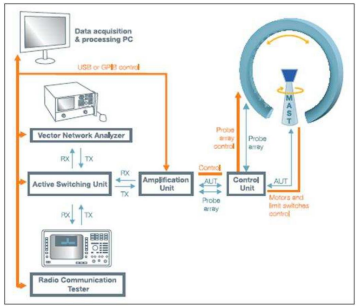
Introduction

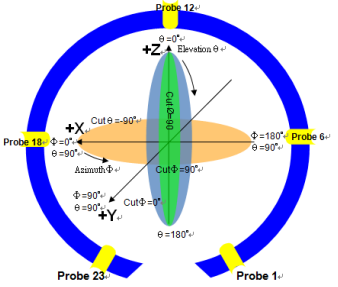
- This report provides Sub GHz Ant & wi-fi Ant passive measurement results which include:
  - Antenna Gain
  - 1D Radiation Pattern
  - 2D Heat Map
  - 3D Spherical

Antenna Vendor Info & Measurement Setup

- Antenna Vendor: Proprietary Design
- Test Date: 20240108
- Test Engineer :Joel Kuo
- Measurement Setup:
  - Reflection Coefficient Measurement:
    1. Network Analyzer (Keysight Agilent E5071C)
    2. Setup:
       -calibrate the Network Analyzer by one port calibration using 85033E calibration kit.
       -connect the antenna under test to the Network Analyzer.

  - Pattern & Gain measurement:
    1. Satimo chamber (SG24)
    2. Satimo program (wave studio)
    3. system overview :

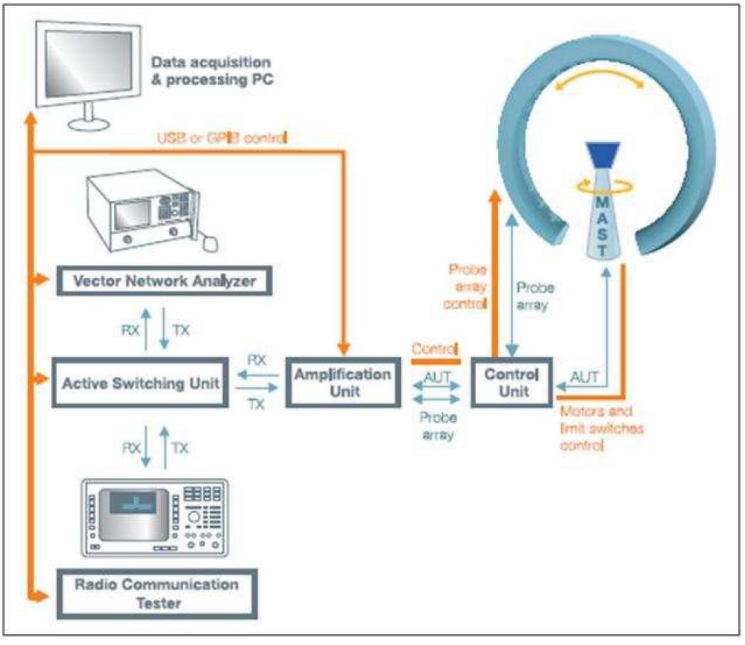




  - Test Item
    1. Antenna passive test 400MHz~6GHz

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
OTA Chamber	Satimo SG24	MVG/ HKG0147S	2023/09/15	2024/09/16
Network Analyzer	Keysight E5071C	MY46212481	2023/5/15	2024/5/16

Test Procedure



1. Place the device to be tested on the fixture and align it with the center of the chamber.
2. Connect the antenna cable to the RF connector of the chamber.
3. Use the SW to configure parameters (antenna name, frequency points, measurement angles, antenna dimension), and then run the test SW (wave studio).
4. By phi from 0° to 360° and theta from 0° to 180° with a step size of 2 degrees, get the 3D data, including efficiency, peak gain, 2D and 3D radiation patterns.
5. This is far field test for antenna verification.
6. This is passive measurement, which means the device is off and not in any operating mode.

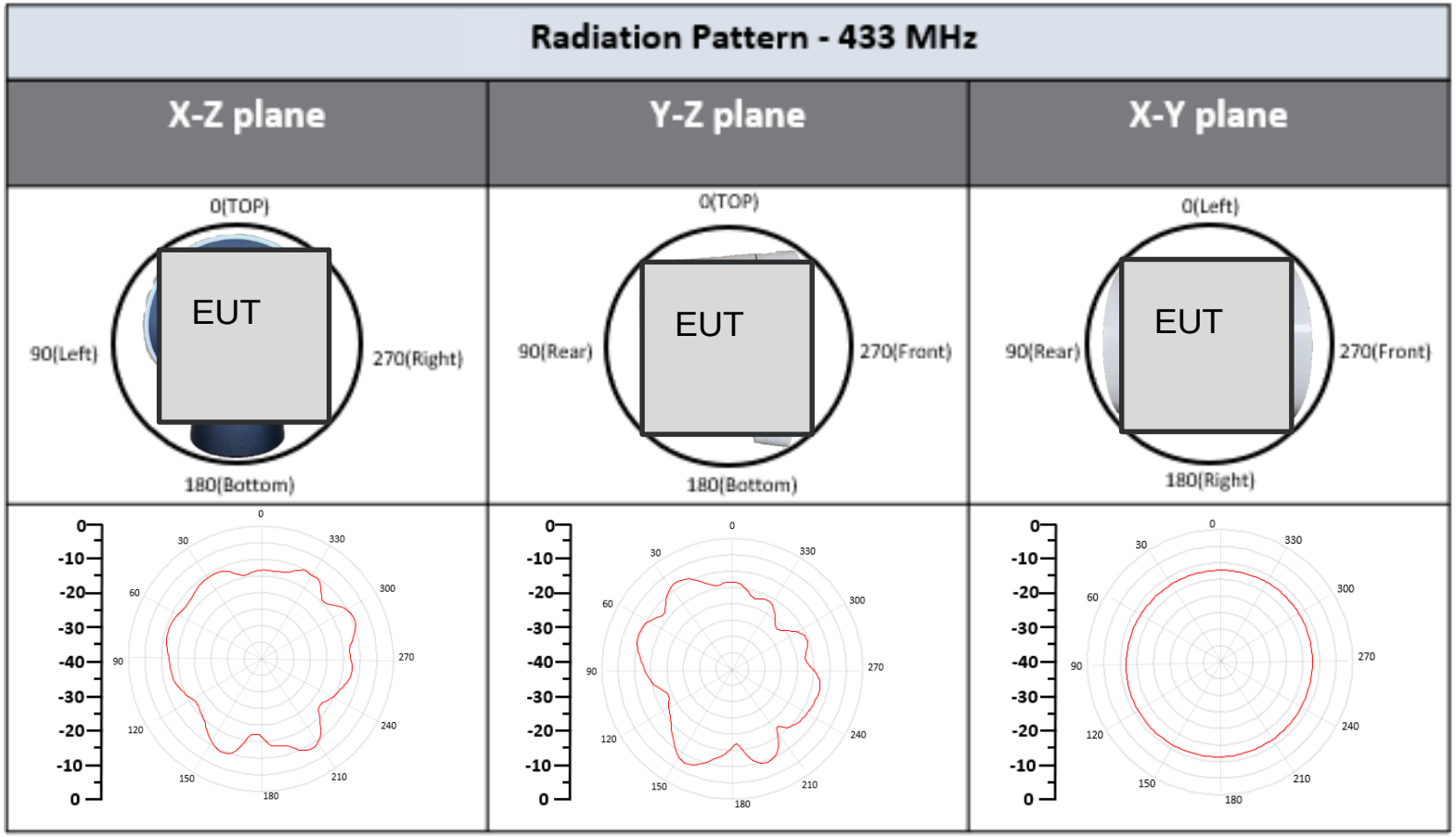
Antenna

Antenna	
Wireless Function	■ Wi-Fi 2.4G antenna*2 ■Sub-GHz antenna*1
Antenna type	■2.4G FPC Ant(Dipole type)*2 ■Sub GHz FPC Ant(loop Type)*1
Measurement data	
Peak Gain	■ Wi-Fi_L @2.43 dBi ■ Wi-Fi_R @2.98 dBi ■ Sub-GHz @-6.60 dBi

Measurement data

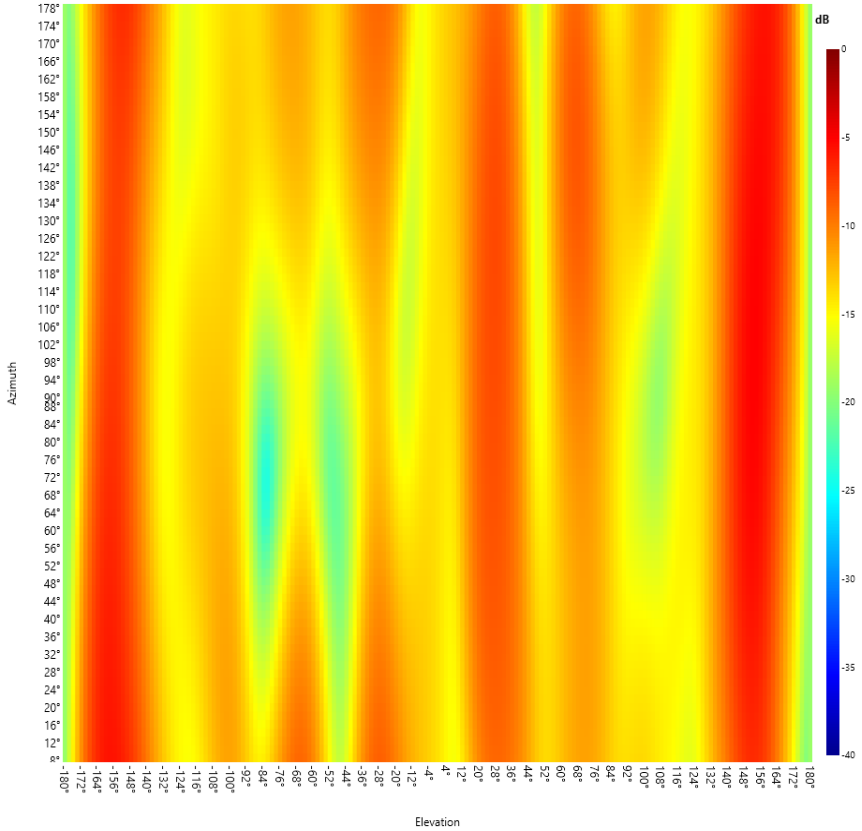
1D radiation pattern : **Sub GHz Antenna**

	XZ	YZ	XY
0°	Top	Top	Left
90°	Left	Rear	Rear
180°	Bottom	Bottom	Right
270°	Right	Front	Front

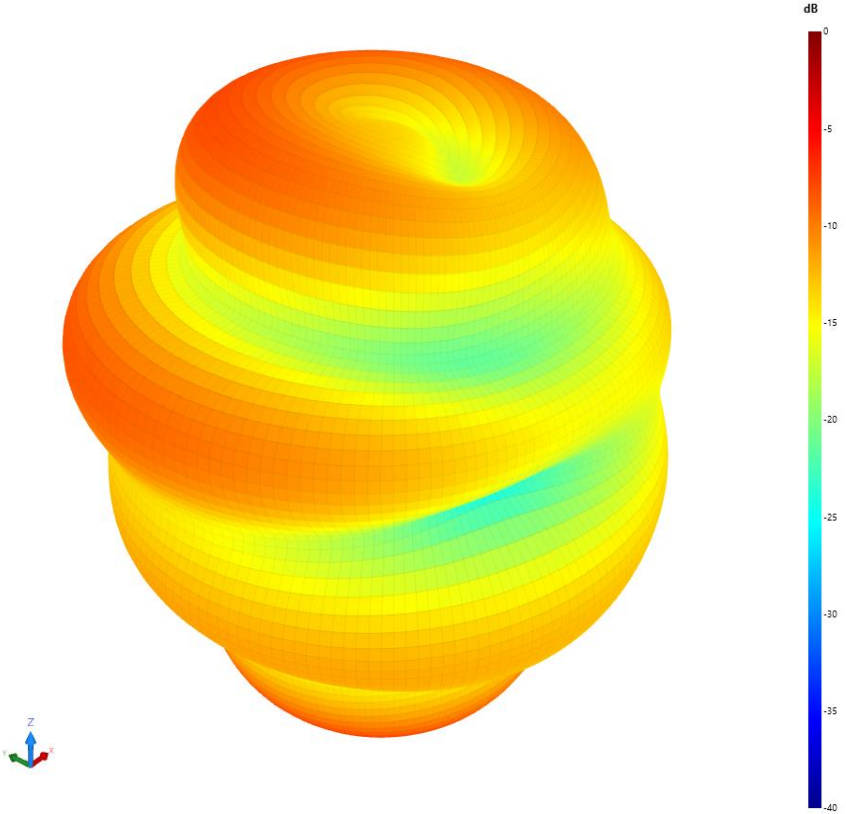


Measurement data

2D Heat map & 3D Spherical : Sub GHz Antenna



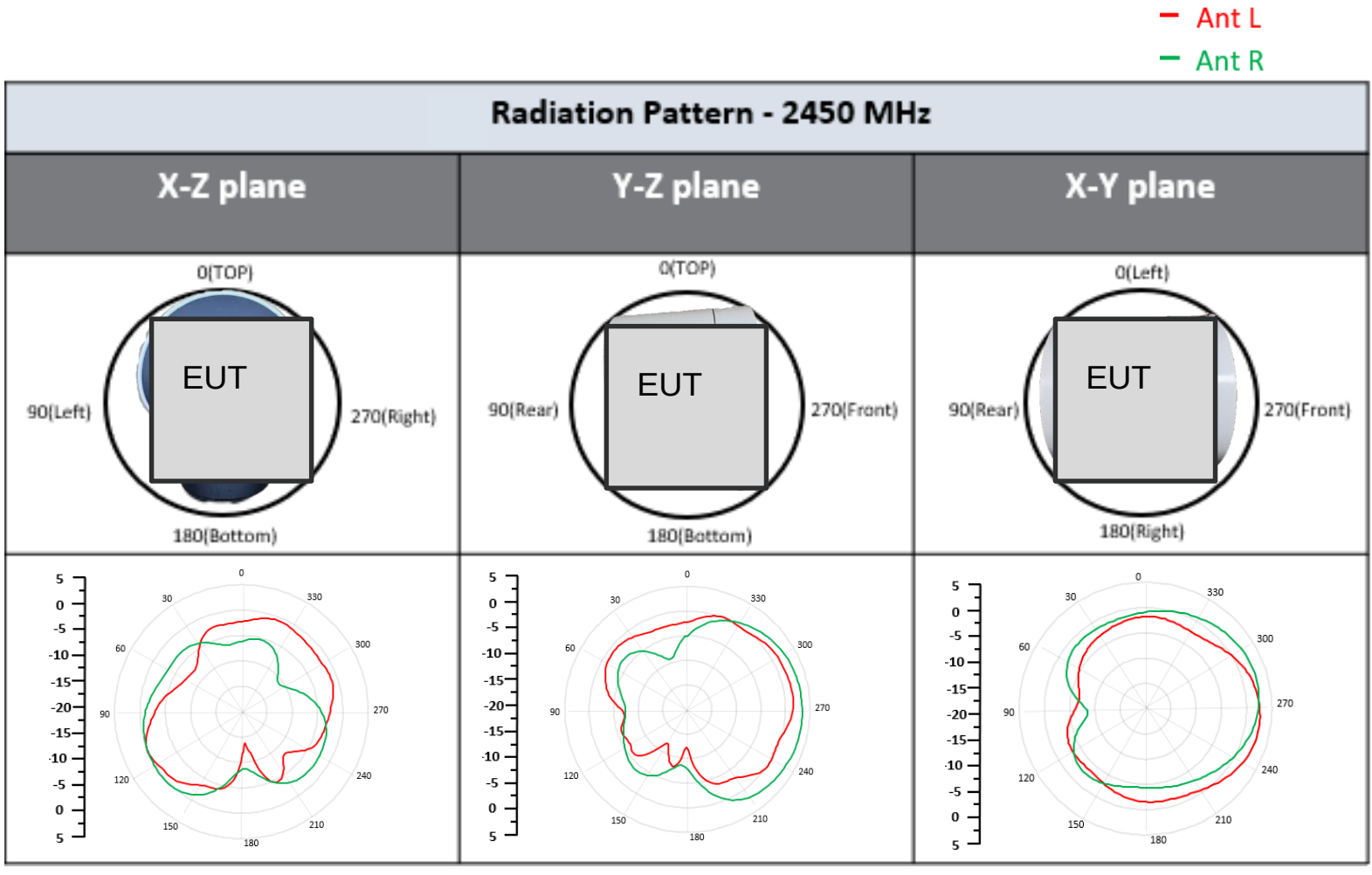
2D Heat map



3D Spherical

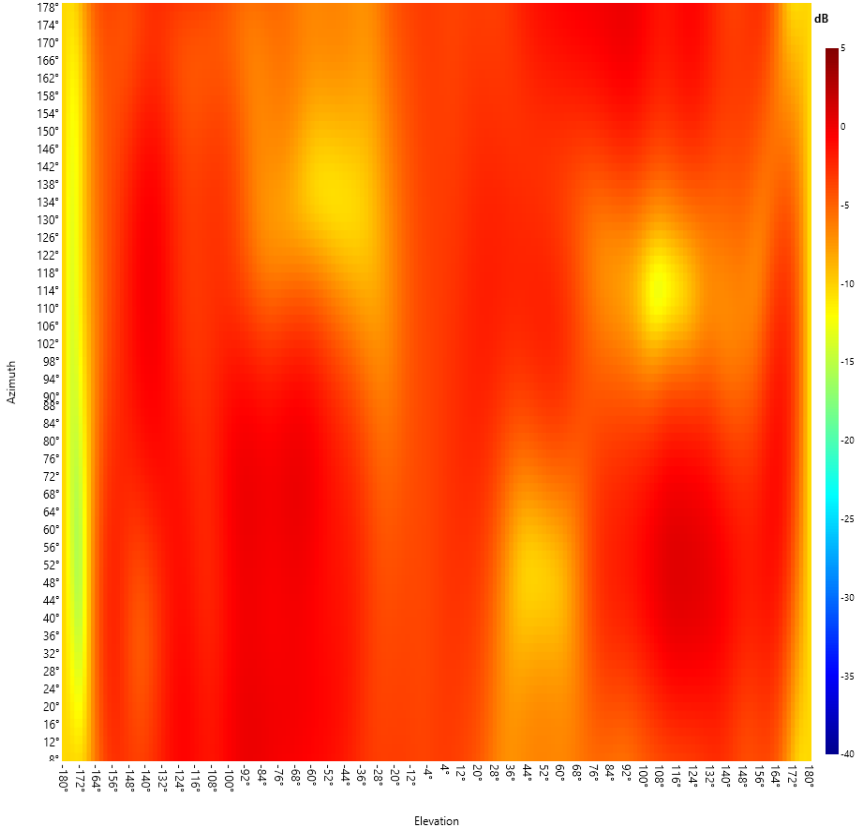
Measurement data

	XZ	YZ	XY
0°	Top	Top	Left
90°	Left	Rear	Rear
180°	Bottom	Bottom	Right
270°	Right	Front	Front

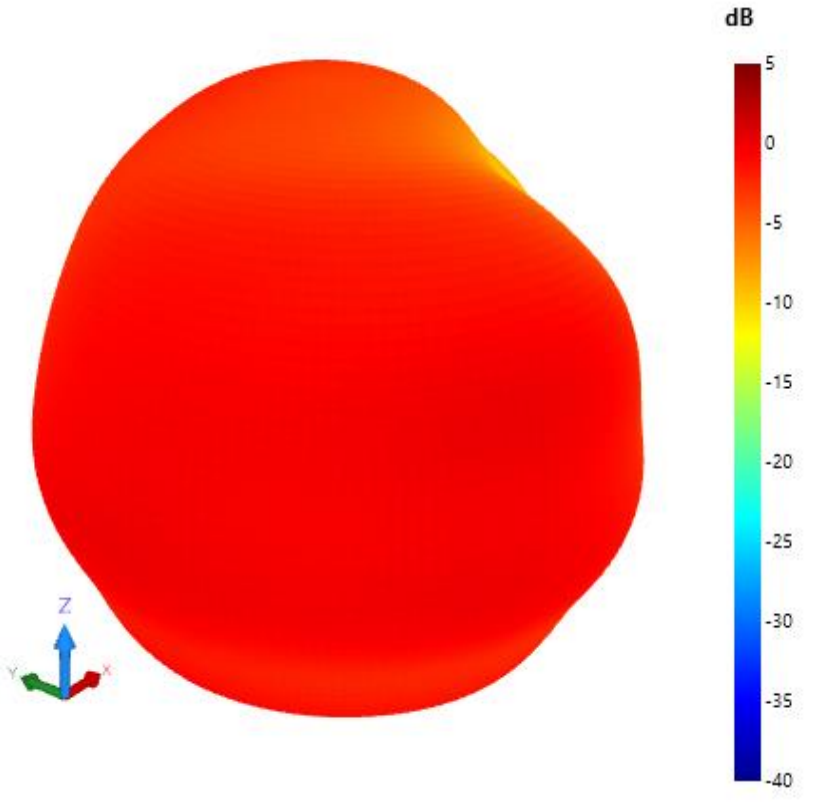


Measurement data

2D Heat map & 3D Spherical : **Wi-Fi Antenna _ Left**



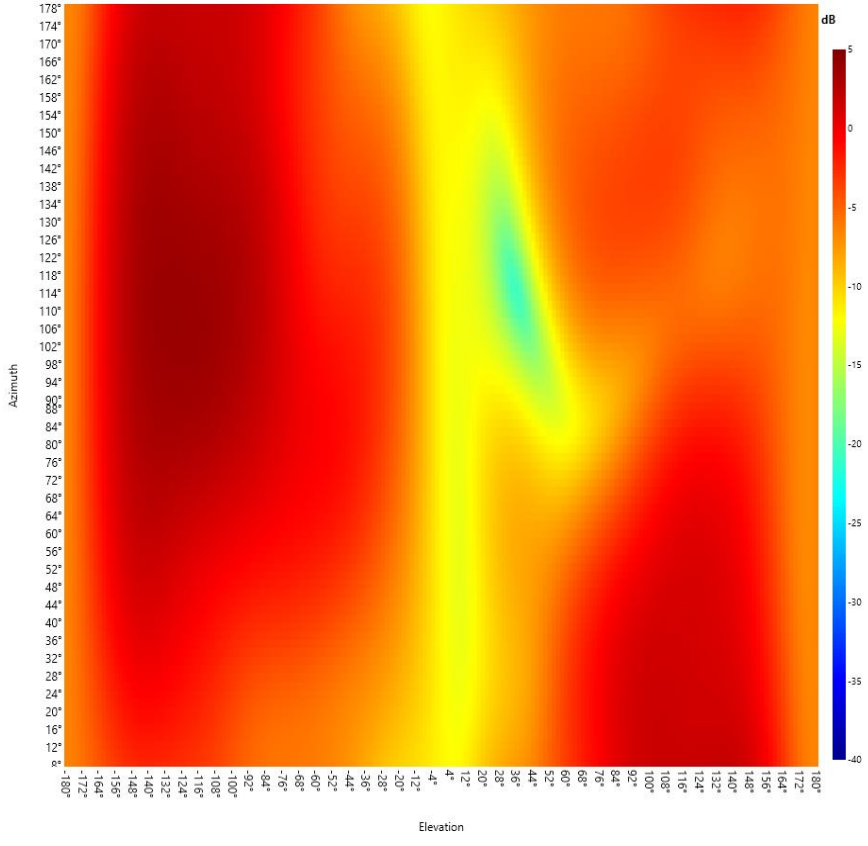
2D Heat map



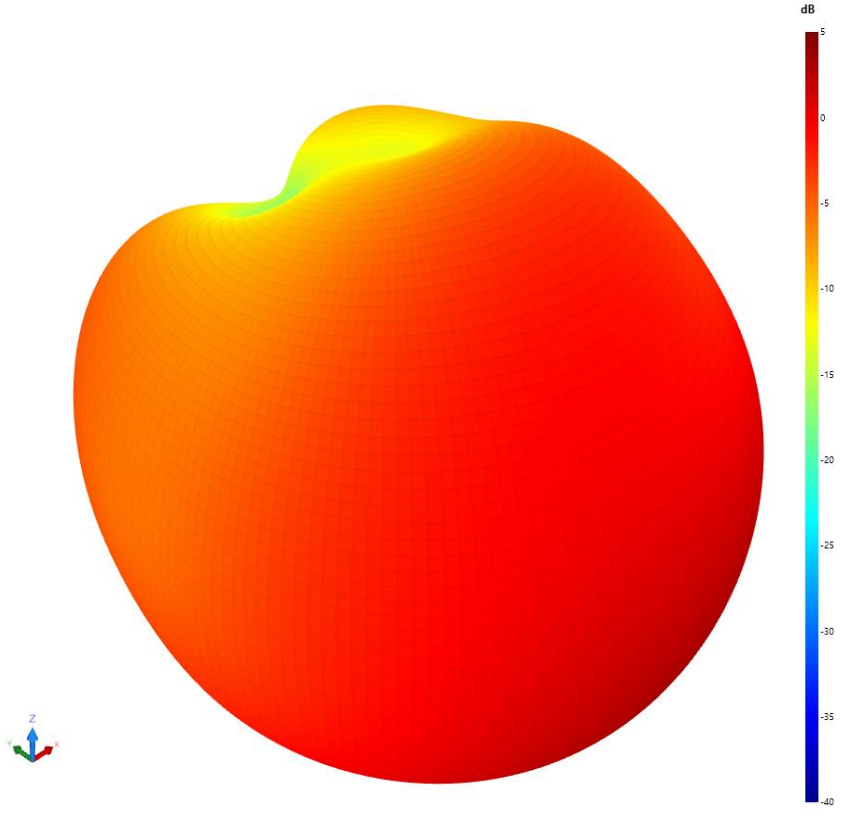
3D Spherical

Measurement data

2D Heat map & 3D Spherical : **Wi-Fi Antenna _ Right**



2D Heat map



3D Spherical