TAOGLAS



Datasheet

5G/4G 4*MIMO Cross-Polarized Antenna

Part No:
TGX.04.W.A.001

Description:

White Wideband 400-6000MHz 5G/4G 4*MIMO Cross Polarized Antenna

With Multi-mount Bracket (Wall, Pole and Suction Cup Mounting options)

Features:

Highest efficiency for 450-6000MHz wideband applications

Fully 5G/4G Cellular Operational

Cross Polarized Dipole Antennas

IP67 Rated Enclosure

Omnidirectional Gain Patterns leading to better coverage

Multi-function bracket including Wall, Pole, and Glass Mount options

Cable: 3m TGC-200

Connector: SMA Male Straight – Fully Customizable

Dimensions: 165 * 165 * 149 mm (Including Bracket)

RoHS & Reach Compliant

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1. Introduction



The Taoglas TGX.04.W is a white 4* 5G/4G MIMO cross-polarized omnidirectional dipole antenna with a wide bandwidth covering all worldwide sub 6GHz cellular bands from 400 to 6000MHz. It uses four dipole antennas to deliver the best possible throughput and quality improvements in transmitting and receive signal levels, leading to better coverage and performance, especially in urban environments. It is designed for multiple mounting options to allow for a variety of use cases and is supplied with 3m of low loss cable with SMA(M) connectors as standard.

Typical Applications include:

- Agriculture and Rural 5G
- Coverage enhancement systems
- Commercial Transportation
- Connected Enterprise
- Public Safety and First Responder

The TGX.04 design is an evolution of our hugely successful TG.45 antenna design and it is unrivalled in its ability to cover all wideband 5G/4G Sub 6GHz bands. The antenna is tuned for great performance at the recently established 5GNR bands between 3300 - 4200MHz and covers Band 31 (450MHz) and Band 71 (617MHz) at the lower end of the 5G/4G frequency spectrum. High Efficiency and stable Gain is achievable at each band on all 4 MIMO antennas.

The cross polarized antennas' layout also enhances MIMO performance capabilities, thus improving signal quality. This is achieved by positioning the antenna elements orthogonal to each other aligning with the +/- 45-degree polarised signals received from most base station antennas and in turn, enhances throughput capacity giving the user the best possible cellular performance for their device. The TGX.04 has been designed for typical applications including gateways, routers and wireless access points that require, high efficiency and unrivalled performance.

The robust TGX.04 enclosure is IP67 rated and manufactured from ASA for exceptional mechanical performance. The bracket is designed to allow for multiple mounting options, including wall or pole or mounting and it is supplied with suction cups to facilitate glass mounting. All accessories for each mounting option are included with the product. The TGX.04 is an omnidirectional antenna, but the mounting bracket allows the user to position the antenna and lock it into place for optimal performance.

The TGC-200 cable and SMA(M) connector are fully customizable depending on your specific requirements. Contact your regional Taoglas customer support team for more information.

2. Specifications

Electrical									
Band	**Frequency (MHz)**		**Efficiency (%)**	**Average Gain (dB)**	**Peak Gain (dBi)**	**Impedance**	**Max Input Power**	**Polarization**	**Radiation Pattern**
4G/3G Band 31,87,88	430~470	MIMO 1	36.4	-4.39	1.0	50 Ω	10W	Cross Polarized Linear Antennas	Omni-Directional
		MIMO 2	39.5	-4.04	-0.4				
		MIMO 3	37.1	-4.31	-0.2				
		MIMO 4	29.5	-5.3	0.2				
5GNR/4G Band 71	617~698	MIMO 1	32.3	-4.91	0.7				
		MIMO 2	26.7	-5.73	1.1				
		MIMO 3	29	-5.38	-0.6				
		MIMO 4	33.9	-4.7	1.9				
4G/3G Band 12,13,14,17,28,29	698~806	MIMO 1	50	-3.01	2.7				
		MIMO 2	34.3	-4.65	1.9				
		MIMO 3	45.4	-3.43	0.9				
		MIMO 4	50.1	-3	2.3				
4G/3G/NB-IoT/Cat M Band 5,8,18,19,20,26,27	824~960	MIMO 1	57.2	-2.42	2.8				
		MIMO 2	50.1	-3	2.7				
		MIMO 3	53.5	-2.72	2.3				
		MIMO 4	37.1	-4.3	2.3				
5GNR/4G Band 21,32,74,75,76	1427~1518	MIMO 1	43	-3.67	2.2				
		MIMO 2	43.7	-3.6	3.1				
		MIMO 3	34.3	-4.65	1.3				
		MIMO 4	38.2	-4.18	2.4				
4G/3G Band 1,2,3,4,9,23,25,35,39,66	1710~2200	MIMO 1	49.7	-3.04	3.6				
		MIMO 2	42.1	-3.76	4.2				
		MIMO 3	42.7	-3.69	3.3				
		MIMO 4	48.3	-3.16	2.7				
4G/3G Band 7,30,38,40,41	2300~2690	MIMO 1	38	-4.2	3.7				
		MIMO 2	34	-4.68	4.3				
		MIMO 3	35	-4.56	3.8				
		MIMO 4	37.2	-4.3	3.0				
5GNR/4G Band 22,42,48,77,78,79	3300~5000	MIMO 1	39.7	-4.03	3.5				
		MIMO 2	39.2	-4.08	3.3				
		MIMO 3	38.8	-4.15	3.5				
		MIMO 4	40.6	-3.94	2.8				
LTE5200/ Wi-Fi 5800	5150~5925	MIMO 1	28.7	-5.42	1.6				
		MIMO 2	29	-5.38	2.2				
		MIMO 3	28.5	-5.45	2.3				
		MIMO 4	28.4	-5.47	1.5				

Cross Polar Discrimination (dB) – XPD			
Band	**Frequency (MHz)**		**YZ Plane (Azimuth)**
4G/3G Band 31	430~470	MIMO 1	22.58
		MIMO 2	19.76
		MIMO 3	17.03
		MIMO 4	14.80
5GNR/4G Band 71	617~698	MIMO 1	18.80
		MIMO 2	15.56
		MIMO 3	17.29
		MIMO 4	23.60
4G/3G Band 12,13,14,17,28,29	698~806	MIMO 1	25.85
		MIMO 2	23.17
		MIMO 3	16.32
		MIMO 4	24.70
4G/3G/NB-IoT/Cat M Band 5,8,18,19,20,26,27	824~960	MIMO 1	26.24
		MIMO 2	25.46
		MIMO 3	18.42
		MIMO 4	31.80
5GNR/4G Band 21,32,74,75,76	1427~1518	MIMO 1	17.43
		MIMO 2	23.08
		MIMO 3	16.29
		MIMO 4	18.60
4G/3G Band 1,2,3,4,9,23,25,35,39,66	1710~2200	MIMO 1	26.31
		MIMO 2	25.16
		MIMO 3	20.84
		MIMO 4	20.40
4G/3G Band 7,30,38,40,41	2300~2690	MIMO 1	25.88
		MIMO 2	29.85
		MIMO 3	17.93
		MIMO 4	18.80
5GNR/4G Band 22,42,48,77,78,79	3300~5000	MIMO 1	26.0
		MIMO 2	26.5
		MIMO 3	20.2
		MIMO 4	19.0
LTE5200/ Wi-Fi 5800	5150~5925	MIMO 1	24.57
		MIMO 2	18.44
		MIMO 3	24.07
		MIMO 4	18.50

*XPD is the average of the maximum Cross Polar Discrimination at each frequency band

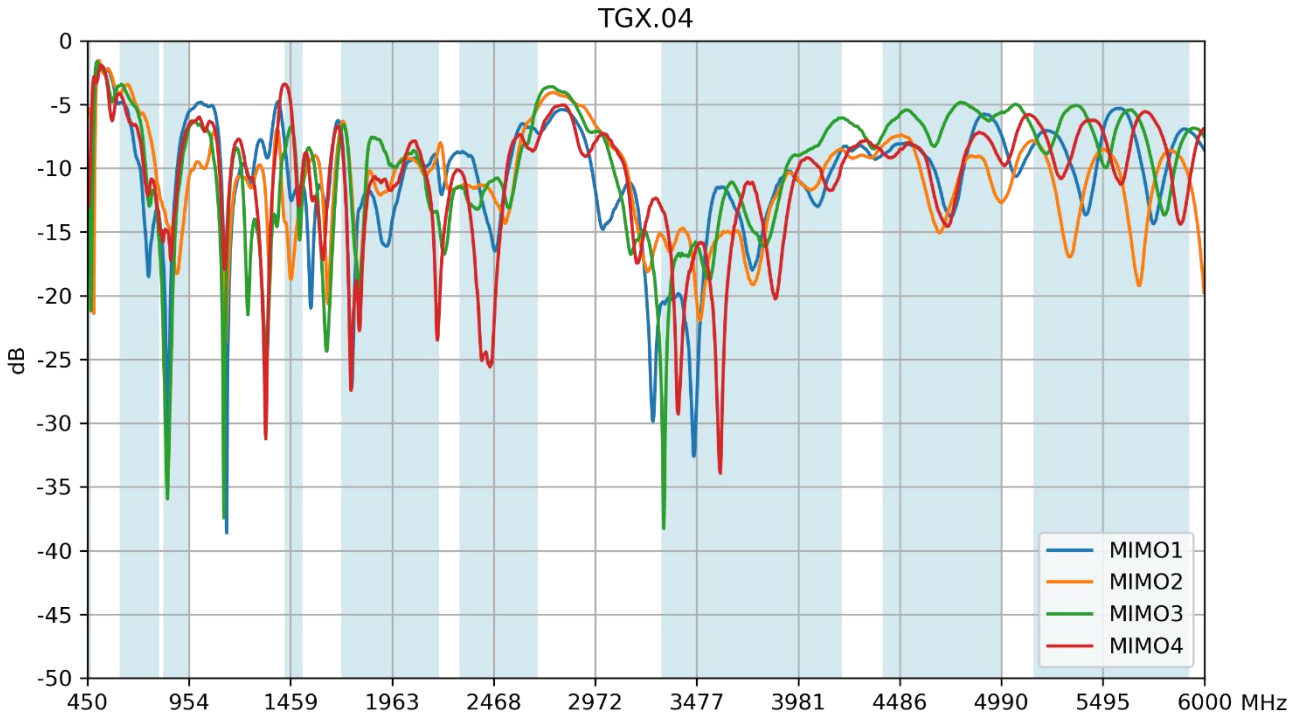
Mechanical	
Dimensions	165*165* 149mm
Weight	900g
Plastic Material	ASA
Waterproof Rating	IP67
Cable	3m TGC-200
Connector	SMA (M) Straight
Environmental	
Temperature Range	-40°C to 85°C

5G/4G Bands			
Band Number	5GNR / FR1 / LTE / LTE-Advanced / WCDMA / HSPA / HSPA+ / TD-SCDMA		
	Uplink	**Downlink**	**Covered**
1	UL: 1920 to 1980	DL: 2110 to 2170	✓
2	UL: 1850 to 1910	DL: 1930 to 1990	✓
3	UL: 1710 to 1785	DL: 1805 to 1880	✓
4	UL: 1710 to 1755	DL: 2110 to 2155	✓
5	UL: 824 to 849	DL: 869 to 894	✓
7	UL: 2500 to 2570	DL:2620 to 2690	✓
8	UL: 880 to 915	DL: 925 to 960	✓
9	UL: 1749.9 to 1784.9	DL: 1844.9 to 1879.9	✓
11	UL: 1427.9 to 1447.9	DL: 1475.9 to 1495.9	✓
12	UL: 699 to 716	DL: 729 to 746	✓
13	UL: 777 to 787	DL: 746 to 756	✓
14	UL: 788 to 798	DL: 758 to 768	✓
17	UL: 704 to 716	DL: 734 to 746	✓
18	UL: 815 to 830	DL: 860 to 875	✓
19	UL: 830 to 845	DL: 875 to 890	✓
20	UL: 832 to 862	DL: 791 to 821	✓
21	UL: 1447.9 to 1462.9	DL: 1495.9 to 1510.9	✓
22	UL: 3410 to 3490	DL: 3510 to 3590	✓
23	UL:2000 to 2020	DL: 2180 to 2200	✓
24	UL:1625.5 to 1660.5	DL: 1525 to 1559	✓
25	UL: 1850 to 1915	DL: 1930 to 1995	✓
26	UL: 814 to 849	DL: 859 to 894	✓
27	UL: 807 to 824	DL: 852 to 869	✓
28	UL: 703 to 748	DL: 758 to 803	✓
29	UL: -	DL: 717 to 728	✓
30	UL: 2305 to 2315	DL: 2350 to 2360	✓
31	UL: 452.5 to 457.5	DL: 462.5 to 467.5	✓
32	UL: -	DL: 1452 - 1496	✓
35	1850 to 1910		✓
38	2570 to 2620		✓
39	1880 to 1920		✓
40	2300 to 2400		✓
41	2496 to 2690		✓
42	3400 to 3600		✓
43	3600 to 3800		✓
48	3550 to 3700		✓
66	UL: 1710-1780	DL: 2110-2200	✓
71	617 to 698		✓
74/75/76	1427 to 1518		✓
77	3300 to 4200		✓
78	3300 to 3800		✓
79	4400 to 5000		✓
87	410 to 425		✓
88	412 to 427		✓

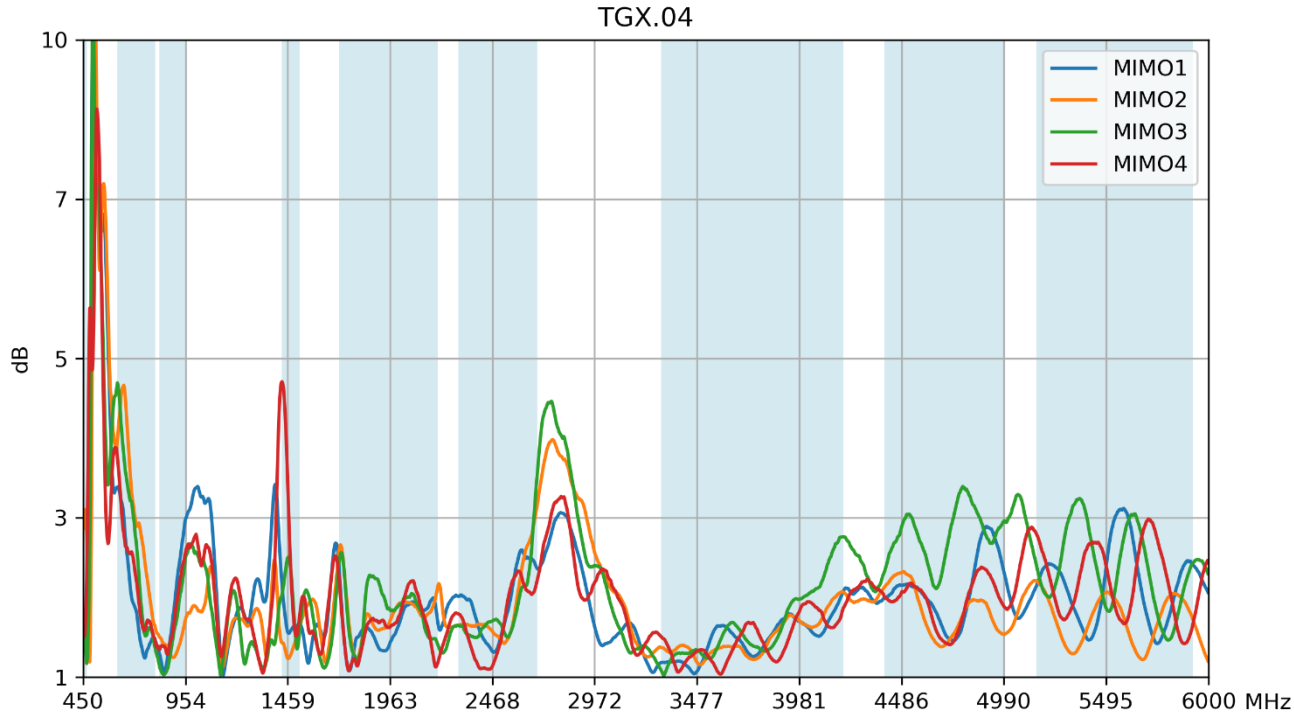
*Tested with 3m Cable in Free Space

3. Antenna Characteristics

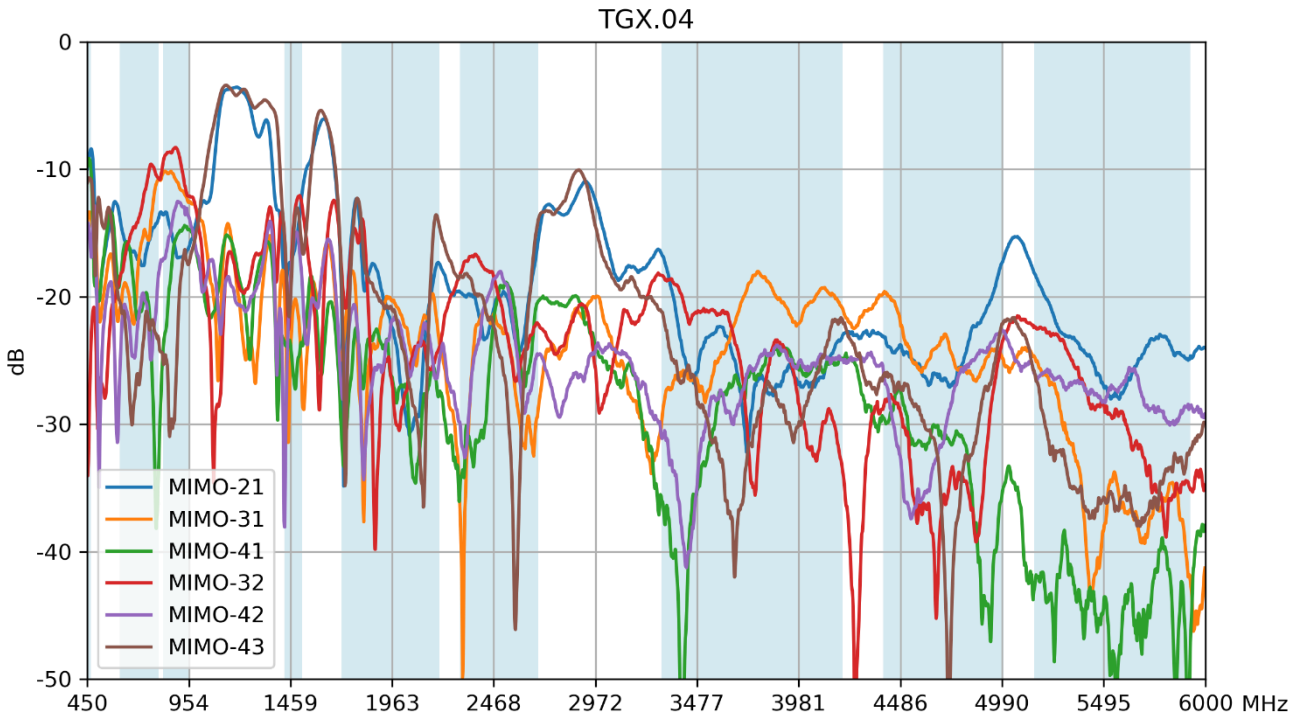
3.1 Return Loss



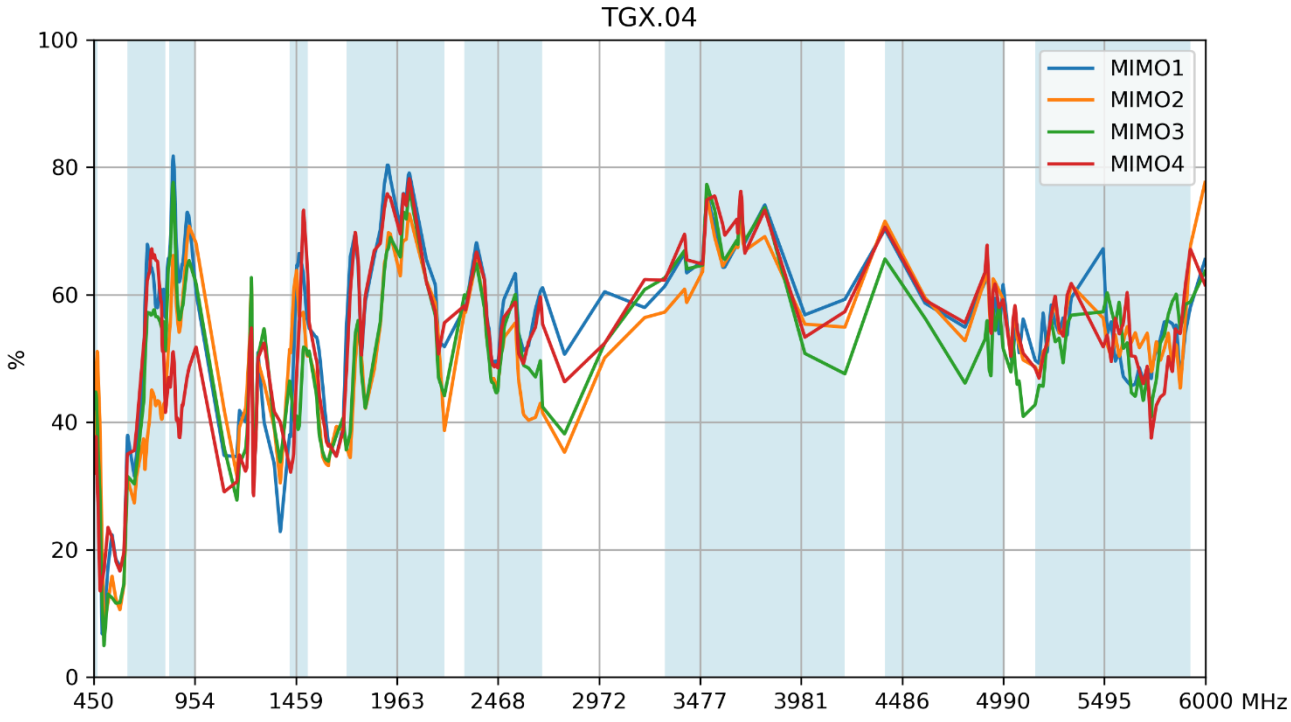
3.2 VSWR



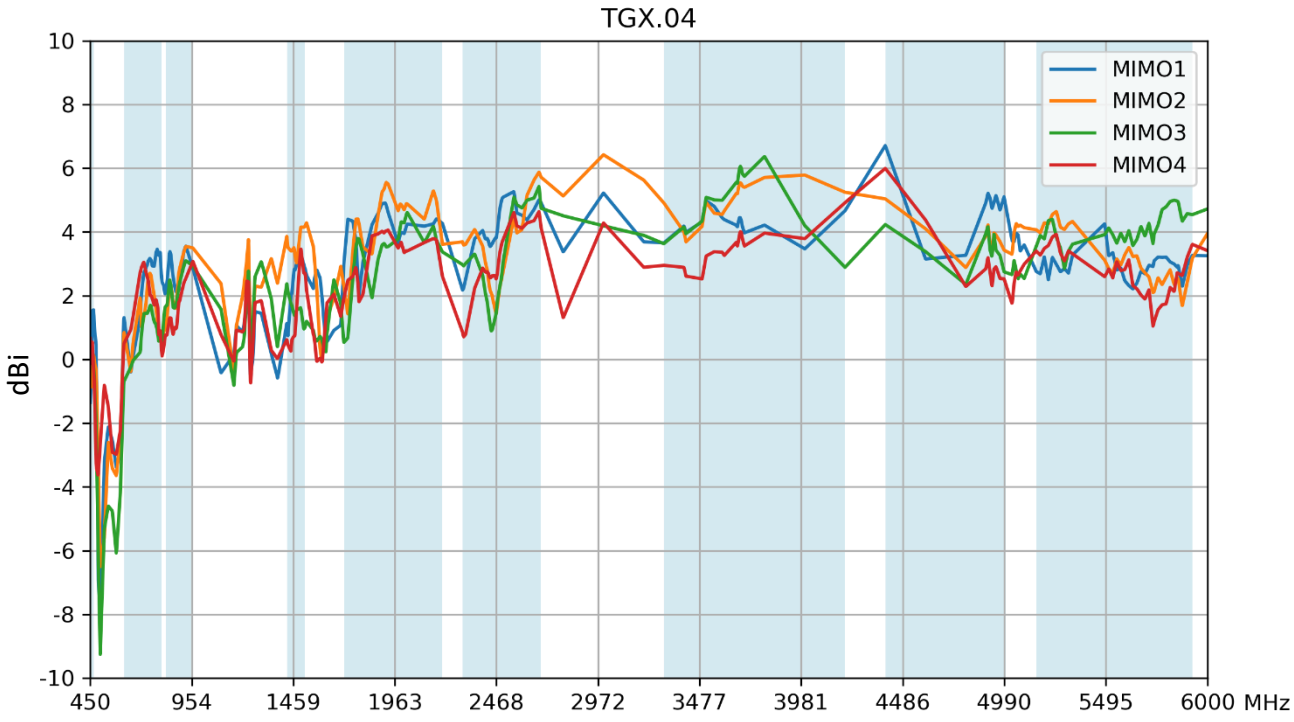
3.3 Isolation



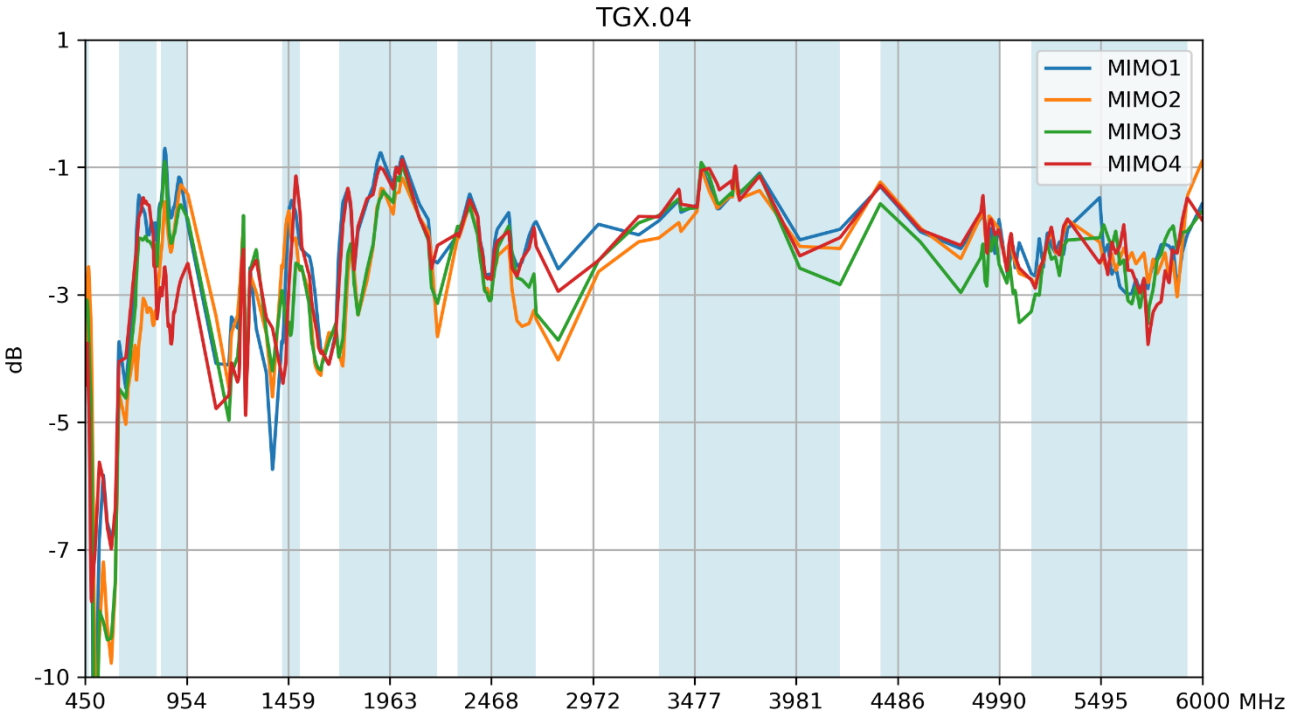
3.4 Efficiency



3.5 Peak Gain

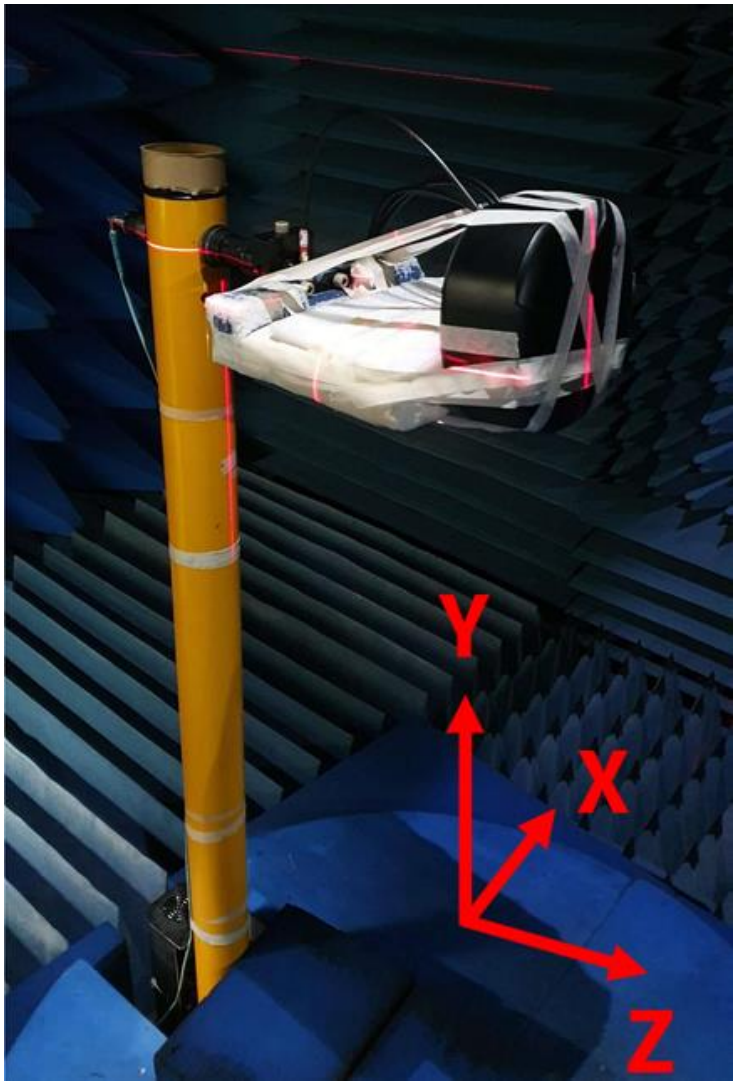


3.6 Average Gain



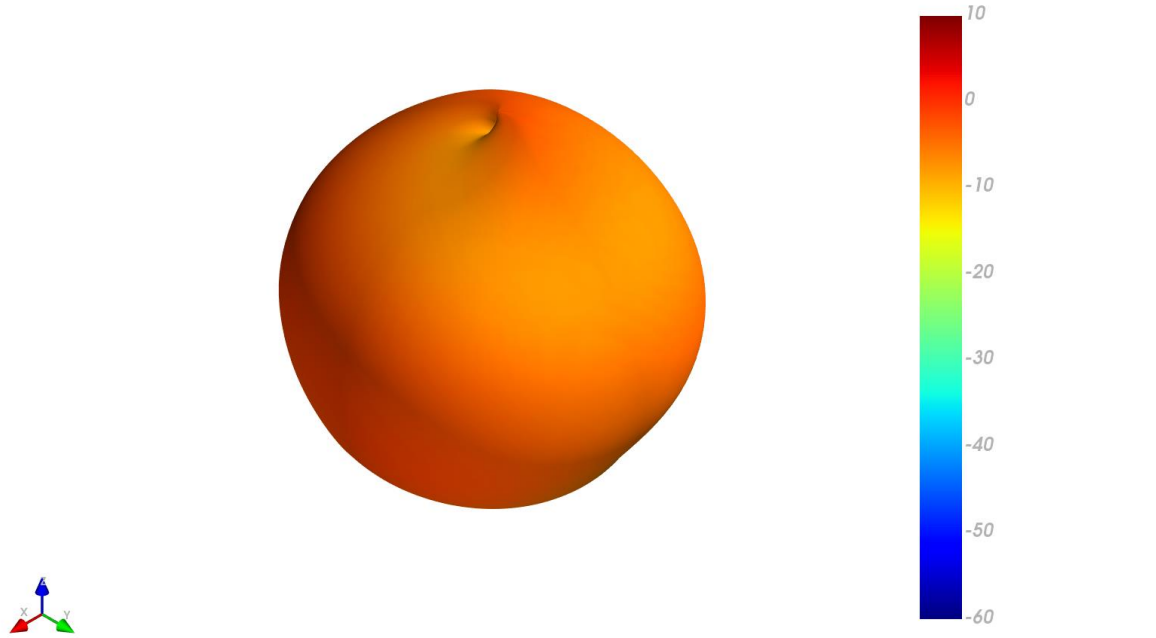
4. Radiation Patterns

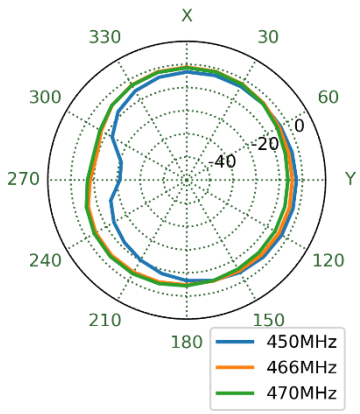
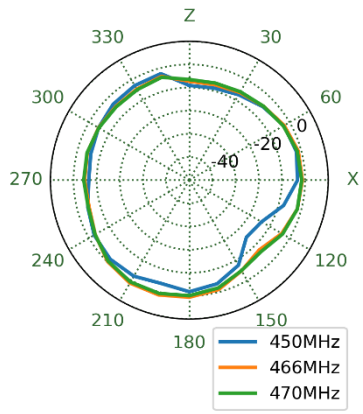
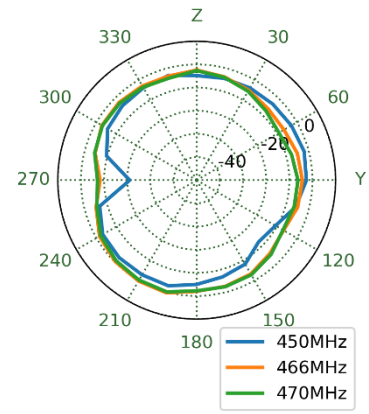
4.1 Test Setup – in Free Space



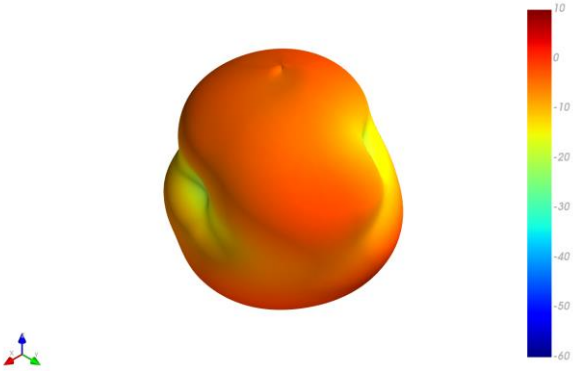
4.2 3D and 2D Radiation Patterns – MIMO 1

466MHz

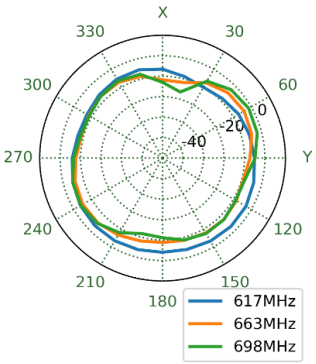


XY Plane	XZ Plane	YZ Plane
		

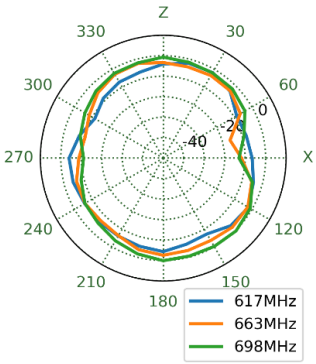
663MHz



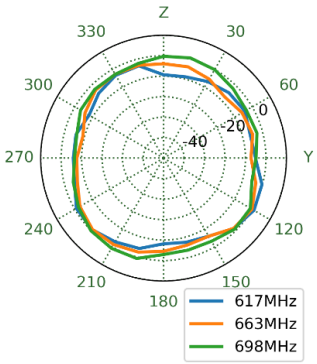
XY Plane



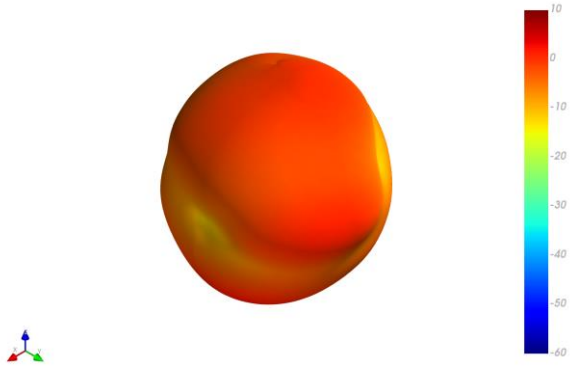
XZ Plane



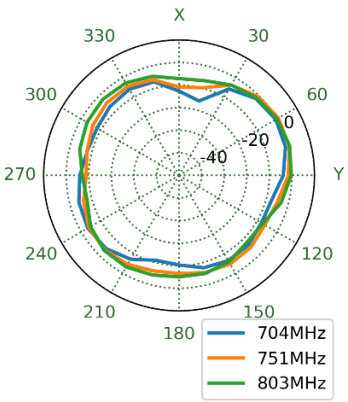
YZ Plane



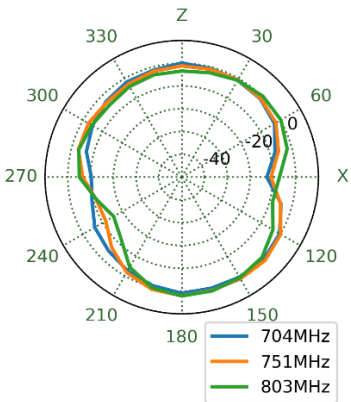
751MHz



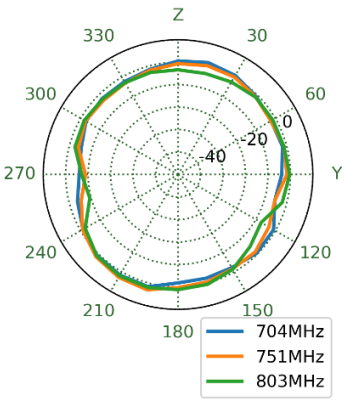
XY Plane



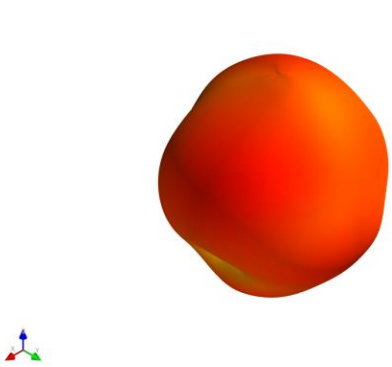
XZ Plane



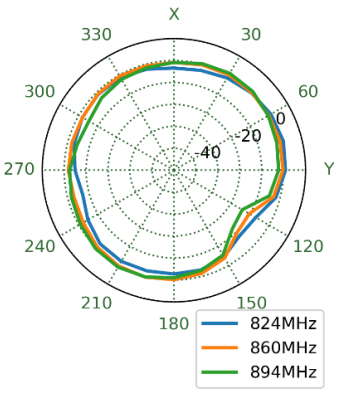
YZ Plane



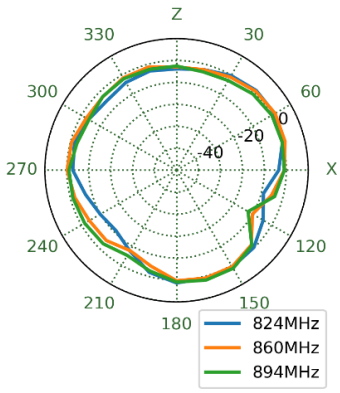
860MHz



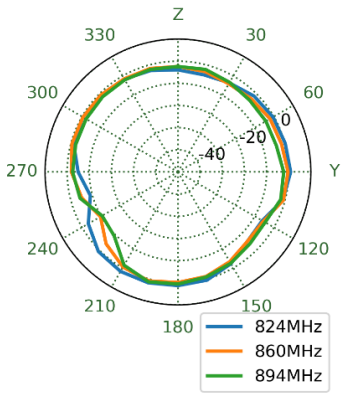
XY Plane



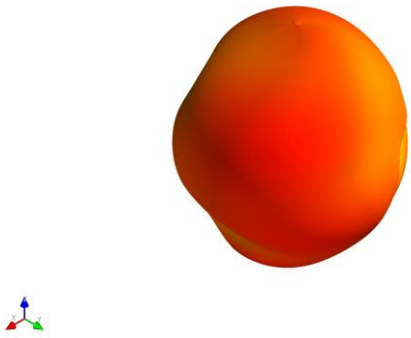
XZ Plane



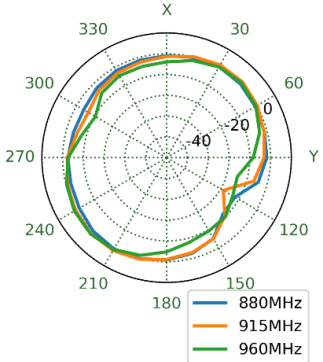
YZ Plane



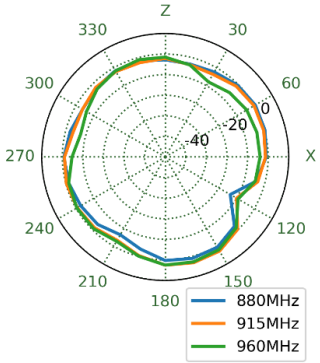
915MHz



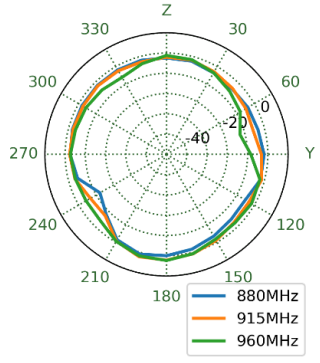
XY Plane



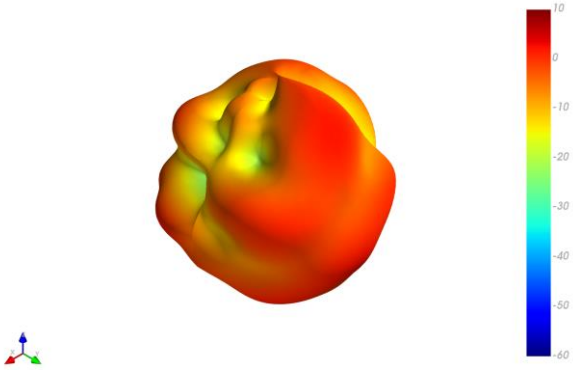
XZ Plane



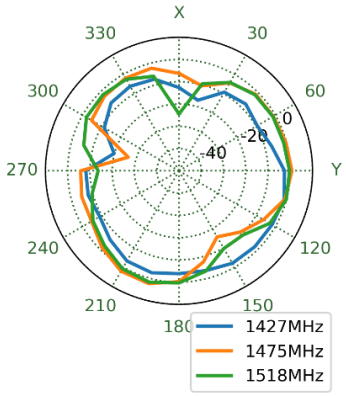
YZ Plane



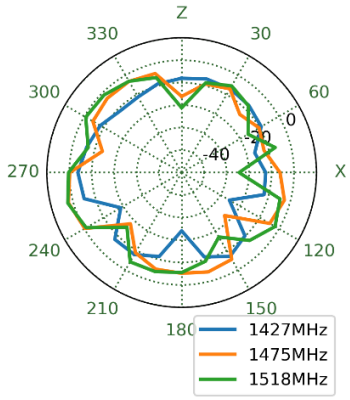
1475MHz



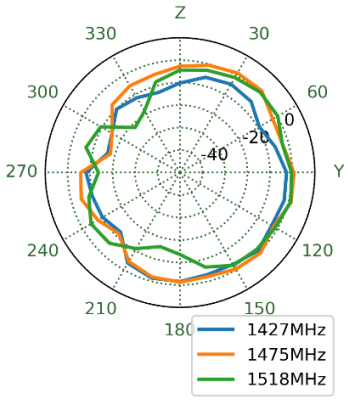
XY Plane



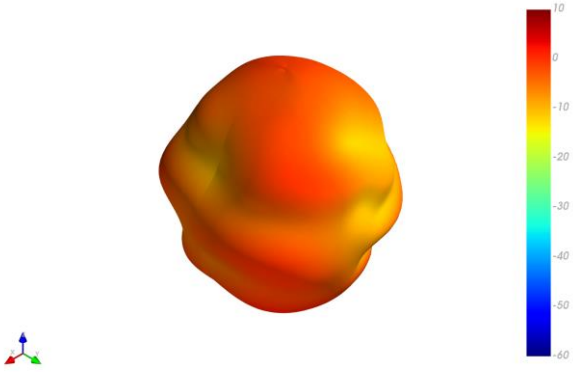
XZ Plane



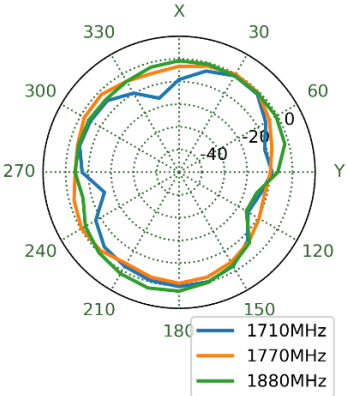
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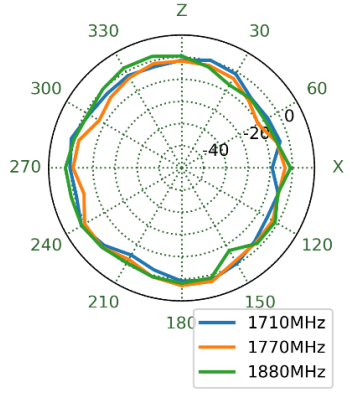
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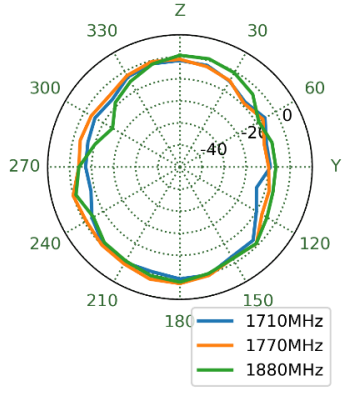
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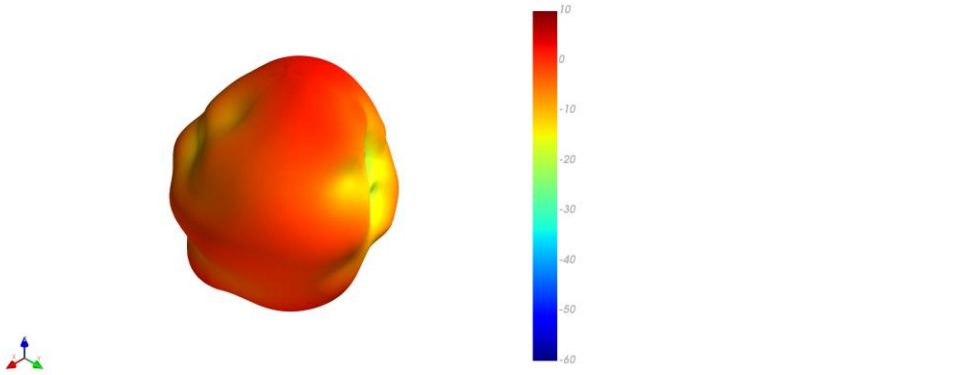
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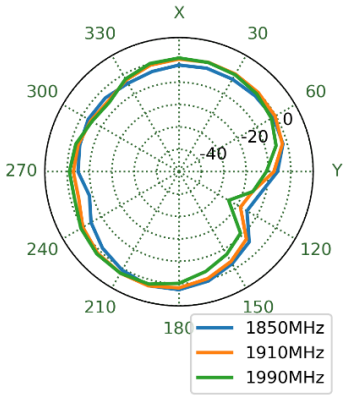
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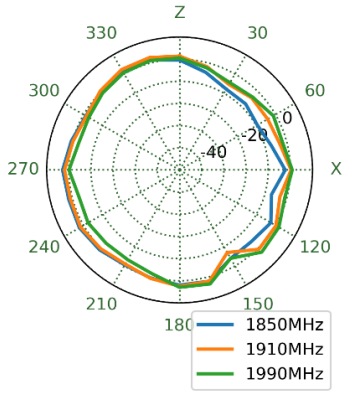
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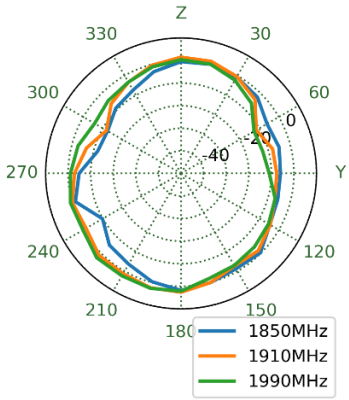
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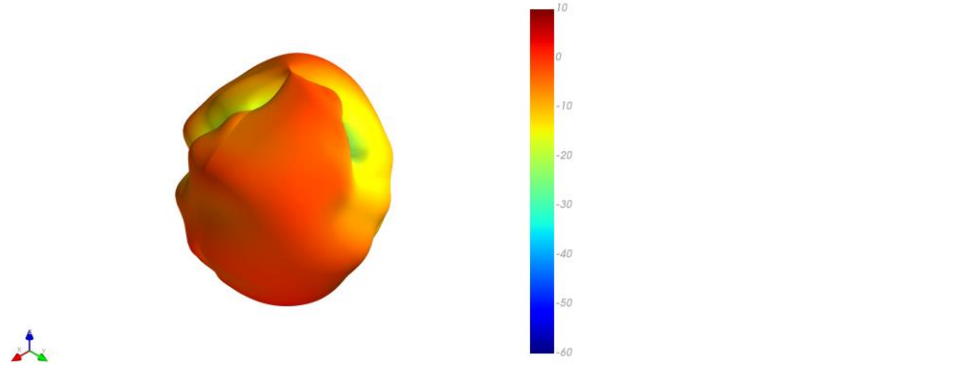
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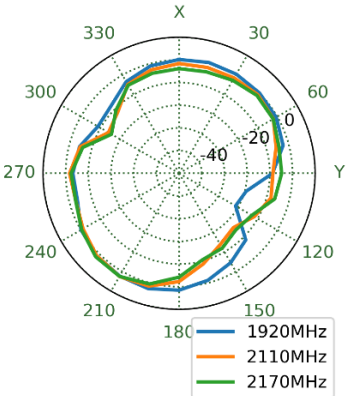
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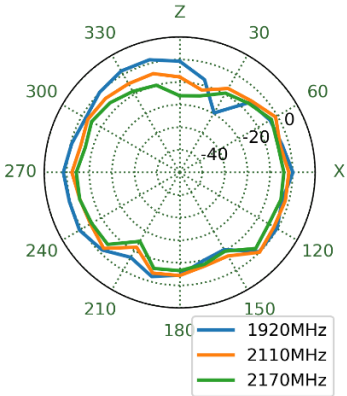
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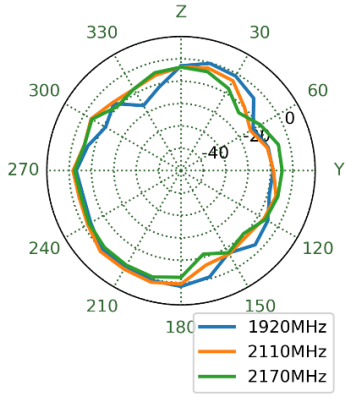
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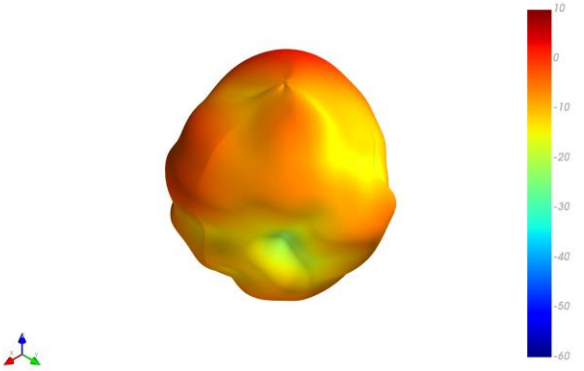
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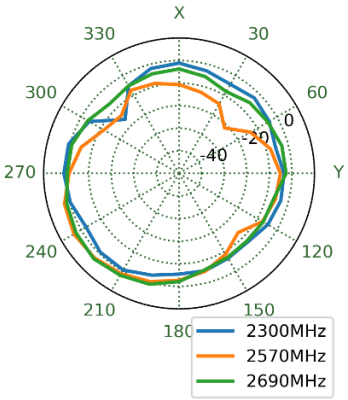
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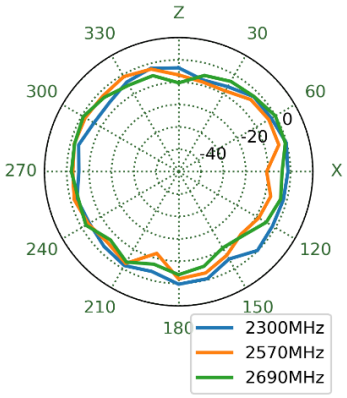
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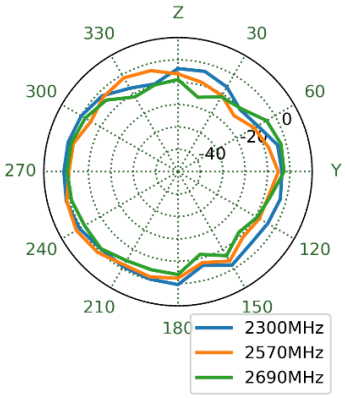
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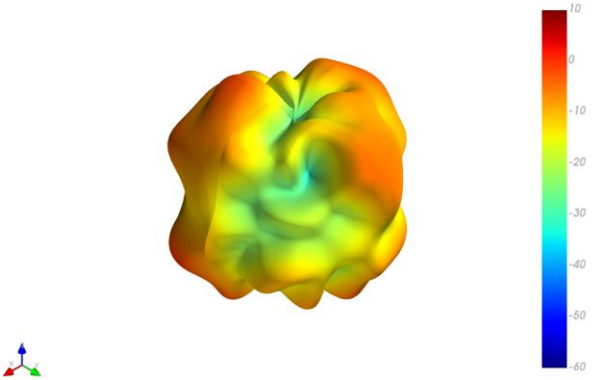
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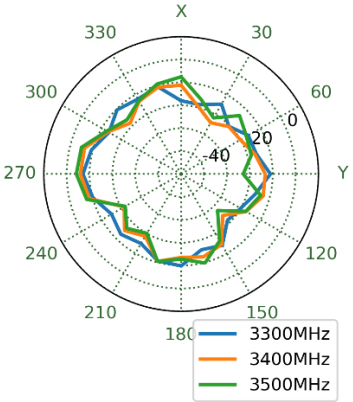
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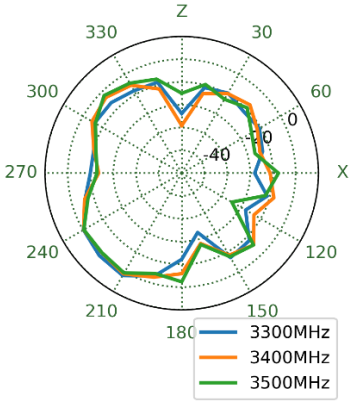
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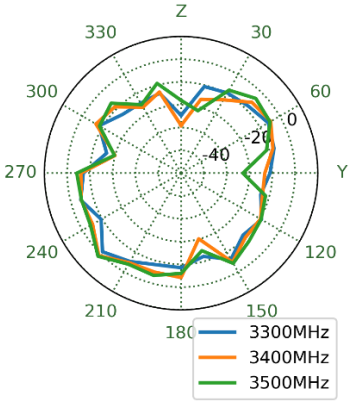
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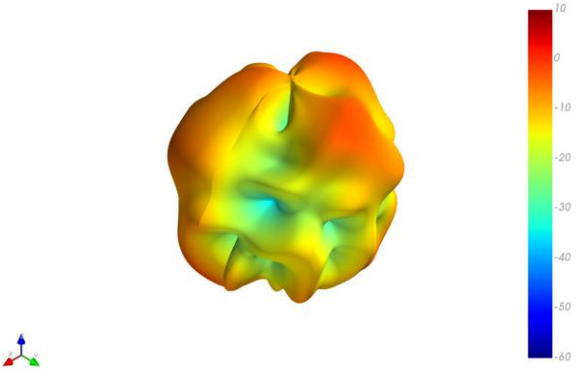
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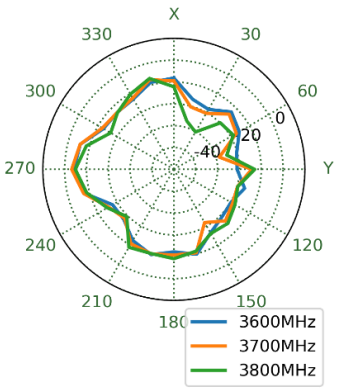
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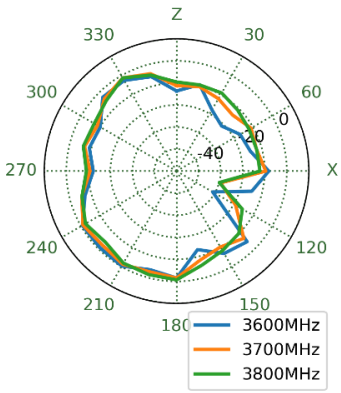
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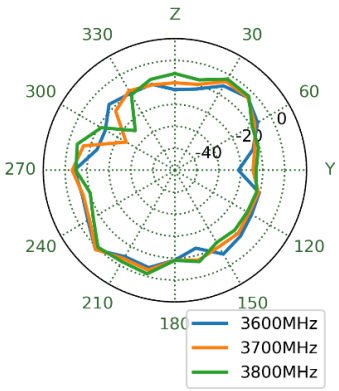
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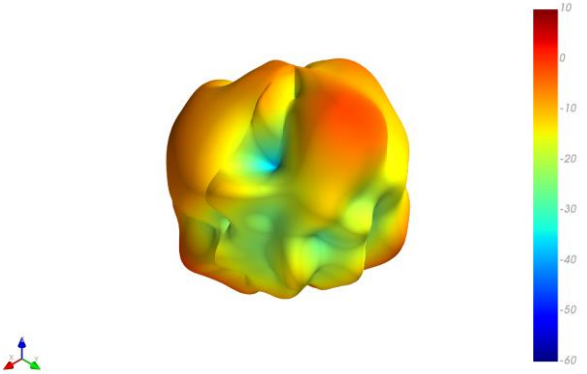
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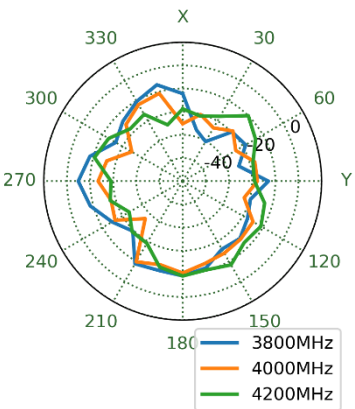
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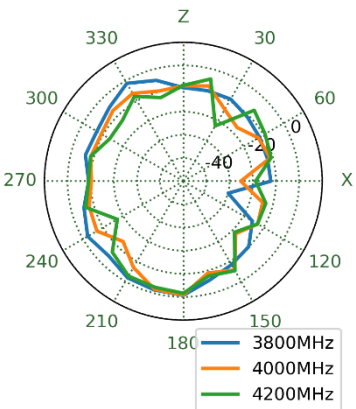
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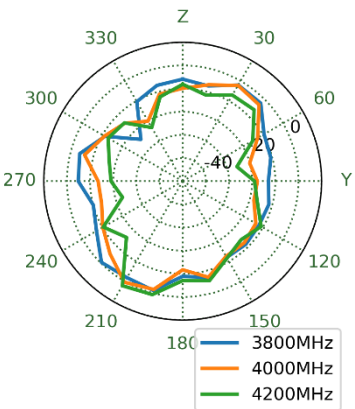
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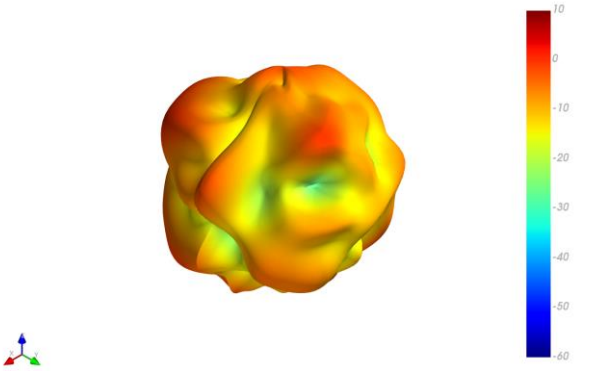
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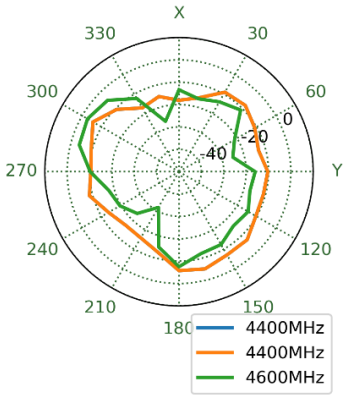
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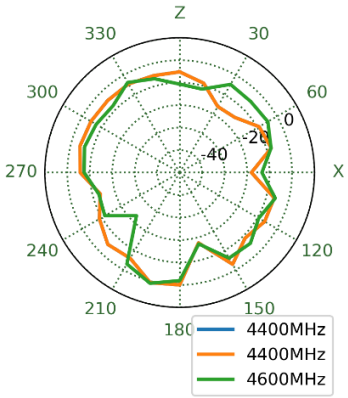
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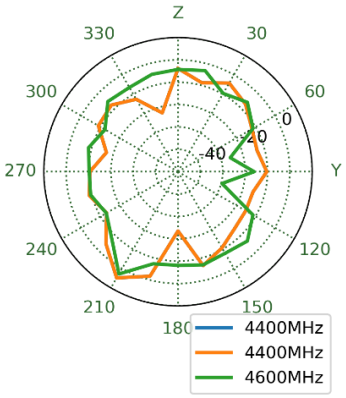
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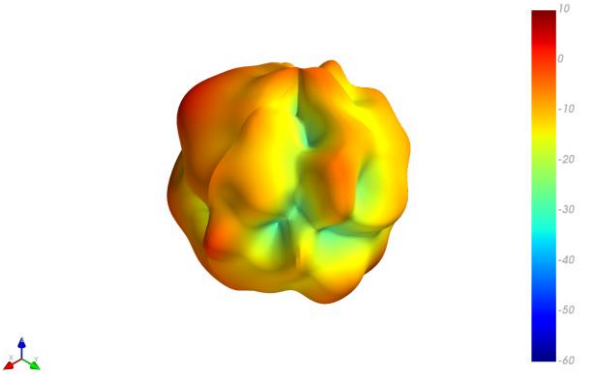
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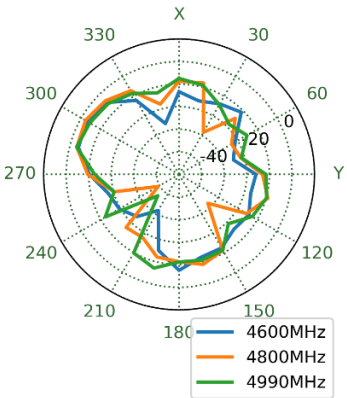
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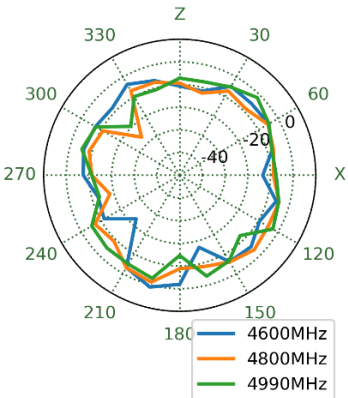
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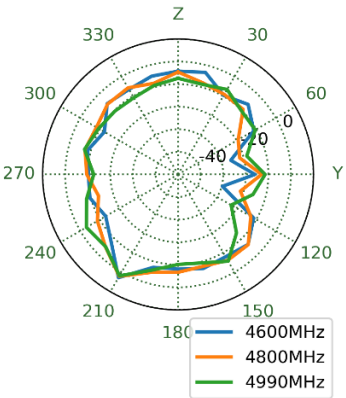
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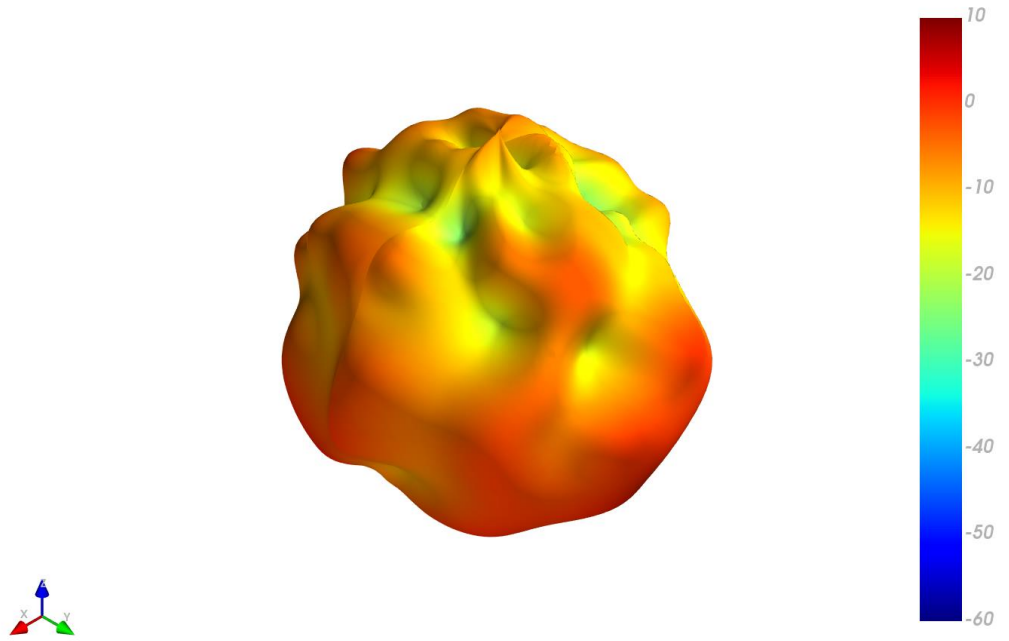
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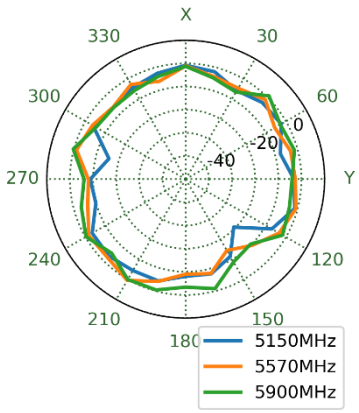
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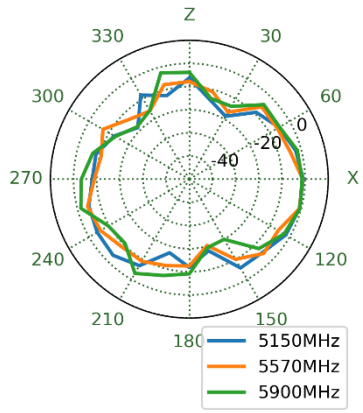


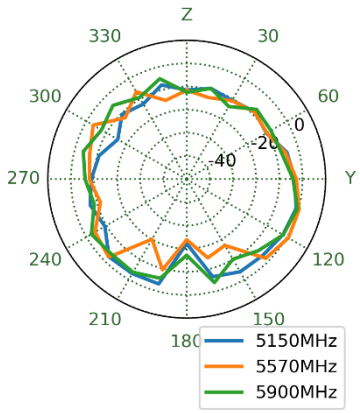
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XY Plane	XZ Plane	YZ Plane

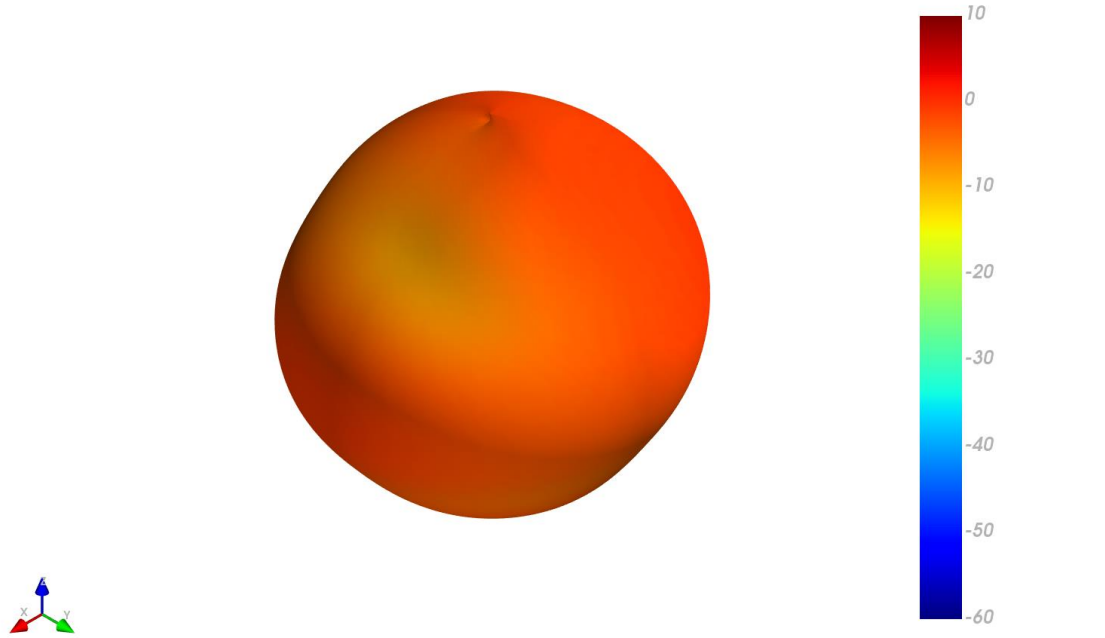




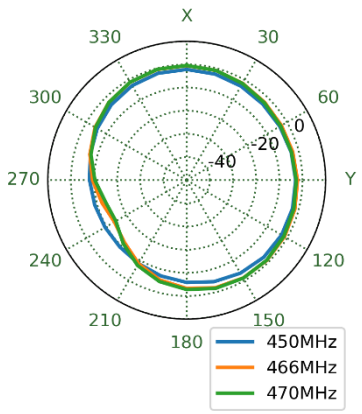


4.3 3D and 2D Radiation Patterns – MIMO 2

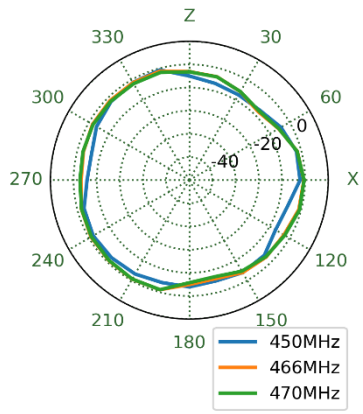
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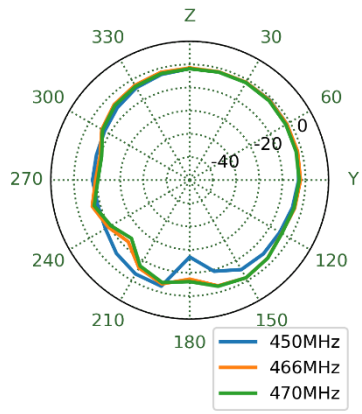
XY Plane



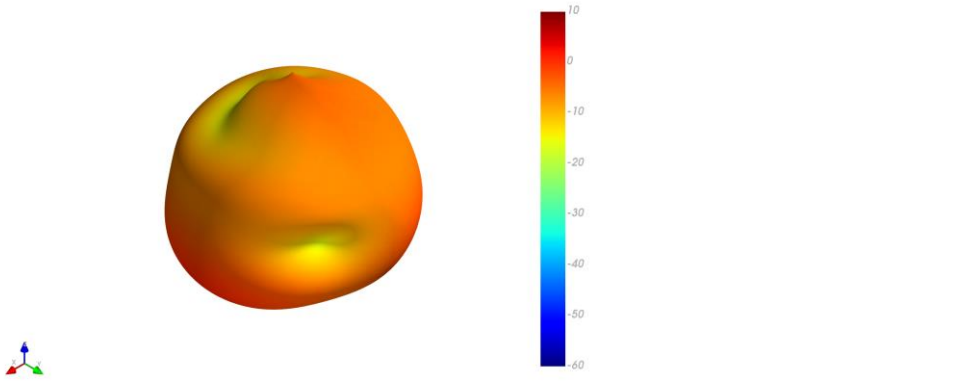
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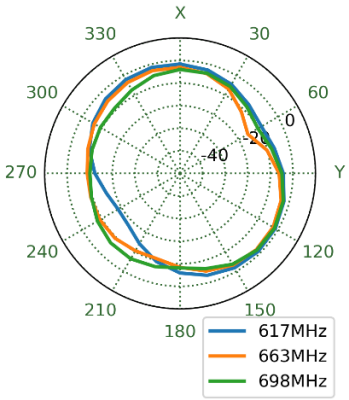
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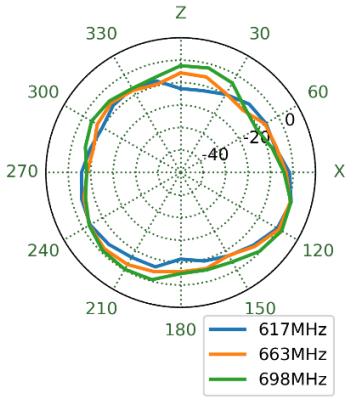
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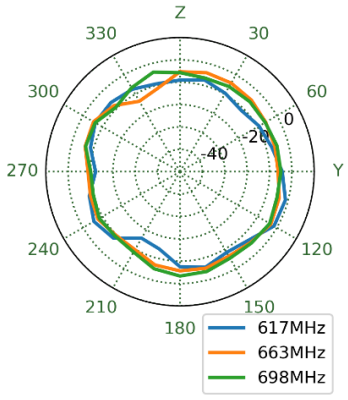
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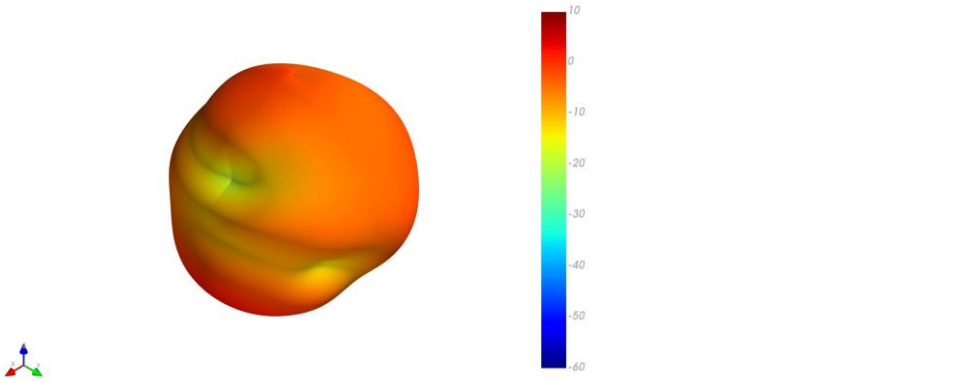
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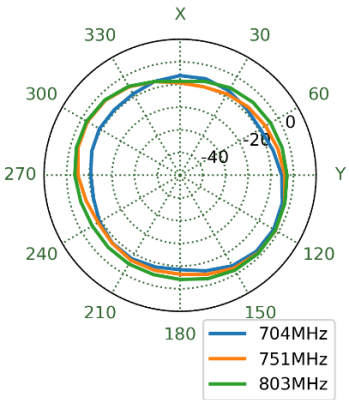
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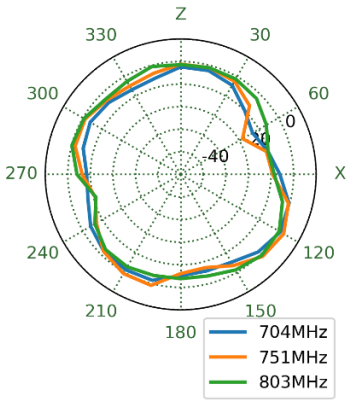
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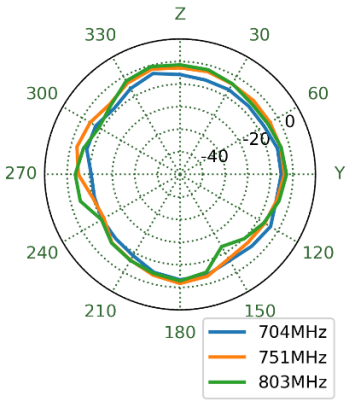
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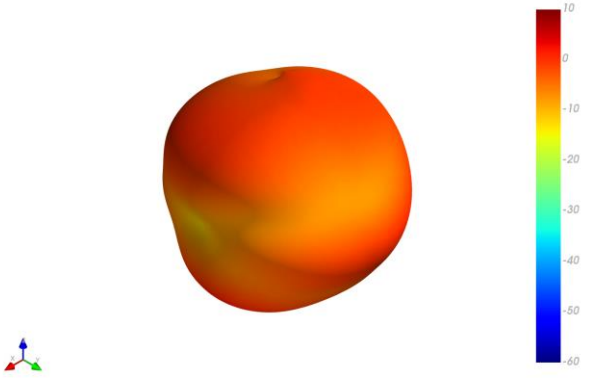
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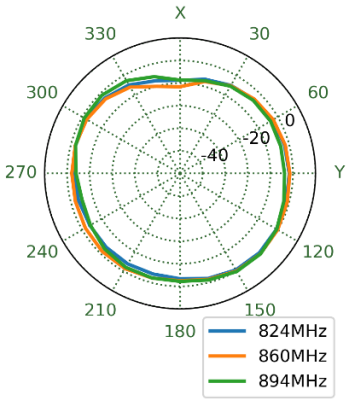
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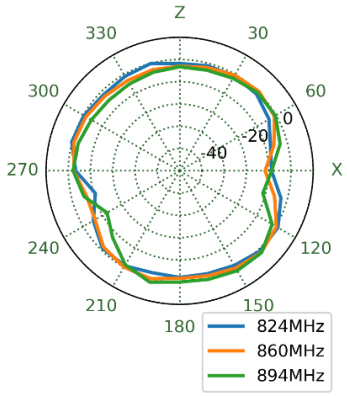
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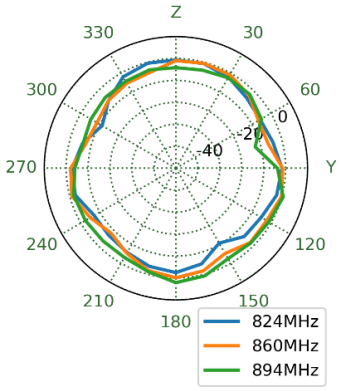
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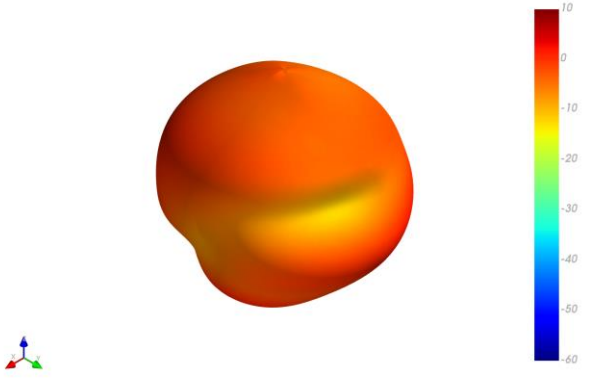
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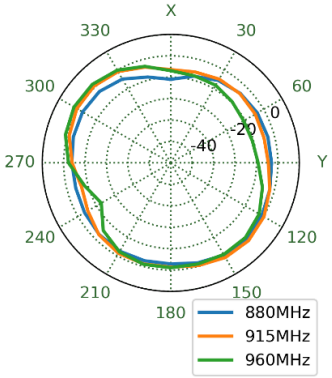
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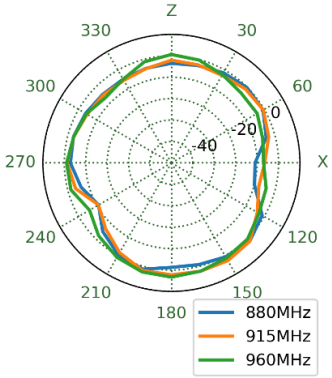
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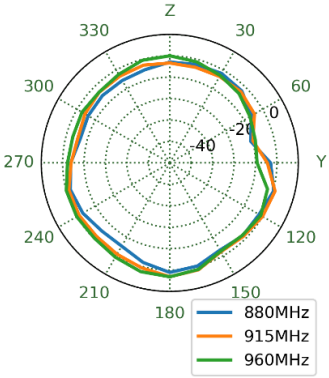
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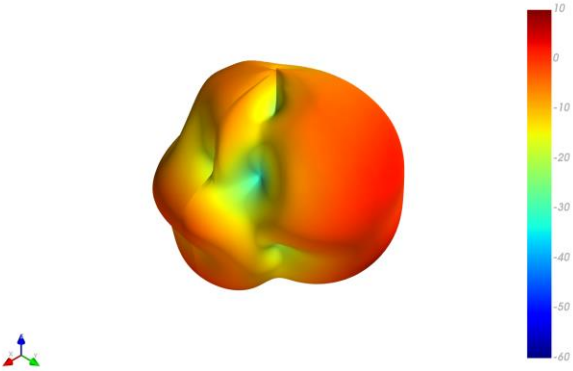
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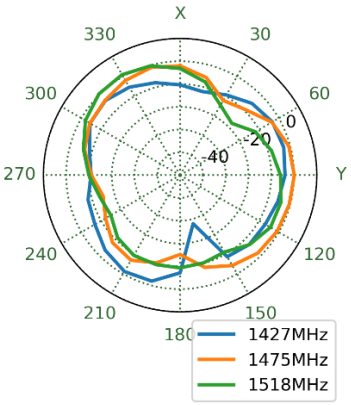
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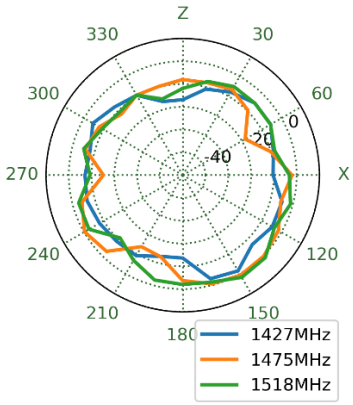
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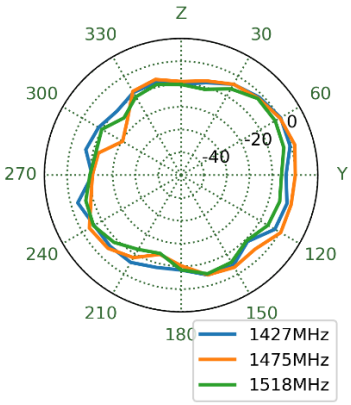
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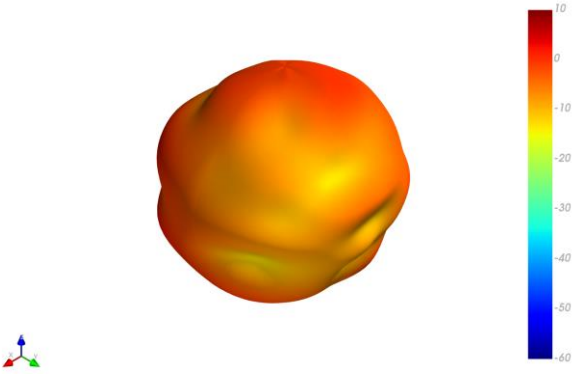
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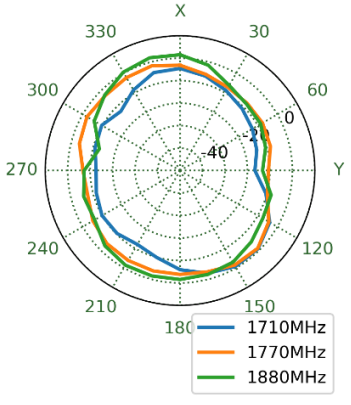
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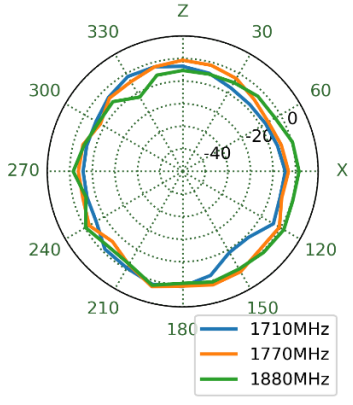
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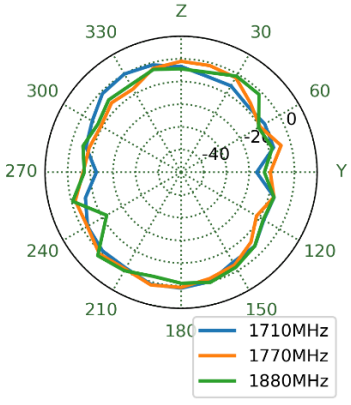
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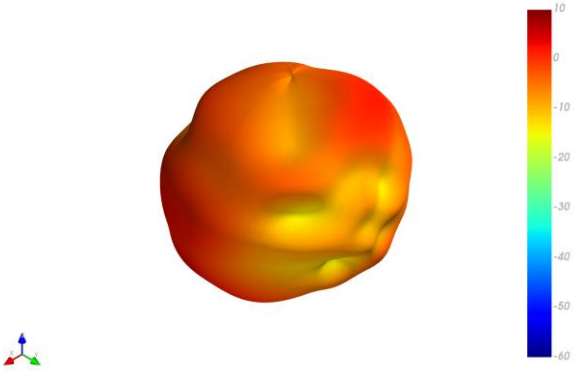
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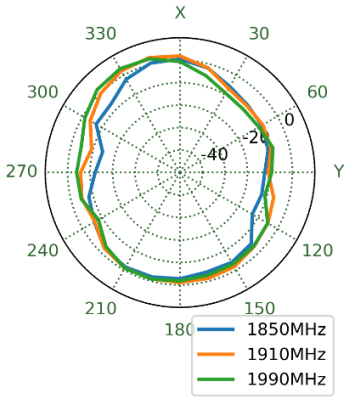
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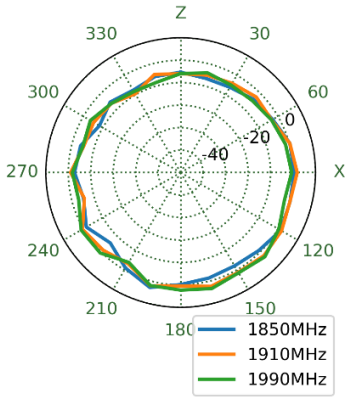
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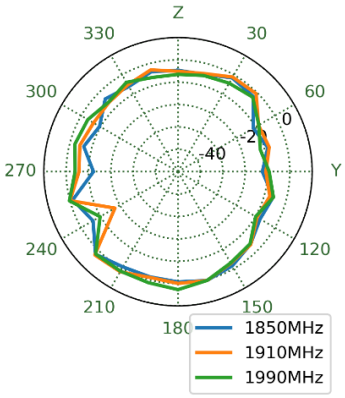
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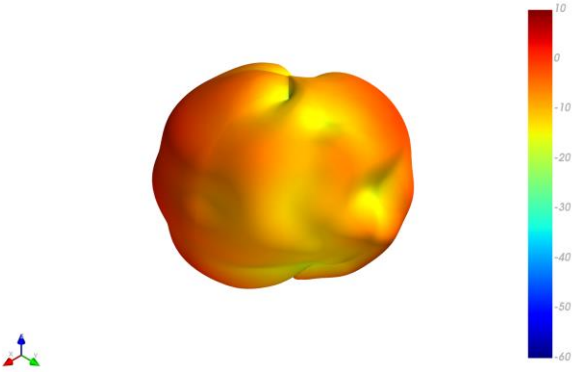
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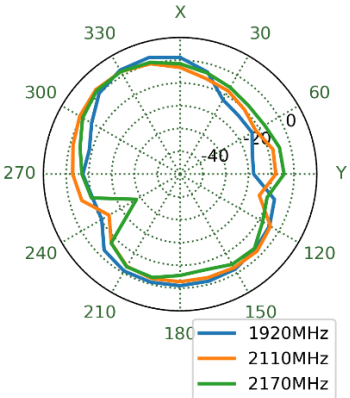
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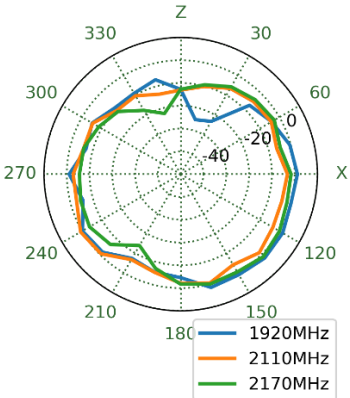
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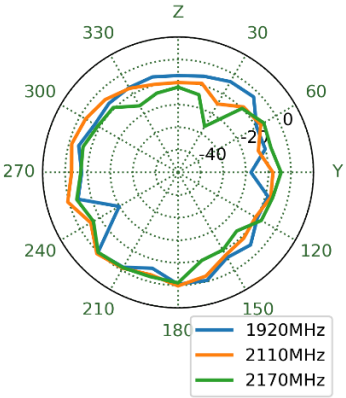
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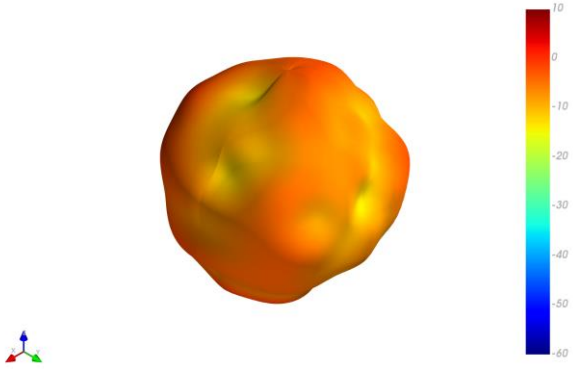
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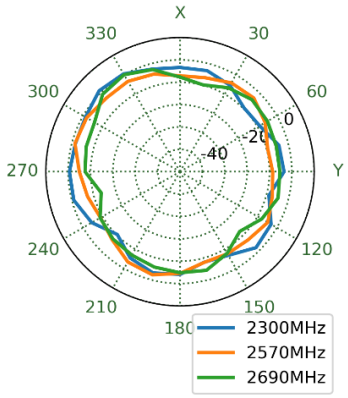
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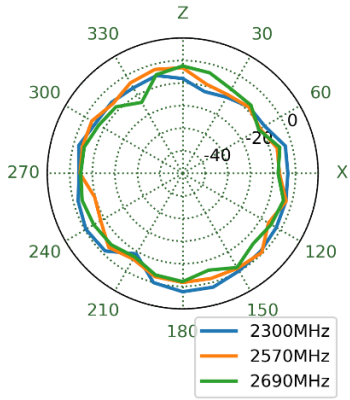
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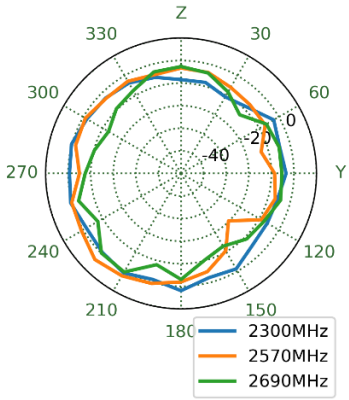
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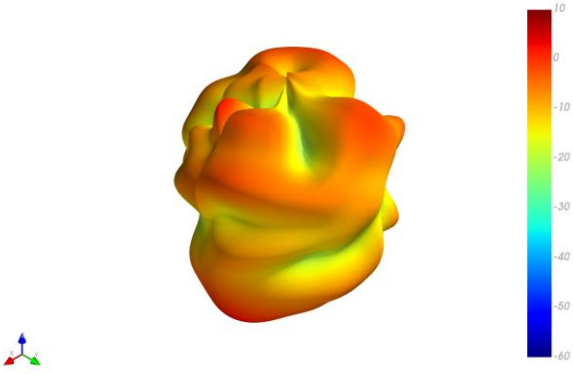
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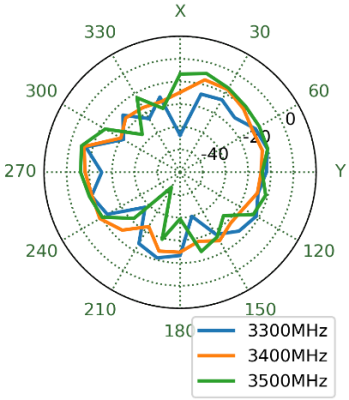
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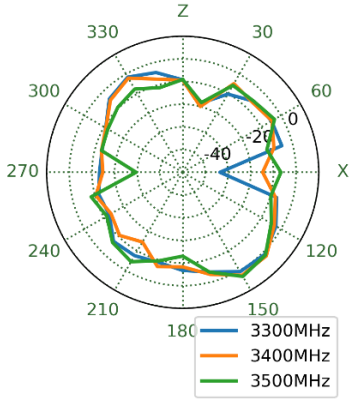
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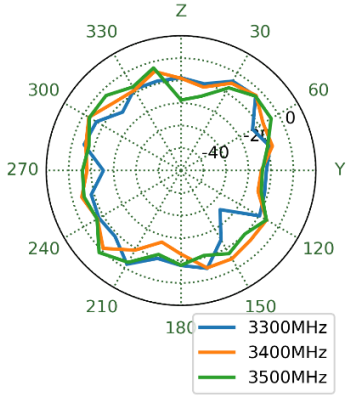
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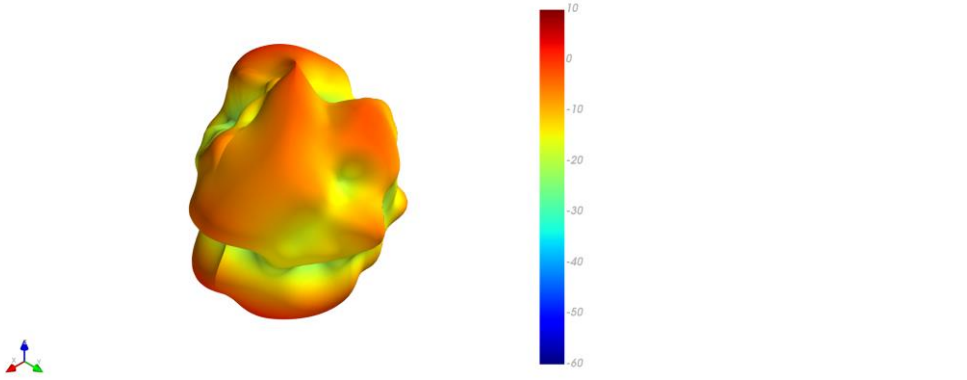
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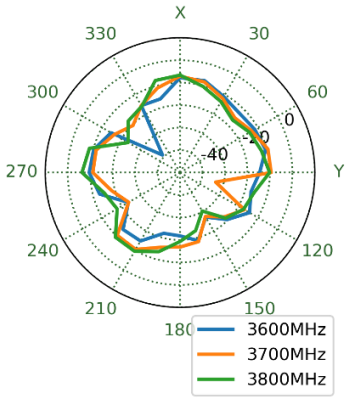
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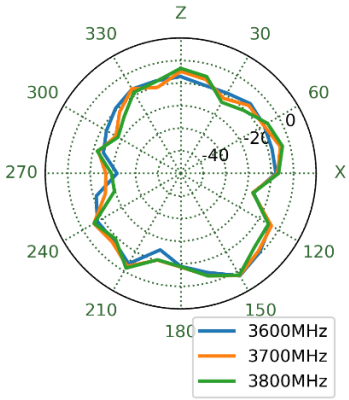
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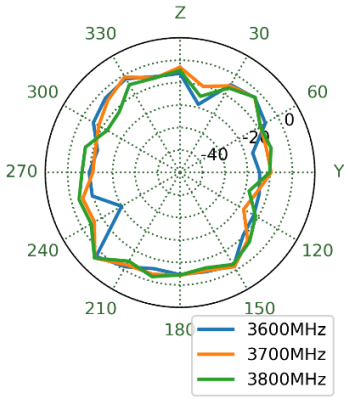
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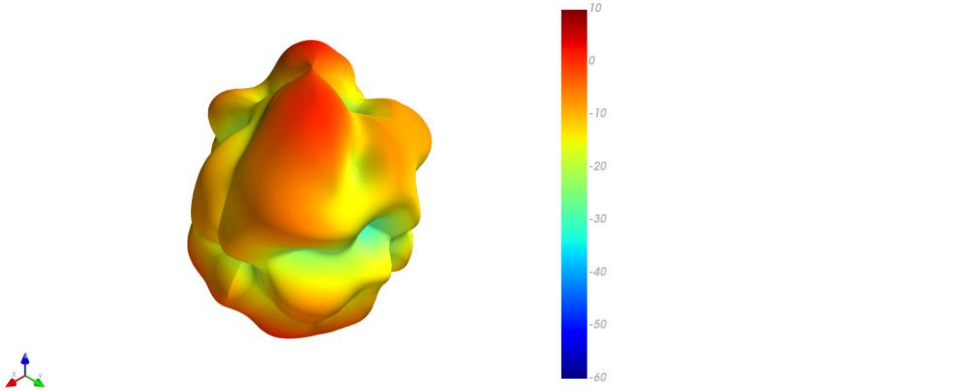
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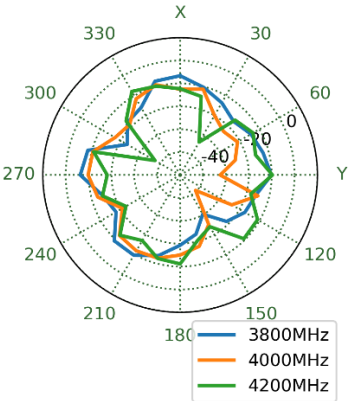
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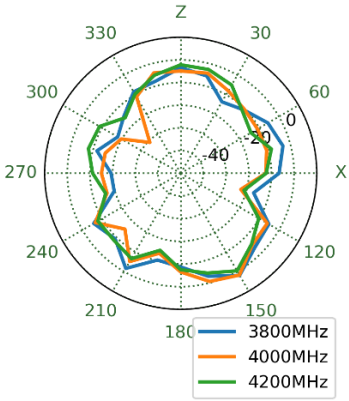
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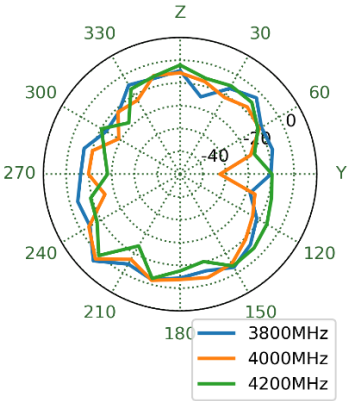
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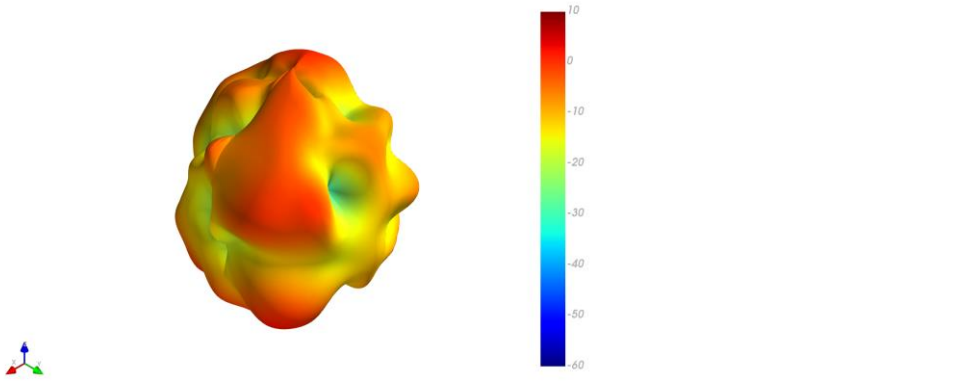
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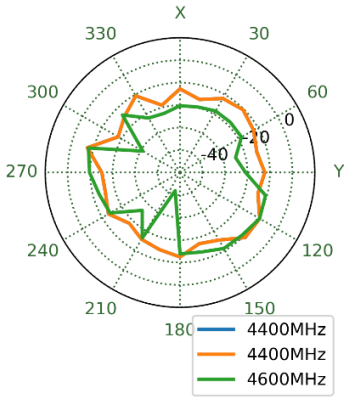
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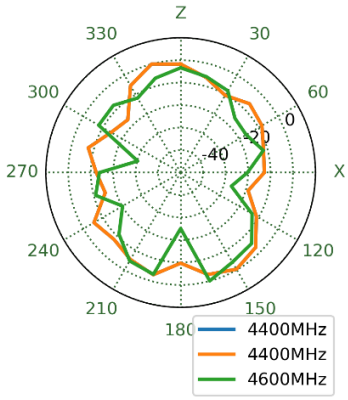
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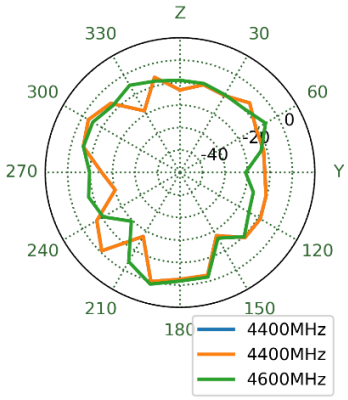
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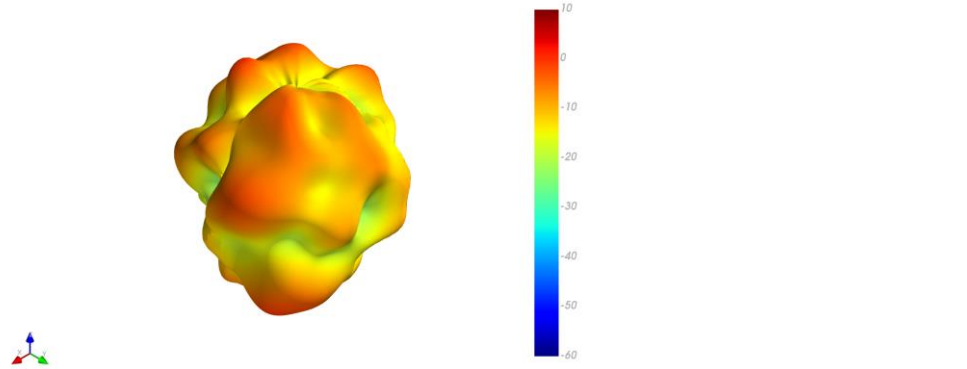
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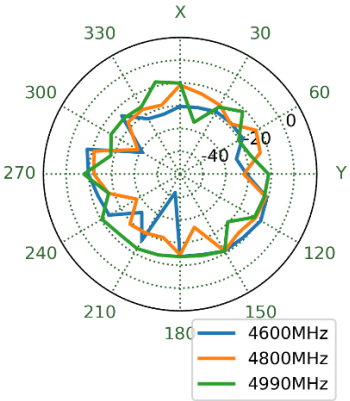
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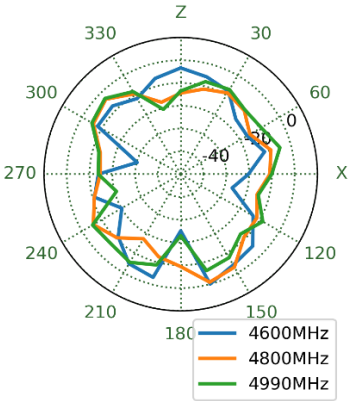
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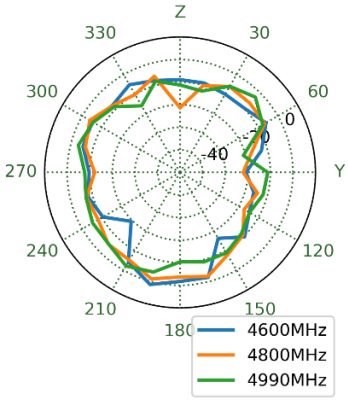
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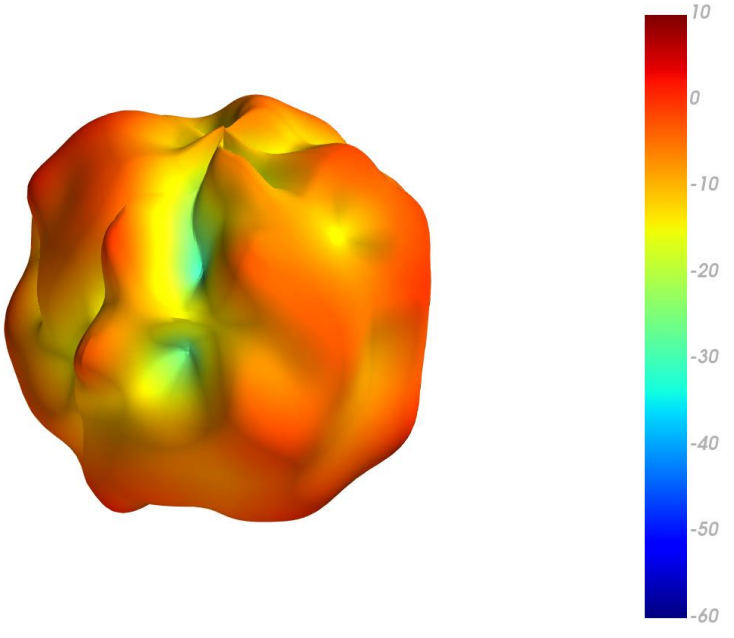
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YZ Plane

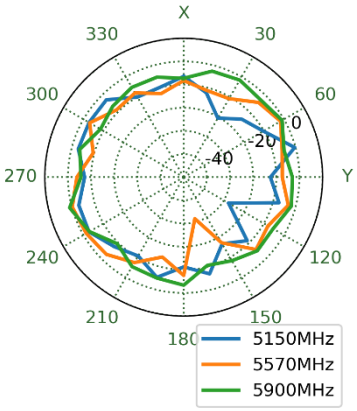


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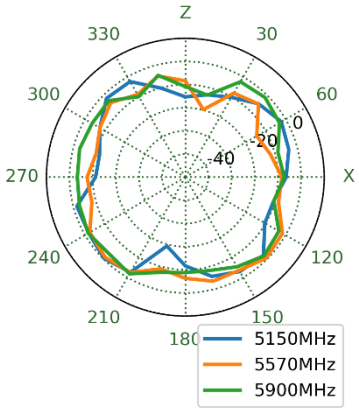




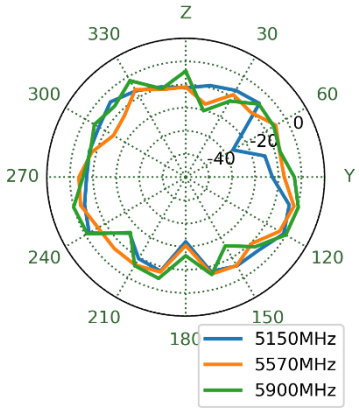
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XZ Plane

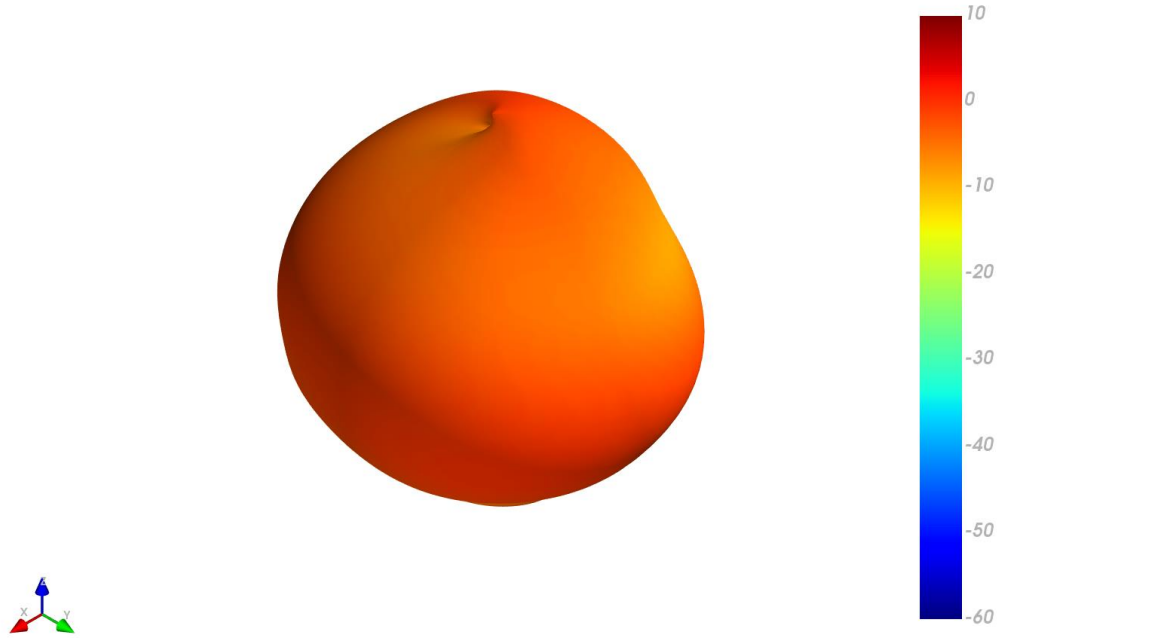


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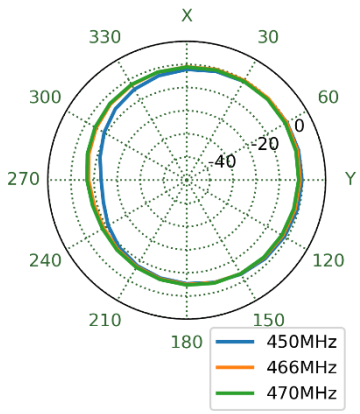


4.4 3D and 2D Radiation Patterns – MIMO 3

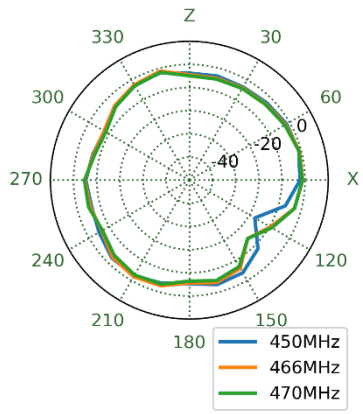
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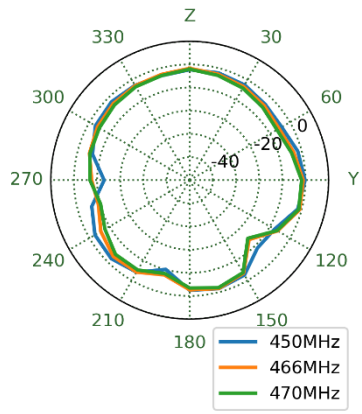
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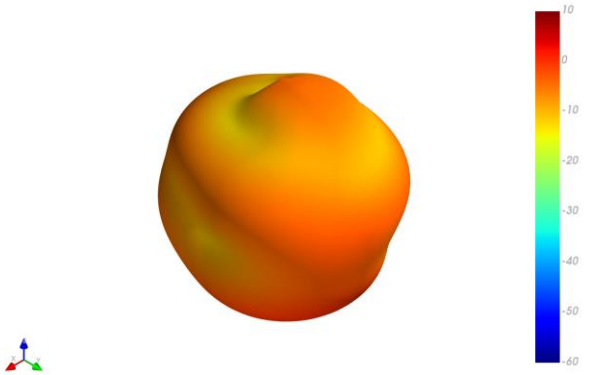
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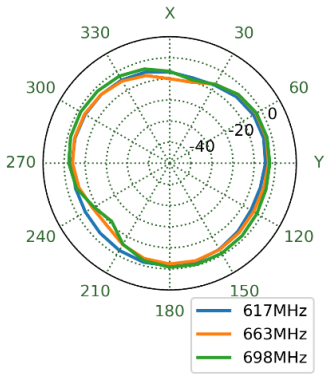
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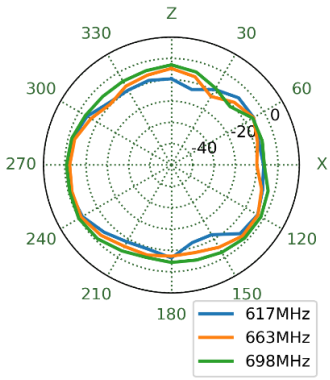
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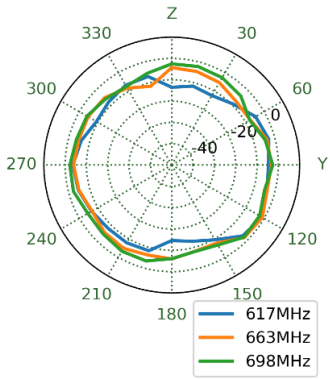
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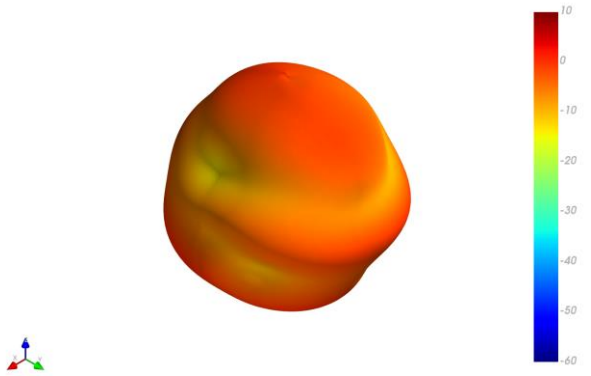
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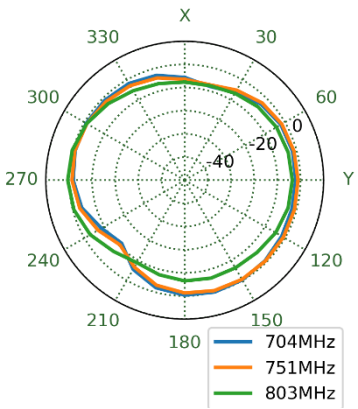
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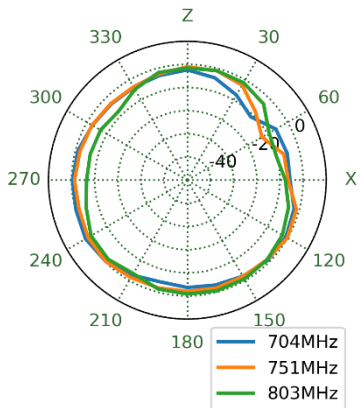
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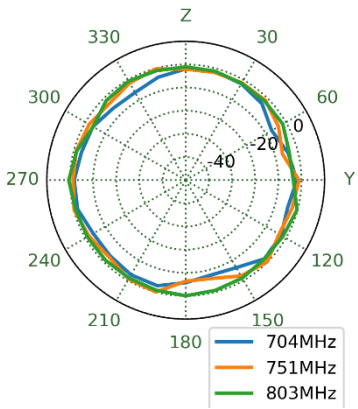
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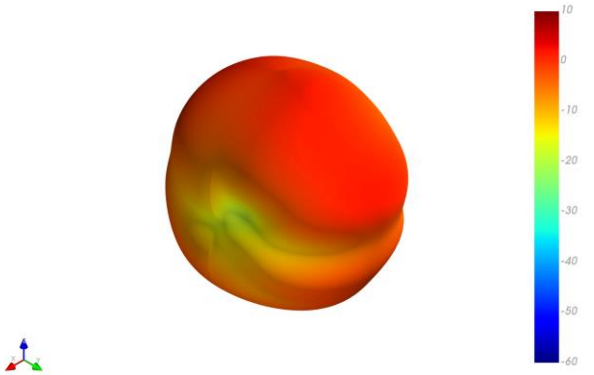
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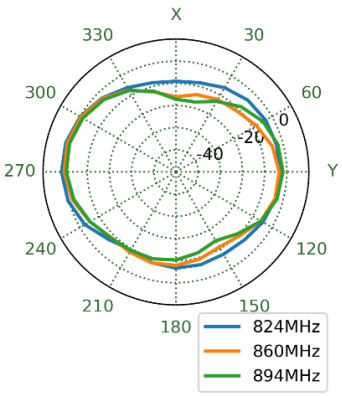
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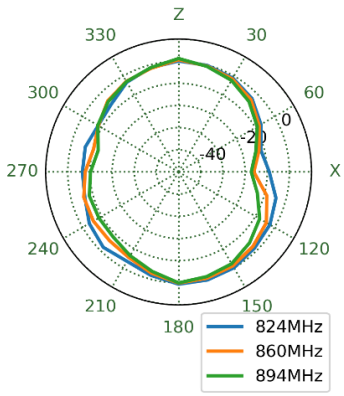
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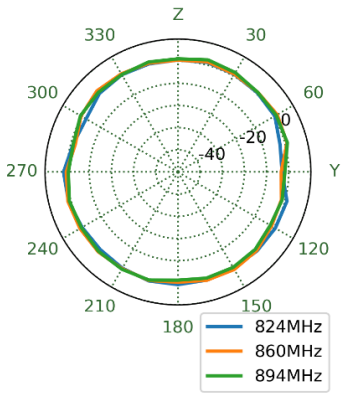
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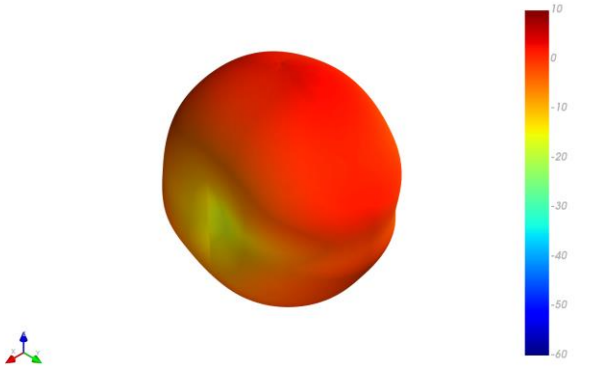
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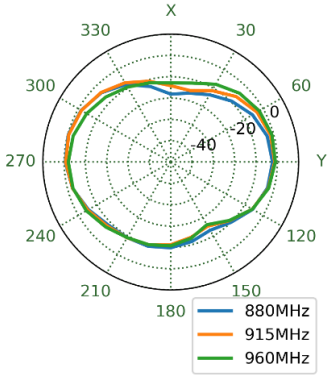
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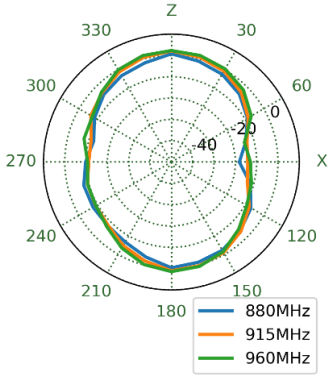
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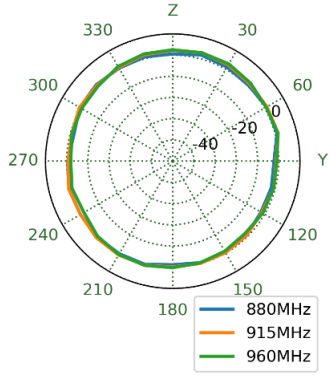
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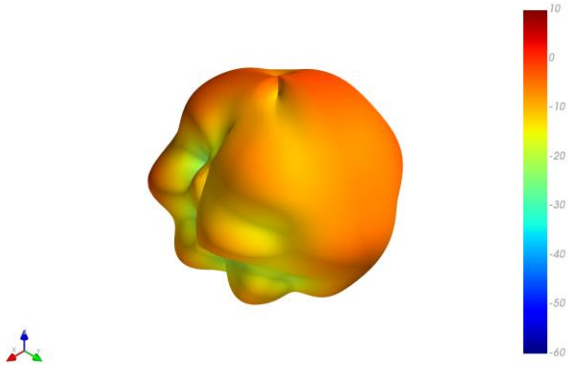
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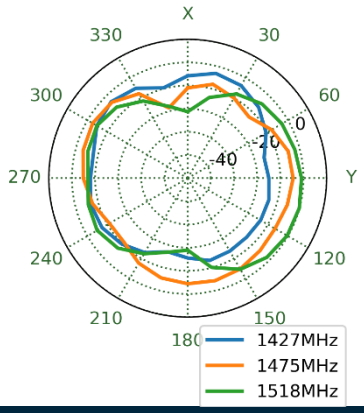
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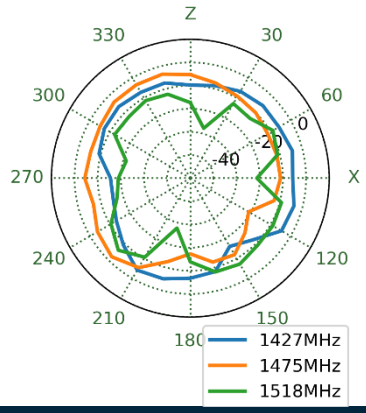
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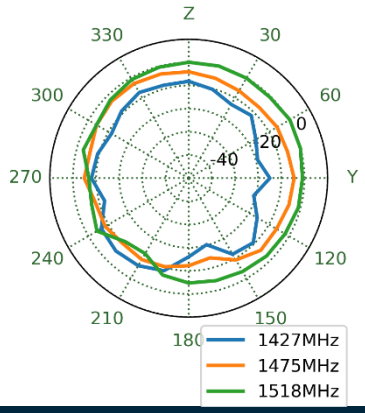
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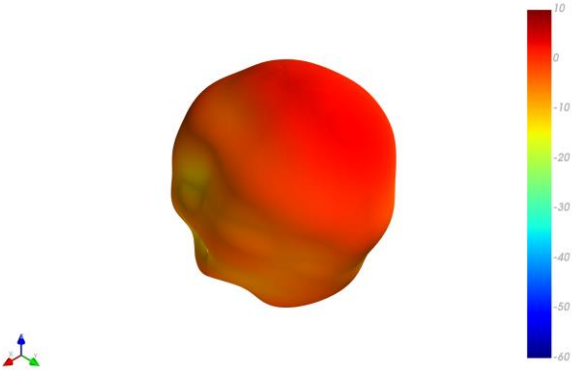
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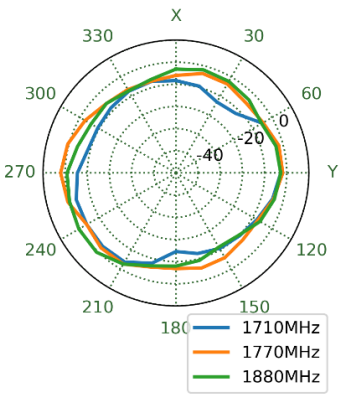
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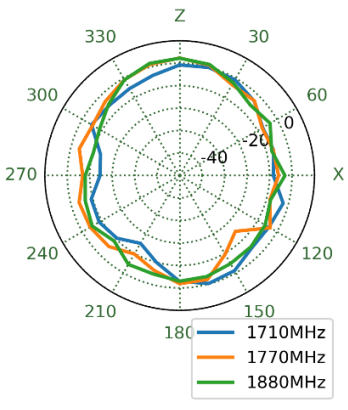
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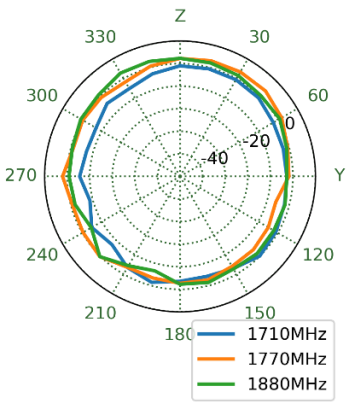
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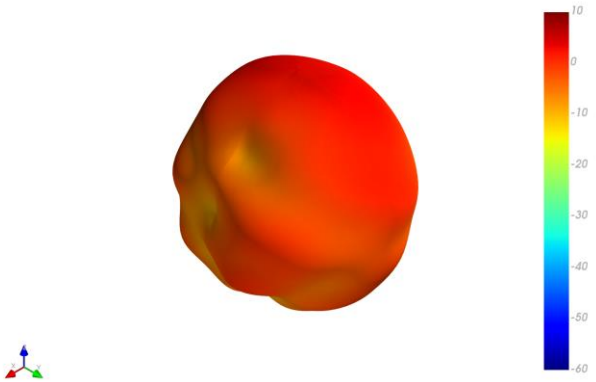
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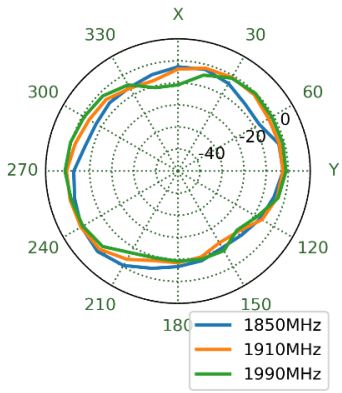
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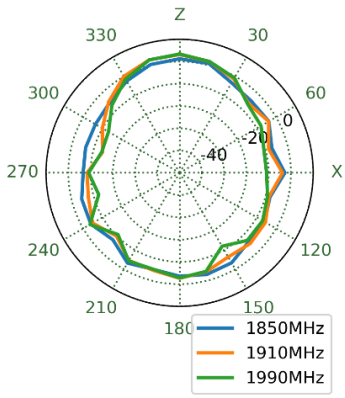
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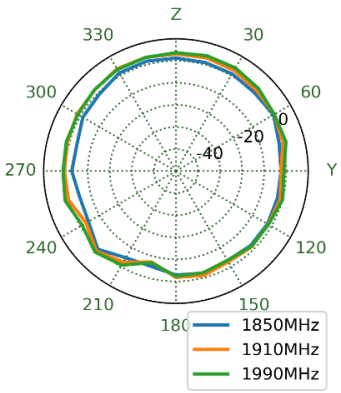
XY Plane



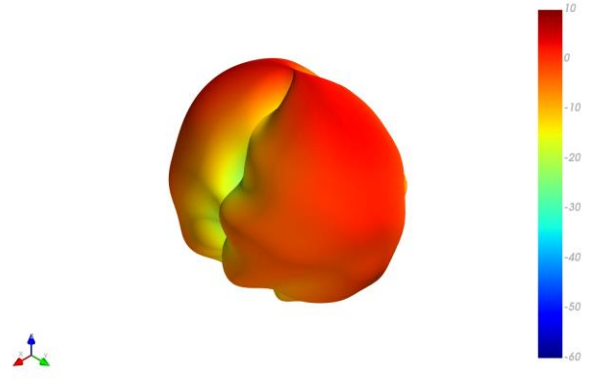
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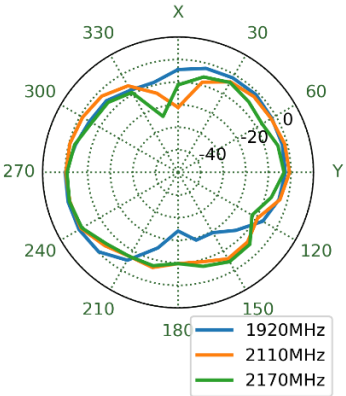
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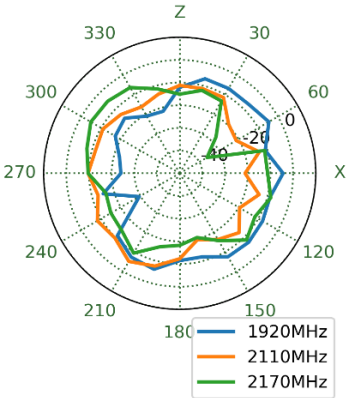
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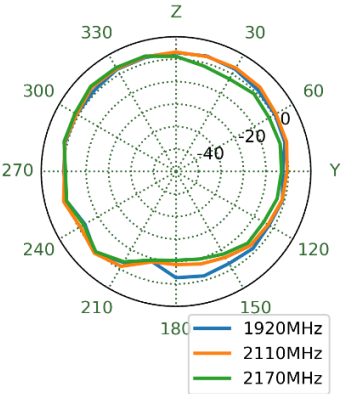
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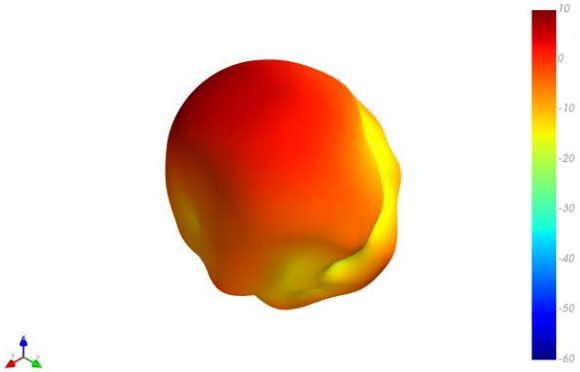
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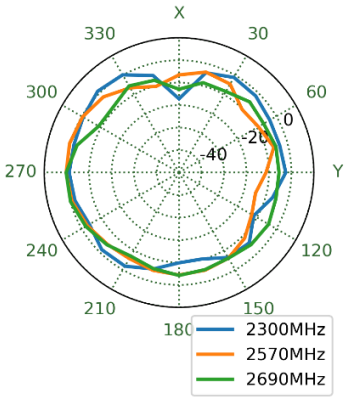
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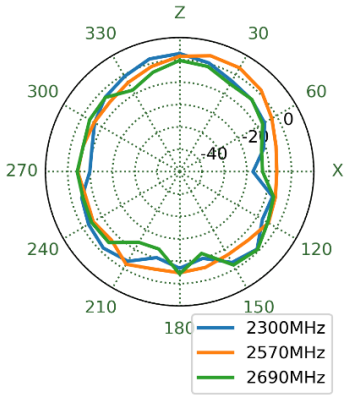
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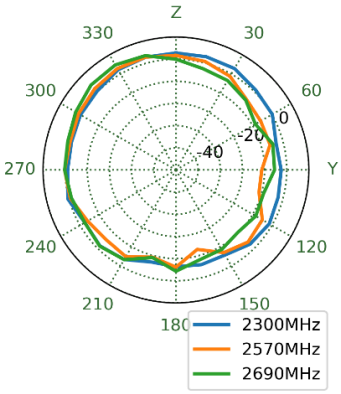
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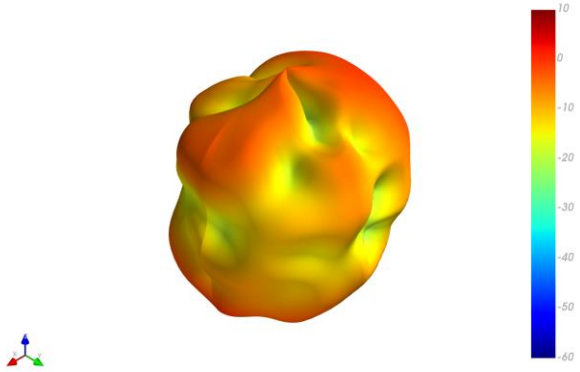
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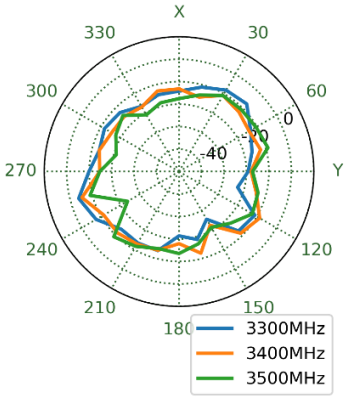
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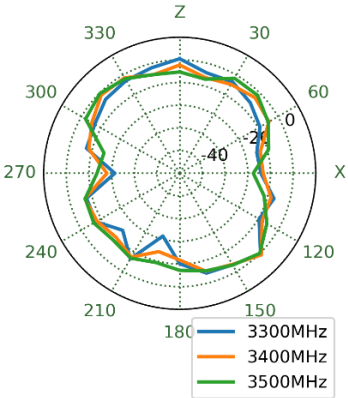
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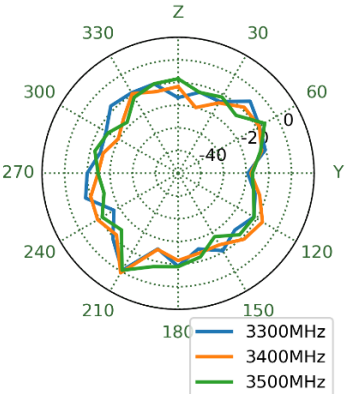
XY Plane



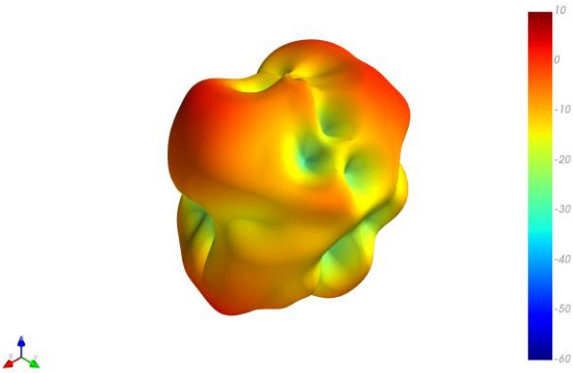
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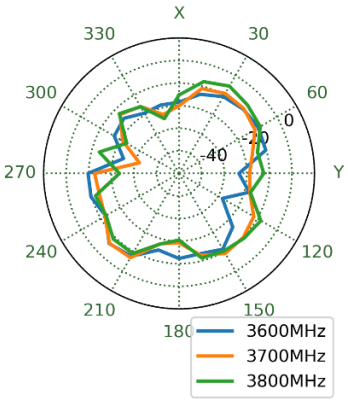
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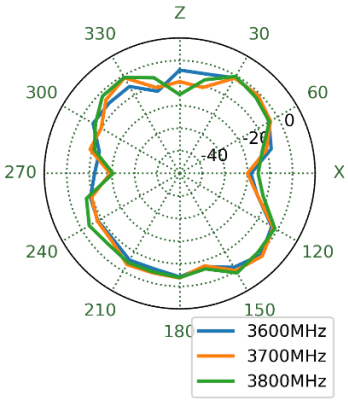
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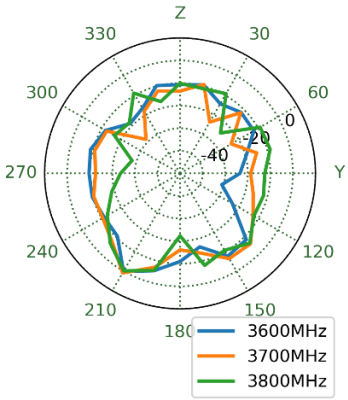
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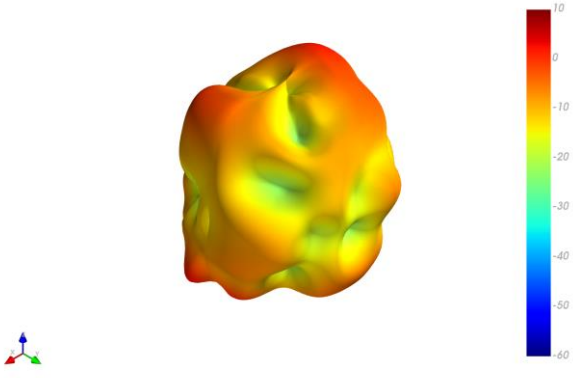
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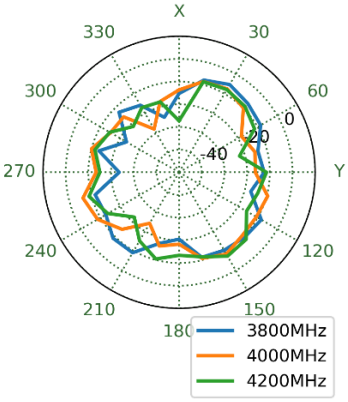
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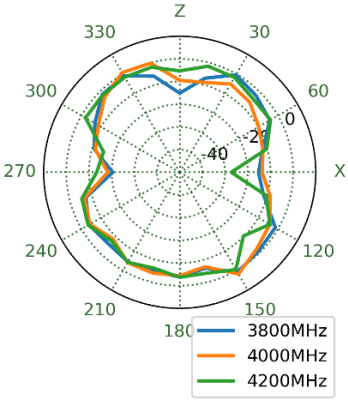
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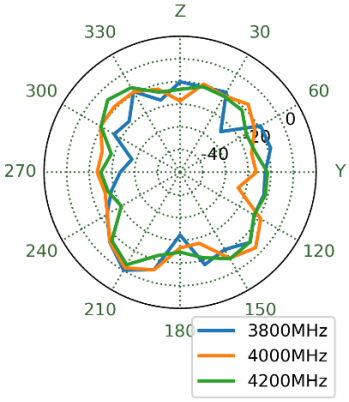
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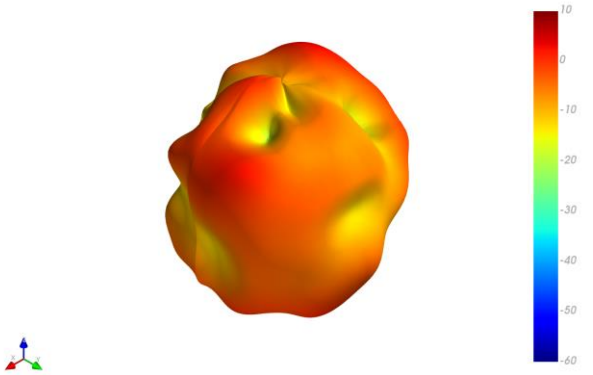
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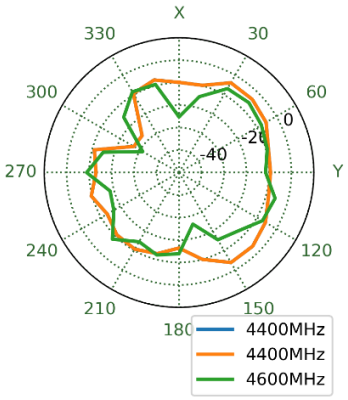
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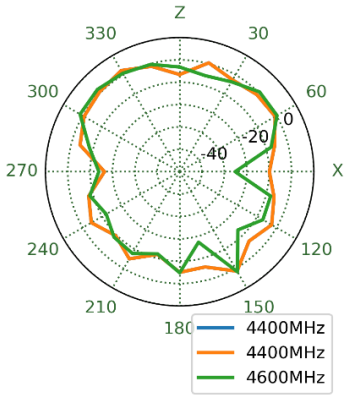
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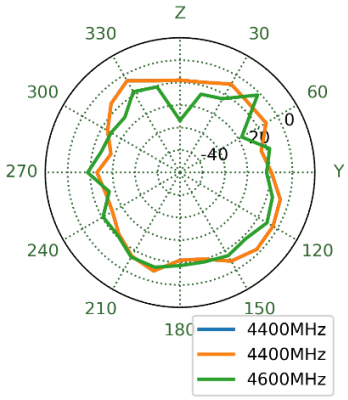
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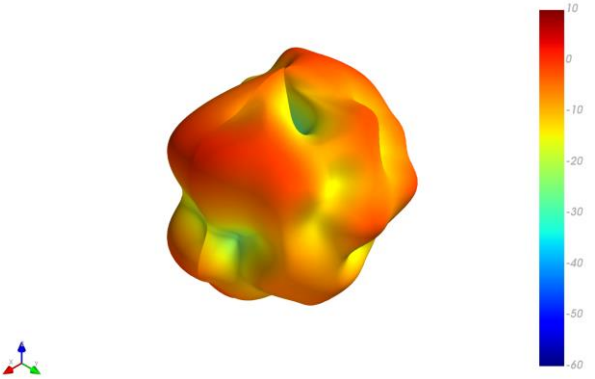
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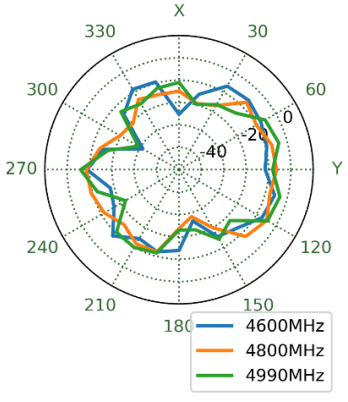
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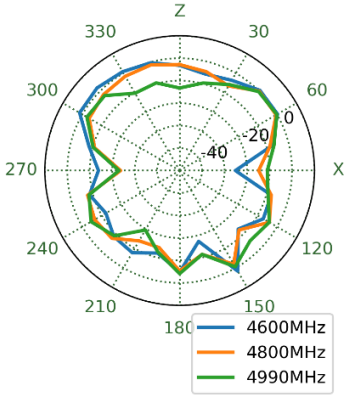
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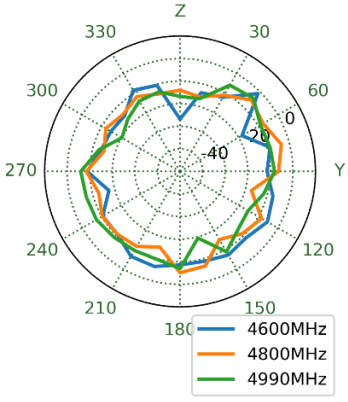
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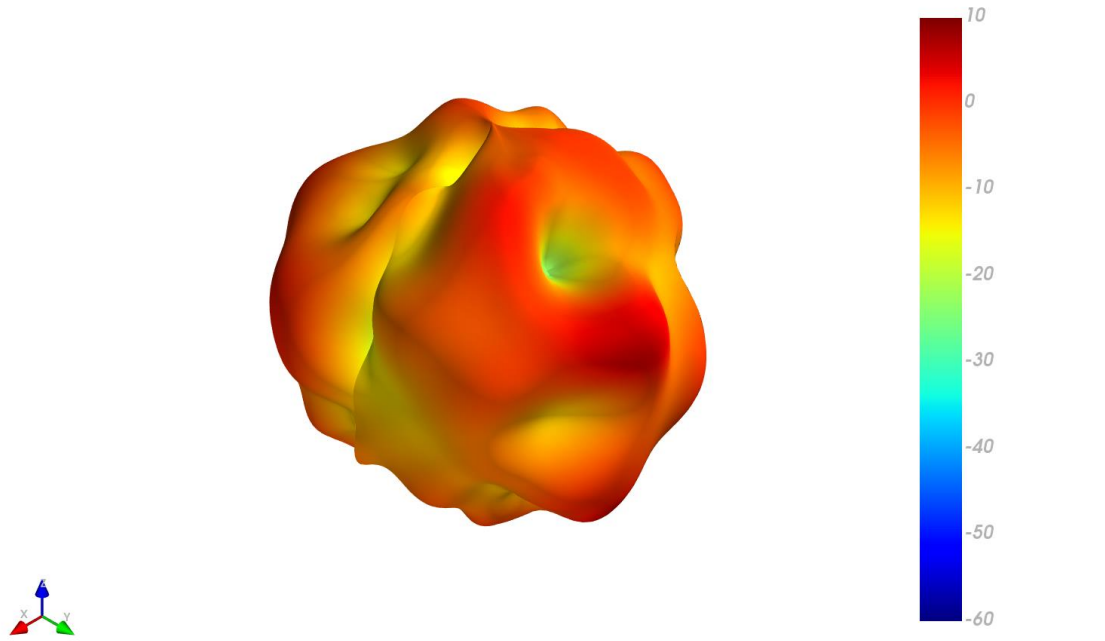
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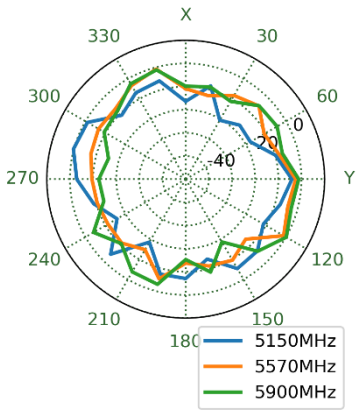
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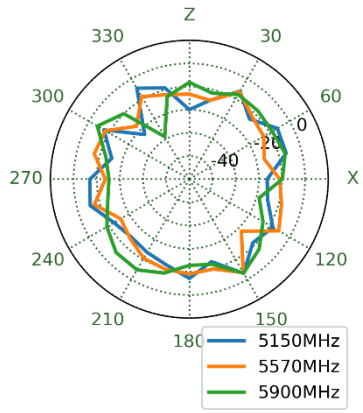


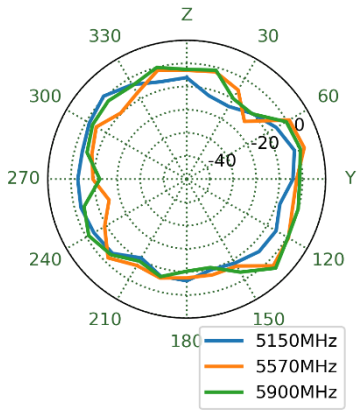
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XY Plane	XZ Plane	YZ Plane

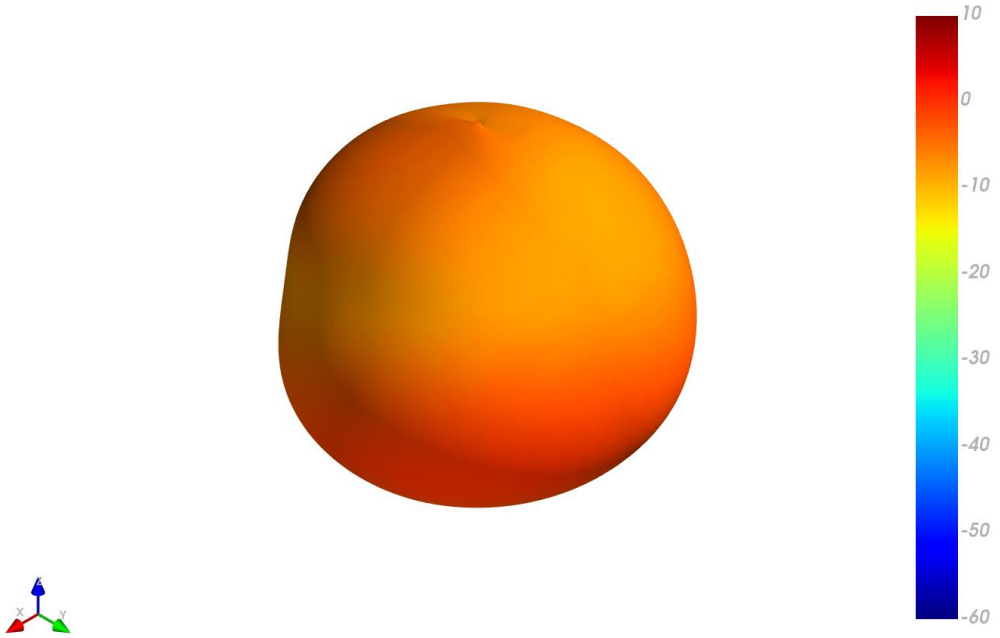


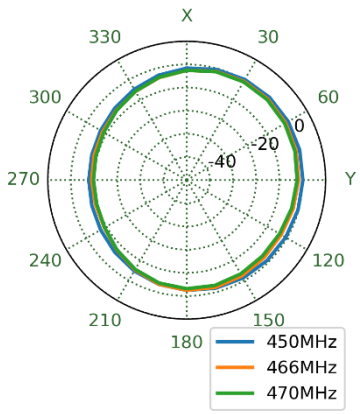
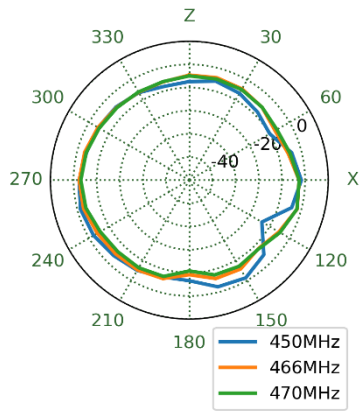
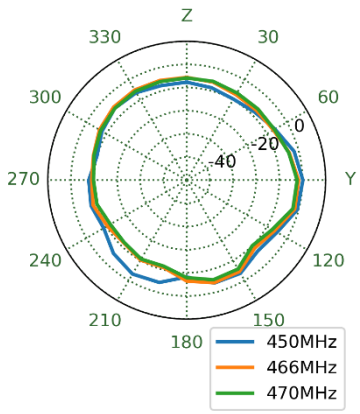




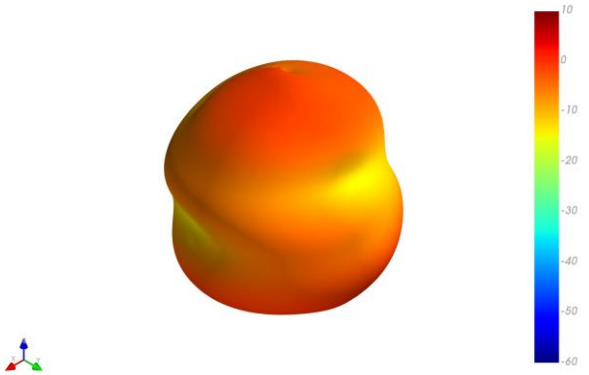
4.5 3D and 2D Radiation Patterns – MIMO 4

466MHz

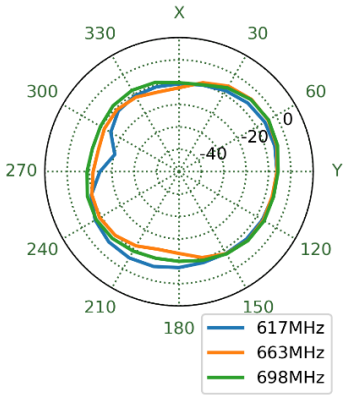


XY Plane	XZ Plane	YZ Plane
		

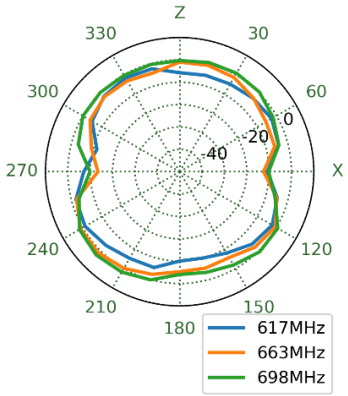
663MHz



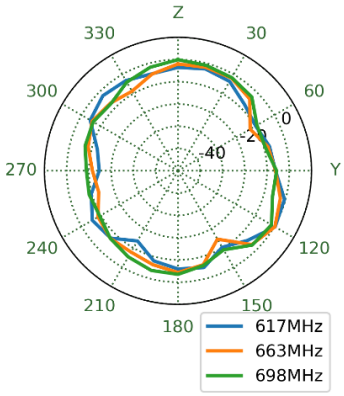
XY Plane



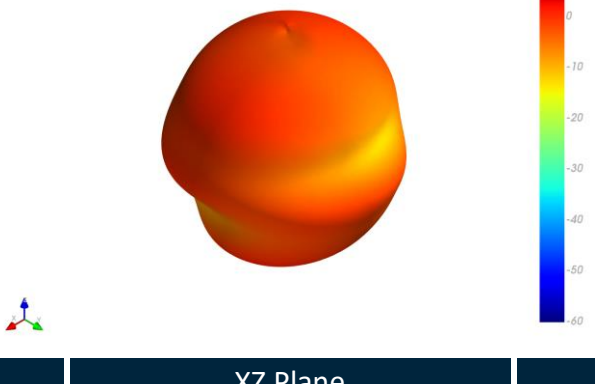
XZ Plane



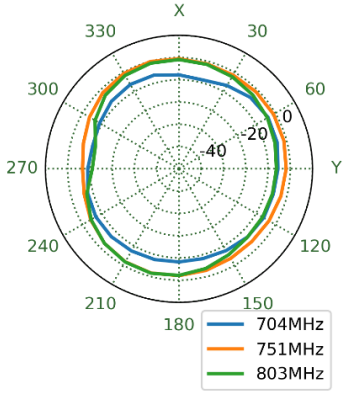
YZ Plane



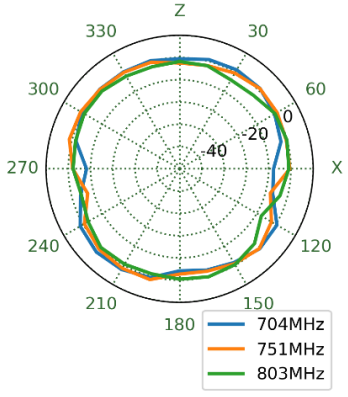
751MHz



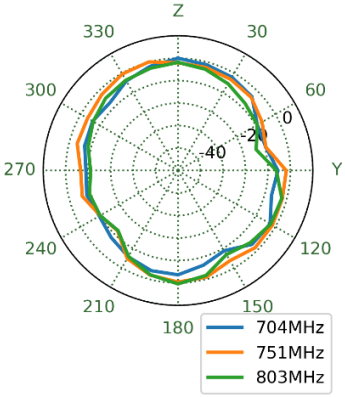
XY Plane



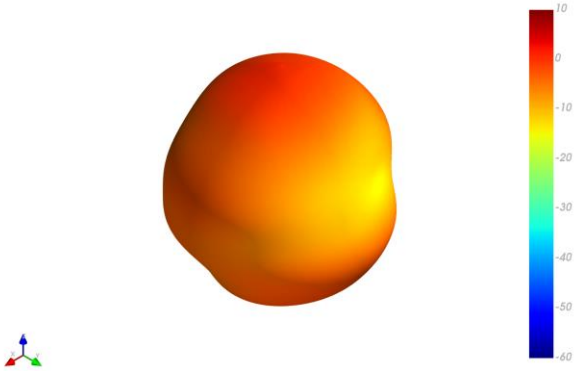
XZ Plane



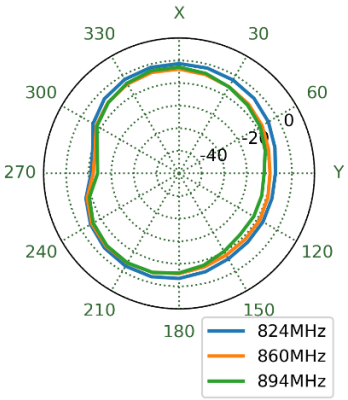
YZ Plane



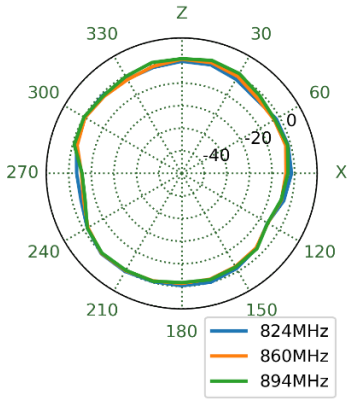
860MHz



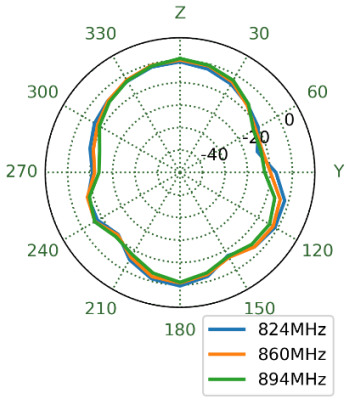
XY Plane



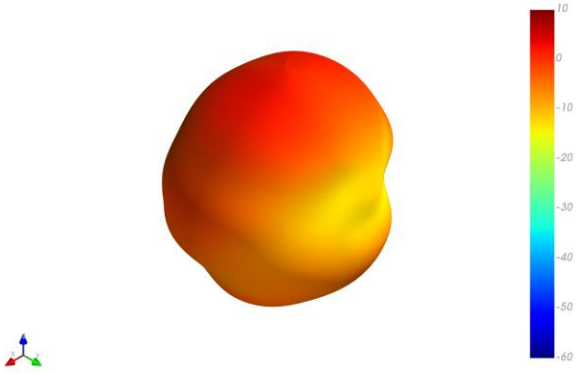
XZ Plane



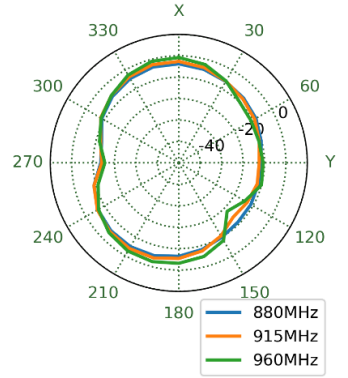
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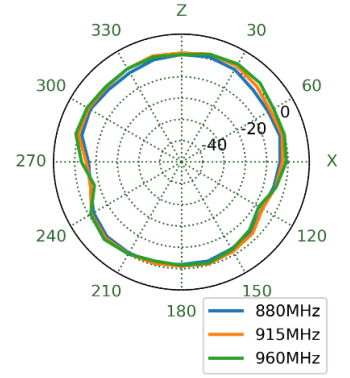
915MHz



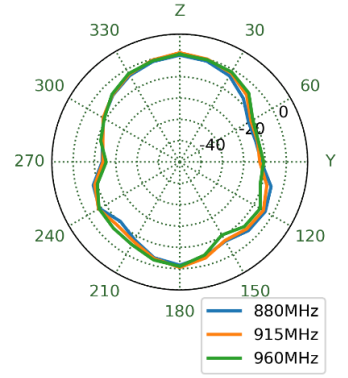
XY Plane



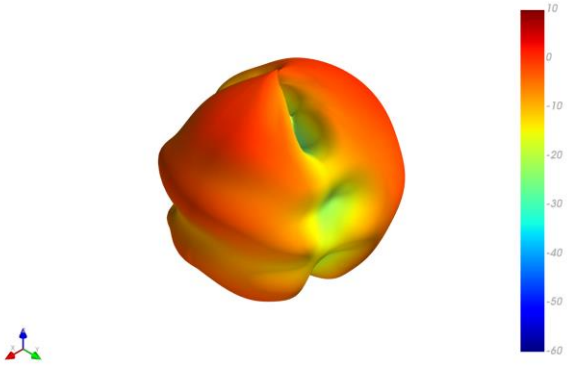
XZ Plane



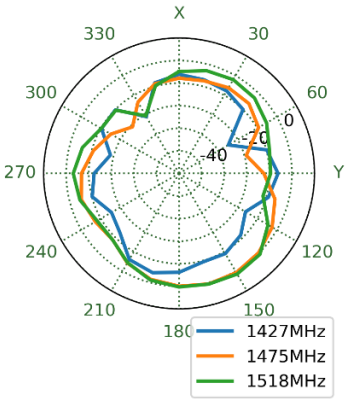
YZ Plane



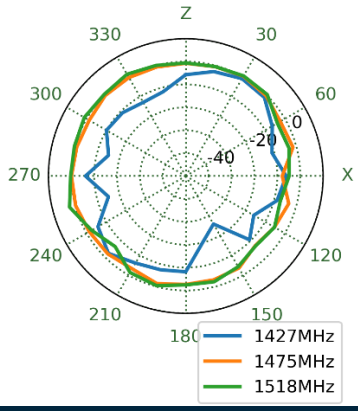
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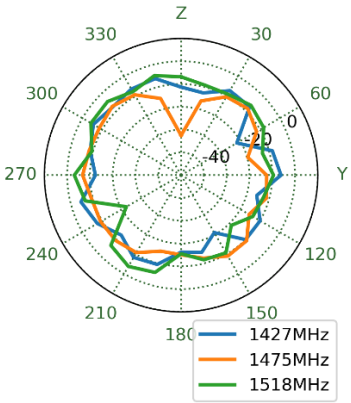
XY Plane



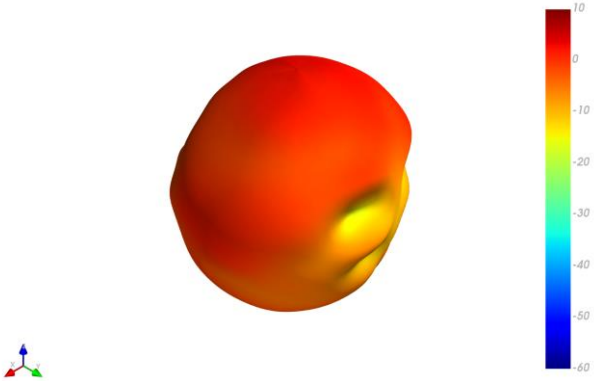
XZ Plane



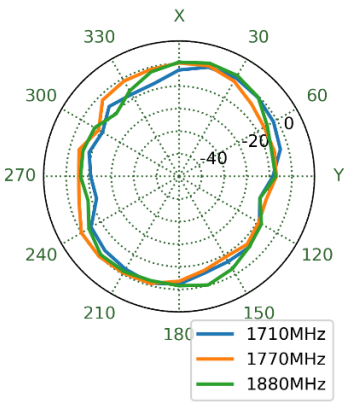
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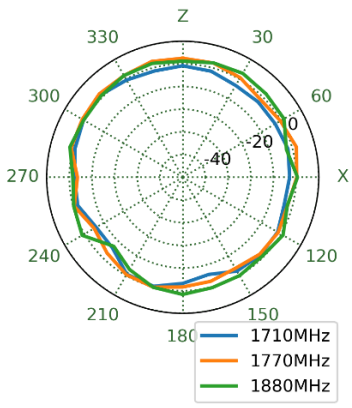
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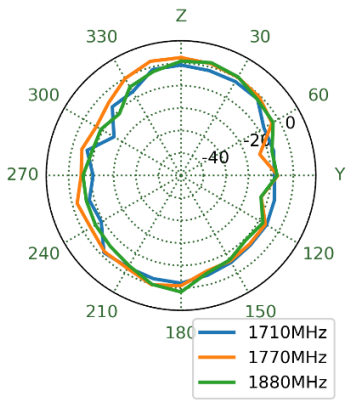
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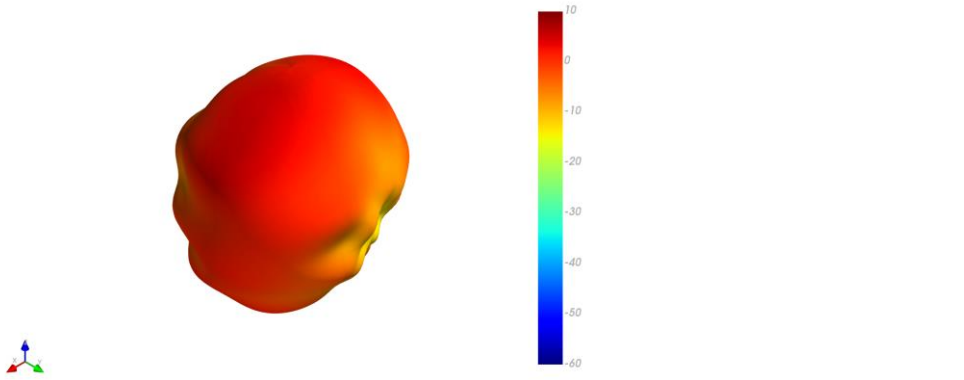
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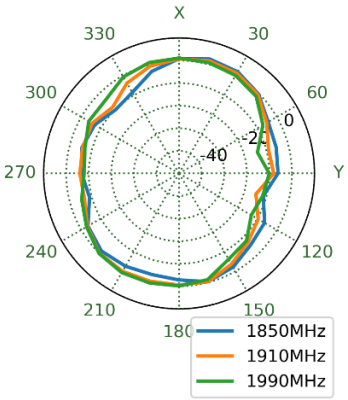
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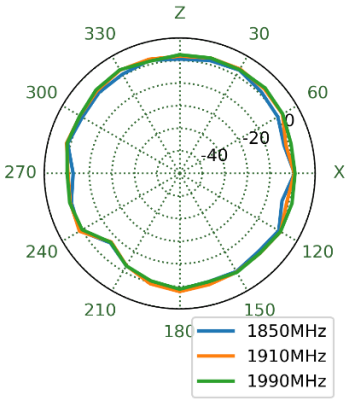
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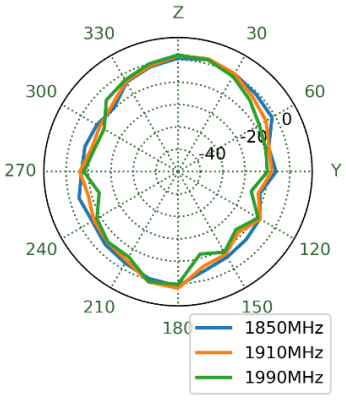
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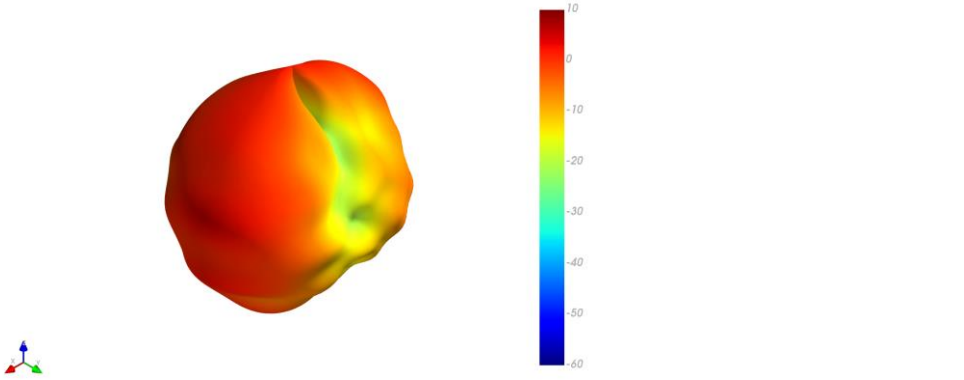
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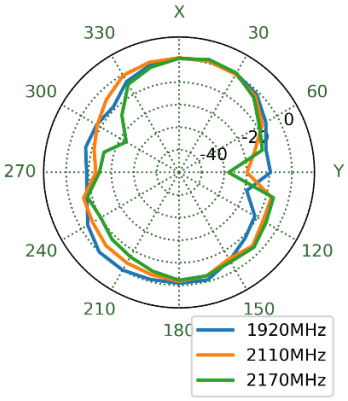
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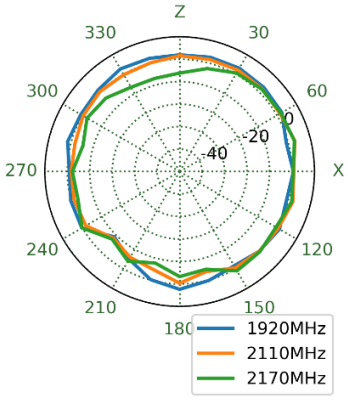
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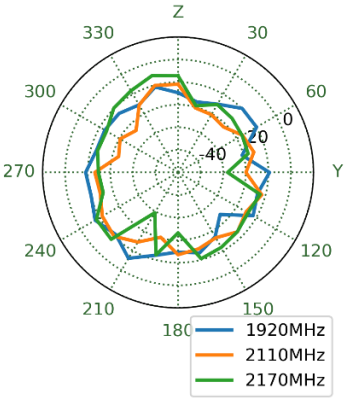
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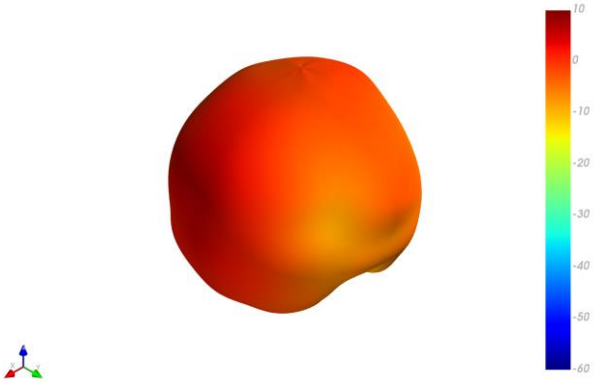
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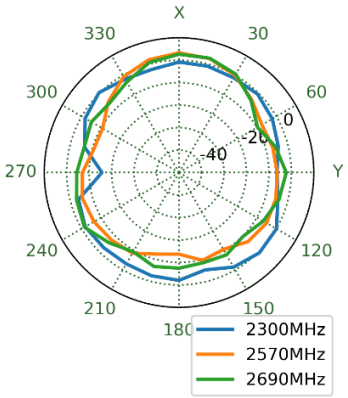
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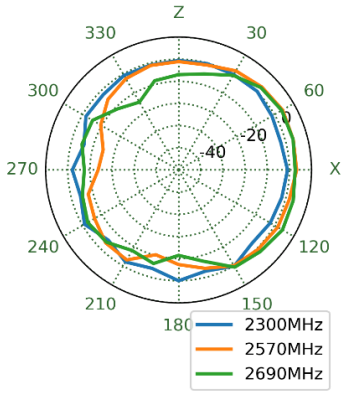
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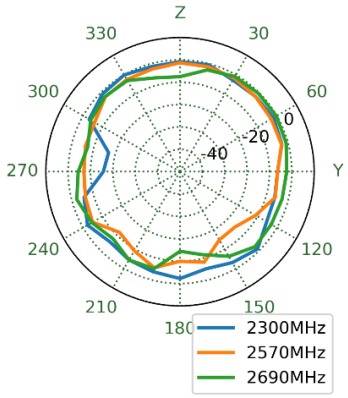
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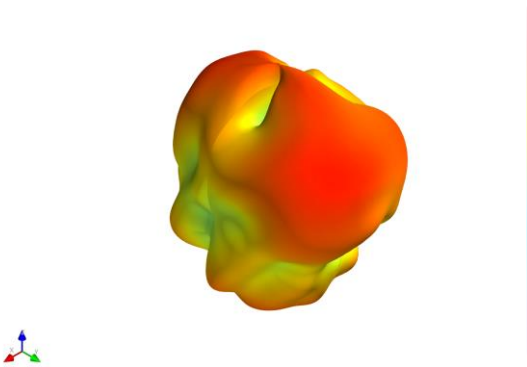
XZ Plane



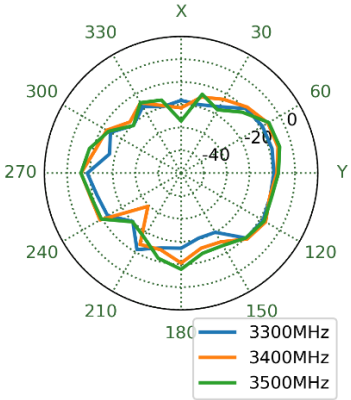
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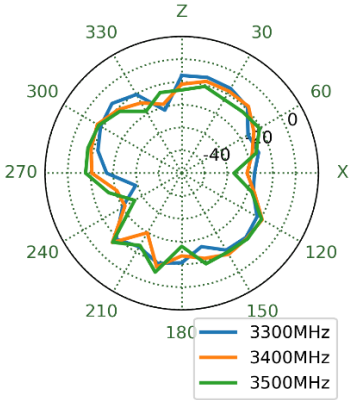
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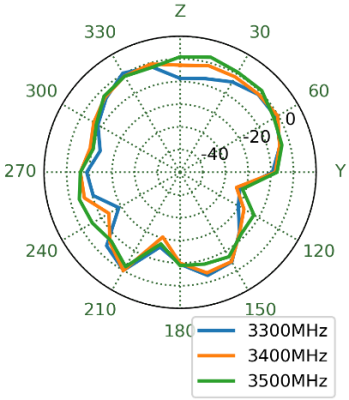
XY Plane



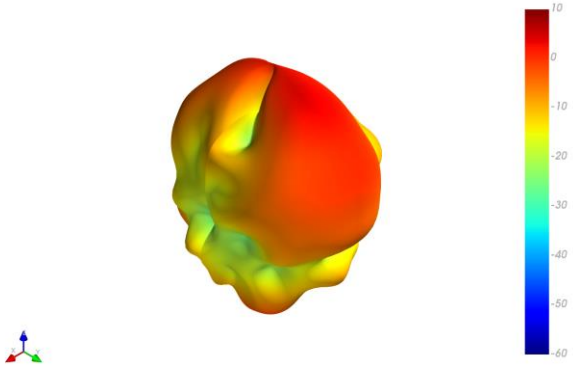
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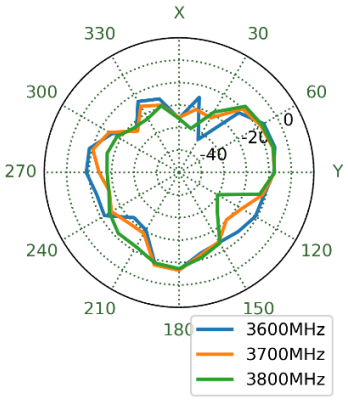
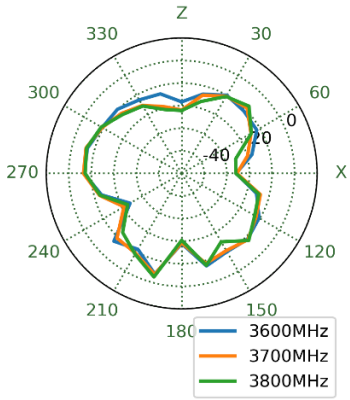
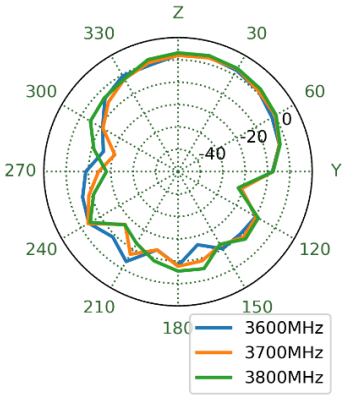


YZ Plane

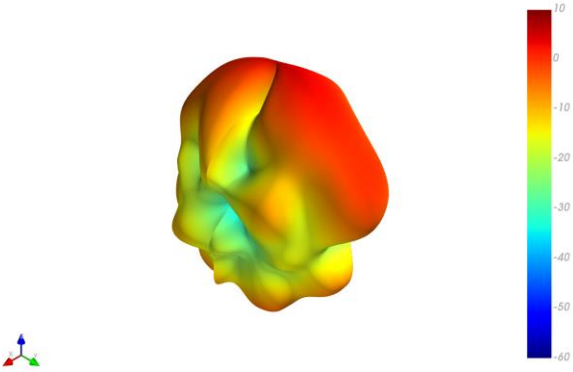


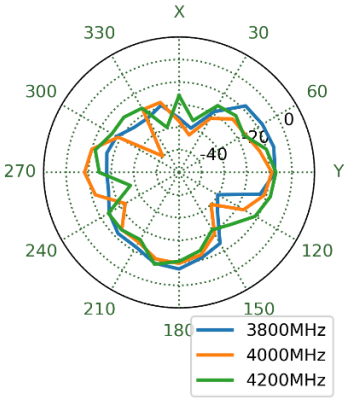
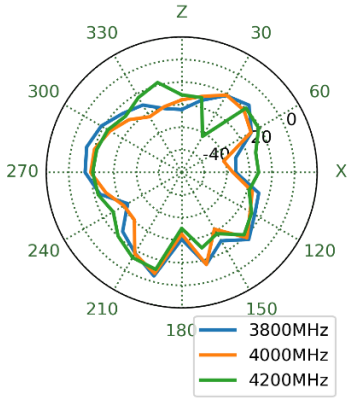
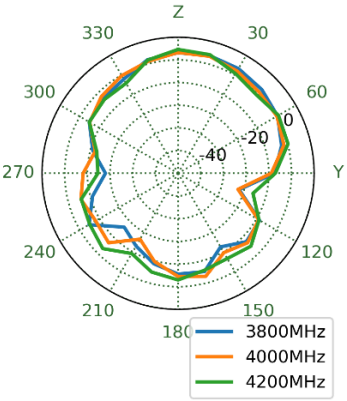
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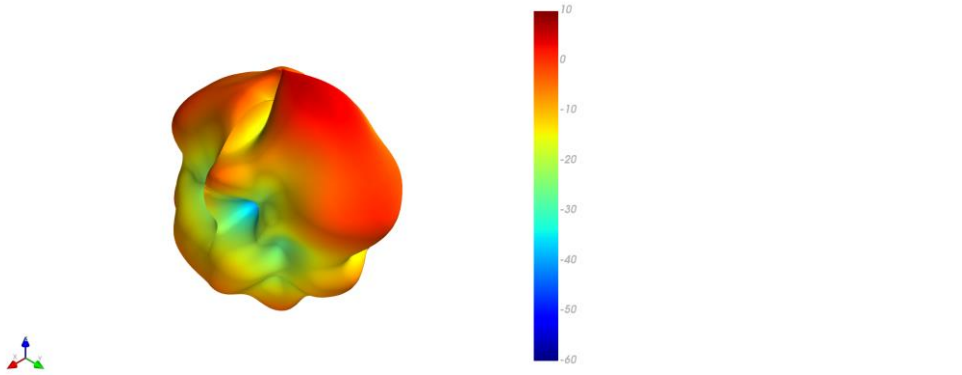
XY Plane	XZ Plane	YZ Plane
		

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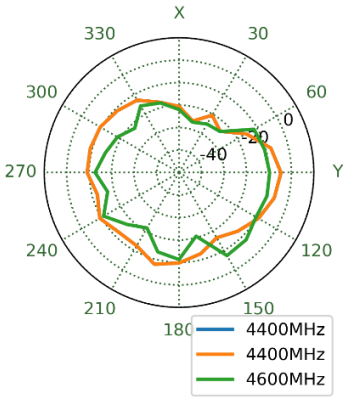


XY Plane	XZ Plane	YZ Plane
		

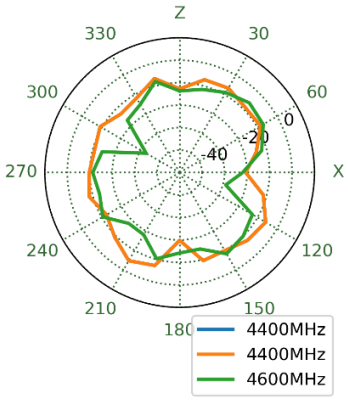
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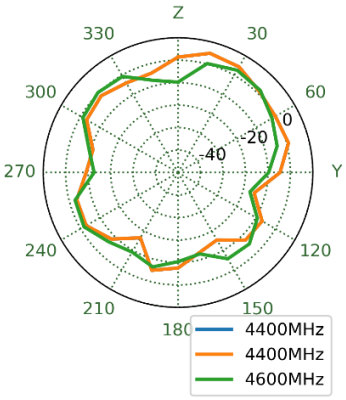
XY Plane



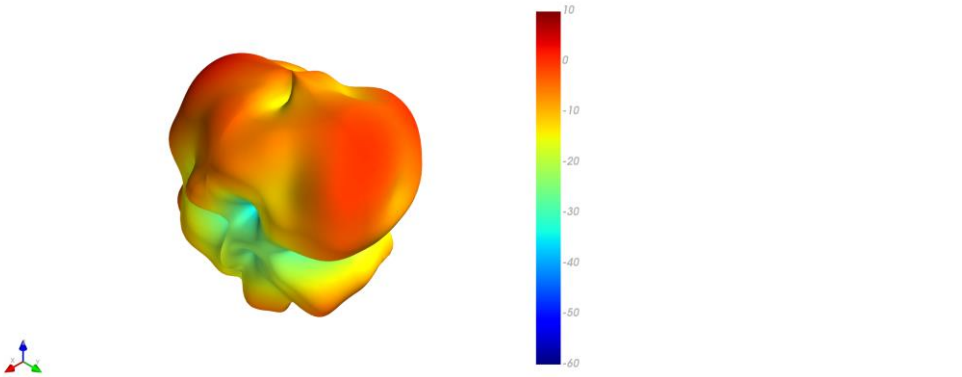
XZ Plane



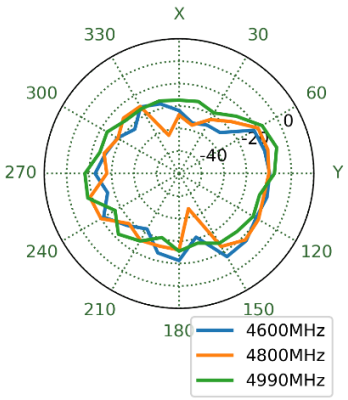
YZ Plane



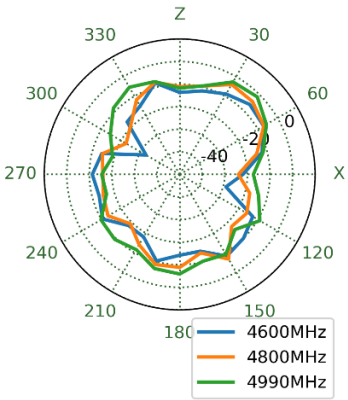
4800MHz



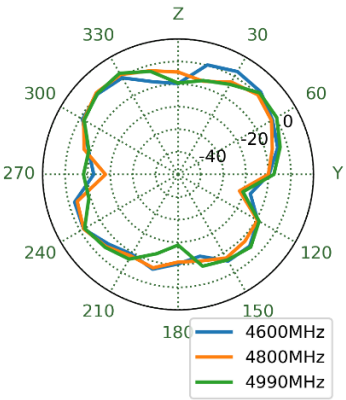
XY Plane



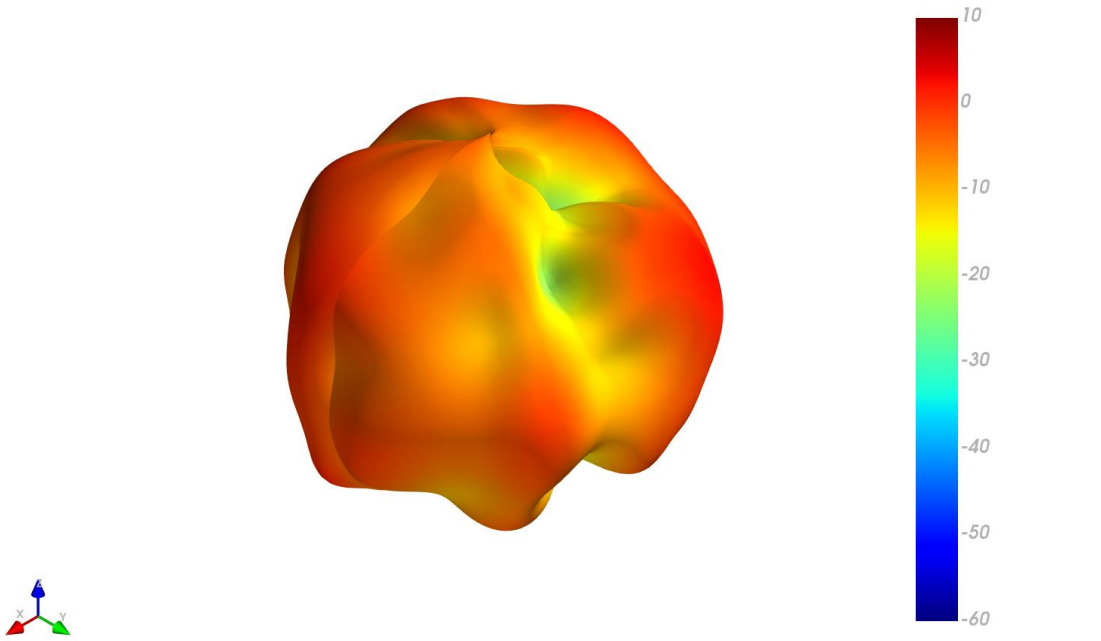
XZ Plane



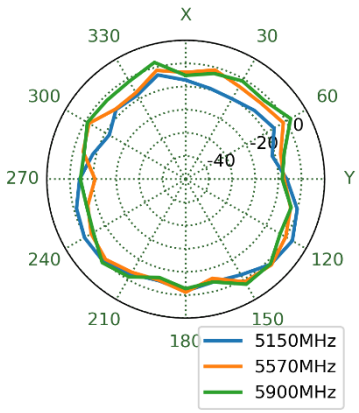
YZ Plane

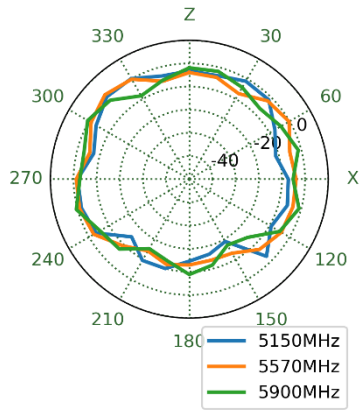


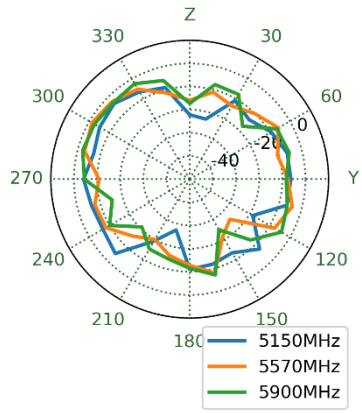
5570MHz



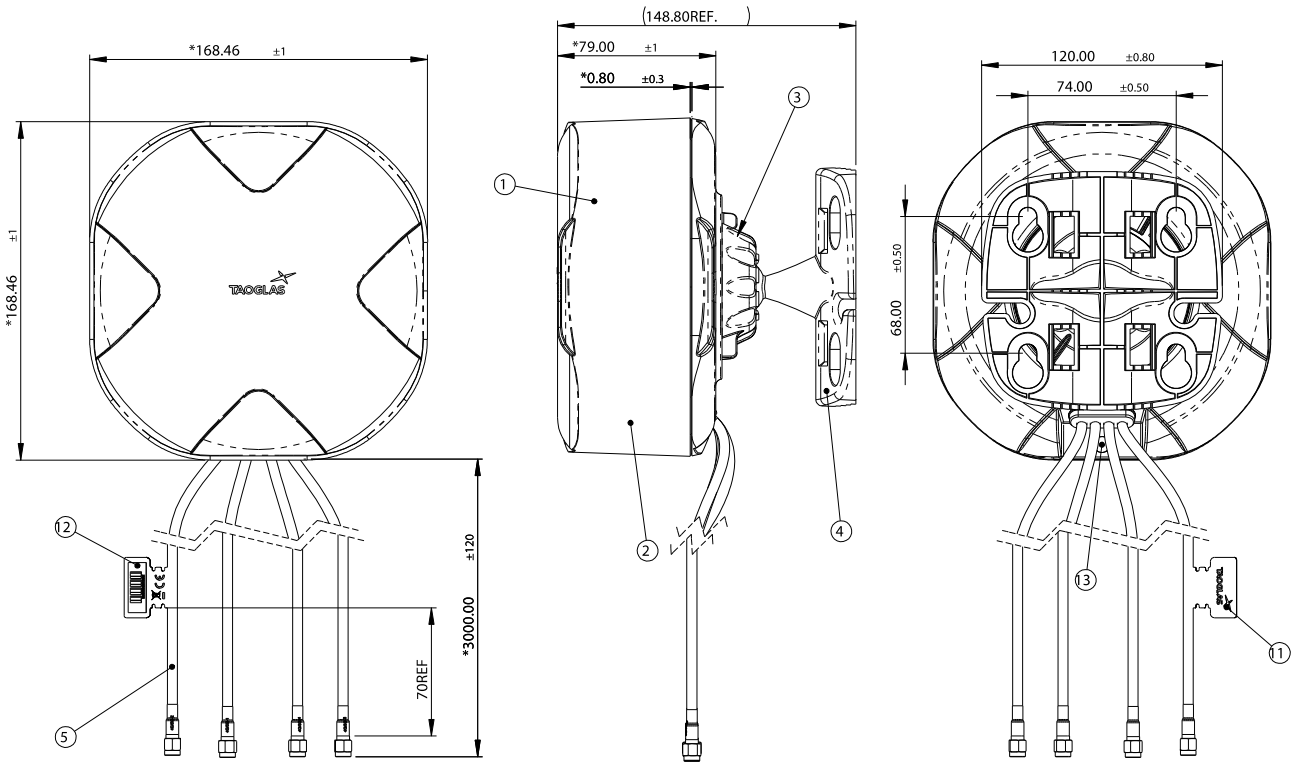
XY Plane	XZ Plane	YZ Plane



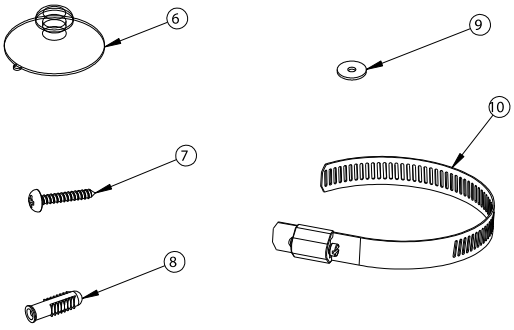




5. Mechanical Drawing (Units: mm)



	Name	Material	Finish	QTY
1	TGX.04 Top Housing	ASA	MT 9050	1
2	TGX.04 Bottom Housing	ASA	MT 9050	1
3	M39 plastic nut_blac	ASA	MT 9050	1
4	Multifunction bracket_blac	ASA	MT 9050	1
5	Cable Assembl	N/A	N/A	1
6	D40 Suction Cup	PVC	Clear	4
7	TP4*25L Screw	Steel	Ni plated	4
8	Wall mount stud	Nylon	White	4
9	Steel Washer	SUS 304	Natural	4
10	Hose clamp	SUS304	Natural	2
11	CE and WEEE logo label	PEPA	White/377C	1
12	Data code label	PET	White	1
13	Gore Vent	N/A	Black	1



6. Installation Guidelines

Installation Instructions

TGX.04 Series

MIMO 5G/4G Antenna

TAOGLAS

Introduction

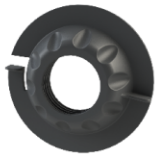
Following these guidelines will help ensure that your Taoglas TGX.04 antenna is installed correctly. The TGX.04 can be mounted via in 3 different variations;wall mount, pole mount and suction cup mount. All mounting methods are outlined below.



Installation **Requirements**

Antenna Components: Mounting Plate (x1), Tightening Nut (x1), Antenna Housing (x1), Coaxial Cable(x4)







- Pole Mount:
  7mm [9/32"] socket wrench or screwdriver, metal mounting clamp (x2)
  Pole Diameter Range: 22mm [0.9"] - 50mm [2"]
  Metal Mounting Clamp
- Wall Mount:
  Screwdriver, drill, M4 [Gauge 8] screw (x4), M4 [Gauge 8] washer (x4), 6mm [1/4"] wall mount stud (x4)
- Suction Cup Mount:
  D40 Suction cups (x4)

Notices

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

Warning
Do not Operate the transmitter when someone is within 20 cm of the antenna.
Do not operate the equipment in an explosive atmosphere.

European Waste Electronic Equipment Directive 2002/96/EC
Please ensure that your old Waste Electricals and Electronics are recycled do not throw them away into standard waste.

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

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IG-21-8-020-A

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Hardware **Installation**

The TGX.45 antenna can be installed with 3 different methods: pole mount, wall mount, and suction cup mount. Please refer to the appropriate section below that best fits your installation needs

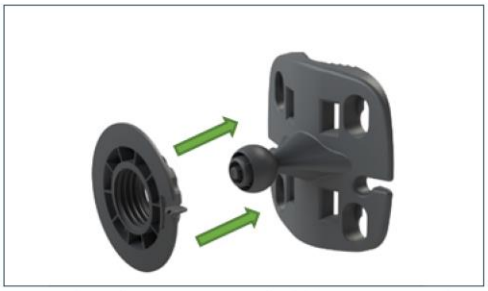
Pole Mount Installation



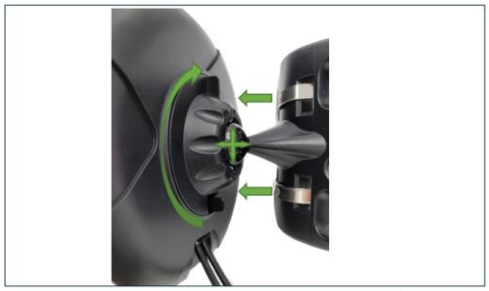
Insert the metal mounting clamps(both top and bottom) through the inner slots of the mounting plate



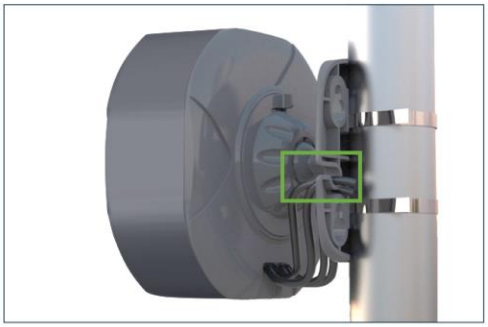
Loop the mouting straps around the pole at the desired position and tighten the strap until the mounting plate is fixed. Use the self centering feature to guide the mounting plate onto the pole



Insert the tightening nut onto the ball joint mount with the flat surface facing away from the mounting plate



Insert the ball joint firmly into the socket on the back of the antenna body and slide the tightening nut into the antenna housing's back plate to secure in place. Adjust to the desired antenna orientation on the bal joint and tighten the nut to fix the antenna in place.



Optional: Route cables through the cable guide on the mounting plate



Completed Installation

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Hardware **Installation**

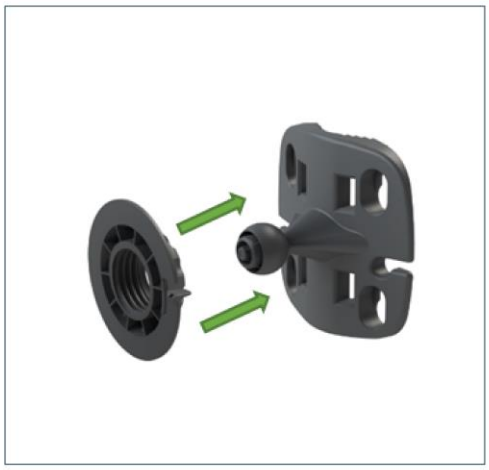
The TGX.45 antenna can be installed with 3 different methods: pole mount, wall mount, and suction cup mount. Please refer to the appropriate section below that best fits your installation needs

Wall Mount Installation

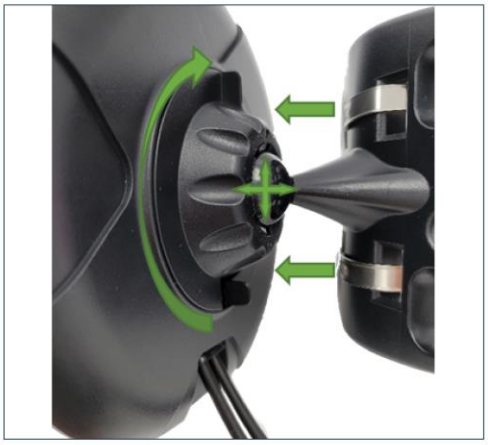


Correct Screw and Washer Location

Using the mounting plate as a guide mark the position of the screws to the desired location. Drill holes for wall mount studs(6mm[1/4"] diamter, min 25mm[1"] depth) and secure the studs in place. Position the washers into the mounting plate, insert the screws through and into the wall studs. Drive the screws in and tighten to secure the mounting plate in place



Insert the tightening nut onto the ball joint mount from the mounting plate



Insert the ball joint firmly into the socket on the back of the antenna bodyand slide the tightening nut into the antenna housing's back plate to secure in place. Adjust to the desired antenna orientation on the ball joint and tighten the nut to fix the antenna in place



Completed Installation

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Hardware **Installation**

The TGX.45 antenna can be installed with 3 different methods: pole mount, wall mount, and suction cup mount. Please refer to the appropriate section below that best fits your installation needs

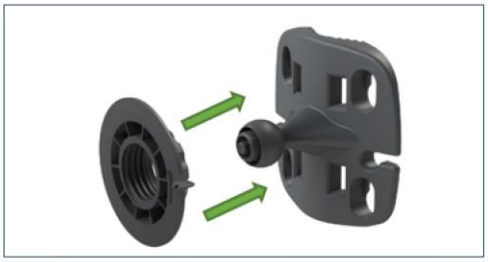
Suction Cup Mount Installation



Insert the metal mounting clamps(both top and bottom) through the inner slots of the mounting plate



Using the mounting plate as guide on the mounting surface, align to the desired location of the antenna. Press firmly on each cup to secure in place
Note: Check that the surface to mount on is flat, non-porous, and has been adequately cleaned to ensure proper adhesion.



Insert the tightening nut onto the ball joint mount with the flat surface facing away from the mounting plate



Insert the ball joint firmly into the socket on the back of the antenna body and slide the tightening nut into the antenna housing's back plate to secure in place. Adjust to the desired antenna orientation on the bal joint and tighten the nut to fix the antenna in place.



Completed Installation

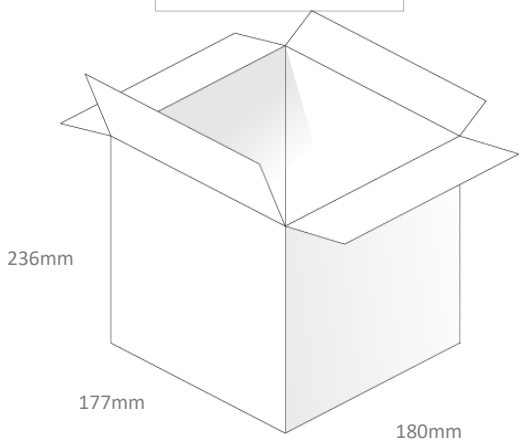
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7. Packaging

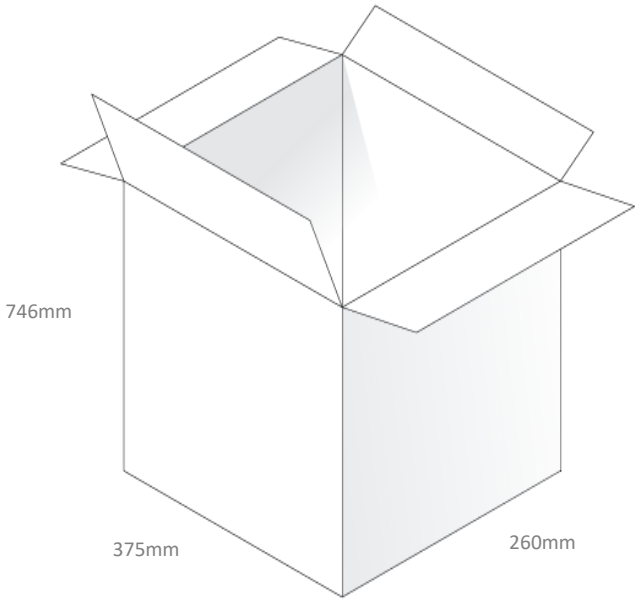
Kit:
1pc TGX.04.A.001
4pcs Suction Cup
4pcs Wall plug + screw
4pcs Steel Washer
2pcs Metal Cable Ties
1 Kit per Small Box
Dimensions: 180*177*236mm
Weight: 900g







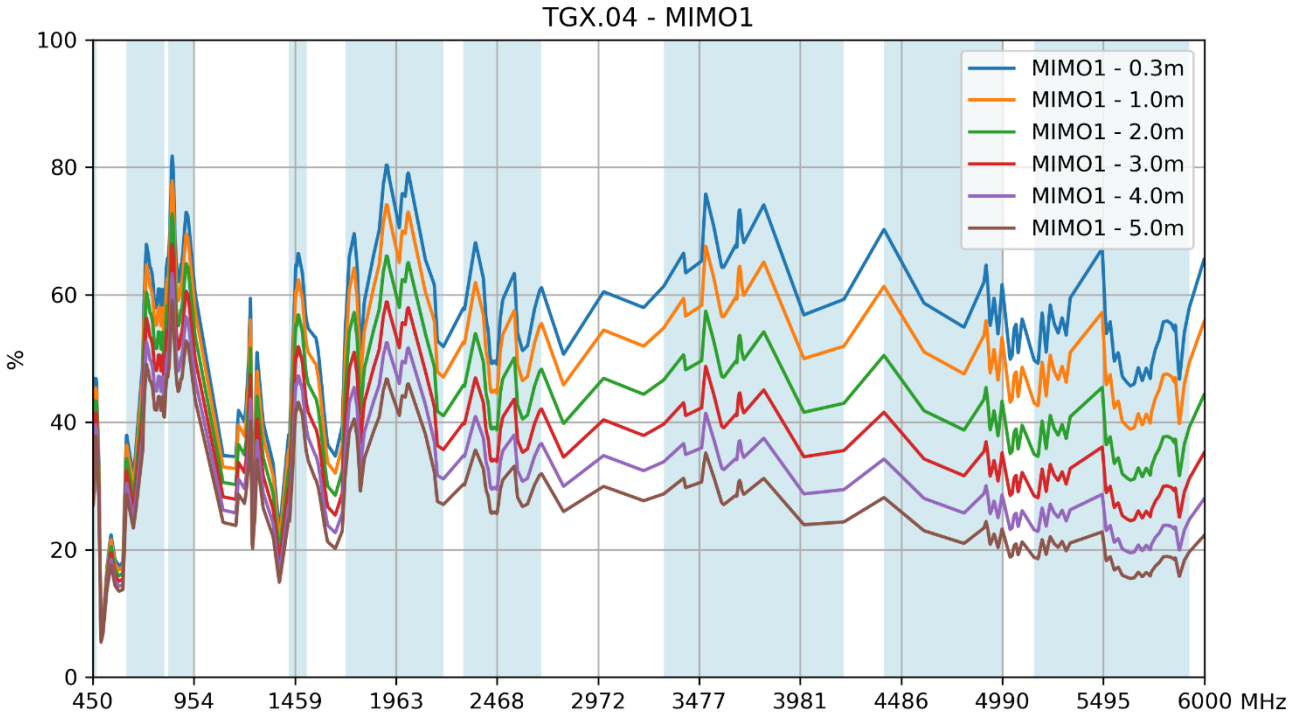
8pcs TGX.04.A.001 per Carton
Carton Dimensions: 746*375*260mm
Weight: 8Kg

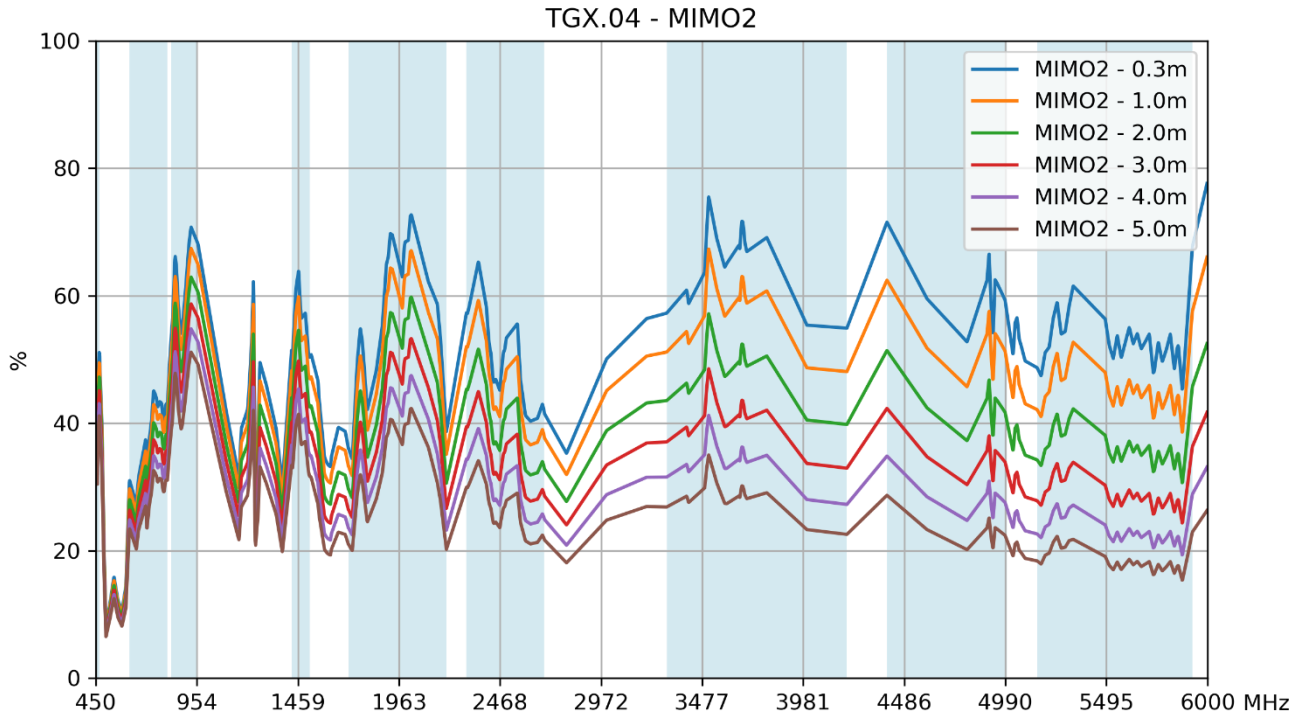


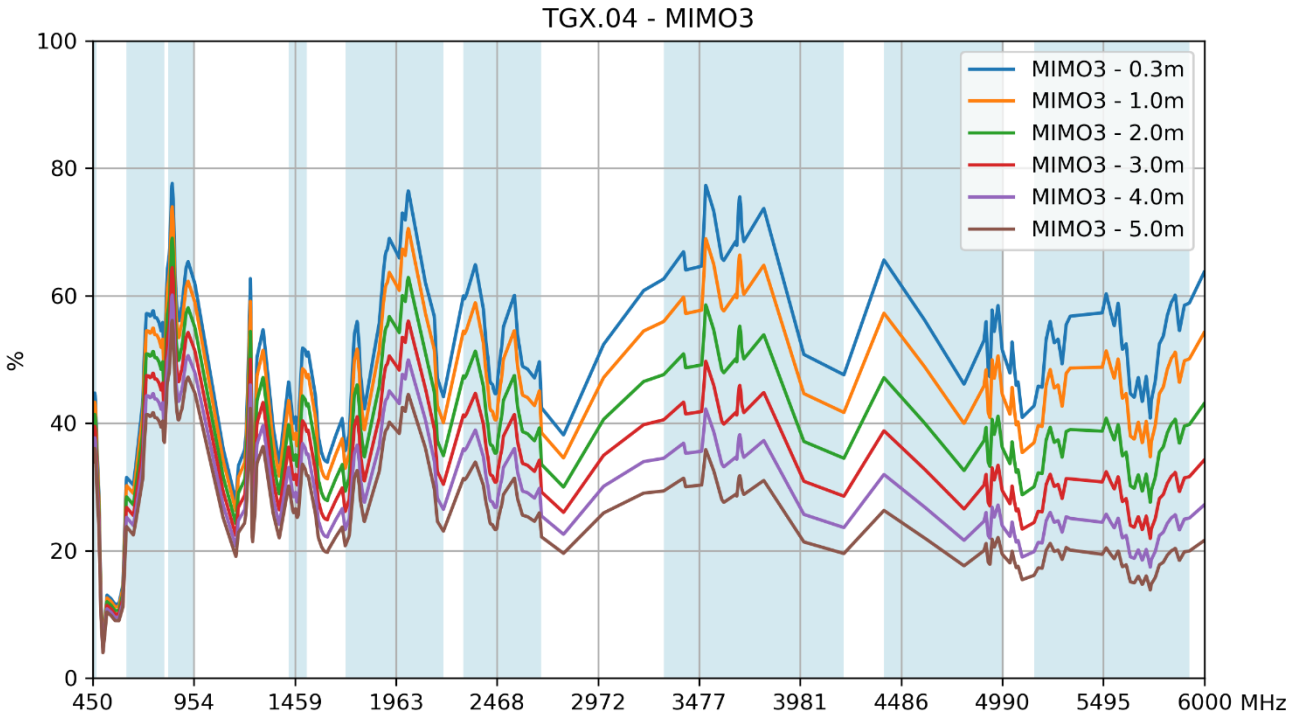
8. Application Note

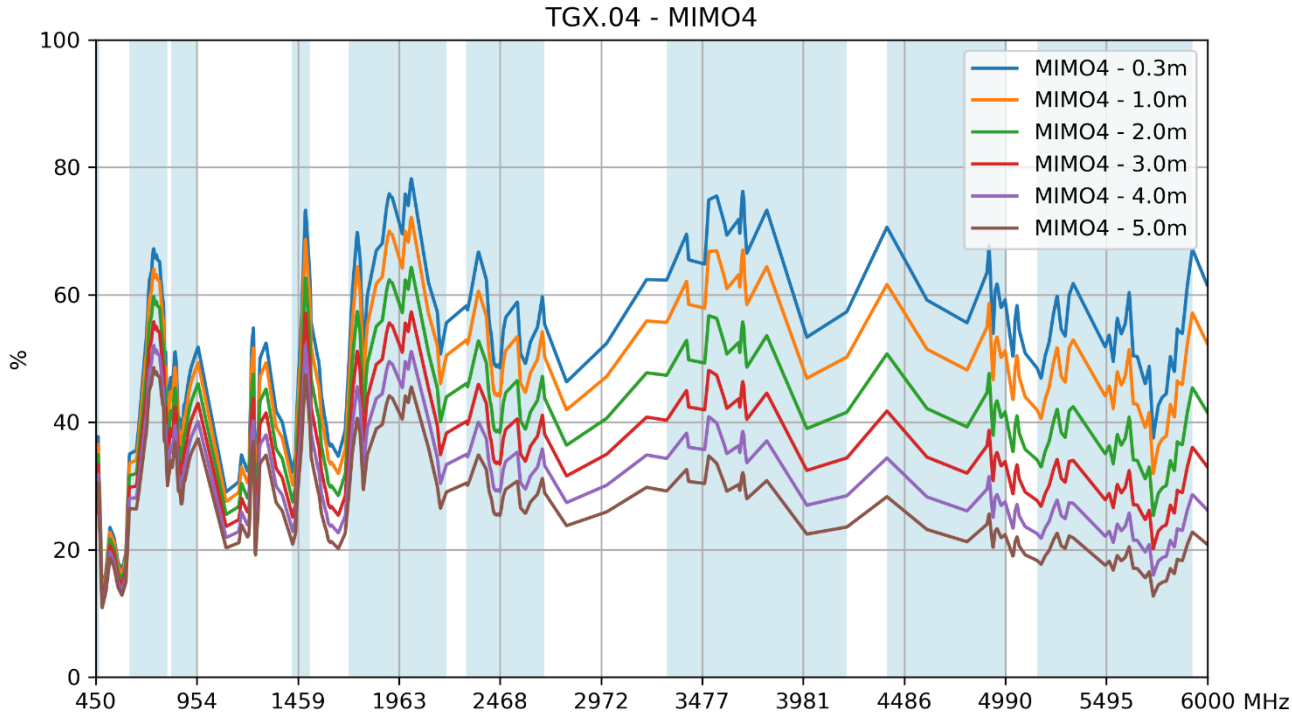
The TGX.04's performance varies based on cable length due to loss values, as demonstrated in the following section.

8.1 Efficiency

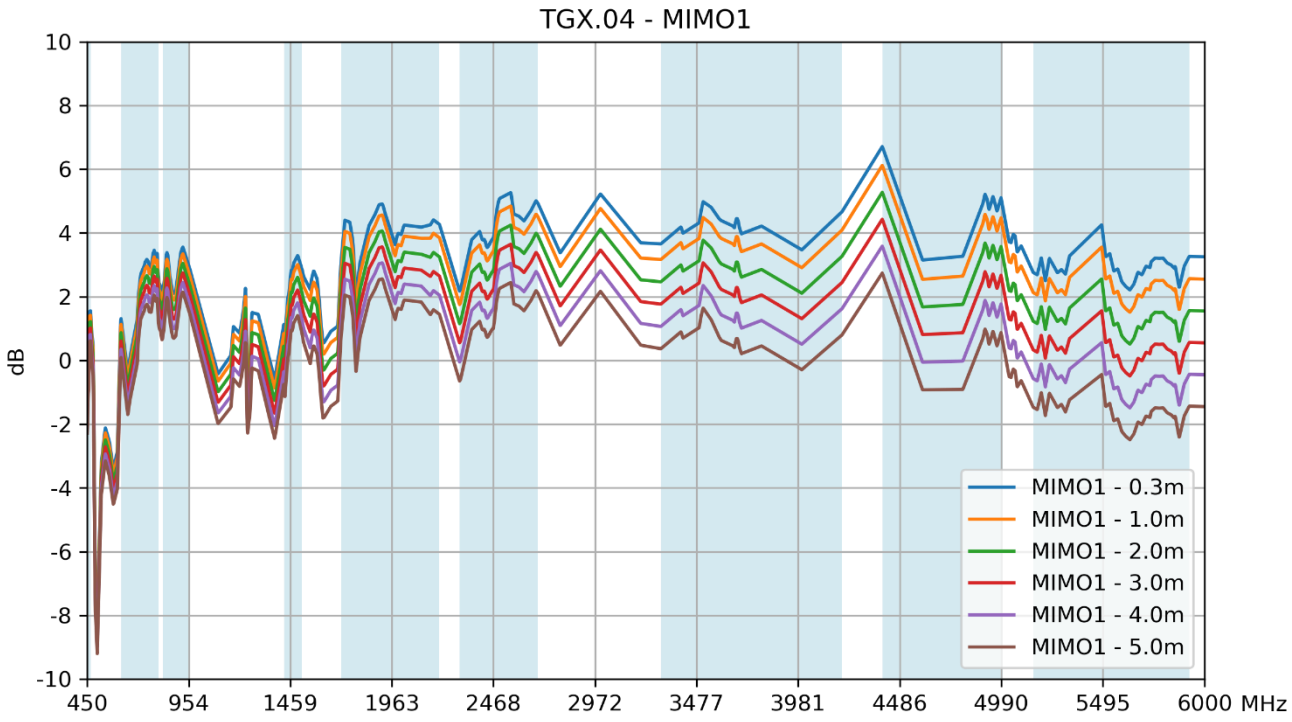


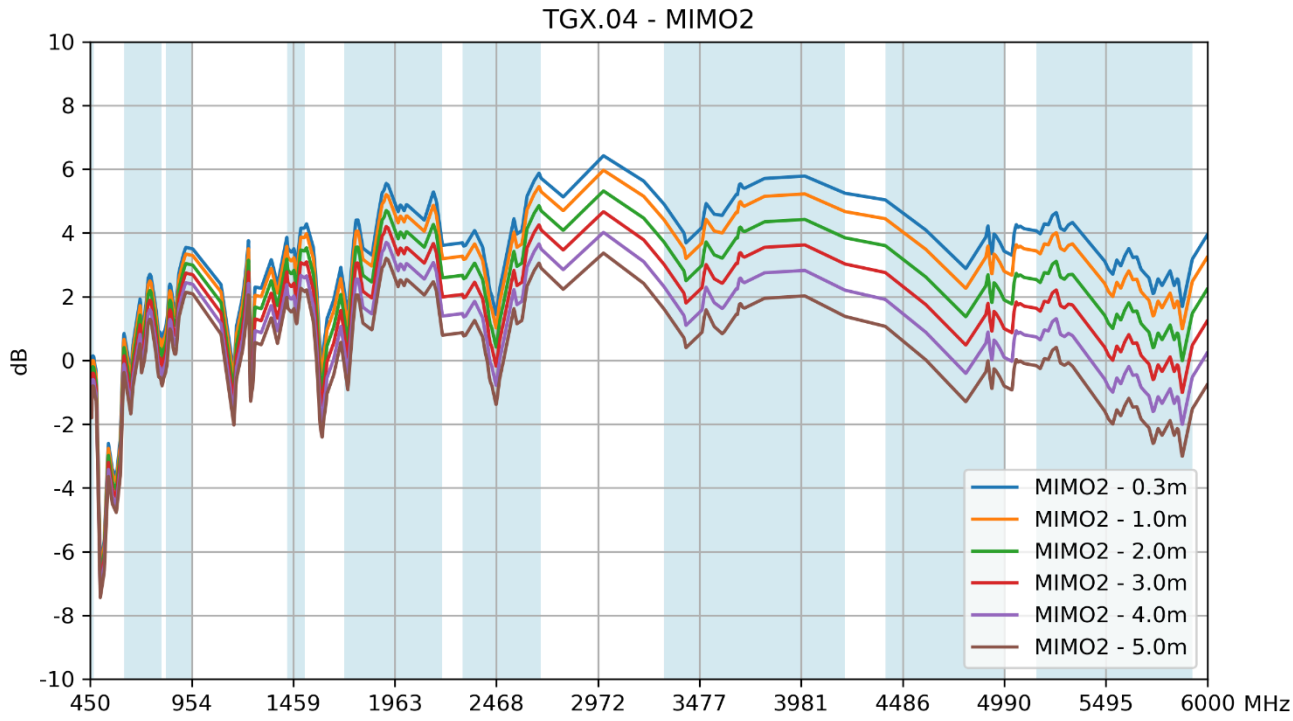


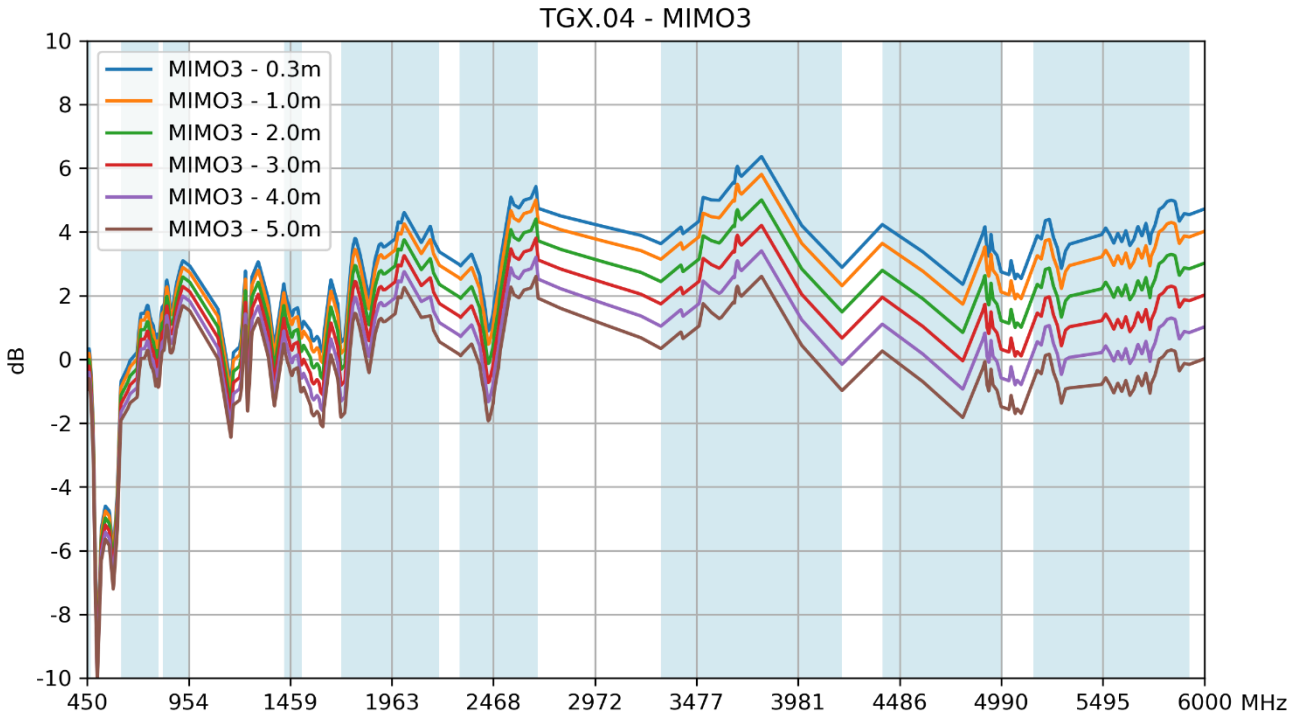

TGX.04 - MIMO3
MIMO3 - 0.3m
MIMO3 - 1.0m
MIMO3 - 2.0m
MIMO3 - 3.0m
MIMO3 - 4.0m
MIMO3 - 5.0m
%
100
80
60
40
20
0
450
954
1459
1963
2468
2972
3477
3981
4486
4990
5495
6000 MHz

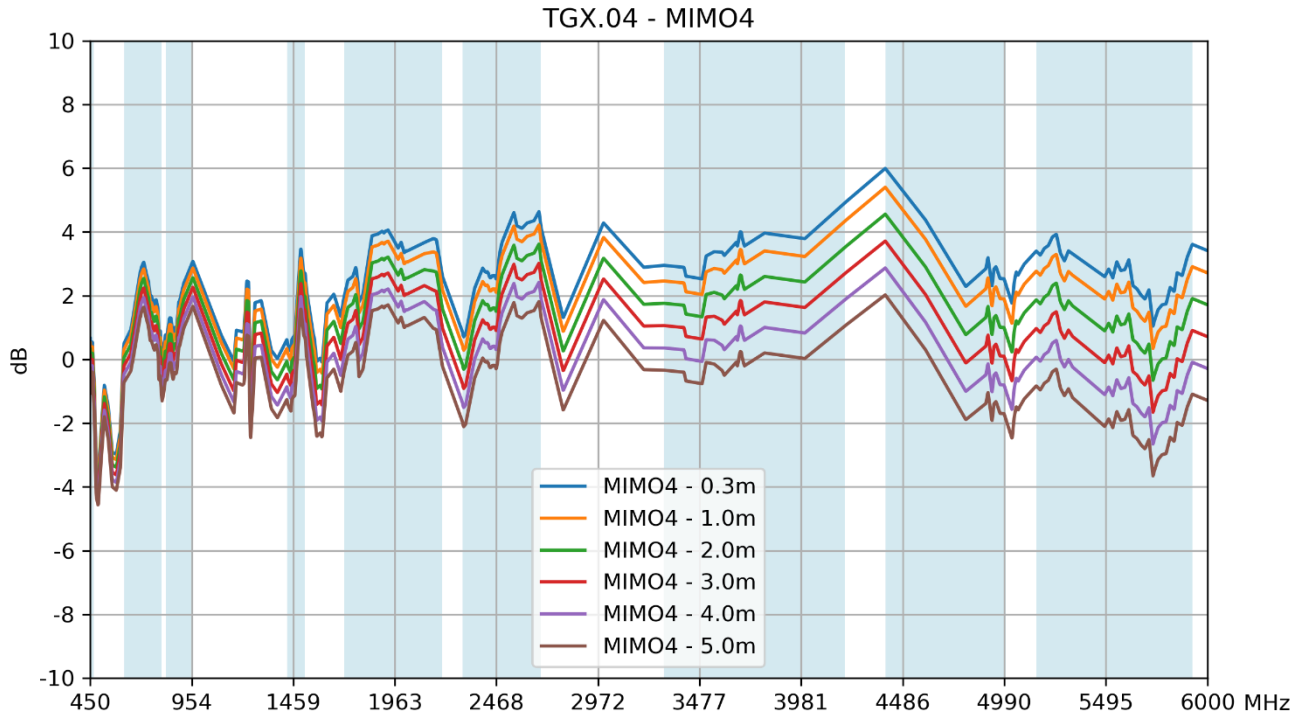

TGX.04 - MIMO4
MIMO4 - 0.3m
MIMO4 - 1.0m
MIMO4 - 2.0m
MIMO4 - 3.0m
MIMO4 - 4.0m
MIMO4 - 5.0m
%
100
80
60
40
20
0
450
954
1459
1963
2468
2972
3477
3981
4486
4990
5495
6000 MHz

8.2 Peak Gain

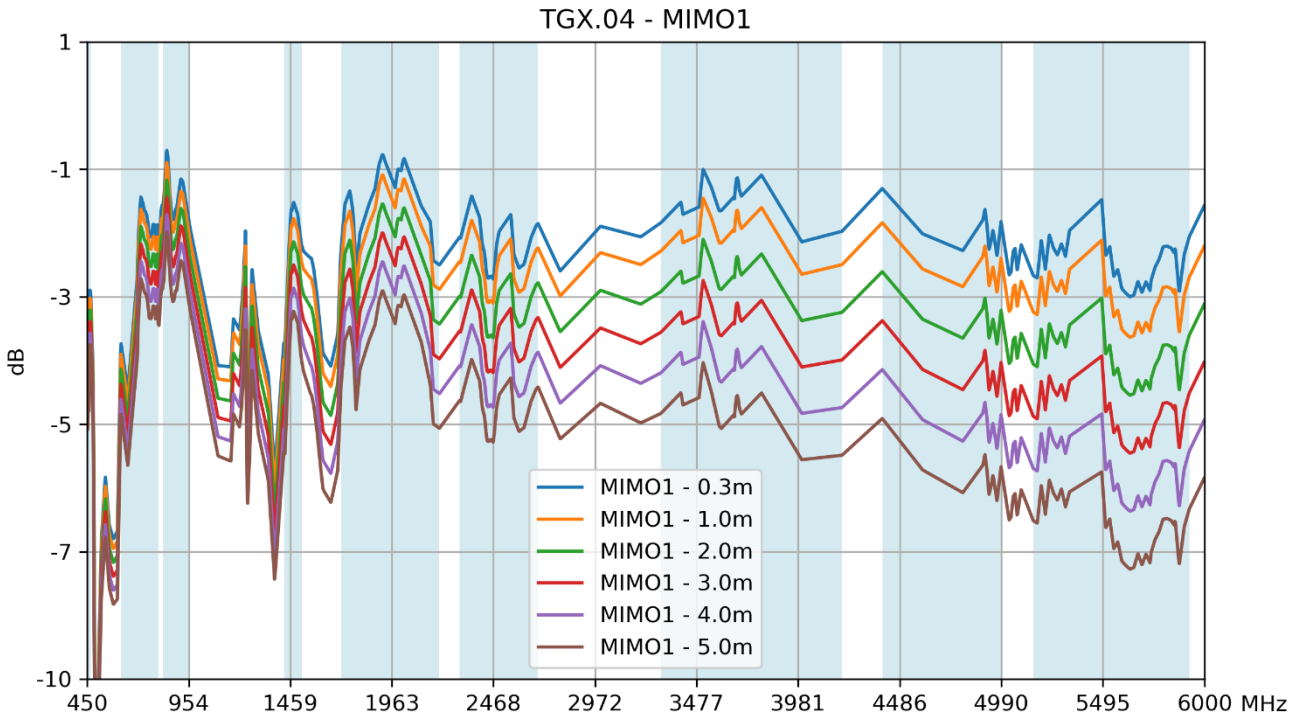

TGX.04 - MIMO1
dB
10
8
6
4
2
0
-2
-4
-6
-8
-10
450
954
1459
1963
2468
2972
3477
3981
4486
4990
5495
6000 MHz
MIMO1 - 0.3m
MIMO1 - 1.0m
MIMO1 - 2.0m
MIMO1 - 3.0m
MIMO1 - 4.0m
MIMO1 - 5.0m

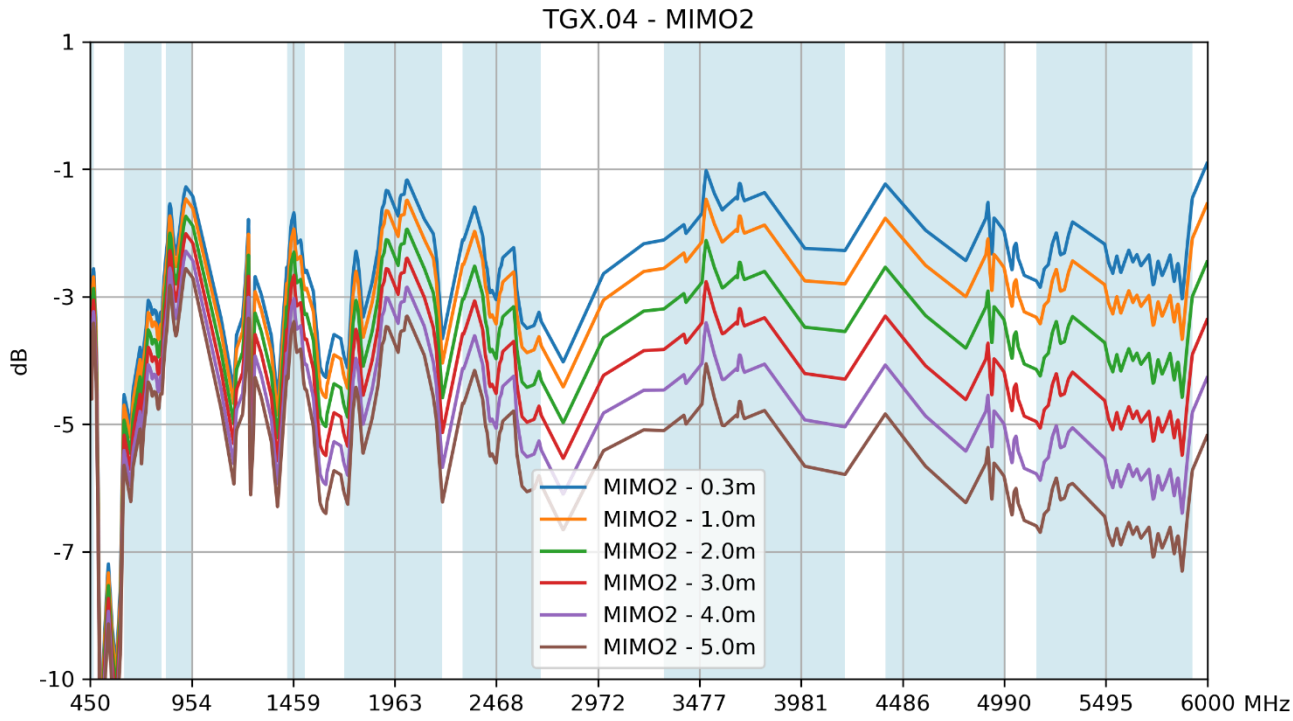

TGX.04 - MIMO2
dB
10
8
6
4
2
0
-2
-4
-6
-8
-10
450
954
1459
1963
2468
2972
3477
3981
4486
4990
5495
6000 MHz
MIMO2 - 0.3m
MIMO2 - 1.0m
MIMO2 - 2.0m
MIMO2 - 3.0m
MIMO2 - 4.0m
MIMO2 - 5.0m

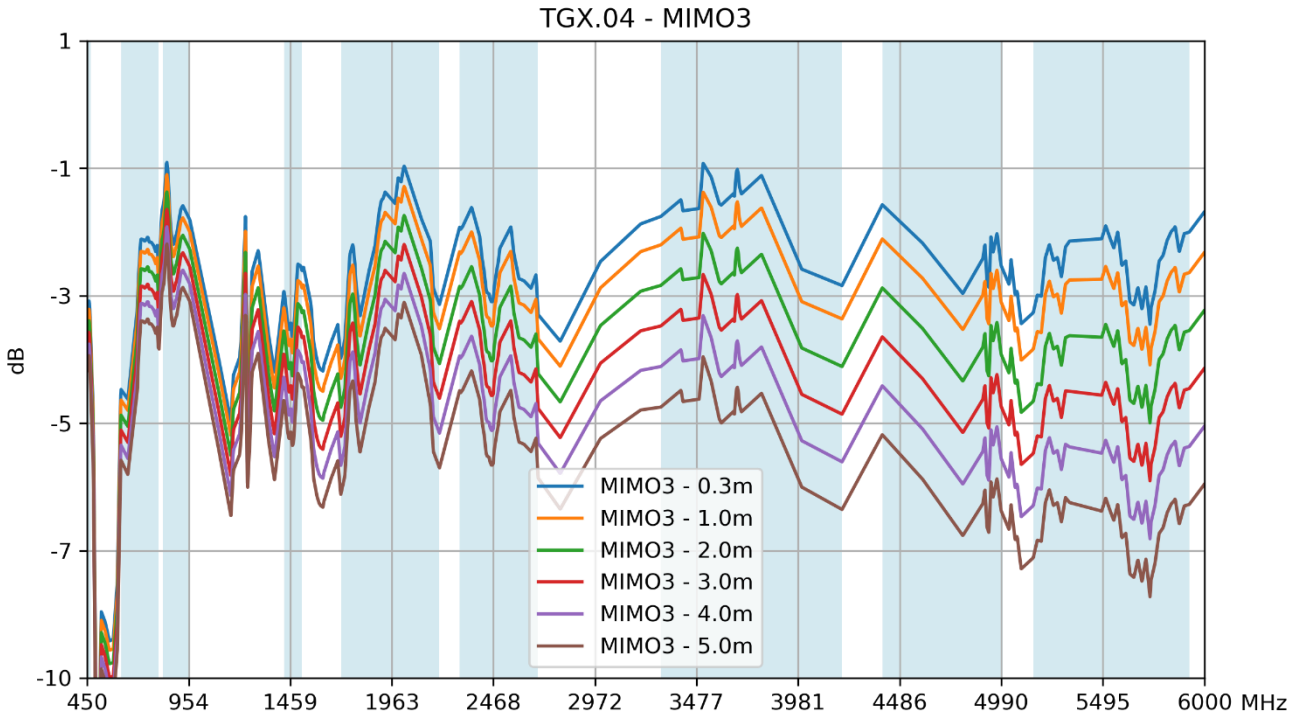

TGX.04 - MIMO3
MIMO3 - 0.3m
MIMO3 - 1.0m
MIMO3 - 2.0m
MIMO3 - 3.0m
MIMO3 - 4.0m
MIMO3 - 5.0m
dB
10
8
6
4
2
0
-2
-4
-6
-8
-10
450
954
1459
1963
2468
2972
3477
3981
4486
4990
5495
6000 MHz

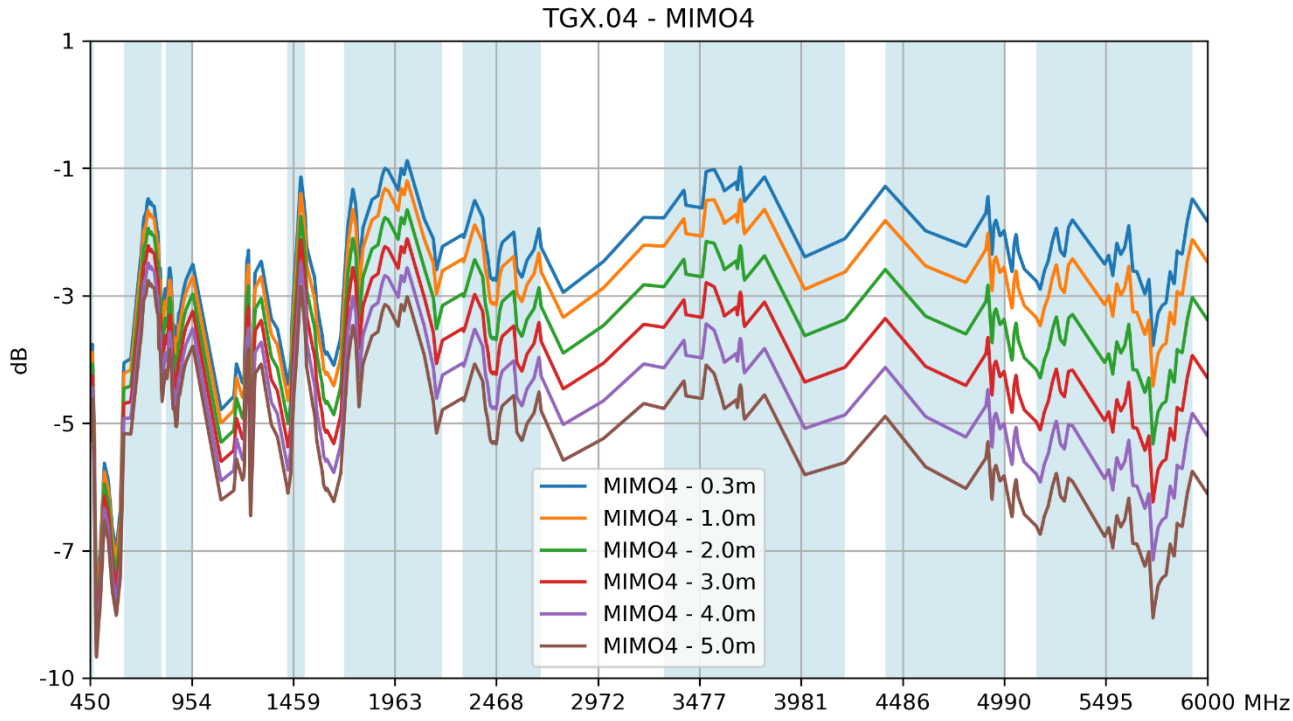

TGX.04 - MIMO4
MIMO4 - 0.3m
MIMO4 - 1.0m
MIMO4 - 2.0m
MIMO4 - 3.0m
MIMO4 - 4.0m
MIMO4 - 5.0m
dB
10
8
6
4
2
0
-2
-4
-6
-8
-10
450
954
1459
1963
2468
2972
3477
3981
4486
4990
5495
6000 MHz

8.3 Average Gain






TGX.04 - MIMO3
dB
1
-1
-3
-5
-7
-10
450
954
1459
1963
2468
2972
3477
3981
4486
4990
5495
6000 MHz
MIMO3 - 0.3m
MIMO3 - 1.0m
MIMO3 - 2.0m
MIMO3 - 3.0m
MIMO3 - 4.0m
MIMO3 - 5.0m


TGX.04 - MIMO4
dB
1
-1
-3
-5
-7
-10
450
954
1459
1963
2468
2972
3477
3981
4486
4990
5495
6000 MHz
MIMO4 - 0.3m
MIMO4 - 1.0m
MIMO4 - 2.0m
MIMO4 - 3.0m
MIMO4 - 4.0m
MIMO4 - 5.0m

8.4 Comparison Table

Frequency (MHz)		LTE 450	5GNR B71	LTE 700	LTE 800/900	5GNR 1500	5GNR n66	LTE 2600	5GNR n77	5GNR n78	5GNR n79	LTE 5200
		450-470	610-698	698-806	824-960	1427-1518	1710-2200	2300-2690	3300-4200	3300-3800	4400-5000	5150-5925
Efficiency (%)												
MIMO1	0.3m	41.2	38.4	60.2	69.0	55.3	68.2	55.2	67.7	68.8	59.8	52.5
	1.0m	39.9	36.7	57.4	65.7	51.8	62.8	50.1	59.8	60.8	51.9	44.9
	2.0m	38.1	34.4	53.5	61.3	47.2	55.8	43.6	50.1	51.0	42.2	35.9
	3.0m	36.4	32.3	50.0	57.2	43.0	49.7	38.0	42.0	42.8	34.4	28.7
	4.0m	34.8	30.3	46.6	53.4	39.2	44.2	33.1	35.2	35.9	28.0	23.0
	5.0m	33.2	28.4	43.5	49.9	35.7	39.3	28.8	29.5	30.1	22.8	18.4
MIMO2	0.3m	44.7	31.8	41.3	60.3	56.1	57.9	49.4	65.9	67.1	60.9	53.0
	1.0m	43.3	30.4	39.3	57.5	52.6	53.3	44.9	58.2	59.3	52.7	45.3
	2.0m	41.3	28.5	36.7	53.7	47.9	47.4	39.1	48.8	49.7	43.0	36.2
	3.0m	39.5	26.7	34.3	50.1	43.7	42.1	34.0	40.9	41.7	35.0	29.0
	4.0m	37.7	25.1	32.0	46.7	39.8	37.5	29.7	34.3	35.0	28.5	23.2
	5.0m	36.0	23.5	29.8	43.6	36.2	33.3	25.8	28.7	29.4	23.2	18.5
MIMO3	0.3m	42.0	34.5	54.7	64.4	44.2	58.7	50.8	67.7	69.7	54.1	52.2
	1.0m	40.6	33.0	52.1	61.4	41.4	54.1	46.2	59.8	61.6	46.8	44.6
	2.0m	38.8	30.9	48.6	57.3	37.7	48.1	40.2	50.1	51.7	38.2	35.7
	3.0m	37.1	29.0	45.4	53.5	34.3	42.7	35.0	42.0	43.3	31.1	28.5
	4.0m	35.4	27.1	42.4	49.9	31.3	38.0	30.5	35.2	36.4	25.3	22.8
	5.0m	33.8	25.4	39.5	46.6	28.5	33.8	26.6	29.5	30.5	20.6	18.2
MIMO4	0.3m	33.4	40.4	60.3	44.7	49.2	66.4	54.0	69.1	70.7	60.9	51.9
	1.0m	32.4	38.6	57.5	42.6	46.0	61.1	49.0	61.1	62.5	52.8	44.4
	2.0m	30.9	36.2	53.6	39.8	41.9	54.4	42.7	51.2	52.4	43.0	35.5
	3.0m	29.5	33.9	50.1	37.1	38.2	48.3	37.2	42.9	43.9	35.0	28.4
	4.0m	28.2	31.8	46.7	34.6	34.8	43.0	32.4	35.9	36.9	28.5	22.7
	5.0m	26.9	29.8	43.6	32.3	31.7	38.2	28.2	30.1	30.9	23.2	18.2
Average Gain (dB)												
MIMO1	0.3m	-3.85	-4.15	-2.20	-1.61	-2.57	-1.66	-2.58	-1.69	-1.62	-2.23	-2.80
	1.0m	-3.99	-4.35	-2.41	-1.82	-2.86	-2.02	-3.00	-2.23	-2.16	-2.85	-3.48
	2.0m	-4.19	-4.63	-2.71	-2.12	-3.26	-2.53	-3.60	-3.00	-2.92	-3.74	-4.45
	3.0m	-4.39	-4.91	-3.01	-2.42	-3.67	-3.04	-4.20	-3.77	-3.69	-4.63	-5.42
	4.0m	-4.59	-5.19	-3.31	-2.72	-4.07	-3.55	-4.80	-4.53	-4.45	-5.52	-6.39
	5.0m	-4.79	-5.47	-3.61	-3.02	-4.48	-4.06	-5.40	-5.30	-5.21	-6.41	-7.36
MIMO2	0.3m	-3.50	-4.97	-3.84	-2.19	-2.51	-2.38	-3.06	-1.81	-1.73	-2.16	-2.75
	1.0m	-3.64	-5.17	-4.05	-2.40	-2.79	-2.73	-3.48	-2.35	-2.27	-2.78	-3.44
	2.0m	-3.84	-5.45	-4.35	-2.70	-3.20	-3.24	-4.08	-3.12	-3.03	-3.67	-4.41
	3.0m	-4.04	-5.73	-4.65	-3.00	-3.60	-3.76	-4.68	-3.89	-3.80	-4.56	-5.38

	4.0m	-4.24	-6.01	-4.95	-3.30	-4.00	-4.27	-5.28	-4.65	-4.56	-5.45	-6.35
	5.0m	-4.44	-6.29	-5.25	-3.60	-4.41	-4.78	-5.88	-5.42	-5.32	-6.34	-7.32
MIMO3	0.3m	-3.77	-4.62	-2.62	-1.91	-3.55	-2.31	-2.94	-1.70	-1.57	-2.67	-2.82
	1.0m	-3.91	-4.82	-2.83	-2.12	-3.83	-2.67	-3.36	-2.23	-2.10	-3.29	-3.50
	2.0m	-4.11	-5.10	-3.13	-2.42	-4.24	-3.18	-3.96	-3.00	-2.87	-4.18	-4.48
	3.0m	-4.31	-5.38	-3.43	-2.72	-4.65	-3.69	-4.56	-3.77	-3.63	-5.07	-5.45
	4.0m	-4.51	-5.66	-3.73	-3.02	-5.05	-4.20	-5.16	-4.54	-4.39	-5.96	-6.42
	5.0m	-4.71	-5.95	-4.03	-3.32	-5.46	-4.71	-5.76	-5.30	-5.16	-6.85	-7.39
MIMO4	0.3m	-4.76	-3.94	-2.19	-3.49	-3.08	-1.78	-2.68	-1.60	-1.51	-2.15	-2.85
	1.0m	-4.90	-4.13	-2.40	-3.70	-3.37	-2.14	-3.10	-2.14	-2.04	-2.78	-3.53
	2.0m	-5.10	-4.42	-2.70	-4.00	-3.77	-2.65	-3.70	-2.91	-2.81	-3.67	-4.50
	3.0m	-5.30	-4.70	-3.00	-4.30	-4.18	-3.16	-4.30	-3.68	-3.57	-4.56	-5.47
	4.0m	-5.50	-4.98	-3.30	-4.60	-4.59	-3.67	-4.90	-4.44	-4.33	-5.45	-6.44
	5.0m	-5.70	-5.26	-3.60	-4.90	-4.99	-4.18	-5.50	-5.21	-5.10	-6.34	-7.41
Peak Gain (dBi)												
MIMO1	0.3m	1.57	1.38	3.46	3.56	3.30	4.91	5.27	4.98	4.98	6.71	4.26
	1.0m	1.43	1.20	3.25	3.35	3.02	4.56	4.85	4.48	4.48	6.12	3.56
	2.0m	1.23	0.94	2.95	3.05	2.62	4.06	4.25	3.77	3.77	5.28	2.56
	3.0m	1.03	0.68	2.65	2.75	2.22	3.56	3.65	3.06	3.06	4.43	1.56
	4.0m	0.83	0.42	2.35	2.45	1.82	3.06	3.05	2.35	2.35	3.59	0.56
	5.0m	0.63	0.16	2.05	2.15	1.42	2.56	2.45	1.64	1.64	2.74	-0.44
MIMO2	0.3m	0.18	1.93	2.70	3.55	4.20	5.56	5.88	5.78	5.71	5.04	4.64
	1.0m	0.04	1.72	2.49	3.34	3.90	5.21	5.46	5.22	5.15	4.45	4.01
	2.0m	-0.16	1.42	2.19	3.04	3.47	4.71	4.86	4.42	4.35	3.60	3.11
	3.0m	-0.36	1.12	1.89	2.74	3.07	4.21	4.26	3.62	3.55	2.76	2.21
	4.0m	-0.56	0.82	1.59	2.44	2.67	3.71	3.66	2.82	2.75	1.91	1.31
	5.0m	-0.76	0.52	1.29	2.14	2.27	3.21	3.06	2.02	1.95	1.07	0.41
MIMO3	0.3m	0.34	0.22	1.70	3.10	2.38	4.61	5.44	6.37	6.37	4.23	5.00
	1.0m	0.20	0.01	1.49	2.89	2.10	4.26	5.02	5.81	5.81	3.64	4.30
	2.0m	-0.00	-0.29	1.19	2.59	1.70	3.76	4.42	5.01	5.01	2.80	3.30
	3.0m	-0.20	-0.59	0.89	2.29	1.30	3.26	3.82	4.21	4.21	1.95	2.30
	4.0m	-0.40	-0.89	0.59	1.99	0.90	2.76	3.22	3.41	3.41	1.11	1.30
	5.0m	-0.60	-1.19	0.29	1.69	0.50	2.26	2.62	2.61	2.61	0.26	0.30
MIMO4	0.3m	0.76	2.73	3.06	3.08	3.52	4.06	4.65	4.92	4.01	5.99	3.93
	1.0m	0.62	2.52	2.85	2.87	3.24	3.71	4.23	4.34	3.45	5.40	3.30
	2.0m	0.42	2.22	2.55	2.57	2.84	3.21	3.63	3.52	2.65	4.56	2.40
	3.0m	0.22	1.92	2.25	2.27	2.44	2.71	3.03	2.70	1.85	3.71	1.50
	4.0m	0.02	1.62	1.95	1.97	2.04	2.21	2.43	1.88	1.05	2.87	0.60
	5.0m	-0.18	1.32	1.65	1.67	1.64	1.71	1.83	1.05	0.25	2.03	-0.30

Changelog for the datasheet

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Revision: B (Current Version)	
Date:	2025-02-03
Notes:	Update the washer material in packaging information.
Author:	Paul Liu

Previous Revisions

Revision: A (Original First Release)	
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Notes:	
Author:	Jack Conroy

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