



TAOGLAS®



Datasheet

Patriot Series

Part Numbers

Black - PATR.SP.18.B.0.3M

White - PATR.SP.18.W.0.3M

Description

18-in-1 Super Compact, Permanent Mount Antenna

Features:

- 18-in-1 Permanent Mount Antenna
- 2* GNSS L1/L5 Bands
- 9* 5G/4G LTE Cellular 600-6000MHz
- 5* Wi-Fi 2.4/5.8/7.125 GHz
- 1x LMR/TETRA Interchangeable Whip
- 1x SDARS
- IP69K Rated Waterproof Enclosure
- IK08 Rated UV Resistant Housing
- Dimensions: 205 mm x 180 mm x 60 mm
- Cables and Connectors Fully Customizable
- RoHS & Reach Compliant

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1. Introduction



Patriot 18-in-1 High-Performance Super Compact Combination Antenna

The Patriot is a cutting-edge, multi-combination antenna engineered specifically for the Ford Interceptor vehicle, the most widely used police vehicle in the U.S. Designed to eliminate the need for multiple antennas, it offers up to 18-in-1 connectivity, supporting 5G and 4G cellular (600–6000 MHz), with both dual-band GNSS (L1 and L1/ L5) and a secondary GNSS (L1), Wi-Fi® (2.4, 5.8, and 7.1 GHz), SDARS (2.3 GHz), and LMR/TETRA (380–400 MHz and 700–900 MHz), the Patriot enables concurrent broadband, navigation, telemetry, and voice services. A dedicated whip element with full P25 VHF/UHF/700-900 MHz support is available in various lengths to meet frequency requirements, ensuring optimal performance for first responders and fleet vehicles. It is a compact, low-profile design that allows for seamless integration onto vehicle roofs, utilizing existing OEM mounting connections to simplify installation.

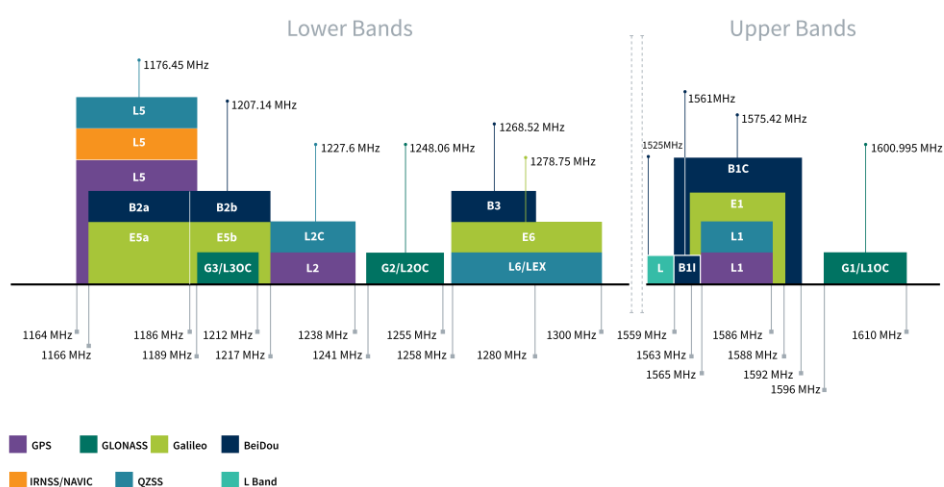
The **Patriot** guarantees enhanced signal strength and with its rugged IK08 and IP69K-rated enclosure and ability to mount between the vehicle roof ribs, this next-generation antenna delivers superior durability, reliability, and efficiency, making it one of the most versatile and compact solutions available today. With a small footprint of (L)205mm x (W)180mm and a whip height of up to 164mm*, the Compact Design of the Patriot ensures a low-profile, unobtrusive installation.

SKU'S

PATR.SP.18.B.0.3M	18-in-1 Permanent Mount Antenna 2x GNSS, 9x 5G/4G, 5x Wi-Fi, 1x SDARS, 1x LMR Whip With SMA/RP-SMA/Quad FAKRA Code E and Code D Connector and Staggered RG-174/TGC-1.5DS Pigtail Cables (2025 Version)
PATR.SP.18.W.0.3M	18-in-1 Permanent Mount White Antenna 2x GNSS, 9x 5G/4G, 5x Wi-Fi, 1x SDARS, 1x LMR Whip With SMA/RP-SMA/Quad FAKRA Code E and Code D Connector and Staggered RG-174/TGC-1.5DS Pigtail Cables (2025 Version)
PATR.SP.17.B.0.3M	17-in-1 Permanent Mount Antenna 2x GNSS, 9x 5G/4G, 5x Wi-Fi, 1x LMR Whip With SMA/RP-SMA/Quad FAKRA Code E and Code D Connector and Staggered RG-174/TGC-1.5DS Pigtail Cables (2024 Version)
PATR.SP.17.W.0.3M	17-in-1 Permanent Mount White Antenna 2x GNSS, 9x 5G/4G, 5x Wi-Fi, 1x LMR Whip With SMA/RP-SMA/Dual FAKRA Code C Connector and Staggered RG-174/TGC-1.5DS Pigtail Cables (2024 Version)
PATR.SP.18.B.5M	18-in-1 Permanent Mount Antenna 2x GNSS, 9x 5G/4G, 5x Wi-Fi, 1x SDARS, 1x LMR Whip With SMA/RP-SMA/Quad FAKRA Code E and Code D Connector and 5M RG-174/TGC-200 Cables (2025 Version)
PATR.SP.18.W.5M	18-in-1 Permanent Mount White Antenna 2x GNSS, 9x 5G/4G, 5x Wi-Fi, 1x SDARS, 1x LMR Whip With SMA/RP-SMA/Quad FAKRA Code E and Code D Connector and 5M RG-174/TGC-200 Cables (2025 Version)
PATR.SP.17.B.5M	17-in-1 Permanent Mount Antenna 2x GNSS, 9x 5G/4G, 5x Wi-Fi, 1x LMR Whip With SMA/RP-SMA/Dual FAKRA Code C Connector and 5M RG-174/TGC-200 Cables (2024 Version)
PATR.SP.17.W.5M	17-in-1 Permanent Mount White Antenna 2x GNSS, 9x 5G/4G, 5x Wi-Fi, 1x LMR Whip With SMA/RP-SMA/Dual FAKRA Code C Connector and 5M RG-174/TGC-200 Cables (2024 Version)
PATR.FP.18.B.5M	18-in-1 Permanent Mount Antenna 2x GNSS, 9x 5G/4G, 5x Wi-Fi, 1x SDARS, 1x LMR Whip With FAKRA Code C/D/I/Quad FAKRA Code E and Code D Connector and 5M RG-174/TGC-200 Cables (2025 Version)
PATR.FP.18.W.5M	18-in-1 Permanent Mount White Antenna 2x GNSS, 9x 5G/4G, 5x Wi-Fi, 1x SDARS, 1x LMR Whip With FAKRA Code C/D/I/Quad FAKRA Code E and Code D Connector and 5M RG-174/TGC-200 Cables (2025 Version)
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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 – L1-L5				
Frequency (MHz)	1176.45	1561	1575.42	1603
VSWR (max.)	2:1	2:1	2:1	2:1
Passive Antenna Efficiency (%)	69.70	30.43	53.94	61.10
Passive Antenna Gain (dBi)	2.24	-1.33	1.15	1.46
Polarization	RHCP			
Impedance	50 Ω			

GNSS 2 – L1			
Frequency (MHz)	1561	1575.42	1602
VSWR (max.)	3:1	2:1	2:1
Passive Antenna Efficiency (%)	47.44	58.06	62.10
Passive Antenna Gain (dBi)	1.62	1.97	2.78
Polarization	RHCP		
Impedance	50 Ω		

GNSS - LNA and Filter Electrical Properties (L1-L5)				
Frequency (MHz)	1176.45	1561	1575.42	1603
Gain@3.0V	15.8	15.3	15.15	14.96
Noise@3.0V	2.92	2.78	2.99	2.31
DC Power Input	1.8-5.5V			
Power consumption@5.5V (mA)	10mA +/- 3			

GNSS 2 - LNA and Filter Electrical Properties (L1)			
Frequency (MHz)	1561	1575.42	1603
Gain@3.0V	28.01	27.84	28.39
Noise@3.0V	2.26	2.10	2.40
DC Power Input	1.8-5.5V		
Power consumption@5.5V (mA)	10mA +/- 3		

4G-5G Electrical									
Band	Frequency (MHz)	Measurement	Efficiency (%)	Average Gain (dB)	Peak Gain (dBi)	Impedance	Polarization	Radiation Pattern	Max. input power
5GNR/4G Band71	617-698	4G-5G 1	27.1	-5.67	-0.38	50 Ω	Linear	Omni directional	10W
		4G-5G 2	29.9	-5.25	0.01				
		4G-5G 3	23.5	-6.28	1.55				
		4G-5G 4	24.3	-6.14	-0.45				
		4G-5G 5	24.0	-6.20	0.51				
		4G-5G 6	20.4	-6.91	0.06				
		4G-5G 7	24.0	-6.20	-1.31				
		4G-5G 8	22.9	-6.40	-1.32				
		4G-5G 9	13.0	-8.85	-3.06				
4G/3G Band 12,13,14,17,28,29	698-824	4G-5G 1	33.0	-4.82	0.98				
		4G-5G 2	33.3	-4.77	1.00				
		4G-5G 3	44.0	-3.57	1.84				
		4G-5G 4	24.6	-6.08	-0.11				
		4G-5G 5	37.1	-4.30	1.52				
		4G-5G 6	21.3	-6.71	0.32				
		4G-5G 7	21.2	-6.73	-0.19				
		4G-5G 8	23.9	-6.21	0.09				
		4G-5G 9	19.4	-7.13	-0.49				
4G/3G/NB-IoT/Cat M Band 5,8,18,19,20,26,27	824-960	4G-5G 1	37.9	-4.22	1.79				
		4G-5G 2	35.8	-4.47	1.68				
		4G-5G 3	30.8	-5.11	1.06				
		4G-5G 4	33.4	-4.77	3.56				
		4G-5G 5	31.9	-4.96	1.72				
		4G-5G 6	30.8	-5.12	1.83				
		4G-5G 7	30.5	-5.16	1.66				
		4G-5G 8	33.2	-4.79	1.79				
		4G-5G 9	27.4	-5.63	0.72				
5GNR/4G Band 21,32,74,75,76	1427-1518	4G-5G 1	30.2	-5.20	2.54				
		4G-5G 2	27.6	-5.60	2.21				
		4G-5G 3	30.0	-5.23	1.33				
		4G-5G 4	48.3	-3.16	4.28				
		4G-5G 5	30.4	-5.17	1.20				
		4G-5G 6	26.2	-5.82	1.81				
		4G-5G 7	26.5	-5.76	1.21				
		4G-5G 8	28.5	-5.45	2.49				
		4G-5G 9	32.6	-4.87	2.75				
4G/3G Band 1,2,3,4,9,23,25,35,39,	1710-2200	4G-5G 1	39.7	-4.02	4.87				
		4G-5G 2	39.6	-4.02	4.98				

66		4G-5G 3	40.3	-3.94	5.59				
		4G-5G 4	47.1	-3.27	5.31				
		4G-5G 5	41.4	-3.83	4.17				
		4G-5G 6	44.7	-3.50	5.21				
		4G-5G 7	47.6	-3.22	5.34				
		4G-5G 8	40.9	-3.89	5.31				
		4G-5G 9	36.7	-4.35	4.23				
4G/3G Band 7,30,38,40,41	2300-2690	4G-5G 1	46.8	-3.30	5.12				
		4G-5G 2	44.5	-3.51	5.02				
		4G-5G 3	43.2	-3.64	7.50				
		4G-5G 4	51.4	-2.89	5.94				
		4G-5G 5	42.8	-3.68	6.78				
		4G-5G 6	44.9	-3.48	6.44				
		4G-5G 7	53.2	-2.74	5.64				
		4G-5G 8	42.0	-3.77	5.28				
		4G-5G 9	42.4	-3.72	5.99				
5200/Wi-Fi5800	5150-5925	4G-5G 1	53.0	-2.75	6.29				
		4G-5G 2	41.1	-3.86	5.52				
		4G-5G 3	49.3	-3.07	7.33				
		4G-5G 4	48.3	-3.16	6.08				
		4G-5G 5	46.4	-3.33	7.95				
		4G-5G 6	53.9	-2.69	6.84				
		4G-5G 7	52.7	-2.78	6.81				
		4G-5G 8	54.3	-2.65	7.10				
		4G-5G 9	41.2	-3.85	6.92				
5G NR/4G Band 22,42,48,77,78,79	3300-5000	4G-5G 1	57.4	-2.41	7.14				
		4G-5G 2	50.9	-2.93	6.12				
		4G-5G 3	44.6	-3.51	7.29				
		4G-5G 4	51.6	-2.88	6.46				
		4G-5G 5	47.2	-3.26	7.11				
		4G-5G 6	60.1	-2.21	8.50				
		4G-5G 7	54.8	-2.61	6.10				
		4G-5G 8	57.2	-2.42	7.42				
		4G-5G 9	48.8	-3.11	7.32				
Tested on a 30x30cm metal ground plane with 30cm cables									

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-Fi 1	45.7	-3.40	4.84	50 Ω	Linear	Omni directional	10W				
		Wi-Fi 2	43.6	-3.60	5.08								
		Wi-Fi 3	47.6	-3.22	5.74								
		Wi-Fi 4	41.9	-3.78	4.39								
		Wi-Fi 5	48.3	-3.16	5.97								
Wi-Fi - 5GHz	5150-5850	Wi-Fi 1	51.8	-2.85	6.34					50 Ω	Linear	Omni directional	10W
		Wi-Fi 2	53.3	-2.73	7.39								
		Wi-Fi 3	55.7	-2.54	6.93								
		Wi-Fi 4	43.3	-3.63	6.60								
		Wi-Fi 5	47.1	-3.27	7.30								
Wi-Fi - 6GHz	5925-7125	Wi-Fi 1	61.1	-2.14	6.74	50 Ω	Linear	Omni directional	10W				
		Wi-Fi 2	56.3	-2.50	7.94								
		Wi-Fi 3	56.5	-2.48	7.45								
		Wi-Fi 4	49.5	-3.06	7.48								
		Wi-Fi 5	50.1	-3.00	8.37								
Tested on a 30x30cm metal ground plane with 30cm cables													

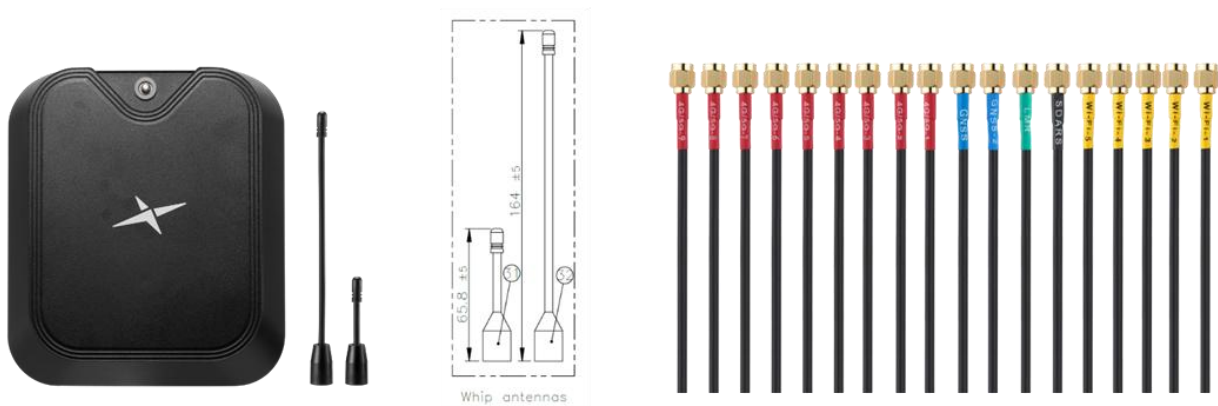
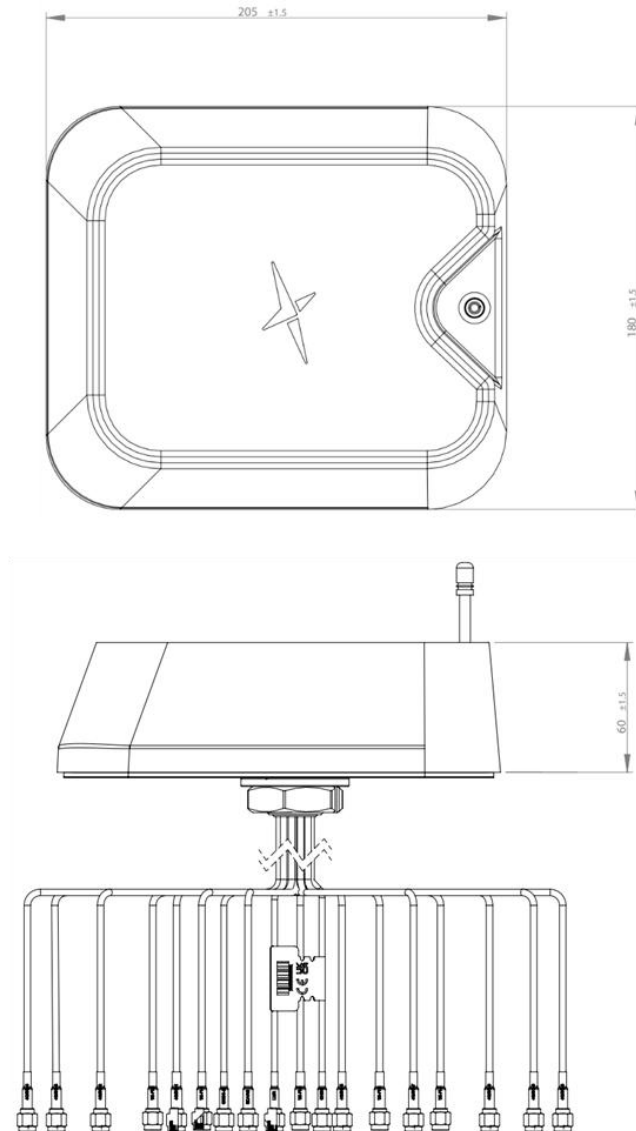
SDARS Electrical								
Band	Frequency (MHz)	Efficiency (%)	Average Gain (dB)	Peak Gain (dBi)	Impedance	Polarization	Radiation Pattern	Max. input power
SXM High Band* (Satellite)	2332-2345	41.2	-3.85	3.08	50 Ω	Linear	Omni directional	10W
SXM High Band* (Terrestrial)	2336-2341	41.2	-3.85	3.08				
SXM Wideband	2320-2345	42.8	-3.69	4.06				

LMR Electrical								
Band	Frequency (MHz)	Efficiency (%)	Average Gain (dB)	Peak Gain (dBi)	Impedance	Polarization	Radiation Pattern	Max. input power
LMR	700-900	42.5	-3.72	1.93	50 Ω	Linear	Omni directional	10W

Mechanical	
Dimensions (Not including Whip)	Length – 205mm / Width – 180mm / Height – 60mm
Small Whip Length	65mm
Medium Whip Length	164mm
Whip Coil Diameter	Ø6mm
Whip Base Diameter	Ø14mm
Enclosure	UV Resistant PC
Cable*	RG-174, TGC-1.5DS
Connector*	SMA(M), RP-SMA(M), /Quad FAKRA Code E and Code D
Base and Thread	Nickel plated steel
Thread Diameter	M22
Weight (including cables & whip)	840g

Environmental	
Protection	IP69K, IK08
Operational Temperature	-40°C to 85°C
Storage Temperature	-40°C to 85°C
Humidity	Non-condensing 65°C 95% RH
RoHS Compliant	Yes
REACH Compliant	Yes

3. Mechanical Drawing



4. Installation Guide

Installation Instructions

Patriot Series

18-in-1 Permanent Mount Combination Antenna

A Introduction

The **Taoglas Patriot** is a cutting-edge, multi-combination antenna engineered specifically for the Ford Interceptor vehicle, the most widely used police vehicle in the U.S. Designed to eliminate the need for multiple antennas, it offers up to 18-in-1 connectivity, including 5G/4G, GNSS (L1 & L1/L5), Wi-Fi®, SDARS and LMR/TETRA, ensuring optimal performance for first responders and fleet vehicles. With a small footprint of (L)205mm x (W)180mm and a whip height of up to 164mm, the compact design of the Patriot ensures a low-profile, unobtrusive installation.



Electrical Safety

The Patriot contains an active GPS/GNSS antenna.

Rated voltage: 1.8-5.5VDC Rated current: 10mA maximum

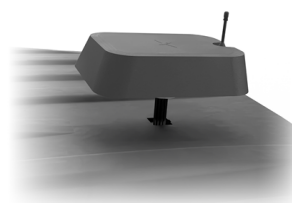
The supply to this device must be provided with overcurrent protection of 1A maximum.

Power consumption @ 1.8-5.5V ; 10 mA

B Mounting & Location

Secured via a $\varnothing 22\text{mm}$ diameter threaded mounting stud, The Patriot is recommended to be fitted utilizing the existing OEM antenna mounting hole, with a foam gasket for secure, unobstructed installation between roof ribs. If this is not available, a $\varnothing 24\text{mm}$ hole will need to be drilled in the roof or enclosure.

When mounting on a vehicle roof panel ensure to mount on a flat surface, and measure for a central position. Care should be taken to mount the Patriot antenna as far as possible from other roof-mounted features such as the aircon unit, light bar etc.



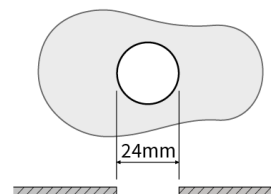
Sealing

In order to ensure that the installation is properly sealed against the mounting surface care must be taken regarding curvature of the mounting panel. It is highly recommended to install the antenna on a clean, flat and level surface. After installation the compression of the foam gasket and adhesive against the mounting panel should be checked and a small bead of neutral cure silicone sealant can be applied around the periphery of the enclosure if required.

C Surface Preparation

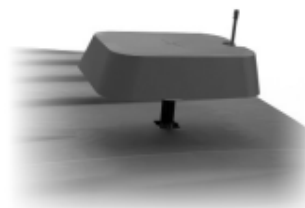
When preparing to drill the hole, mask the area around the hole position to protect the surface. If an existing OEM antenna mounting hole is not present, drill a pilot hole and increase the hole size to $\varnothing 24\text{mm}$ ($\frac{7}{8}"$). Ensure the drill bit does not contact the headliner. Then deburr and clean the area around the hole carefully removing all waste.

Remove paint and primer from under panel surface to ensure adequate earth contact by washer and nut. Apply petroleum jelly or paint around cut edge of the hole to prevent corrosion



D Adhesive Foam Gasket

On the underside of the antenna there is a 3M adhesive foam gasket. Peel away the 3M adhesive protection and feed the cables through the hole. Position the antenna over the hole and press down onto the panel with pressure. This adhesion will ensure the antenna is securely mounted and will also allow for extremely minimal curvature on the roof of a vehicle.



E Securing the Mount

A split nut is used to easily fit onto the thread through the cables. The nut is attached from the underside of the panel, it should easily twist onto the thread and then secured in place with a final tighten with a spanner. After tightening, double check the antenna to make sure that it is properly secured.

Recommended Mounting Torque: 5N-m



F Cable Routing and Connection

The cables supplied are RG-174 and TGC-1.5DS for all feeds. The heatshrink will denote which cable is which for ease of installation. Connect each individual connector to the correct port of the router, if any cable is unused please fit a 50Ω terminator to the individual connection.



G Notices



Caution

To comply with FCC RF Exposure requirements in section 1.1310 of the FCC Rules, antennas used with this device must be installed to provide a separation distance of at least 20 cm from all persons to satisfy RF exposure compliance.



Warning

Do not operate the equipment in an explosive atmosphere.



European Waste Electronic Equipment Directive 2012/19/EU

Please ensure that your old Waste Electricals and Electronics are recycled do not throw them away into standard waste.



Hazardous Substances Directive (RoHS) 2011/65/EU / 2015/863/EU Directive 2014/53/EU Radio Equipment Directive (RED)

View CE Certificate online:

www.taoglas.com/assets/ce/CE-Declaration-of-Conformity-RoHS-RED-Patriot-Series.pdf

Harmonised Standards and References:

EN 301 489-1 (V2.2.3): ElectroMagnetic Compatibility (EMC) standard for radio equipment and services;
Part 1: Common technical requirements. Referencing CENELEC EN 55032 Class B.

Waiver: This document represents information compiled by Taoglas to the best of our current knowledge. This is not intended to be used as a representation or warranty of fitness of the products described for any particular purpose. This document details guidelines for general information purposes only. When planning installations, always seek specialist advice and ensure that the products are always installed by a properly qualified installer in accordance with applicable regional laws and regulations.

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5. Packaging

Small Whip



☑ 1 PCS / Zipper bag

Medium Whip



☑ 1 PCS / PE bag



- ☑ 1 PCS / PE bag
- ☑ PE bag(mm): 500x350 (Ref)
- ☑ Weight (g): 825 $\pm$ 3%
- ☑ SPQ Label



- ✓ 8 PCS/ Carton
- ✓ Carton(mm):484x434x286
- ✓ Weight (kg): 8.1±3%
- ✓ Carton Label

6. Antenna Characteristics

6.1 Test Setup

AUT

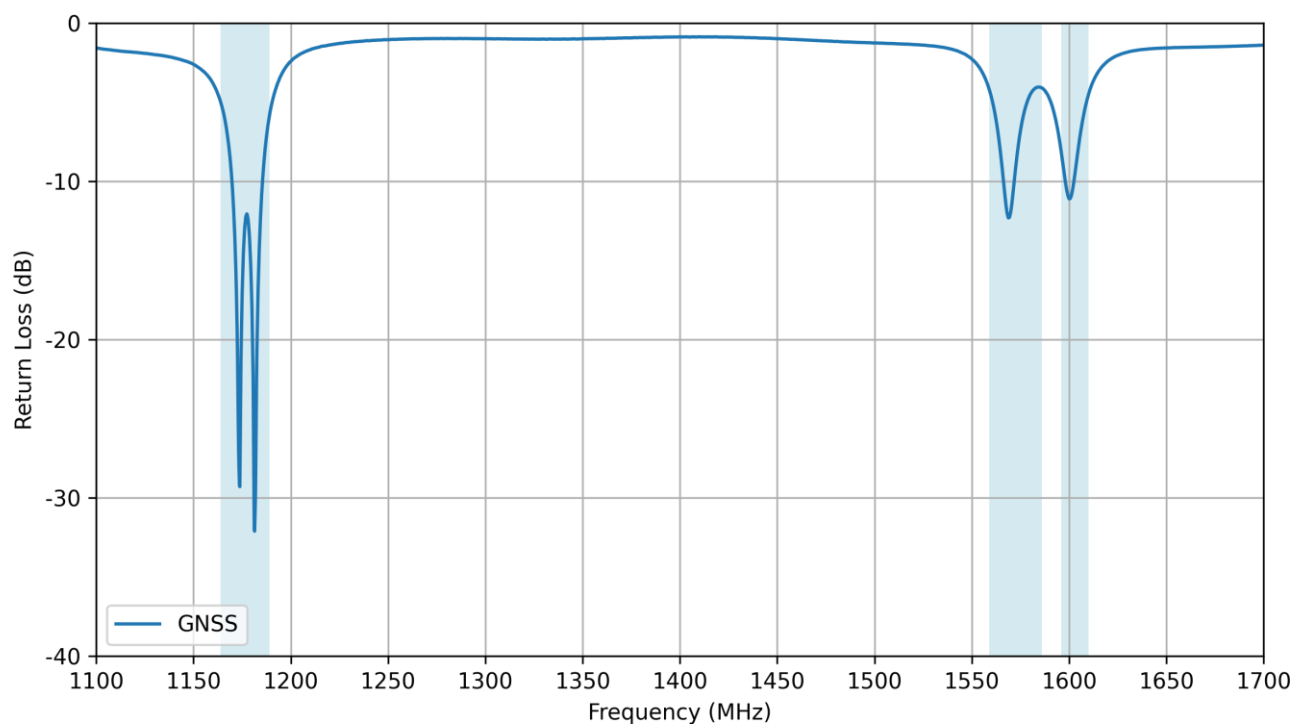


Vector Network Analyzer

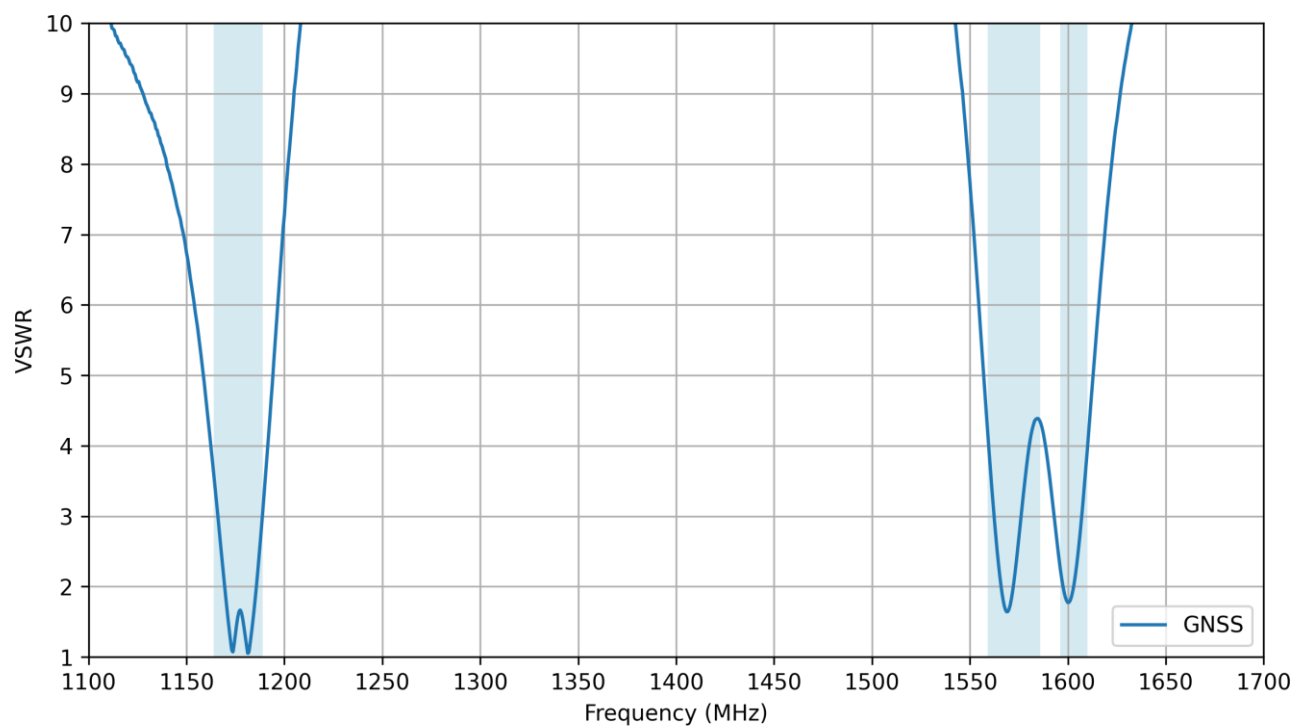


VNA Test Set-up on a 30x30cm Metal Ground Plane with 30cm cables.

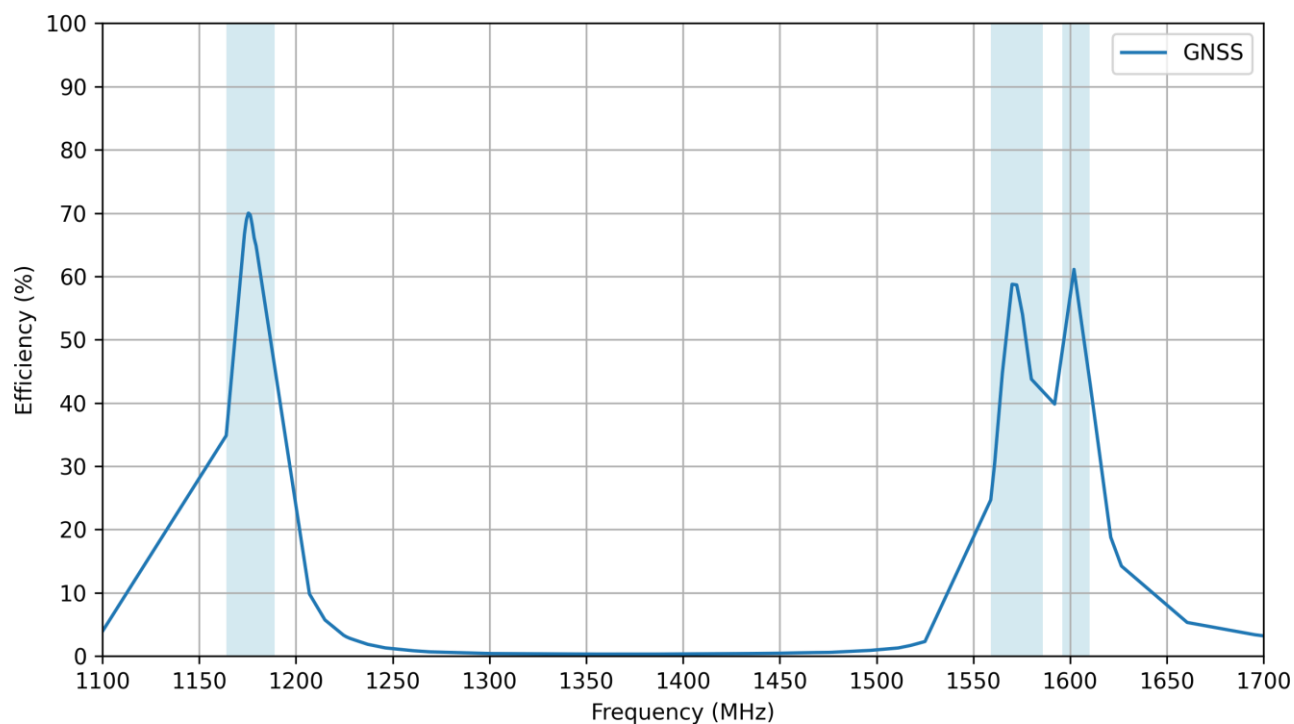
6.2 GNSS - Return Loss



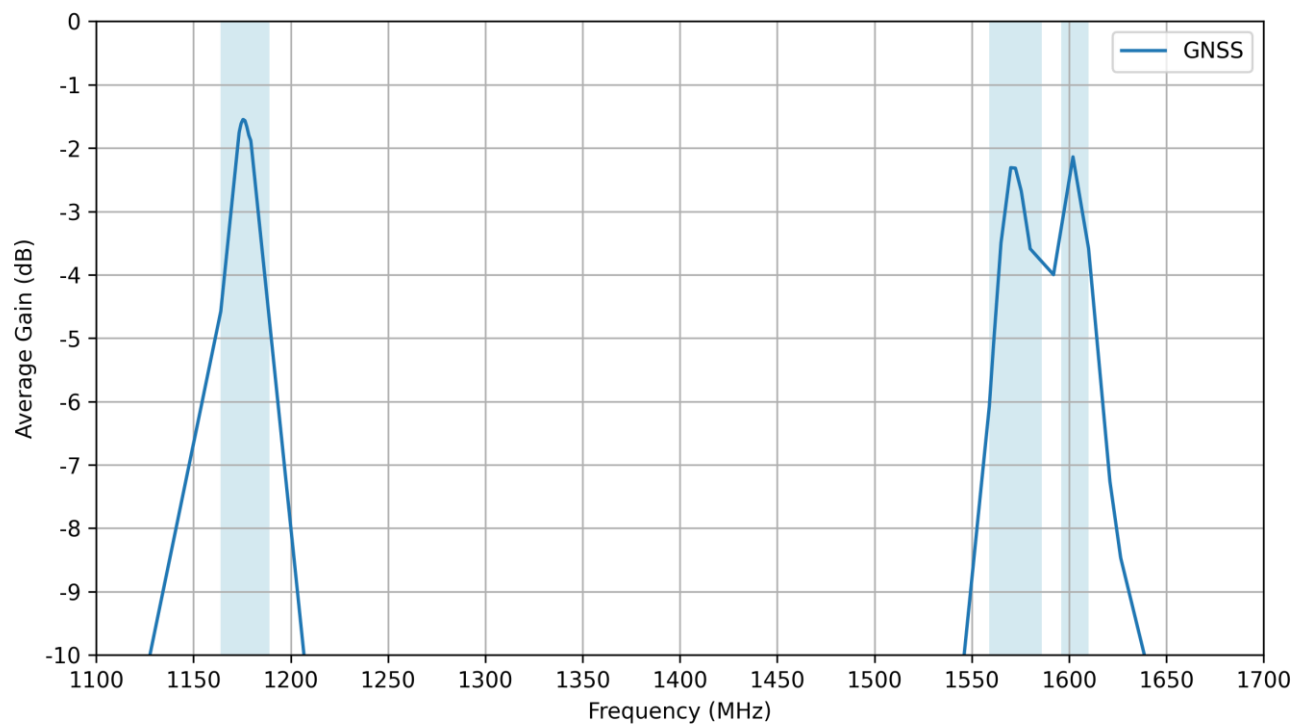
6.3 GNSS - VSWR



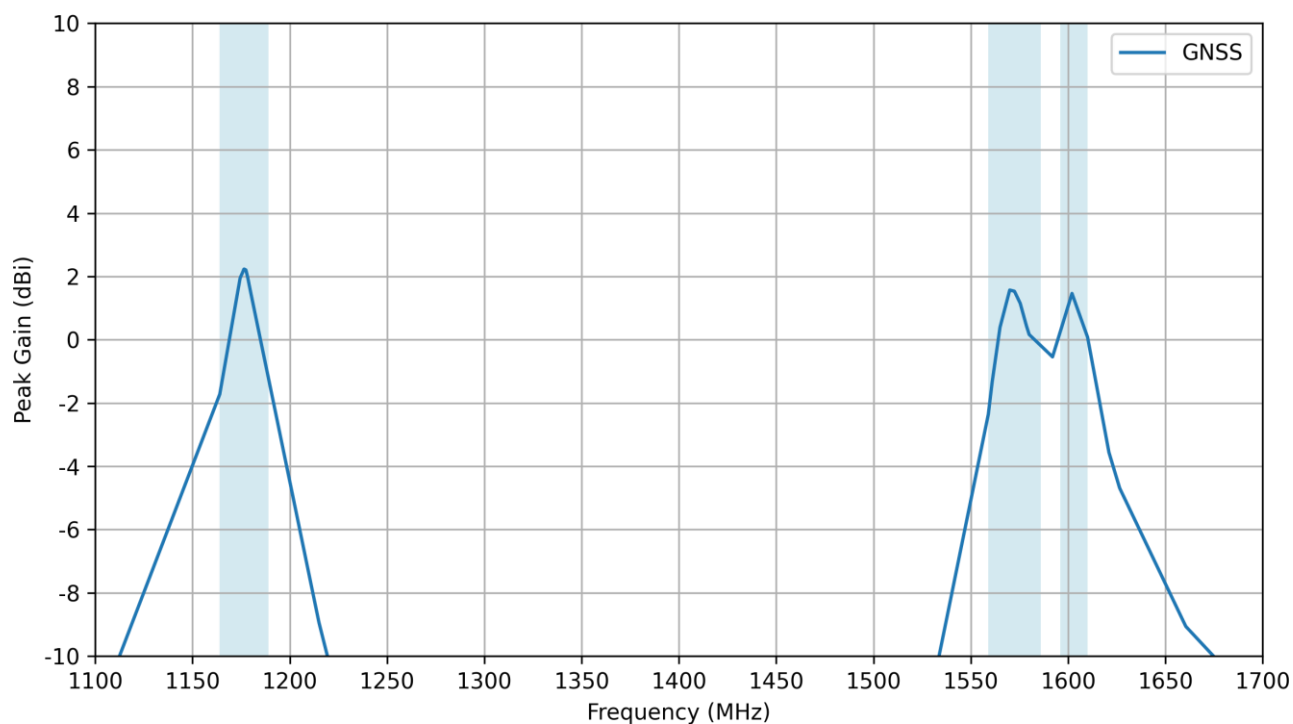
6.4 GNSS - Efficiency



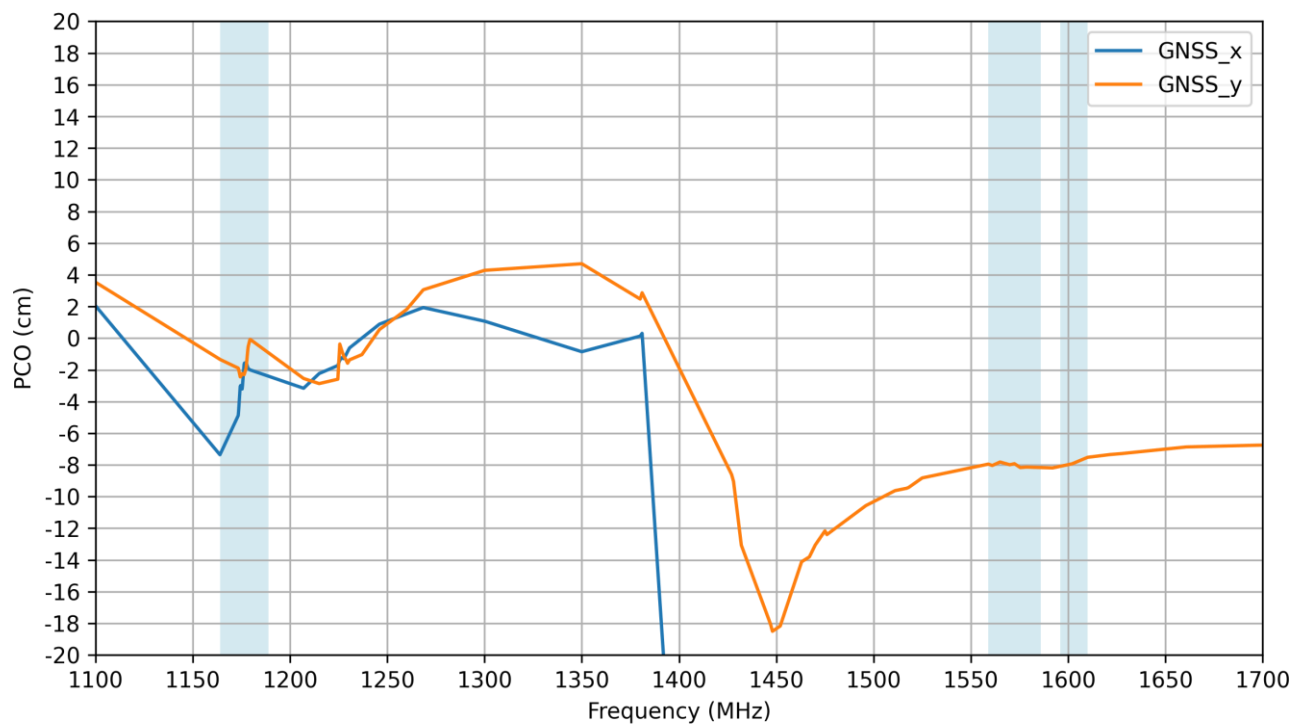
6.5 GNSS - Average Gain



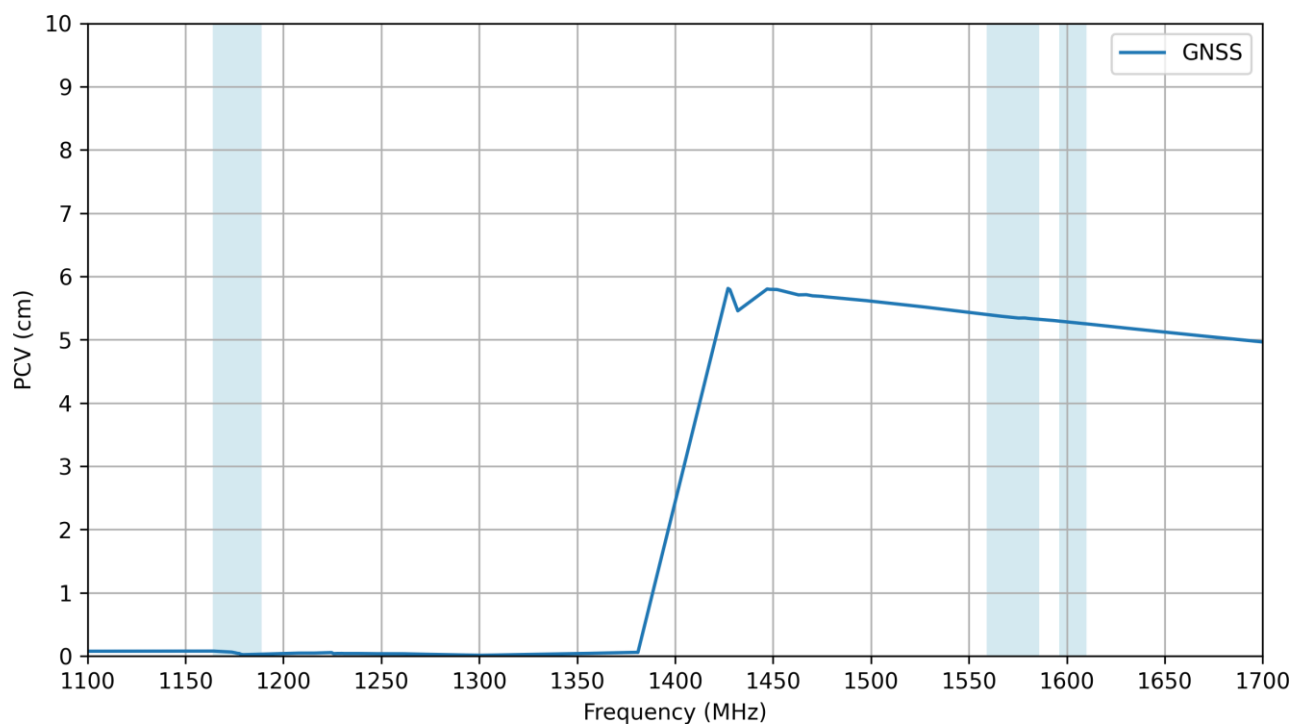
6.6 GNSS - Peak Gain



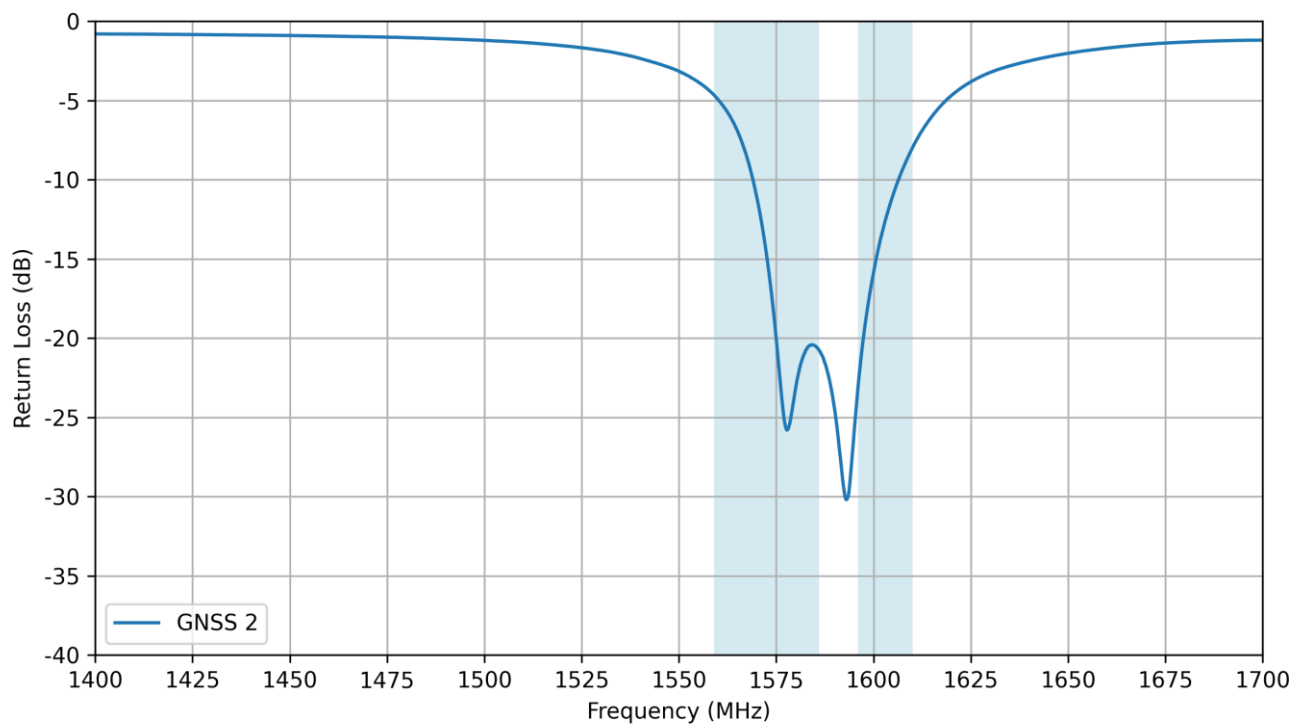
6.7 GNSS - PCO



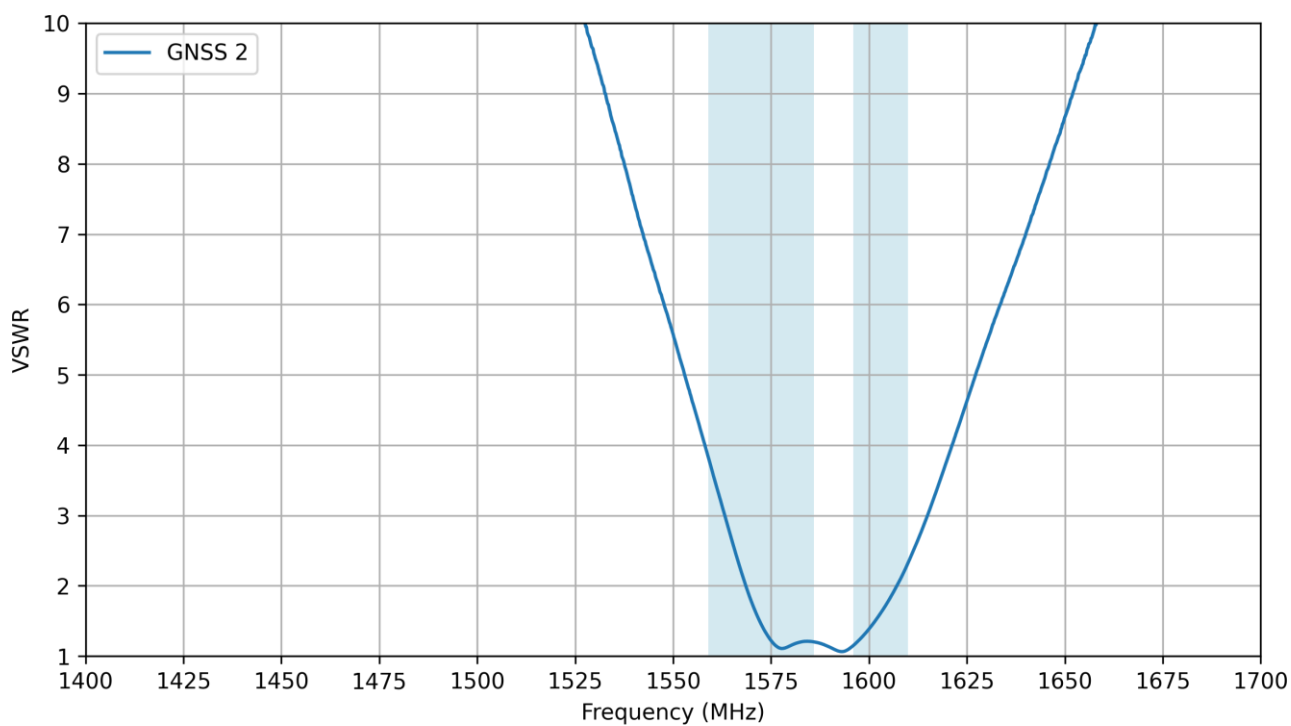
6.8 GNSS - PCV



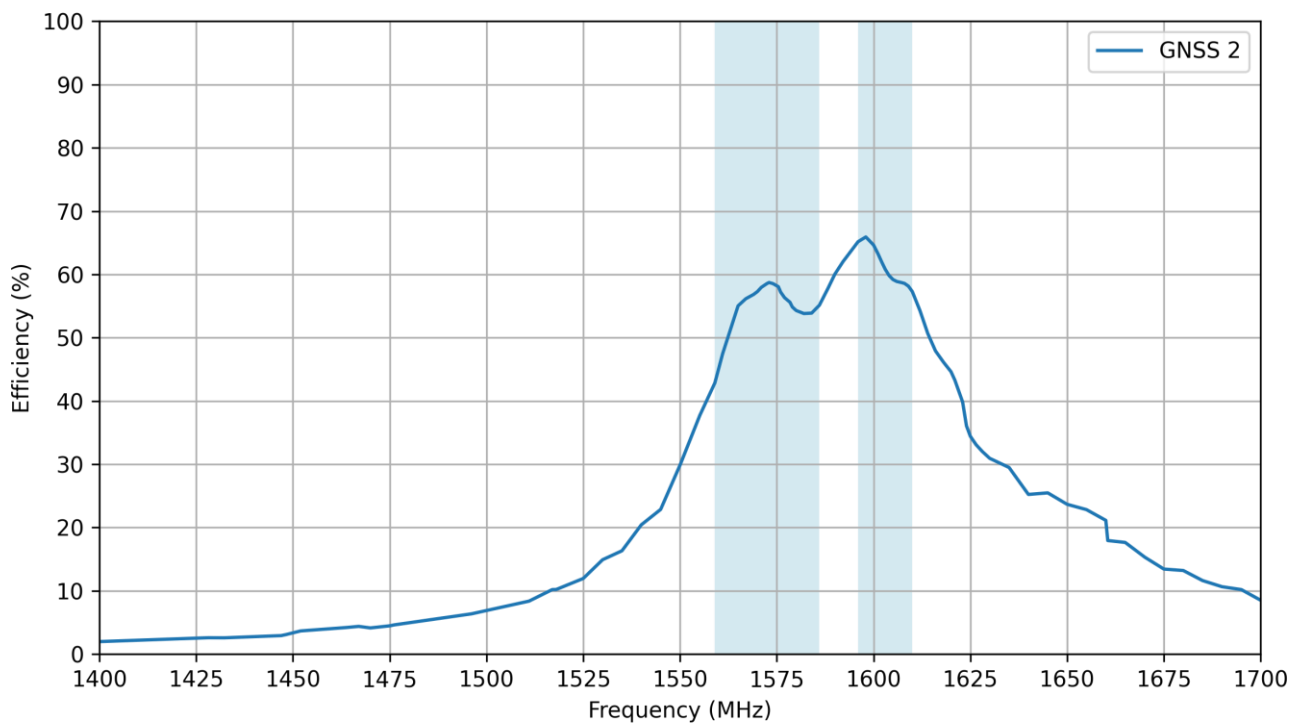
6.9 GNSS 2 - Return Loss



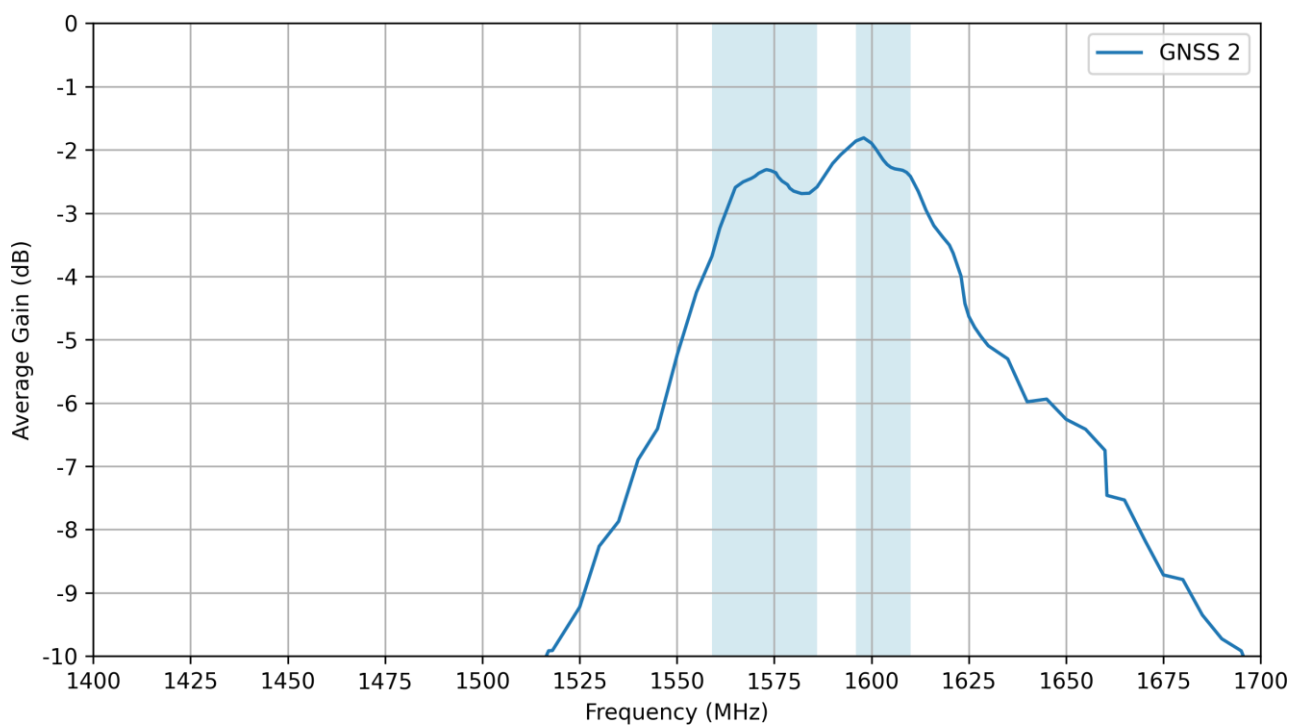
6.10 GNSS 2 - VSWR



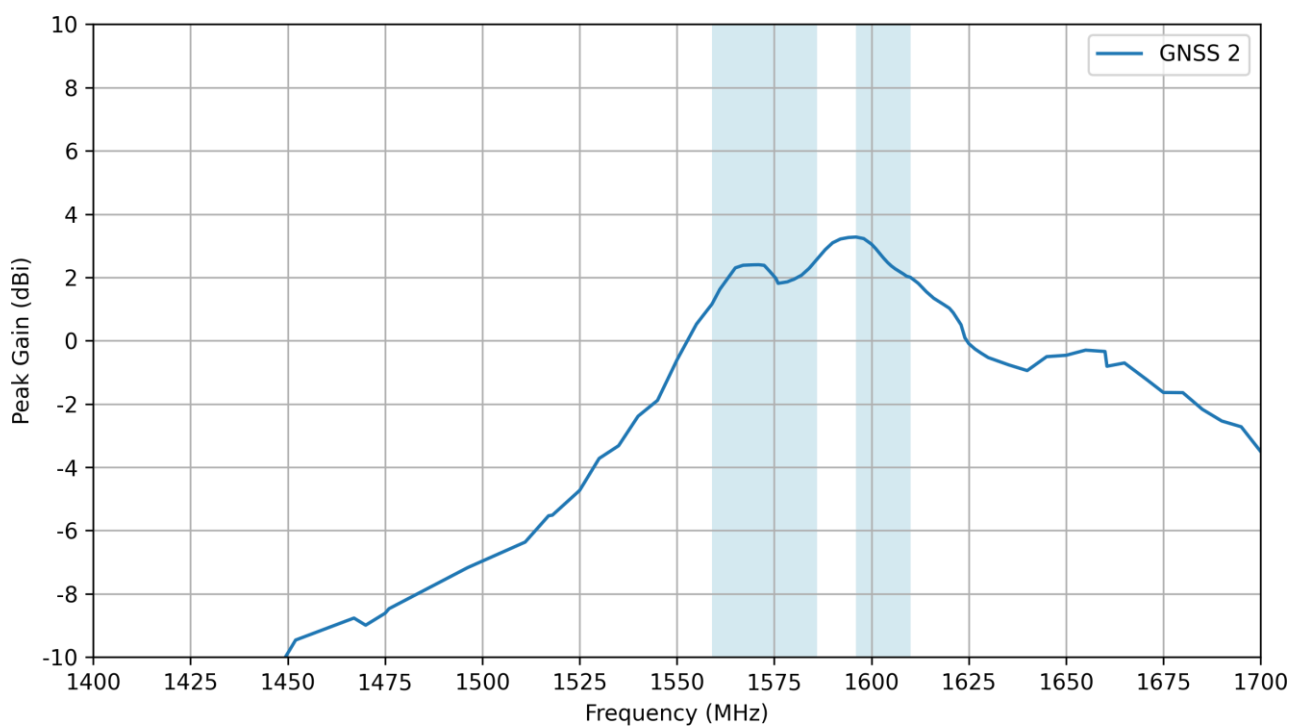
6.11 GNSS 2 - Efficiency



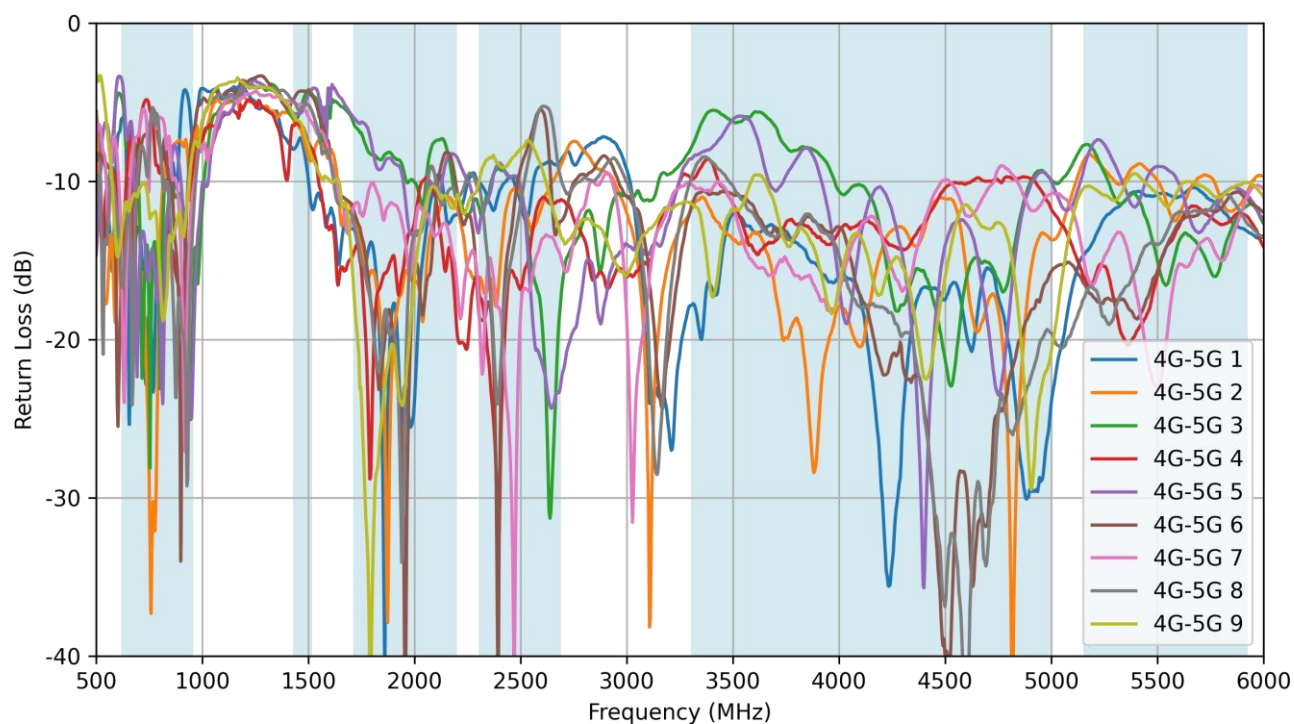
6.12 GNSS 2 - Average Gain



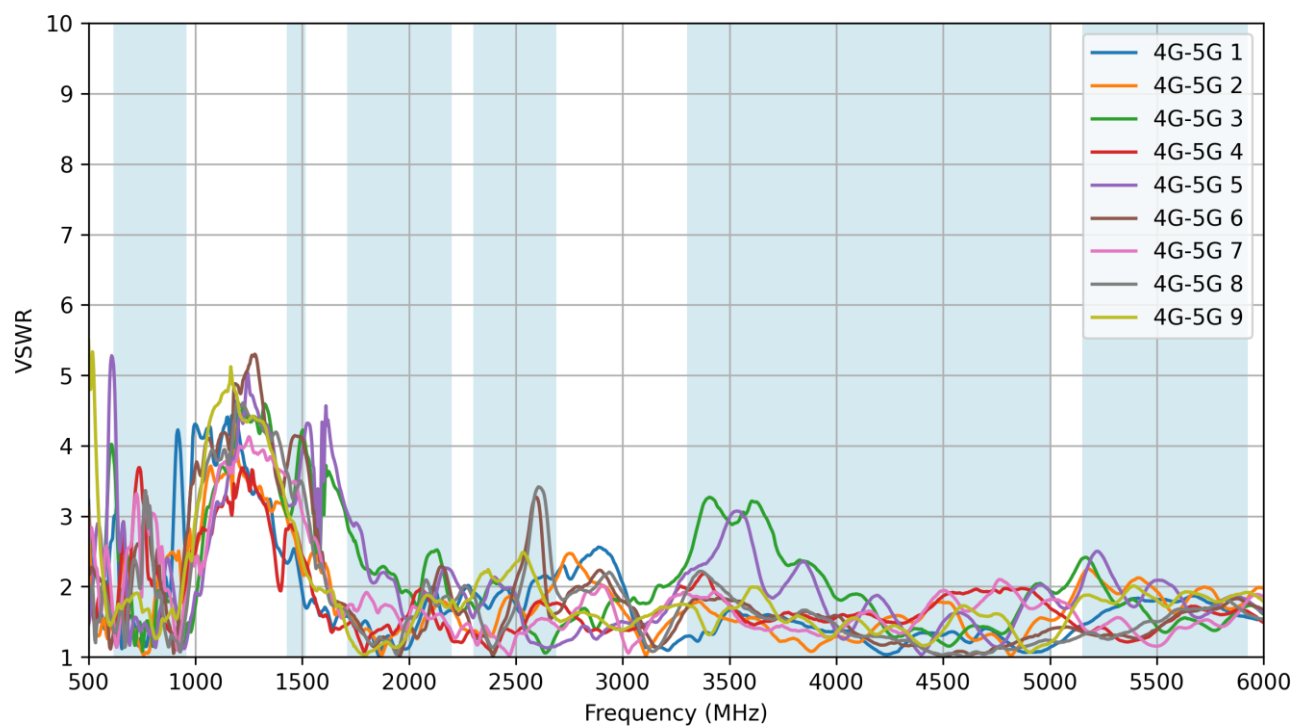
6.13 GNSS 2 - Peak Gain



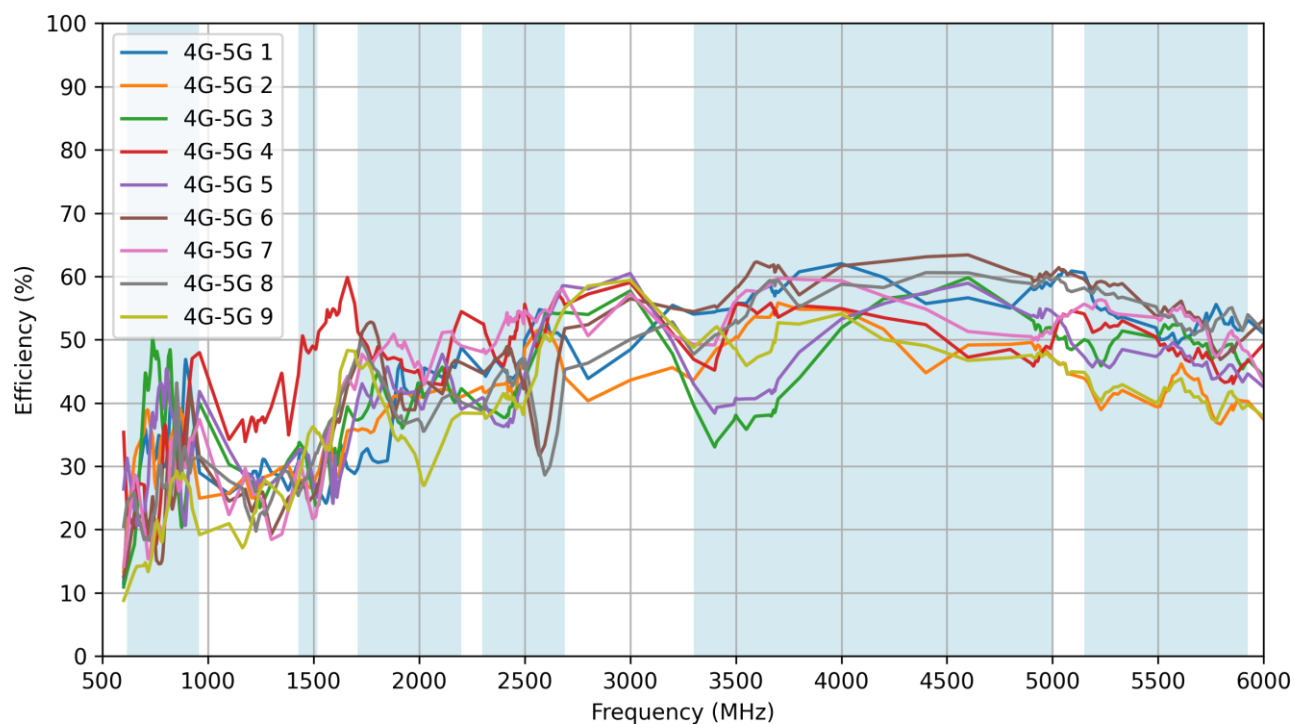
6.14 4G-5G - Return Loss



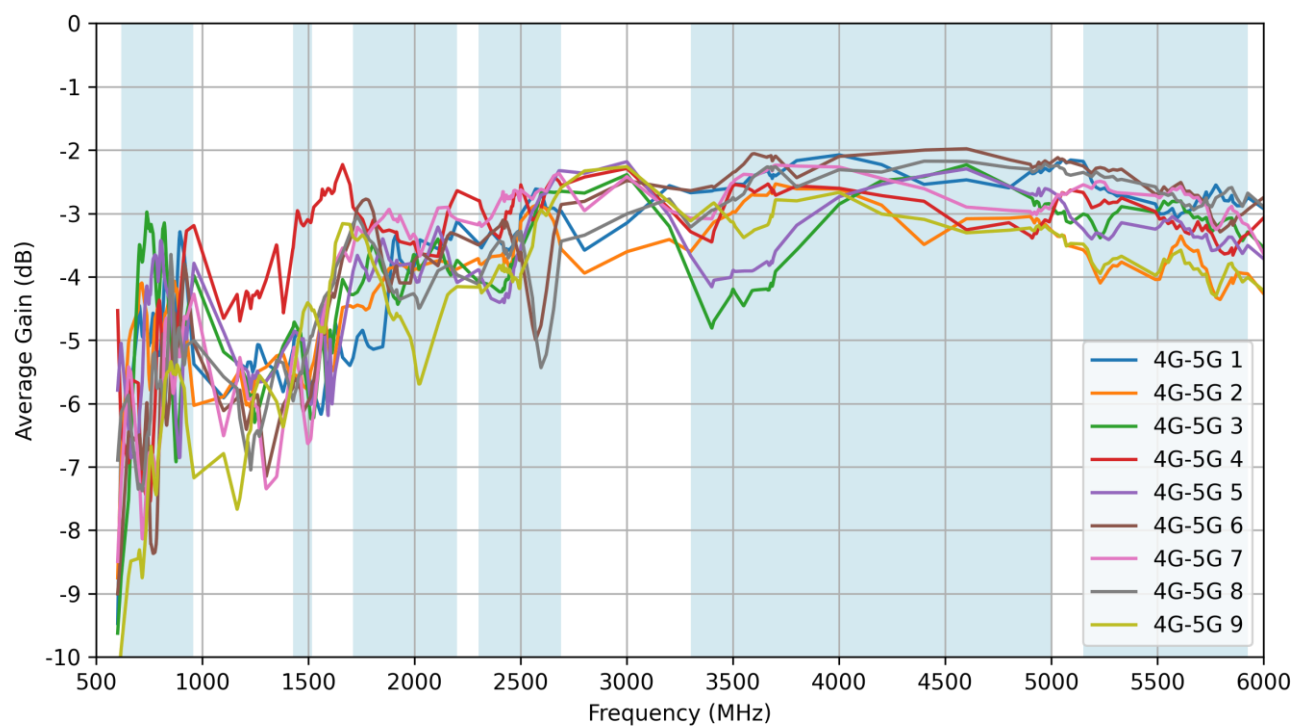
6.15 4G-5G - VSWR



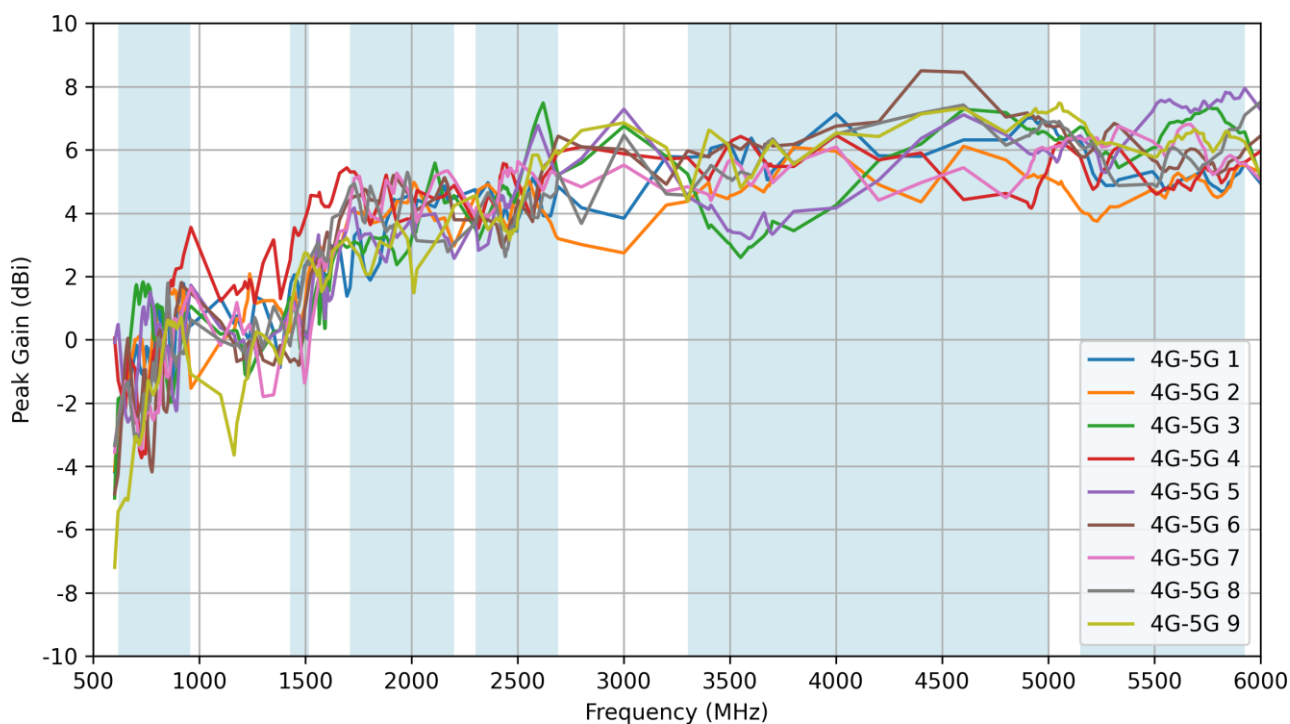
6.16 4G-5G - Efficiency



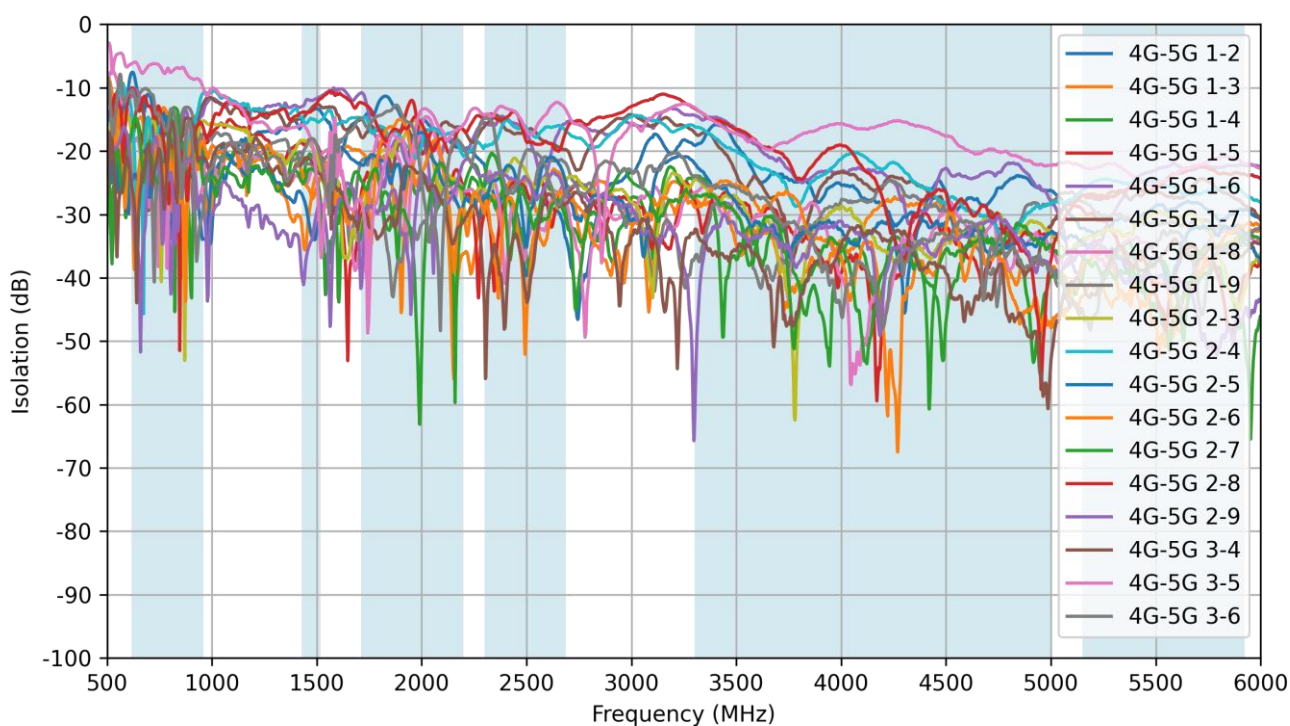
6.17 4G-5G - Average Gain



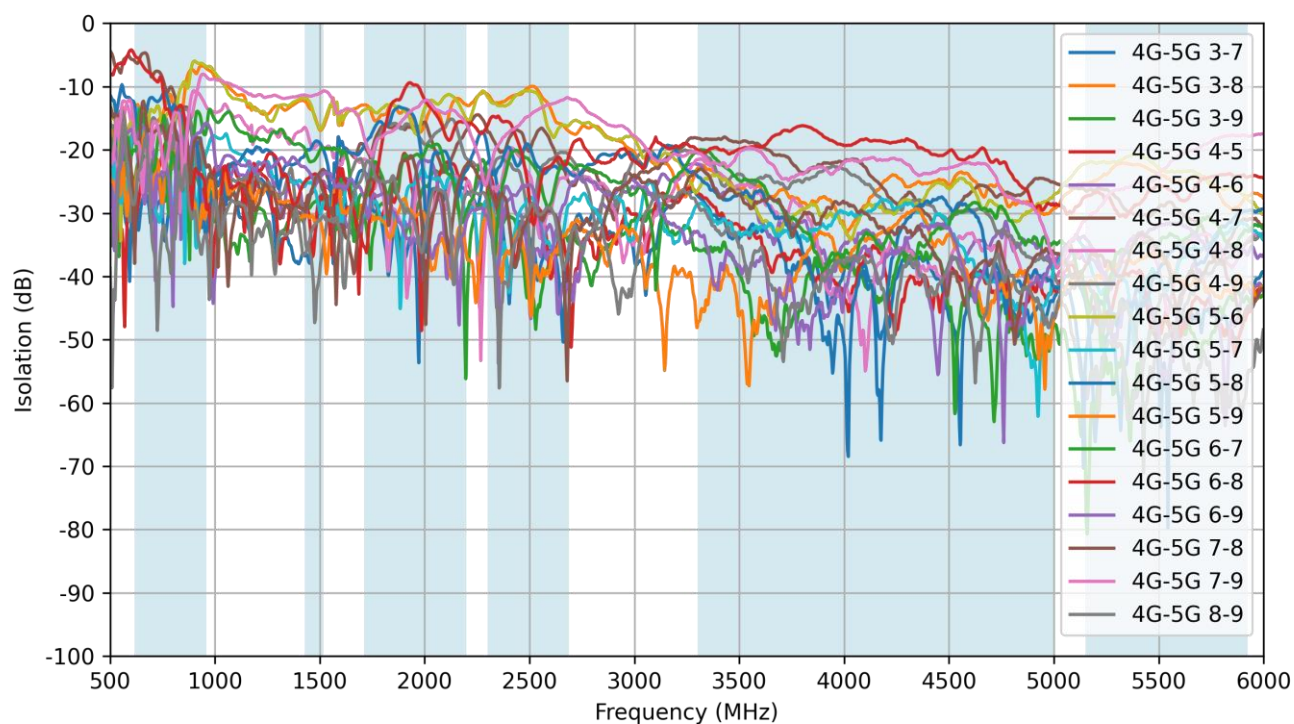
6.18 4G-5G - Peak Gain



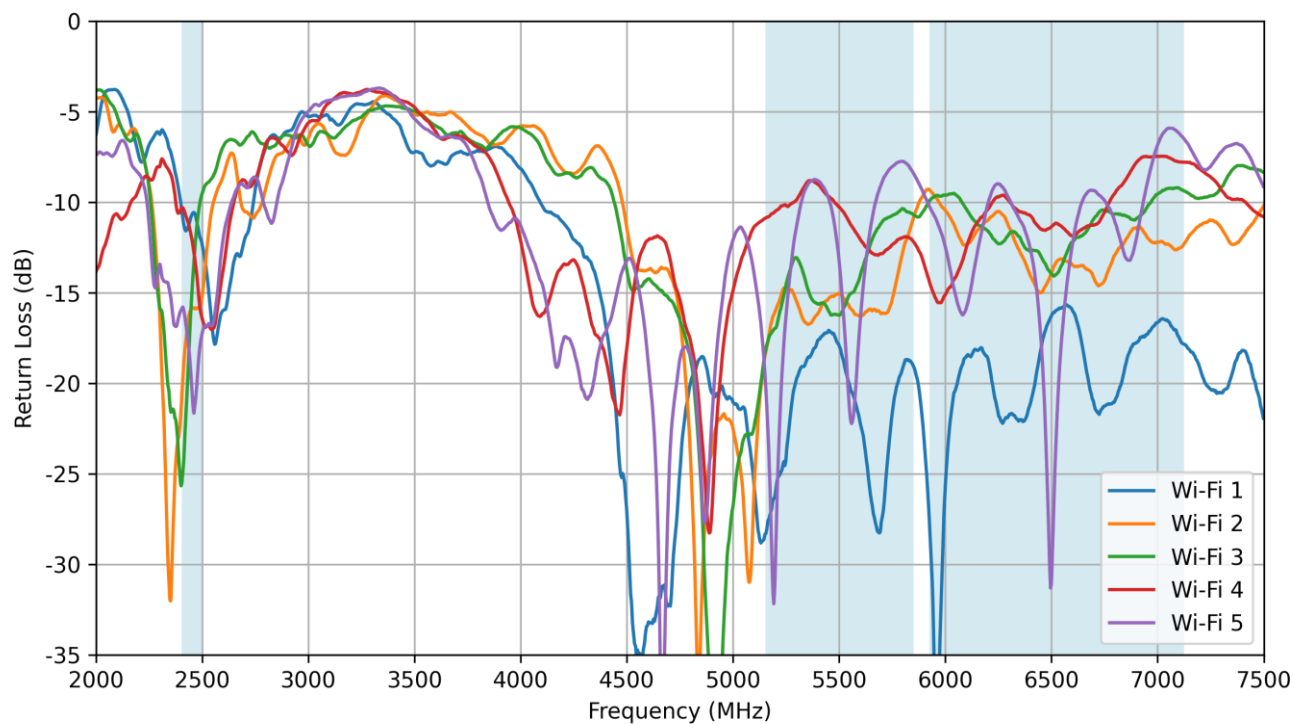
6.19 4G-5G – Isolation 1



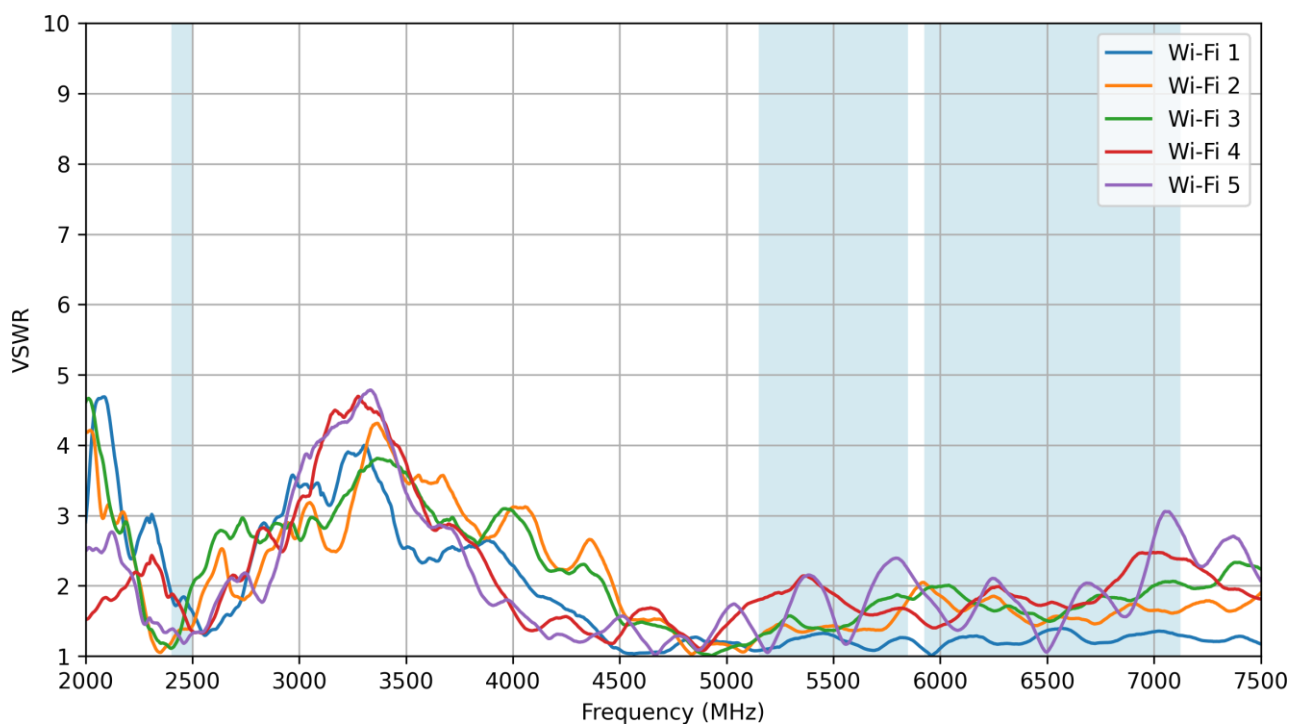
6.20 4G-5G – Isolation 2



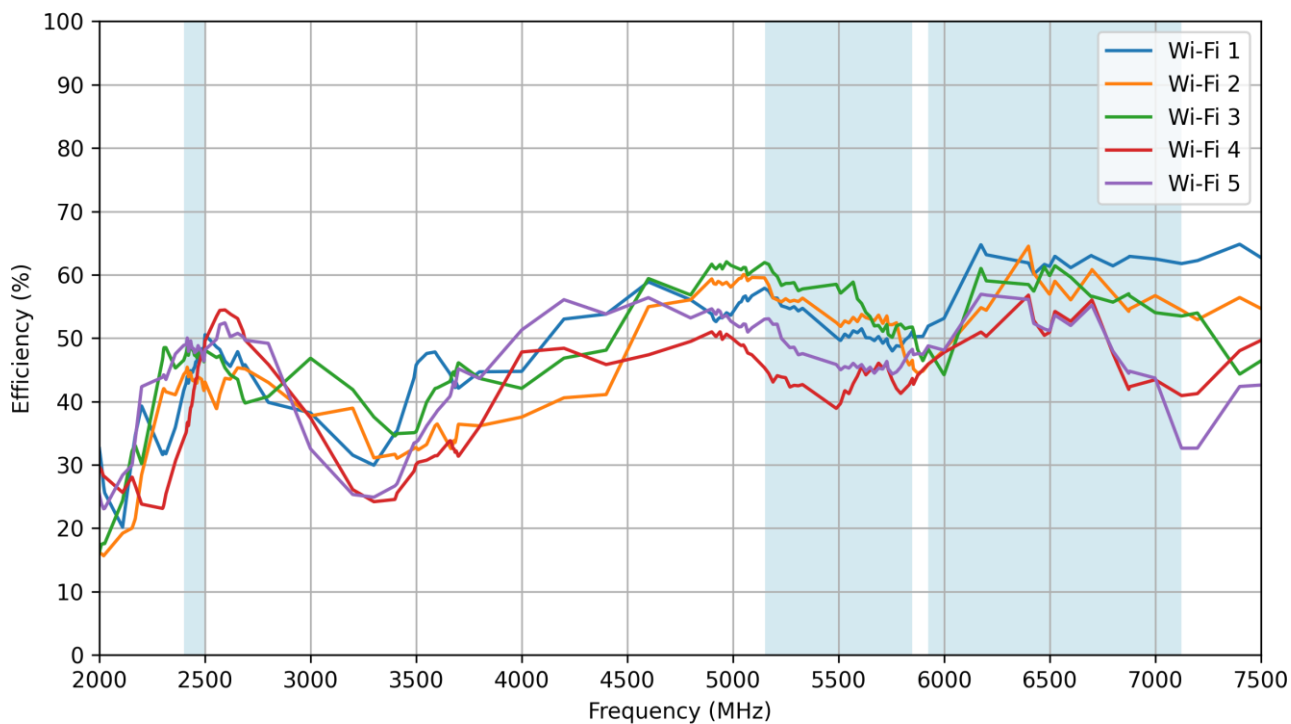
6.21 Wi-Fi - Return Loss



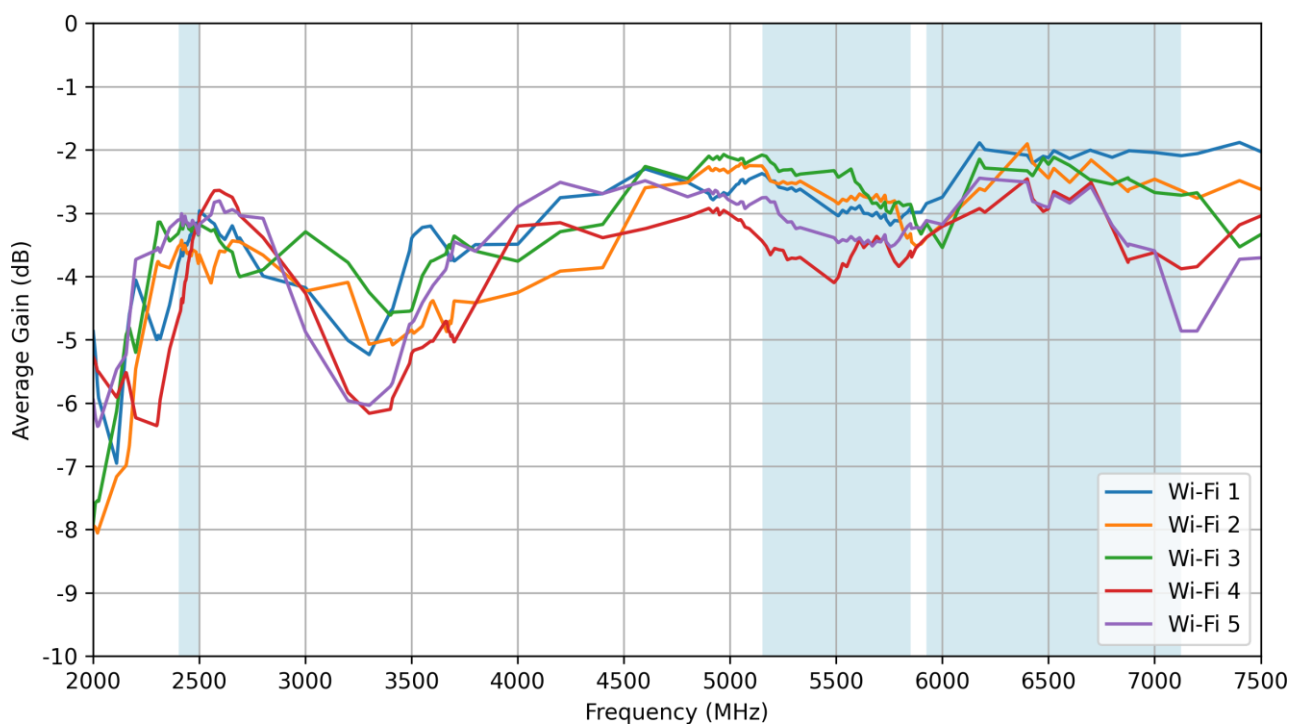
6.22 Wi-Fi - VSWR



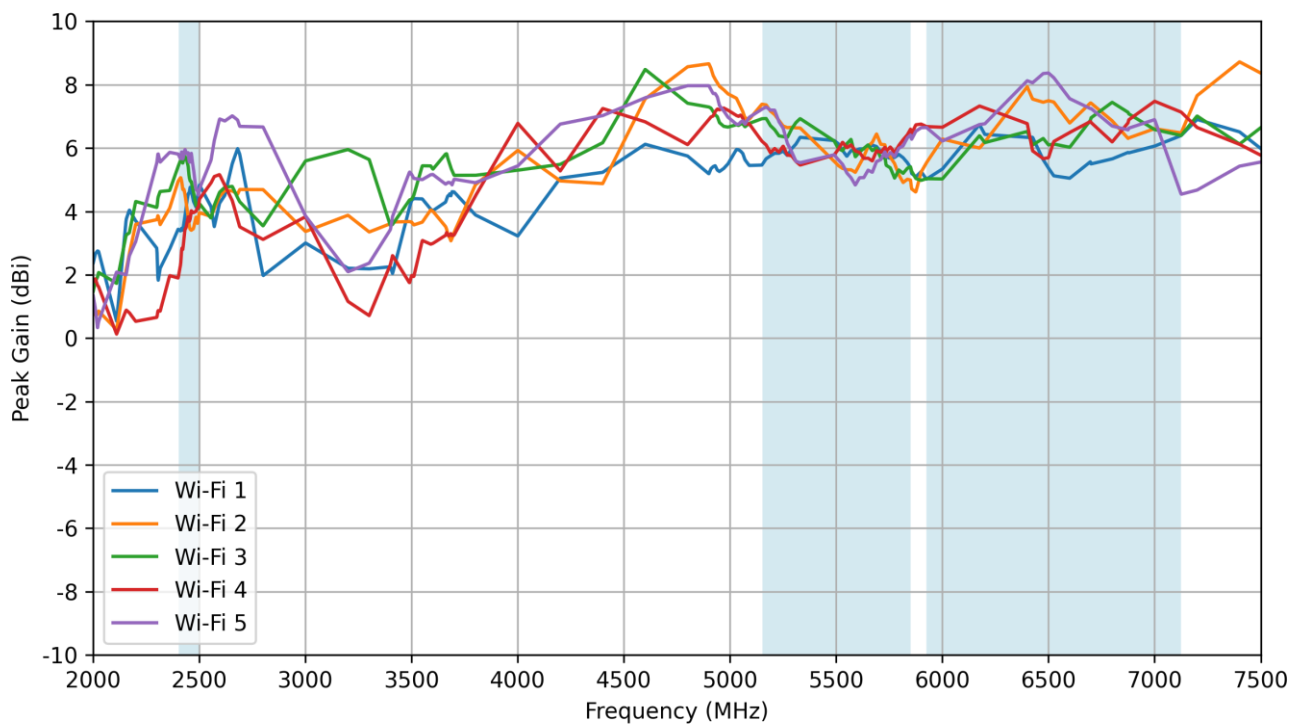
6.23 Wi-Fi - Efficiency



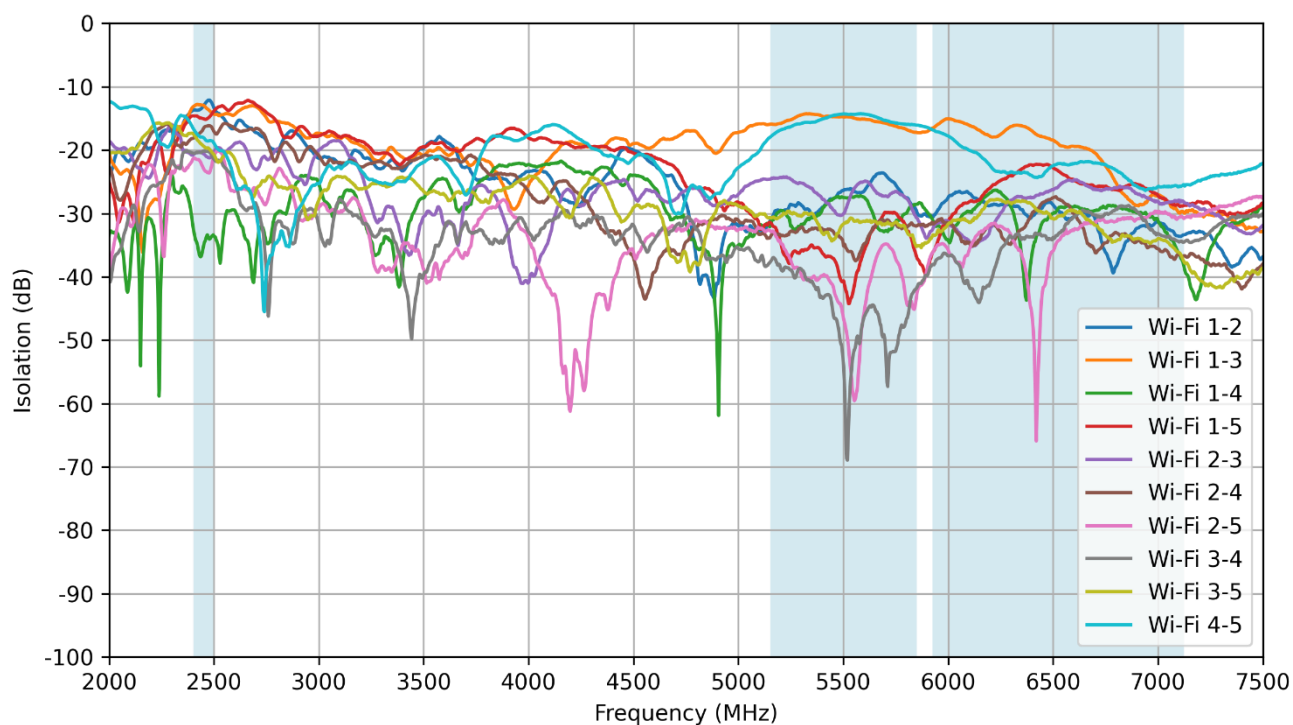
6.24 Wi-Fi - Average Gain



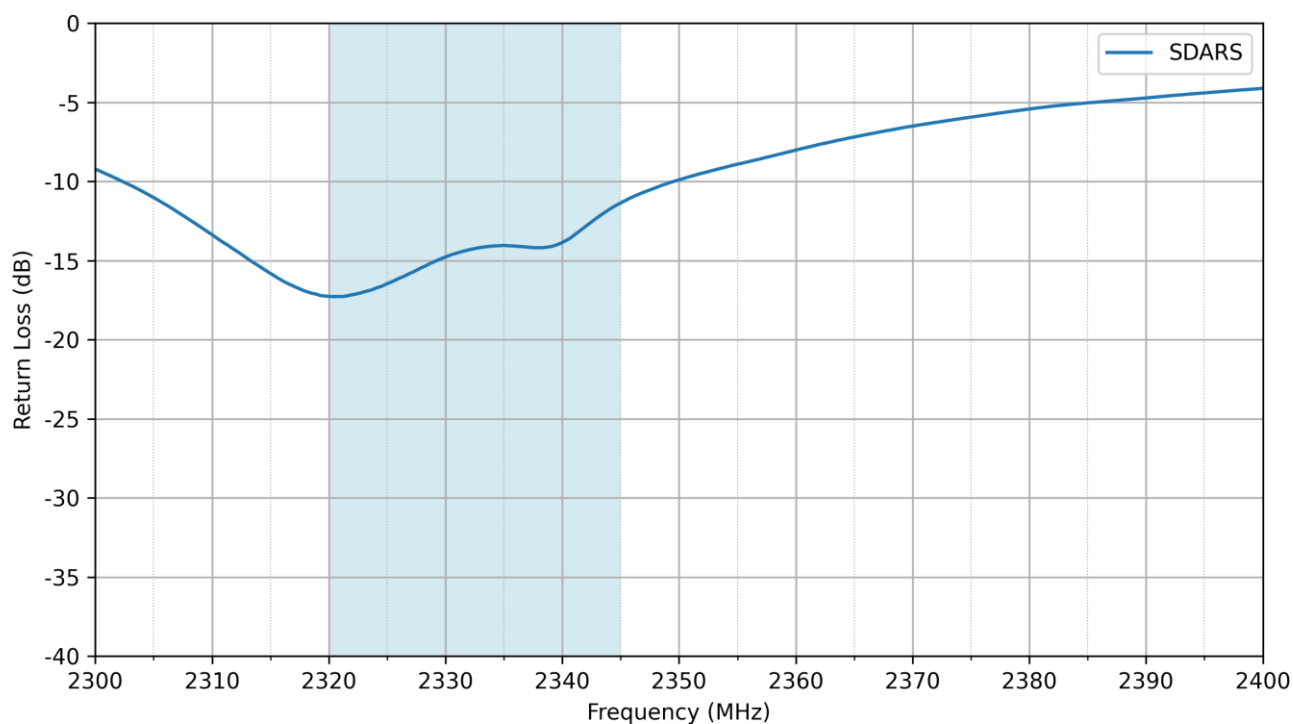
6.25 Wi-Fi - Peak Gain



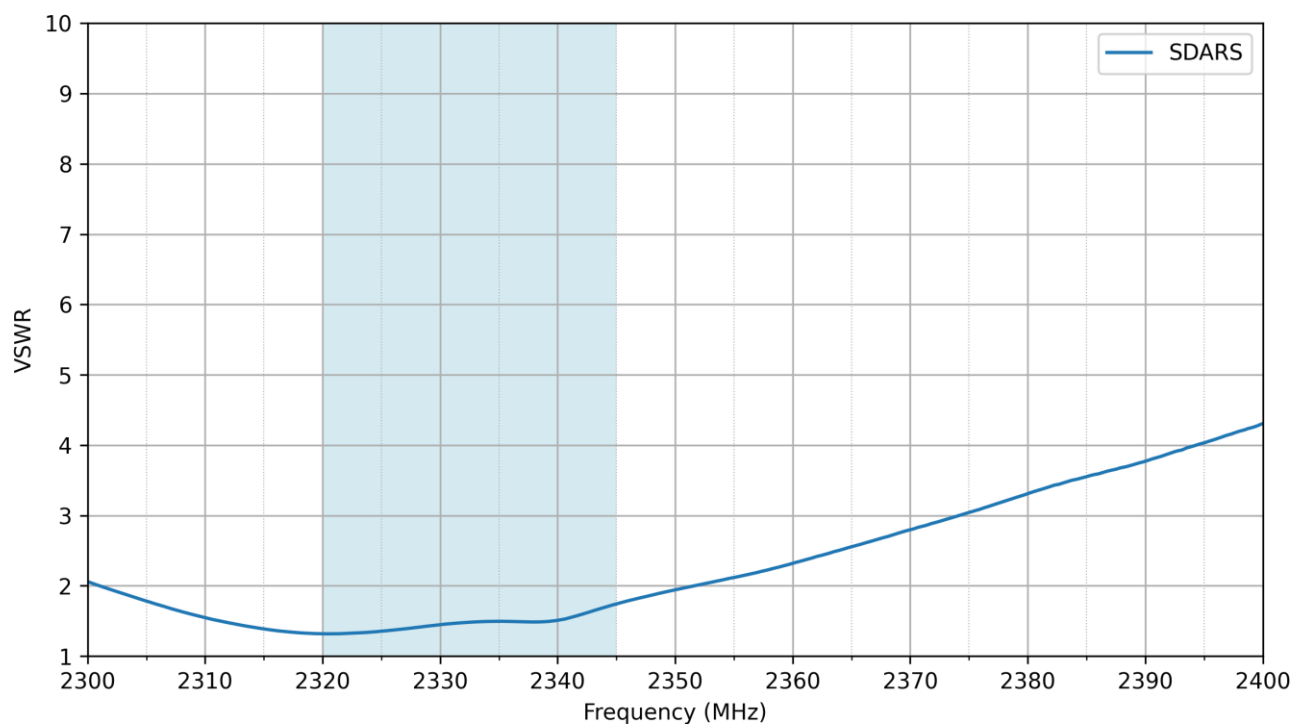
6.26 Wi-Fi - Isolation



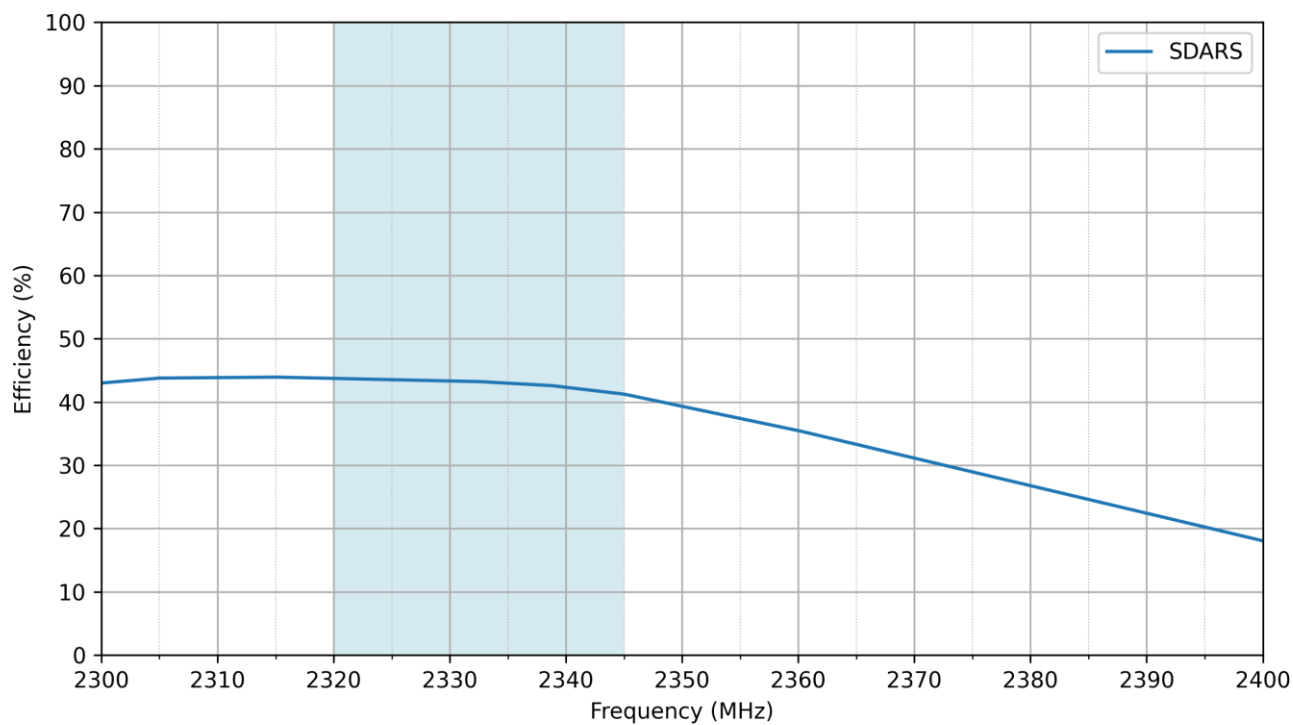
6.27 SDARS - Return Loss



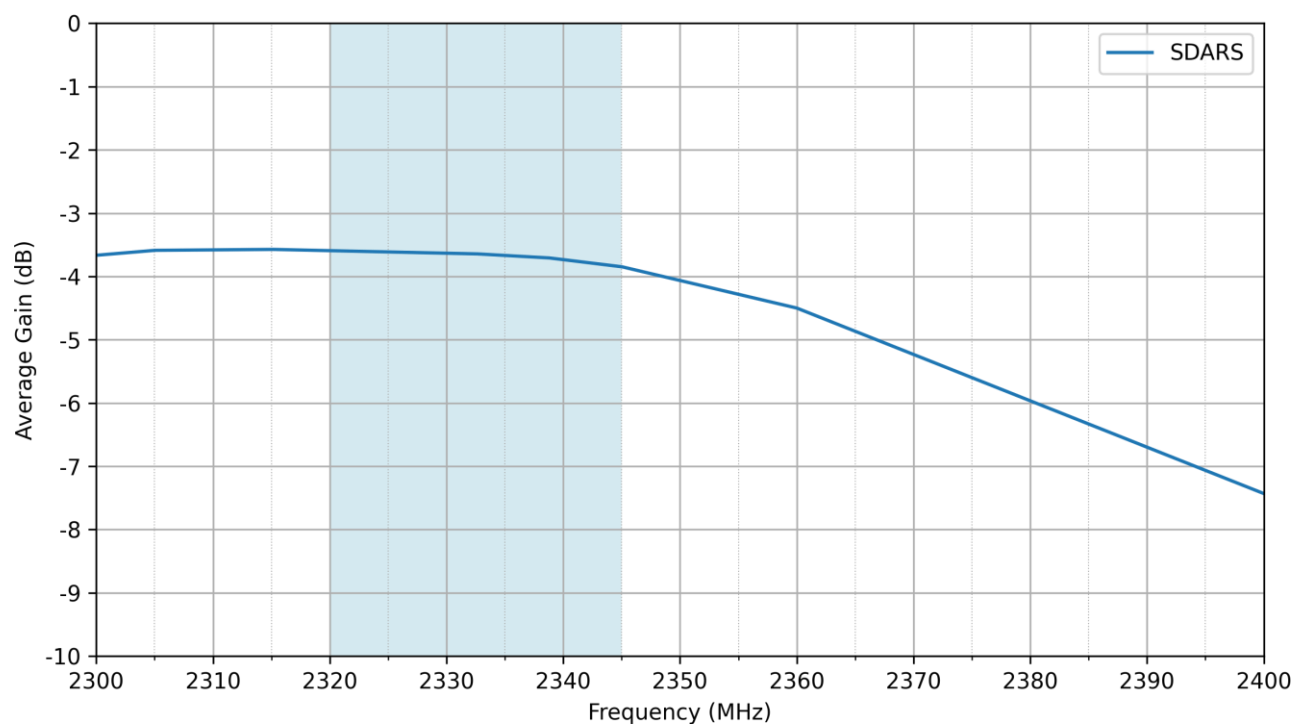
6.28 SDARS - VSWR



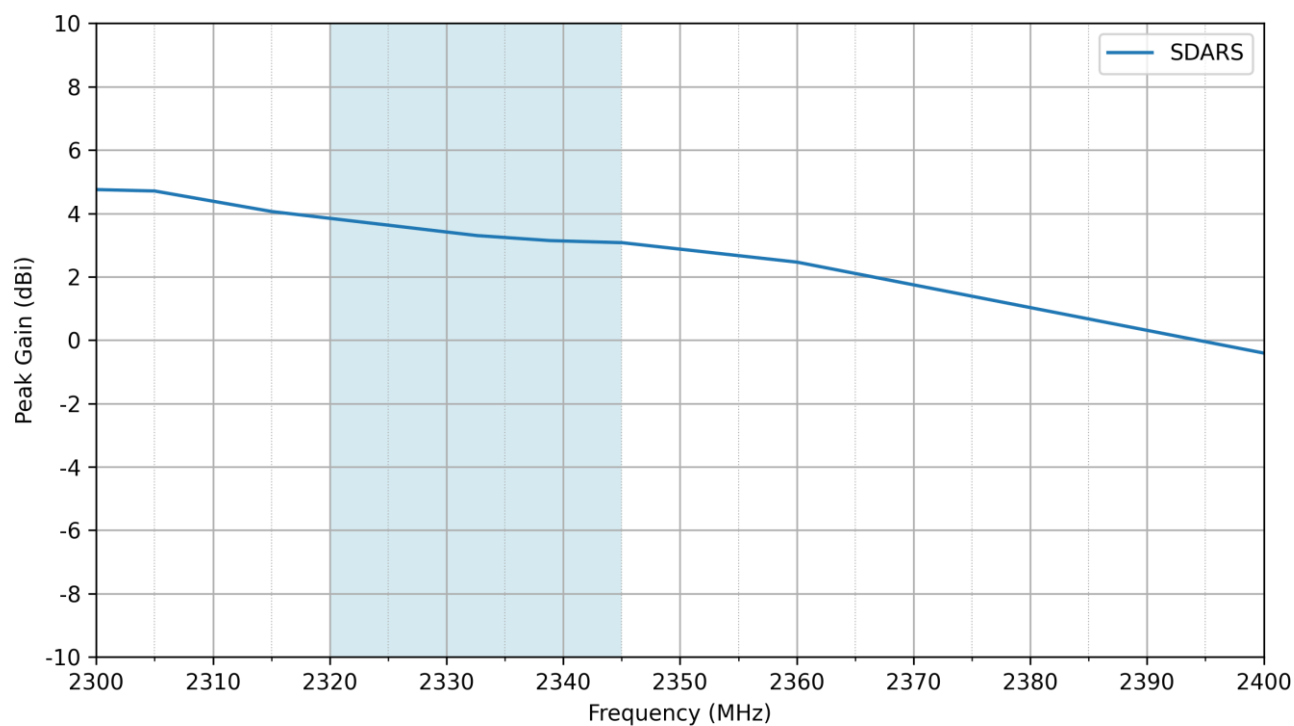
6.29 SDARS - Efficiency



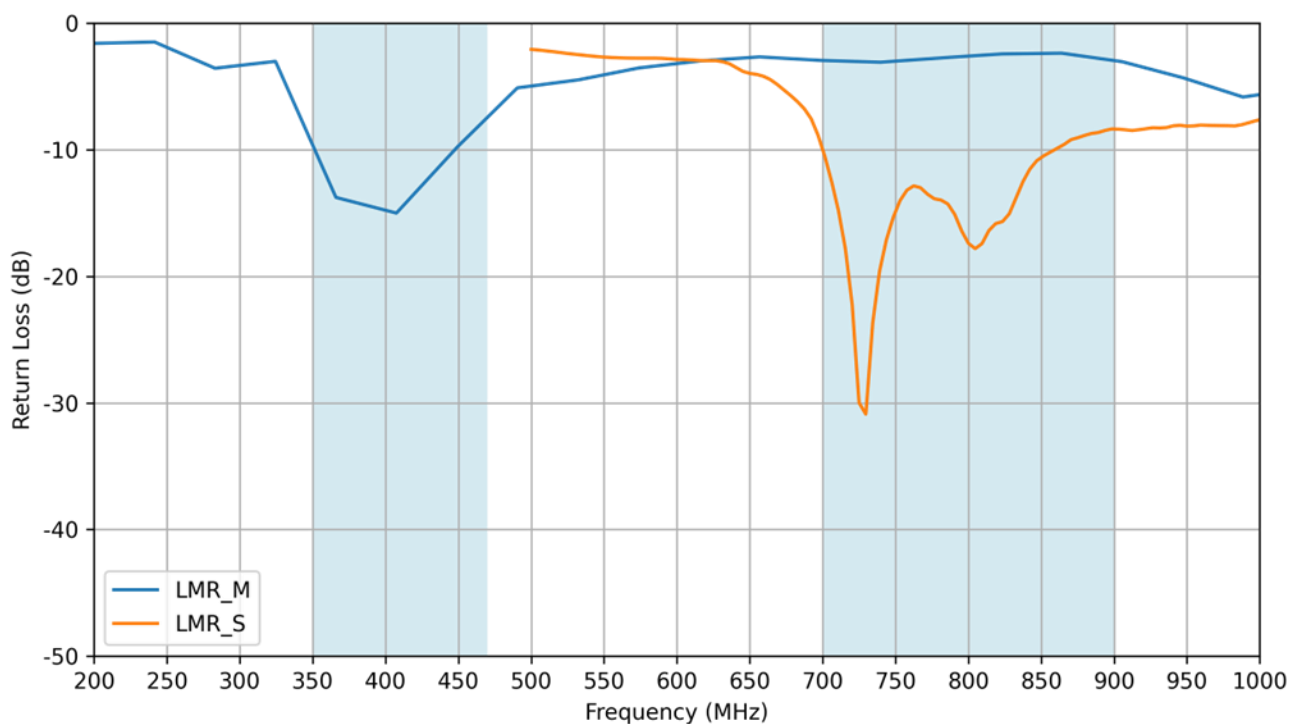
6.30 SDARS - Average Gain



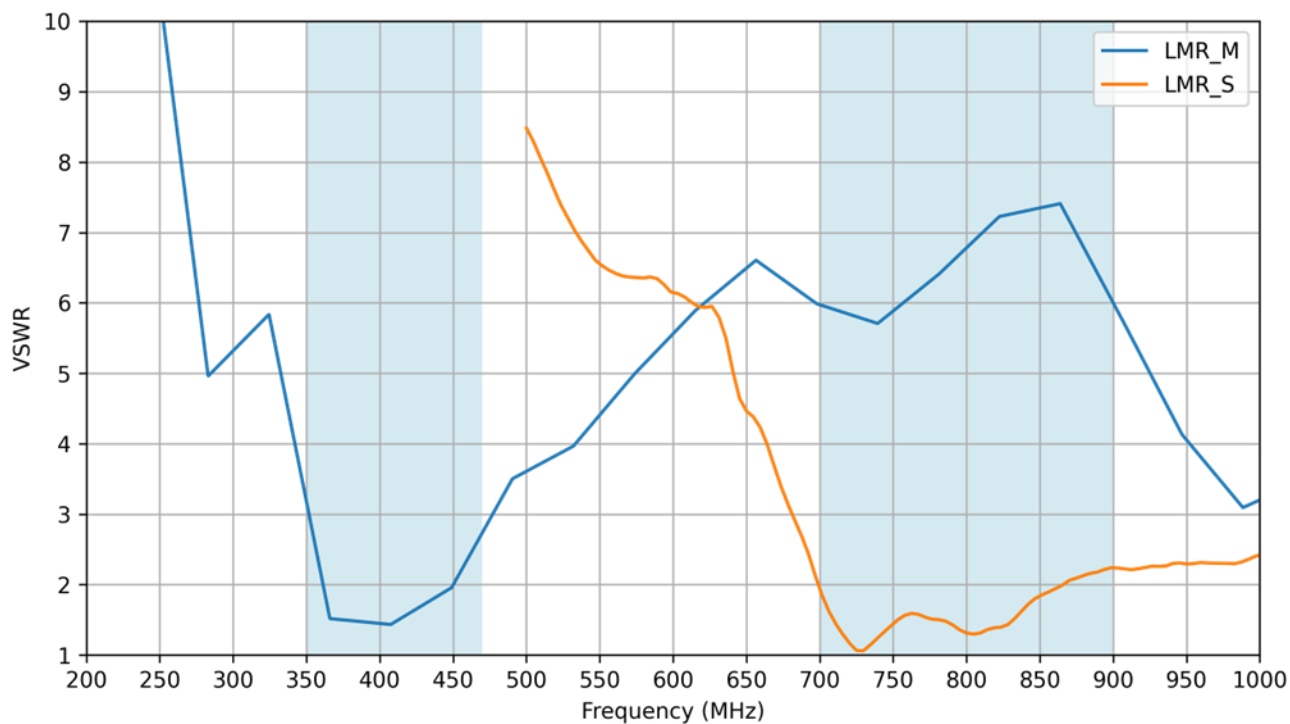
6.31 SDARS - Peak Gain



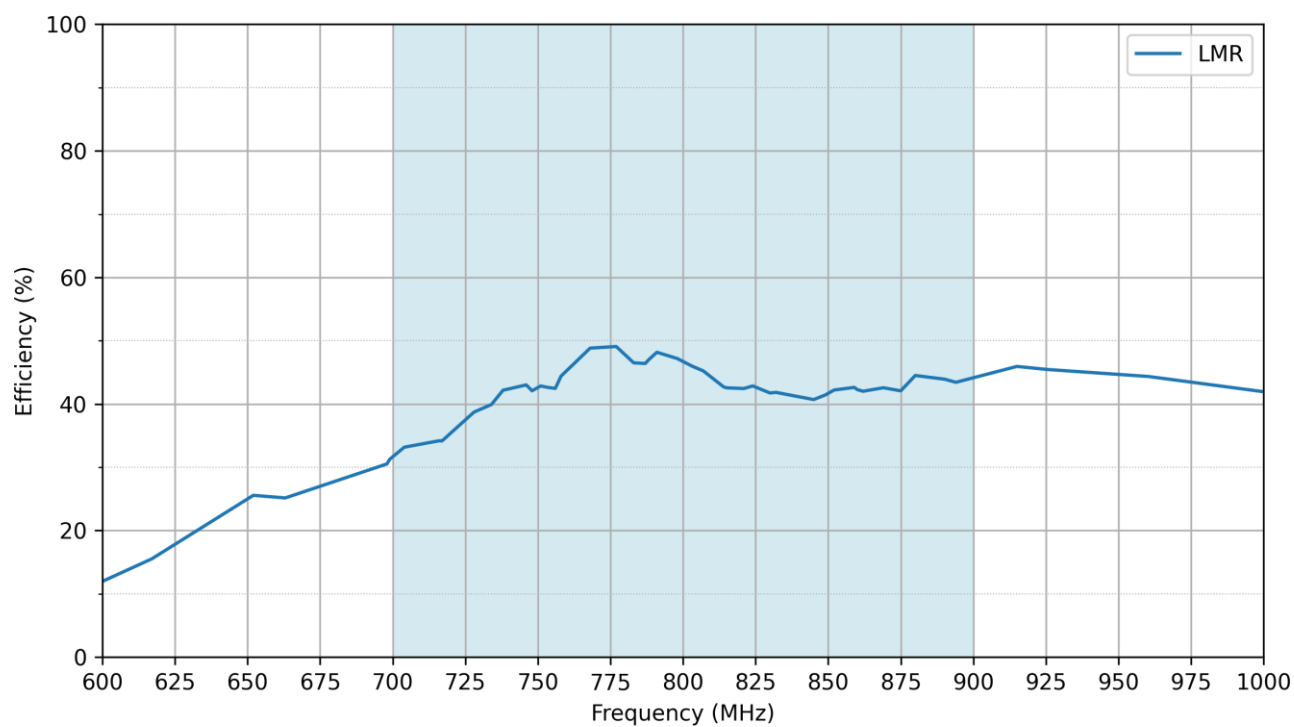
6.32 LMR - Return Loss



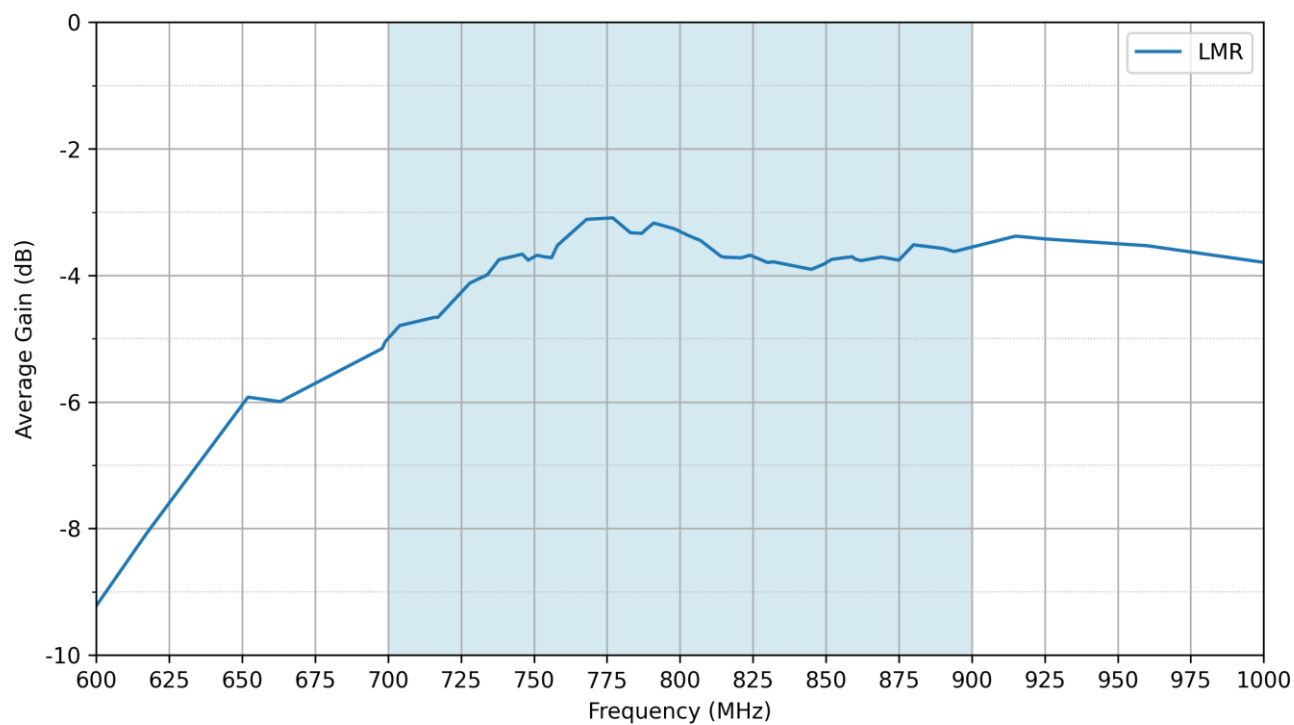
6.33 LMR - VSWR



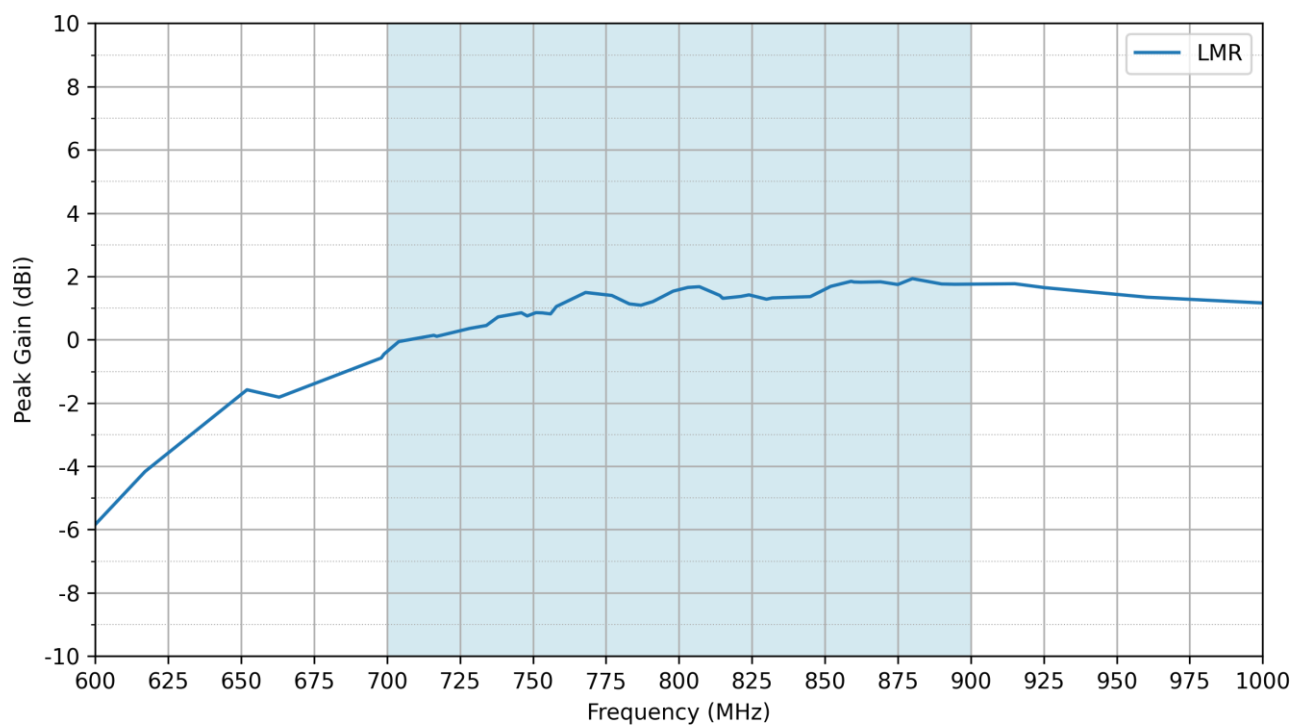
6.34 LMR - Efficiency



6.35 LMR - Average Gain

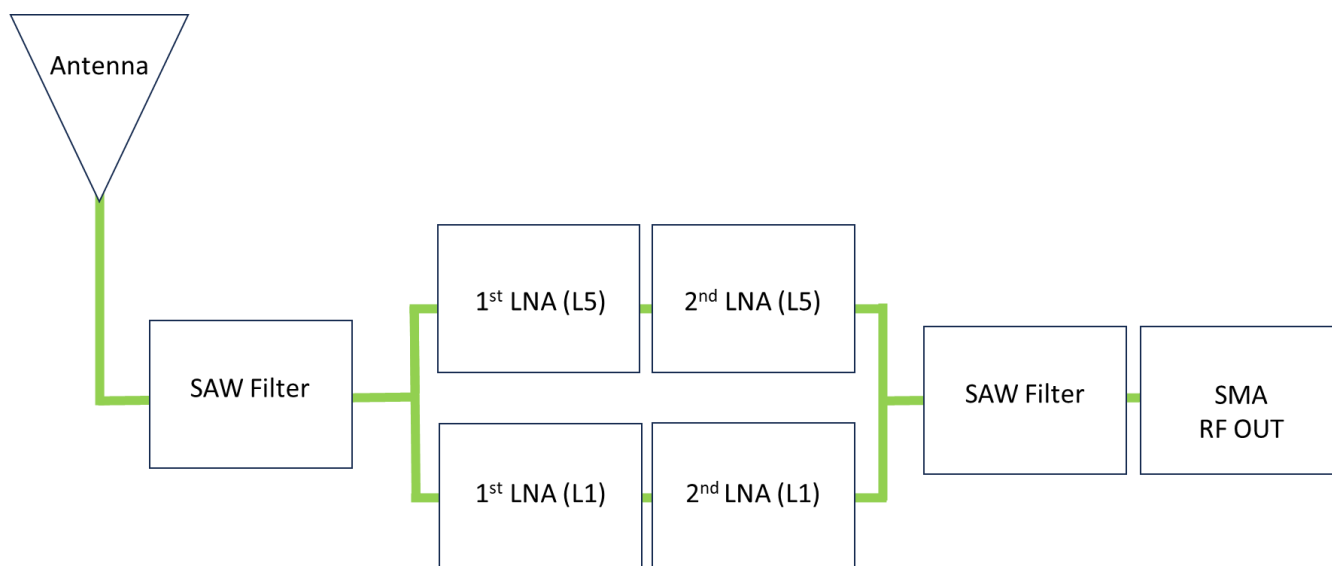


6.36 LMR - Peak Gain

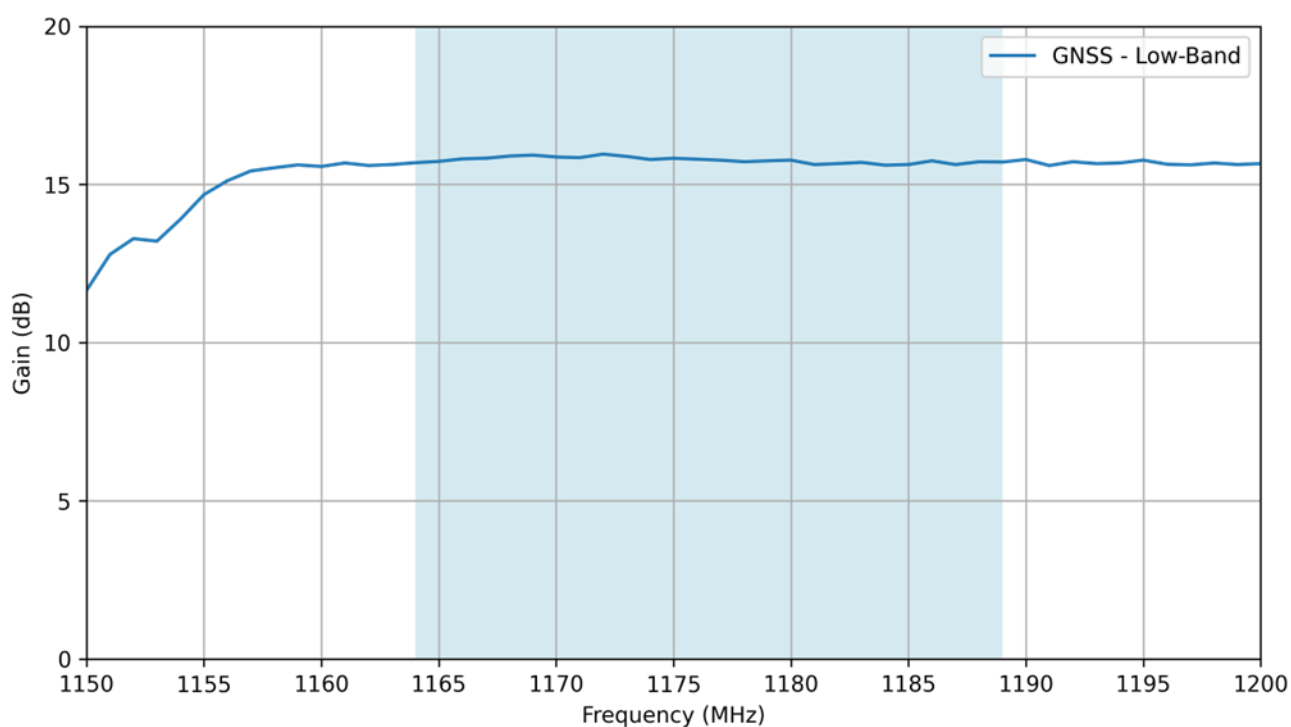


7. LNA Characteristics

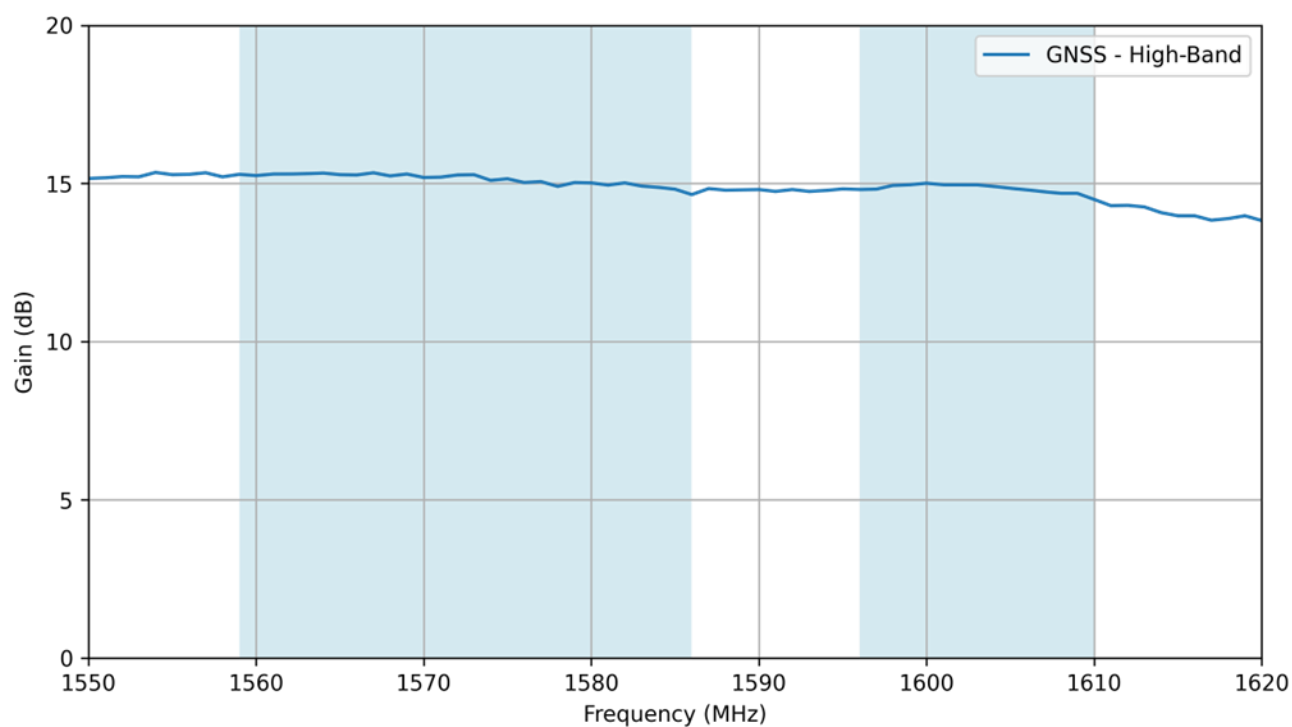
7.1 GNSS - Block Diagram



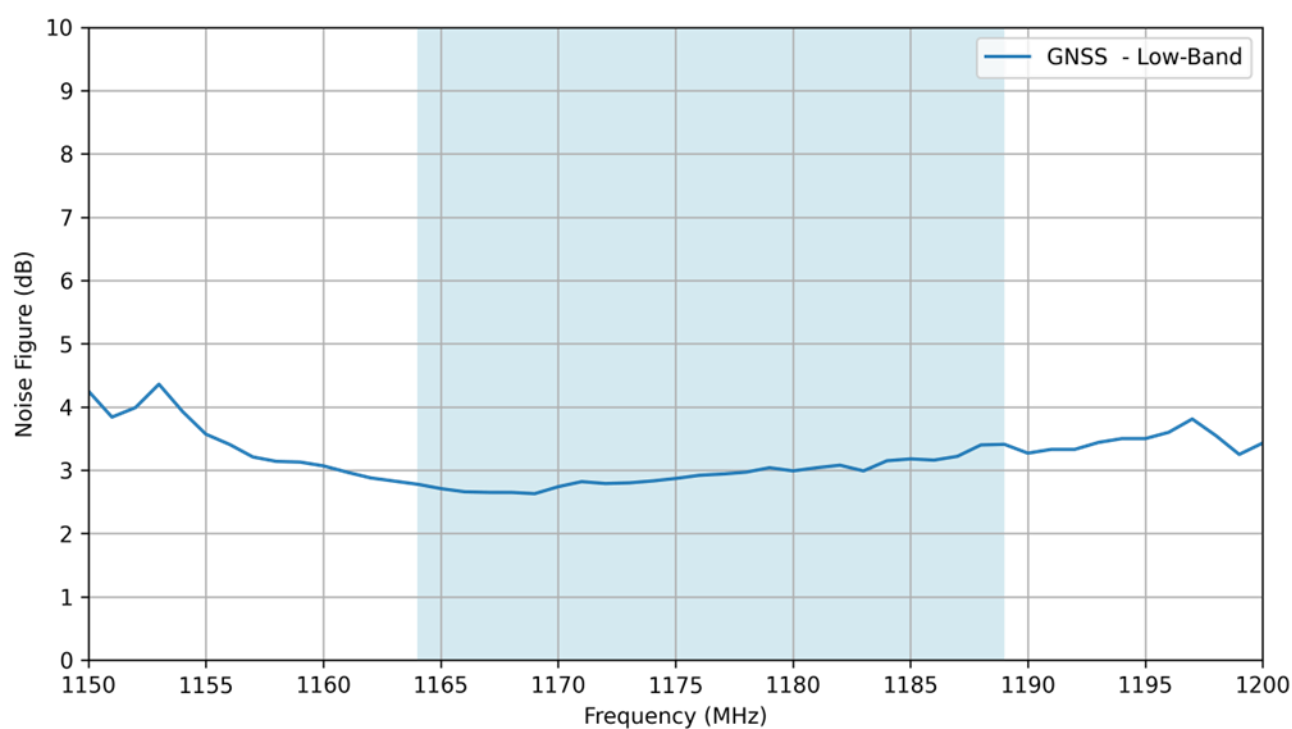
7.2 GNSS - Gain (Low-Band)



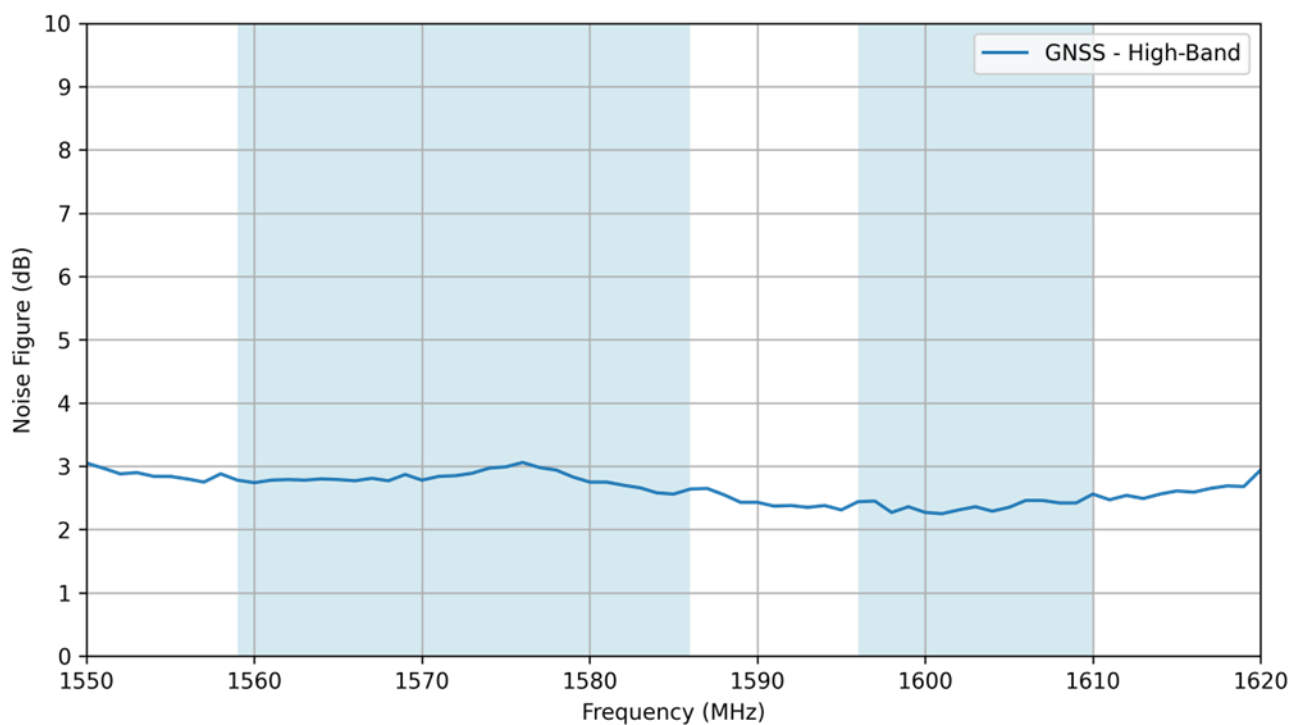
7.3 GNSS - Gain (High-Band)



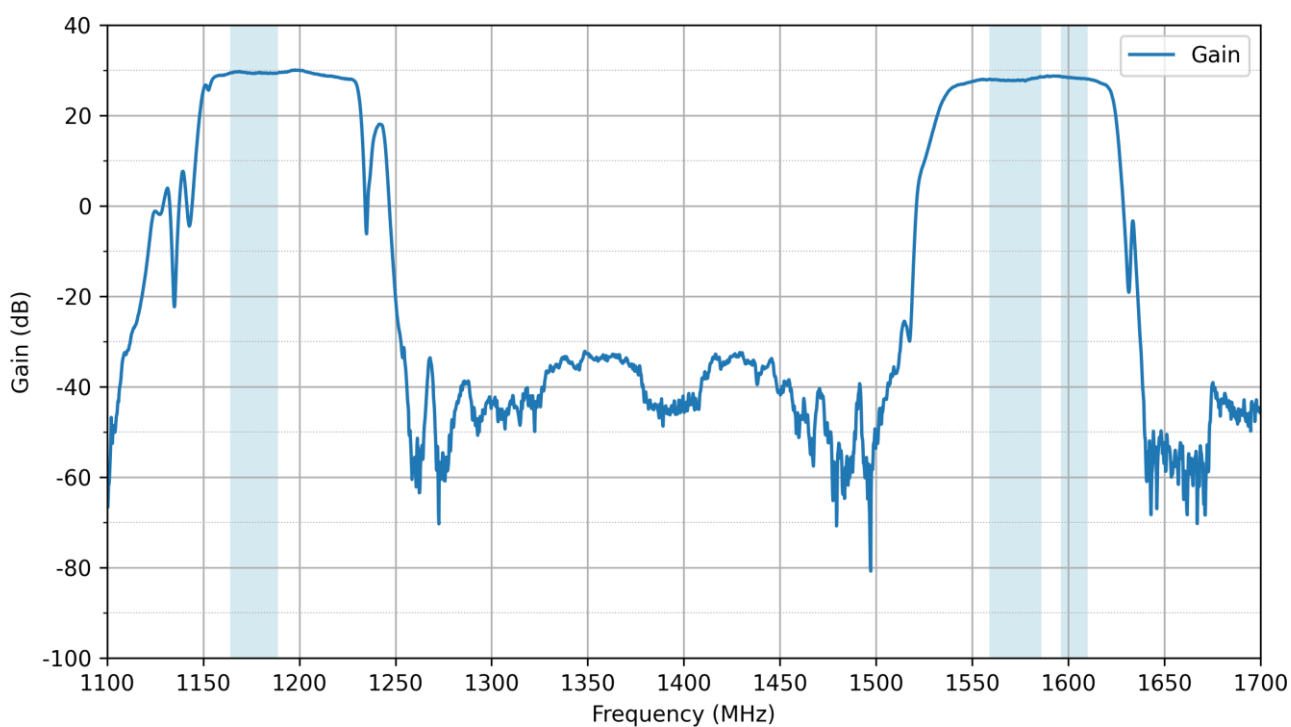
7.4 GNSS - Noise Figure (Low-Band)



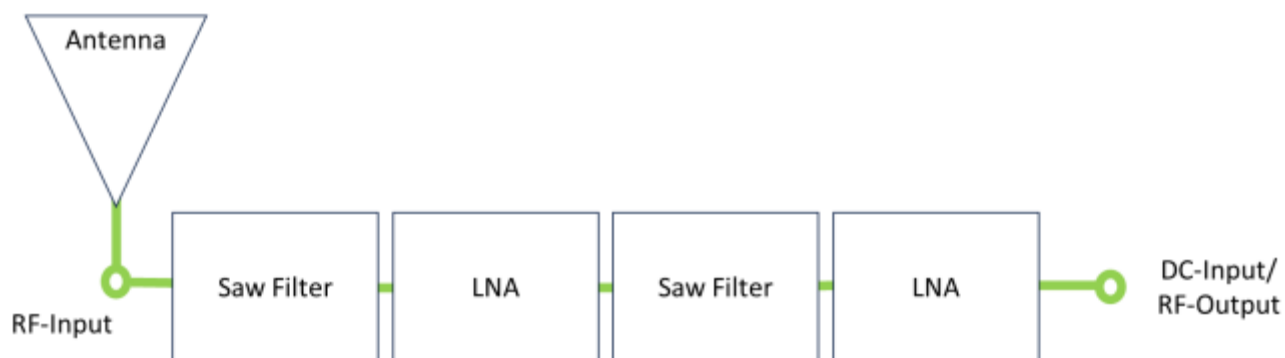
7.5 GNSS - Noise Figure (High-Band)



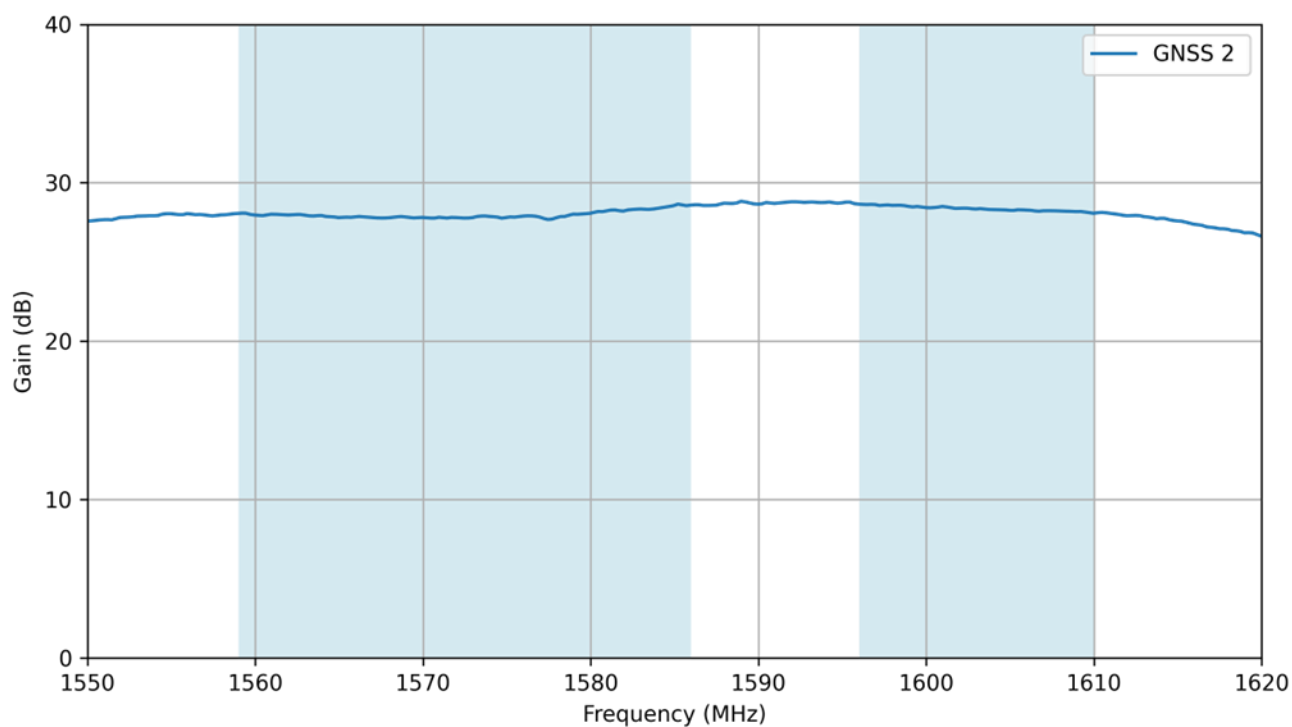
7.6 GNSS - Out Of Band Attenuation



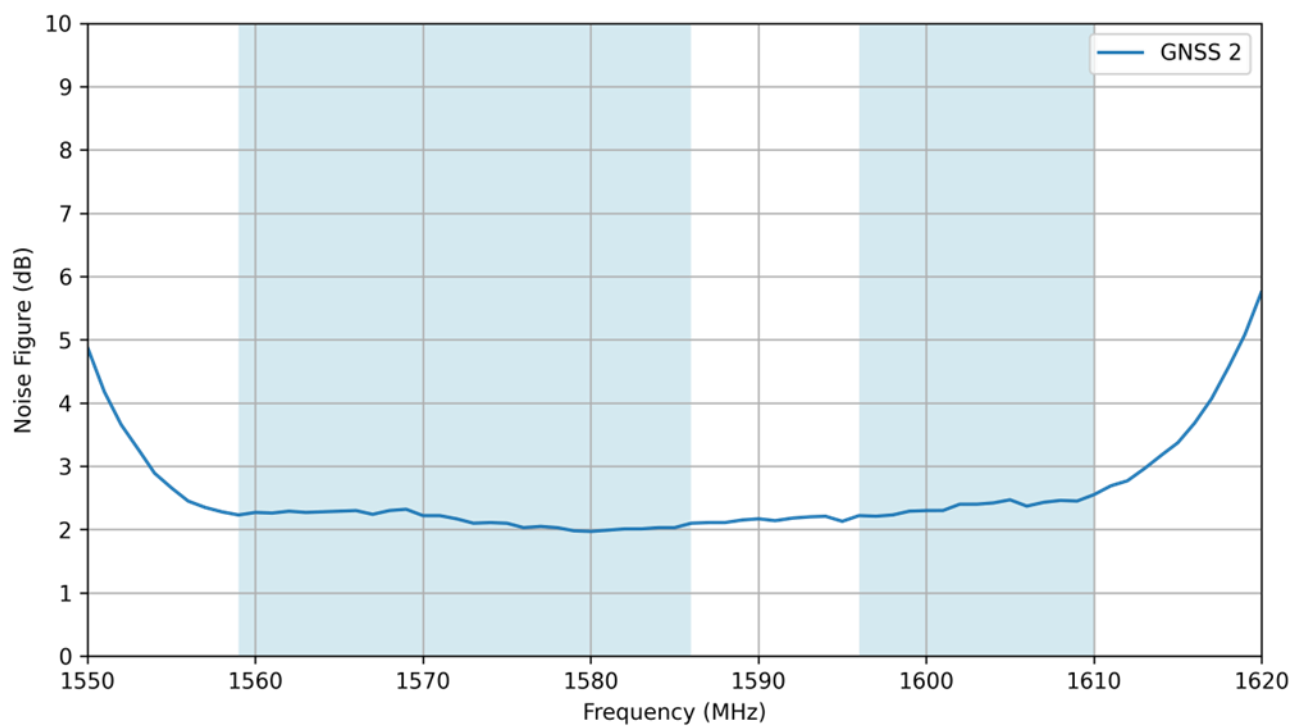
7.7 GNSS 2 - Block Diagram



7.8 GNSS 2 - Gain

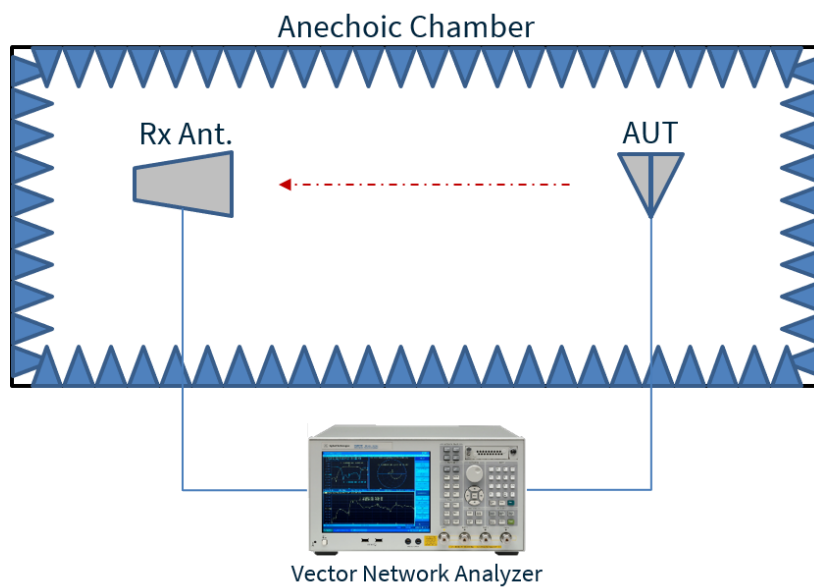


7.9 GNSS 2 - Noise Figure



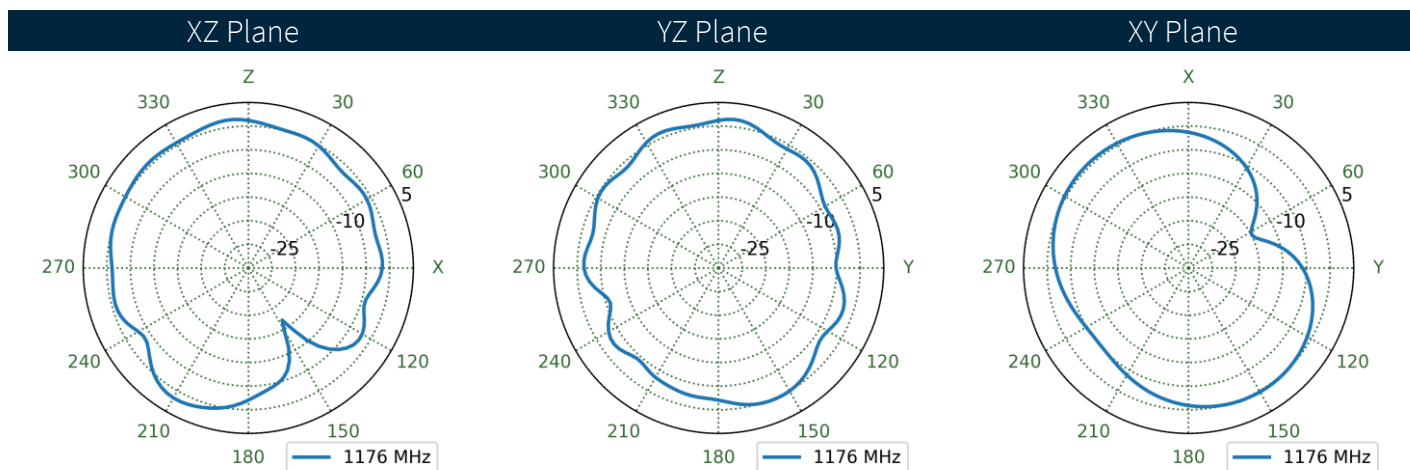
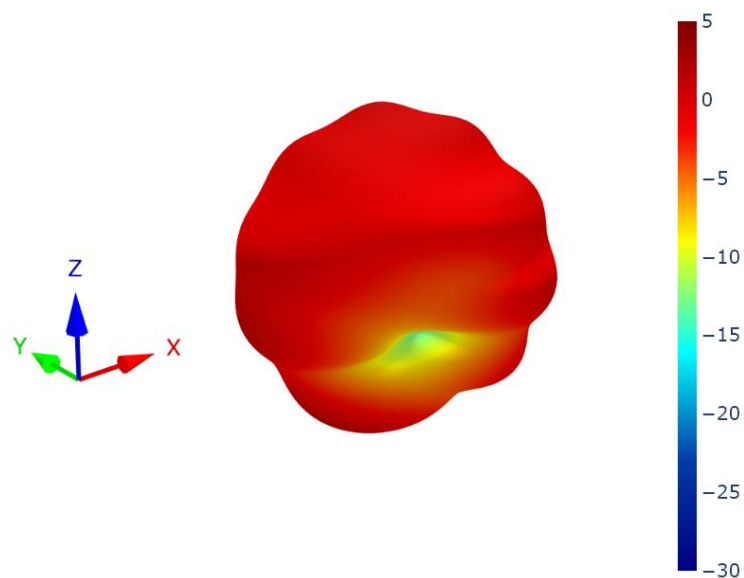
8. Radiation Patterns

8.1 Test Setup

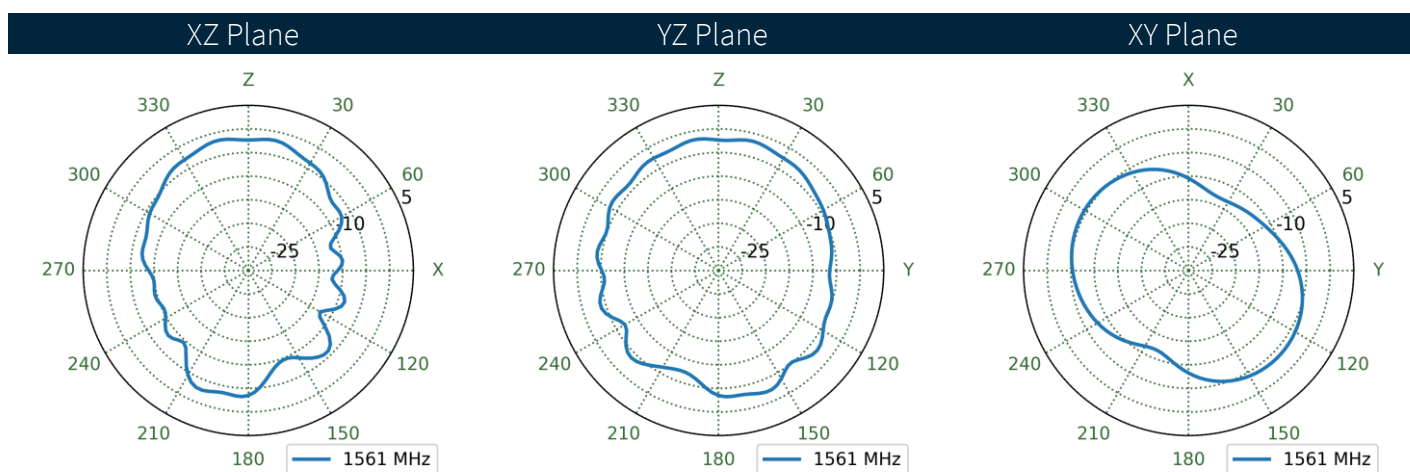
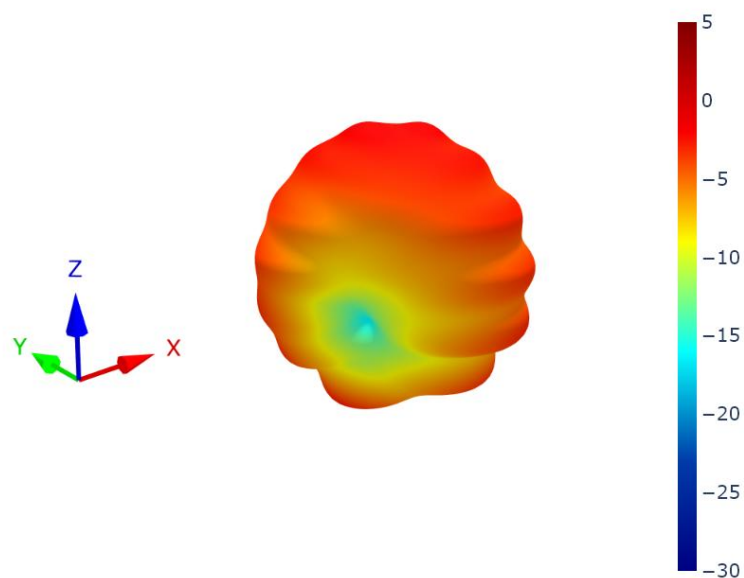


Chamber Test Set-up on a 30x30cm Metal Ground Plane with 30cm cables.

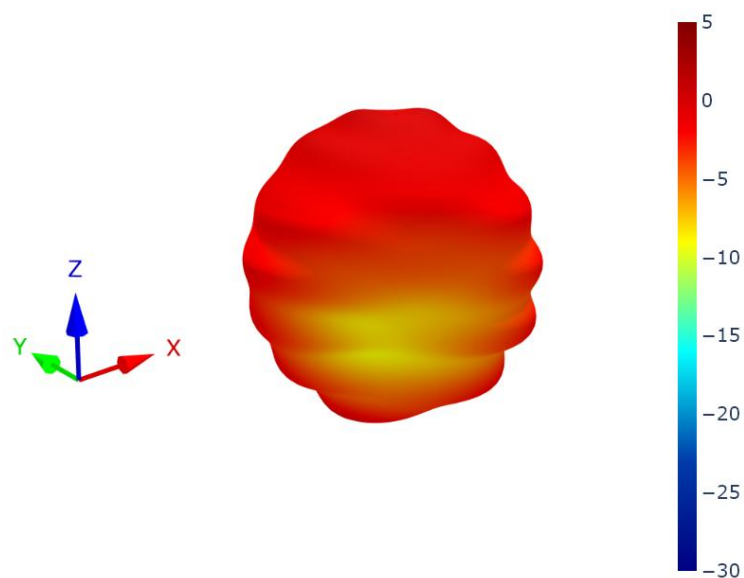
8.2 GNSS Patterns at 1176 MHz



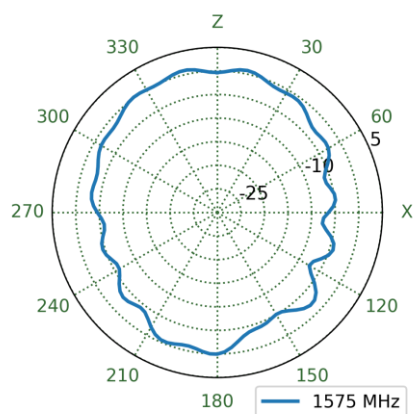
8.3 GNSS Patterns at 1561 MHz



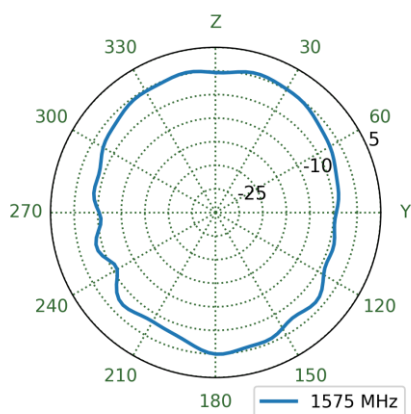
8.4 GNSS Patterns at 1575 MHz



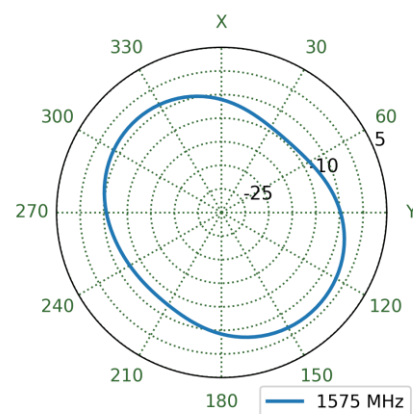
XZ Plane



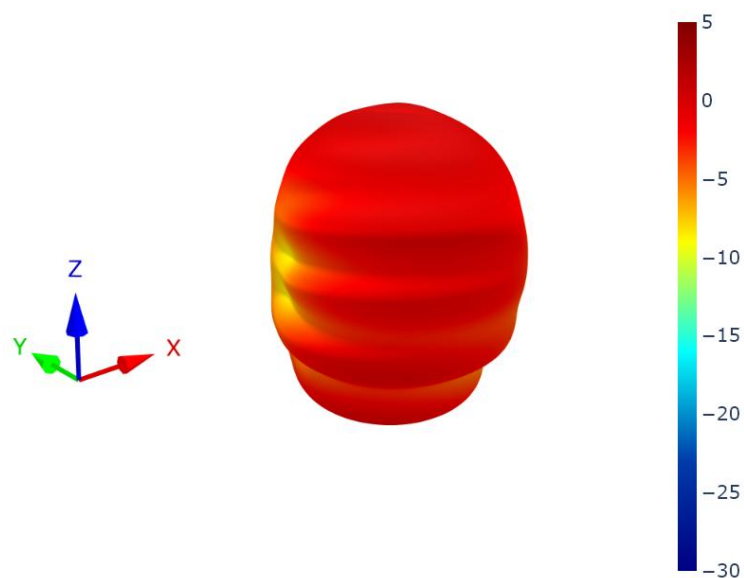
YZ Plane



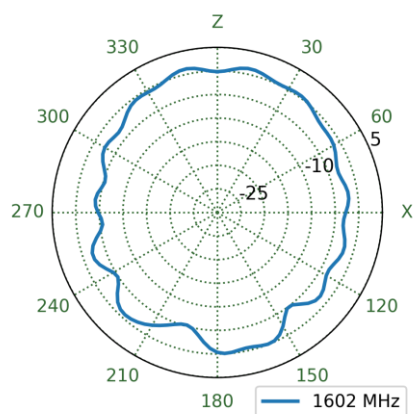
XY Plane



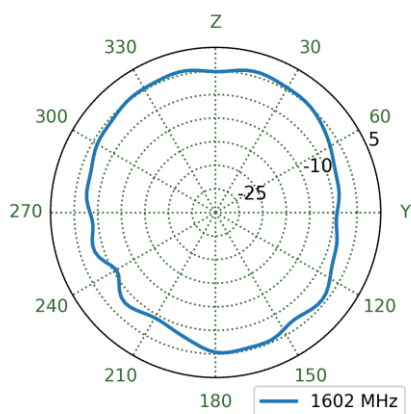
8.5 GNSS Patterns at 1602 MHz



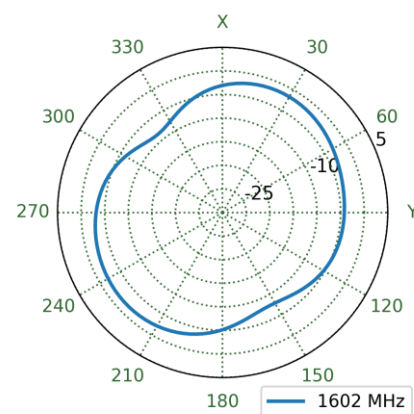
XZ Plane



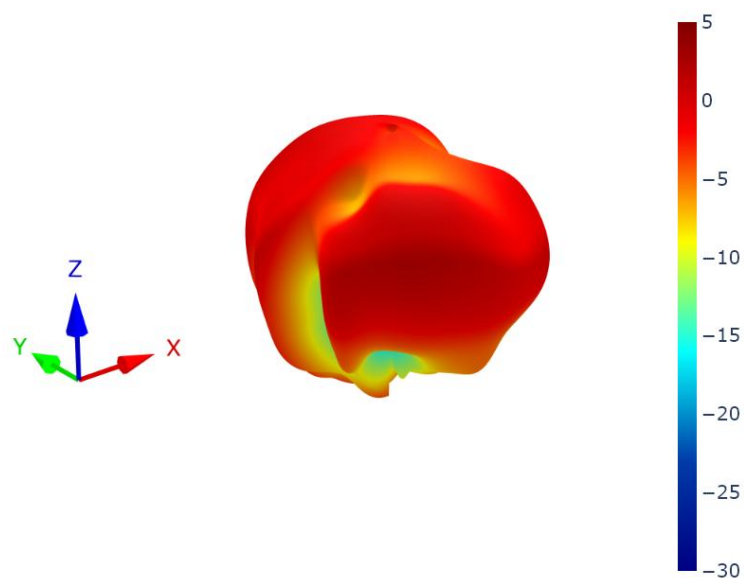
YZ Plane



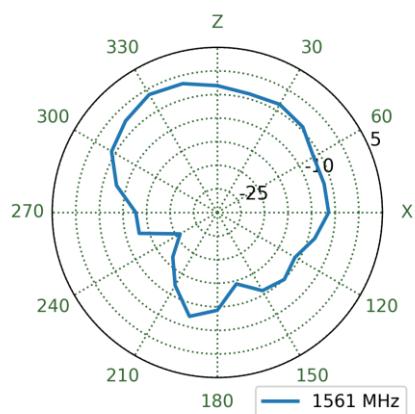
XY Plane



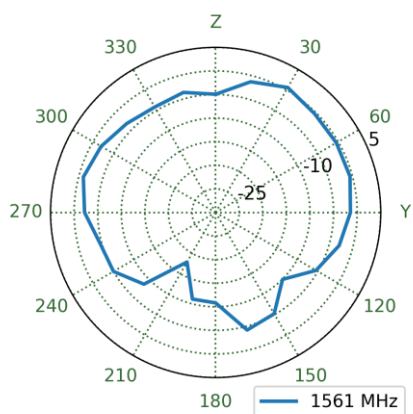
8.6 GNSS 2 Patterns at 1561 MHz



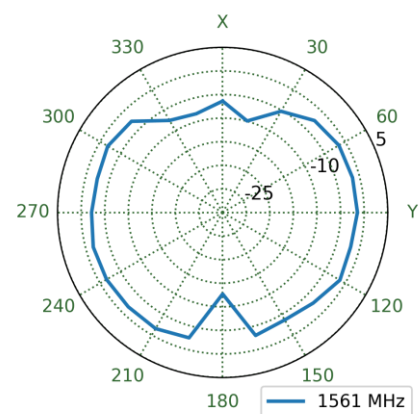
XZ Plane



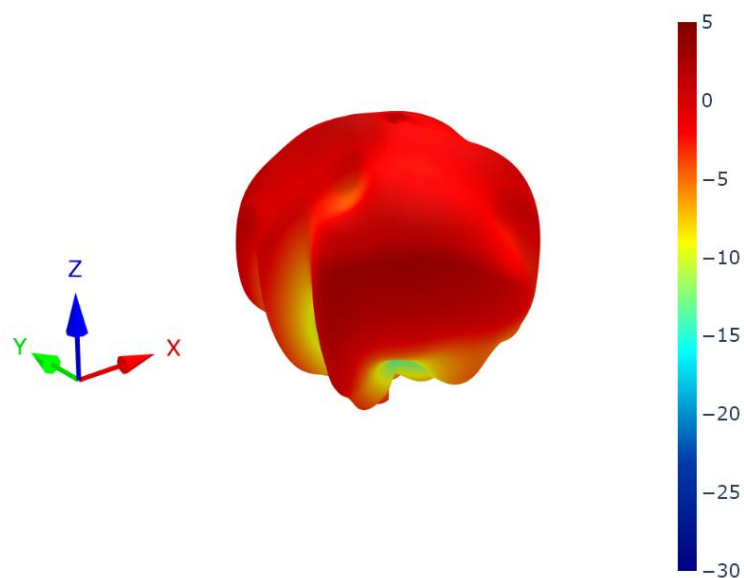
YZ Plane



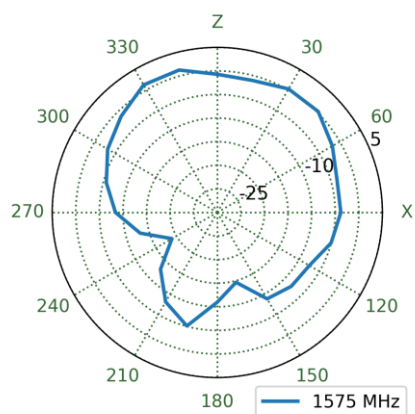
XY Plane



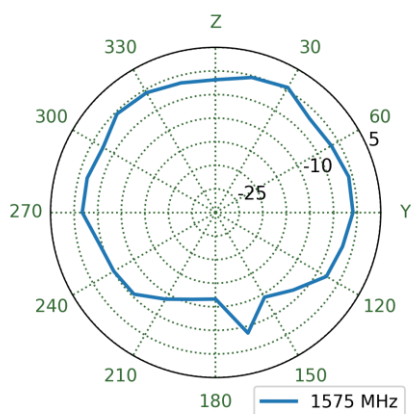
8.7 GNSS 2 Patterns at 1575 MHz



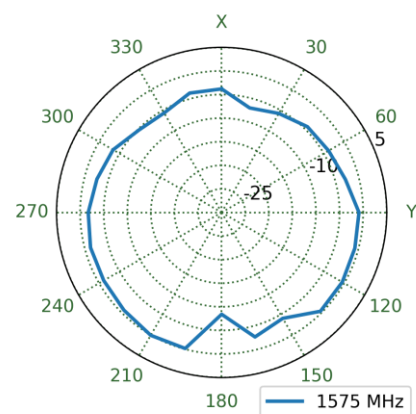
XZ Plane



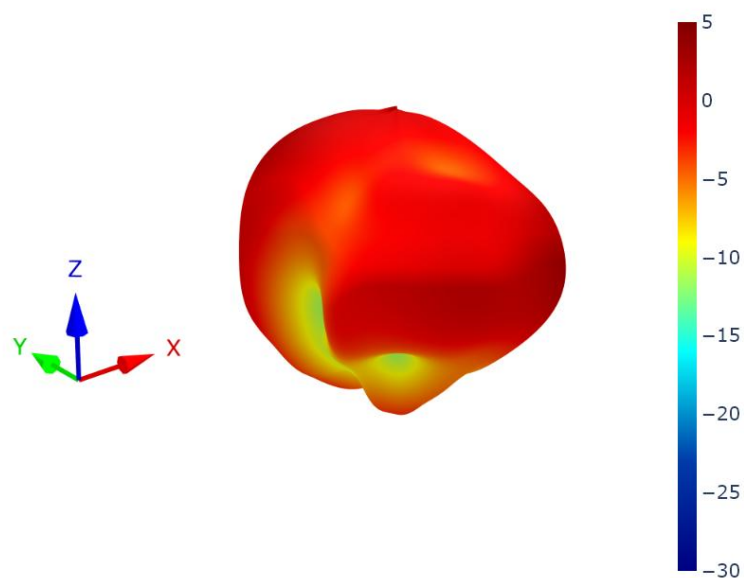
YZ Plane



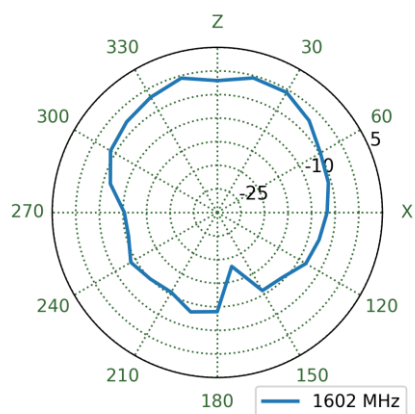
XY Plane



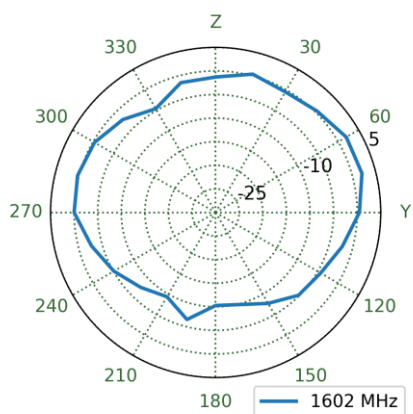
8.8 GNSS 2 Patterns at 1602 MHz



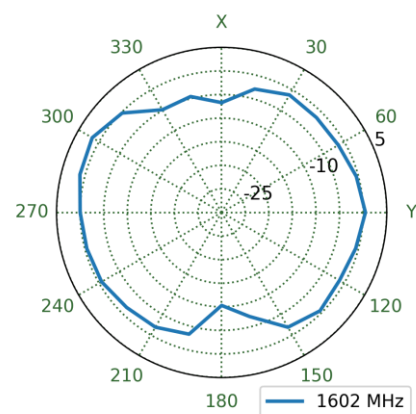
XZ Plane



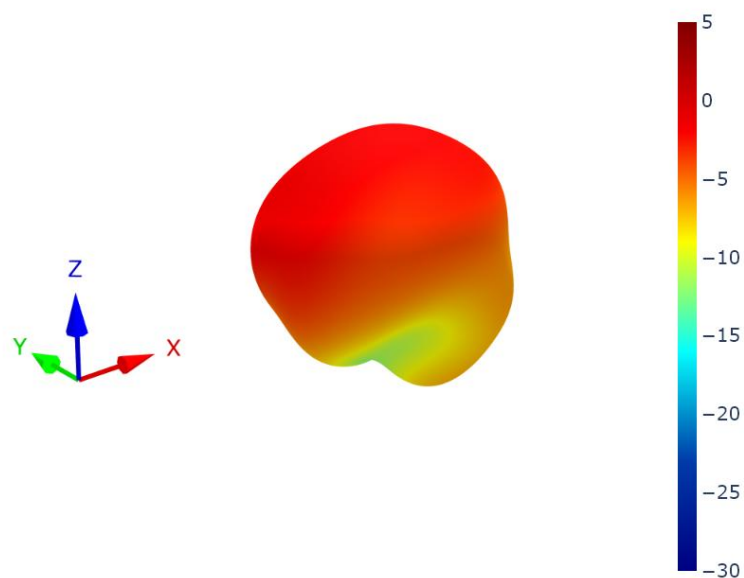
YZ Plane



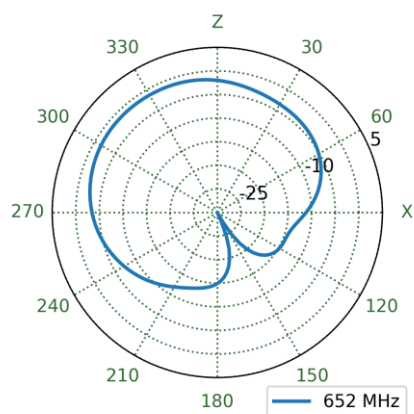
XY Plane



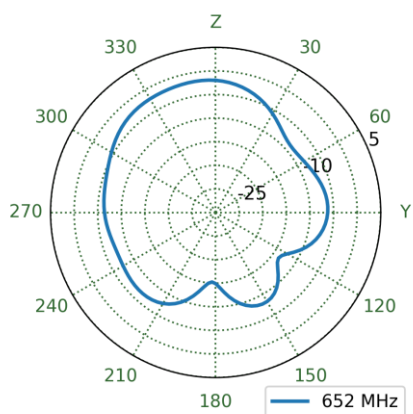
8.9 4G-5G 1 Patterns at 652 MHz



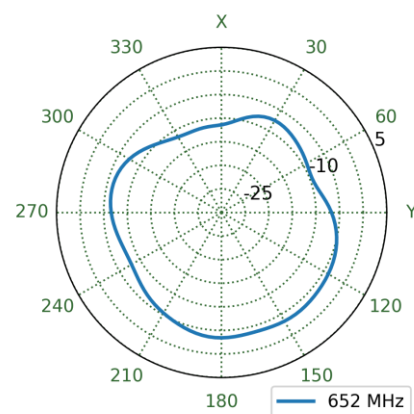
XZ Plane



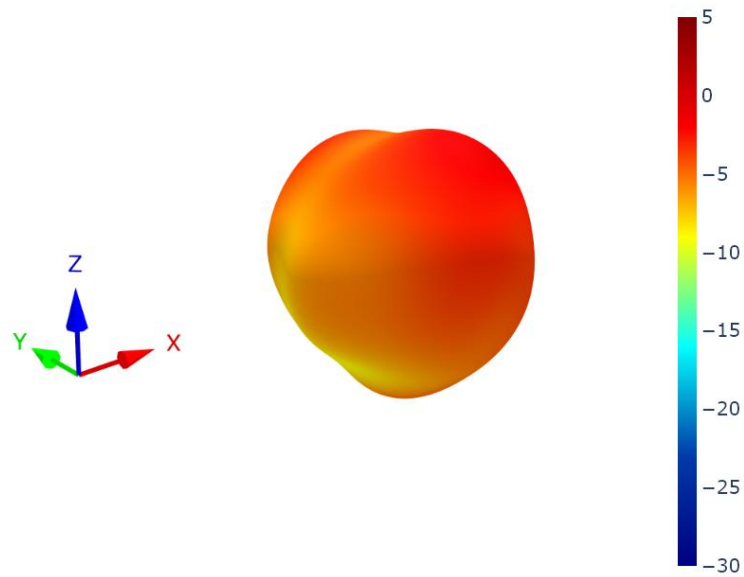
YZ Plane



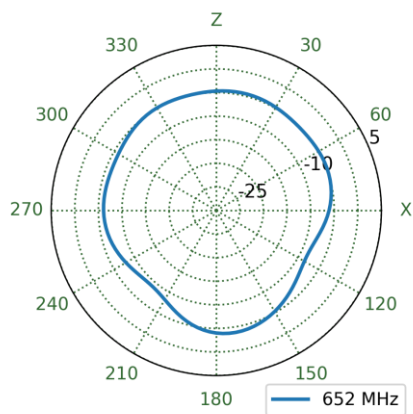
XY Plane



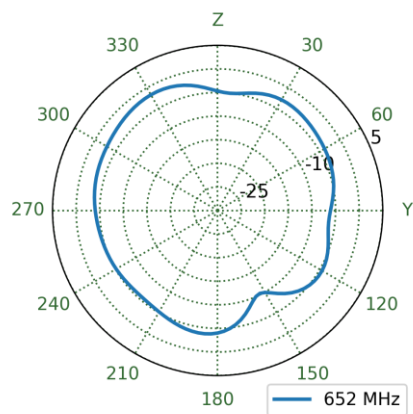
8.10 4G-5G 2 Patterns at 652 MHz



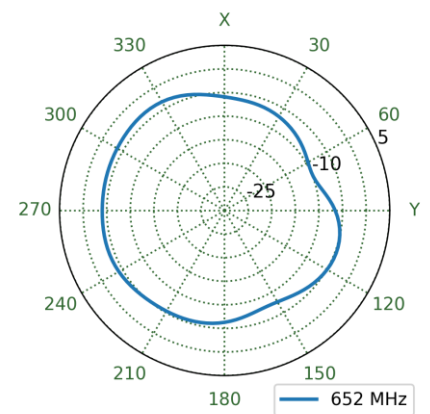
XZ Plane



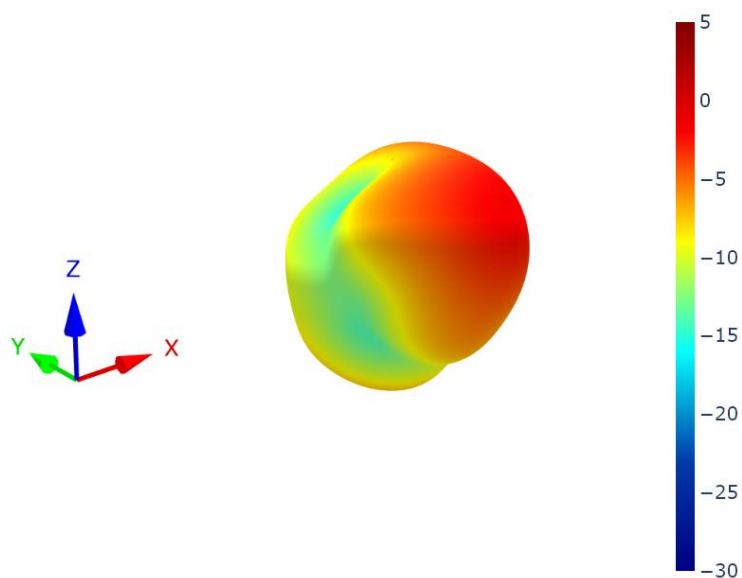
YZ Plane



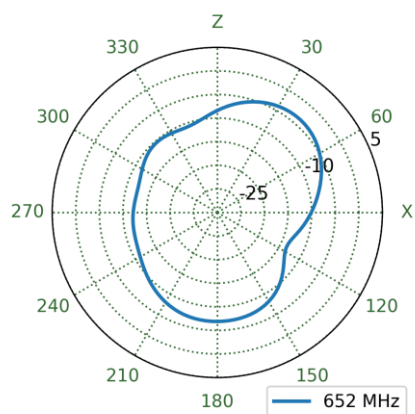
XY Plane



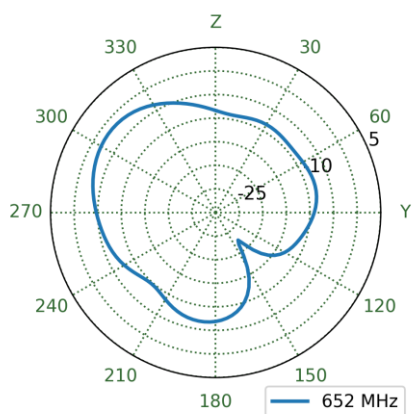
8.11 4G-5G 3 Patterns at 652 MHz



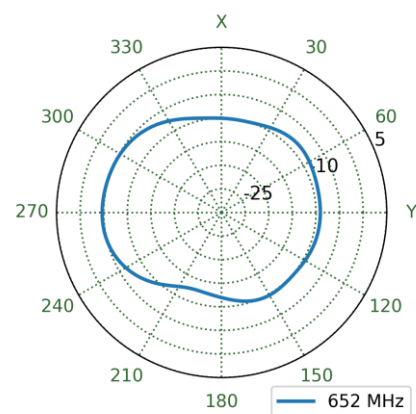
XZ Plane



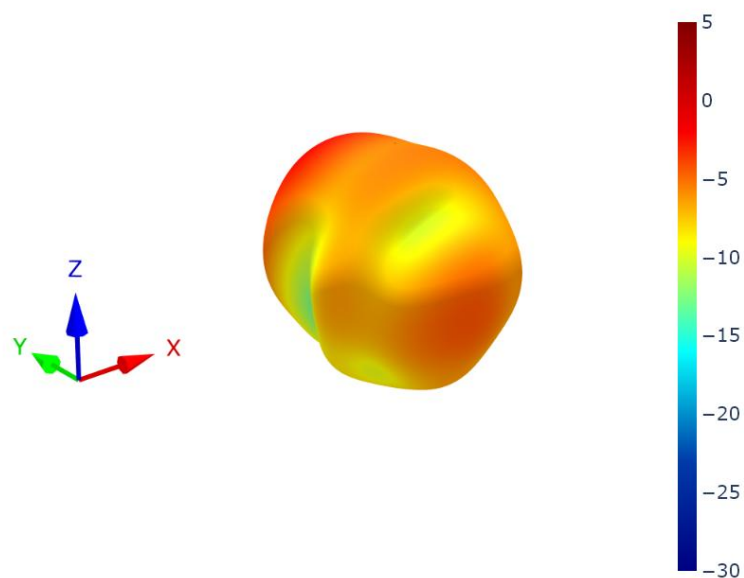
YZ Plane



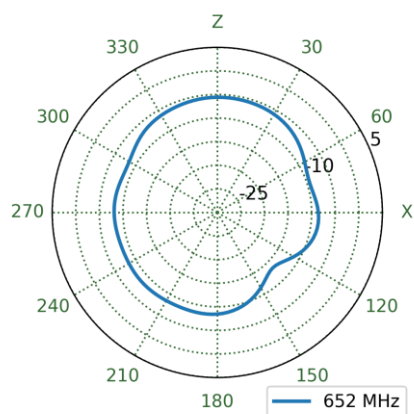
XY Plane



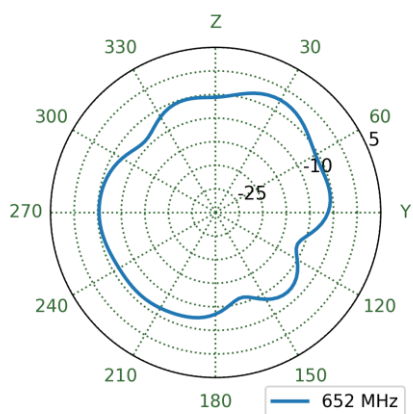
8.12 4G-5G 4 Patterns at 652 MHz



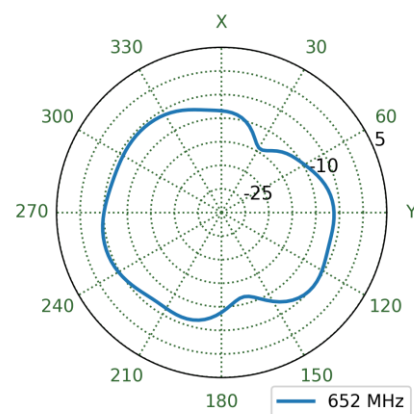
XZ Plane



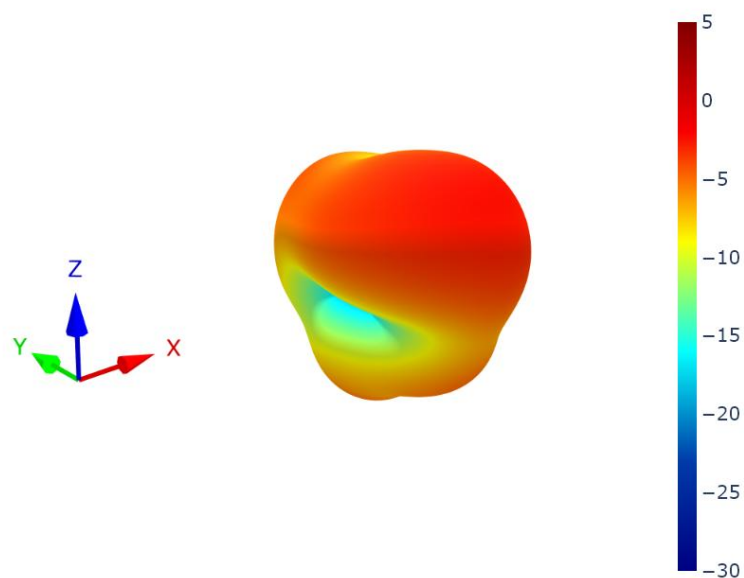
YZ Plane



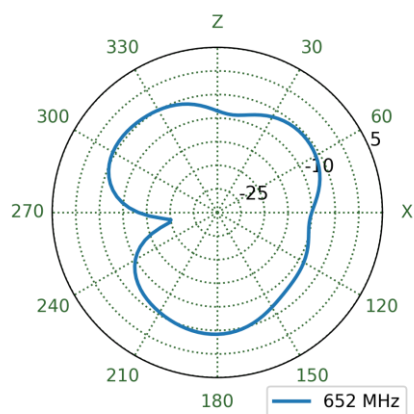
XY Plane



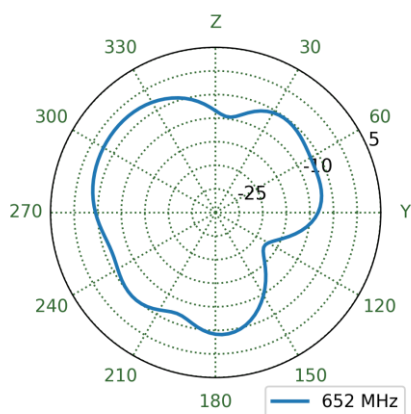
8.13 4G-5G 5 Patterns at 652 MHz



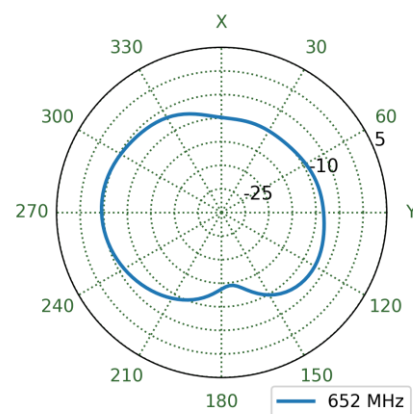
XZ Plane



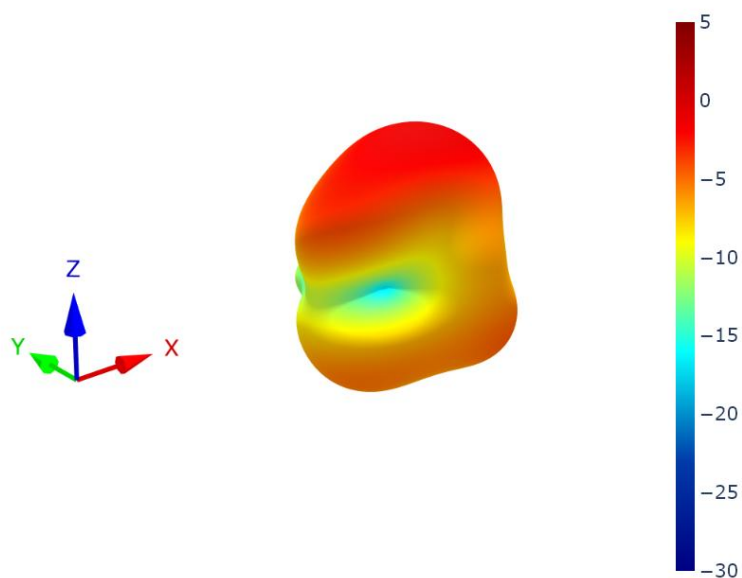
YZ Plane



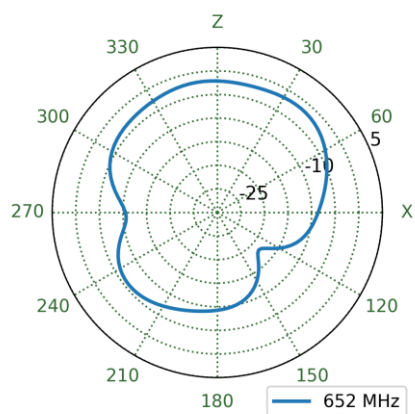
XY Plane



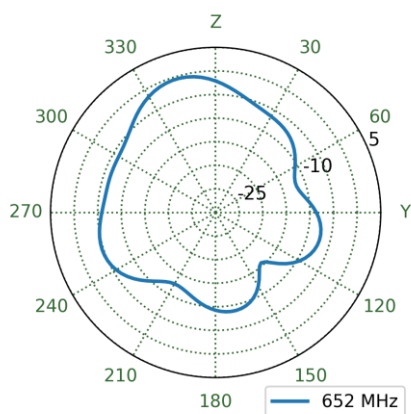
8.14 4G-5G 6 Patterns at 652 MHz



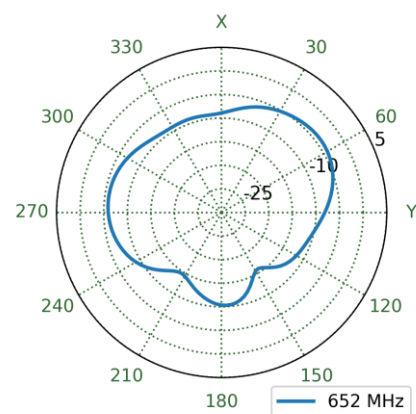
XZ Plane



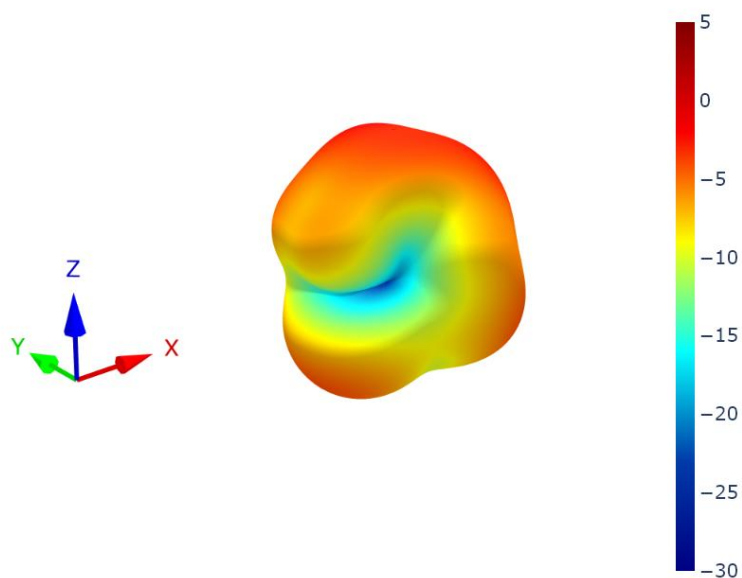
YZ Plane



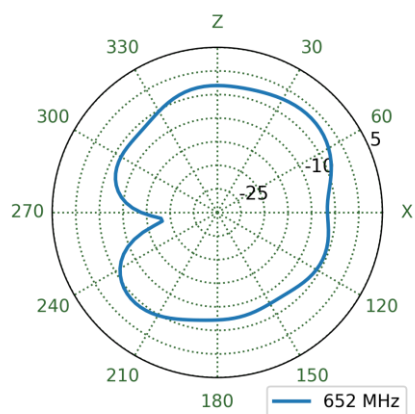
XY Plane



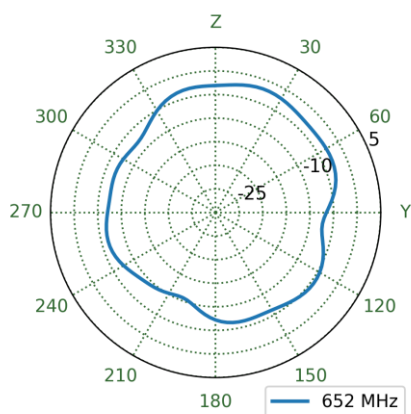
8.15 4G-5G 7 Patterns at 652 MHz



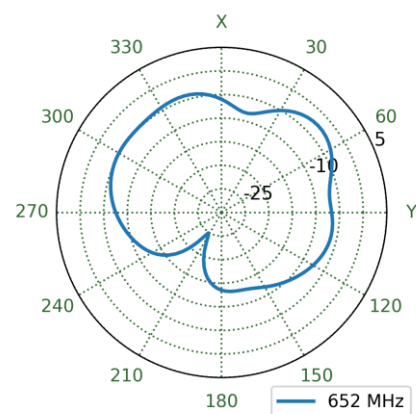
XZ Plane



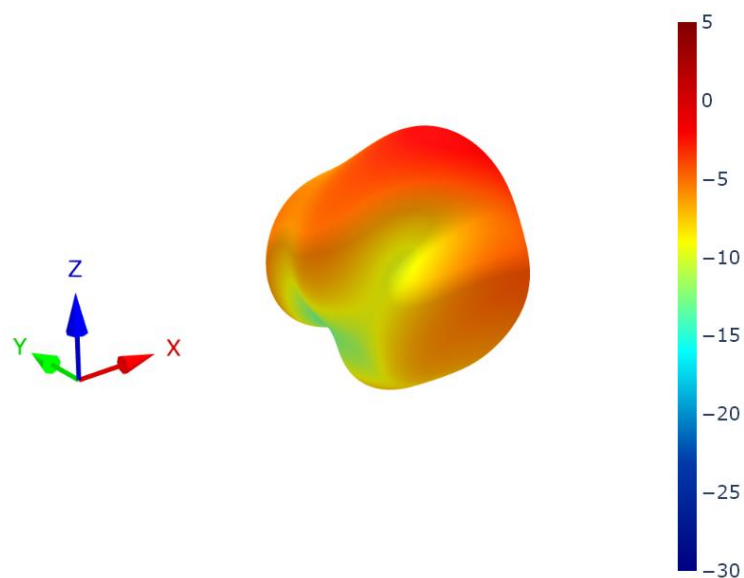
YZ Plane



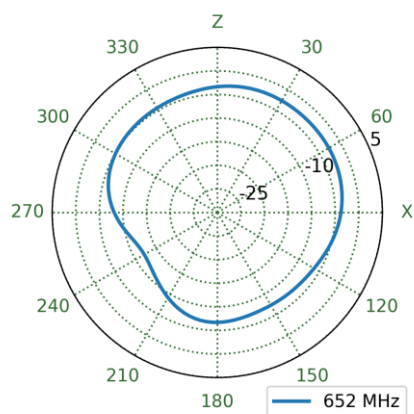
XY Plane



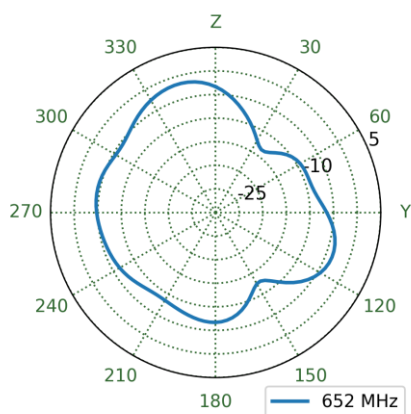
8.16 4G-5G 8 Patterns at 652 MHz



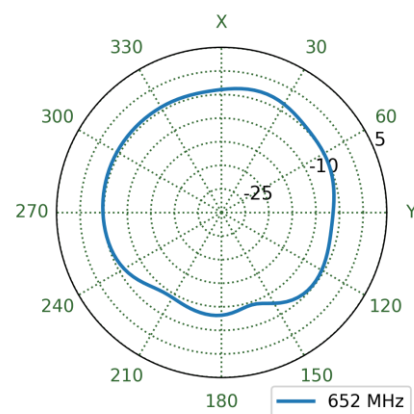
XZ Plane



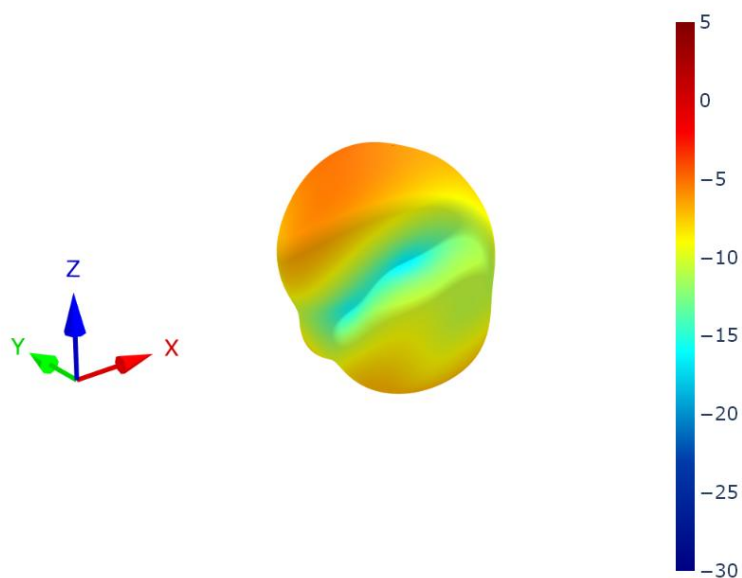
YZ Plane



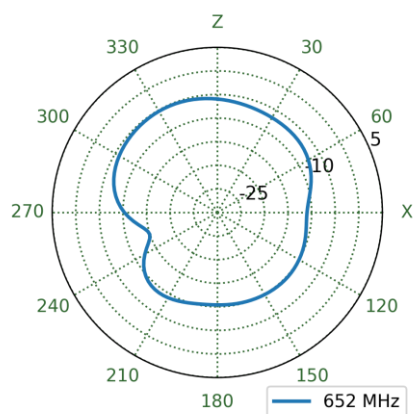
XY Plane



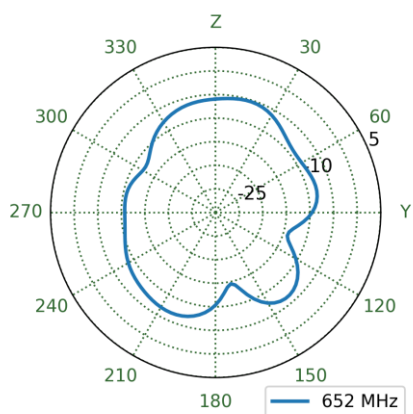
8.17 4G-5G 9 Patterns at 652 MHz



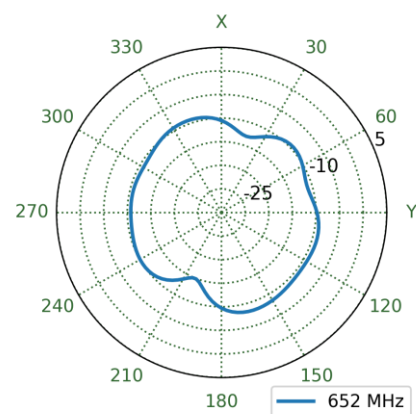
XZ Plane



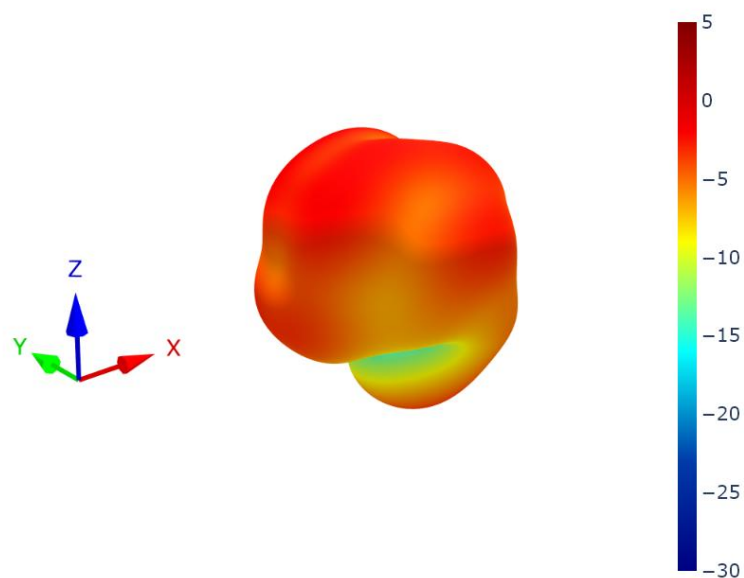
YZ Plane



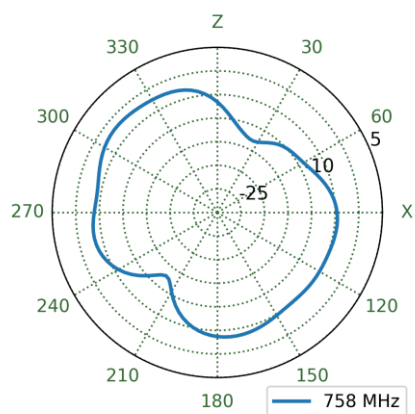
XY Plane



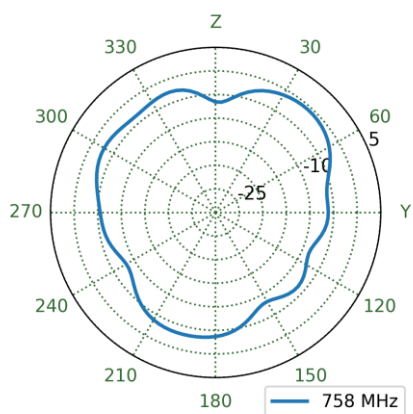
8.18 4G-5G 1 Patterns at 758 MHz



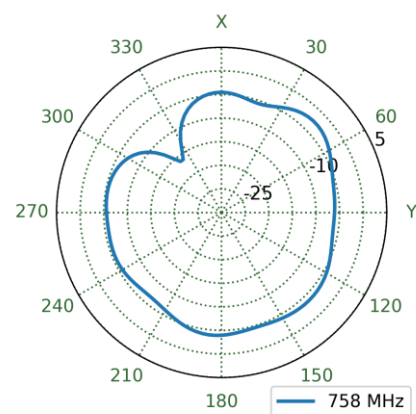
XZ Plane



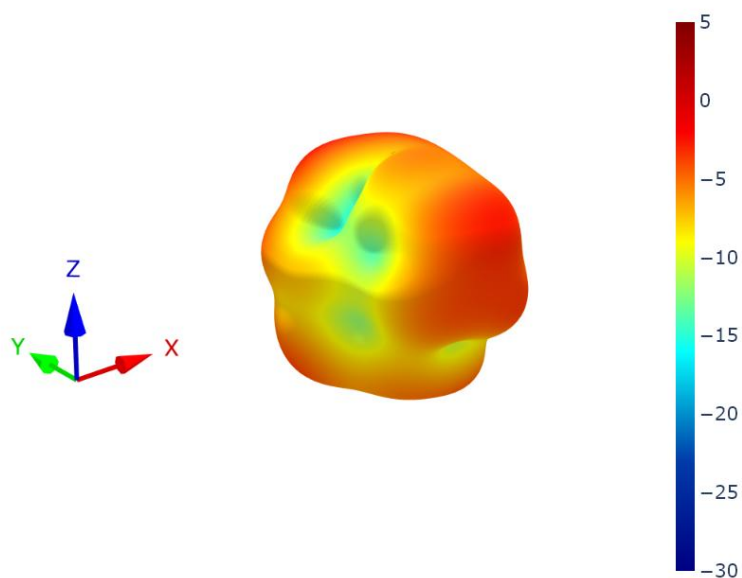
YZ Plane



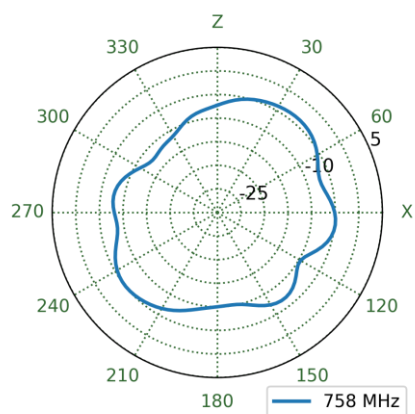
XY Plane



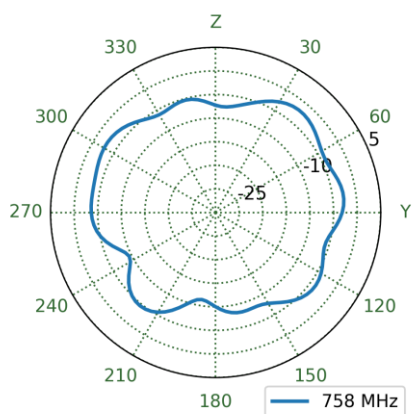
8.19 4G-5G 2 Patterns at 758 MHz



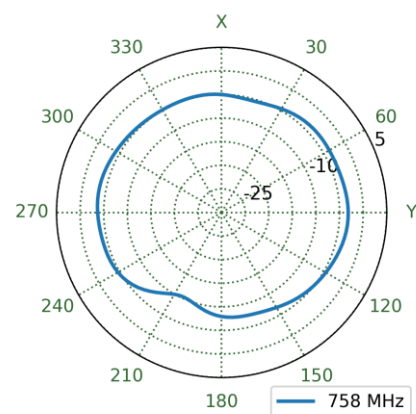
XZ Plane



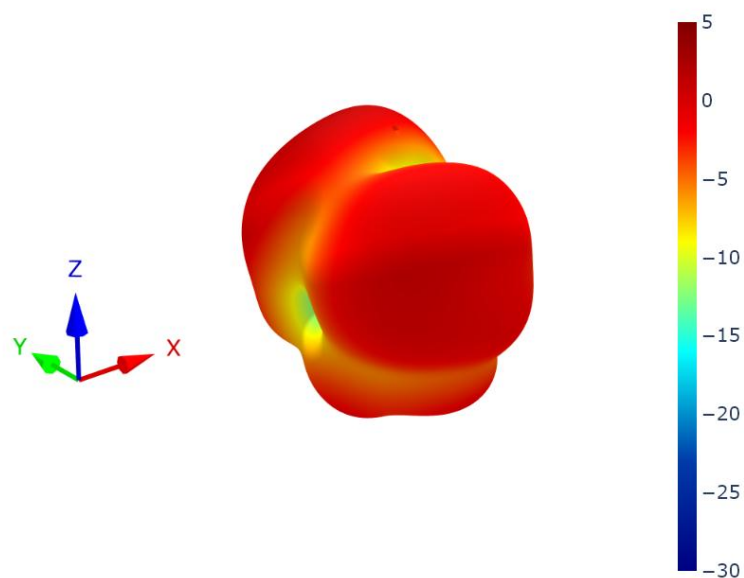
YZ Plane



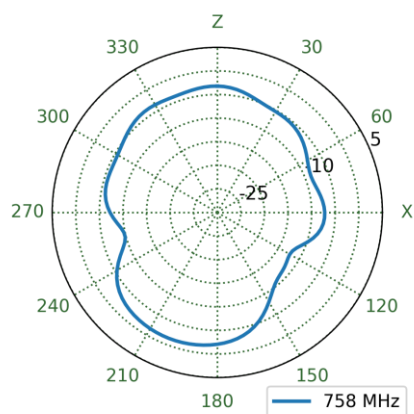
XY Plane



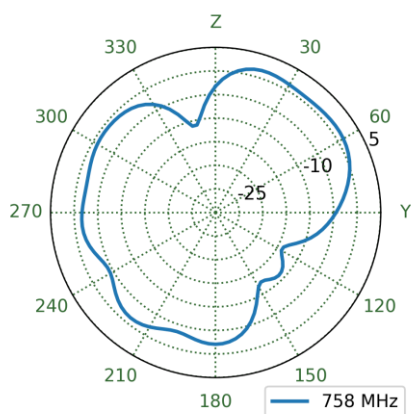
8.20 4G-5G 3 Patterns at 758 MHz



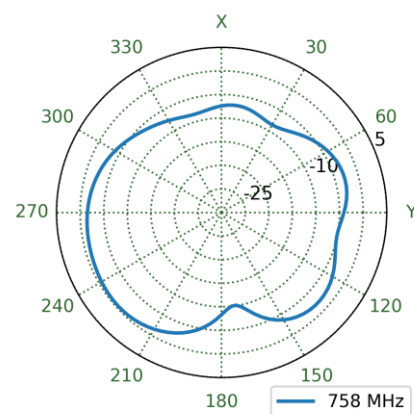
XZ Plane



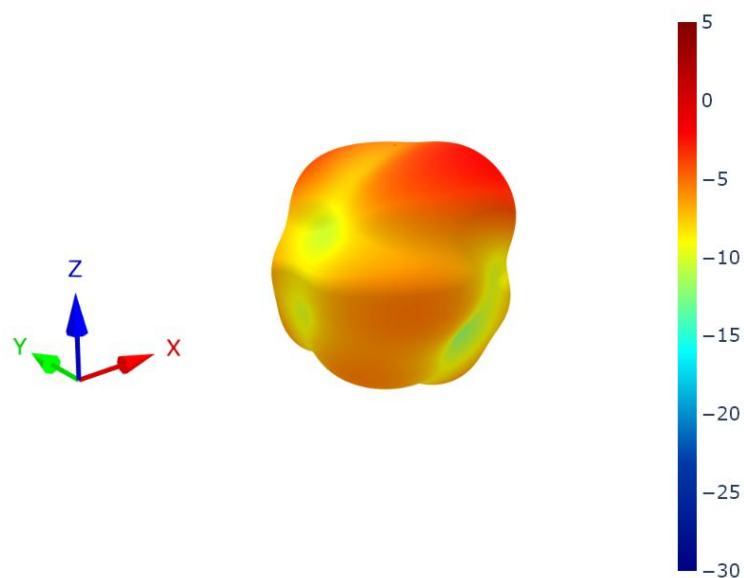
YZ Plane



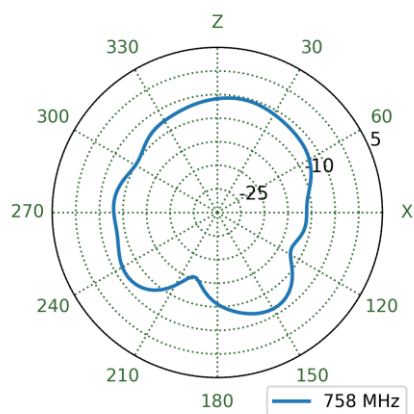
XY Plane



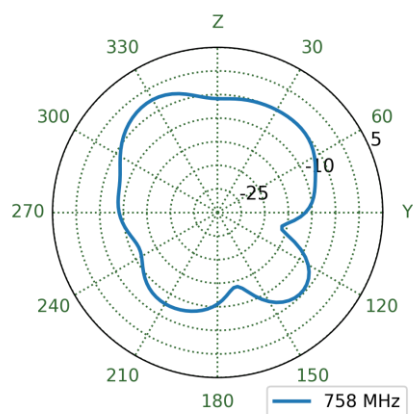
8.21 4G-5G 4 Patterns at 758 MHz



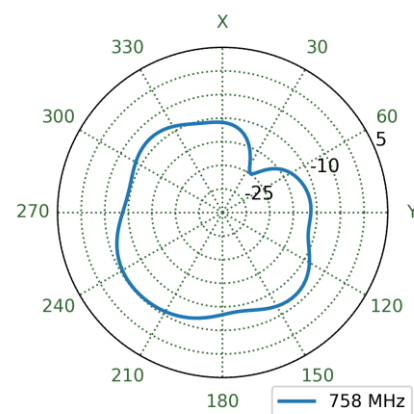
XZ Plane



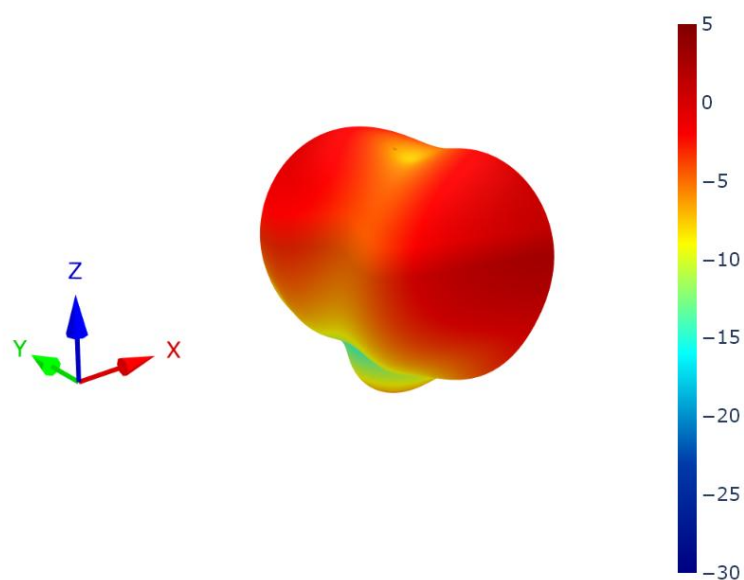
YZ Plane



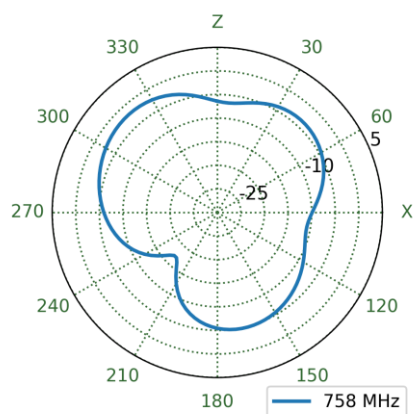
XY Plane



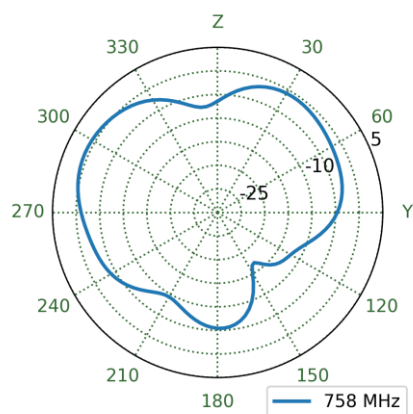
8.22 4G-5G 5 Patterns at 758 MHz



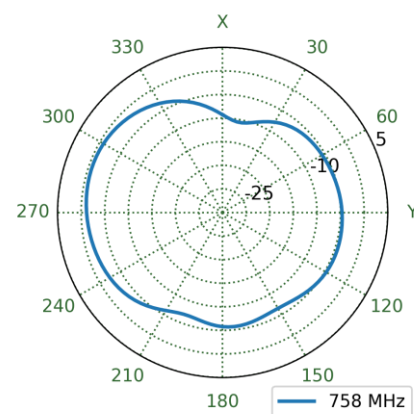
XZ Plane



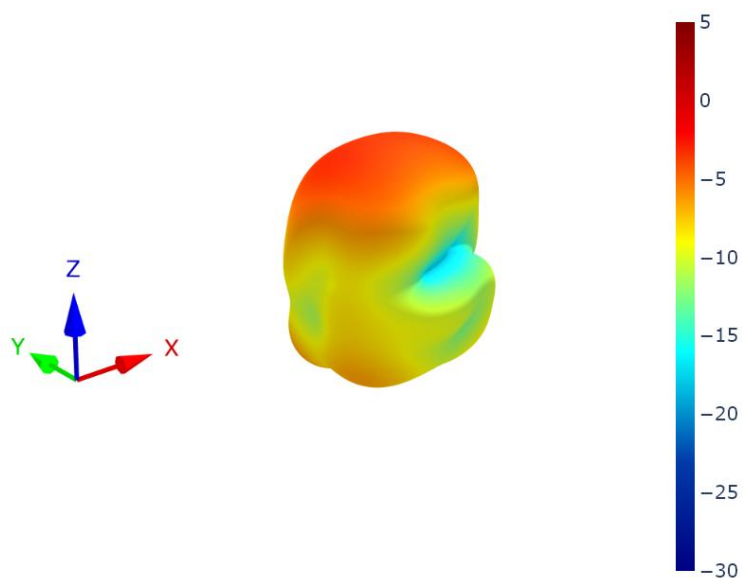
YZ Plane



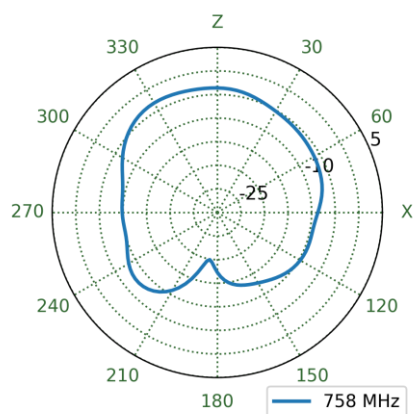
XY Plane



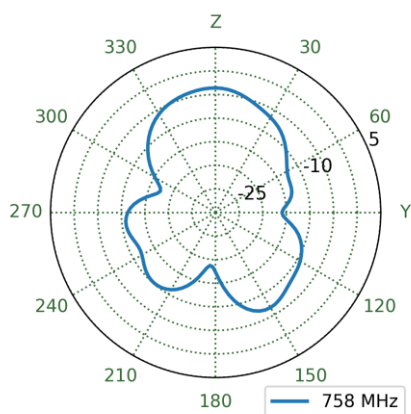
8.23 4G-5G 6 Patterns at 758 MHz



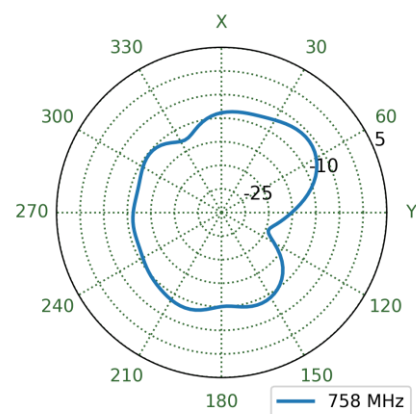
XZ Plane



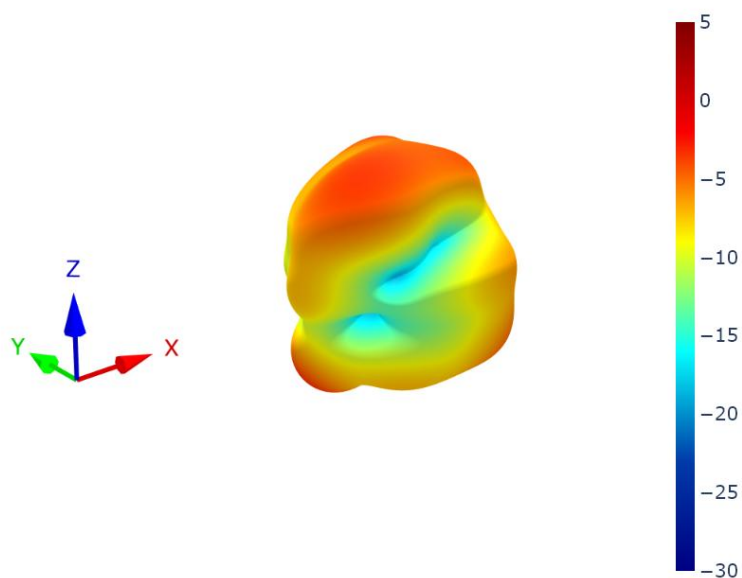
YZ Plane



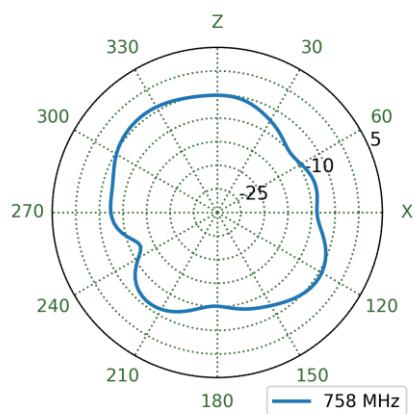
XY Plane



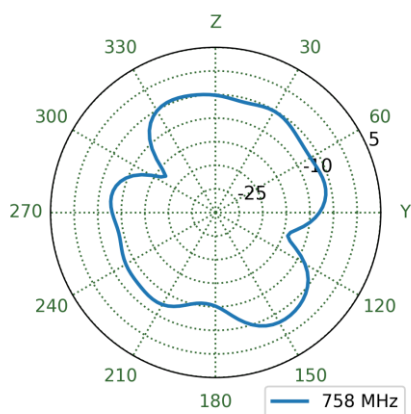
8.24 4G-5G 7 Patterns at 758 MHz



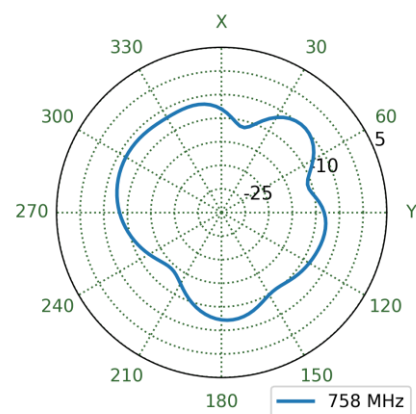
XZ Plane



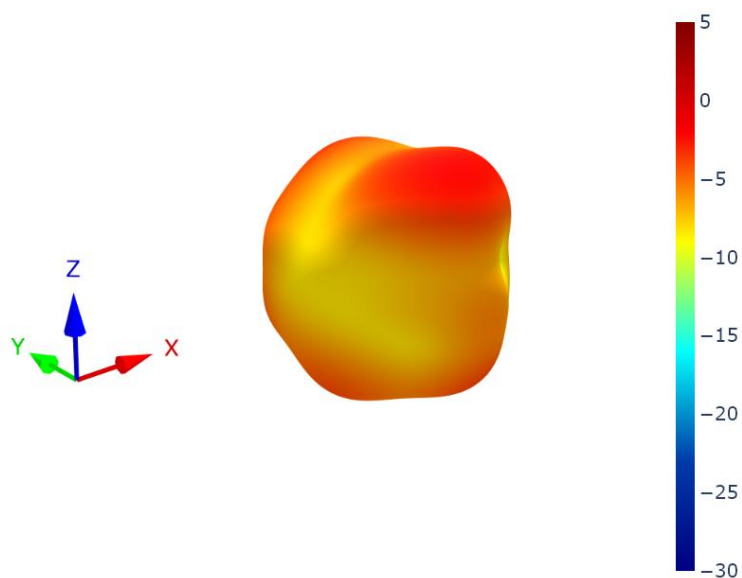
YZ Plane



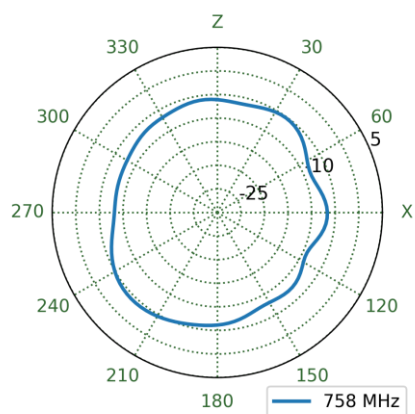
XY Plane



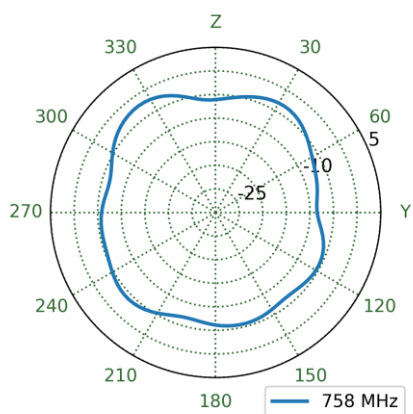
8.25 4G-5G 8 Patterns at 758 MHz



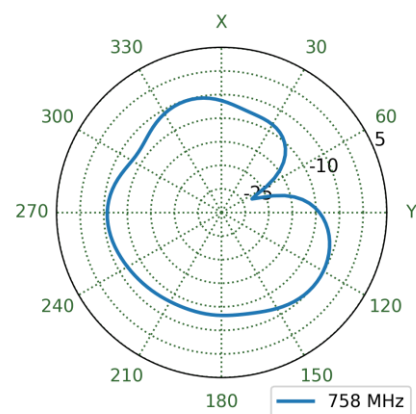
XZ Plane



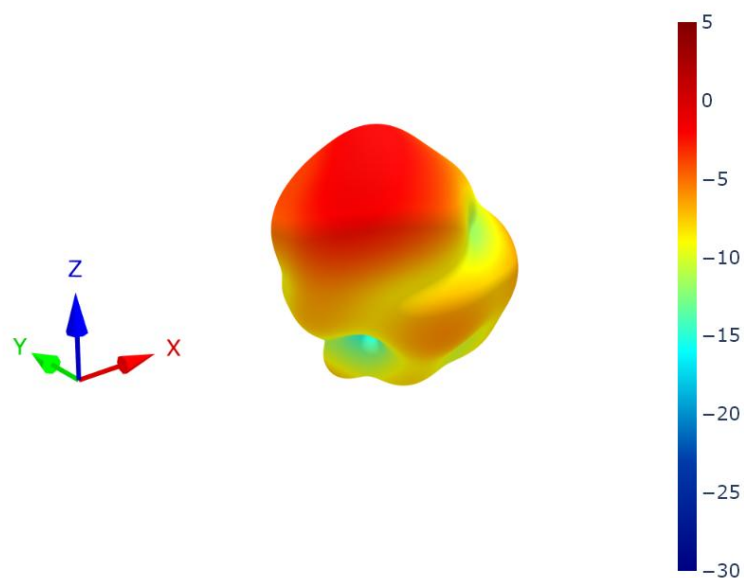
YZ Plane



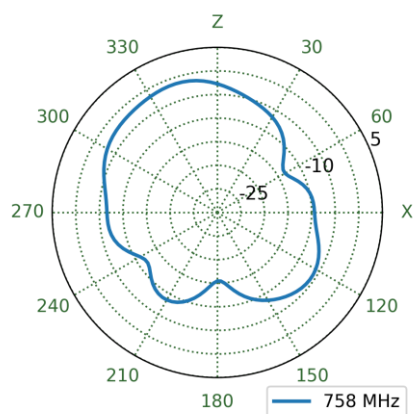
XY Plane



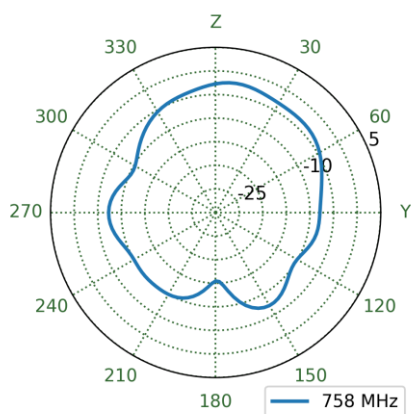
8.26 4G-5G 9 Patterns at 758 MHz



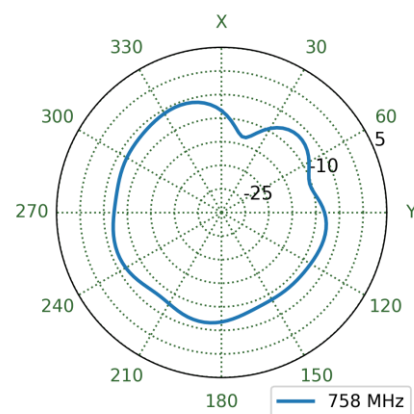
XZ Plane



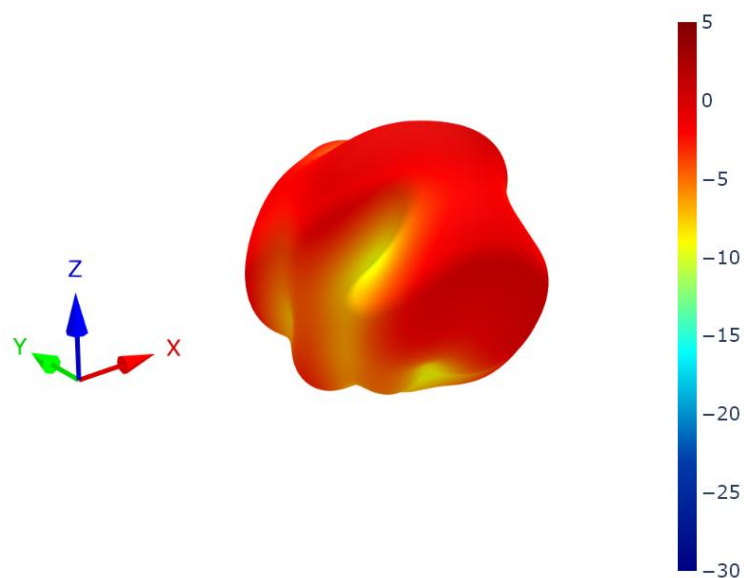
YZ Plane



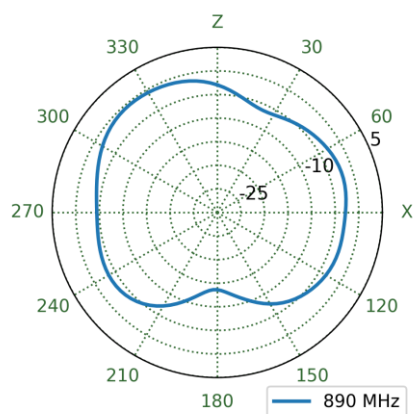
XY Plane



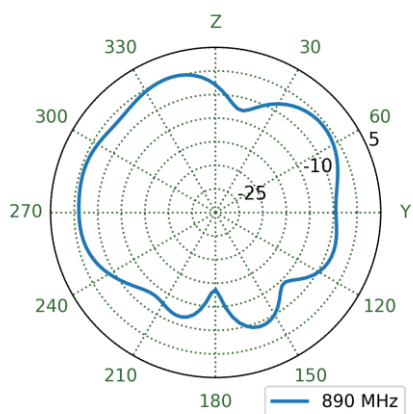
8.27 4G-5G 1 Patterns at 890 MHz



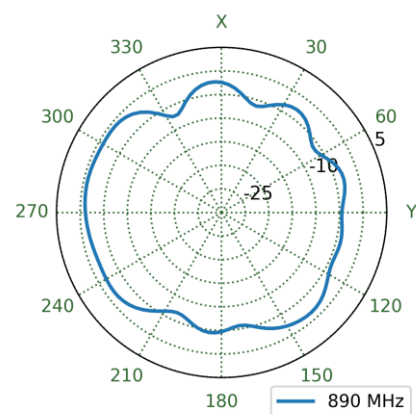
XZ Plane



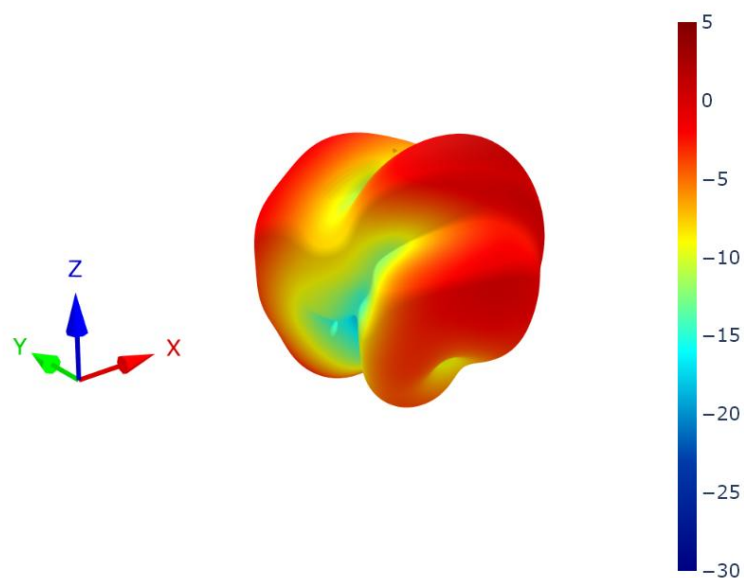
YZ Plane



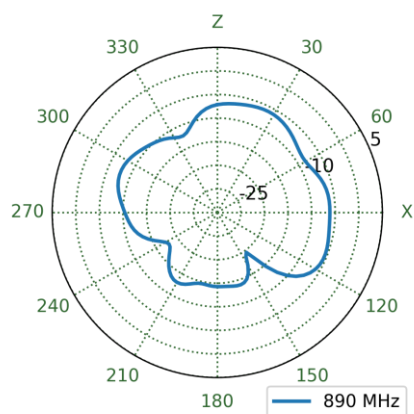
XY Plane



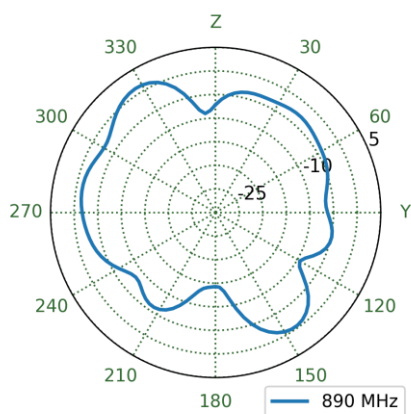
8.28 4G-5G 2 Patterns at 890 MHz



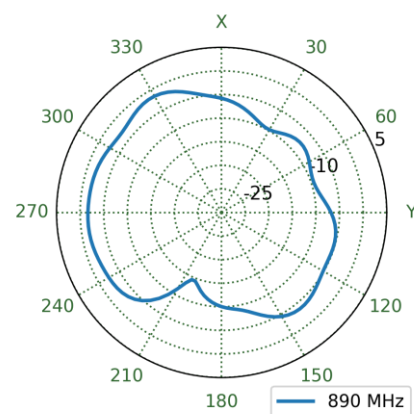
XZ Plane



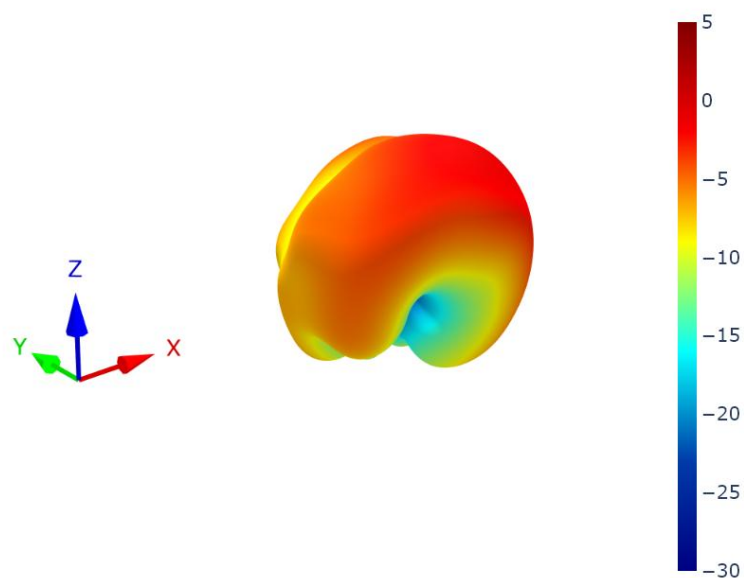
YZ Plane



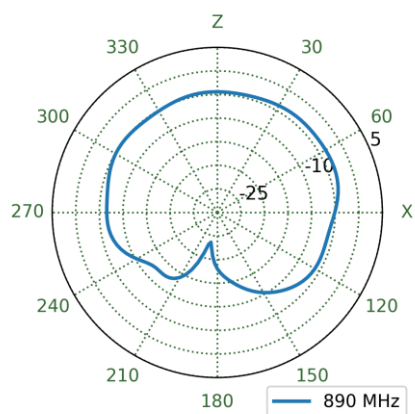
XY Plane



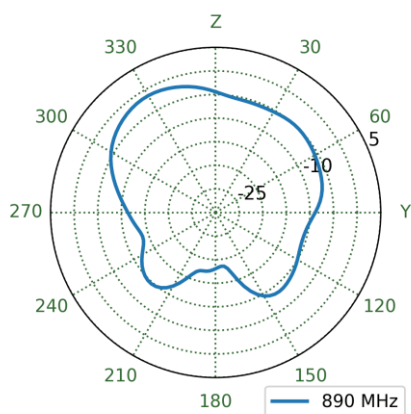
8.29 4G-5G 3 Patterns at 890 MHz



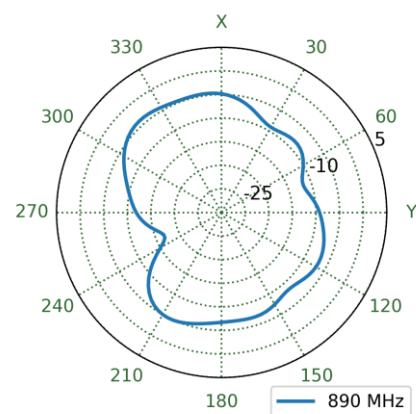
XZ Plane



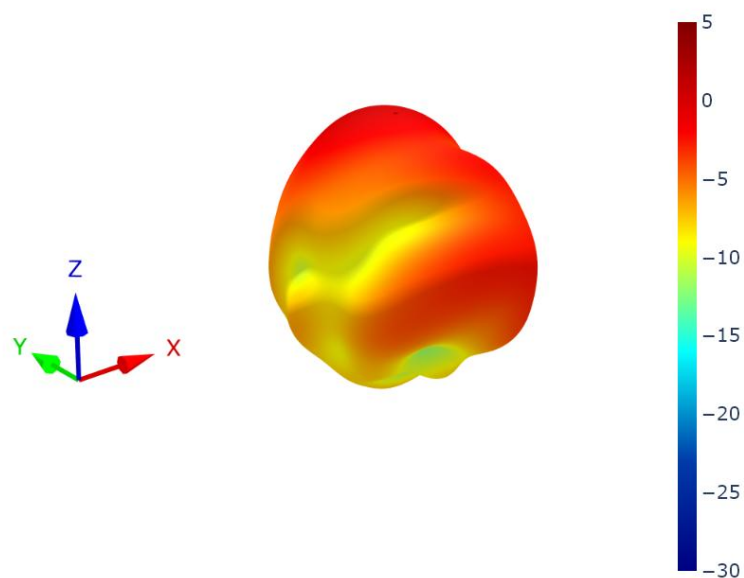
YZ Plane



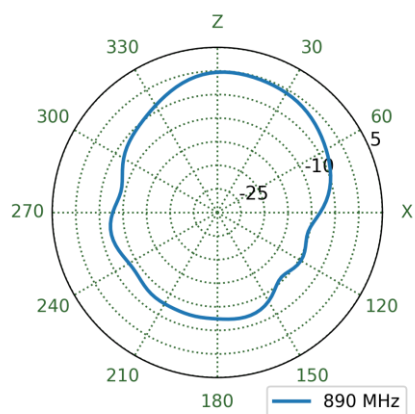
XY Plane



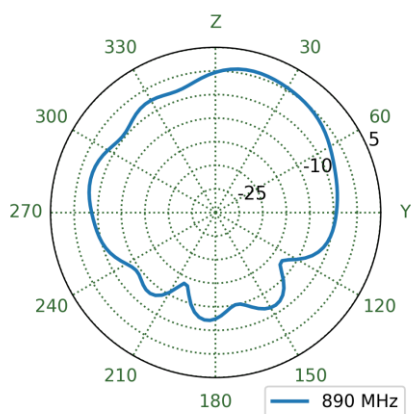
8.30 4G-5G 4 Patterns at 890 MHz



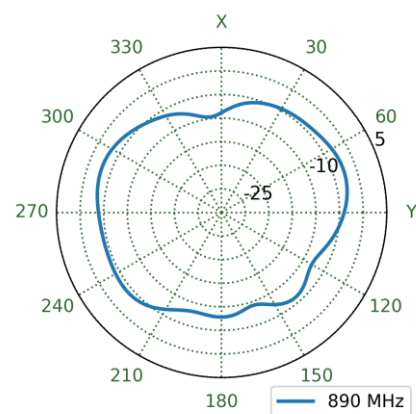
XZ Plane



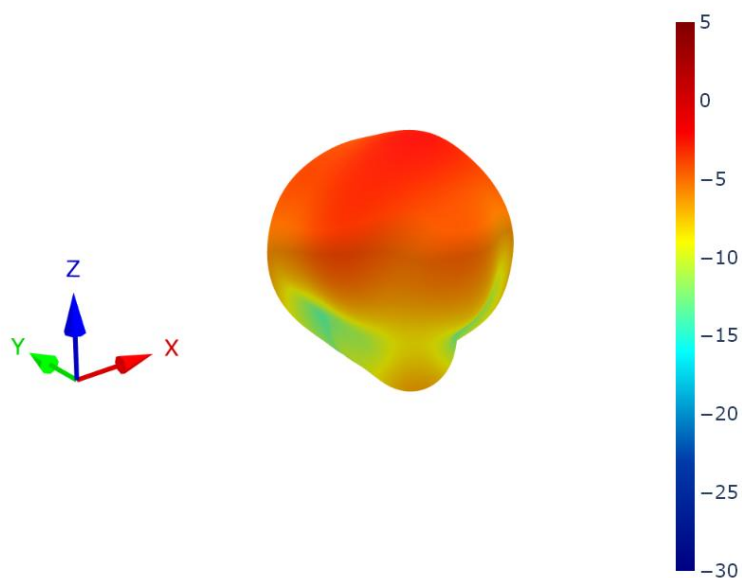
YZ Plane



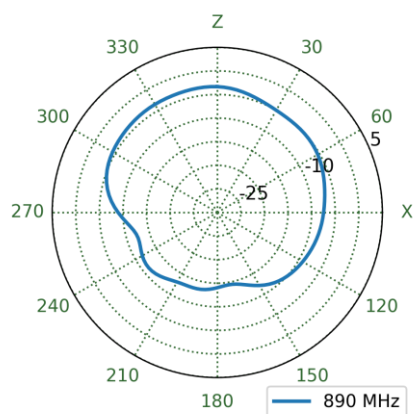
XY Plane



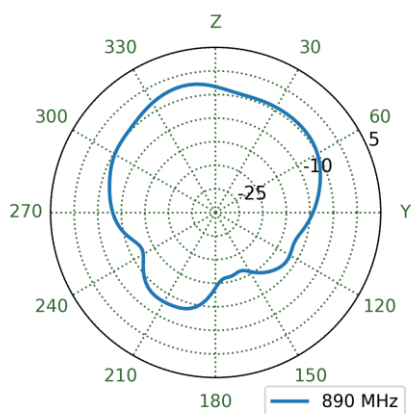
8.31 4G-5G 5 Patterns at 890 MHz



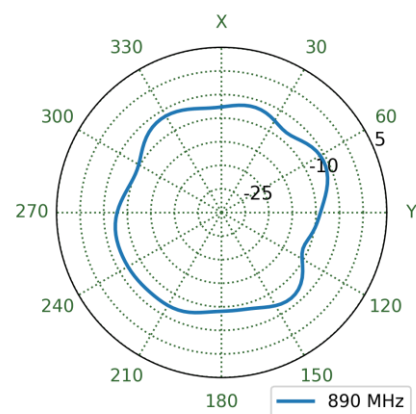
XZ Plane



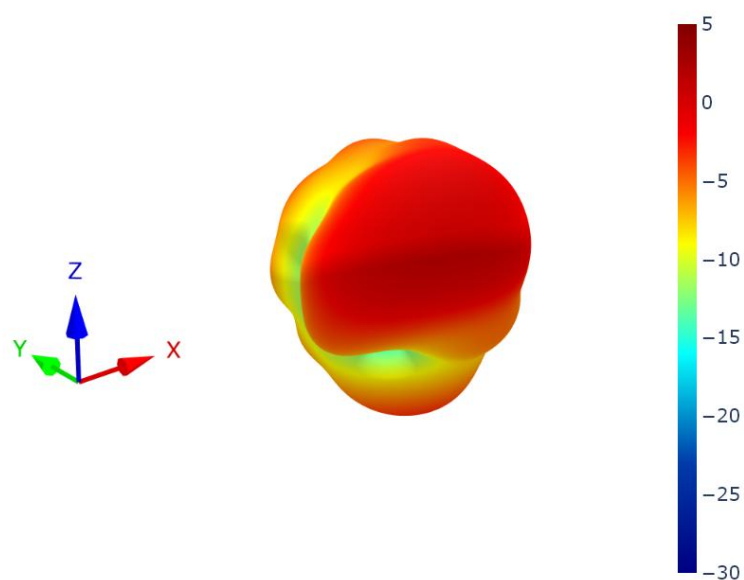
YZ Plane



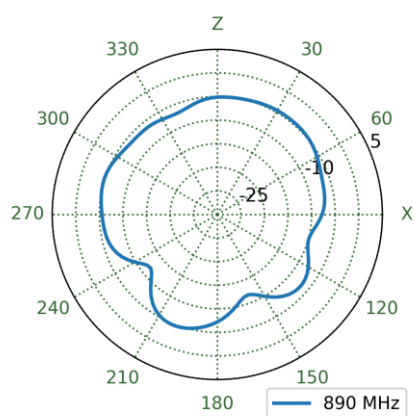
XY Plane



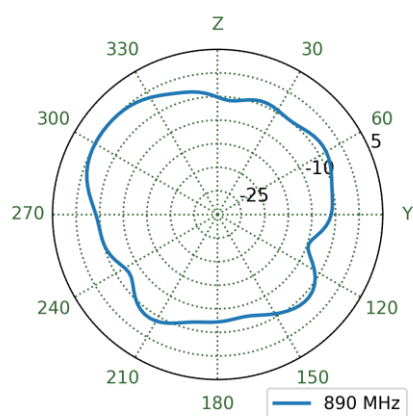
8.32 4G-5G 6 Patterns at 890 MHz



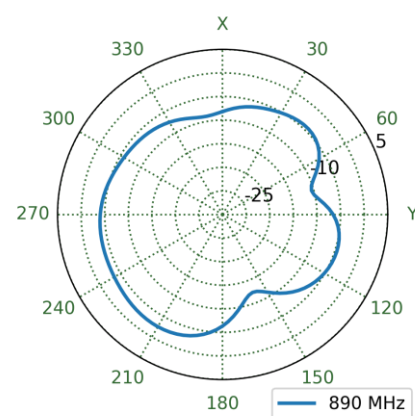
XZ Plane



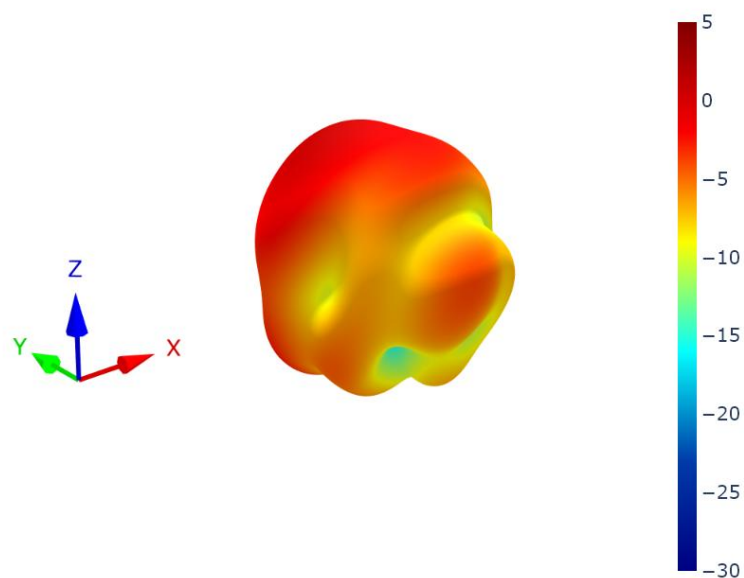
YZ Plane



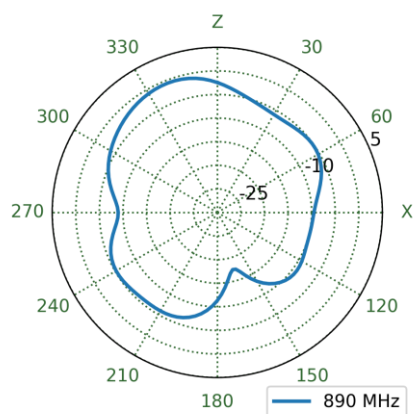
XY Plane



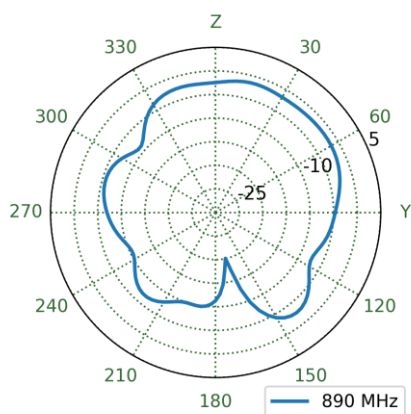
8.33 4G-5G 7 Patterns at 890 MHz



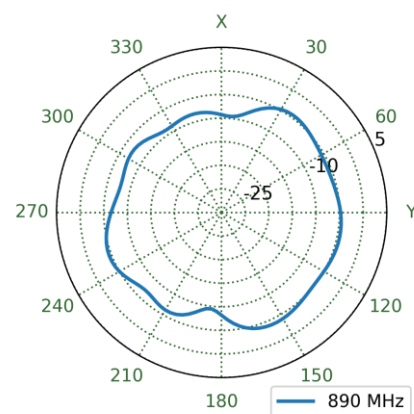
XZ Plane



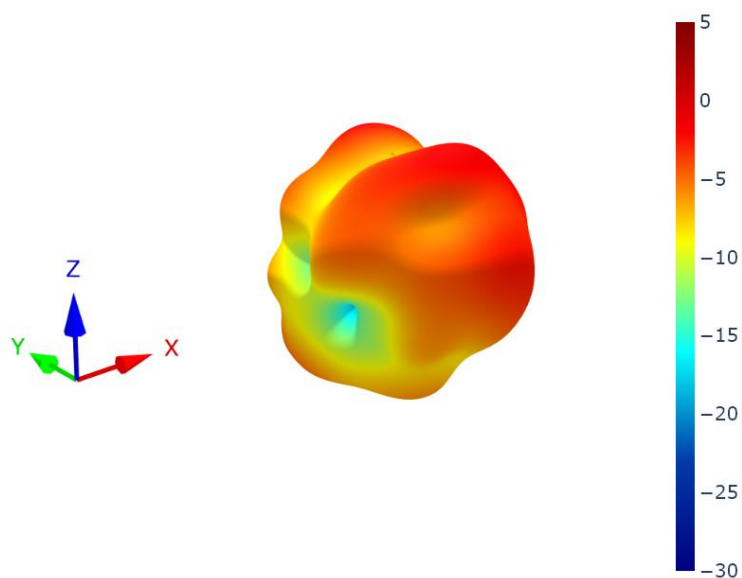
YZ Plane



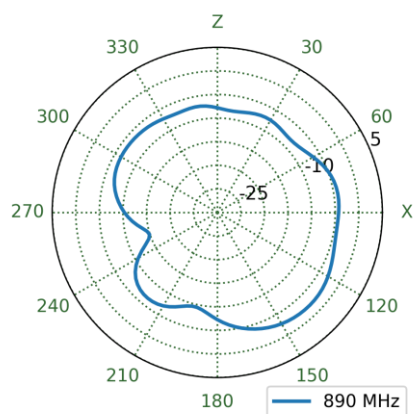
XY Plane



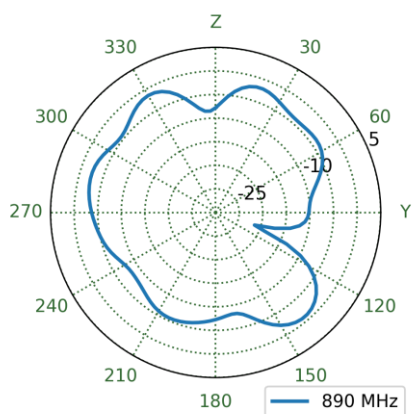
8.34 4G-5G 8 Patterns at 890 MHz



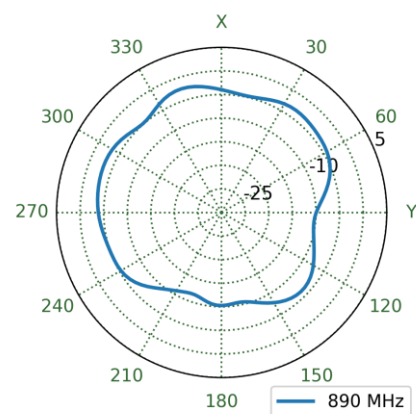
XZ Plane



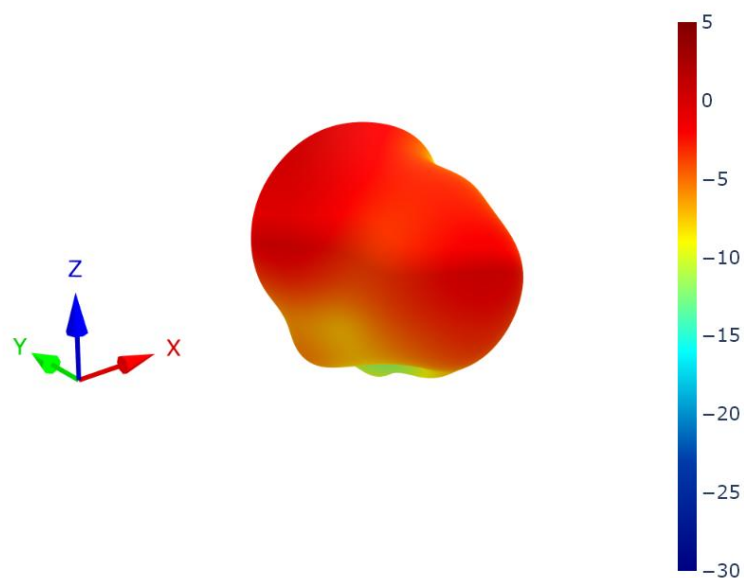
YZ Plane



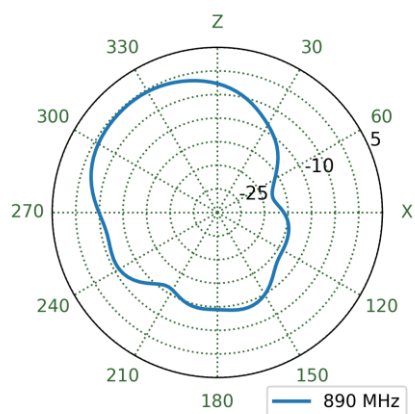
XY Plane



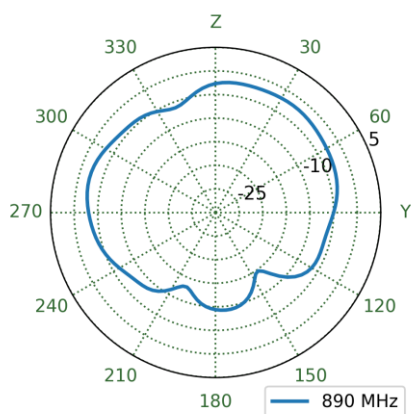
8.35 4G-5G 9 Patterns at 890 MHz



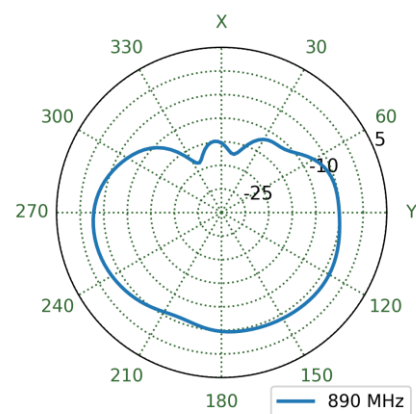
XZ Plane



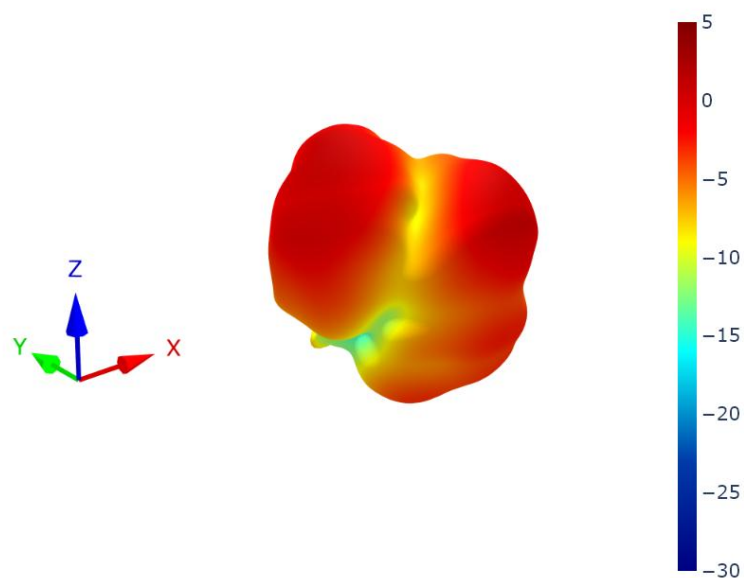
YZ Plane



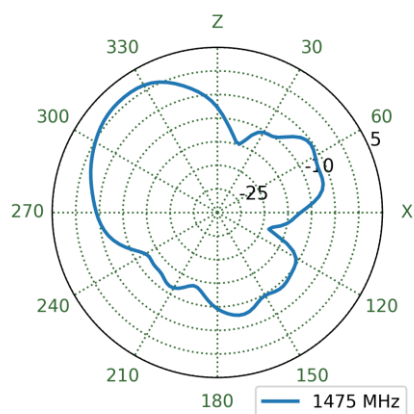
XY Plane



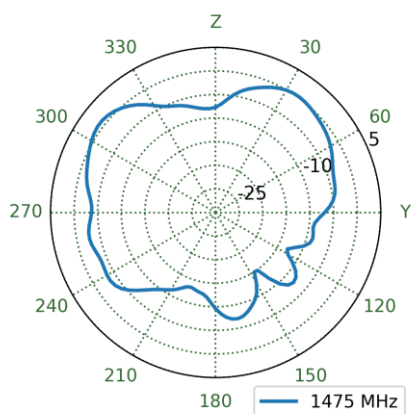
8.36 4G-5G 1 Patterns at 1475 MHz



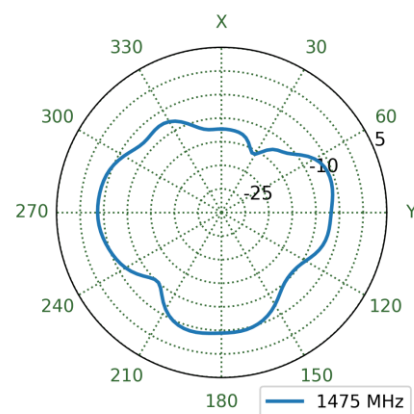
XZ Plane



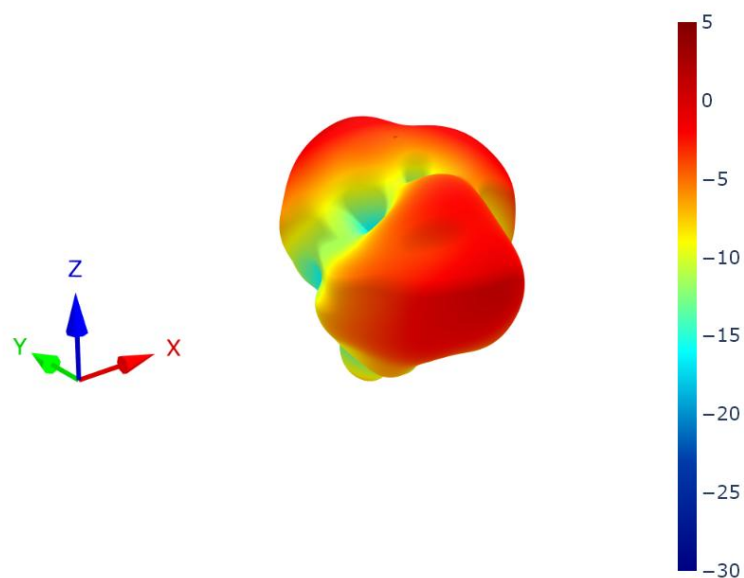
YZ Plane



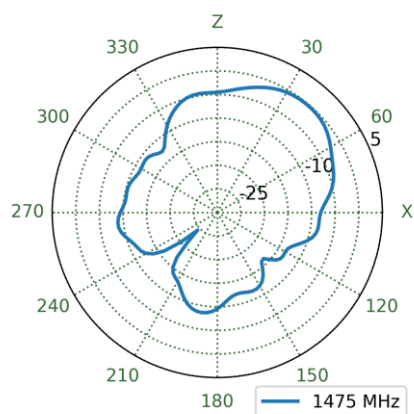
XY Plane



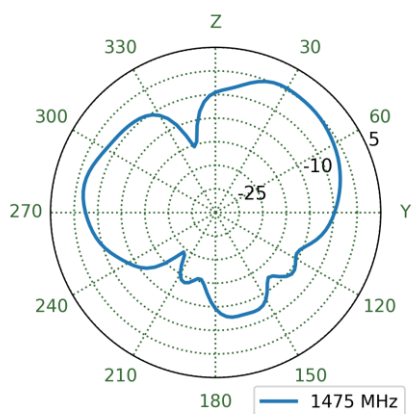
8.37 4G-5G 2 Patterns at 1475 MHz



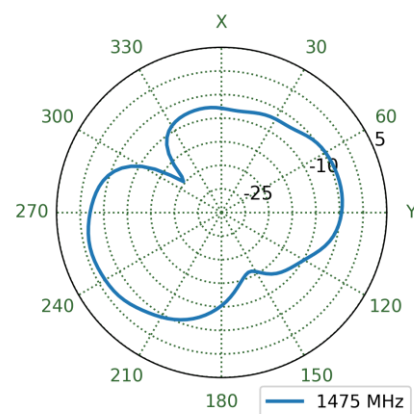
XZ Plane



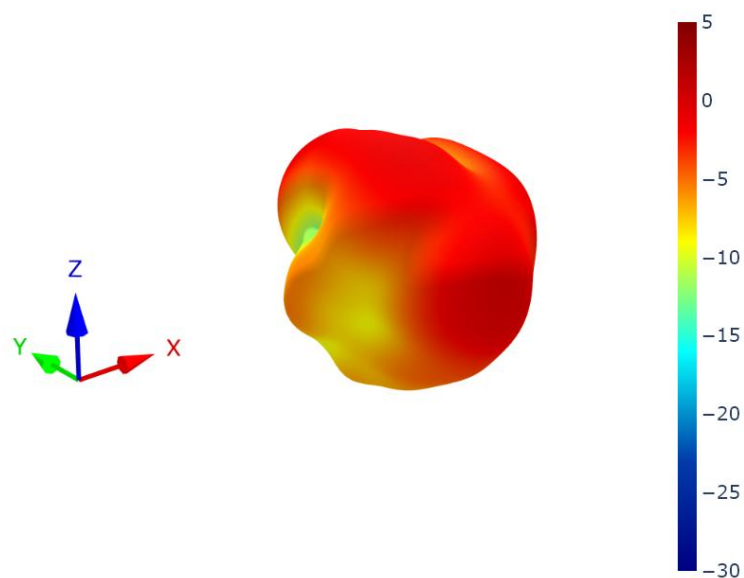
YZ Plane



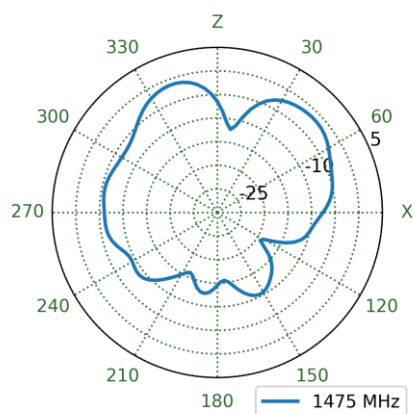
XY Plane



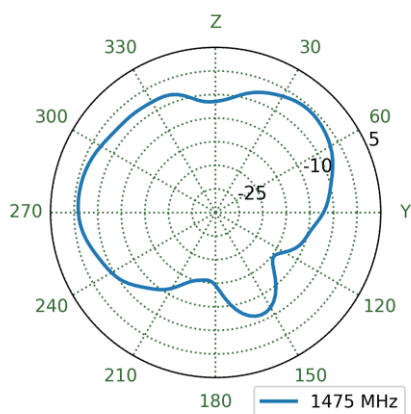
8.38 4G-5G 3 Patterns at 1475 MHz



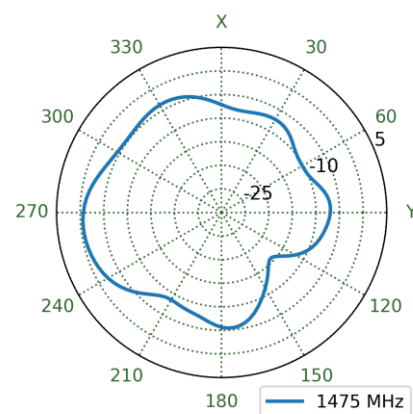
XZ Plane



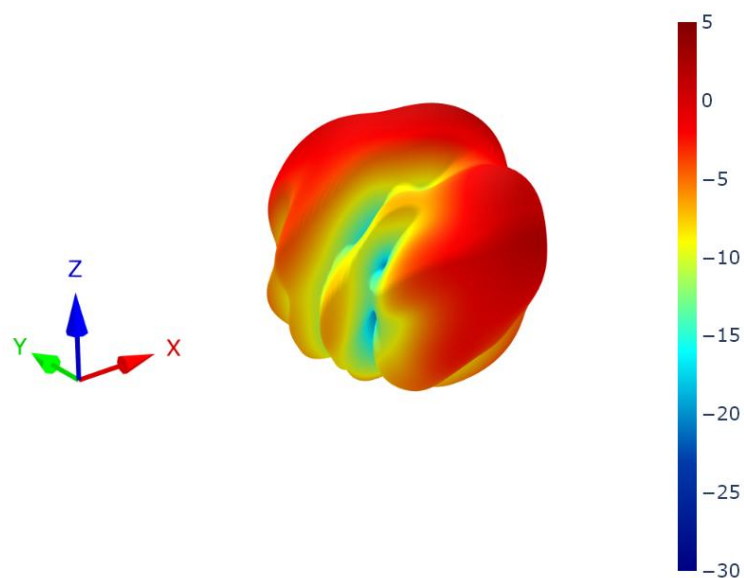
YZ Plane



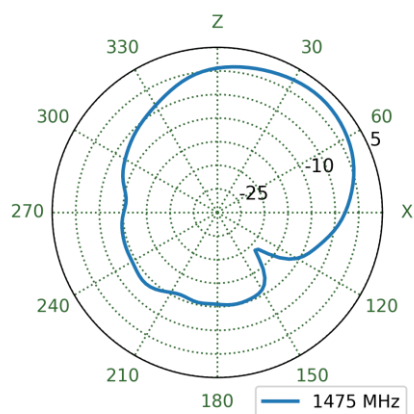
XY Plane



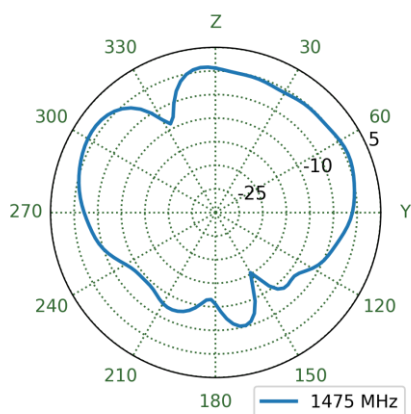
8.39 4G-5G 4 Patterns at 1475 MHz



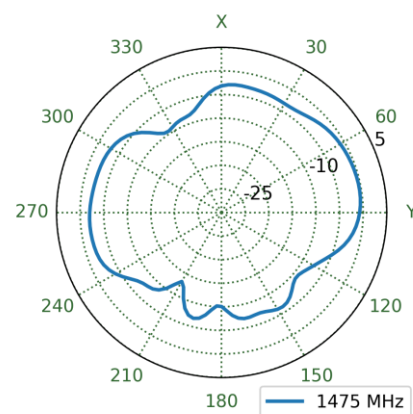
XZ Plane



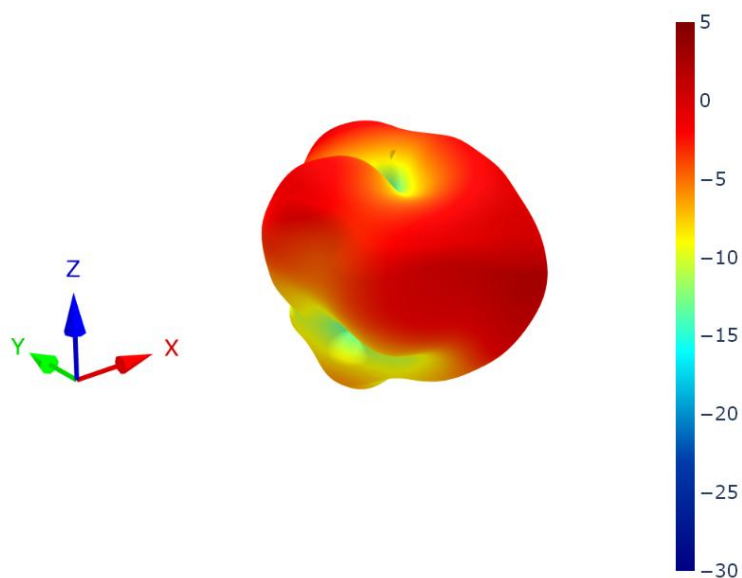
YZ Plane



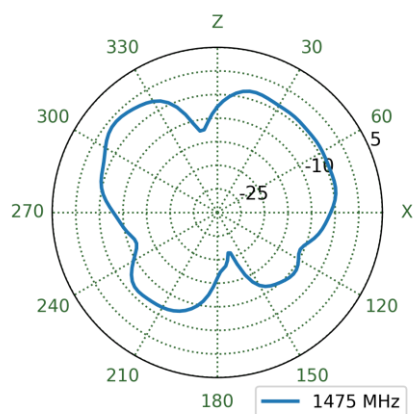
XY Plane



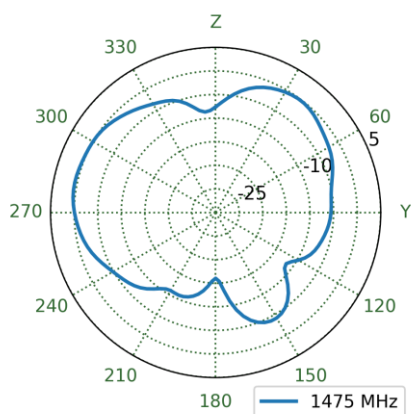
8.40 4G-5G 5 Patterns at 1475 MHz



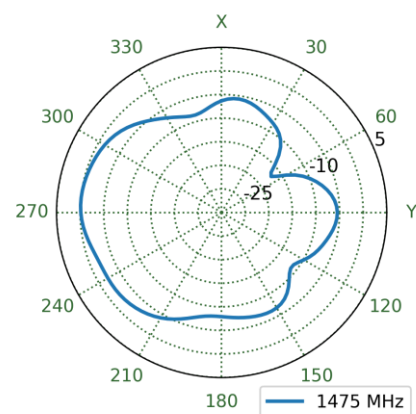
XZ Plane



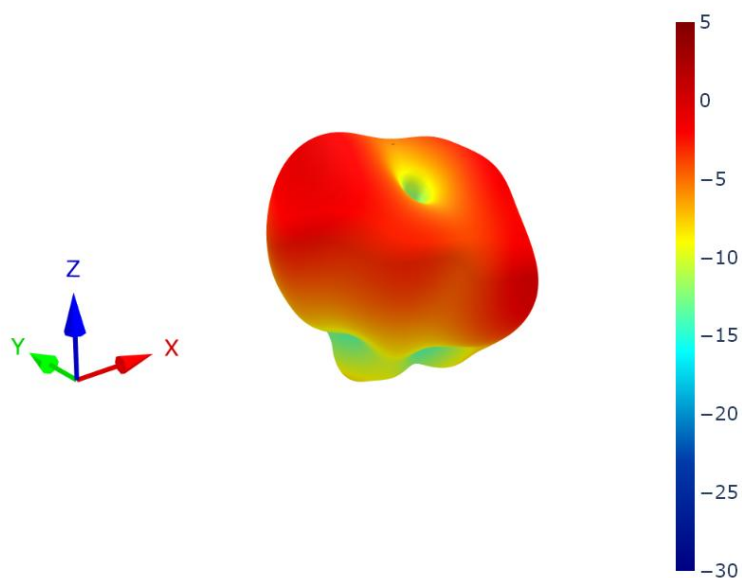
YZ Plane



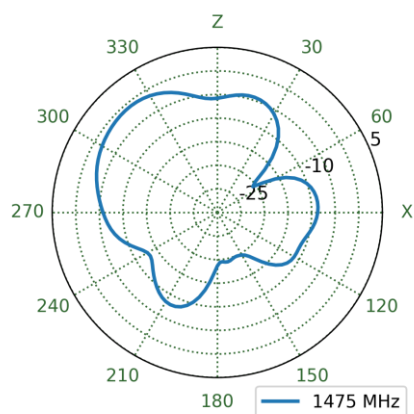
XY Plane



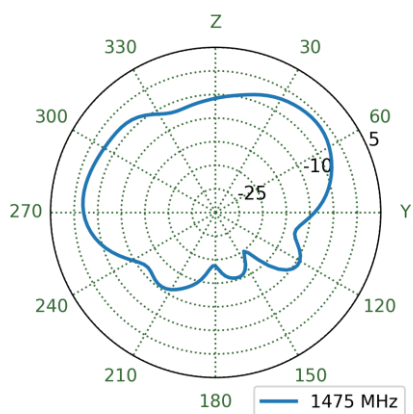
8.41 4G-5G 6 Patterns at 1475 MHz



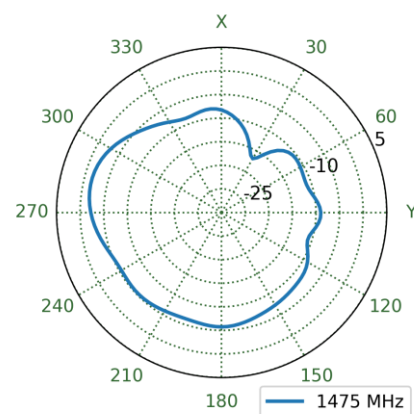
XZ Plane



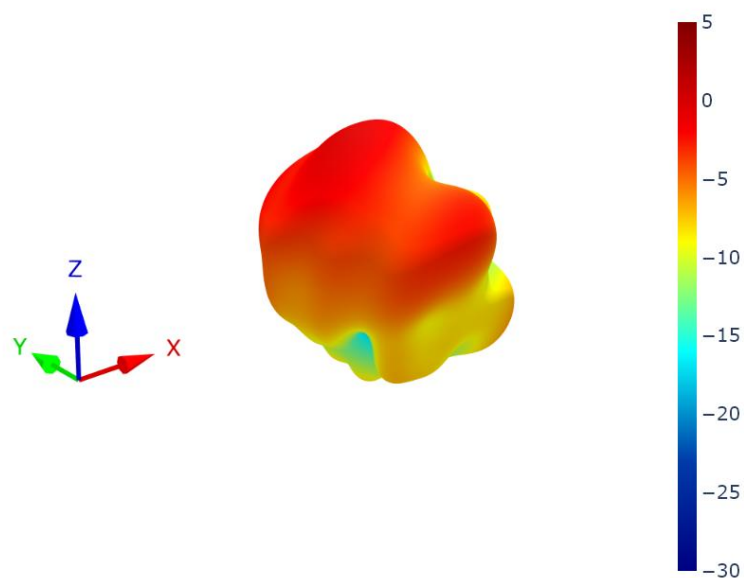
YZ Plane



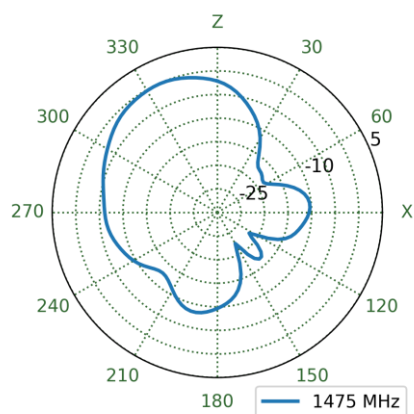
XY Plane



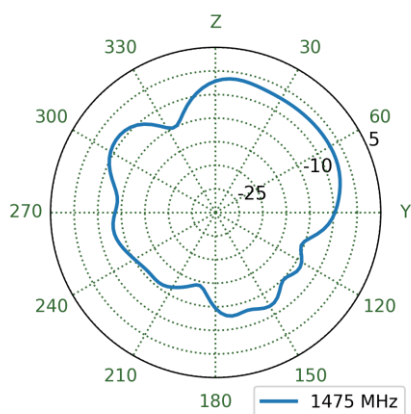
8.42 4G-5G 7 Patterns at 1475 MHz



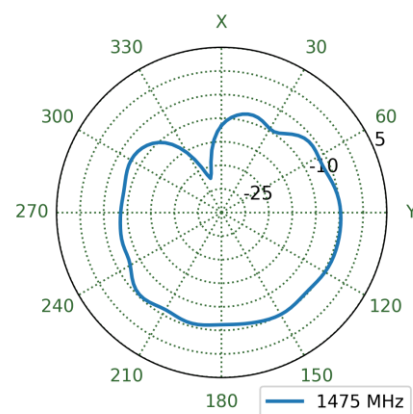
XZ Plane



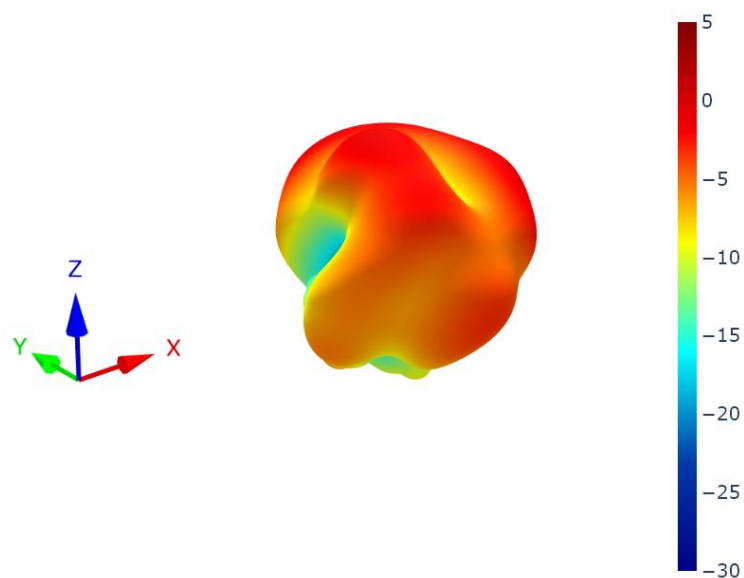
YZ Plane



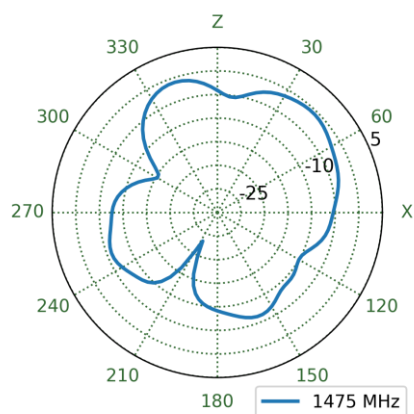
XY Plane



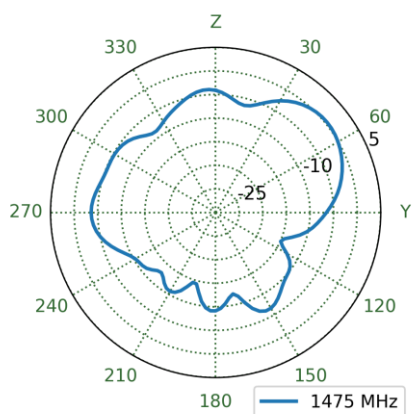
8.43 4G-5G 8 Patterns at 1475 MHz



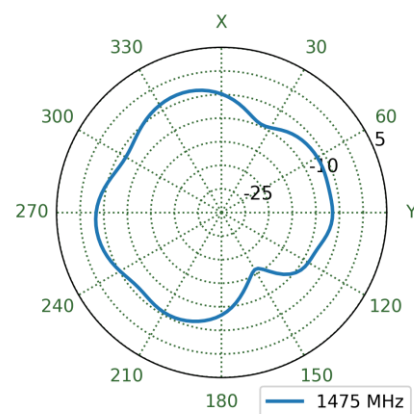
XZ Plane



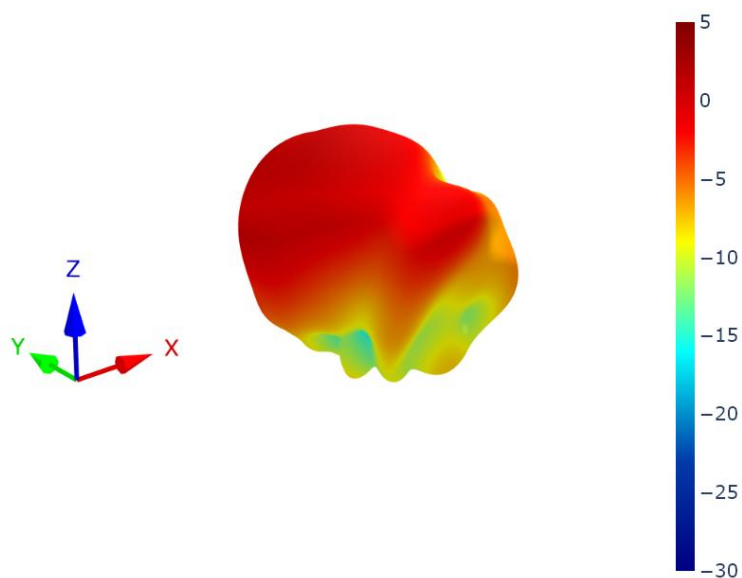
YZ Plane



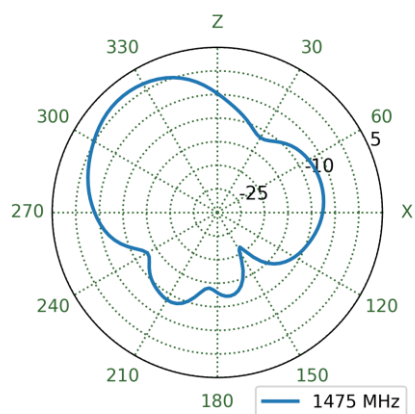
XY Plane



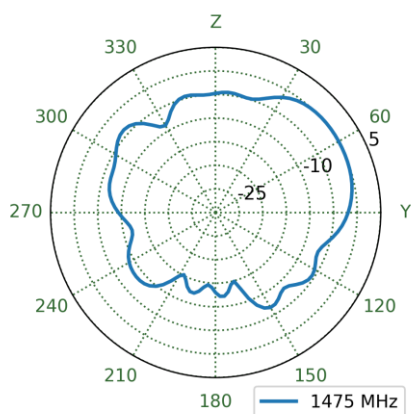
8.44 4G-5G 9 Patterns at 1475 MHz



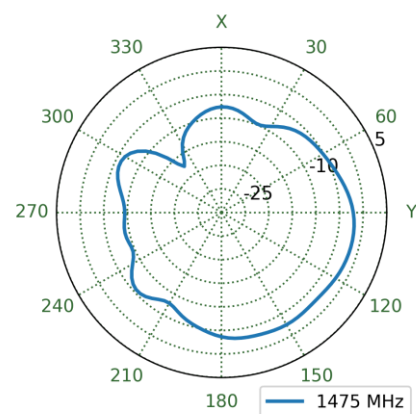
XZ Plane



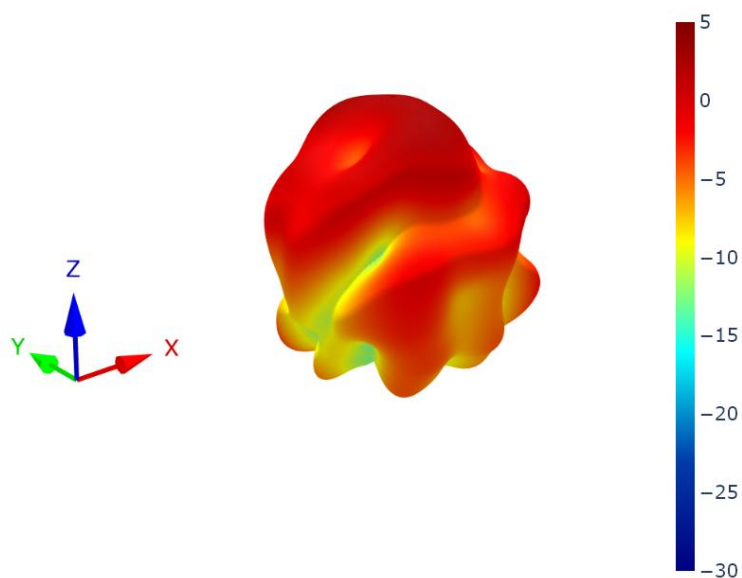
YZ Plane



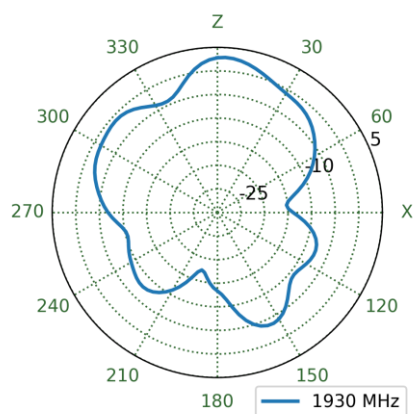
XY Plane



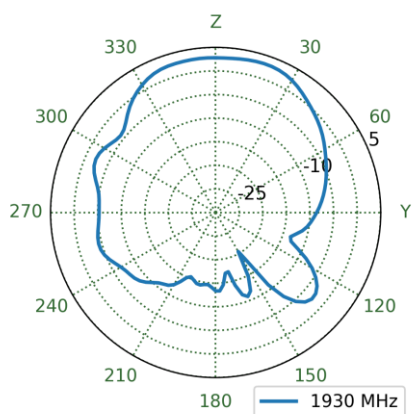
8.45 4G-5G 1 Patterns at 1930 MHz



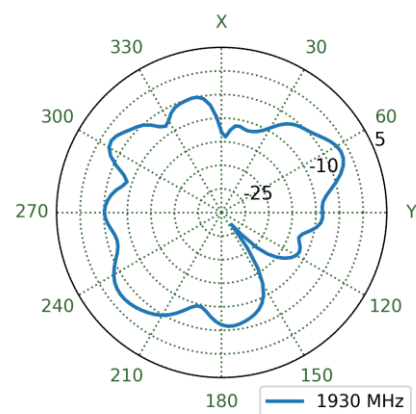
XZ Plane



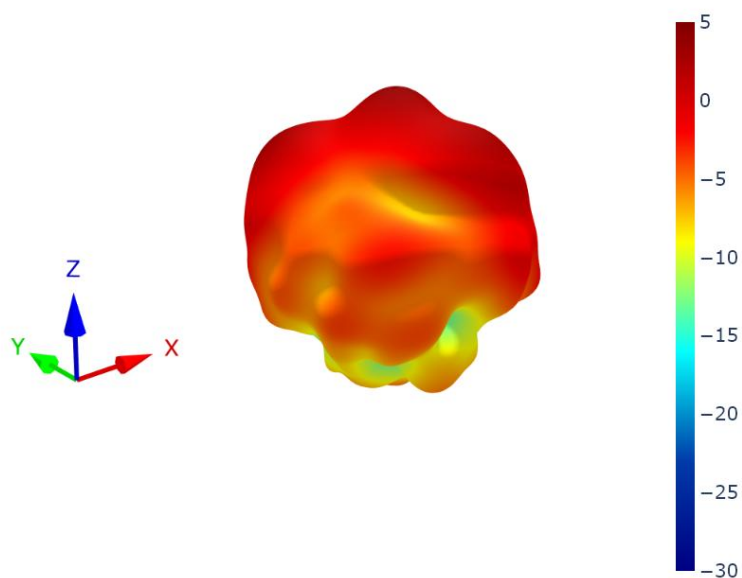
YZ Plane



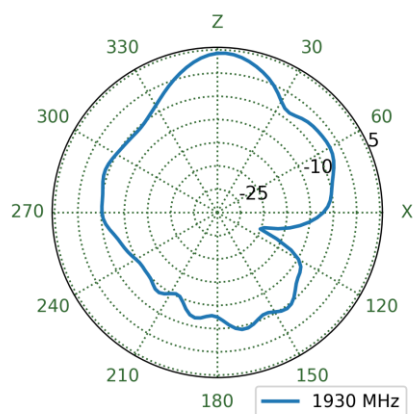
XY Plane



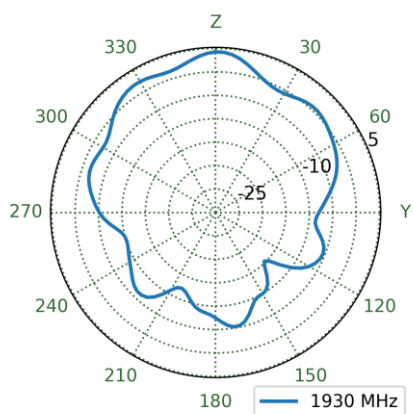
8.46 4G-5G 2 Patterns at 1930 MHz



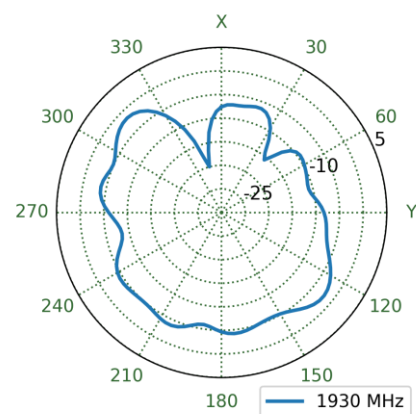
XZ Plane



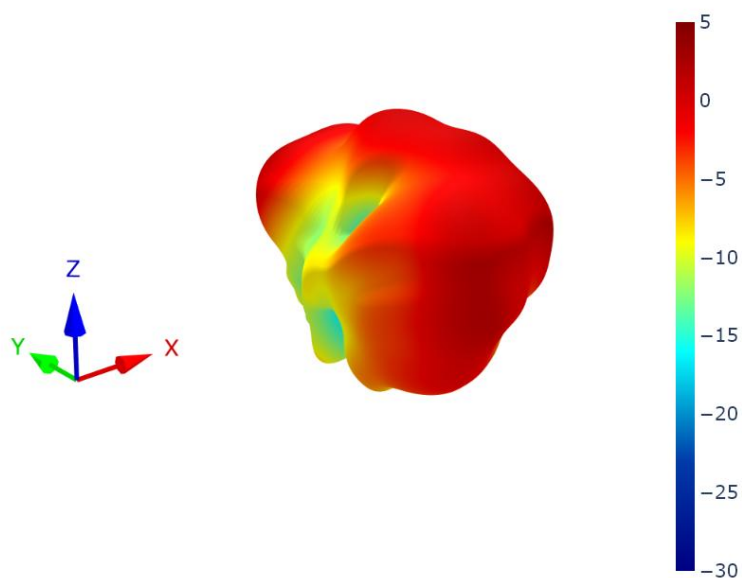
YZ Plane



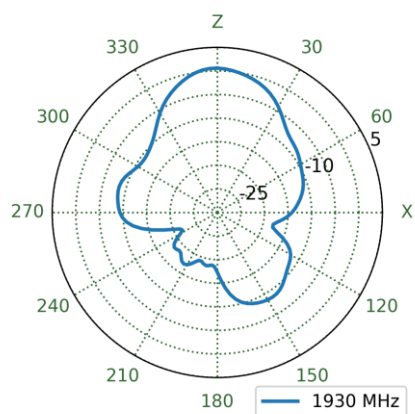
XY Plane



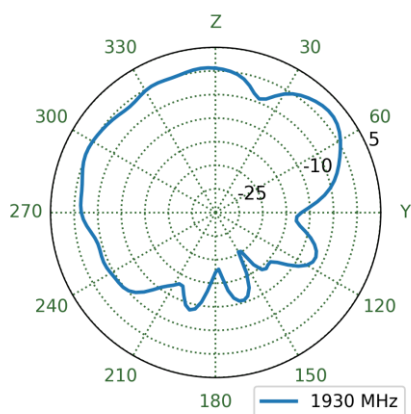
8.47 4G-5G 3 Patterns at 1930 MHz



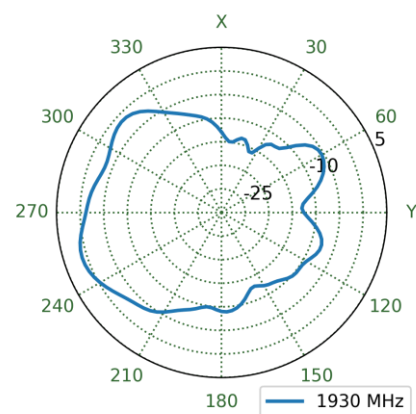
XZ Plane



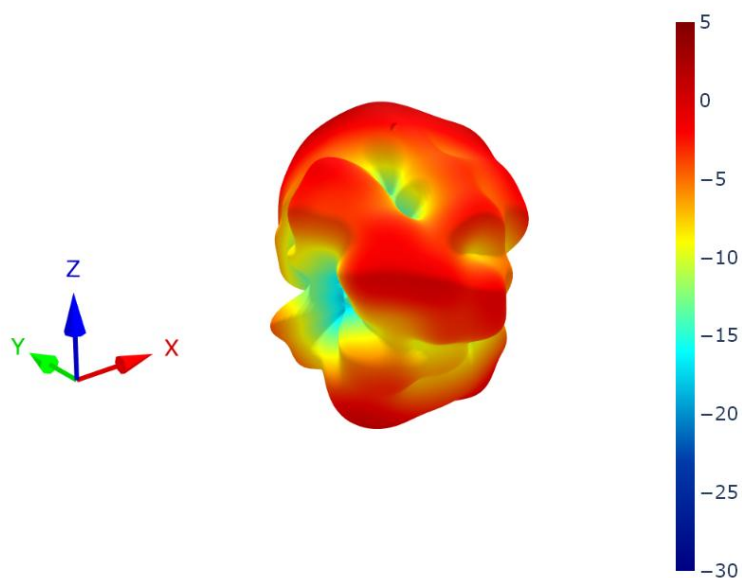
YZ Plane



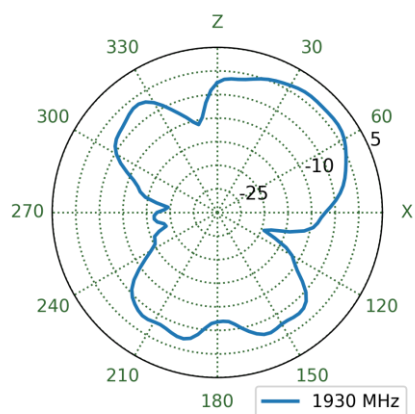
XY Plane



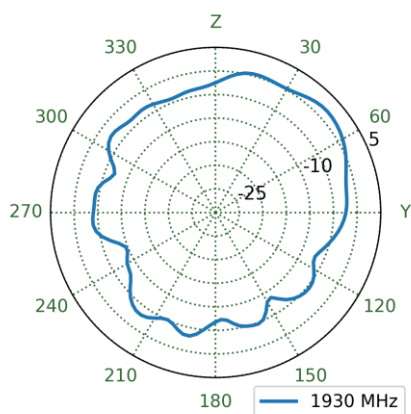
8.48 4G-5G 4 Patterns at 1930 MHz



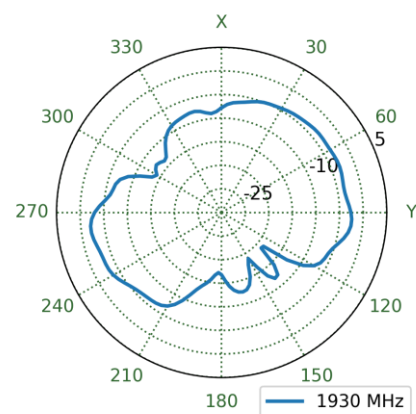
XZ Plane



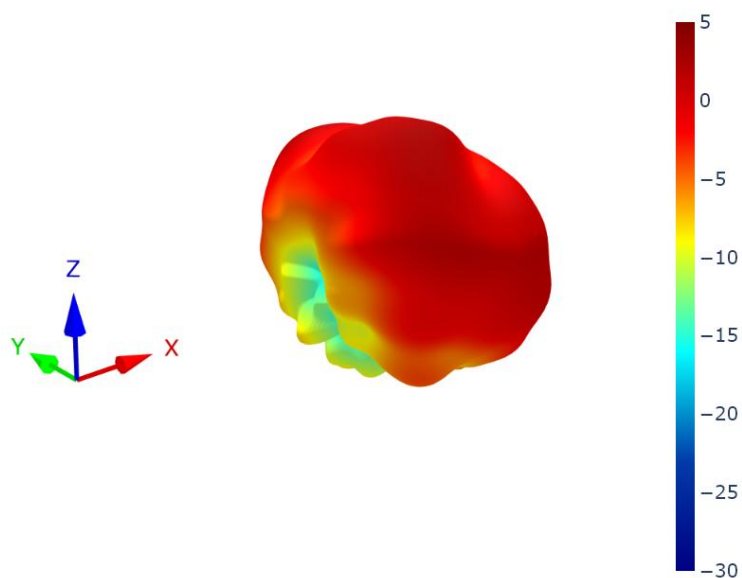
YZ Plane



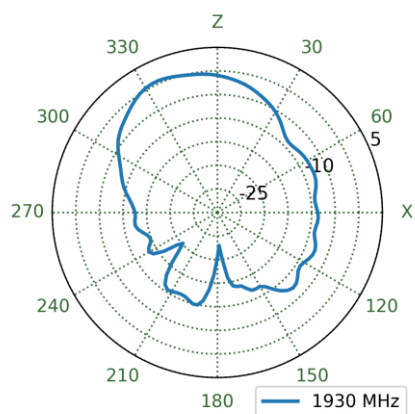
XY Plane



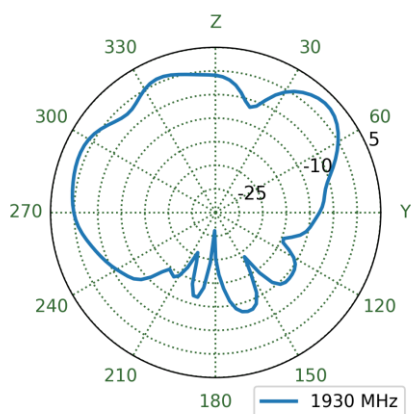
8.49 4G-5G 5 Patterns at 1930 MHz



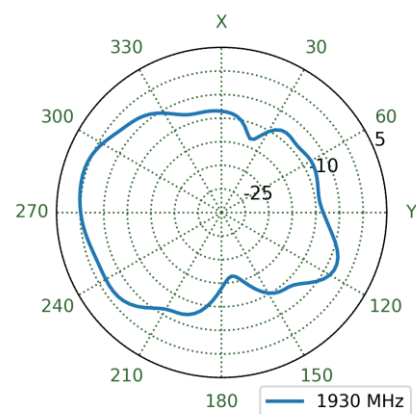
XZ Plane



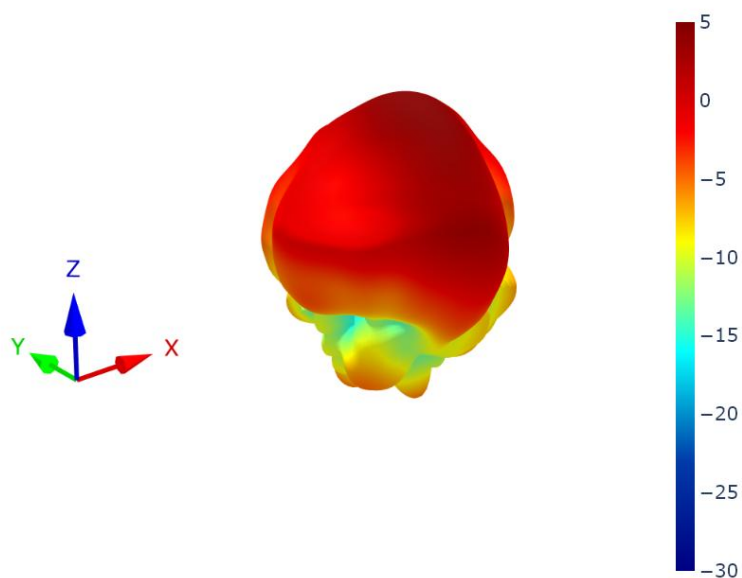
YZ Plane



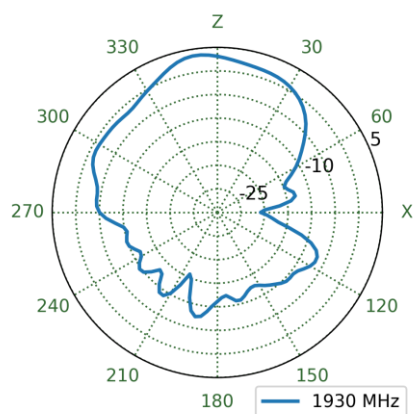
XY Plane



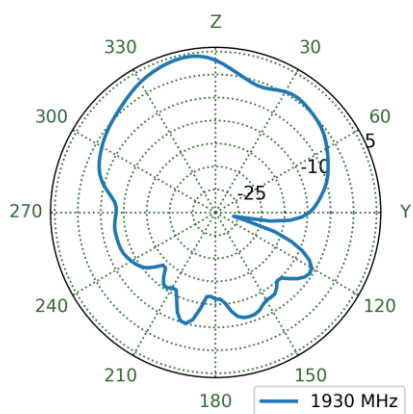
8.50 4G-5G 6 Patterns at 1930 MHz



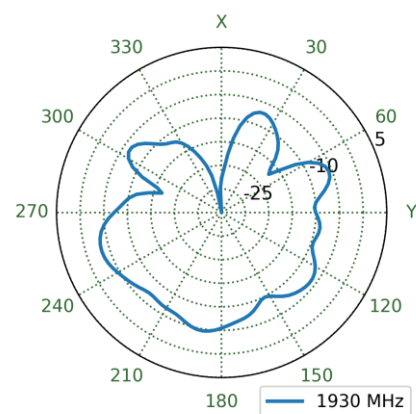
XZ Plane



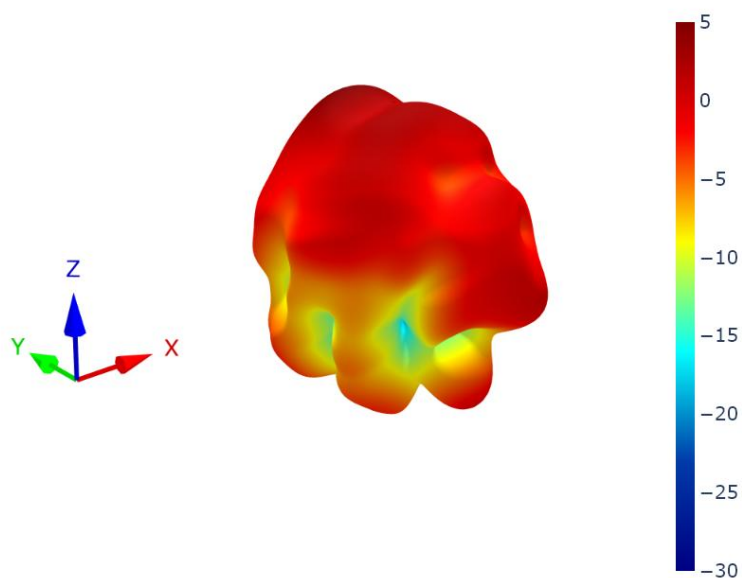
YZ Plane



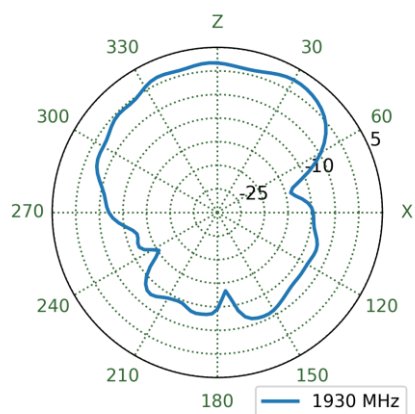
XY Plane



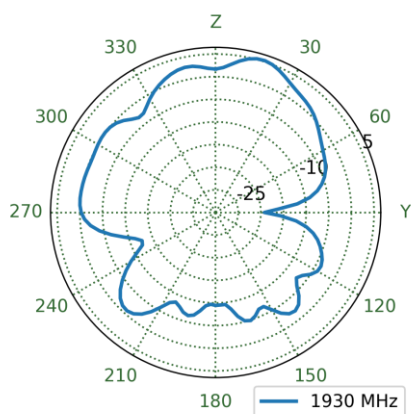
8.51 4G-5G 7 Patterns at 1930 MHz



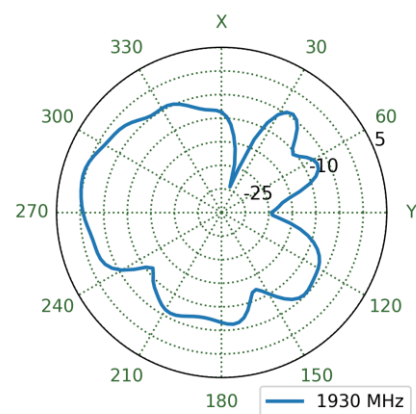
XZ Plane



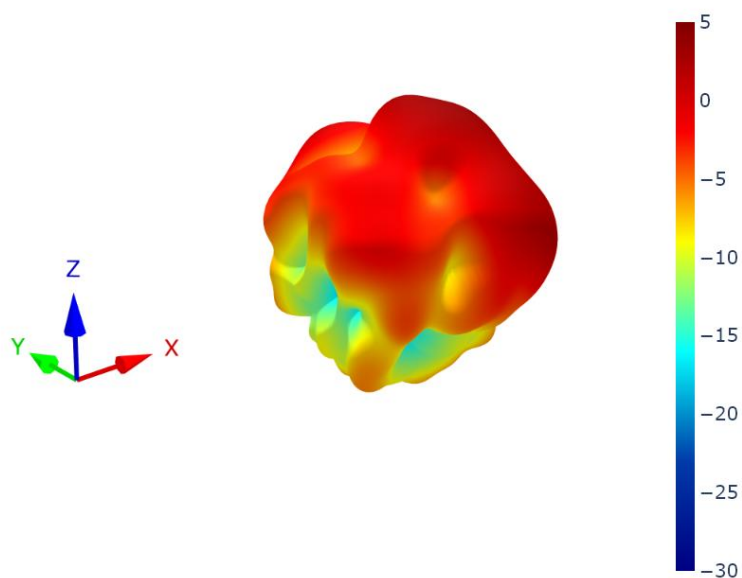
YZ Plane



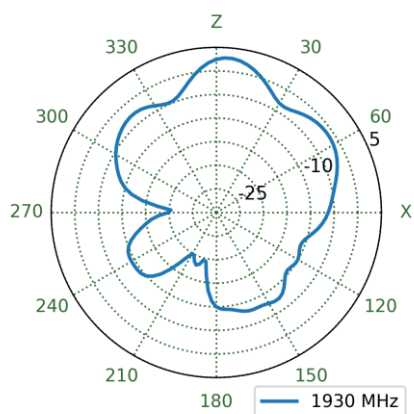
XY Plane



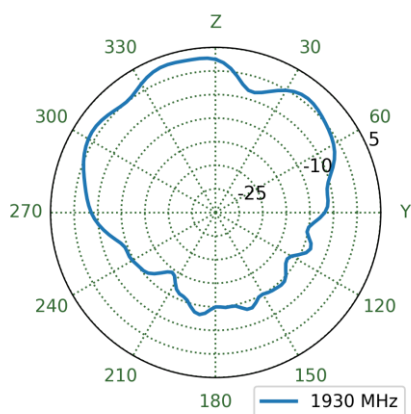
8.52 4G-5G 8 Patterns at 1930 MHz



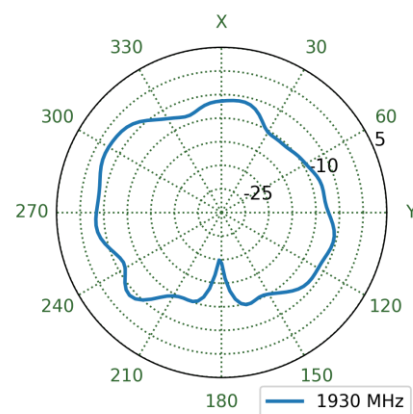
XZ Plane



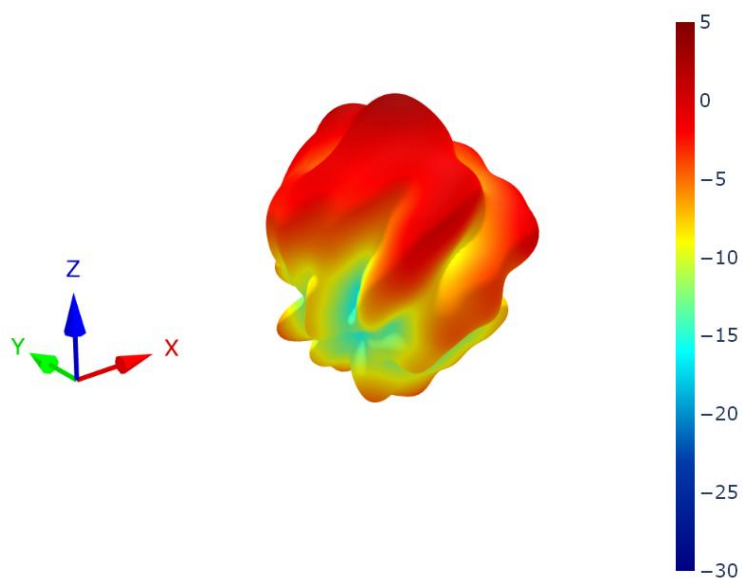
YZ Plane



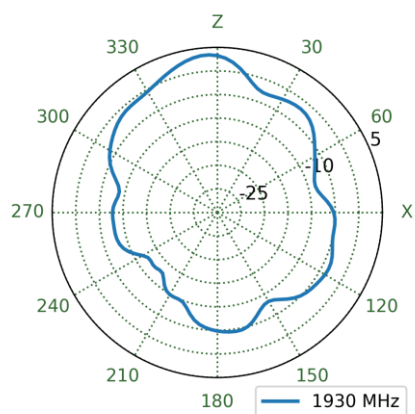
XY Plane



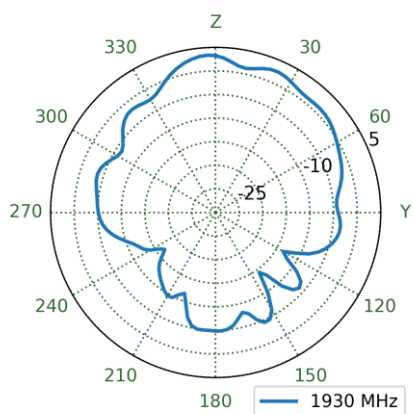
8.53 4G-5G 9 Patterns at 1930 MHz



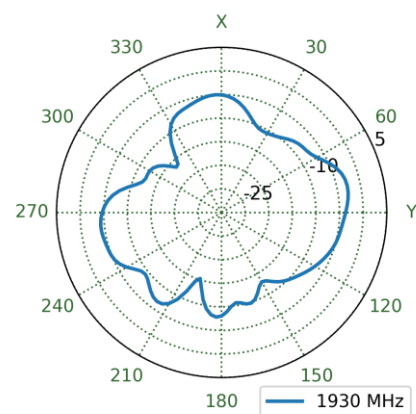
XZ Plane



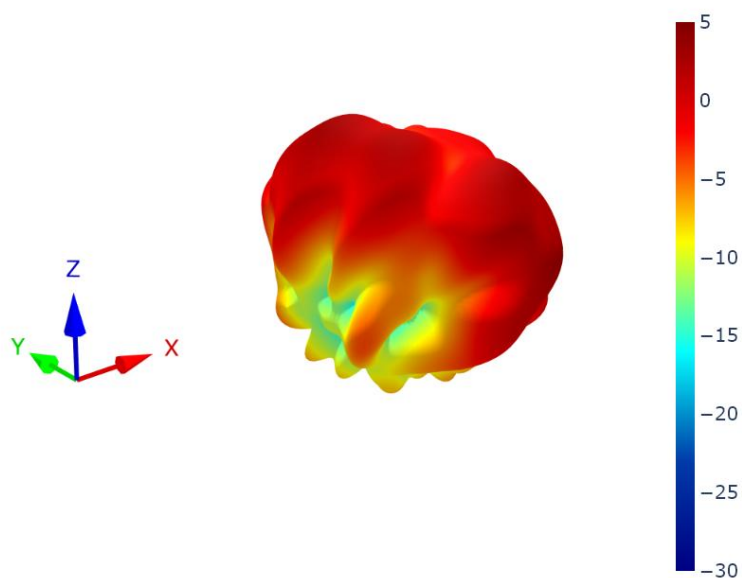
YZ Plane



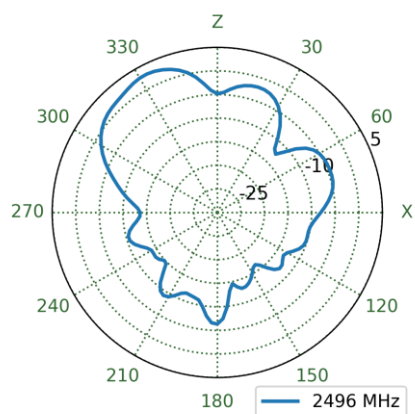
XY Plane



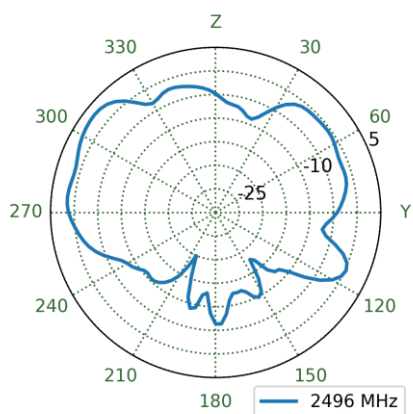
8.54 4G-5G 1 Patterns at 2496 MHz



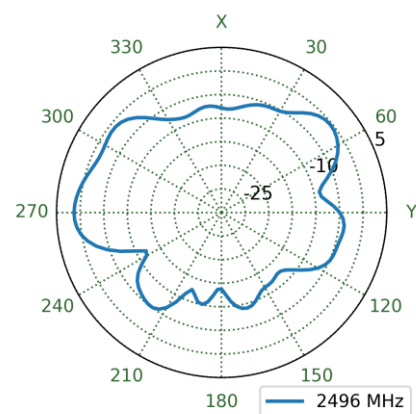
XZ Plane



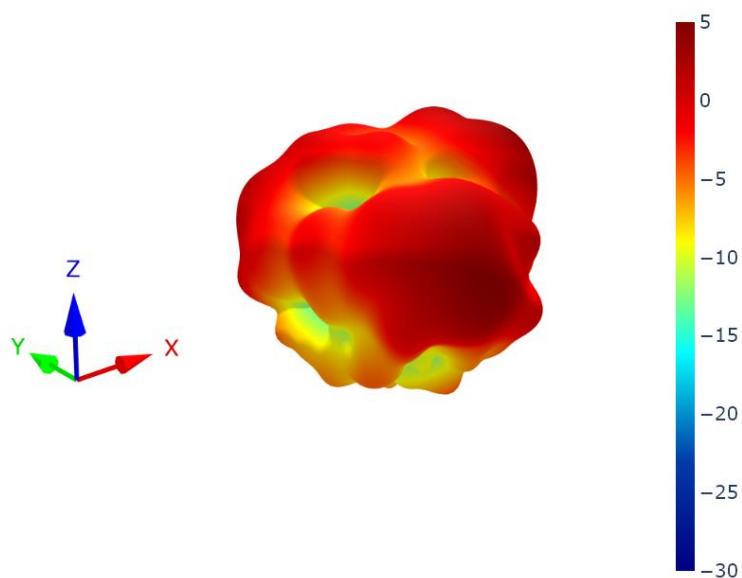
YZ Plane



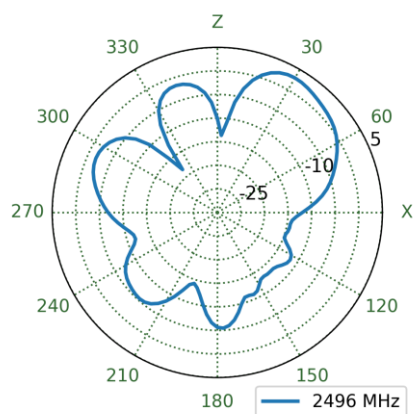
XY Plane



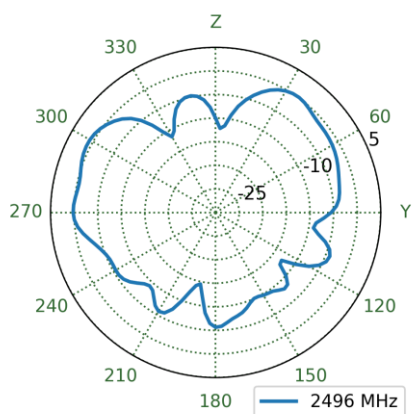
8.55 4G-5G 2 Patterns at 2496 MHz



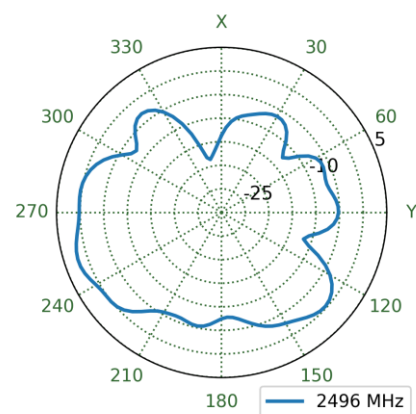
XZ Plane



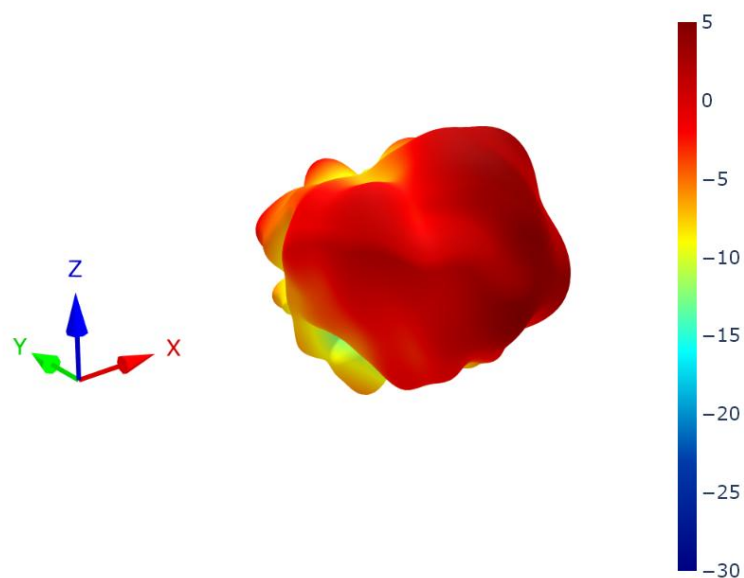
YZ Plane



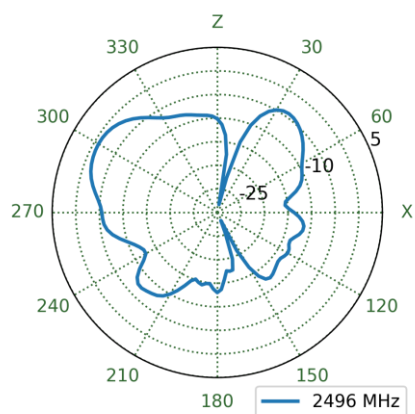
XY Plane



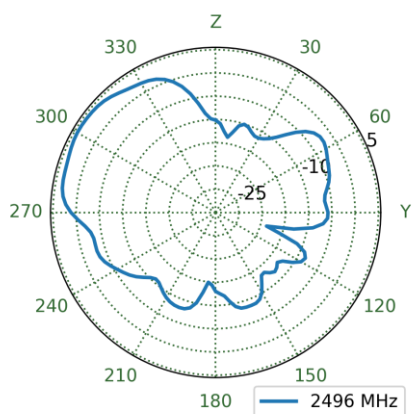
8.56 4G-5G 3 Patterns at 2496 MHz



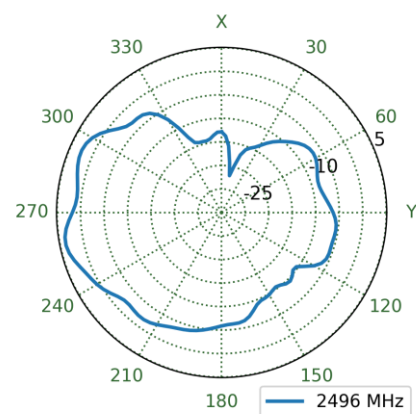
XZ Plane



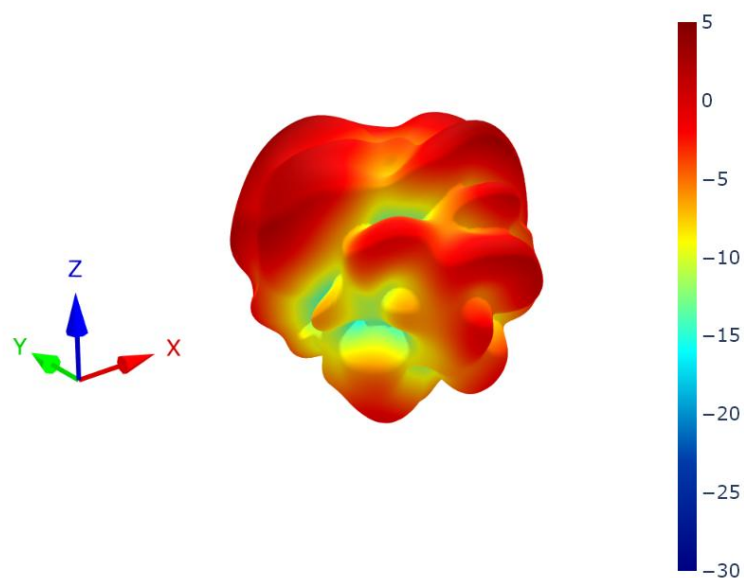
YZ Plane



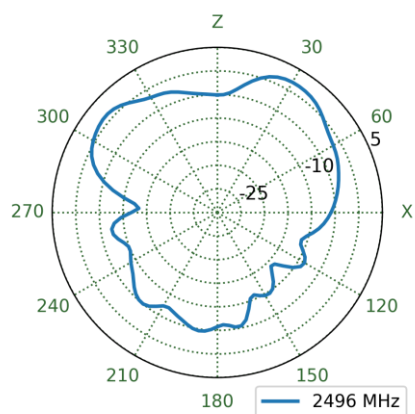
XY Plane



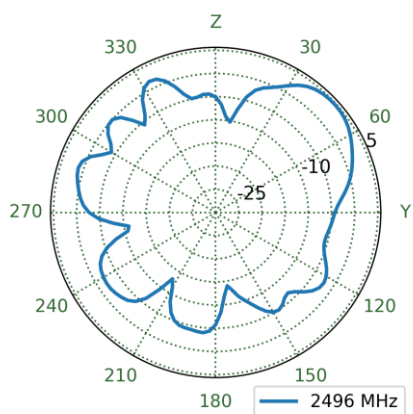
8.57 4G-5G 4 Patterns at 2496 MHz



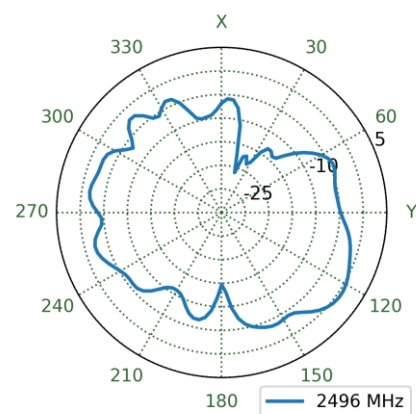
XZ Plane



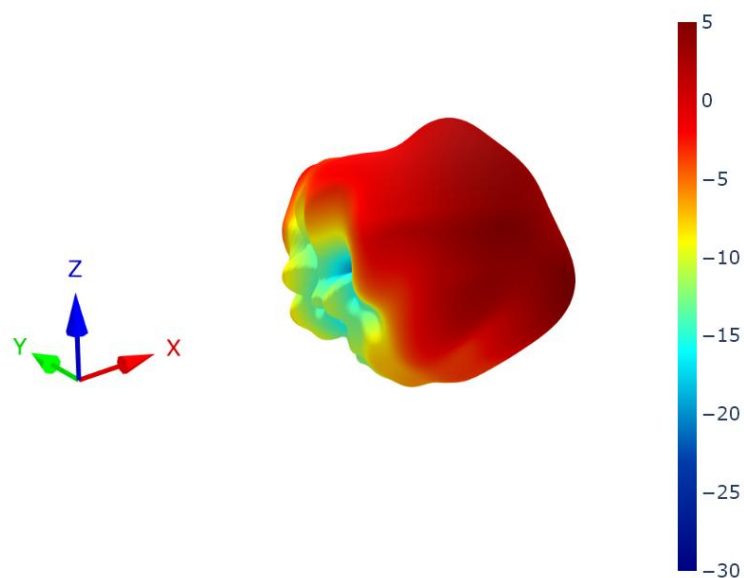
YZ Plane



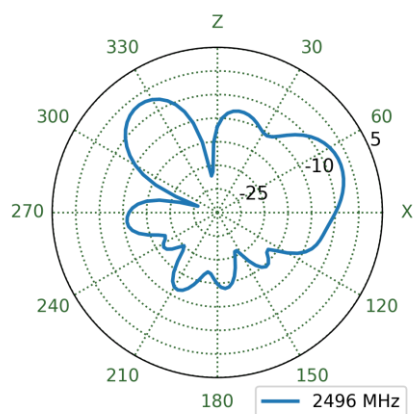
XY Plane



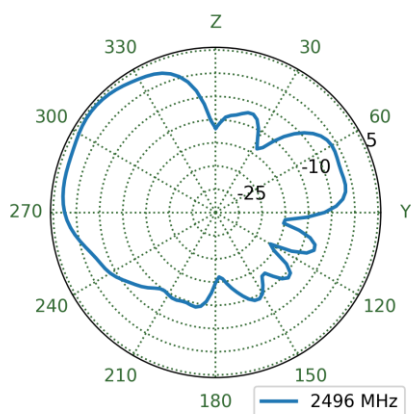
8.58 4G-5G 5 Patterns at 2496 MHz



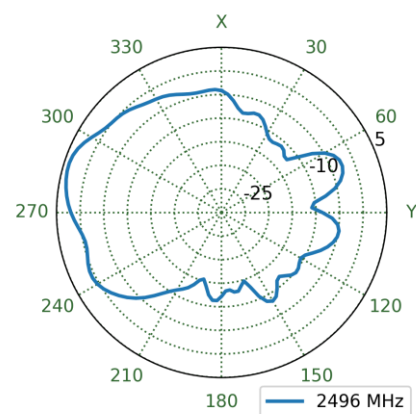
XZ Plane



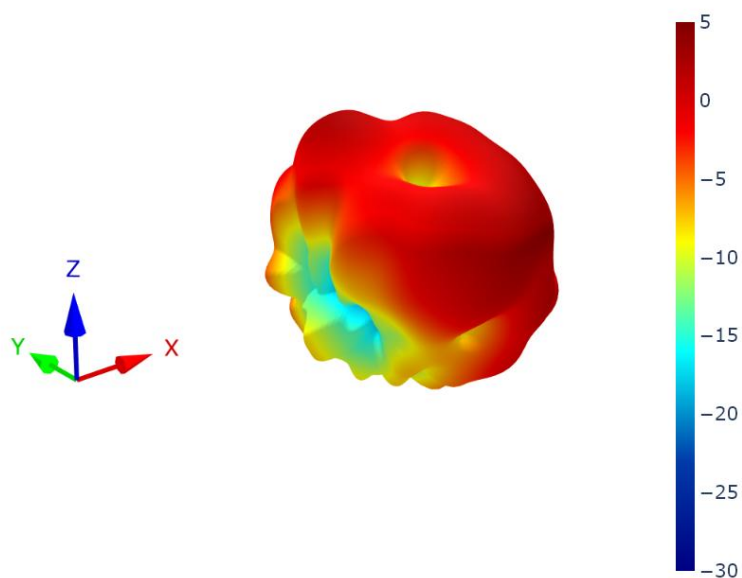
YZ Plane



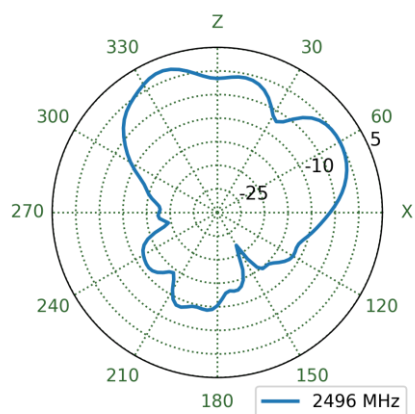
XY Plane



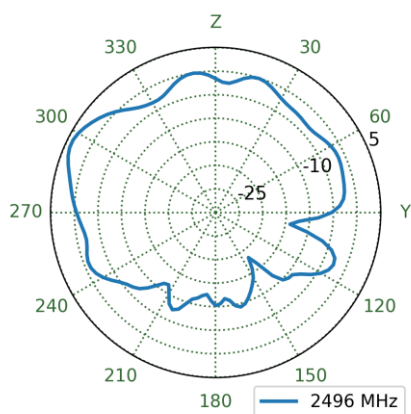
8.59 4G-5G 6 Patterns at 2496 MHz



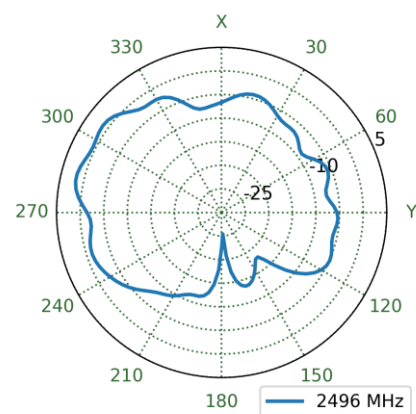
XZ Plane



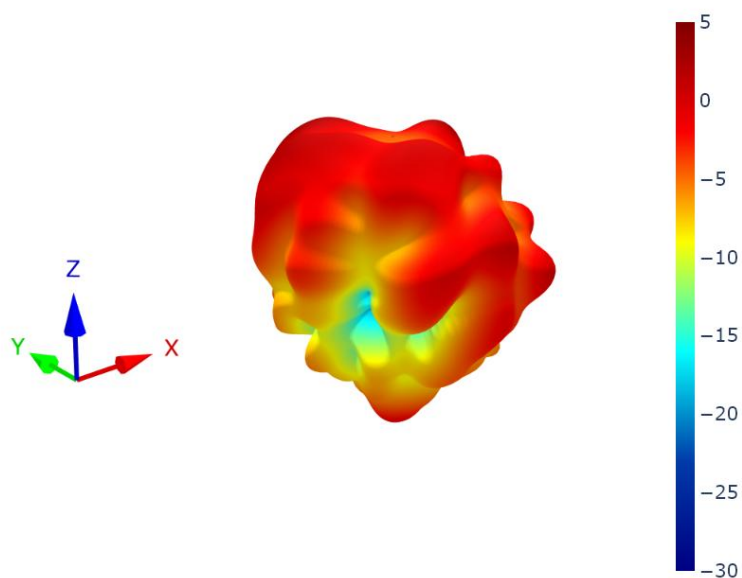
YZ Plane



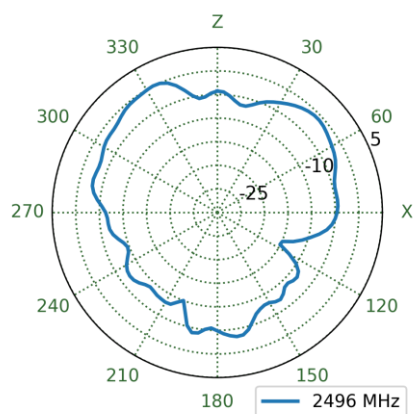
XY Plane



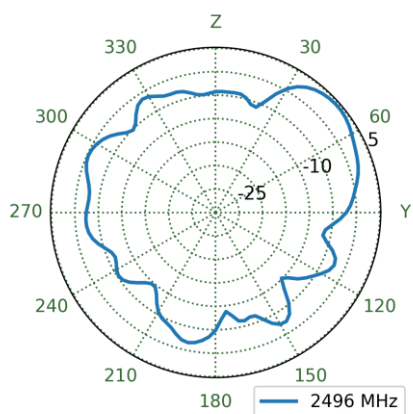
8.60 4G-5G 7 Patterns at 2496 MHz



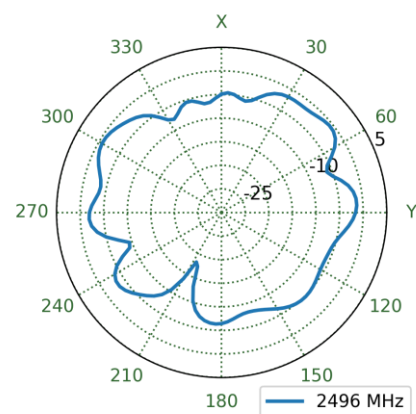
XZ Plane



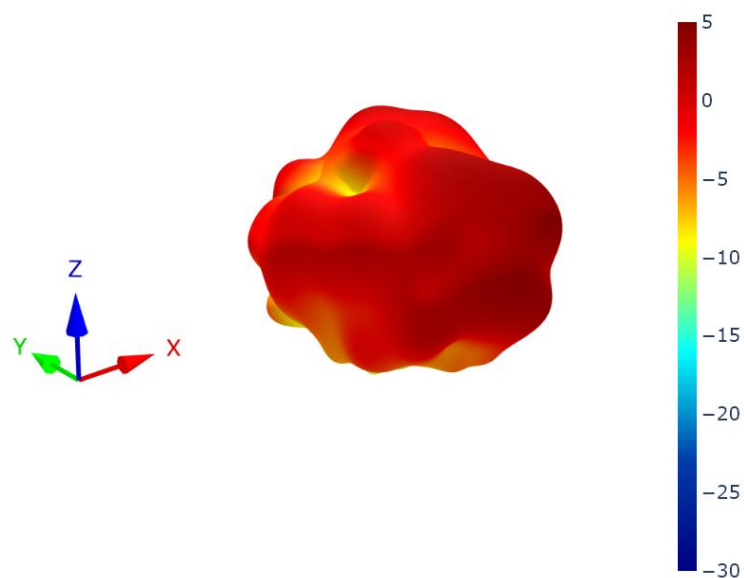
YZ Plane



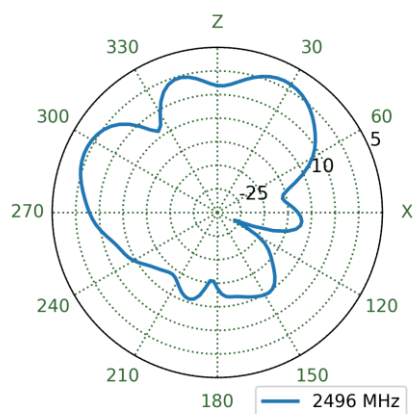
XY Plane



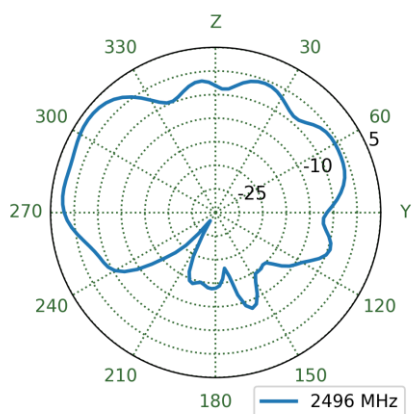
8.61 4G-5G 8 Patterns at 2496 MHz



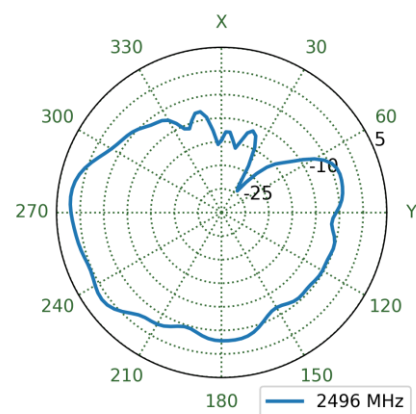
XZ Plane



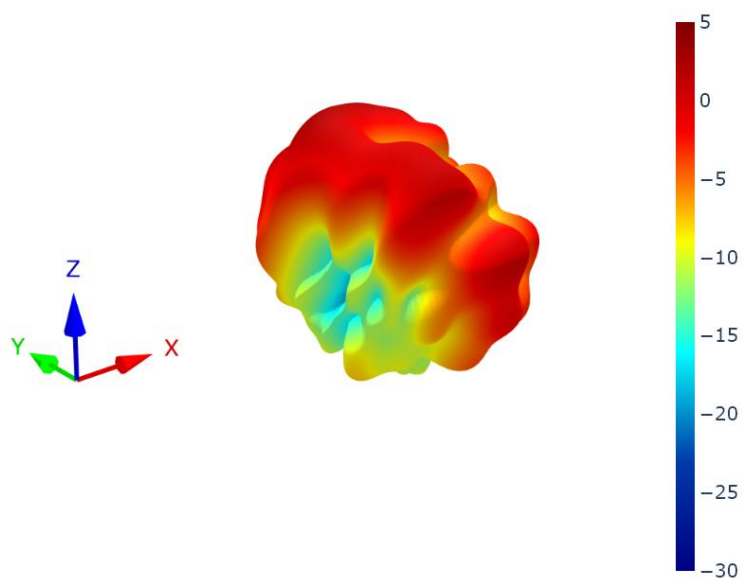
YZ Plane



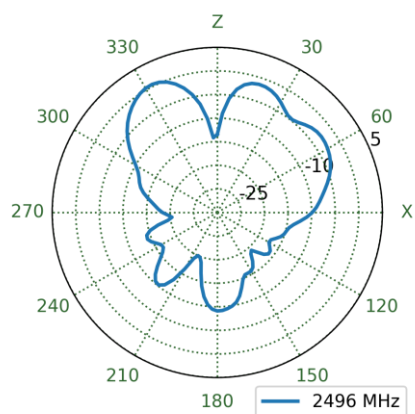
XY Plane



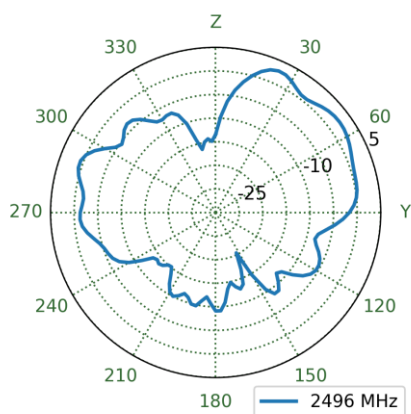
8.62 4G-5G 9 Patterns at 2496 MHz



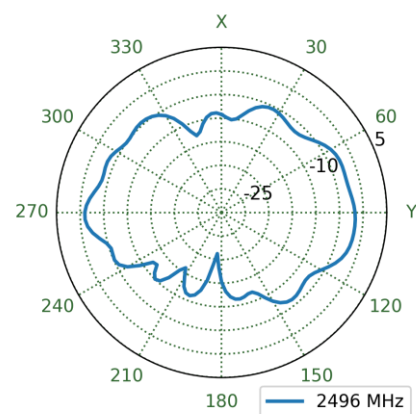
XZ Plane



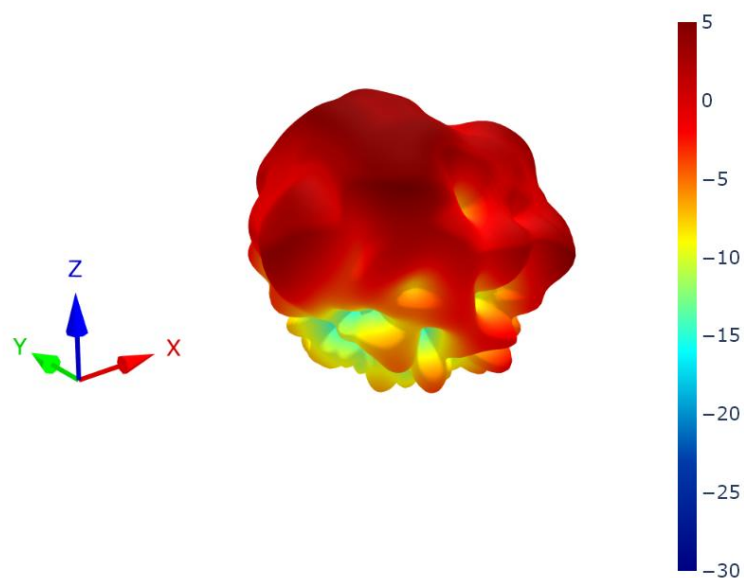
YZ Plane



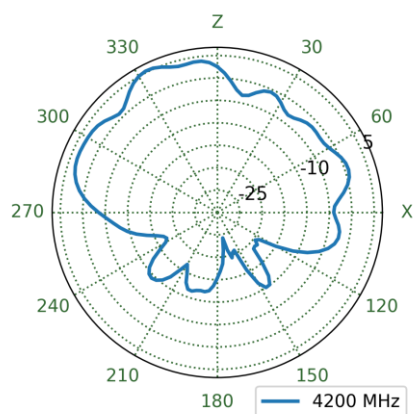
XY Plane



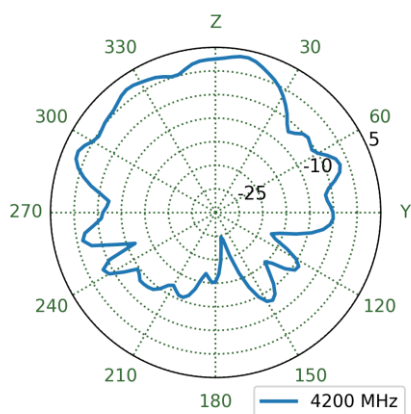
8.63 4G-5G 1 Patterns at 4200 MHz



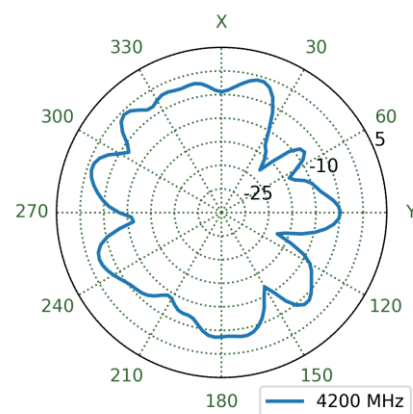
XZ Plane



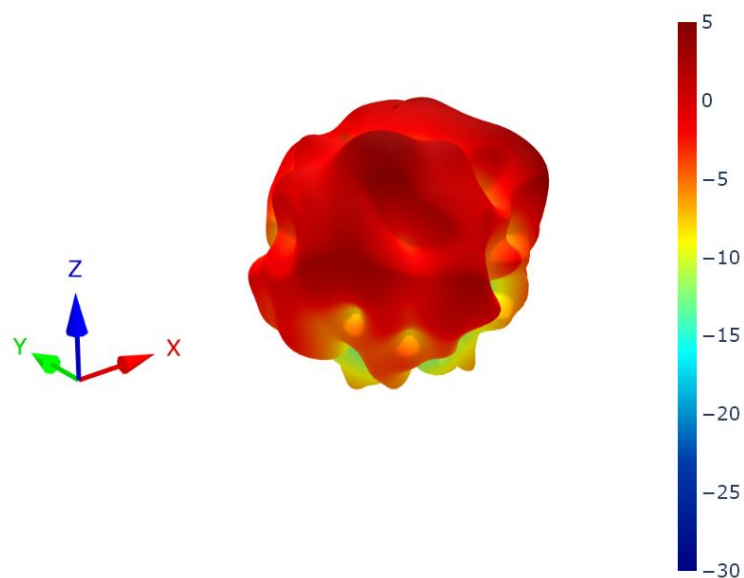
YZ Plane



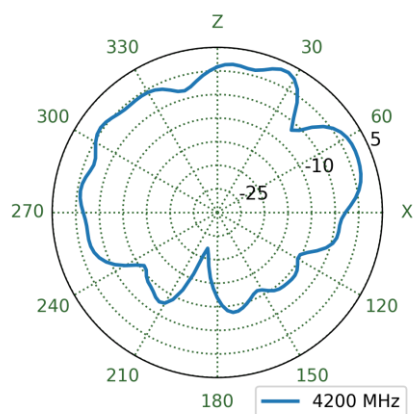
XY Plane



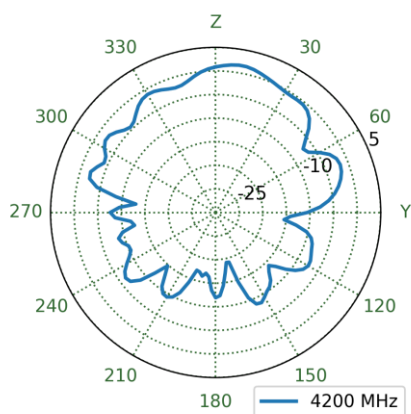
8.64 4G-5G 2 Patterns at 4200 MHz



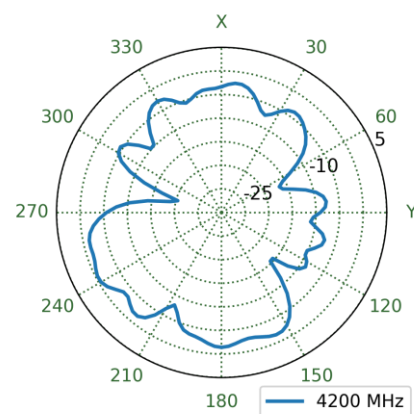
XZ Plane



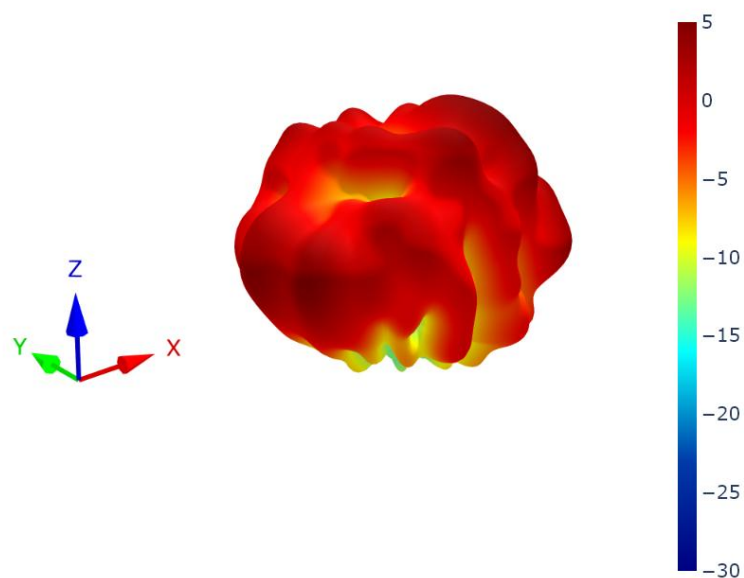
YZ Plane



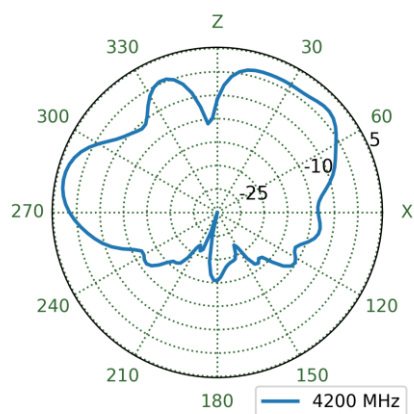
XY Plane



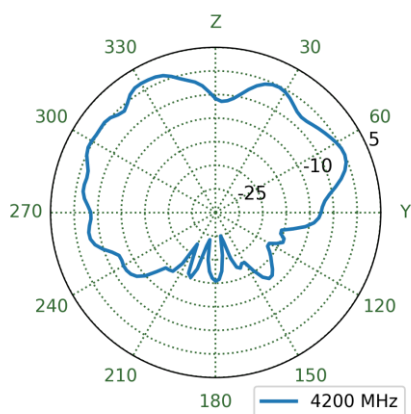
8.65 4G-5G 3 Patterns at 4200 MHz



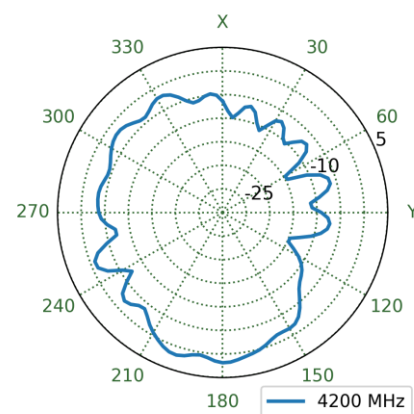
XZ Plane



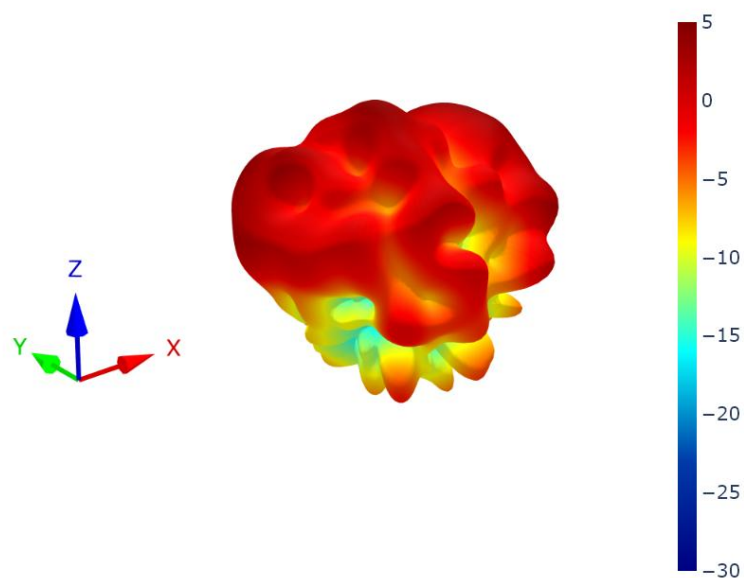
YZ Plane



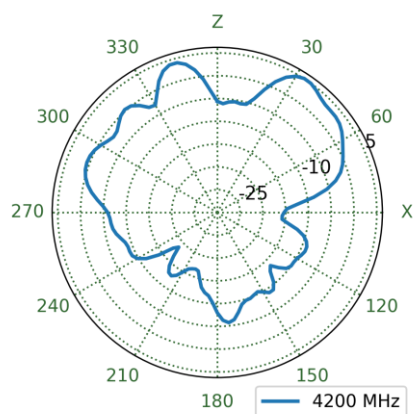
XY Plane



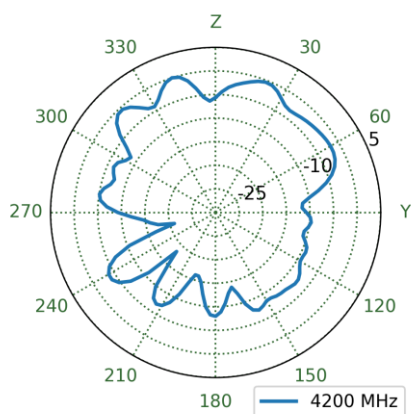
8.66 4G-5G 4 Patterns at 4200 MHz



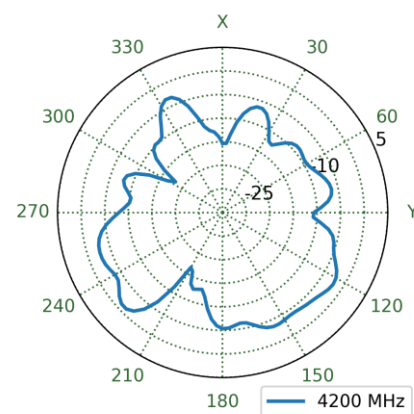
XZ Plane



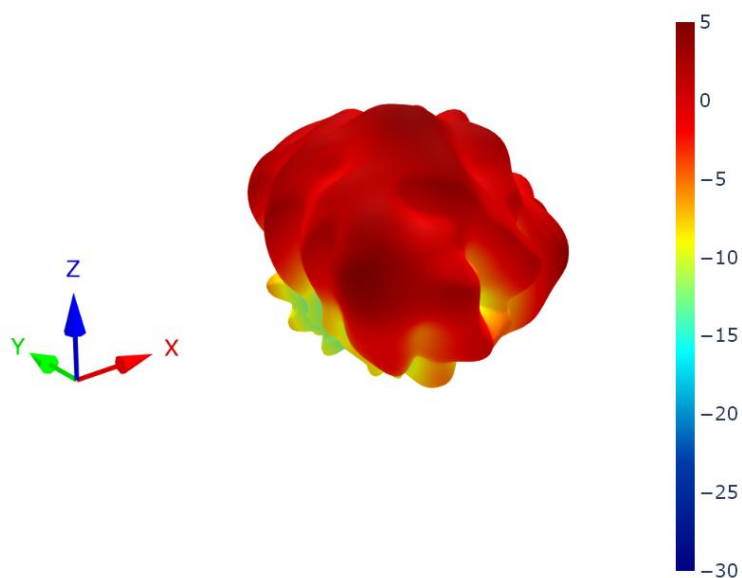
YZ Plane



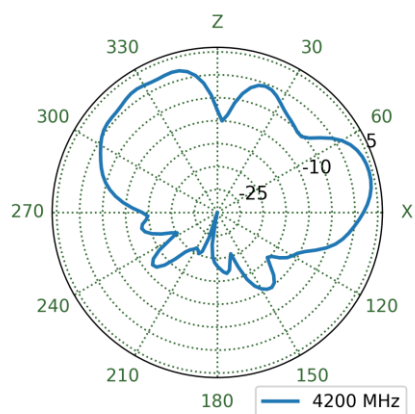
XY Plane



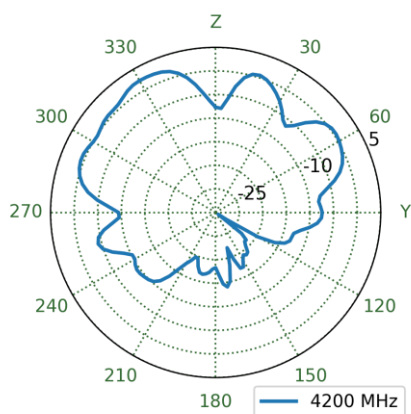
8.67 4G-5G 5 Patterns at 4200 MHz



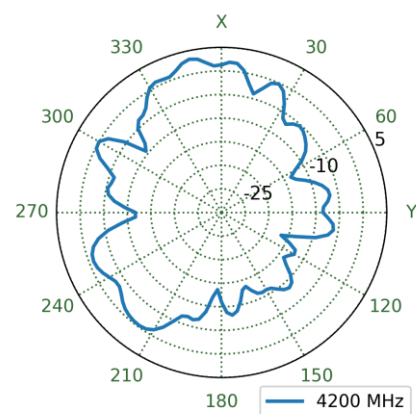
XZ Plane



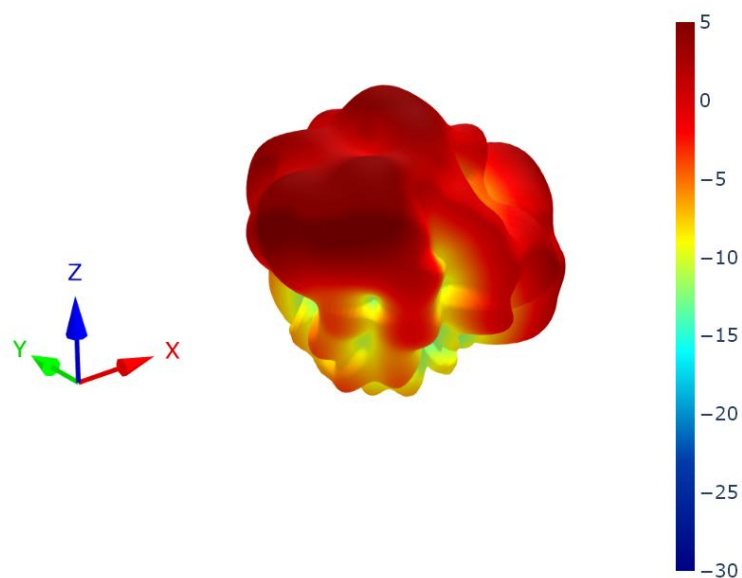
YZ Plane



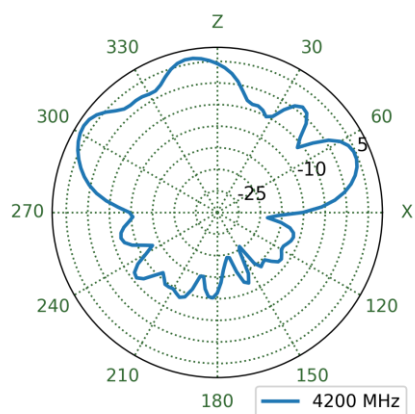
XY Plane



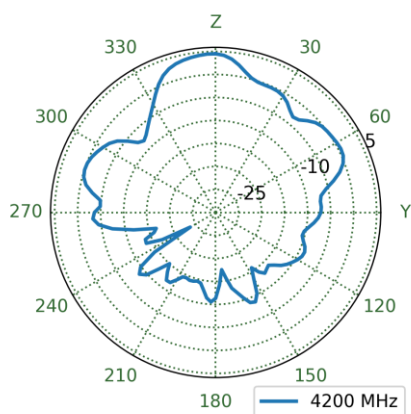
8.68 4G-5G 6 Patterns at 4200 MHz



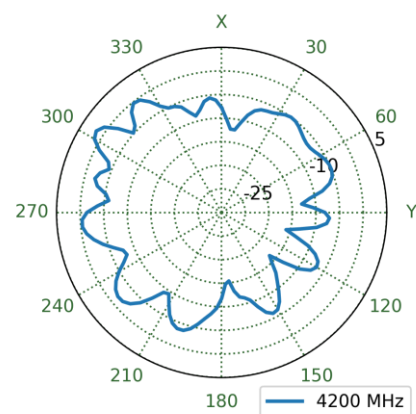
XZ Plane



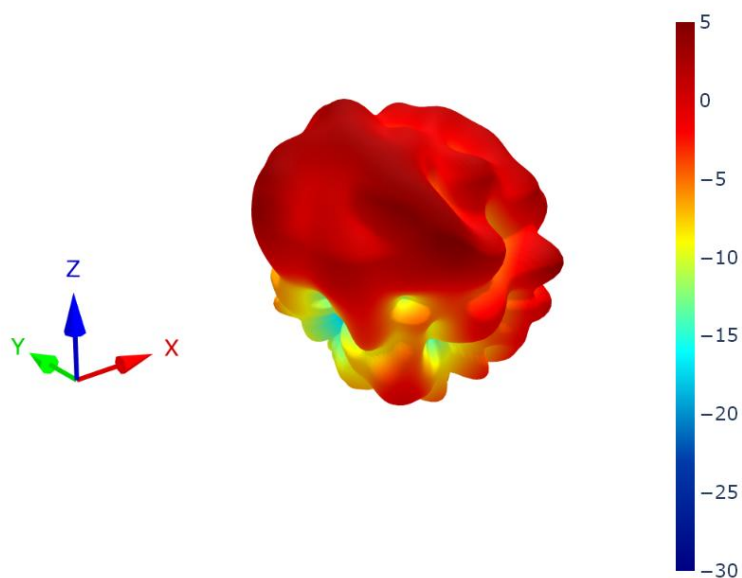
YZ Plane



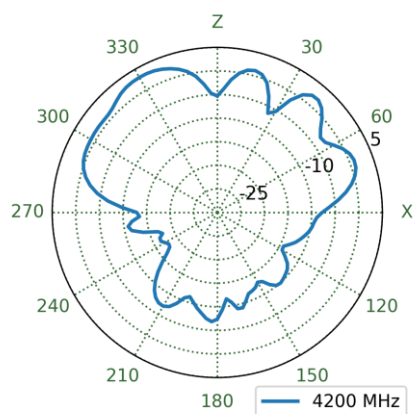
XY Plane



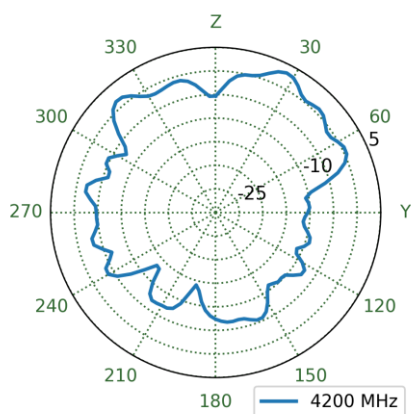
8.69 4G-5G 7 Patterns at 4200 MHz



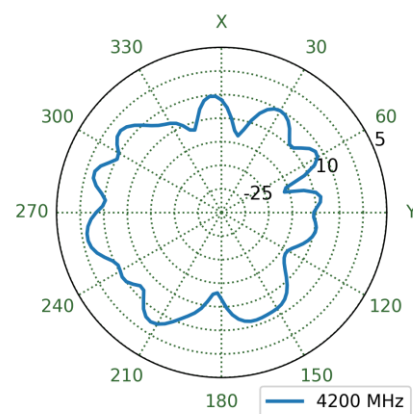
XZ Plane



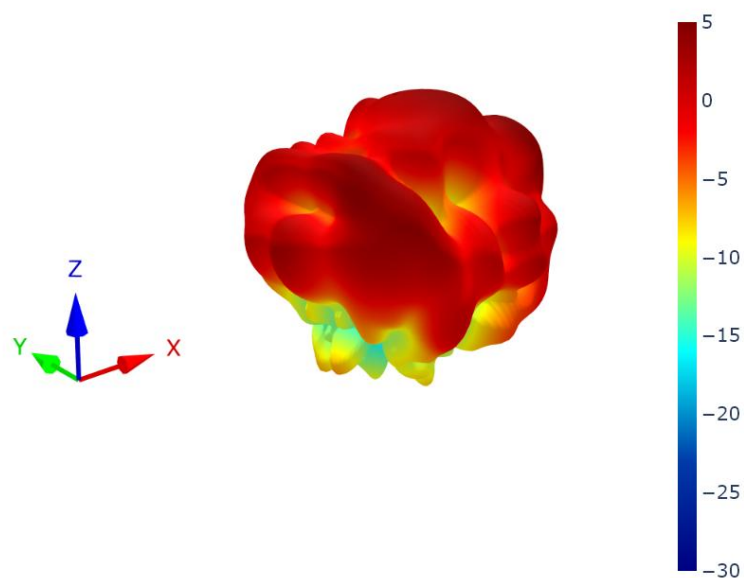
YZ Plane



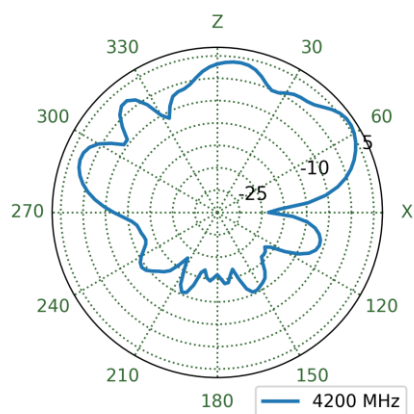
XY Plane



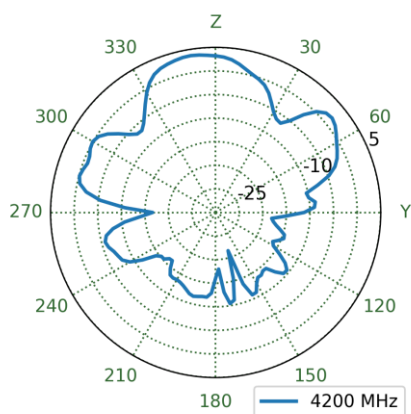
8.70 4G-5G 8 Patterns at 4200 MHz



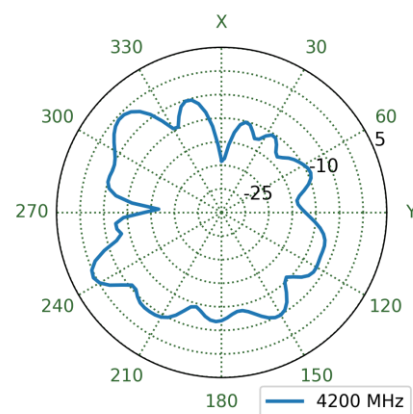
XZ Plane



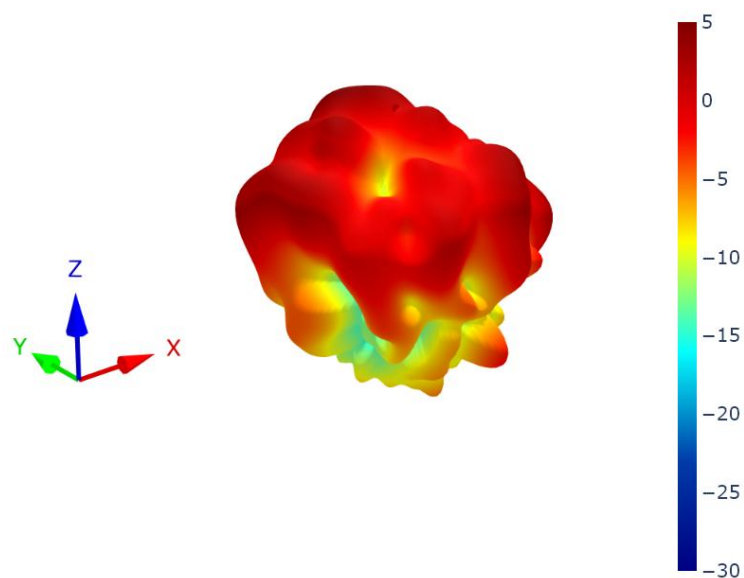
YZ Plane



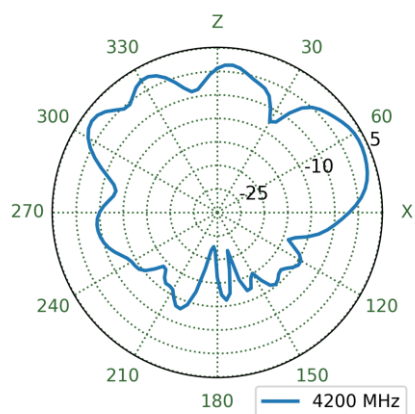
XY Plane



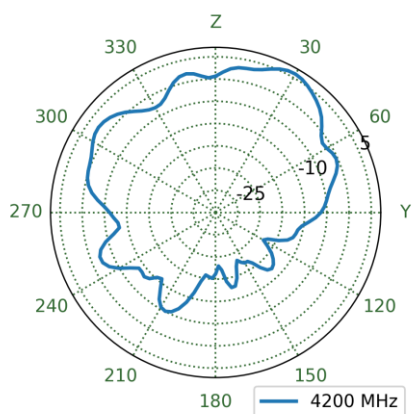
8.71 4G-5G 9 Patterns at 4200 MHz



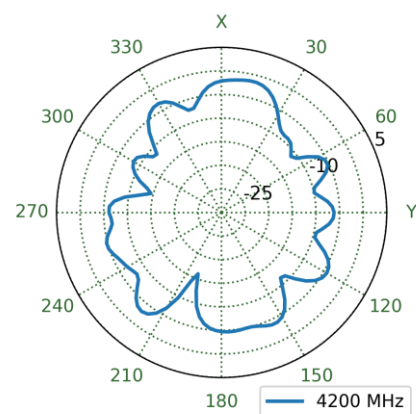
XZ Plane



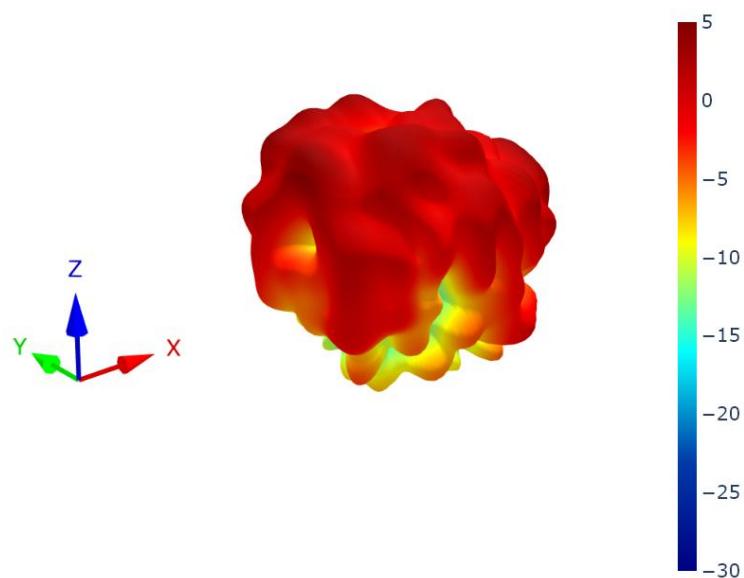
YZ Plane



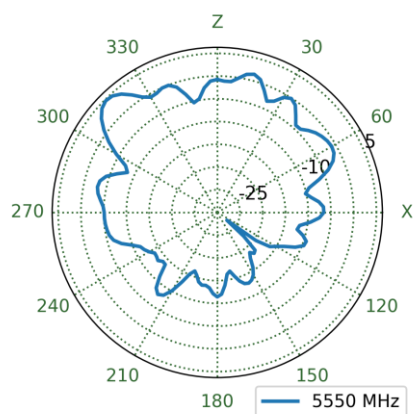
XY Plane



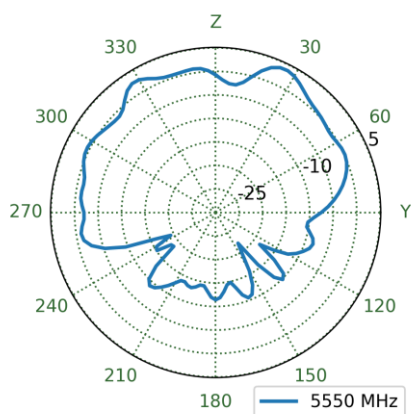
8.72 4G-5G 1 Patterns at 5550 MHz



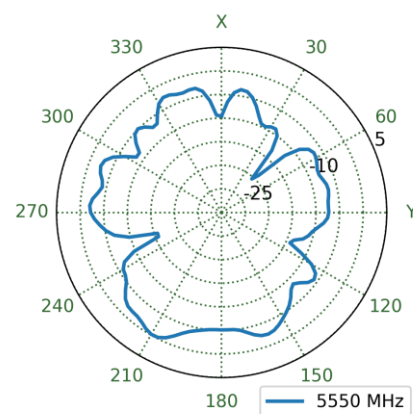
XZ Plane



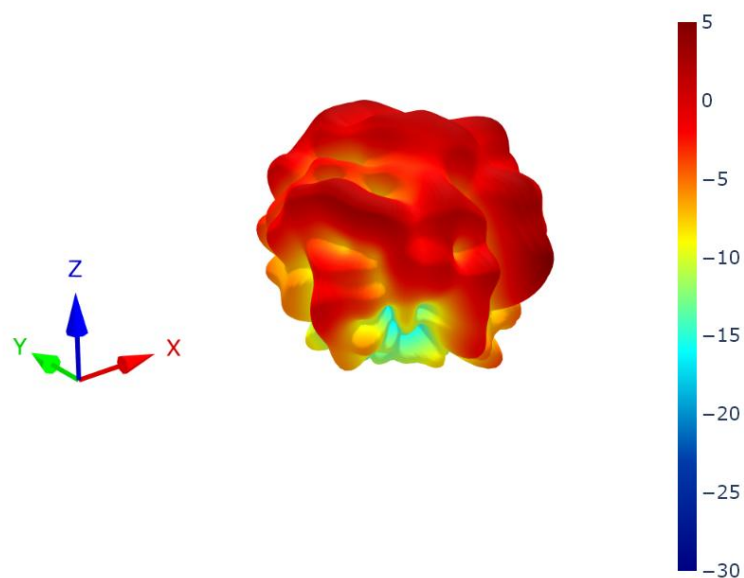
YZ Plane



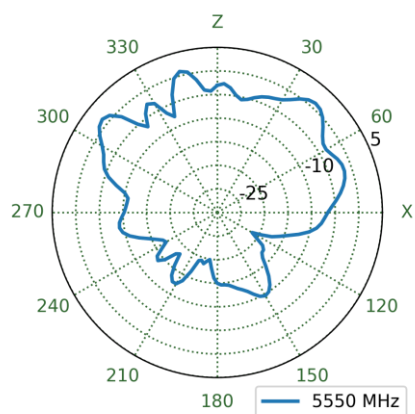
XY Plane



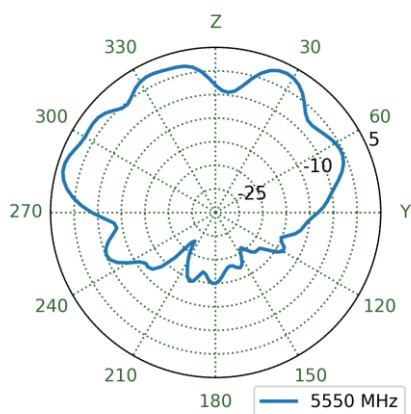
8.73 4G-5G 2 Patterns at 5550 MHz



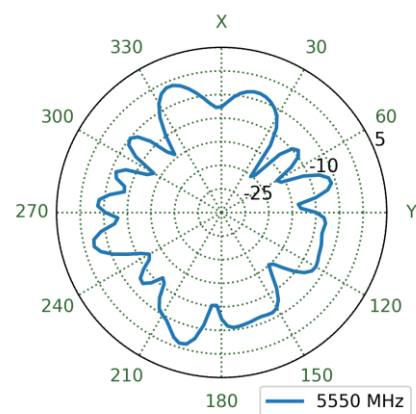
XZ Plane



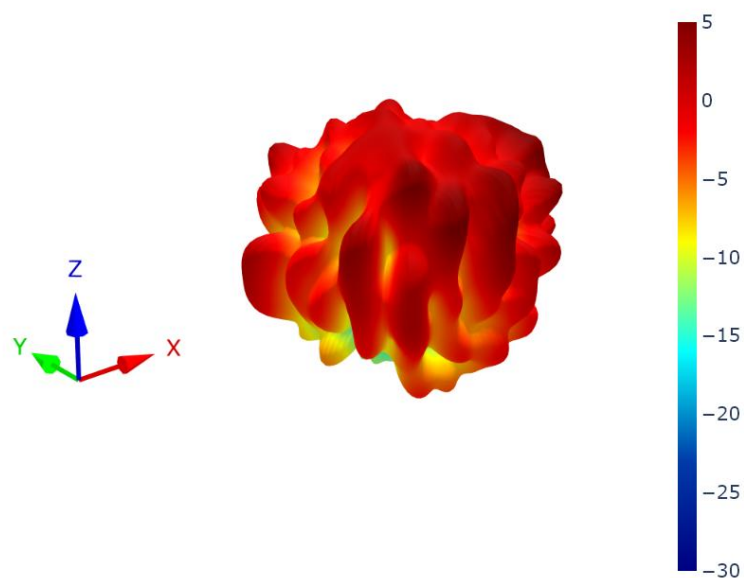
YZ Plane



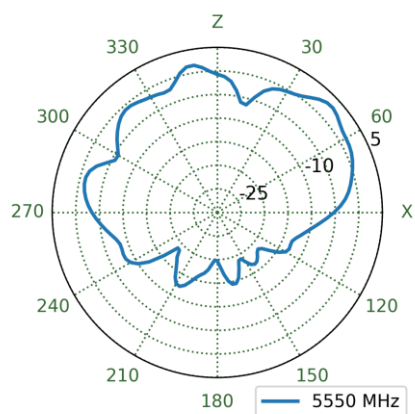
XY Plane



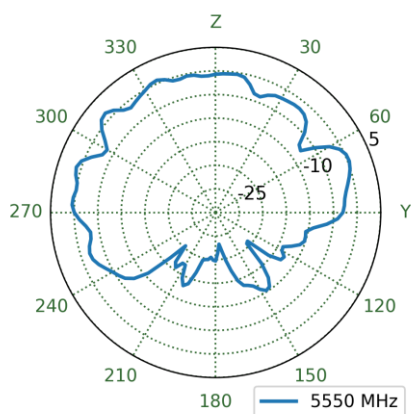
8.74 4G-5G 3 Patterns at 5550 MHz



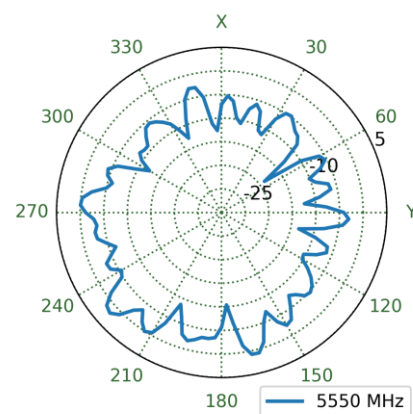
XZ Plane



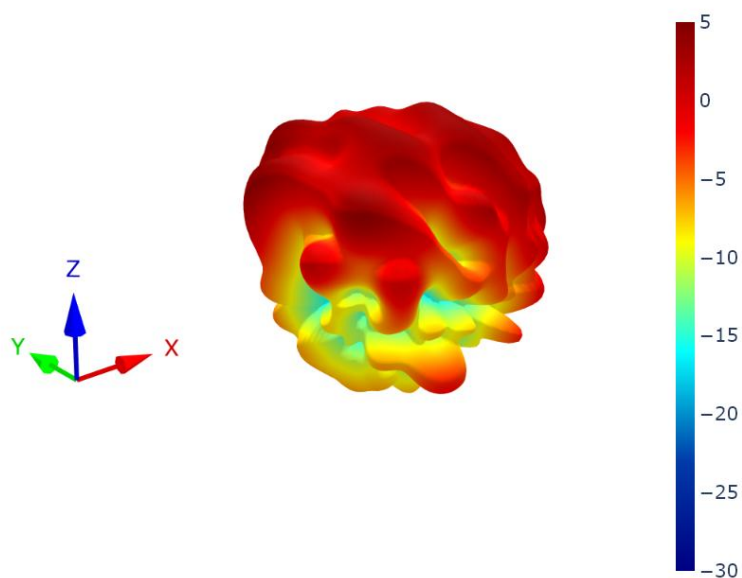
YZ Plane



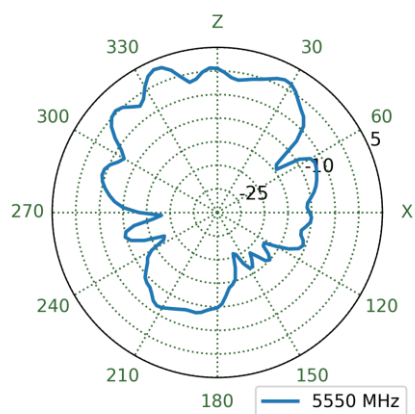
XY Plane



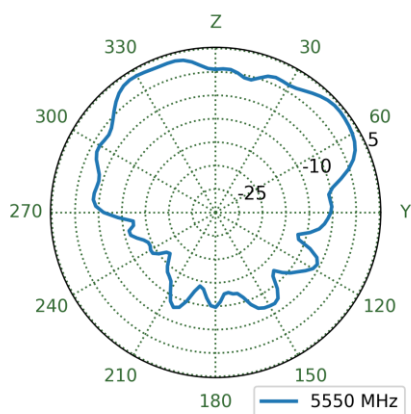
8.75 4G-5G 4 Patterns at 5550 MHz



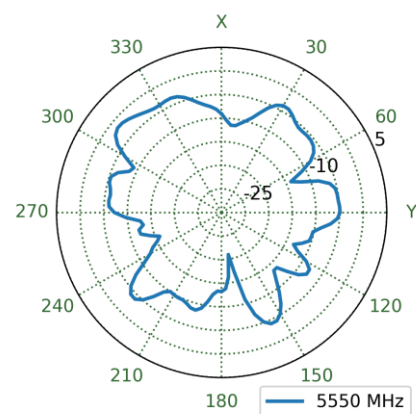
XZ Plane



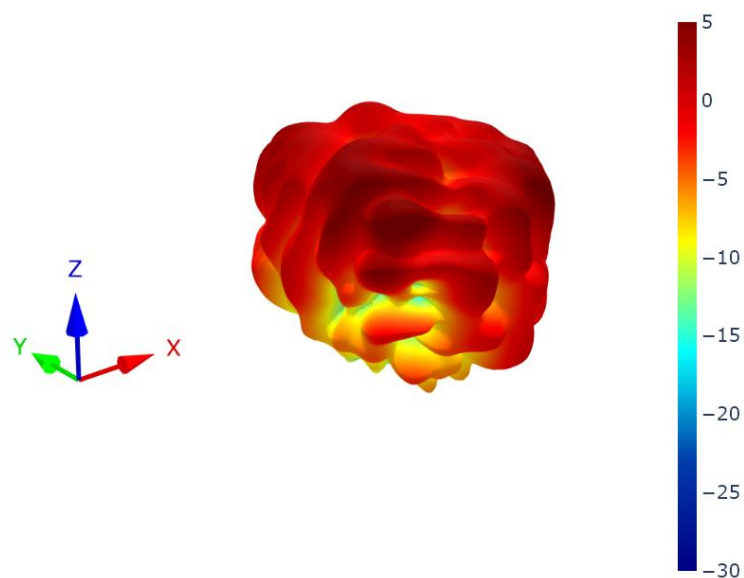
YZ Plane



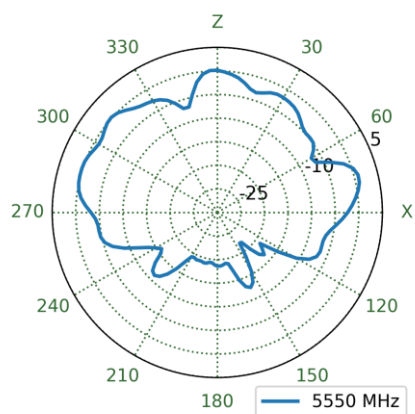
XY Plane



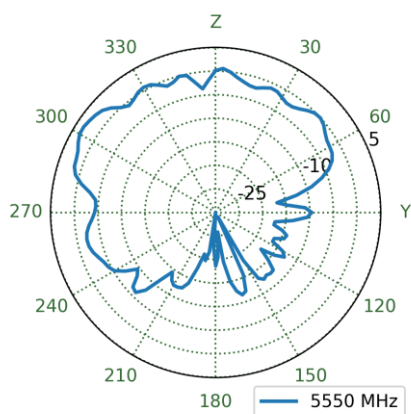
8.76 4G-5G 5 Patterns at 5550 MHz



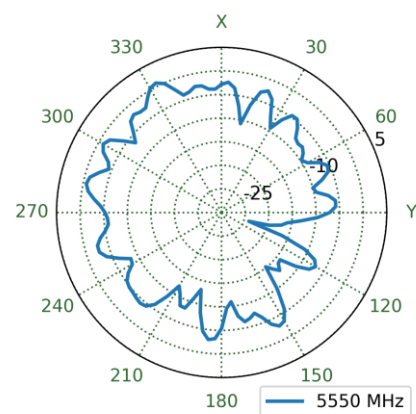
XZ Plane



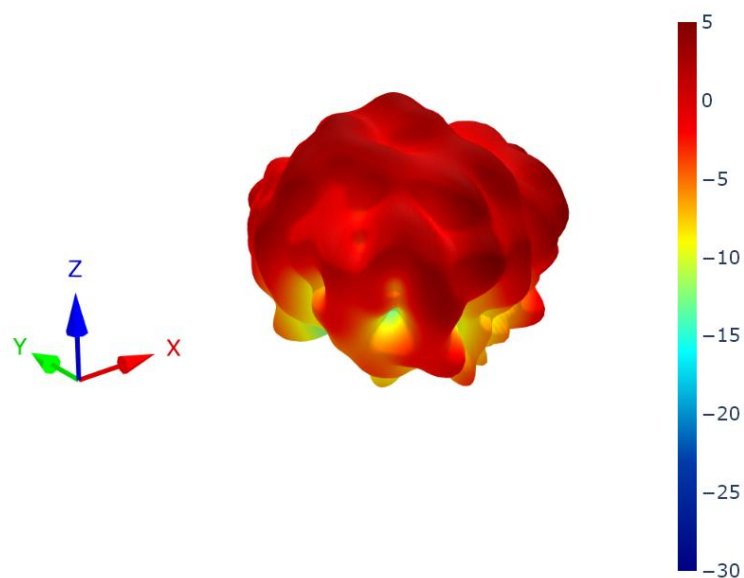
YZ Plane



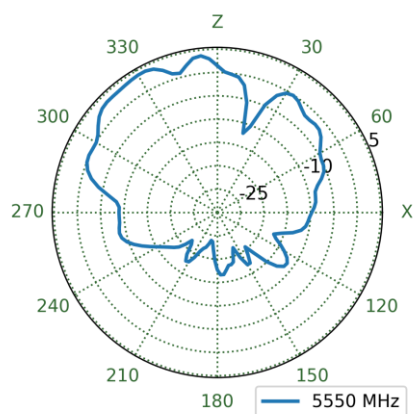
XY Plane



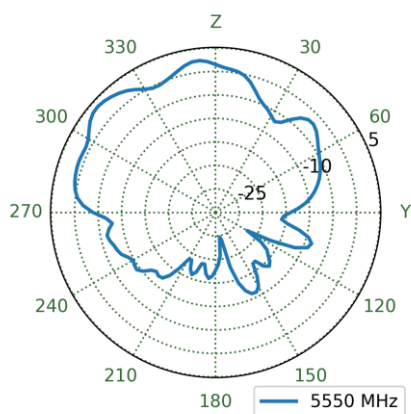
8.77 4G-5G 6 Patterns at 5550 MHz



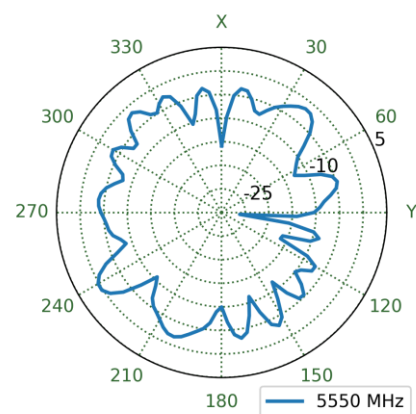
XZ Plane



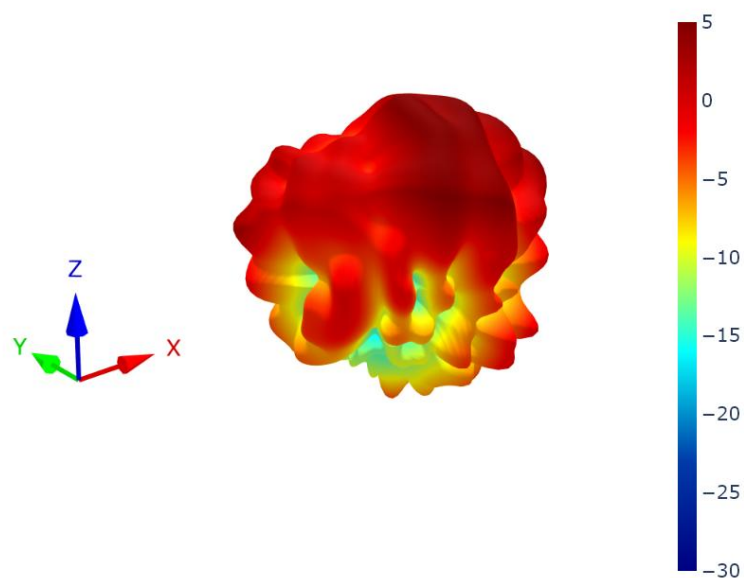
YZ Plane



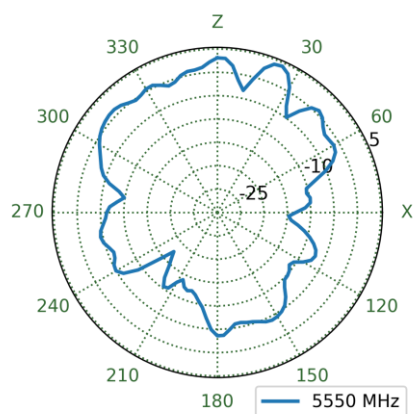
XY Plane



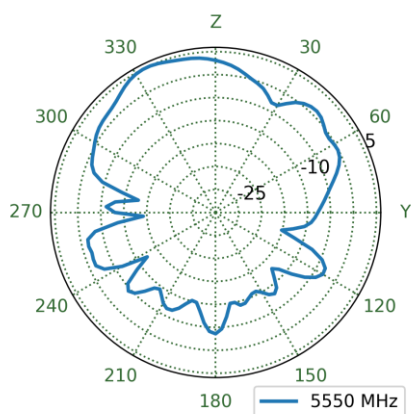
8.78 4G-5G 7 Patterns at 5550 MHz



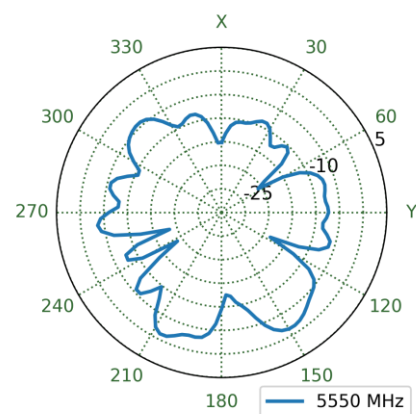
XZ Plane



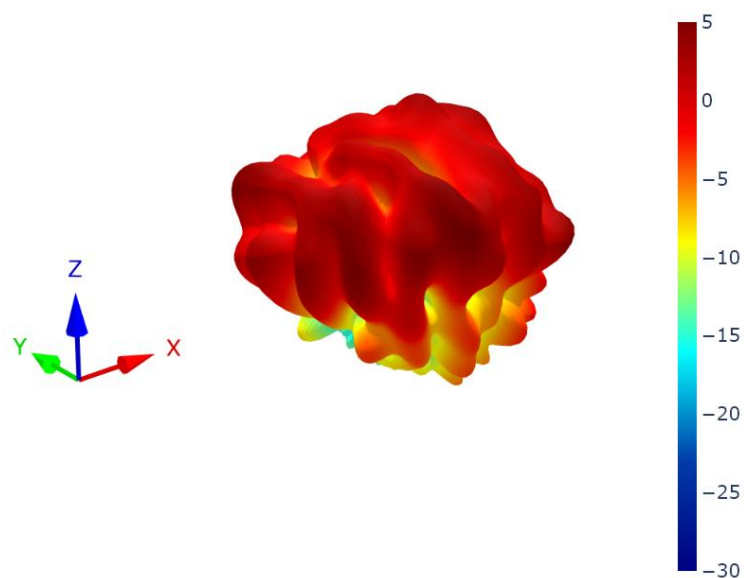
YZ Plane



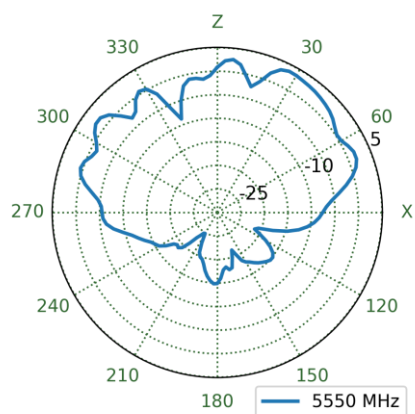
XY Plane



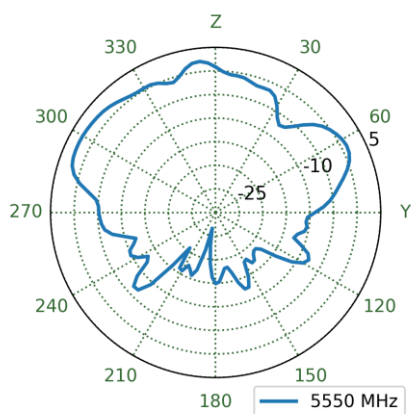
8.79 4G-5G 8 Patterns at 5550 MHz



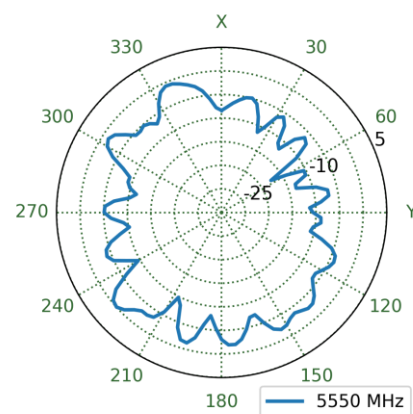
XZ Plane



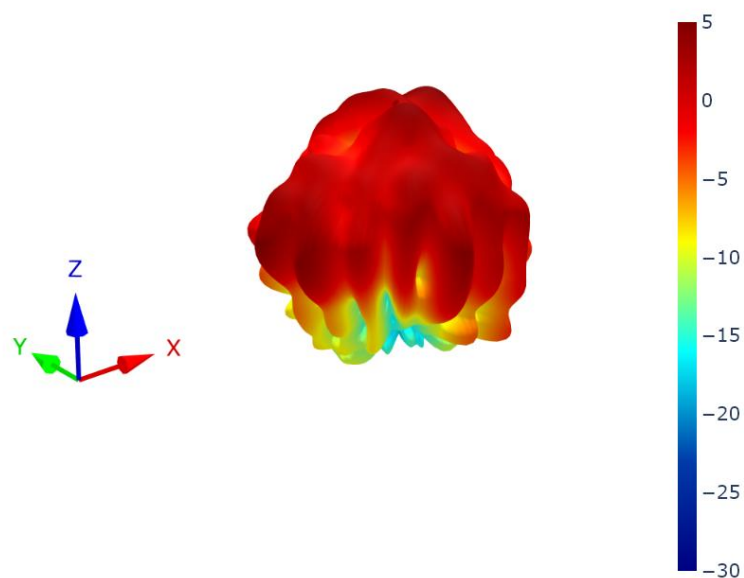
YZ Plane



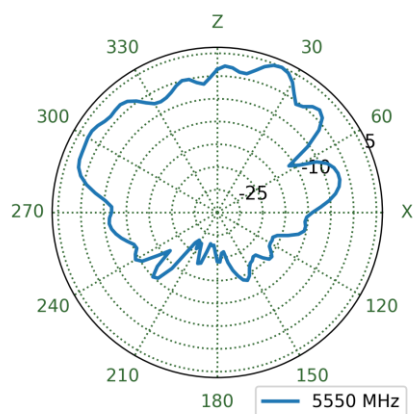
XY Plane



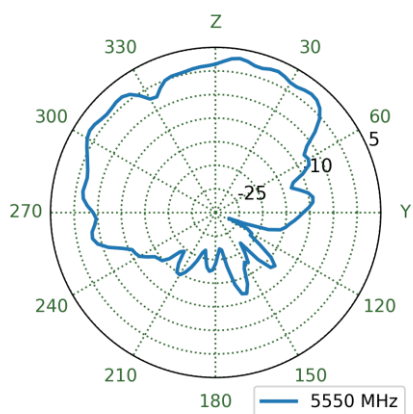
8.80 4G-5G 9 Patterns at 5550 MHz



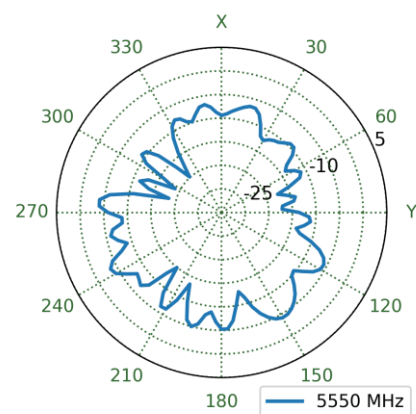
XZ Plane



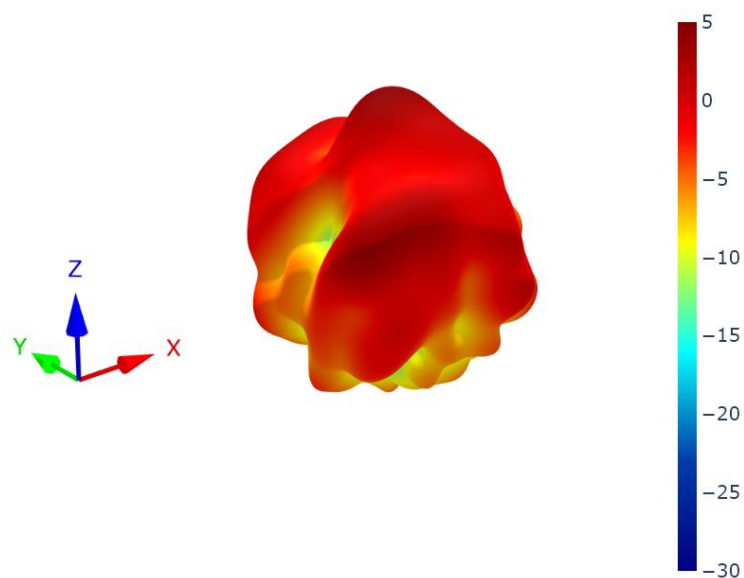
YZ Plane



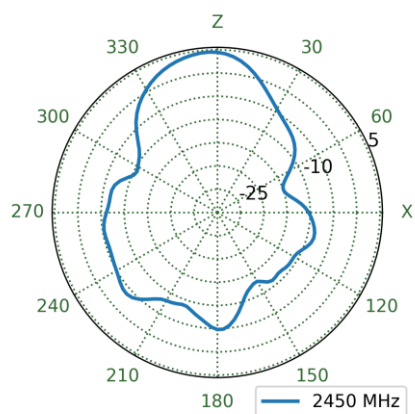
XY Plane



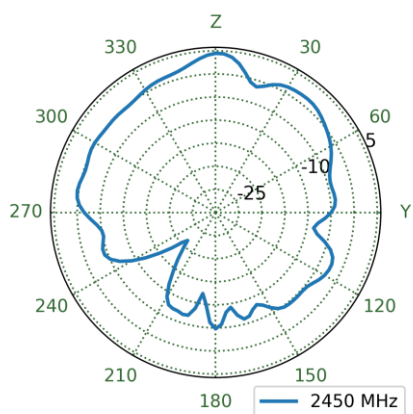
8.81 Wi-Fi 1 Patterns at 2450 MHz



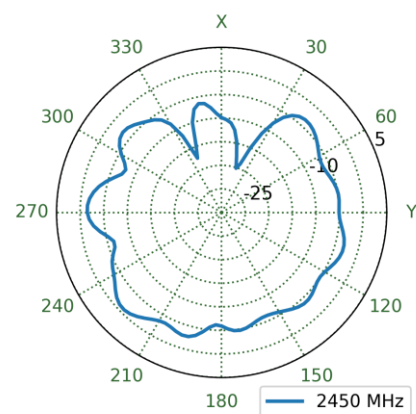
XZ Plane



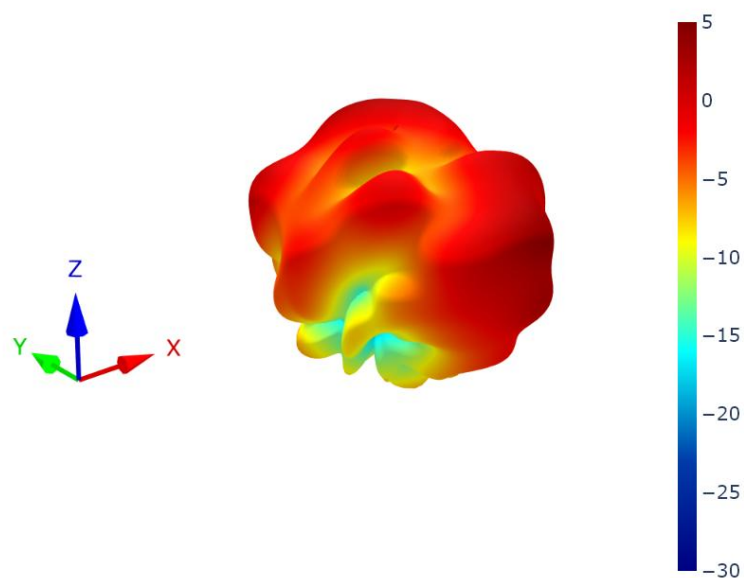
YZ Plane



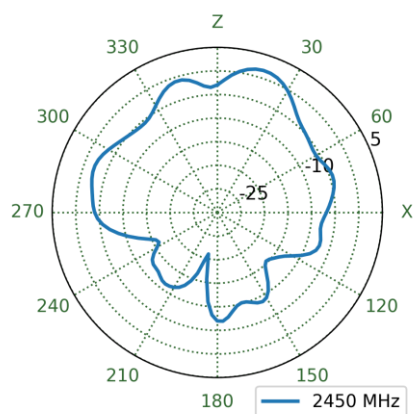
XY Plane



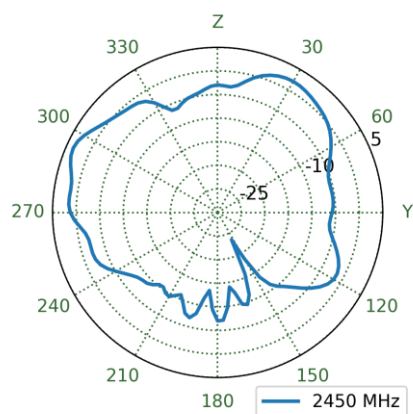
8.82 Wi-Fi 2 Patterns at 2450 MHz



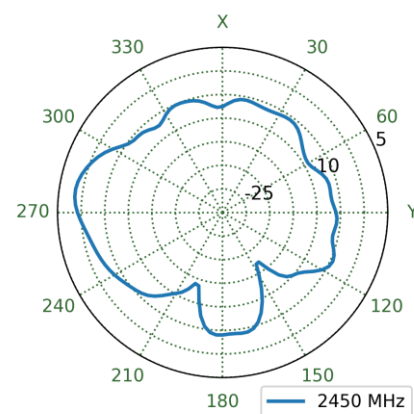
XZ Plane



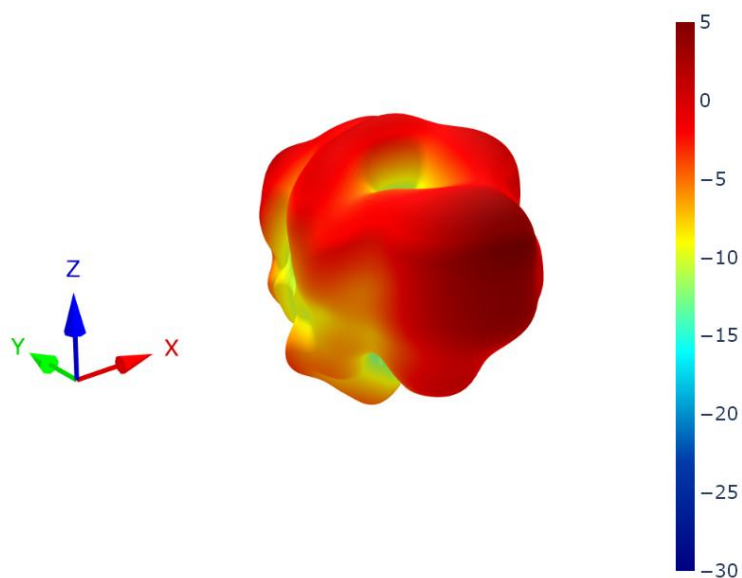
YZ Plane



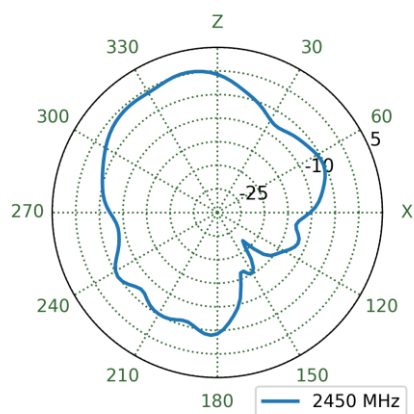
XY Plane



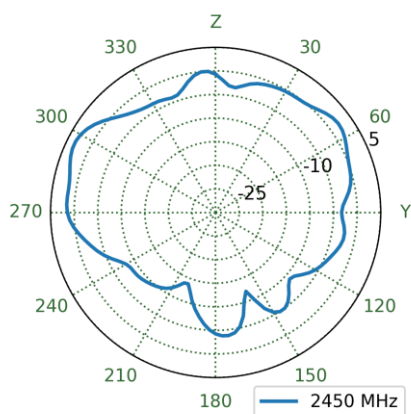
8.83 Wi-Fi 3 Patterns at 2450 MHz



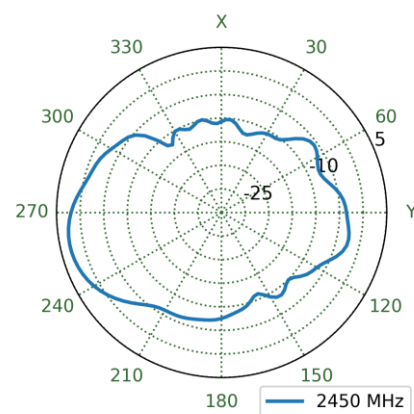
XZ Plane



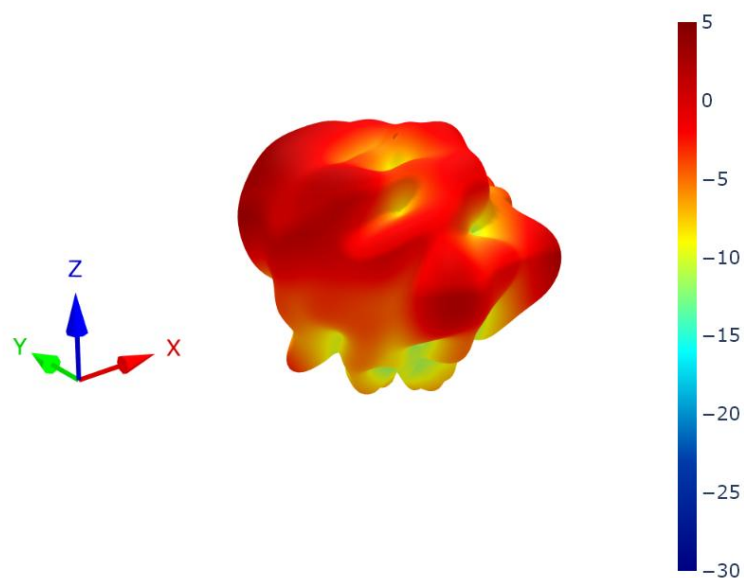
YZ Plane



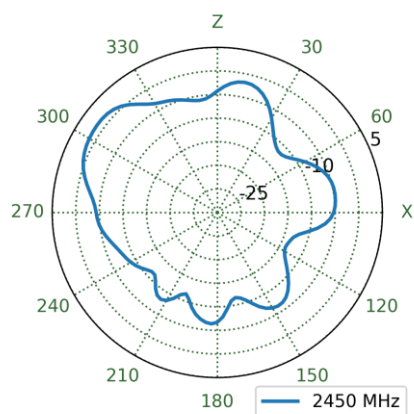
XY Plane



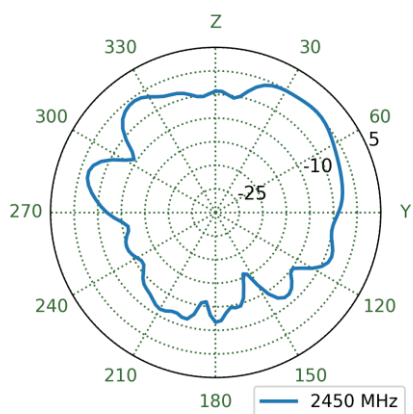
8.84 Wi-Fi 4 Patterns at 2450 MHz



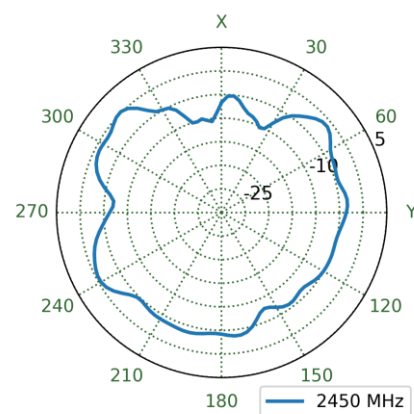
XZ Plane



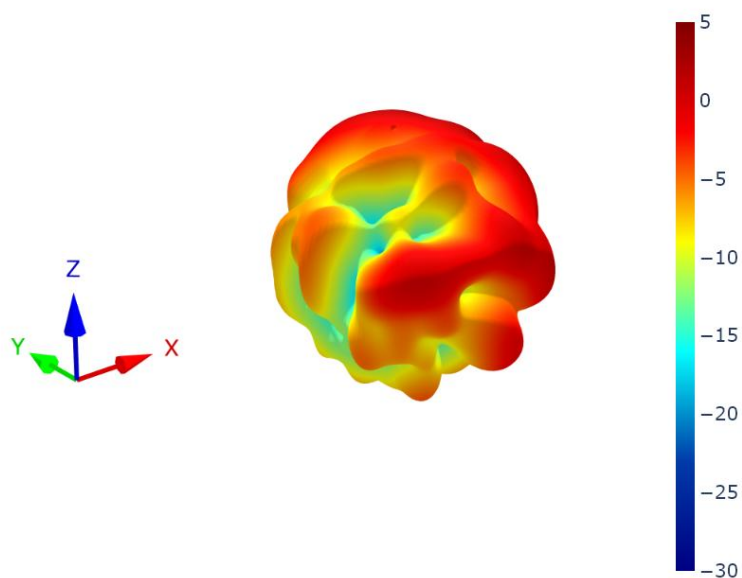
YZ Plane



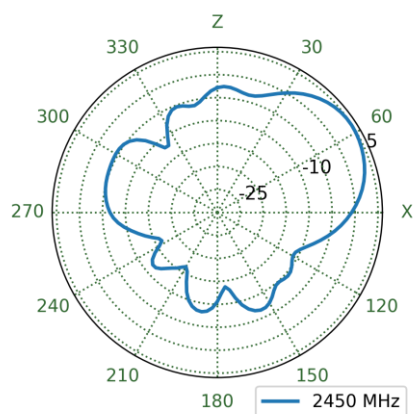
XY Plane



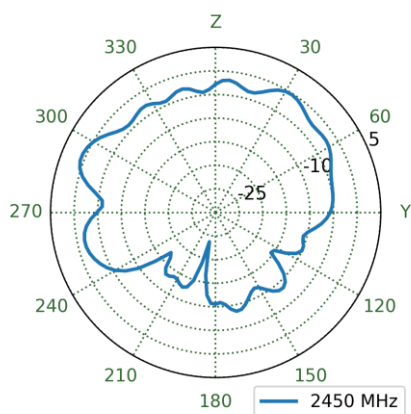
8.85 Wi-Fi 5 Patterns at 2450 MHz



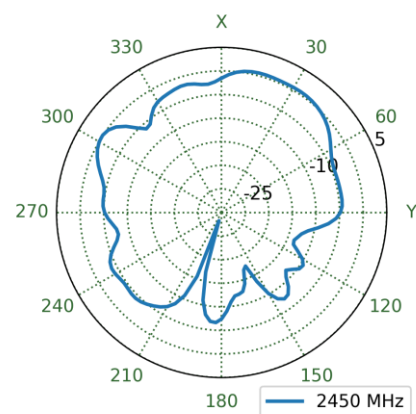
XZ Plane



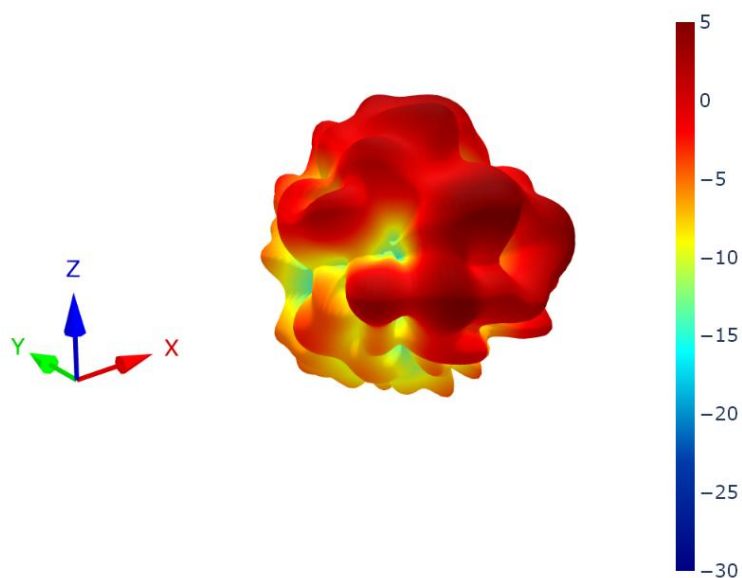
YZ Plane



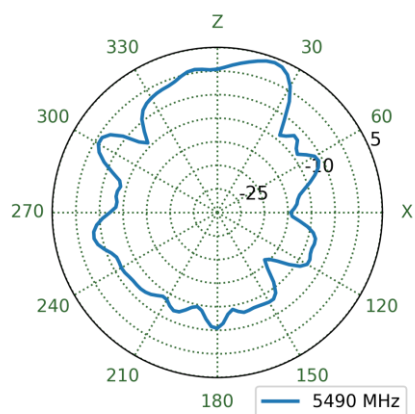
XY Plane



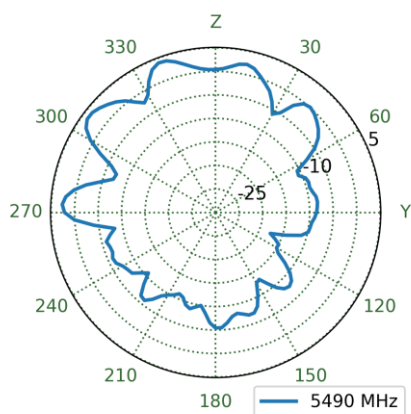
8.86 Wi-Fi 1 Patterns at 5500 MHz



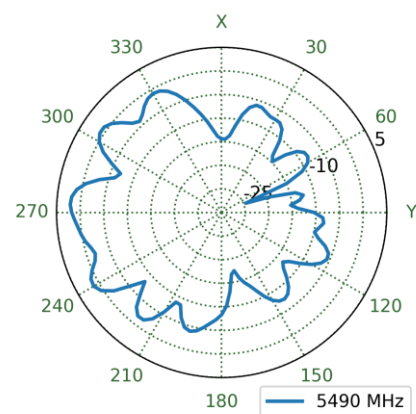
XZ Plane



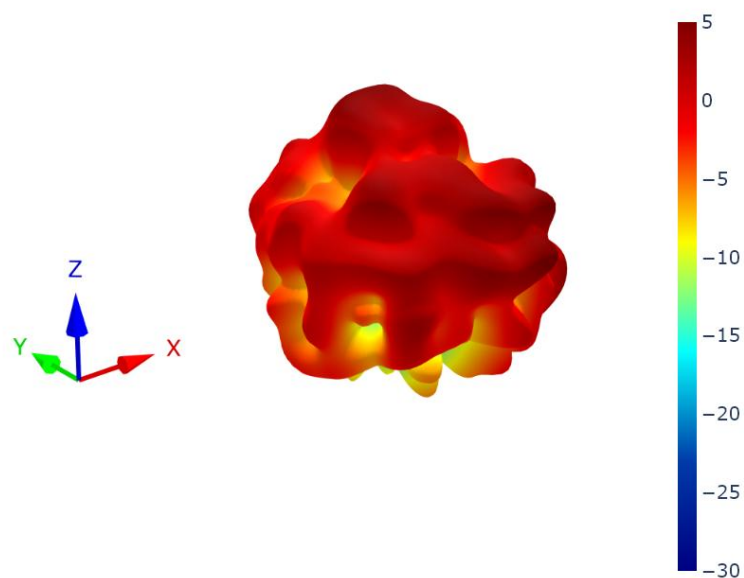
YZ Plane



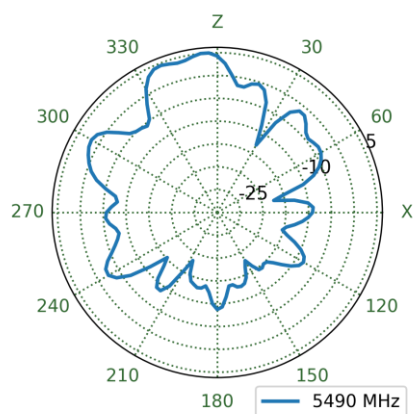
XY Plane



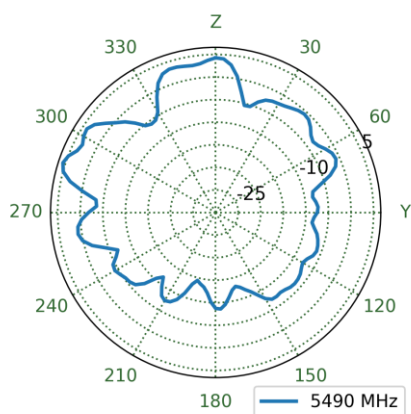
8.87 Wi-Fi 2 Patterns at 5500 MHz



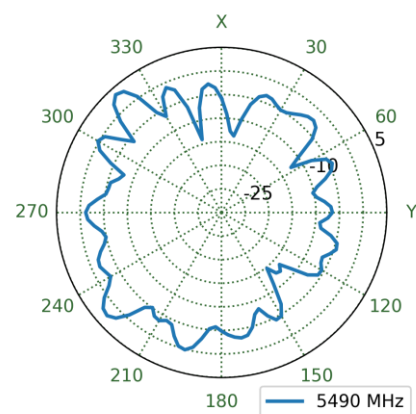
XZ Plane



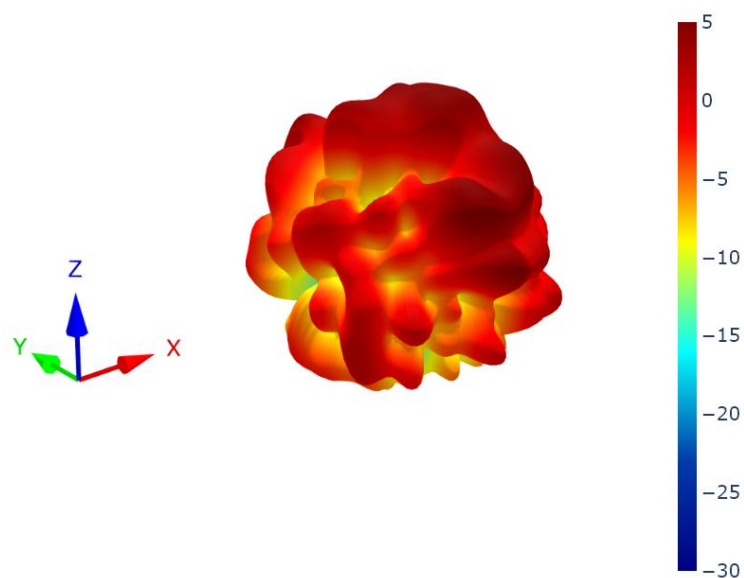
YZ Plane



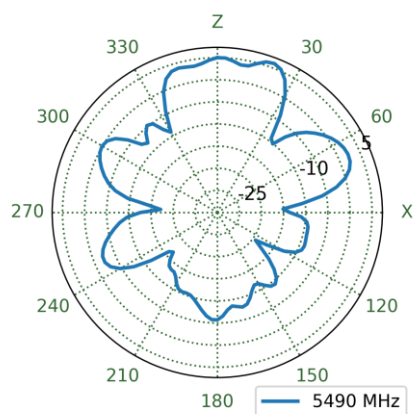
XY Plane



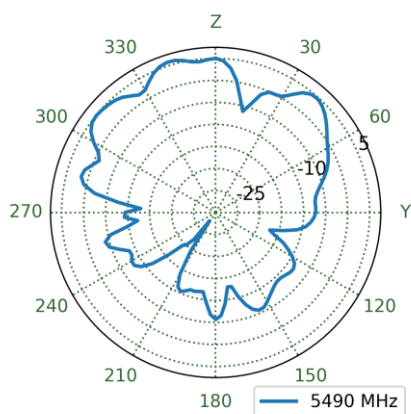
8.88 Wi-Fi 3 Patterns at 5500 MHz



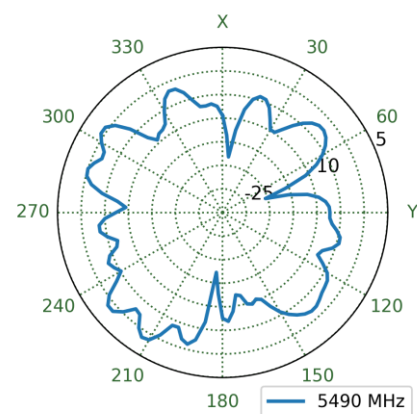
XZ Plane



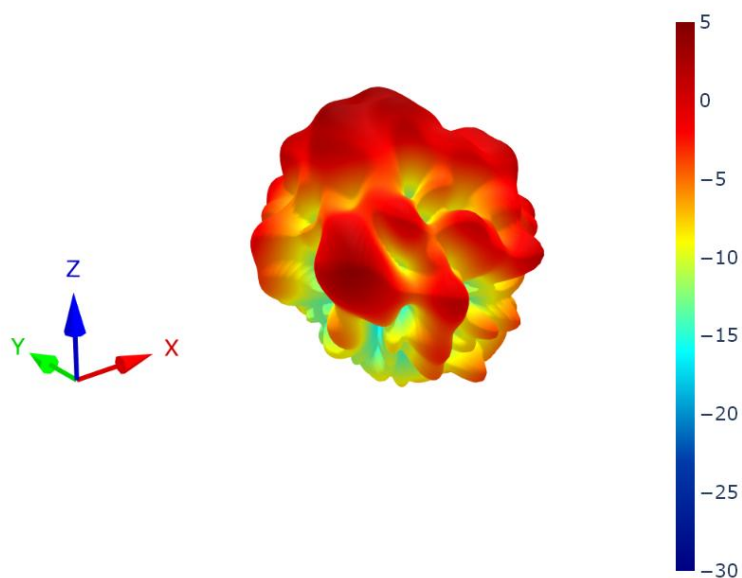
YZ Plane



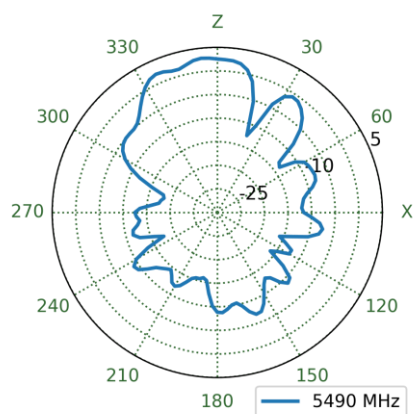
XY Plane



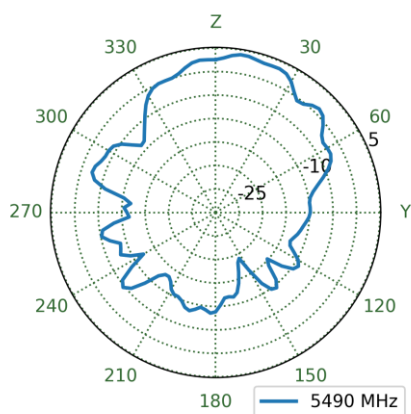
8.89 Wi-Fi 4 Patterns at 5500 MHz



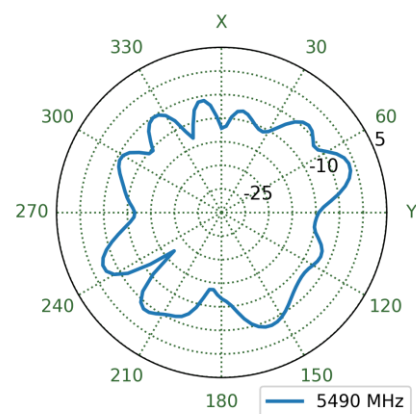
XZ Plane



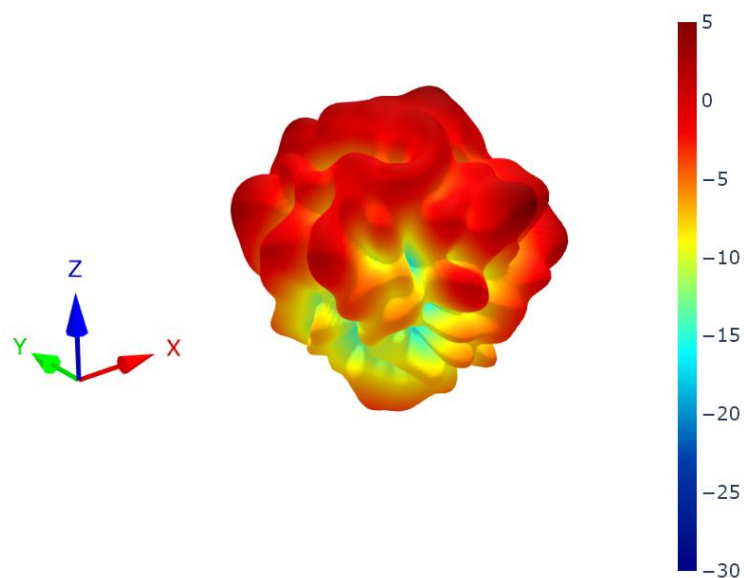
YZ Plane



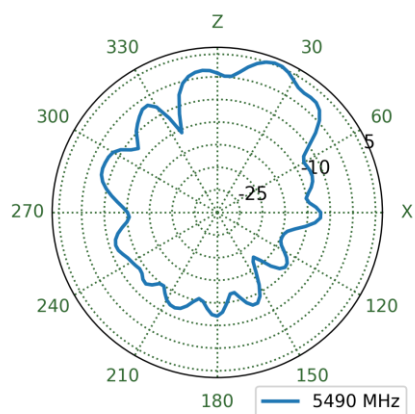
XY Plane



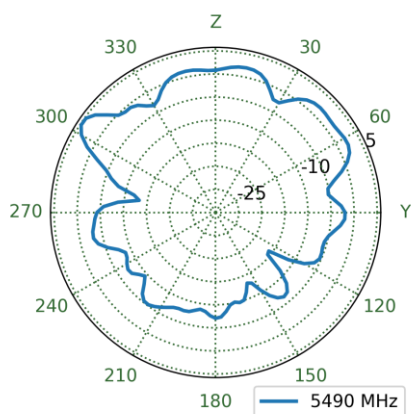
8.90 Wi-Fi 5 Patterns at 5500 MHz



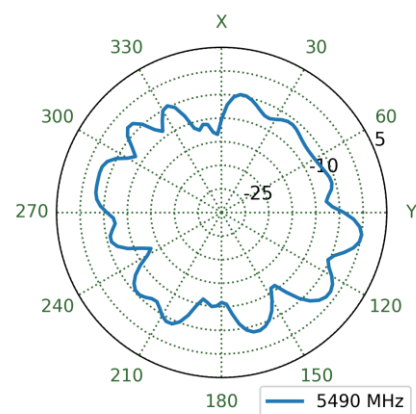
XZ Plane



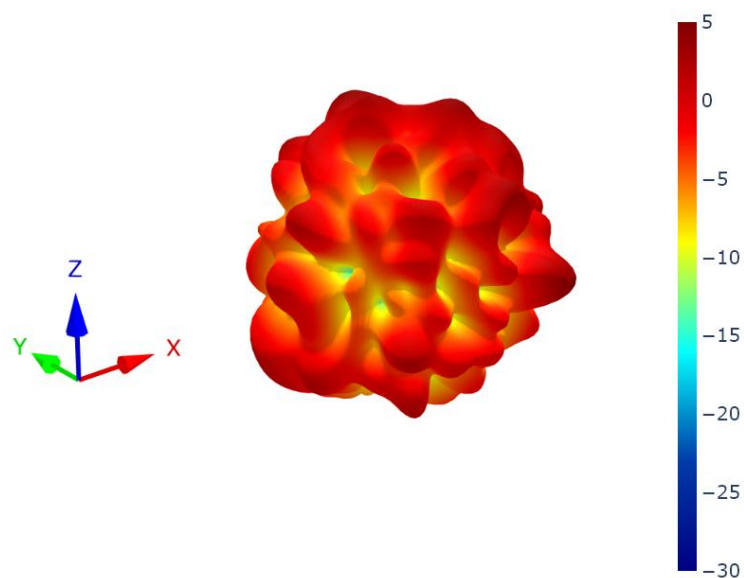
YZ Plane



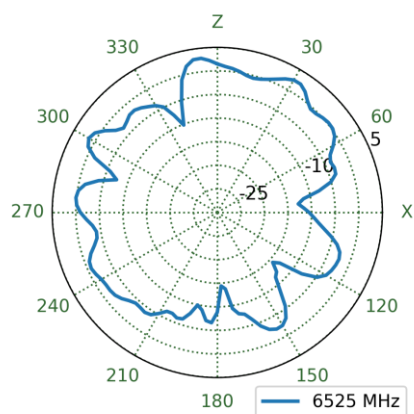
XY Plane



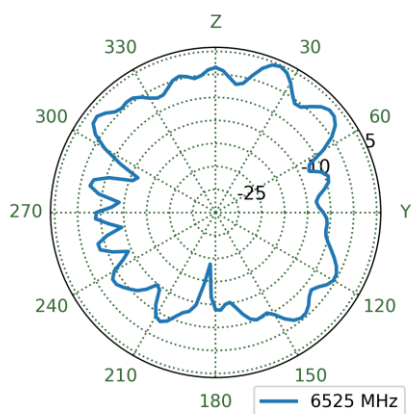
8.91 Wi-Fi 1 Patterns at 6525 MHz



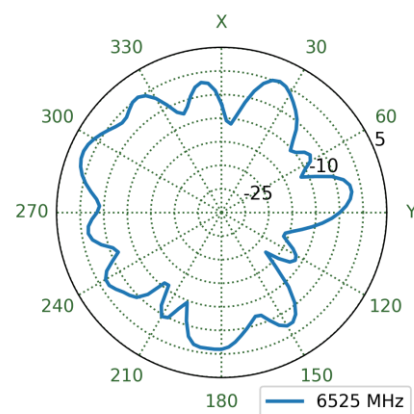
XZ Plane



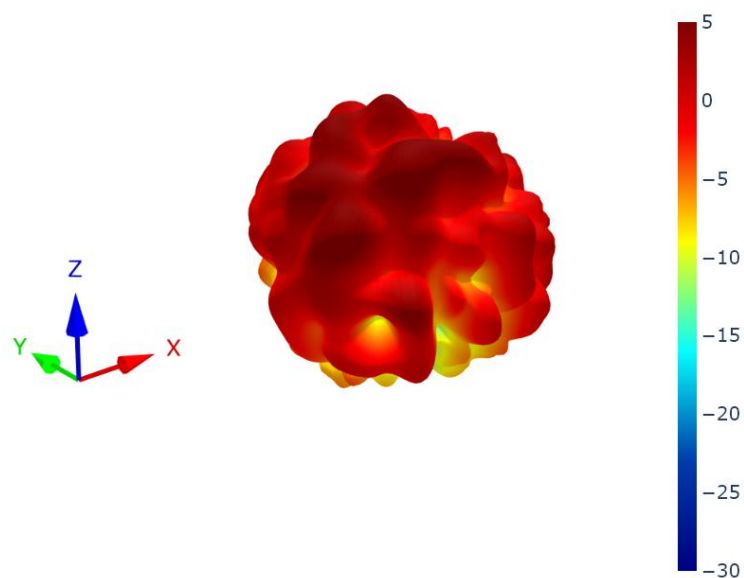
YZ Plane



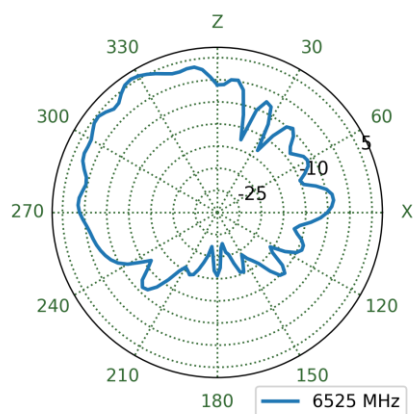
XY Plane



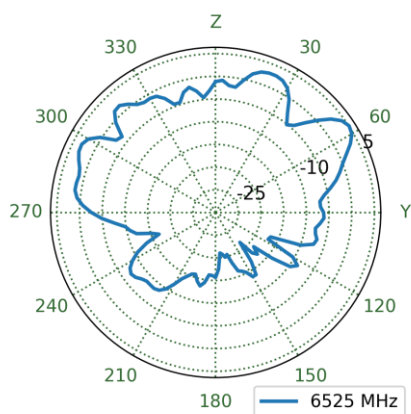
8.92 Wi-Fi 2 Patterns at 6525 MHz



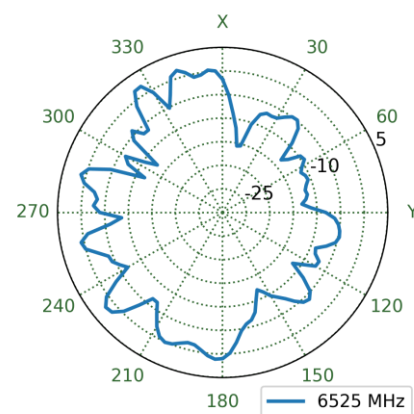
XZ Plane



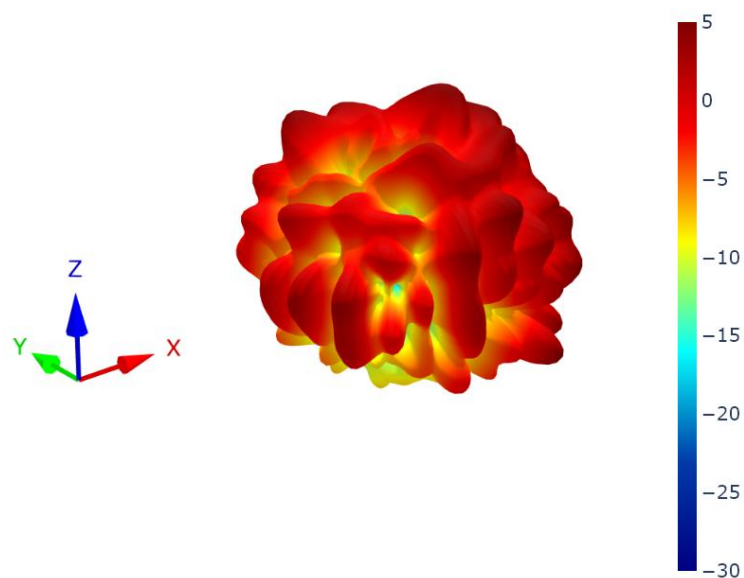
YZ Plane



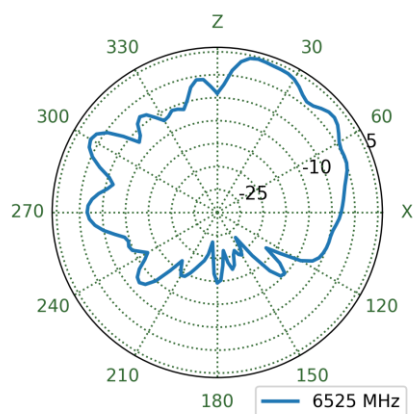
XY Plane



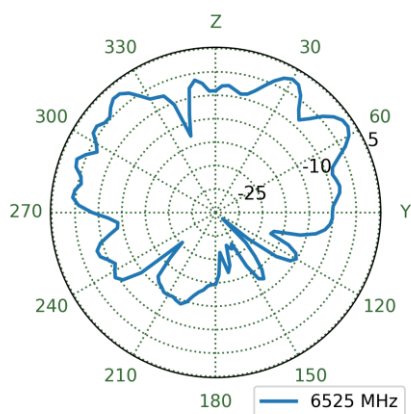
8.93 Wi-Fi 3 Patterns at 6525 MHz



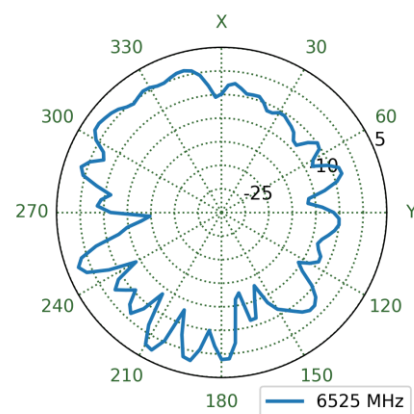
XZ Plane



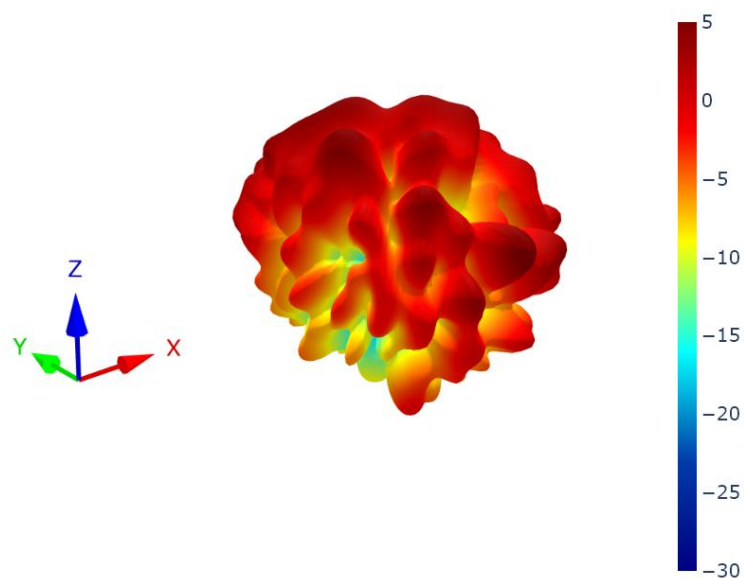
YZ Plane



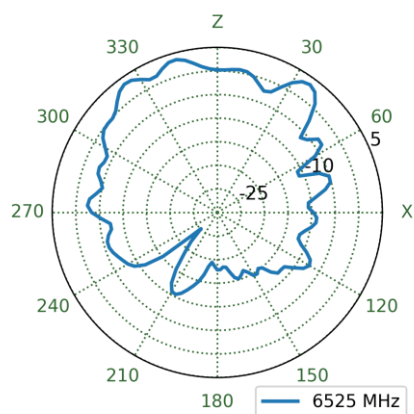
XY Plane



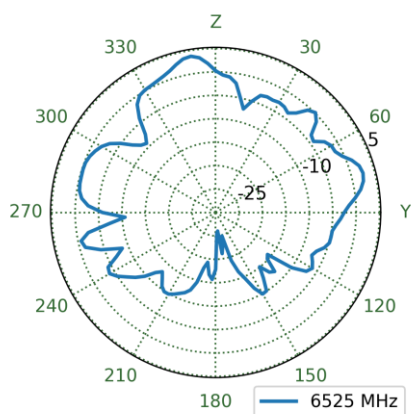
8.94 Wi-Fi 4 Patterns at 6525 MHz



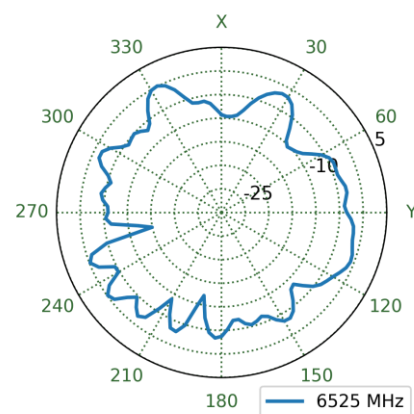
XZ Plane



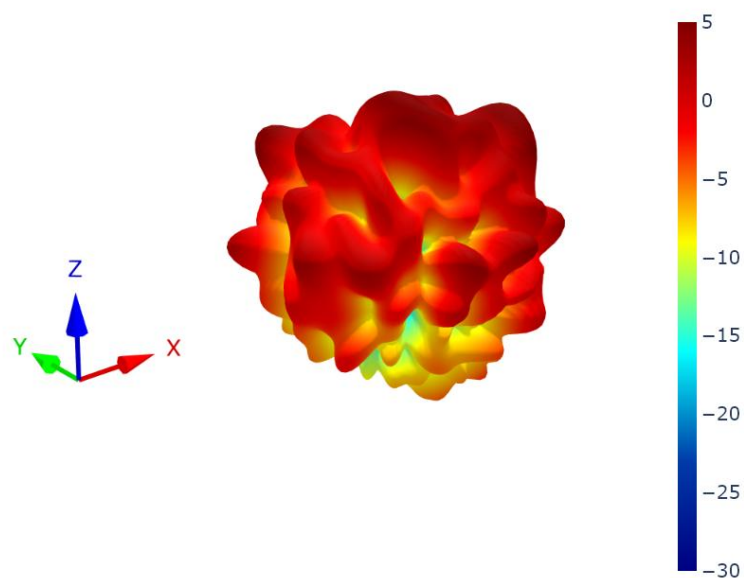
YZ Plane



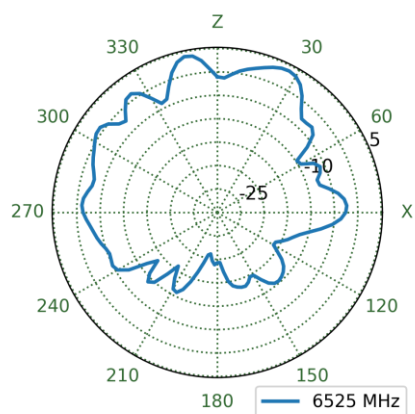
XY Plane



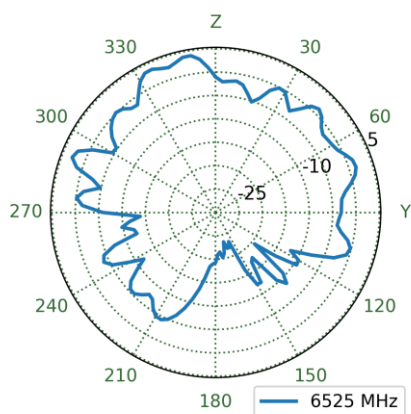
8.95 Wi-Fi 5 Patterns at 6525 MHz



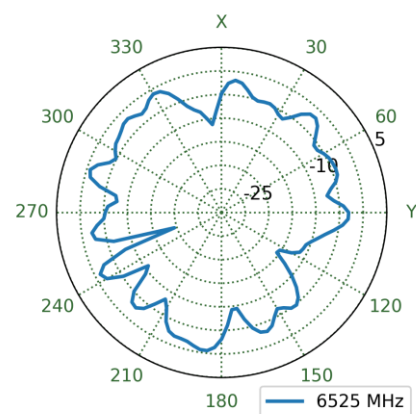
XZ Plane



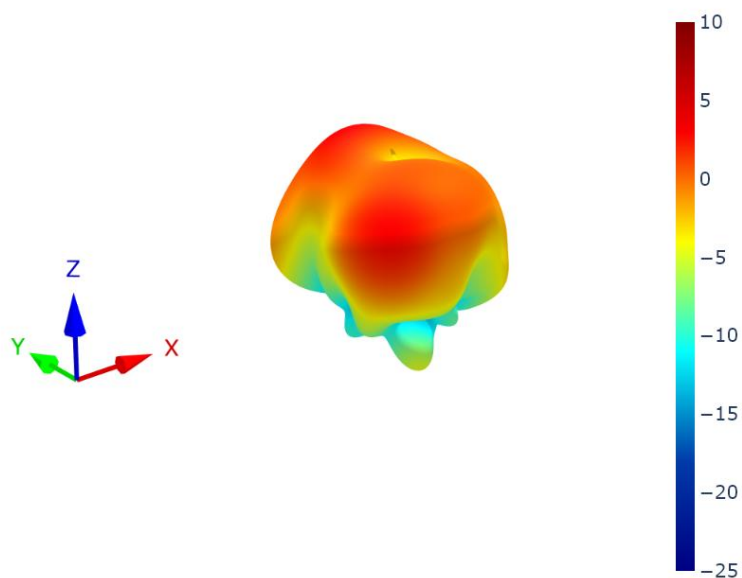
YZ Plane



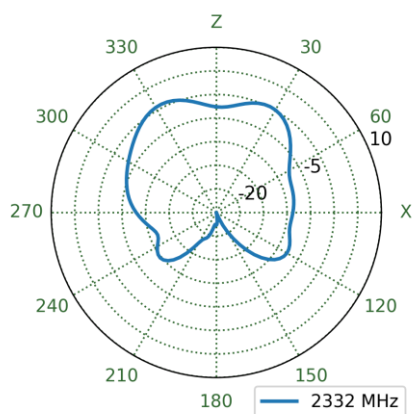
XY Plane



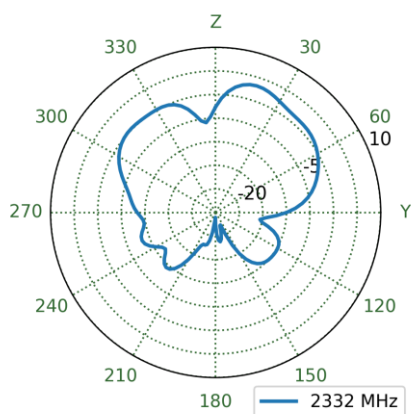
8.96 SDARS Patterns at 2326 MHz



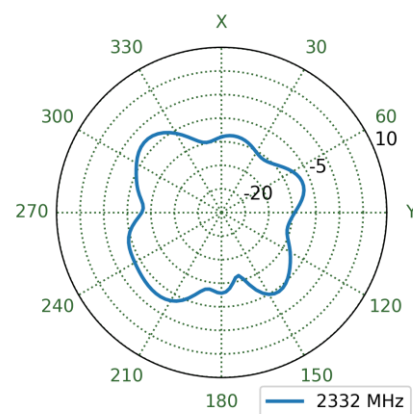
XZ Plane



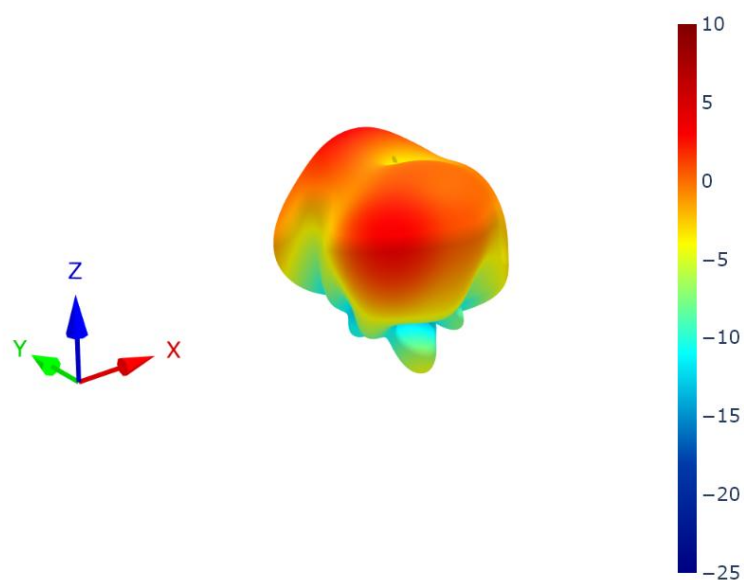
YZ Plane



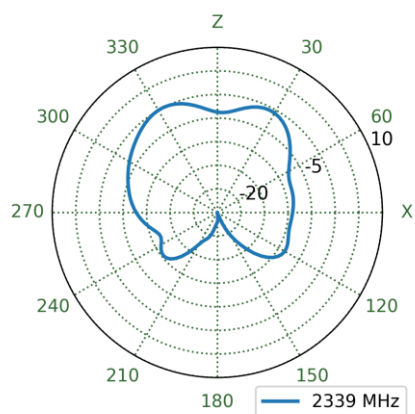
XY Plane



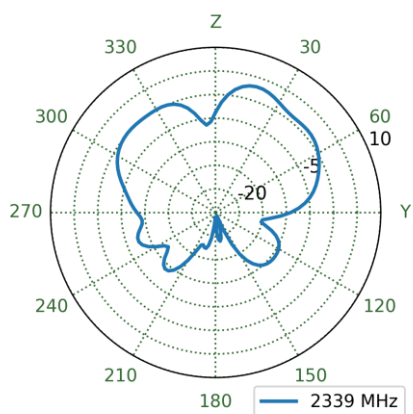
8.97 SDARS Patterns at 2339 MHz



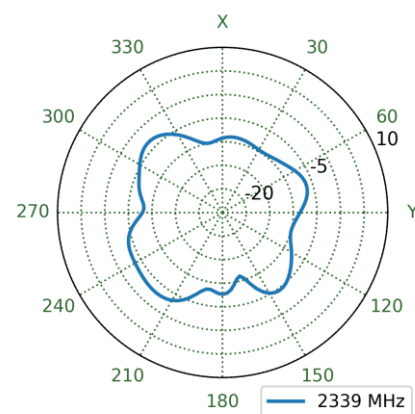
XZ Plane



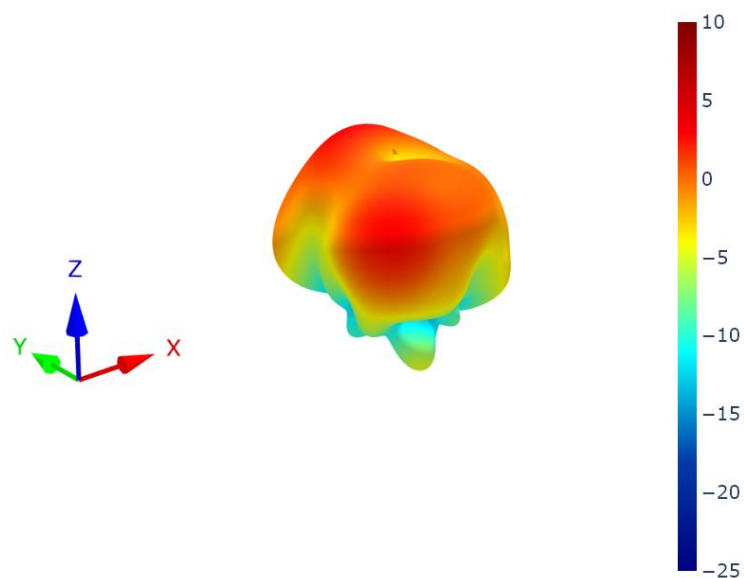
YZ Plane



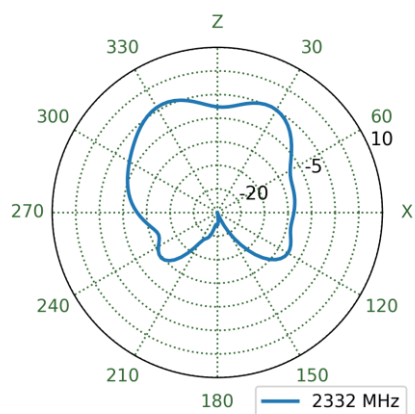
XY Plane



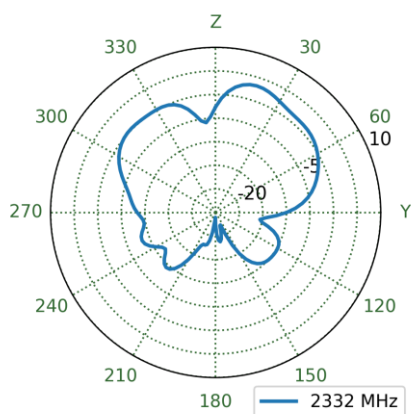
8.98 SDARS Patterns at 2333 MHz



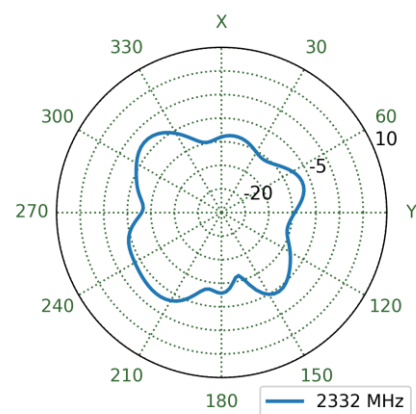
XZ Plane



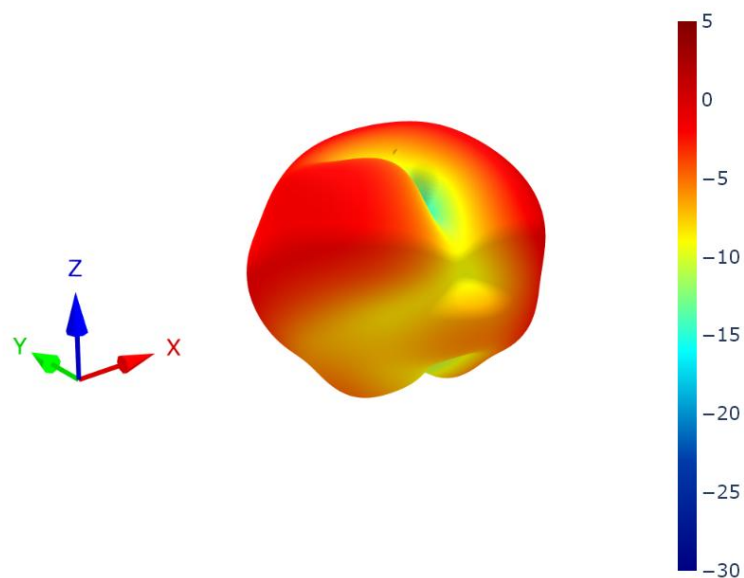
YZ Plane



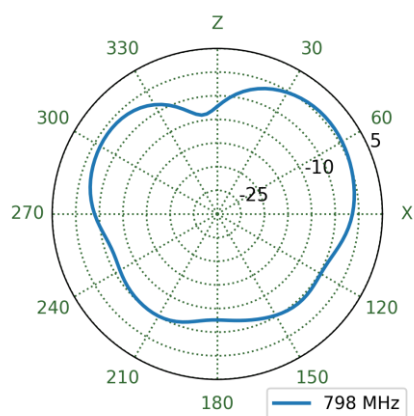
XY Plane



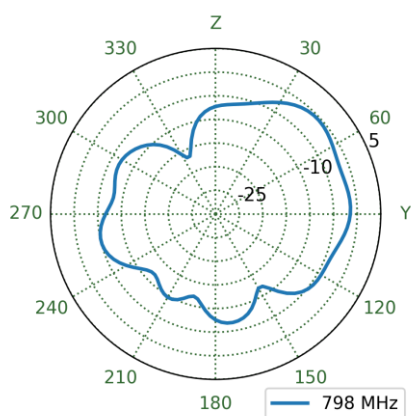
8.99 LMR Patterns at 800 MHz



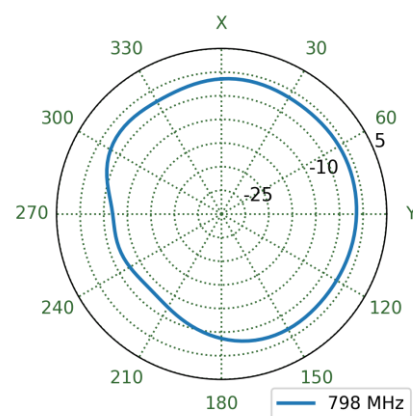
XZ Plane



YZ Plane



XY Plane



Changelog for the datasheet

SPE-25-8-178 – Patriot Datasheet

Revision: A (Original First Release)	
Date:	2025-06-27
Notes:	Initial release.
Author:	Gary West

Previous Revisions



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