

Antenna Test Report

Model : Chip Antenna(AA055C)

For EUT (RGP0145) Mouse

Test date: 2022/08/17

Manufacturer: Unictron Technologies Corporation

Test Chamber: Unictron Technologies Corporation

Tester by: Ken Yen

Checked by: Sam Wu

Approved by: Mike Yang

Measurement Setup

Equipment	M/N	calibration date
Network Analyzer	Agilent E5071A	2021/12/10
Spectrum Analyzer	Agilent E4407B	2022/1/12
Wireless Communications Test Set	Agilent 8960	2021/11/25

Reflection Coefficient Measurement

- a. Equipment : Network Analyzer(Agilent E5071A)
SW: Maxwell V3.7.1
- b. Test items : S-parameters (Impedance, return loss, VSWR)

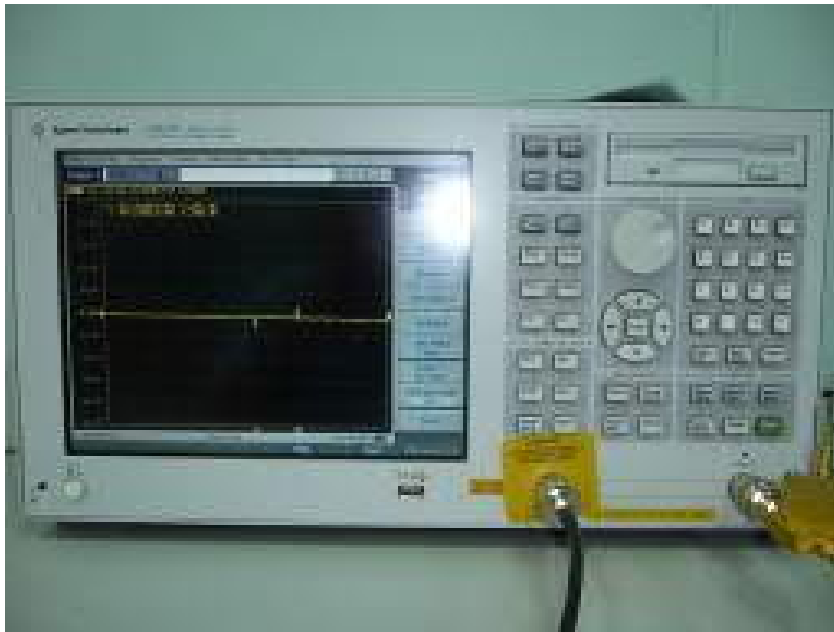
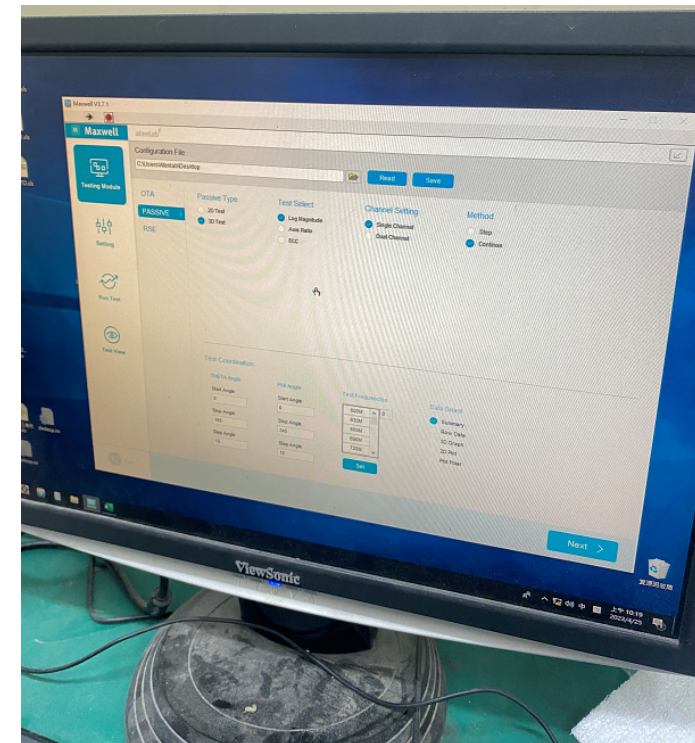
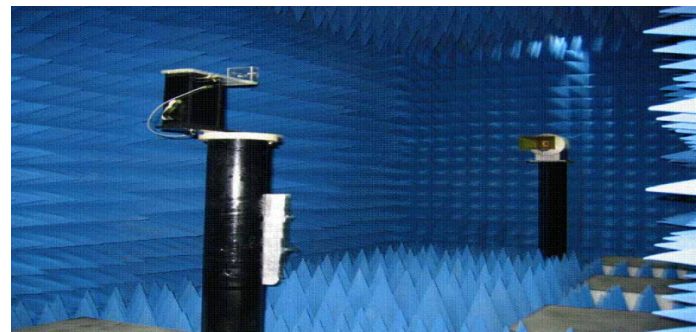
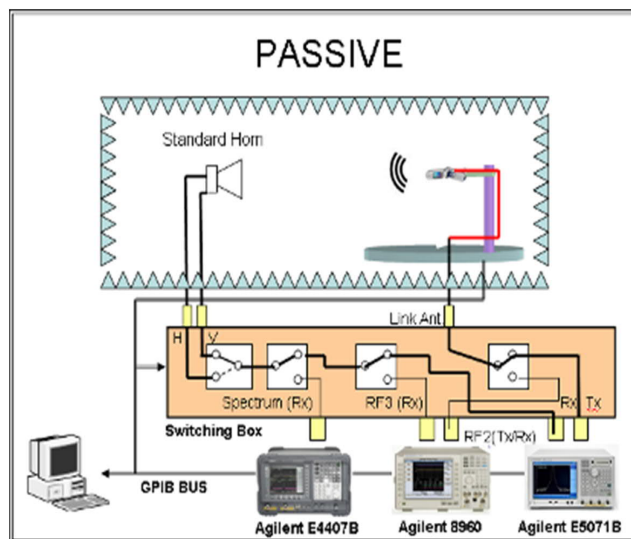


Figure. Network Analyzer(Agilent E5071A)



Radiation Pattern Measurement

- a. Equipment : Anechoic Chamber, Network Analyzer (Agilent E5071A), Standard Horn.
- b. Test items : Gain, efficiency, 2D gain pattern, 3D gain pattern



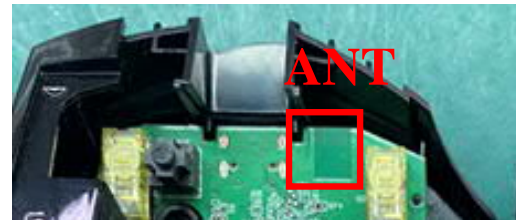
1. Prepare the test equipment
 2. Configure the test parameters
 3. Start the test
 4. Analyze the test results
- Use the analysis tools of the E5071A to analyze and process the test results. For example, frequency response curves, gain curves, VSWR curves, etc. can be plotted to evaluate the performance of the antenna.

Figure. Scheme of radiation pattern measurement system

Measurement Setup – Free space

Mechanical setting

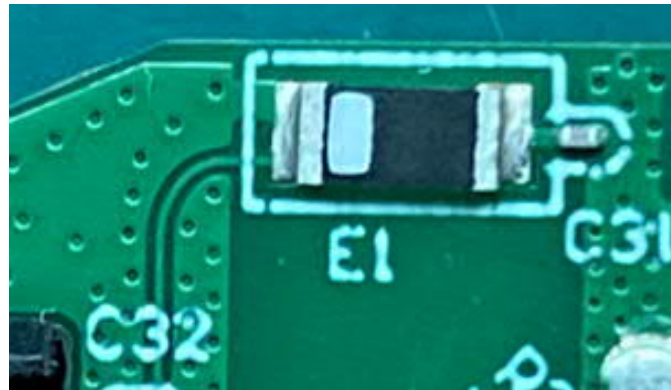
Placement of antenna



Measurement Setup – Free space

Mechanical setting

Placement of antenna



Measurement Setup – In hand

Mechanical setting

Placement of antenna

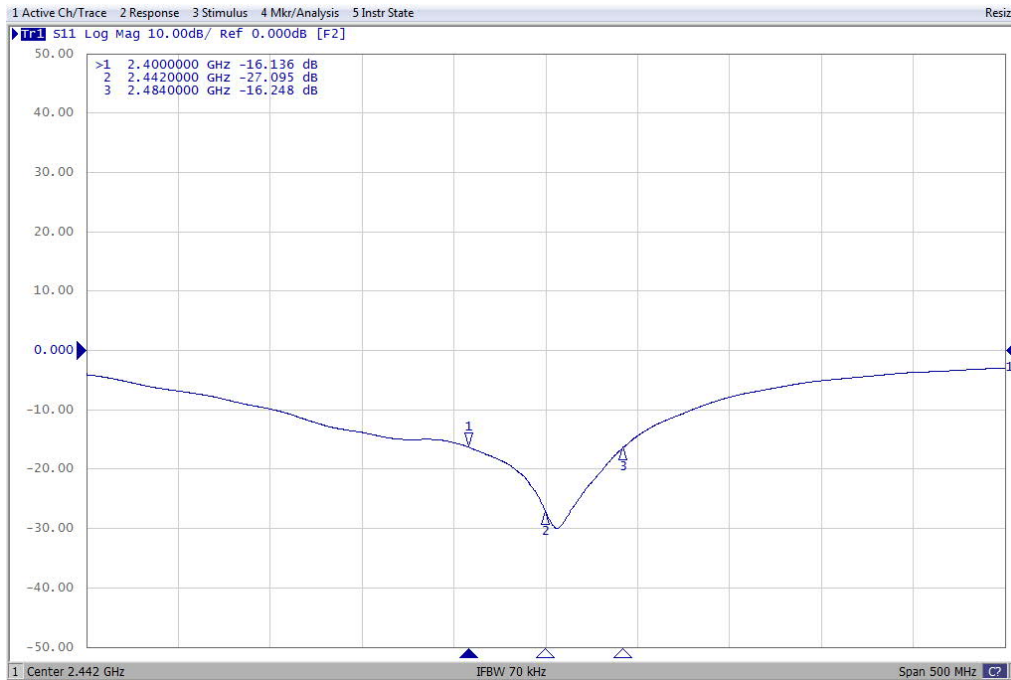


Experimental results

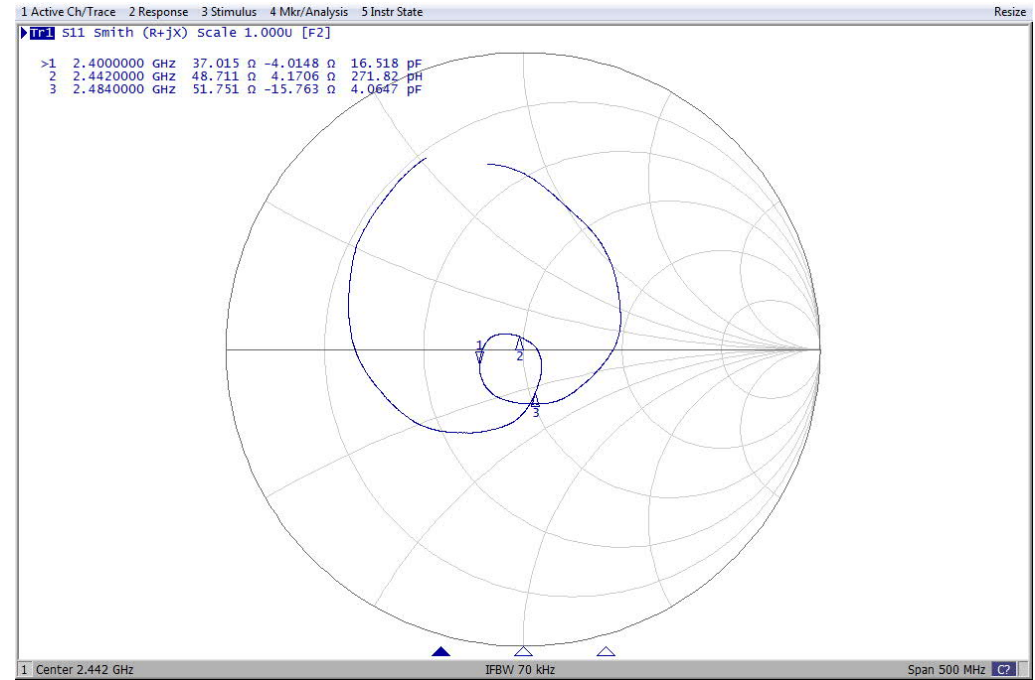
Experimental results – Free space

S-Parameters

Return Loss

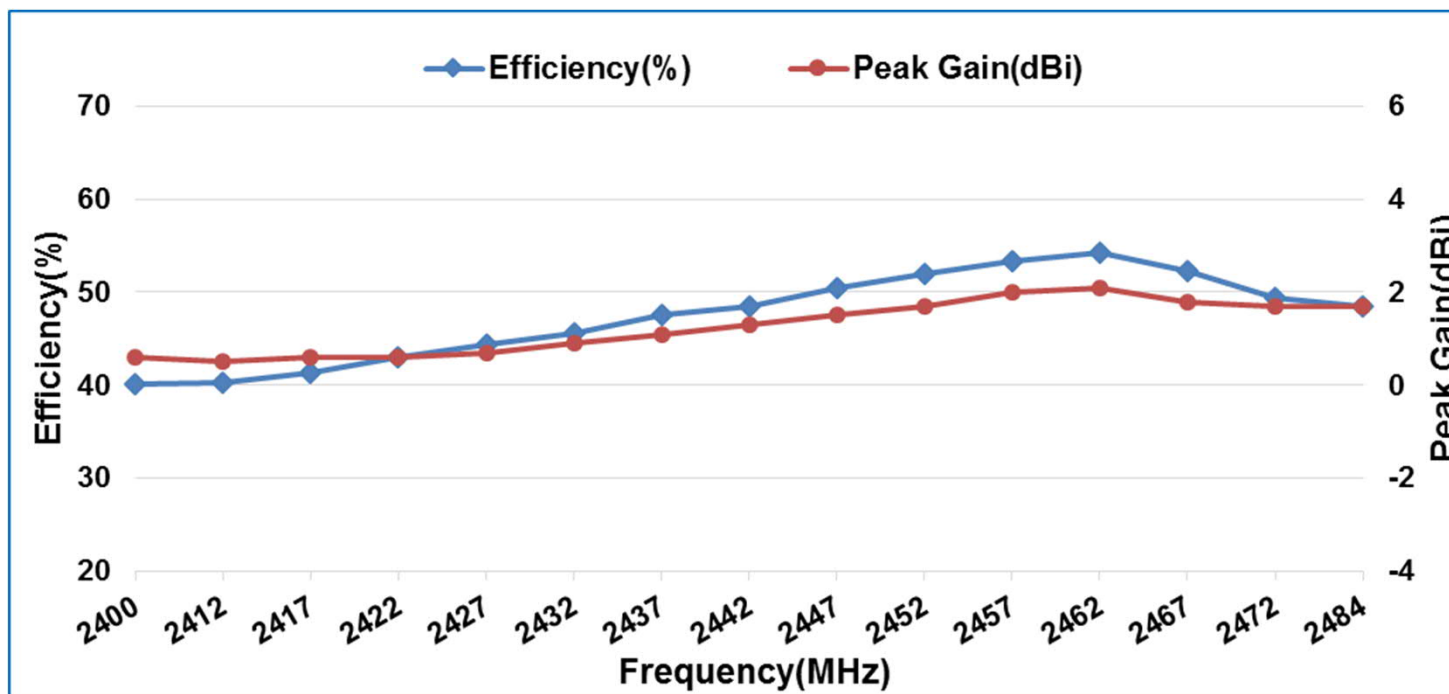


Smith chart



Experimental results – Free space

Radiation efficiency

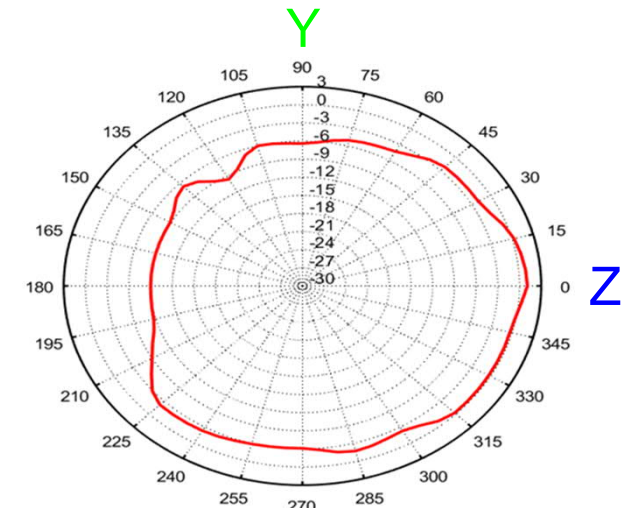
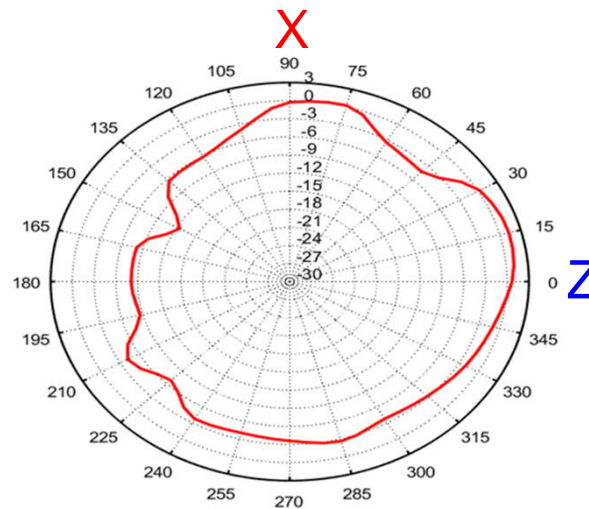
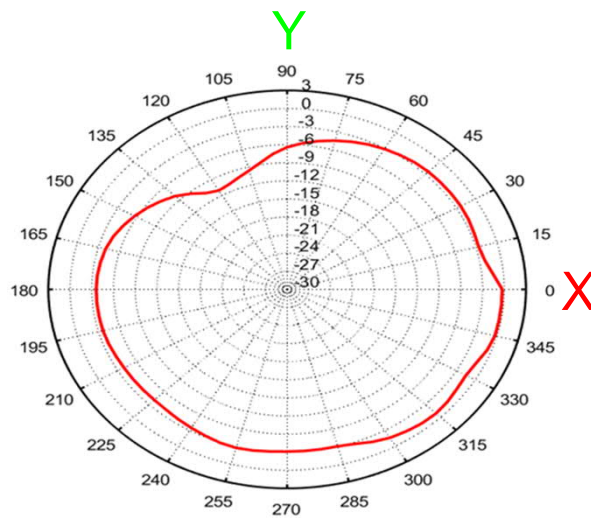


2400-2484 MHz

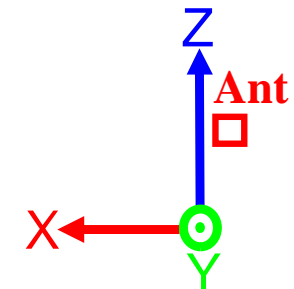
Frequency (MHz)	2400	2412	2417	2422	2427	2432	2437	2442	2447	2452	2457	2462	2467	2472	2484
Efficiency (dB)	-4.0	-3.9	-3.8	-3.7	-3.5	-3.4	-3.2	-3.1	-3.0	-2.8	-2.7	-2.7	-2.8	-3.1	-3.1
Efficiency (%)	40.1	40.3	41.3	43.0	44.3	45.6	47.6	48.5	50.4	51.9	53.3	54.3	52.3	49.4	48.5
Peak Gain (dBi)	0.6	0.5	0.6	0.6	0.7	0.9	1.1	1.3	1.5	1.7	2.0	2.1	1.8	1.7	1.7

Experimental results – Free space

2D Gain Pattern (Radiation Pattern @ 2462 MHz) (unit: dBi)

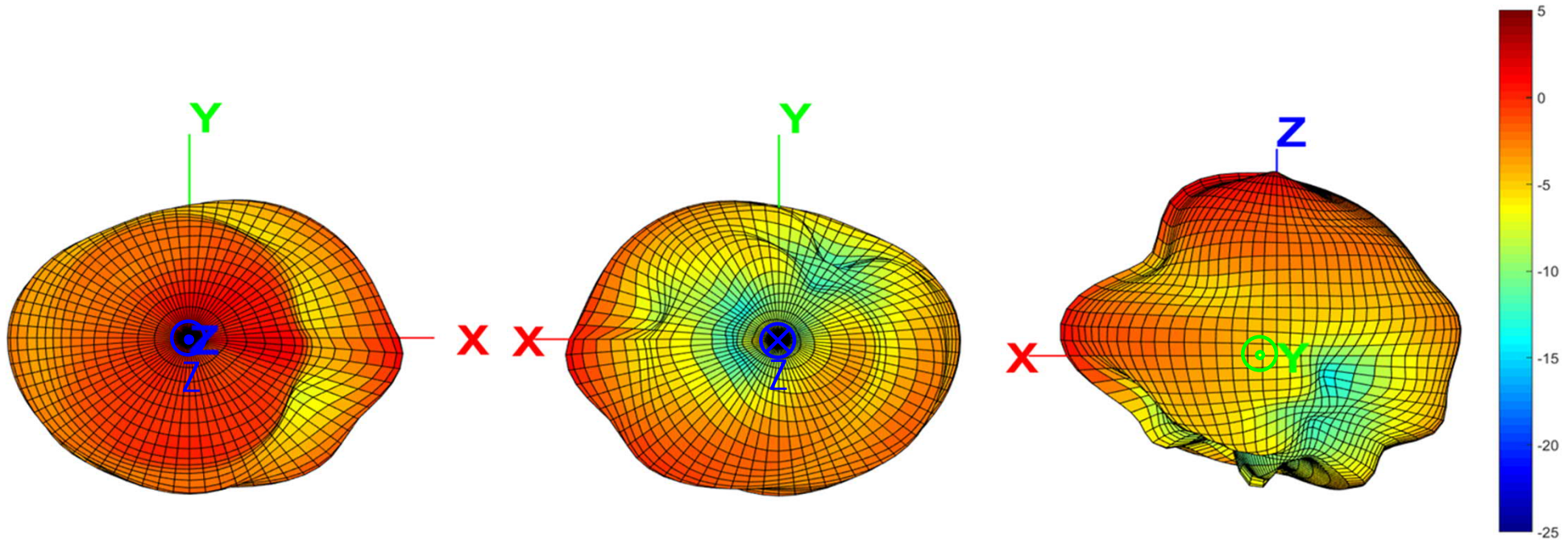


Total Polarization	XY Plane		XZ Plane		YZ Plane	
Frequency (MHz)	Peak Gain (dBi)	Average Gain (dBi)	Peak Gain (dBi)	Average Gain (dBi)	Peak Gain (dBi)	Average Gain (dBi)
2442MHz	-0.27	-3.02	1.31	-2.3	1.09	-2.34

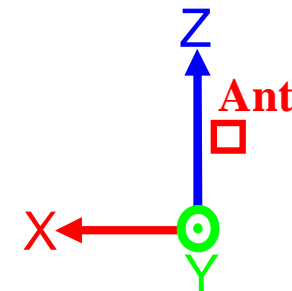


Experimental results – Free space

3D Gain Pattern (Radiation Pattern @ 2462 MHz) (unit: dBi)



Peak Gain: 2.1dBi



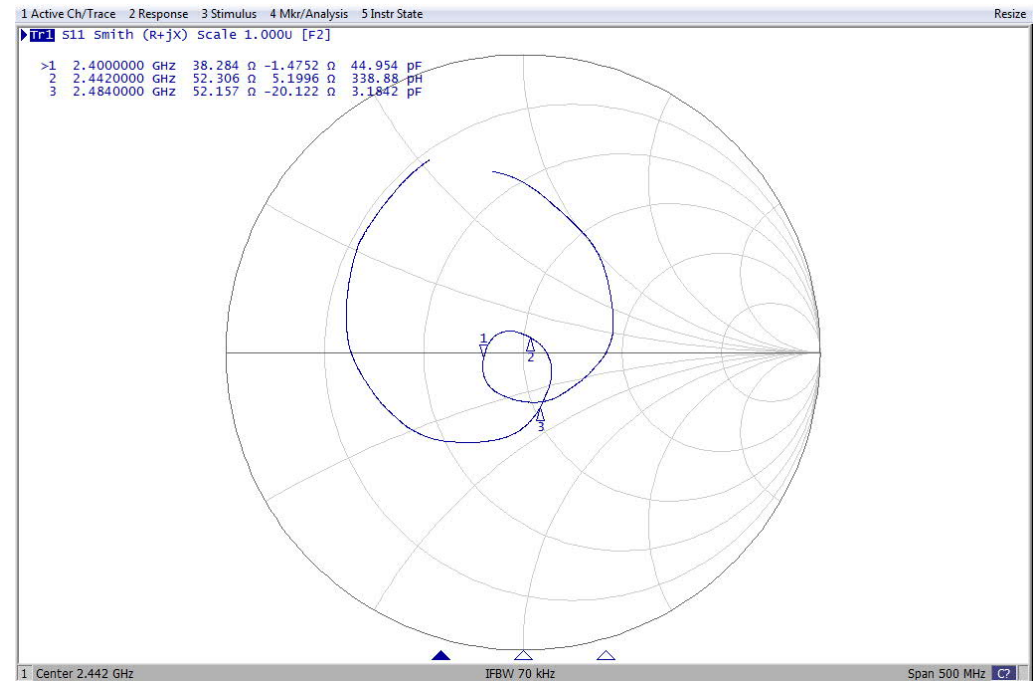
Experimental results – In hand

S-Parameters

Return Loss

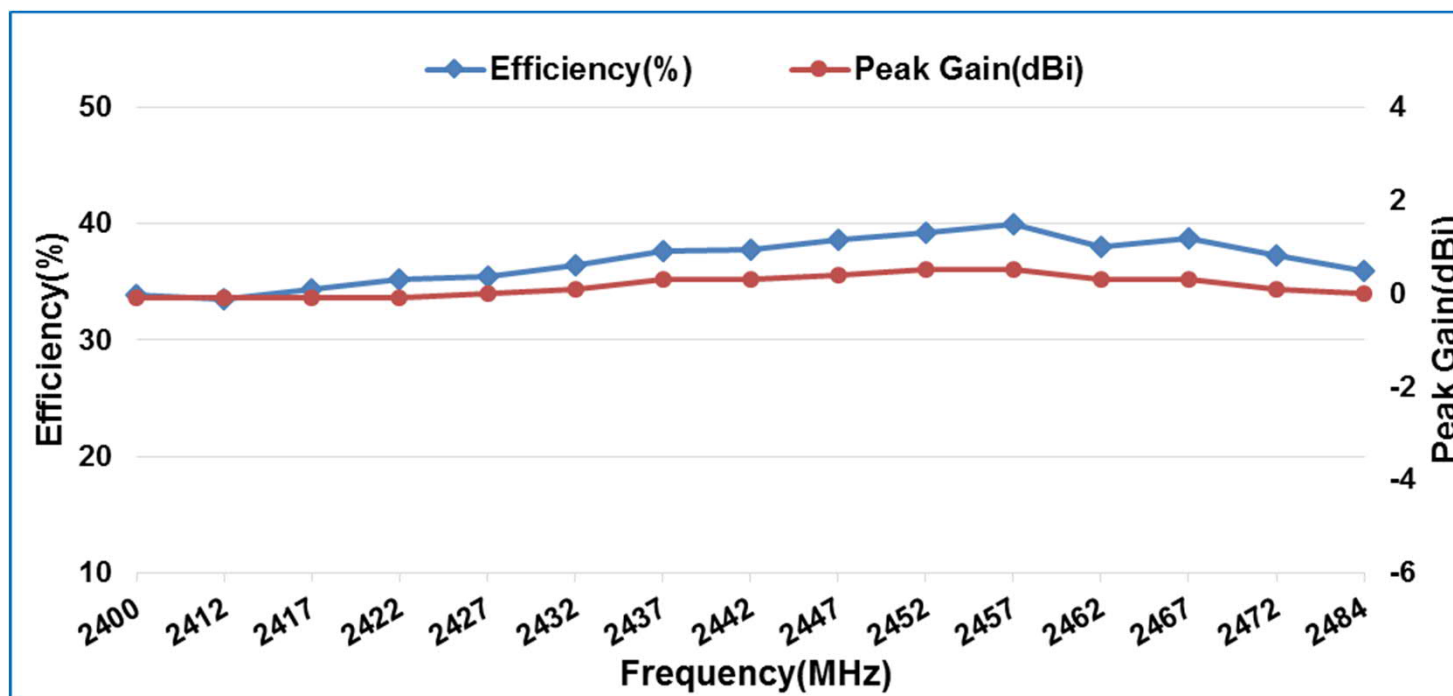


Smith chart



Experimental results – In hand

Radiation efficiency

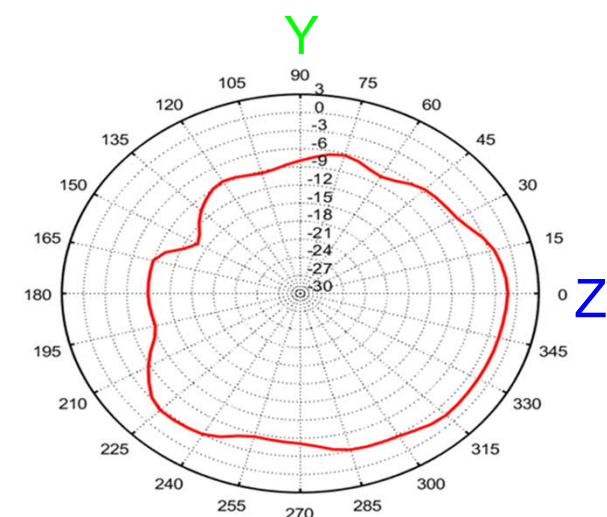
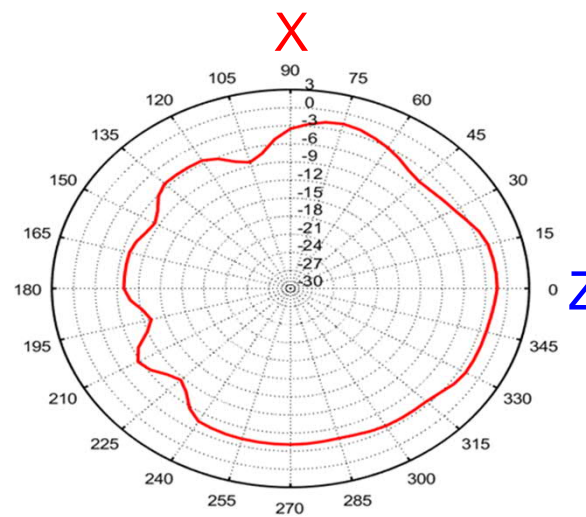
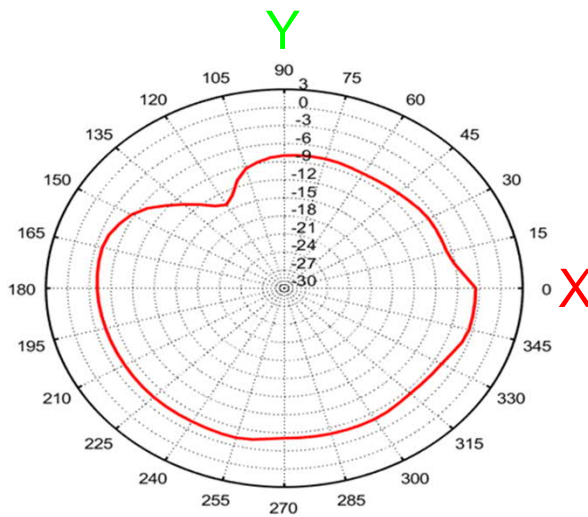


2400-2484 MHz

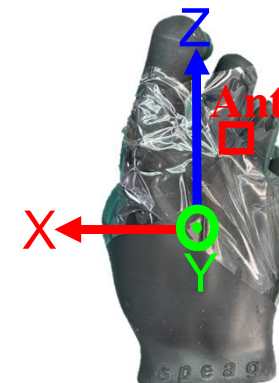
Frequency (MHz)	2400	2412	2417	2422	2427	2432	2437	2442	2447	2452	2457	2462	2467	2472	2484
Efficiency (dB)	-4.7	-4.7	-4.6	-4.5	-4.5	-4.4	-4.2	-4.2	-4.1	-4.1	-4.0	-4.2	-4.1	-4.3	-4.5
Efficiency (%)	33.9	33.5	34.4	35.2	35.5	36.4	37.7	37.8	38.6	39.2	39.9	38.0	38.7	37.3	35.9
Peak Gain (dBi)	-0.1	-0.1	-0.1	-0.1	0.0	0.1	0.3	0.3	0.4	0.5	0.5	0.3	0.3	0.1	0.0

Experimental results – In hand

2D Gain Pattern (Radiation Pattern @ 2452 MHz) (unit: dBi)

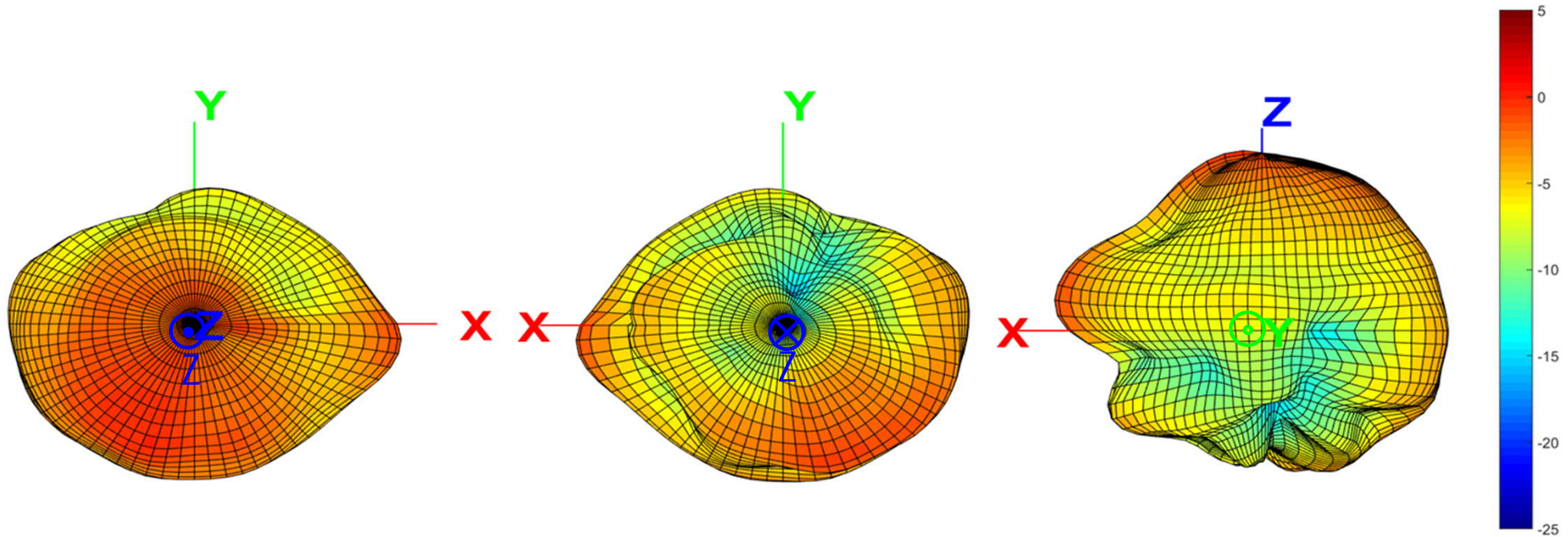


Total Polarization	XY Plane		XZ Plane		YZ Plane	
Frequency (MHz)	Peak Gain (dBi)	Average Gain (dBi)	Peak Gain (dBi)	Average Gain (dBi)	Peak Gain (dBi)	Average Gain (dBi)
2442MHz	-3.5	-5.46	-1.41	-3.81	-1.27	-4.13



Experimental results – In hand

3D Gain Pattern (Radiation Pattern @ 2452 MHz) (unit: dBi)



Peak Gain: 0.5dBi

