



## ***ANTENNA PASSIVE TEST REPORT***

**Applicant:** Grandsun  
**Product Name:** ARC III Charging Case (板载天线)  
**Model No.(EUT):** ARC III Charging Case (板载天线)  
**Date of Receipt:** 2024-03-11  
**Date of Test:** 2024-03-11

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



**REVISION HISTORY**

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



**CONTENTS**

<b>1. GENERAL INFORMATION.....</b>	<b>4</b>
<b>1.1 Test Location.....</b>	<b>4</b>
<b>1.2 Test item and results.....</b>	<b>4</b>
<b>1.3 Laboratory Environment.....</b>	<b>4</b>
<b>1.4 Test Equipments List.....</b>	<b>4</b>
<b>1.5 Measurement Uncertainty.....</b>	<b>4</b>
<b>2. OTA MEASUREMENTS SYSTEM CONFIGURATION.....</b>	<b>5</b>
<b>3. TEST RESULTS.....</b>	<b>6</b>
<b>3.1 Efficiency &amp; Gain.....</b>	<b>6</b>
<b>3.2 2-D antenna pattern.....</b>	<b>6</b>
<b>3.3 3-D antenna pattern.....</b>	<b>7</b>
<b>3.4 Passive pattern.....</b>	<b>8</b>
<b>4. APPENDIX A THE EUT AND TEST CONFIGURATION.....</b>	<b>10</b>
<b>5. Matching Network.....</b>	<b>10</b>



## 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	EST-LINDGERN	2023-04-20	One year

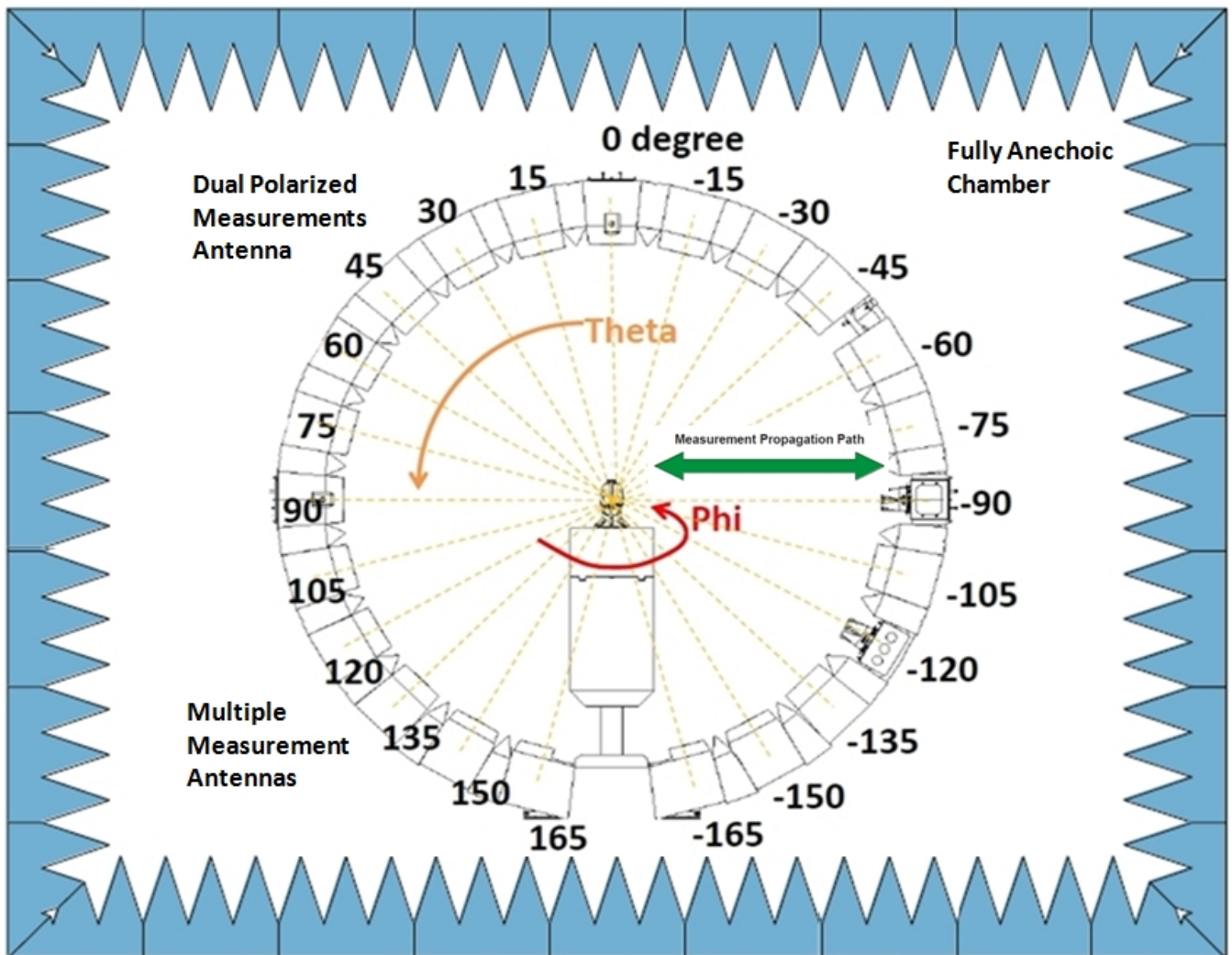
### 1.5 Measurement Uncertainty

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  $15^\circ$  , 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 degree.

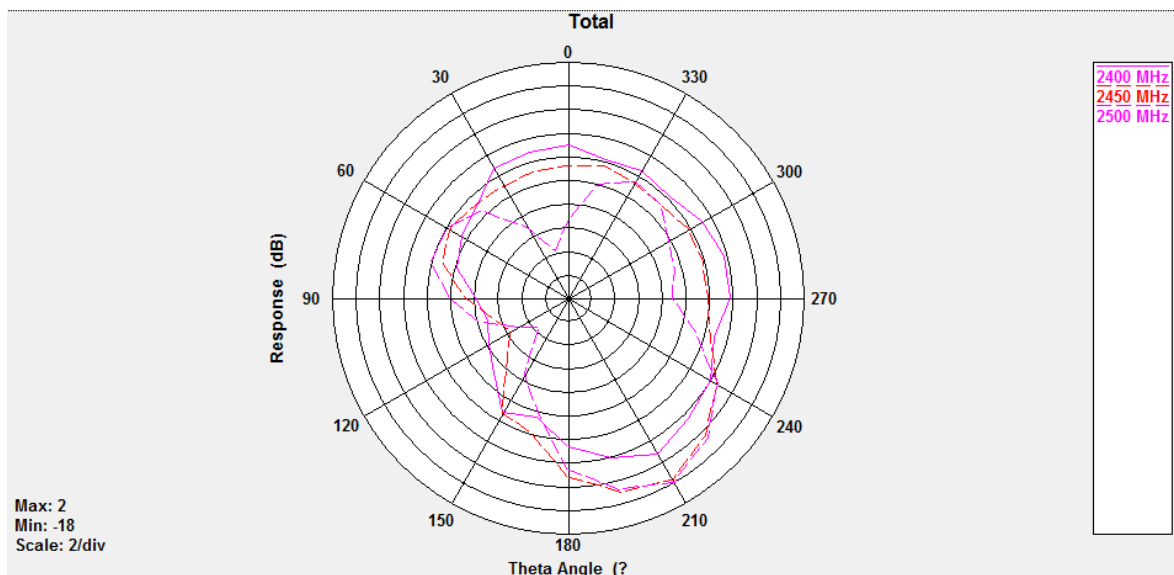


### 3. TEST RESULTS

#### 3.1 Efficiency & Gain

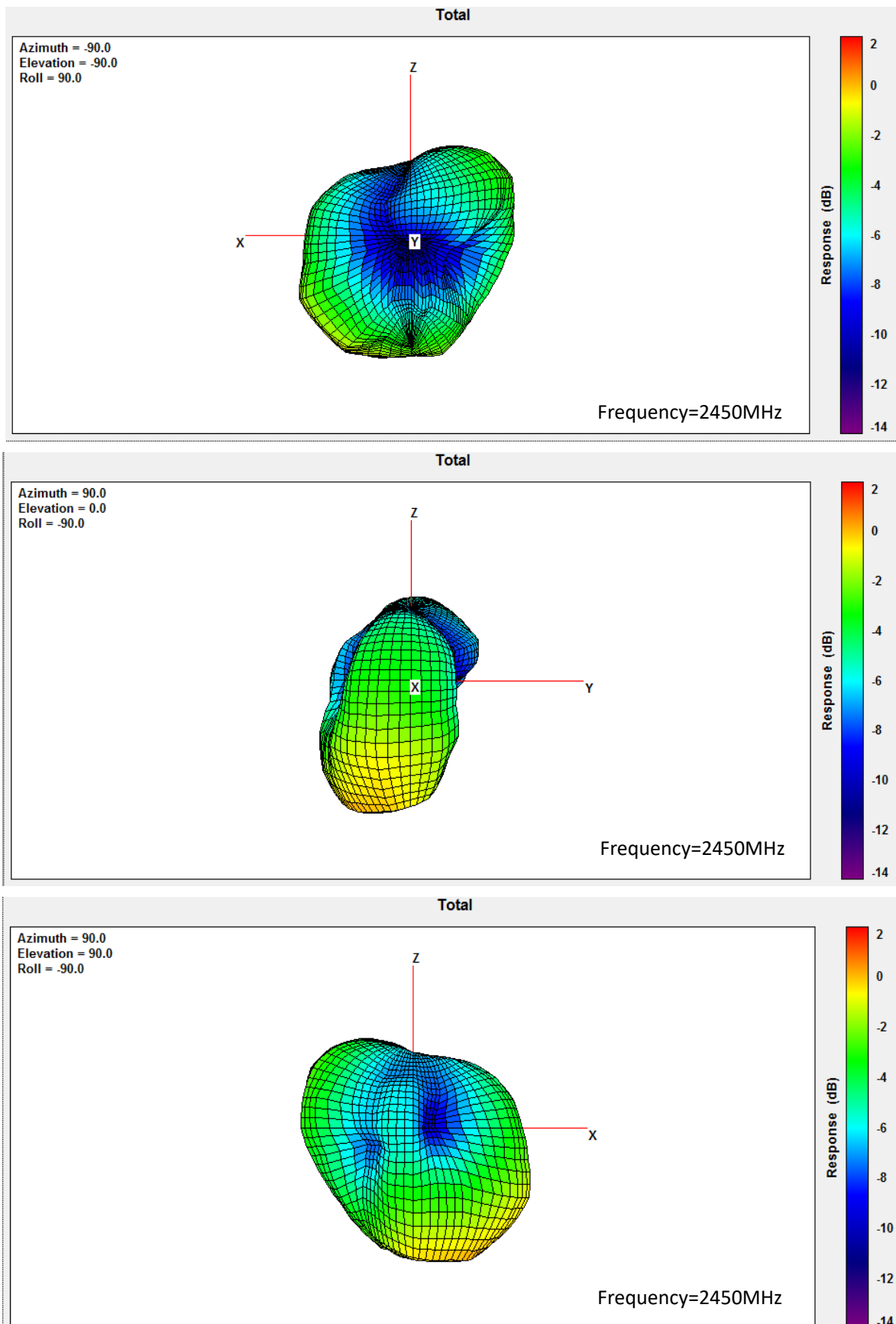
Frequency (Mhz)	Efficiency (dB)	Efficiency (%)	Gain (dBi)
2400	-5.54	27.9	-2.00
2410	-5.36	29.0	-1.62
2420	-5.18	30.2	-1.12
2430	-5.15	30.5	-0.73
2440	-5.05	31.2	-0.21
2450	-4.92	32.1	0.33
2460	-4.95	31.9	0.58
2470	-4.96	31.8	0.83
2480	-5.11	30.7	0.72
2490	-5.33	29.2	0.52
2500	-5.70	26.8	0.21

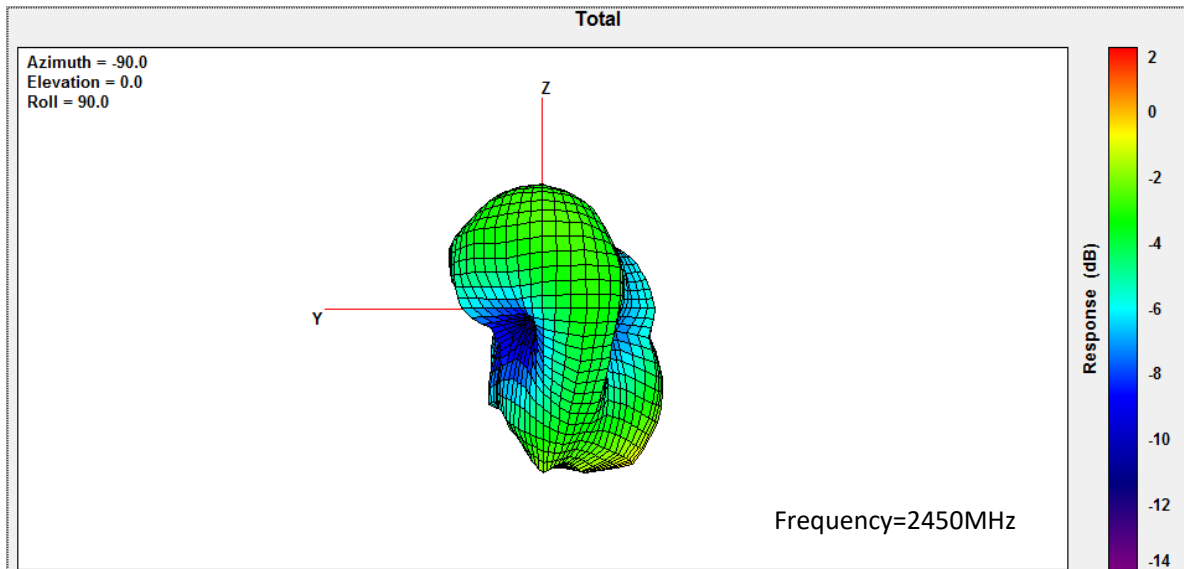
#### 3.2 2-D antenna pattern (Phi=90°)





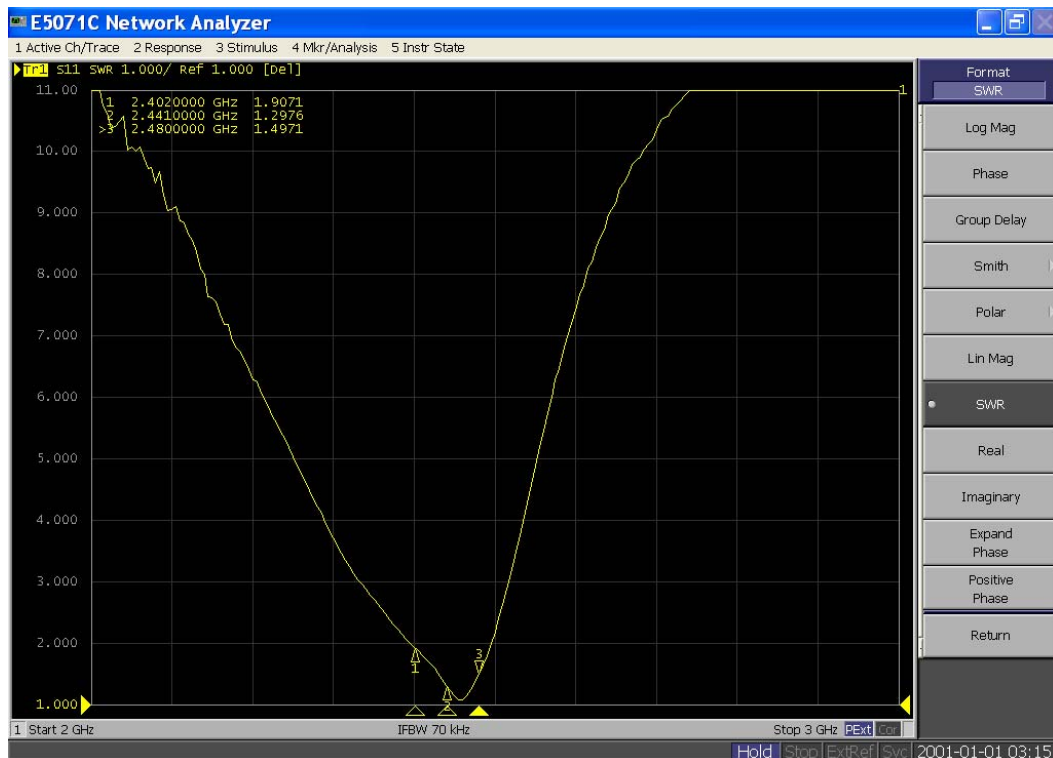
### 3.3 3-D antenna pattern





### 3.4 Passive pattern

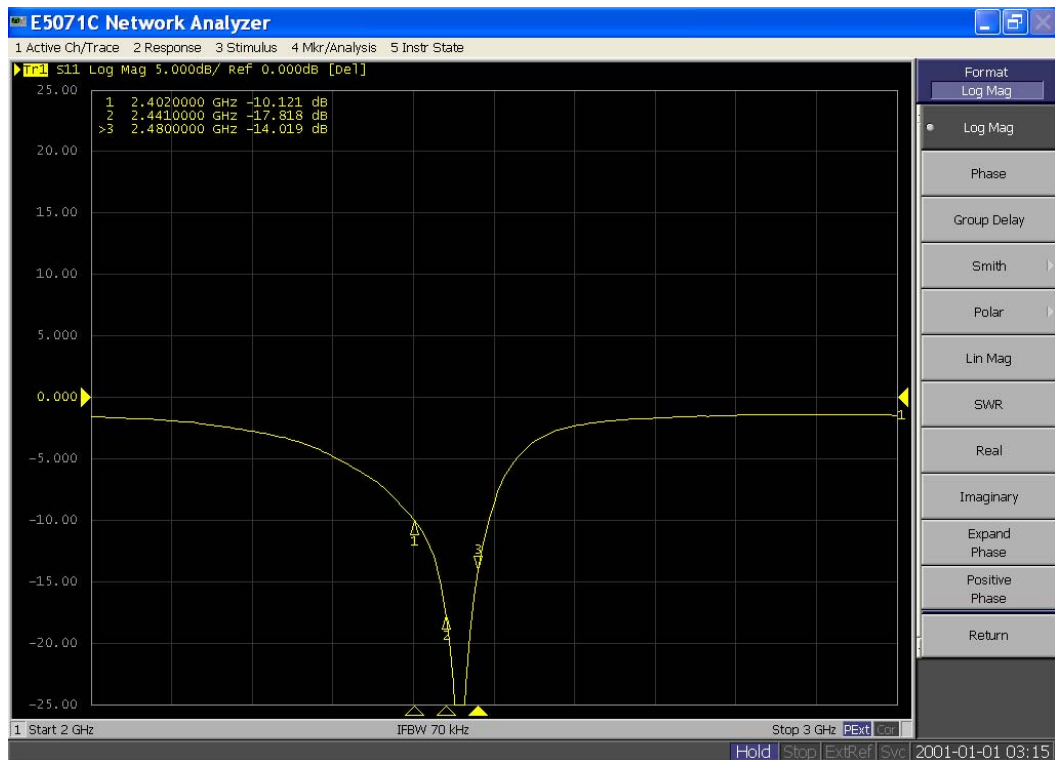
#### 3.4.1 VSWR



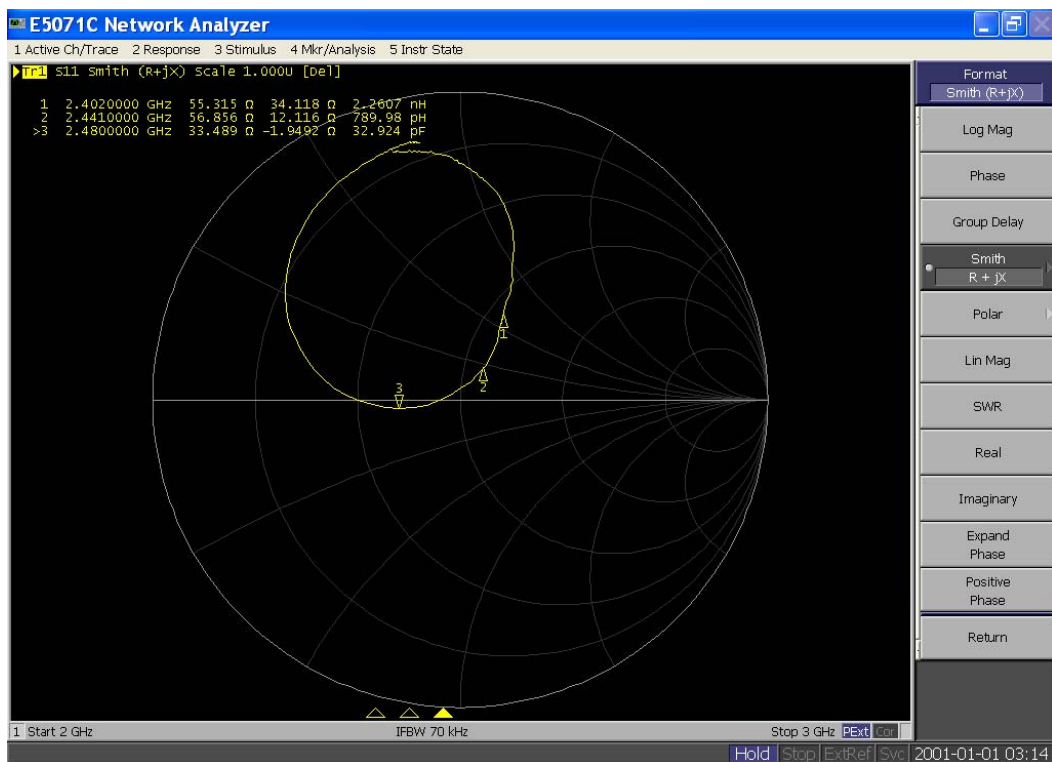




### 3.4.2 Return loss

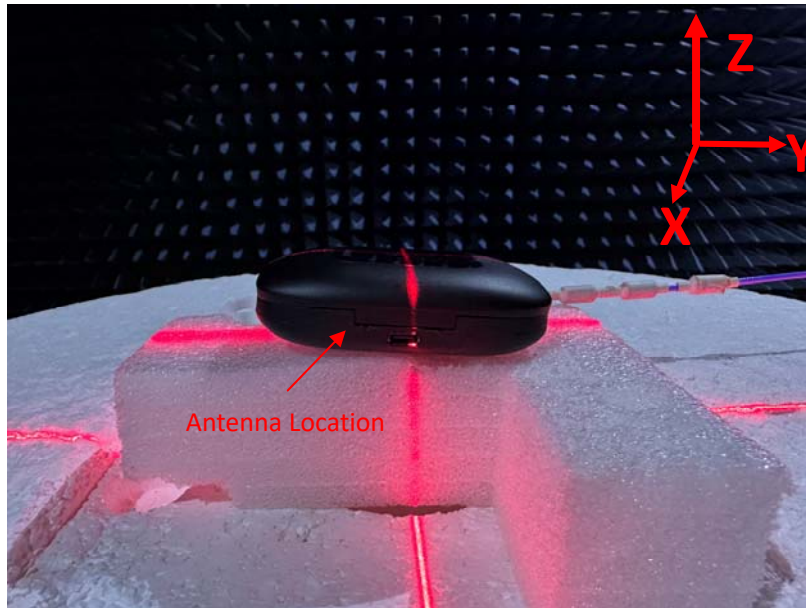


### 3.4.3 Smith

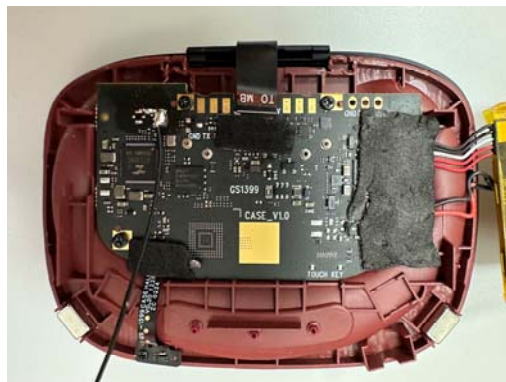
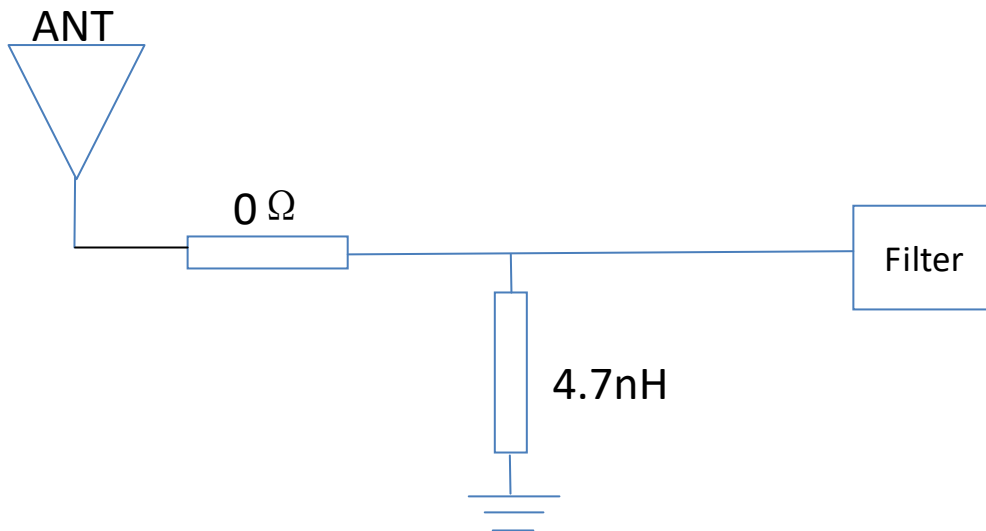




#### 4.APPENDIX A THE EUT AND TEST CONFIGURATION



#### 5.Matching Network



Hardwave Versions : GS-1399 CASE V1.0