

3D Antenna Measurement Summary Report

REPORT NO.: PSU-NQN2602110114OT01

**PLATFORM
MANUFACTURER:** Shenzhen Lianshun Intelligent Technology Co., Ltd.

PLATFORM NAME: Bluetooth Module

ANTENNA TYPE: PCB Antenna

TESTED DATE: 2026.02.11-02.11

ISSUED: 2026.02.12

APPLICANT: Shenzhen Lianshun Intelligent Technology Co., Ltd.

ADDRESS : 3rd Floor, Building 8, Shatou Lane Industrial Zone,
Changzhen Community, Yutang Street, Guangming
District, Shenzhen

ISSUED BY : Huarui 7layers High Technology (Suzhou) Co., Ltd.

ADDRESS : Tower N, Innovation Center, 88 Zhuyi Road, High-tech
District, Suzhou City, Anhui Province China

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RELEASE CONTROL RECORD

REPORT NO.	REASON FOR CHANGE	DATE ISSUED
PSU-NQN2602110114OT01	Original release	2026.02.12

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GENERAL INFORMATION

APPLICANT:	Shenzhen Lianshun Intelligent Technology Co., Ltd.
MANUFACTURER:	Shenzhen Lianshun Intelligent Technology Co., Ltd.
MODEL NO.:	FDS-BS07-S
HARDWARE VERSION:	V1.1
SOFTWARE VERSION:	V1.2

Test Standard: ANSI/IEEE Std. 149 2021.

PREPARED BY : Ding Fangshun , **DATE :** 2026.02.12
Ding Fang Shun / Engineer

APPROVED BY : Luke Lu , **DATE :** 2026.02.12
Luke / Manager

1. Test Equipment List

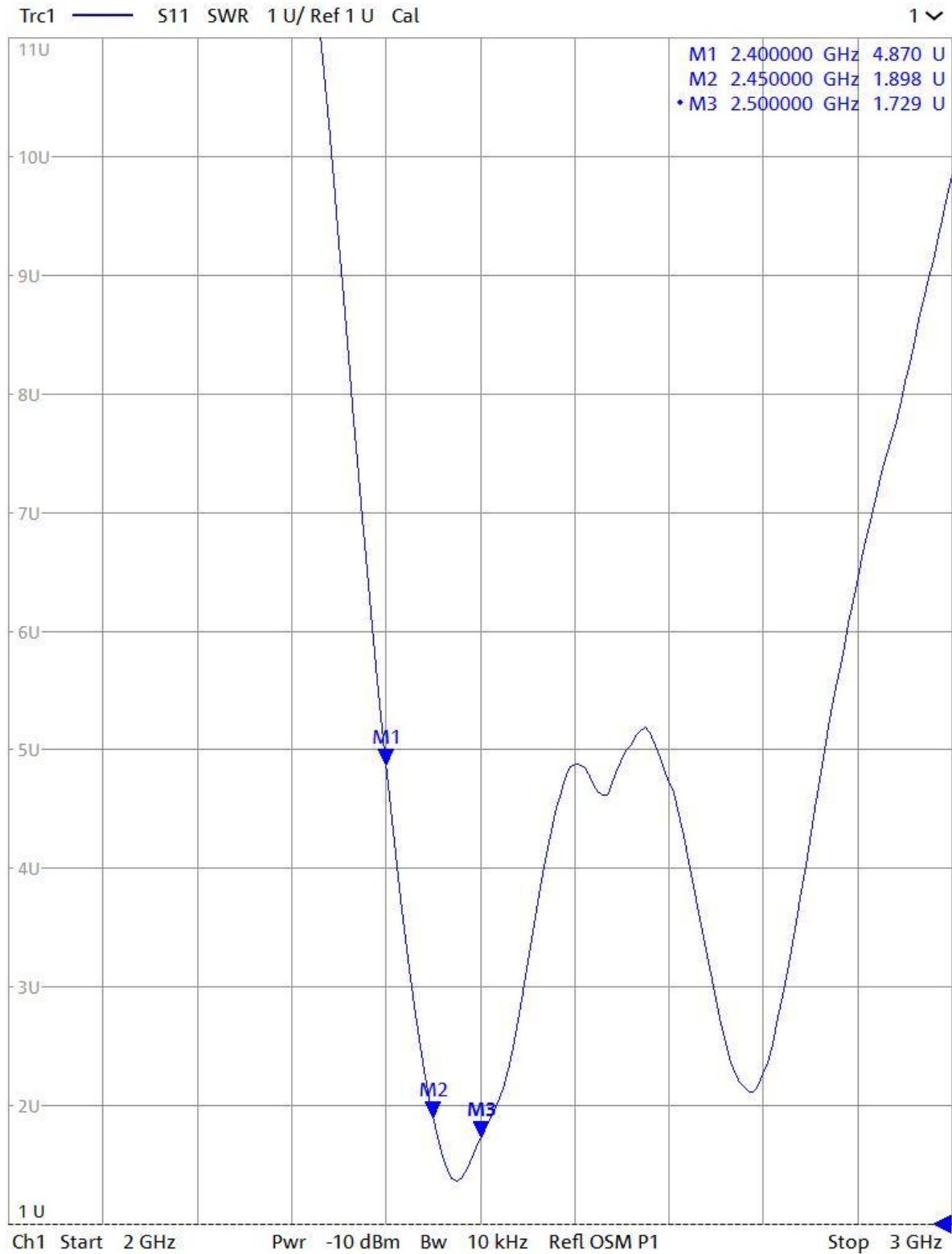
TYPE OF EQUIPMENT	MODEL NUMBER	SERIAL NUMBER	CALIBRATION DUE DATE
Network Analyzer	ZND	102314	2026.03.28
OTA Chamber	TS8991	N/A	N/A
Measurement Antenna	TC-TA18	101095	N/A

2. Measurement Uncertainty

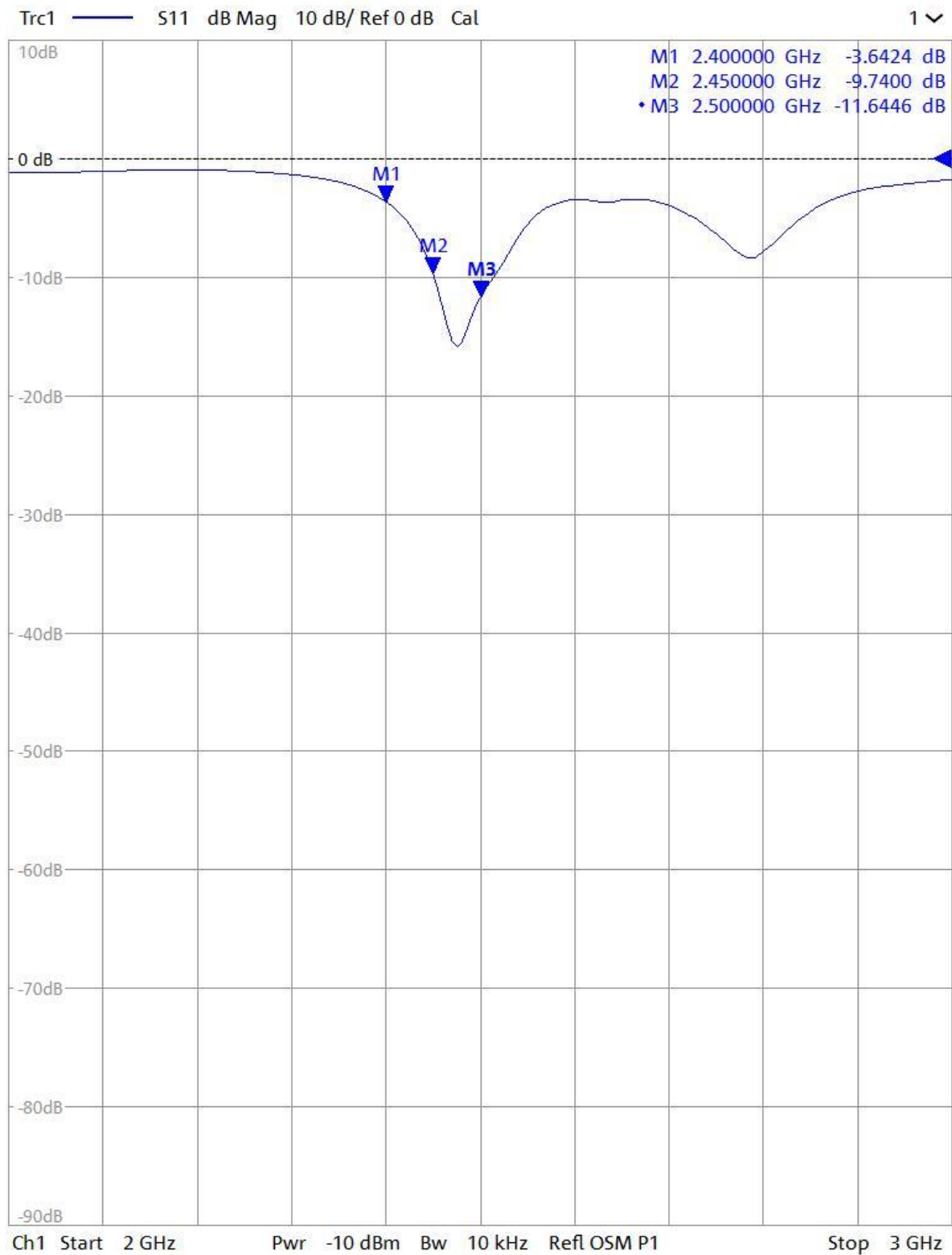
Expanded Uncertainty for Measurement (k=2 or 95% Confidence Level) at Passive antenna test over frequency range 600 – 2600MHz is +/- 1.52 dB.

3. Characteristics of antenna

3.1. S11-VSWR



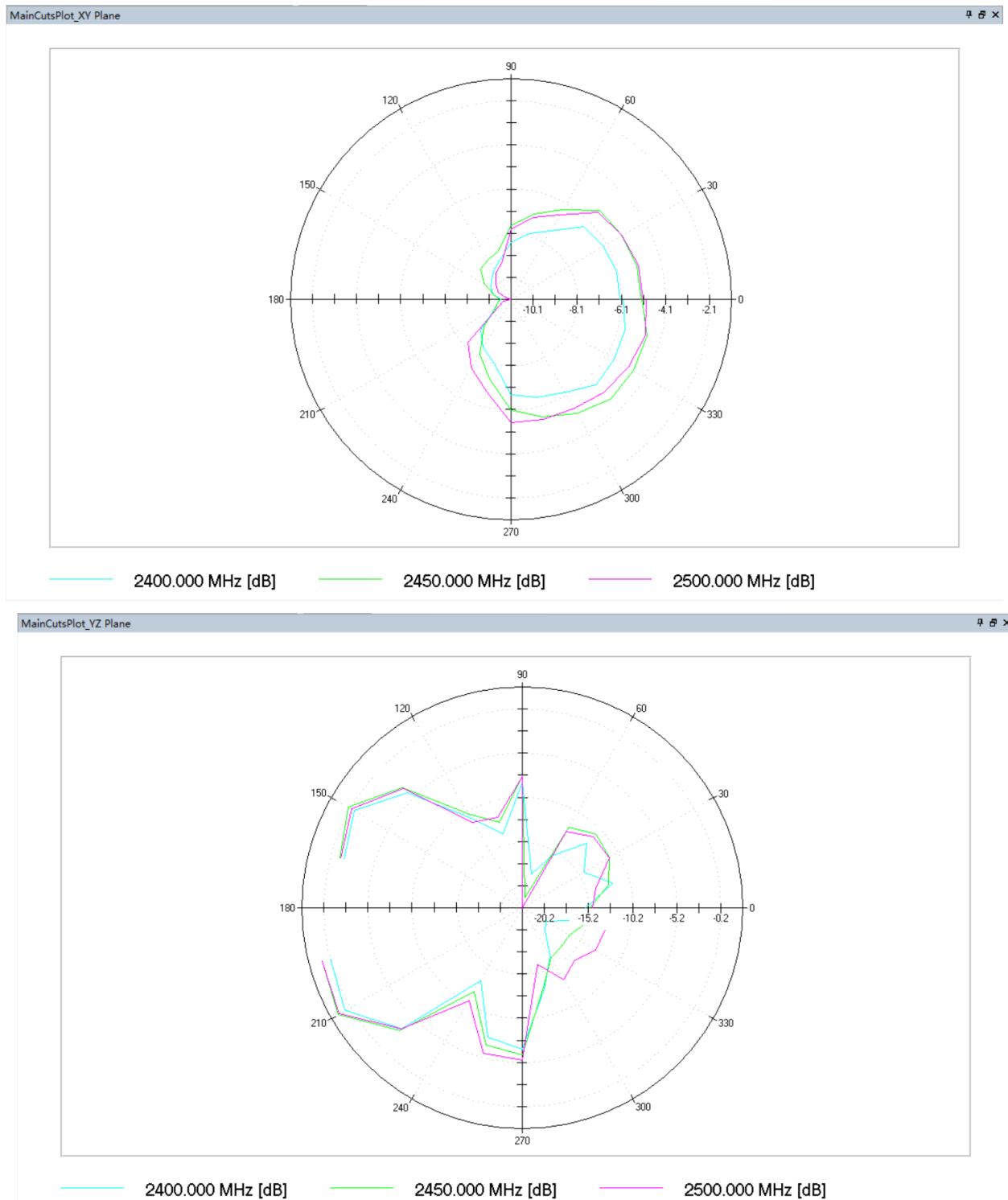
3.2. S11-ReturnLoss



3.3. 3D Antenna Gain-Free Space

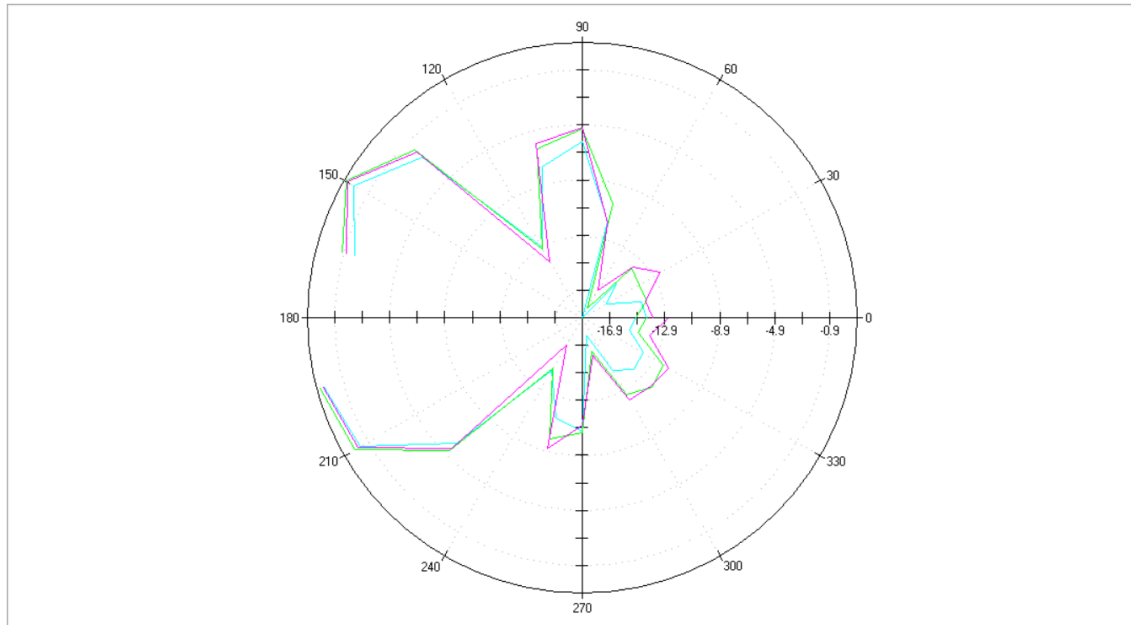
Frequency (MHz)	Directivity (dBi)	Efficiency (dB)	Efficiency (%)	Gain (dBi)
2400	7.8	-7.3	18.8	0.6
2410	7.8	-7.1	19.4	0.7
2420	7.9	-7.0	19.9	0.8
2430	7.9	-6.8	20.9	1.1
2440	7.8	-6.5	22.2	1.3
2450	7.8	-6.4	22.7	1.4
2460	7.9	-6.3	23.6	1.6
2470	8.0	-6.1	24.5	1.9
2480	7.9	-6.1	24.4	1.8
2490	8.0	-6.3	23.3	1.6
2500	8.0	-6.6	22.1	1.4

3.4 Antenna Pattern



MainCutsPlot_XZ Plane

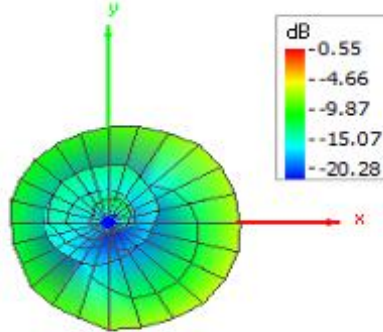
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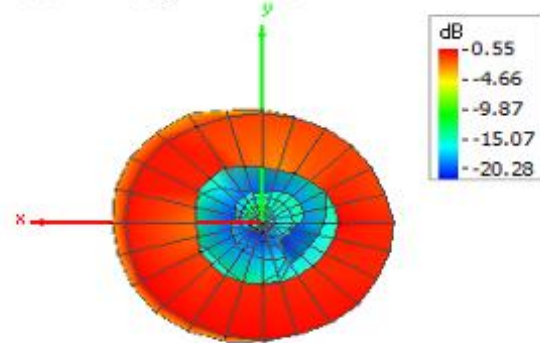
— 2400.000 MHz [dB] — 2450.000 MHz [dB] — 2500.000 MHz [dB]

2400MHz

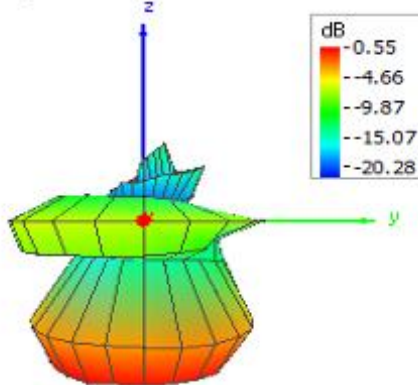
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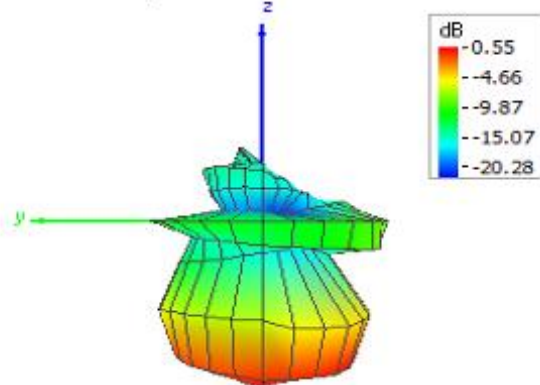
Theta = 180, Phi = 0



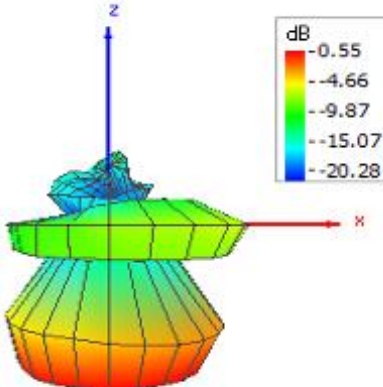
Theta = 90, Phi = 0



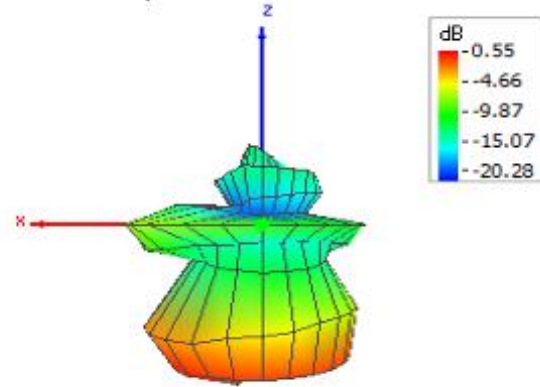
Theta = 90, Phi = 180



Theta = 90, Phi = 270

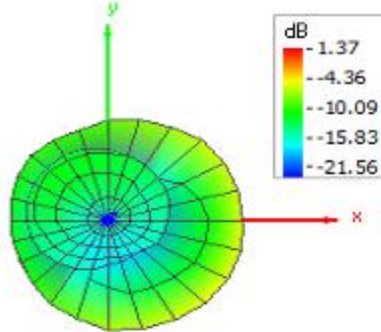


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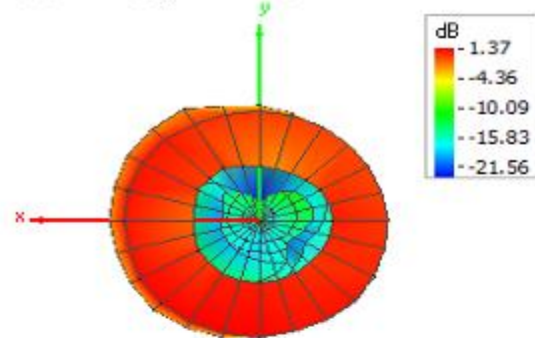


2450MHz

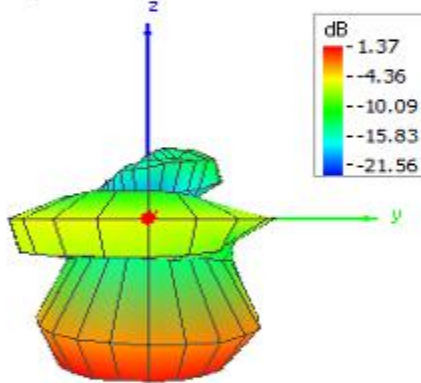
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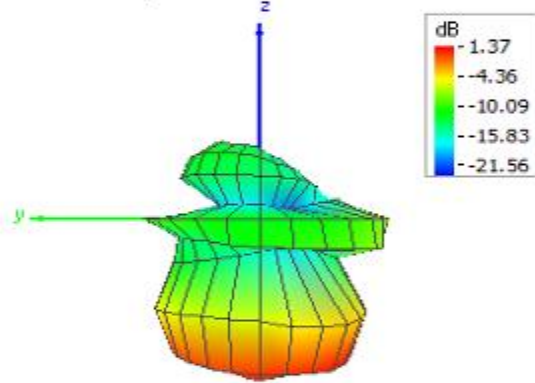
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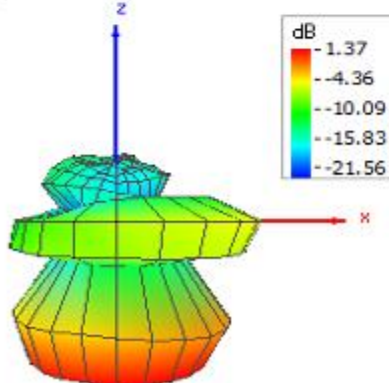
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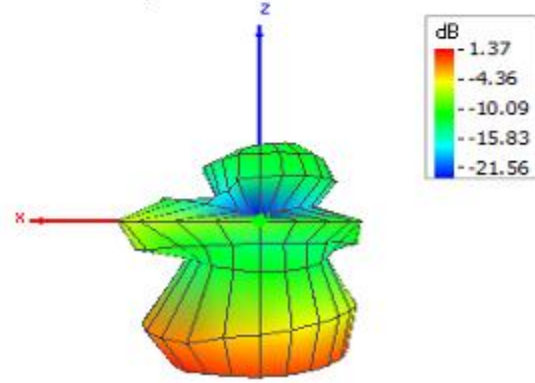
Theta = 90, Phi = 180



Theta = 90, Phi = 270

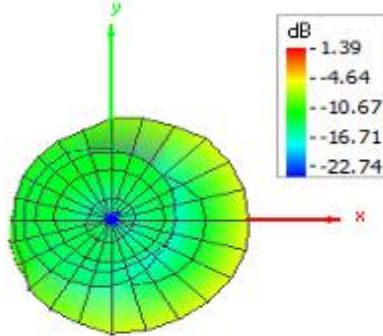


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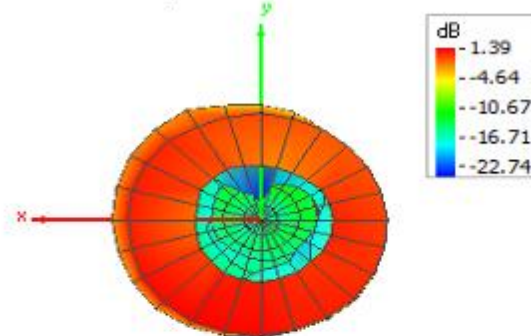


2500MHz

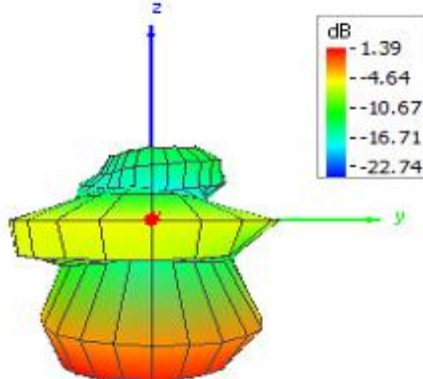
Theta = 0, Phi = 0



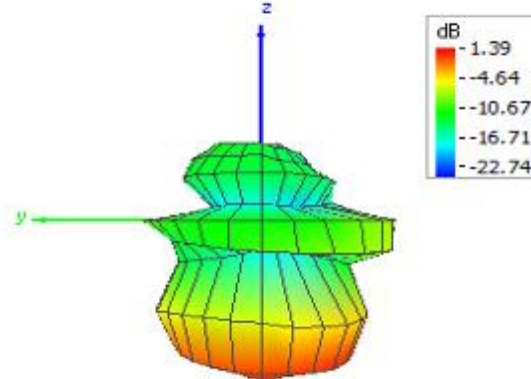
Theta = 180, Phi = 0



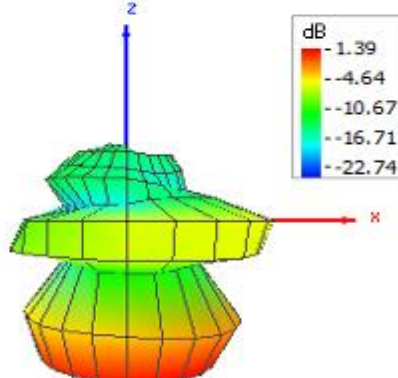
Theta = 90, Phi = 0



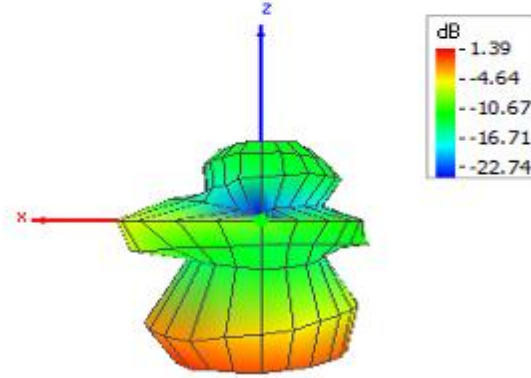
Theta = 90, Phi = 180

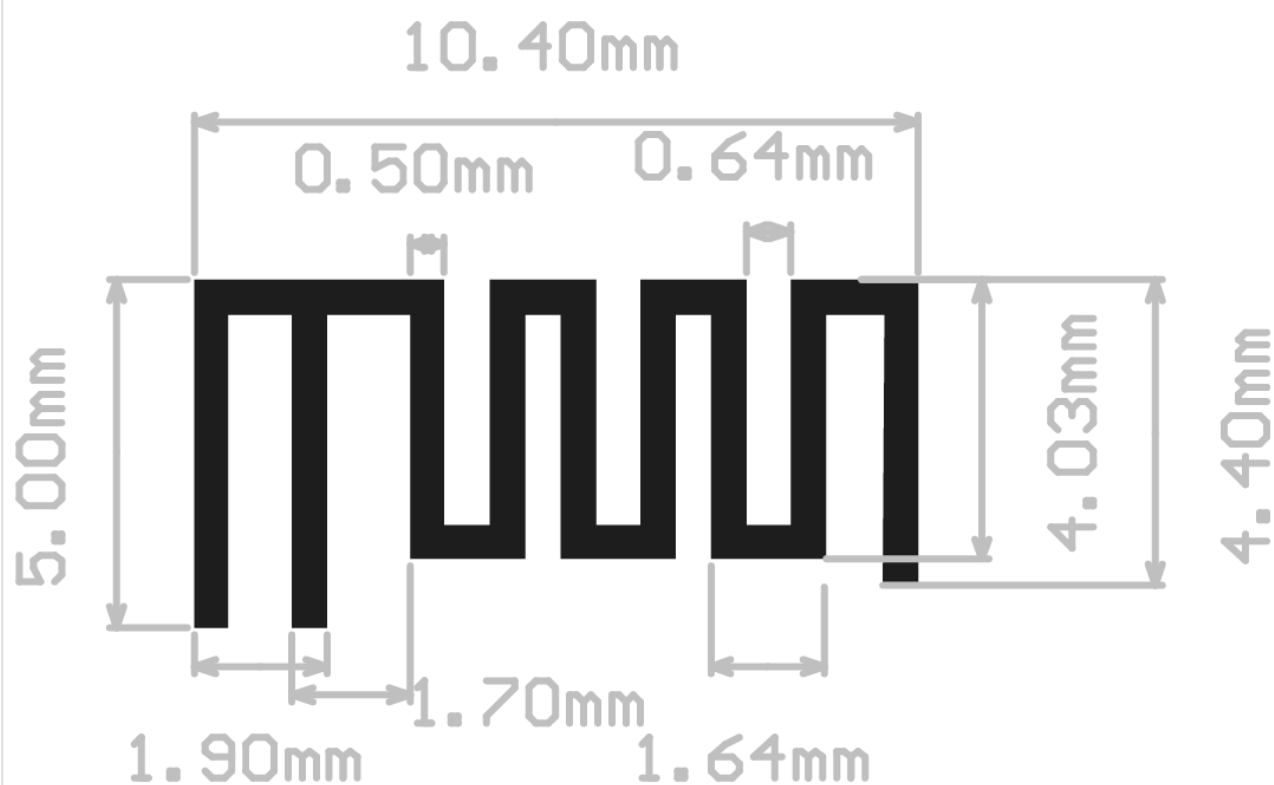


Theta = 90, Phi = 270

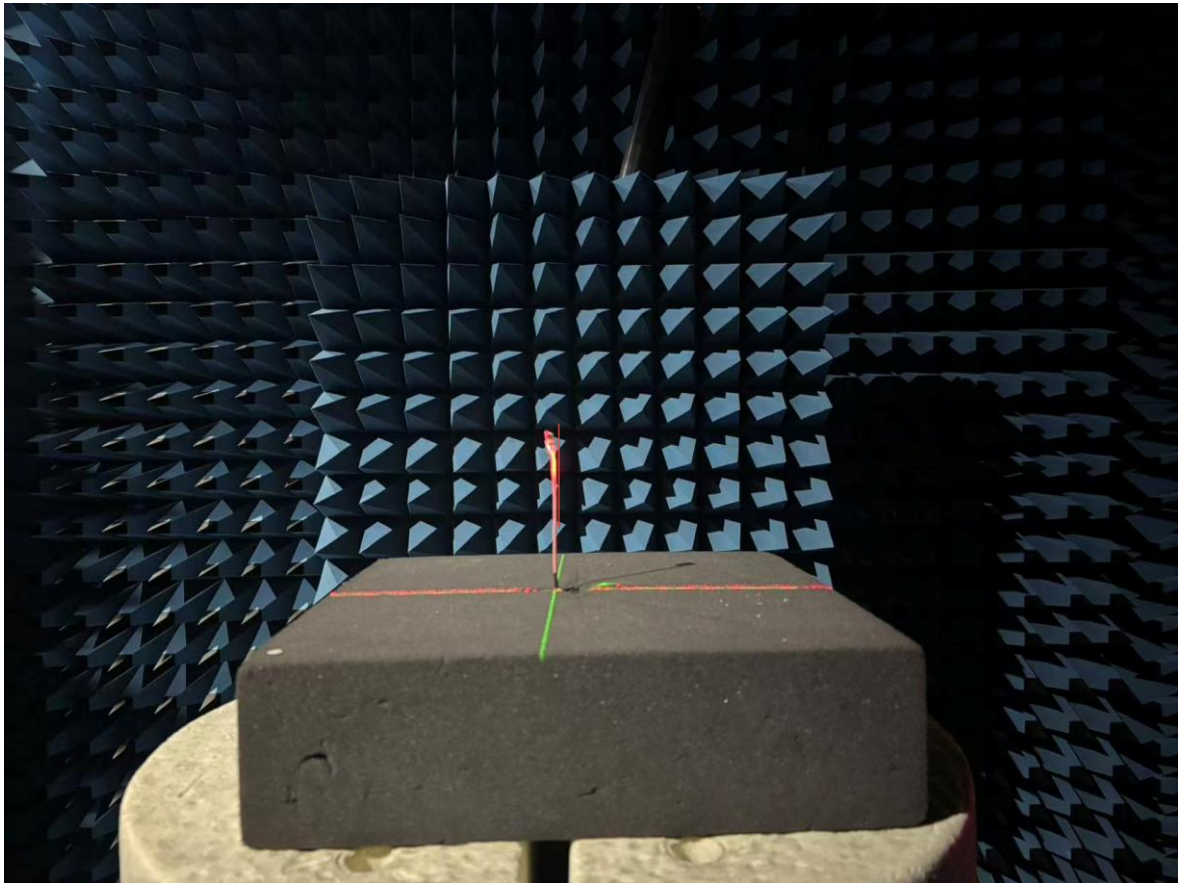


Theta = 90, Phi = 90





Appendix B. Testing Setup Photo



Free Space