TAOGLAS

Datasheet

6-in-1 Antennas

Part No:
MA9906. A.007.dp

Description:

Guardian X 0.35m 6in1 4*LTE/5GNR MIMO 2*Wi-Fi MIMO

Features:

Low-profile Housing with Wall Mount
4*LTE/5GNR 600 to 6GHz
2*Wi-Fi MIMO 2.4GHz/5.8GHz
Cables: 5G/4G 0.35m of TGC-200
Connectors: 5G/4G – FAKRA Code
Dimensions: 360mm*160*16.5mm
0.35m RG-58 with FAKRA
RoHS & Reach Compliant

1. Introduction

The Taoglas GuardianX MA9906.A is a low-profile heavy duty, fully IP67 waterproof external antenna. Combining 6 elements into one antenna, 4* LTE MIMO (600MHz to 6GHz) and 2* Dual-band Wi-Fi MIMO 2.4-5.8GHz.

Typical applications include:
- Passenger Bus / Rail / Air Applications.
- Automotive and Heavy Equipment Vehicle Tracking and Telematics
- Remote Asset and Pipeline Monitoring
- HD Video over LTE - First Responder and Emergency Services
- M2M Applications/IoT

LTE 4G applications demand high speed data uplink and downlink. High efficiency and high gain MIMO antennas are necessary to achieve the required signal to noise ratio and throughput required to solve these challenges. Taoglas also takes care to have high isolation between the two MIMO antennas to prevent selfinterference. Low loss cables are used to keep efficiency high over long cable lengths. In contrast, smaller MIMO antennas with poorer quality thinner cables will have much reduced efficiency and isolation, which would lead to a large drop in system throughput, increased number of drops, and may indeed not make a system connection at all.

Cable length and connector types are customizable. Contact your regional Taoglas customer support team for installation guidelines or further information.

2. Specifications

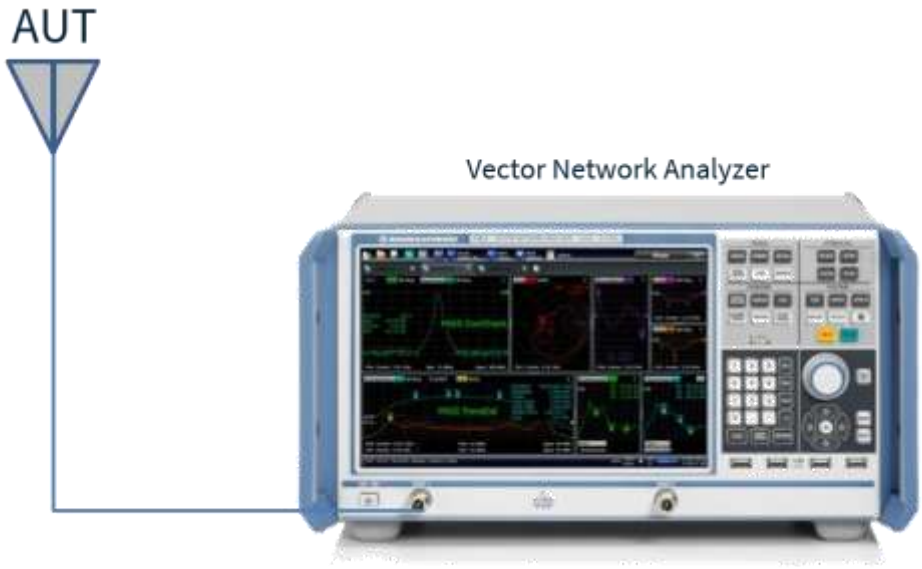
LTE/5GNR MIMO											
Frequency (MHz)		5GNR B71	LTE 700	LTE B5_B8	5GNR 1500	5GNR N66	LTE 2600	5GNR N77	5GNR N78	5GNR N79	LTE 5200
		650-698	698-824	824-960	1427-1518	1710-2200	2300-2690	3300-4200	3300-3800	4400-5000	5150-5925
Efficiency (%)											
LTE 1	0.35m	79.9	71.3	67.8	64.6	64.4	66.8	57.8	57.3	64.8	53.6
LTE 3	0.35m	60.5	77.2	73.6	62.3	73.7	78.2	63.3	62.4	75.4	55.6
LTE 6	0.35m	66.0	59.8	65.7	64.0	64.9	73.1	73.9	73.3	70.5	49.9
LTE 8	0.35m	73.5	68.6	66.8	36.2	78.3	66.4	46.6	46.2	51.0	34.4
Average Gain (dB)											
LTE 1	0.35m	-0.97	-1.47	-1.69	-1.90	-1.91	-1.75	-2.38	-2.42	-1.89	-2.71
LTE 3	0.35m	-2.18	-1.12	-1.33	-2.06	-1.33	-1.07	-1.99	-2.05	-1.23	-2.55
LTE 6	0.35m	-1.81	-2.23	-1.82	-1.94	-1.88	-1.36	-1.32	-1.35	-1.52	-3.02
LTE 8	0.35m	-1.34	-1.63	-1.75	-4.42	-1.06	-1.78	-3.32	-3.36	-2.93	-4.63
Peak Gain (dBi)											
LTE 1	0.35m	5.36	4.84	5.29	4.70	5.00	7.54	9.29	6.59	10.45	10.31
LTE 3	0.35m	3.26	4.71	4.37	3.76	5.08	5.97	5.17	5.17	6.47	6.33
LTE 6	0.35m	2.54	4.89	5.19	5.60	4.62	5.27	5.85	5.85	7.39	5.78
LTE 8	0.35m	4.54	4.68	4.51	2.44	5.18	6.39	7.44	6.66	8.30	7.51

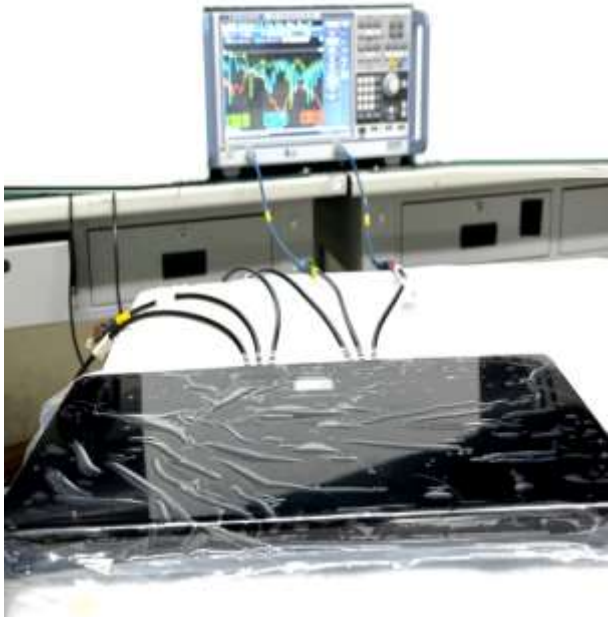
Wi-Fi MIMO			
Frequency (MHz)		2.4GHz	5GHz
		2400-2480	5150-5850
Efficiency (%)			
Wi-Fi 2	0.35m	56.8	48.0
Wi-Fi 7	0.35m	54.7	48.6
Average Gain (dB)			
Wi-Fi 2	0.35m	-2.46	-3.19
Wi-Fi 7	0.35m	-2.62	-3.13
Peak Gain (dBi)			
Wi-Fi 2	0.35m	4.43	8.12
Wi-Fi 7	0.35m	5.76	8.97
Impedance	50 Ω		
Polarization	Linear		
Radiation Pattern	Omni		
Max. input power	20W		

Mechanical	
Dimensions	360mm*160mm
Weight	735 g (Not Included Cable and Package)
Housing	PC
Connector	FAKRA Code A(LTE-1); FAKRA Code B(LTE-3); FAKRA Code C(LTE-8); FAKRA Code D(LTE-6) FAKRA Code E(WIFI-2); FAKRA Code F(WIFI-7)
Cable	TGC-200 Coaxial Cable
Environmental	
Waterproof Rating	IP67
Temperature Range	-40°C to 85°C
Humidity	Non-condensing 65°C 95% RH

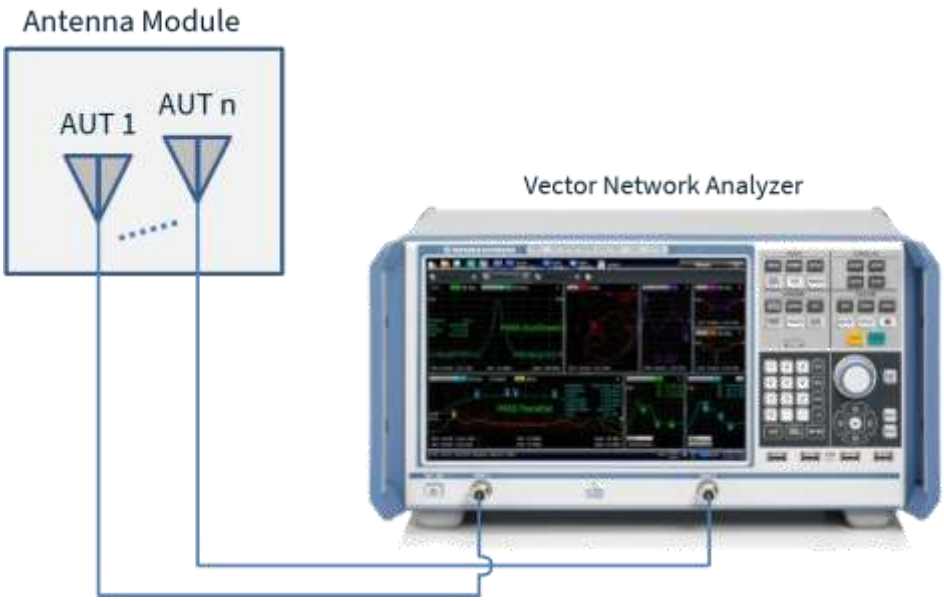
3. Test Setup

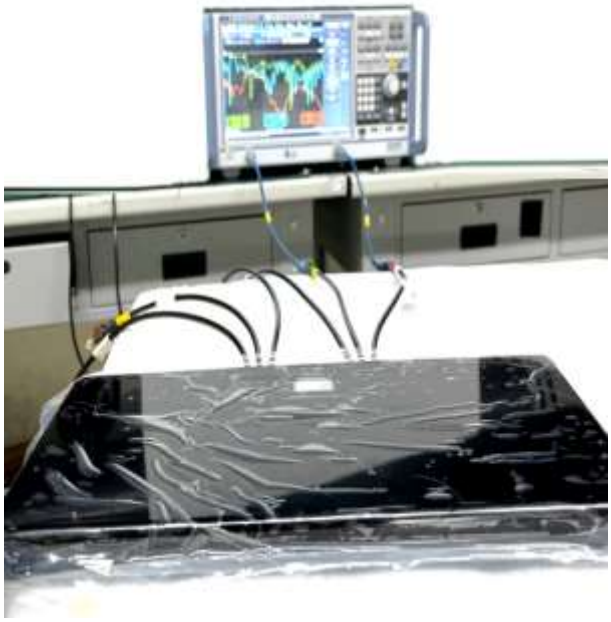
3.1 S11 / VSWR / Return Loss



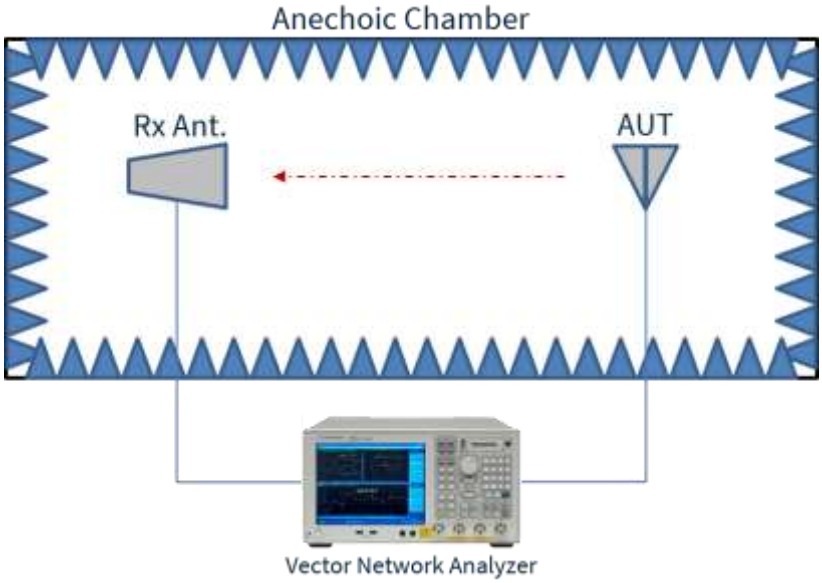


3.2 S12 Isolation



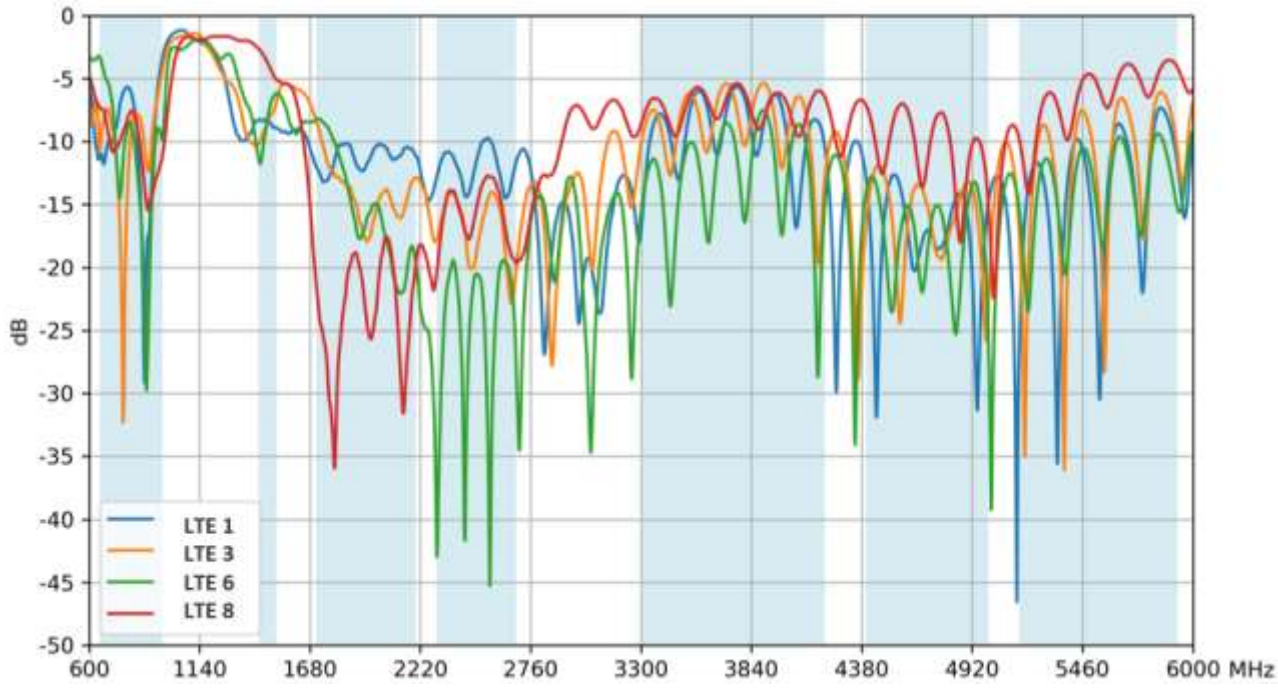


3.3 Radiation Performance

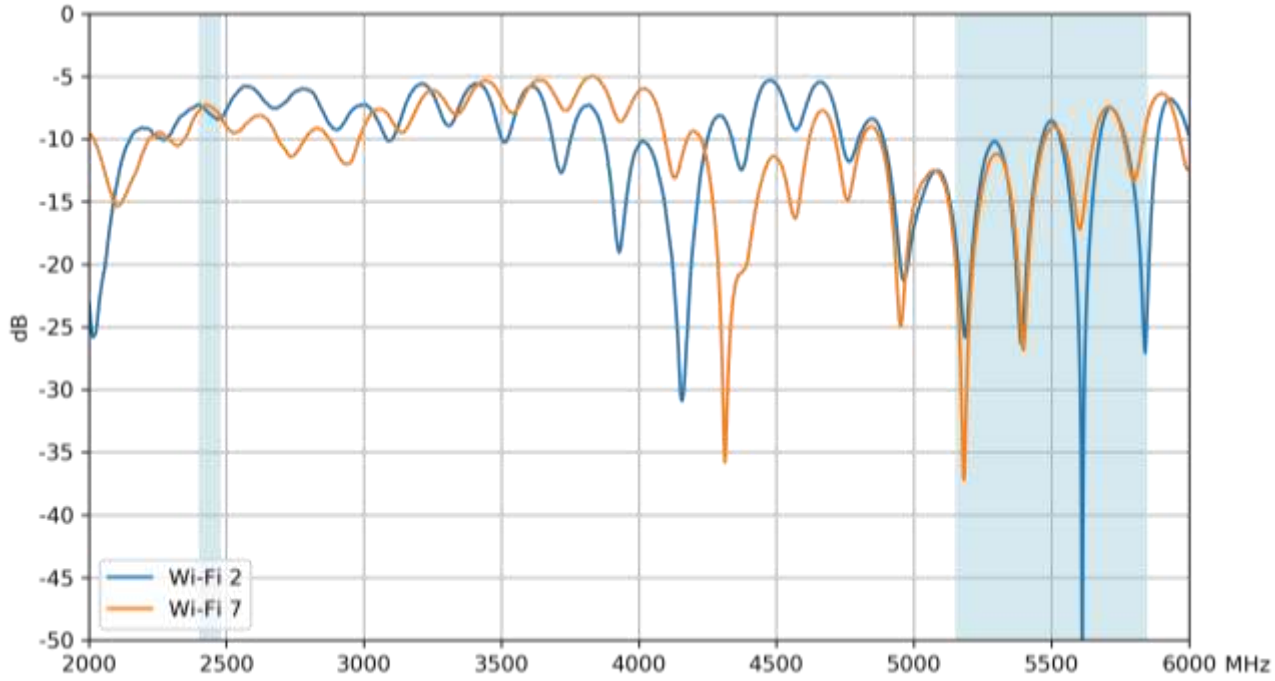


4. Antenna Characteristics

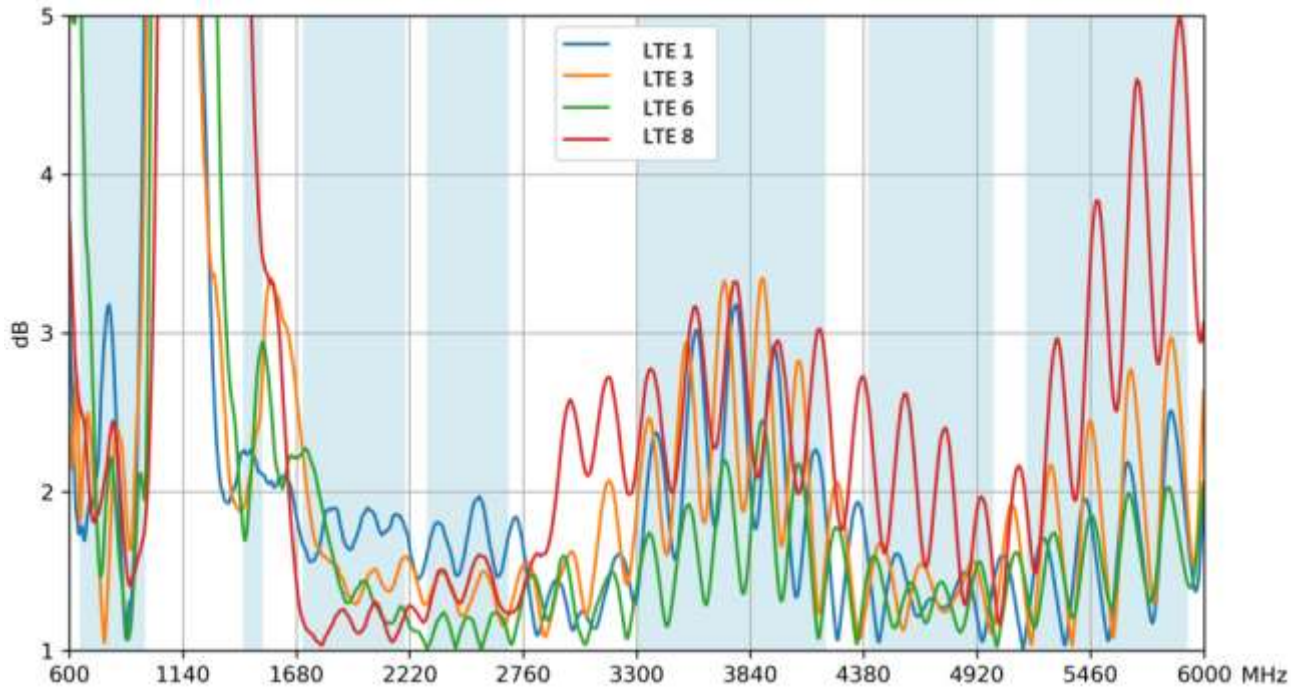
4.1 Return Loss - LTE



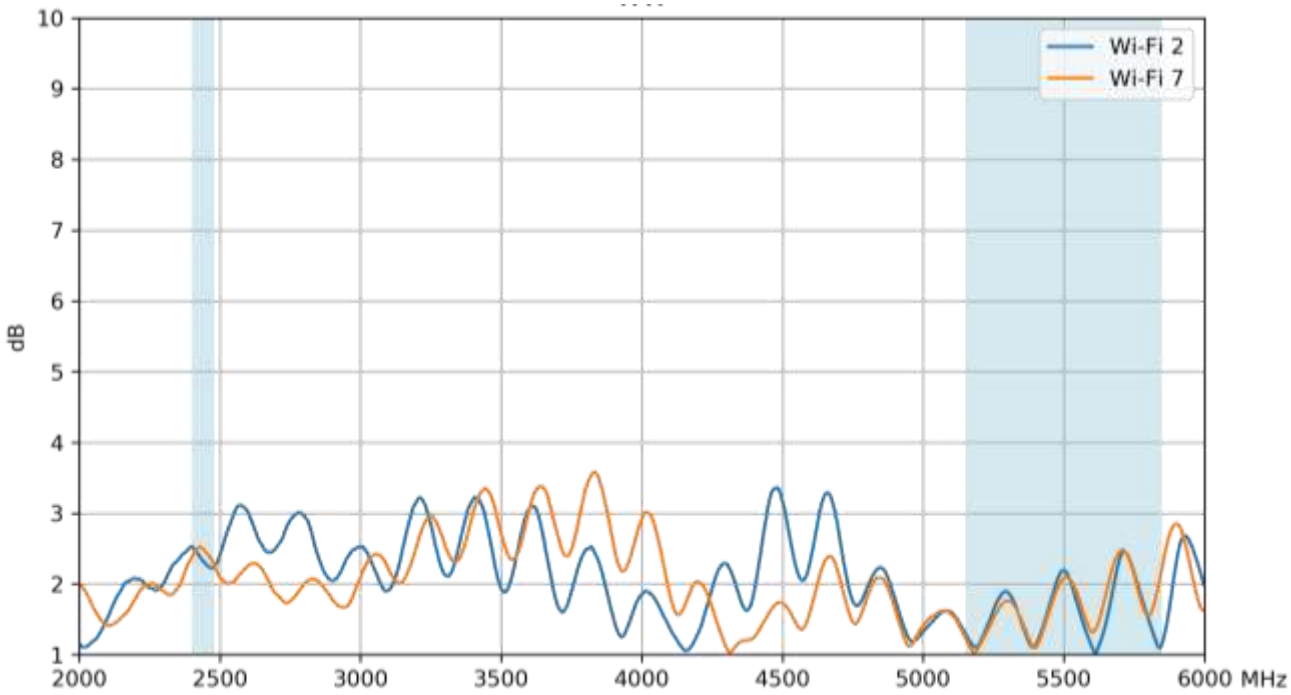
4.2 Return Loss – Wi-Fi



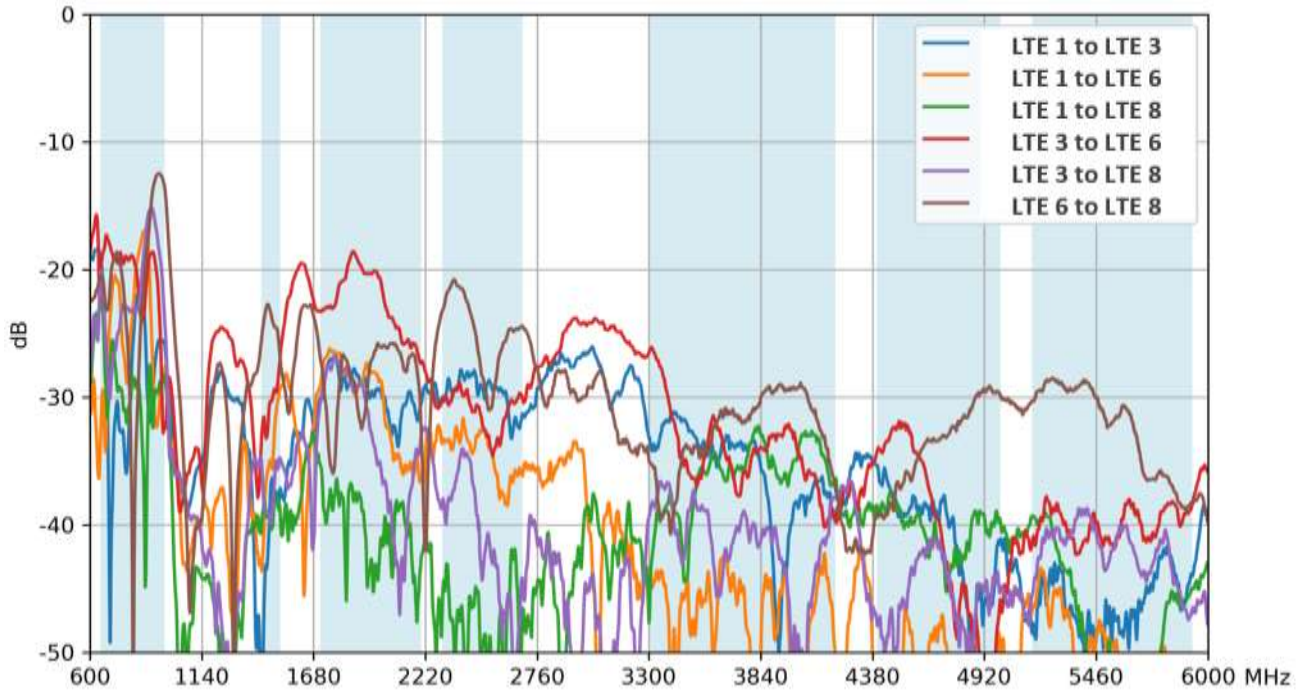
4.3 VSWR -LTE



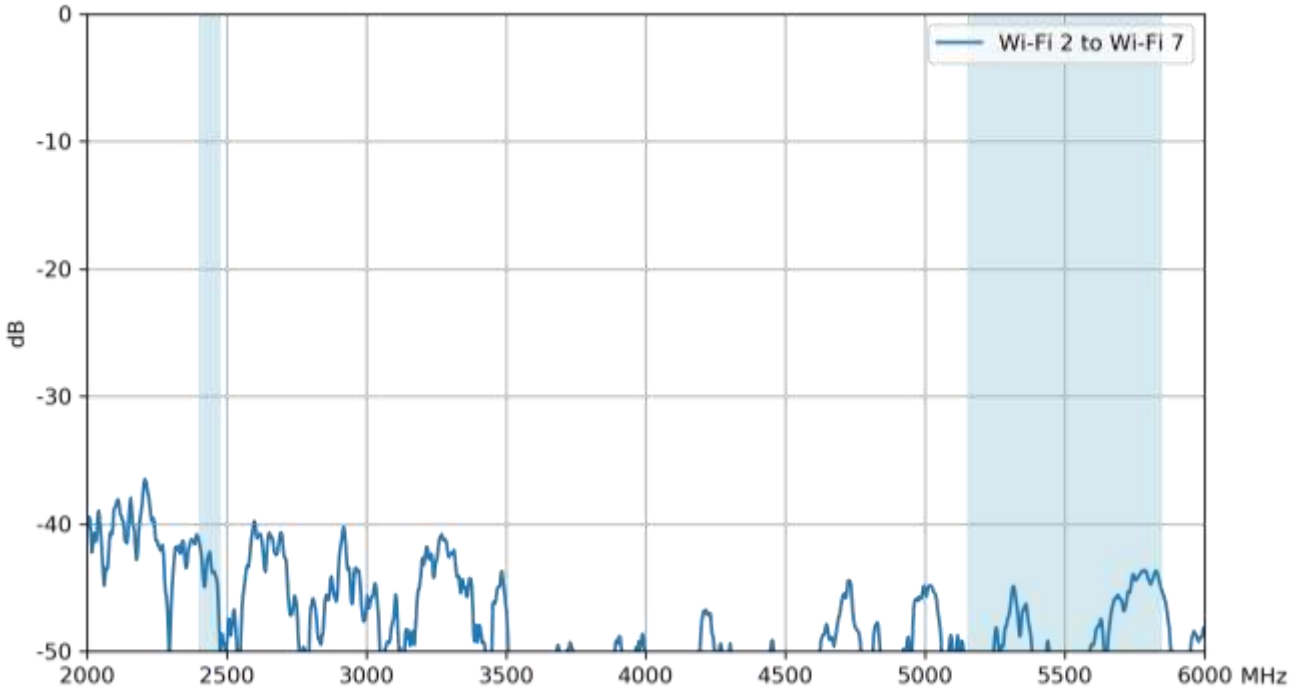
4.4 VSWR – Wi-Fi



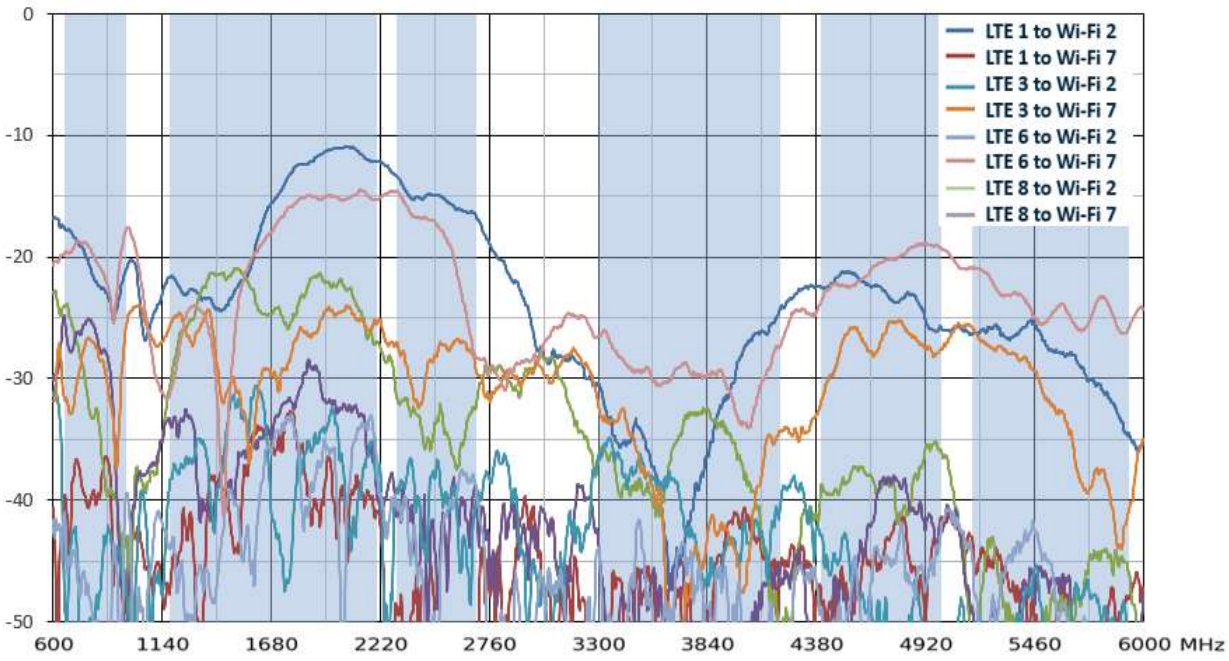
4.5 Isolation - LTE



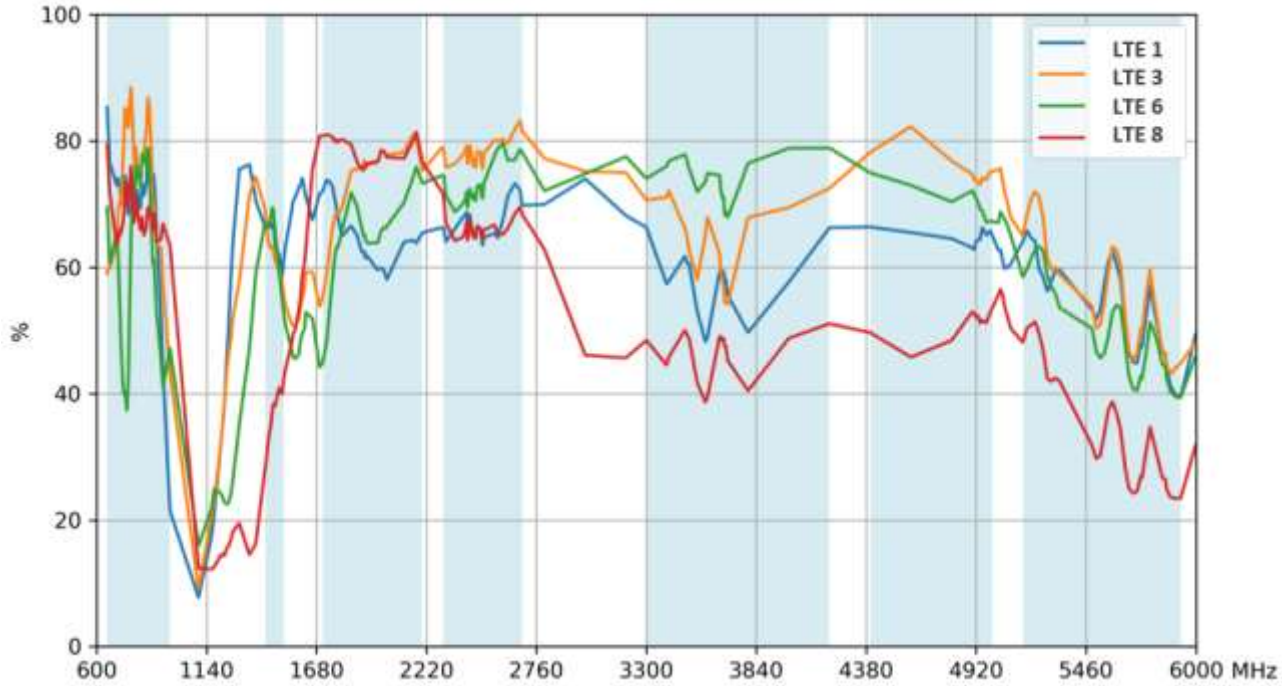
4.6 Isolation – Wi-Fi



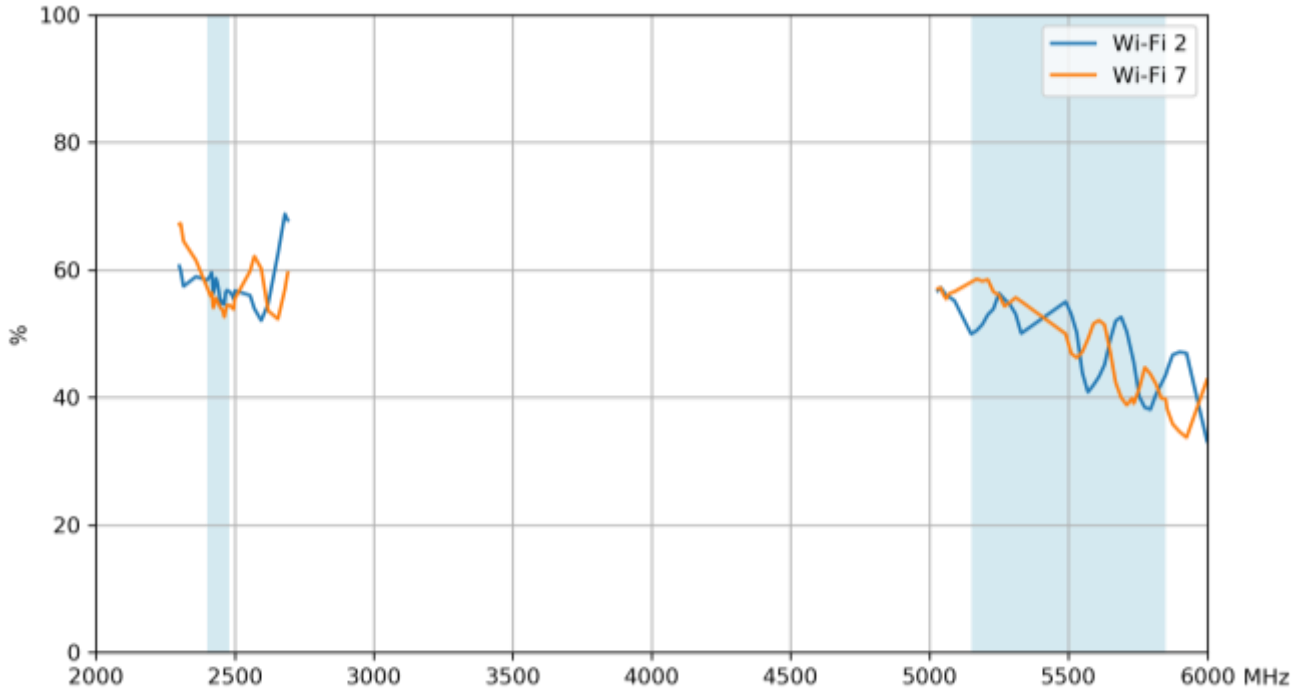
4.7 Isolation – LTE/Wi-Fi



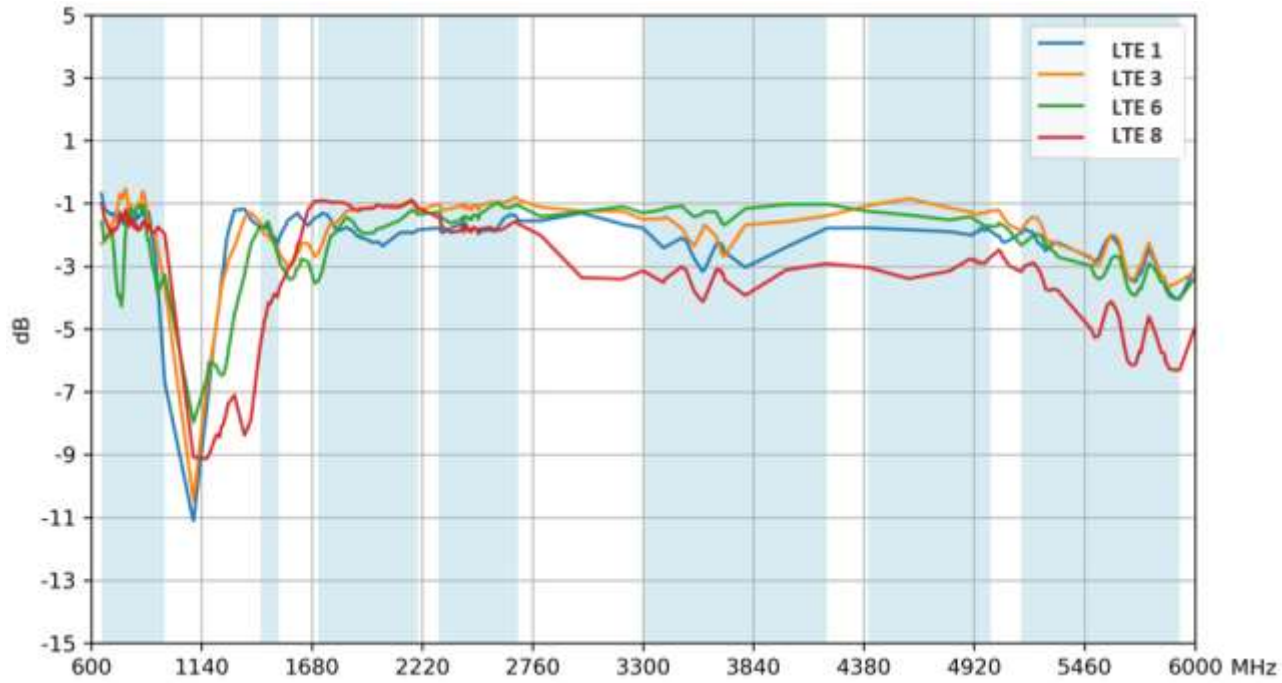
4.6 Efficiency - LTE



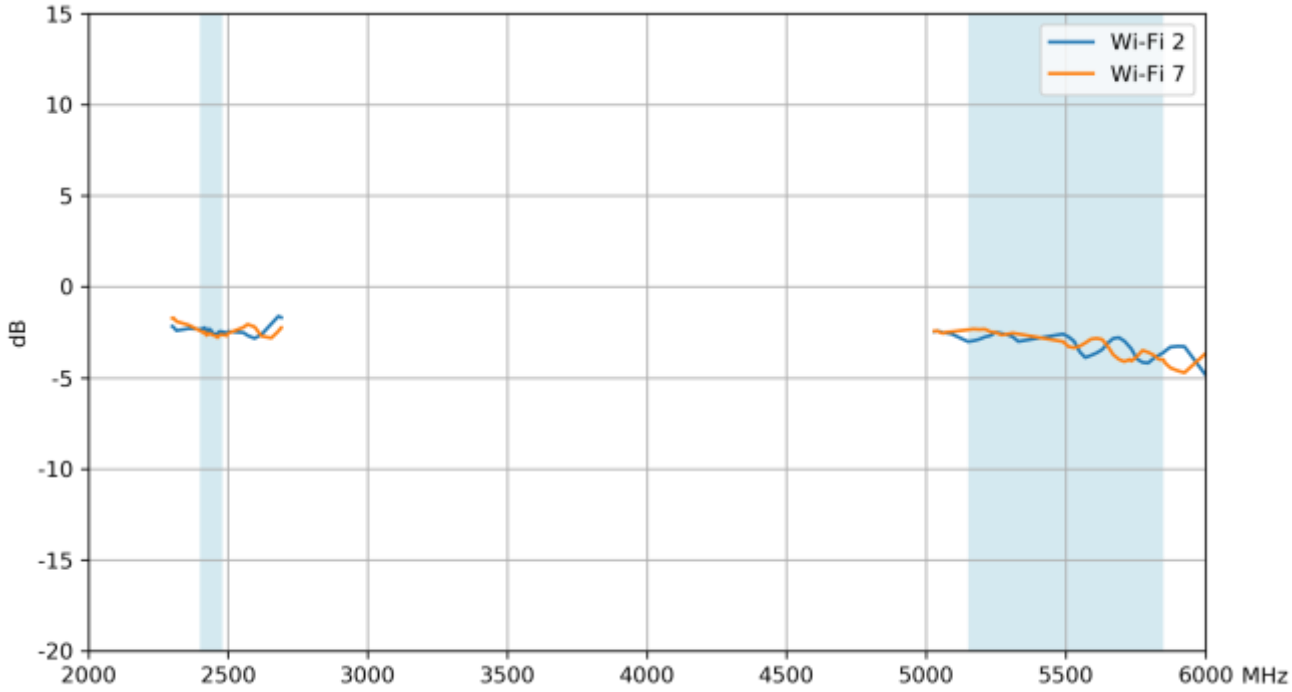
4.7 Efficiency – Wi-Fi



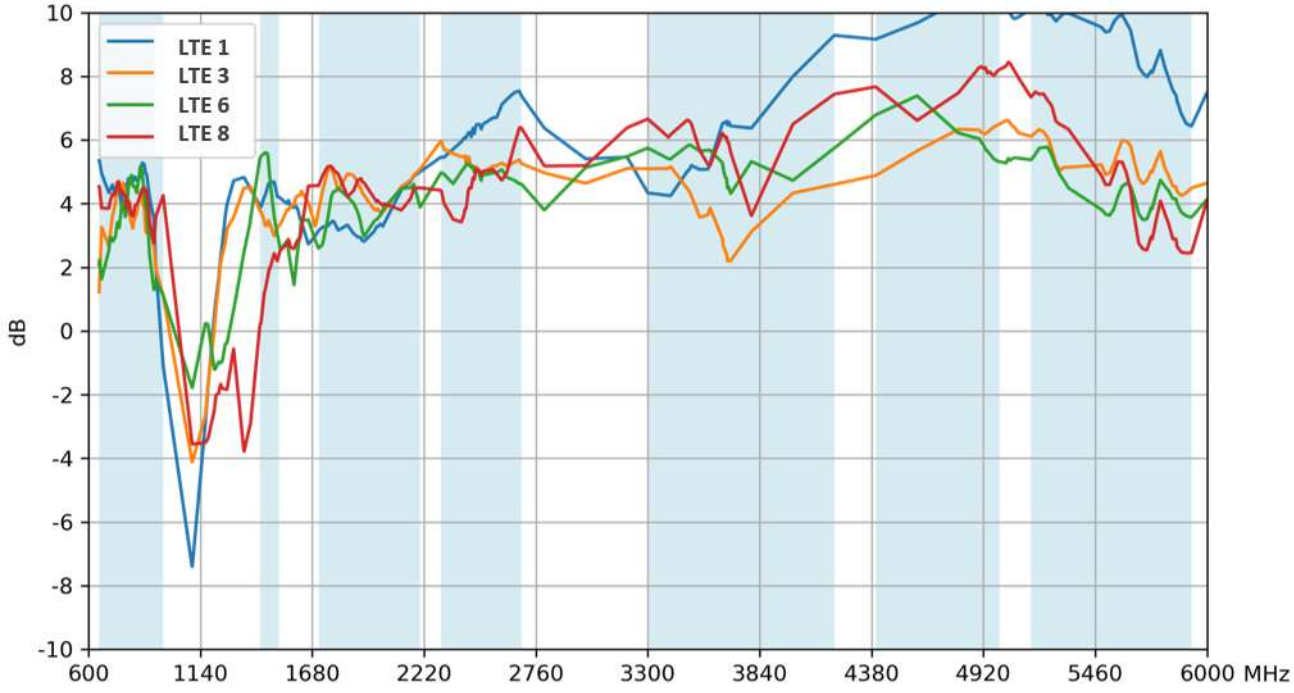
4.8 Average Gain - LTE



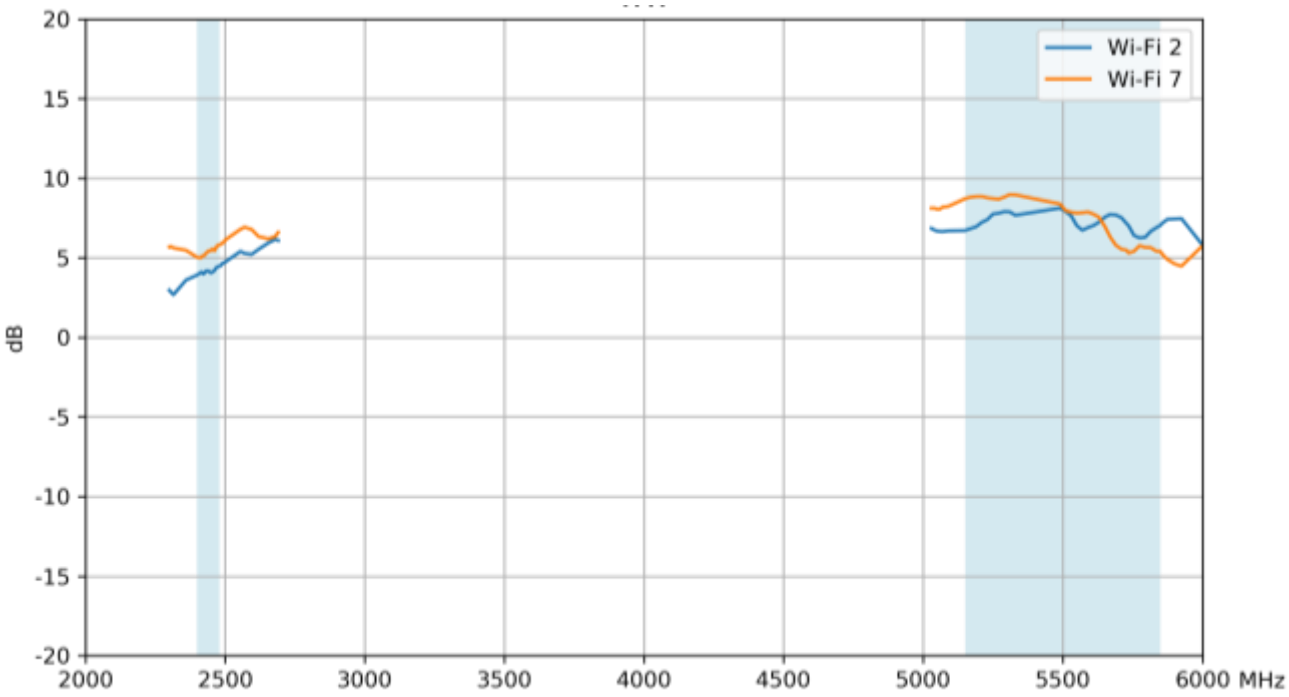
4.7 Average Gain – Wi-Fi



4.8 Peak Gain - LTE

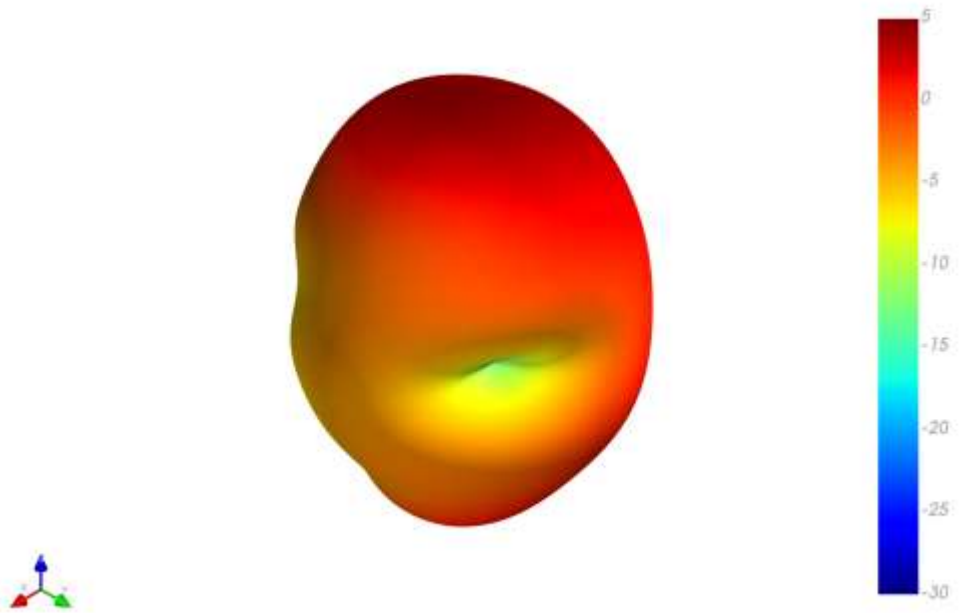


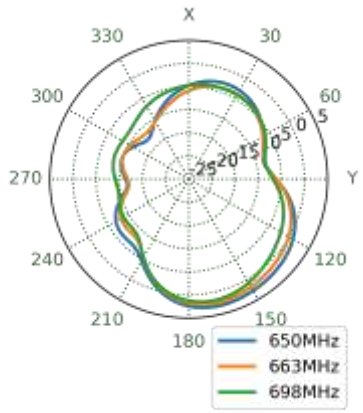
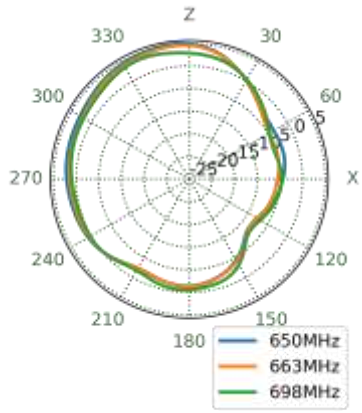
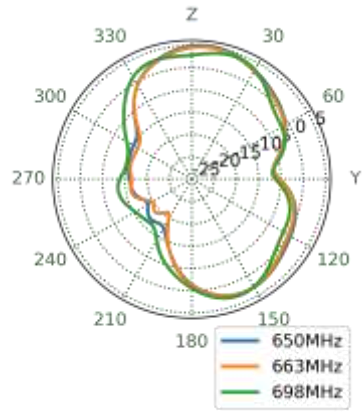
4.9 Peak Gain – Wi-Fi



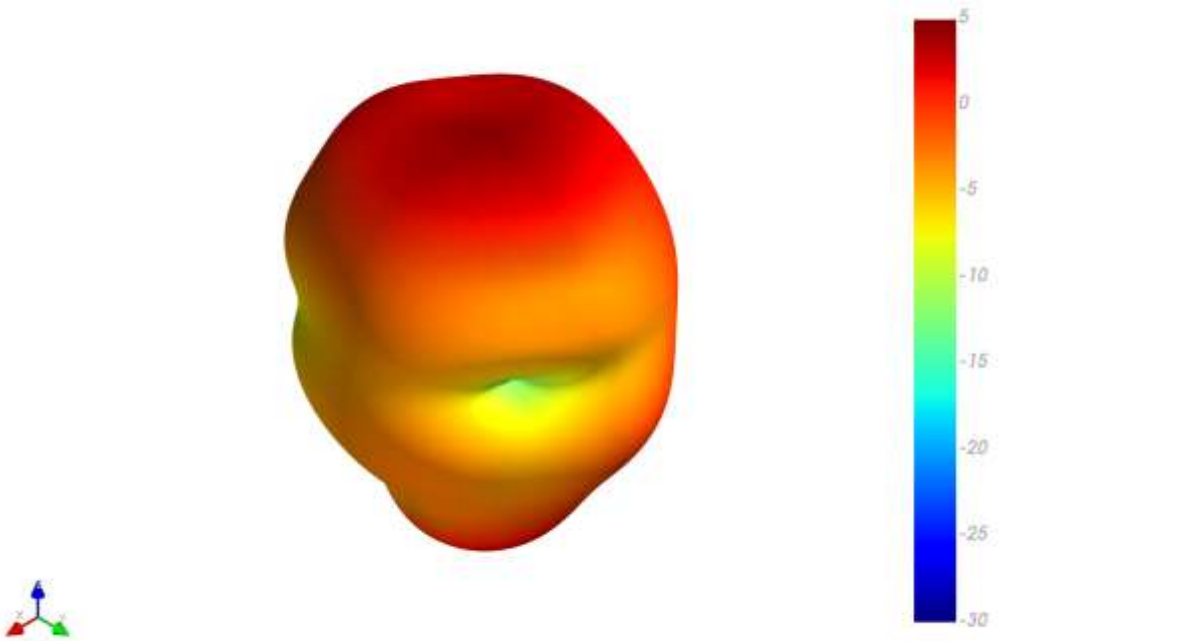
5. Radiation Patterns

5.1 LTE 1 663MHz 3D and 2D Radiation Patterns

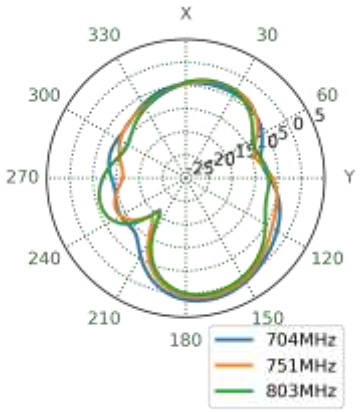


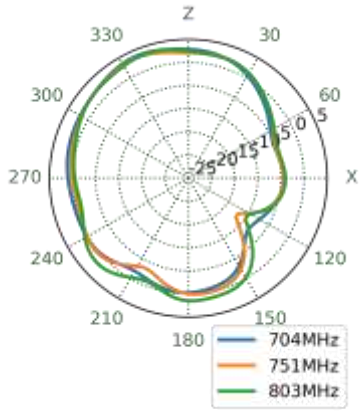
XY Plane	XZ Plane	YZ Plane
		

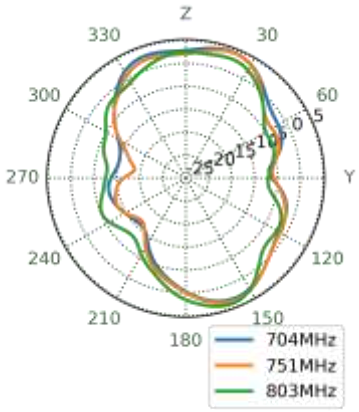
751MHz



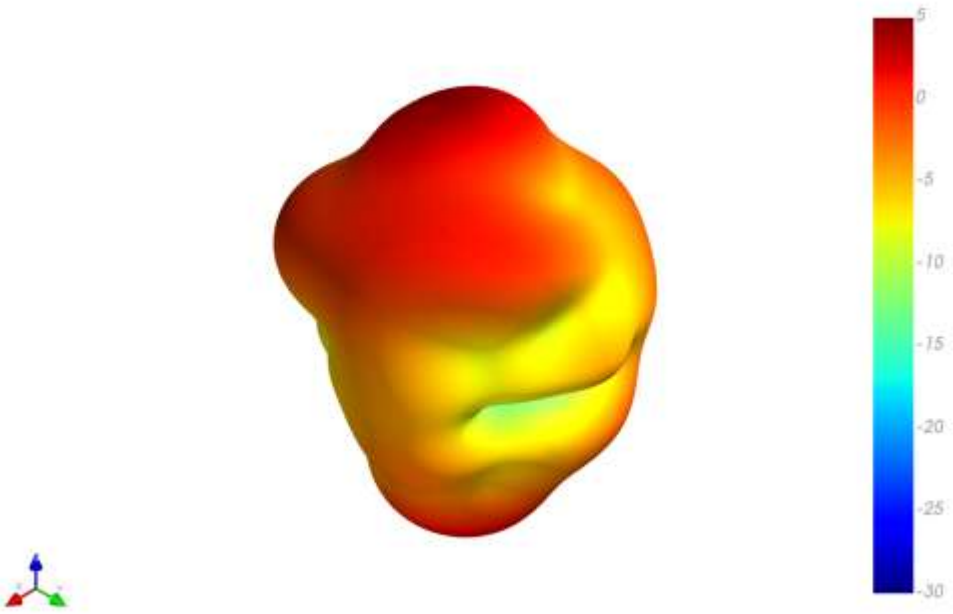
XY Plane	XZ Plane	YZ Plane



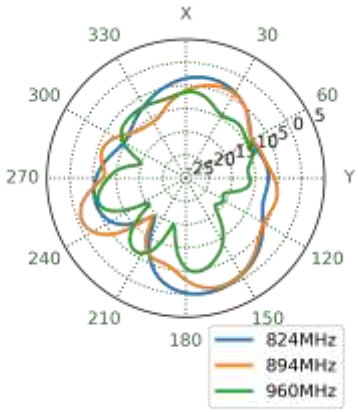


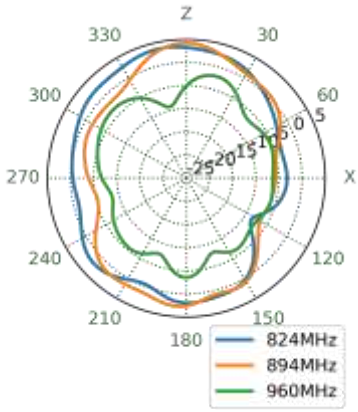


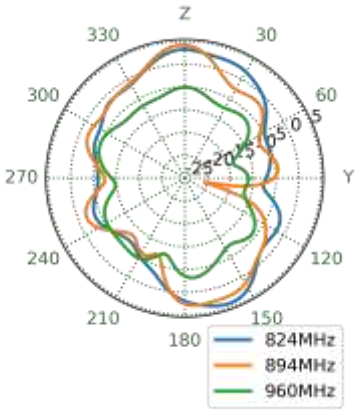
894MHz



XY Plane	XZ Plane	YZ Plane







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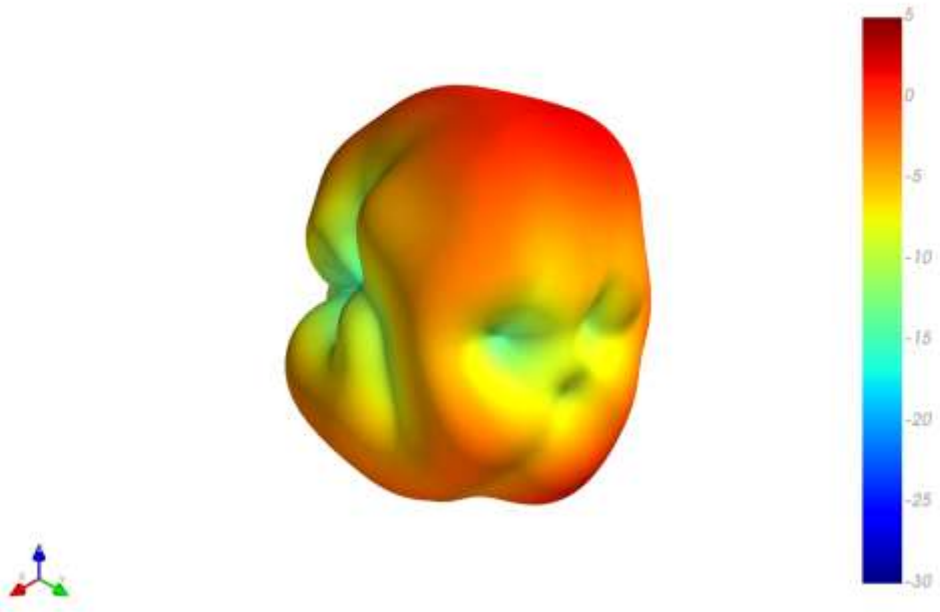

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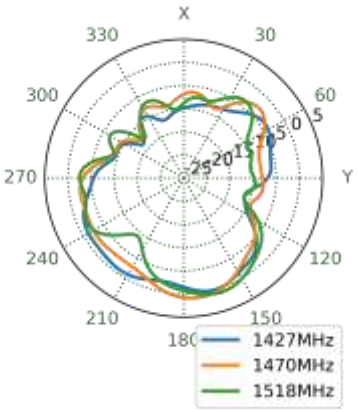
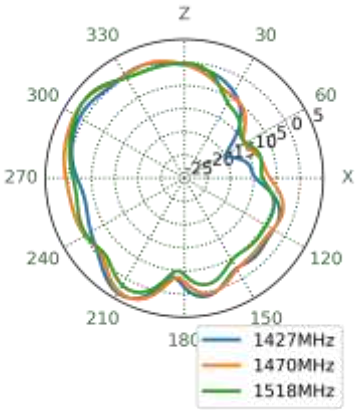
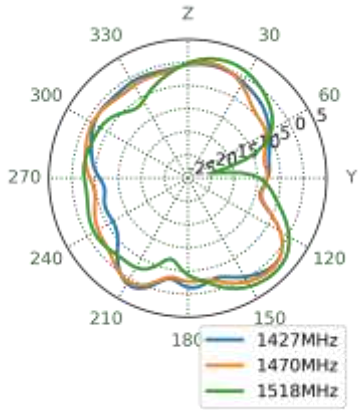
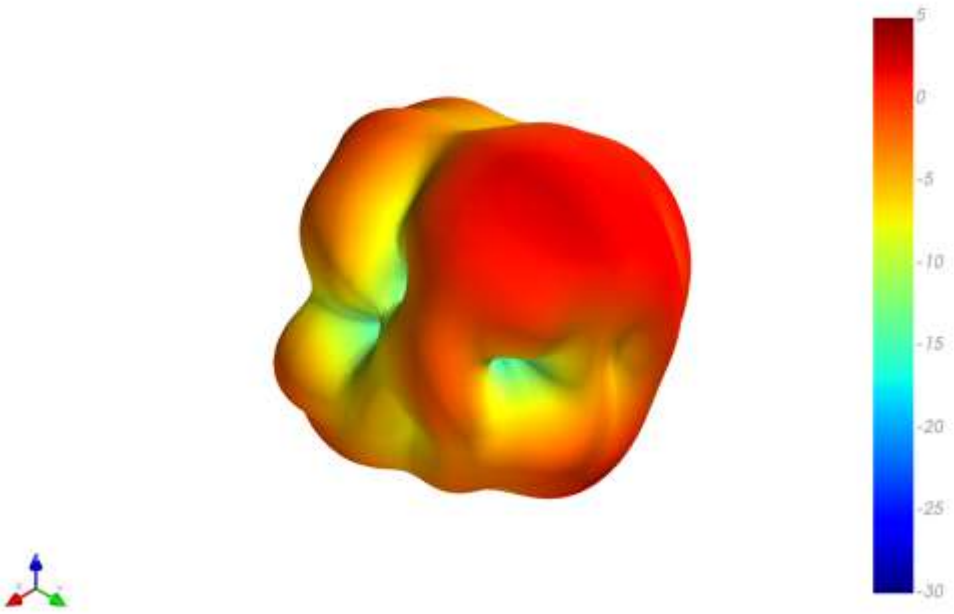
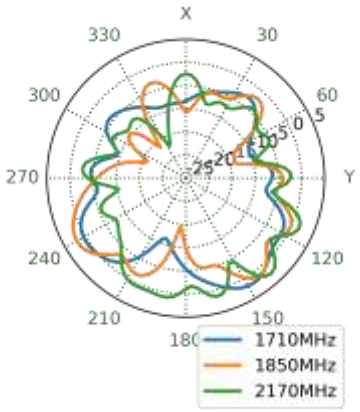
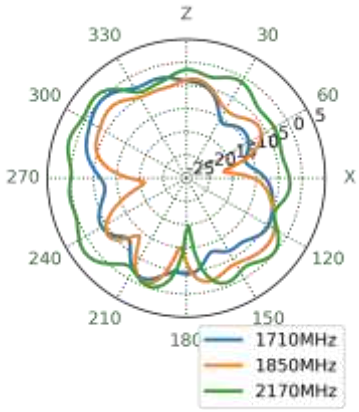
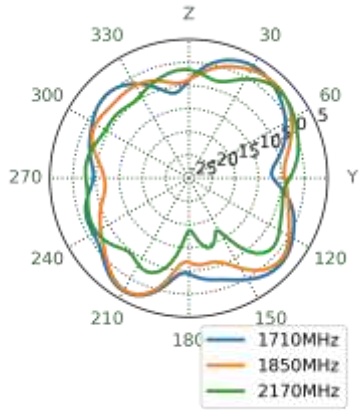
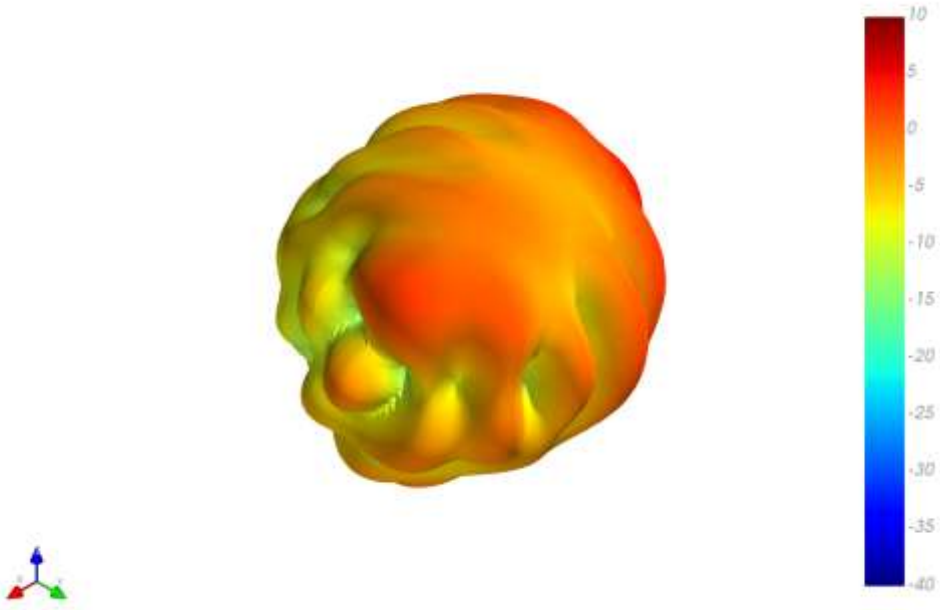
		

1850MHz



XY Plane	XZ Plane	YZ Plane
		

2496MHz



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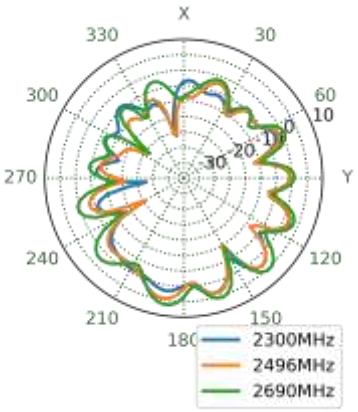
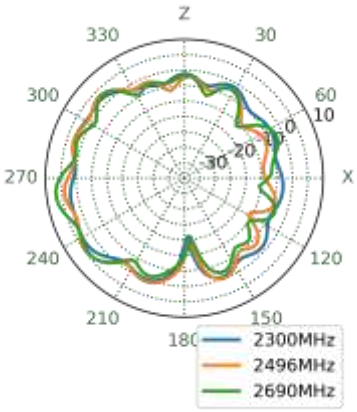
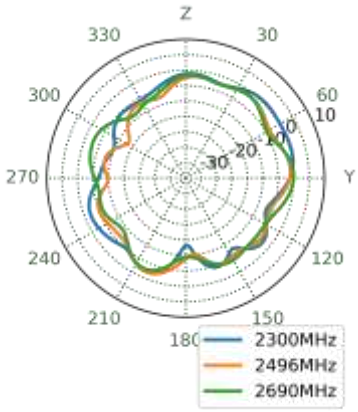
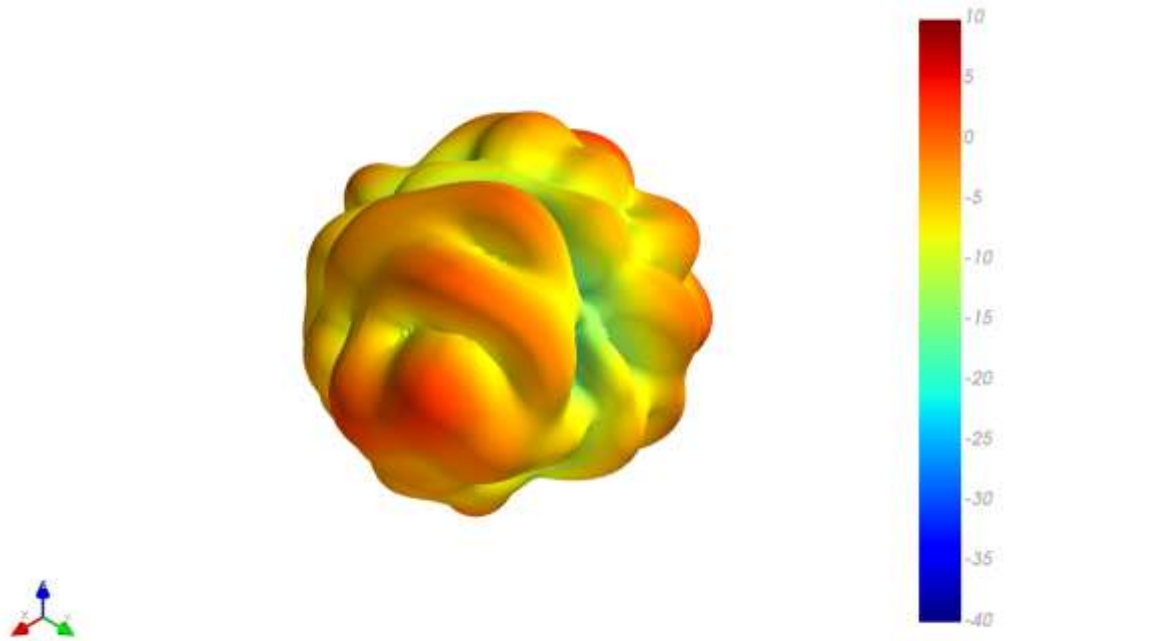
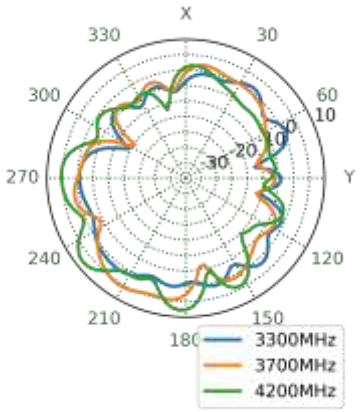
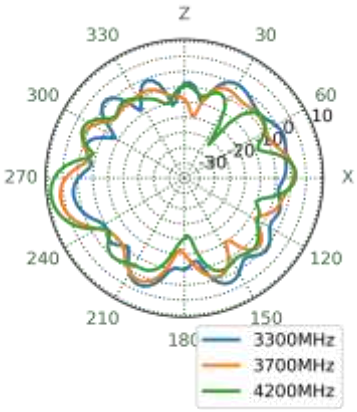
		

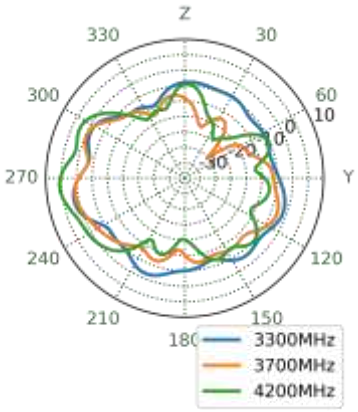
3700MHz



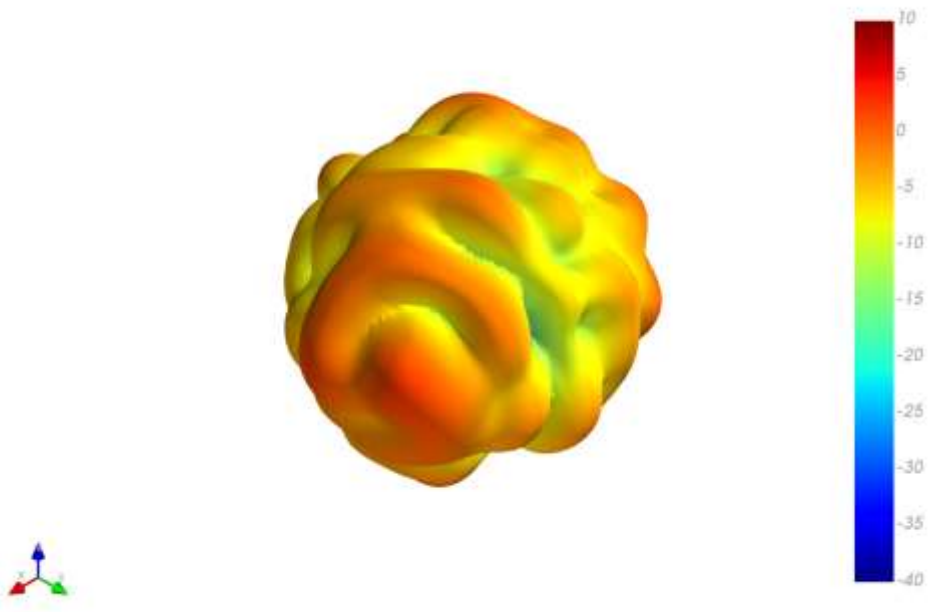
XY Plane	XZ Plane	YZ Plane

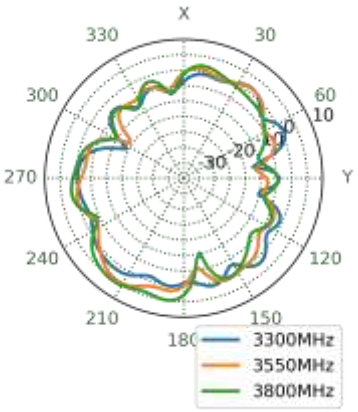
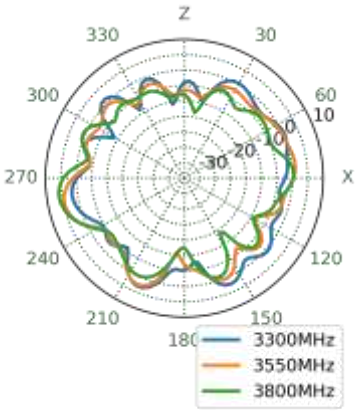
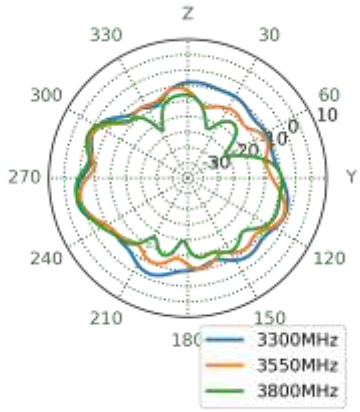




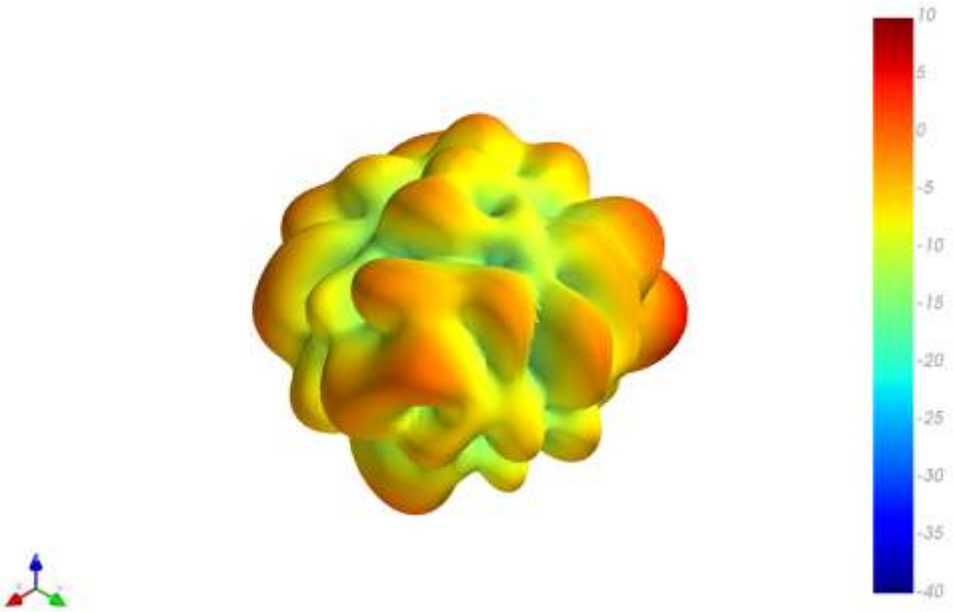


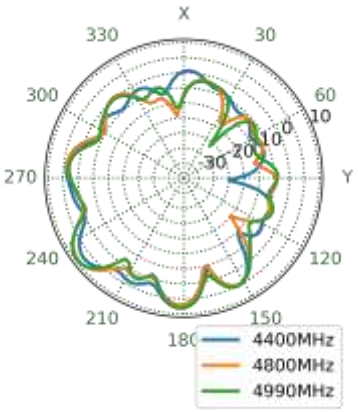
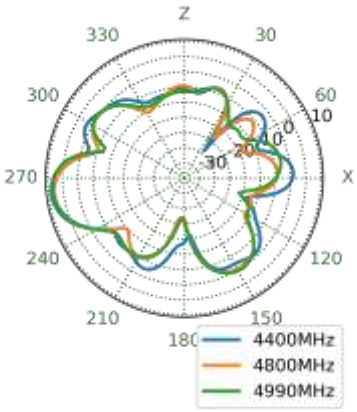
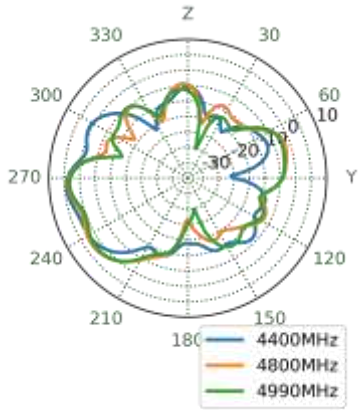
3550MHz



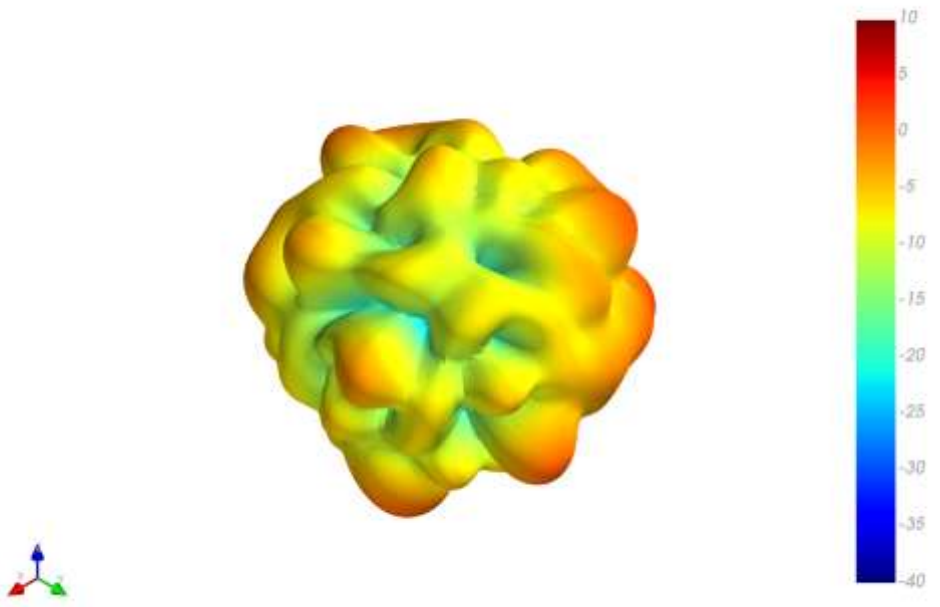
XY Plane	XZ Plane	YZ Plane
		

4800MHz

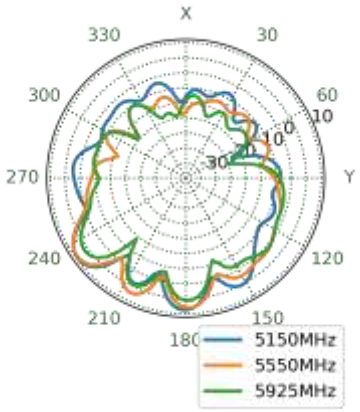


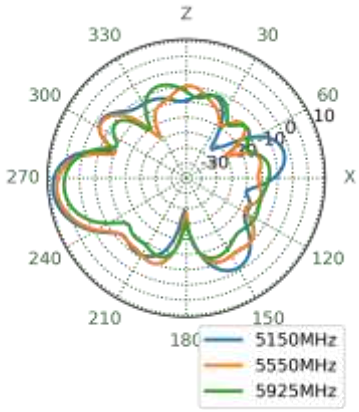
XY Plane	XZ Plane	YZ Plane
		

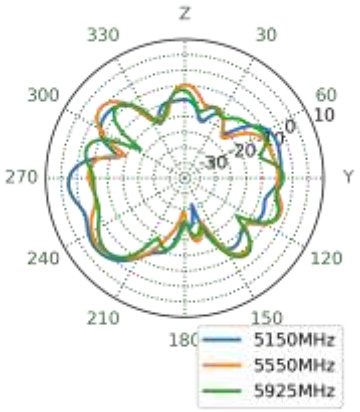
5550MHz



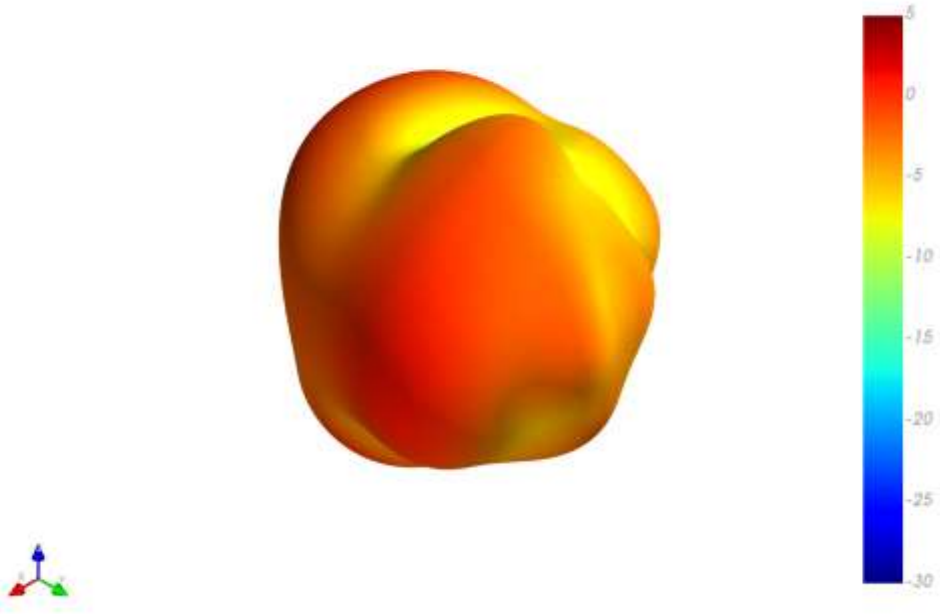
XY Plane	XZ Plane	YZ Plane

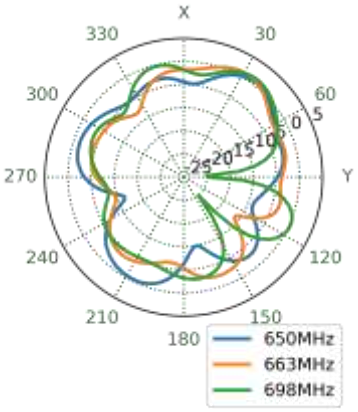
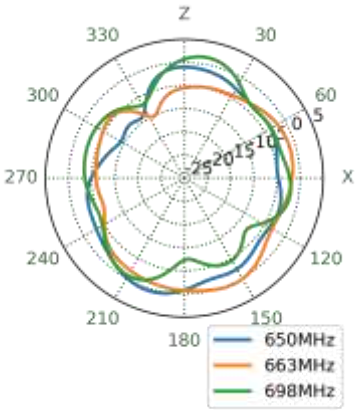
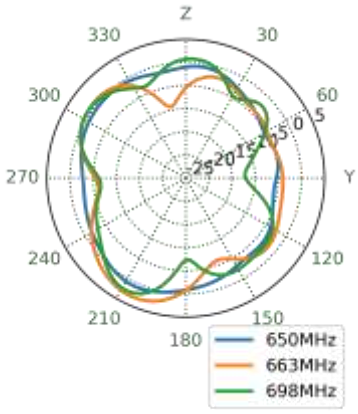




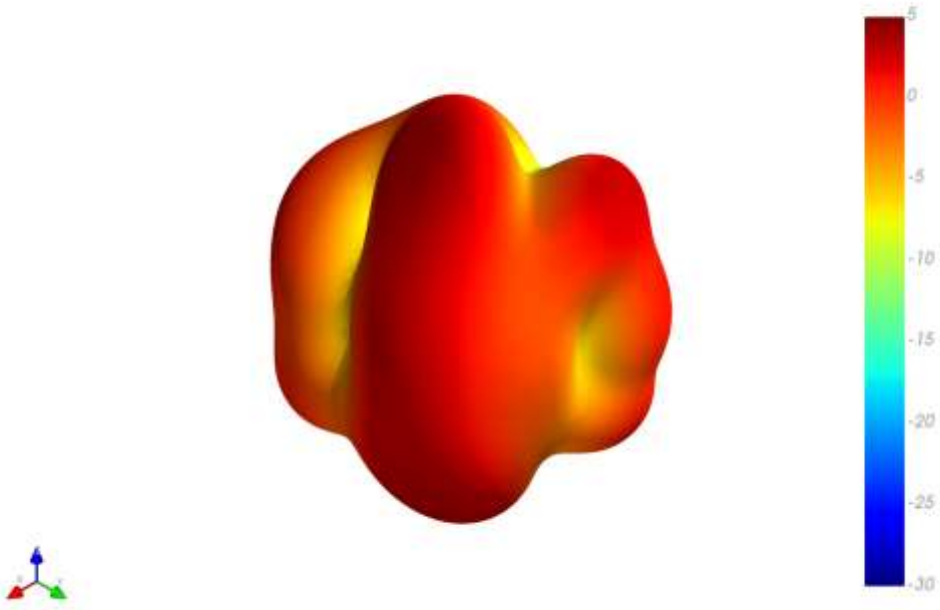


5.2 LTE 3 663MHz 3D and 2D Radiation Patterns

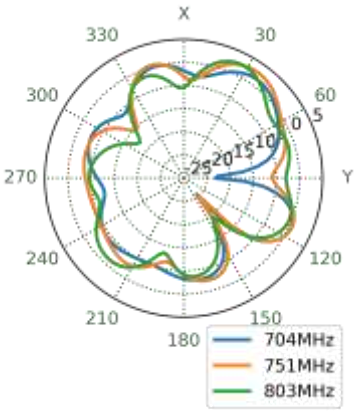


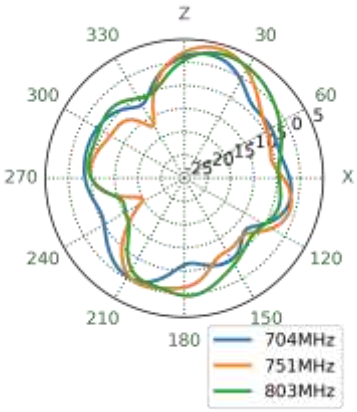
XY Plane	XZ Plane	YZ Plane
		

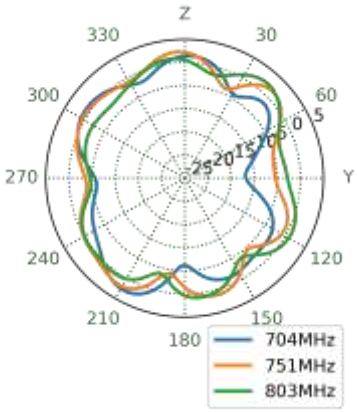
751MHz



XY Plane	XZ Plane	YZ Plane

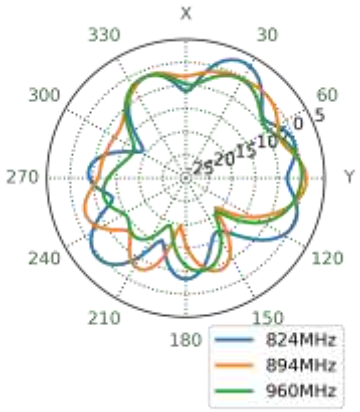


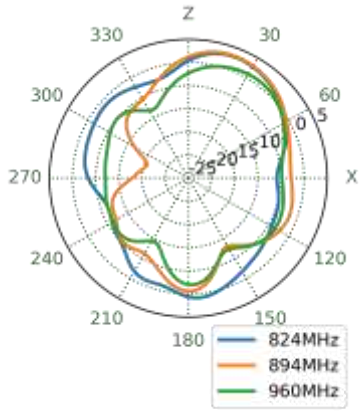


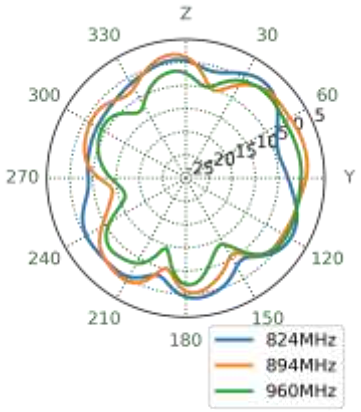


894MHz

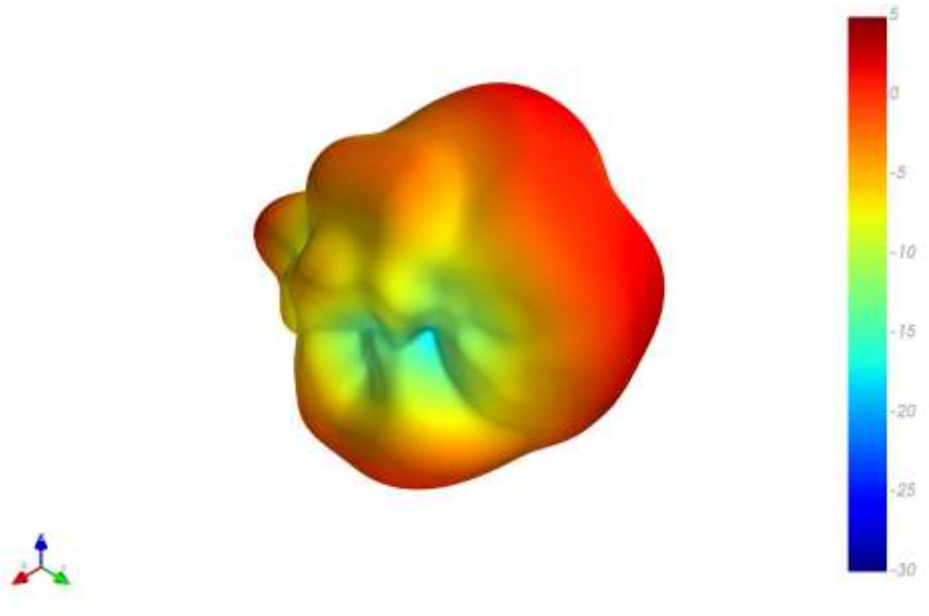
XY Plane	XZ Plane	YZ Plane



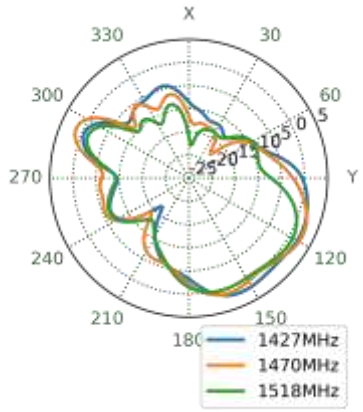


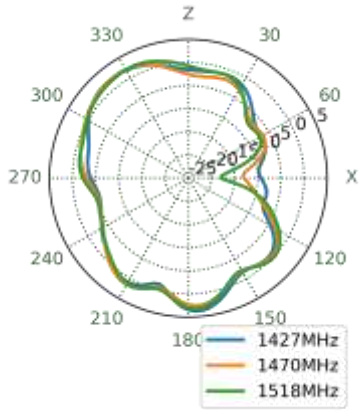


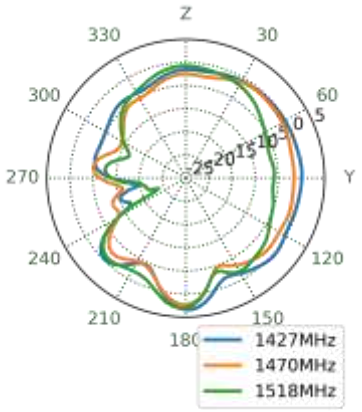
1470MHz



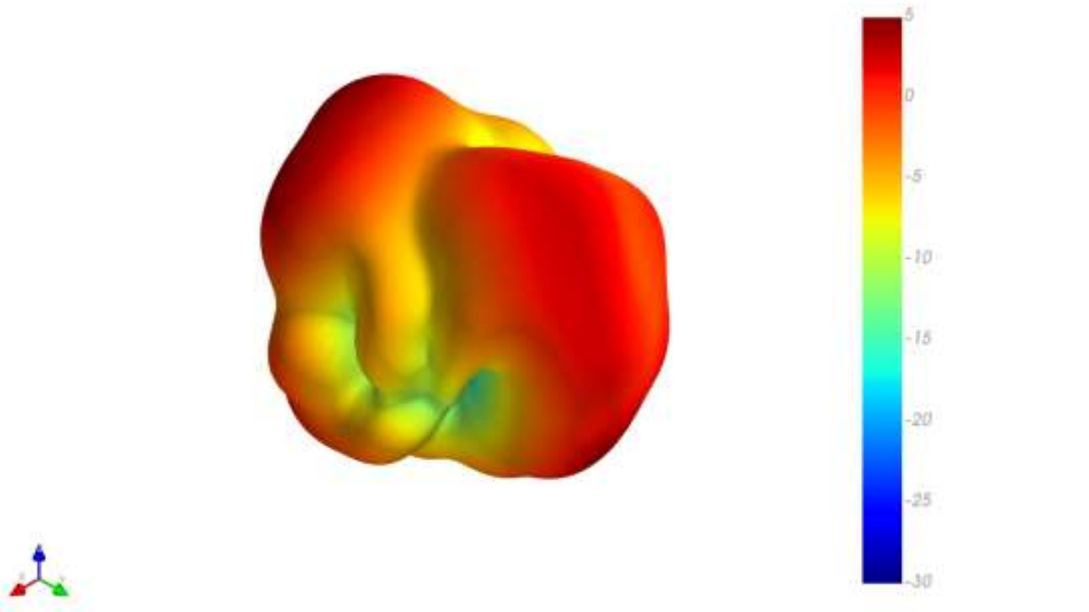
XY Plane	XZ Plane	YZ Plane

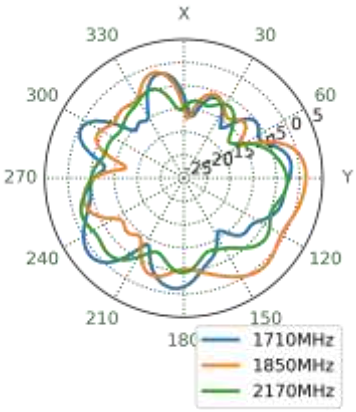
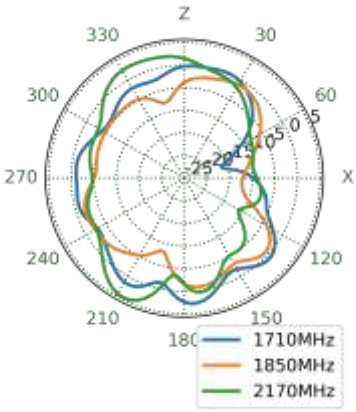
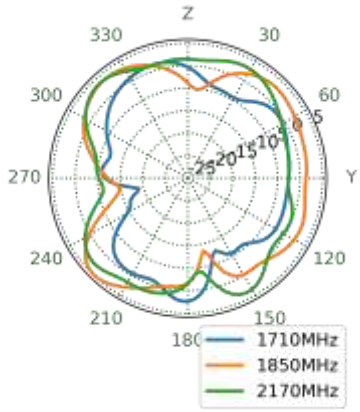




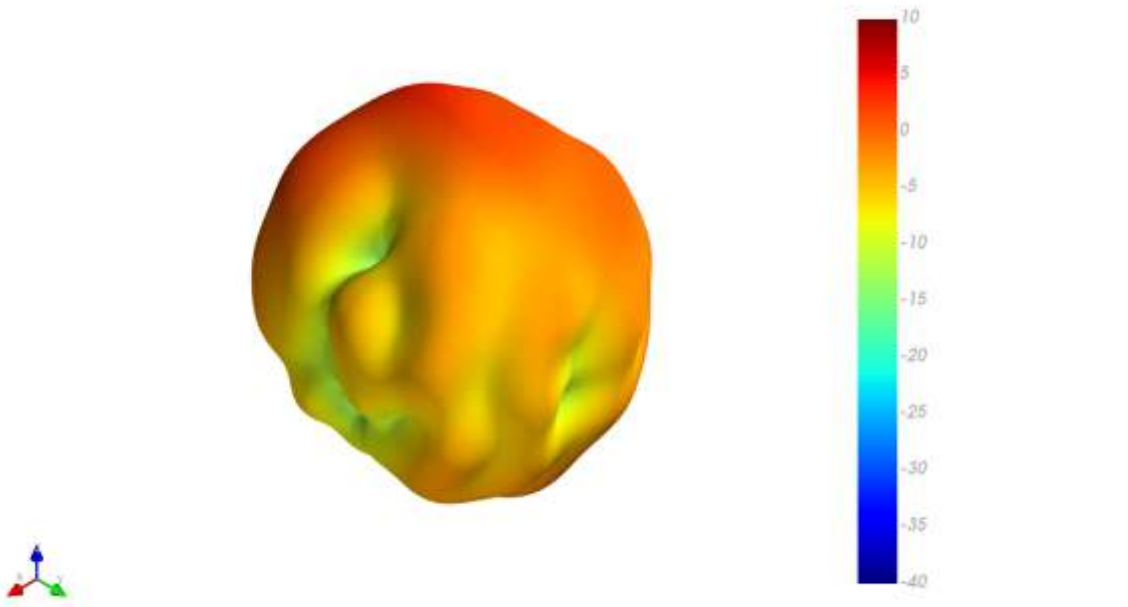


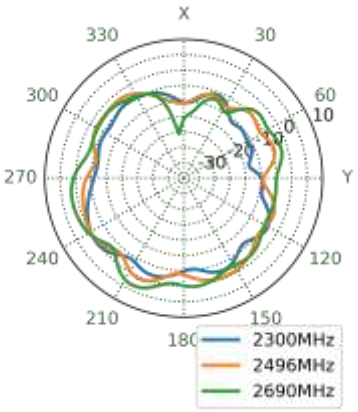
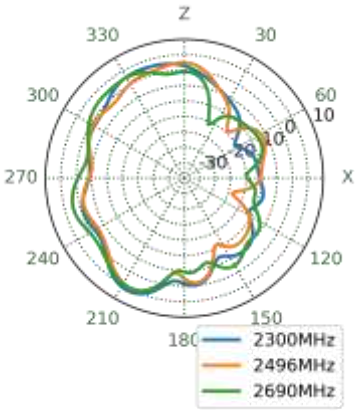
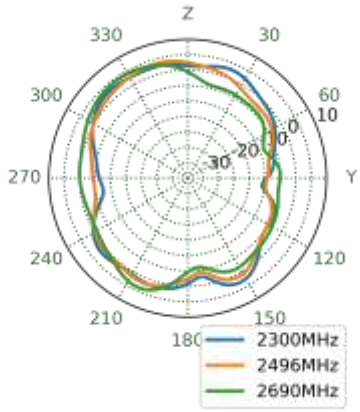
1850MHz



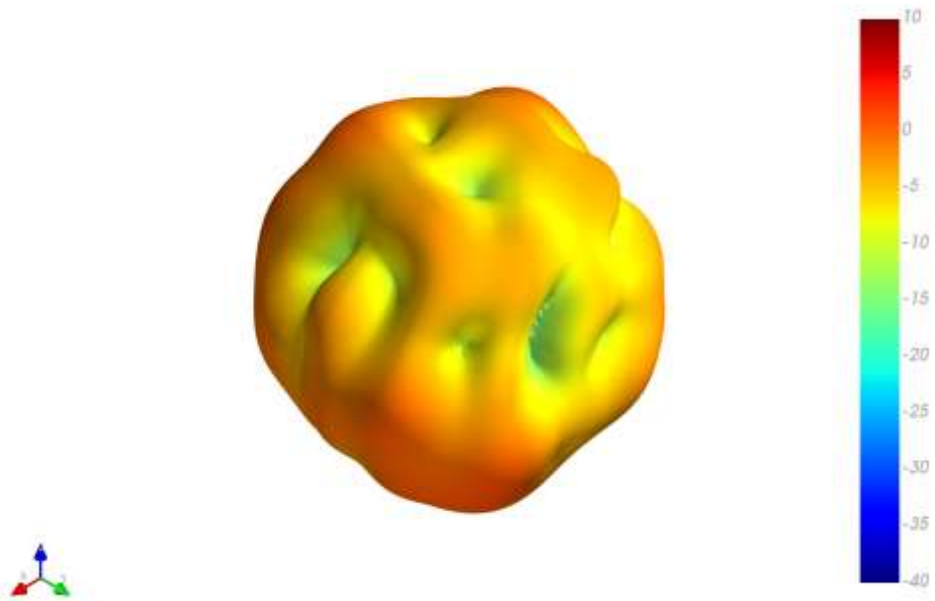
XY Plane	XZ Plane	YZ Plane
		

2496MHz

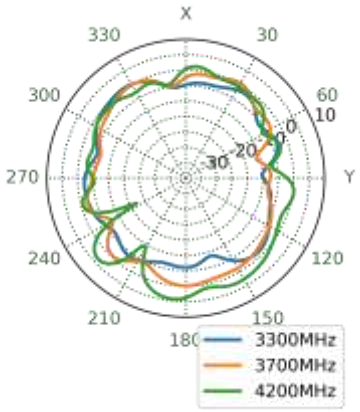


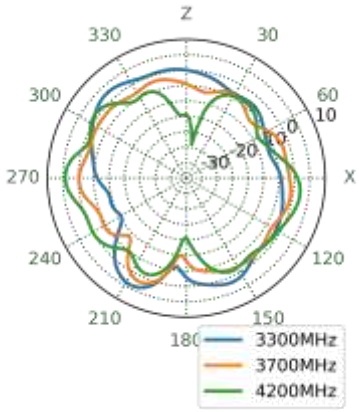
XY Plane	XZ Plane	YZ Plane
		

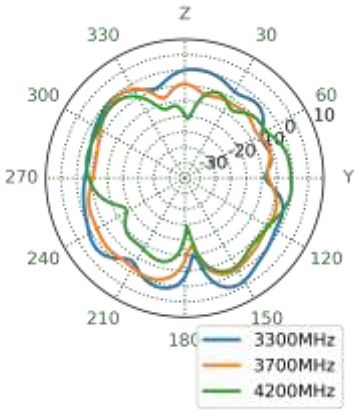
3700MHz



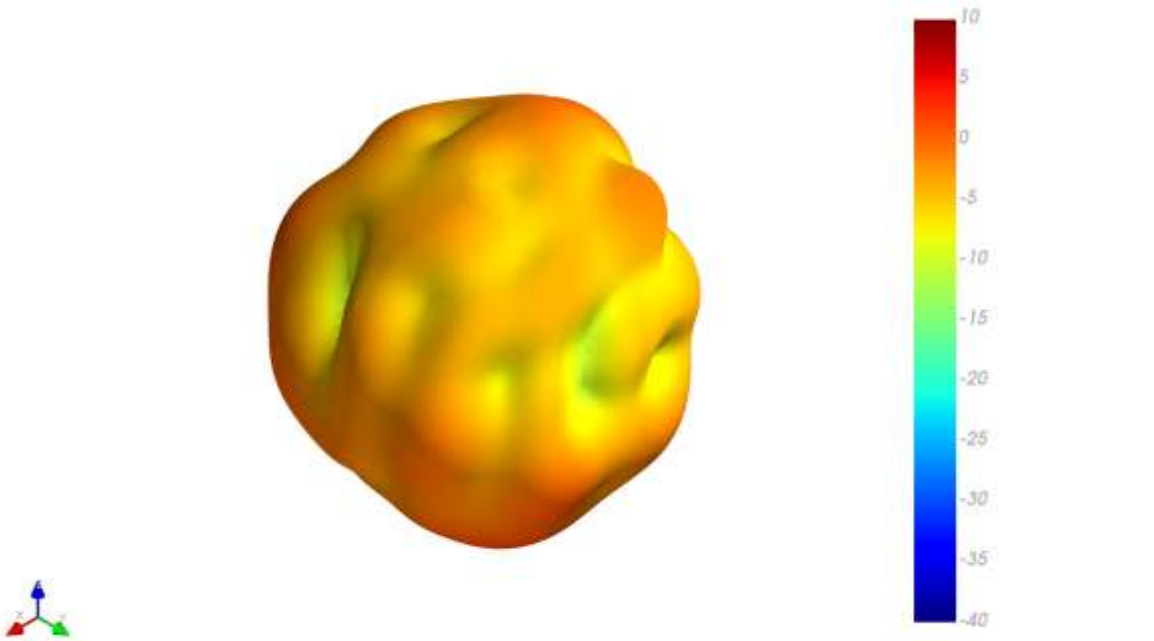
XY Plane	XZ Plane	YZ Plane

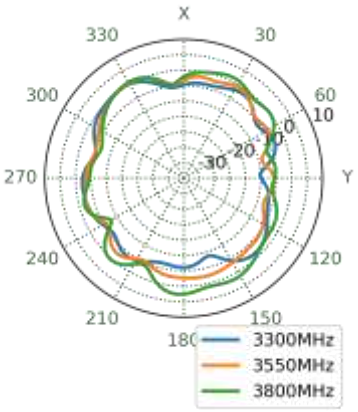
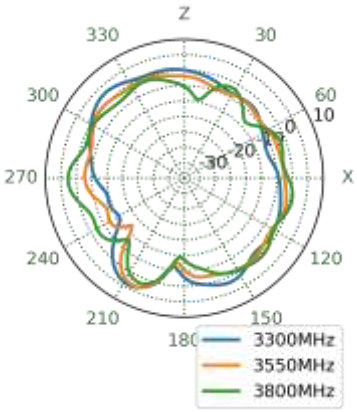
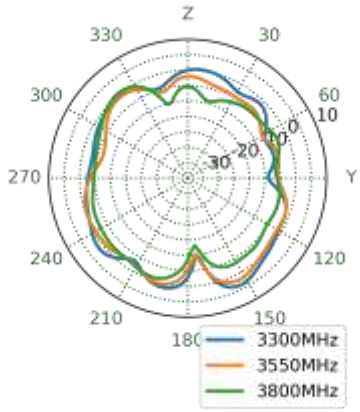




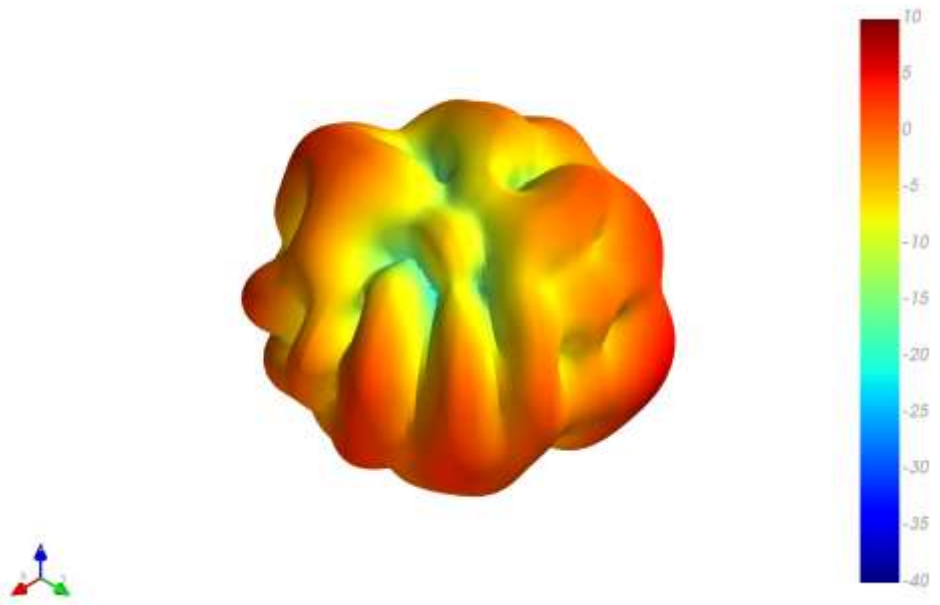


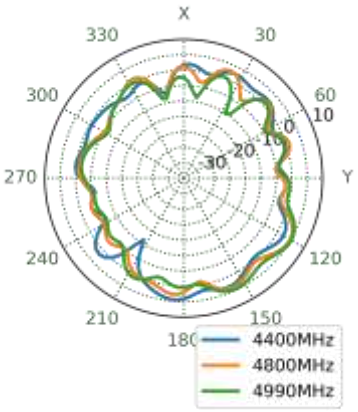
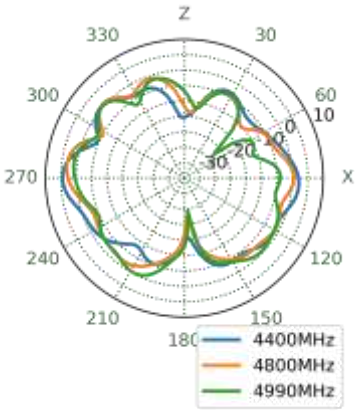
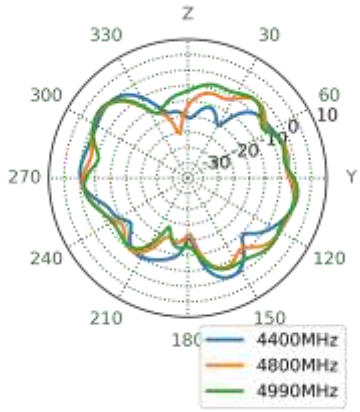
3550MHz



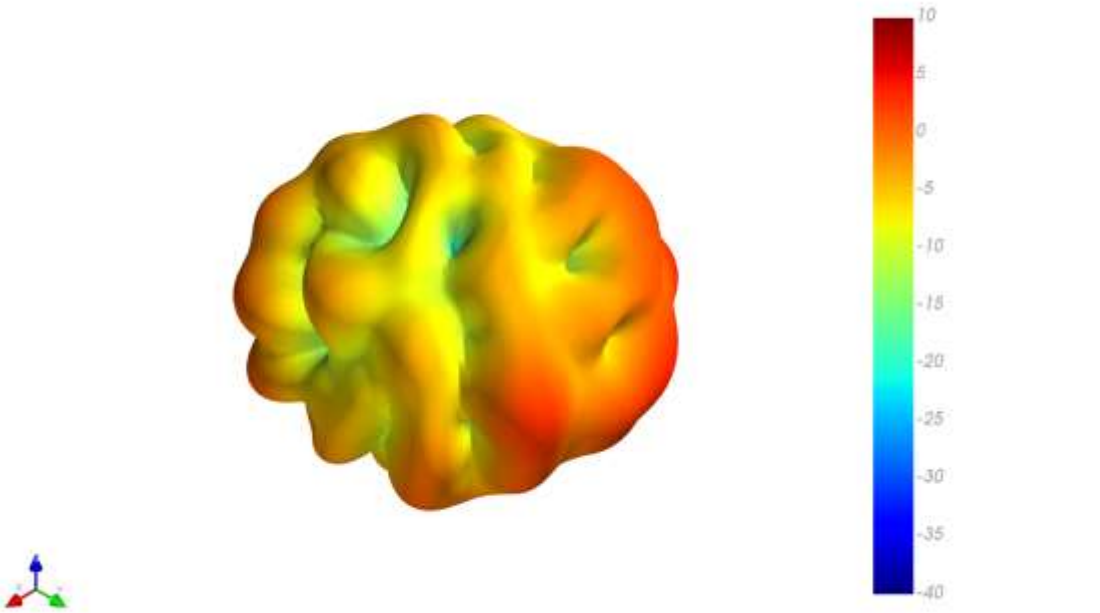
XY Plane	XZ Plane	YZ Plane
		

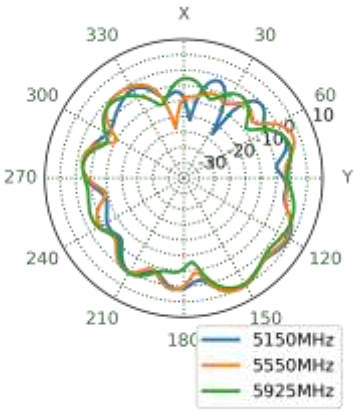
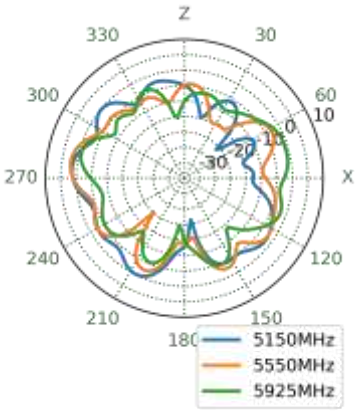
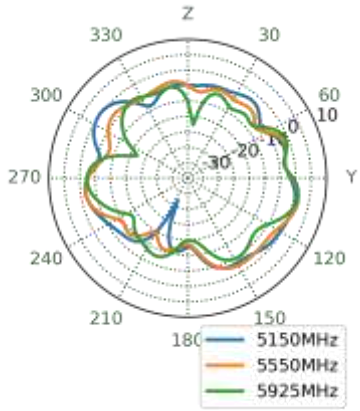
4800MHz



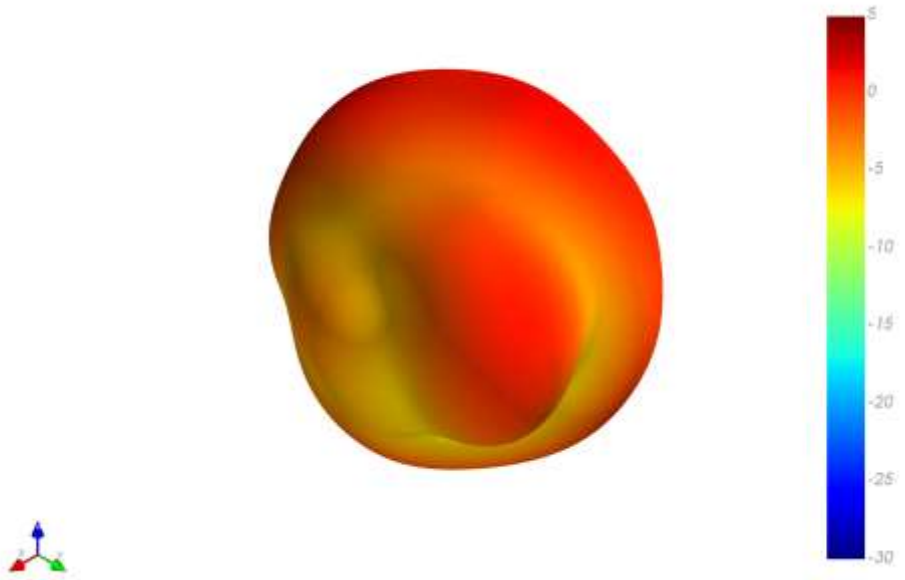
XY Plane	XZ Plane	YZ Plane
		

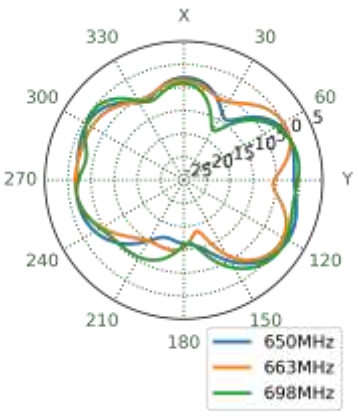
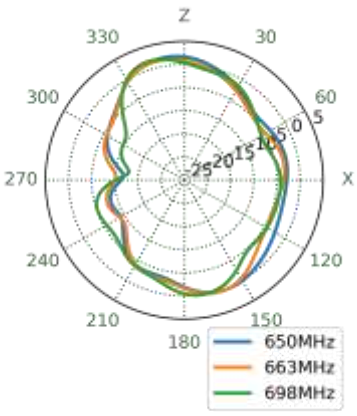
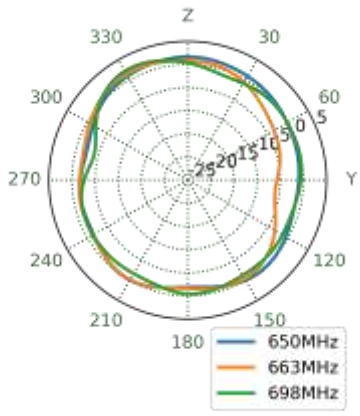
5550MHz



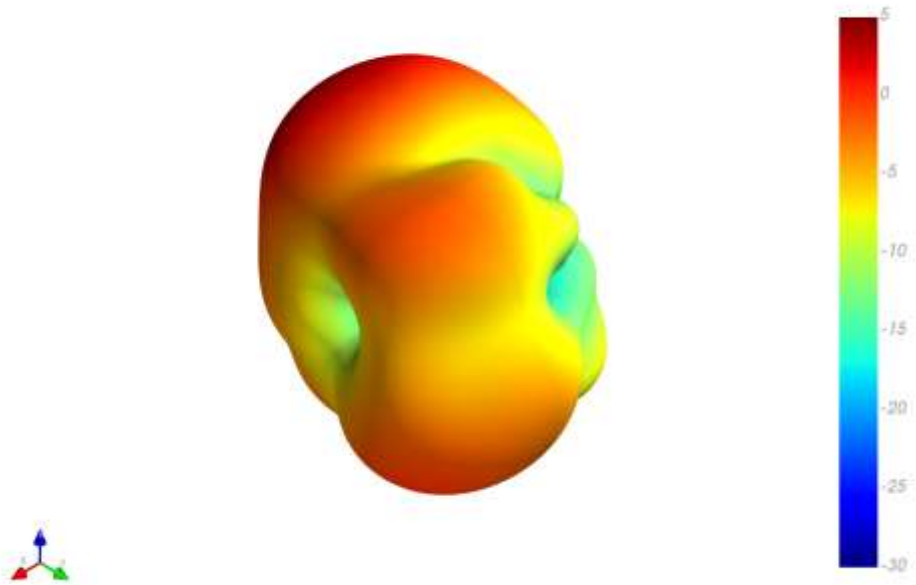
XY Plane	XZ Plane	YZ Plane
		

5.3 LTE 6 663MHz 3D and 2D Radiation Patterns

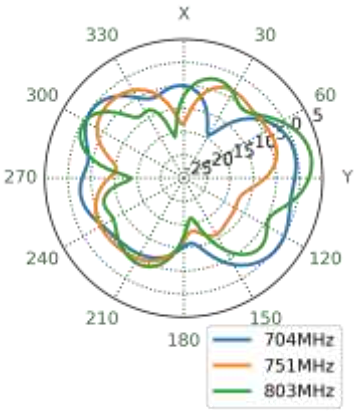


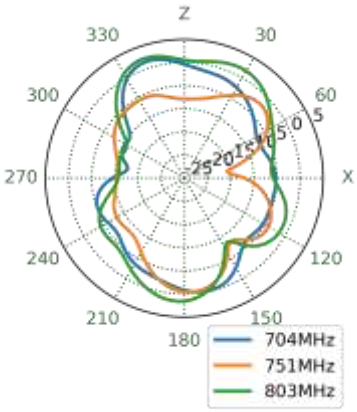
XY Plane	XZ Plane	YZ Plane
		

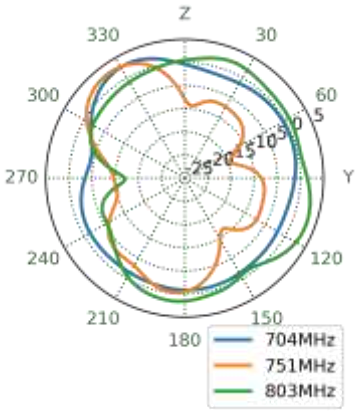
751MHz



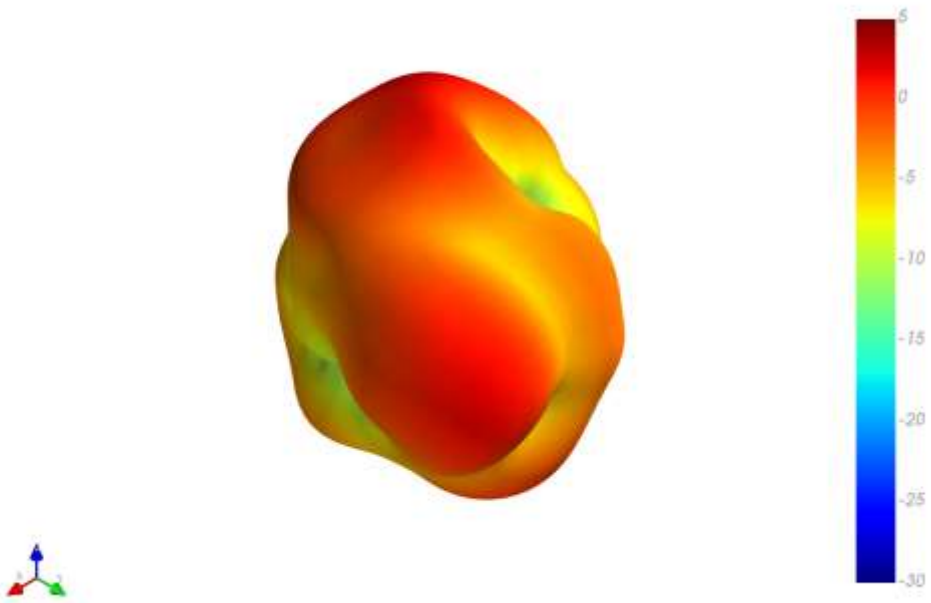
XY Plane	XZ Plane	YZ Plane

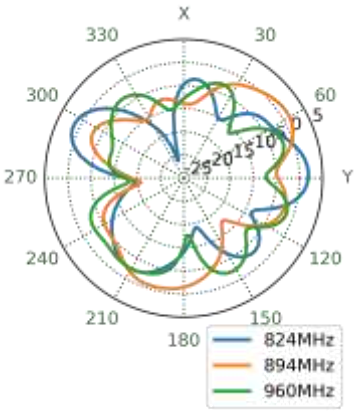
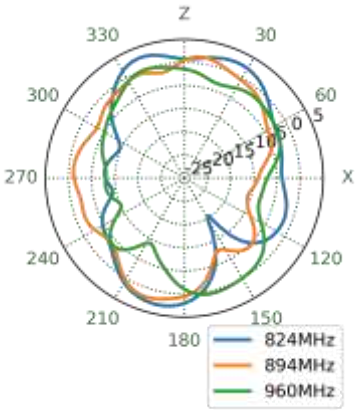
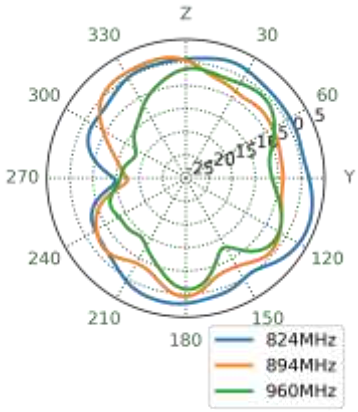






894MHz



XY Plane	XZ Plane	YZ Plane
		

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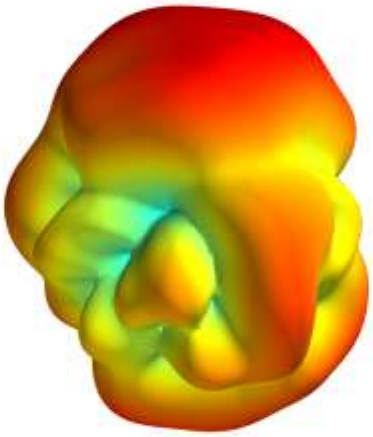
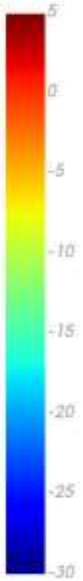
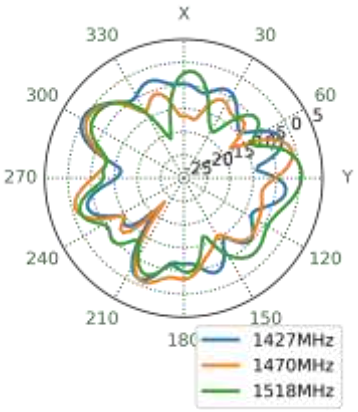
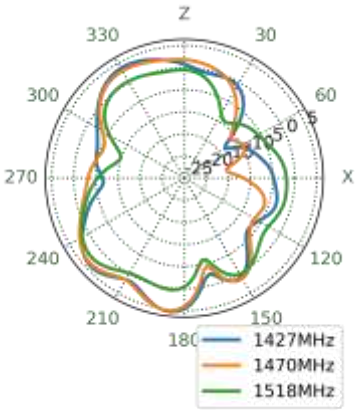
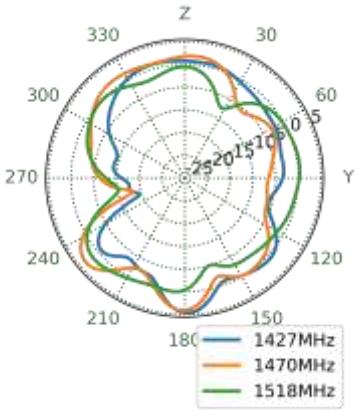




XY Plane	XZ Plane	YZ Plane







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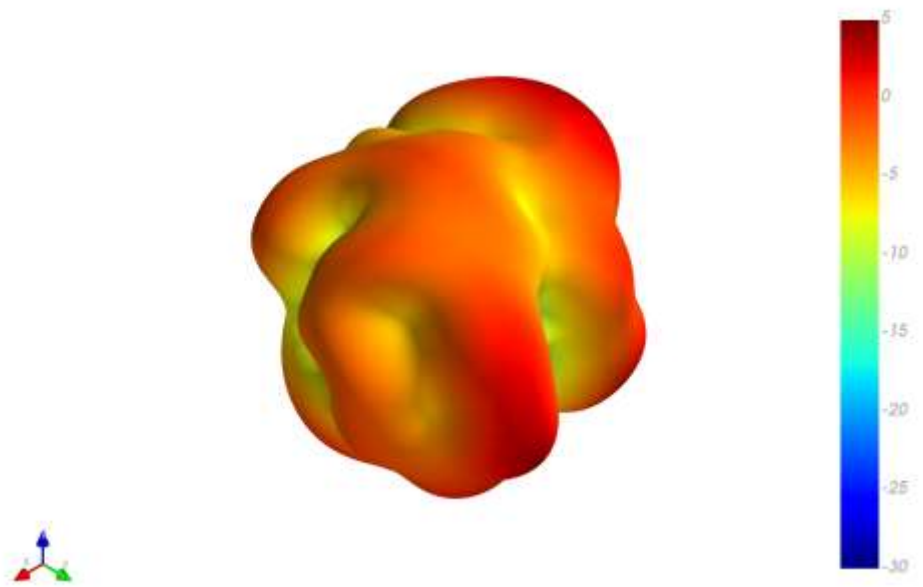
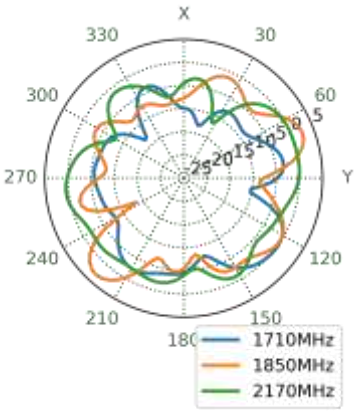
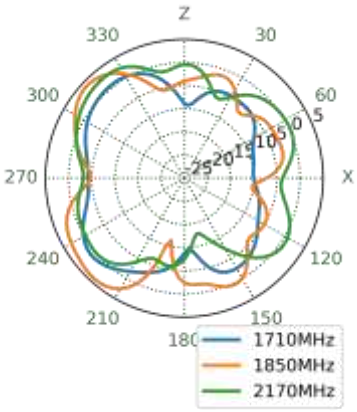
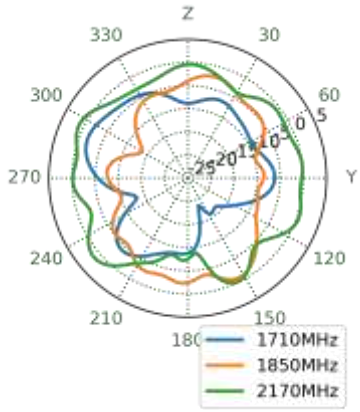


XY Plane	XZ Plane	YZ Plane
		

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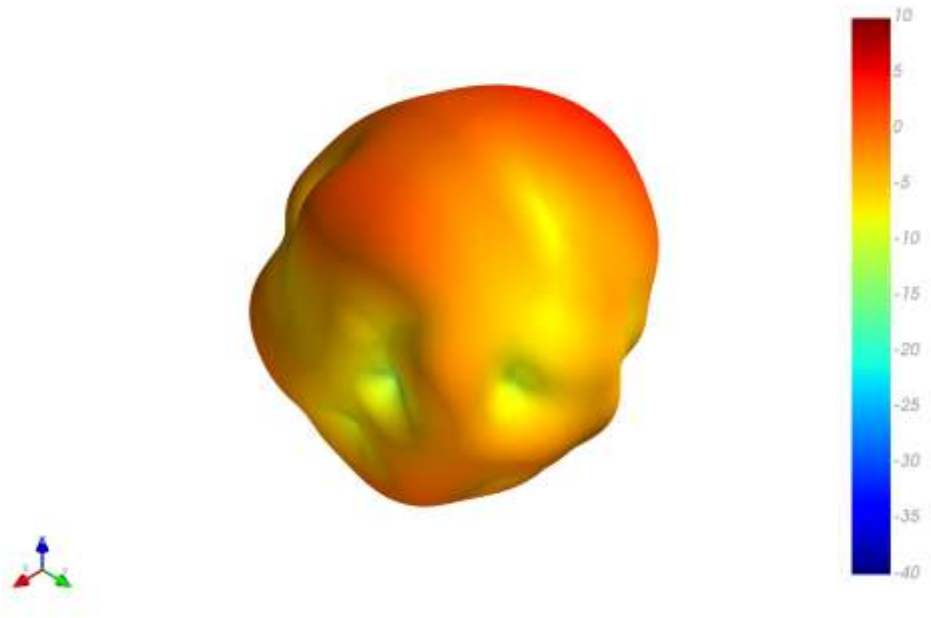

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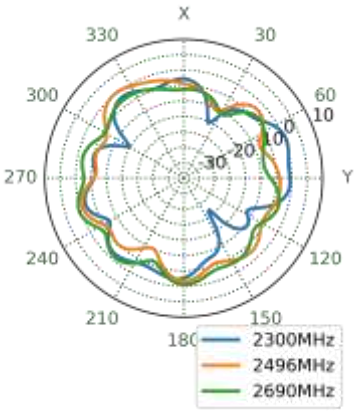

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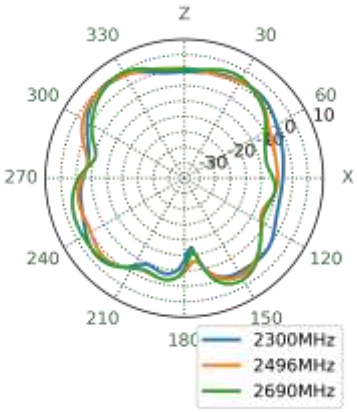

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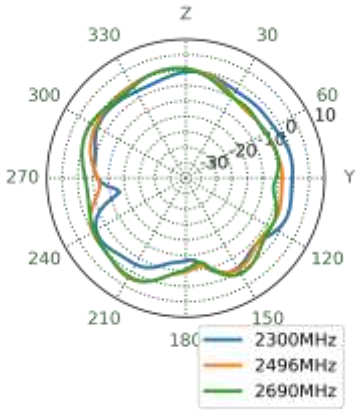

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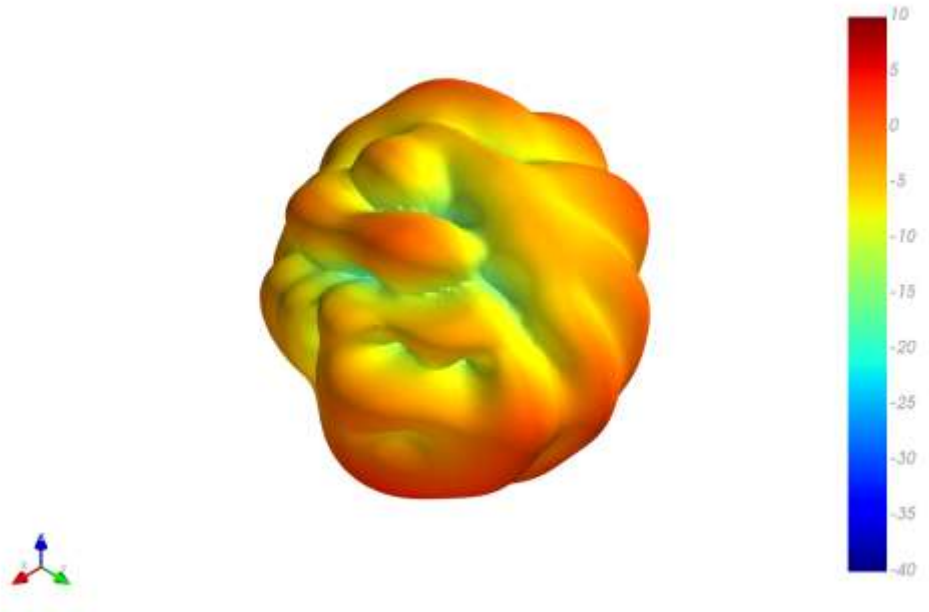
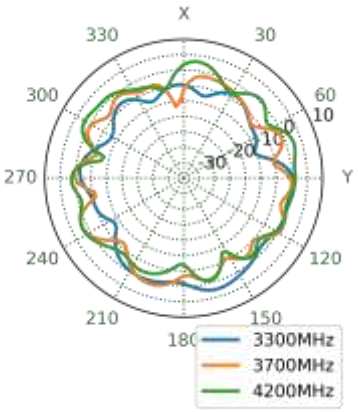
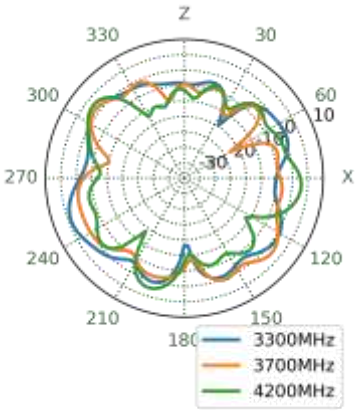
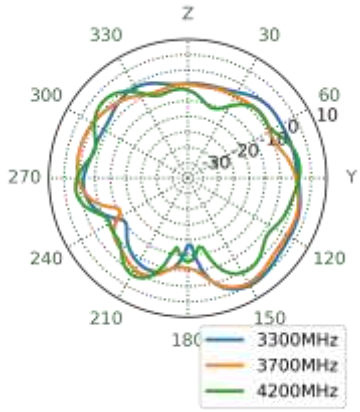
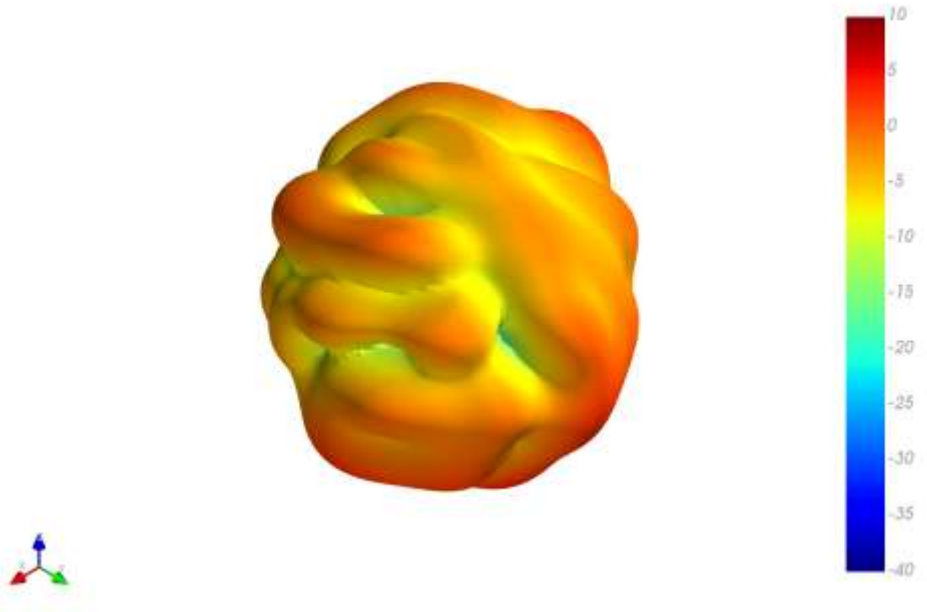
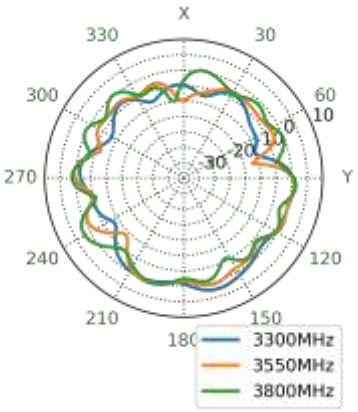
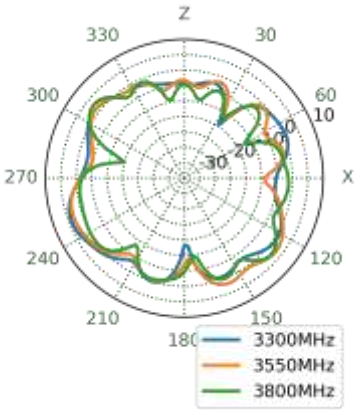
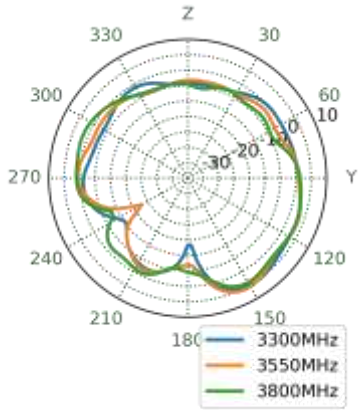


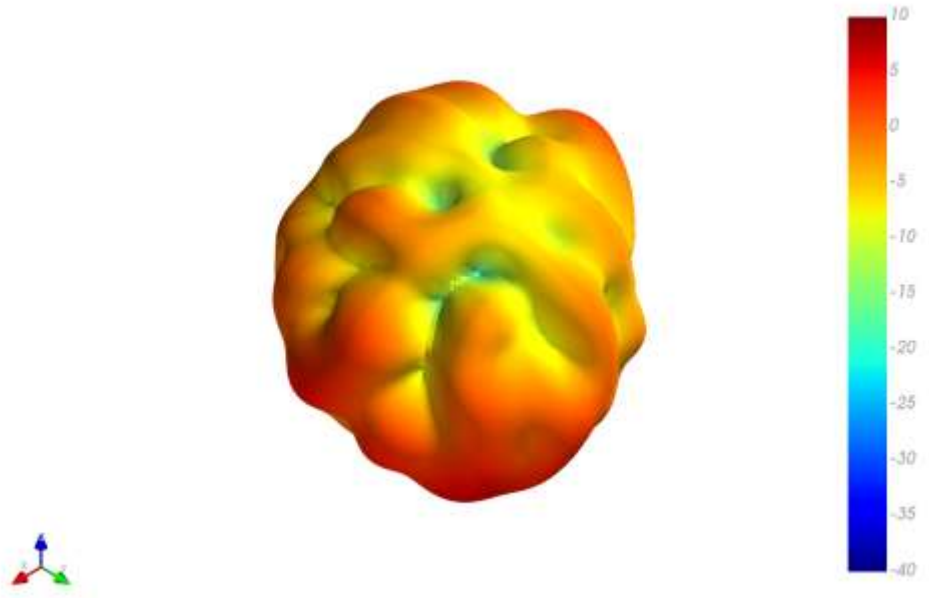
XY Plane	XZ Plane	YZ Plane
		

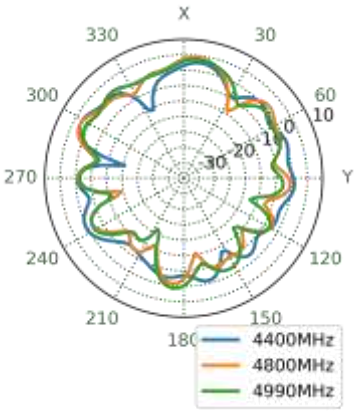
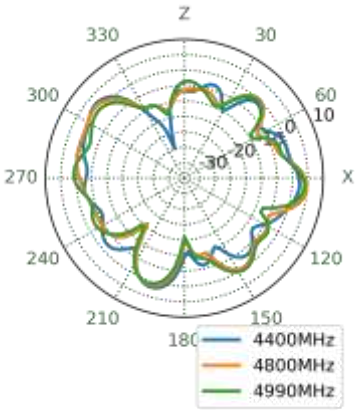
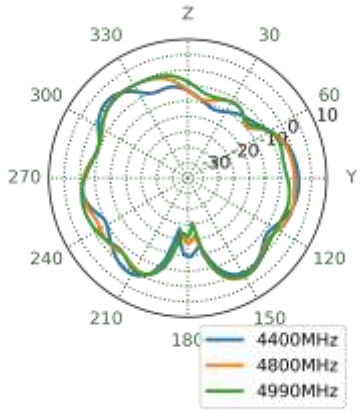
3550MHz



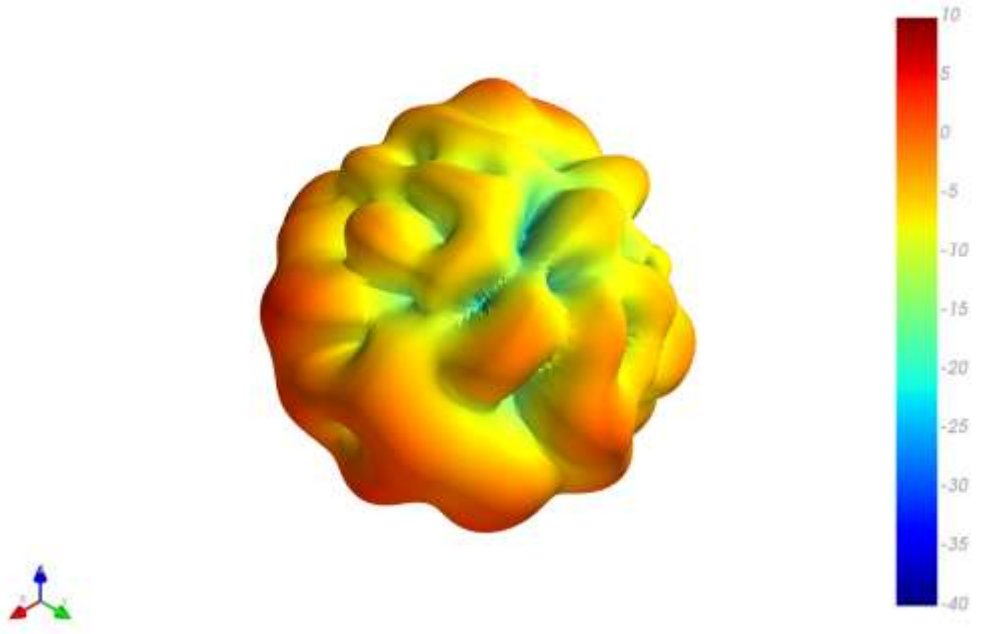
XY Plane	XZ Plane	YZ Plane
		

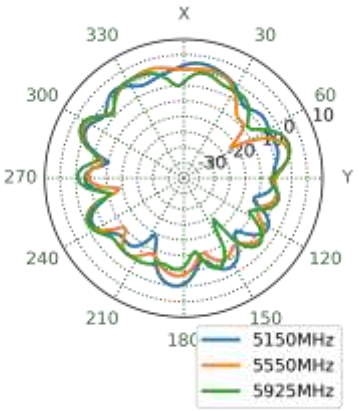
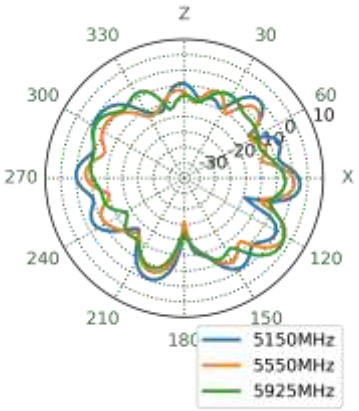
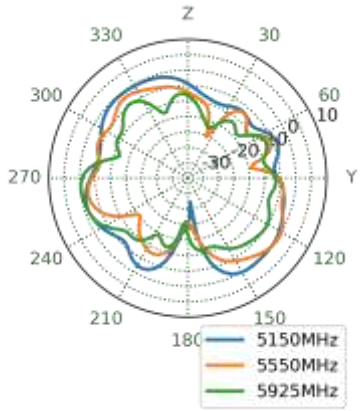
4800MHz



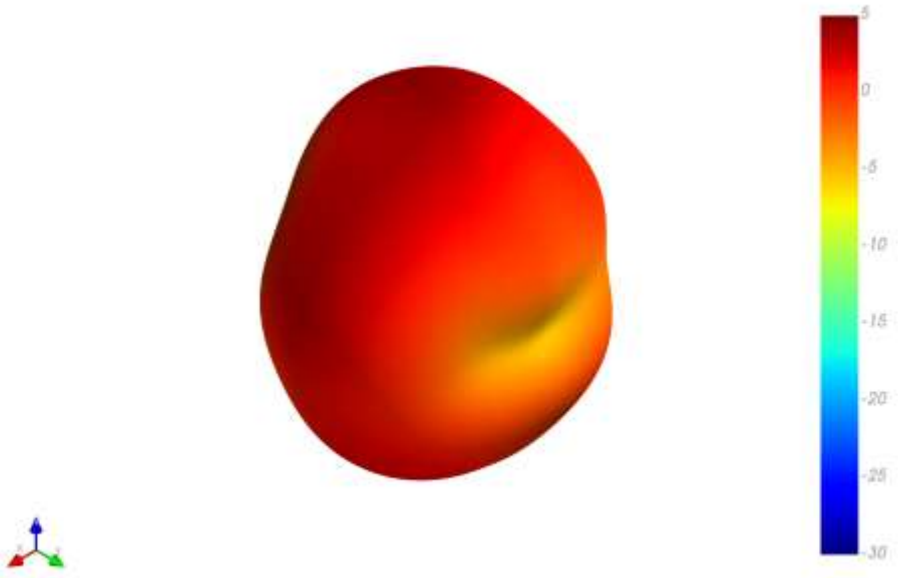
XY Plane	XZ Plane	YZ Plane
		

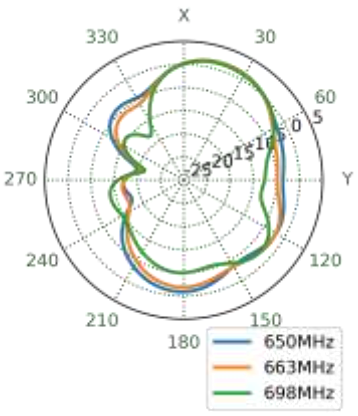
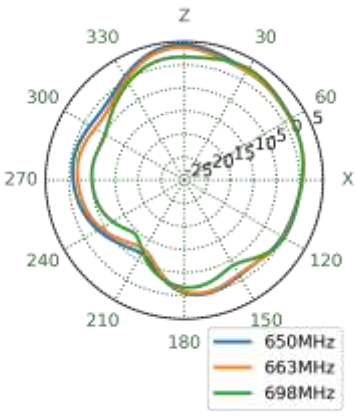
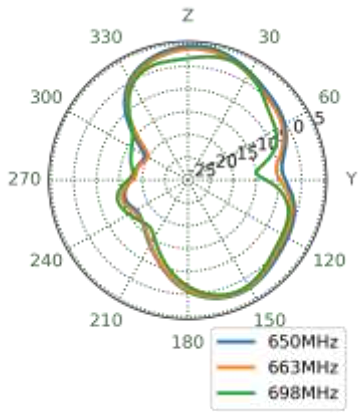
5550MHz



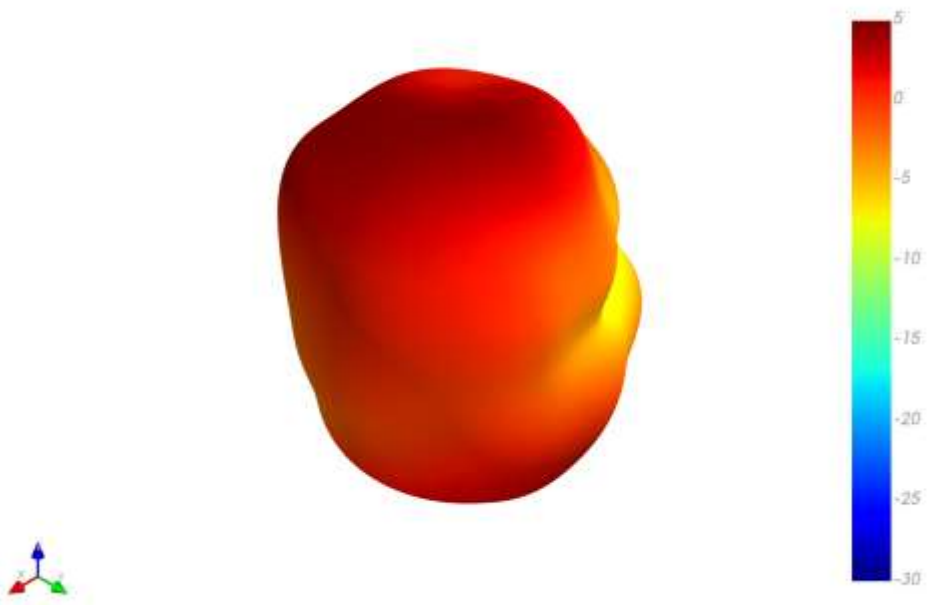
XY Plane	XZ Plane	YZ Plane
		

5.4 LTE 8 663MHz 3D and 2D Radiation Patterns

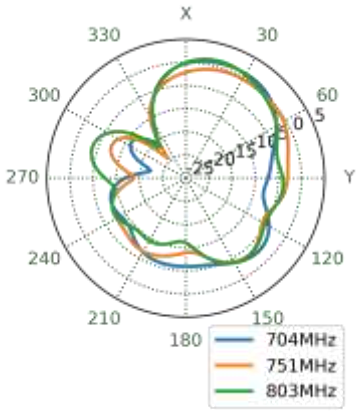


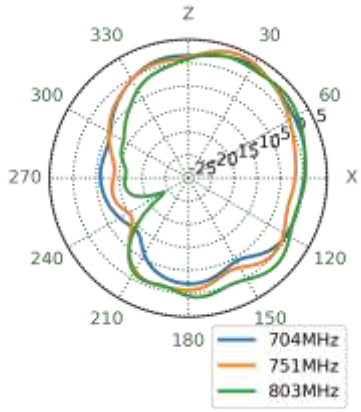
XY Plane	XZ Plane	YZ Plane
		

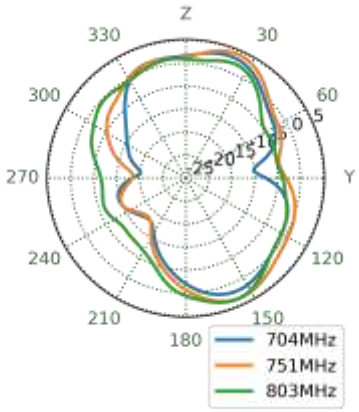
751MHz



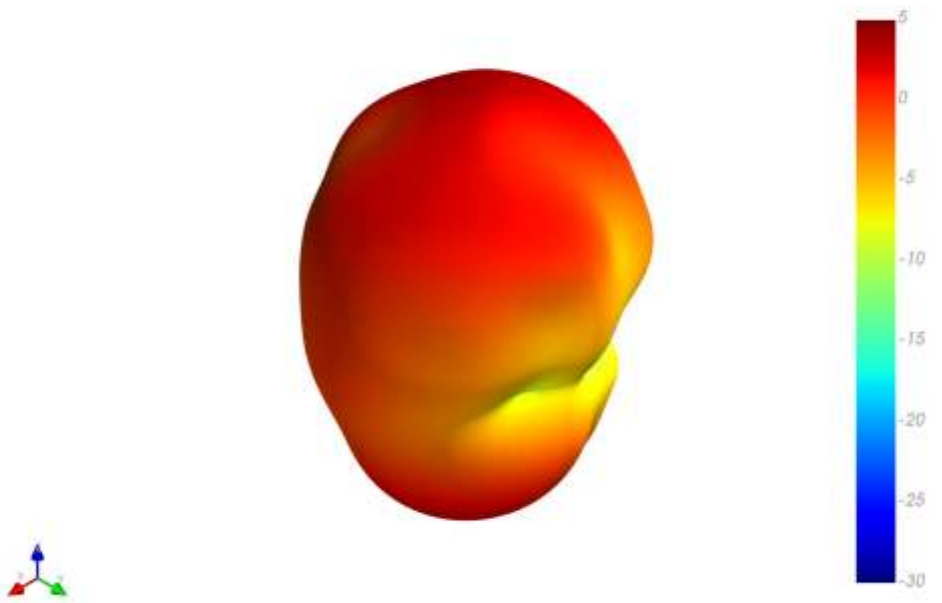
XY Plane	XZ Plane	YZ Plane

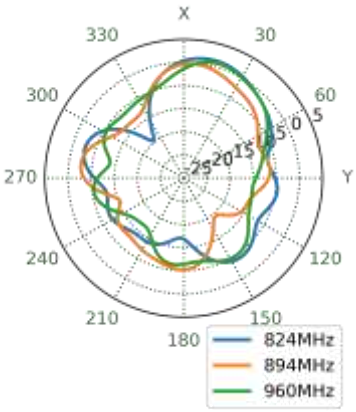
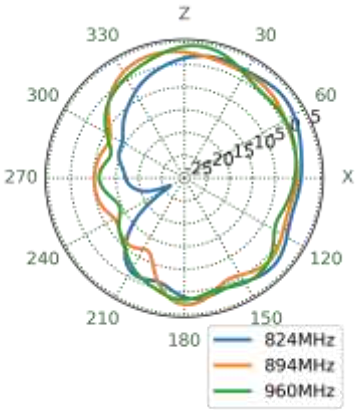
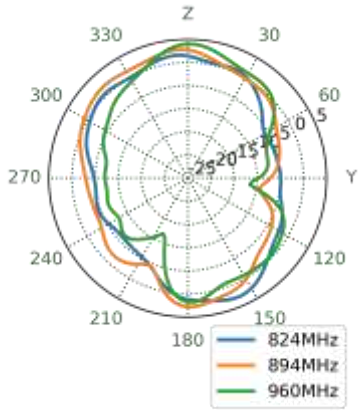




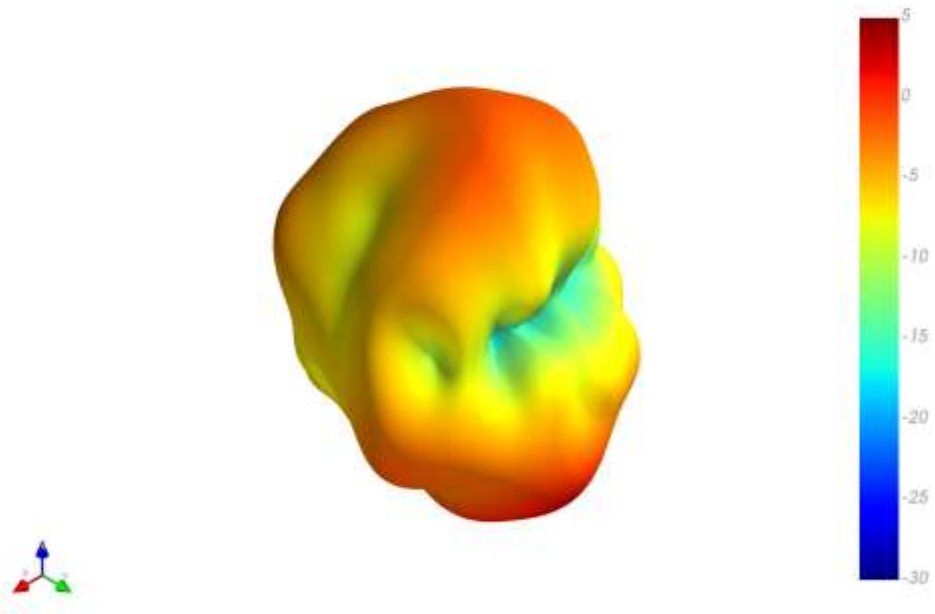


894MHz

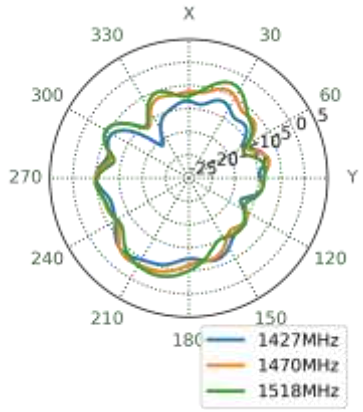


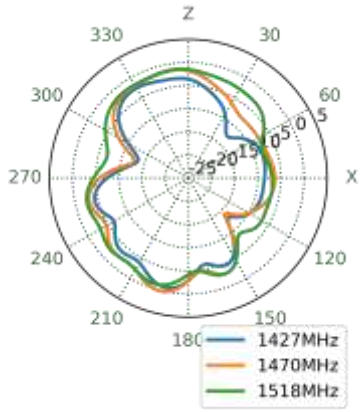
XY Plane	XZ Plane	YZ Plane
		

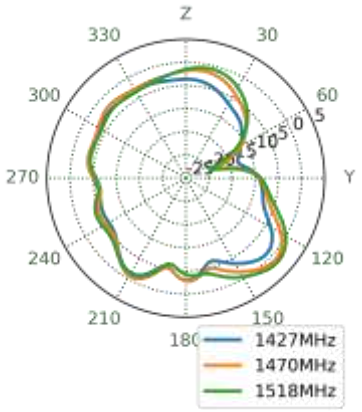
1470MHz



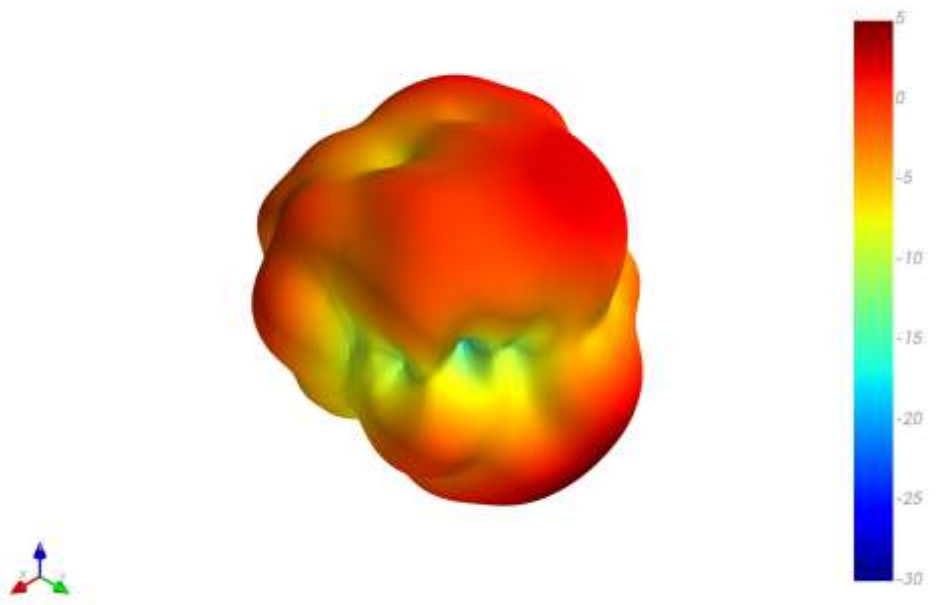
XY Plane	XZ Plane	YZ Plane



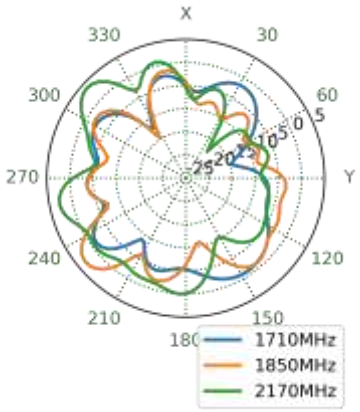


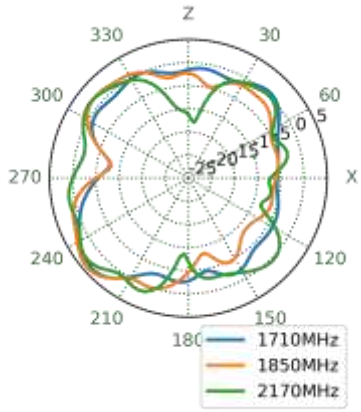


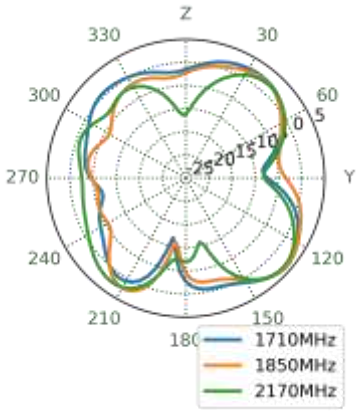
1850MHz



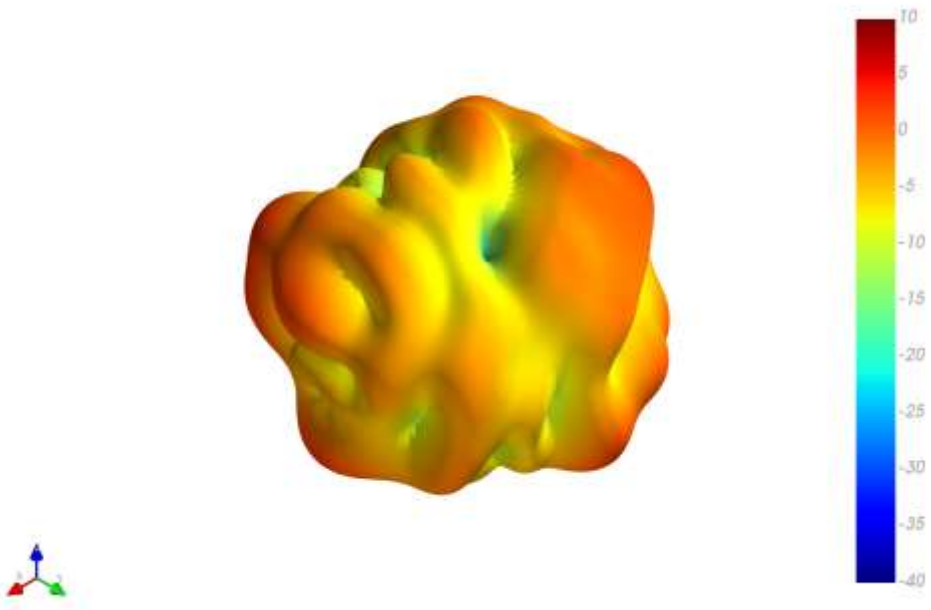
XY Plane	XZ Plane	YZ Plane



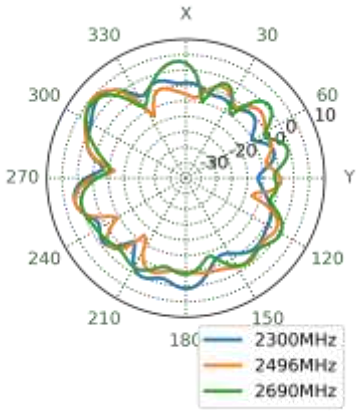


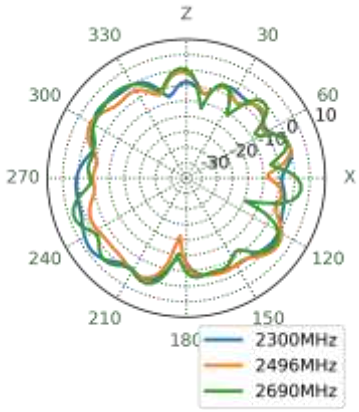


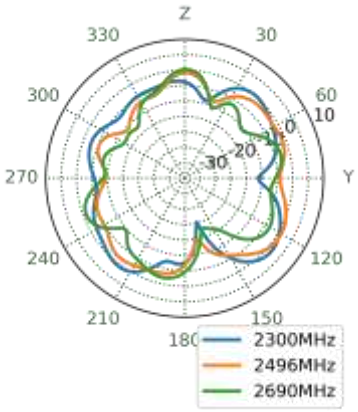
2496MHz



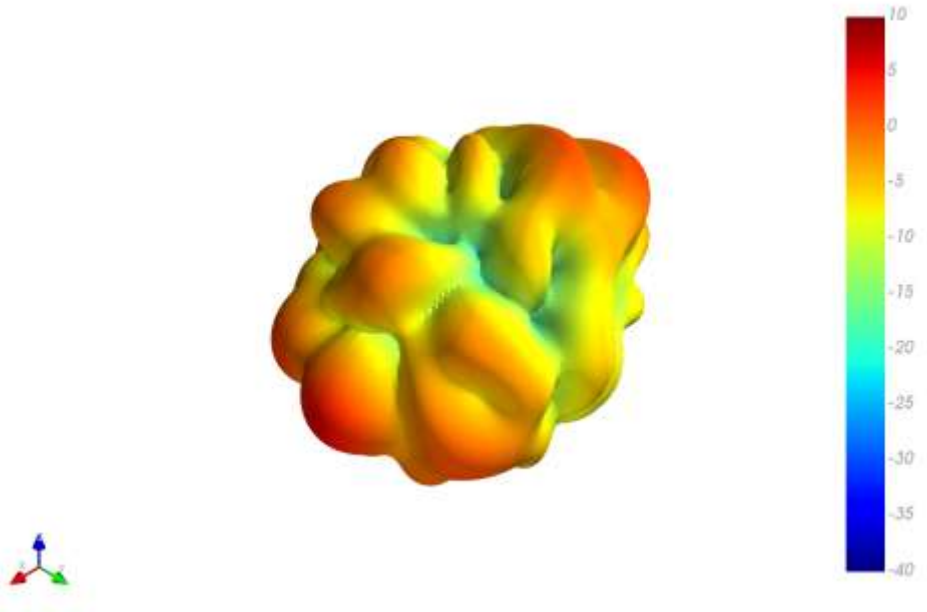
XY Plane	XZ Plane	YZ Plane

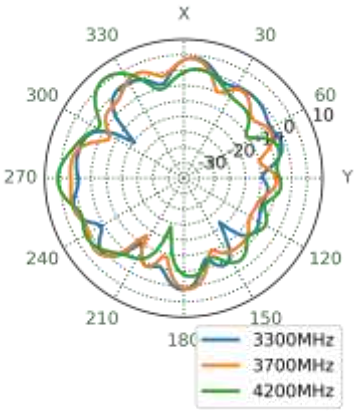
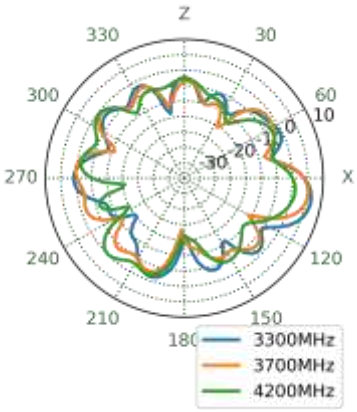
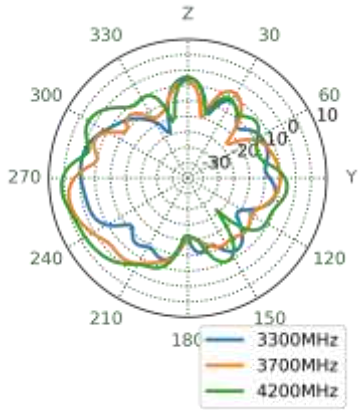




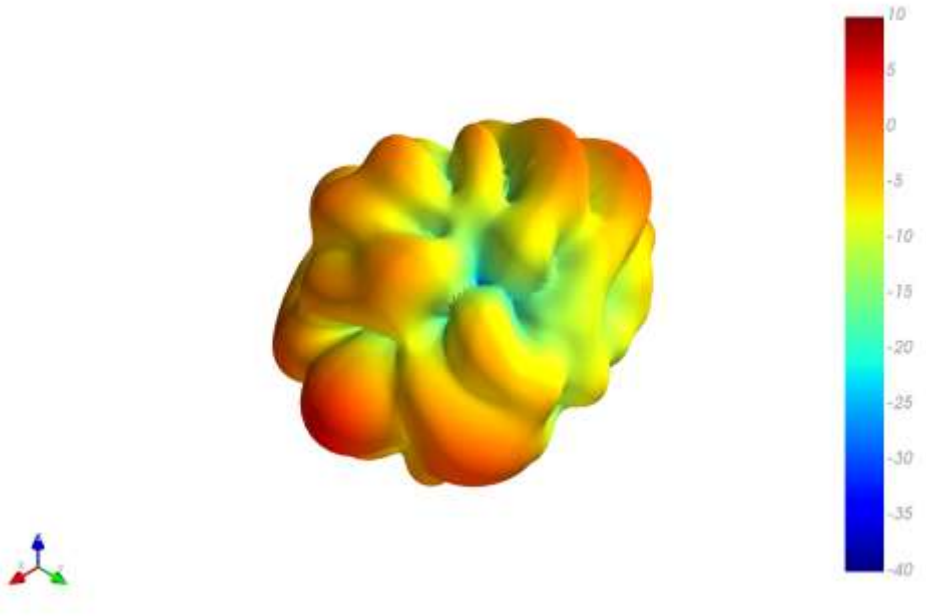


3700MHz

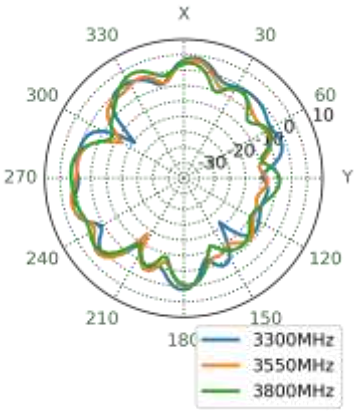


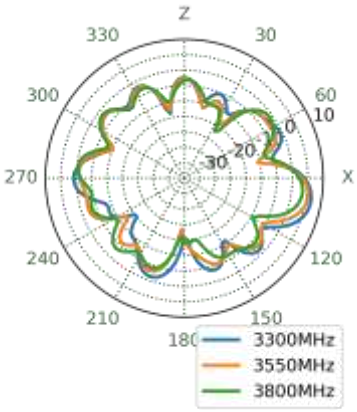
XY Plane	XZ Plane	YZ Plane
		

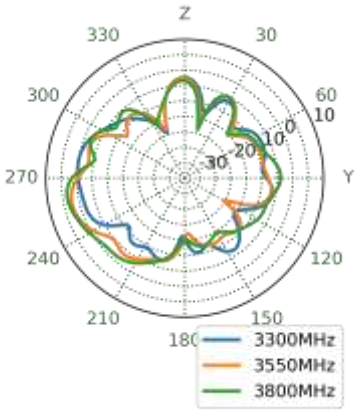
3550MHz



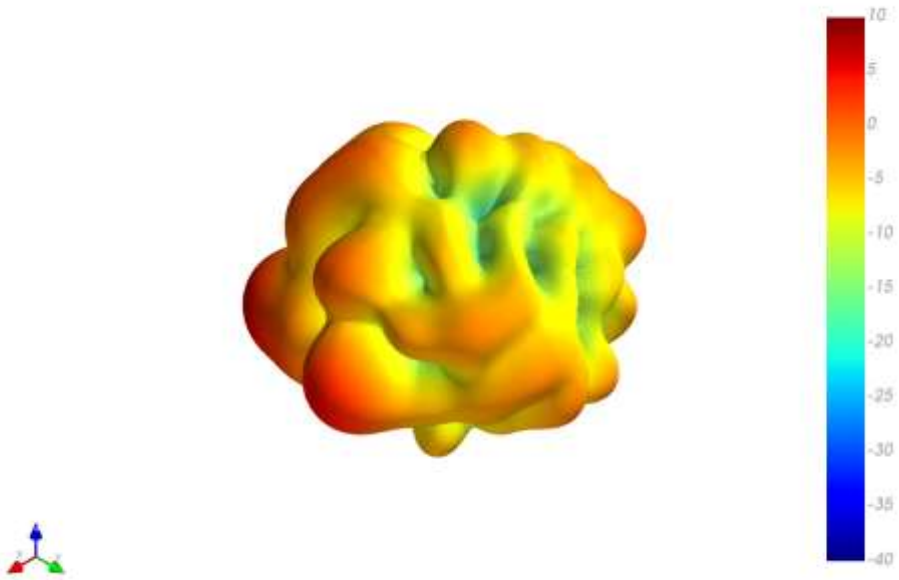
XY Plane	XZ Plane	YZ Plane

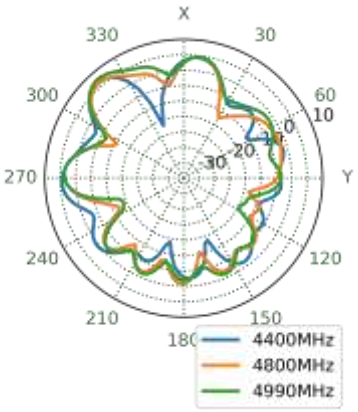
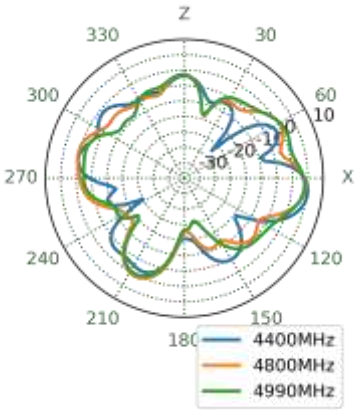
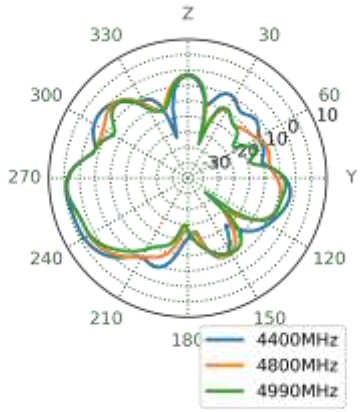




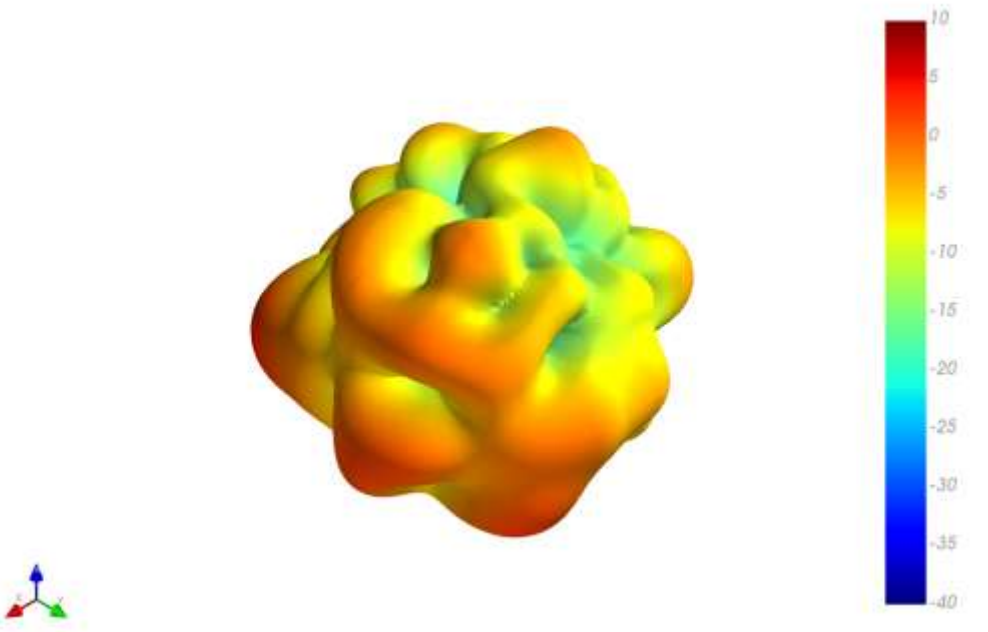


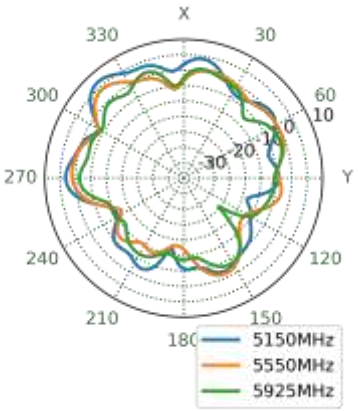
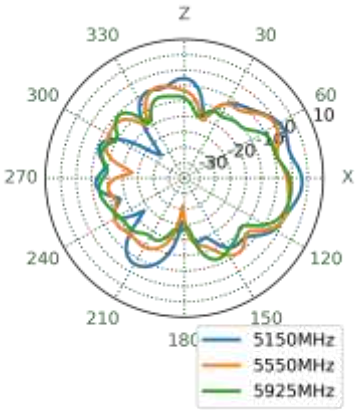
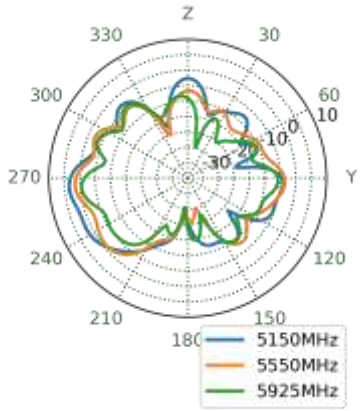
4800MHz



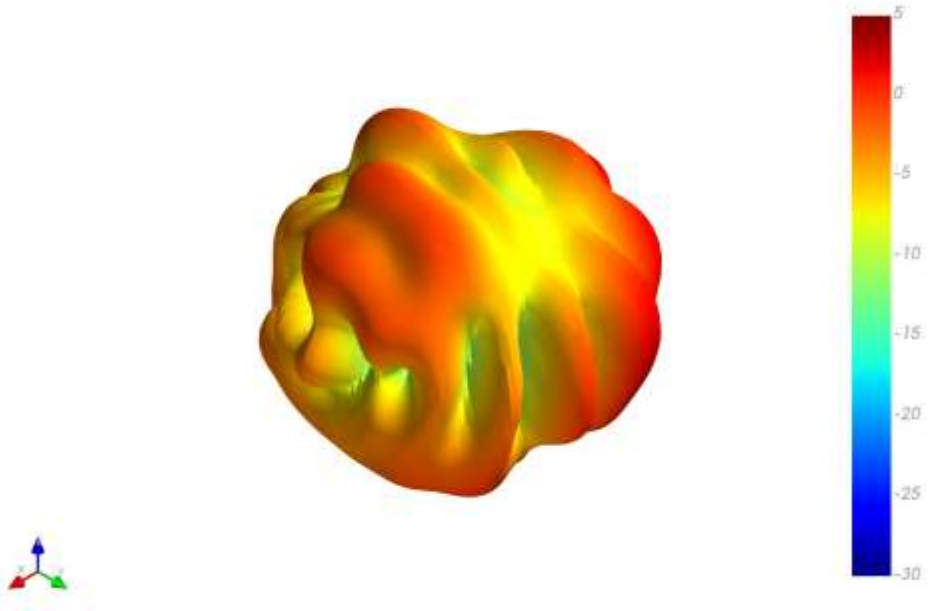
XY Plane	XZ Plane	YZ Plane
		

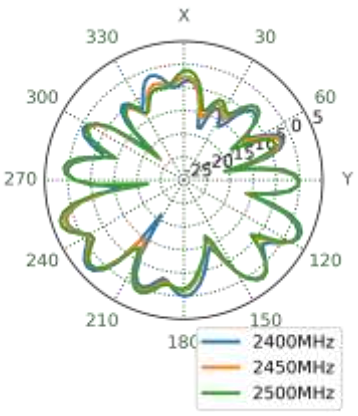
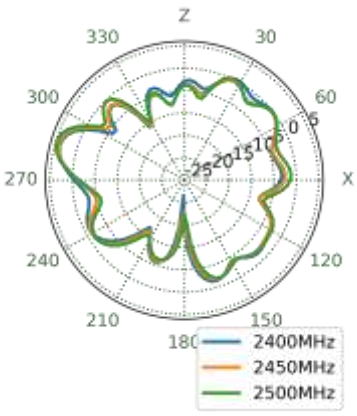
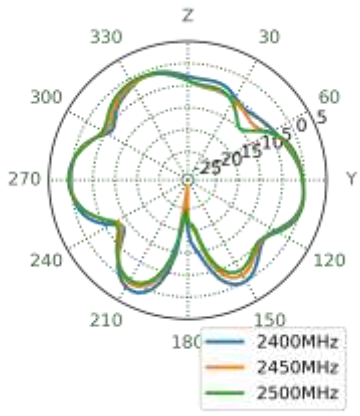
5550MHz



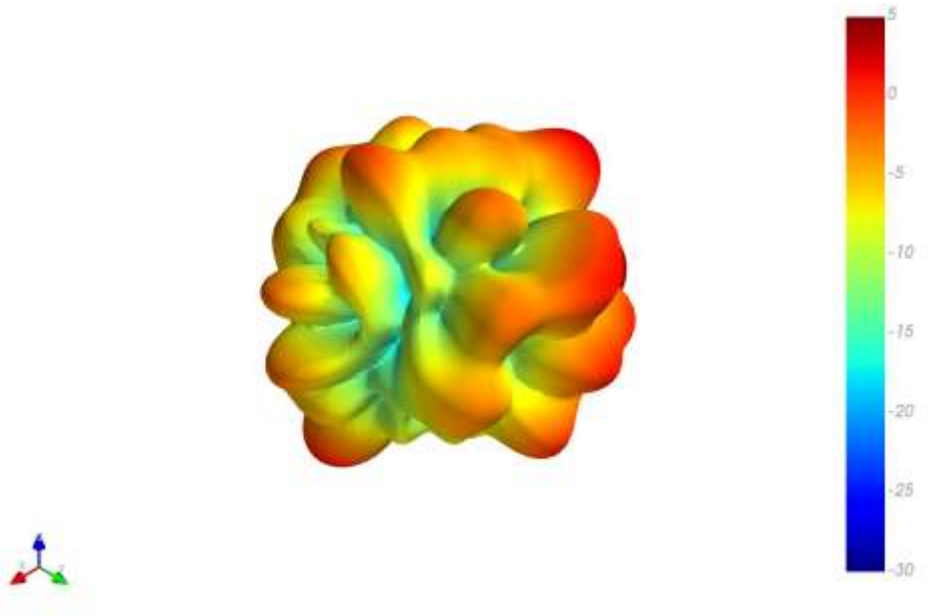
XY Plane	XZ Plane	YZ Plane
		

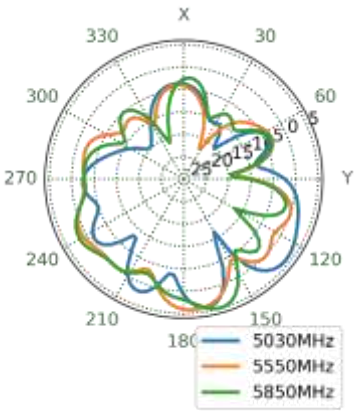
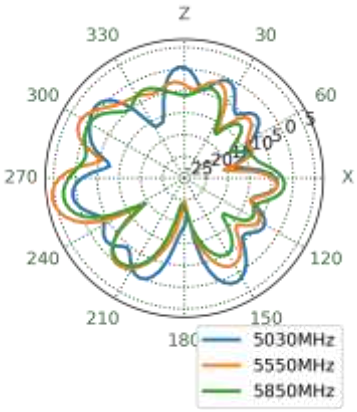
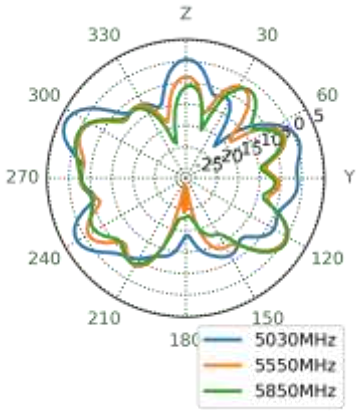
5.5 Wi-Fi 2 2450MHz 3D and 2D Radiation Patterns



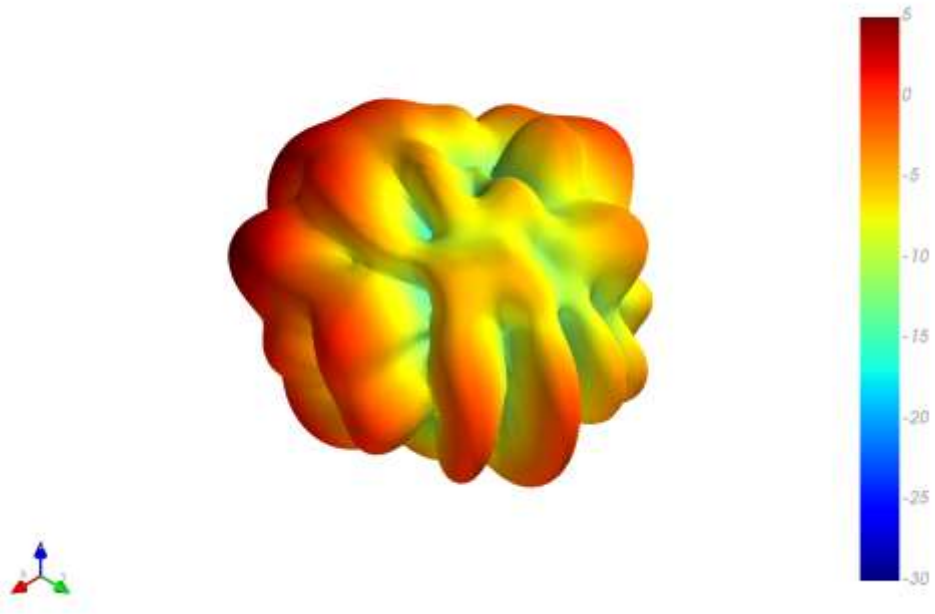
XY Plane	XZ Plane	YZ Plane
		

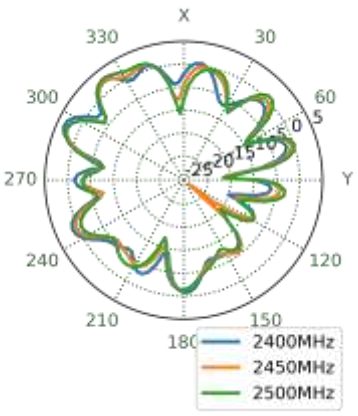
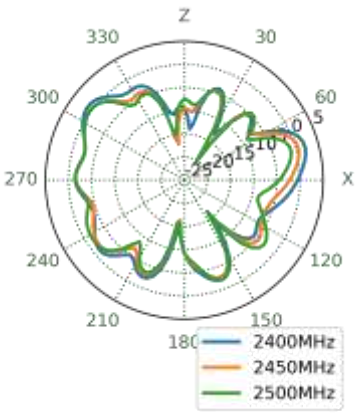
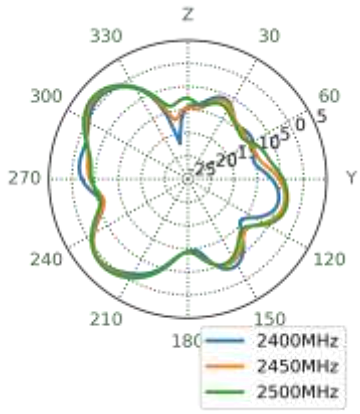
5550MHz



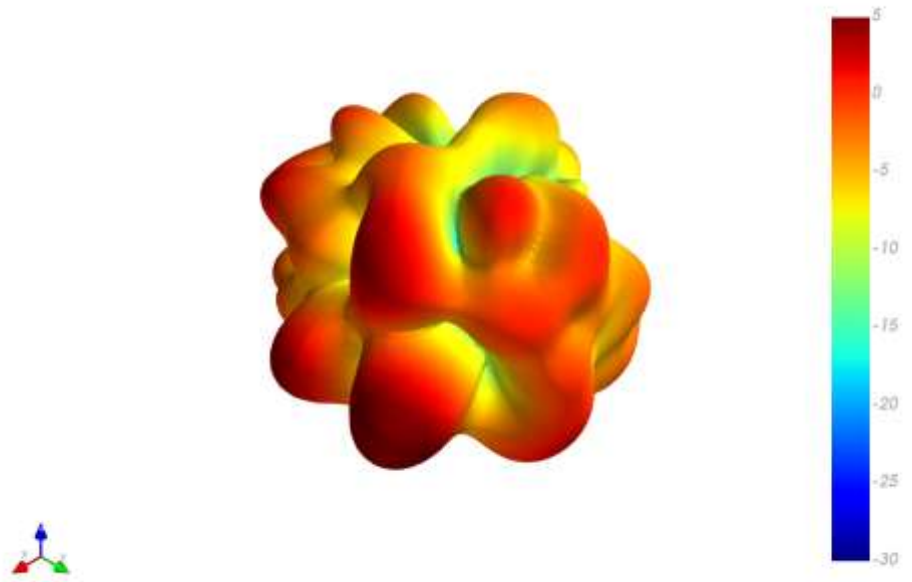
XY Plane	XZ Plane	YZ Plane
		

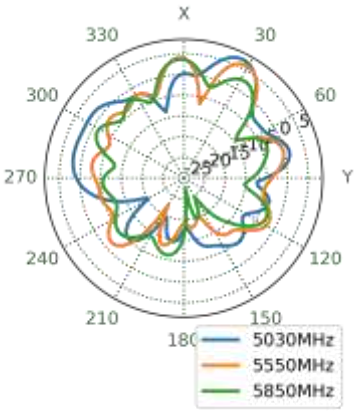
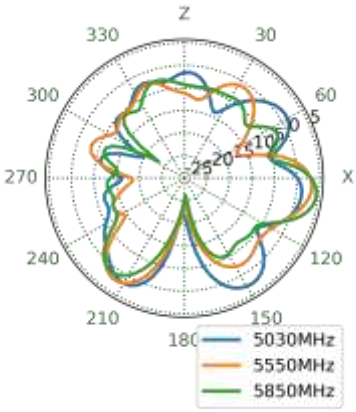
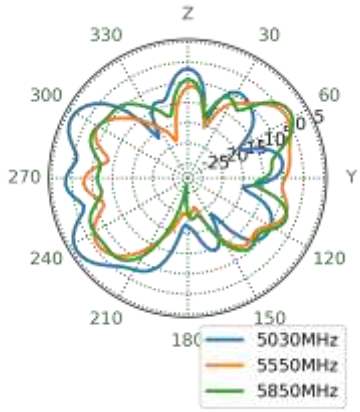
5.6 Wi-Fi 7 2450MHz 3D and 2D Radiation Patterns



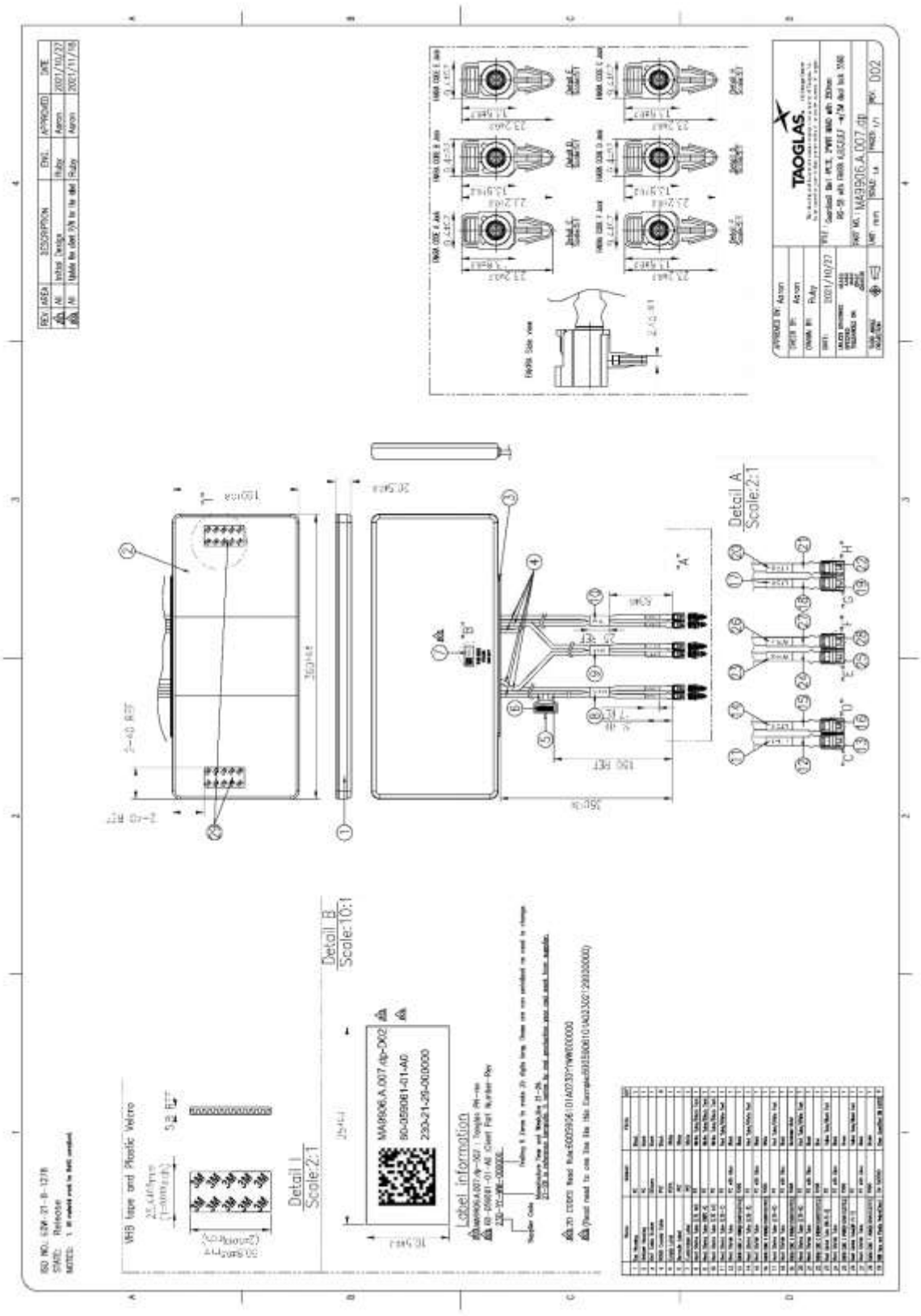
XY Plane	XZ Plane	YZ Plane
		

5550MHz



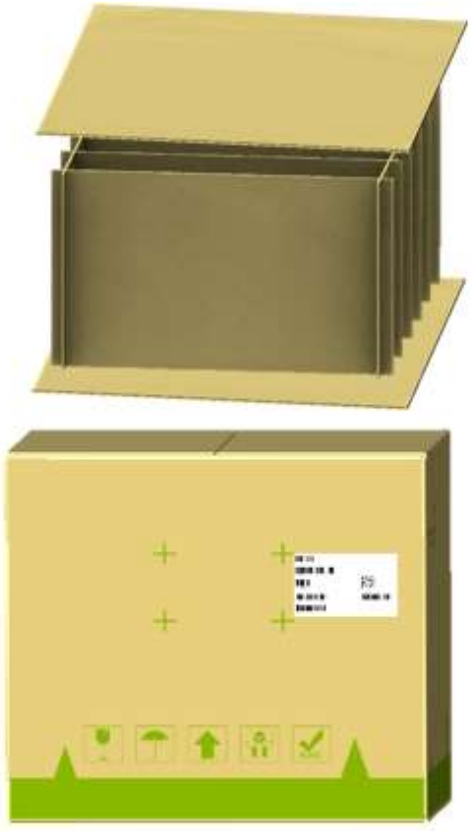
XY Plane	XZ Plane	YZ Plane
		

6. Mechanical Drawing (Units: mm)



7. Packaging

☑ Antenna x1 / PE bag



☑ 7 SET / Carton

☑ Honeycomb Board 1 SET

☑ Partition Board x 2

☑ Carton(mm): 525x415x260

☑ Carton Label

Changelog for the datasheet

SPE-22-8-014 – MA9906.A.007.dp

Revision: A (Original First Release)	
Date:	2022-01-27
Notes:	Custom Datasheet
Author:	Gary West

Previous Revisions

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