

LYNwave Technology

Antenna & Thermal solution provider

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Antenna Measurement Information

- Test Date : 2025-12-30
- Test Engineer : Zino
- Measurement System: StarLab 10GHz version with OTA (Satimo)

Measurement setup:

- Pattern & Gain measurement
 1. MVG chamber: StarLab 10GHz version with OTA (Satimo)
 2. MVG program (WaveStudio)
 3. System overview
- Test item
 1. Antenna passive test: 600MHz~10GHz

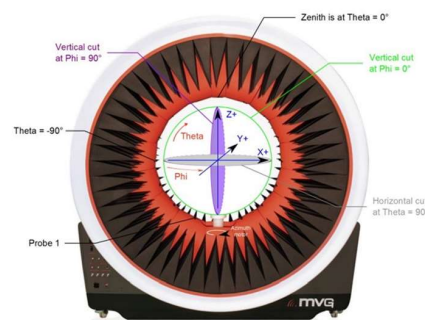


Figure 3.12: StarLab spherical coordinate system

- Calibration Information

Description	Model No.	Serial #	Calibration Date	Calibration Until
Chamber	<u>StarLab</u>	NA	2025/11/22	2026/11/22
Network Analyzer	Keysight E5071C	NA	2025/10/01	2026/10/01

Antenna Placement:

No.	Function	Type	Material	Frequency(MHz)
Ant.1 (ALA25M-242AA4)	Wi-Fi Tri Band	PIFA	Metal	2400-2500 5150-5850 5925-7125
Ant.2 (ALA25M-242AA4)	Wi-Fi Tri Band	PIFA	Metal	2400-2500 5150-5850 5925-7125



S-Parameters



Coordinate Definition Equipment: Satimo

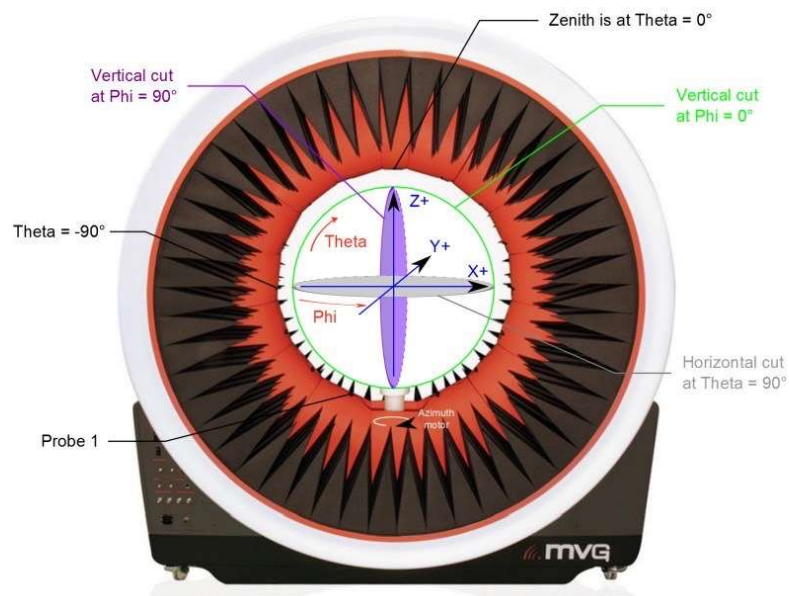


Figure 3.12: StarLab spherical coordinate system



Gain Table

2.4GHz	Frequency(MHz)	2400	2450	2483.5
Ant.1	Peak Gain(dBi)	-0.5	-0.6	-0.8
	Efficiency(%)	36	35	34
Ant.2	Peak Gain(dBi)	-3.4	-3.0	-3.0
	Efficiency(%)	20	20	22

5GHz	Frequency(MHz)	5200	5300	5600	5785
Ant.1	Peak Gain(dBi)	-3.4	-3.5	-2.7	-2.1
	Efficiency(%)	12	12	13	14
Ant.2	Peak Gain(dBi)	-1.3	-2.1	-3.2	-3.5
	Efficiency(%)	21	18	13	12

6GHz	Frequency(MHz)	6175	6475	6695	6995
Ant.1	Peak Gain(dBi)	-1.0	0.1	0.7	-1.6
	Efficiency(%)	21	31	36	24
Ant.2	Peak Gain(dBi)	-4.2	-4.0	-3.6	-1.8
	Efficiency(%)	11	12	13	18

Isolation Table – 2.4GHz (Wi-Fi Tri-Band)

Item	Worst mutual isolation (dB) 2.4GHz Band	
Antenna	Ant.1	Ant.2
Ant.1		-13.6
Ant.2		

Isolation Table – 5GHz (Wi-Fi Tri-Band)

Item	Worst mutual isolation (dB) 5GHz Band	
Antenna	Ant.1	Ant.2
Ant.1		-24.8
Ant.2		

Isolation Table – 6GHz (Wi-Fi Tri-Band)

Item	Worst mutual isolation (dB) 6GHz Band	
Antenna	Ant.1	Ant.2
Ant.1		-32.1
Ant.2		

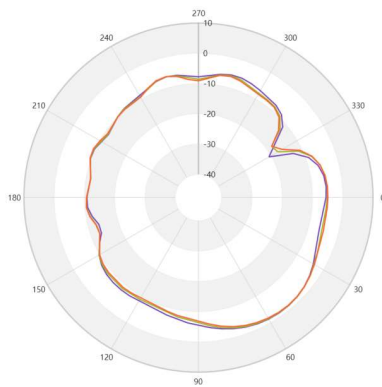
2D Radiation Pattern

Ant.1 (Wi-Fi Tri Band)

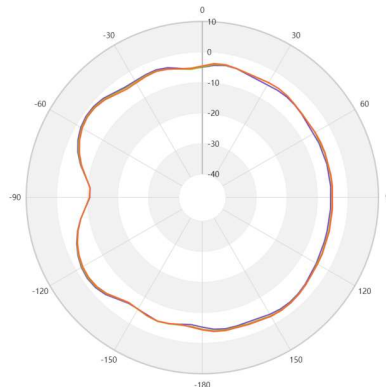
Frequency(MHz) : 2400-2483.5

Radiation Pattern :

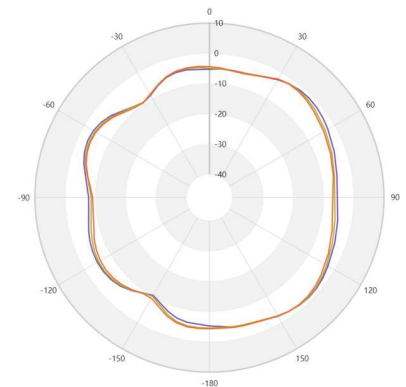
Azimuth Plane
theta = 90



Elevation Plane
phi = 0

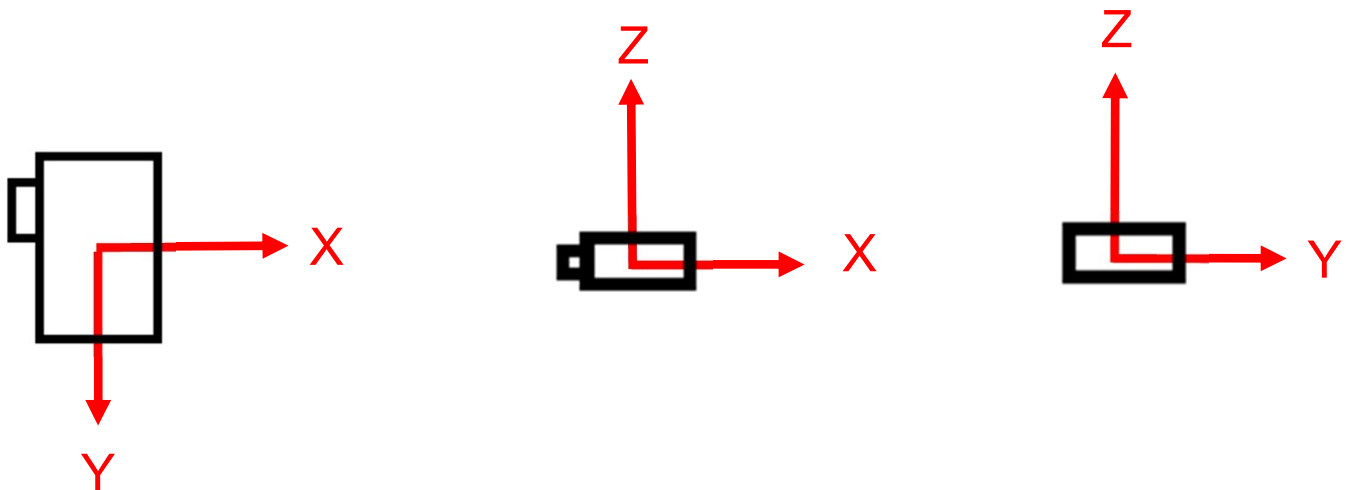


Elevation Plane
phi = 90



— 2400.00 MHz
— 2450.00 MHz
— 2483.50 MHz

Setup :



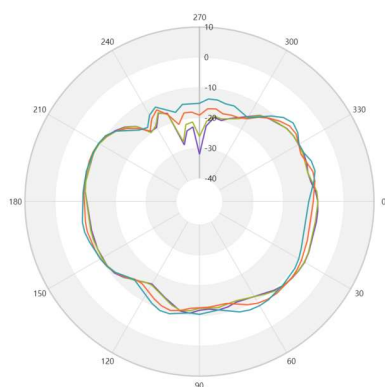
2D Radiation Pattern

Ant.1 (Wi-Fi Tri Band)

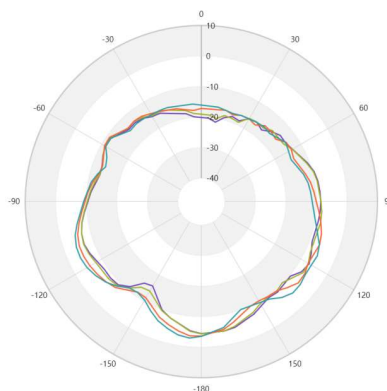
Frequency(MHz) : 5200-5785

Radiation Pattern :

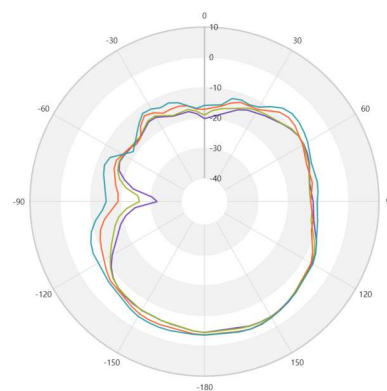
Azimuth Plane
theta = 90



Elevation Plane
phi = 0

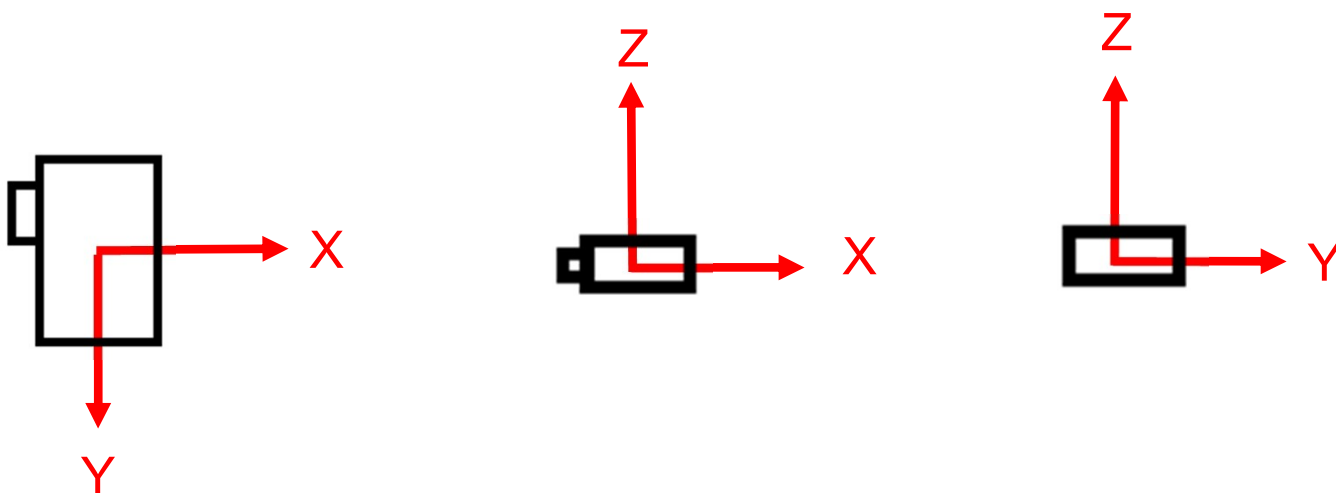


Elevation Plane
phi = 90



— 5200.00 MHz
— 5300.00 MHz
— 5600.00 MHz
— 5785.00 MHz

Setup :



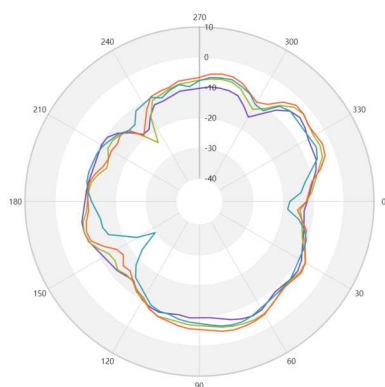
2D Radiation Pattern

Ant.1 (Wi-Fi Tri Band)

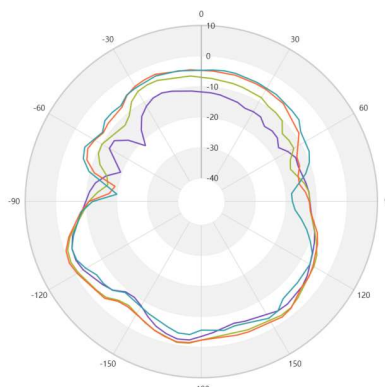
Frequency(MHz) : 6175-6995

Radiation Pattern :

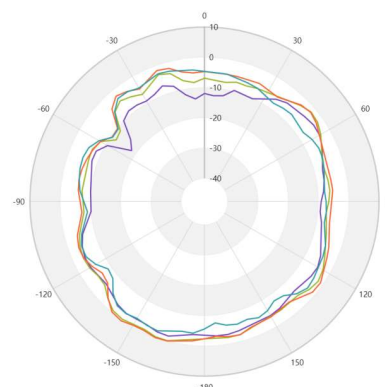
Azimuth Plane
theta = 90



Elevation Plane
phi = 0

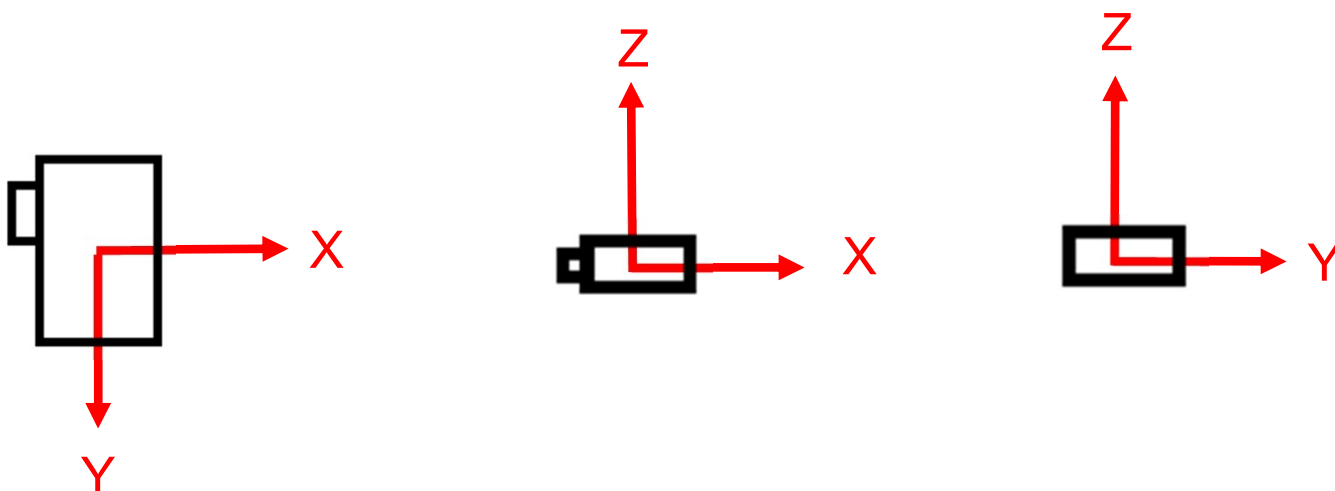


Elevation Plane
phi = 90



— 6175.00 MHz
— 6475.00 MHz
— 6695.00 MHz
— 6995.00 MHz

Setup :



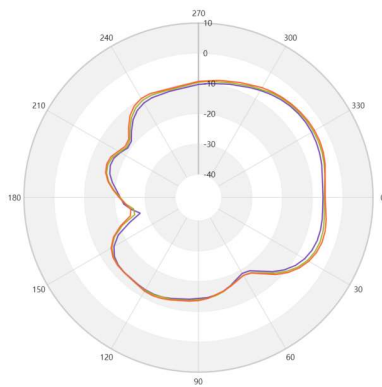
2D Radiation Pattern

Ant.2 (Wi-Fi Tri Band)

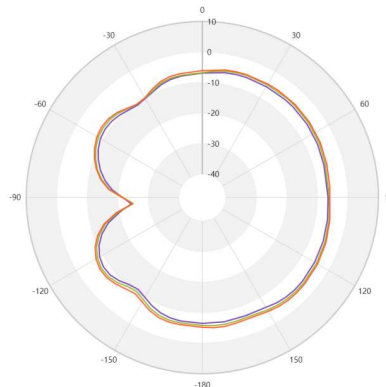
Frequency(MHz) : 2400-2483.5

Radiation Pattern :

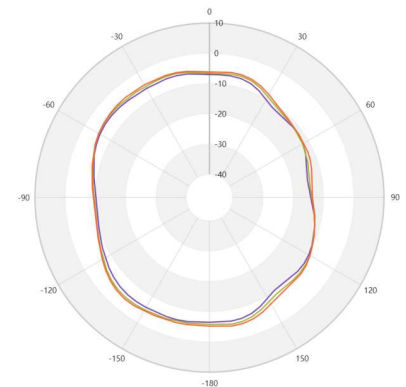
Azimuth Plane
theta = 90



Elevation Plane
phi = 0

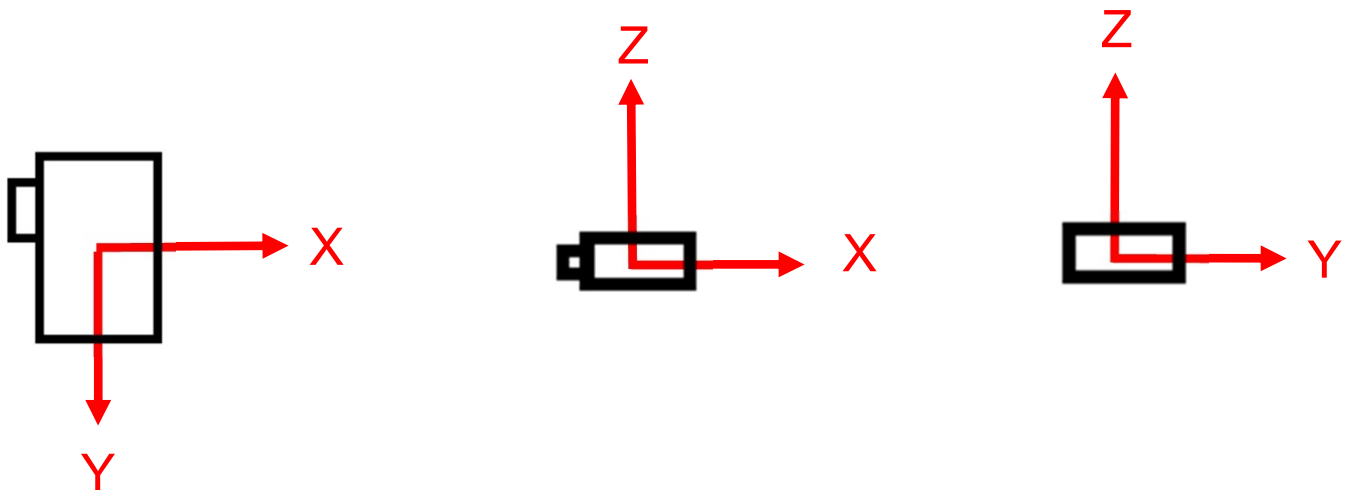


Elevation Plane
phi = 90



— 2400.00 MHz
— 2450.00 MHz
— 2483.50 MHz

Setup :



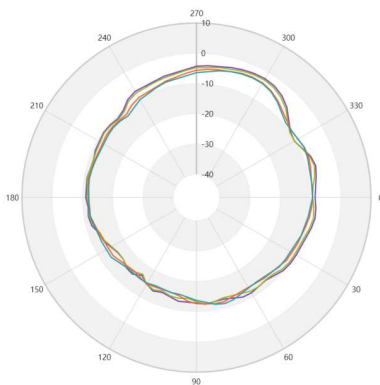
2D Radiation Pattern

Ant.2 (Wi-Fi Tri Band)

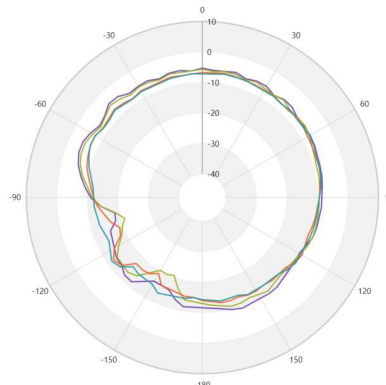
Frequency(MHz) : 5200-5785

Radiation Pattern :

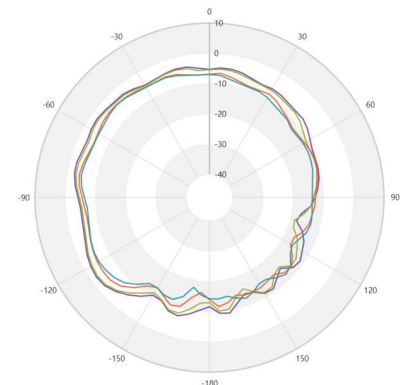
Azimuth Plane
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Elevation Plane
phi = 0

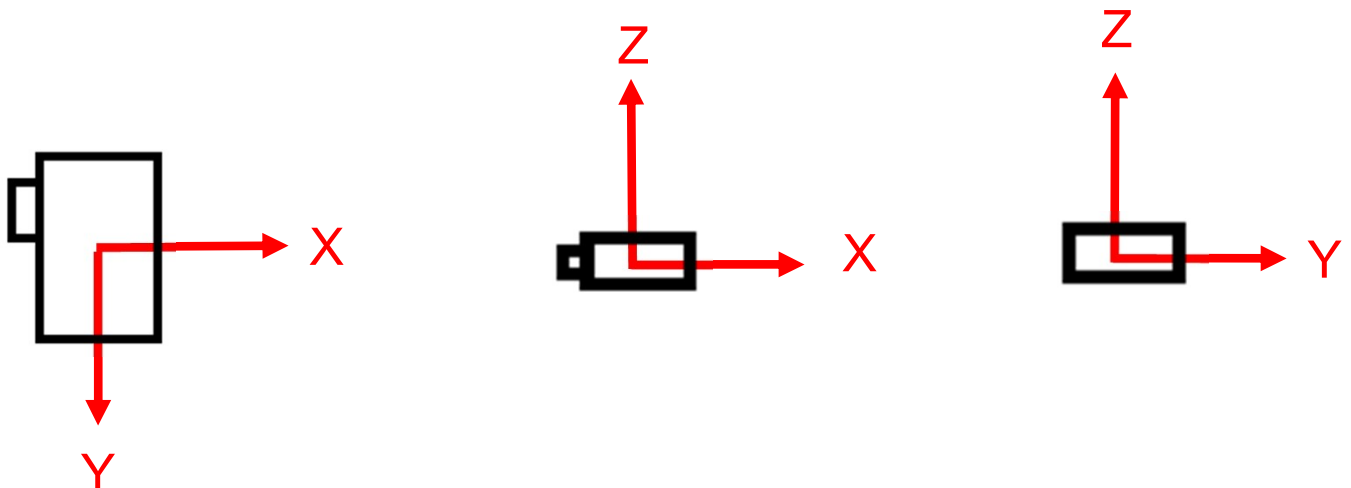


Elevation Plane
phi = 90



— 5200.00 MHz
— 5300.00 MHz
— 5600.00 MHz
— 5785.00 MHz

Setup :



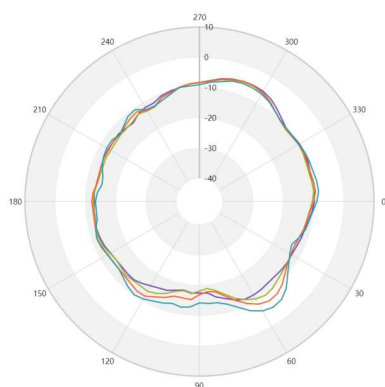
2D Radiation Pattern

Ant.2 (Wi-Fi Tri Band)

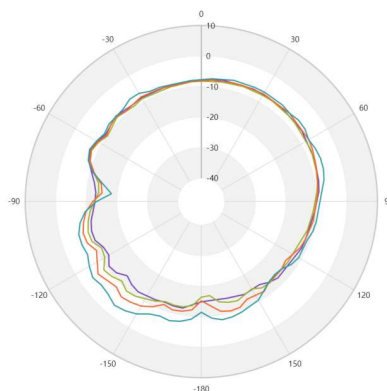
Frequency(MHz) : 6175-6995

Radiation Pattern :

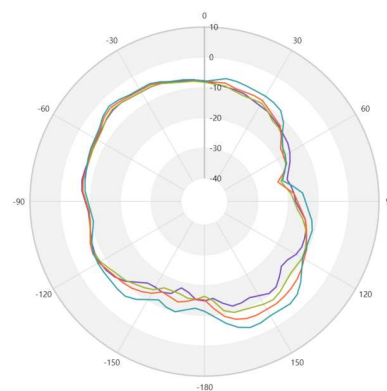
Azimuth Plane
theta = 90



Elevation Plane
phi = 0

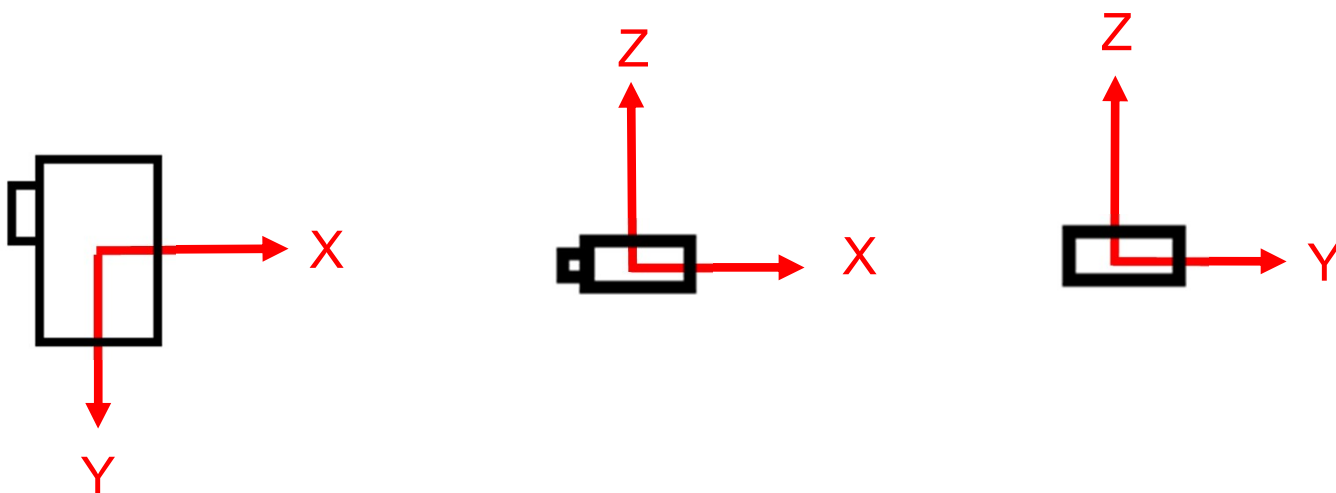


Elevation Plane
phi = 90



— 6175.00 MHz
— 6475.00 MHz
— 6695.00 MHz
— 6995.00 MHz

Setup :



Summary

Summary	Ant.1	Ant.2	Remark
Return Loss – 2.4GHz	< -14dB	< -3dB	
Efficiency – 2.4GHz	> 34%	> 20%	
Peak Gain – 2.4GHz	-0.8 – -0.5dBi	-3.4 – -3.0dBi	
Return Loss – 5GHz	< -5dB	< -2dB	
Efficiency – 5GHz	> 12%	> 12%	
Peak Gain – 5GHz	-3.5 – -2.1dBi	-3.5 – -1.3dBi	
Return Loss – 6GHz	< -7dB	< -2dB	
Efficiency – 6GHz	> 21%	> 11%	
Peak Gain – 6GHz	-1.6 – 0.7dBi	-4.2 – -1.8dBi	

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