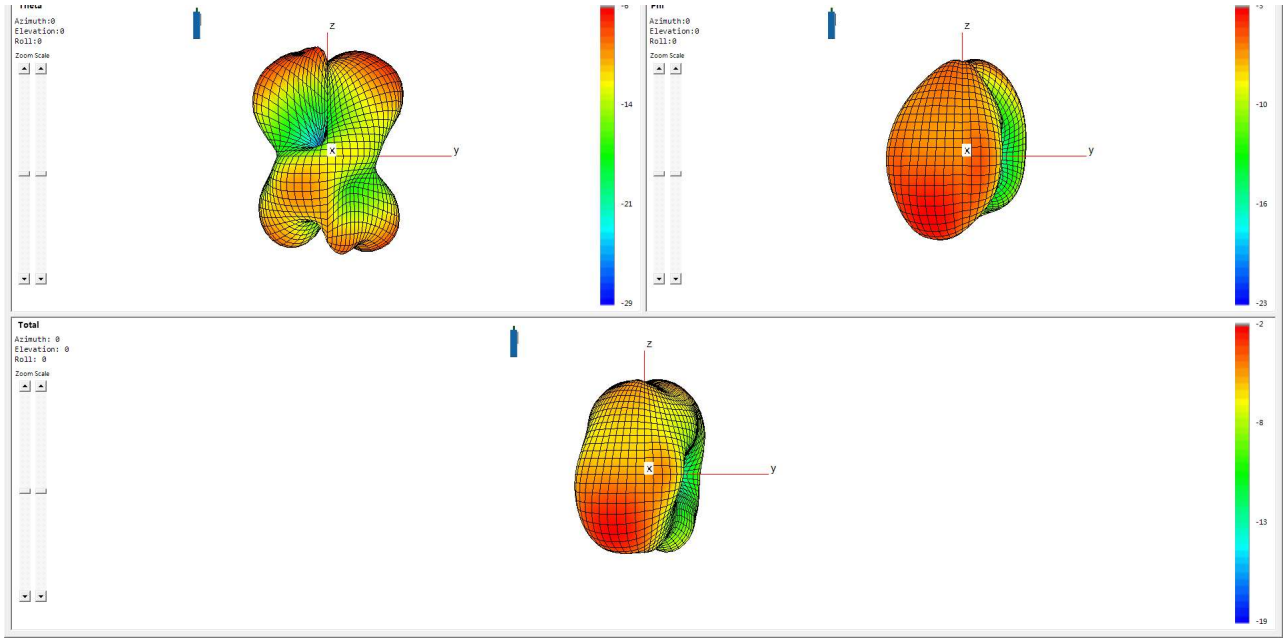
Free space efficiency

3.4 Radiation Pattern

3.4.1 3D Pattern

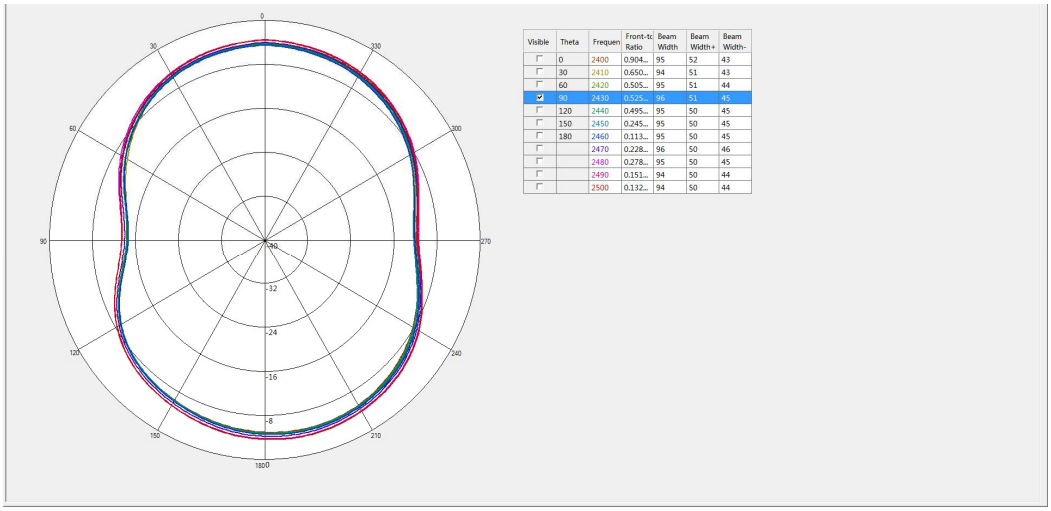


Left Ear 3D Antenna Pattern



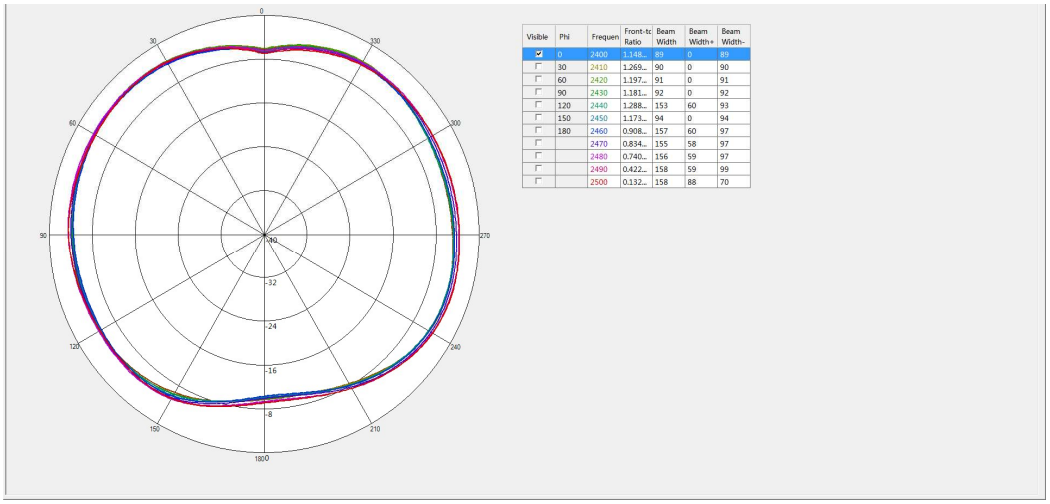
Right Ear 3D Antenna Pattern

3.4.2 2D Pattern



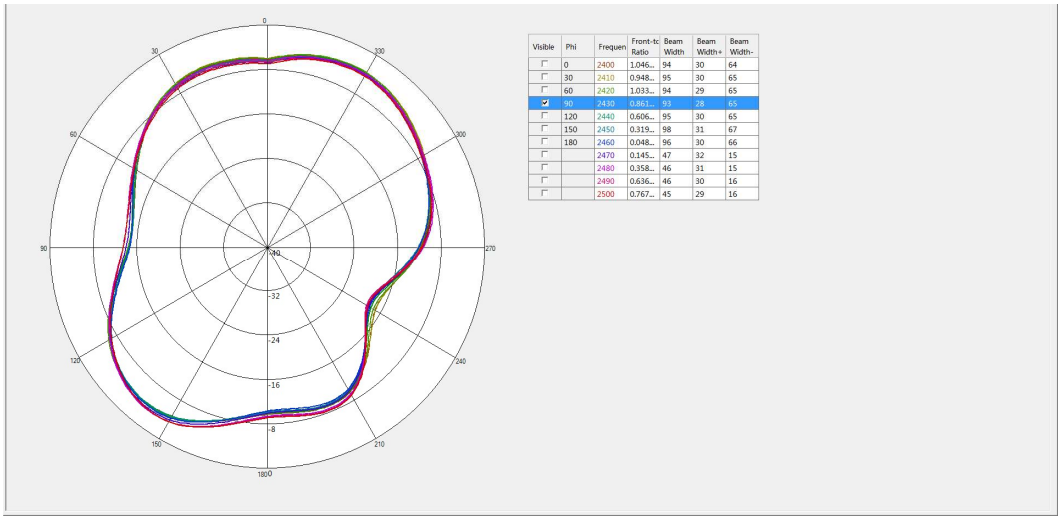
Visible	Theta	Frequen	Front-to Ratio	Beam Width	Beam Width+	Beam Width-
☐	0	2400	0.904...	95	52	43
☐	30	2410	0.650...	94	51	43
☐	60	2420	0.505...	95	51	44
☑	90	2430	0.525...	96	51	45
☐	120	2440	0.495...	95	50	45
☐	150	2450	0.245...	95	50	45
☐	180	2460	0.113...	95	50	45
☐		2470	0.228...	96	50	46
☐		2480	0.278...	95	50	45
☐		2490	0.151...	94	50	44
☐		2500	0.132...	94	50	44

Theta=90^0， Left Ear 2D Antenna Pattern



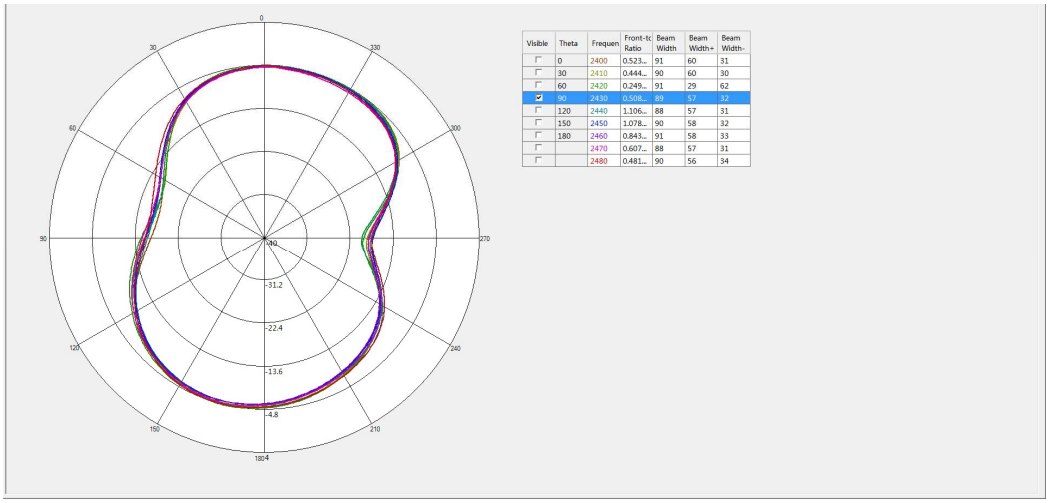
Visible	Phi	Frequen	Front-to Ratio	Beam Width	Beam Width+	Beam Width-
☑	0	2400	1.148...	89	0	89
☐	30	2410	1.269...	90	0	90
☐	60	2420	1.197...	91	0	91
☐	90	2430	1.181...	92	0	92
☐	120	2440	1.288...	153	60	93
☐	150	2450	1.173...	94	0	94
☐	180	2460	0.908...	157	60	97
☐		2470	0.834...	155	58	97
☐		2480	0.740...	156	59	97
☐		2490	0.422...	158	59	99
☐		2500	0.132...	158	88	70

Phi=0^0， Left Ear 2D Antenna Pattern



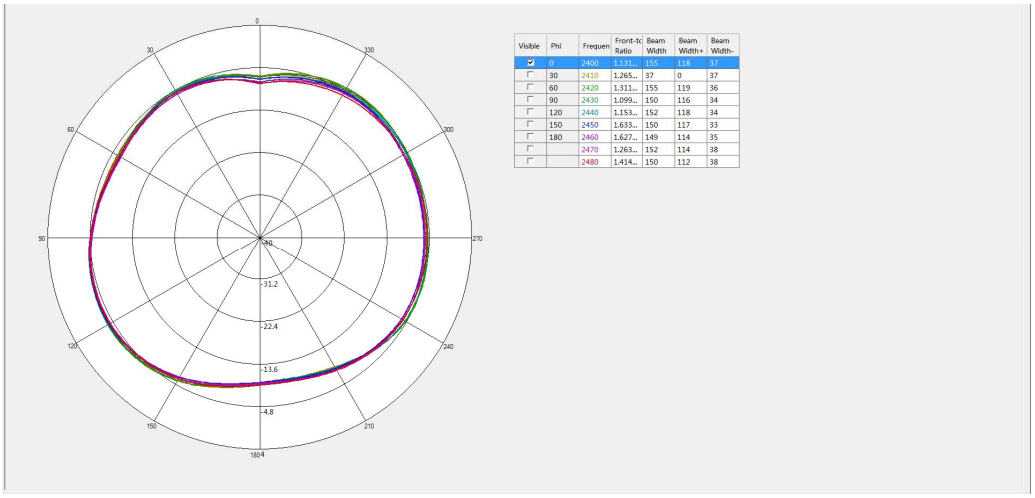
Visible	Phi	Frequen	Front-to Ratio	Beam Width	Beam Width+	Beam Width-
☐	0	2400	1.046...	94	30	64
☐	30	2410	0.948...	95	30	65
☐	60	2420	1.033...	94	29	65
☑	90	2430	0.861...	93	28	65
☐	120	2440	0.606...	95	30	65
☐	150	2450	0.319...	98	31	67
☐	180	2460	0.048...	96	30	66
☐		2470	0.145...	47	32	15
☐		2480	0.358...	46	31	15
☐		2490	0.636...	46	30	16
☐		2500	0.767...	45	29	16

Phi=90^0， Left Ear 2D Antenna Pattern



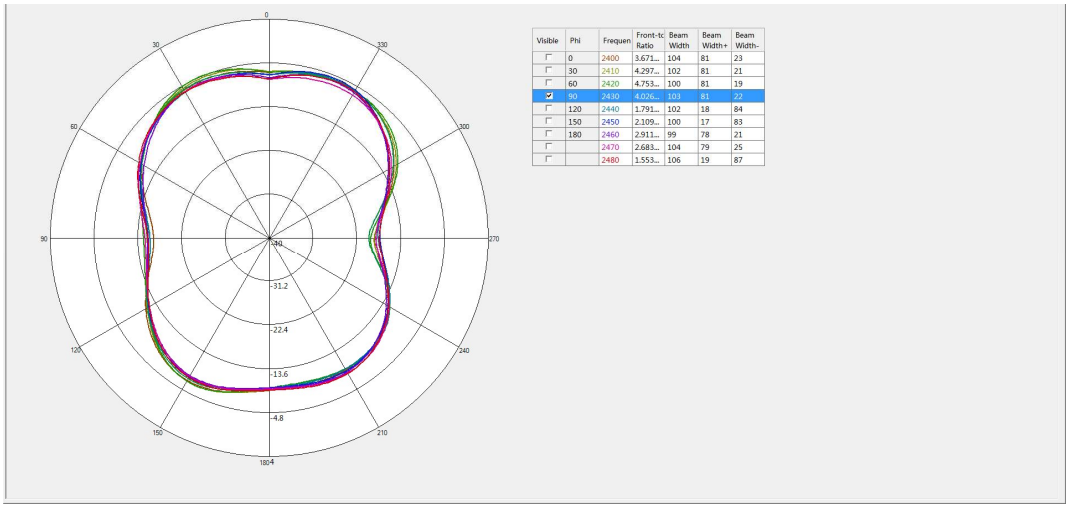
Visible	Theta	Frequen	Front-to Ratio	Beam Width	Beam Width+	Beam Width-
☐	0	2400	0.523...	91	60	31
☐	30	2410	0.444...	90	60	30
☐	60	2420	0.249...	91	29	62
☑	90	2430	0.508...	89	57	32
☐	120	2440	1.106...	88	57	31
☐	150	2450	1.078...	90	58	32
☐	180	2460	0.843...	91	58	33
☐		2470	0.607...	88	57	31
☐		2480	0.481...	90	56	34

Theta=90^0， Right Ear 2D Antenna Pattern



Visible	Phi	Frequen	Front-to Ratio	Beam Width	Beam Width+	Beam Width-
☑	0	2400	1.131...	155	118	37
☐	30	2410	1.265...	37	0	37
☐	60	2420	1.311...	155	119	36
☐	90	2430	1.099...	150	116	34
☐	120	2440	1.153...	152	118	34
☐	150	2450	1.633...	150	117	33
☐	180	2460	1.627...	149	114	35
☐		2470	1.263...	152	114	38
☐		2480	1.414...	150	112	38

Phi =0^0， Right Ear 2D Antenna Pattern

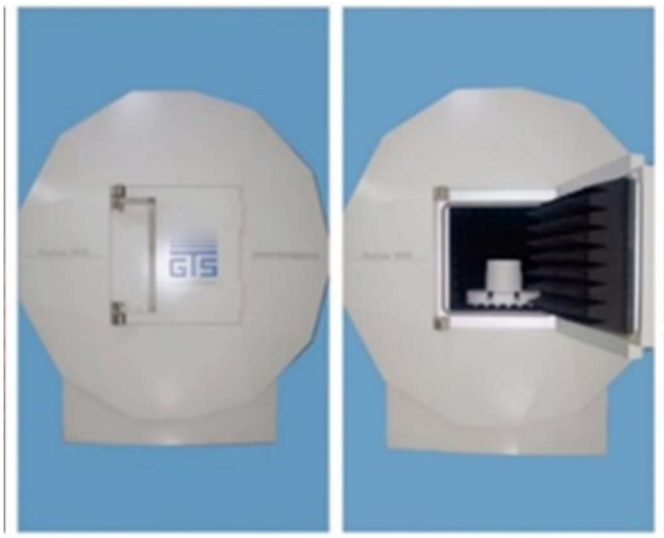


Visible	Phi	Frequen	Front-to Ratio	Beam Width	Beam Width+	Beam Width-
☐	0	2400	3.671...	104	81	23
☐	30	2410	4.297...	102	81	21
☐	60	2420	4.753...	100	81	19
☑	90	2430	4.026...	103	81	22
☐	120	2440	1.791...	102	18	84
☐	150	2450	2.109...	100	17	83
☐	180	2460	2.911...	99	78	21
☐		2470	2.683...	104	79	25
☐		2480	1.553...	106	19	87

Phi =90^0， Right Ear 2D Antenna Pattern

IV.Test Equipment

4.1 Compact OTA Test System



Model: RayZone 1800;
Calibration Date: 2023/11/05

4.2 Test Equipment

Model: Agilent Technologies E5071C;
Calibration Date: 2023/11/05

Model: ROHDE&SCHWARZ CMW500;
Calibration Date: 2023/1105

4.3 Testing Software

Testing Software Name: wave Studio 23.2

4.4 Antenna Test Photo