LYNwave Technology

Antenna & Thermal solution provider

2025

www.lynwave.com

Antenna Field Test Report

Project Name: RT-AX50 GO

Model Name: Ant.1 : ALX23M-222AAA

Ant.2 : ALX23M-222AA9

Type: PIFA

Date	Owner	Check	Revision	History
2024/02/16	Peter	Michael	v0.1	1. Antenna sample measurement
2024/02/29	Peter	Michael	v0.1	1. Update 3D radiation pattern
2025/02/20	Jason	Michael	v0.2	1. Antenna passive measurement using Satimo Lab
2025/02/25	Jason	Michael	v0.3	1. Antenna passive measurement using Satimo Lab
2025/08/20	Jason	Michael	v0.3	1. Add antenna information sources, θ and φ angles, and radiation patterns on the plane of maximum gain.

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Antenna Placement

No.	Function	Material	Dimension(mm)	Frequency(MHz)	Remark
Ant.1	Wi-Fi Dual-Band	Metal	25.9*1.4*12.9mm	2400 – 2500 5150 – 5850	
Ant.2	Wi-Fi Dual-Band	Metal	28.7*1.4*12.9mm	2400 – 2500 5150 – 5850	

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Return loss – Ant.1~Ant.2 (Wi-Fi Dual-band)

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Coordinate Definition
Equipment: Satimo - STARLAB

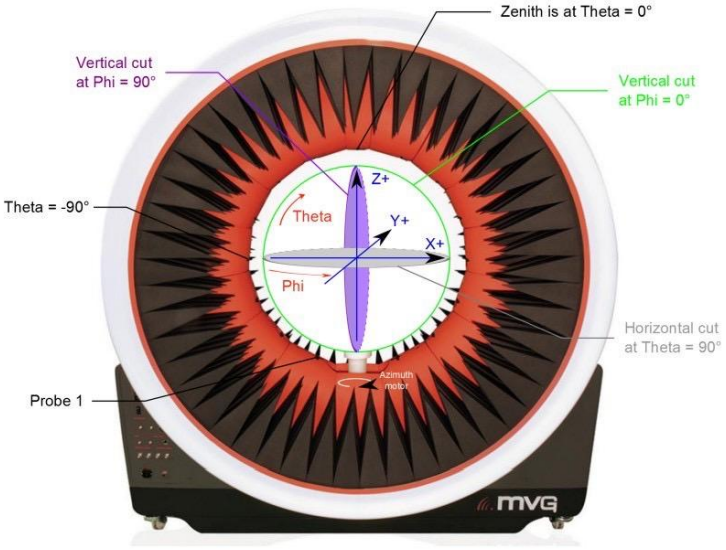

Figure 3.12: StarLab spherical coordinate system

Gain Table

No.	Frequency(MHz)	2400	2450	2500	5150	5550	5850
Ant.1	Peak Gain(dBi)	2.0	2.3	1.9	4.8	4.4	4.0
	Efficiency(%)	60	60	61	77	76	74
Ant.2	Peak Gain(dBi)	0.8	1.6	1.9	4.0	4.1	3.3
	Efficiency(%)	63	67	70	78	76	69

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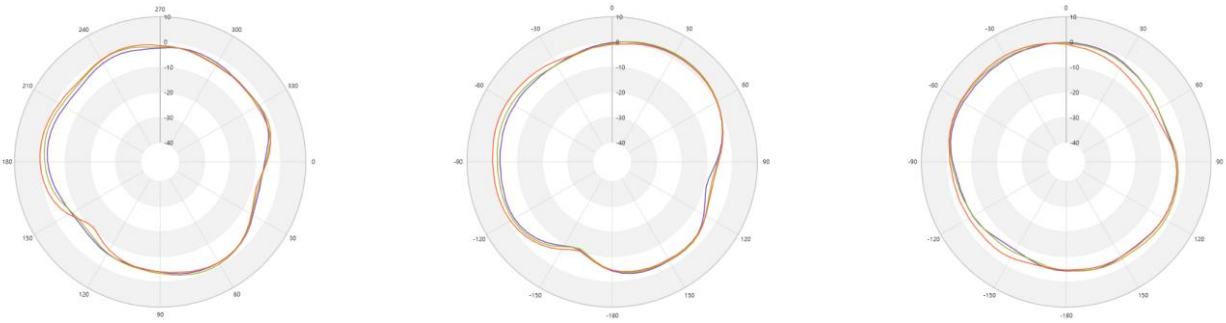
2D Radiation Pattern
Ant.1 (Wi-Fi Dual-band)
Frequency(MHz) : 2400-2500

Radiation Pattern :

Azimuth Plane theta = 90	Elevation Plane phi = 0	Elevation Plane phi = 90



2400.00 MHz
2450.00 MHz
2500.00 MHz

Setup :

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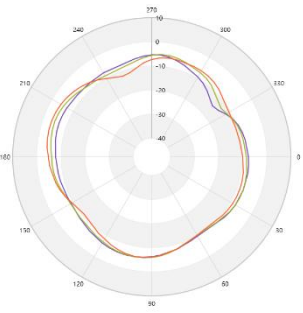
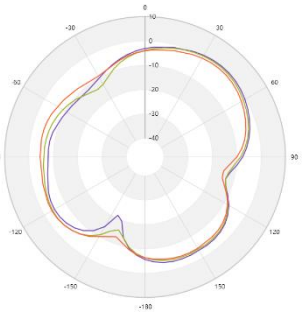
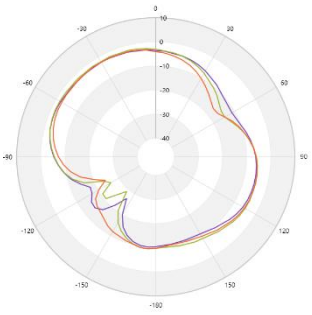
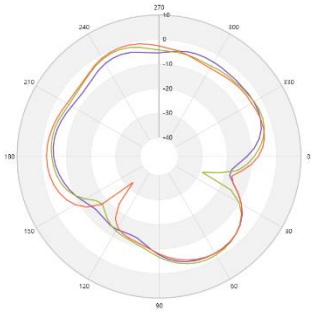
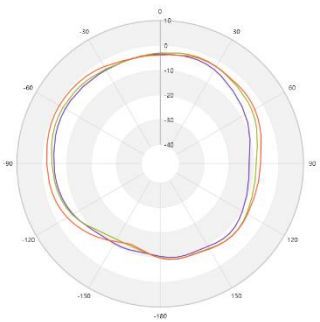
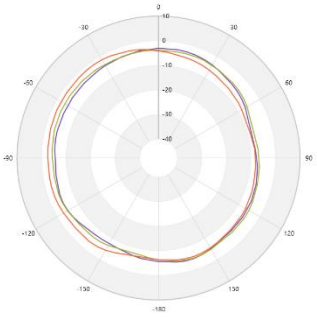
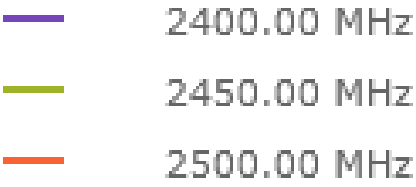
2D Radiation Pattern
Ant.1 (Wi-Fi Dual-band)
Frequency(MHz) : 2400-2500

Radiation Pattern :

	Azimuth Plane theta = 90	Elevation Plane phi = 0	Elevation Plane phi = 90
Eθ			
EΦ			



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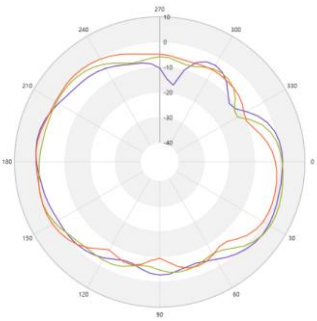
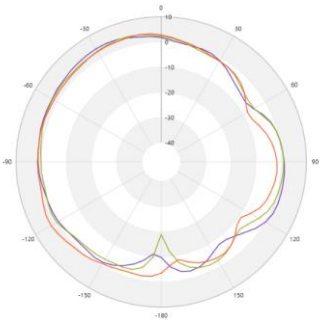
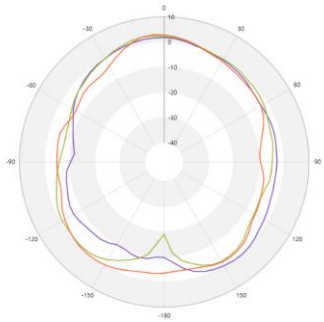
2D Radiation Pattern
Ant.1 (Wi-Fi Dual-band)
Frequency(MHz) : 5150-5850

Radiation Pattern :

Azimuth Plane theta = 90	Elevation Plane phi = 0	Elevation Plane phi = 90







5150.00 MHz

5550.00 MHz

5850.00 MHz

Setup :

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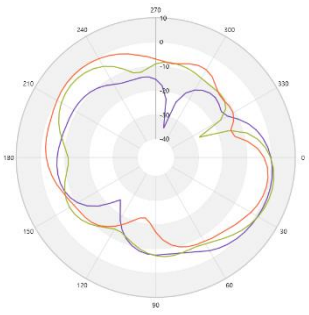
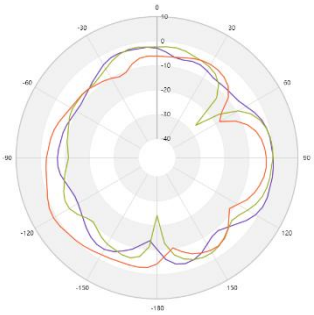
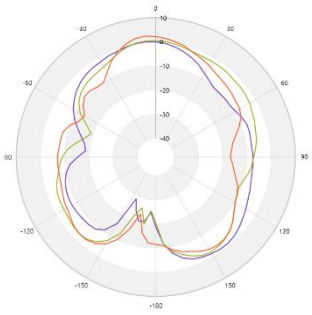
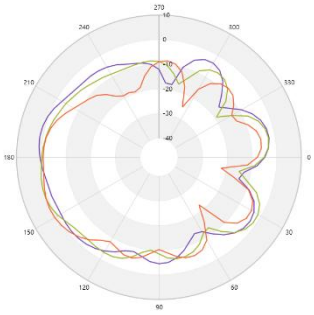
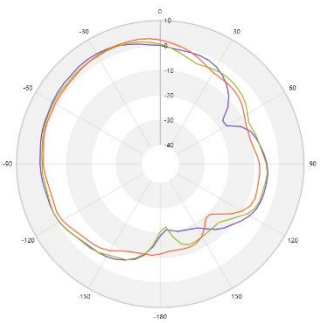
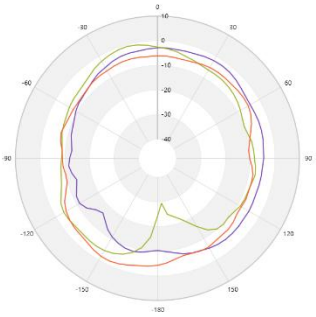
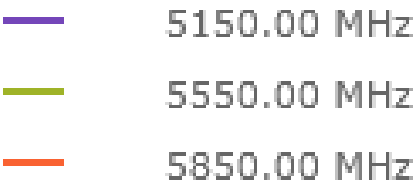
2D Radiation Pattern
Ant.1 (Wi-Fi Dual-band)
Frequency(MHz) : 5150-5850

Radiation Pattern :

	Azimuth Plane theta = 90	Elevation Plane phi = 0	Elevation Plane phi = 90
Eθ			
EΦ			



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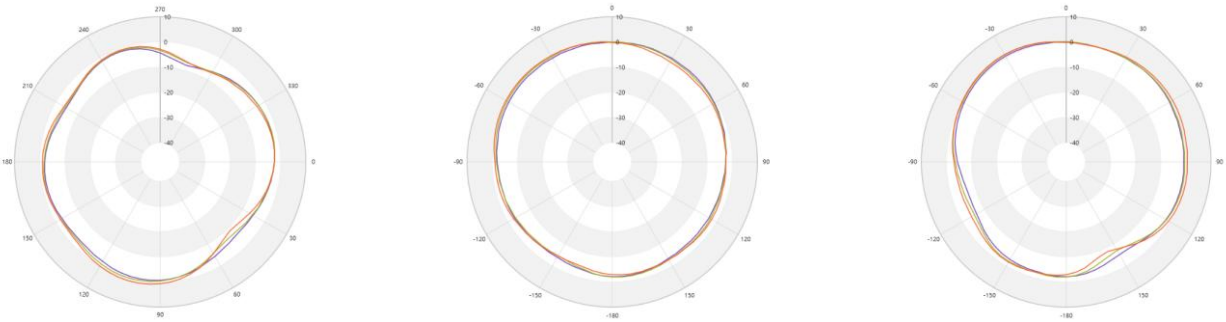
2D Radiation Pattern
Ant.2 (Wi-Fi Dual-band)
Frequency(MHz) : 2400-2500

Radiation Pattern :

Azimuth Plane theta = 90	Elevation Plane phi = 0	Elevation Plane phi = 90



2400.00 MHz
2450.00 MHz
2500.00 MHz

Setup :

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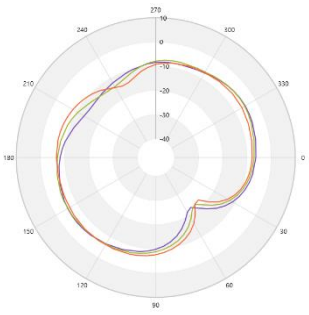
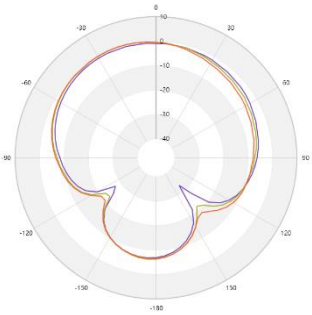
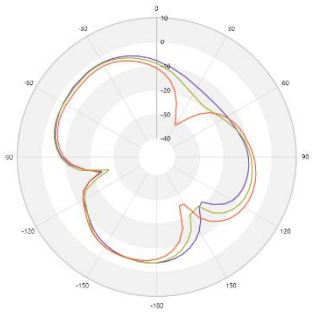
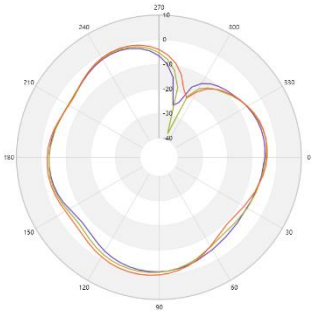
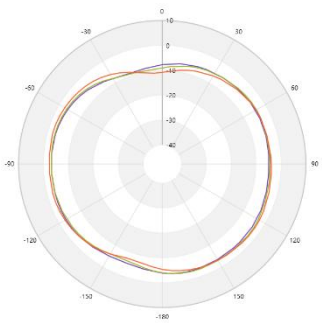
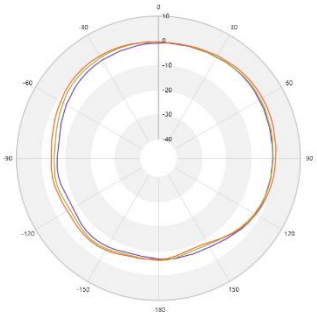
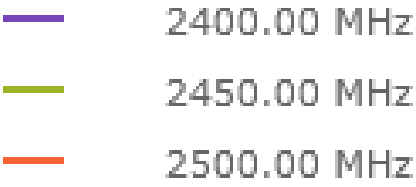
2D Radiation Pattern
Ant.2 (Wi-Fi Dual-band)
Frequency(MHz) : 2400-2500

Radiation Pattern :

	Azimuth Plane theta = 90	Elevation Plane phi = 0	Elevation Plane phi = 90
Eθ			
EΦ			



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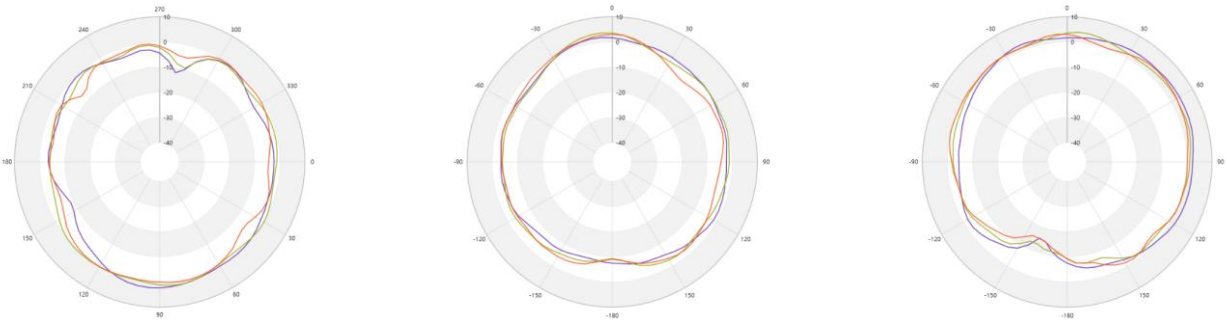
2D Radiation Pattern
Ant.2 (Wi-Fi Dual-band)
Frequency(MHz) : 5150-5850

Radiation Pattern :

Azimuth Plane theta = 90	Elevation Plane phi = 0	Elevation Plane phi = 90



5150.00 MHz
5550.00 MHz
5850.00 MHz

Setup :

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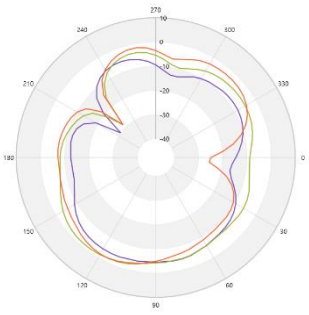
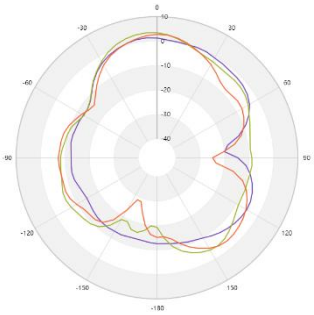
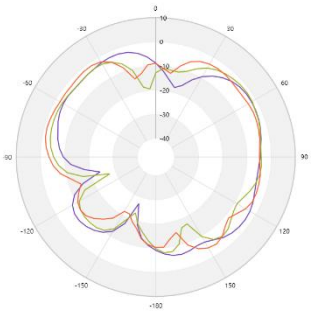
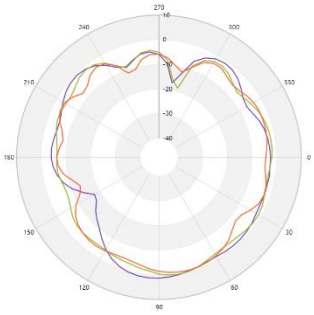
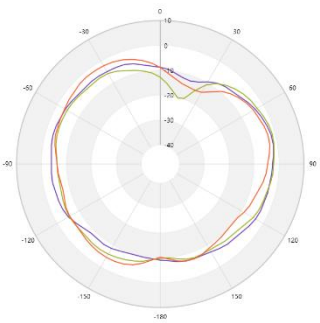
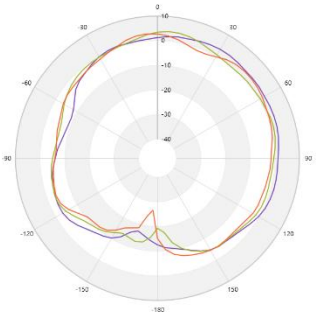
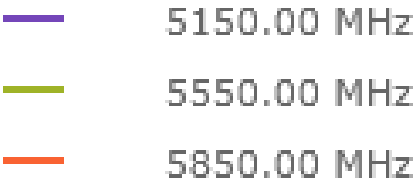
2D Radiation Pattern
Ant.2 (Wi-Fi Dual-band)
Frequency(MHz) : 5150-5850

Radiation Pattern :

	Azimuth Plane theta = 90	Elevation Plane phi = 0	Elevation Plane phi = 90
Eθ			
EΦ			



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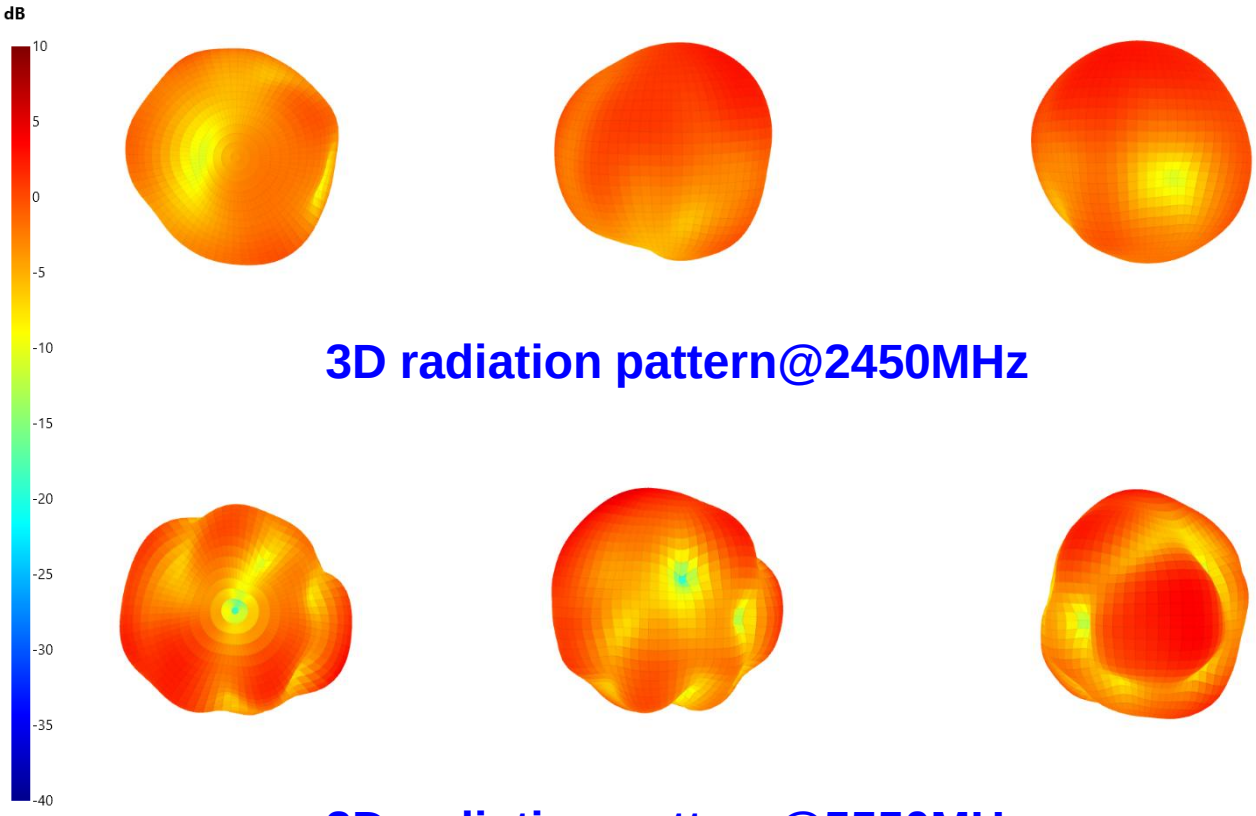
Ant.1_3D Radiation Pattern
Frequency(MHz) : 2450&5550

Radiation Pattern :

Azimuth Plane Theta = 90	Elevation Plane phi = 0	Elevation Plane phi = 90



3D radiation pattern@2450MHz

3D radiation pattern@5550MHz

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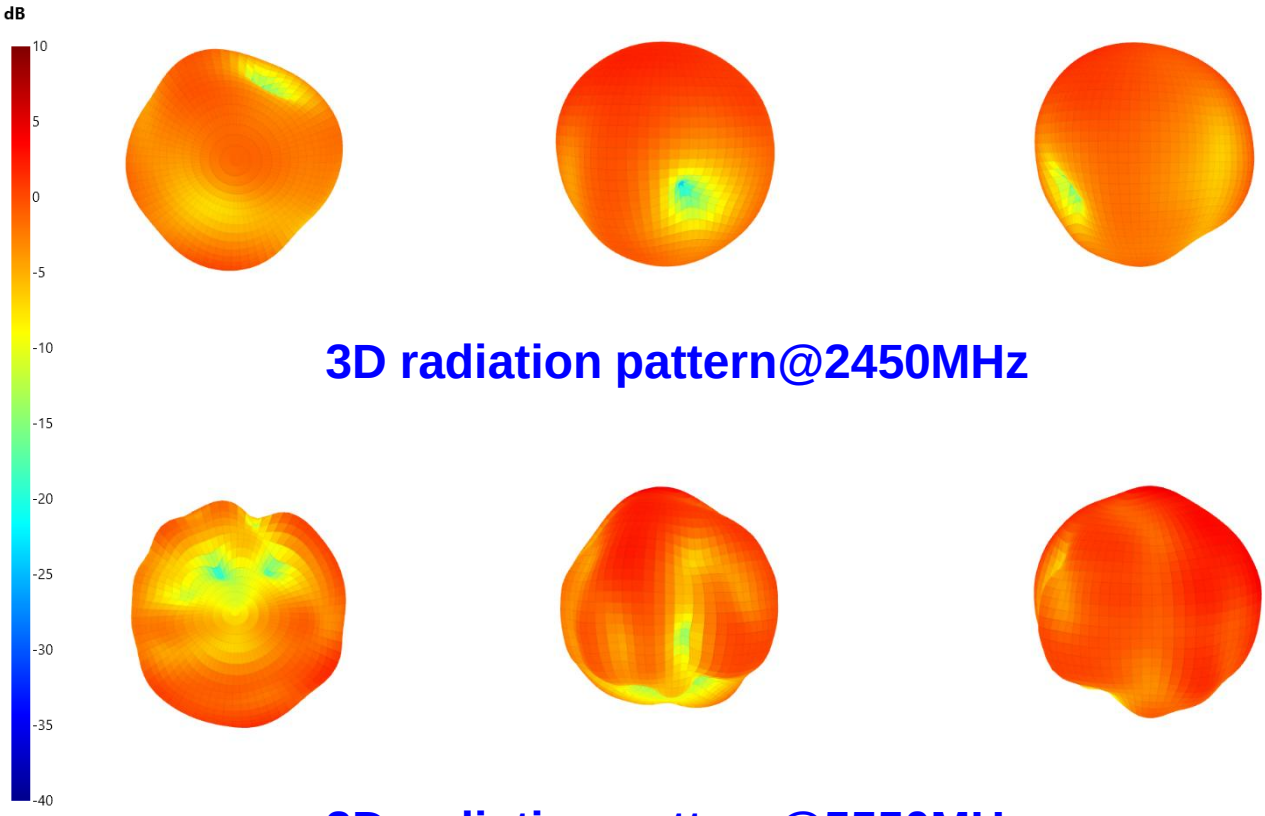
Ant.2_3D Radiation Pattern
Frequency(MHz) : 2450&5550

Radiation Pattern :

Azimuth Plane Theta = 90	Elevation Plane phi = 0	Elevation Plane phi = 90



3D radiation pattern@2450MHz

3D radiation pattern@5550MHz

Setup :

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Summary

- The antenna tested is all good.

Summary	Ant.1	Ant.2	Remark
Return Loss – 2.4GHz	< -10dB	< -10dB	
Return Loss – 5GHz	< -10dB	< -10dB	
Efficiency – 2.4GHz	> 60%	> 60%	
Efficiency – 5GHz	> 70%	> 65%	
Peak Gain – 2.4GHz	1.9 – 2.3dBi	0.8 – 1.9dBi	
Peak Gain – 5GHz	4.0 – 4.8dBi	3.3 – 4.1dBi	

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