Wireless Device Over the Air Performance Test Report

REPORT NO.		**OQ482104**
APPLICANT	:	**Dyson Technology Limited**
MANUFACTURER	:	**Dyson Technology Limited**
DATE OF RECEIPT	:	**August 23, 2024**
DATE OF TEST	:	**August 23, 2024**
ISSUE DATE	:	**November 27, 2024**

Reviewed by:

Neil Kao / Manager

We, SPORTON INTERNATIONAL (USA) INC., would like to declare that the tested sample has been evaluated in accordance with the procedures and shown the compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL (USA) INC., the test report shall not be reproduced except in full.

The declared product specification for EUT presented in this report is provided by the manufacturer / applicant, and the manufacturer / applicant takes all the responsibilities for the accuracy of product specification.

SPORTON INTERNATIONAL (USA) INC.

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Revision History

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
OQ482104	1.0	Initial issue of report	September 5, 2024
OQ482104	2.0	Removed 438M and antenna test results	November 7, 2024
OQ482104	3.0	Updated the report structure and added the 438M test results	November 27, 2024

1. Test Laboratory

Test Site	Sporton International (USA) Inc.
Telephone Number	TEL: +1-408-904-3300
Address	1175 Montague Expressway, Milpitas, CA 95035 USA
Chamber	☐ OTA01-CA ■ OTA02-CA
Testing Personnel	Swapna Kotha

■ : The chamber(s) which used to perform the test in this test report.

2. Client Information

2.1 Applicant

Company Name	Dyson Technology Limited
Address	Tetbury Hill, Malmesbury, Wiltshire, SN16 0RP, United Kingdom
Contact Person	Muhammad Hanif Ismail

2.2 Manufacturer

Company Name	Dyson Technology Limited
Address	Tetbury Hill, Malmesbury, Wiltshire, SN16 0RP, United Kingdom
Contact Person	Muhammad Hanif Ismail

3. Equipment Under test(EUT) Information

3.1 Description of EUT

Product Feature & Specification	
Brand Name	Dyson Technology Limited
Model Name	Purifier Hot + Cool Gen1, Purifier Cool Gen1
Antenna Type	IFA Antenna
Commercial Software Testing Tools	EMQuest
Commercial Software Version Number	v1.10 Build 4675

4. Measurement Environment

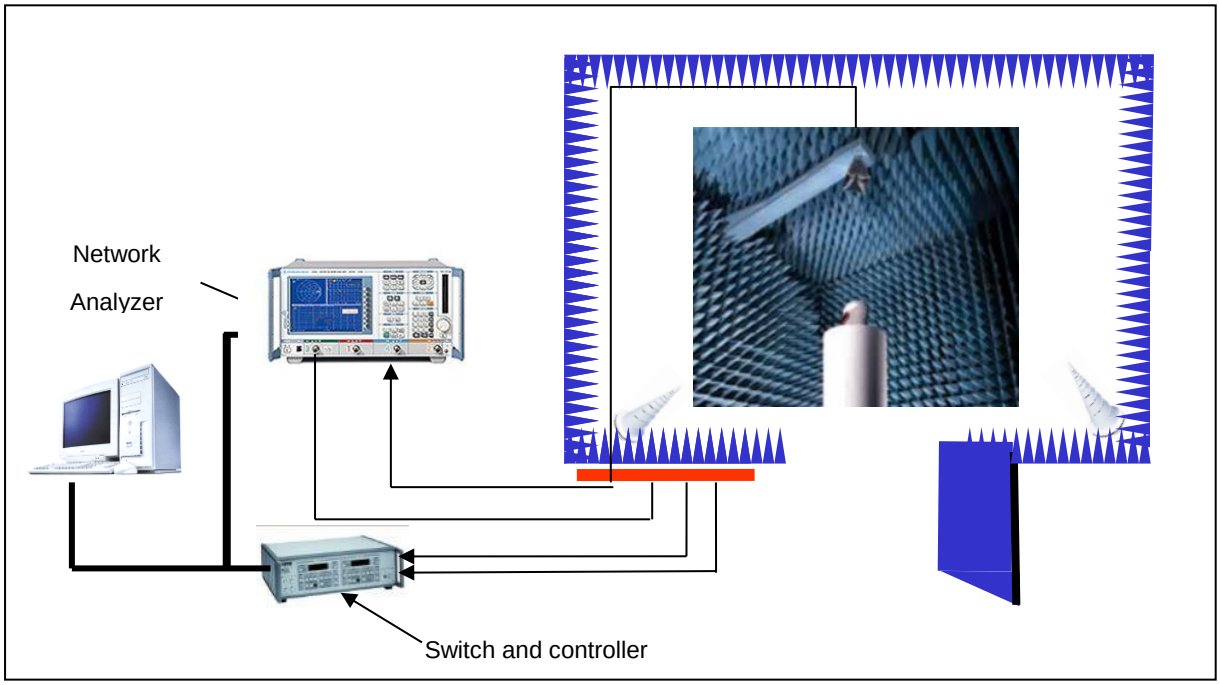
Ambient Condition

Temperature (°C):	25℃ +/- 5℃	Humidity (%):	<60%

Test Equipment List

Name	Manufacturer	Type/Model	Serial Number	Calibration	
				Last Cal.	Due Date
Vector Network Analyzer	R&S	ZVB8	100110	2024/08/05	2025/08/04
RF Switch	R&S	OSP 120	100322	N/A	N/A
Open Boundary Quad-Ridged Horn	ETS-Lindgren	3164-08	N/A	N/A	N/A
Multi-Devices Controller	ETS-Lindgren	2090-OPT1	00055109	N/A	N/A

Passive Measurement Setup



Test Procedure

Test Step Flow

1. Maintain the test ambient temperature of 23±2 C, the instrument is powered on and preheated for more than 30 minutes
2. Tum on the darkroom power supply, connect the test cable, and set up the sample according to the standard
3. Outline sets the test content objectives and conducts calibration tests
4. Run the EMQuest OTA software, the test is complete, export the corresponding test diagram and test data, and save to the corresponding directory

Test Principle

The test principle can be seen in accordance with the standard ANSI/IEEE std 149-2021

Test Conditions

1.The analyte, the network analyzer for testing, the test equipment and the test cable connector should have good reliability, stability, dynamic range and measurement accuracy to ensure the correctness of the measurement accuracy
2. The measuring instrument should have a certificate of conformity and be within the effective calibration period
3. The analyte should be complete and undamaged, and the test environment should be kept clean

5. Summary of Test Results

5.1 Standard

Document	Version
IEEE Std 149™	2021

5.2 Declaration

Declaration of Conformity:
The judgment of conformity in the report is based on the measurement results excluding the measurement uncertainty.
Comments and Explanations:
Done

5.3 Abbreviations and Definitions

Please note the following abbreviations in this section:

FS = Free Space

5.4 Summary Table

438M_Unit_Wi-Fi_Antenna					
Frequency (MHz)	Tot. Rad. Pwr. (dBm)	Peak Gain (dBi)	Directivity (dBi)	Efficiency (dB)	Efficiency (%)
2400	-2.82	3.50	6.32	-2.82	52.26
2402	-2.80	3.45	6.25	-2.80	52.48
2405	-2.74	3.55	6.29	-2.74	53.21
2410	-2.64	3.55	6.19	-2.64	54.43
2415	-2.64	3.46	6.10	-2.64	54.48
2420	-2.64	3.41	6.05	-2.64	54.45
2425	-2.60	3.36	5.96	-2.60	54.96
2430	-2.66	3.22	5.87	-2.66	54.23
2435	-2.70	3.19	5.89	-2.70	53.67
2440	-2.74	3.15	5.89	-2.74	53.15
2445	-2.63	3.23	5.86	-2.63	54.58
2450	-2.69	3.06	5.75	-2.69	53.80
2455	-2.68	3.10	5.77	-2.68	53.98
2460	-2.67	3.04	5.71	-2.67	54.13
2465	-2.64	3.16	5.80	-2.64	54.39
2470	-2.64	3.06	5.70	-2.64	54.46
2475	-2.64	3.04	5.68	-2.64	54.45
2480	-2.62	2.93	5.54	-2.62	54.74
2485	-2.61	2.99	5.60	-2.61	54.81
2490	-2.60	2.86	5.46	-2.60	54.99
2495	-2.61	2.95	5.55	-2.61	54.84
2500	-2.64	2.87	5.51	-2.64	54.42
5000	-2.13	3.86	5.99	-2.13	61.28
5050	-1.90	3.86	5.76	-1.90	64.56
5100	-2.30	3.55	5.85	-2.30	58.85
5150	-2.42	3.23	5.64	-2.42	57.30
5180	-2.42	3.01	5.43	-2.42	57.32
5200	-2.29	3.07	5.36	-2.29	59.08
5250	-2.35	2.95	5.30	-2.35	58.16
5300	-2.49	2.75	5.24	-2.49	56.34

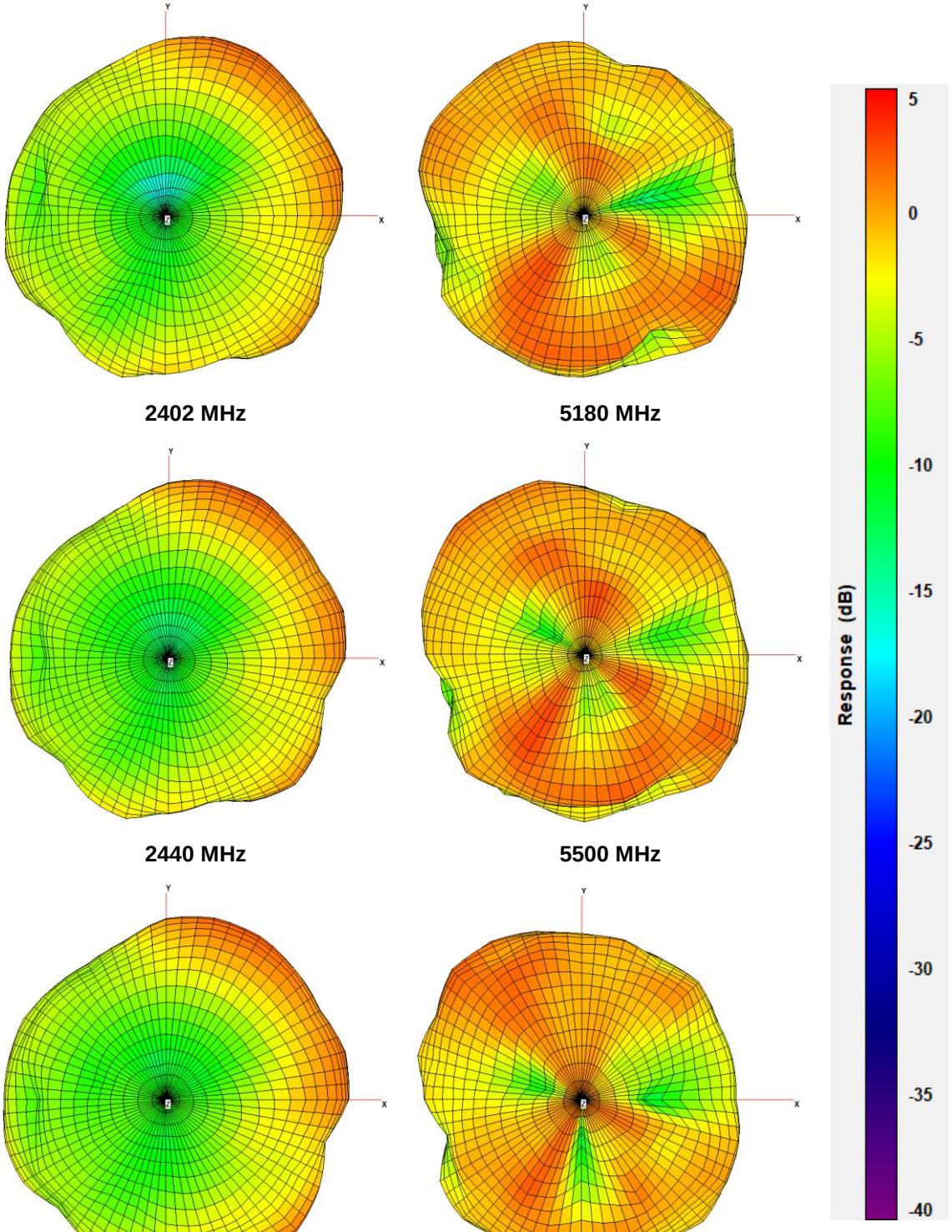
5350	-2.41	3.28	5.69	-2.41	57.48
5400	-2.70	3.05	5.75	-2.70	53.72
5450	-2.48	3.10	5.58	-2.48	56.44
5500	-2.23	3.70	5.92	-2.23	59.89
5550	-2.39	3.54	5.93	-2.39	57.68
5600	-2.05	3.84	5.90	-2.05	62.31
5650	-2.36	3.32	5.68	-2.36	58.06
5700	-2.62	3.25	5.87	-2.62	54.67
5750	-2.64	2.90	5.54	-2.64	54.45
5800	-2.75	2.27	5.02	-2.75	53.08
5825	-2.76	2.66	5.41	-2.76	53.00
5850	-2.93	2.67	5.60	-2.93	50.88
5900	-2.94	2.48	5.42	-2.94	50.86
5950	-2.64	3.02	5.67	-2.64	54.42
6000	-3.03	2.53	5.56	-3.03	49.81

527M_Unit_Wi-Fi_Antenna					
Frequency (MHz)	Tot. Rad. Pwr. (dBm)	Peak Gain (dBi)	Directivity (dBi)	Efficiency (dB)	Efficiency (%)
2400	-2.87	3.36	6.22	-2.87	51.69
2402	-2.87	3.43	6.29	-2.87	51.68
2405	-2.80	3.50	6.30	-2.80	52.48
2410	-2.71	3.64	6.35	-2.71	53.54
2415	-2.72	3.65	6.37	-2.72	53.46
2420	-2.74	3.72	6.46	-2.74	53.20
2425	-2.69	3.84	6.53	-2.69	53.80
2430	-2.74	3.81	6.56	-2.74	53.16
2435	-2.79	3.77	6.56	-2.79	52.65
2440	-2.79	3.90	6.68	-2.79	52.66
2445	-2.69	4.04	6.73	-2.69	53.82
2450	-2.75	3.98	6.73	-2.75	53.07
2455	-2.76	4.01	6.77	-2.76	53.03
2460	-2.76	4.01	6.77	-2.76	52.95
2465	-2.74	3.90	6.64	-2.74	53.17
2470	-2.74	3.99	6.73	-2.74	53.21
2475	-2.75	3.90	6.65	-2.75	53.07
2480	-2.73	3.94	6.67	-2.73	53.33
2485	-2.75	3.92	6.68	-2.75	53.08
2490	-2.74	3.88	6.61	-2.74	53.26
2495	-2.77	3.73	6.50	-2.77	52.81
2500	-2.81	3.62	6.44	-2.81	52.31
5000	-2.32	4.02	6.34	-2.32	58.65
5050	-2.06	4.21	6.27	-2.06	62.18
5100	-2.44	4.14	6.57	-2.44	57.08
5150	-2.49	4.25	6.75	-2.49	56.32
5180	-2.53	3.95	6.48	-2.53	55.88
5200	-2.34	4.38	6.73	-2.34	58.28
5250	-2.45	3.98	6.43	-2.45	56.95
5300	-2.56	3.44	6.00	-2.56	55.42
5350	-2.58	3.16	5.74	-2.58	55.25
5400	-2.91	2.73	5.64	-2.91	51.13

5450	-2.77	3.45	6.22	-2.77	52.83
5500	-2.54	3.37	5.91	-2.54	55.69
5550	-2.60	3.44	6.04	-2.60	54.94
5600	-2.22	4.26	6.48	-2.22	60.02
5650	-2.46	4.11	6.57	-2.46	56.77
5700	-2.67	3.89	6.56	-2.67	54.03
5750	-2.74	3.53	6.26	-2.74	53.27
5800	-2.96	3.25	6.20	-2.96	50.62
5825	-2.88	3.19	6.07	-2.88	51.51
5850	-3.01	3.44	6.45	-3.01	50.05
5900	-3.10	2.81	5.91	-3.10	48.94
5950	-2.79	3.35	6.15	-2.79	52.56
6000	-3.06	2.82	5.89	-3.06	49.40

Appendix A. Pattern Plots

3D Pattern_438M_Unit



2402 MHz

5180 MHz

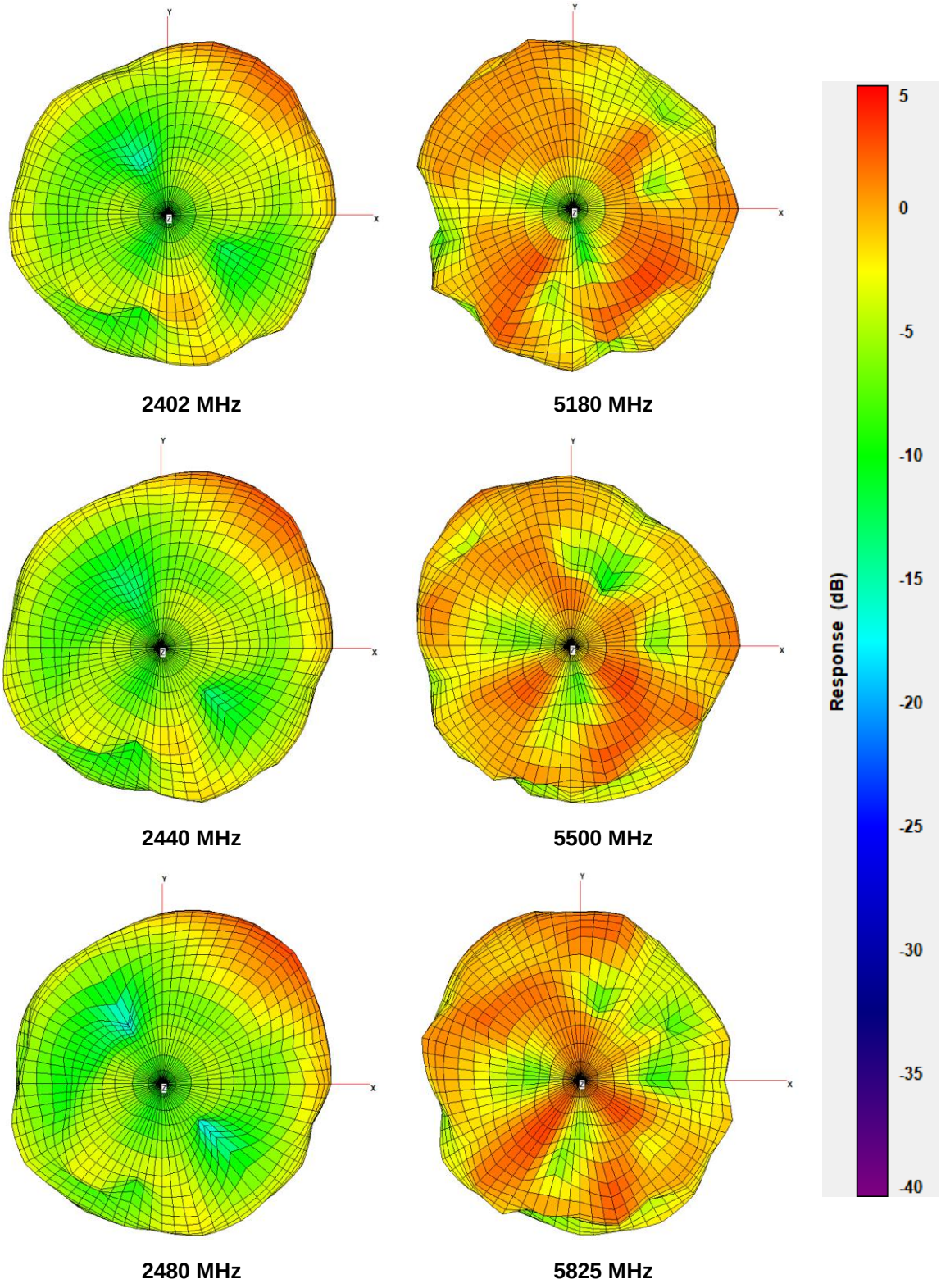
2440 MHz

5500 MHz

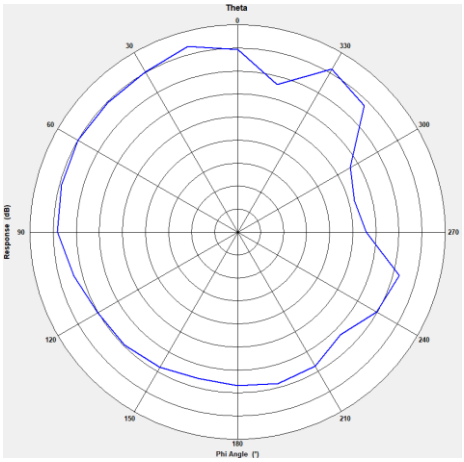
2480 MHz

5825 MHz

3D Pattern_527M_Unit



2D Pattern_438M_Unit XY Plane



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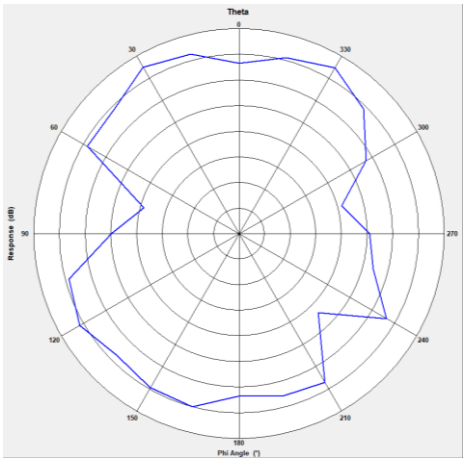

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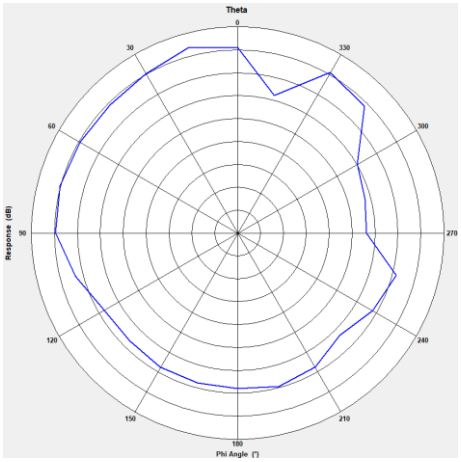

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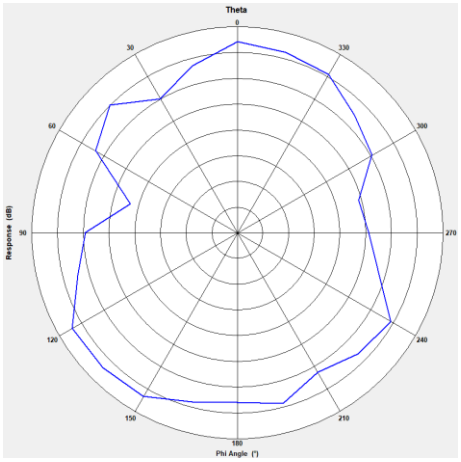

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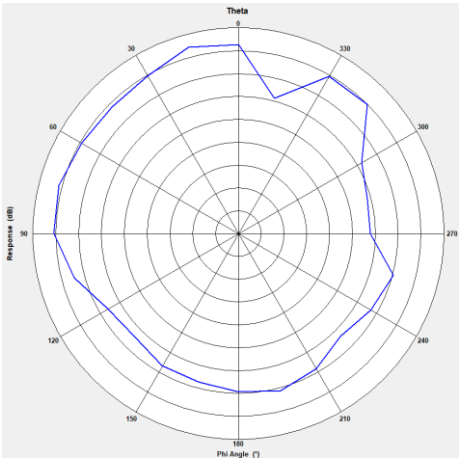

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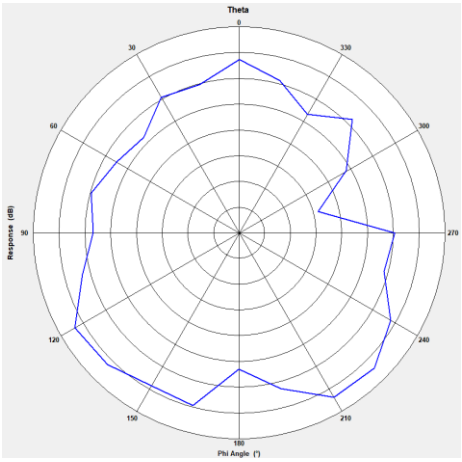
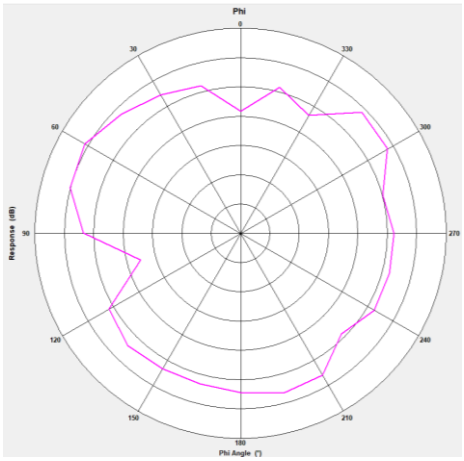


5825 MHz

2D Pattern_438M_Unit YZ Plane



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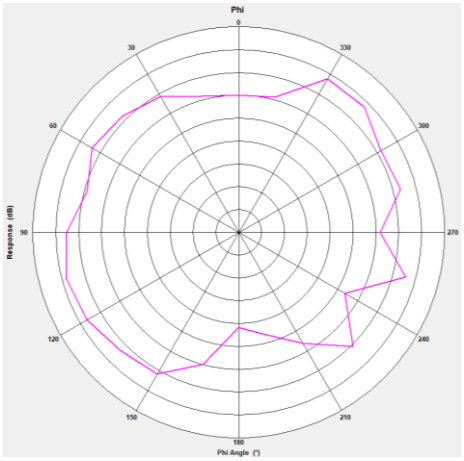

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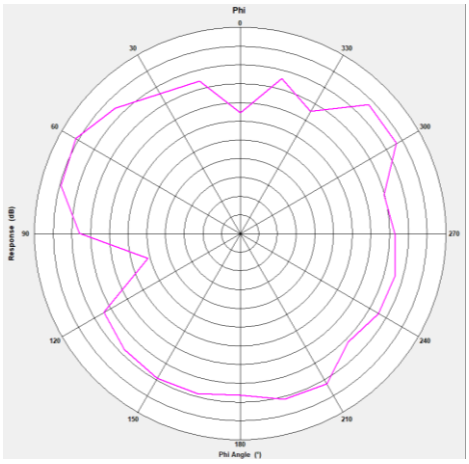

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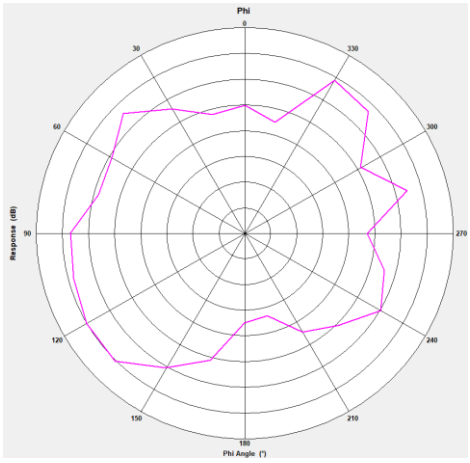

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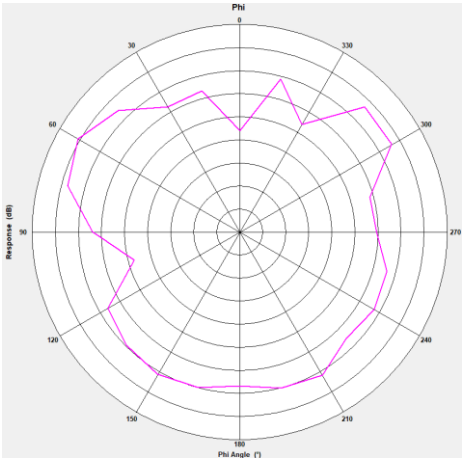

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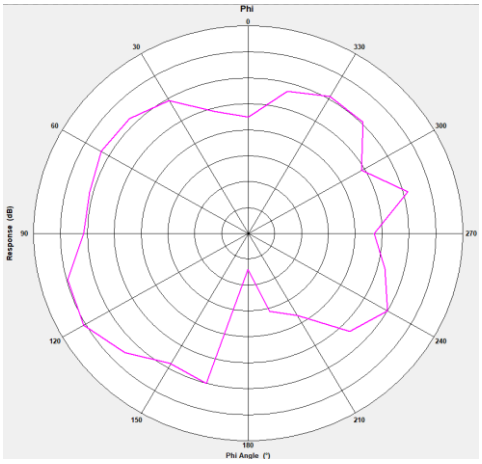
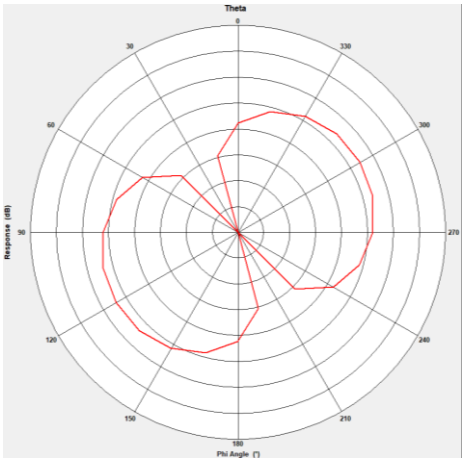


5825 MHz

2D Pattern_438M_Unit ZX Plane



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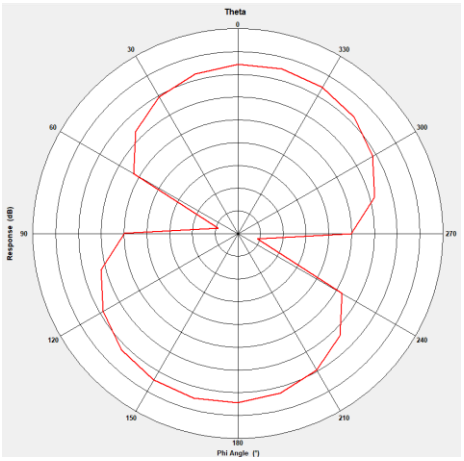

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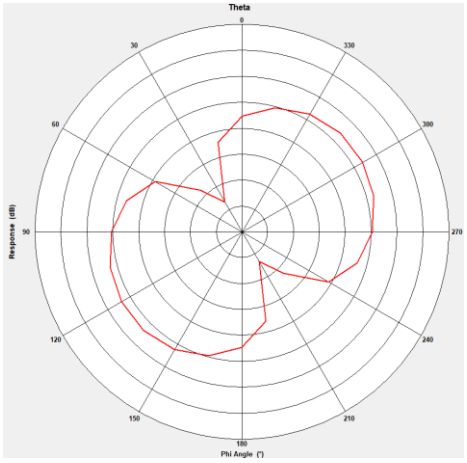

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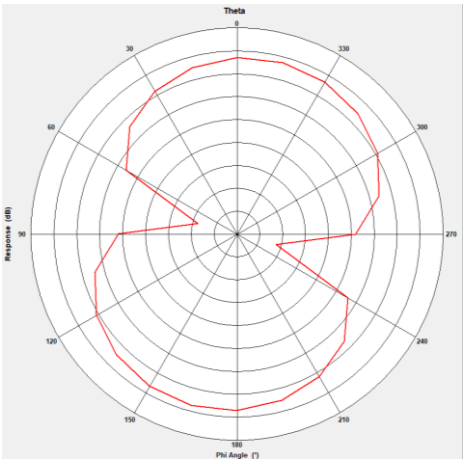

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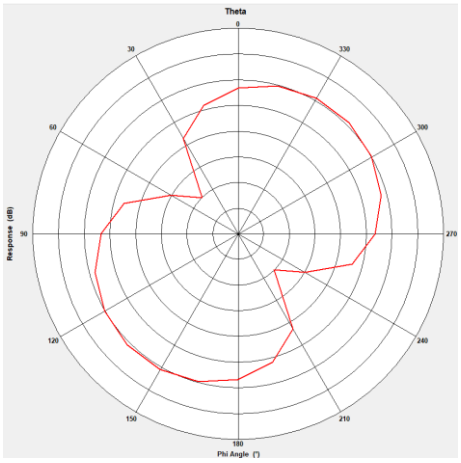

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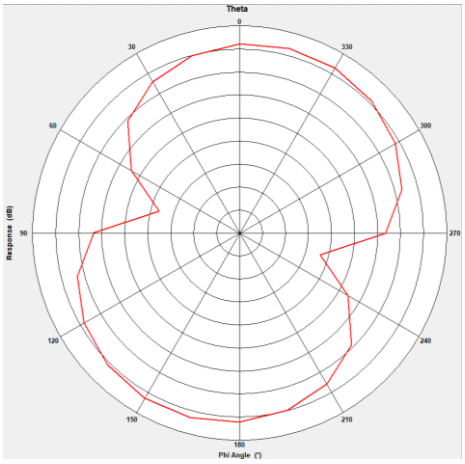

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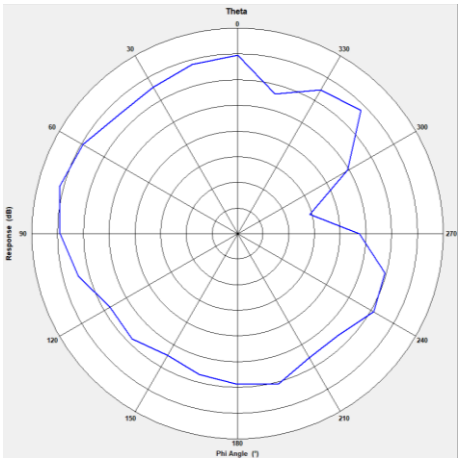
2D Pattern_527M_Unit XY Plane



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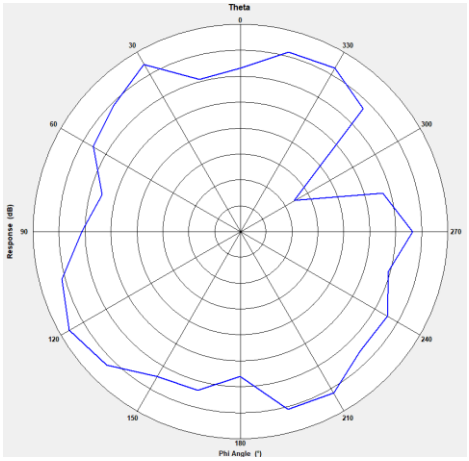

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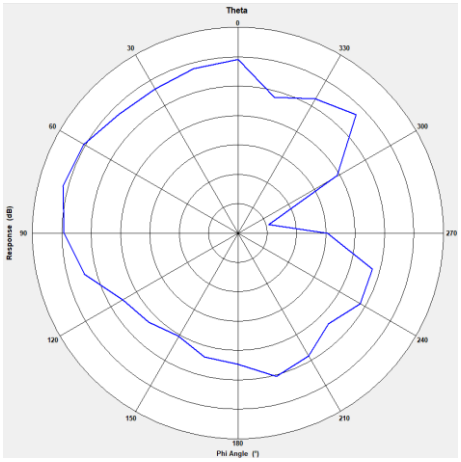

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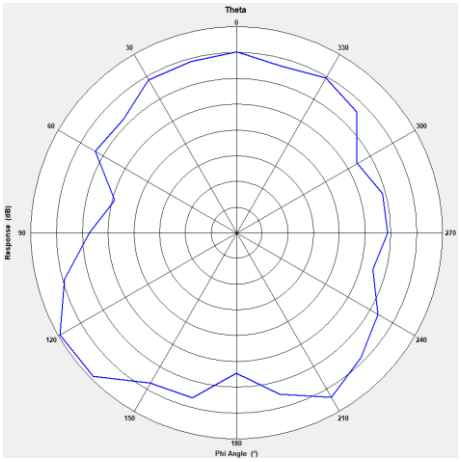

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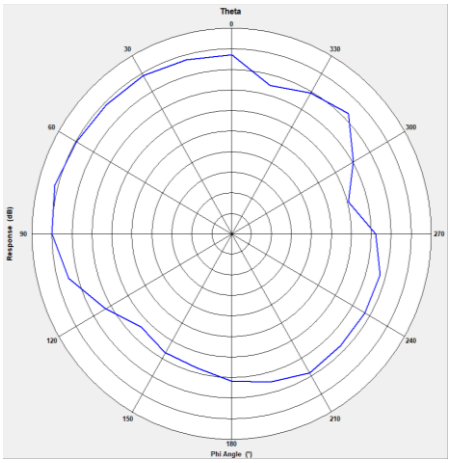

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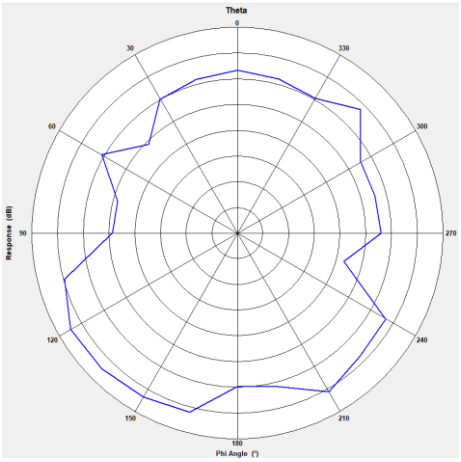
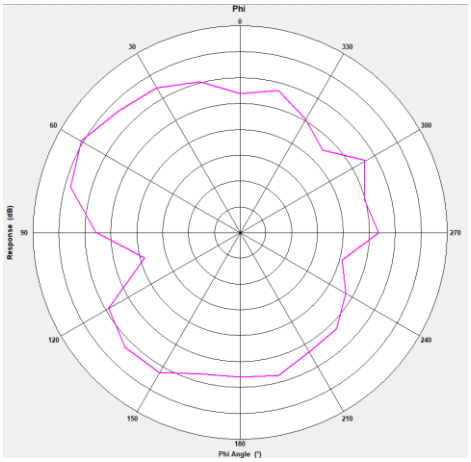


5825 MHz

2D Pattern_527M_Unit YZ Plane



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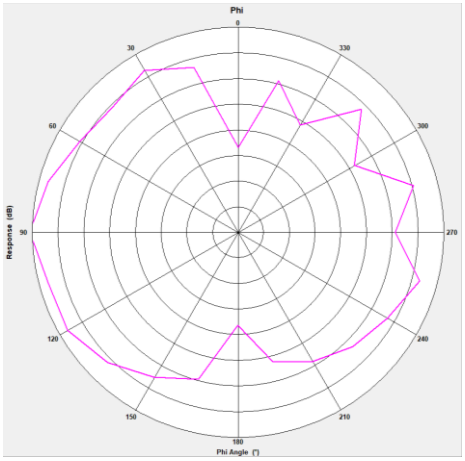

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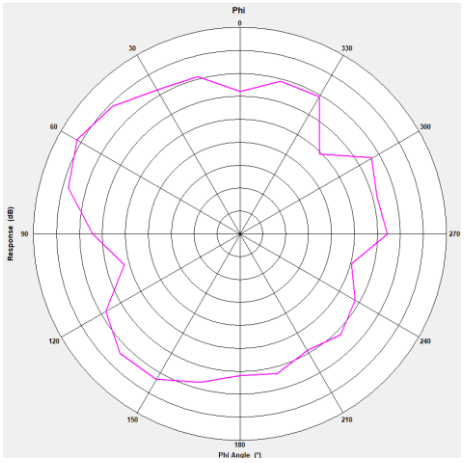

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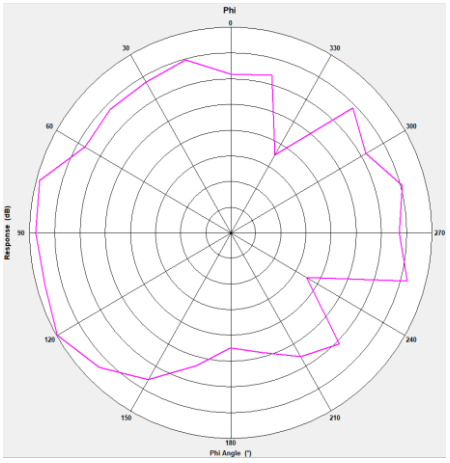

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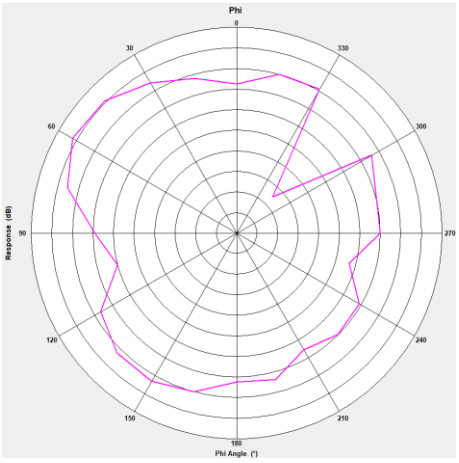

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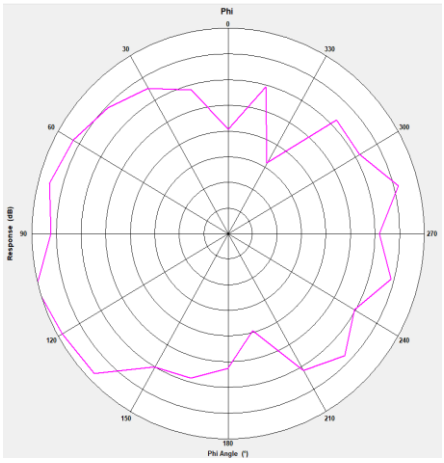
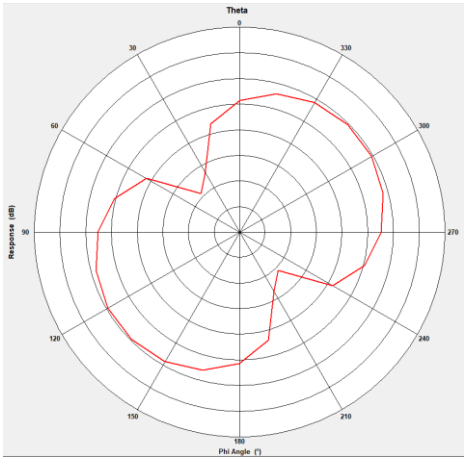
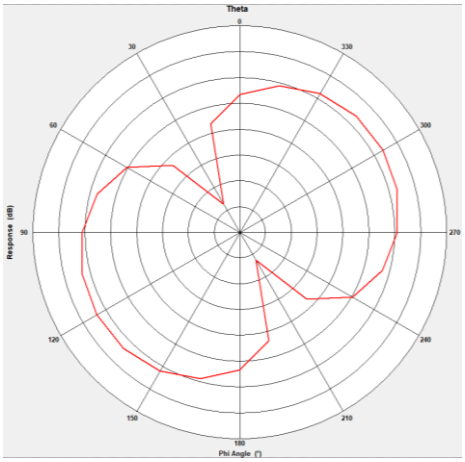


5825 MHz

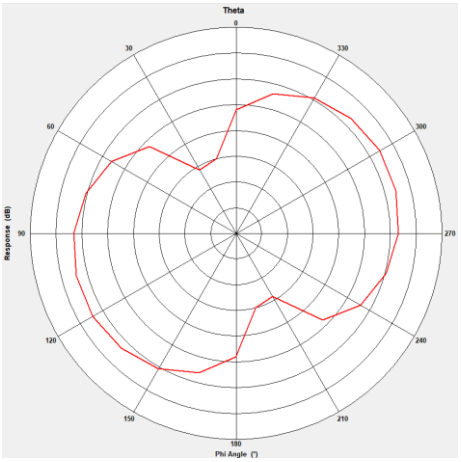
2D Pattern_527M_Unit ZX Plane



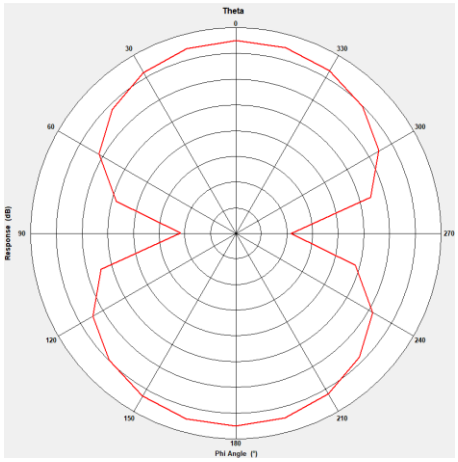
2402 MHz



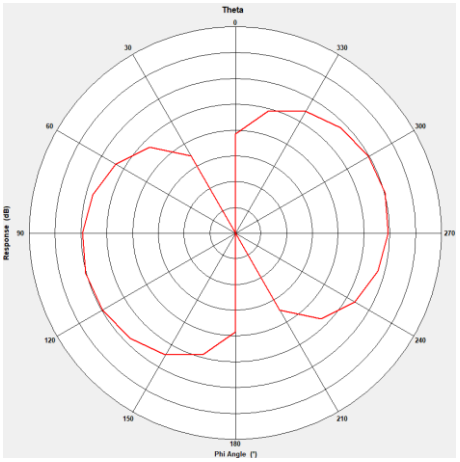
5180 MHz



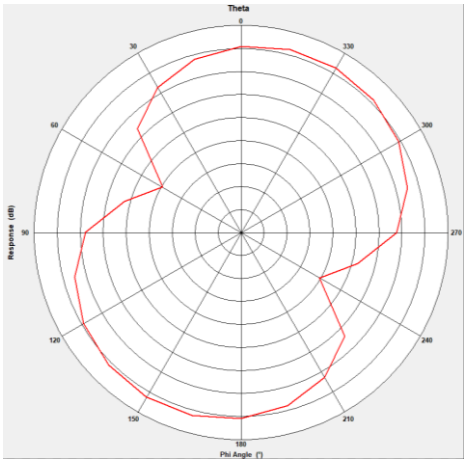
2440 MHz



5500 MHz



2480 MHz



A

Description for DUT Testing Position

Please refer to the separate Testing Position image in Appendix B.