TEST REPORT

Applicant:	NetComm Wireless Pty Ltd
Address:	Level 5, 18-20 Orion Road, Lane Cove, NSW 2066, Sydney, Australia
Equipment Type:	CFW-2752
Model Name:	MASY-00283-000
Brand Name:	N/A
Test Standard:	ANSI/IEEE Std 149-1979
Test Date:	May 13, 2022
Date of Issue:	May 24, 2022

ISSUED BY:

Shenzhen BALUN Technology Co., Ltd.

Tested by: Mai Jintian **Checked by:** Tolan Tu **Approved by:** Wei Yanquan (Chief Engineer)

Revision History

Version	Issue Date	Revisions
Rev. 01	May 24, 2022	Initial Issue

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1 GENERAL INFORMATION

1.1 Identification of the Testing Laboratory

Company Name	Shenzhen BALUN Technology Co., Ltd.
Address	Block B, 1/F, Baisha Science and Technology Park, Shahe West Road, Nanshan District, ShenZhen, GuangDong Province, China
Phone Number	+86 755 6685 0100

1.2 Identification of the Responsible Testing Location

Test Location	Shenzhen BALUN Technology Co., Ltd.
Address	Block B, 1/F, Baisha Science and Technology Park, Shahe West Road, Nanshan District, ShenZhen, GuangDong Province, China
Description	All measurement facilities used to collect the measurement data are located at Block B, 1/F, Baisha Science and Technology Park, Shahe West Road, Nanshan District, ShenZhen, GuangDong Province, China

2 PRODUCT INFORMATION

2.1 Applicant Information

Applicant	NetComm Wireless Pty Ltd
Address	Level 5, 18-20 Orion Road, Lane Cove, NSW 2066, Sydney, Australia
Contact Person	Jesse chen
E-mail Address	jesse.chen@casa-systems.com

2.2 Manufacturer Information

Manufacturer	Casa Systemms, Inc.
Address	100 Old River Road Andover, MA 01810. USA

2.3 Factory Information

Factory	N/A
Address	N/A

2.4 General Description for Equipment under Test (EUT)

EUT Name	CFW-2752
Model Name Under Test	MASY-00283-000
Antenna Type	Planar Antenna
Dimensions	46.0*33.2*8.2cm

Note: This sample contains test data for six ports. In this report, 1#, 2#, 3#, 4#, 5#, 6# are used to represent the corresponding port and corresponding test data.

2.5 Ancillary Equipment

Note: Not applicable.

2.6 Technical Information

1#~4#

Frequency Range	1710MHz ~ 4200MHz
Test Frequencies	1710MHz, 1880MHz, 2025MHz, 2170MHz, 2300MHz, 2400MHz, 2500MHz, 2600MHz, 2700MHz, 3300MHz, 3400MHz, 3500MHz, 3600MHz, 3700MHz, 3800MHz, 3900MHz, 4000MHz, 4100MHz, 4200MHz

5#

Frequency Range	2400MHz ~ 2500MHz
Test Frequencies	2400MHz, 2450MHz, 2500MHz

6#

Frequency Range	1574.42MHz ~ 1576.42MHz
Test Frequencies	1574.42MHz, 1575.42MHz, 1576.42MHz

3 SUMMARY OF TEST RESULTS

3.1 Test Standards

No.	Identity	Document Title
1	ANSI/IEEE Std 149-1979	IEEE Standard Test Procedures for Antennas

3.2 Test Verdict

Report Section	Description	Remark
ANNEX A.1	Gain and Efficiency	--
ANNEX B	Radiation Pattern	--

3.3 Test Uncertainty

The uncertainty is calculated using the methods suggested in the "Guide to the Expression of Uncertainty in Measurement" (GUM) published by ISO.

Item	Uncertainty
VSWR(S11)	±0.61
Gain	±1.92dB

4 GENERAL TEST CONFIGURATIONS

4.1 Test Condition

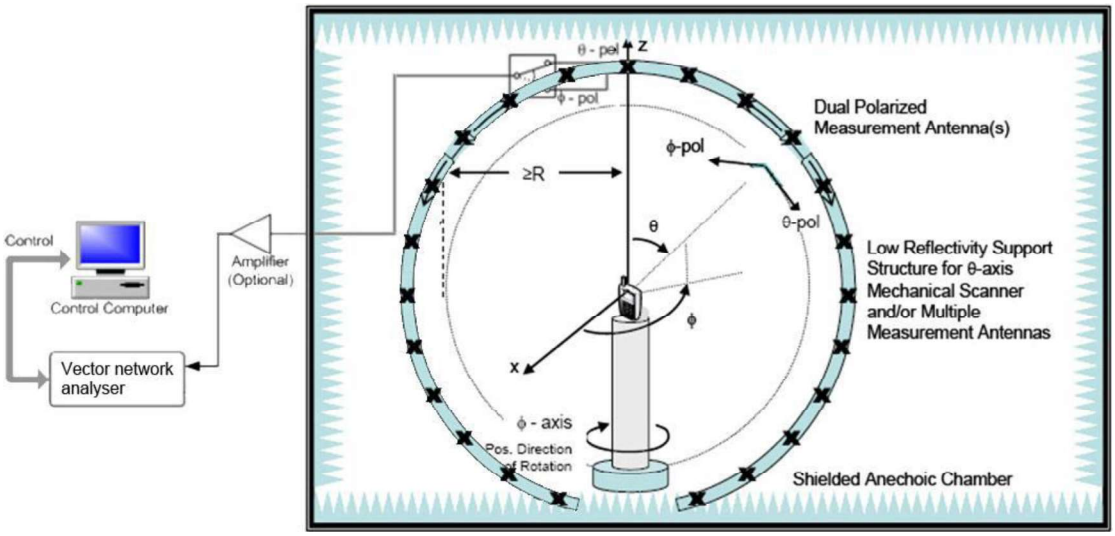
Environment Parameter	Selected Values During Tests			
	Ambient Pressure(KPa)	Temperature(℃)	Voltage	Relative Humidity (%)
Normal Temperature, Normal Voltage (NTNV)	100 to 102	19 to 25	N/A	45 to 55

4.2 Test Equipment List

Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due
Vector Network Analyzer	Agilent	E5071B	MY42404001	2022.04.02	2023.04.01
SG24 Multi-probe Antenna Measurement System	SATIMO	SG24-L	1101855-0001	2021.11.12	2024.11.11

4.3 Test Setup

4.3.1 Antenna gain, efficiency and radiation pattern test setup



ANNEX A TEST RESULTS

A.1 Gain and Efficiency

1#

Frequency	Gain (dBi)	Efficiency (%)
1710MHz	10.29	59
1880MHz	11.18	68
2025MHz	12.14	68
2170MHz	13.09	69
2300MHz	14.10	74
2400MHz	14.09	70
2500MHz	14.63	72
2600MHz	14.76	72
2700MHz	14.59	64
3300MHz	15.95	66
3400MHz	16.06	65
3500MHz	16.31	68
3600MHz	16.03	64
3700MHz	16.09	63
3800MHz	16.24	68
3900MHz	16.22	69
4000MHz	16.30	68
4100MHz	16.42	69
4200MHz	15.09	62

2#

Frequency	Gain (dBi)	Efficiency (%)
1710MHz	10.42	71
1880MHz	10.52	67
2025MHz	12.62	77
2170MHz	14.03	80
2300MHz	14.34	81
2400MHz	14.51	80
2500MHz	14.64	79
2600MHz	14.76	79
2700MHz	14.62	76
3300MHz	16.05	73
3400MHz	15.87	69
3500MHz	16.37	74
3600MHz	16.49	73
3700MHz	16.83	74
3800MHz	16.92	77
3900MHz	17.29	78
4000MHz	16.48	75
4100MHz	16.16	71
4200MHz	15.43	70

3#

Frequency	Gain (dBi)	Efficiency (%)
1710MHz	10.80	78
1880MHz	10.72	70
2025MHz	12.79	78
2170MHz	14.08	81
2300MHz	14.42	82
2400MHz	14.34	80
2500MHz	14.73	81
2600MHz	14.68	79
2700MHz	14.76	76
3300MHz	16.21	75
3400MHz	15.85	72
3500MHz	16.47	77
3600MHz	16.82	77
3700MHz	17.18	77
3800MHz	17.18	78
3900MHz	17.55	80
4000MHz	17.15	80
4100MHz	16.67	79
4200MHz	15.44	72

4#

Frequency	Gain (dBi)	Efficiency (%)
1710MHz	10.90	67
1880MHz	11.27	69
2025MHz	12.85	74
2170MHz	13.47	72
2300MHz	14.23	78
2400MHz	14.28	74
2500MHz	14.51	75
2600MHz	14.89	77
2700MHz	14.35	65
3300MHz	15.90	70
3400MHz	16.05	69
3500MHz	16.19	74
3600MHz	16.20	71
3700MHz	15.98	68
3800MHz	16.40	72
3900MHz	16.57	76
4000MHz	16.87	78
4100MHz	16.65	72
4200MHz	15.05	63

5#

Frequency	Gain (dBi)	Efficiency (%)
2400MHz	7.21	88
2450MHz	7.22	85
2500MHz	7.43	81

6#

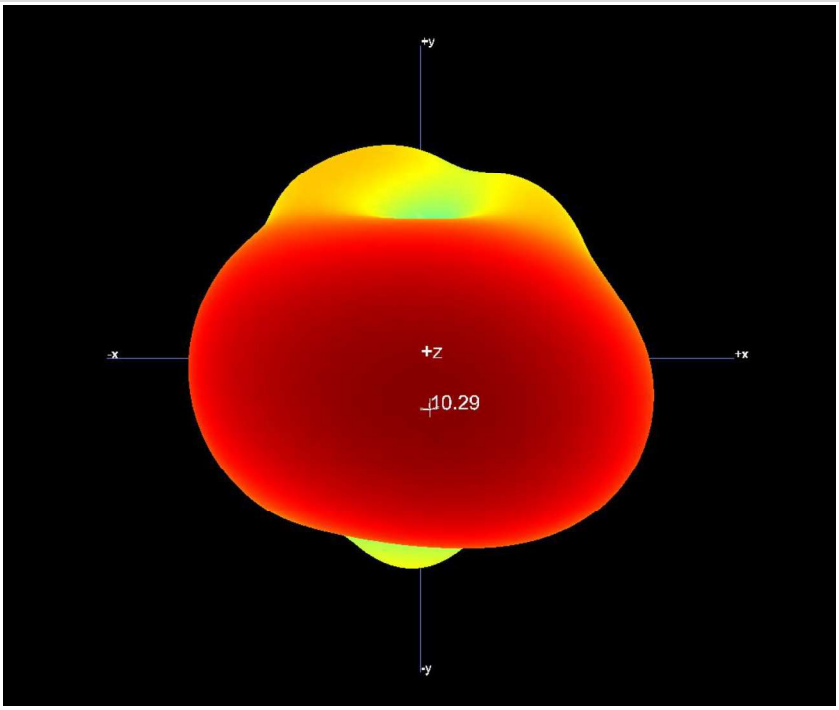
Frequency	Gain (dBi)	Efficiency (%)
1574.42MHz	4.89	93
1575.42MHz	4.98	94
1576.42MHz	4.99	94

ANNEX B RADIATION PATTERN

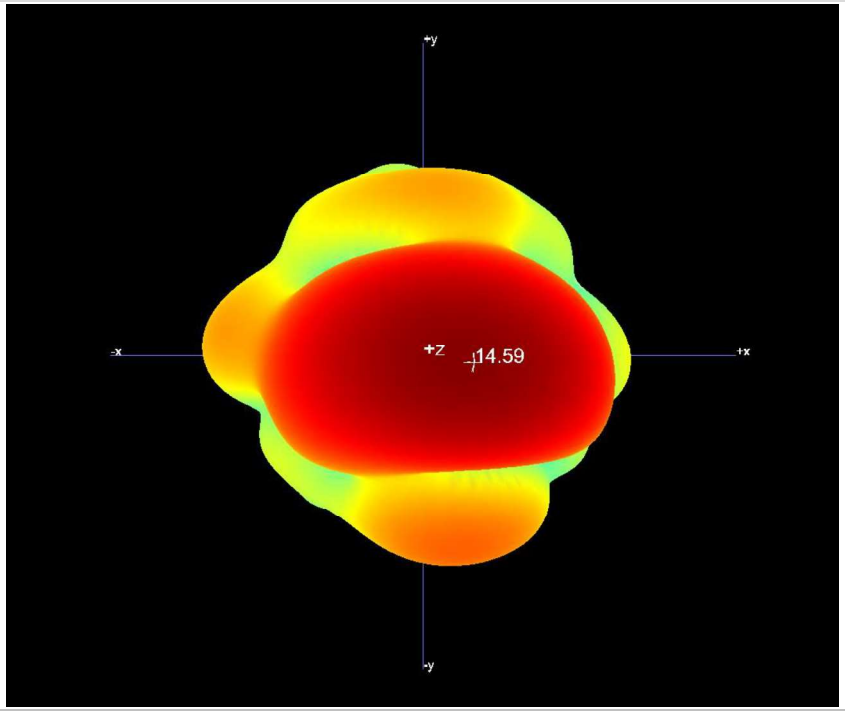
B.1 3D Pattern

1#

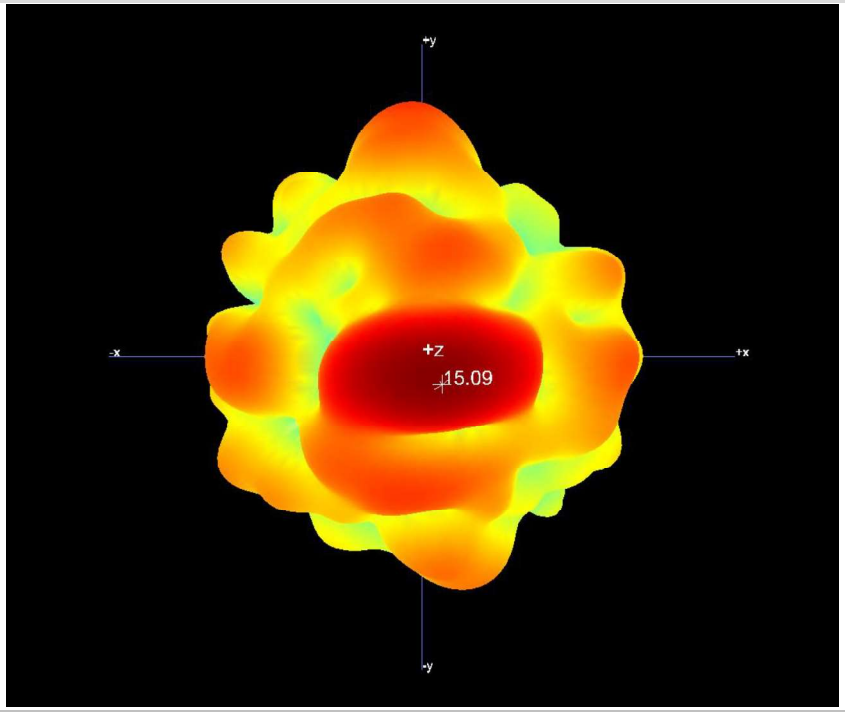
B1.1 3D Pattern for 1710MHz



B1.2 3D Pattern for 2700MHz



B1.3 3D Pattern for 4200MHz



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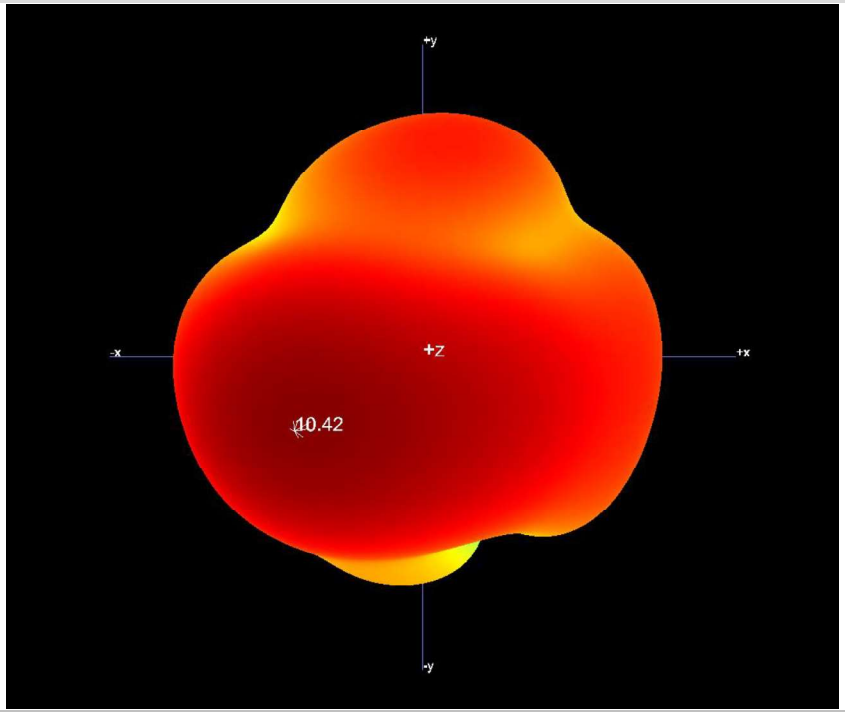
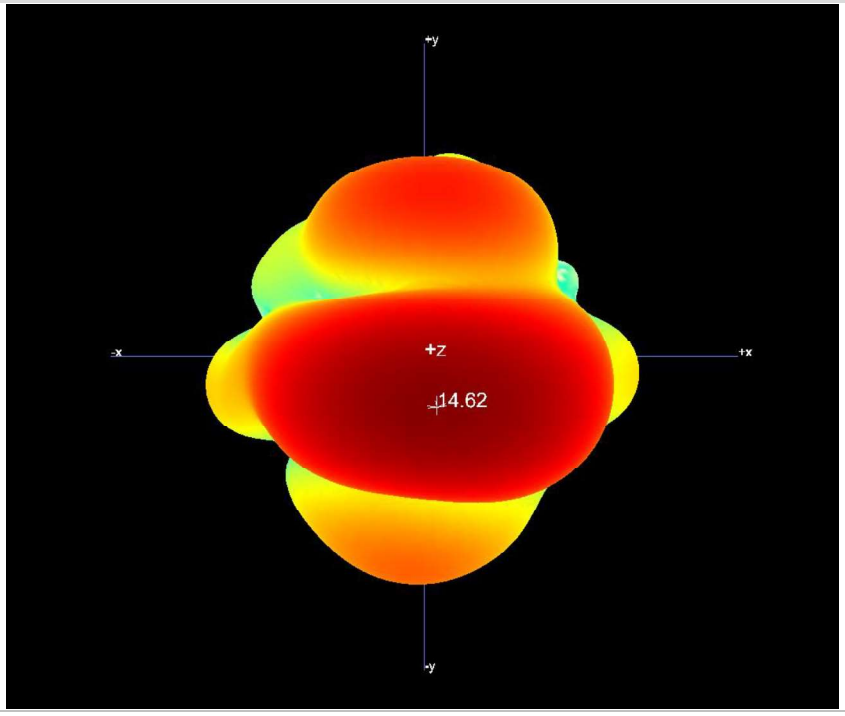
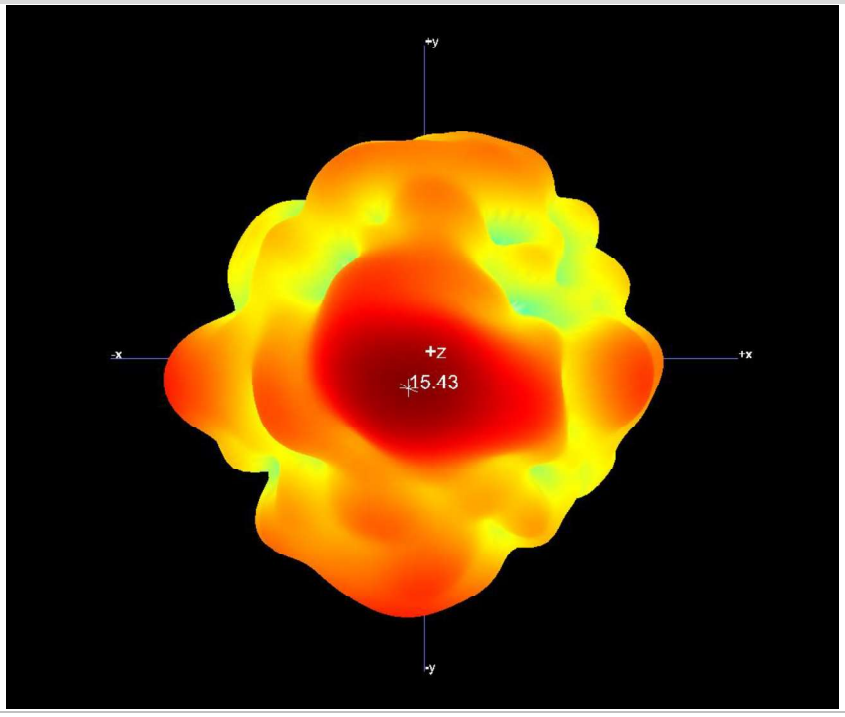
B1.4 3D Pattern for 1710MHz



B1.5 3D Pattern for 2700MHz



B1.6 3D Pattern for 4200MHz



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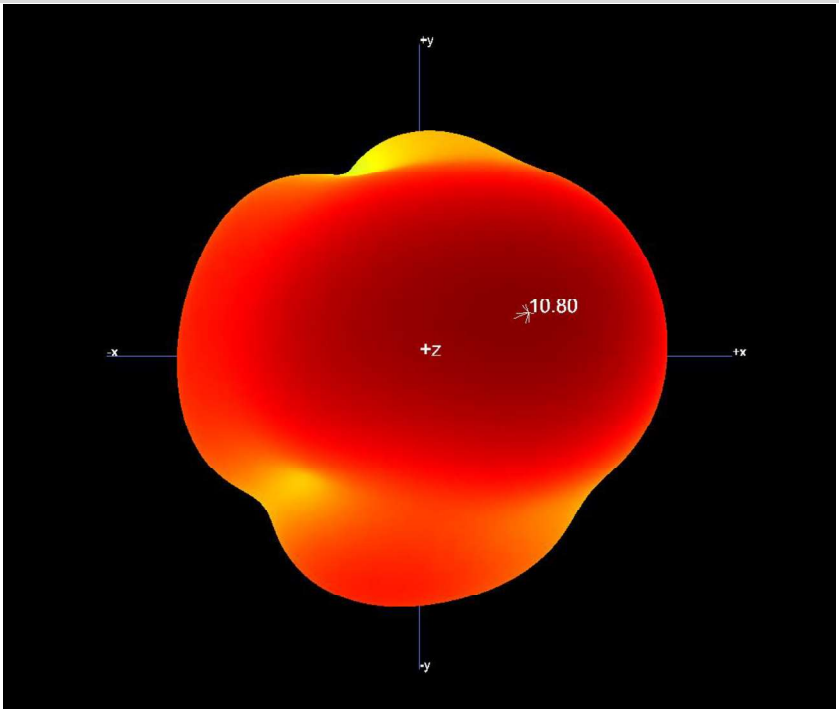
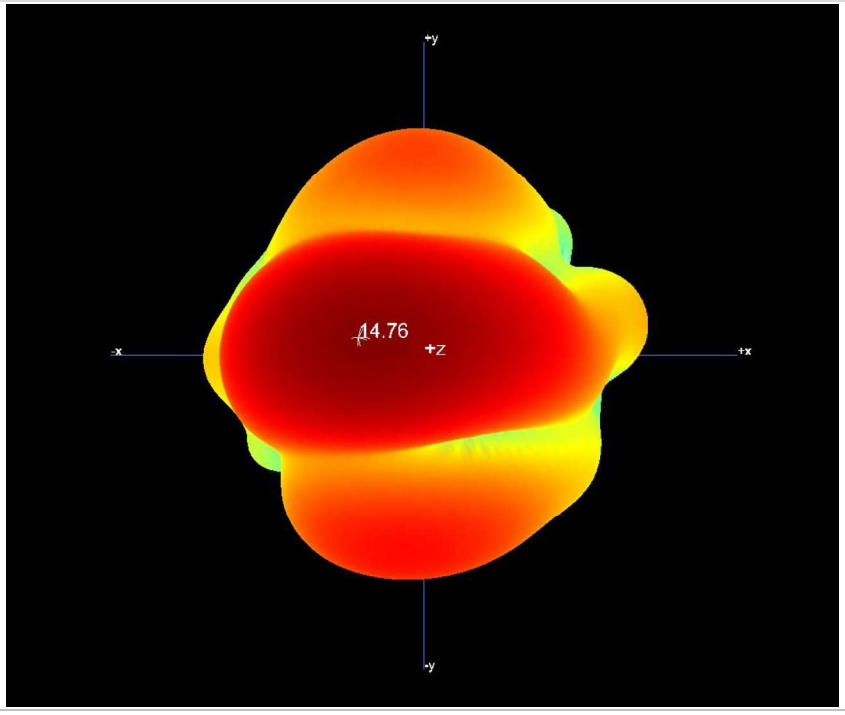
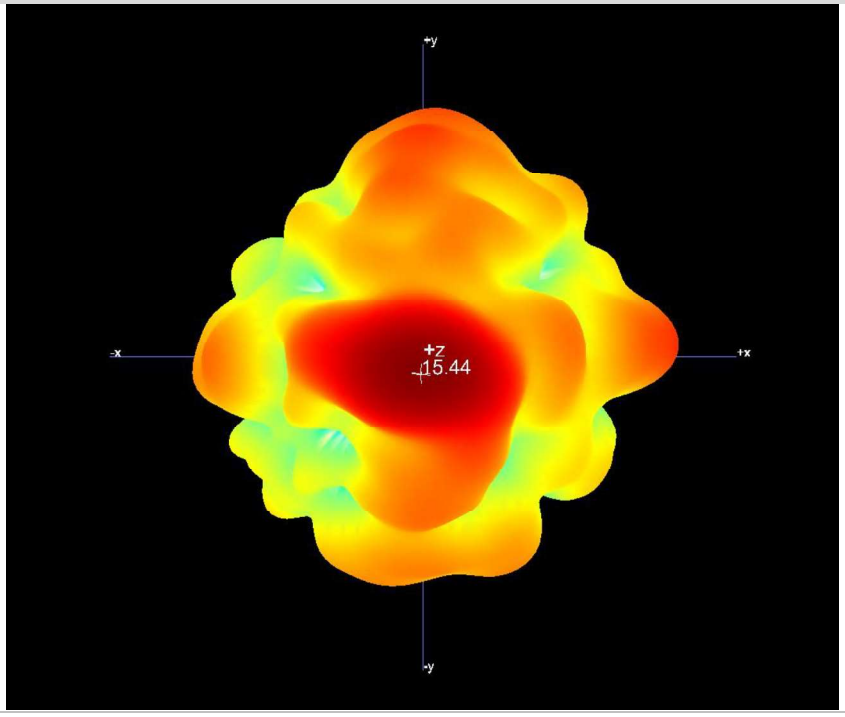
B1.7 3D Pattern for 1710MHz



B1.8 3D Pattern for 2700MHz



B1.9 3D Pattern for 4200MHz



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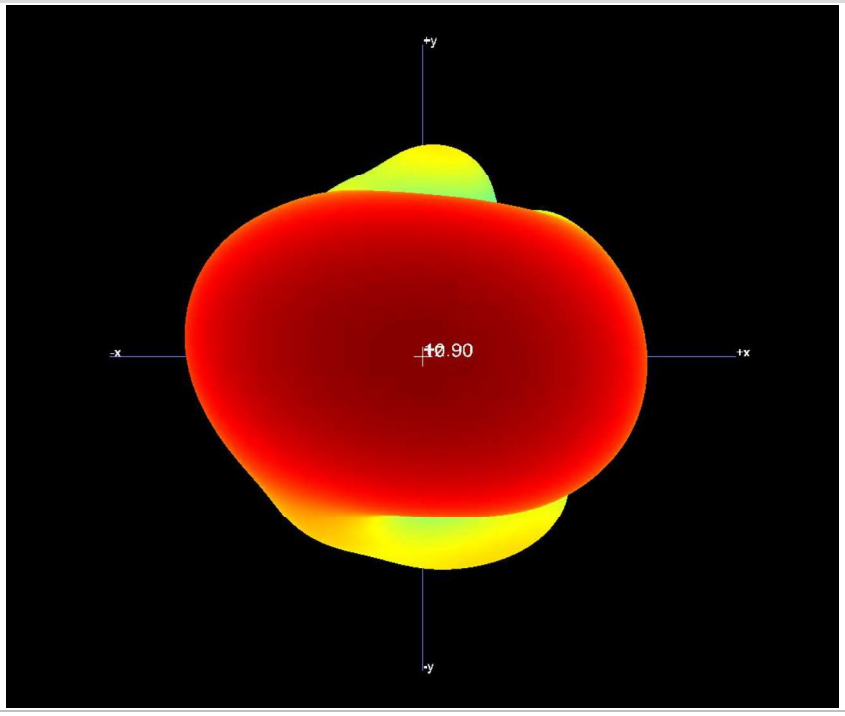
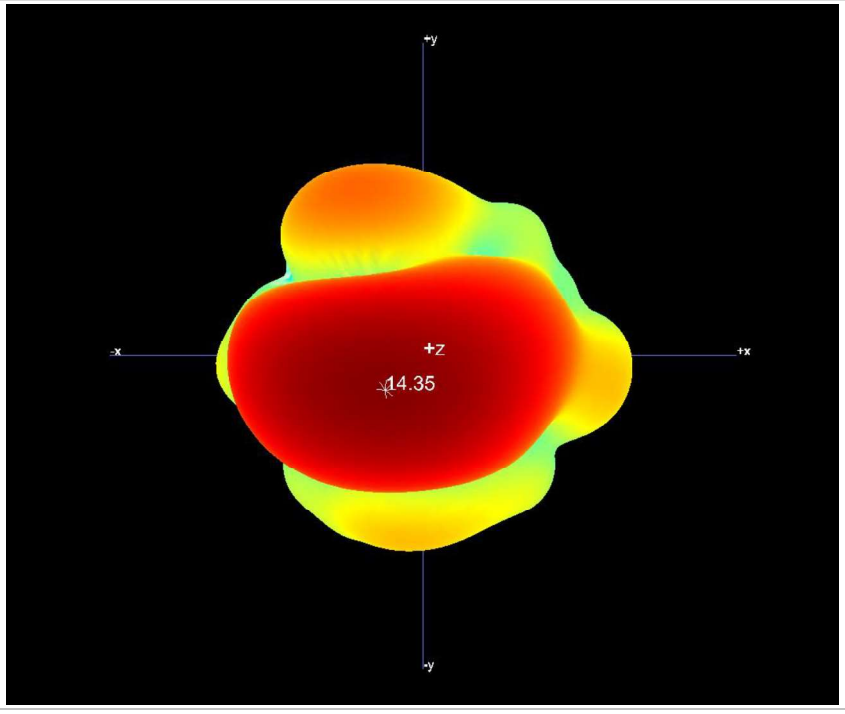
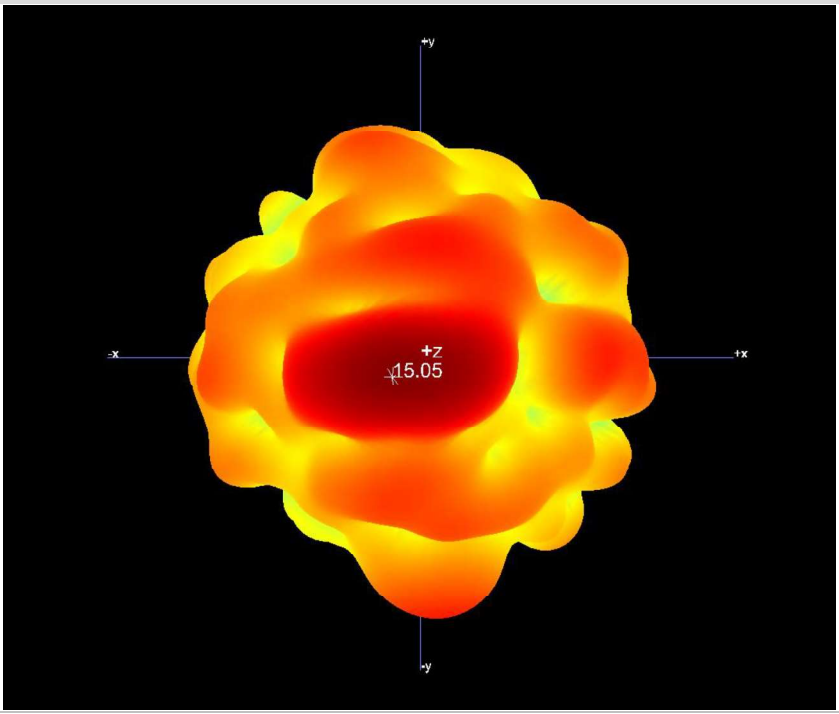
B1.10 3D Pattern for 1710MHz



B1.11 3D Pattern for 2700MHz

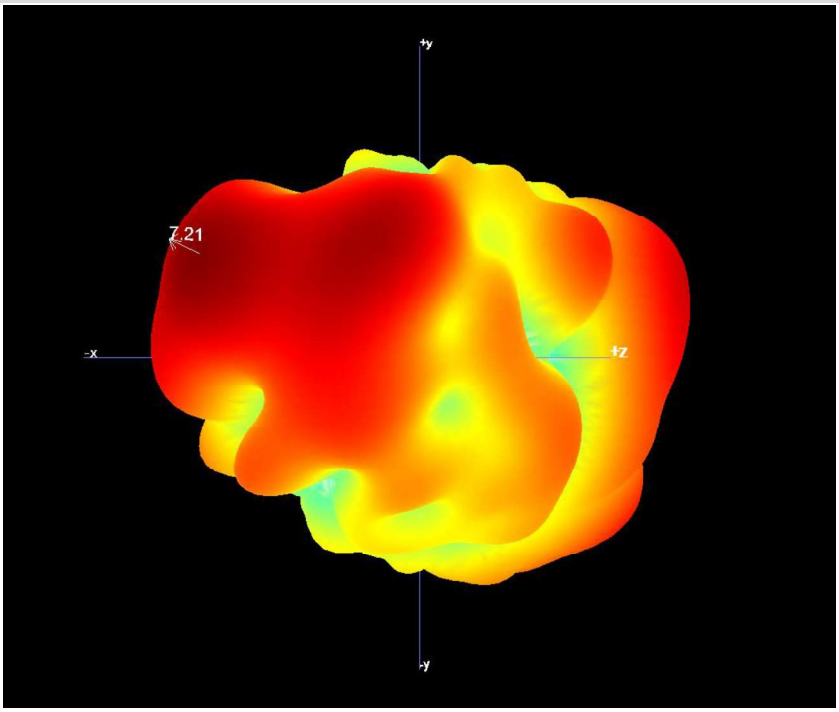


B1.12 3D Pattern for 4200MHz

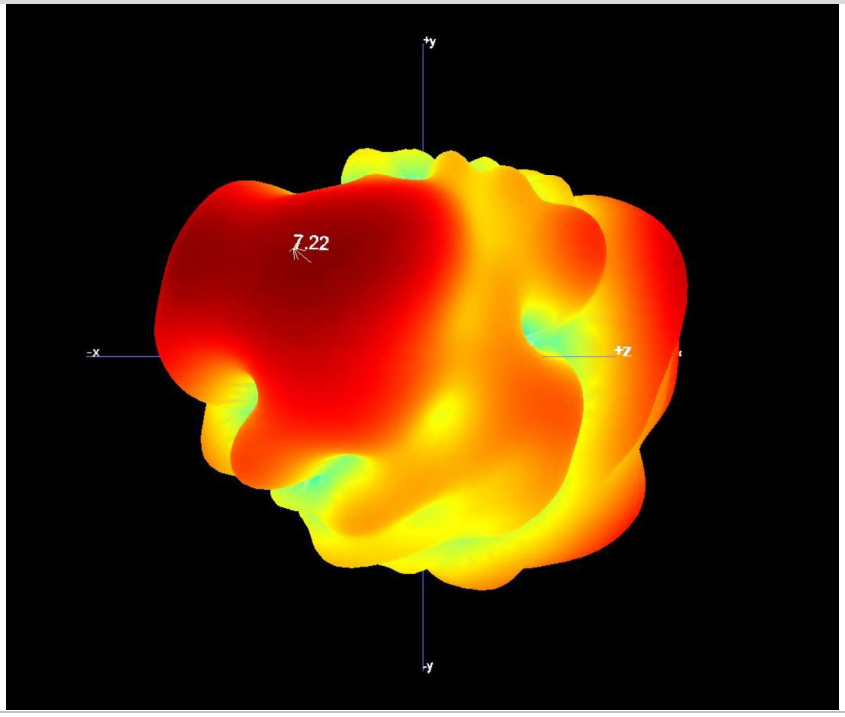


5#

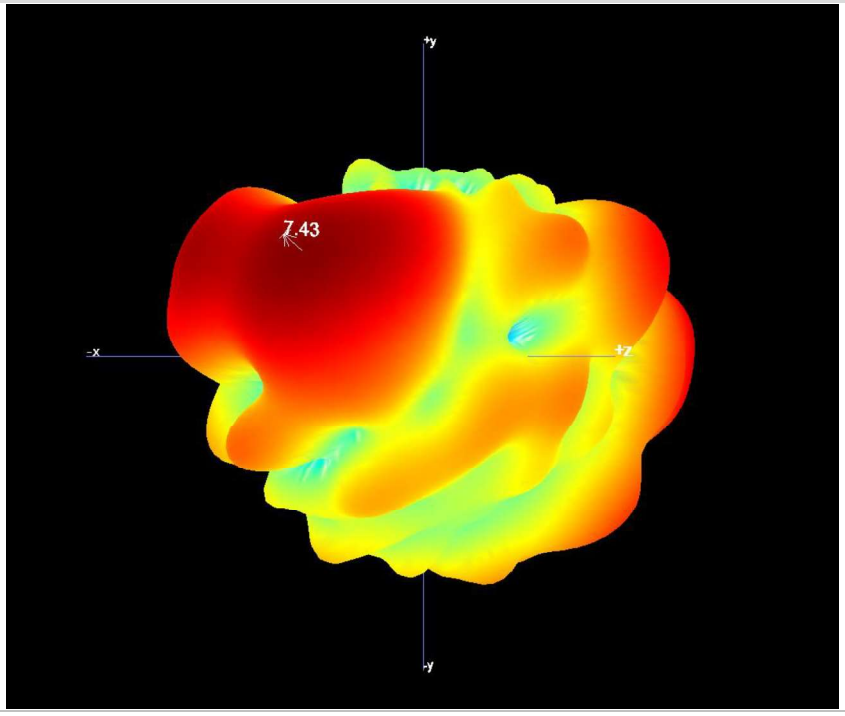
B1.13 3D Pattern for 2400MHz



B1.14 3D Pattern for 2450MHz

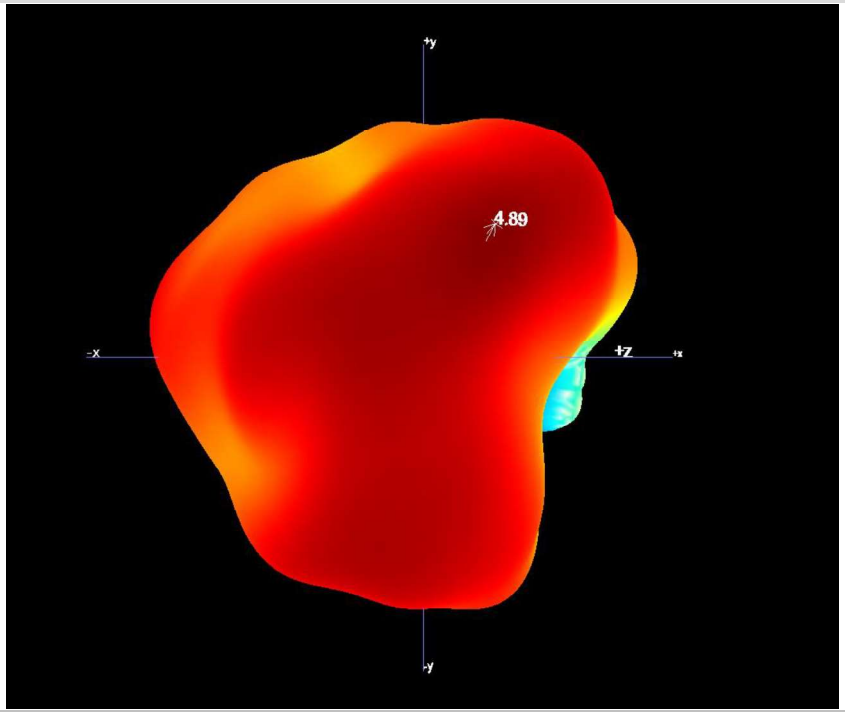


B1.15 3D Pattern for 2500MHz

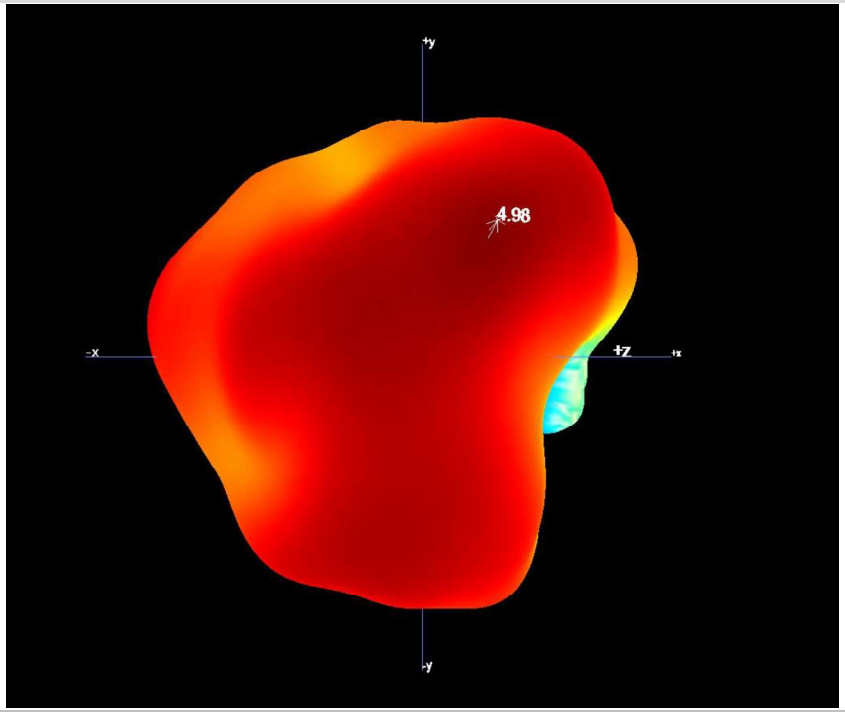


6#

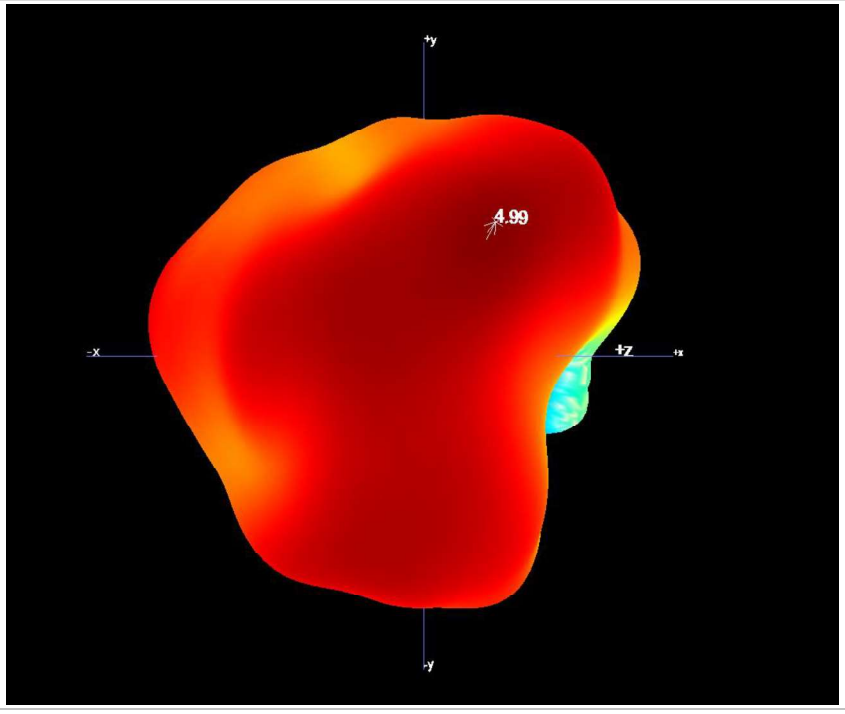
B1.16 3D Pattern for 1574.42MHz



B1.17 3D Pattern for 1575.42MHz



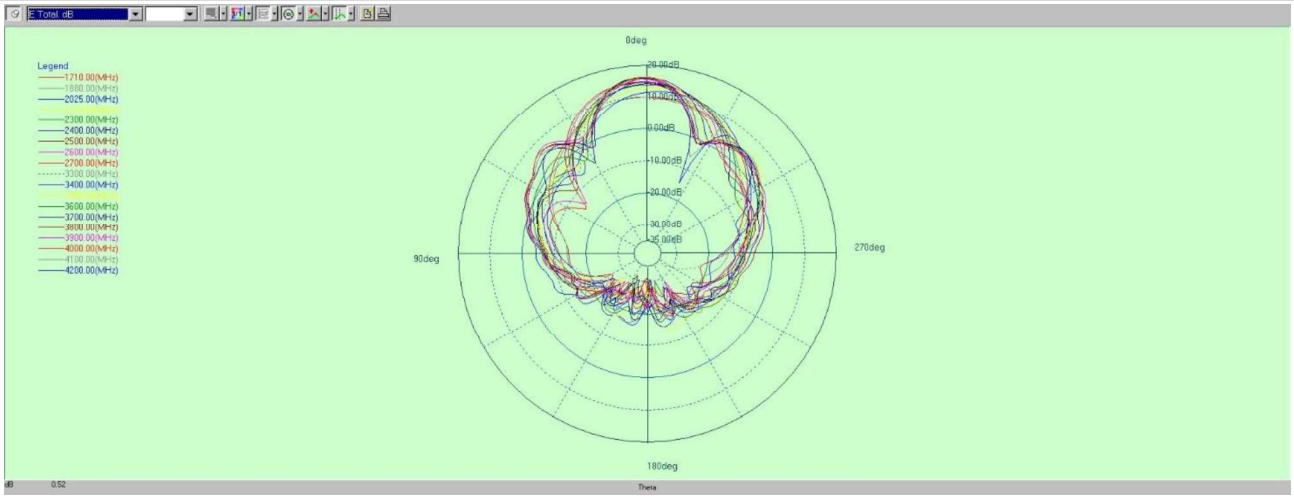
B1.18 3D Pattern for 1576.42MHz



B.2 1D Radiation Pattern

1#

B2.1 PHI=0



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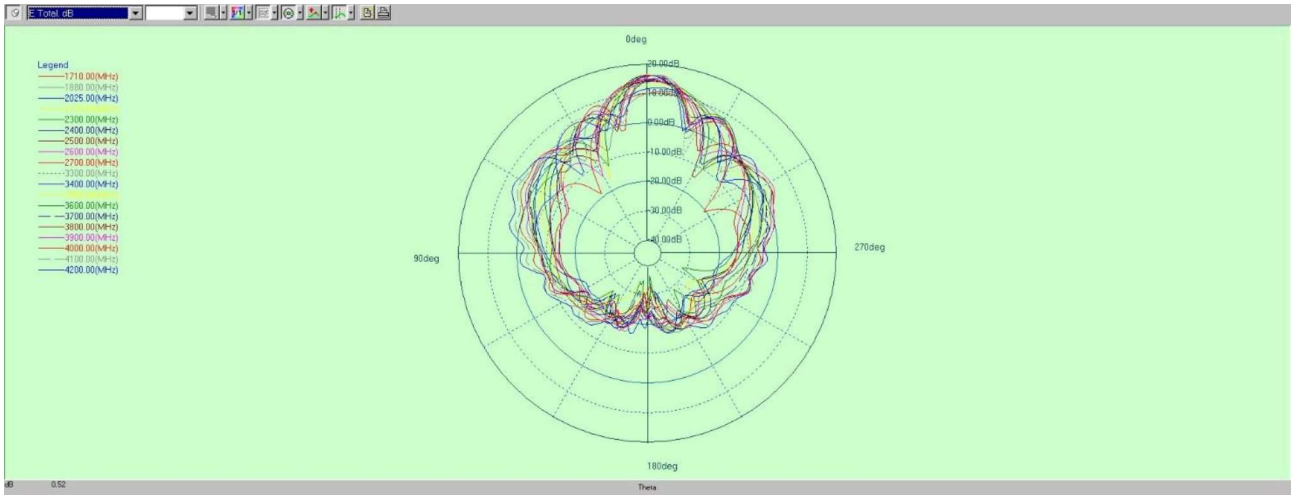

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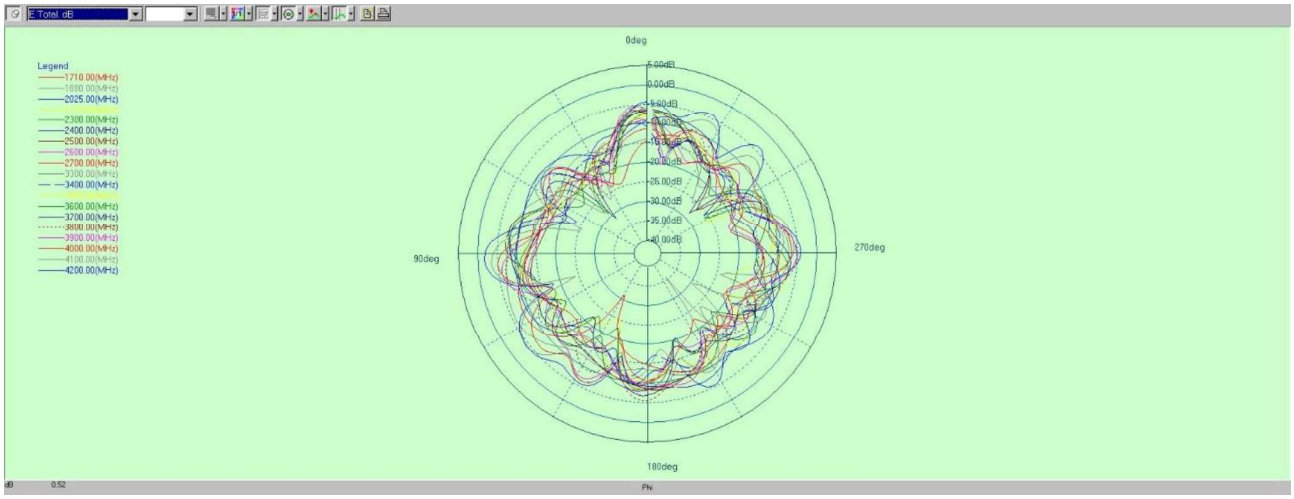

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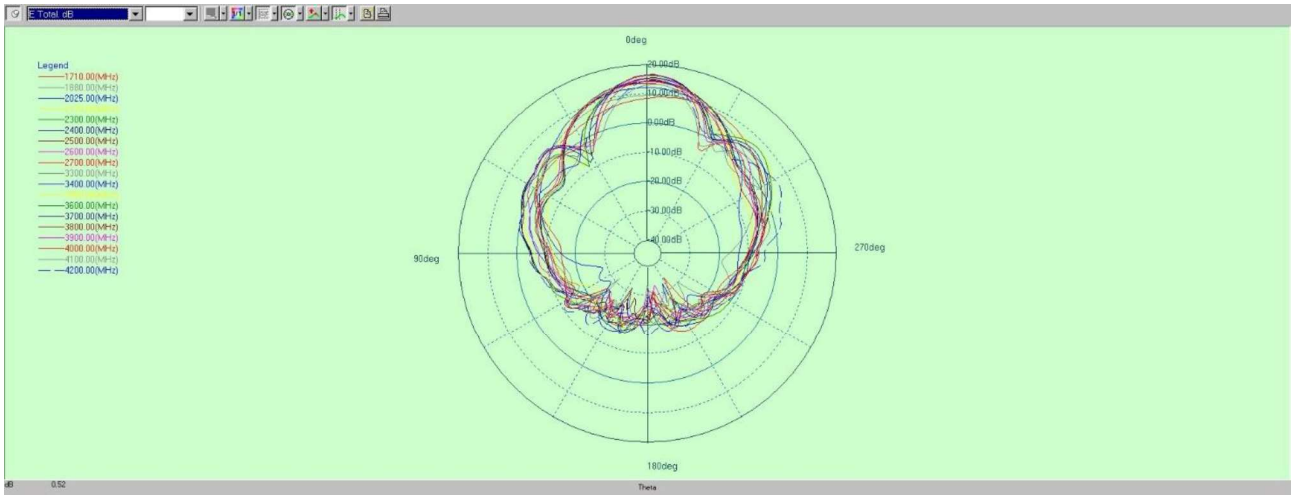
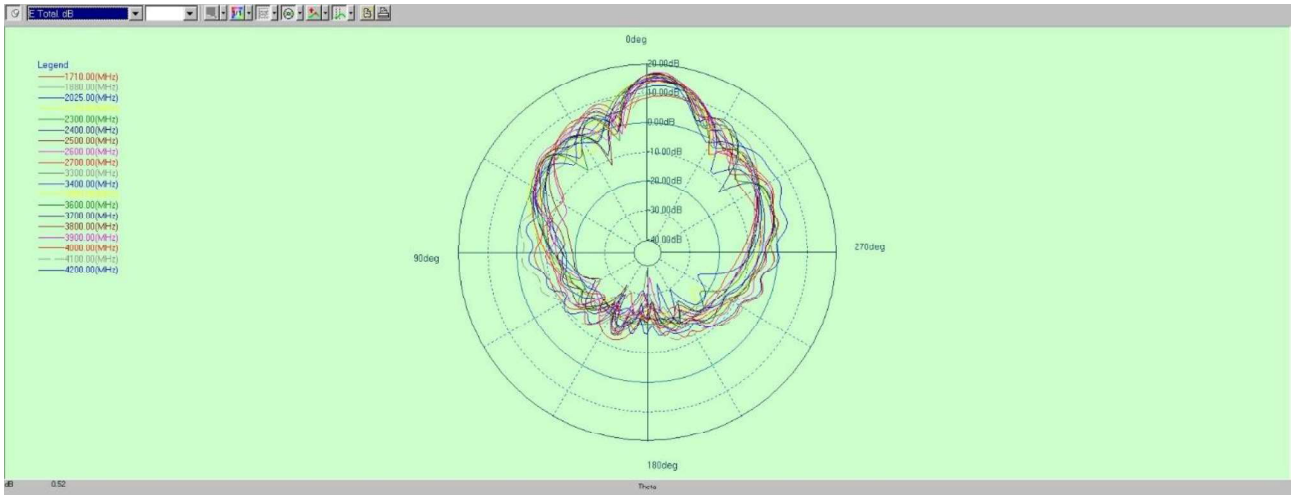
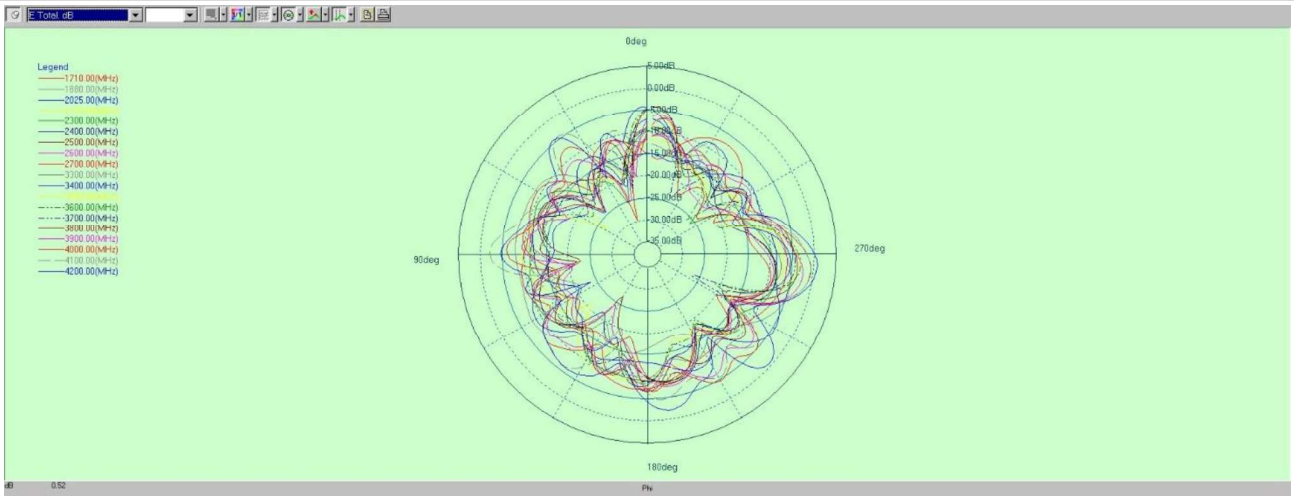


B2.5 PHI=90



B2.6 THETA=90



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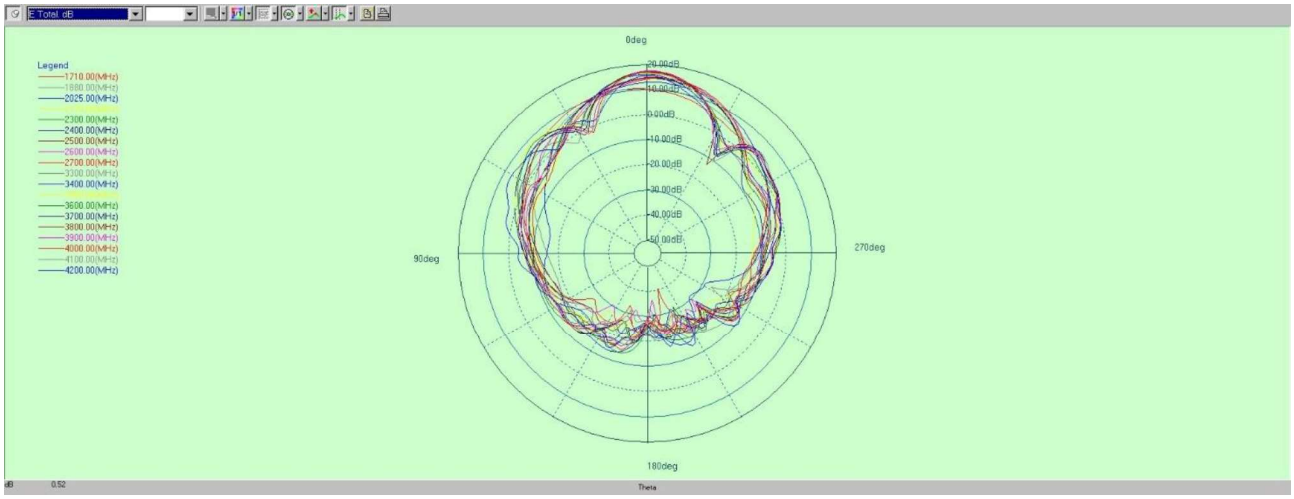

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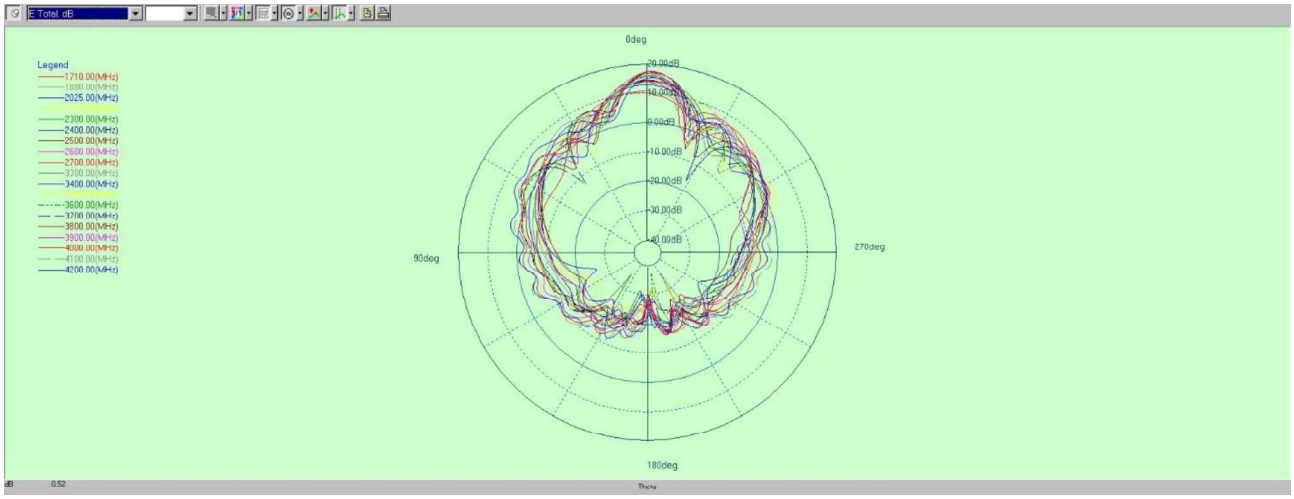

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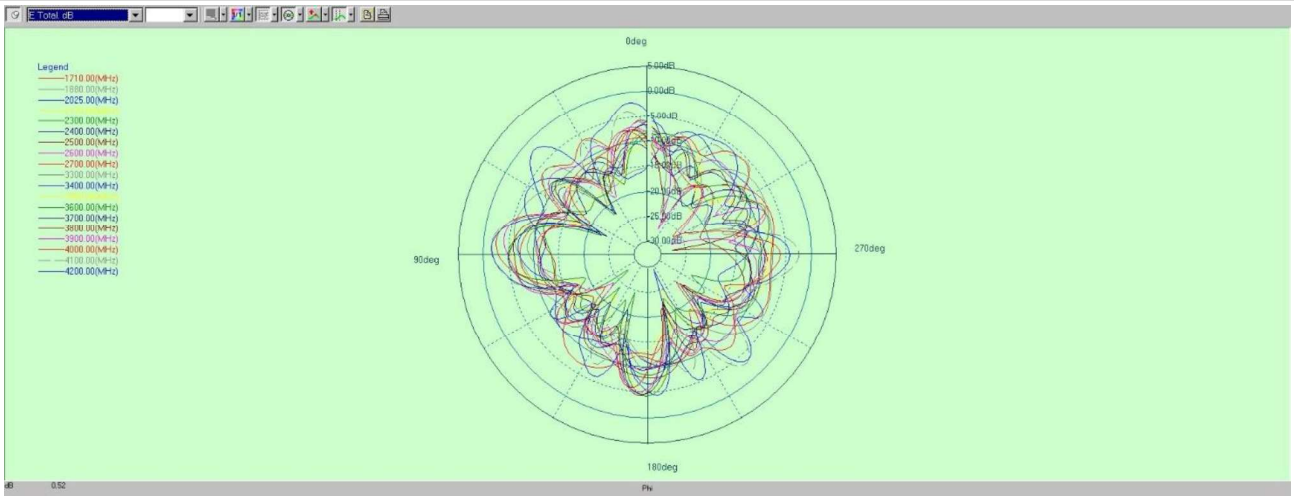

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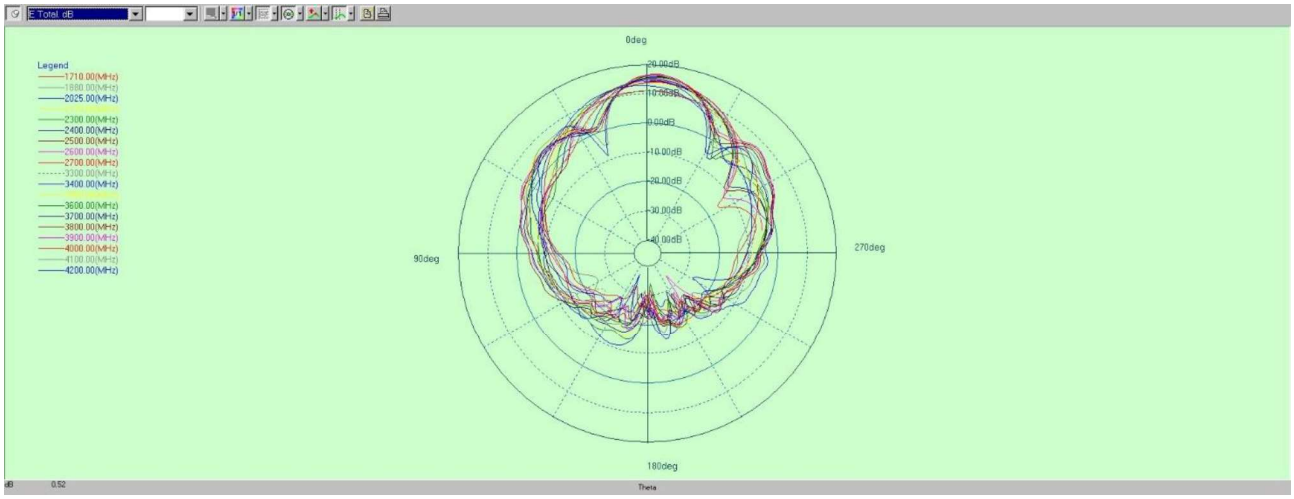

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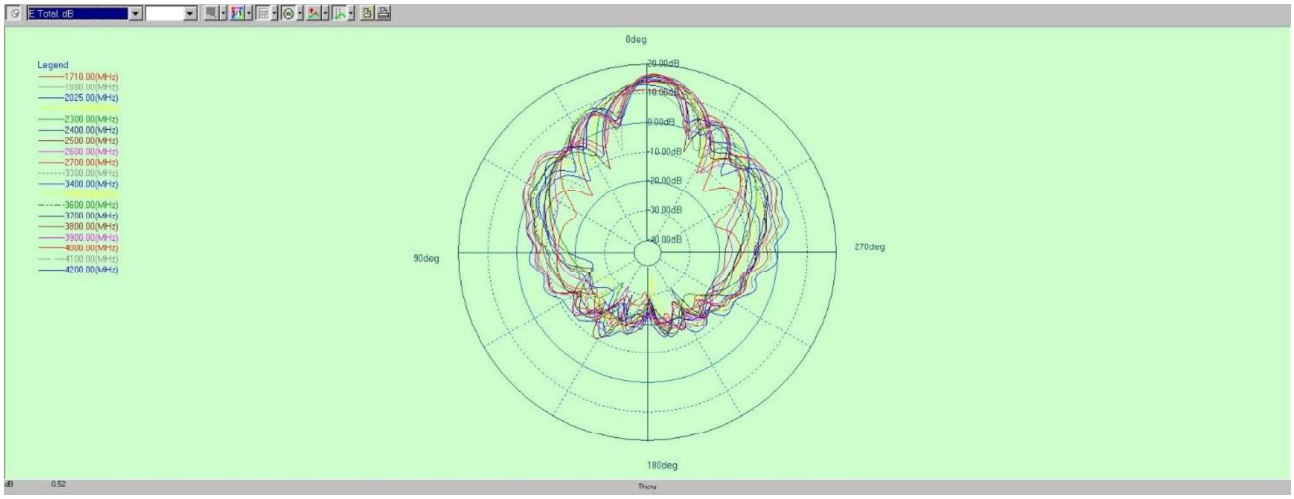

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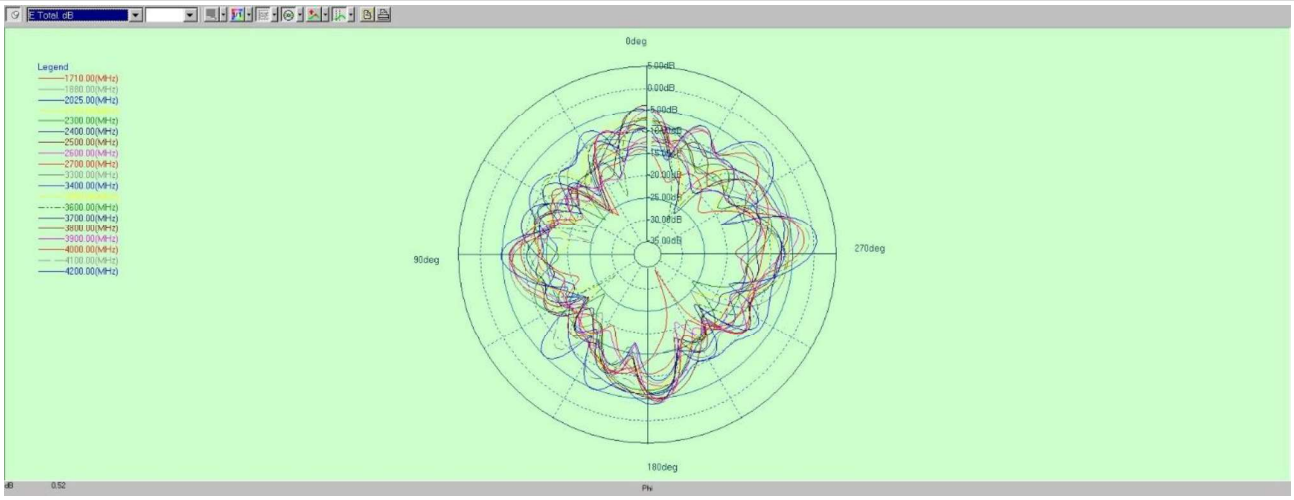

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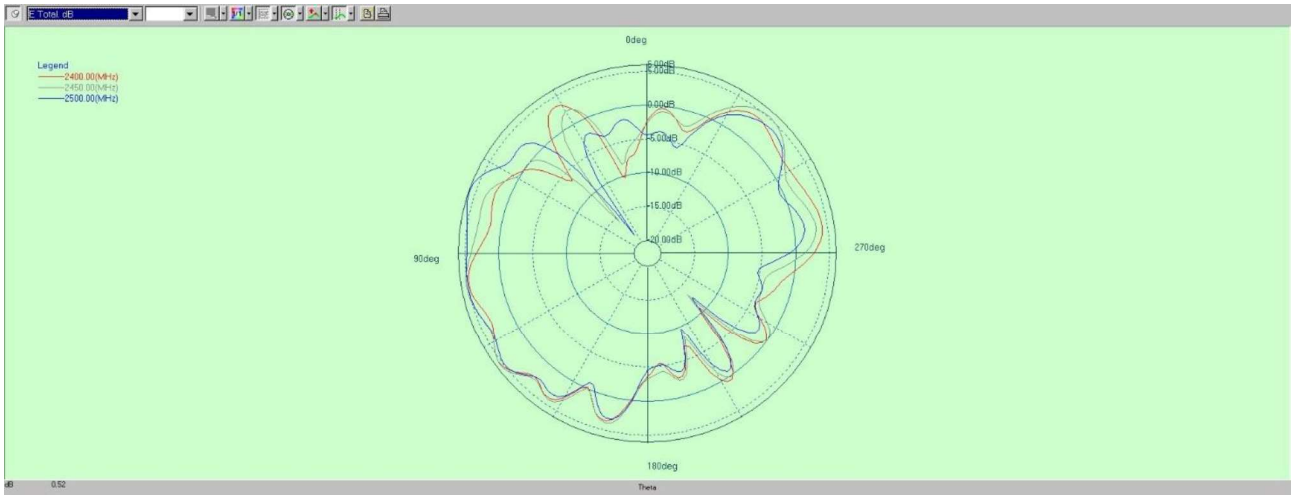

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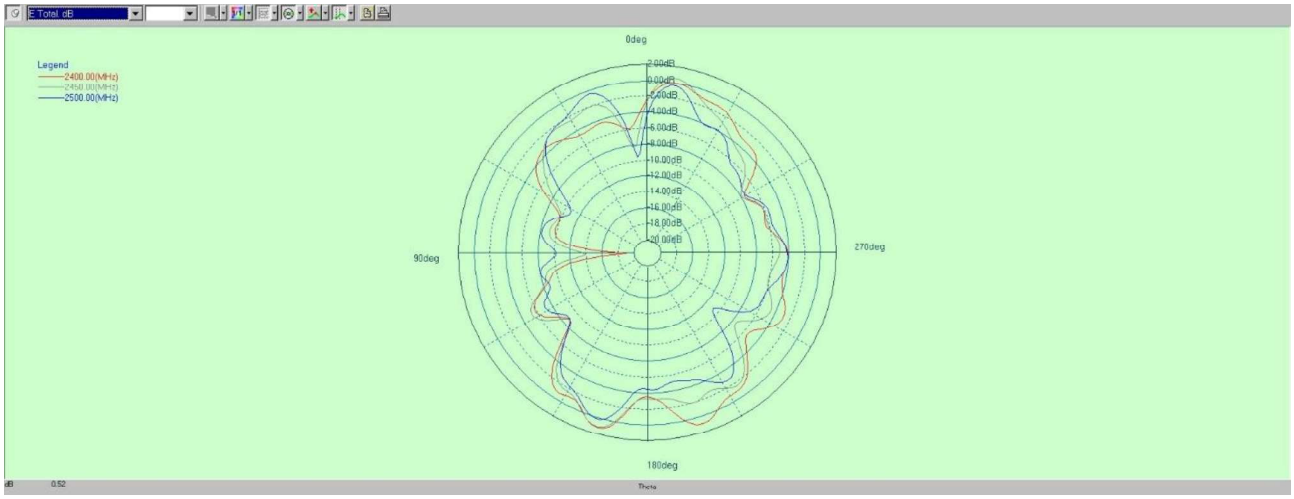
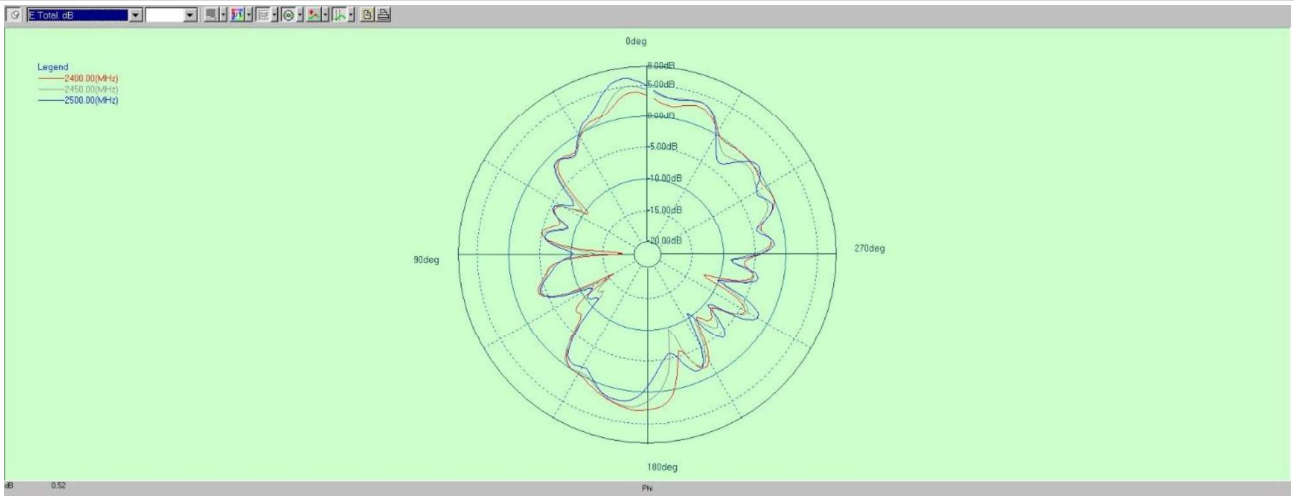


B2.15 THETA=90



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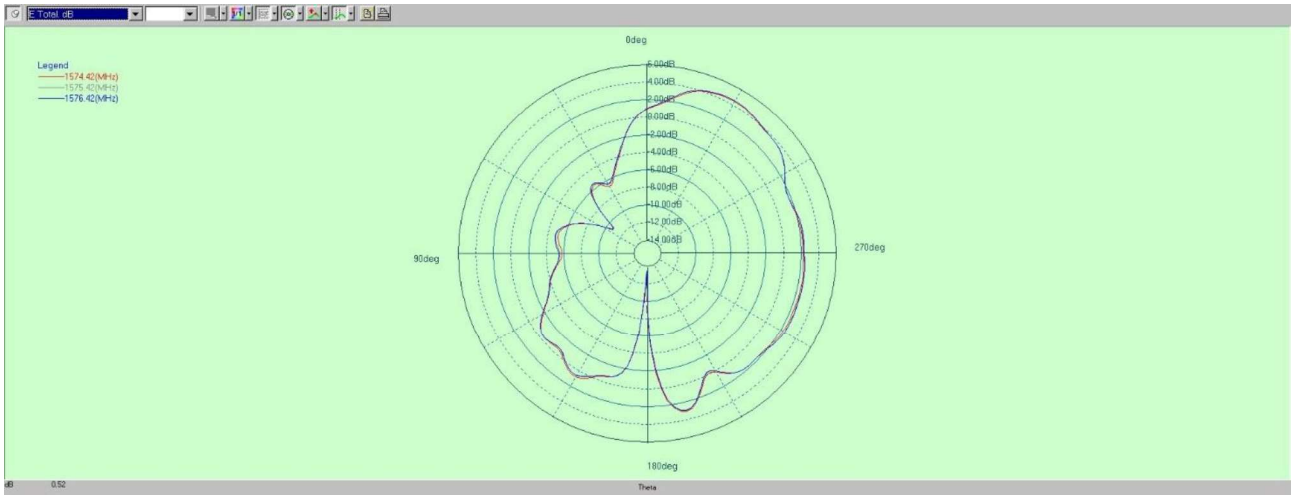

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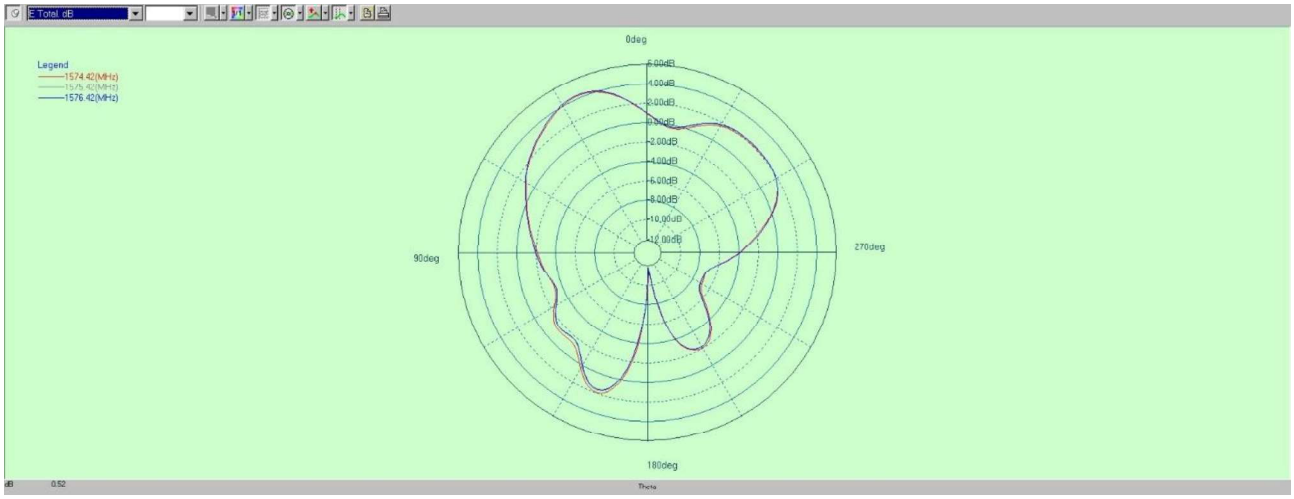

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