



# TAOGLAS®



# Datasheet

## Comet Series

**Part No:**  
MA322.A.001

### Description

Comet 2-in-1 - 2\*5G/4G MIMO 1\*Adhesive/Magnetic Mount Puck Antenna

### Features:

- Low-profile Housing with Adhesive/Magnetic Mount
- 2\* 5G/4G MIMO 600-6000MHz
- Worldwide 5G Bands including legacy 4G 3G and 2G bands
- IP67 Waterproof Enclosure
- Dimensions: Ø 80mm x 18.1mm
- 2m Low Loss TGC-1.5DS cable with SMA(M) connectors
- Custom Cables and Connectors Available
- RoHS & Reach Compliant

<b>1.</b>	<b>Introduction</b>	<b>2</b>
<b>2.</b>	<b>Specification</b>	<b>3</b>
<b>3.</b>	<b>Antenna Characteristics</b>	<b>6</b>
<b>4.</b>	<b>Radiation Patterns</b>	<b>10</b>
<b>5.</b>	<b>Mechanical Drawing</b>	<b>31</b>
<b>6.</b>	<b>Packaging</b>	<b>32</b>
<b>7.</b>	<b>Application Note</b>	<b>33</b>
<hr/>		
	<b>Changelog</b>	<b>45</b>

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# 1. Introduction



The Taoglas Comet MA322 is a low profile, puck style, adhesive/magnetic mount antenna. The MA322 contains two 5G/4G high performance antennas for use in MIMO cellular systems. Through innovative antenna design techniques, it covers all worldwide cellular frequencies from 600MHz to 6GHz, with stable gain and high efficiency, normally difficult to achieve in smaller antennas.

The Comet series has been designed to be compact and low profile, measuring just 80x18mm, to be utilized in application areas where other larger and taller antennas are not appropriate. The Comet has been designed with an option for either magnetic or adhesive mounting. This allows it to be utilized and installed in applications where destructive installations are not allowed, such as drilling mounting holes to secure a permanent antenna on leased vehicles.

Typical Applications Include:

- Telematics
- Gateways and Routers
- Digital Signage
- First Responder and Emergency Services

The robust ASA magnetic mount enclosure is designed to be waterproof rated to IP67 and can be mounted internally or externally on devices or vehicles. The Comet comes with a separate 3M foam high-performance pad for adhesive mount application. Both MIMO 1 and 2 connections utilize 2m TGC-1.5DS coaxial cable with SMA(M) connectors as standard. Customized cable and connector versions are also available.

Contact your regional Taoglas customer support team for further information.

## 2. Specification

LTE Electrical									
Band	Frequency (MHz)	Measurement	Efficiency (%)	Average Gain (dB)	Peak Gain (dBi)	Impedance	Polarization	Radiation Pattern	Max. input power
5G NR Band 71	617-698	4G-5G 1	25.0	-6.0	1.1	50 $\Omega$	Linear	Omni	2W
		4G-5G 2	25.0	-6.0	1.1				
LTE700	698-824	4G-5G 1	42.7	-3.7	2.0				
		4G-5G 2	45.0	-3.5	1.7				
GSM800/900	824-960	4G-5G 1	53.3	-2.7	2.2				
		4G-5G 2	56.1	-2.5	2.1				
5G NR Band 1500	1427-1518	4G-5G 1	20.6	-6.9	-0.5				
		4G-5G 2	22.0	-6.6	-0.4				
5G NR N66	1710-2200	4G-5G 1	55.4	-2.6	4.6				
		4G-5G 2	54.7	-2.6	4.5				
LTE2600	2300-2690	4G-5G 1	55.8	-2.5	2.3				
		4G-5G 2	56.6	-2.5	4.2				
5G NR N77	3300-4200	4G-5G 1	46.1	-3.4	2.4				
		4G-5G 2	46.8	-3.3	2.0				
5G NR N78	3300-3800	4G-5G 1	48.9	-3.1	1.8				
		4G-5G 2	49.3	-3.1	1.5				
5G NR N79	4400-5000	4G-5G 1	59.9	-2.2	4.0				
		4G-5G 2	60.3	-2.2	3.6				
LTE5200	5150-5925	4G-5G 1	60.4	-2.2	4.5				
		4G-5G 2	64.7	-1.9	4.6				

Note: The antenna was measured with 300mm 1.5DS cable in free space.



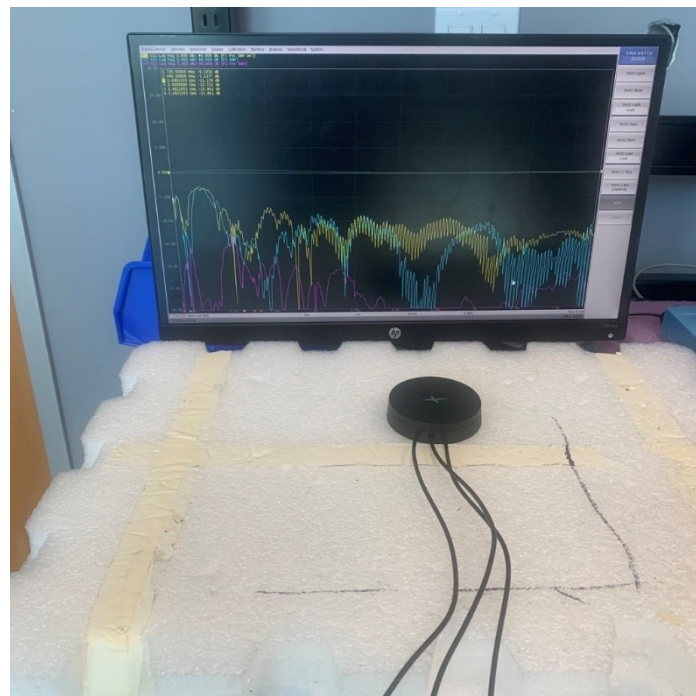
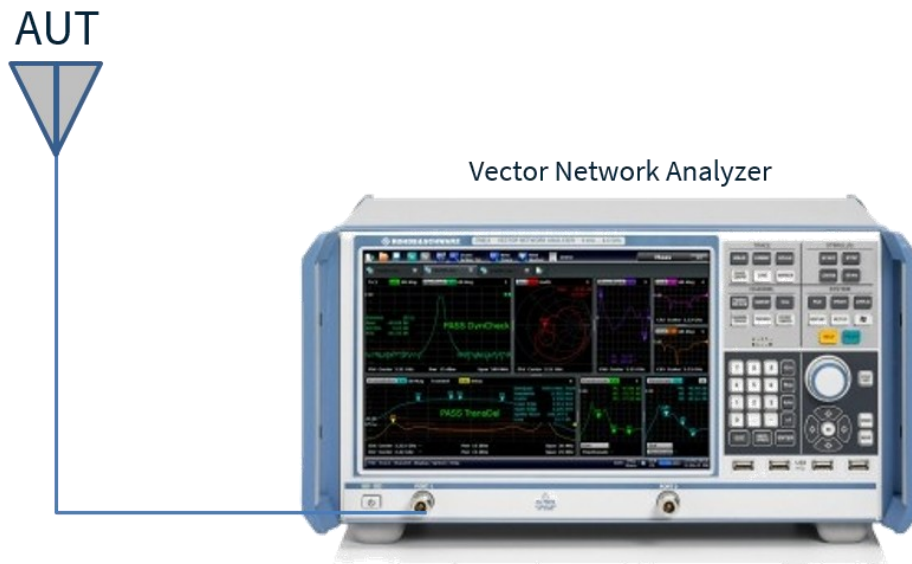
5G/4G Bands				
Band Number	5G NR / FR1 / LTE / LTE-Advanced / WCDMA / HSPA / HSPA+ / TD-SCDMA			
	Uplink	Downlink	FS LTE 1	FS LTE 2
B1	1920 to 1980	2110 to 2170	✓	✓
B2	1850 to 1910	1930 to 1990	✓	✓
B3	1710 to 1785	1805 to 1880	✓	✓
B4	1710 to 1755	2110 to 2155	✓	✓
B5	824 to 849	869 to 894	✓	✓
B7	2500 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*	2000 to 2020	2180 to 2200	✓	✓
B24	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	✗	✗

Dimensions	Ø80mm x 18 mm
Weight	113g
Material	ASA
Connector	SMA(M)ST
Cable	2m TGC-1.5DS

Environmental	
Waterproof Rating	IP67
Operation Temperature	-40°C to 85°C
Storage Temperature	-40°C to 85°C
Relative Humidity	Non-condensing 65°C 95% RH
RoHs Compliant	Yes

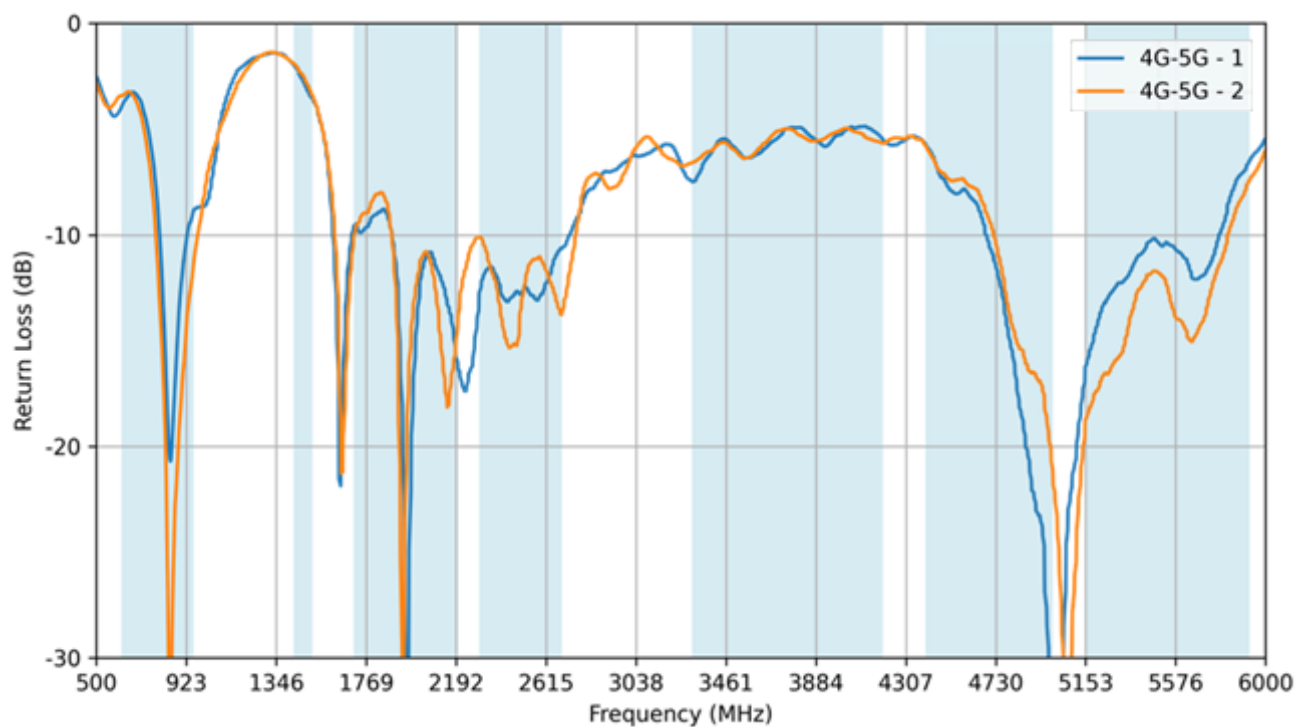
### 3. Antenna Characteristics

#### 3.1 Test Setup – 30cm Cable in Free Space

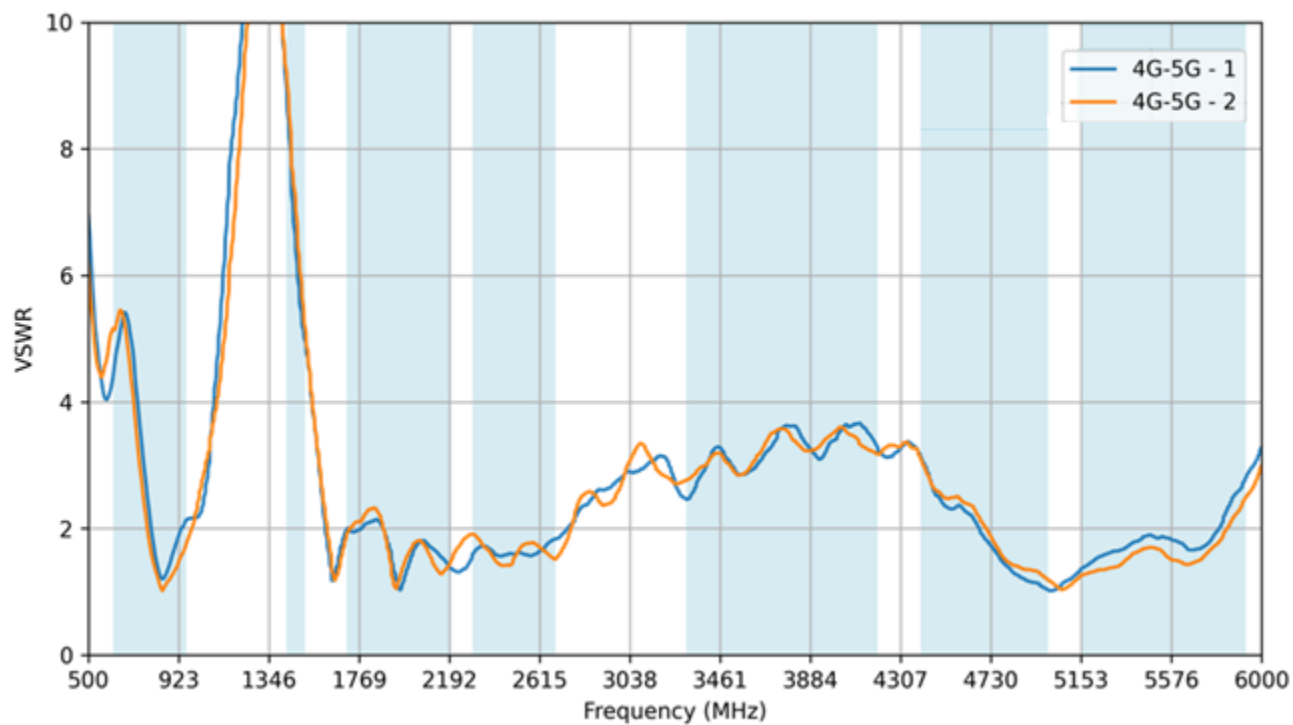


VNA Test Set-up

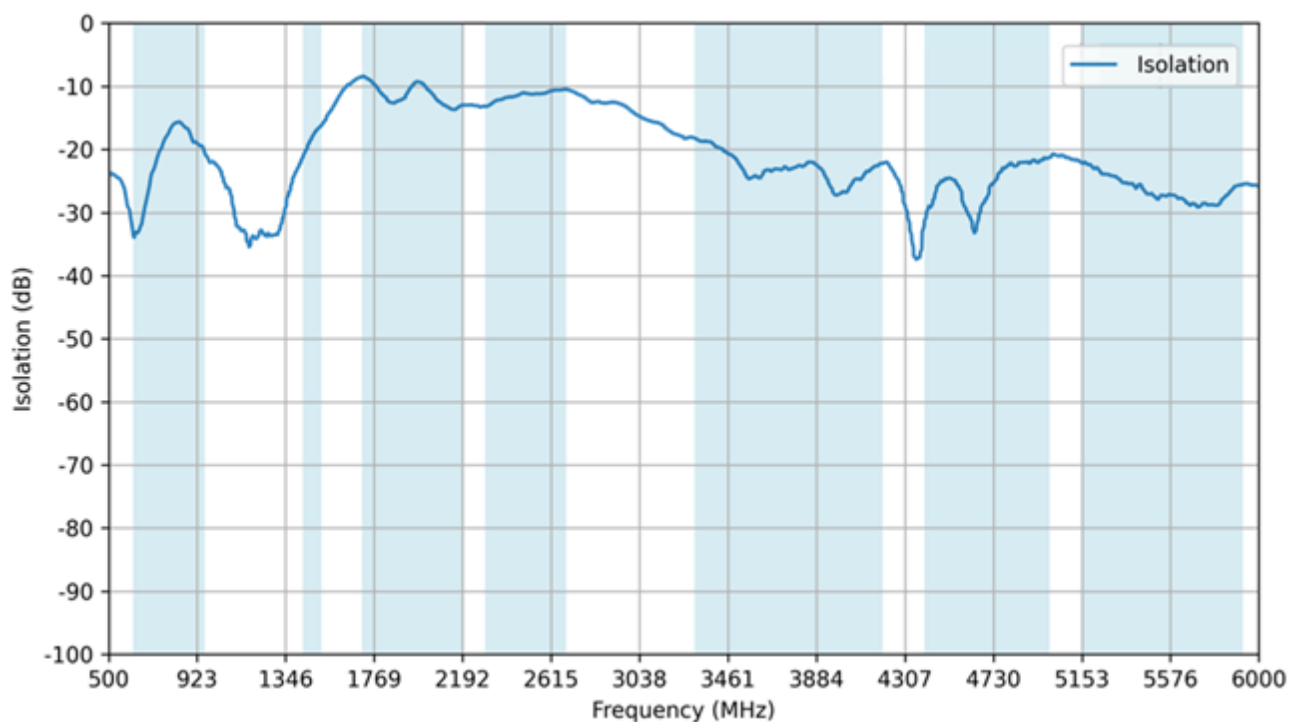
### 3.2 Return Loss



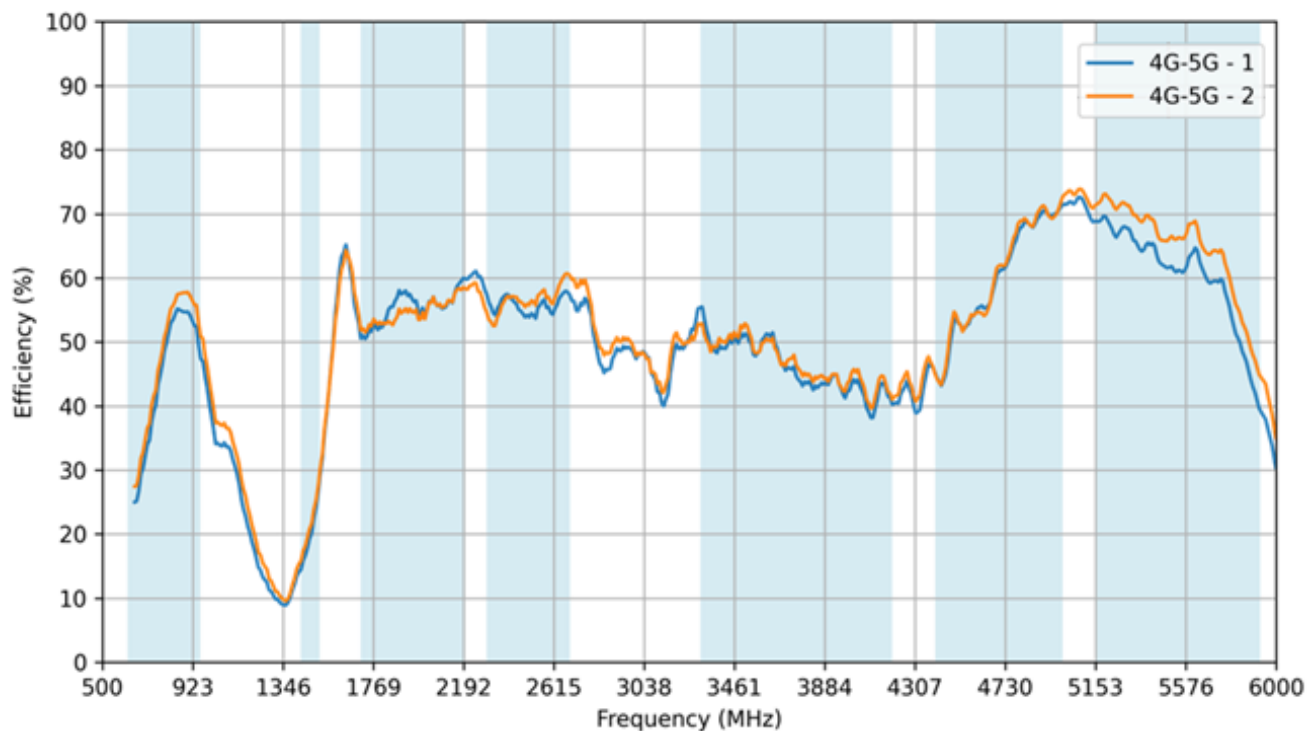
### 3.3 VSWR



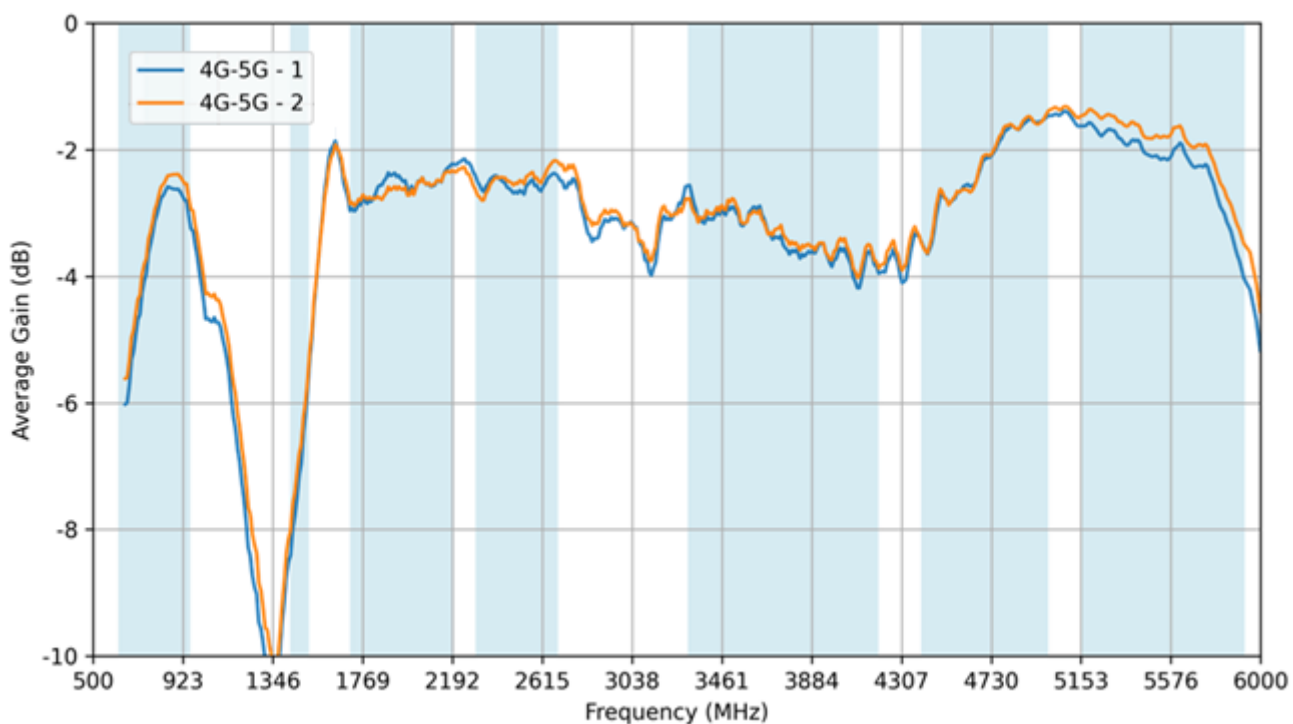
### 3.4 Isolation



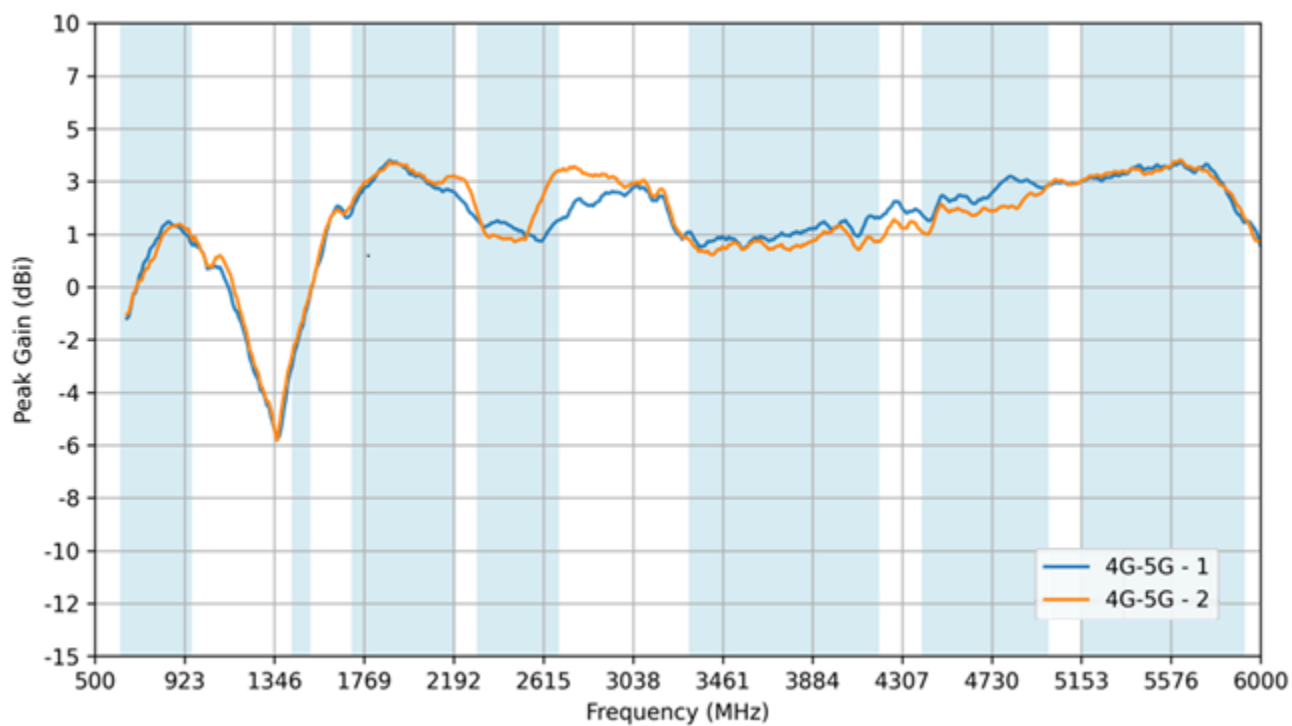
### 3.5 Efficiency



### 3.6 Average Gain

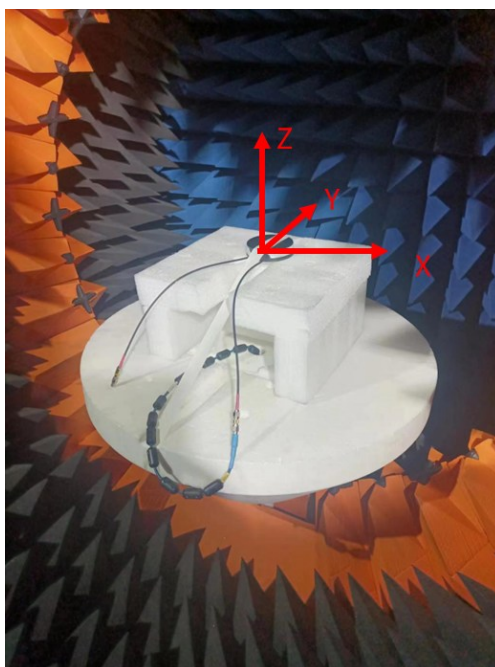
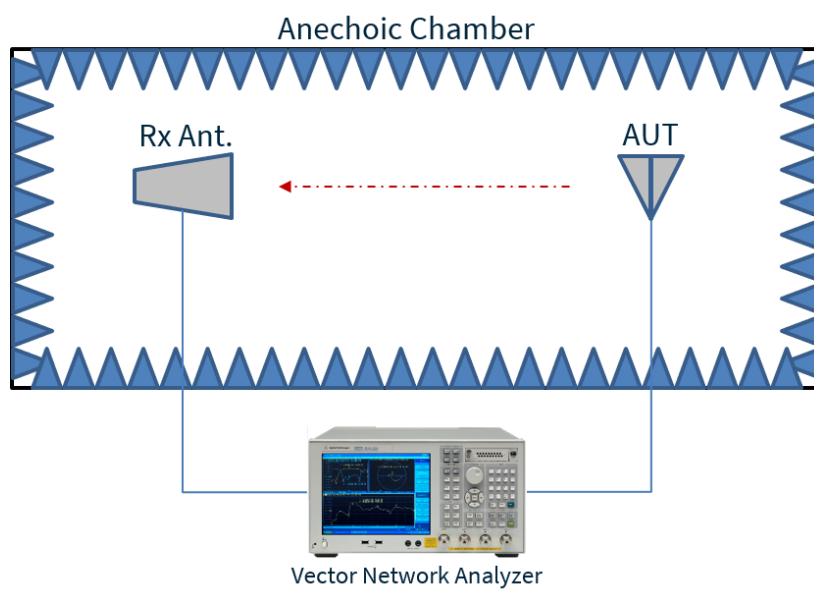


### 3.7 Peak Gain



## 4. Radiation Patterns

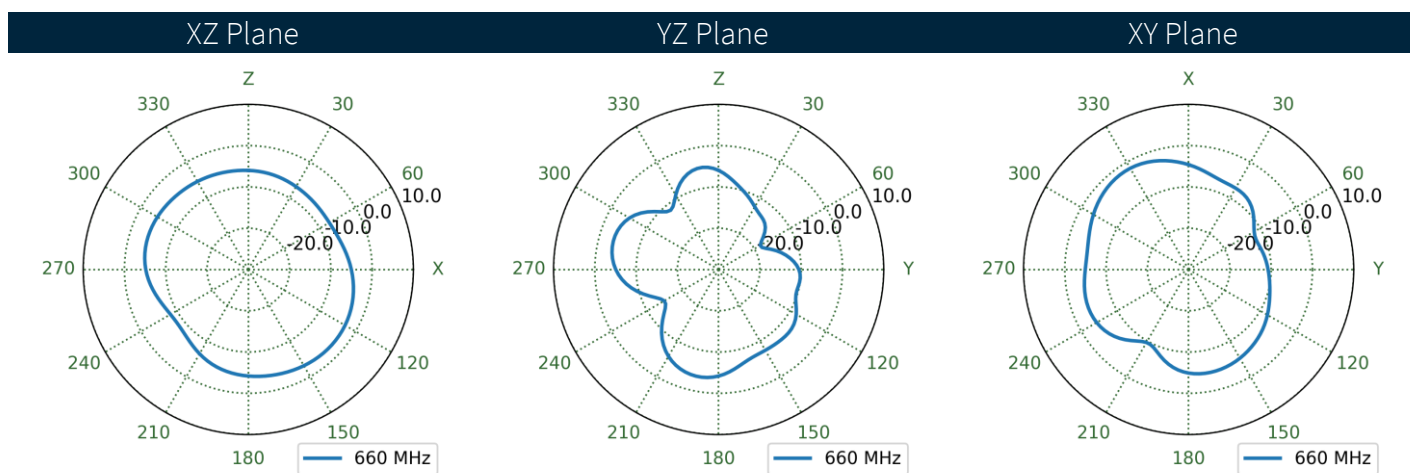
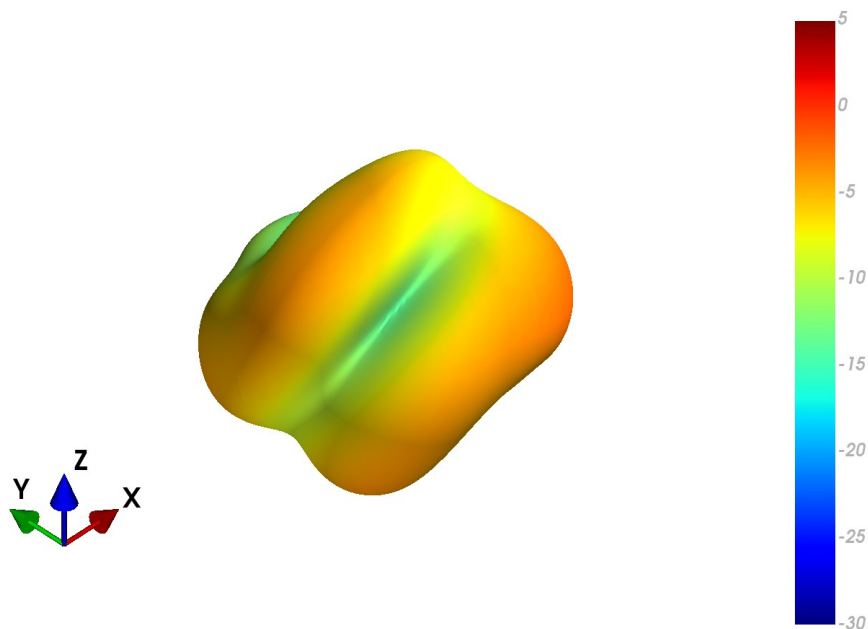
### 4.1 Test Setup – 30cm Cable in Free Space



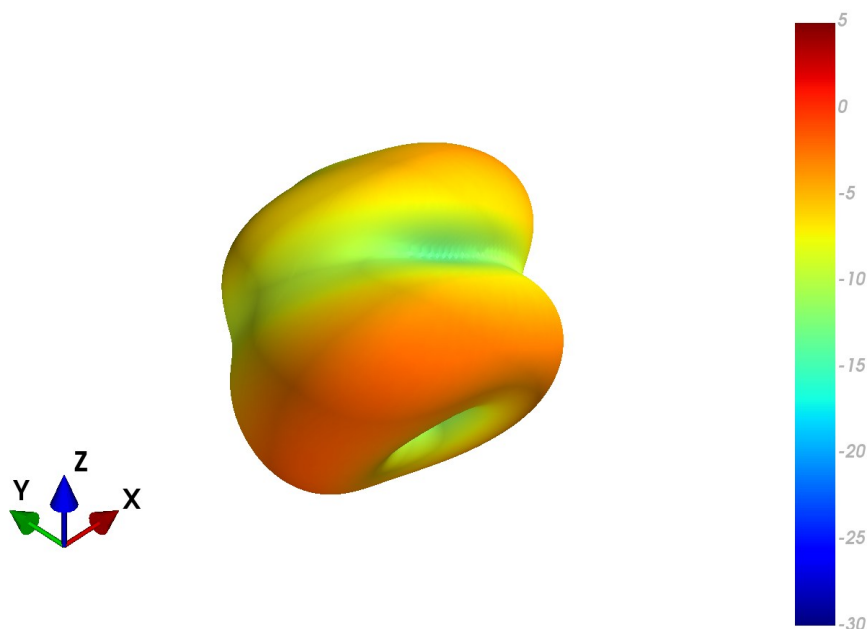
Chamber Test Set-up



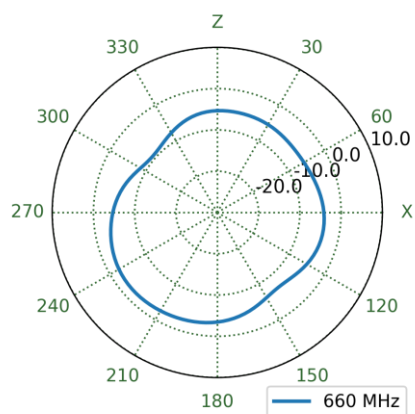
## 4.2 4G-5G 1 Patterns at 660 MHz



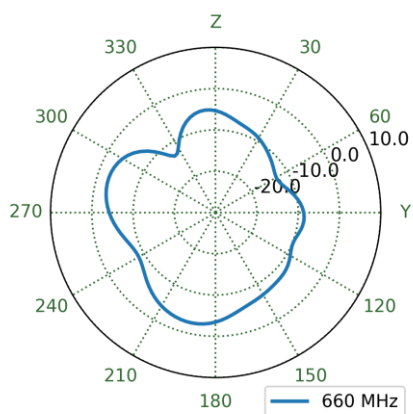
## 4.3 4G-5G 2 Patterns at 660 MHz



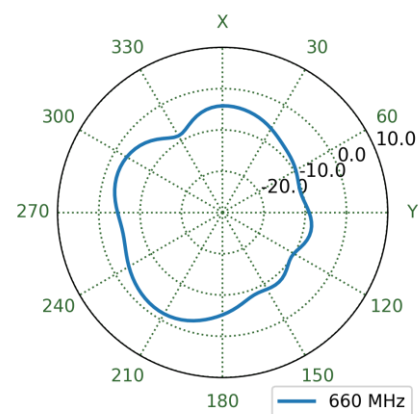
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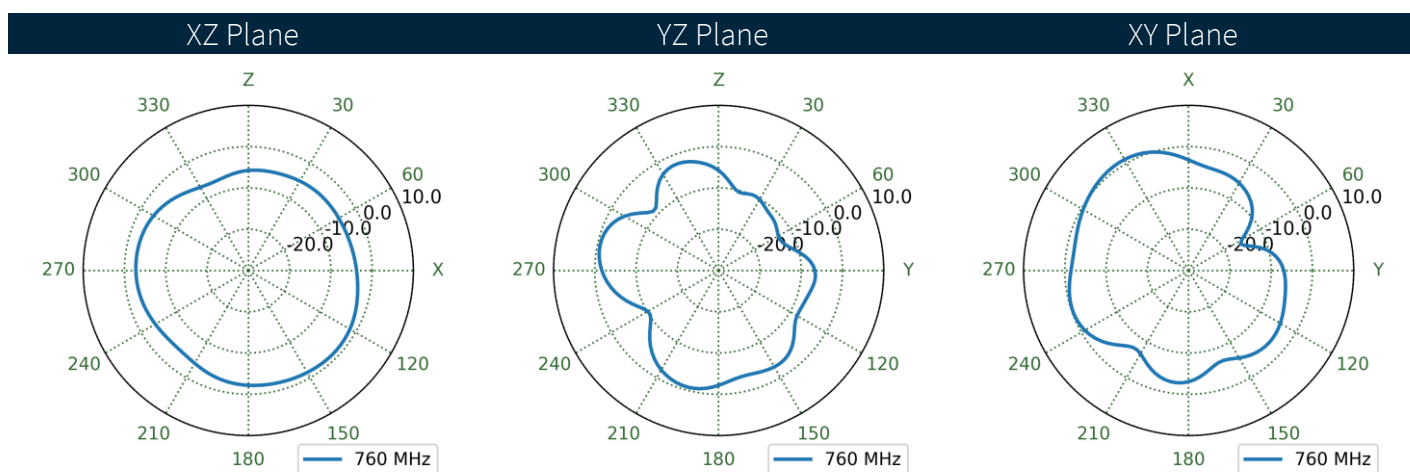
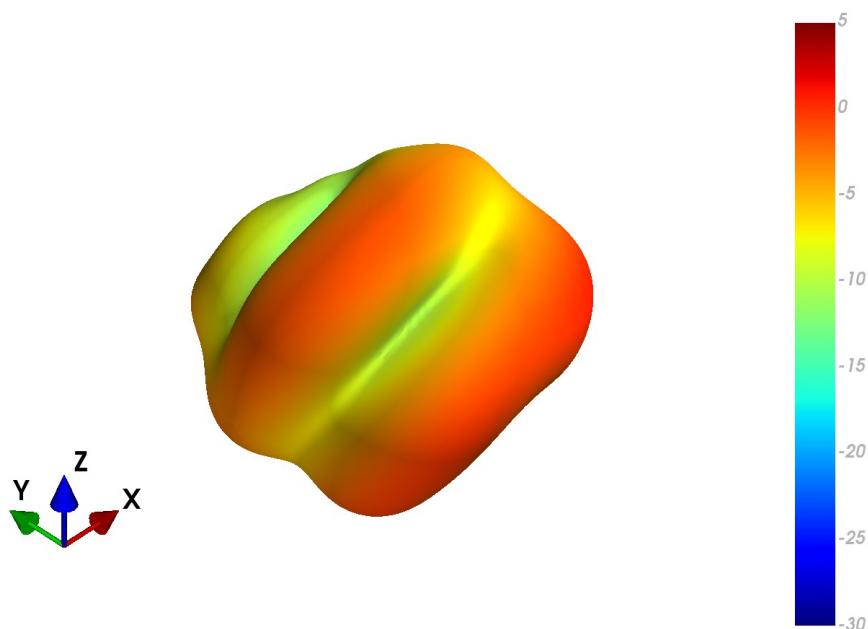
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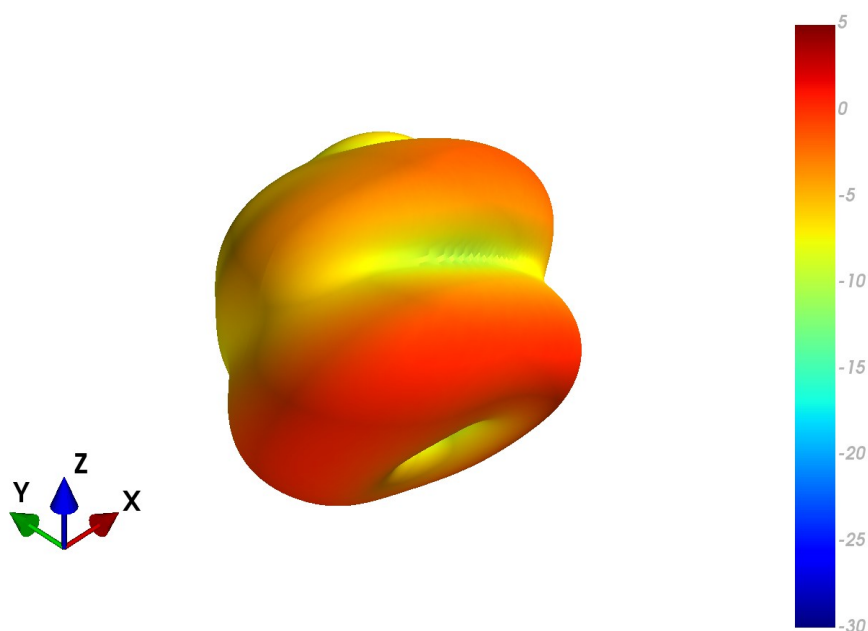
XY Plane



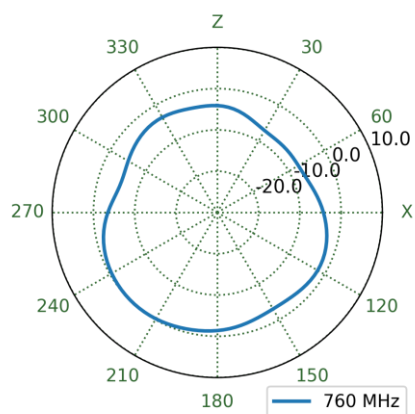
## 4.4 4G-5G 1 Patterns at 760 MHz



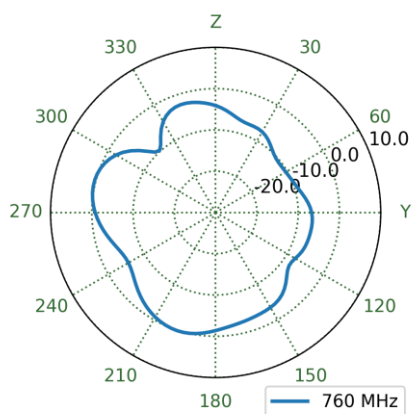
## 4.5 4G-5G 2 Patterns at 760 MHz



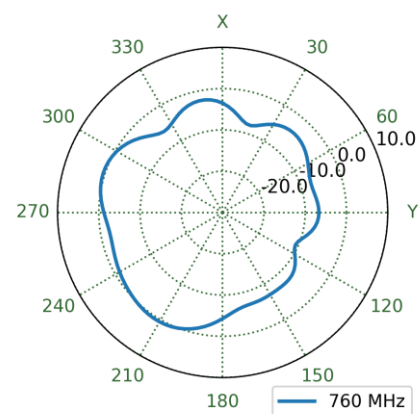
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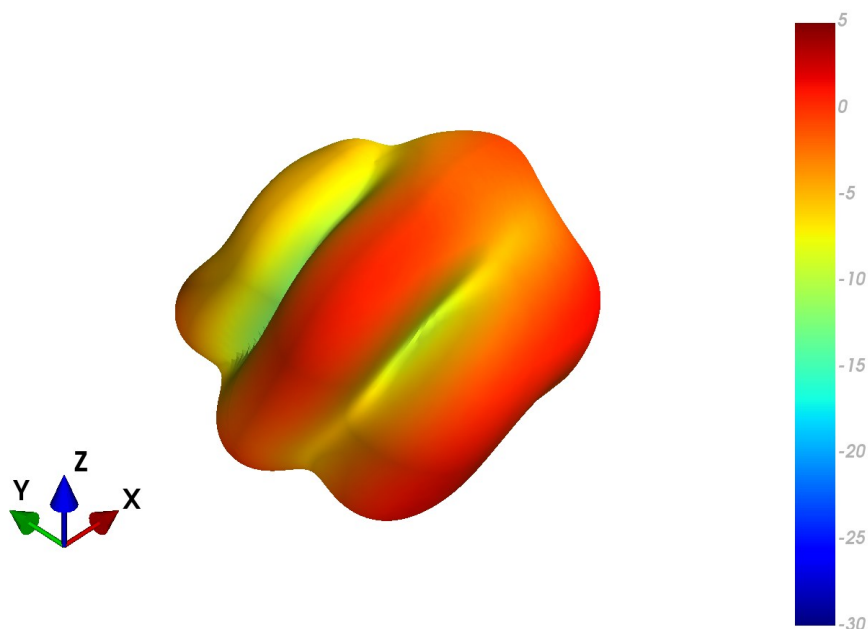
YZ Plane



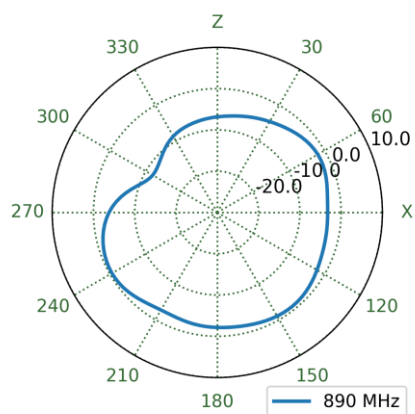
XY Plane



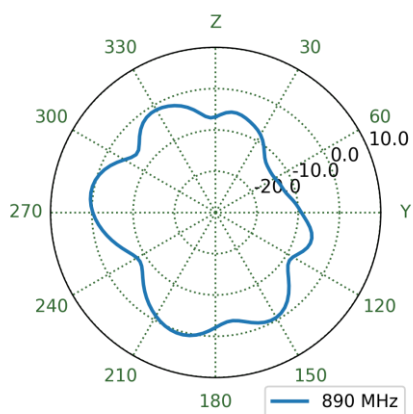
## 4.6 4G-5G 1 Patterns at 890 MHz



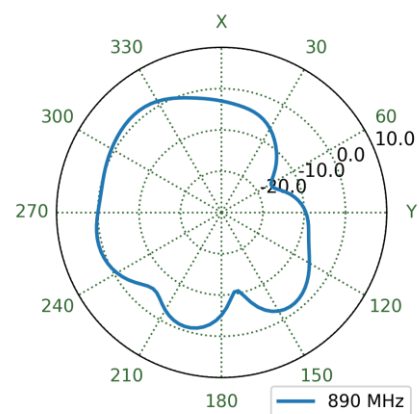
XZ Plane



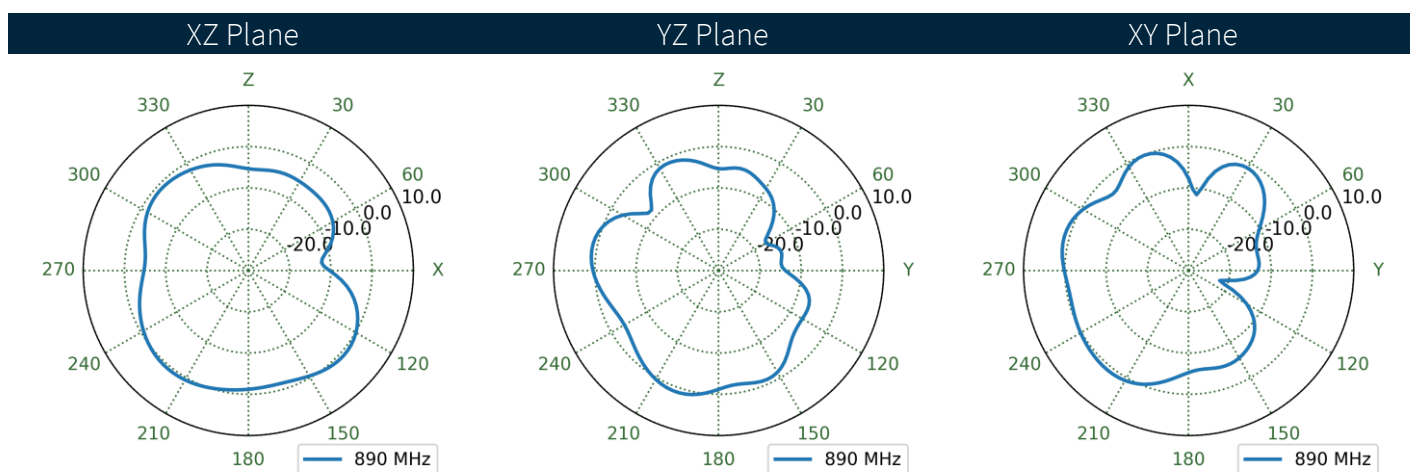
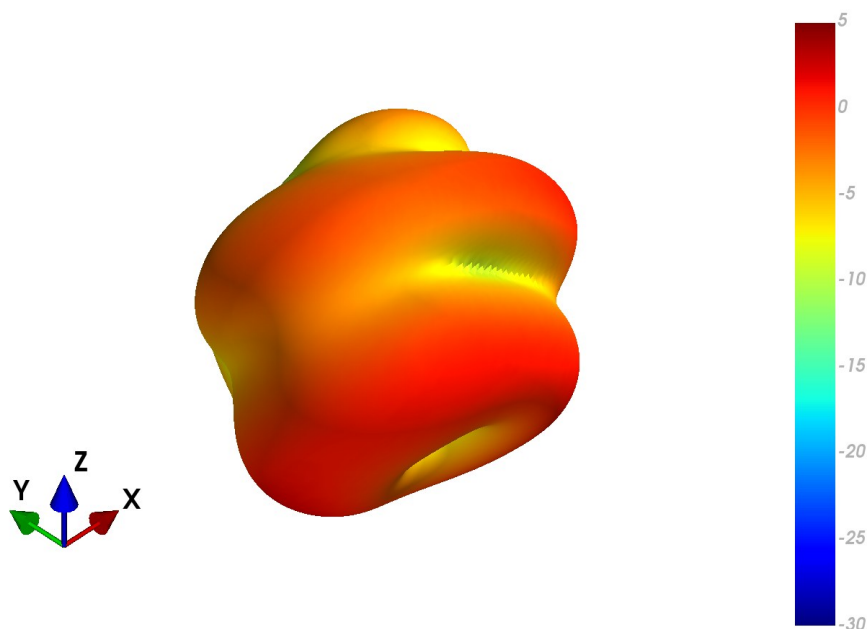
YZ Plane



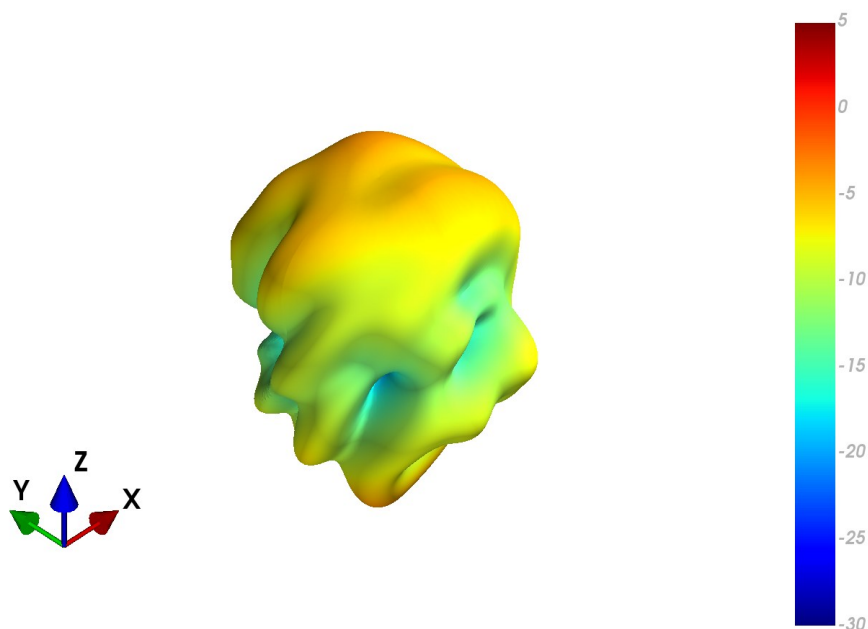
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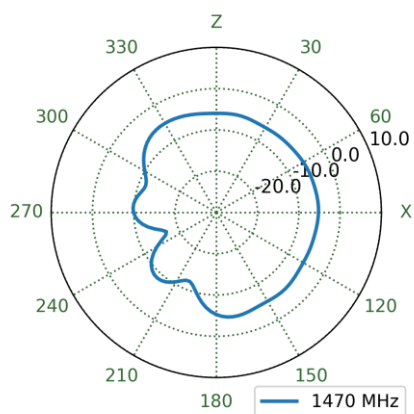
## 4.7 4G-5G 2 Patterns at 890 MHz



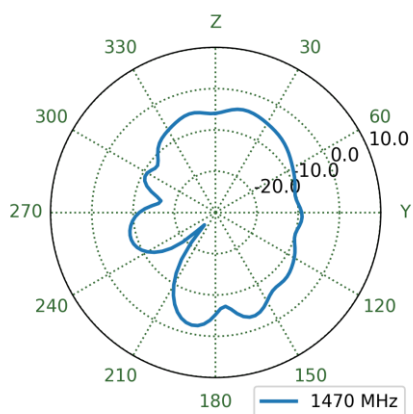
## 4.8 4G-5G 1 Patterns at 1470 MHz



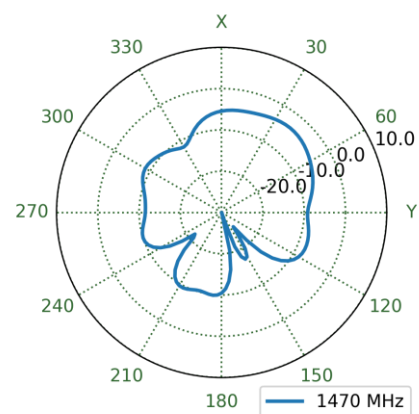
XZ Plane



YZ Plane

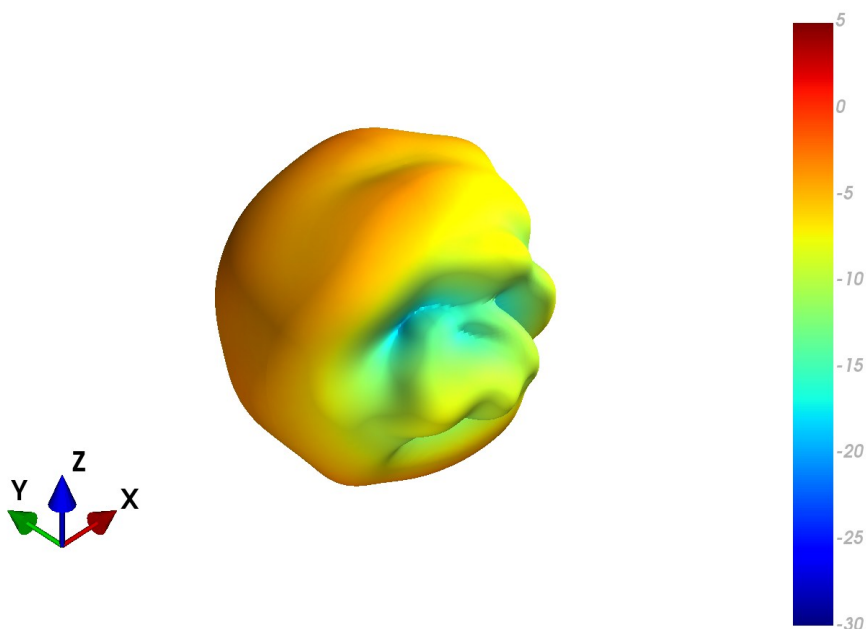


XY Plane

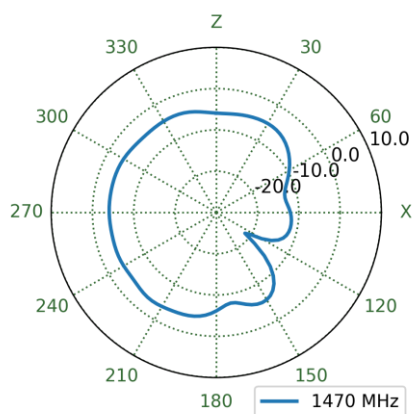




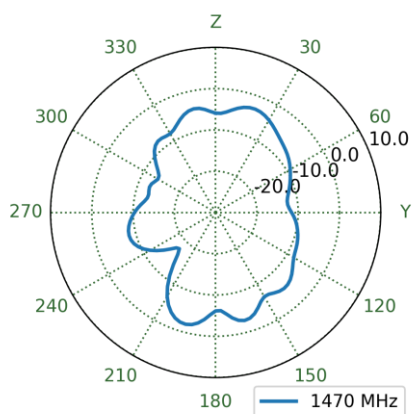
## 4.9 4G-5G 2 Patterns at 1470 MHz



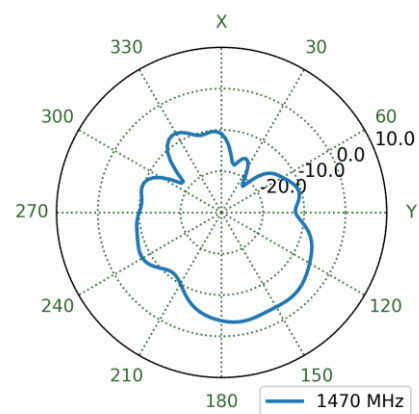
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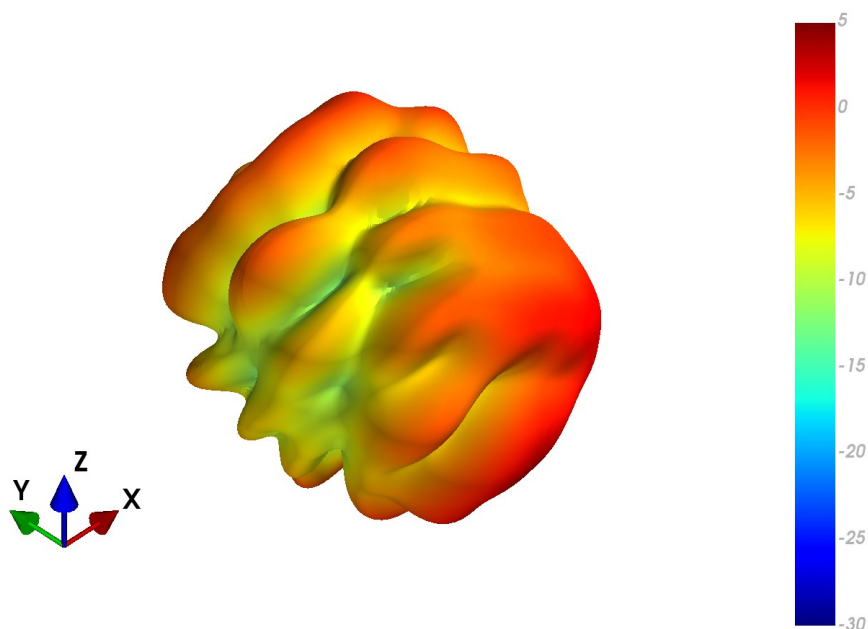
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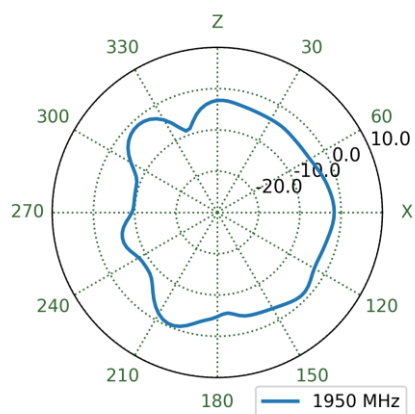
XY Plane



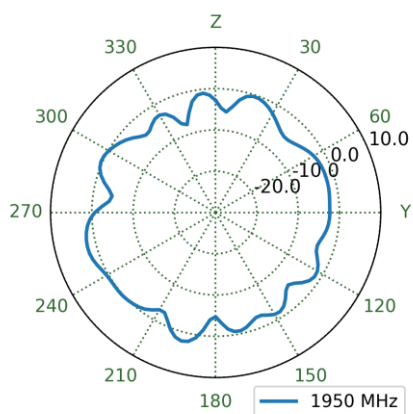
## 4.10 4G-5G 1 Patterns at 1950 MHz



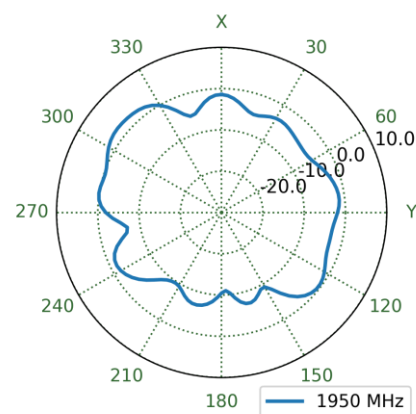
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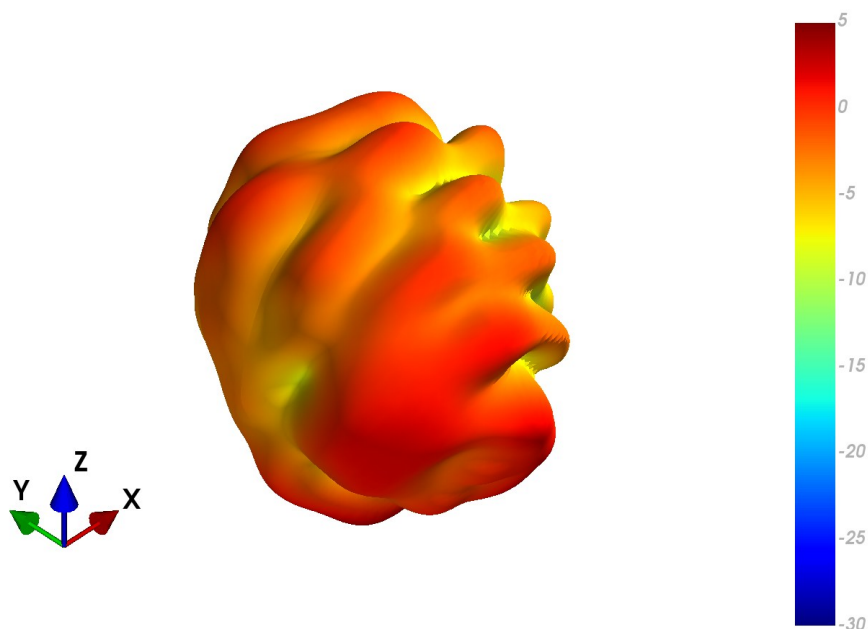
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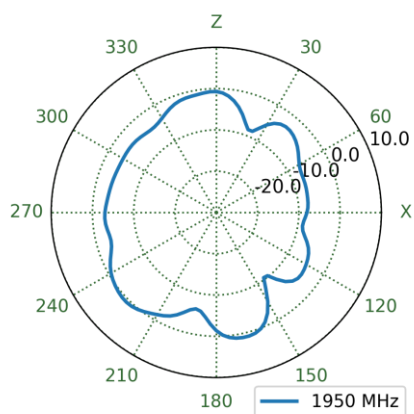
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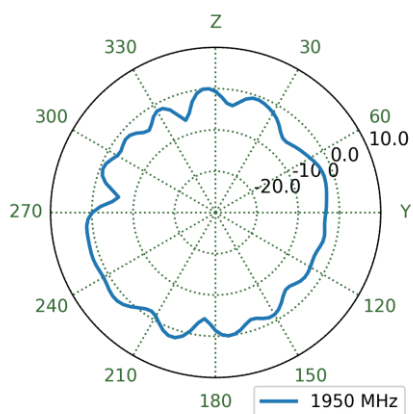
## 4.11 4G-5G 2 Patterns at 1950 MHz



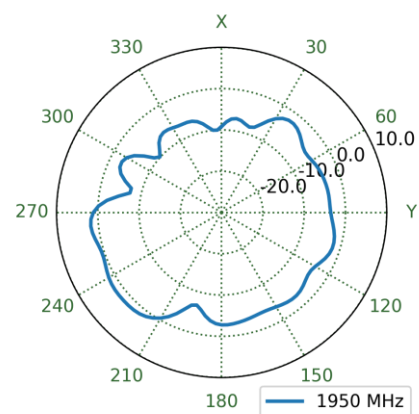
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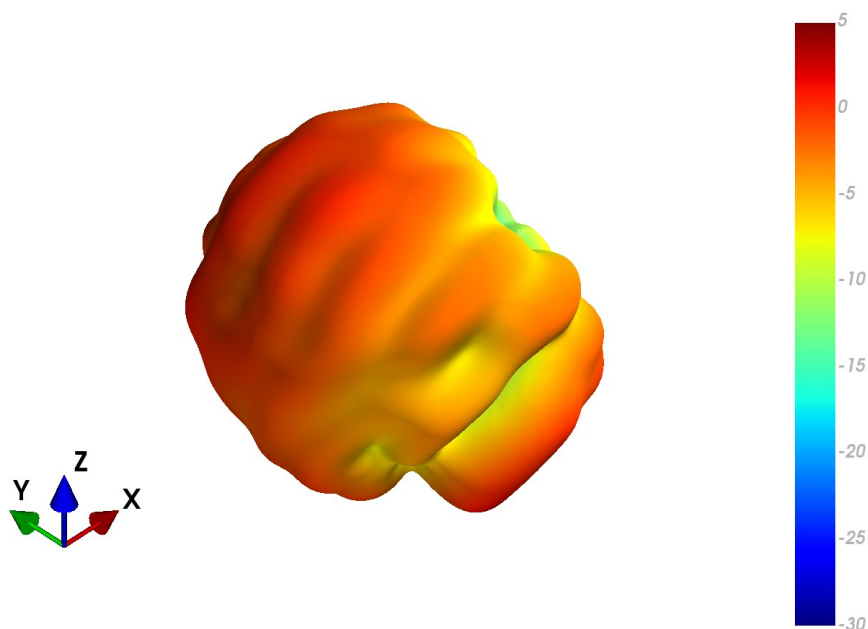
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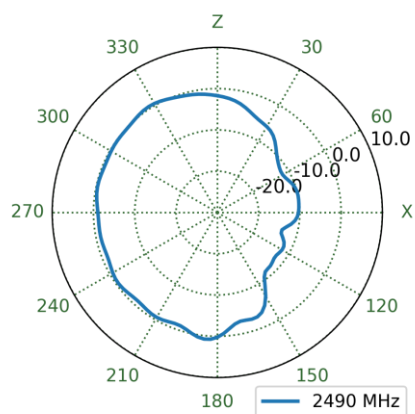
XY Plane



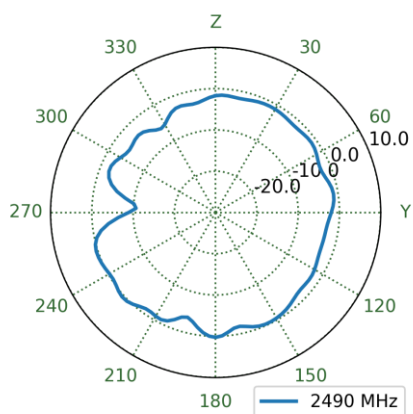
## 4.12 4G-5G 1 Patterns at 2490 MHz



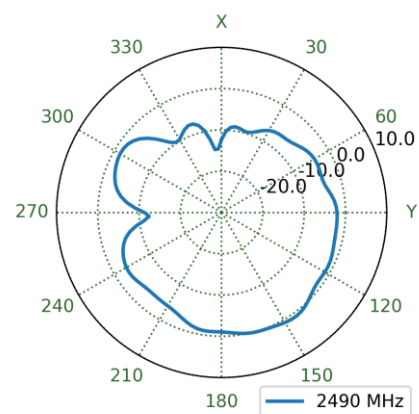
XZ Plane



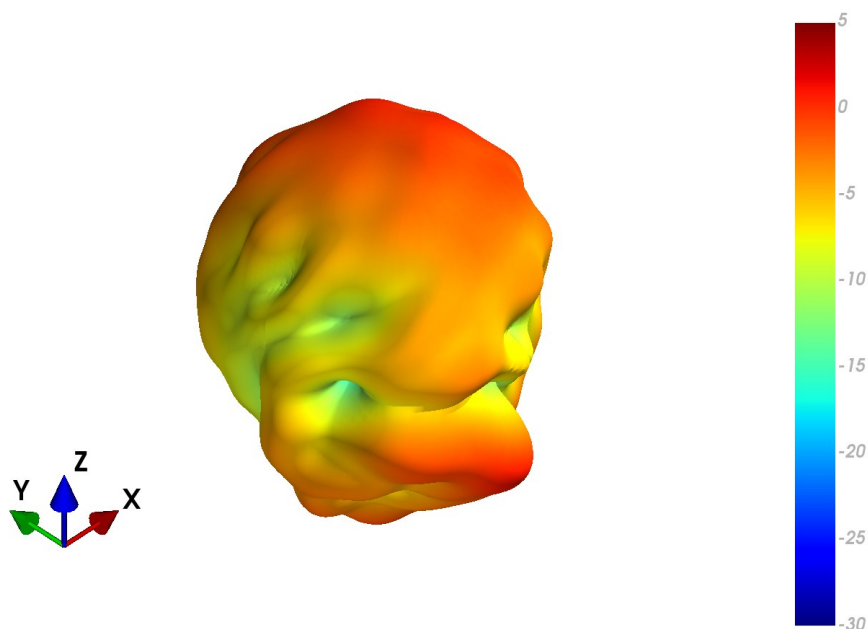
YZ Plane



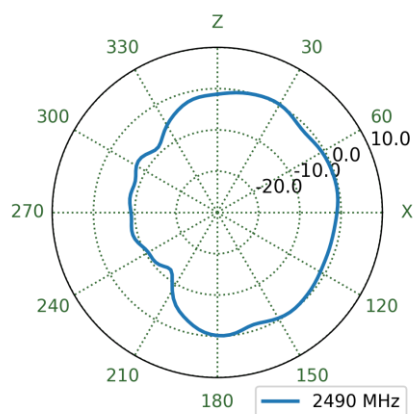
XY Plane



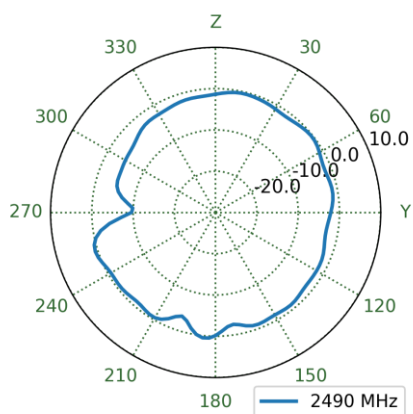
# 4.13 4G-5G 2 Patterns at 2490 MHz



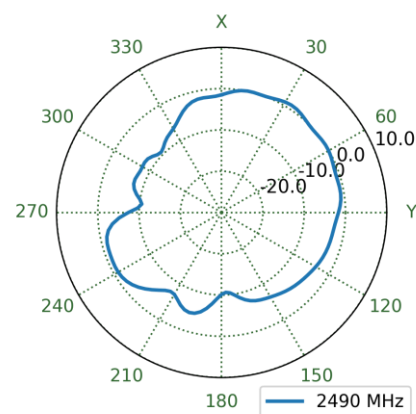
XZ Plane



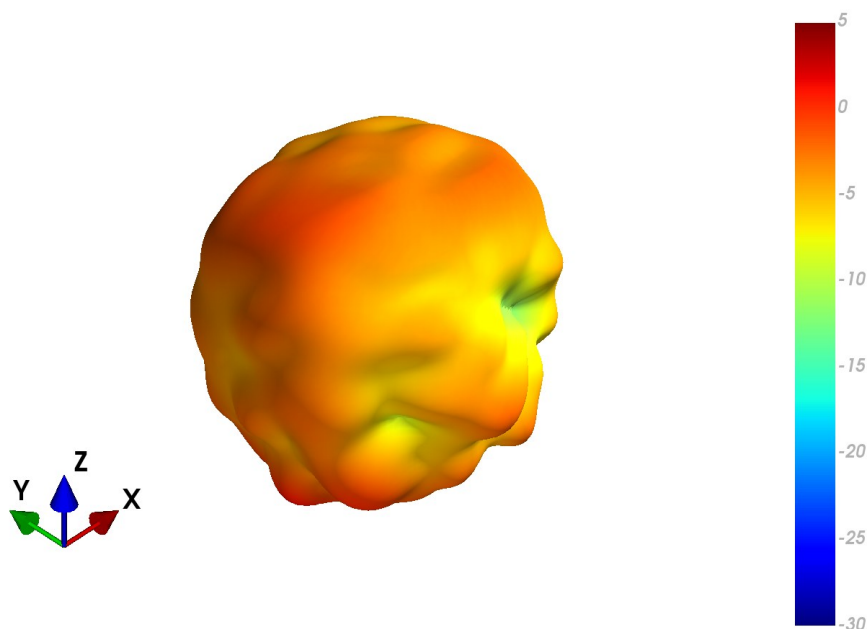
YZ Plane



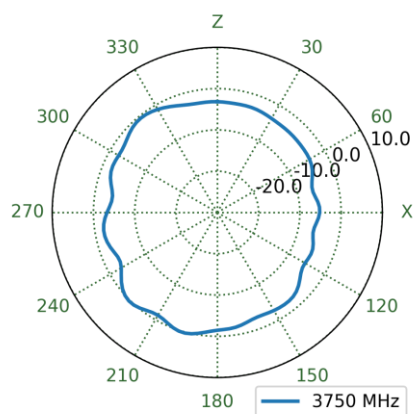
XY Plane



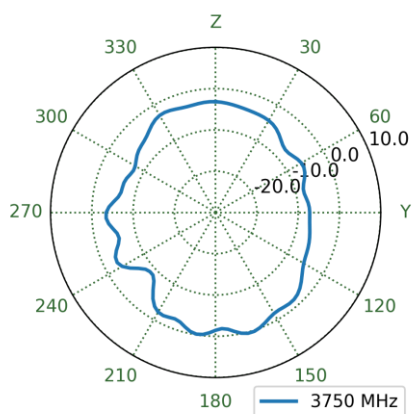
# 4.14 4G-5G 1 Patterns at 3750 MHz



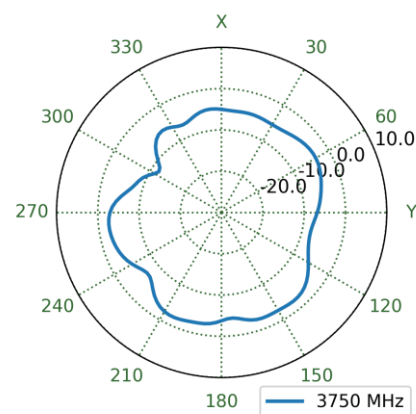
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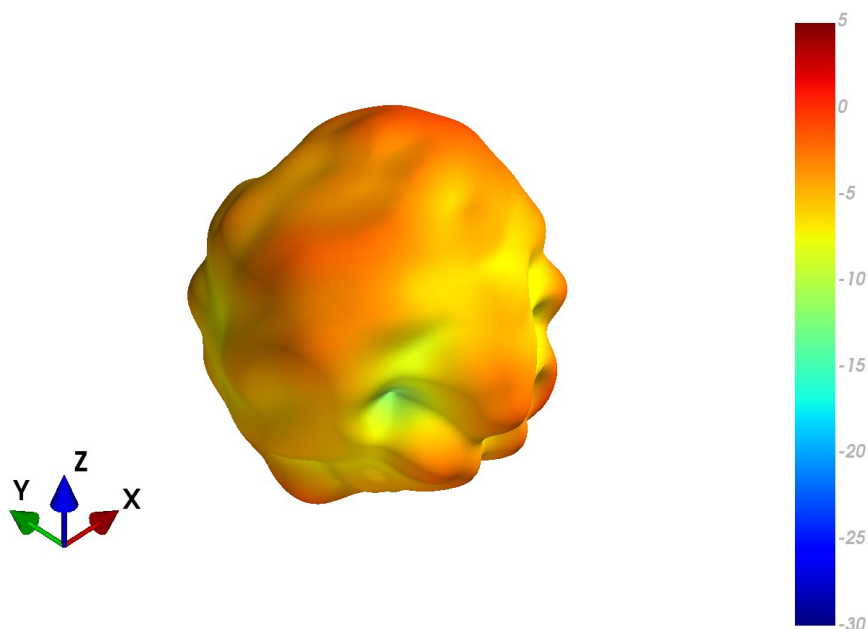
YZ Plane



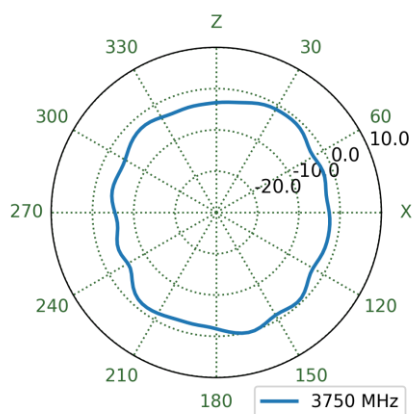
XY Plane



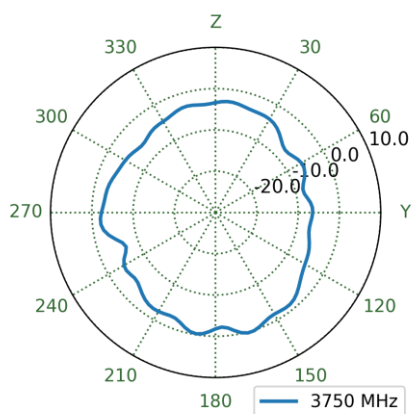
# 4.15 4G-5G 2 Patterns at 3750 MHz



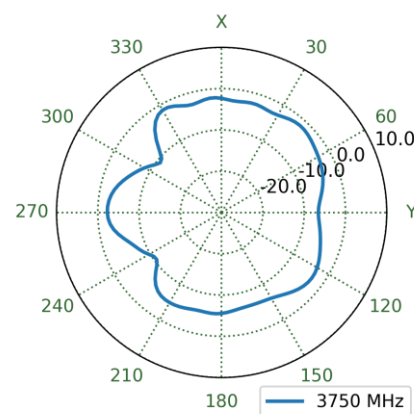
XZ Plane



YZ Plane

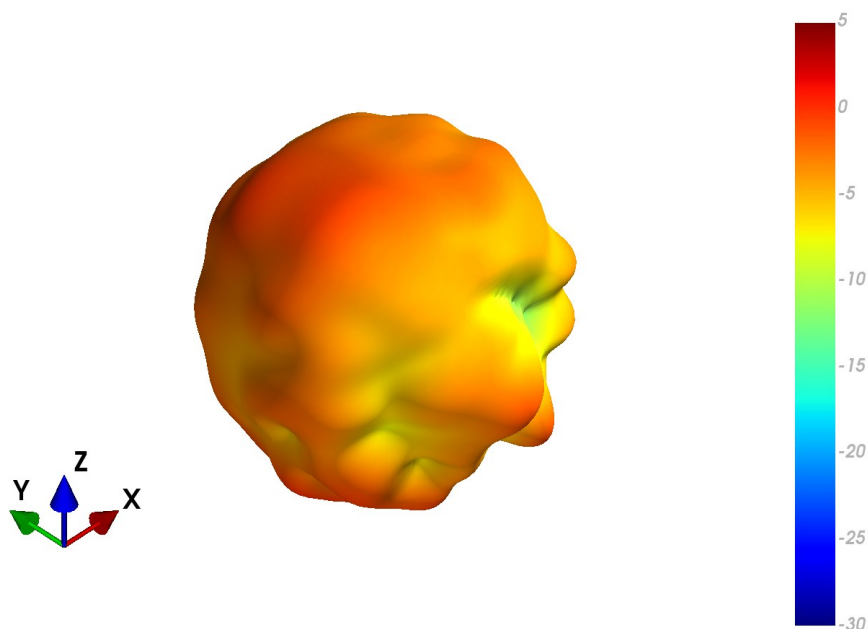


XY Plane

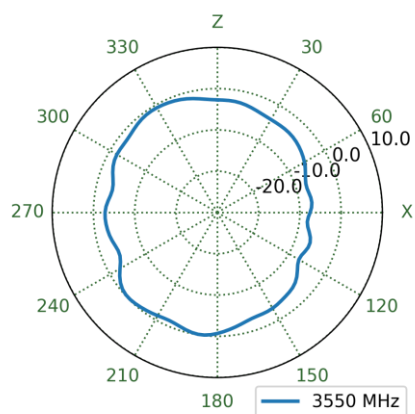




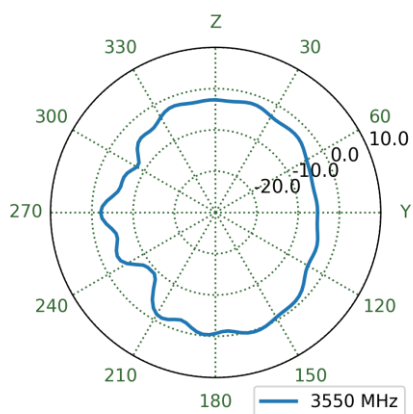
## 4.16 4G-5G 1 Patterns at 3550 MHz



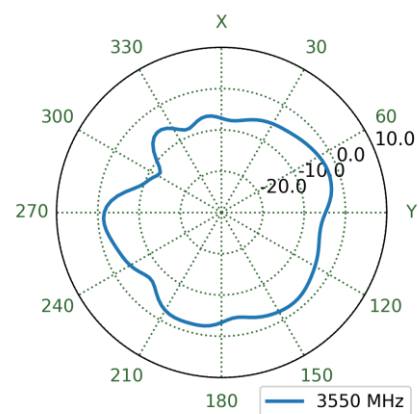
XZ Plane



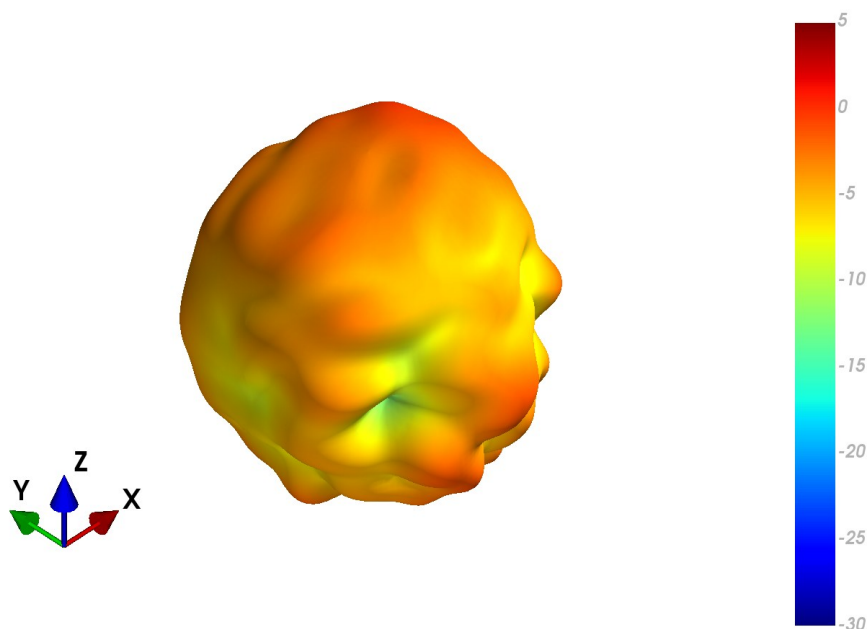
YZ Plane



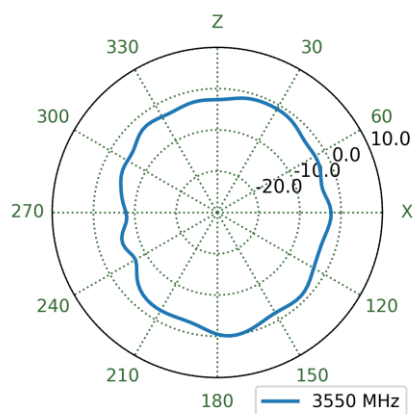
XY Plane



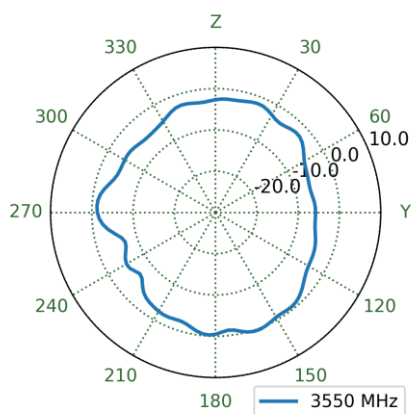
# 4.17 4G-5G 2 Patterns at 3550 MHz



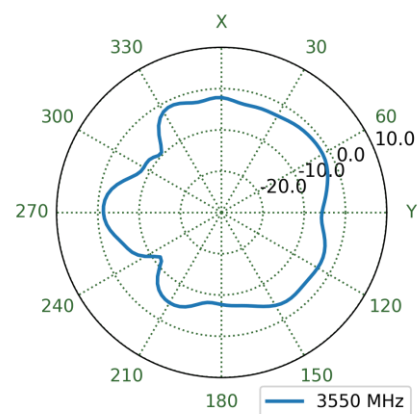
XZ Plane



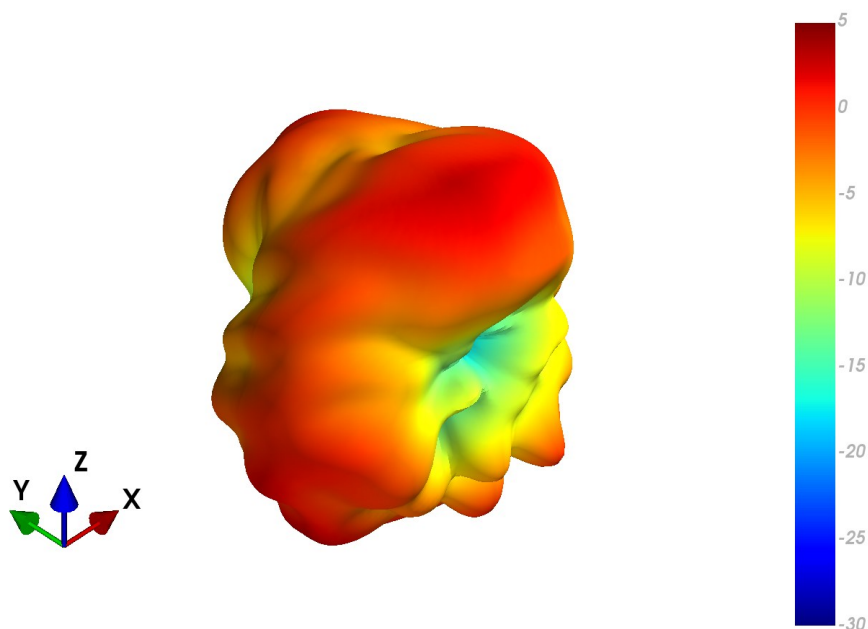
YZ Plane



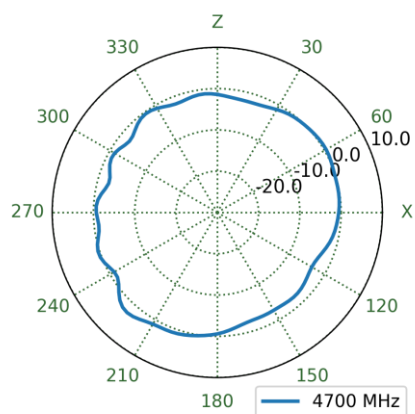
XY Plane



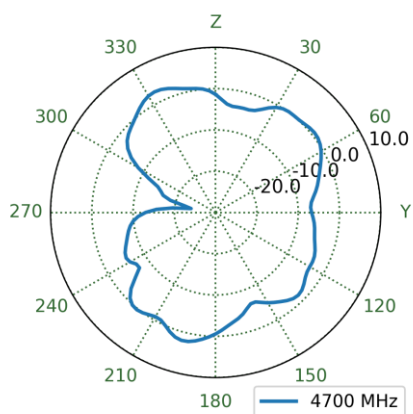
## 4.18 4G-5G 1 Patterns at 4700 MHz



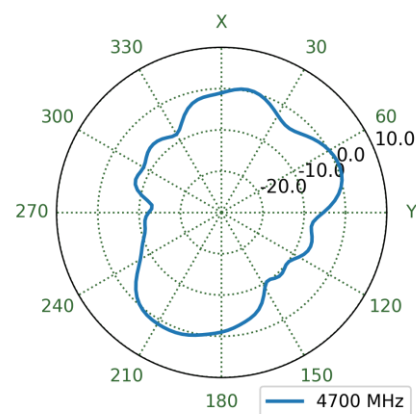
XZ Plane



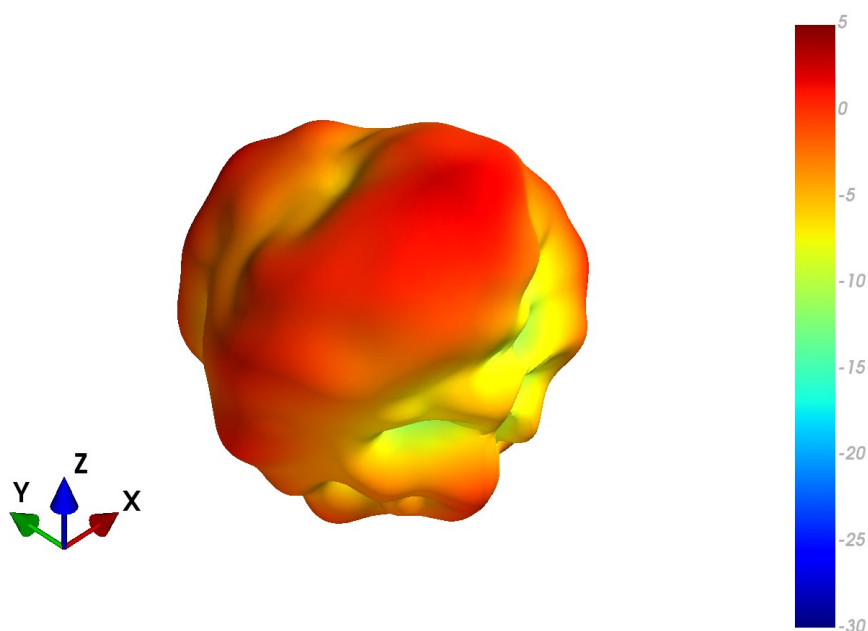
YZ Plane



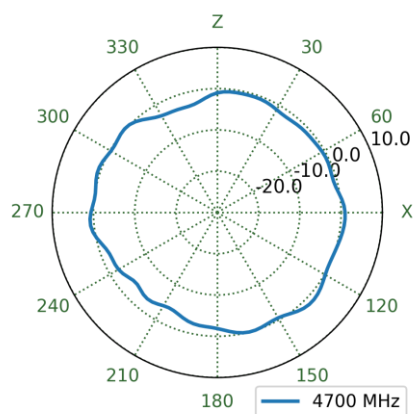
XY Plane



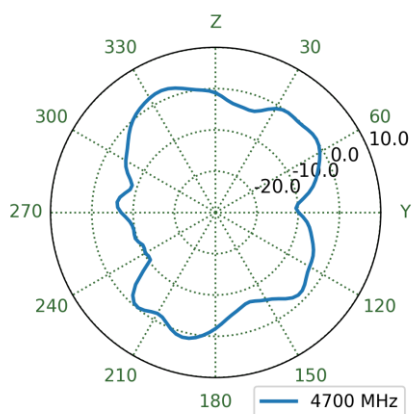
# 4.19 4G-5G 2 Patterns at 4700 MHz



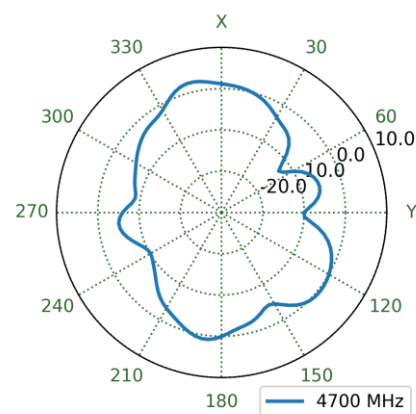
XZ Plane



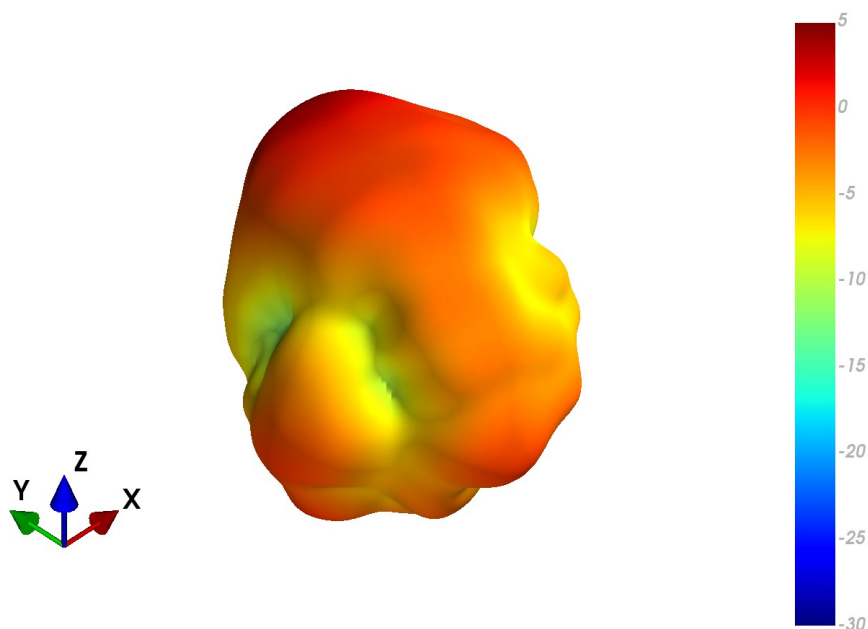
YZ Plane



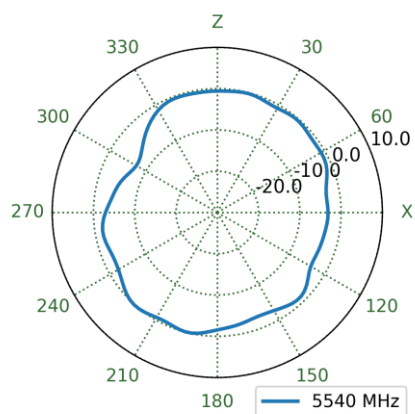
XY Plane



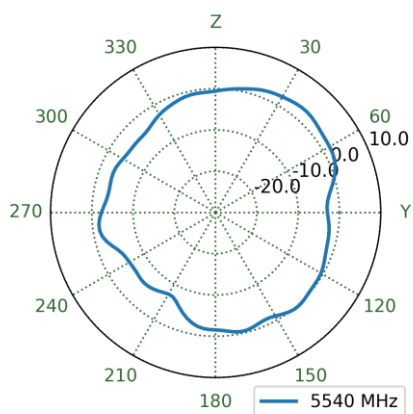
## 4.20 4G-5G 1 Patterns at 5540 MHz



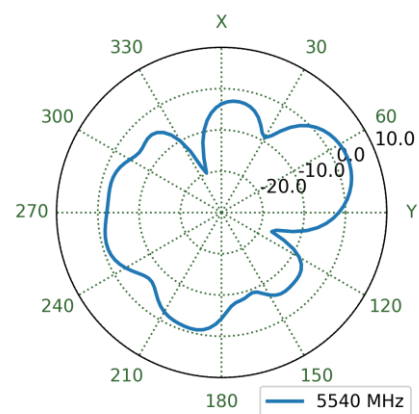
XZ Plane



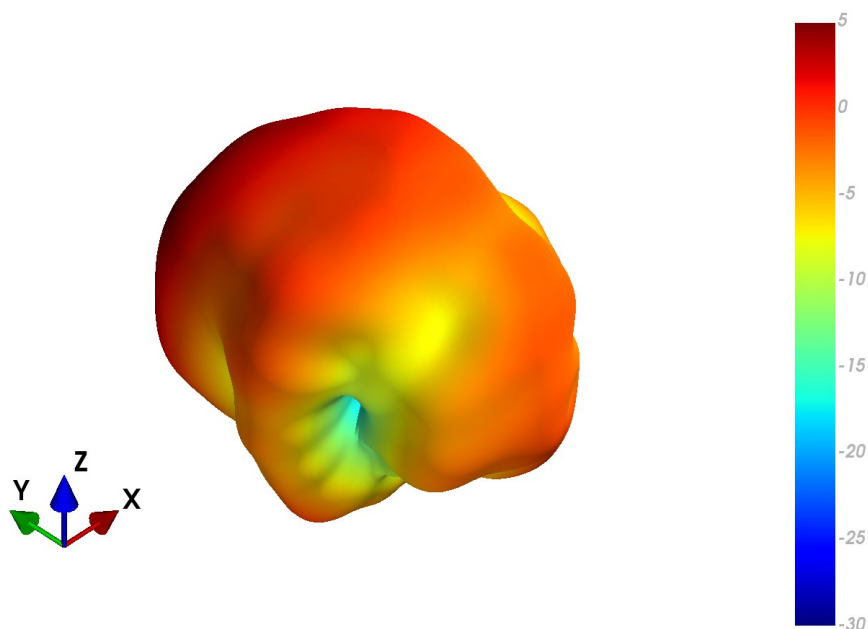
YZ Plane



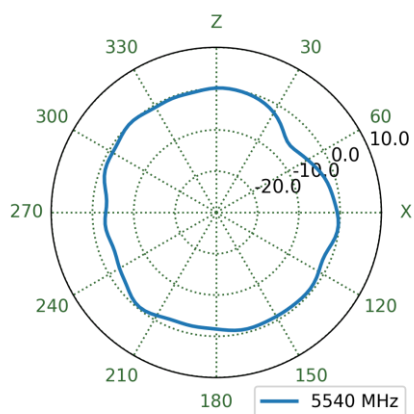
XY Plane



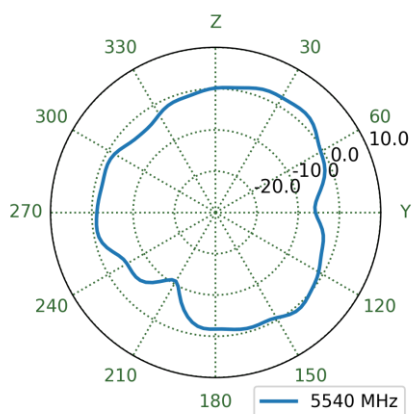
## 4.21 4G-5G 2 Patterns at 5540 MHz



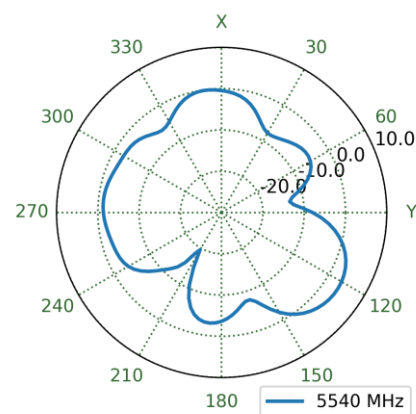
XZ Plane



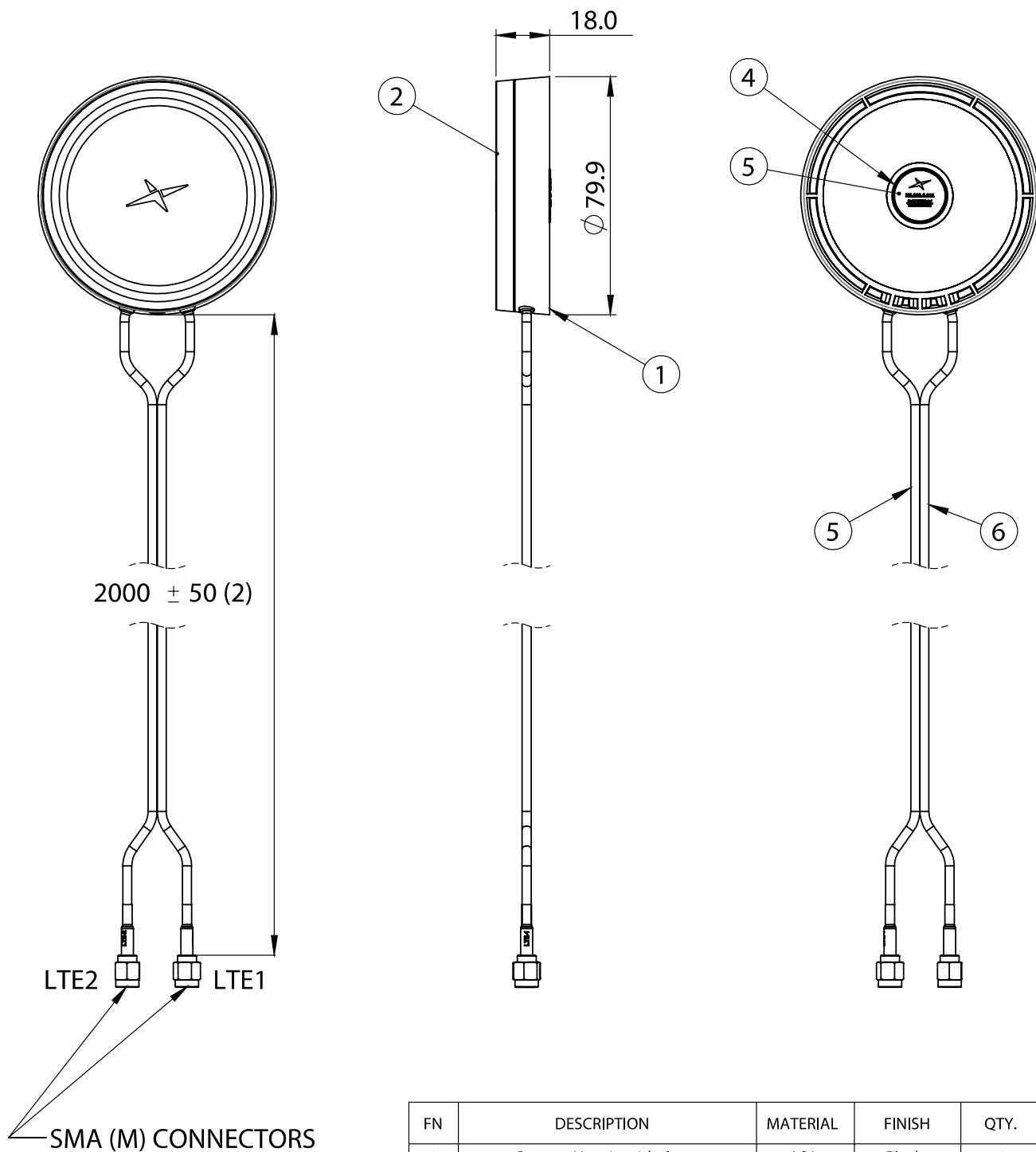
YZ Plane



XY Plane



## 5. Mechanical Drawing



FN	DESCRIPTION	MATERIAL	FINISH	QTY.
1	Bottom Housing 2 hole	ASA	Black	1
2	Top Housing	ASA	Black	1
3	Magnet N48	N48	Ni Plated	1
4	PRODUCT LABEL MA322.A.001	Polyester	NA	1
5	Cable Assy 2m 1.5DS LTE1	NA	NA	1
6	Cable Assy 2m 1.5DS LTE2	NA	NA	1



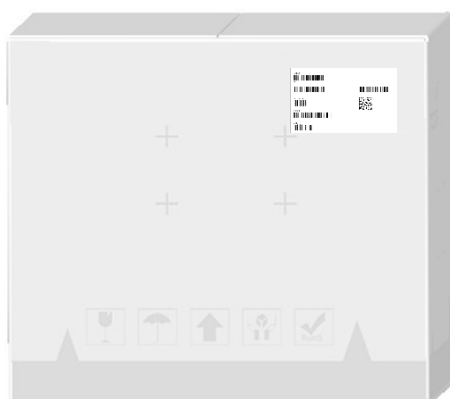
## 6. Packaging



- ✓ 1 PCS / Zipper bag
- ✓ Zipper bag(mm): 70x100



- ✓ 1 PCS / PE bag
- ✓ PE bag(mm): 380x110
- ✓ Weight (g): 119.5±3%
- ✓ SPQ Label



- ✓ 70 PCS / Carton
- ✓ Carton(mm): 370x370x300
- ✓ Weight (kg): 9.3±3%
- ✓ Carton Label

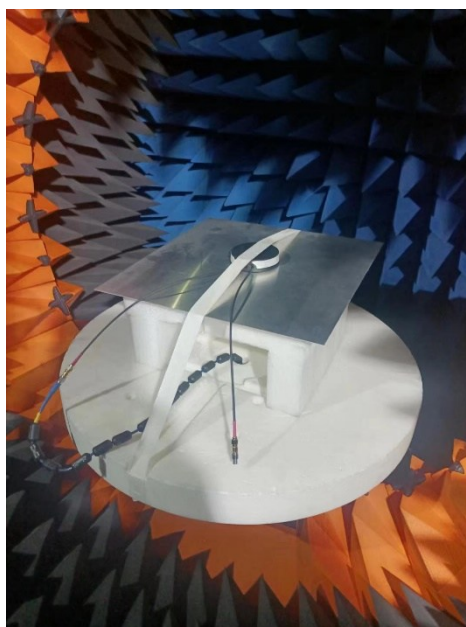
## 7. Application Note

### 7.1 Test Setup – 30cm Cable on 30x30cm Ground Plane

AUT

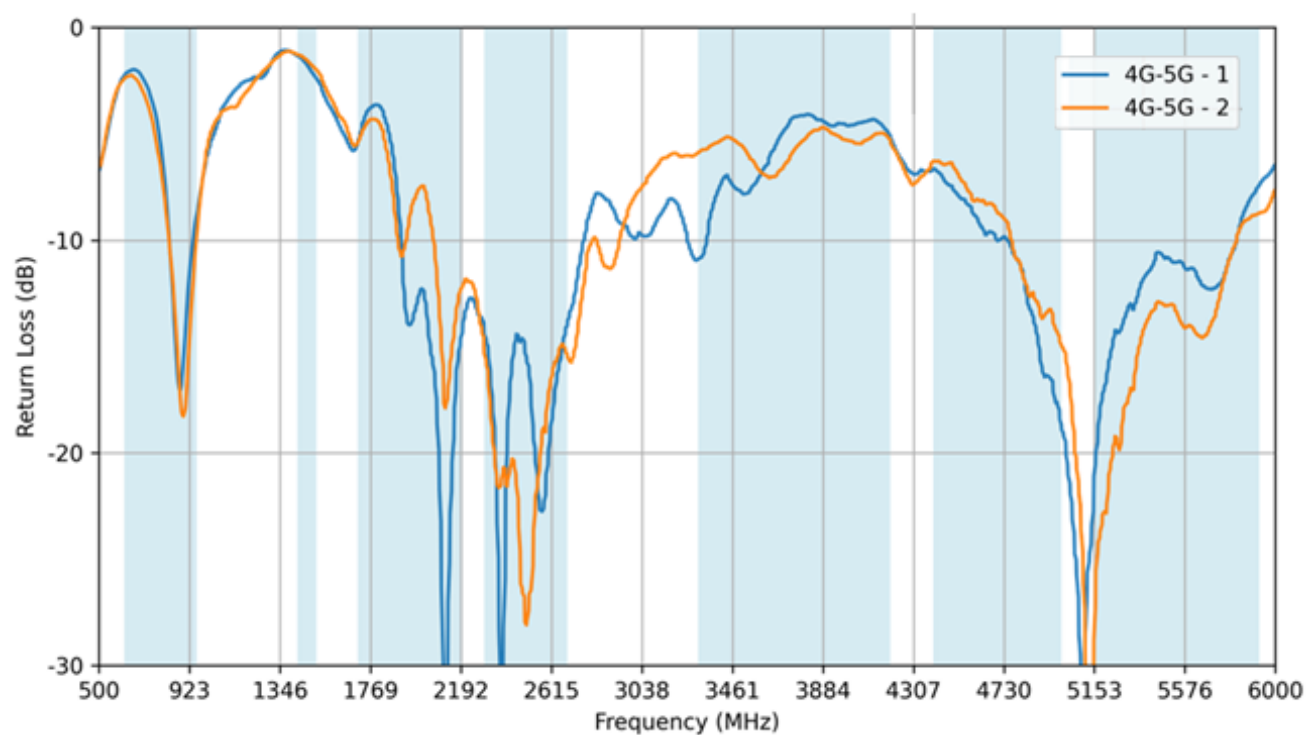


Vector Network Analyzer

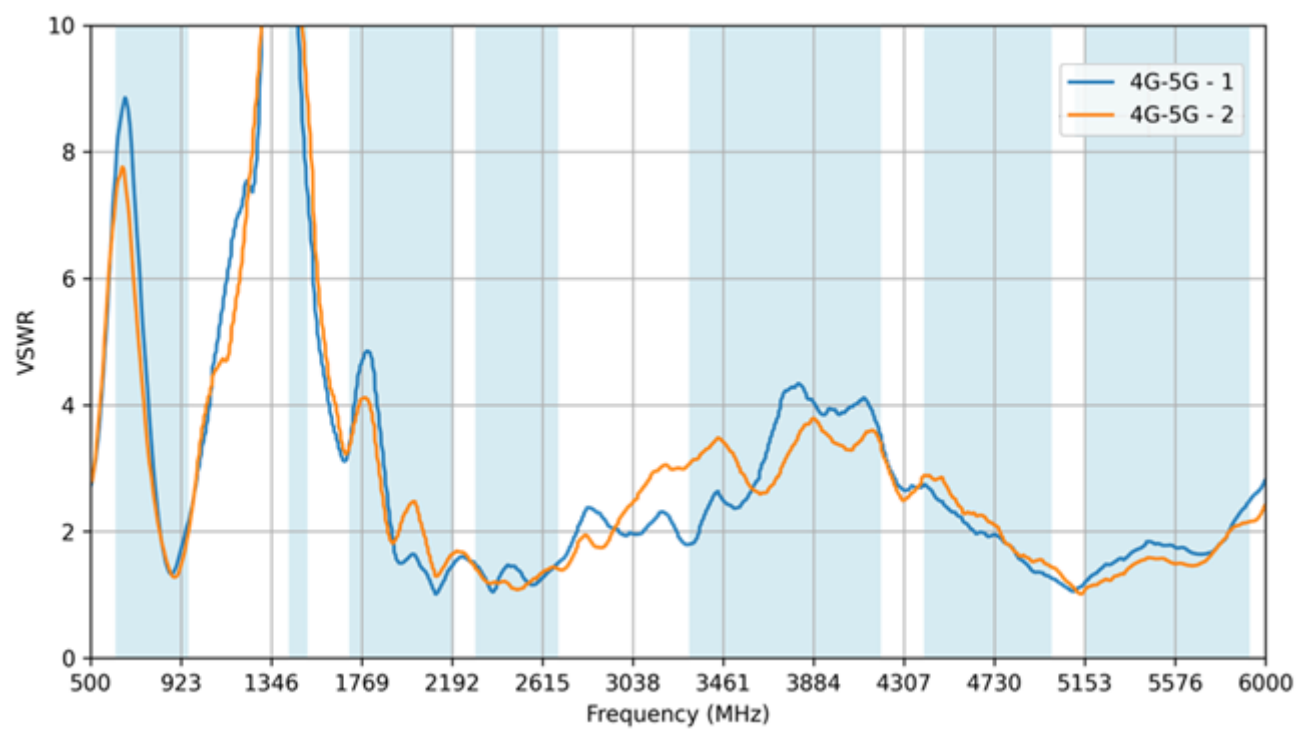


Chamber Test Set-up

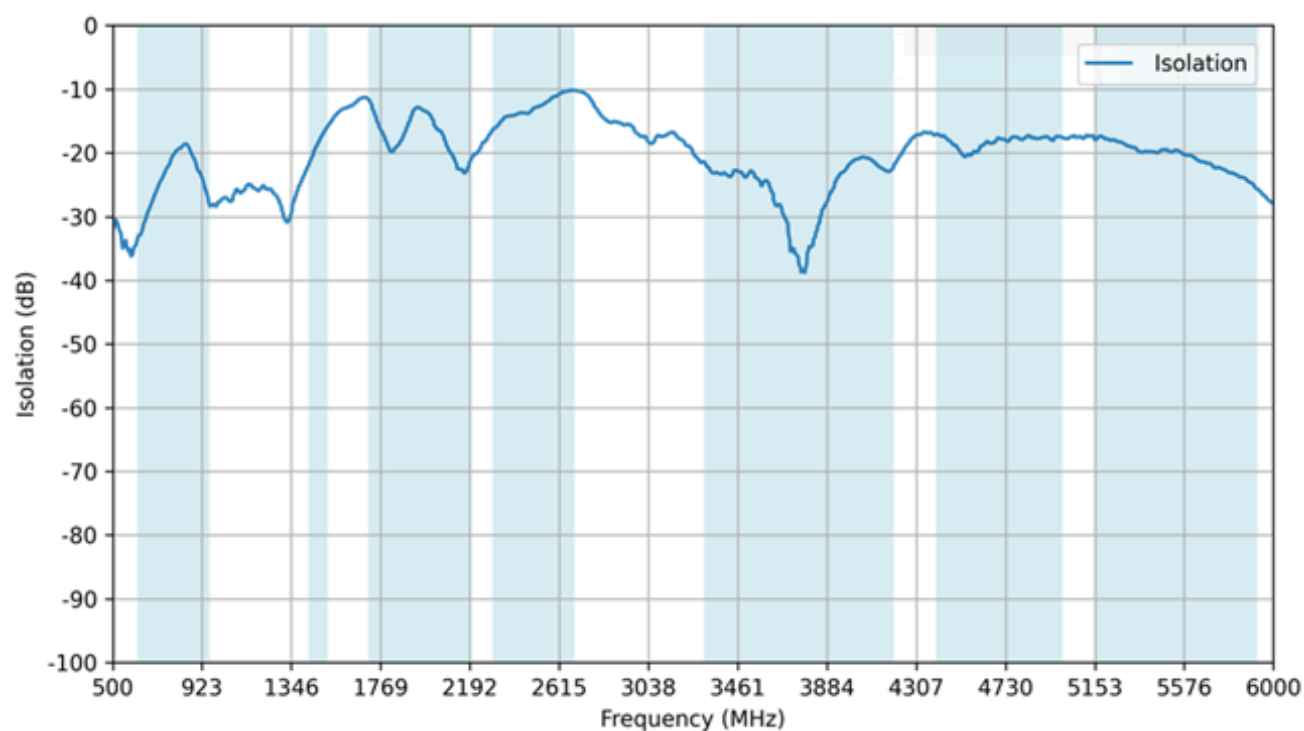
## 7.2 Return Loss



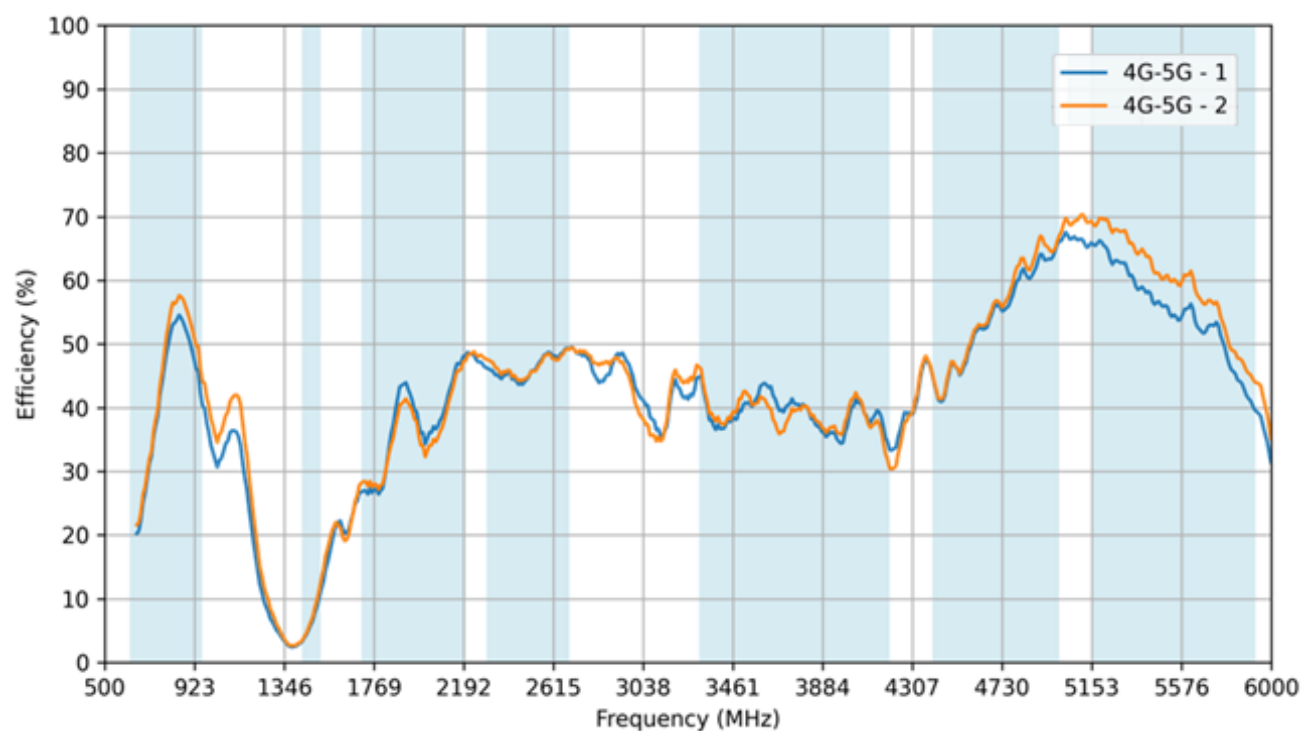
## 7.3 VSWR



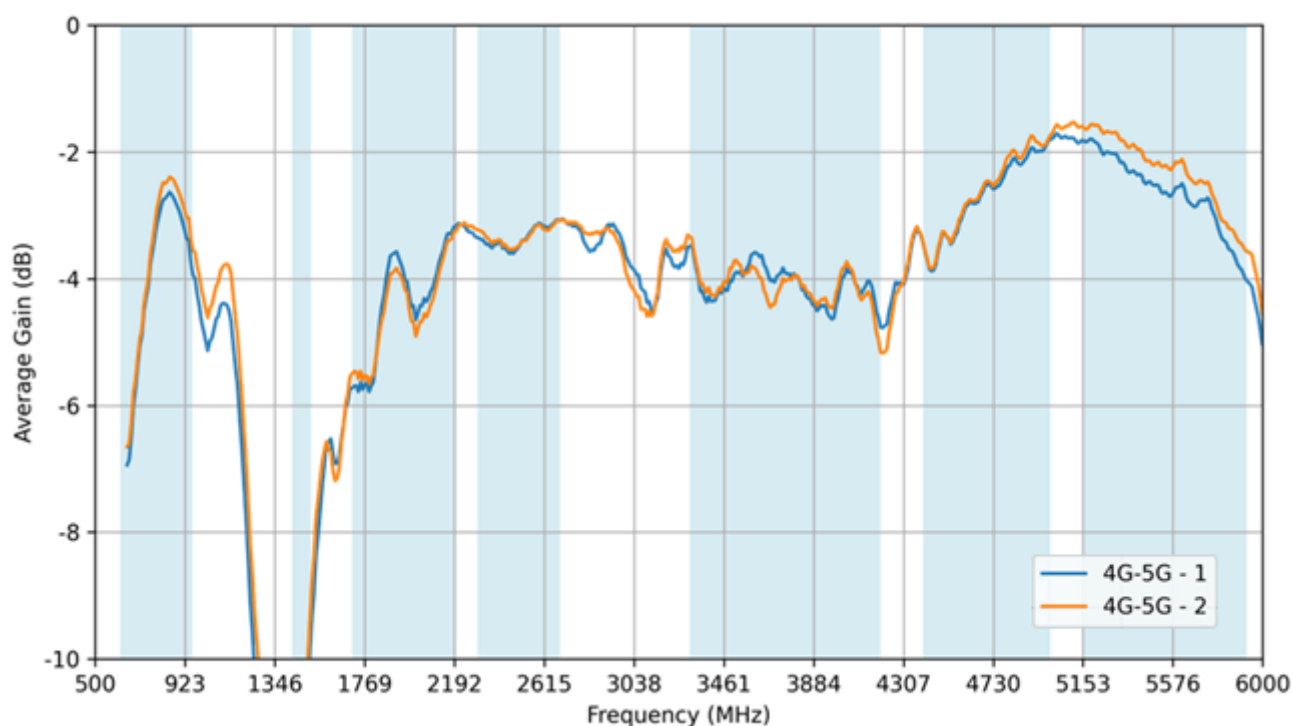
## 7.4 Isolation



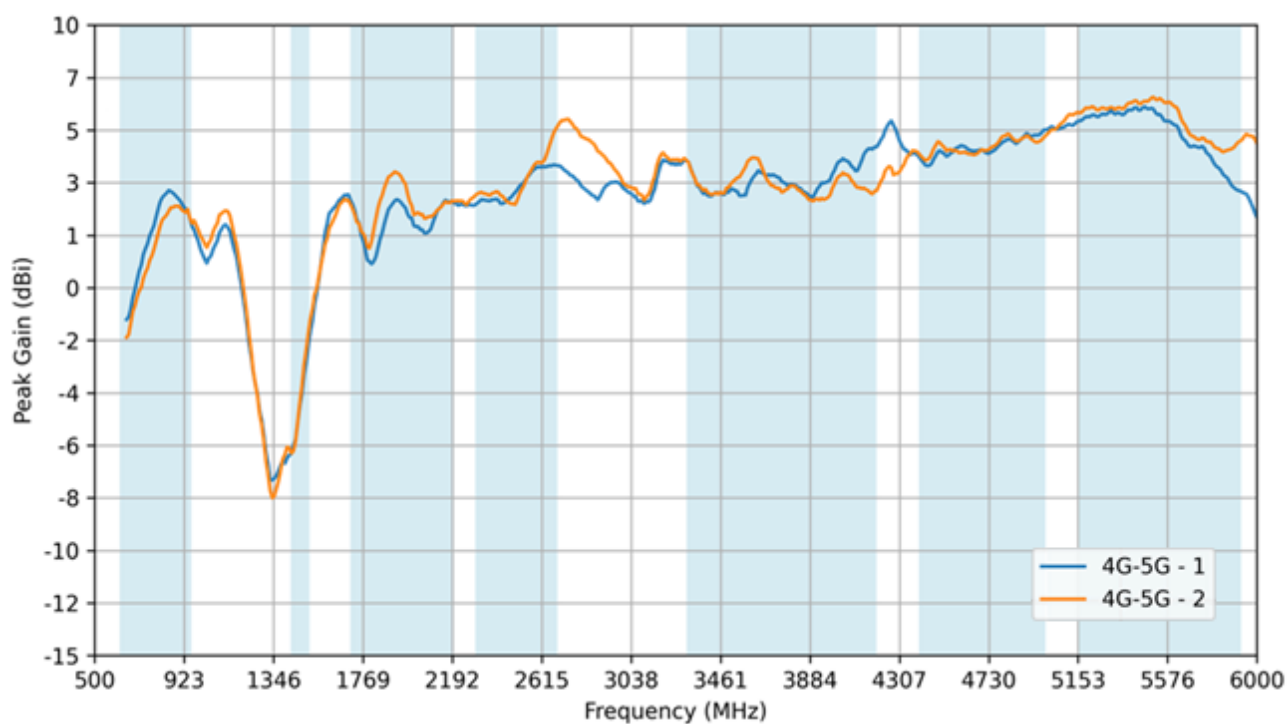
## 7.5 Efficiency



## 7.6 Average Gain



## 7.7 Peak Gain



## 7.8 Test Setup – 2m Cable in Free Space

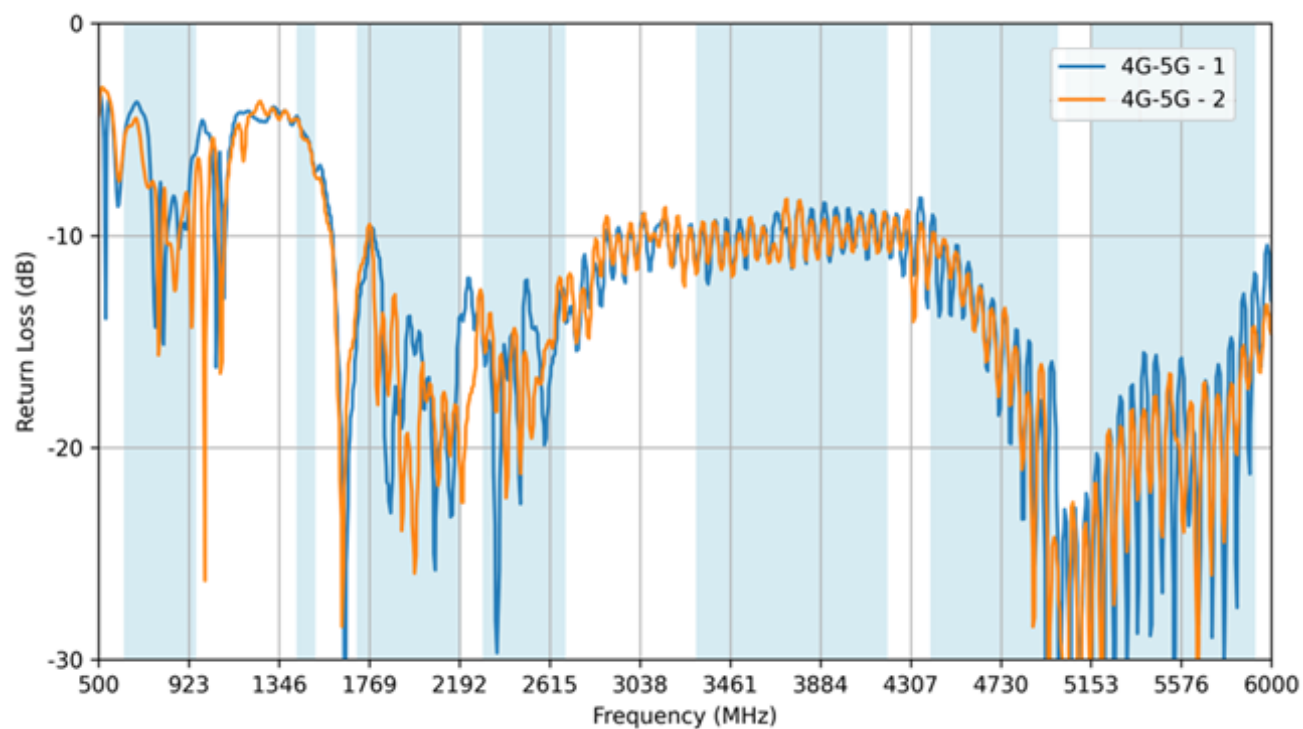
AUT

Vector Network Analyzer

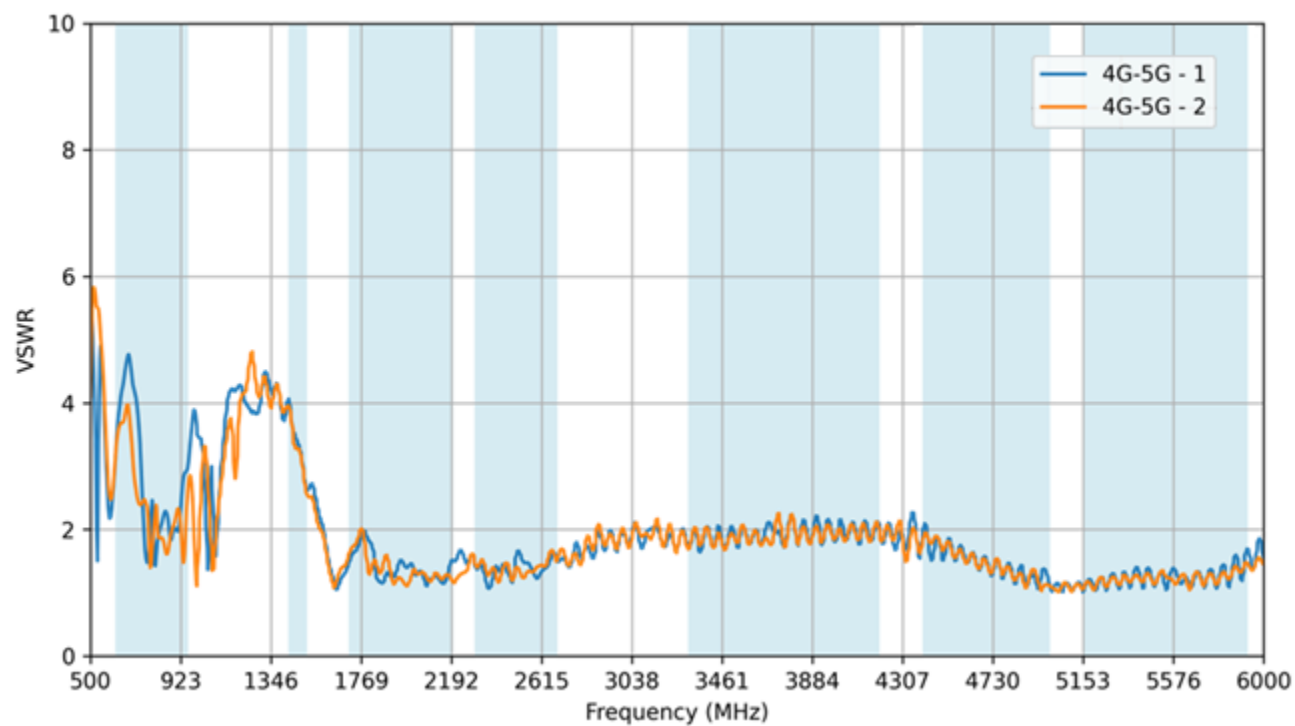


Chamber Test Set-up

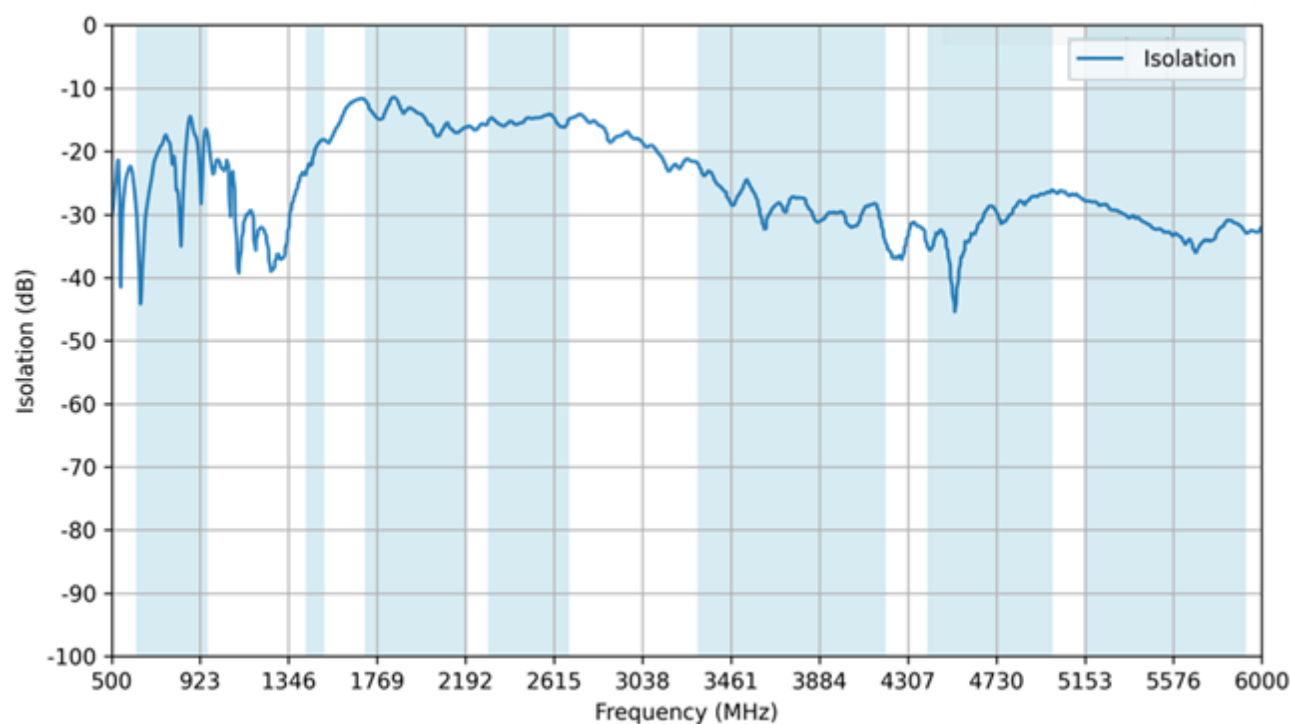
## 7.9 Return Loss



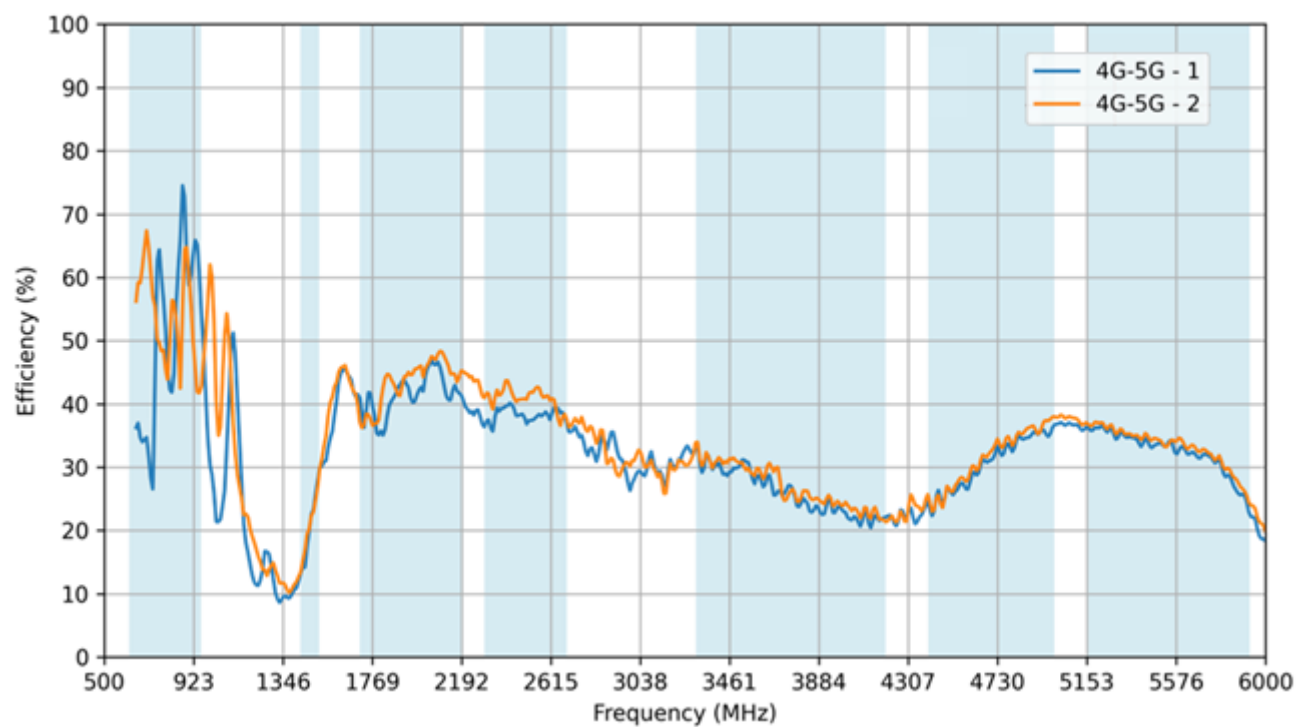
## 7.10 VSWR



## 7.11 Isolation

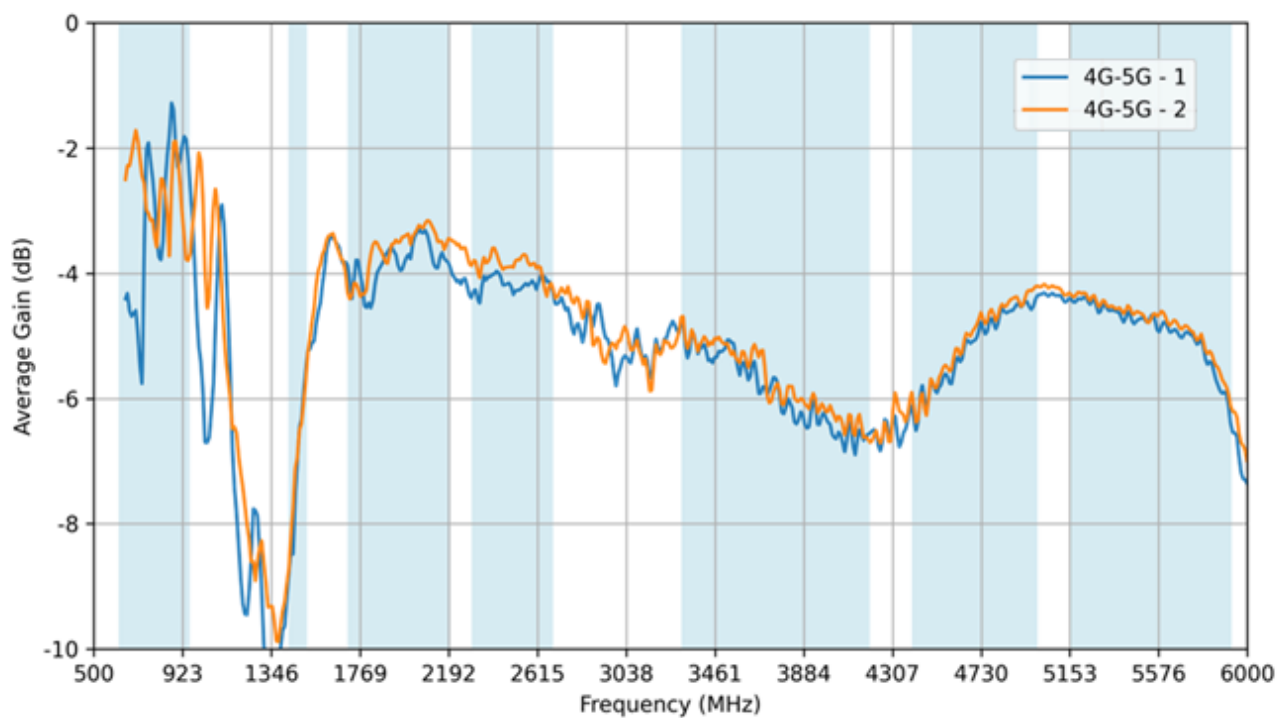


## 7.12 Efficiency

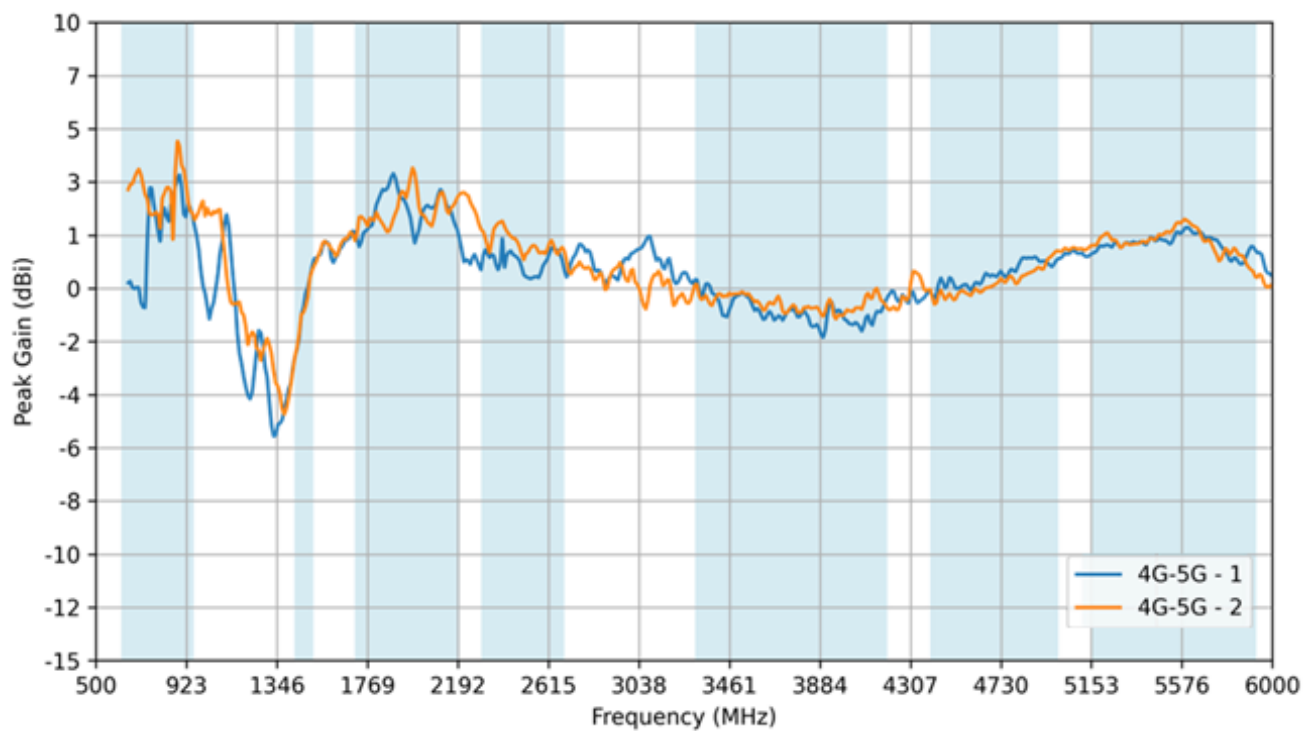




### 7.13 Average Gain



### 7.14 Peak Gain

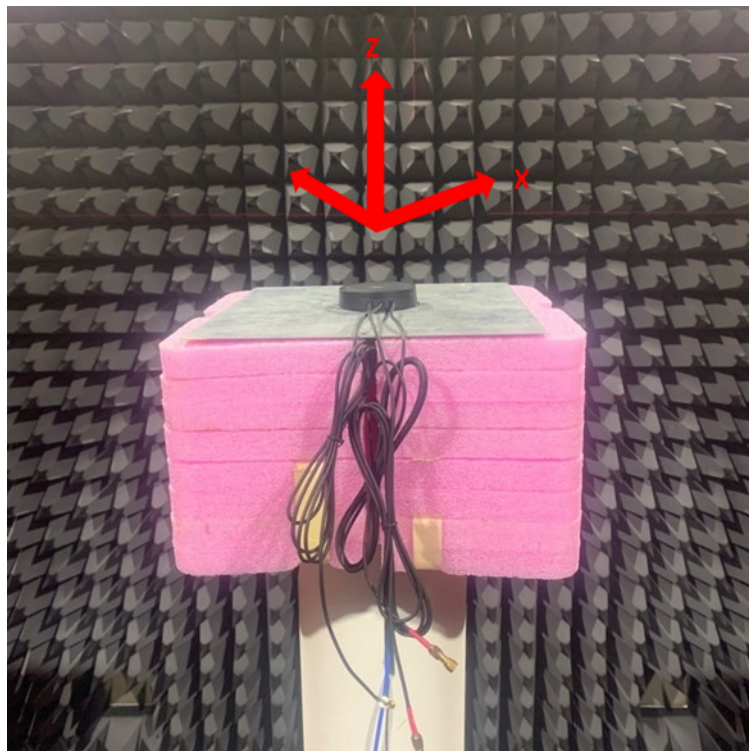


## 7.15 Test Setup – 2m Cable on 30x30cm Ground Plane

AUT

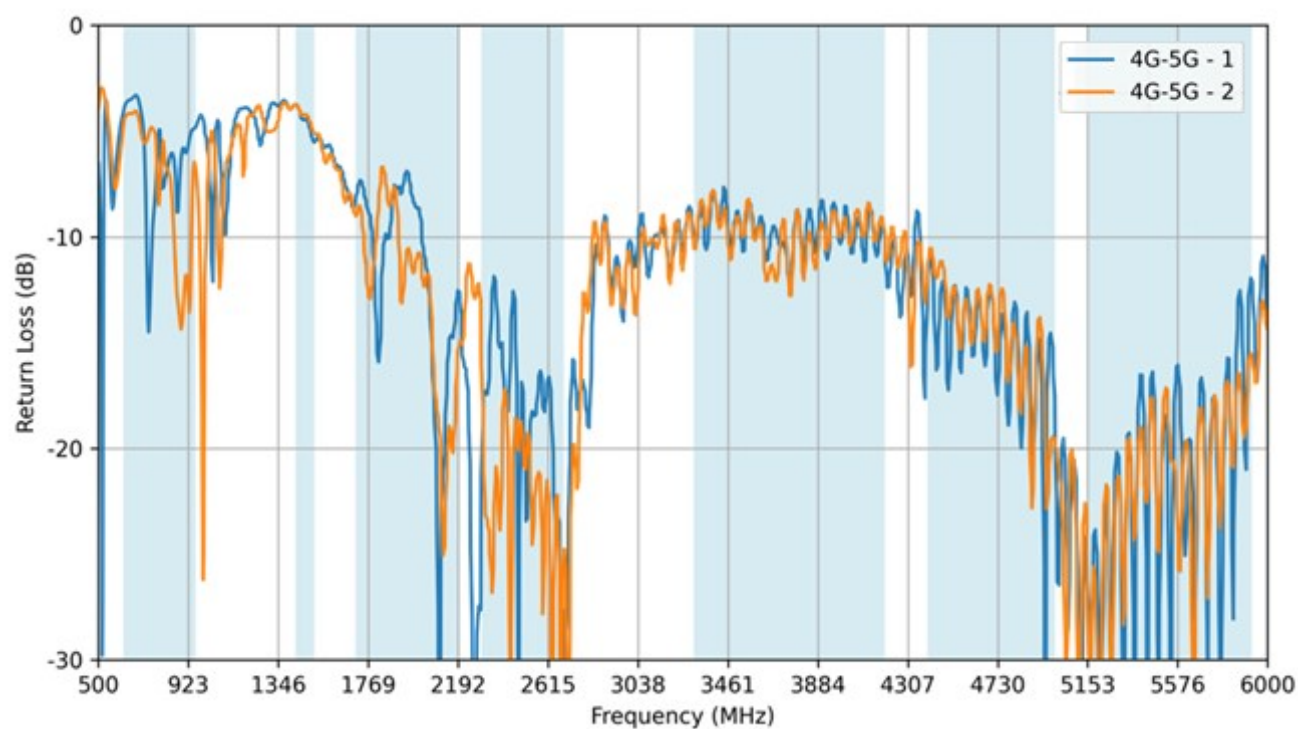


Vector Network Analyzer

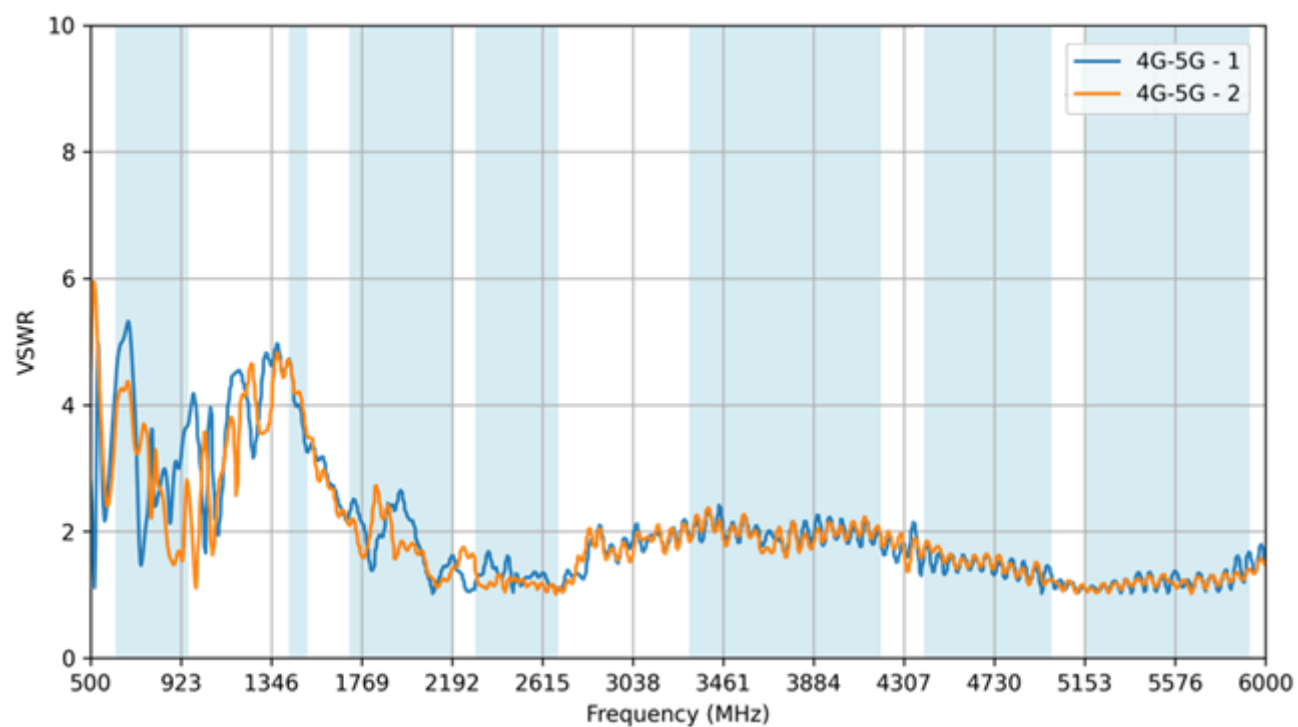


Chamber Test Set-up

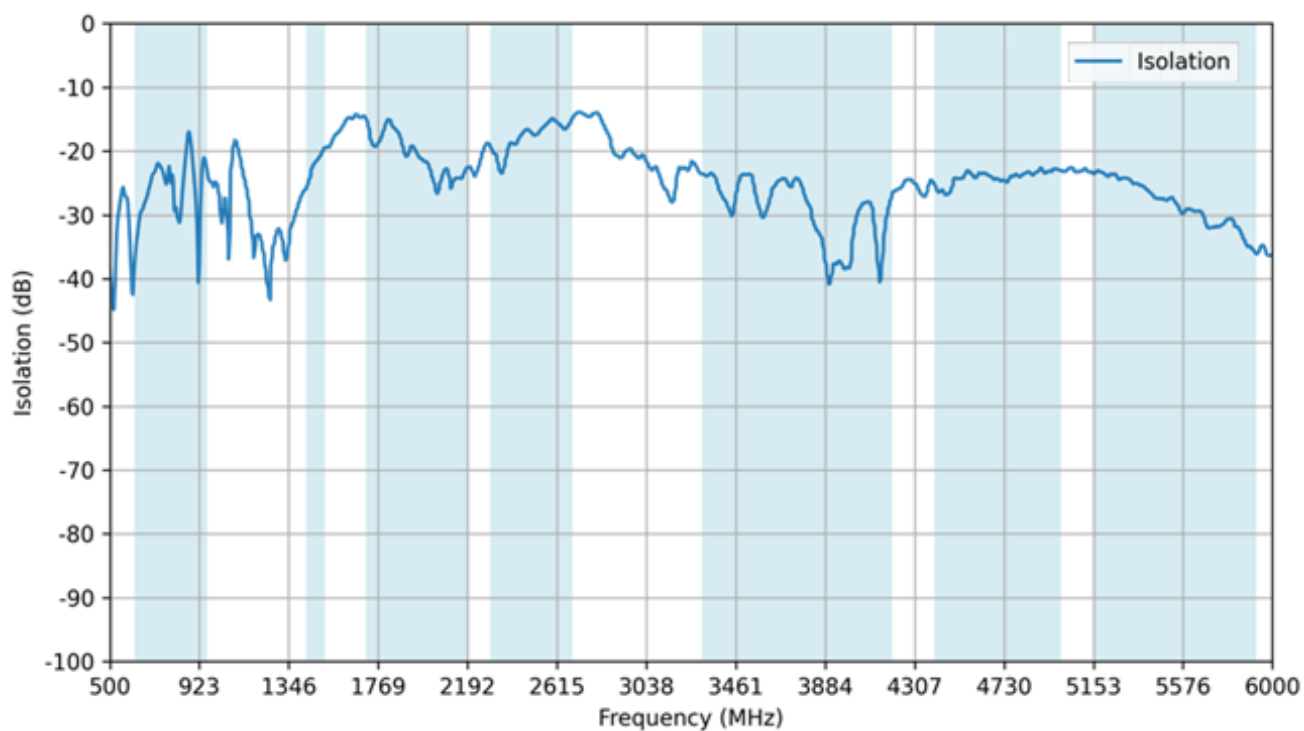
## 7.16 Return Loss



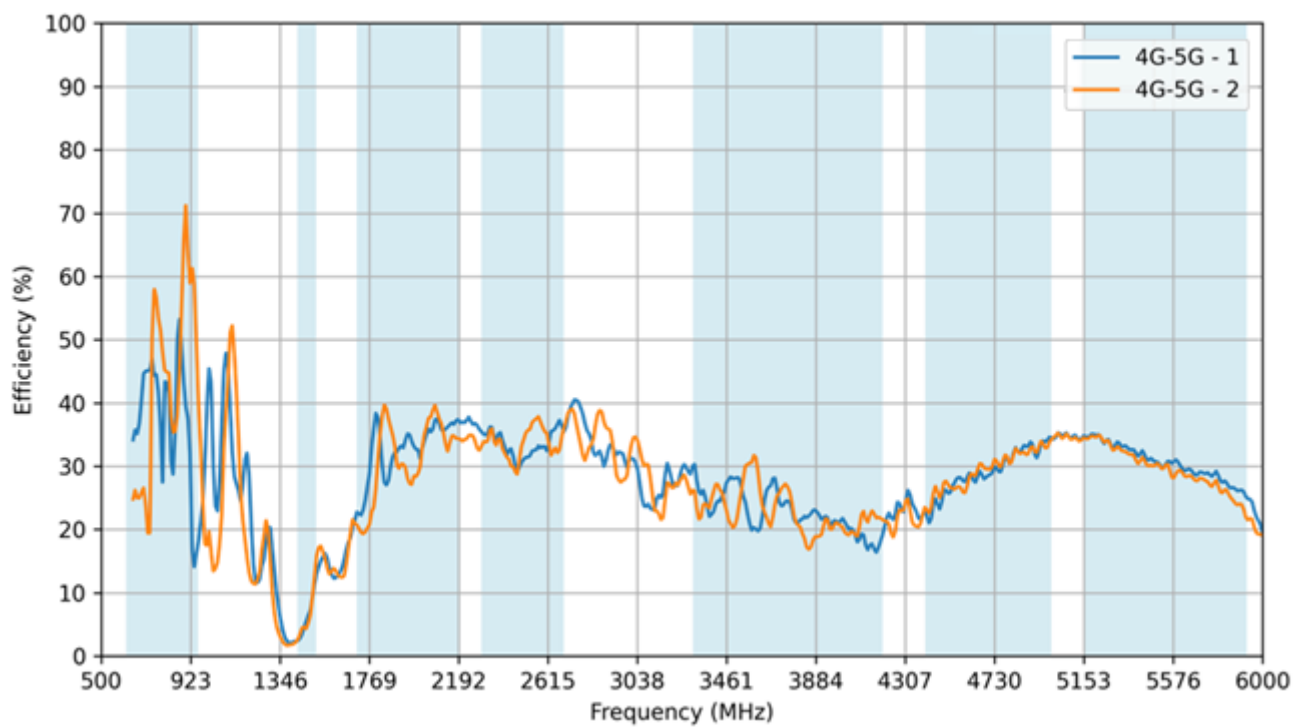
## 7.17 VSWR



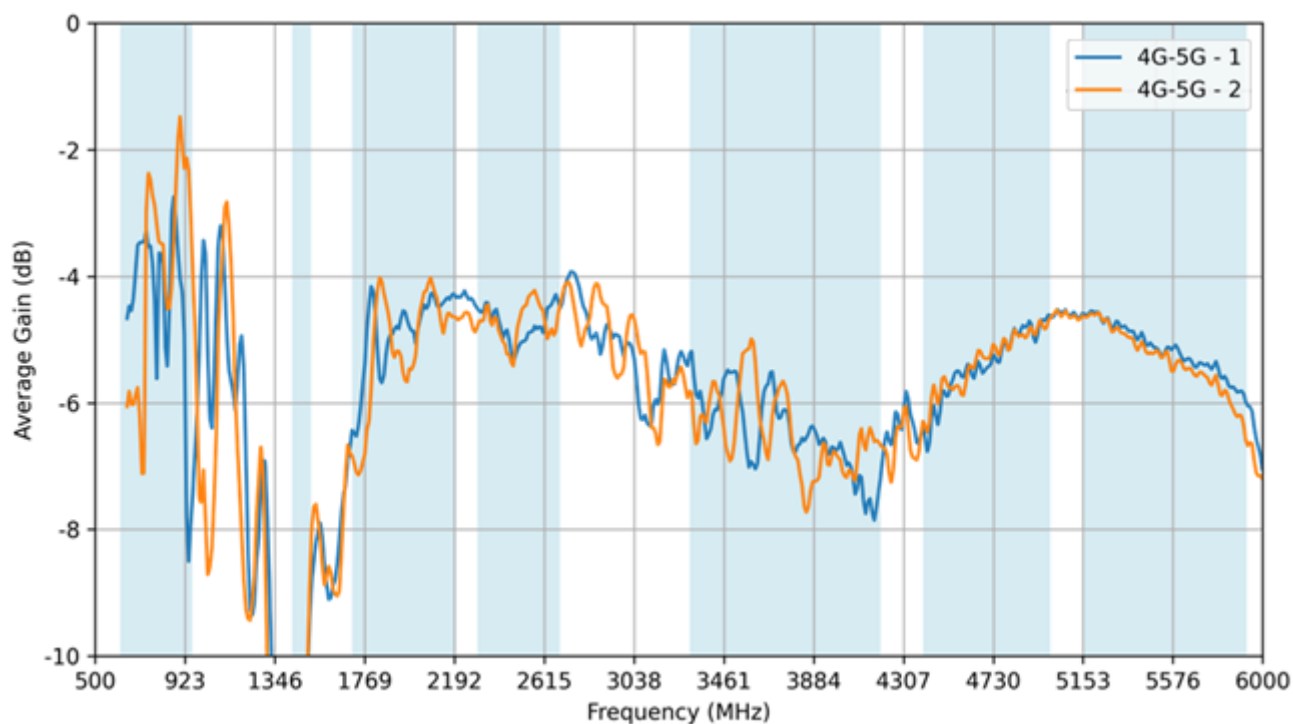
## 7.18 Isolation



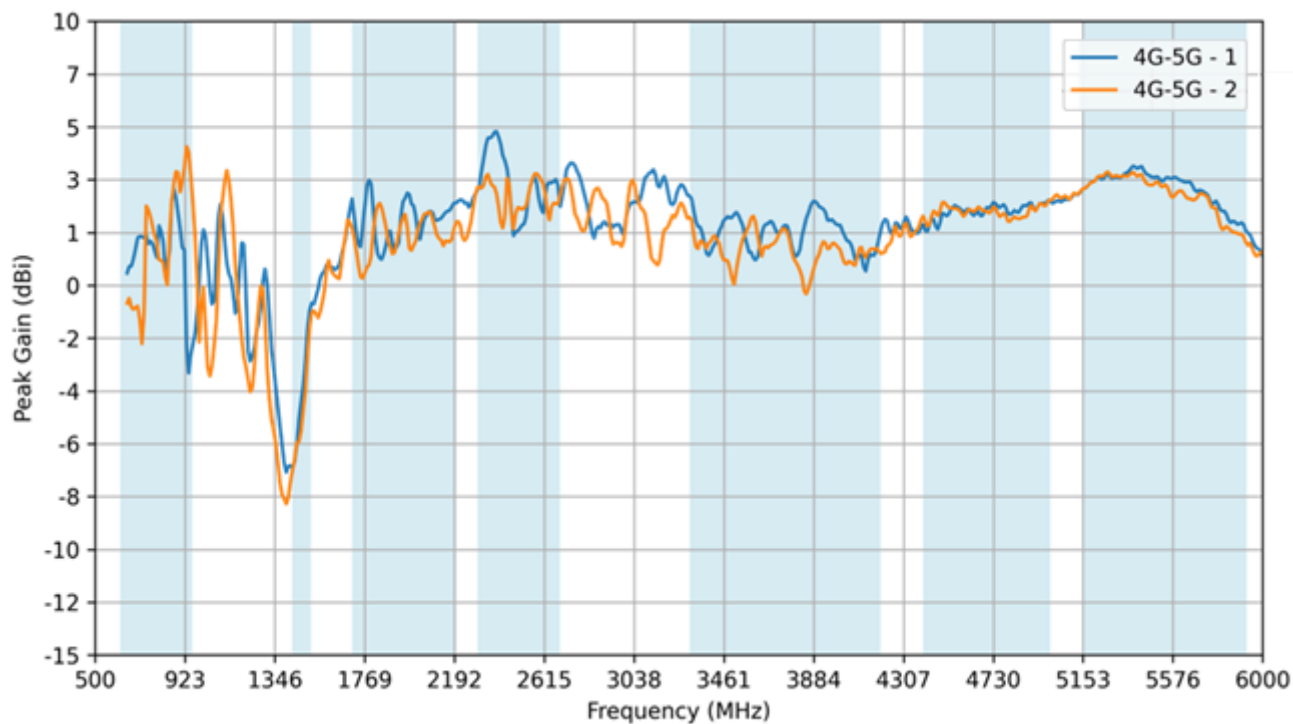
## 7.19 Efficiency



## 7.20 Average Gain



## 7.21 Peak Gain



Changelog for the datasheet

SPE-23-8-173- MA322.A.001

Revision: C (Current Version)

Date:	2025-05-06
Notes:	Added application note back and changed LTE to 4G-5G.
Author:	Gary West

Previous Revisions

Revision: B

Date:	2024-11-05
Notes:	Removed the application note
Author:	Paul Liu

Revision: A (Original First Release)

Date:	2023-06-14
Notes:	
Author:	Jack Conroy



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