

LYNwave Technology

Antenna & Thermal solution provider

Antenna Field Test Report

Company: Alarm
Project Name: V781B
Model Name:
Application: Video Doorbell
Mounting Type: Wall Mount

Date	Owner	Revision	Remark
2024/11/26	Ken	v0.1	1. Antenna passive measurement using Satimo Lab
2024/11/29	Ken	v0.2	1. Rigid cable rework. Insertion loss measurement
2024/12/10	Ken	v0.3	1. System level fine tune
2025/03/10	Ken	v0.3	1. Antenna passive measurement using Satimo Lab
2025/07/08	Ken	v0.3	1. Antenna passive measurement using Satimo Lab
2025/09/04	Ken	v0.4	1. Antenna passive measurement using Satimo Lab
2025/09/18	Ken	v0.5	1. Antenna 2 new sample
2025/09/30	Ken	v0.5	1. Adjustment of test frequency points
2025/10/28	Ken	v0.5	1. Change Ant.1 the color of the cable.
2025/12/05	Ken	v0.5	1. Antenna passive measurement using Satimo Lab

Table of Contents

- A. Antenna RF Characteristics
 - 1. Customer Specification
 - 2. Antenna Placement
 - 3. S-Parameters
 - 4. Coordinate Definition
 - 5. Gain Table
 - 6. Radiation Patterns
 - 7. Summary

Customer Specification

Ant. No.	Type	Function	Operating Freq.	Radiation Pattern	Cable Type	Connector Type
Ant.1	FPC	Wi-Fi	2400-2500MHz 5150-5850MHz	away from the back surface	1.13LL	IPEX
Ant.2	FPC	Wi-Fi	2400-2500MHz 5150-5850MHz	away from the back surface	1.13LL	IPEX

Specification	Return Loss	VSWR	Isolation	Peak Gain	Efficiency
2.4GHz	< -10dB	TBD	< -20dB	2.5dBi	>65%
5GHz	< -10dB	TBD	< -20dB	4.0dBi	>75%

Antenna Placement

No.	Function	Material	Dimension(mm)	Frequency(MHz)	Remark
Ant.1 (ALA25F-222AA6)	Wi-Fi	FPC	16x40	2400 – 2500 5150 – 5850	Thickness ≈ 0.14mm
Ant.2 (ALA25F-222AA5)	Wi-Fi	FPC	16x40	2400 – 2500 5150 – 5850	Thickness ≈ 0.14mm

Photo provided separately (Figure 1)

S-Parameters – Ant.1 & Ant.2 (Wi-Fi Dual band)



Coordinate Definition

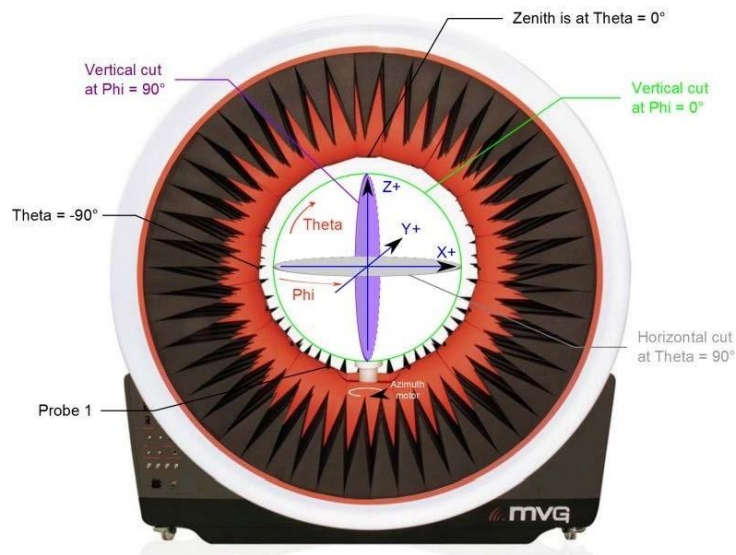


Figure 3.12: StarLab spherical coordinate system

Photo provided separately (Figure 2)

Gain Table

2.4GHz	Frequency(MHz)	2400	2450	2500
Ant.1	Peak Gain(dBi)	3.9	4.2	4.5
	Efficiency(%)	66	70	71
Ant.2	Peak Gain(dBi)	2.2	2.4	2.6
	Efficiency(%)	63	65	65

5GHz	Frequency(MHz)	5170	5330	5490	5600	5730	5835
Ant.1	Peak Gain(dBi)	3.1	2.7	3.7	4.2	4.9	5.2
	Efficiency(%)	61	60	71	72	69	69
Ant.2	Peak Gain(dBi)	5.0	4.7	4.3	3.9	3.8	3.9
	Efficiency(%)	64	60	63	64	64	62

Isolation Table

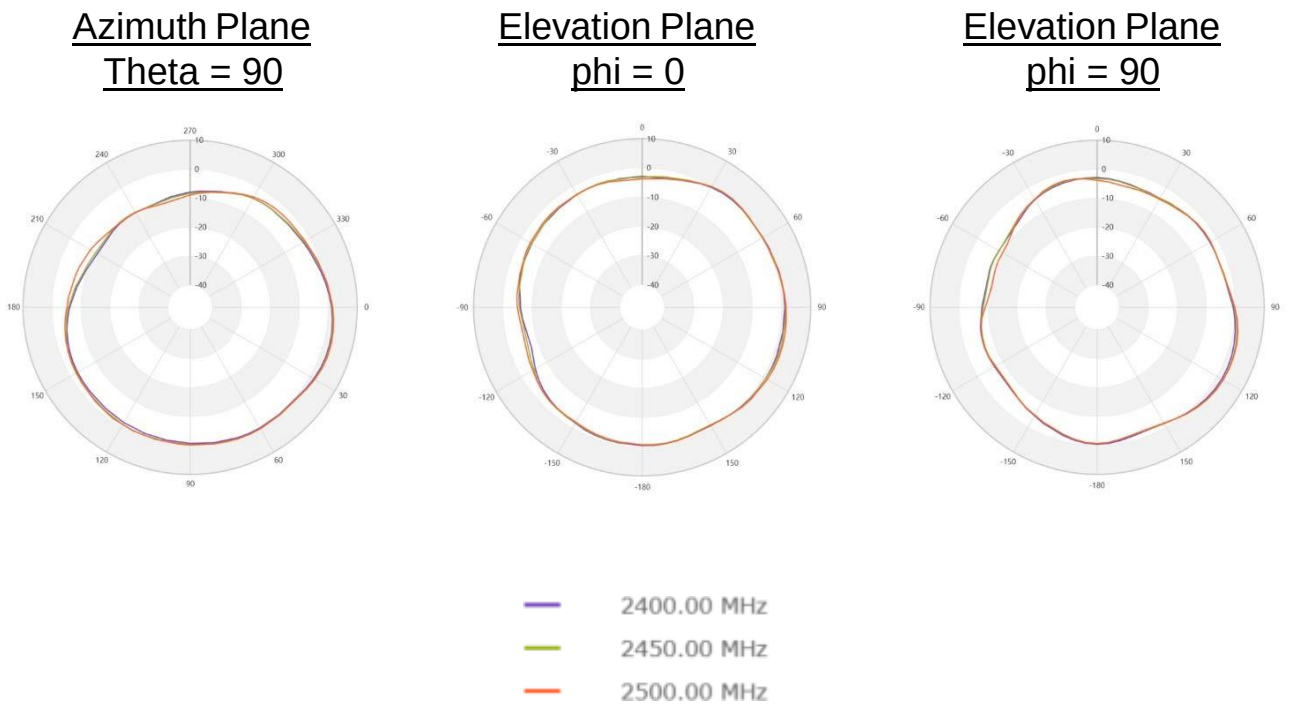
Isolation	Worst mutual isolation (dB) 2.4GHz Band		Worst mutual isolation (dB) 5GHz Band	
Antenna	Ant.1	Ant.2	Ant.1	Ant.2
Ant.1		-21.5		-32.2
Ant.2				

2D Radiation Pattern

Ant.1 (Wi-Fi Dual-band)

Frequency(MHz) : 2400-2500

Radiation Pattern :

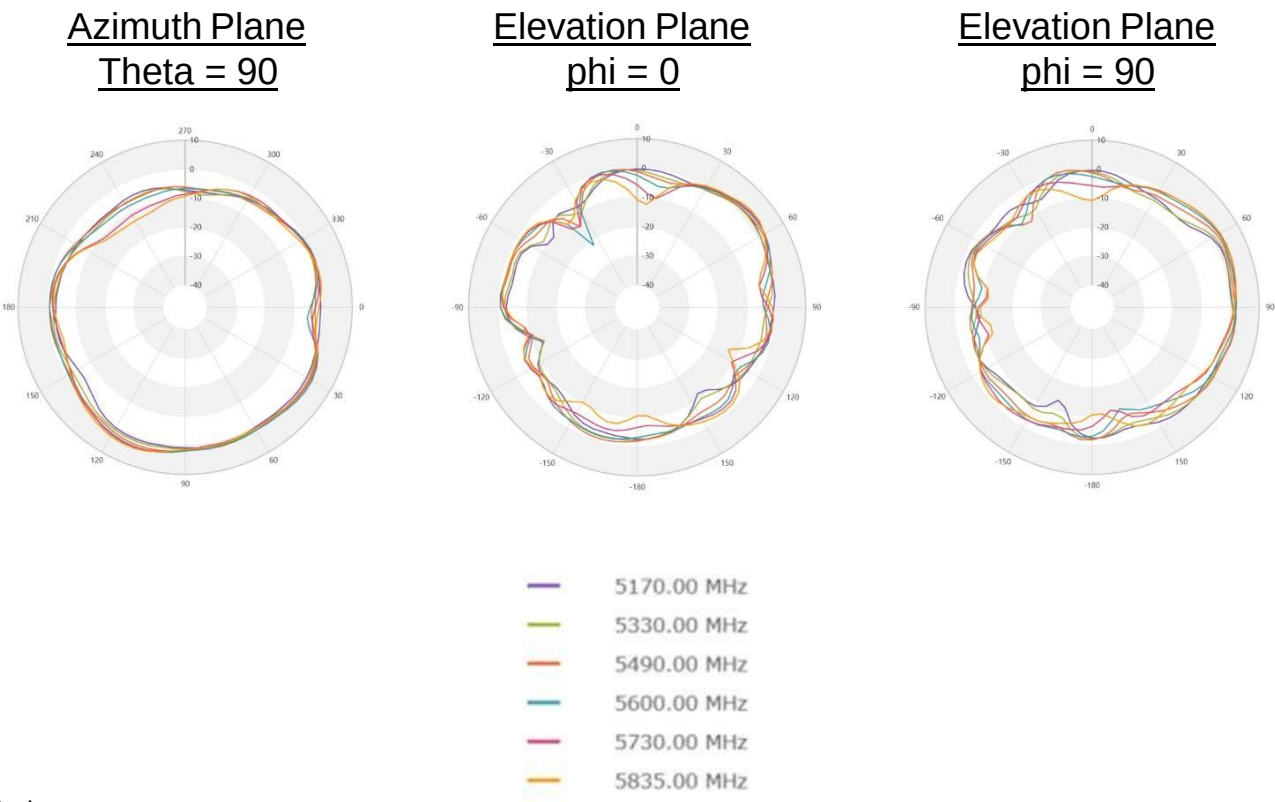


Setup :

Photo provided separately (Figure 3)

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

Radiation Pattern :



Setup :

Photo provided separately (Figure 4)

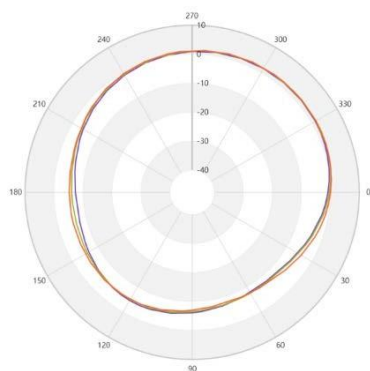
2D Radiation Pattern

Ant.2 (Wi-Fi Dual-band)

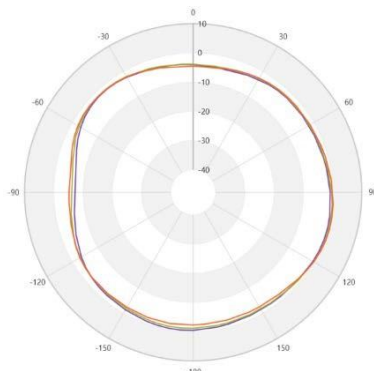
Frequency(MHz) : 2400-2500

Radiation Pattern :

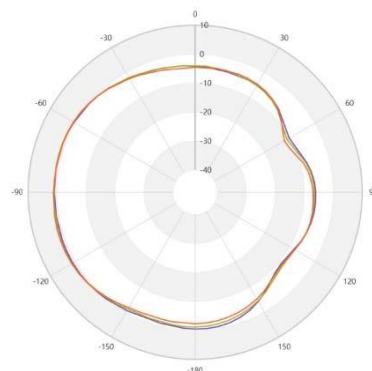
Azimuth Plane
Theta = 90



Elevation Plane
phi = 0



Elevation Plane
phi = 90



— 2400.00 MHz
— 2450.00 MHz
— 2500.00 MHz

Setup :

Photo provided separately (Figure 5)

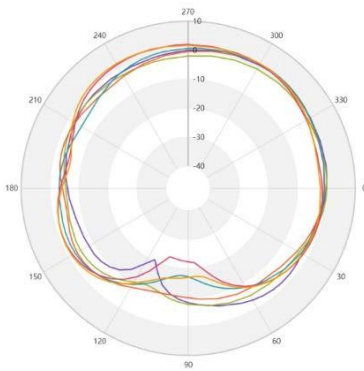
2D Radiation Pattern

Ant.2 (Wi-Fi Dual-band)

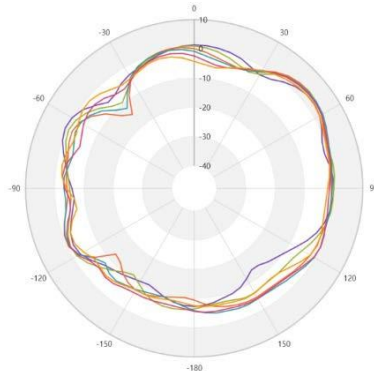
Frequency(MHz) : 5150-5850

Radiation Pattern :

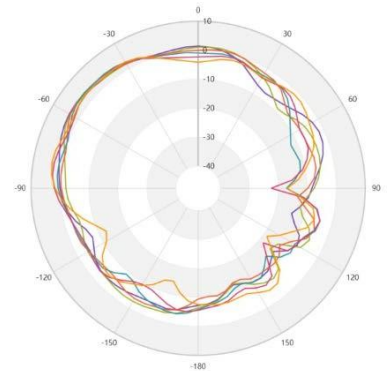
Azimuth Plane
Theta = 90



Elevation Plane
phi = 0



Elevation Plane
phi = 90



Setup :

Photo provided separately (Figure 6)

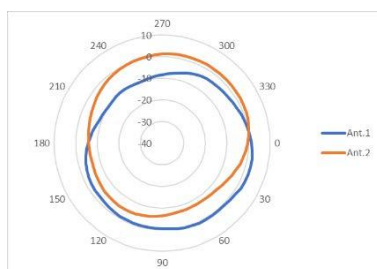
2D Radiation Pattern

Ant.1 – Ant.2 Combine (Wi-Fi Dual band)

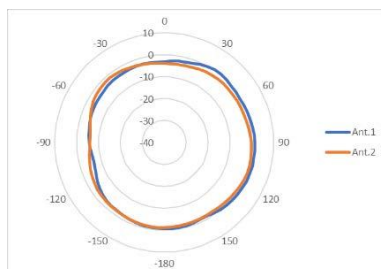
Frequency(MHz) : 2450

Radiation Pattern :

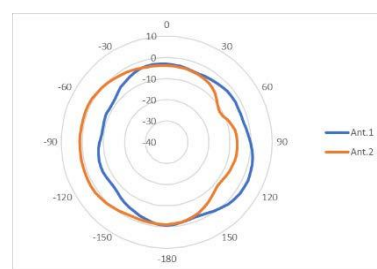
Azimuth Plane



Elevation Plane
phi = 0



Elevation Plane
phi = 90



Setup :

Photo provided separately (Figure 7)

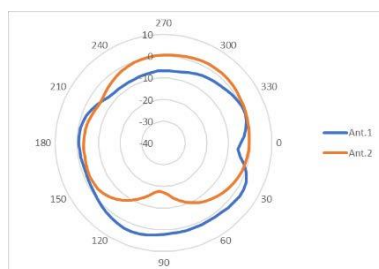
2D Radiation Pattern

Ant.1 – Ant.2 Combine (Wi-Fi Dual band)

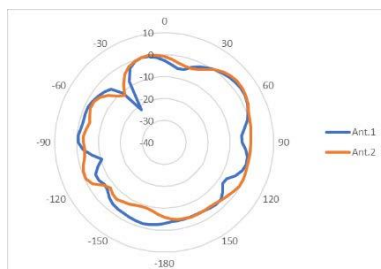
Frequency(MHz) : 5600

Radiation Pattern :

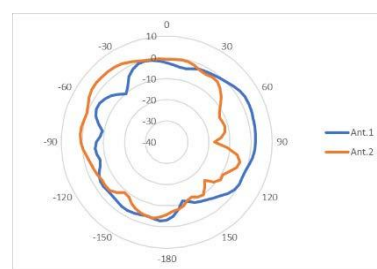
Azimuth Plane



Elevation Plane
phi = 0



Elevation Plane
phi = 90



Setup :

Photo provided separately (Figure 8)

Summary

- The antenna meets customer requirements.

Summary	Ant.1	Ant.2	Remark
Return Loss – 2.4GHz	< -10dB	< -10dB	
Return Loss – 5GHz	< -10dB	< -10dB	
Efficiency – 2.4GHz	> 65%	> 60%	
Efficiency – 5GHz	> 60%	> 60%	
Peak Gain – 2.4GHz	3.9 – 4.5dBi	2.2 – 2.6dBi	
Peak Gain – 5GHz	2.7 – 5.2dBi	3.8 – 5.0dBi	

Ant.	Port	Brand Name	Model Name	Ant. Type	Connector	Support
1	0	LYNwave	ALA25F-222AA6-00	PIFA	I-Pex	2.4G+5G+BT
2	1	LYNwave	ALA25F-222AA5-00	PIFA	I-Pex	2.4G+5G+BT

Ant.	Port	2.4G	UNII-1	UNII-2A	UNII-2C	UNII-3	BT
1	0	4.5	3.1	2.7	4.2	5.2	4.5
2	1	2.6	5	4.7	4.3	3.9	2.6

Manufacturer: Lynwave Technology Co., Ltd.

Address : 3F-6, No.327, Xuecheng Rd., Sanxia Dist., New Taipei City 237624, Taiwan

www.lynwave.com



<https://www.facebook.com/LYNwaveTechnology/>



<https://www.linkedin.com/company/lynwave-technology-ltd./>



<https://lynwave.en.alibaba.com/>