TAOGLAS

Datasheet

MA2336

Part No:
MA2336.A.001

Description

6-in-1 GNSS, 2x Wideband Cellular MIMO, 2x Dual-Band Wi-Fi MIMO, and AM/FM Headliner Adhesive Antenna with 215m RG-174

Features:

Low-Profile, Covert Film Antenna
1* GNSS - L1,B1I,G1
2* Cellular - 600-6000MHz
2* Wi-Fi - 2.4 - 5.8MHz
1* AM/FM Antenna
Durable ABS+PC Enclosure
Designed for Heavy-Duty Vehicles and Equipment
Integrated 3M VHB Adhesive Mounting
RG-174 Coaxial Cable
FAKRA Connector (Custom Options Available)
Compact Dimensions: 553 × 70 × 16.7mm
Suitable for OEM Automotive, Trucks, RVs, Motorcycles, and Machinery
Manufactured in TS16949 Automotive-Approved Facilities
RoHS & REACH Compliant

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1. Introduction

Taoglas MA2336 6-in-1 GNSS, Dual 5G/4G, Dual Wi-Fi & AM/FM Antenna

The Taoglas MA2336 is a next-generation, high-performance, low-profile 6-in-1 antenna solution, engineered for advanced automotive and heavy equipment connectivity. Designed to meet the growing demands of telematics and infotainment systems, the MA2336 integrates **GNSS**, **dual 5G/4G cellular**, **dual Wi-Fi**, and **AM/FM reception** into a single, compact unit.

Housed in a robust ABS+PC enclosure with an internal PCB architecture, the MA2336 delivers exceptional RF performance across multiple frequency bands while maintaining a sleek, covert design for seamless integration into modern vehicles. This multi-technology antenna ensures reliable connectivity for navigation, high-speed data, and entertainment applications without compromising durability or quality.

Certified to the stringent TS16949 automotive quality standard, the MA2336 is approved for OEM deployment and meets the rigorous requirements of heavy-duty truck and equipment manufacturers.

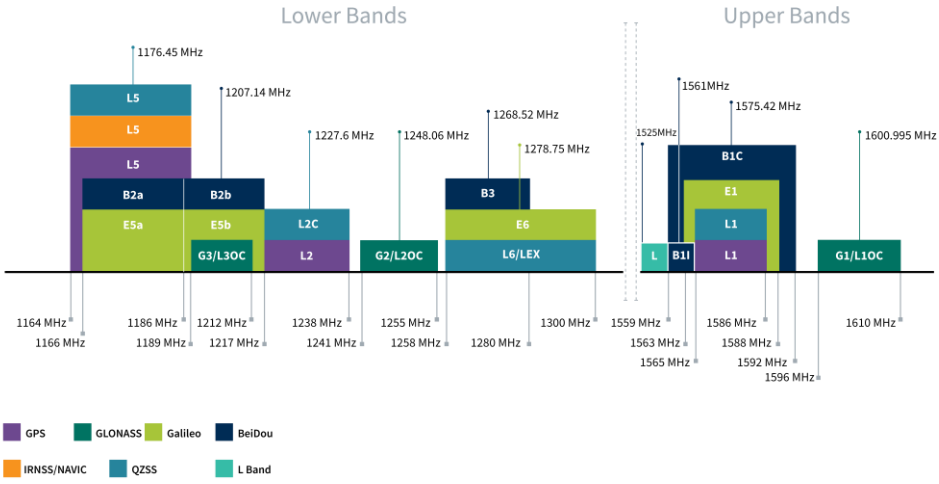
Typical Applications:

- OEM automotive platforms
- Heavy-duty trucks and plant machinery
- Recreational Vehicles (RVs)
- Specialized and industrial equipment

The antenna includes standard RG-174 coaxial cables with FAKRA connectors, with customization options available upon request. For tailored integration solutions, please contact your local Taoglas support team.

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**	**1602**
VSWR (max.)	3:1	2:1	1.5:1
Efficiency (%)	51.1	67.2	66.2
Peak Gain (dBi)	1.49	2.75	3.89
Average Gain (dB)	-2.91	-1.72	-1.80
Polarization	RHCP		
Impedance	50 Ω		

Cellular Electrical									
Band	Frequency (MHz)	Measurement	Efficiency (%)	Average Gain (dB)	Peak Gain (dBi)	Impedance	Polarization	Radiation Pattern	Max. input power
5GNR/4G Band71	617-698	Cellular 1	50.2	-3.00	2.49	50 Ω	Linear	Omni directional	10W
		Cellular 2	37.8	-4.22	2.49				
4G/3G Band 12,13,14,17,28,29	698-824	Cellular 1	68.8	-1.62	3.54				
		Cellular 2	55.0	-2.60	2.65				
4G/3G/NB-IoT/Cat M Band 5,8,18,19,20,26,27	824-960	Cellular 1	63.9	-1.95	3.33				
		Cellular 2	43.0	-3.67	1.80				
5GNR/4G Band 21,32,74,75,76	1427-1518	Cellular 1	52.2	-2.82	3.27				
		Cellular 2	16.8	-7.75	0.31				
4G/3G Band 1,2,3,4,9,23,25,35,39, 66	1710-2200	Cellular 1	61.7	-2.10	4.35				
		Cellular 2	57.0	-2.44	4.85				
4G/3G Band 7,30,38,40,41	2300-2690	Cellular 1	47.7	-3.22	2.74				
		Cellular 2	61.7	-2.10	4.77				
LTE5200/Wi-Fi5800	5150-5925	Cellular 1	9.9	-10.04	-1.94				
		Cellular 2	32.2	-4.92	2.24				
5GNR/4G Band 22,42,48,77,78,79	3300-5000	Cellular 1	21.3	-6.71	1.33				
		Cellular 2	40.2	-3.95	4.87				

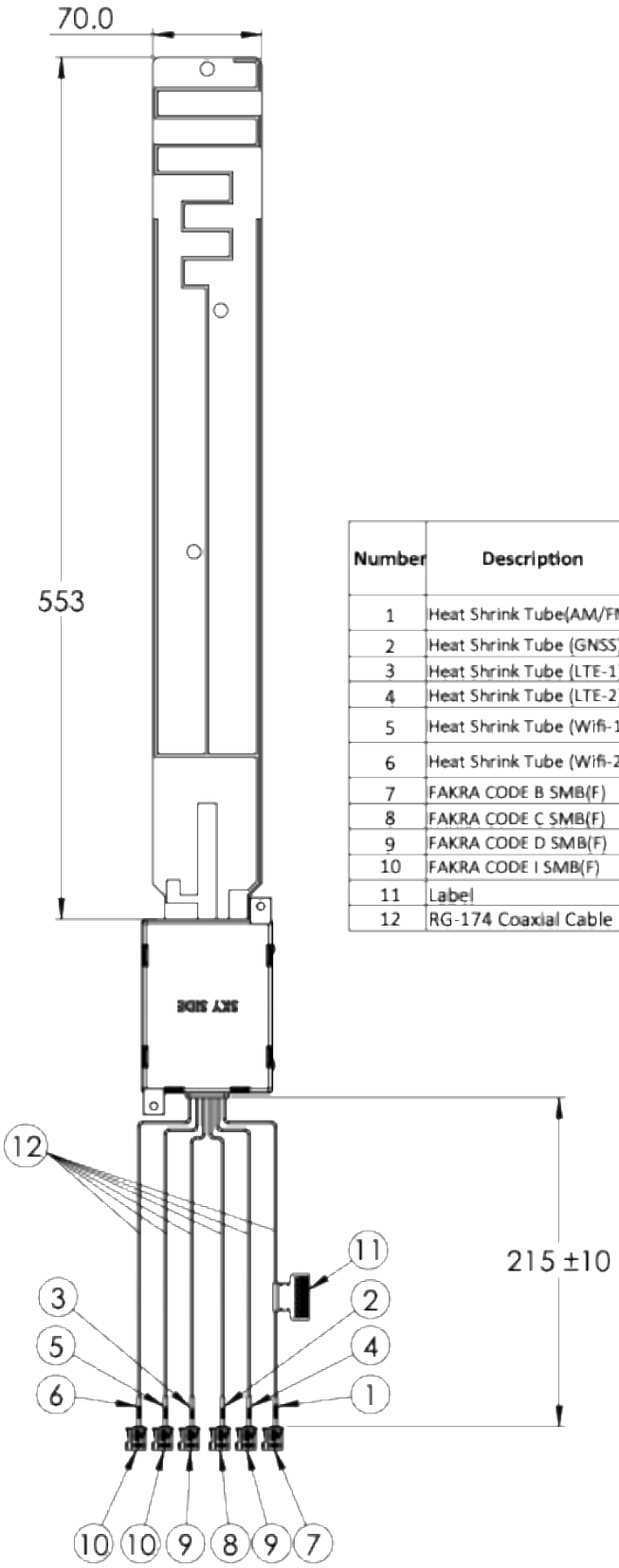
Wi-Fi Electrical									
Band	Frequency (MHz)	Measurement	Efficiency (%)	Average Gain (dB)	Peak Gain (dBi)	Impedance	Polarization	Radiation Pattern	Max. input power
Wi-Fi - 2GHz	2400-2500	Wi-Fi 1	47.6	-3.22	4.45	50 Ω	Linear	Omni directional	10W
		Wi-Fi 2	55.6	-2.55	4.83				
Wi-Fi - 5GHz	5150-5850	Wi-Fi 1	58.6	-2.32	5.17				
		Wi-Fi 2	65.5	-1.84	3.68				

Mechanical	
Dimensions	553mm x 70mm x 16.7mm
Weight	137g
Material	Housing: ABS/PC
Connector	FAKRA Series – See drawing in Section 2
Cable	RG-174

Environmental	
Waterproof Rating	IP41 (Internal Installation Only)
Operation Temperature	-40°C to 85°C
Storage Temperature	-40°C to 85°C
Thermal Shock	IEC 60068-2-14
Relative Humidity	Non-condensing 65°C 95% RH

5G/4G Bands				
Band Number	5GNR / FR1 / LTE / LTE-Advanced / WCDMA / HSPA / HSPA+ / TD-SCDMA / NTN			
	Uplink	Downlink	Cellular 1	Cellular 2
B1	1920 to 1980	2110 to 2170	✓	✓
B2	1850 to 1910	1930 to 1990	✓	✓
B3	1710 to 1785	1805 to 1880	✓	✓
B4	1710 to 1755	2110 to 2155	✓	✓
B5	824 to 849	869 to 894	✓	✓
B7	2500 to 2570	2620 to 2690	✓	✓
B8	880 to 915	925 to 960	✓	✓
B9*	1749.9 to 1784.9	1844.9 to 1879.9	✓	✓
B11	1427.9 to 1447.9	1475.9 to 1495.9	✓	✓
B12	699 to 716	729 to 746	✓	✓
B13	777 to 787	746 to 756	✓	✓
B14	788 to 798	758 to 768	✓	✓
B17	704 to 716	734 to 746	✓	✓
B18	815 to 830	860 to 875	✓	✓
B19	830 to 845	875 to 890	✓	✓
B20	832 to 862	791 to 821	✓	✓
B21	1447.9 to 1462.9	1495.9 to 1510.9	✓	✓
B22*	3410 to 3490	3510 to 3590	✓	✓
B23 / n23	2000 to 2020	2180 to 2200	✓	✓
B24 / n255	1626.5 to 1660.5	1525 to 1559	✓	✓
B25	1850 to 1915	1930 to 1995	✓	✓
B26	814 to 849	859 to 894	✓	✓
B27*	807 to 824	852 to 869	✓	✓
B28	703 to 748	758 to 803	✓	✓
B29	717 to 728		✓	✓
B30	2305 to 2315	2350 to 2360	✓	✓
B31	452.5 to 457.5	462.5 to 467.5	✗	✗
B32	1452 to 1496		✓	✓
B34	2010 to 2025		✓	✓
B35	1850 to 1910		✓	✓
B36	1930 to 1990		✓	✓
B37	1910 to 1930		✓	✓
B38	2570 to 2620		✓	✓
B39	1880 to 1920		✓	✓
B40	2300 to 2400		✓	✓
B41	2496 to 2690		✓	✓
B42	3400 to 3600		✓	✓
B43	3600 to 3800		✓	✓
B45	1447 to 1467		✓	✓
B46	5150 to 5925		✓	✓
B47	5855 to 5925		✓	✓
B48	3550 to 3700		✓	✓
B49	3550 to 3700		✓	✓
B50	1432 to 1517		✓	✓
B51	1427 to 1432		✓	✓
B52	3300 to 3400		✓	✓
B53	2483.5 to 2495		✓	✓
B65	1920 to 2010	2110 to 2200	✓	✓
B66	1710 to 1780	2110 to 2200	✓	✓
B68	698 to 728	753 to 783	✓	✓
B69	2570 to 2620		✓	✓
B70	1695 to 1710	1995 to 2020	✓	✓
B71	663 to 698	617 to 652	✓	✓
B72	451 to 456	461 to 466	✗	✗
B73	450 to 455	460 to 465	✗	✗
B74	1427 to 1470	1475 to 1518	✓	✓
B75	1432 to 1517		✓	✓
B76	1427 to 1432		✓	✓
B77	3300 to 4200		✓	✓
B78	3300 to 3800		✓	✓
B79	4400 to 5000		✓	✓
B85	698 to 716	728 to 746	✓	✓
B87	410 to 415	420 to 425	✗	✗
B88	412 to 417	422 to 427	✗	✗
n256	1980 to 2010	2170 to 2200	✓	✓

3. Mechanical Drawing



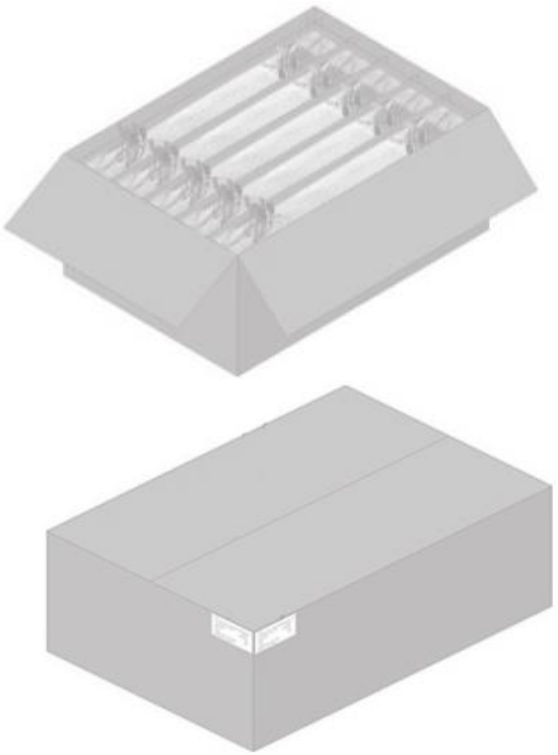
Number	Description	Material	Finish	Qty
1	Heat Shrink Tube(AM/FM)	PE	Green Tube/WhiteText	1
2	Heat Shrink Tube (GNSS)	PE	Blue Tube/White Text	1
3	Heat Shrink Tube (LTE-1)	PE	Red Tube/White Text	1
4	Heat Shrink Tube (LTE-2)	PE	Red Tube/White Text	1
5	Heat Shrink Tube (Wifi-1)	PE	Yellow Tube/Black Text	1
6	Heat Shrink Tube (Wifi-2)	PE	Yellow Tube/Black Text	1
7	FAKRA CODE B SMB(F)	PA66	White	1
8	FAKRA CODE C SMB(F)	PA66	Blue	1
9	FAKRA CODE D SMB(F)	PA66	BORDEAUX-Violet	2
10	FAKRA CODE I SMB(F)	PA66	Beige	2
11	Label	PEPA	White	1
12	RG-174 Coaxial Cable	PVC	Black	6

4. Packaging

☑ 1 PCS / PE Bag

☑ Weight (Kg): 0.13 ±3%

☑ SPQ Label



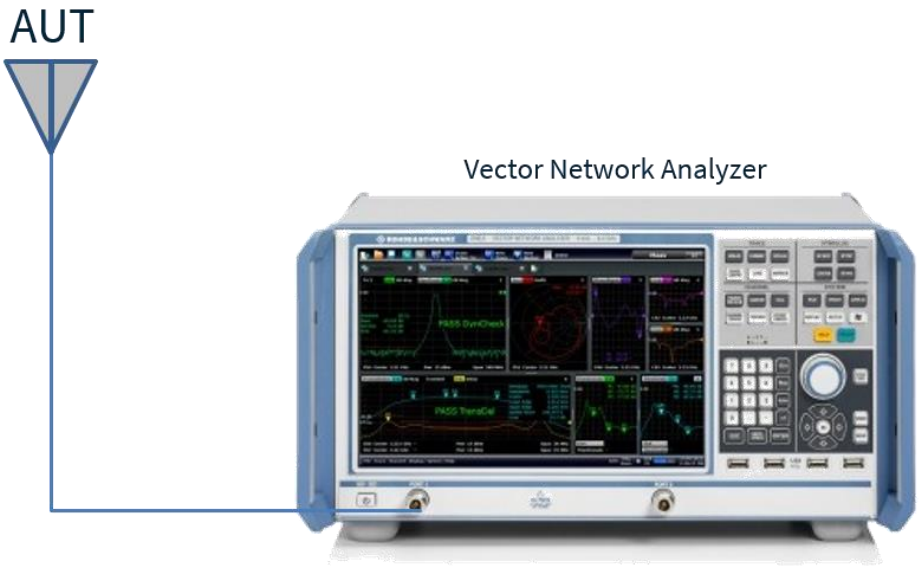
☑ 100 PCS / Carton
(50 PCS Per layer)
☑ Carton(mm): 745x518x256

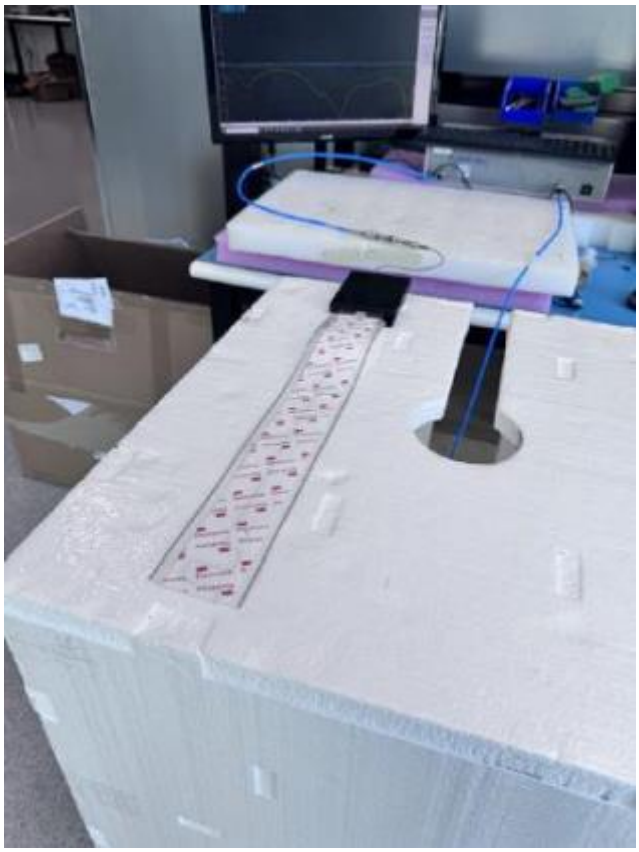
☑ Weight (Kg): 14 ±3%

☑ Carton Label

5. Antenna Characteristics

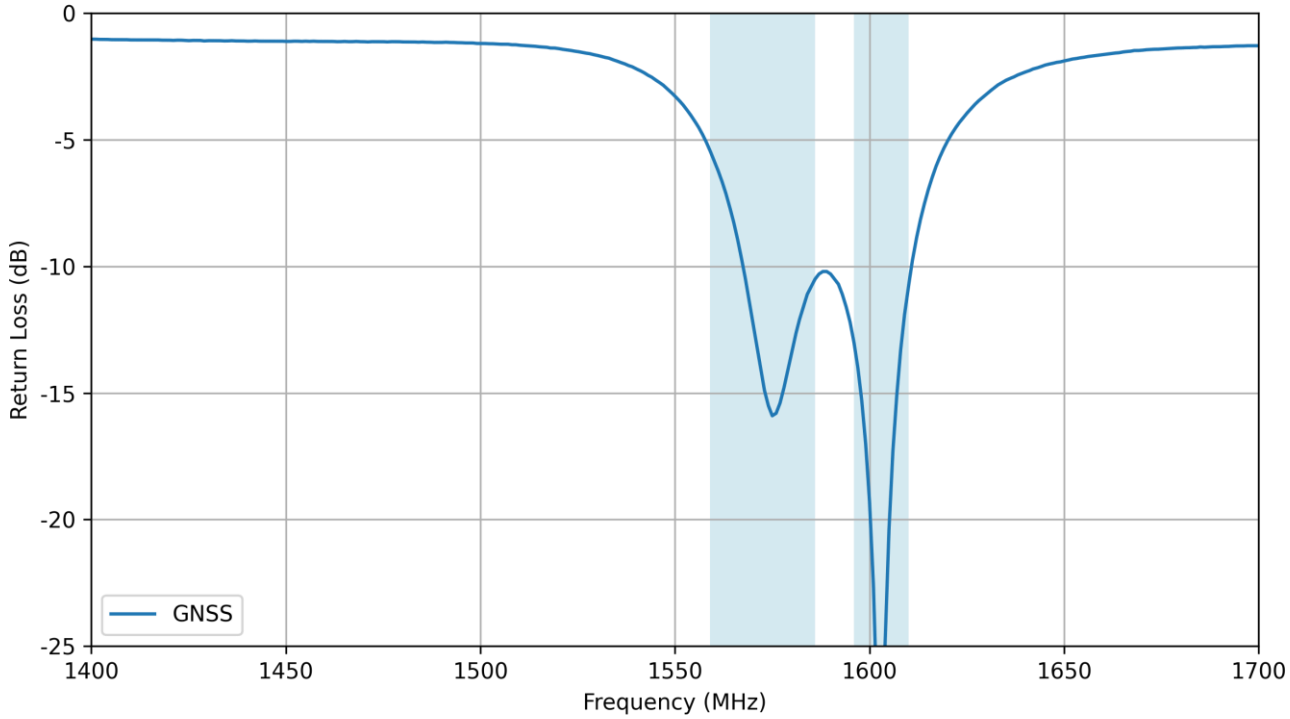
5.1 Test Setup



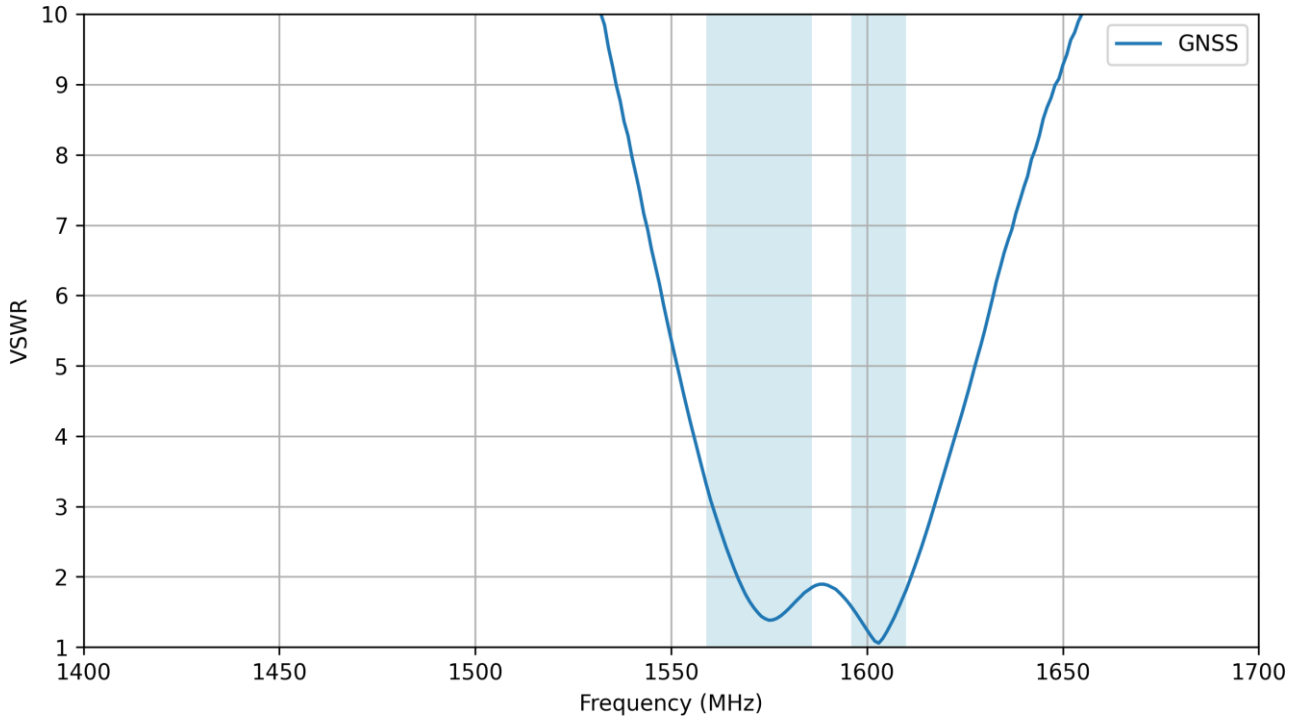


VNA Test Set-up

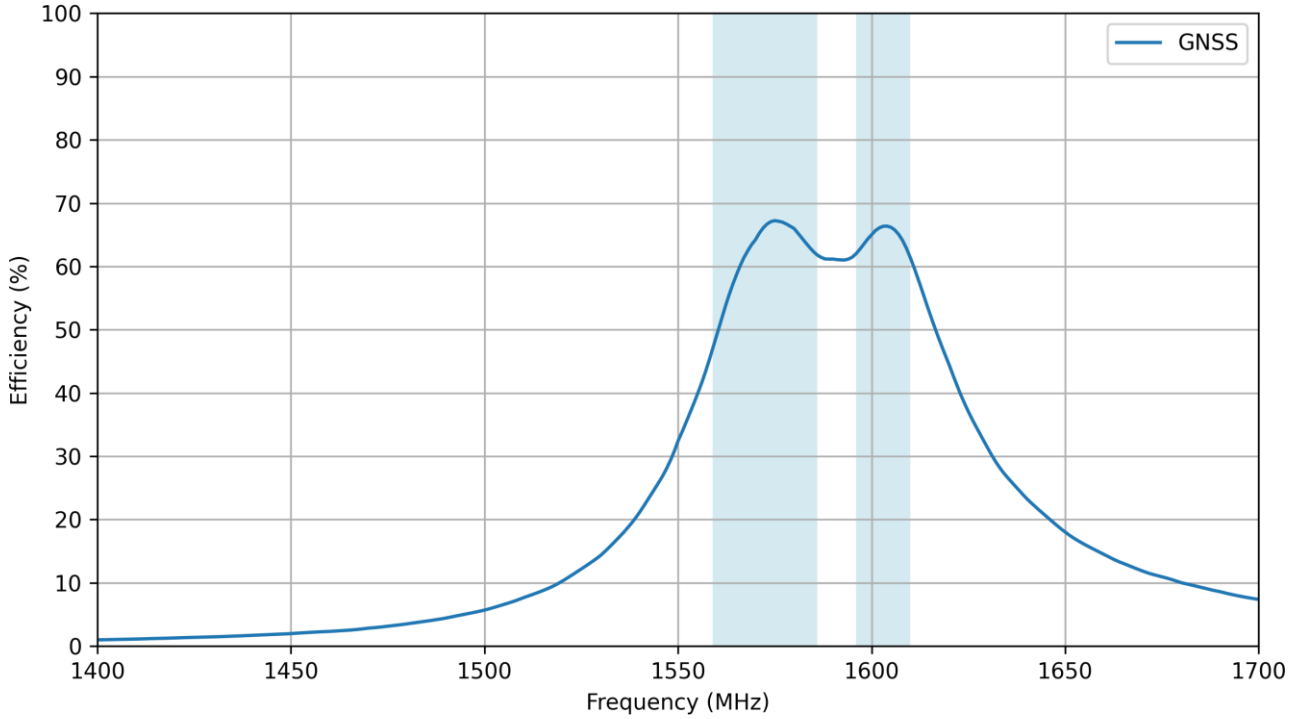
5.2 GNSS - Return Loss



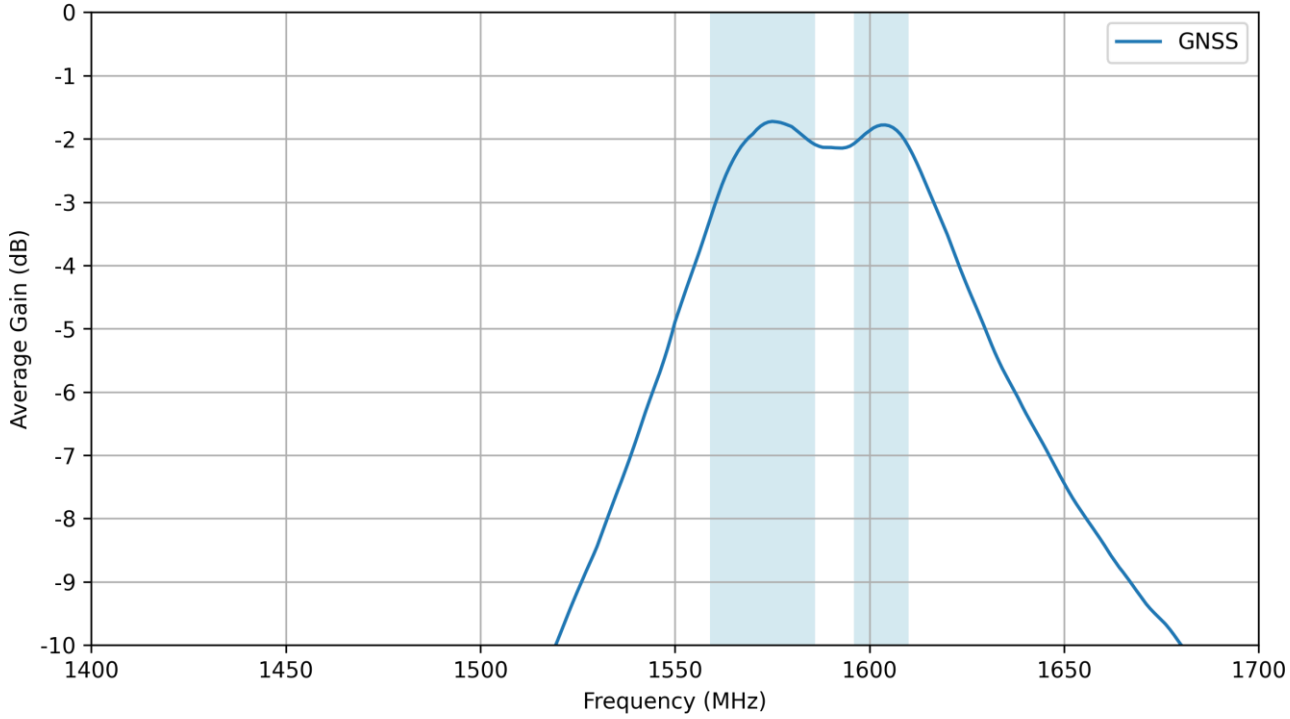
5.3 GNSS - VSWR



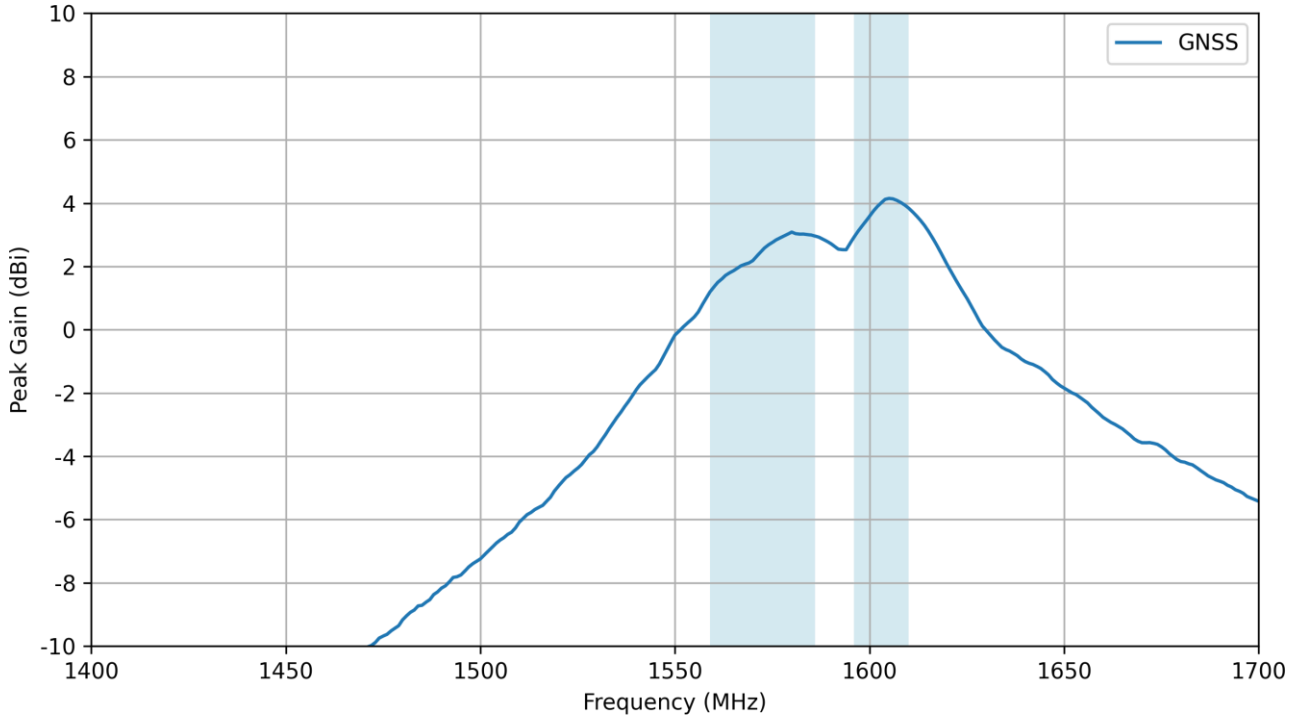
5.4 GNSS - Efficiency



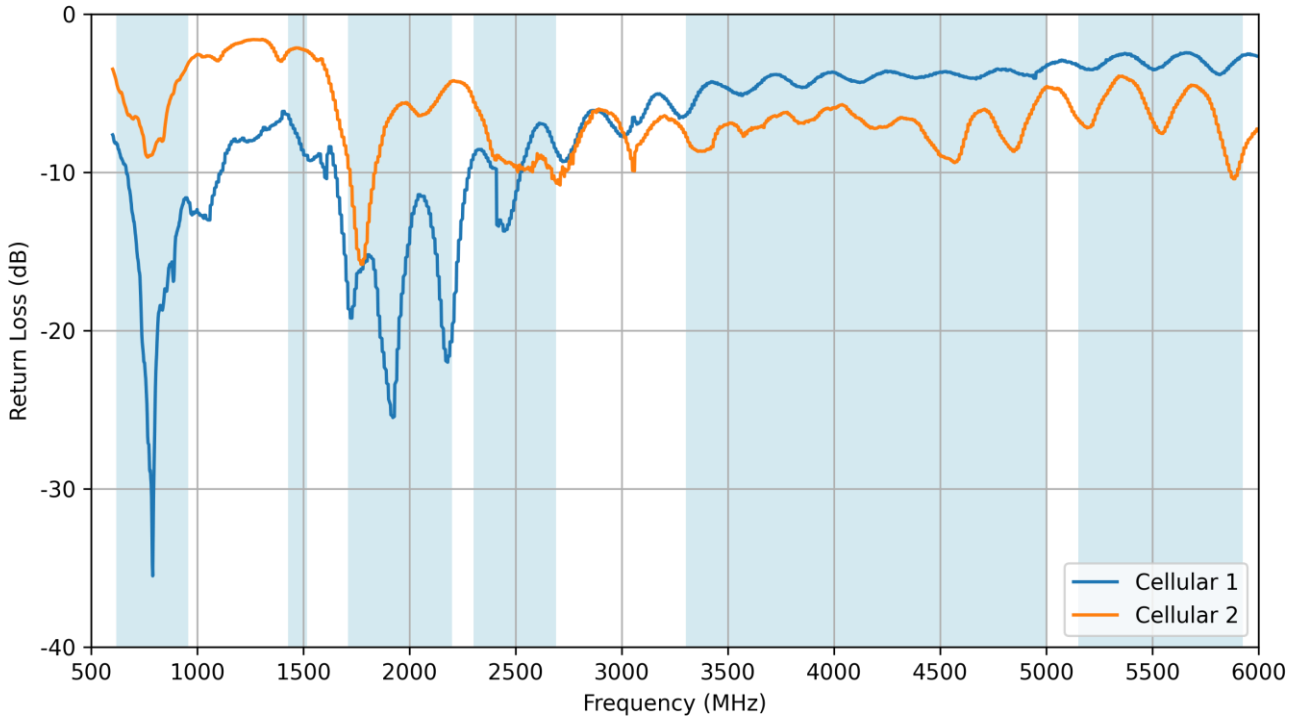
5.5 GNSS - Average Gain



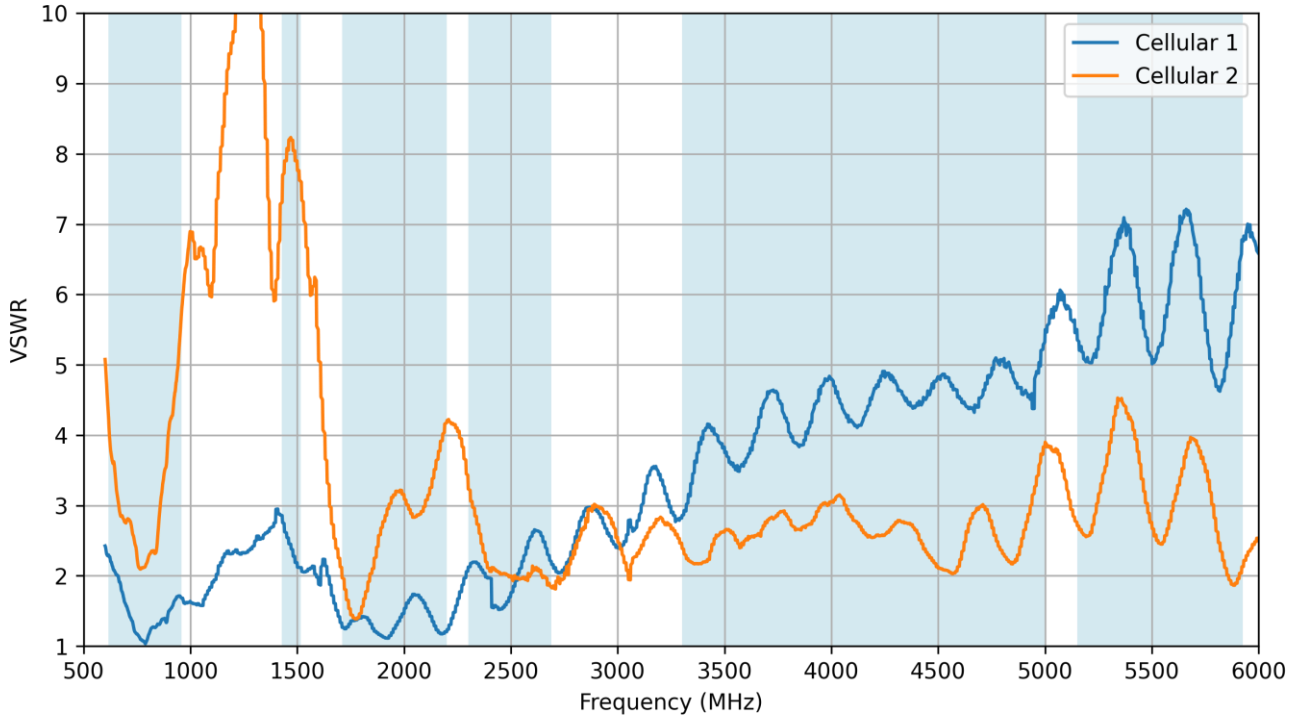
5.6 GNSS - Peak Gain



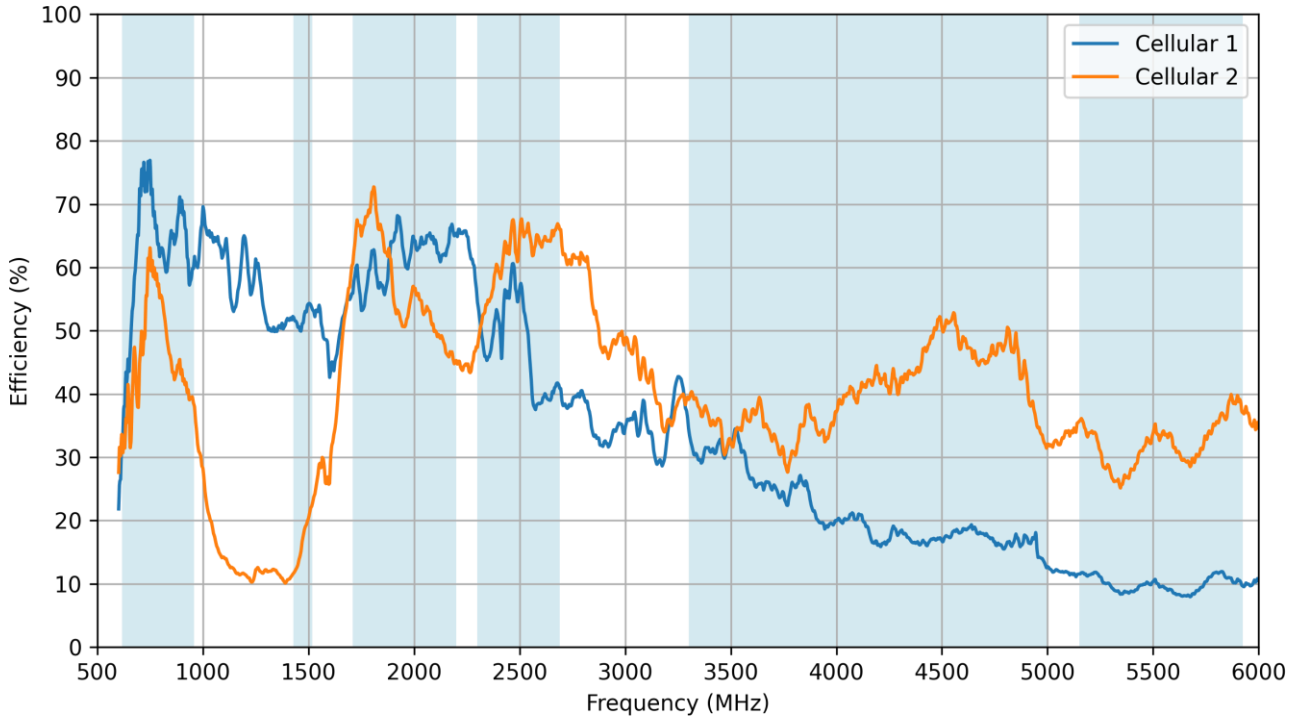
5.7 Cellular - Return Loss



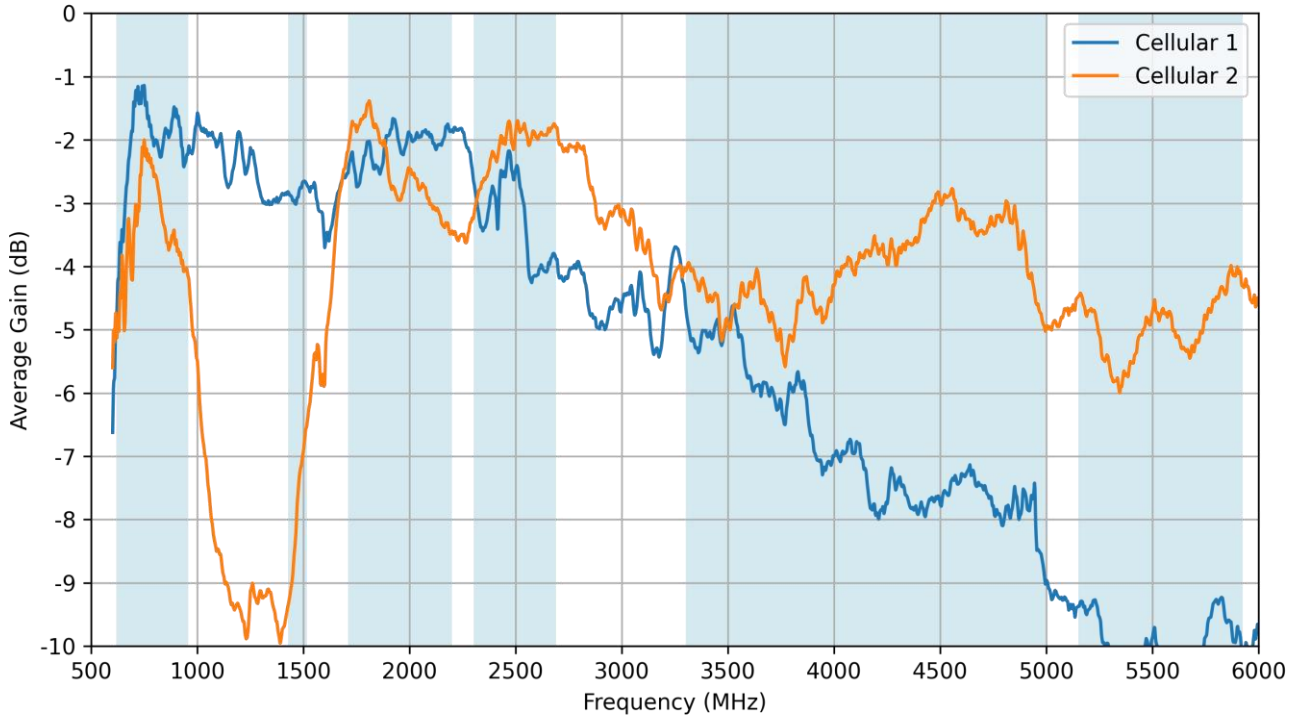
5.8 Cellular - VSWR



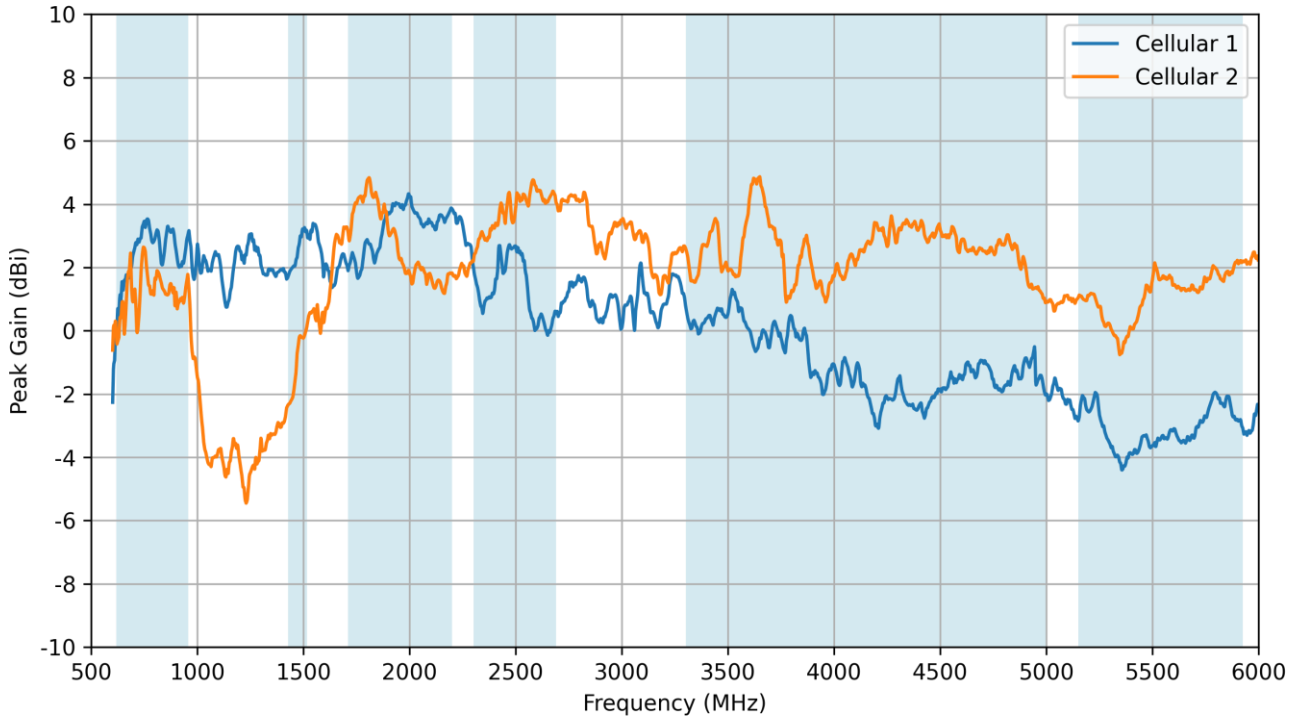
5.9 Cellular - Efficiency



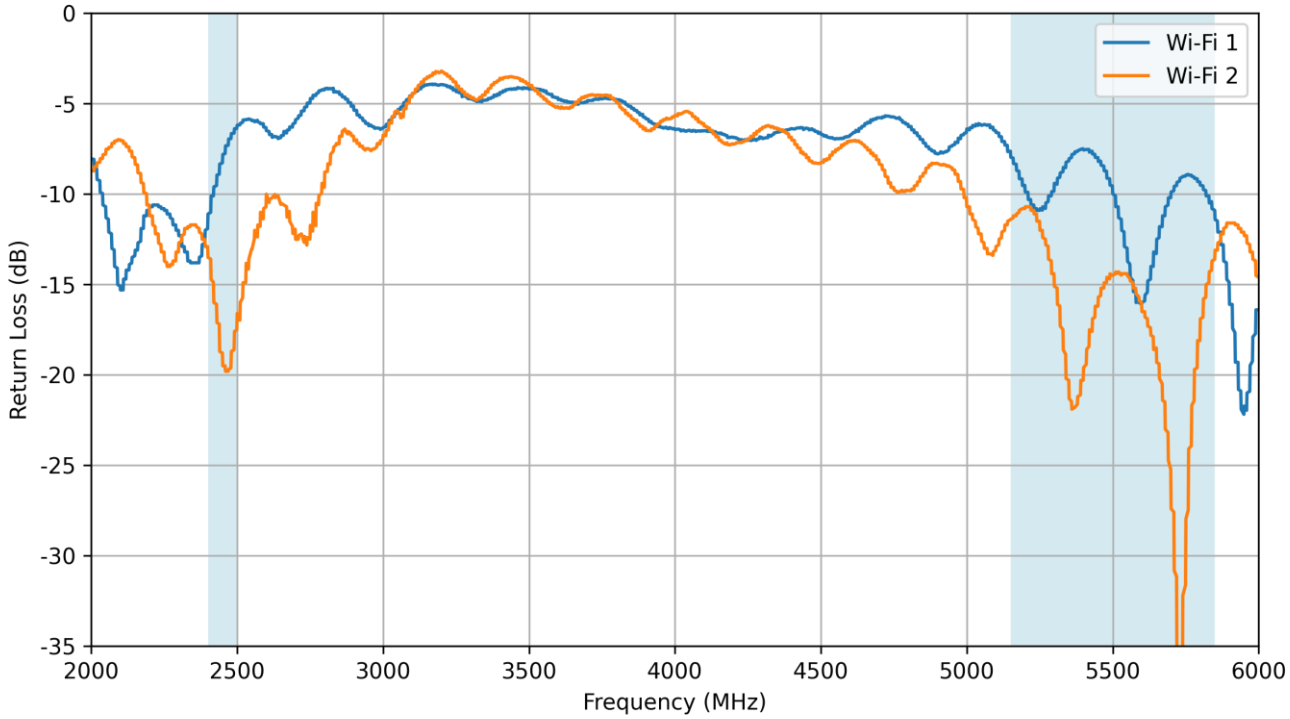
5.10 Cellular - Average Gain



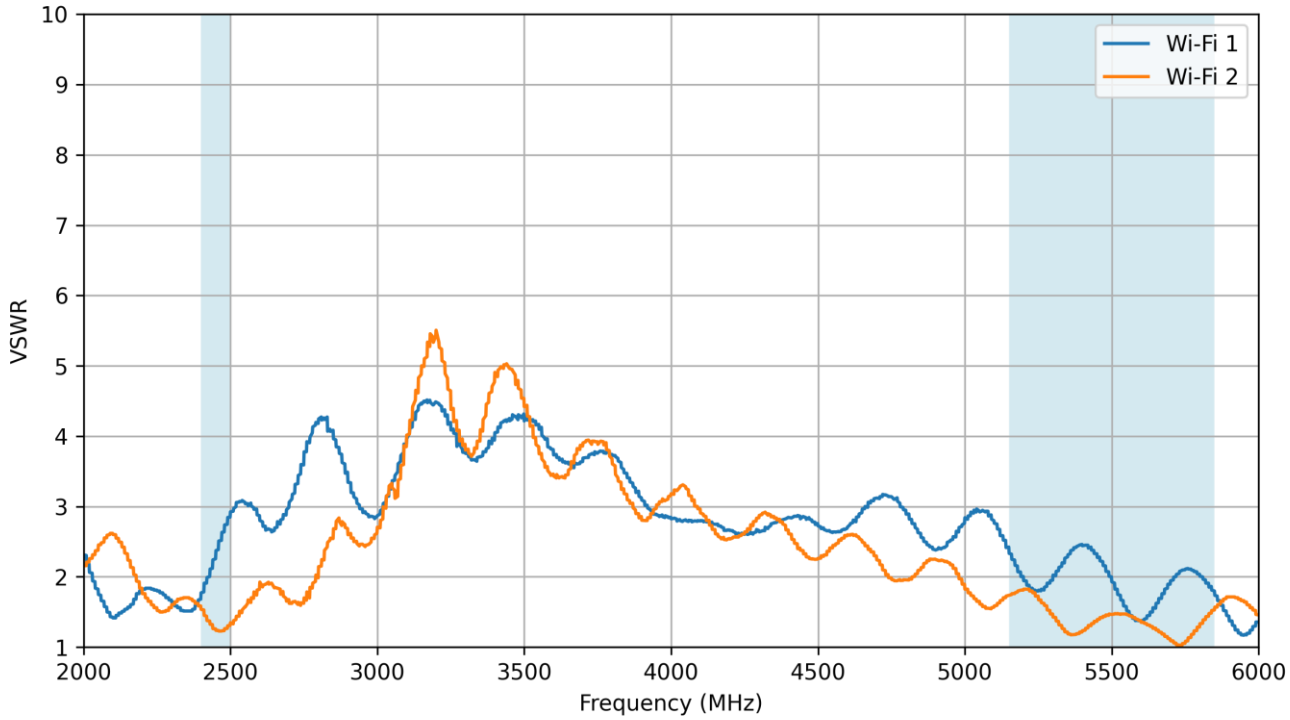
5.11 Cellular - Peak Gain



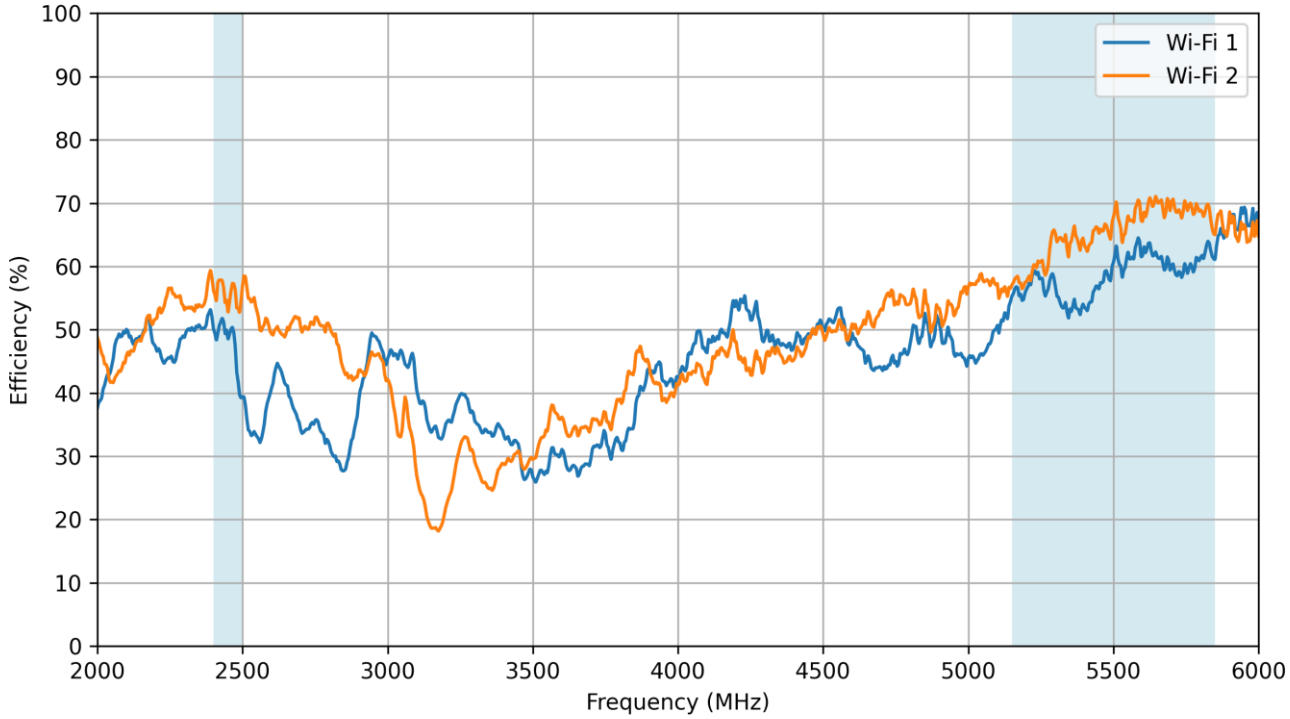
5.12 Wi-Fi - Return Loss



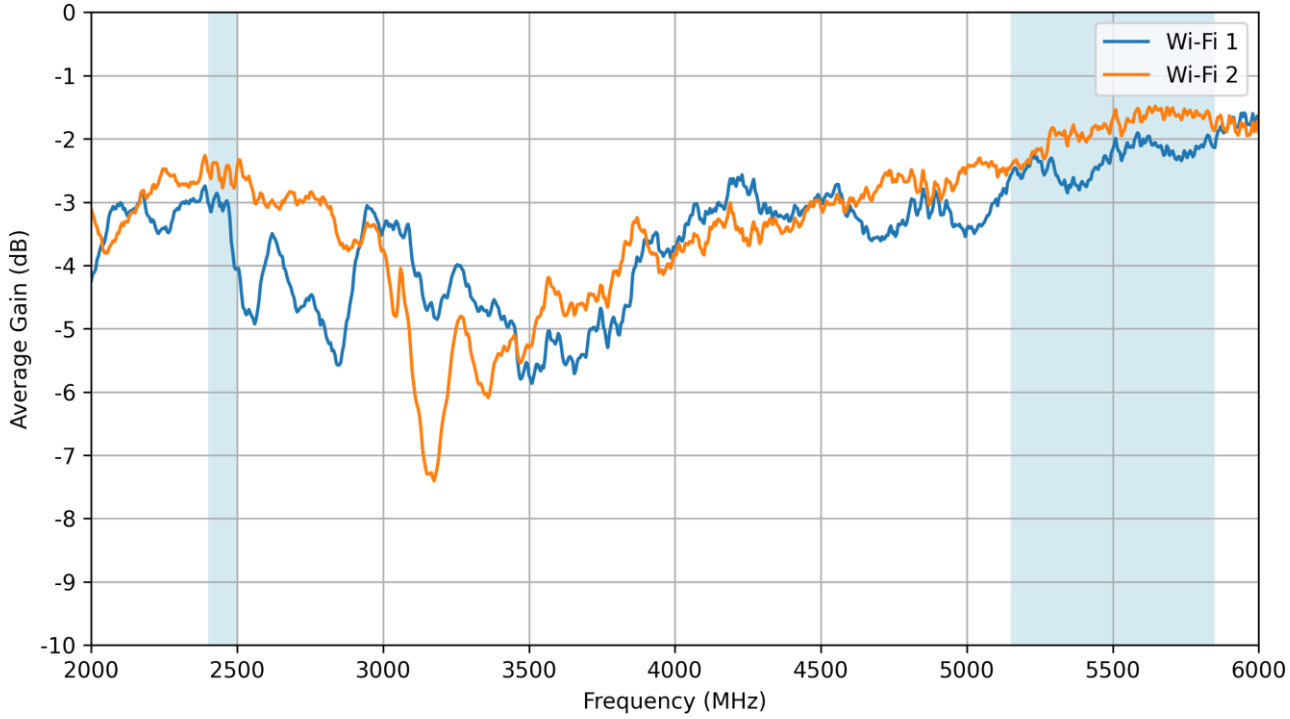
5.13 Wi-Fi - VSWR



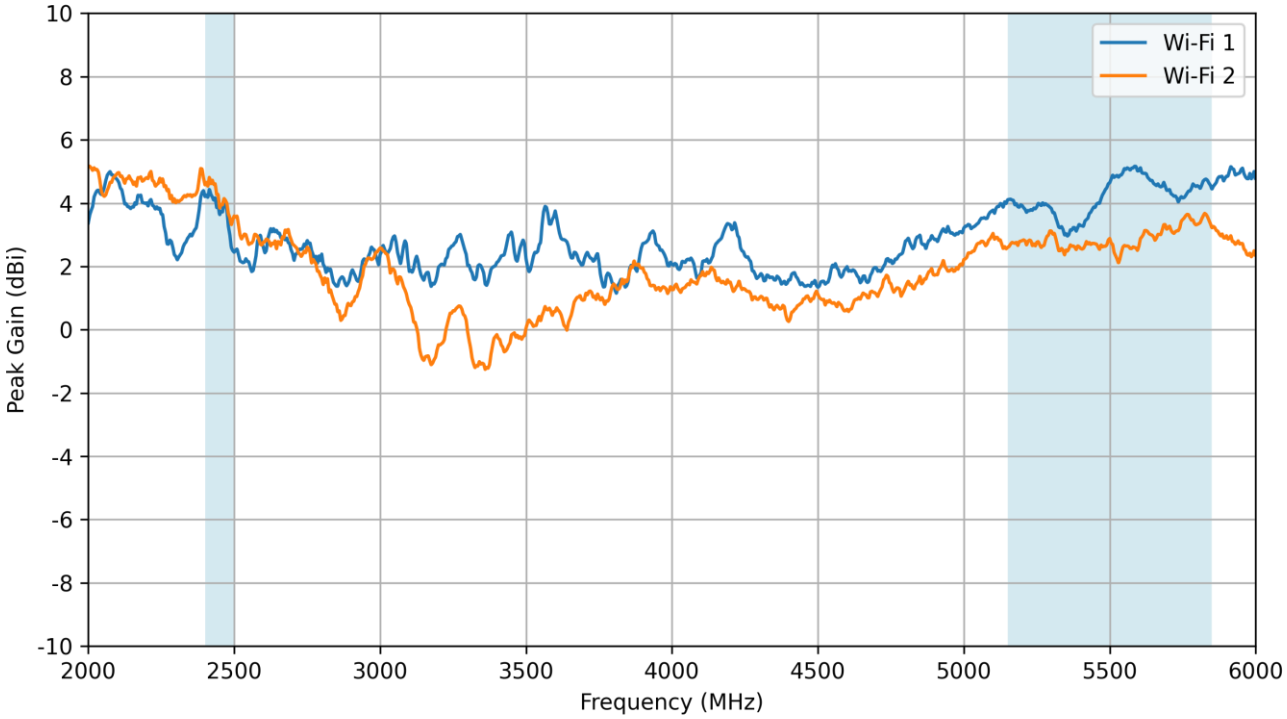
5.14 Wi-Fi - Efficiency



5.15 Wi-Fi - Average Gain

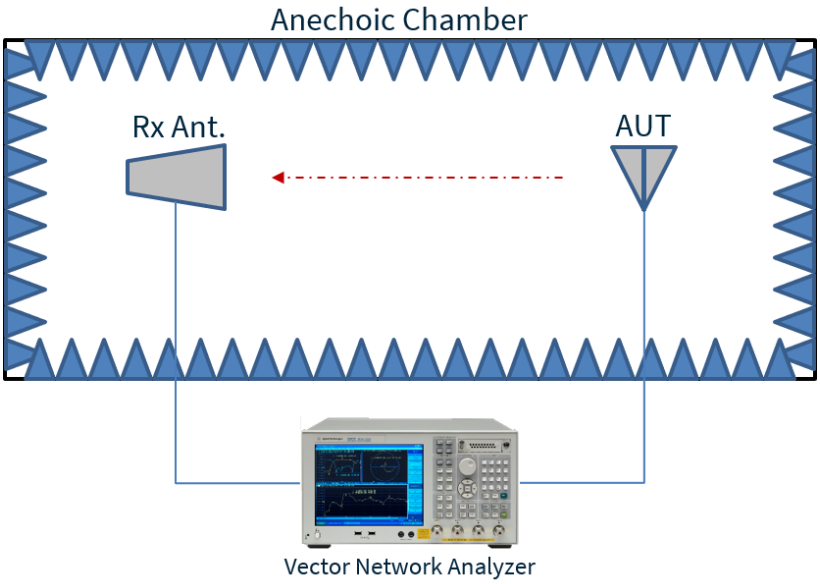


5.16 Wi-Fi - Peak Gain



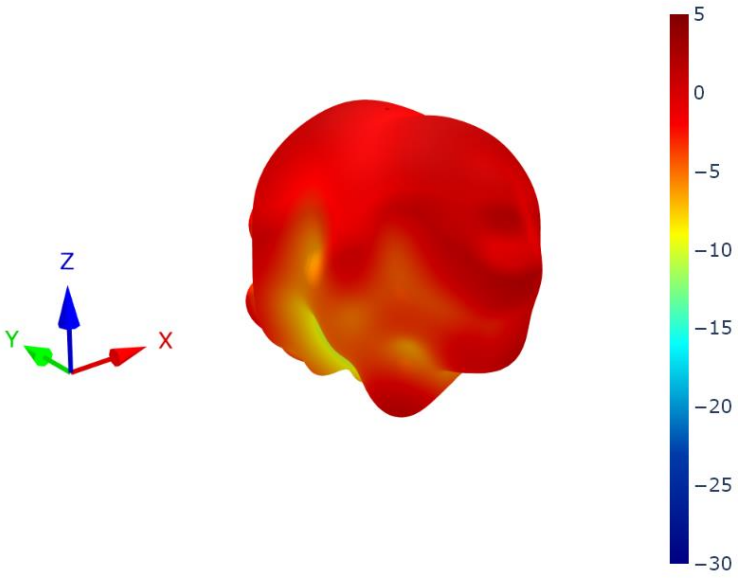
6. Radiation Patterns

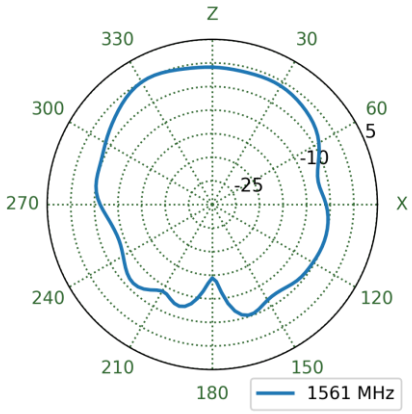
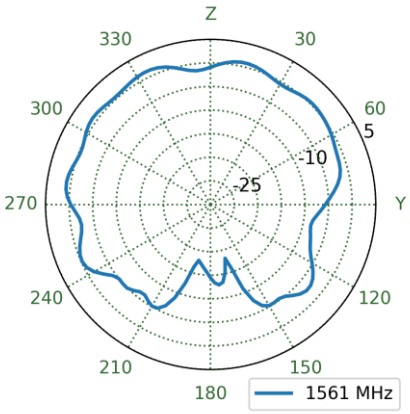
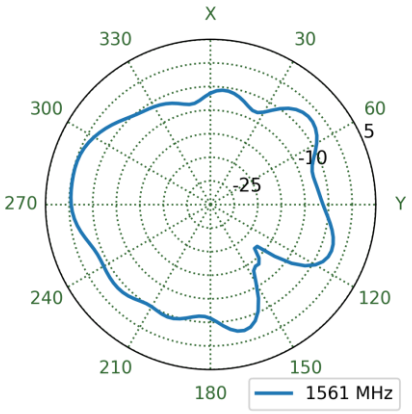
6.1 Test Setup



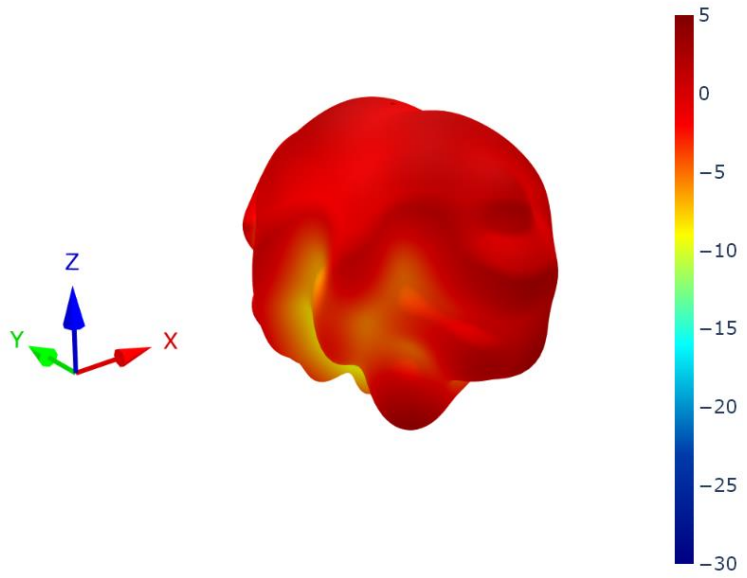
Chamber Test Set-up

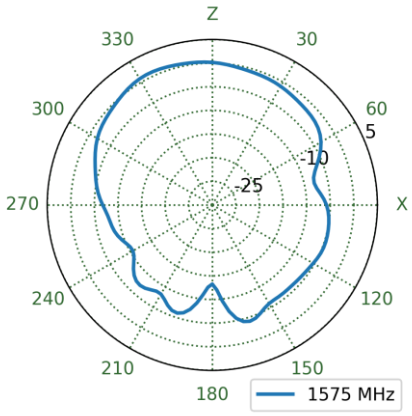
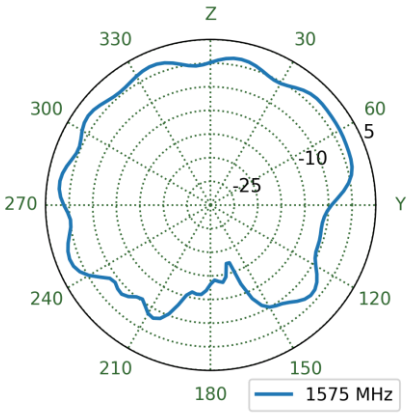
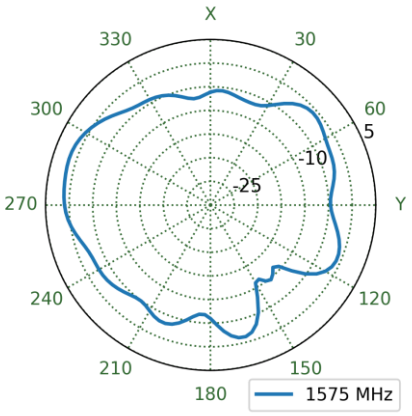
6.2 GNSS Patterns at 1561 MHz



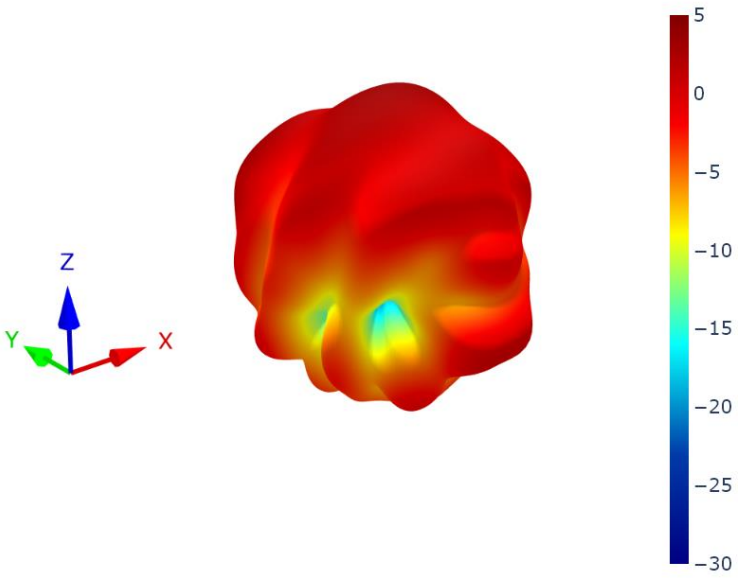
XZ Plane	YZ Plane	XY Plane
		

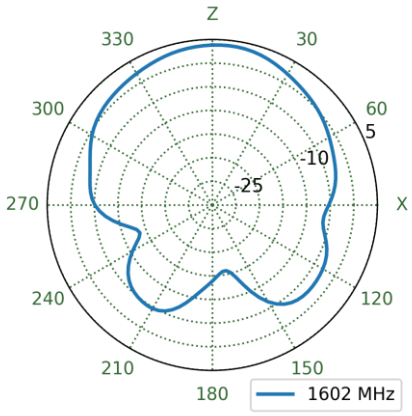
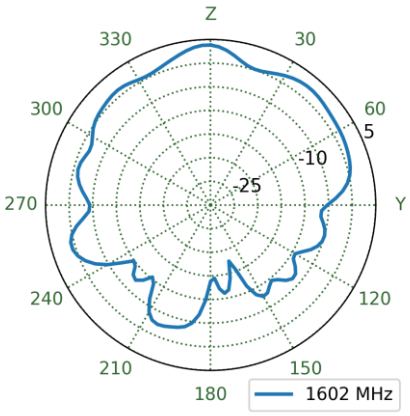
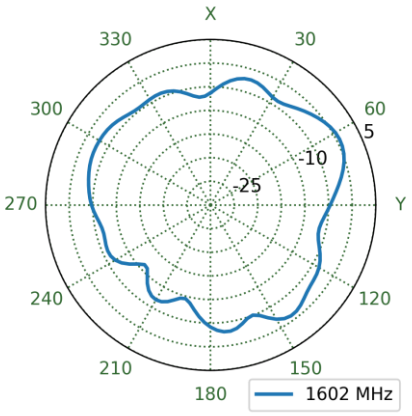
6.3 GNSS Patterns at 1575 MHz



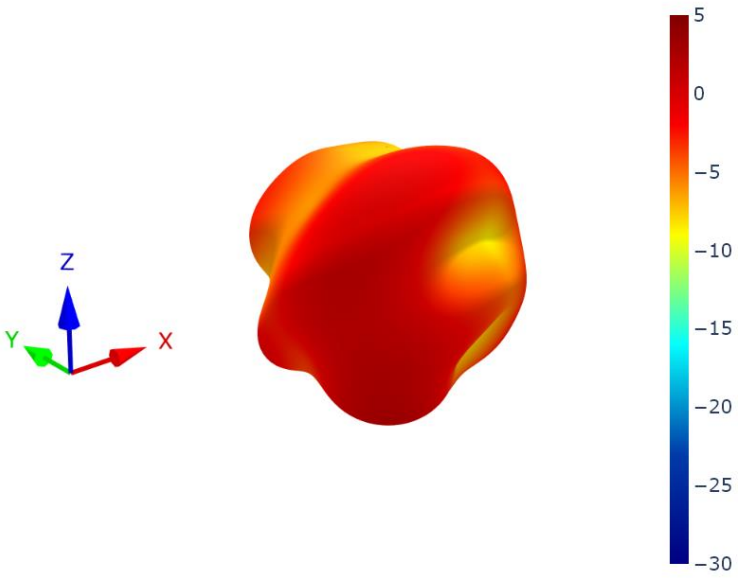
XZ Plane	YZ Plane	XY Plane
		

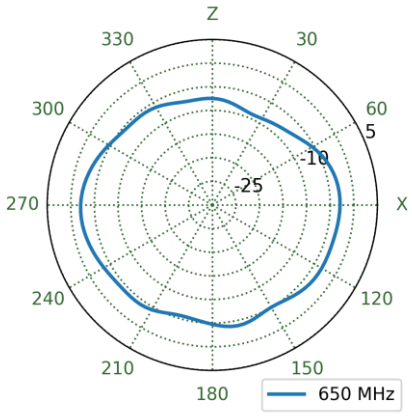
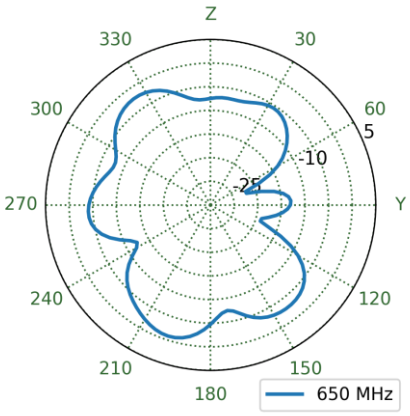
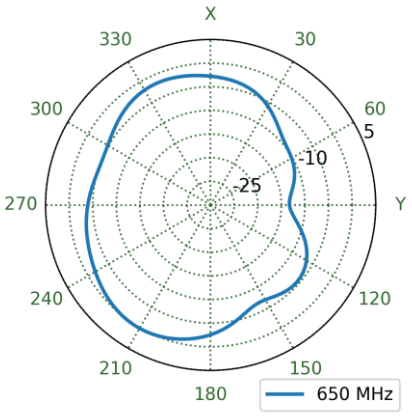
6.4 GNSS Patterns at 1602 MHz



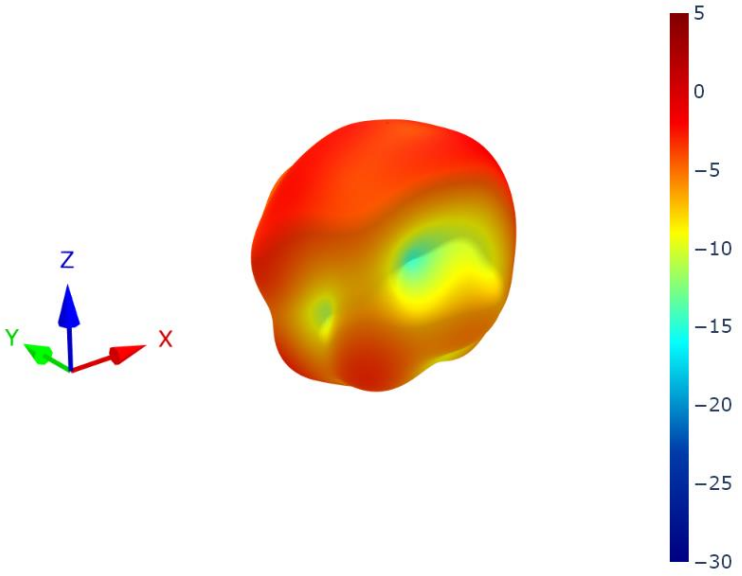
XZ Plane	YZ Plane	XY Plane
		

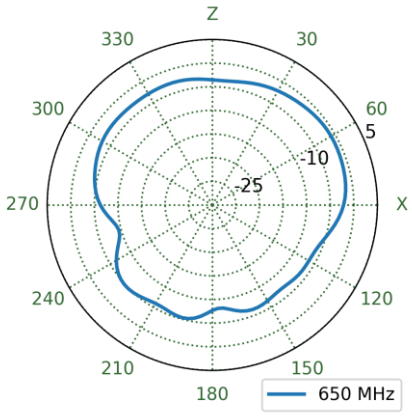
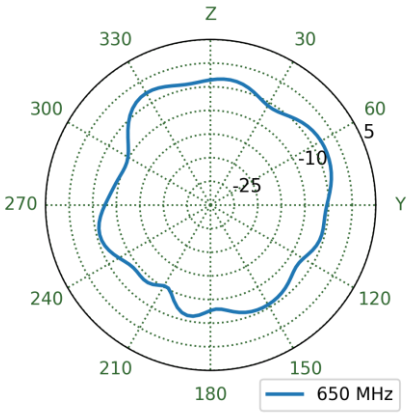
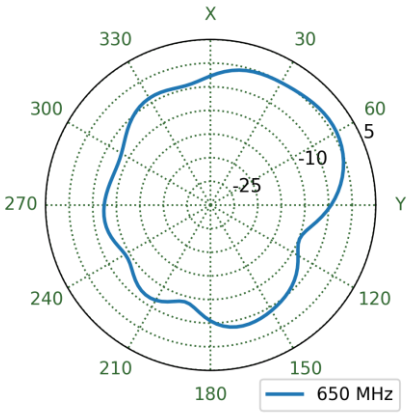
6.5 Cellular 1 Patterns at 650 MHz



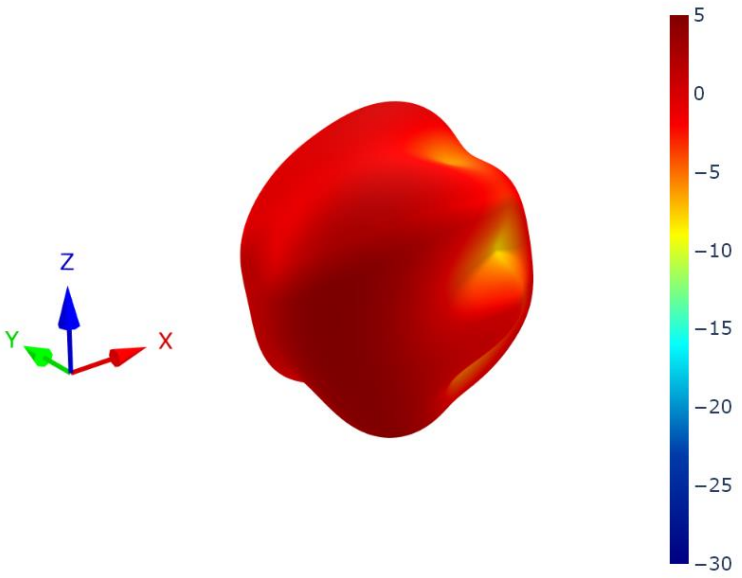
XZ Plane	YZ Plane	XY Plane
		

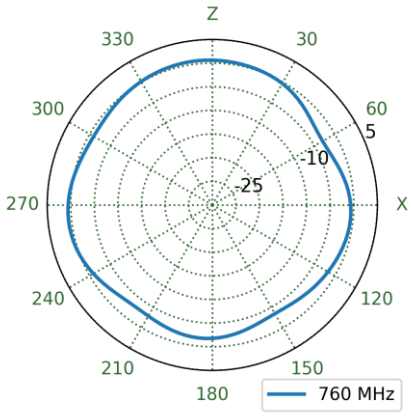
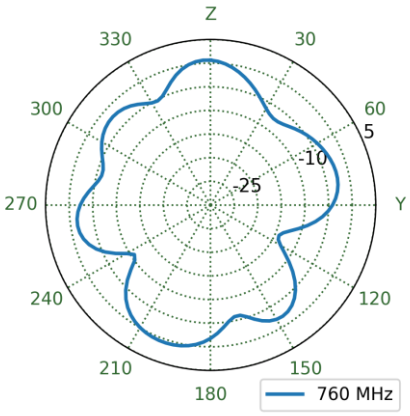
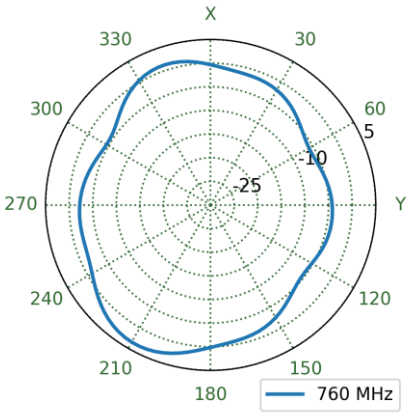
6.6 Cellular 2 Patterns at 650 MHz



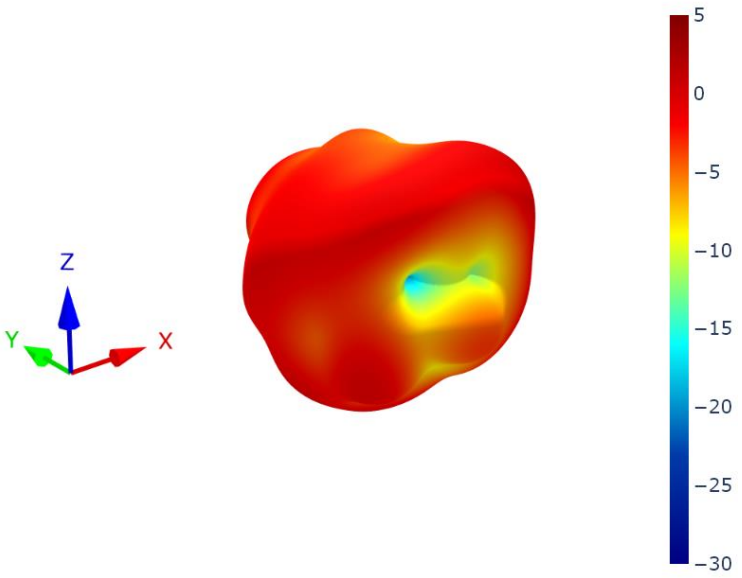
XZ Plane	YZ Plane	XY Plane
		

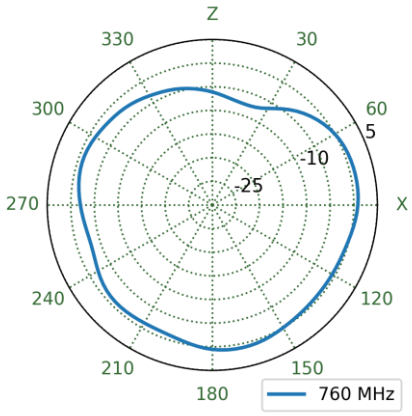
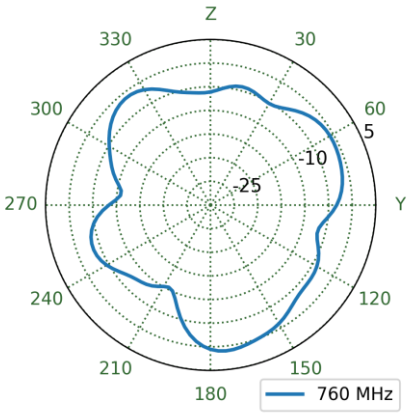
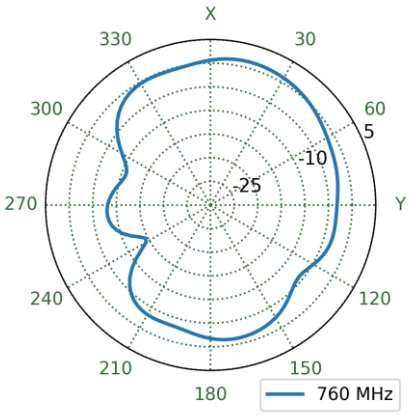
6.7 Cellular 1 Patterns at 760 MHz



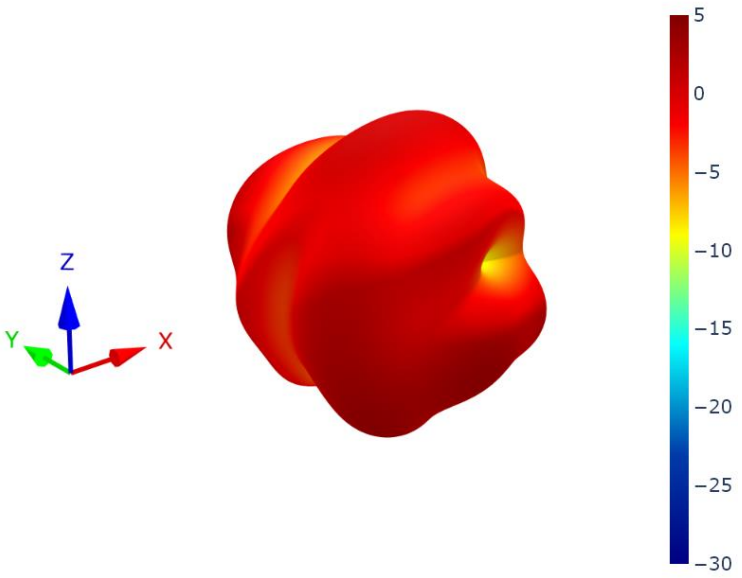
XZ Plane	YZ Plane	XY Plane
		

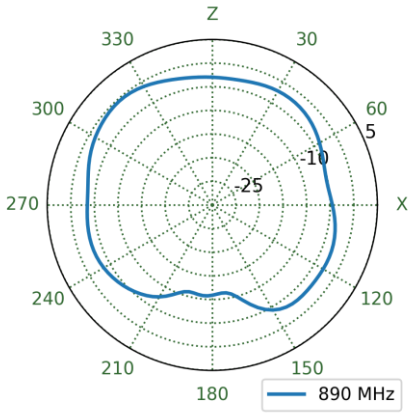
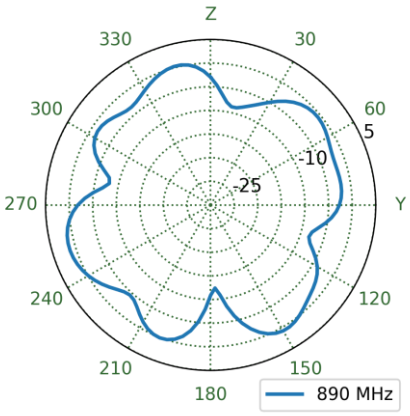
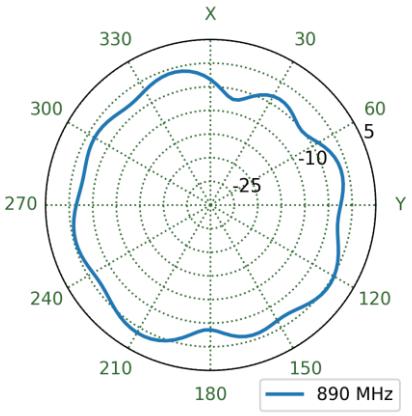
6.8 Cellular 2 Patterns at 760 MHz



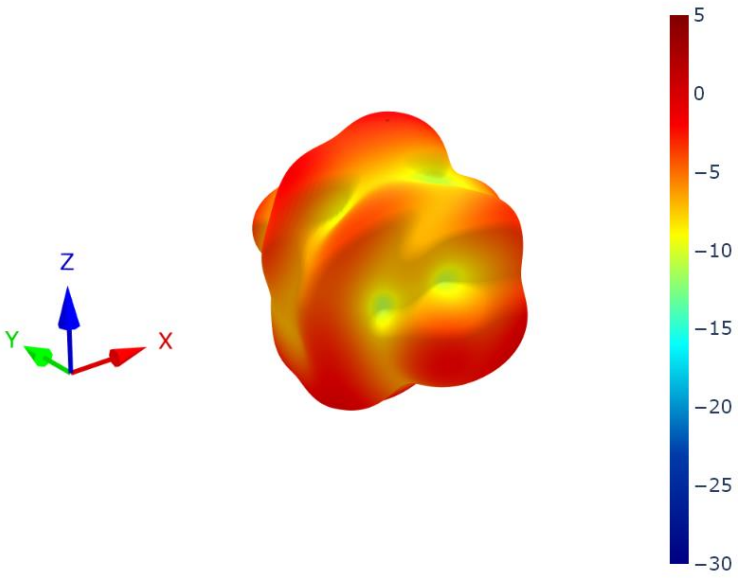
XZ Plane	YZ Plane	XY Plane
		

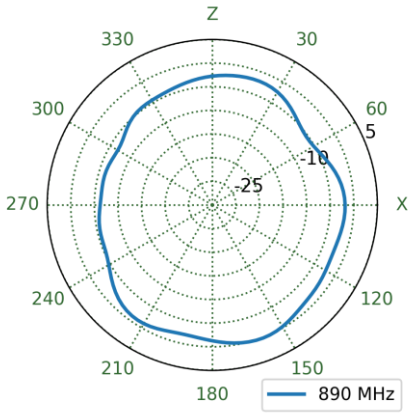
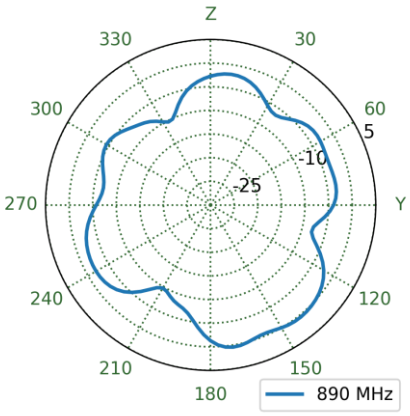
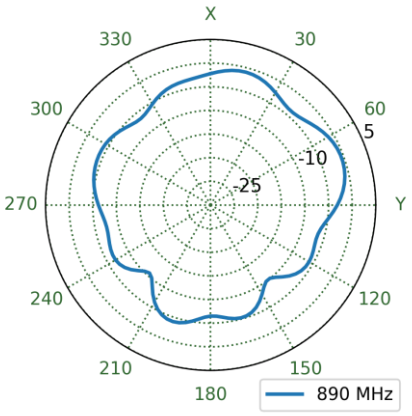
6.9 Cellular 1 Patterns at 890 MHz



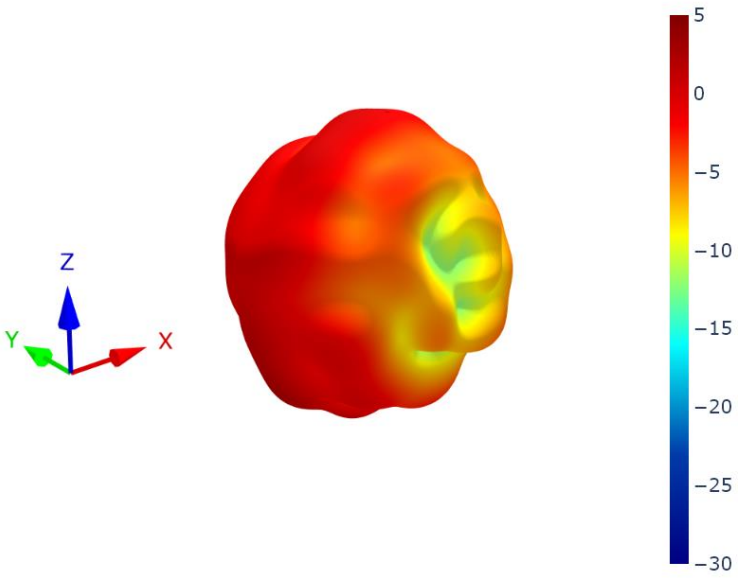
XZ Plane	YZ Plane	XY Plane
		

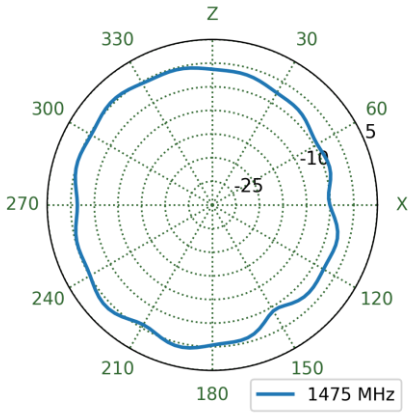
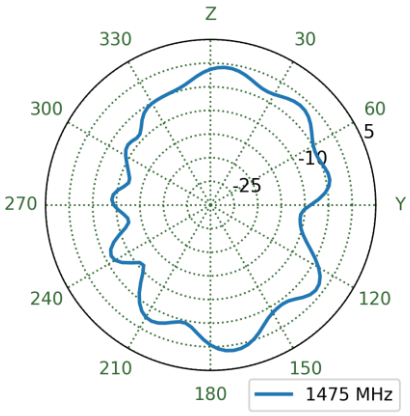
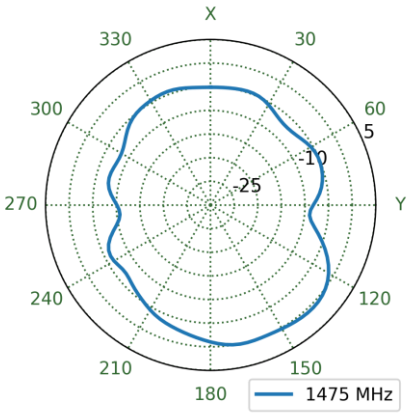
6.10 Cellular 2 Patterns at 890 MHz



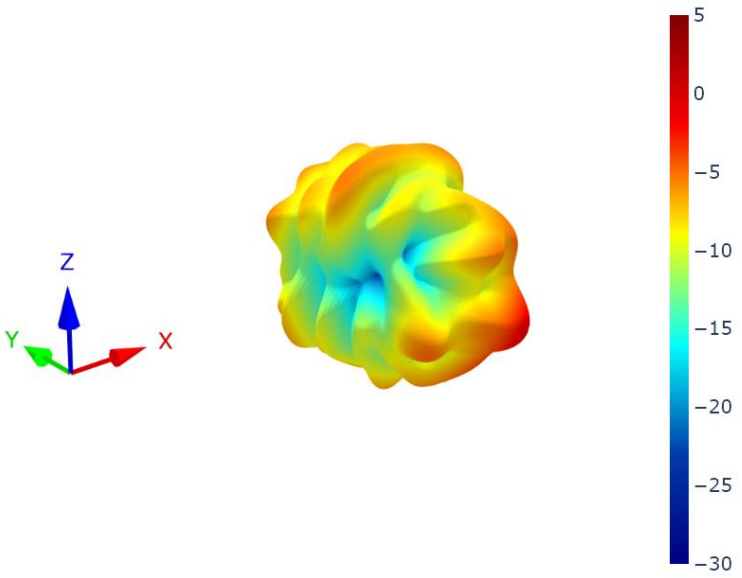
XZ Plane	YZ Plane	XY Plane
		

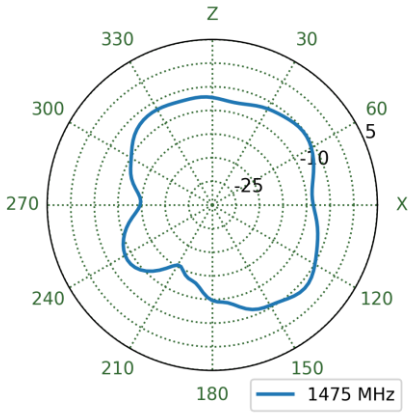
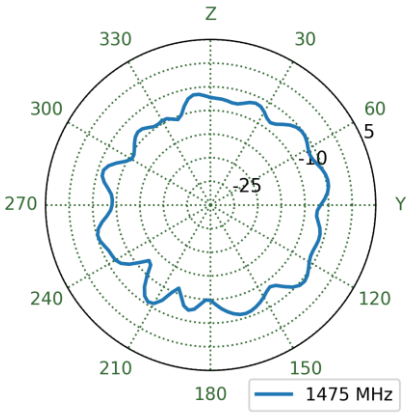
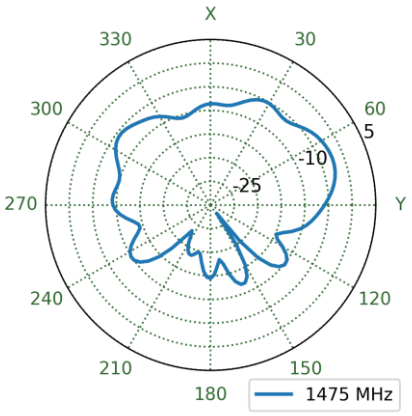
6.11 Cellular 1 Patterns at 1475 MHz



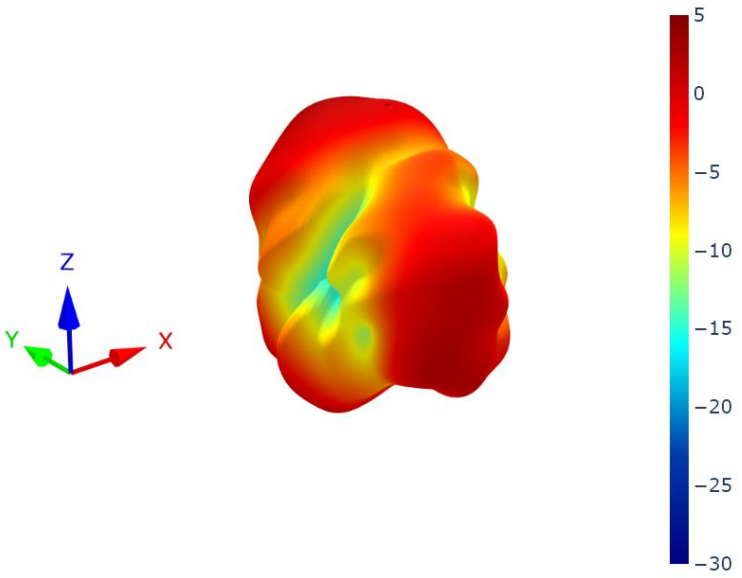
XZ Plane	YZ Plane	XY Plane
		

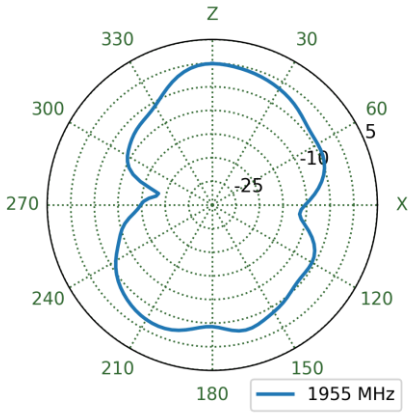
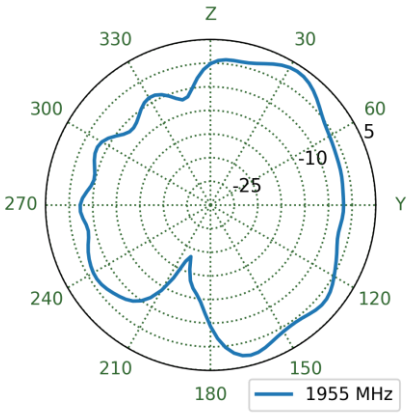
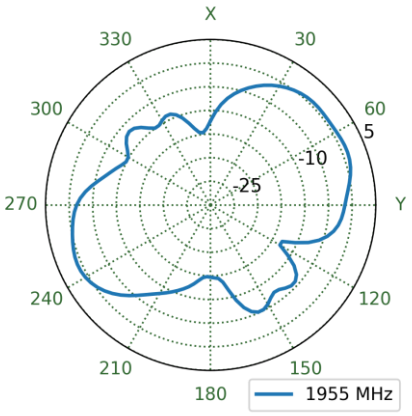
6.12 Cellular 2 Patterns at 1475 MHz



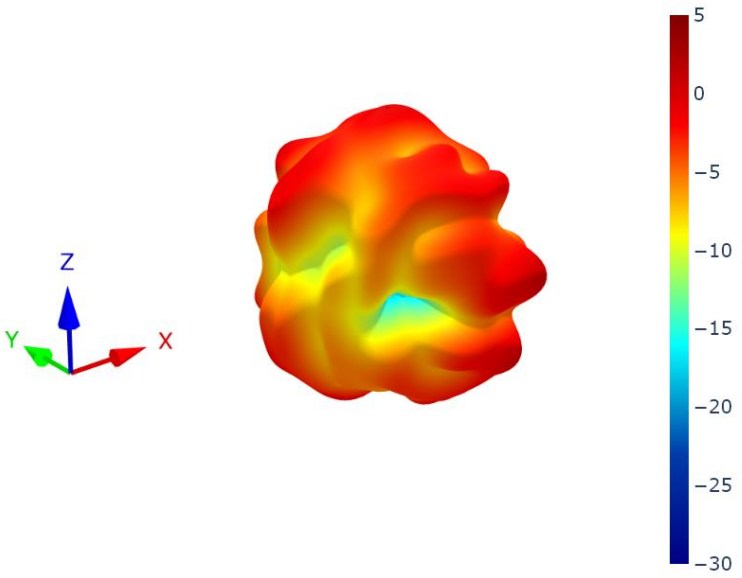
XZ Plane	YZ Plane	XY Plane
		

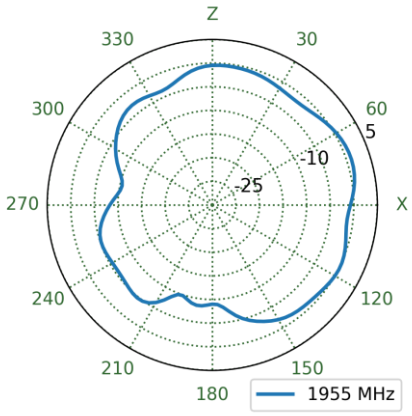
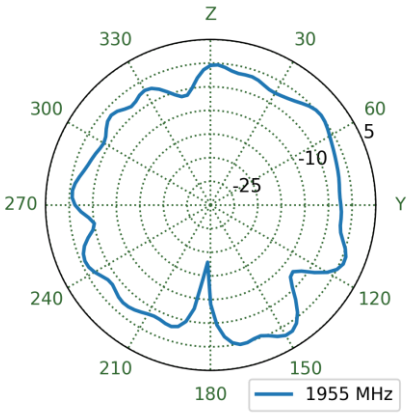
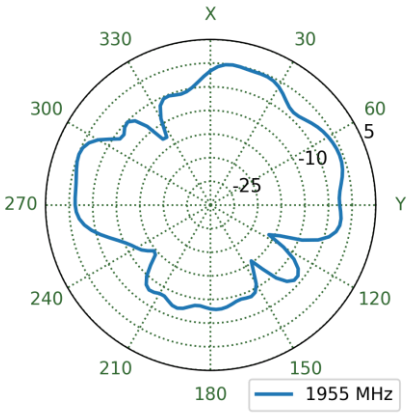
6.13 Cellular 1 Patterns at 1955 MHz



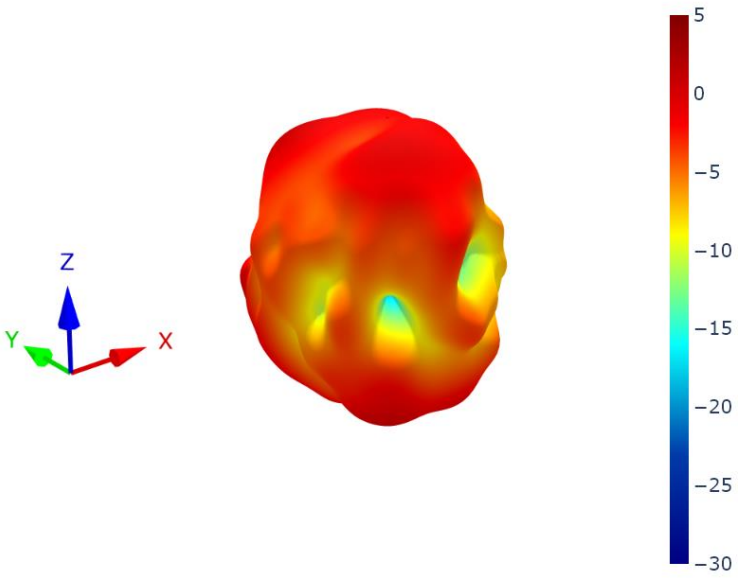
XZ Plane	YZ Plane	XY Plane
		

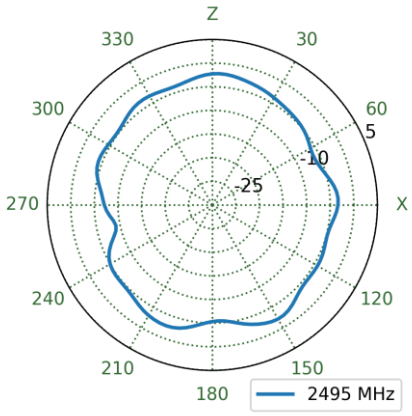
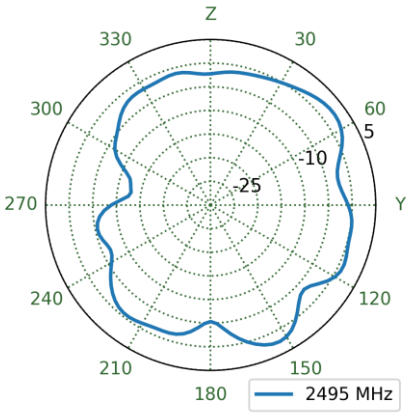
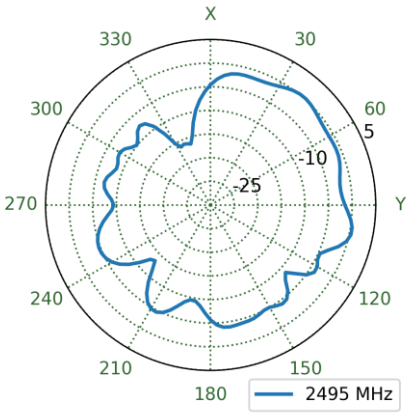
6.14 Cellular 2 Patterns at 1955 MHz



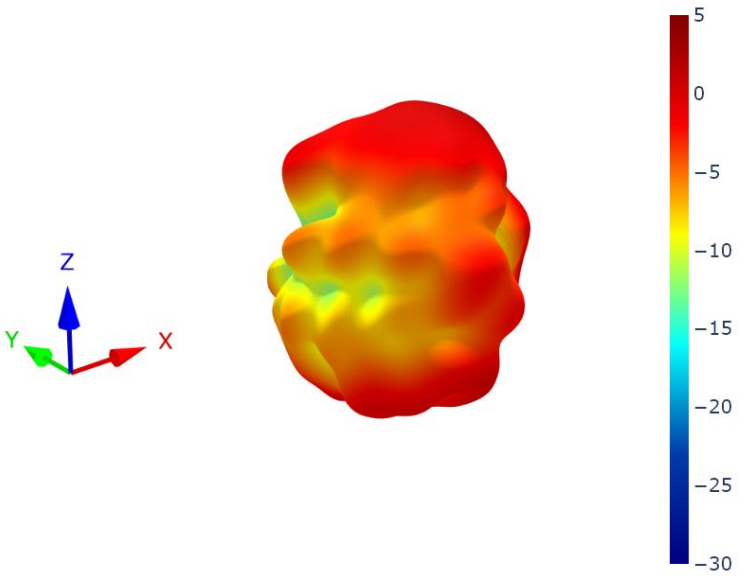
XZ Plane	YZ Plane	XY Plane
		

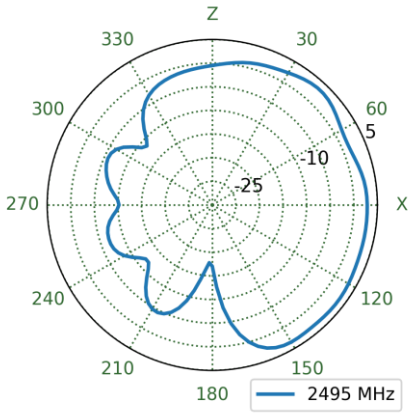
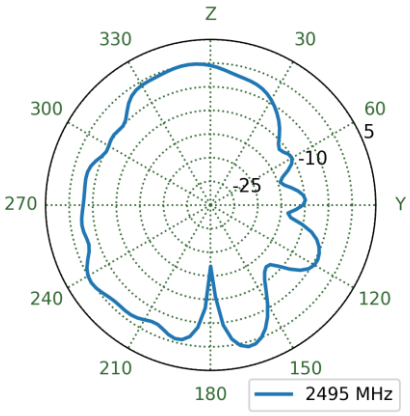
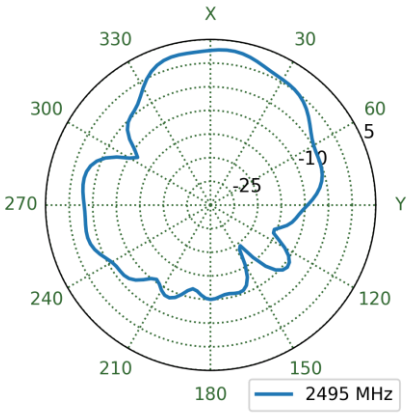
6.15 Cellular 1 Patterns at 2495 MHz



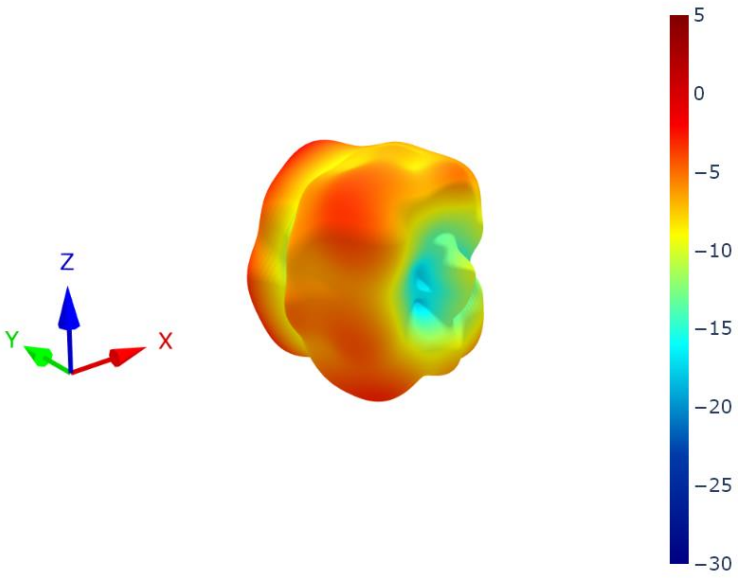
XZ Plane	YZ Plane	XY Plane
		

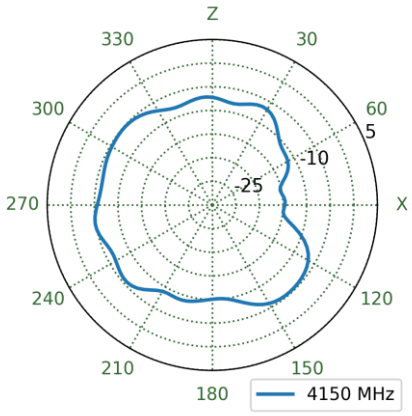
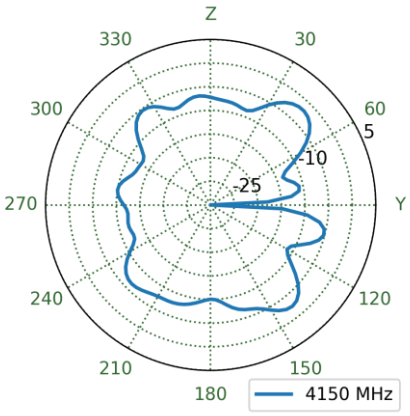
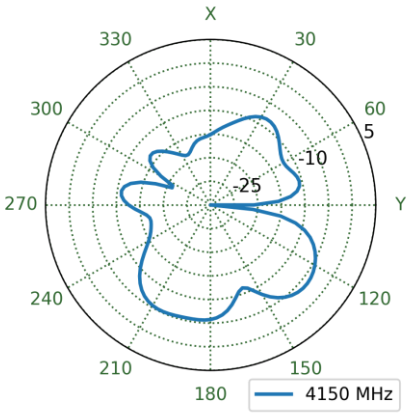
6.16 Cellular 2 Patterns at 2495 MHz



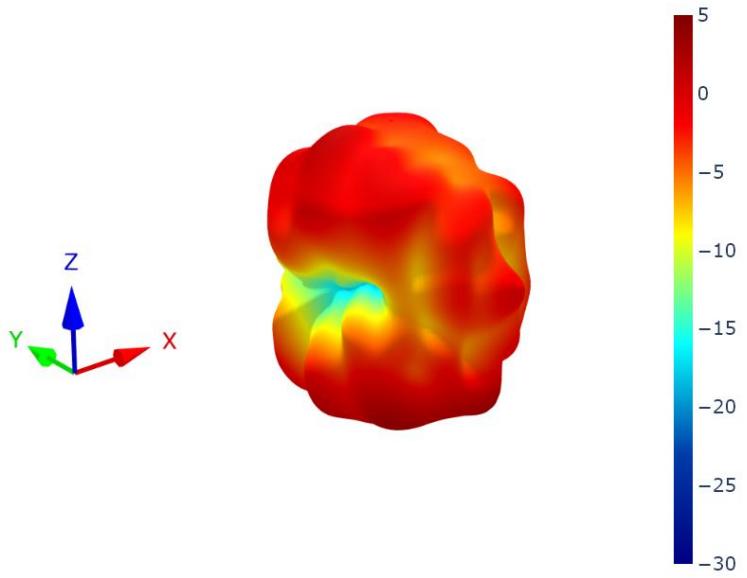
XZ Plane	YZ Plane	XY Plane
		

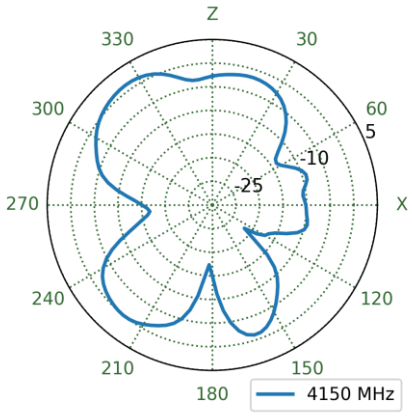
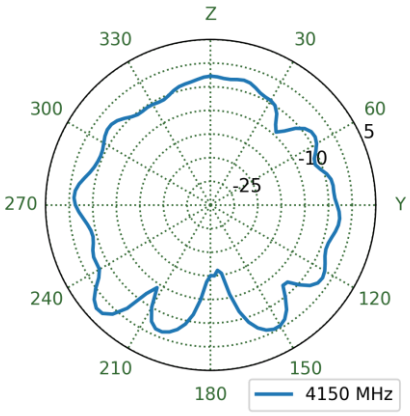
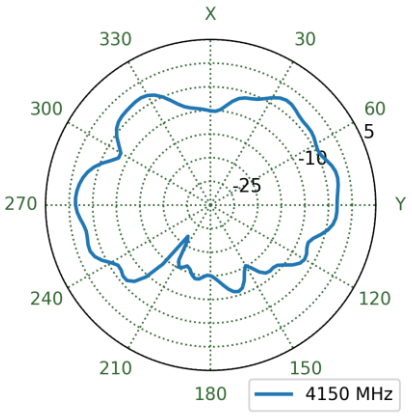
6.17 Cellular 1 Patterns at 4150 MHz



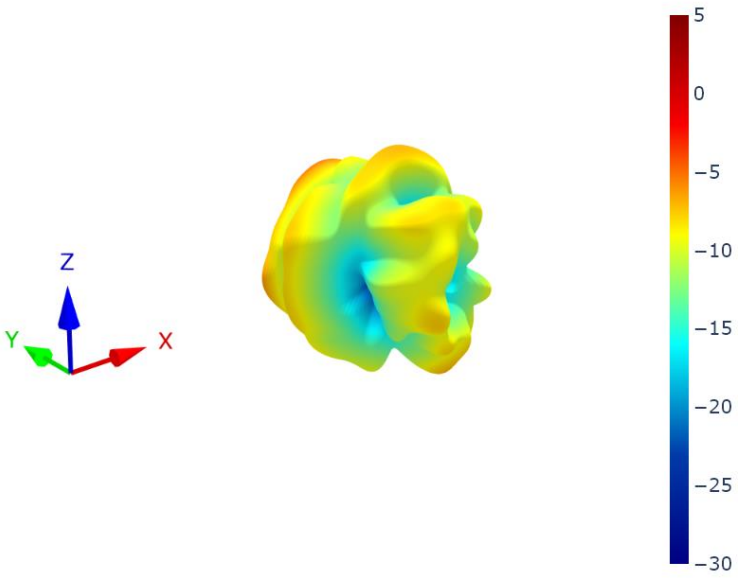
XZ Plane	YZ Plane	XY Plane
		

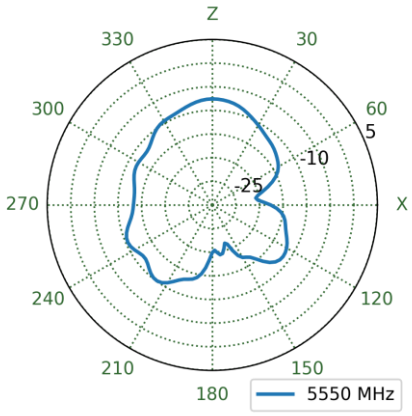
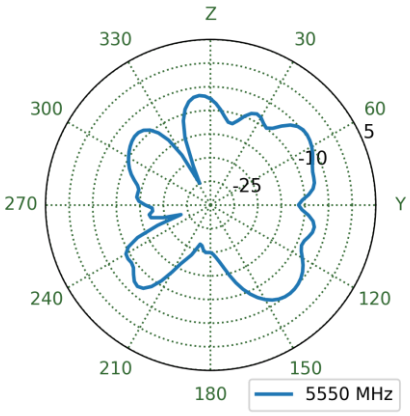
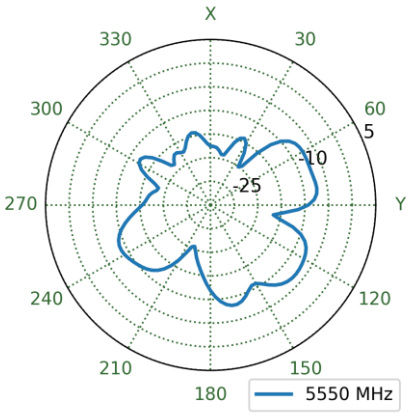
6.18 Cellular 2 Patterns at 4150 MHz



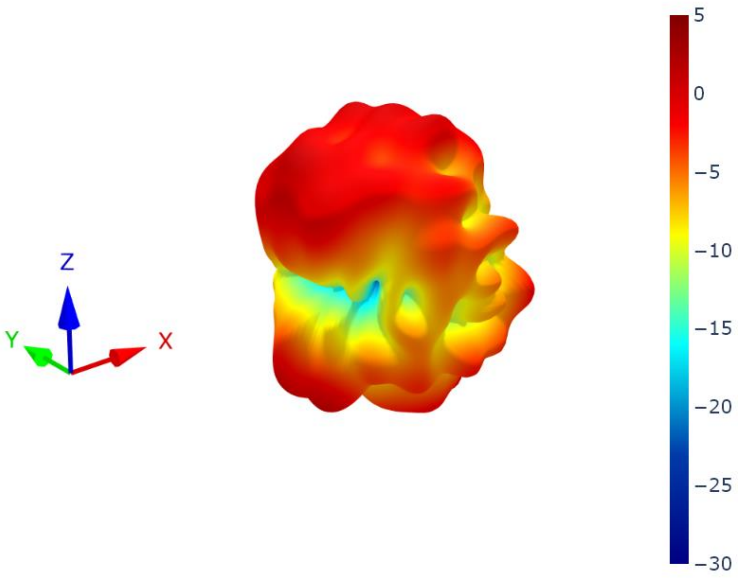
XZ Plane	YZ Plane	XY Plane
		

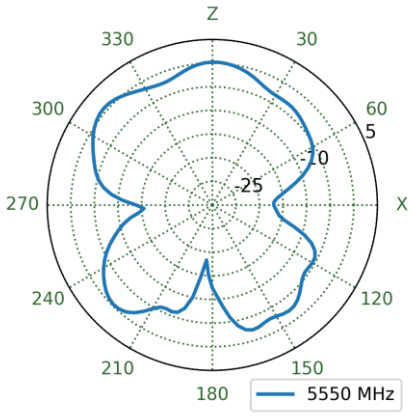
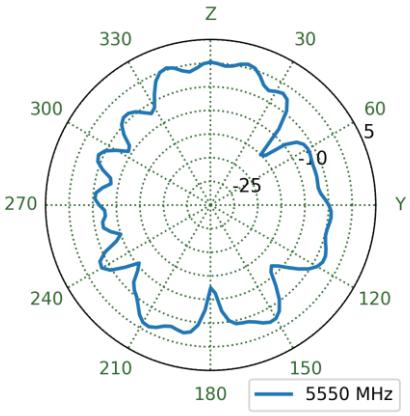
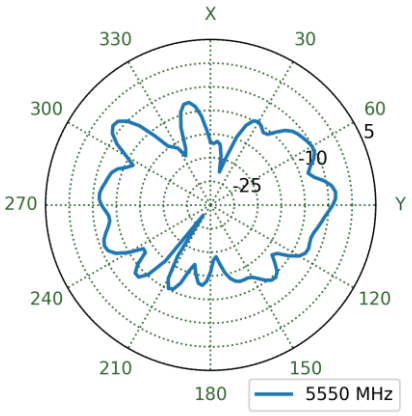
6.19 Cellular 1 Patterns at 5550 MHz



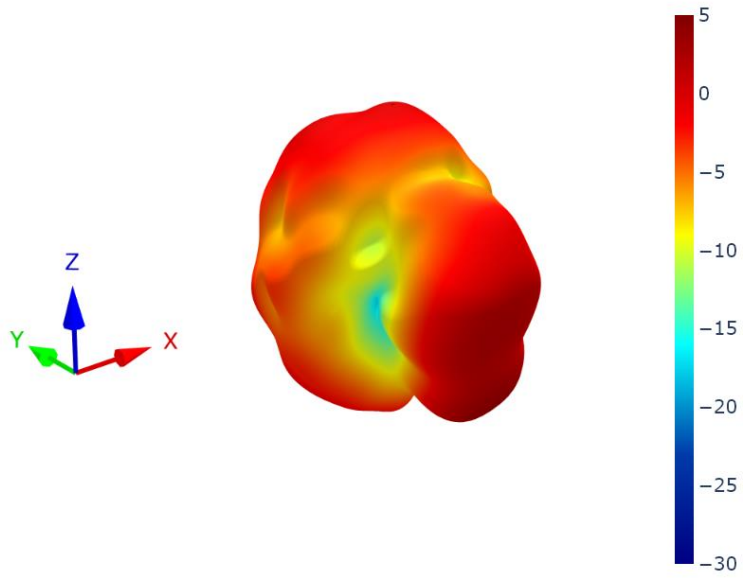
XZ Plane	YZ Plane	XY Plane
		

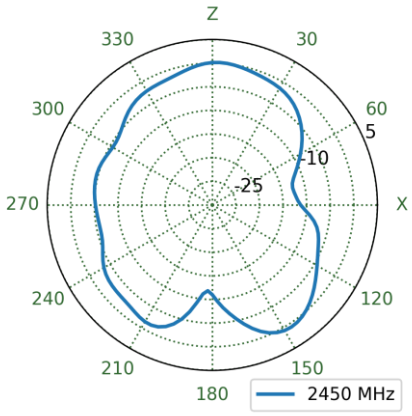
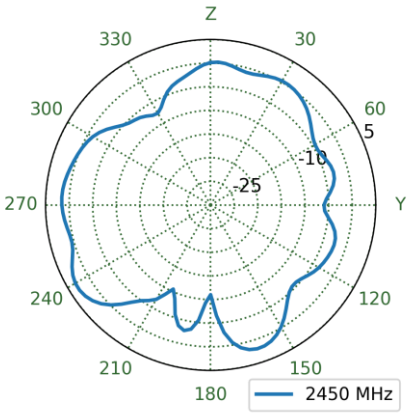
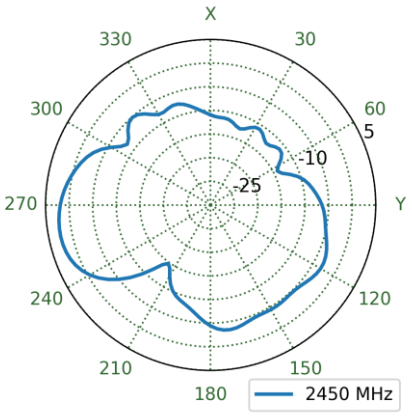
6.20 Cellular 2 Patterns at 5550 MHz



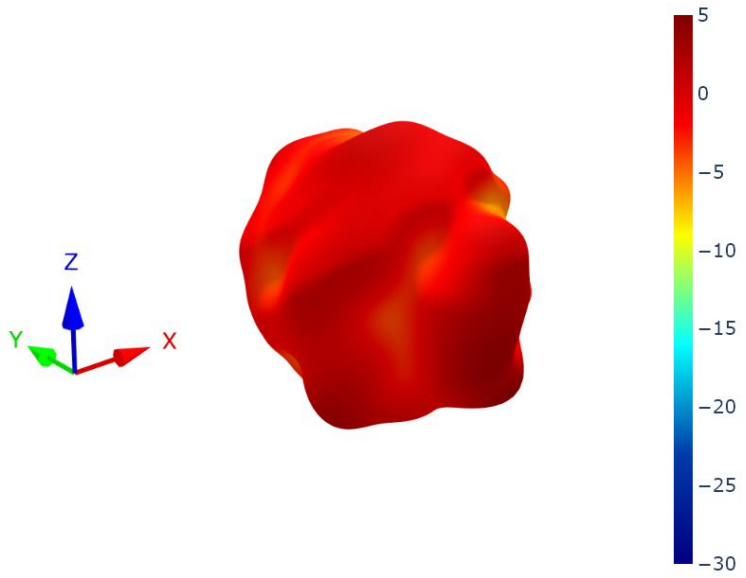
XZ Plane	YZ Plane	XY Plane
		

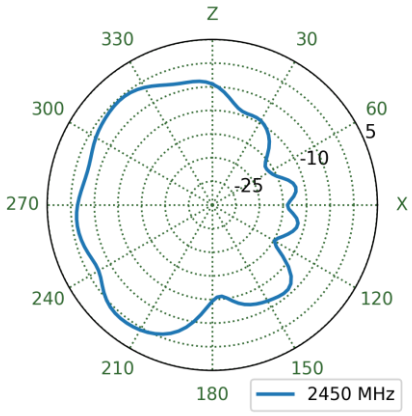
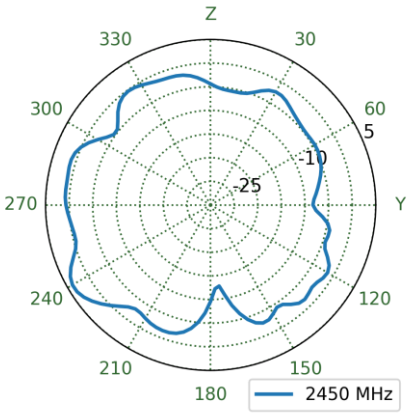
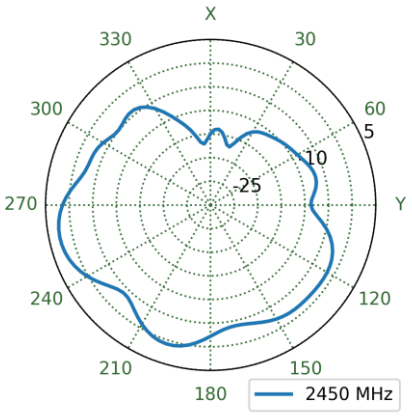
6.21 Wi-Fi 1 Patterns at 2450 MHz



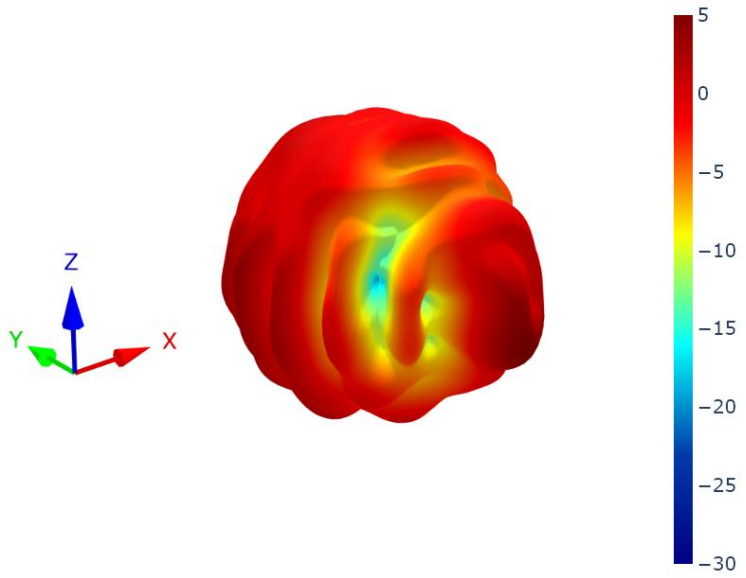
XZ Plane	YZ Plane	XY Plane
		

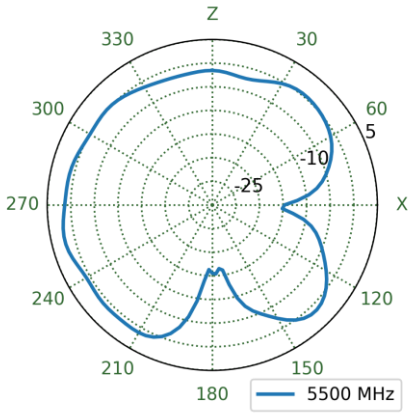
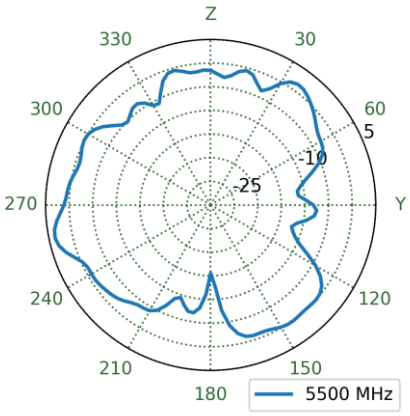
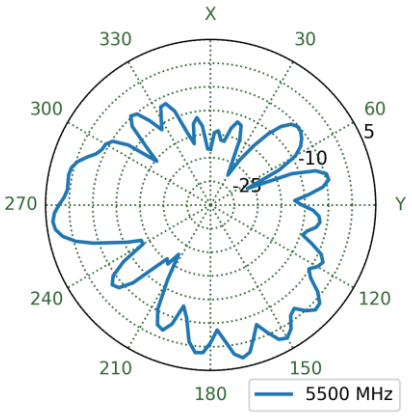
6.22 Wi-Fi 2 Patterns at 2450 MHz



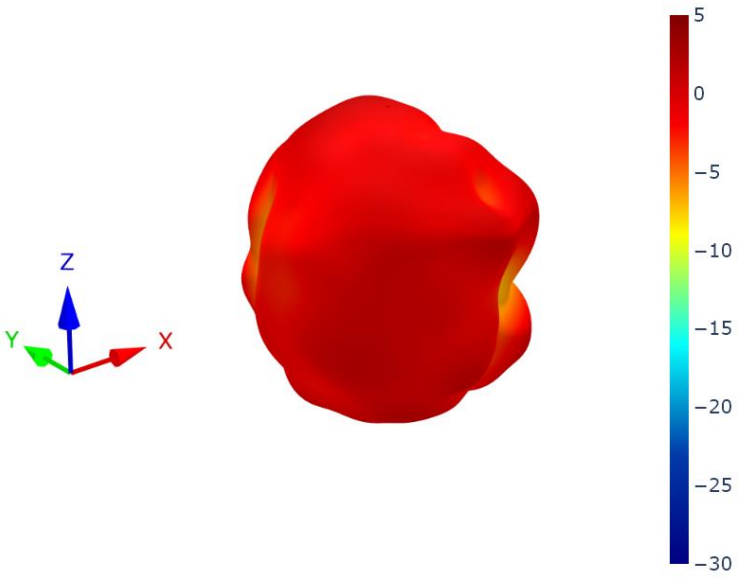
XZ Plane	YZ Plane	XY Plane
		

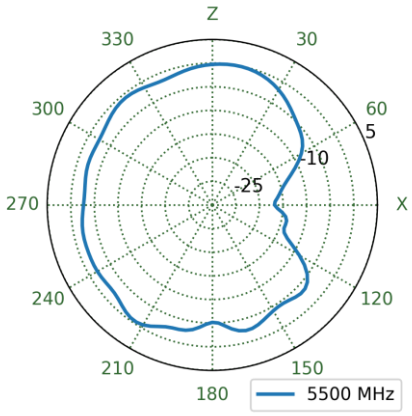
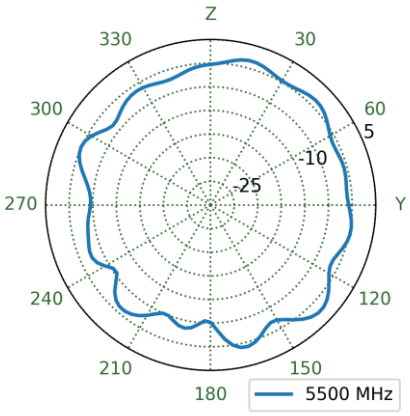
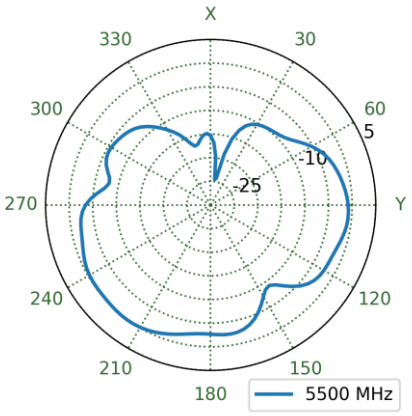
6.23 Wi-Fi 1 Patterns at 5500 MHz



XZ Plane	YZ Plane	XY Plane
		

6.24 Wi-Fi 2 Patterns at 5500 MHz



XZ Plane	YZ Plane	XY Plane
		

Changelog for the datasheet

SPE-25-8-326– MA2336.A.001

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Date:	2025-12-02
Notes:	Initial Release
Author:	Gary West

Previous Revisions

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