



TAOGLAS®



Datasheet

Raptor Max

Part No:
MAX1016.W.001

Description

16-in-1 Permanent Mount Antenna White with Multiband GNSS, 8 5G/4G, 6 Wi-Fi & 1 LMR Whip with Staggered RG-174/TGC-1.5DS Cables

Features:

Low-profile, IP67 rated Enclosure
8* LTE MIMO 617 to 6000MHz
6* WIFI MIMO 2.4GHz/5.8 GHz
1* GPS-GLONASS- Antenna
1* LMR/TETRA Interchangeable Whip
Dims: 330mm * 75.5mm * 45.2mm
RoHS & Reach Compliant

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1. Introduction



The Taoglas® Raptor MAX series of concept combination antenna are designed to enhance the connectivity options available to you for your vehicle. With up to 16-in-1 connections available, in combinations of Multiband GNSS, 5G/4G MIMO, Wi-Fi MIMO, LMR/VHF/UHF/Tetra, this next generation, super low-profile vehicle roof mount antenna eliminates the need for multiple antenna installations.

The MAX1016 can be configured in any combination of multiband GNSS (L1/L5), up to 8 5G/4G antennas, up to 6 Wi-Fi antennas and LMR/Tetra. Each of the cellular antennas covers all global 5G/4G bands from 600 to 6000MHz with great efficiency across all bands. The Wi-Fi antennas are designed for Wi-Fi 6e/7 coverage on bands 2.4, 5.8 and 7.125GHz. The embedded multiband active GNSS antenna covers both the L1 and L5 bands, helping you achieve a much greater positional accuracy than from single GNSS. The interchangeable whip allows you the add frequency bands specific to your requirements either in the LMR or TETRA ranges.

The antenna comes with low-loss TGC-1.5DS coaxial pigtail cables as standard, terminating in SMA(M) / RP-SMA(M), with custom configurations depending on your requirements. The super low profile, fully IP67 rated waterproof enclosure is manufactured from a robust, UV protected ABS material, ideal for use in any environment or weather condition.

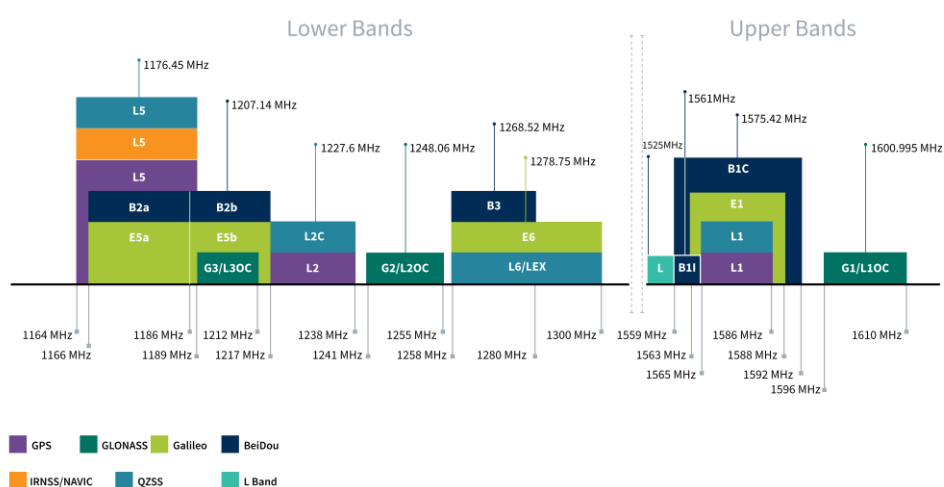
Several configurations in both black and white will be available as standard, see below, but other configurations are available upon request, contact your local Taoglas customer service team for more information.

Raptor Max SKU's and Configurations:

- **MAX1008** 8x 5G/4G
- **MAX1009** 1x GNSS & 8x 5G/4G
- **MAX1012** 1x GNSS, 8x 5G/4G & 3x Wi-Fi
- **MAX1012** 1x GNSS, 8x 5G/4G & 4x Wi-Fi
- **MAX1014** 1x GNSS, 8x 5G/4G & 5x Wi-Fi
- **MAX1015** 1x GNSS, 8x 5G/4G & 6x Wi-Fi
- **MAX1016** 1x GNSS, 8x 5G/4G, 6x Wi-Fi & 1x LMR Whip

2. Specification

GNSS Frequency Bands					
GPS	L1 1575.42 MHz	L2 1227.6 MHz	L5 1176.45 MHz		
	■	□	■		
GLONASS	G1 1602 MHz	G2 1248 MHz	G3 1207 MHz		
	□	□	□		
Galileo	E1 1575.24 MHz	E5a 1176.45 MHz	E5b 1201.5 MHz	E6 1278.75 MHz	
	■	■	□	□	
BeiDou	B1C 1575.42 MHz	B1I 1561 MHz	B2a 1176.45 MHz	B2b 1207.14 MHz	B3 1268.52 MHz
	■	■	■	□	□
L-Band	L-Band 1542 MHz				
	□				
QZSS (Regional)	L1 1575.42 MHz	L2C 1227.6 MHz	L5 1176.45 MHz	L6 1278.75e6	
	■	□	■	□	
IRNSS (Regional)	L5 1176.45 MHz				
	■				
SBAS	L1/E1/B1 1575.42 MHz	L5/B2a/E5a 1176.45 MHz	G1 1602 MHz	G2 1248 MHz	G3 1207 MHz
	■	■	□	□	□



GNSS Bands and Constellations

GNSS Electrical				
Frequency (MHz)	1176.45	1561	1575.42	1603
VSWR (max.)	3:1	3:1	3:1	8:1
Passive Antenna Efficiency (%)	37.77	33.44	40.65	17.73
Passive Antenna Gain at Zenith (dBi)	1.75	3.59	4.51	1.19
Axial Ratio (dB)	8.43	22.05	14.71	12.86
Polarization	RHCP			
Impedance	50 Ω			

LNA and Filter Electrical Properties				
Frequency (MHz)	1176.45	1561	1575.42	1603
Gain@3.0V	12.6	11.5	11.1	10.9
Noise@3.0V	2.0	2.2	2.6	2.2
DC Power Input	1.8-5.5V			
Power consumption@5.5V (mA)	10mA +/- 3			

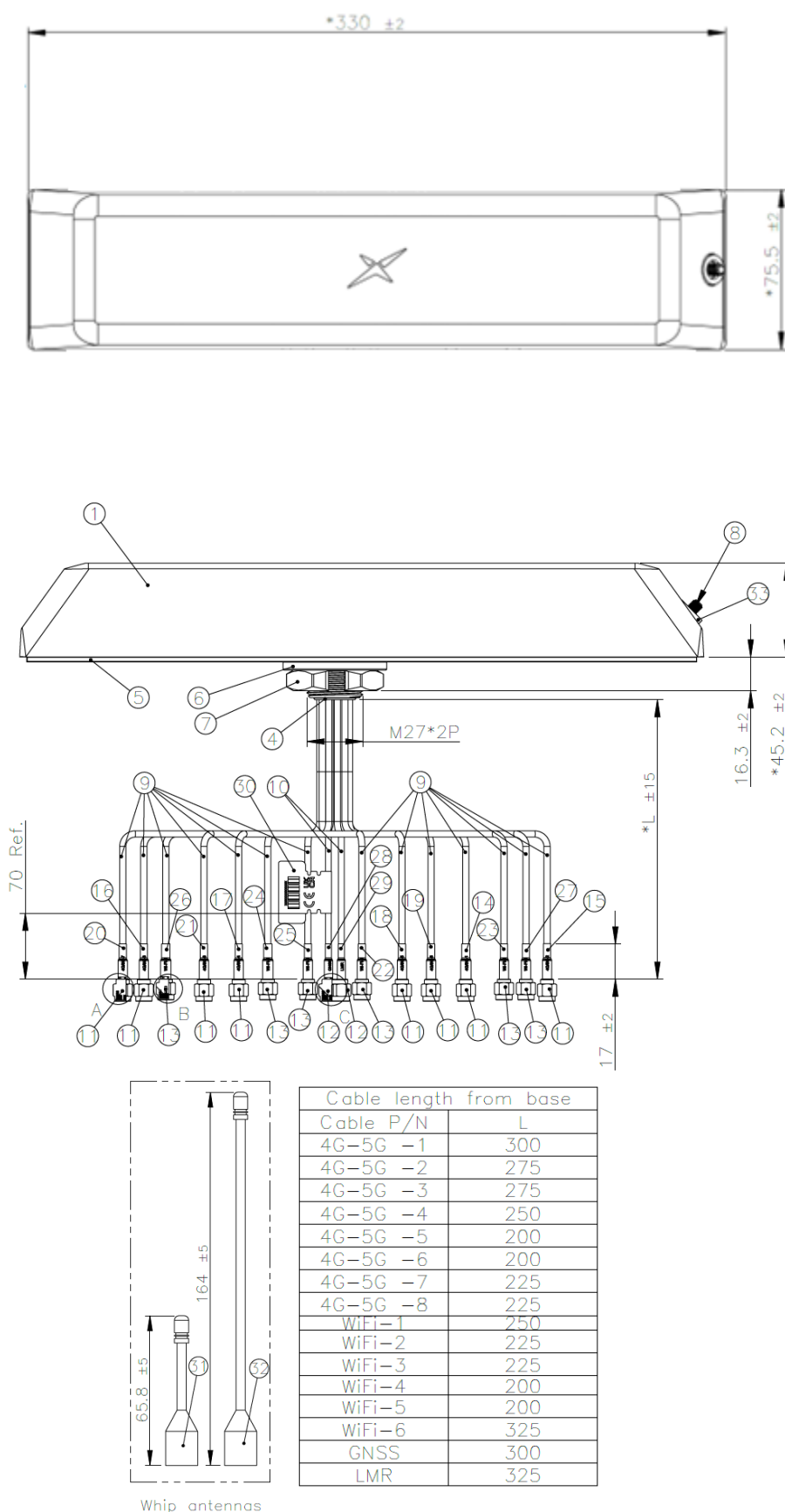
LTE Electrical									
Band	Frequency (MHz)	Measurement	Efficiency (%)	Average Gain (dB)	Peak Gain (dBi)	Impedance	Polarization	Radiation Pattern	Max. input power
5GNR/4G Band71	617-698	LTE1	27.0	-5.69	2.03	50 Ω	Linear	Omni	2W
		LTE2	20.4	-6.91	-1.50				
		LTE3	25.6	-5.92	0.17				
		LTE4	44.1	-3.56	3.54				
		LTE5	24.9	-6.04	2.68				
		LTE6	24.5	-6.11	-0.41				
		LTE7	25.1	-6.00	-1.18				
		LTE8	29.9	-5.24	0.85				
4G/3G Band 12,13,14,17,28,29	698-824	LTE1	34.1	-4.67	2.63				
		LTE2	32.0	-4.95	1.92				
		LTE3	35.7	-4.48	2.67				
		LTE4	42.9	-3.67	2.75				
		LTE5	32.0	-4.95	1.77				
		LTE6	26.4	-5.79	-0.11				
		LTE7	32.9	-4.83	1.97				
		LTE8	36.4	-4.39	2.24				
4G/3G/NB-IoT/Cat M Band 5,8,18,19,20,26,27	824-960	LTE1	38.3	-4.16	1.52				
		LTE2	36.0	-4.44	1.50				
		LTE3	28.3	-5.48	1.20				
		LTE4	35.5	-4.49	2.45				
		LTE5	29.9	-5.24	1.53				
		LTE6	28.7	-5.43	-0.35				
		LTE7	36.3	-4.40	2.66				
		LTE8	40.1	-3.97	2.58				
5GNR/4G Band 21,32,74,75,76	1427-1518	LTE1	37.4	-4.27	2.73				
		LTE2	41.9	-3.78	3.32				
		LTE3	33.1	-4.81	2.78				
		LTE4	32.9	-4.82	2.33				
		LTE5	31.2	-5.06	2.10				
		LTE6	31.5	-5.01	1.43				
		LTE7	39.7	-4.02	2.25				
		LTE8	25.7	-5.91	0.94				
4G/3G Band 1,2,3,4,9,23,25,35,39,66	1710-2200	LTE1	46.4	-3.34	4.93				
		LTE2	47.2	-3.26	4.61				
		LTE3	51.5	-2.88	5.48				
		LTE4	48.7	-3.13	5.34				
		LTE5	51.5	-2.88	6.07				
		LTE6	49.3	-3.07	6.07				
		LTE7	29.8	-5.26	4.22				
		LTE8	31.3	-5.04	2.93				
4G/3G Band 7,30,38,40,41	2300-2690	LTE1	49.9	-3.02	5.47				
		LTE2	48.3	-3.16	4.39				
		LTE3	48.2	-3.17	6.12				
		LTE4	38.8	-4.12	6.69				
		LTE5	39.2	-4.07	5.96				
		LTE6	49.2	-3.08	6.79				
		LTE7	39.7	-4.01	5.28				
		LTE8	43.1	-3.65	6.09				
5GNR/4G Band 22,42,48,77,78,79	3300-5000	LTE1	51.4	-2.89	6.13				
		LTE2	44.9	-3.48	7.46				
		LTE3	47.4	-3.24	5.75				
		LTE4	48.2	-3.17	6.88				
		LTE5	42.5	-3.72	5.24				
		LTE6	46.2	-3.35	5.90				
		LTE7	43.1	-3.65	5.37				
		LTE8	46.1	-3.36	6.02				
LTE5200/Wi-Fi5800	5150-5925	LTE1	43.2	-3.65	7.96				
		LTE2	42.7	-3.69	7.82				
		LTE3	43.4	-3.63	5.67				
		LTE4	46.5	-3.33	5.73				
		LTE5	42.7	-3.70	5.26				
		LTE6	43.6	-3.61	5.84				
		LTE7	40.1	-3.97	6.03				
		LTE8	44.6	-3.50	6.14				

Wi-Fi Electrical									
Band	Frequency (MHz)	Measurement	Efficiency (%)	Average Gain (dB)	Peak Gain (dBi)	Impedance	Polarization	Radiation Pattern	Max. input power
Wi-Fi - 2GHz	2400-2500	Wi-Fi1	56.5	-2.48	4.36	50 Ω	Linear	Omni	2W
		Wi-Fi2	58.2	-2.35	6.55				
		Wi-Fi3	56.1	-2.51	5.68				
		Wi-Fi4	58.1	-2.36	4.19				
		Wi-Fi5	53.3	-2.73	7.60				
		Wi-Fi6	52.7	-2.78	6.98				
Wi-Fi - 5GHz	5150-5850	Wi-Fi1	49.3	-3.07	5.71				
		Wi-Fi2	49.5	-3.05	7.47				
		Wi-Fi3	47.8	-3.20	5.63				
		Wi-Fi4	45.9	-3.38	6.10				
		Wi-Fi5	50.5	-2.97	8.04				
		Wi-Fi6	44.7	-3.50	8.51				
Wi-Fi - 6GHz	5925-7125	Wi-Fi1	47.1	-3.27	6.33				
		Wi-Fi2	49.9	-3.02	7.47				
		Wi-Fi3	48.4	-3.15	6.28				
		Wi-Fi4	43.1	-3.66	5.96				
		Wi-Fi5	46.2	-3.36	7.31				
		Wi-Fi6	43.7	-3.60	7.22				

Mechanical	
Dimensions	330x75.5x45.2mm
Material	PC
Connector	See Page 8
Cable	See Page 8

Environmental	
Temperature Range	-40 - +85°C
Relative Humidity	Non-condensing 65°C 95% RH
RoHs & REACH Compliant	Yes

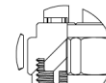
3. Mechanical Drawing



DETAIL A
SCALE 1.5 : 1



DETAIL B
SCALE 1.5 : 1



DETAIL C
SCALE 1.5 : 1

	Name	Material	Finish	Qty
1	Top housing	PC	White	1
2	Bottom housing	PC+10%GF/Sab ic 505RU	MT9050, White	1
3	Metal Stem	Zinc Alloy	Ni Plated	1
4	Grommet	Silicone Rubber	Black	1
5	Double Side Adhesive	3M 9448HK + CR4305 2t	Black	1
6	washer(ID28*OD50 t4.0)	S45C	Ni-Zn Plated	1
7	M27*P2.0mm steel Nut	S45C	Ni-Zn Plated	1
8	M6*0.75P screw	Brass	Ni Plated	1
9	TGC-1.5DS Coaxial Cable	PE	Black	14
10	RG174 Coaxial Cable	PE	Black	2
11	SMA(M)ST Plug for low loss1.5DS	Brass	Au Plated	8
12	SMA(M)ST Plug	Brass	Au Plated	2
13	SMA(M)ST_RP low loss 1.5DS	Brass	AU PLATING	6
14	Heat Shrink Tube(4G/5G-1)	PE	Red Tube/White Text	1
15	Heat Shrink Tube(4G/5G-2)	PE	Red Tube/White Text	1
16	Heat Shrink Tube(4G/5G-3)	PE	Red Tube/White Text	1
17	Heat Shrink Tube(4G/5G-4)	PE	Red Tube/White Text	1
18	Heat Shrink Tube(4G/5G-5)	PE	Red Tube/White Text	1
19	Heat Shrink Tube(4G/5G-6)	PE	Red Tube/White Text	1
20	Heat Shrink Tube(4G/5G-7)	PE	Red Tube/White Text	1
21	Heat Shrink Tube(4G/5G-8)	PE	Red Tube/White Text	1
22	Heat Shrink Tube (WiFi-1)	PE	Yellow tube/ Black text	1
23	Heat Shrink Tube (WiFi-2)	PE	Yellow Tube/Black Text	1
24	Heat Shrink Tube (Wi- Fi-3)	PE	Yellow Tube /Black Text	1
25	Heat Shrink Tube (Wi- Fi-4)	PE	Yellow Tube /Black Text	1
26	Heat Shrink Tube (Wi- Fi-5)	PE	Yellow Tube /Black Text	1
27	Heat Shrink Tube (Wi- Fi-6)	PE	Yellow Tube /Black Text	1
28	Heat Shrink Tube(GNSS)	PE	Blue Tube/White Text	1
29	Heat Shrink Tube(LMR)	PE	Green Tube/White Text	1
30	CE,WEEE and UKCA mark logo Label	PEPA	White	1
31	Flexible Whip Antenna 700-900MHz	PVC	White	1
32	Flexible Whip Antenna 380-400MHz	PVC	White	1
33	Foam adhesive	Silicone Rubber	White	1

4. Packaging

1pc Small Whip per PE Bag



1pc Large Whip per PE Bag



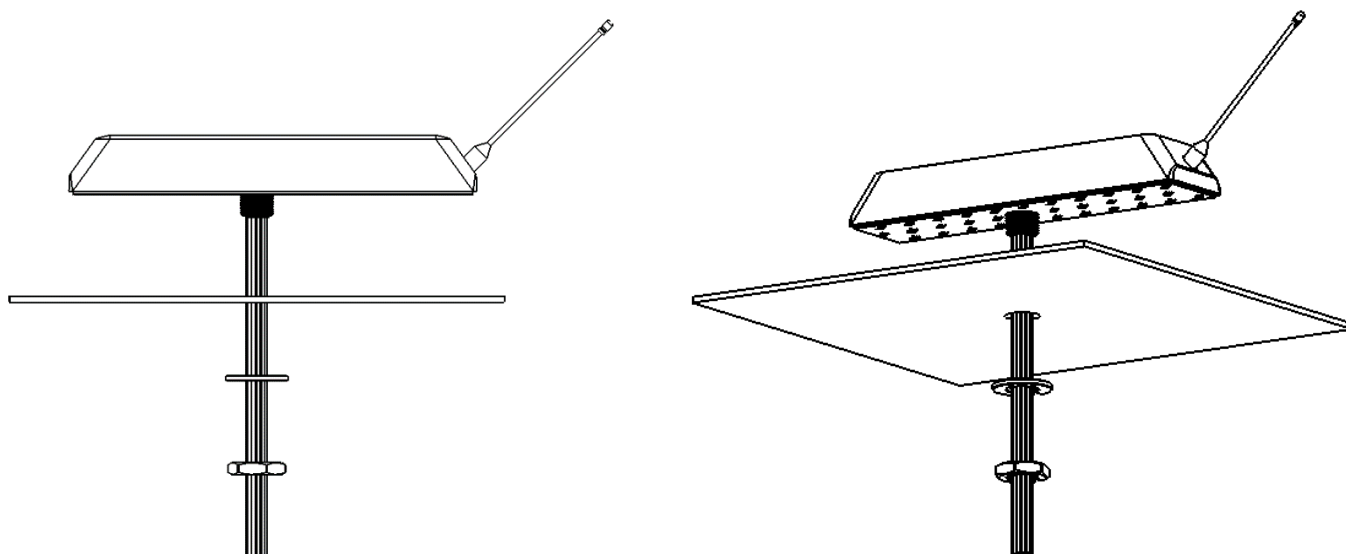
1pc Antenna per Large PE Bag
Bag Dimensions: 470x470mm
Weight: 0.58Kg



8pcs per Carton
Carton Dimensions: 370x370x300mm
Weight: 6.1Kg



5. Installation Recommendation



Correct installation of the Raptor Max is required to ensure that the waterproof integrity of the vehicle or enclosure is not compromised.

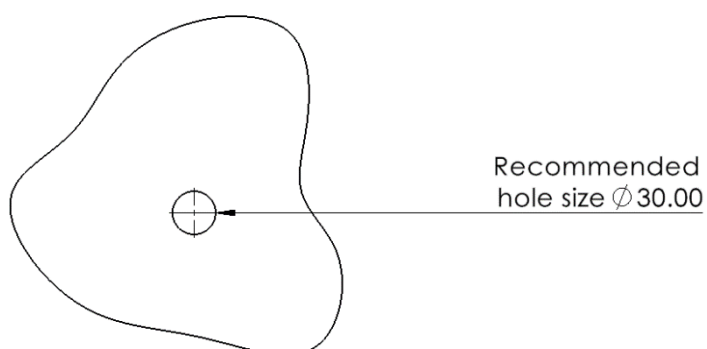
Step 1: Drill the recommended 30mm diameter hole as indicated below.

Step 2: Ensure that the surface you are mounting to is clean, dry and flat to receive the Raptor Max.

Step 3: Feed the cables through the hole and remove the 3m adhesive backing from the base.

Step 4: Position the Raptor Max into the correct orientation on the mounting surface and firmly press down to activate the 3M adhesive.

Step 5: To permanently mount the antenna, slide the washer and nut over the cable assembly and hand tighten to ensure a secure fit.



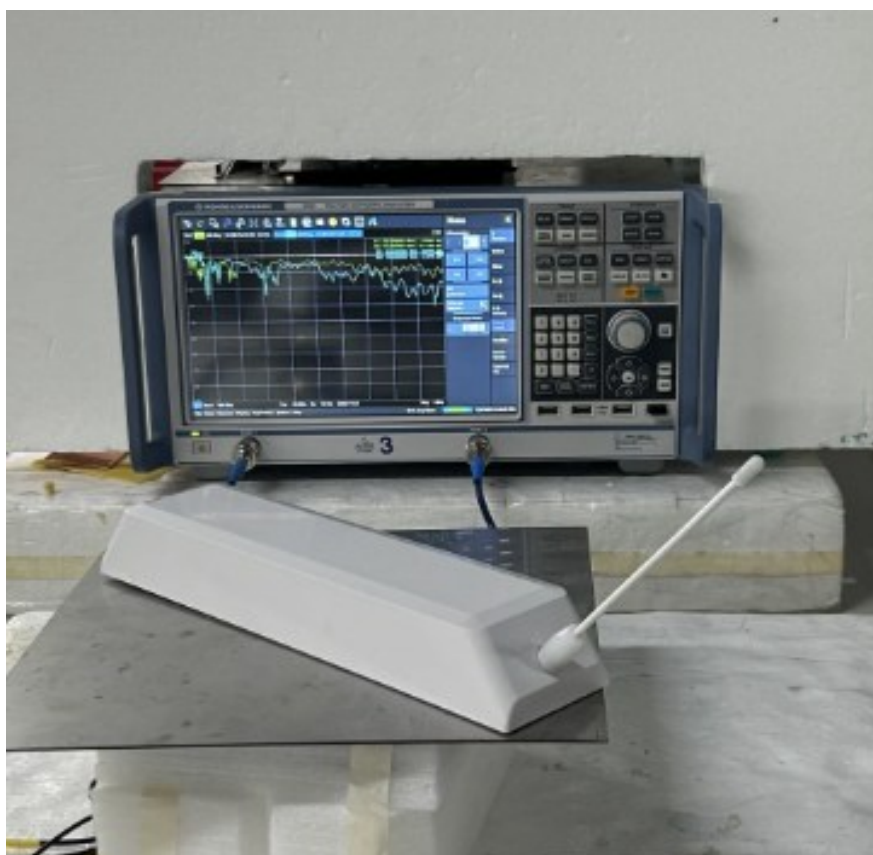
6. Antenna Characteristics

6.1 Test Setup

AUT

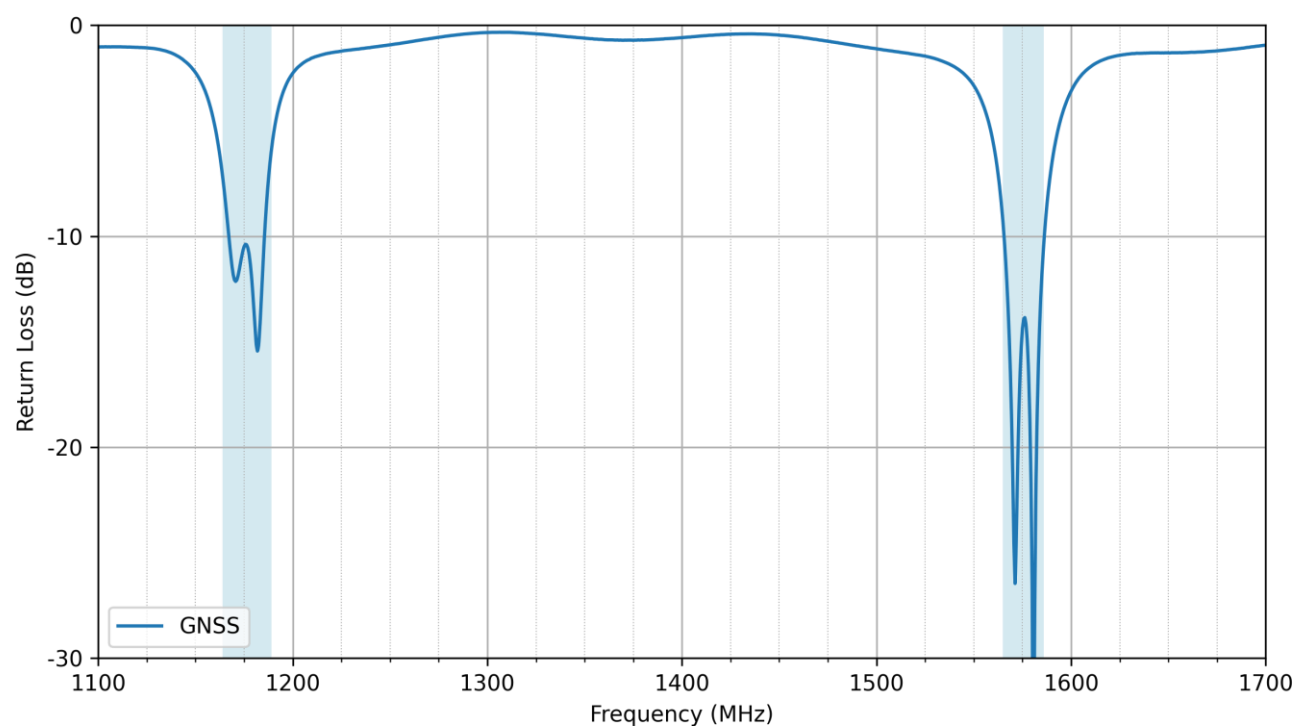


Vector Network Analyzer

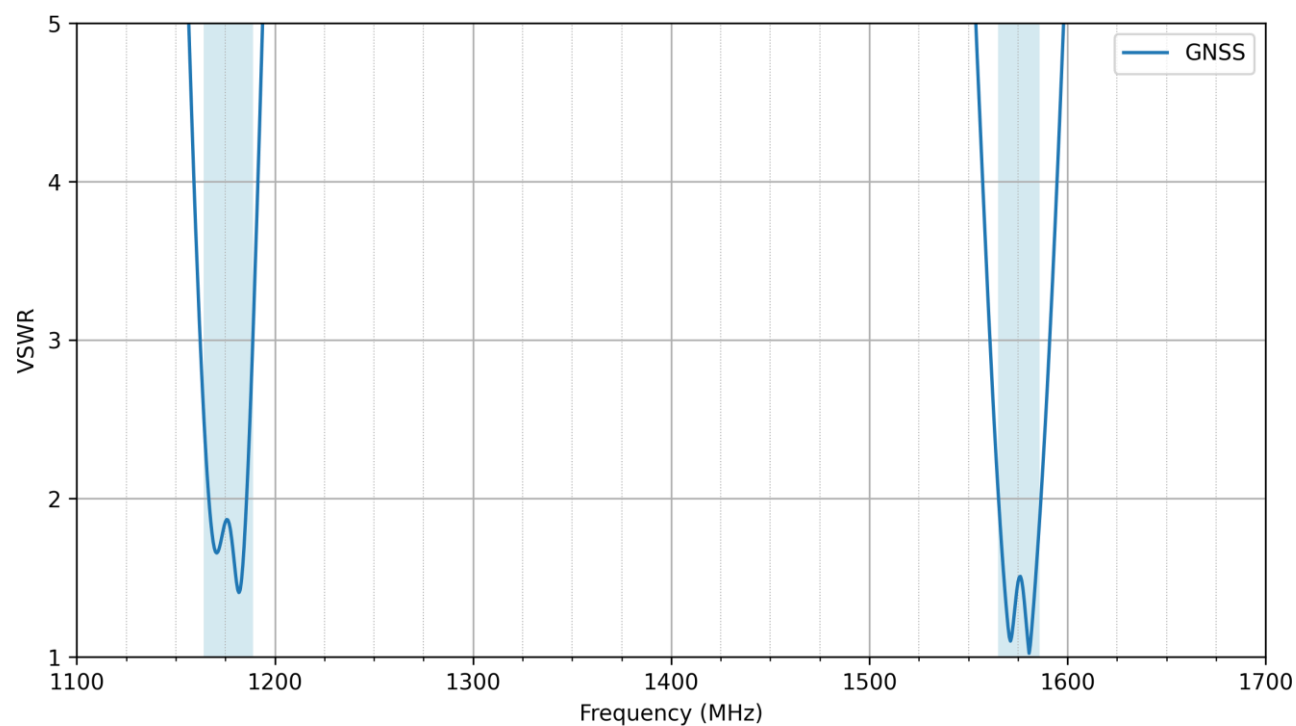


VNA Test Set-up

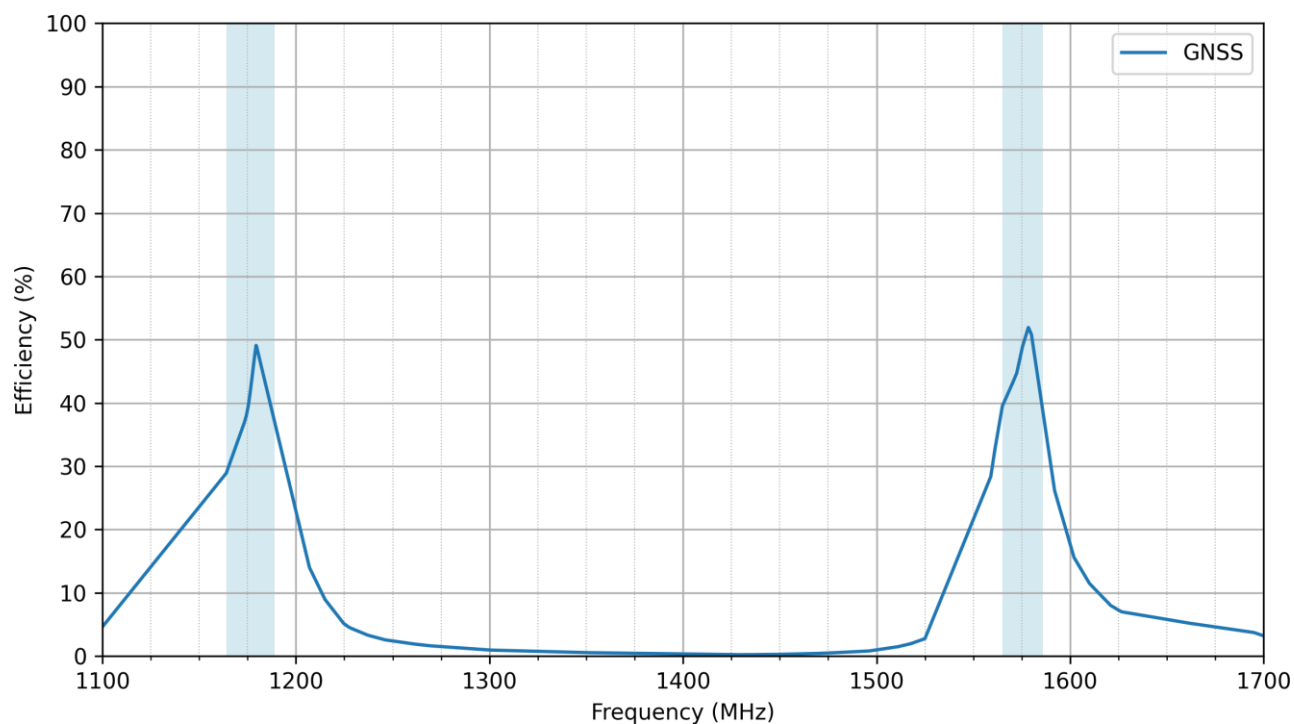
6.2 GNSS - Return Loss



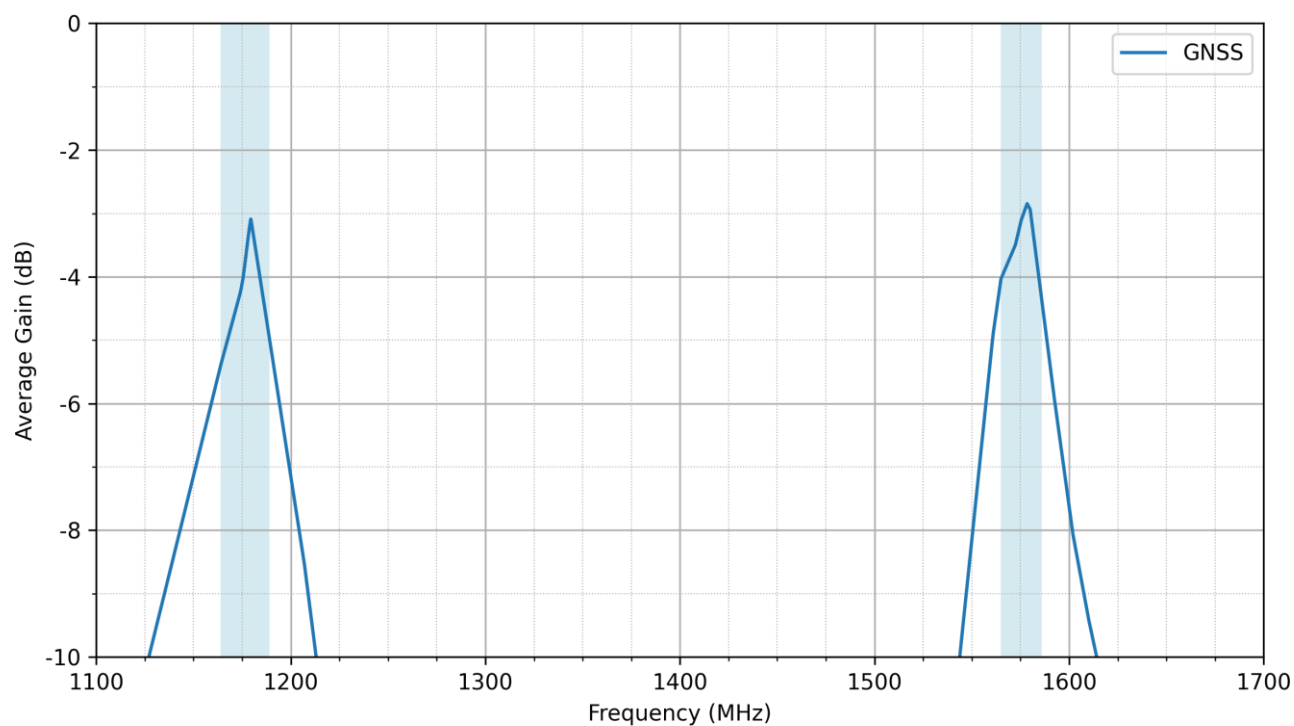
6.3 GNSS - VSWR



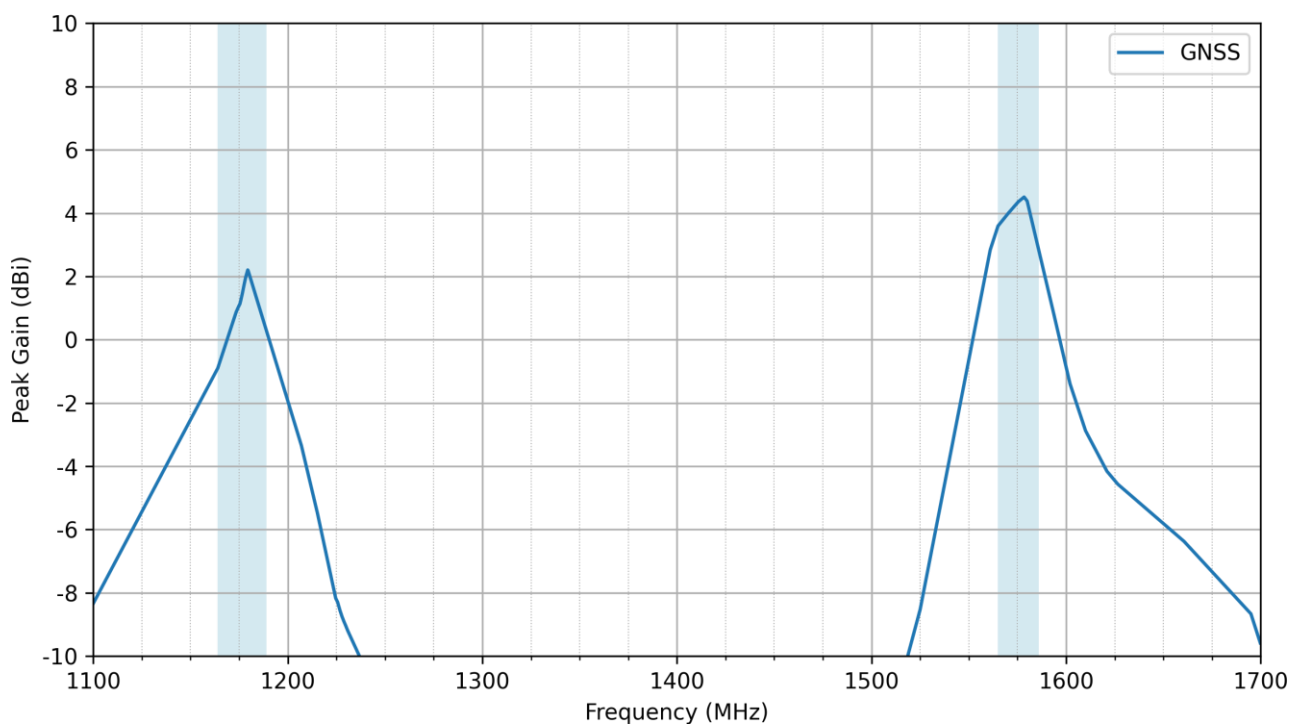
6.4 GNSS - Efficiency



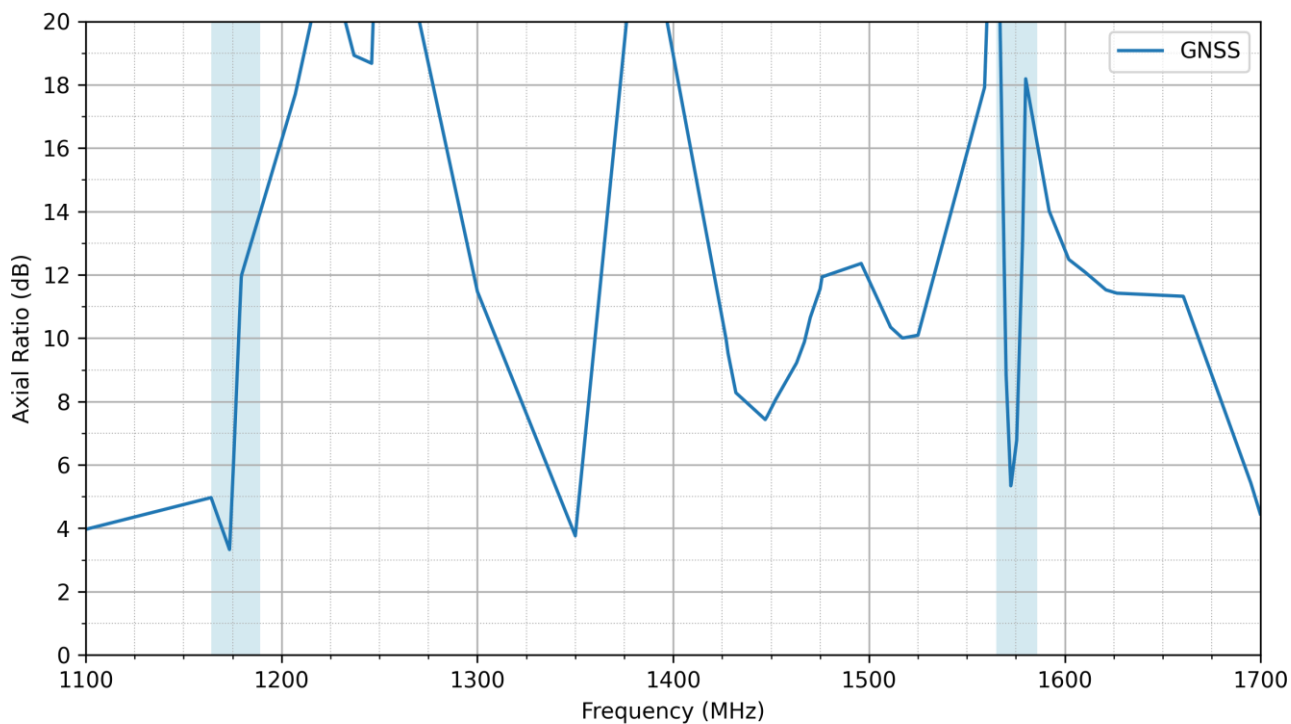
6.5 GNSS - Average Gain



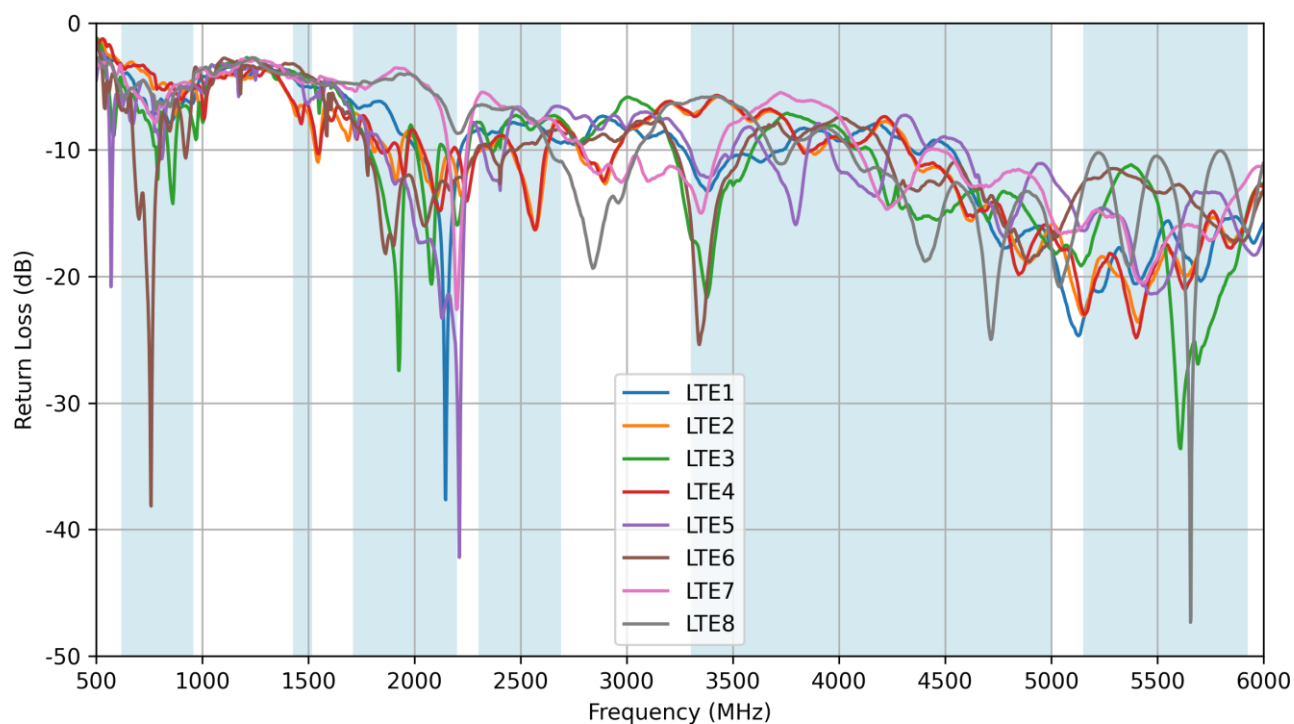
6.6 GNSS - Peak Gain (Gtotal)



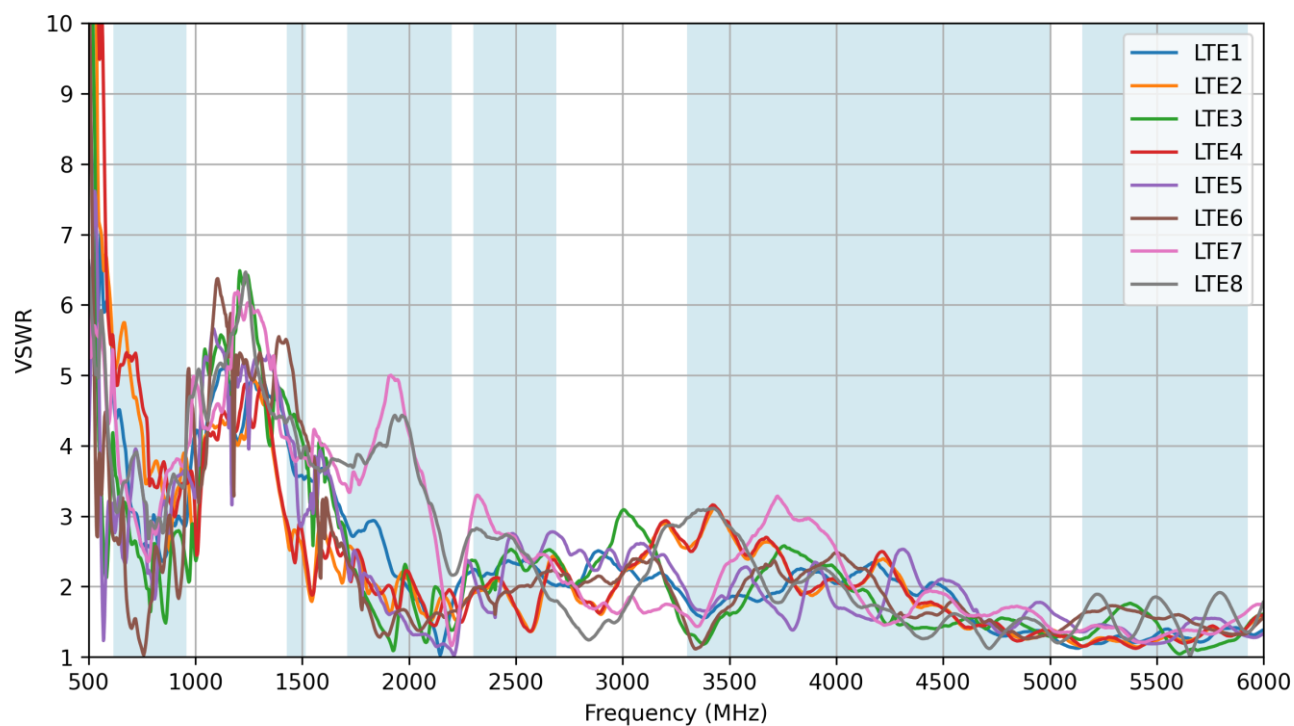
6.7 Axial Ratio



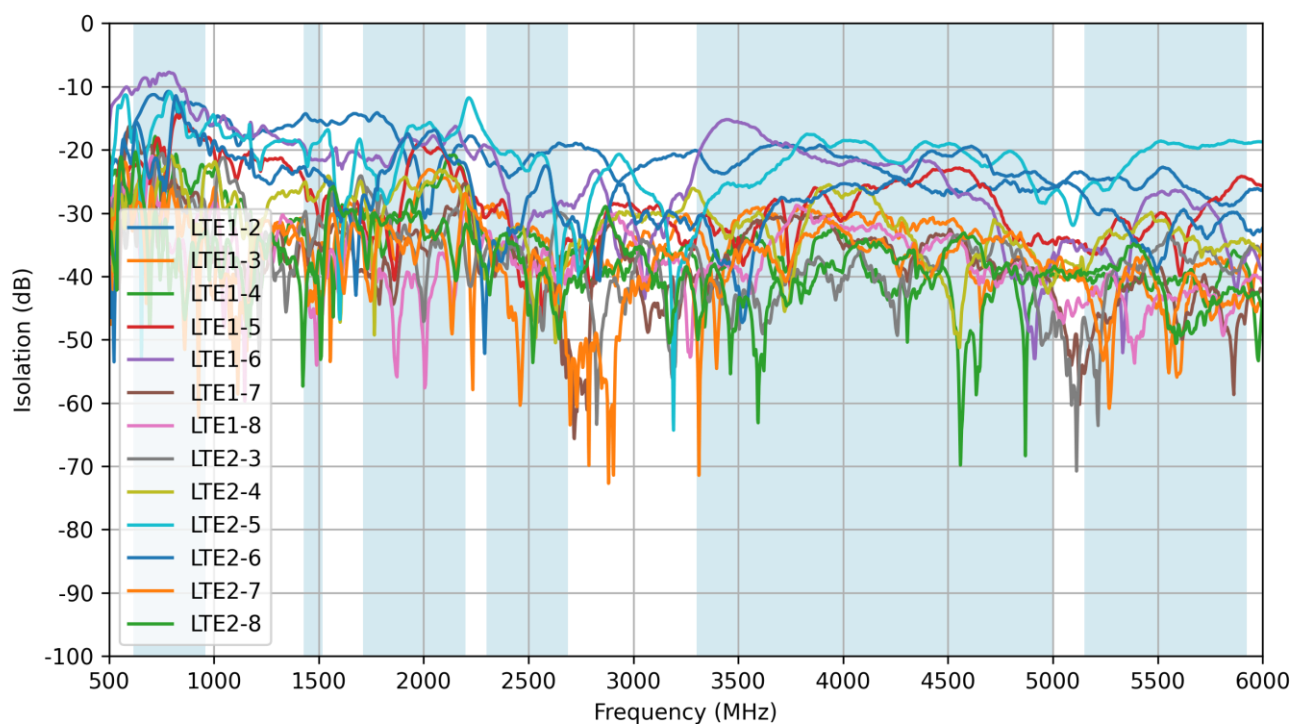
6.8 LTE - Return Loss



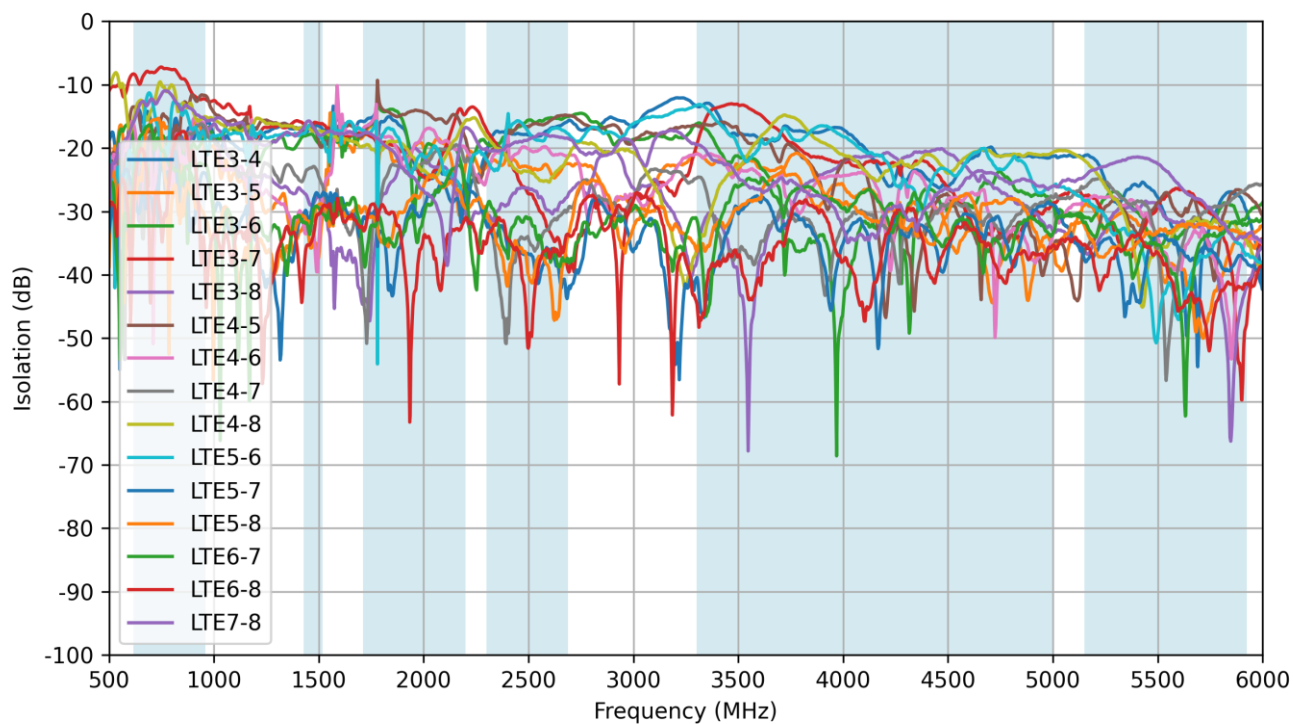
6.9 LTE - VSWR



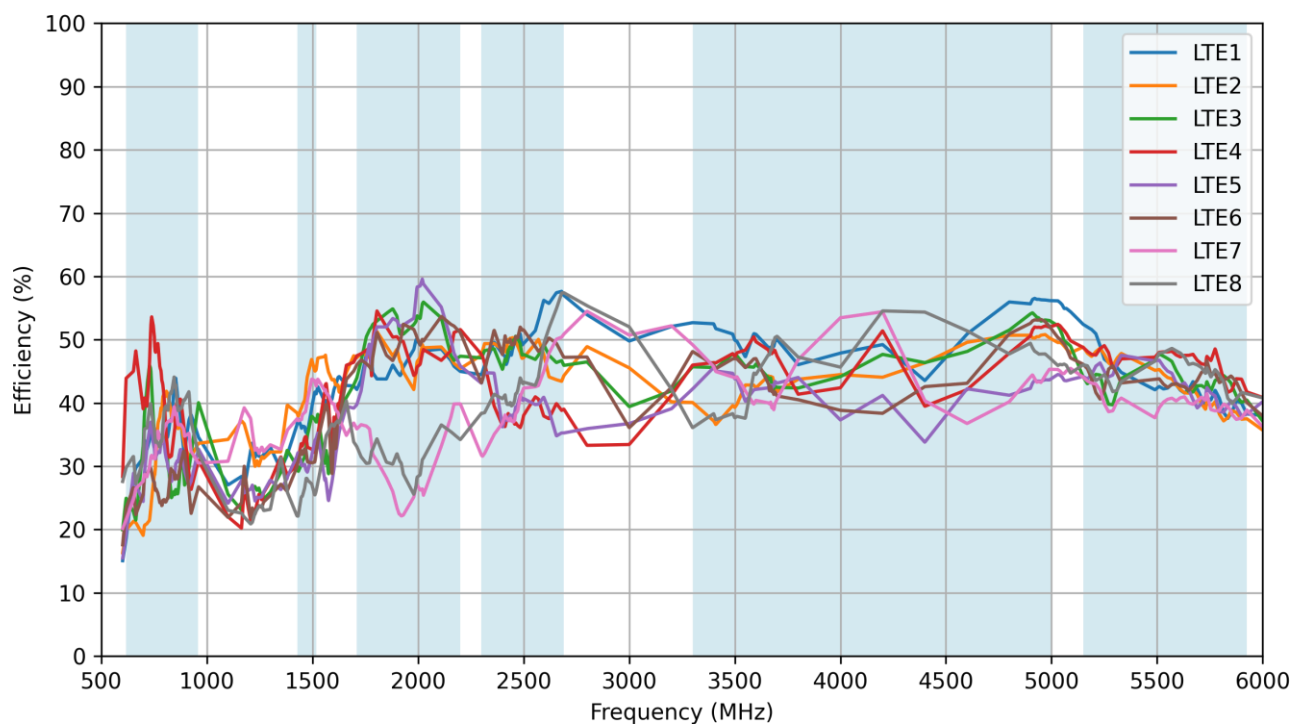
6.10 Isolation



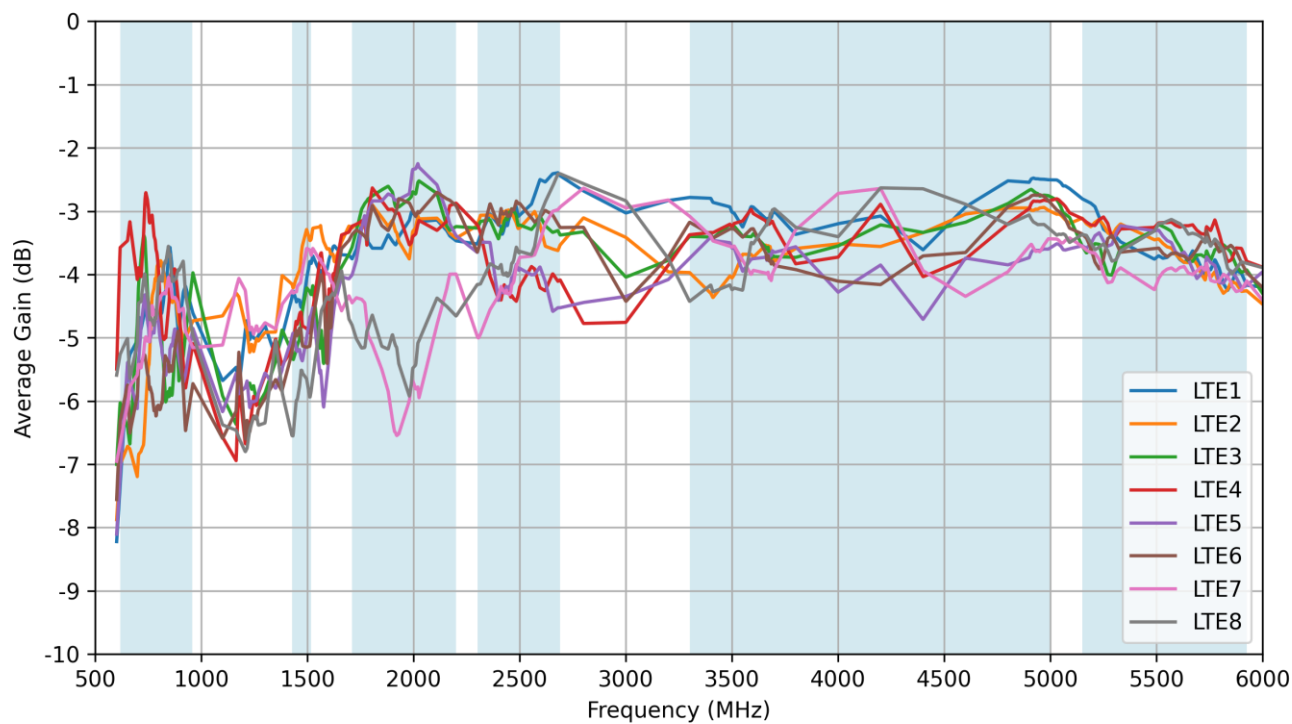
6.11 Isolation



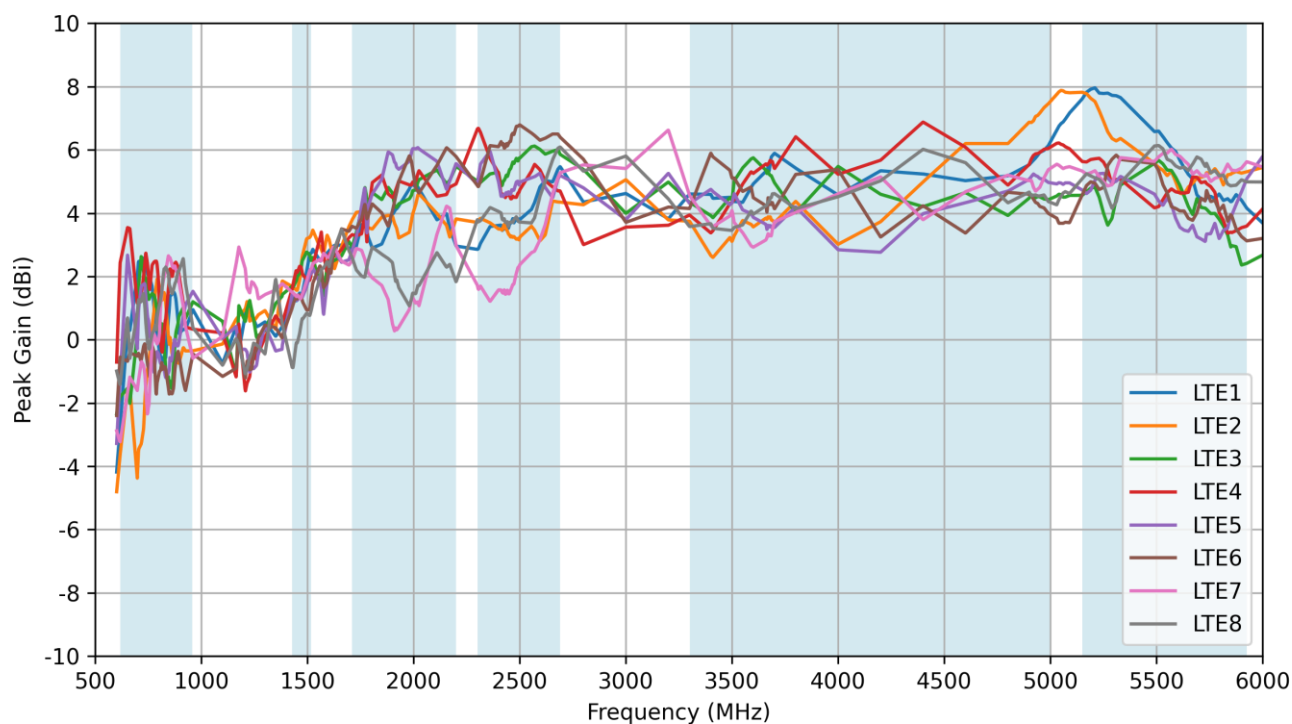
6.12 LTE - Efficiency



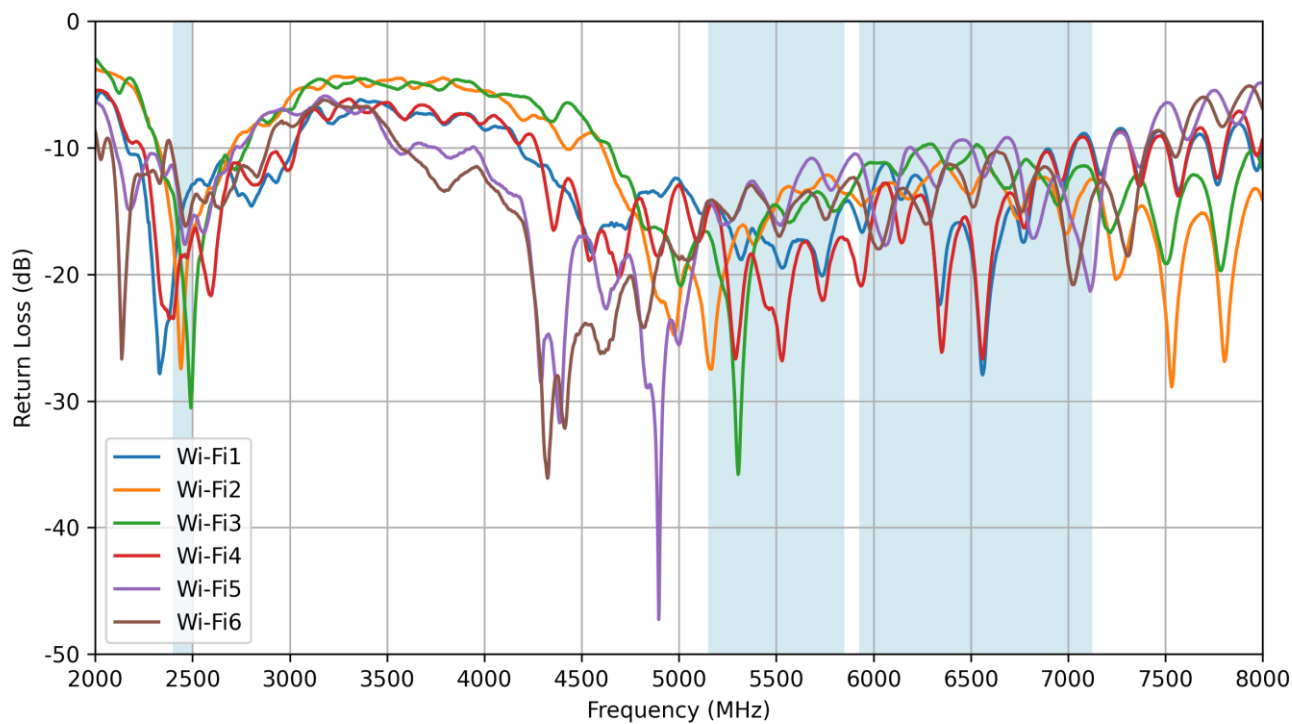
6.13 LTE - Average Gain



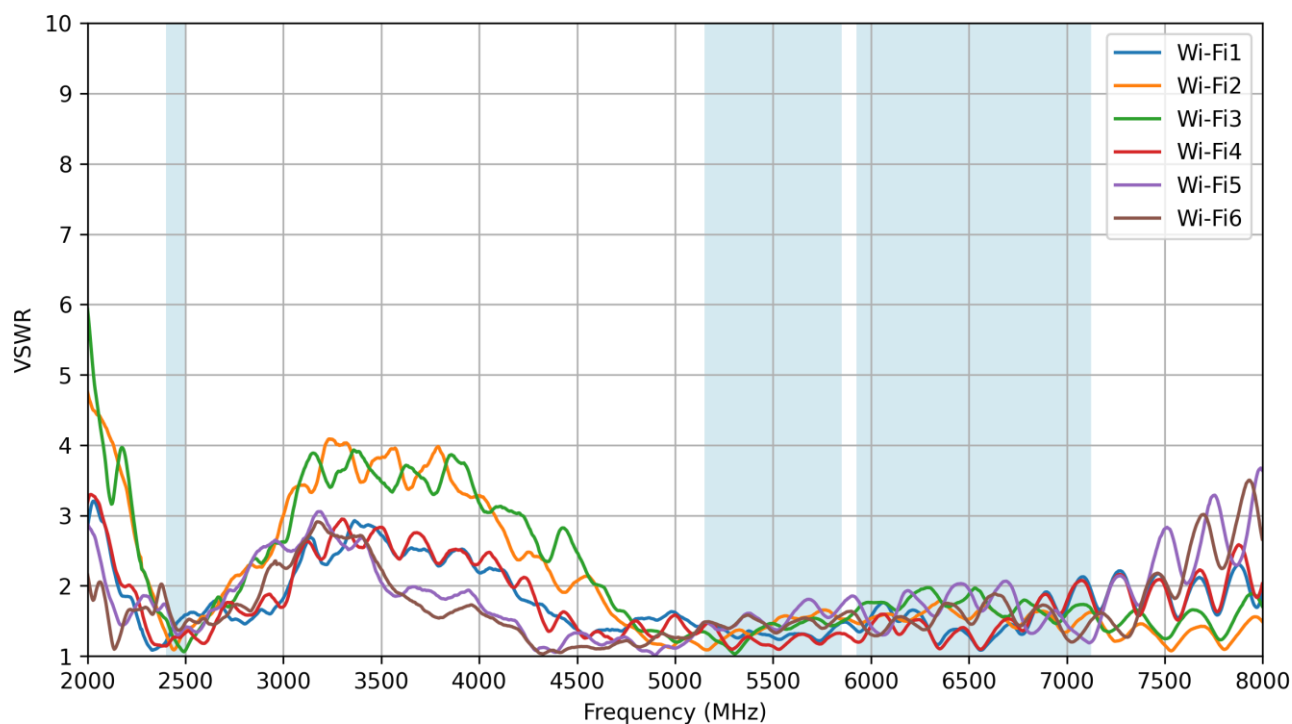
6.14 LTE - Peak Gain



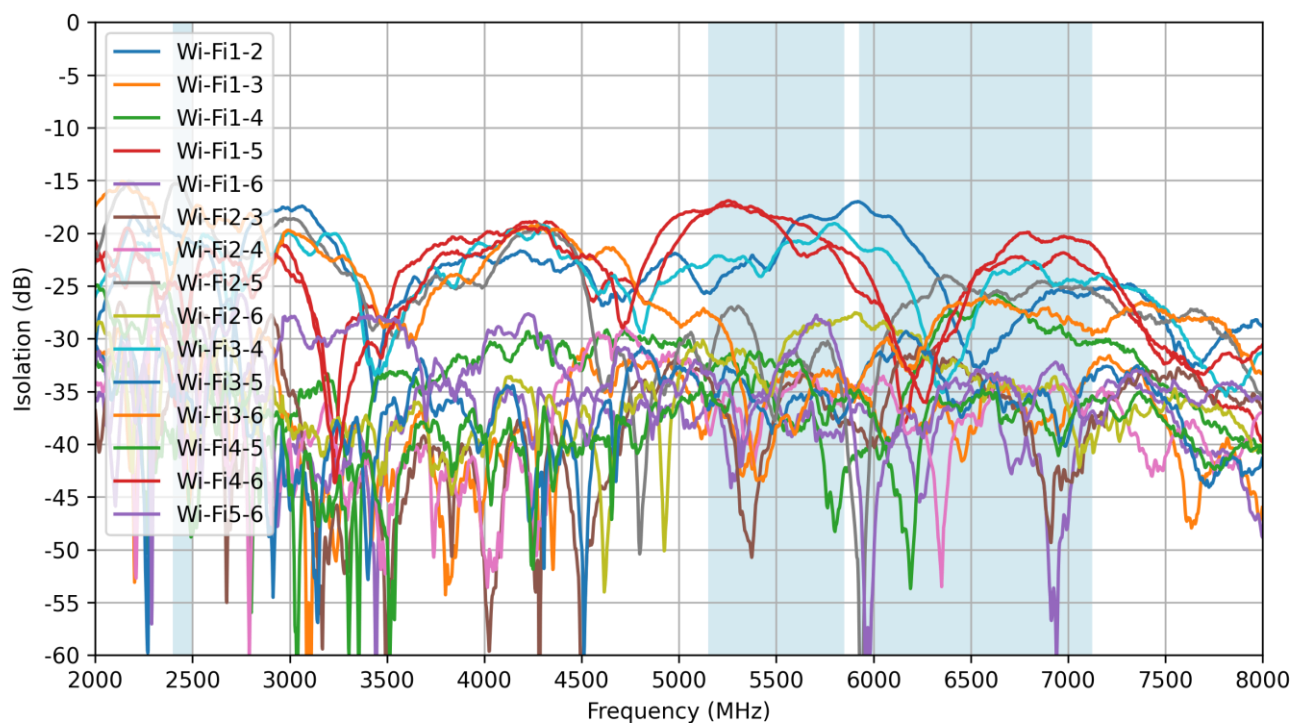
6.15 Wi-Fi - Return Loss



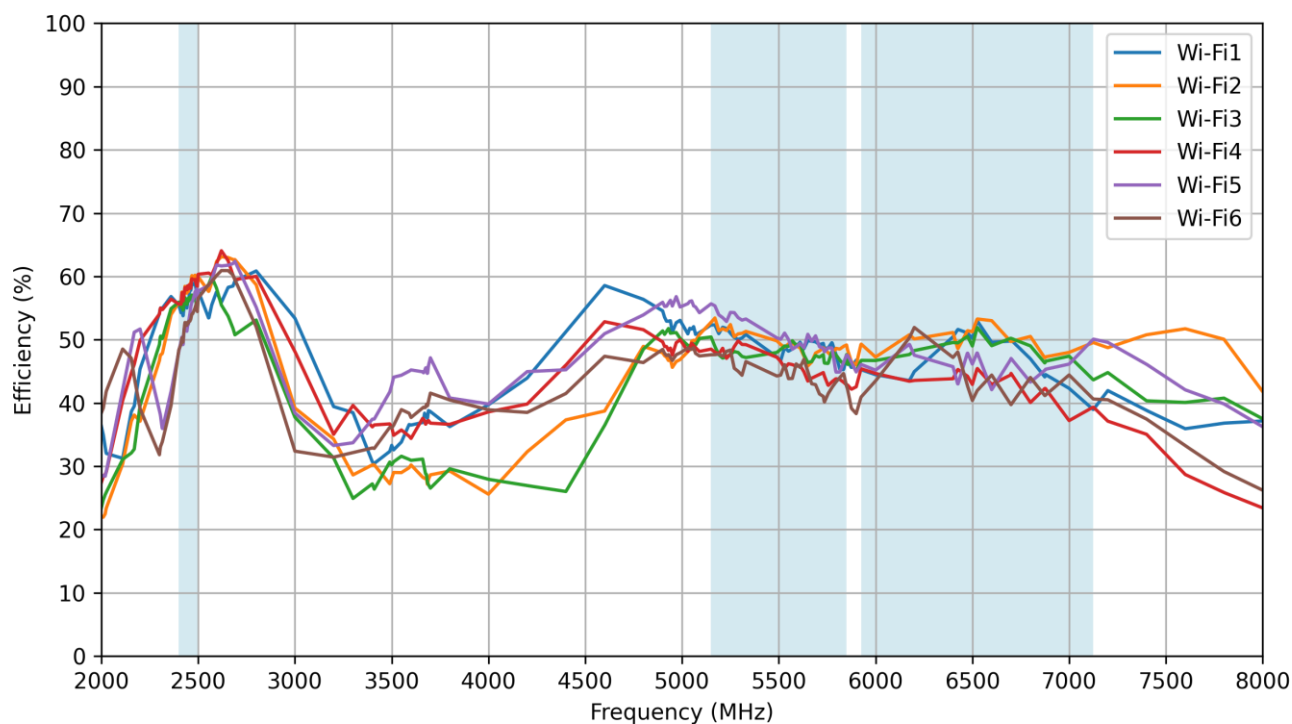
6.16 Wi-Fi - VSWR



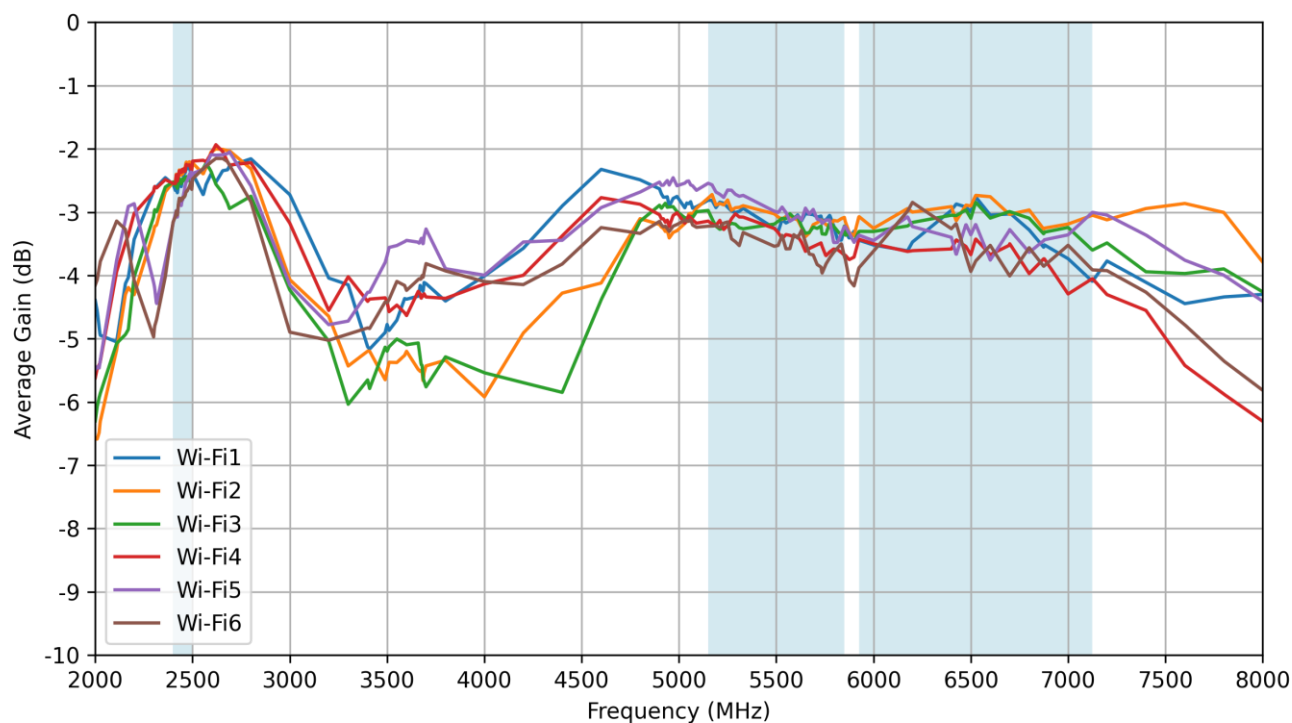
6.17 Wi-Fi - Isolation



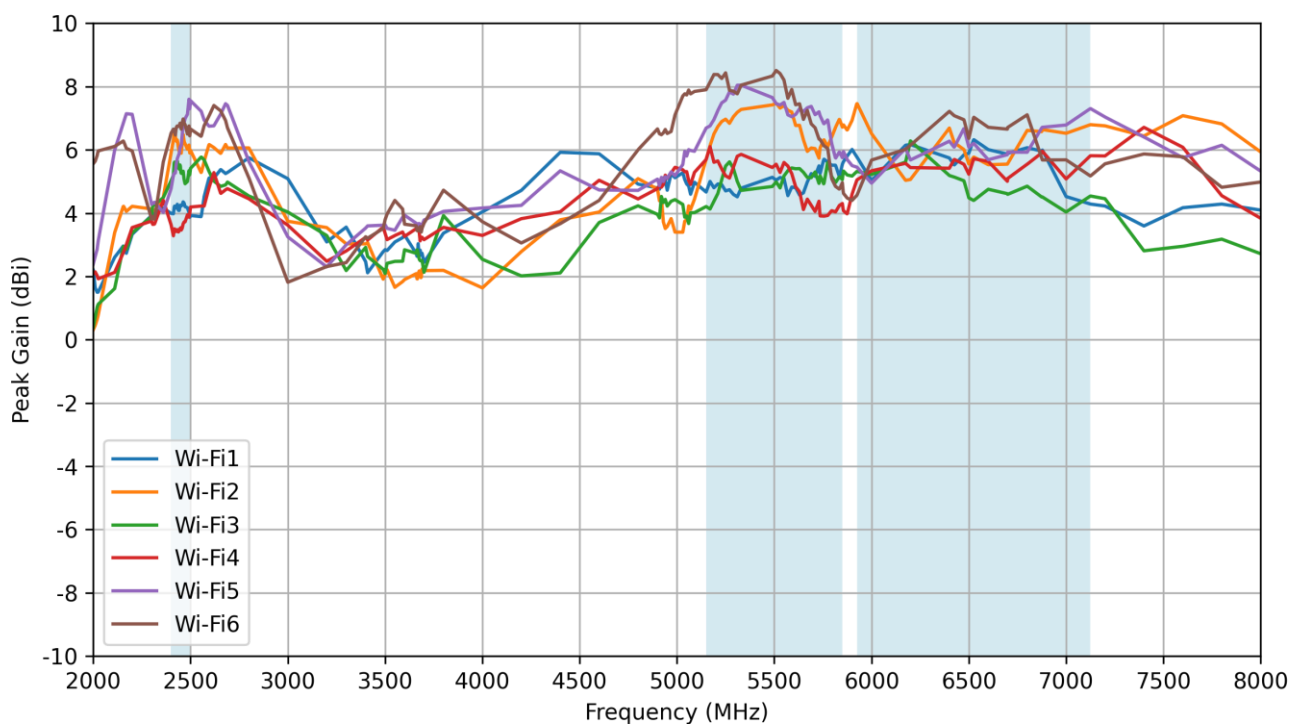
6.18 Wi-Fi - Efficiency



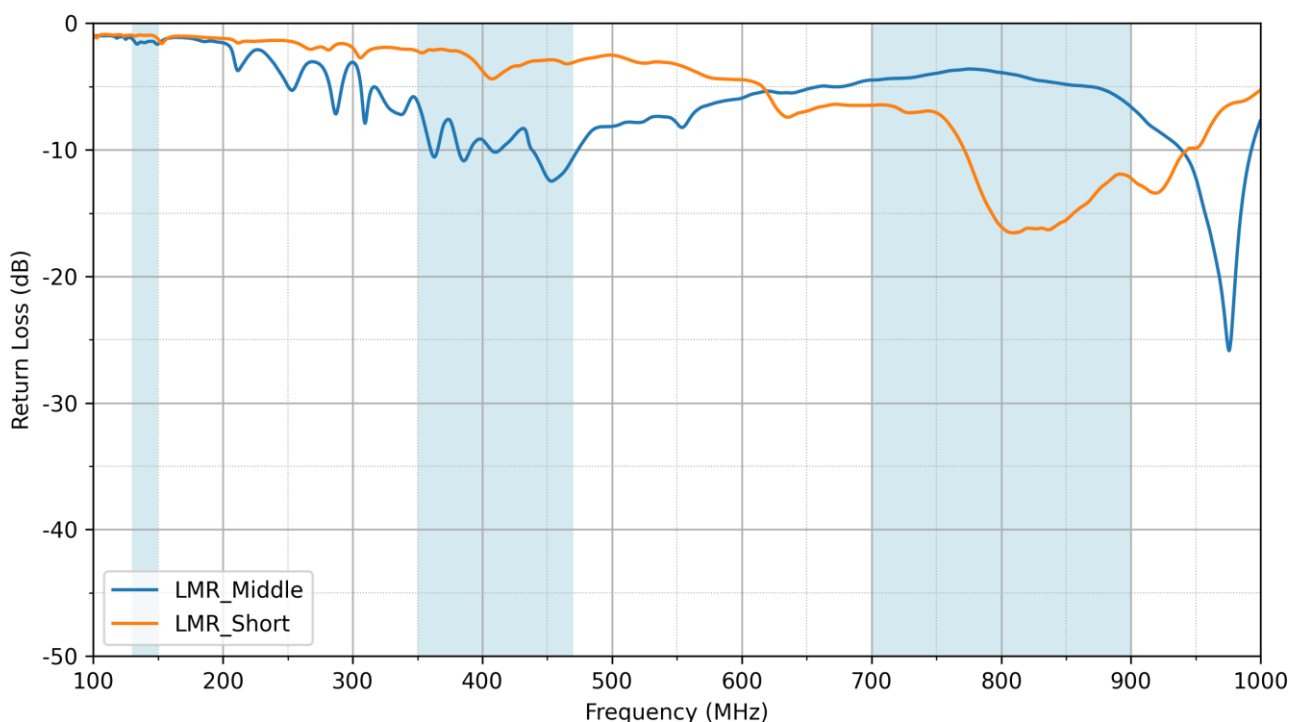
6.19 Wi-Fi - Average Gain



6.20 Wi-Fi - Peak Gain

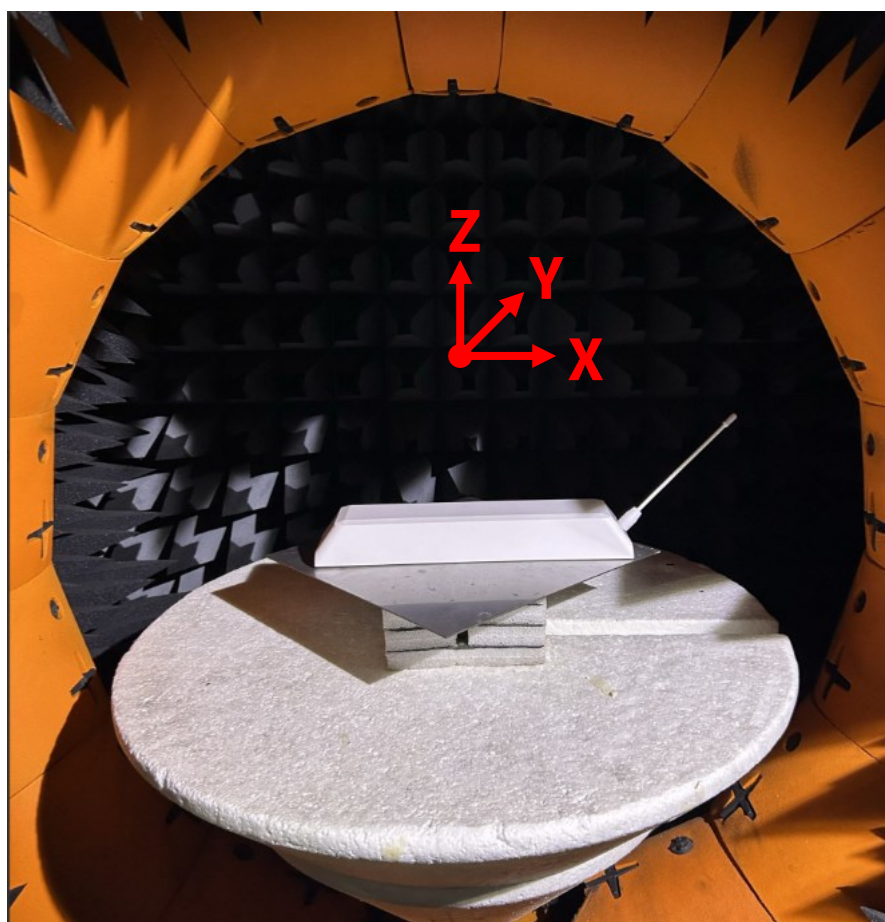
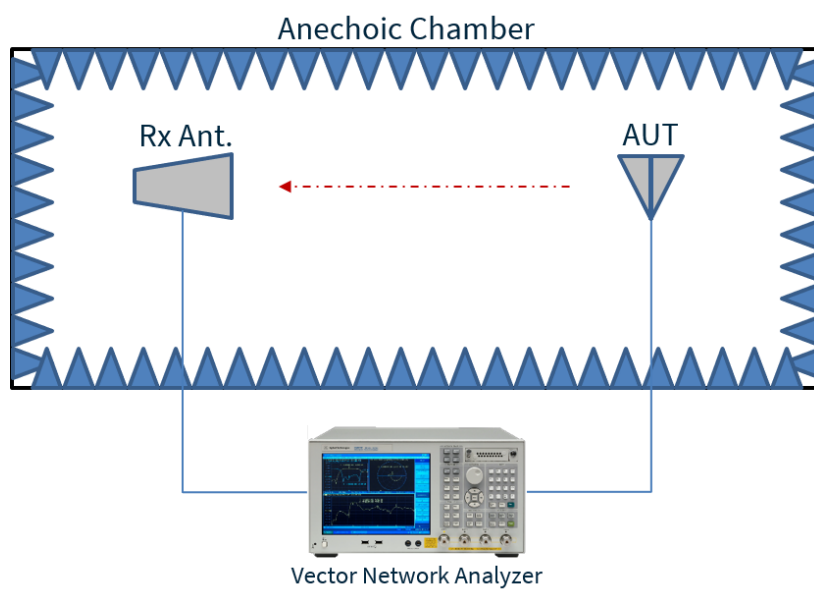


6.21 LMR



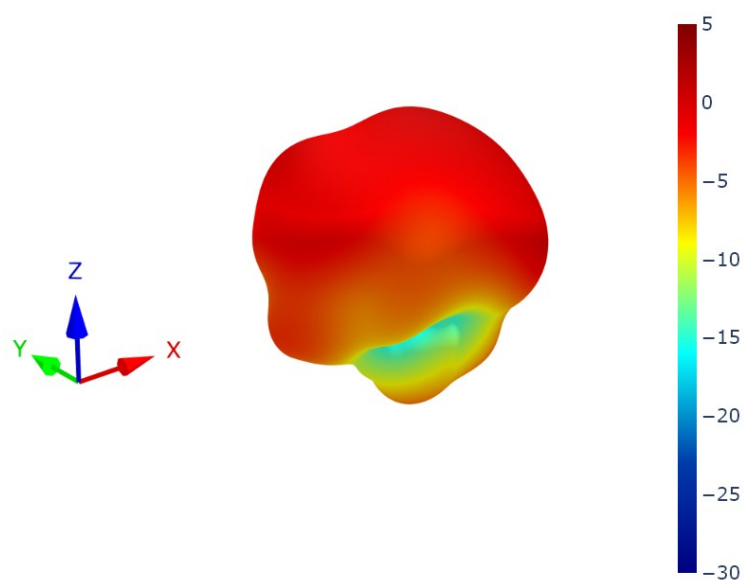
7. Radiation Patterns

7.1 Test Setup

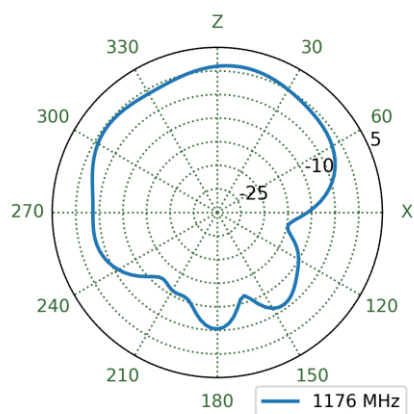


Chamber Test Set-up

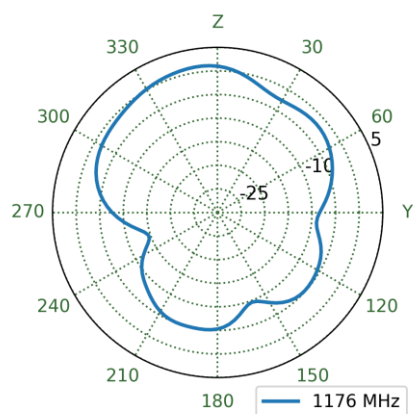
7.2 GNSS Patterns at 1176 MHz



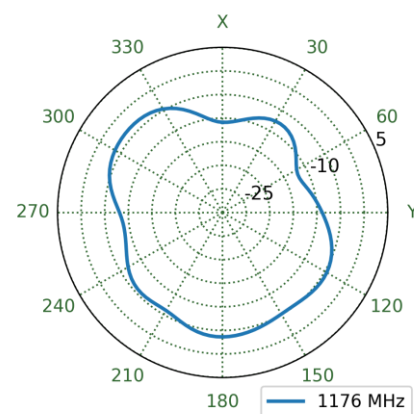
XZ Plane



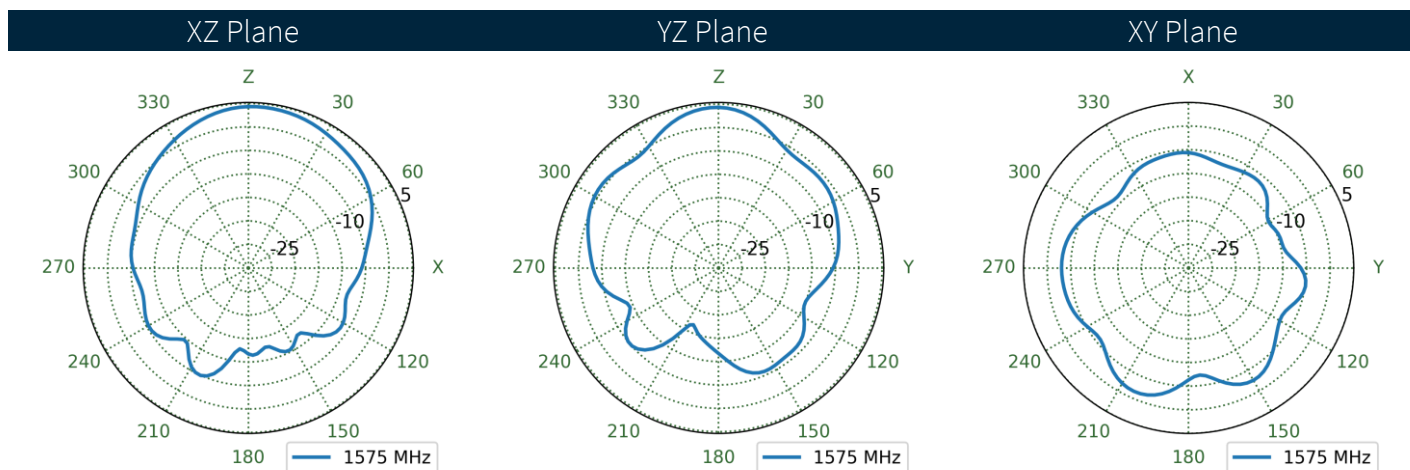
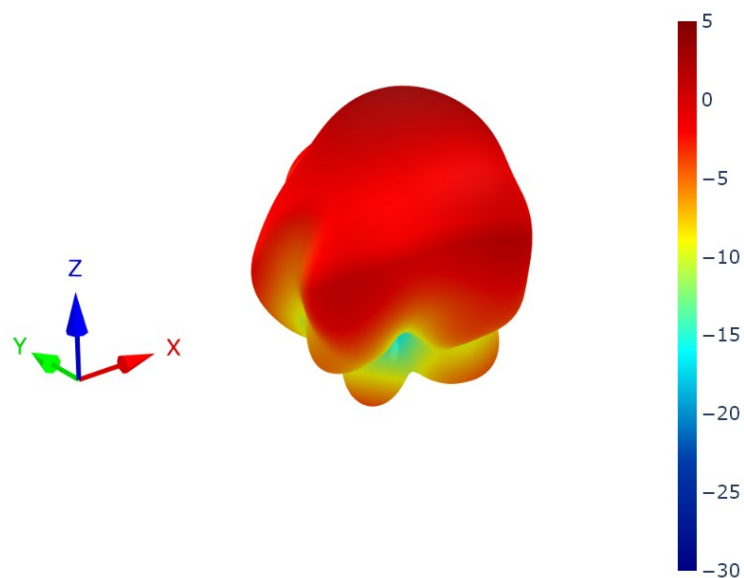
YZ Plane



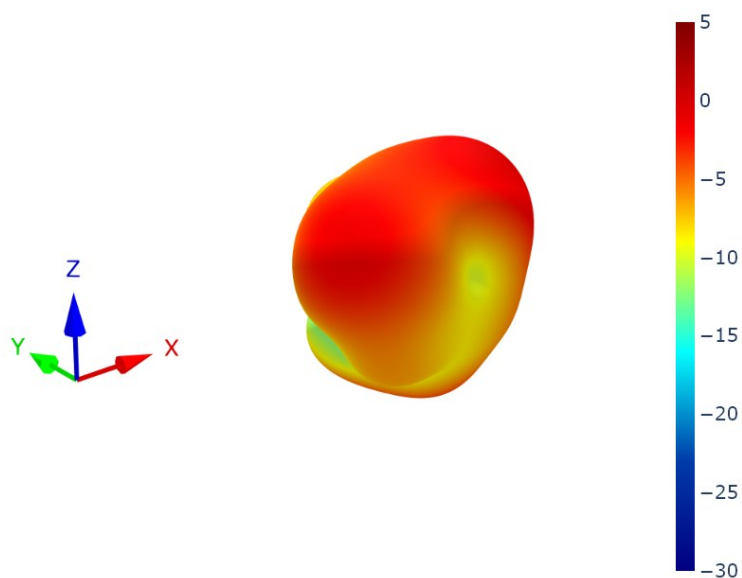
XY Plane



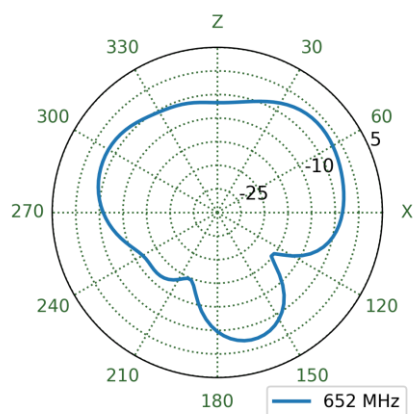
7.3 GNSS Patterns at 1576 MHz



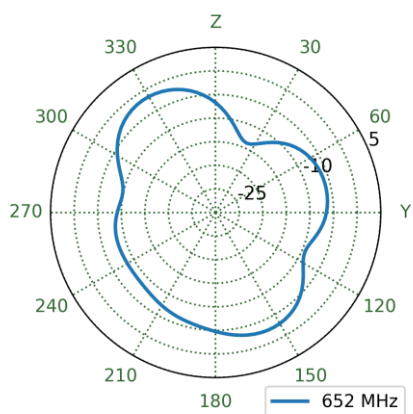
7.4 LTE1 Patterns at 650 MHz



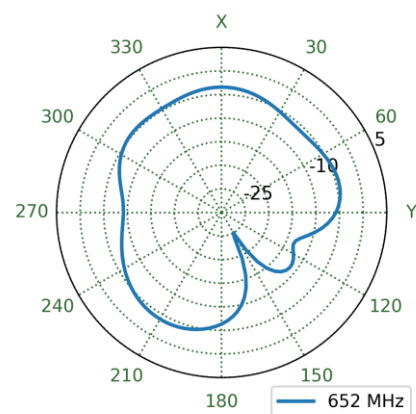
XZ Plane



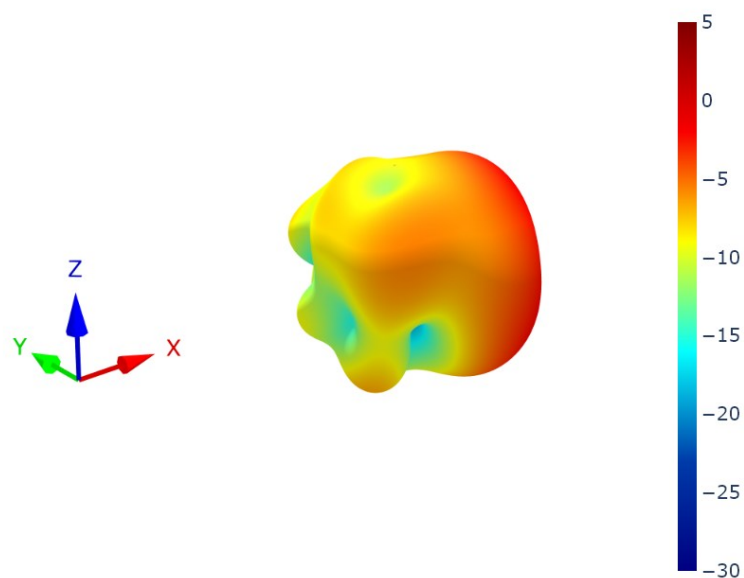
YZ Plane



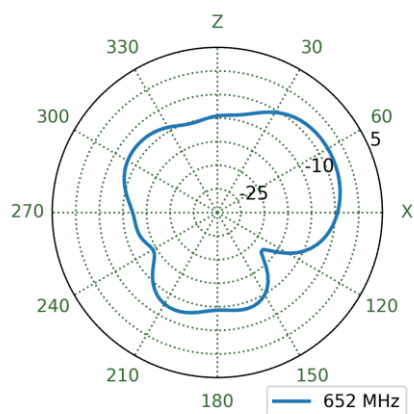
XY Plane



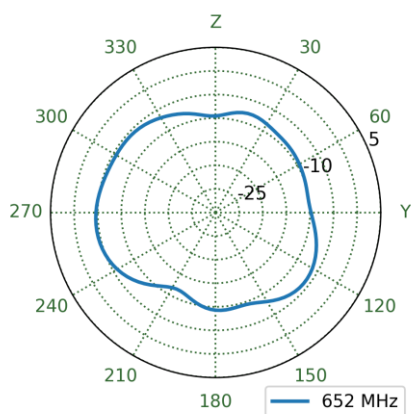
7.5 LTE2 Patterns at 650 MHz



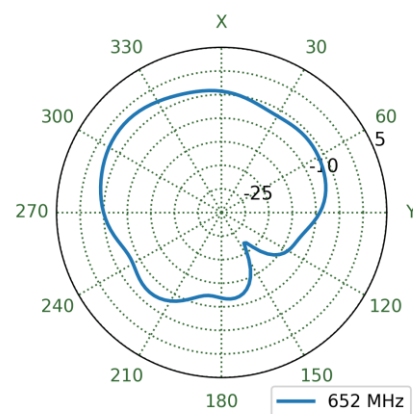
XZ Plane



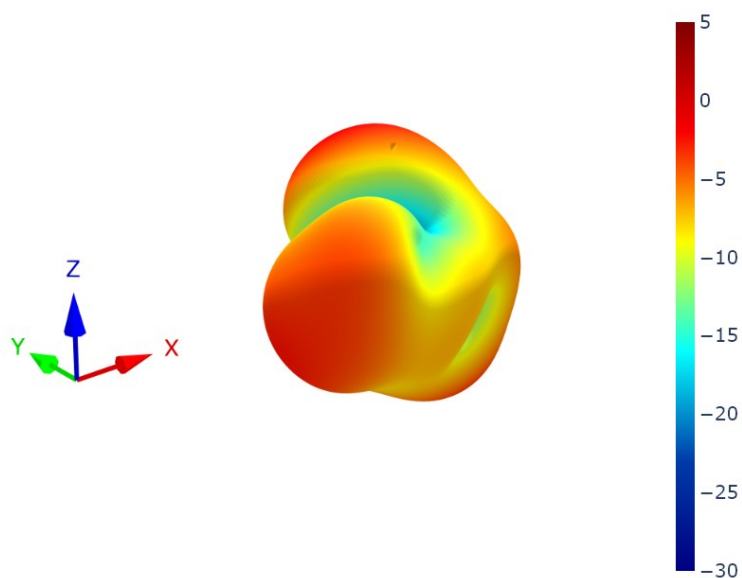
YZ Plane



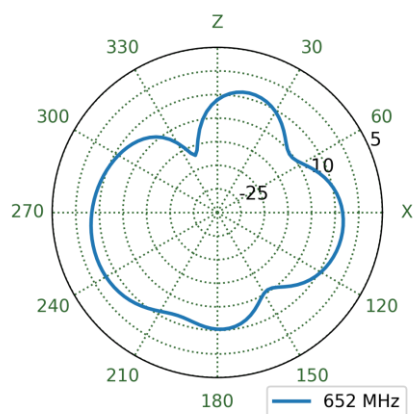
XY Plane



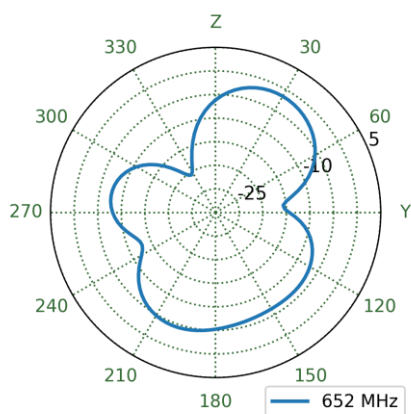
7.6 LTE3 Patterns at 650 MHz



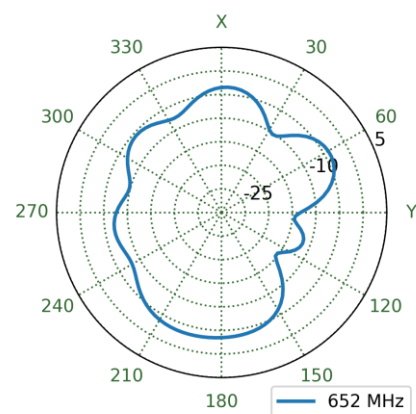
XZ Plane



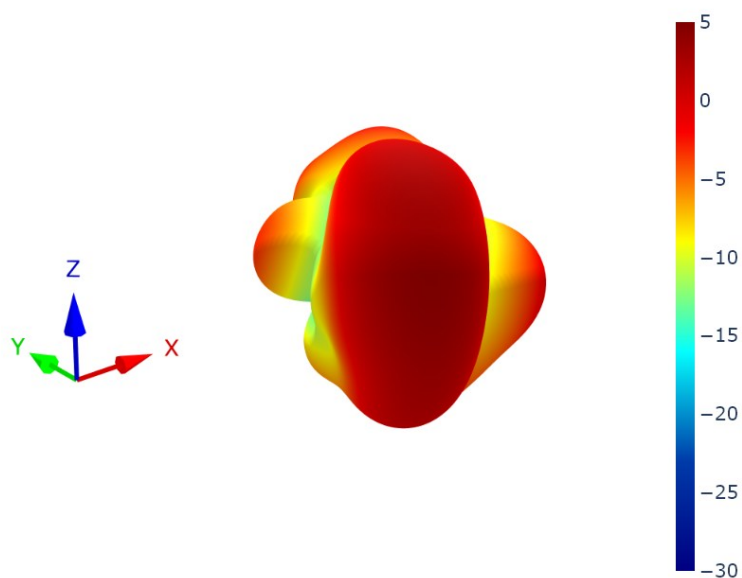
YZ Plane



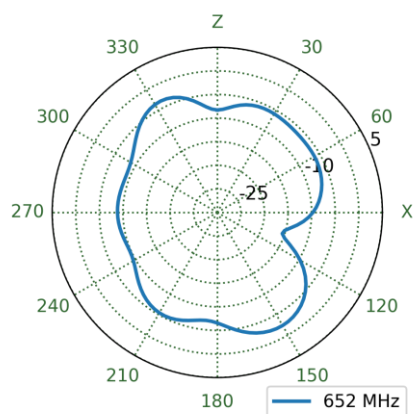
XY Plane



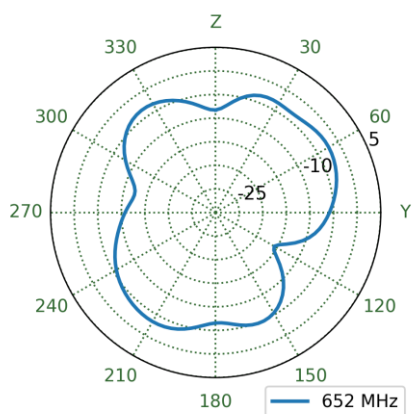
7.7 LTE4 Patterns at 650 MHz



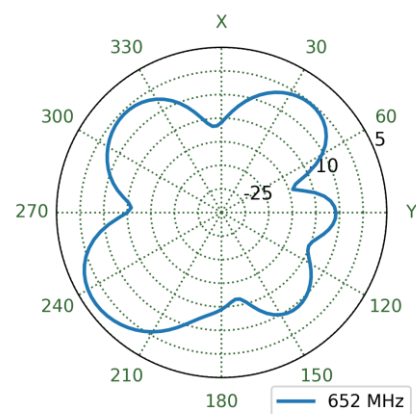
XZ Plane



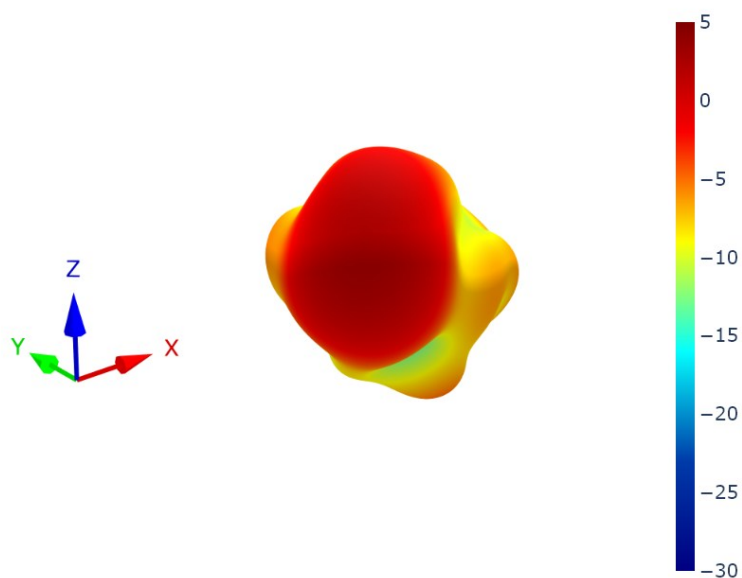
YZ Plane



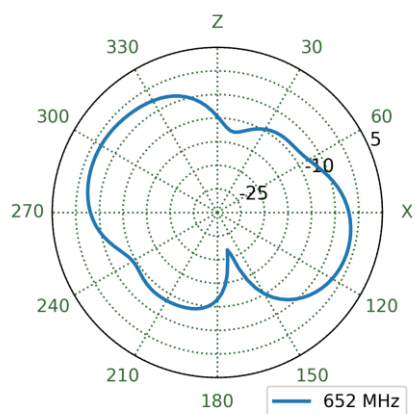
XY Plane



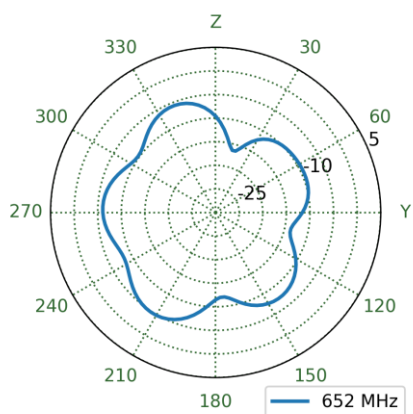
7.8 LTE5 Patterns at 650 MHz



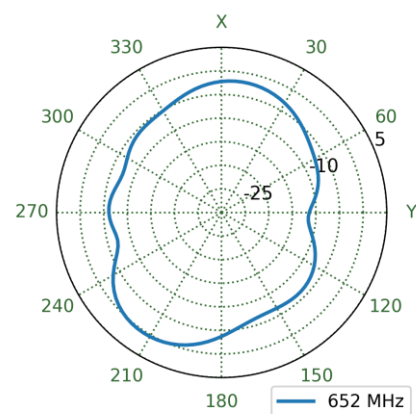
XZ Plane



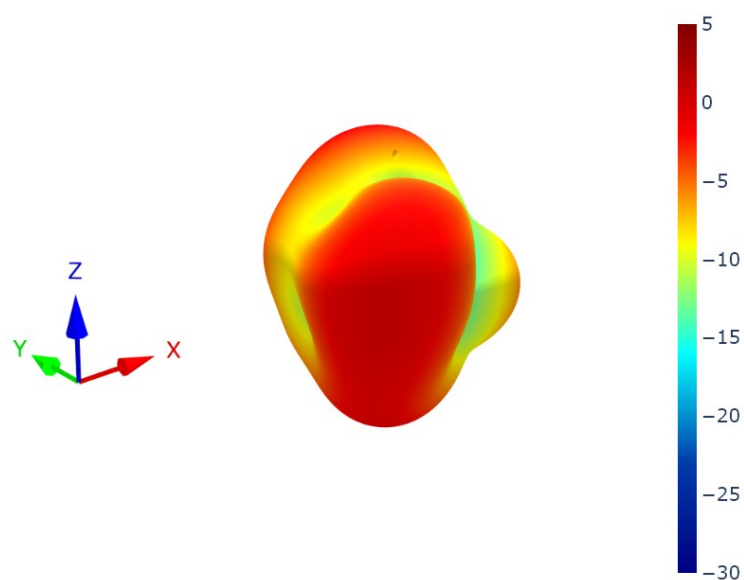
YZ Plane



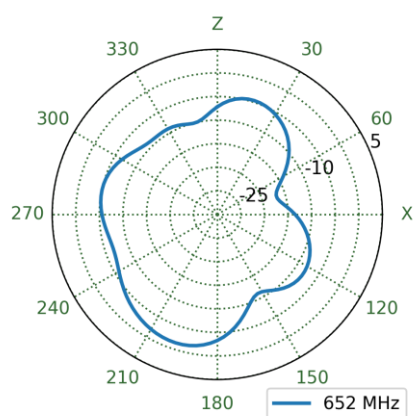
XY Plane



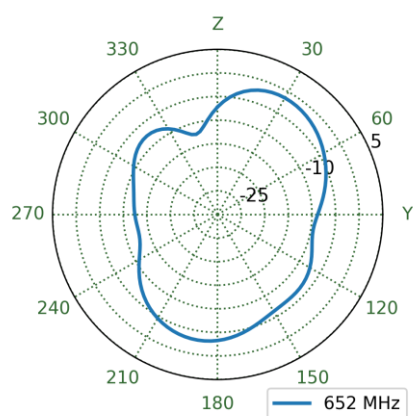
7.9 LTE6 Patterns at 650 MHz



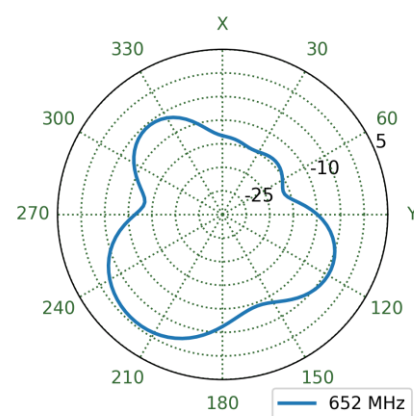
XZ Plane



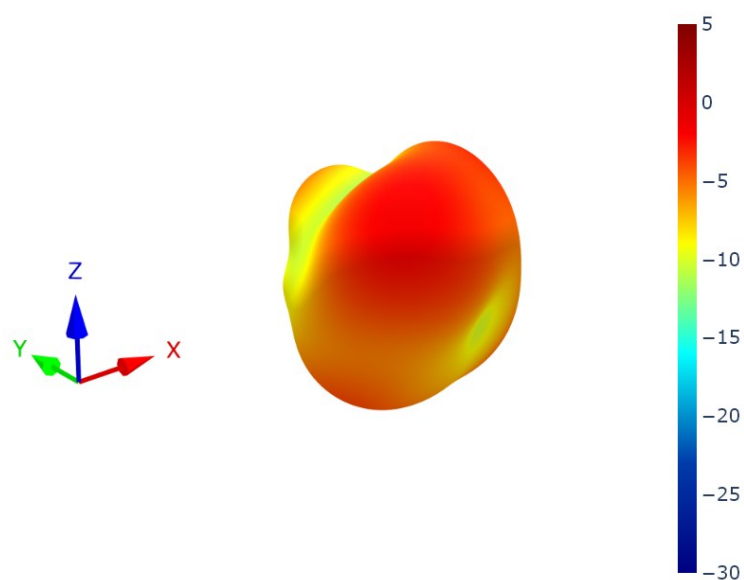
YZ Plane



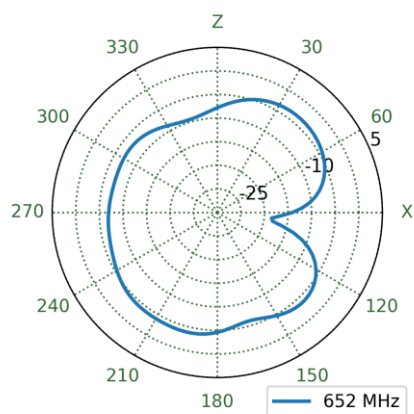
XY Plane



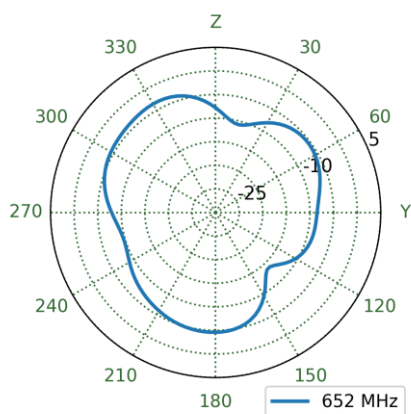
7.10 LTE7 Patterns at 650 MHz



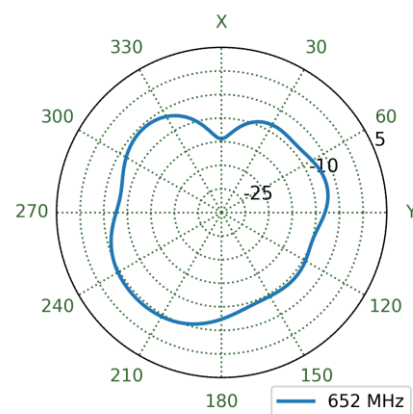
XZ Plane



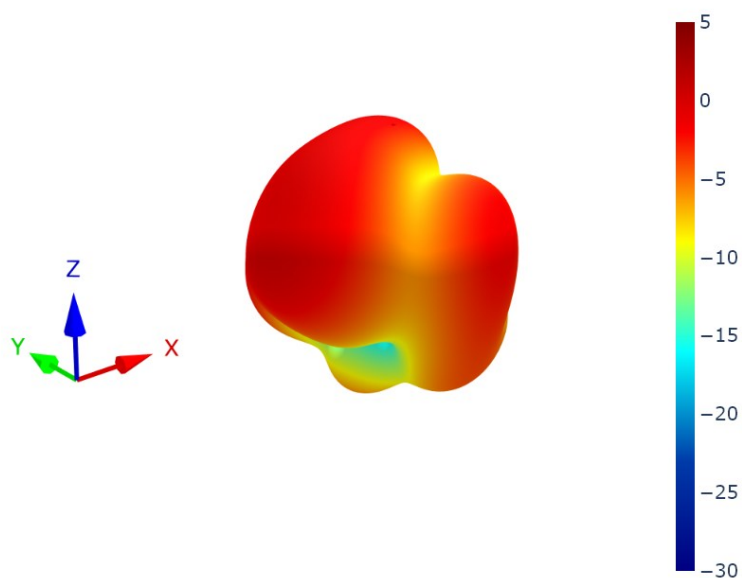
YZ Plane



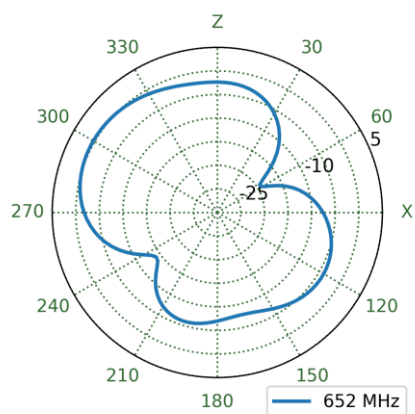
XY Plane



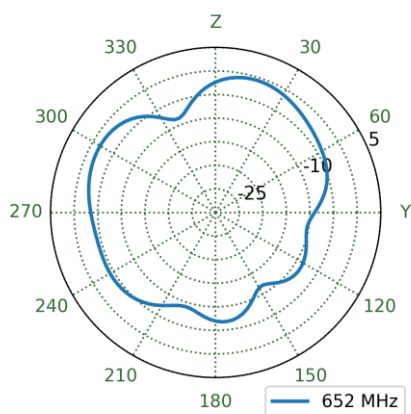
7.11 LTE8 Patterns at 650 MHz



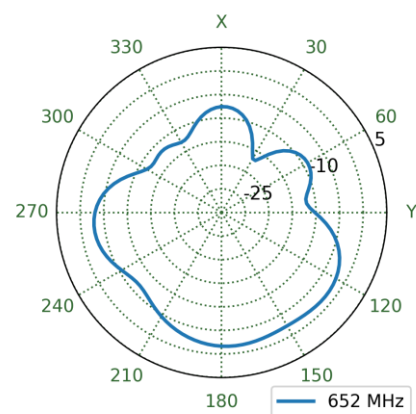
XZ Plane



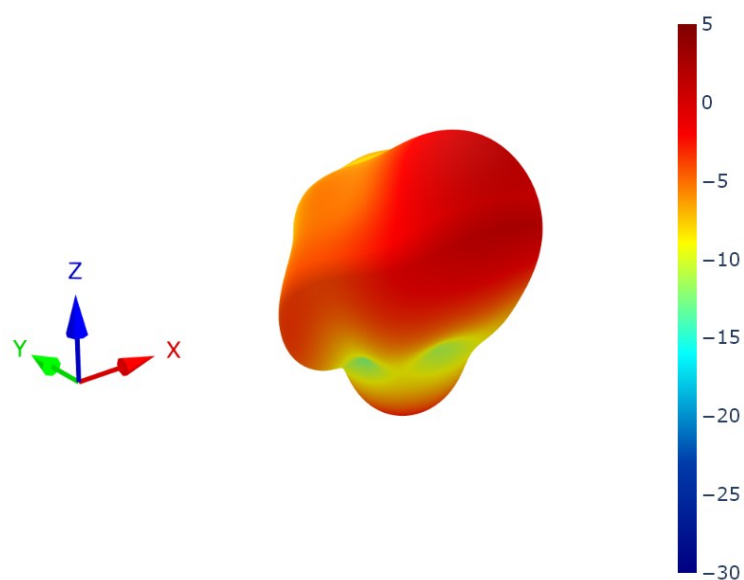
YZ Plane



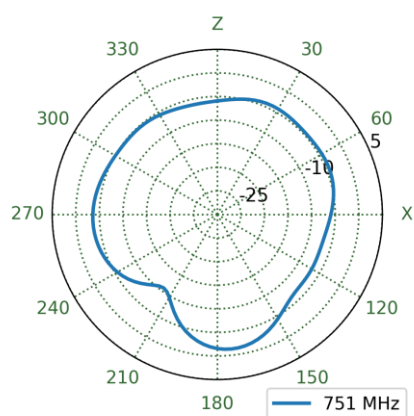
XY Plane



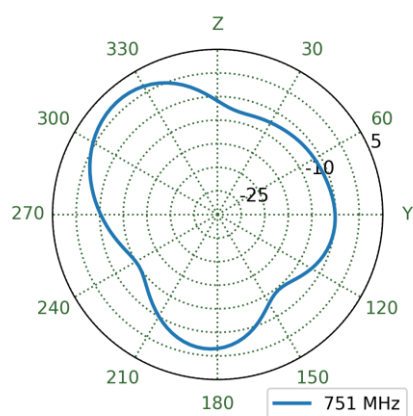
7.12 LTE1 Patterns at 750 MHz



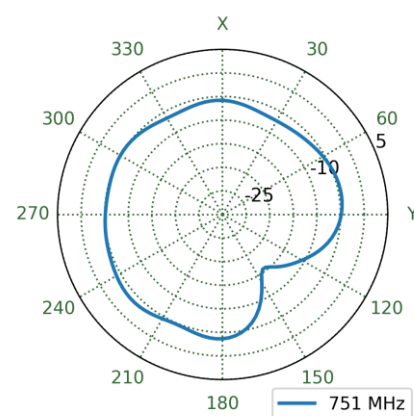
XZ Plane



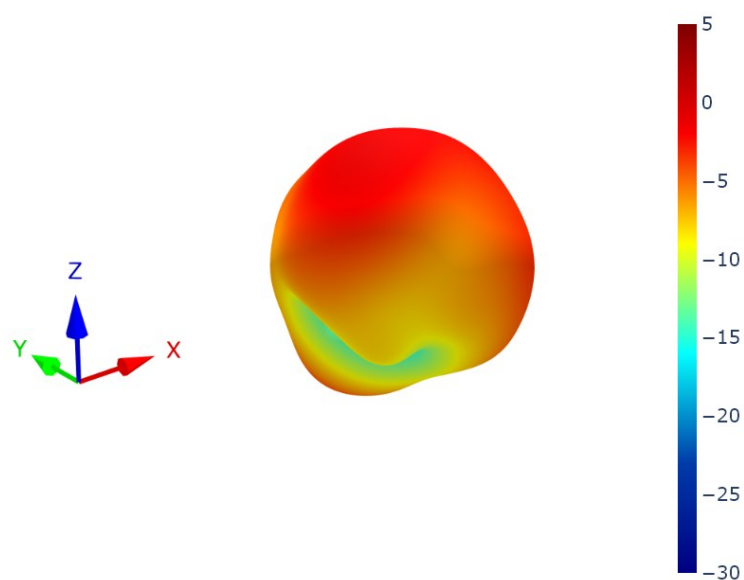
YZ Plane



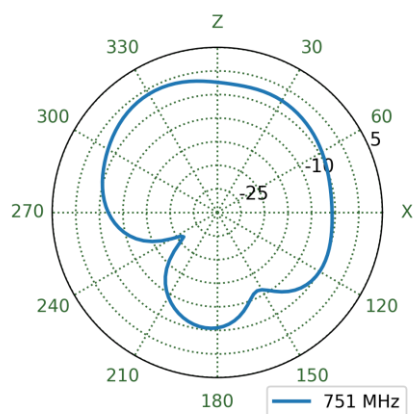
XY Plane



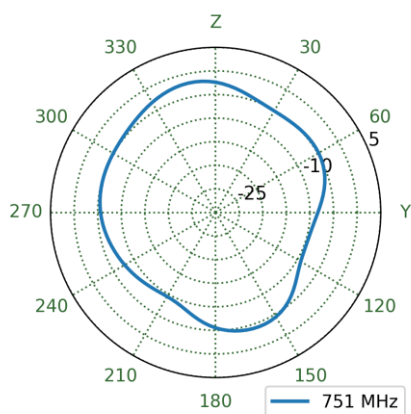
7.13 LTE2 Patterns at 750 MHz



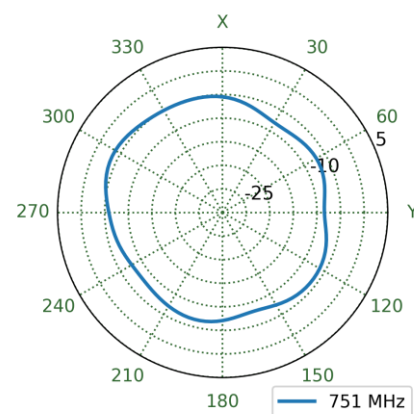
XZ Plane



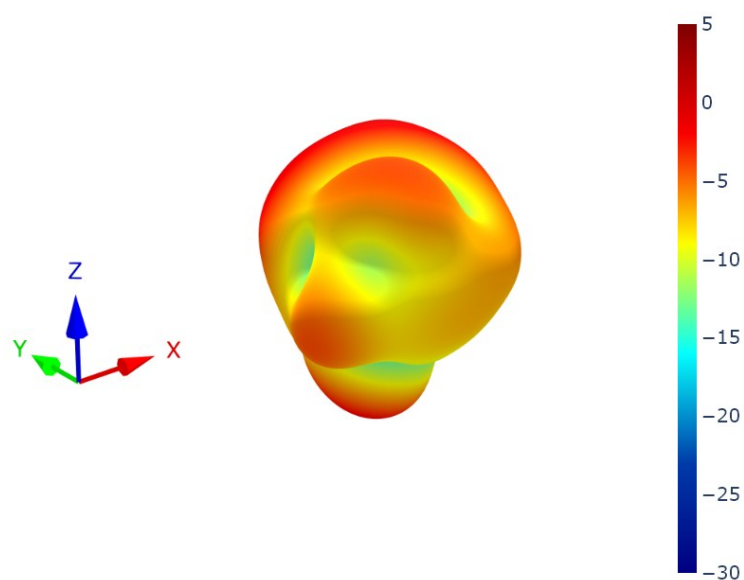
YZ Plane



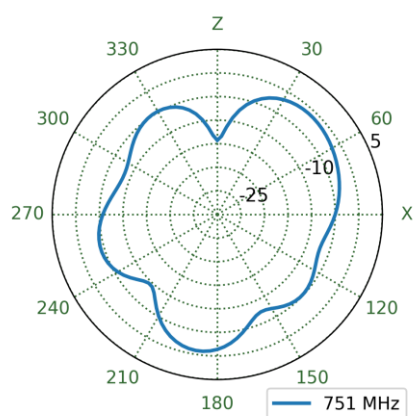
XY Plane



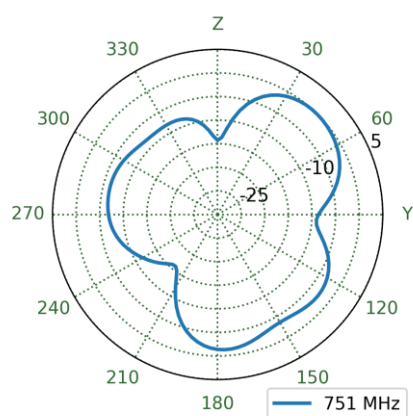
7.14 LTE3 Patterns at 750 MHz



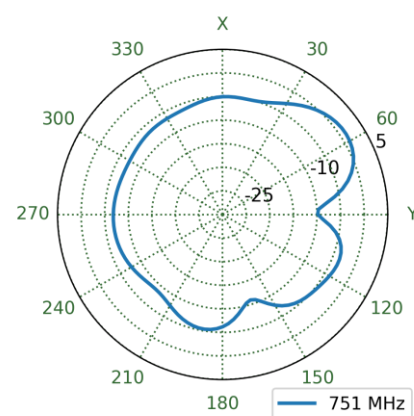
XZ Plane



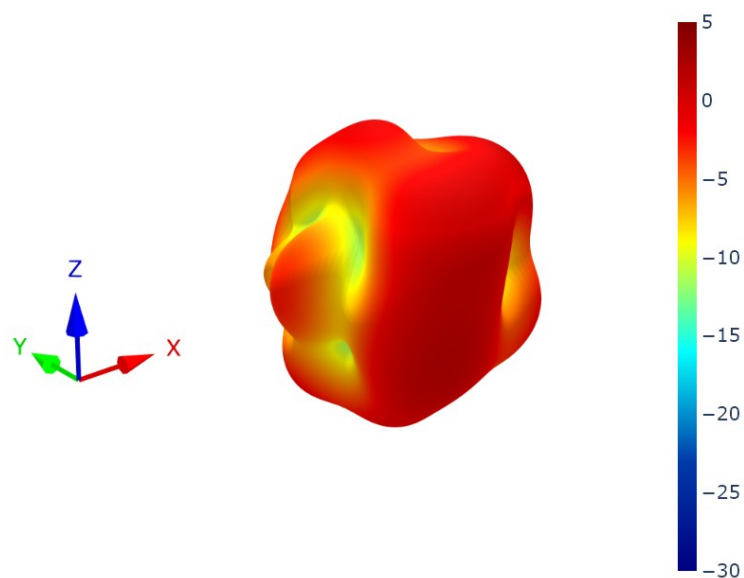
YZ Plane



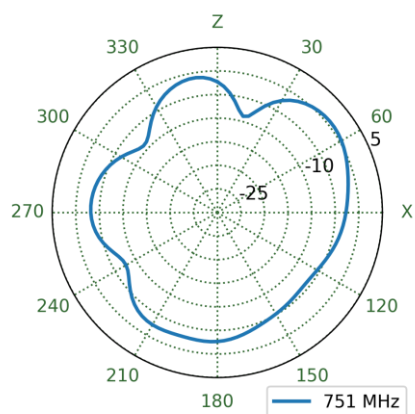
XY Plane



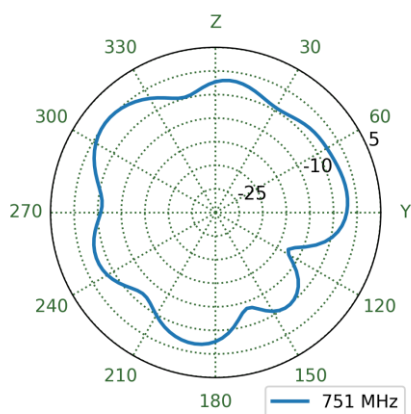
7.15 LTE4 Patterns at 750 MHz



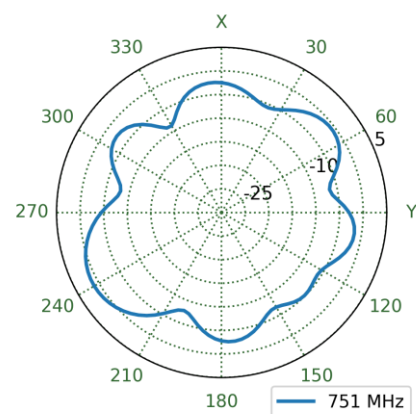
XZ Plane



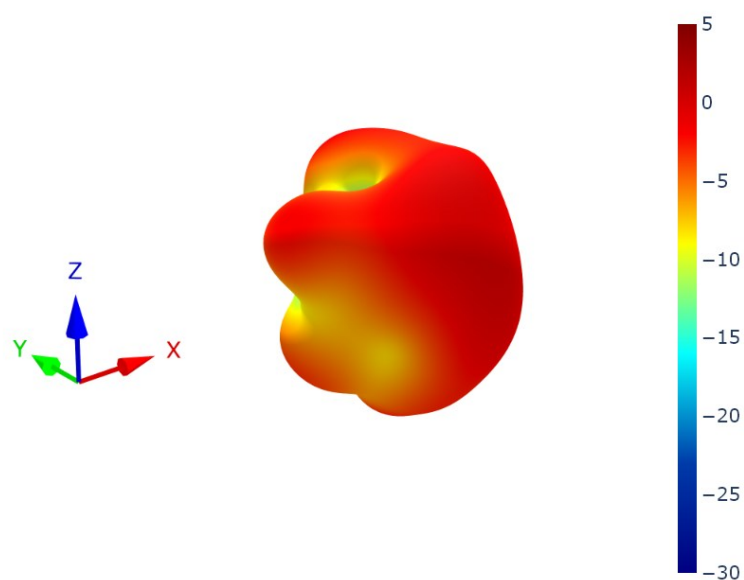
YZ Plane



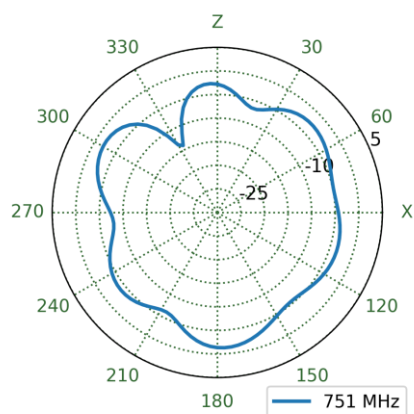
XY Plane



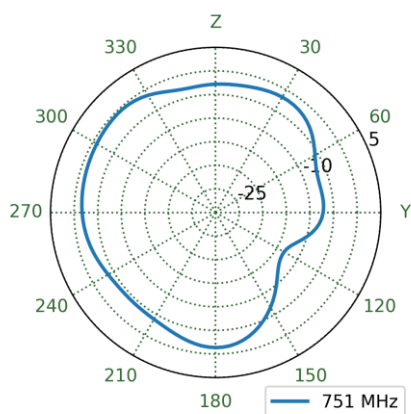
7.16 LTE5 Patterns at 750 MHz



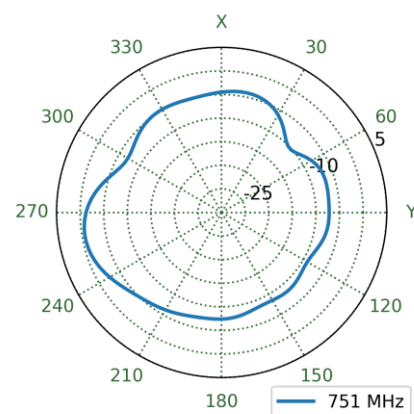
XZ Plane



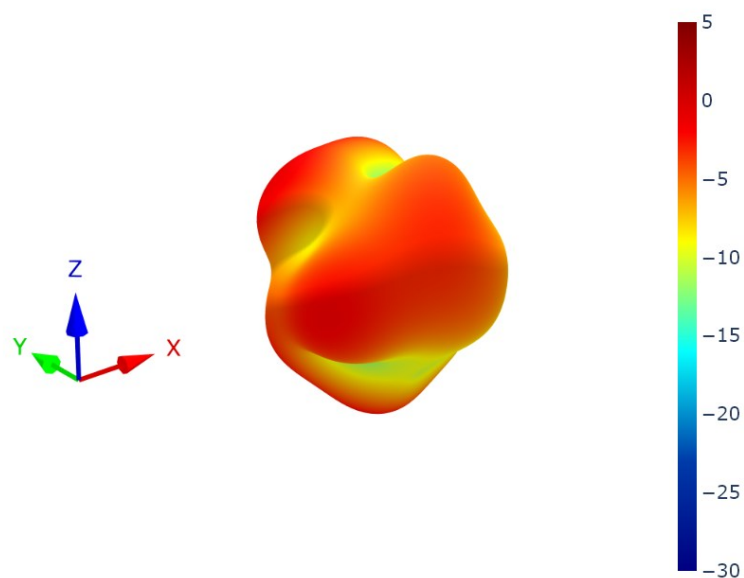
YZ Plane



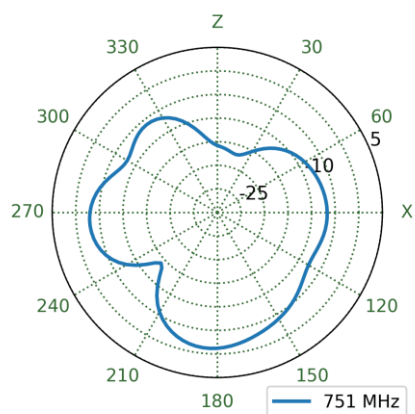
XY Plane



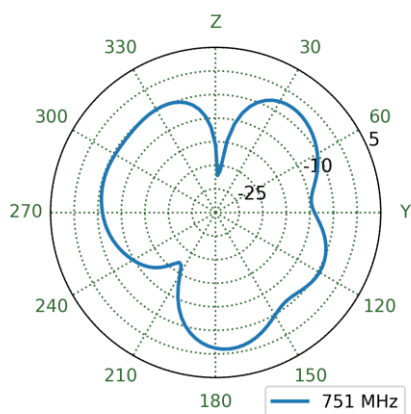
7.17 LTE6 Patterns at 750 MHz



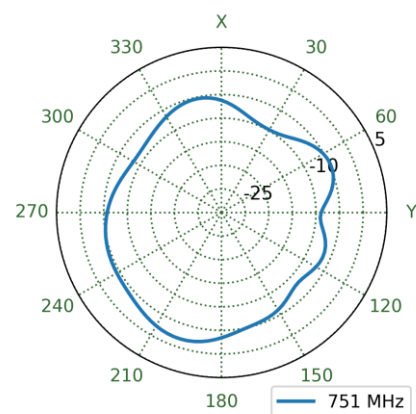
XZ Plane



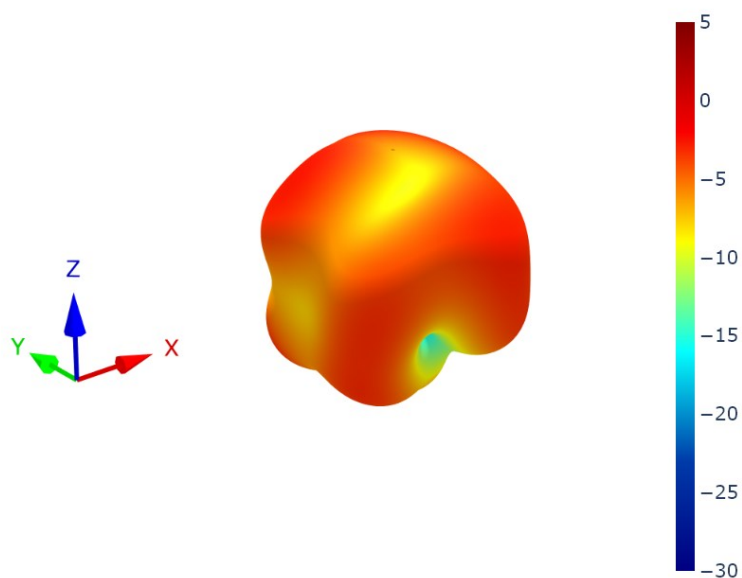
YZ Plane



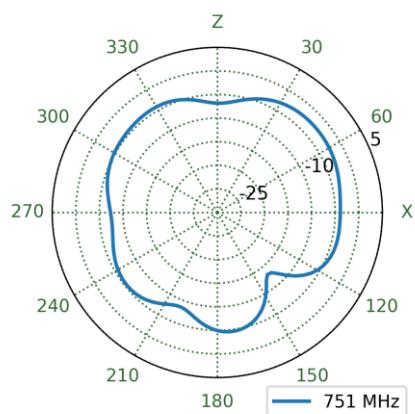
XY Plane



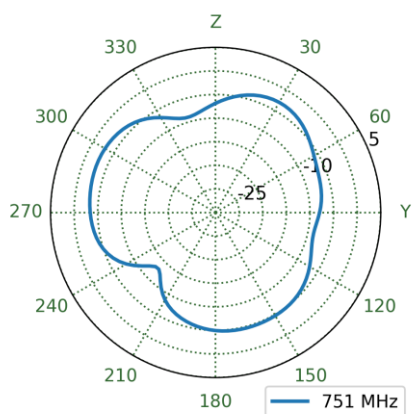
7.18 LTE7 Patterns at 750 MHz



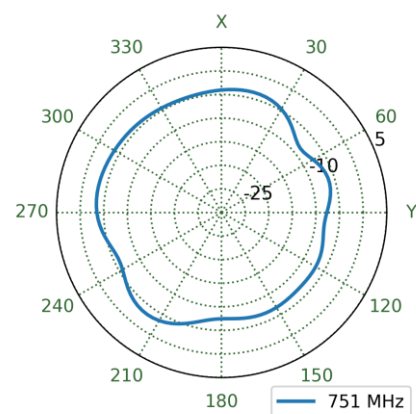
XZ Plane



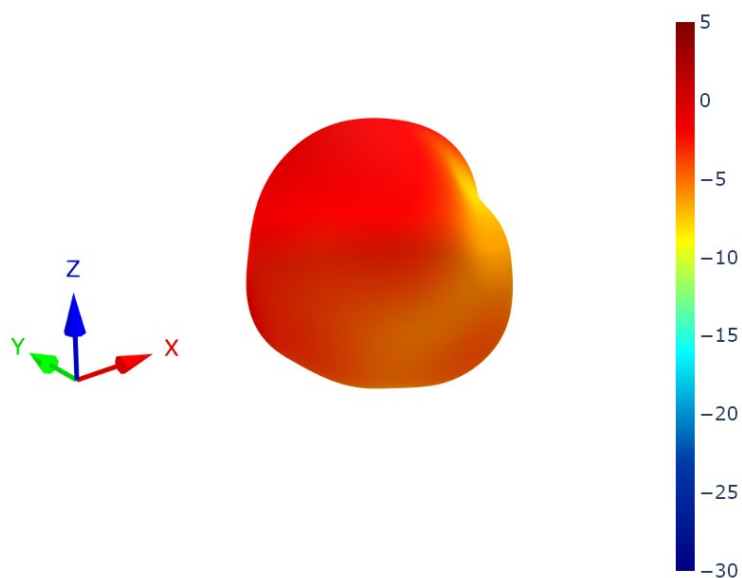
YZ Plane



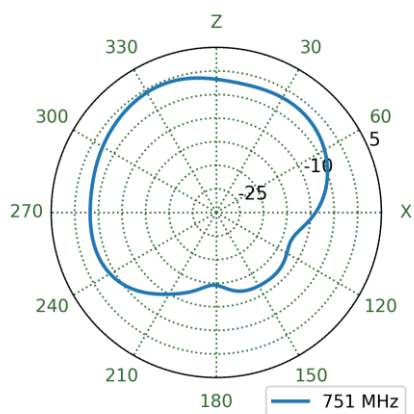
XY Plane



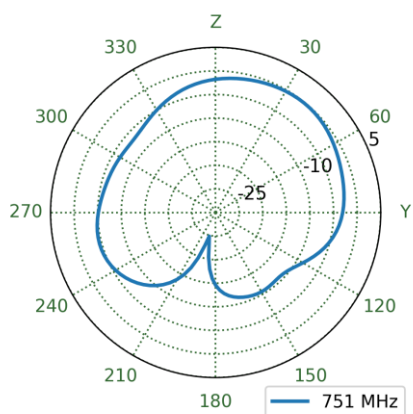
7.19 LTE8 Patterns at 750 MHz



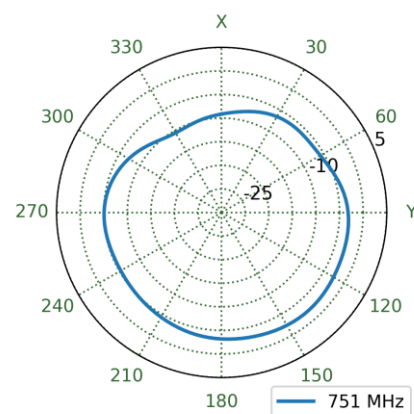
XZ Plane



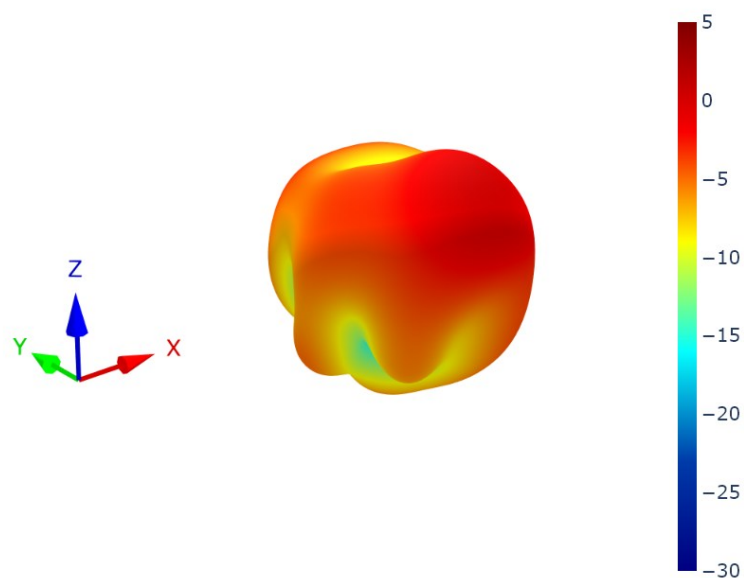
YZ Plane



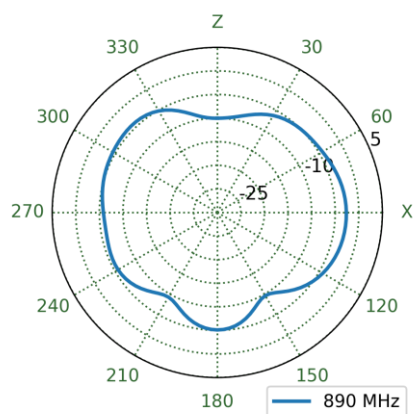
XY Plane



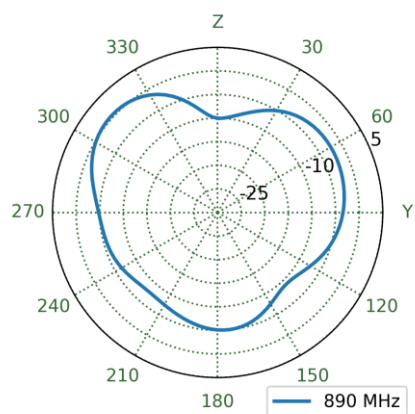
7.20 LTE1 Patterns at 890 MHz



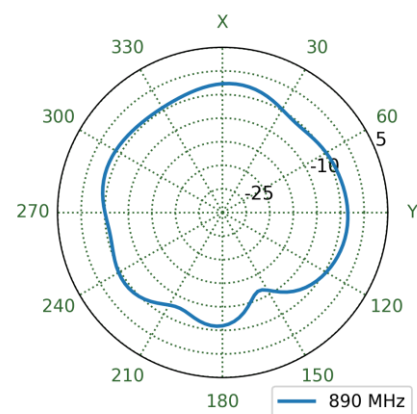
XZ Plane



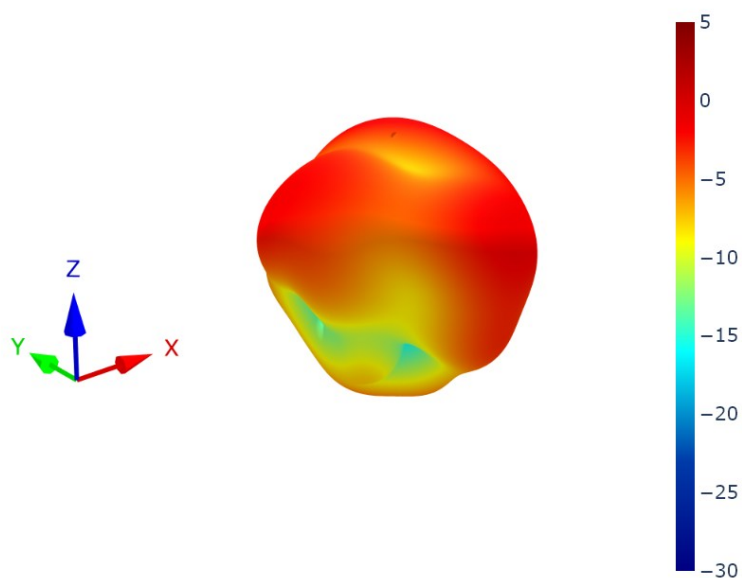
YZ Plane



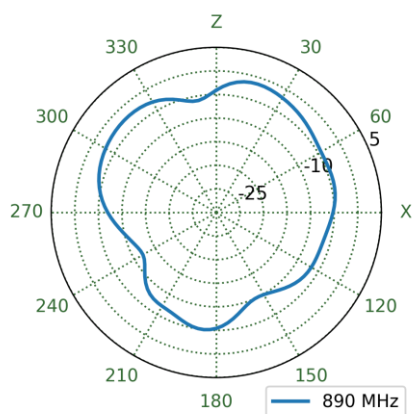
XY Plane



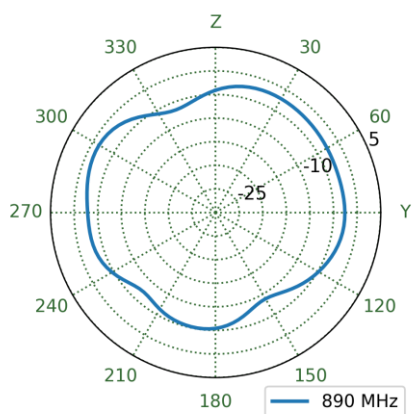
7.21 LTE2 Patterns at 890 MHz



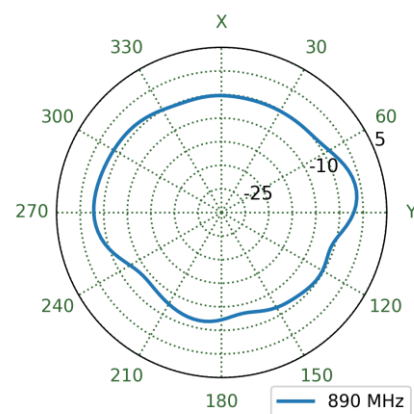
XZ Plane



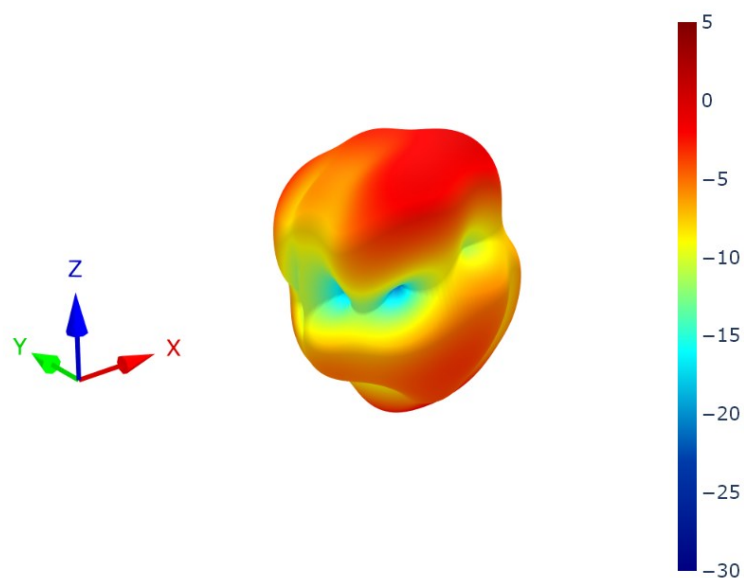
YZ Plane



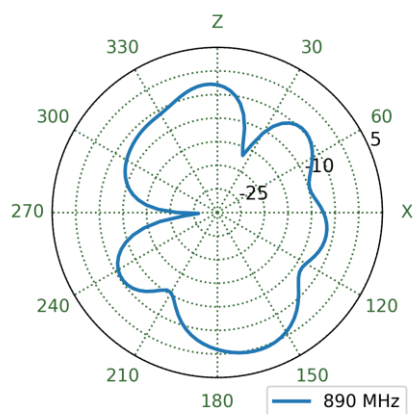
XY Plane



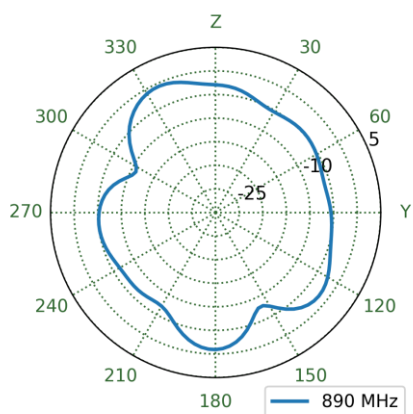
7.22 LTE3 Patterns at 890 MHz



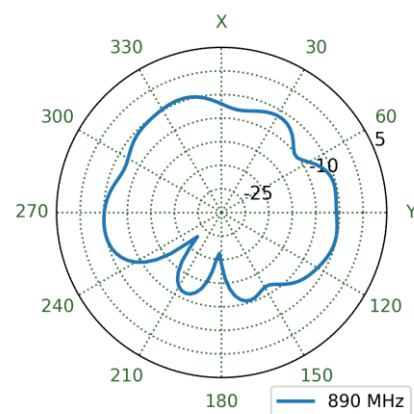
XZ Plane



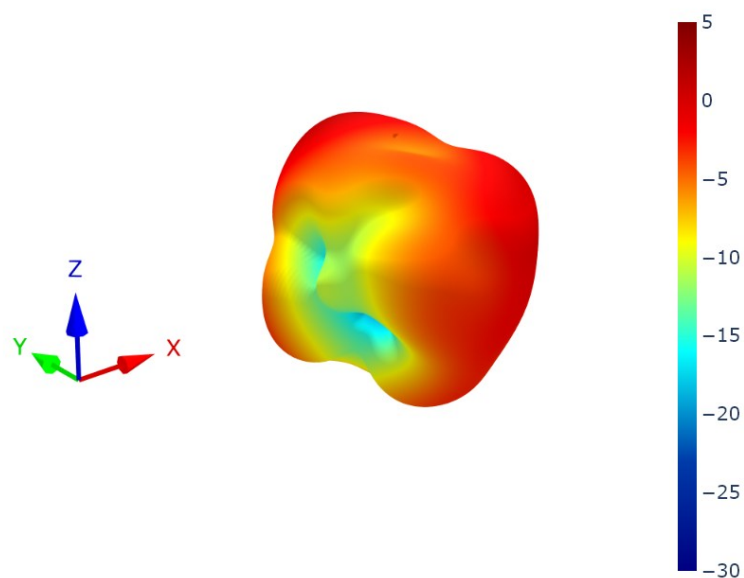
YZ Plane



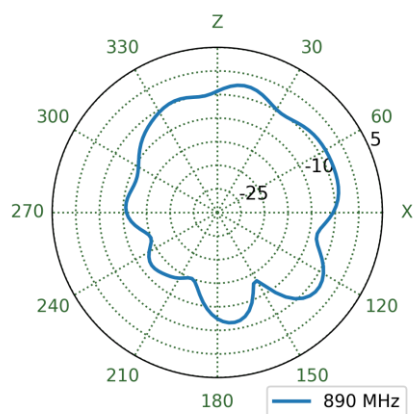
XY Plane



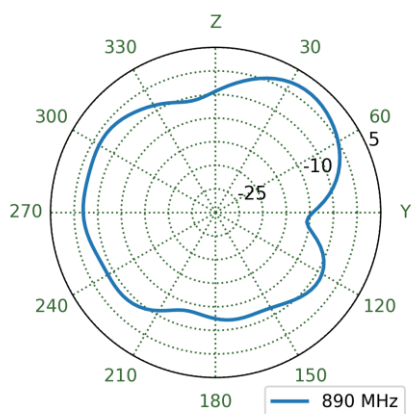
7.23 LTE4 Patterns at 890 MHz



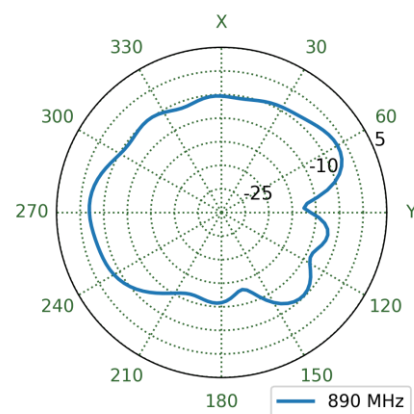
XZ Plane



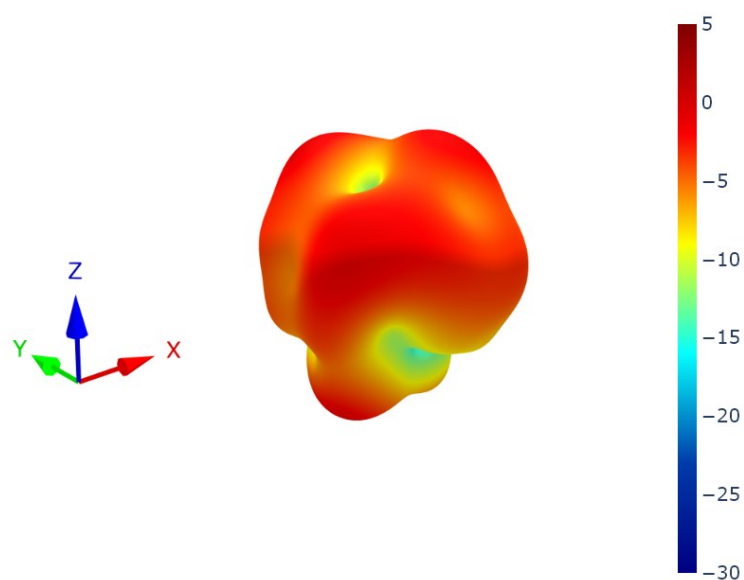
YZ Plane



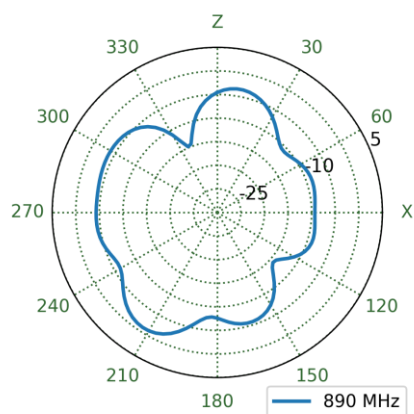
XY Plane



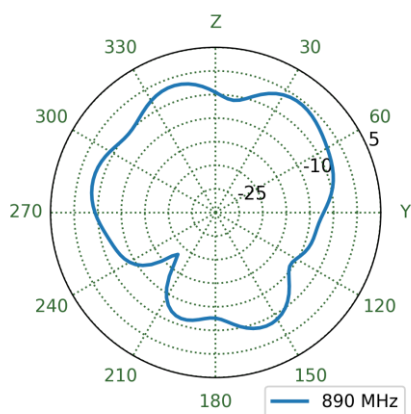
7.24 LTE5 Patterns at 890 MHz



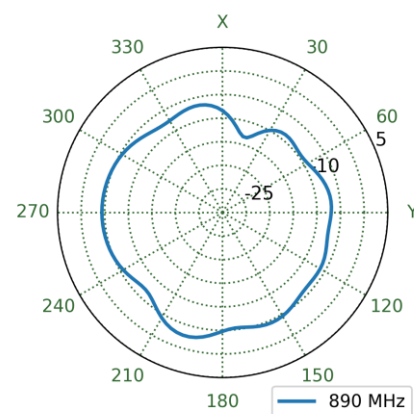
XZ Plane



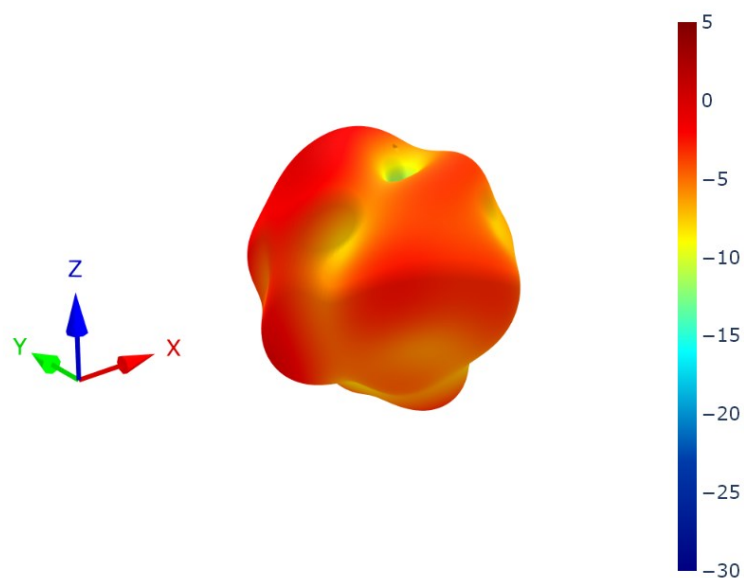
YZ Plane



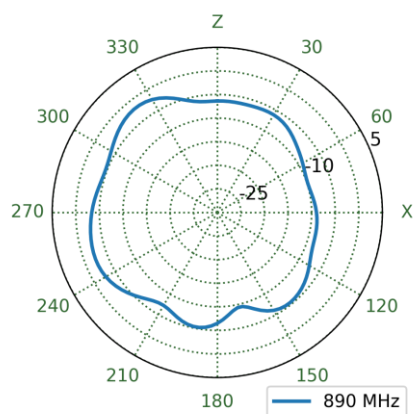
XY Plane



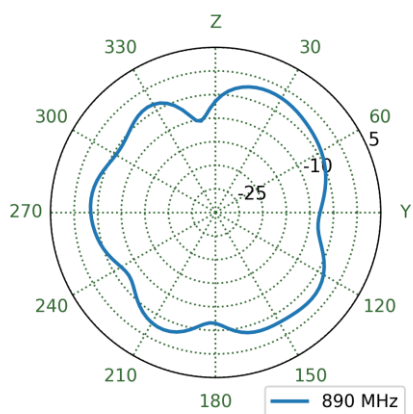
7.25 LTE6 Patterns at 890 MHz



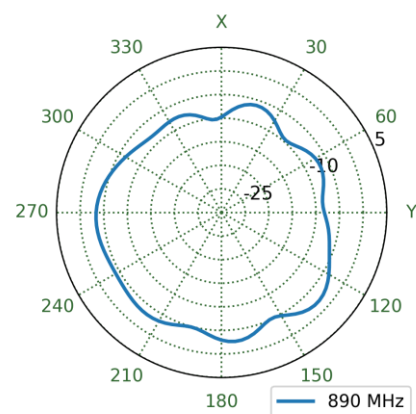
XZ Plane



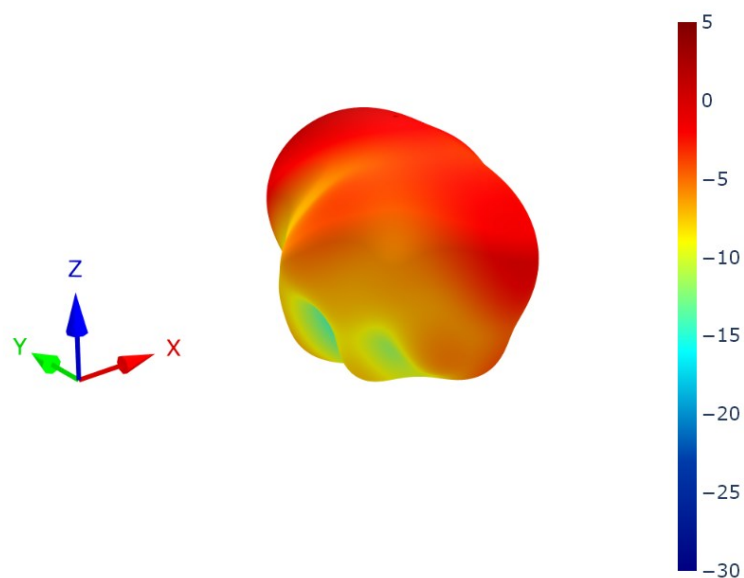
YZ Plane



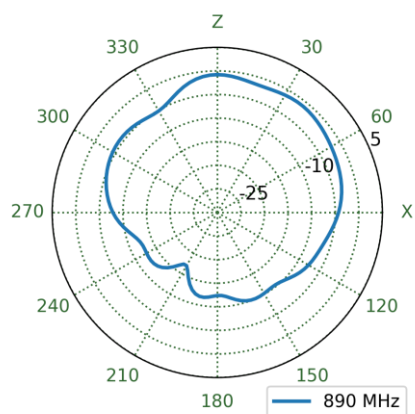
XY Plane



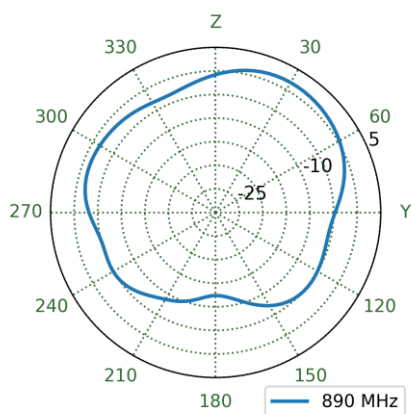
7.26 LTE7 Patterns at 890 MHz



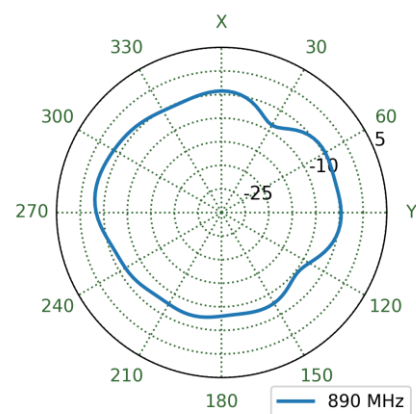
XZ Plane



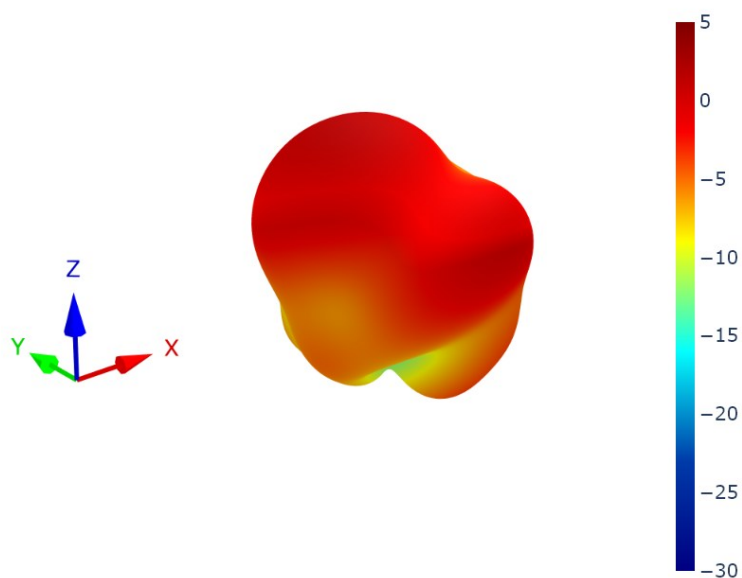
YZ Plane



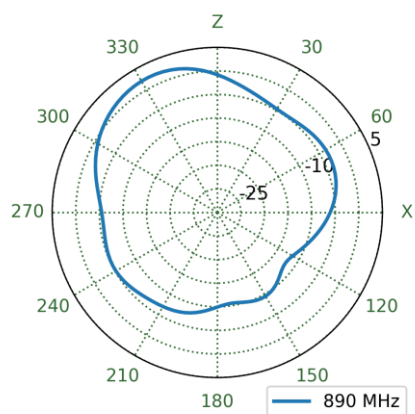
XY Plane



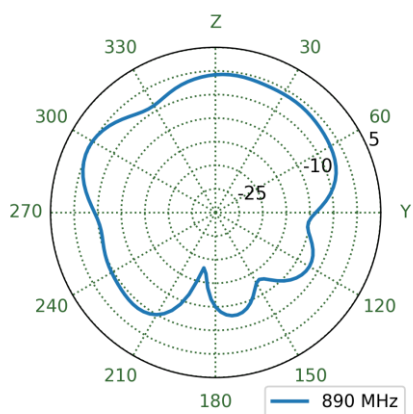
7.27 LTE8 Patterns at 890 MHz



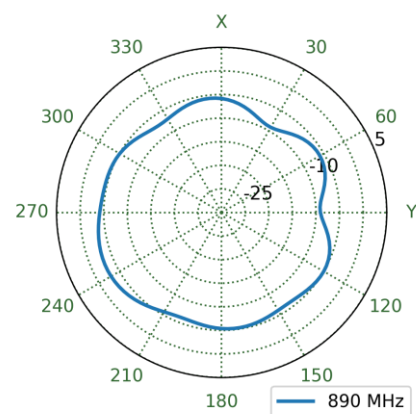
XZ Plane



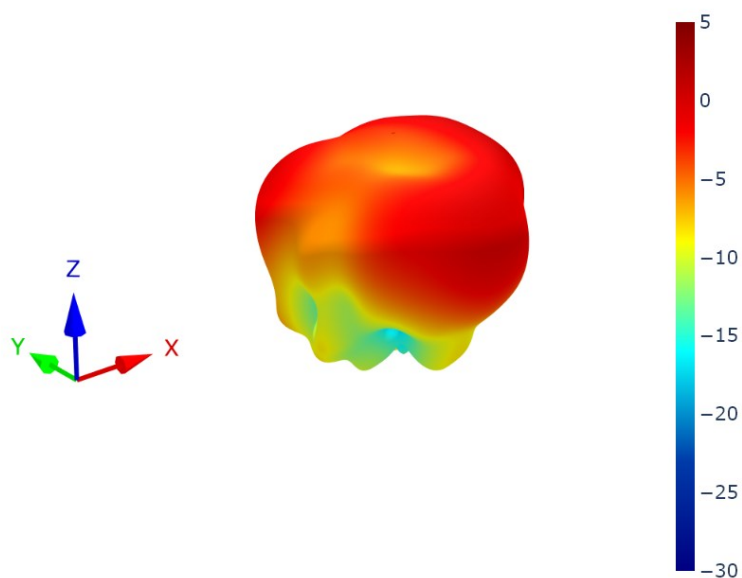
YZ Plane



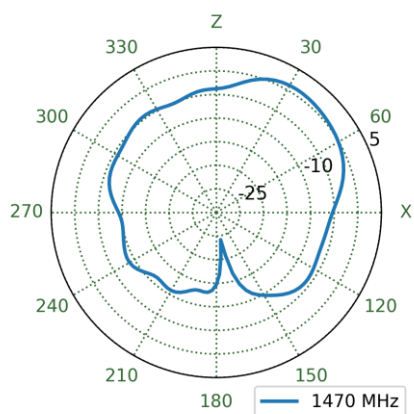
XY Plane



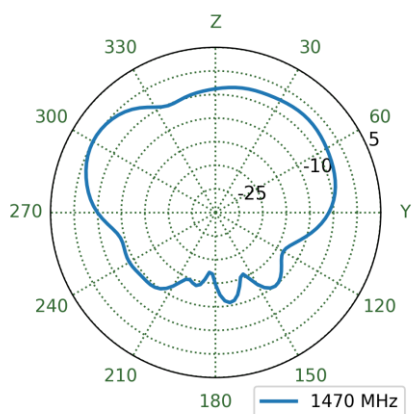
7.28 LTE1 Patterns at 1470 MHz



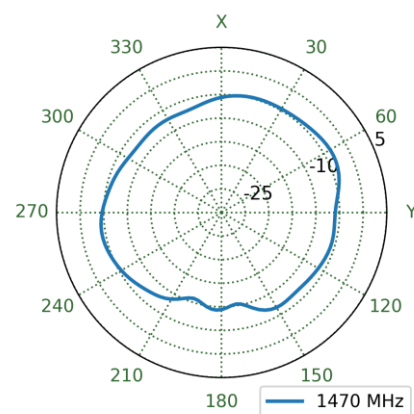
XZ Plane



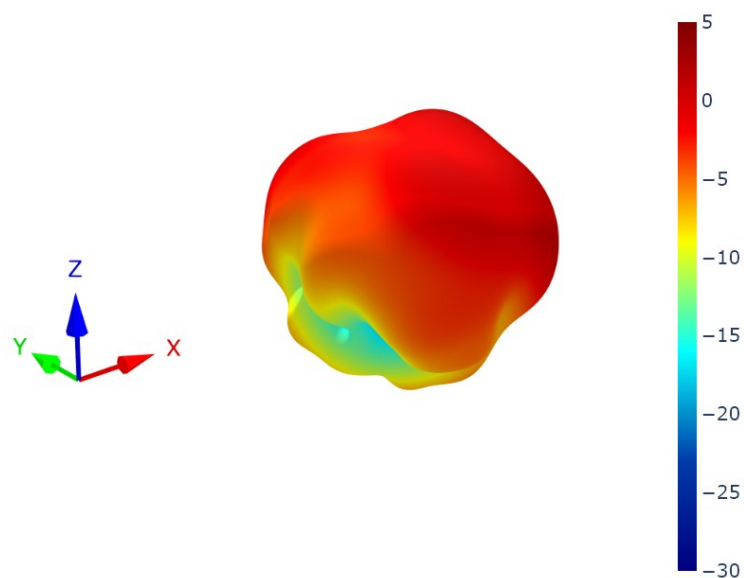
YZ Plane



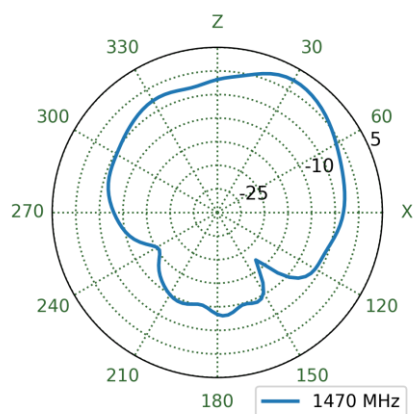
XY Plane



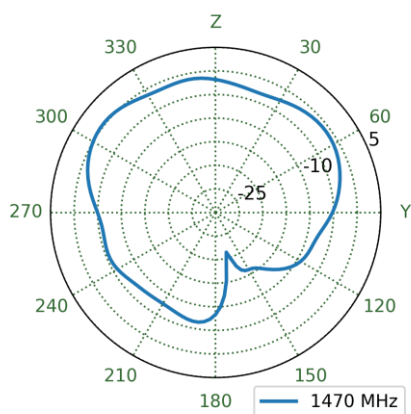
7.29 LTE2 Patterns at 1470 MHz



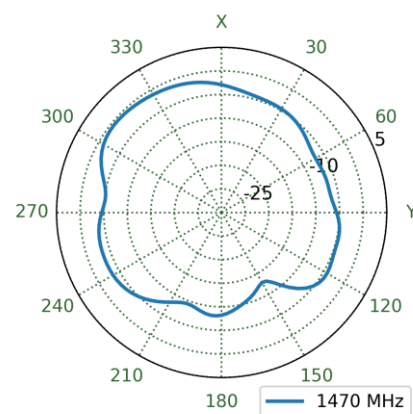
XZ Plane



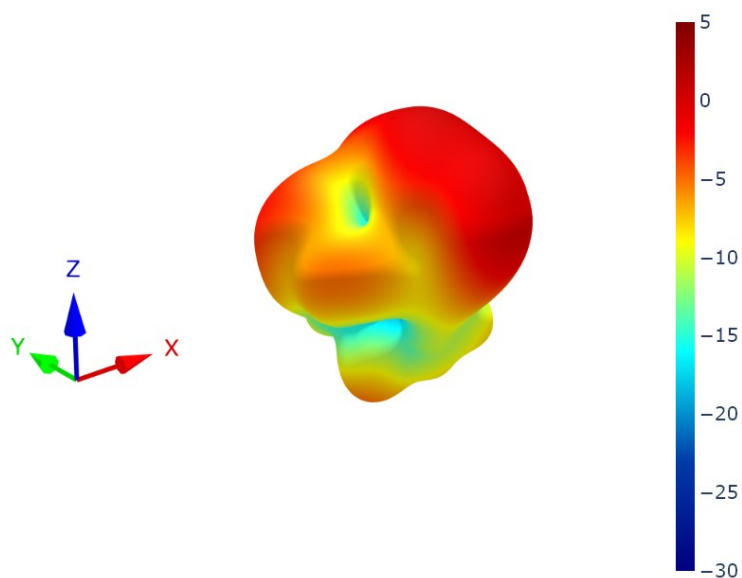
YZ Plane



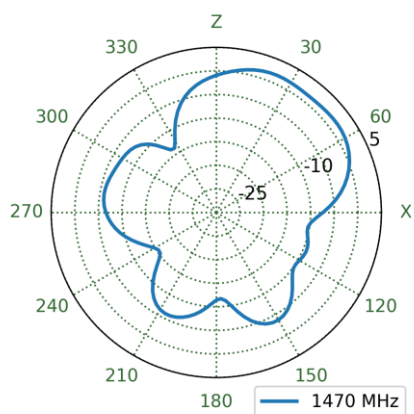
XY Plane



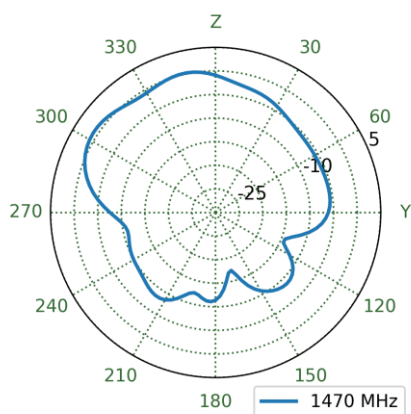
7.30 LTE3 Patterns at 1470 MHz



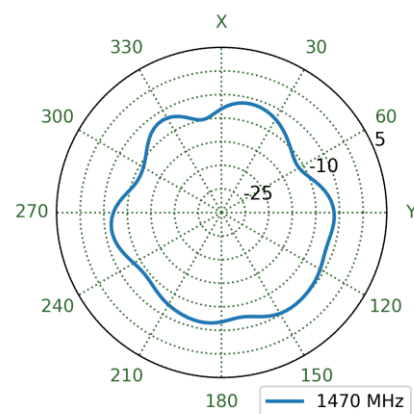
XZ Plane



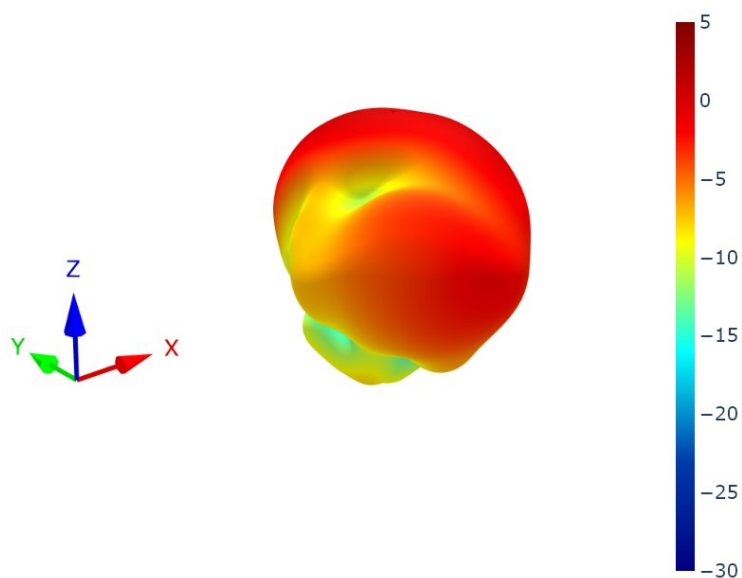
YZ Plane



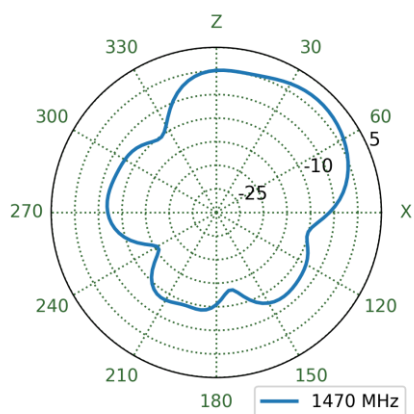
XY Plane



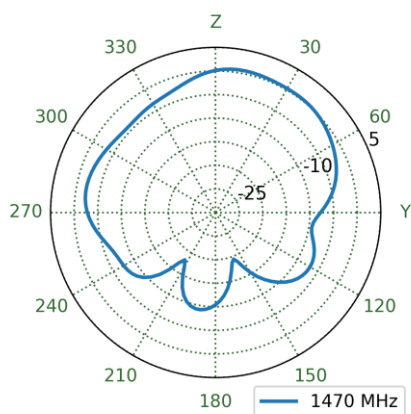
7.31 LTE4 Patterns at 1470 MHz



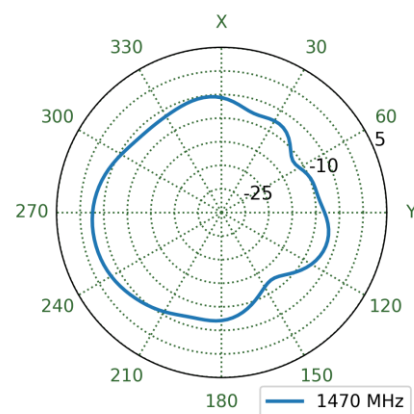
XZ Plane



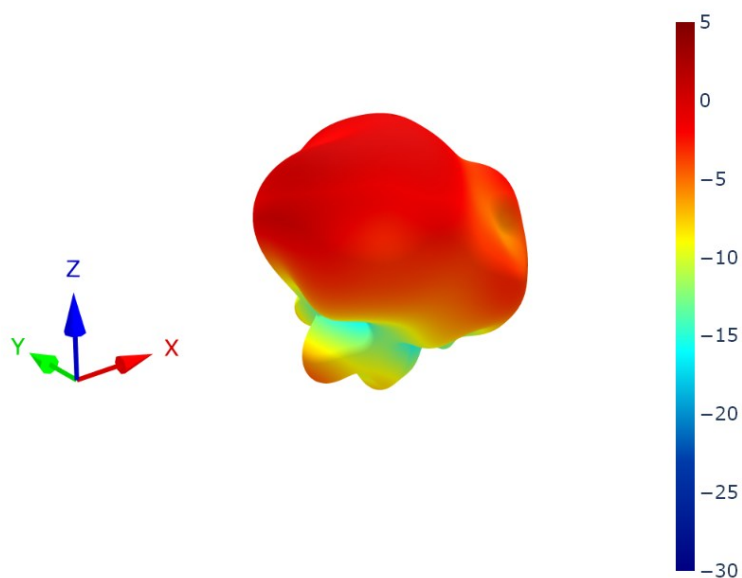
YZ Plane



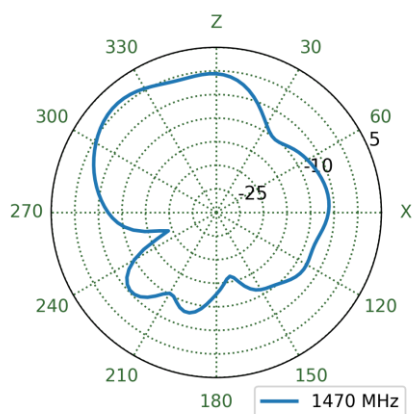
XY Plane



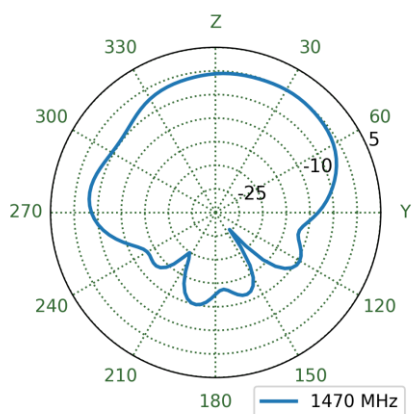
7.32 LTE5 Patterns at 1470 MHz



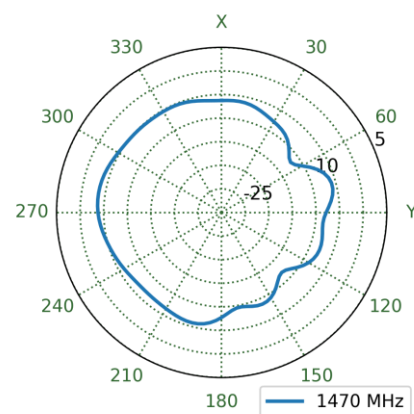
XZ Plane



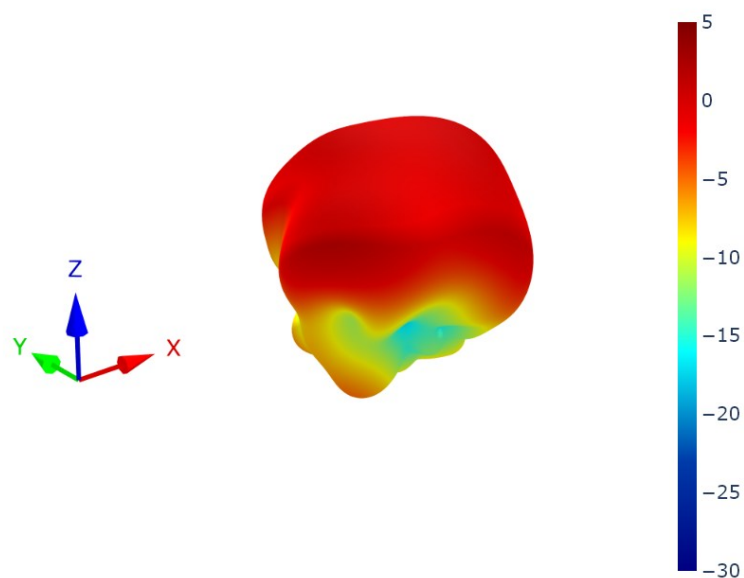
YZ Plane



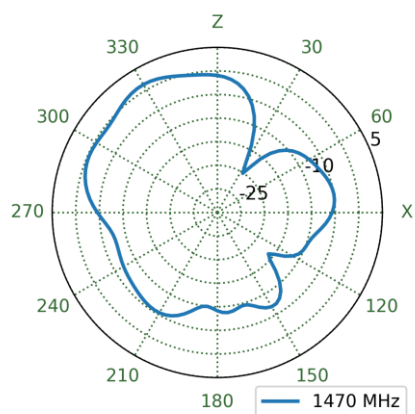
XY Plane



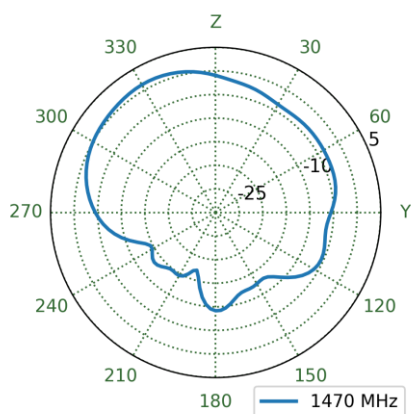
7.33 LTE6 Patterns at 1470 MHz



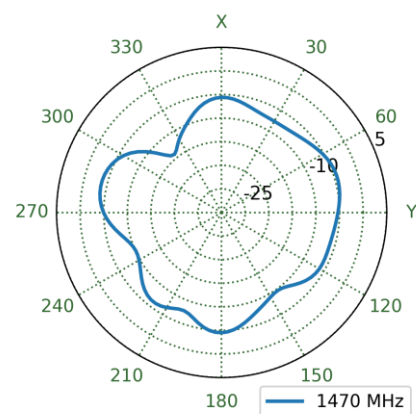
XZ Plane



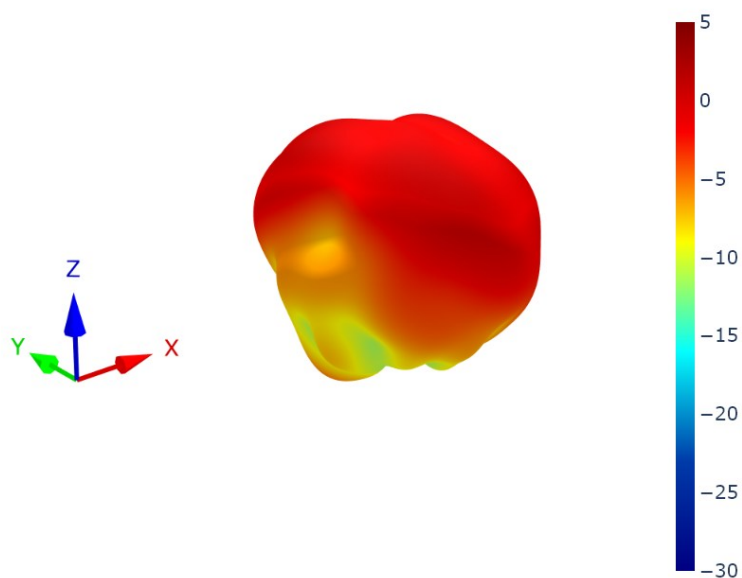
YZ Plane



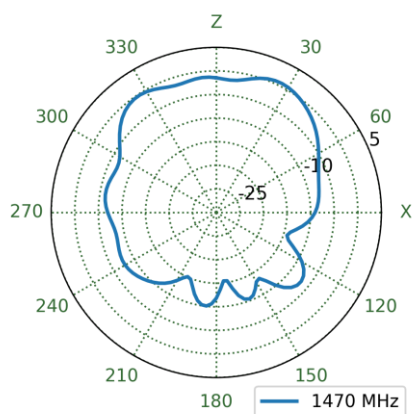
XY Plane



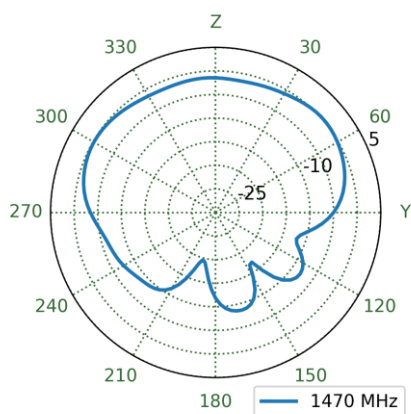
7.34 LTE7 Patterns at 1470 MHz



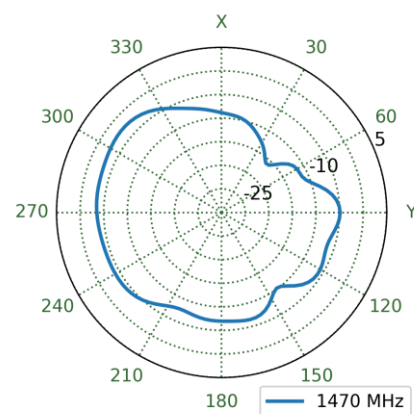
XZ Plane



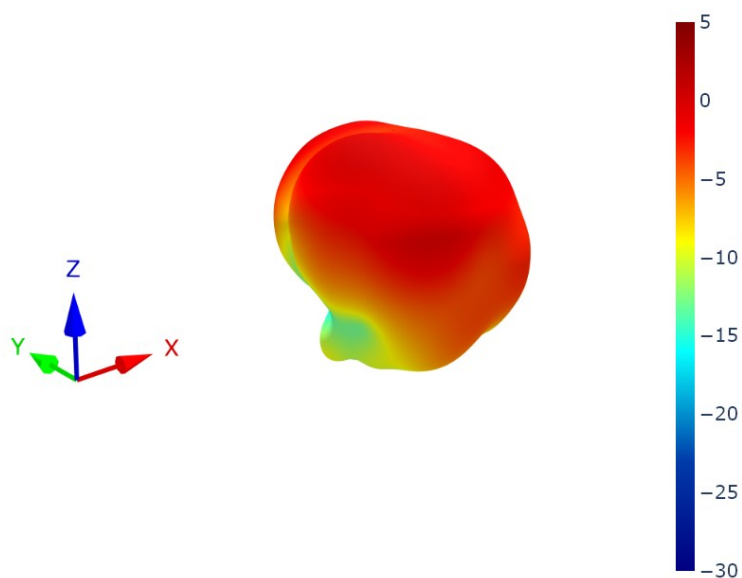
YZ Plane



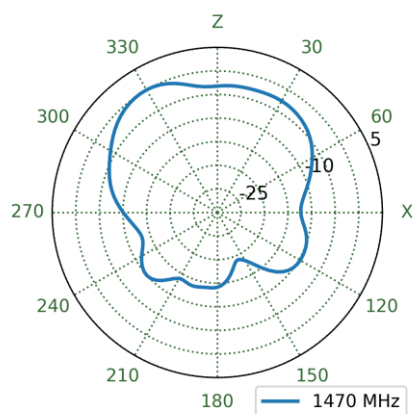
XY Plane



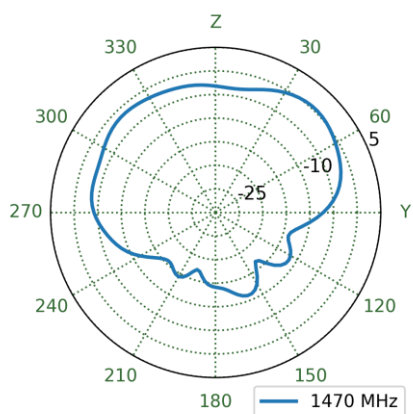
7.35 LTE8 Patterns at 1470 MHz



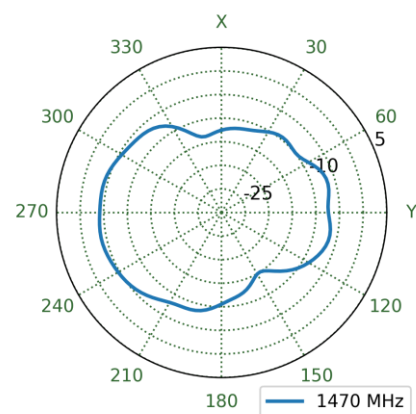
XZ Plane



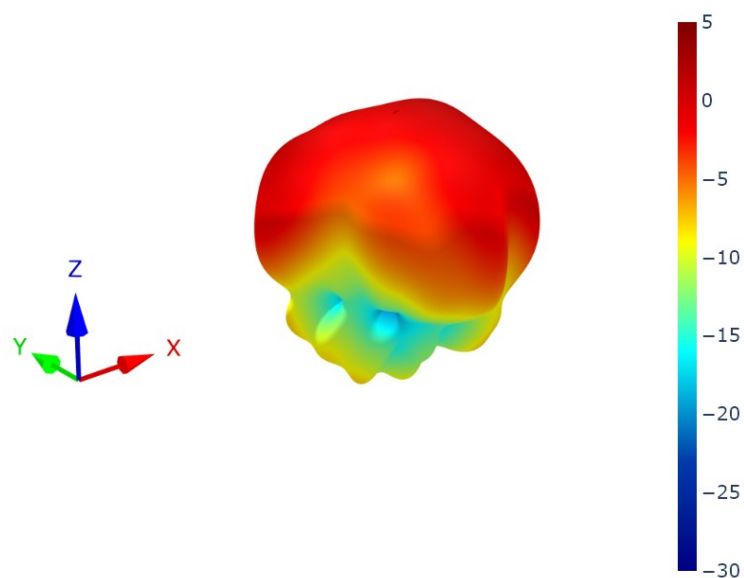
YZ Plane



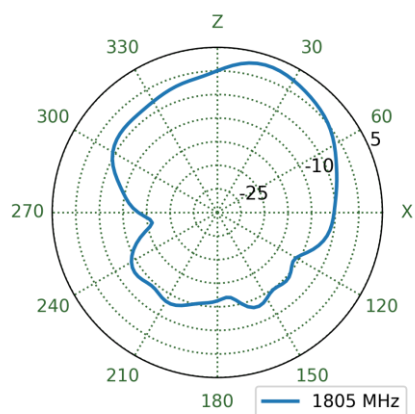
XY Plane



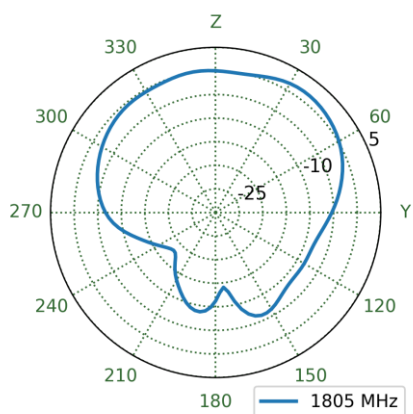
7.36 LTE1 Patterns at 1805 MHz



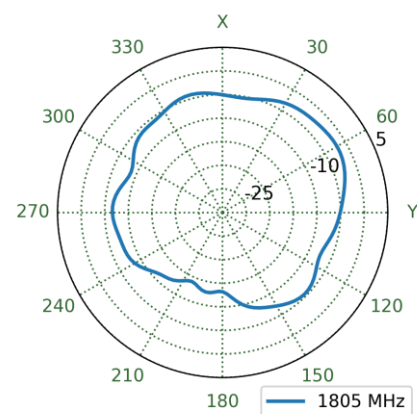
XZ Plane



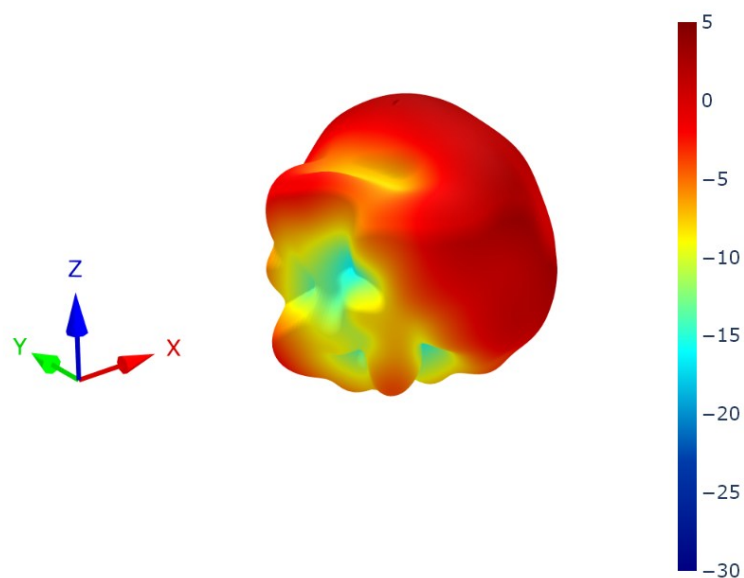
YZ Plane



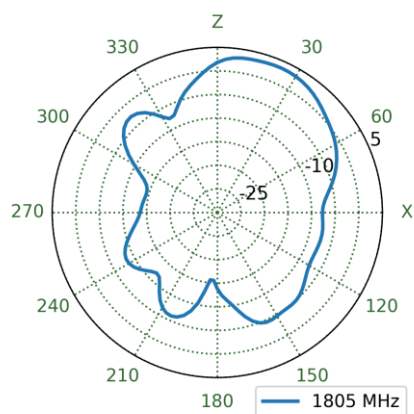
XY Plane



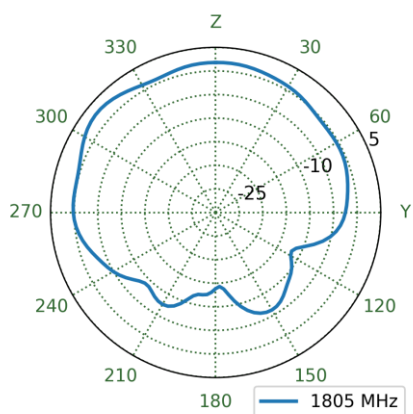
7.37 LTE2 Patterns at 1805 MHz



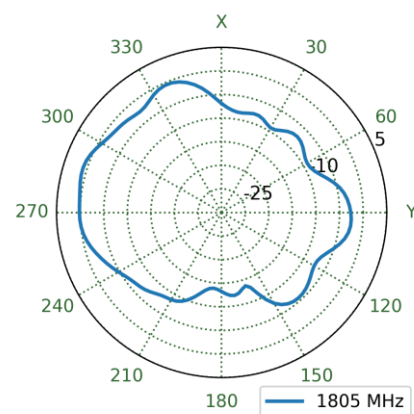
XZ Plane



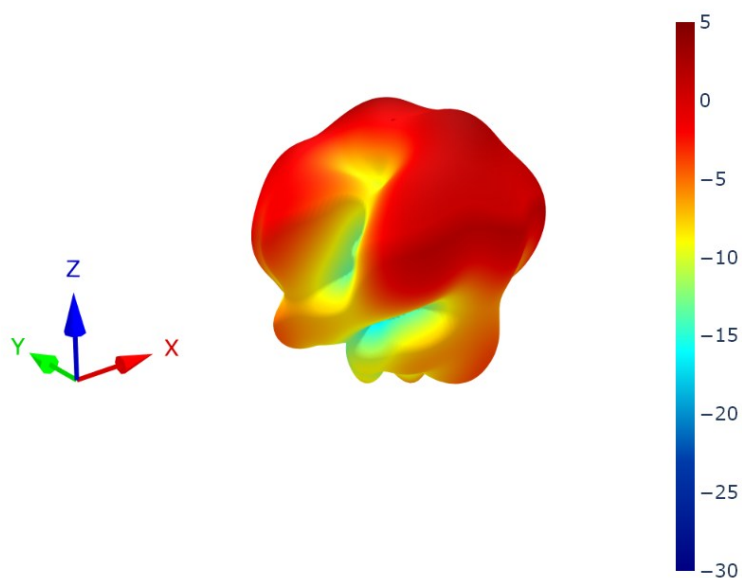
YZ Plane



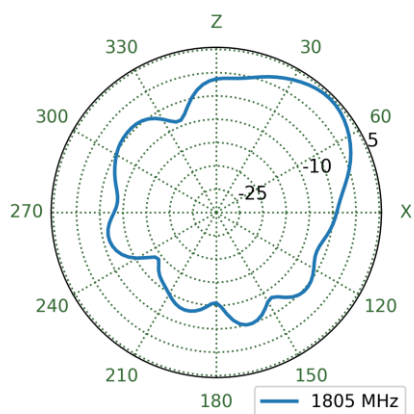
XY Plane



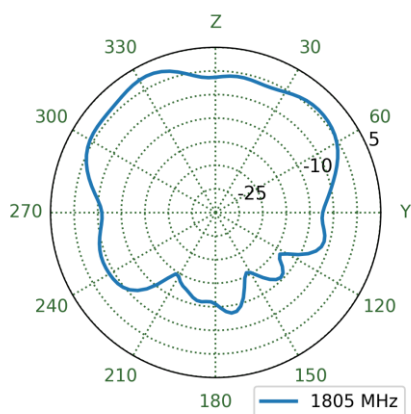
7.38 LTE3 Patterns at 1805 MHz



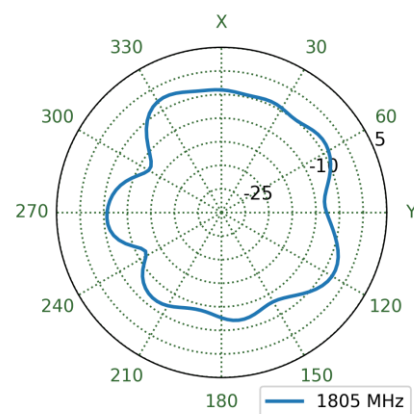
XZ Plane



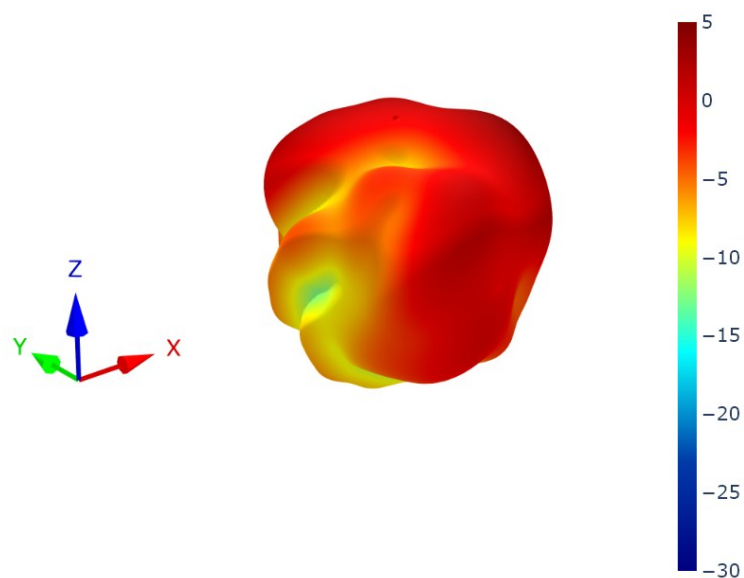
YZ Plane



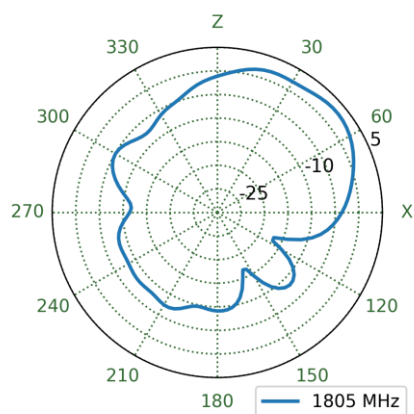
XY Plane



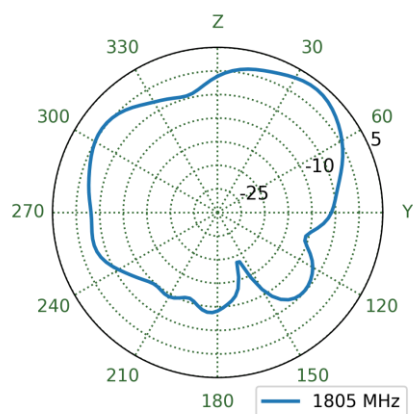
7.39 LTE4 Patterns at 1805 MHz



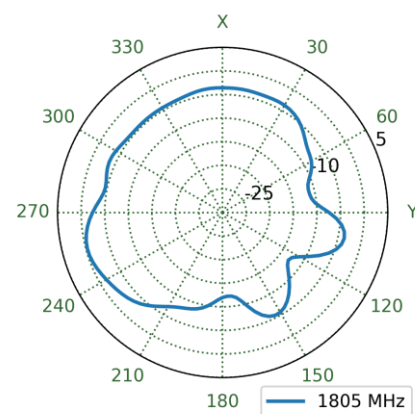
XZ Plane



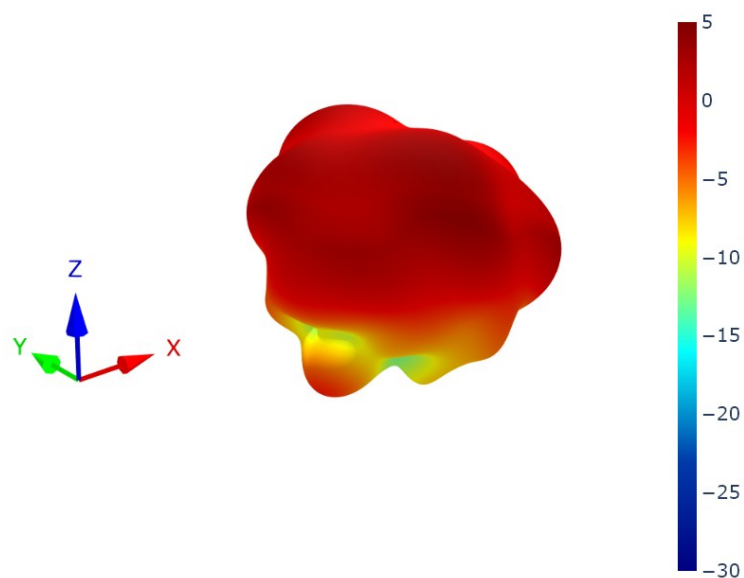
YZ Plane



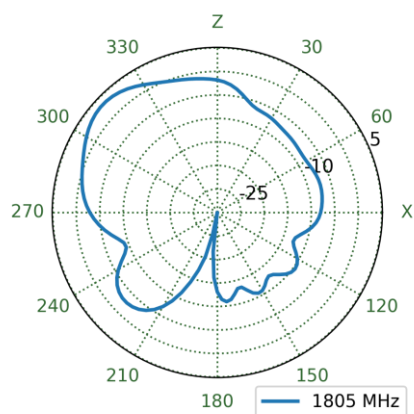
XY Plane



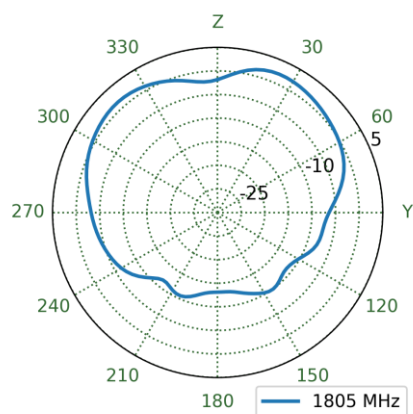
7.40 LTE5 Patterns at 1805 MHz



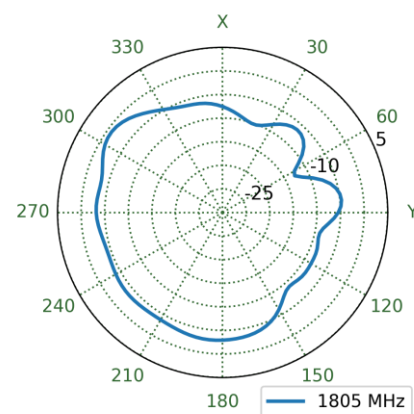
XZ Plane



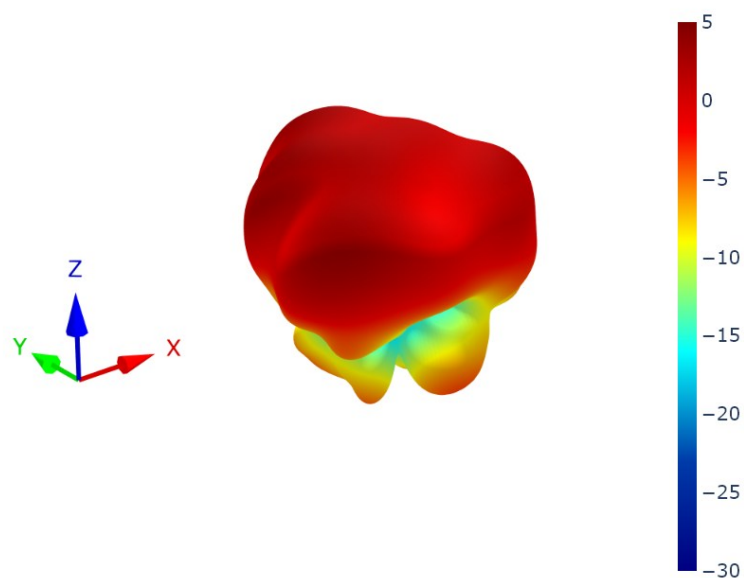
YZ Plane



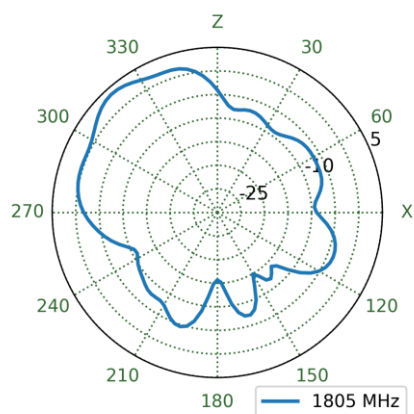
XY Plane



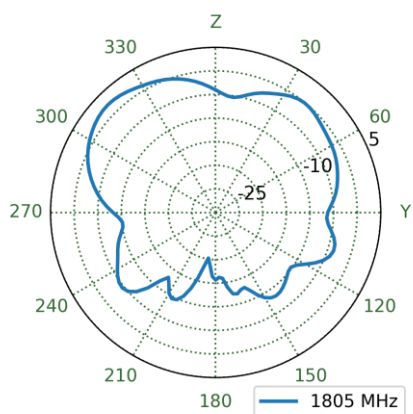
7.41 LTE6 Patterns at 1805 MHz



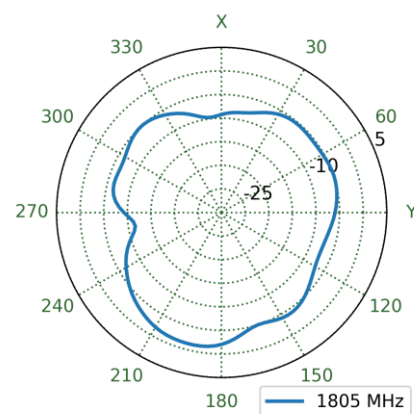
XZ Plane



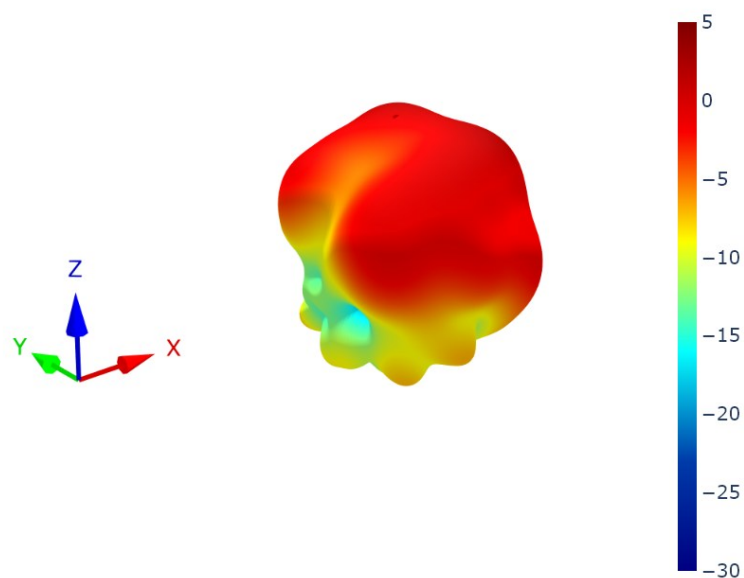
YZ Plane



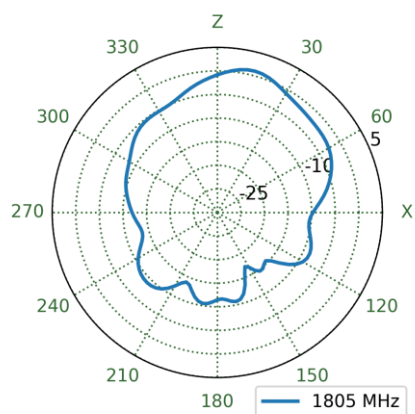
XY Plane



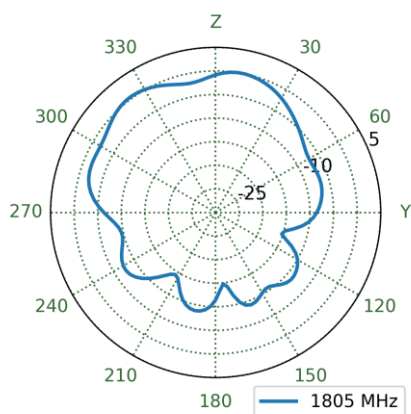
7.42 LTE7 Patterns at 1805 MHz



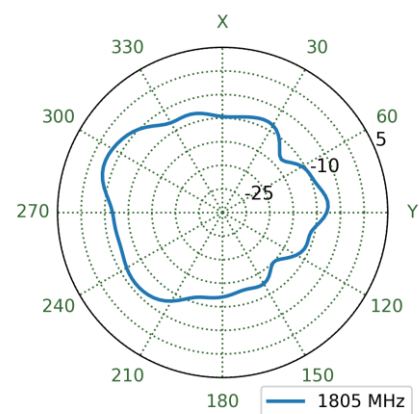
XZ Plane



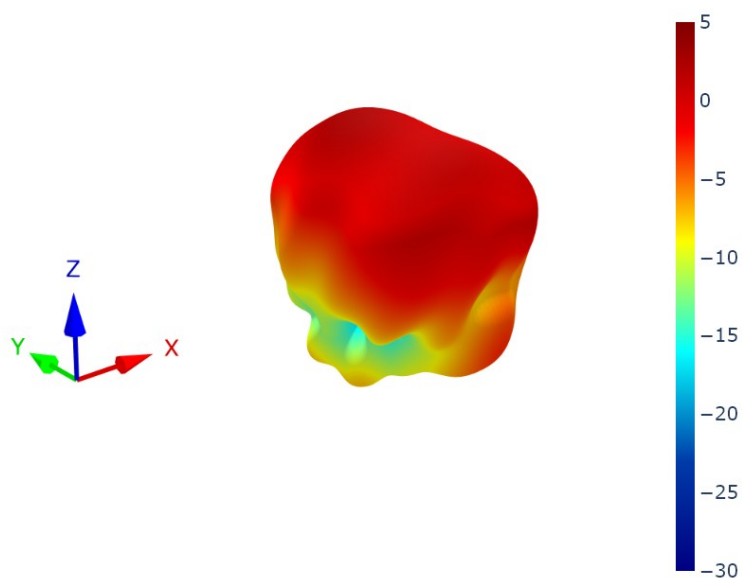
YZ Plane



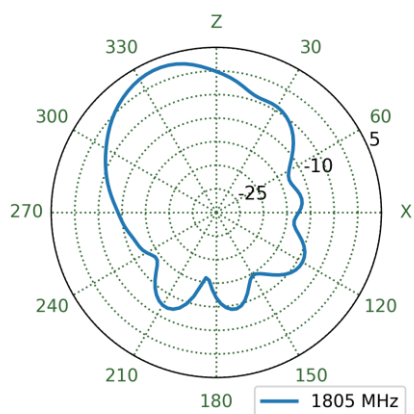
XY Plane



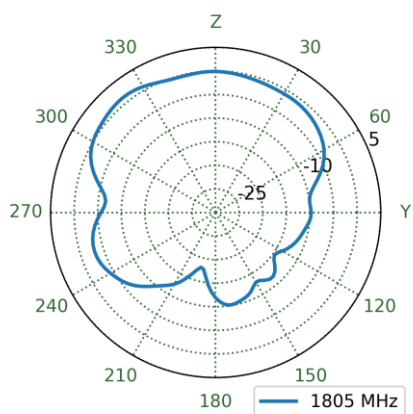
7.43 LTE8 Patterns at 1805 MHz



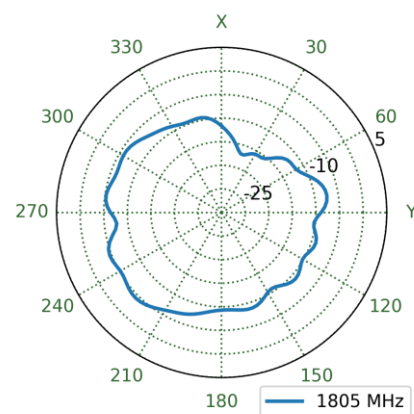
XZ Plane



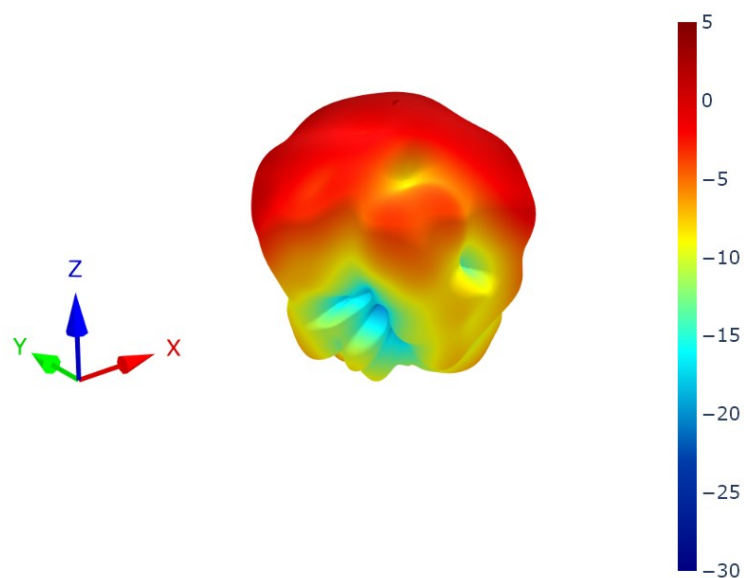
YZ Plane



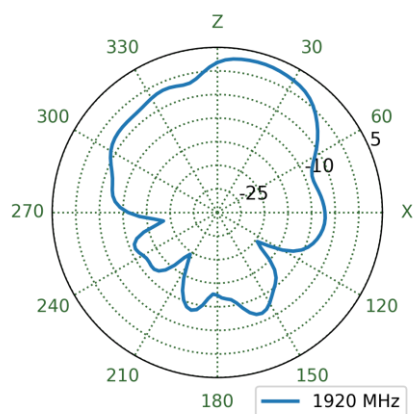
XY Plane



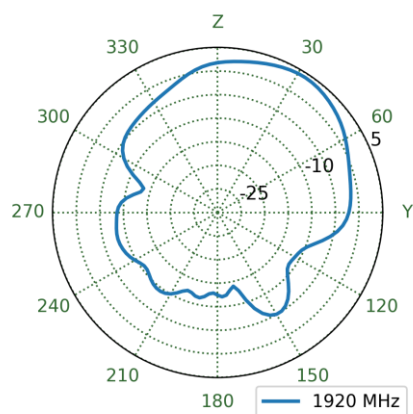
7.44 LTE1 Patterns at 1920 MHz



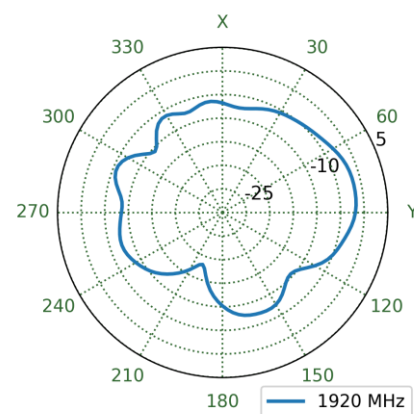
XZ Plane



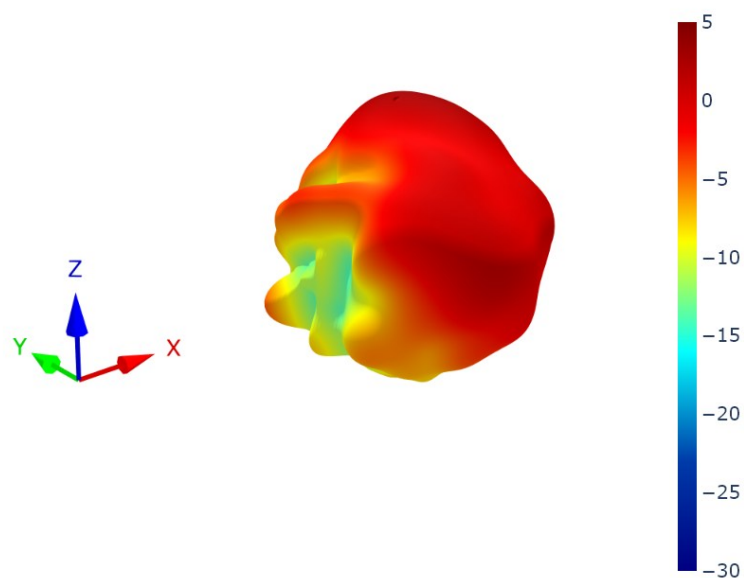
YZ Plane



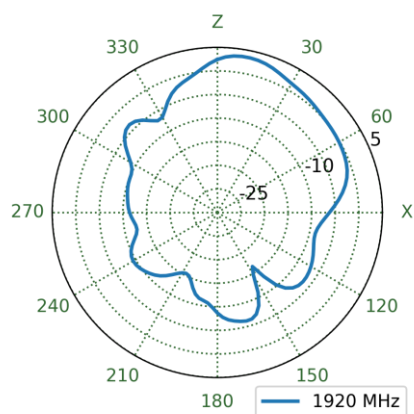
XY Plane



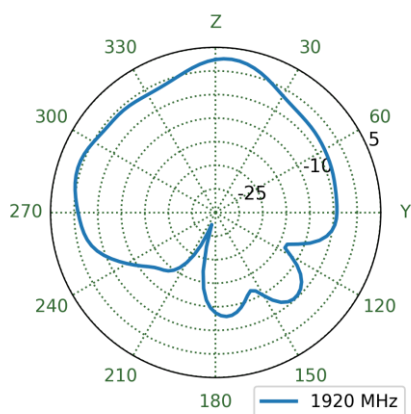
7.45 LTE2 Patterns at 1920 MHz



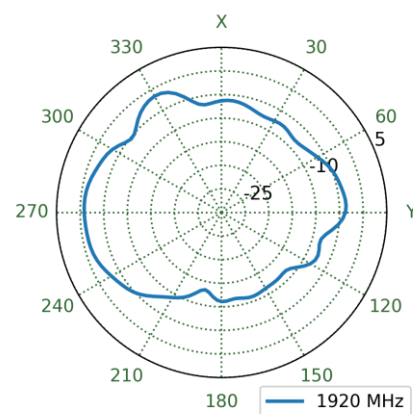
XZ Plane



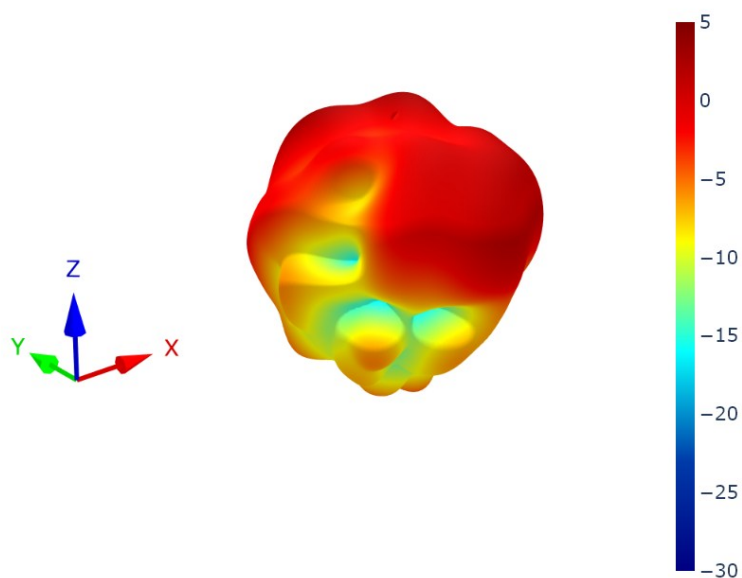
YZ Plane



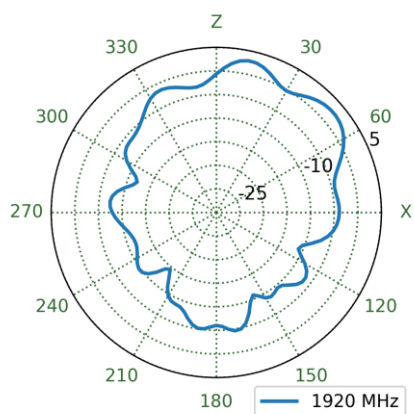
XY Plane



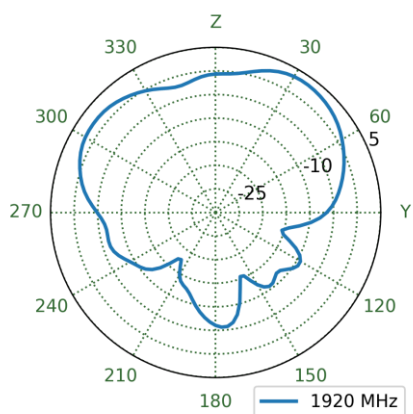
7.46 LTE3 Patterns at 1920 MHz



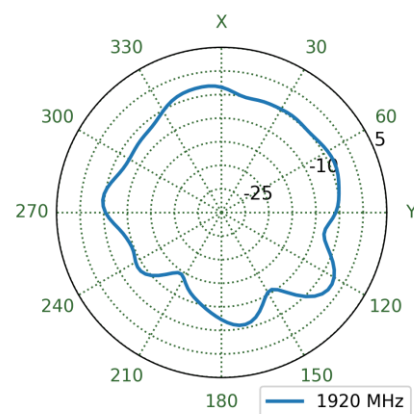
XZ Plane



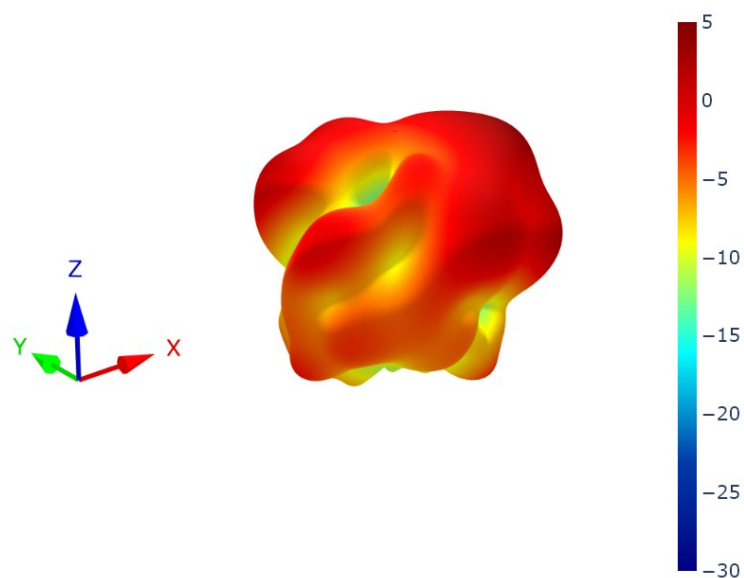
YZ Plane



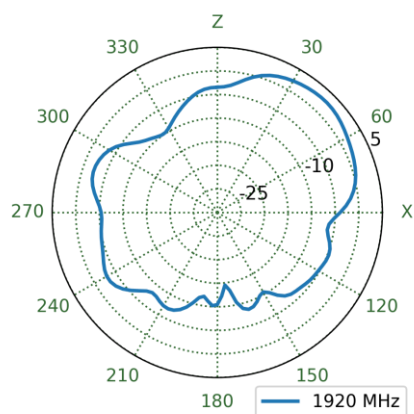
XY Plane



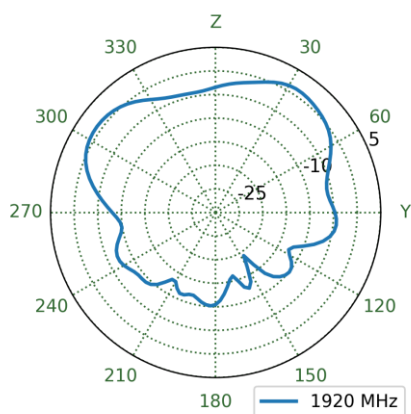
7.47 LTE4 Patterns at 1920 MHz



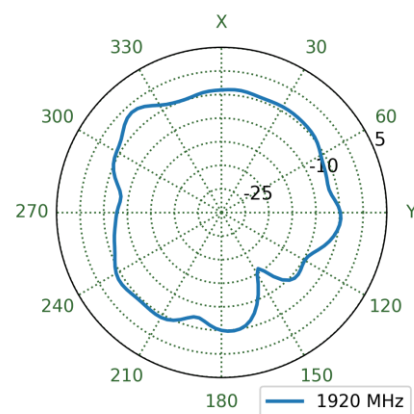
XZ Plane



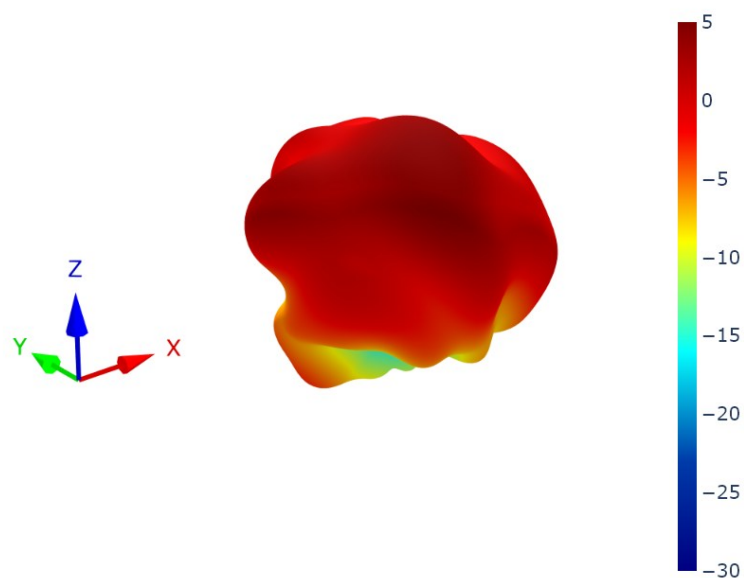
YZ Plane



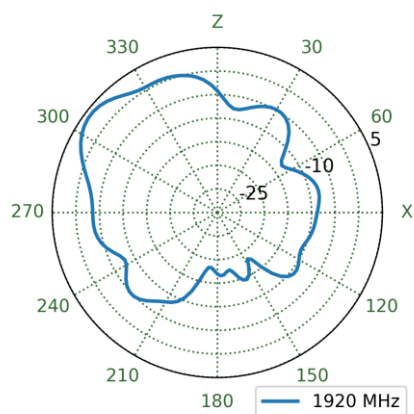
XY Plane



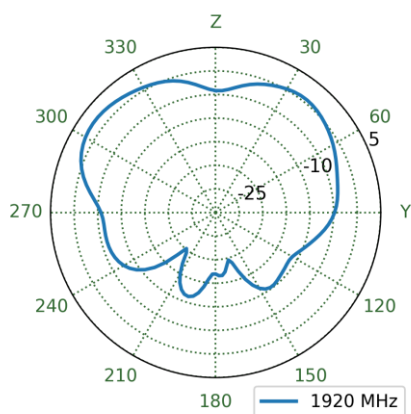
7.48 LTE5 Patterns at 1920 MHz



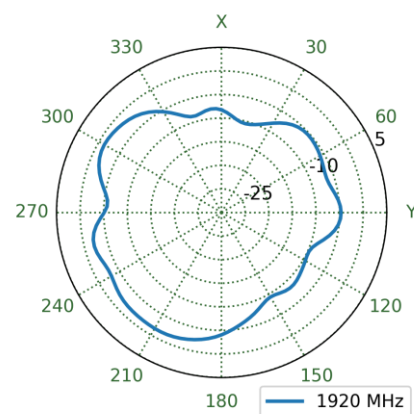
XZ Plane



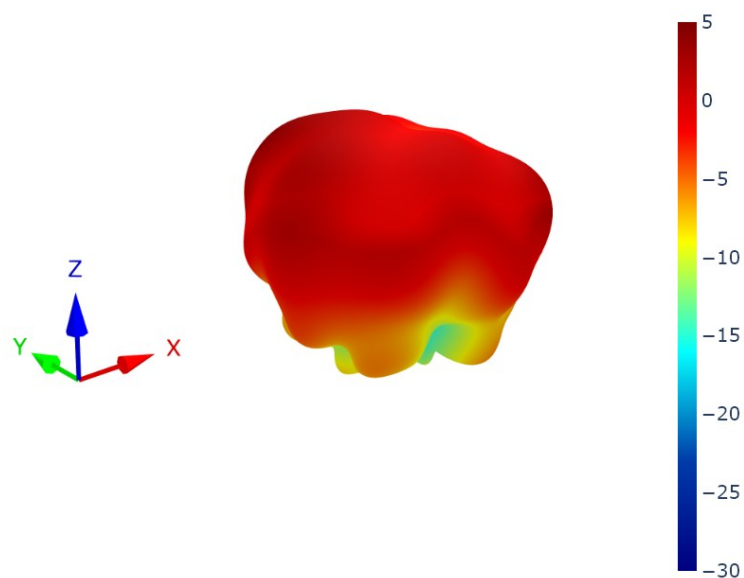
YZ Plane



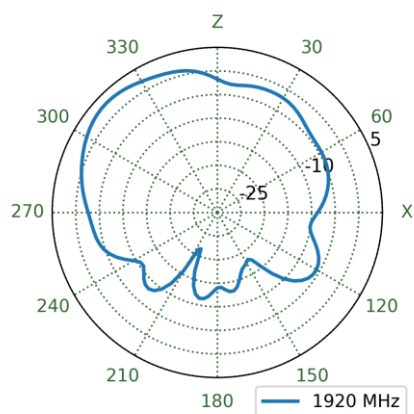
XY Plane



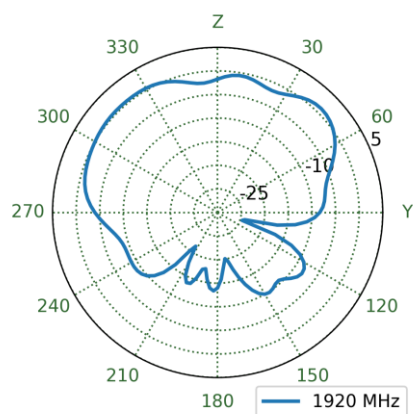
7.49 LTE6 Patterns at 1920 MHz



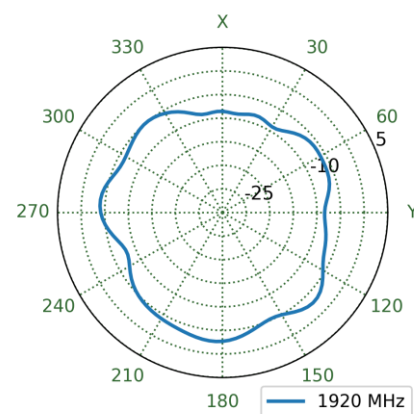
XZ Plane



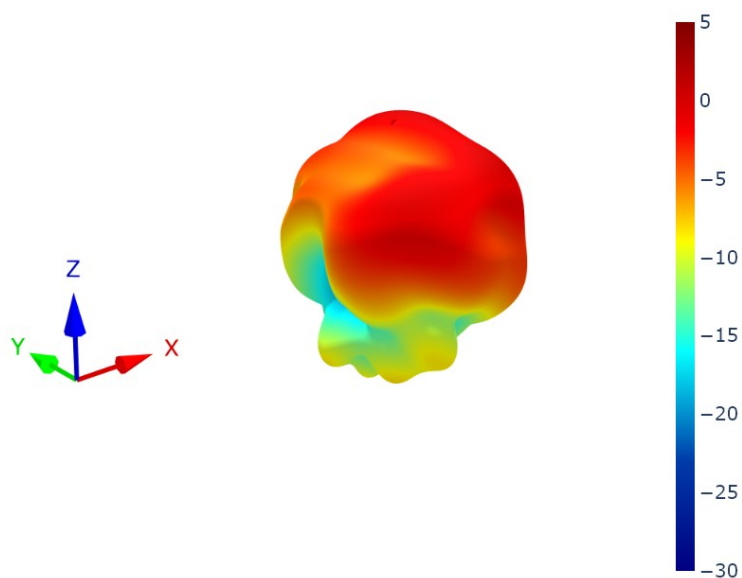
YZ Plane



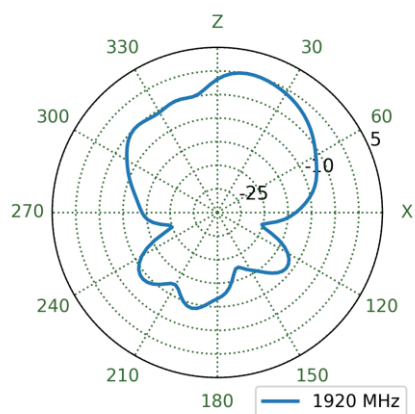
XY Plane



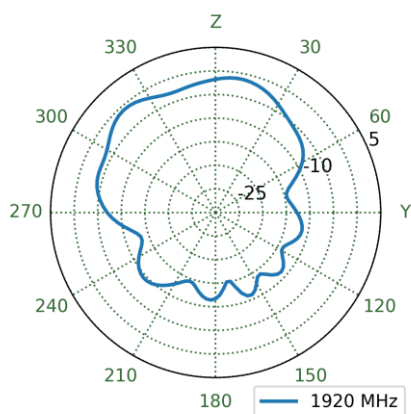
7.50 LTE7 Patterns at 1920 MHz



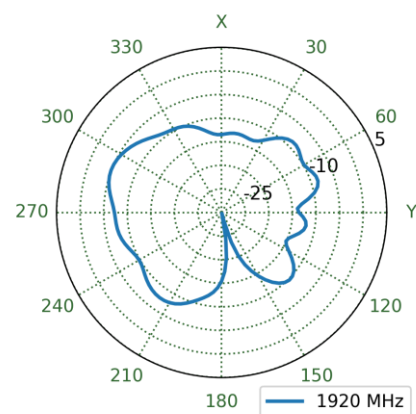
XZ Plane



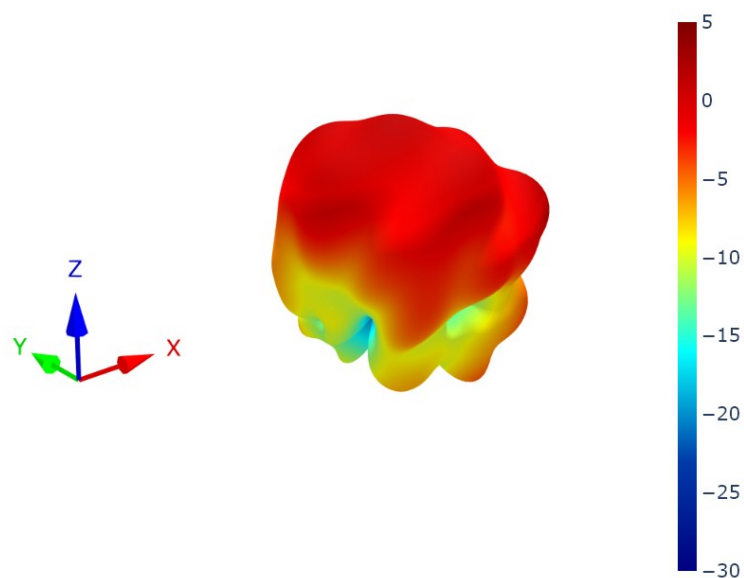
YZ Plane



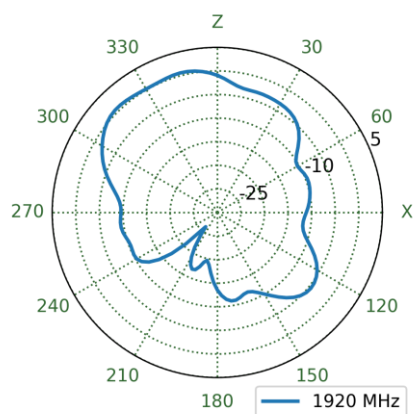
XY Plane



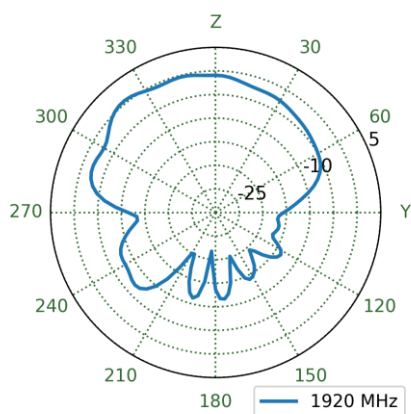
7.51 LTE8 Patterns at 1920 MHz



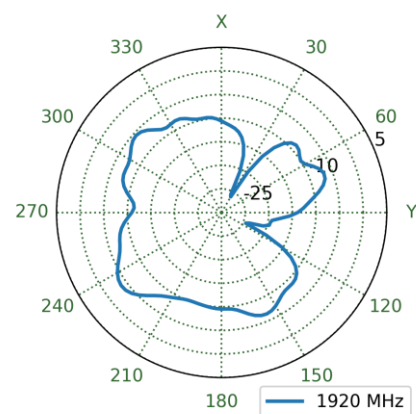
XZ Plane



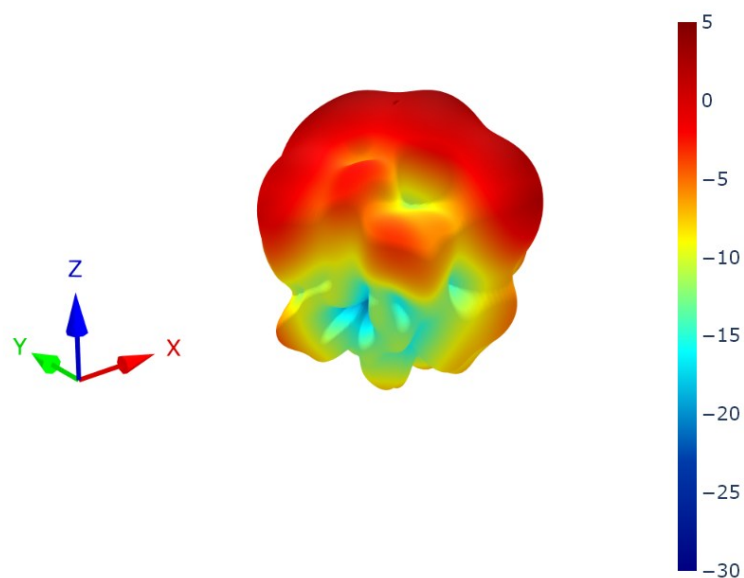
YZ Plane



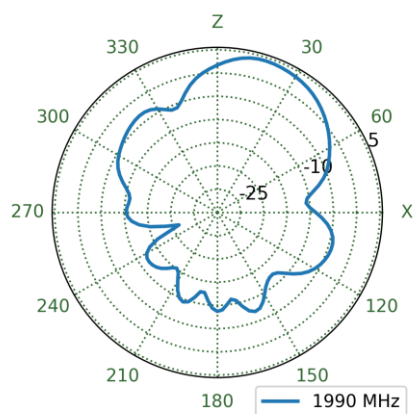
XY Plane



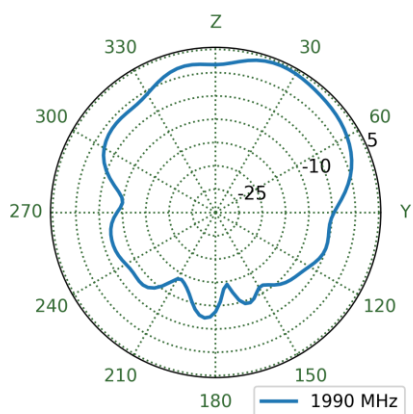
7.52 LTE1 Patterns at 1990 MHz



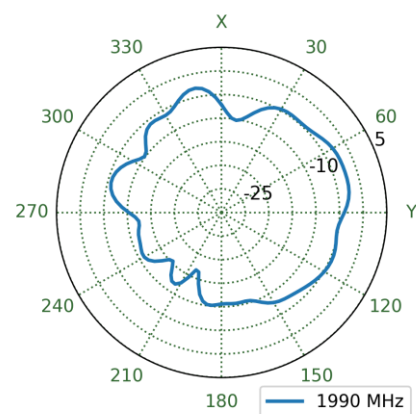
XZ Plane



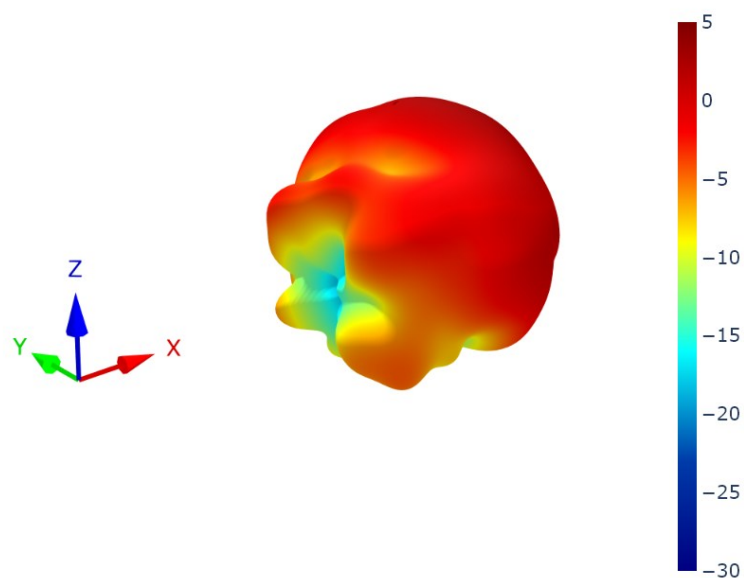
YZ Plane



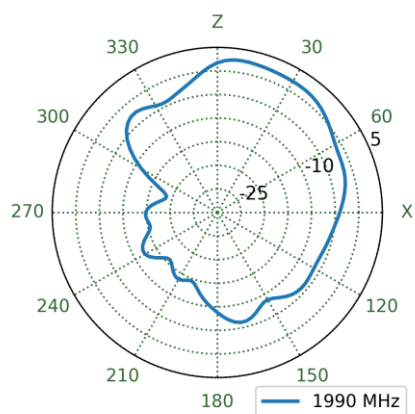
XY Plane



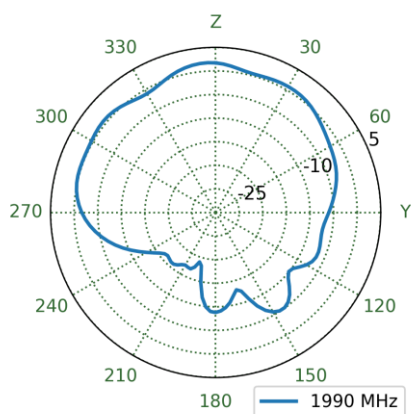
7.53 LTE2 Patterns at 1990 MHz



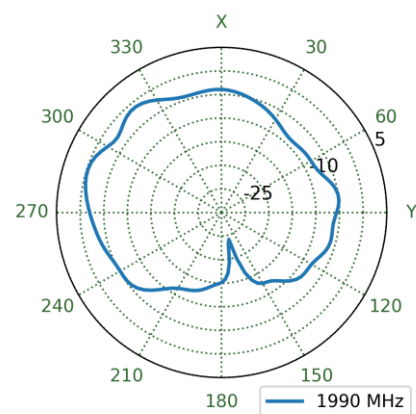
XZ Plane



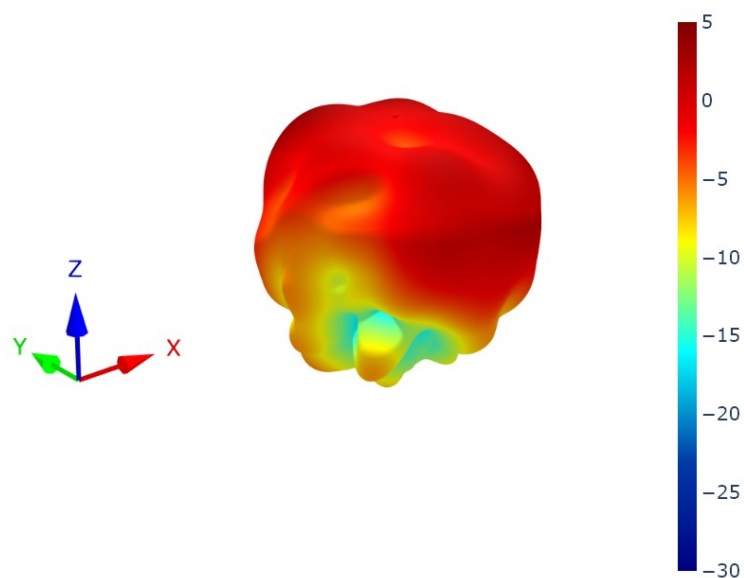
YZ Plane



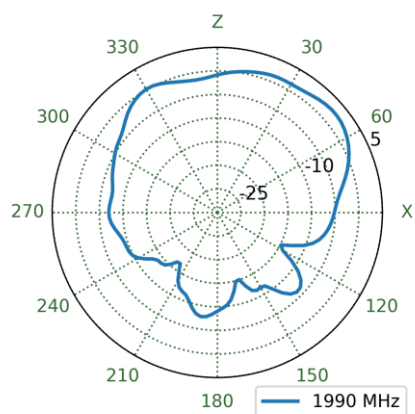
XY Plane



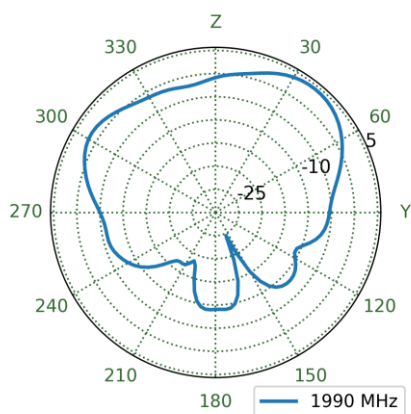
7.54 LTE3 Patterns at 1990 MHz



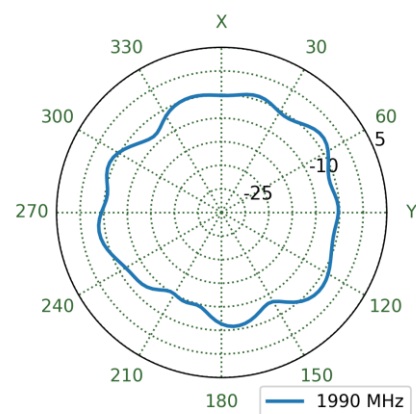
XZ Plane



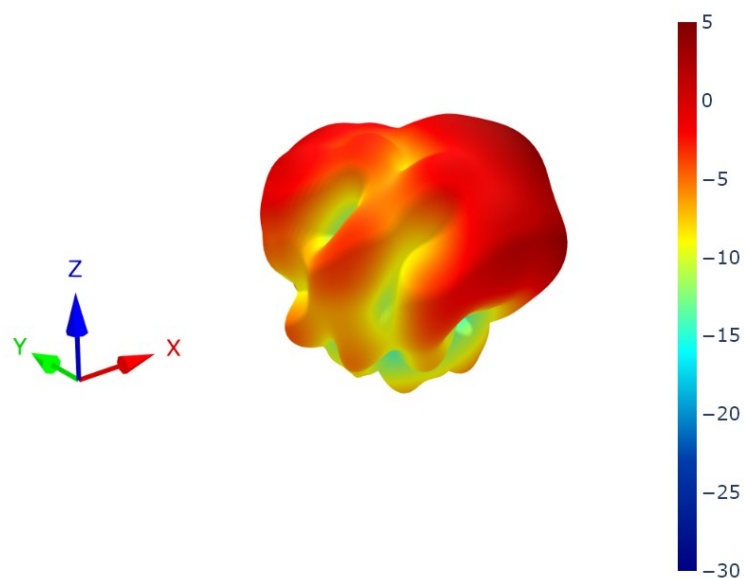
YZ Plane



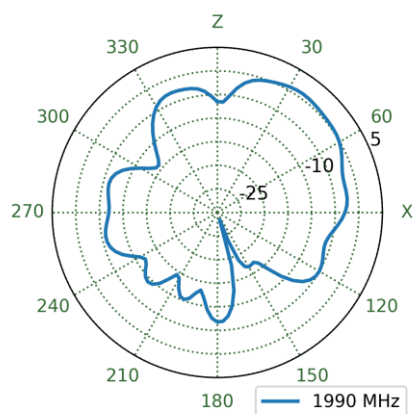
XY Plane



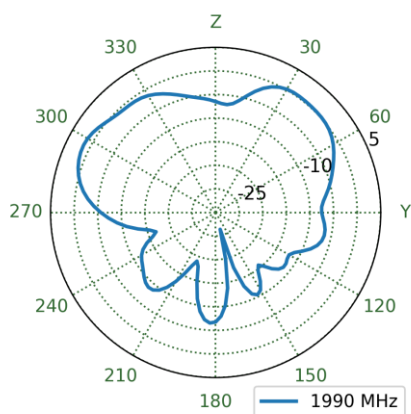
7.55 LTE4 Patterns at 1990 MHz



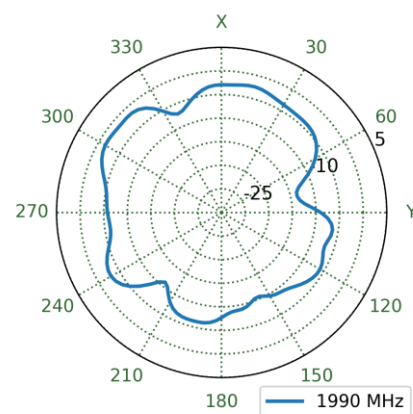
XZ Plane



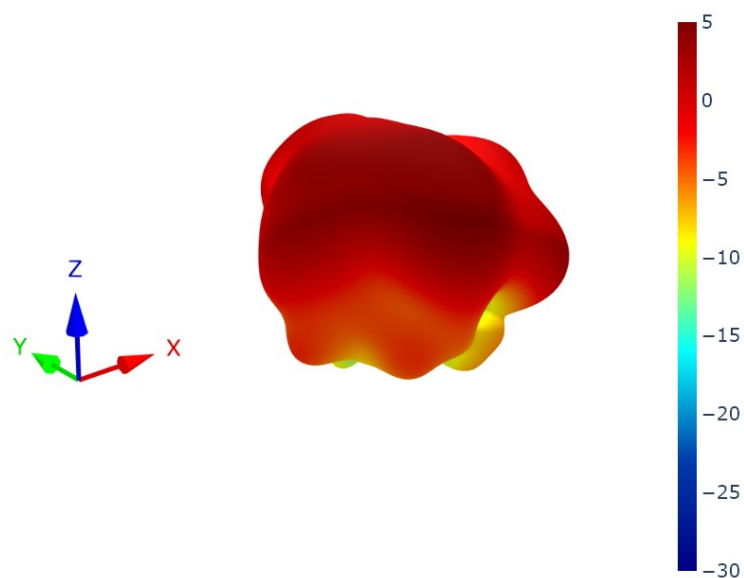
YZ Plane



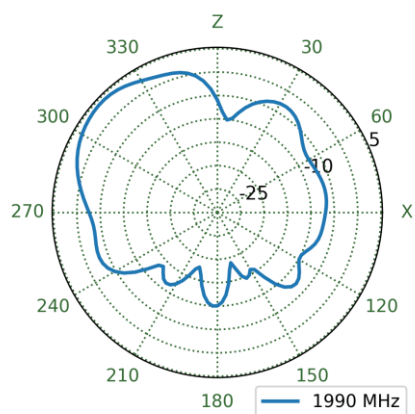
XY Plane



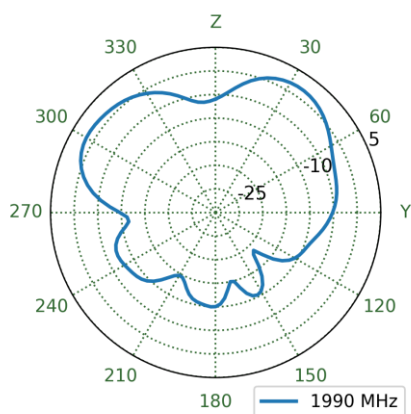
7.56 LTE5 Patterns at 1990 MHz



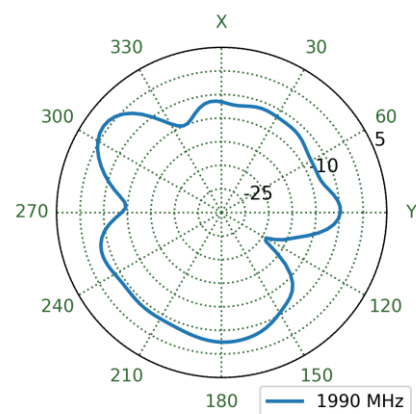
XZ Plane



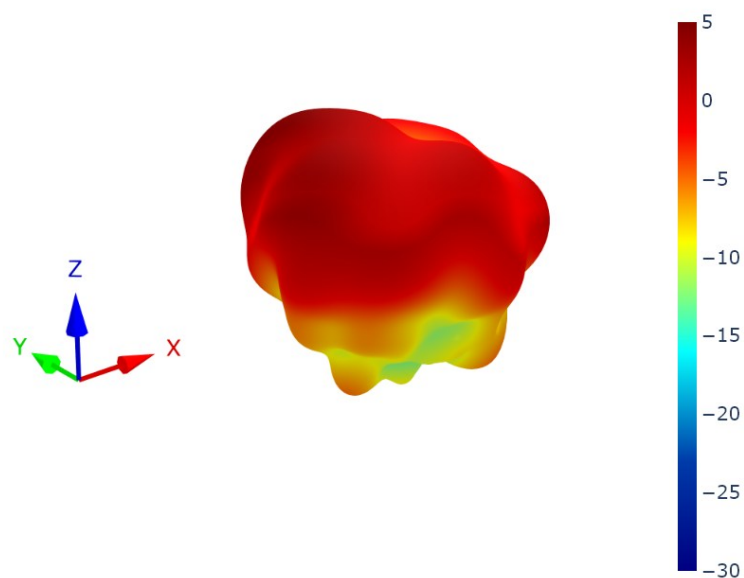
YZ Plane



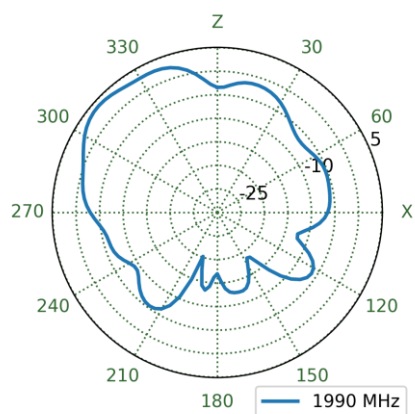
XY Plane



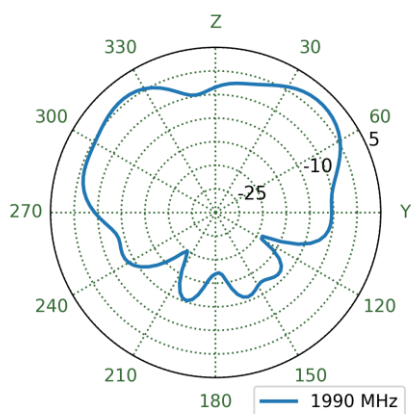
7.57 LTE6 Patterns at 1990 MHz



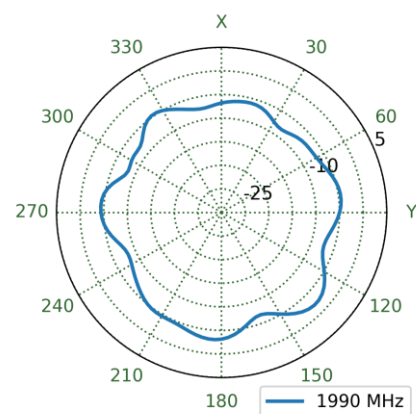
XZ Plane



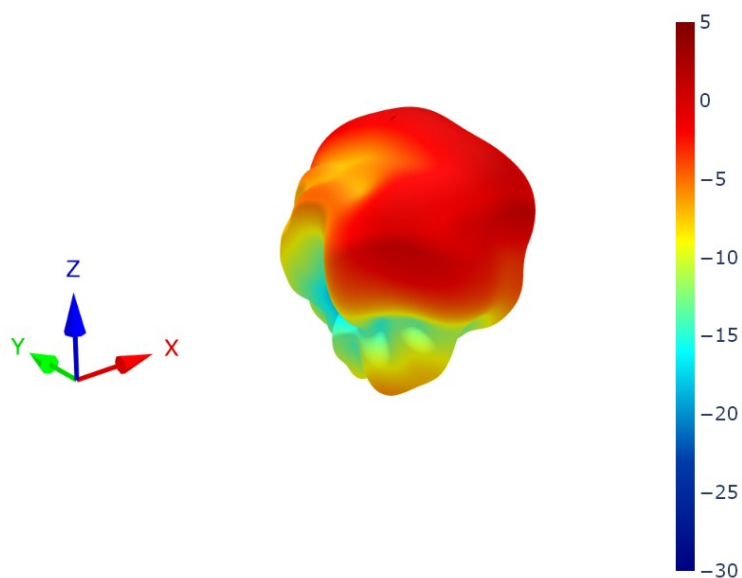
YZ Plane



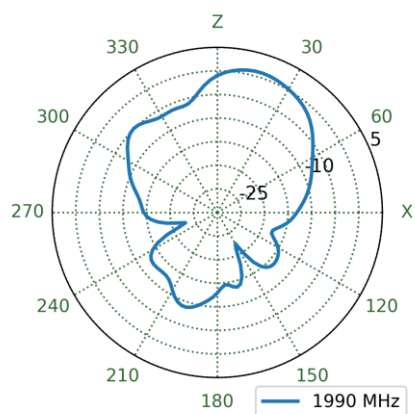
XY Plane



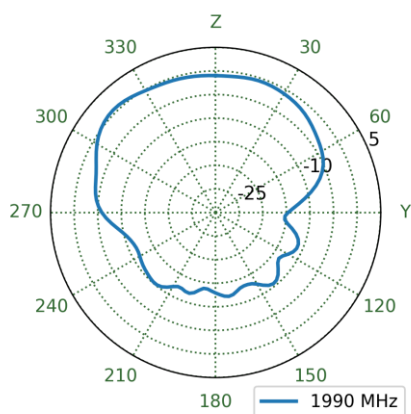
7.58 LTE7 Patterns at 1990 MHz



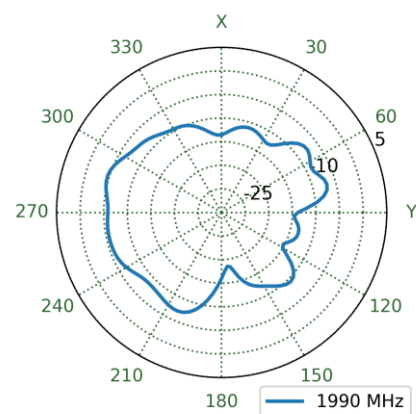
XZ Plane



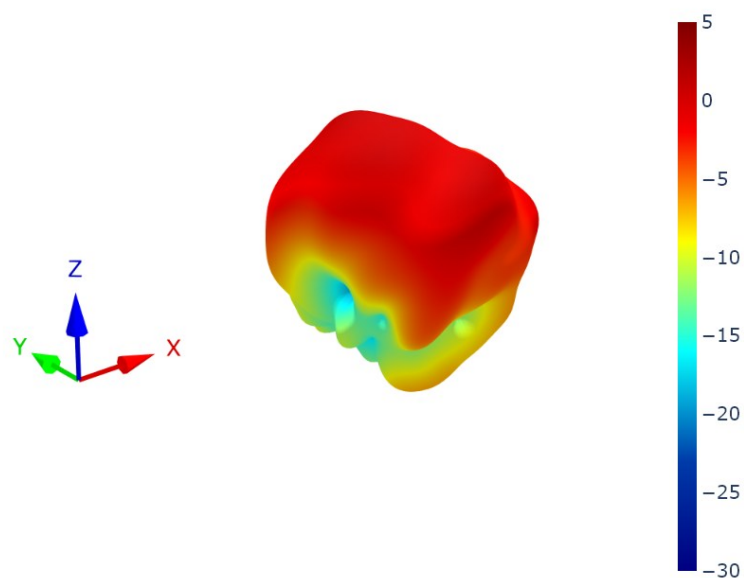
YZ Plane



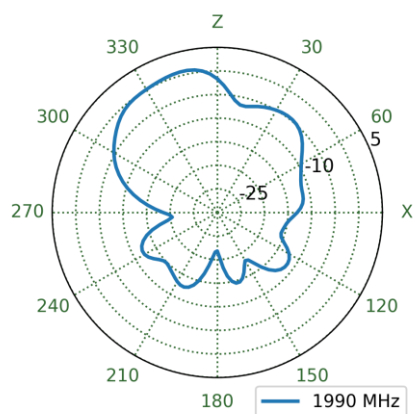
XY Plane



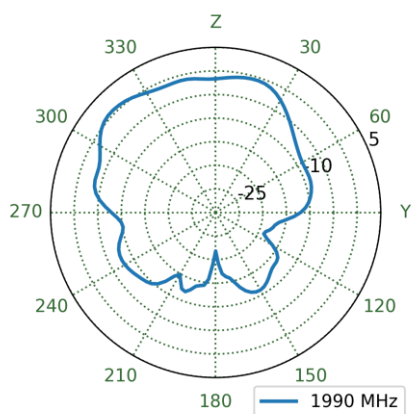
7.59 LTE8 Patterns at 1990 MHz



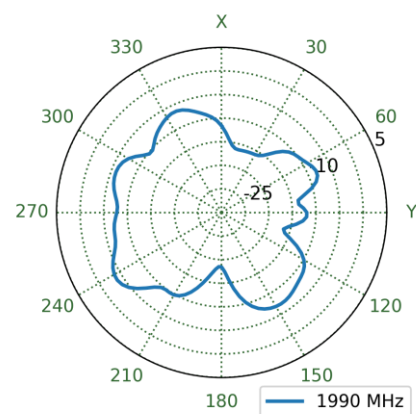
XZ Plane



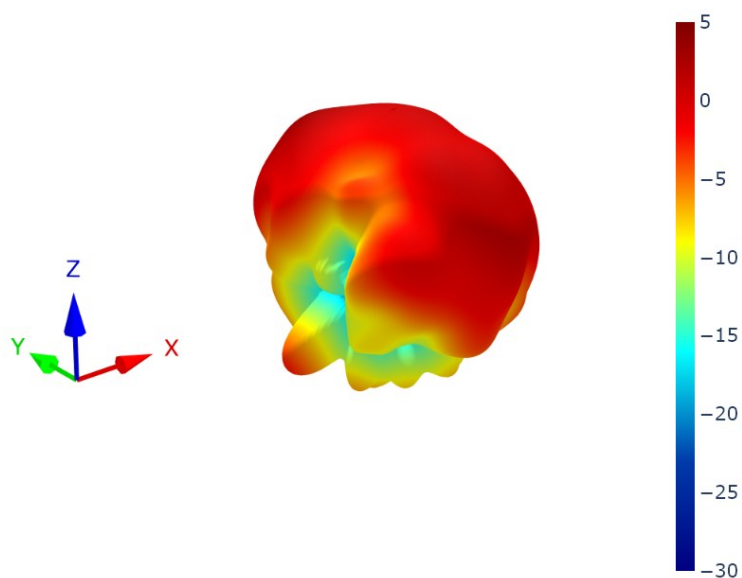
YZ Plane



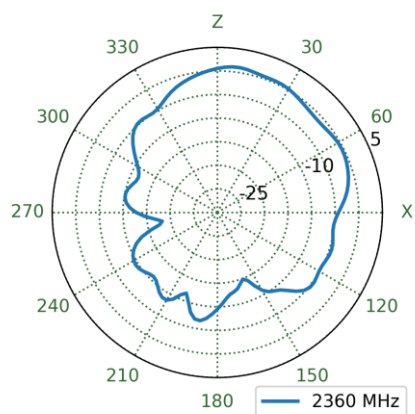
XY Plane



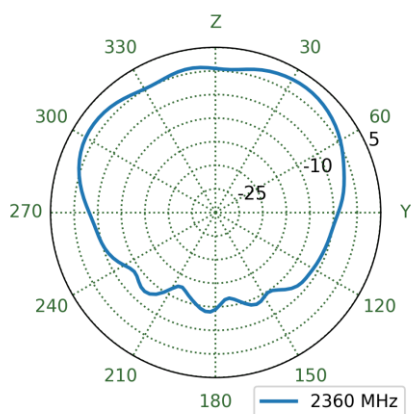
7.60 LTE1 Patterns at 2360 MHz



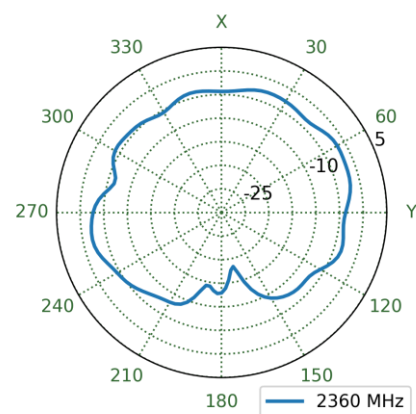
XZ Plane



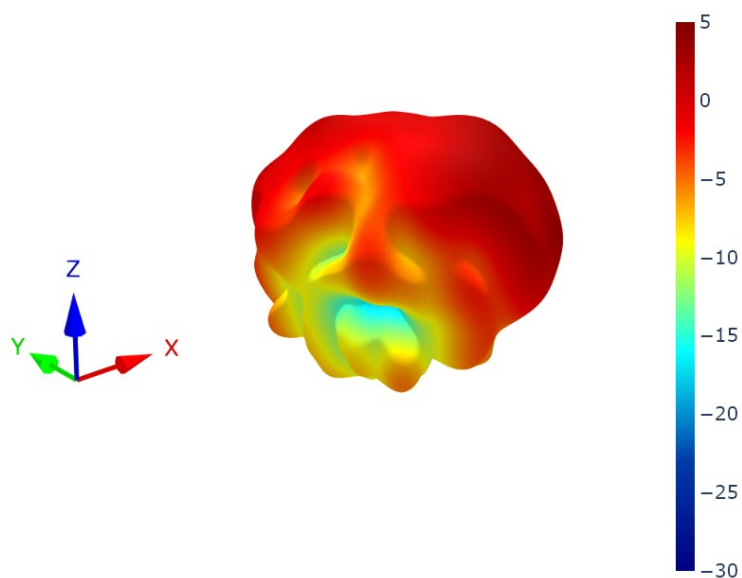
YZ Plane



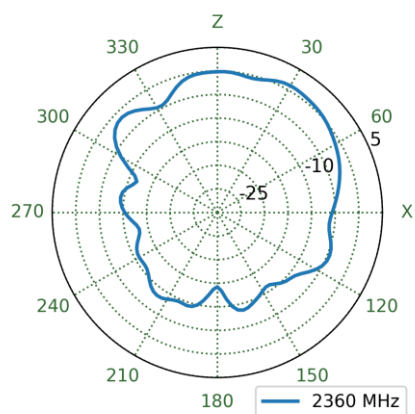
XY Plane



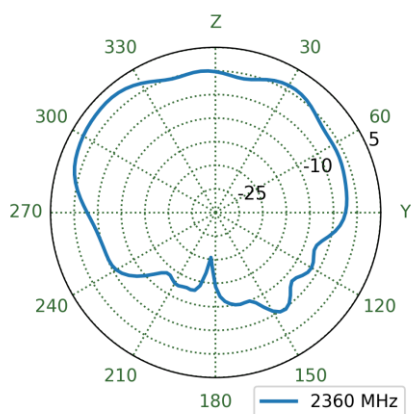
7.61 LTE2 Patterns at 2360 MHz



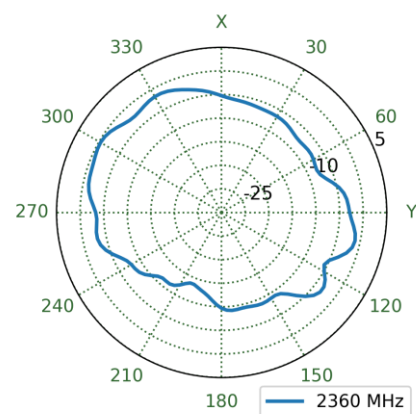
XZ Plane



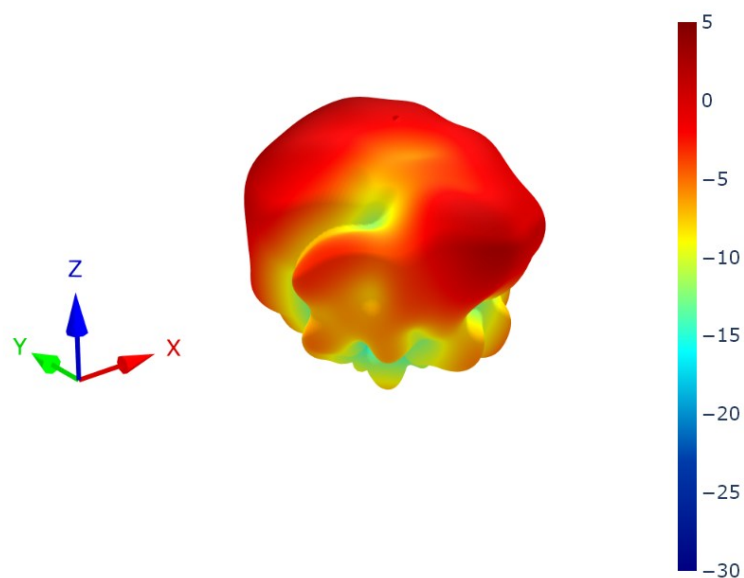
YZ Plane



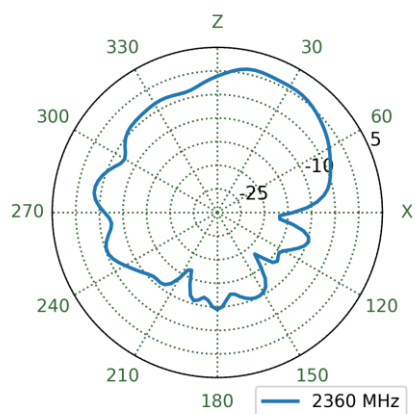
XY Plane



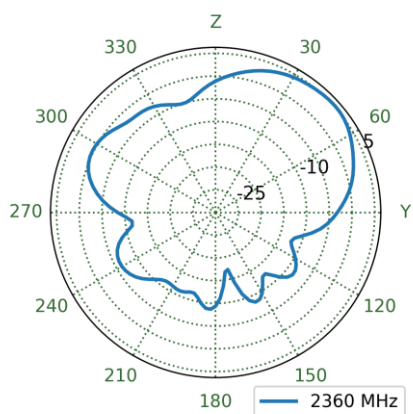
7.62 LTE3 Patterns at 2360 MHz



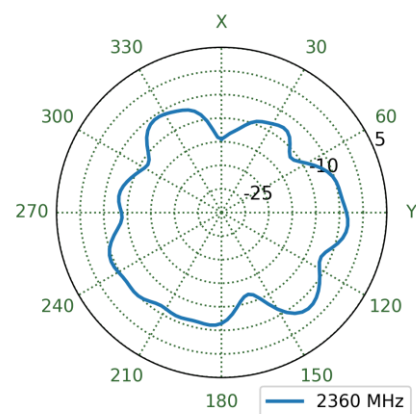
XZ Plane



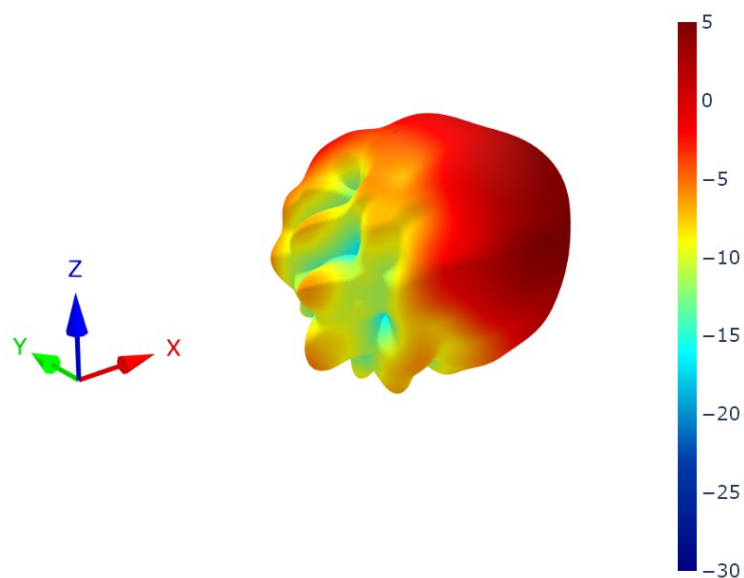
YZ Plane



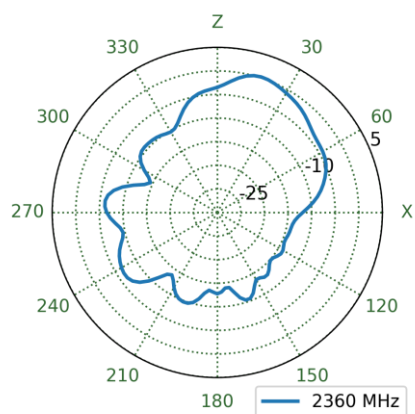
XY Plane



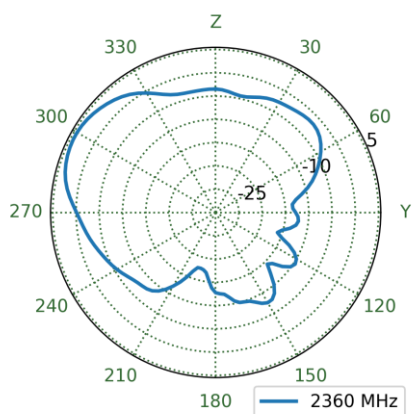
7.63 LTE4 Patterns at 2360 MHz



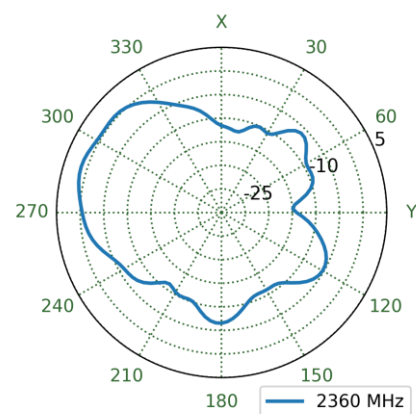
XZ Plane



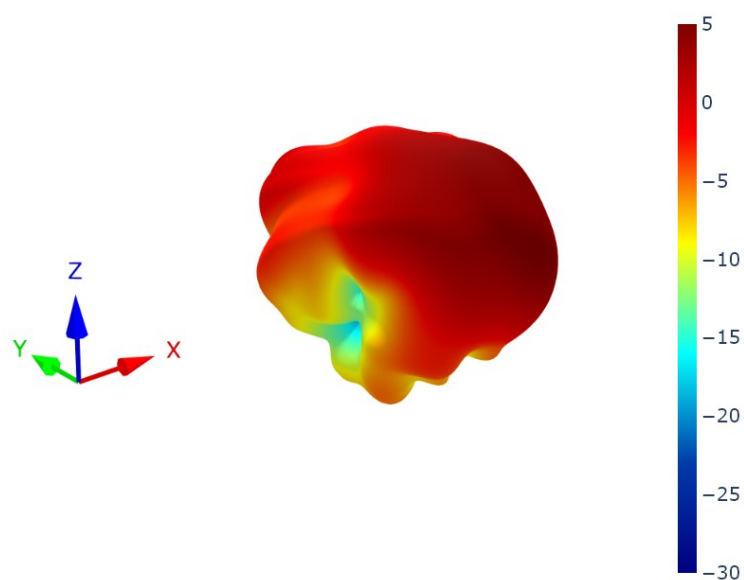
YZ Plane



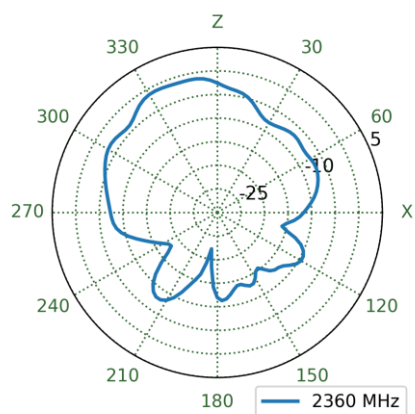
XY Plane



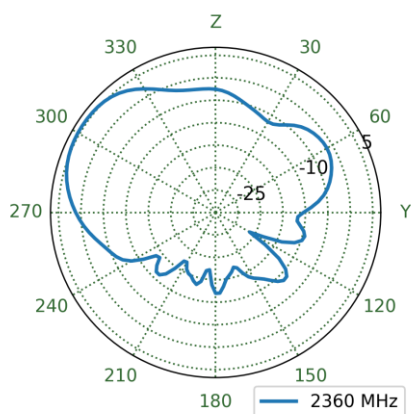
7.64 LTE5 Patterns at 2360 MHz



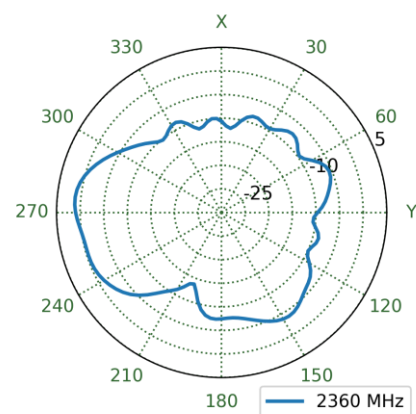
XZ Plane



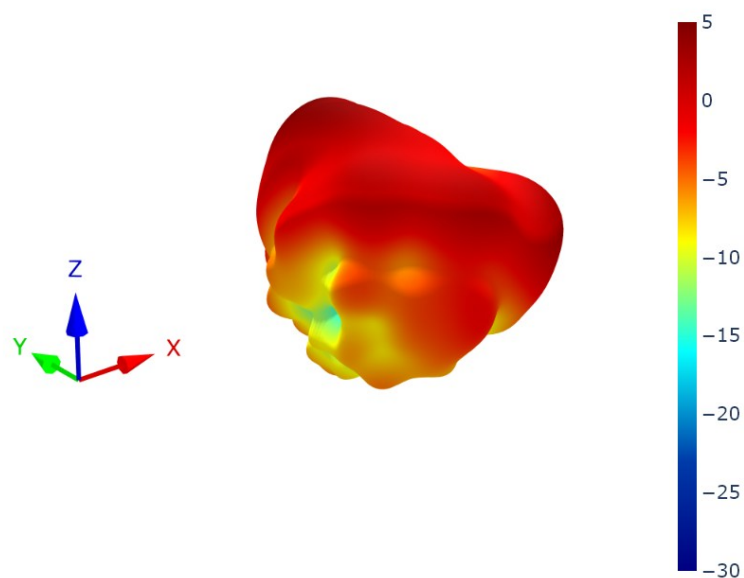
YZ Plane



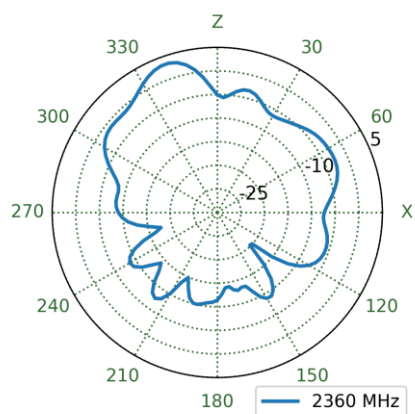
XY Plane



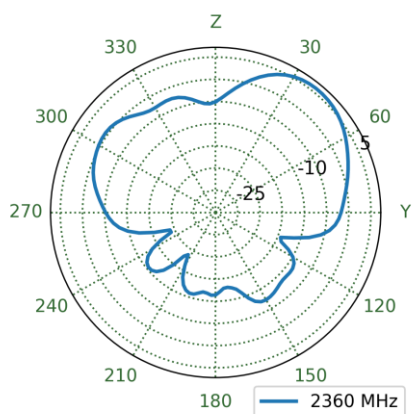
7.65 LTE6 Patterns at 2360 MHz



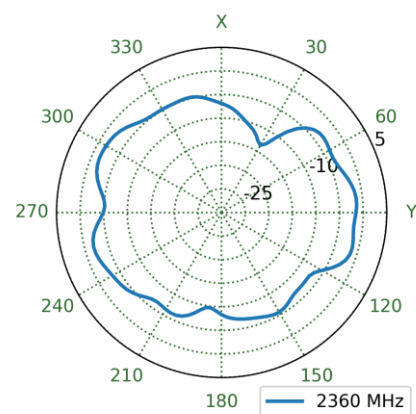
XZ Plane



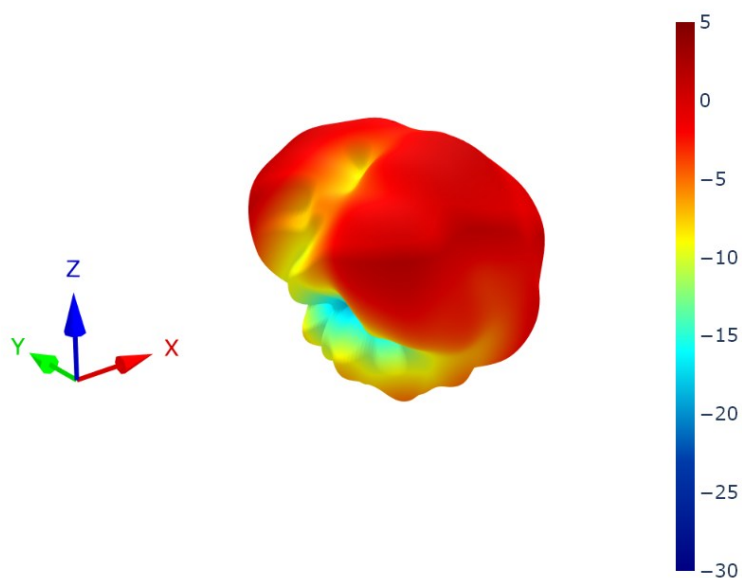
YZ Plane



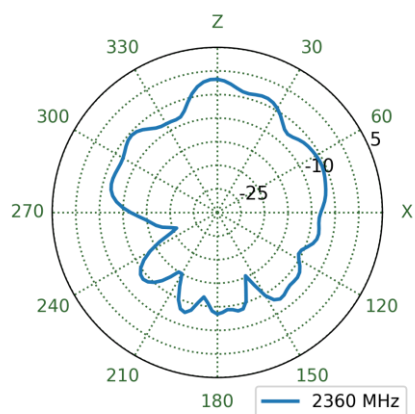
XY Plane



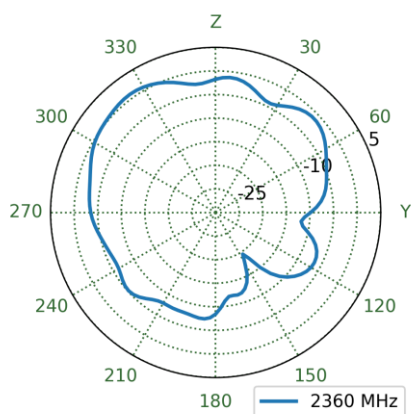
7.66 LTE7 Patterns at 2360 MHz



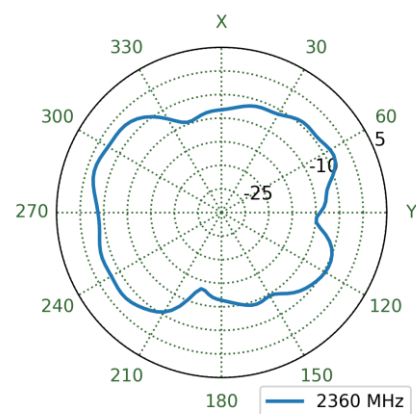
XZ Plane



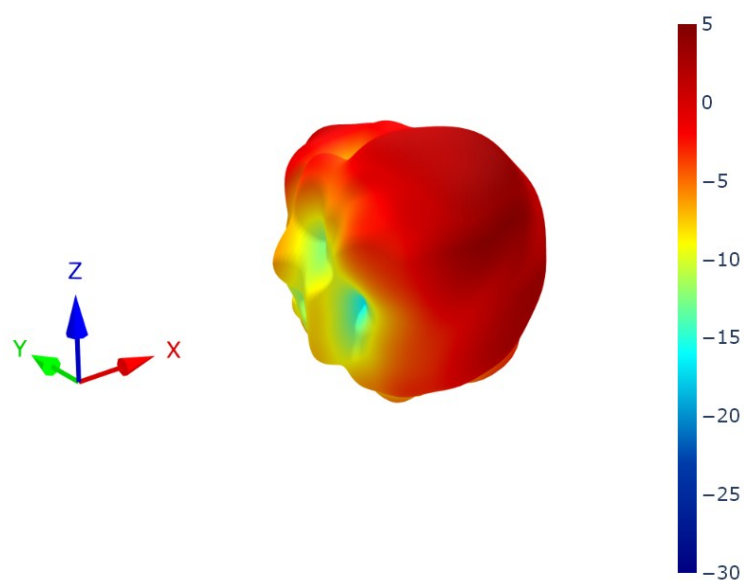
YZ Plane



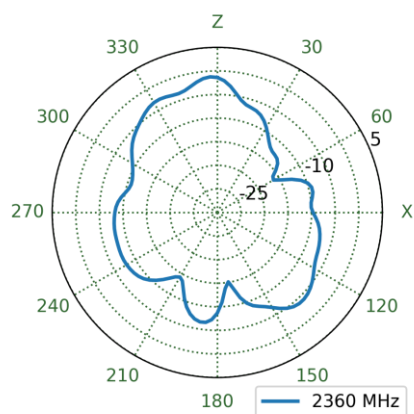
XY Plane



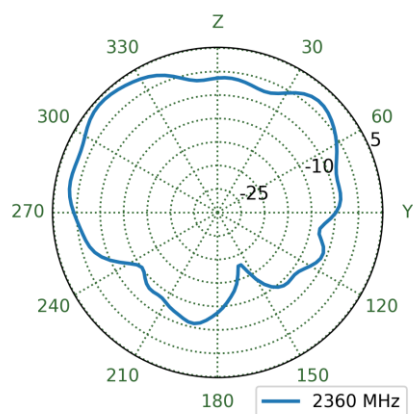
7.67 LTE8 Patterns at 2360 MHz



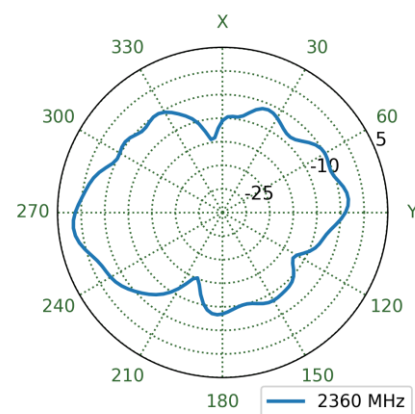
XZ Plane



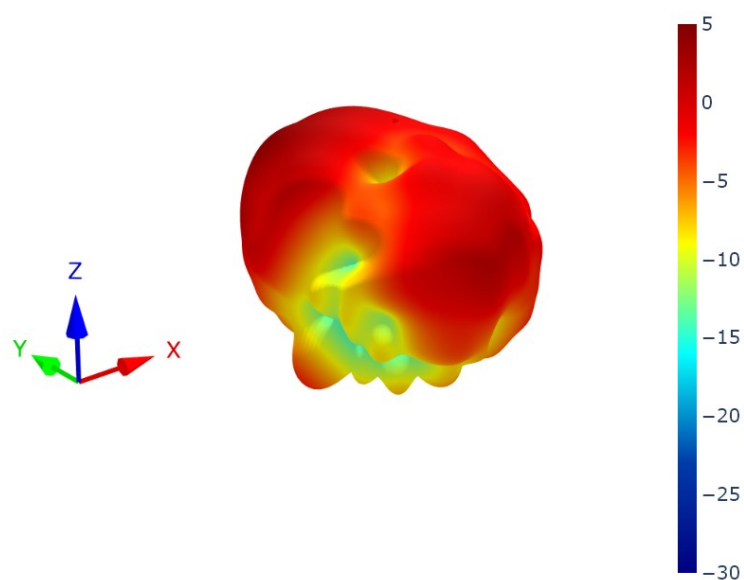
YZ Plane



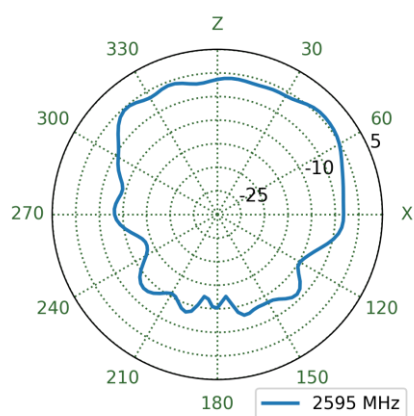
XY Plane



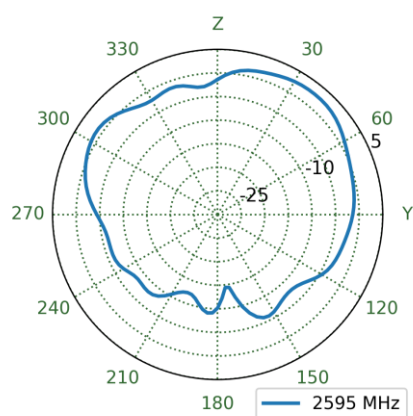
7.68 LTE1 Patterns at 2595 MHz



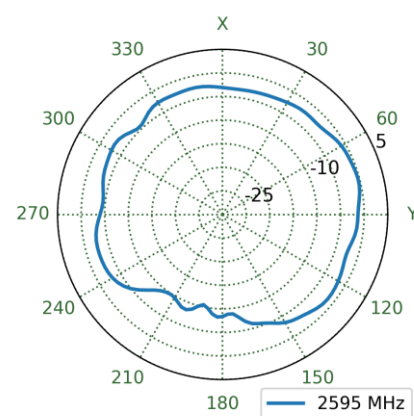
XZ Plane



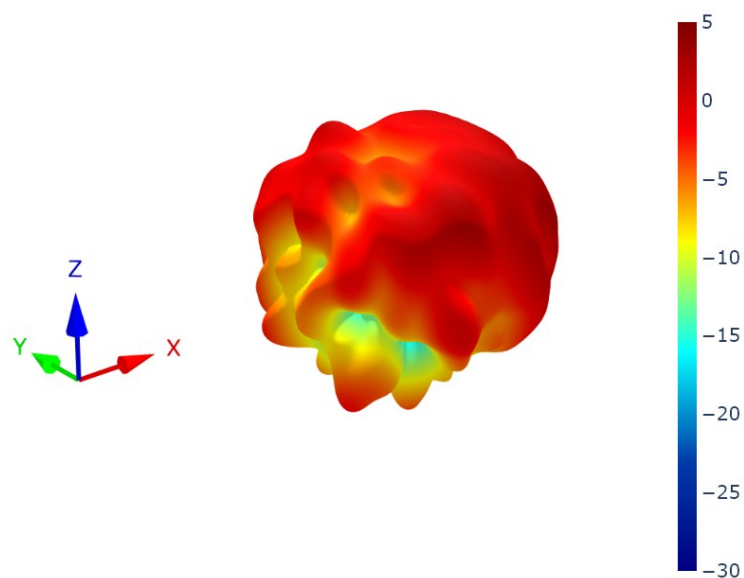
YZ Plane



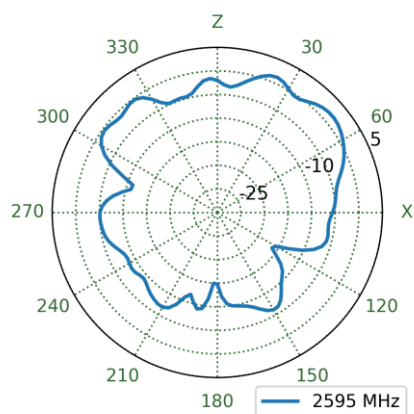
XY Plane



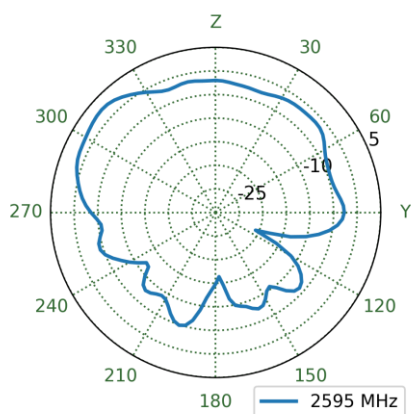
7.69 LTE2 Patterns at 2595 MHz



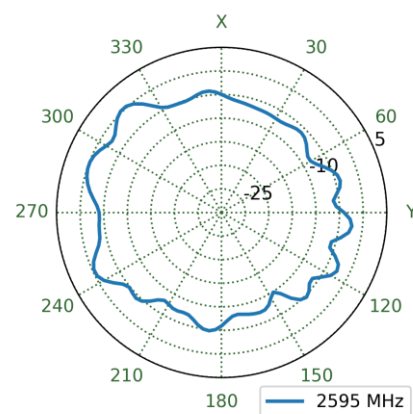
XZ Plane



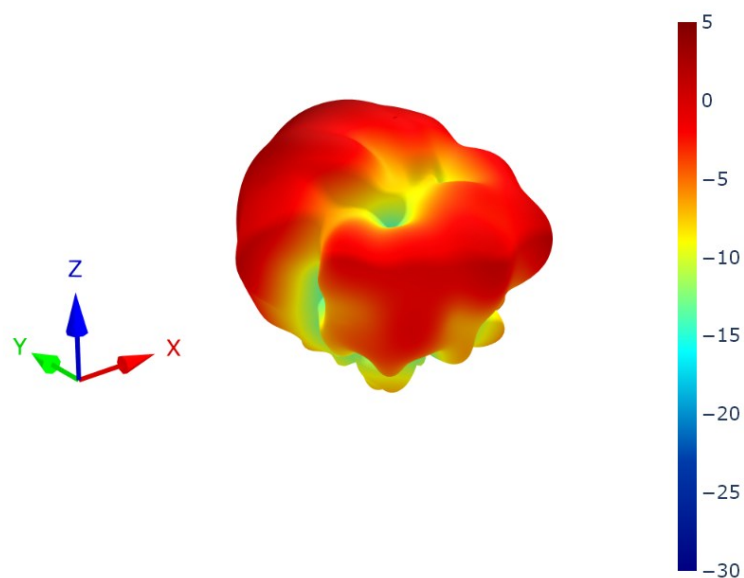
YZ Plane



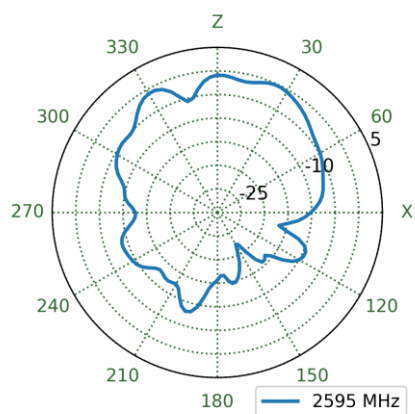
XY Plane



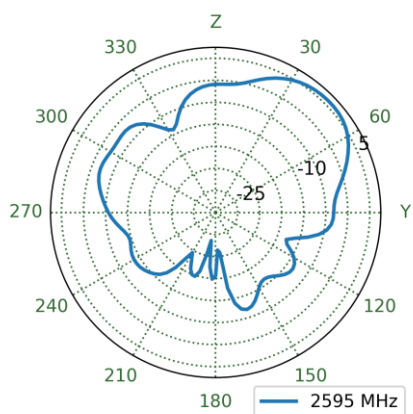
7.70 LTE3 Patterns at 2595 MHz



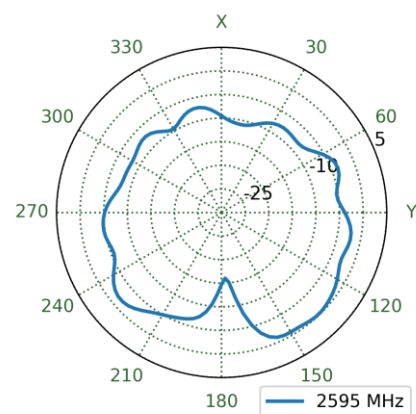
XZ Plane



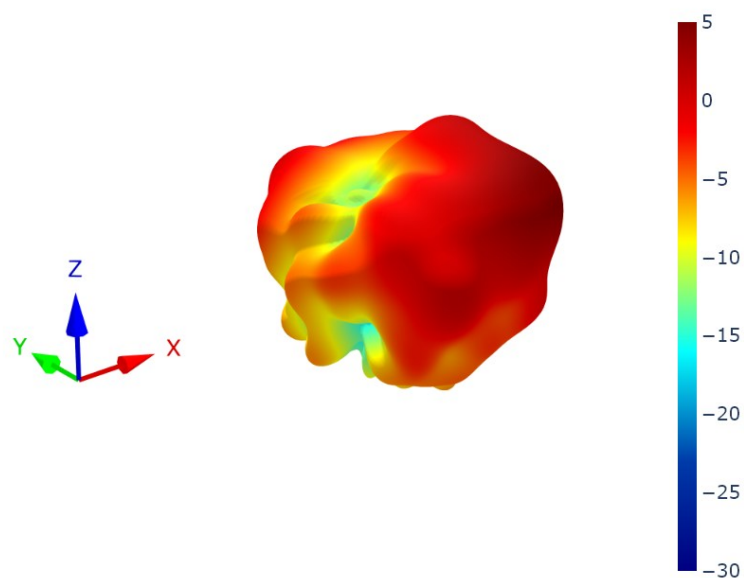
YZ Plane



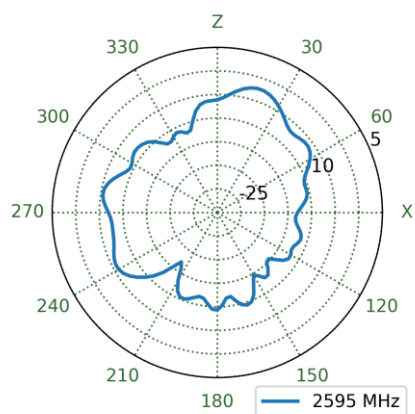
XY Plane



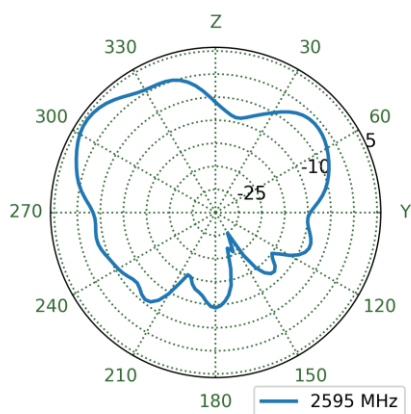
7.71 LTE4 Patterns at 2595 MHz



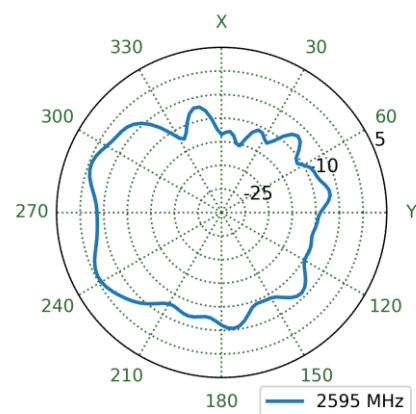
XZ Plane



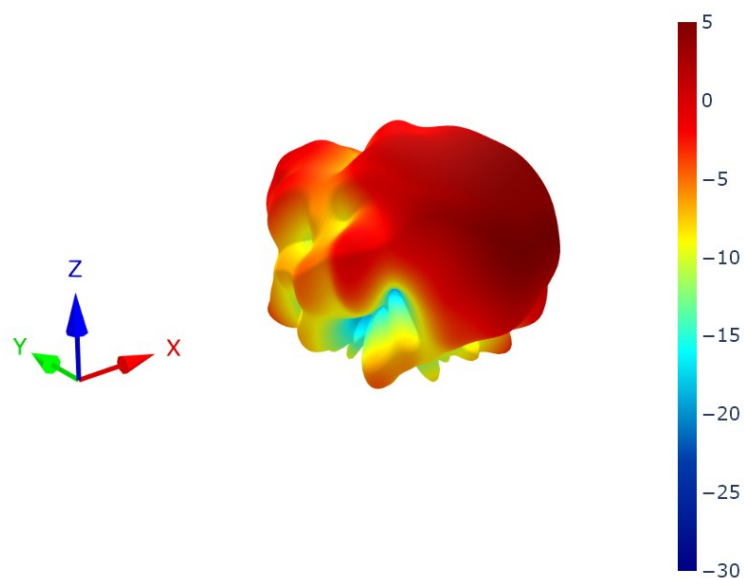
YZ Plane



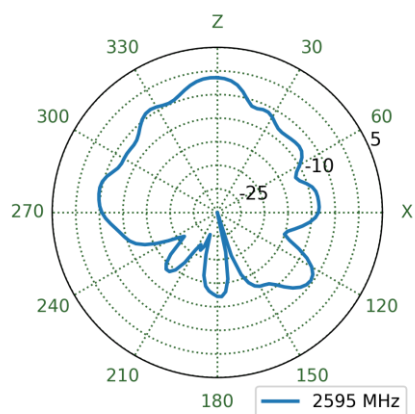
XY Plane



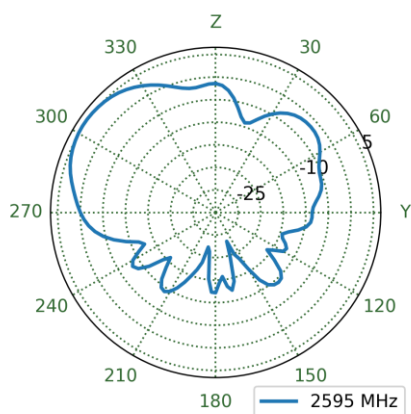
7.72 LTE5 Patterns at 2595 MHz



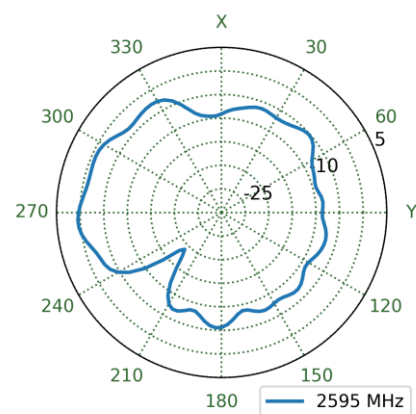
XZ Plane



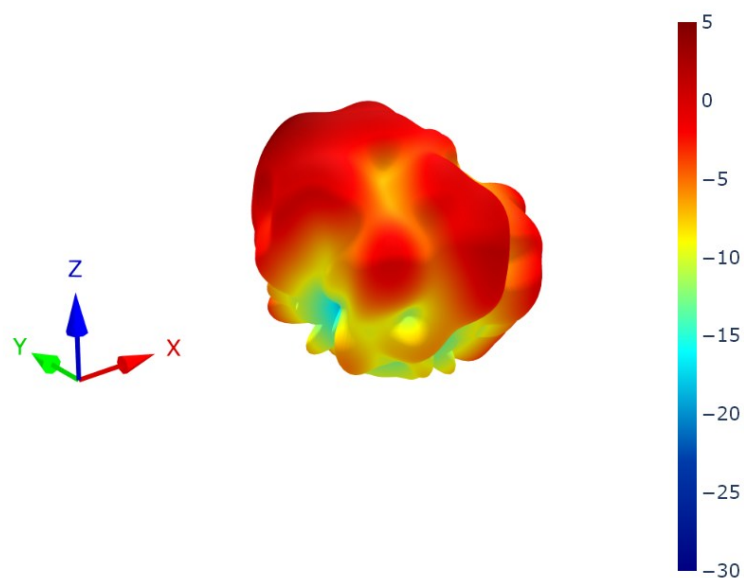
YZ Plane



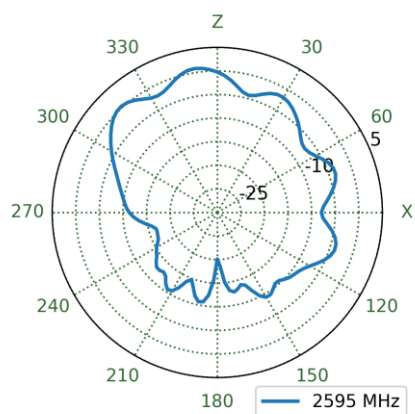
XY Plane



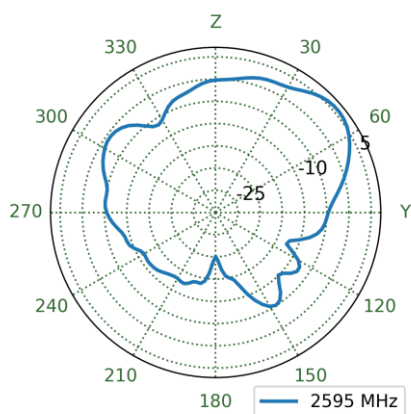
7.73 LTE6 Patterns at 2595 MHz



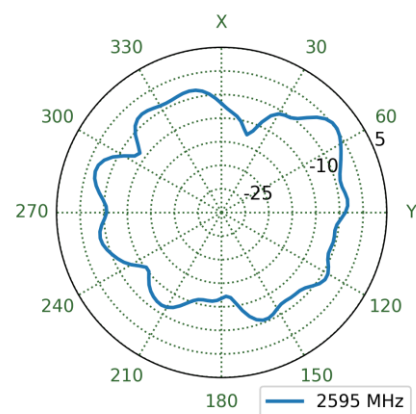
XZ Plane



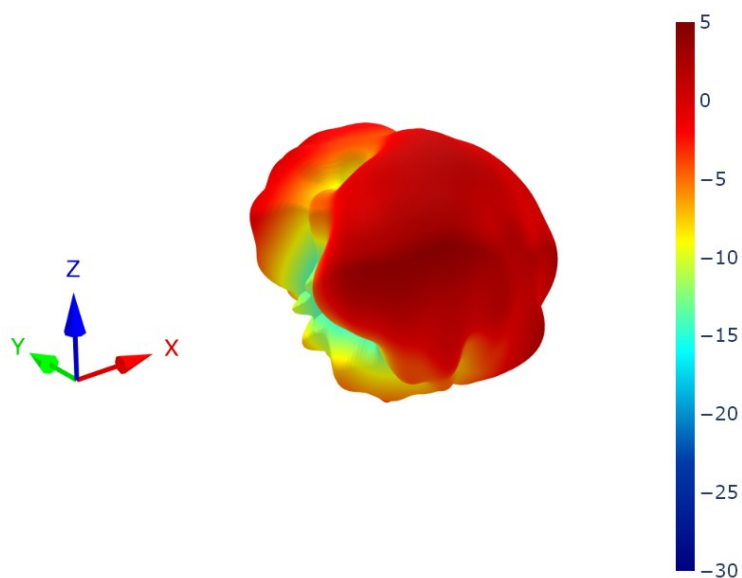
YZ Plane



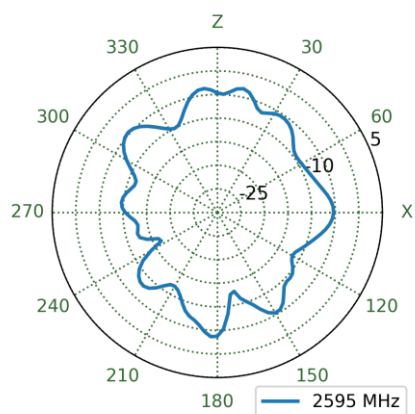
XY Plane



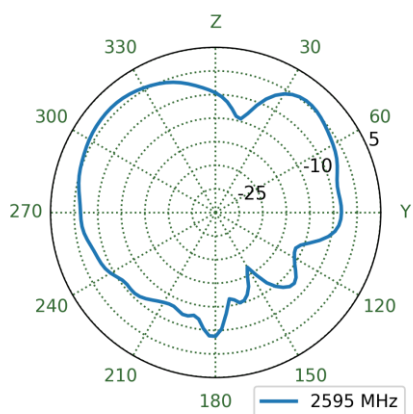
7.74 LTE7 Patterns at 2595 MHz



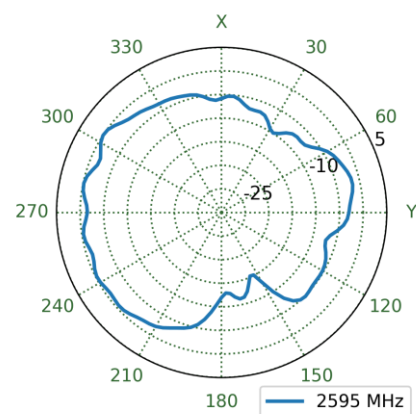
XZ Plane



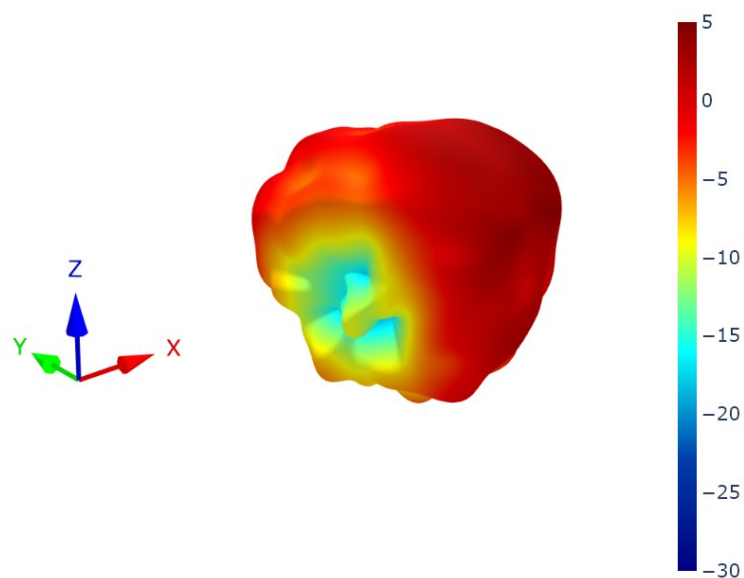
YZ Plane



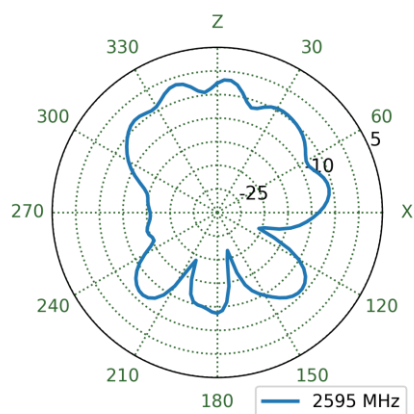
XY Plane



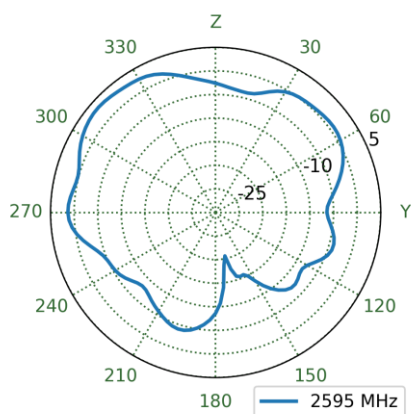
7.75 LTE8 Patterns at 2595 MHz



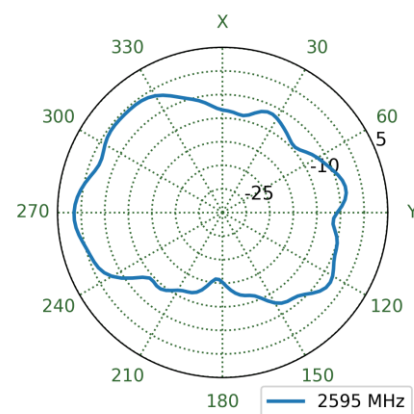
XZ Plane



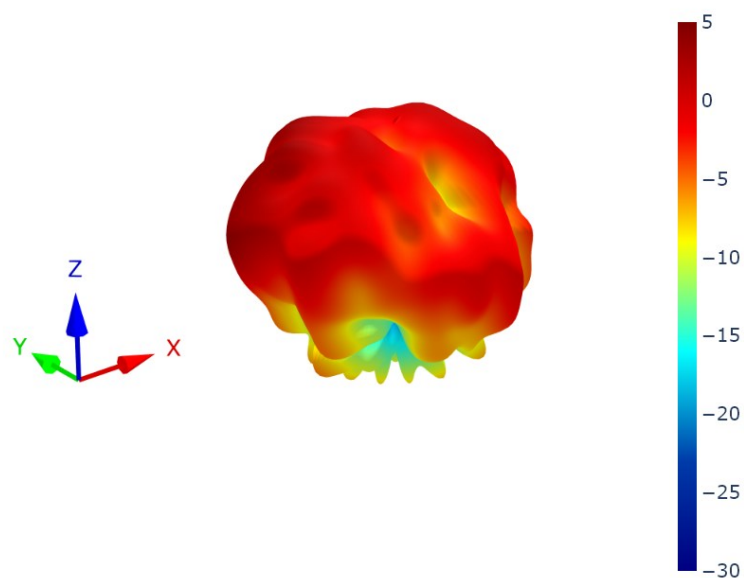
YZ Plane



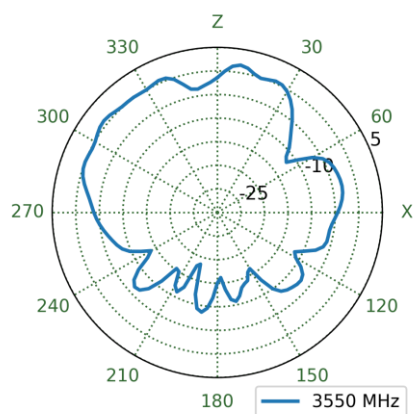
XY Plane



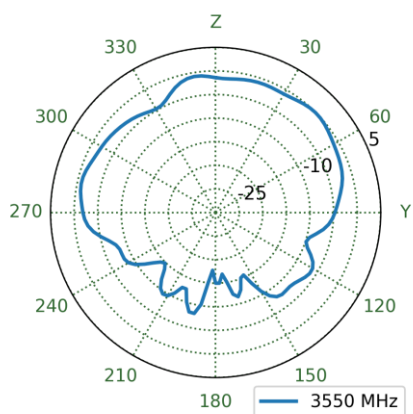
7.76 LTE1 Patterns at 3550 MHz



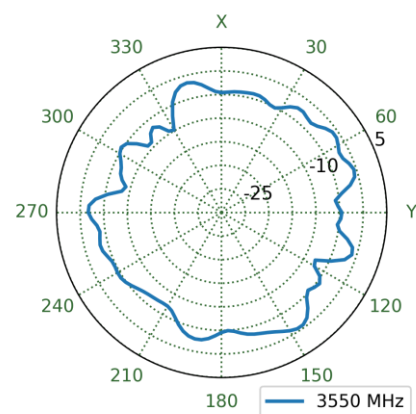
XZ Plane



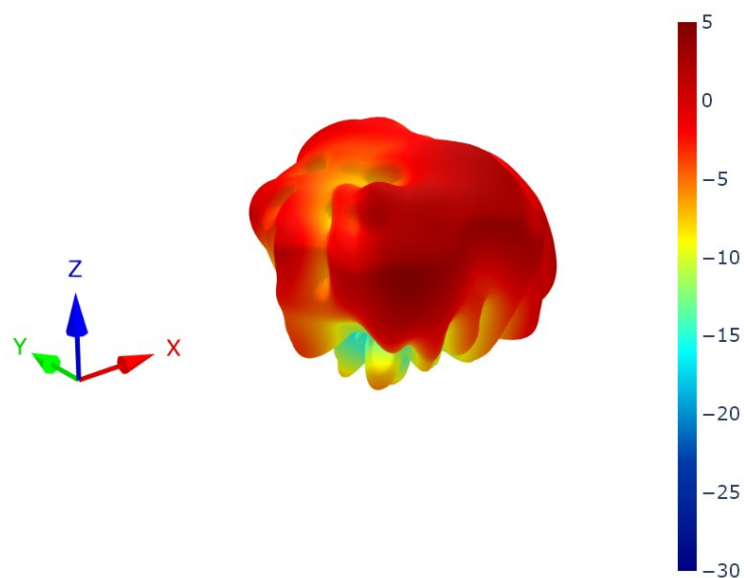
YZ Plane



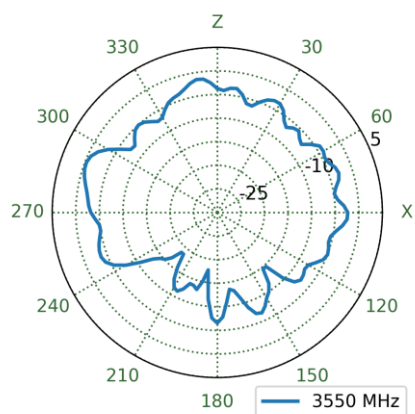
XY Plane



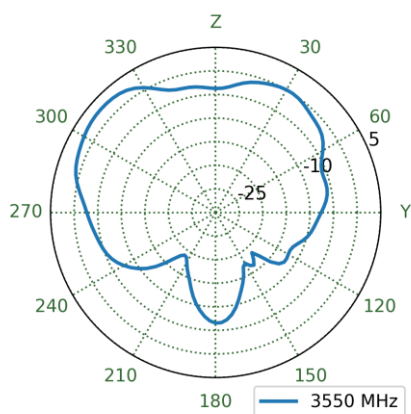
7.77 LTE2 Patterns at 3550 MHz



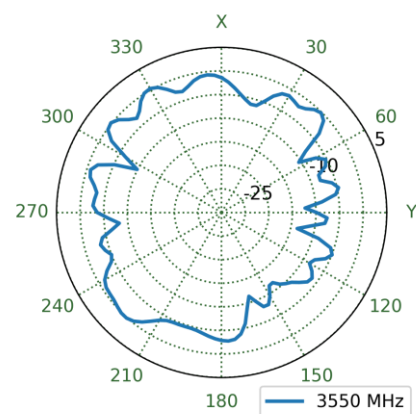
XZ Plane



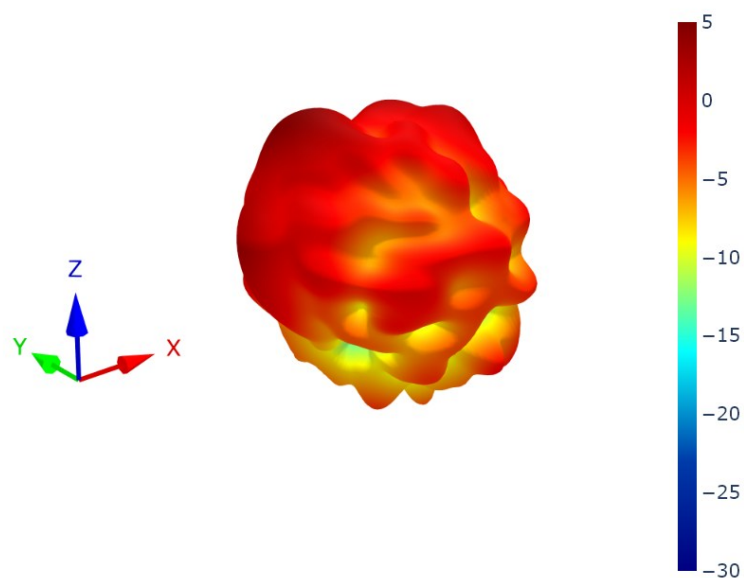
YZ Plane



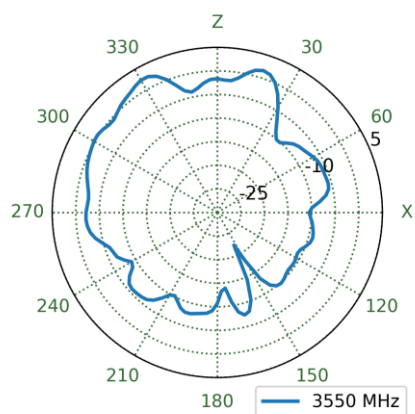
XY Plane



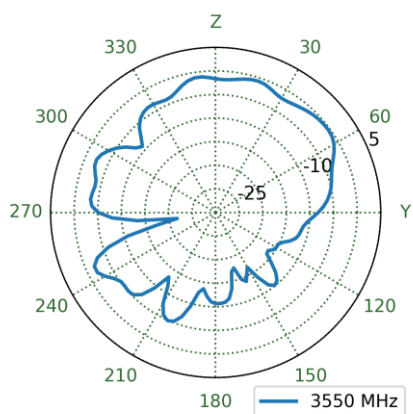
7.78 LTE3 Patterns at 3550 MHz



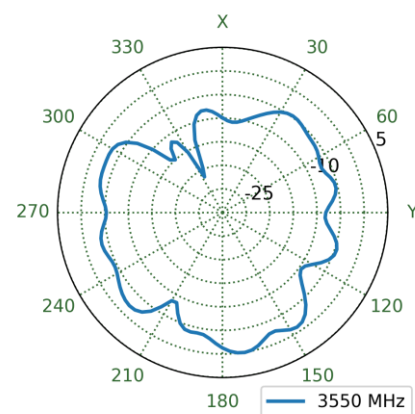
XZ Plane



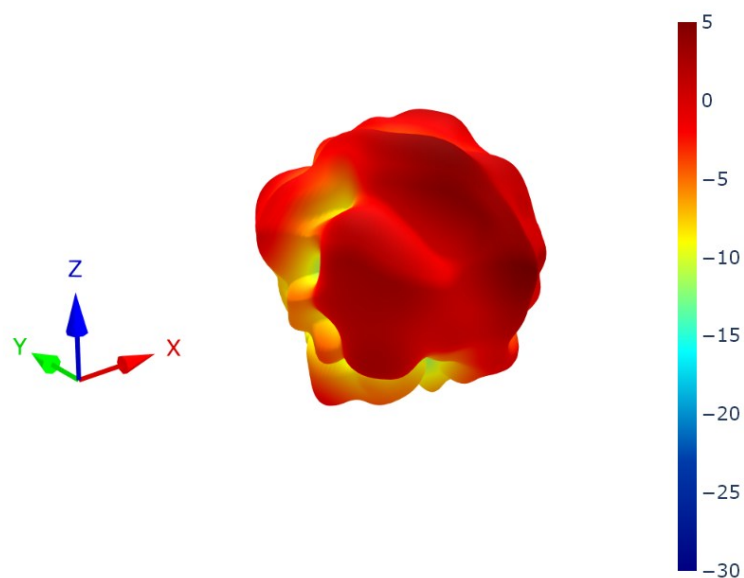
YZ Plane



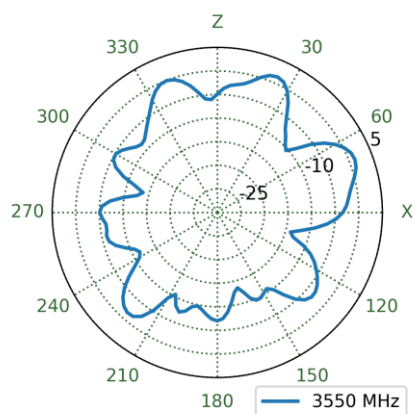
XY Plane



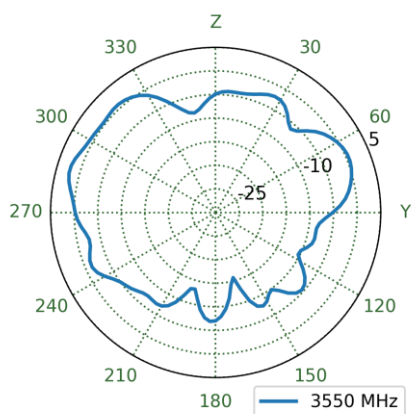
7.79 LTE4 Patterns at 3550 MHz



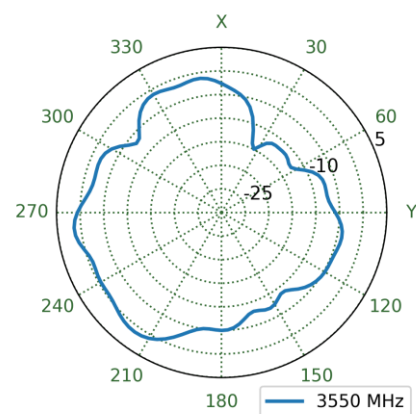
XZ Plane



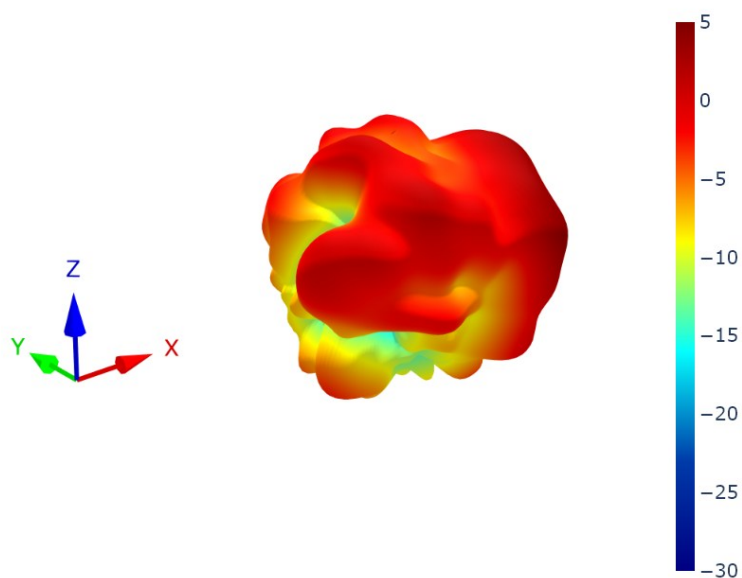
YZ Plane



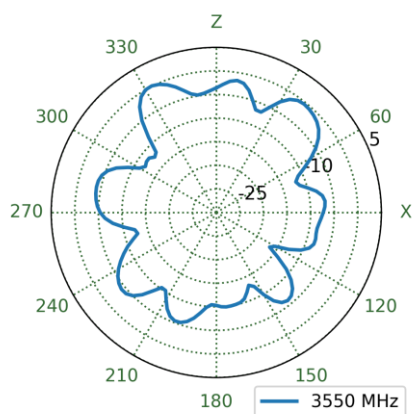
XY Plane



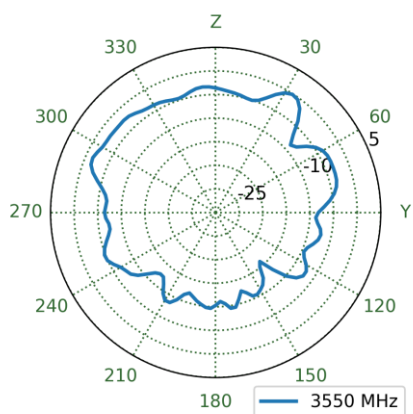
7.80 LTE5 Patterns at 3550 MHz



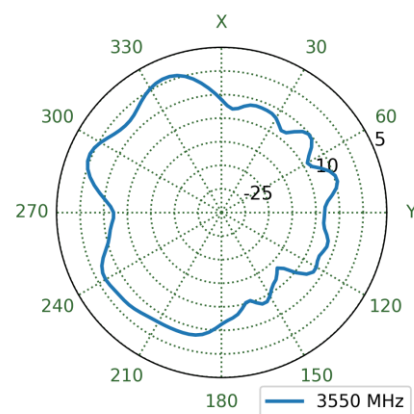
XZ Plane



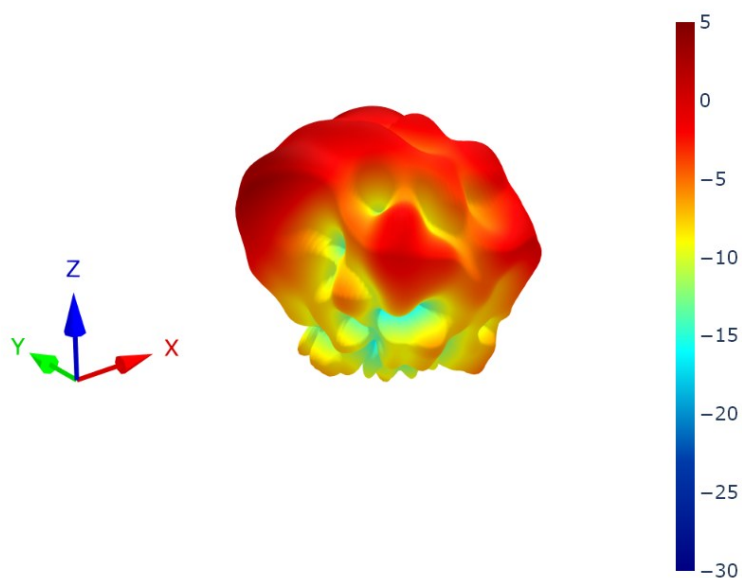
YZ Plane



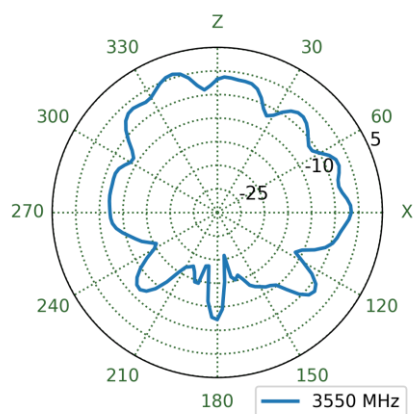
XY Plane



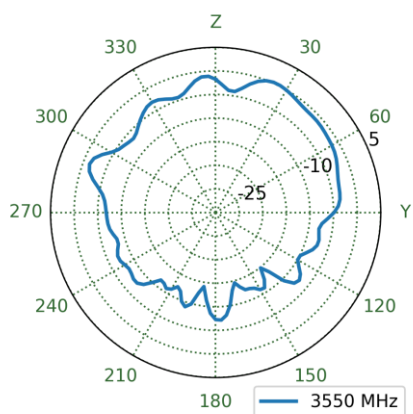
7.81 LTE6 Patterns at 3550 MHz



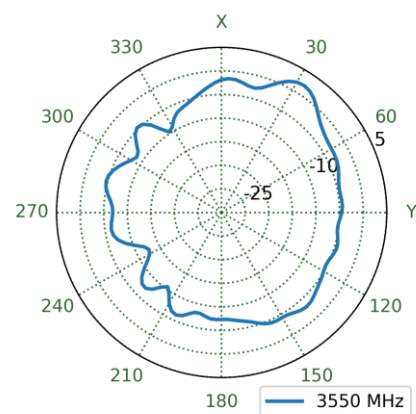
XZ Plane



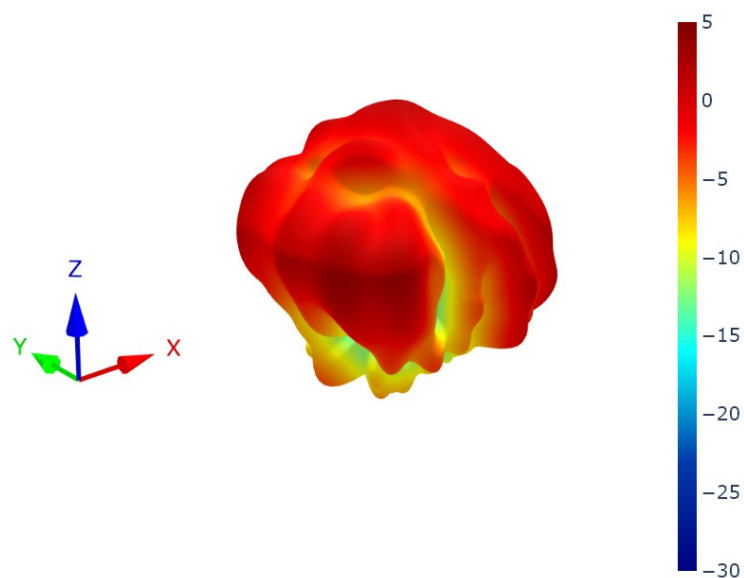
YZ Plane



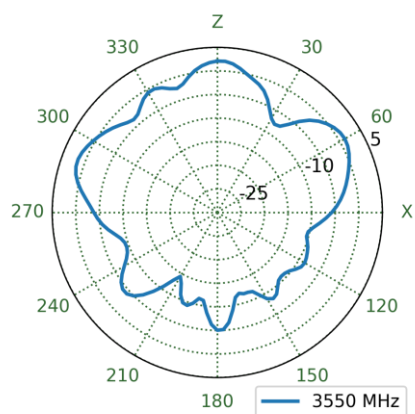
XY Plane



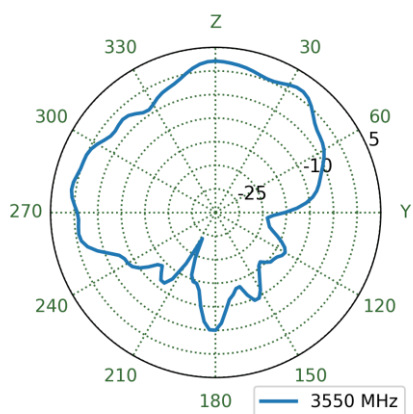
7.82 LTE7 Patterns at 3550 MHz



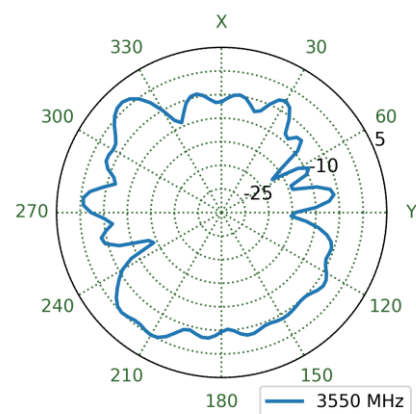
XZ Plane



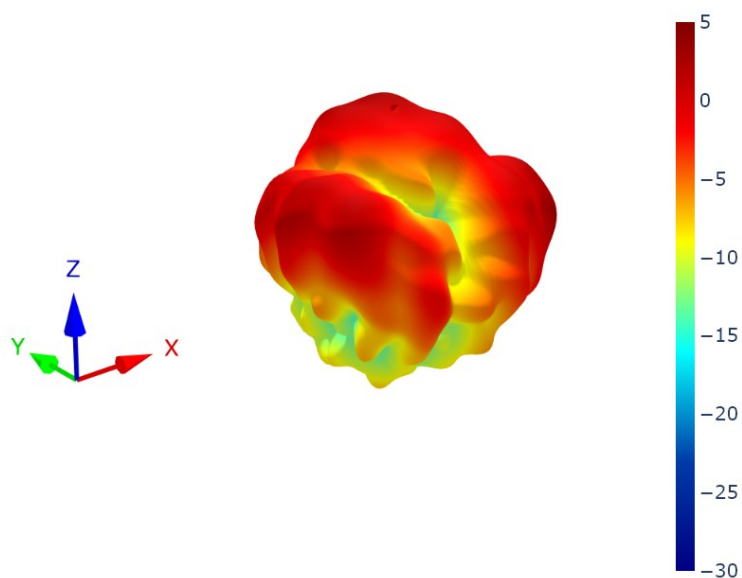
YZ Plane



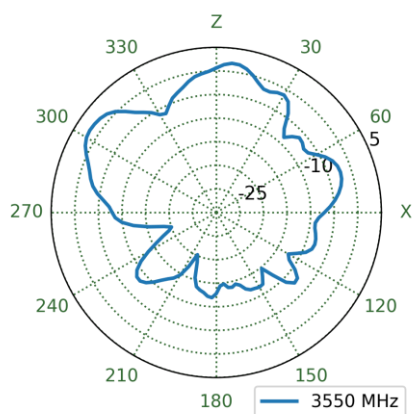
XY Plane



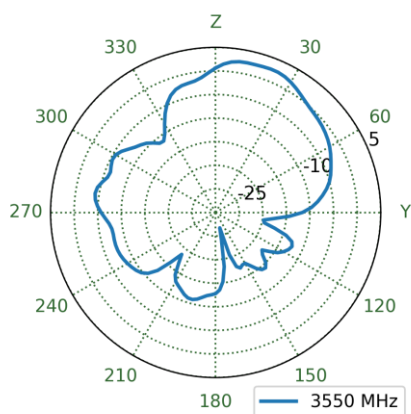
7.83 LTE8 Patterns at 3550 MHz



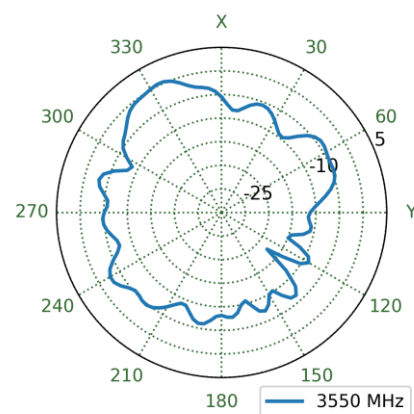
XZ Plane



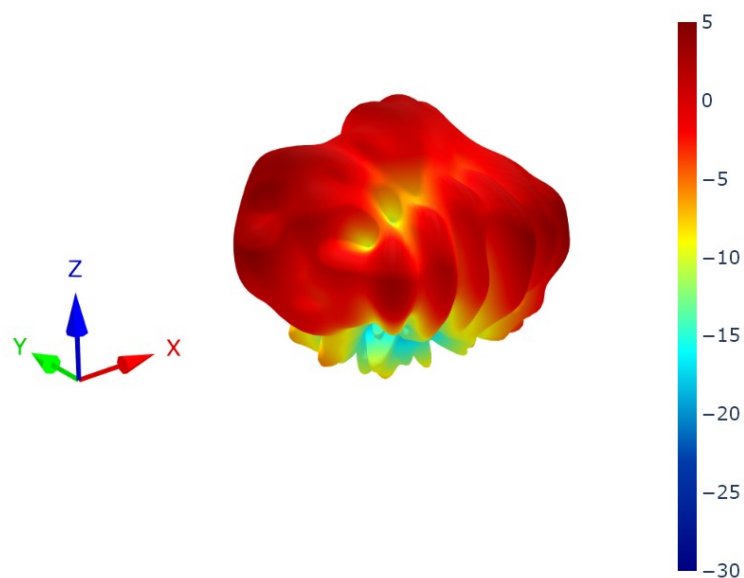
YZ Plane



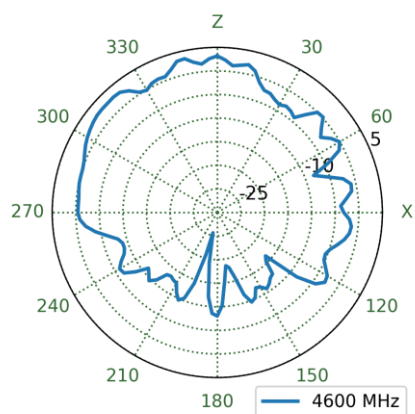
XY Plane



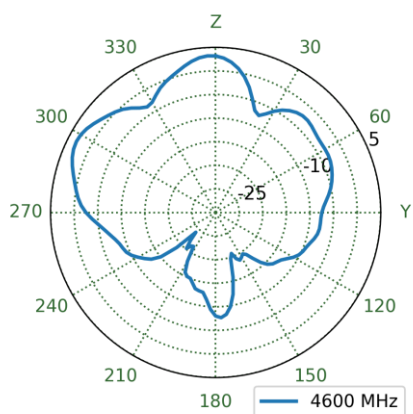
7.84 LTE1 Patterns at 4600 MHz



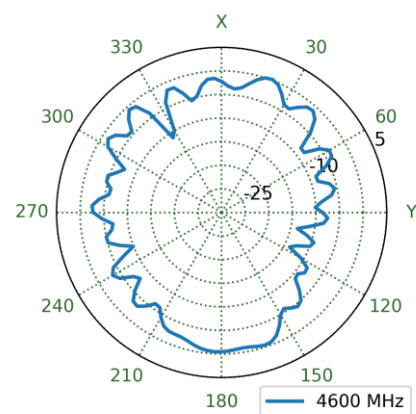
XZ Plane



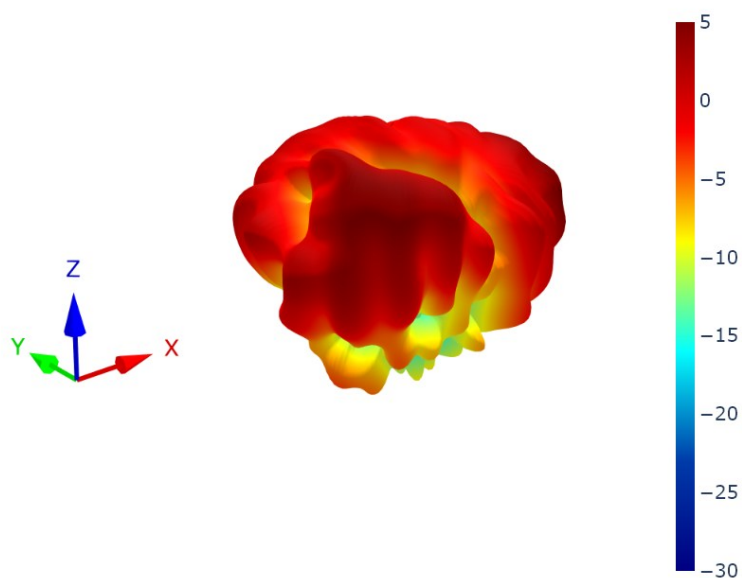
YZ Plane



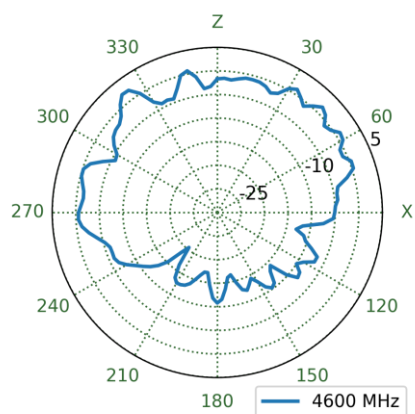
XY Plane



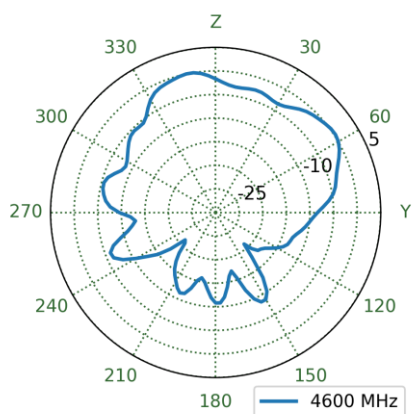
7.85 LTE2 Patterns at 4600 MHz



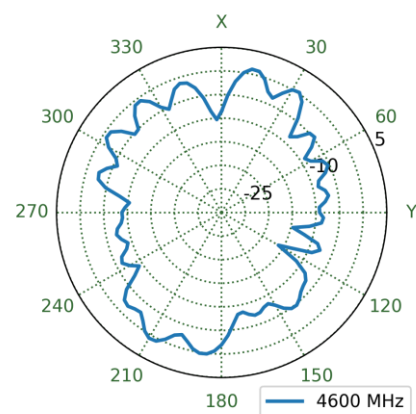
XZ Plane



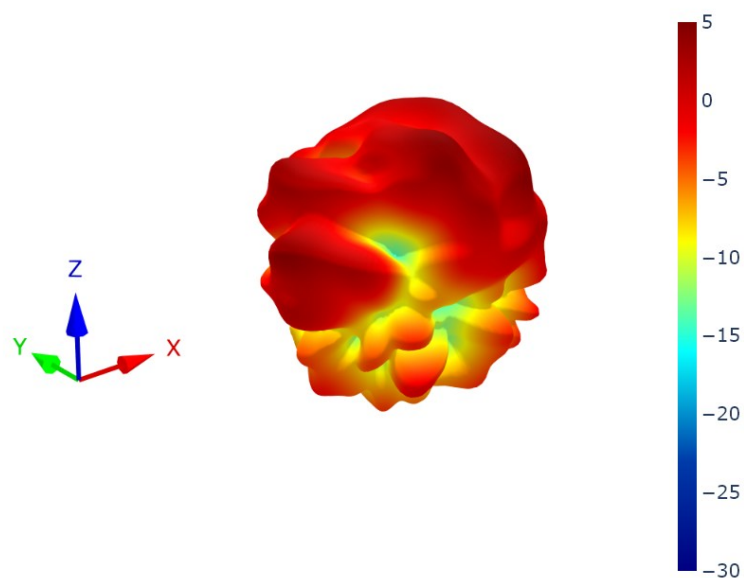
YZ Plane



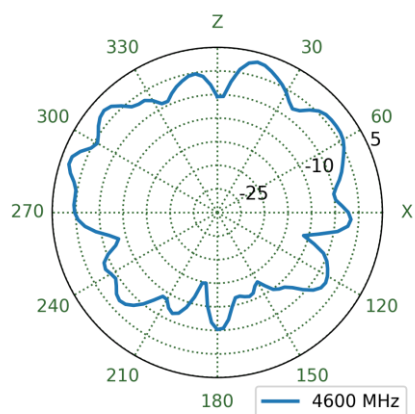
XY Plane



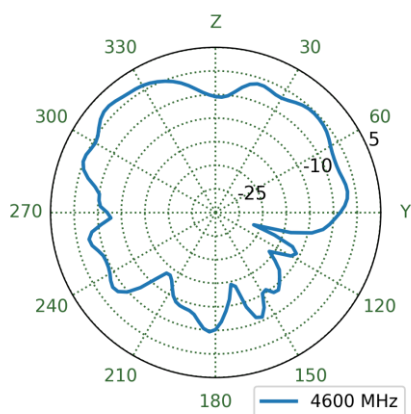
7.86 LTE3 Patterns at 4600 MHz



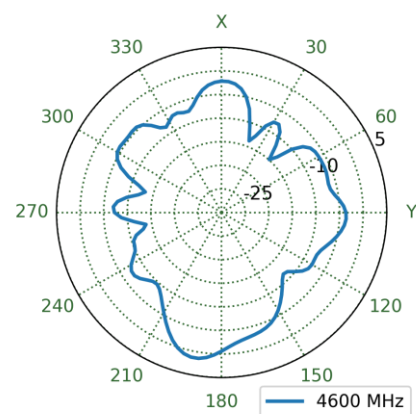
XZ Plane



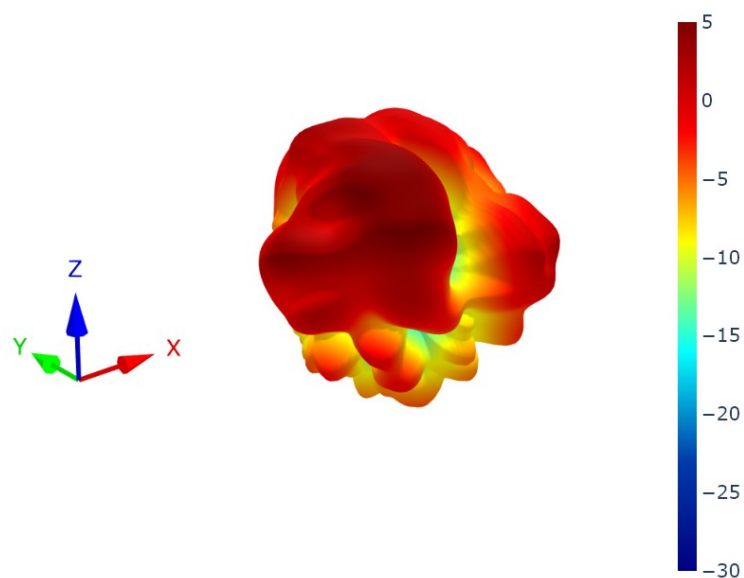
YZ Plane



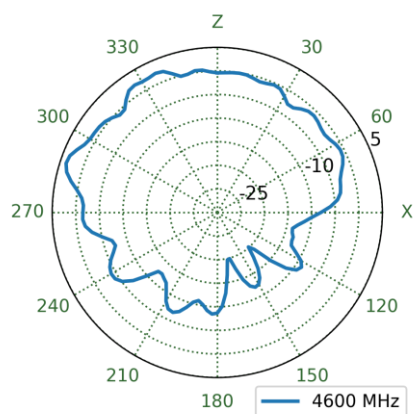
XY Plane



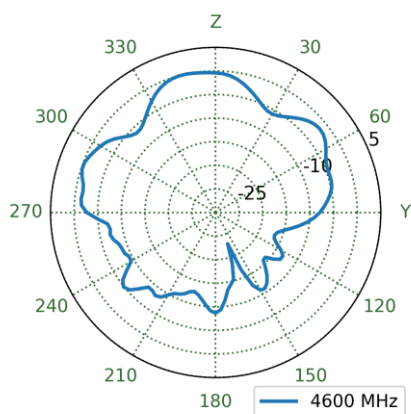
7.87 LTE4 Patterns at 4600 MHz



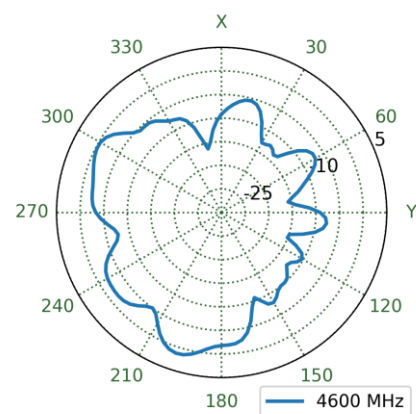
XZ Plane



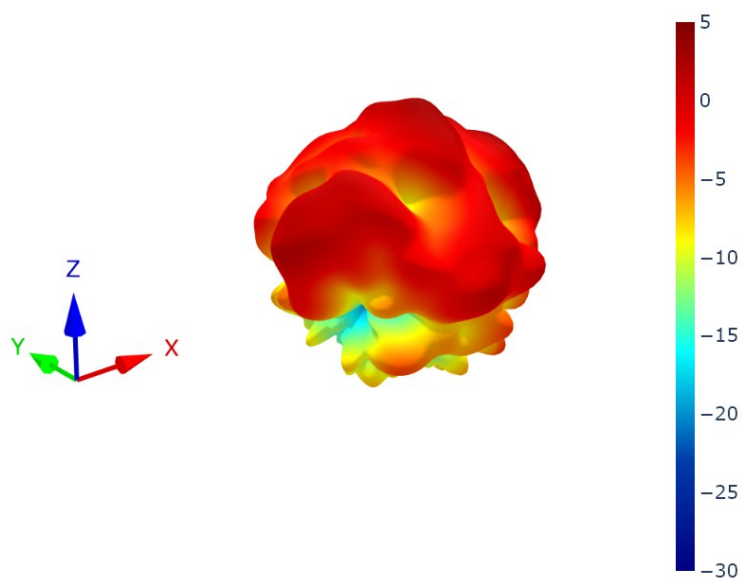
YZ Plane



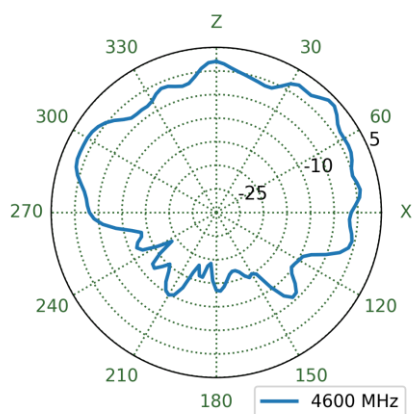
XY Plane



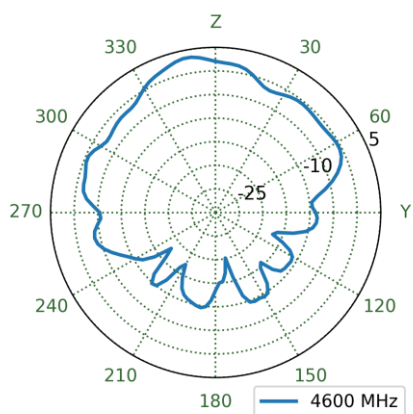
7.88 LTE5 Patterns at 4600 MHz



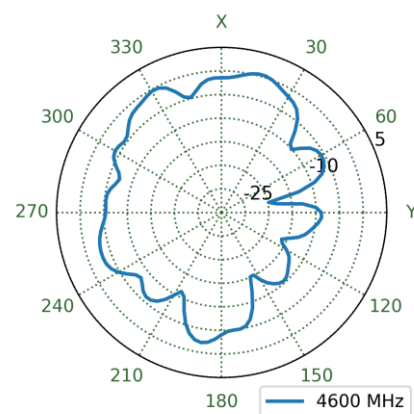
XZ Plane



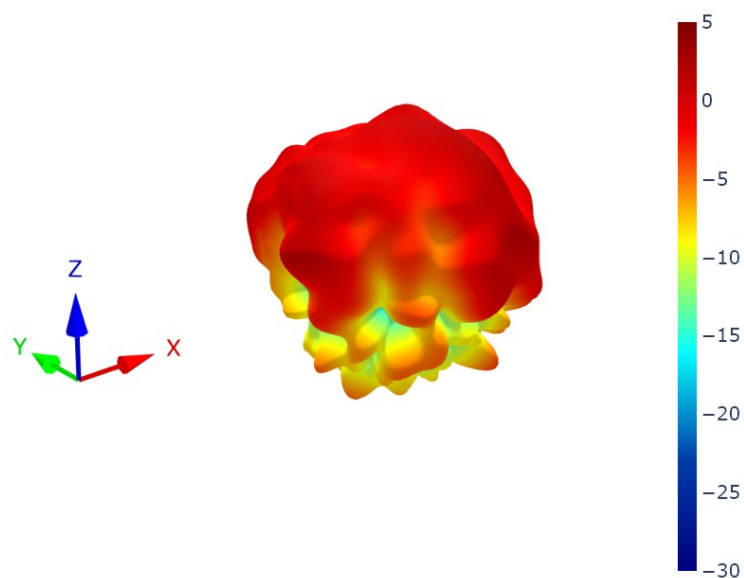
YZ Plane



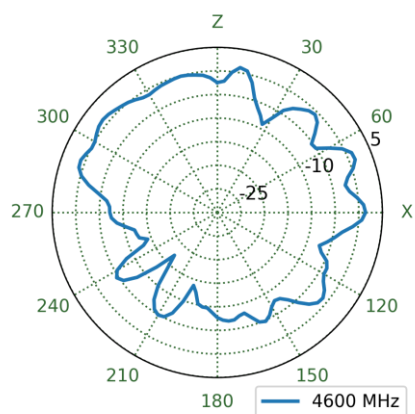
XY Plane



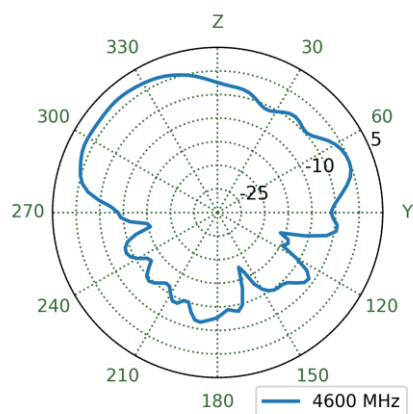
7.89 LTE6 Patterns at 4600 MHz



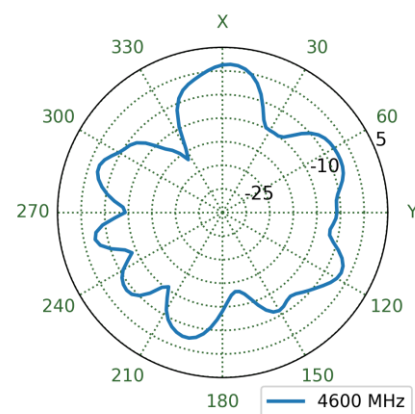
XZ Plane



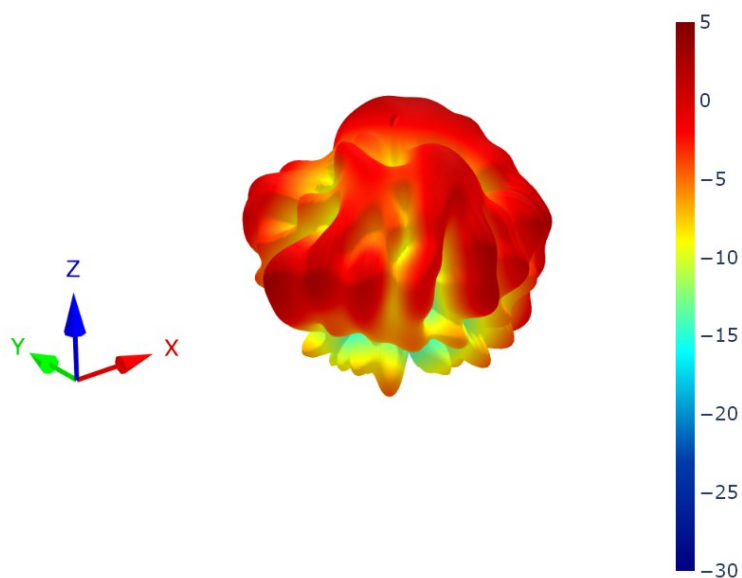
YZ Plane



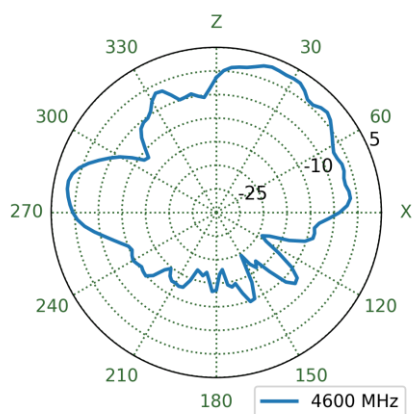
XY Plane



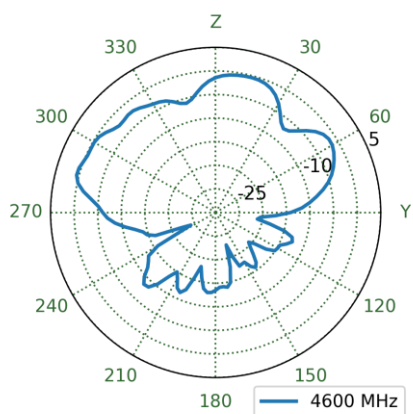
7.90 LTE7 Patterns at 4600 MHz



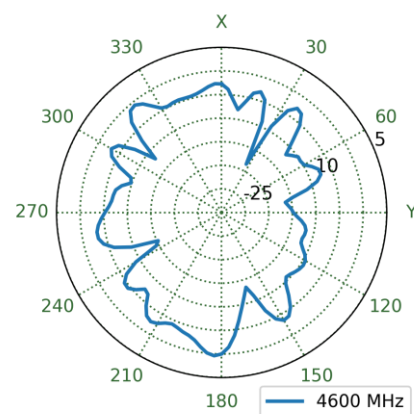
XZ Plane



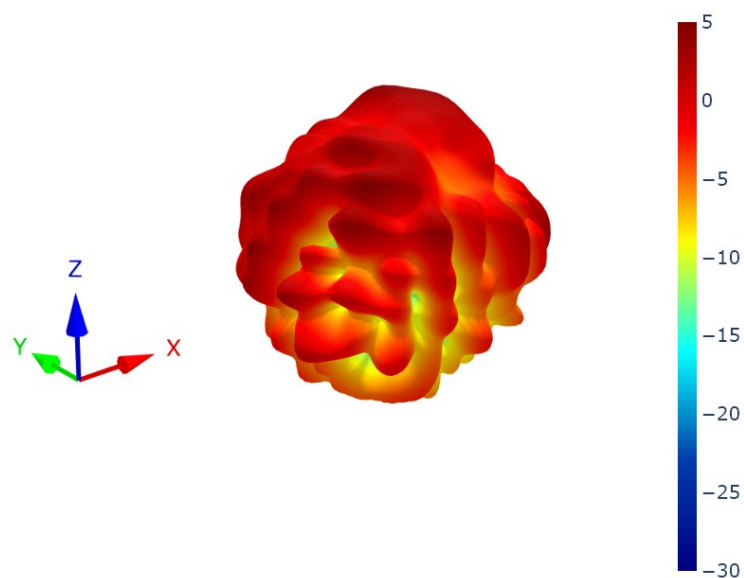
YZ Plane



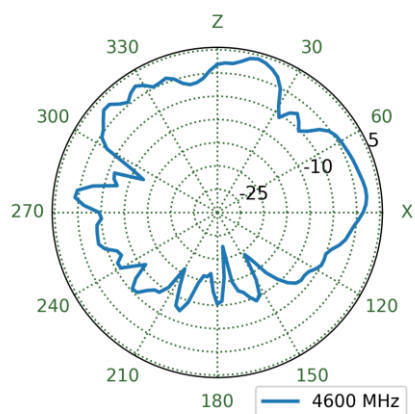
XY Plane



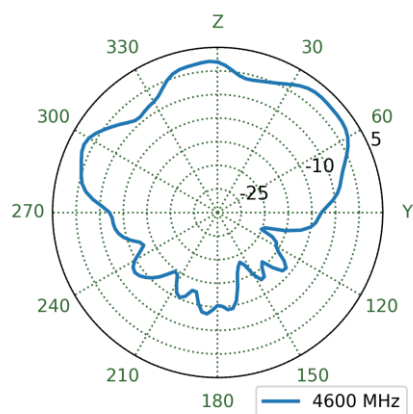
7.91 LTE8 Patterns at 4600 MHz



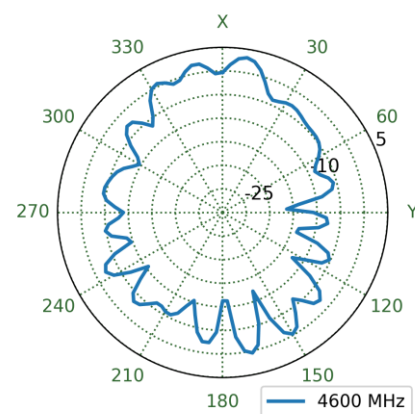
XZ Plane



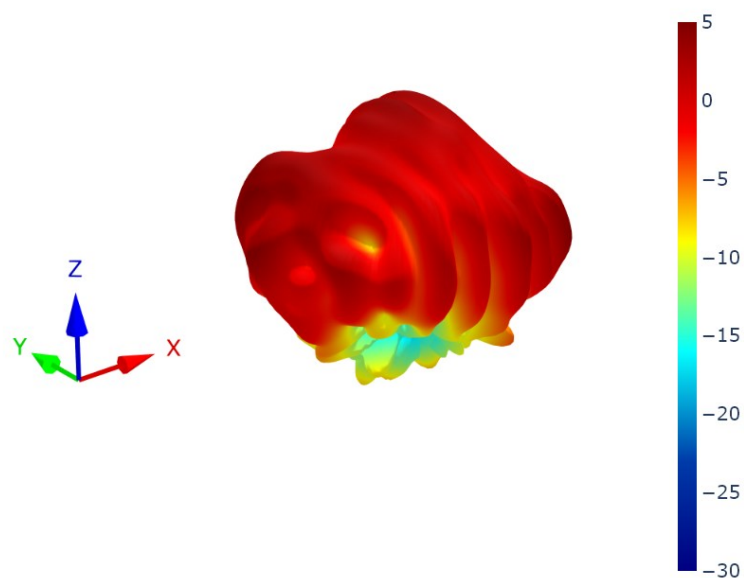
YZ Plane



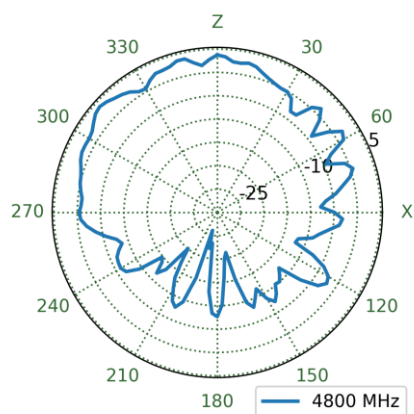
XY Plane



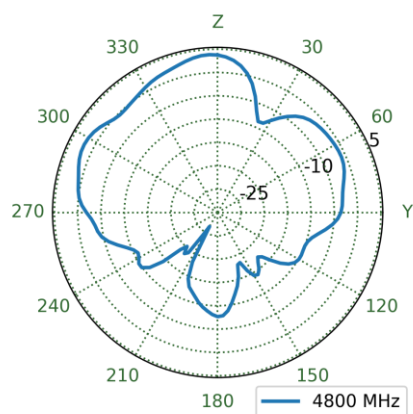
7.92 LTE1 Patterns at 4800 MHz



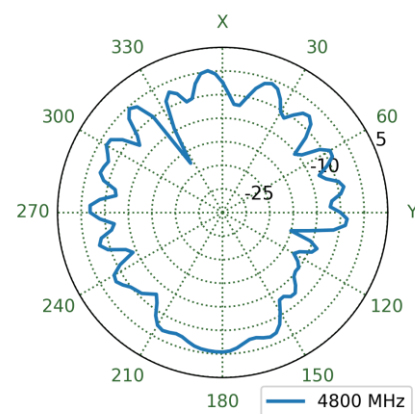
XZ Plane



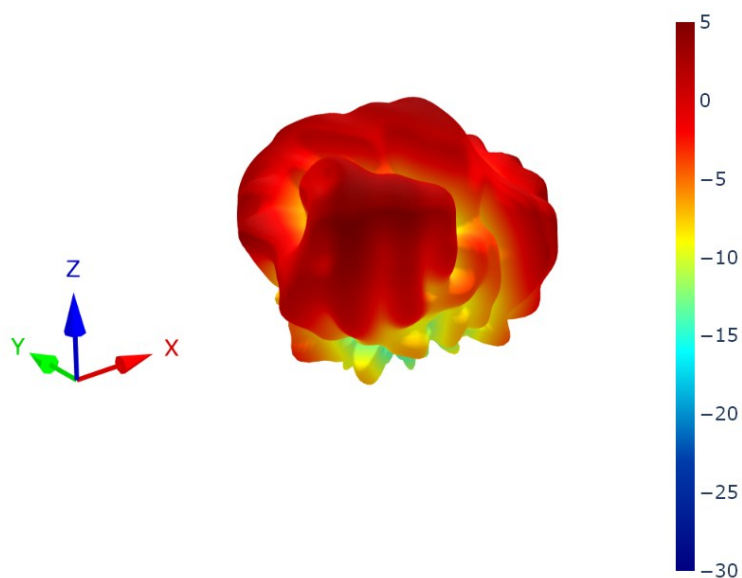
YZ Plane



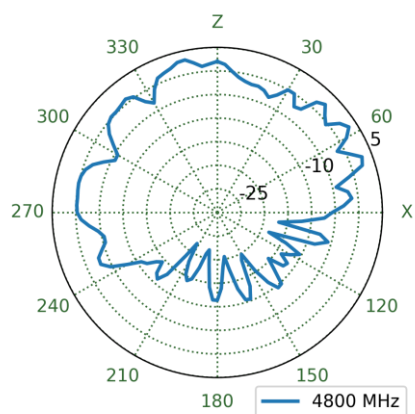
XY Plane



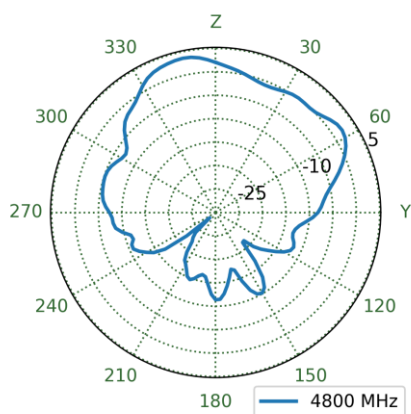
7.93 LTE2 Patterns at 4800 MHz



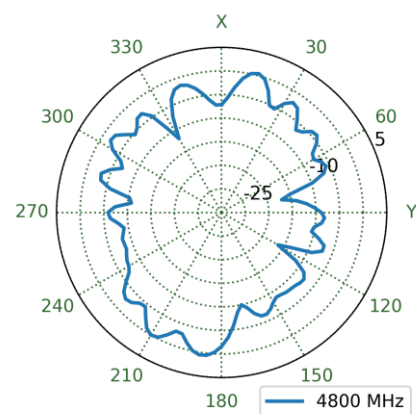
XZ Plane



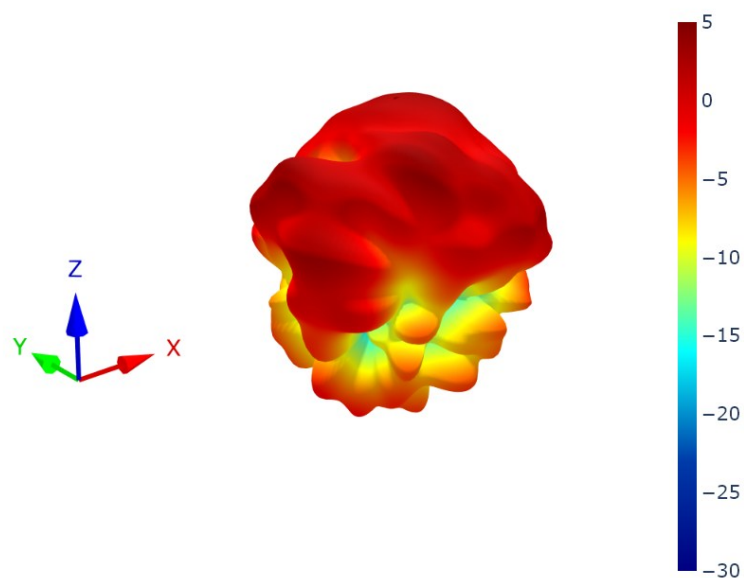
YZ Plane



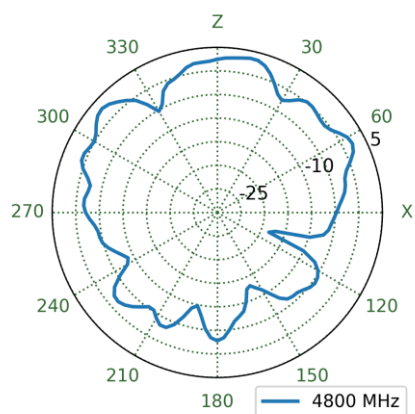
XY Plane



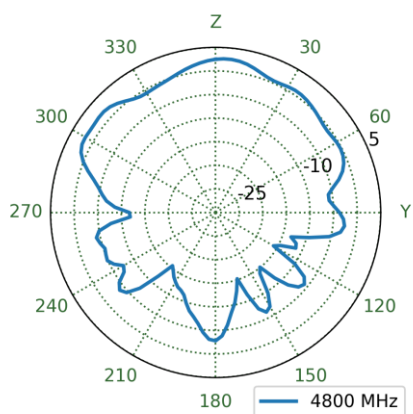
7.94 LTE3 Patterns at 4800 MHz



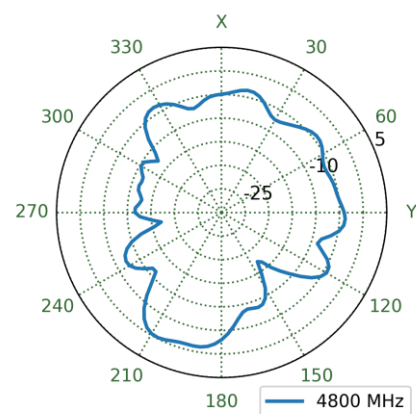
XZ Plane



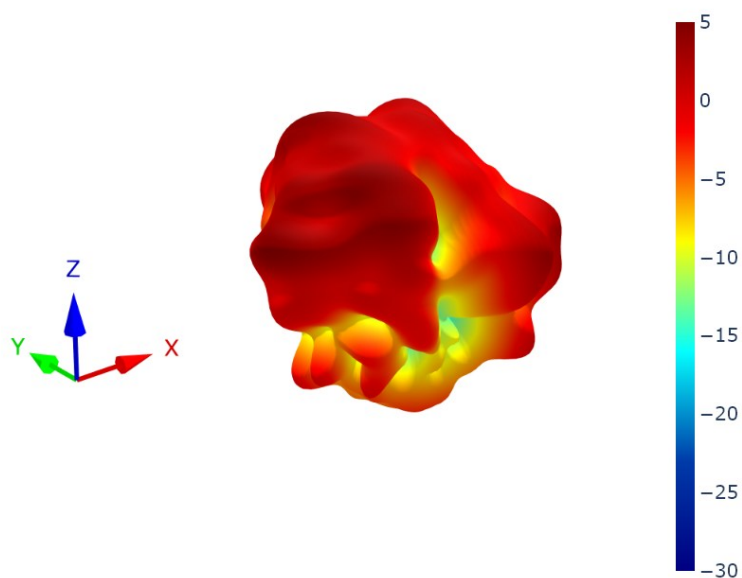
YZ Plane



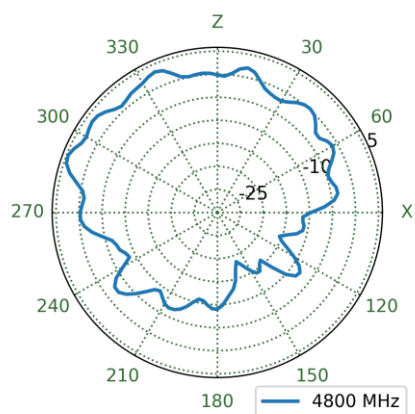
XY Plane



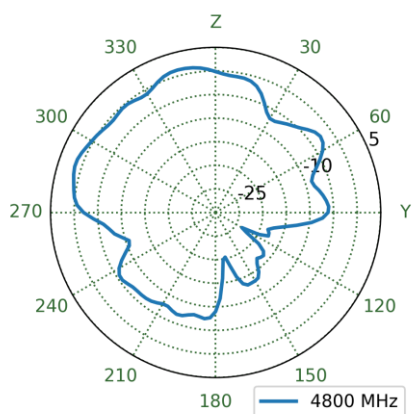
7.95 LTE4 Patterns at 4800 MHz



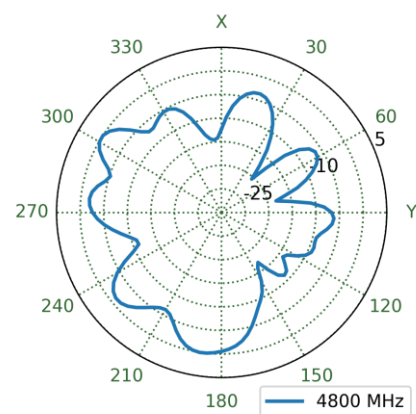
XZ Plane



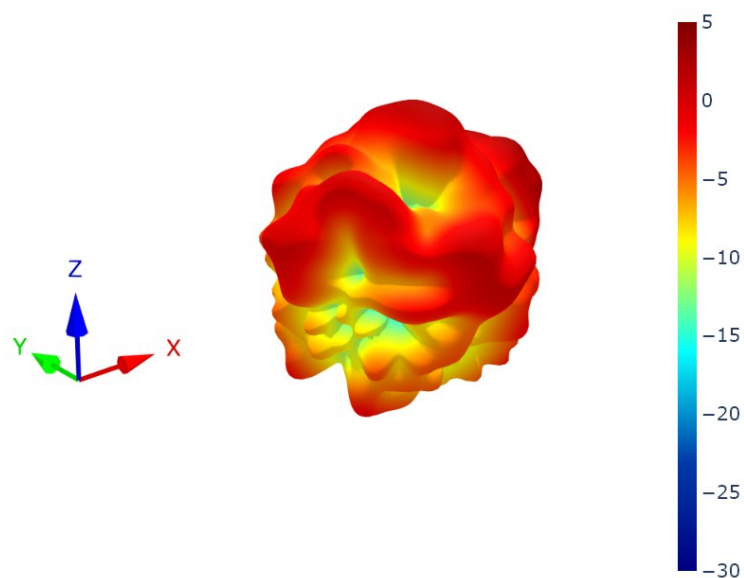
YZ Plane



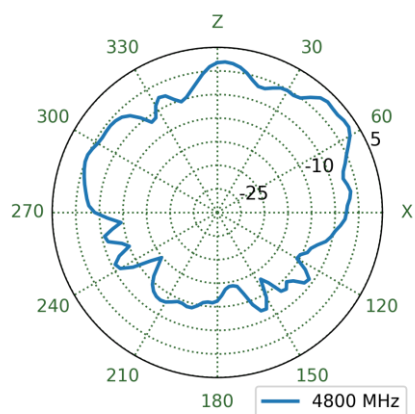
XY Plane



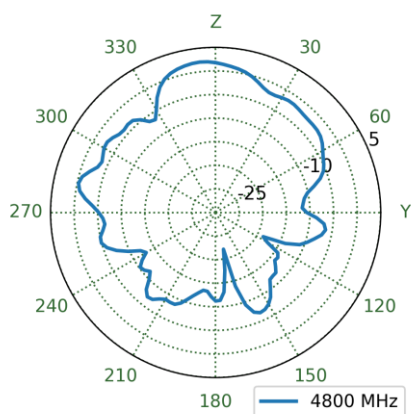
7.96 LTE5 Patterns at 4800 MHz



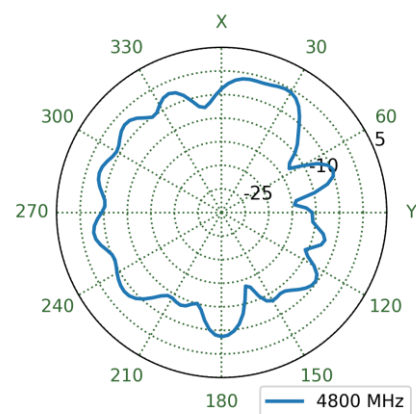
XZ Plane



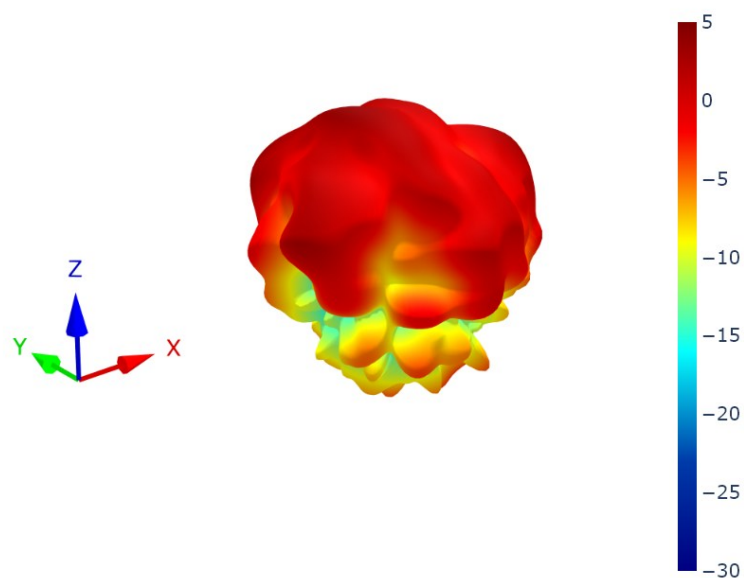
YZ Plane



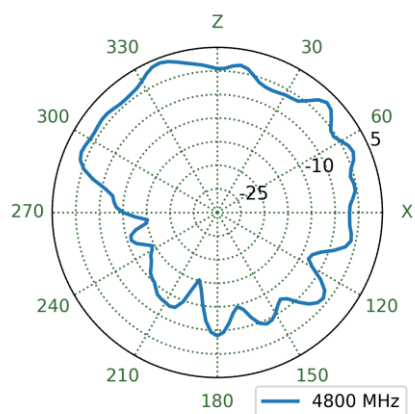
XY Plane



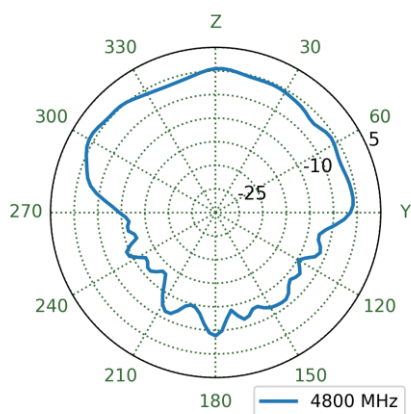
7.97 LTE6 Patterns at 4800 MHz



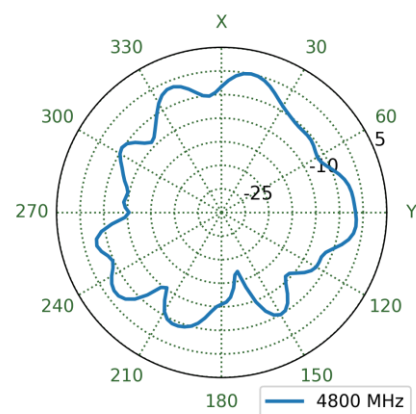
XZ Plane



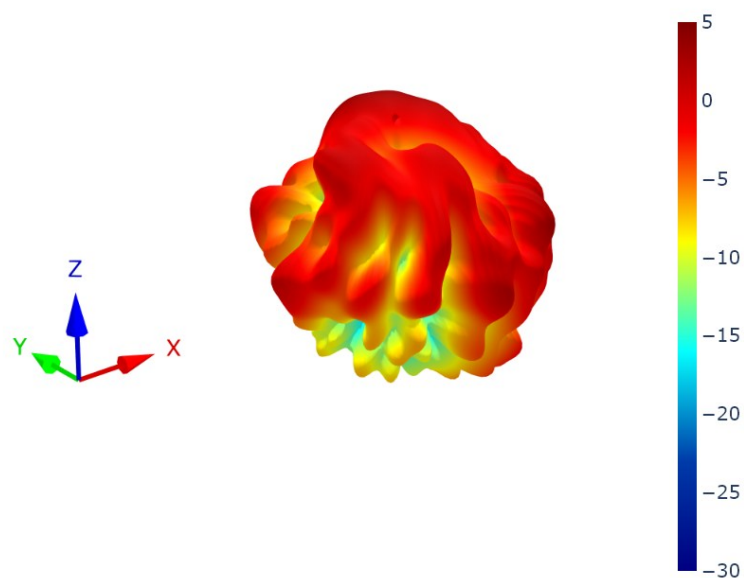
YZ Plane



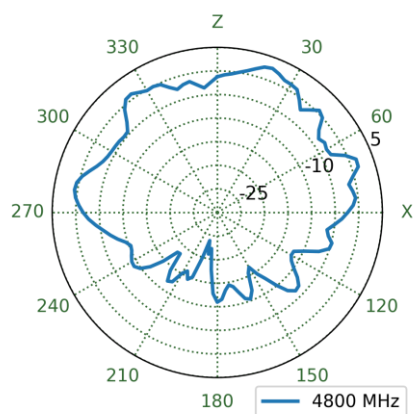
XY Plane



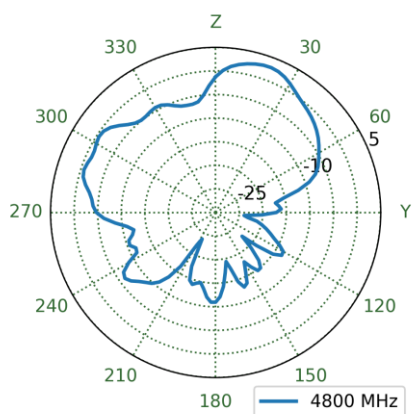
7.98 LTE7 Patterns at 4800 MHz



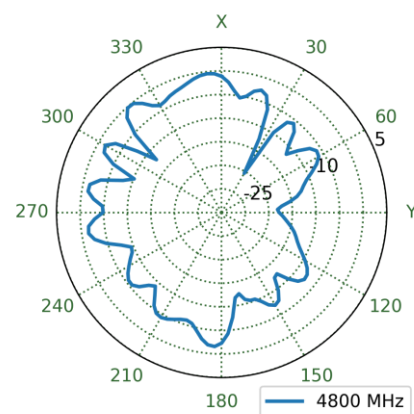
XZ Plane



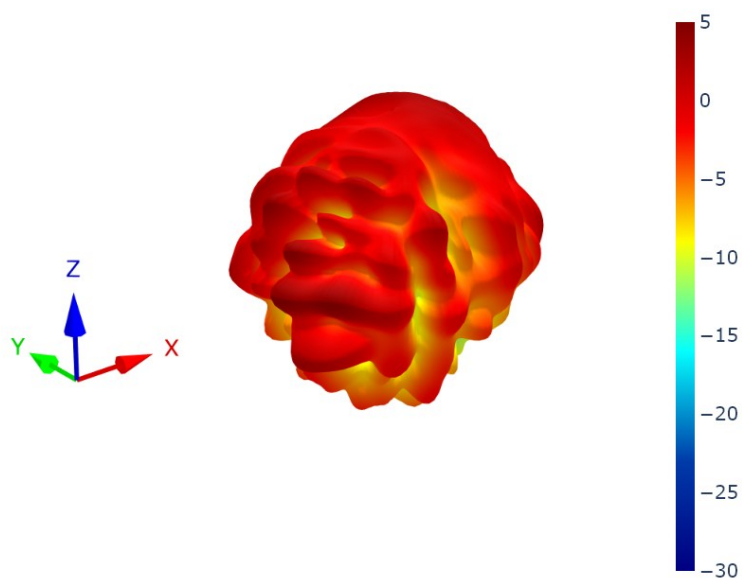
YZ Plane



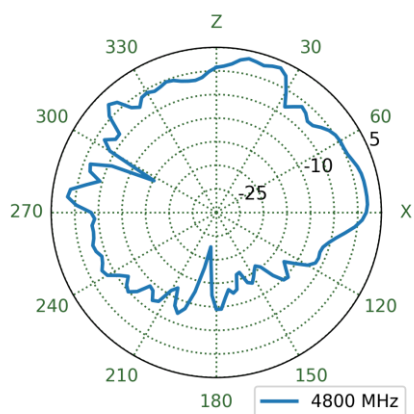
XY Plane



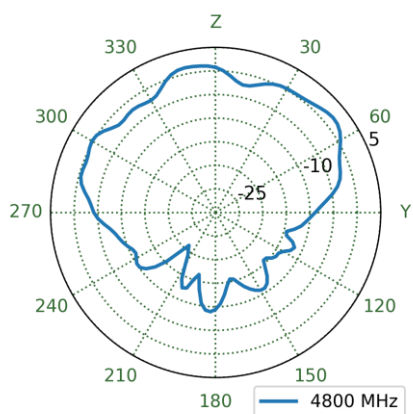
7.99 LTE8 Patterns at 4800 MHz



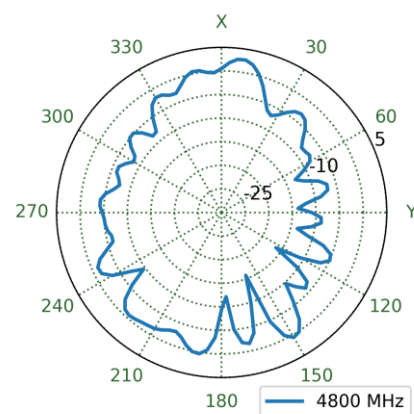
XZ Plane



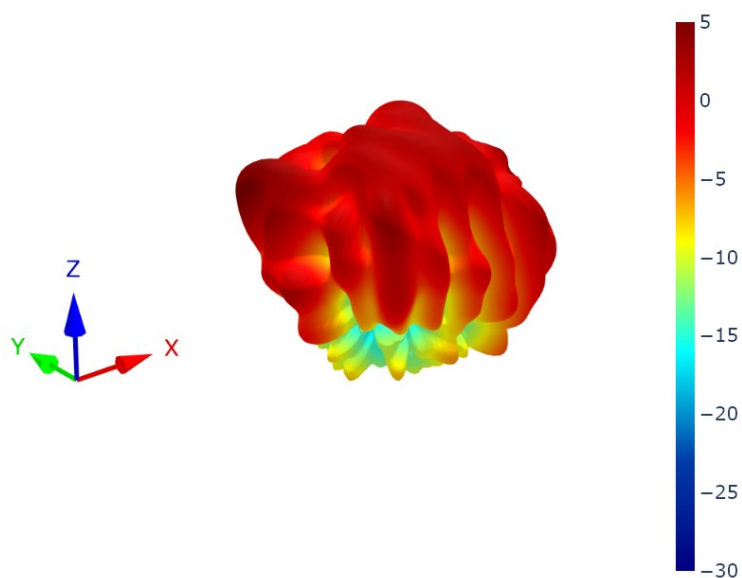
YZ Plane



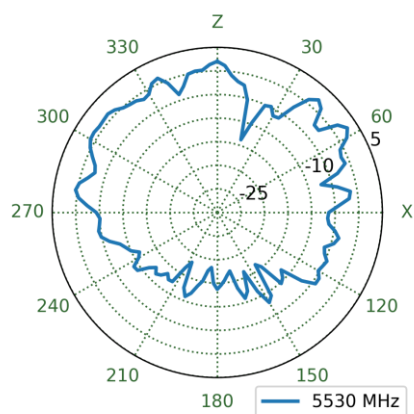
XY Plane



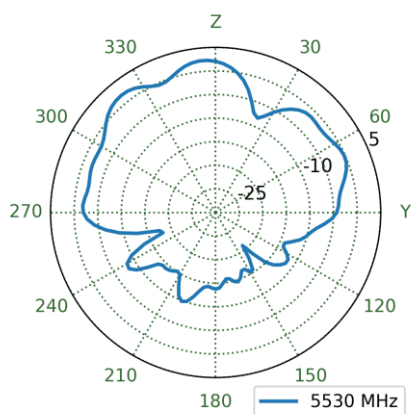
7.100 LTE1 Patterns at 5530 MHz



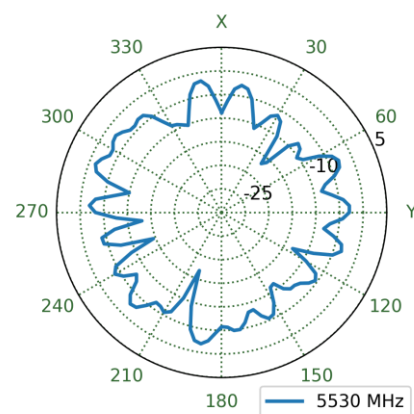
XZ Plane



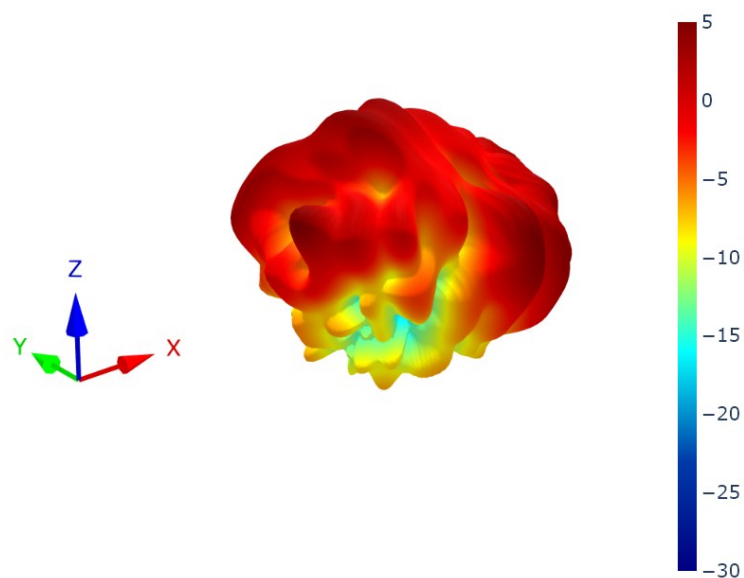
YZ Plane



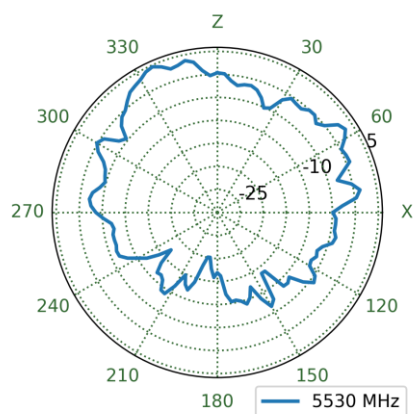
XY Plane



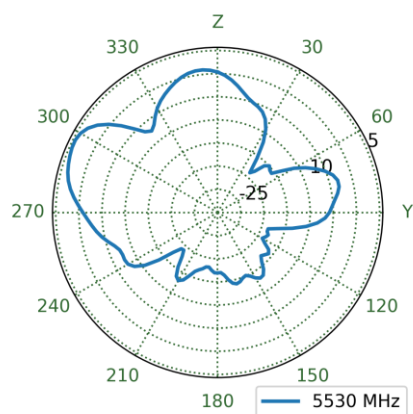
7.101 LTE2 Patterns at 5530 MHz



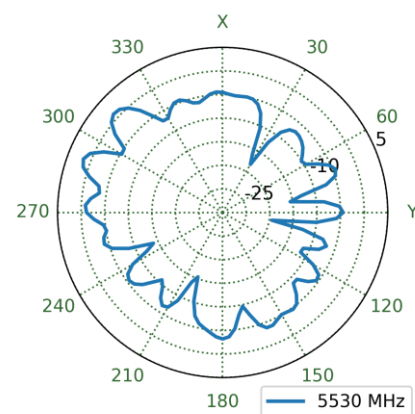
XZ Plane



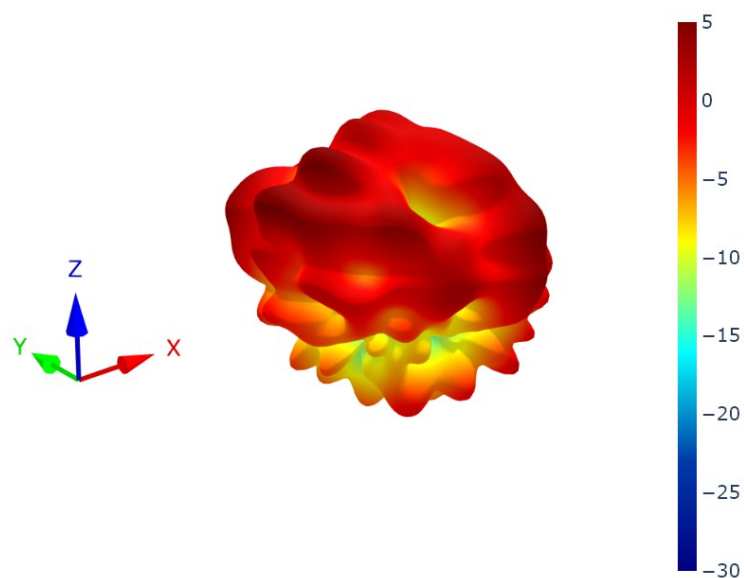
YZ Plane



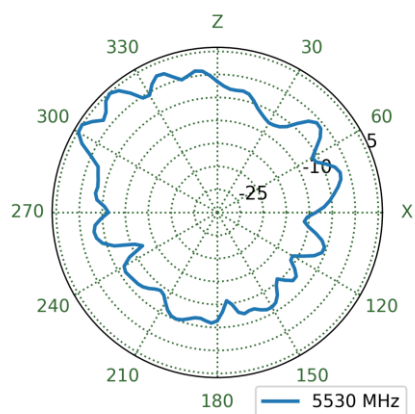
XY Plane



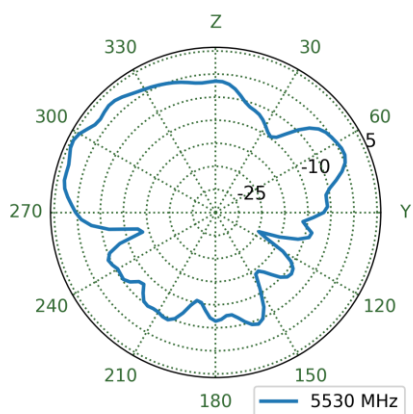
7.102 LTE3 Patterns at 5530 MHz



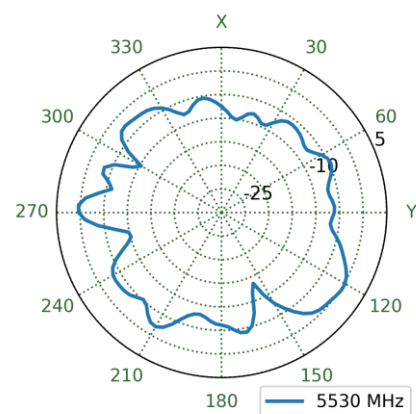
XZ Plane



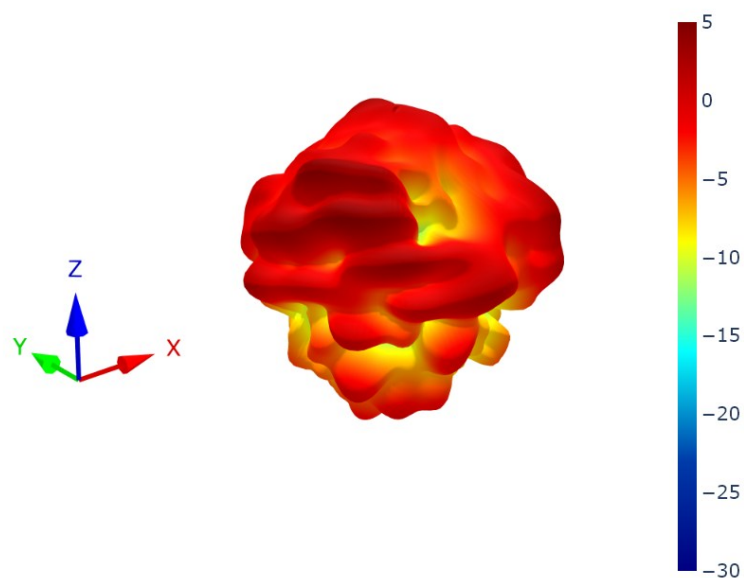
YZ Plane



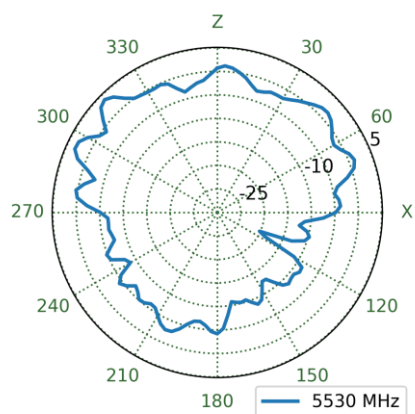
XY Plane



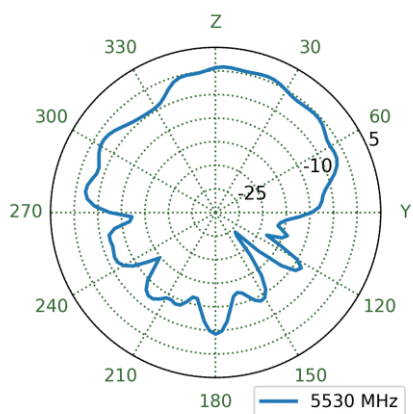
7.103 LTE4 Patterns at 5530 MHz



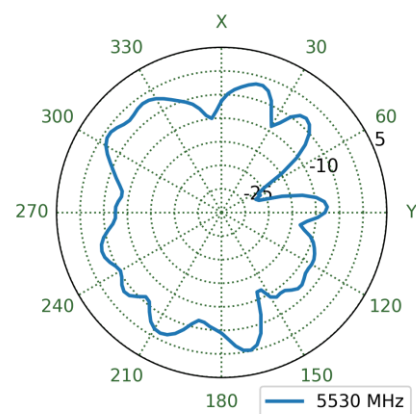
XZ Plane



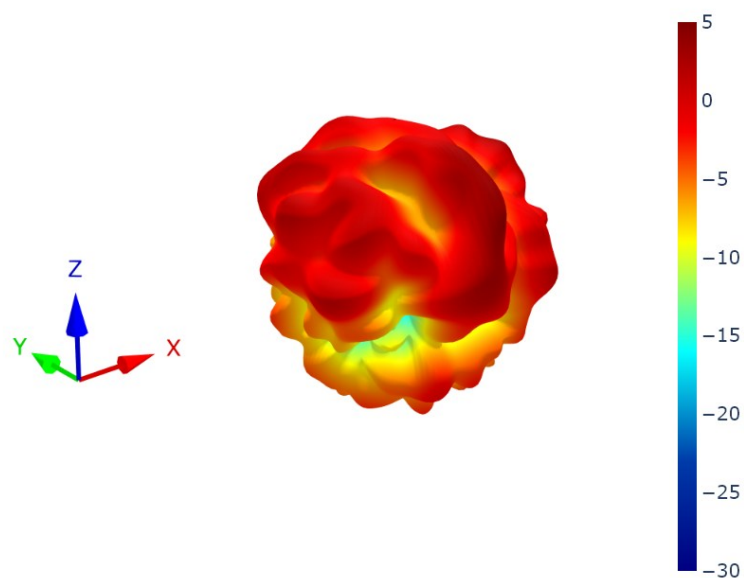
YZ Plane



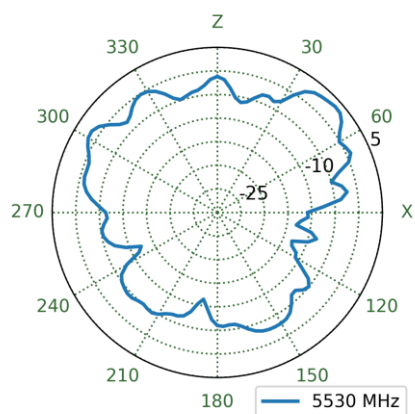
XY Plane



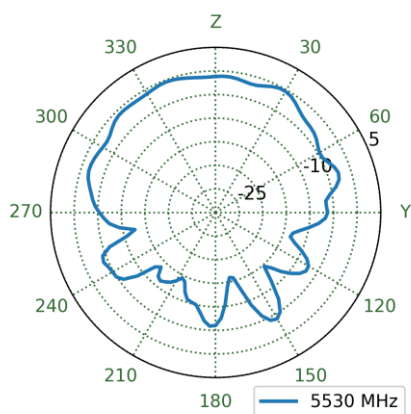
7.104 LTE5 Patterns at 5530 MHz



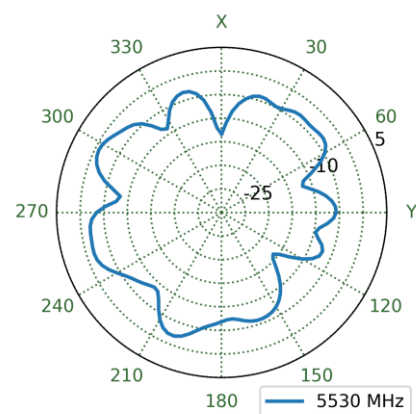
XZ Plane



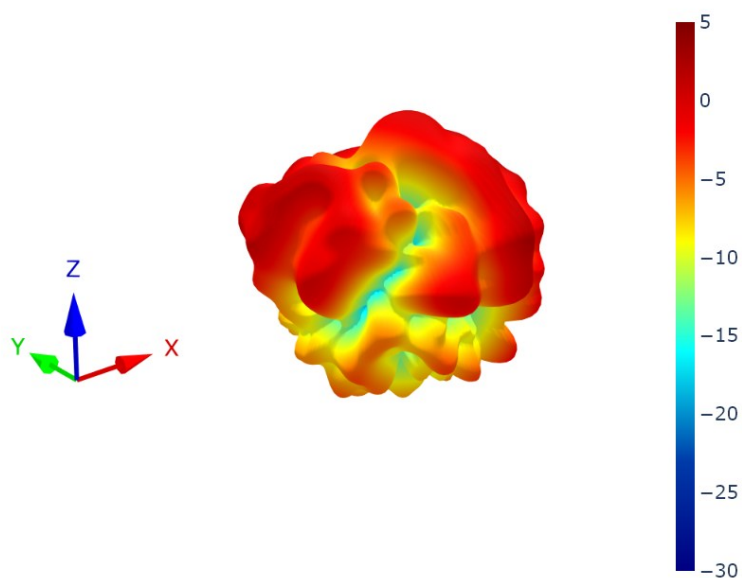
YZ Plane



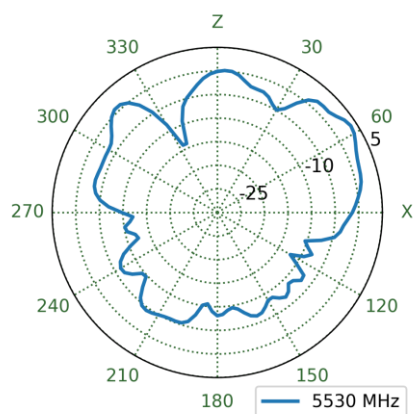
XY Plane



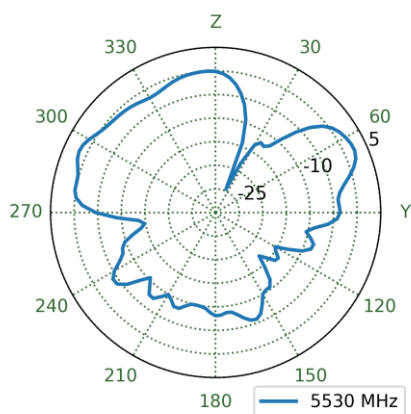
7.105 LTE6 Patterns at 5530 MHz



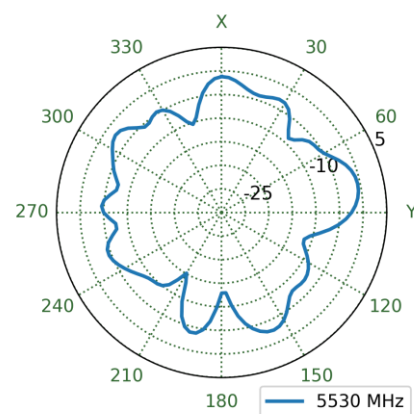
XZ Plane



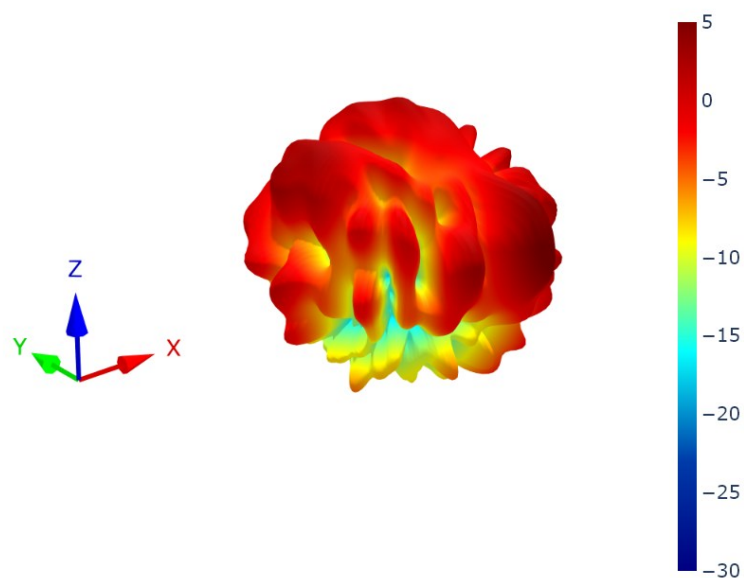
YZ Plane



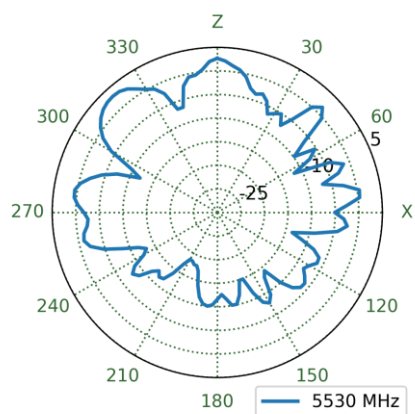
XY Plane



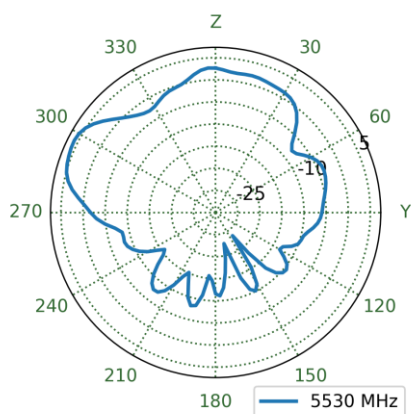
7.106 LTE7 Patterns at 5530 MHz



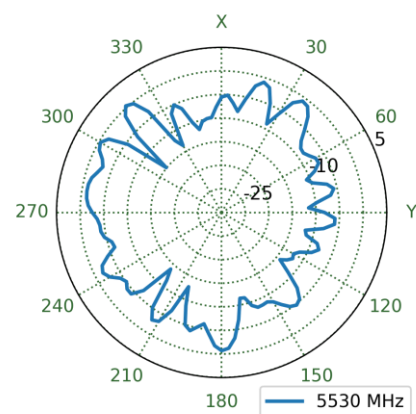
XZ Plane



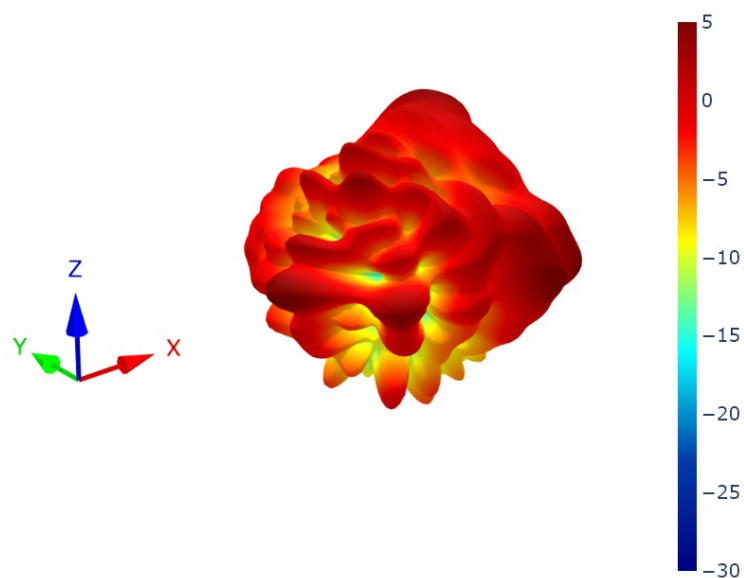
YZ Plane



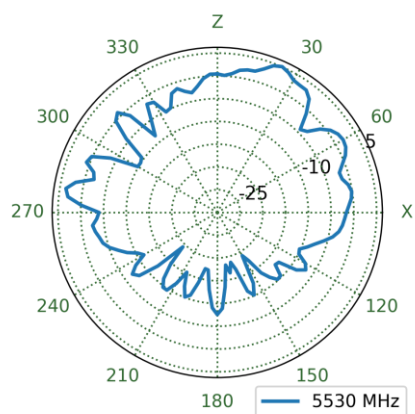
XY Plane



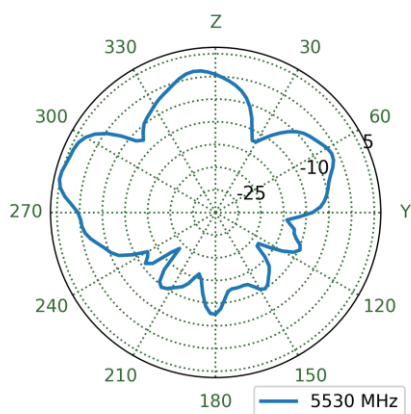
7.107 LTE8 Patterns at 5530 MHz



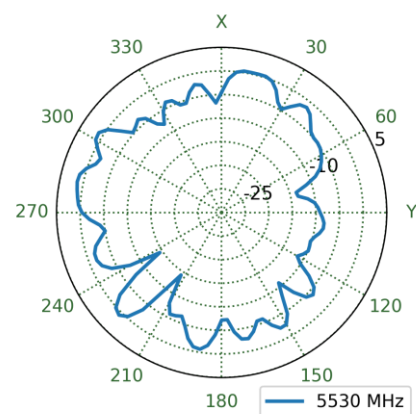
XZ Plane



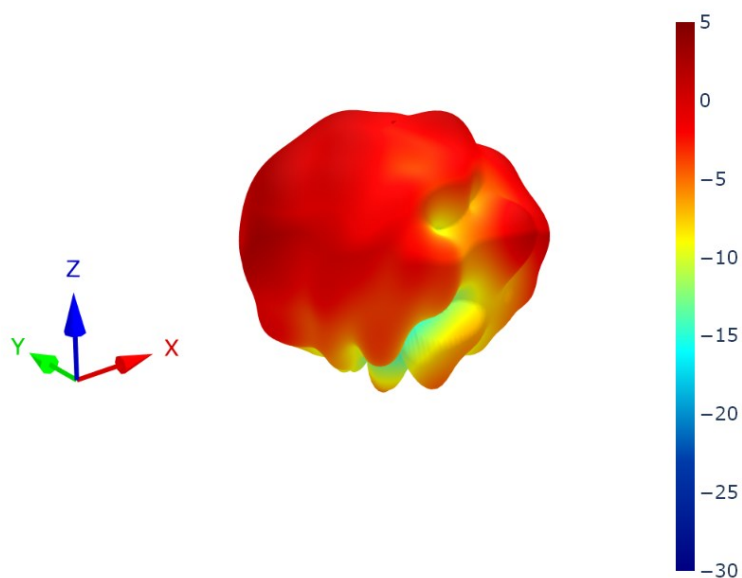
YZ Plane



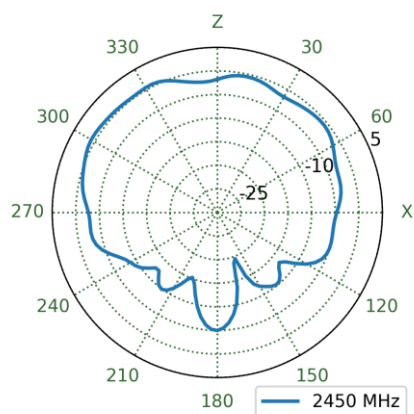
XY Plane



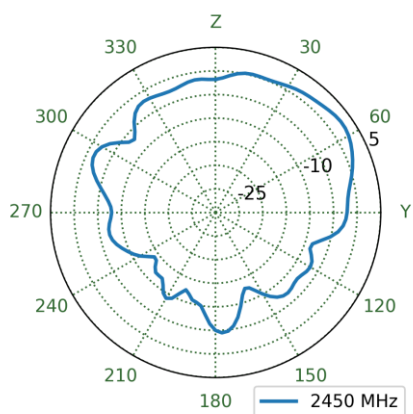
7.108 Wi-Fi1 Patterns at 2450 MHz



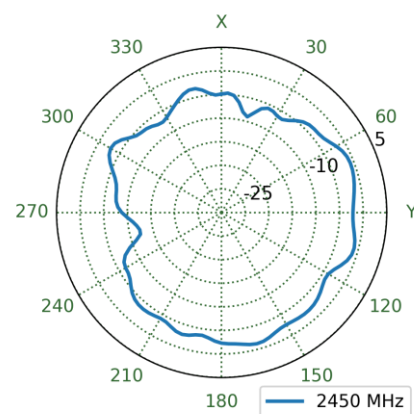
XZ Plane



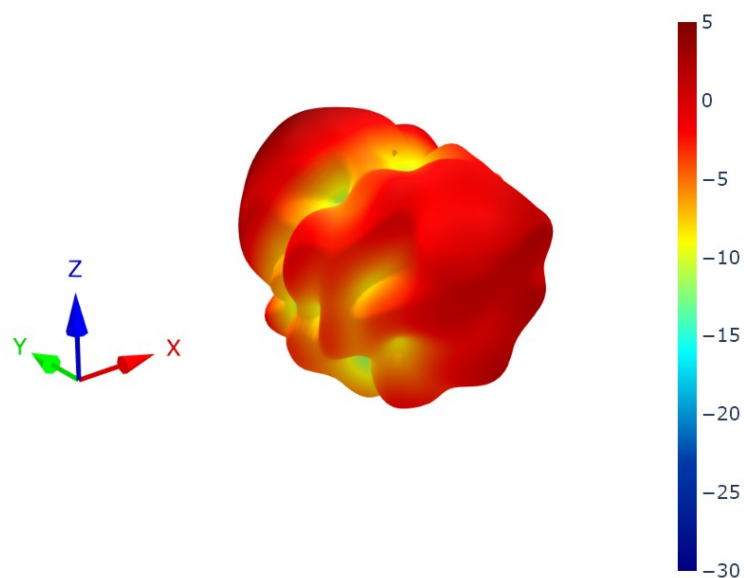
YZ Plane



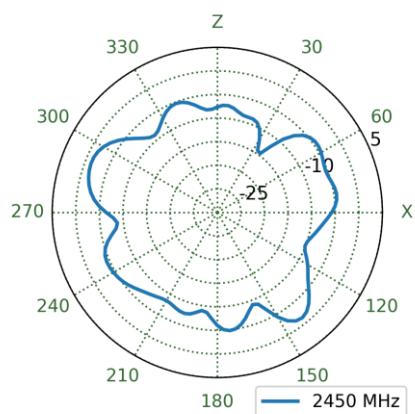
XY Plane



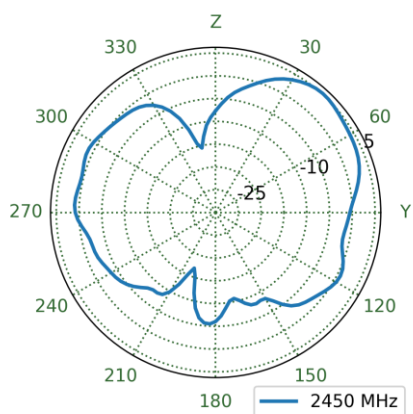
7.109 Wi-Fi2 Patterns at 2450 MHz



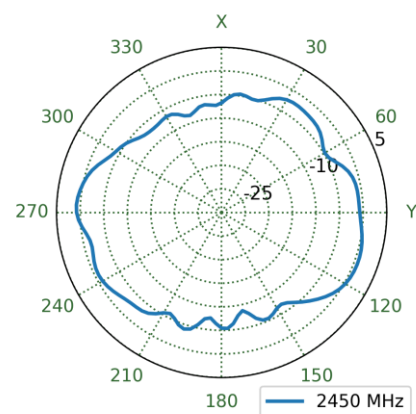
XZ Plane



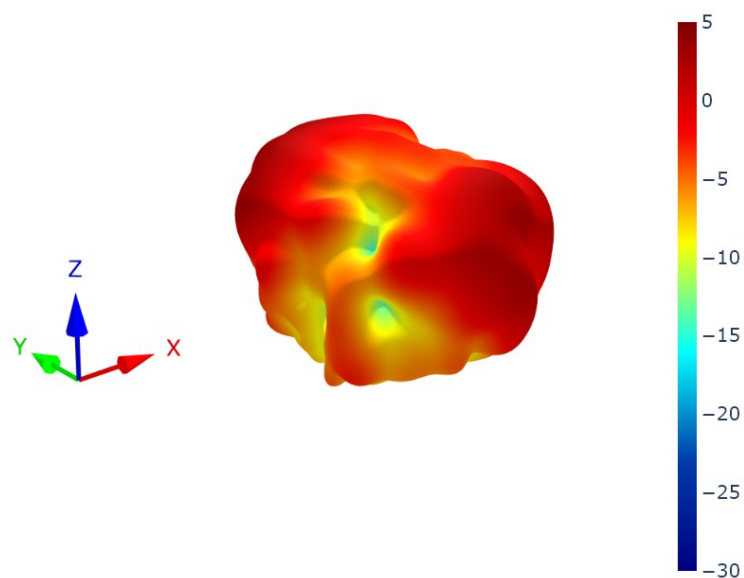
YZ Plane



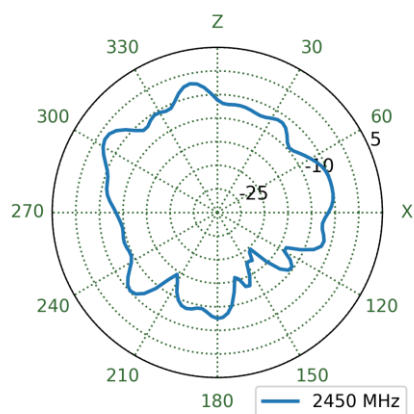
XY Plane



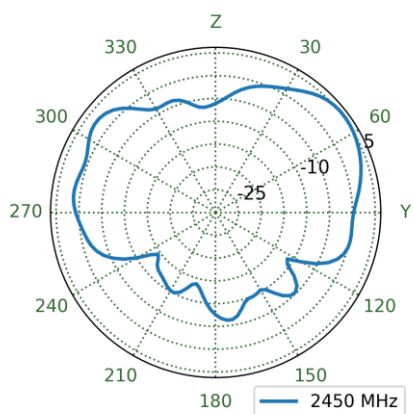
7.110 Wi-Fi3 Patterns at 2450 MHz



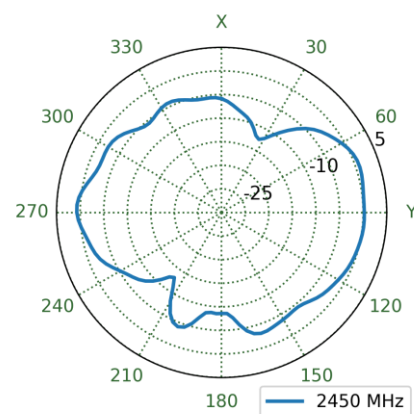
XZ Plane



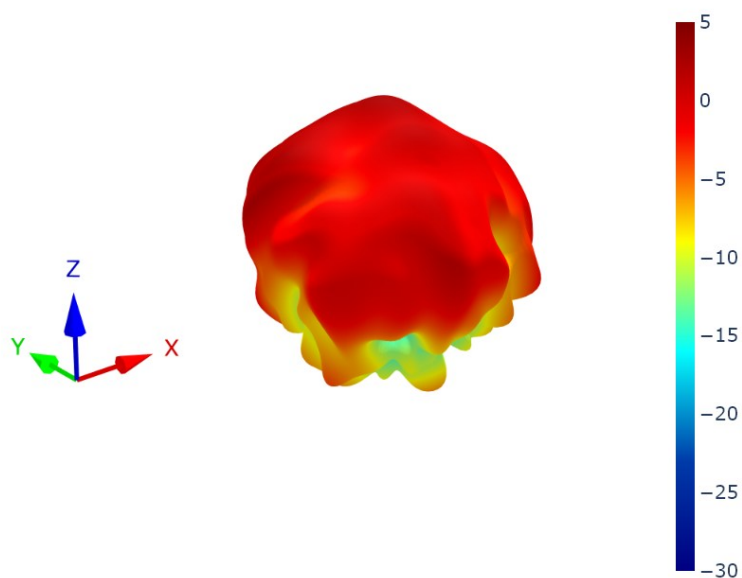
YZ Plane



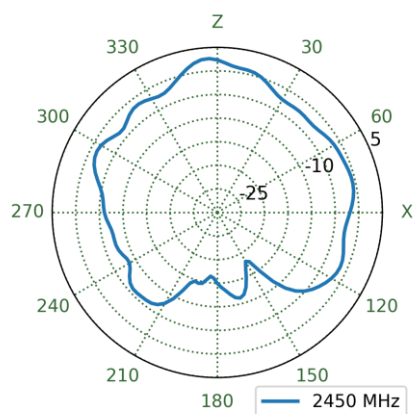
XY Plane



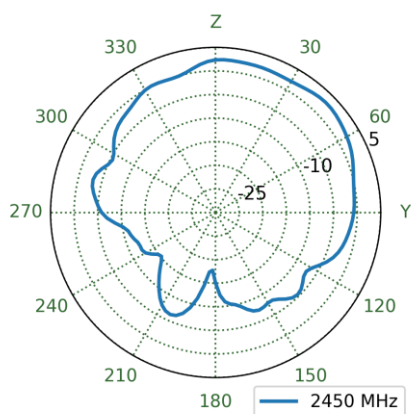
7.111 Wi-Fi Patterns at 2450 MHz



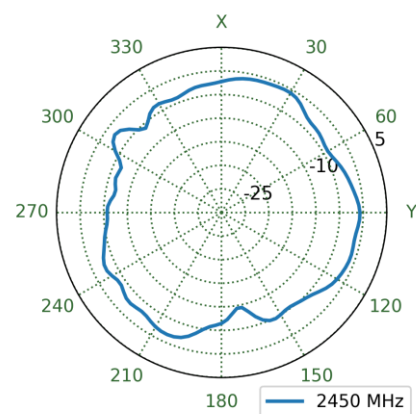
XZ Plane



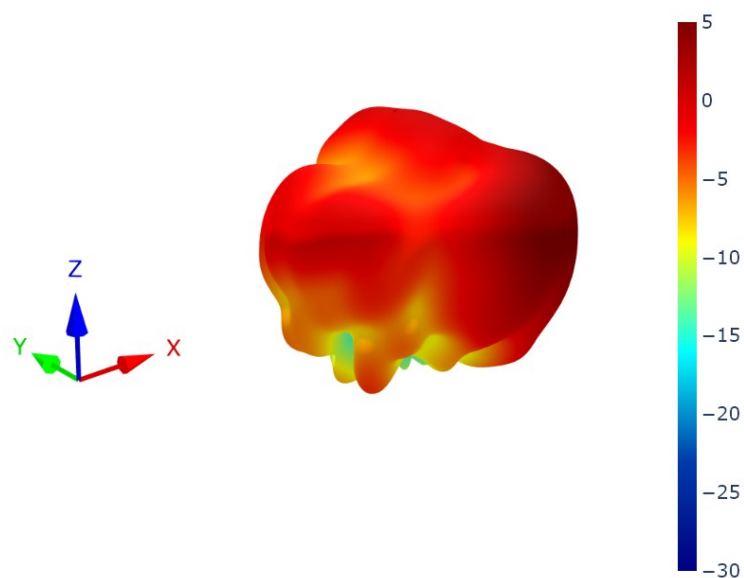
YZ Plane



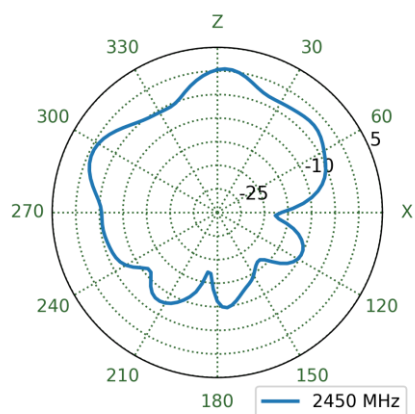
XY Plane



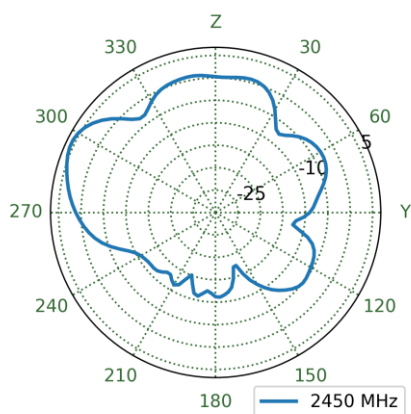
7.112 Wi-Fi5 Patterns at 2450 MHz



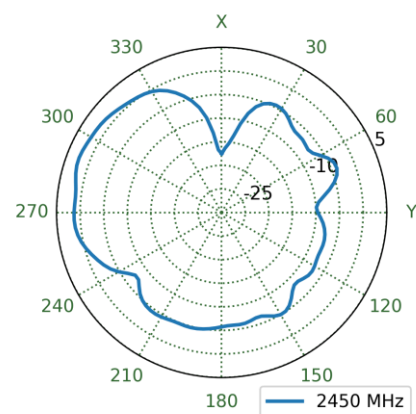
XZ Plane



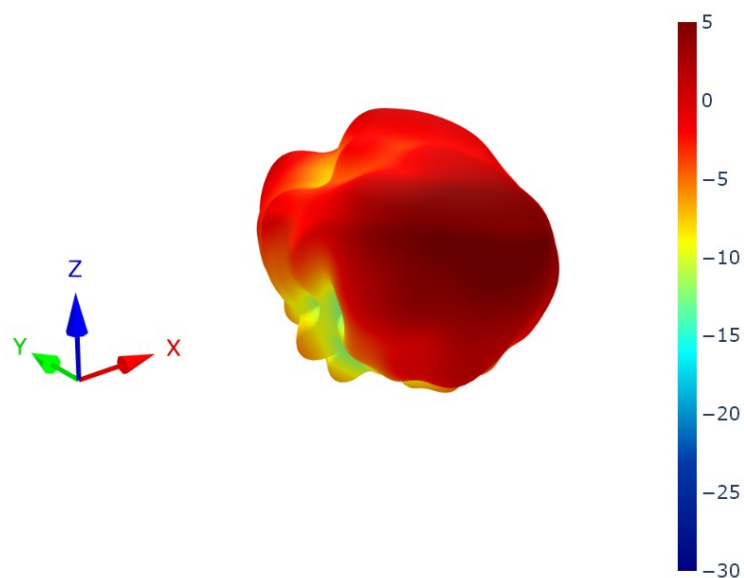
YZ Plane



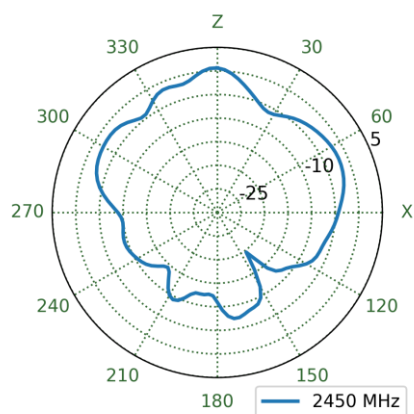
XY Plane



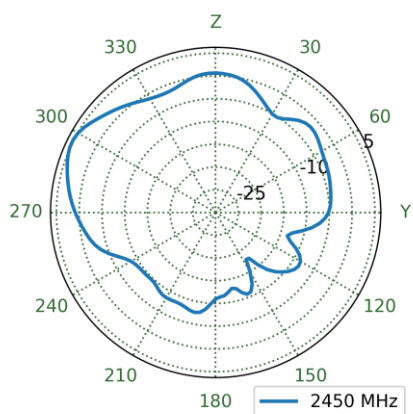
7.113 Wi-Fi6 Patterns at 2450 MHz



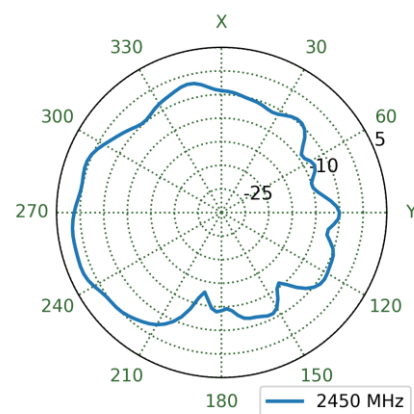
XZ Plane



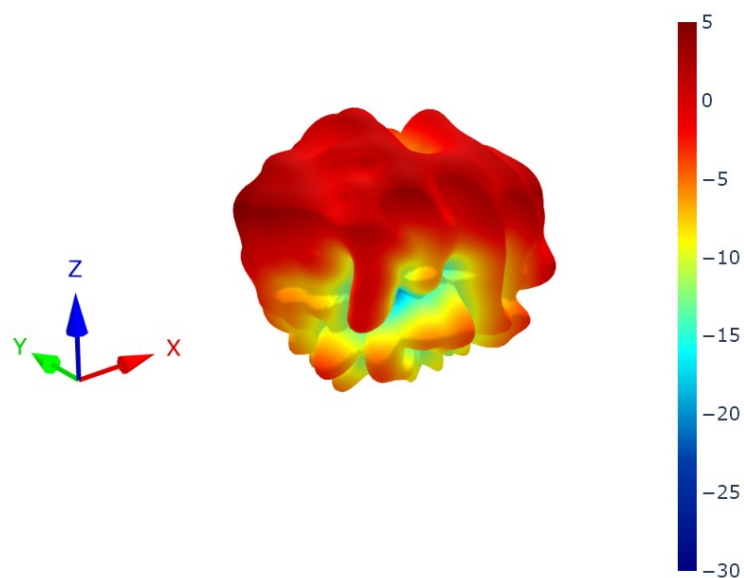
YZ Plane



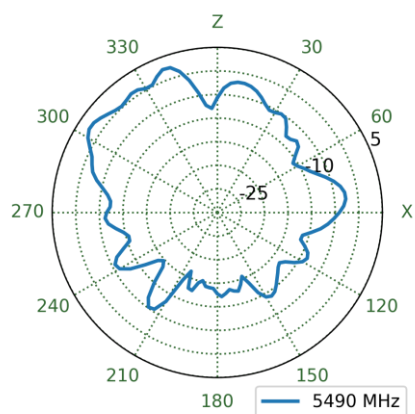
XY Plane



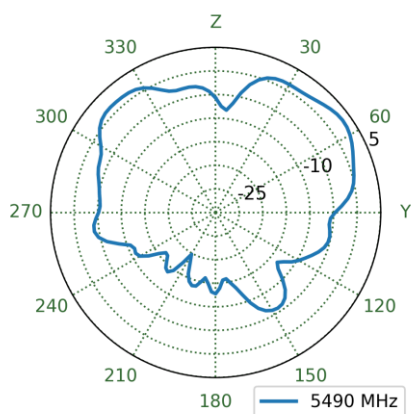
7.114 Wi-Fi1 Patterns at 5500 MHz



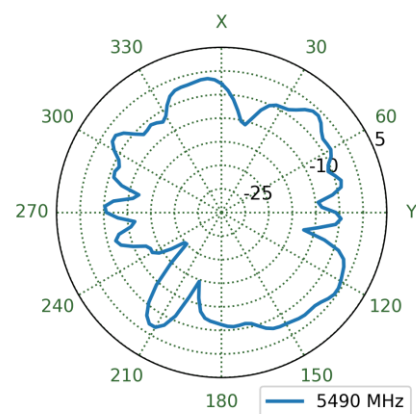
XZ Plane



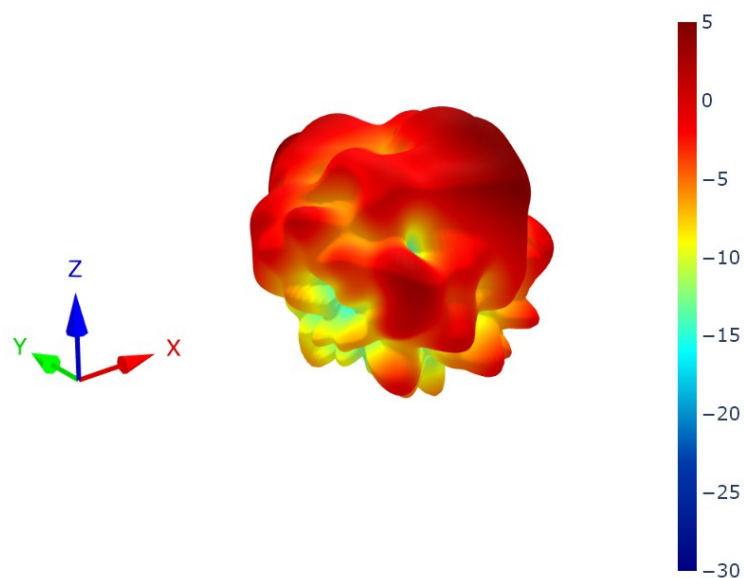
YZ Plane



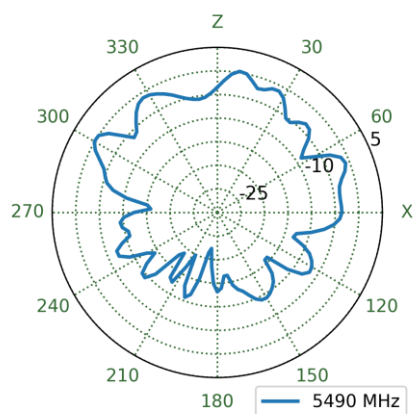
XY Plane



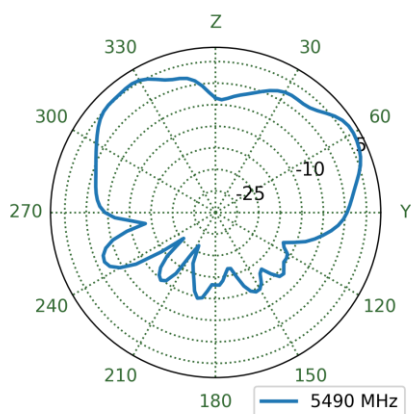
7.115 Wi-Fi2 Patterns at 5500 MHz



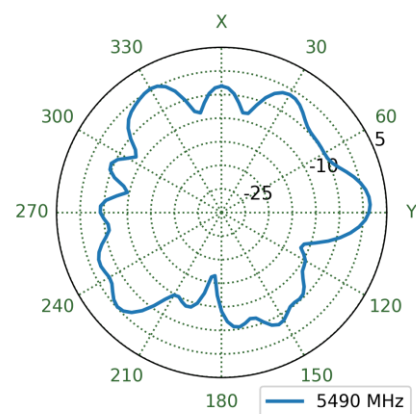
XZ Plane



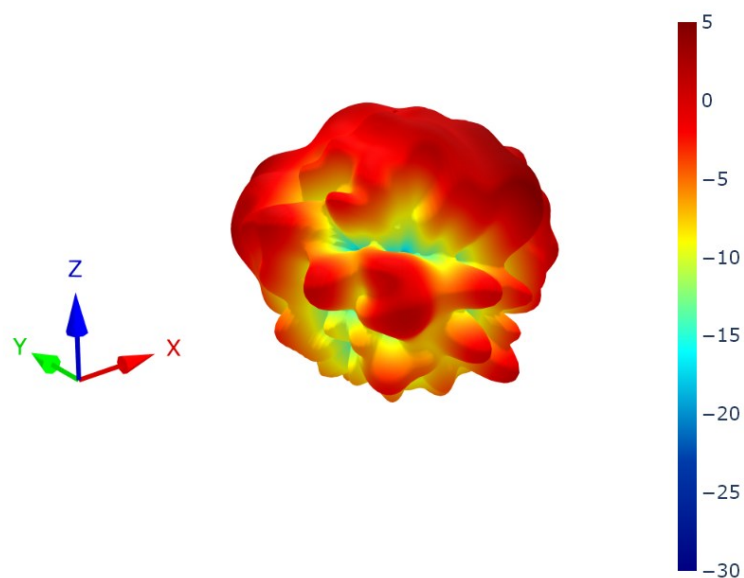
YZ Plane



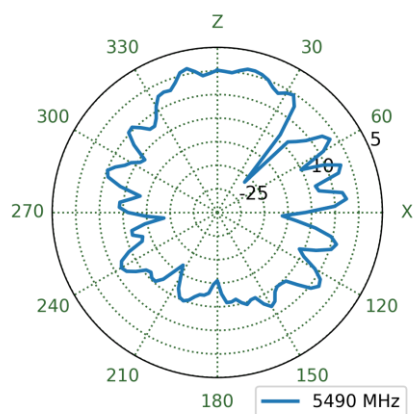
XY Plane



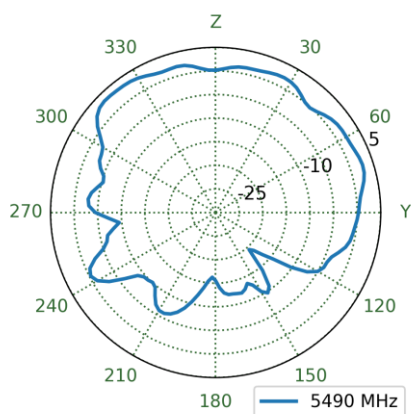
7.116 Wi-Fi3 Patterns at 5500 MHz



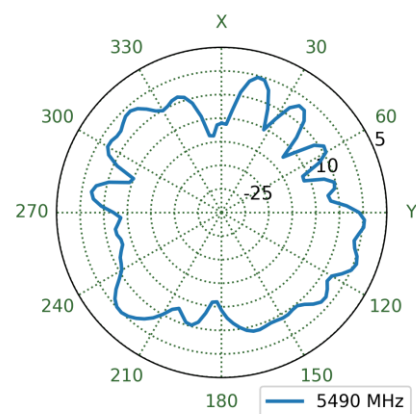
XZ Plane



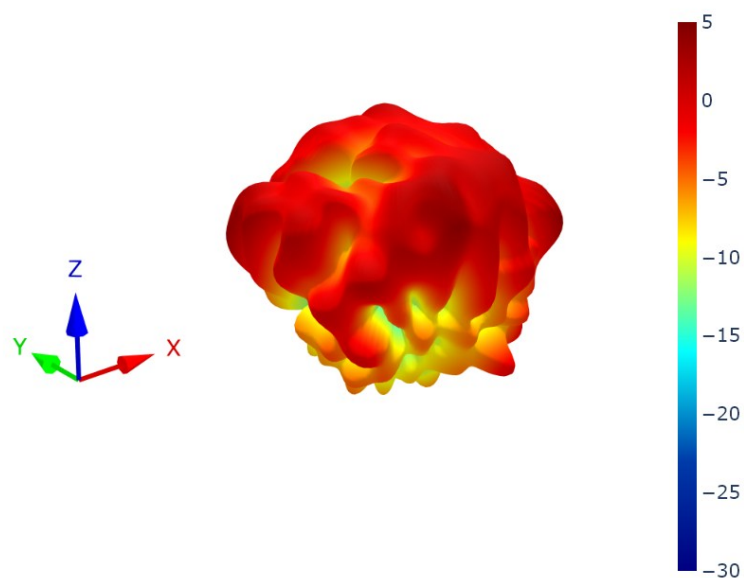
YZ Plane



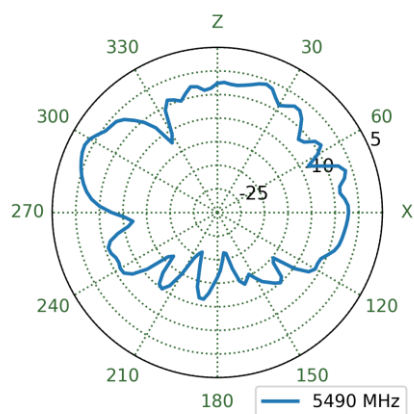
XY Plane



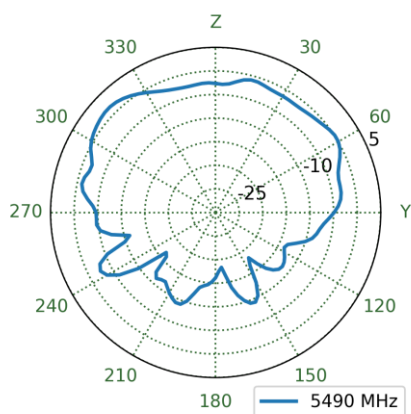
7.117 Wi-Fi Patterns at 5500 MHz



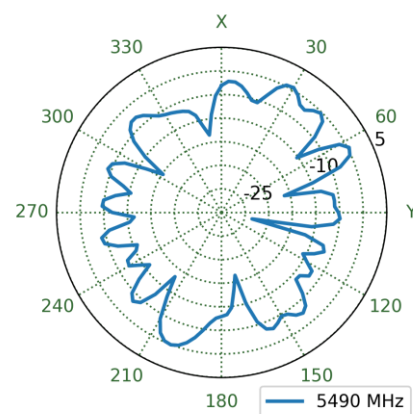
XZ Plane



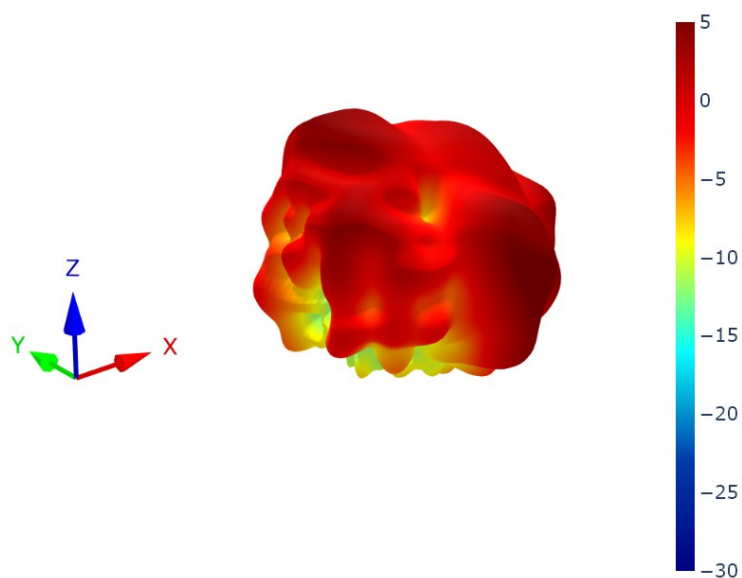
YZ Plane



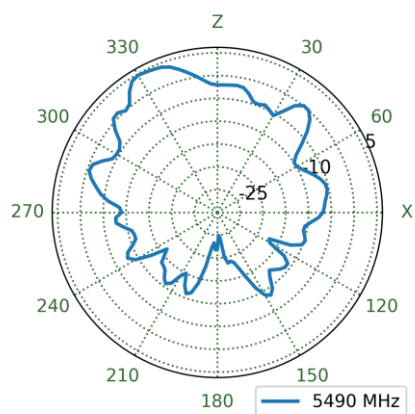
XY Plane



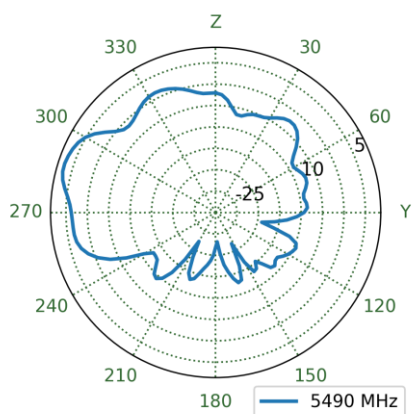
7.118 Wi-Fi5 Patterns at 5500 MHz



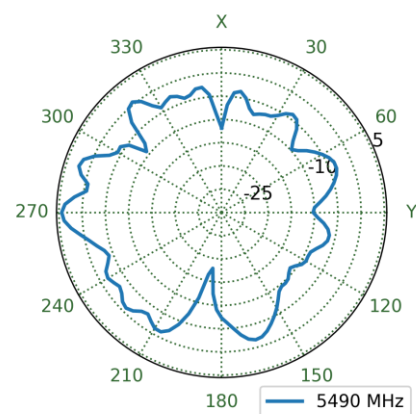
XZ Plane



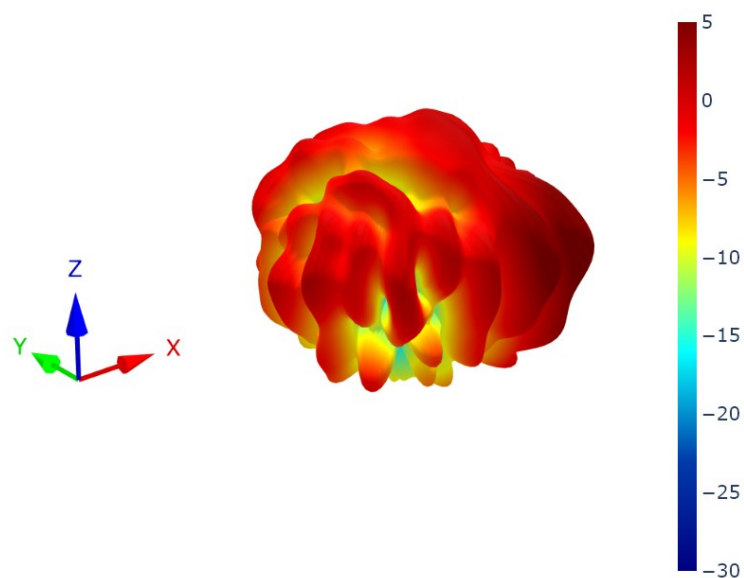
YZ Plane



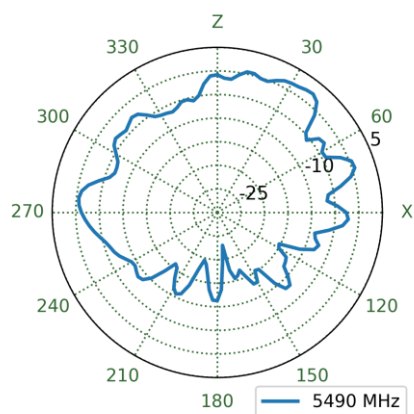
XY Plane



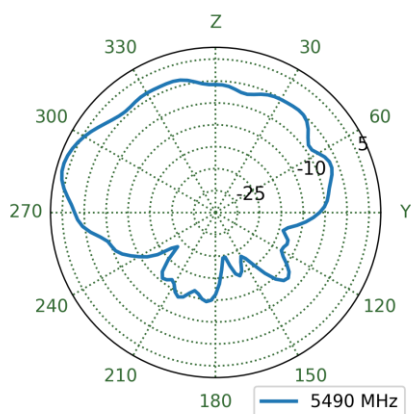
7.119 Wi-Fi6 Patterns at 5500 MHz



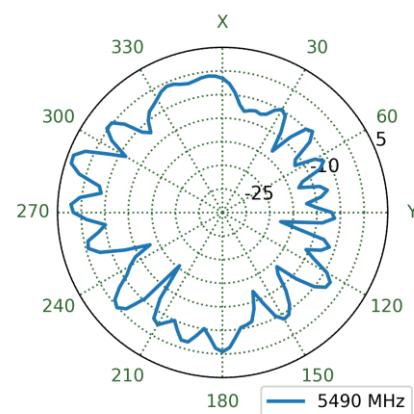
XZ Plane



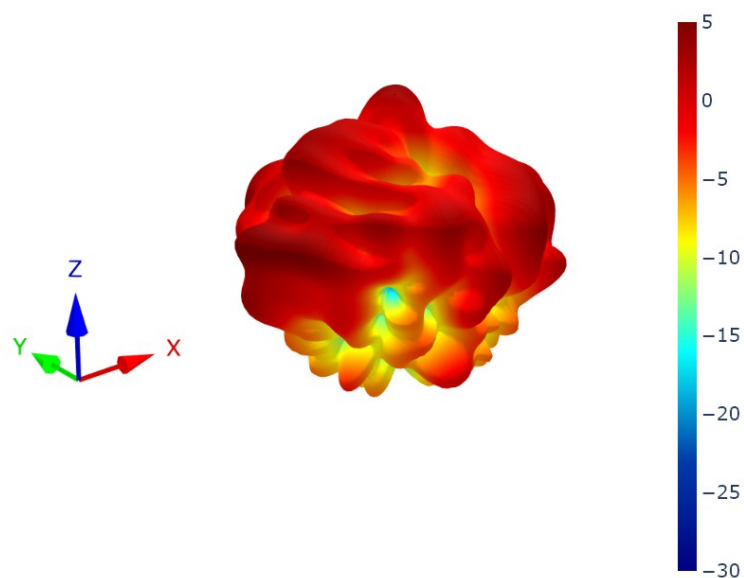
YZ Plane



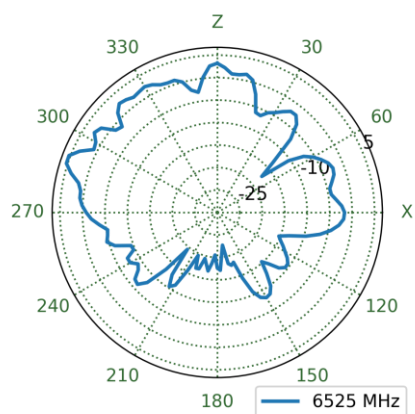
XY Plane



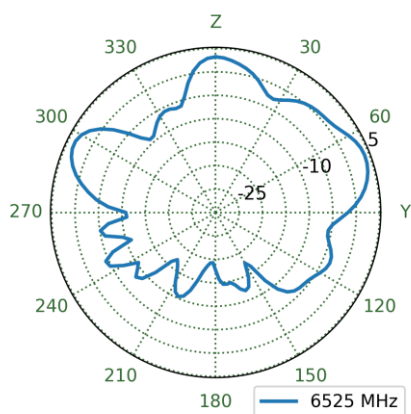
7.120 Wi-Fi1 Patterns at 6525 MHz



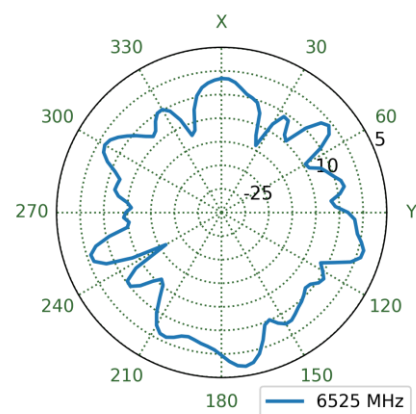
XZ Plane



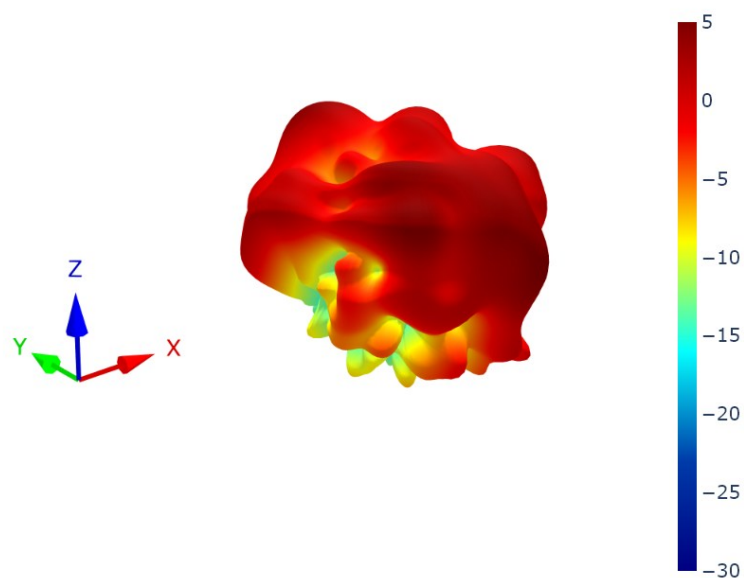
YZ Plane



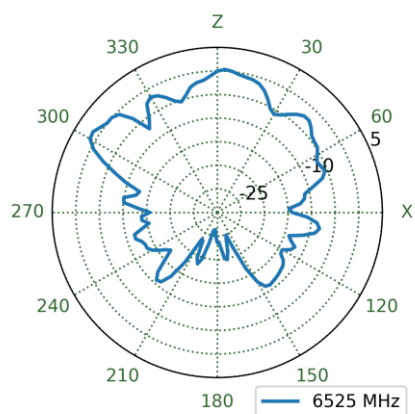
XY Plane



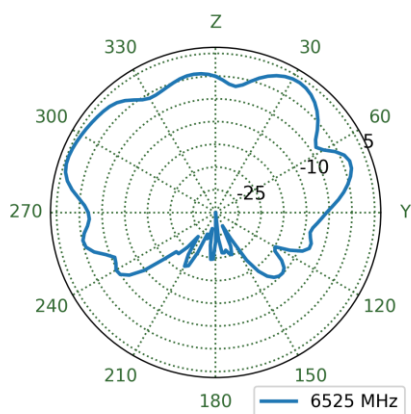
7.121 Wi-Fi2 Patterns at 6525 MHz



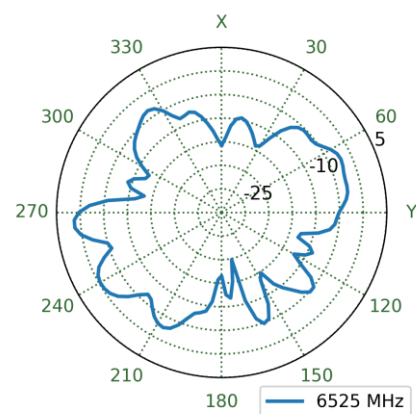
XZ Plane



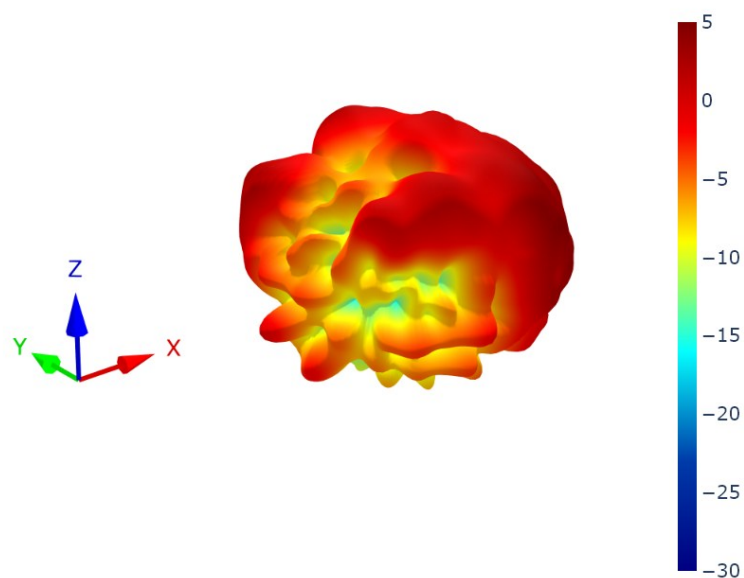
YZ Plane



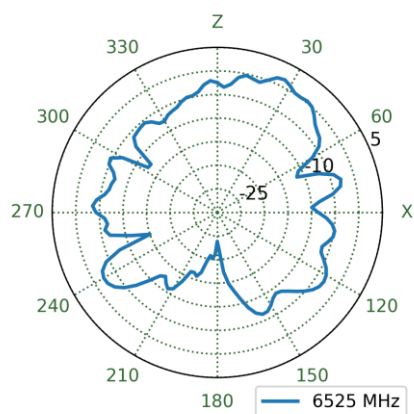
XY Plane



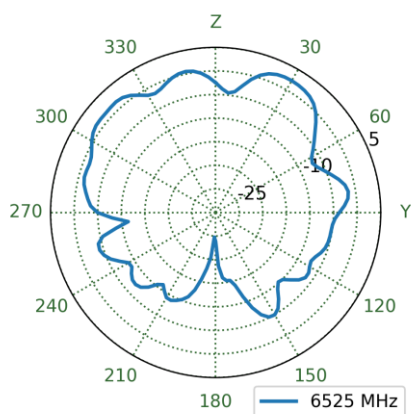
7.122 Wi-Fi3 Patterns at 6525 MHz



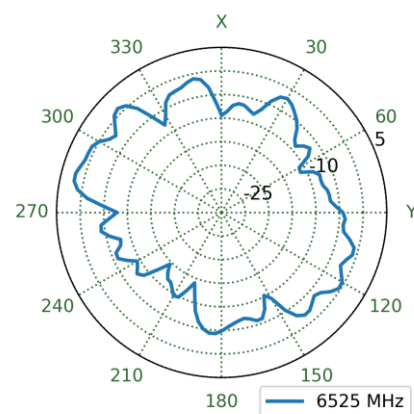
XZ Plane



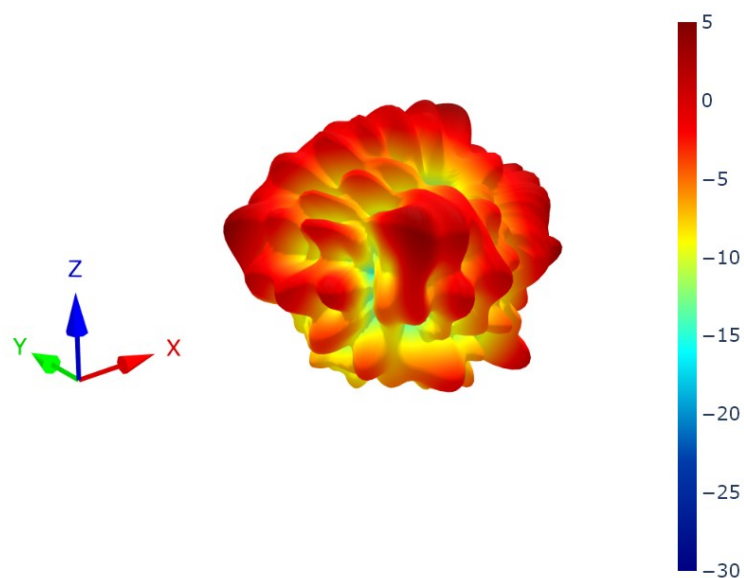
YZ Plane



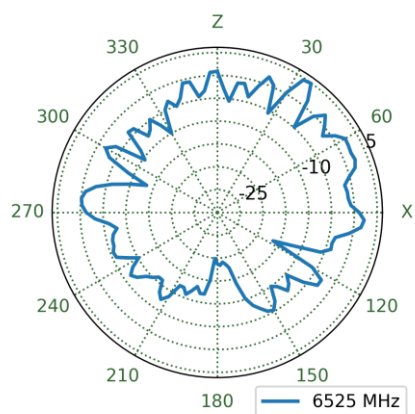
XY Plane



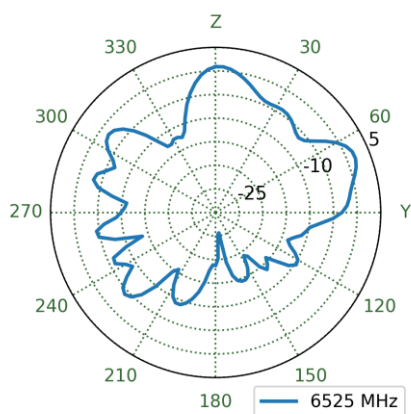
7.123 Wi-Fi4 Patterns at 6525 MHz



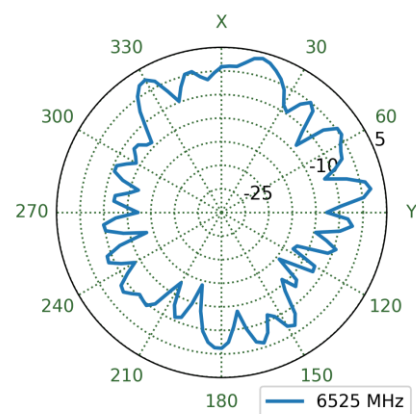
XZ Plane



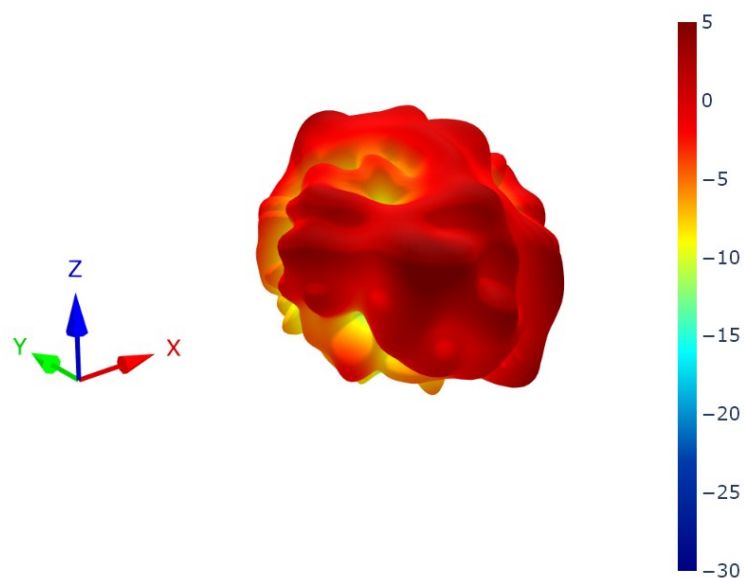
YZ Plane



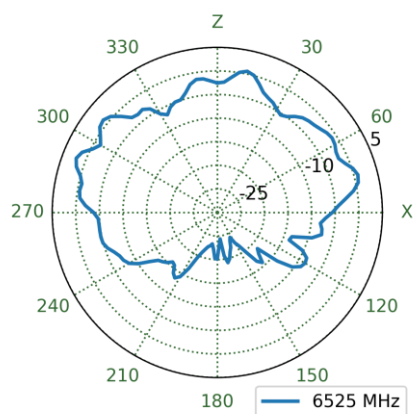
XY Plane



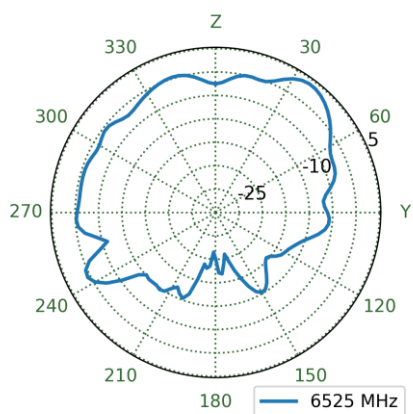
7.124 Wi-Fi5 Patterns at 6525 MHz



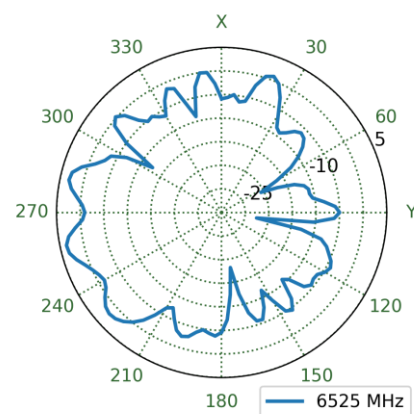
XZ Plane



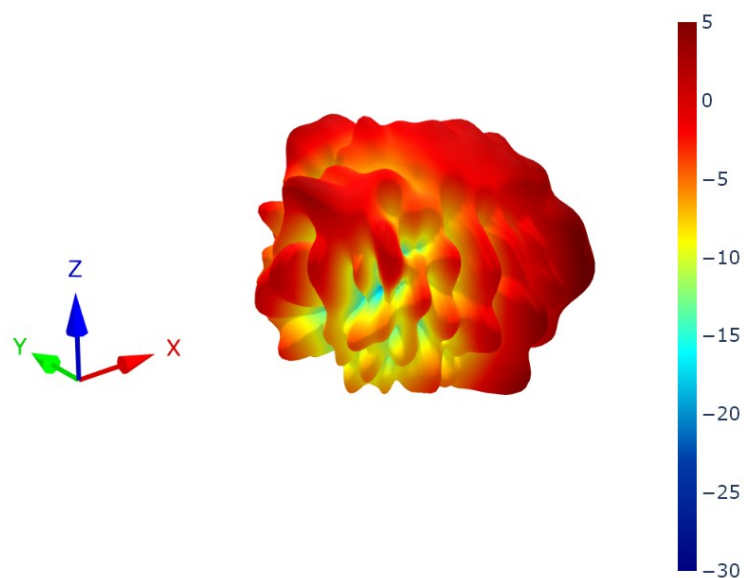
YZ Plane



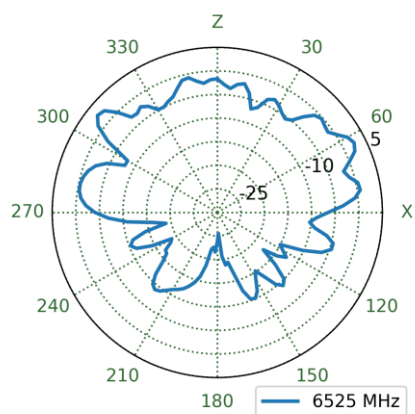
XY Plane



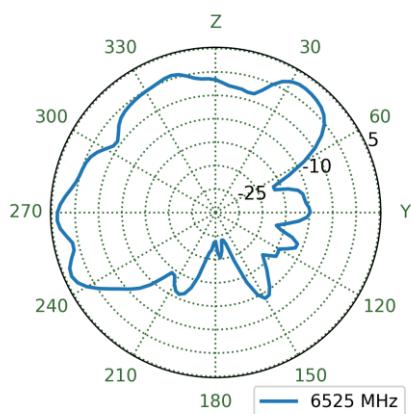
7.125 Wi-Fi6 Patterns at 6525 MHz



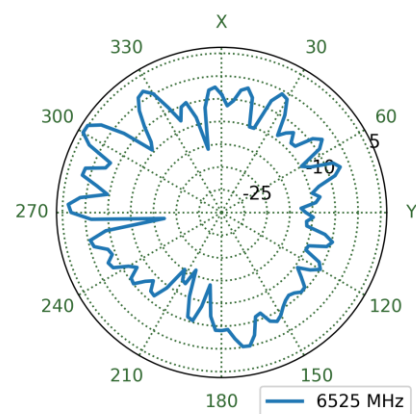
XZ Plane



YZ Plane



XY Plane



Changelog for the datasheet

SPE-24-8-195 - MAX1016.W.001

Revision: A (Original First Release)

Date:	2024-08-19
Notes:	Initial Release
Author:	Gary West

Previous Revisions



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