



ANTENNA PASSIVE TEST REPORT
(Free Space)

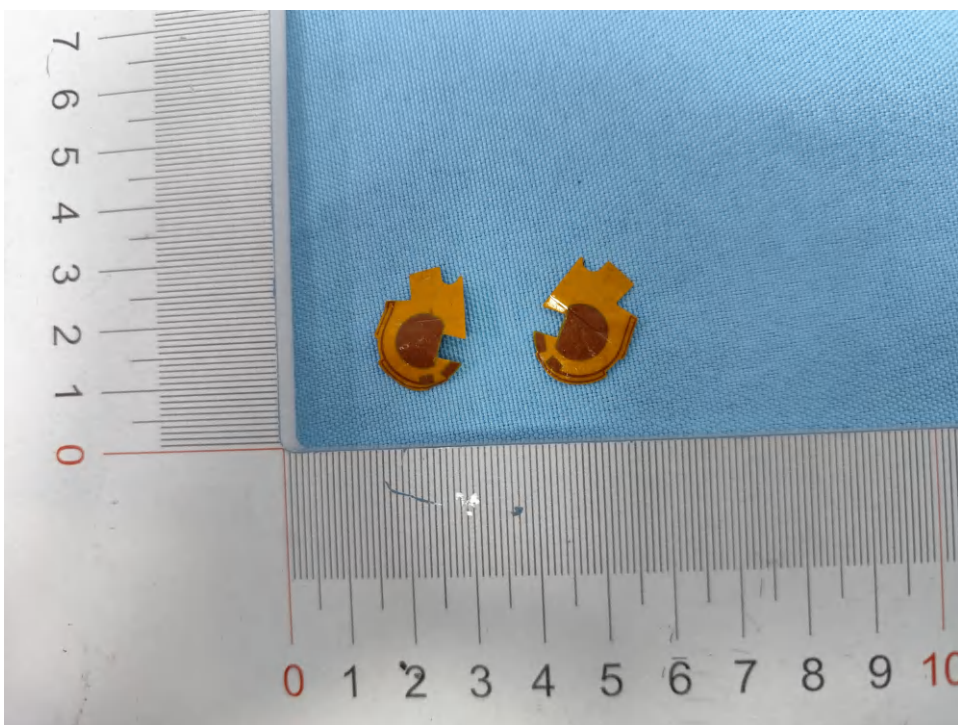
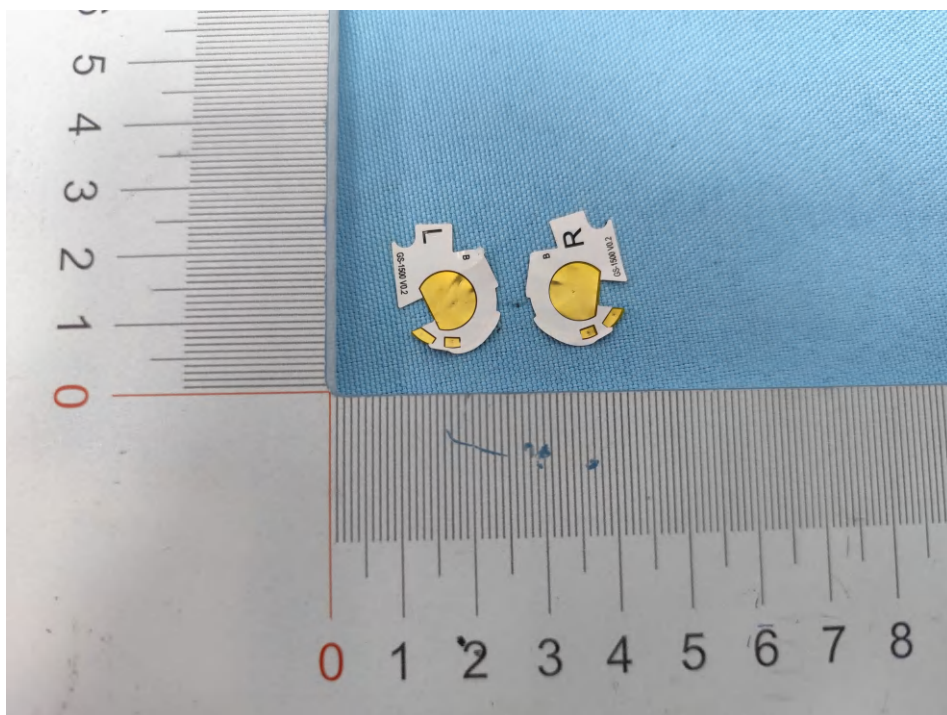
Applicant: Grandsun
Product Name: ARC 5
Model No.(EUT): ARC 5
Date of Receipt: 2025-02-21
Date of Test: 2025-02-21

Tested by: Max.Chen
Made by: Max.Chen
Checked by: Noki.Ho



REVISION HISTORY

Revision Record		
Version	Date	Reason for change
V0.1	2017-05-20	First edition





CONTENTS

1. GENERAL INFORMATION.....	4
1.1 Test Location.....	4
1.2 Test item and results.....	4
1.3 Laboratory Environment.....	4
1.4 Test Equipments List.....	4
1.5 Measurement Uncertainty.....	4
2. OTA MEASUREMENTS SYSTEM CONFIGURATION.....	5
3. TEST RESULTS.....	6
3.1 Efficiency & Gain.....	6
3.2 2-D antenna pattern.....	7
3.3 3-D antenna pattern.....	8
3.4 Passive pattern.....	11
4. APPENDIX A THE EUT AND TEST CONFIGURATION.....	14



1. GENERAL INFORMATION

1.1 Test Location

Company: Shenzhen Grandsun Electronics Co.,Ltd.
Address: Gaoqiao Industry Zone,Pingdi Town,Longgang District,Shenzhen,China
Post code: 518117
Telephone: +86-755-89234568

1.2 Test item and results

Test detailed items/section as below:

NO	Items
1	Gain
2	Efficiency
3	2-D/3-D pattern

1.3 Laboratory Environment

Temperature	Min.=18℃	Max.=24℃
Relative humidity	Min.=30%	Max.=70℃
Shield effect	0.5-10GHZ	> 100dB
Ground resistance	<0.4 Ω	

1.4 Test Equipments List

Equipment Name	Model NO.	Manufacture	Calibration	Valid Period
Network Analyzer	E5071C	Keysight	2023-04-20	One year
Chamber	AMS-8923-195	ETS-LINDGERN	2023-04-20	One year

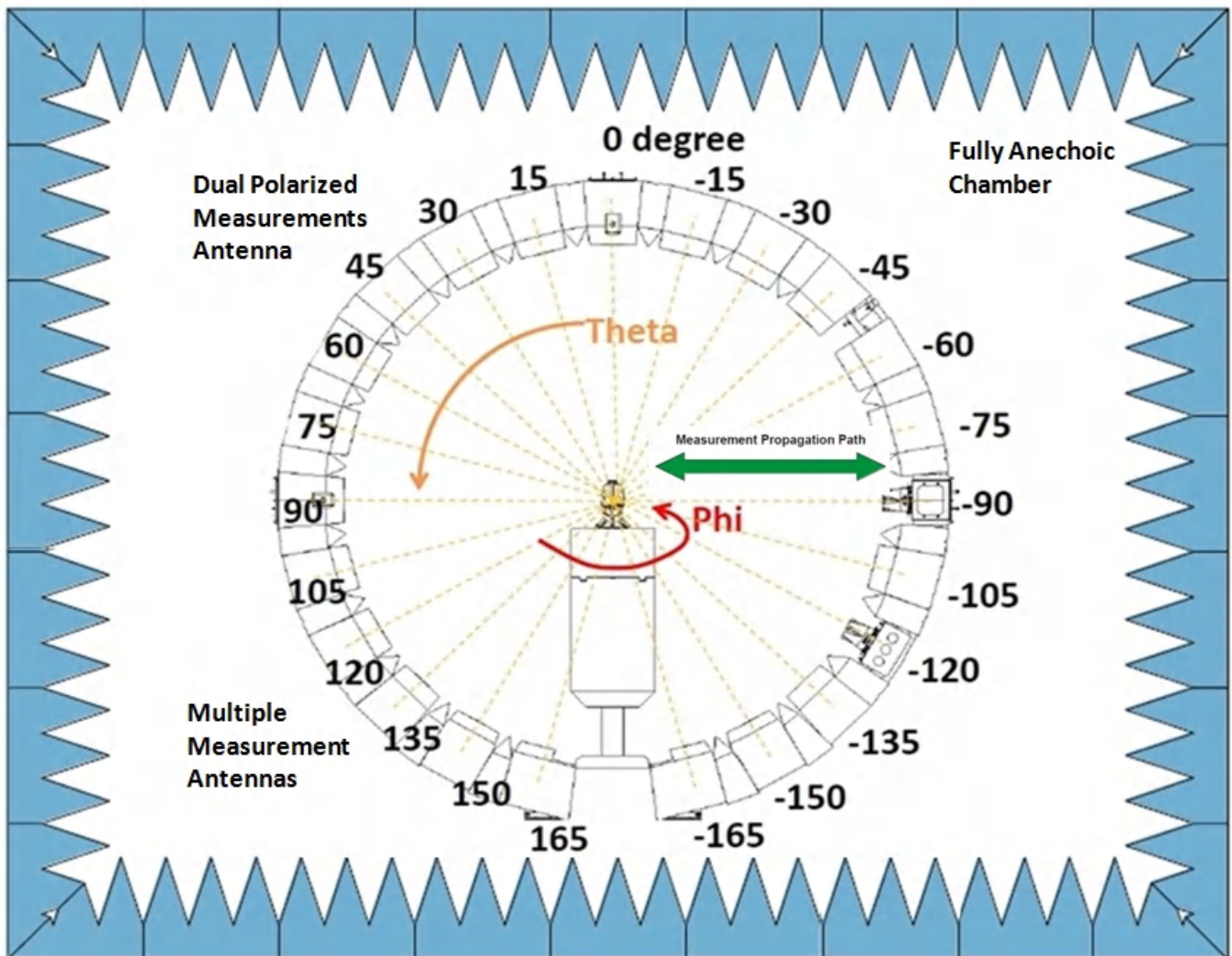
1.5 Measurement Uncertainty

Item	2.4GHZ-2.5GHZ(dB)
Gain	0.3
Efficiency	0.3



2. OTA MEASUREMENTS SYSTEM CONFIGURATION

The system is designed for fully-compliant radiated wireless antenna measurements over the frequency range from 700 MHz to 6 GHz with a 1.95-meter path length. The system includes a multi-antenna array with twenty-three (23) dual-polarized measurement antennas spaced every 15° , The chamber size is 5m*5m*5m



OTA measurement System Configuration

Note: Phi(The turntable) is from $0^\circ \sim 180^\circ$,Theta(the ring, multiple antennas) is from $-165^\circ \sim 165^\circ$, Rotate the AUT and multi-antenna array record the data ,the step of rotation is 15° .



3. TEST RESULTS

3.1 Efficiency & Gain

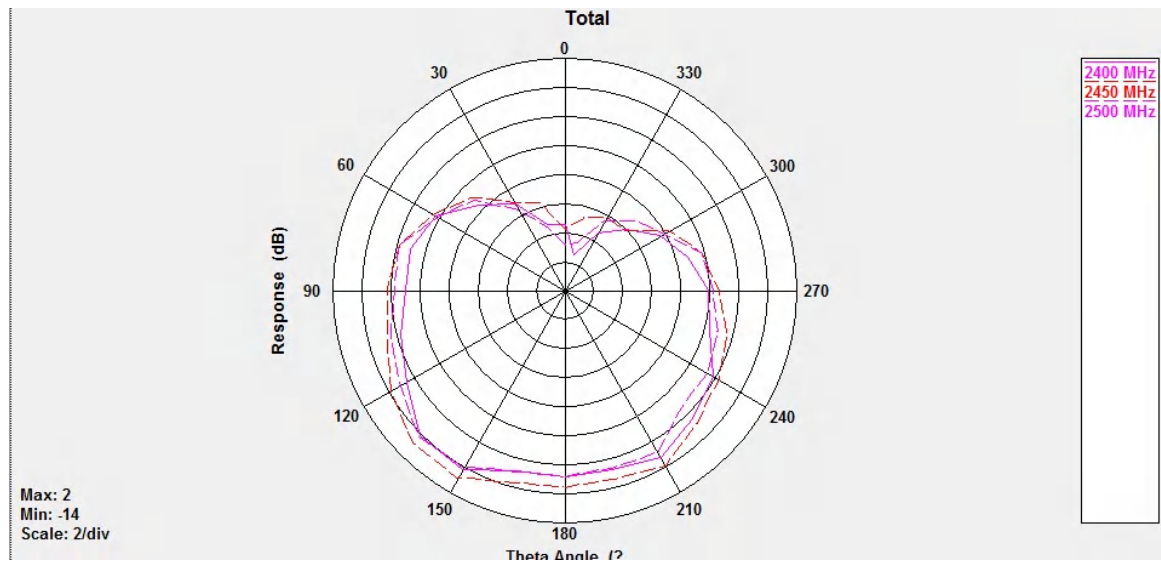
Earbuds_R			
Frequency (Mhz)	Efficiency (dB)	Efficiency (%)	Gain (dBi)
2400	-4.22	37.79	0.41
2410	-4.01	39.64	0.59
2420	-4.01	39.68	0.43
2430	-3.85	41.19	0.59
2440	-3.62	43.38	0.81
2450	-3.63	43.32	0.81
2460	-3.62	43.41	0.98
2470	-3.79	41.70	0.71
2480	-3.93	40.38	0.41
2490	-4.20	37.99	0.18
2500	-4.56	34.97	-0.10

Earbuds_L			
Frequency (Mhz)	Efficiency (dB)	Efficiency (%)	Gain (dBi)
2400	-4.14	38.47	0.70
2410	-4.06	39.17	0.56
2420	-3.90	40.71	0.54
2430	-3.70	42.64	0.76
2440	-3.60	43.60	0.83
2450	-3.68	42.82	0.58
2460	-3.60	43.55	0.63
2470	-3.52	44.45	0.73
2480	-3.65	43.09	0.56
2490	-3.77	41.92	0.59
2500	-4.14	38.45	0.11

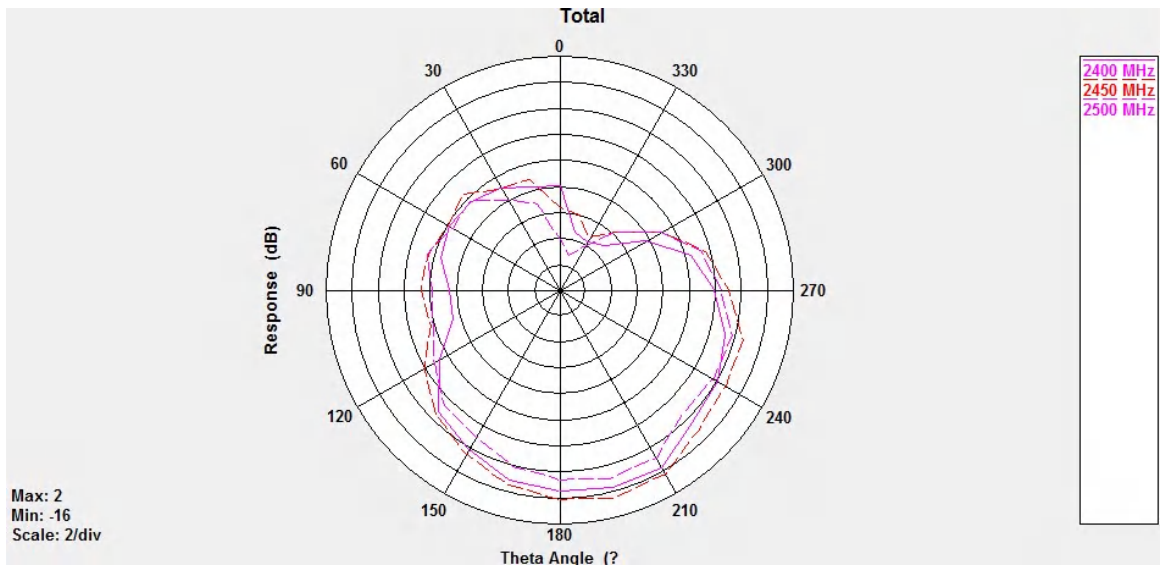


3.2 2-D antenna pattern (Phi=90°)

3.2.1 Earbuds_R



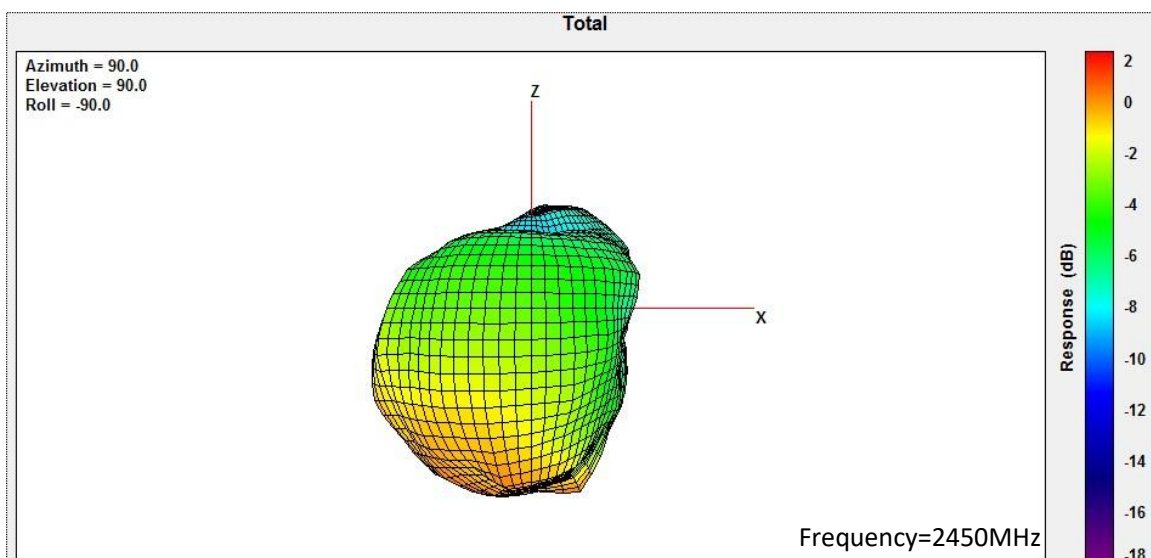
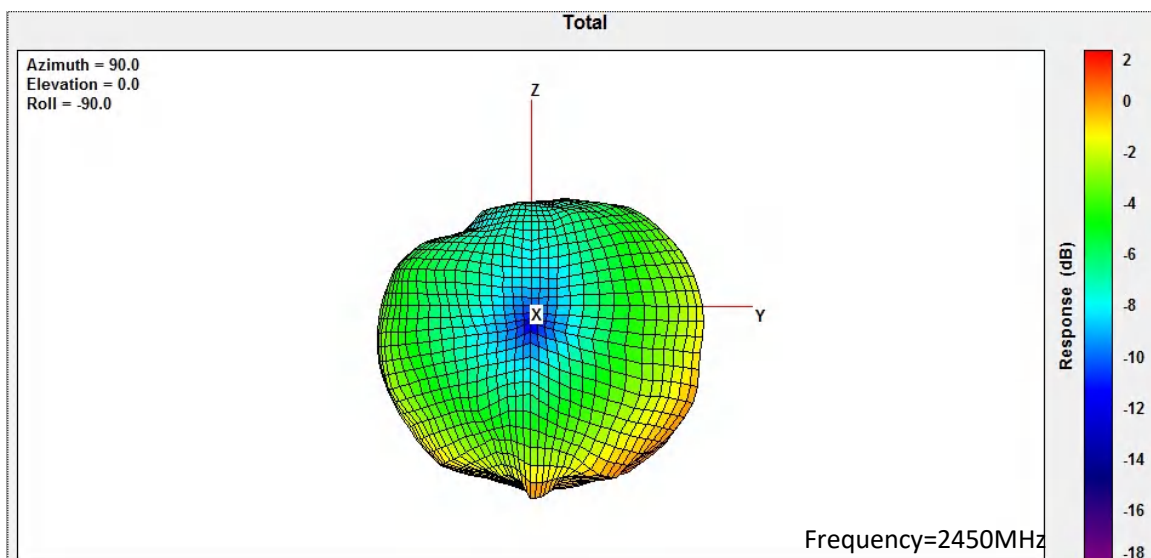
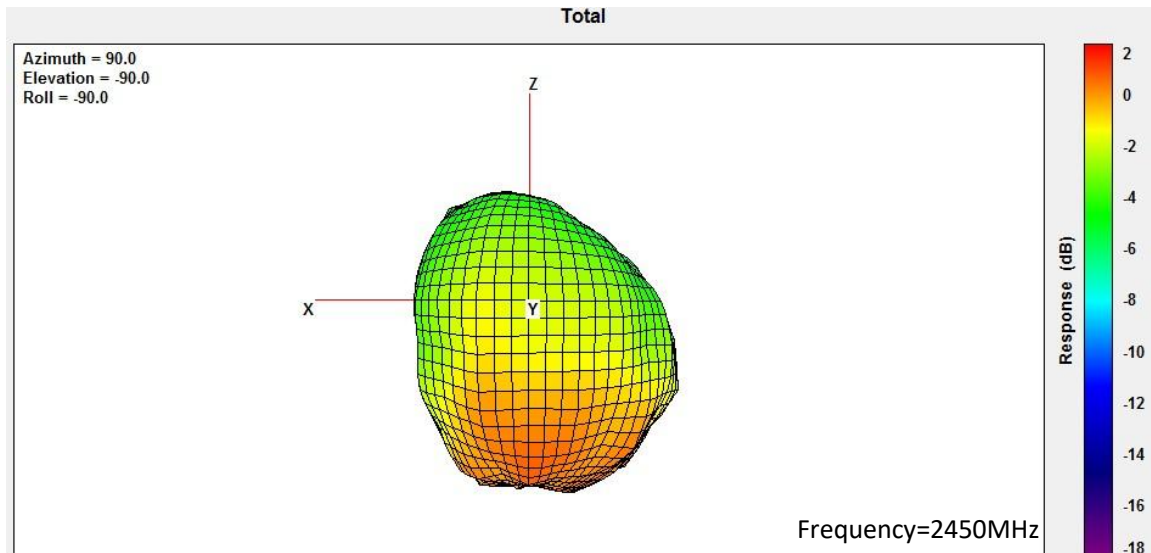
3.2.1 Earbuds_L

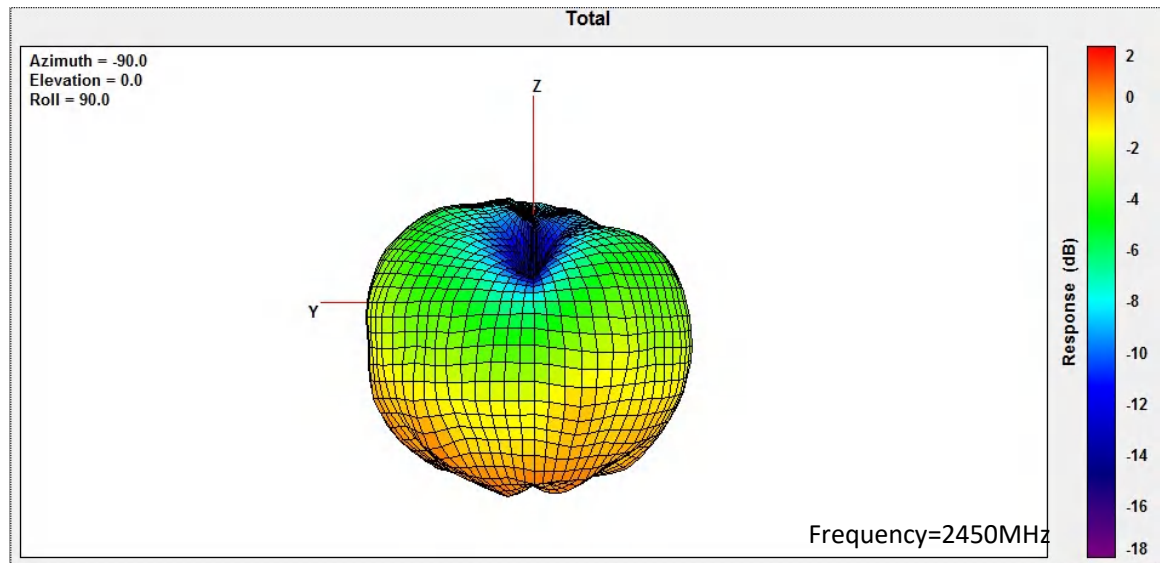




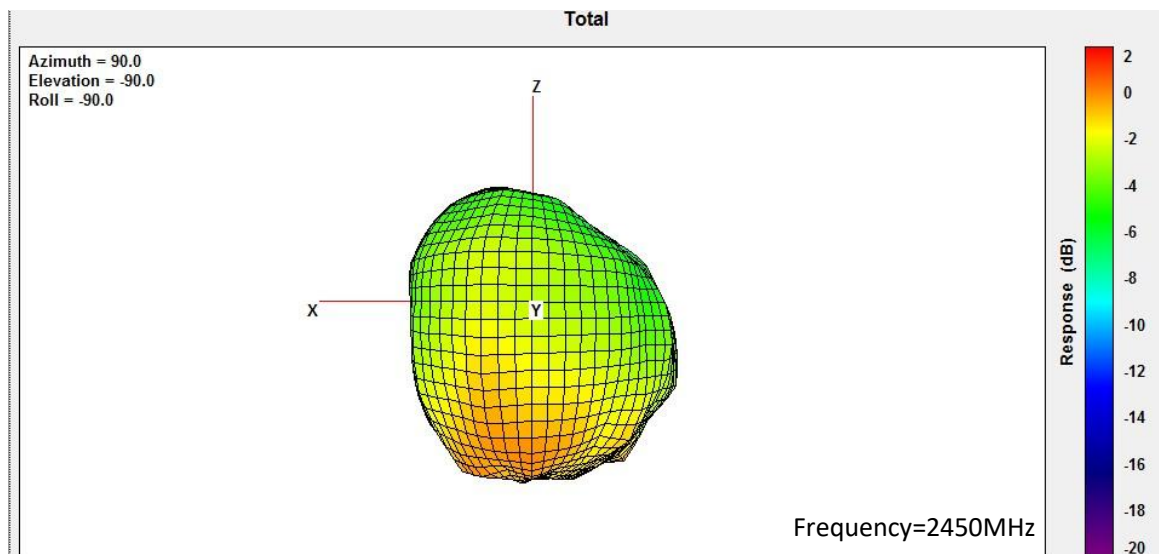
3.3 3-D antenna pattern

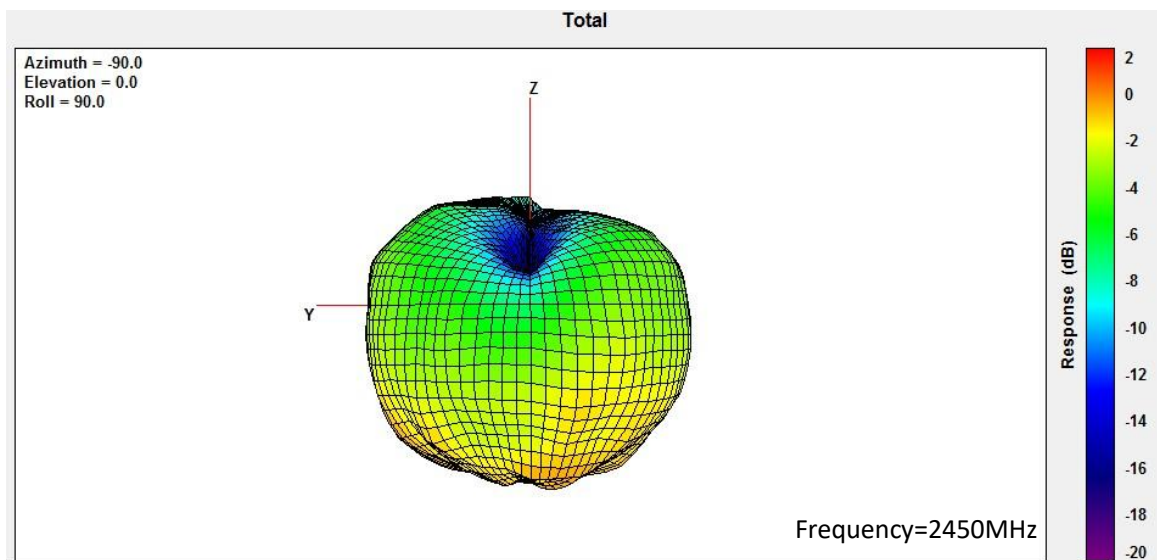
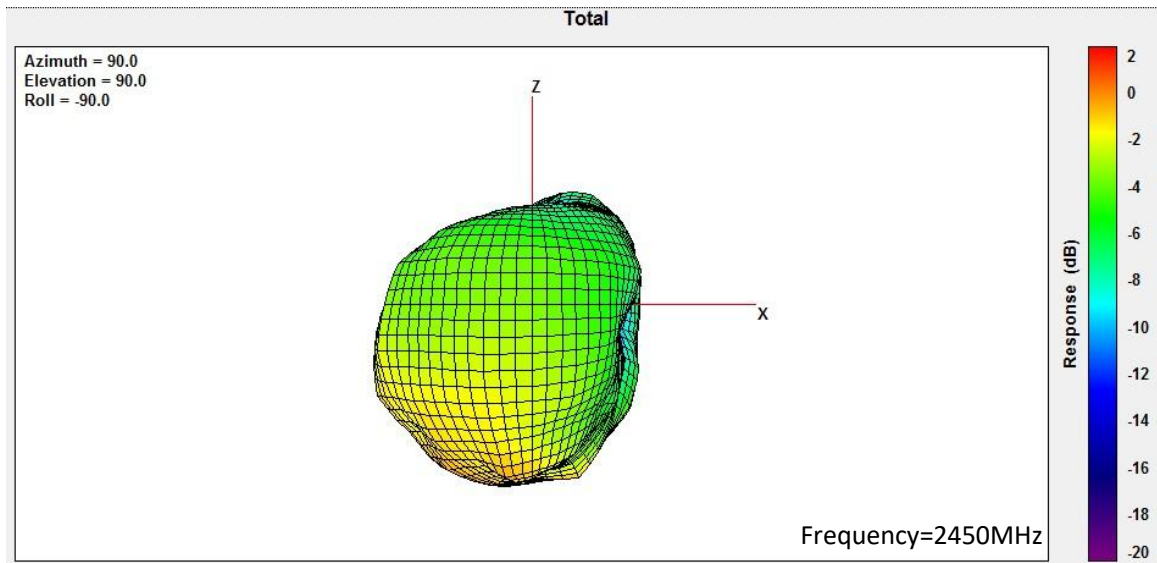
3.3.1 Earbuds_R





3.3.2 Earbuds_L



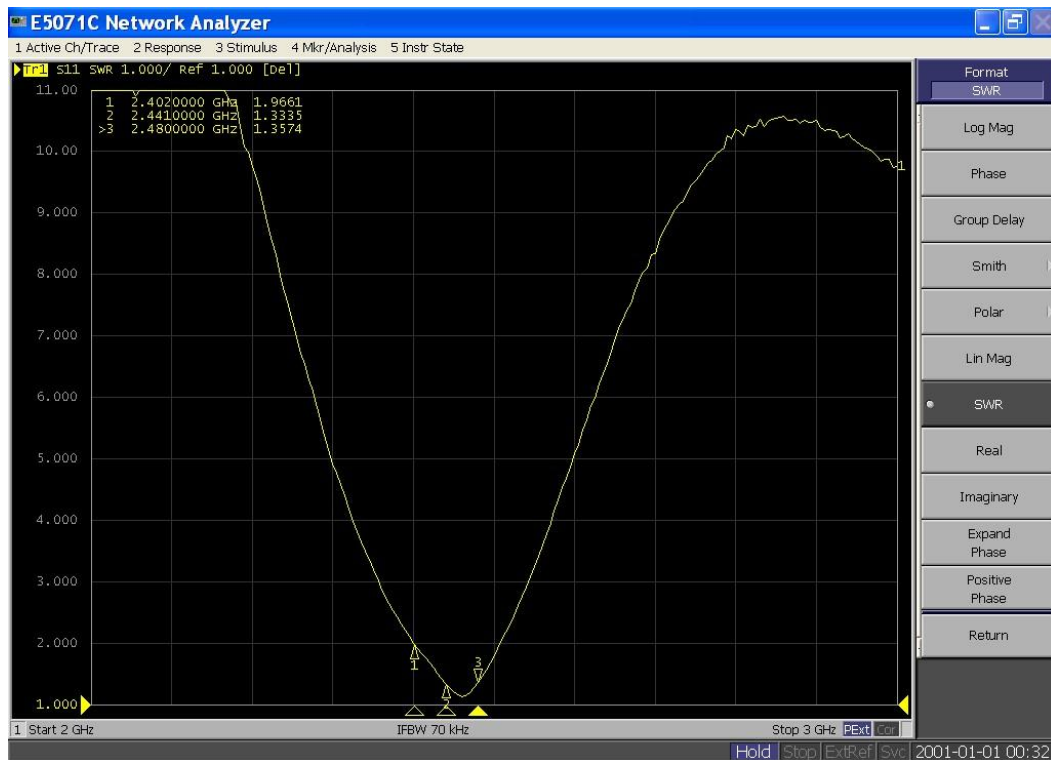




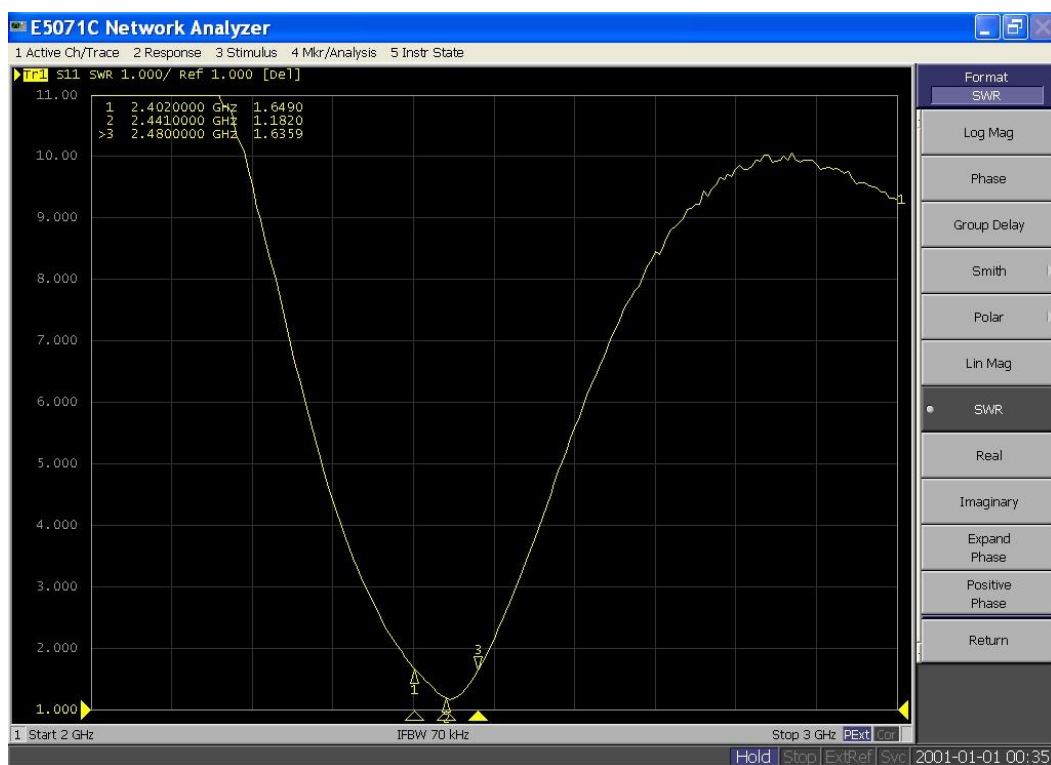
3.4 Passive pattern

3.4.1 VSWR

3.4.1.1 Earbuds_R



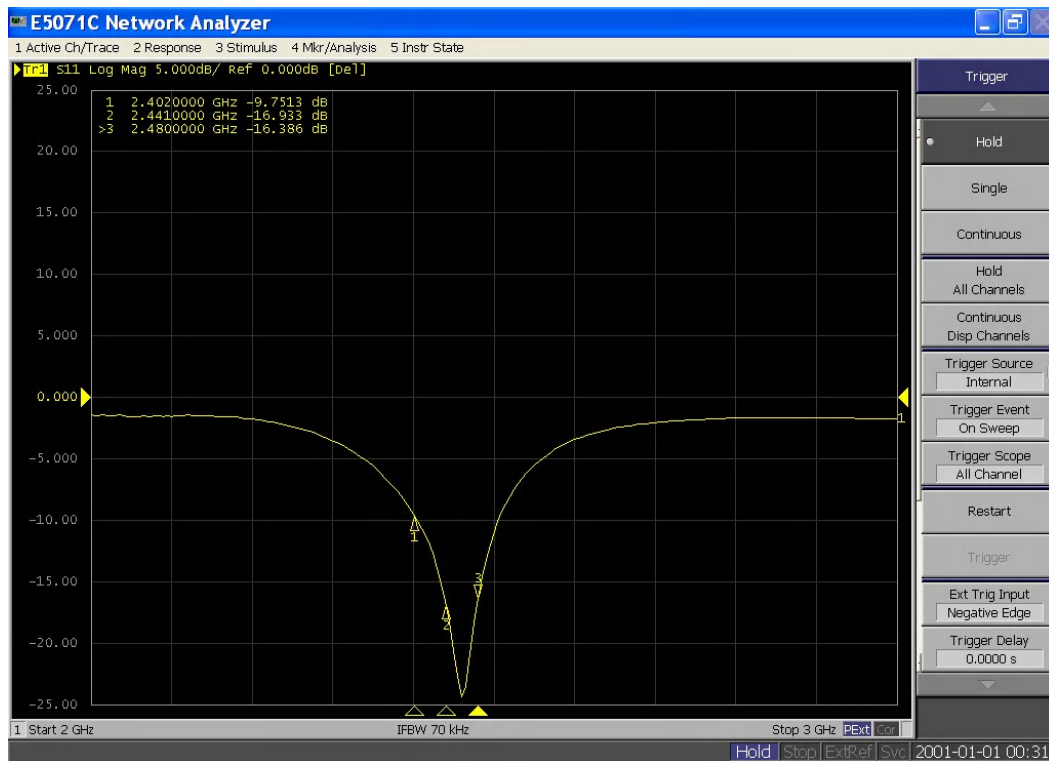
3.4.1.2 Earbuds_L



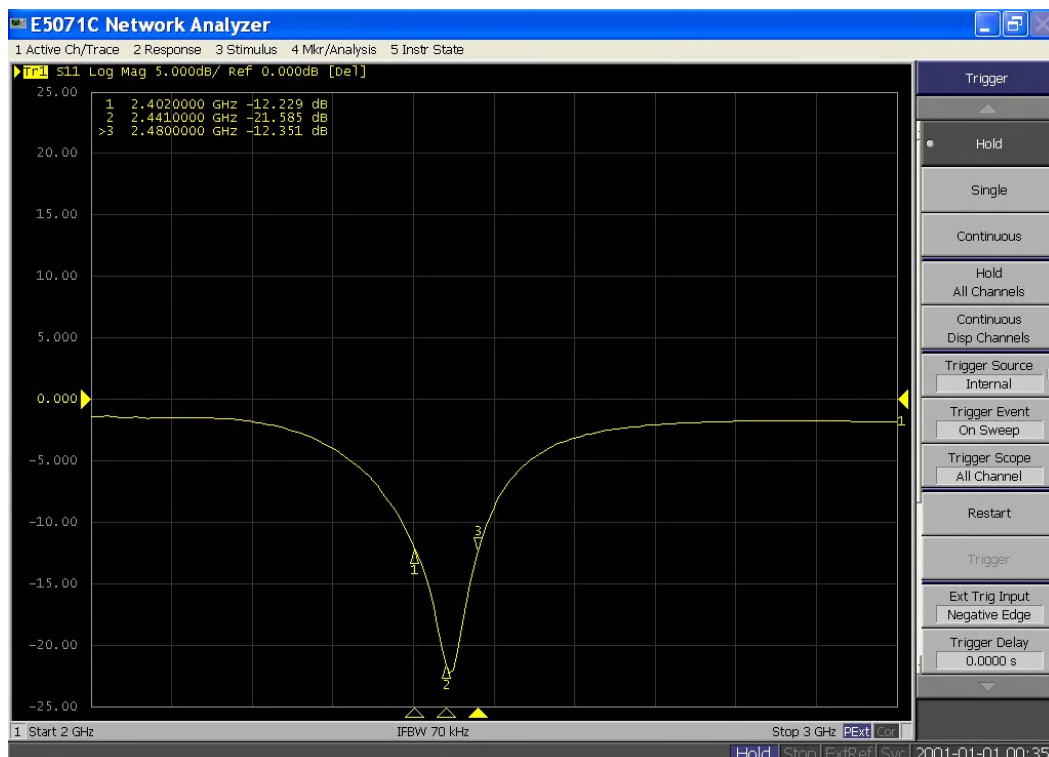


3.4.2 Return loss

3.4.2.1 Earbuds_R



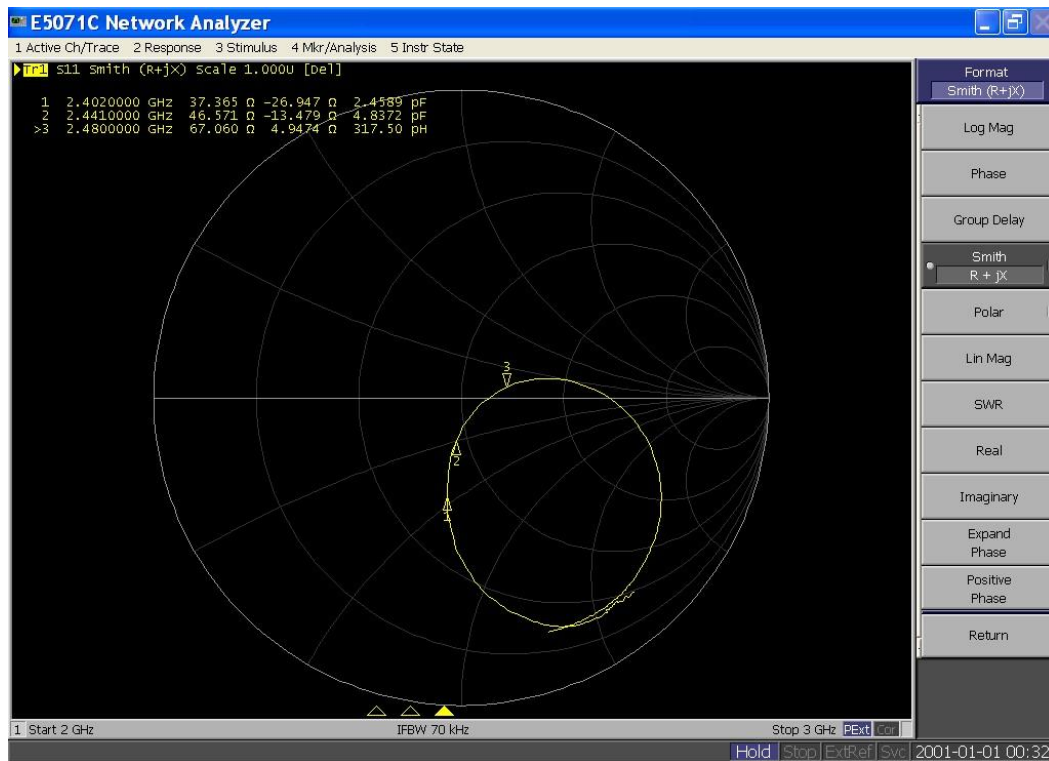
3.4.2.1 Earbuds_L



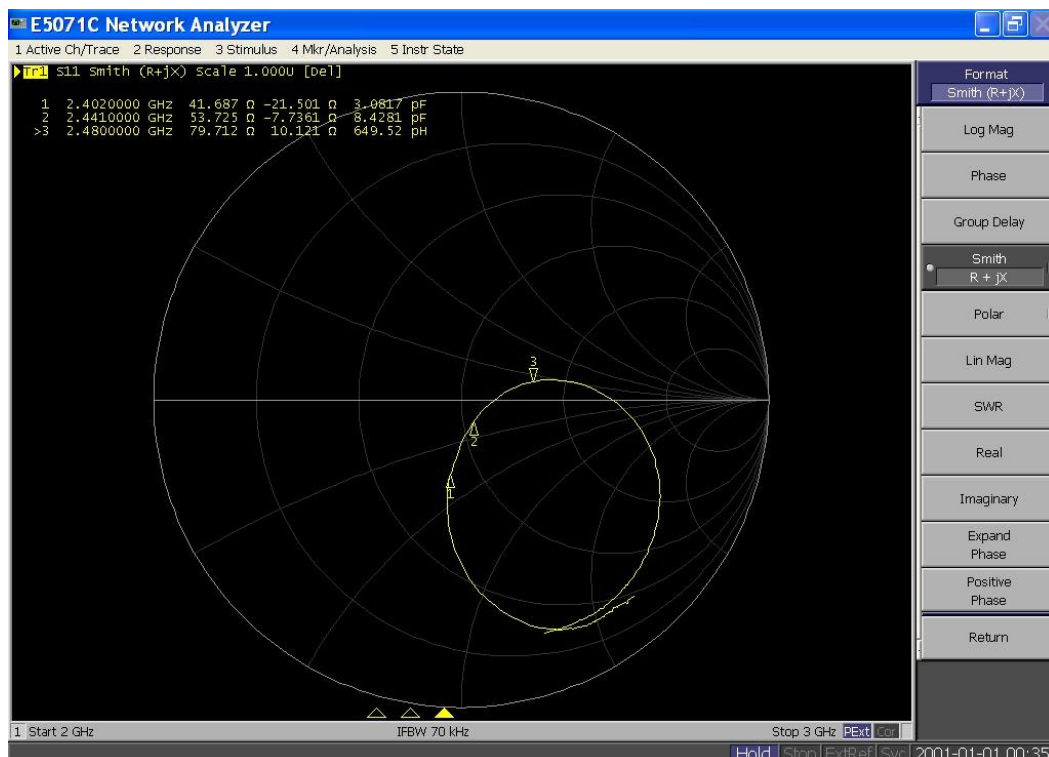


3.4.3 Impedance

3.4.3.1 Earbuds_R



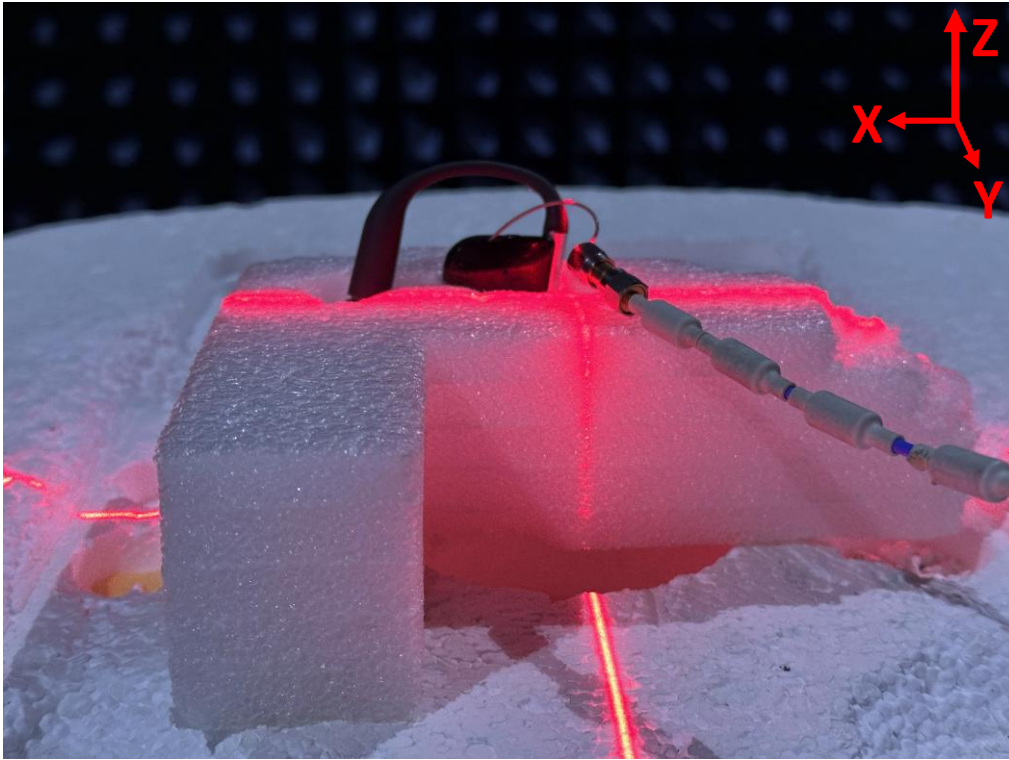
3.4.3.2 Earbuds_L





4.APPENDIX A THE EUT AND TEST CONFIGURATION

4.1 Earbuds_R



4.2 Earbuds_L

