



TAOGLAS[®]



Datasheet

Guardian HP

Part No:

GUAHP.9.1G4C4W.3M.S23.B

Description

Guardian HP Adhesive Mount 9-in-1 3m RG-174/TGC-1.5DS
GNSS SMA(M), 4*5G/4G SMA(M), 4*Wi-Fi RP-SMA(M)

Features:

Low-profile Housing with Wall Mount
4* 4G-5G MIMO 600-6000MHz / 1400-6000MHz
4* WIFI MIMO 2.4 & 5.8 & 7.125 GHz
1* GPS-GLONASS- Antenna
IP67 Waterproof Enclosure
Dims: 360.0 x 160.0 x 16.5mm
Cable:RG-174 & TGC-1.5DS
Connectors: SMA(M) & RP-SMA(M)
RoHS & Reach Compliant

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1. Introduction



The Taoglas **Guardian HP** is a low-profile, wall-mount 9-in-1 combination antenna designed to deliver reliable multi-band connectivity in a compact, rugged enclosure. It integrates 4 × 4G/5G MIMO (4G-5G 1 & 2: 600–6000 MHz, 4G-5G 3 & 4: 1400–6000 MHz), 4 × tri-band Wi-Fi MIMO (2.4, 5.8, and 7.125 GHz), and a GNSS antenna (GPS/GLONASS) within a single IP67-rated waterproof housing, ensuring dependable performance in demanding indoor and outdoor environments.

Its slim form factor and wall-mount design make it well suited to installations where space is limited and a discreet, non-intrusive solution is required. Supplied with low-loss cables and standard SMA and RP-SMA connectors, the Guardian HP enables straightforward integration across a wide range of devices and systems, while maintaining compliance with RoHS and REACH standards.

Typical applications:

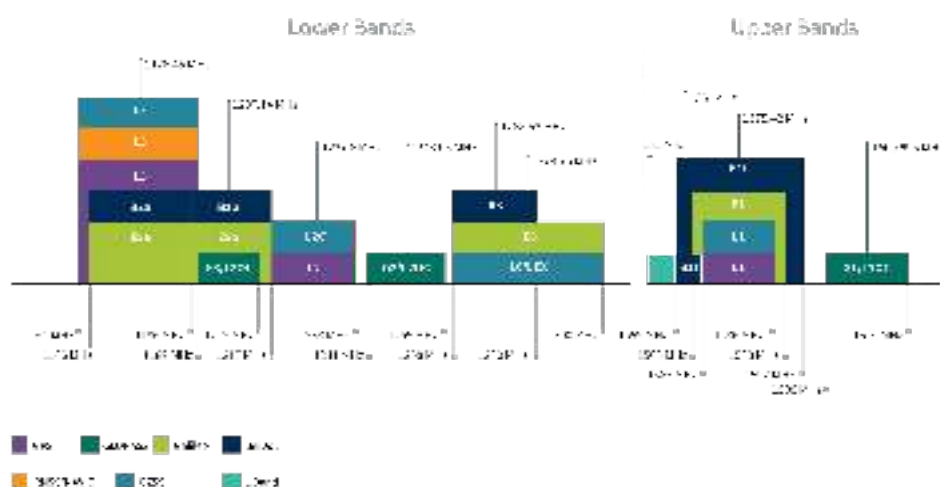
- Industrial and enterprise routers and gateways
- Smart infrastructure and IoT deployments
- Transportation hubs and connected vehicles
- HD video and high-bandwidth data applications
- Public safety, first responder, and emergency services

The Guardian HP is optimized for key 5G frequency bands, with antenna elements tuned to support both wideband and high-band operation. Users should refer to the performance table to select the appropriate connections for their application.

Cable length, connector types, and antenna configurations are fully customizable, with options for variants below 9-in-1 and additional Wi-Fi or GNSS support available from Taoglas.

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				
Frequency (MHz)	GPS_L1	GPS_L5	BeiDou_B1	GLONASS_G1
	1565-1586	1164-1189	1559-1592	1596-1610
Average Gain (dB)	-1.77	-2.95	-2.00	-2.62
Efficiency (%)	66.5	50.7	63.0	54.7
Peak Gain (dBi)	3.93	2.49	3.93	3.38
Axial Ratio at Zenith	11.7	5	4.8	13.1
Impedance	50 Ω			
Polarization	RHCP			

LNA and Filter Electrical Properties		
		3V(Type.)
LNA Gain	L1	22.3
	L5	15.15
Noise Figure	L1	2.22
	L5	5.72
Current Consumption		16.8mA
Outer Band Attenuation(dB)	At 500 ~1000 MHz	60 dB
	At 2000 ~2690MHz	50 dB
	At 3300~6000MHz	50 dB
Output Impedance		50 ohm
Return Loss(dB)		< -10dB
Input Voltage(V)		+1.8 to 5.5

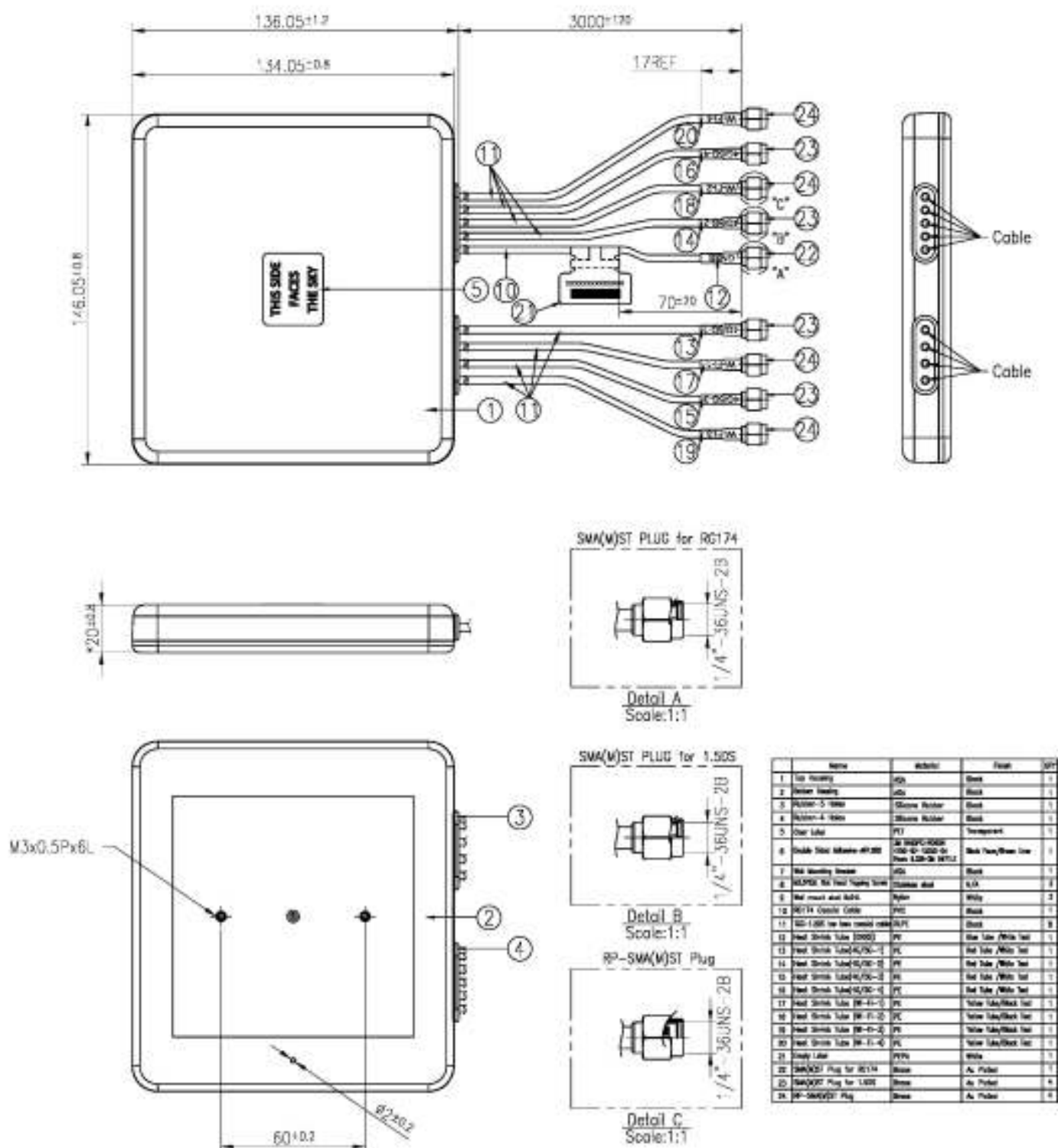
4G-5G Electrical									
Band	Frequency (MHz)	Measurement	Efficiency (%)	Average Gain (dB)	Peak Gain (dBi)	Impedance	Polarization	Radiation Pattern	Max. input power
5G NR/4G Band 71	617-698	4G-5G 1	40.1	-3.97	2.27	50 Ω	Linear	Omni directional	2W
		4G-5G 2	41.8	-3.79	3.59				
		4G-5G 3	N/A	N/A	N/A				
		4G-5G 4	N/A	N/A	N/A				
4G/3G Band 12,13,14,17,28,29	698-806	4G-5G 1	44.1	-3.56	3.73				
		4G-5G 2	38.7	-4.12	2.96				
		4G-5G 3	N/A	N/A	N/A				
		4G-5G 4	N/A	N/A	N/A				
4G/3G/NB-IoT/Cat M Band 5,8,18,19,20,26,27	824-960	4G-5G 1	46.6	-3.32	4.39				
		4G-5G 2	40.3	-3.95	2.71				
		4G-5G 3	N/A	N/A	N/A				
		4G-5G 4	N/A	N/A	N/A				
5G NR/4G Band 21,32,74,75,76	1427-1518	4G-5G 1	33.8	-4.71	0.05				
		4G-5G 2	30.1	-5.21	1.70				
		4G-5G 3	39.3	-4.05	6.52				
		4G-5G 4	39.2	-4.07	3.64				
4G/3G Band 1,2,3,4,9,23,25,35,39,66	1710-2200	4G-5G 1	51.4	-2.89	3.49				
		4G-5G 2	42.4	-3.73	4.26				
		4G-5G 3	48.7	-3.13	3.76				
		4G-5G 4	48.6	-3.13	3.18				
4G/3G Band 7,30,38,40,41	2300-2690	4G-5G 1	46.3	-3.34	3.48				
		4G-5G 2	44.4	-3.52	3.02				
		4G-5G 3	44.9	-3.48	3.01				
		4G-5G 4	45.9	-3.39	3.24				
5G NR/4G Band 22,42,48,77,78,79	3300-5000	4G-5G 1	46.5	-3.33	4.71				
		4G-5G 2	44.8	-3.49	3.96				
		4G-5G 3	31.0	-5.09	4.18				
		4G-5G 4	30.4	-5.17	4.85				
LTE5200/Wi-Fi5800	5150-5925	4G-5G 1	39.4	-4.04	4.54				
		4G-5G 2	36.7	-4.36	4.64				
		4G-5G 3	36.0	-4.44	3.23				
		4G-5G 4	36.0	-4.44	2.85				

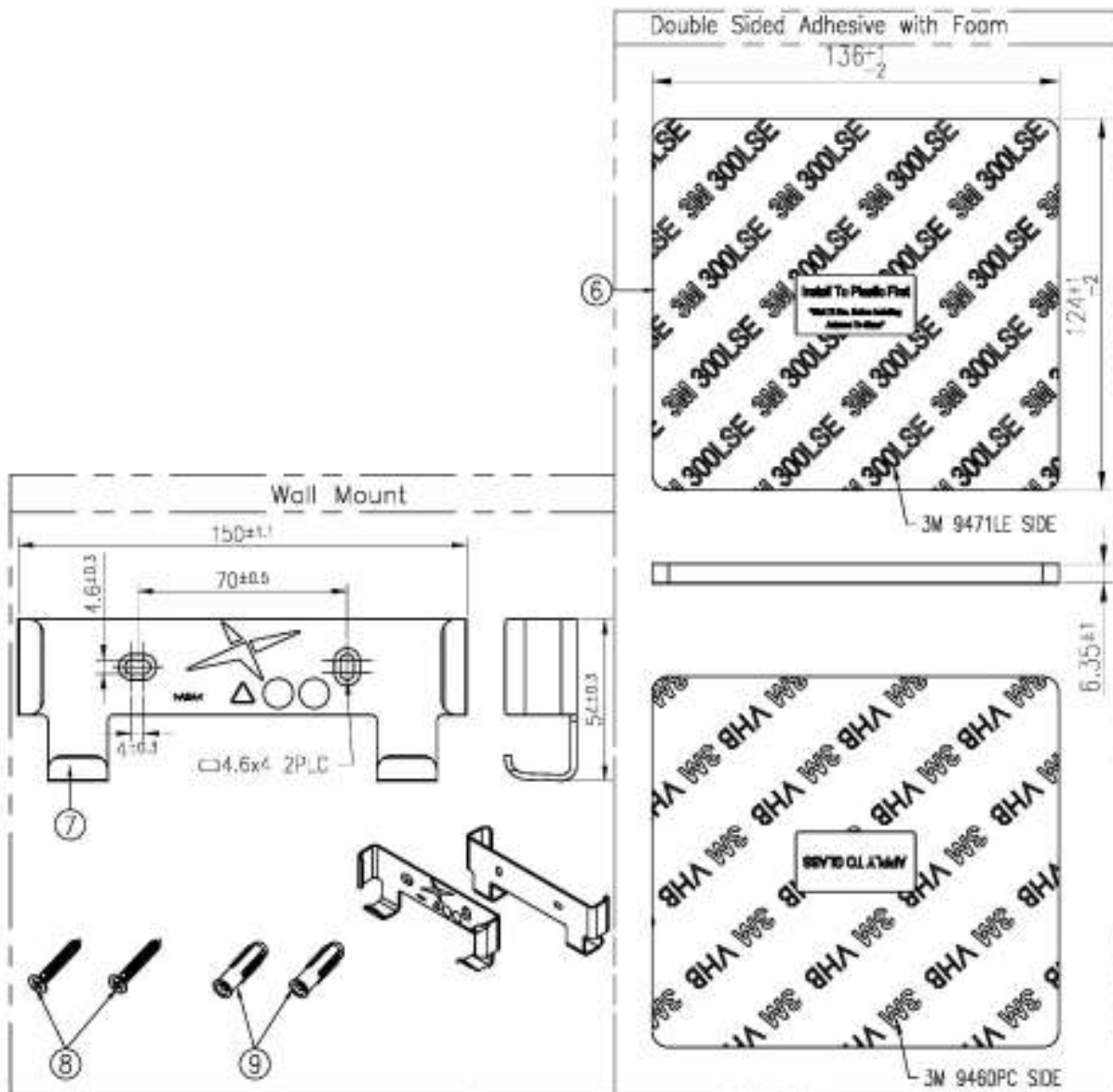
Wi-Fi Electrical									
Band	Frequency (MHz)	Measurement	Efficiency (%)	Average Gain (dB)	Peak Gain (dBi)	Impedance	Polarization	Radiation Pattern	Max. input power
Wi-Fi - 2GHz	2400-2500	Wi-Fi 2	24.3	-6.14	0.46	50 Ω	Linear	Omni directional	2W
		Wi-Fi 1	28.7	-5.43	4.44				
		Wi-Fi 3	49.2	-3.08	3.84				
		Wi-Fi 4	50.4	-2.98	3.79				
Wi-Fi - 5GHz	5150-5850	Wi-Fi 2	48.8	-3.11	4.88				
		Wi-Fi 1	47.7	-3.22	4.85				
		Wi-Fi 3	48.1	-3.18	4.84				
		Wi-Fi 4	44.9	-3.48	5.07				
Wi-Fi - 6GHz	5925-7125	Wi-Fi 2	46.2	-3.36	4.46				
		Wi-Fi 1	41.2	-3.86	3.79				
		Wi-Fi 3	47.8	-3.21	4.89				
		Wi-Fi 4	43.7	-3.60	5.86				

Mechanical	
Dimensions	146.0 x 134.0 x 20.0mm
Material	ASA
Connector	RP-SMA & SMA
Cable	RG-174 & TGC 1.5DS

Environmental	
Waterproof Rating	IPx7
Operation Temperature	-40°C to + 85°C
Storage Temperature	-40°C to + 85°C
Relative Humidity	Non-condensing 65°C 95% RH

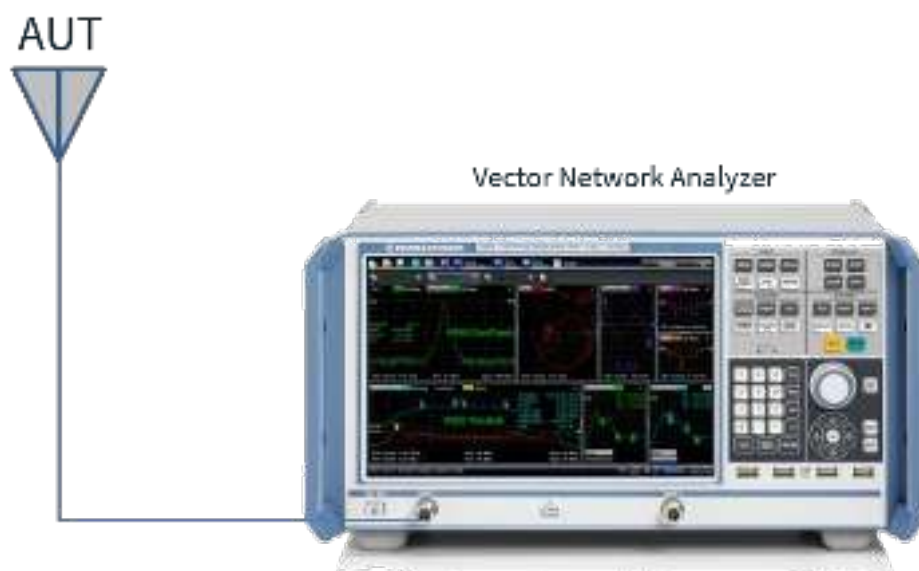
3. Mechanical Drawing





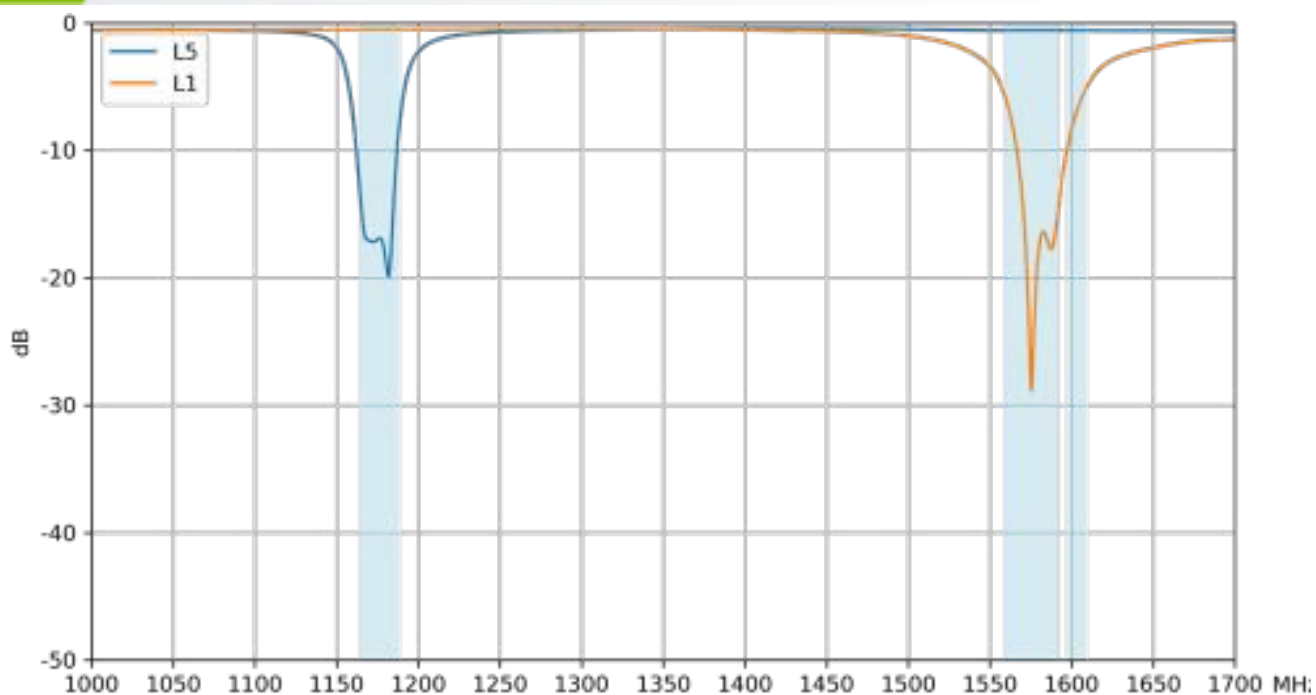
4. Antenna Characteristics

4.1 Test Setup

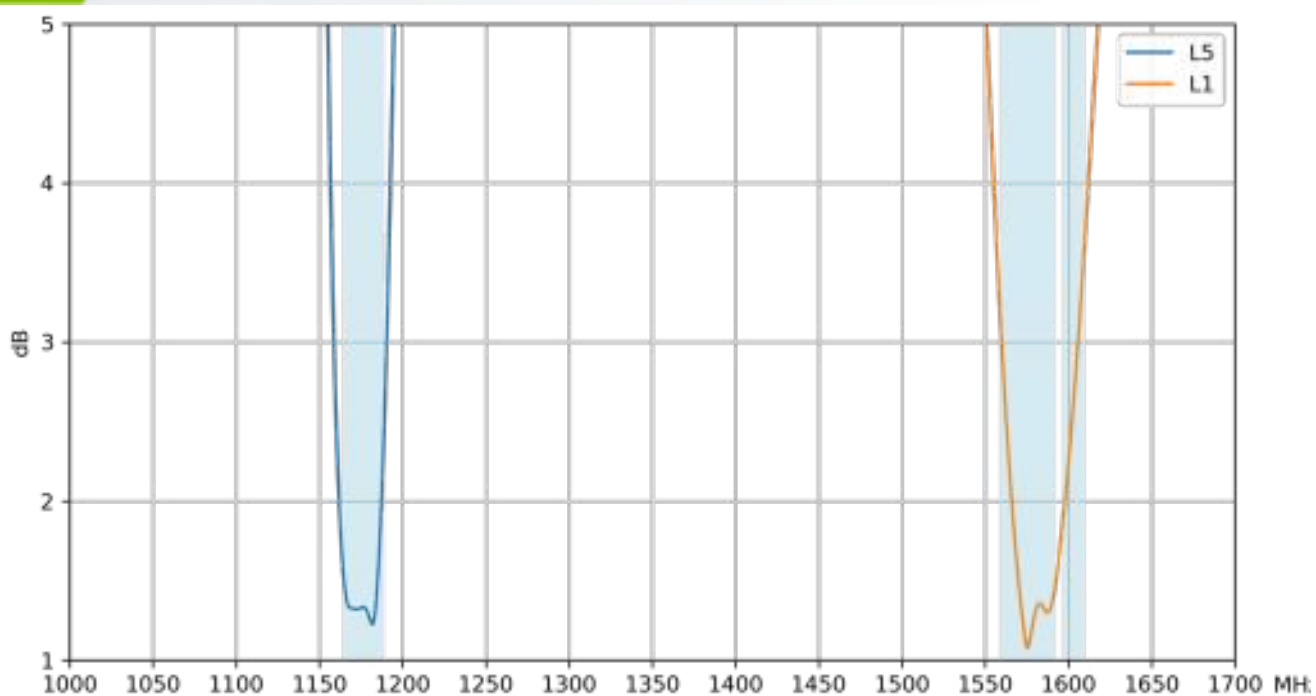


VNA Test Setup

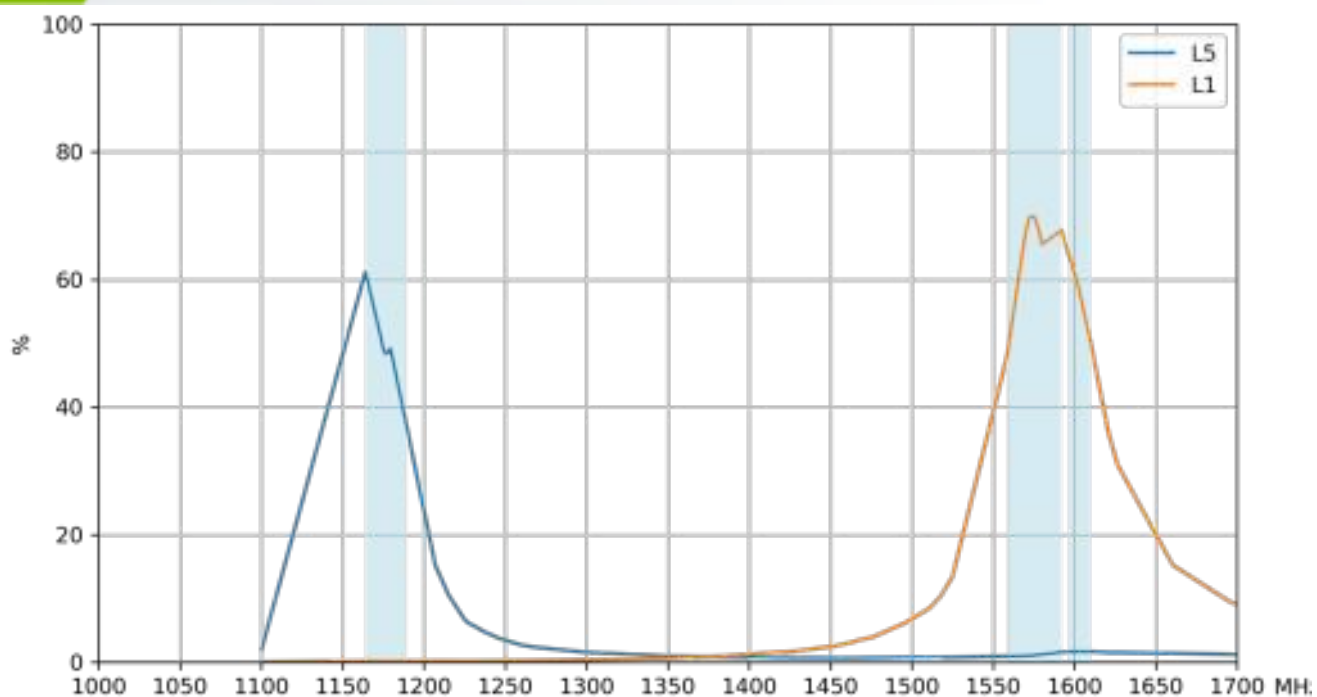
4.2 GNSS - Return Loss



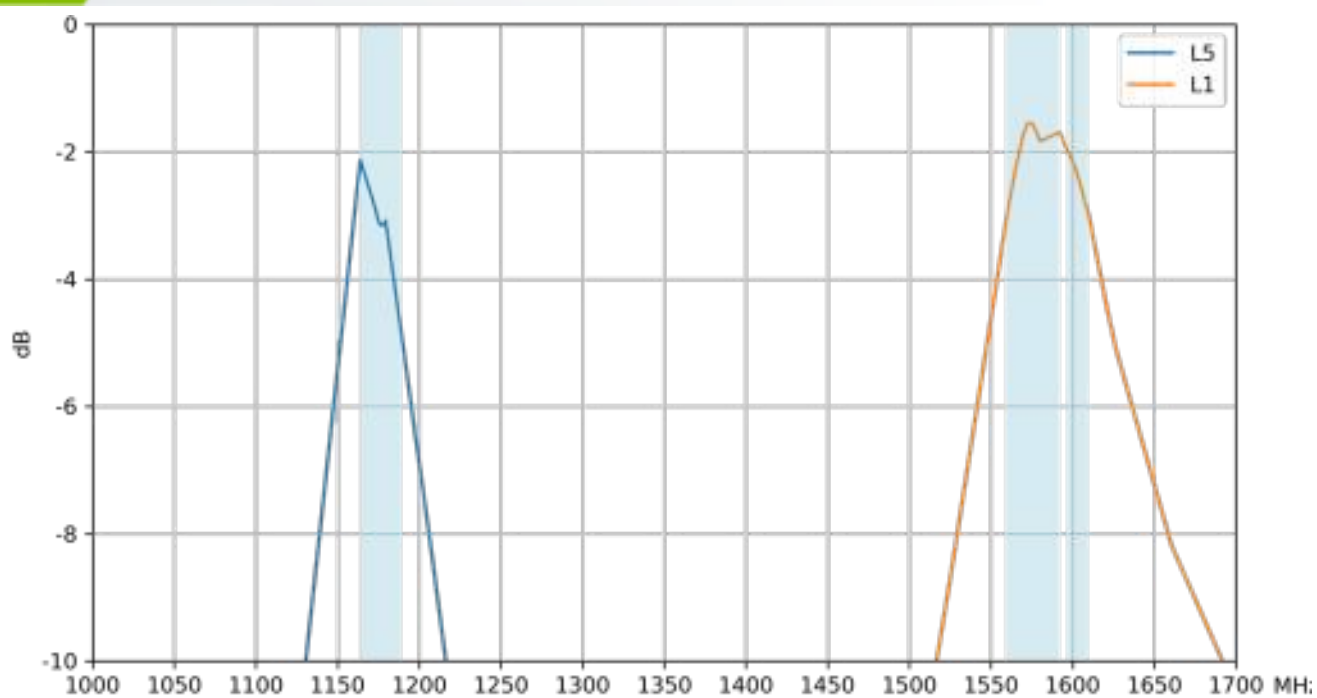
4.3 GNSS - VSWR



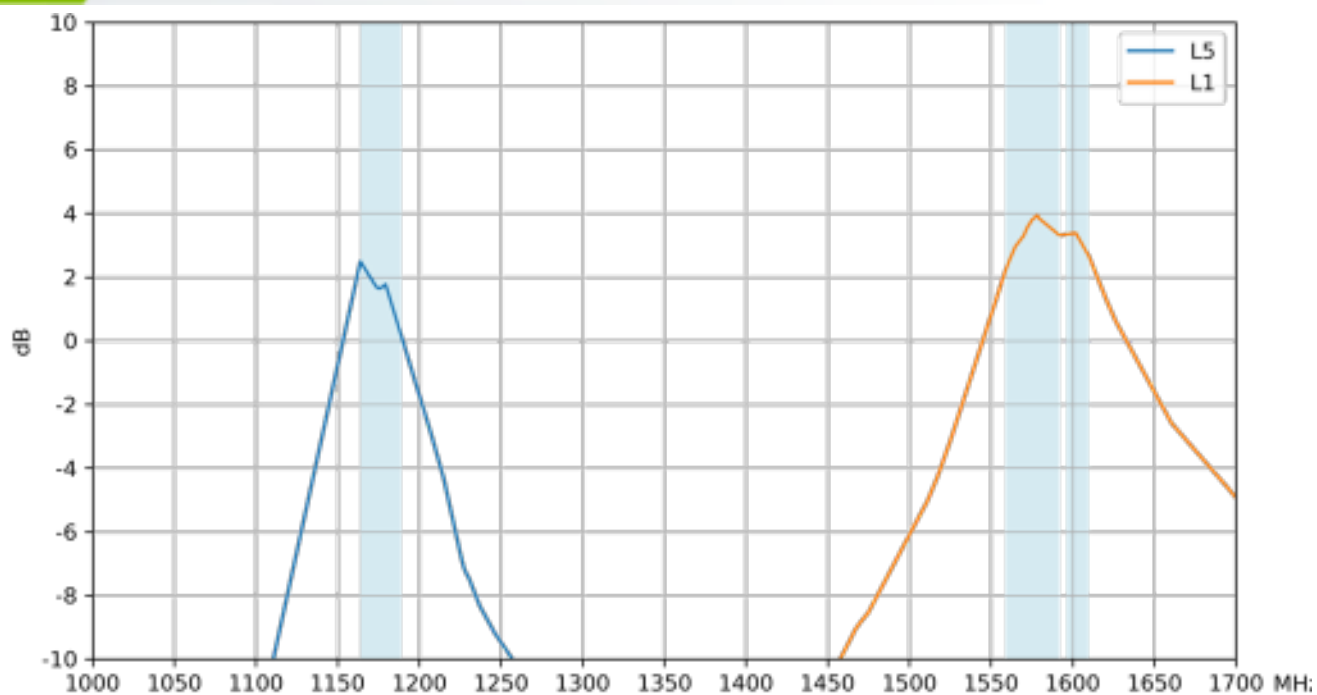
4.4 GNSS - Efficiency



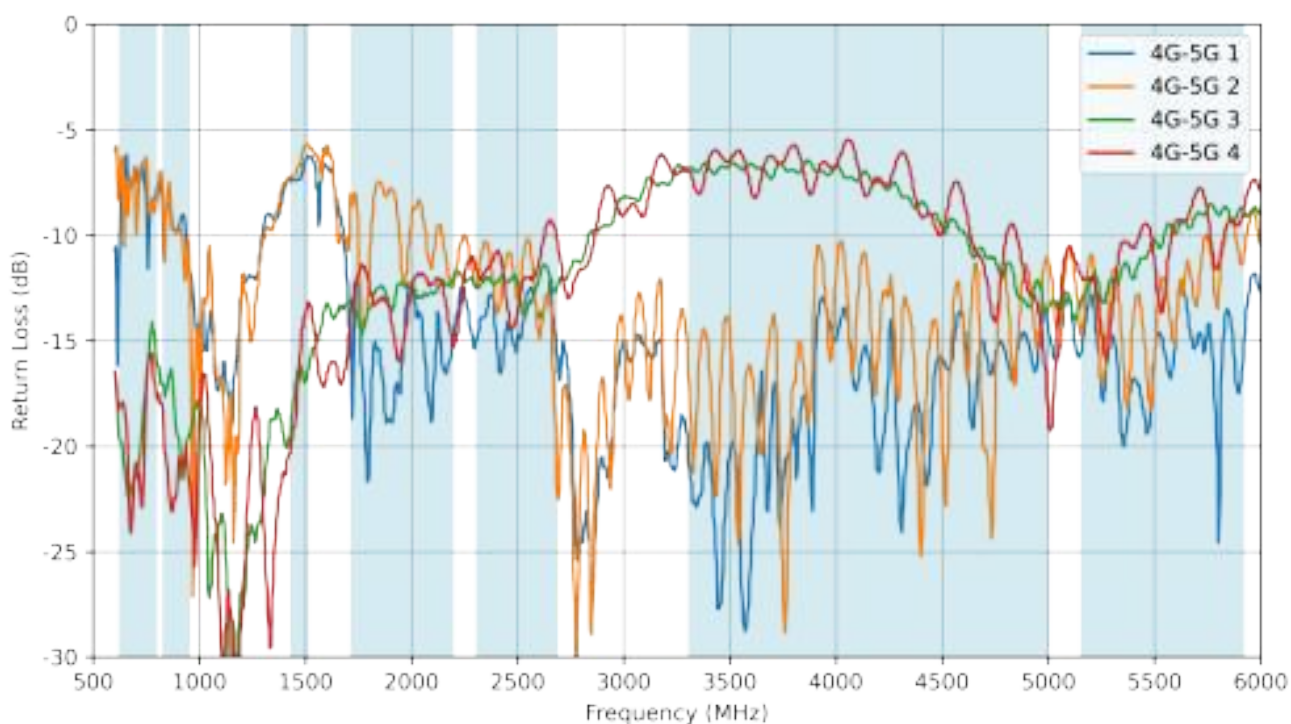
4.5 GNSS - Average Gain



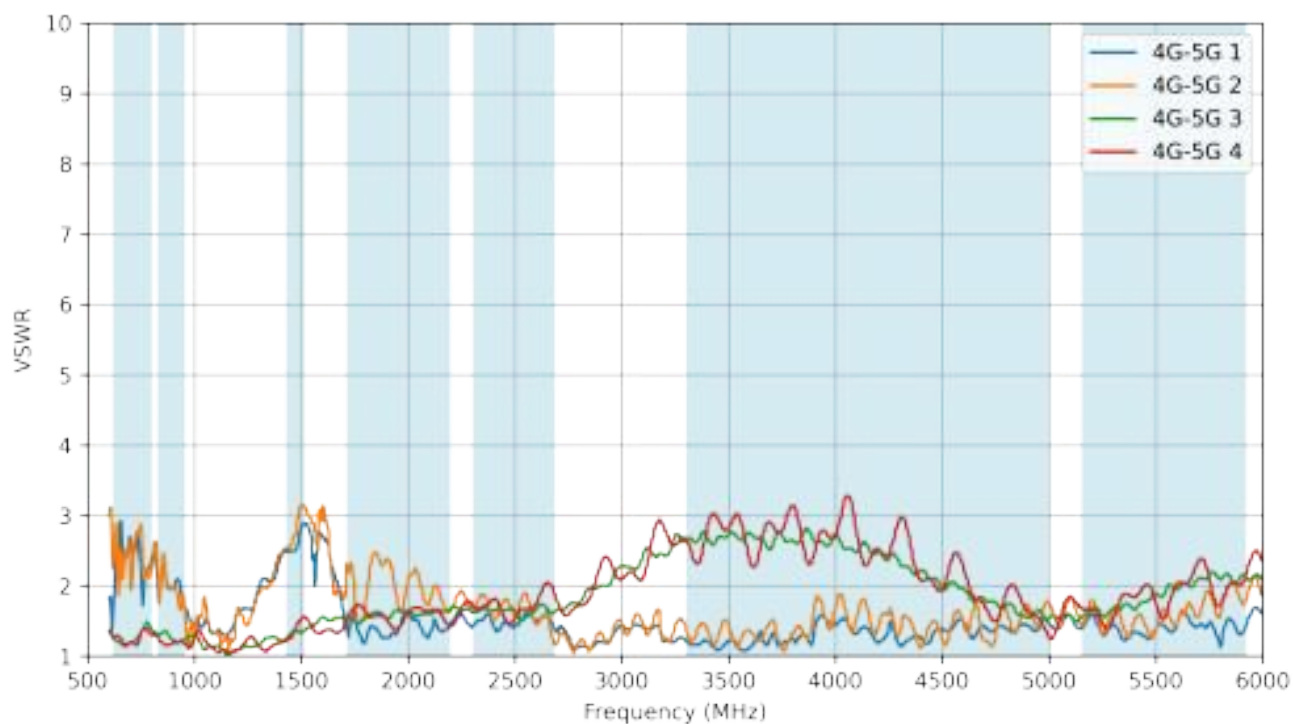
4.6 GNSS - Peak Gain



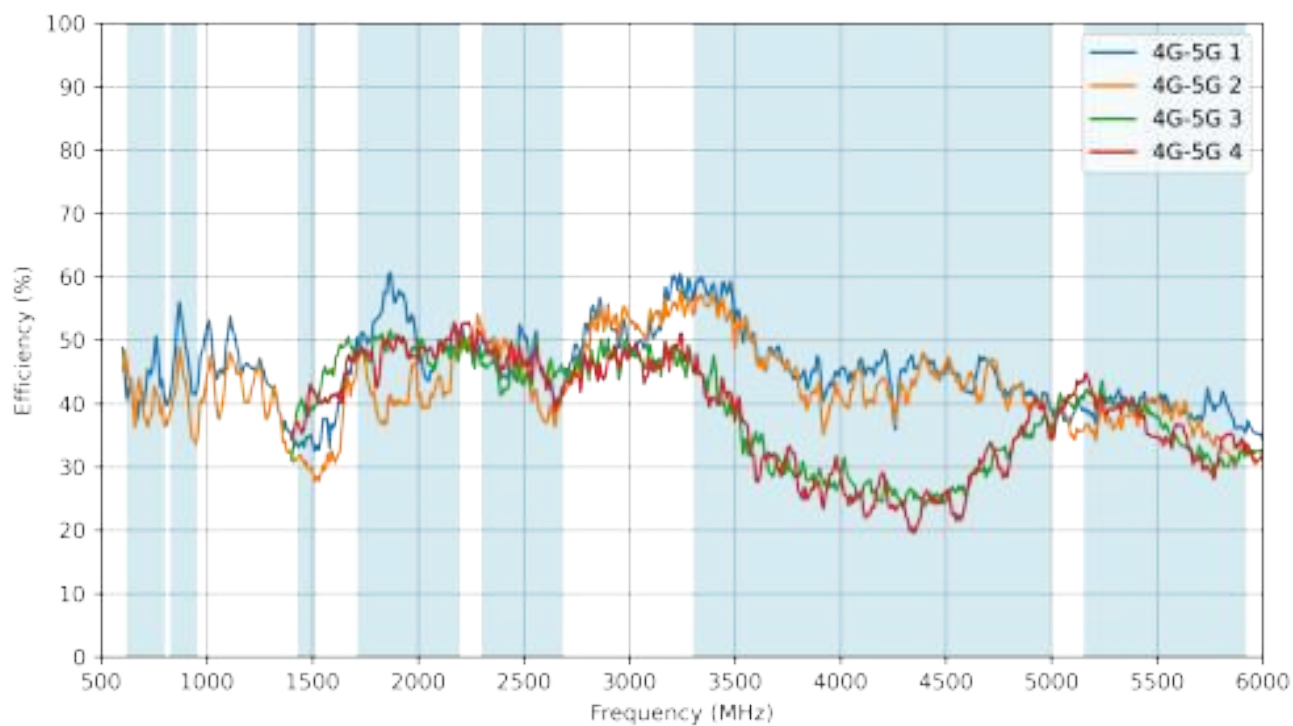
4.7 4G-5G - Return Loss



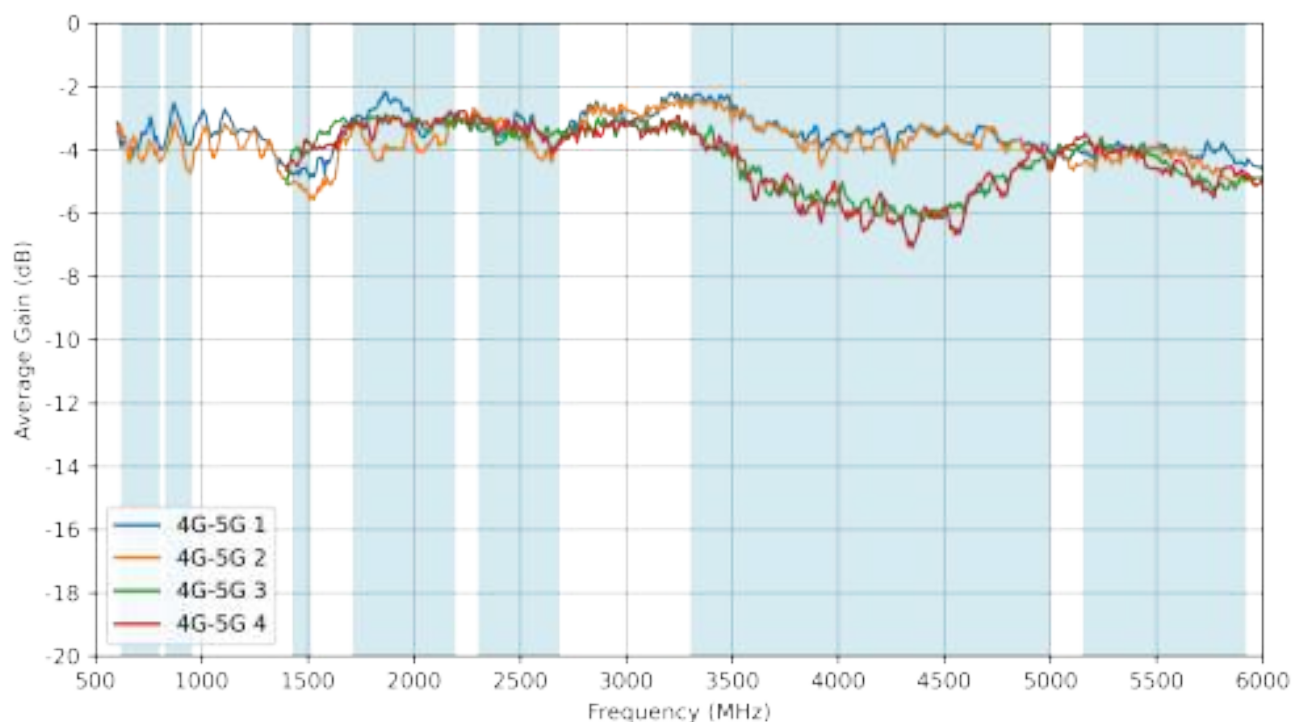
4.8 4G-5G - VSWR



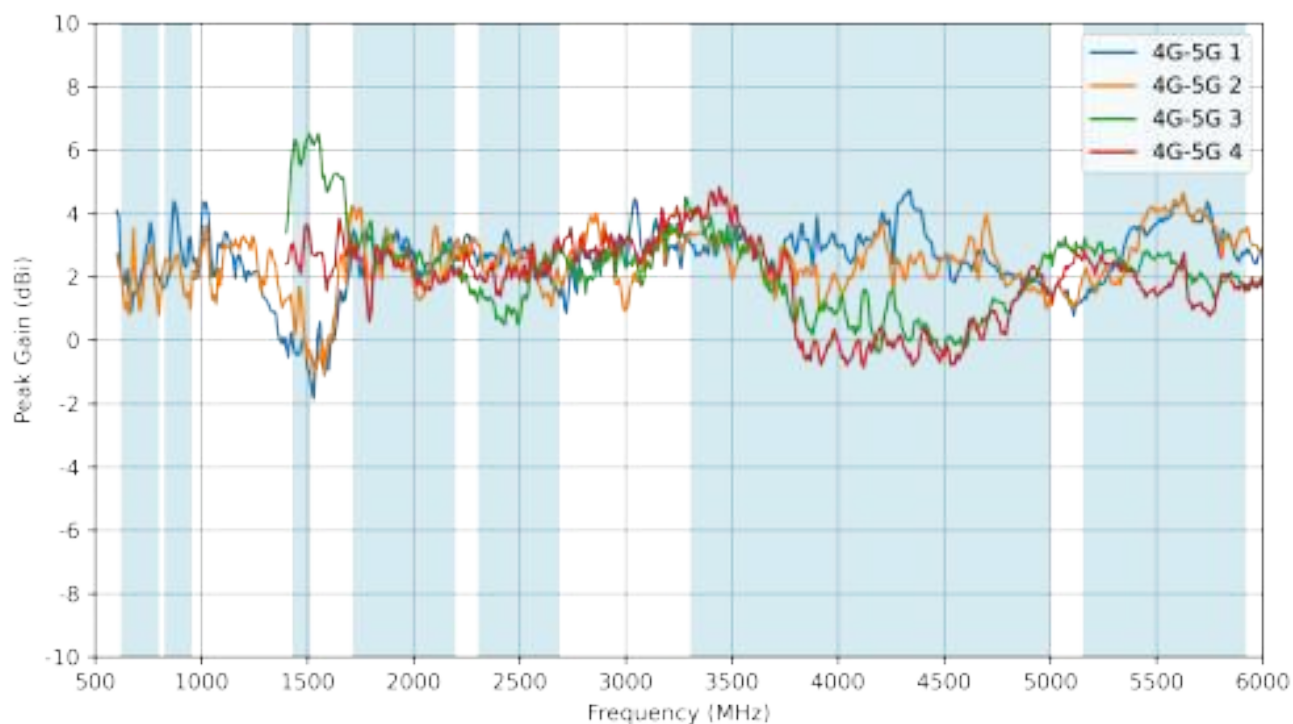
4.9 4G-5G - Efficiency



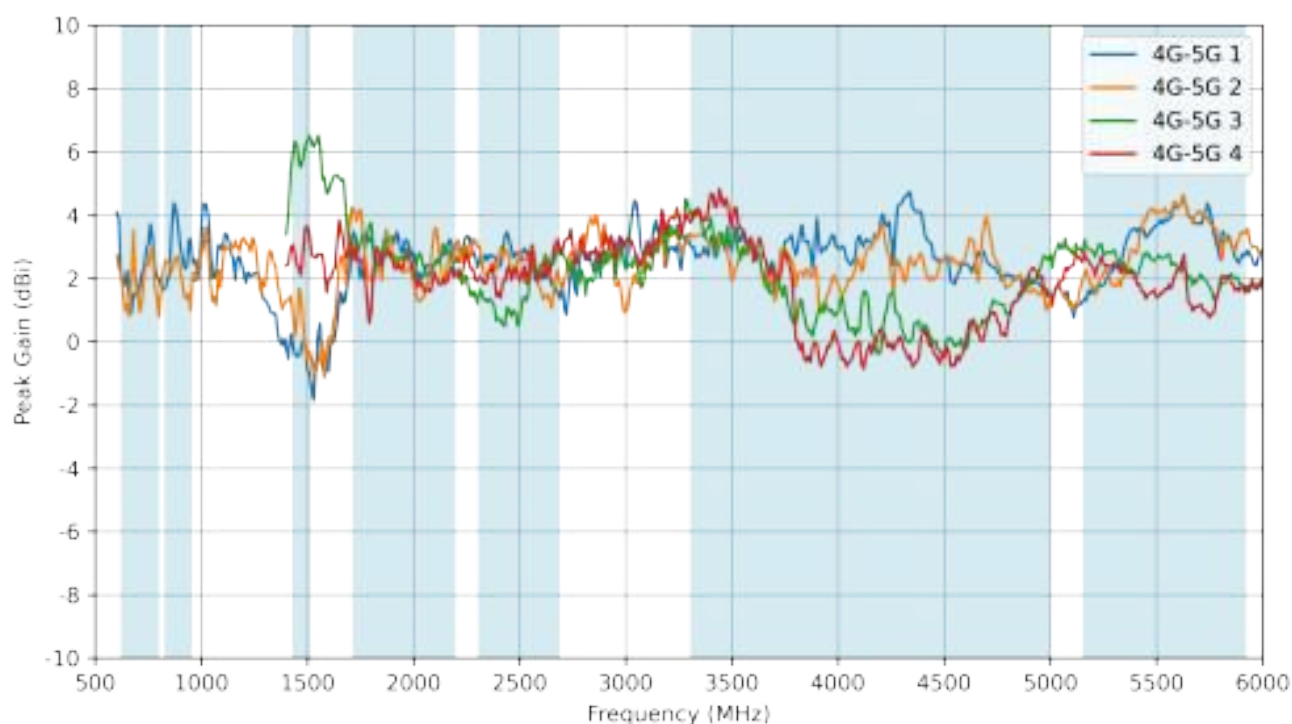
4.10 4G-5G - Average Gain



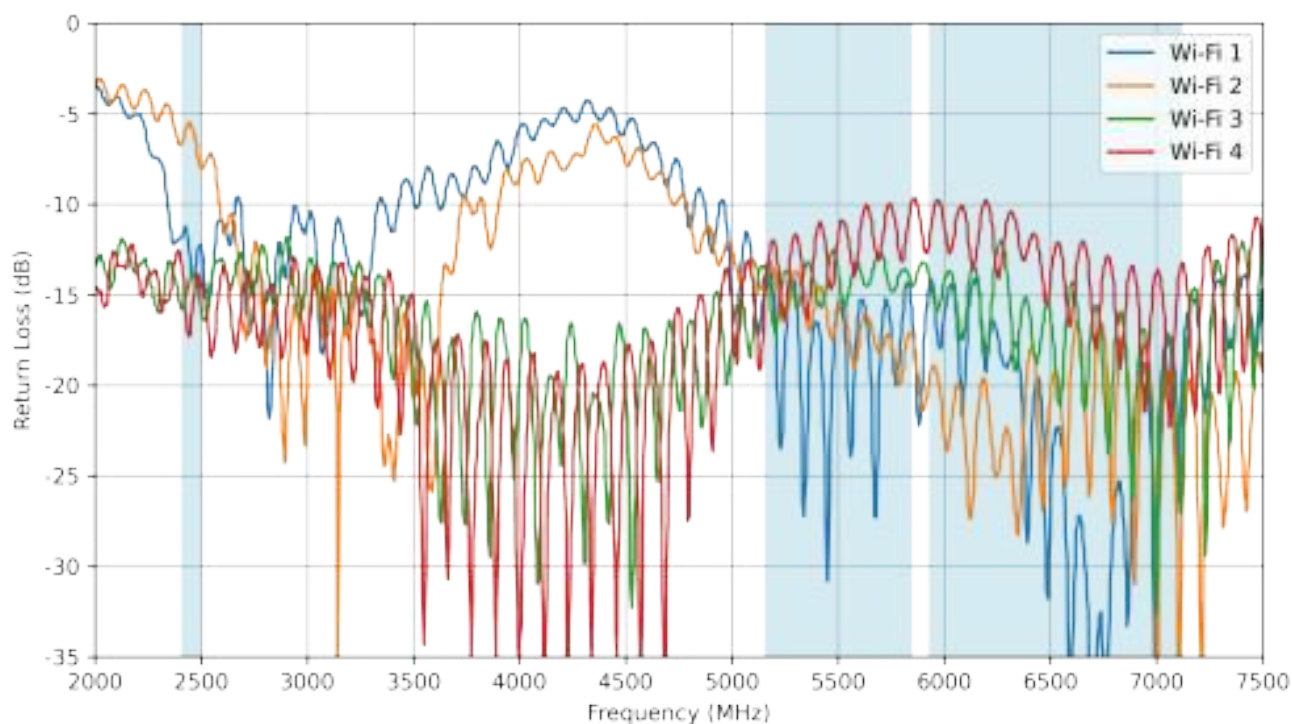
4.11 4G-5G - Peak Gain



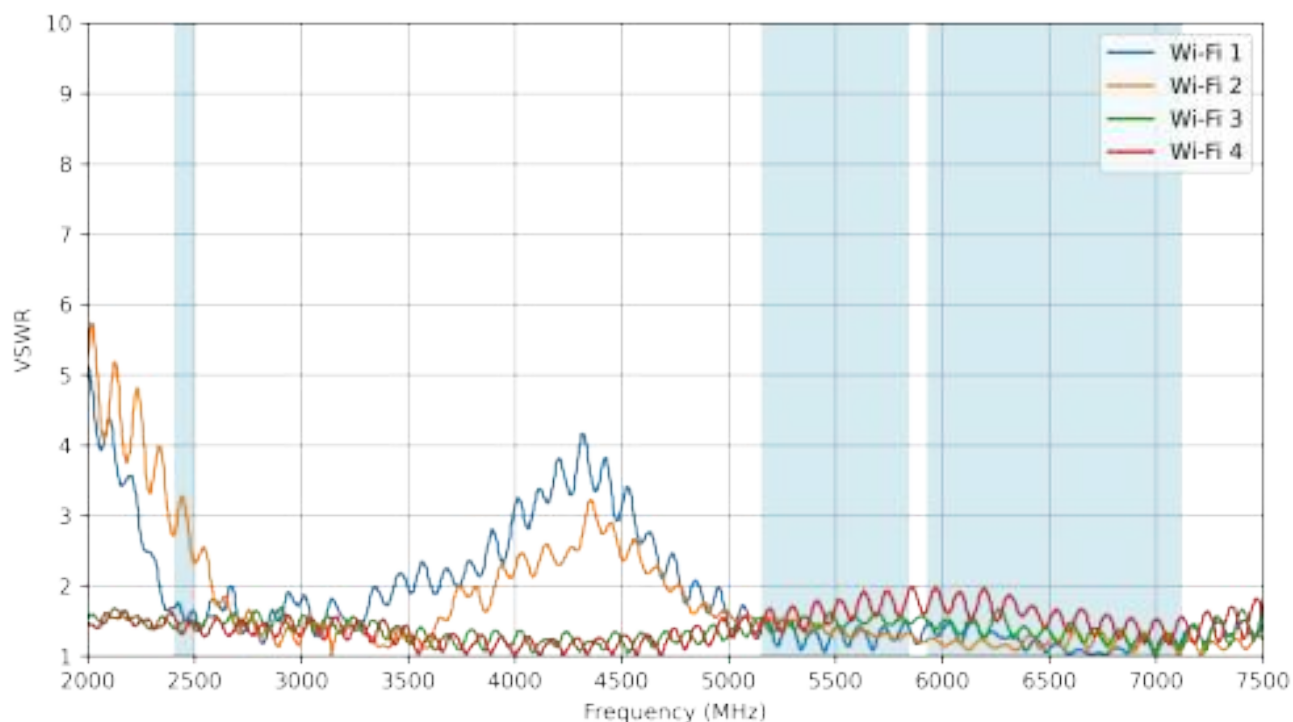
4.12 4G-5G – Isolation



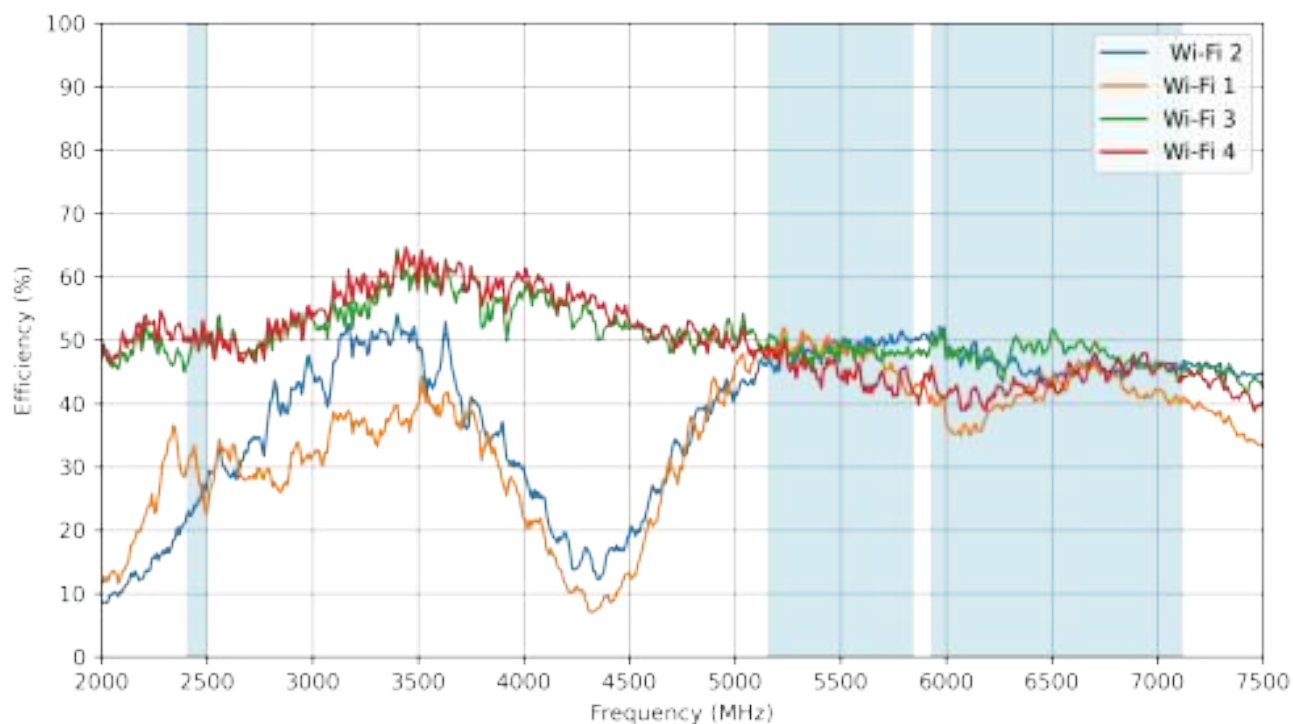
4.13 Wi-Fi - Return Loss



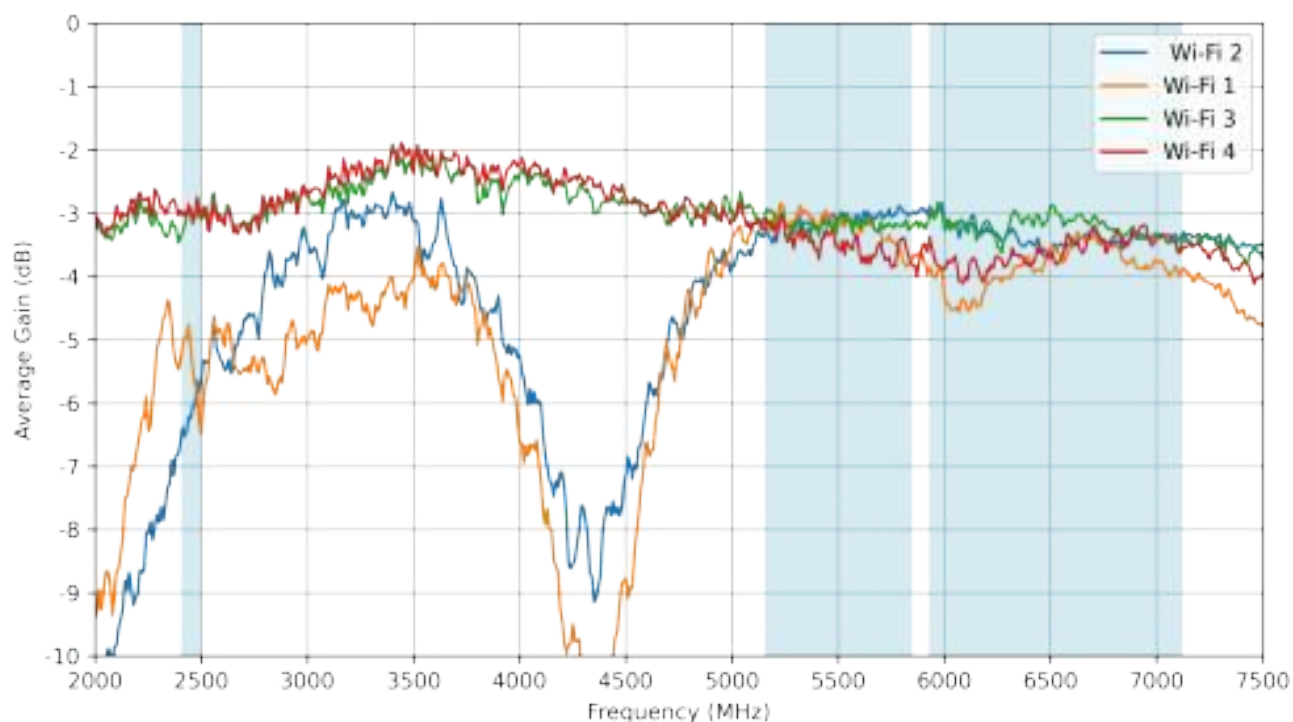
4.14 Wi-Fi - VSWR



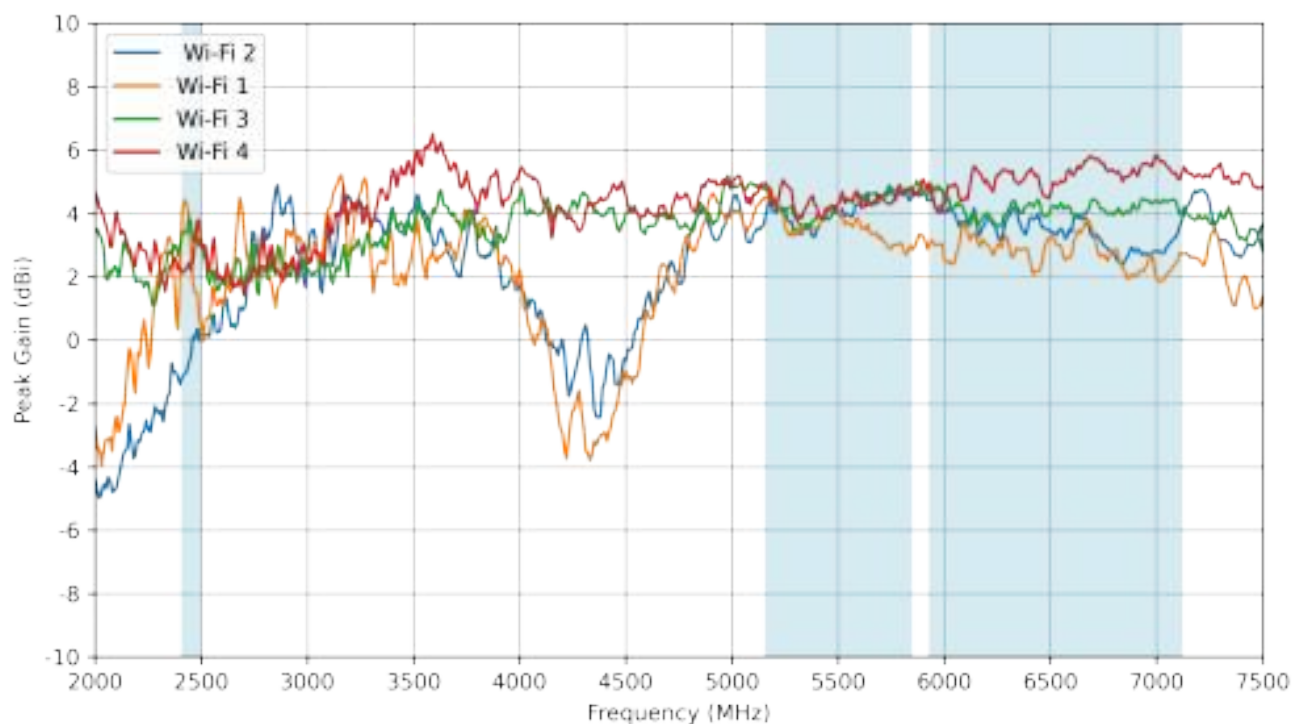
4.15 Wi-Fi - Efficiency



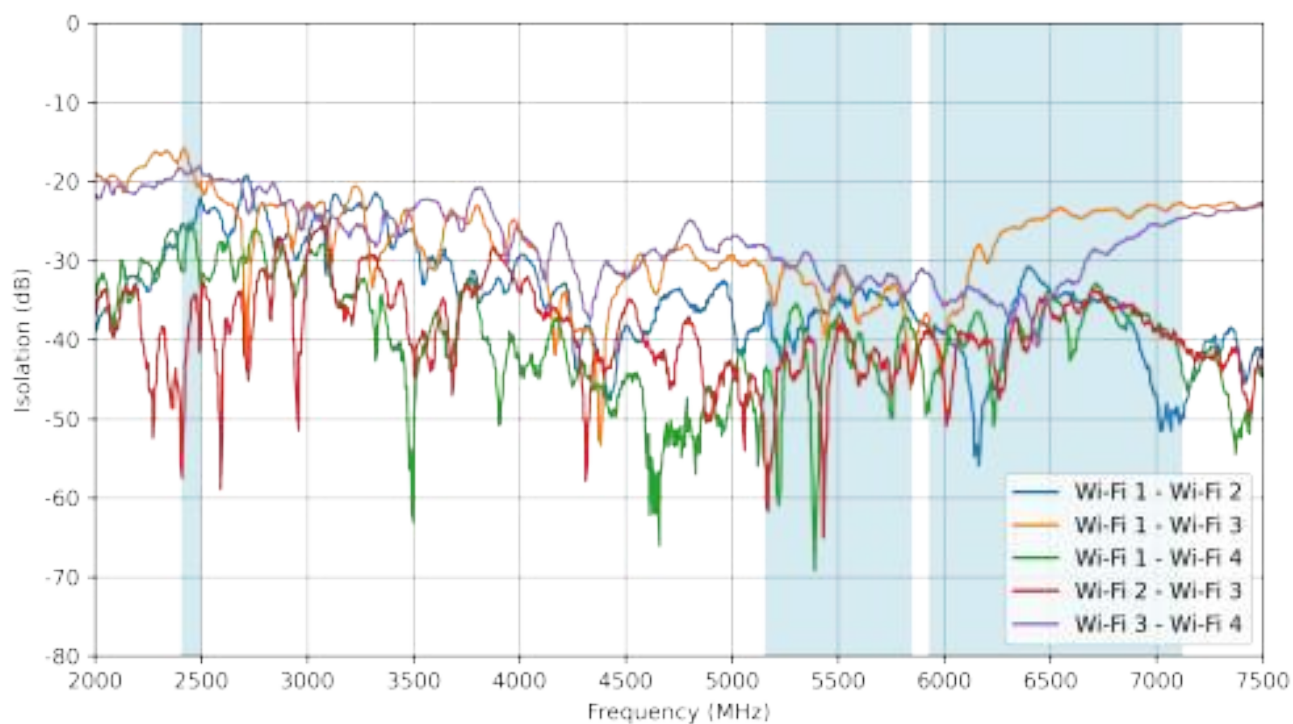
4.16 Wi-Fi - Average Gain



4.17 Wi-Fi - Peak Gain

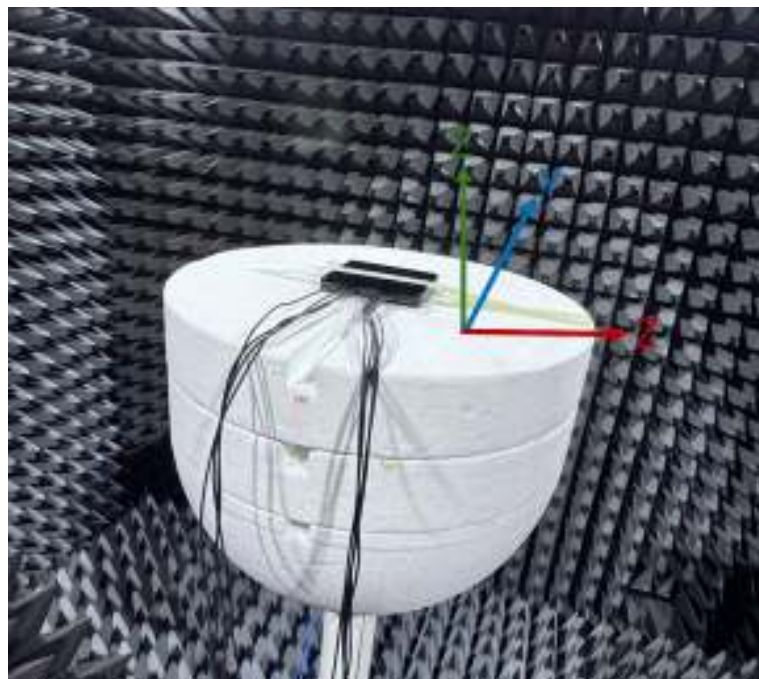
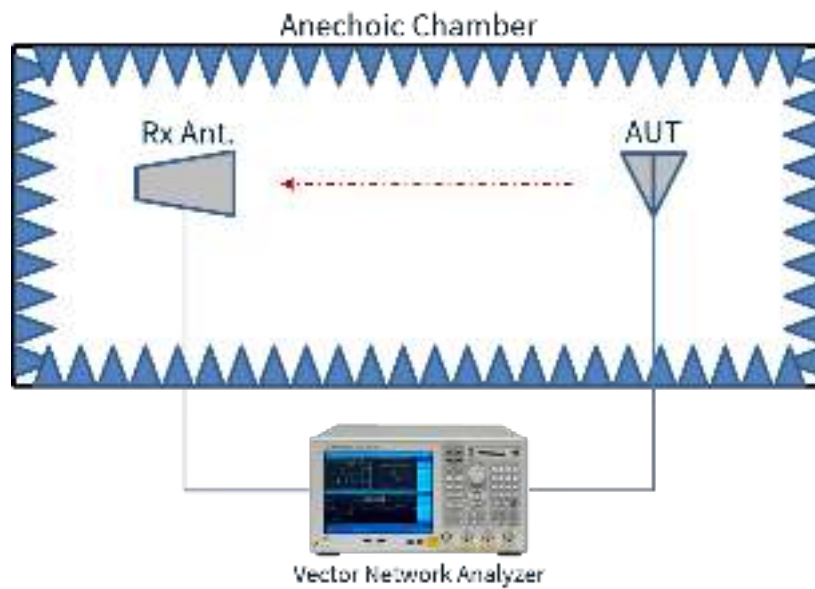


4.18 Wi-Fi - Isolation



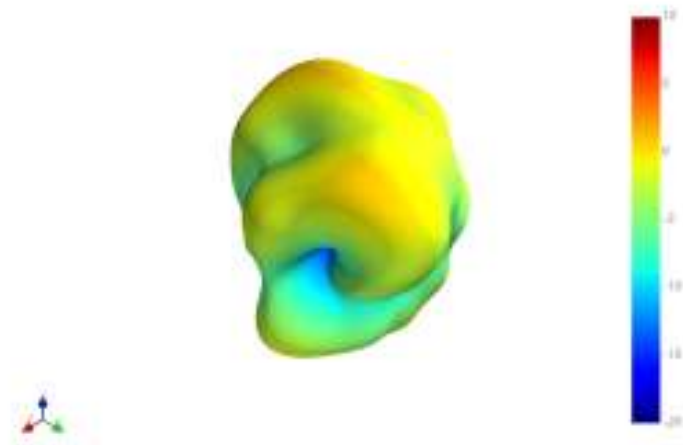
5. Radiation Patterns

5.1 Test Setup

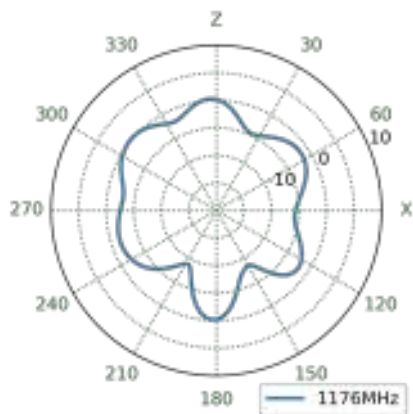


Chamber Test Setup

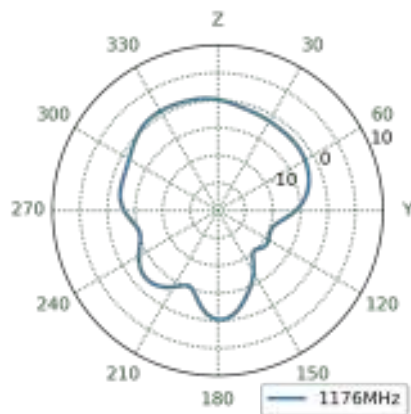
5.2 GNSS Patterns at 1176 MHz



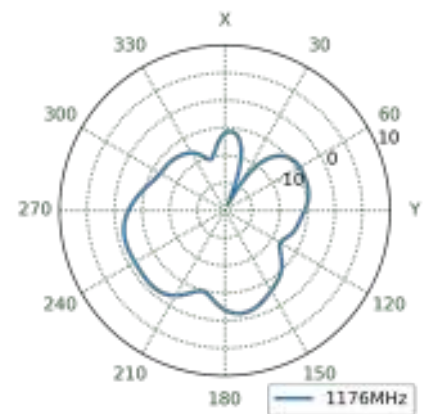
XZ Plane



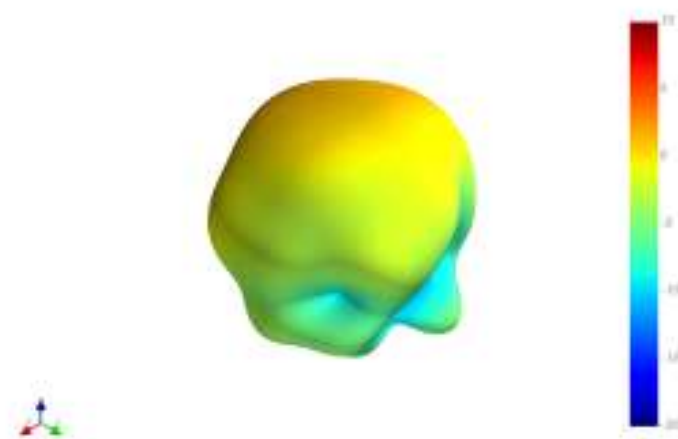
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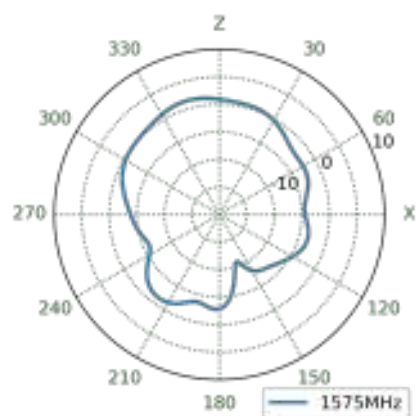
XY Plane



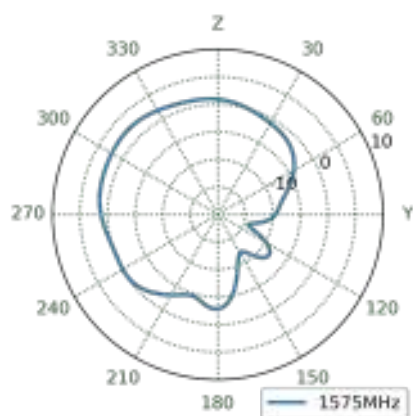
5.3 GNSS Patterns at 1575 MHz



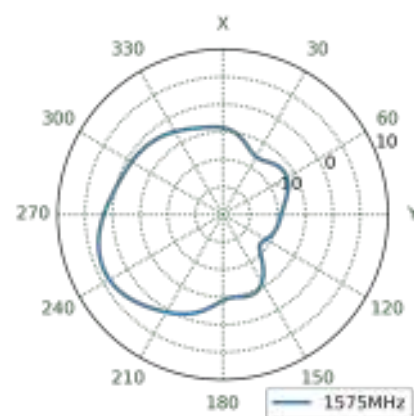
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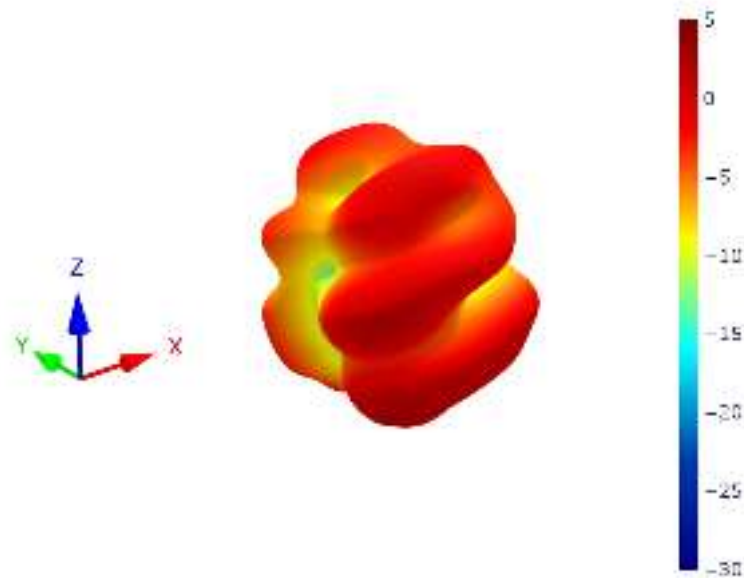
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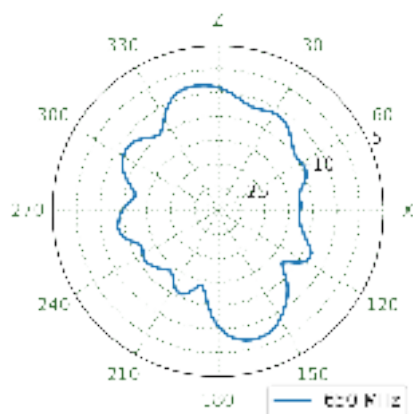
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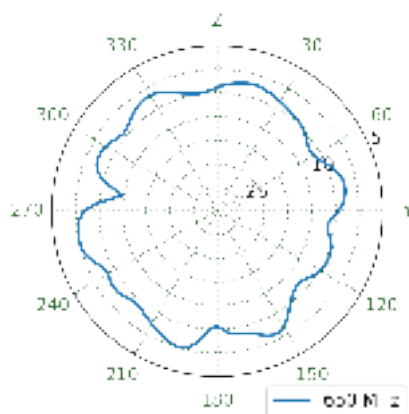
5.4 4G-5G 1 Patterns at 650 MHz



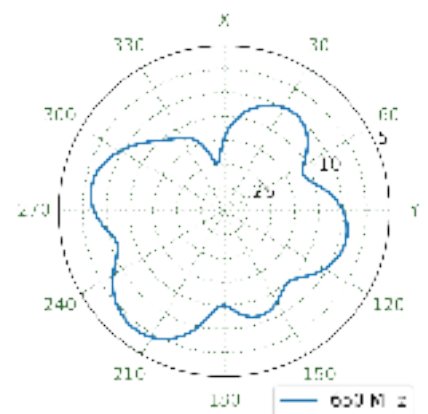
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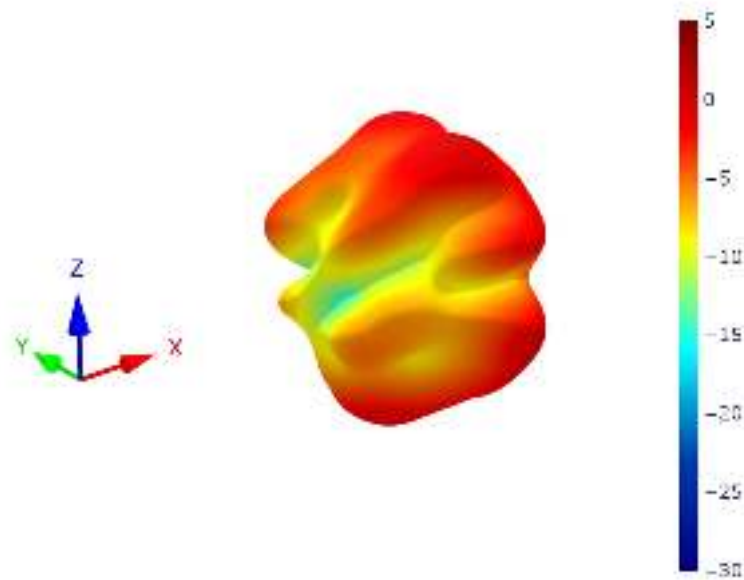
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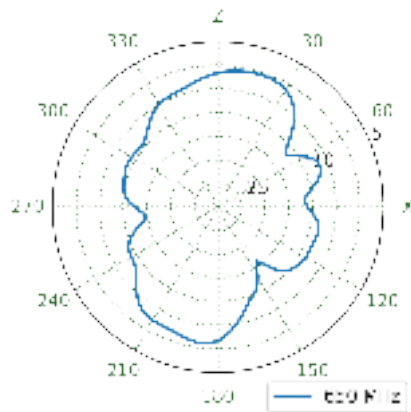
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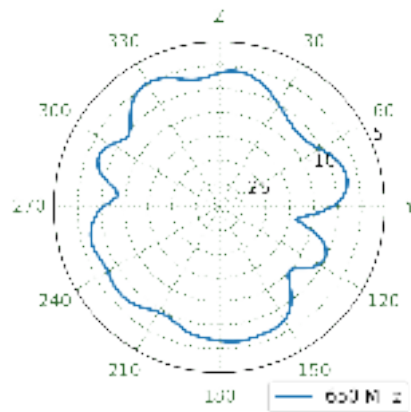
5.5 4G-5G 2 Patterns at 650 MHz



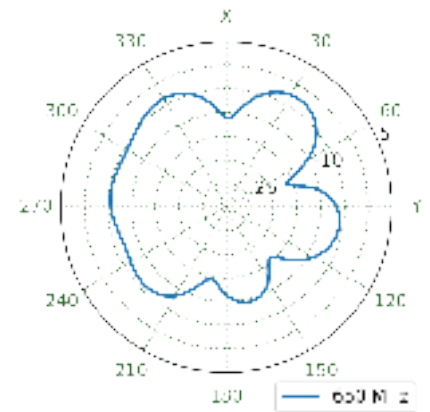
XZ Plane



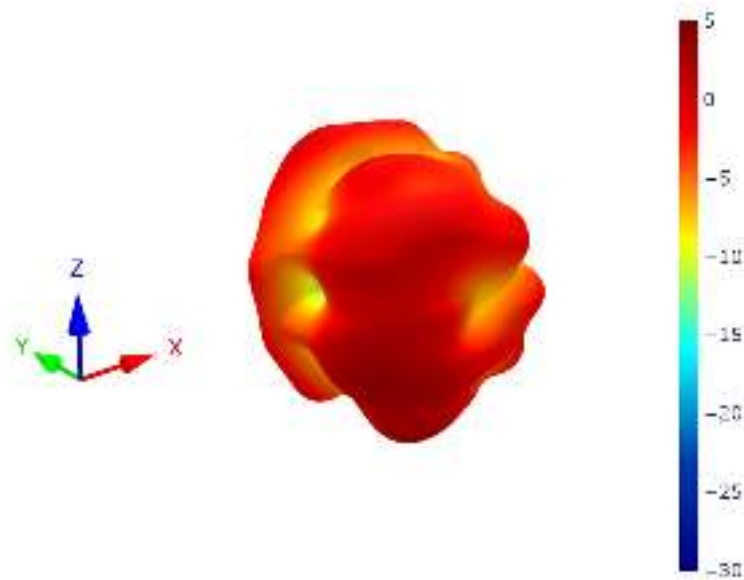
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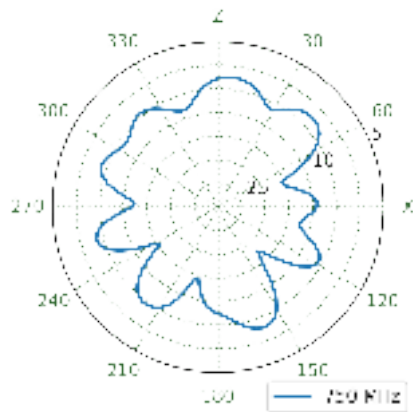
XY Plane



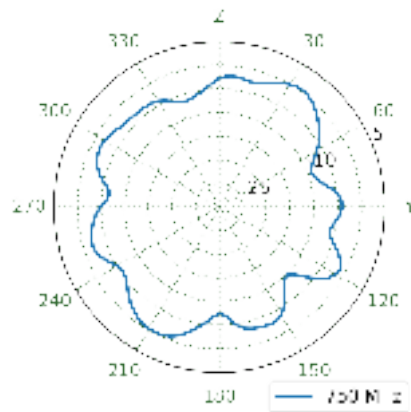
5.6 4G-5G 1 Patterns at 750 MHz



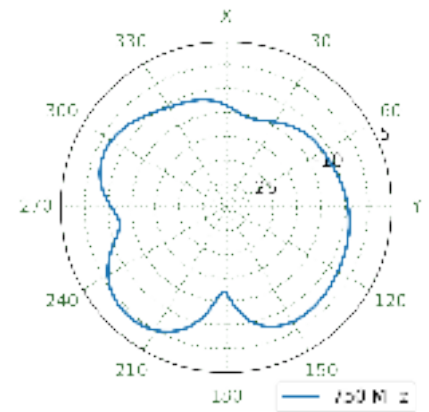
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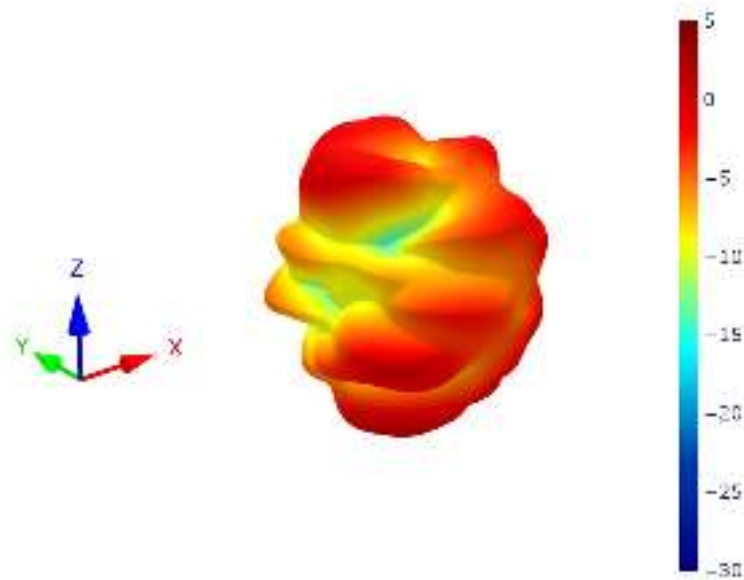
YZ Plane



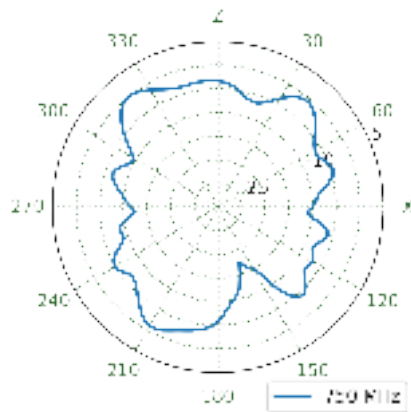
XY Plane



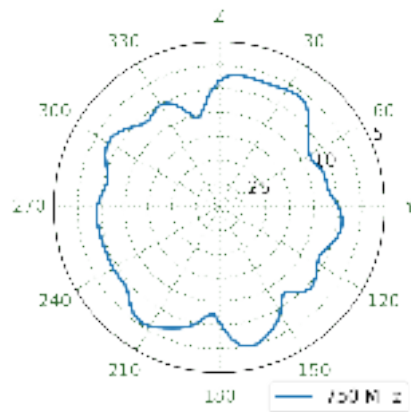
5.7 4G-5G 2 Patterns at 750 MHz



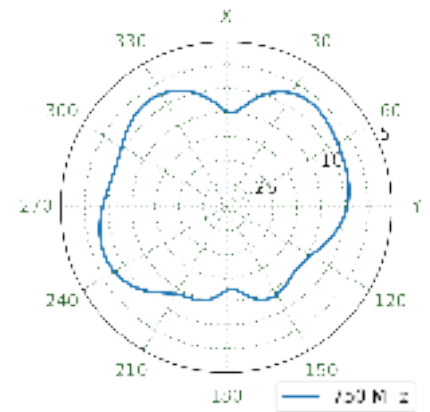
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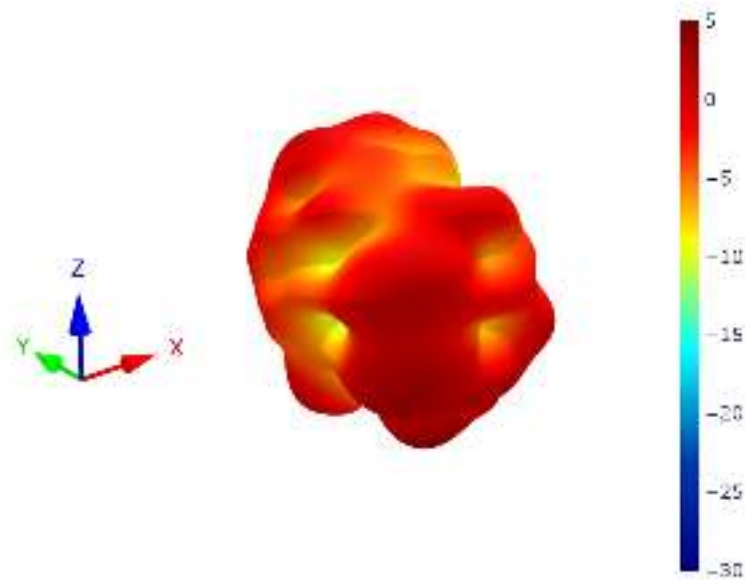
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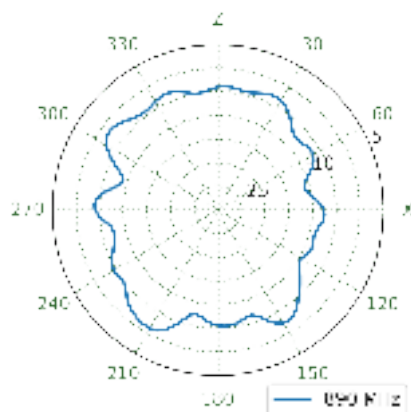
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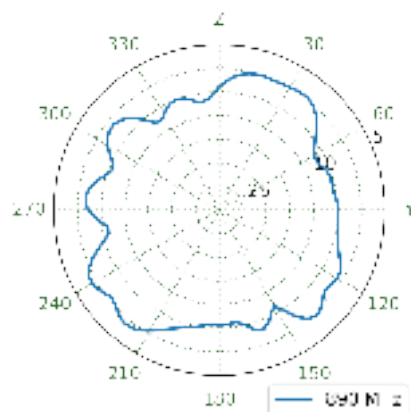
5.8 4G-5G 1 Patterns at 890 MHz



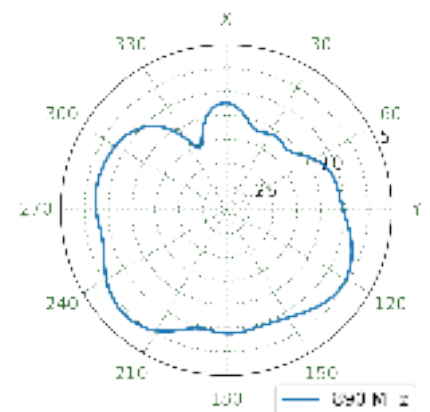
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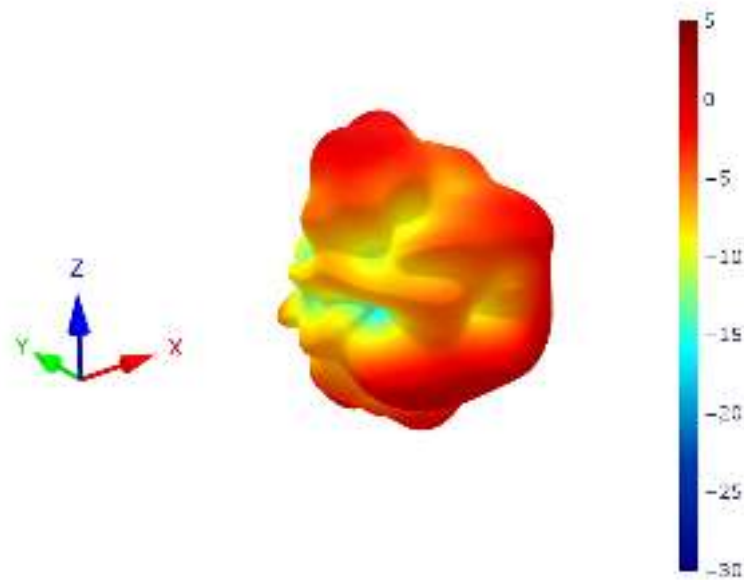
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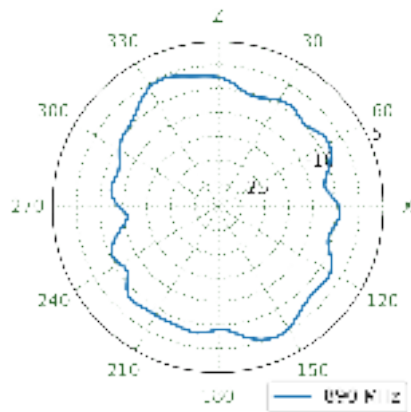
XY Plane



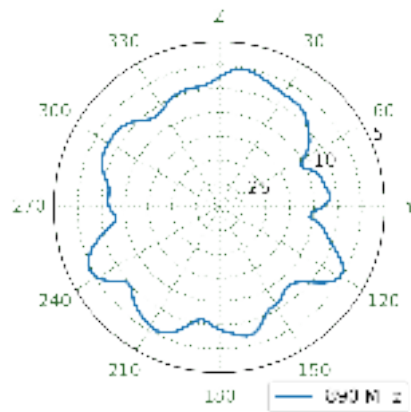
5.9 4G-5G 2 Patterns at 890 MHz



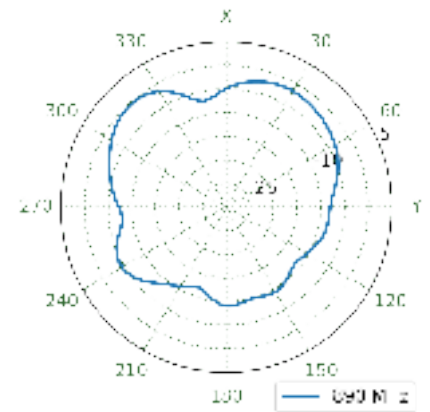
XZ Plane



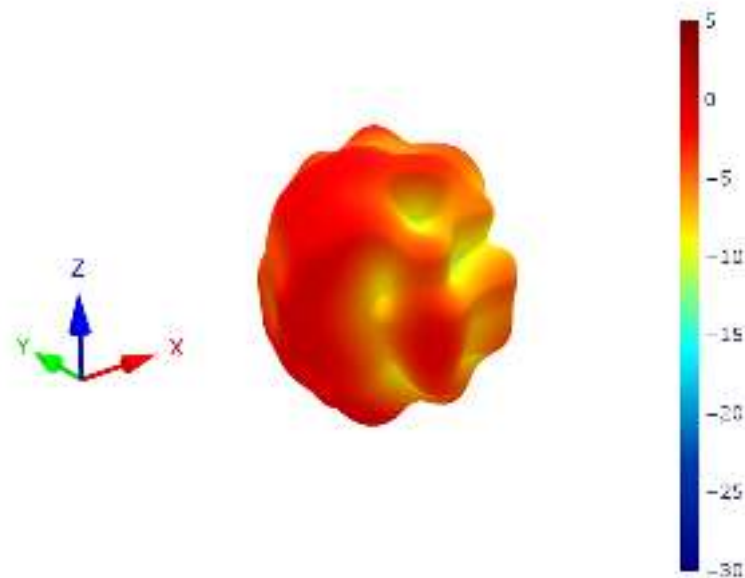
YZ Plane



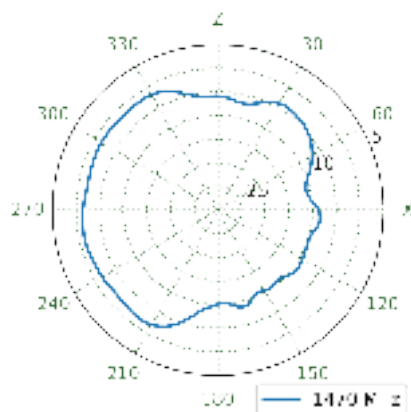
XY Plane



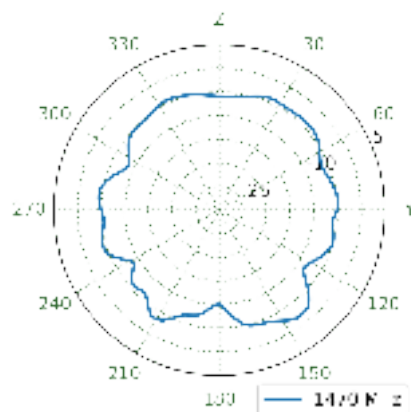
5.10 4G-5G 1 Patterns at 1470 MHz



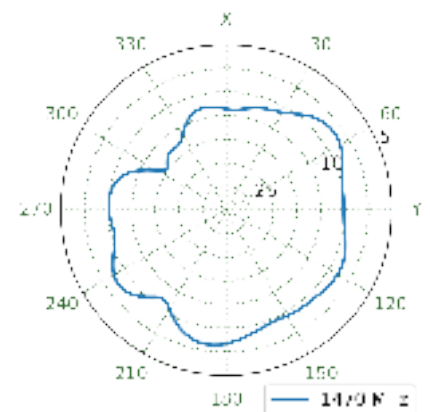
XZ Plane



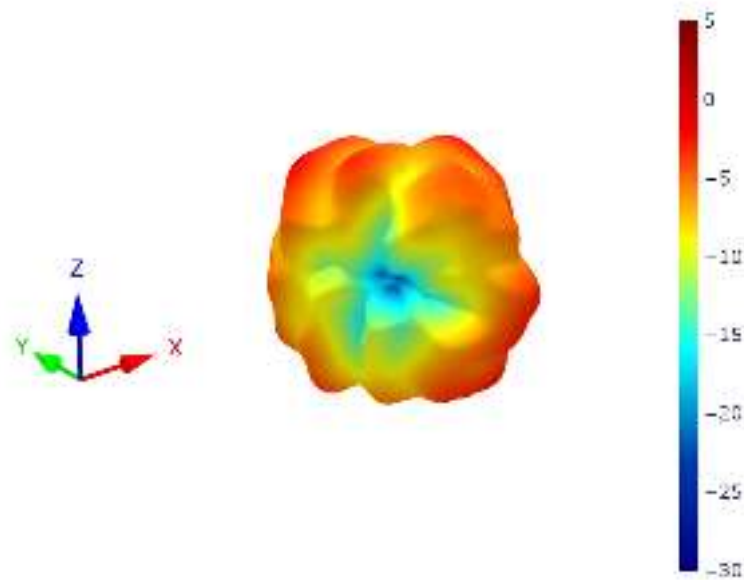
YZ Plane



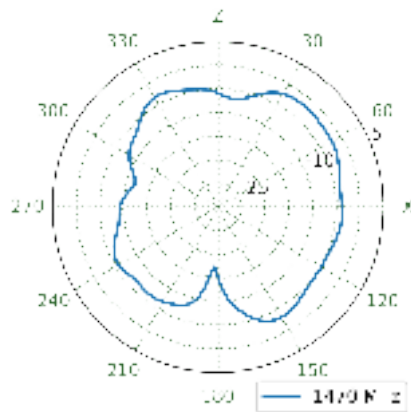
XY Plane



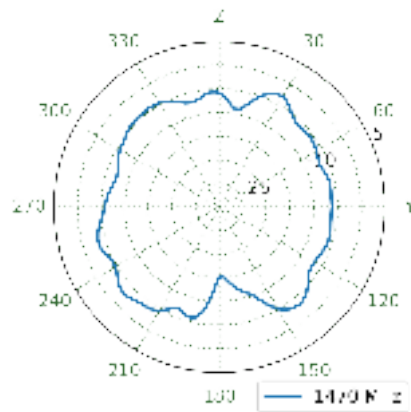
5.11 4G-5G 2 Patterns at 1470 MHz



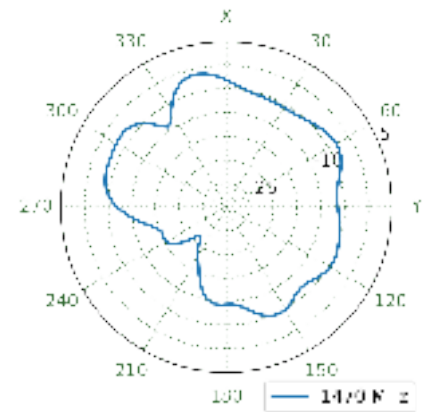
XZ Plane



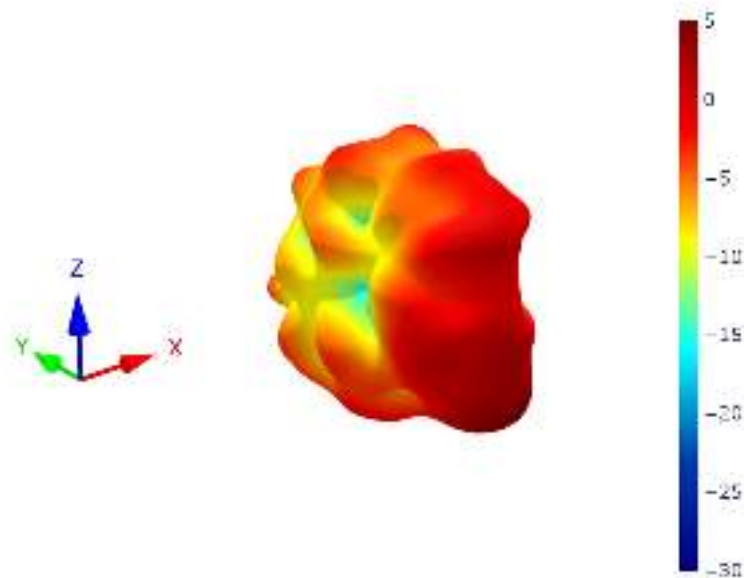
YZ Plane



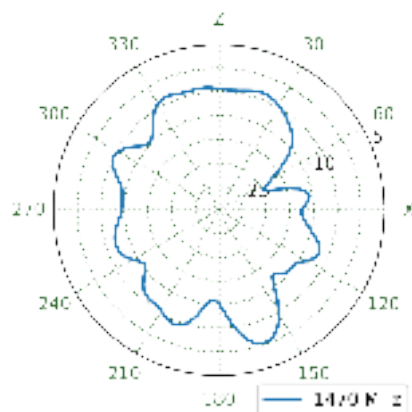
XY Plane



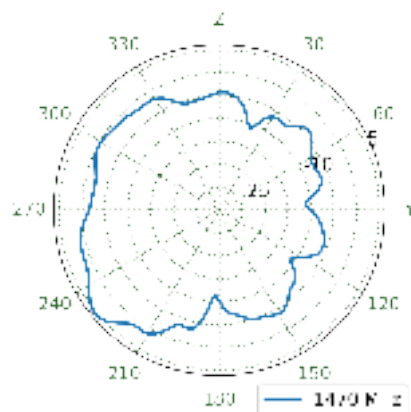
5.12 4G-5G 3 Patterns at 1470 MHz



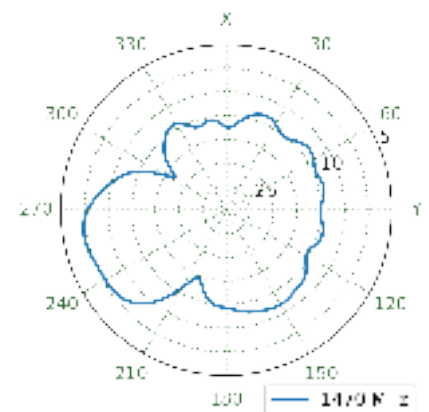
XZ Plane



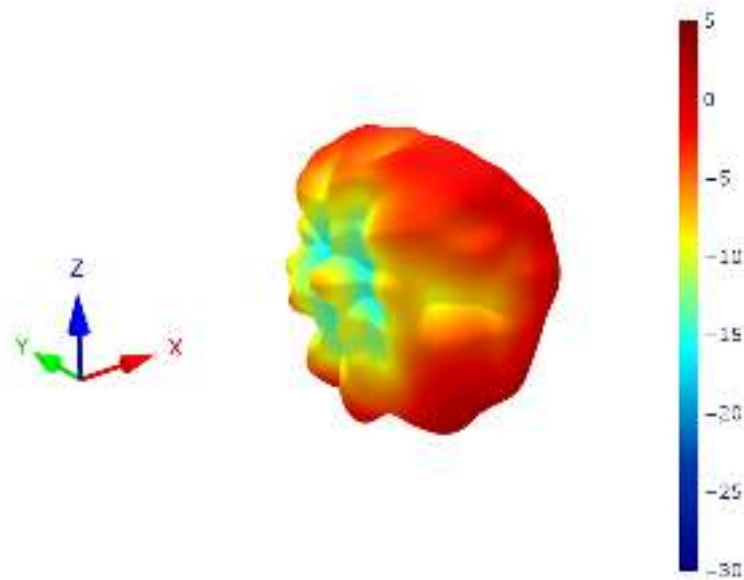
YZ Plane



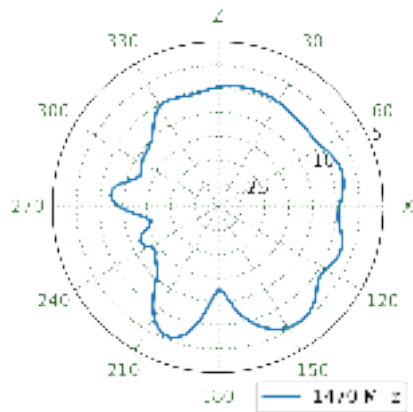
XY Plane



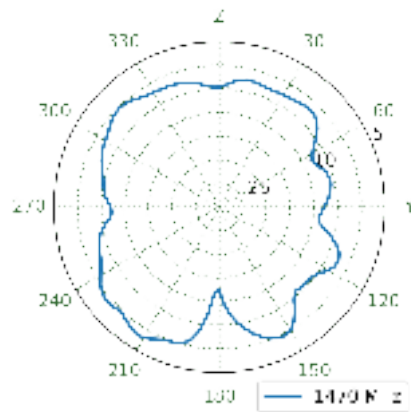
5.13 4G-5G 4 Patterns at 1470 MHz



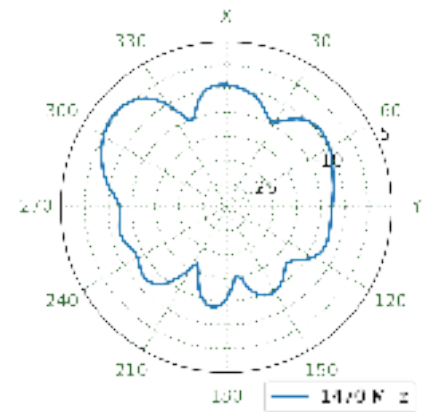
XZ Plane



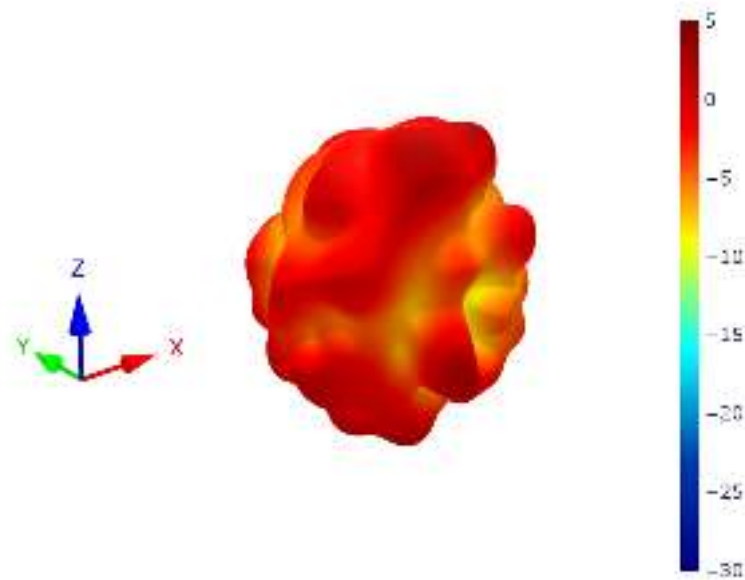
YZ Plane



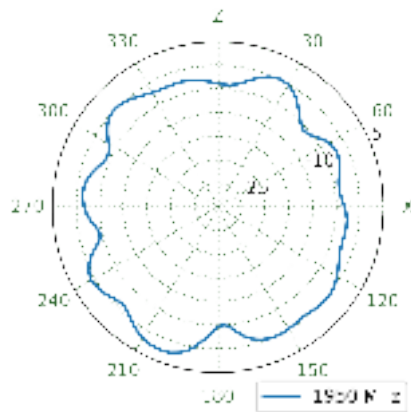
XY Plane



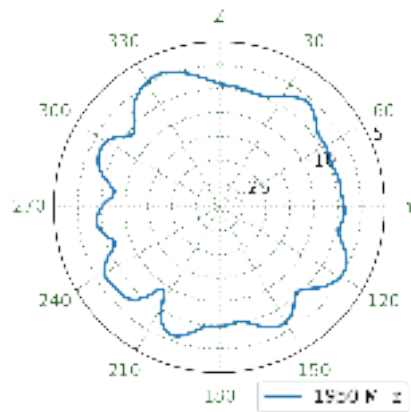
5.14 4G-5G 1 Patterns at 1950 MHz



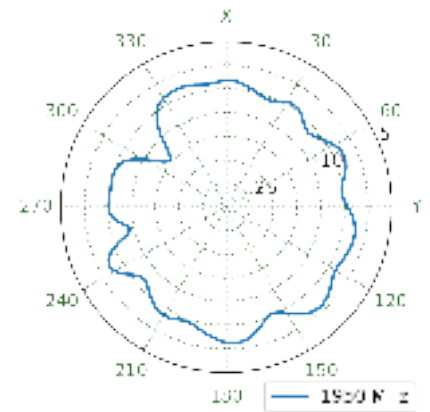
XZ Plane



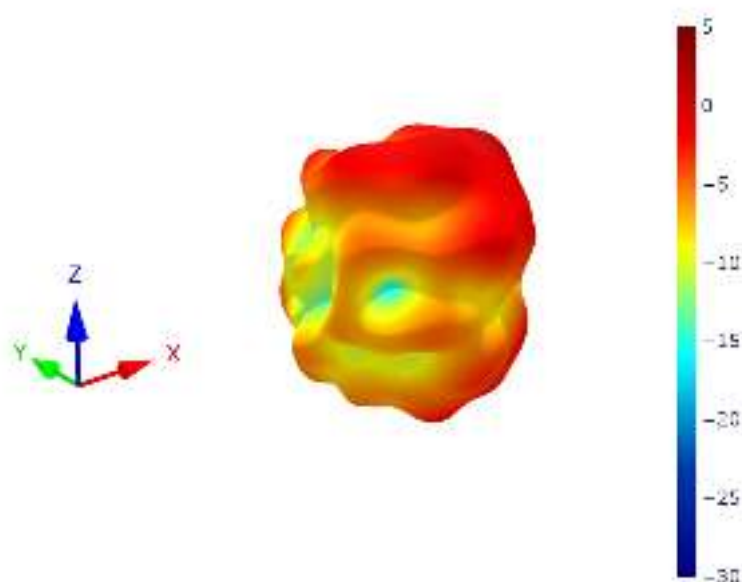
YZ Plane



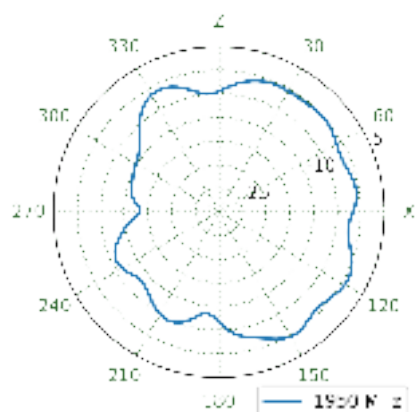
XY Plane



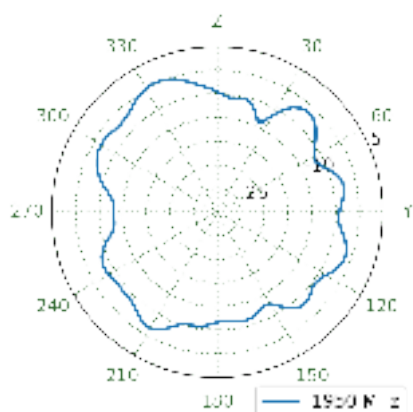
5.15 4G-5G 2 Patterns at 1950 MHz



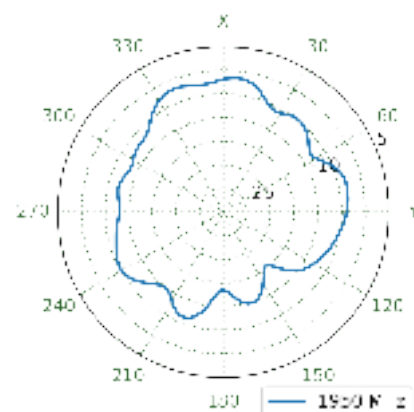
XZ Plane



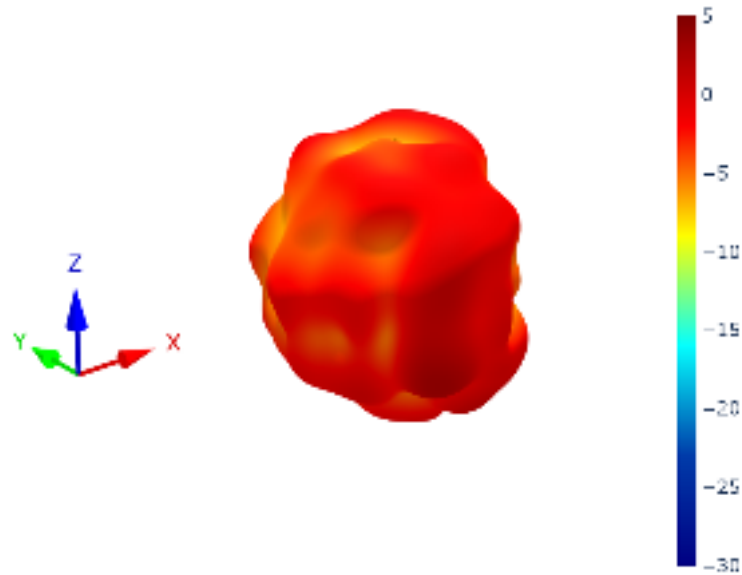
YZ Plane



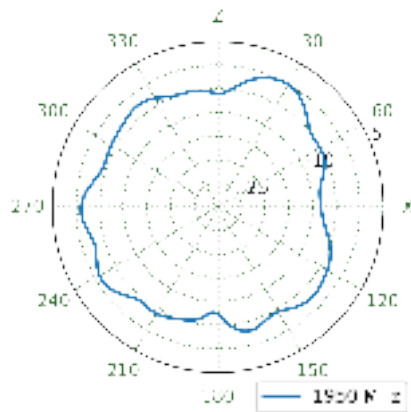
XY Plane



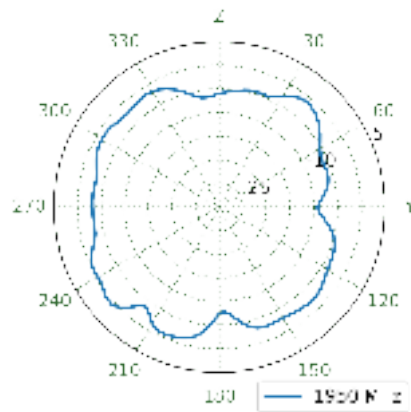
5.16 4G-5G 3 Patterns at 1950 MHz



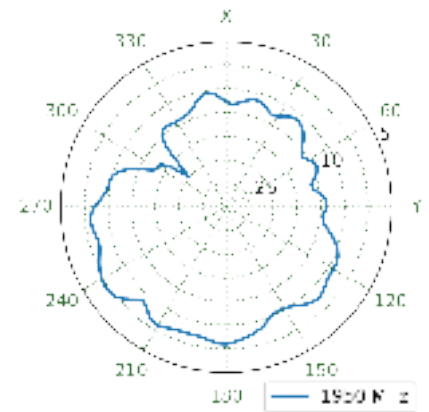
XZ Plane



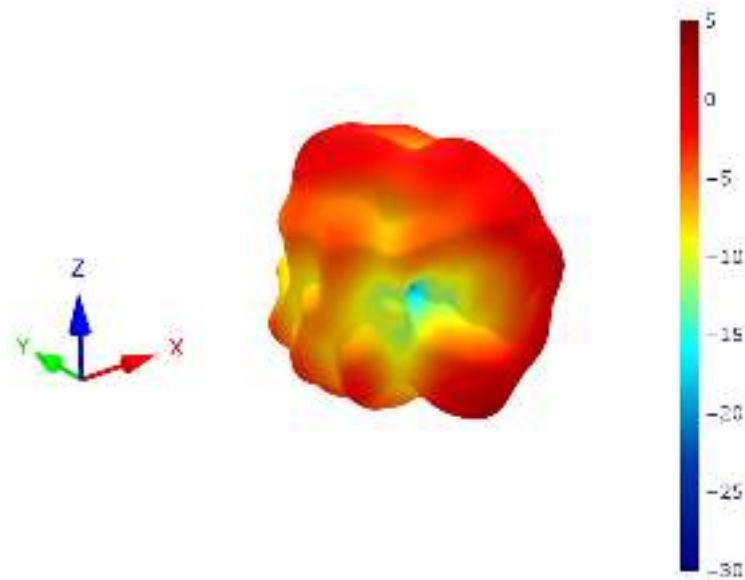
YZ Plane



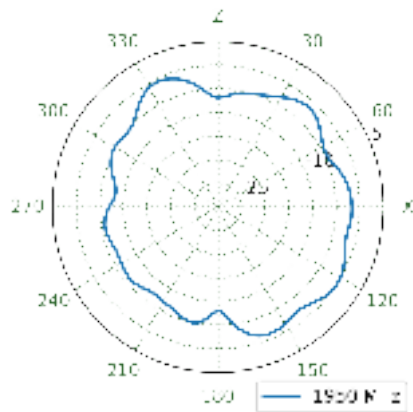
XY Plane



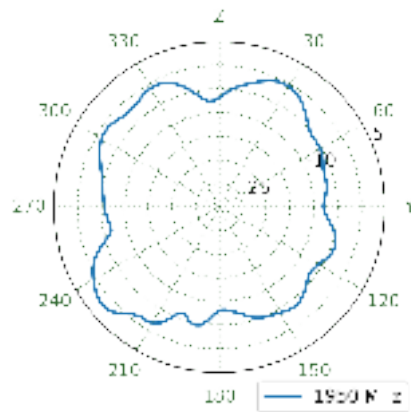
5.17 4G-5G 4 Patterns at 1950 MHz



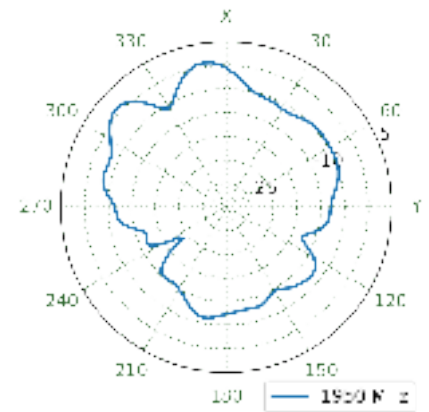
XZ Plane



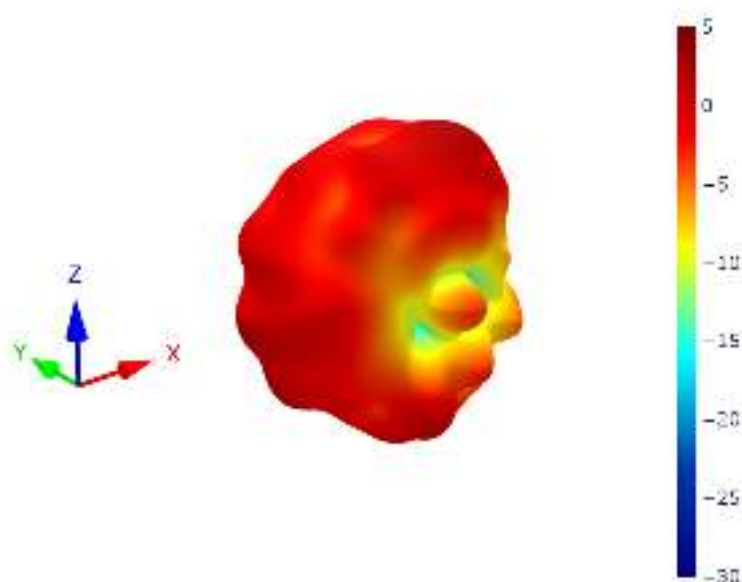
YZ Plane



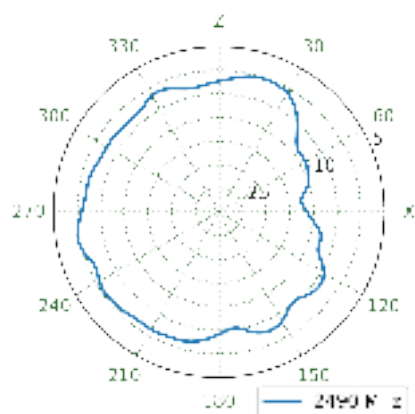
XY Plane



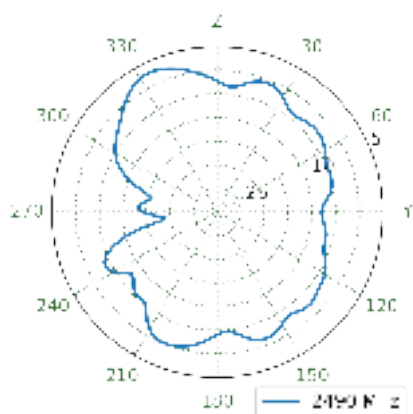
5.18 4G-5G 1 Patterns at 2490 MHz



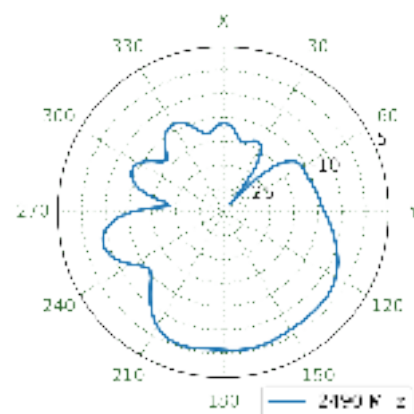
XZ Plane



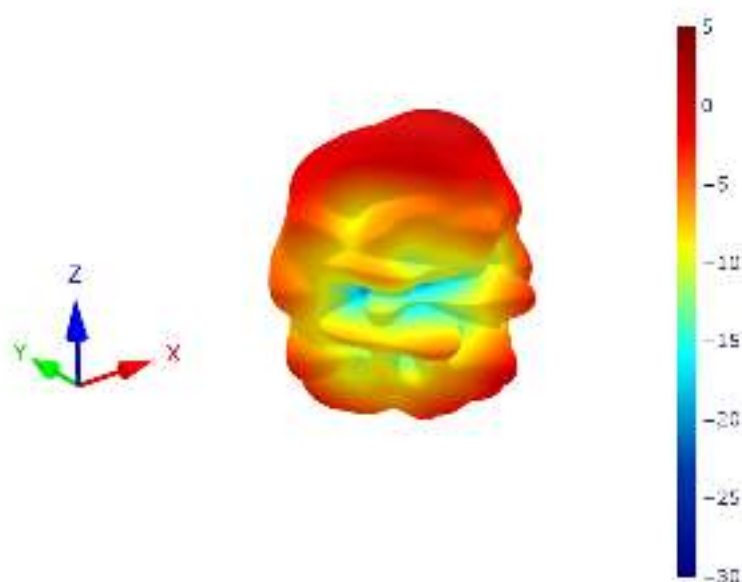
YZ Plane



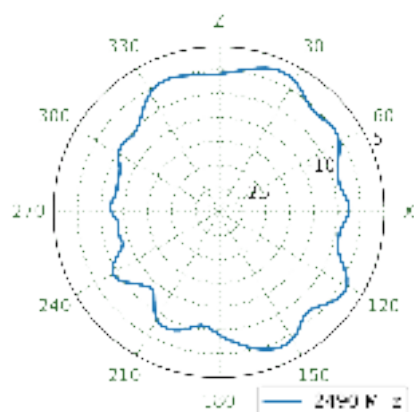
XY Plane



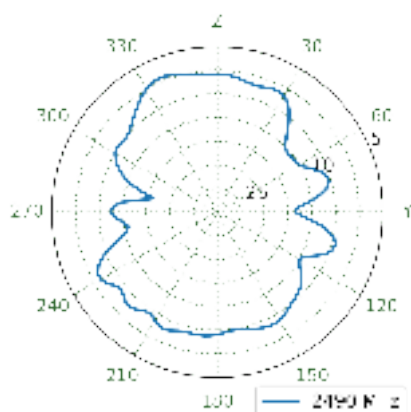
5.19 4G-5G 2 Patterns at 2490 MHz



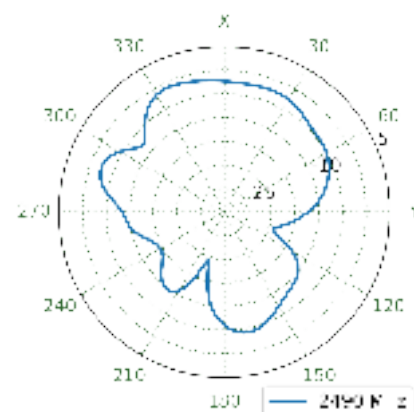
XZ Plane



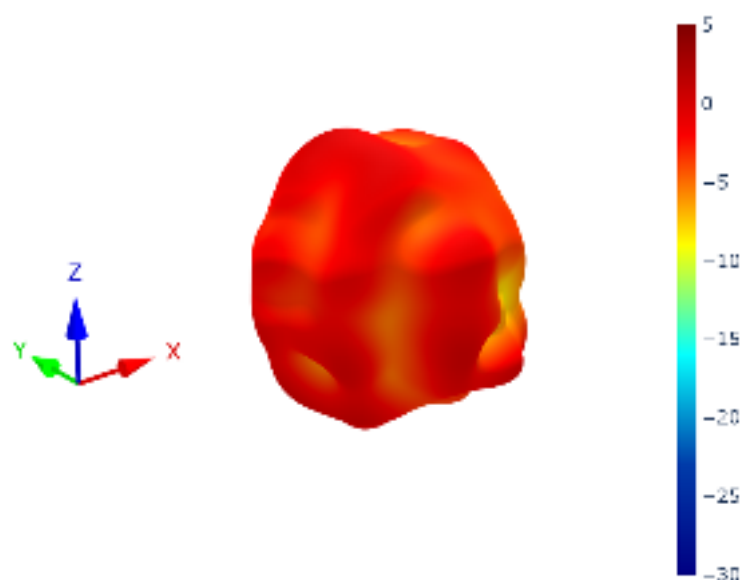
YZ Plane



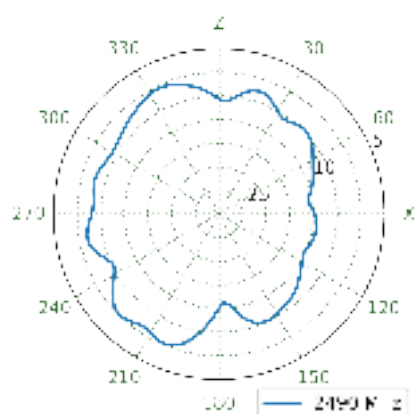
XY Plane



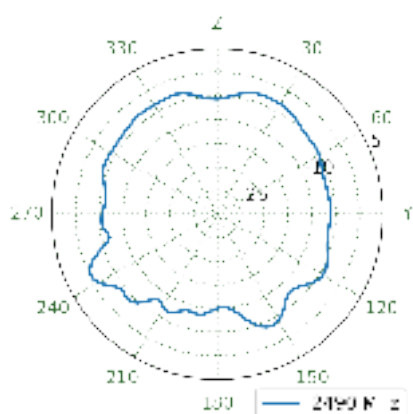
5.20 4G-5G 3 Patterns at 2490 MHz



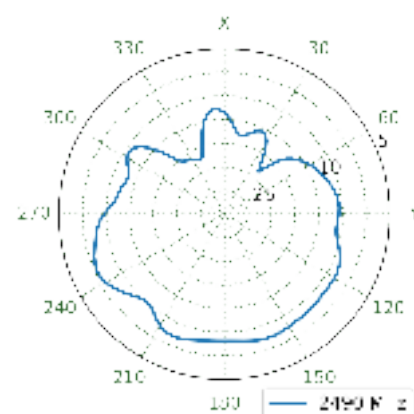
XZ Plane



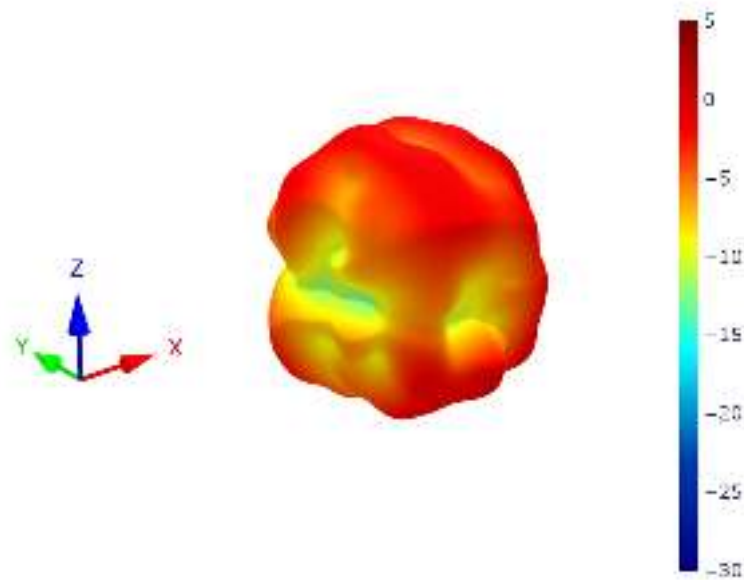
YZ Plane



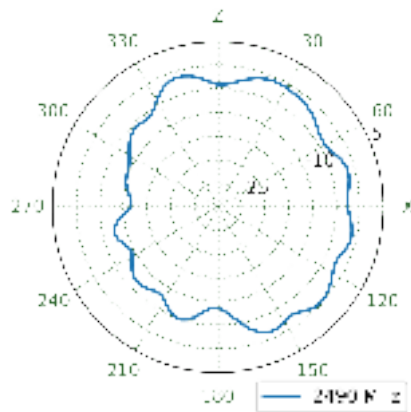
XY Plane



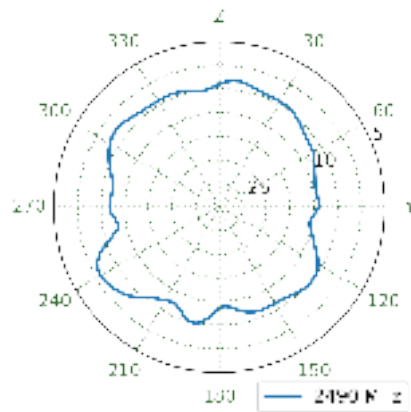
5.21 4G-5G 4 Patterns at 2490 MHz



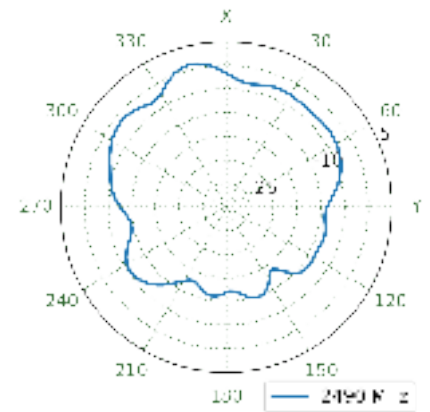
XZ Plane



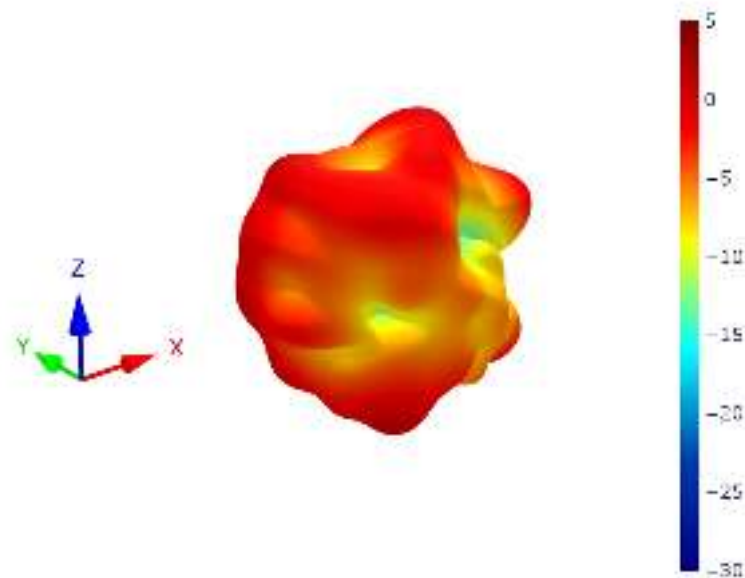
YZ Plane



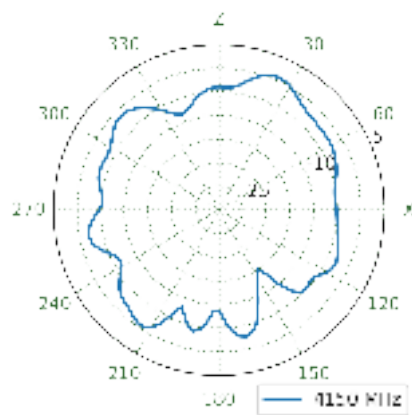
XY Plane



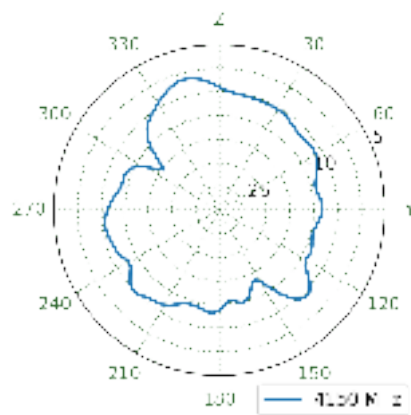
5.22 4G-5G 1 Patterns at 4150 MHz



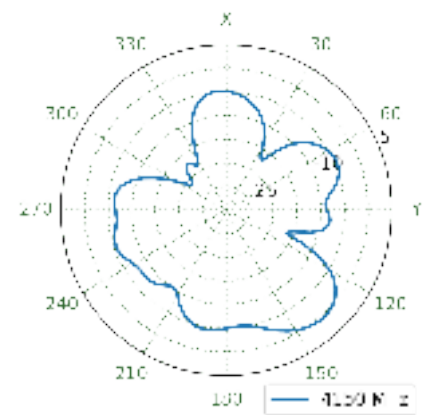
XZ Plane



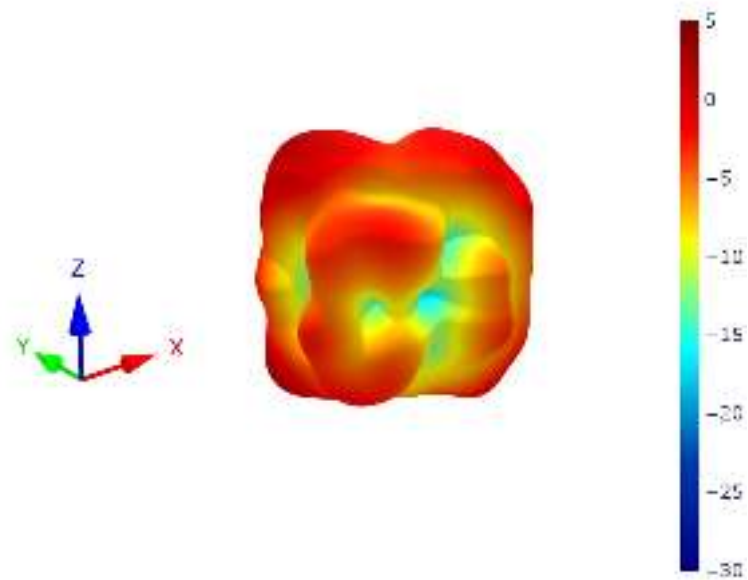
YZ Plane



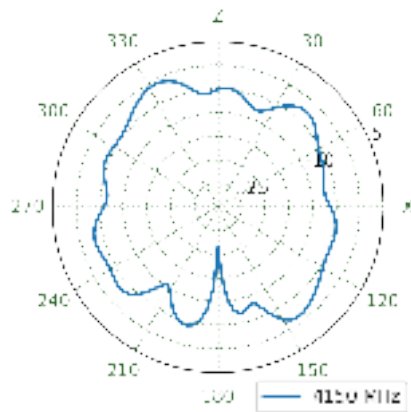
XY Plane



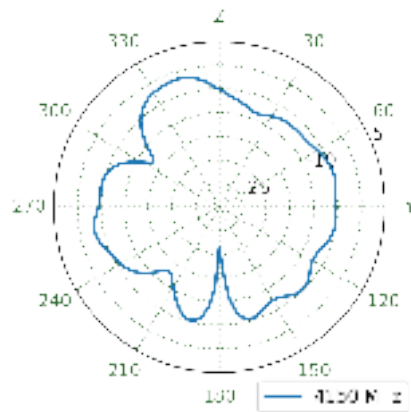
5.23 4G-5G 2 Patterns at 4150 MHz



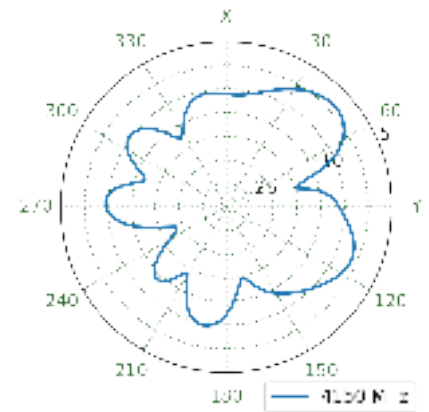
XZ Plane



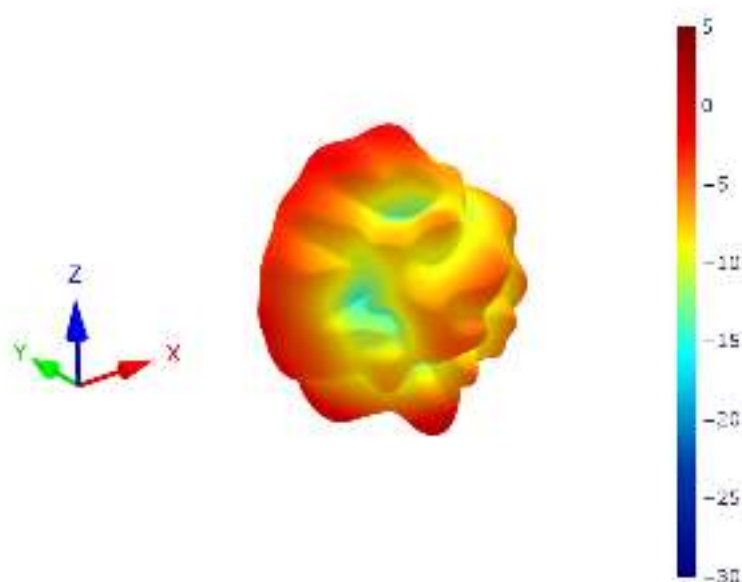
YZ Plane



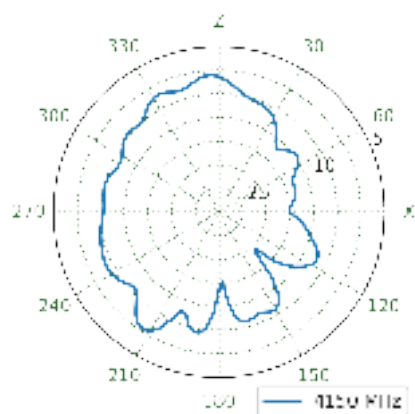
XY Plane



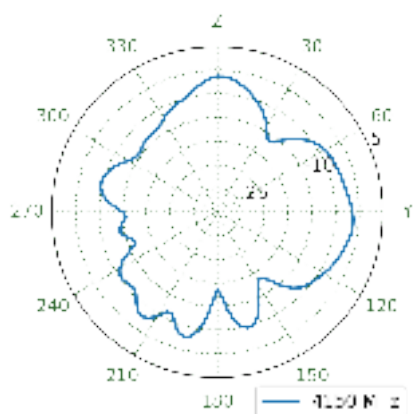
5.24 4G-5G 3 Patterns at 4150 MHz



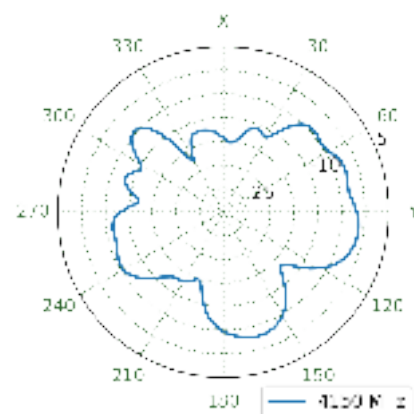
XZ Plane



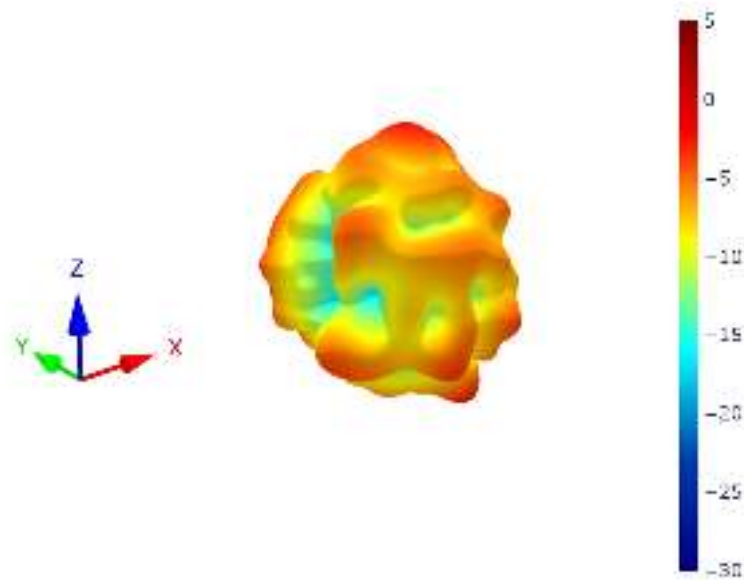
YZ Plane



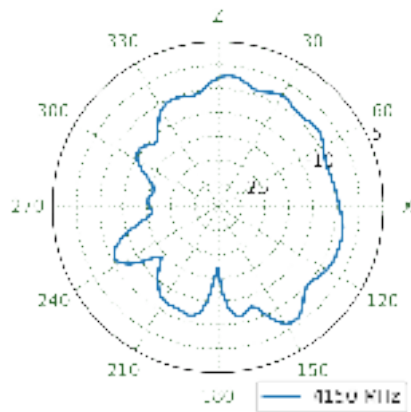
XY Plane



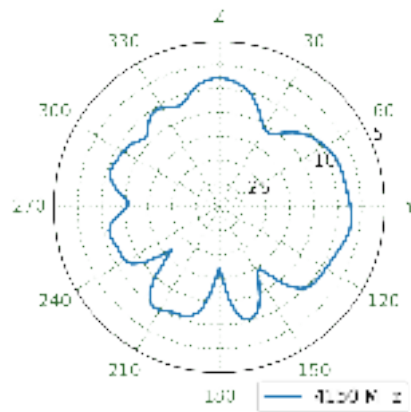
5.25 4G-5G 4 Patterns at 4150 MHz



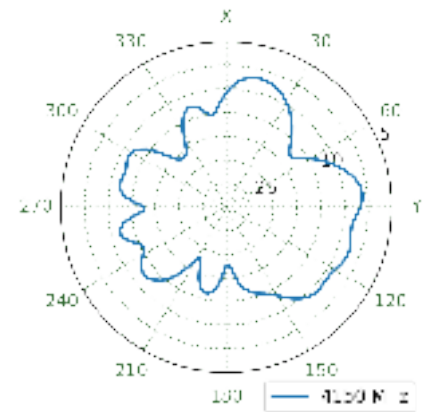
XZ Plane



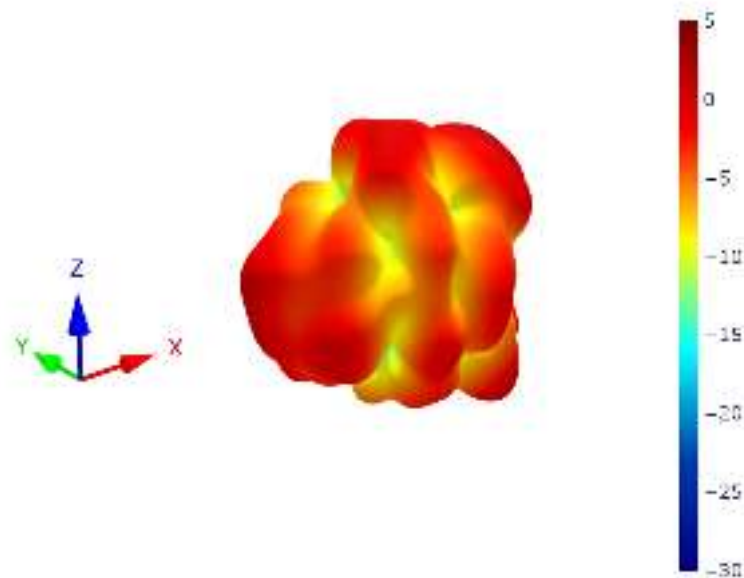
YZ Plane



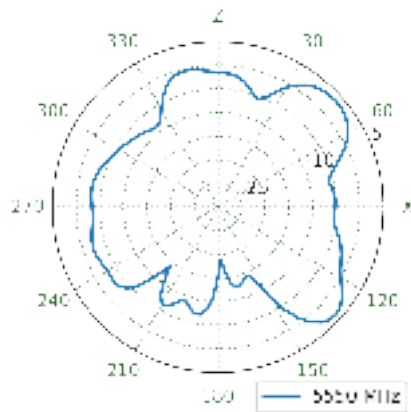
XY Plane



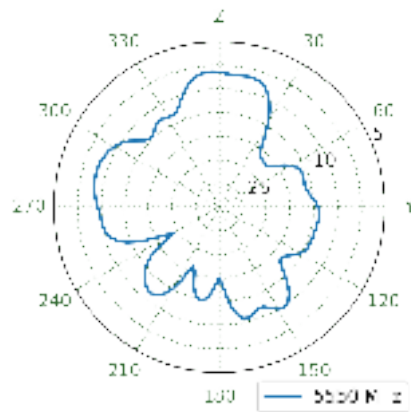
5.26 4G-5G 1 Patterns at 5550 MHz



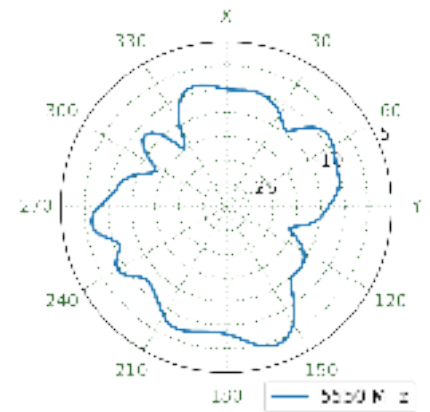
XZ Plane



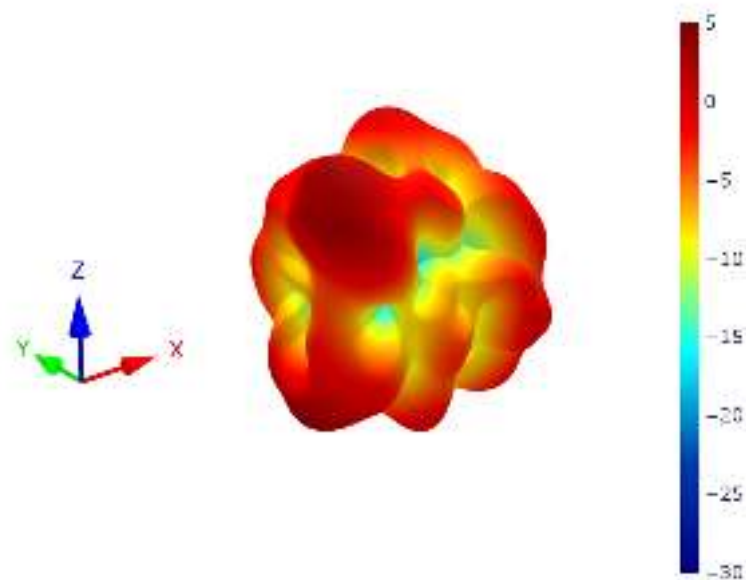
YZ Plane



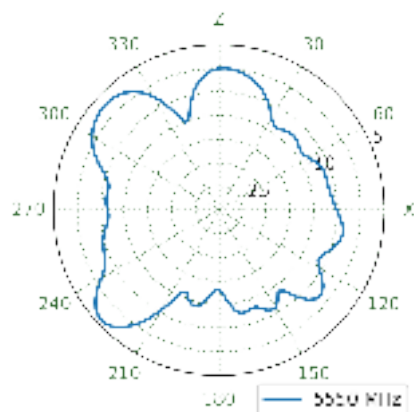
XY Plane



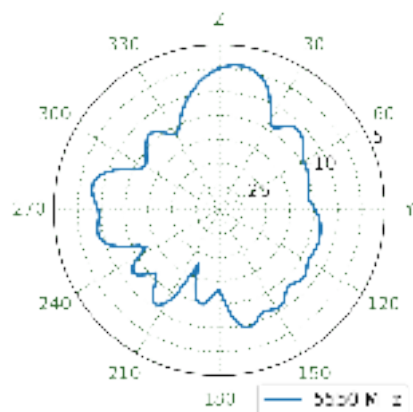
5.27 4G-5G 2 Patterns at 5550 MHz



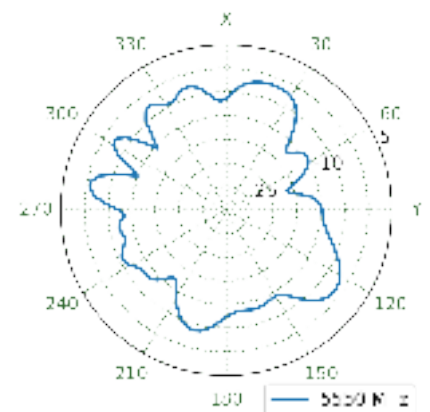
XZ Plane



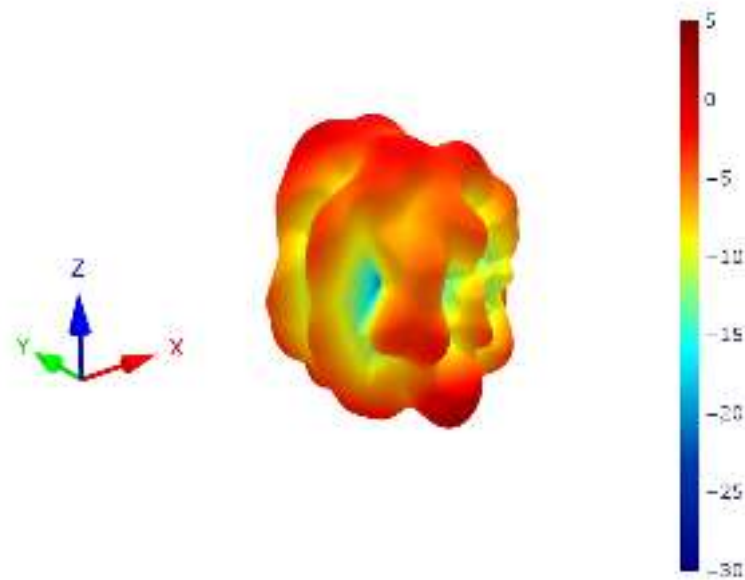
YZ Plane



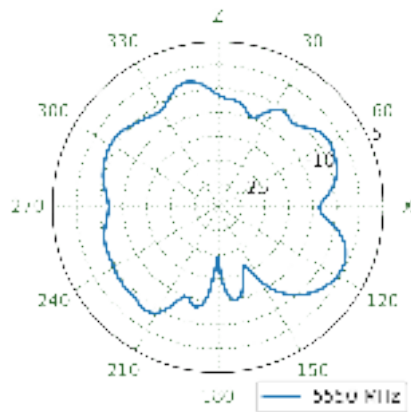
XY Plane



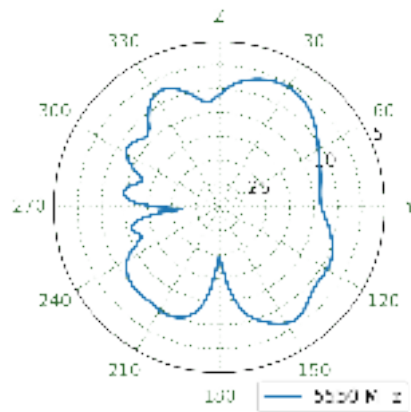
5.28 4G-5G 3 Patterns at 5550 MHz



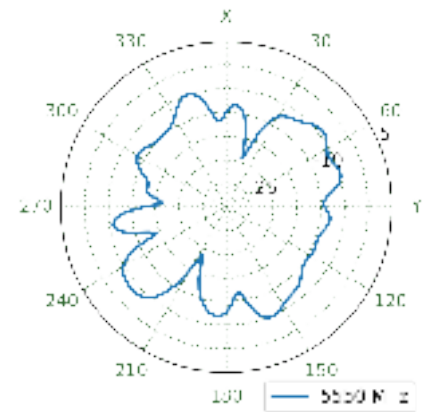
XZ Plane



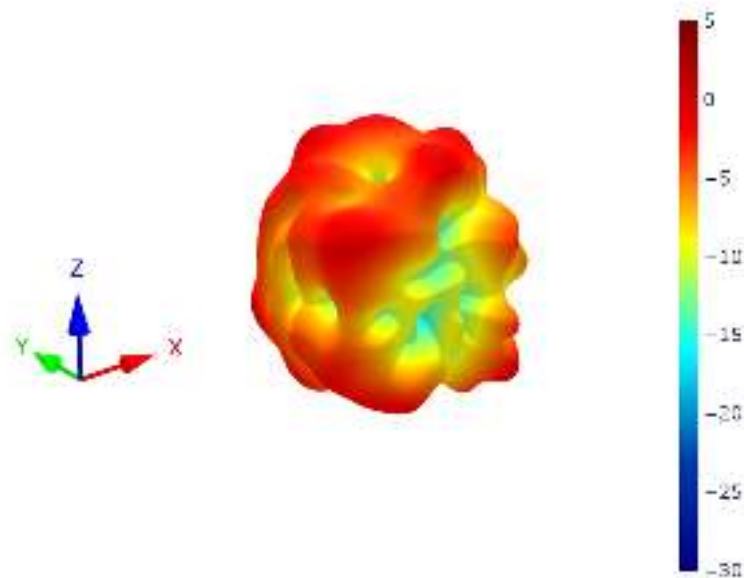
YZ Plane



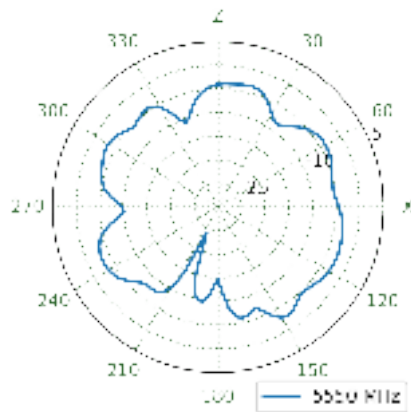
XY Plane



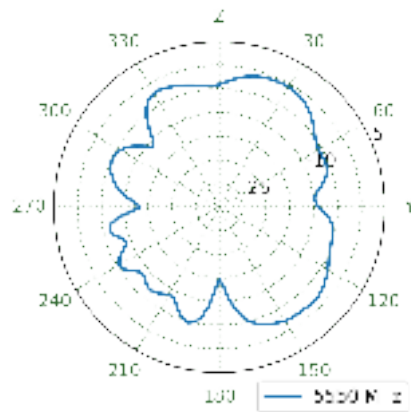
5.29 4G-5G 4 Patterns at 5550 MHz



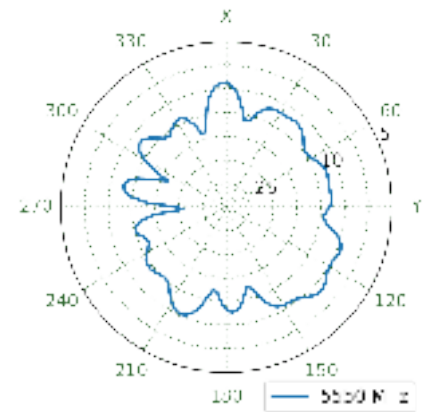
XZ Plane



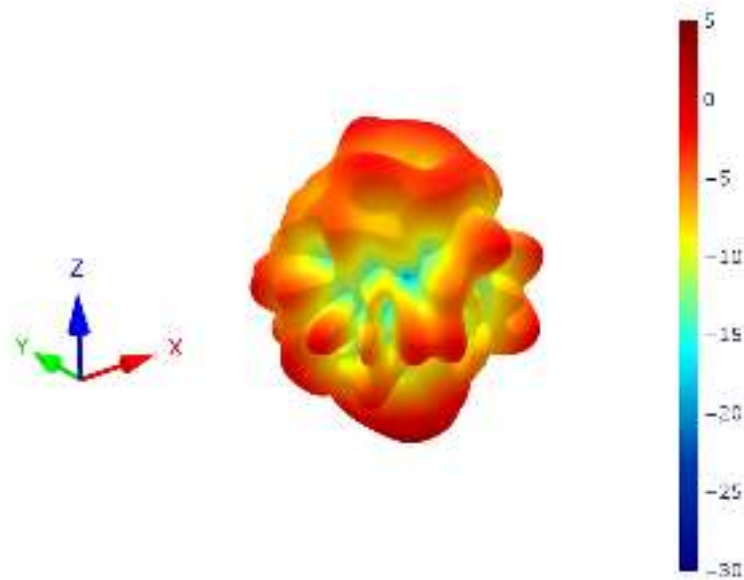
YZ Plane



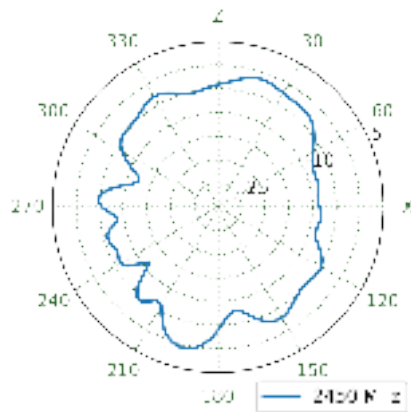
XY Plane



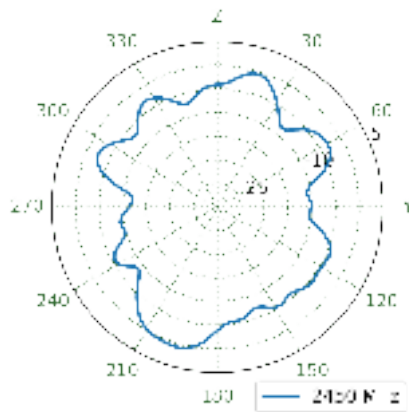
5.30 Wi-Fi 1 Patterns at 2450 MHz



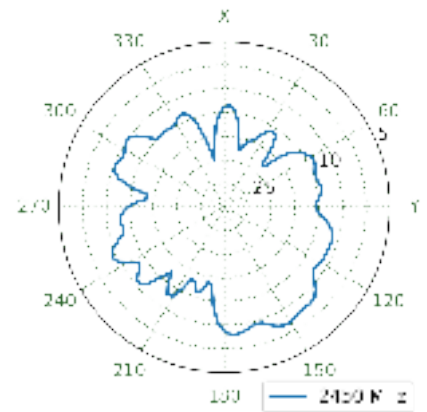
XZ Plane



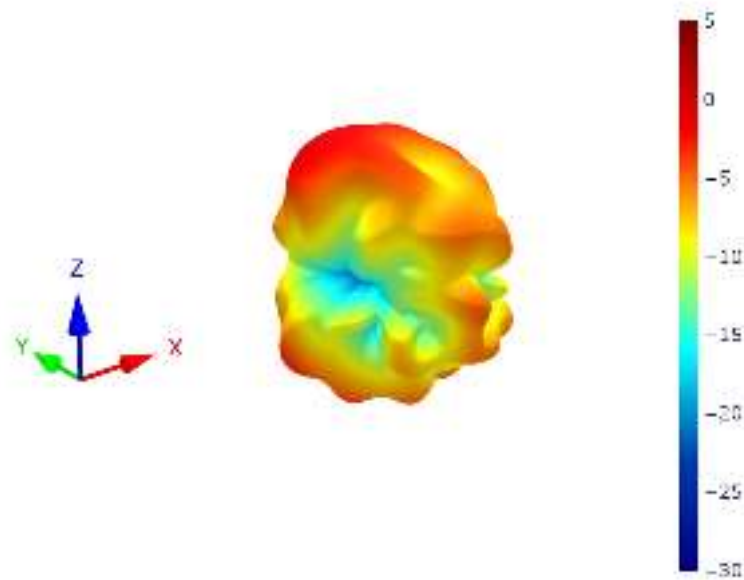
YZ Plane



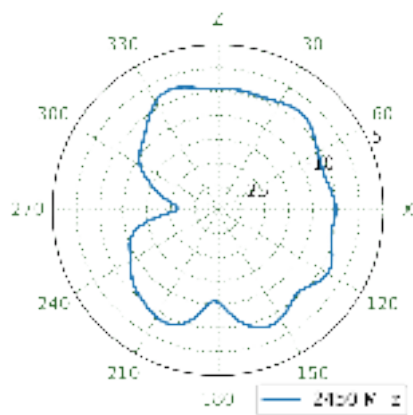
XY Plane



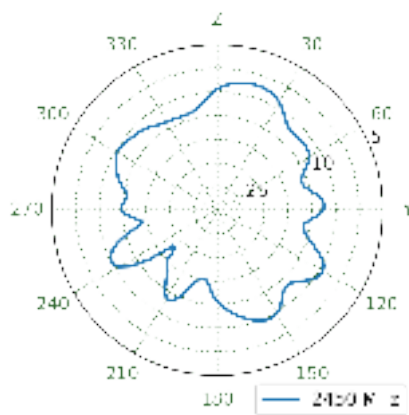
5.31 Wi-Fi 2 Patterns at 2450 MHz



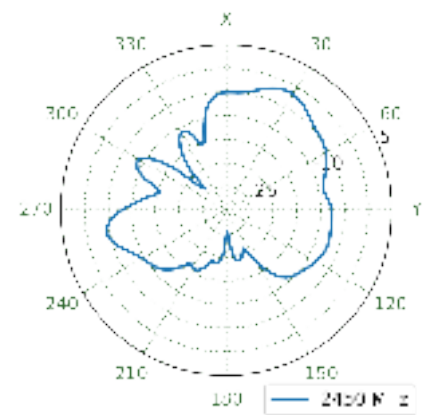
XZ Plane



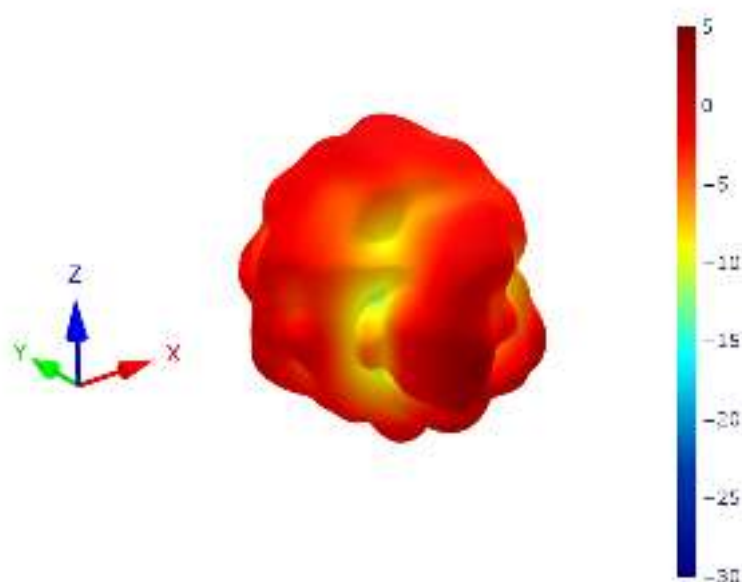
YZ Plane



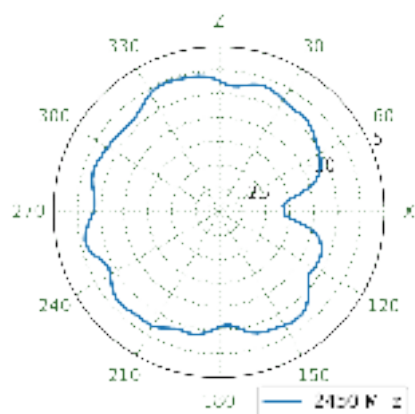
XY Plane



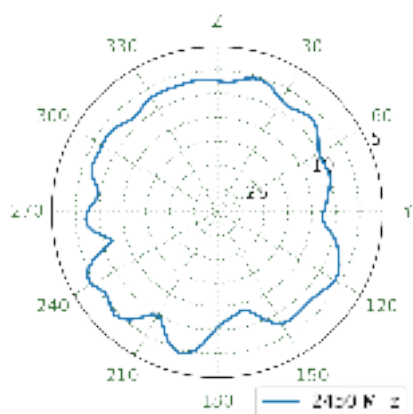
5.32 Wi-Fi 3 Patterns at 2450 MHz



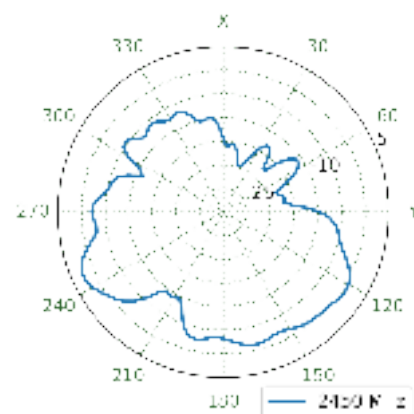
XZ Plane



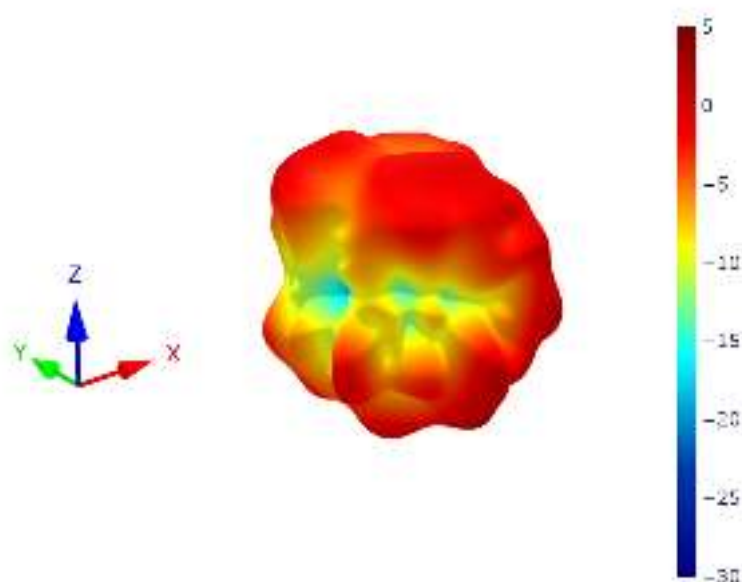
YZ Plane



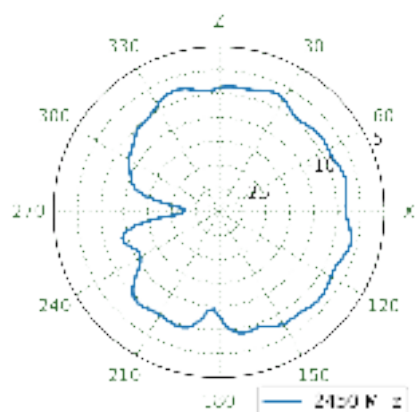
XY Plane



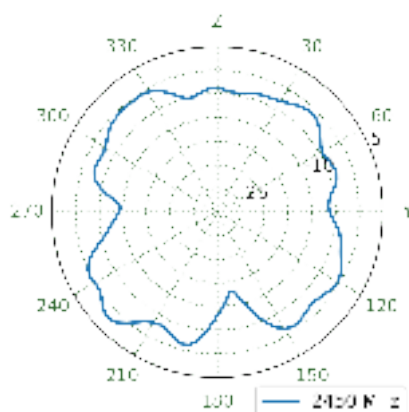
5.33 Wi-Fi 4 Patterns at 2450 MHz



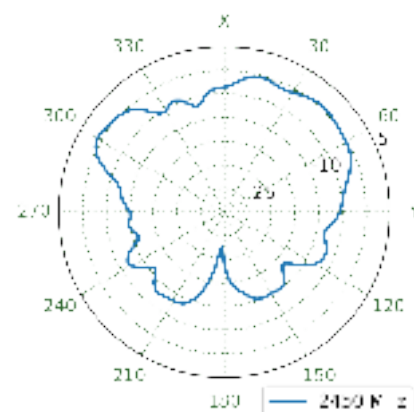
XZ Plane



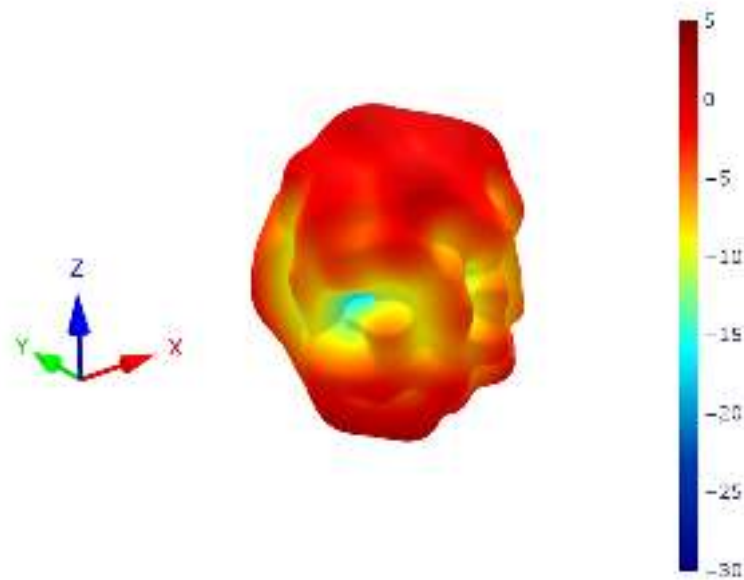
YZ Plane



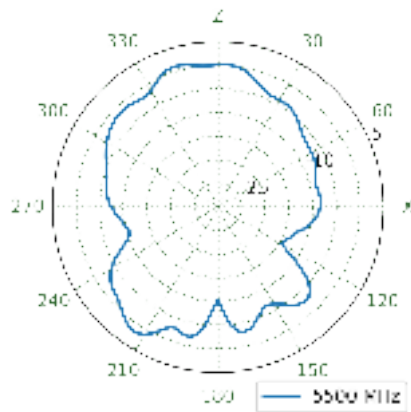
XY Plane



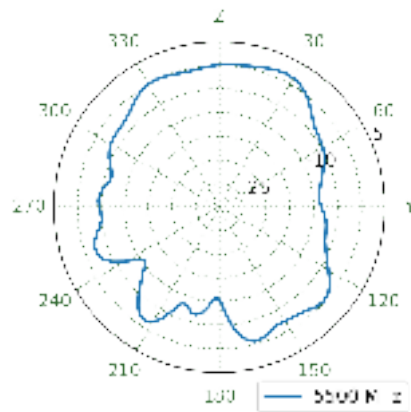
5.34 Wi-Fi 1 Patterns at 5500 MHz



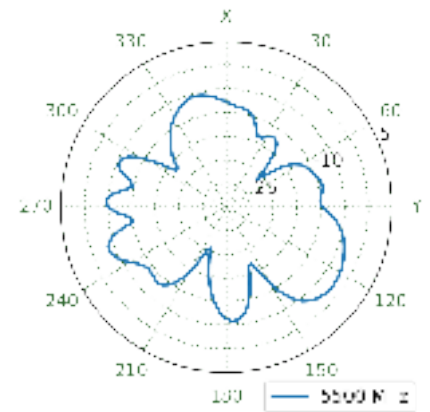
XZ Plane



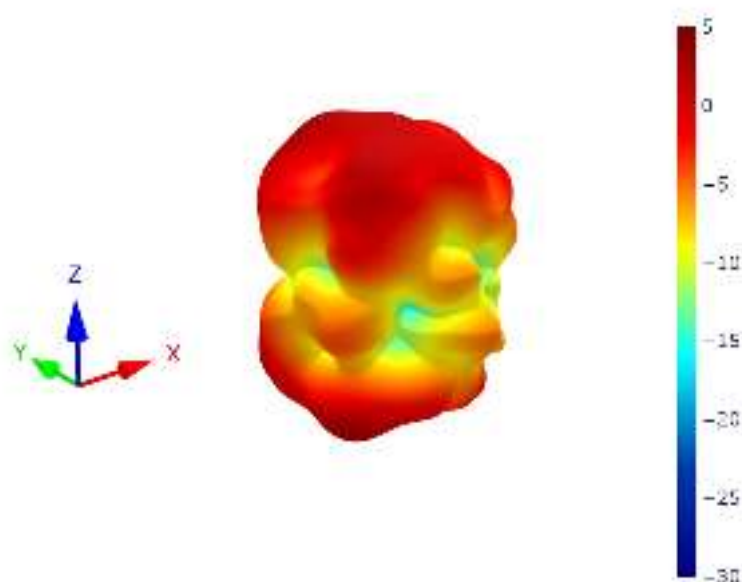
YZ Plane



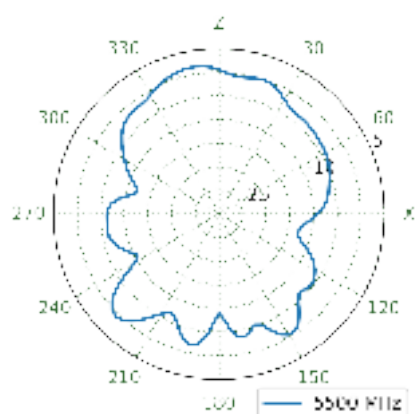
XY Plane



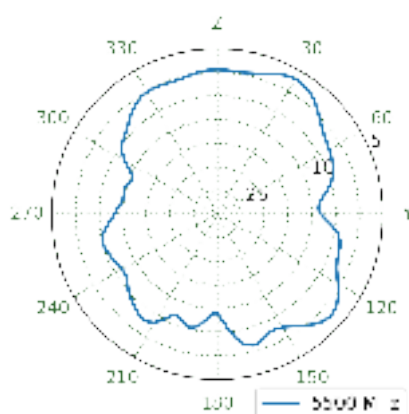
5.35 Wi-Fi 2 Patterns at 5500 MHz



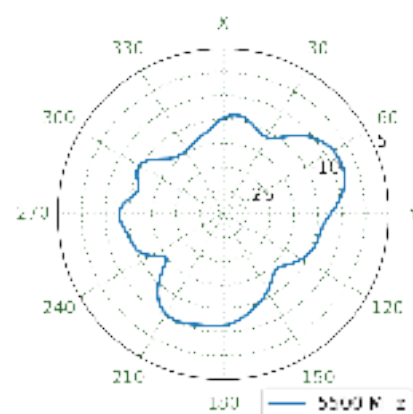
XZ Plane



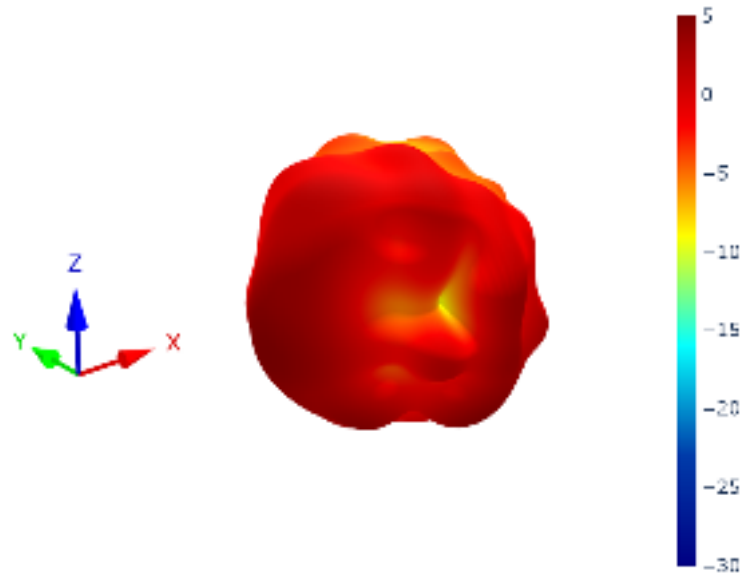
YZ Plane



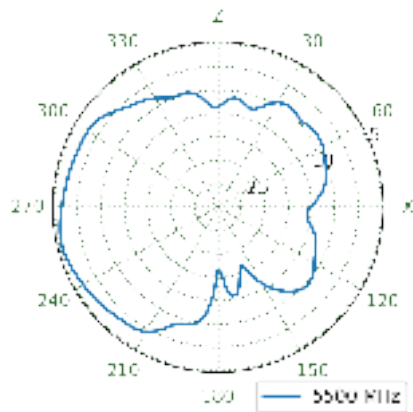
XY Plane



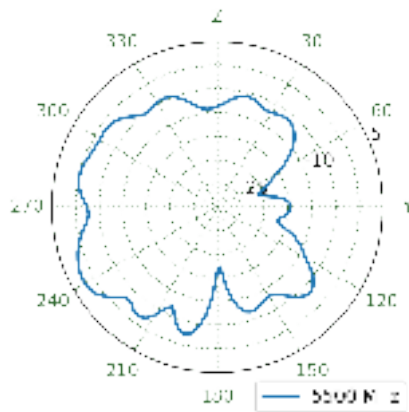
5.36 Wi-Fi 3 Patterns at 5500 MHz



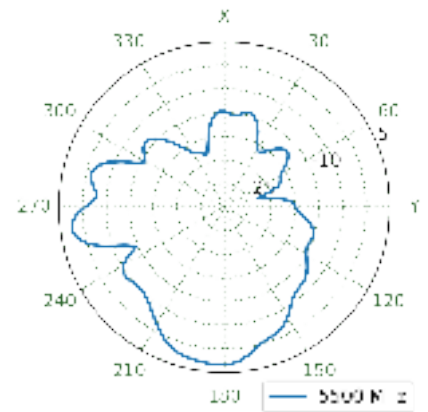
XZ Plane



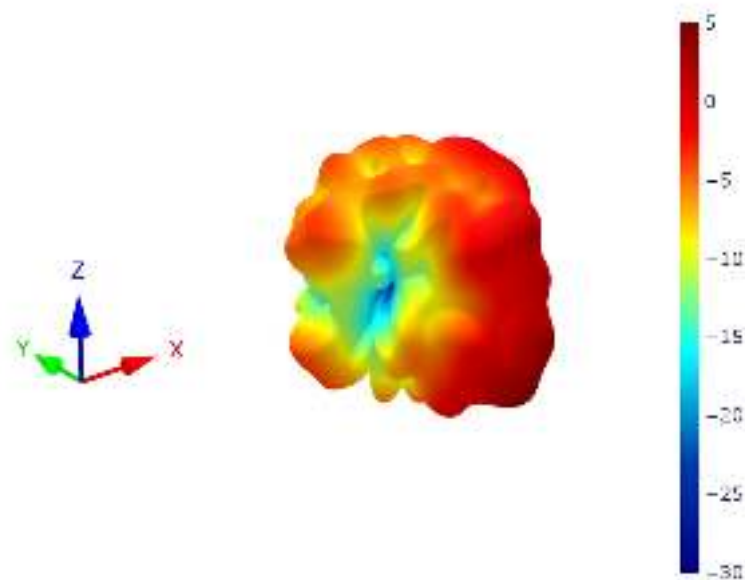
YZ Plane



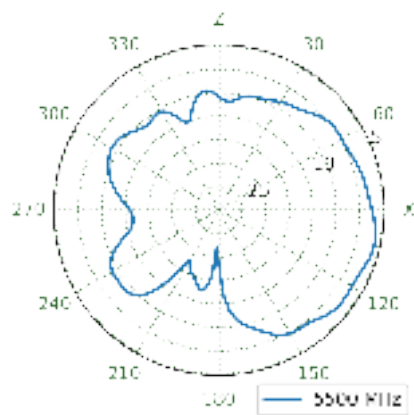
XY Plane



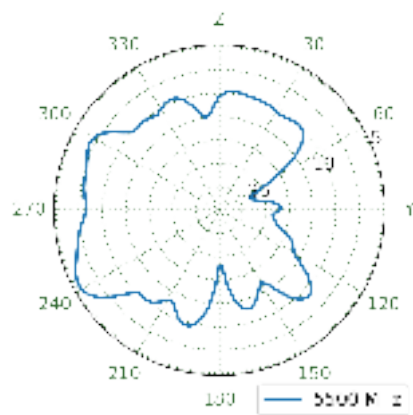
5.37 Wi-Fi 4 Patterns at 5500 MHz



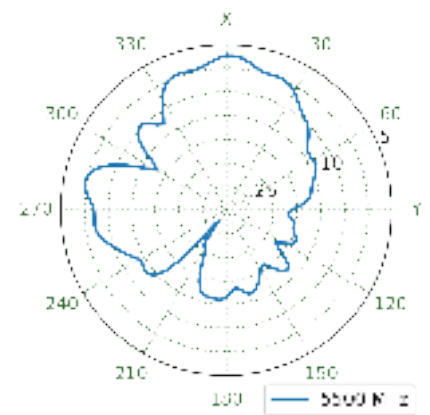
XZ Plane



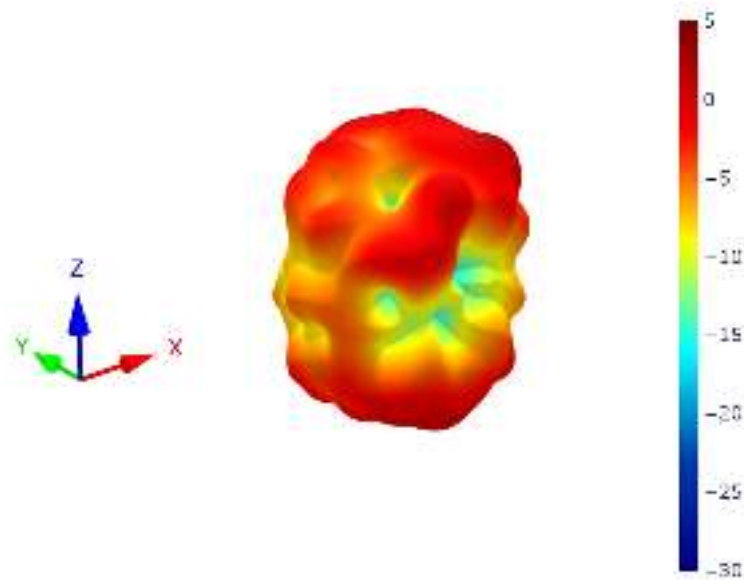
YZ Plane



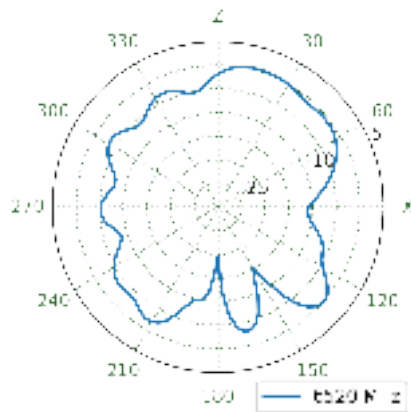
XY Plane



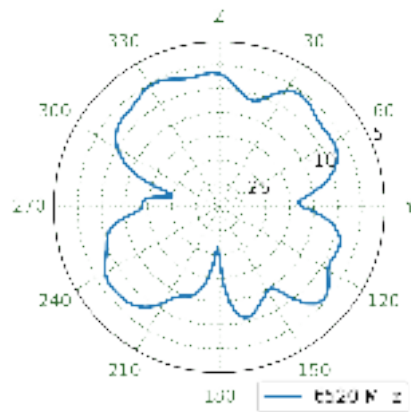
5.38 Wi-Fi 1 Patterns at 6520 MHz



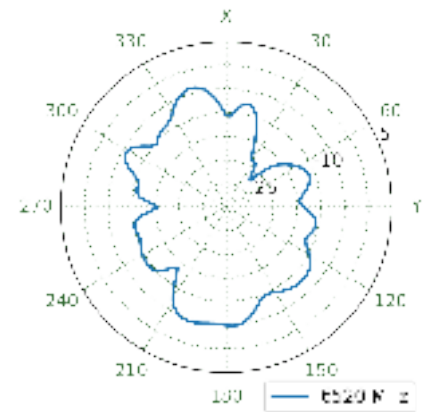
XZ Plane



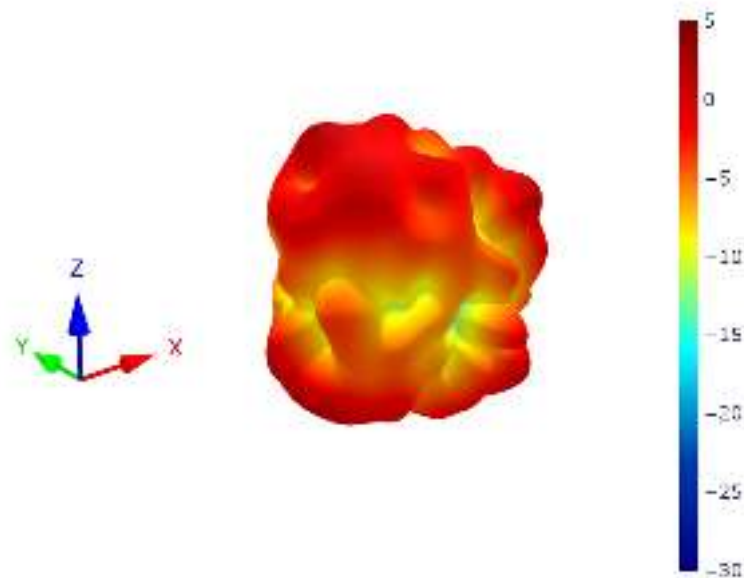
YZ Plane



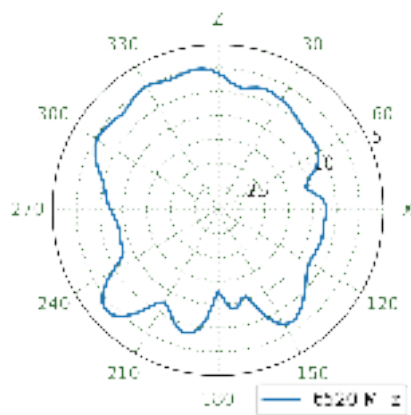
XY Plane



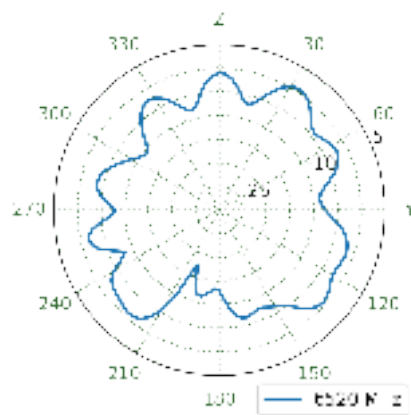
5.39 Wi-Fi 2 Patterns at 6520 MHz



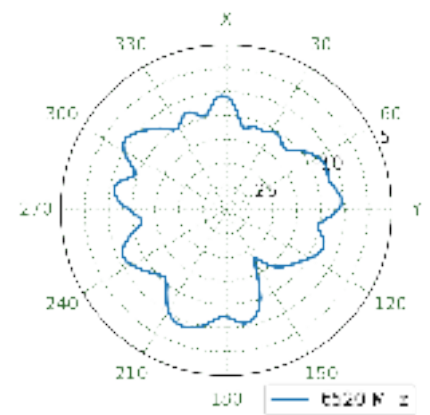
XZ Plane



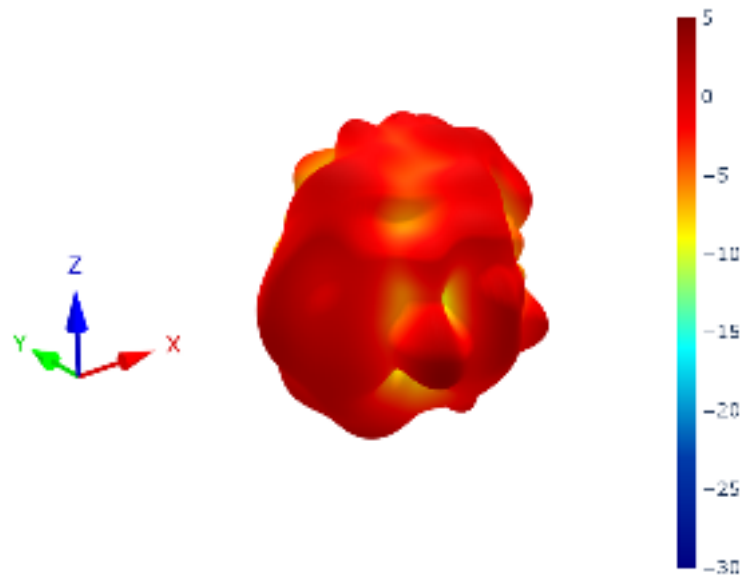
YZ Plane



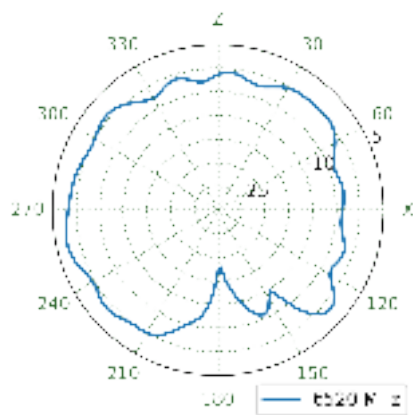
XY Plane



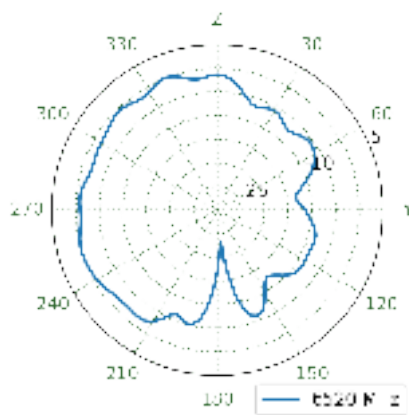
5.40 Wi-Fi 3 Patterns at 6520 MHz



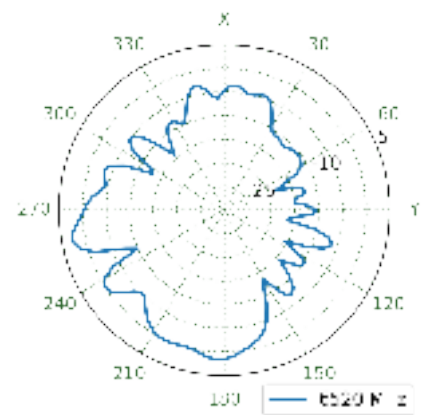
XZ Plane



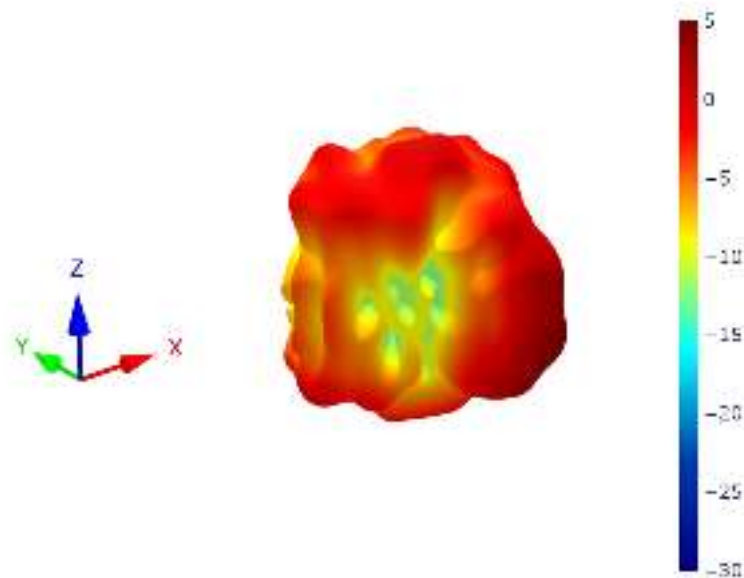
YZ Plane



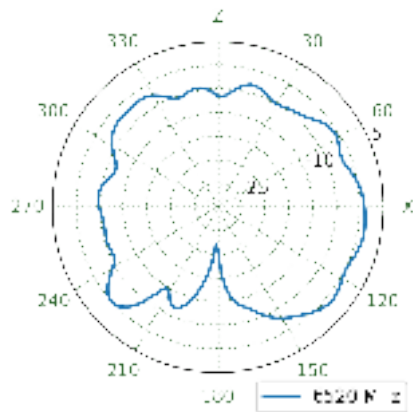
XY Plane



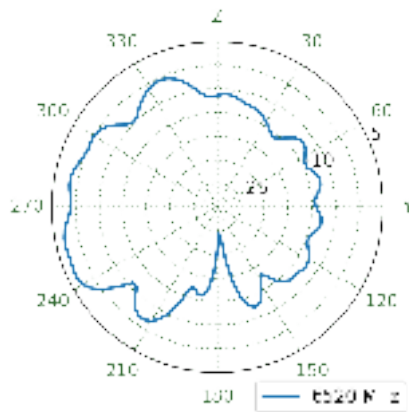
5.41 Wi-Fi 4 Patterns at 6520 MHz



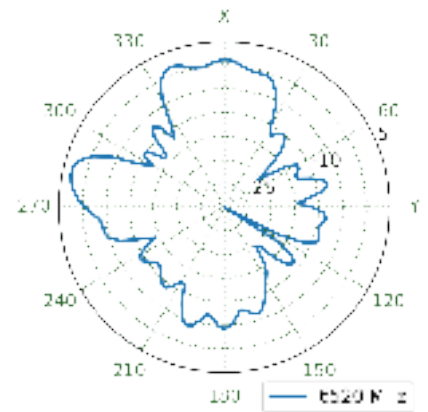
XZ Plane



YZ Plane



XY Plane



Changelog for the datasheet

SPE-26-8-105 – GUAHP.9.1G4C4W.3M.S23.B

Revision: A (Original First Release)	
Date:	2026-05-22
Notes:	Initial Release.
Author:	Gary West

Previous Revisions

Table with 2 columns and 5 rows

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