TAOGLAS

Datasheet

Monsoon

Part No:
GA.170.305111

Description:

5G/4G Monsoon Permanent Mount External Antenna with 3000mm TGC-200 and SMA(M)

Features:

1*5G/4G Antenna
Worldwide 5G/4G Bands, 600MHz-6GHz
IP69K Rated, Robust ABS+PC Enclosure
Permanent (Screw) Mount Antenna
Cable: 3M TGC-200
Connector: SMA(M)ST
Dimensions: 204*69*31 mm
RoHS & Reach Compliant

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Ireland ISO 9001: 2015 Certified

Taiwan ISO 9001: 2015 Certified

1. Introduction

The Taoglas GA.170 Monsoon antenna is a low profile, fully IP69K waterproof external M2M antenna for use on containers for global telematics services. The GA.170 delivers best-in-class 5G/4G antenna performance from 600-6000MHz.

Typical applications include:

- HD Video over LTE
- First Responder and Emergency Services
- Intelligent Transport Systems
- Internet of Things (IoT market)
- High Definition Video Broadcast Systems
- Wireless LTE M2M Devices
- Digital Signage

5G/4G applications demand high speed data uplink and downlink. A high-efficiency and high-gain antenna is required to achieve the required signal to noise ratio and throughput required to solve these challenges. The GA.170 does not require a ground plane. Low loss cables are used to keep efficiency high over long cable lengths.

Cables and connectors are fully customizable. Contact your regional Taoglas customer support team for further information.

2. Specifications

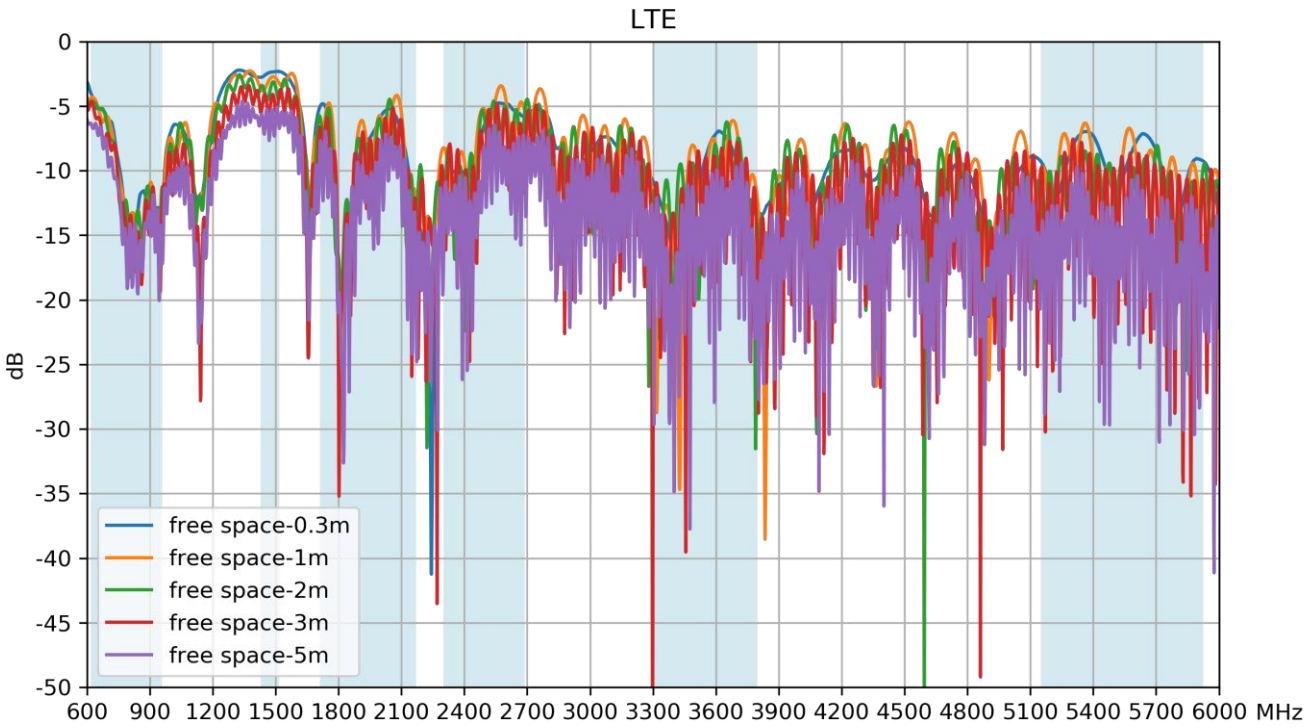
Cellular											
Frequency (MHz)		5G NR Band 71	LTE700	GSM 850/900	5G NR Band	DCS	PCS	UMTS1	LTE2600	5G NR Band 77, 78, 79	LTE5200/ Wi-Fi 5800
		617 ~698	698 ~806	824 ~960	1427~ 1518	1710 ~1880	1850 ~1990	1920 ~2170	2490 ~2690	3300 ~3500	5150 ~5925
Efficiency (%)											
Free space	0.3m	33.54	55.25	57.26	25.92	54.79	54.93	52.11	52.30	58.39	67.81
	1m	32.04	52.64	54.55	24.29	50.55	50.68	47.90	47.48	51.64	57.92
	2m	30.02	49.13	50.91	22.13	45.05	45.17	42.47	41.36	43.34	46.26
	3m	28.13	45.85	47.51	20.16	40.15	40.25	37.66	36.02	36.38	36.94
	5m	24.70	39.93	41.38	16.73	31.90	31.98	29.62	27.32	25.64	23.57
30x30cm Ground Plane	0.3m	42.25	57.68	66.18	16.82	60.43	61.07	53.58	51.85	57.69	70.42
	1m	40.37	54.96	63.05	15.75	55.75	56.34	49.24	47.07	51.03	60.16
	2m	37.83	51.29	58.85	14.35	49.69	50.22	43.65	41.00	42.83	48.04
	3m	35.45	47.87	54.92	13.07	44.28	44.76	38.70	35.71	35.95	38.36
	5m	31.13	41.69	47.83	10.85	35.18	35.55	30.42	27.09	25.34	24.47
Average Gain											
Free space	0.3m	-4.74	-2.58	-2.42	-5.86	-2.61	-2.60	-2.83	-2.81	-2.34	-1.69
	1m	-4.94	-2.79	-2.63	-6.15	-2.96	-2.95	-3.20	-3.23	-2.87	-2.37
	2m	-5.23	-3.09	-2.93	-6.55	-3.46	-3.45	-3.72	-3.83	-3.63	-3.35
	3m	-5.51	-3.39	-3.23	-6.96	-3.96	-3.95	-4.24	-4.43	-4.39	-4.32
	5m	-6.07	-3.99	-3.83	-7.76	-4.96	-4.95	-5.28	-5.63	-5.91	-6.28
30x30cm Ground Plane	0.3m	-3.74	-2.39	-1.79	-7.74	-2.19	-2.14	-2.71	-2.85	-2.39	-1.52
	1m	-3.94	-2.60	-2.00	-8.03	-2.54	-2.49	-3.08	-3.27	-2.92	-2.21
	2m	-4.22	-2.90	-2.30	-8.43	-3.04	-2.99	-3.60	-3.87	-3.68	-3.18
	3m	-4.50	-3.20	-2.60	-8.84	-3.54	-3.49	-4.12	-4.47	-4.44	-4.16
	5m	-5.07	-3.80	-3.20	-9.65	-4.54	-4.49	-5.17	-5.67	-5.96	-6.11
Peak Gain											
Free space	0.3m	-0.20	1.74	1.69	-2.28	3.17	6.24	5.29	5.97	7.01	6.32
	1m	-0.40	1.53	1.48	-2.56	2.82	5.89	4.93	5.55	6.48	5.64
	2m	-0.68	1.23	1.18	-2.97	2.32	5.39	4.41	4.95	5.72	4.66
	3m	-0.96	0.93	0.88	-3.37	1.82	4.89	3.89	4.35	4.96	3.69
	5m	-1.52	0.33	0.28	-4.18	0.82	3.89	2.86	3.15	3.44	1.73
30x30cm Ground Plane	0.3m	1.72	1.86	2.94	-1.77	6.22	5.50	5.34	7.03	6.55	7.12
	1.0m	1.52	1.65	2.73	-2.06	5.87	5.15	4.98	6.61	6.01	6.43
	2.0m	1.25	1.35	2.43	-2.46	5.37	4.65	4.46	6.01	5.25	5.46
	3.0m	0.97	1.05	2.13	-2.87	4.87	4.15	3.94	5.41	4.49	4.48
	5.0m	0.41	0.45	1.53	-3.68	3.87	3.15	2.90	4.21	2.97	2.53
Impedance		50 Ω									
Polarization		Linear - Vertical									

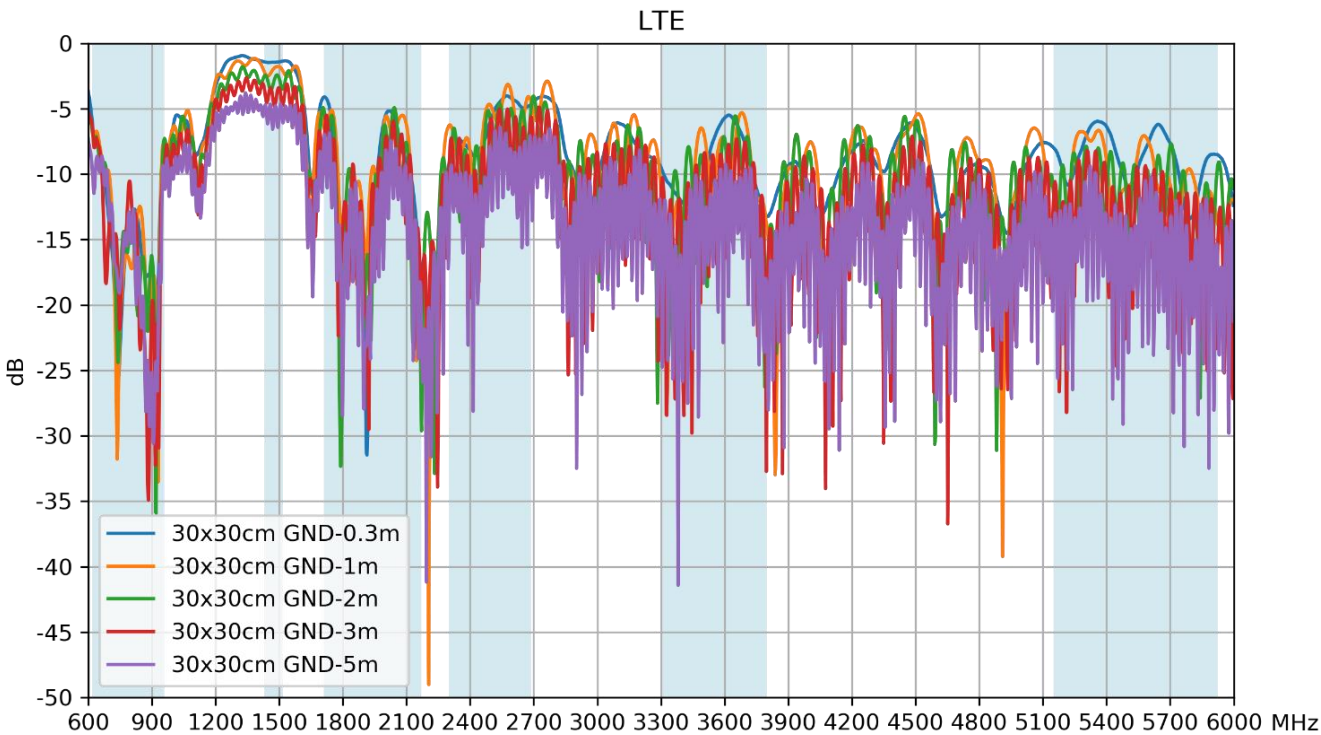
Mechanical	
Dimensions	204 x 69 x 31 mm
Cable	LTE : 3000mm TGC-200
Connector	LTE: SMA(M)
Casing	PC+ABS
Adhesive	3M 9448HK + CR4305
Sealant	Rubber Stopper
Weight	550 g
Recommended Mounting Torque	24.5N·m
Maximum Mounting Torque	29.5N·m
Environmental	
IP Rating	IP69K
Corrosion	5% NaCl for 96hrs - Nickel plated steel base and thread
Temperature Range	-40°C to +85°C
Thermal Shock	100 cycles -40°C to +85°C
Humidity	Non-condensing 65°C 95% RH
Shock (Drop Test)	1m drop on concrete 6 axes
Cable Pull	8 Kgf

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 (LTE only)	✓
18	UL: 815 to 830	DL: 860 to 875 (LTE only)	✓
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 (LTE only)	✓
24	UL:1625.5 to 1660.5	DL: 1525 to 1559 (LTE only)	✓
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 (LTE only)	✓
28	UL: 703 to 748	DL: 758 to 803 (LTE only)	✓
29	UL: -	DL: 717 to 728 (LTE only)	✓
30	UL: 2305 to 2315	DL: 2350 to 2360 (LTE only)	✓
31	UL: 452.5 to 457.5	DL: 462.5 to 467.5 (LTE only)	✗
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		✓
78	3300 to 3800		✓
79	4400 to 5000		✓

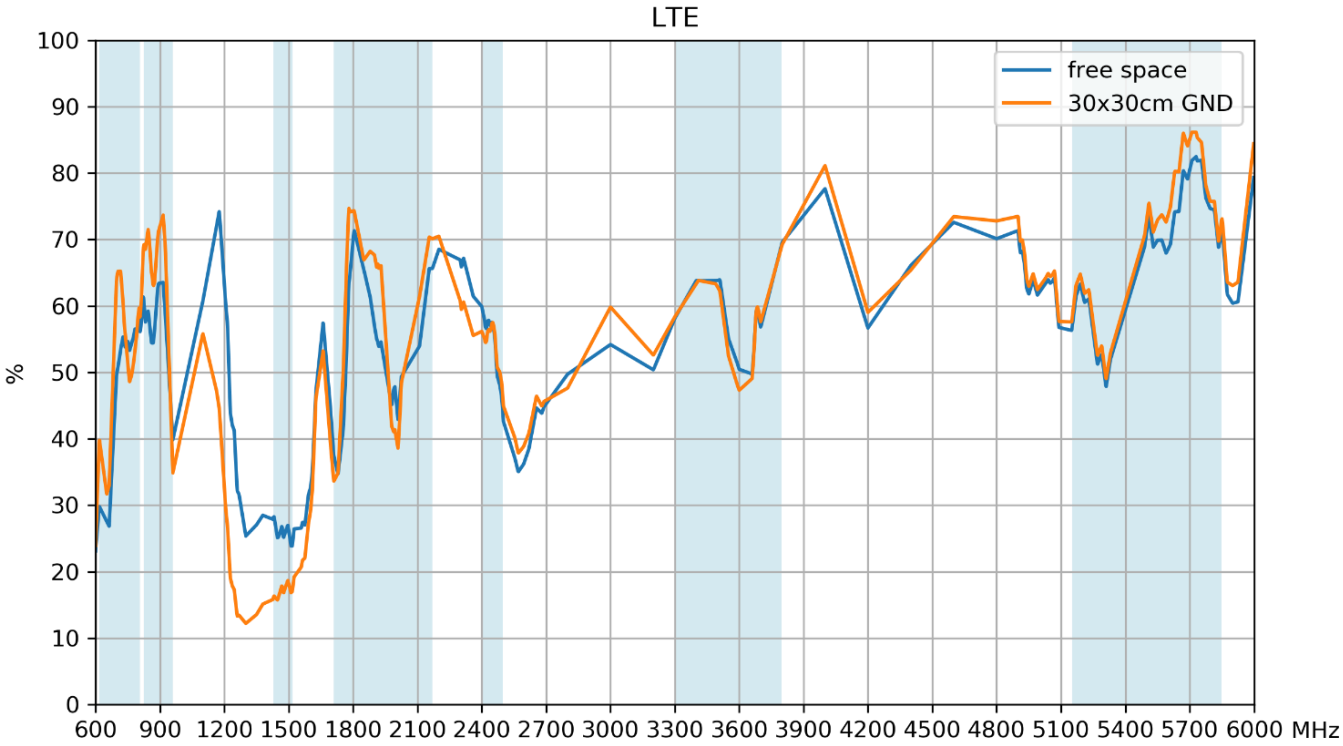
3. Antenna Characteristics

3.1 Return Loss

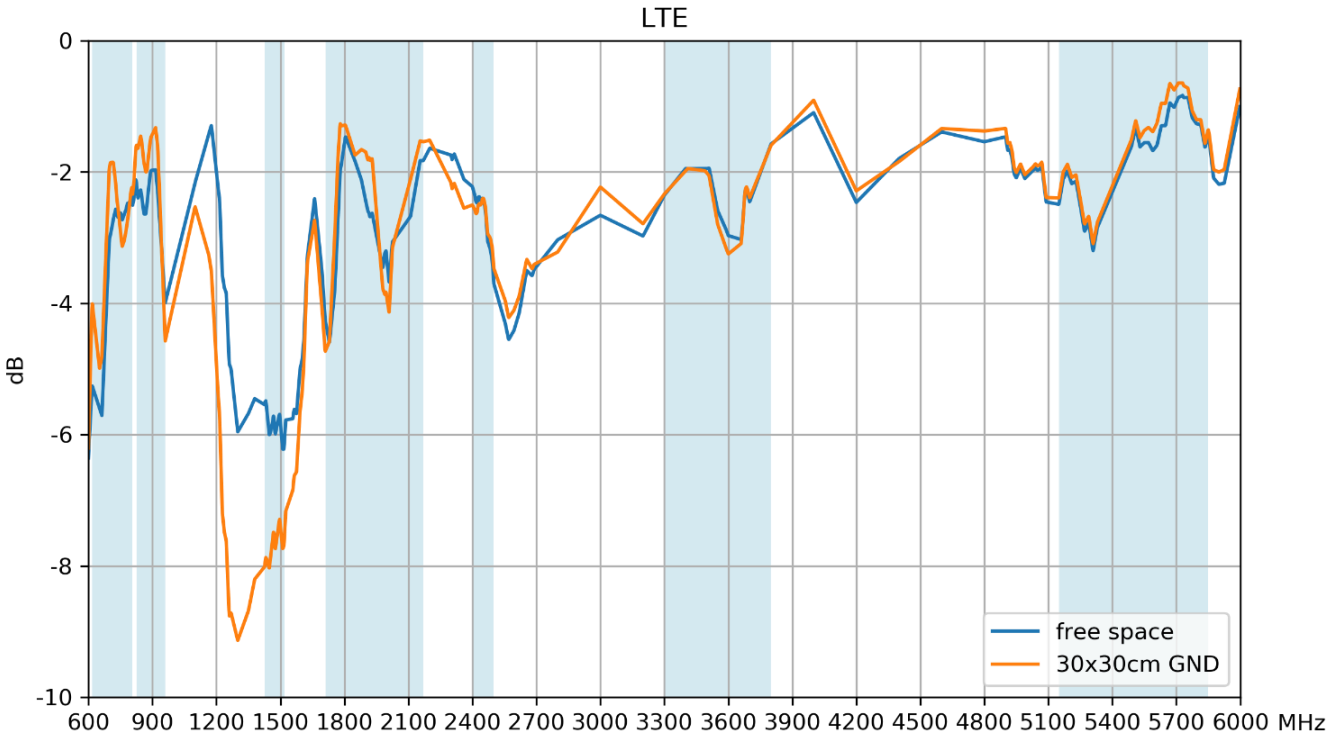




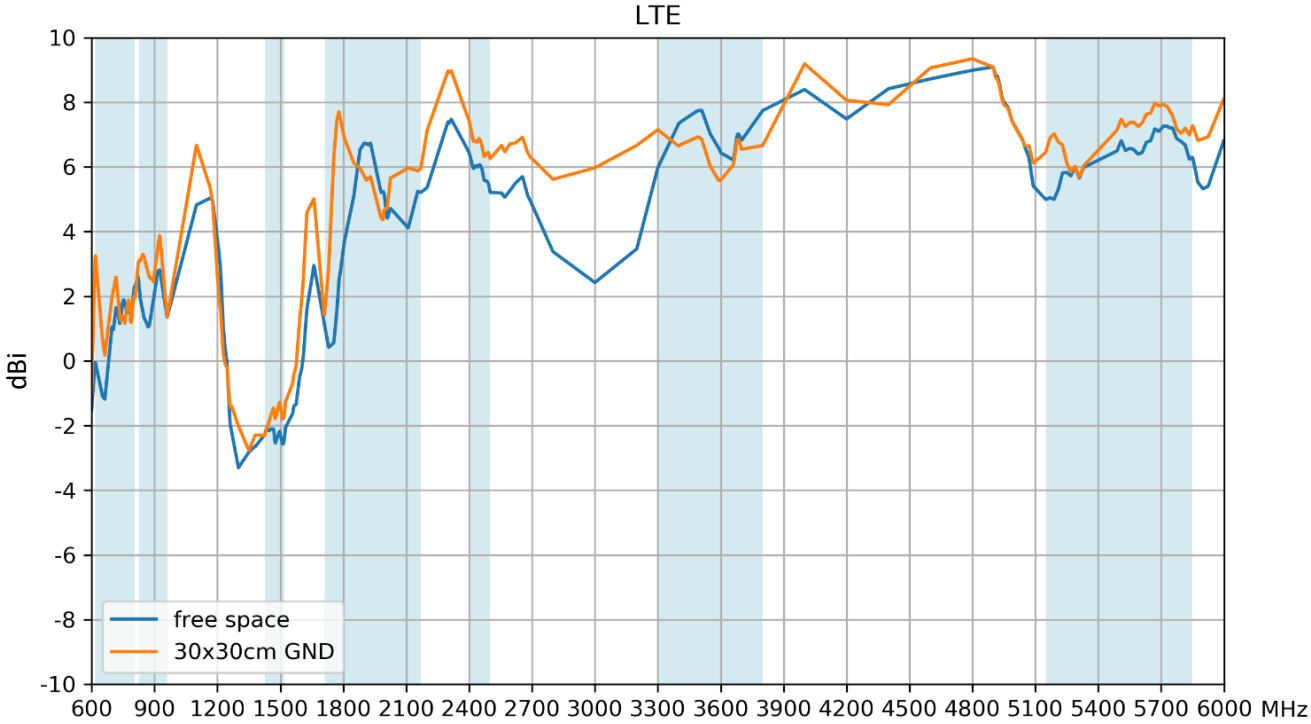
3.3 Efficiency



3.4 Average Gain

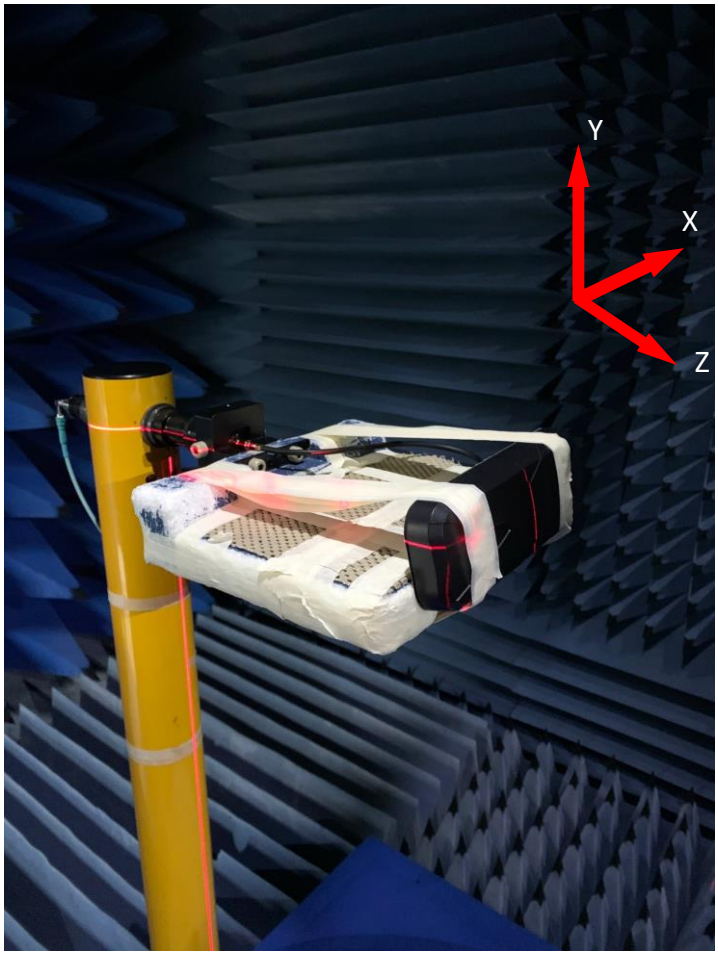


3.5 Peak Gain


LTE
dBi
10
8
6
4
2
0
-2
-4
-6
-8
-10
600 900 1200 1500 1800 2100 2400 2700 3000 3300 3600 3900 4200 4500 4800 5100 5400 5700 6000 MHz
free space
30x30cm GND

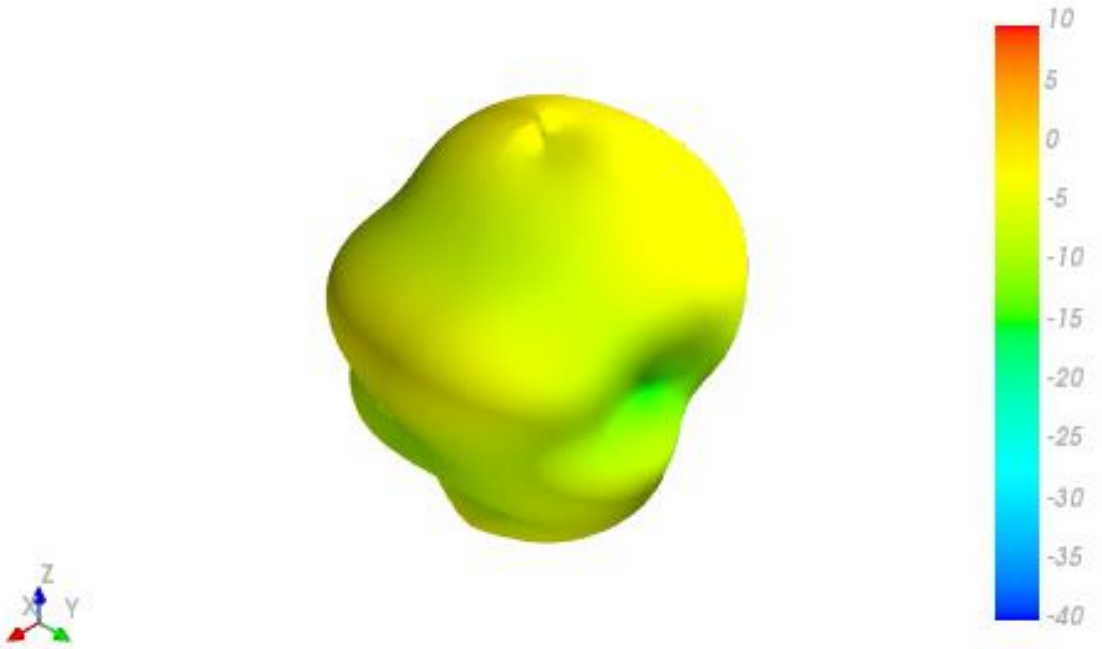
4. Radiation Patterns

4.1 Test Setup – Free Space

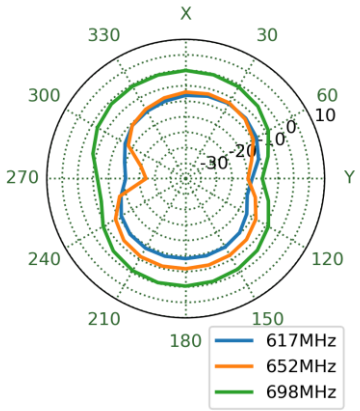


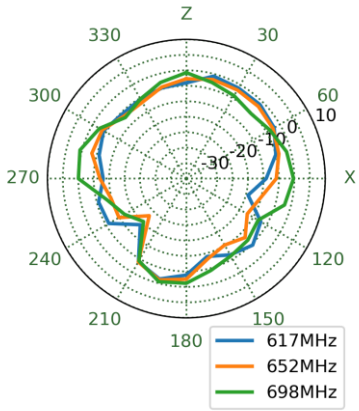
4.2 Cellular 3D and 2D Radiation Patterns

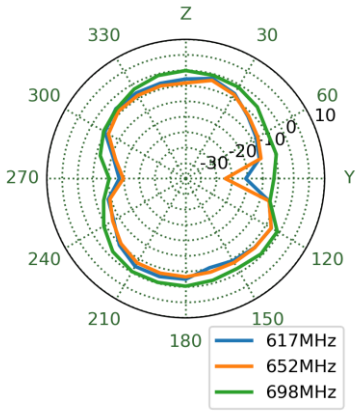
652MHz



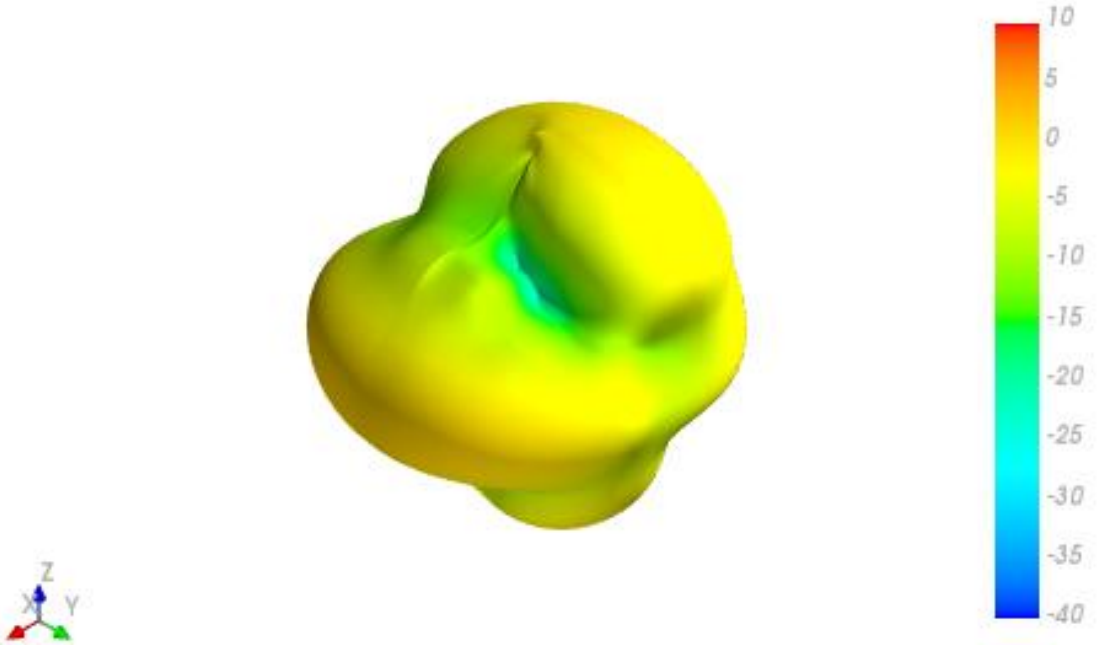
XY Plane	XZ Plane	YZ Plane



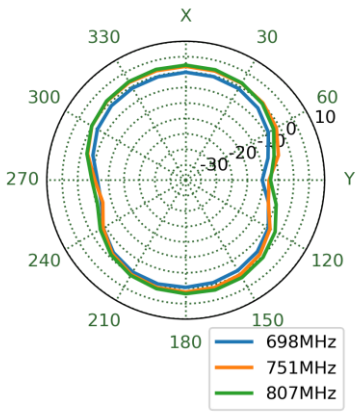


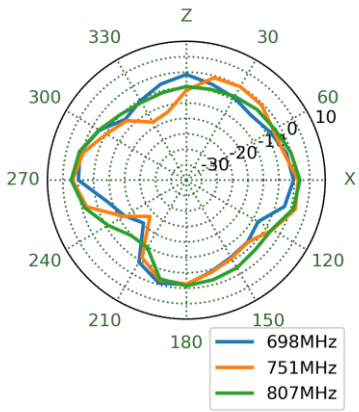


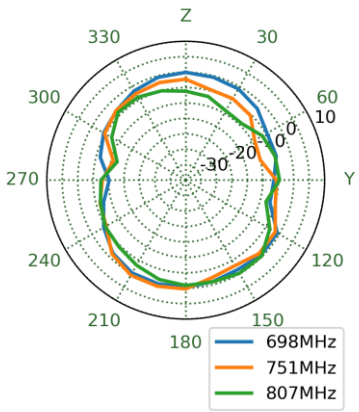
751MHz



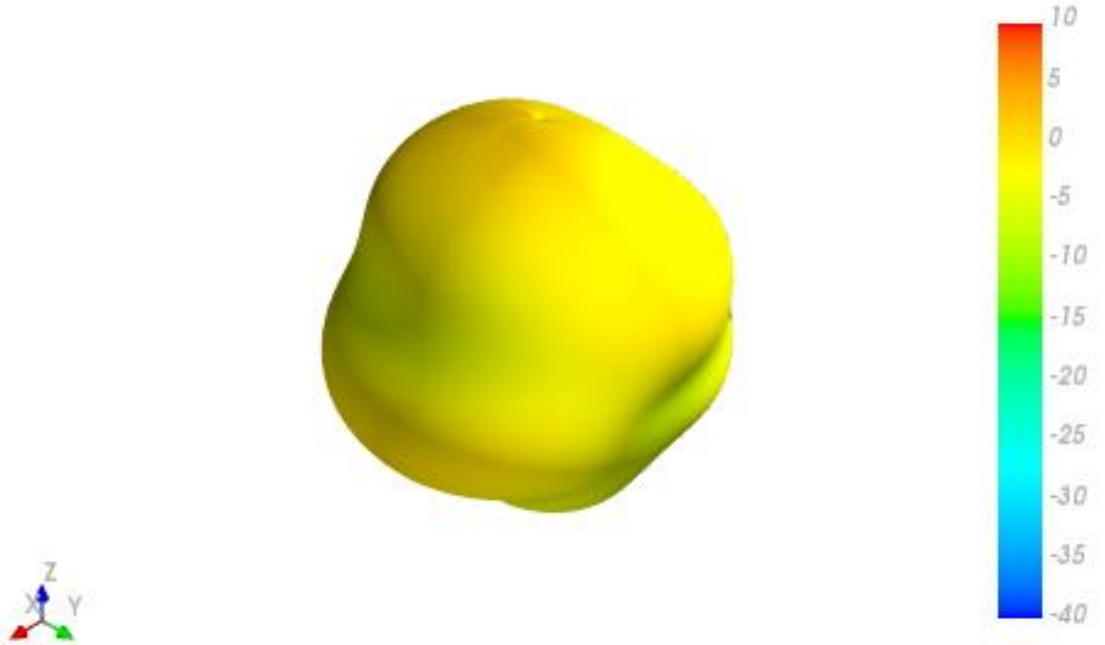
XY Plane	XZ Plane	YZ Plane



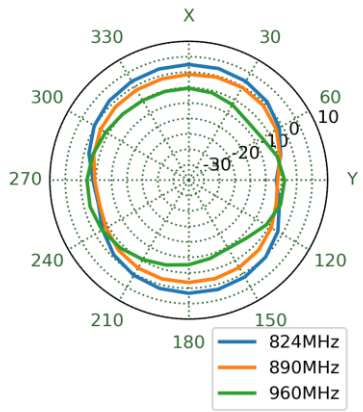


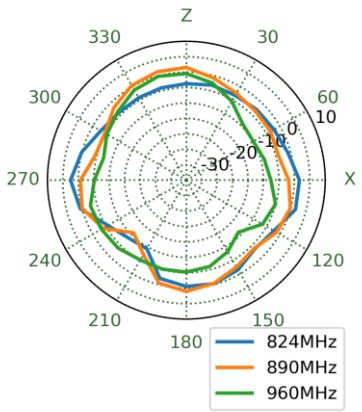


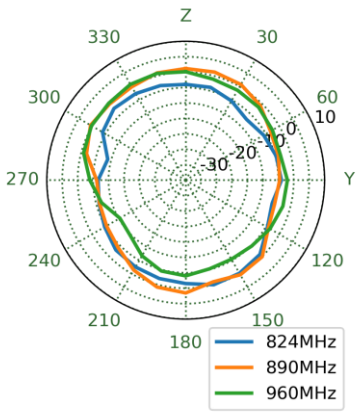
890MHz



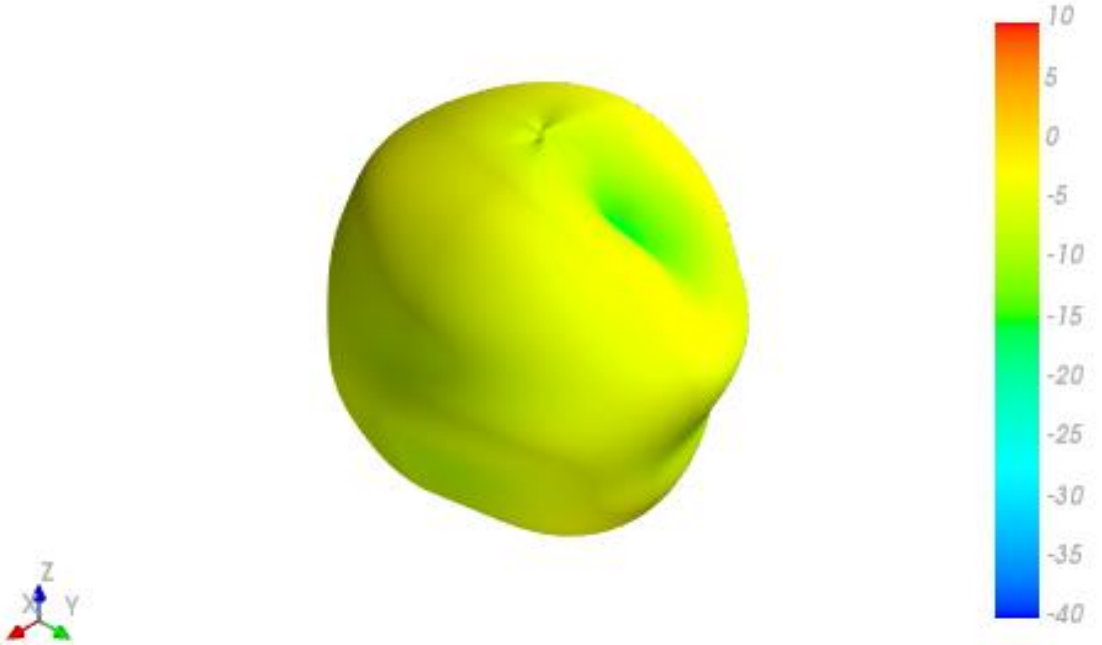
XY Plane	XZ Plane	YZ Plane



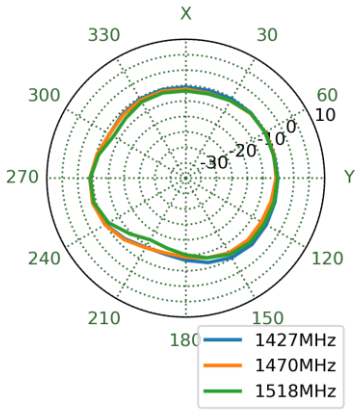


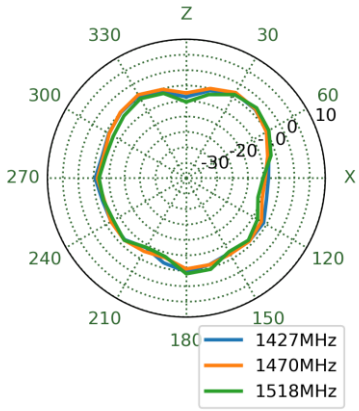


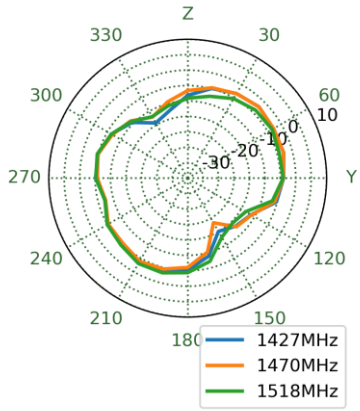
1470MHz



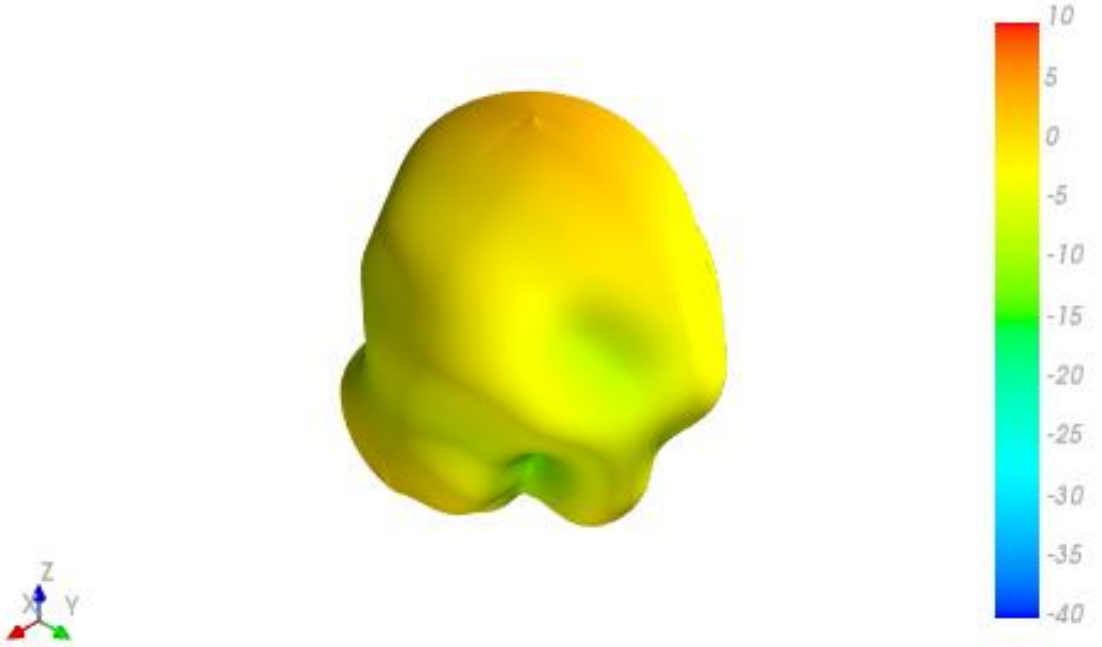
XY Plane	XZ Plane	YZ Plane



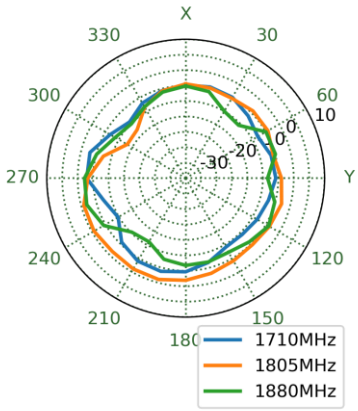


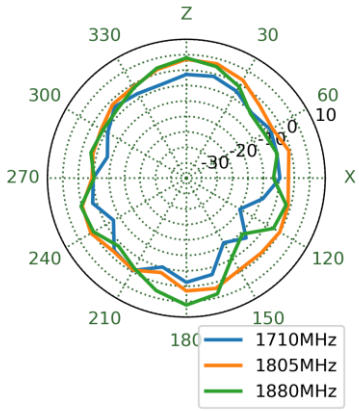


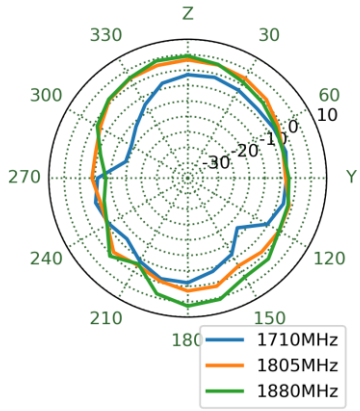
1805MHz



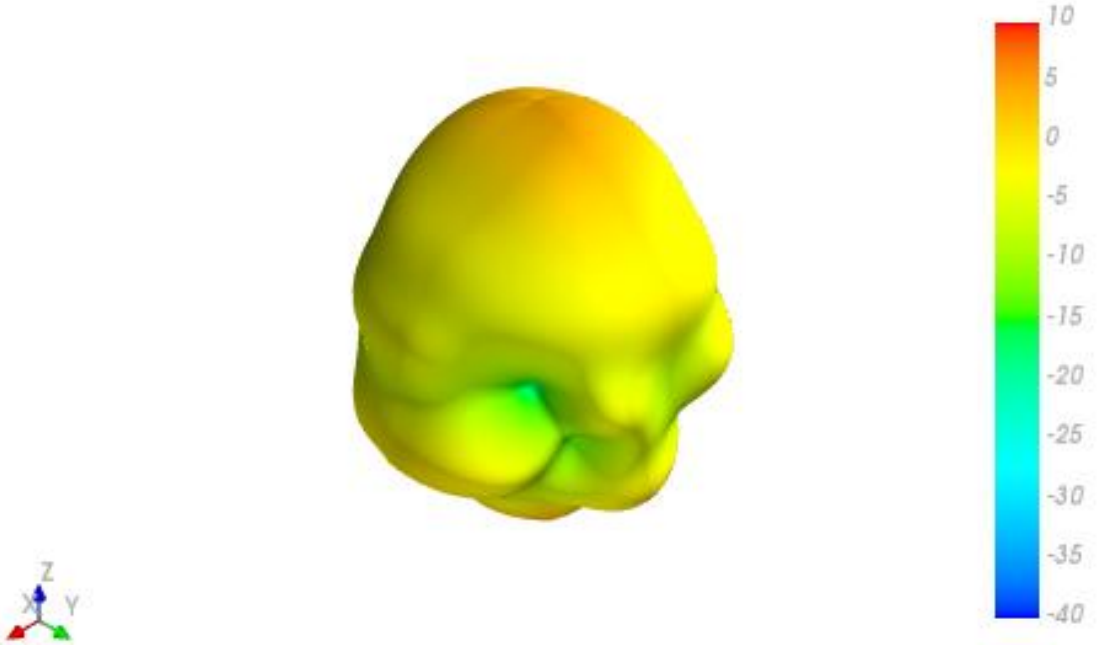
XY Plane	XZ Plane	YZ Plane



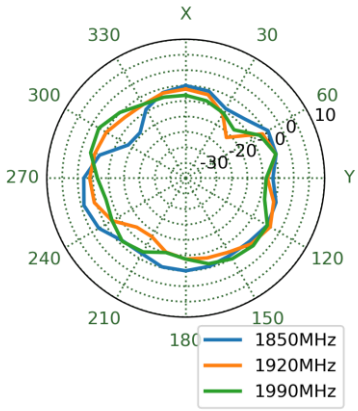


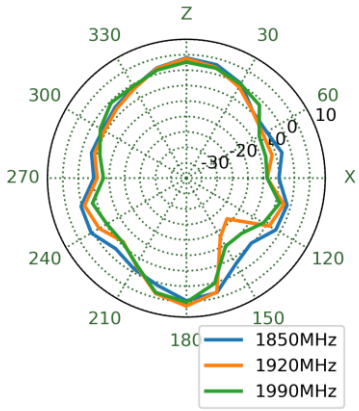


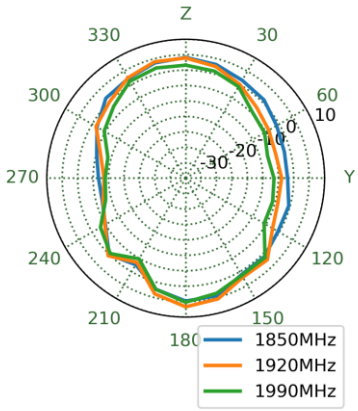
1920MHz



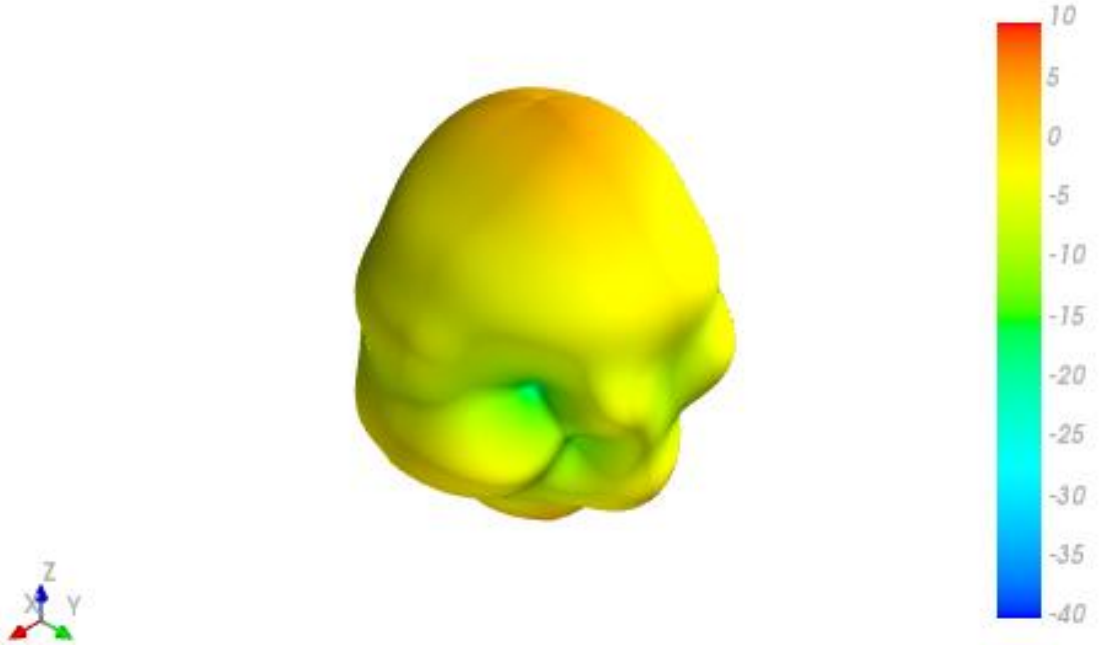
XY Plane	XZ Plane	YZ Plane



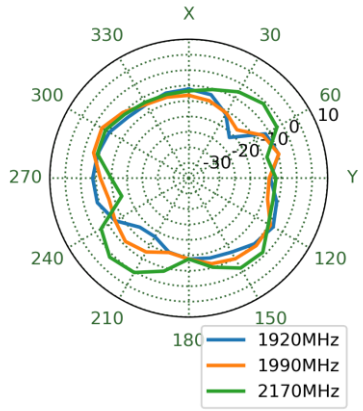


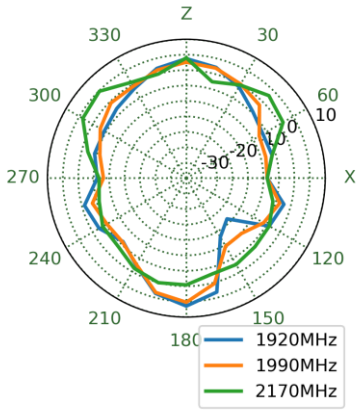


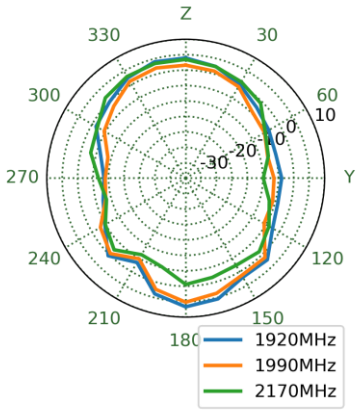
1990MHz



XY Plane	XZ Plane	YZ Plane







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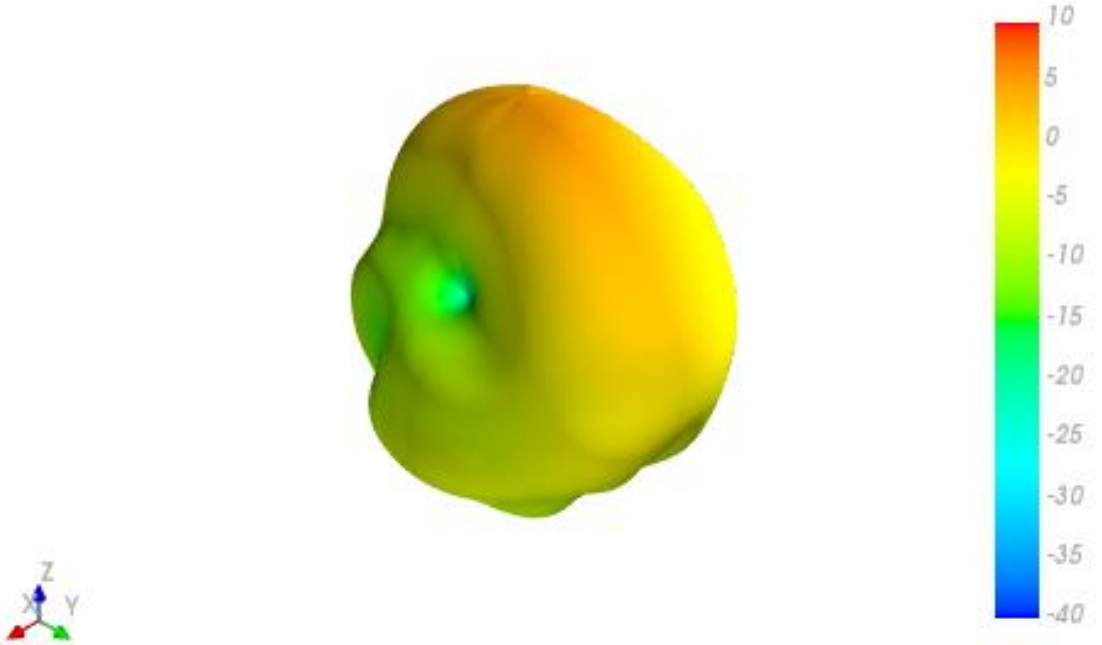
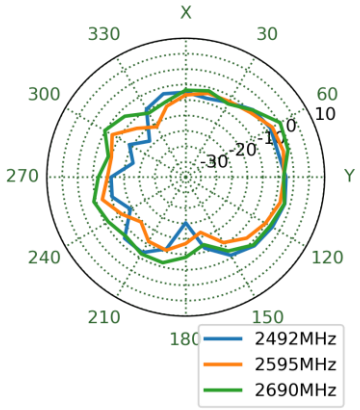
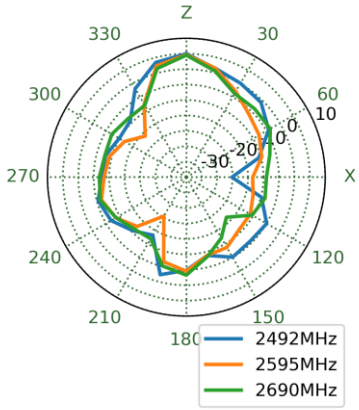
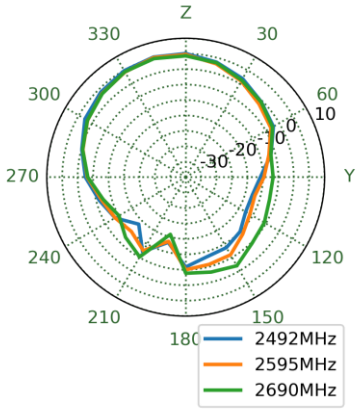


XY Plane	XZ Plane	YZ Plane







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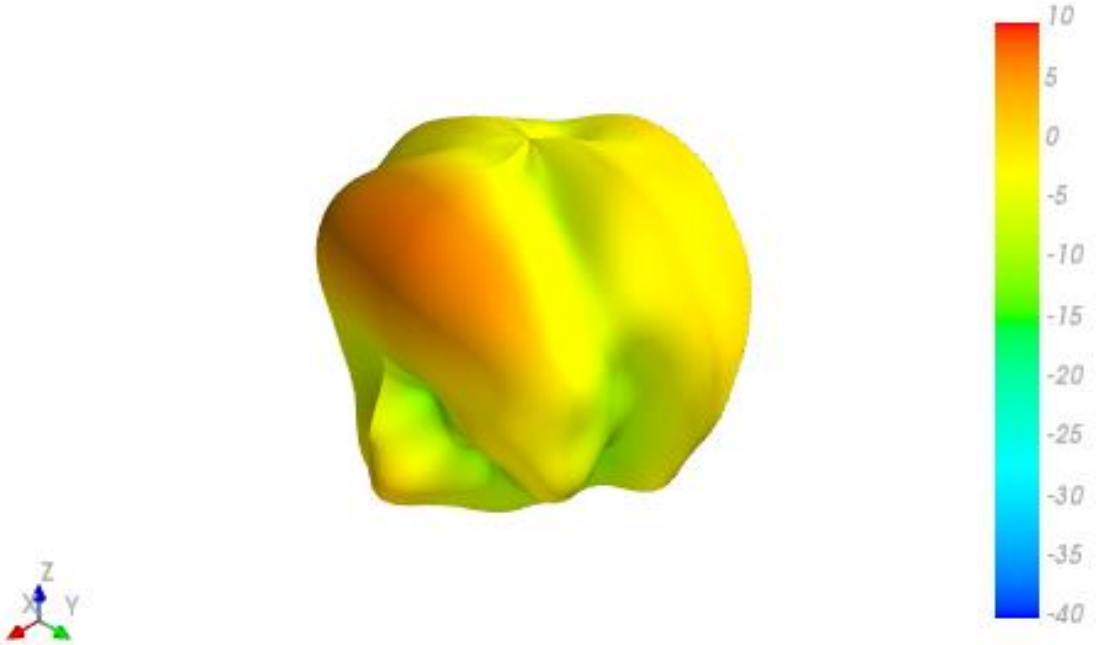
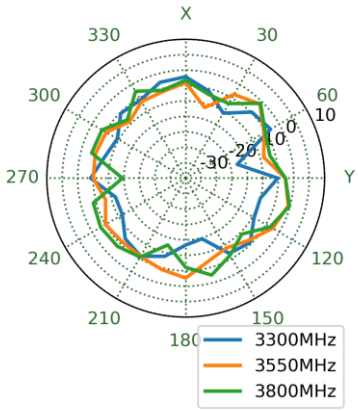
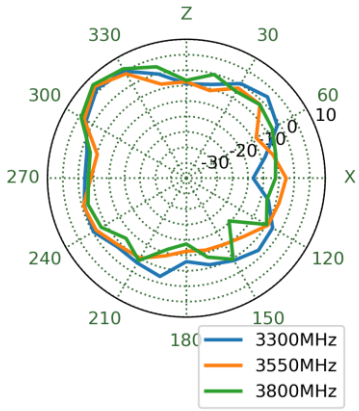
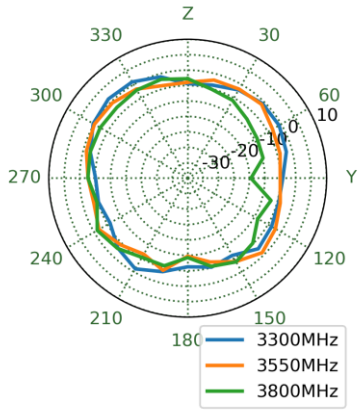


XY Plane	XZ Plane	YZ Plane







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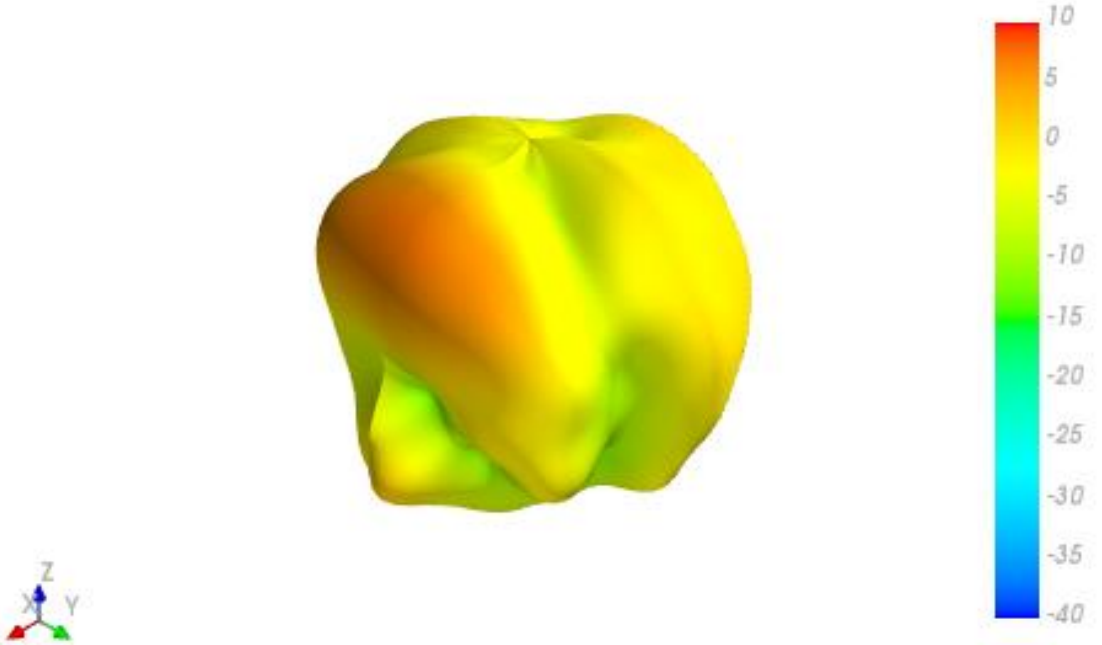
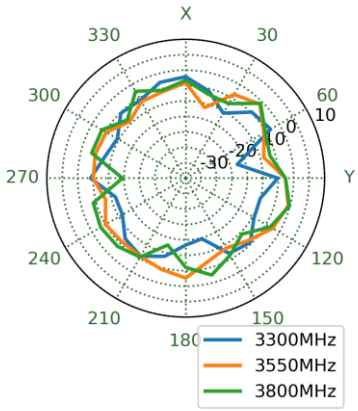
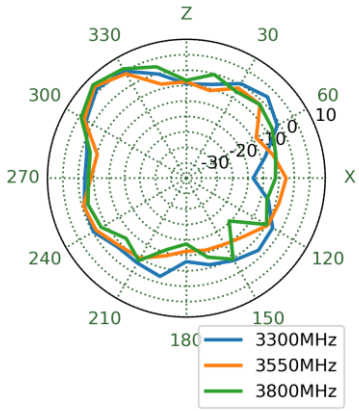
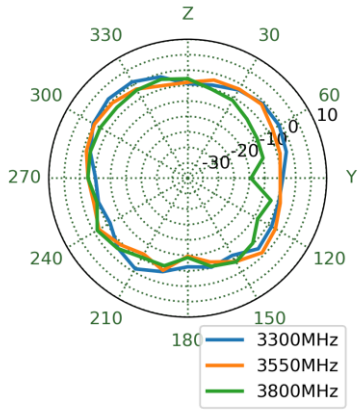


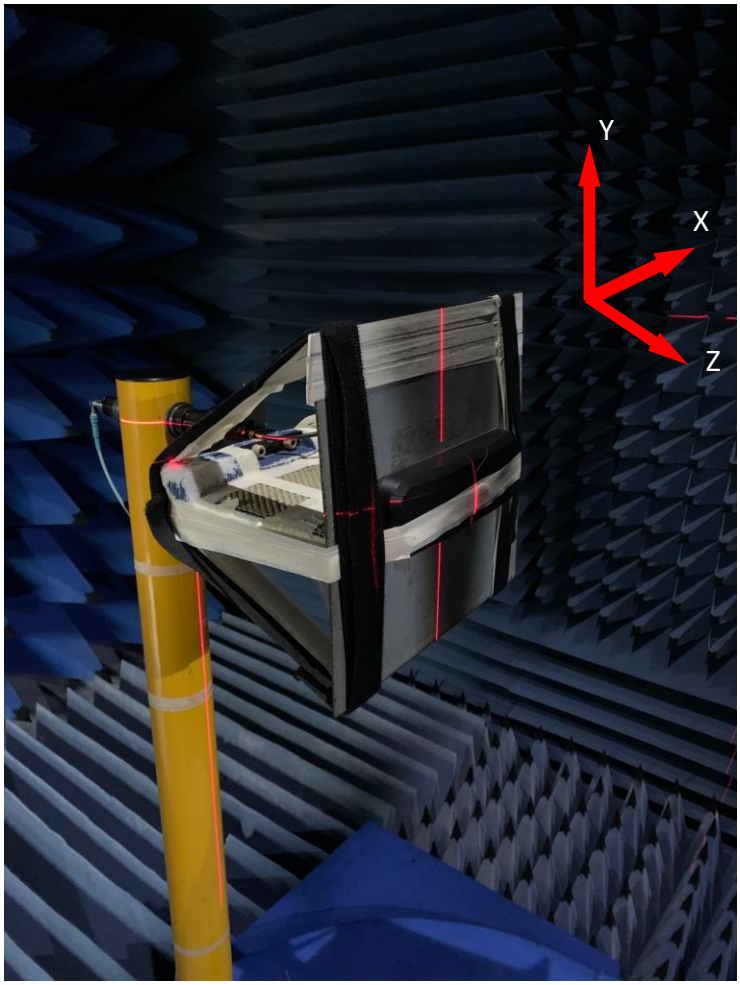
XY Plane	XZ Plane	YZ Plane





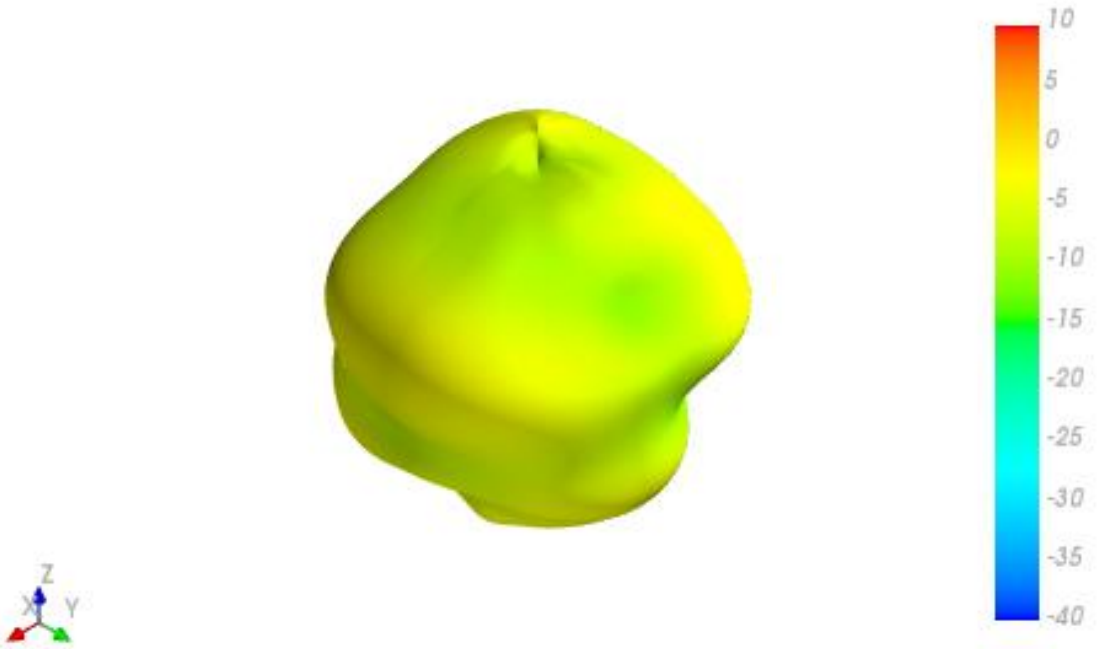


4.3 Test Setup – 30*30cm Ground Plane

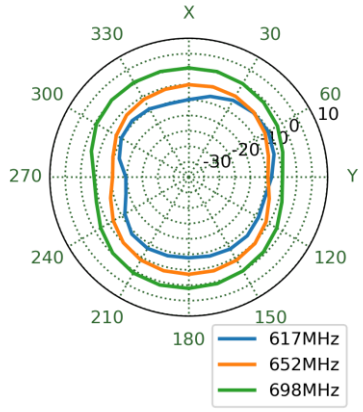


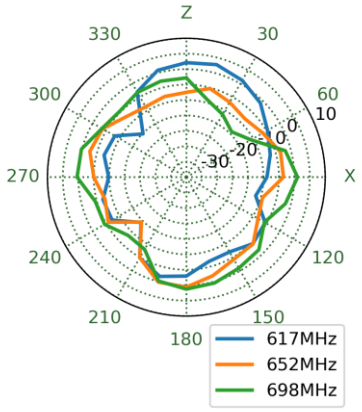
4.2 Cellular 3D and 2D Radiation Patterns

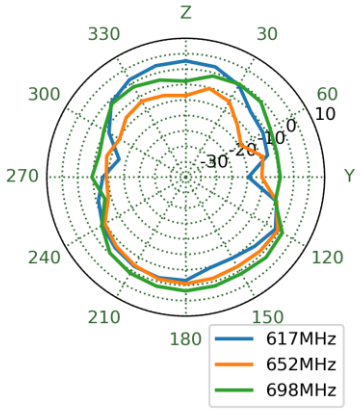
652MHz



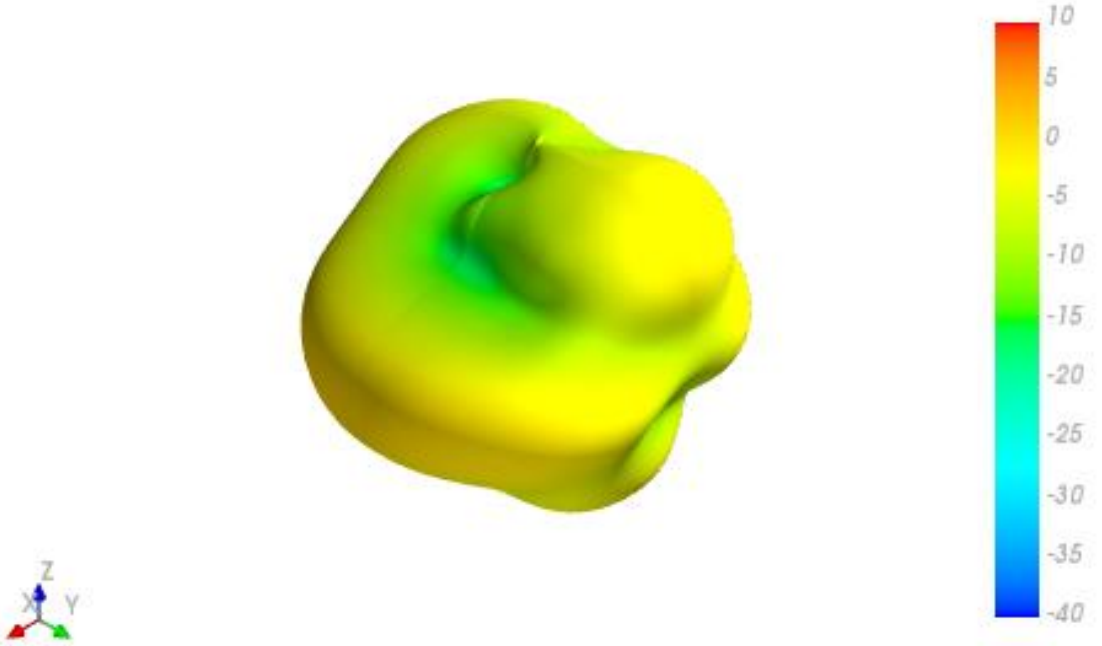
XY Plane	XZ Plane	YZ Plane



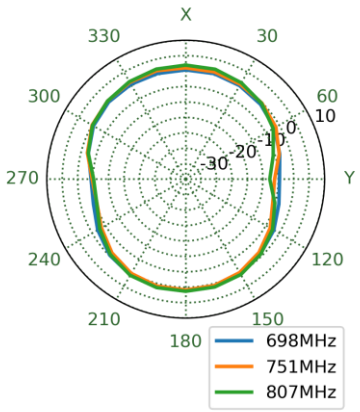


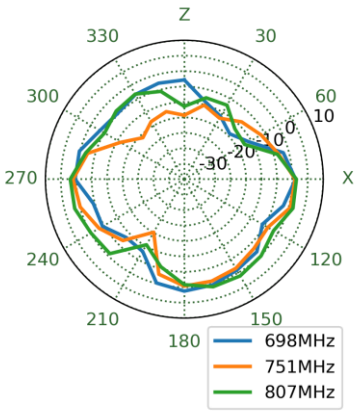


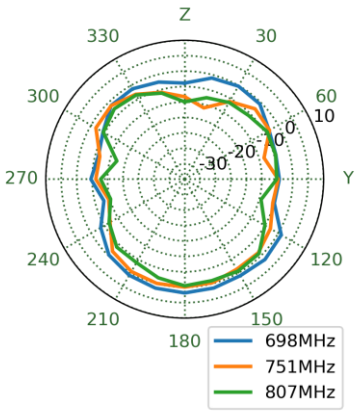
751MHz



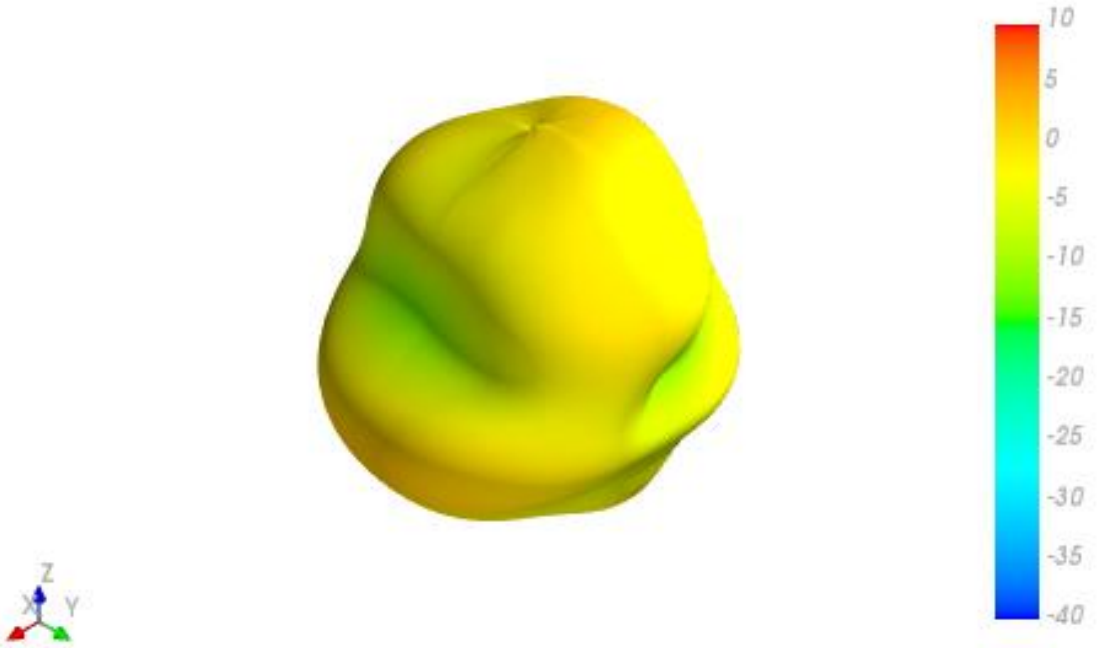
XY Plane	XZ Plane	YZ Plane



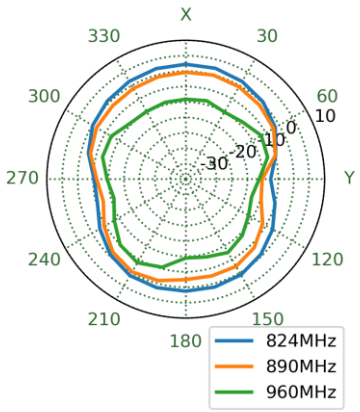


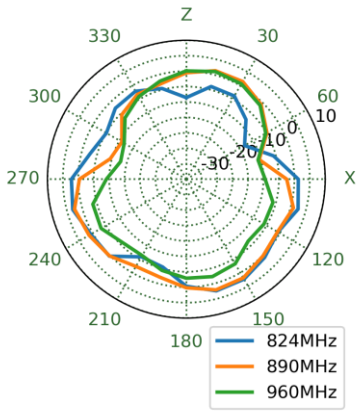


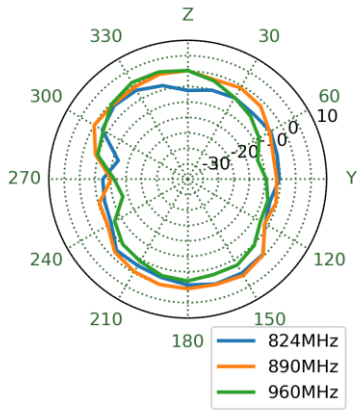
890MHz



XY Plane	XZ Plane	YZ Plane







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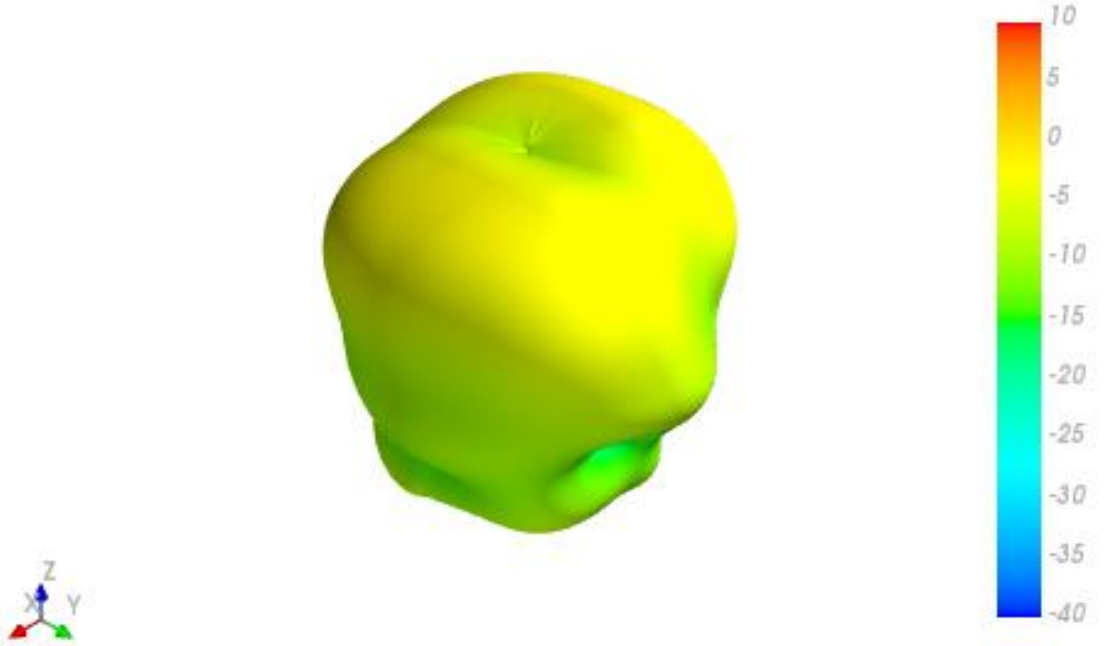
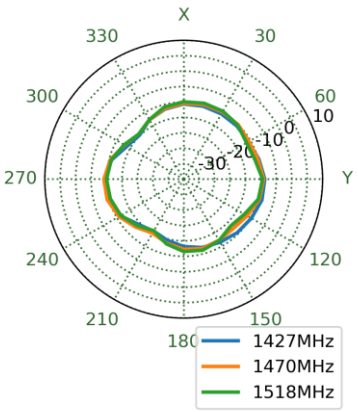
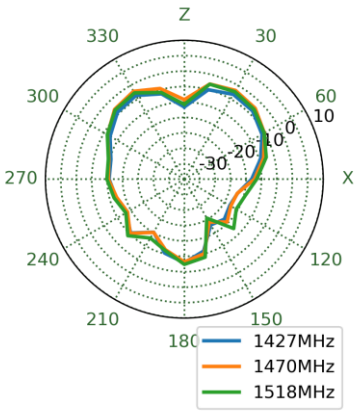
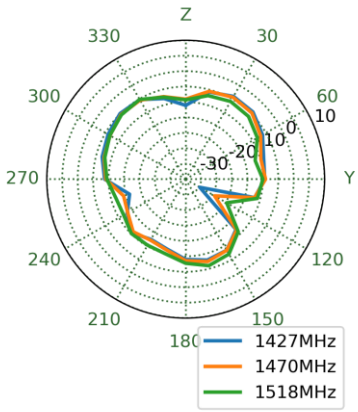


XY Plane	XZ Plane	YZ Plane







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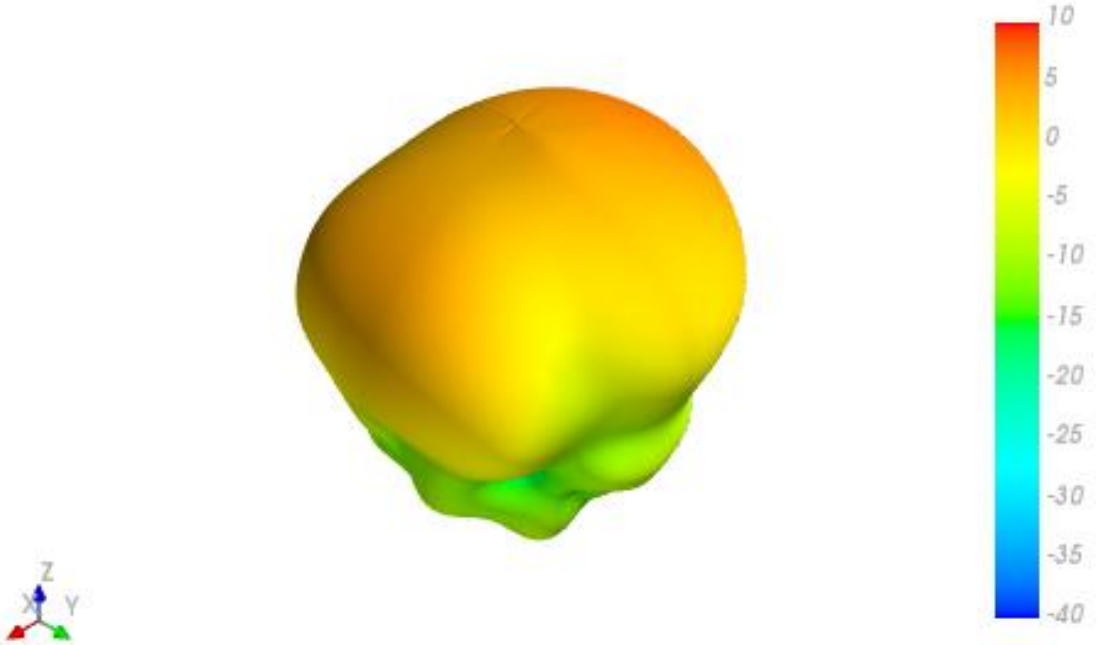
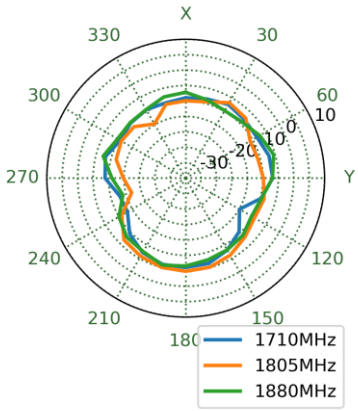
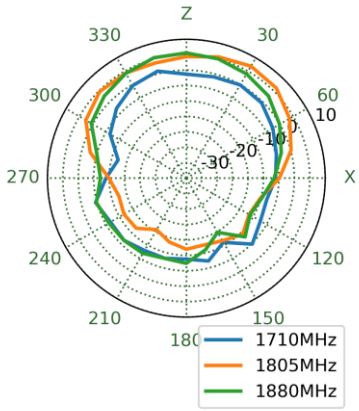
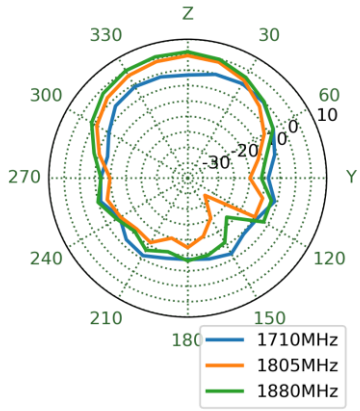


XY Plane	XZ Plane	YZ Plane







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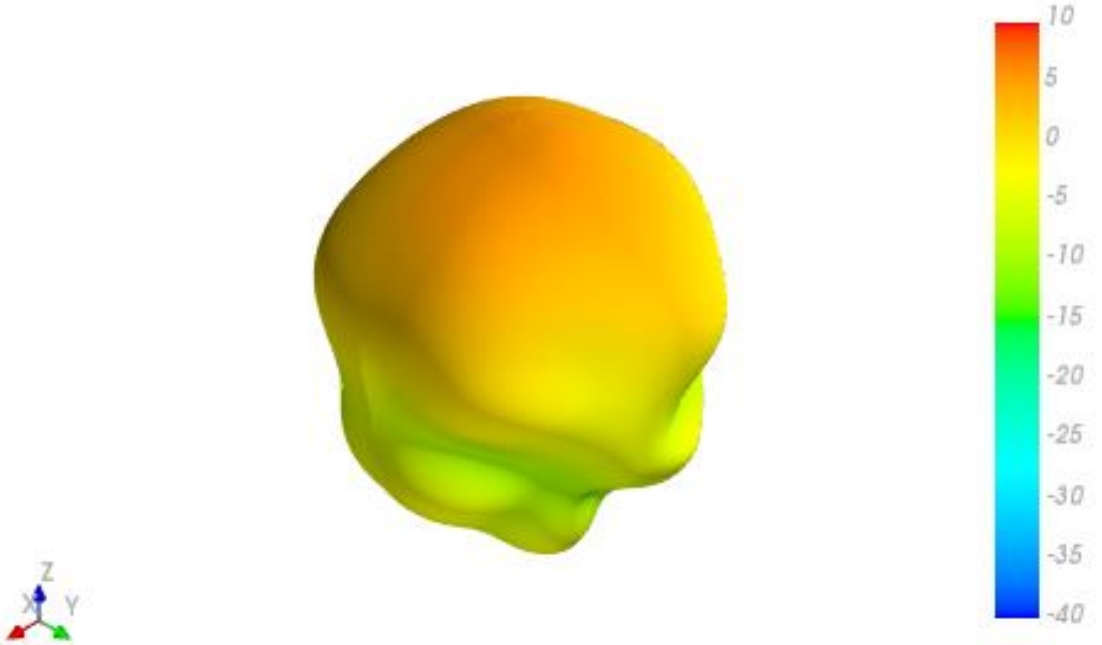
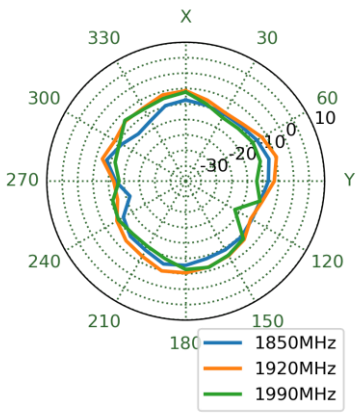
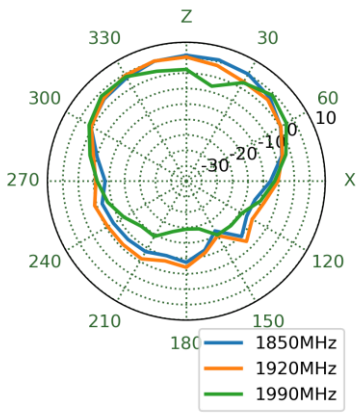
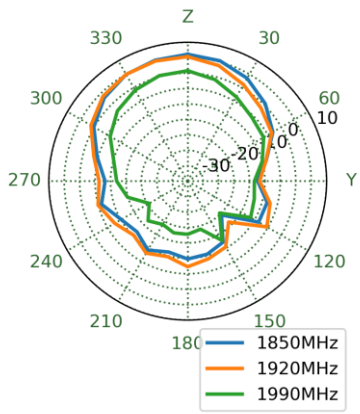


XY Plane	XZ Plane	YZ Plane







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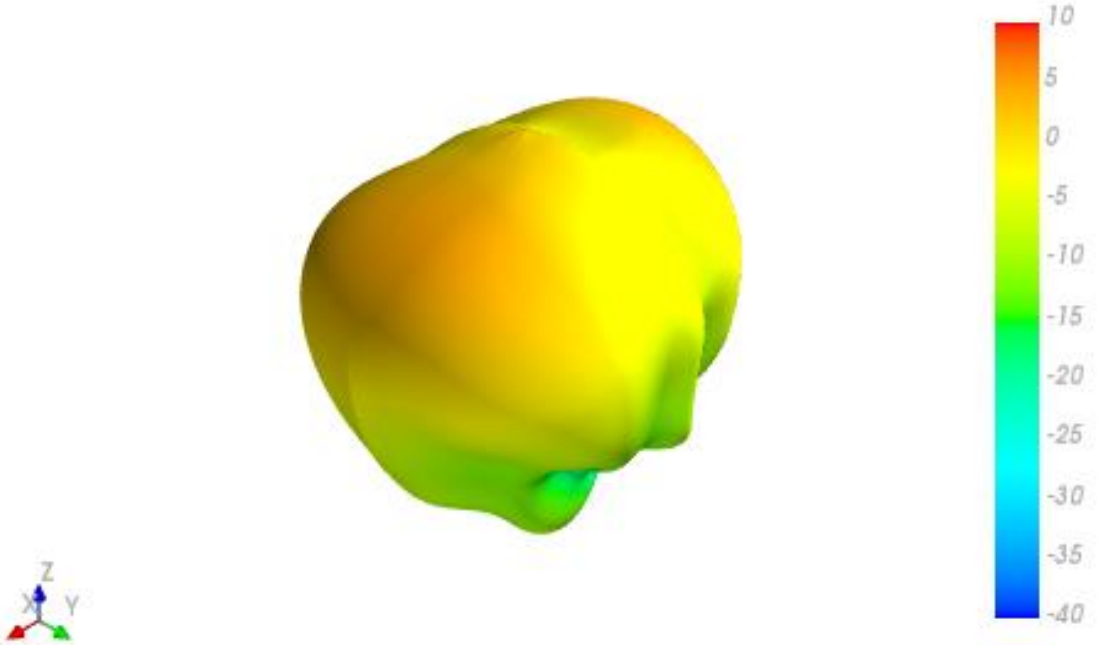
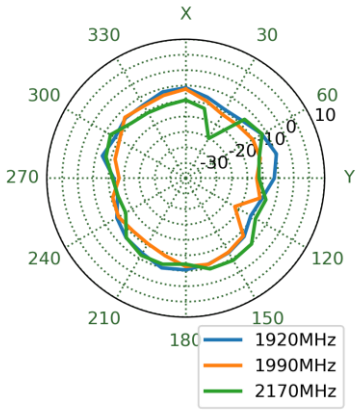
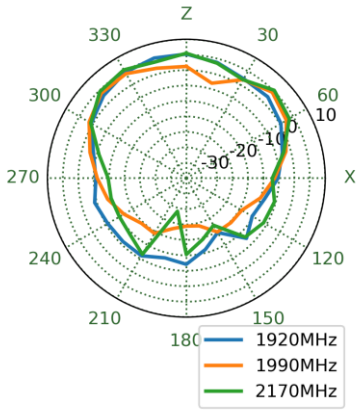
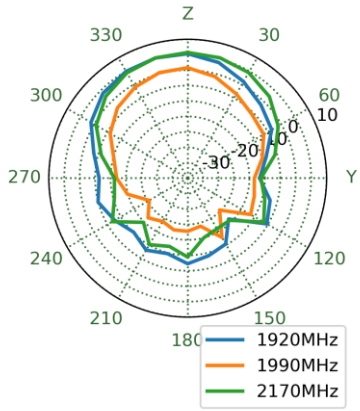


XY Plane	XZ Plane	YZ Plane







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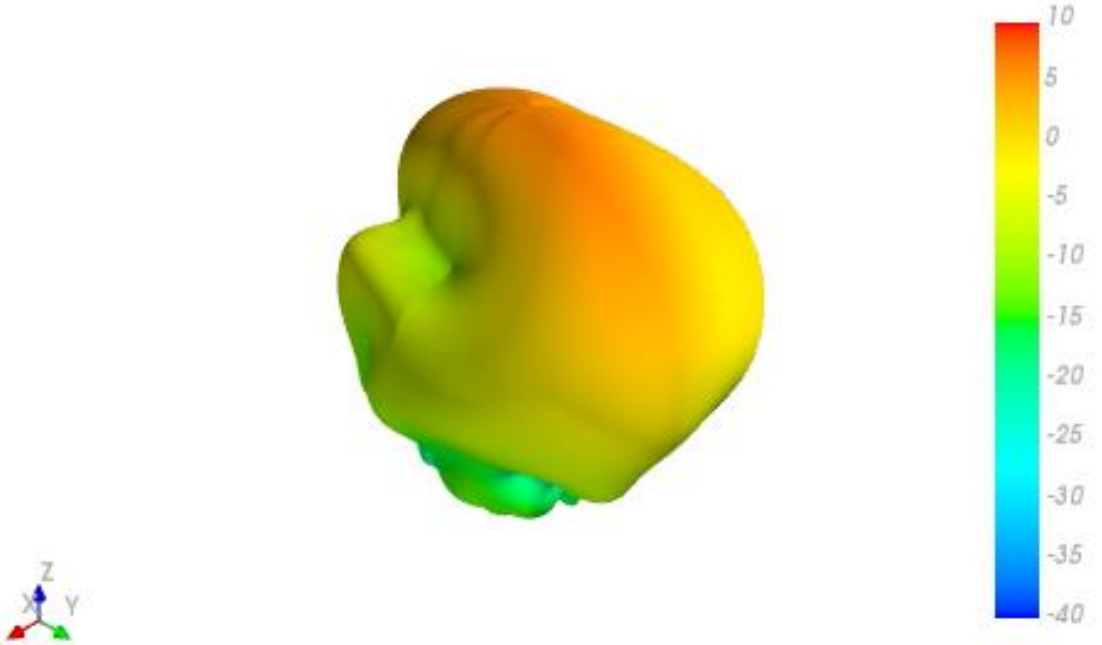
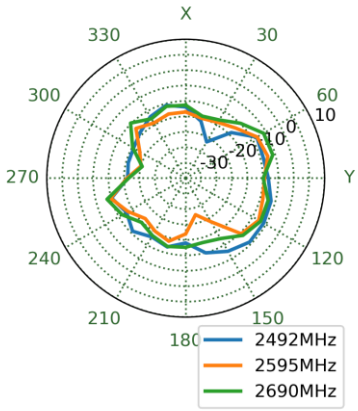
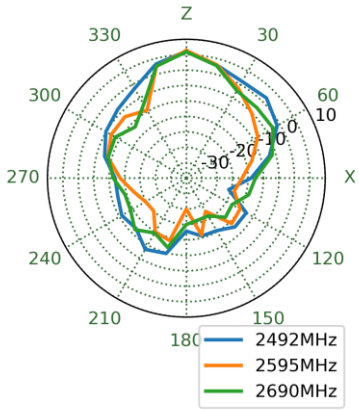
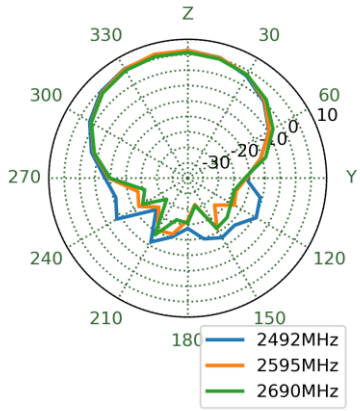


XY Plane	XZ Plane	YZ Plane







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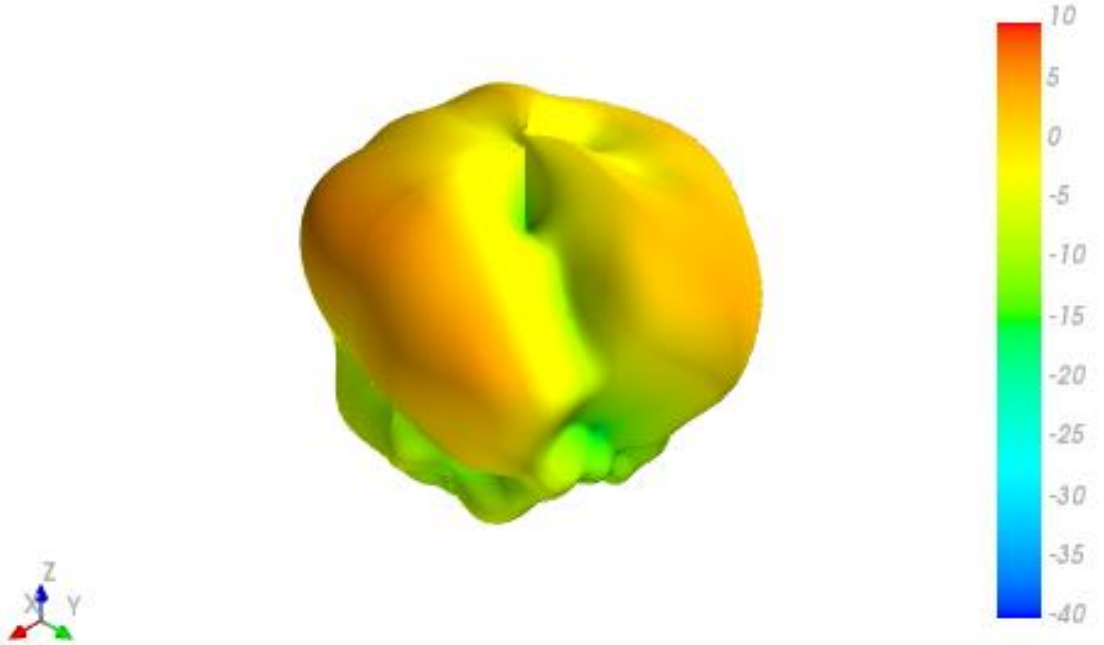
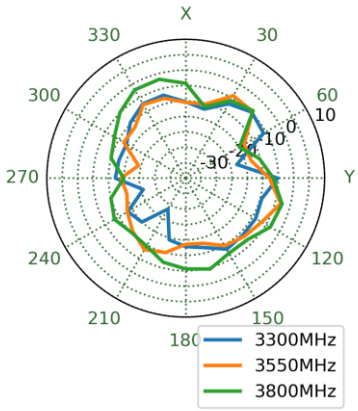
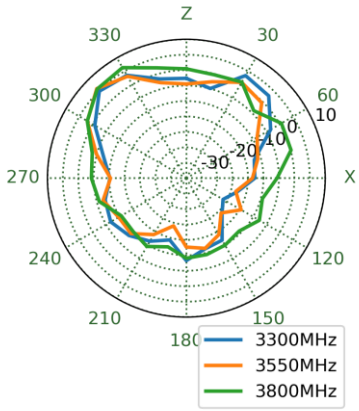
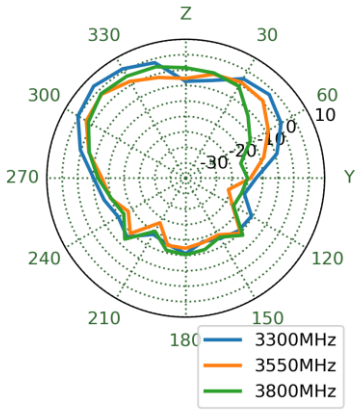


XY Plane	XZ Plane	YZ Plane







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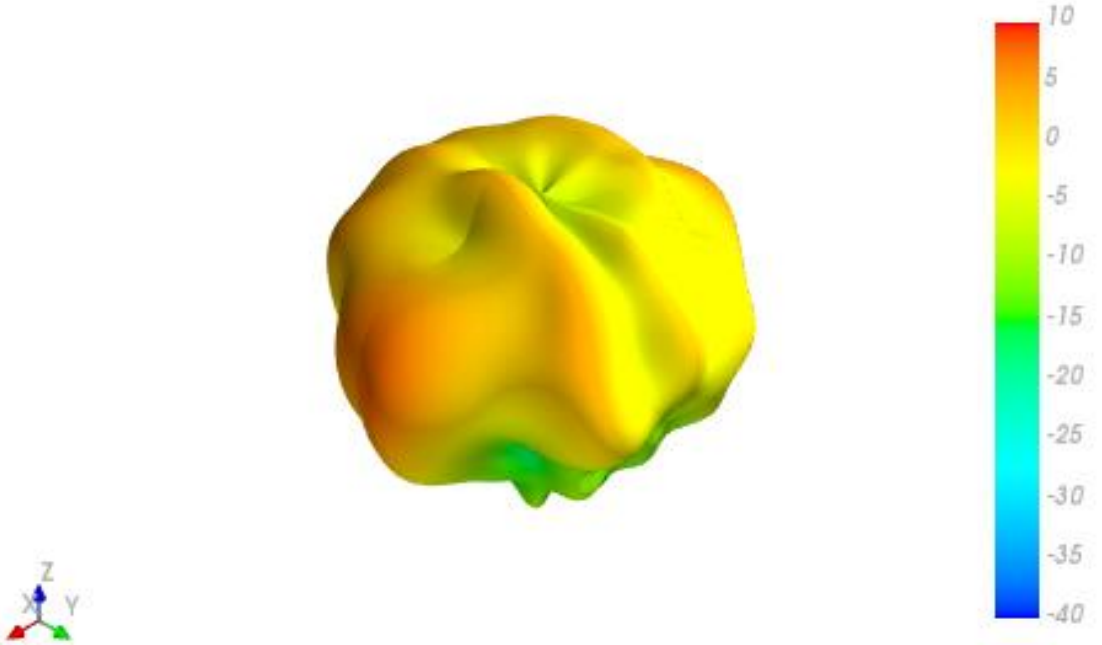
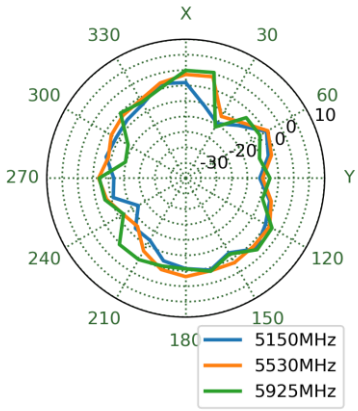
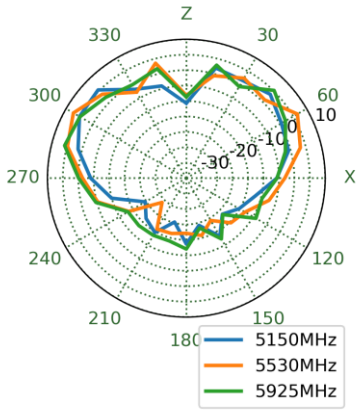
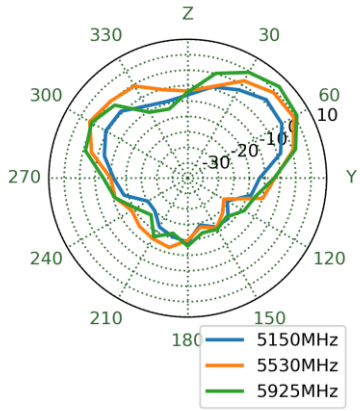


XY Plane	XZ Plane	YZ Plane





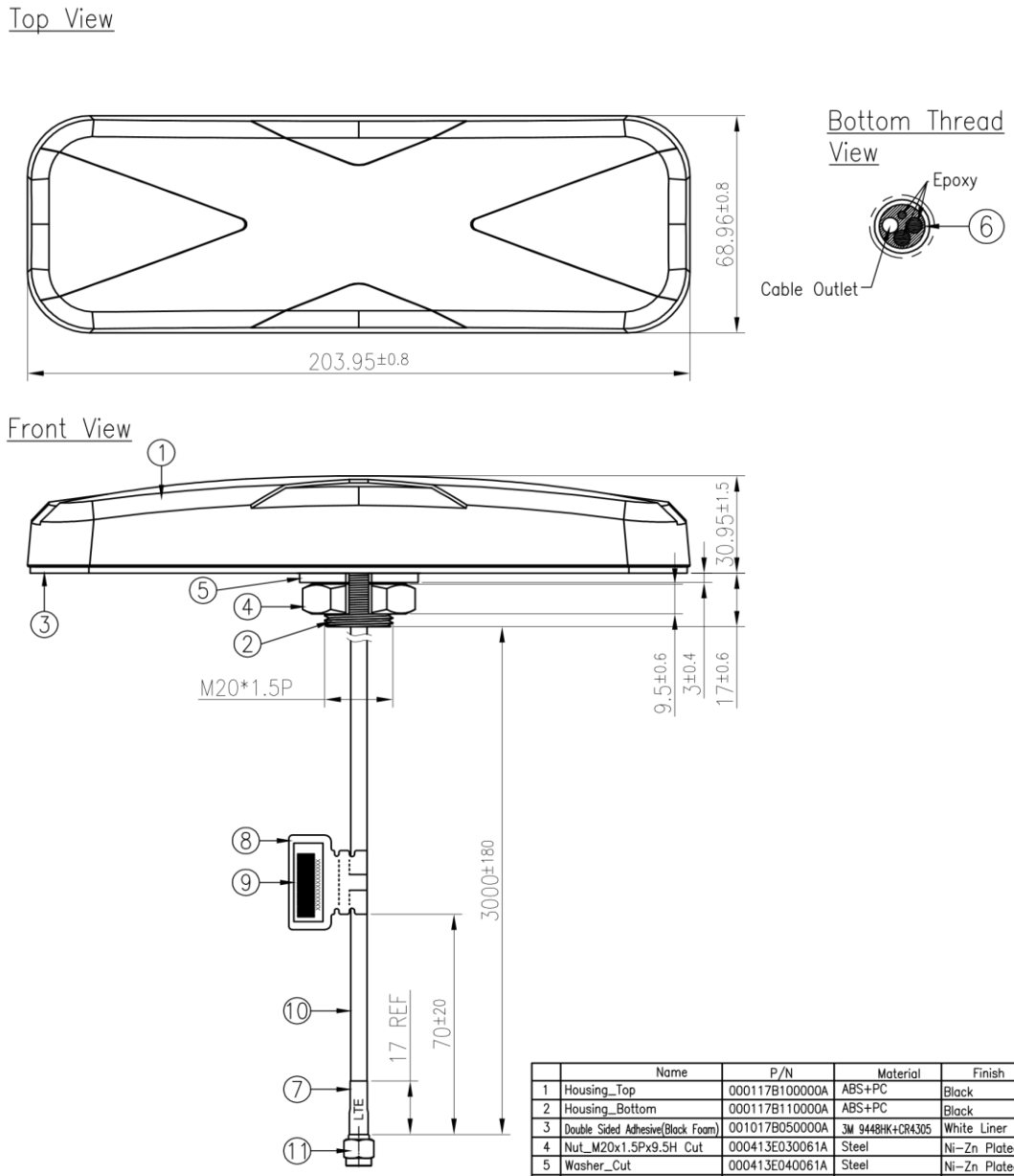


5. Mechanical Drawing (Units: mm)

ISO NO: EDW-18-8-xxxx

<Release>

REV	ZONE	DESCRIPTION	ENG	APPROVED	ISSUED DATE
D01	ALL	Initial Design	Rachel	Haley	2018/06/04
D02	ALL	Change Cable from CFD200-E to TGC-200.	Bonnie	Haley	2018/06/19



	Name	P/N	Material	Finish	QTY
1	Housing_Top	000117B100000A	ABS+PC	Black	1
2	Housing_Bottom	000117B110000A	ABS+PC	Black	1
3	Double Sided Adhesive(Black Foam)	001017B050000A	3M 9448HK+CR4305	White Liner	1
4	Nut_M20x1.5Px9.5H Cut	000413E030061A	Steel	Ni-Zn Plated	1
5	Washer_Cut	000413E040061A	Steel	Ni-Zn Plated	1
6	Cable Rubber	000713E000063A	Silicone Rubber	Black	1
7	Heat Shrink Tube (LTE)	001316L080000A	PE	Red Tube/White Text	1
8	Empty Label	001015G000000A	PEPA	White	1
9	Barcode Label	001015G010000A	PET	White	1
D02 10	TGC200 Coaxial Cable	306718E000000A	PE	Black	1
11	SMA(M)ST	200216D02009BA	Brass	Au Plated	1

UNLESS OTHERWISE SPECFIED TOLERANCES ON:
.X± 0.2
XX.± 0.5 .XX± 0.1
X.± 0.3 .XXX± 0.05

DATE: 2018/06/04
UNIT: mm
THIRD ANGLE PROJECTION
MAT'L:
FINISH:
SCALE: 1/2

APPROVED BY: Haley
CHECKED BY: Jack
DRAWN BY: Rachel
CUSTOMERS SIGNATURE / DATE

taoglas antenna solutions TW Design Centre

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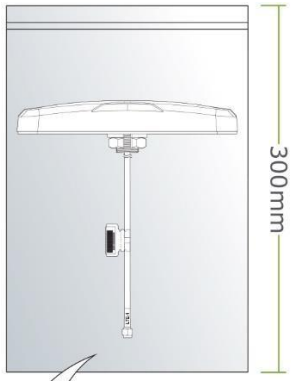
REV D02

TITLE. : Monsoon Screwmount 3M LTE SMA(M)ST TGC-200 D02

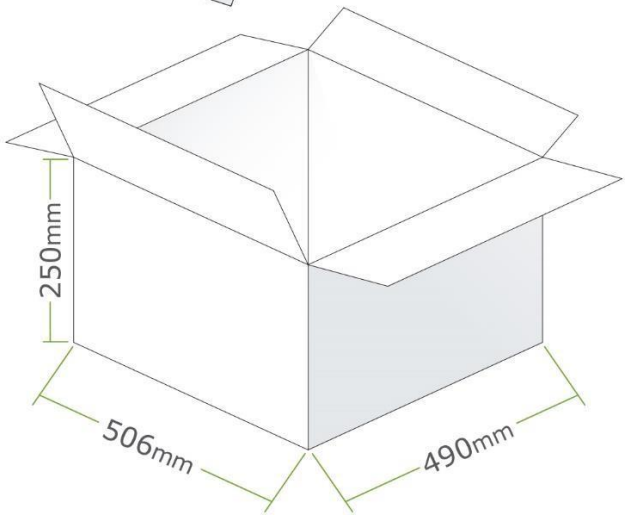
PART NO. : GA.170.305111

6. Packaging

1pc GA.170.305111 per PE Bag
PE Bag Dimensions - 300*200mm
Weight - 410g

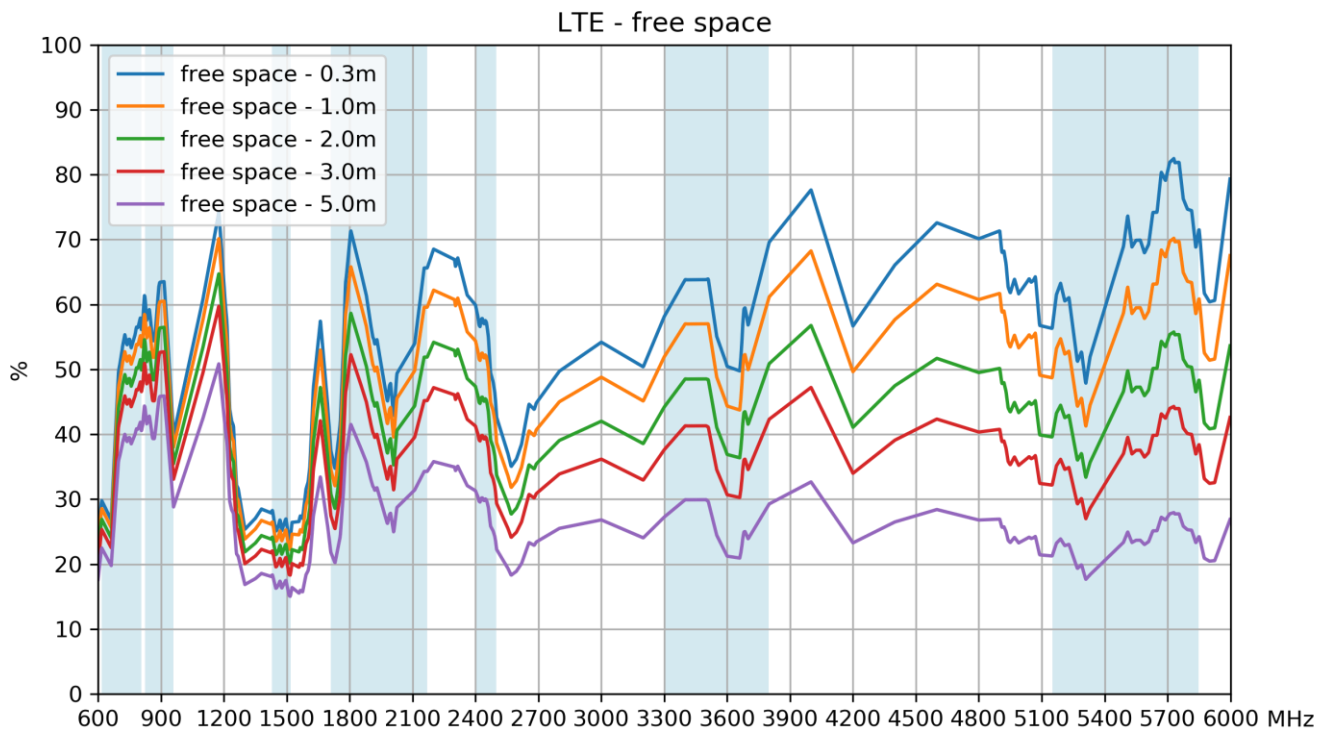


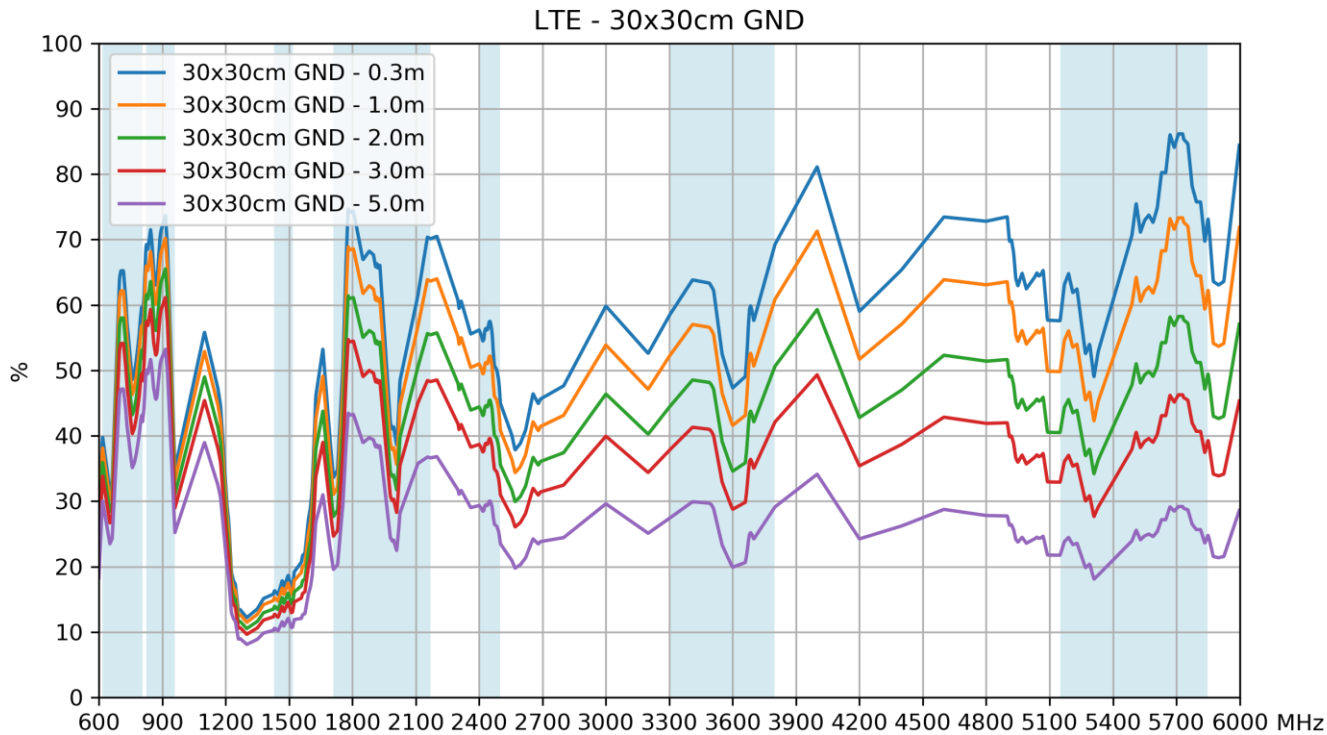
18 pcs GA.170.305111 per Carton
Box Dimensions - 506*490*250mm
Weight - 7.3Kg



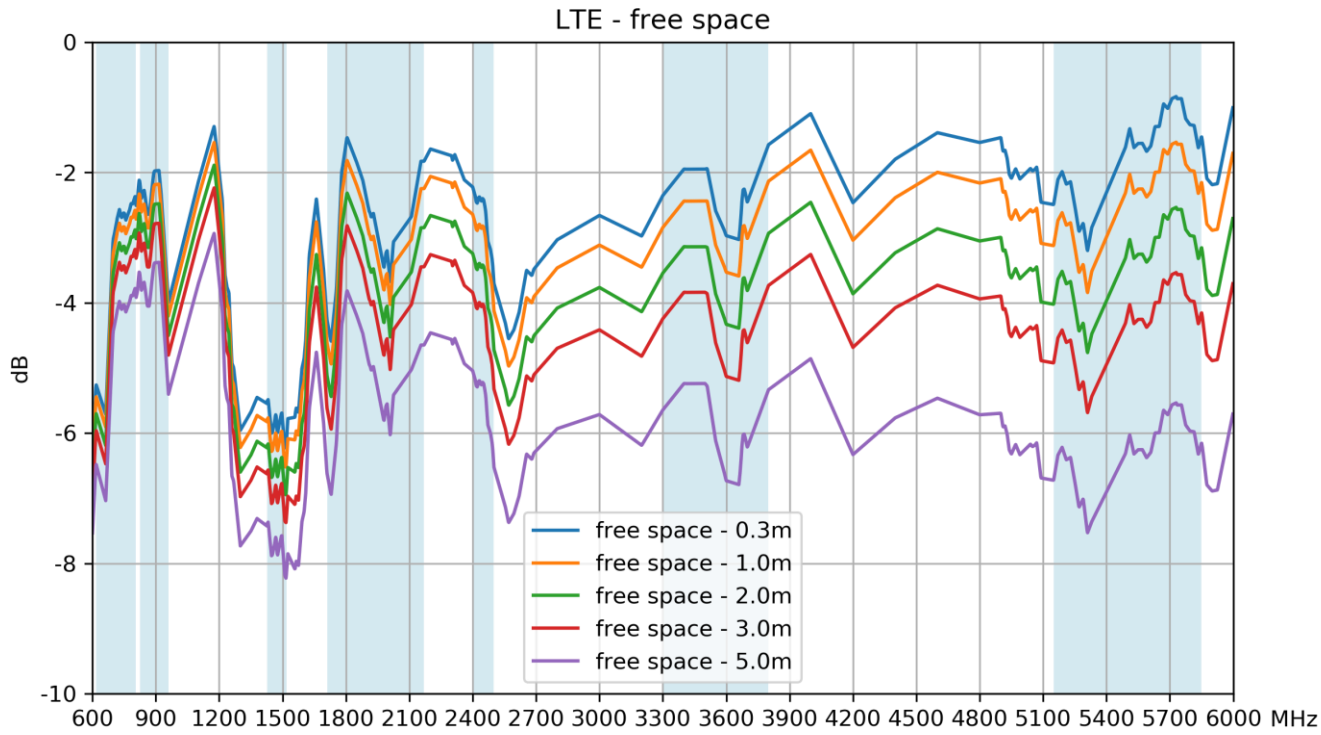
7. Application Note

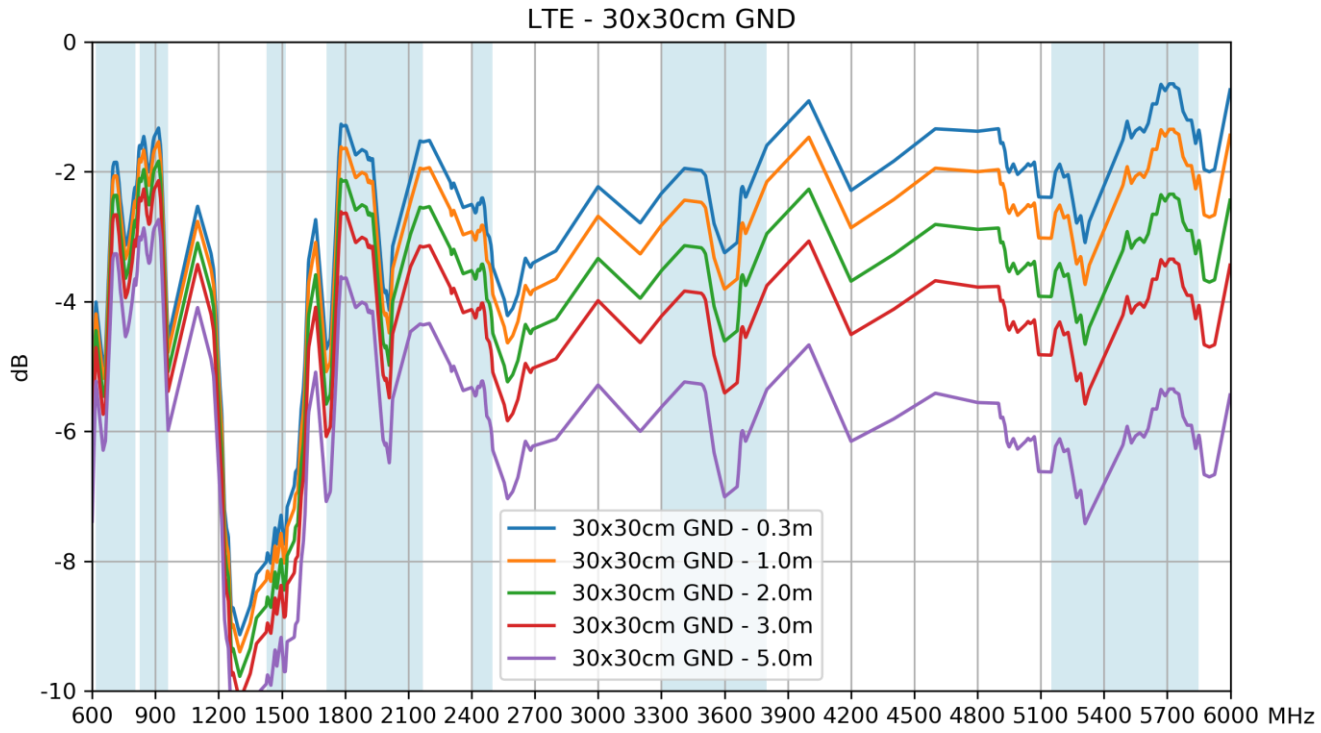
7.1 Efficiency



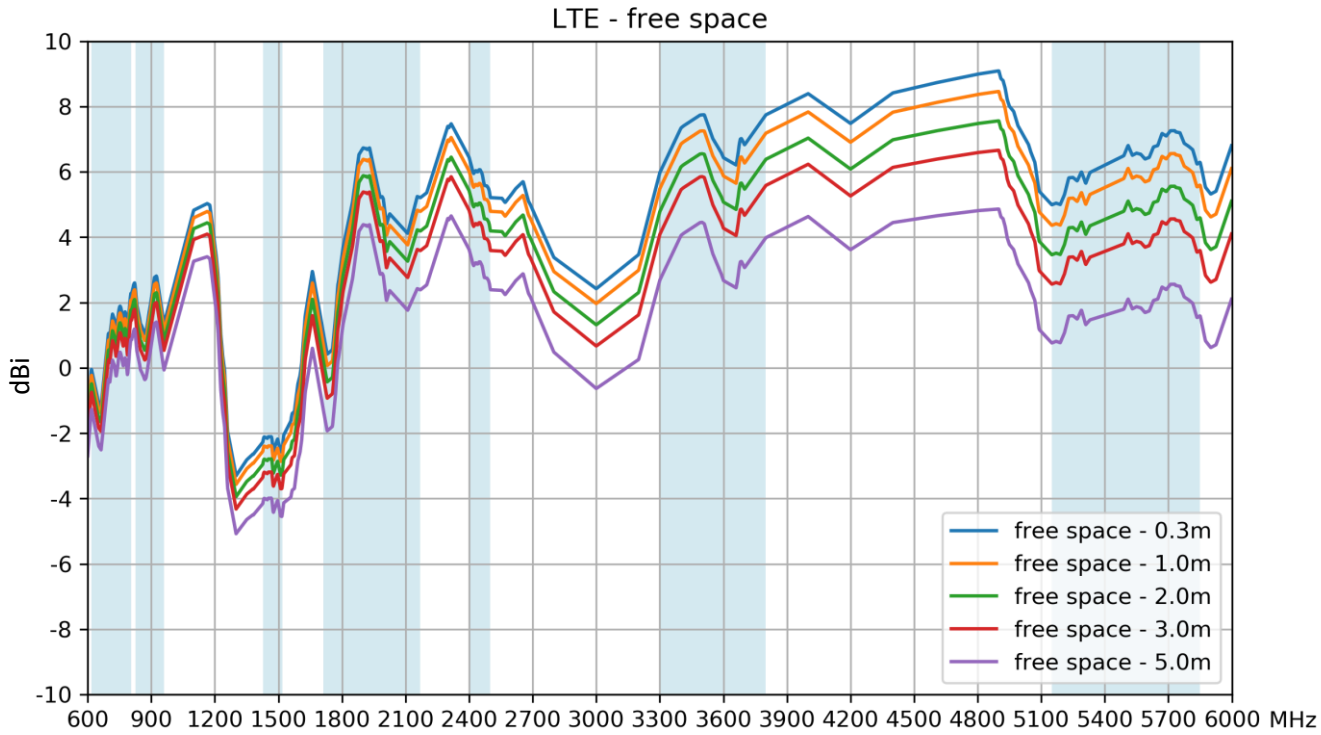


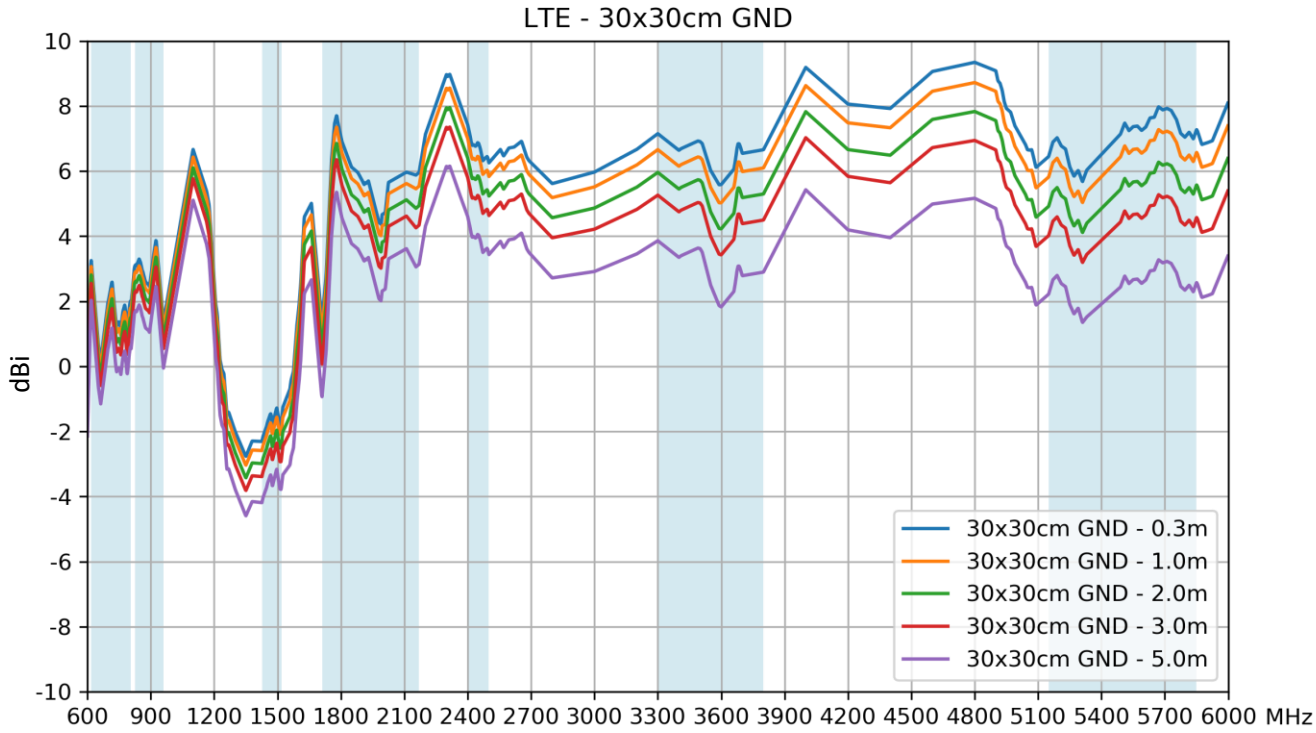
7.2 Average Gain





7.3 Peak Gain


LTE - free space
dBi
10
8
6
4
2
0
-2
-4
-6
-8
-10
600 900 1200 1500 1800 2100 2400 2700 3000 3300 3600 3900 4200 4500 4800 5100 5400 5700 6000 MHz
free space - 0.3m
free space - 1.0m
free space - 2.0m
free space - 3.0m
free space - 5.0m


LTE - 30x30cm GND
dBi
10
8
6
4
2
0
-2
-4
-6
-8
-10
600 900 1200 1500 1800 2100 2400 2700 3000 3300 3600 3900 4200 4500 4800 5100 5400 5700 6000 MHz
30x30cm GND - 0.3m
30x30cm GND - 1.0m
30x30cm GND - 2.0m
30x30cm GND - 3.0m
30x30cm GND - 5.0m

Changelog for the datasheet

SPE-18-8-073 – GA.170.305111

Revision: B (Current Version)	
Date:	2020-02-11
Changes:	Updated to include 5G data
Changes Made by:	Jack Conroy

Previous Revisions

Revision: A (Original First Release)	
Date:	2018-08-01
Notes:	
Author:	Jack Conroy

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- Поставка электронных компонентов под контролем ВП;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
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AVIC JONHON

«JONHON» (основан в 1970 г.)

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«FORSTAR» (основан в 1998 г.)

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