TAOGLAS

Datasheet

Part No:
PC45.07.0150AQ

Description

Wideband 5G/4G 600-6000MHz Cellular PCB Antenna (120x20mm)

with Black 150mm 1.37 Cable and I-PEX MHF1

Features:

High-performance PCB Cellular Antenna
Global Cellular Coverage: 600-6000MHz
Dims:120 x 20 x 1.06mm
Cable: 150mm of 1.37 Coaxial Cable (Black)
Connector: I-PEX MHF1
RoHS & Reach Compliant

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1. Introduction

The Taoglas PC45 is a high-performance PCB antenna specifically designed for 5G/4G cellular IoT devices and applications. Its small footprint and super slim design offer exceptional integration capabilities. At just 120 x 20mm, it is easily installed with minimal design requirements. Engineered for seamless integration, either on or off the main device PCB, the 3M peel and stick adhesive on the back makes it easy to integrate. The design eliminates the need for complex matching or tuning, allowing for quick and easy installation, minimizing your overall design cycle.

This antenna features a 1.37mm diameter RF cable equipped with an I-PEX MHF1 connector, ensuring reliable and robust connection to the device. With a frequency range of 600-6000MHz, the antenna supports a wide range of 5G, LTE, and other global cellular bands, delivering high efficiency to assist with PTCRB certification.

Typical applications for the PC45 antenna include:

- Network devices, Gateways and Routers
- Remote Monitoring and CCTV Cameras
- Point of Sale Terminals
- Digital Signage

The antenna's compact design includes a 150mm perpendicular (90-degree) cable feed, making it an ideal solution for applications where space is limited without compromising on performance. Whether for IoT devices, cellular modules, or other wireless communication products, this antenna ensures optimized performance across a wide range of frequencies.

Contact your regional Taoglas customer support team for samples or for further information.

2. Specification

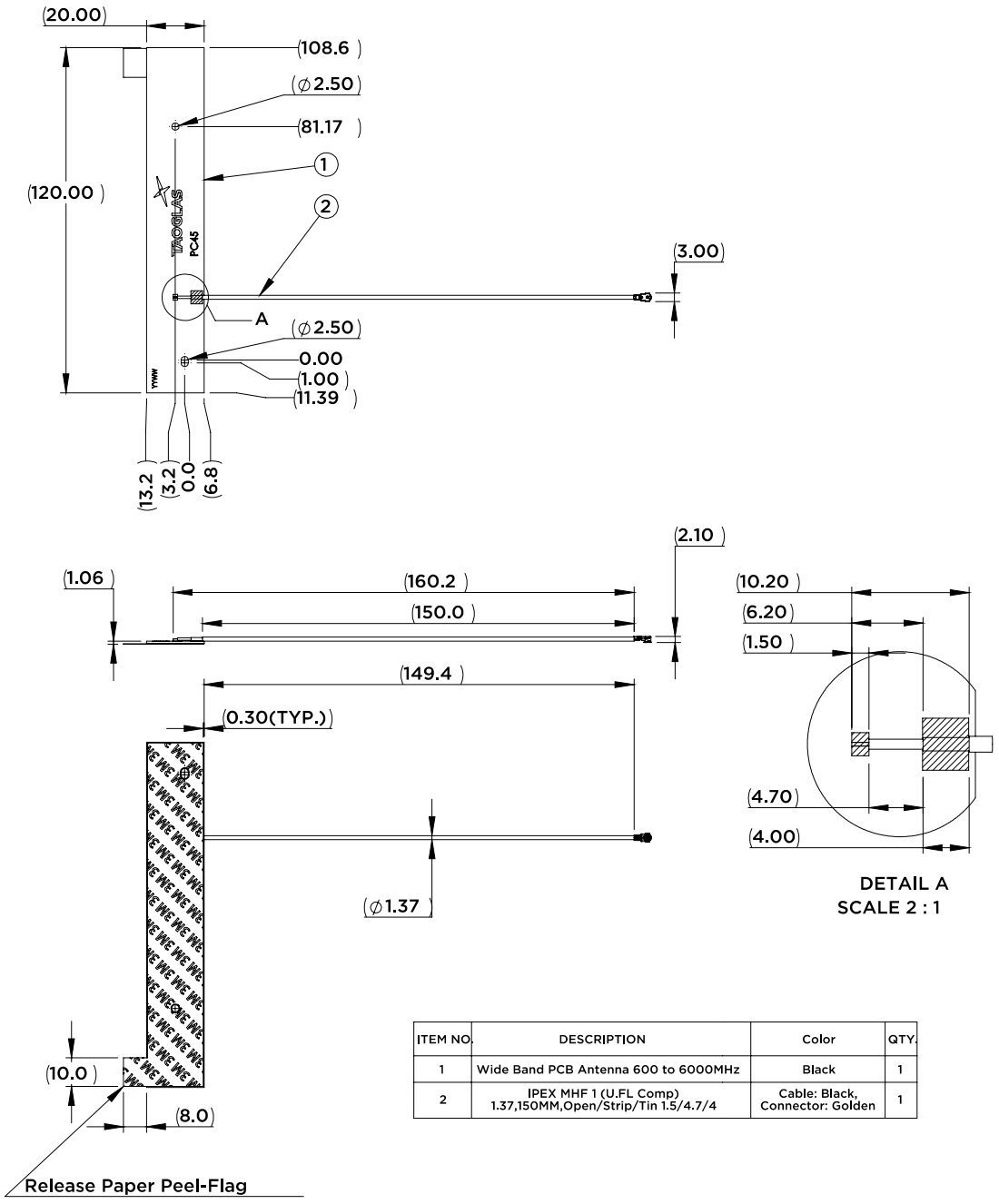
LTE Electrical									
Band	Frequency (MHz)	Measurement	Efficiency (%)	Average Gain (dB)	Peak Gain (dBi)	Impedance	Polarization	Radiation Pattern	Max. input power
5GNR/4G Band71	617-698	Cable Feed Left	25.8	-5.88	-1.04	50 Ω	Linear	Omni directional	2W
		Cable Feed Right	39.8	-4.00	0.19				
		Cable Feed Straight	32.6	-4.87	-0.71				
4G/3G Band 12,13,14,17,28,29	698-824	Cable Feed Left	59.0	-2.29	2.30				
		Cable Feed Right	66.1	-1.80	1.87				
		Cable Feed Straight	64.4	-1.91	1.81				
4G/3G/NB-IoT/Cat M Band 5,8,18,19,20,26,27	824-960	Cable Feed Left	60.0	-2.22	2.06				
		Cable Feed Right	61.5	-2.11	1.87				
		Cable Feed Straight	61.4	-2.12	1.67				
5GNR/4G Band 21,32,74,75,76	1427-1518	Cable Feed Left	62.3	-2.06	2.54				
		Cable Feed Right	56.9	-2.45	1.73				
		Cable Feed Straight	61.9	-2.08	2.41				
4G/3G Band 1,2,3,4,9,23,25,35,39, 66	1710-2200	Cable Feed Left	65.2	-1.86	3.95				
		Cable Feed Right	66.1	-1.80	3.41				
		Cable Feed Straight	65.8	-1.82	3.56				
4G/3G Band 7,30,38,40,41	2300-2690	Cable Feed Left	55.8	-2.53	3.86				
		Cable Feed Right	57.4	-2.41	3.28				
		Cable Feed Straight	56.0	-2.52	3.68				
5GNR/4G Band 22,42,48,77,78,79	3300-5000	Cable Feed Left	65.3	-1.85	5.66				
		Cable Feed Right	64.9	-1.88	5.20				
		Cable Feed Straight	64.7	-1.89	5.22				
LTE5200/Wi-Fi5800	5150-5925	Cable Feed Left	45.2	-3.45	2.96				
		Cable Feed Right	45.0	-3.47	2.92				
		Cable Feed Straight	45.1	-3.46	3.79				

5G/4G Bands					
Band Number	5GNR / FR1 / LTE / LTE-Advanced / WCDMA / HSPA / HSPA+ / TD-SCDMA				
	Uplink	Downlink	Cable Feed Left	Cable Feed Right	Cable Feed Straight
B1	1920 to 1980	2110 to 2170	✓	✓	✓
B2	1850 to 1910	1930 to 1990	✓	✓	✓
B3	1710 to 1785	1805 to 1880	✓	✓	✓
B4	1710 to 1755	2110 to 2155	✓	✓	✓
B5	824 to 849	869 to 894	✓	✓	✓
B7	2500 to 2570	2620 to 2690	✓	✓	✓
B8	880 to 915	925 to 960	✓	✓	✓
B9*	1749.9 to 1784.9	1844.9 to 1879.9	✓	✓	✓
B11	1427.9 to 1447.9	1475.9 to 1495.9	✓	✓	✓
B12	699 to 716	729 to 746	✓	✓	✓
B13	777 to 787	746 to 756	✓	✓	✓
B14	788 to 798	758 to 768	✓	✓	✓
B17	704 to 716	734 to 746	✓	✓	✓
B18	815 to 830	860 to 875	✓	✓	✓
B19	830 to 845	875 to 890	✓	✓	✓
B20	832 to 862	791 to 821	✓	✓	✓
B21	1447.9 to 1462.9	1495.9 to 1510.9	✓	✓	✓
B22*	3410 to 3490	3510 to 3590	✓	✓	✓
B23*	2000 to 2020	2180 to 2200	✓	✓	✓
B24	1626.5 to 1660.5	1525 to 1559	✓	✓	✓
B25	1850 to 1915	1930 to 1995	✓	✓	✓
B26	814 to 849	859 to 894	✓	✓	✓
B27*	807 to 824	852 to 869	✓	✓	✓
B28	703 to 748	758 to 803	✓	✓	✓
B29	717 to 728		✓	✓	✓
B30	2305 to 2315	2350 to 2360	✓	✓	✓
B31	452.5 to 457.5	462.5 to 467.5	✗	✗	✗
B32	1452 to 1496		✓	✓	✓
B34	2010 to 2025		✓	✓	✓
B35	1850 to 1910		✓	✓	✓
B36	1930 to 1990		✓	✓	✓
B37	1910 to 1930		✓	✓	✓
B38	2570 to 2620		✓	✓	✓
B39	1880 to 1920		✓	✓	✓
B40	2300 to 2400		✓	✓	✓
B41	2496 to 2690		✓	✓	✓
B42	3400 to 3600		✓	✓	✓
B43	3600 to 3800		✓	✓	✓
B45	1447 to 1467		✓	✓	✓
B46	5150 to 5925		✓	✓	✓
B47	5855 to 5925		✓	✓	✓
B48	3550 to 3700		✓	✓	✓
B49	3550 to 3700		✓	✓	✓
B50	1432 to 1517		✓	✓	✓
B51	1427 to 1432		✓	✓	✓
B52	3300 to 3400		✓	✓	✓
B53	2483.5 to 2495		✓	✓	✓
B65	1920 to 2010	2110 to 2200	✓	✓	✓
B66	1710 to 1780	2110 to 2200	✓	✓	✓
B68	698 to 728	753 to 783	✓	✓	✓
B69	2570 to 2620		✓	✓	✓
B70	1695 to 1710	1995 to 2020	✓	✓	✓
B71	663 to 698	617 to 652	✗	✓	✓
B72	451 to 456	461 to 466	✗	✗	✗
B73	450 to 455	460 to 465	✗	✗	✗
B74	1427 to 1470	1475 to 1518	✓	✓	✓
B75	1432 to 1517		✓	✓	✓
B76	1427 to 1432		✓	✓	✓
B77	3300 to 4200		✓	✓	✓
B78	3300 to 3800		✓	✓	✓
B79	4400 to 5000		✓	✓	✓
B85	698 to 716	728 to 746	✓	✓	✓
B87	410 to 415	420 to 425	✗	✗	✗
B88	412 to 417	422 to 427	✗	✗	✗

Mechanical	
Dimensions	120 x 20 x 1.06mm
Weight	5.6g
Material	Rigid PCB
Connector	IPEX MHF1
Cable	150mm of 1.37 Coaxial

Environmental	
Operation Temperature	-40°C to 85°C
Storage Temperature	-40°C to 85°C
Relative Humidity	Non-condensing 65°C 95% RH

3. Mechanical Drawing



ITEM NO.	DESCRIPTION	Color	QTY.
1	Wide Band PCB Antenna 600 to 6000MHz	Black	1
2	IPEX MHF 1 (U.FL Comp) 1.37,150MM,Open/Strip/Tin 1.5/4.7/4	Cable: Black, Connector: Golden	1

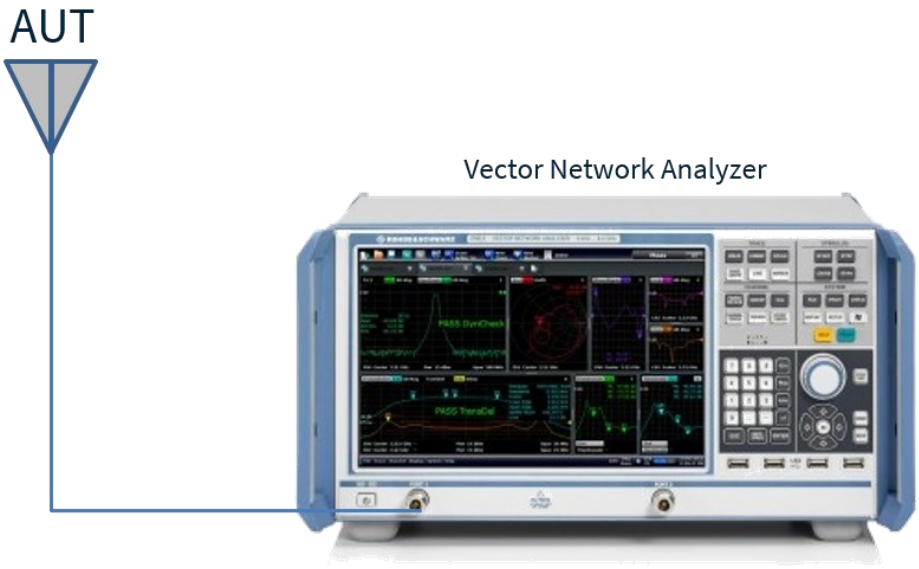
4. Packaging

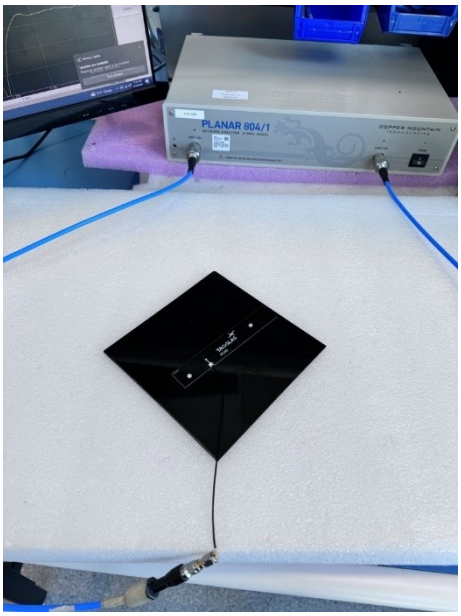
50pc per PE bag (1bundle/25pcs)
Bag dimensions: 230 x 330mm
Weight: 0.28Kg

1000pcs per carton
Box dimensions: 320 x 250 x 290mm
Weight: 6.12Kg

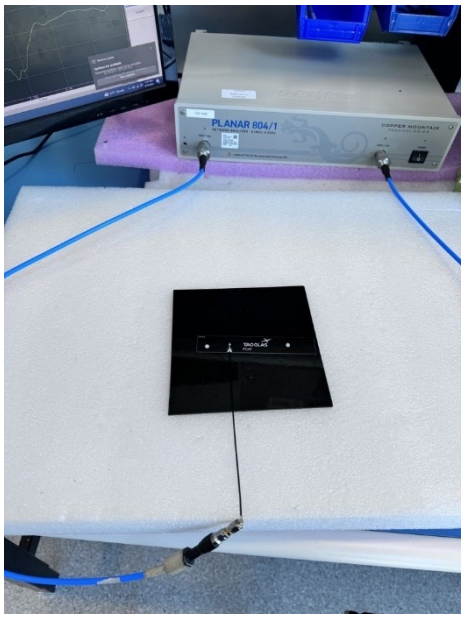
5. Antenna Characteristics

5.1 Test Setup

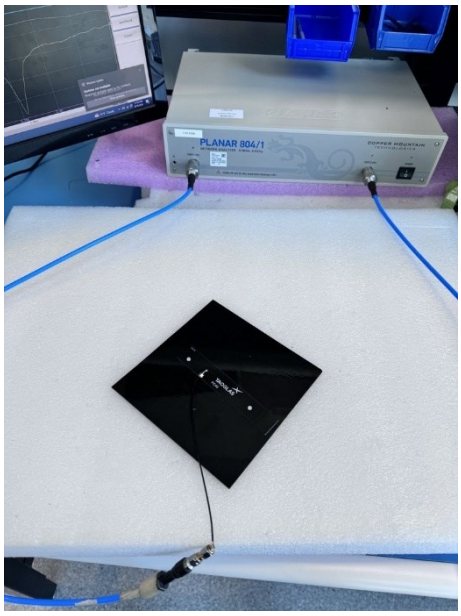




Cable Feed Left

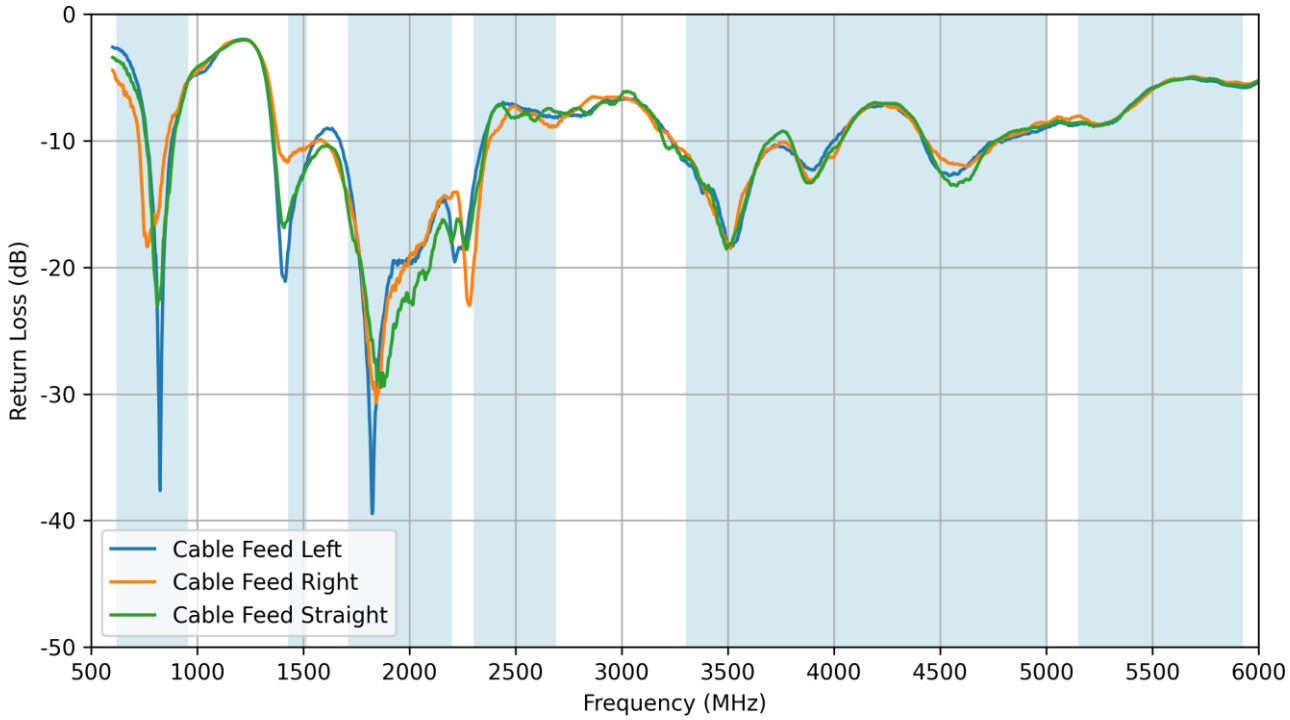


Cable Feed Straight

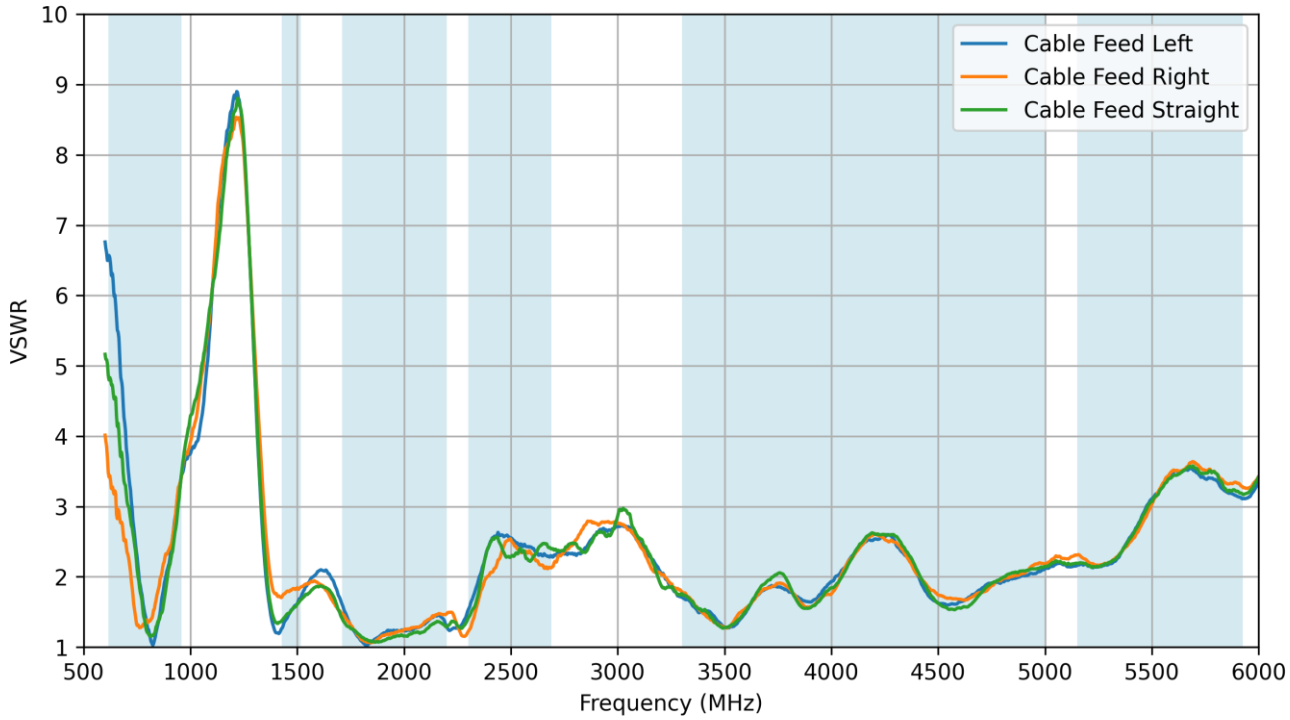


Cable Feed Right

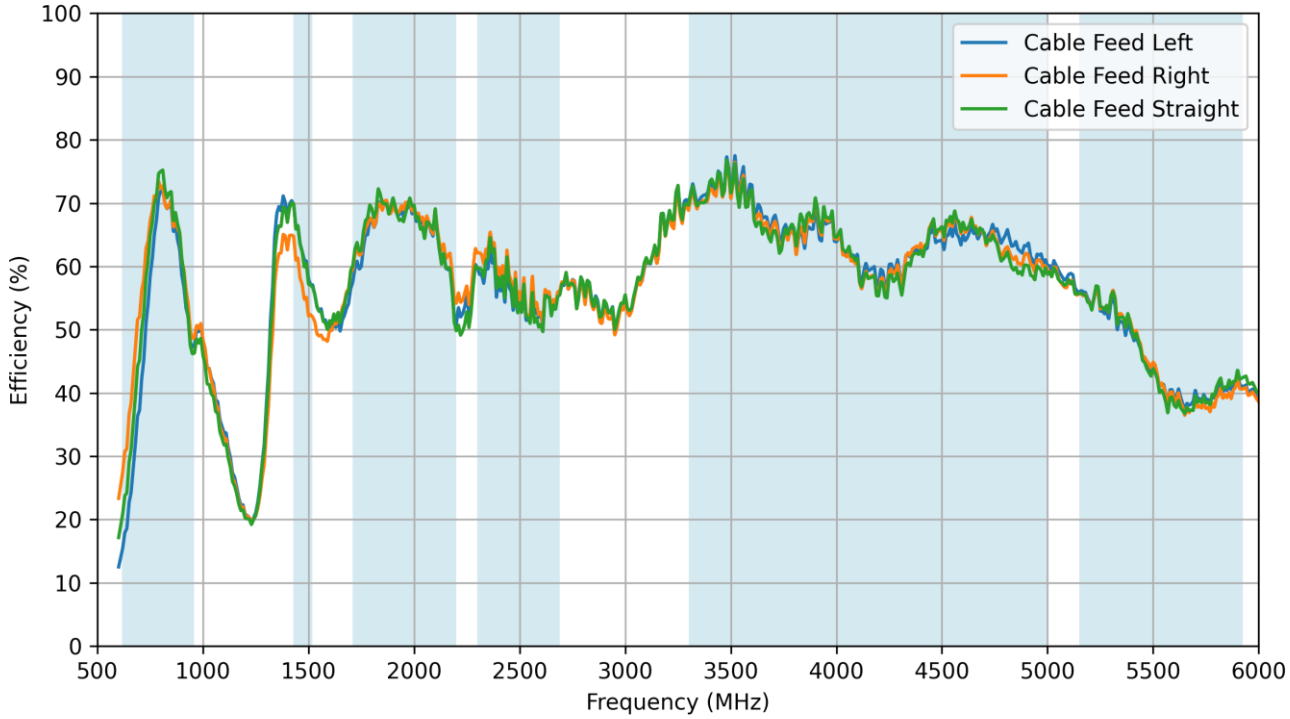
5.2 Return Loss



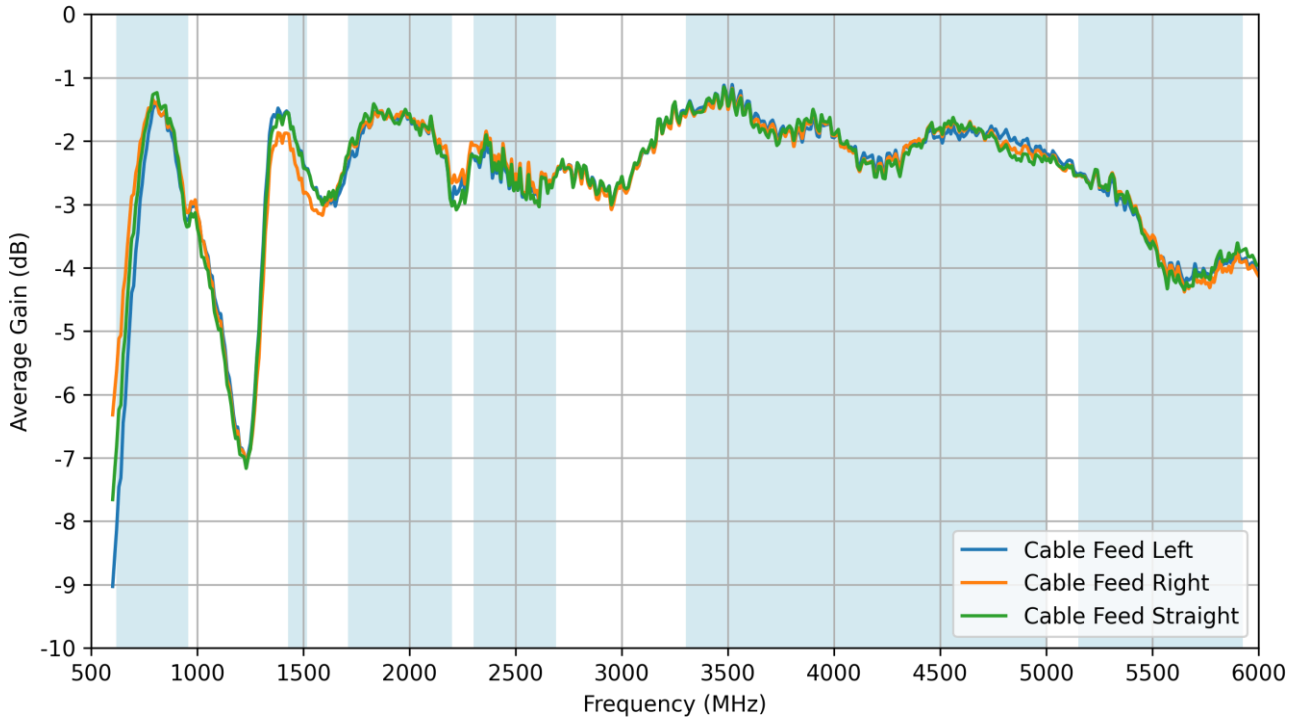
5.3 VSWR



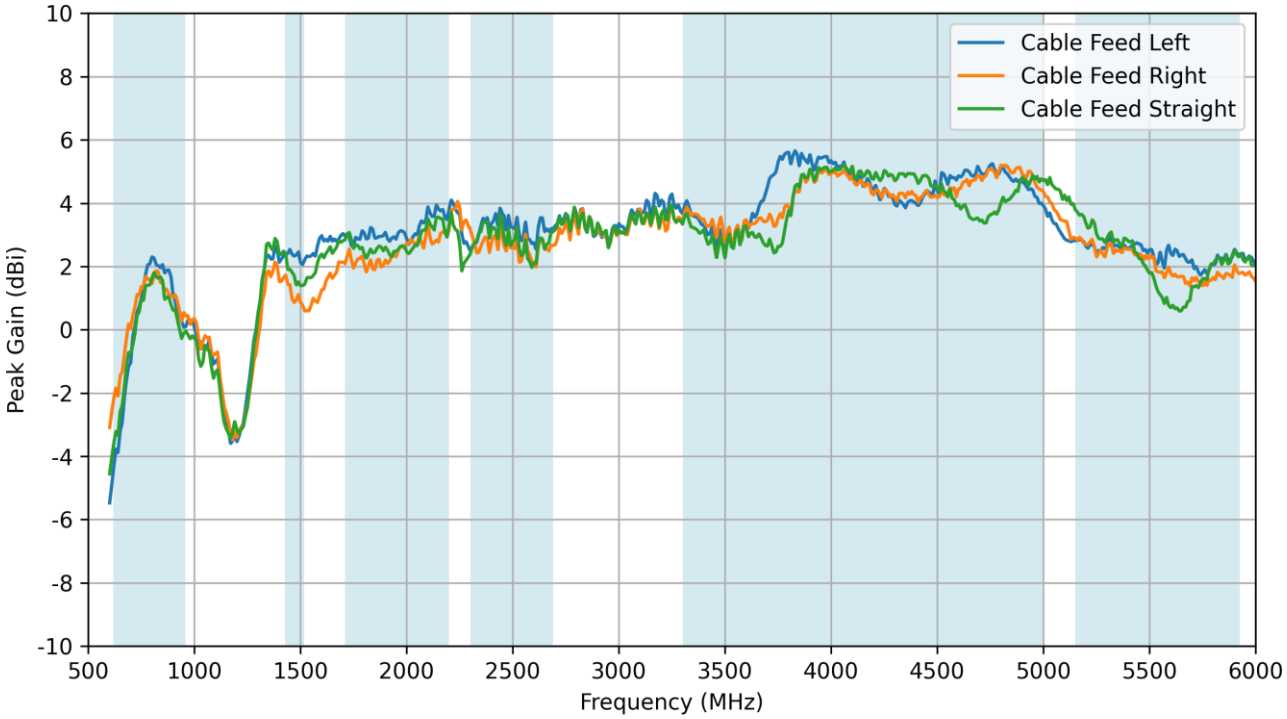
5.4 Efficiency



5.5 Average Gain

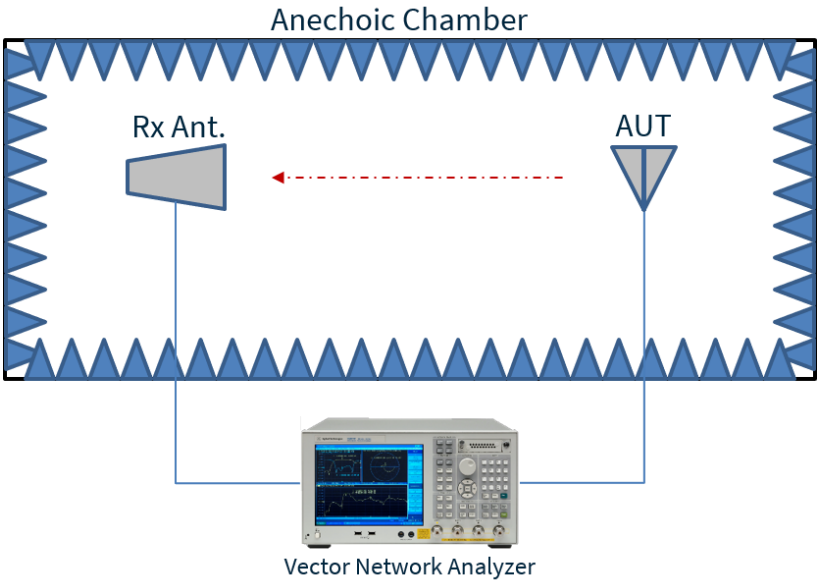


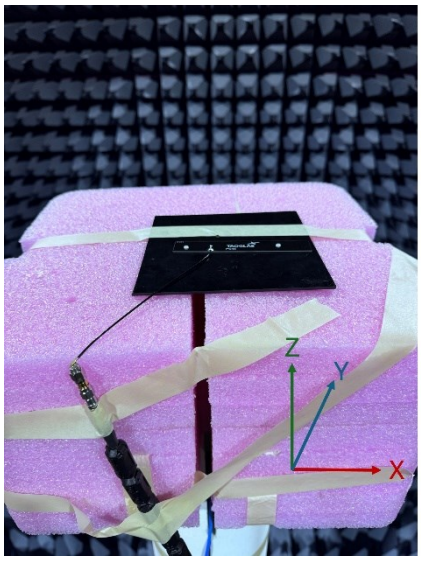
5.6 Peak Gain


Cable Feed Left
Cable Feed Right
Cable Feed Straight
Peak Gain (dBi)
Frequency (MHz)
10
8
6
4
2
0
-2
-4
-6
-8
-10
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
6000

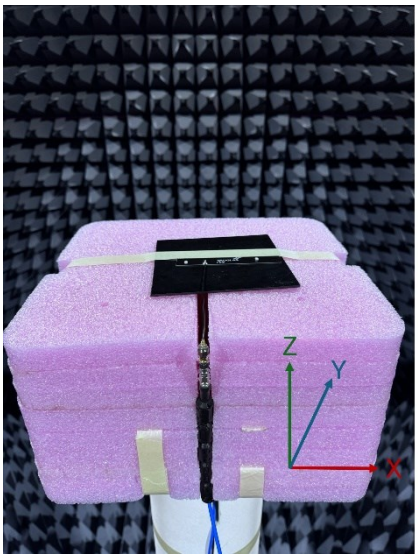
6. Radiation Patterns

6.1 Test Setup

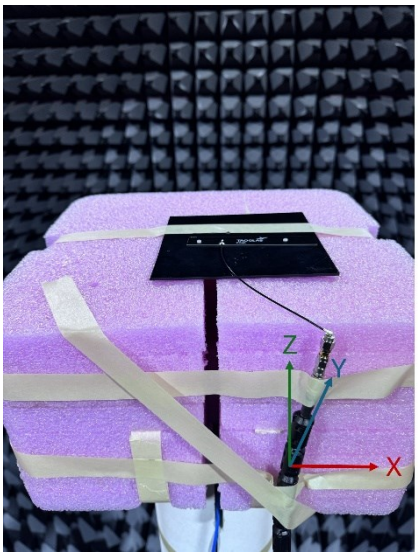




Cable Feed Left

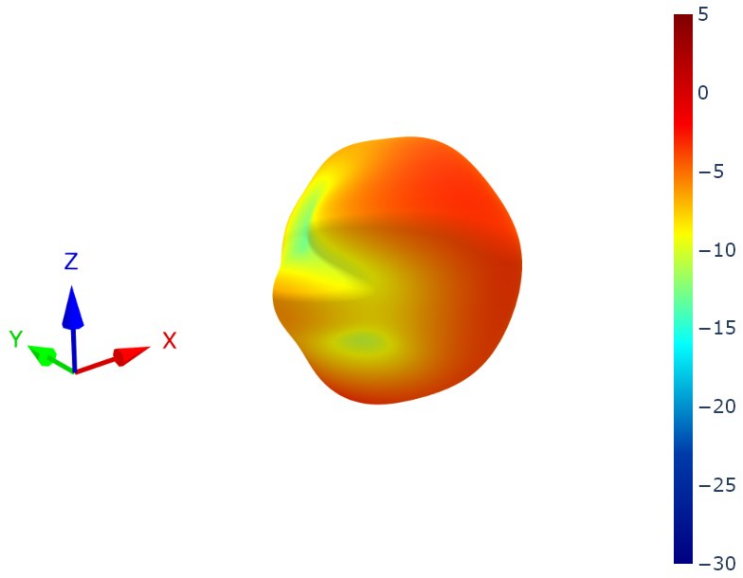


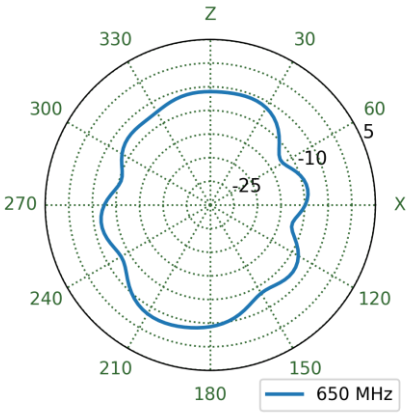
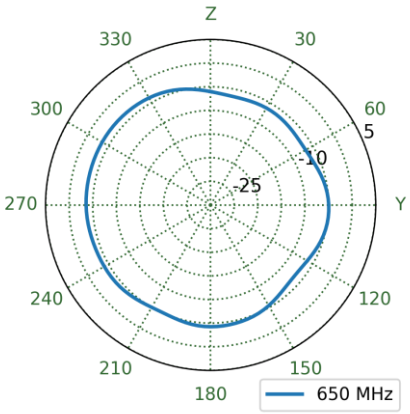
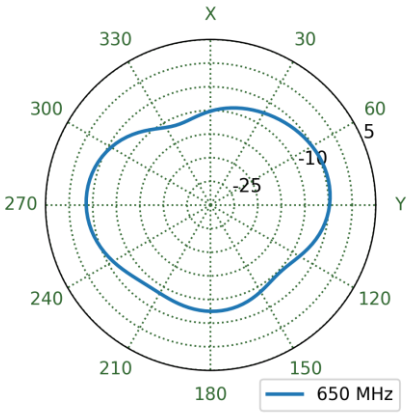
Cable Feed Straight



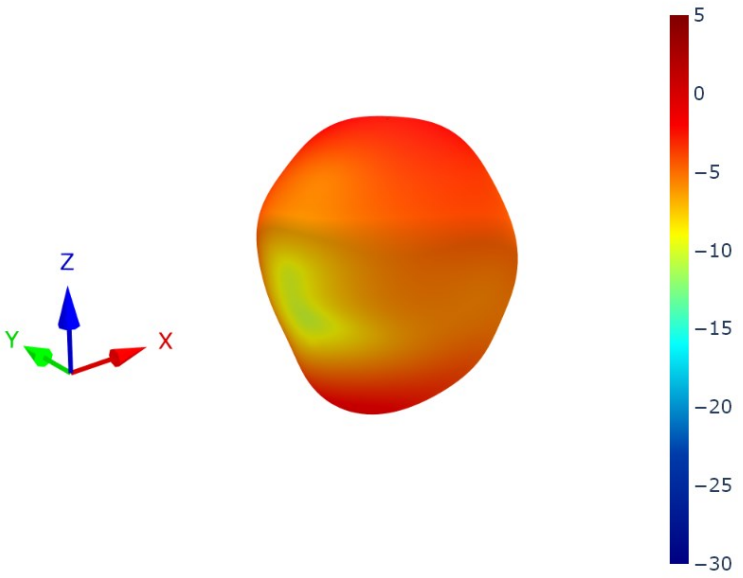
Cable Feed Right

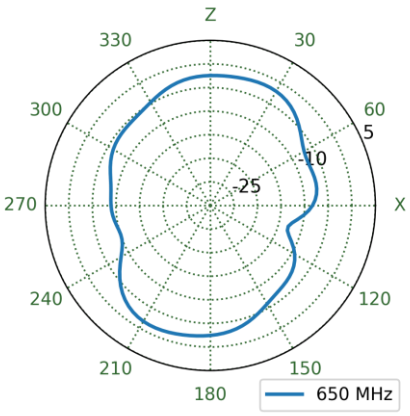
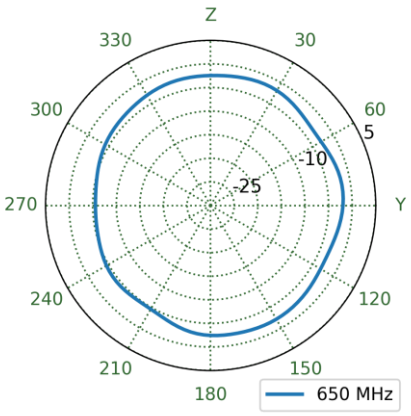
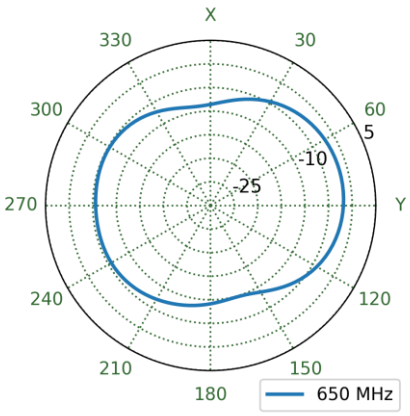
6.2 Cable Feed Left Patterns at 650 MHz



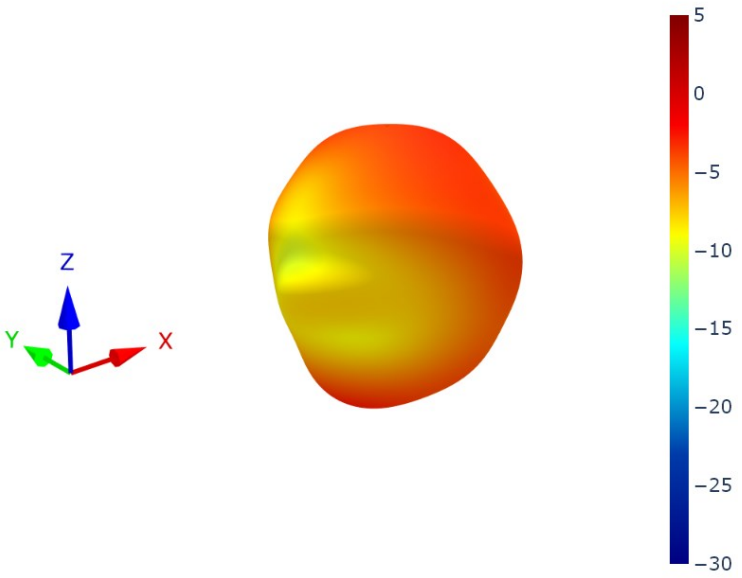
XZ Plane	YZ Plane	XY Plane
		

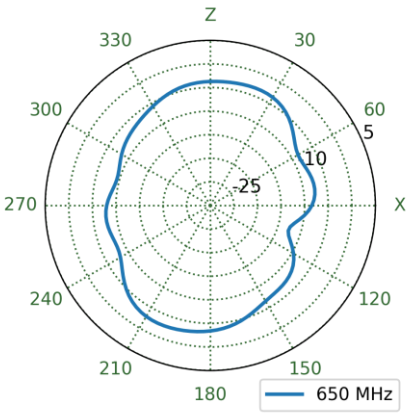
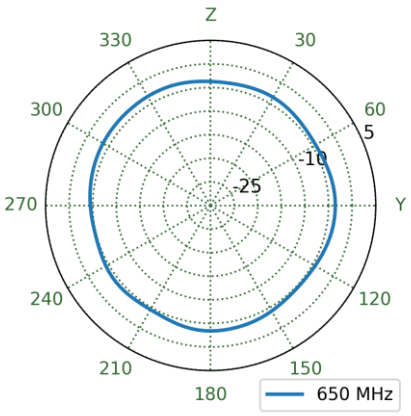
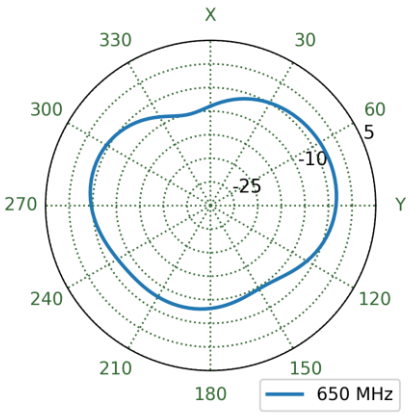
6.3 Cable Feed Right Patterns at 650 MHz



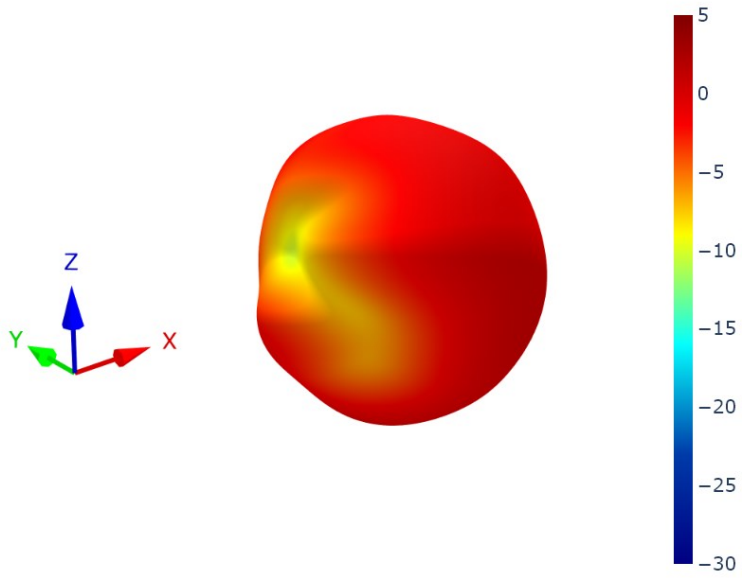
XZ Plane	YZ Plane	XY Plane
		

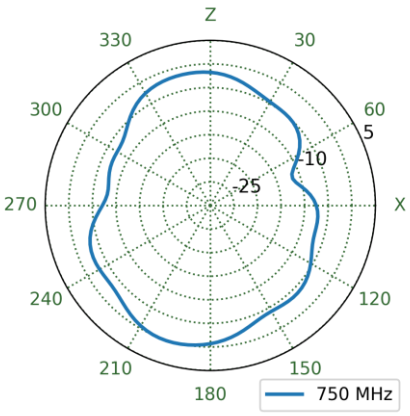
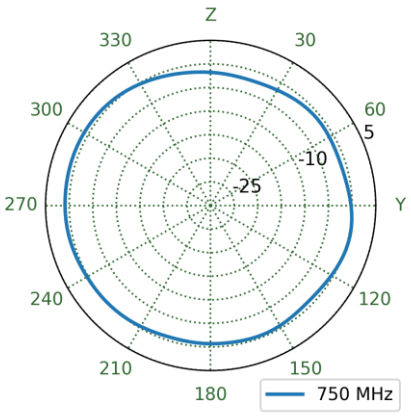
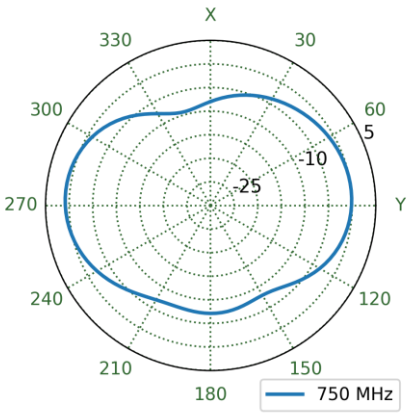
6.4 Cable Feed Straight Patterns at 650 MHz



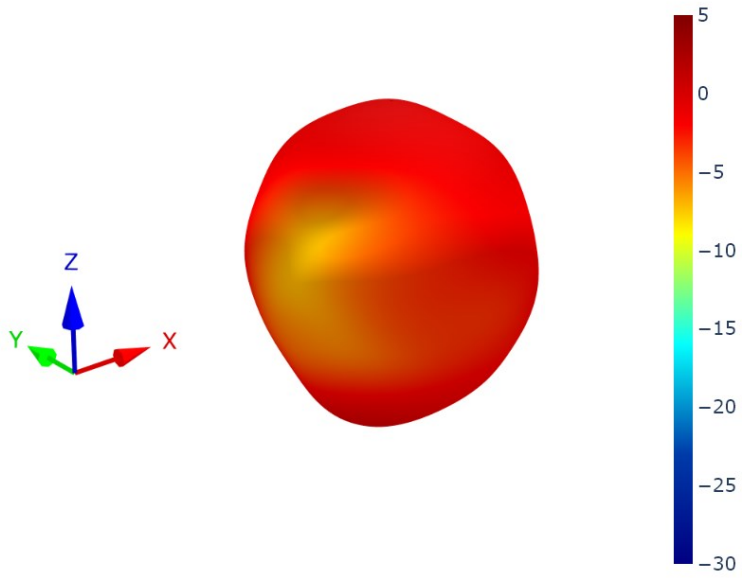
XZ Plane	YZ Plane	XY Plane
		

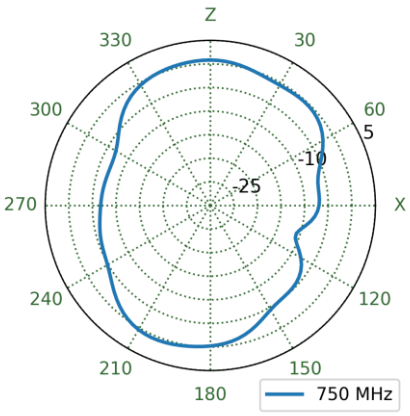
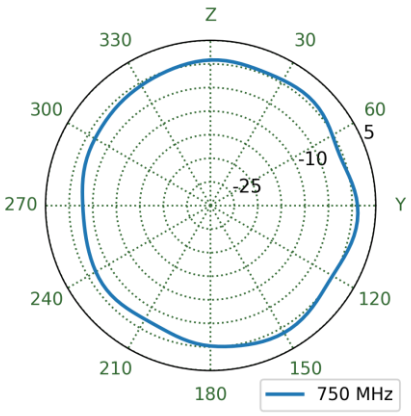
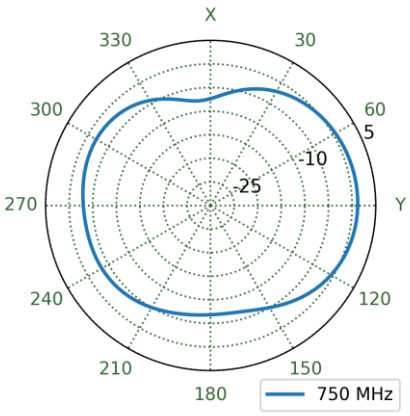
6.5 Cable Feed Left Patterns at 750 MHz



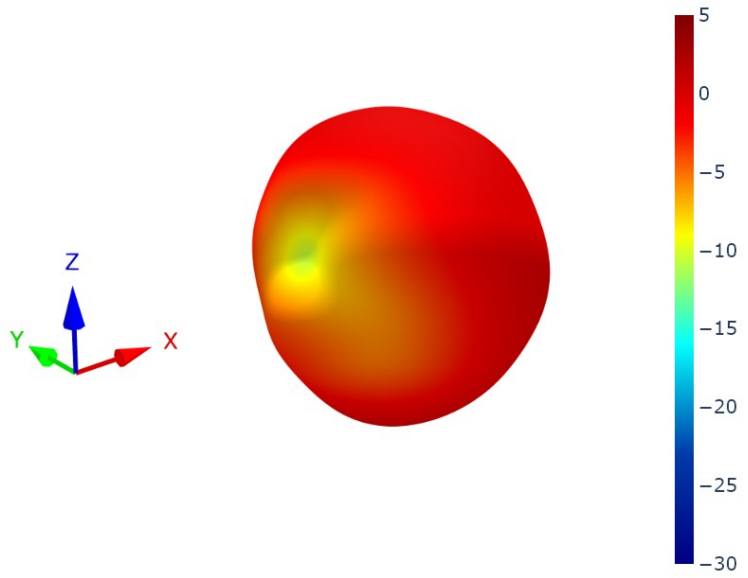
XZ Plane	YZ Plane	XY Plane
		

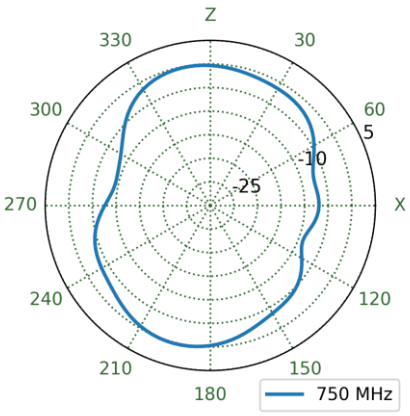
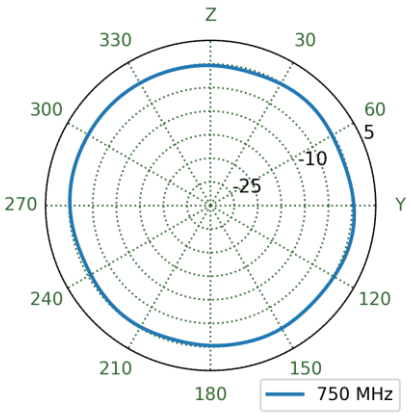
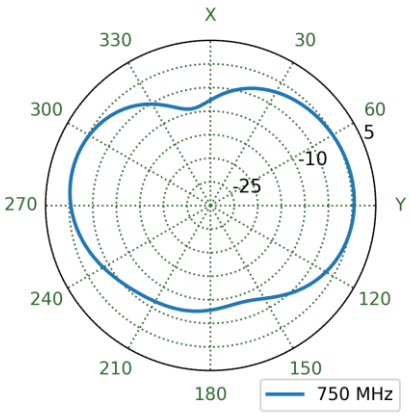
6.6 Cable Feed Right Patterns at 750 MHz



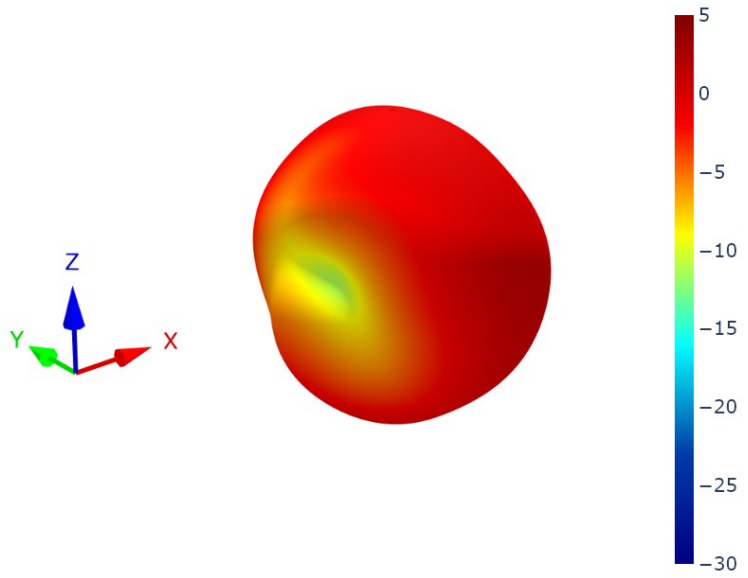
XZ Plane	YZ Plane	XY Plane
		

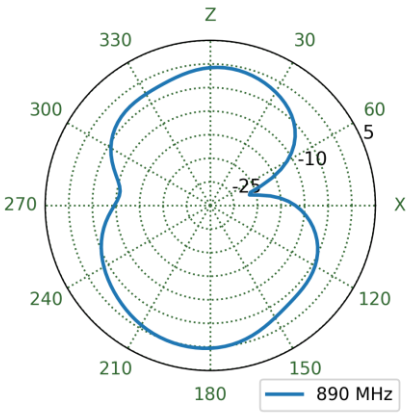
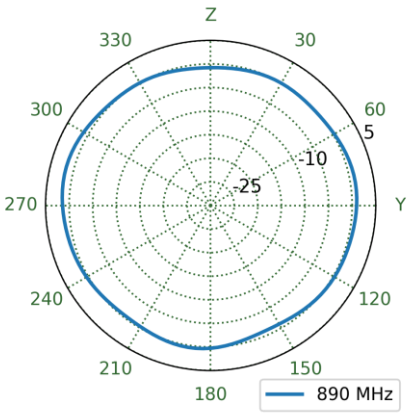
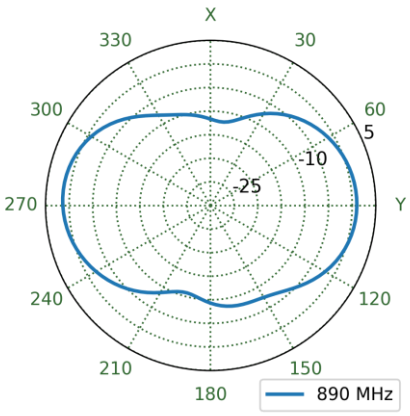
6.7 Cable Feed Straight Patterns at 750 MHz



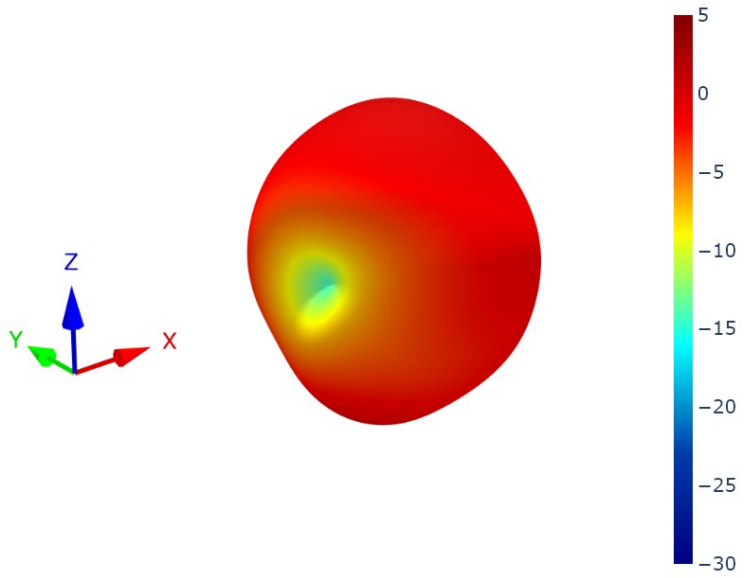
XZ Plane	YZ Plane	XY Plane
		

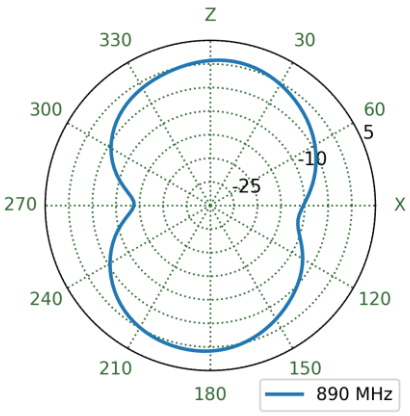
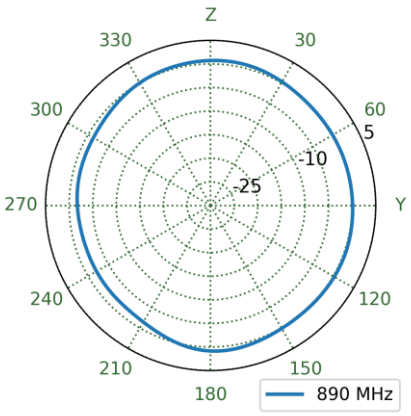
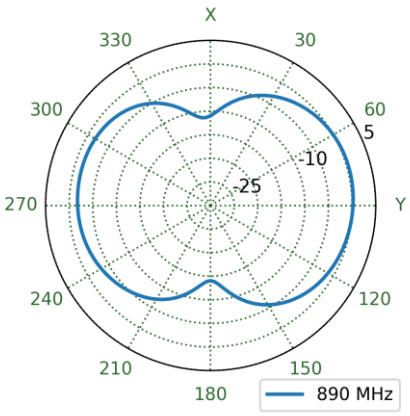
6.8 Cable Feed Left Patterns at 890 MHz



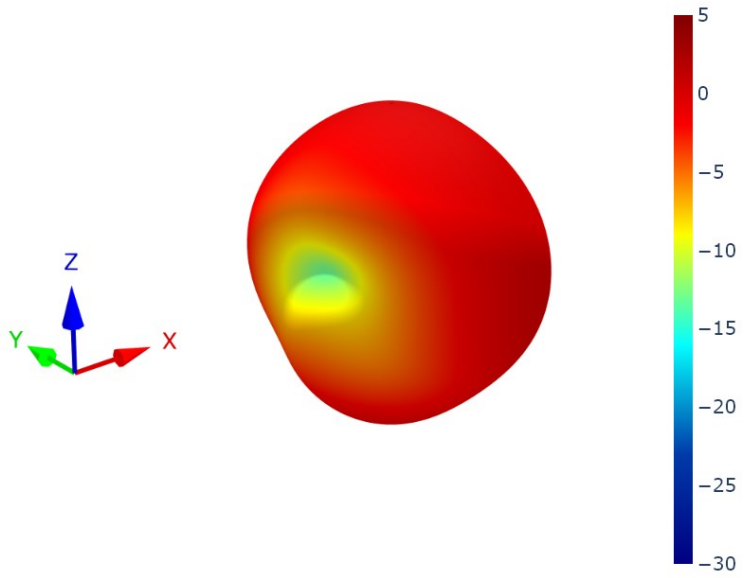
XZ Plane	YZ Plane	XY Plane
		

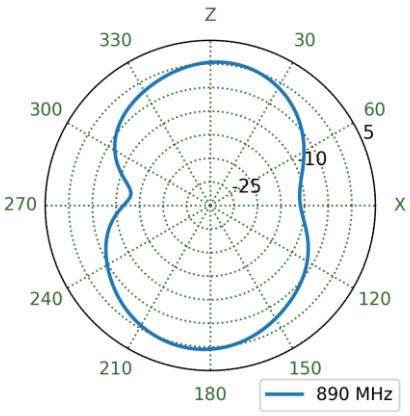
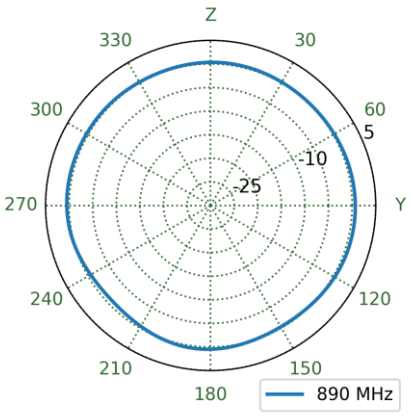
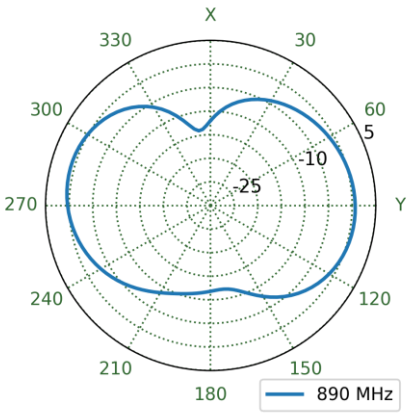
6.9 Cable Feed Right Patterns at 890 MHz



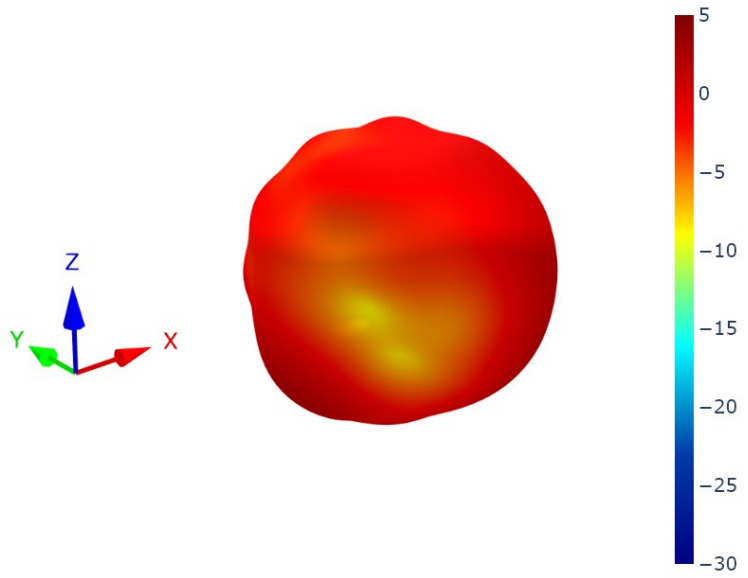
XZ Plane	YZ Plane	XY Plane
		

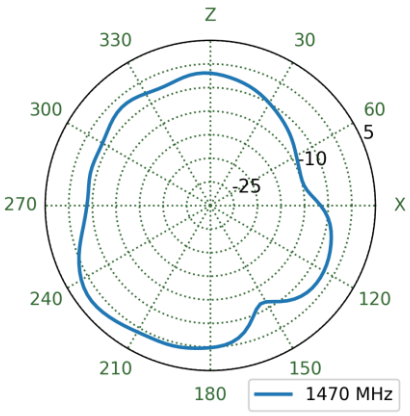
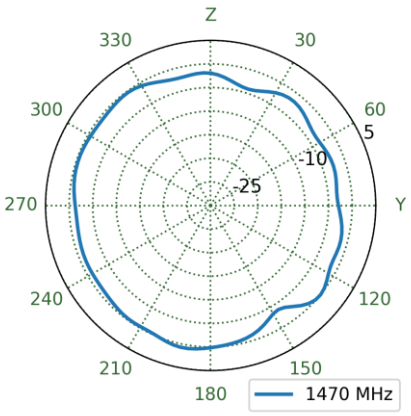
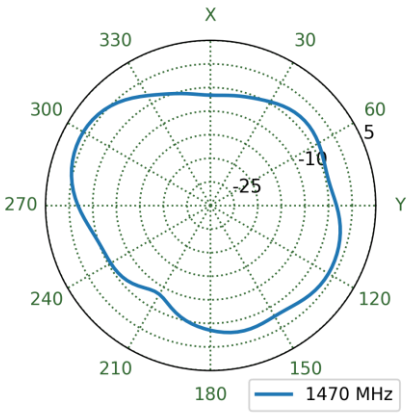
6.10 Cable Feed Straight Patterns at 890 MHz



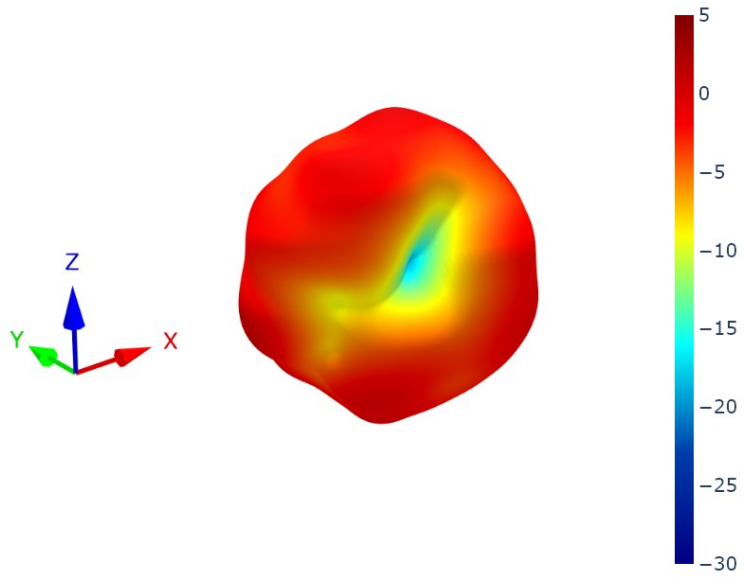
XZ Plane	YZ Plane	XY Plane
		

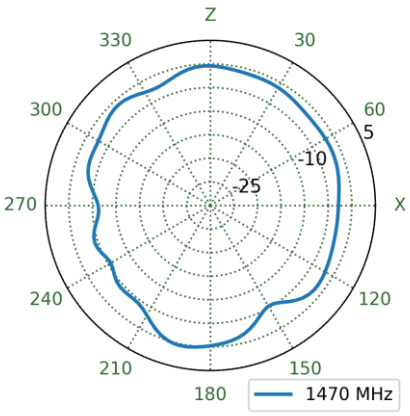
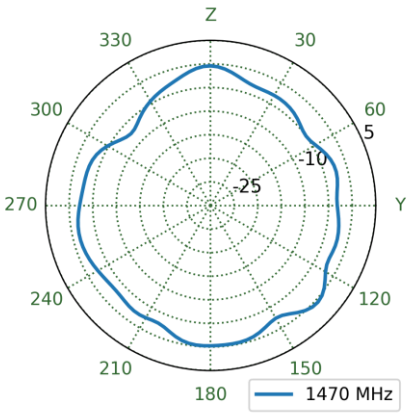
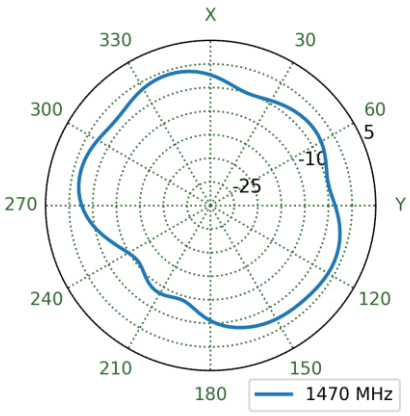
6.11 Cable Feed Left Patterns at 1470 MHz



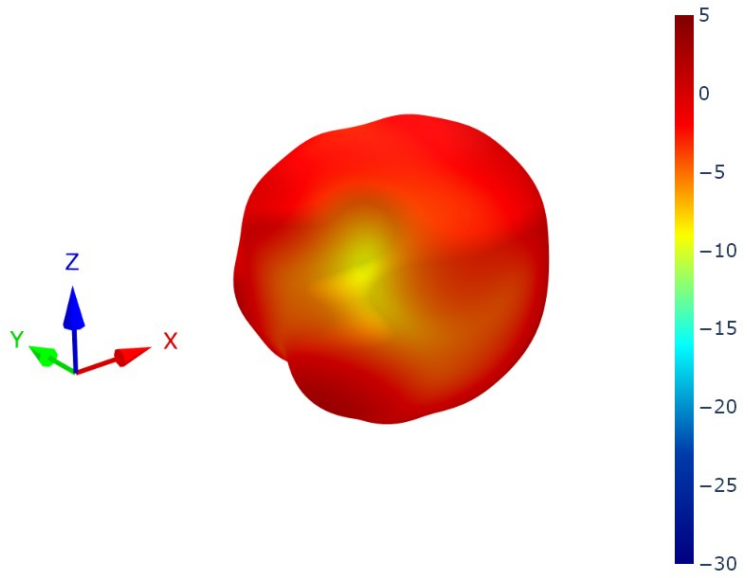
XZ Plane	YZ Plane	XY Plane
		

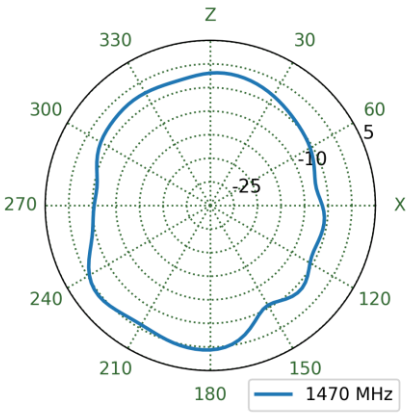
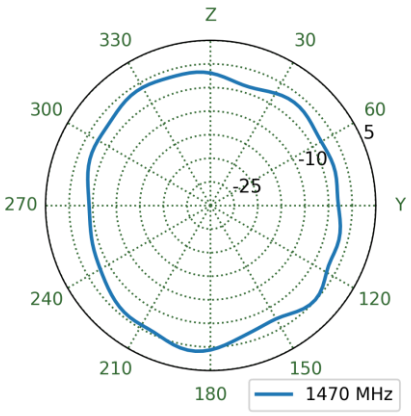
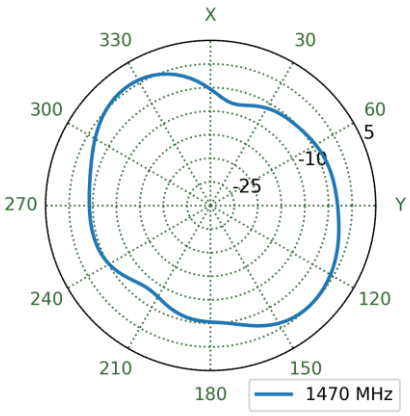
6.12 Cable Feed Right Patterns at 1470 MHz



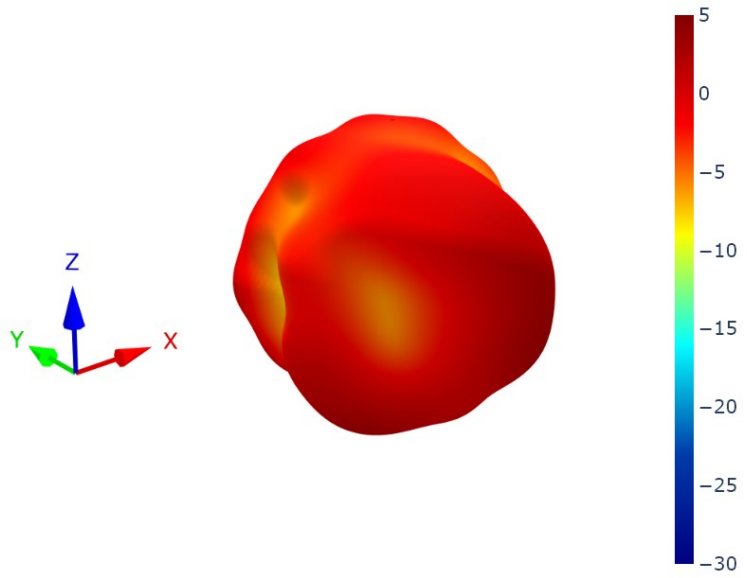
XZ Plane	YZ Plane	XY Plane
		

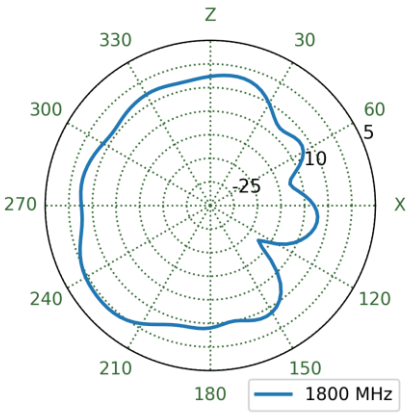
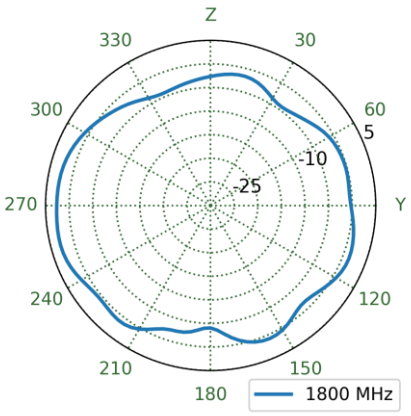
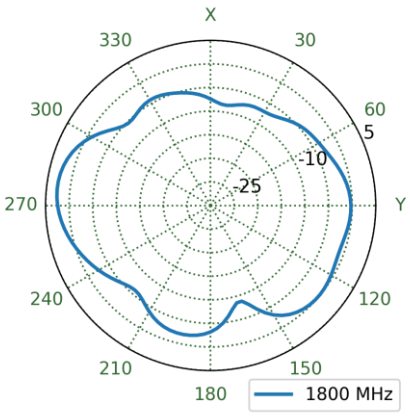
6.13 Cable Feed Straight Patterns at 1470 MHz



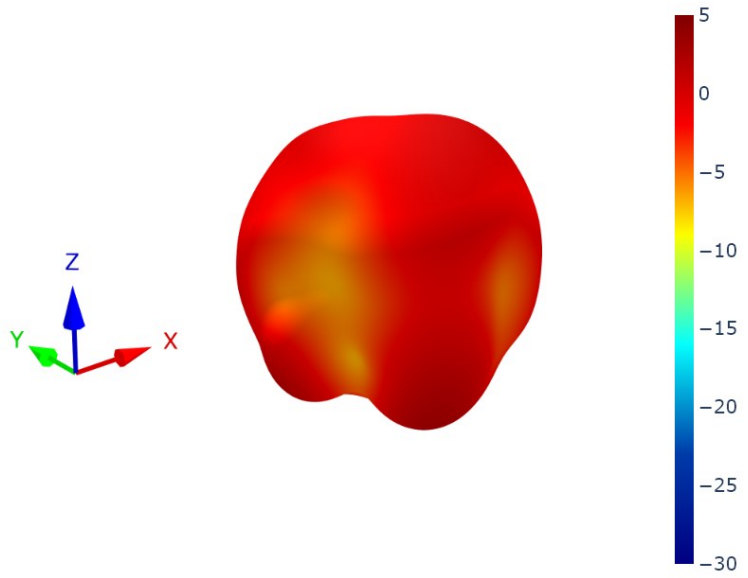
XZ Plane	YZ Plane	XY Plane
		

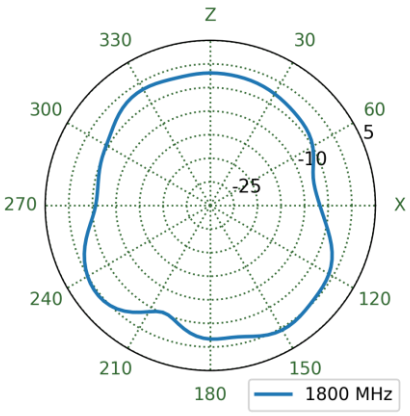
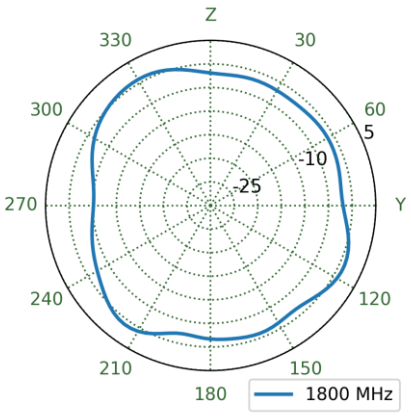
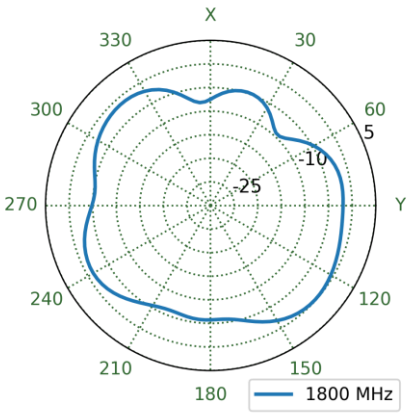
6.14 Cable Feed Left Patterns at 1805 MHz



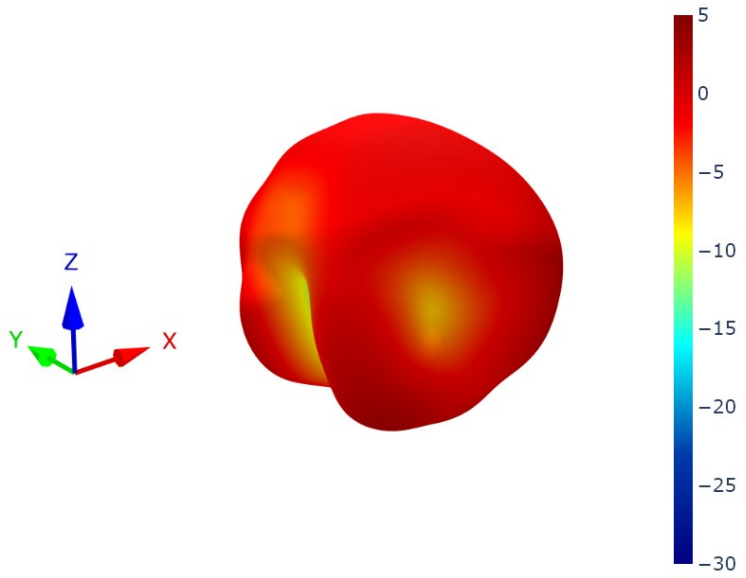
XZ Plane	YZ Plane	XY Plane
		

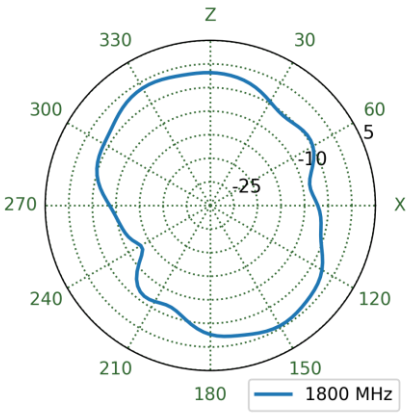
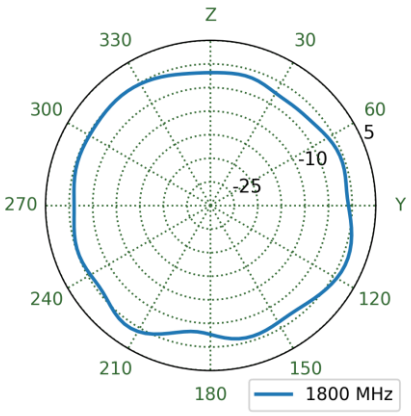
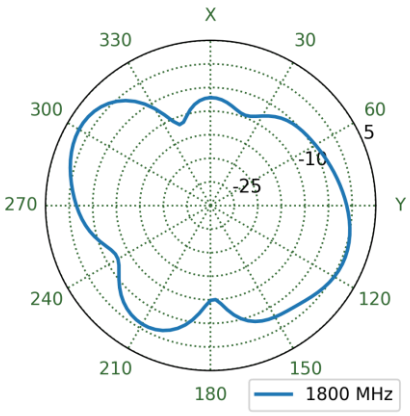
6.15 Cable Feed Right Patterns at 1805 MHz



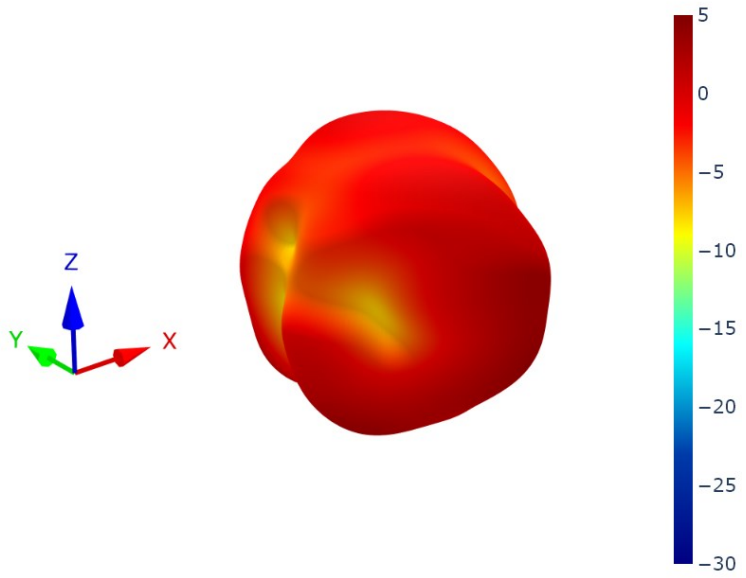
XZ Plane	YZ Plane	XY Plane
		

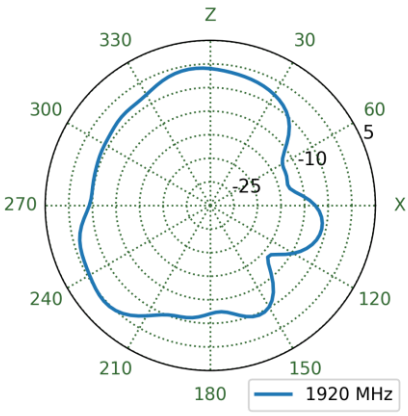
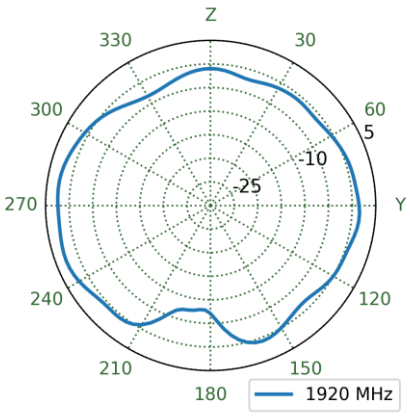
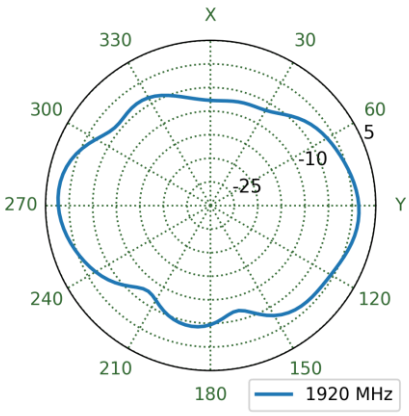
6.16 Cable Feed Straight Patterns at 1805 MHz



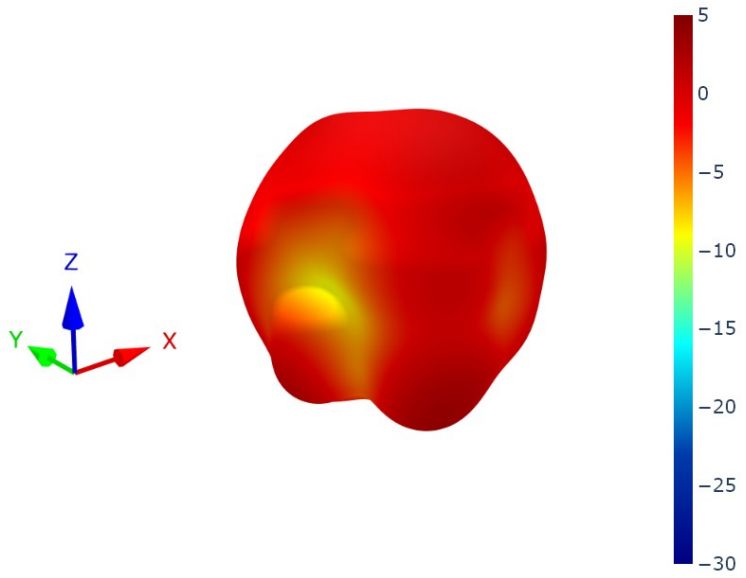
XZ Plane	YZ Plane	XY Plane
		

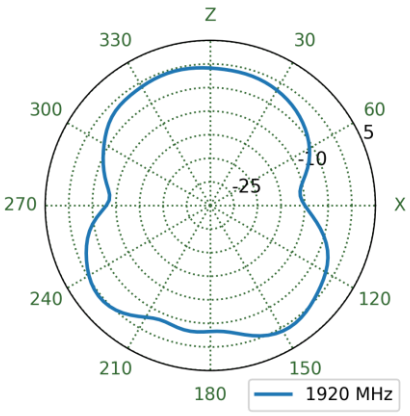
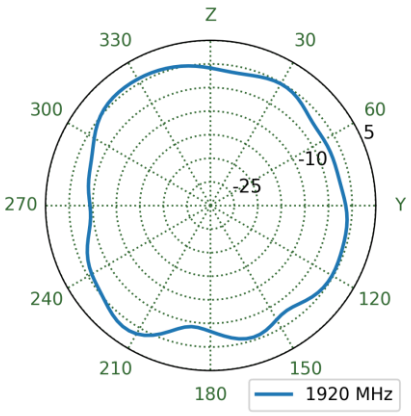
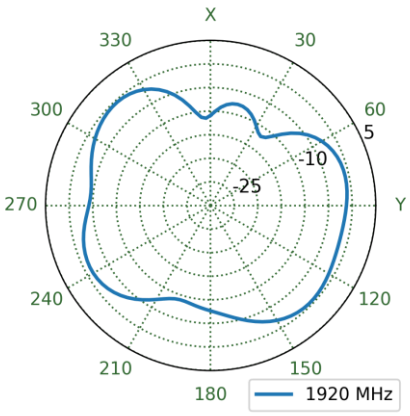
6.17 Cable Feed Left Patterns at 1920 MHz



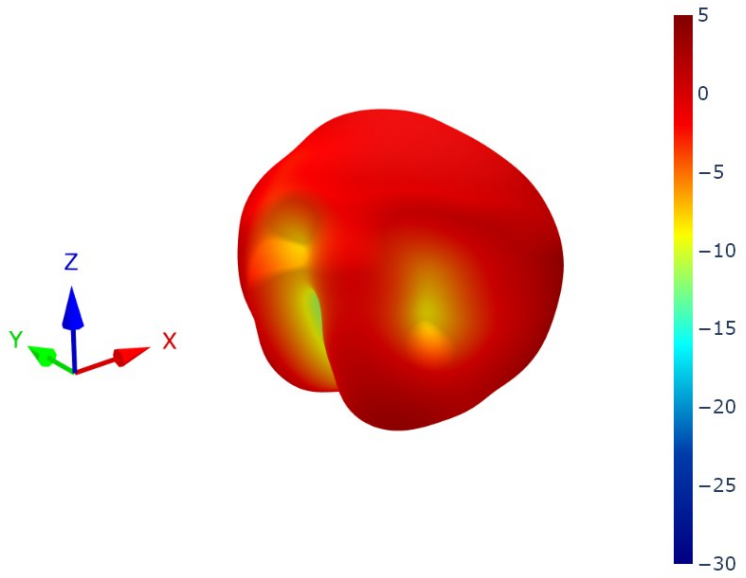
XZ Plane	YZ Plane	XY Plane
		

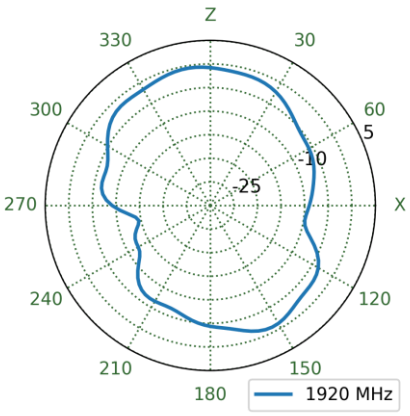
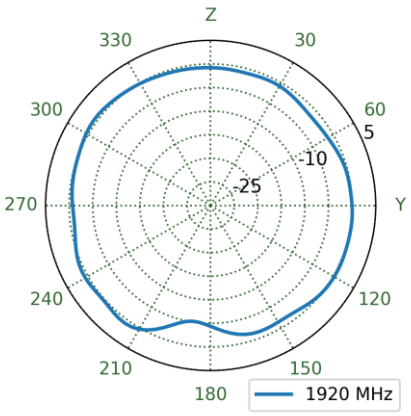
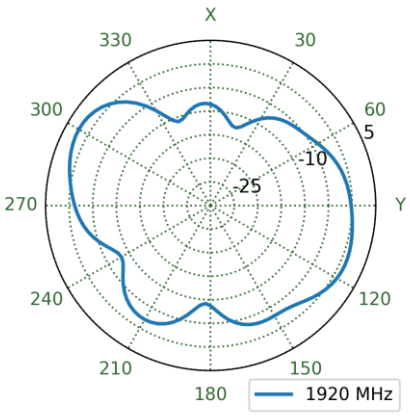
6.18 Cable Feed Right Patterns at 1920 MHz



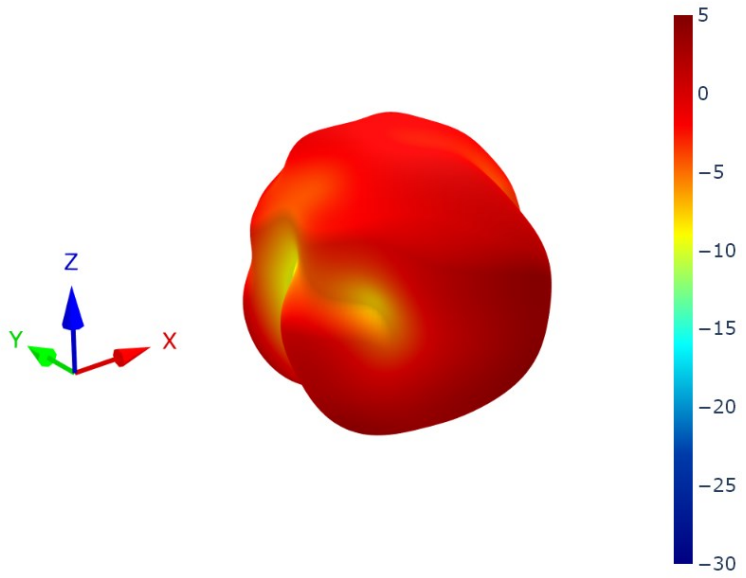
XZ Plane	YZ Plane	XY Plane
		

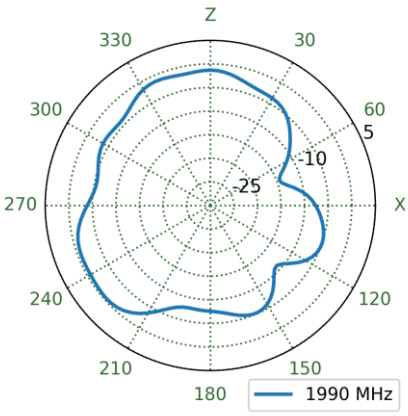
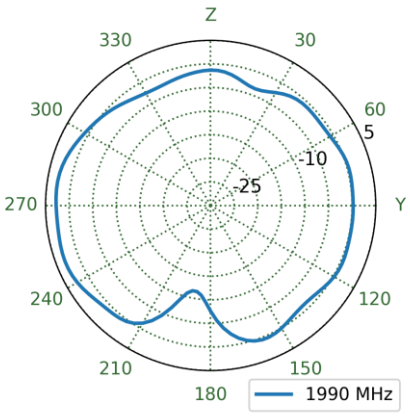
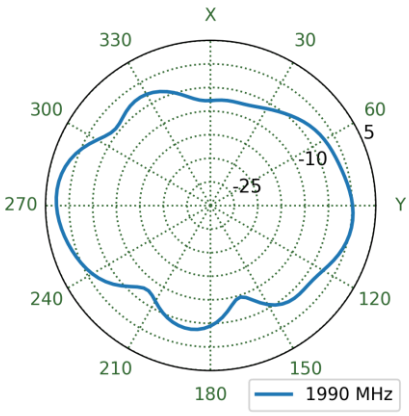
6.19 Cable Feed Straight Patterns at 1920 MHz



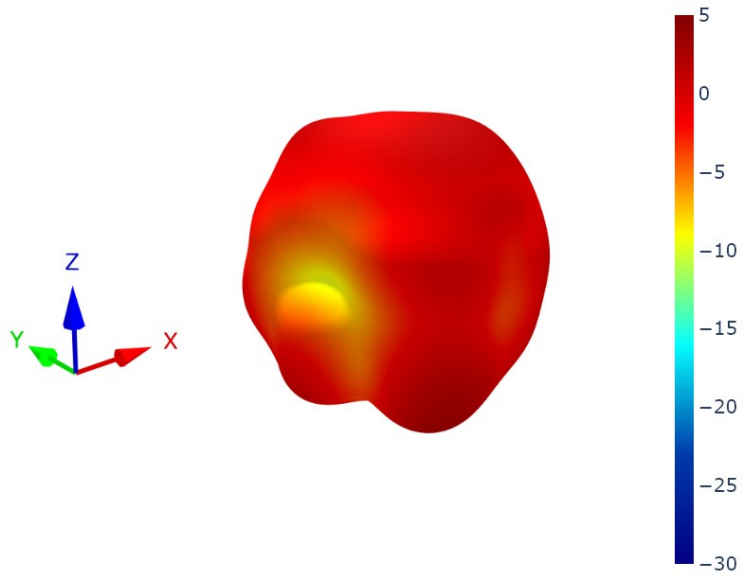
XZ Plane	YZ Plane	XY Plane
		

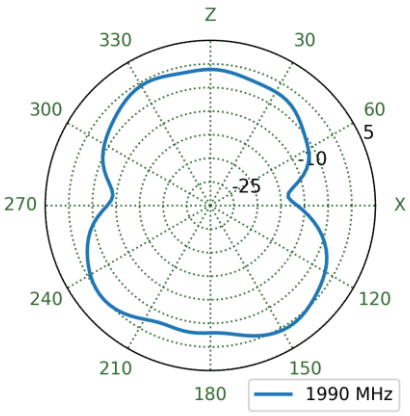
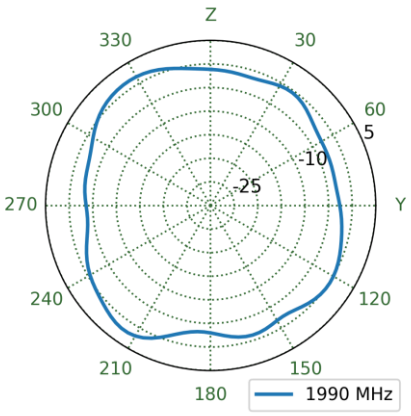
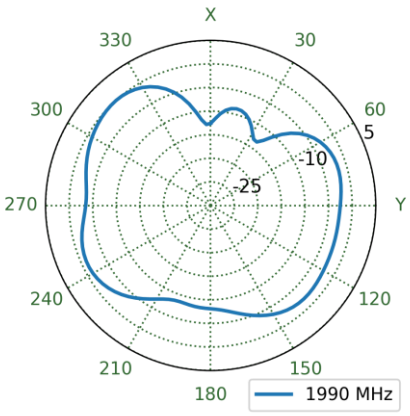
6.20 Cable Feed Left Patterns at 1990 MHz



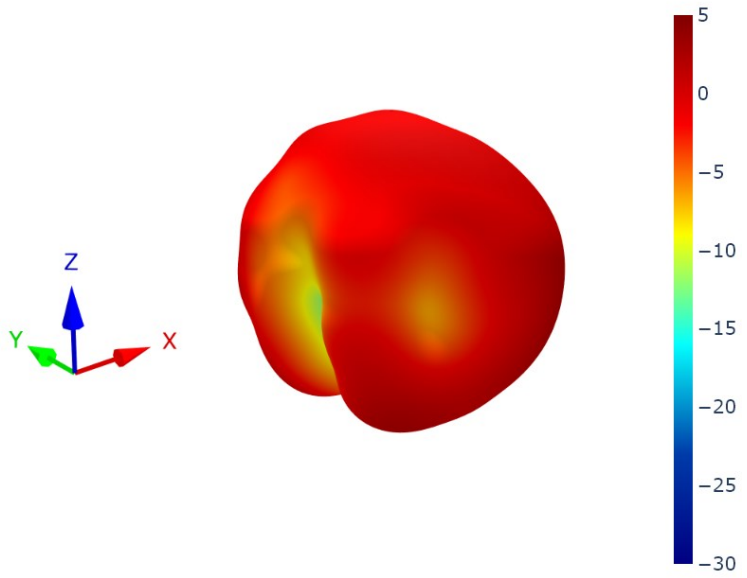
XZ Plane	YZ Plane	XY Plane
		

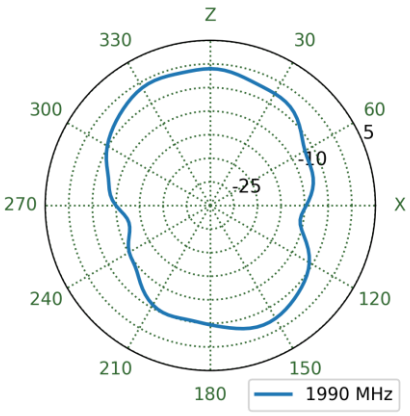
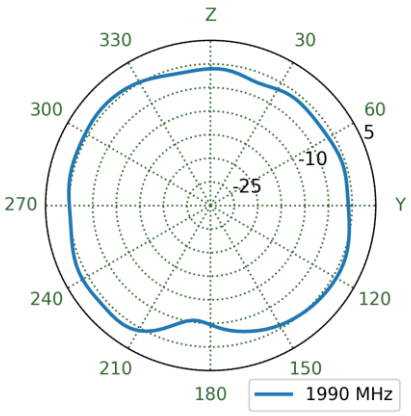
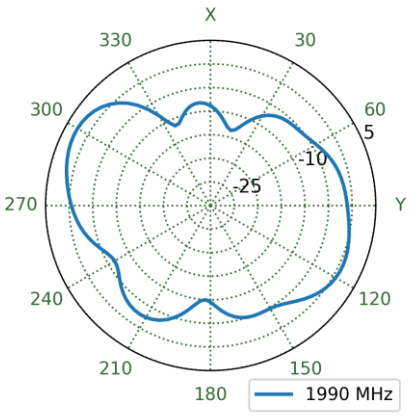
6.21 Cable Feed Right Patterns at 1990 MHz



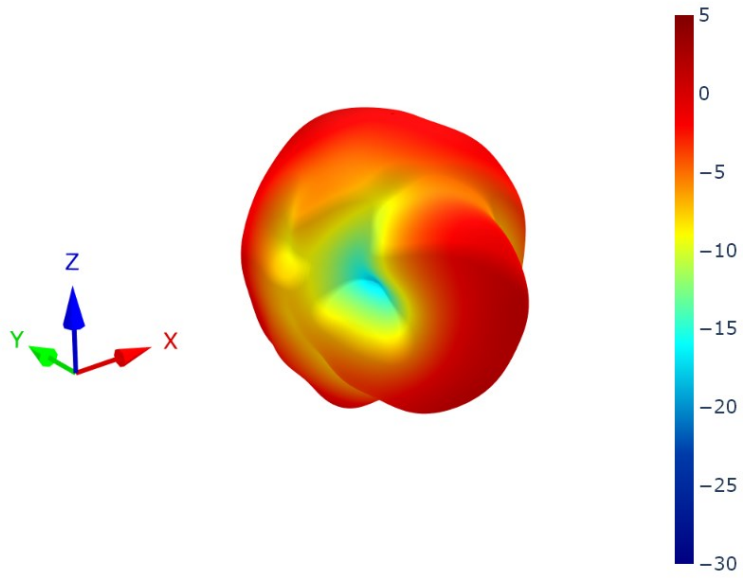
XZ Plane	YZ Plane	XY Plane
		

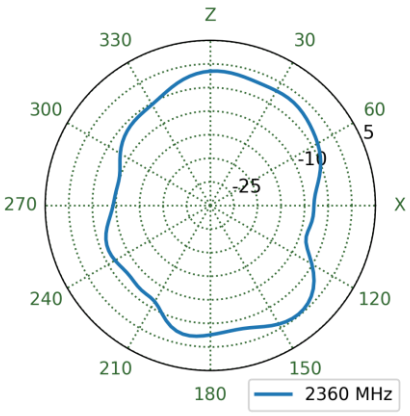
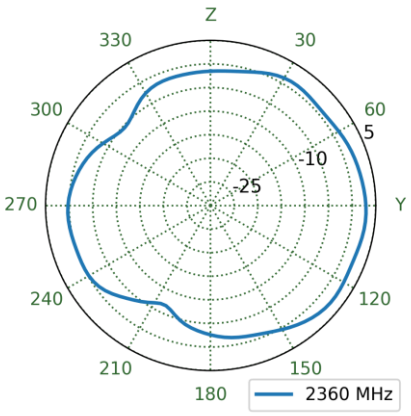
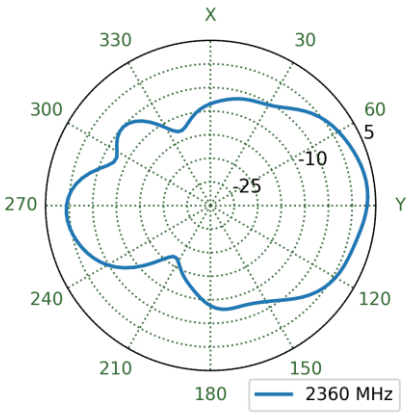
6.22 Cable Feed Straight Patterns at 1990 MHz



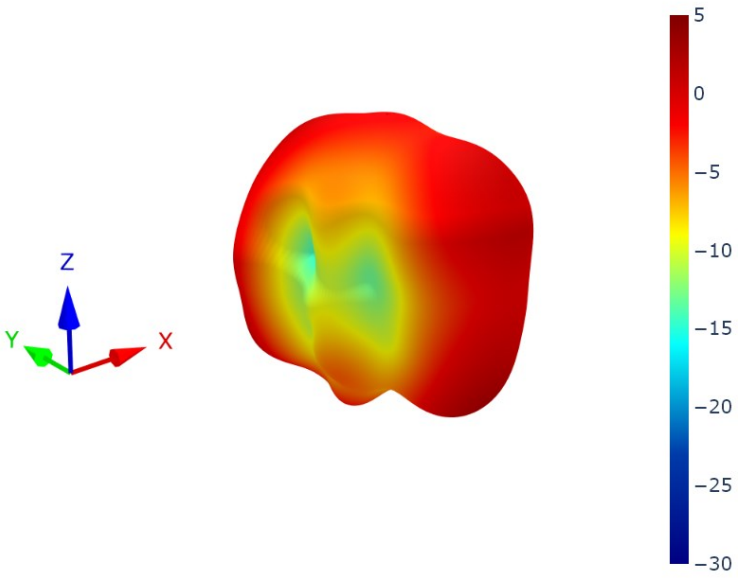
XZ Plane	YZ Plane	XY Plane
		

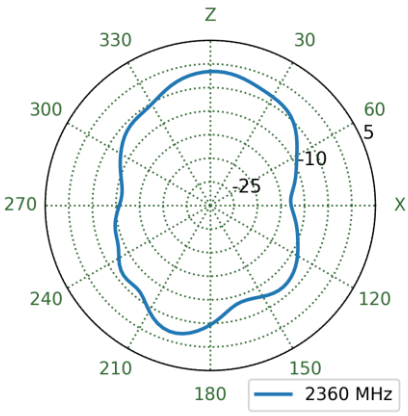
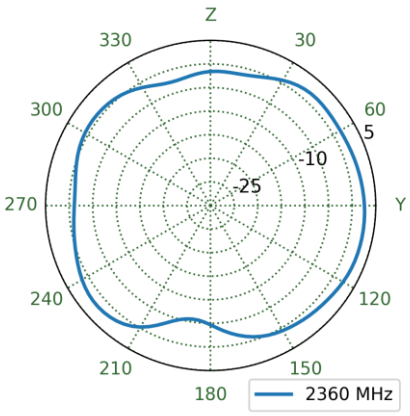
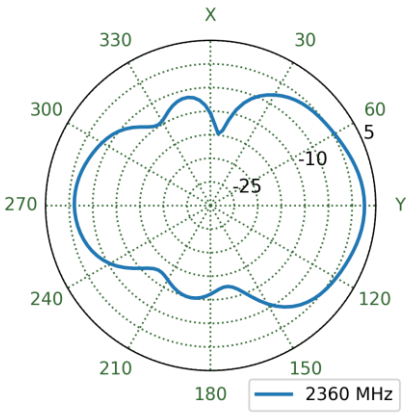
6.23 Cable Feed Left Patterns at 2360 MHz



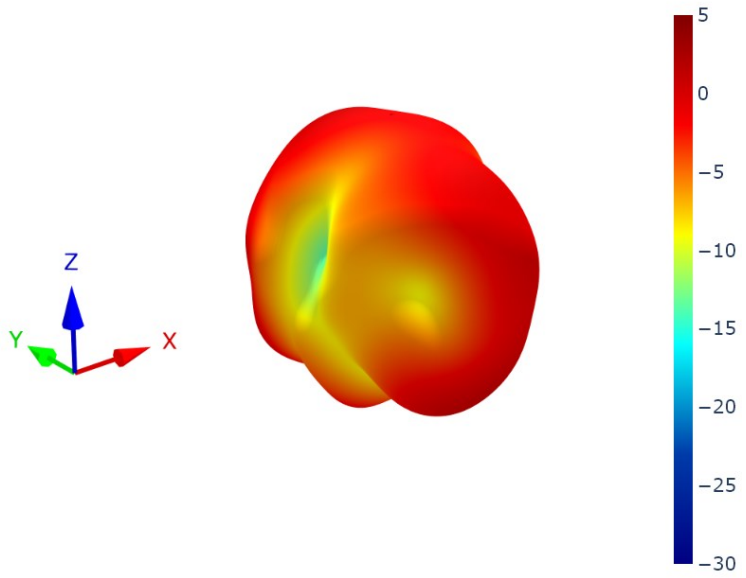
XZ Plane	YZ Plane	XY Plane
		

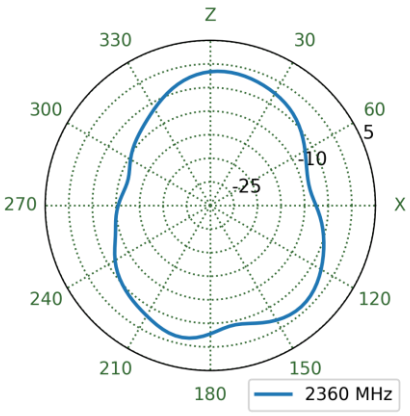
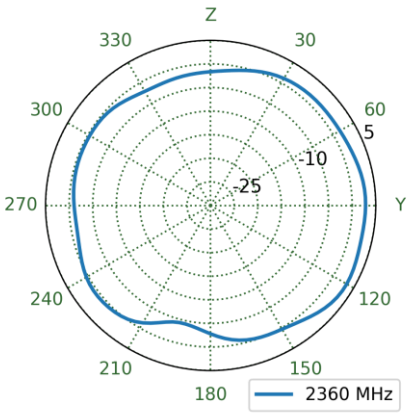
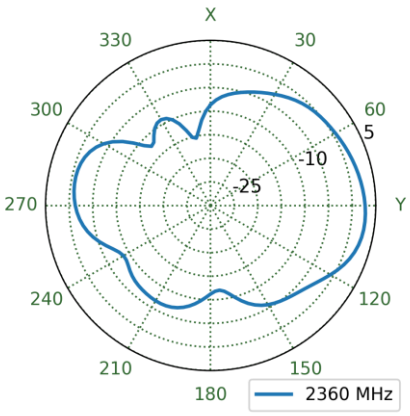
6.24 Cable Feed Right Patterns at 2360 MHz



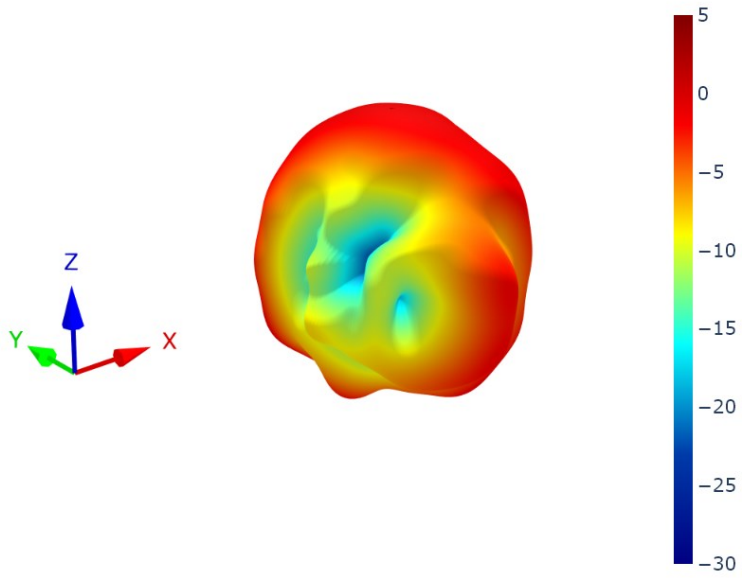
XZ Plane	YZ Plane	XY Plane
		

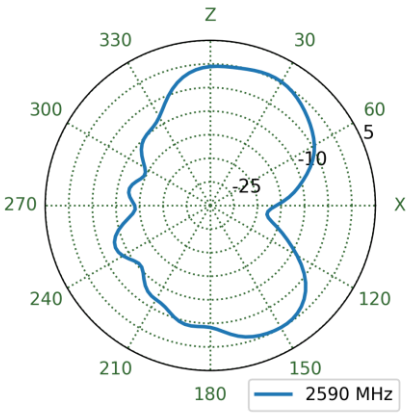
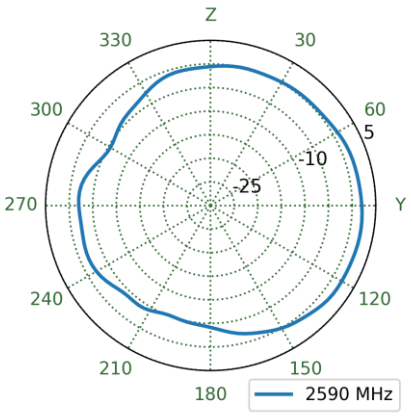
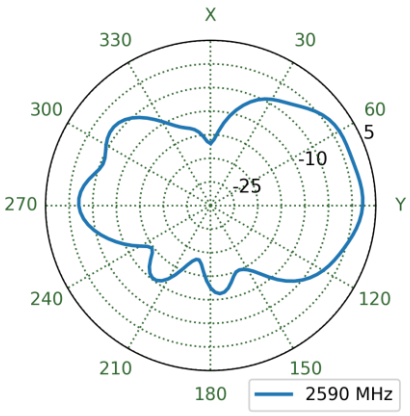
6.25 Cable Feed Straight Patterns at 2360 MHz



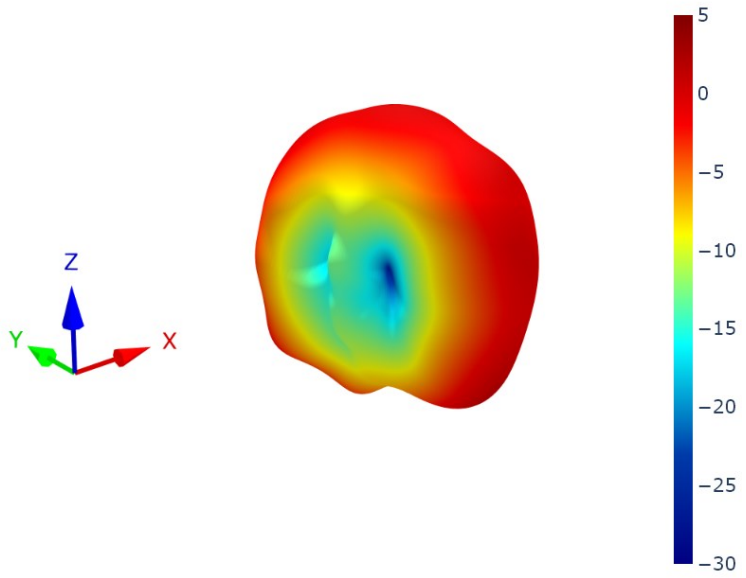
XZ Plane	YZ Plane	XY Plane
		

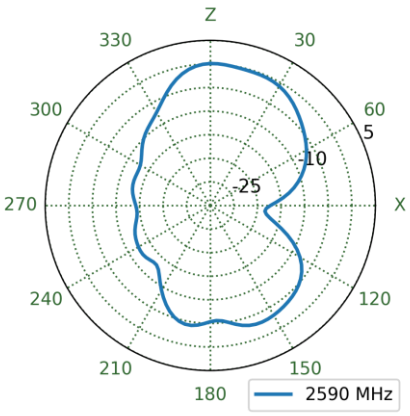
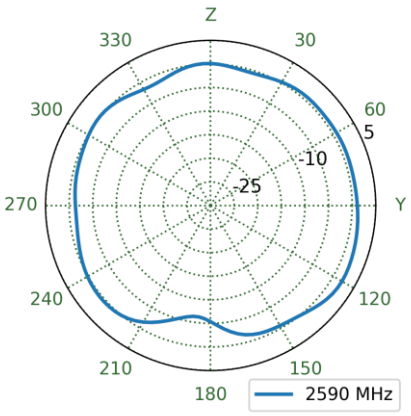
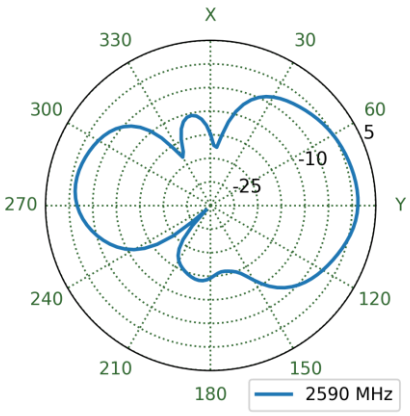
6.26 Cable Feed Left Patterns at 2595 MHz



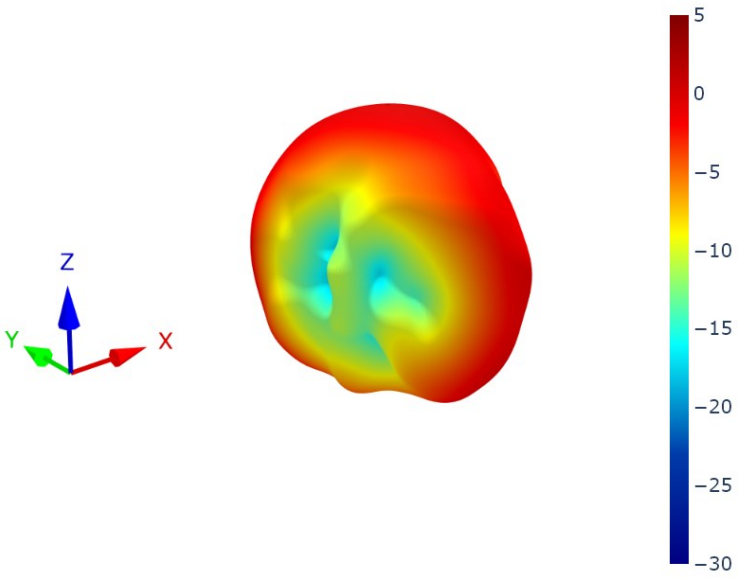
XZ Plane	YZ Plane	XY Plane
		

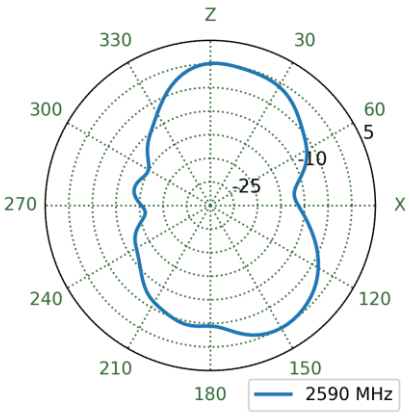
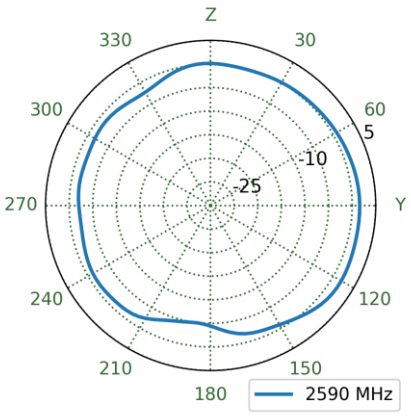
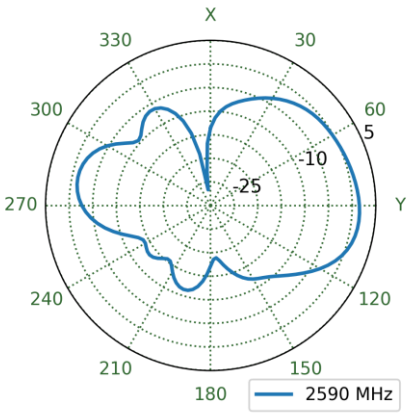
6.27 Cable Feed Right Patterns at 2595 MHz



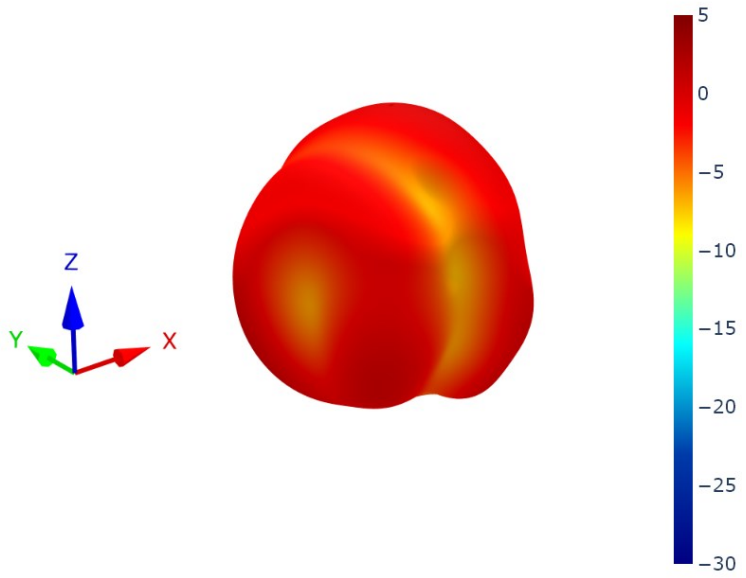
XZ Plane	YZ Plane	XY Plane
		

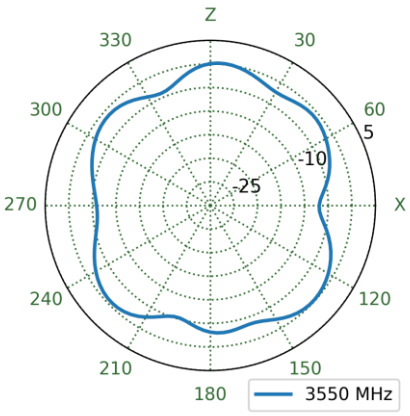
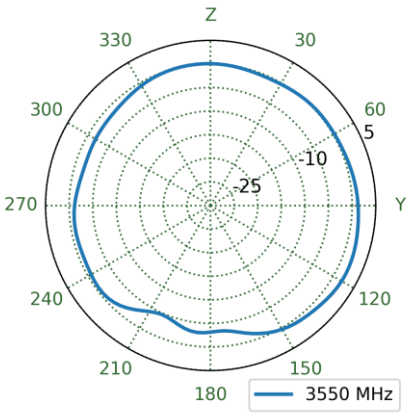
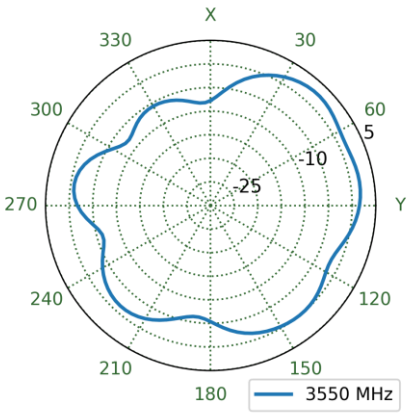
6.28 Cable Feed Straight Patterns at 2595 MHz



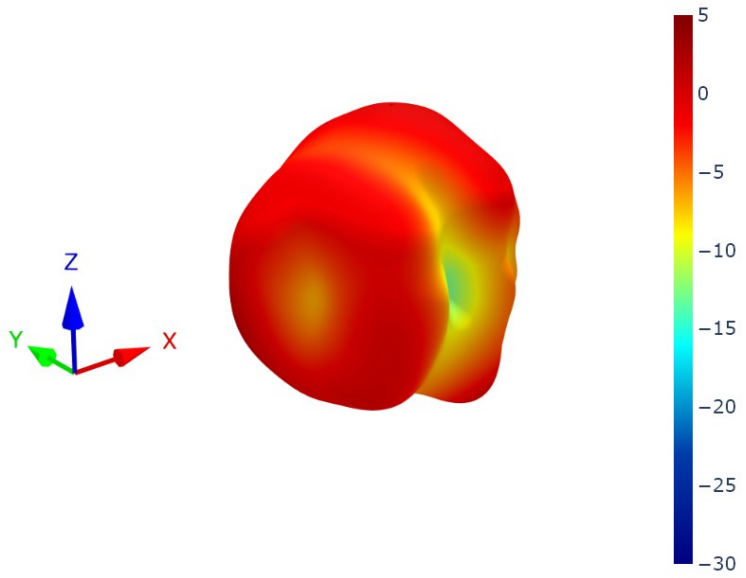
XZ Plane	YZ Plane	XY Plane
		

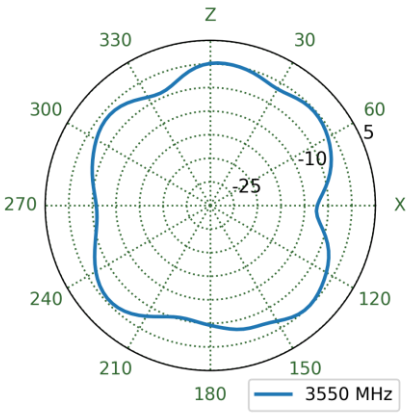
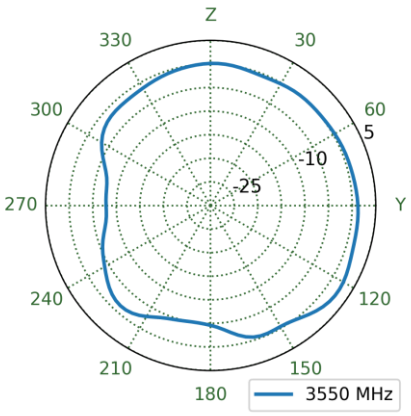
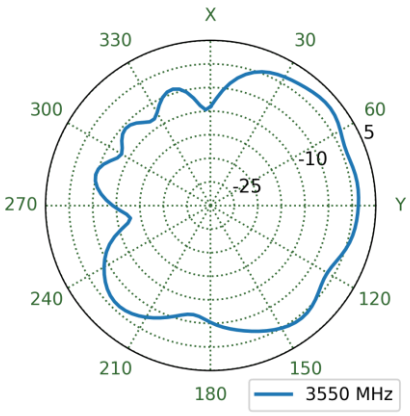
6.29 Cable Feed Left Patterns at 3550 MHz



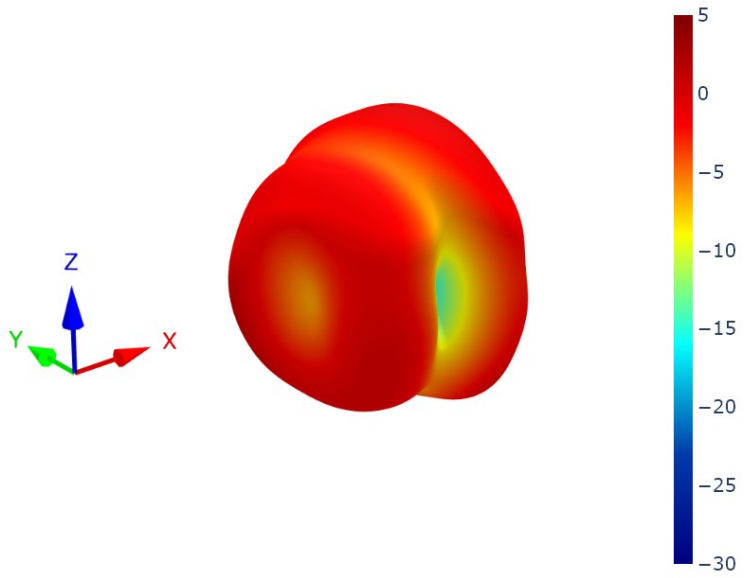
XZ Plane	YZ Plane	XY Plane
		

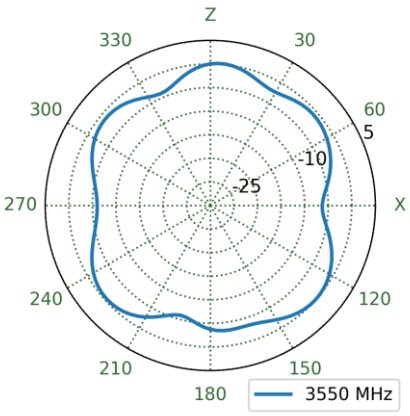
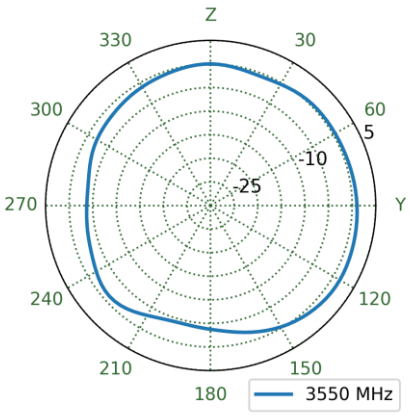
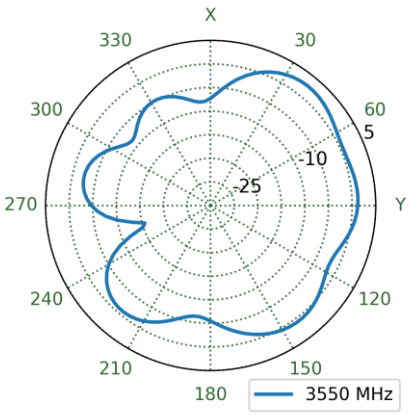
6.30 Cable Feed Right Patterns at 3550 MHz



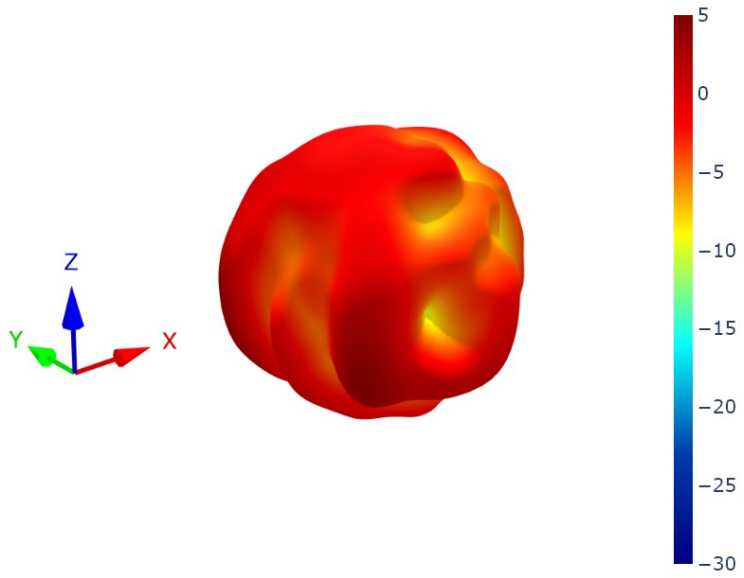
XZ Plane	YZ Plane	XY Plane
		

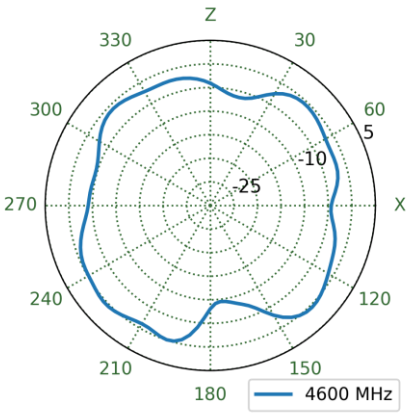
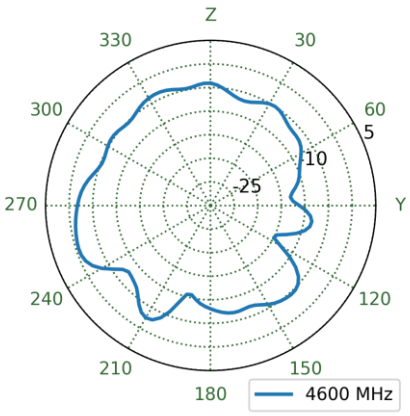
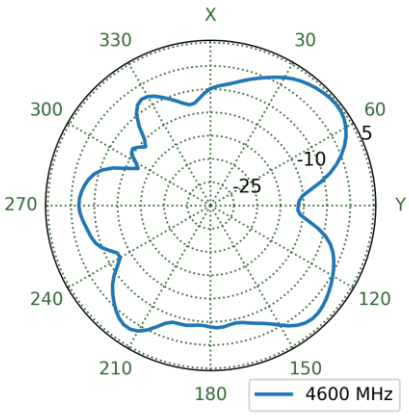
6.31 Cable Feed Straight Patterns at 3550 MHz



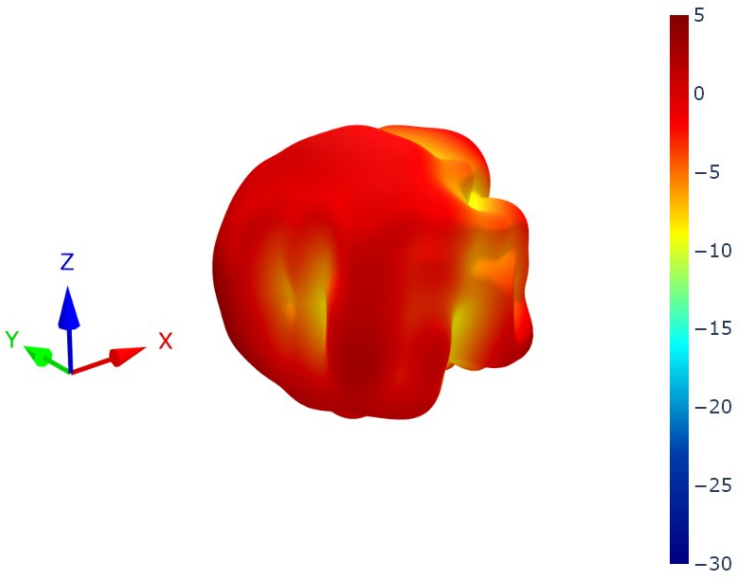
XZ Plane	YZ Plane	XY Plane
		

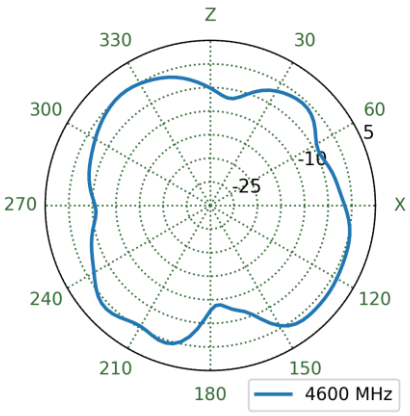
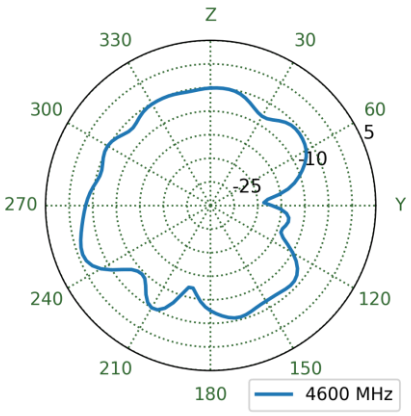
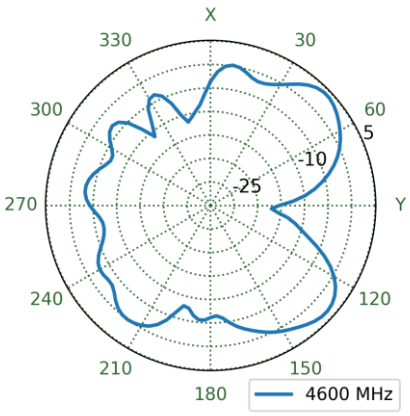
6.32 Cable Feed Left Patterns at 4600 MHz



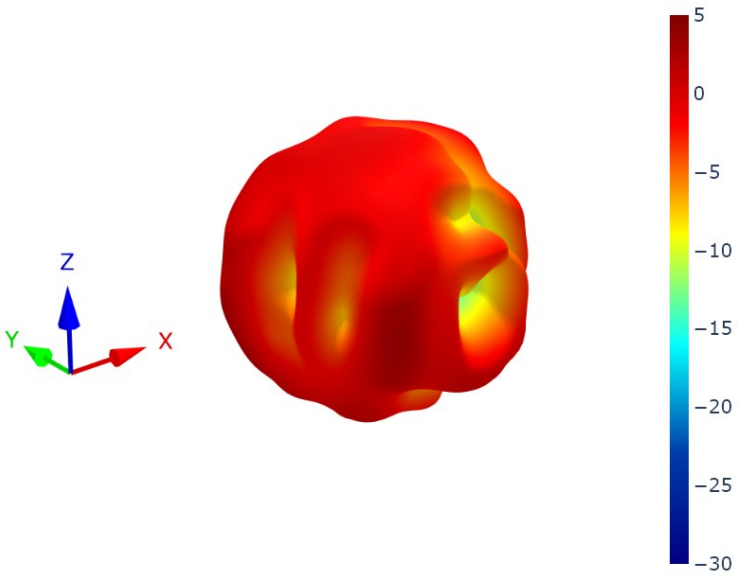
XZ Plane	YZ Plane	XY Plane
		

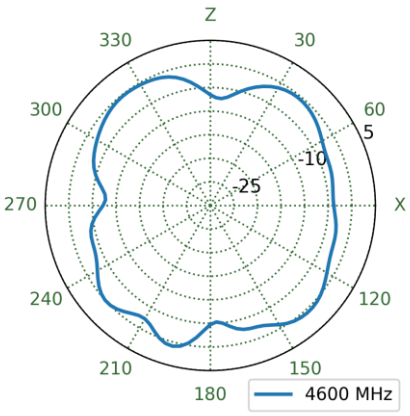
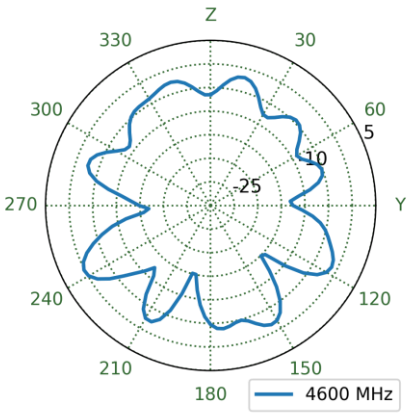
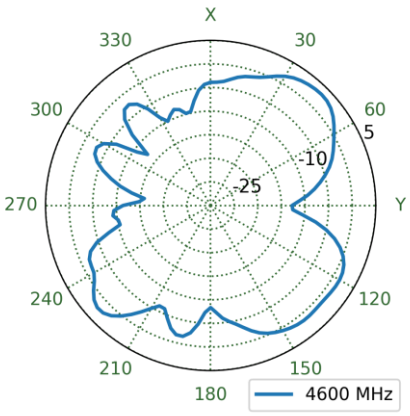
6.33 Cable Feed Right Patterns at 4600 MHz



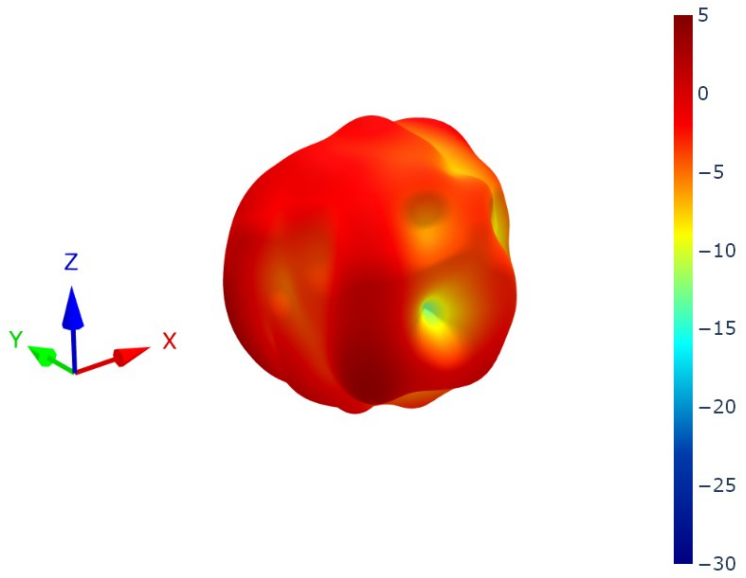
XZ Plane	YZ Plane	XY Plane
		

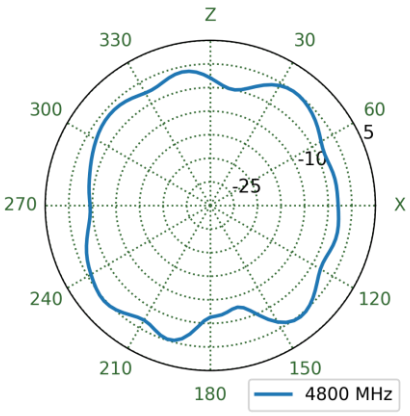
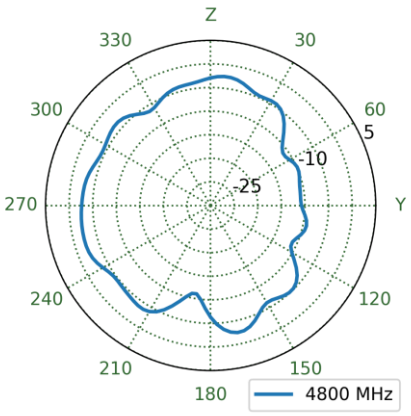
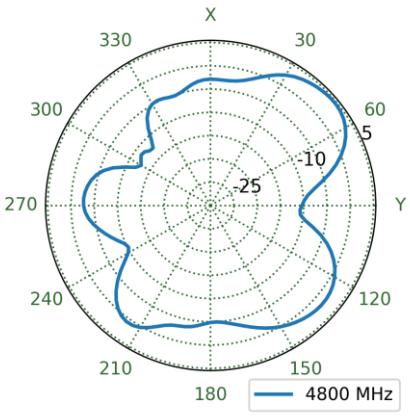
6.34 Cable Feed Straight Patterns at 4600 MHz



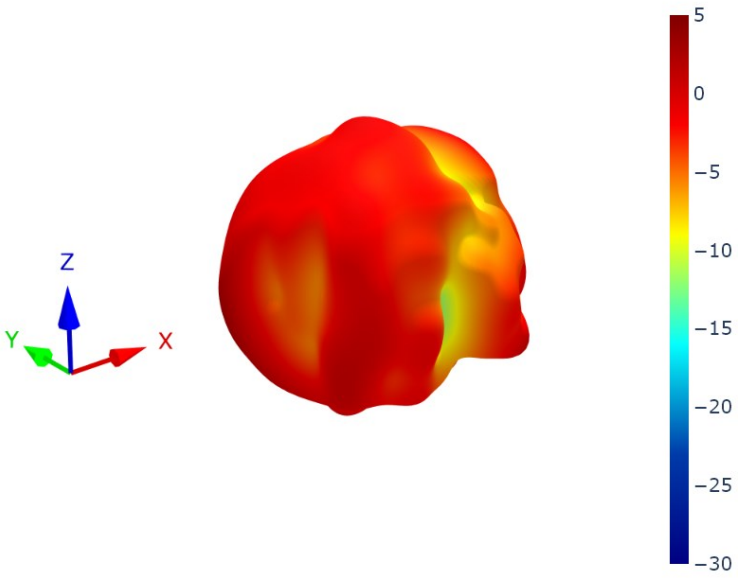
XZ Plane	YZ Plane	XY Plane
		

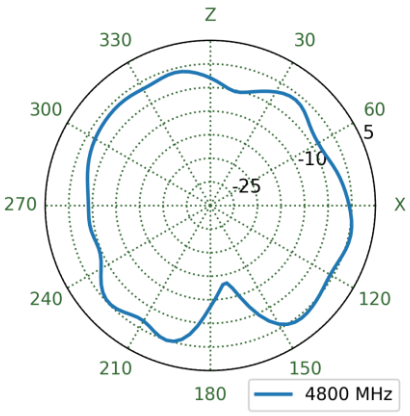
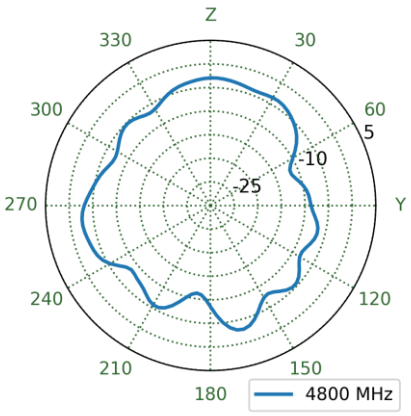
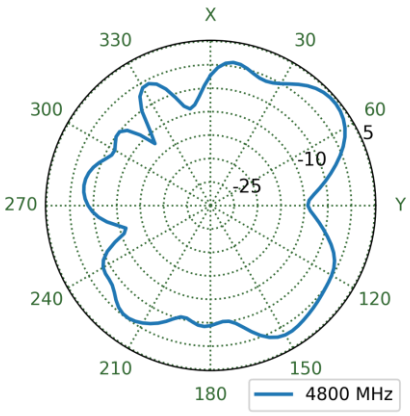
6.35 Cable Feed Left Patterns at 4800 MHz



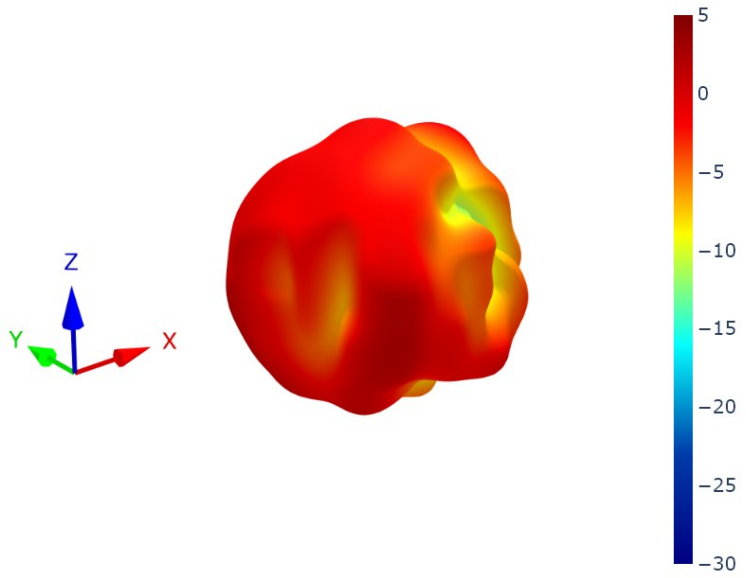
XZ Plane	YZ Plane	XY Plane
		

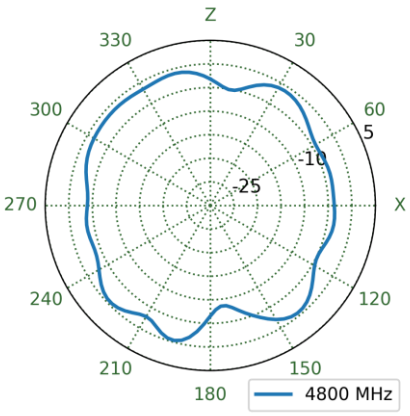
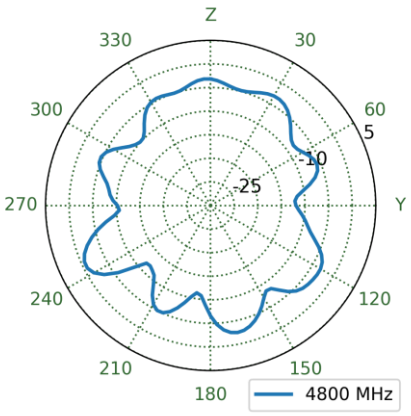
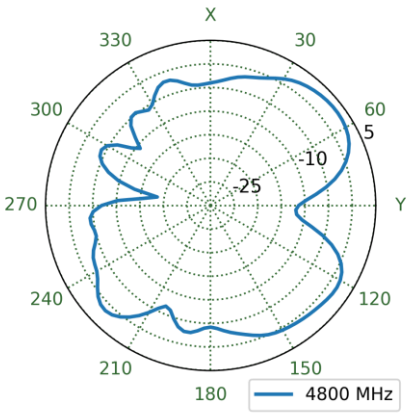
6.36 Cable Feed Right Patterns at 4800 MHz



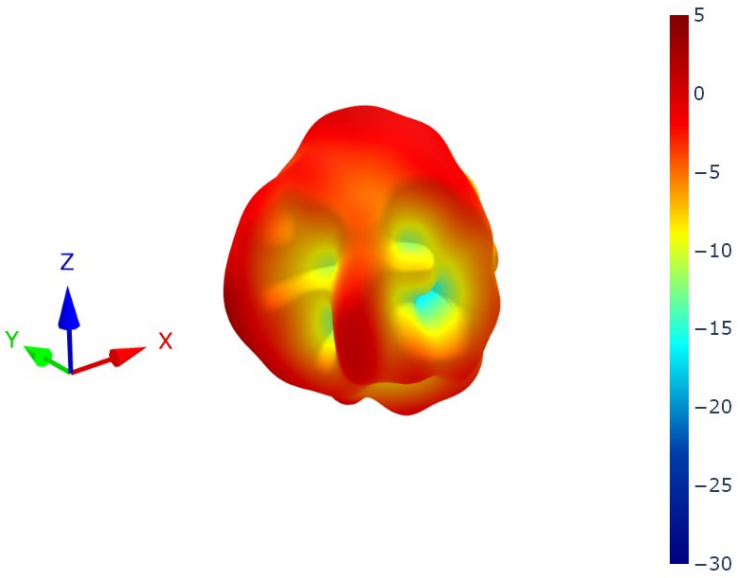
XZ Plane	YZ Plane	XY Plane
		

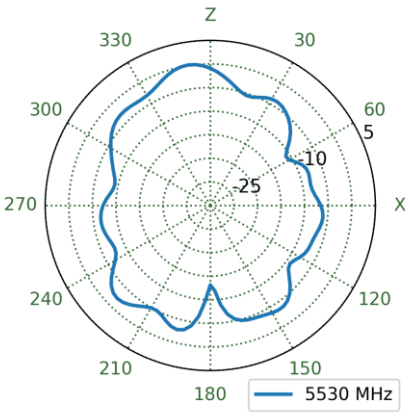
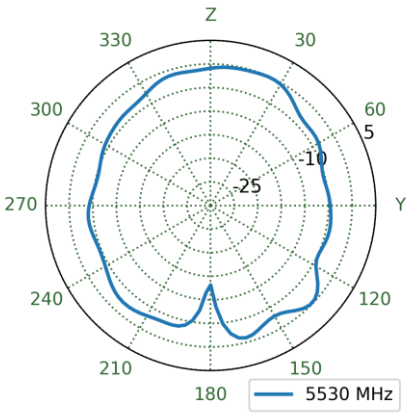
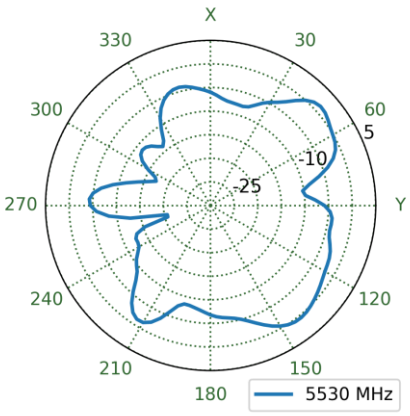
6.37 Cable Feed Straight Patterns at 4800 MHz



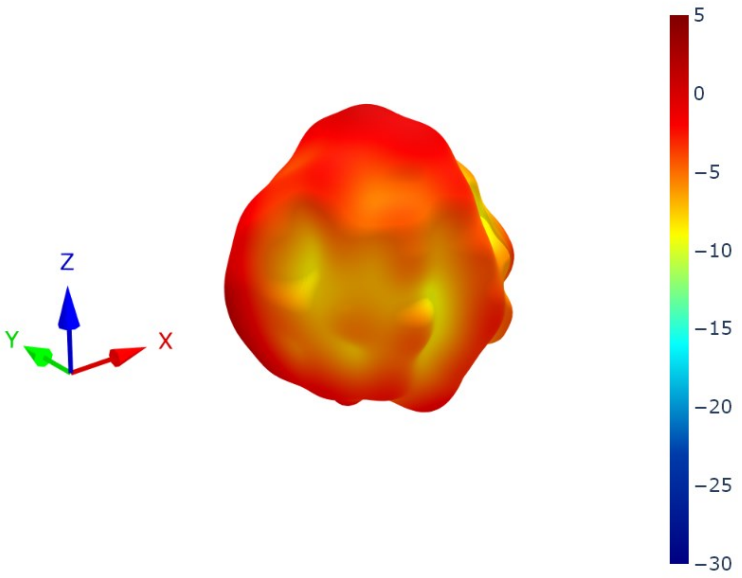
XZ Plane	YZ Plane	XY Plane
		

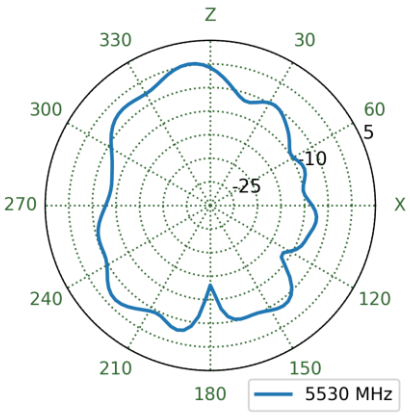
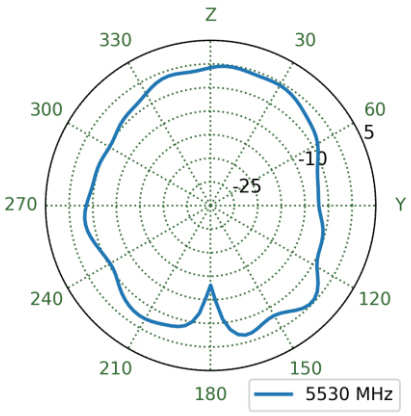
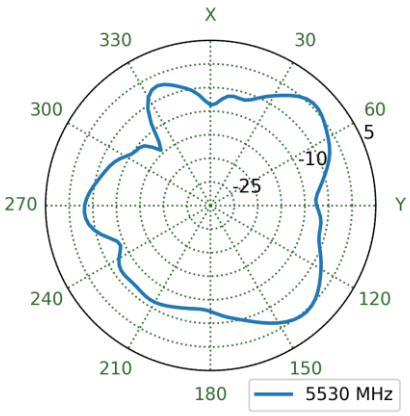
6.38 Cable Feed Left Patterns at 5530 MHz



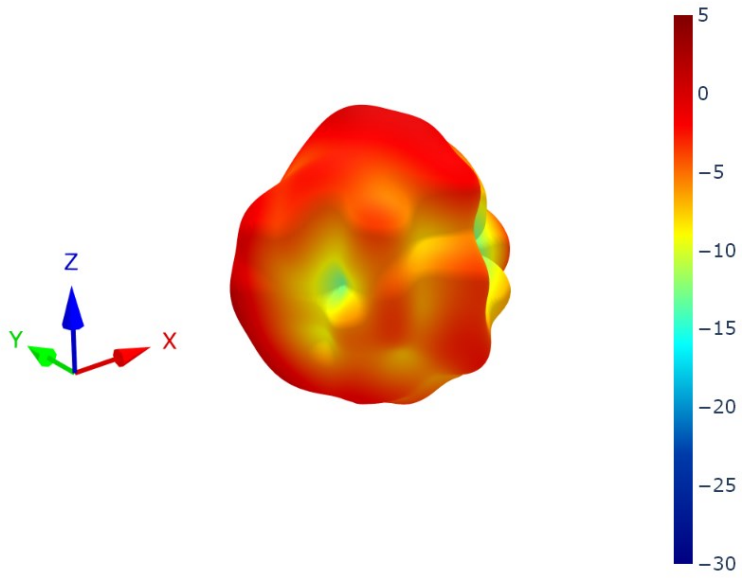
XZ Plane	YZ Plane	XY Plane
		

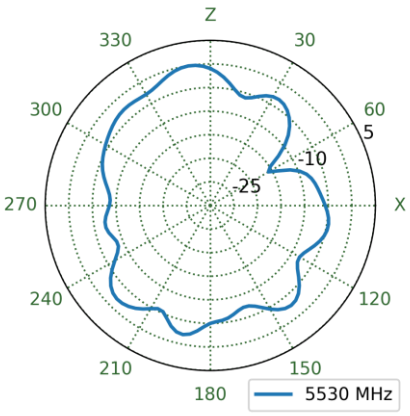
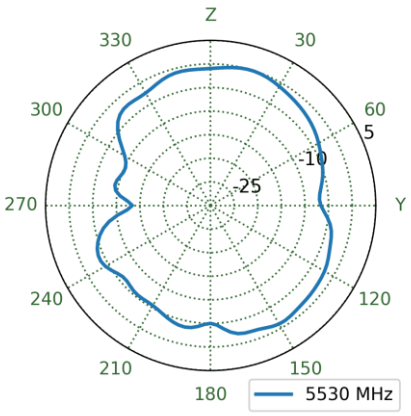
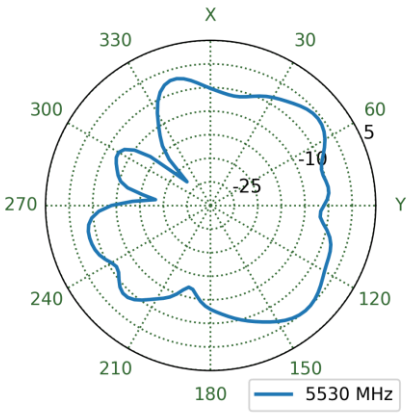
6.39 Cable Feed Right Patterns at 5530 MHz



XZ Plane	YZ Plane	XY Plane
		

6.40 Cable Feed Straight Patterns at 5530 MHz



XZ Plane	YZ Plane	XY Plane
		

Changelog for the datasheet

SPE-24-8-236 – PC45.07.0150AQ

Revision: A (Initial Release)	
Date:	2024-09-25
Notes:	Initial Datasheet Release
Author:	Gary West

Previous Revisions

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