

Kunshan Innwave Communication Technology Co., Ltd.

Antenna Specification

Project Number: Lisheng N77

Product Name: FC39 Antenna

Innowave Project Number: FC39

Innowave Signature:

Issued by	Review	Approval	Date
Yi Hongjun	Wu Liang	Dong Chao	2023/7/1

I. Antenna Basic Parameter

1.1 Type of Antenna: FPC Monopole Antenna

1.2 Model: FC39

1.3 Dimension: Length, Width and Thickness are 20.83mm, 3.87mm and 0.11mm

1.4 Frequency range: 2400MHz ~ 2500MHz

1.5 Gain: Left Ear, -0.05dBi; Right Ear, -0.12dBi

1.6 VSWR: ≤ 2

1.7 Return Loss: $\leq -8\text{dB}$

1.8 Polarization: Linear

1.9 Radiation: Omni-directional

1.10 Manufacturer: Kunshan Innwave Communication Technology Co., Ltd.

1.11 Address: Room 101, Building 7, Zijing Shuangchuangyuan, Dalang Street,
Longhua District, Shenzhen

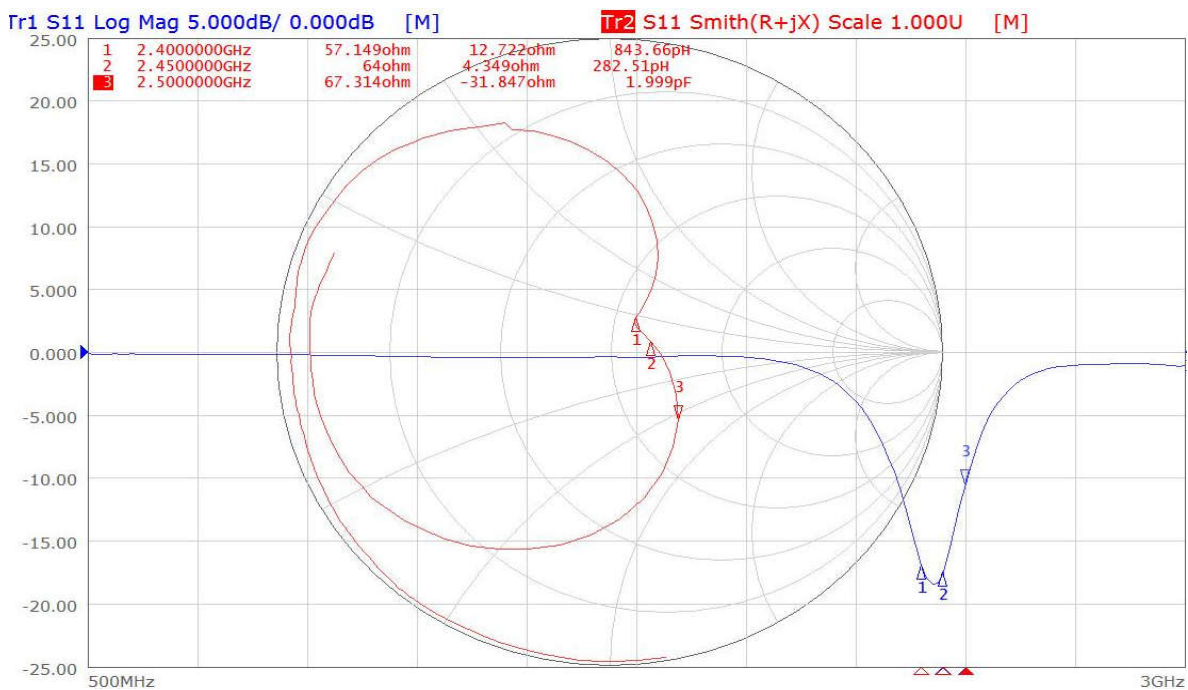
II. Electricity Performance

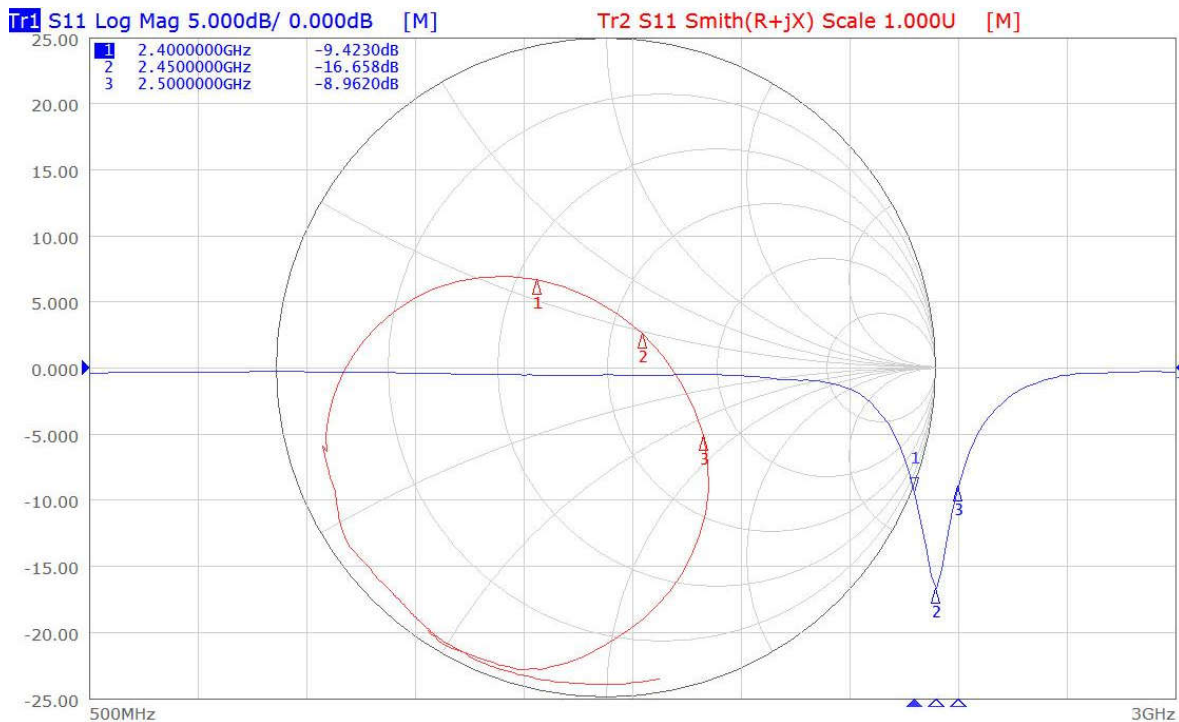
2.1 Antenna Matching

The matching circuit is designed to match the motherboard and antenna, so that the headset can achieve the best RF performance in the operating frequency band.

2.2 Return Loss

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





Right ear

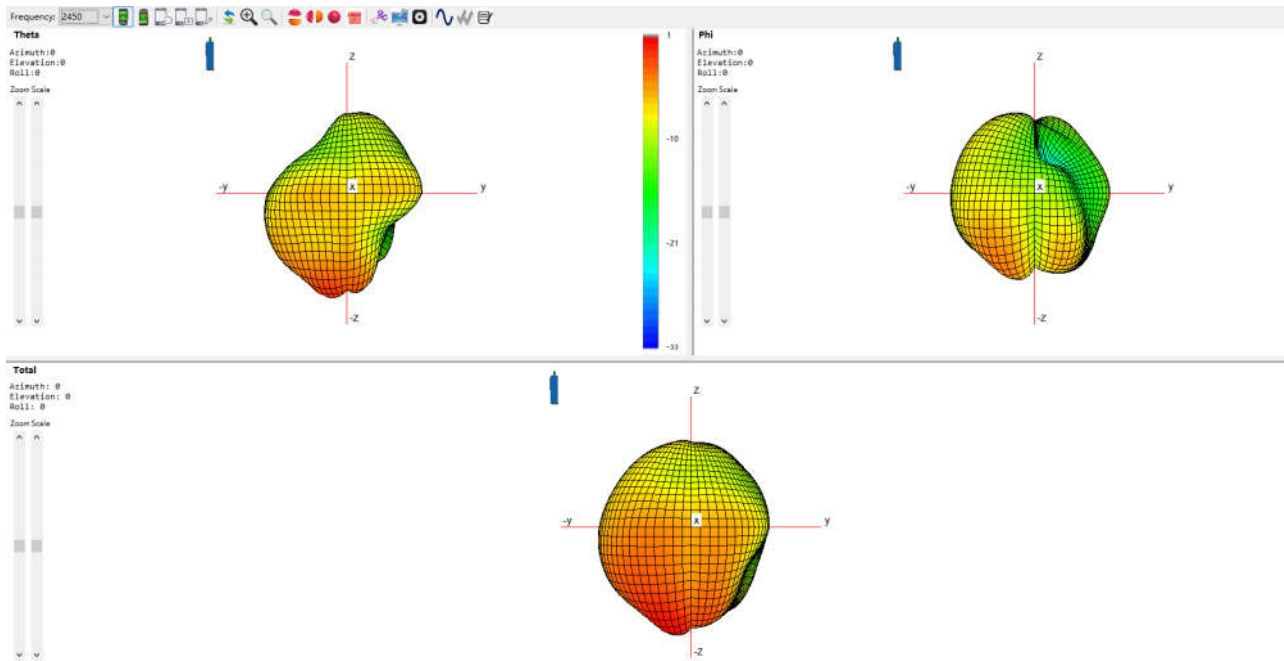
2.3 Antenna Efficiency

Left				Right			
Freq(MHz)	Effi (dB)	Effi (%)	Gain (dBi)	Freq(MHz)	Effi (dB)	Effi (%)	Gain (dBi)
2400	-6.87	20.56	-0.95	2400	-7.03	19.82	-1.02
2410	-6.63	21.73	-0.67	2410	-6.89	20.46	-0.79
2420	-6.41	22.86	-0.42	2420	-6.64	21.68	-0.53
2430	-6.22	23.88	-0.21	2430	-6.41	22.86	-0.31
2440	-6.07	24.72	-0.05	2440	-6.17	24.15	-0.12
2450	-5.92	25.59	-0.17	2450	-5.96	25.35	-0.29
2460	-5.81	26.24	-0.38	2460	-6.13	24.38	-0.5
2470	-5.9	25.70	-0.6	2470	-6.32	23.33	-0.73
2480	-6.05	24.83	-0.83	2480	-6.53	22.23	-0.97
2490	-6.19	24.04	-1.01	2490	-6.75	21.13	-1.19
2500	-6.38	23.01	-1.25	2500	-6.97	20.09	-1.44
AVG	-6.22	23.92	-0.59	AVG	-6.53	22.32	-0.72

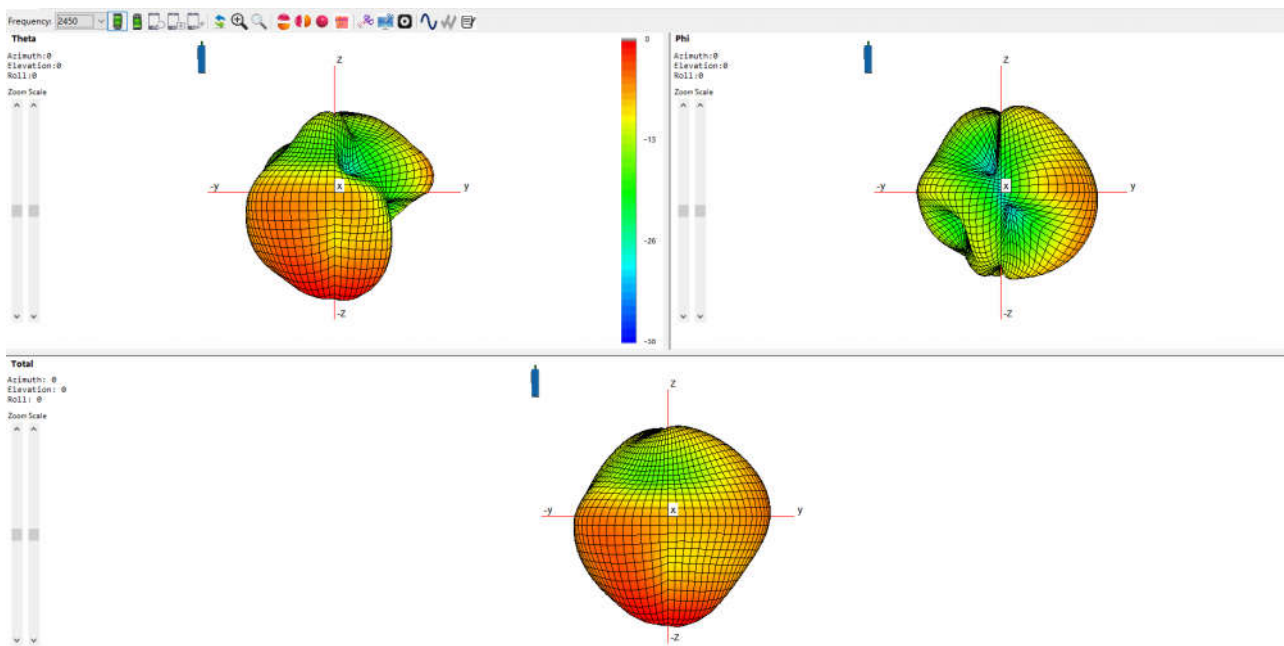
Free space efficiency

2.4 Radiation Pattern

2.4.1 3D Pattern

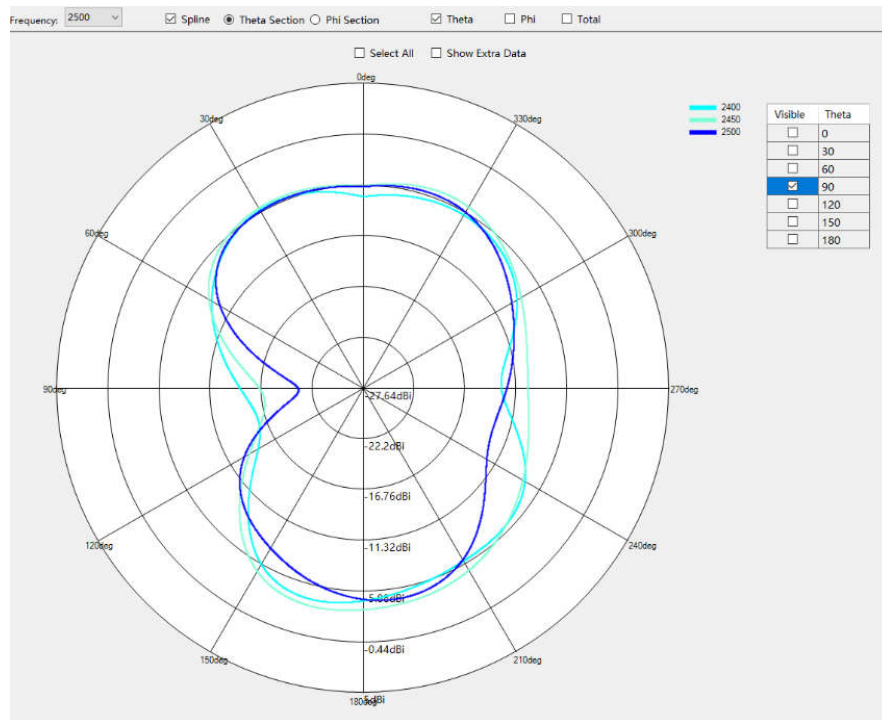


Left Ear 3D Antenna Pattern

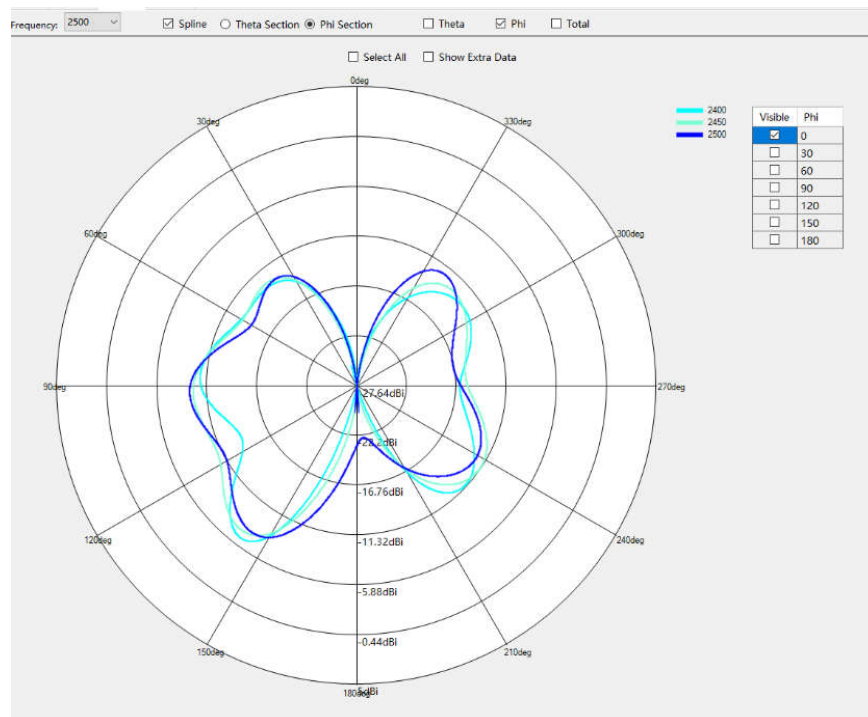


Right Ear 3D Antenna Pattern

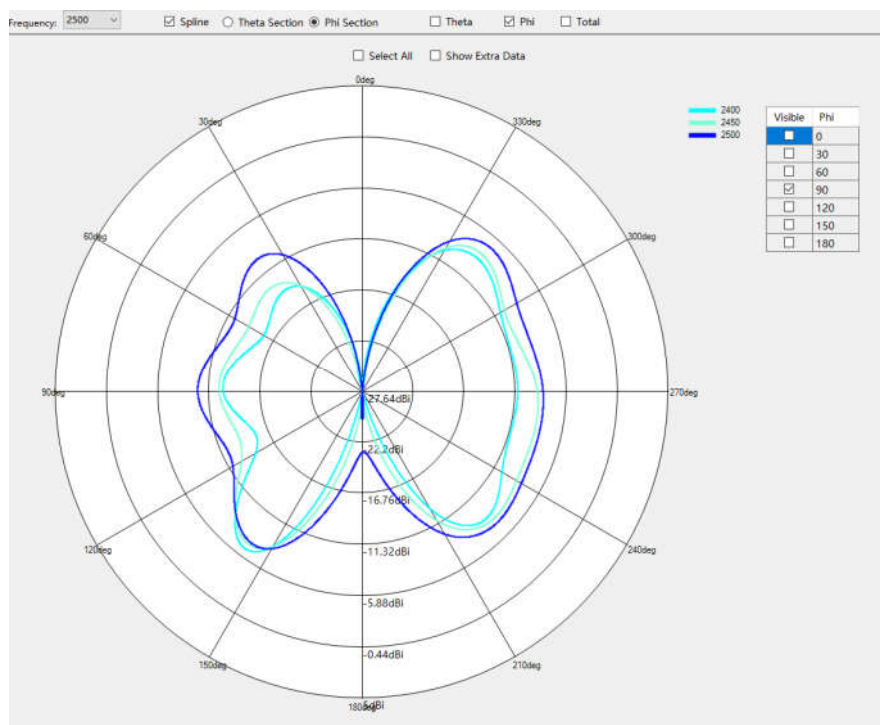
2.4.2 2D Pattern



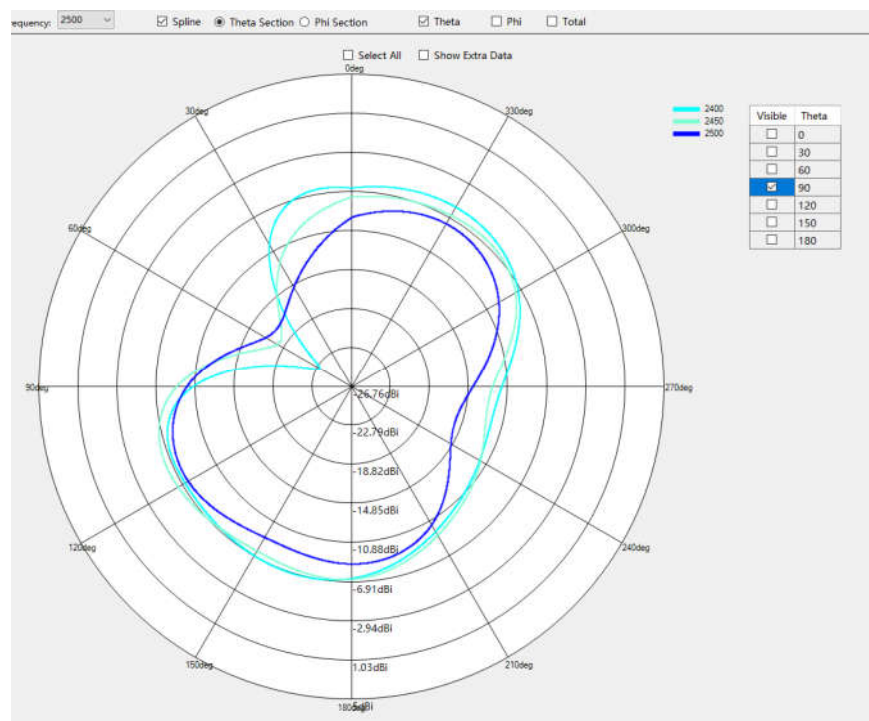
Theta=90⁰, Left Ear 2D Antenna Pattern



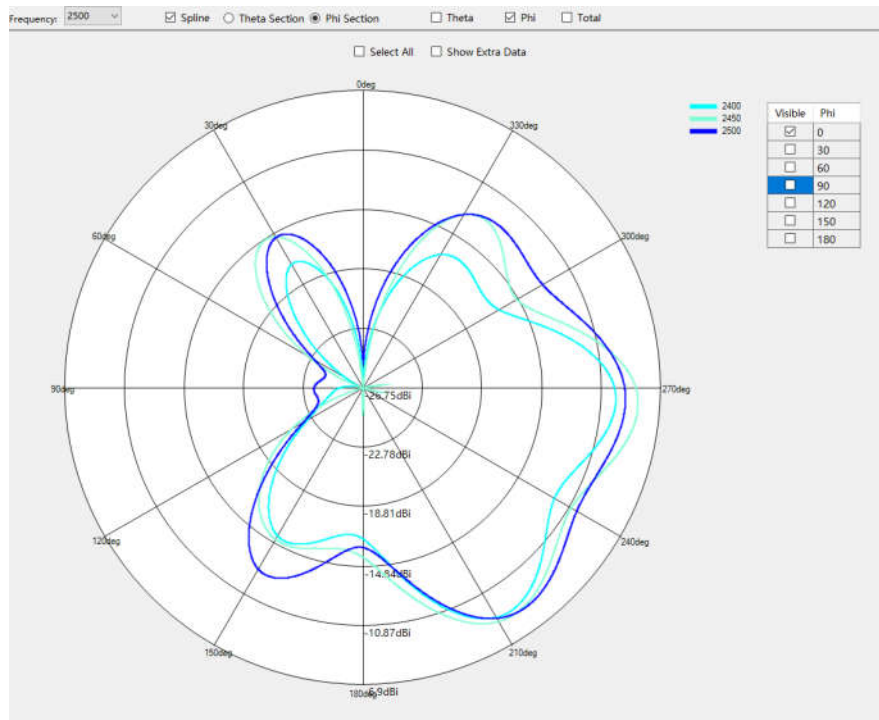
Phi=0⁰, Left Ear 2D Antenna Pattern



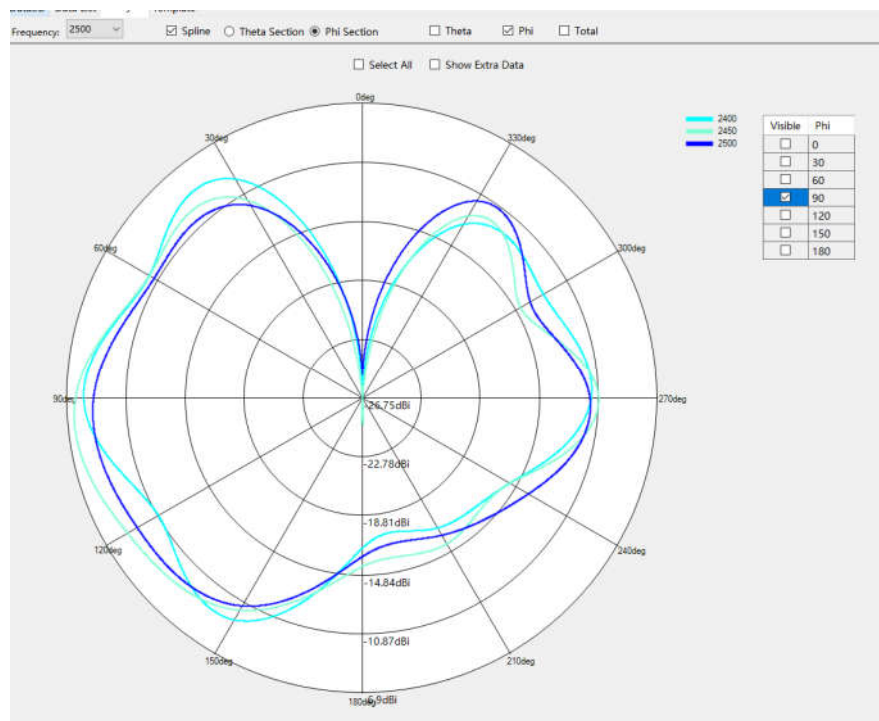
Phi=90⁰, Left Ear 2D Antenna Pattern



Theta=90⁰, Right Ear 2D Antenna Pattern



Phi =0⁰, Right Ear 2D Antenna Pattern



Phi =90⁰, Right Ear 2D Antenna Pattern

III. Test Equipment

3.1 Compact OTA Test System

Model: RayZone 1800;
Calibration Date: 2023/08/04

3.2 Test Equipment

Model: Agilent Technologies E5071C;
Calibration Date: 2023/08/04

Model: TRANSCOM INSTRUMENTS T5260C;
Calibration Date: 2023/08/30

3.3 Testing Software



Testing Software Name: Libra