TAOGLAS®

Datasheet

Part No:
MA343.A.LBI.001

Description

3-in-1 Black Magnet Mount GNSS and 2x 4G LTE MIMO

With 2m of RG-174 Cable and SMA(M) Connectors

Features:

Low-profile Magnetic Mount Antenna
2* 4G/LTE MIMO covering 600-6000MHz
1* GPS-GLONASS
Dims: 58mm * 58mm * 65mm
Cable: 2m of RG174
Connector: SMA(M)
RoHS & Reach Compliant

1. Introduction

The Taoglas MA343 magnetic mount antenna is a high performance 3-in-1 combination antenna with GNSS and 2x 5G/4G MIMO. The robust, compact housing is just at only 65mm tall and 58mm in diameter, it is an ideal for external antenna for assets requiring GNSS, Cellular and Wi-Fi connectivity.

The GPS/GLONASS/Galileo antenna has stable gain and radiation patterns on all bands. The 5G/4G antenna, covers all worldwide LTE bands, includes many sub 6GHz, 5G FR1 bands and includes fallback to 3G/2G bands where required.

The IP67 rated enclosure is made from a durable, UV resistant ASA material that makes it resistant to vandalism or impact. An integrated rubber O-ring under the enclosure prevents water ingress under the antenna. It is mounted from the inside of the user device enclosure and the small thread allows for installation in situations where space is minimal.

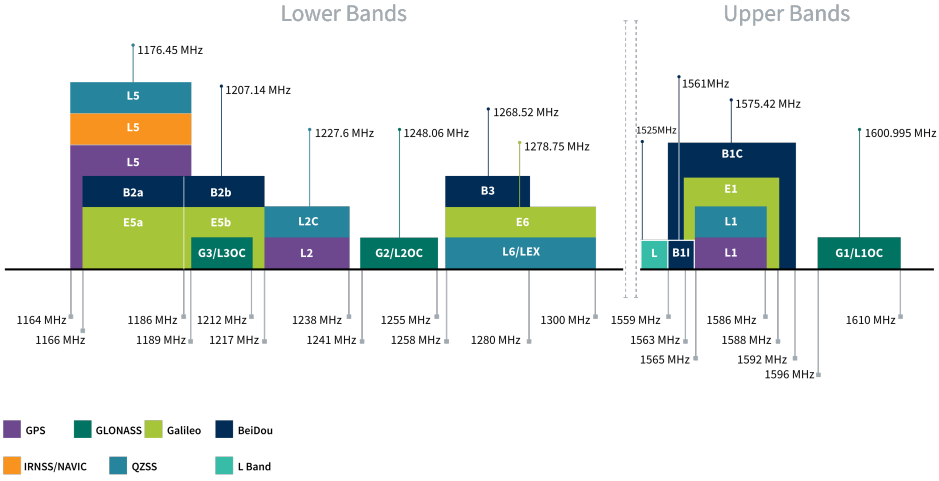
Typical applications include:

- Smart Metering and Remote Monitoring
- Digital Signage
- Transportation and Telematics

Cable type and length, and connectors are fully customizable, and the MA343 can also be customized for other configurations. It is also available in white (MA343.W.LBI.001). Contact your regional Taoglas customer support team for more information.

2. Specification

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



GNSS Bands and Constellations

GNSS Electrical			
Frequency (MHz)	**1561**	**1575.42**	**1603**
VSWR (max.)	3:1	3:1	3:1
Passive Antenna Efficiency (%)	28.22	36.12	45.39
Passive Antenna Gain (dBi)	-3.73	-1.2	-1.2
Polarization	RHCP		
Impedance	50 Ω		

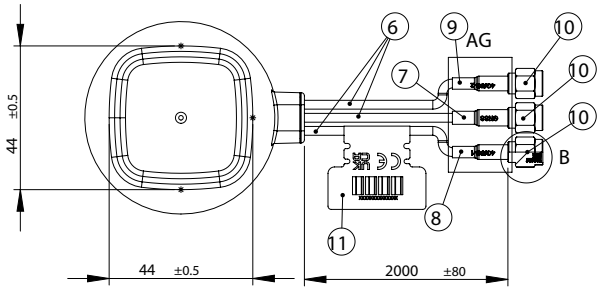
LNA and Filter Electrical Properties			
Frequency (MHz)	**1561**	**1575.42**	**1603**
Gain (dB)	31.7	31.2	29.8
Noise (dB)	2.29	2.15	2.5
Voltage Range	1.8-5.5V		
Current Consumption	9 ± 3		
Out-off-band rejection (dB)	> 70 @700-960MHz , > 60 @ 1710-6000MHz		

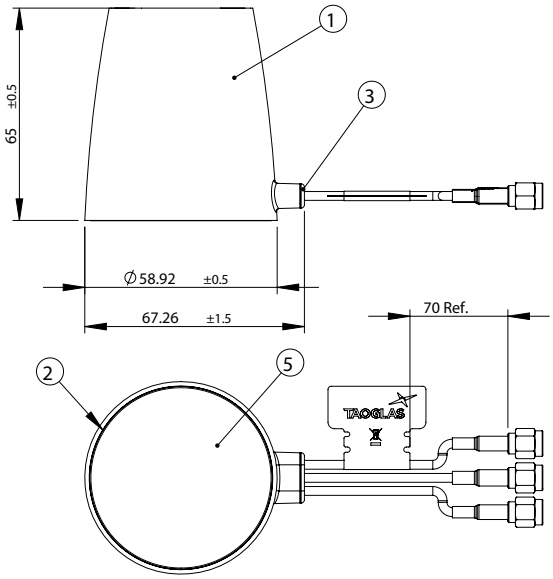
LTE Electrical									
Band	Frequency (MHz)	Measurement	Efficiency (%)	Average Gain (dB)	Peak Gain (dBi)	Impedance	Polarization	Radiation Pattern	Max. input power
5GNR/4G Band71	617-698	LTE1	28.1	-5.51	-0.78	50 Ω	Linear	Omni	2W
		LTE2	24.7	-6.07	-0.91				
4G/3G Band 12,13,14,17,28,29	698-824	LTE1	44.7	-3.50	0.99				
		LTE2	43.3	-3.63	1.12				
4G/3G/NB-IoT/Cat M Band 5,8,18,19,20,26,27	824-960	LTE1	46.7	-3.31	0.99				
		LTE2	57.4	-2.41	1.55				
5GNR/4G Band 21,32,74,75,76	1427-1518	LTE1	33.2	-4.79	2.87				
		LTE2	30.6	-5.15	2.68				
4G/3G Band 1,2,3,4,9,23,25,35,39, 66	1710-2200	LTE1	65.3	-1.85	5.93				
		LTE2	63.5	-1.97	5.34				
4G/3G Band 7,30,38,40,41	2300-2690	LTE1	69.0	-1.61	5.64				
		LTE2	70.9	-1.50	5.95				
5GNR/4G Band 22,42,48,77,78,79	3300-5000	LTE1	55.7	-2.54	6.84				
		LTE2	61.6	-2.10	6.70				
LTE5200/Wi-Fi5800	5150-5925	LTE1	57.3	-2.42	6.00				
		LTE2	56.4	-2.48	5.97				

Mechanical	
Dimensions	58 x 58 x 65mm
Material	ASA
Connector	SMA(M)
Cable	2m of RG174

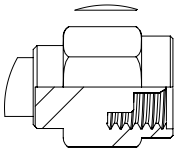
Environmental	
Temperature Range	-40 - +85°C
RoHs & REACH Compliant	Yes

3. Mechanical Drawing





DETAIL AG
SCALE 1 : 1



DETAIL B
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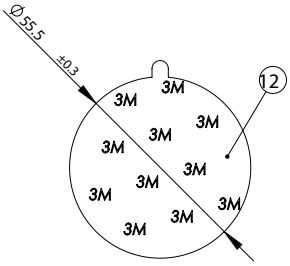
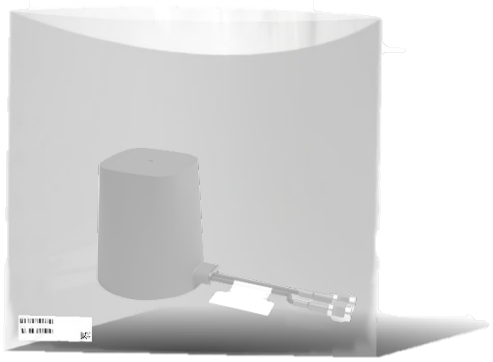


Accessory

	Name	Material	Finish	Qty
1	Top housing	ASA	Black	1
2	Bottom housing	ASA	Black	1
3	Grommet	Silicone Rubber	Black	1
4	Magnet pack/N48	NdFeB	Ni Plated	1
5	Matte Silver Label	PET	Matte Silver	1
6	RG174 Coaxial Cable	PVC	Black	3
7	Heat Shrink Tube(GNSS)	PE	Blue Tube/White Text	1
8	Heat Shrink Tube(4G/5G-1)	PE	Red Tube/White Text	1
9	Heat Shrink Tube(4G/5G-2)	PE	Red Tube/White Text	1
10	SMA(M)ST Plug _for RG-316/RG-174	Brass	Au Plated	3
11	CE,WEEE and UKCA mark logo Label	PEPA	White	1
12	Double Sided Adhesive	3M VHB 5952	Black foam/Red liner	1

4. Packaging

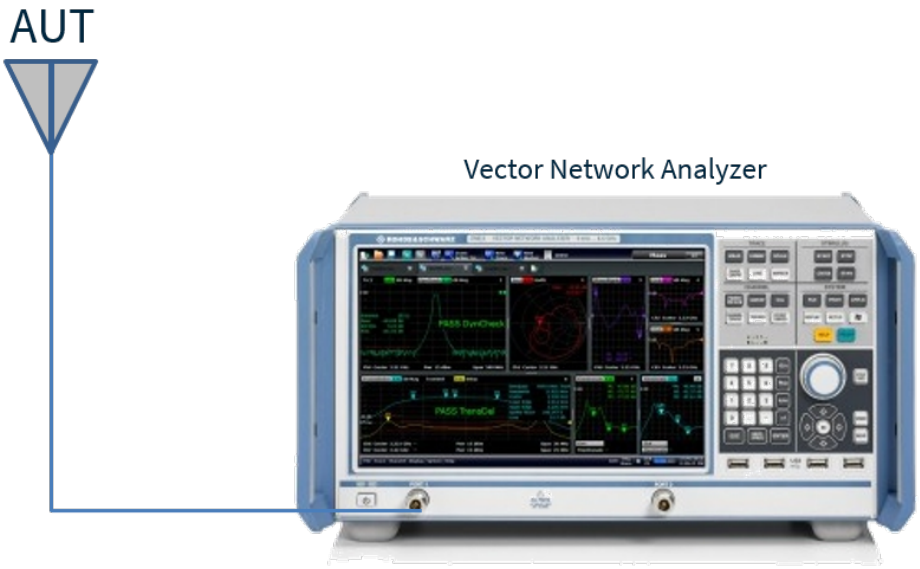
1 PCS /PE Bag
Weight: 161g

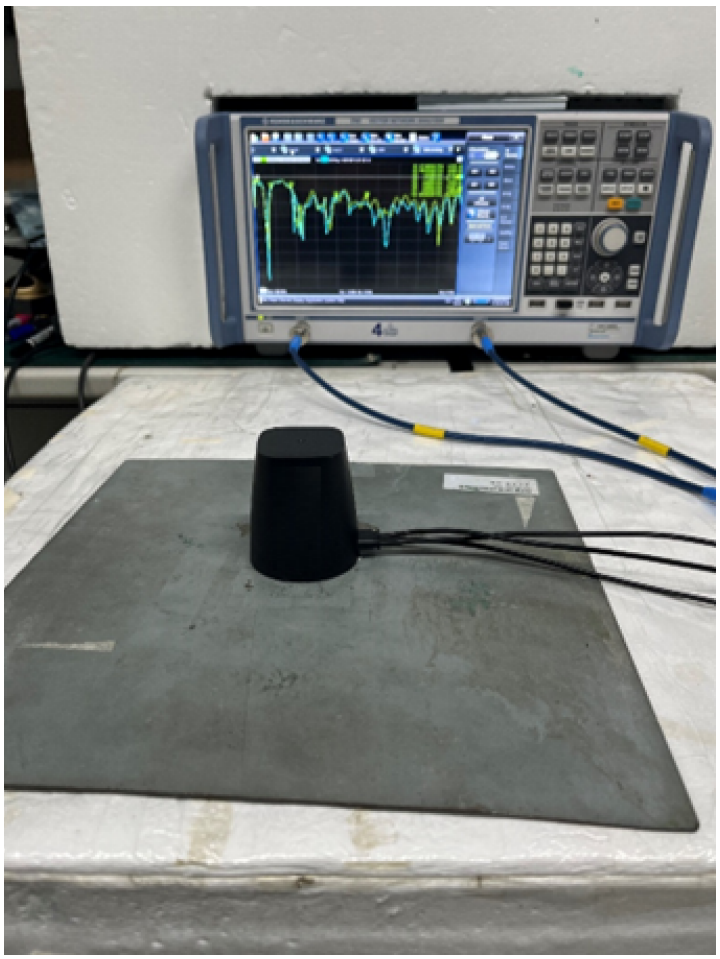


60 PCS / Carton
Dimensions: 430 x 380 x 280mm
Weight: 10.76Kg

5. Antenna Characteristics

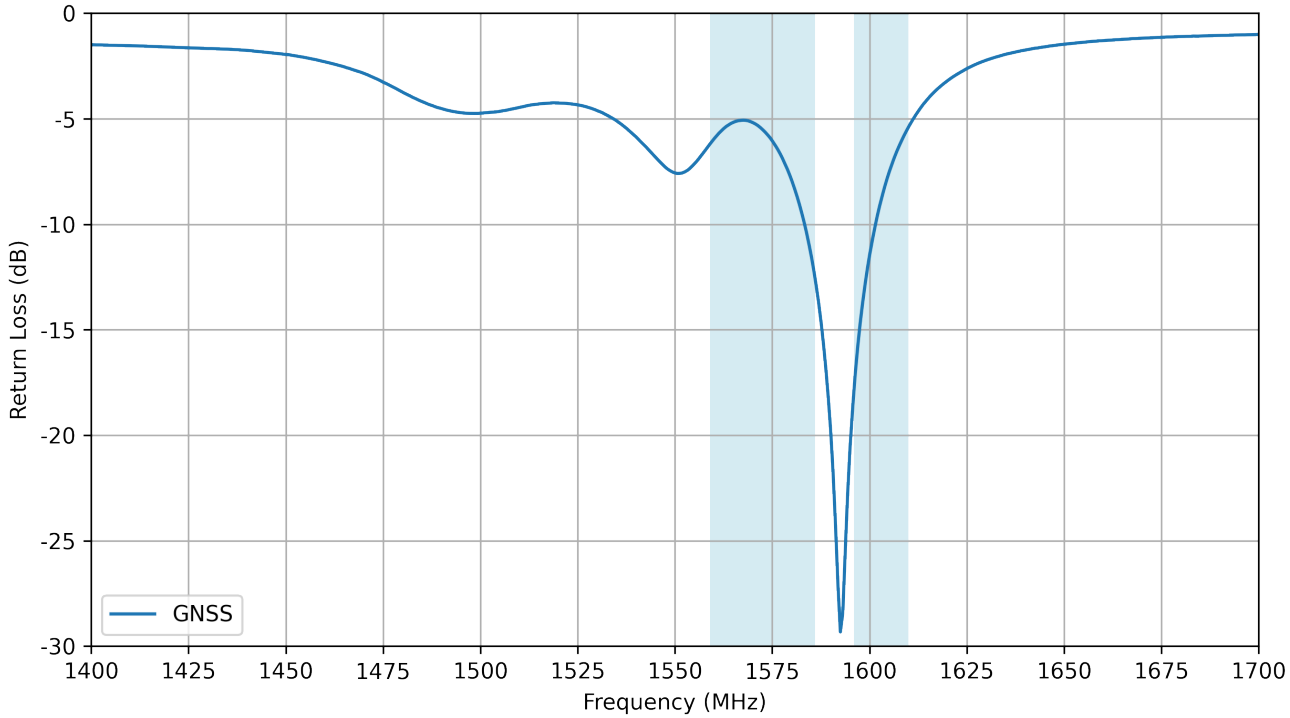
5.1 Test Setup



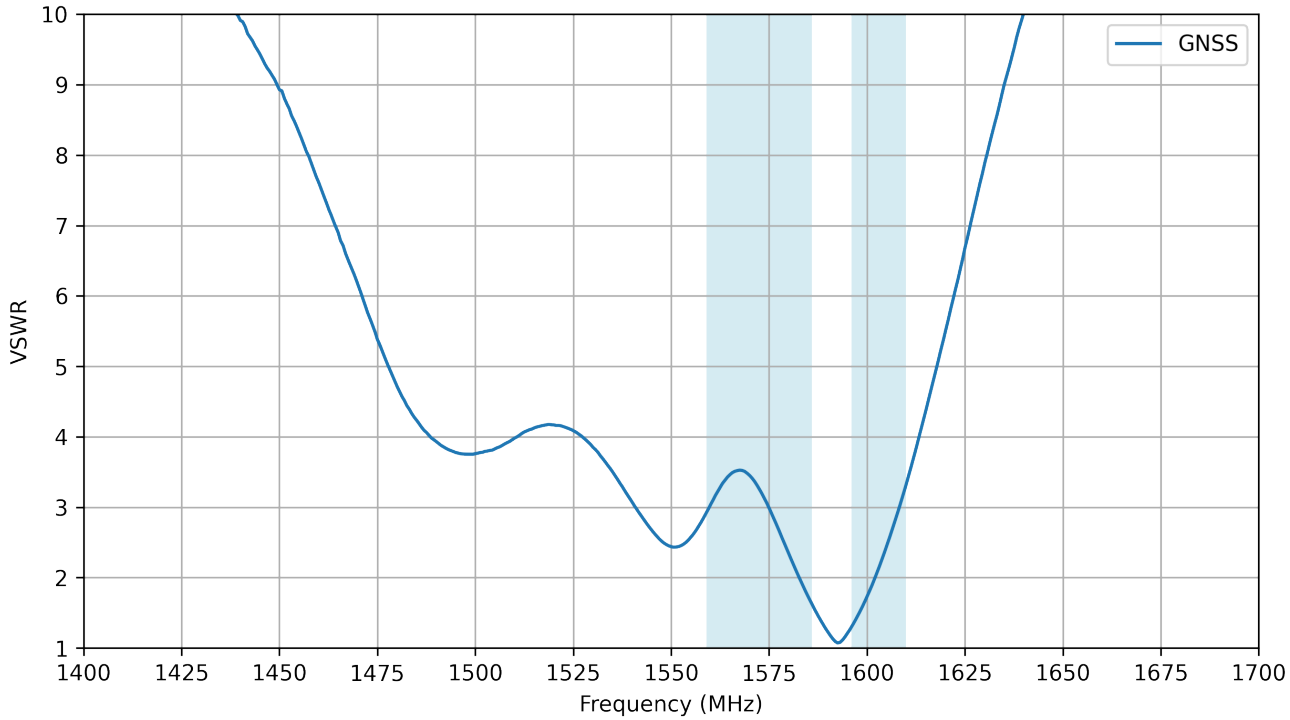


VNA Set-up on 30x30cm Ground Plane

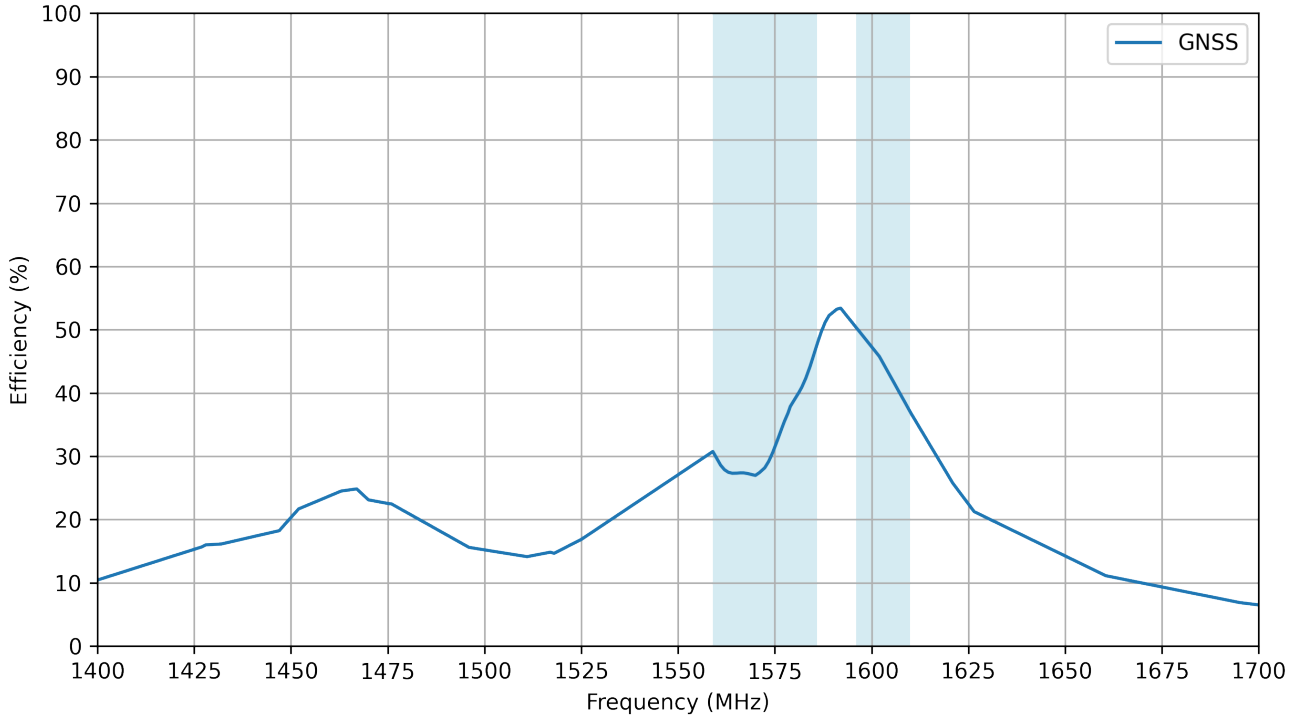
5.2 GNSS - Return Loss



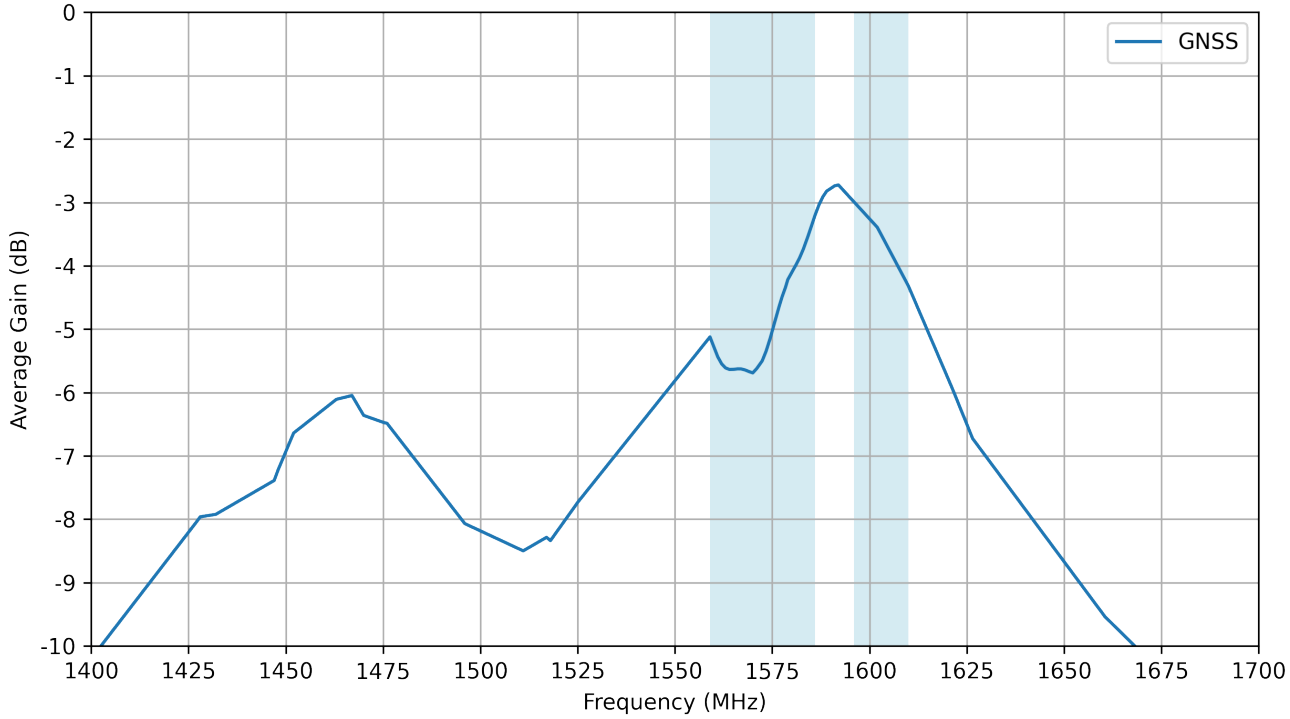
5.3 GNSS - VSWR



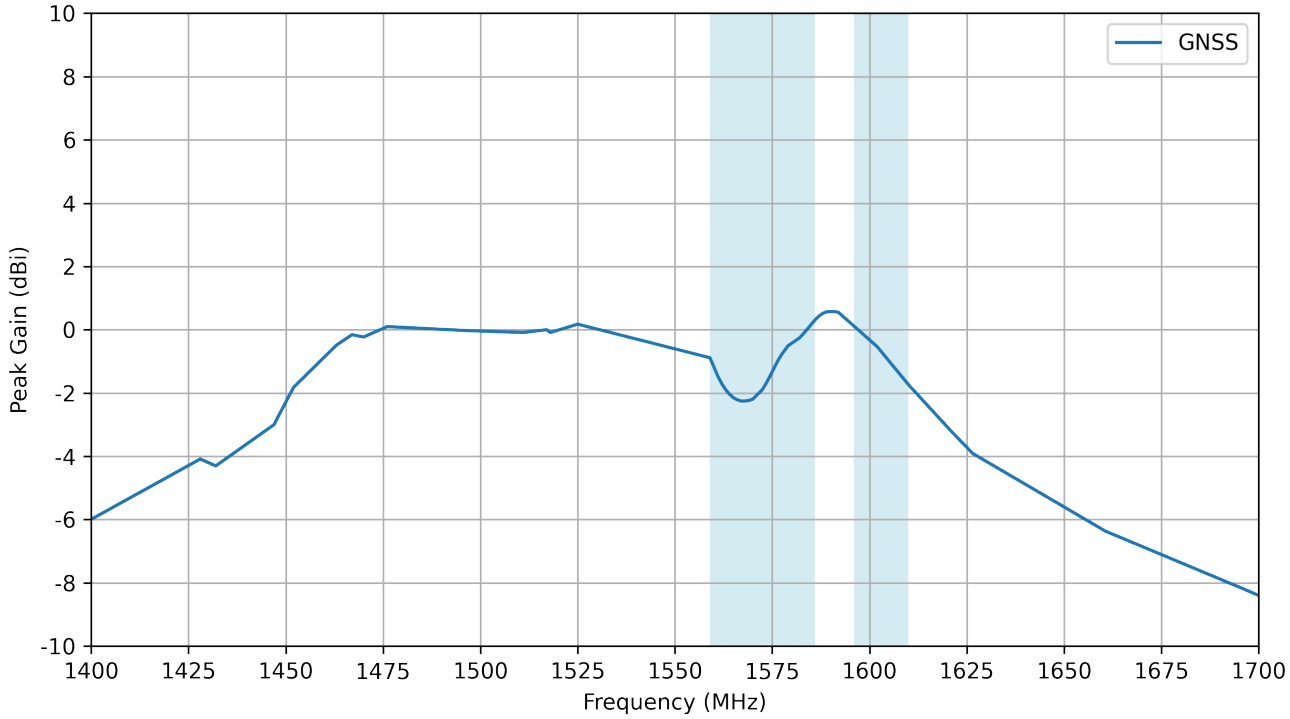
5.4 GNSS - Efficiency



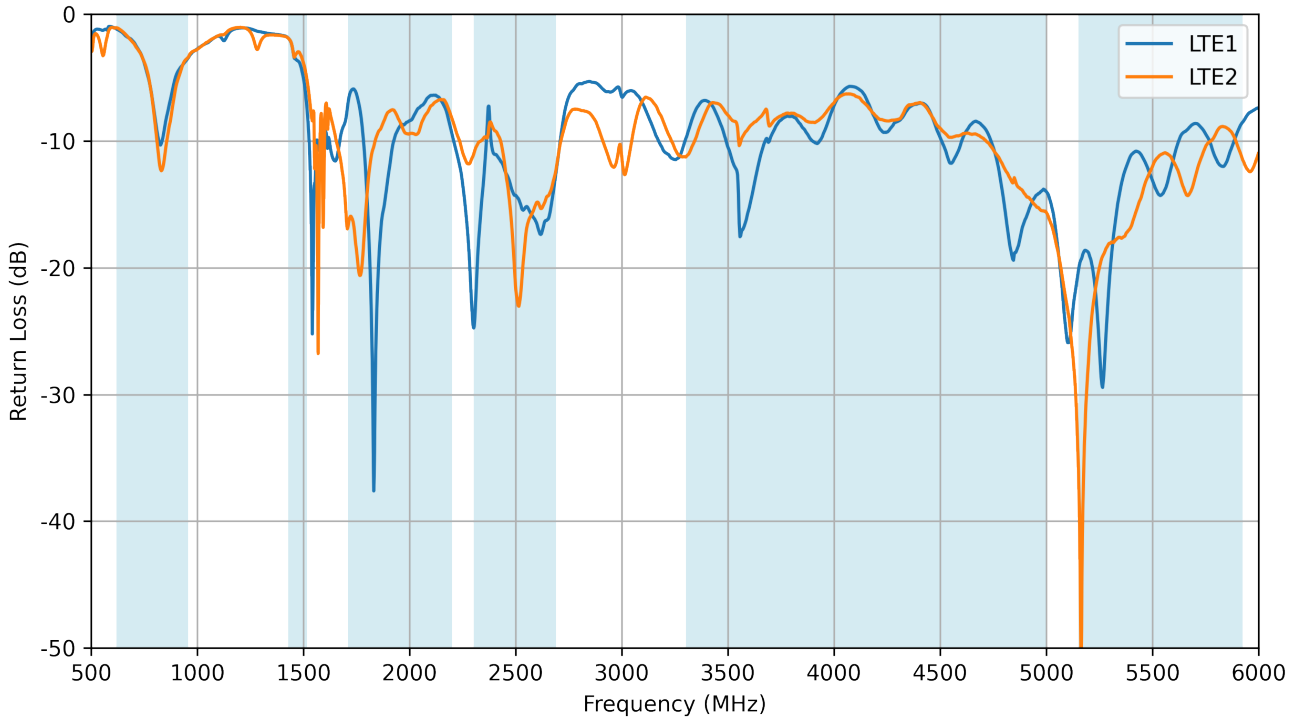
5.5 GNSS - Average Gain



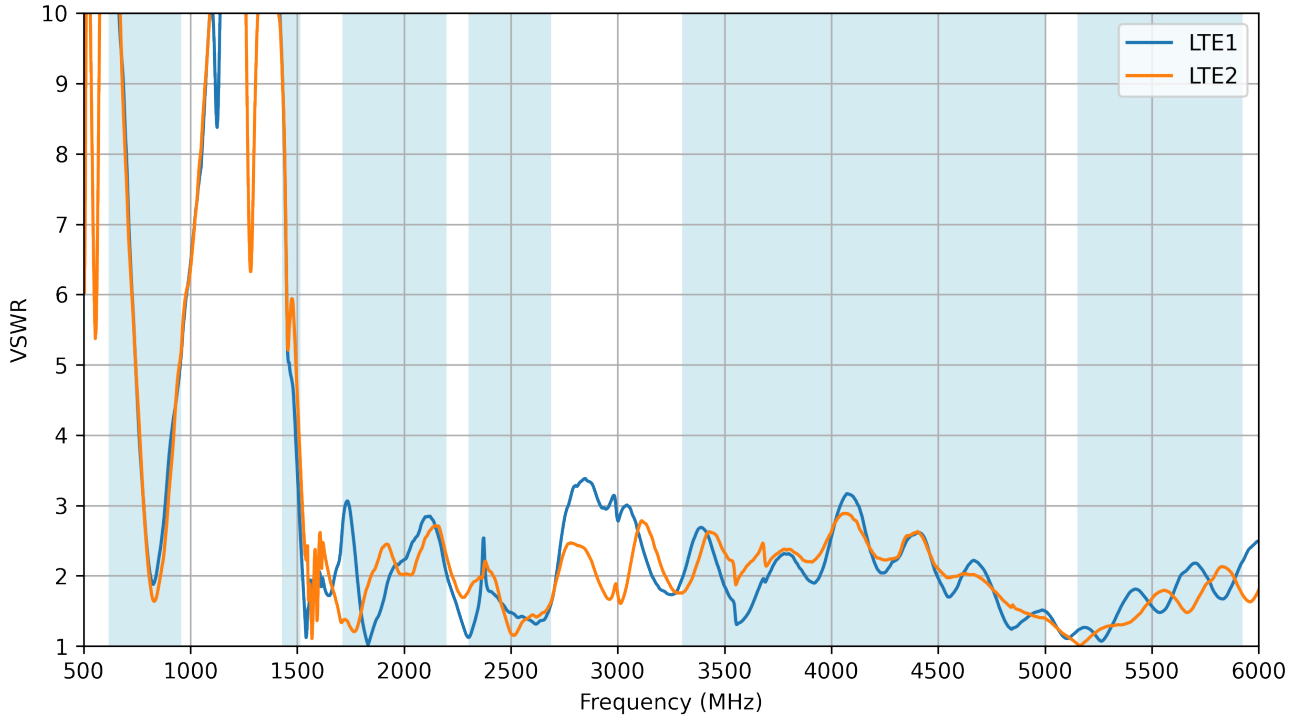
5.6 GNSS - Peak Gain (Gtotal)



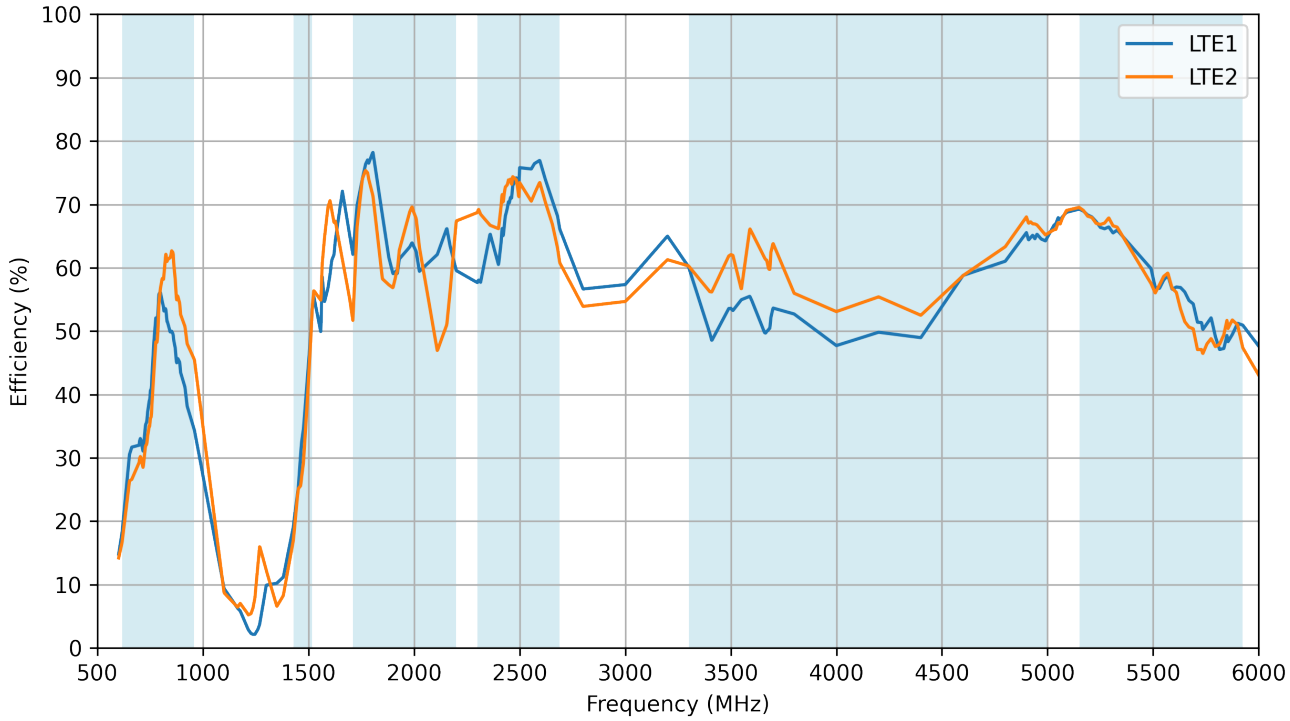
5.7 LTE - Return Loss



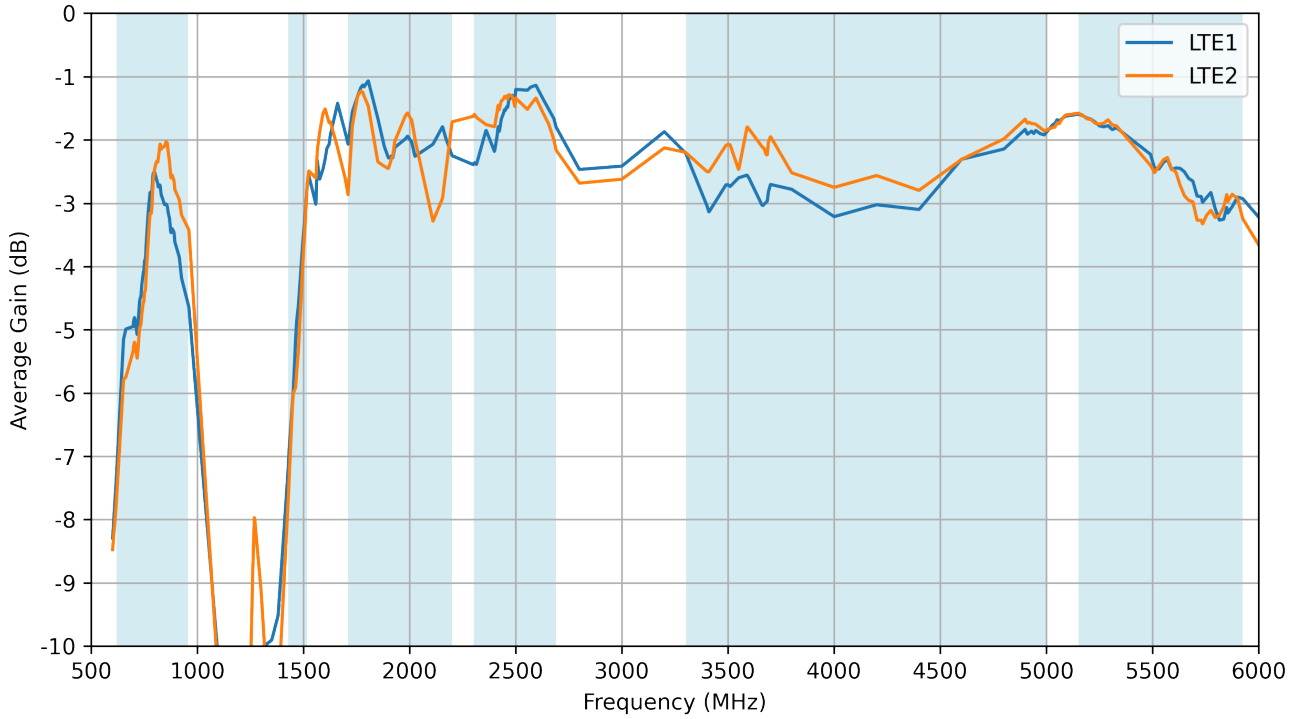
5.8 LTE - VSWR



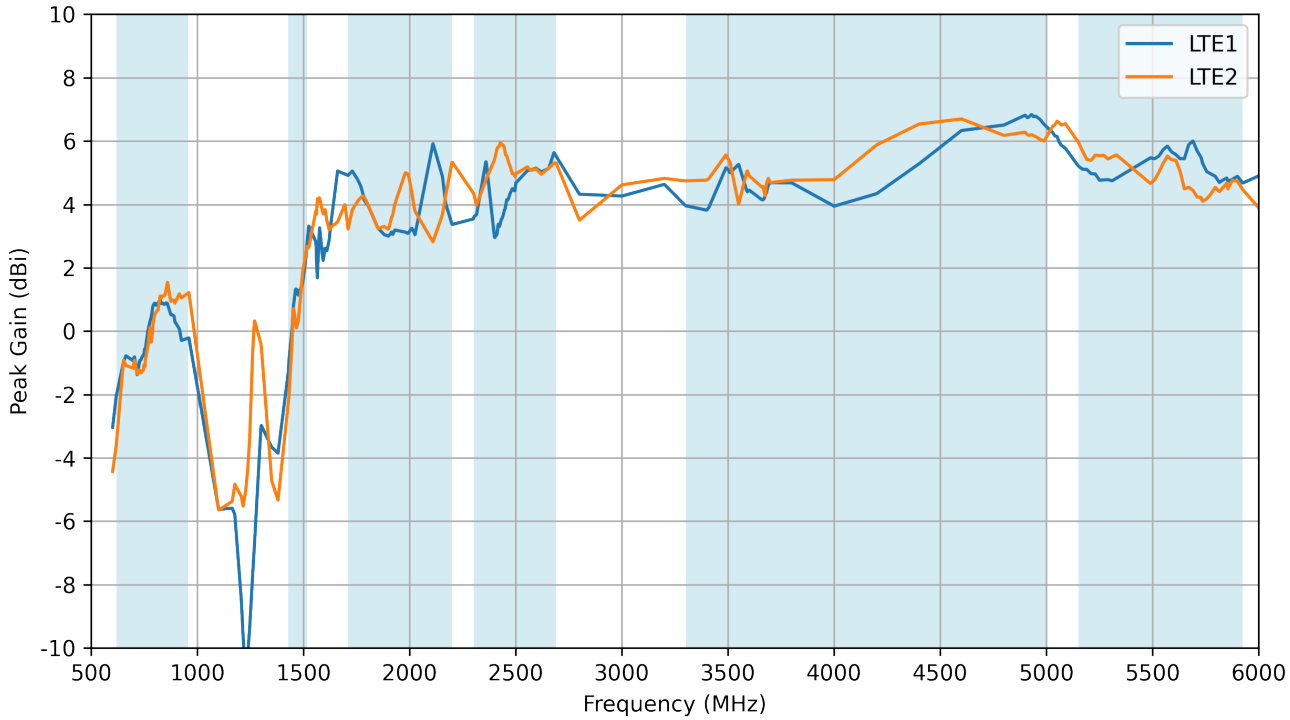
5.9 LTE - Efficiency



5.10 LTE - Average Gain

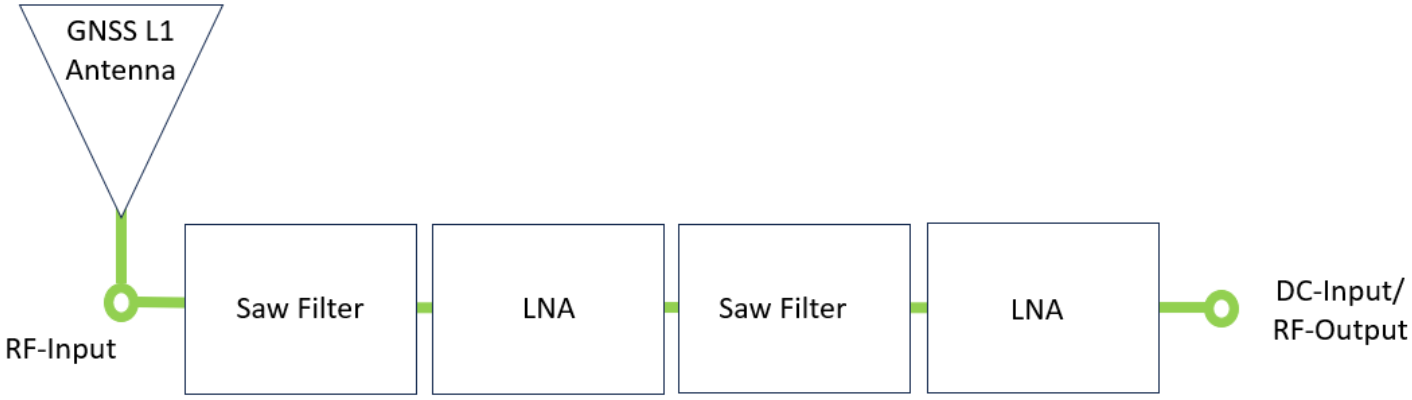


5.11 LTE - Peak Gain

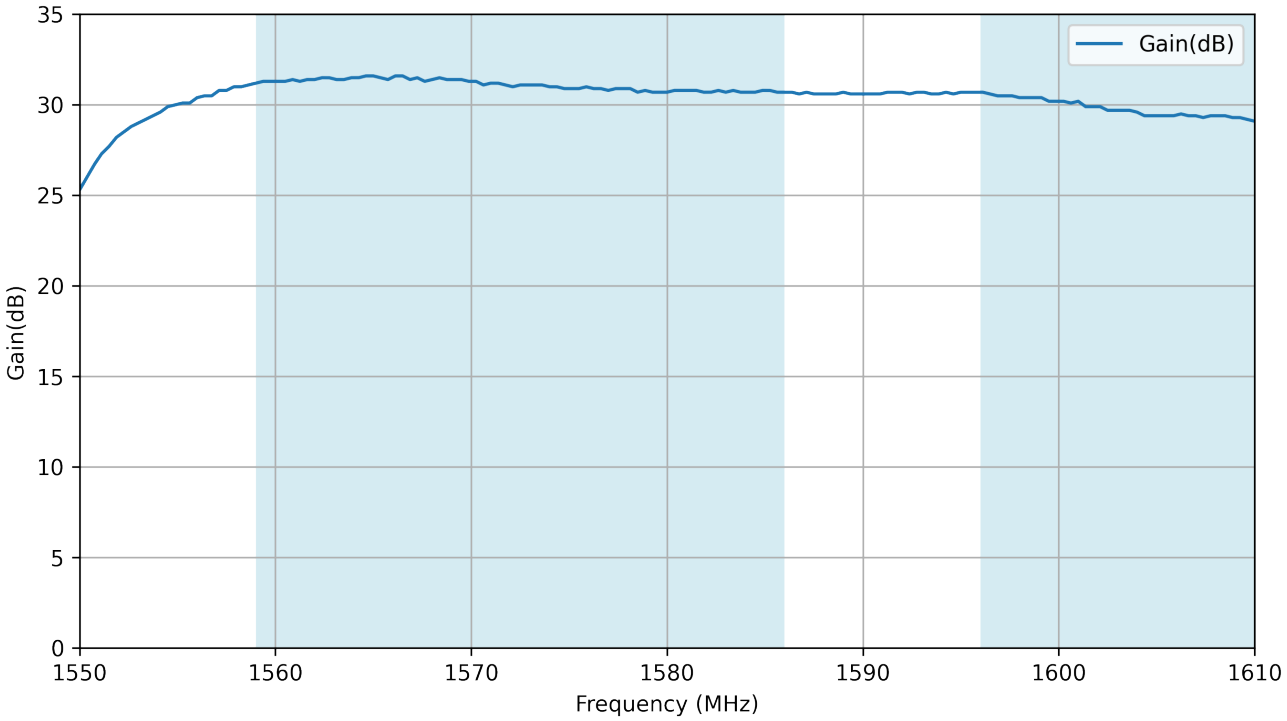


6. LNA Characteristics

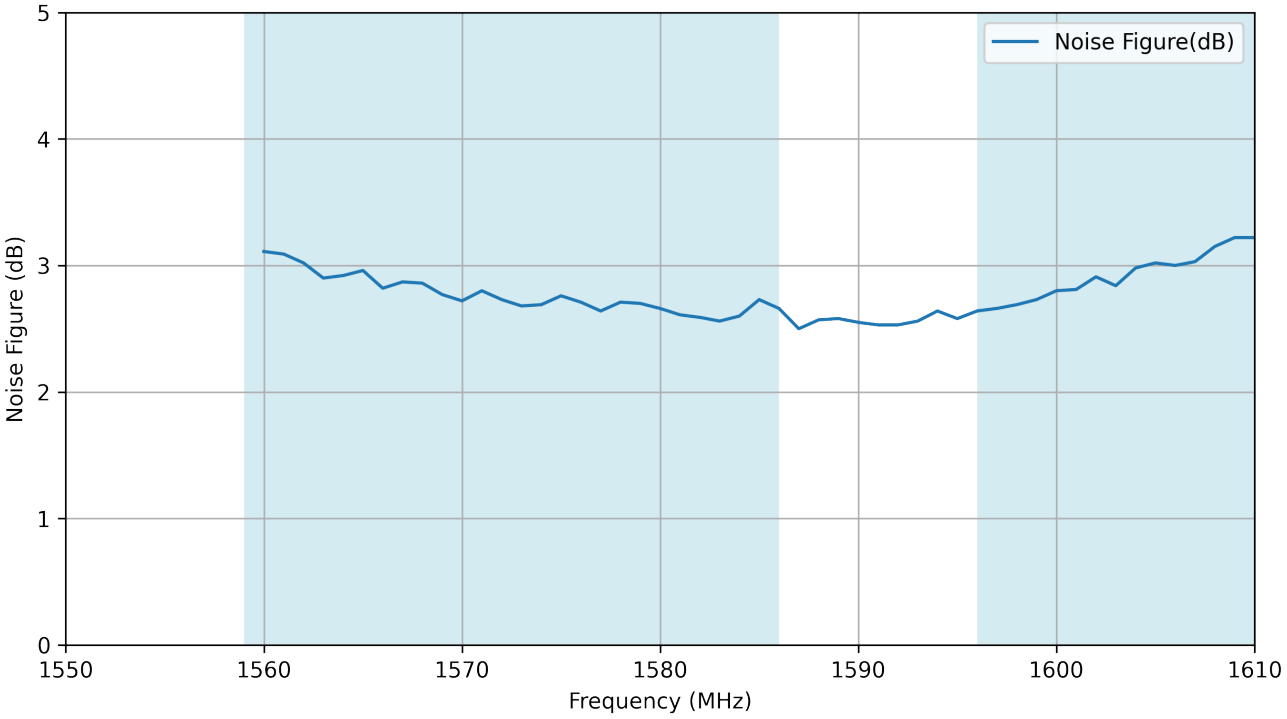
6.1 Block Diagram



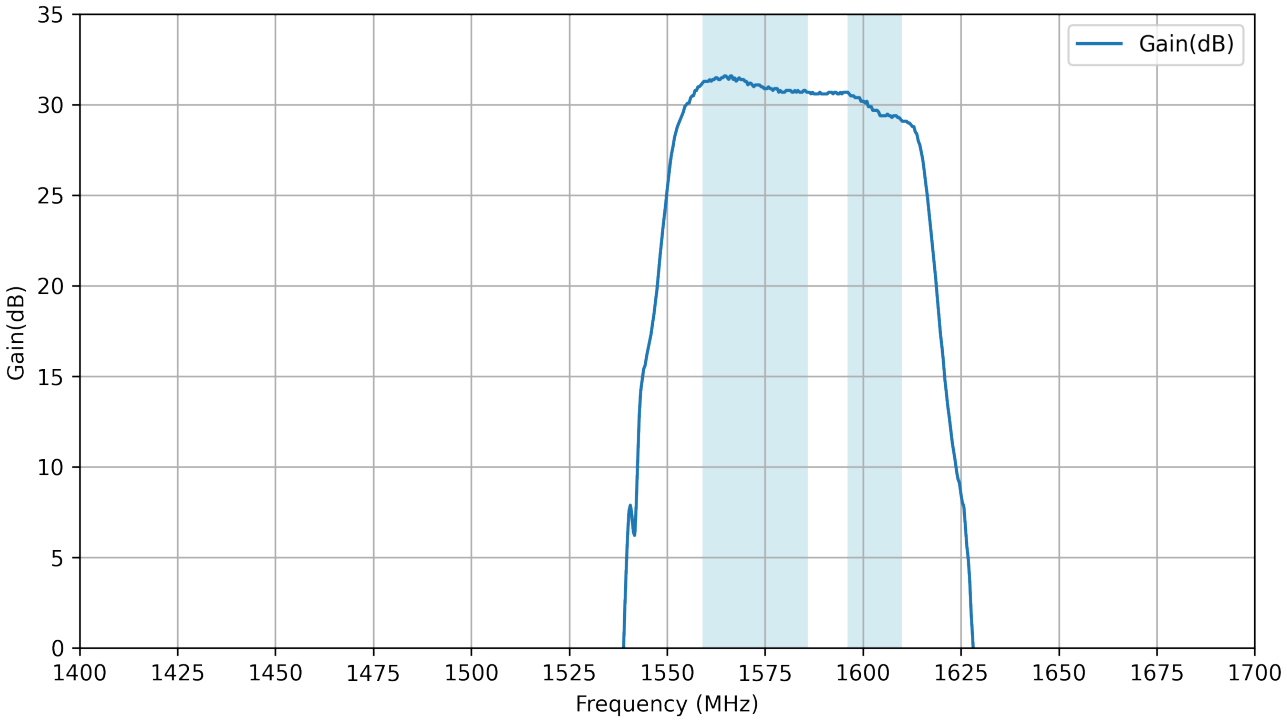
6.2 Gain



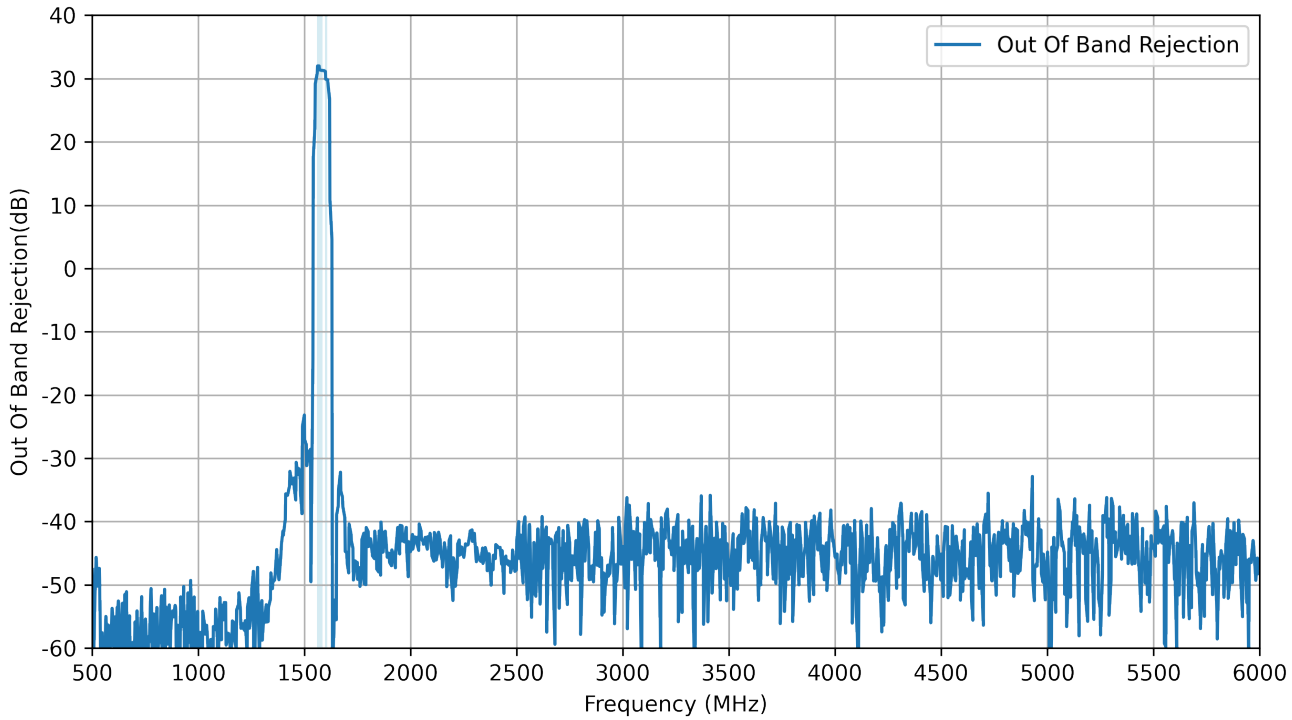
6.3 Noise Figure



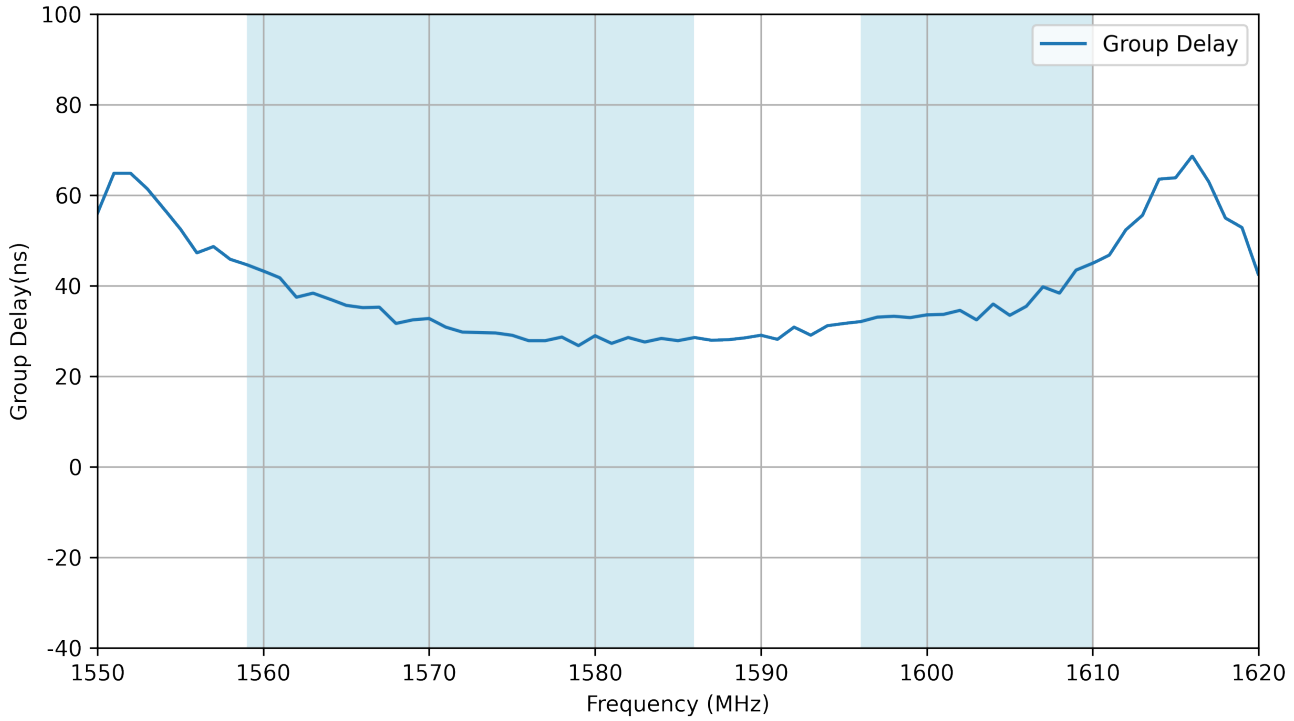
6.4 Wide Band Gain



6.5 Out Of Band Rejection

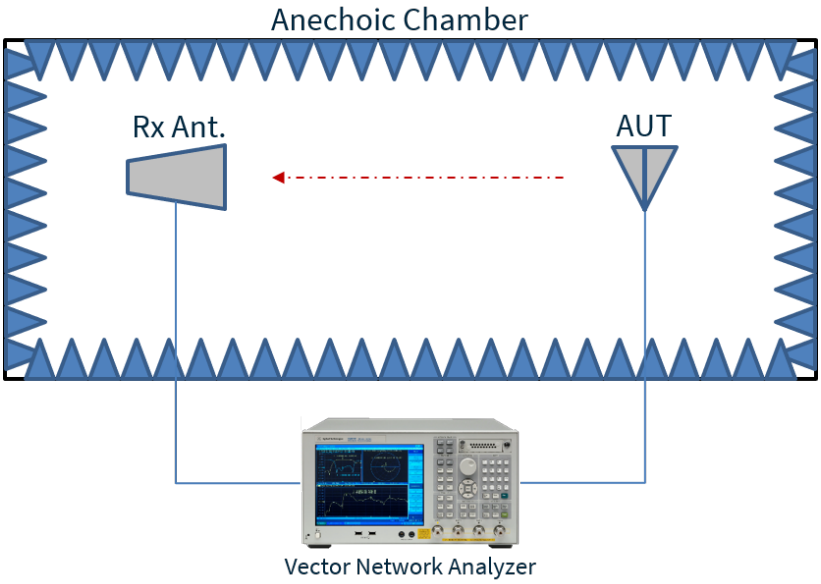


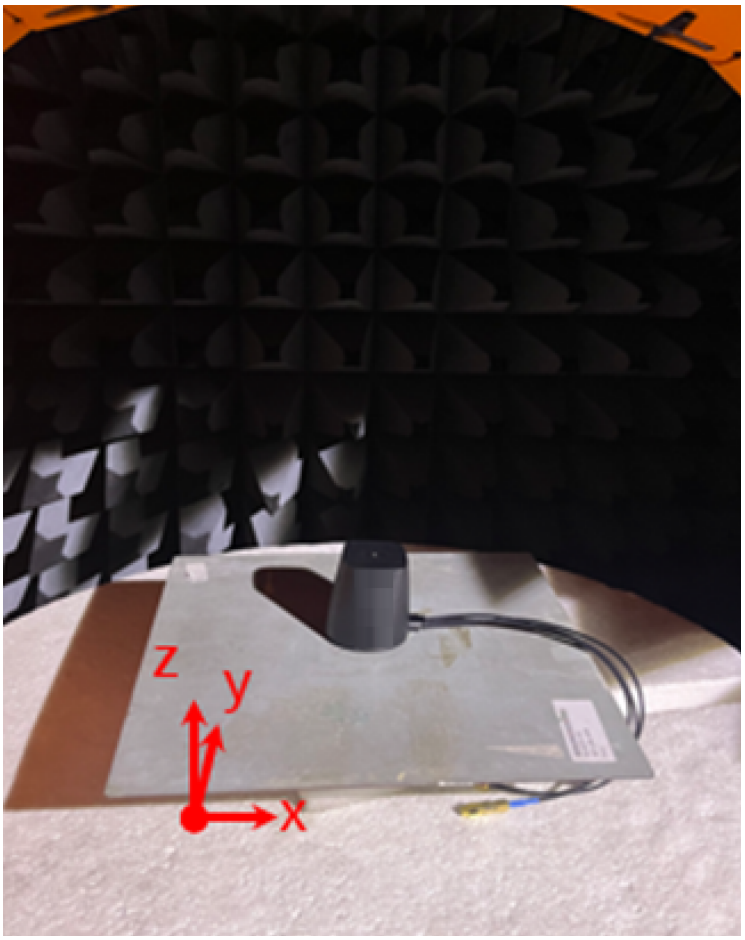
6.6 Group Delay



7. Radiation Patterns

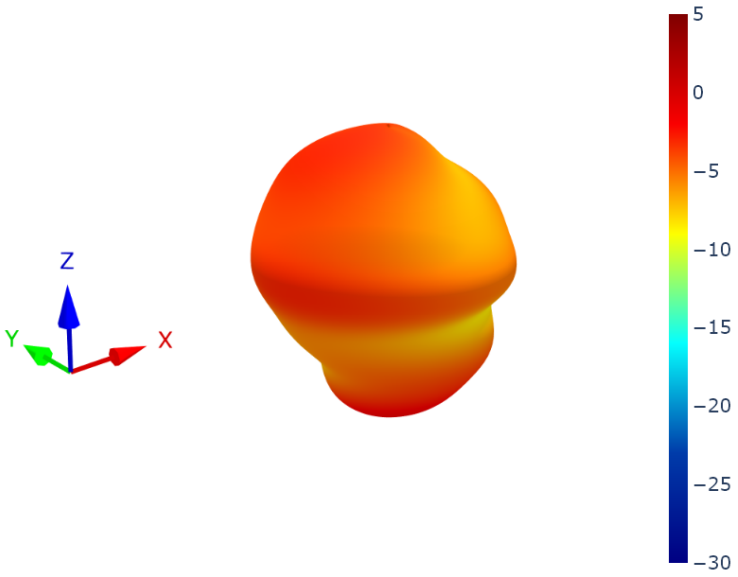
7.1 Test Setup



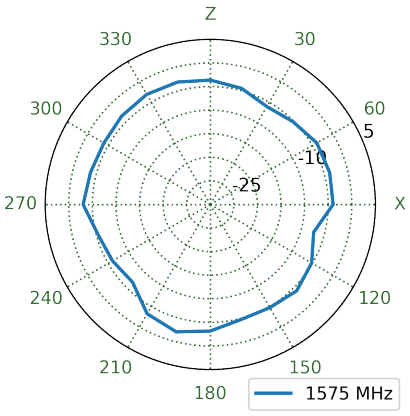


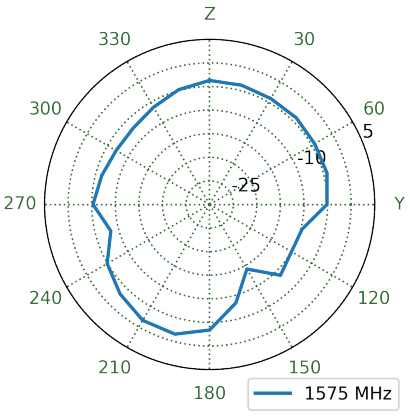
Chamber Set-up on 30x30cm Ground Plane

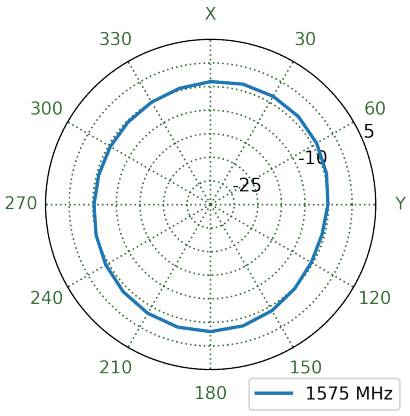
7.2 GNSS Patterns at 1576 MHz



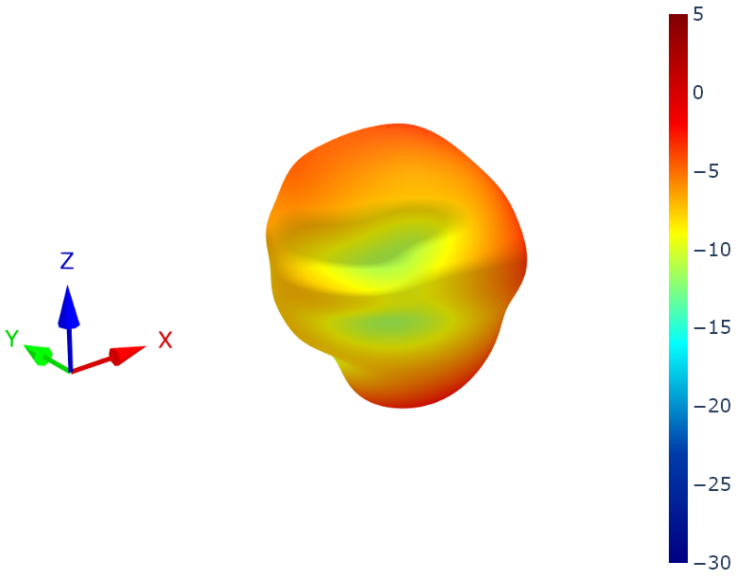
XZ Plane	YZ Plane	XY Plane



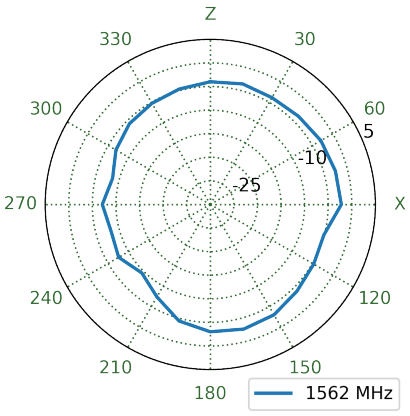


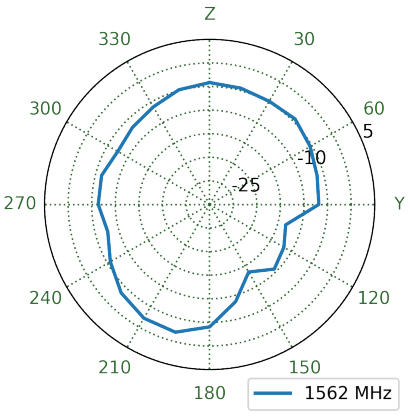


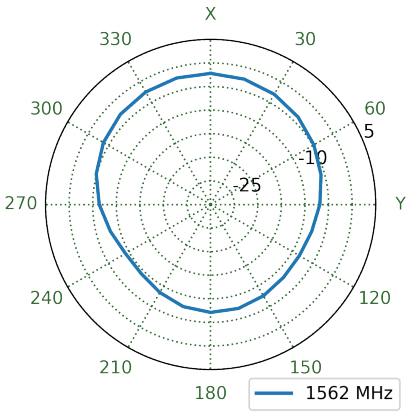
7.3 GNSS Patterns at 1562 MHz



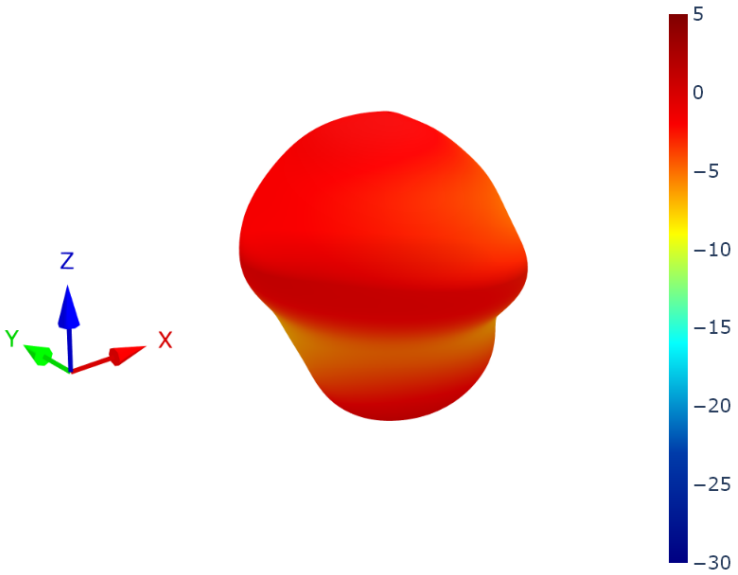
XZ Plane	YZ Plane	XY Plane

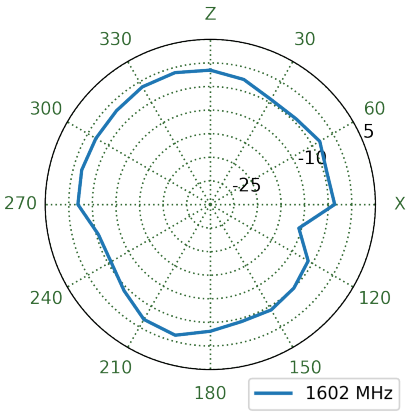
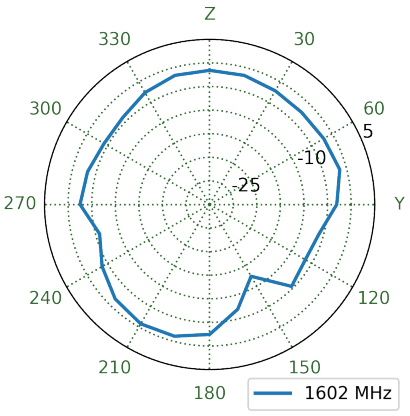
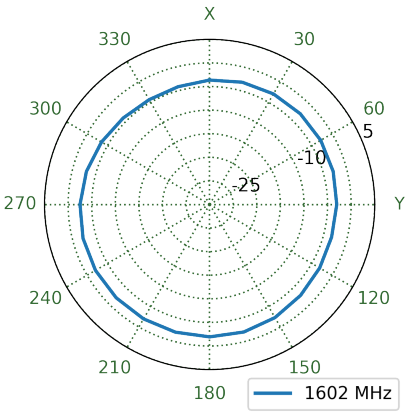




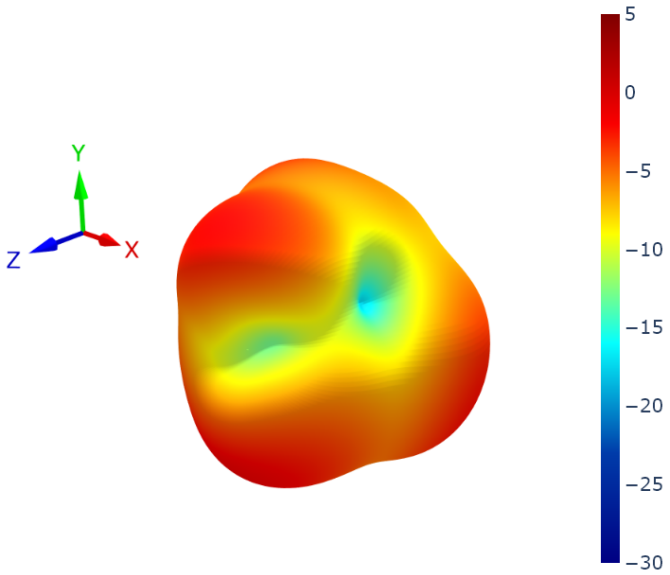


7.4 GNSS Patterns at 1602 MHz

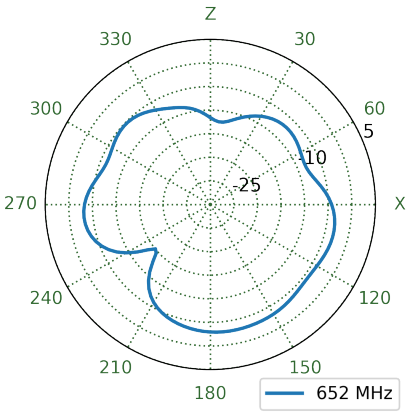


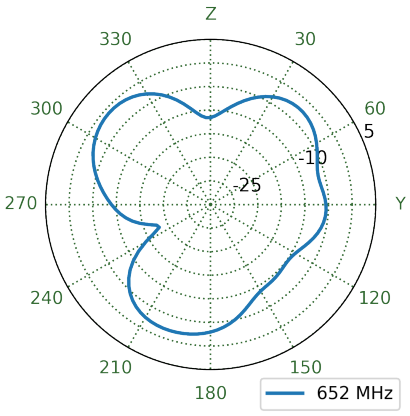
XZ Plane	YZ Plane	XY Plane
		

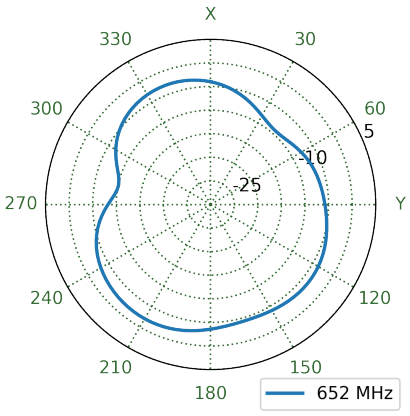
7.5 LTE1 Patterns at 650 MHz



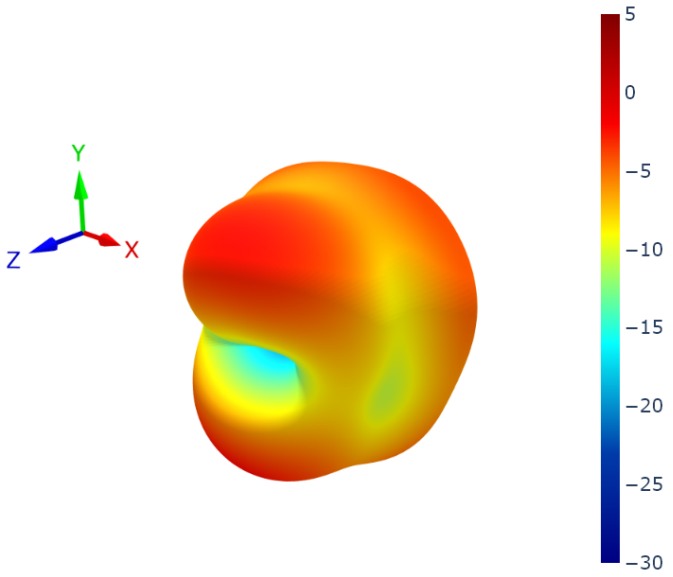
XZ Plane	YZ Plane	XY Plane



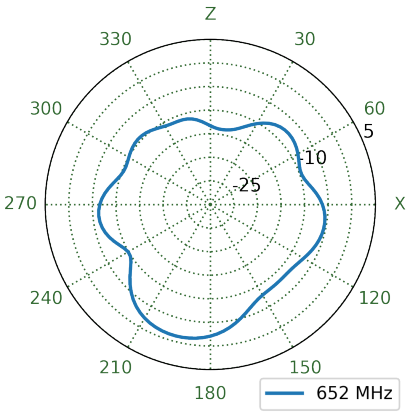


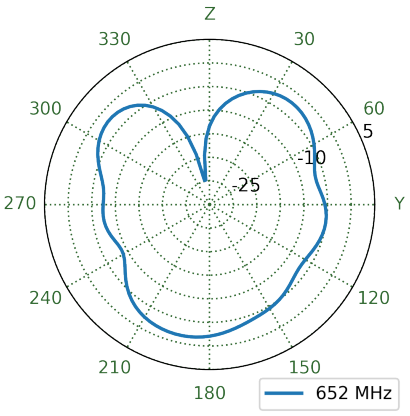


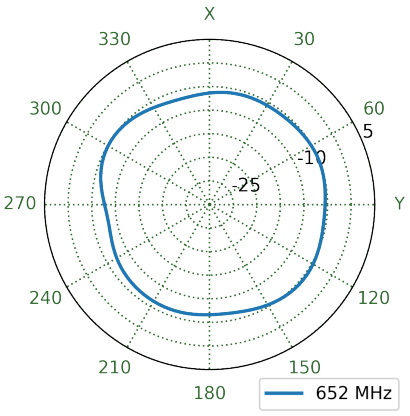
7.6 LTE2 Patterns at 650 MHz



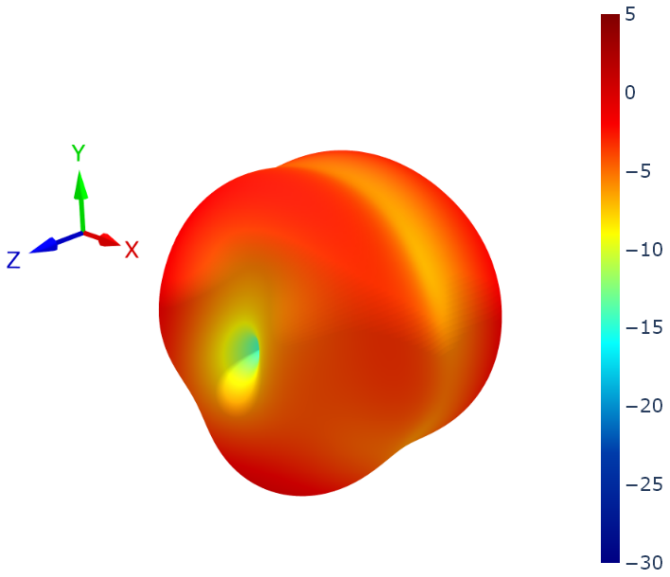
XZ Plane	YZ Plane	XY Plane

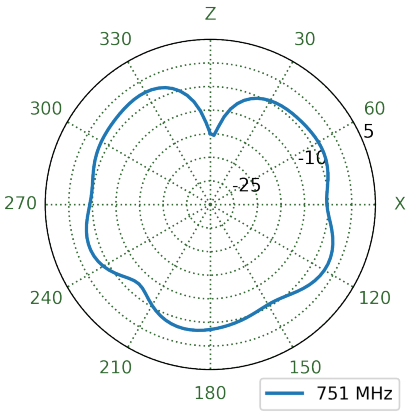
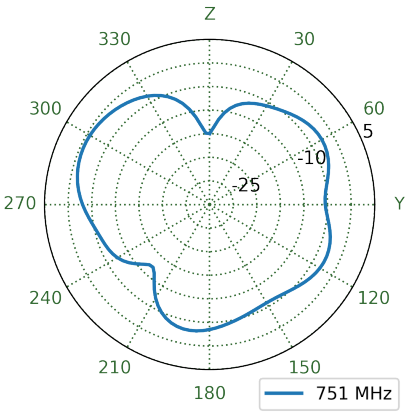
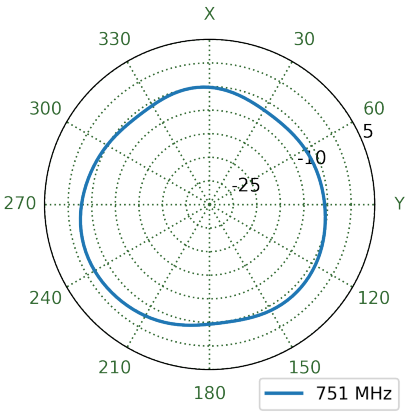




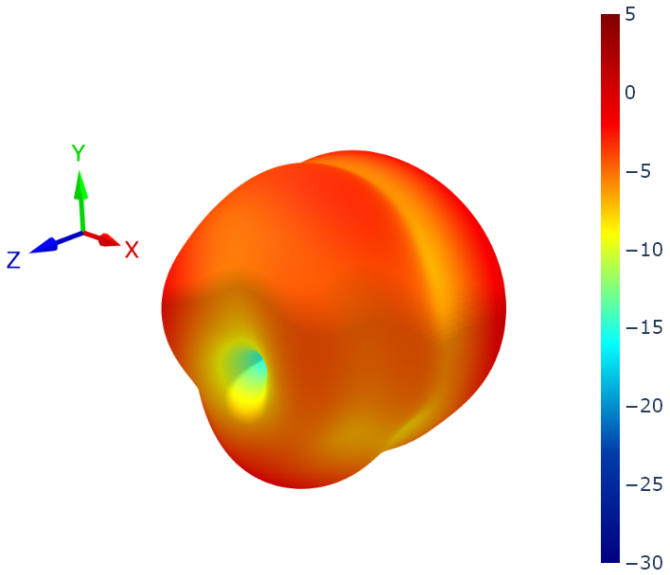


7.7 LTE1 Patterns at 750 MHz

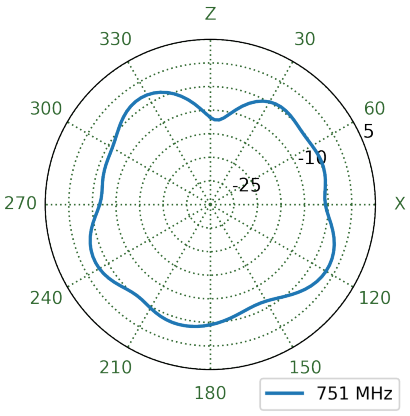


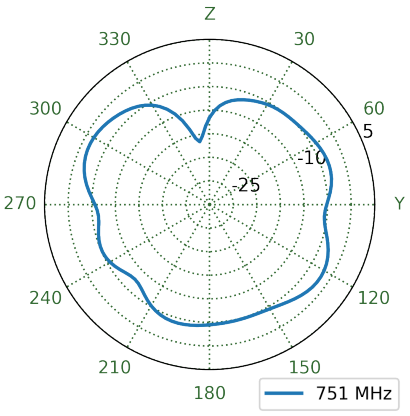
XZ Plane	YZ Plane	XY Plane
		

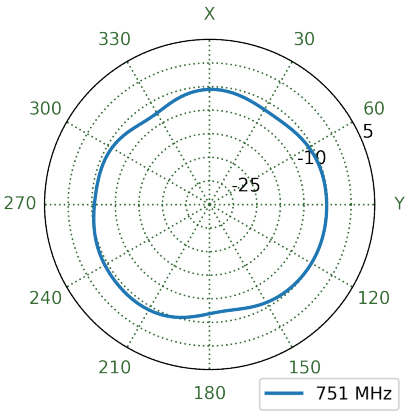
7.8 LTE2 Patterns at 750 MHz



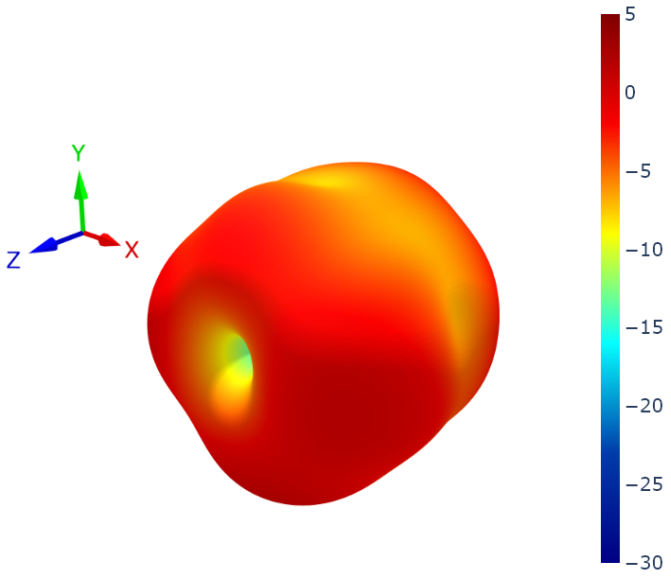
XZ Plane	YZ Plane	XY Plane



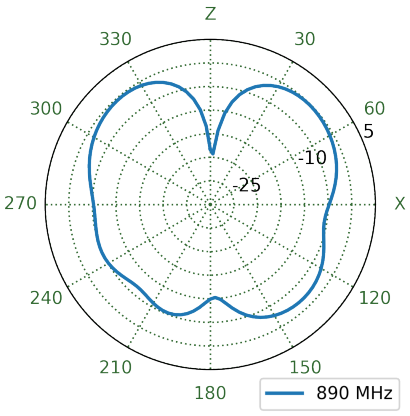


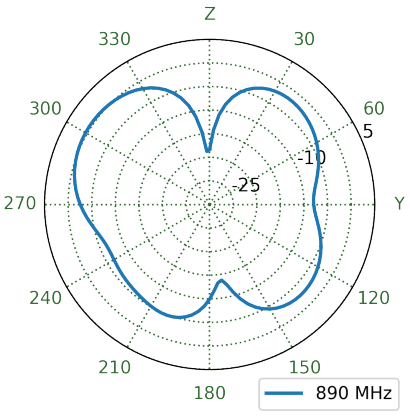


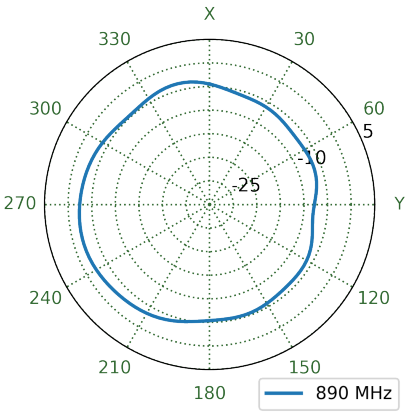
7.9 LTE1 Patterns at 890 MHz



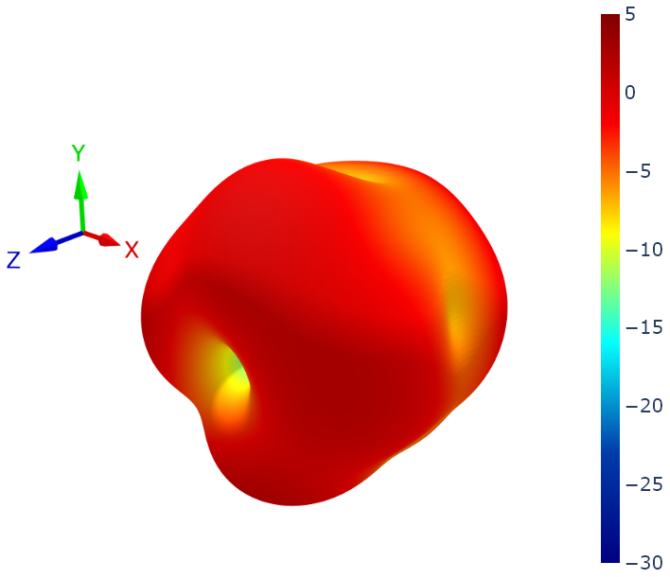
XZ Plane	YZ Plane	XY Plane



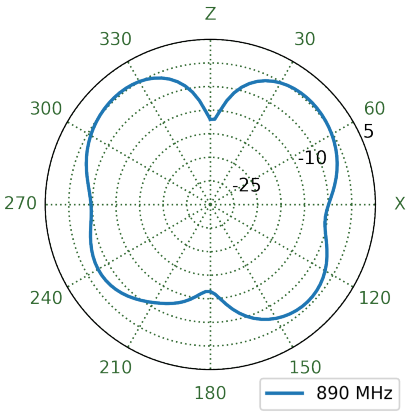


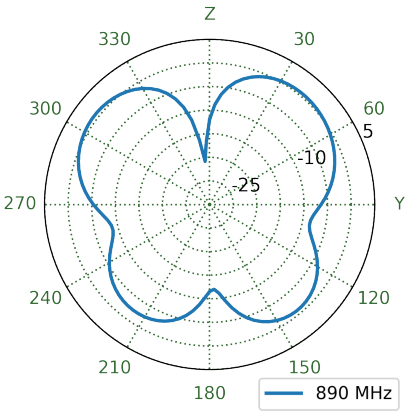


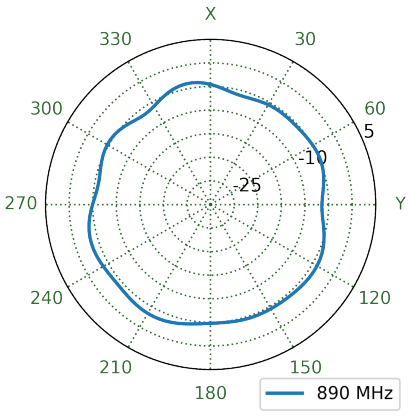
7.10 LTE2 Patterns at 890 MHz



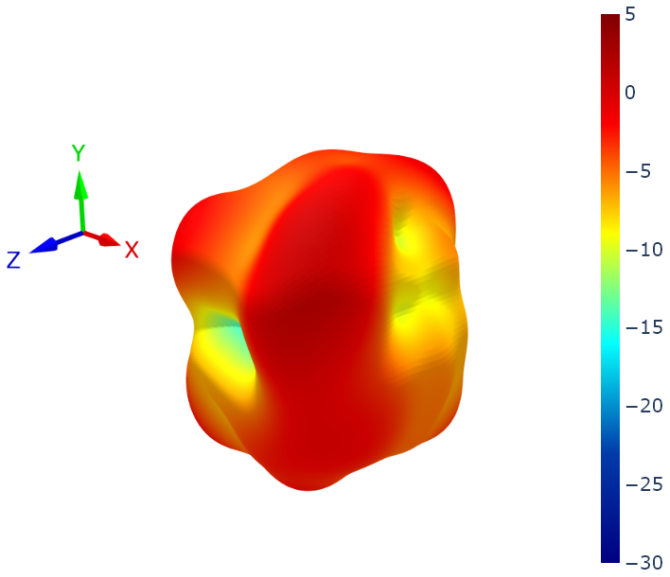
XZ Plane	YZ Plane	XY Plane



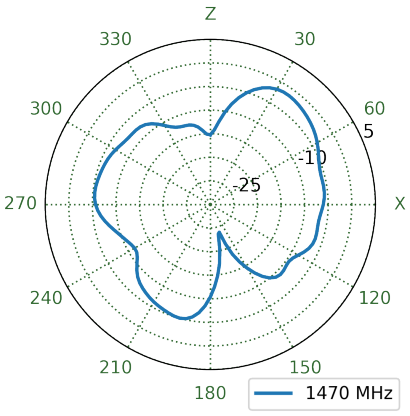


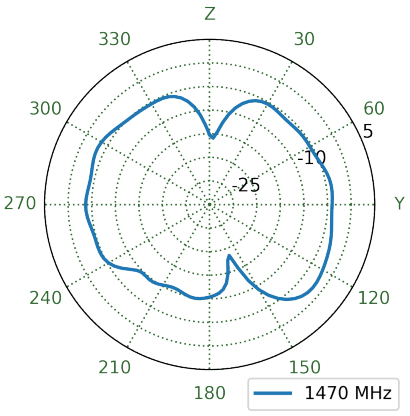


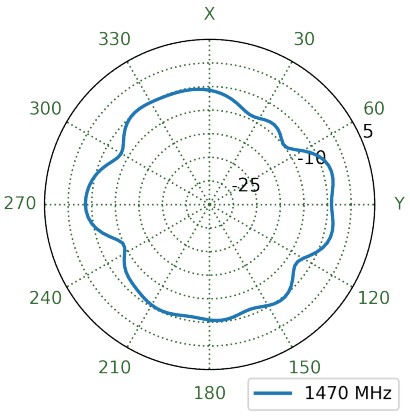
7.11 LTE1 Patterns at 1470 MHz



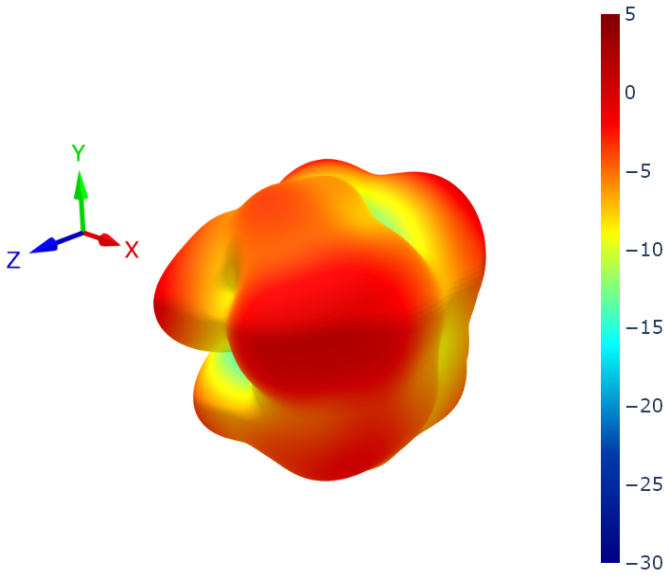
XZ Plane	YZ Plane	XY Plane



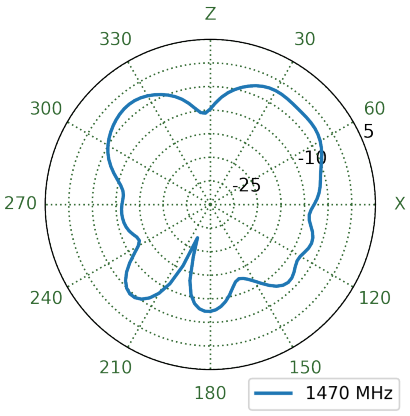


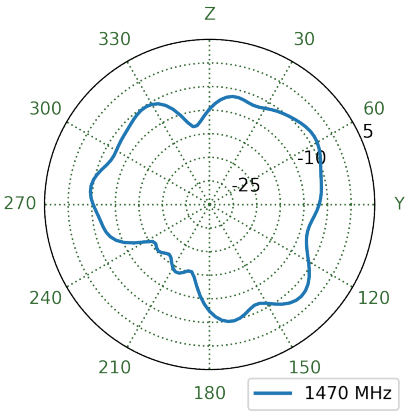


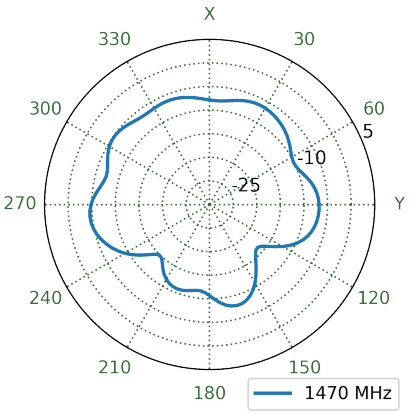
7.12 LTE2 Patterns at 1470 MHz



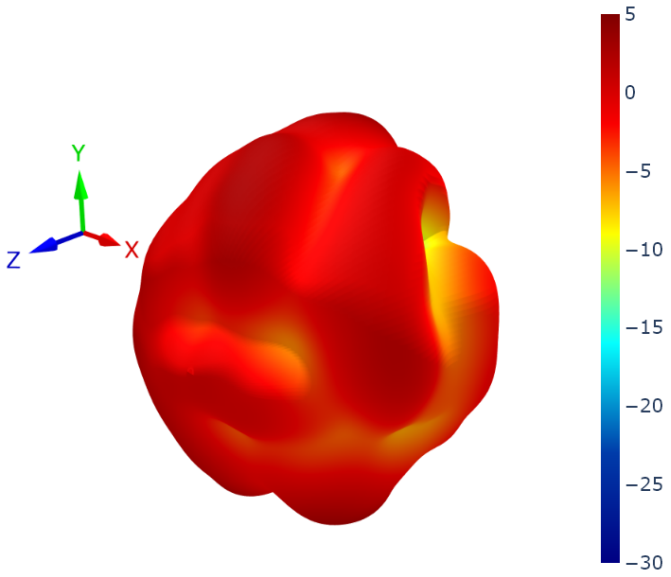
XZ Plane	YZ Plane	XY Plane



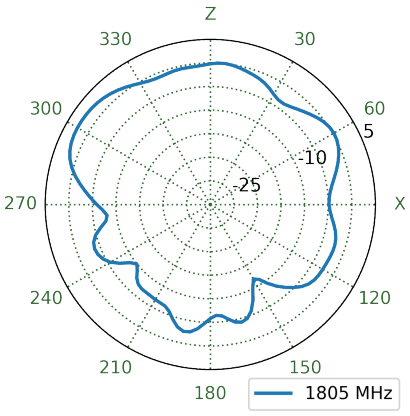


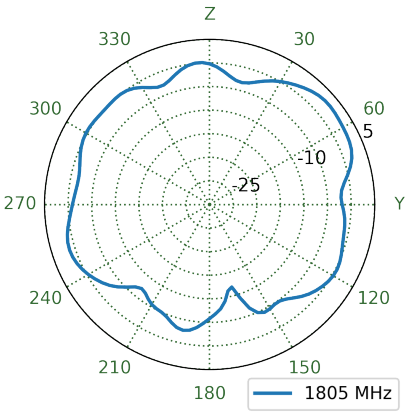


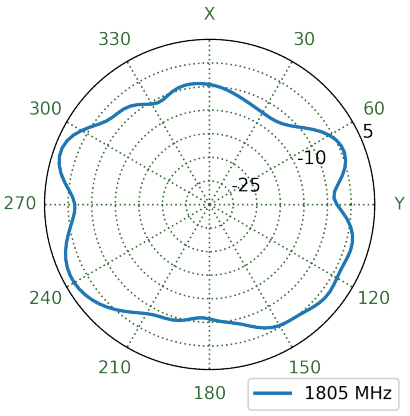
7.13 LTE1 Patterns at 1805 MHz



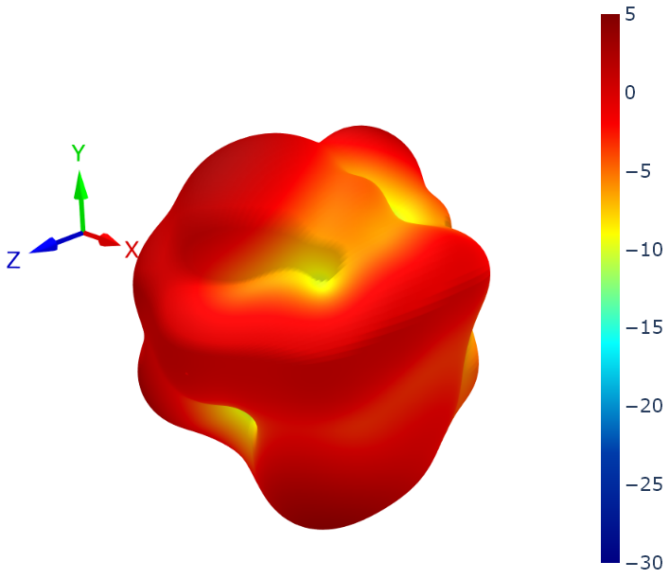
XZ Plane	YZ Plane	XY Plane



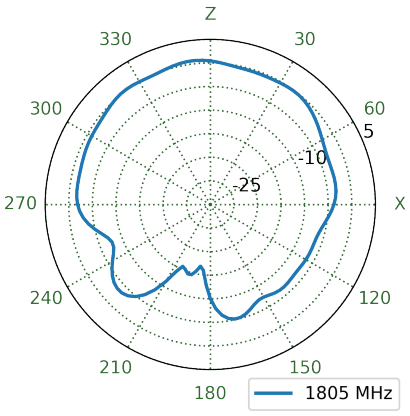


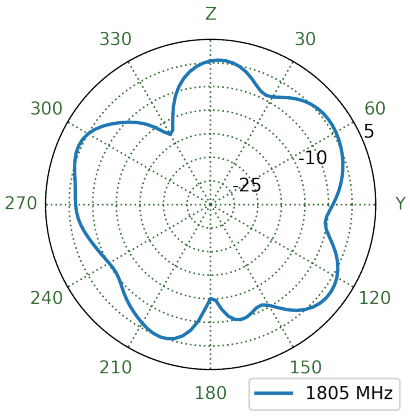


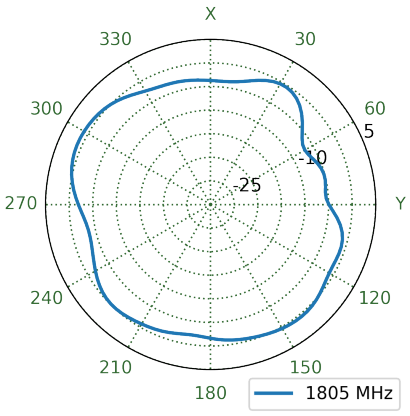
7.14 LTE2 Patterns at 1805 MHz



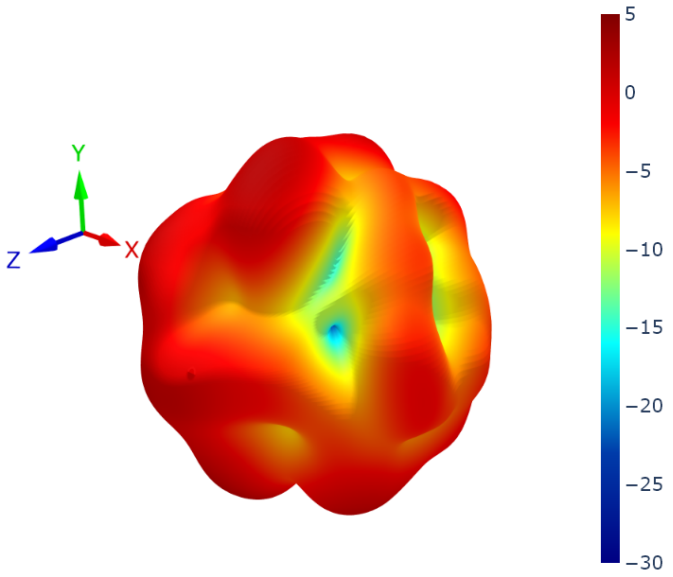
XZ Plane	YZ Plane	XY Plane



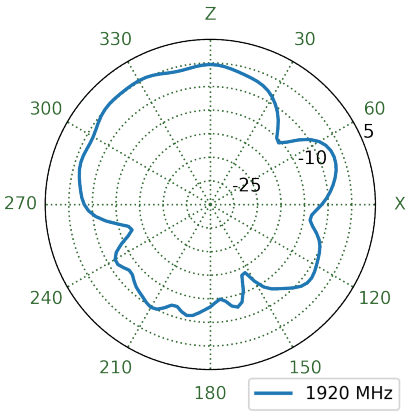


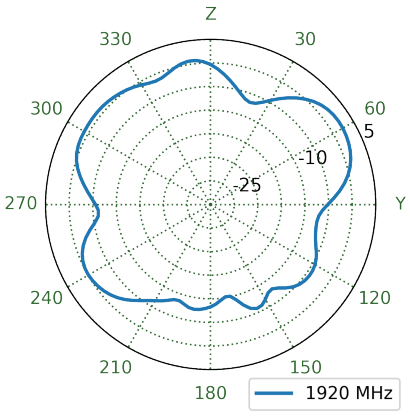


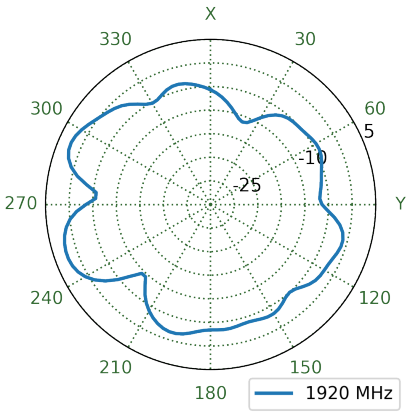
7.15 LTE1 Patterns at 1920 MHz



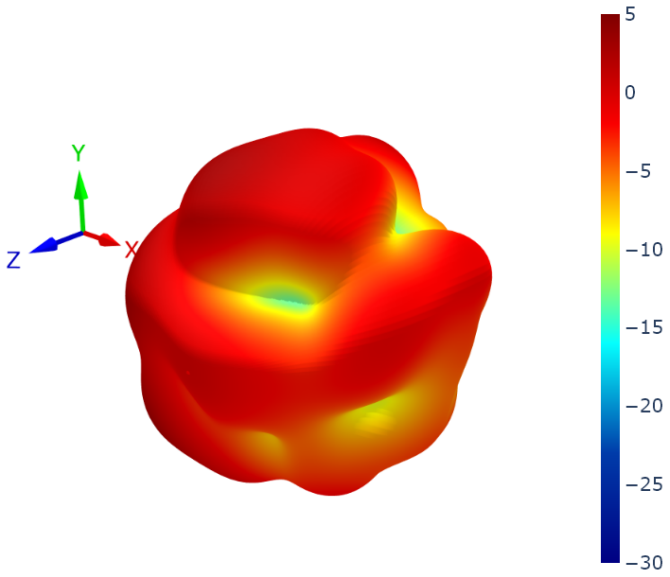
XZ Plane	YZ Plane	XY Plane



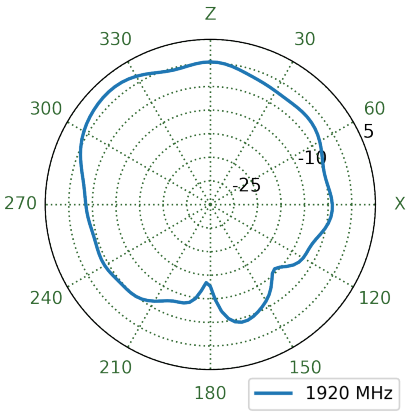


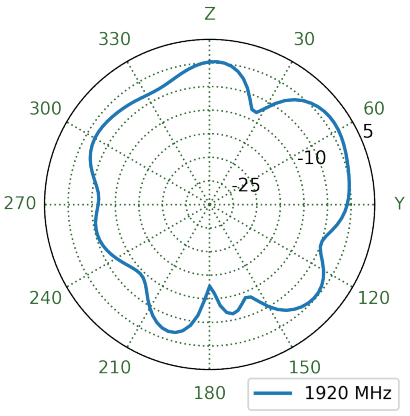


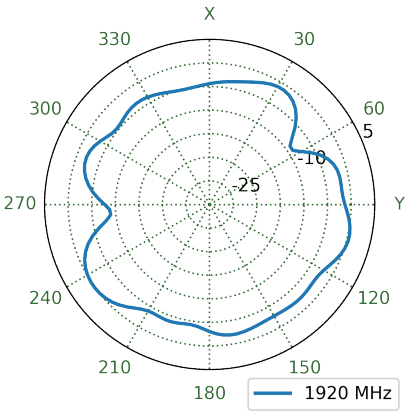
7.16 LTE2 Patterns at 1920 MHz



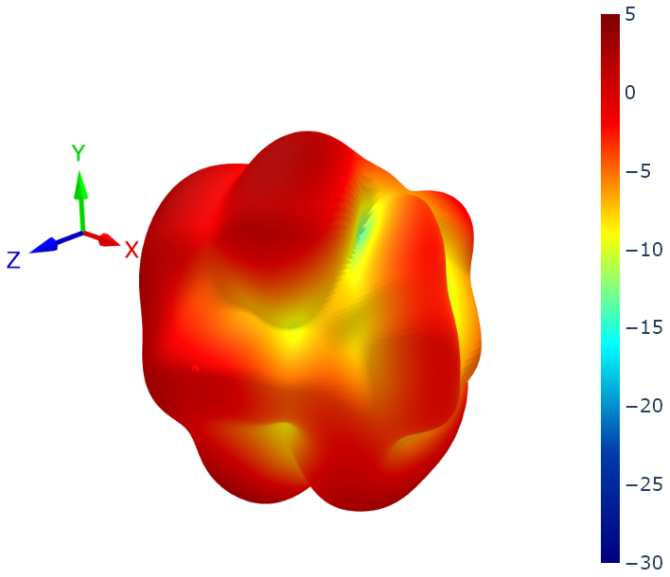
XZ Plane	YZ Plane	XY Plane



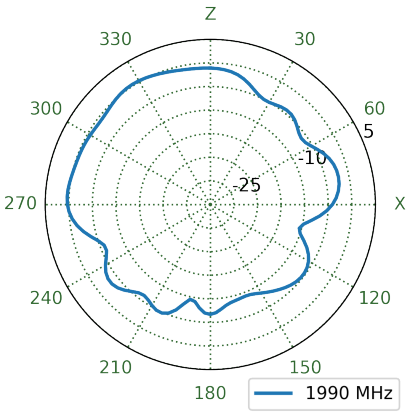


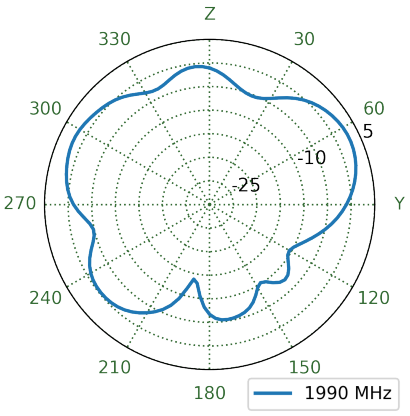


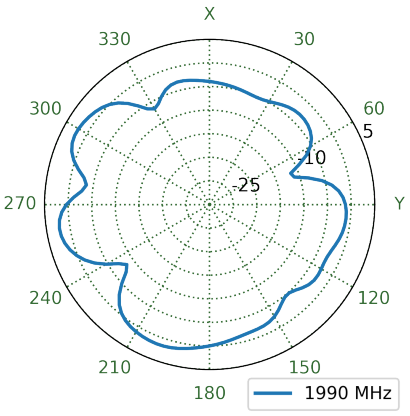
7.17 LTE1 Patterns at 1990 MHz



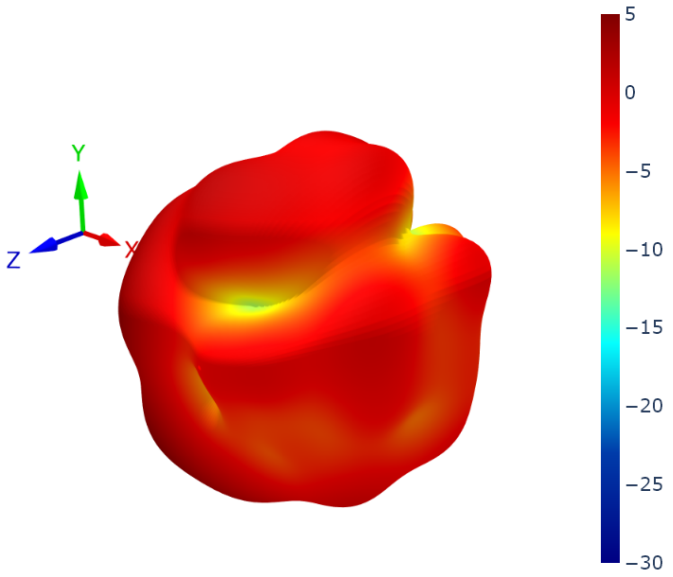
XZ Plane	YZ Plane	XY Plane



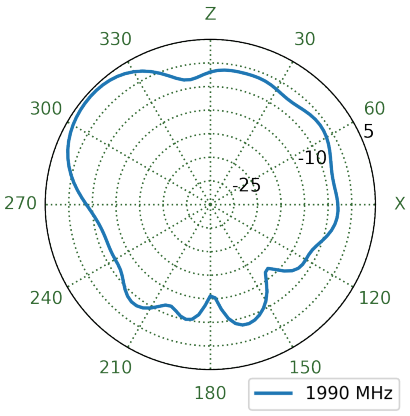


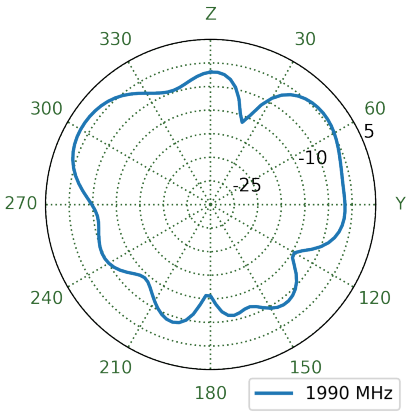


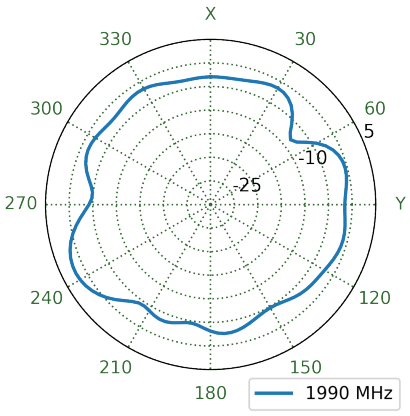
7.18 LTE2 Patterns at 1990 MHz



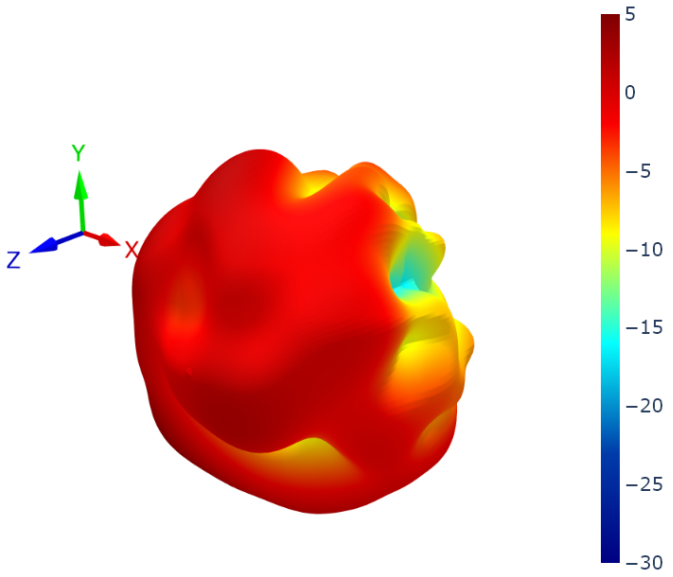
XZ Plane	YZ Plane	XY Plane



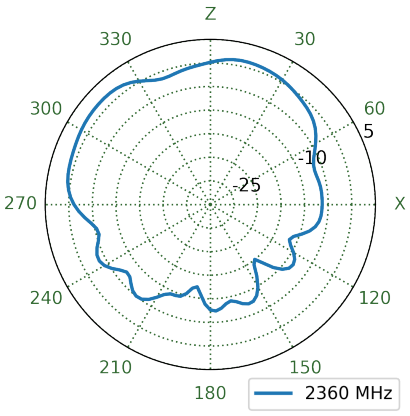


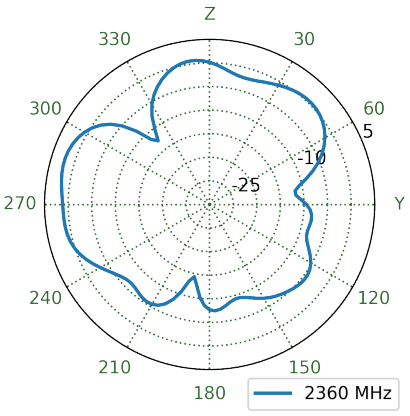


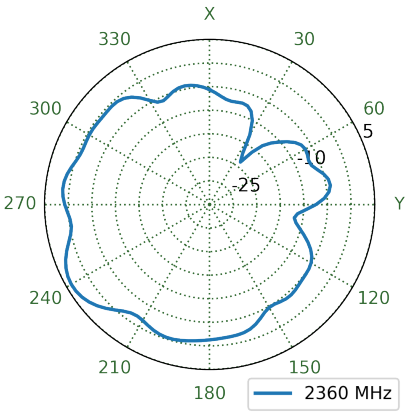
7.19 LTE1 Patterns at 2360 MHz



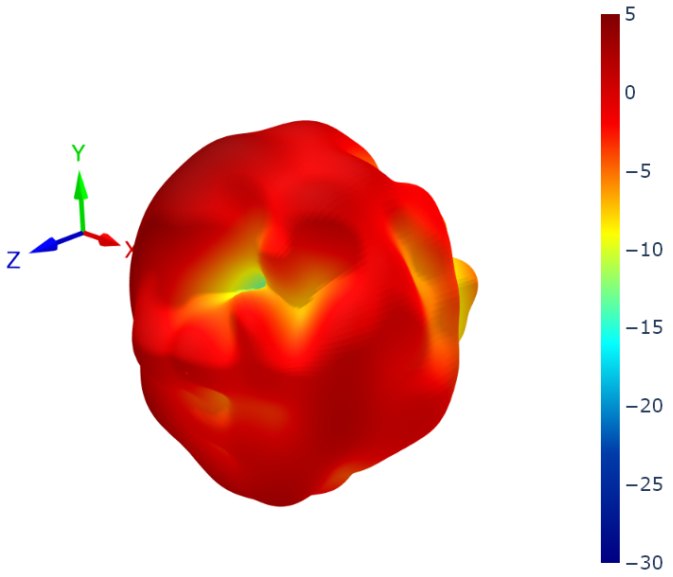
XZ Plane	YZ Plane	XY Plane



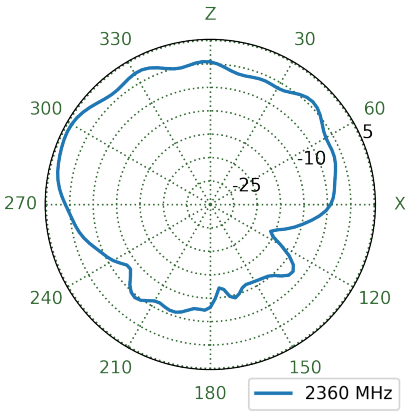


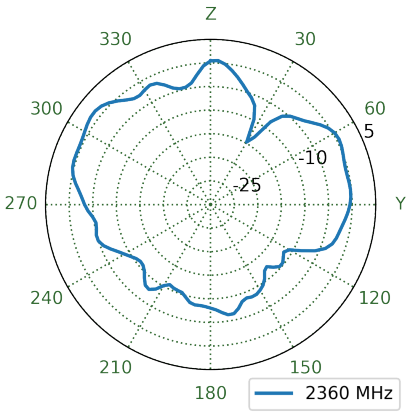


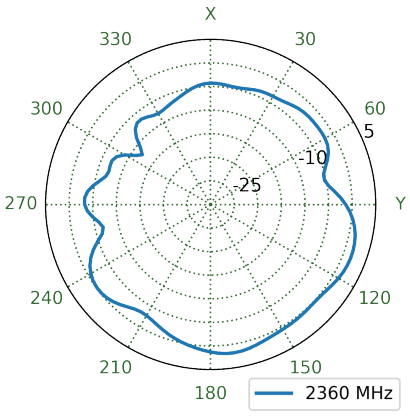
7.20 LTE2 Patterns at 2360 MHz



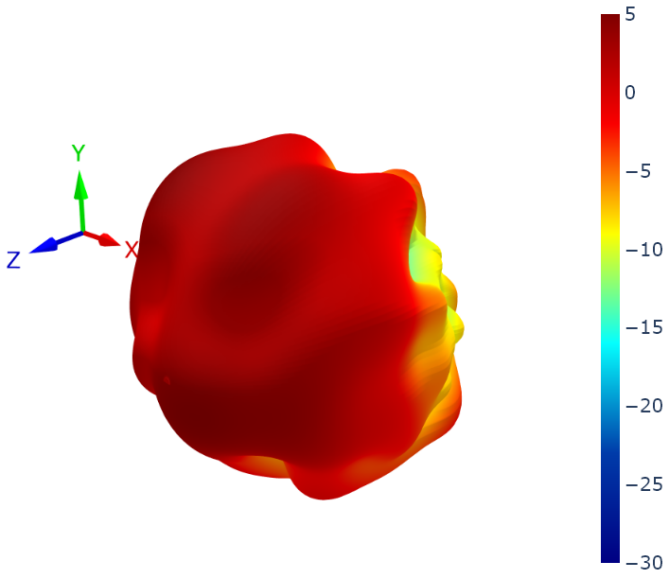
XZ Plane	YZ Plane	XY Plane



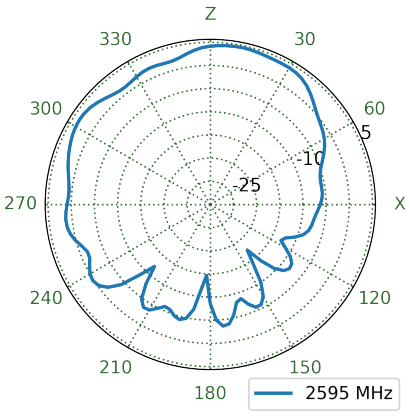


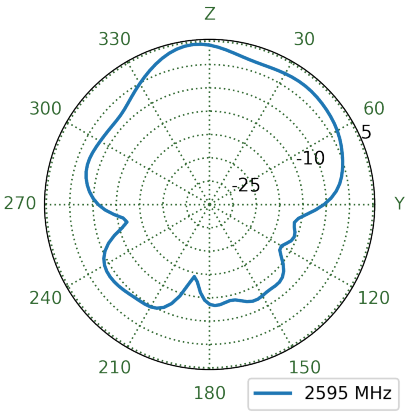


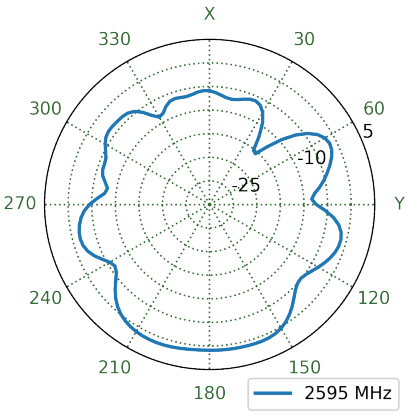
7.21 LTE1 Patterns at 2595 MHz



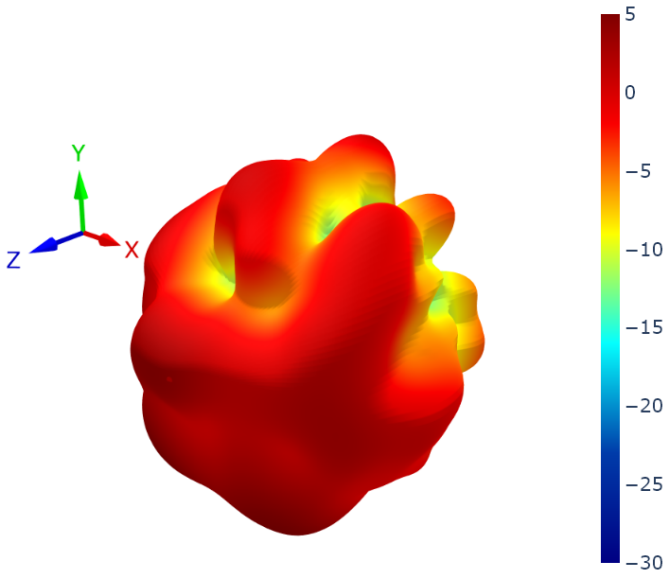
XZ Plane	YZ Plane	XY Plane



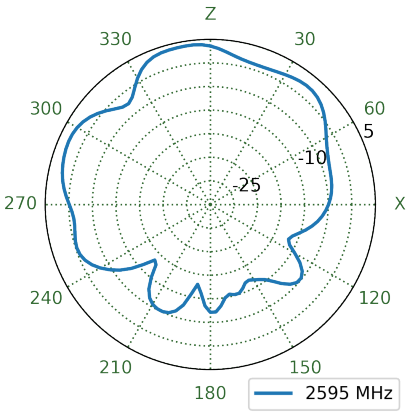


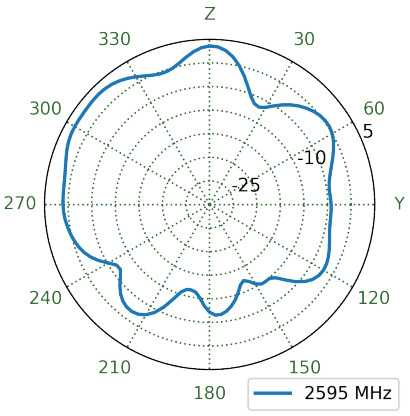


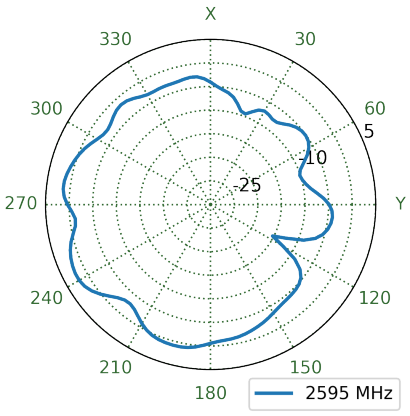
7.22 LTE2 Patterns at 2595 MHz



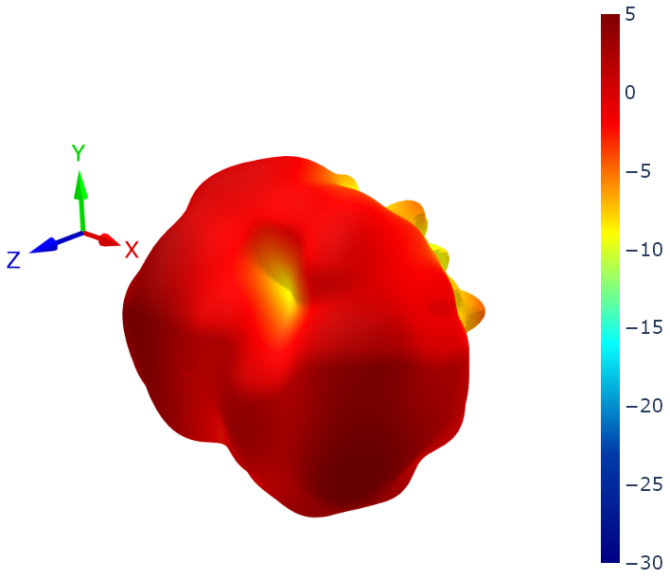
XZ Plane	YZ Plane	XY Plane



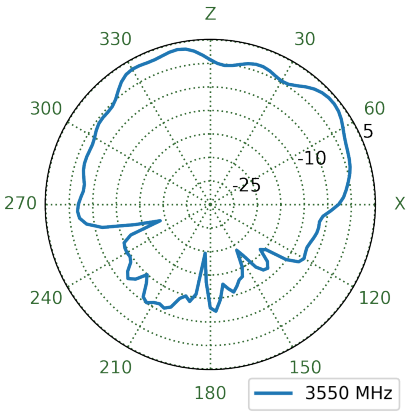


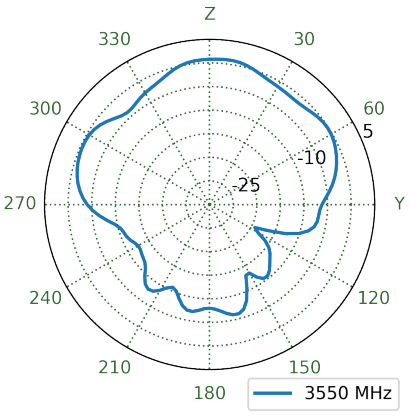


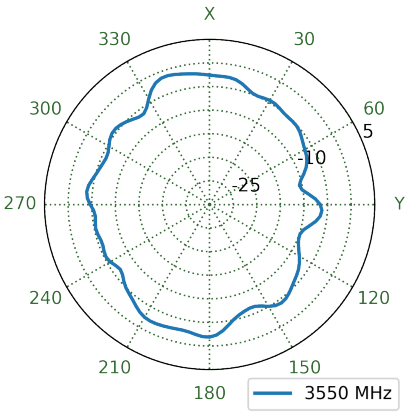
7.23 LTE1 Patterns at 3550 MHz



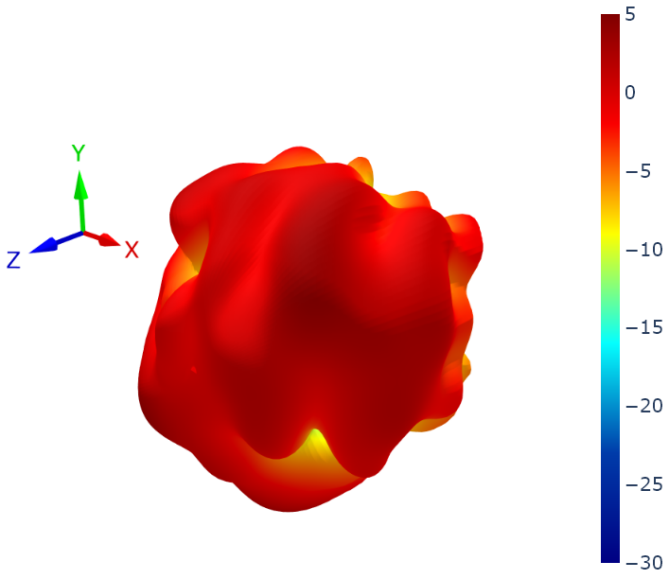
XZ Plane	YZ Plane	XY Plane



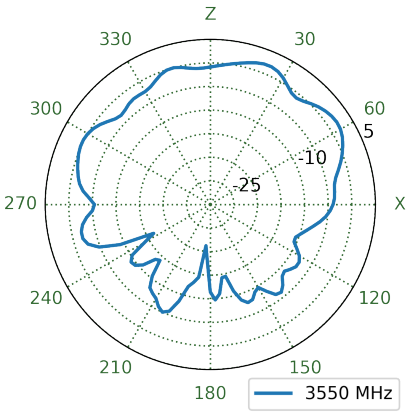


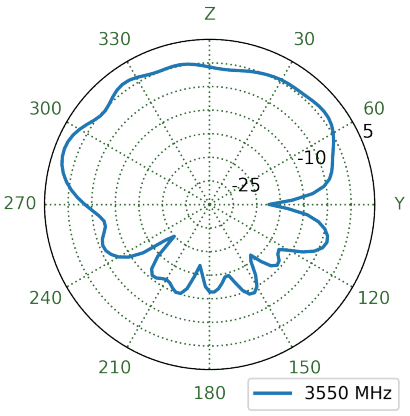


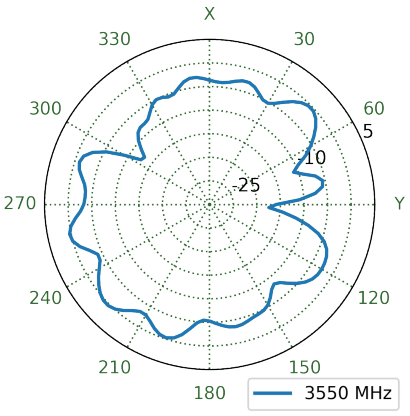
7.24 LTE2 Patterns at 3550 MHz



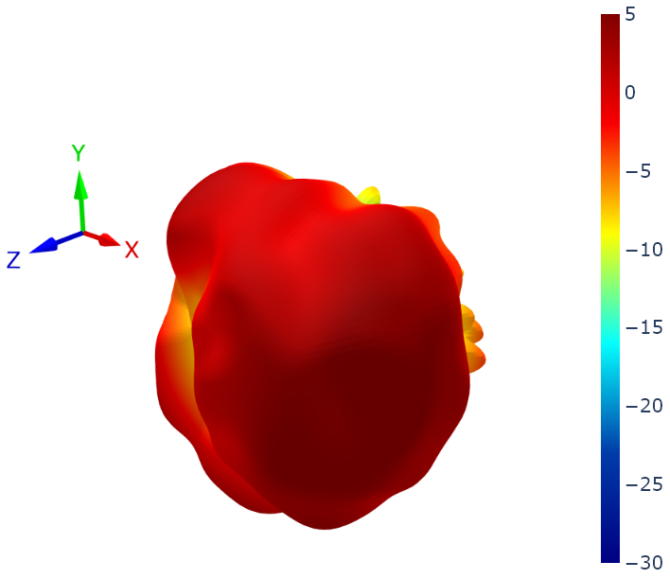
XZ Plane	YZ Plane	XY Plane



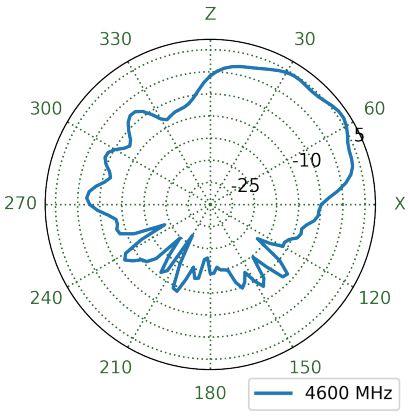


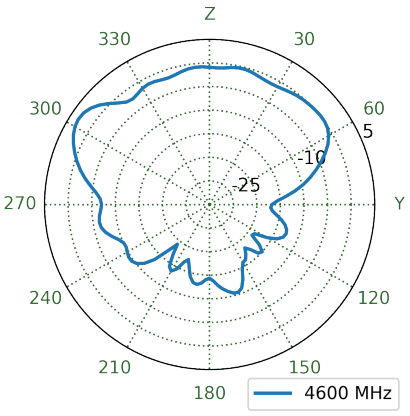


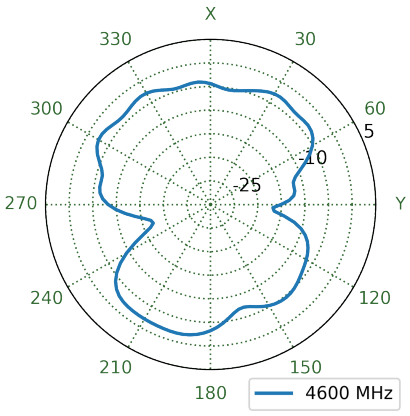
7.25 LTE1 Patterns at 4600 MHz



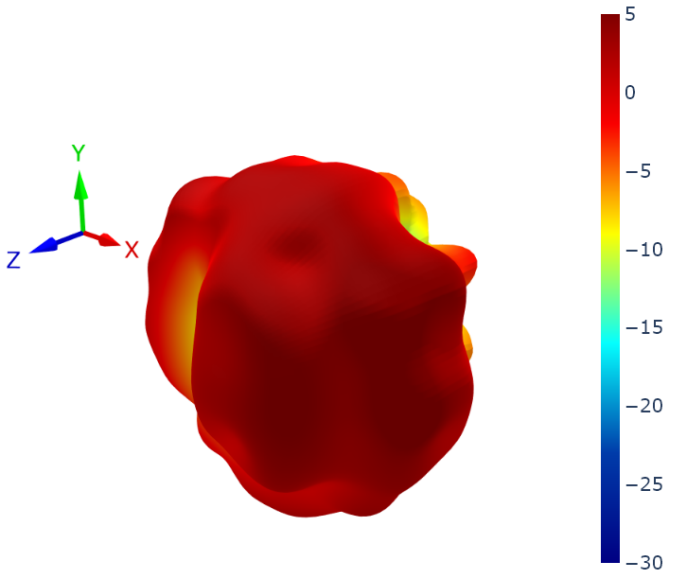
XZ Plane	YZ Plane	XY Plane



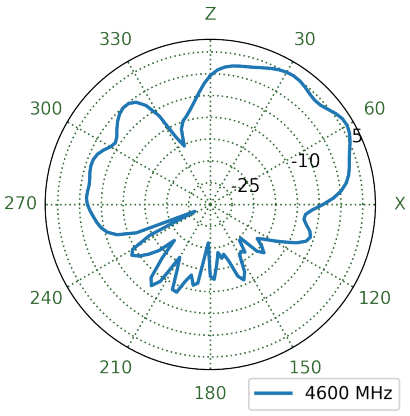


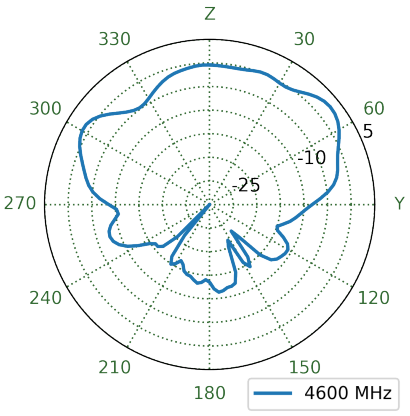


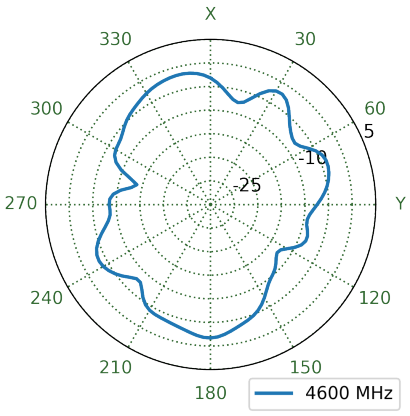
7.26 LTE2 Patterns at 4600 MHz



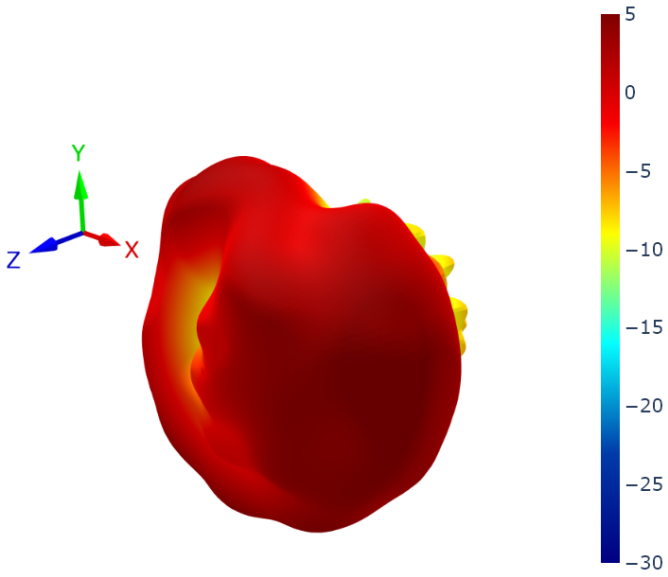
XZ Plane	YZ Plane	XY Plane



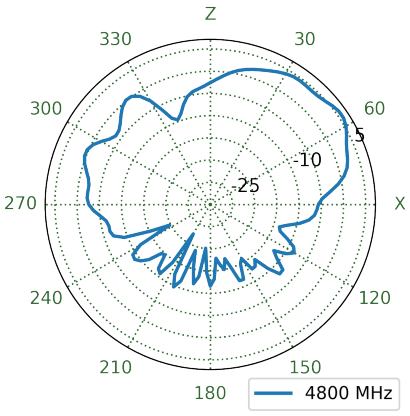


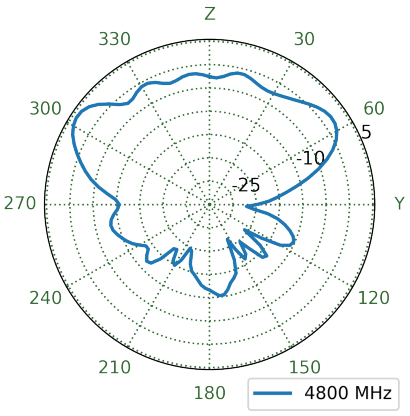


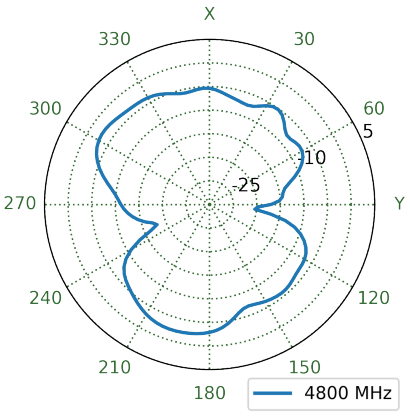
7.27 LTE1 Patterns at 4800 MHz



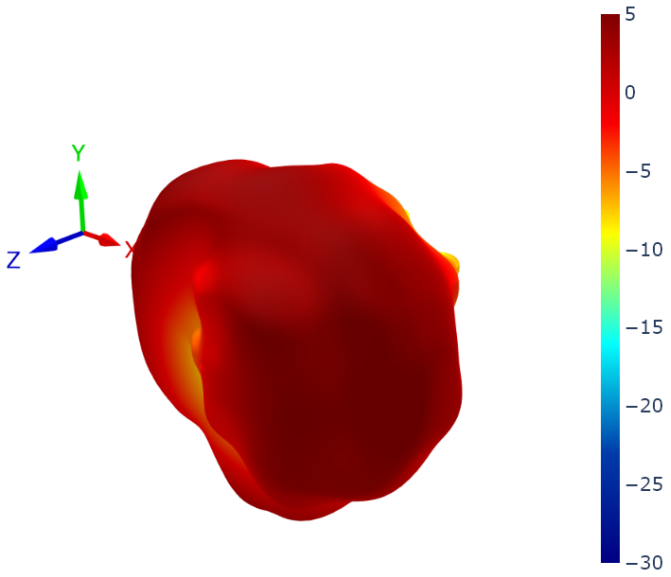
XZ Plane	YZ Plane	XY Plane



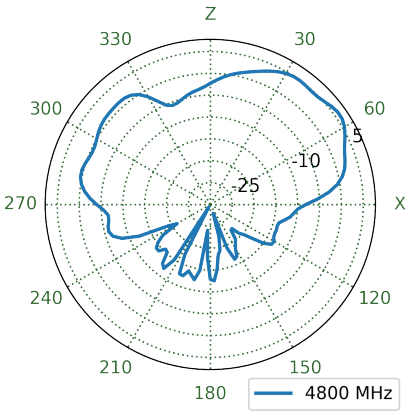


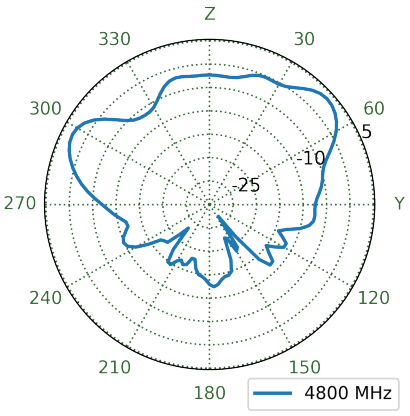


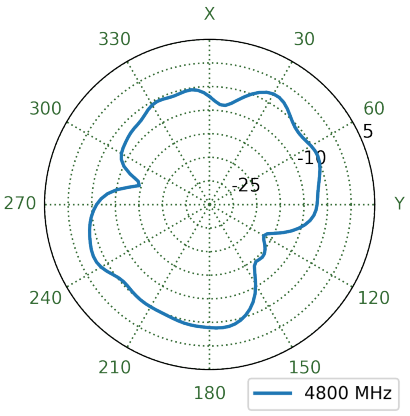
7.28 LTE2 Patterns at 4800 MHz



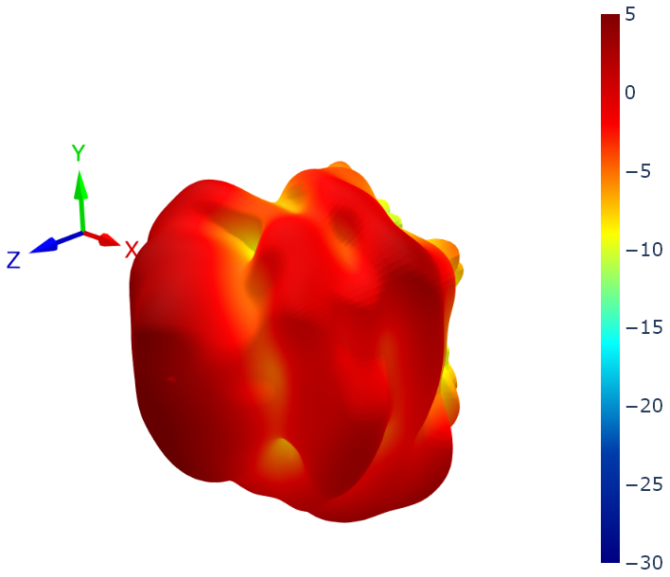
XZ Plane	YZ Plane	XY Plane



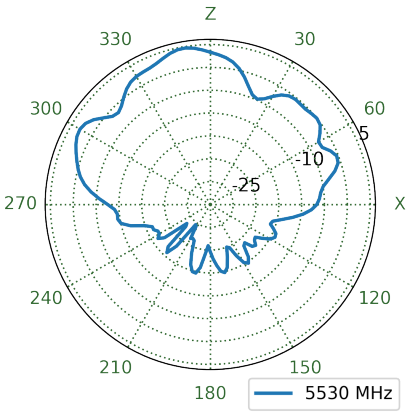


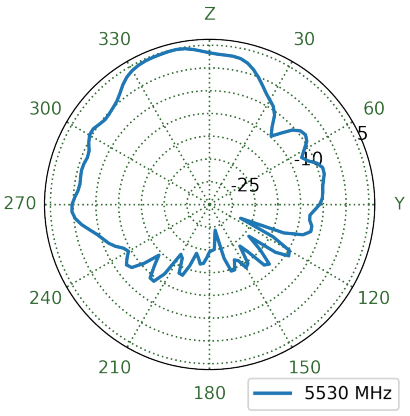


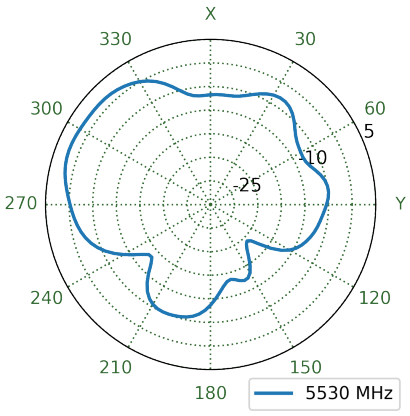
7.29 LTE1 Patterns at 5530 MHz



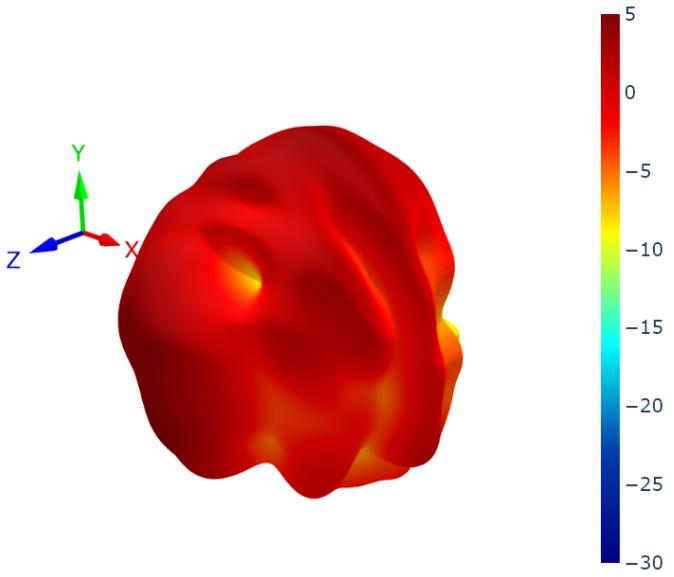
XZ Plane	YZ Plane	XY Plane



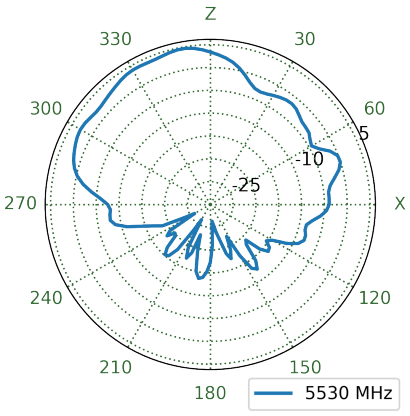


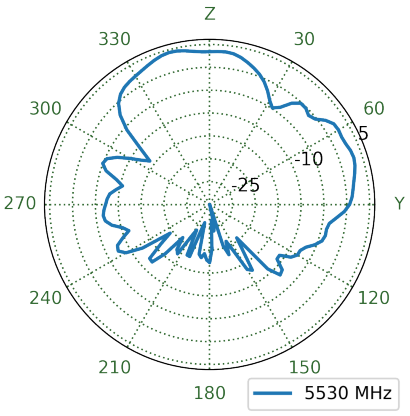


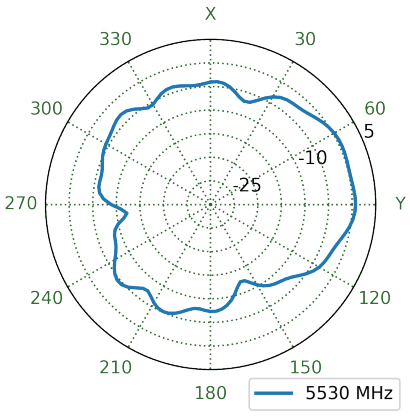
7.30 LTE2 Patterns at 5530 MHz



XZ Plane	YZ Plane	XY Plane







Changelog for the datasheet

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Date:	2024-09-09
Notes:	Initial Release
Author:	Cesar Sousa

Previous Revisions

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