



ANTENNA PASSIVE TEST REPORT

Applicant: Grandsun
Product Name: 233621 hawk
Model No.(EUT): 233621 hawk
Date of Receipt: 2023-02-08
Date of Test: 2023-02-08

Tested by: Max.chen
Made by: Max.chen
Checked by: Noki.ho



Shenzhen Grandsun Electronic Co.,Ltd

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

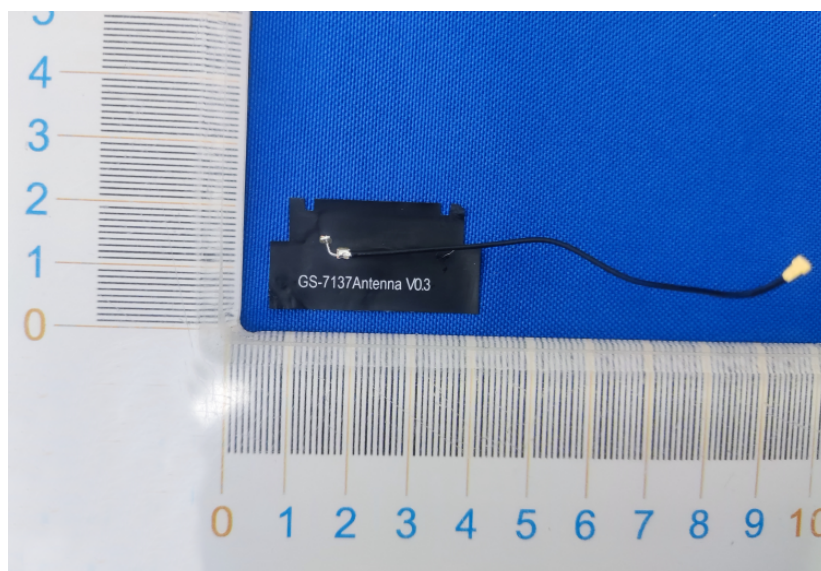
Temperature	Min.=18℃	Max.=24℃
Relative humidity	Min.=30%	Max.=70℃
Shield effect	0.5-10GHZ	> 100dB
Ground resistance	<0.4 Ω	

1.4 Test Equipments List

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

1.5 Measurement Uncertainty

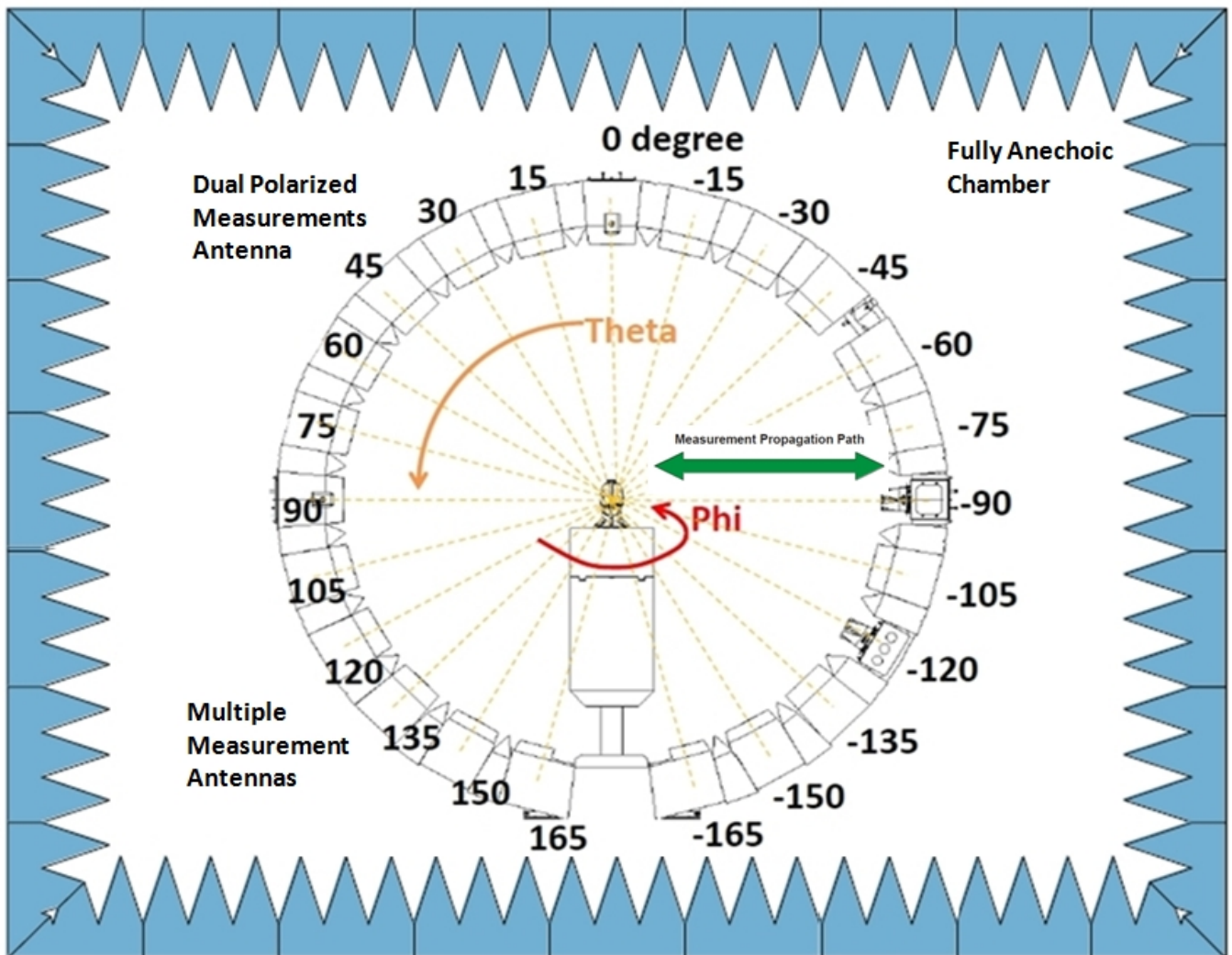
Item	2.4GHZ-2.5GHZ(dB)
Gain	0.3
Efficiency	0.3





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 degree.

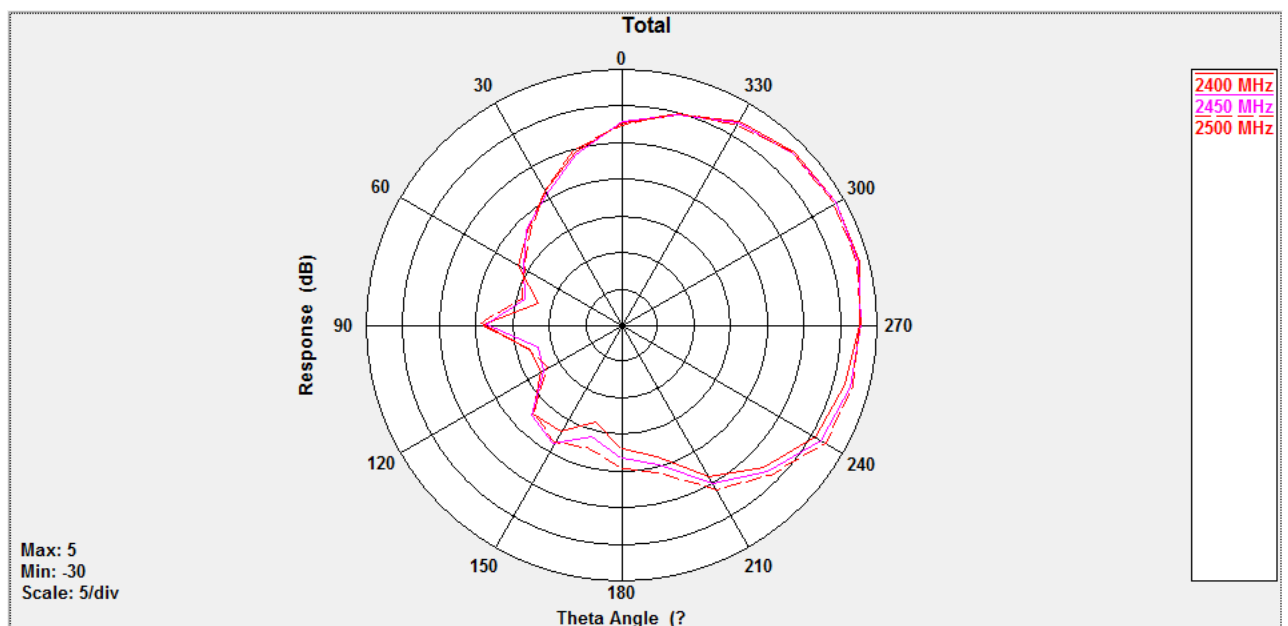


3. TEST RESULTS

3.1 Efficiency & Gain

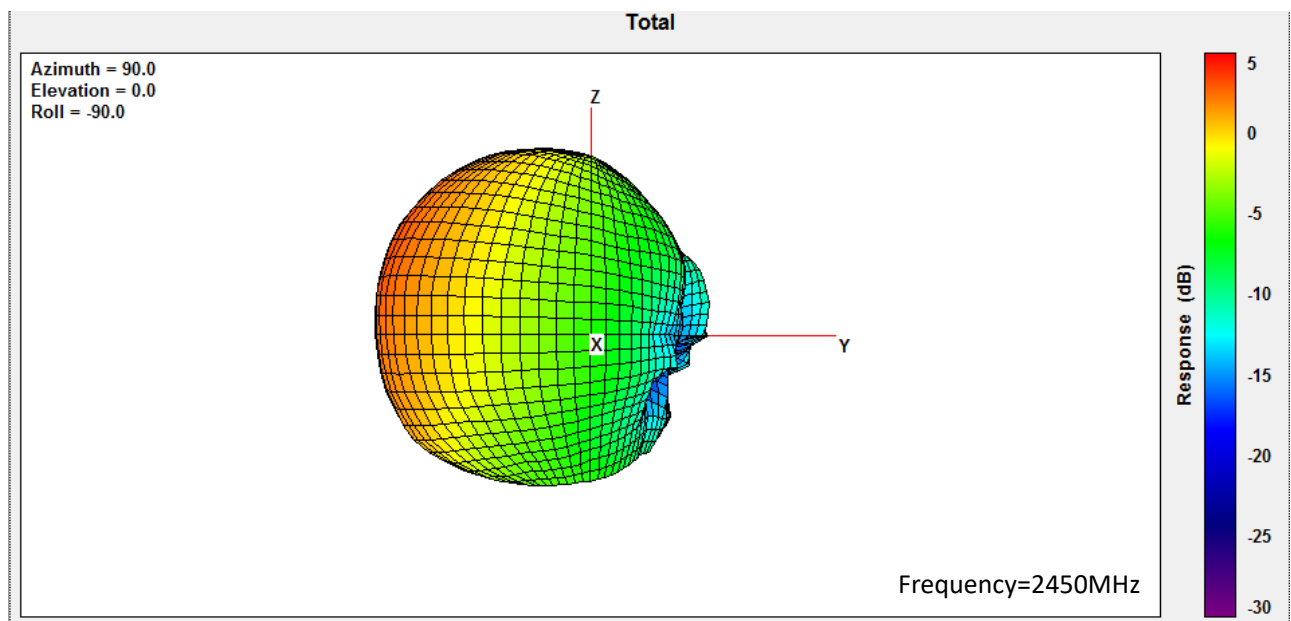
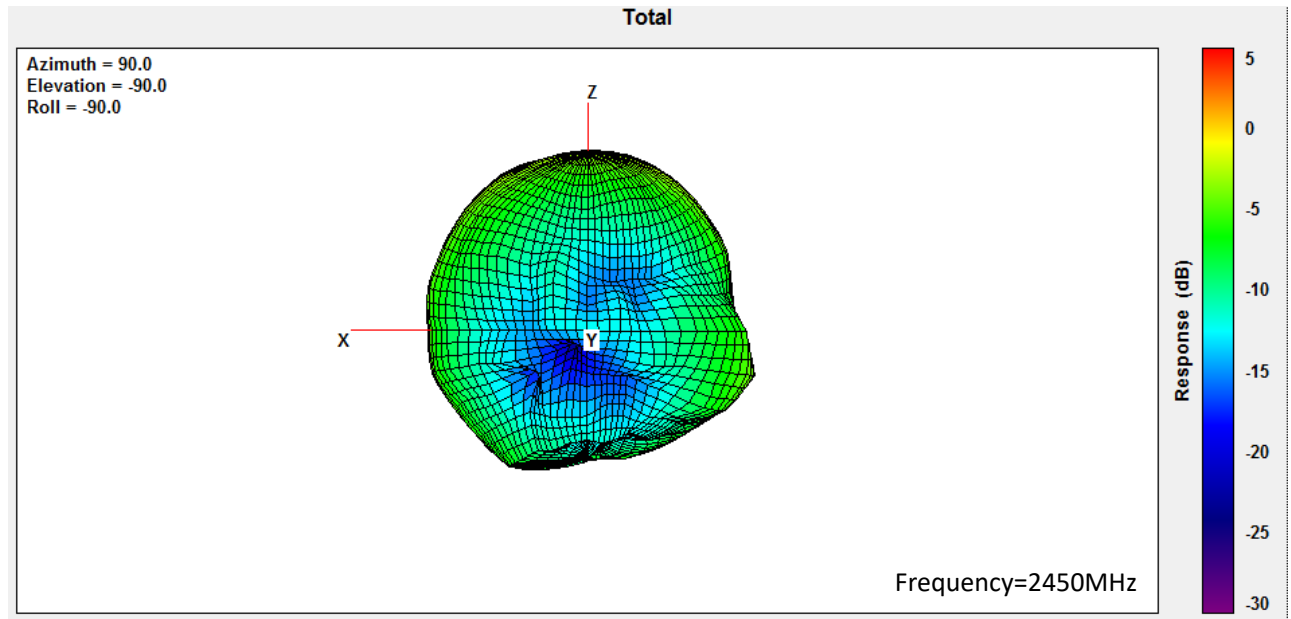
BT Antenna			
Frequency (Mhz)	Efficiency (dB)	Efficiency (%)	Gain (dBi)
2400	-2.99	50.12	3.24
2410	-2.91	51.12	3.31
2420	-2.68	53.83	3.46
2430	-2.90	51.25	3.49
2440	-2.89	51.32	3.52
2450	-2.89	51.29	3.63
2460	-2.92	51.03	3.52
2470	-2.83	52.02	3.41
2480	-2.89	51.34	3.32
2490	-2.75	53.07	3.10
2500	-2.75	53.03	2.98

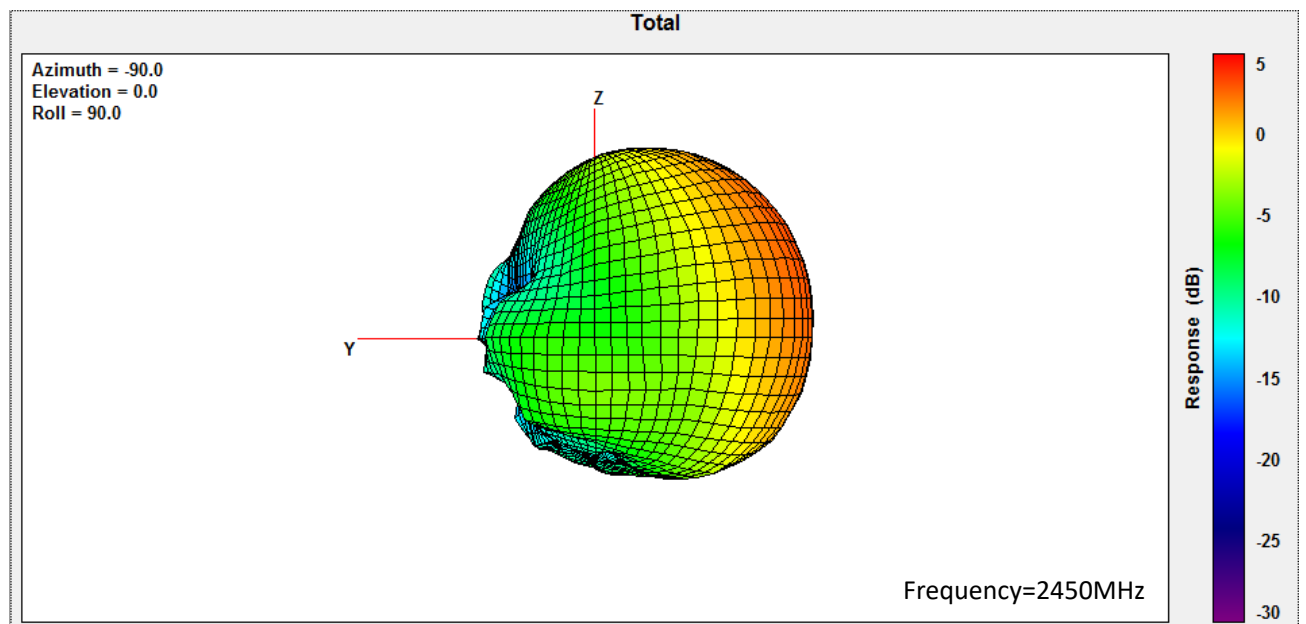
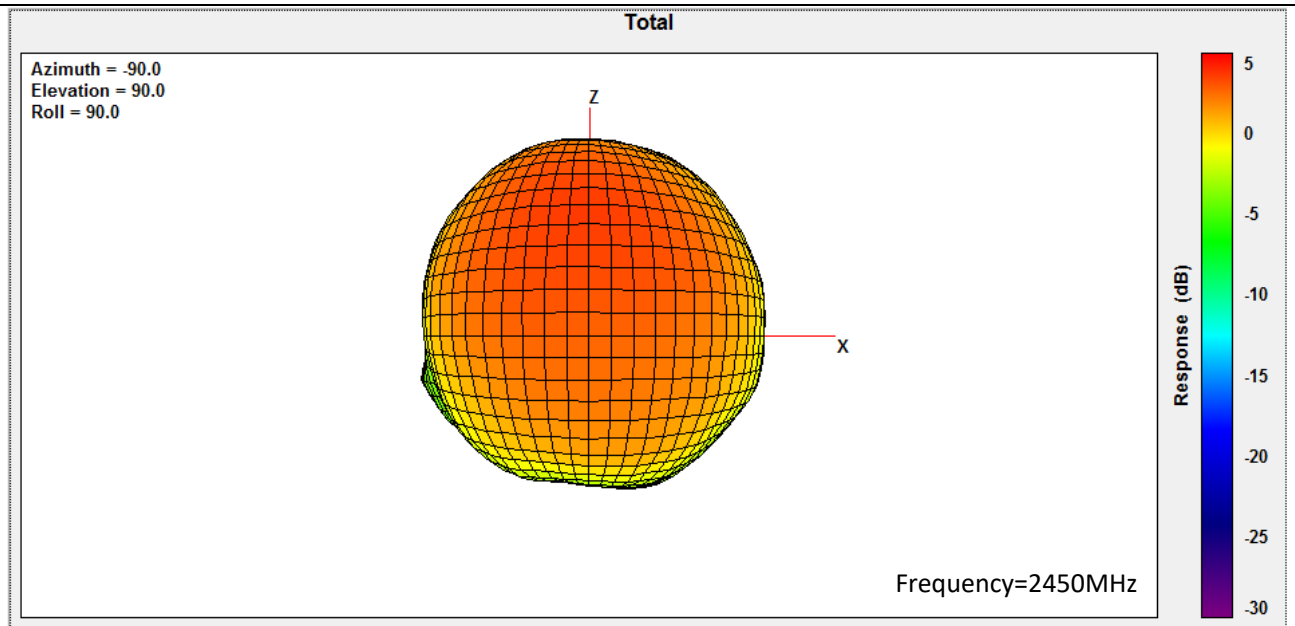
3.2 2-D antenna pattern (Phi=90°)





3.3 3-D antenna pattern

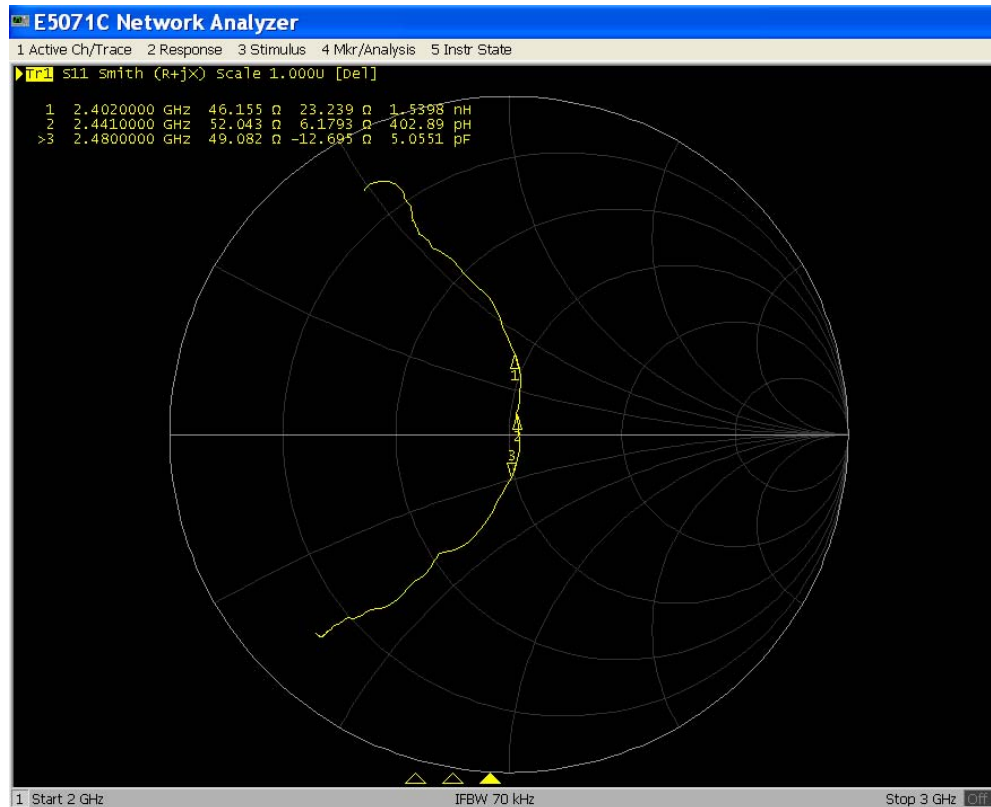




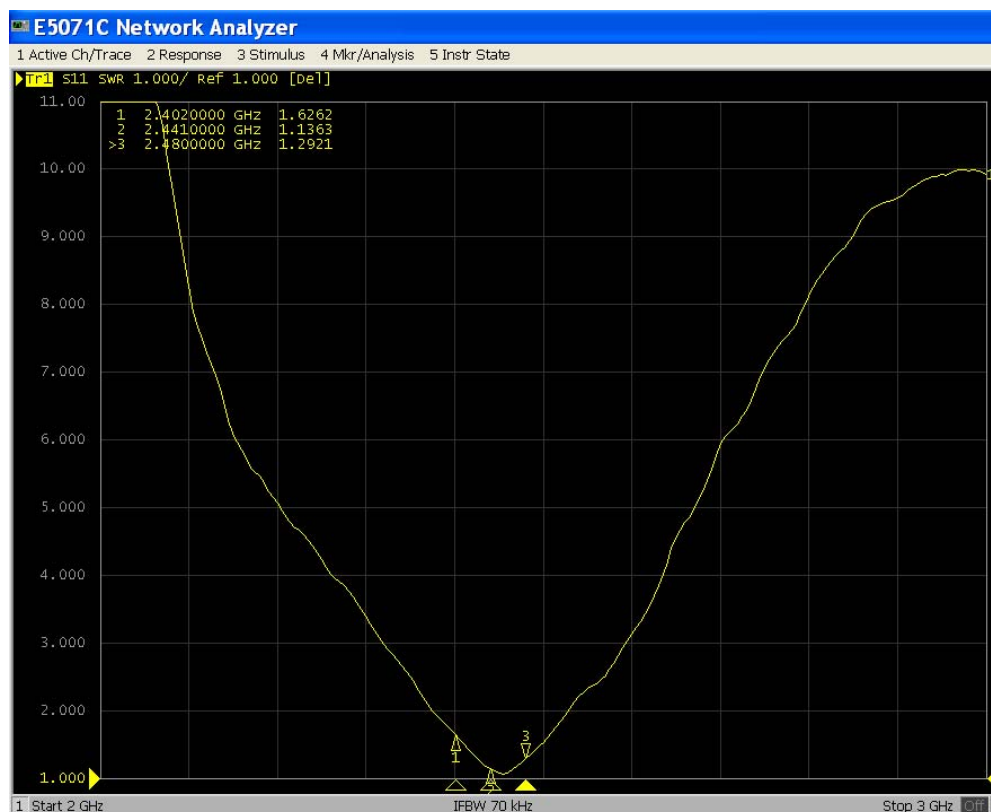


3.4 Passive pattern

3.4.1 Impedance



3.4.2 VSWR





3.4.3 Return loss

