LYNwave Technology

Antenna & Thermal solution provider

2025

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Antenna Field Test Report

Company: Edimax

Project Name: GW-8476FAX(Firewalla)

Model Name:

Application:

Mounting Type: Desktop

Date	Owner	Check	Revision	History
2025/07/29	Jason	Michael	v0.1	1. Antenna sample measurement
2025/09/11	Jason	Michael	v0.2	1. Antenna sample measurement
2025/09/17	Jason	Michael	v0.3	1. Antenna sample measurement
2025/11/10	Jason	Michael	v0.4	1. Antenna sample measurement

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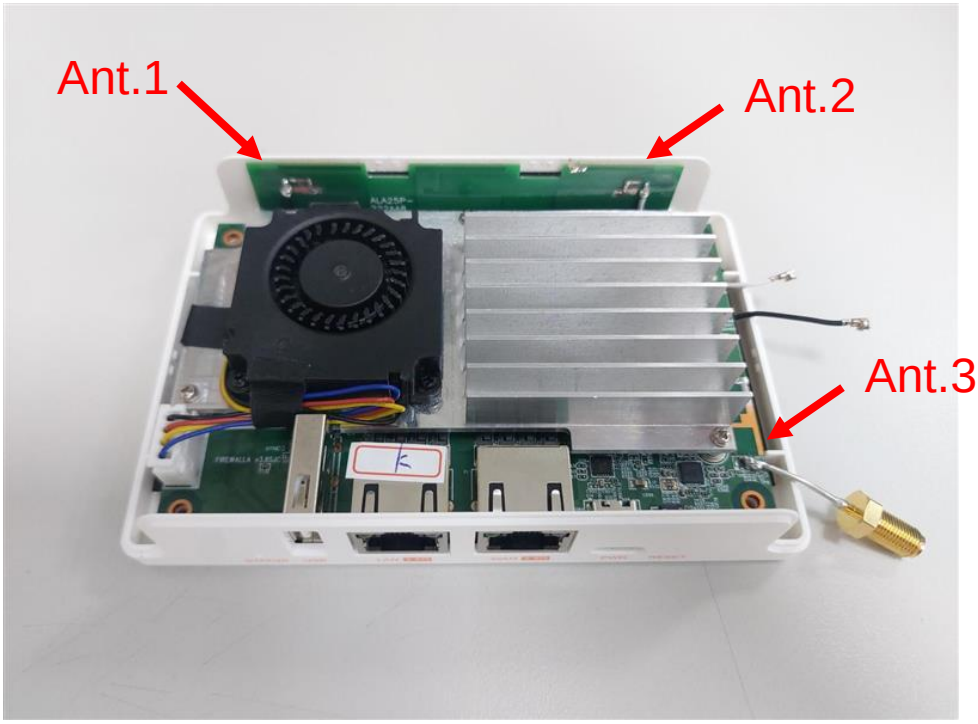
Antenna Placement

No.	Function	Material	Dimension(mm)	Frequency(MHz)	Remark
Ant.1	Wi-Fi Dual-Band	PCB	96*22.1*0.6	2400 – 2500 5150 – 5850	
Ant.2	Wi-Fi Dual-Band	PCB	96*22.1*0.6	2400 – 2500 5150 – 5850	
Ant.3	BT	PCB	TBD	2400 – 2500	



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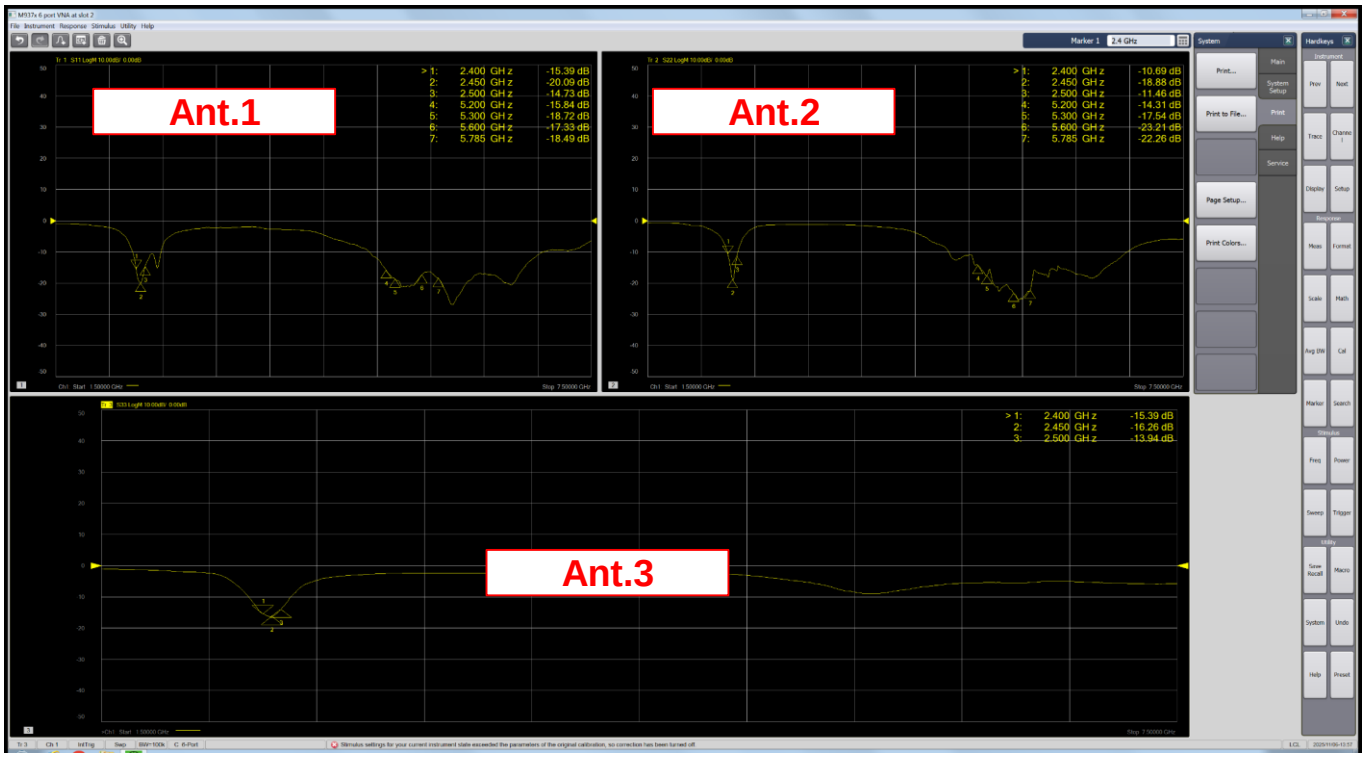
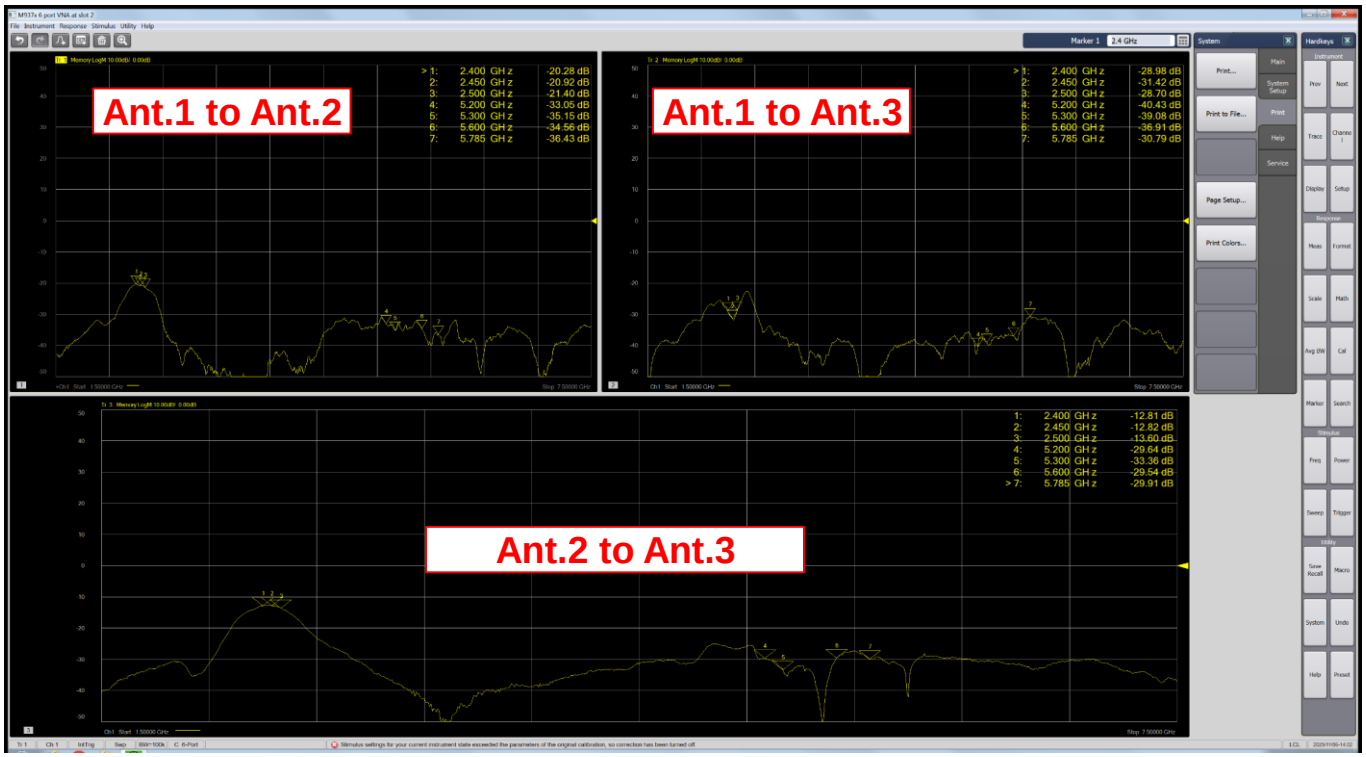
S-Parameters – Ant.1 / Ant.2 / Ant.3 (Wi-Fi Dual-Band / BT)



S-Parameters – Ant.1 / Ant.2 / Ant.3 (Wi-Fi Dual-Band to BT)



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Coordinate Definition

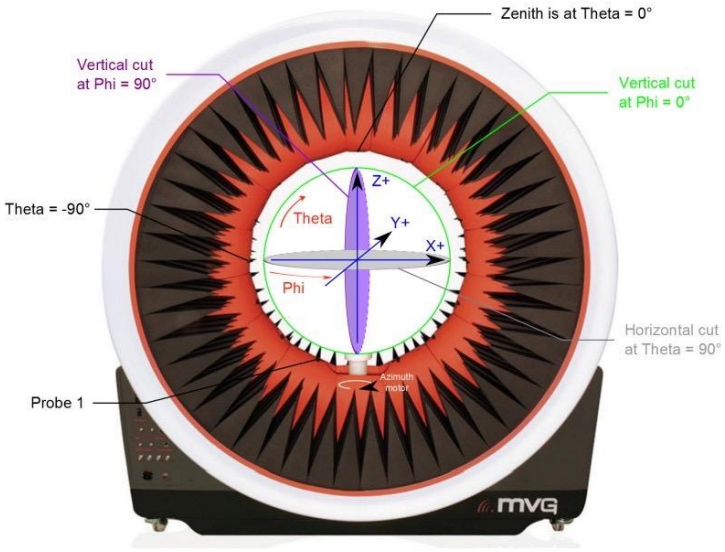
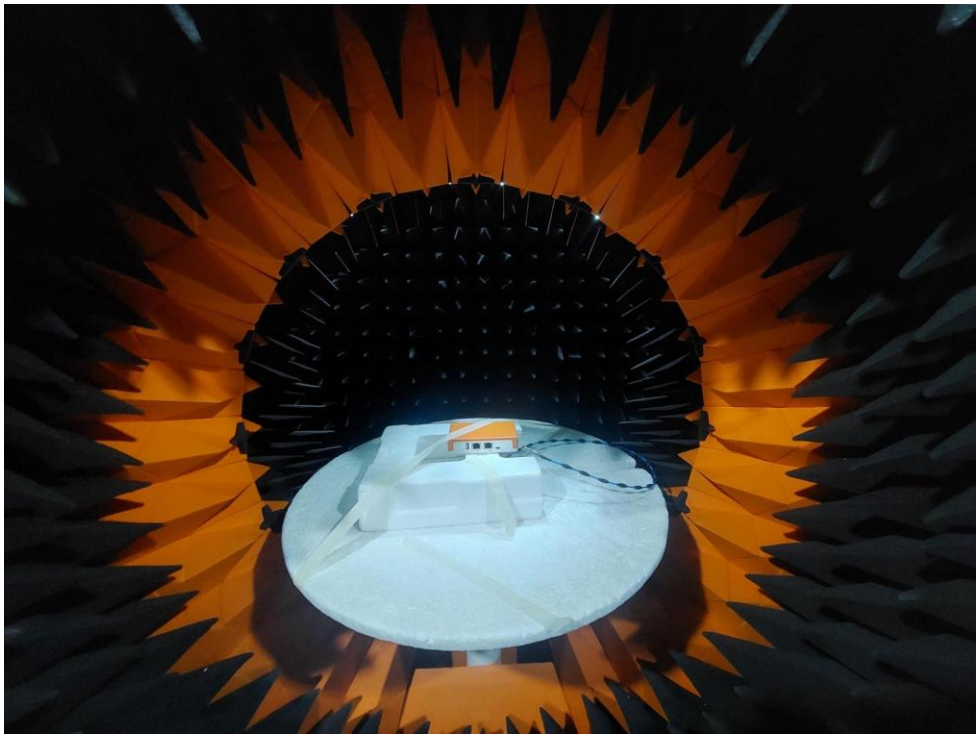
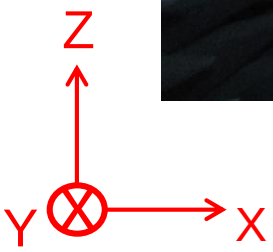


Figure 3.12: StarLab spherical coordinate system





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Gain Table

No.	Frequency(MHz)	2400	2450	2500	5200	5300	5600	5785
Ant.1	Peak Gain(dBi)	2.5	2.6	2.5	4.1	3.8	4.0	3.9
	Efficiency(%)	62	63	62	63	61	65	64
Ant.2	Peak Gain(dBi)	3.3	4.0	3.9	4.0	4.3	4.8	4.2
	Efficiency(%)	60	63	63	61	62	63	64

No.	Frequency(MHz)	2400	2450	2500
Ant.3	Peak Gain(dBi)	3.3	3.8	3.9
	Efficiency(%)	60	61	62

Isolation Table – Ant.1 / Ant.2 / Ant.3

Item	Worst mutual isolation (dB) 2.4GHz Band		Worst mutual isolation (dB) 5GHz Band	
Antenna	Ant.1	Ant.2	Ant.1	Ant.2
Ant.1		-20.2		-33.0
Ant.2				
Ant.3	-28.7	-12.8	-30.7	-29.5

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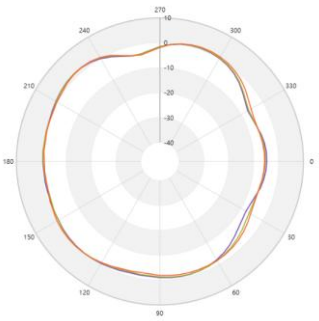
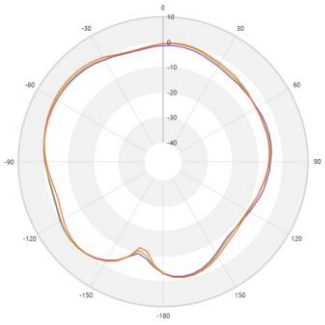
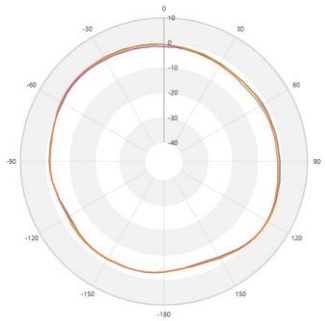
2D Radiation Pattern
Ant.1 (Wi-Fi Dual-Band)
Frequency(MHz) : 2400-2500

Radiation Pattern :

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

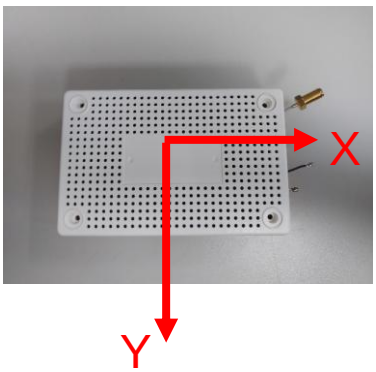


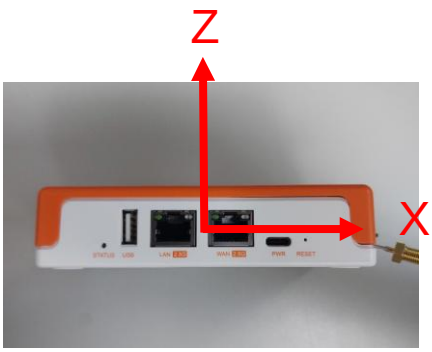


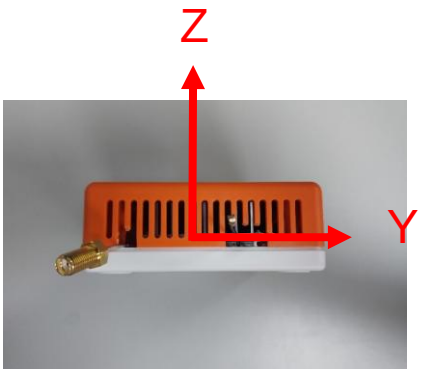


2400.00 MHz
2450.00 MHz
2500.00 MHz

Setup :







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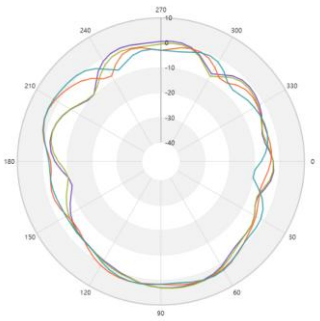
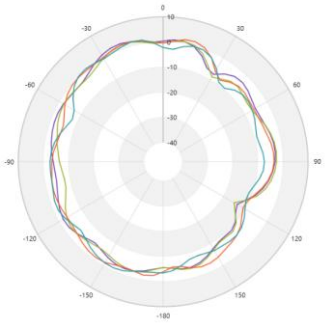
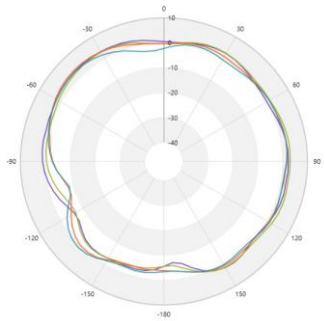
2D Radiation Pattern
Ant.1 (Wi-Fi Dual-Band)
Frequency(MHz) : 5200-5785

Radiation Pattern :

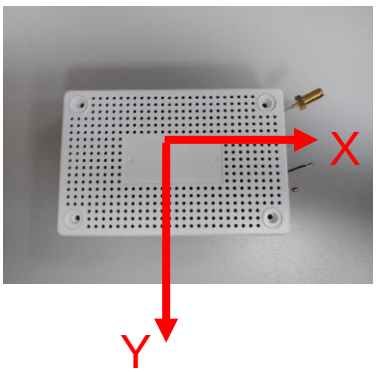
Azimuth Plane Theta = 90	Elevation Plane phi = 0	Elevation Plane phi = 90

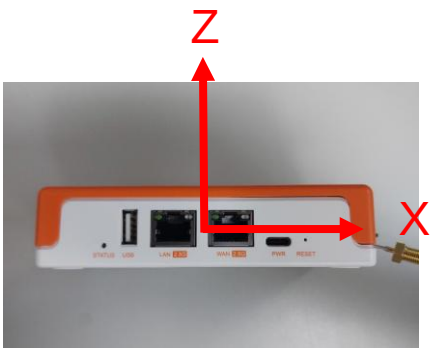


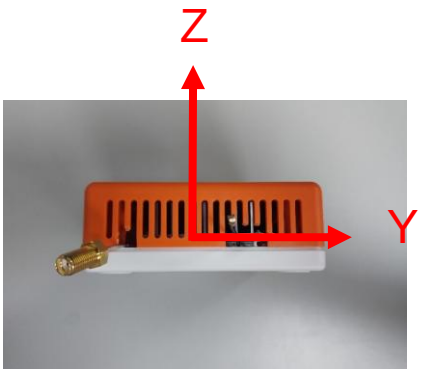




Setup :







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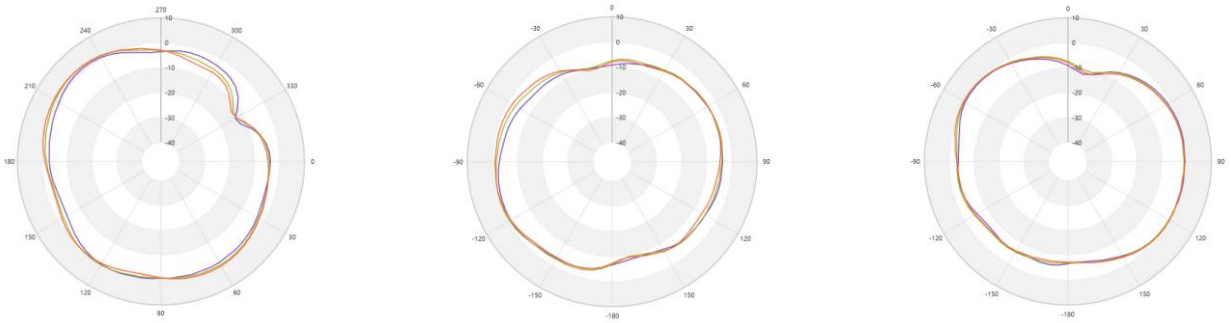
2D Radiation Pattern
Ant.2 (Wi-Fi Dual-Band)
Frequency(MHz) : 2400-2500

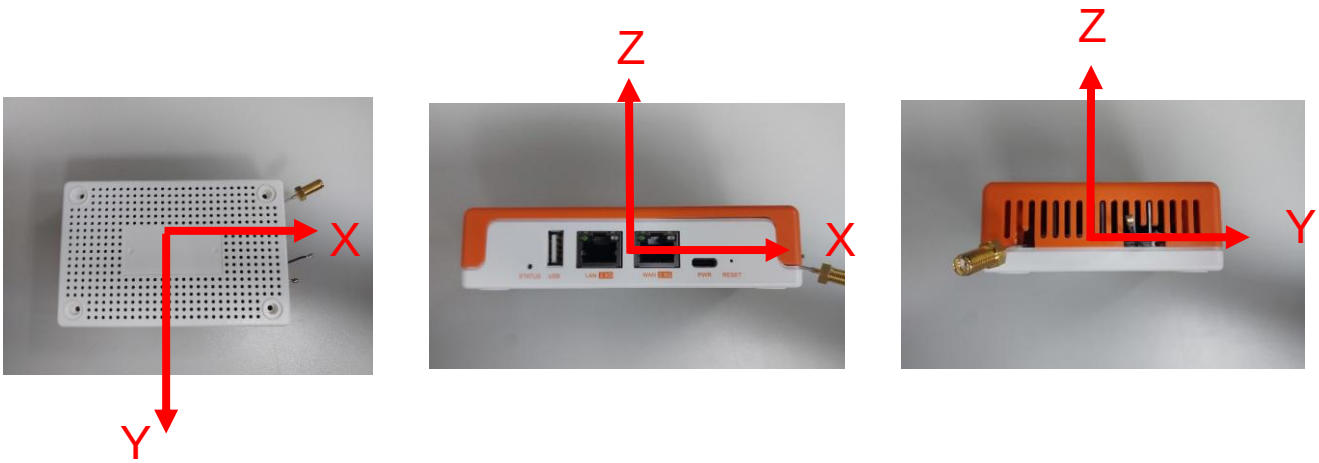
Radiation Pattern :

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



2400.00 MHz
2450.00 MHz
2500.00 MHz

Setup :



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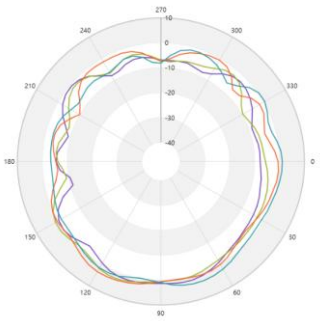
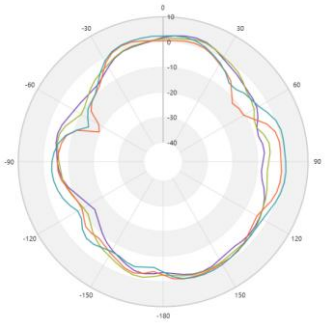
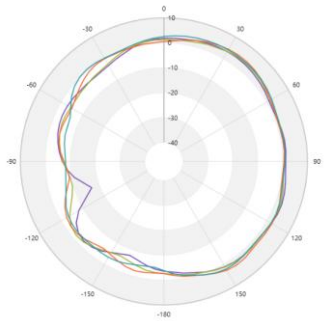
2D Radiation Pattern
Ant.2 (Wi-Fi Dual-Band)
Frequency(MHz) : 5200-5785

Radiation Pattern :

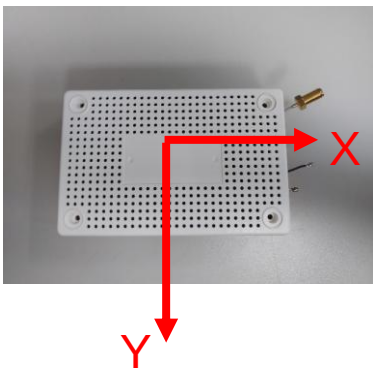
Azimuth Plane Theta = 90	Elevation Plane phi = 0	Elevation Plane phi = 90

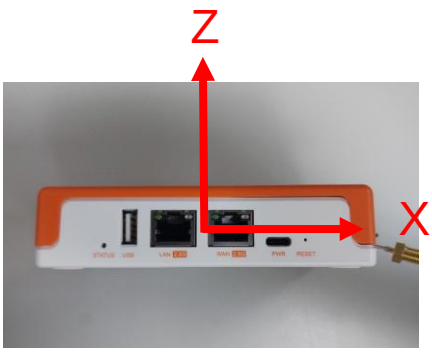


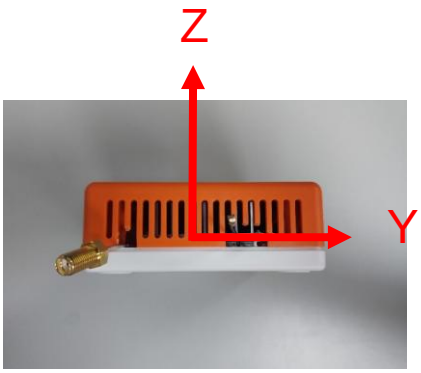




Setup :







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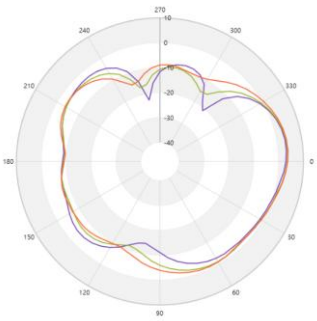
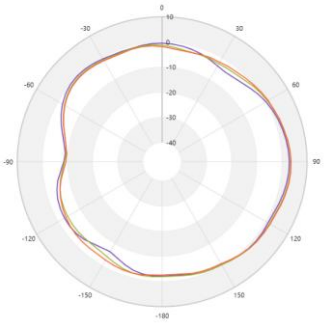
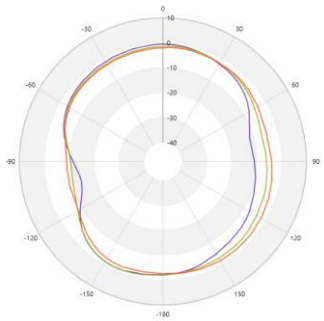
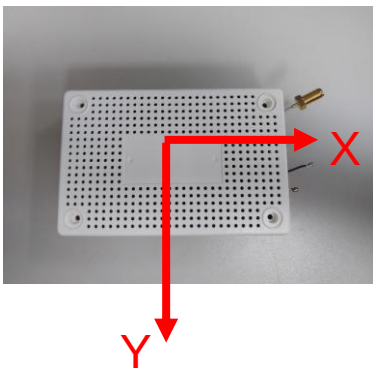
2D Radiation Pattern
Ant.3 (BT)
Frequency(MHz) : 2400-2500

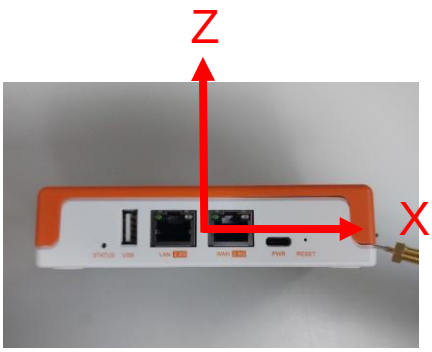
Radiation Pattern :

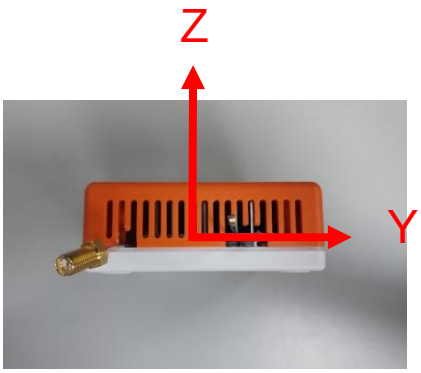
Azimuth Plane Theta = 90	Elevation Plane phi = 0	Elevation Plane phi = 90
		

2400.00 MHz
2450.00 MHz
2500.00 MHz

Setup :







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Summary

1. Passive testing was conducted using the new housing, Mylar, and new antenna.
2. We have optimized the BT antenna.

Summary	Ant.1	Ant.2	Ant.3	Remark
Return Loss – 2.4GHz	< -10dB	< -10dB	< -10dB	
Return Loss – 5GHz	< -10dB	< -10dB		
Efficiency – 2.4GHz	> 60%	> 60%	> 60%	
Efficiency – 5GHz	>60%	> 60%		
Peak Gain – 2.4GHz	2.5 – 2.6dBi	3.3 – 4.0dBi	3.3 – 3.9dBi	
Peak Gain – 5GHz	3.8 – 4.1dBi	4.0 – 4.8dBi		

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