ANTENNA PASSIVE TEST REPORT

Application No.	ZO/2021/90001
Applicant	Ember Technologies, Inc.
Manufacturer	Ember Technologies, Inc.
Product Name	Integrated Device
Model No.	CM21M
Standards	ANSI/IEEE Std 149-2008
Date Initial Sample(s) Received	2021/08/30
Testing Start Date	2021/09/01
Testing Finish Date	2021/09/01
Report Issue Date	2021/09/11

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

Max. Huang	Erwin Li	Derek yang
Prepared by	Reviewed by	Approved by

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Revision Version

Report No.	Version	Date	Memo
ZO/2021/9000101	00	2021/09/11	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	Panta Sun
Tel.	+86 (0) 755 2601 2053
Fax	+86 (0) 755 2671 0594
E-mail	Panta.Sun@sgs.com

1.2 Details of Applicant

Applicant's Name	Ember Technologies, Inc.
Applicant's Address	4607 Lakeview Canyon Rd., #500, Westlake Village CA 91361 USA
Contact	Alicia Mao
Tel.	+1 626-905-9201
Fax	/
E-mail	Alicia.mao@ember.com

1.3 Details of Manufacturer

Manufacturer's Name	Ember Technologies, Inc.
Manufacturer's Address	4607 Lakeview Canyon Rd., #500, Westlake Village CA 91361 USA
Contact	Alicia Mao
Tel.	+1 626-905-9201
Fax	/
E-mail	Alicia.mao@ember.com

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1.4 General Description of EUT

Device Description:	Ember Temperature Control Mug2
Device Manufacturer:	Ember Technologies, Inc.
Device Model:	CM21M
Hardware Version:	/
Software Version:	/

1.5 Test Procedure

Testing is performed according to the **ANSI/IEEE Std 149-2008**.

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1.1 Test Specification

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

1.2 Laboratory Environment

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

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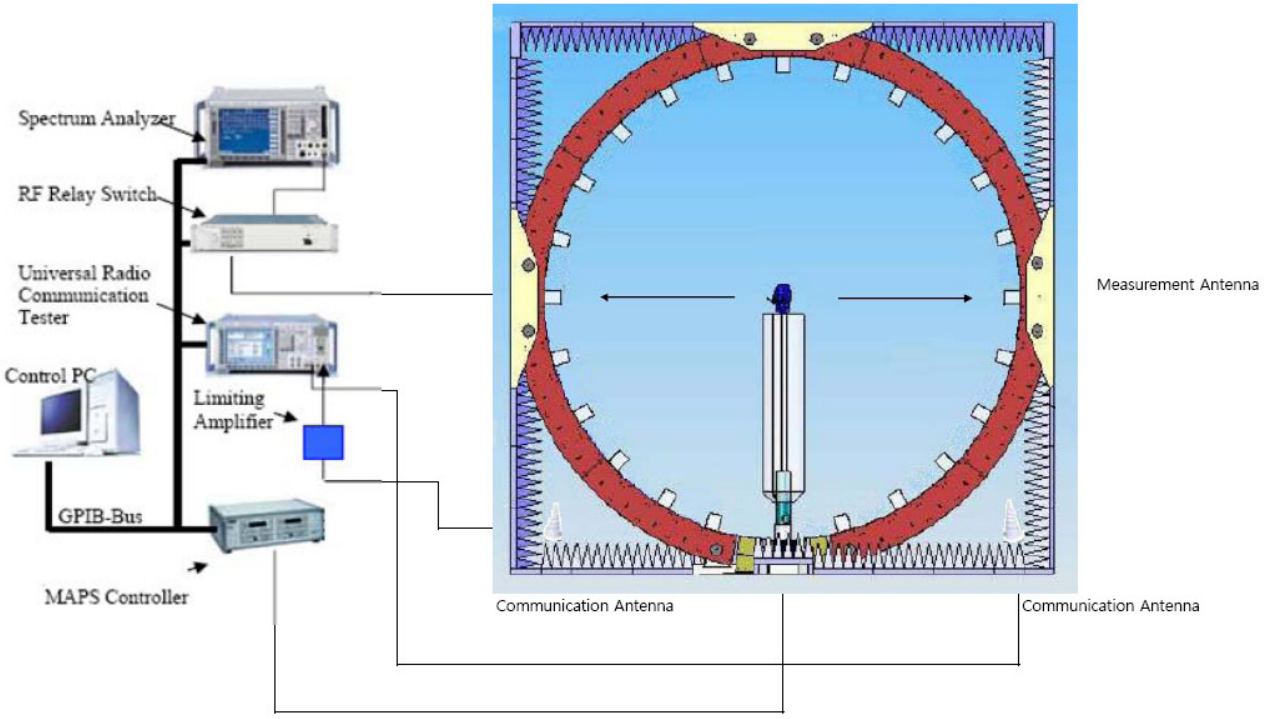
2 OTA Measurements System Configuration

2.1 Test Configuration

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	2021-04-14	2022-04-13
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

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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

FS			
Frequency (MHz)	**Efficiency (dB)**	**Efficiency (%)**	**Gain (dBi)**
2350	-8.70	13.50	-1.66
2355	-8.63	13.71	-1.58
2360	-8.39	14.48	-1.31
2365	-8.34	14.64	-1.28
2370	-8.34	14.65	-1.38
2375	-8.38	14.53	-1.43
2380	-8.33	14.70	-1.45
2385	-8.27	14.90	-1.41
2390	-8.10	15.51	-1.22
2395	-7.81	16.56	-0.94
2400	-7.69	17.01	-0.75
2402	-7.65	17.16	-0.80
2405	-7.57	17.51	-0.68
2410	-7.52	17.68	-0.69
2415	-7.45	18.00	-0.63
2420	-7.36	18.37	-0.57
2425	-7.16	19.21	-0.35
2430	-7.05	19.71	-0.26
2435	-6.89	20.46	-0.06
2440	-6.71	21.35	0.12
2441	-6.68	21.47	0.11
2445	-6.53	22.22	0.33
2450	-6.34	23.22	0.55

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2455	-6.18	24.11	0.68
2460	-6.07	24.74	0.81
2465	-5.88	25.82	0.90
2470	-5.88	25.80	0.94
2475	-5.72	26.77	1.01
2480	-5.71	26.85	1.14
2482	-5.62	27.42	1.31
2485	-5.47	28.40	1.37
2490	-5.27	29.69	1.67
2495	-5.00	31.61	1.98
2500	-4.87	32.60	2.13
2505	-4.79	33.18	2.26
2510	-4.69	33.93	2.22
2515	-4.80	33.14	2.09
2520	-4.82	32.97	1.97
2525	-4.92	32.24	1.88
2530	-4.93	32.17	1.86
2535	-4.95	32.02	1.84
2540	-4.95	32.00	1.89
2545	-4.84	32.80	1.97
2550	-4.95	31.98	1.88
2555	-4.98	31.76	1.77
2560	-5.17	30.39	1.57
2565	-5.27	29.73	1.38
2570	-5.44	28.58	1.19
2575	-5.61	27.46	1.00
2580	-5.64	27.30	0.93

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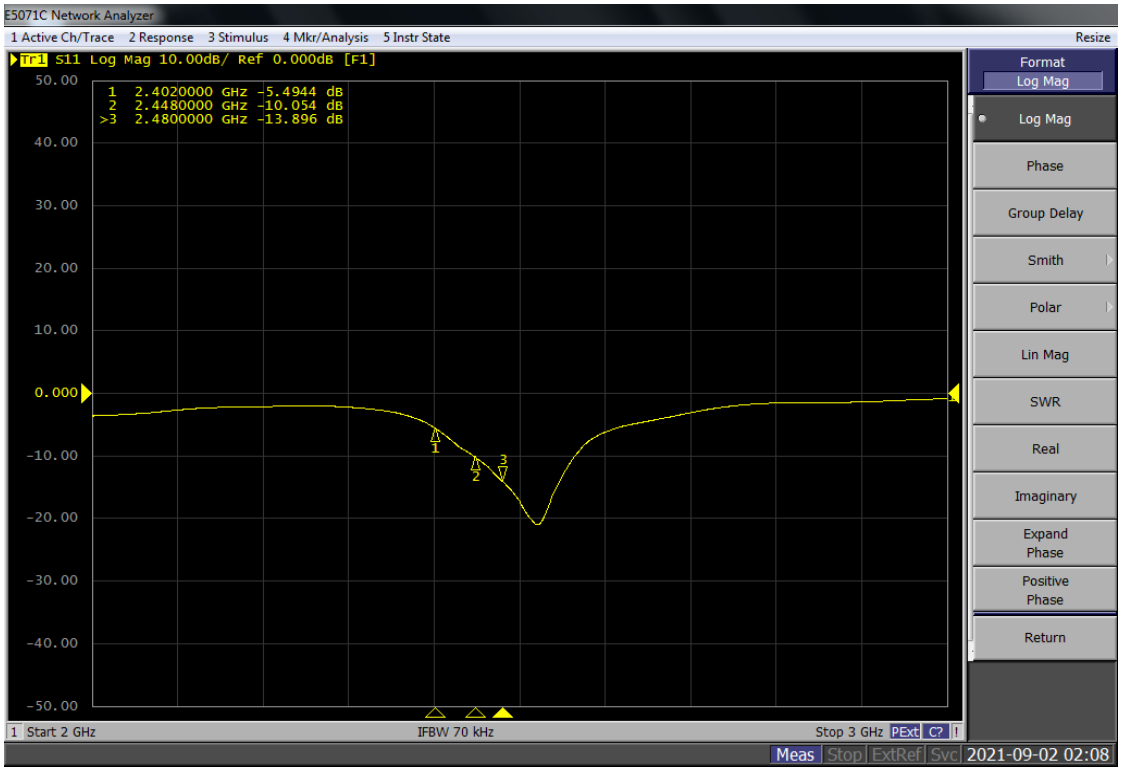
6 Pattern Plots

6.1 Return Loss



Free Space

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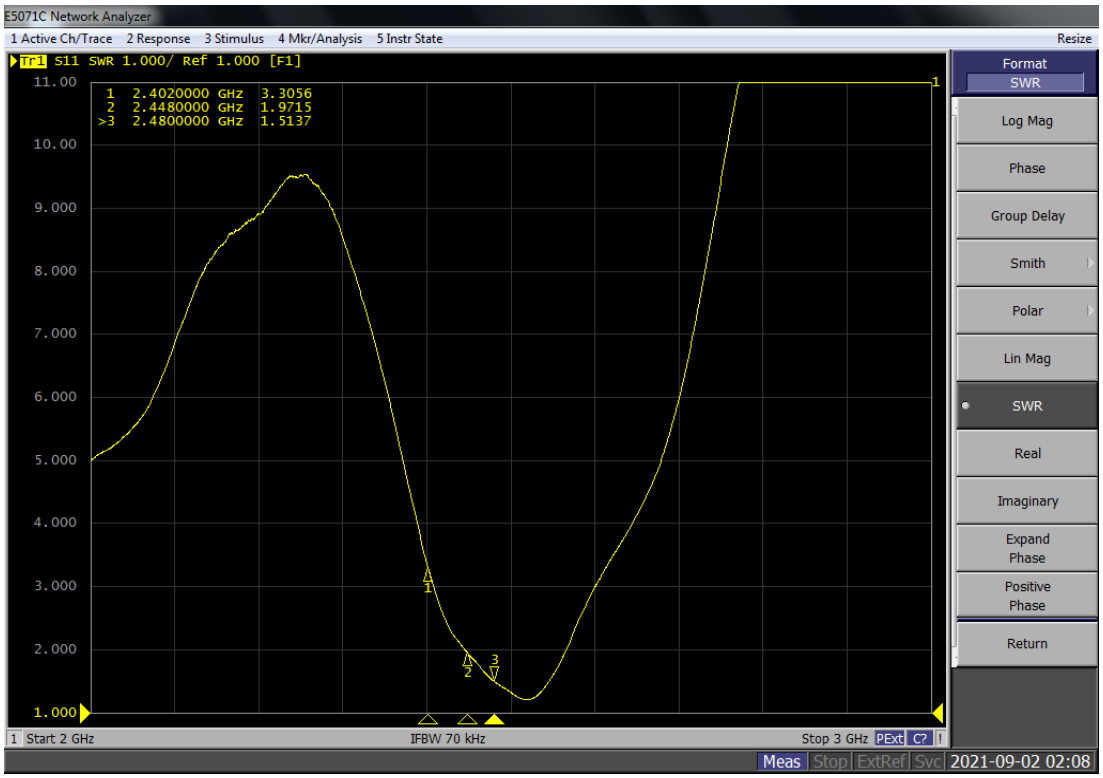
6.2 VSWR



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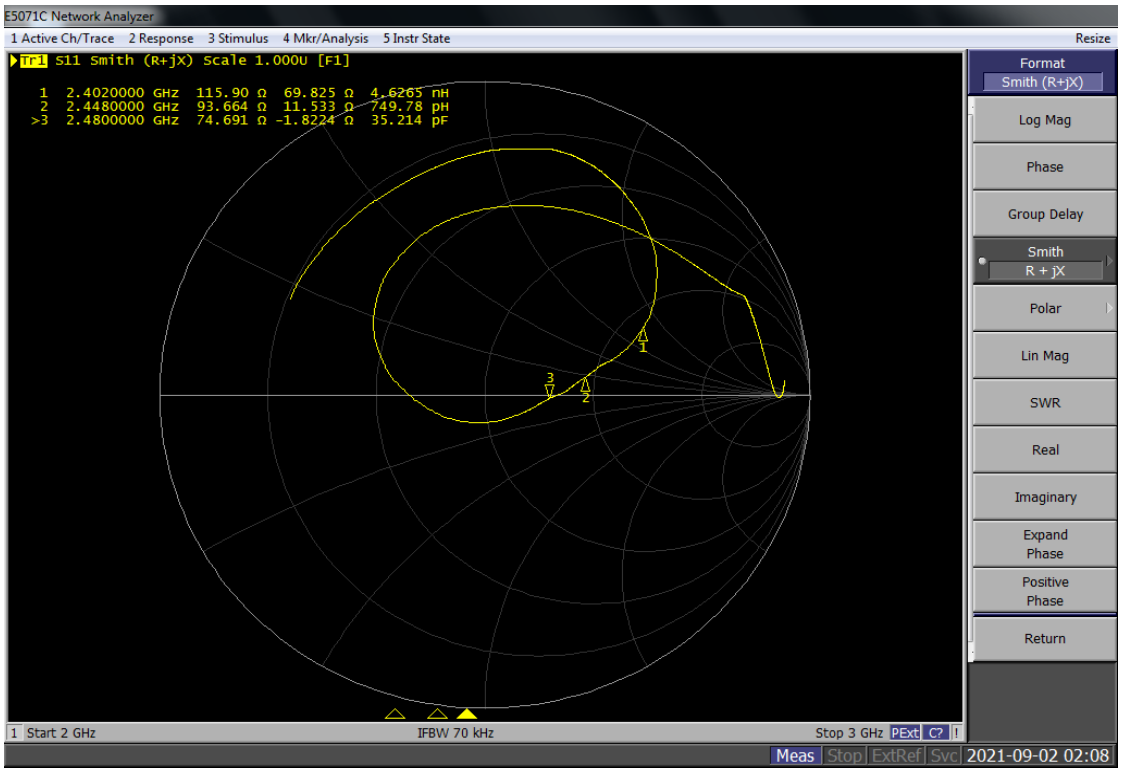
6.3 Stimulus



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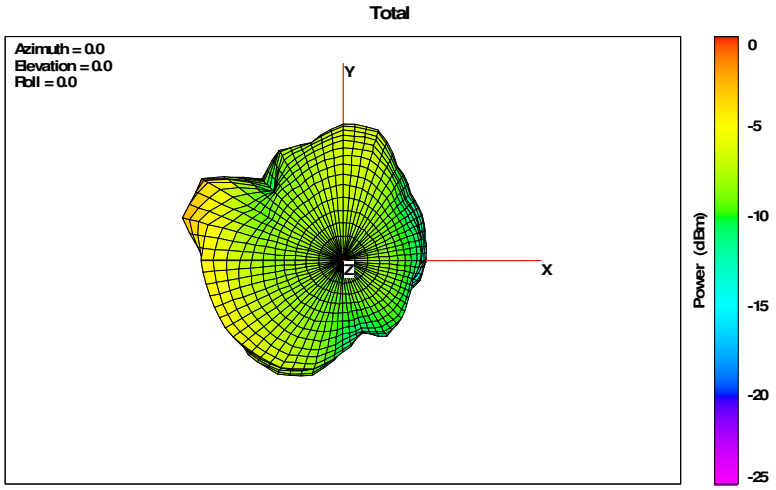
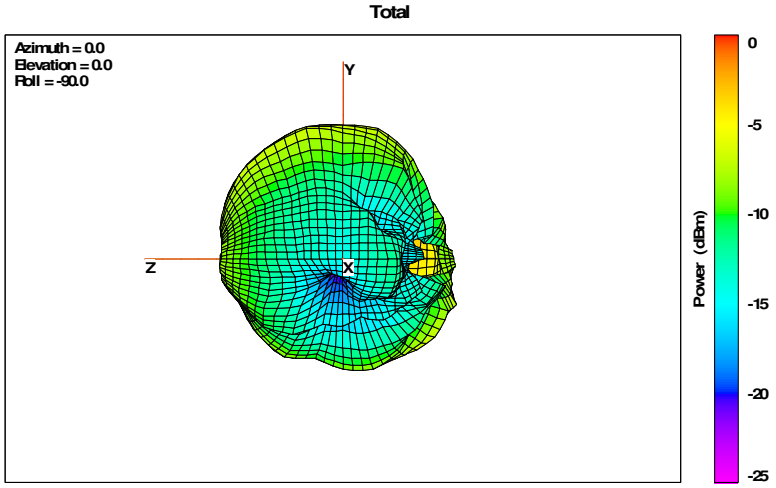
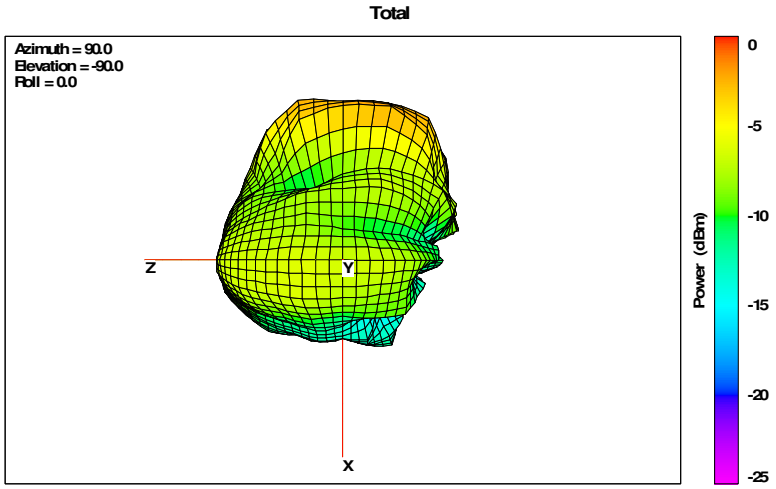
7 3-D Antenna Pattern







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8 The EUT and Test Configuration

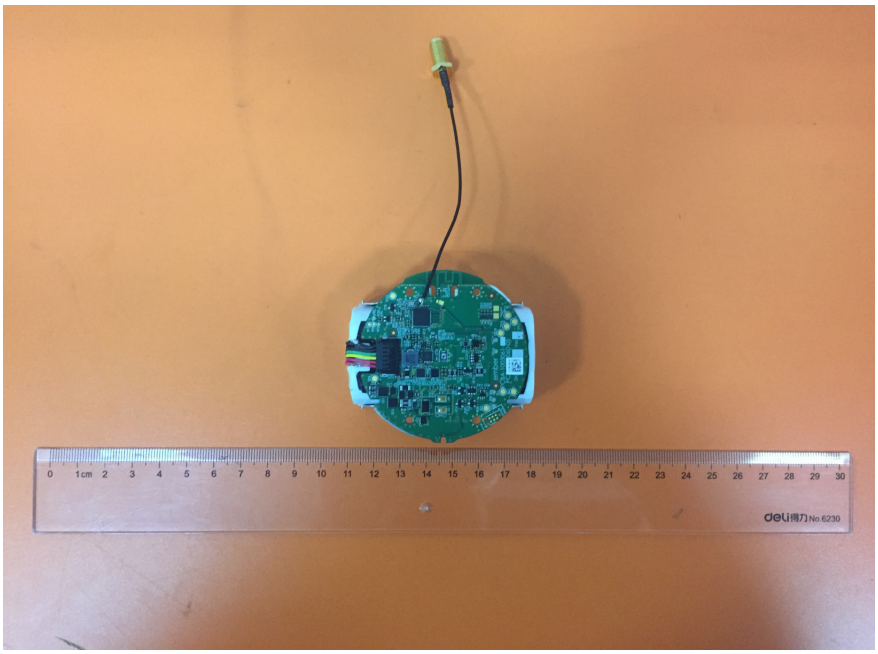
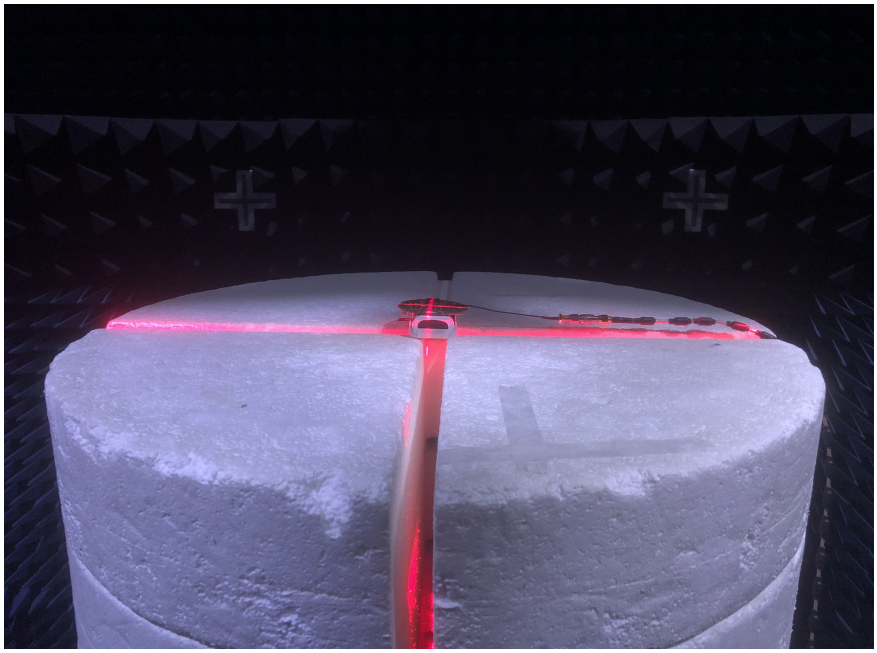


Photo of EUT



Front View

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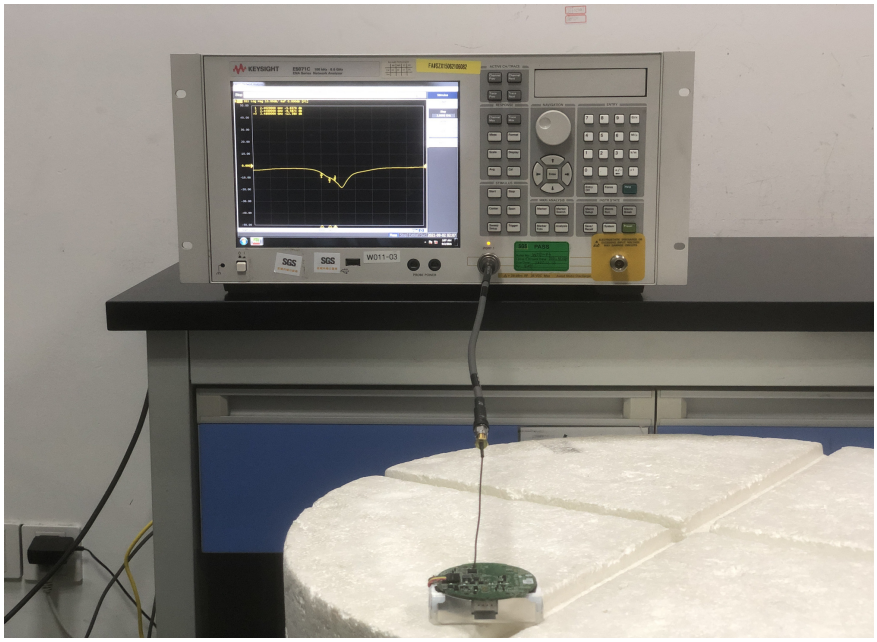

Impedance Setup

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