



ANTENNA PASSIVE TEST REPORT

Applicant: Grandsun
Product Name: GS-1402 游戏 Dongle
Model No.(EUT): GS-1402 游戏 Dongle
Date of Receipt: 2024-03-27
Date of Test: 2024-03-27

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 |
| | | |
| | | |



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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 |

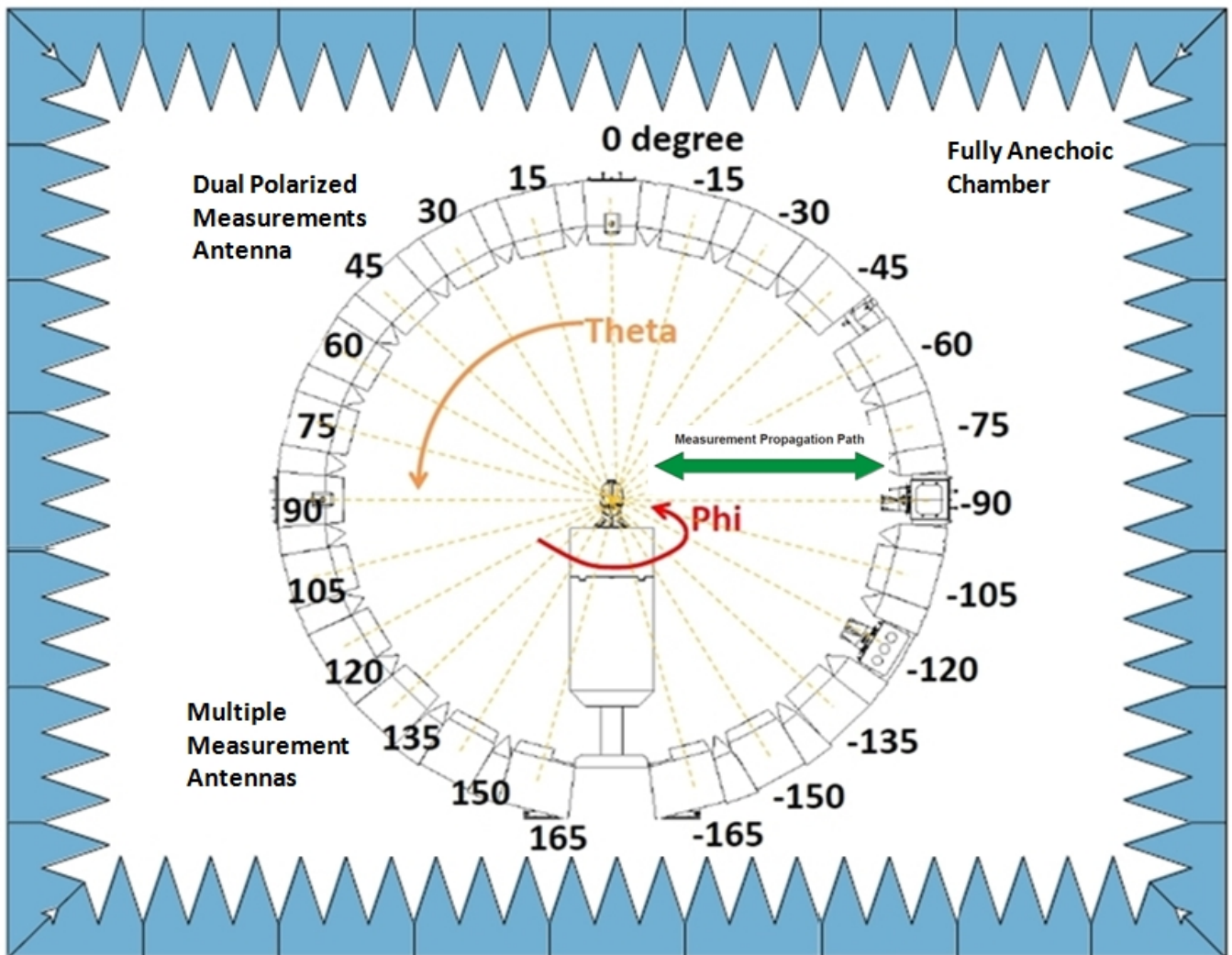
1.5 Measurement Uncertainty

| | |
|------------|---------------|
| Item | 2.4GHZ-2.5GHZ |
| Gain | 0.48dBi |
| 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 degree.



3. TEST RESULTS

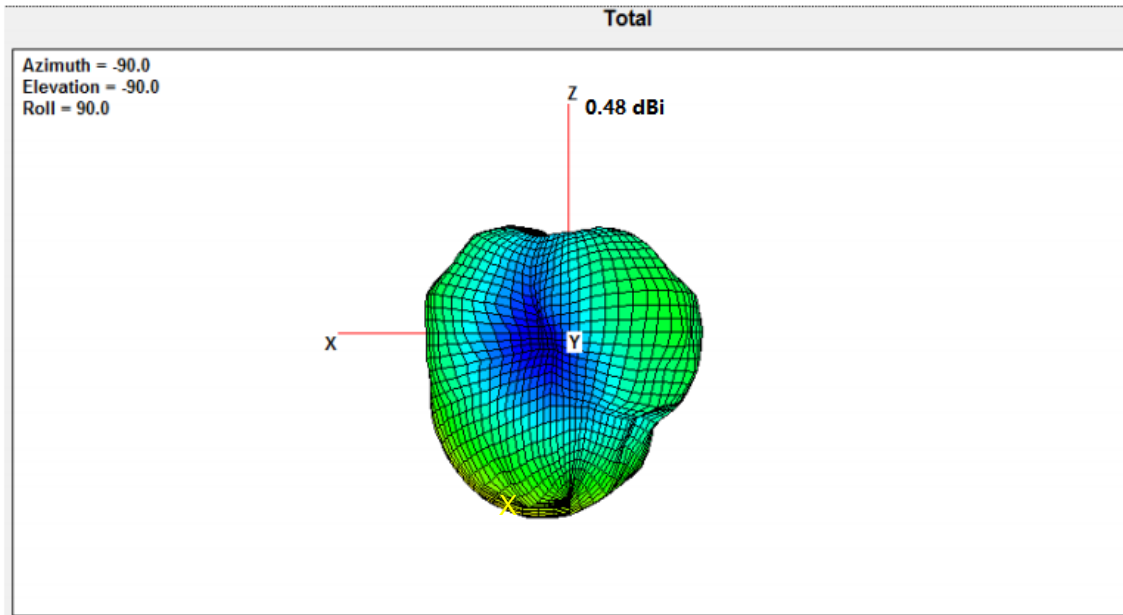
3.1 Efficiency & Gain

| Frequency (Mhz) | Efficiency (dB) | Efficiency (%) | Gain (dBi) |
|-----------------|-----------------|----------------|------------|
| 2400 | -7.65 | 17.1 | -1.67 |
| 2410 | -7.40 | 18.1 | -1.19 |
| 2420 | -7.00 | 19.9 | -0.63 |
| 2430 | -6.57 | 21.9 | -0.10 |
| 2440 | -6.19 | 23.9 | 0.24 |
| 2450 | -5.90 | 25.6 | 0.36 |
| 2460 | -5.81 | 26.1 | 0.10 |
| 2470 | -5.64 | 27.0 | 0.00 |
| 2480 | -5.41 | 28.7 | 0.48 |
| 2490 | -5.60 | 27.5 | 0.19 |
| 2500 | -5.88 | 25.7 | -0.20 |



3.3 3-D antenna pattern

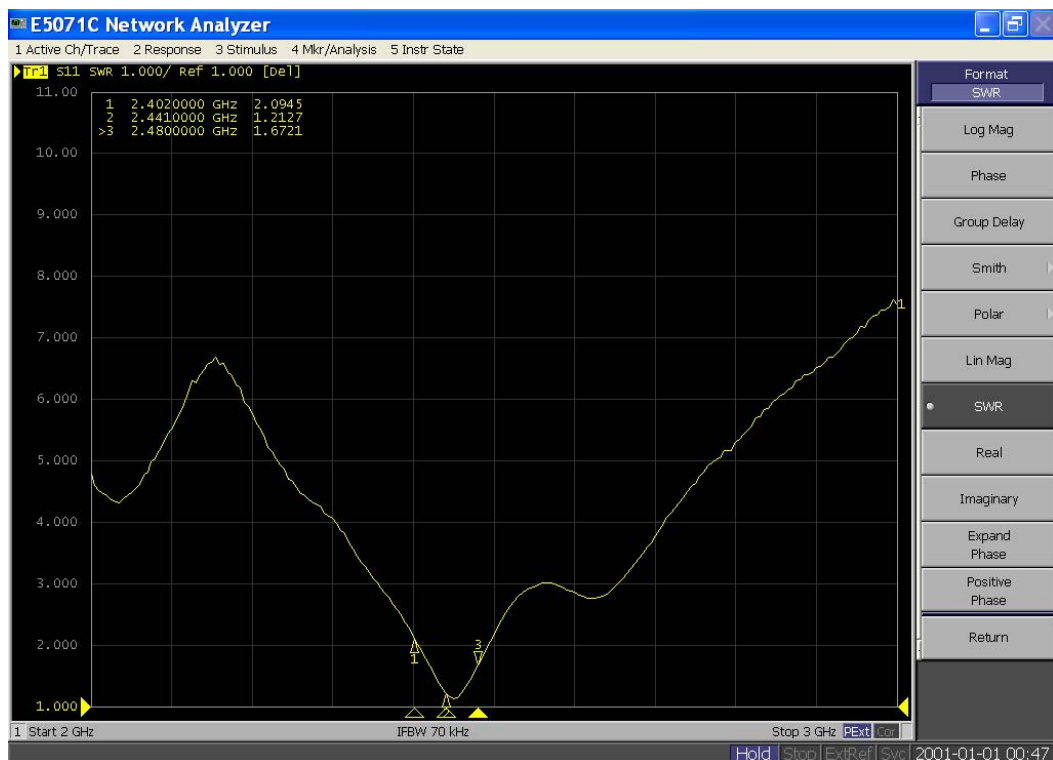
Frequency=2480MHz





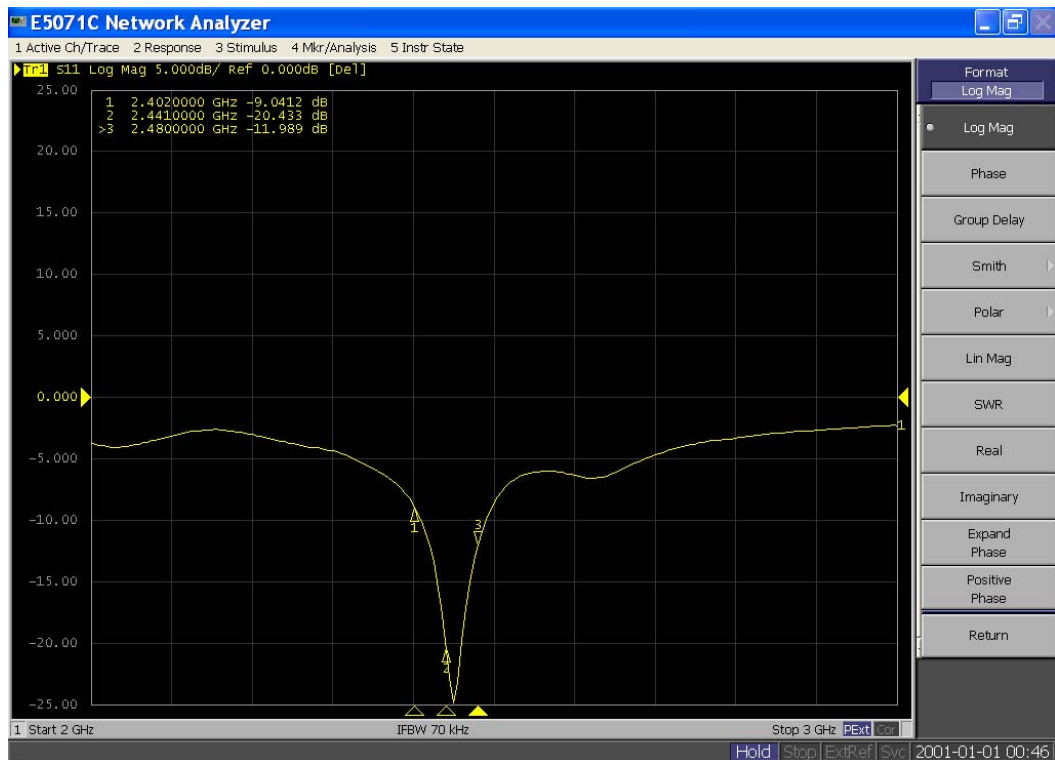
3.4 Passive pattern

3.4.1 VSWR

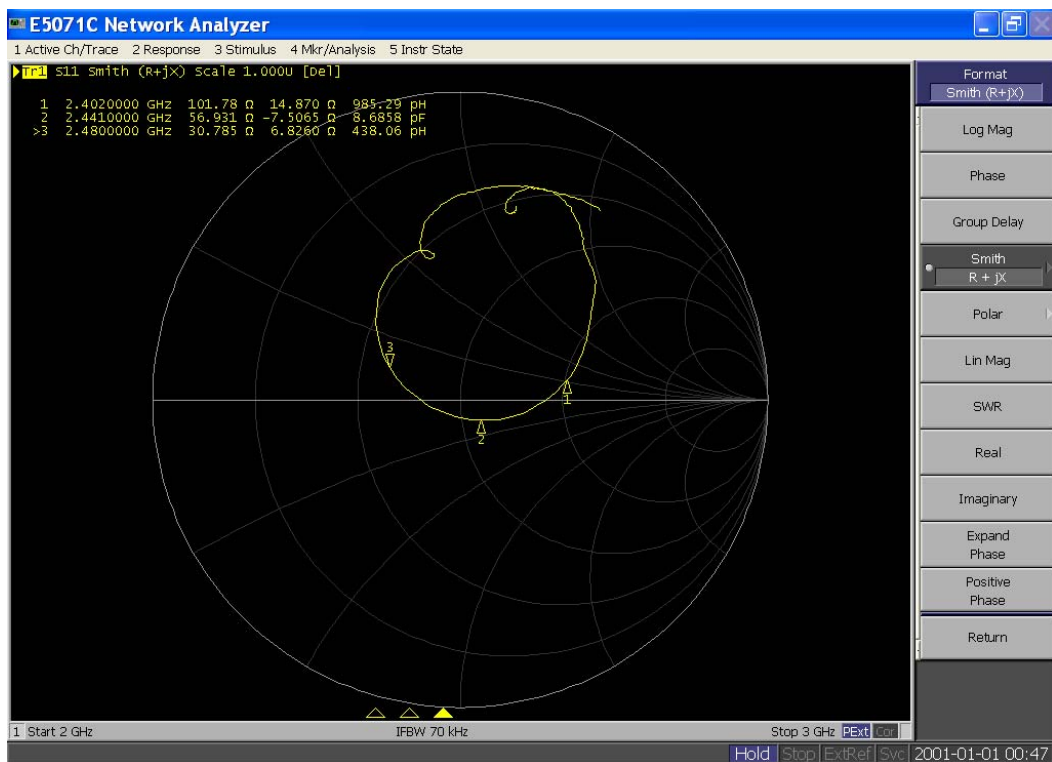




3.4.2 Return loss

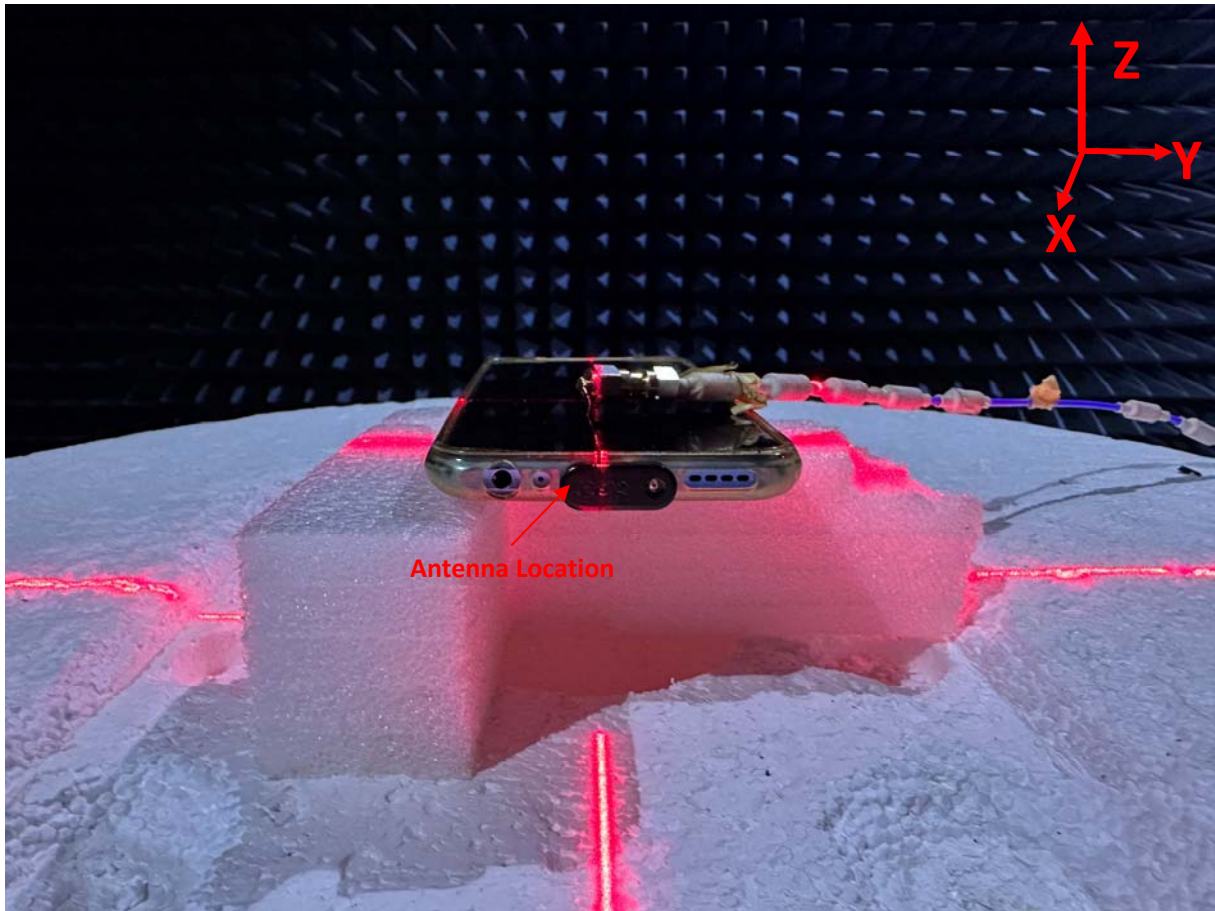


3.4.3 Smith





4.APPENDIX A THE EUT AND TEST CONFIGURATION



5.Matching Network

