



SGS-CSTC Standards Technical Services Co., Ltd Shenzhen Branch

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Rev.: 01
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ANTENNA PASSIVE TEST REPORT

Application No. SZOA2411000217MO
Applicant MEDFRUITION ELECTRONICS TECHNOLOGY CO., LTD.
Manufacturer Shenzhen RF-star Technology Co., Ltd.
Product Name Bluetooth Module
Model No. RF-BM-S01A
Standards ANSI/IEEE Std 149-2021
Date Initial Sample(s) Received Dec.18, 2024
Testing Start Date Dec.18, 2024
Testing Finish Date Dec.18, 2024
Report Issue Date Jan.10, 2025

* In the configuration tested, the EUT detailed in this report complied with the standards specified above.

Yuanyu Luo

Prepared by: Yuanyu Luo/ Test
Engineer

Ervin Li

Approved by: Ervin Li/ Technical
Manager



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Revision History

Revision	Issue Date	Description
01	Jan.10, 2025	Initial creation of report



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1 General Information

1.1 Testing Laboratory

Test Lab	SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch
Address	No. 1 Workshop, M-10, Middle section, Science & Technology Park, Nanshan District, Shenzhen, Guangdong, China 518057
Contact	Ervin Li
Tel.	+86 18823369694
Fax	+86-755-25328600
E-mail	Ervin.Li@sgs.com

1.2 Details of Applicant

Applicant's Name	MEDFRUITION ELECTRONICS TECHNOLOGY CO., LTD.
Applicant's Address	Floor 201, Floor 301, Floor 401, Floor 501, Building 12, Liandong Yochuang Park, No. 7, Lianzhong Road, Shishan Town, Nanhai District, Foshan City, Guangdong Province, China
Contact	Canrong Huang
Tel.	13560436845
Fax	0757-81776019
E-mail	Medfruition_QA03@medfruition.com

1.3 Details of Manufacturer

Manufacturer's Name	Shenzhen RF-star Technology Co., Ltd.
Manufacturer's Address	503, Block A, Building 12, Shenzhen Bay Science and Technology Ecological Park, Nanshan District, Shenzhen
Contact	Zara Wu
Tel.	0755-86329829
Fax	0755-86329413
E-mail	sunny@szrfstar.com



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1.4 General Description of EUT

Device Description:	Bluetooth Module
Device Manufacturer:	Shenzhen RF-star Technology Co., Ltd.
Device Model:	RF-BM-S01A
Hardware Version:	N/A
Software Version:	N/A
Antenna Dimensions:	11.1mm x 2.7mm x 0.85mm
Antenna Type:	PCB

1.5 Test Procedure

Testing is performed according to the **ANSI/IEEE Std 149-2021**.



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1.6 Test Specification

Identity	Document Title
ANSI/IEEE Std 149-2008	IEEE Standard Test Procedures for Antennas

1.7 Laboratory Environment

Temperature	Min. =19°C · Max. = 25°C	
Relative humidity	Min. =40% · Max. =72%	
Shield effect	0.7-6GHz	> 100dB
Ground resistance	<0.5Ω	



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2 OTA Measurements System Configuration

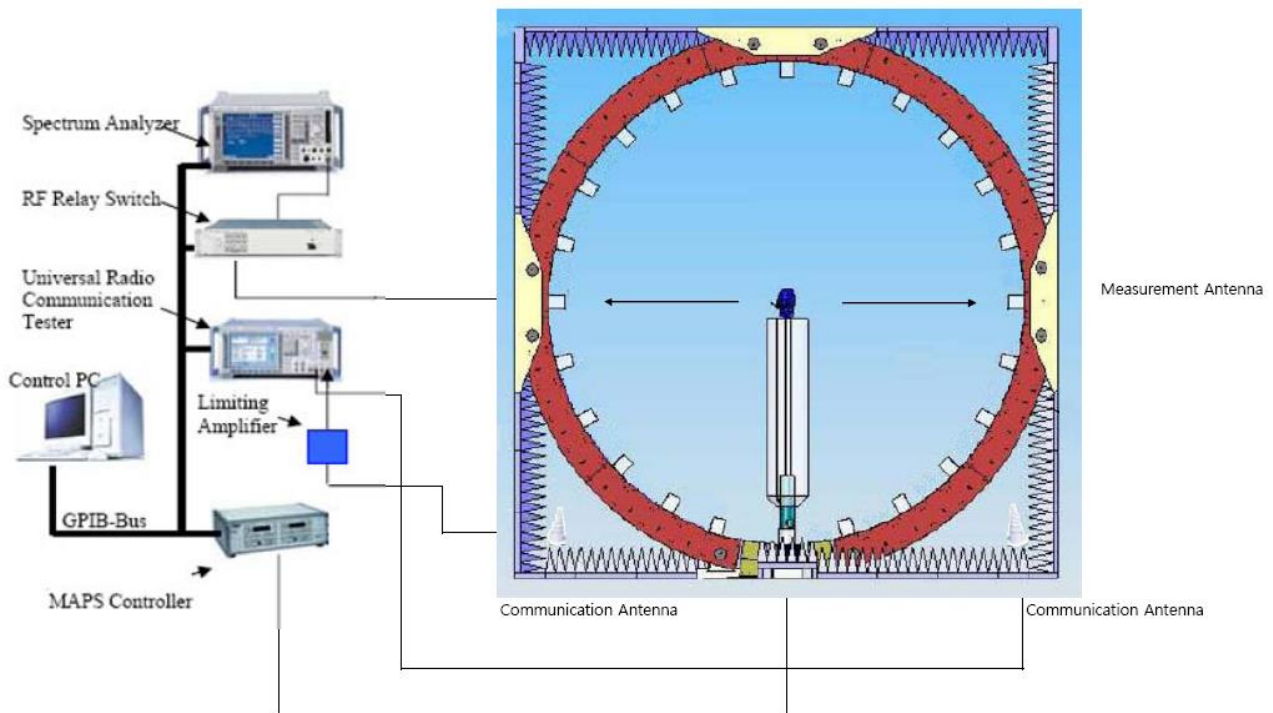
2.1 Test Configuration

Testing Condition:

- Temperature: $22 \pm 3^\circ\text{C}$
- Humidity: <80%

Measurement Facility:

Great-Circle-Cut method is used to measure the antenna 3D GAIN of EUT in OTA qualified anechoic chamber. Equipment Under Test (EUT) geometry centre vertical projection at the centre of platform, the distance from EUT to measurement antenna is 5m



F-1. OTA Measurement System Configuration



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3 Test Equipment List

Type of Equipment	Model Number	Manufacture	Calibration Date	Valid Period
Network Analyzer	E5071C S/N MY46523591	Keysight	2024/01/30	2025/01/29
Quad-Ridge Horn Antenna 700 MHz-10 GHz	EMCO 3164-08 S/N 161915	ETS-Lindgren L.P.	N/A	N/A
MAPS Controller	EMCENTER S/N 160485	ETS-Lindgren L.P.	N/A	N/A
SAM V4.5BS Head Phantom	Head Phantom S/N 3609	SPEAG	NCR	NCR

Definition of Acronyms:
NCR: No Calibration Requirement.



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4 Measurement Uncertainty

Item	2400-2500 MHz (dB)
Gain	0.88
Efficiency	0.88
Measurement Uncertainty (95% CONFIDENCE INTERVAL) K=2	



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5 Test Results

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Frequency (MHz)	Efficiency (dB)	Efficiency (%)	Gain (dBi)
2350	-13.04	4.96	-5.21
2355	-12.88	5.15	-5.02
2360	-12.38	5.77	-4.53
2365	-12.25	5.96	-4.39
2370	-12.10	6.16	-4.20
2375	-11.95	6.39	-3.98
2380	-11.74	6.70	-3.75
2385	-11.34	7.34	-3.25
2390	-11.16	7.65	-3.13
2395	-10.82	8.28	-2.64
2400	-10.91	8.10	-2.75
2402	-10.98	7.97	-2.73
2405	-10.98	7.98	-2.71
2410	-10.87	8.19	-2.54
2415	-10.81	8.29	-2.44
2420	-10.54	8.83	-2.07
2425	-10.53	8.86	-2.12
2430	-10.58	8.75	-2.14
2435	-10.69	8.53	-2.40
2440	-10.74	8.43	-2.45
2441	-10.73	8.46	-2.50
2445	-10.69	8.53	-2.60



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2450	-10.76	8.39	-2.71
2455	-10.79	8.34	-2.77
2460	-11.11	7.75	-3.14
2465	-11.34	7.35	-3.43
2470	-11.78	6.64	-3.94
2475	-11.98	6.35	-4.20
2480	-12.23	5.98	-4.65
2485	-12.41	5.74	-5.03
2490	-12.59	5.51	-5.32
2495	-12.66	5.42	-5.60
2500	-12.84	5.20	-5.90
2505	-12.97	5.04	-6.21
2510	-13.27	4.71	-6.69
2515	-13.75	4.22	-7.32
2520	-14.25	3.76	-7.98
2525	-14.80	3.31	-8.44
2530	-15.21	3.01	-8.83
2535	-15.58	2.77	-9.07
2540	-15.74	2.66	-9.10
2545	-15.82	2.62	-9.04
2550	-15.94	2.55	-9.06
2555	-16.10	2.45	-9.06
2560	-16.32	2.33	-9.12
2565	-16.41	2.29	-9.12
2570	-16.43	2.28	-8.92
2575	-16.38	2.30	-8.85
2580	-16.29	2.35	-8.57



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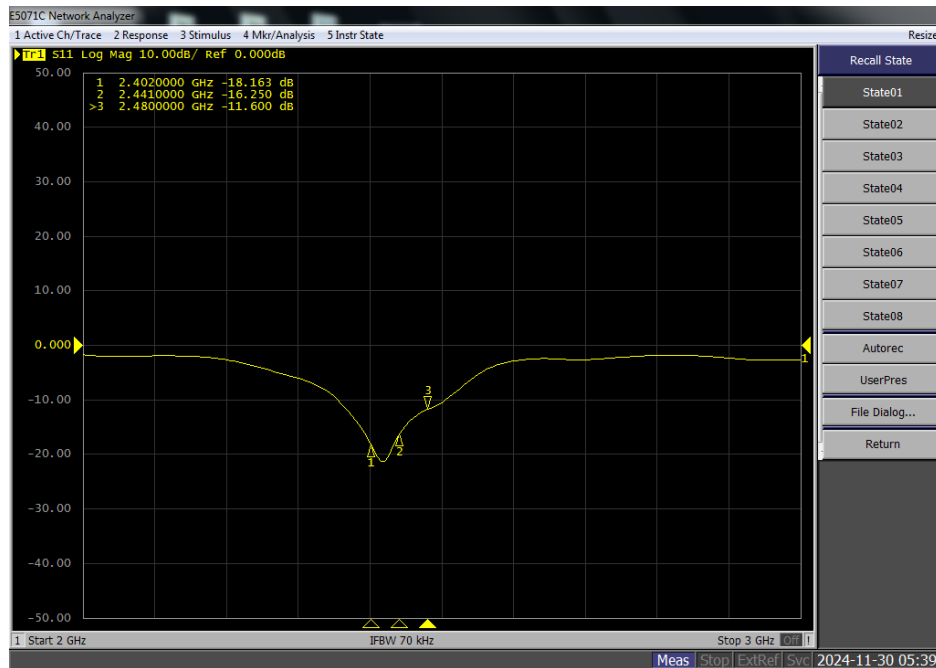
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6 Pattern Plots

6.1 Return Loss



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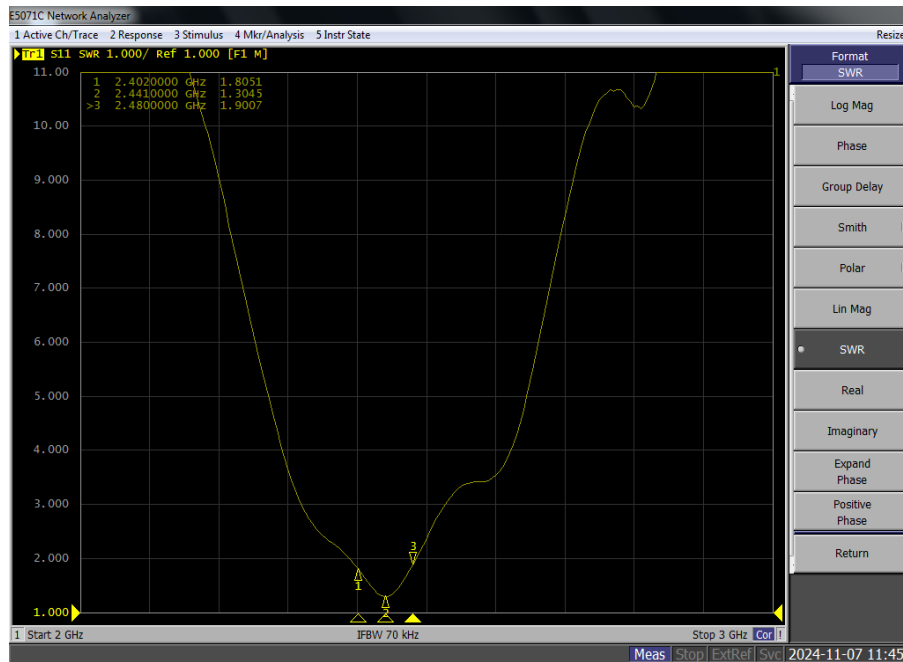
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6.2 VSWR



Free Space



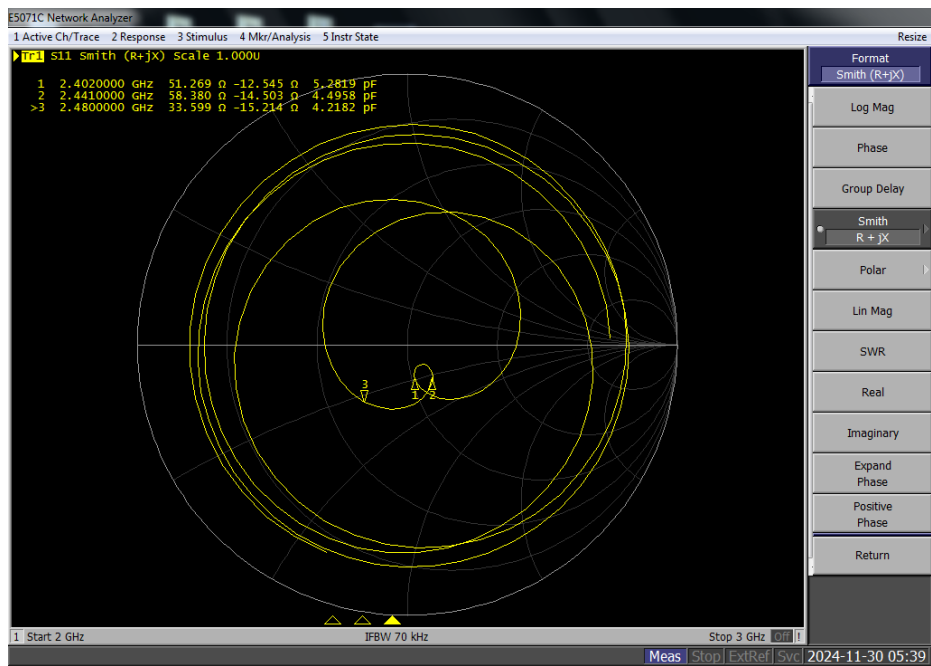
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6.3 Stimulus



Free Space

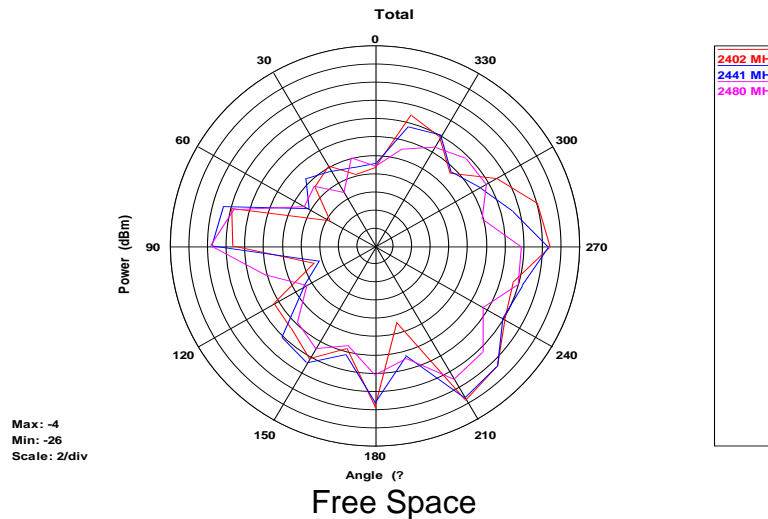


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7 2-D Antenna Pattern(Theta=90°)

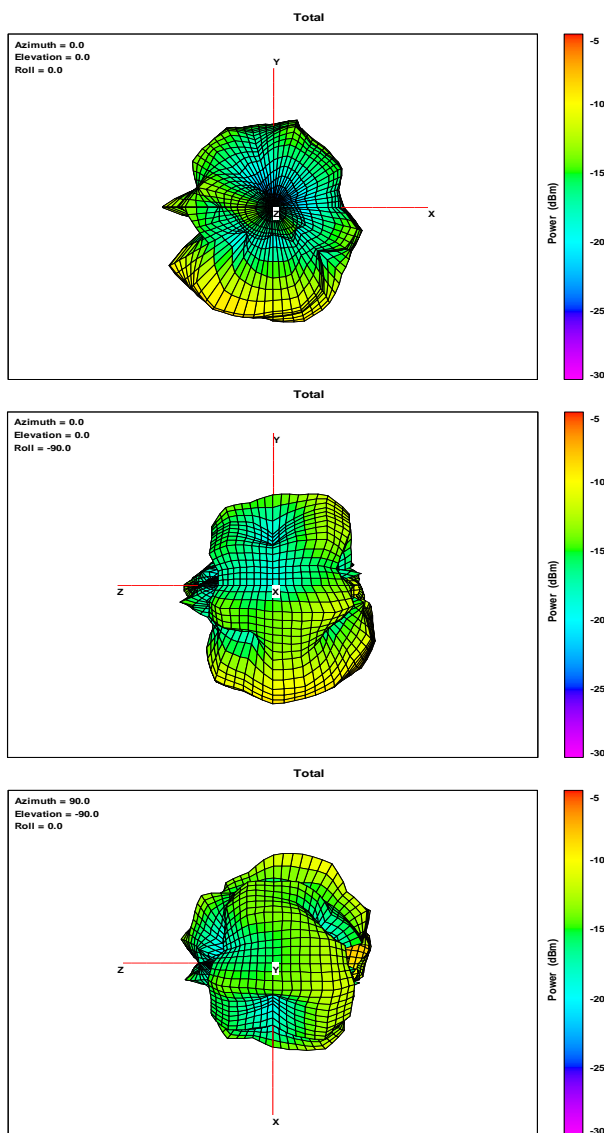


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8 3-D Antenna Pattern



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9 The EUT and Test Configuration

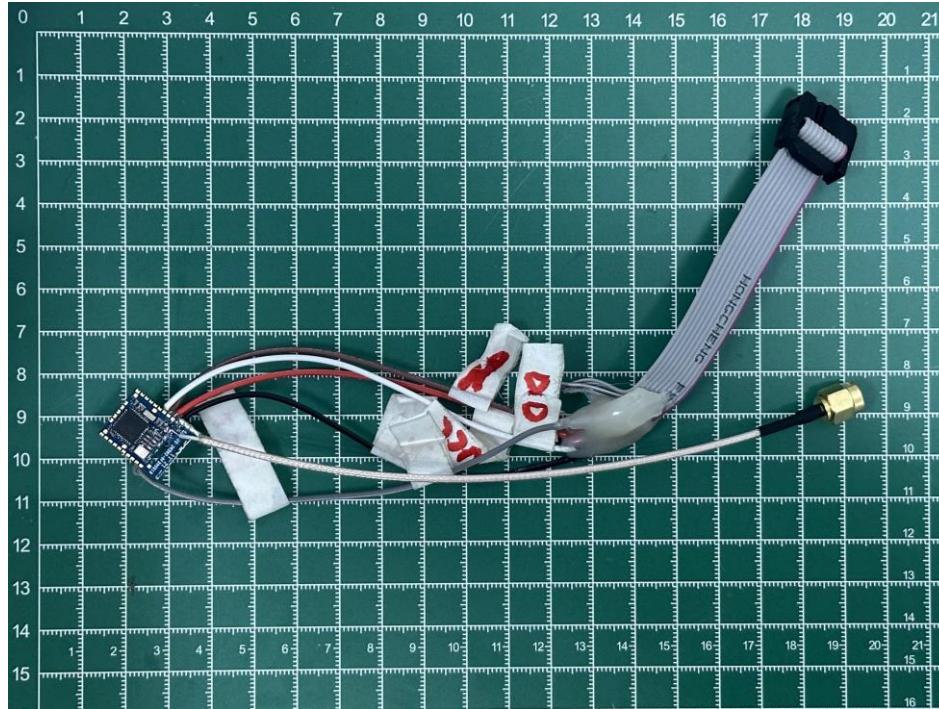
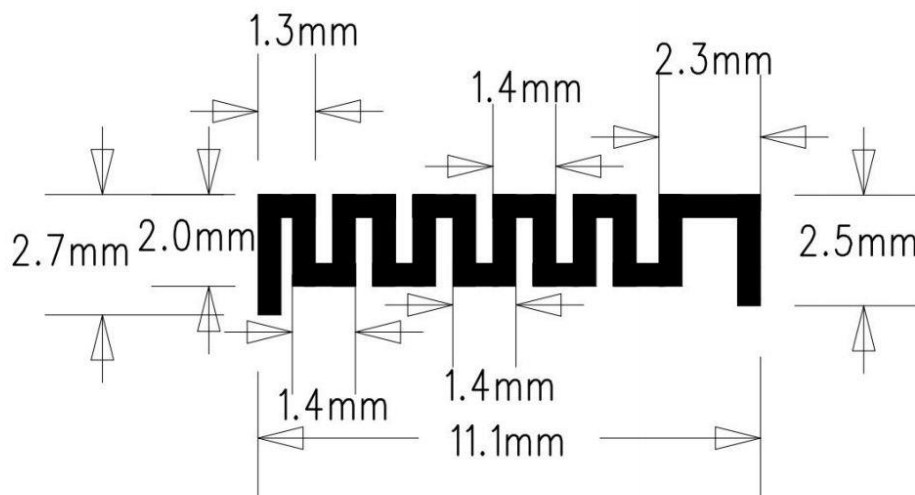


Photo of EUT



Antenna Dimensions



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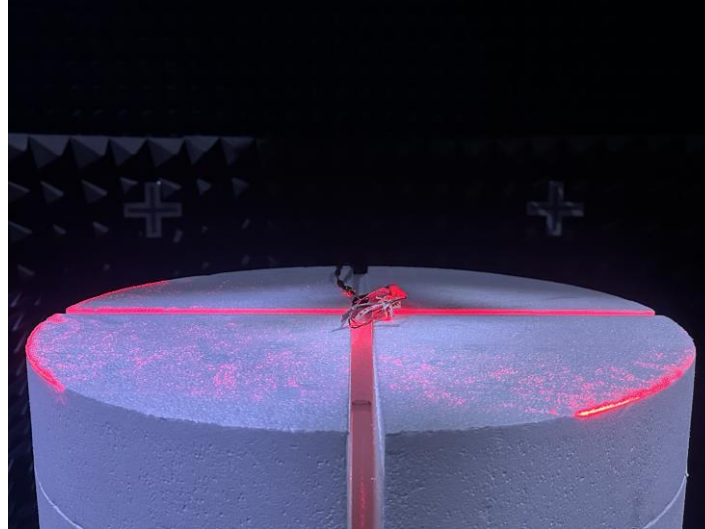
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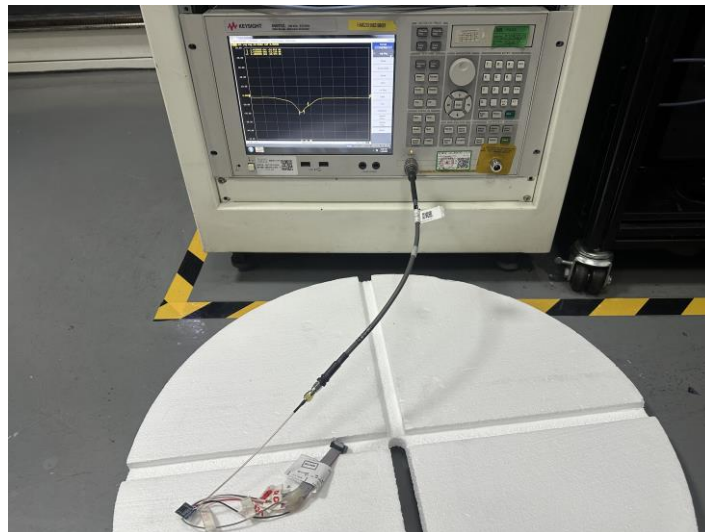
Report No.: SZOA2411000217MO01

Rev.: 01

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Free Space View



Free Space Setup

---END---



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