ANTENNA PASSIVE TEST REPORT

(Free Space)

Applicant:	**Grandsun**
Product Name:	**233621 悟空**
Model No.(EUT):	**233621 悟空**
Date of Receipt:	**2022-04-20**
Date of Test:	**2022-04-20**

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

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	＜0.4Ω	

1.4 Test Equipments List

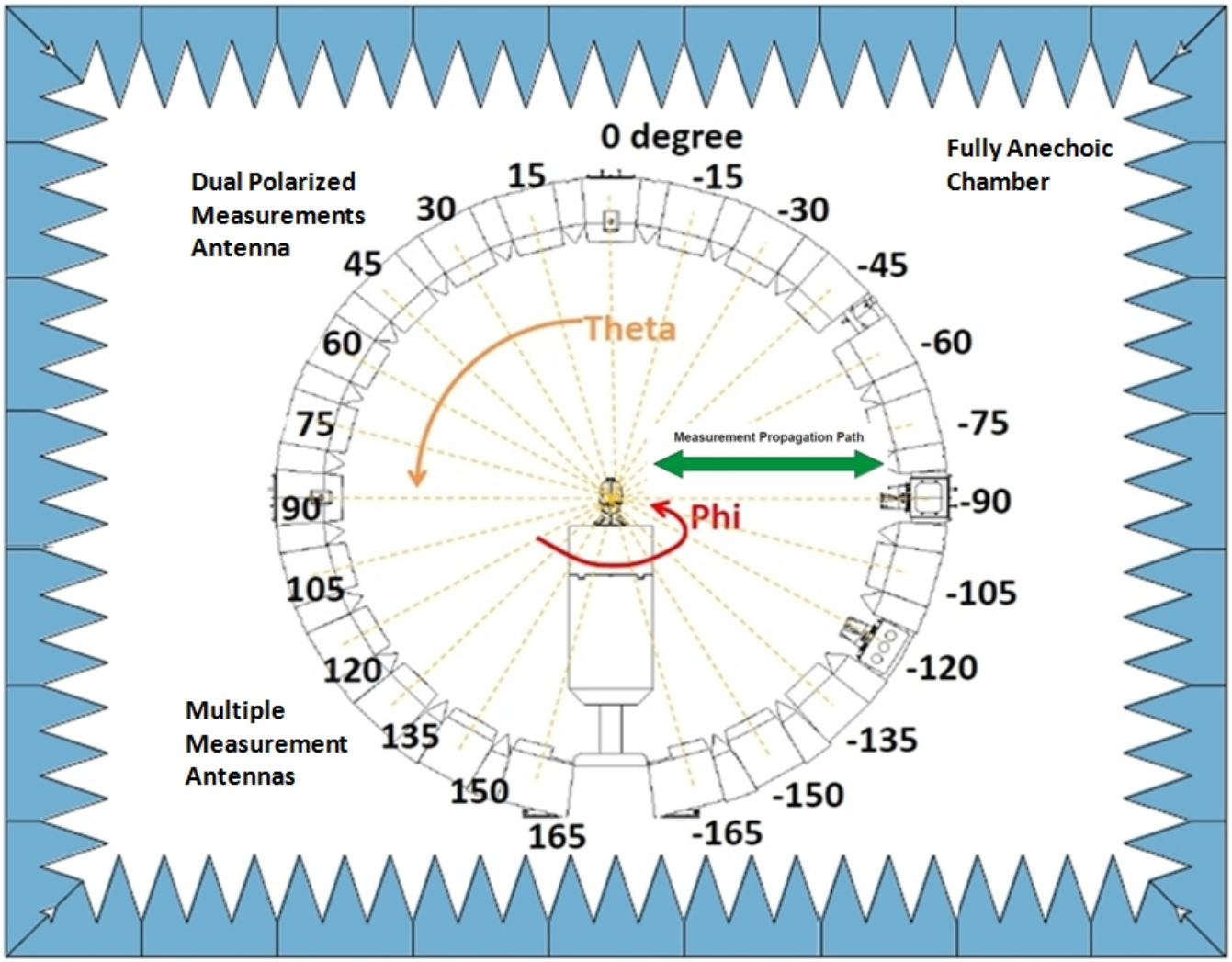
Equipment Name	Model NO.	Manufacture	Calibration	Valid Period
Network Analyzer	E5071C	Keysight	2022-04-20	One year
Chamber	AMS-8923-195	ETS-LINDGERN	2022-04-20	One year

1.5 Measurement Uncertainty

Item	2.4GHZ-2.5GHZ(dB)
Gain	-1.0
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

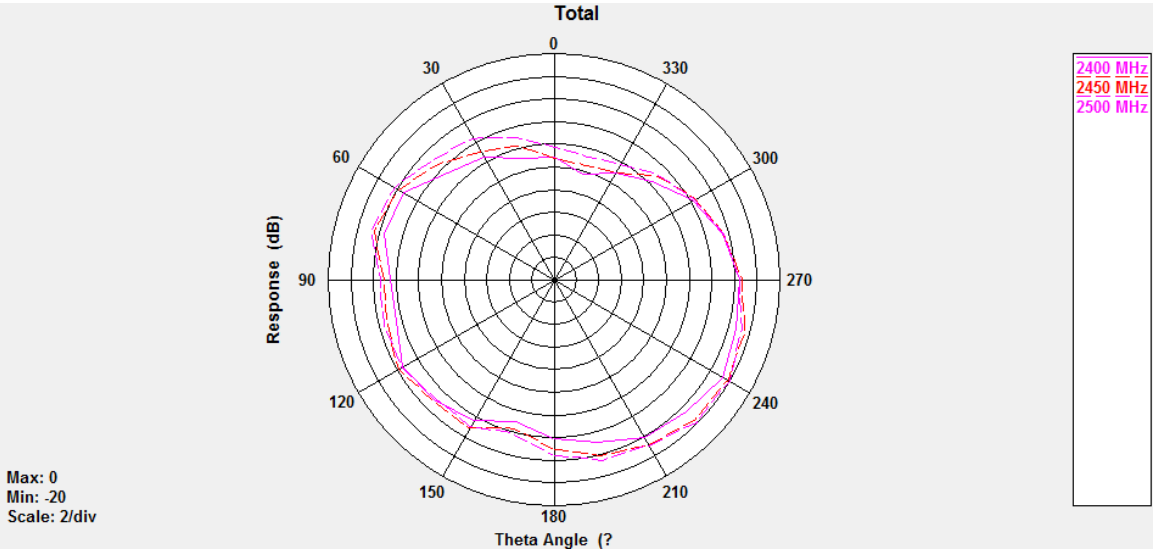
Note：Phi(The turntable) is from 0~180°,Theta(the ring, multiple antennas) is from -165°~165°, Rotate the AUT and multi-antenna array record the data ,the step of rotation is 15 degree.

3. TEST RESULTS

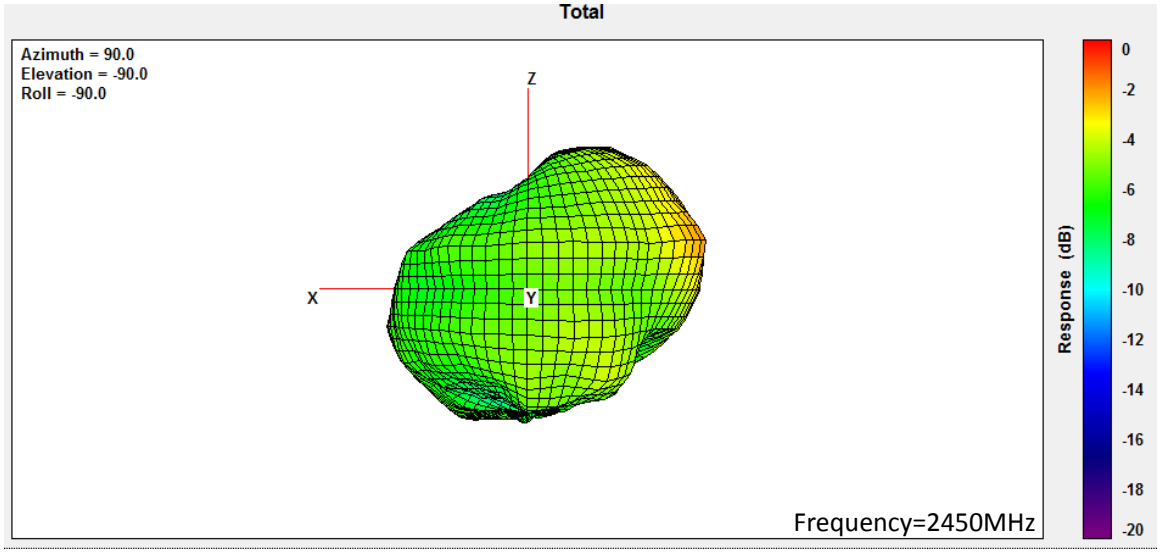
3.1 Efficiency & Gain

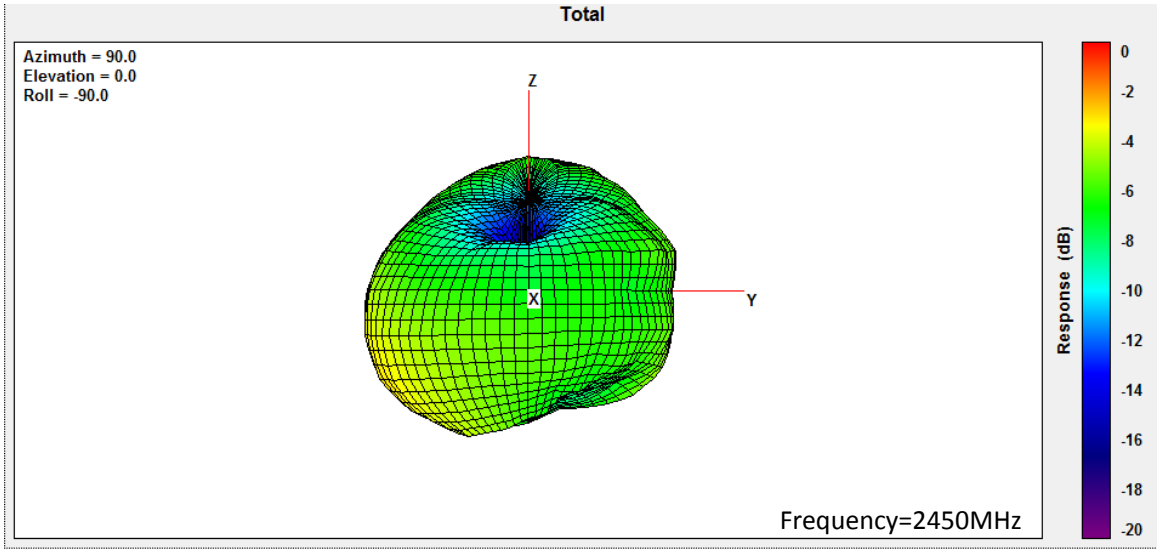
Frequency（Mhz）	Efficiency（dB）	Efficiency（%）	Gain（dBi）
2400	-5.27	29.6	-1.93
2410	-5.09	30.9	-1.74
2420	-4.97	31.8	-1.57
2430	-4.93	32.1	-1.64
2440	-4.78	33.2	-1.70
2450	-4.59	34.6	-1.54
2460	-4.50	35.4	-1.28
2470	-4.36	36.6	-1.00
2480	-4.39	36.3	-1.13
2490	-4.32	36.9	-1.20
2500	-4.34	36.7	-1.23

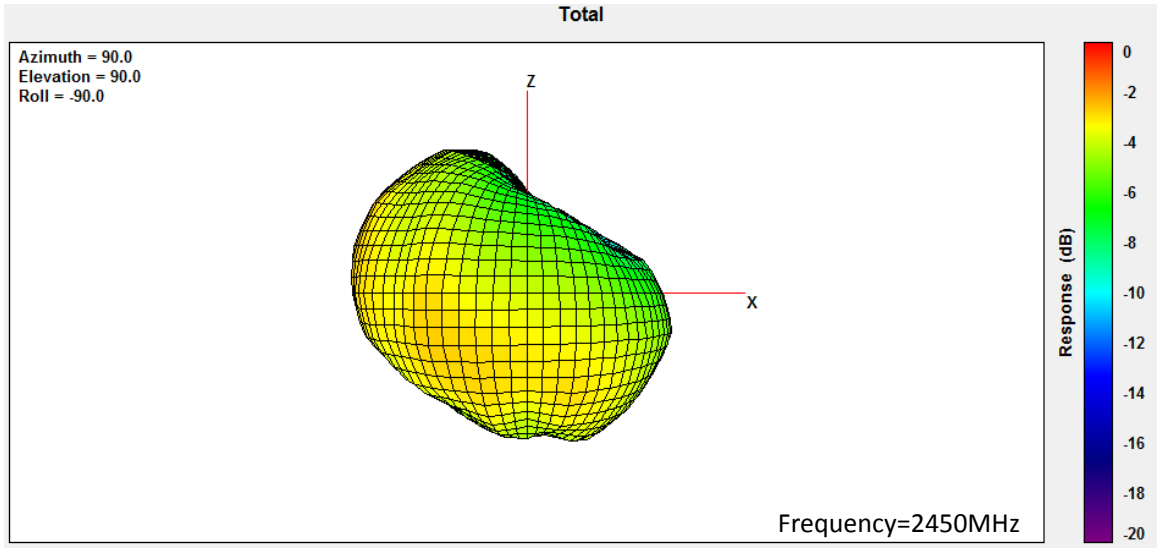
3.2 2-D antenna pattern（Phi=90°）

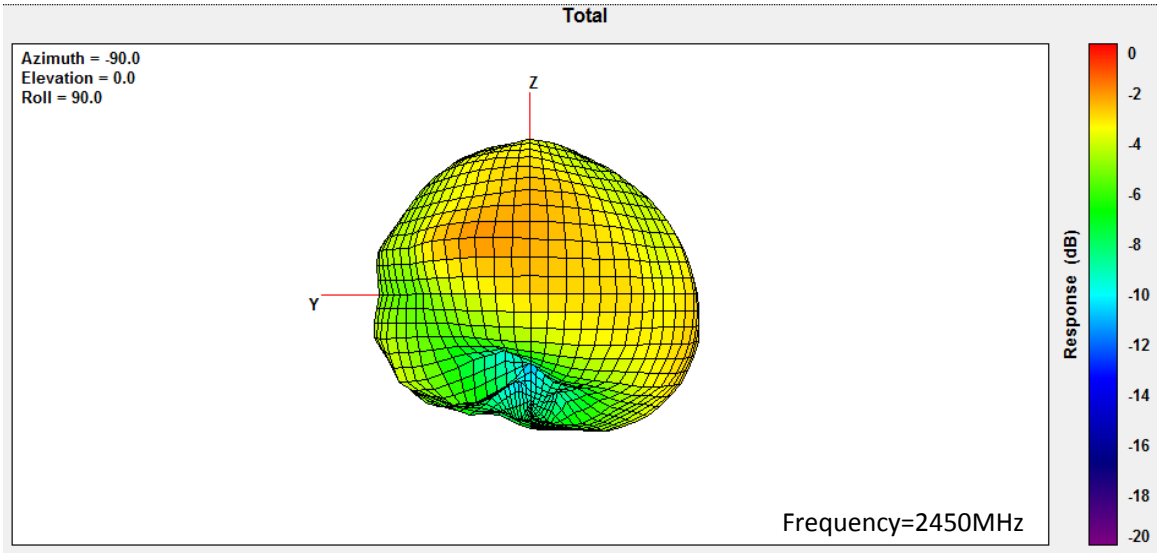


3.3 3-D antenna pattern



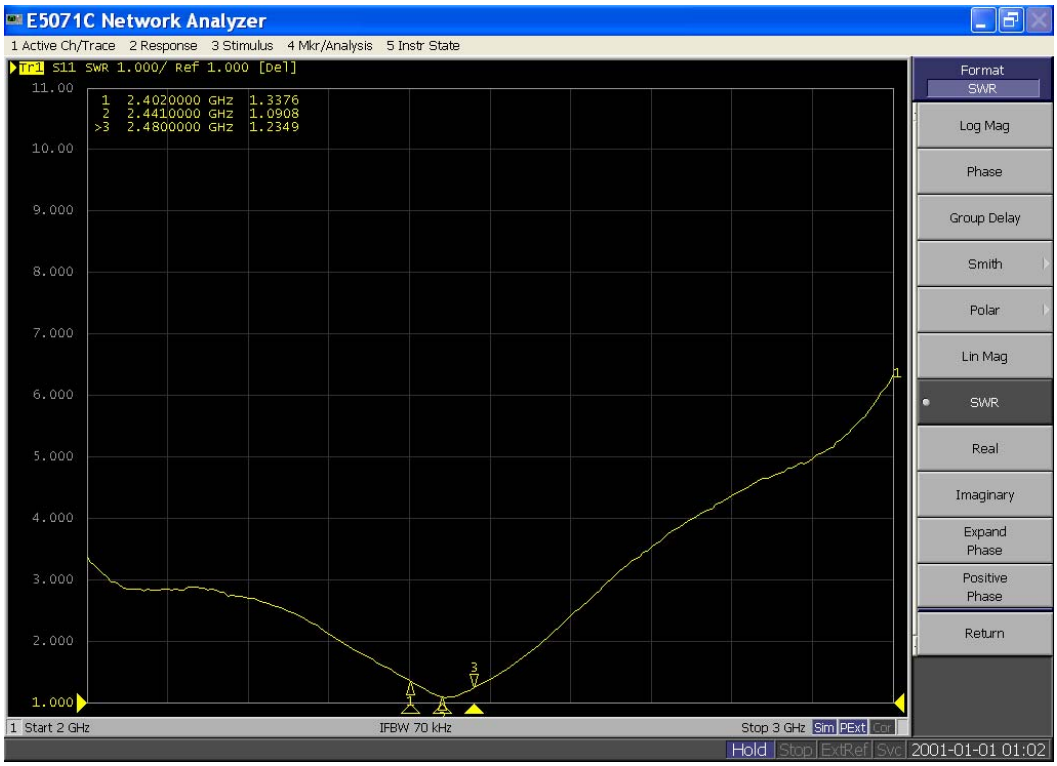




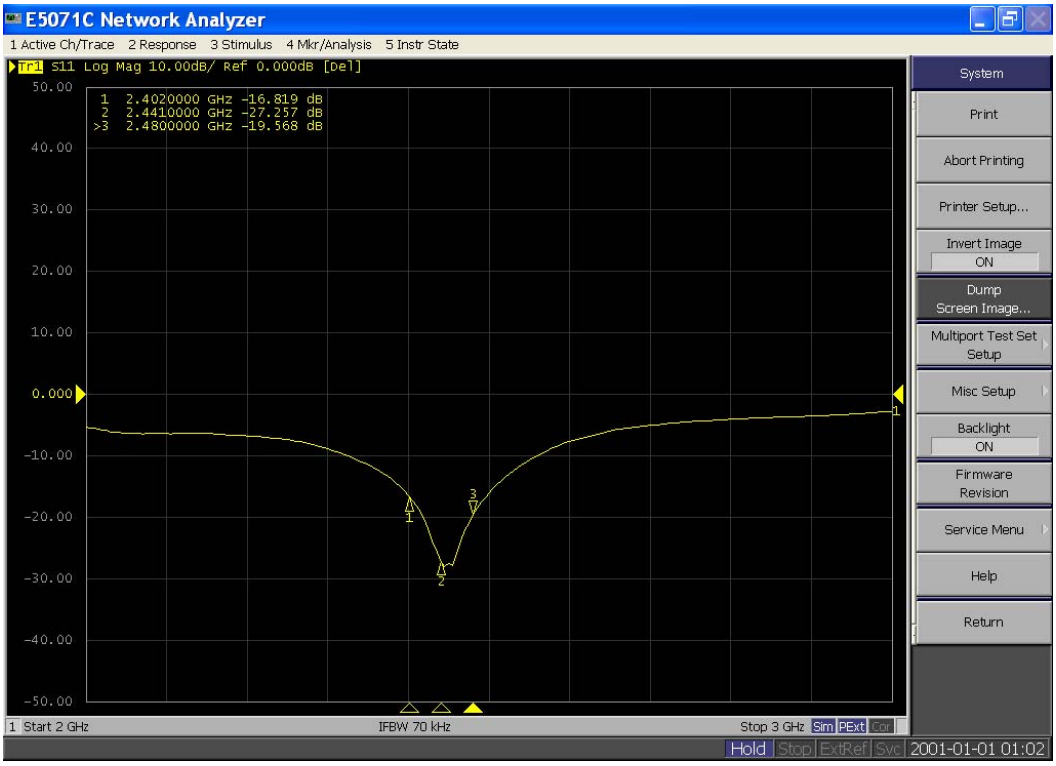


3.4 Passive pattern

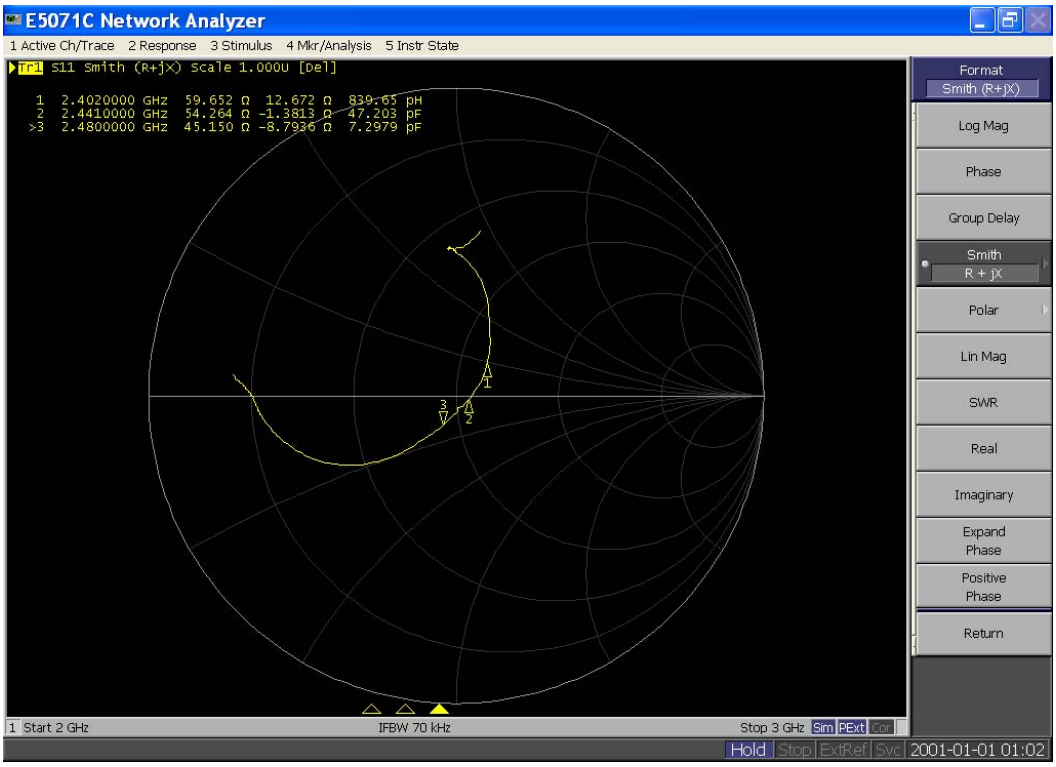
3.4.1 VSWR



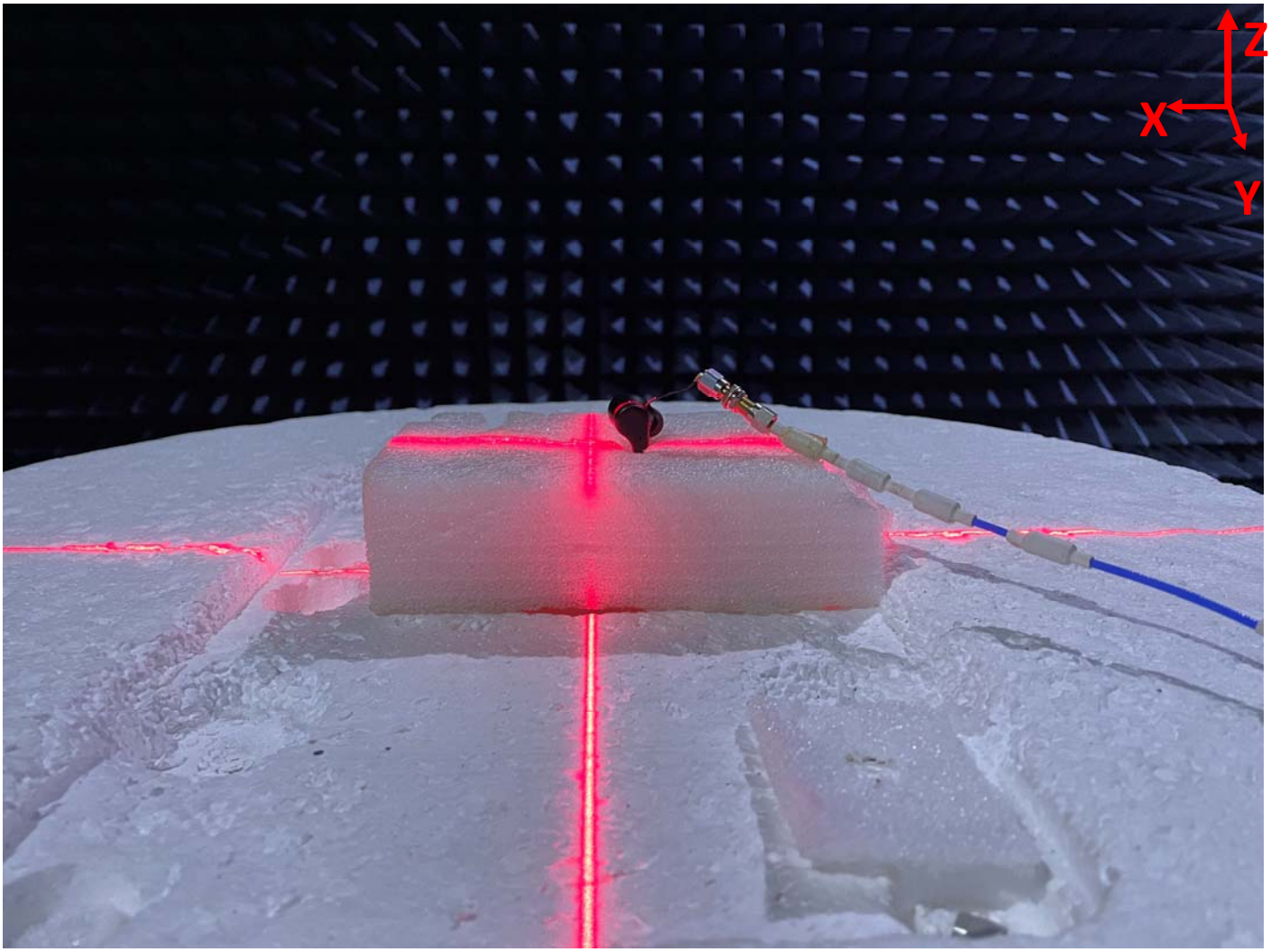
3.4.2 Return loss



3.4.3 Impedance



4.APPENDIX A THE EUT AND TEST CONFIGURATION



5. Conclusion

1. Earbuds_R and Earbuds_L are the same design, So their performance is the same.