Customer Name & Project: Edimax AXE5400

Prepared By: Jeffrey

Date: 2nd June 2023

Airgain Project Code:

Introduction

- Airgain proposes an embedded antenna solution for Edimax AXE5400
  - **The antenna solution is proposal based upon the latest device provided by May 22th, 2023**
    - **There are 2 antennas in the system**

DUT Description

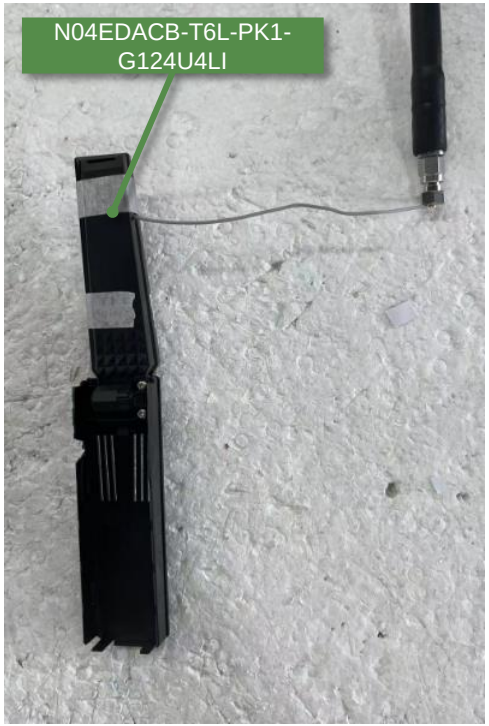
- Total 2 antennas need to be integrated into limited housing space:
  - **Tri-Band Antenna *2**
    Ant1 Frequency Range : 2400 – 2490&5150-5850&5925-7125 (MHz)
    Ant2 Frequency Range : 2400 – 2490&5150-5850&5925-7125 (MHz)

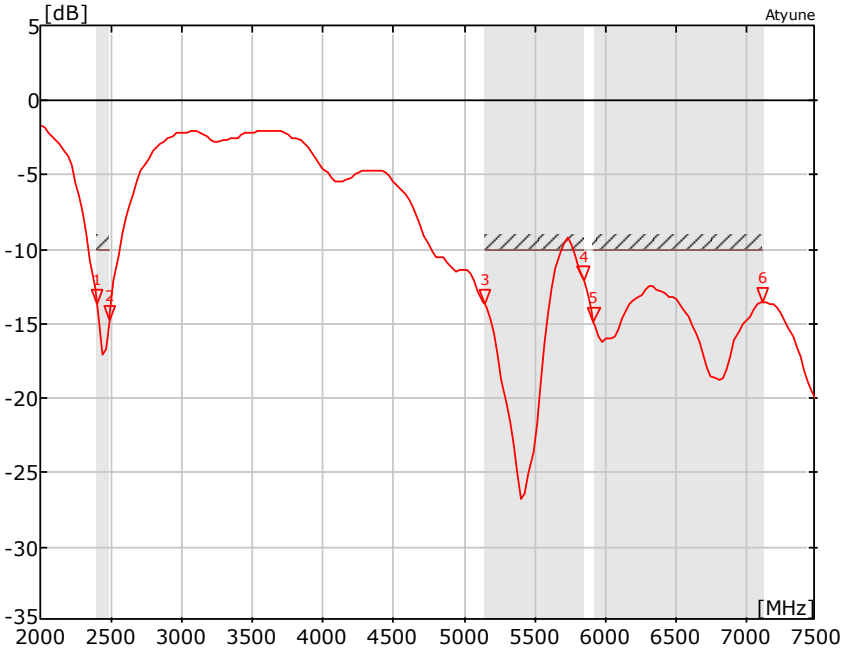
- The antenna is mounted on the plastic enclosure and connect to the radio through coaxial cable and Ipex 4 Connector
- Passive measurement results are presented
- The single antenna:
  - Test Ant1,remove the Ant2;
  - Test Ant2,remove the Ant1;

ANT1_N04EDACB-T6L-PK1-G124U4LI

S-Parameters

Reflection Coefficient for WiFi Antennas





MARKERS:	MHz	dB	MHz	dB	MHz	dB
1.S1P - S11						
	1: 2400	-13.65	3: 5150	-13.66	5: 5925	-14.79
	2: 2490	-14.64	4: 5850	-11.99	6: 7125	-13.49

Antenna Efficiency (%) – 2.4G 5G & 6GHz Wi-Fi Antennas

Frequency (MHz)	Ant1_2G4 (%)
2400	75.4
2410	77.0
2420	75.7
2430	75.7
2440	77.4
2450	77.1
2460	77.3
2470	78.3
2480	77.6
2490	76.8
Average	76.8

Frequency (MHz)	Ant1_5G (%)
5150	73.3
5200	77.8
5300	77.7
5400	77.1
5500	73.9
5600	71.4
5700	61.4
5800	67.1
5850	69.8
Average	72.2

Frequency (MHz)	Ant1_6G (%)
5925	75.5
6000	75.7
6100	73.6
6200	74.3
6300	70.0
6400	71.6
6500	73.6
6600	75.5
6700	75.7
6800	76.6
6900	70.6
7125	70.6
Average	73.6

Antenna Peak Gain – 2.4G 5G & 6GHz Wi-Fi Antennas

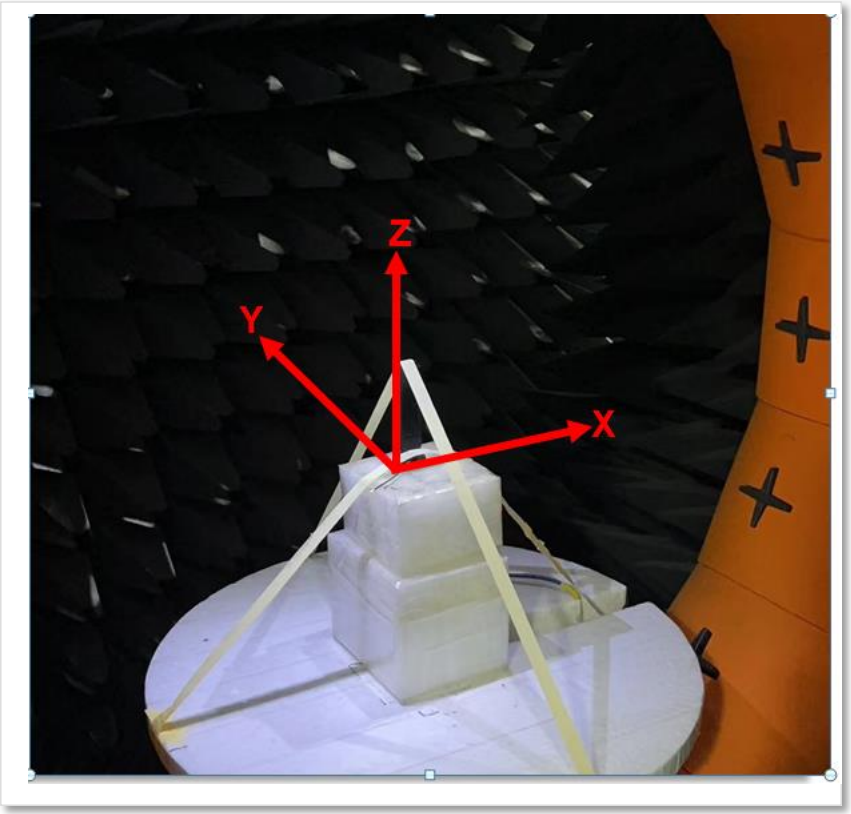
Frequency (MHz)	Ant1_2G4 (dBi)
2400	1.3
2410	1.4
2420	1.1
2430	1.1
2440	1.3
2450	1.1
2460	1.1
2470	1.2
2480	1.0
2490	1.0

Frequency (MHz)	Ant1_5G (dBi)
5150	2.7
5200	3.0
5300	2.9
5400	2.9
5500	2.4
5600	2.0
5700	0.7
5800	0.9
5850	1.2

Frequency (MHz)	Ant1_6G (dBi)
5925	2.3
6000	2.6
6100	2.7
6200	3.3
6300	3.1
6400	3.3
6500	3.3
6600	3.4
6700	3.6
6800	3.9
6900	3.5
7125	4.0

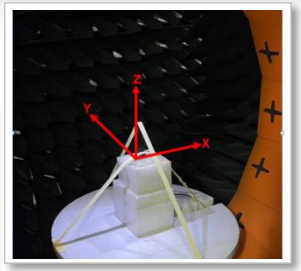
Radiation Patterns

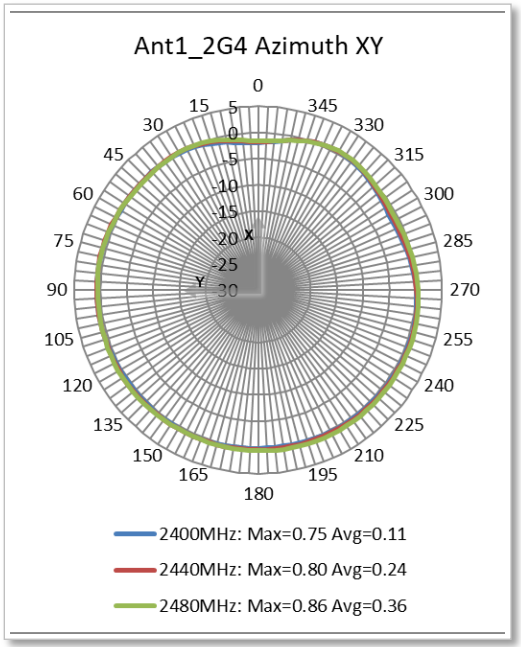
Coordinate System for Radiation Pattern Visualization



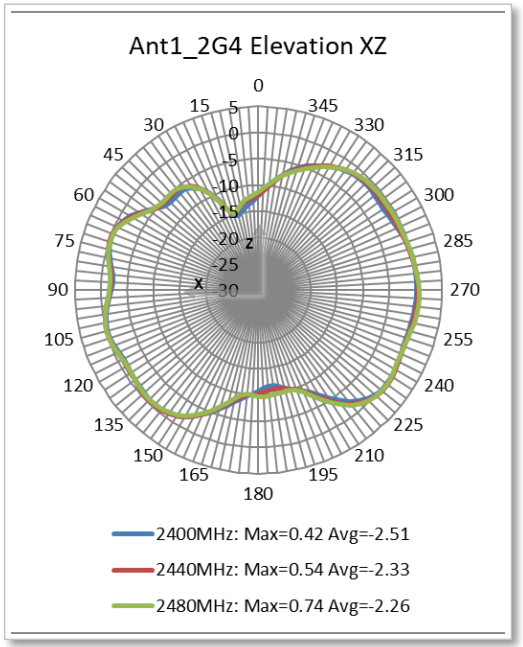
Orientation of Edimax AXE4200

Total Gain Patterns: Ant1_2G4

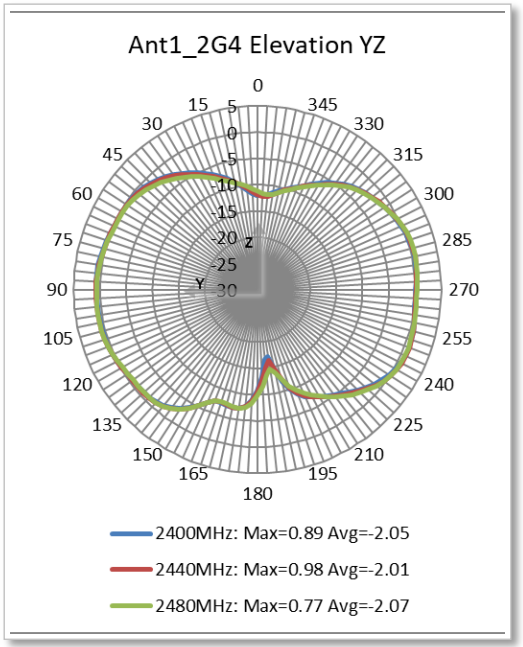




Azimuth (XY)

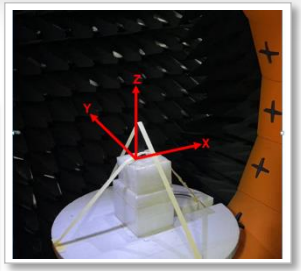


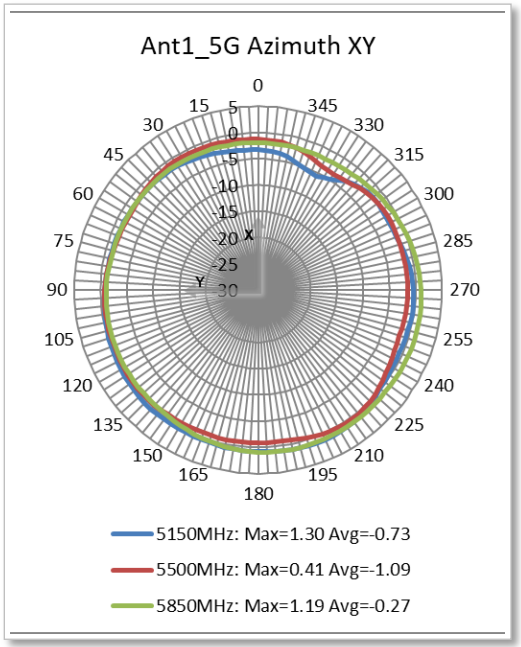
Side to Side (XZ)



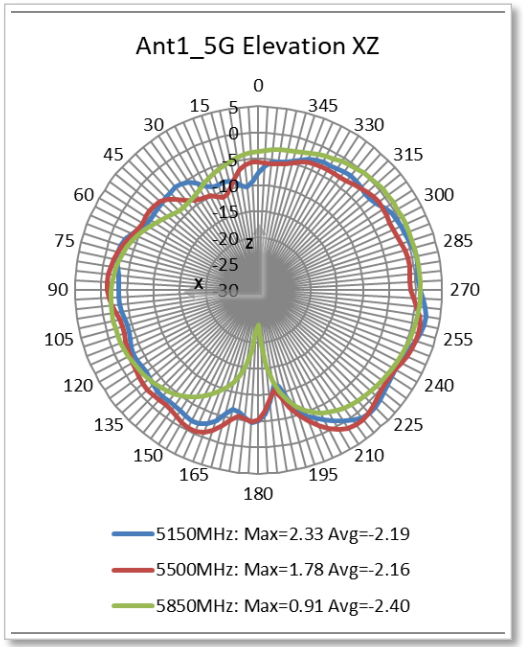
Front to Back (YZ)

Total Gain Patterns: Ant1_5G

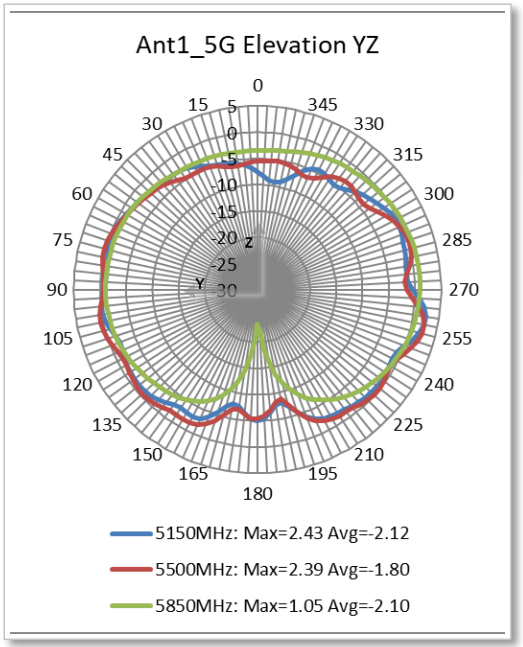




Azimuth (XY)

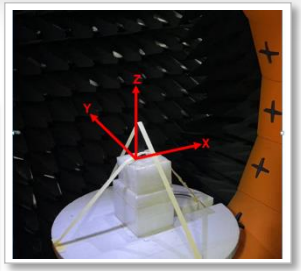


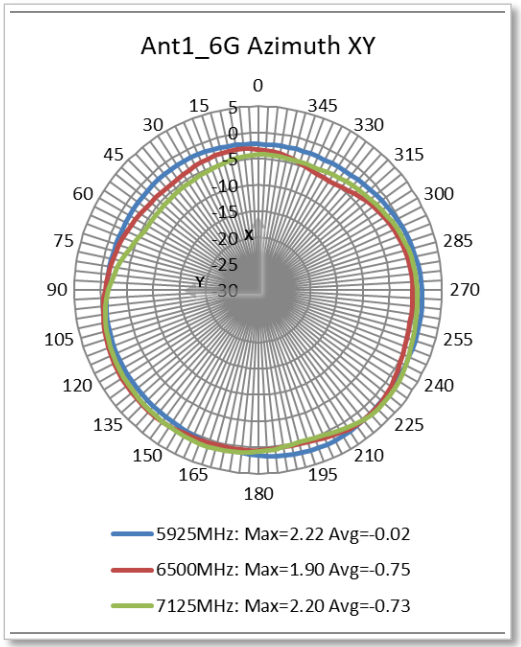
Side to Side (XZ)



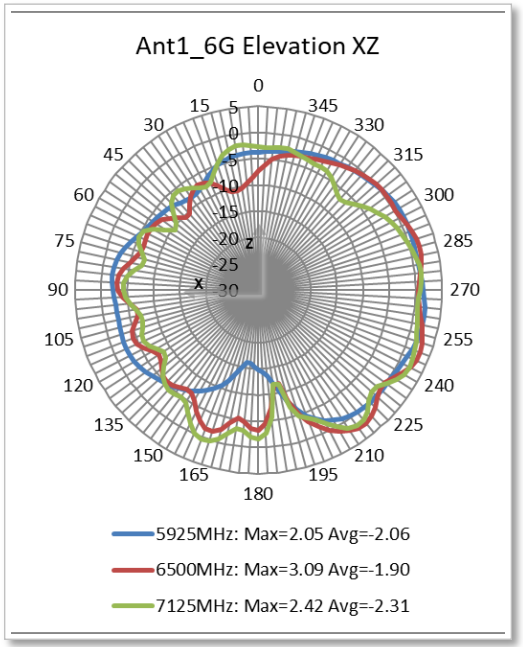
Front to Back (YZ)

Total Gain Patterns: Ant1_6G

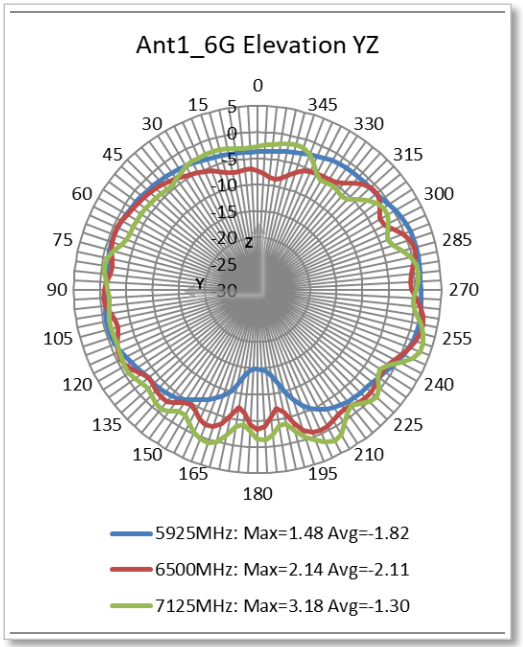




Azimuth (XY)

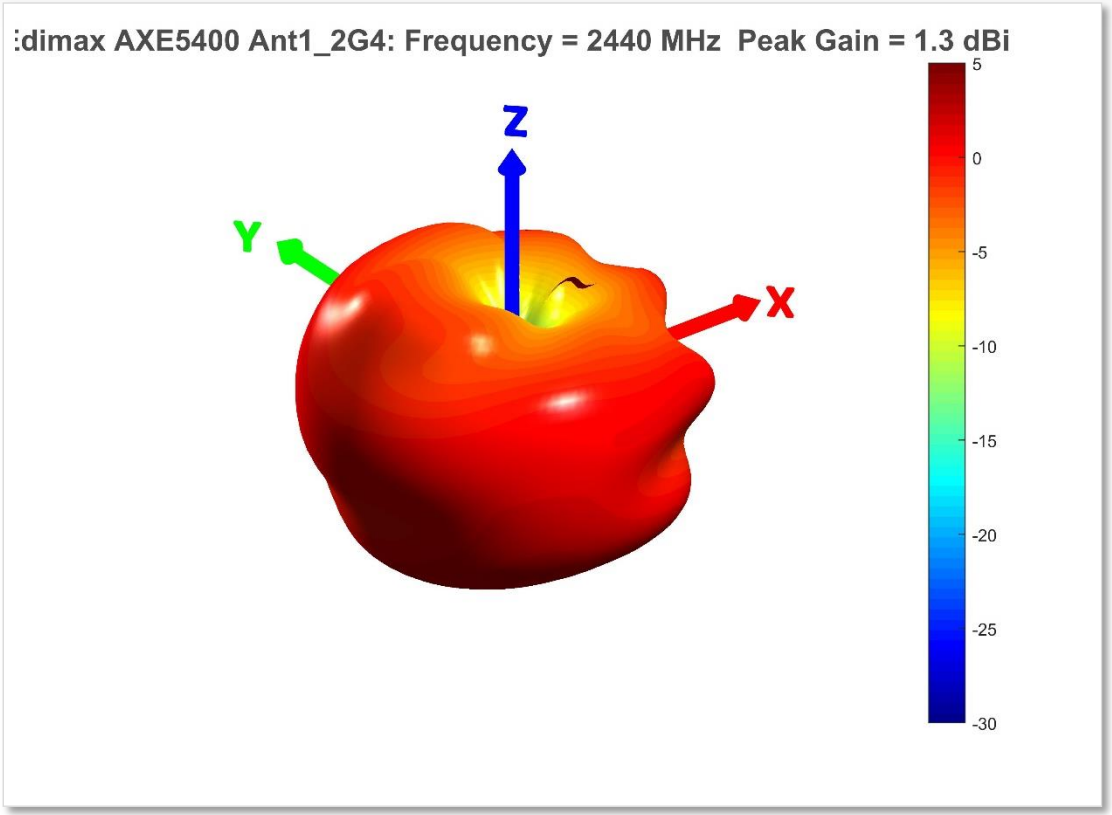


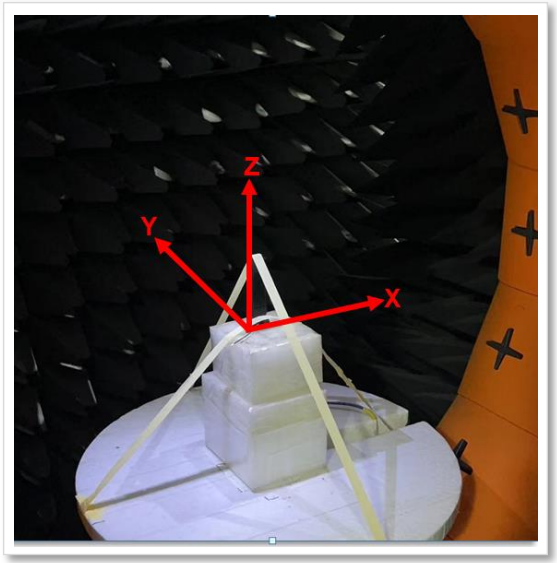
Side to Side (XZ)



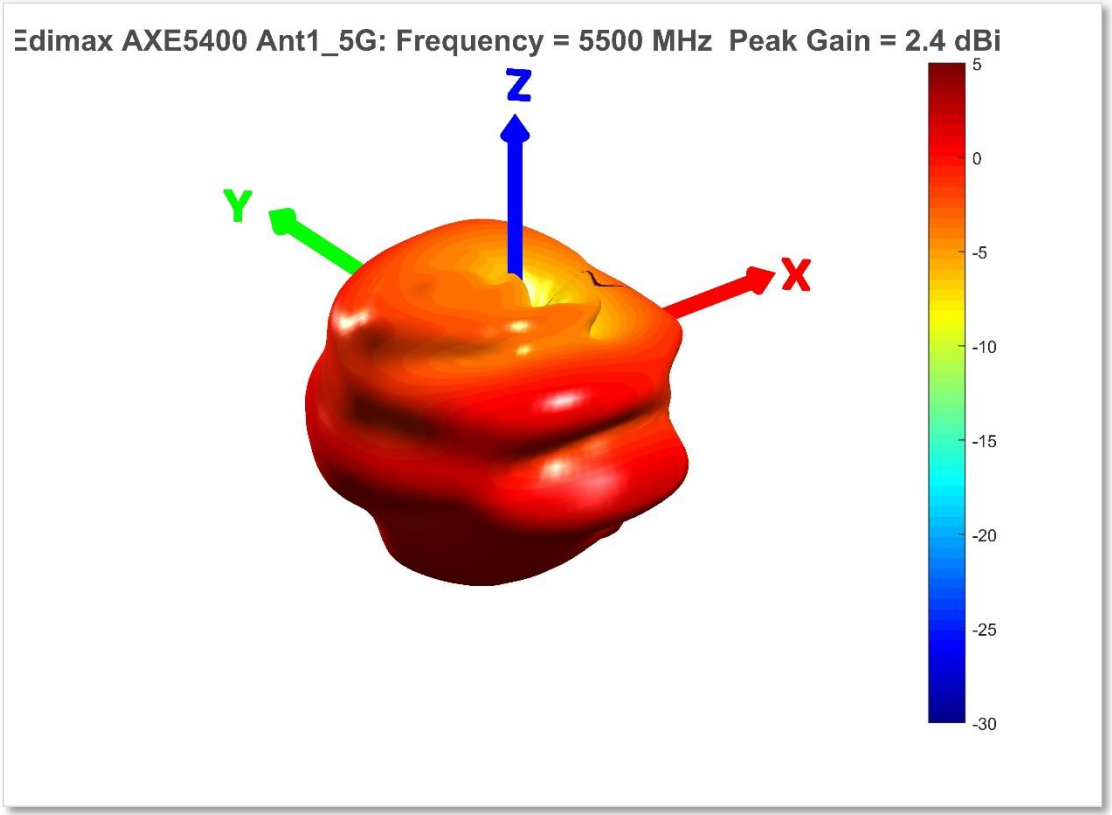
Front to Back (YZ)

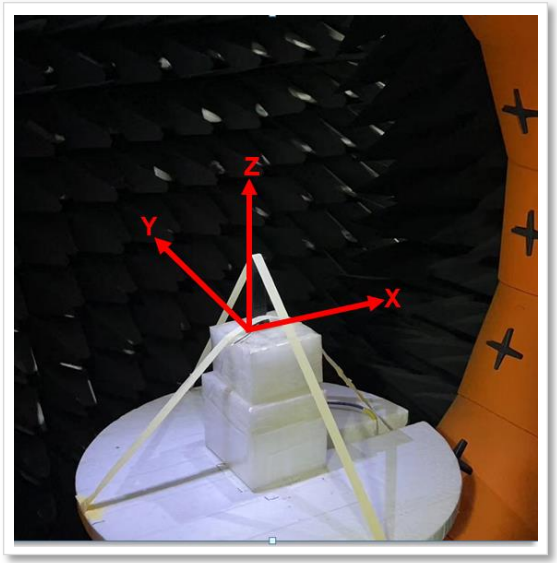
Total Gain 3D Pattern: Ant1_2G4 at 2440MHz



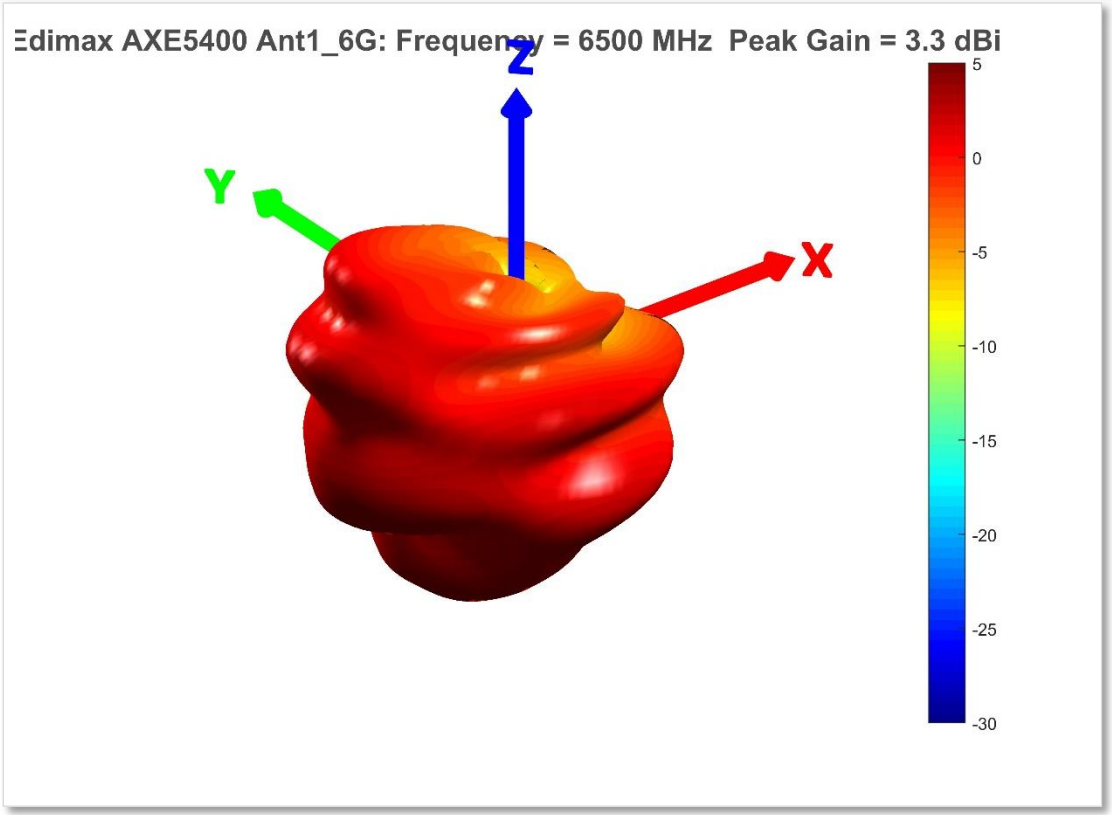


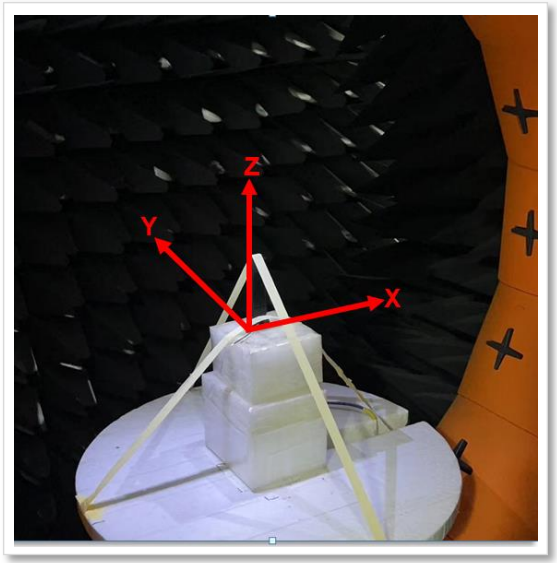
Total Gain 3D Pattern: Ant1_5G at 5500MHz





Total Gain 3D Pattern: Ant1_6G at 6500MHz

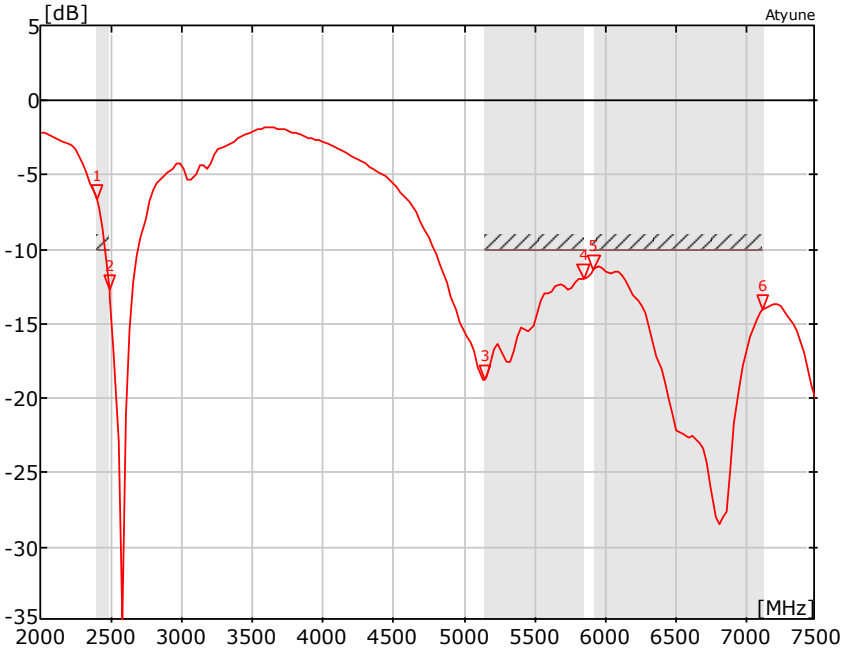




ANT2_N04EDACA-T6L-PK1-B96U4LI

S-Parameters

Reflection Coefficient for WiFi Antennas



MARKERS:	MHz	dB	MHz	dB	MHz	dB
2.S1P - S11						
	1: 2400	-6.62	3: 5150	-18.71	5: 5925	-11.27
	2: 2490	-12.67	4: 5850	-11.89	6: 7125	-13.97

Radiated Measurements

Antenna Efficiency (%) – 2.4G 5G & 6GHz Wi-Fi Antennas

Frequency (MHz)	Ant2_2G4 (%)
2400	61.4
2410	62.5
2420	61.9
2430	62.8
2440	65.9
2450	66.9
2460	68.5
2470	71.3
2480	72.8
2490	74.0
Average	66.8

Frequency (MHz)	Ant2_5G (%)
5150	71.3
5200	74.8
5300	72.5
5400	69.5
5500	65.3
5600	62.1
5700	61.4
5800	67.3
5850	66.6
Average	67.8

Frequency (MHz)	Ant1_6G (%)
5925	65.0
6000	68.0
6100	65.8
6200	73.1
6300	67.6
6400	71.2
6500	71.5
6600	72.7
6700	72.3
6800	74.3
6900	69.0
7125	69.7
Average	70.0

Antenna Peak Gain – 2.4G 5G & 6GHz Wi-Fi Antennas

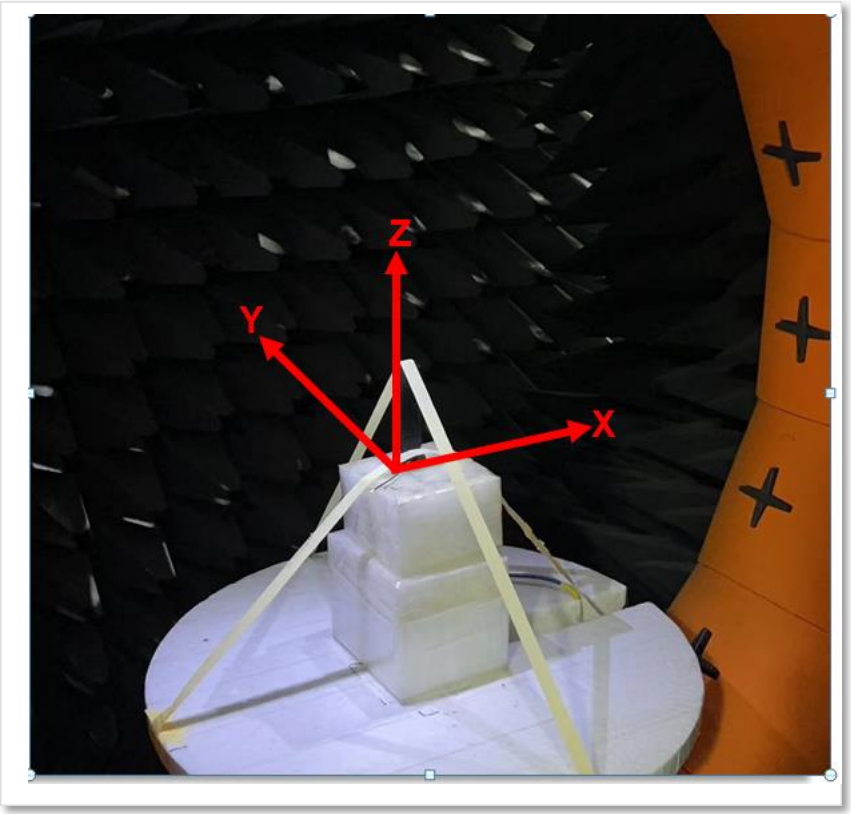
Frequency (MHz)	Ant2_2G4 (dBi)
2400	0.3
2410	0.6
2420	0.4
2430	0.6
2440	0.9
2450	1.0
2460	1.2
2470	1.4
2480	1.5
2490	1.7

Frequency (MHz)	Ant2_5G (dBi)
5150	3.2
5200	3.5
5300	2.8
5400	2.2
5500	2.1
5600	1.8
5700	0.8
5800	1.4
5850	1.5

Frequency (MHz)	Ant2_6G (dBi)
5925	1.6
6000	2.2
6100	2.2
6200	3.0
6300	2.7
6400	3.2
6500	3.3
6600	3.4
6700	3.0
6800	3.1
6900	2.8
7125	3.5

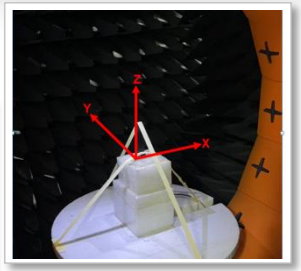
Radiation Patterns

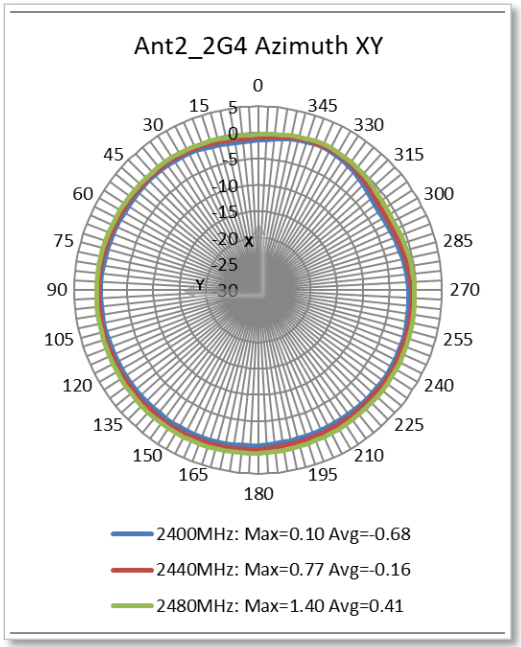
Coordinate System for Radiation Pattern Visualization



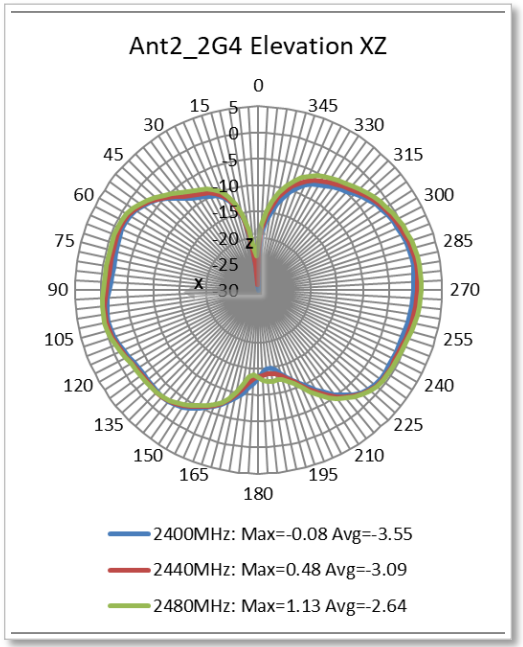
Orientation of Edimax AXE4200

Total Gain Patterns: Ant2_2G4

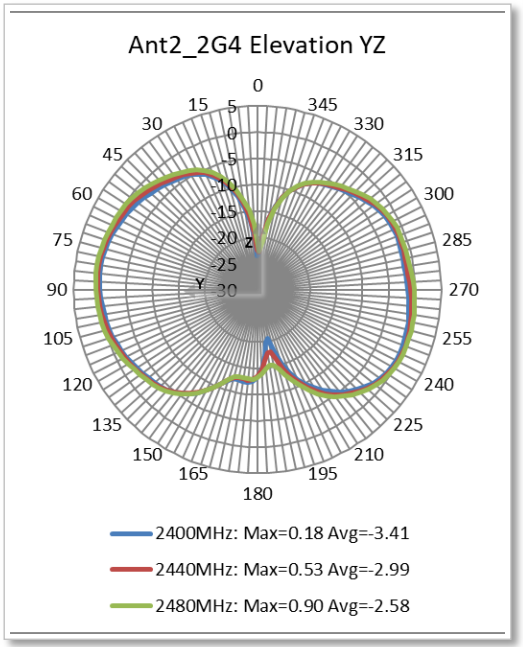




Azimuth (XY)

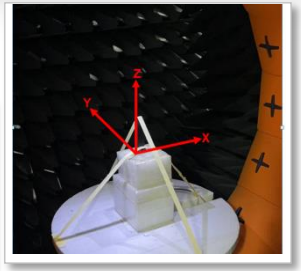


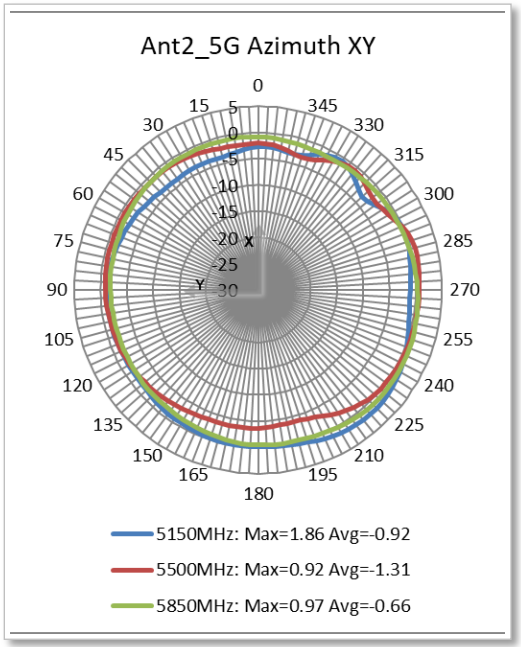
Side to Side (XZ)



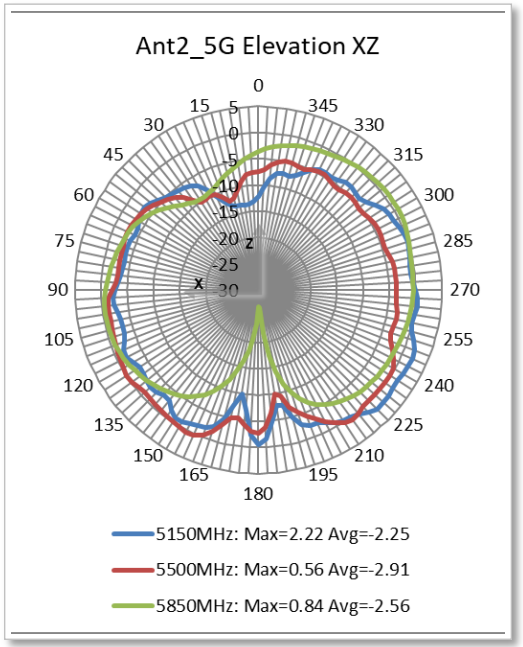
Front to Back (YZ)

Total Gain Patterns: Ant2_5G

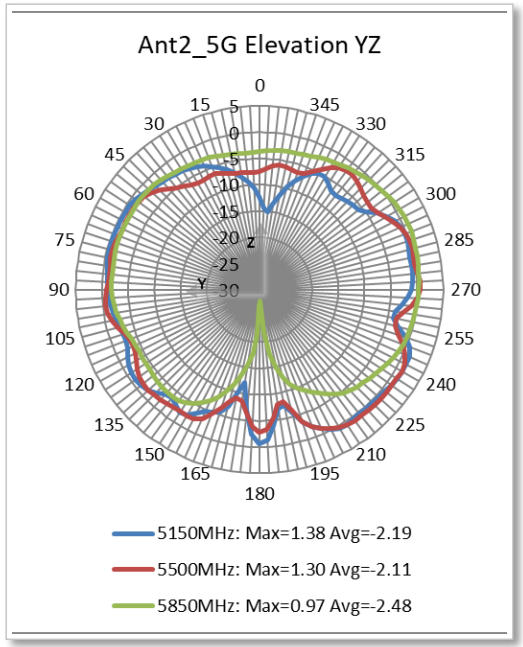




Azimuth (XY)

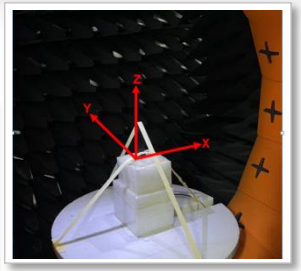


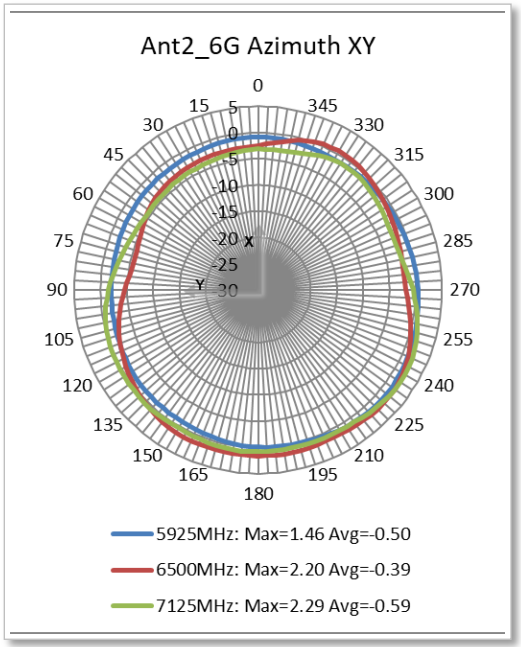
Side to Side (XZ)



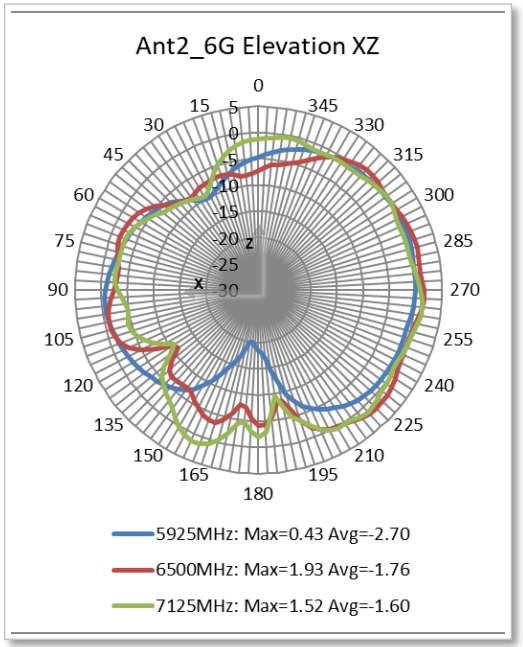
Front to Back (YZ)

Total Gain Patterns: Ant2_6G

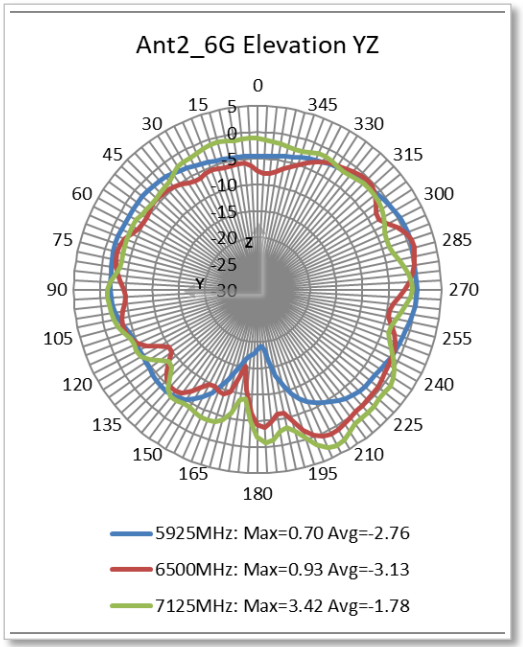




Azimuth (XY)

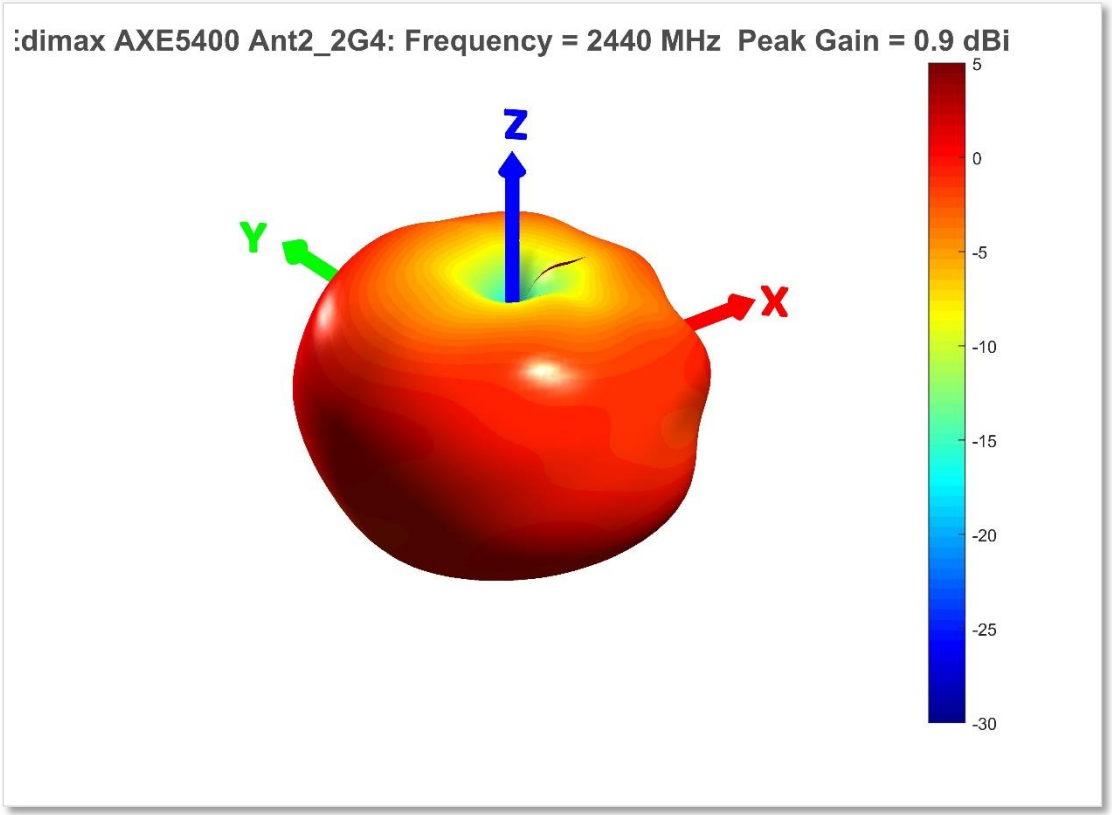


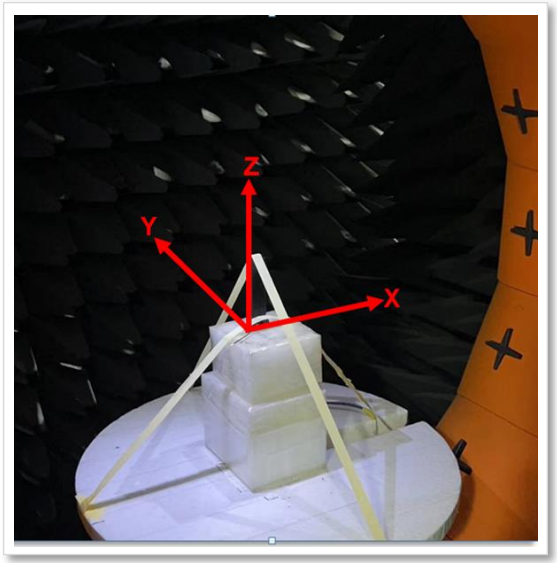
Side to Side (XZ)



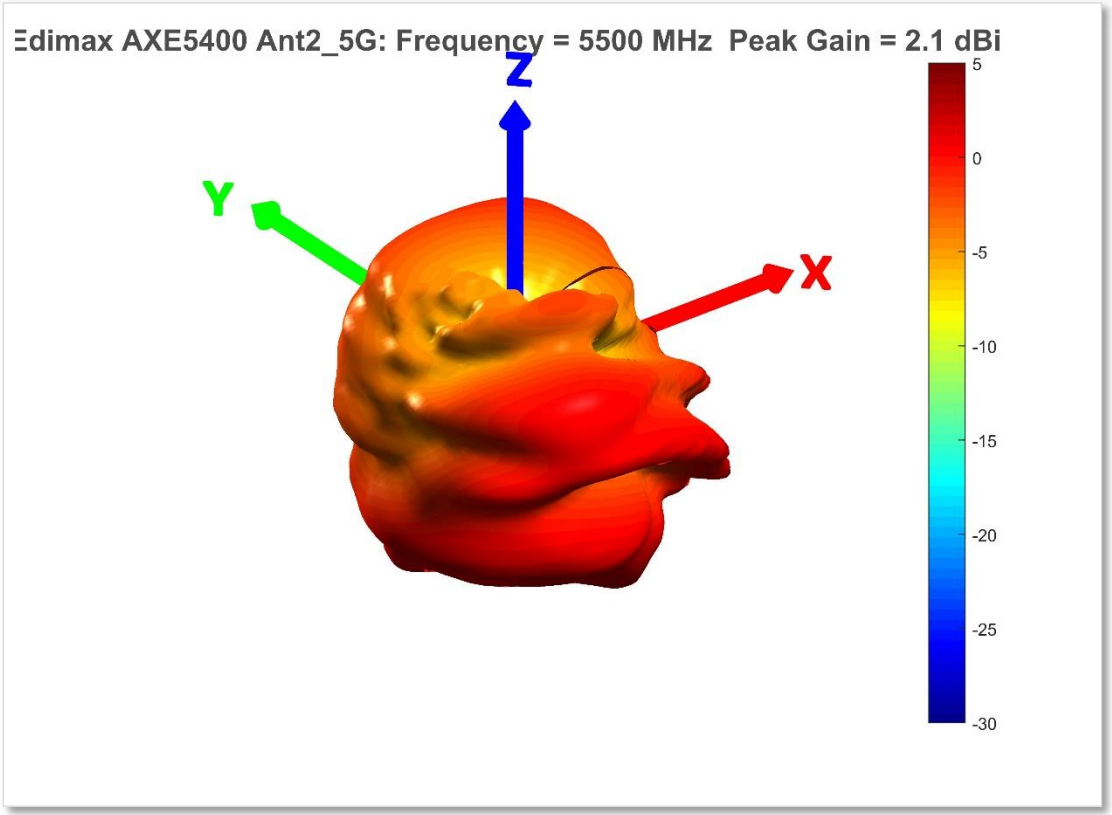
Front to Back (YZ)

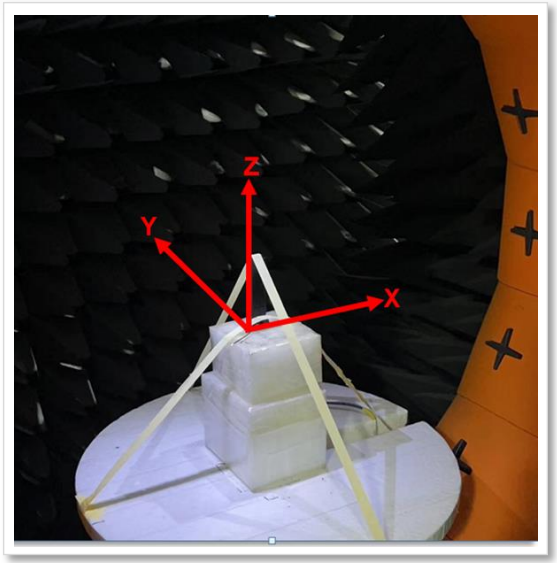
Total Gain 3D Pattern: Ant2_2G4 at 2440MHz





Total Gain 3D Pattern: Ant2_5G at 5500MHz





Total Gain 3D Pattern: Ant2_6G at 6500MHz