

ANTENNA PASSIVE TEST REPORT

Application No. ZEWM2302000117OA
Applicant ACCO Brands USA LLC
Manufacturer Hosiden Corporation
Product Name Pattern Antenna
Model No. AT72780
Standards ANSI/IEEE Std 149-2008
Date Initial Sample(s) Received 2023.02.10
Testing Start Date 2023.02.10
Testing Finish Date 2023.02.10
Report Issue Date 2023.02.16

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

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Prepared by

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Reviewed By

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Approved by



Revision Version

Report No.	Version	Date	Memo
ZEWM2302000117OA01	00	2023.02.16	Initial creation of report



TABLE OF CONTENTS

1	GENERAL INFORMATION	4
1.1	Testing Laboratory.....	4
1.2	Details of Applicant	4
1.3	Details of Manufacturer	4
1.4	General Description of EUT.....	5
1.5	Test Procedure	5
1.6	Test Specification	6
1.7	Laboratory Environment.....	6
2	OTA MEASUREMENTS SYSTEM CONFIGURATION	7
2.1	Test Configuration.....	7
3	TEST EQUIPMENT LIST.....	8
4	MEASUREMENT UNCERTAINTY	9
5	TEST RESULTS.....	10
6	PATTERN PLOTS	12
6.1	Return Loss.....	12
6.2	VSWR	13
6.3	Stimulus	14
7	2-D ANTENNA PATTERN	15
8	3-D ANTENNA PATTERN	16
9	ANTENNA DIMENSION DRAWING.....	17



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	ACCO Brands USA LLC
Applicant's Address	4 Corporate Dr. Lake Zurich IL 60047 United States
Contact	Elena Zhong
Tel.	+86 755 2682 7016
Fax	N/A
E-mail	elena.zhong@powera.com

1.3 Details of Manufacturer

Manufacturer's Name	Hosiden Corporation
Manufacturer's Address	4-33, Kitakyuhoji 1-chome, Yao-City, Osaka 581-0071 Japan
Contact	Elena Zhong
Tel.	+86 755 2682 7016
Fax	N/A
E-mail	elena.zhong@powera.com



1.4 General Description of EUT

Device Description:	Pattern Antenna
Device Manufacturer:	Hosiden Corporation
Device Model:	AT72780
Hardware Version:	N/A
Software Version:	N/A

1.5 Test Procedure

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



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	



SGS-CSTC Standards Technical Services Co., Ltd.
Shenzhen Branch Testing Center, EMC Laboratory.

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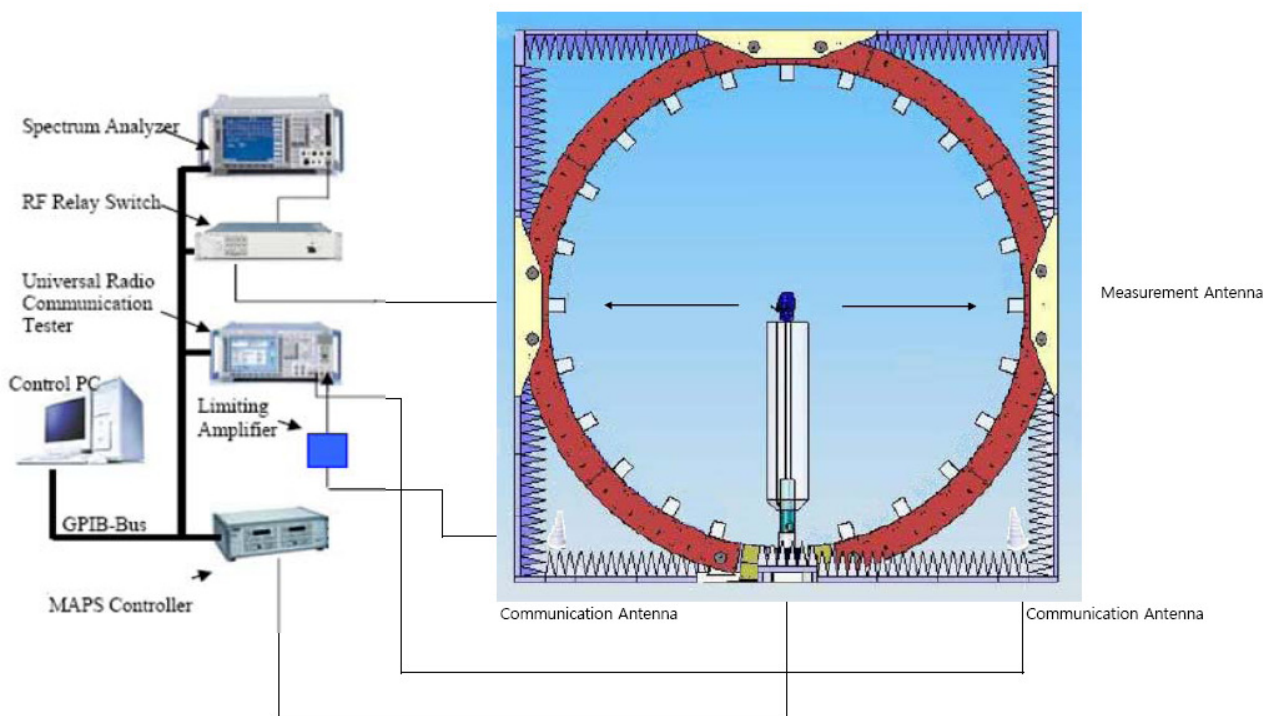
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2 OTA Measurements System Configuration

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

3 Test 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



4 Measurement Uncertainty

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



5 Test Results

Free Space			
Frequency (MHz)	Efficiency (dB)	Efficiency (%)	Gain (dBi)
2350	-13.66	4.31	-6.25
2355	-13.82	4.15	-6.46
2360	-13.95	4.03	-6.48
2365	-14.35	3.67	-6.86
2370	-14.66	3.42	-7.18
2375	-14.94	3.21	-7.43
2380	-15.04	3.13	-7.58
2385	-15.22	3.01	-7.66
2390	-15.40	2.89	-7.93
2395	-15.60	2.75	-7.96
2400	-15.98	2.52	-8.41
2402	-16.05	2.48	-8.45
2405	-16.16	2.42	-8.54
2410	-16.33	2.33	-8.66
2415	-16.44	2.27	-8.80
2420	-16.64	2.17	-8.99
2425	-16.82	2.08	-9.17
2430	-17.00	2.00	-9.21
2435	-17.11	1.95	-9.31
2440	-17.12	1.94	-9.18
2441	-17.14	1.93	-9.18
2445	-17.26	1.88	-9.30
2450	-17.36	1.84	-9.34
2455	-17.47	1.79	-9.42
2460	-17.52	1.77	-9.51
2465	-17.43	1.81	-9.30
2470	-17.45	1.80	-9.41
2475	-17.18	1.92	-9.04
2480	-17.11	1.94	-9.05
2482	-17.02	1.99	-9.01
2485	-16.82	2.08	-8.74
2490	-16.68	2.15	-8.58
2495	-16.27	2.36	-8.20
2500	-15.98	2.52	-7.86

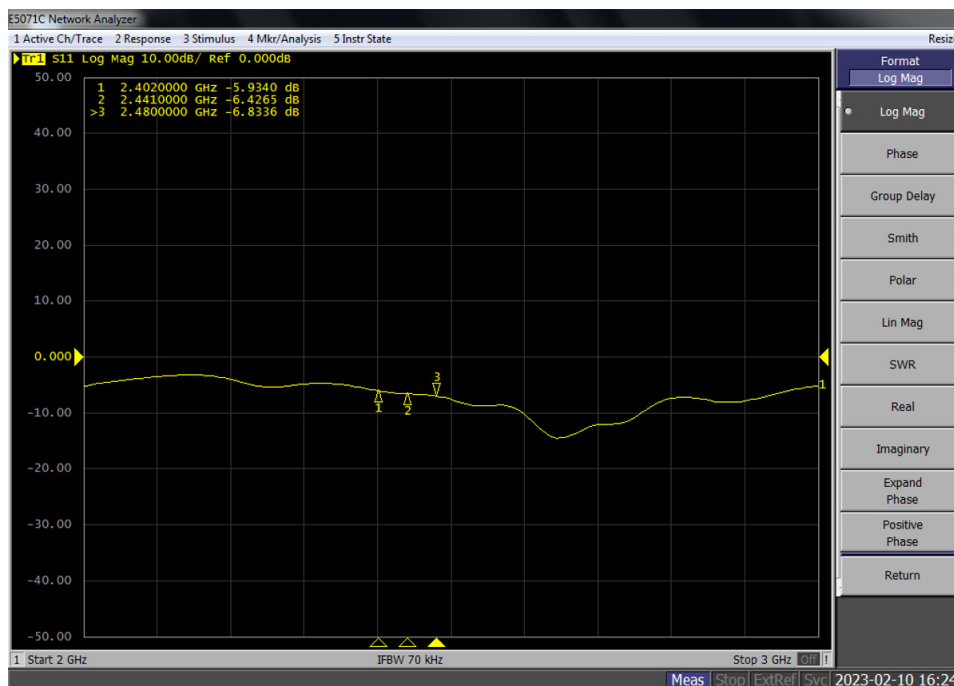


2505	-15.61	2.75	-7.54
2510	-15.24	2.99	-7.12
2515	-15.02	3.15	-6.89
2520	-14.67	3.41	-6.57
2525	-14.42	3.61	-6.24
2530	-14.00	3.98	-5.85
2535	-13.66	4.31	-5.45
2540	-13.22	4.76	-5.09
2545	-12.71	5.35	-4.59
2550	-12.34	5.83	-4.21
2555	-11.89	6.47	-3.82
2560	-11.59	6.94	-3.46
2565	-11.16	7.65	-3.11
2570	-10.83	8.25	-2.67
2575	-10.50	8.92	-2.45
2580	-10.07	9.85	-2.06

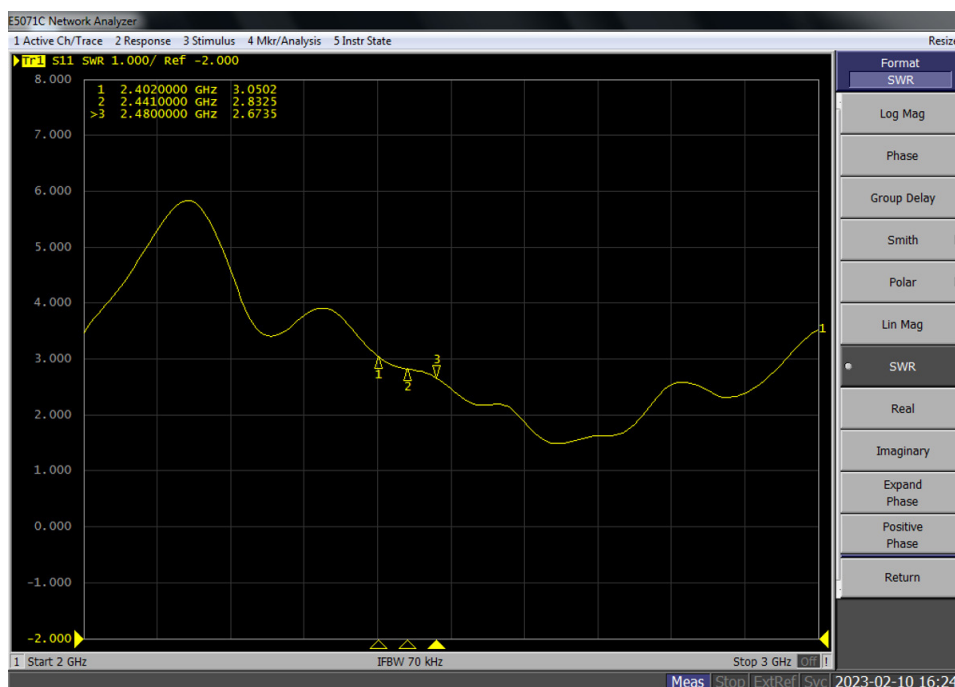


6 Pattern Plots

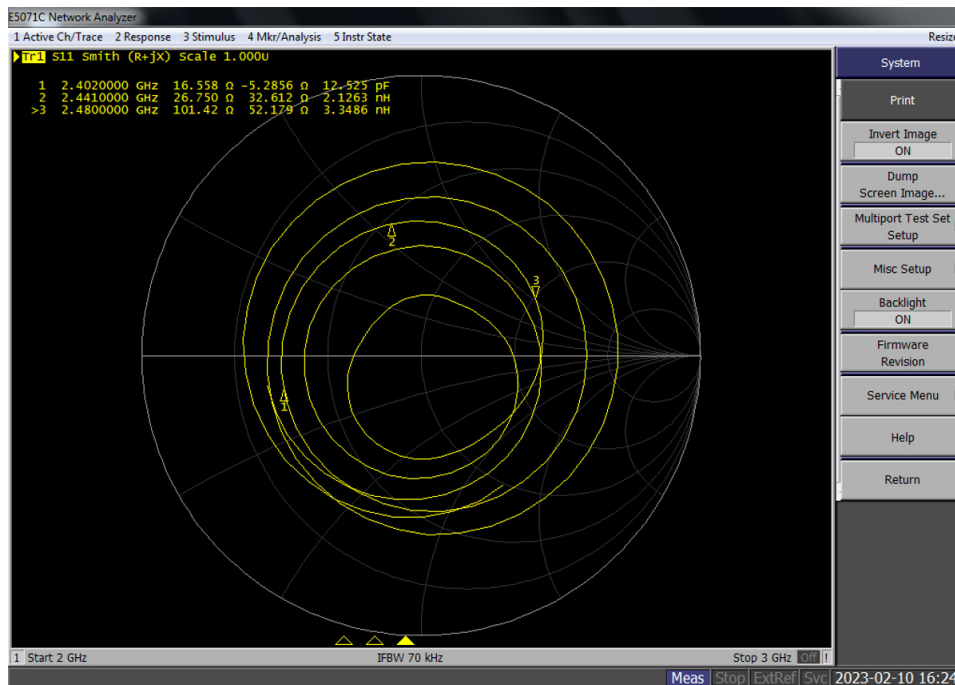
6.1 Return Loss



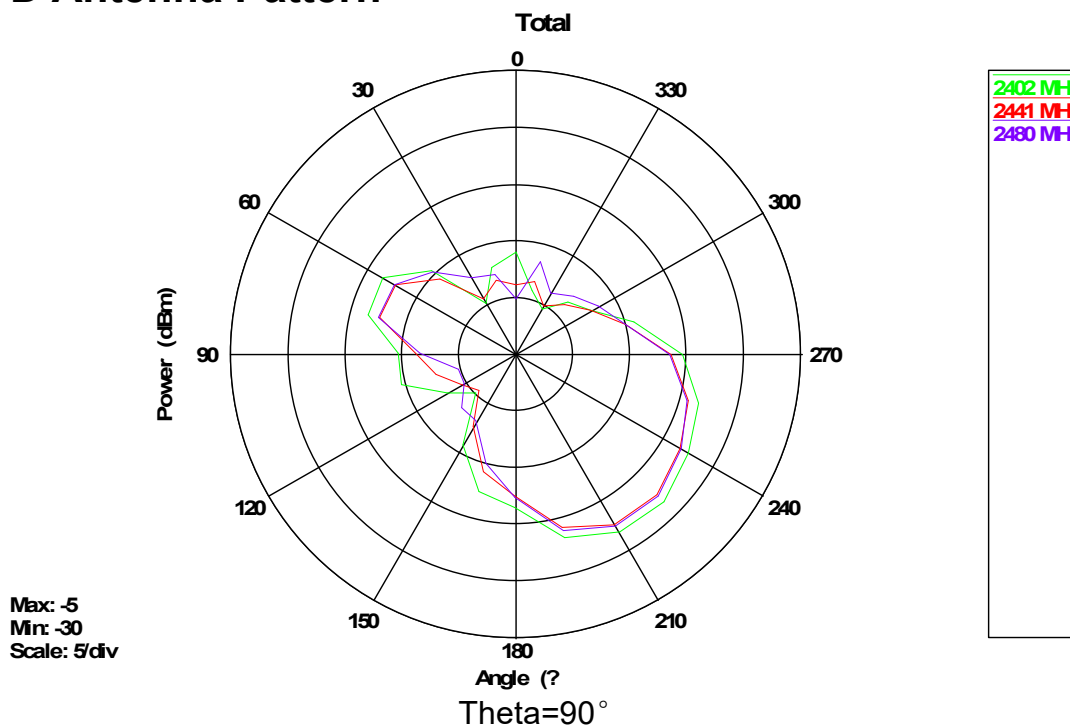
6.2 VSWR



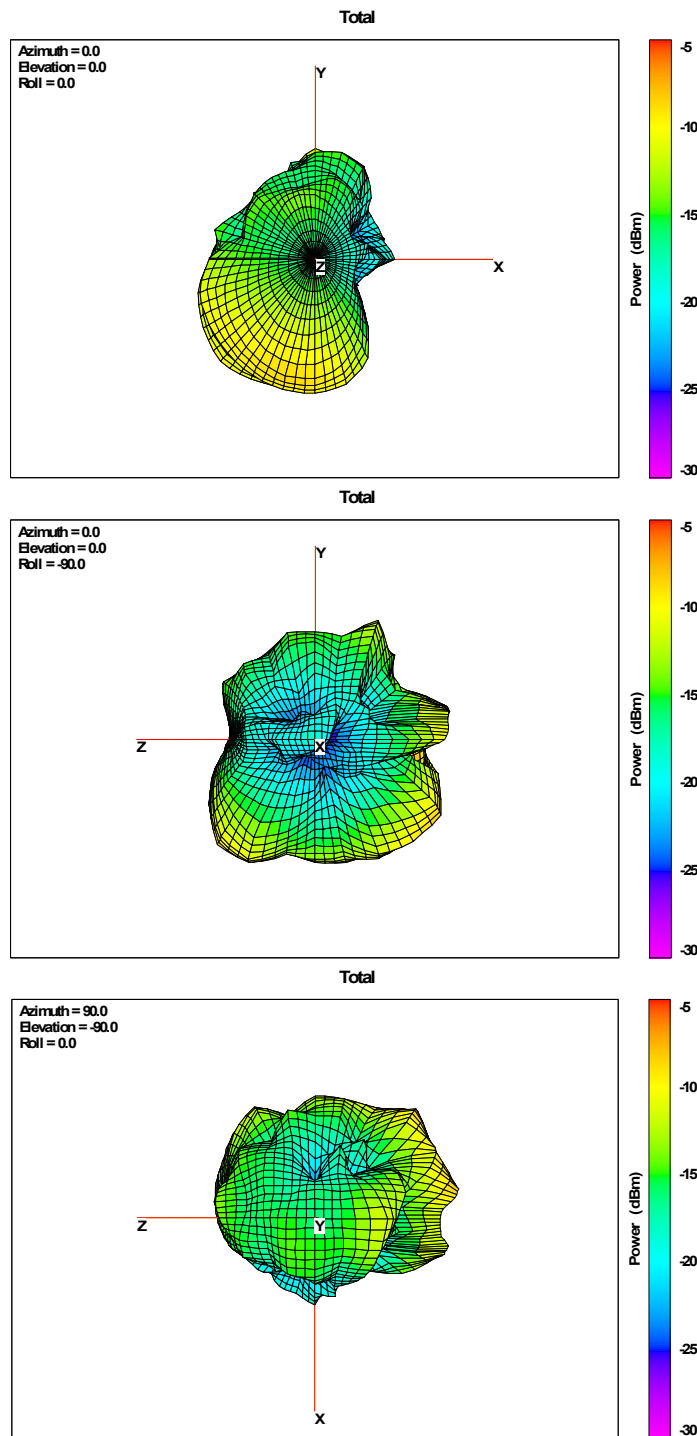
6.3 Stimulus



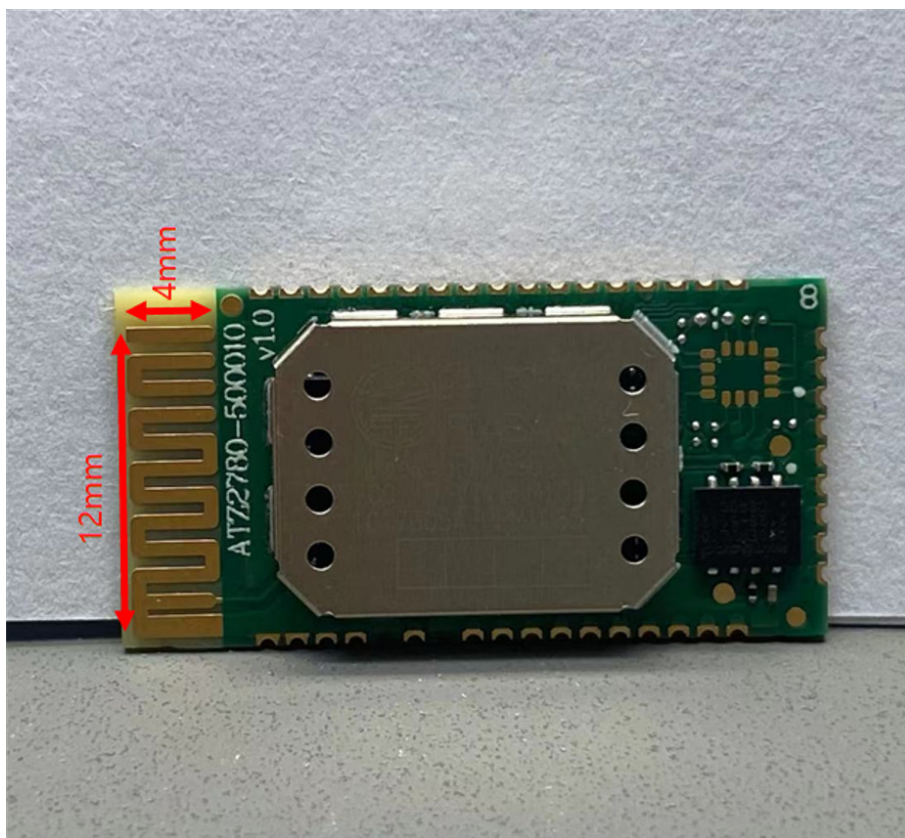
7 2-D Antenna Pattern



8 3-D Antenna Pattern



9 Antenna Dimension Drawing



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