



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

SZEMC-TRF-01 Rev. A/0 Aug01,2022

Report No.: SZCR221000365101

Page: 1 of 19

ANTENNA PASSIVE TEST REPORT

Application No.	SZCR2210003651AT
Applicant	Minut, Inc.
Manufacturer	Minut, Inc.
Product Name	Minut Home Sensor
Model No.	MT-AM1
Standards	ANSI/IEEE Std 149-2008
Date Initial Sample(s) Received	2022-12-07
Testing Start Date	2022-12-08
Testing Finish Date	2022-12-08 to 2022-12-09
Report Issue Date	2022-12-09

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

Keny Xu
EMC Laboratory Manager



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Revision Record				
Version	Chapter	Date	Modifier	Remark
01		2022-12-09		Original

Authorized for issue by:	Prepared by Ian Li	
	Reviewed by Mark Mao	
	Approved by Eric Fu	

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2 Revision Version

Report No.	Version	Date	Memo
SZCR2210003651AT	00	12/09	Initial creation of report



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4 General Information

4.1 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	Mark Mao
Tel.	+86 (0) 755 2532 8628
Fax	+86 (0) 755 2671 0594
E-mail	Mark.Mao@sgs.com

4.2 Details of Applicant

Applicant's Name	Minut, Inc.
Applicant's Address	Baltzarsgatan 23 Minut AB Malmo 211 36 Sweden
Contact	Fredrik Ahlberg
Tel.	+46705518852
E-mail	fredrik@minut.com

4.3 Details of Manufacturer

Manufacturer's Name	Minut, Inc.
Manufacturer's Address	Baltzarsgatan 23 Minut AB Malmo 211 36 Sweden
Contact	Fredrik Ahlberg
Tel.	+46705518852
E-mail	fredrik@minut.com

4.4 General Description of EUT

Device Description:	Minut Home Sensor
Device Manufacturer:	Minut AB
Device Model:	MT-AM1
Hardware Version:	N/A
Software Version:	N/A
S/N:	N/A



4.5 Test Procedure

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

4.6 Test Specification

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

4.7 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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4.8 Test Location

All tests were performed at:

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518057.

Tel: +86 755 2601 2053 Fax: +86 755 2671 0594

No tests were sub-contracted.

4.9 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

- **A2LA (Certificate No. 3816.01)**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory is accredited by the American Association for Laboratory Accreditation(A2LA). Certificate No. 3816.01.

4.10 Deviation from Standards

None

4.11 Abnormalities from Standard Conditions

None

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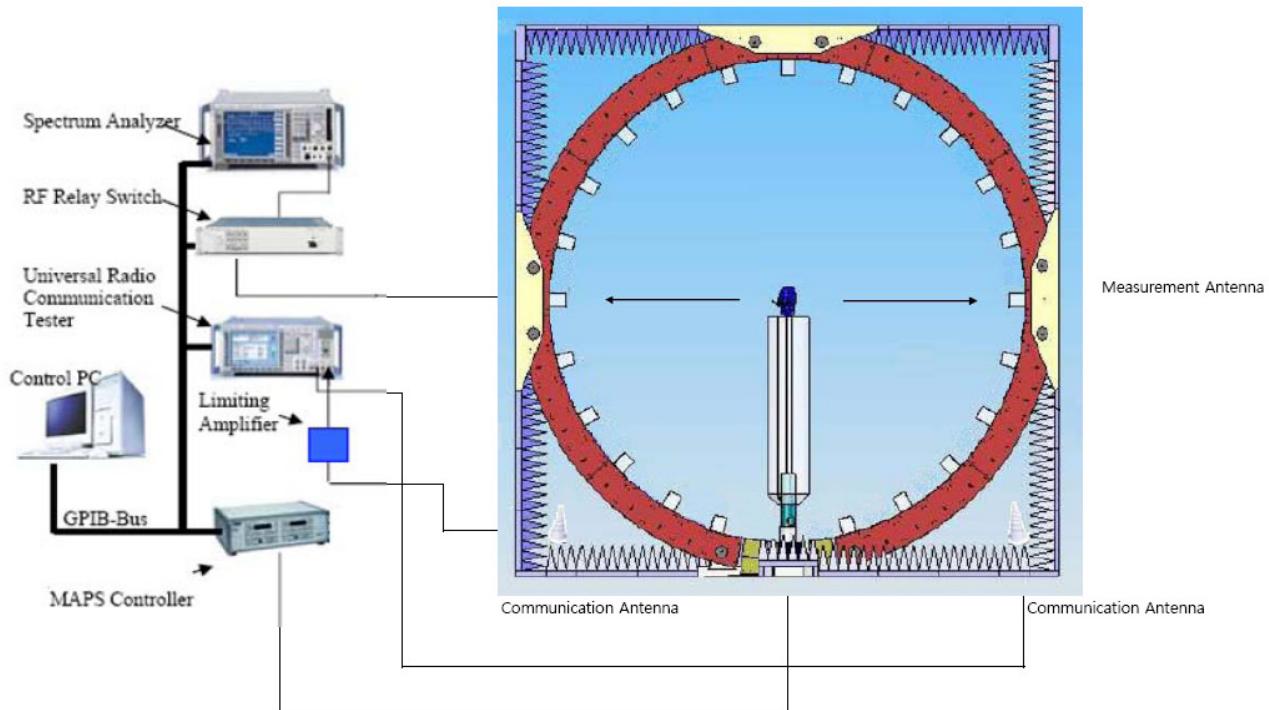
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5 OTA Measurements System Configuration

5.1 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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6 Equipment List

Type of Equipment	Model Number	Manufacture	Calibration Date	Valid Period
Network Analyzer	E5071C S/N MY46523591	Keysight	2022/4/11	2023/4/10
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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7 Measurement Uncertainty

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



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8 Test Result

8.1 Test summary

product	Maximum Gain Data			
	Frequency (MHz)	Efficiency (dB)	Efficiency (%)	Gain (dBi)
Wi-Fi antenna	2500	-4.51	35.39	3.21
BT antenna	2500	-4.25	37.57	1.01

8.2 Wi-Fi Antenna Test Results

Free Space			
Frequency (MHz)	Efficiency (dB)	Efficiency (%)	Gain (dBi)
2400	-5.08	31.05	2.58
2402	-5.07	31.14	2.60
2405	-5.07	31.14	2.69
2410	-5.13	30.68	2.59
2415	-5.15	30.57	2.62
2420	-5.18	30.34	2.52
2425	-5.13	30.72	2.63
2430	-5.16	30.50	2.54
2435	-5.16	30.48	2.56
2440	-5.07	31.09	2.58
2441	-5.07	31.11	2.60
2445	-5.06	31.21	2.61
2450	-4.98	31.80	2.67
2455	-4.95	32.00	2.75
2460	-4.91	32.27	2.79
2465	-4.86	32.65	2.90
2470	-5.02	31.49	2.72
2475	-5.01	31.54	2.76
2480	-5.18	30.35	2.52
2482	-5.13	30.71	2.59
2485	-5.02	31.47	2.67
2490	-4.94	32.04	2.73
2495	-4.59	34.71	3.11
2500	-4.51	35.39	3.21

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8.3 BT Antenna Test Results

Free Space			
Frequency (MHz)	Efficiency (dB)	Efficiency (%)	Gain (dBi)
2400	-4.49	35.60	0.68
2402	-4.48	35.63	0.65
2405	-4.44	35.98	0.78
2410	-4.53	35.22	0.69
2415	-4.59	34.78	0.64
2420	-4.69	34.00	0.56
2425	-4.64	34.36	0.54
2430	-4.69	33.99	0.47
2435	-4.68	34.01	0.41
2440	-4.62	34.53	0.54
2441	-4.63	34.44	0.55
2445	-4.62	34.48	0.58
2450	-4.55	35.09	0.76
2455	-4.53	35.26	0.83
2460	-4.49	35.54	0.78
2465	-4.45	35.89	0.83
2470	-4.60	34.65	0.58
2475	-4.66	34.19	0.59
2480	-4.89	32.46	0.32
2482	-4.86	32.63	0.30
2485	-4.81	33.01	0.53
2490	-4.73	33.65	0.54
2495	-4.39	36.36	0.93
2500	-4.25	37.57	1.01



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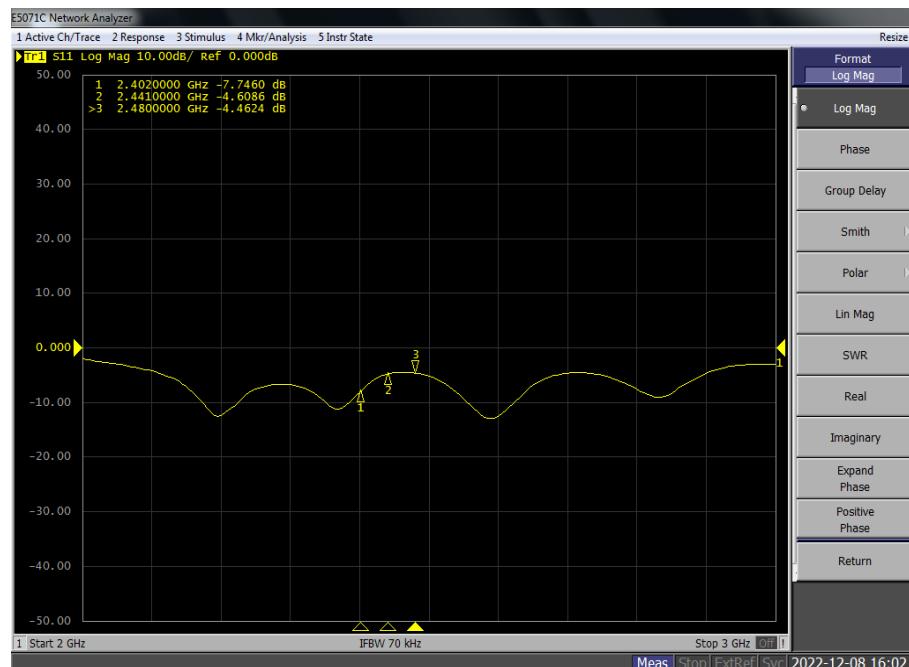
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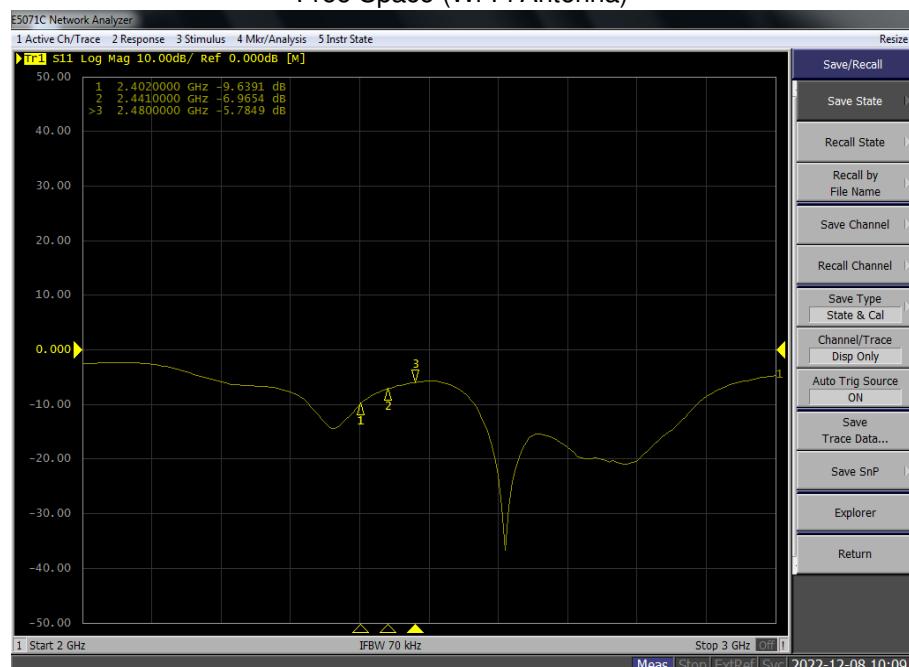
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9 Pattern Plots

Return Loss



Free Space (Wi-Fi Antenna)



Free Space (BT Antenna)

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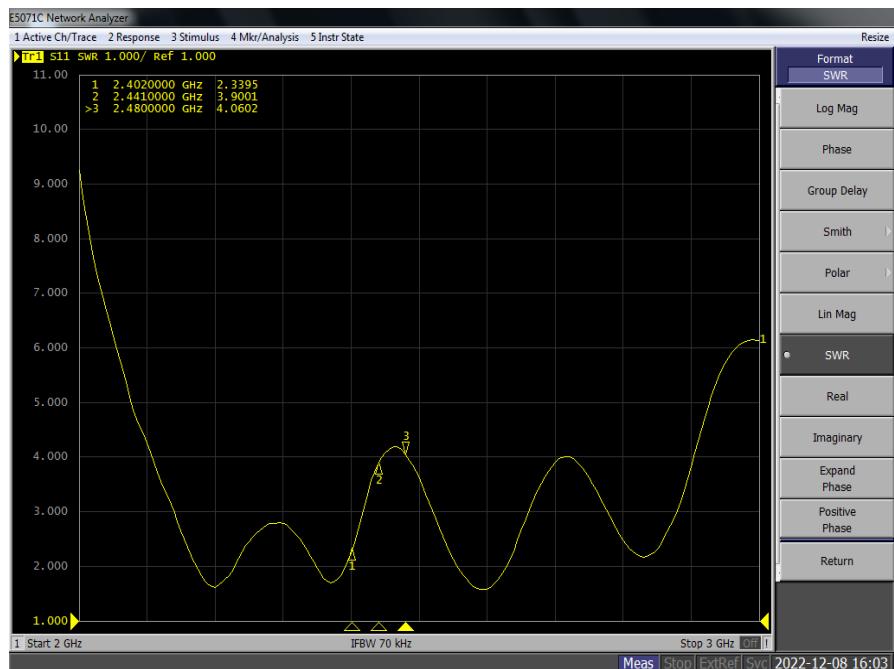
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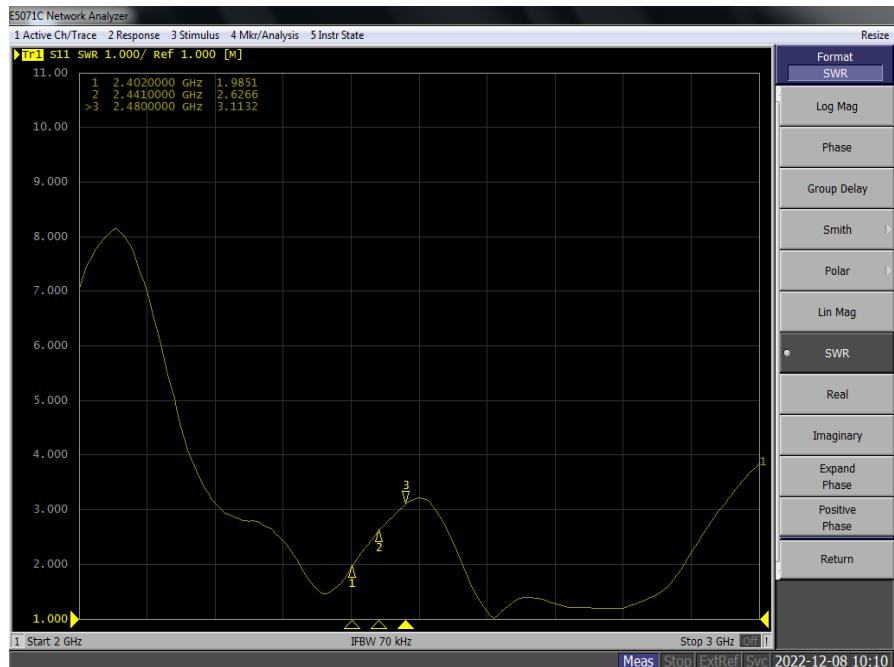
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Free Space (Wi-Fi Antenna)



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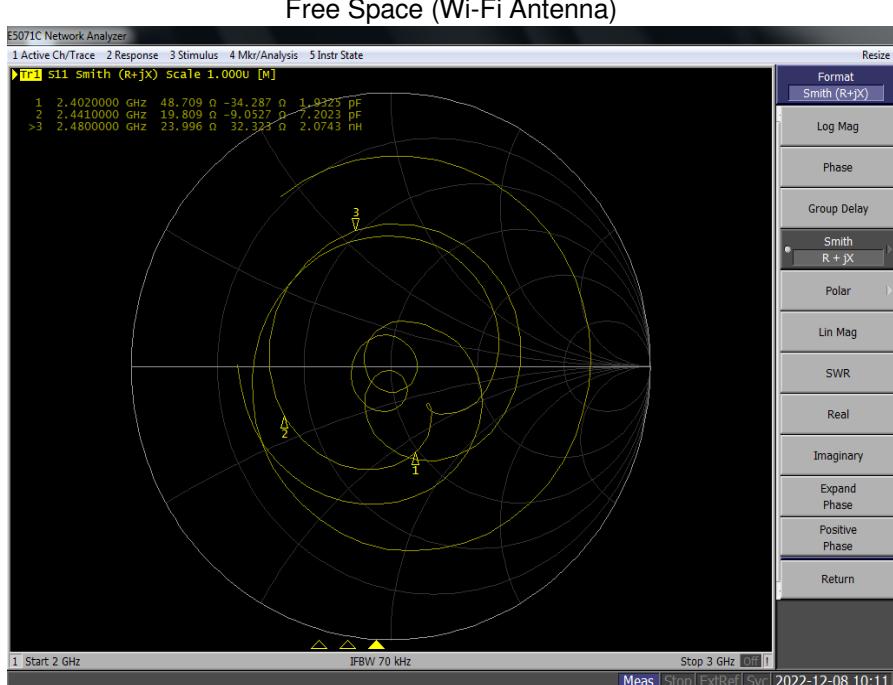
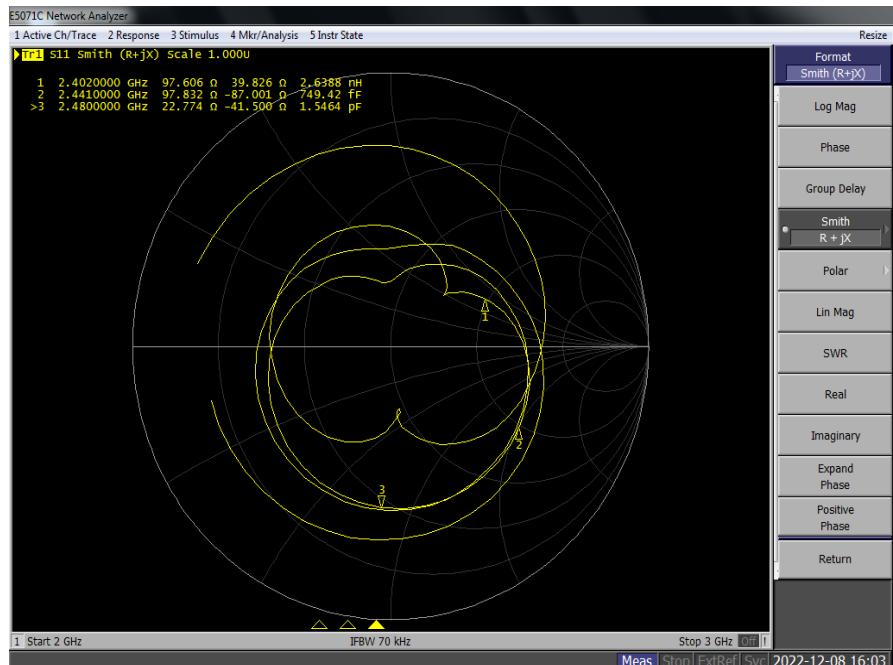
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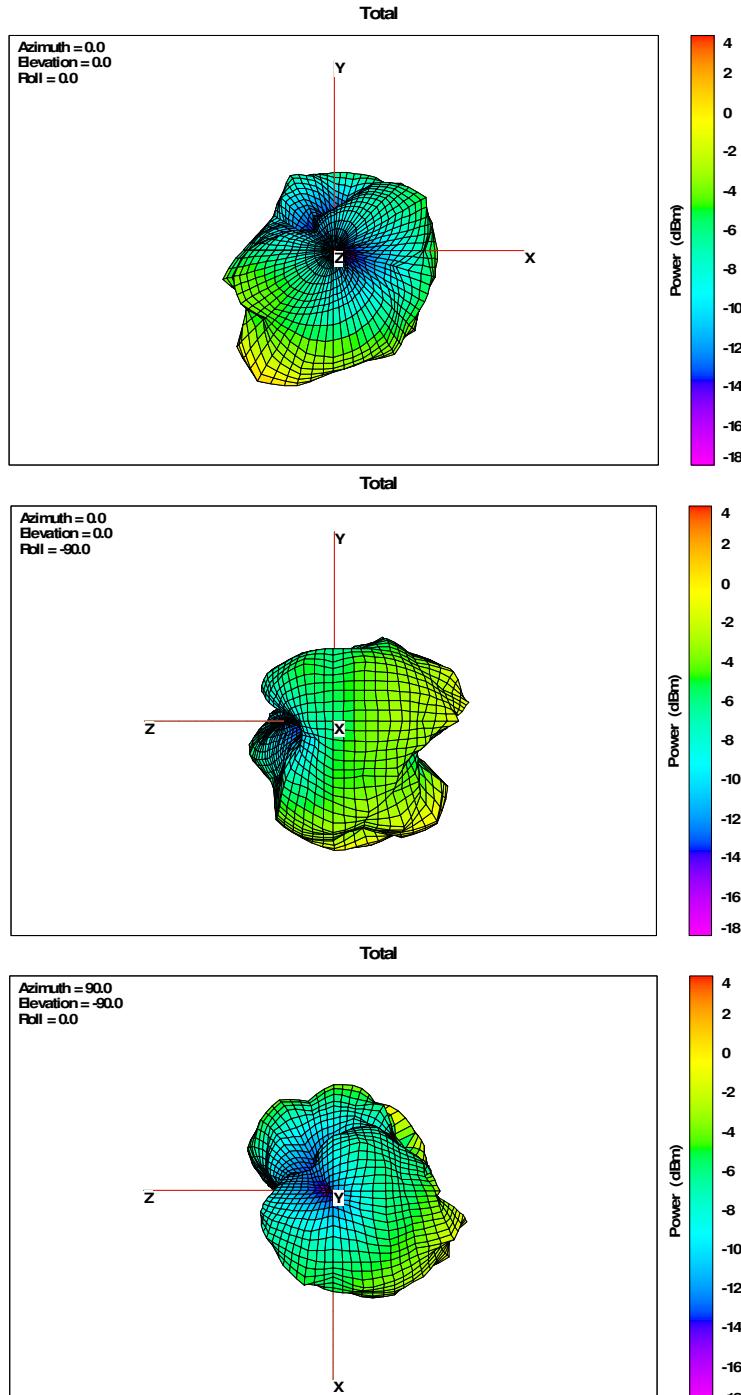
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10 3-D Antenna Pattern



Wi-Fi Antenna 3-D Antenna Pattern

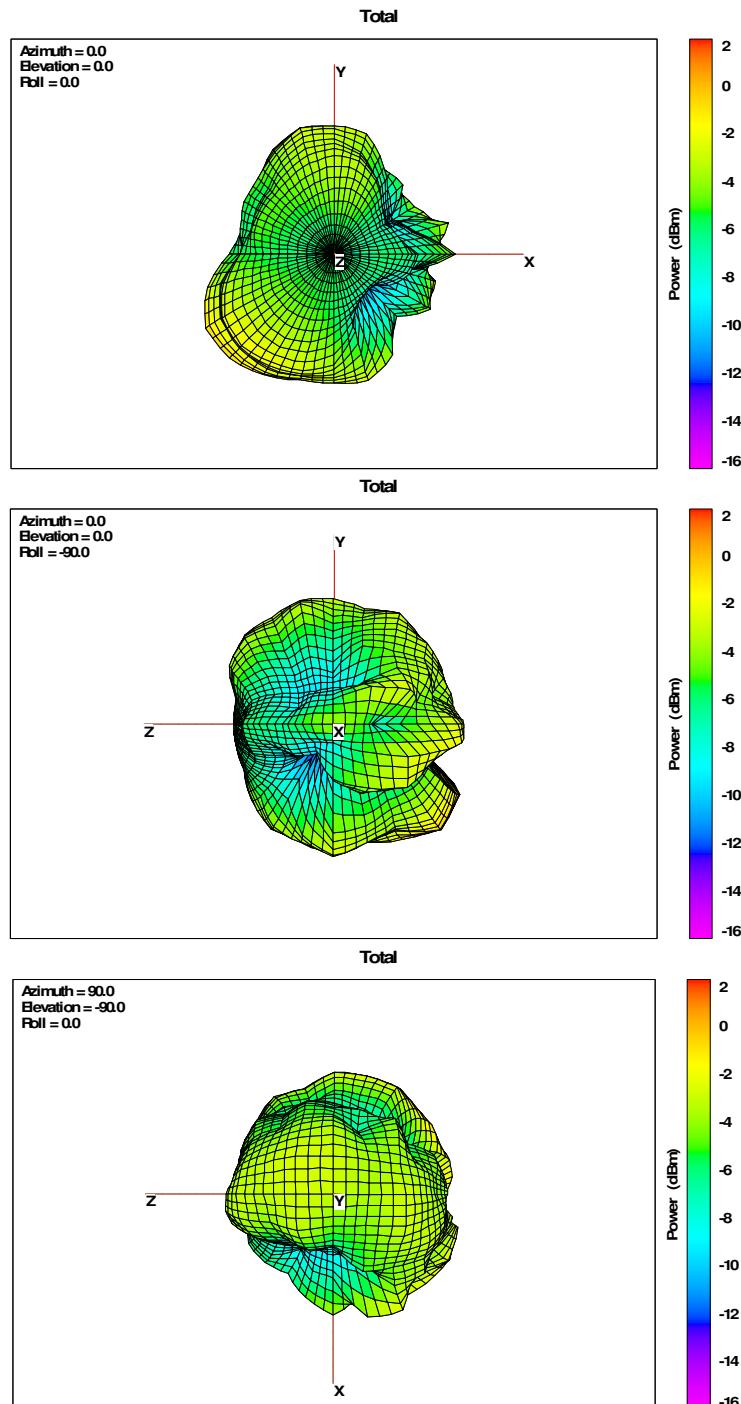


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BT Antenna 3-D Antenna Pattern



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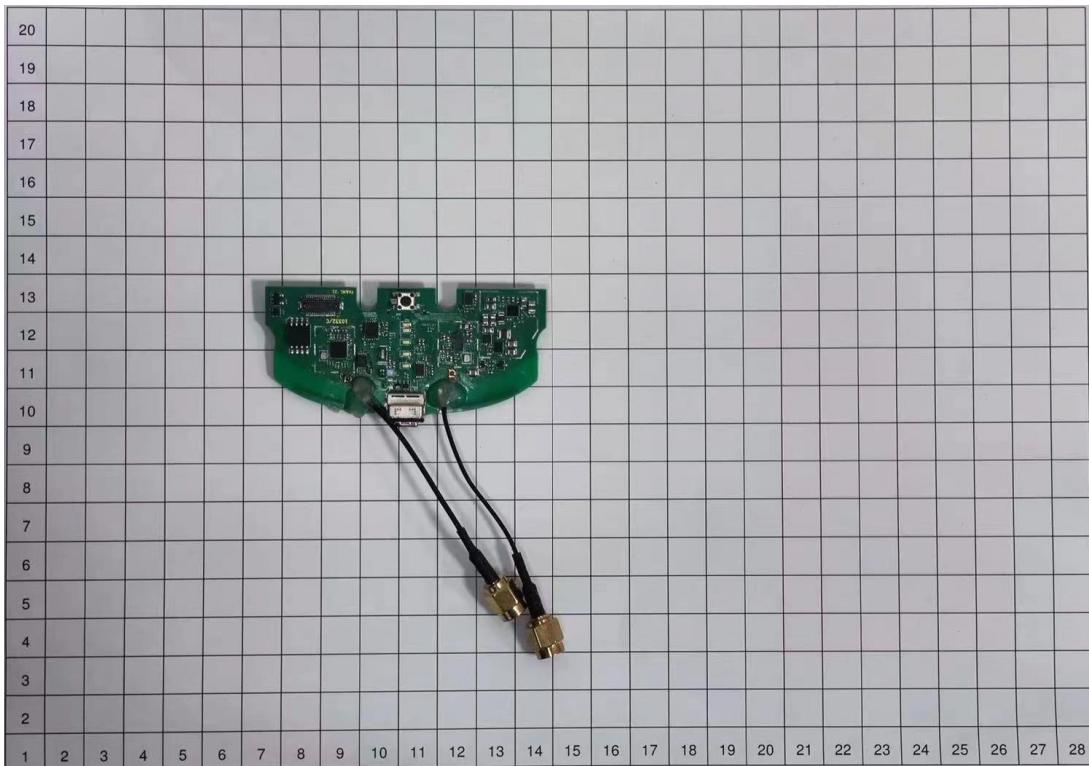
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11 The EUT and Test Configuration

Photo of EUT



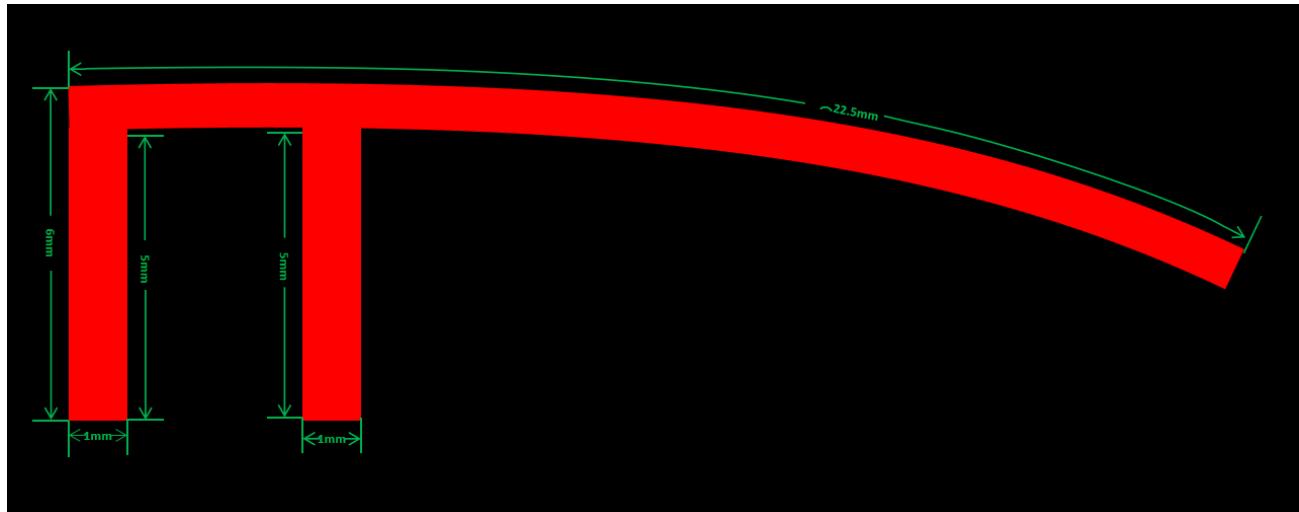
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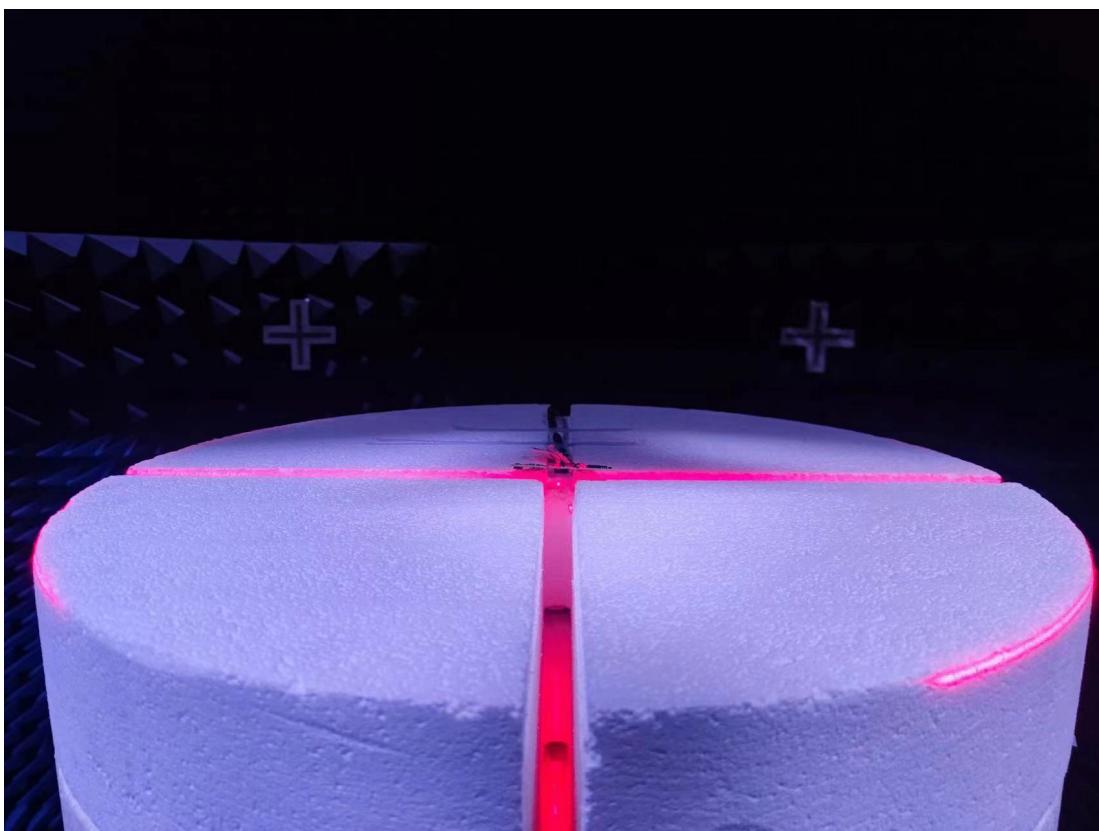
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Size of the Antenna



Size of the Antenna in the EUT

Free Space View



- End of the Report -



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