

Test Report- Dell Silent MS

Customer: Darfon
Project: Dell Silent MS355d
Antenna: Printing Ant
Version: E
Testing Date 2024/04/19
Release date: 2024/04/19

Tested by: Ken Yen
Checked by: Sam Wu
Approved by: Mike Yang

1. Background

2. Measurement Setup

2.1 Reflection coefficient measurement

2.2 Radiation pattern measurement

2.3 Mechanical setting

3. Experimental Results

3.1 S Parameters

3.2 Radiation efficiency

3.3 Conclusion

Background

Sample

1. Testing at Free Space & Hand held mode.

Measurement Setup

Reflection Coefficient Measurement

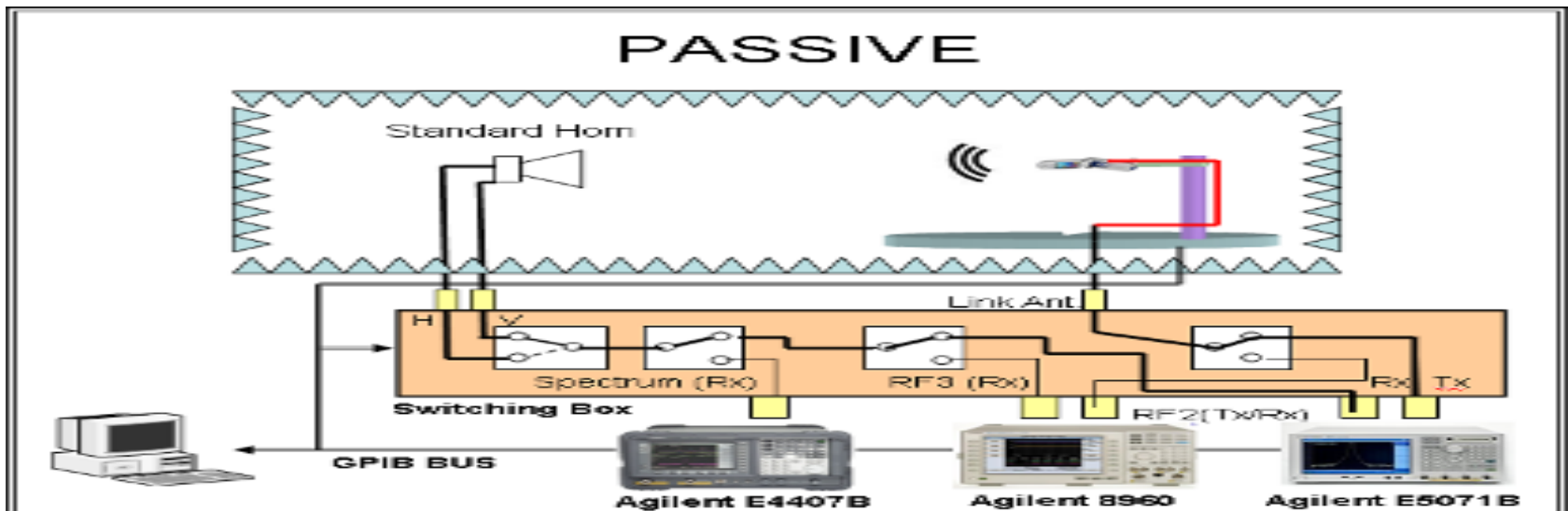
1. Equipment : Network Analyzer(Agilent E5071A)
 - a. Last Calibration date: 2024/3/4
 - b. Next Calibration date: 2025/3/4
2. Test Software: Maxwell Viewer
3. Test items : S-parameters (Impedance, return loss, VSWR)



Figure. Network Analyzer(Agilent E5071A)

Radiation Pattern Measurement

1. Equipment :
 - a. Anechoic Chamber/ Standard Horn
 - i. Last Calibration date: 2024/3/4
 - ii. Next Calibration date: 2025/3/4
 - b. Network Analyzer (Agilent E5071C)
 - i. Last Calibration date: 2024/3/4
 - ii. Next Calibration date: 2025/3/4
2. Test Software: Maxwell Viewer
3. Test items : Gain, efficiency, 2D gain pattern, 3D gain pattern



Measurement Procedure

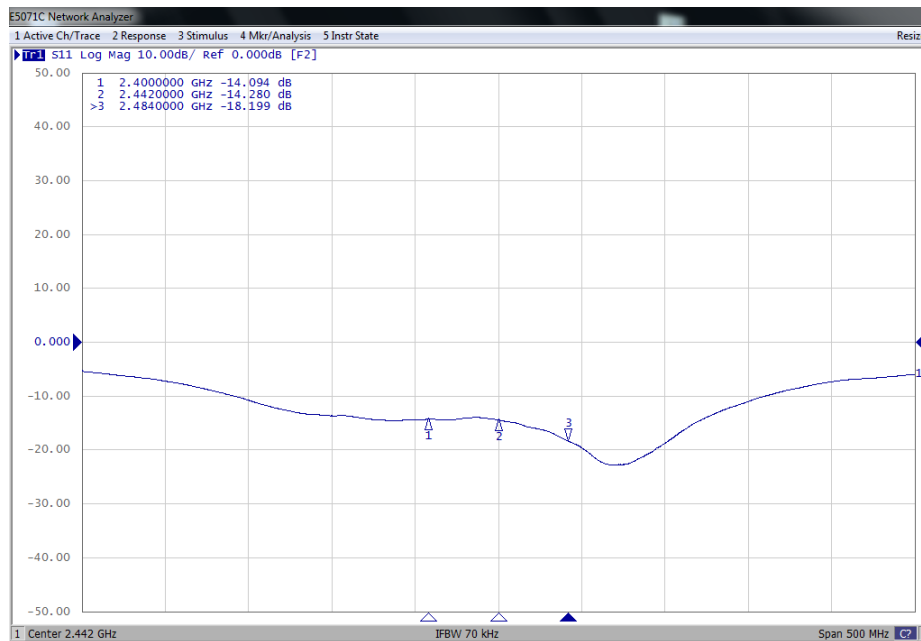
1. Place the DUT at the center of the turntable.
2. Connecting the test cable to the DUT , and use the software for measurement.
3. During the measured process, Equipment will conduct radiation testing with the DUT through 23 probes by a vertical 360- degree; then the turntable will rotate a horizontal 180-degree.
4. After a complete measurement of spherical 3D is completed.

Experimental results

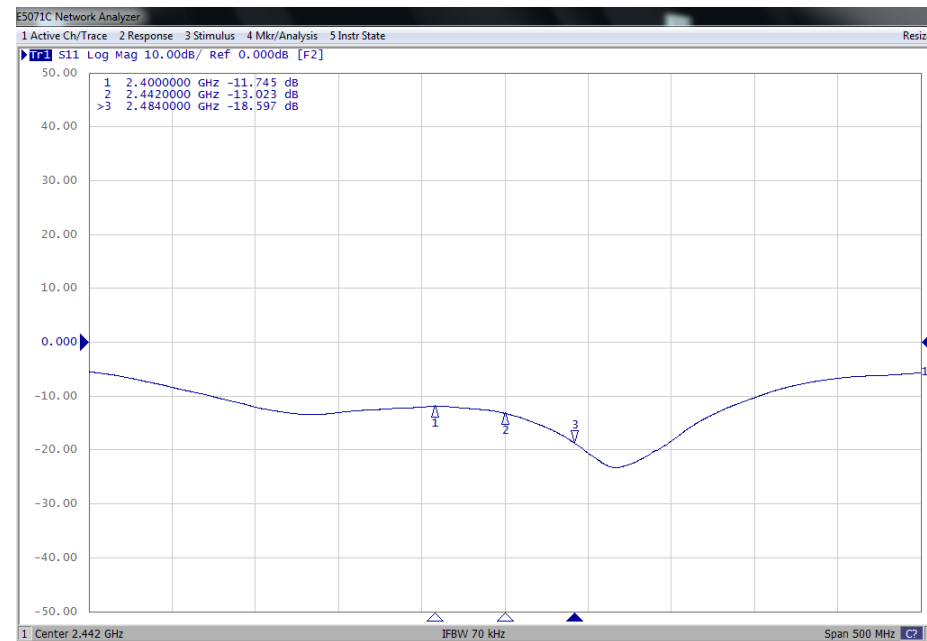
S-Parameters

Return Loss

Main-Free Space



Main-Hand held



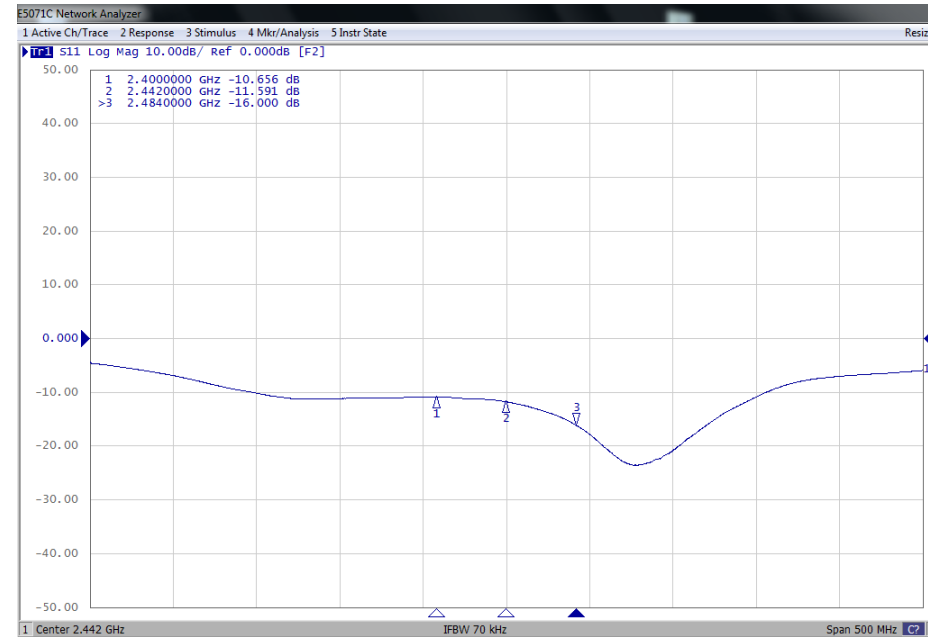
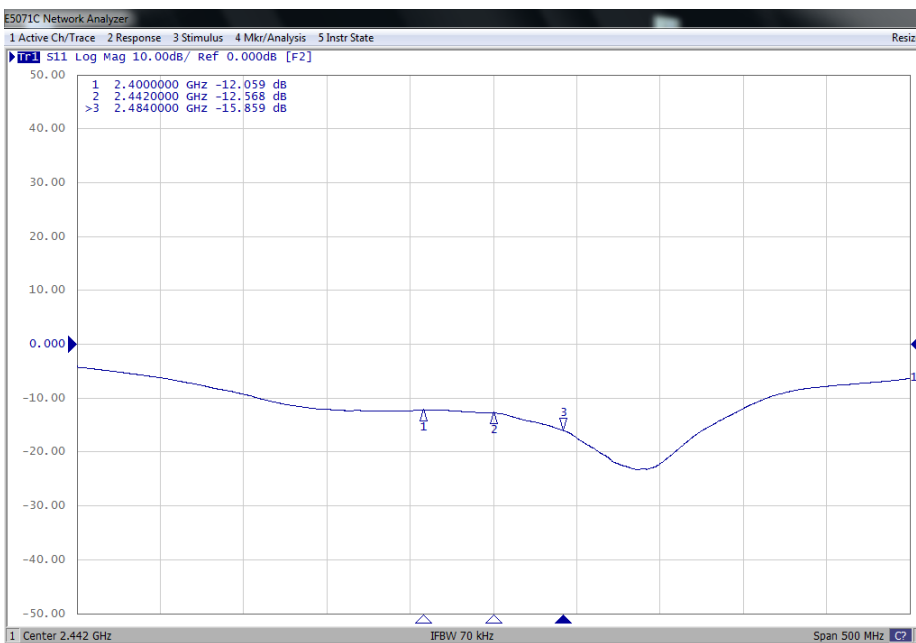
Experimental results

S-Parameters

Return Loss

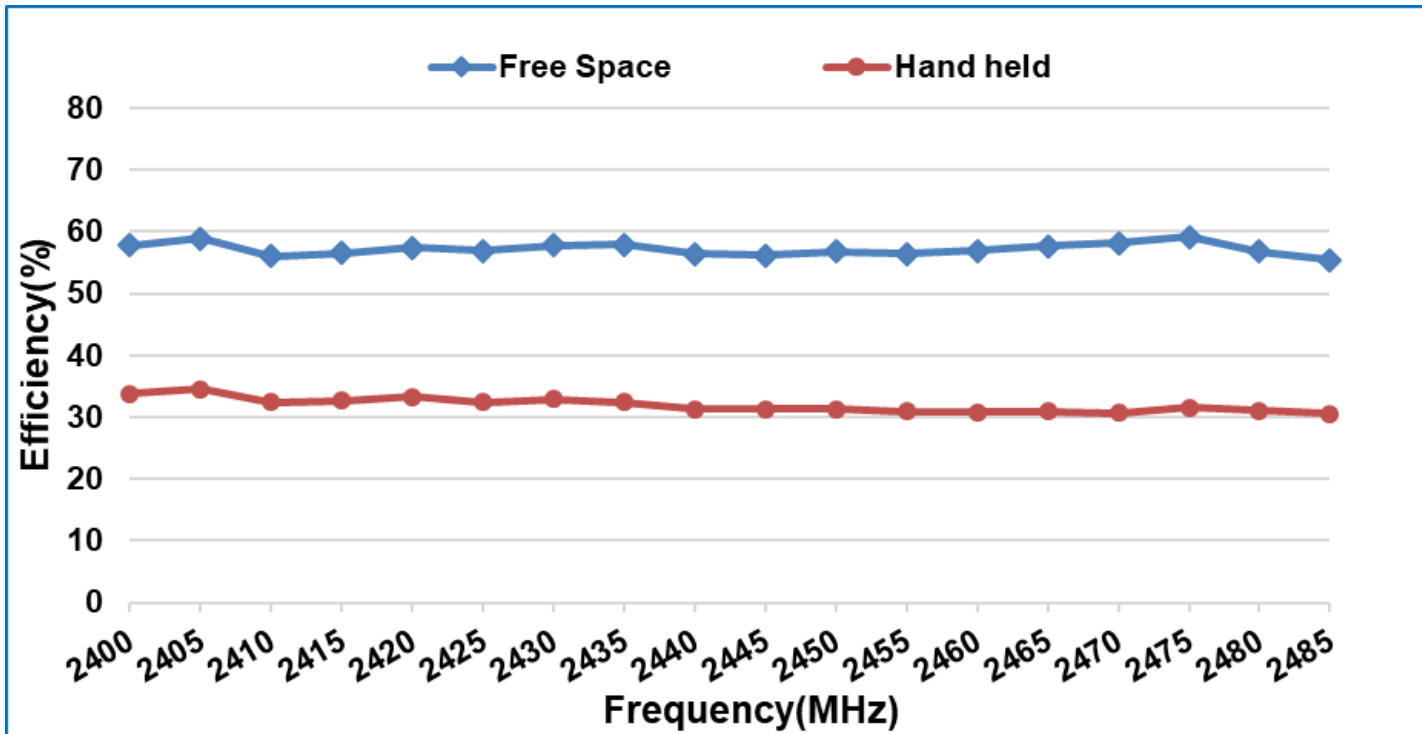
Second-Free Space

Second-Hand held



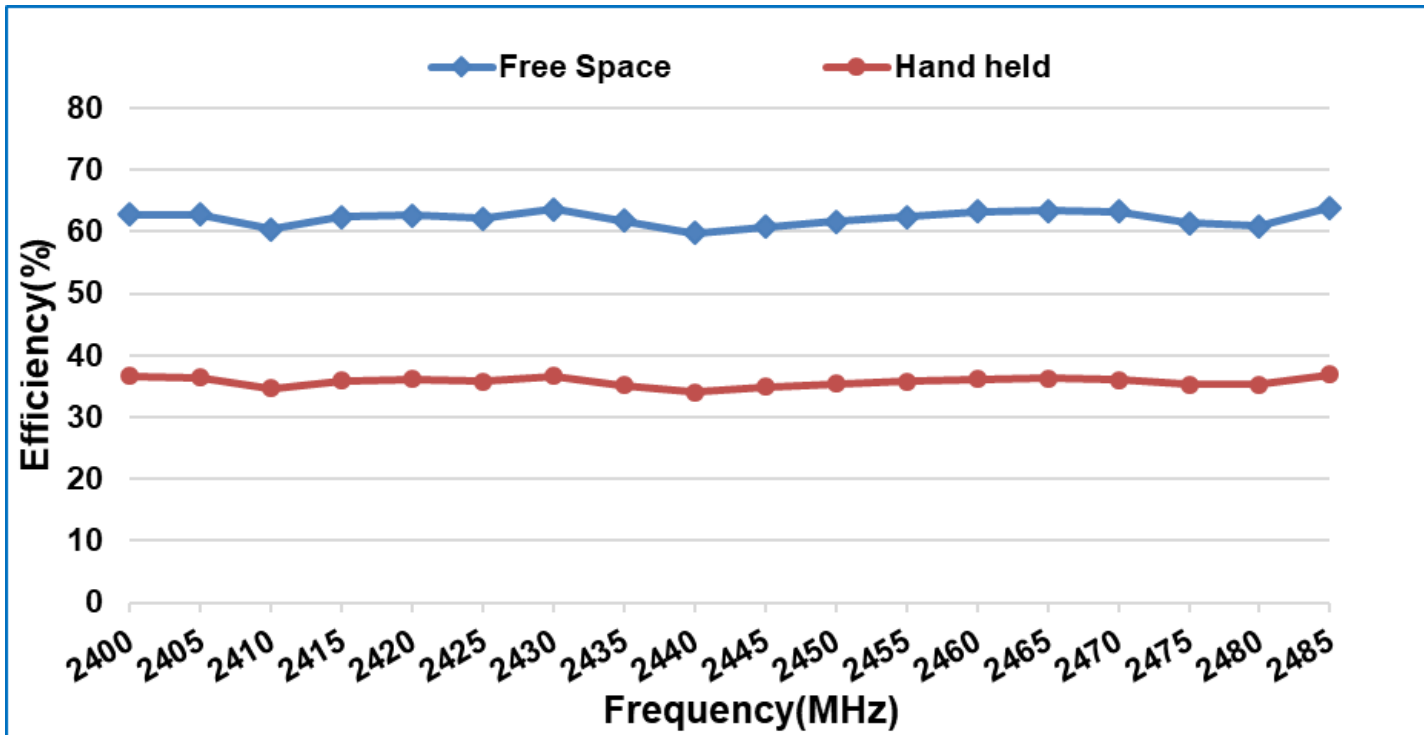
Experimental results (Main)

Radiation efficiency

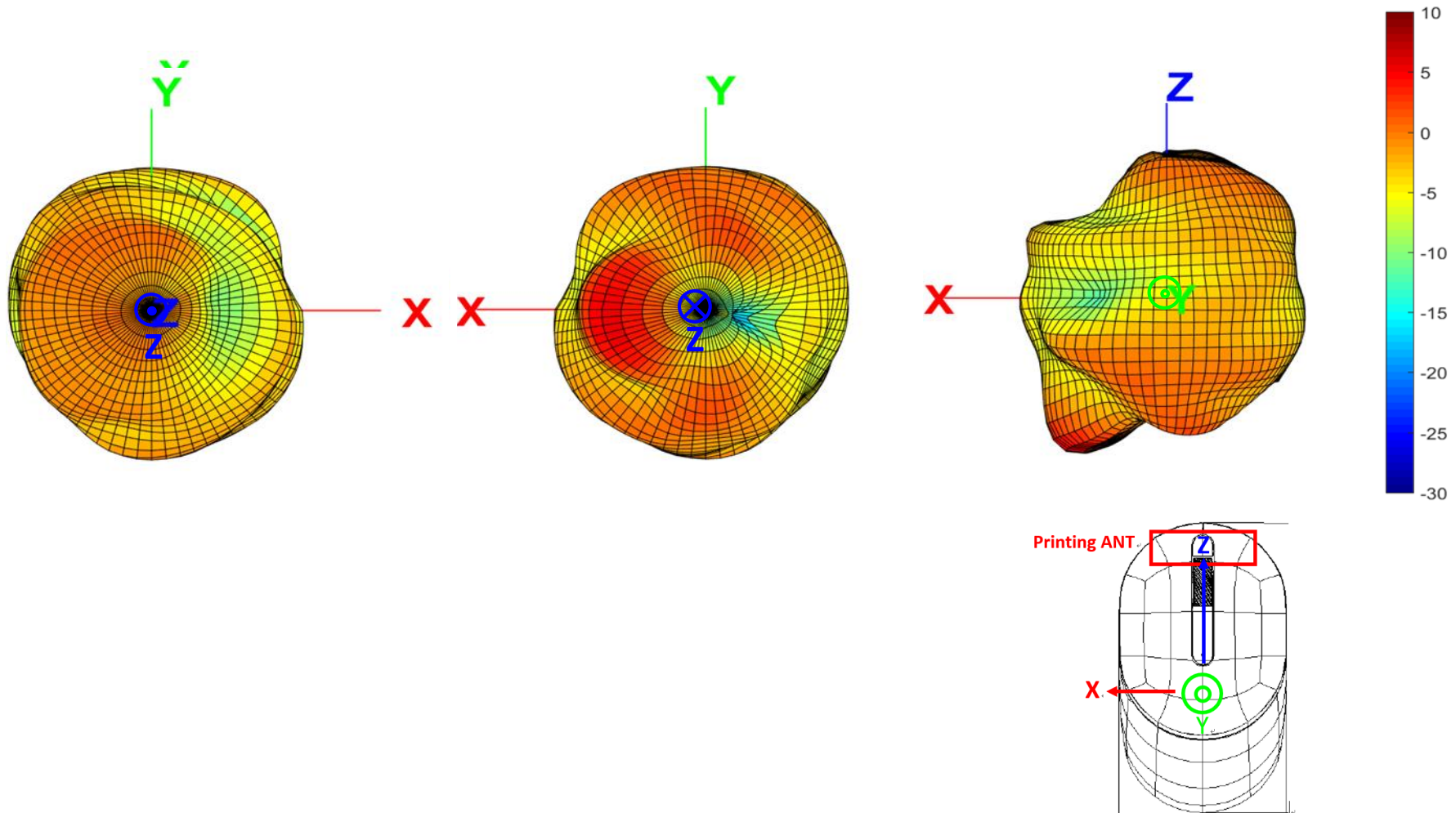


Experimental results (Second)

Radiation efficiency

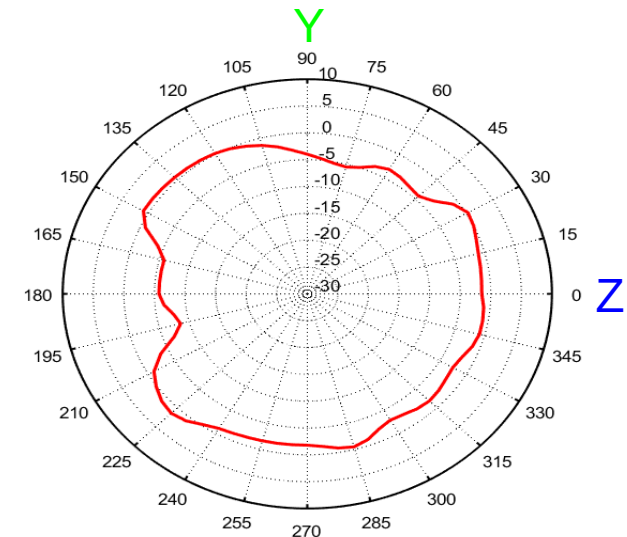
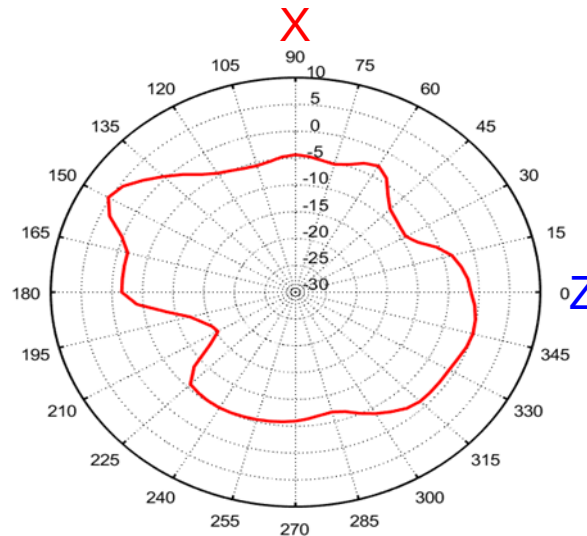
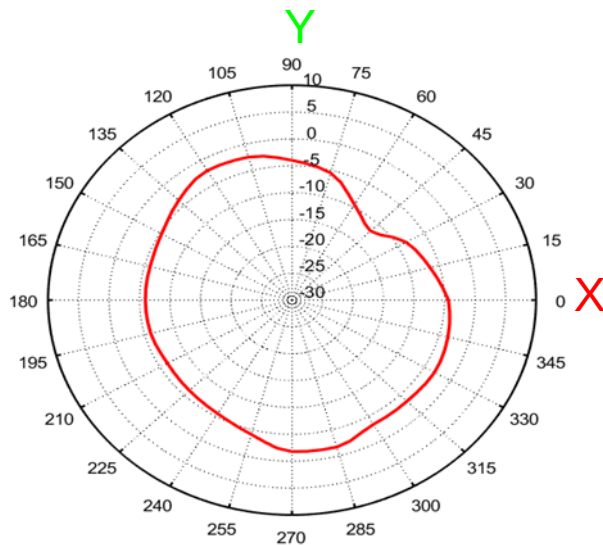


3D Gain Pattern (Radiation Pattern @ 2445 MHz) (unit: dBi)

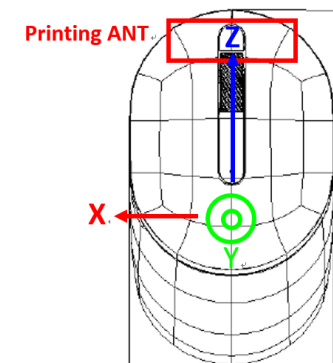


Experimental results (Main-Free Space)

2D Gain Pattern (Radiation Pattern @ 2445 MHz) (unit: dBi)

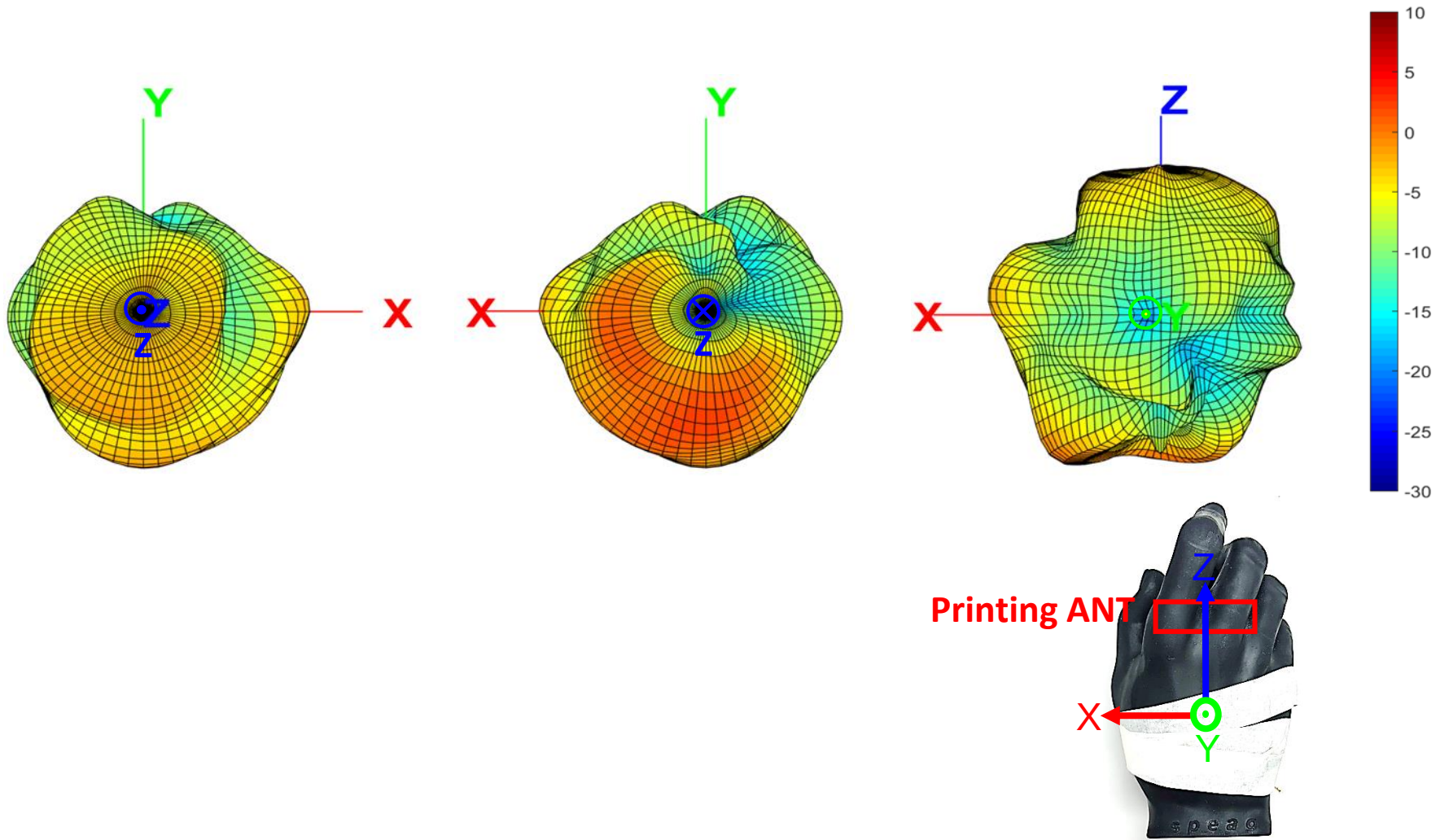


Total Polarization	XY Plane		XZ Plane		YZ Plane	
Frequency (MHz)	Peak Gain (dBi)	Average Gain (dBi)	Peak Gain (dBi)	Average Gain (dBi)	Peak Gain (dBi)	Average Gain (dBi)
2445MHz	-1.68	-4.46	5.33	-2.41	1.47	-1.45



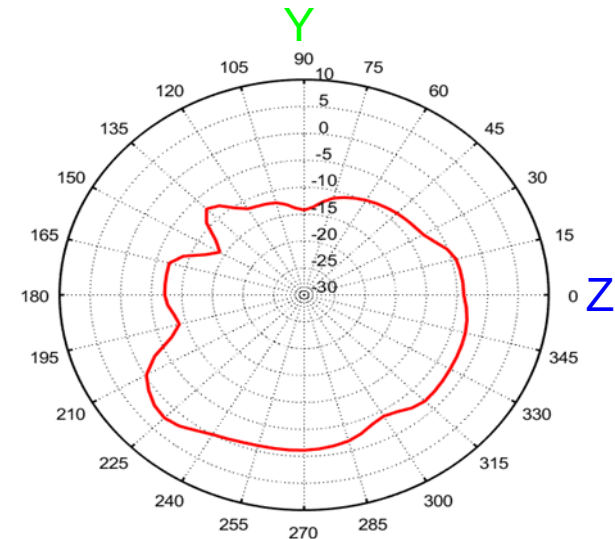
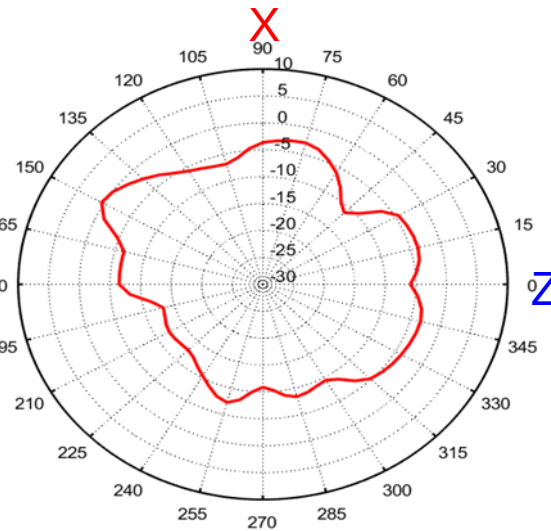
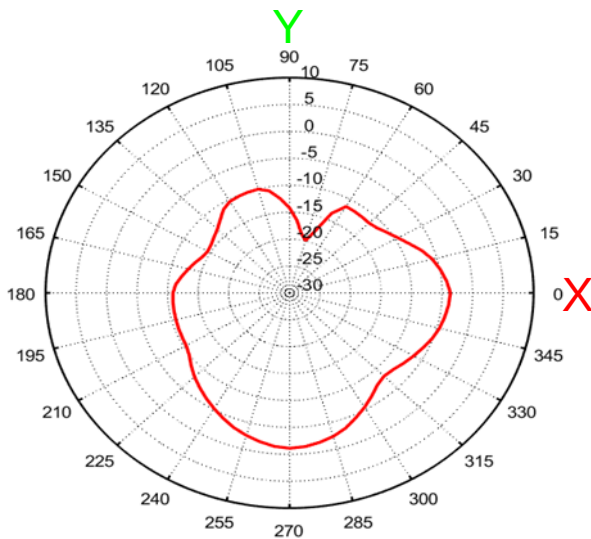
Experimental results (Main-Hand held)

3D Gain Pattern (Radiation Pattern @ 2445 MHz) (unit: dBi)

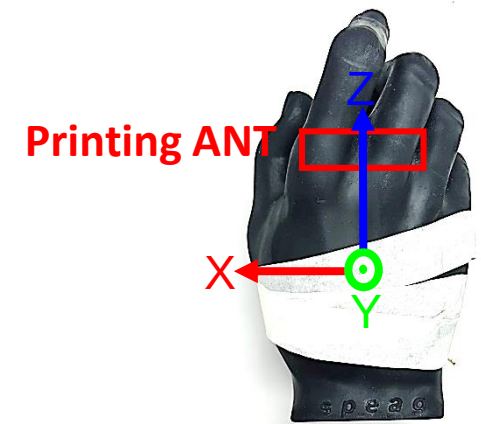


Experimental results (Main-Hand held)

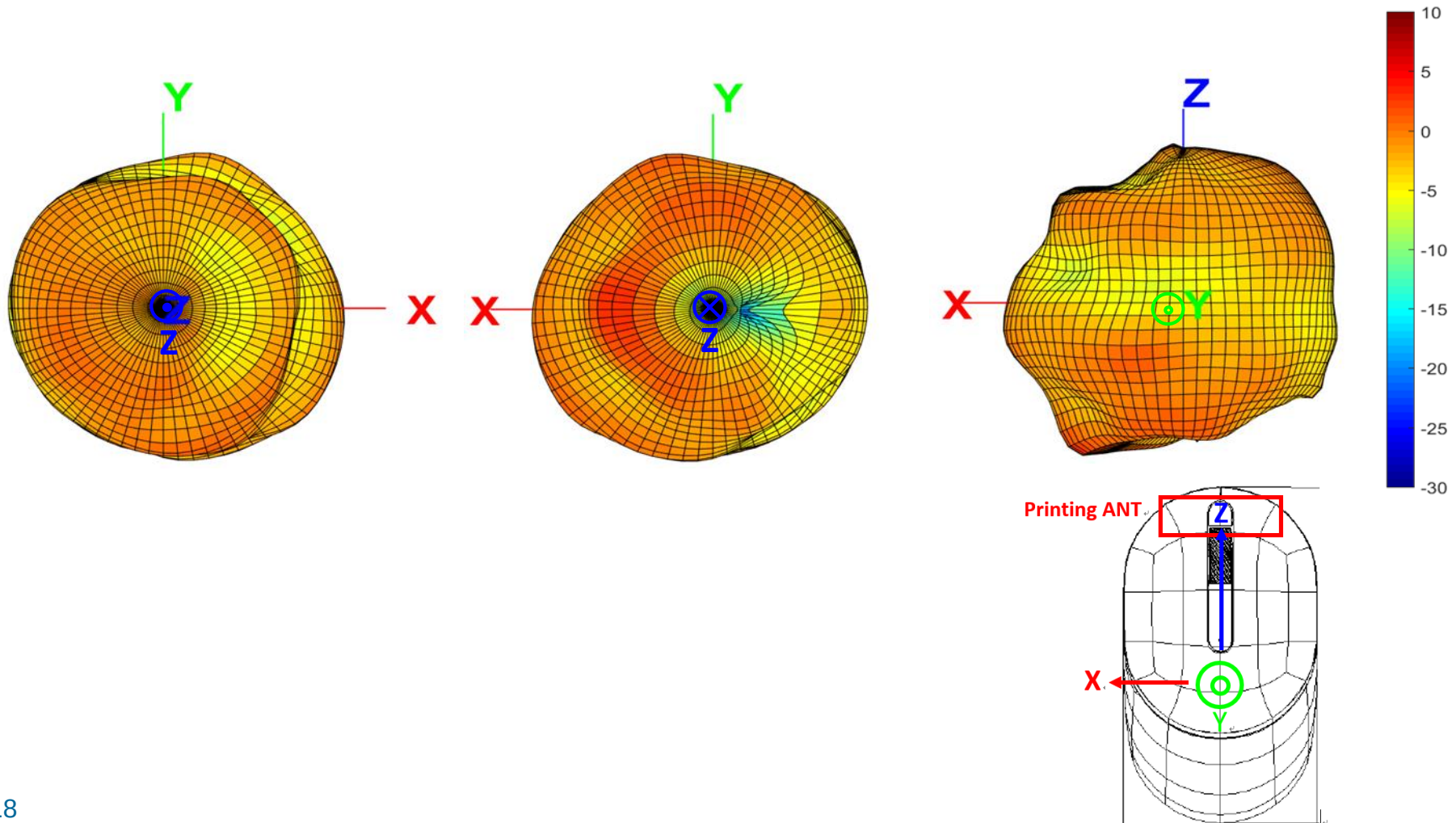
2D Gain Pattern (Radiation Pattern @ 2445 MHz) (unit: dBi)



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)
2445MHz	-1.12	-6.66	0.44	-5.41	2.33	-3.64

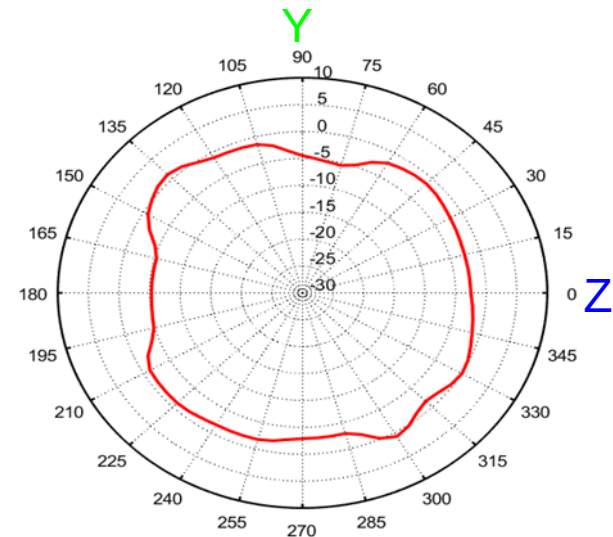
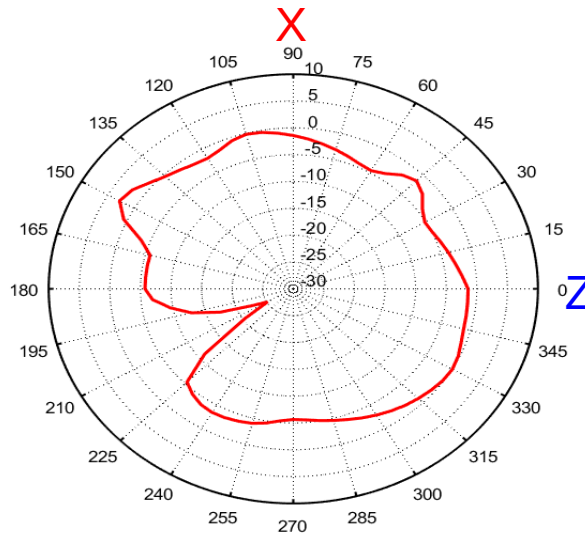
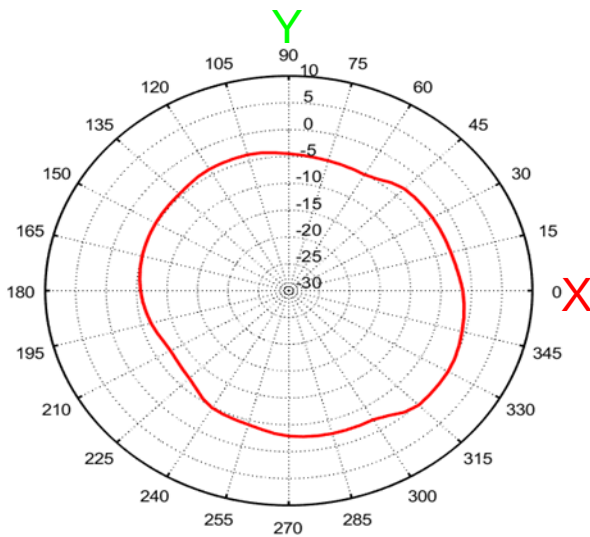


3D Gain Pattern (Radiation Pattern @ 2445 MHz) (unit: dBi)

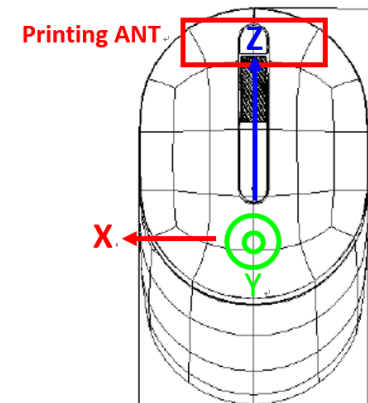


Experimental results (Second -Free Space)

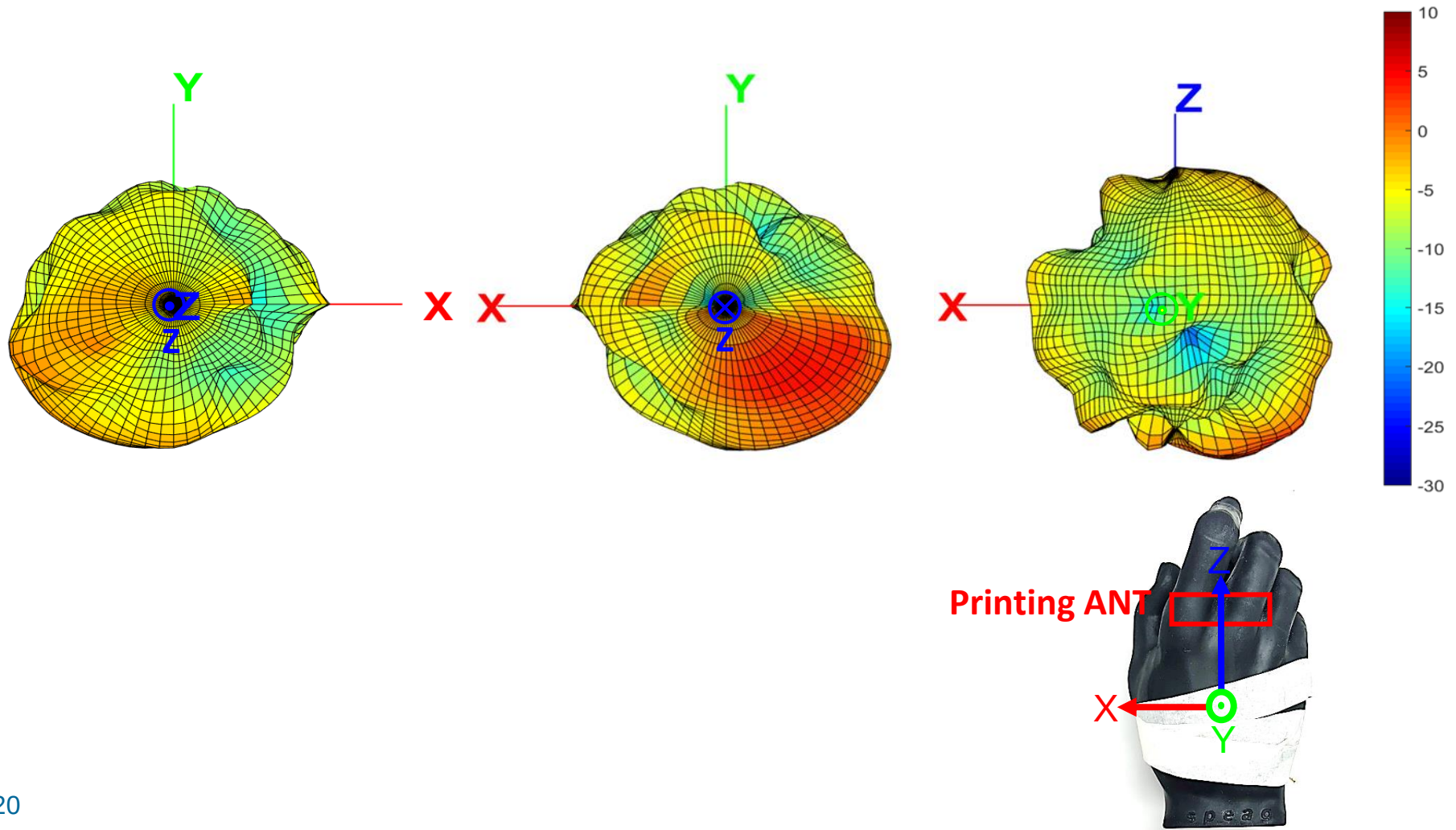
2D Gain Pattern (Radiation Pattern @ 2445 MHz) (unit: dBi)



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)
2445MHz	0.19	-3.16	2.81	-2.3	1.16	-1.75

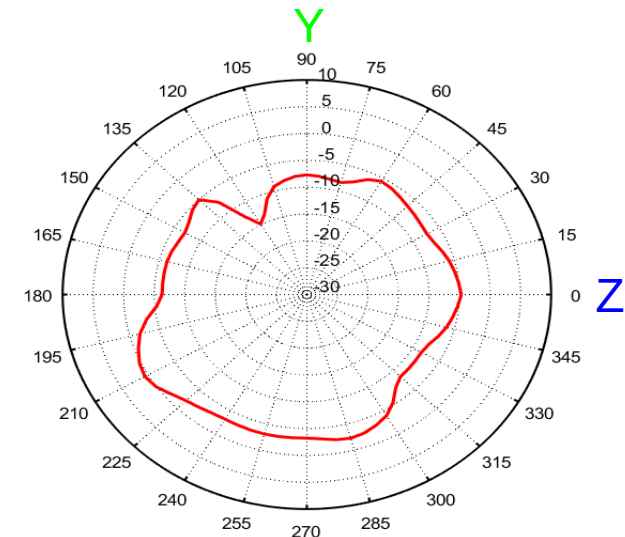
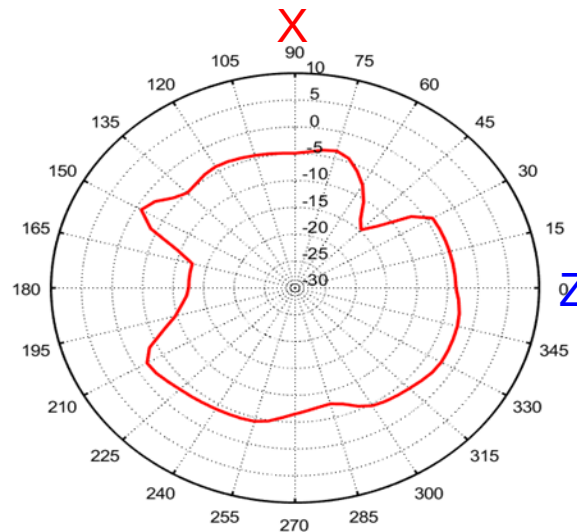
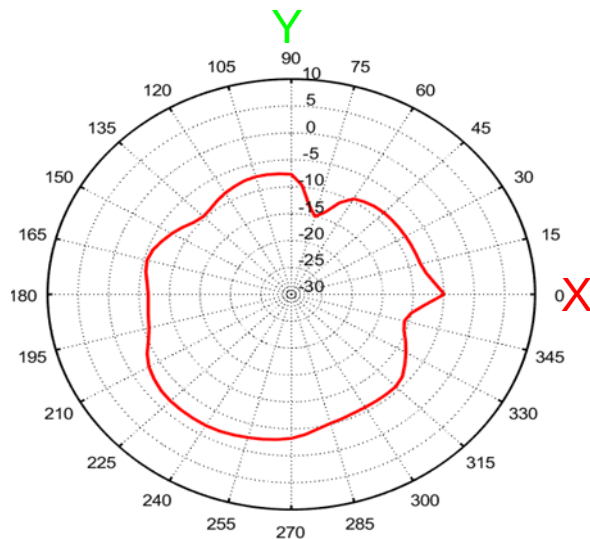


3D Gain Pattern (Radiation Pattern @ 2445 MHz) (unit: dBi)

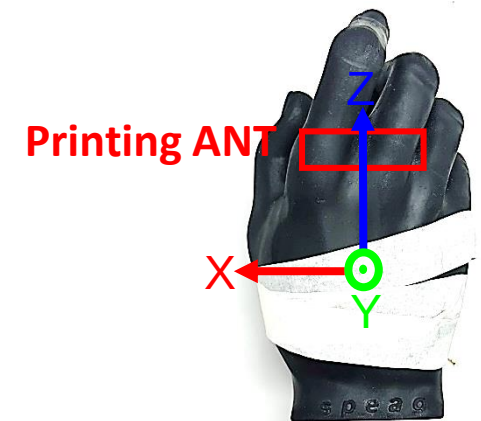


Experimental results (Second -Hand held)

2D Gain Pattern (Radiation Pattern @ 2445 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)
2445MHz	-1.87	-5.72	-0.88	-4.27	0.63	-4.63



Peak Gain and Efficiency

Freq	Peak Gain	Efficiency
2.4GHz	5.33dBi	63.7%