

Regulatory WWAN Antenna Information

(English Language Required for Intel Regulatory Review / Approval)

(OEM/ODM or antenna vendor is required to complete this document with platform antenna information.
Remove Intel references and make this your own document)

Platform	
Platform Owner	DELL
Brand Name	DELL
Model Name	P114F
ODM	Compal Electronics, Inc
Target Launch Date	
Antenna	
Manufacturer	Hong-BO
Part Number	■ Tx1/Rx1 Antenna WWAN Main: Antenna P/N: Main: 350-24013 COMPAL P/N: DC33002MT1L
	■ Rx2 Antenna WWAN Aux : Antenna P/N: Main: 350-24013 COMPAL P/N: DC33002MT1L
	■ Rx3 Antenna MIMO3: Antenna P/N: Main: 350-24013 COMPAL P/N: DC33002MT1L
	■ TX2/Rx4 Antenna MIMO2: Antenna P/N: Main: 350-24013 COMPAL P/N: DC33002MT1L
Module	
With WWAN Module	T99W175(DW5930e) FR1
(Check Box)	

Antenna Sample / Antenna Data

Requirements for worldwide regulatory approval

Section	Description of Required OEM / ODM Antenna Information	US / IC	EU	Japan	Taiwan	S.Korea
1A	Part Number for Antenna only	Required	Required	Required	Required	Required
1B	Antenna Manufacturer Name	Required	Required	Required	Required	Required
1C	Description of Antenna Type	Required	N/A	N/A	N/A	N/A
1D	Part number of Antenna Assembly / cable impedance, length & diameter.	Required	Desired	Desired	Desired	Desired
1E	Tx1, Tx2 & Tx3 antenna (Peak Gain W/ cable loss) *	Required	Required	Required	Required	Required
	1E OR 1F, 1G, 1H					
1F	Tx1, Tx2 & Tx3 antenna (Peak Gain only) *	Required	Required	Required	Required	Required
1G	VSWR of cable including connector	Required	Required	Required	Required	Required
1H	Tx1, Tx2 & Tx3 antenna (Cable loss W/ connector) *	Required	Required	Required	Required	Required
2	Dimensioned Photographs <u>and</u> Drawings of Tx1, Tx2, and Tx3 (or Rx3) antennas	Required	Required	Required	Required	Required
3	Radiation patterns of antennas loaded in the host platform.	Required	Desired	Required	N/A	Required
4	Platform model name / number - correlated to antenna manufacturer and antenna part number	Required	Required	Desired	Required	Desired
5	Photograph(s) or Drawings showing location of antennas in platform. <u>(S. Korea requires photographs of antennas for approval submission).</u> <u>Taiwan requires pictures of each antenna type shown in the system.</u>	Required	Required	Desired	<u>Required (Photos)</u>	<u>Required (Photos)</u>
6	Mech. drawings / photos with dimensions of antenna locations and distance from end-user (For evaluation of SAR testing requirement).	Required	N/A	N/A	N/A	N/A
7	Photograph(s) or Drawings showing the location of all antennas (WLAN, other) and distance between those transmitting antennas. Information will be used to evaluate whether co-location testing is required.	Required	N/A	N/A	N/A	N/A
8	Local representative contact information for LMA/ PARS process.	Required	N/A	N/A	N/A	N/A

Antenna Information

Section 1. Antenna Assembly Specifications

1A	1B	1C	1D	1E	1F	1G	1H
Antenna Part Number	Manufacture	Antenna Type	Cable Assembly Part Number and Information	*Peak Gain W/ Cable loss (dBi)	Peak Gain w/o Cable Loss (dBi)	VSWR	Cable Loss (dBi)
(P/N: 350-24013 / (DC33002MT1L) Tx1/Rx1 Antenna	Hong-BO Co., Ltd. I-PEX MHF-	PIFA	(1)Cable length: 646mm diameter: 1.37mm SLLS (2)Connector P/N: I-PEX MHF-4L(20632-001R-37)	698-821MHz -0.92 dBi (peak)	698-821MHz -0.37 dBi (peak)	698-821MHz 5.00 max	698-821MHz 0.55 dBi (peak)
				824-960MHz -1.94 dBi (peak)	824-960MHz -1.27 dBi (peak)	824-960MHz 4.00 max	824-960MHz 0.67 dBi (peak)
				1425-1515MHz -3.28 dBi (peak)	1425-1515MHz -2.49 dBi (peak)	1425-1515MHz 3.00 max	1425-1515MHz 0.79 dBi (peak)
				1710-2200MHz 1.13 dBi (peak)	1710-2200MHz 2.05 dBi (peak)	1710-2200MHz 3.00 max	1710-2200MHz 0.92 dBi (peak)
				2300-2690MHz 2.59 dBi (peak)	2300-2690MHz 3.65 dBi (peak)	2300-2690MHz 4.00 max	2300-2690MHz 1.06 dBi (peak)
				3400-3800MHz 1.76 dBi (peak)	3400-3800MHz 3.27 dBi (peak)	3400-3800MHz 4.00 max	3400-3800MHz 1.51 dBi (peak)
				4200-4700MHz 1.55 dBi (peak)	4200-4700MHz 3.24 dBi(peak)	4200-4700MHz 3.00 max	4200-4700MHz 1.69 dBi (peak)
				5150-5925MHz 0.94 dBi (peak)	5150-5925MHz 2.88 dBi (peak)	5150-5925MHz 3.00 max	5150-5925MHz 1.94 dBi (peak)
(P/N: 350-24013 / (DC33002MT1L) Rx2 Antenna	Hong-BO Co., Ltd	PIFA	(1)Cable length: 451mm diameter: 1.13mm SLLS (2)Connector P/N: I-PEX MHF-4L(20565-001R-13)	717-821MHz -0.77 dBi (peak)	717-821MHz -0.15 dBi (peak)	717-821MHz 5.00 max	717-821MHz 0.62 dBi (peak)
				824-960MHz -4.11 dBi (peak)	824-960MHz -3.41 dBi (peak)	824-960MHz 5.00 max	824-960MHz 0.7 dBi (peak)
				1425-1515MHz -4.50 dBi (peak)	1425-1515MHz -3.76 dBi (peak)	1425-1515MHz 3.00 max	1425-1515MHz 0.74 dBi (peak)
				1557-1610 MHz -3.44 dBi (peak)	1557-1610 MHz -2.65 dBi (peak)	1557-1610 MHz 3.00 max	1557-1610 MHz 0.79 dBi (peak)
				1805-2200MHz 0.27 dBi (peak)	1805-2200MHz 1.25 dBi (peak)	1805-2200MHz 3.00 max	1805-2200MHz 0.98 dBi (peak)
				2300-2690MHz 0.70 dBi (peak)	2300-2690MHz 1.76 dBi (peak)	2300-2690MHz 3.00 max	2300-2690MHz 1.06 dBi (peak)
				3400-3800MHz 0.14 dBi (peak)	3400-3800MHz 1.50 dBi (peak)	3400-3800MHz 3.00 max	3400-3800MHz 1.36 dBi (peak)
				4200-4700MHz 0.16 dBi(peak)	4200-4700MHz 1.68 dBi(peak)	4200-4700MHz 3.00 max	4200-4700MHz 1.52 dBi (peak)
				5150-5925MHz -1.75 dBi (peak)	5150-5925MHz 0.02 dBi (peak)	5150-5925MHz 3.00 max	5150-5925MHz 1.77 dBi (peak)

1A Antenna Part Number	1B Manufacture	1C Antenna Type	1D Cable Assembly Part Number and Information	1E *Peak Gain W/ Cable loss (dBi)	1F Peak Gain w/o Cable Loss (dBi)	1G VSWR	1H Cable Loss (dBi)
(P/N: 350-24013 / (DC33002MT1L) Rx3 Antenna	Hong-BO Co., Ltd	PIFA	(1)Cable length: 296mm diameter: 1.13mm SLLS (2)Connector P/N: I-PEX MHF-4 (20565-001R-13)	1805-2200MHz 0.98 dBi (peak)	1805-2200MHz 1.59 dBi (peak)	1805-2200MHz 3.00 dBi (peak)	1805-2200MHz 0.61 dBi (peak)
				2300-2690MHz 3.10 dBi (peak)	2300-2690MHz 3.76 dBi (peak)	2300-2690MHz 3.00 dBi (peak)	2300-2690MHz 0.66 dBi (peak)
				3400-3800MHz 1.28 dBi (peak)	3400-3800MHz 2.13 dBi (peak)	3400-3800MHz 4.00 dBi (peak)	3400-3800MHz 0.85 dBi (peak)
				4200-5000MHz 0.75 dBi (peak)	4200-5000MHz 1.70 dBi (peak)	4200-5000MHz 3.00 dBi (peak)	4200-5000MHz 0.95 dBi (peak)
(P/N: 350-24013 / (DC33002MT1L) Tx2/Rx4 Antenna	Hong-BO Co., Ltd	PIFA	1)Cable length: 351mm diameter: 1.13mm SLLS (2)Connector P/N: I-PEX MHF-4 (20565-001R-13)	1710-2200MHz 1.94 dBi (peak)	1710-2200MHz 2.56 dBi (peak)	1710-2200MHz 3.00 dBi (peak)	1710-2200MHz 0.62 dBi (peak)
				2300-2690MHz 2.36 dBi (peak)	2300-2690MHz 3.03 dBi (peak)	2300-2690MHz 3.00 dBi (peak)	2300-2690MHz 0.67 dBi (peak)
				3400-3800MHz 2.10 dBi (peak)	3400-3800MHz 2.95 dBi (peak)	3400-3800MHz 4.00 dBi (peak)	3400-3800MHz 0.85 dBi (peak)
				4200-5000MHz -1.34 dBi (peak)	4200-5000MHz -0.37 dBi (peak)	4200-5000MHz 4.00 dBi (peak)	4200-5000MHz 0.97 dBi (peak)

- Antenna Peak Gain required being test in system basis.
- 1E frame contend absolutely peak antenna gain include H/V

Antenna Peak Gain Table: Low and middle band

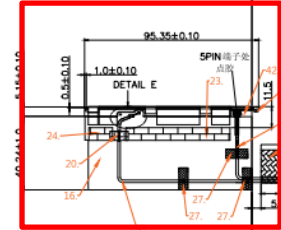
Frequency (MHz)	Tx1/Rx1 antenna		Rx2 antenna	
	Horizontal	Vertical	Horizontal	Vertical
	(dBi)	(dBi)	(dBi)	(dBi)
698	-4.22	-3.71		
703	-3.85	-3.13		
707.5	-3.70	-2.90		
717	-3.50	-2.47	-2.97	-2.55
725.5	-3.72	-2.14	-3.10	-2.36
748	-2.31	-0.92	-2.72	-2.16
756	-2.27	-1.03	-2.36	-1.47
768	-2.84	-1.57	-2.13	-0.77
777	-3.45	-2.43	-1.79	-0.97
782	-3.77	-2.80	-1.71	-1.28
787	-3.98	-3.07	-1.97	-1.86
814	-4.47	-2.67	-4.94	-4.46
824	-4.29	-2.28	-5.59	-4.64
832	-4.22	-2.14	-5.71	-4.44
836.5	-4.20	-2.01	-5.77	-4.35
849	-4.91	-2.49	-5.82	-4.33
862	-4.51	-1.94	-5.75	-4.76
880	-4.76	-3.39	-5.61	-4.40
897.5	-4.27	-2.75	-5.01	-4.11
915	-3.63	-3.06	-4.78	-4.39
925	-3.57	-3.55	-4.70	-4.69
960	-4.57	-4.54	-6.31	-5.44
1427.9	-4.02	-3.28	-5.52	-7.03
1447.9	-4.39	-3.39	-5.34	-7.13
1455.4	-4.59	-3.63	-5.32	-7.01
1462.9	-5.01	-4.00	-5.41	-7.02
1496	-5.72	-3.74	-4.71	-6.55
1510.9	-6.20	-3.87	-4.50	-6.31
1557			-4.89	-6.68
1575			-4.06	-6.09
1610			-3.44	-5.94

High band

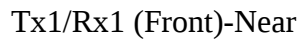
	Tx1/Rx1 antenna		Rx2 antenna	
Frequency (MHz)	Horizontal	Vertical	Horizontal	Vertical
	(dBi)	(dBi)	(dBi)	(dBi)
1710	-0.28	-2.72		
1732.5	0.56	-2.09		
1747.5	0.99	-1.78		
1755	1.00	-1.84		
1785	1.13	-0.64		
1805	0.37	-0.70	-0.95	-3.95
1850	-0.38	-1.00	-0.98	-3.79
1880	0.25	0.26	-1.50	-3.43
1910	0.24	0.75	0.23	-2.56
1920	0.37	0.72	-0.17	-2.60
1950	0.04	0.17	0.27	-2.72
1980	-0.10	-1.06	-0.36	-3.94
2110	-1.59	-0.96	-0.70	-3.73
2200	-1.19	-0.36	-1.88	-4.50
2300	1.73	1.88	0.69	-1.89
2305	1.70	1.82	0.48	-1.81
2315	1.40	1.60	0.19	-1.90
2350	0.11	0.60	0.26	-3.42
2400	0.73	1.45	0.20	-4.13
2500	1.14	1.90	0.70	-3.07
2570	1.30	2.59	-1.82	-5.05
2595	0.96	1.96	-3.60	-6.29
2620	0.01	1.13	-4.16	-7.13
2690	0.03	0.90	-5.23	-7.28
3400	-0.08	0.84	-0.75	0.14
3500	-1.24	0.31	-0.99	-1.99
3600	0.32	1.76	-0.21	-1.14
3700	-1.61	0.32	-1.93	-2.16
3800	-1.47	0.23	-2.88	-3.27
4200	1.31	1.55	-3.92	-1.57
4400	0.12	-0.22	-1.93	-1.93
4700	-0.94	-1.61	0.16	0.16
5150	0.86	0.94	-3.37	-1.75
5537.5	-0.50	0.44	-2.58	-3.29
5925	-4.31	-5.78	-7.47	-6.69

	Tx2/Rx4 antenna		Rx3 antenna	
Frequency (MHz)	Horizontal	Vertical	Horizontal	Vertical
	(dBi)	(dBi)	(dBi)	(dBi)
1710	-3.75	-1.85		
1732.5	-1.34	-0.22		
1747.5	-0.46	0.06		
1755	-0.18	0.21		
1785	0.04	0.16		
1805	0.20	0.02	-0.95	-1.80
1850	0.50	-0.14	-0.94	-2.04
1880	1.46	0.30	-1.95	-2.15
1910	1.94	0.91	-1.80	-2.18
1920	1.77	0.99	-1.39	-1.61
1950	1.38	1.21	0.76	-1.12
1980	-1.86	0.45	0.83	-1.07
2110	0.88	1.74	-1.09	-1.84
2200	-1.07	-0.26	0.98	0.72
2300	0.91	-1.08	2.22	-0.25
2305	0.52	-1.05	2.16	-0.42
2315	0.35	-1.30	2.08	-0.57
2350	0.33	-0.80	-1.02	0.38
2400	-0.42	-1.78	1.10	1.06
2500	-0.51	-2.38	3.10	0.86
2570	2.36	-0.54	-0.72	1.84
2595	1.95	0.38	-0.71	0.47
2620	0.84	-0.53	0.17	0.48
2690	-2.91	-5.75	2.48	-0.37
3400	2.10	-2.09	-0.65	0.69
3500	-1.65	-3.26	-0.05	0.96
3600	1.05	-0.58	1.28	-0.20
3700	-2.84	-4.57	-1.75	-0.39
3800	-3.24	-3.45	-0.18	0.81
4200	-2.04	-1.34	-0.17	0.75
4400	-1.55	-3.37	0.27	0.12
4700	-3.24	-3.18	-2.17	-1.25
5000	-4.54	-3.11	-0.06	-0.64

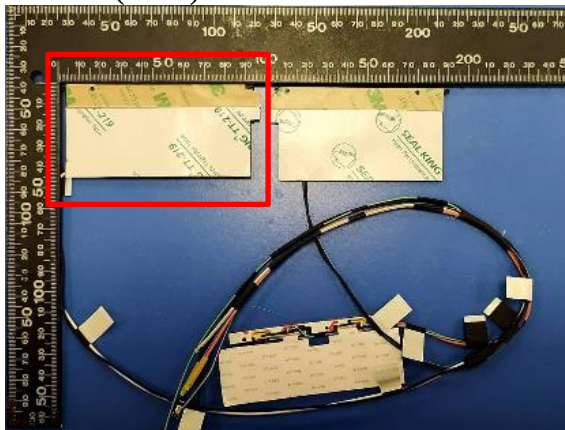
Tx1/Rx1 Antenna Dimensioned Drawing:



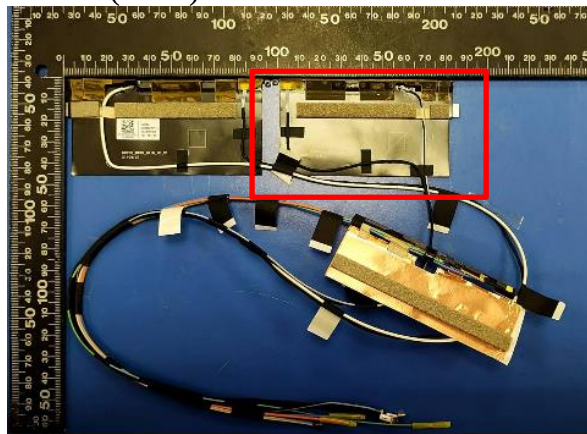
Tx1/Rx1(Front)-Far



Tx1/Rx1 (Back)-Near



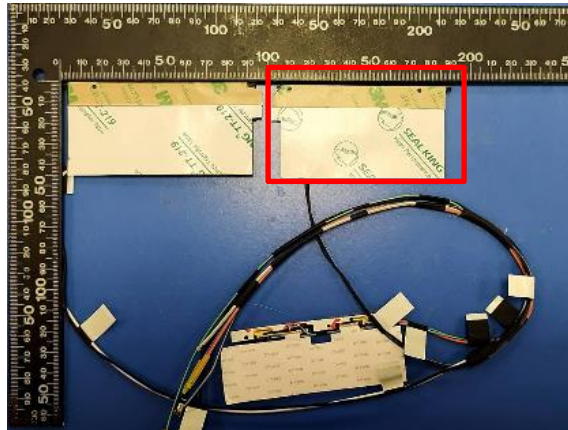
Rx2(Front)-Far



Rx2 (Front)-Near



Rx2 (Back)-Far

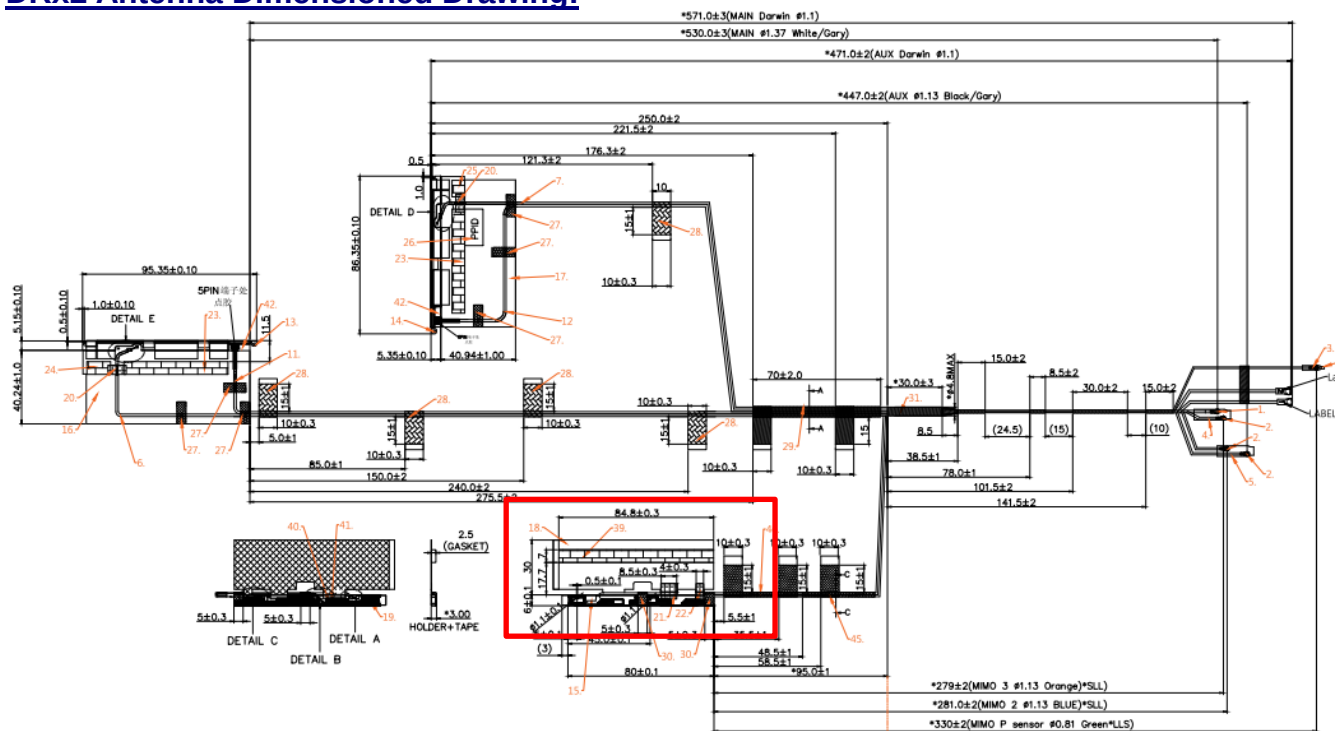


Rx2 (Back)-Near



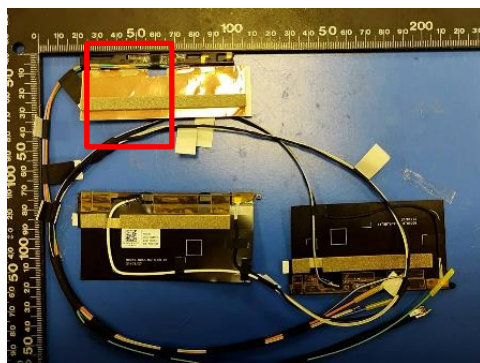
Include a dimensioned photo and dimensioned drawing of Aux antenna here.

DRx2 Antenna Dimensioned Drawing:



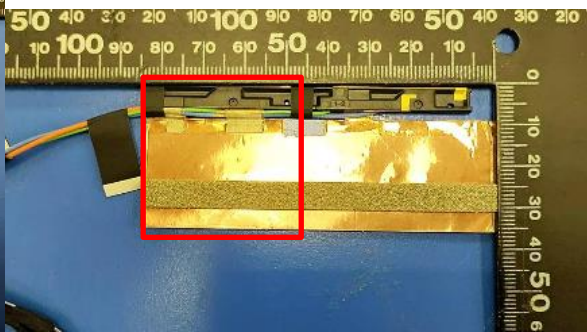
DRx2 Antenna Photo:

DRx2 (Front)-Far

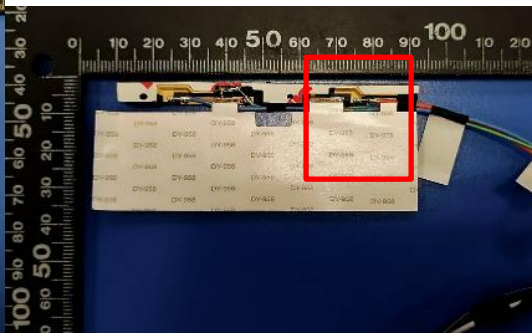
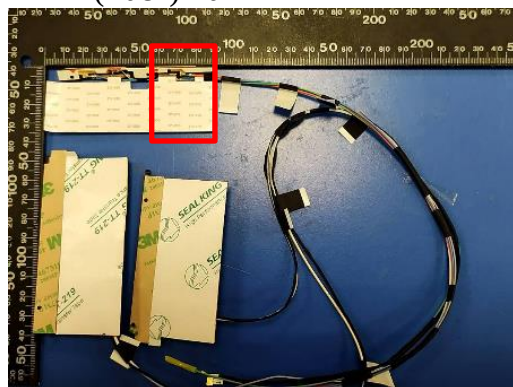


DRx2 (Back)-Far

DRx2 (Front)-Near



DRx2 (Back)-Near

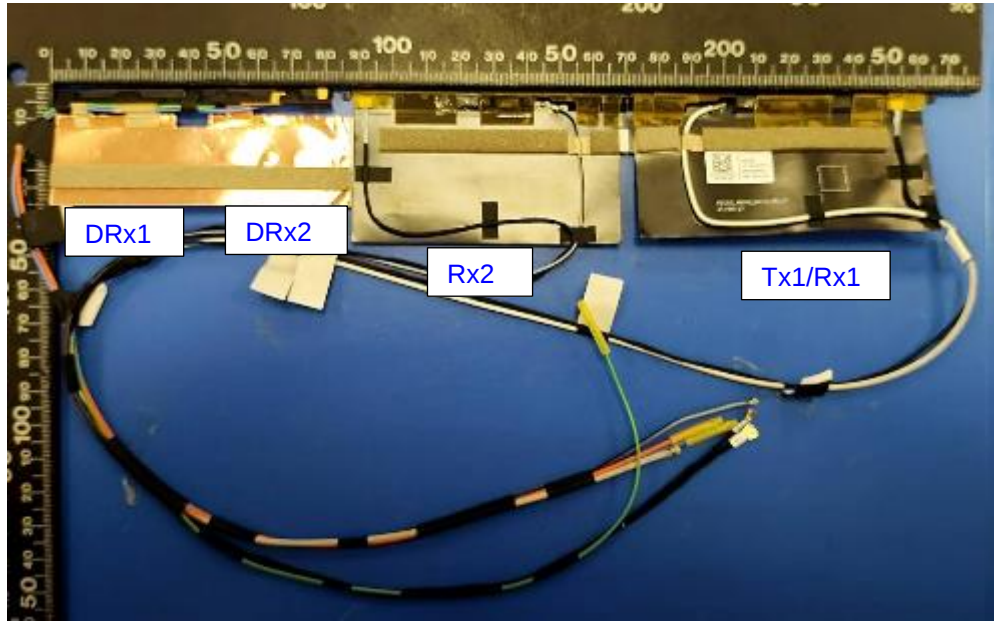


[illegible]

Include front view photo of all 2 antennas here.

Antenna Manufacturer: Hong-Bo

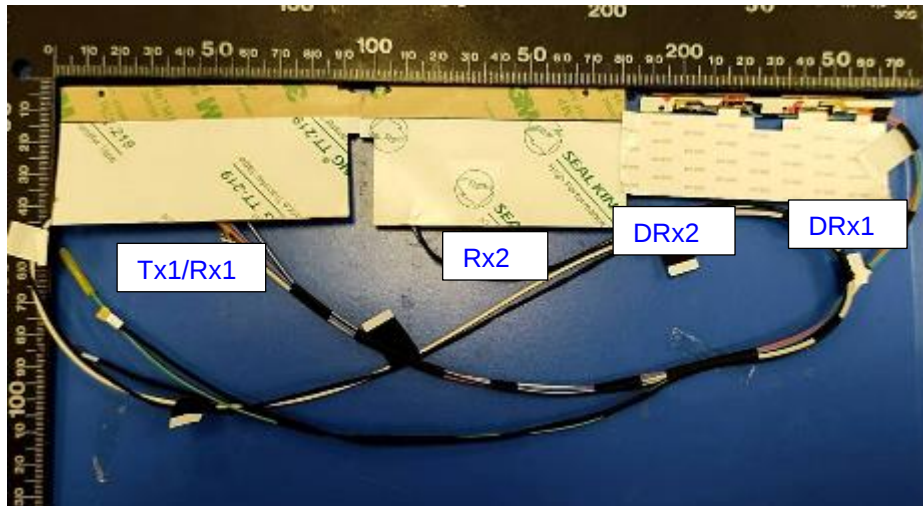
Antenna Part Number: : 350-24013(Tx1/Rx1), 350-24013(Rx2), 350-24013(DRx2), 350-24013(DRx1)
DC33002MT1L (Tx1/Rx1), DC33002MT1L (Rx2), DC33002MT1L (DRx2), DC33002MT1L (DRx1)



Include back view photo of all 2 antennas here.

Antenna Manufacturer: Hong-BO

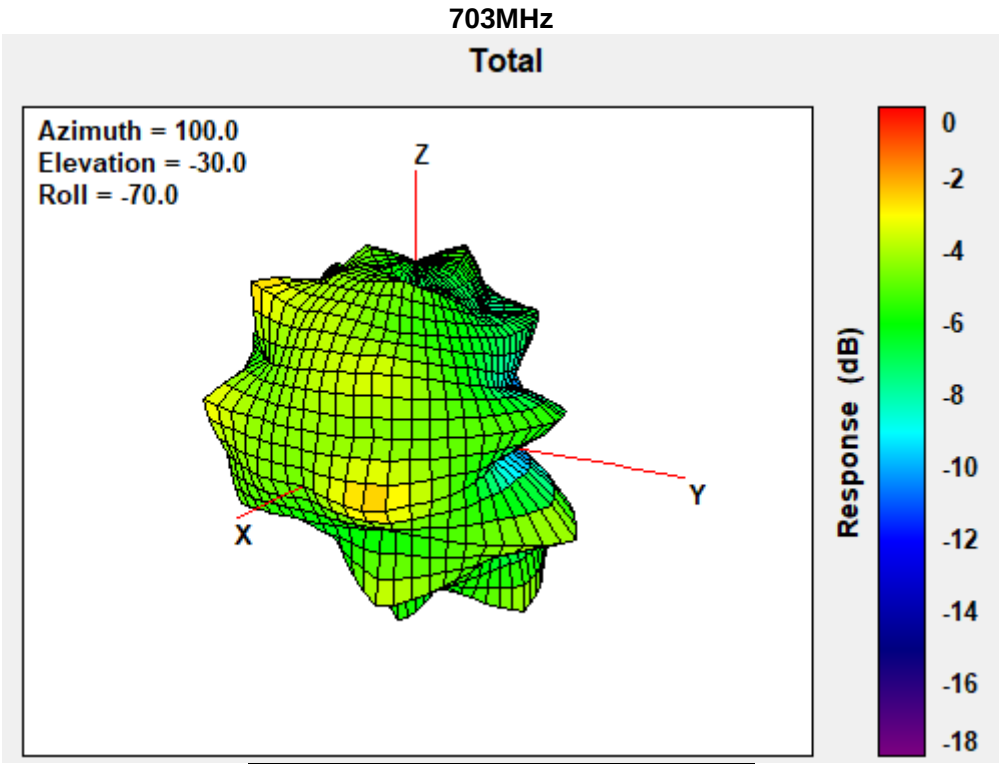
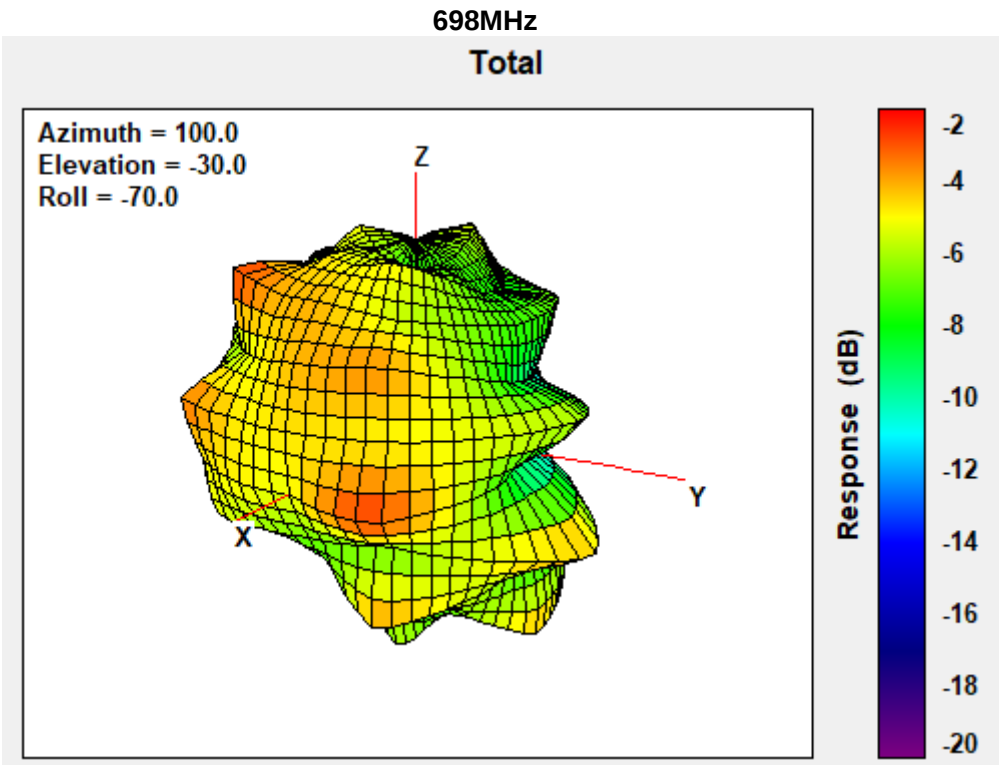
Antenna Part Number: 350-24013(Tx1/Rx1), 350-24013(Rx2), 350-24013(DRx2), 350-24013(DRx1)
DC33002MT1L (Tx1/Rx1), DC33002MT1L (Rx2), DC33002MT1L (DRx2), DC33002MT1L (DRx1)

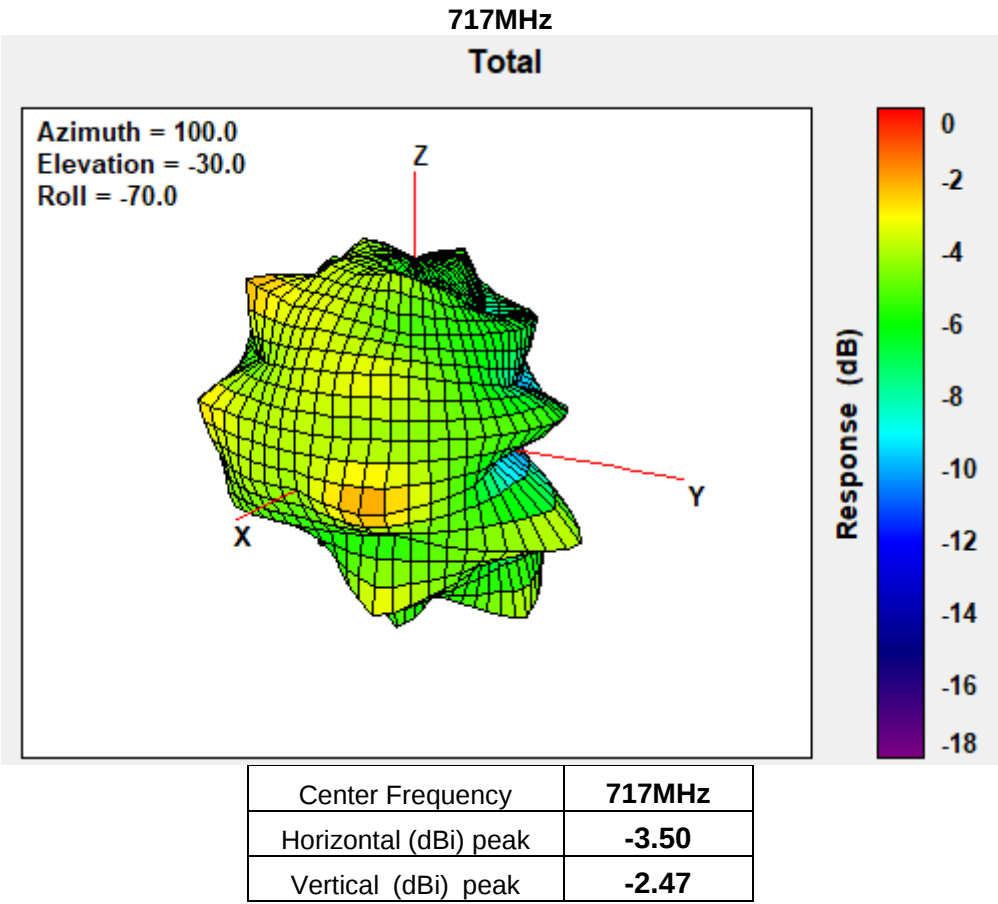
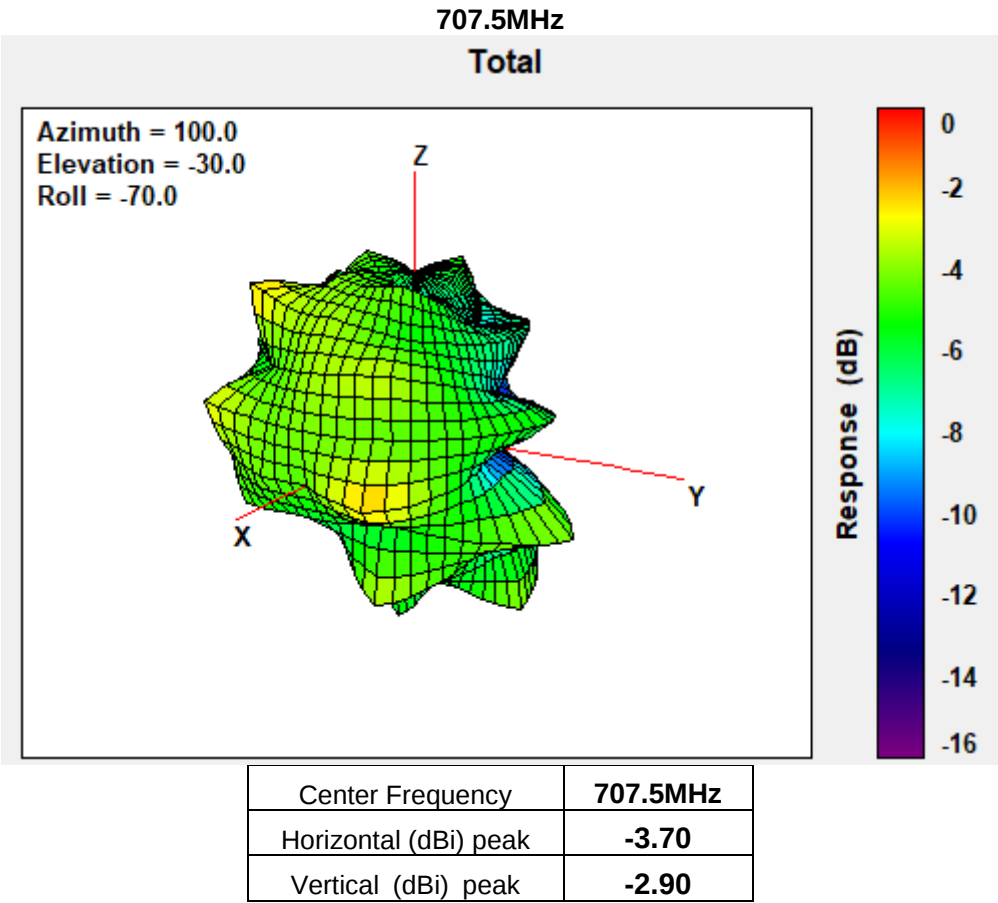


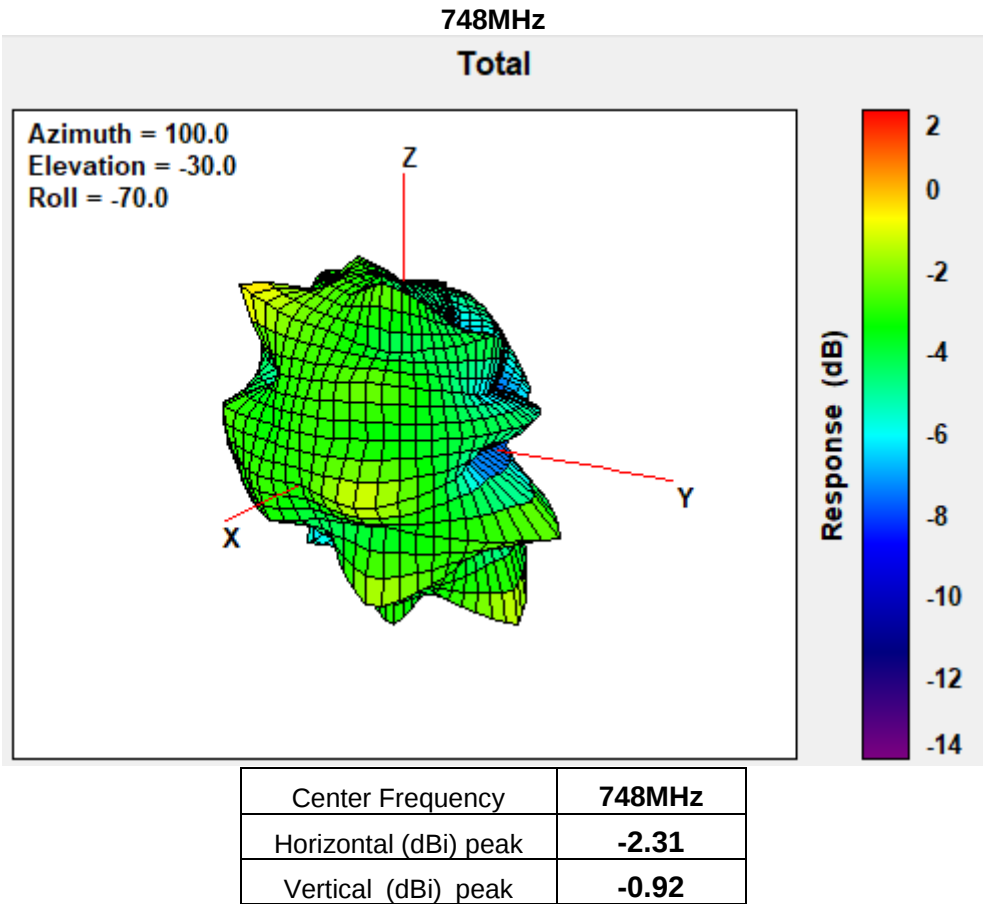
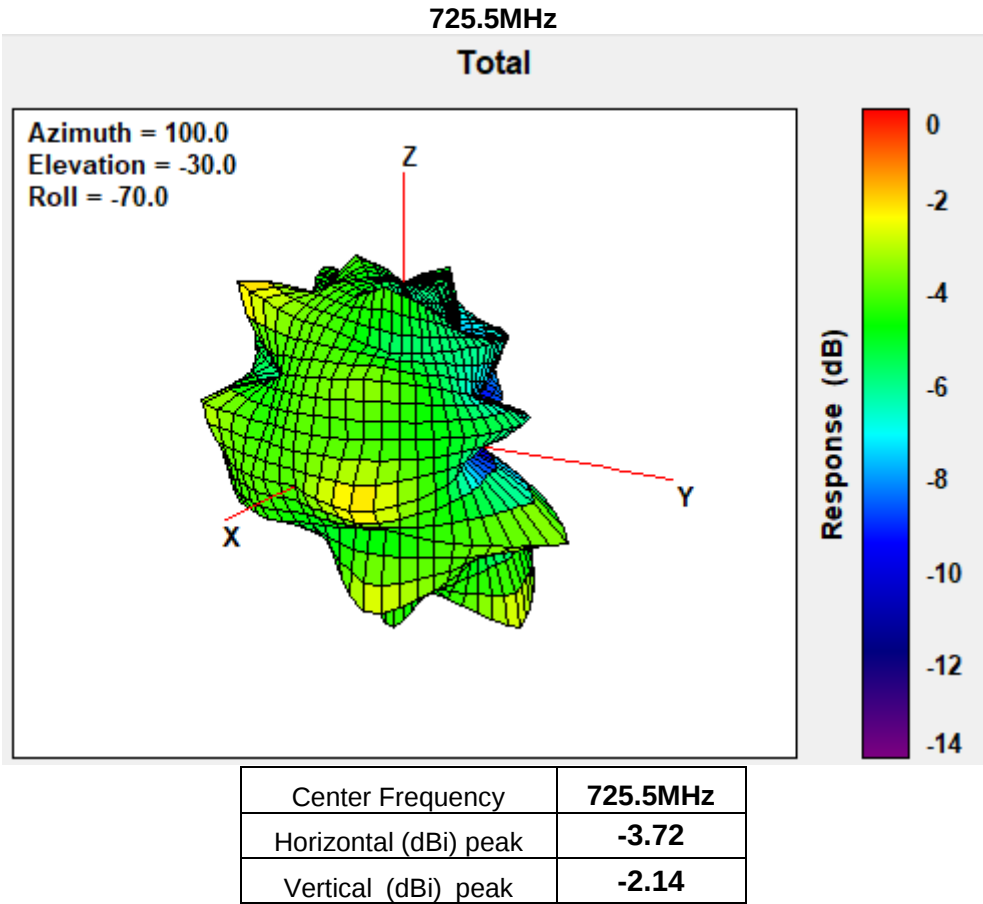
Note: antenna photo should include L type ruler

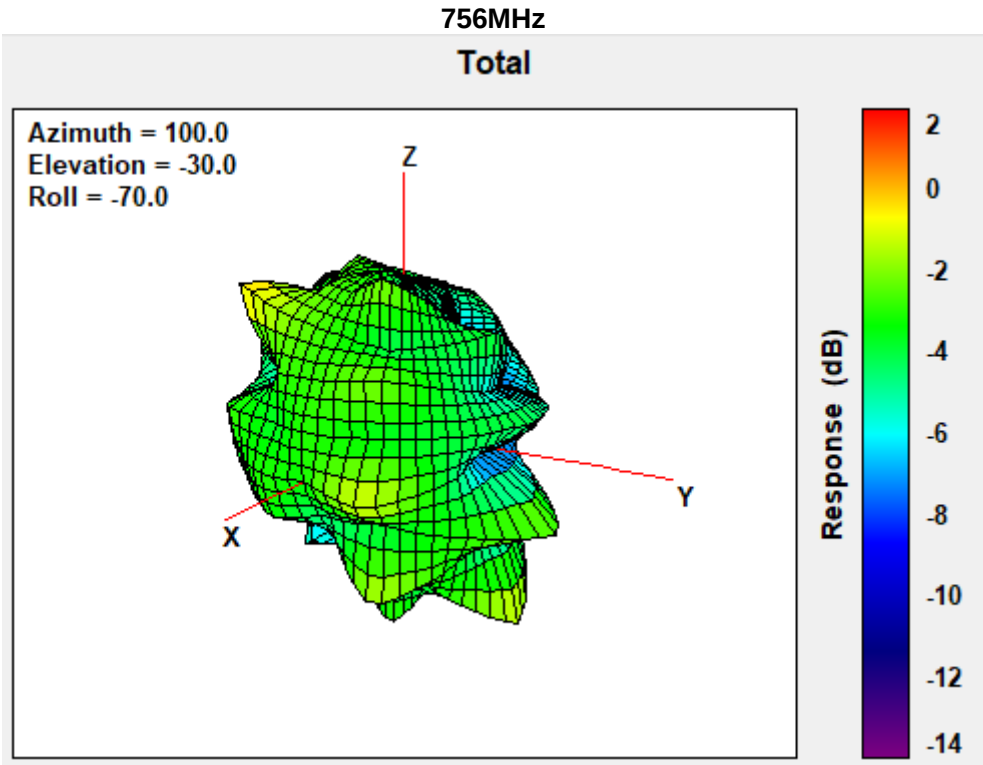
Section 3. Radiation characteristics of antennae Loaded in Host Platform

WWAN Main Antenna (TPx)

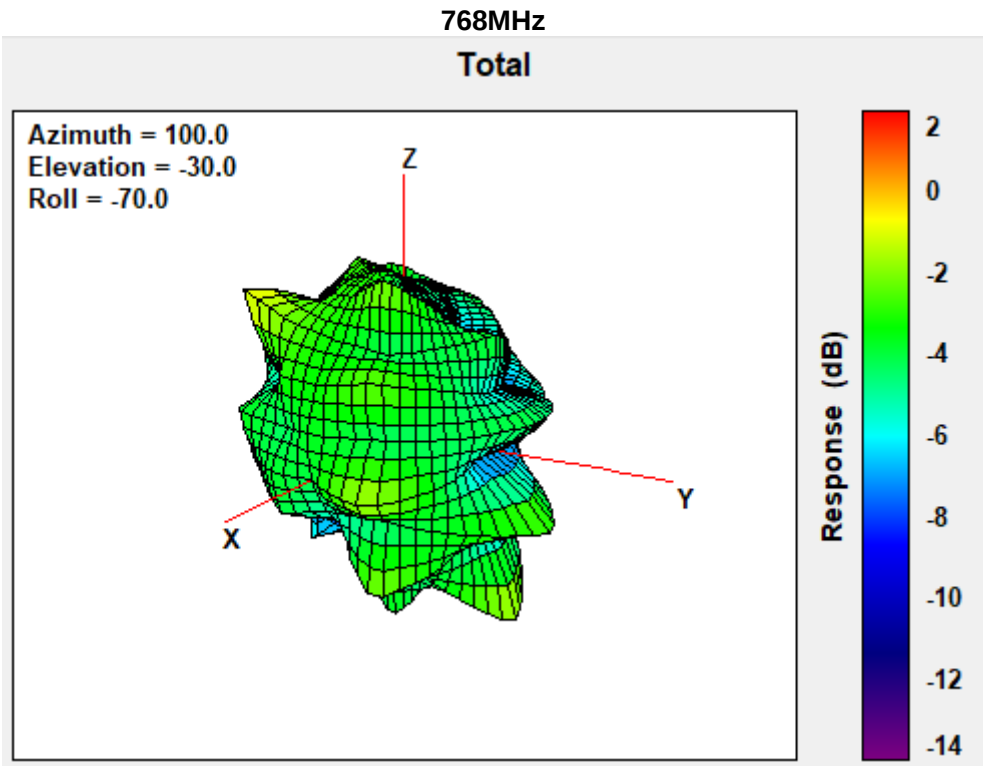




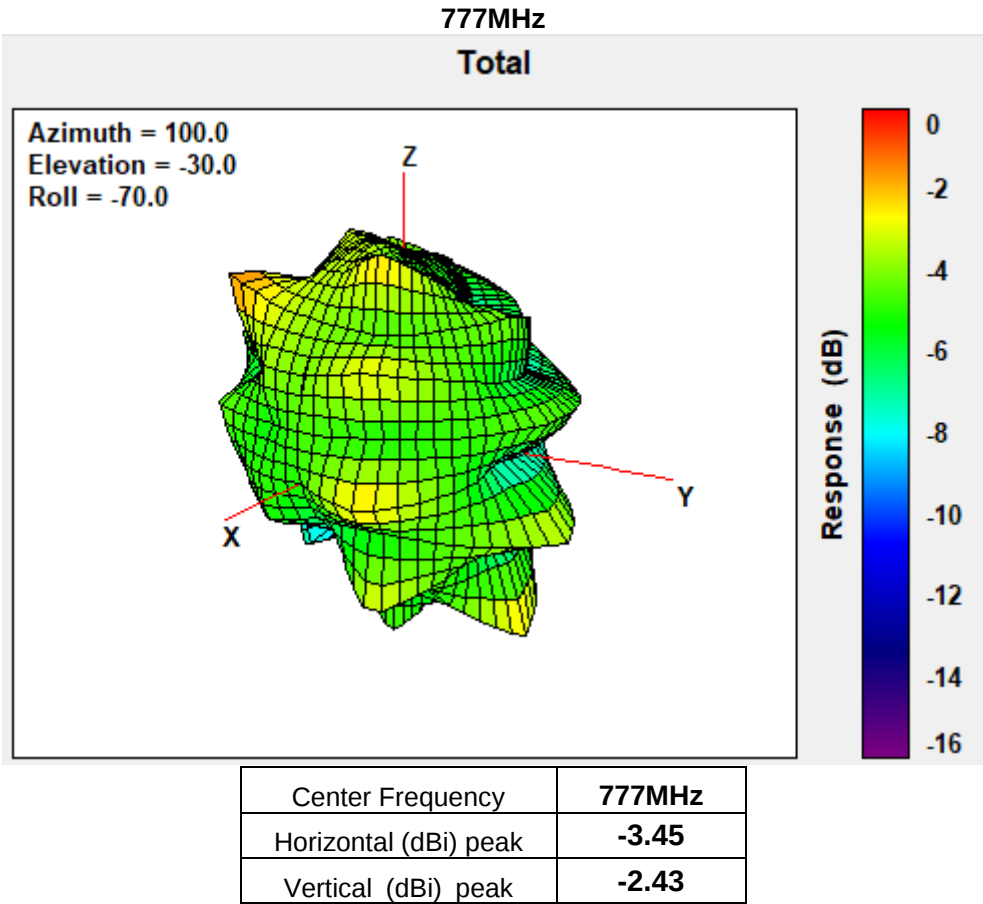


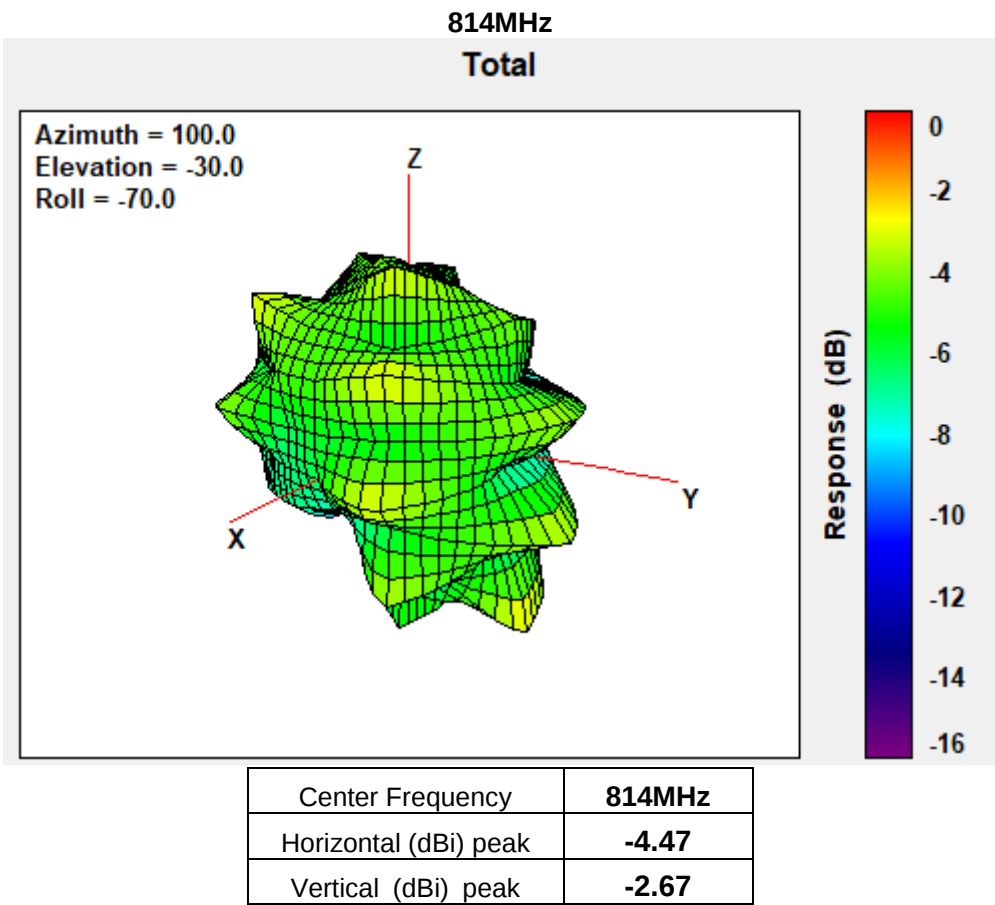
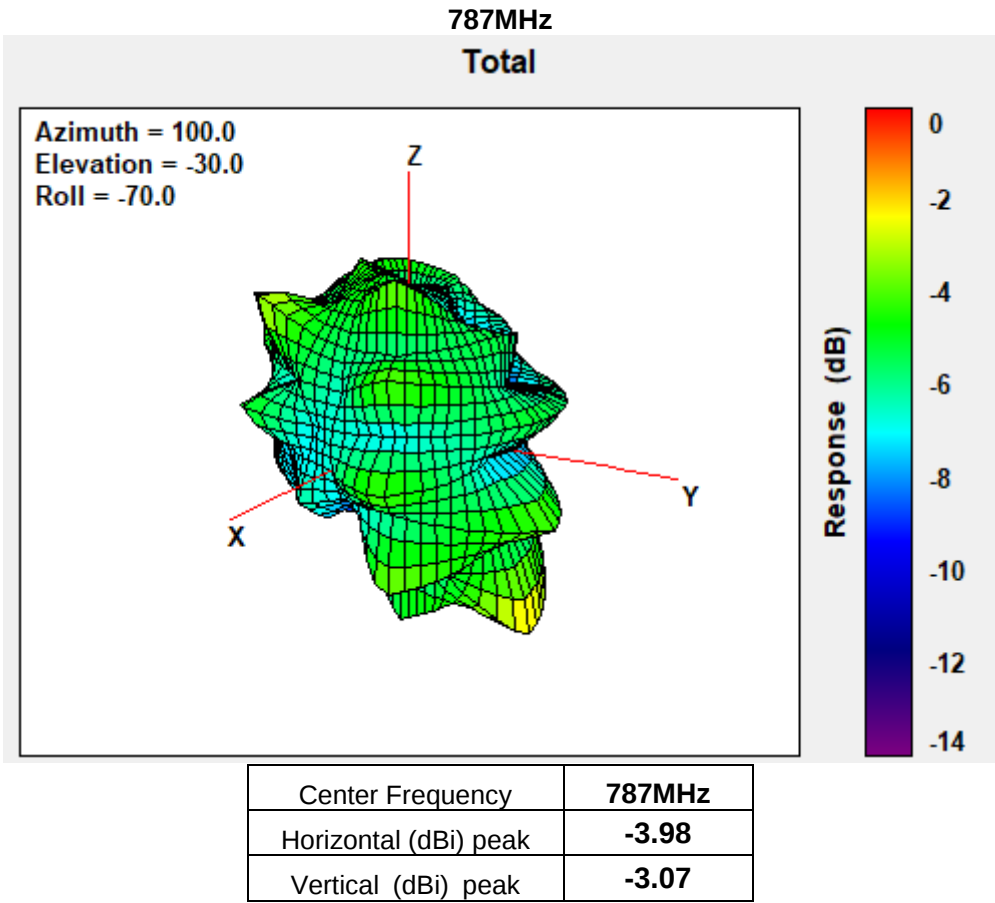


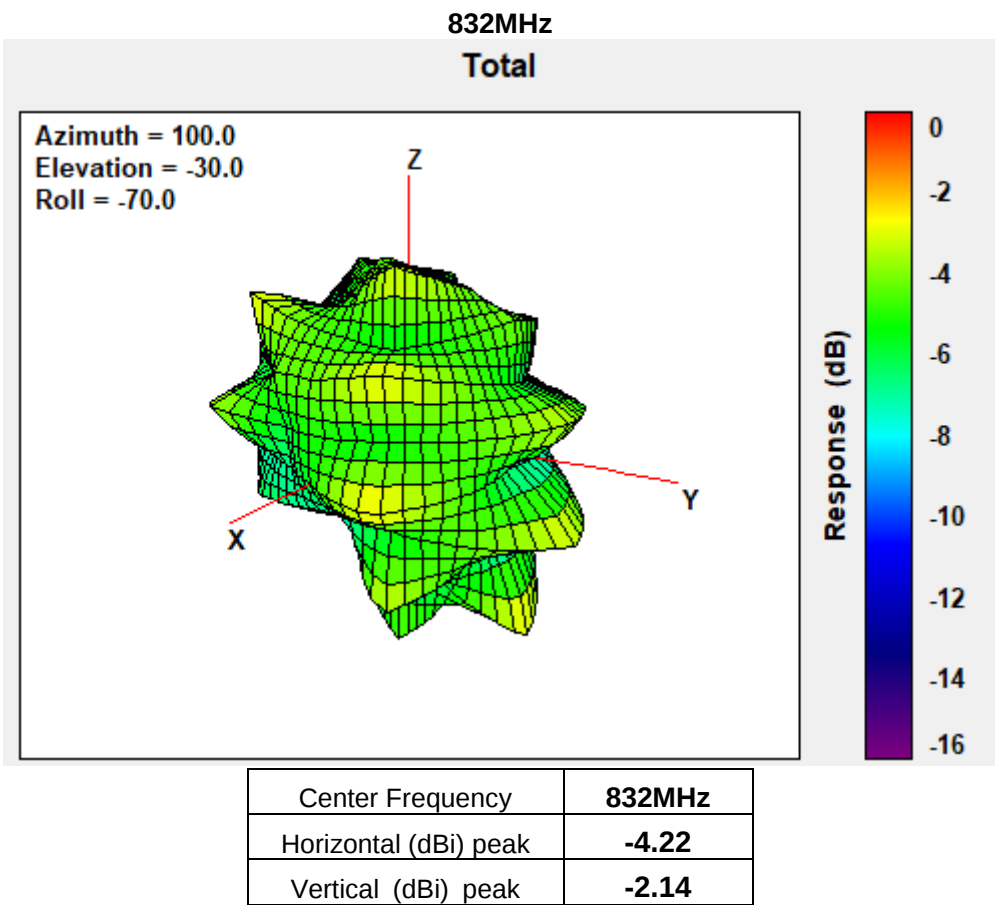
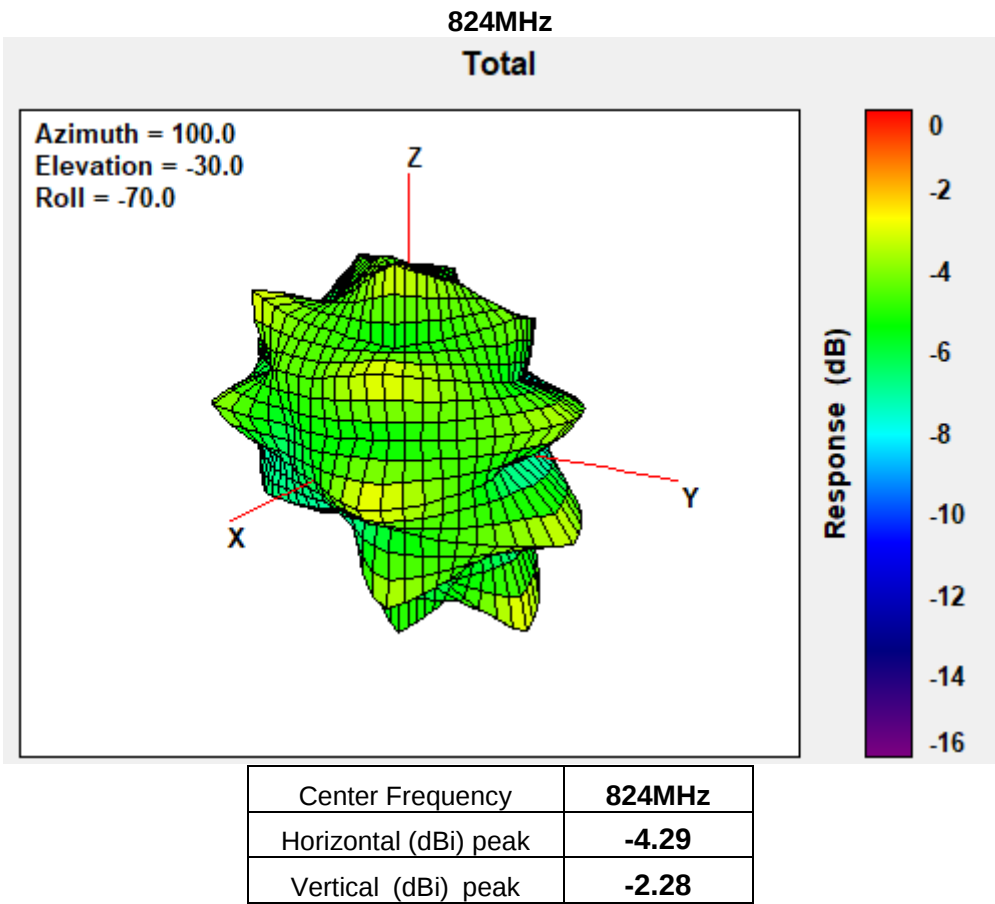
Center Frequency	756MHz
Horizontal (dBi) peak	-2.27
Vertical (dBi) peak	-1.03



Center Frequency	768MHz
Horizontal (dBi) peak	-2.84
Vertical (dBi) peak	-1.57



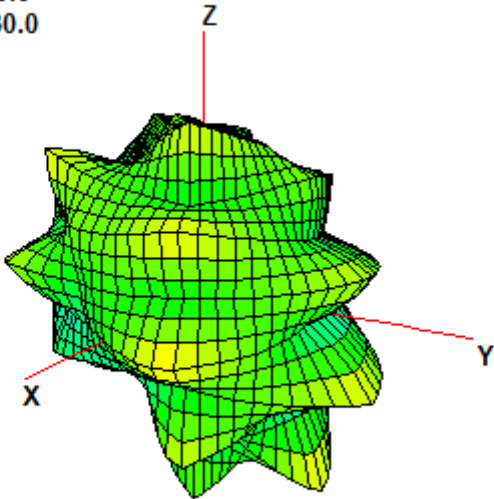




836.5MHz

Total

Azimuth = 100.0
Elevation = -30.0
Roll = -70.0

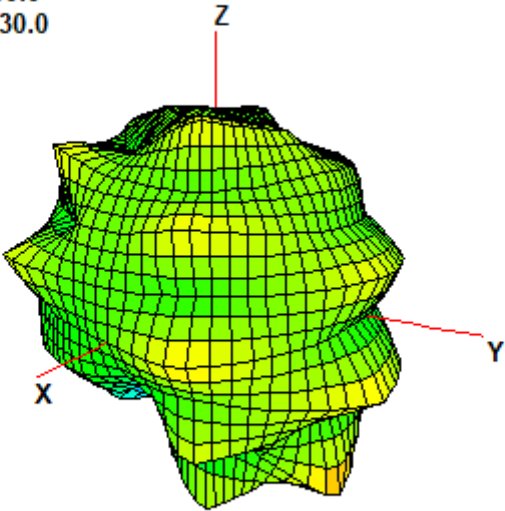


Center Frequency	836.5MHz
Horizontal (dBi) peak	-4.20
Vertical (dBi) peak	-2.01

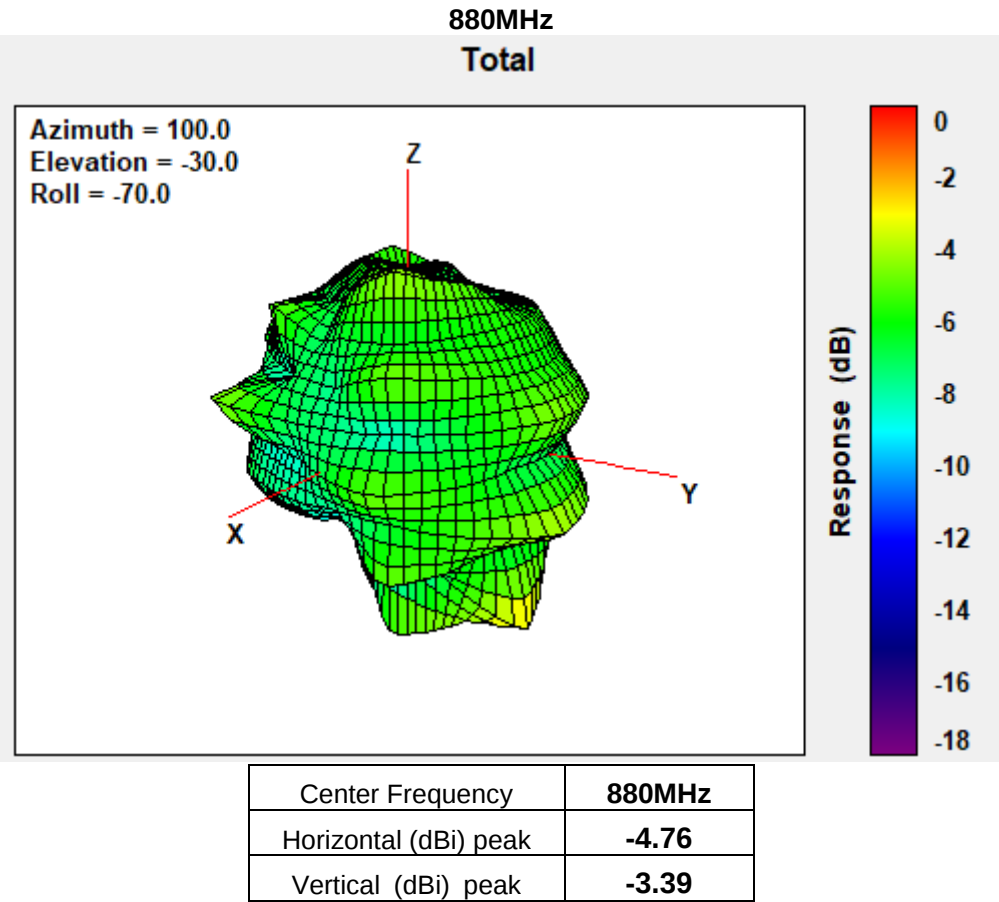
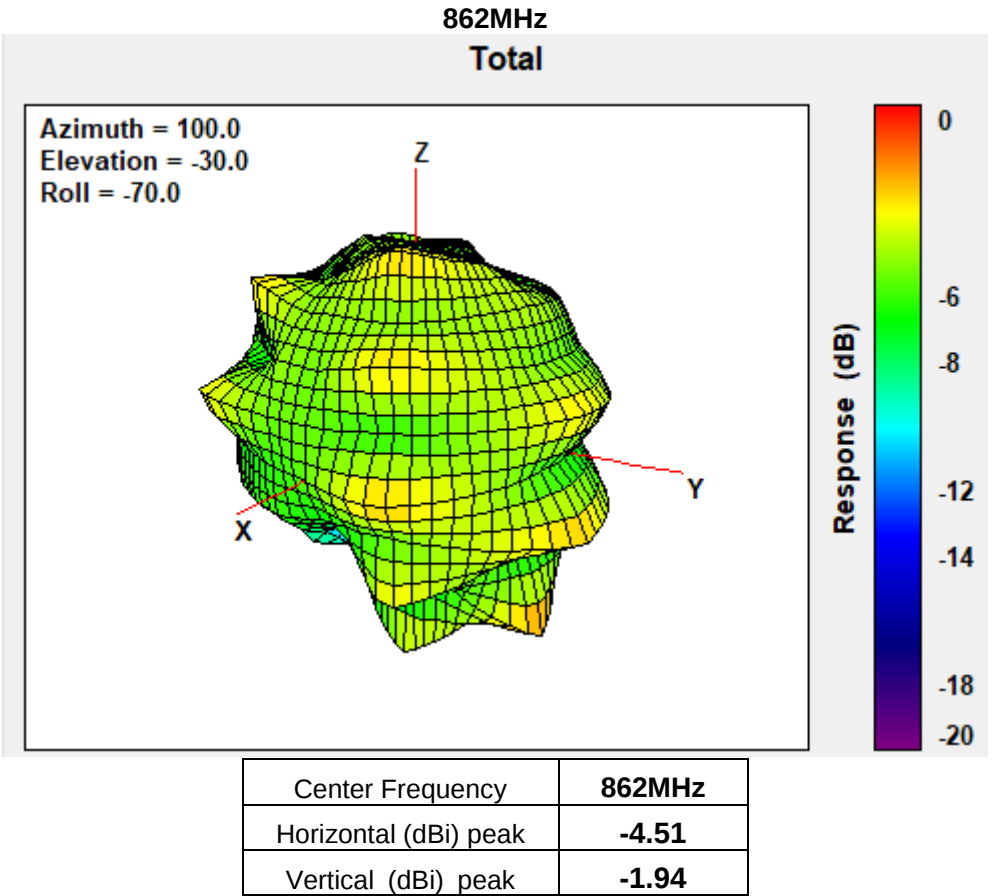
849MHz

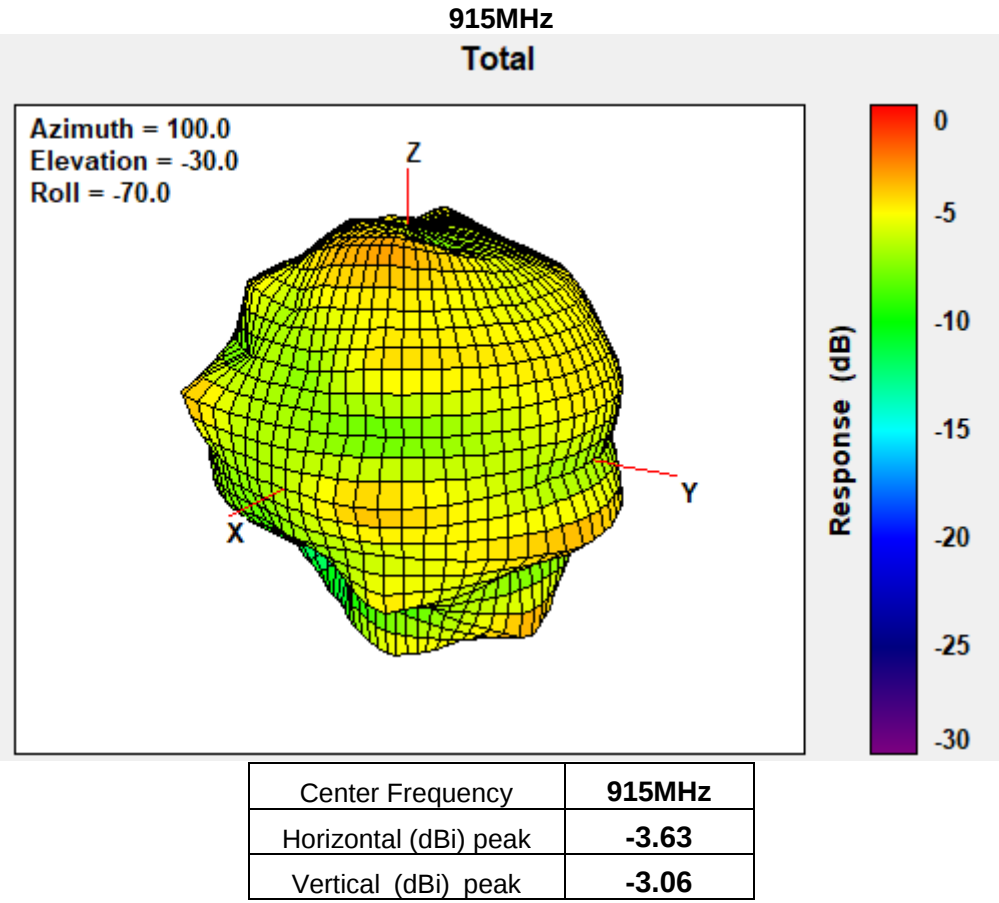
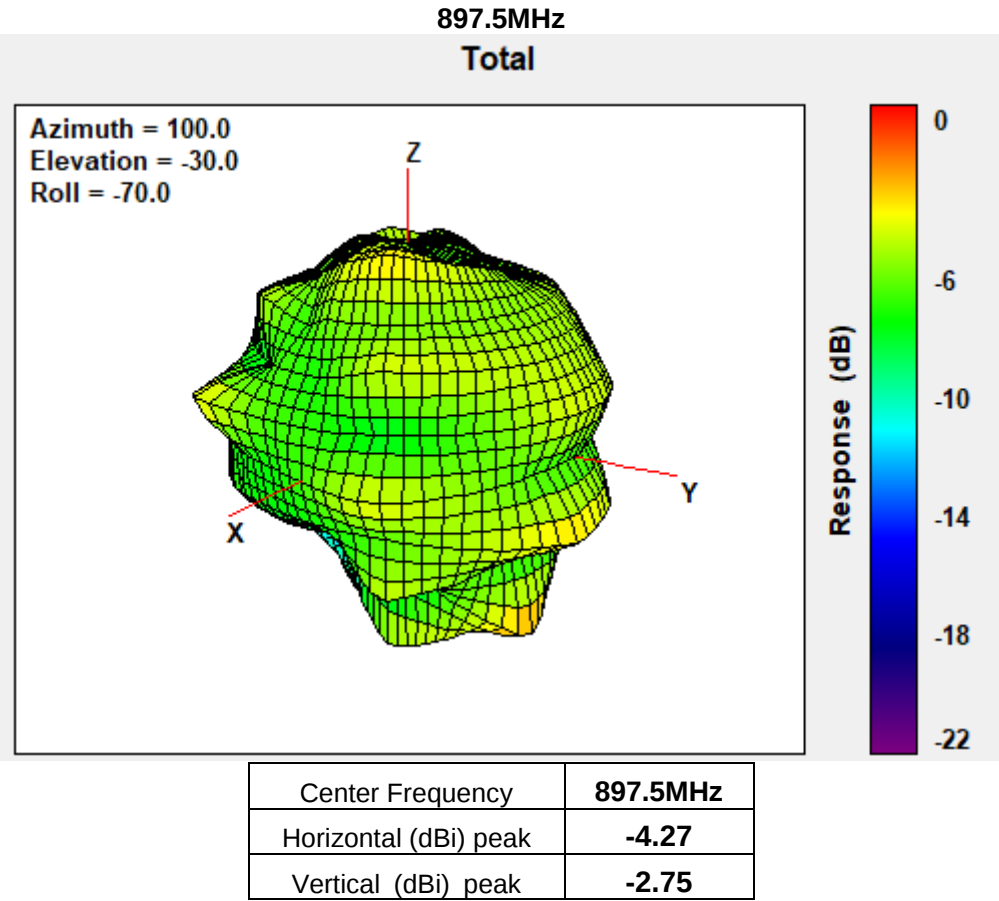
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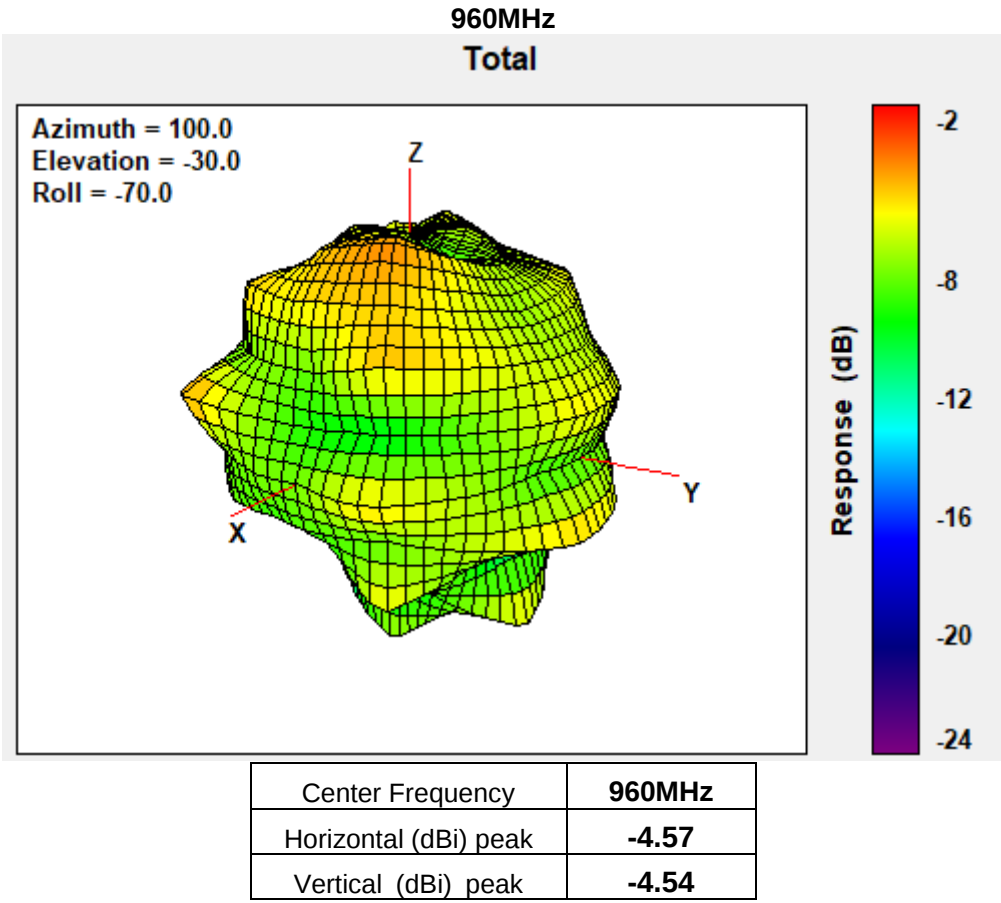
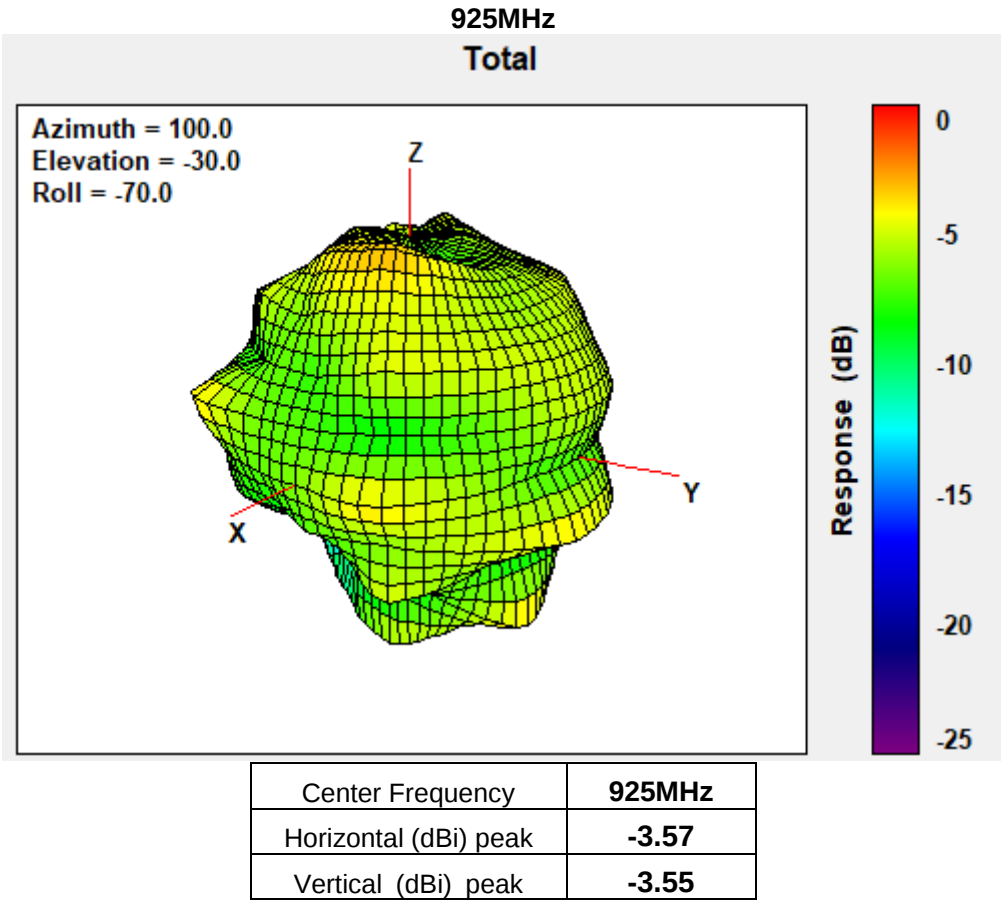
Azimuth = 100.0
Elevation = -30.0
Roll = -70.0

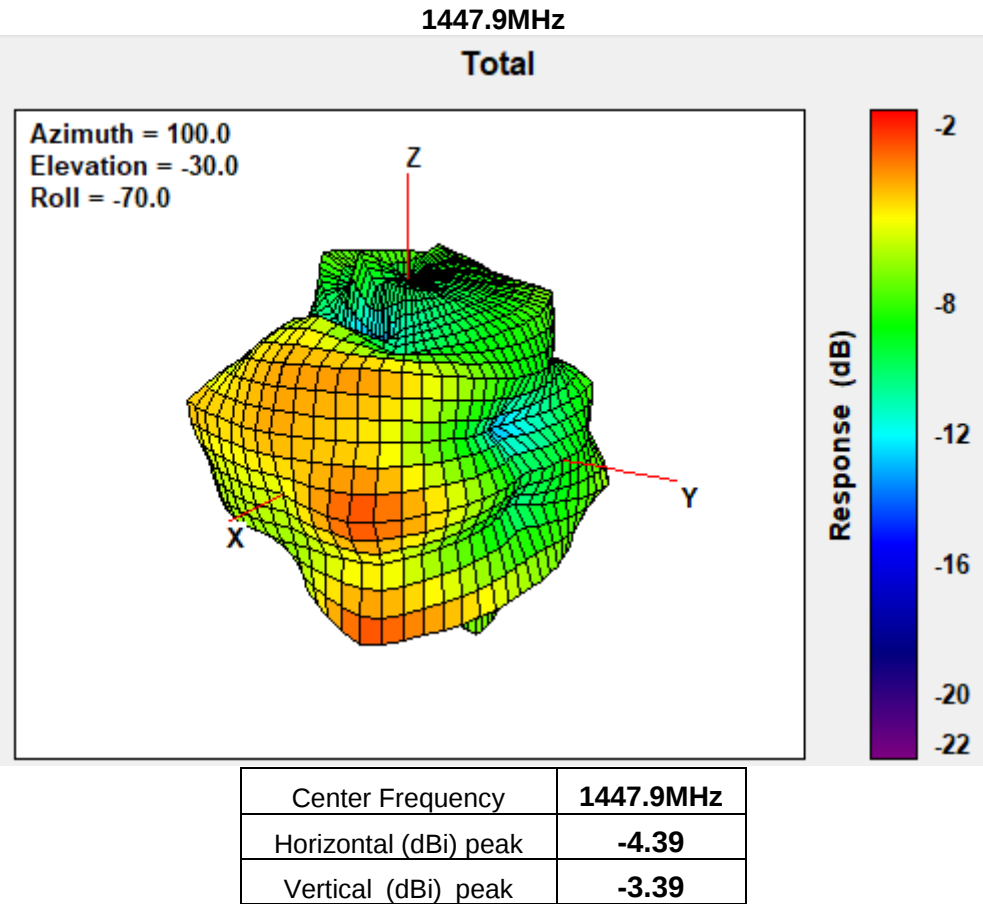
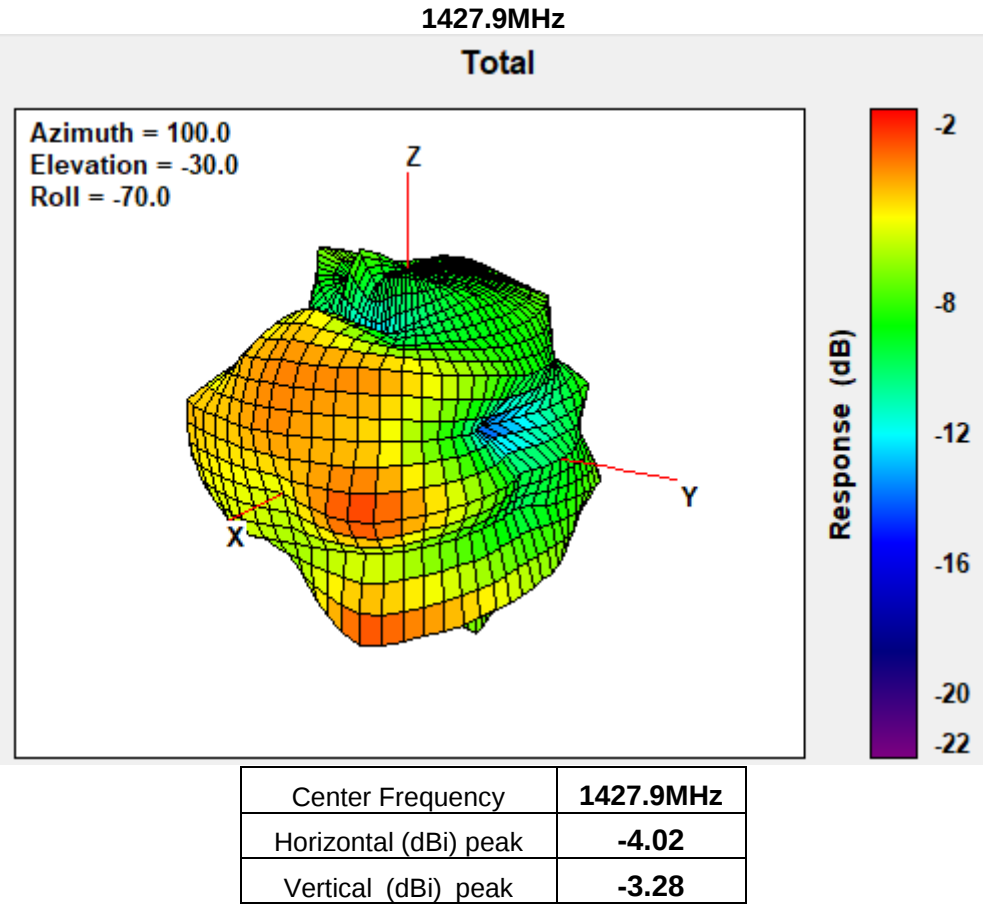


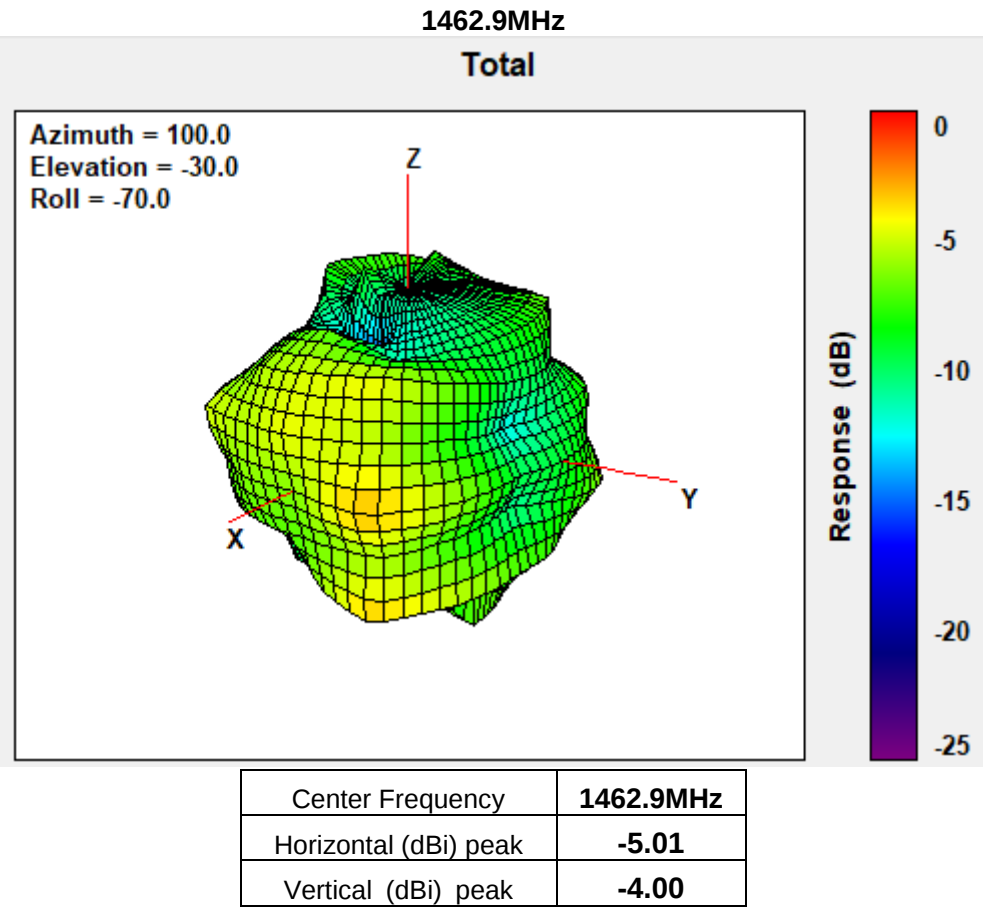
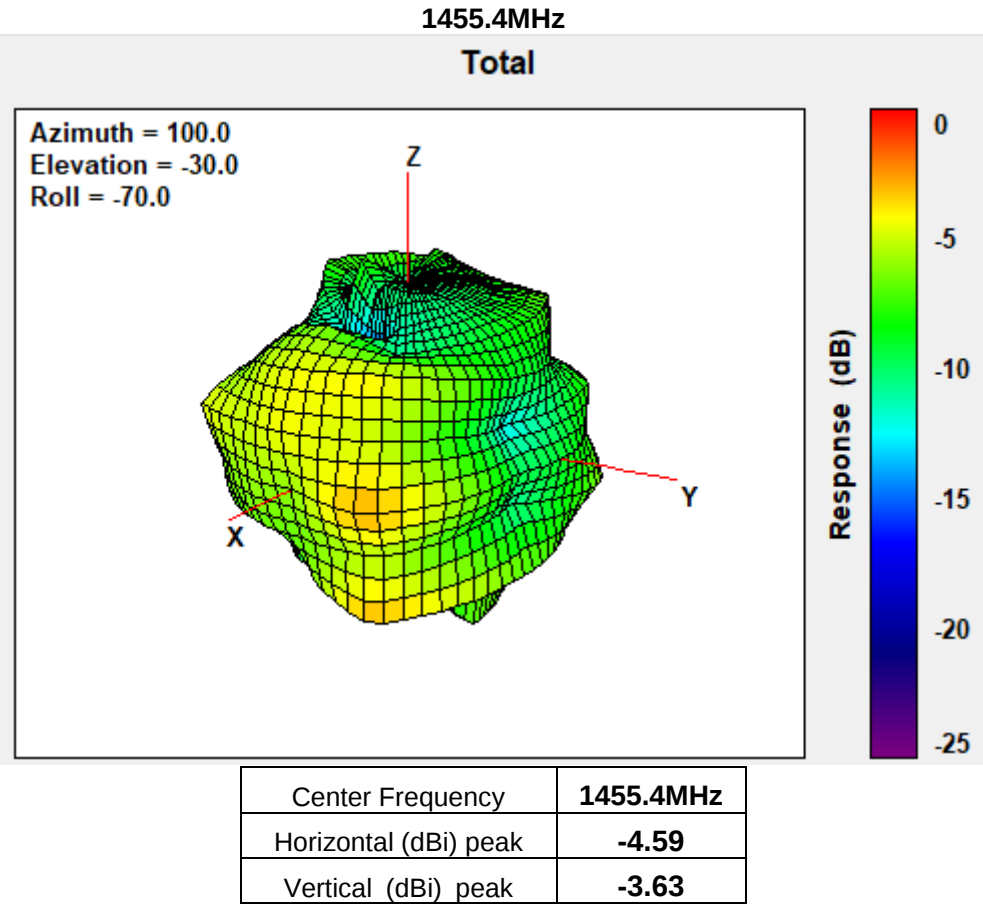
Center Frequency	849MHz
Horizontal (dBi) peak	-4.91
Vertical (dBi) peak	-2.49

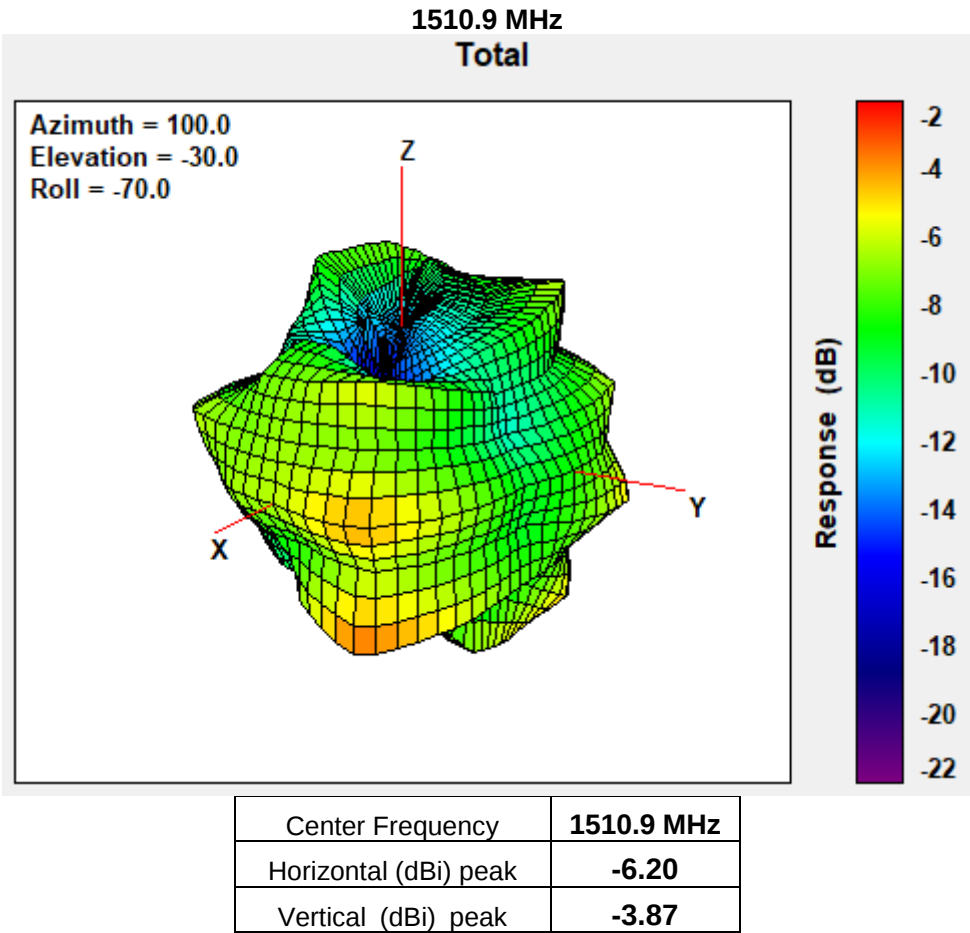
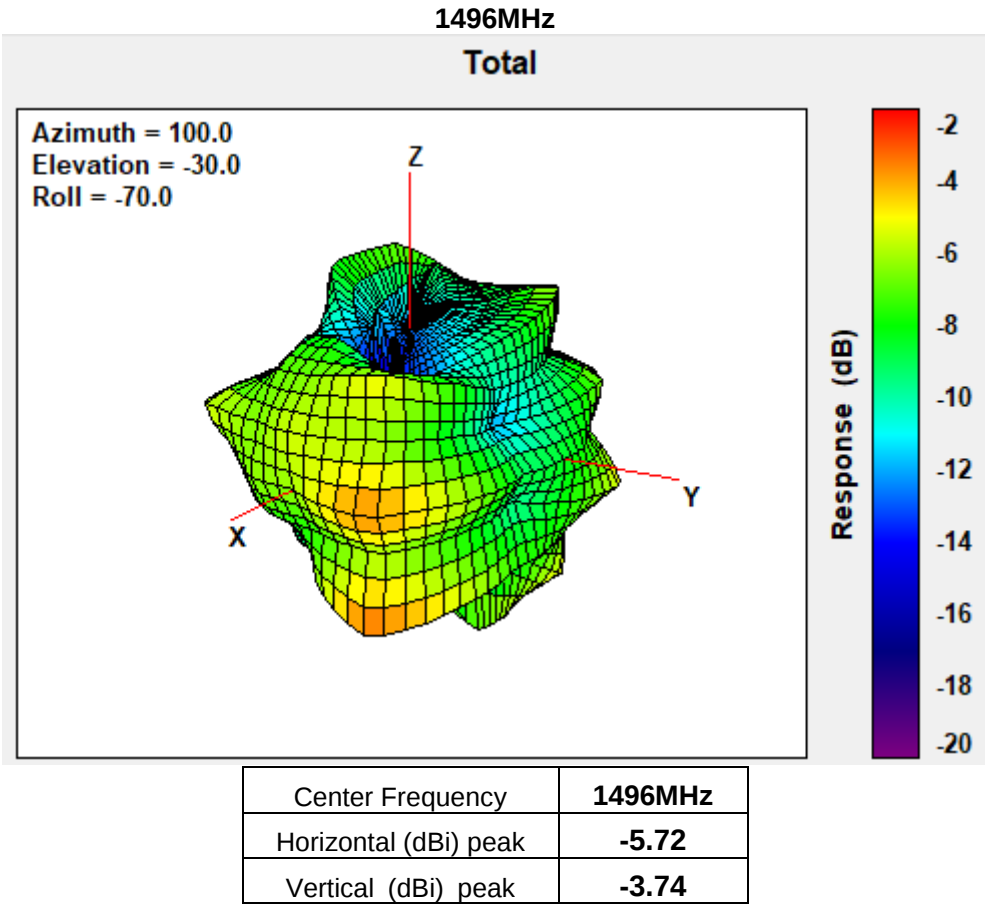


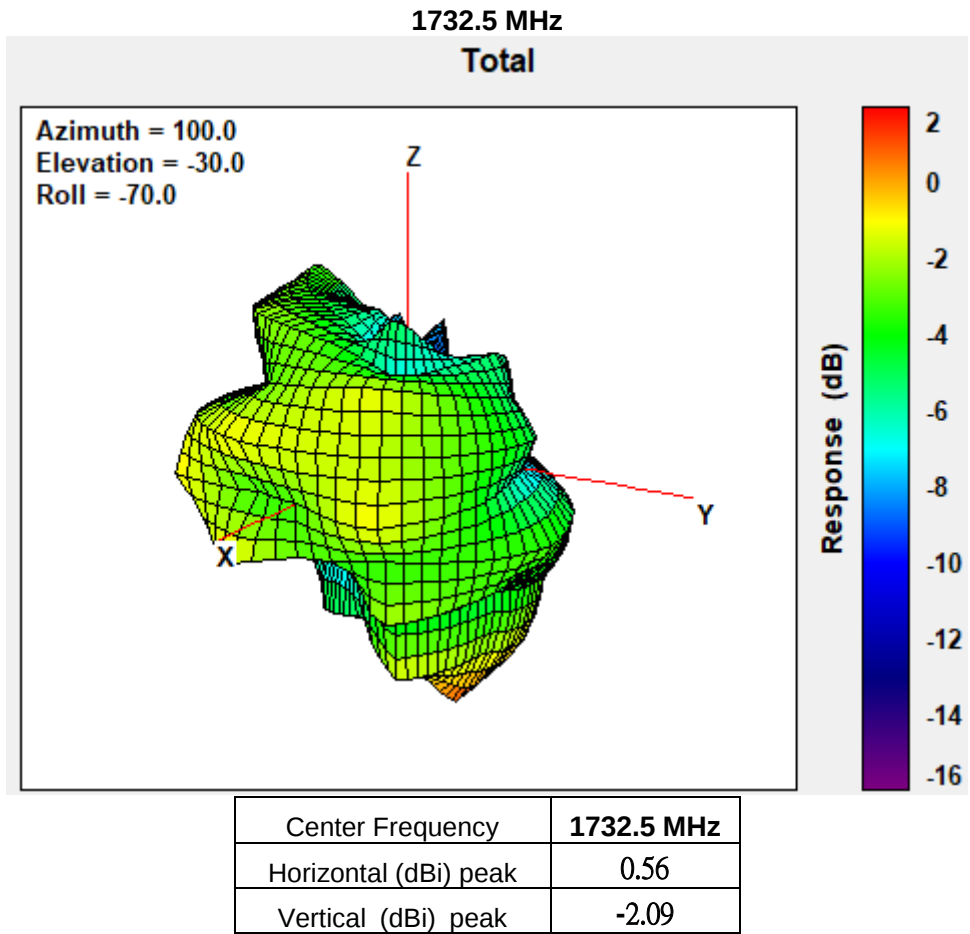
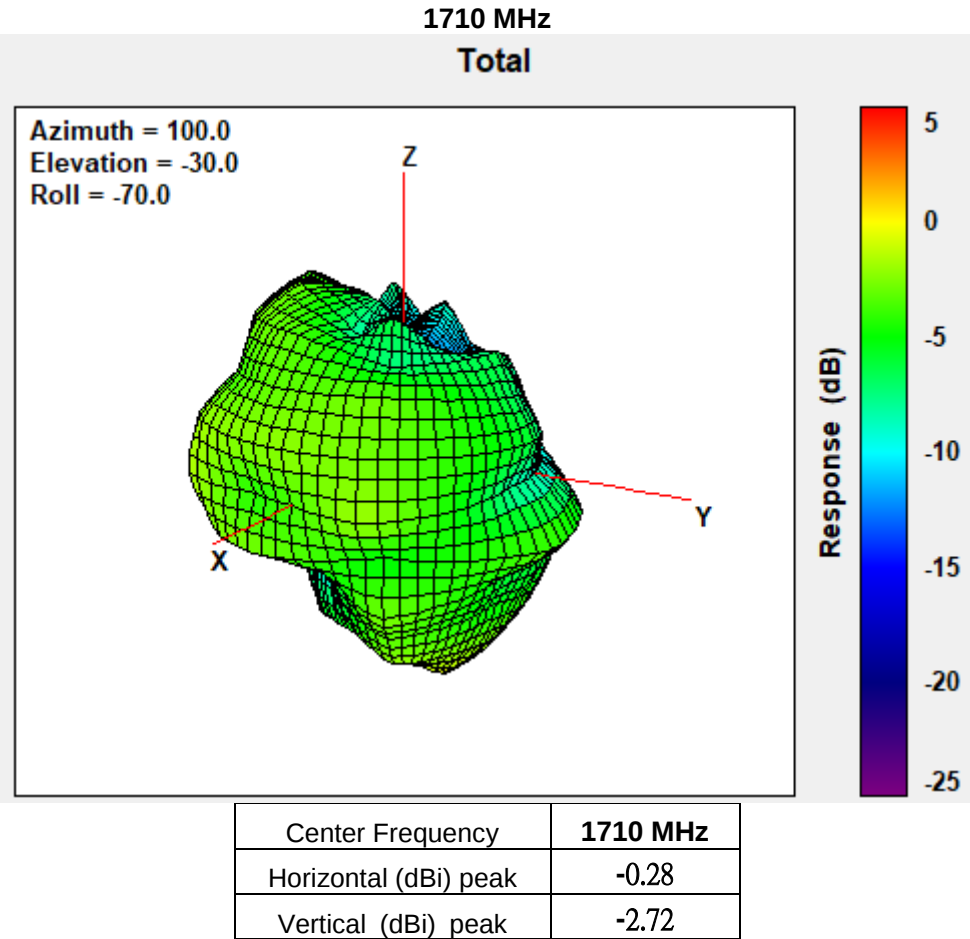


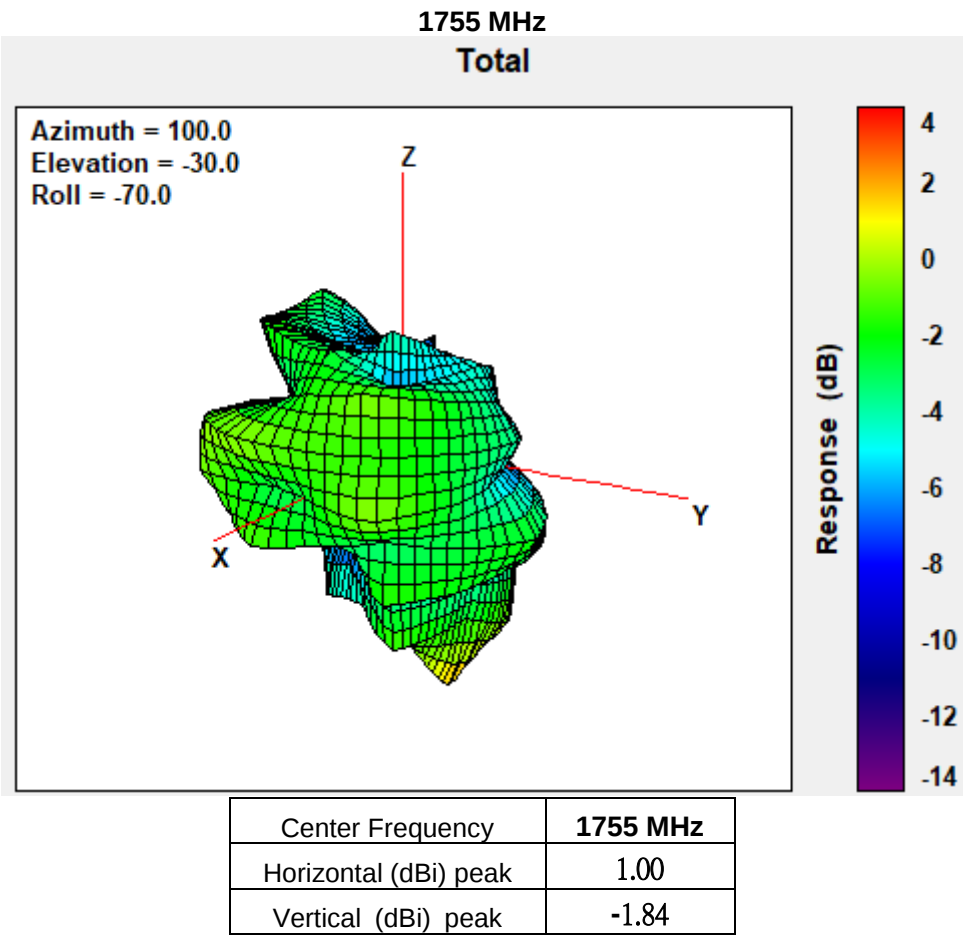
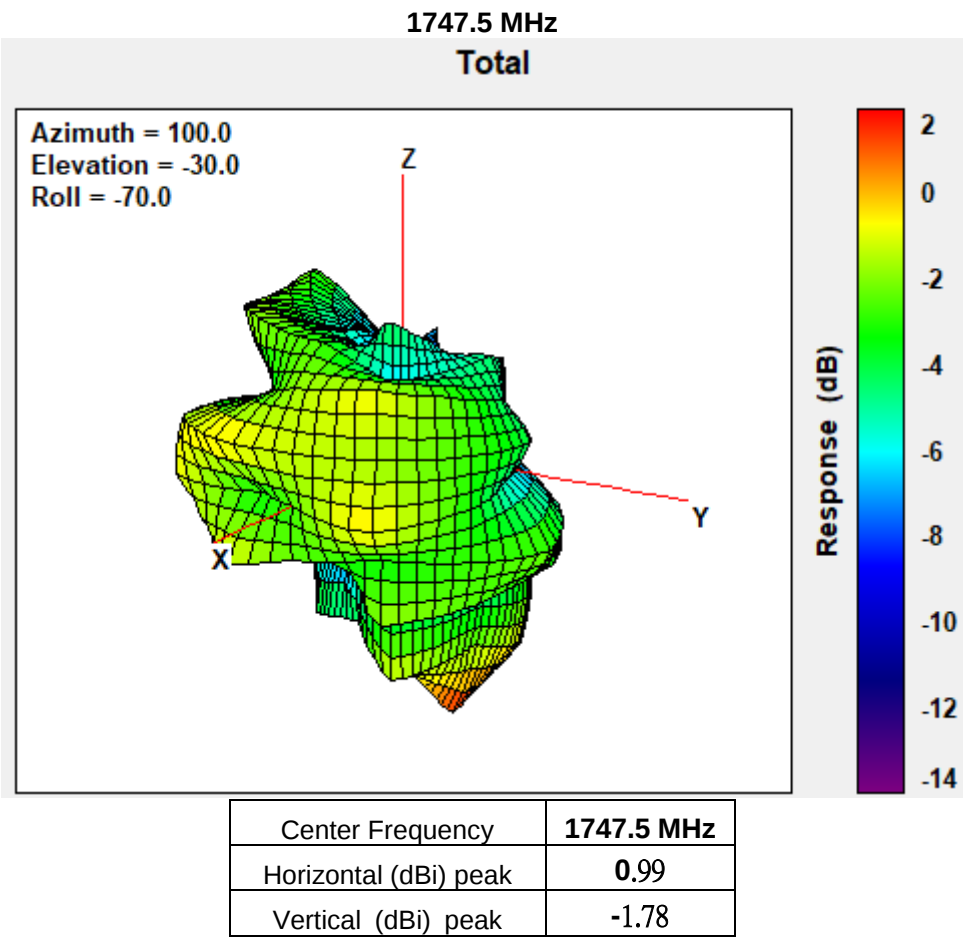


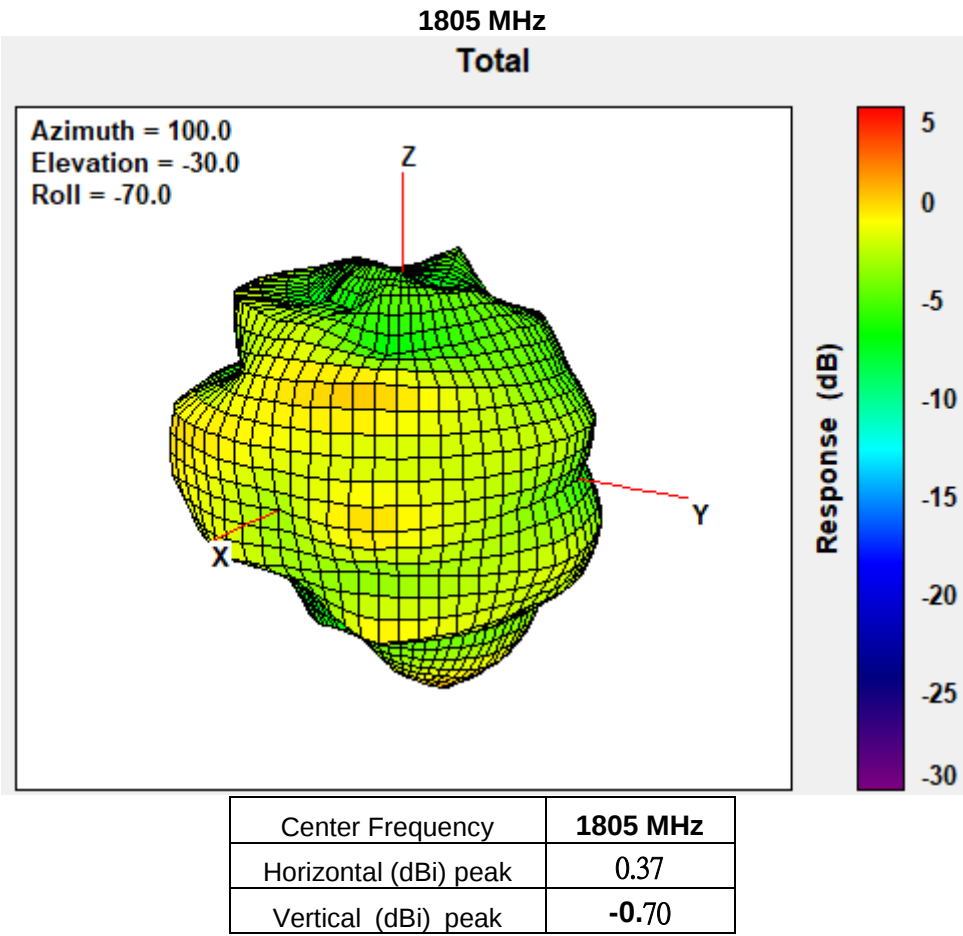
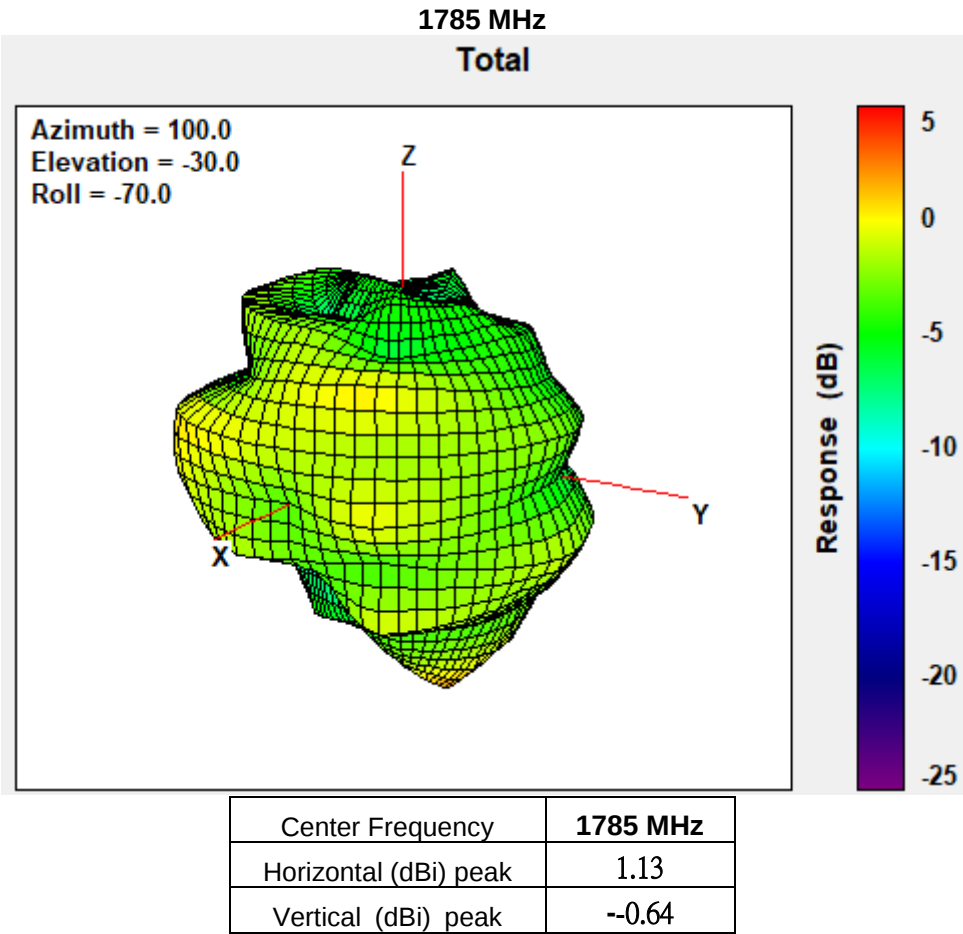


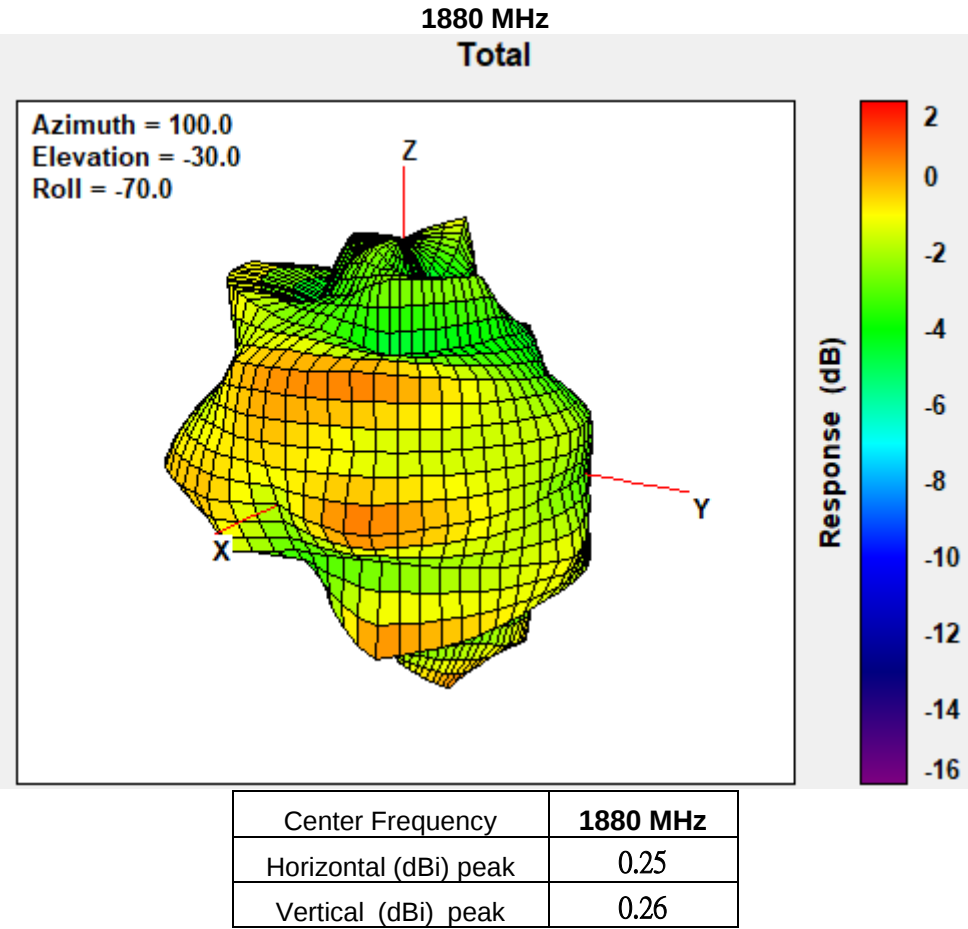
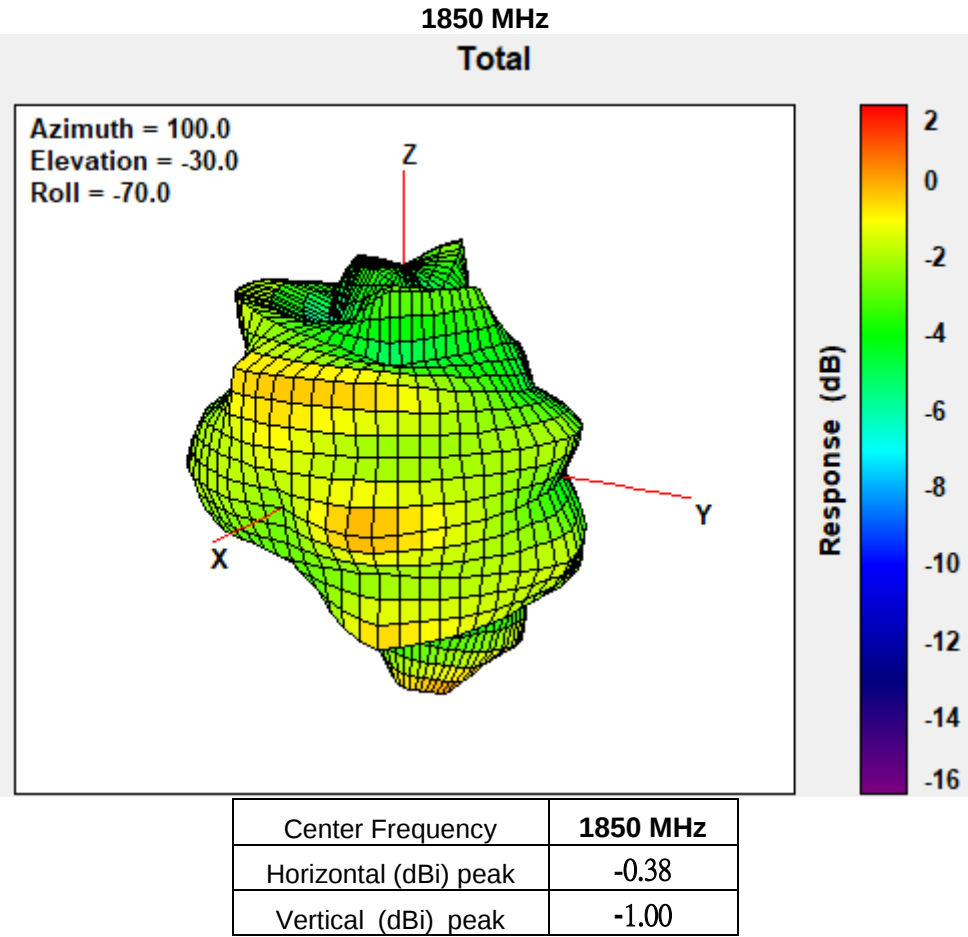


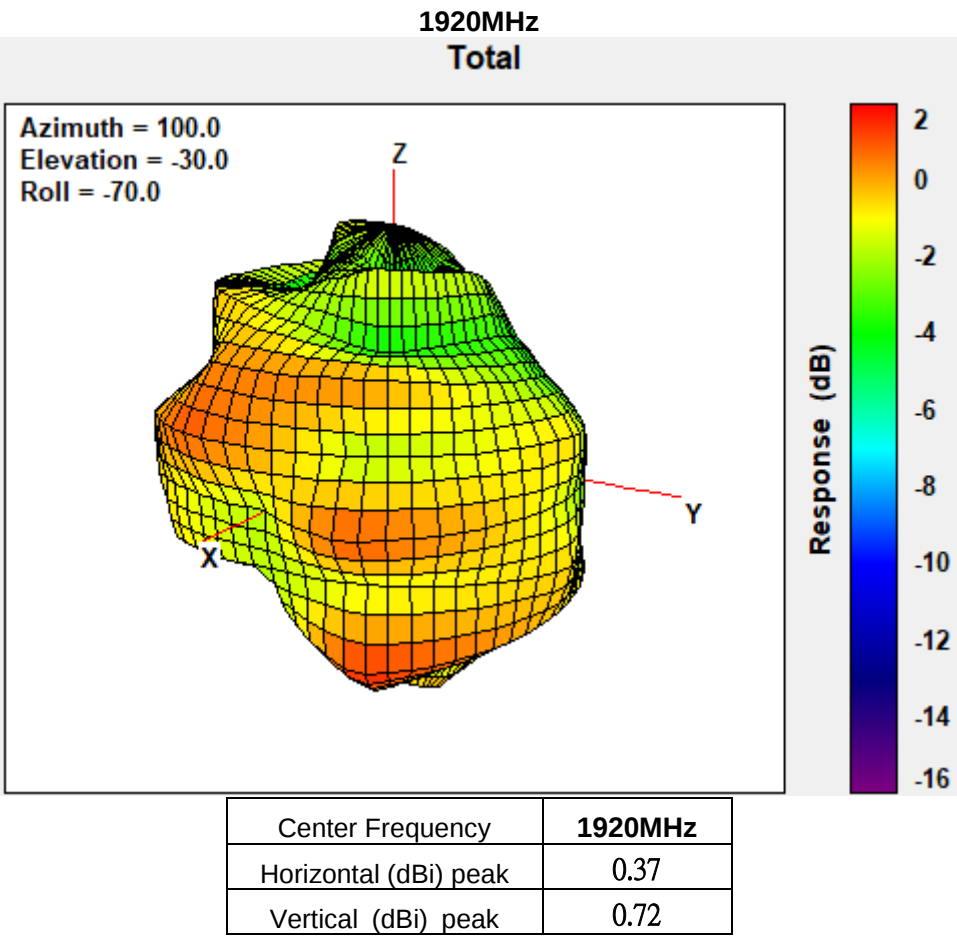
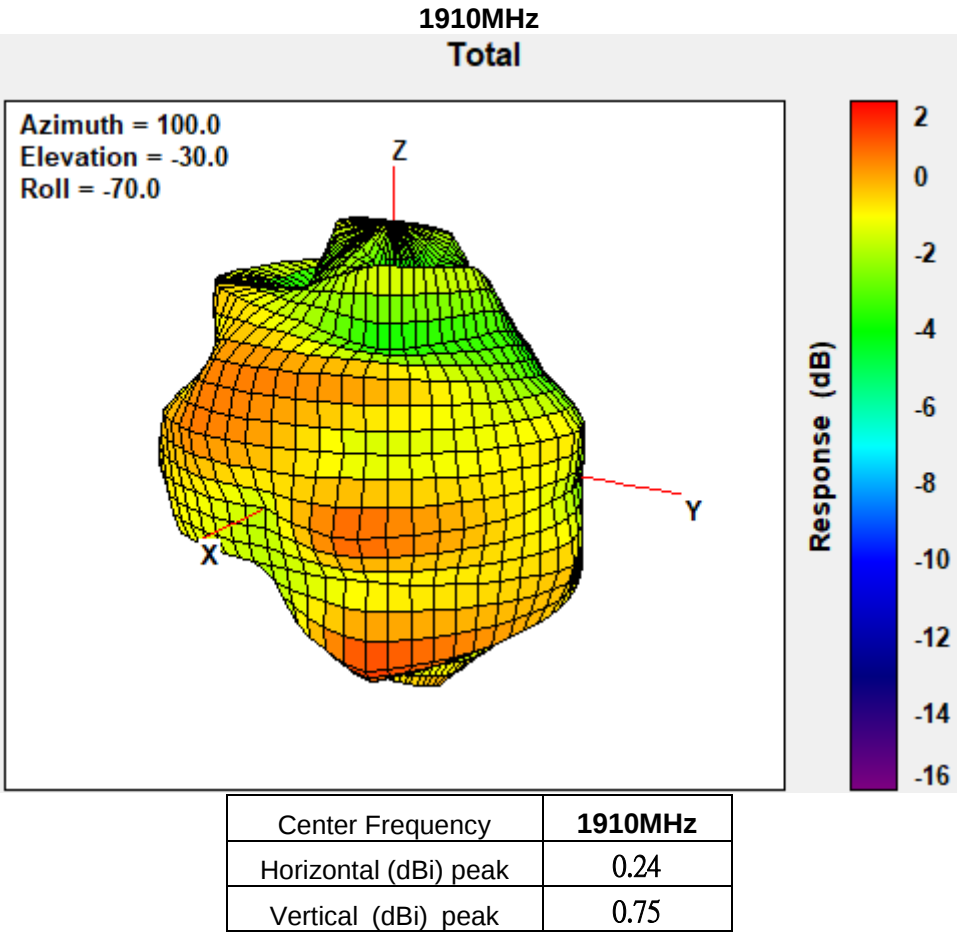


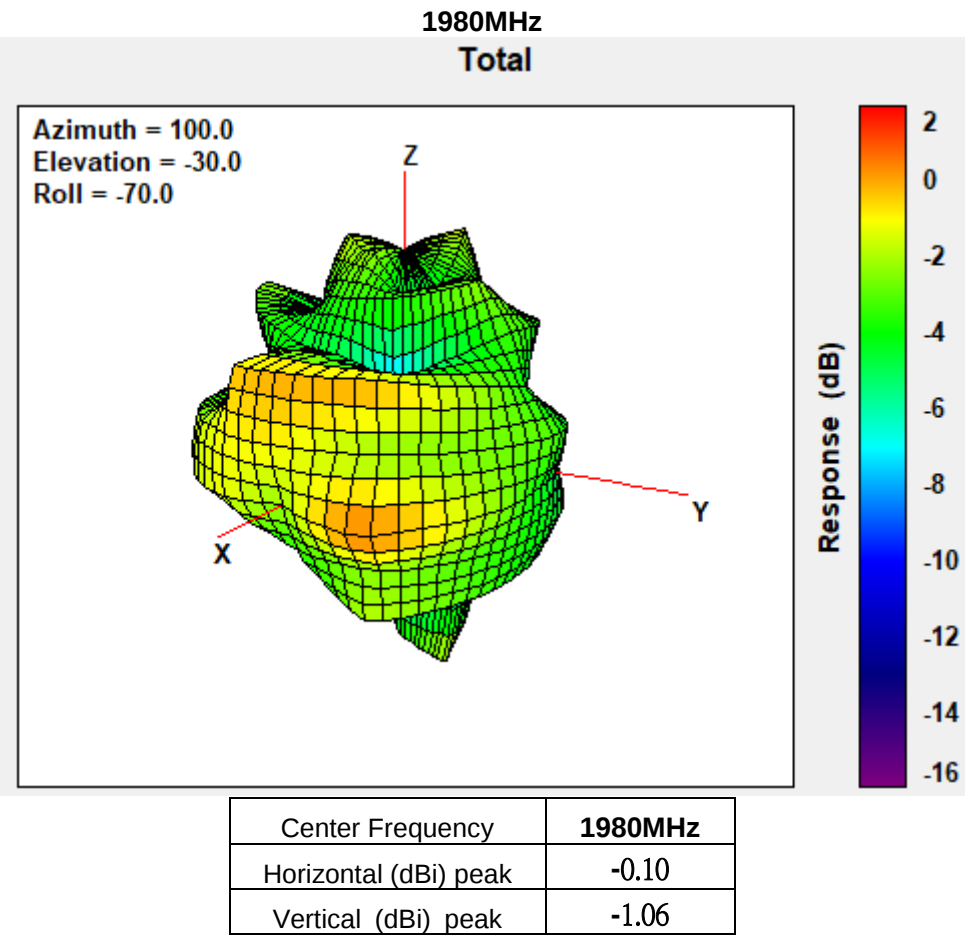
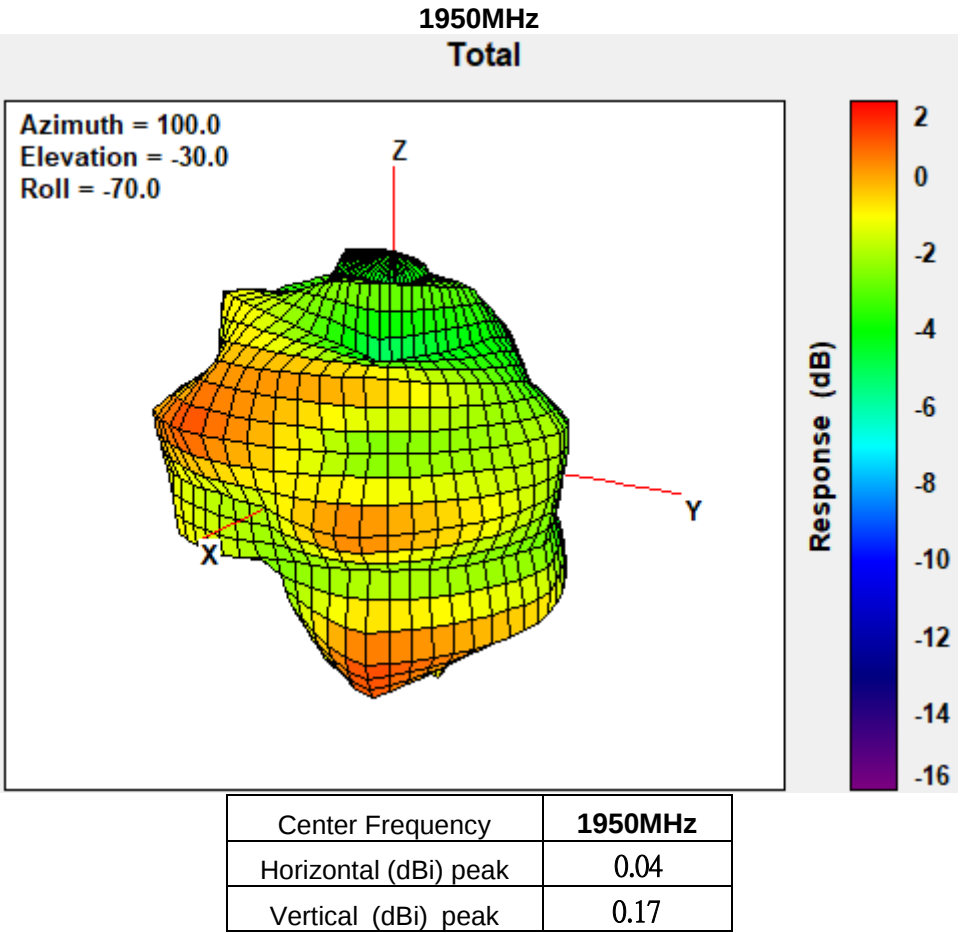


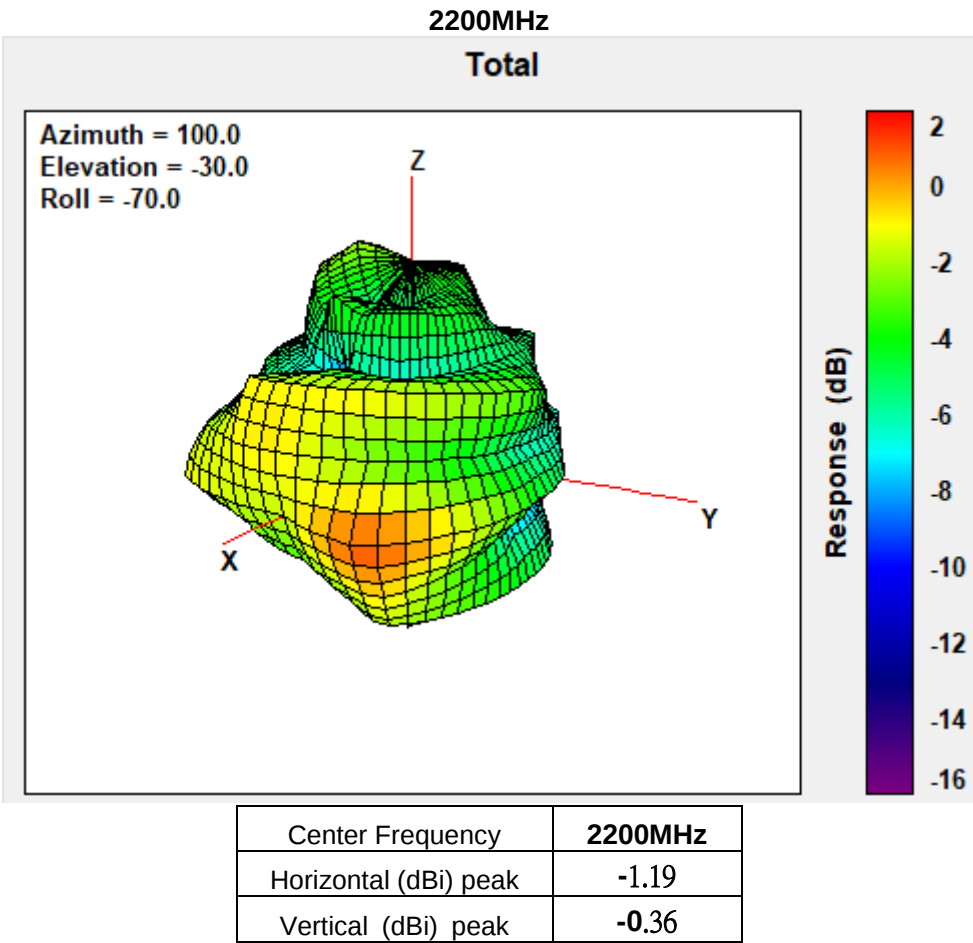
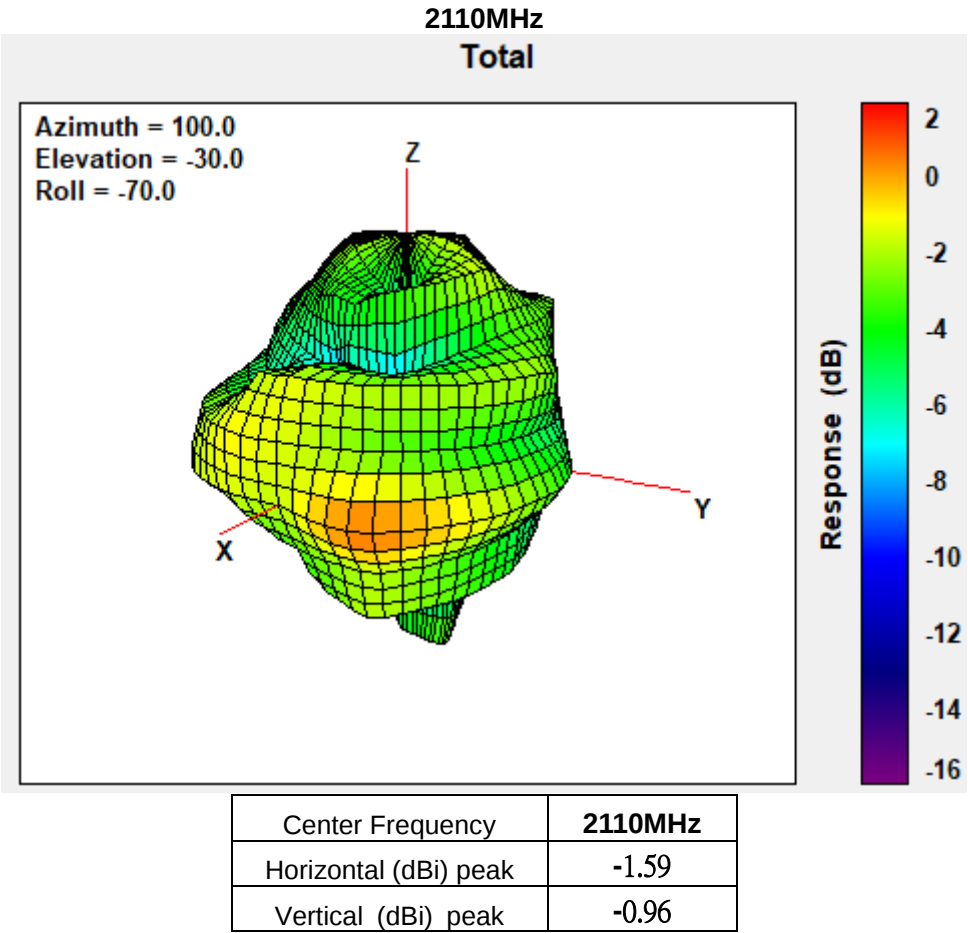


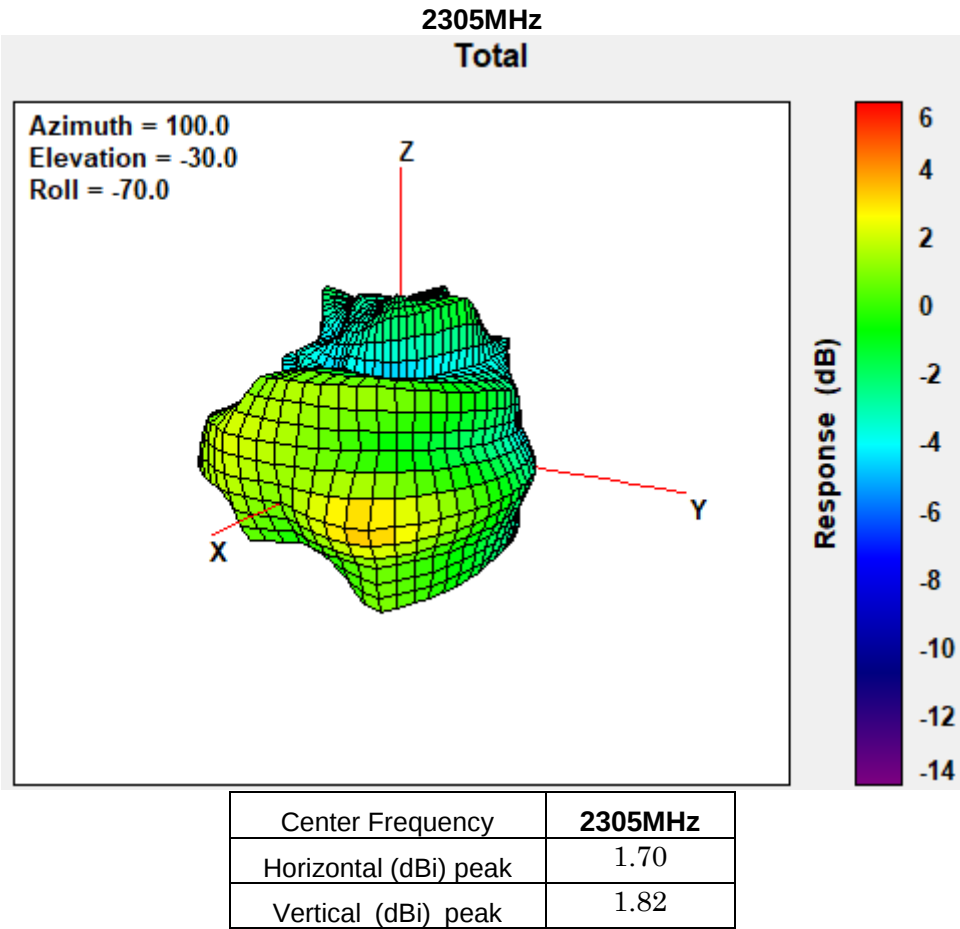
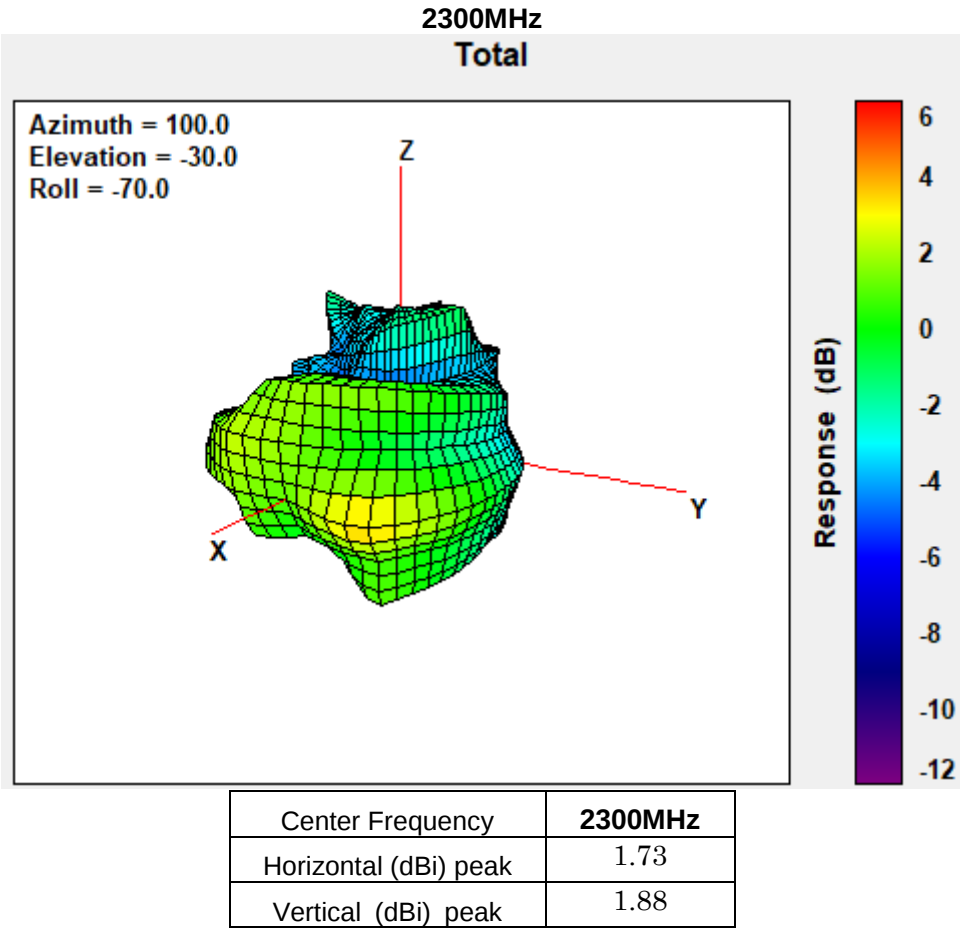


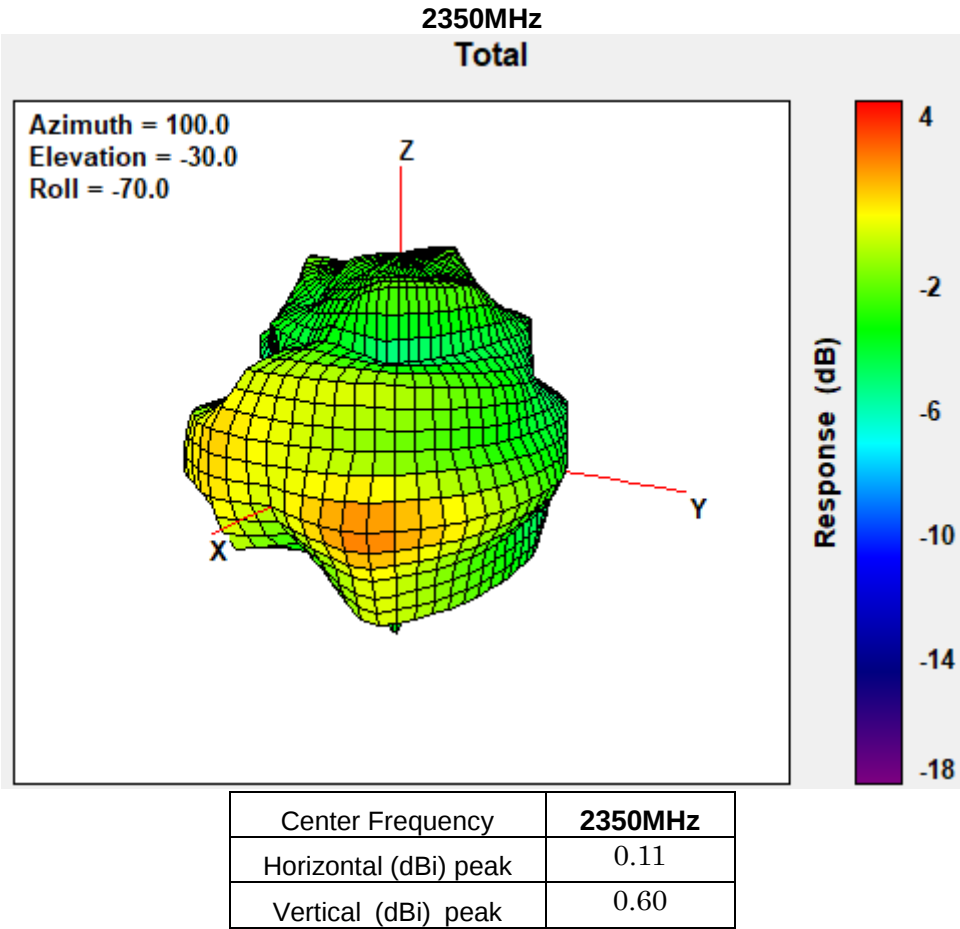
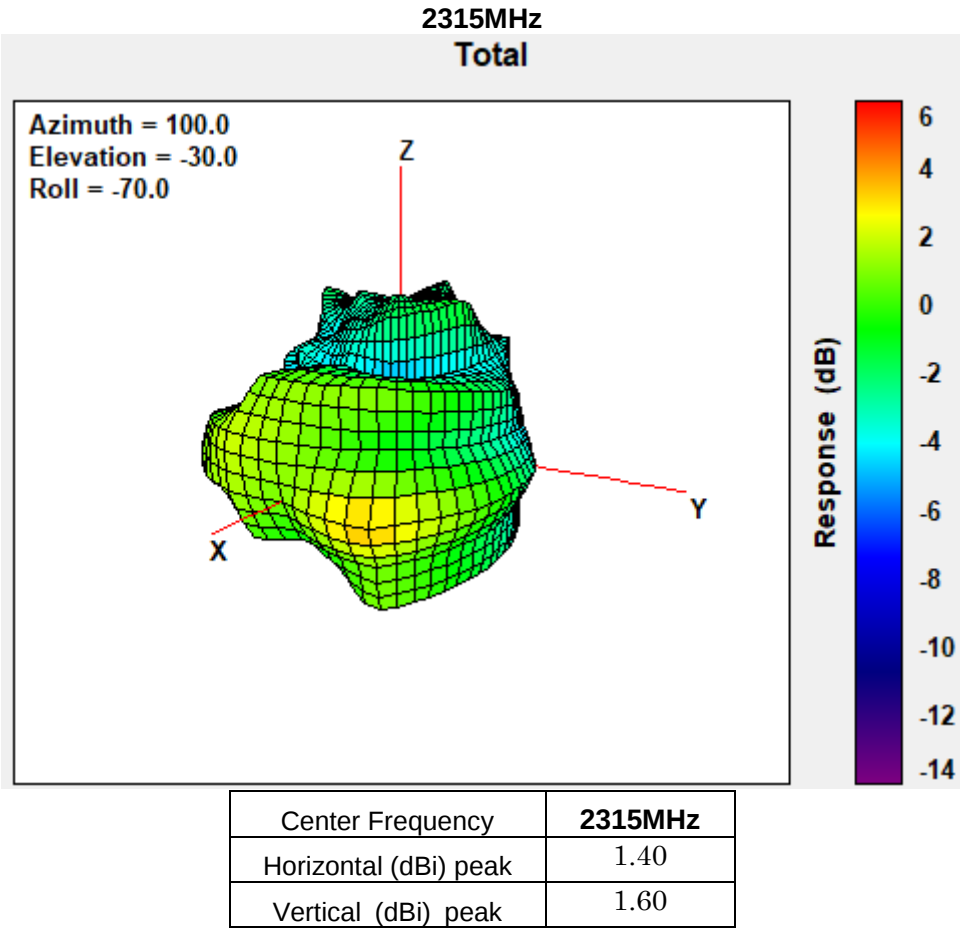


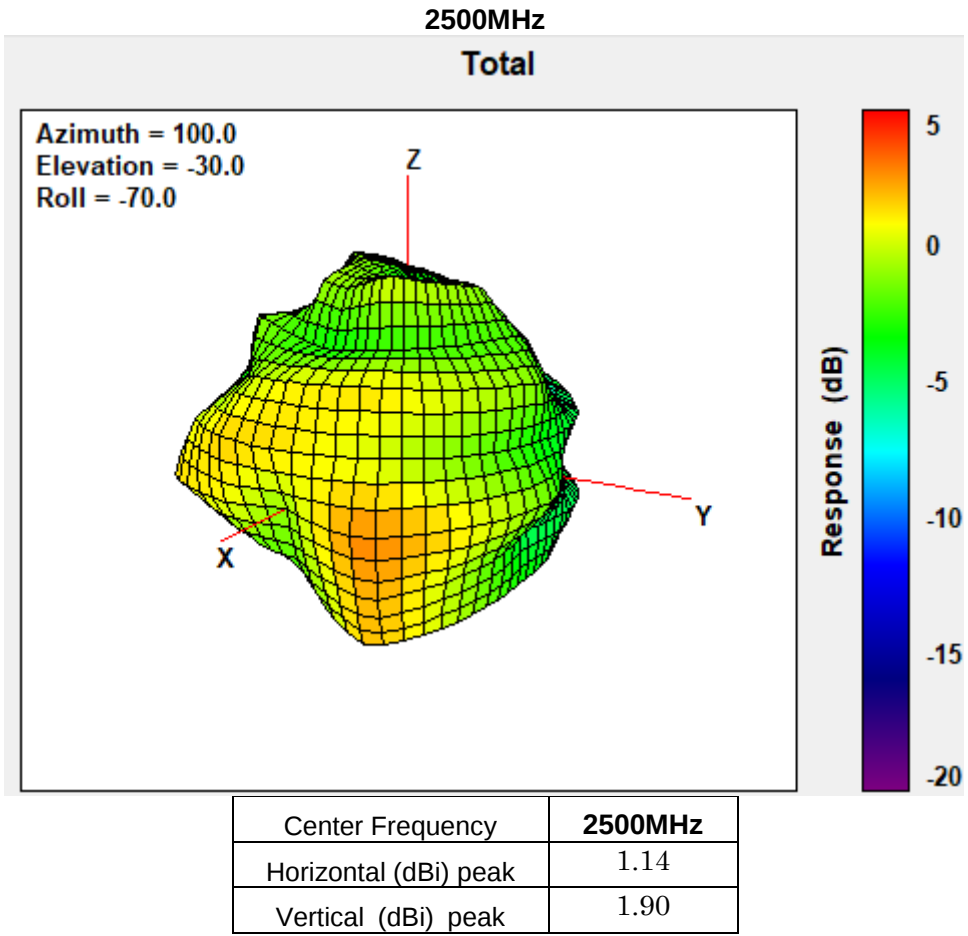
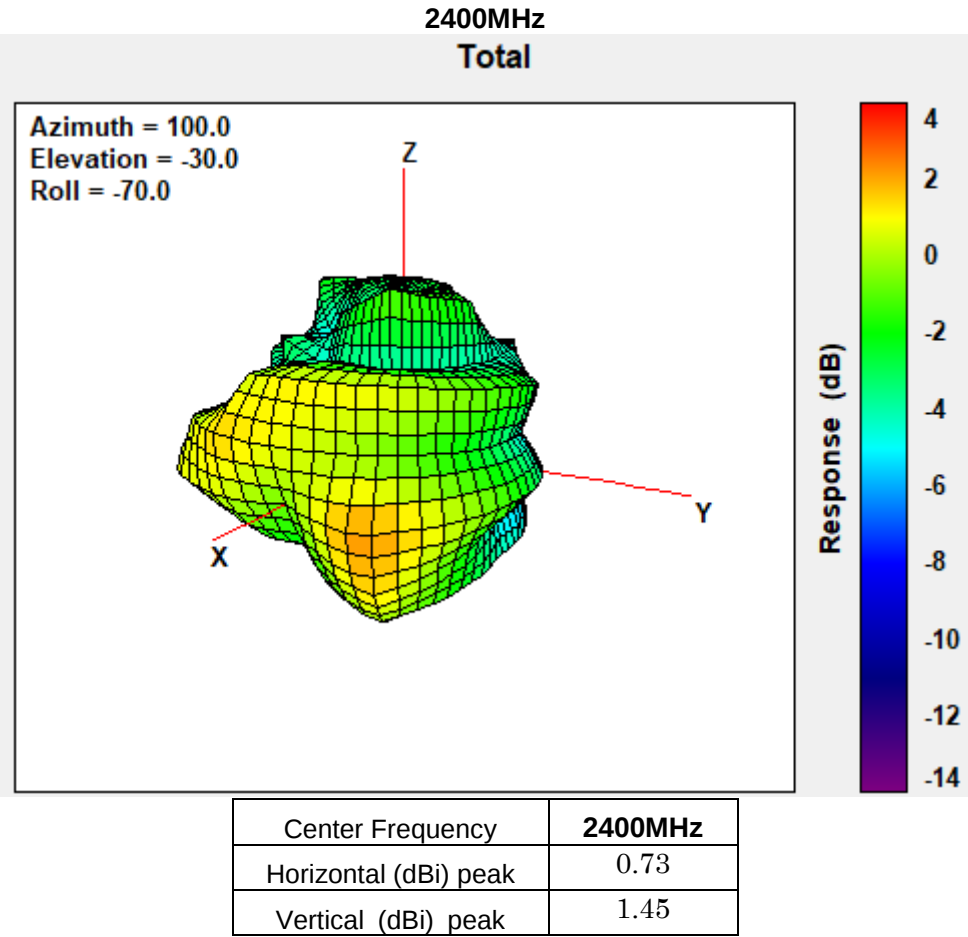


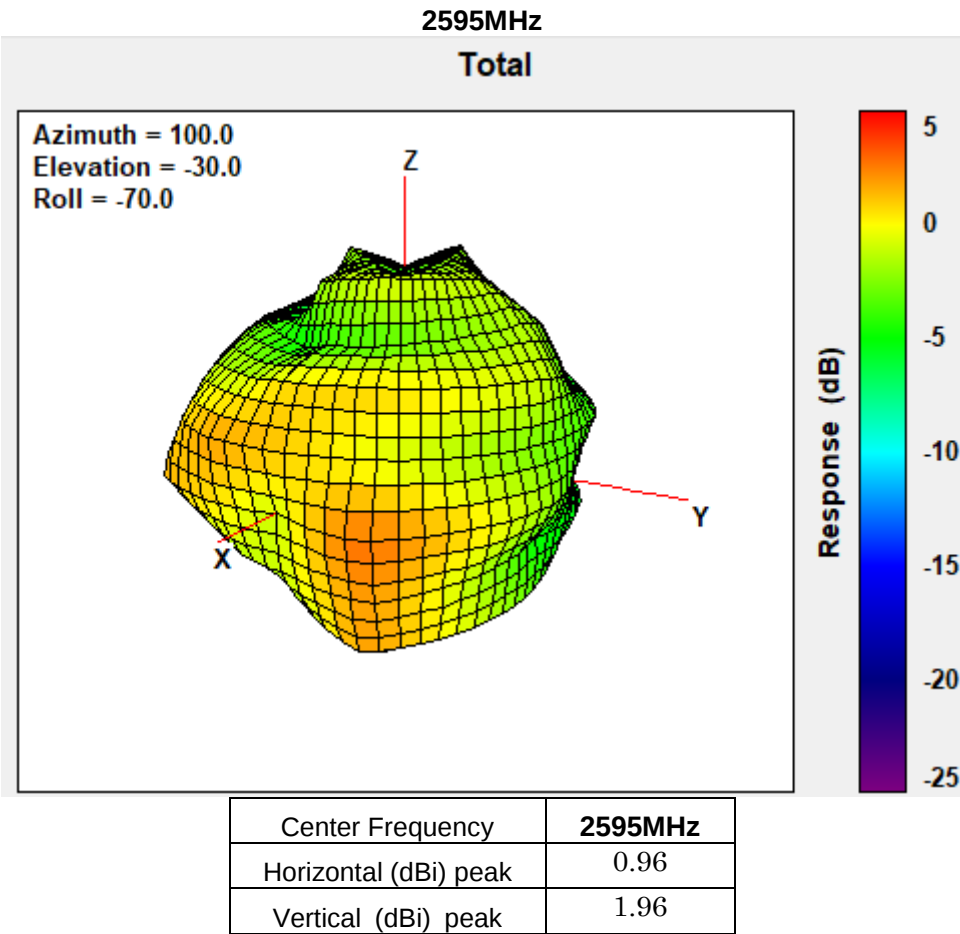
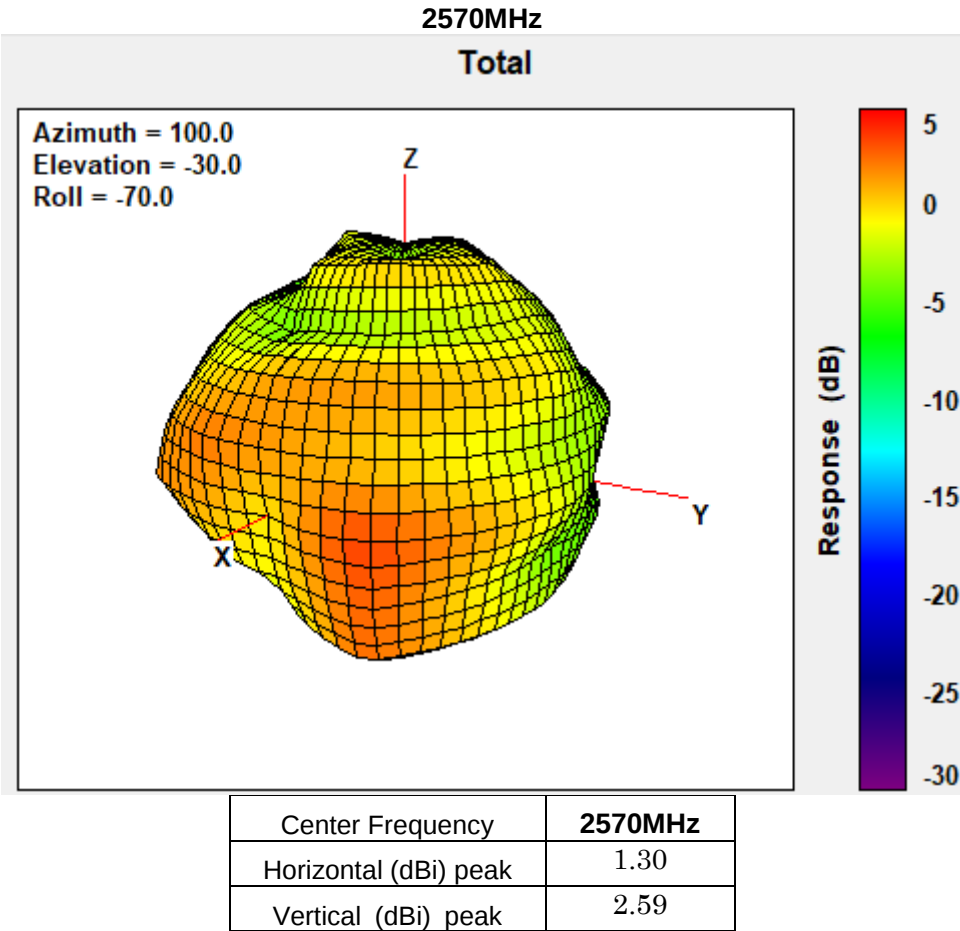


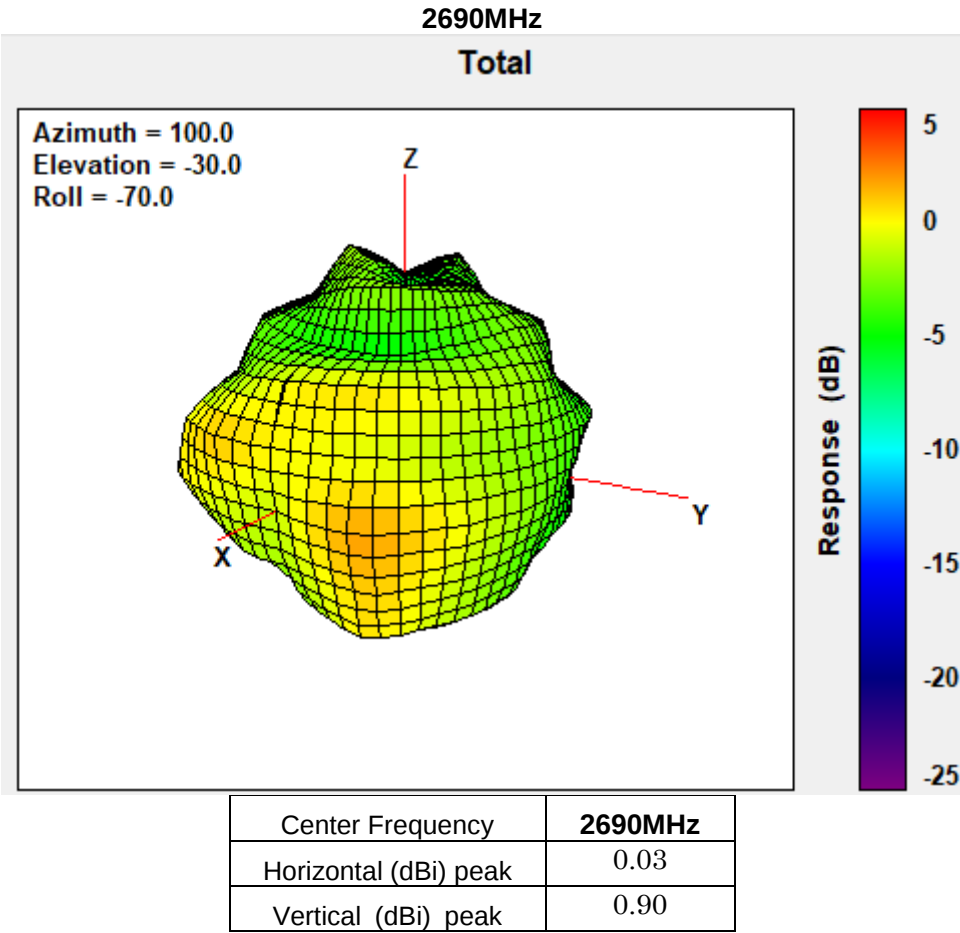
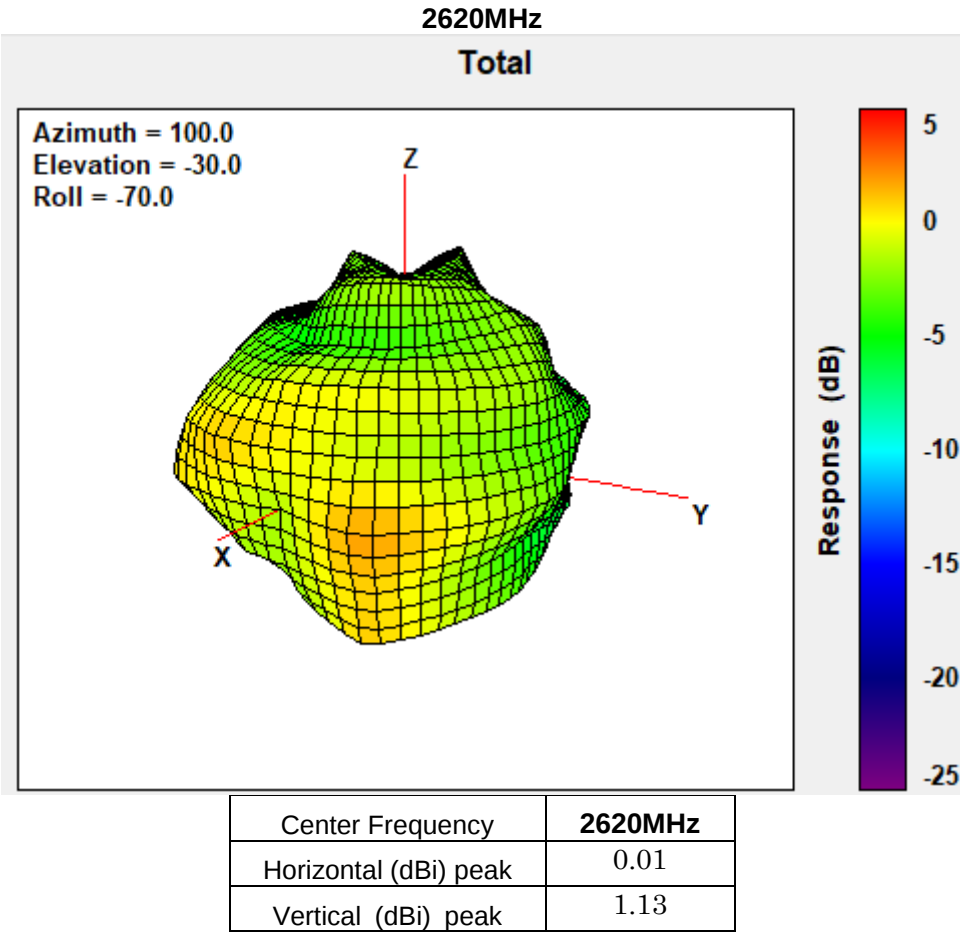


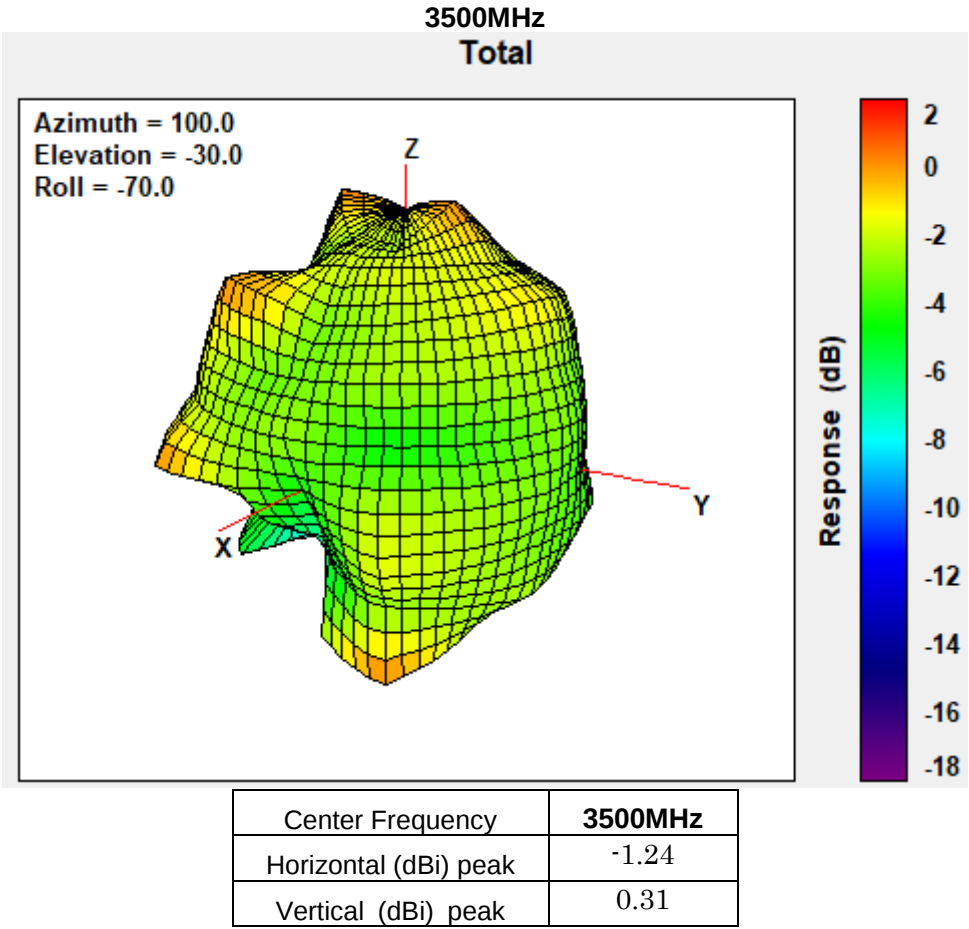
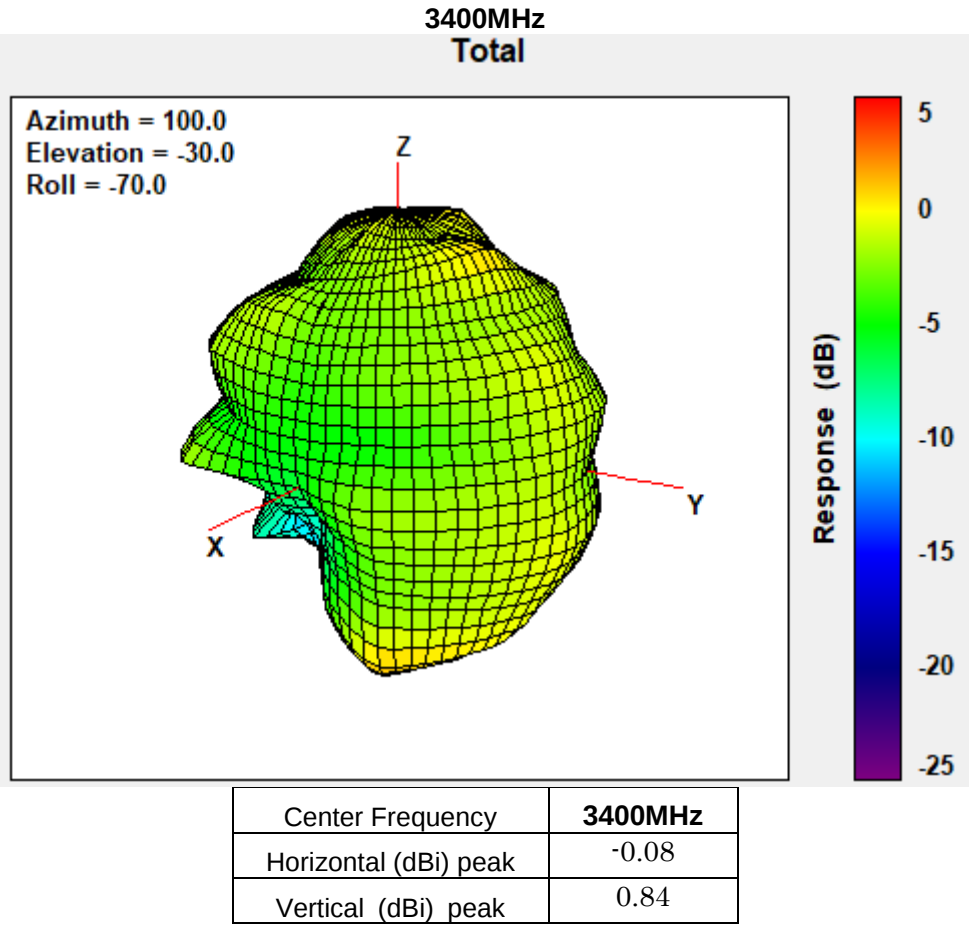


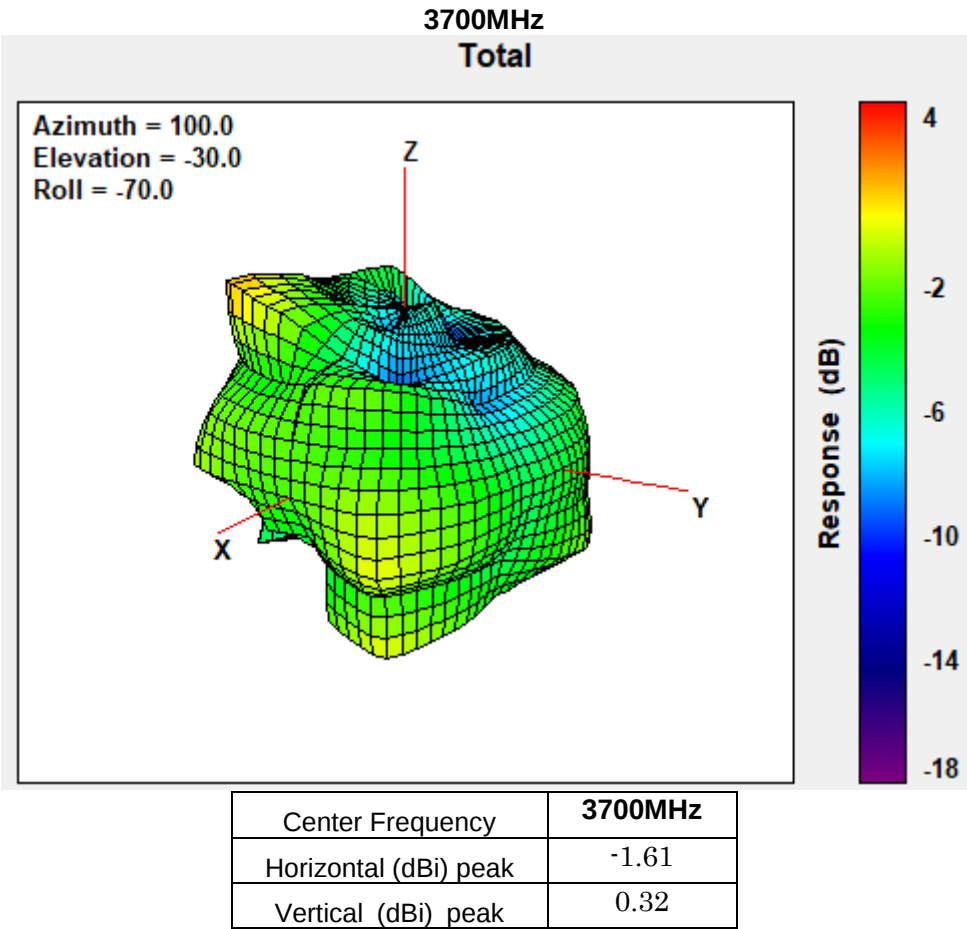
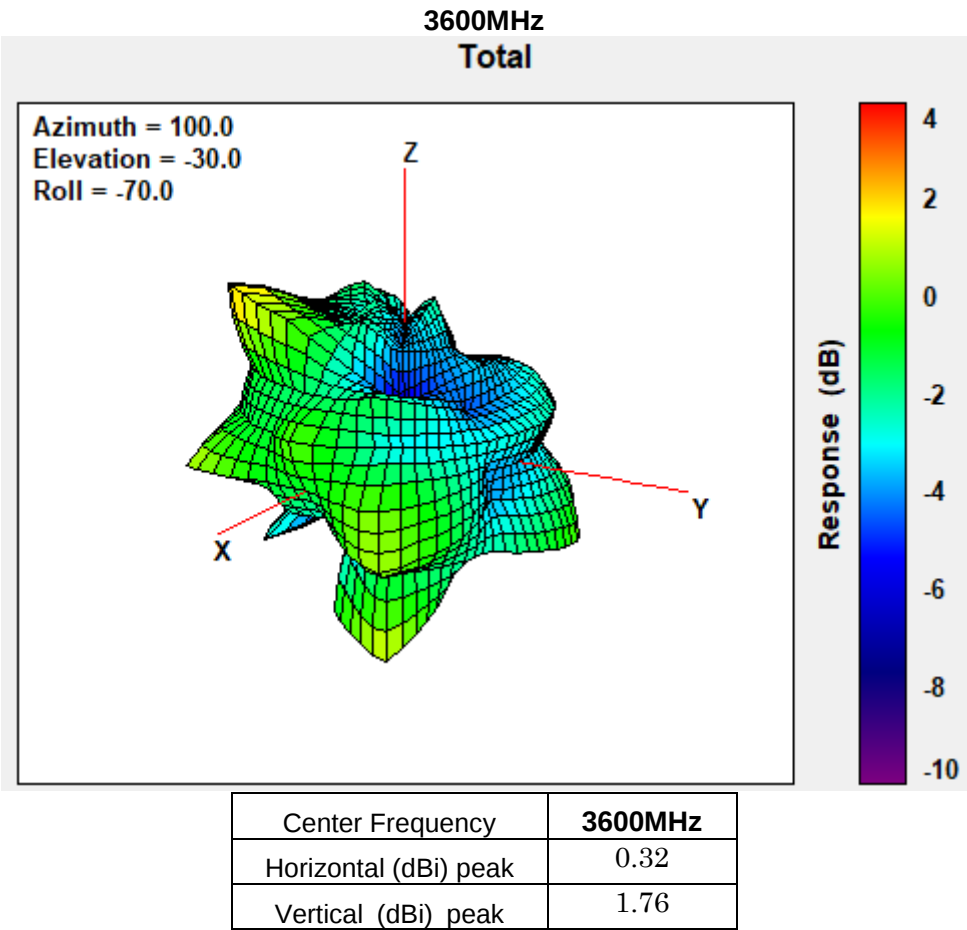


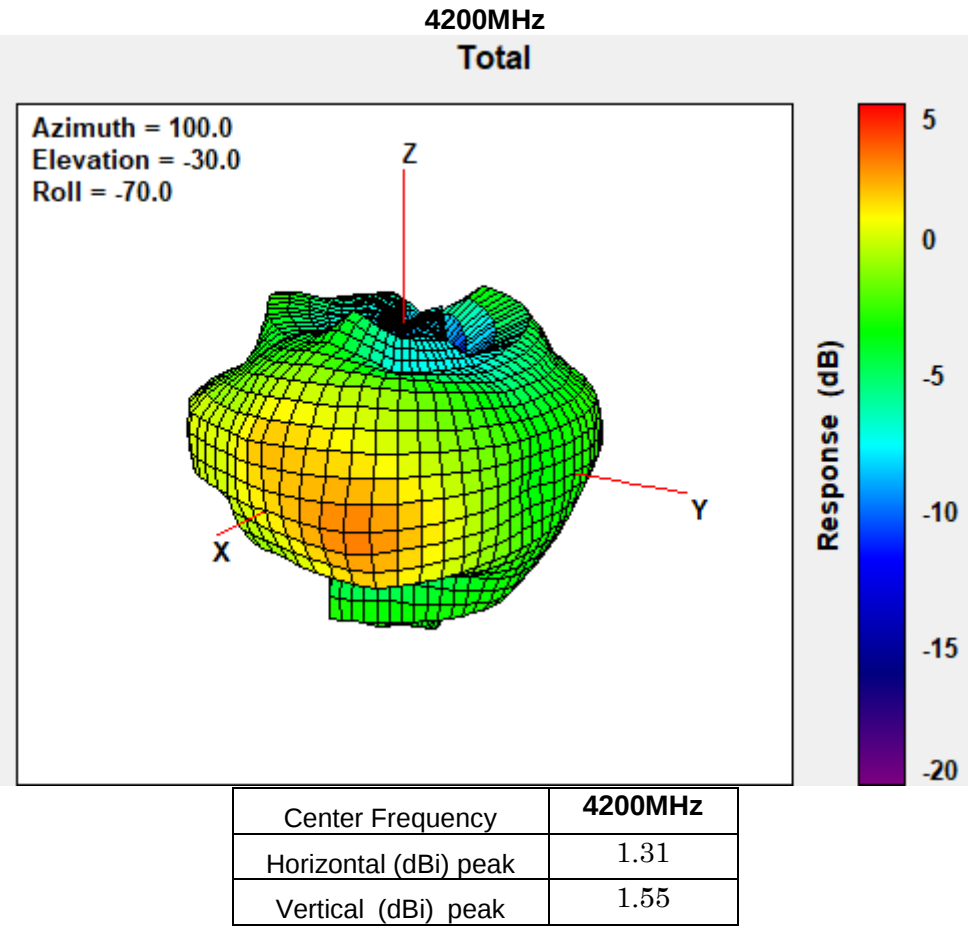
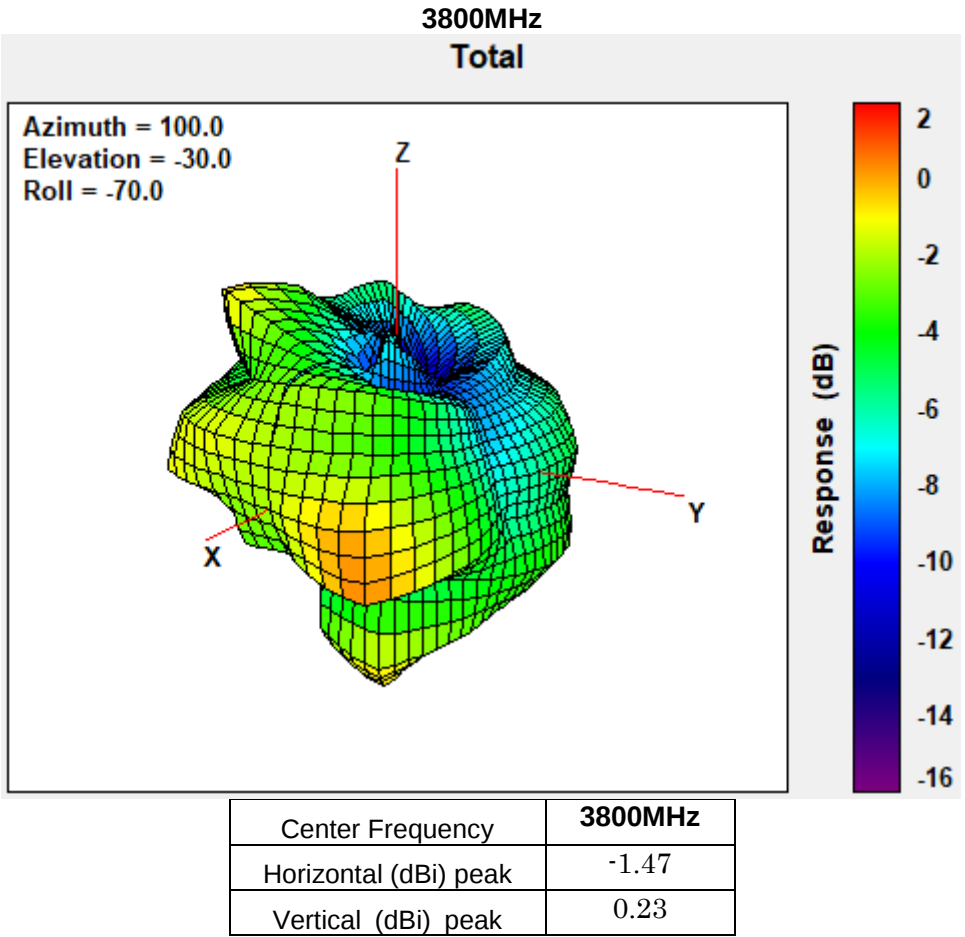


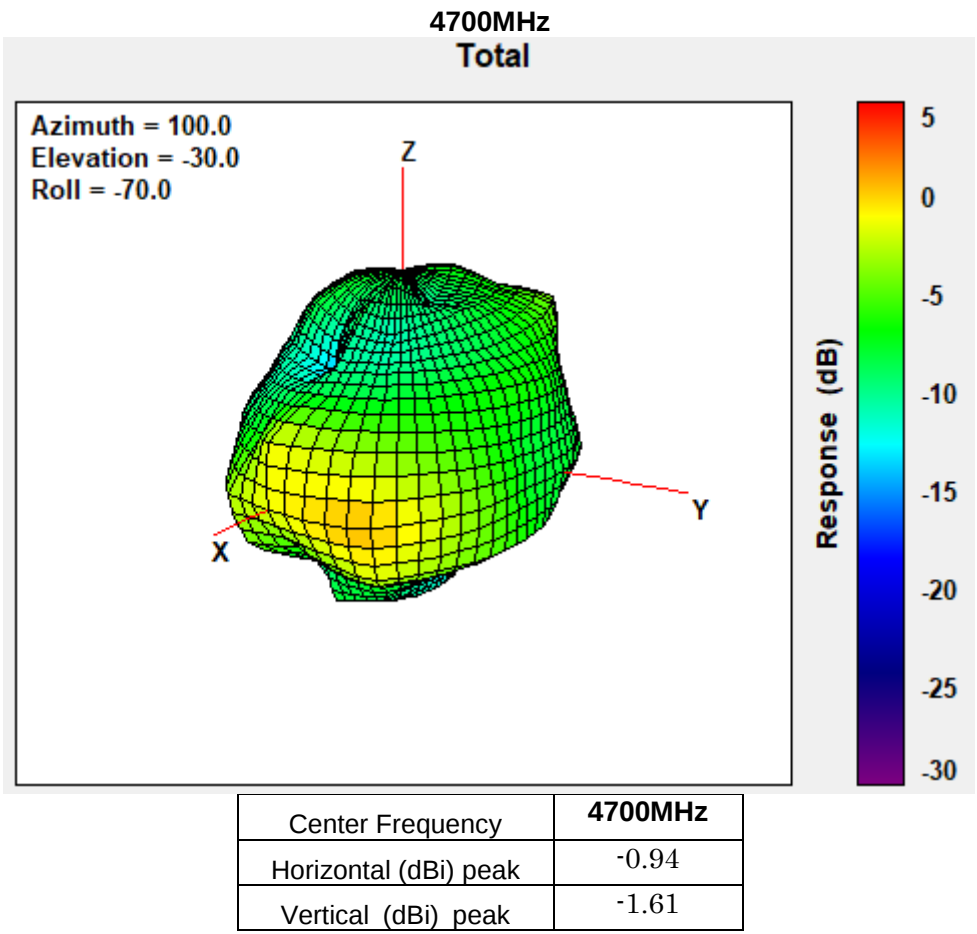
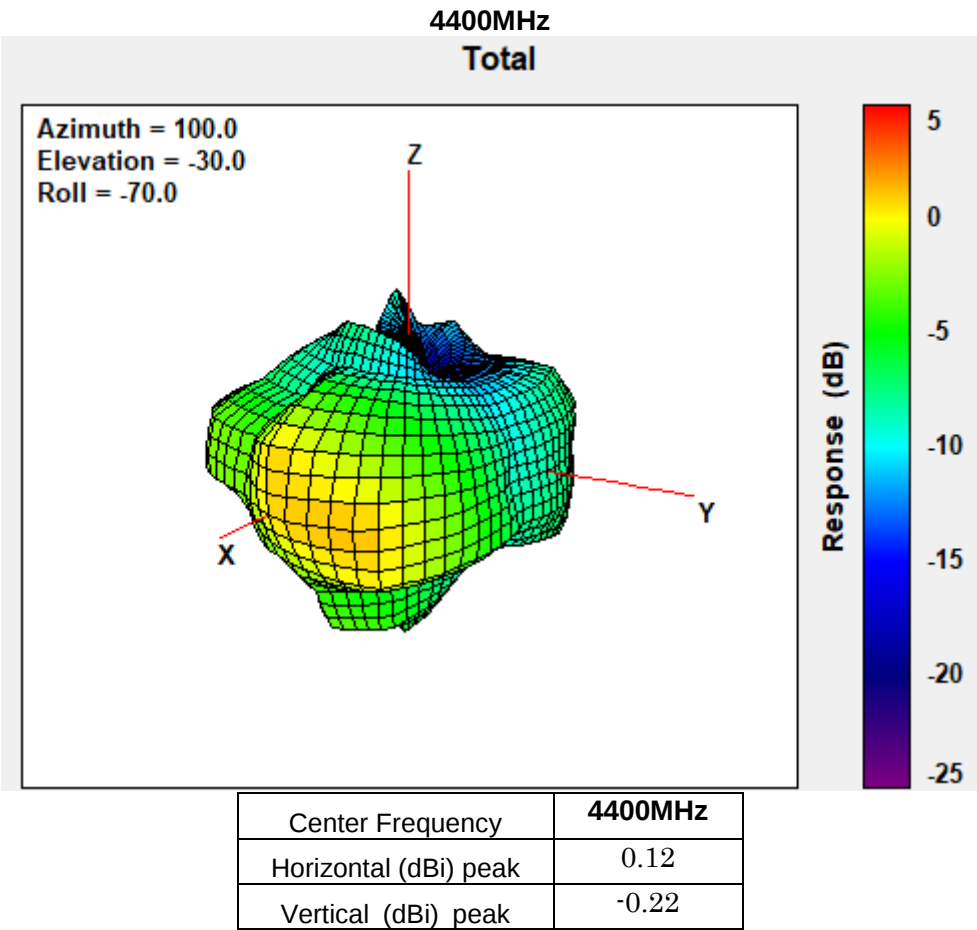


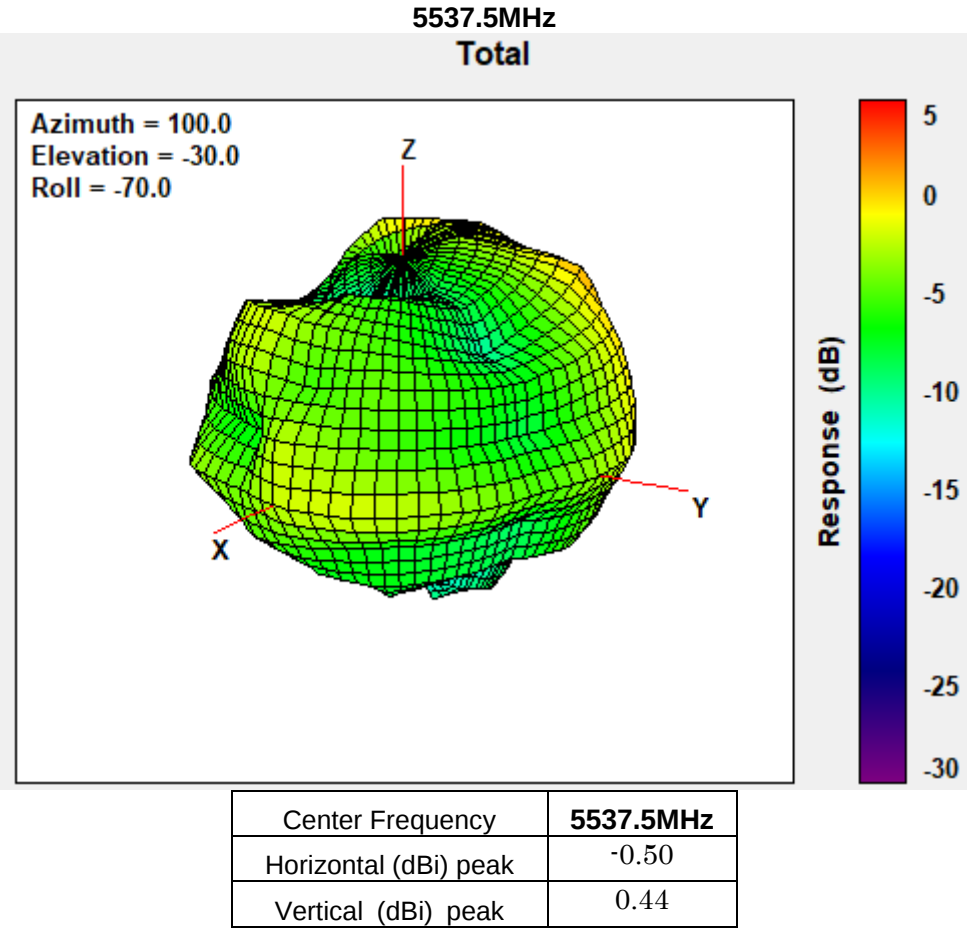
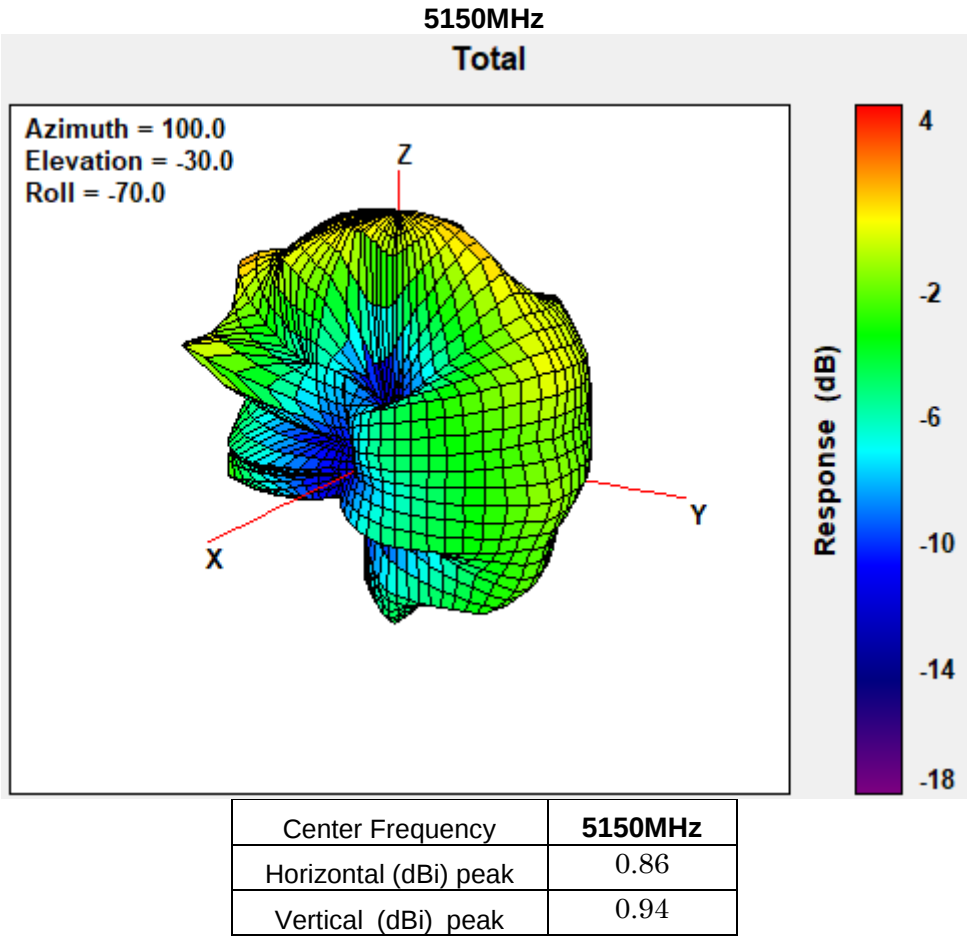


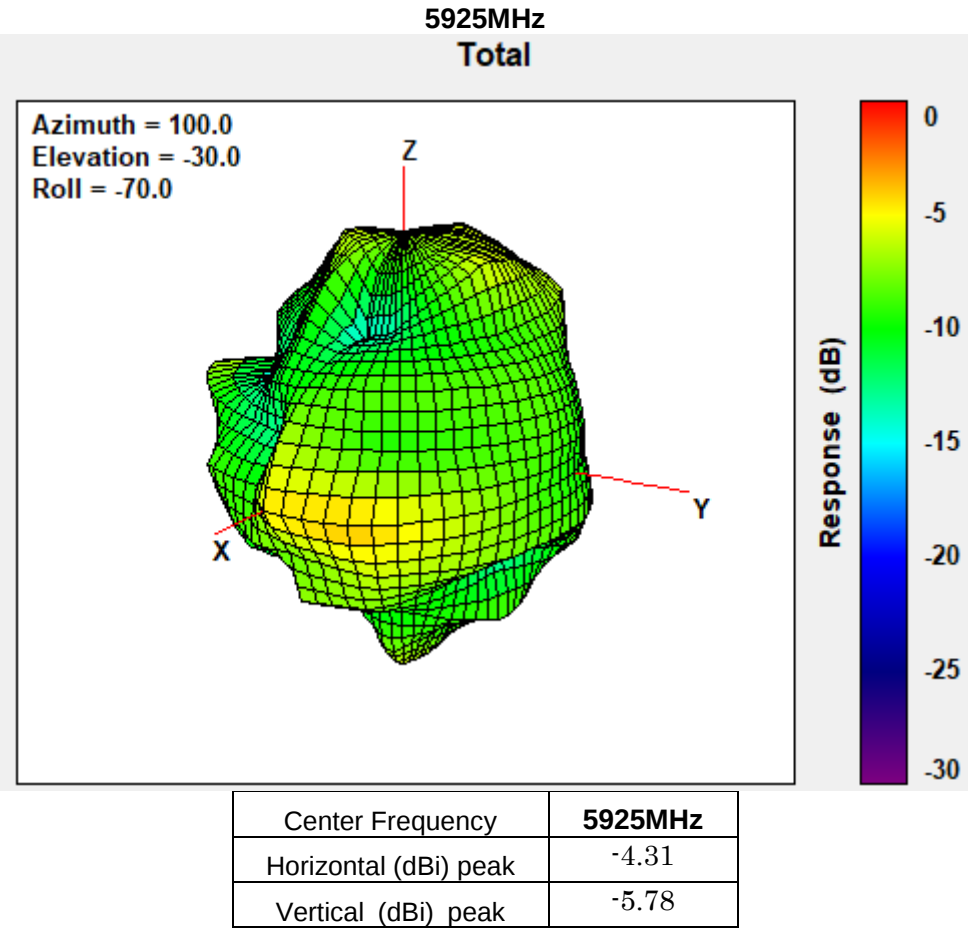




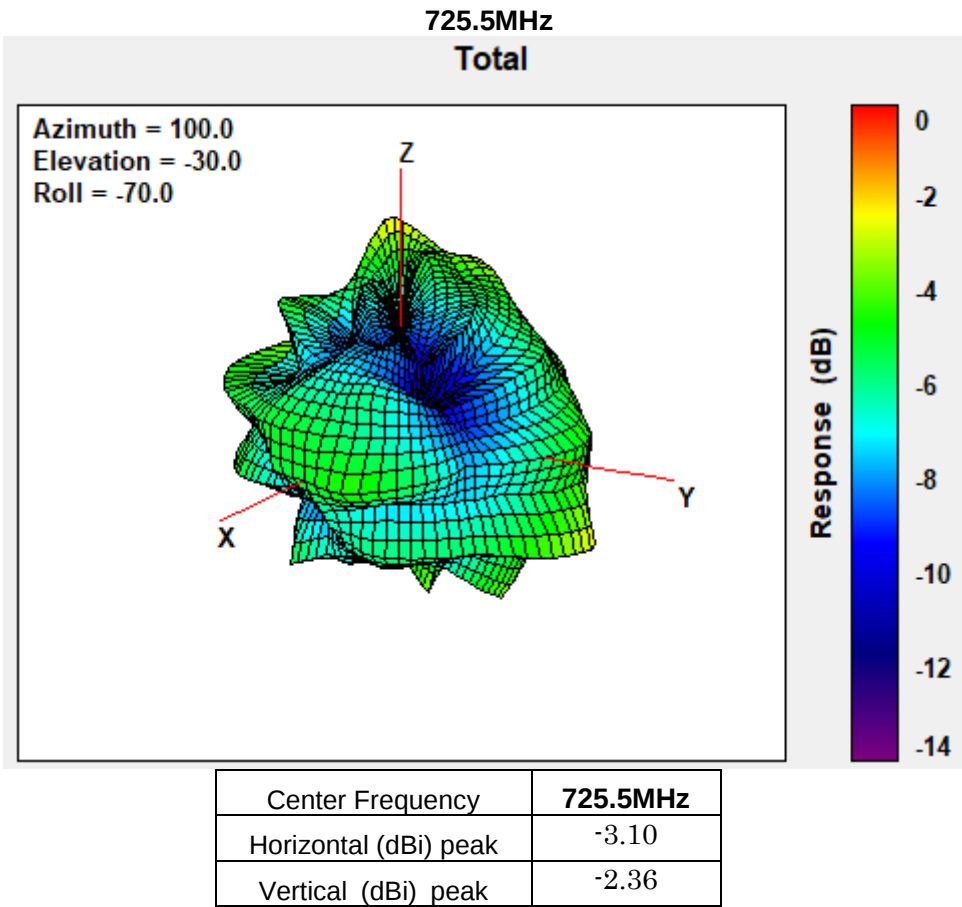
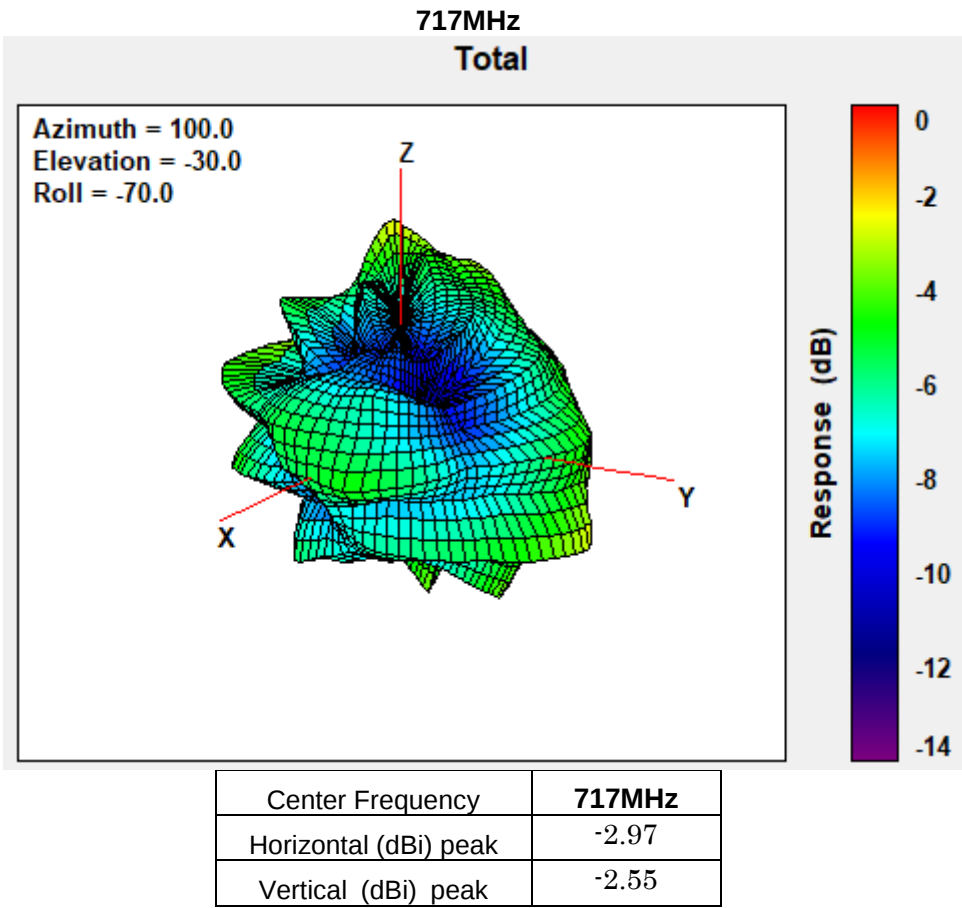


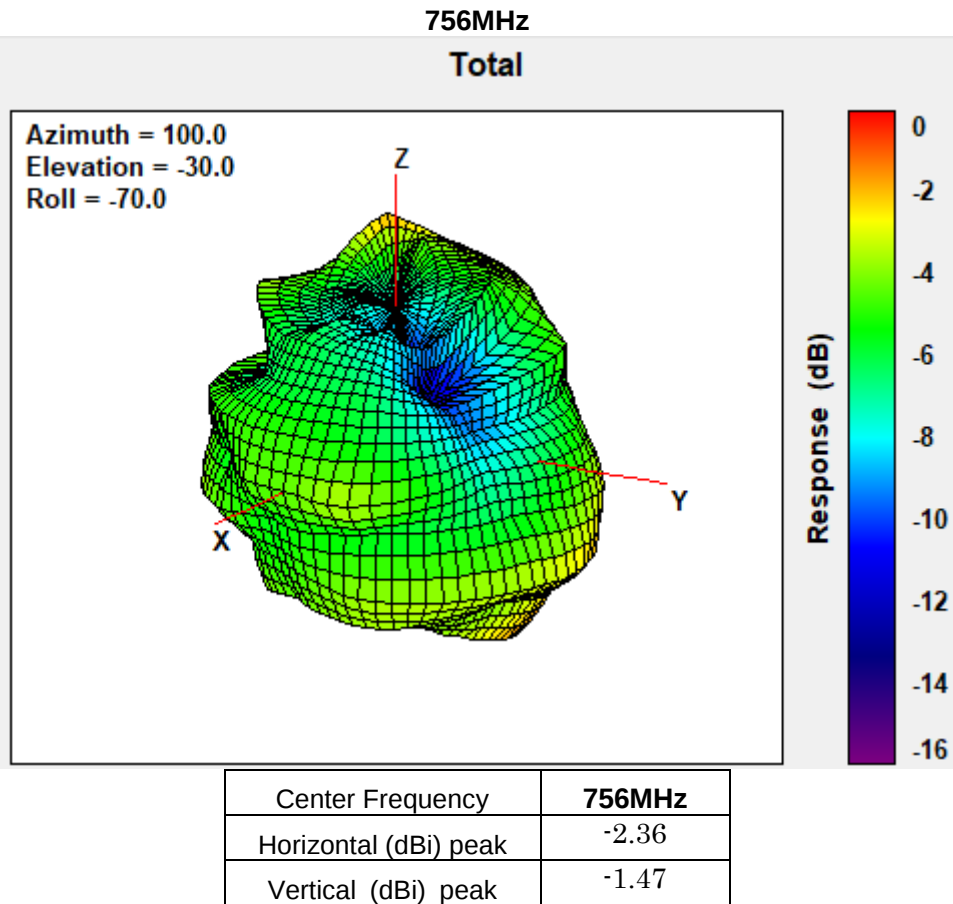
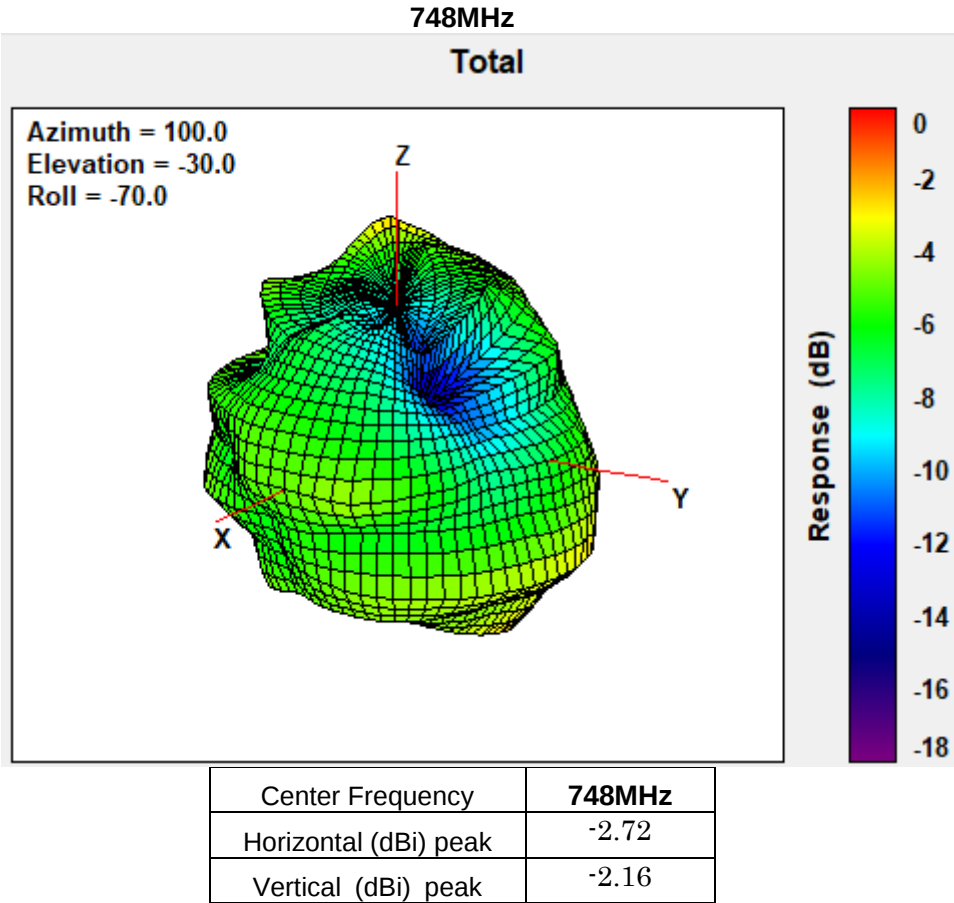


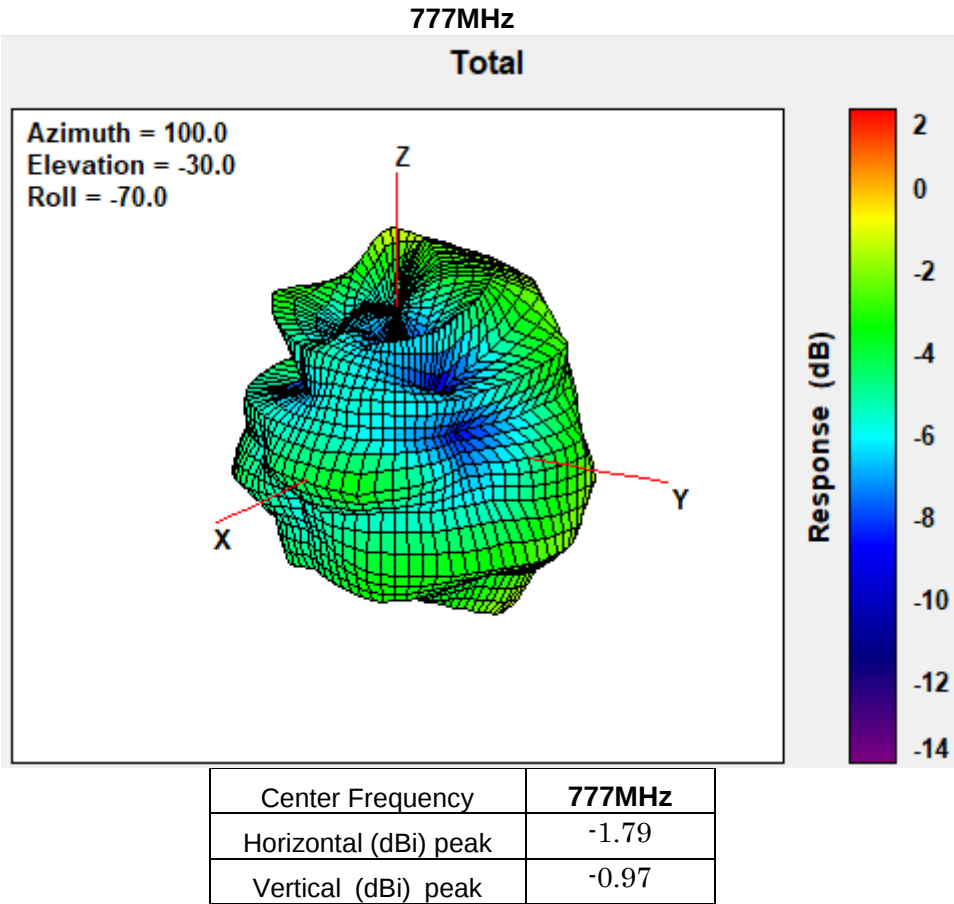
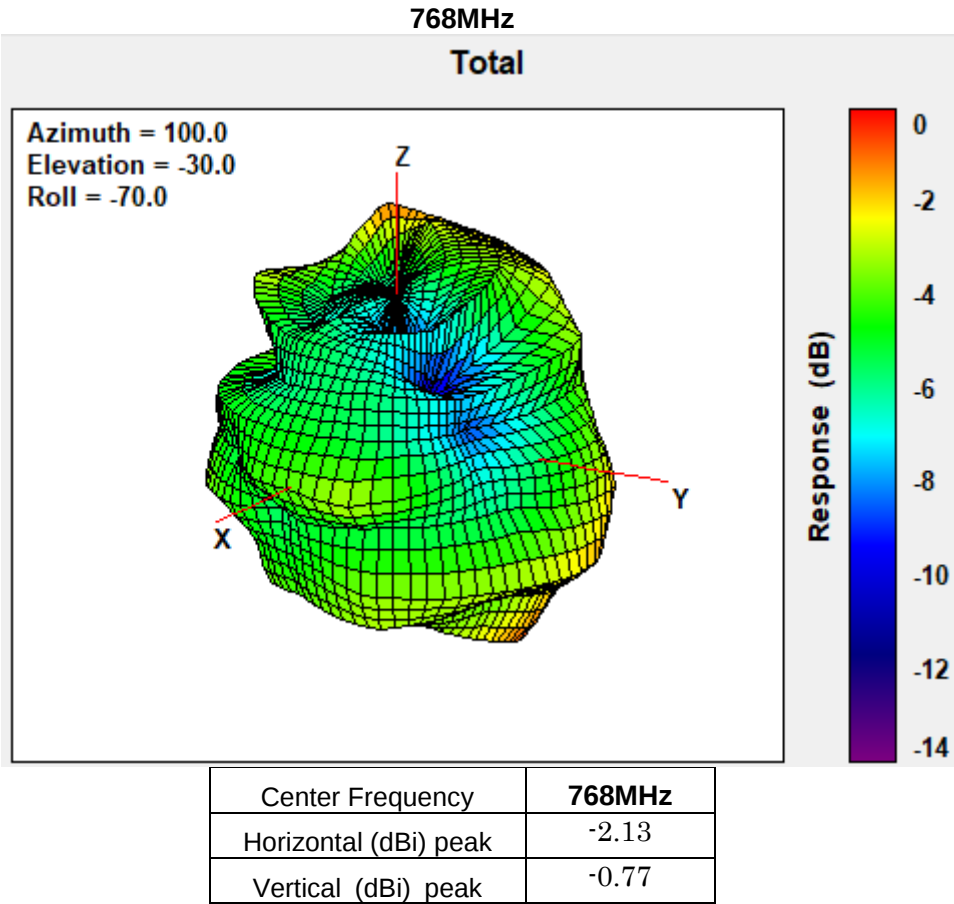


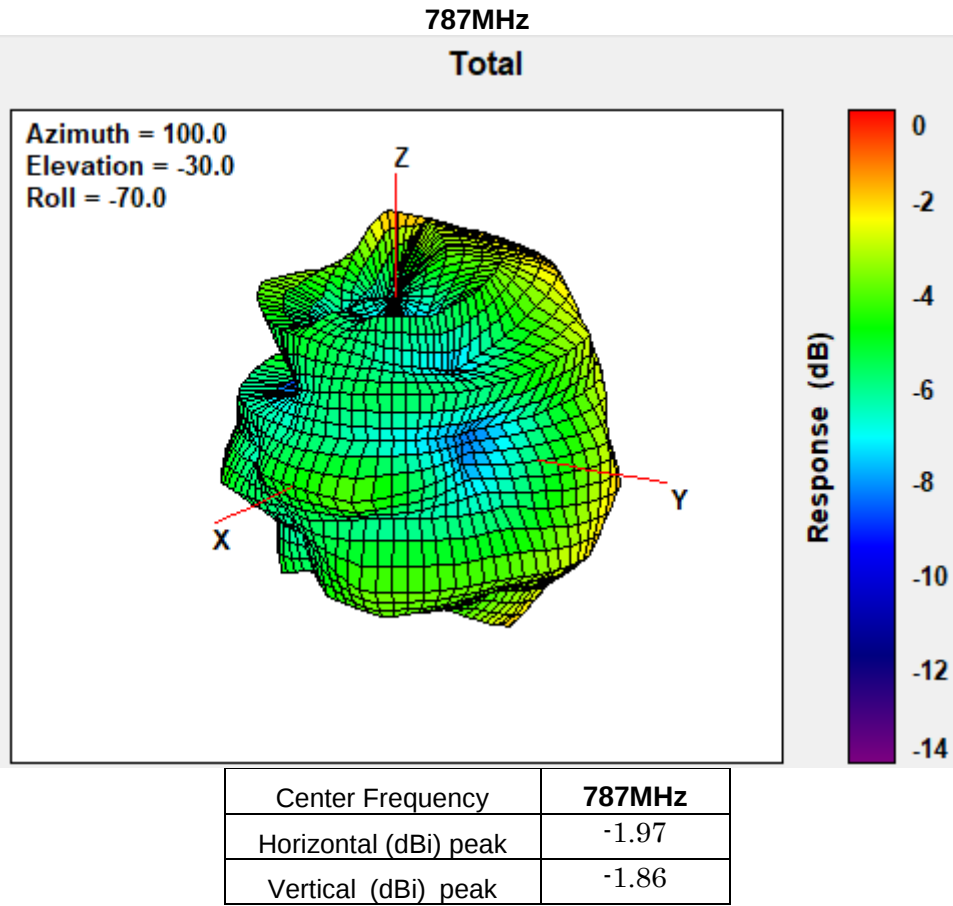
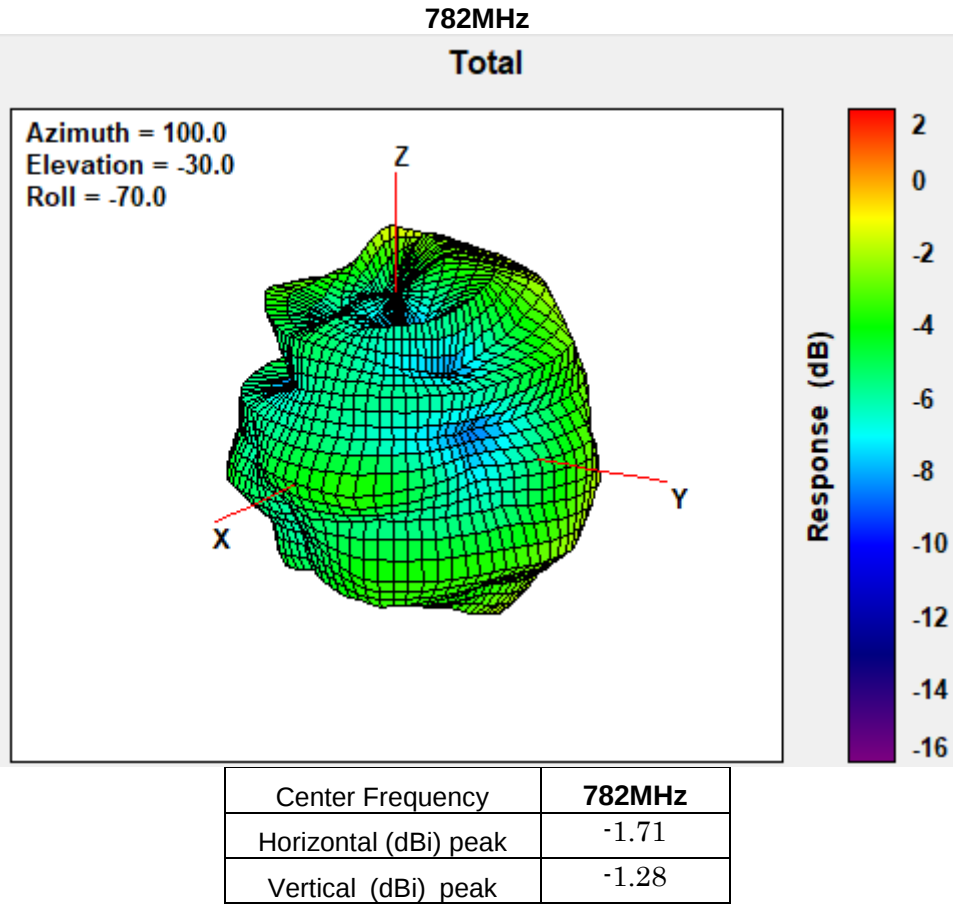


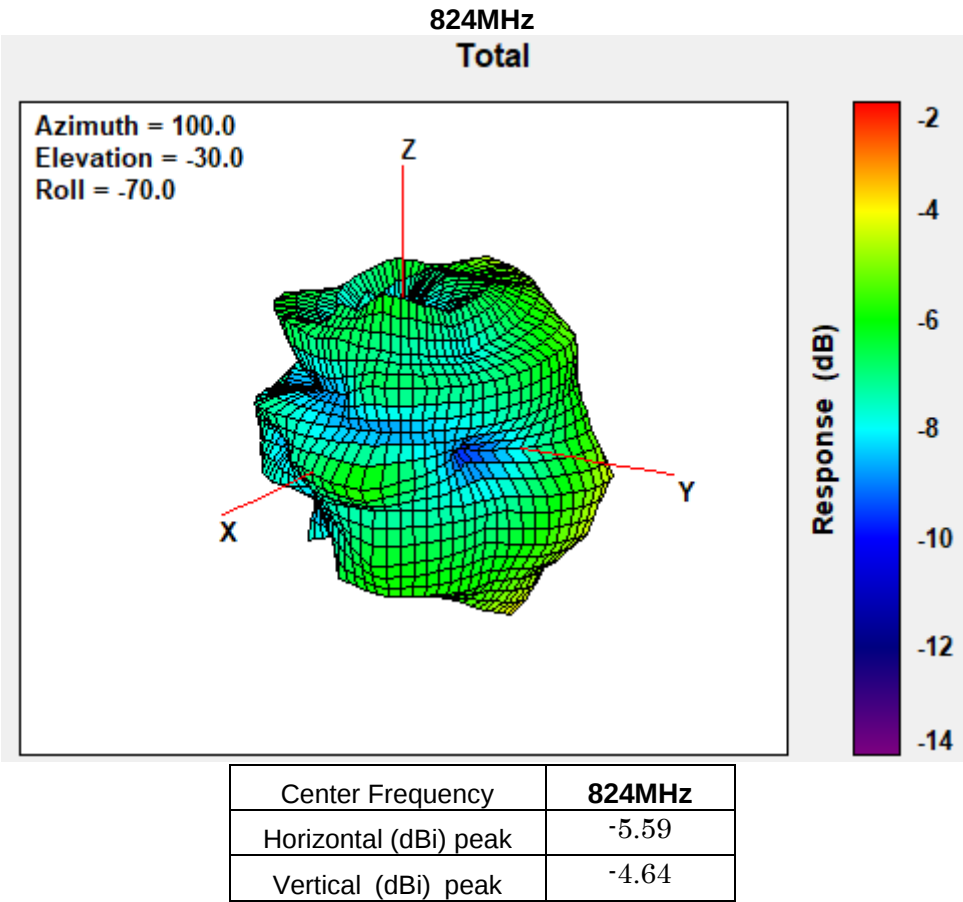
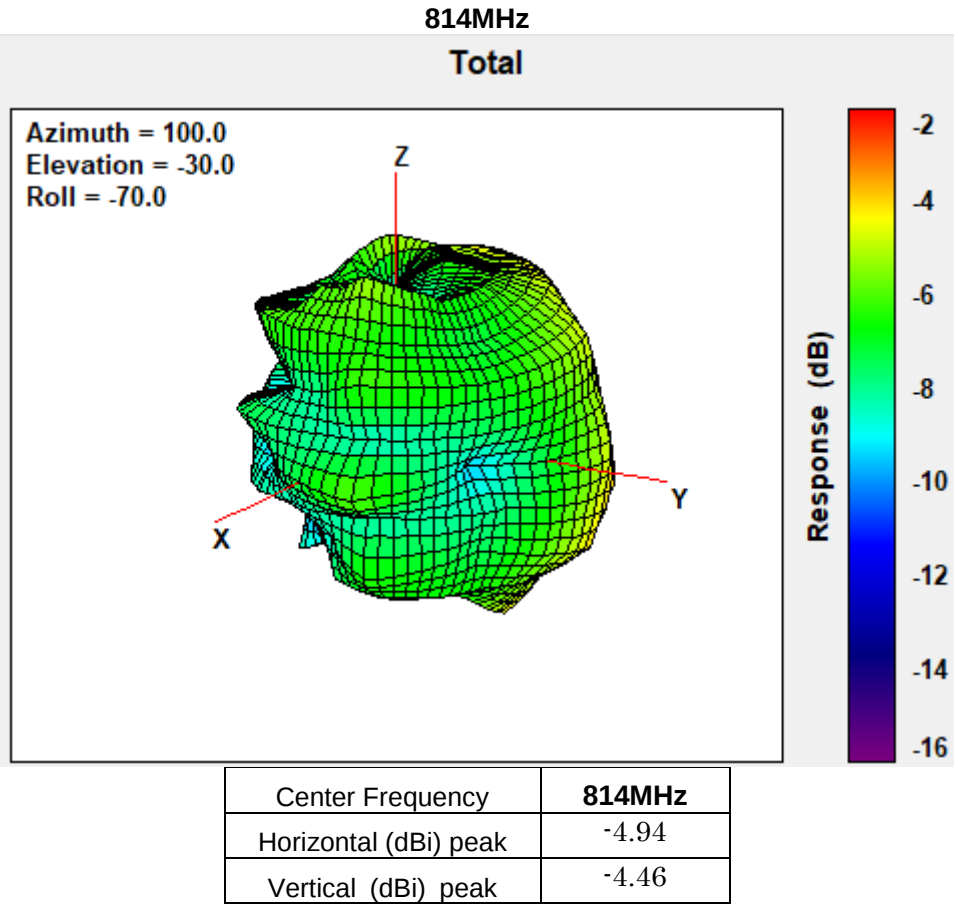
WWAN Aux Antenna (DRx)

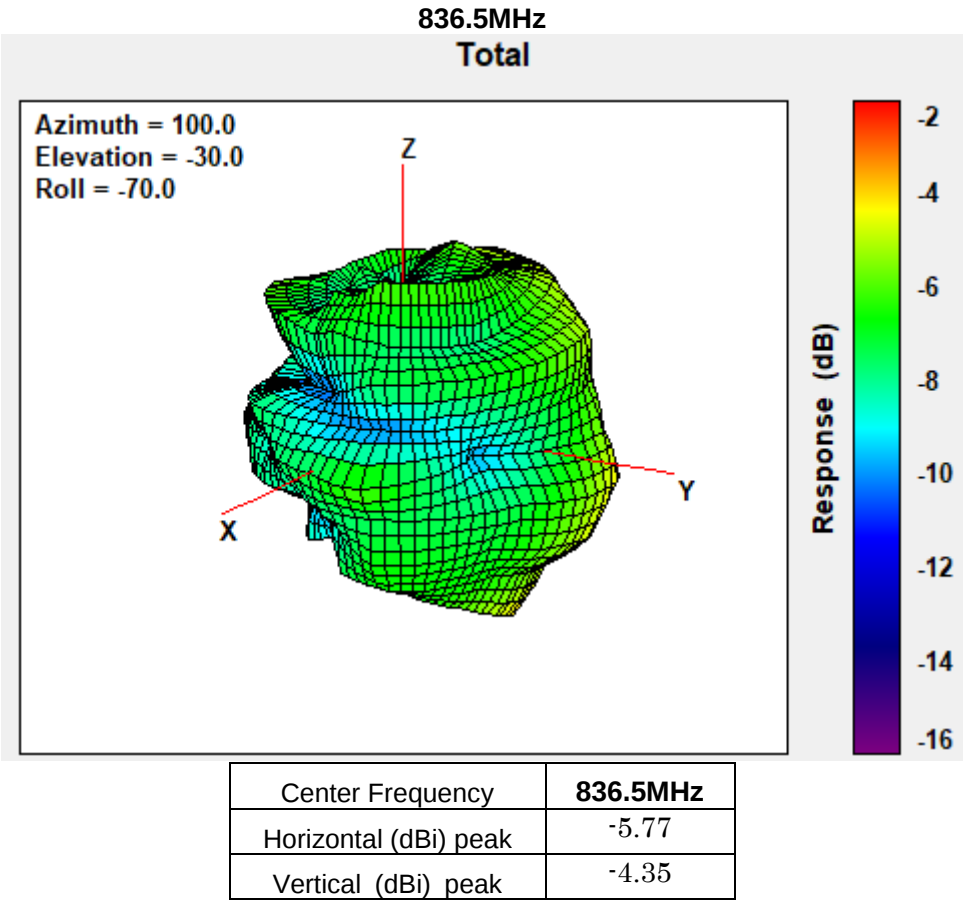
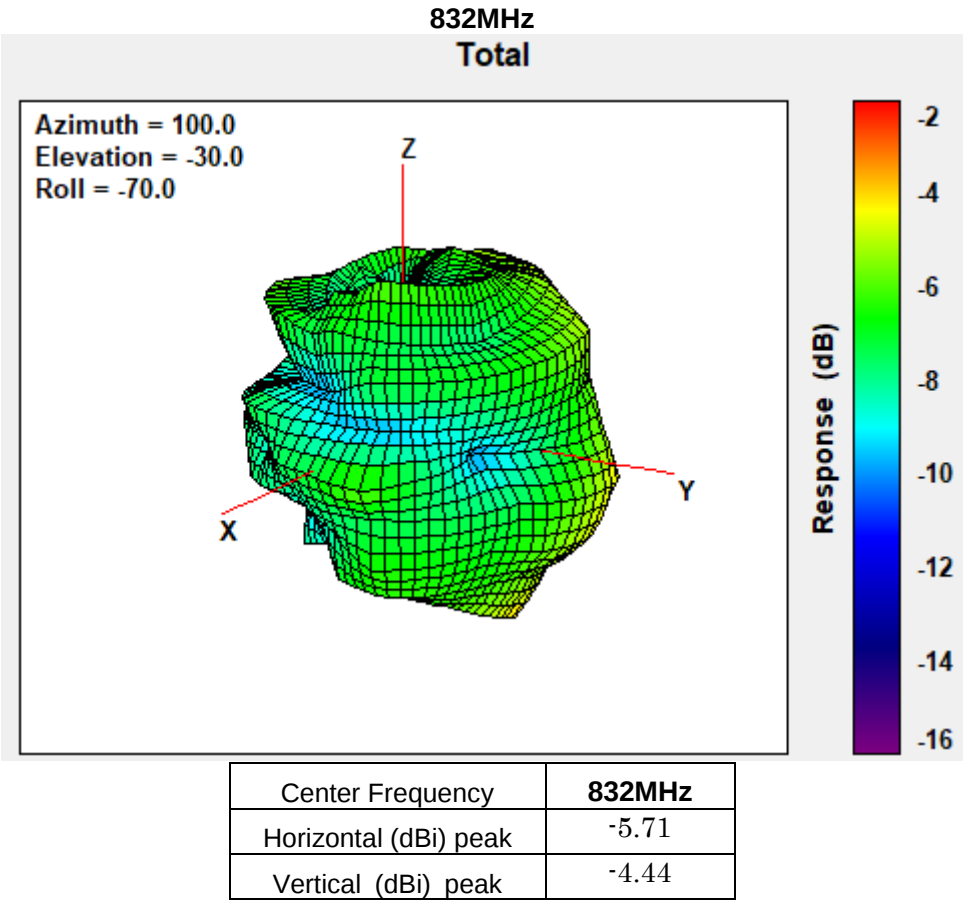


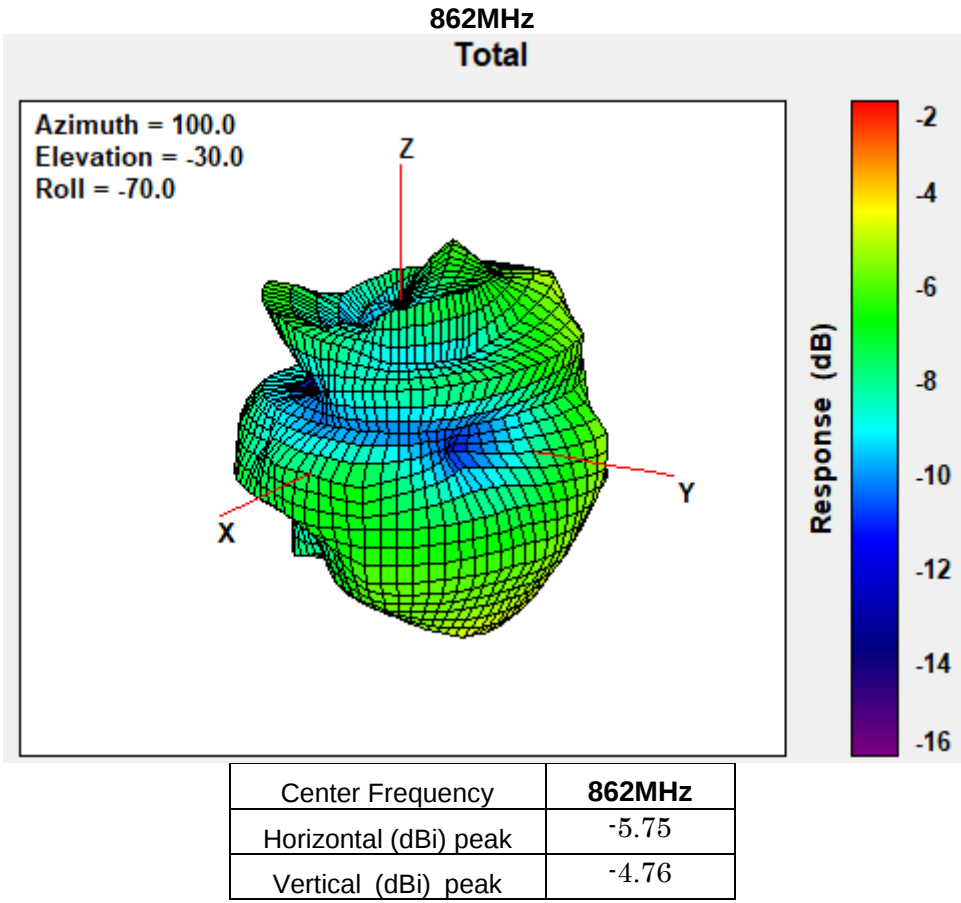
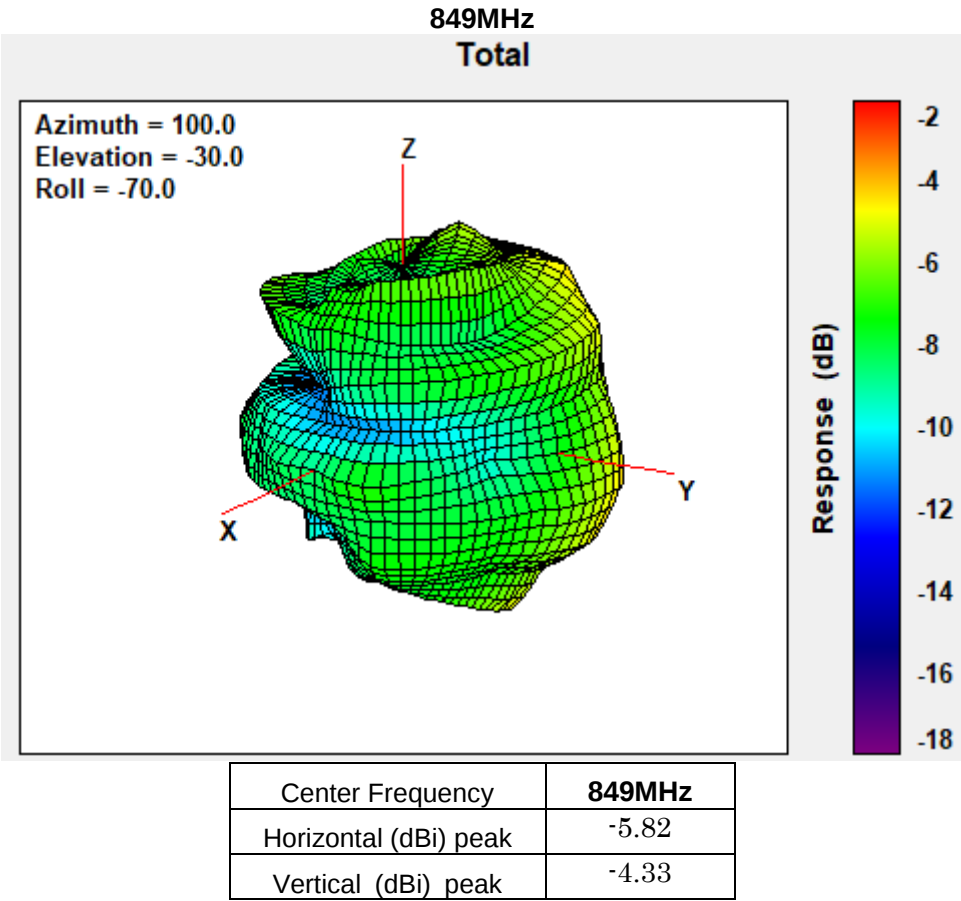


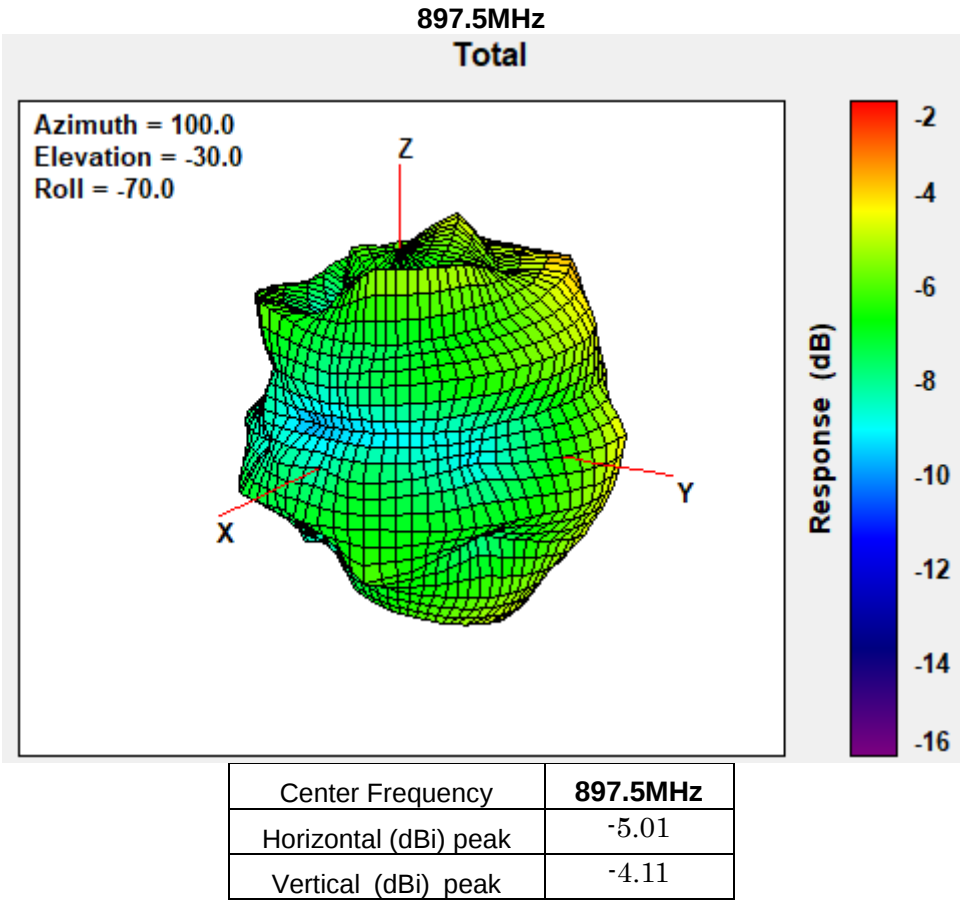
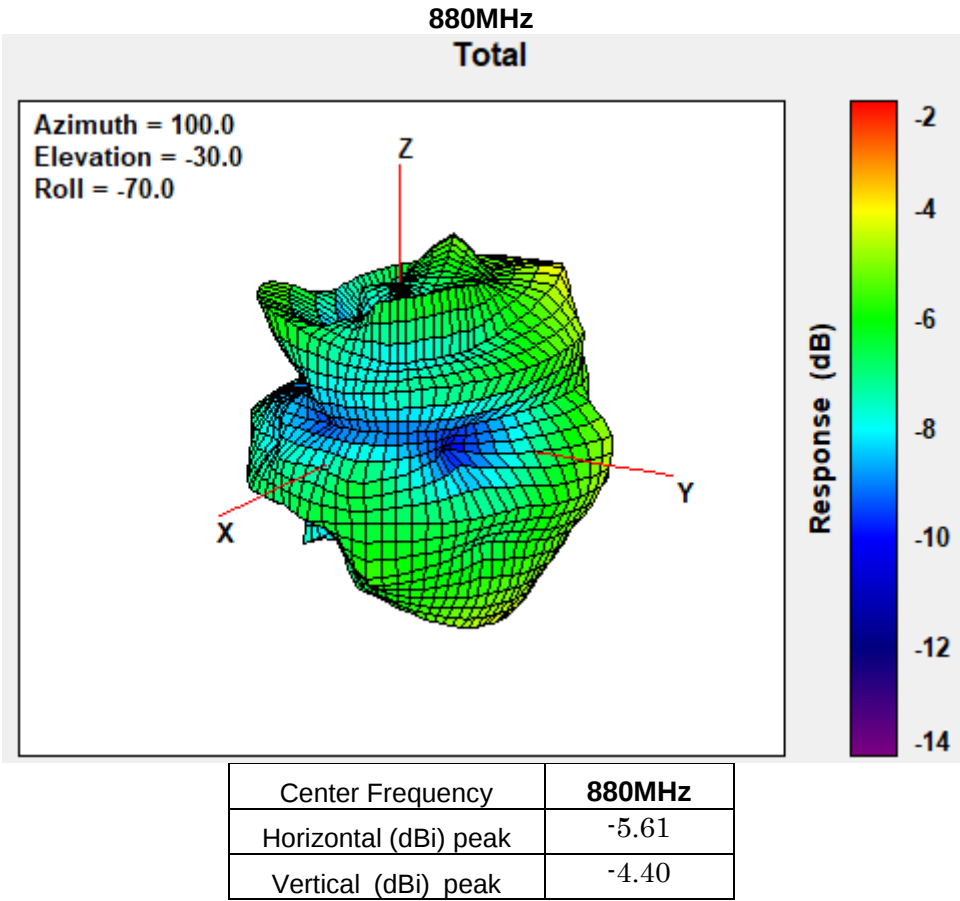


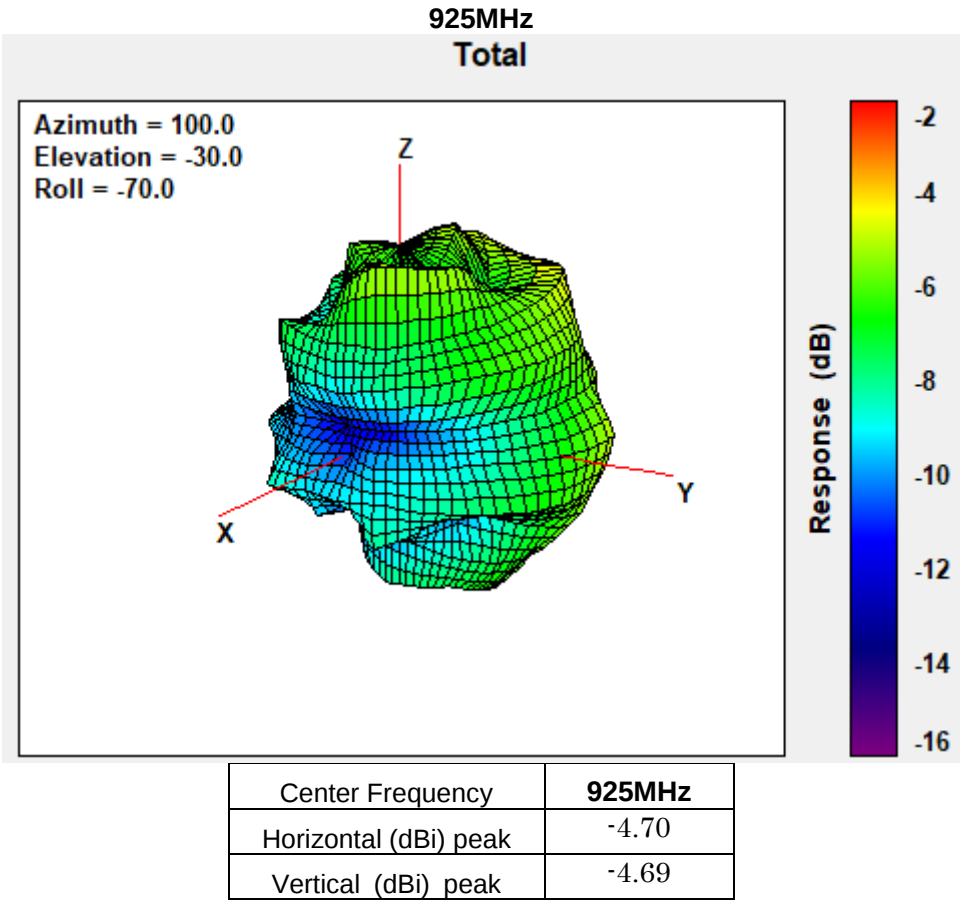
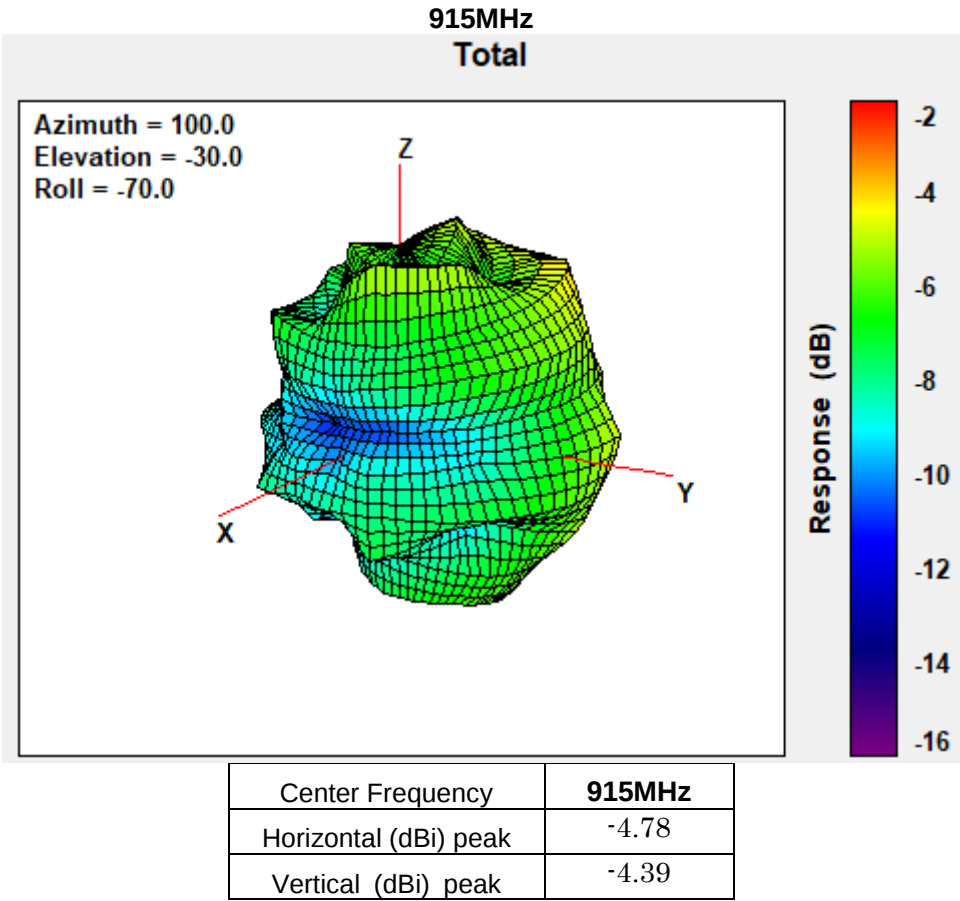


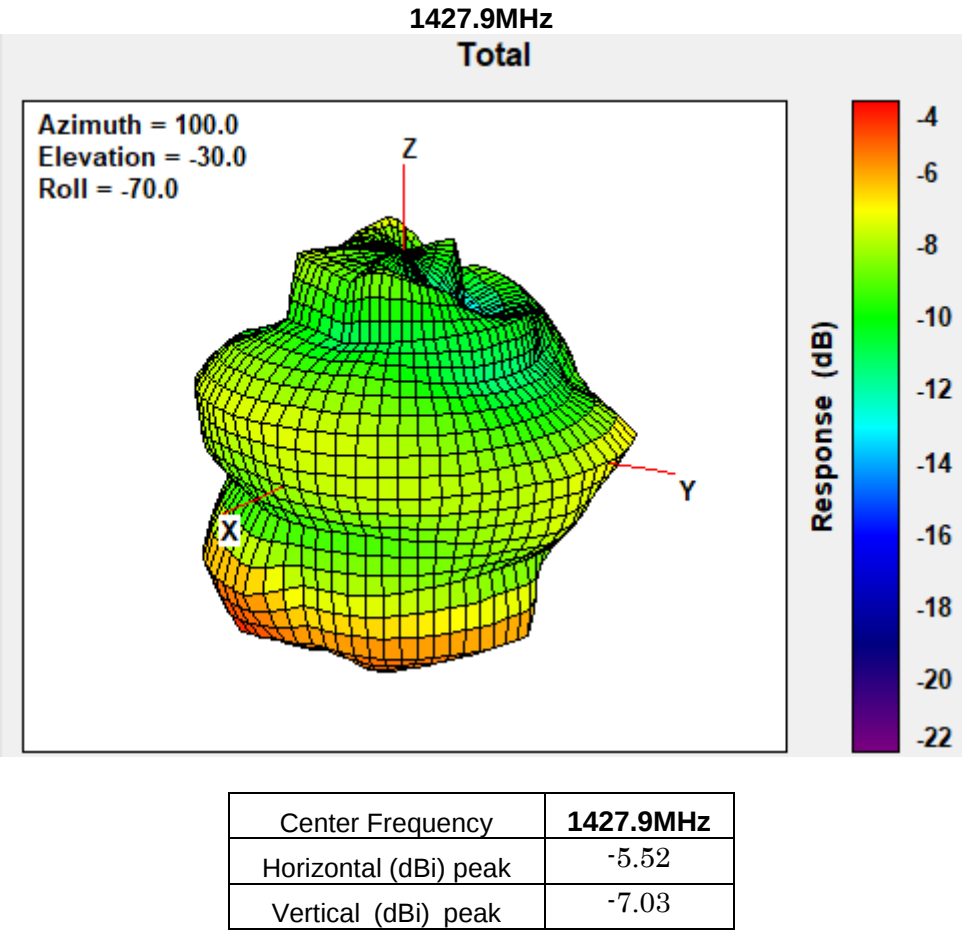
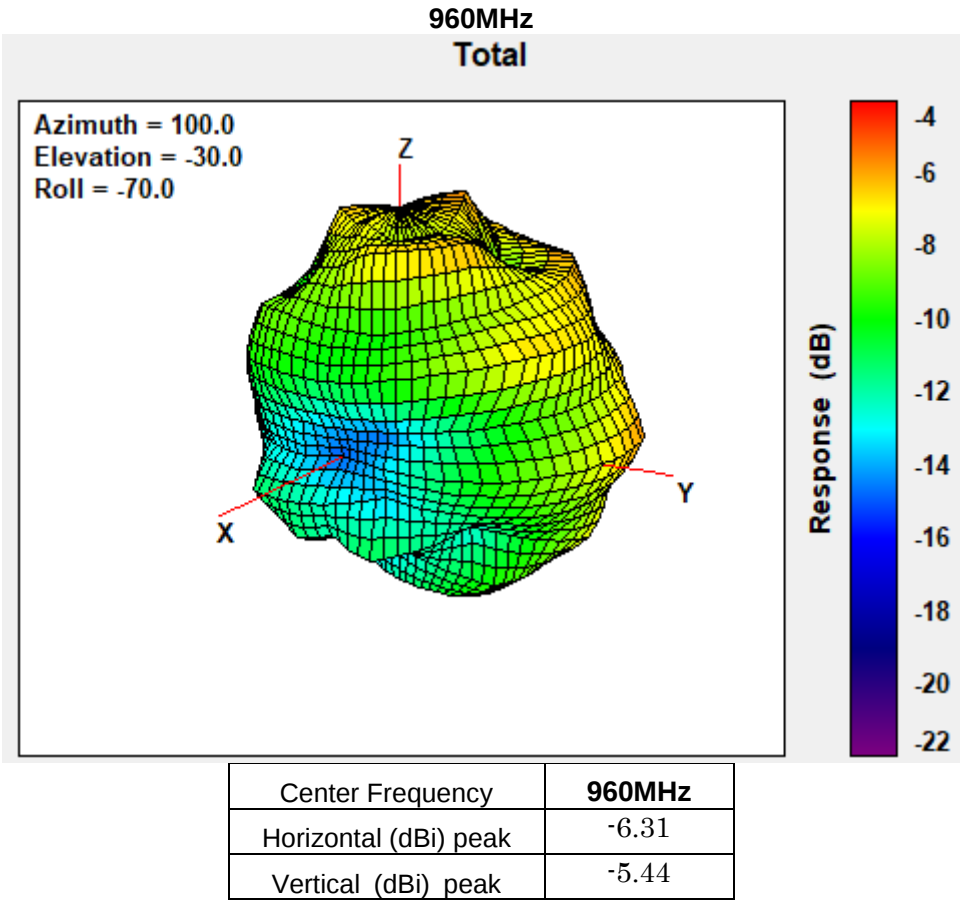




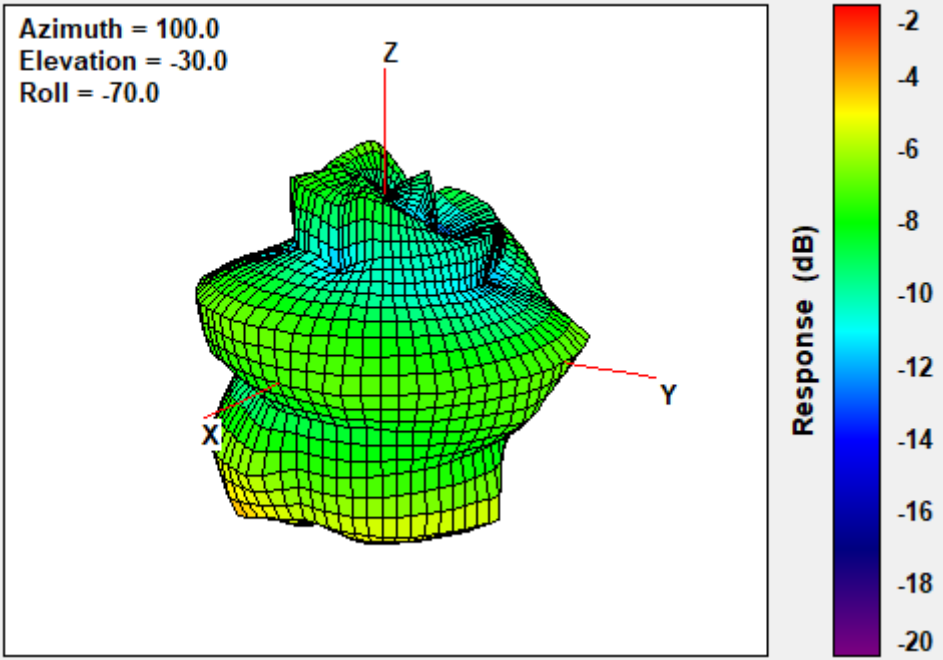




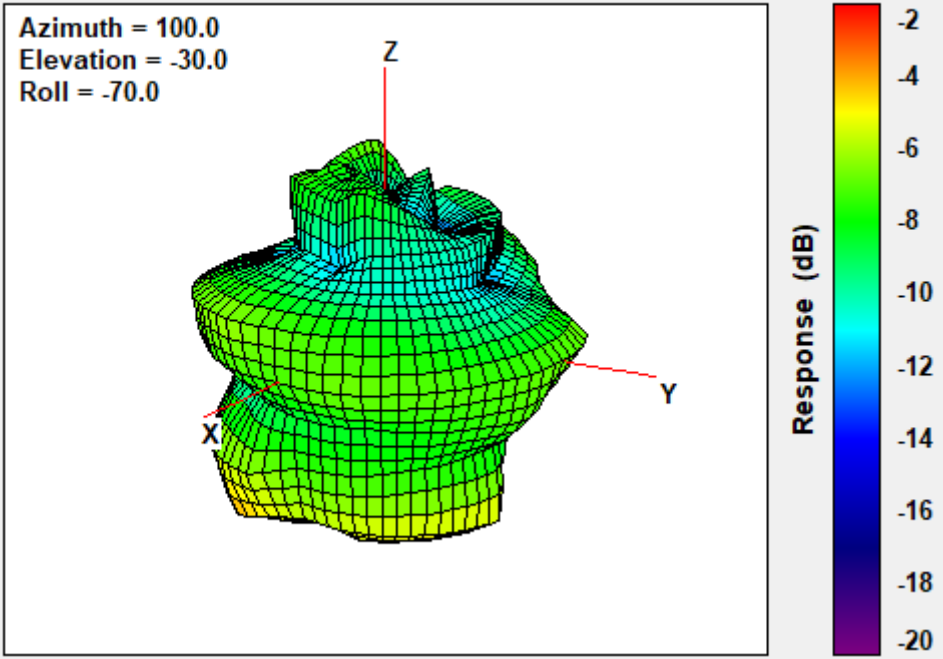


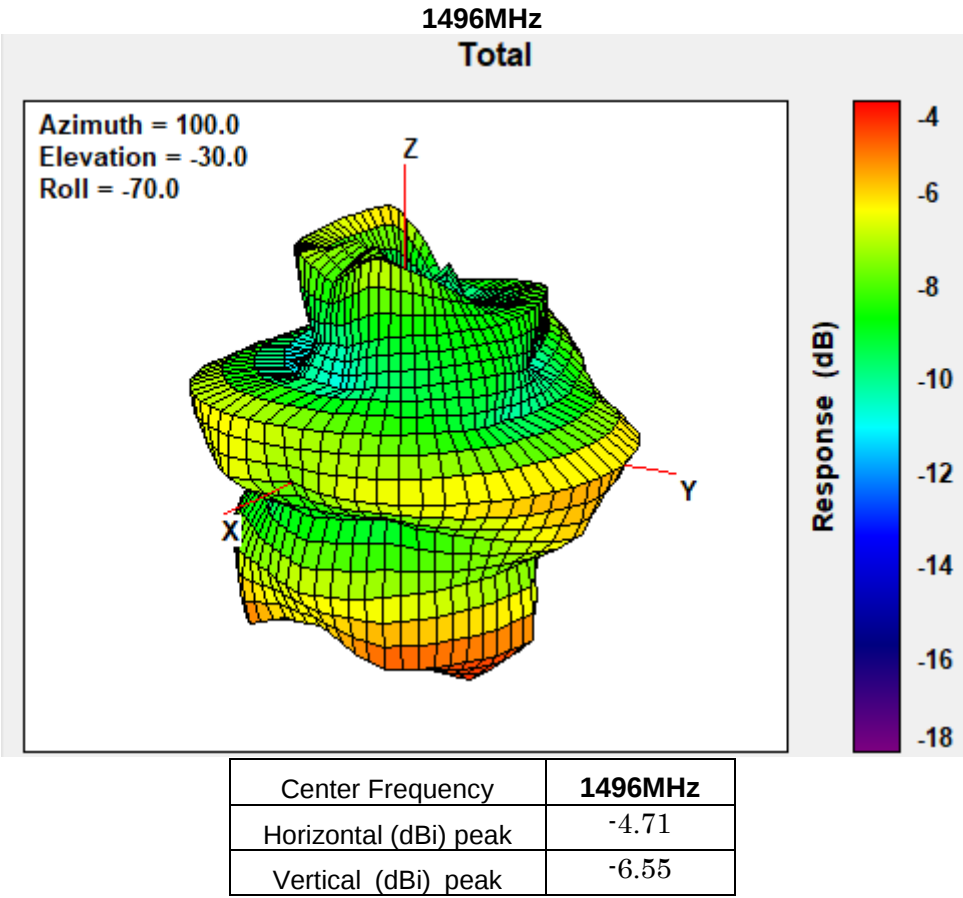
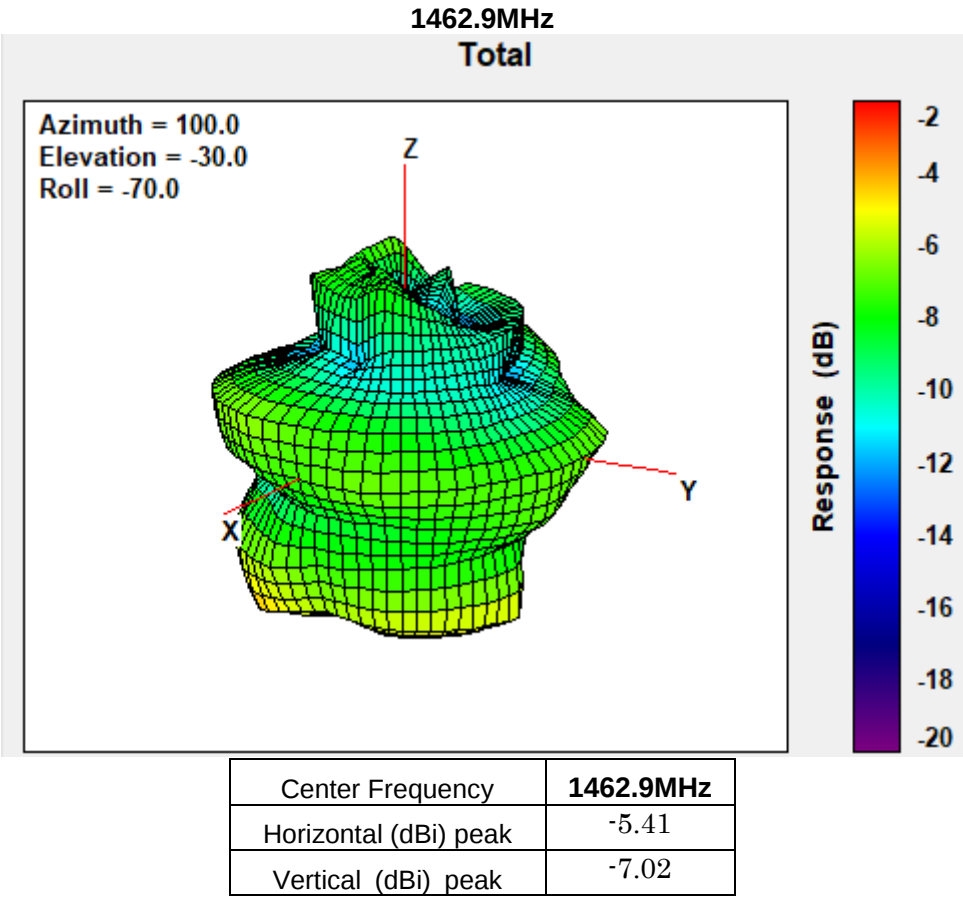


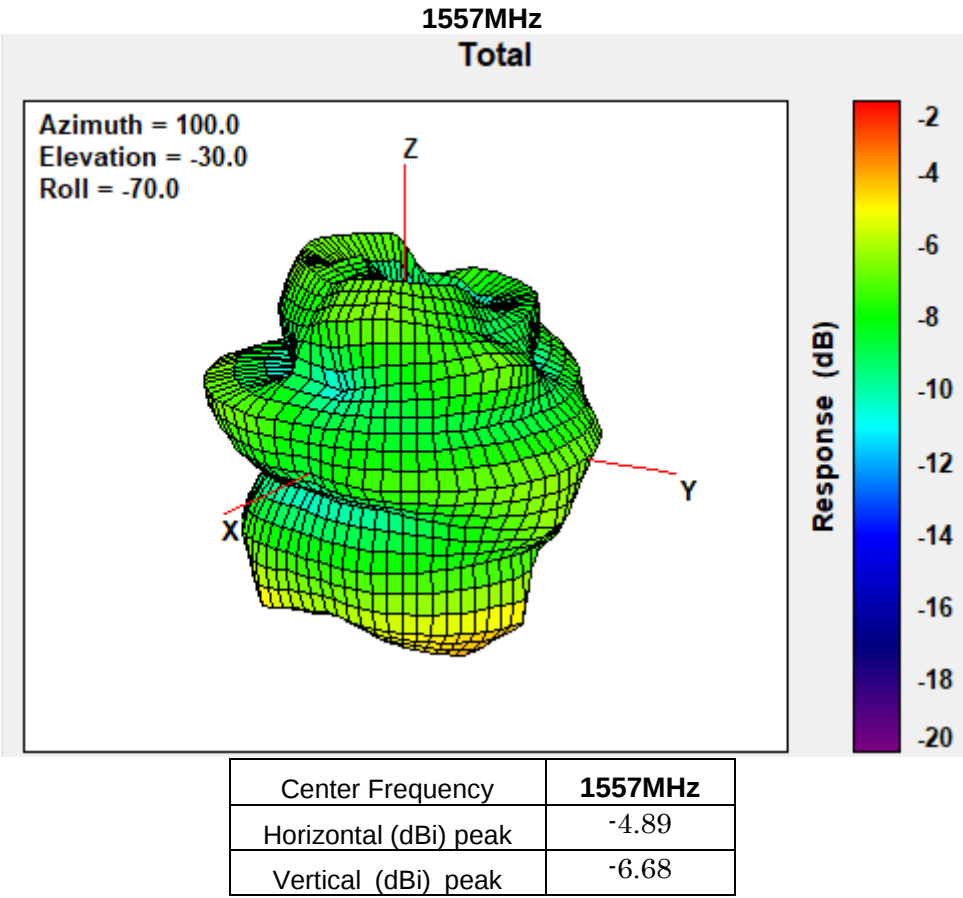
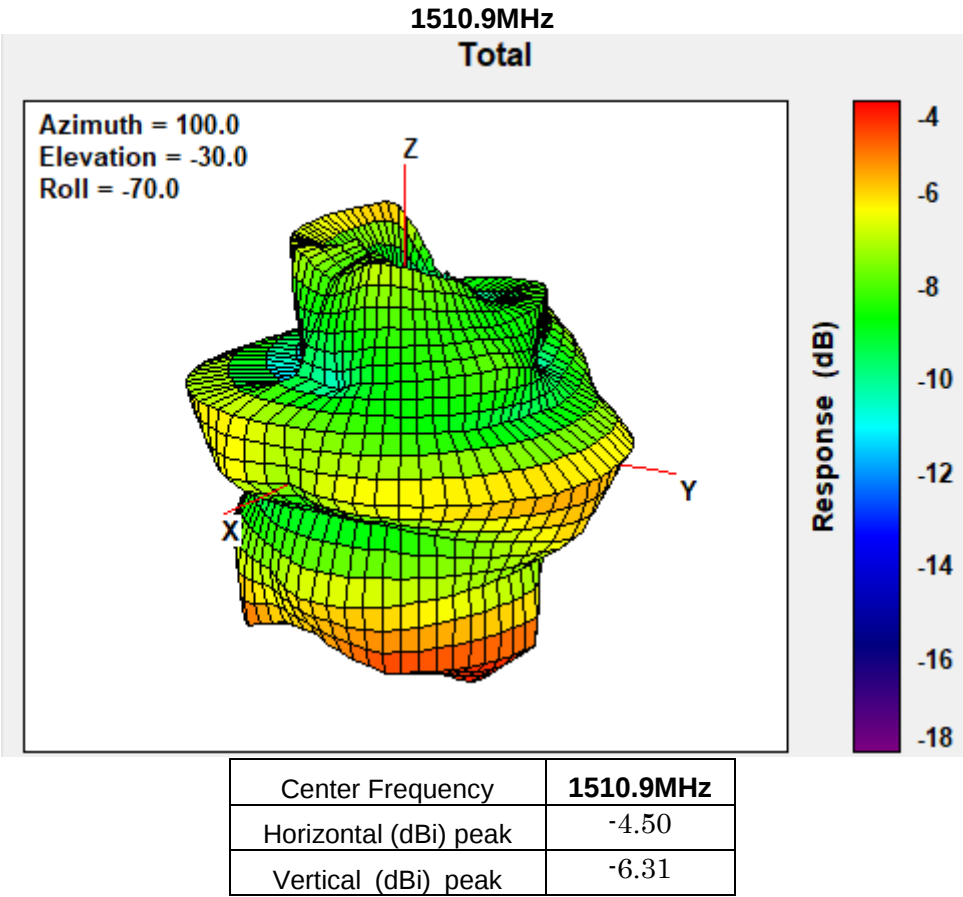
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Total

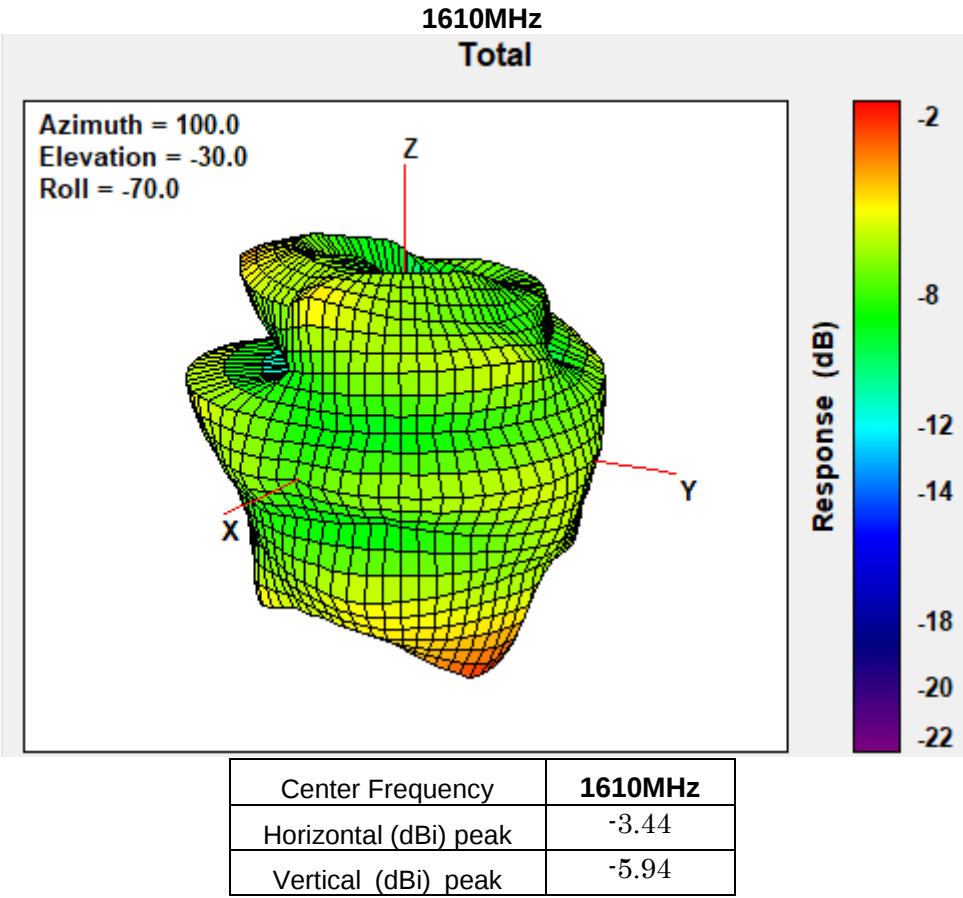
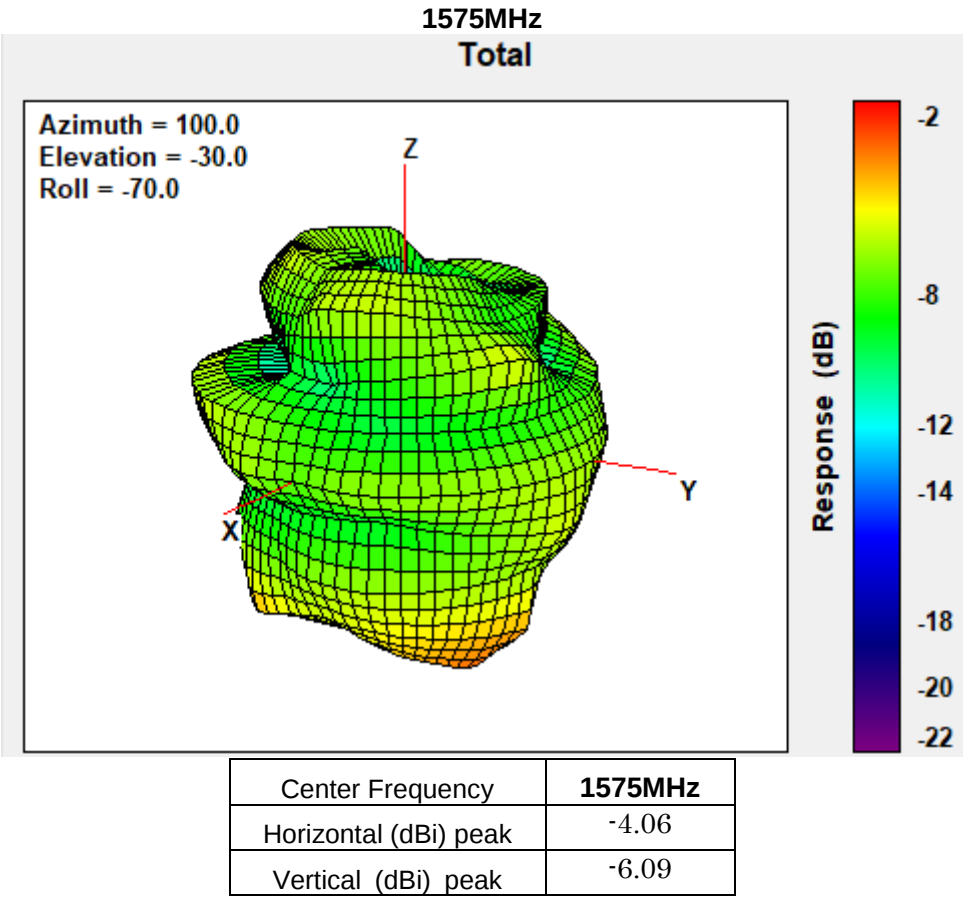


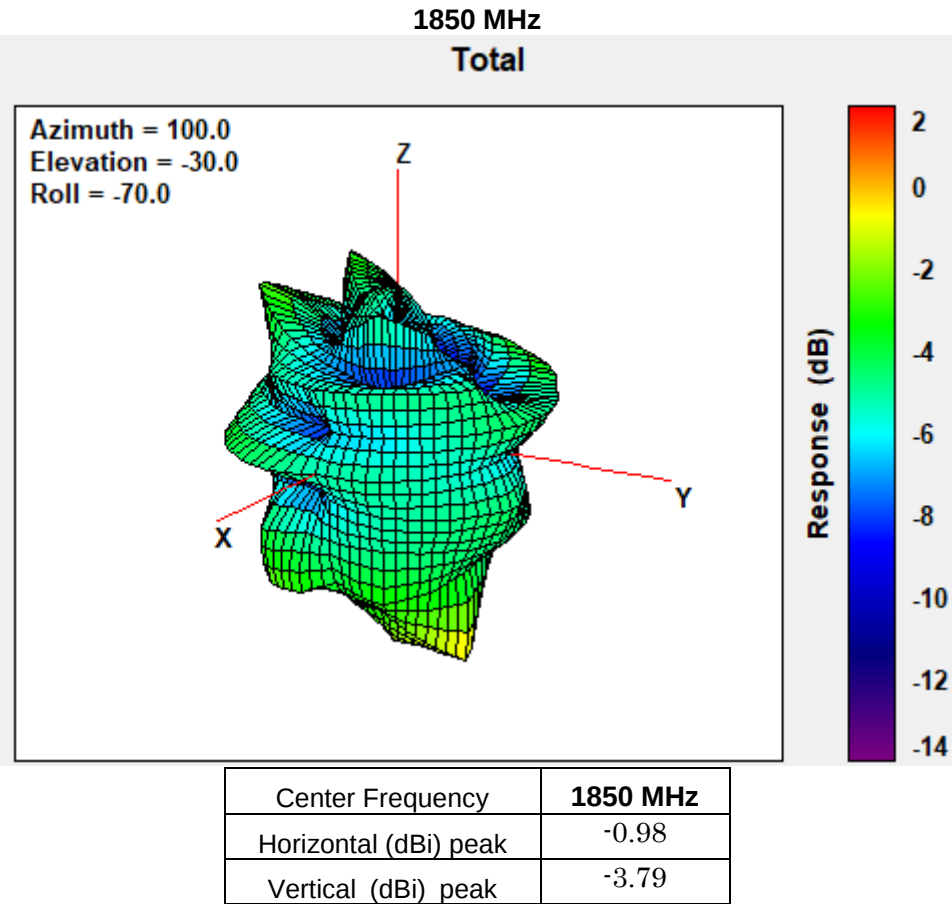
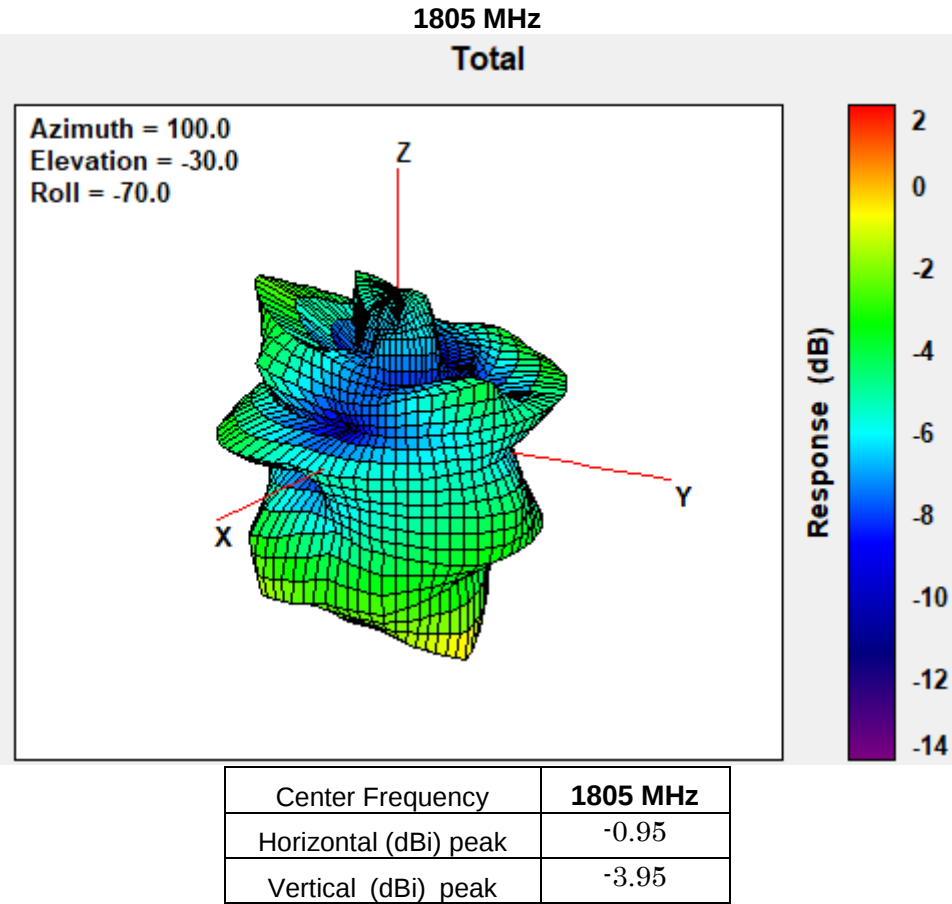
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Total

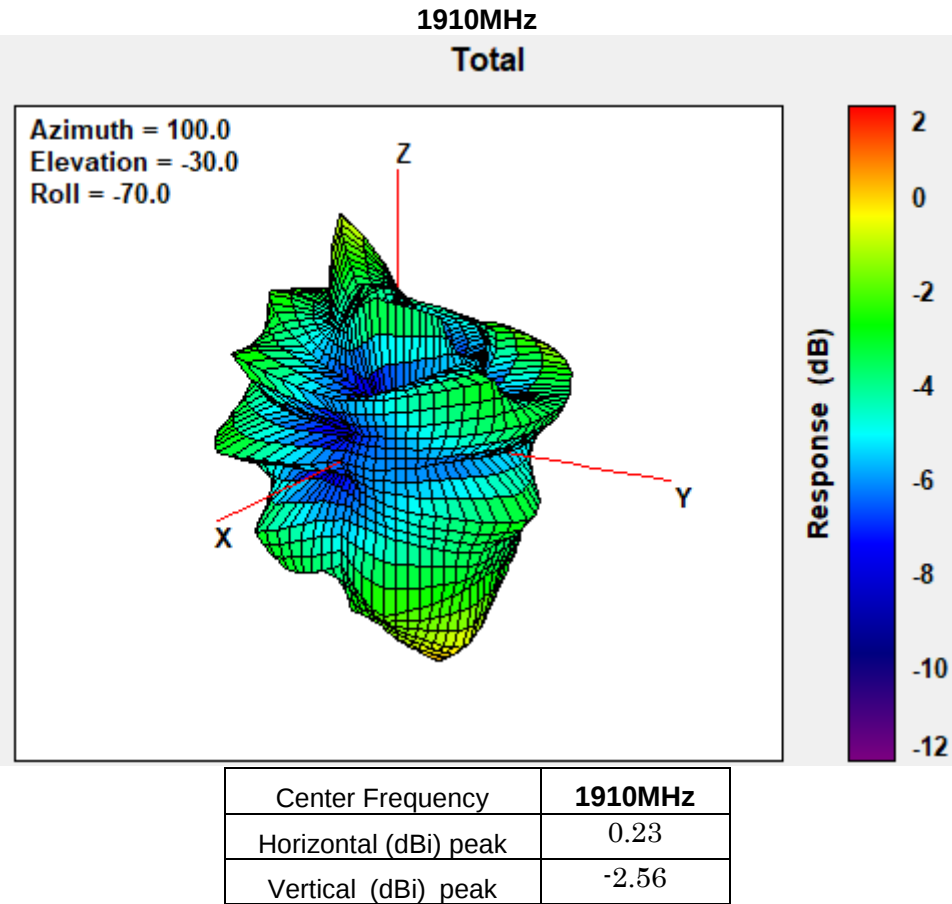
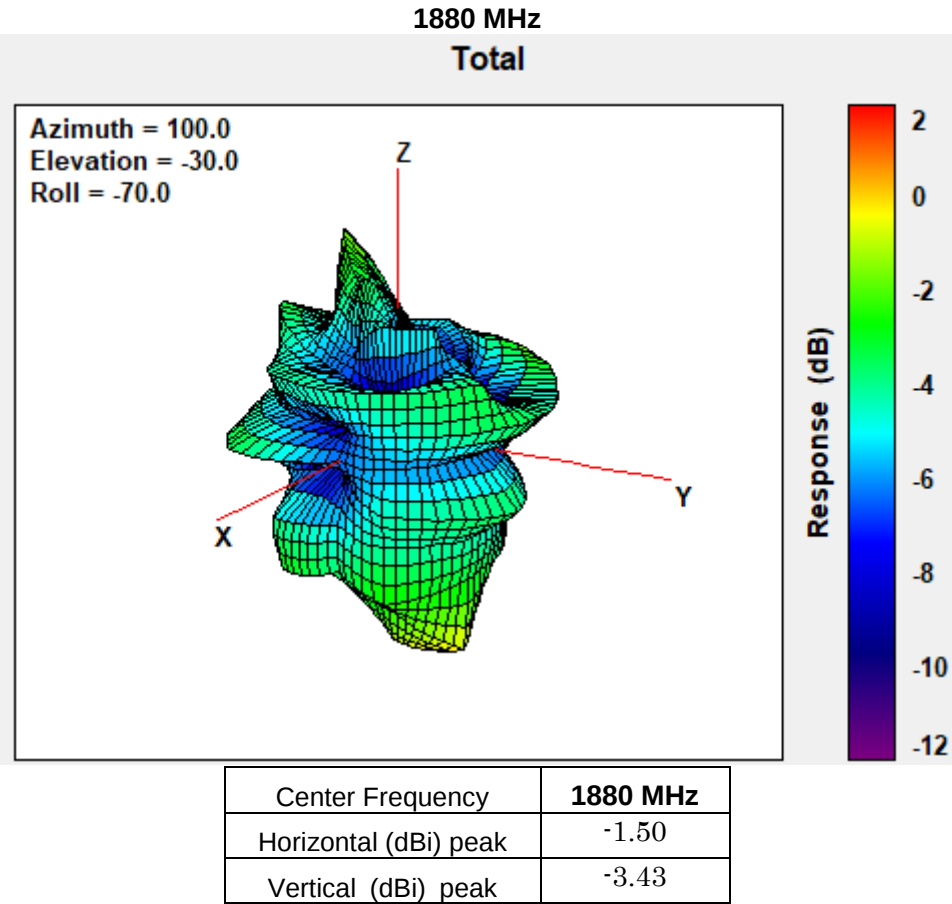


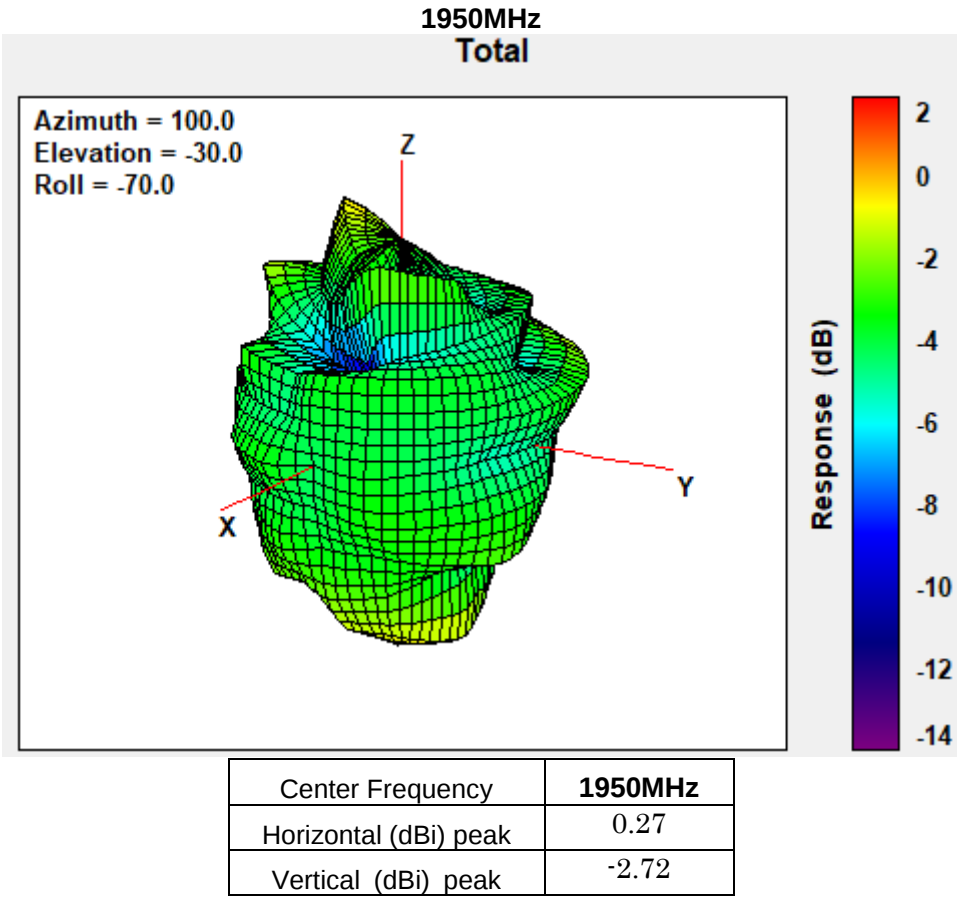
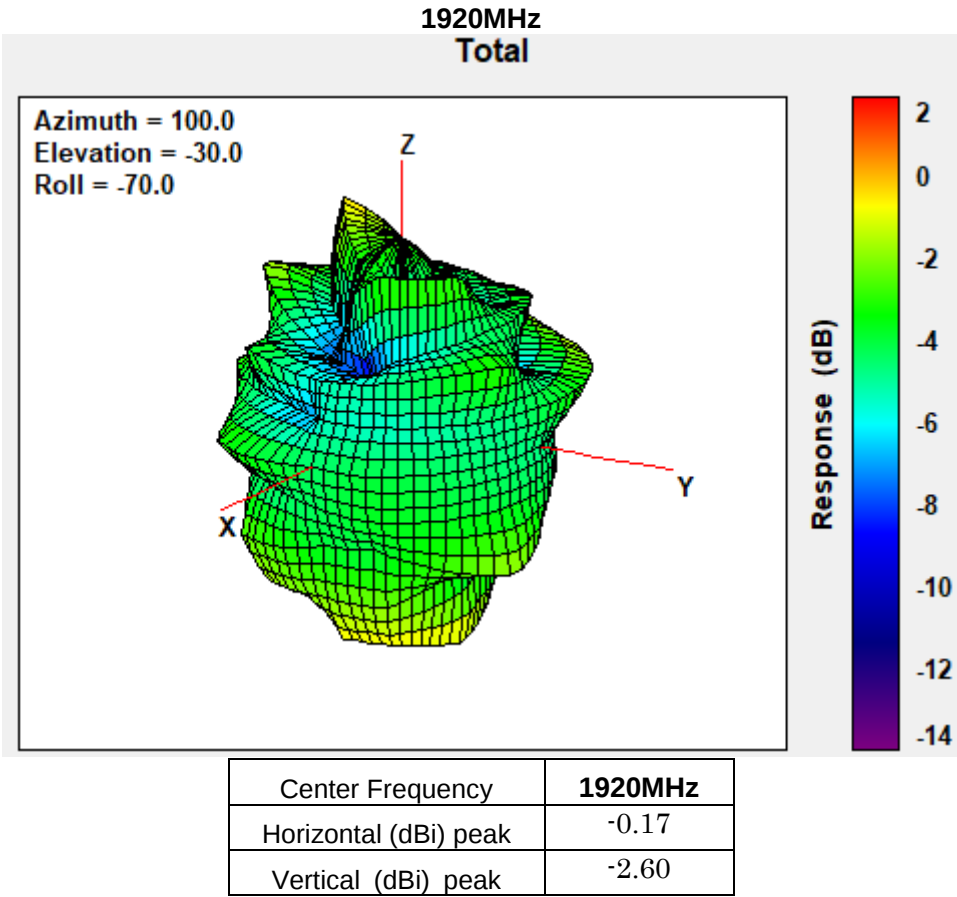


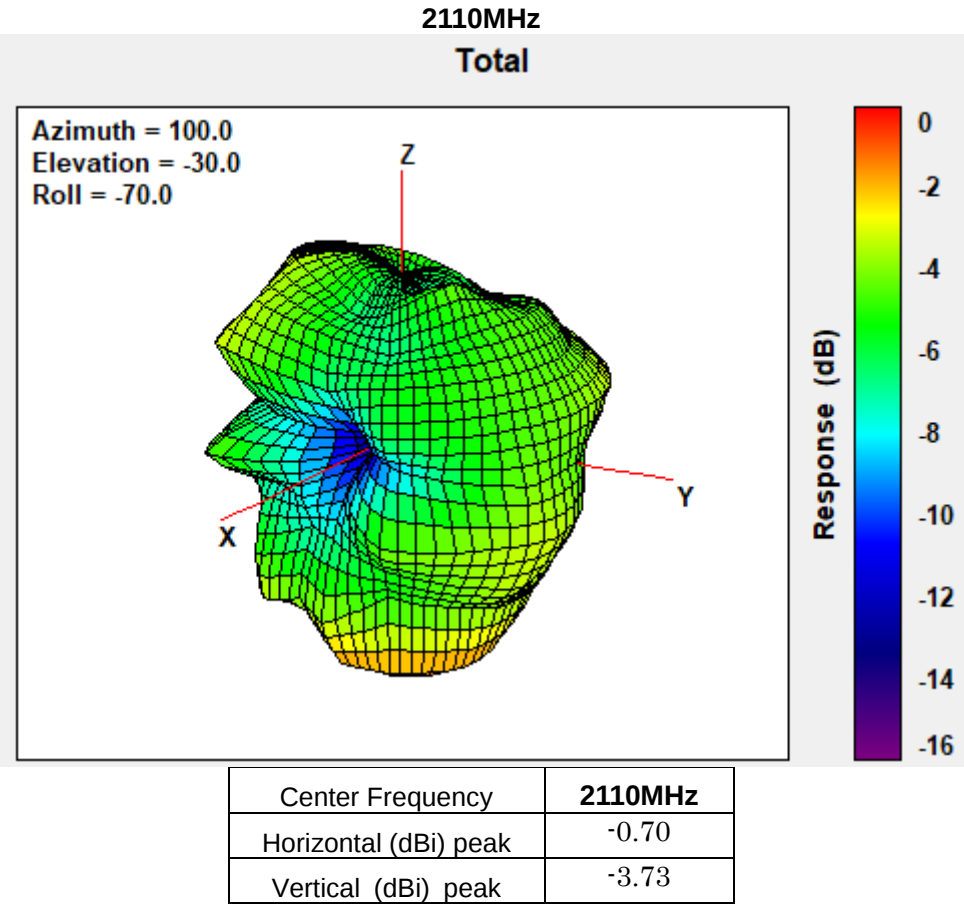
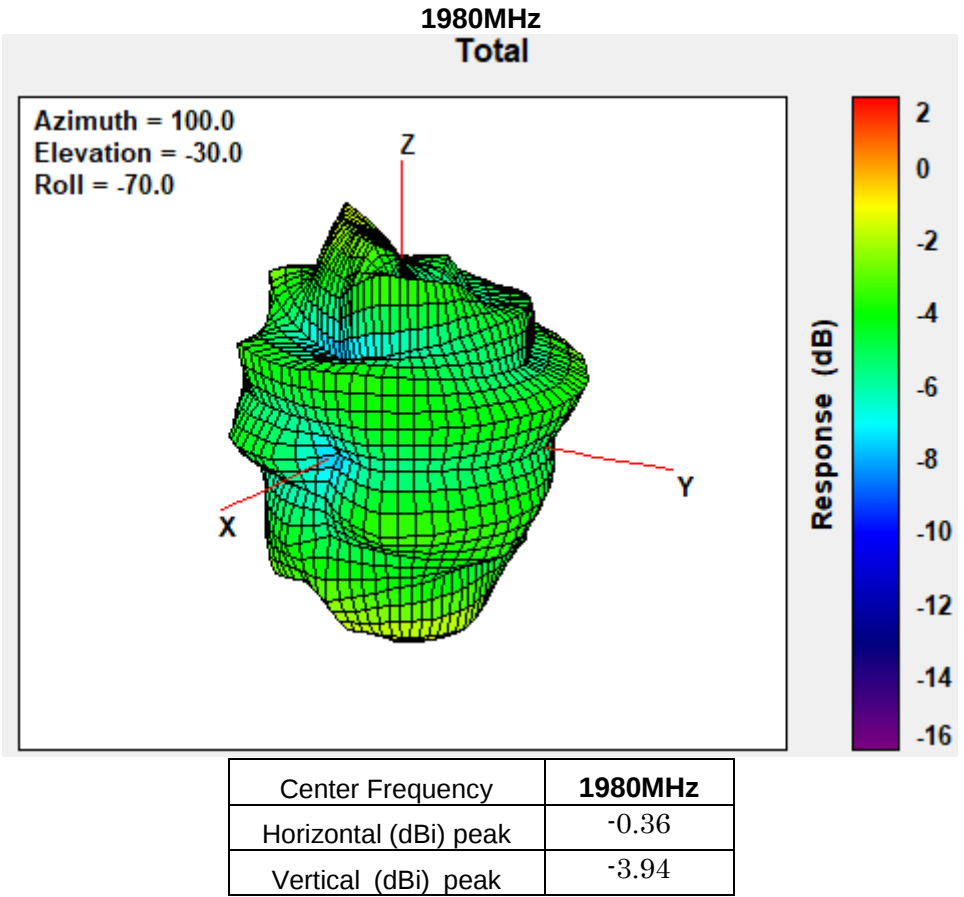


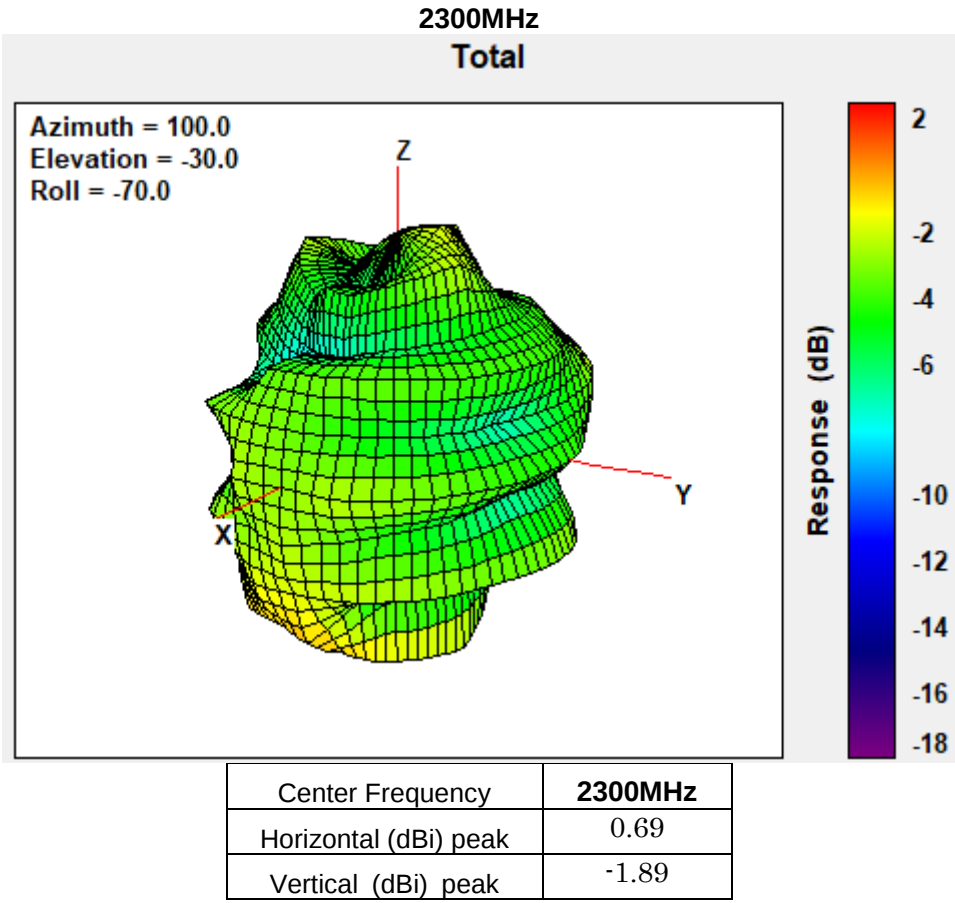
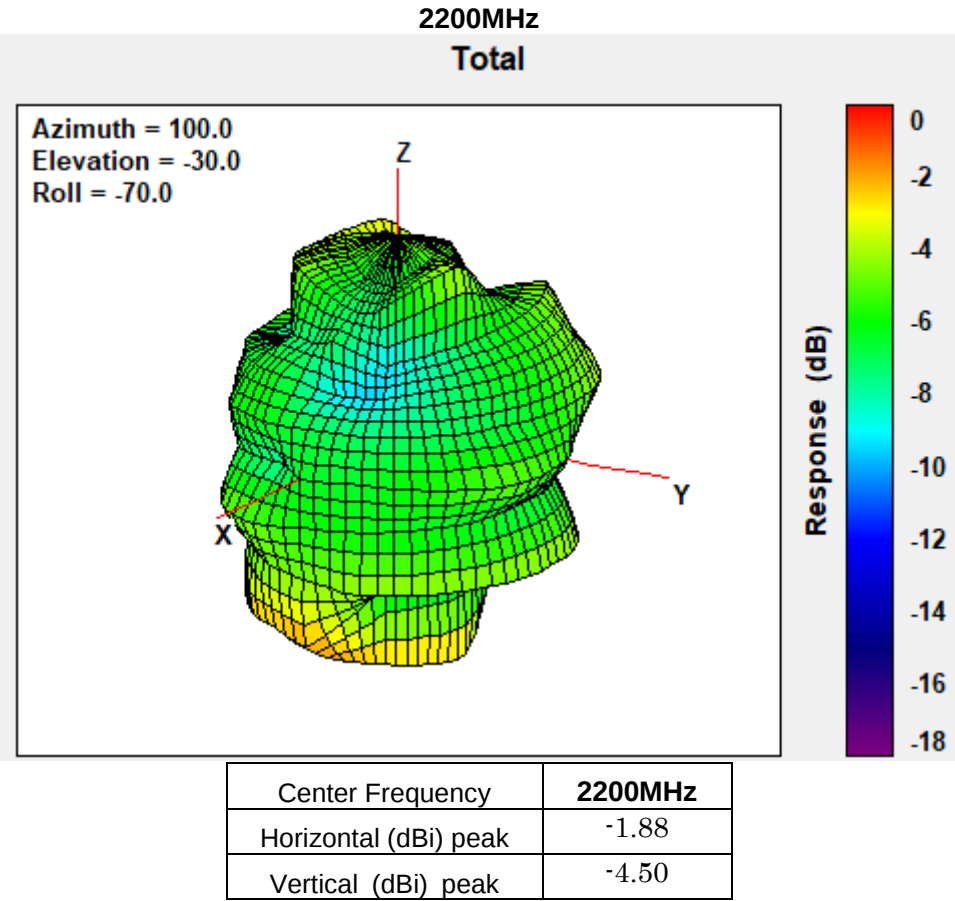


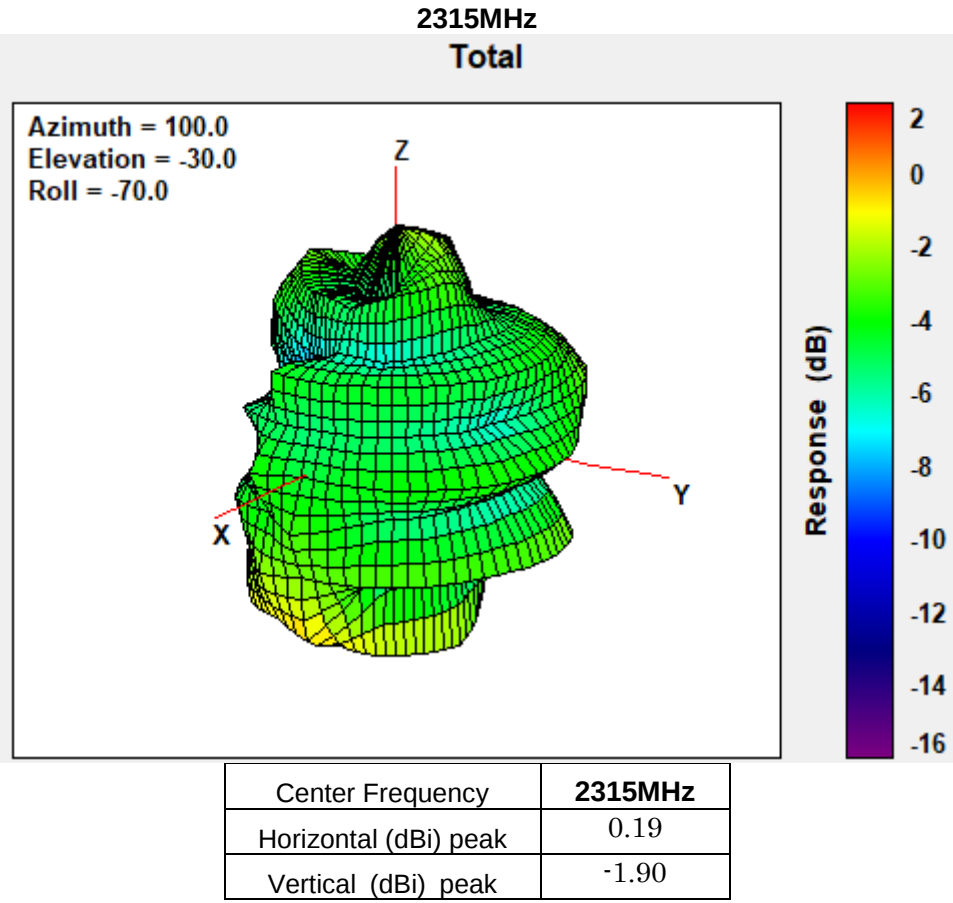
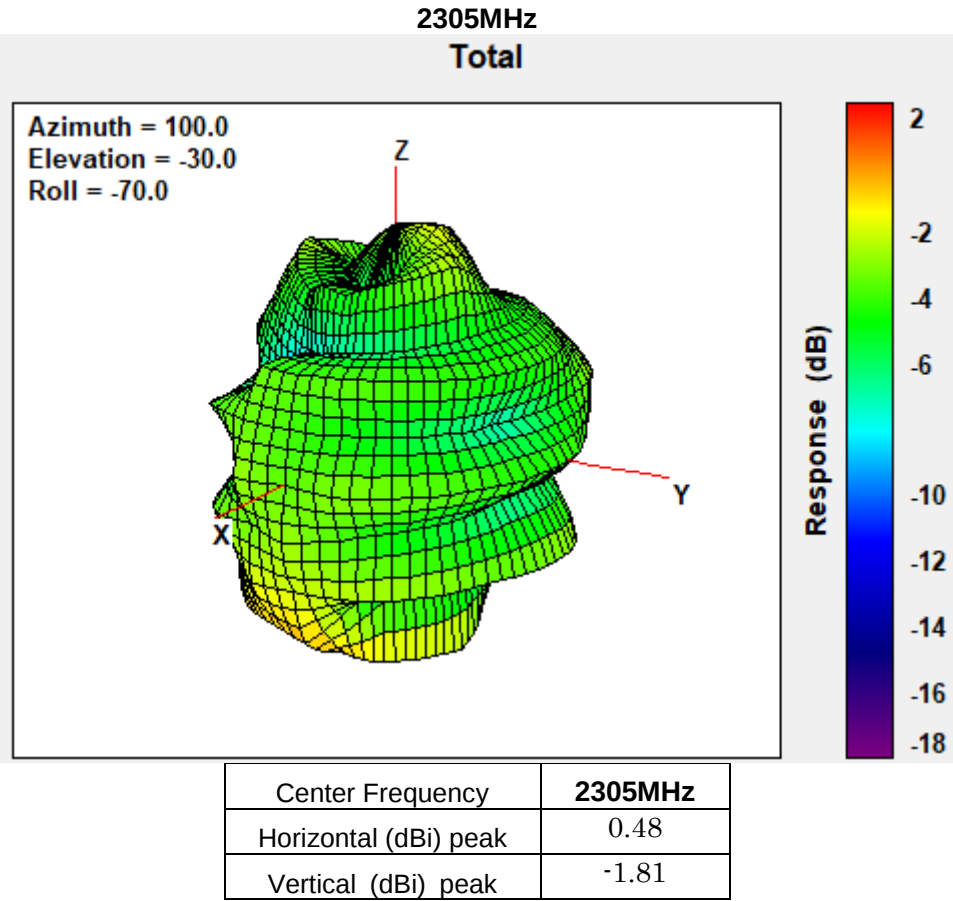


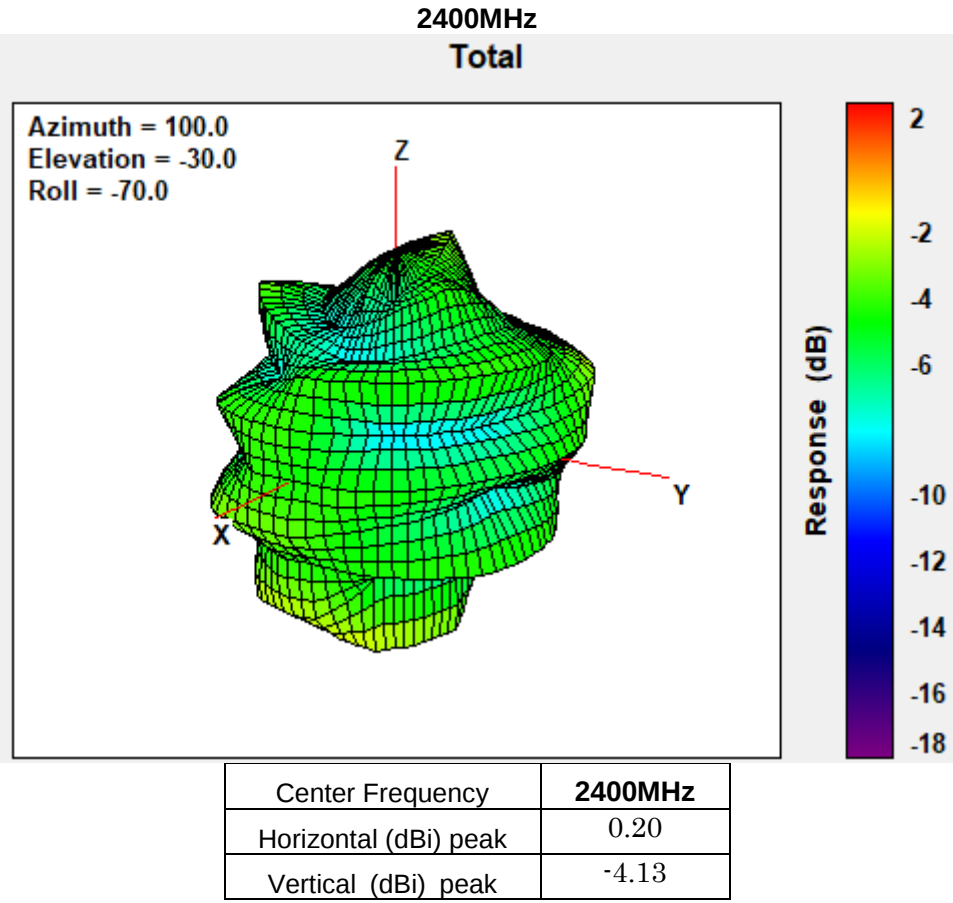
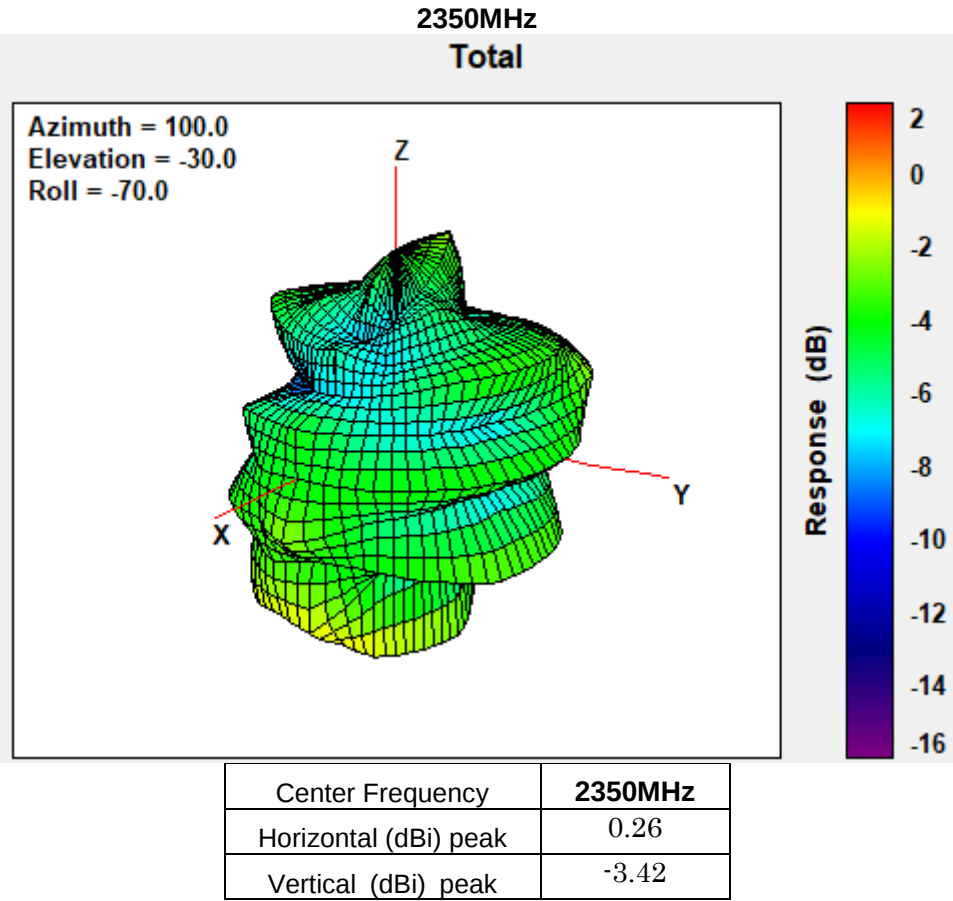


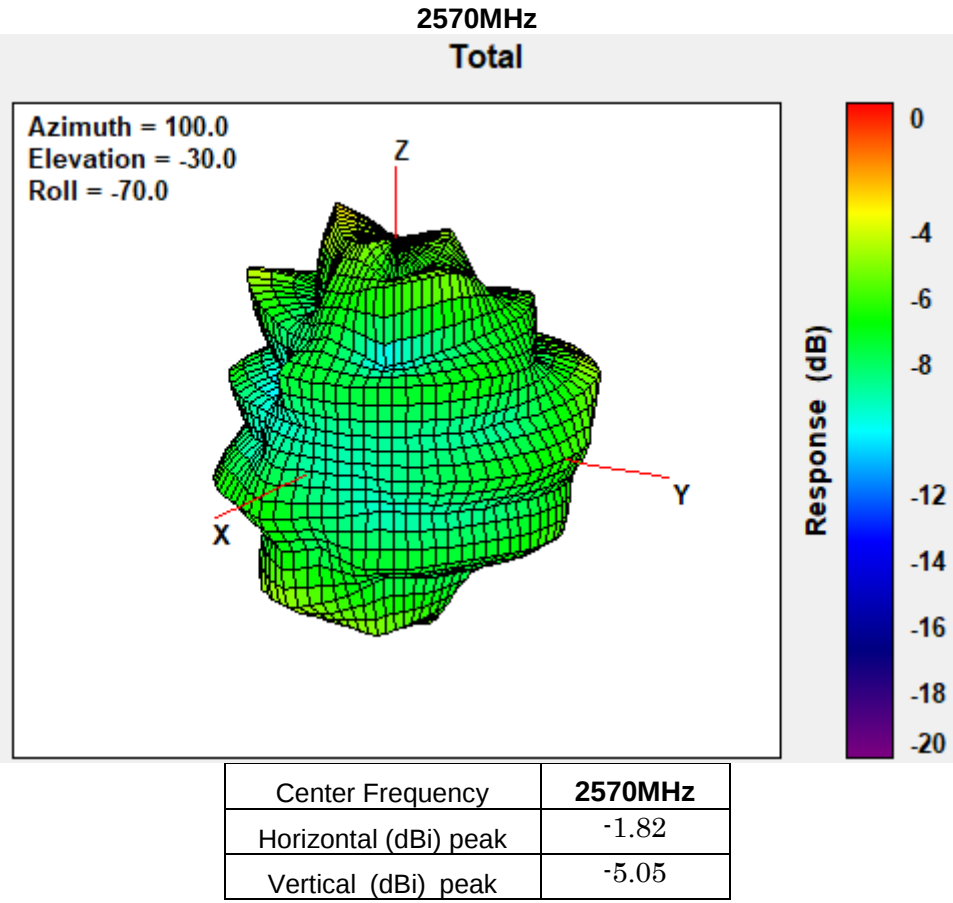
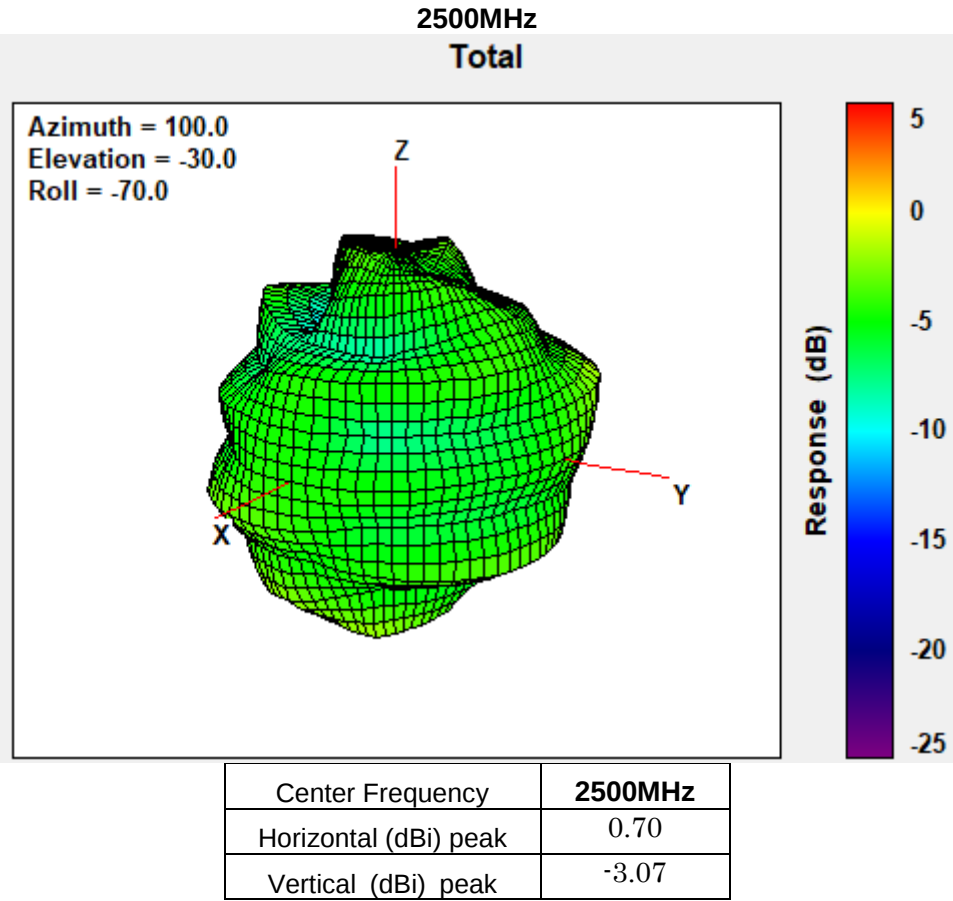


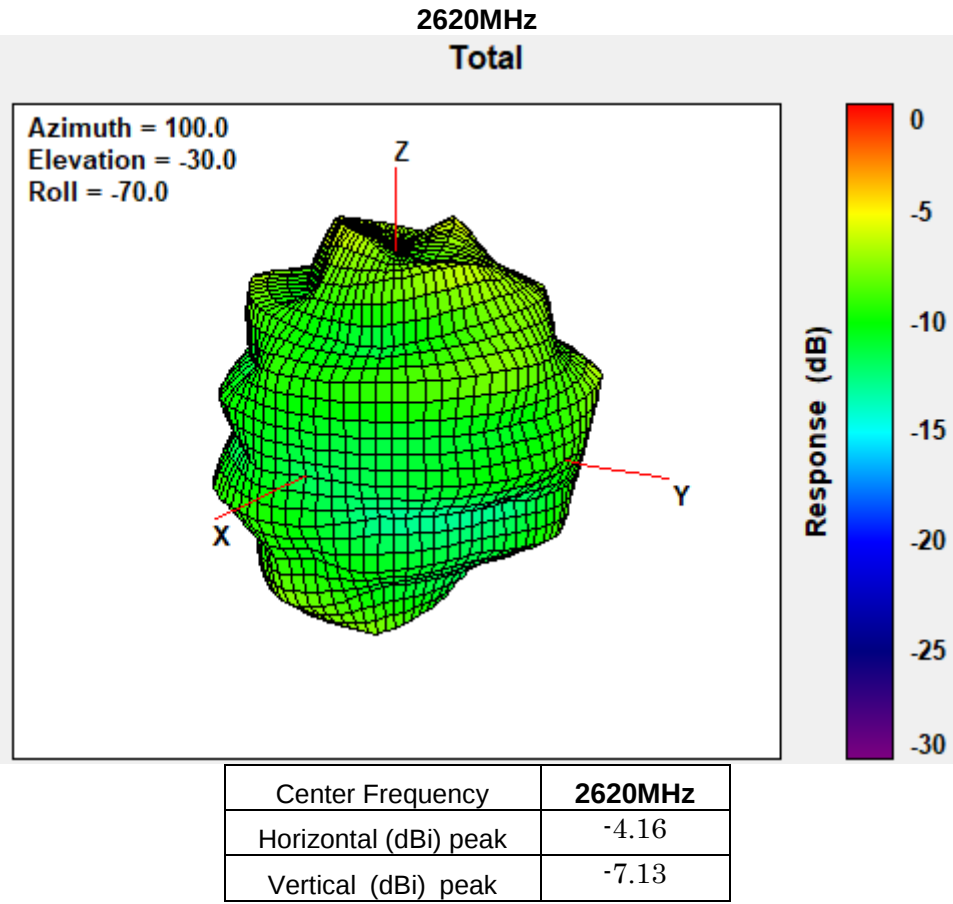
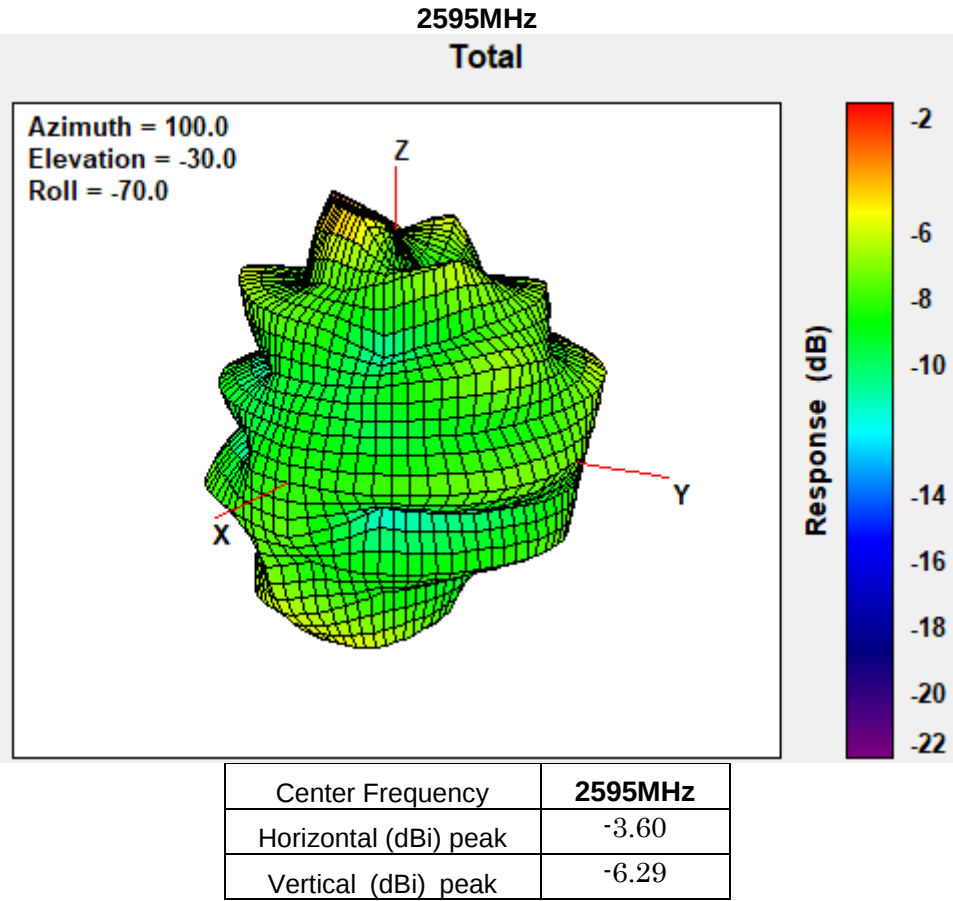


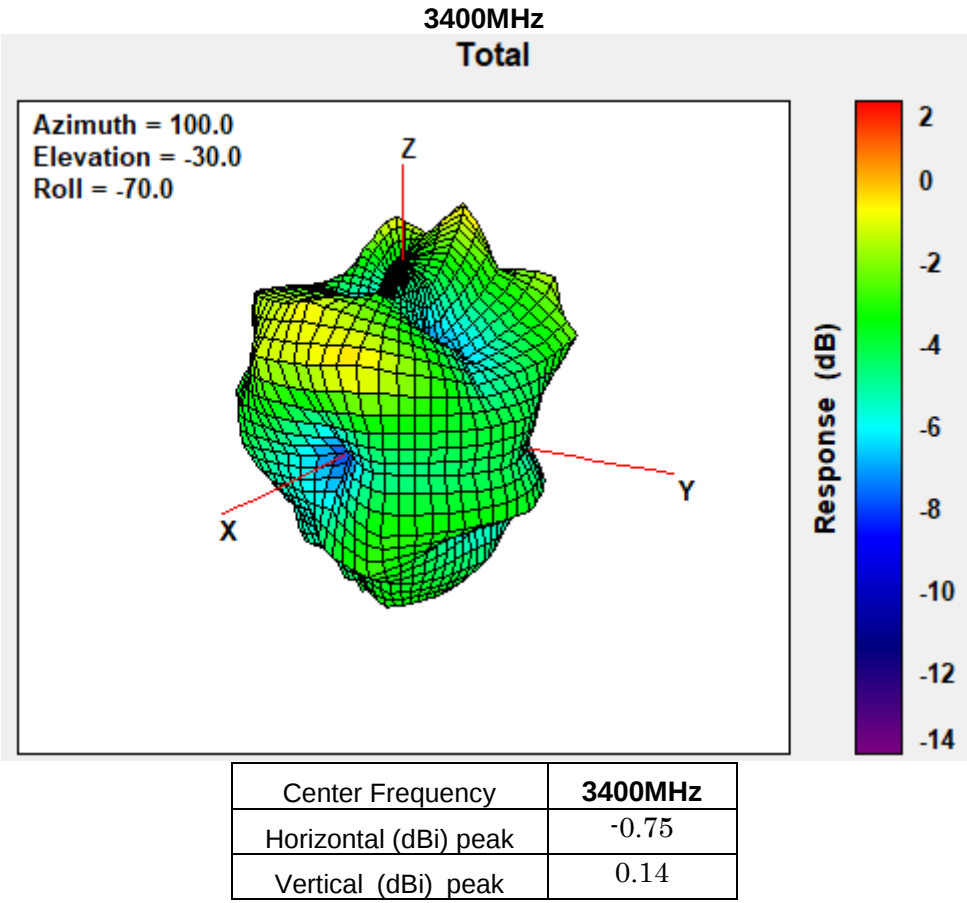
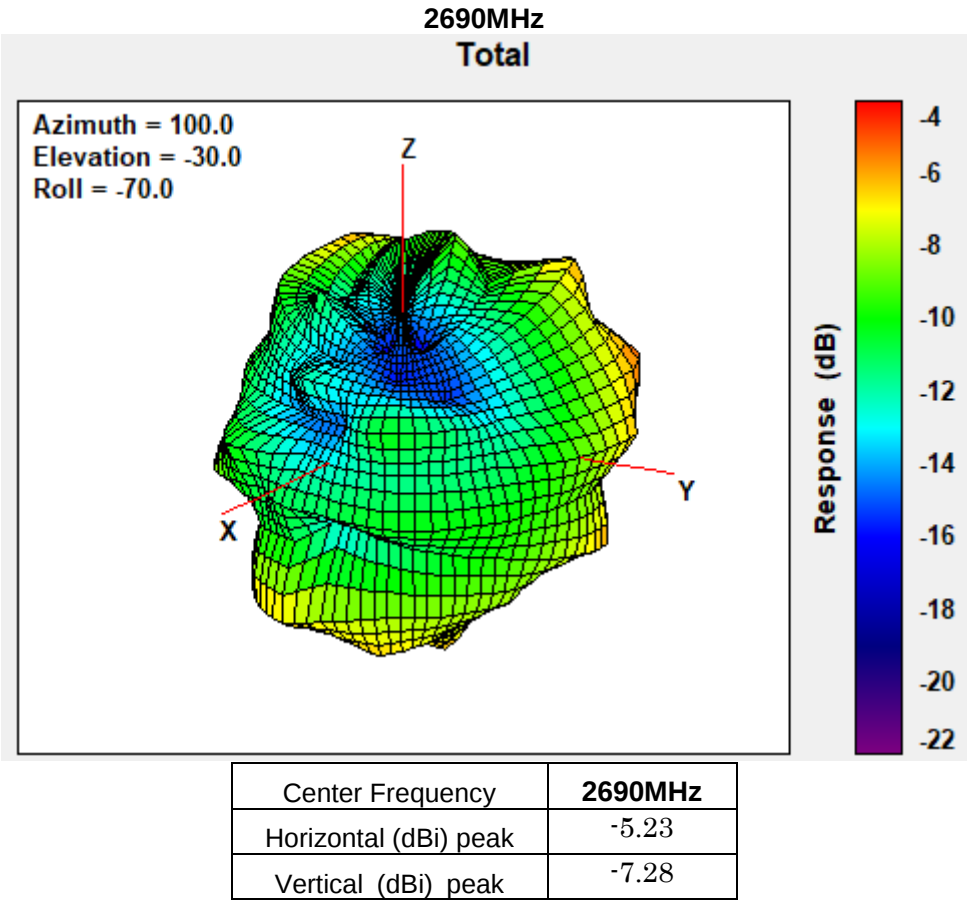


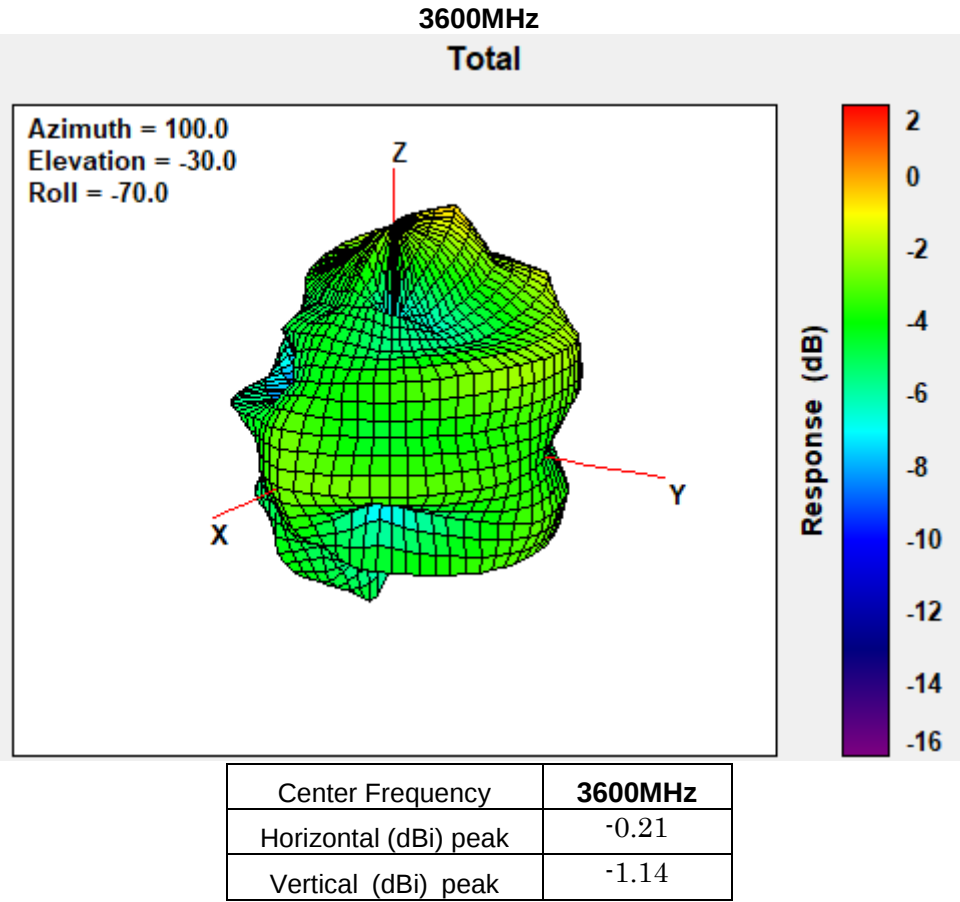
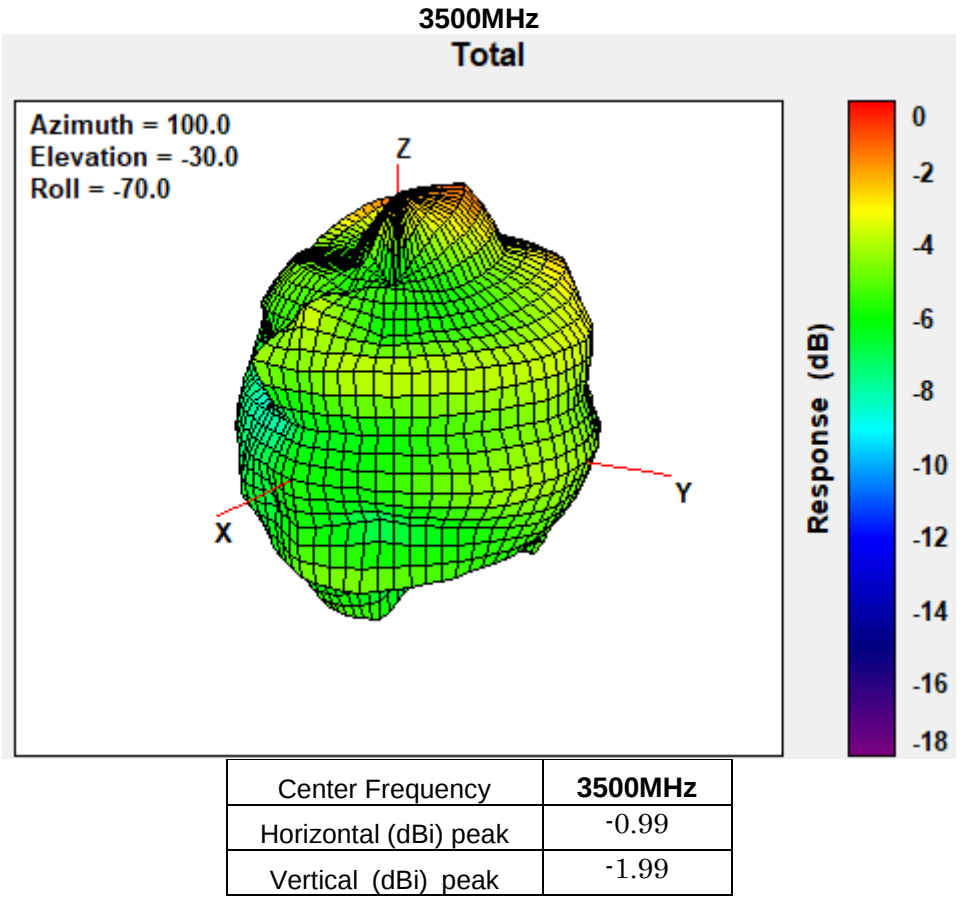


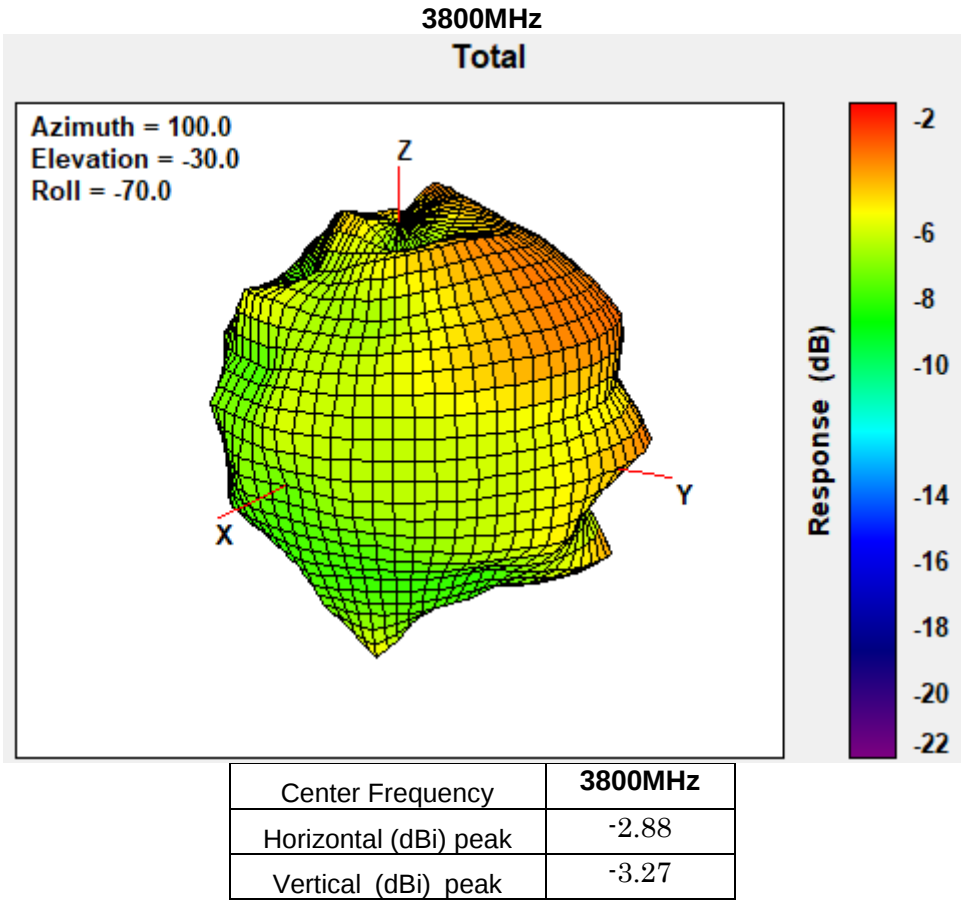
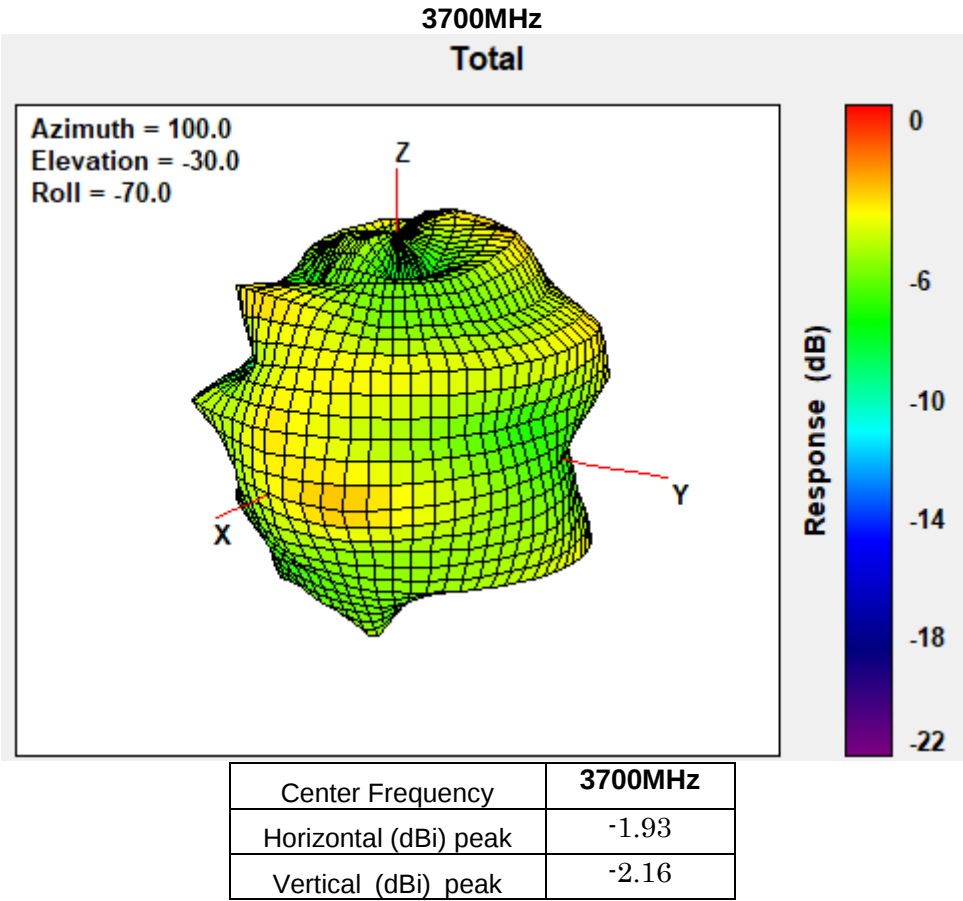


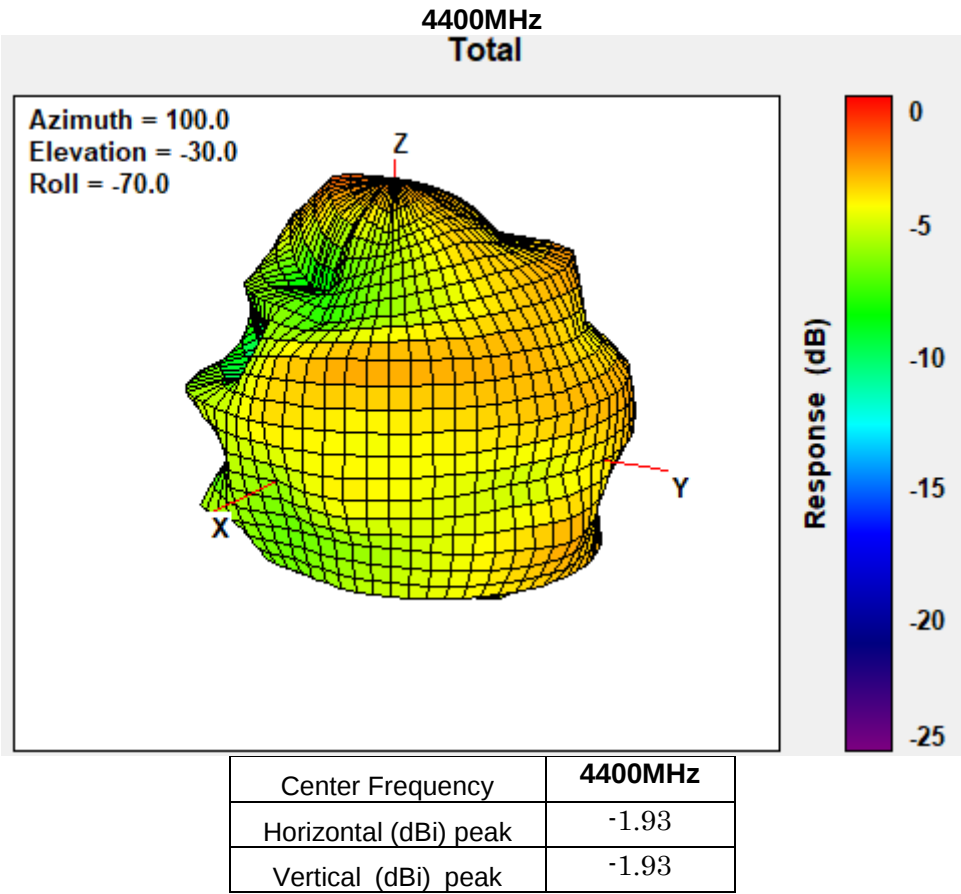
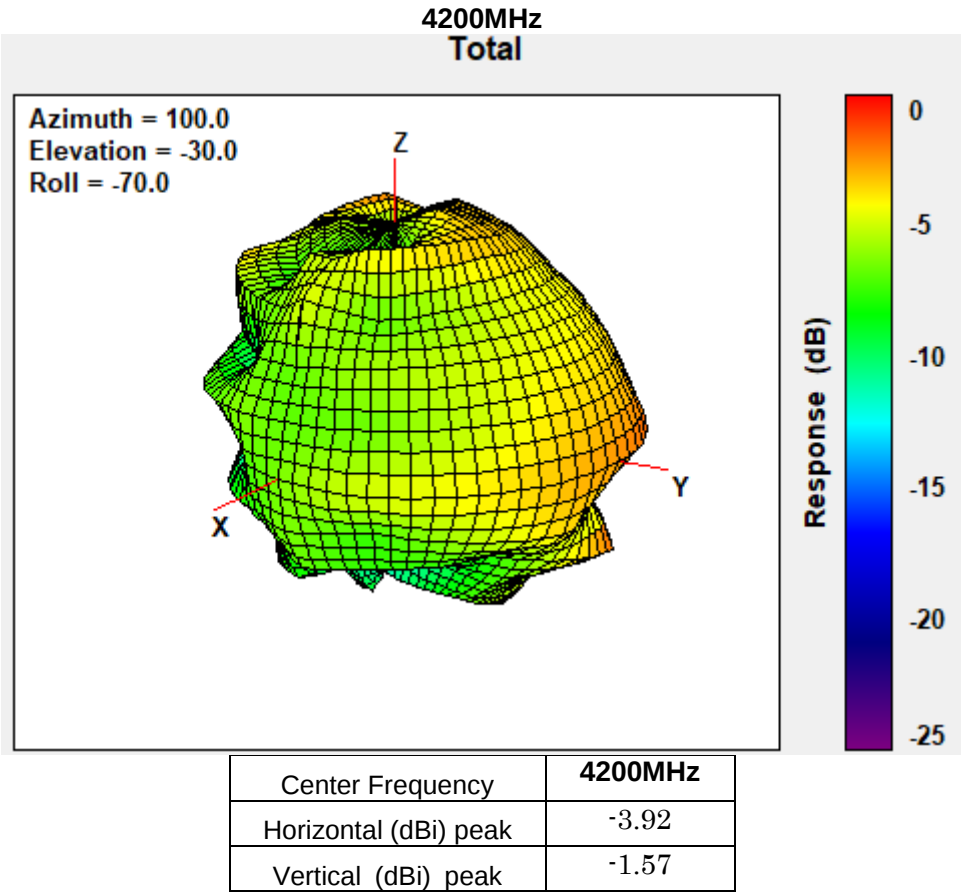


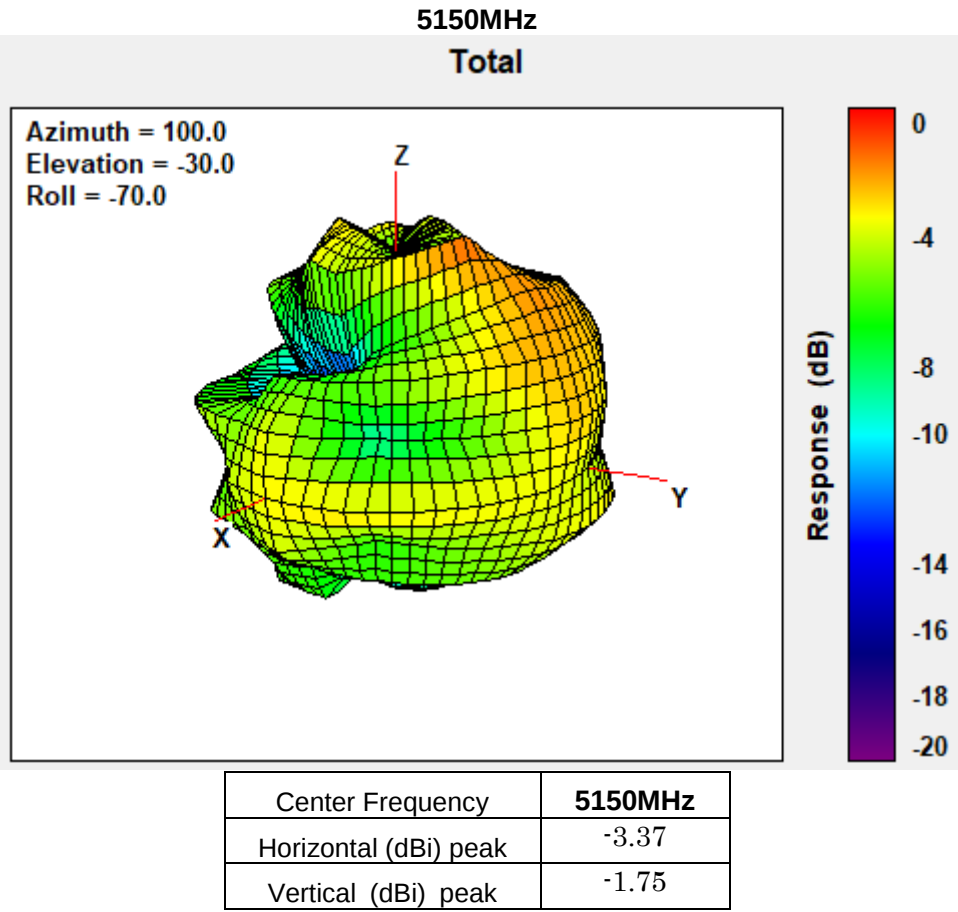
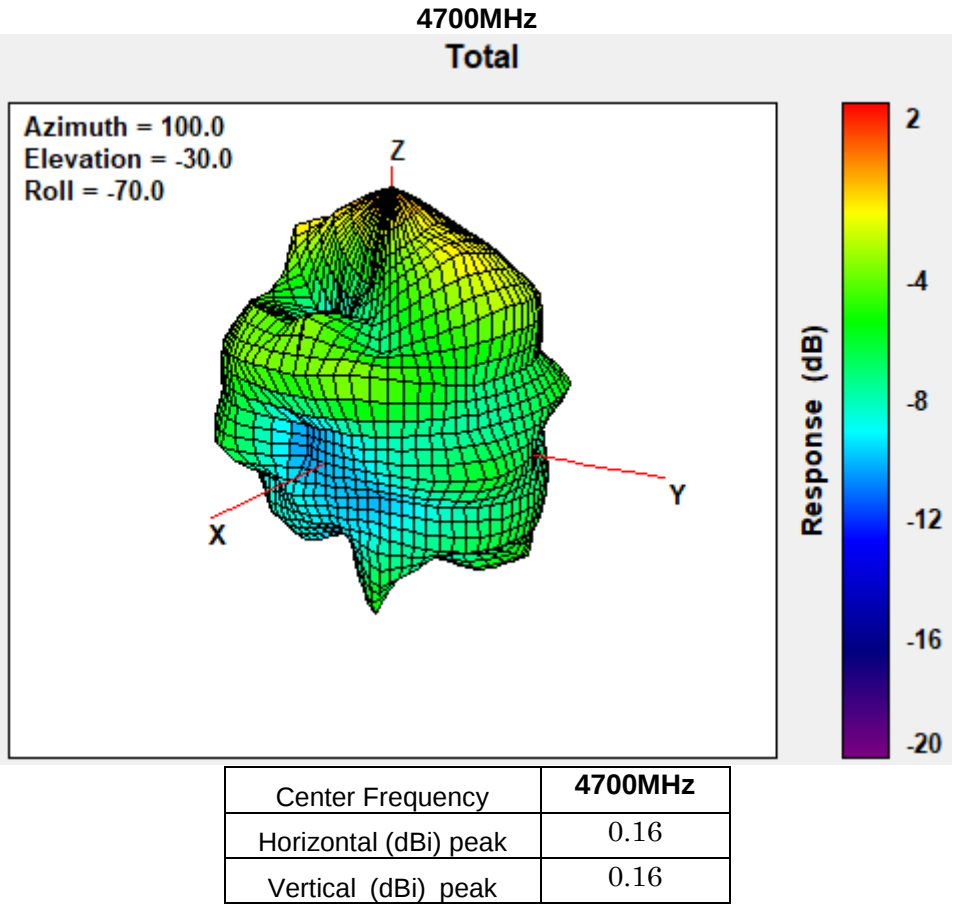


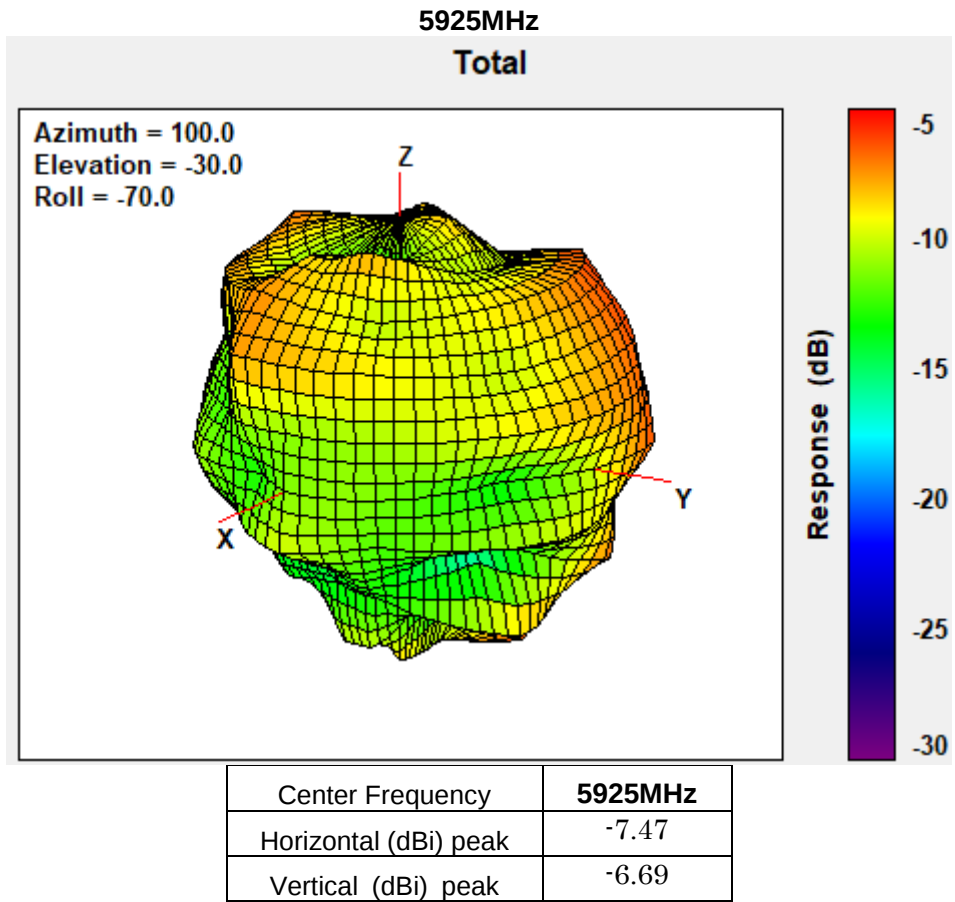
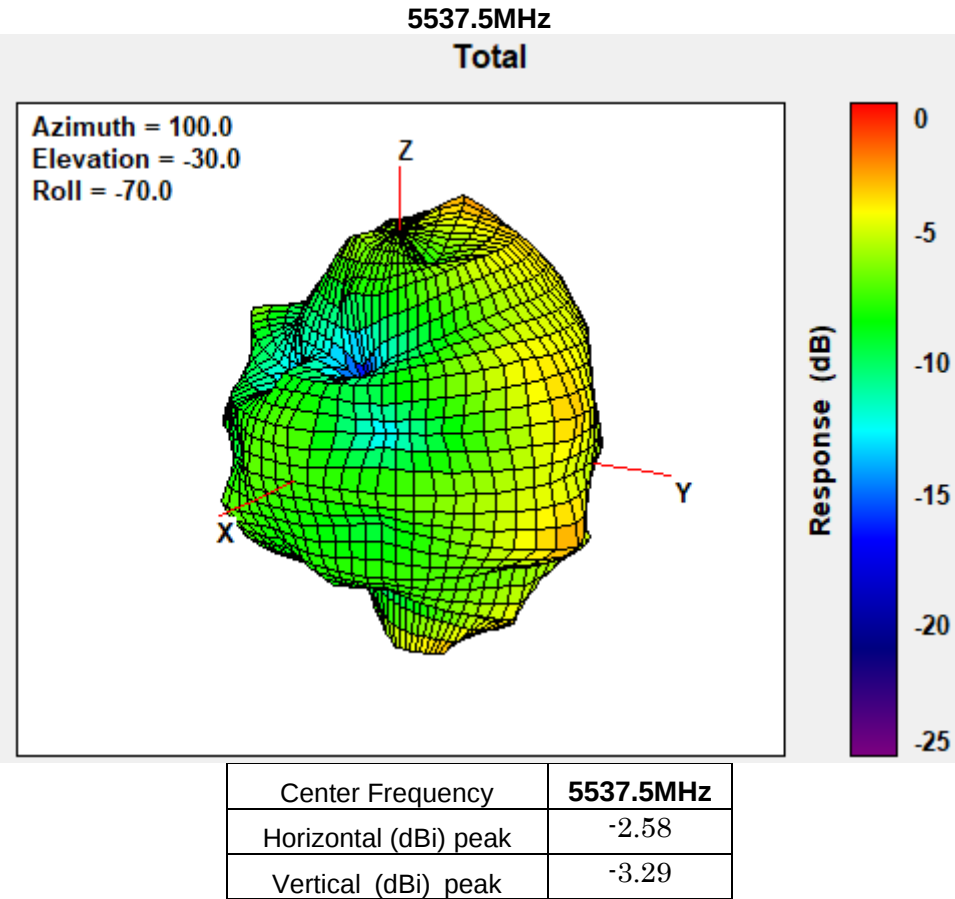




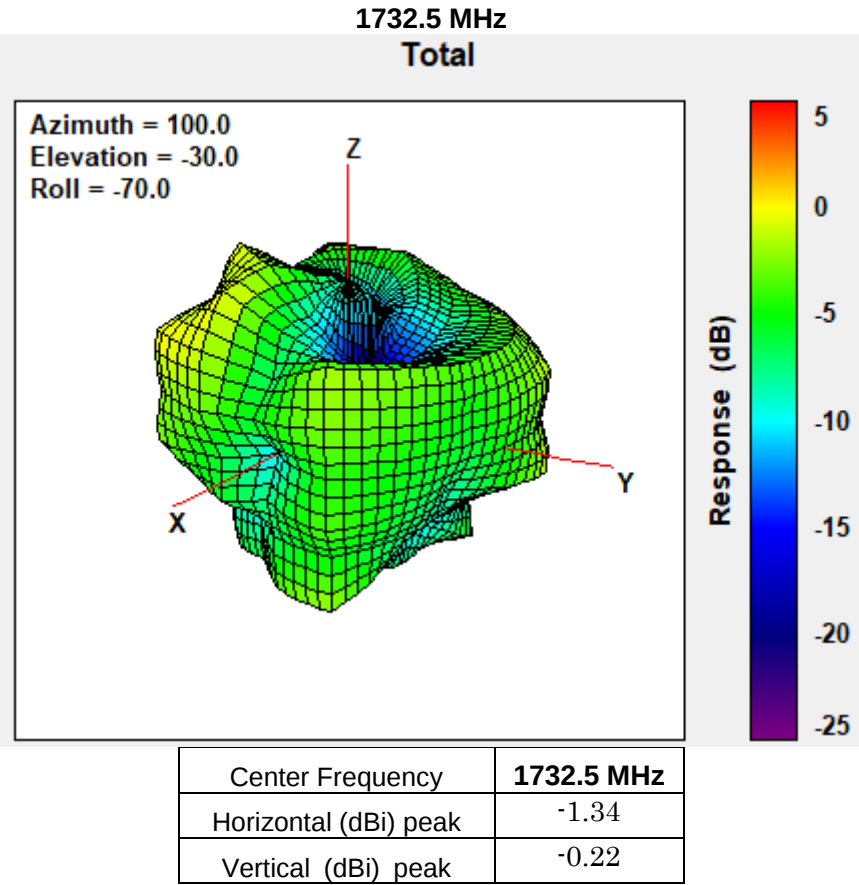
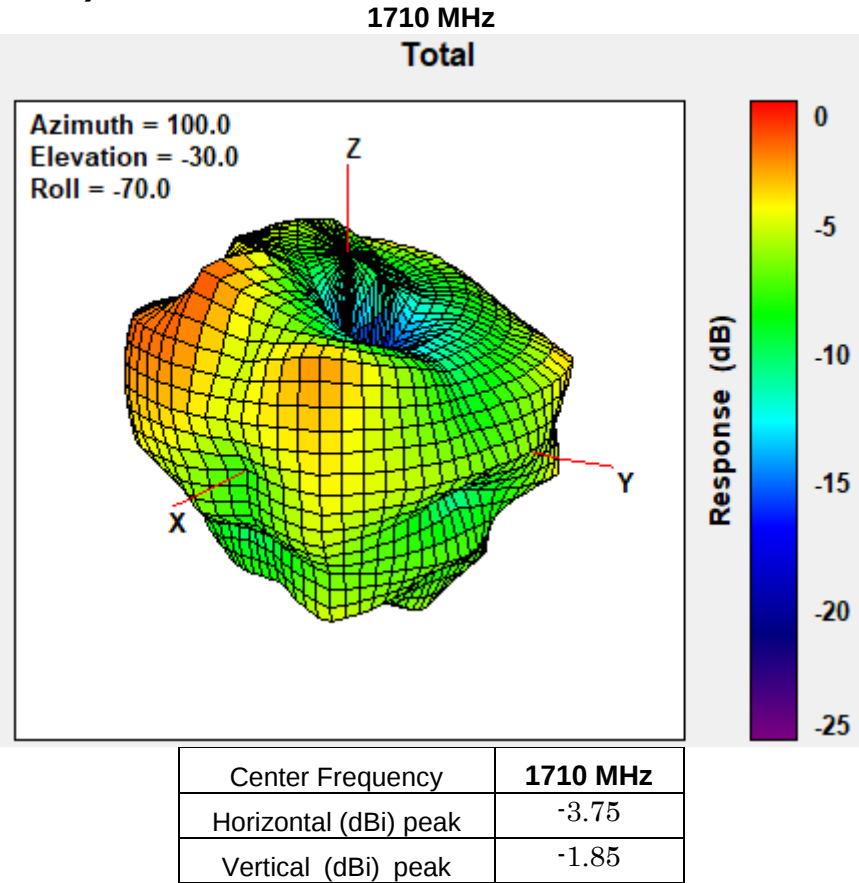


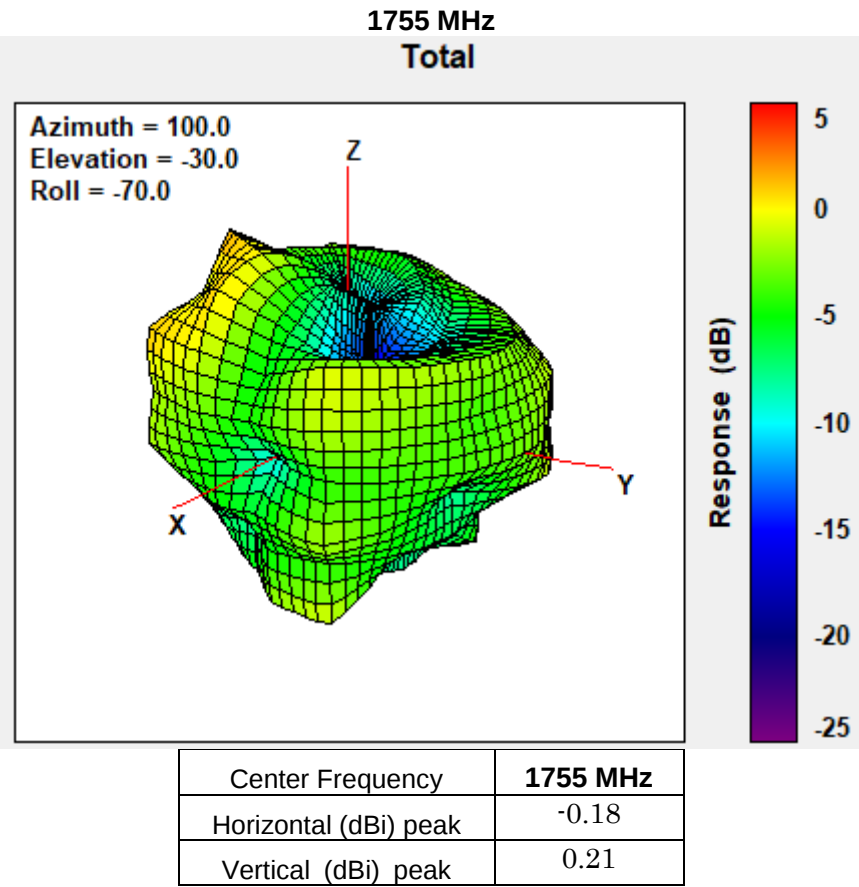
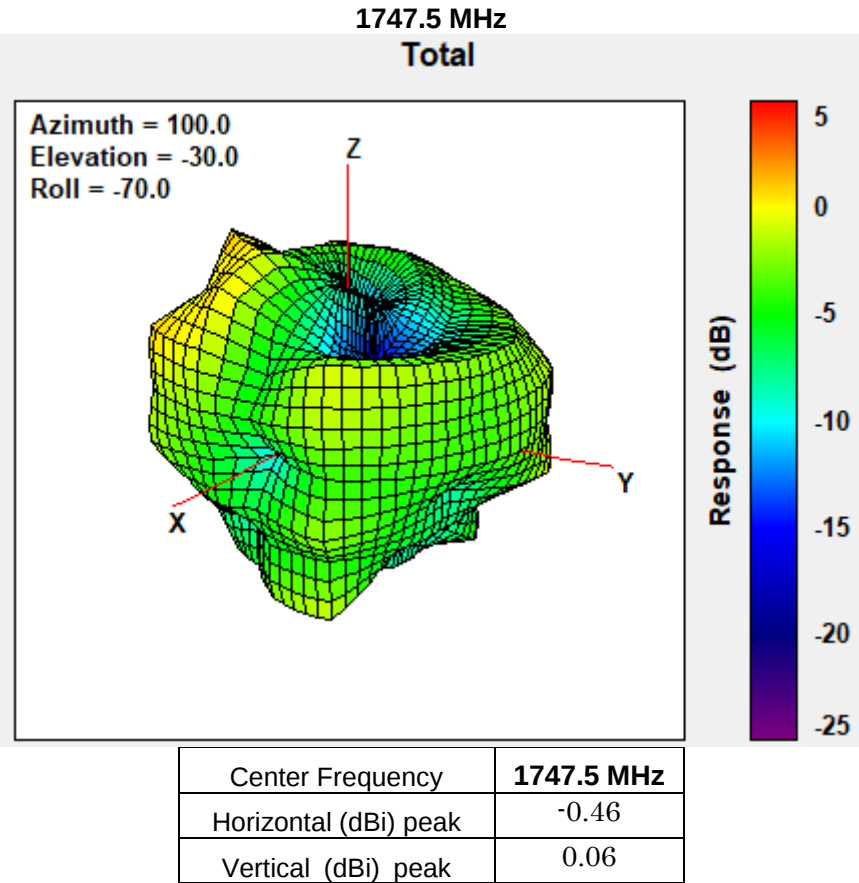


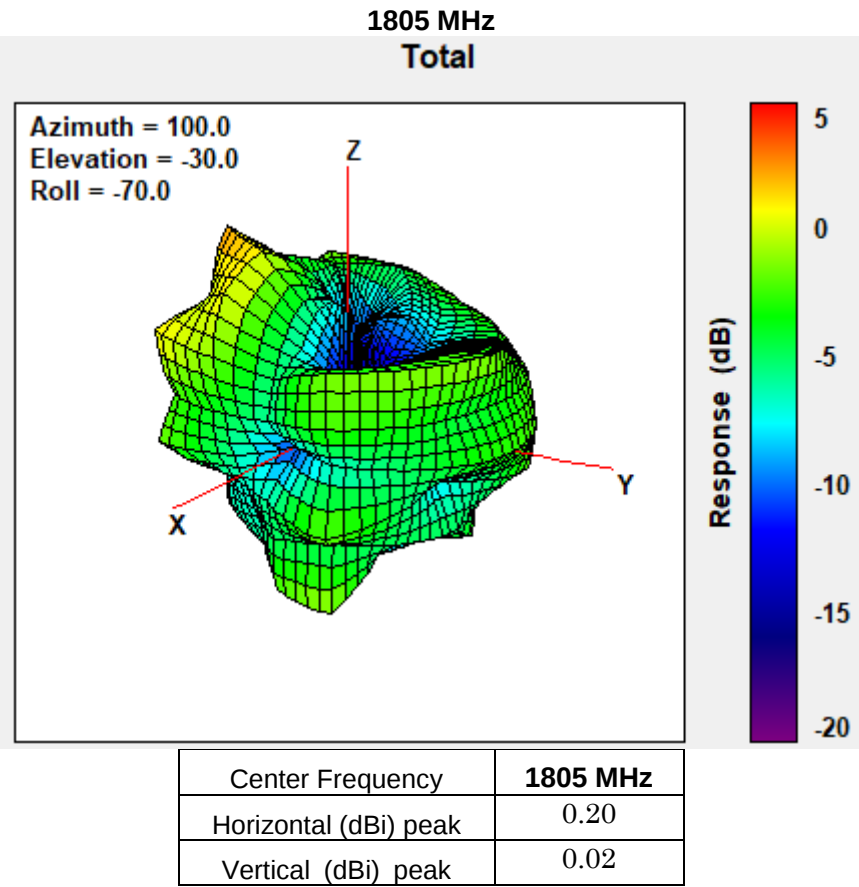
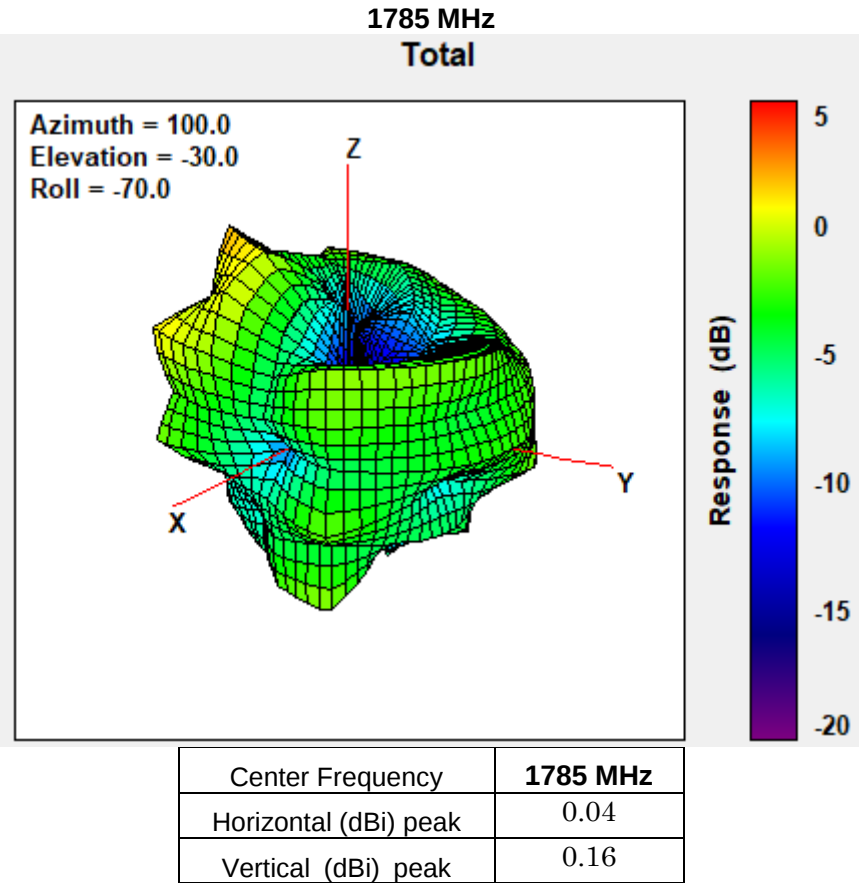


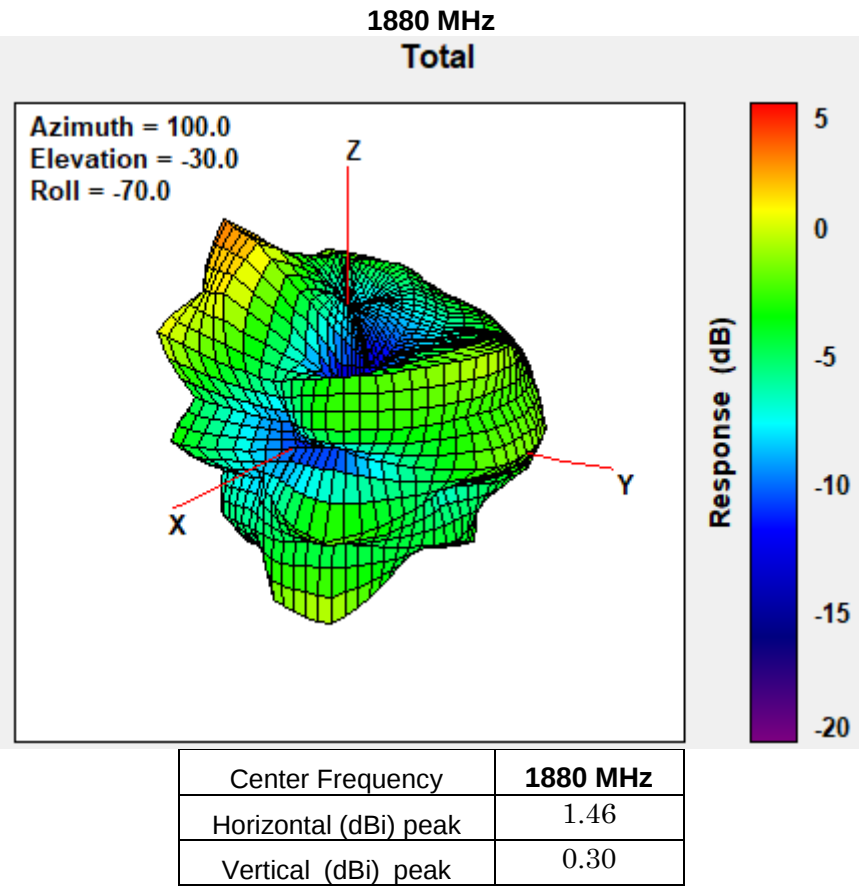
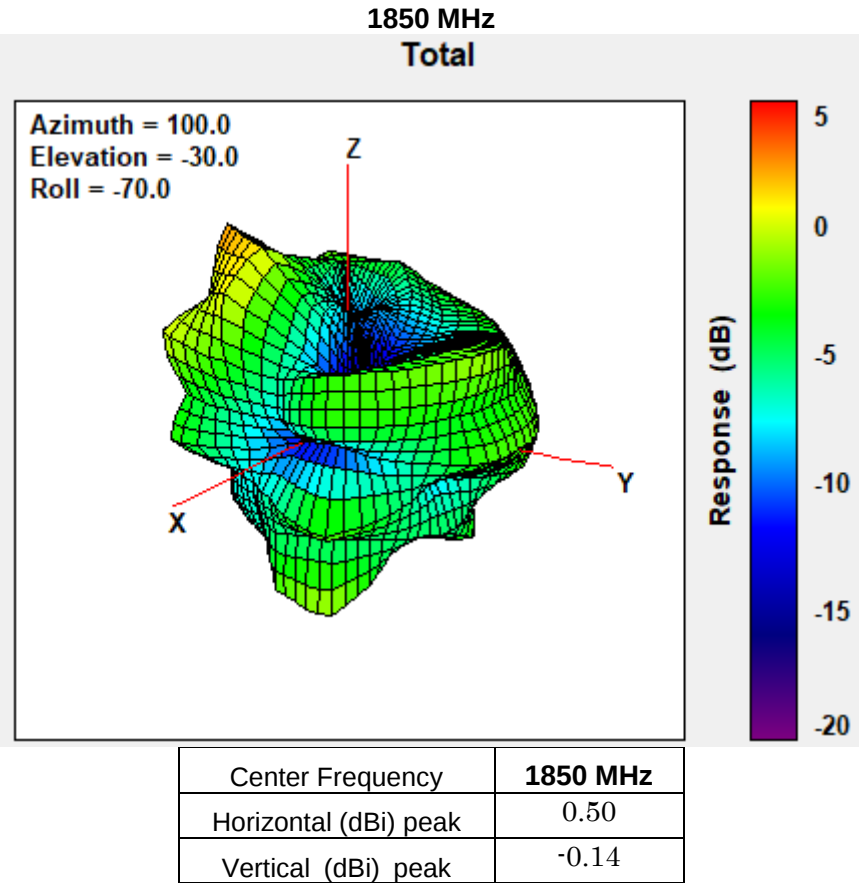


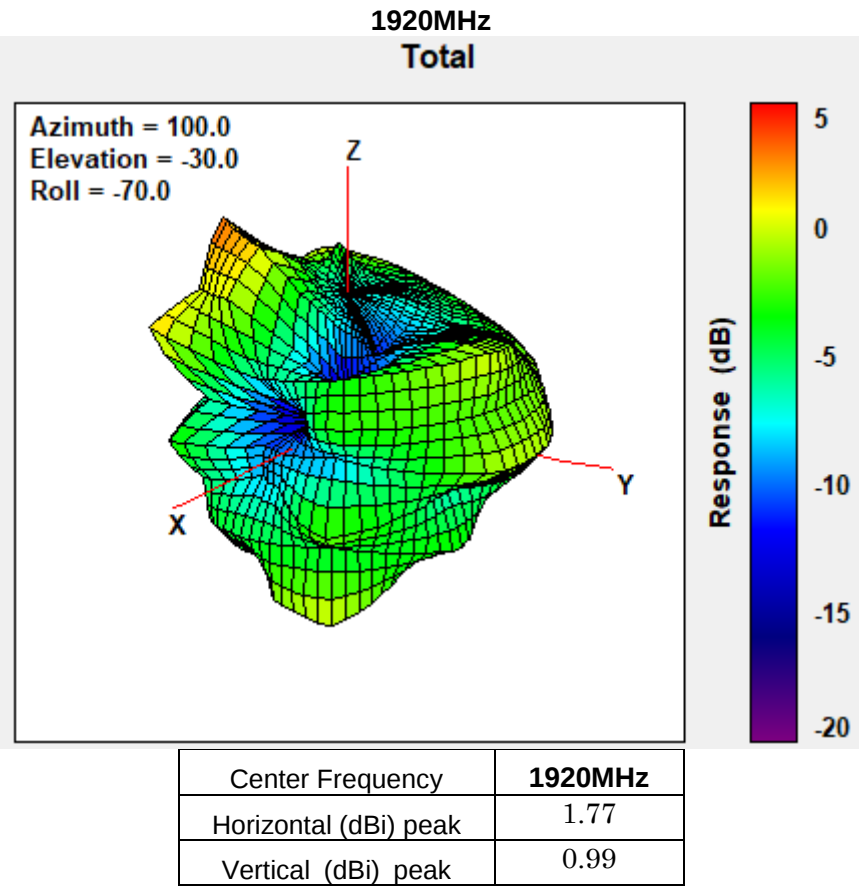
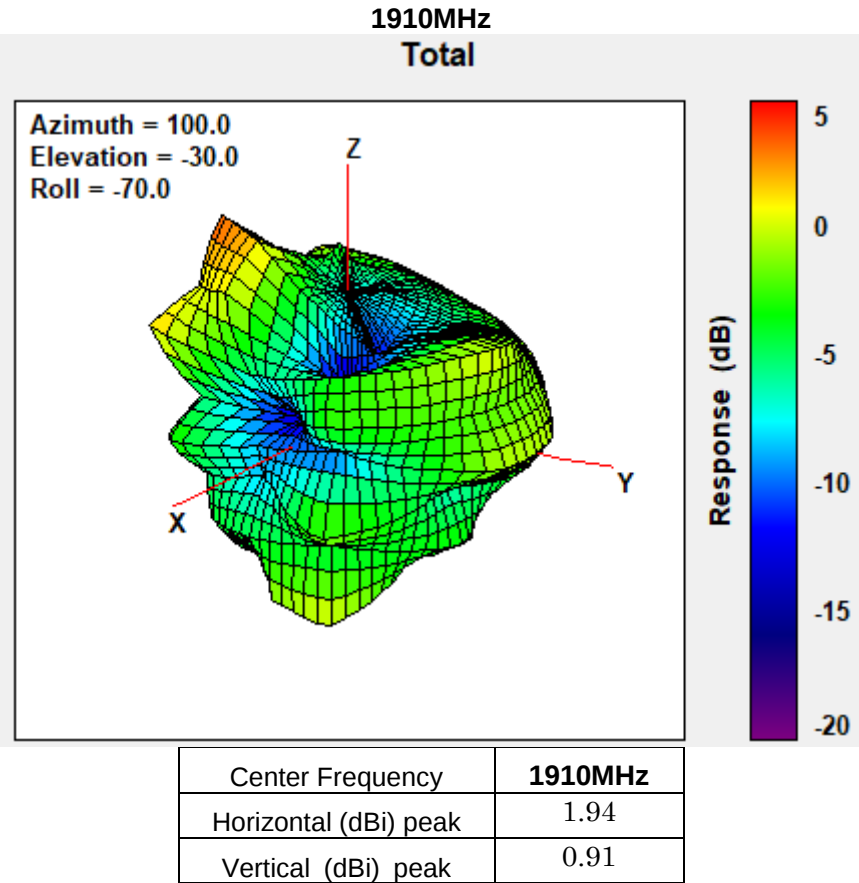
MIMO2 Antenna (DRx2)

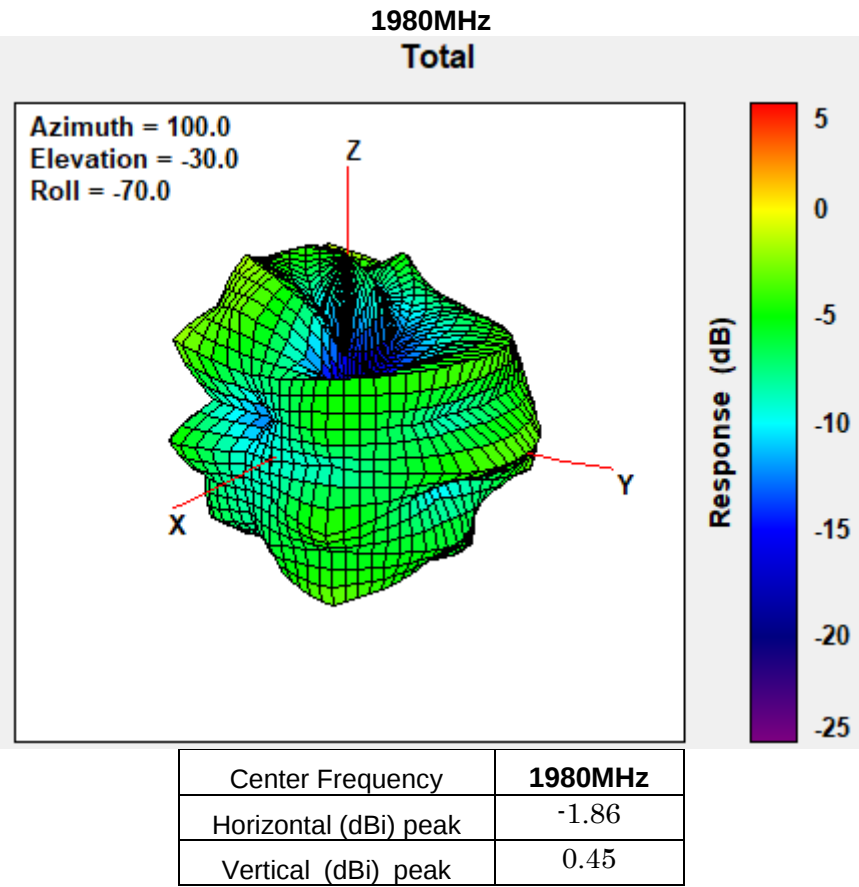
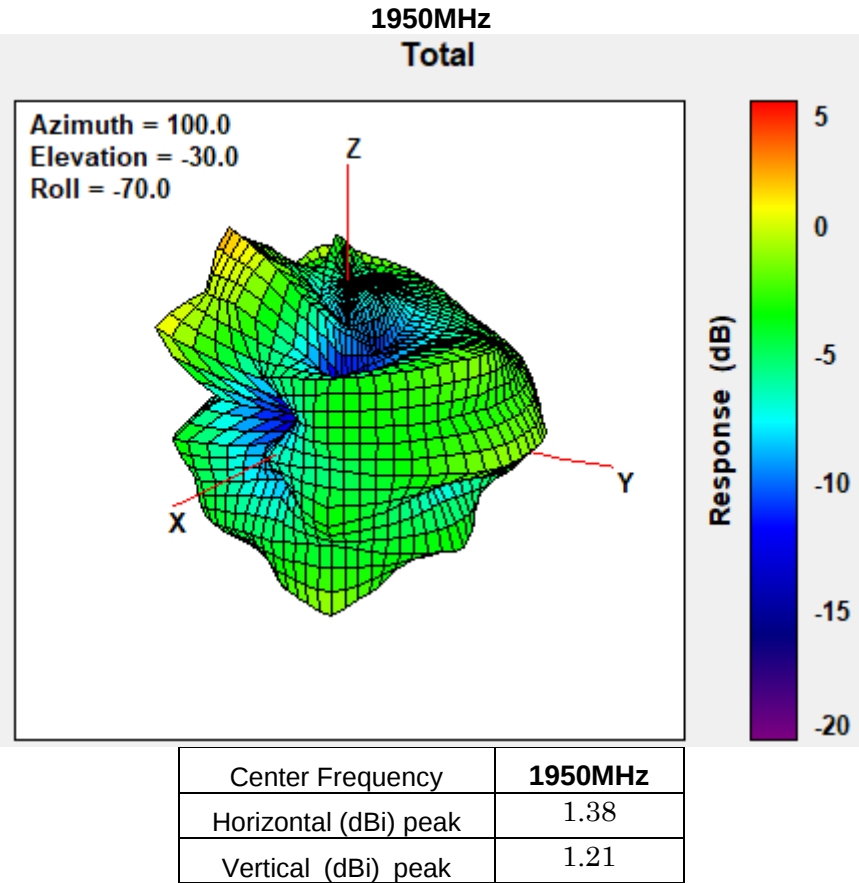


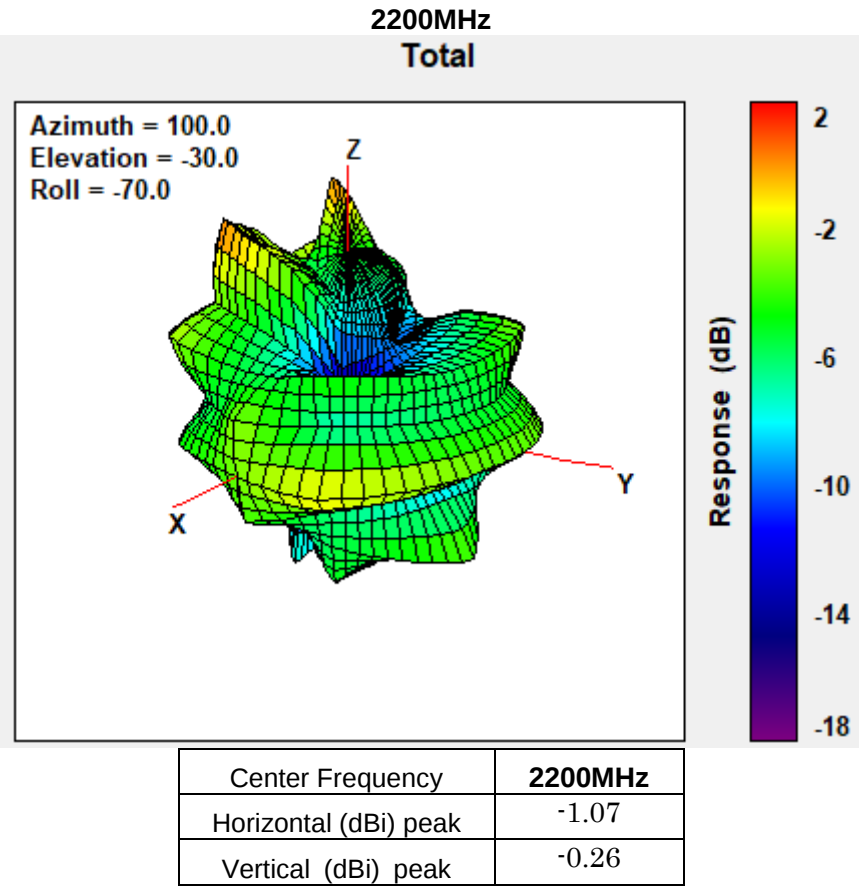
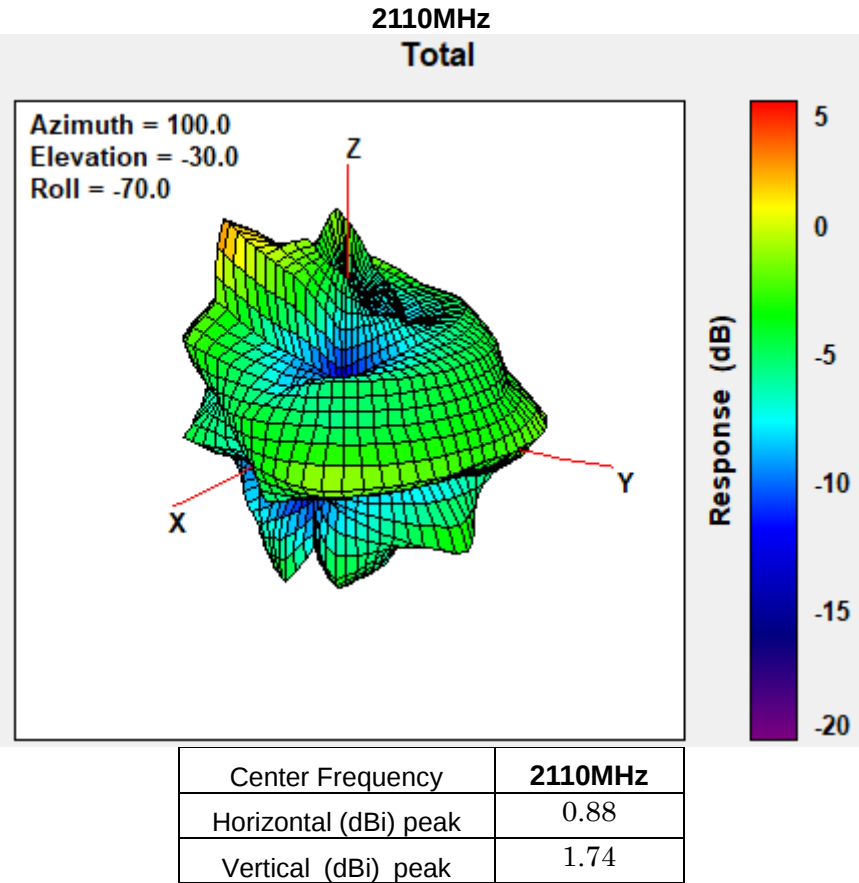


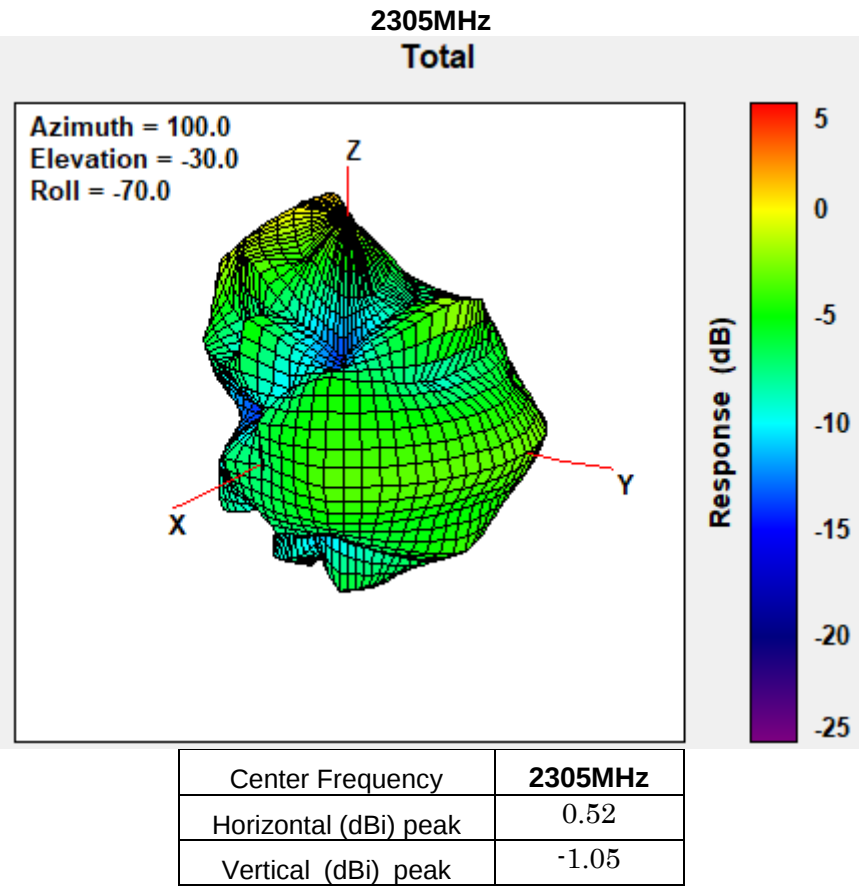
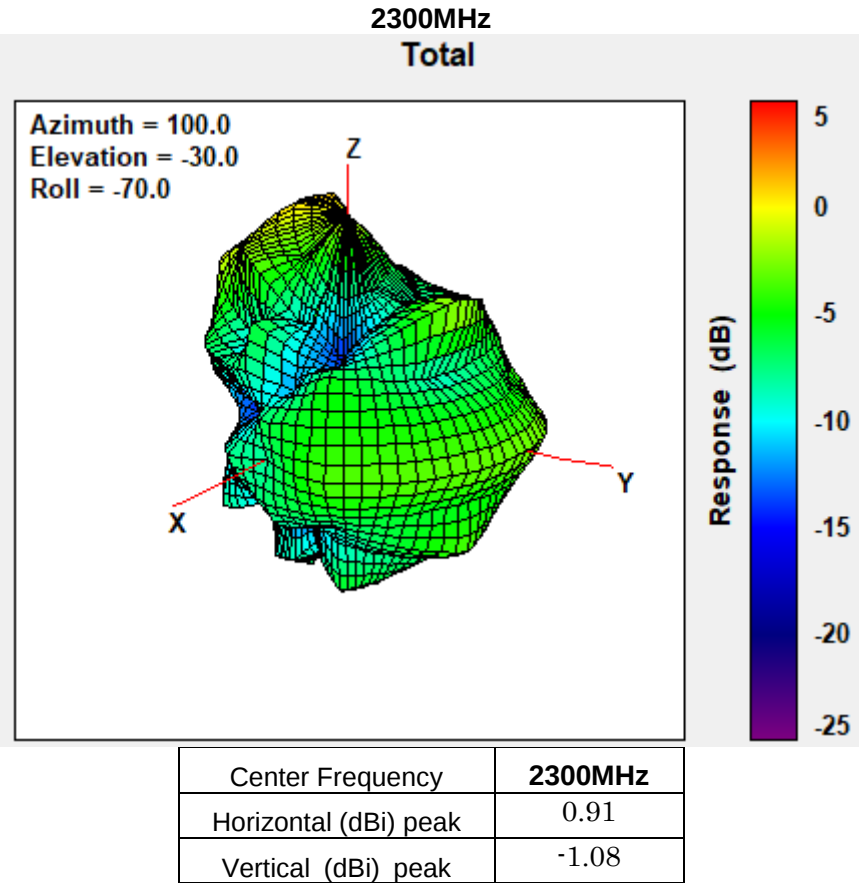


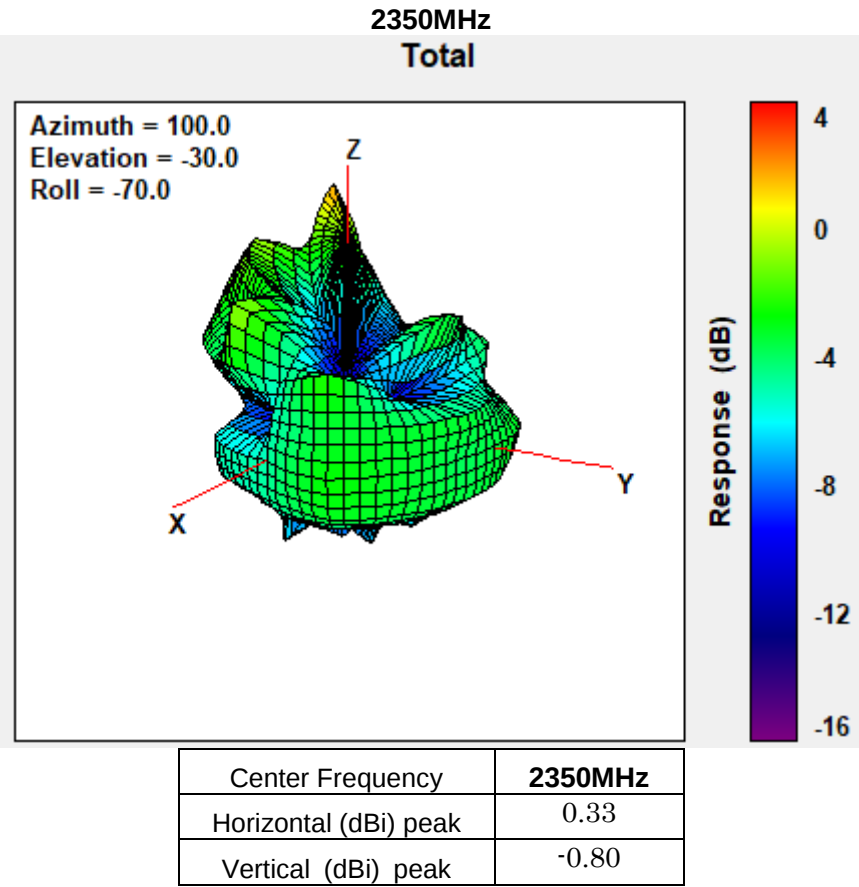
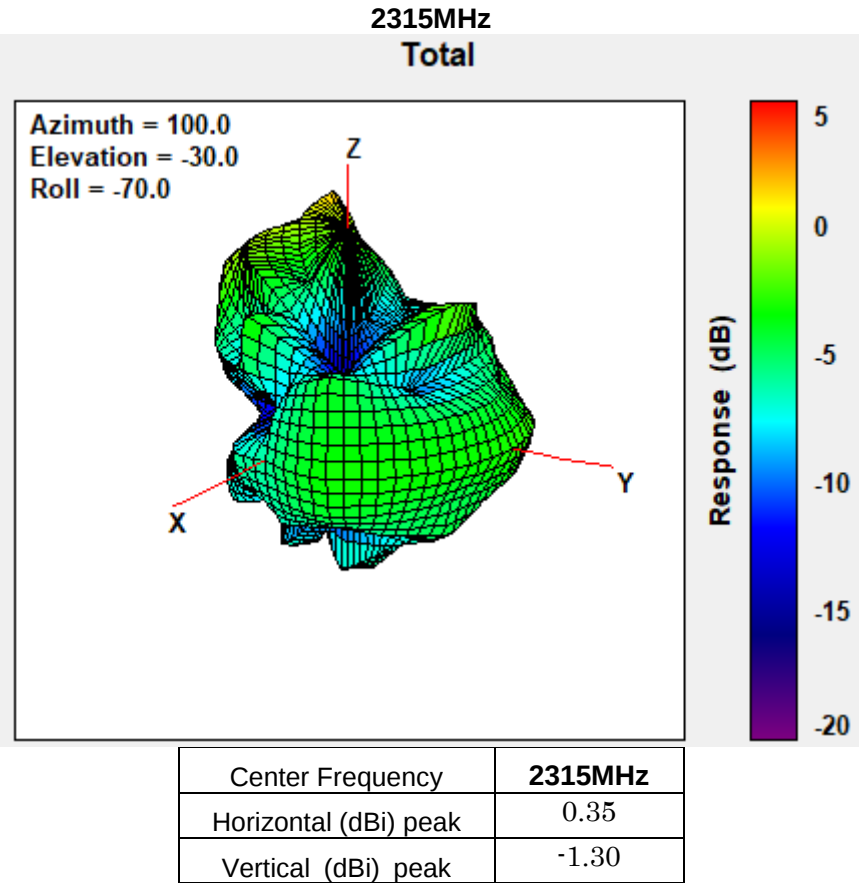


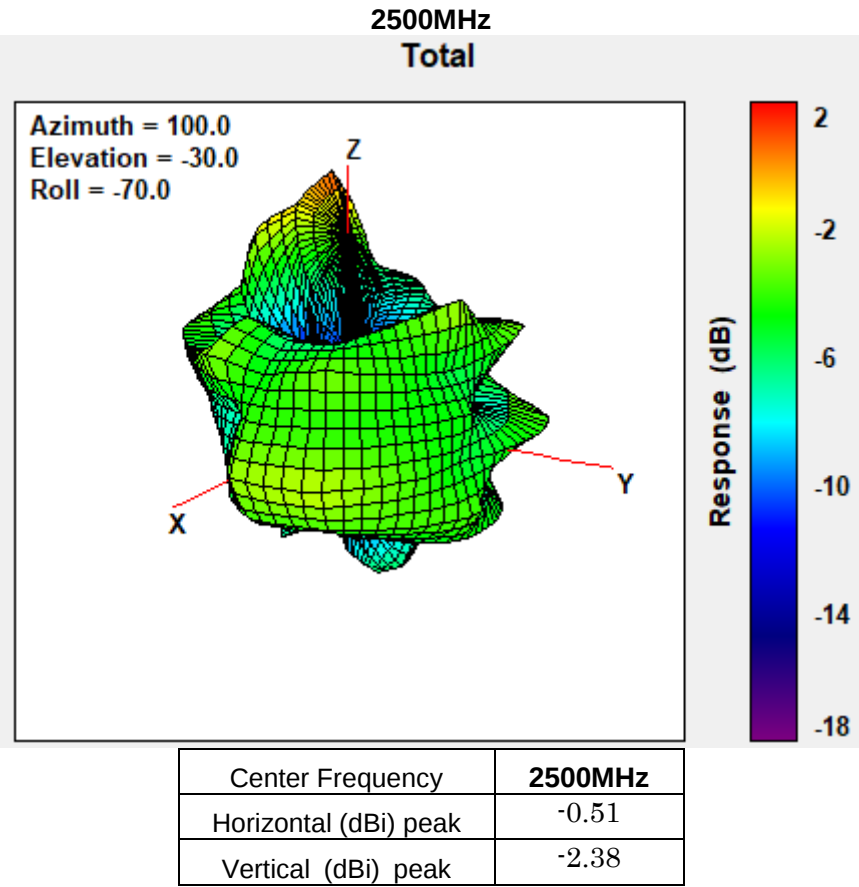
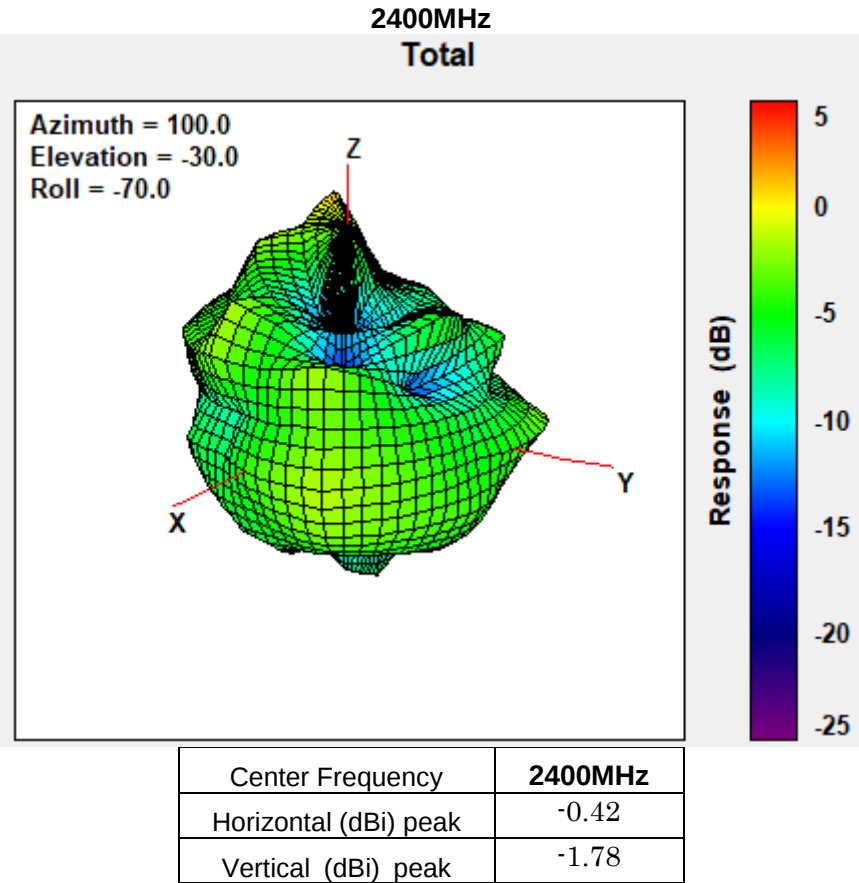


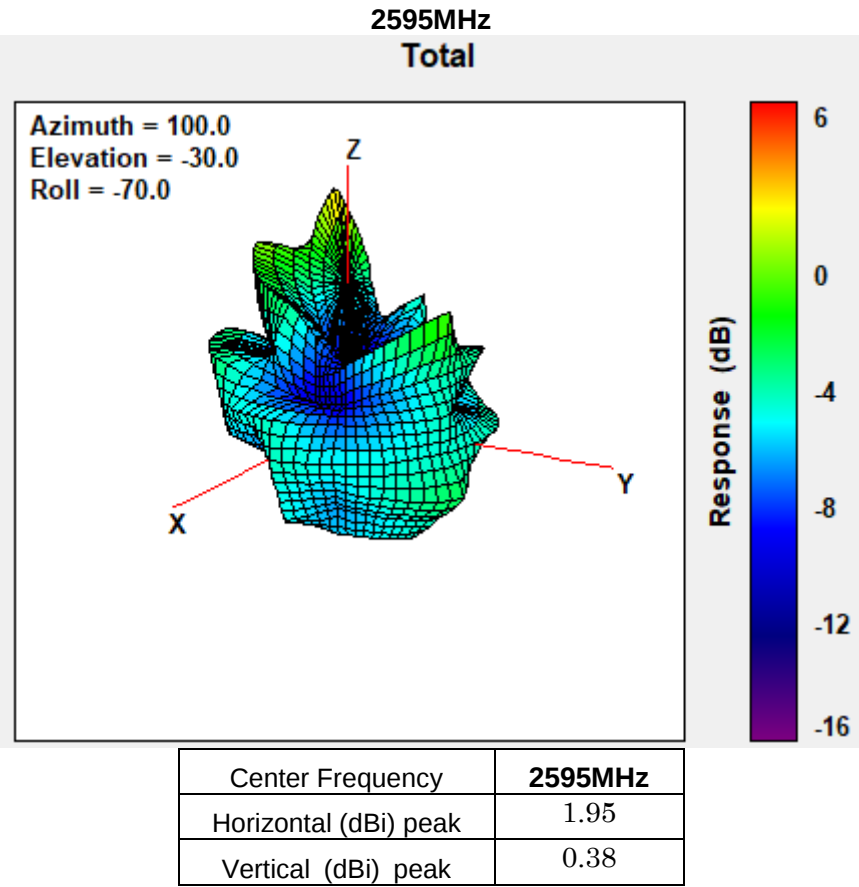
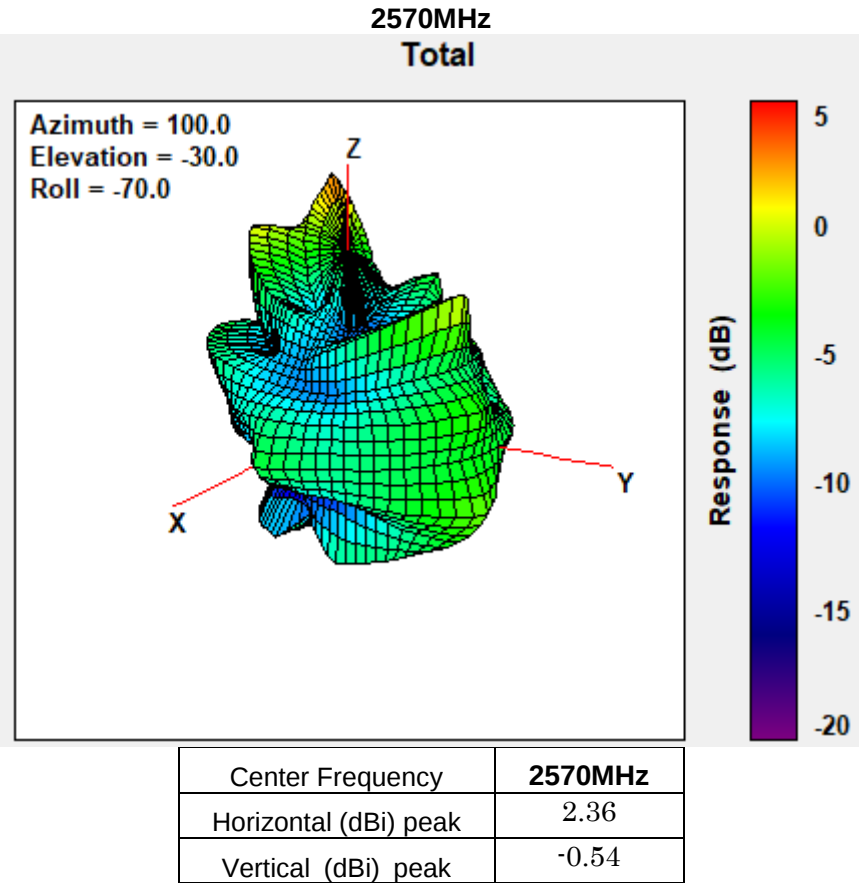


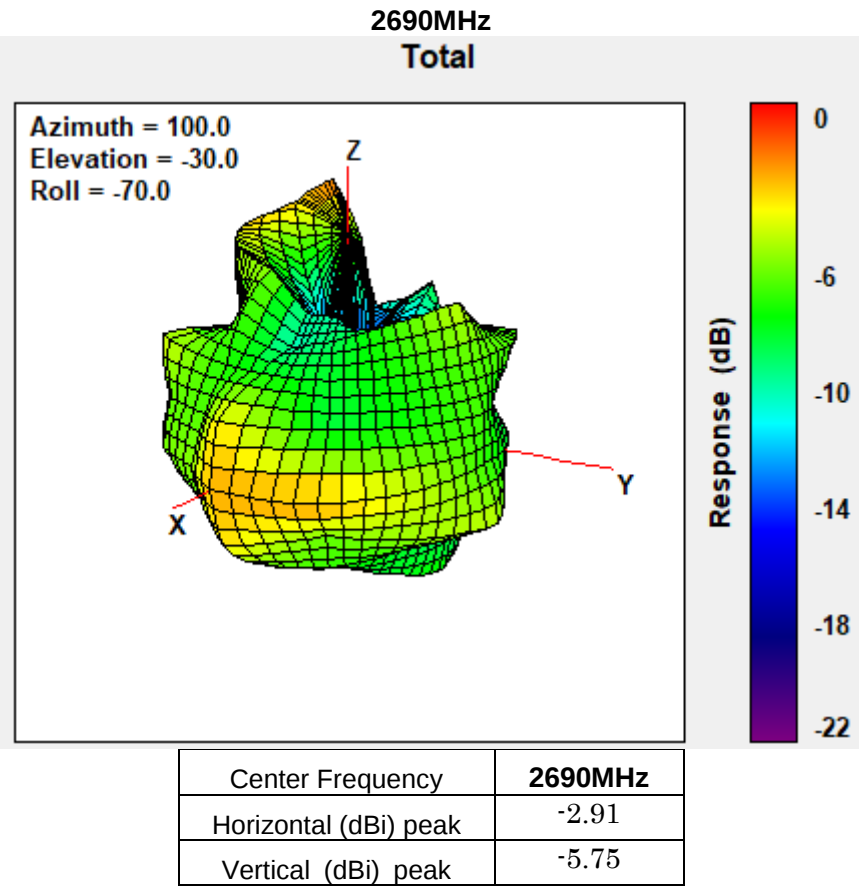
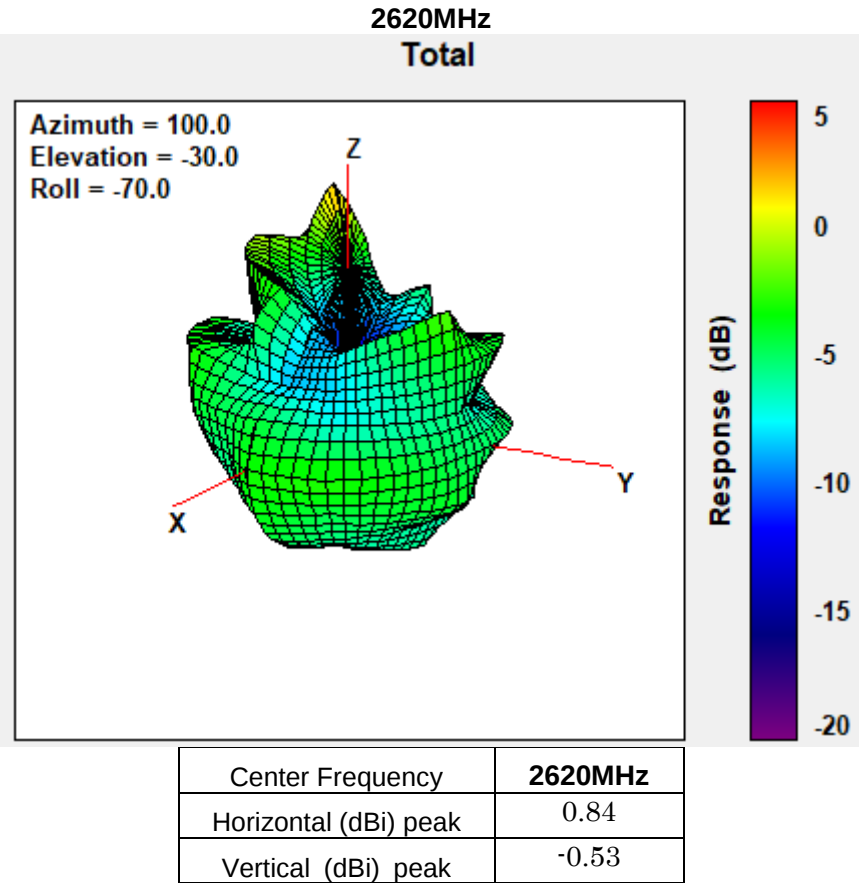


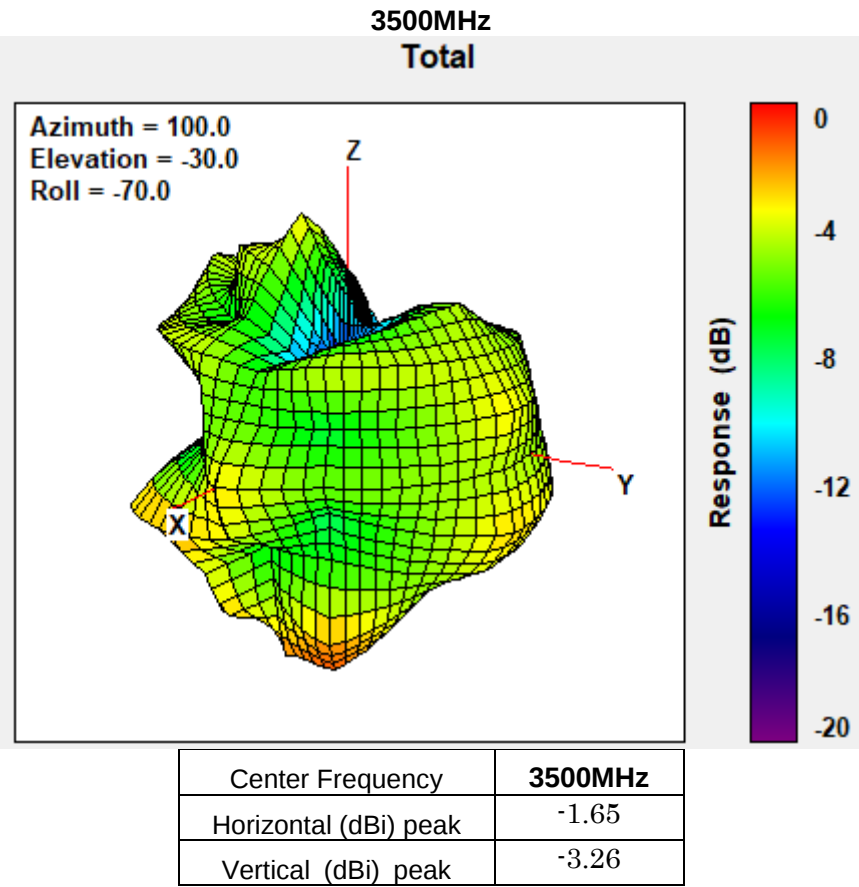
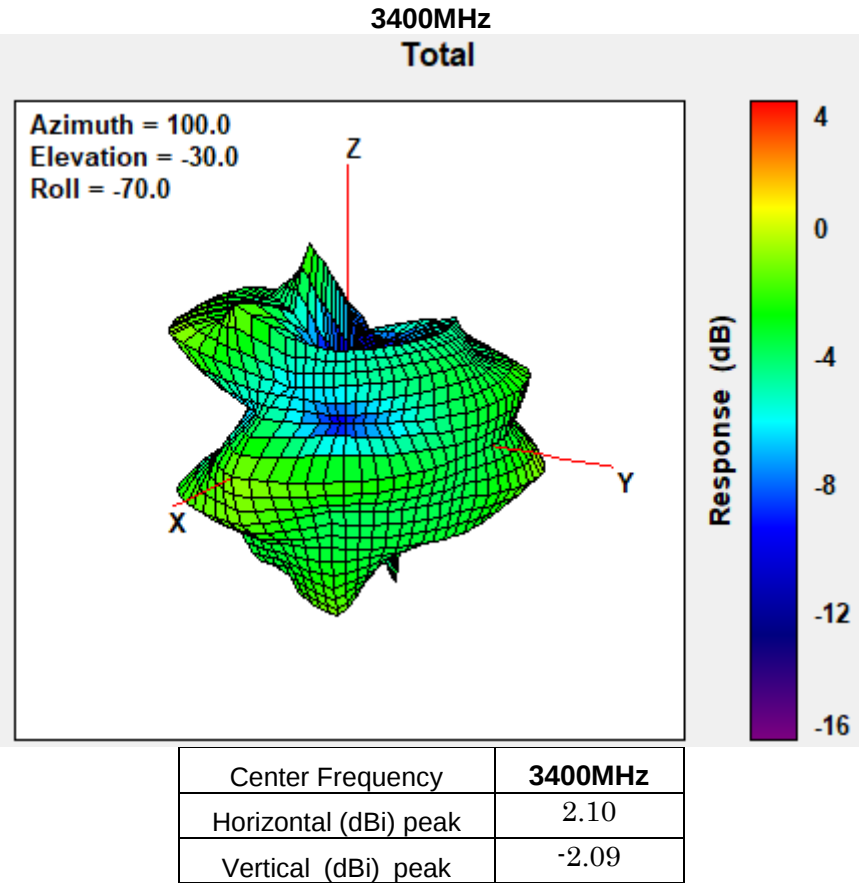


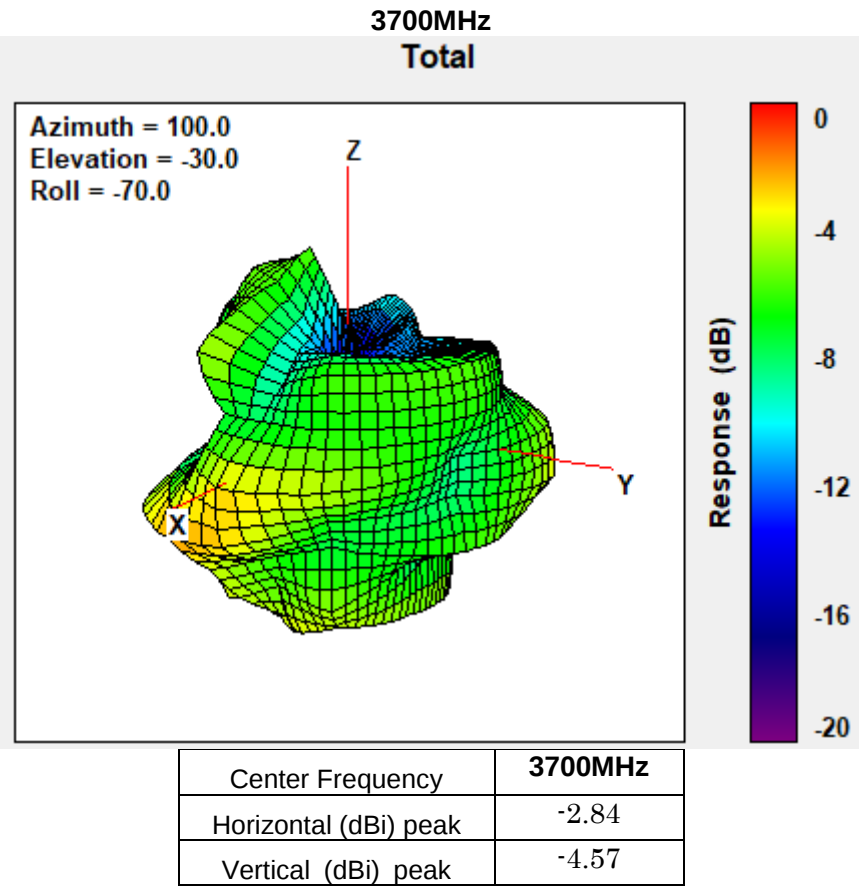
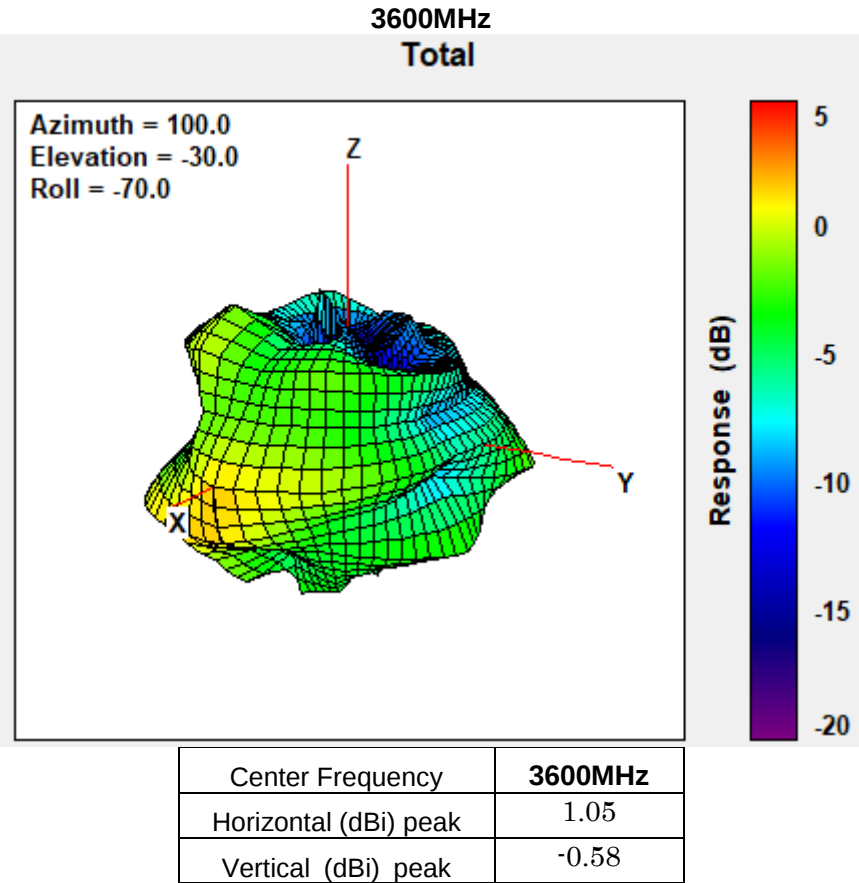


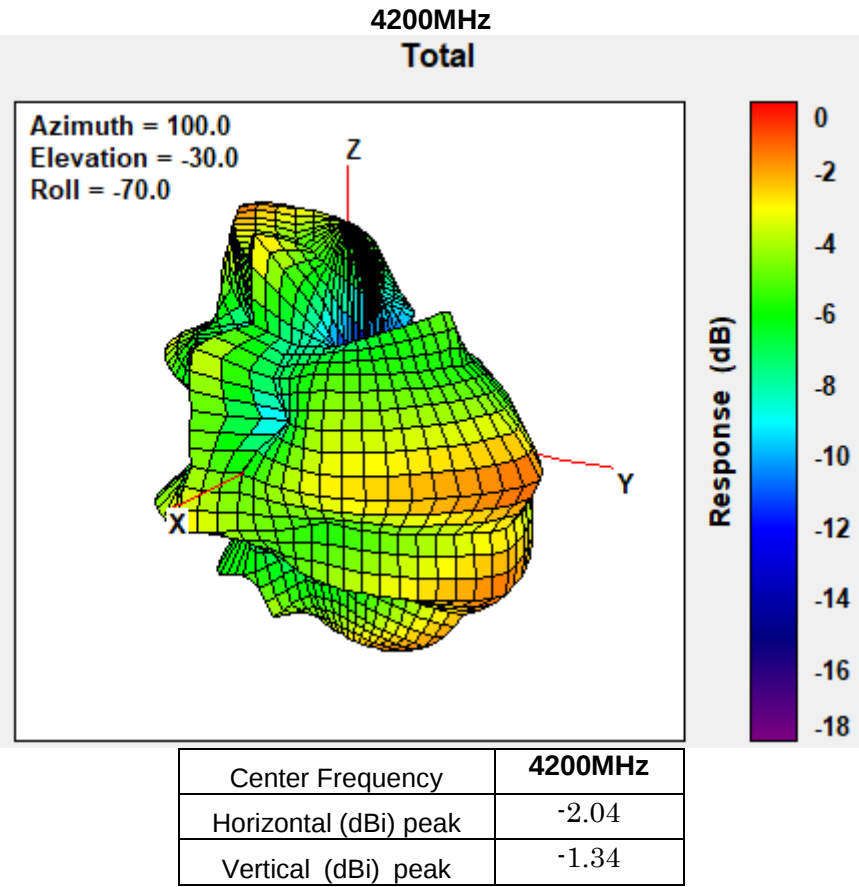
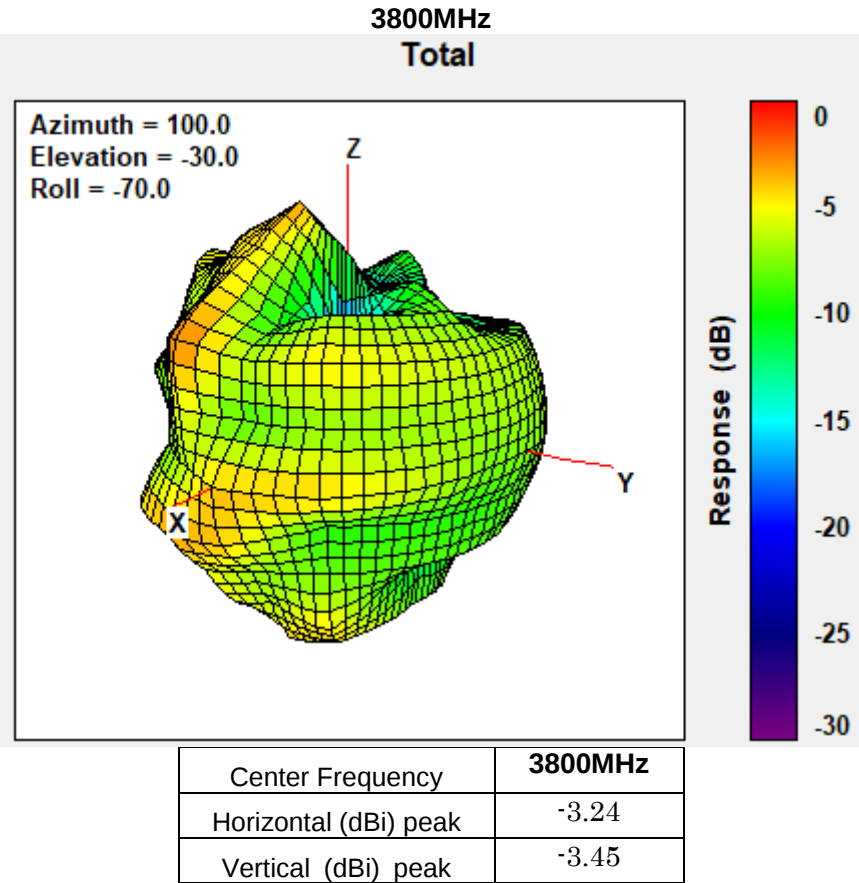


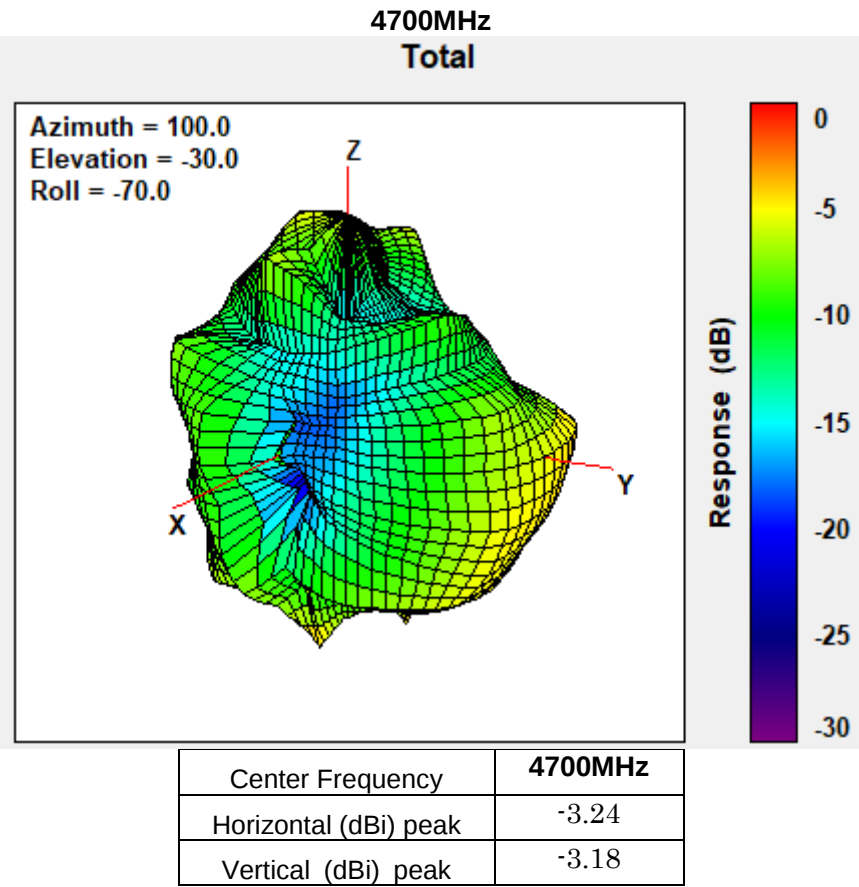
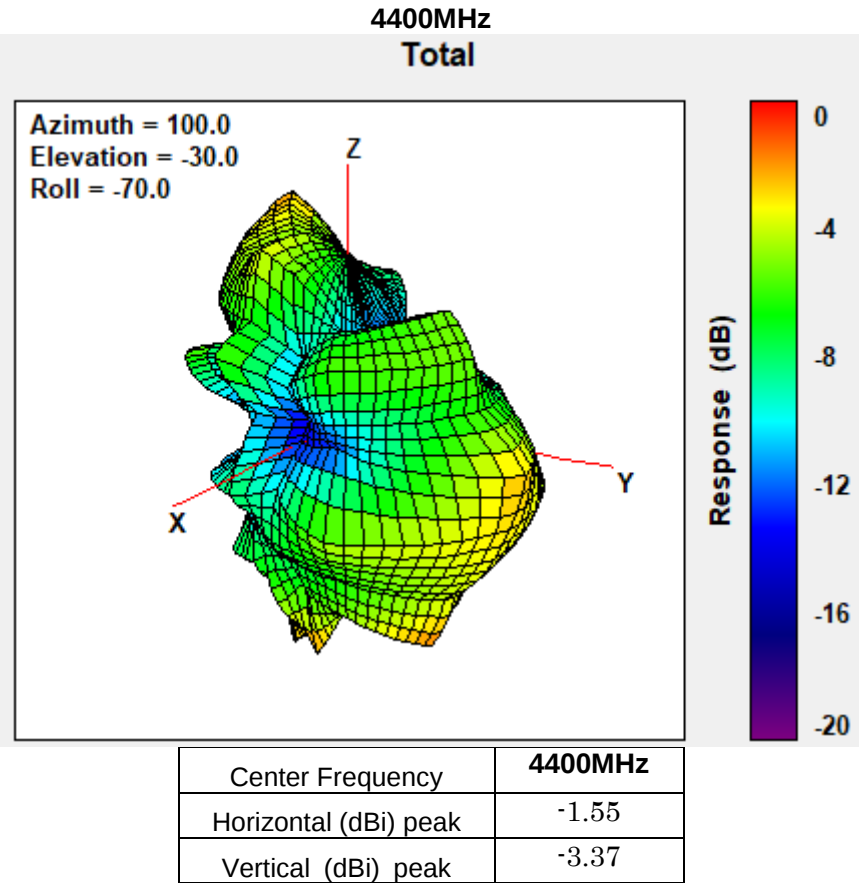


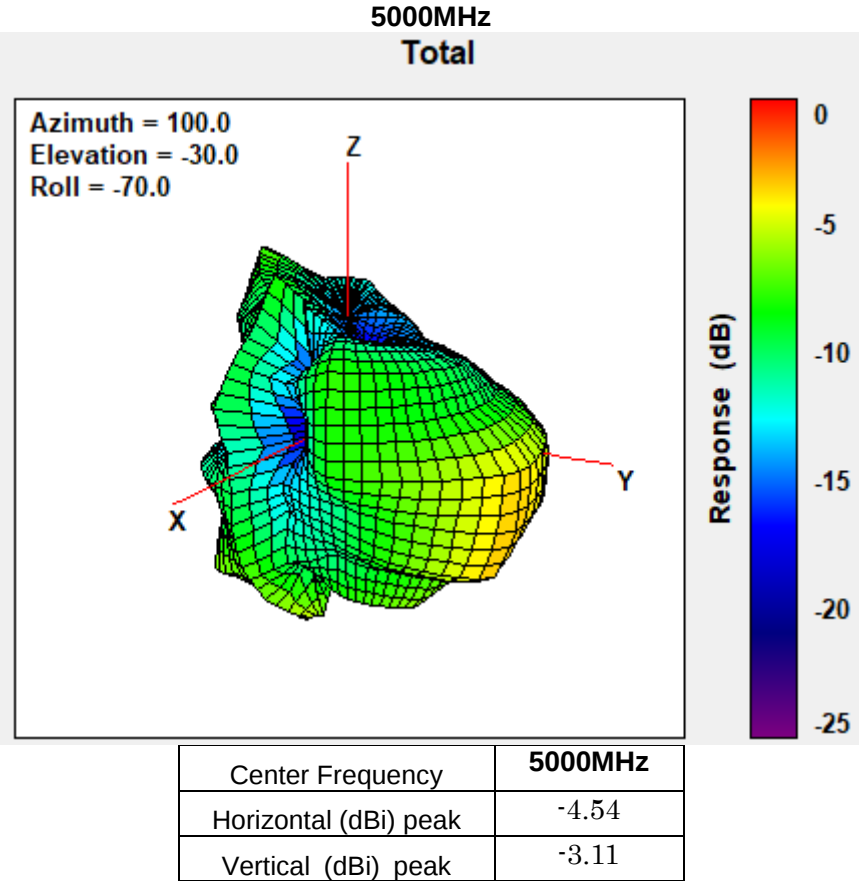




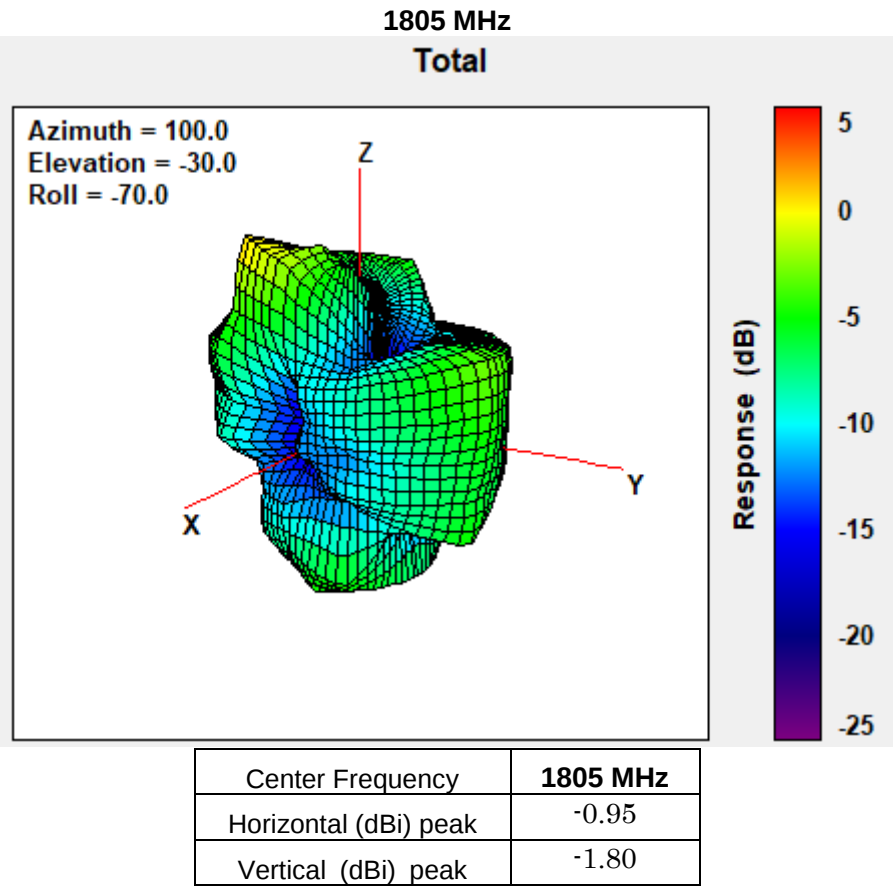


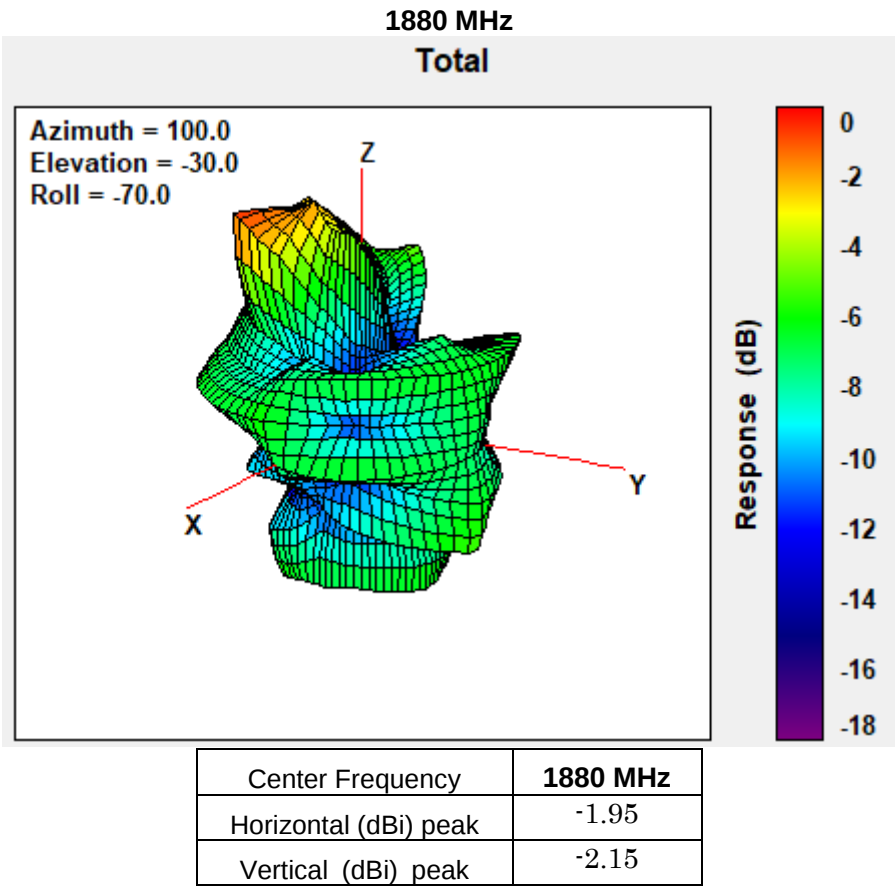
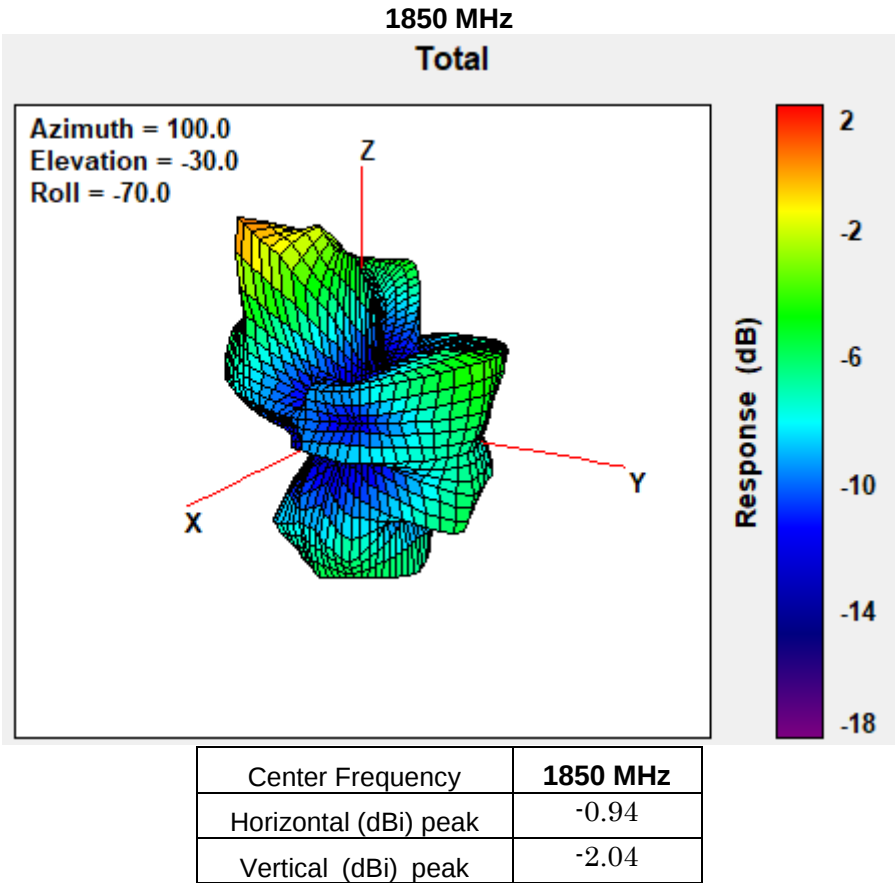




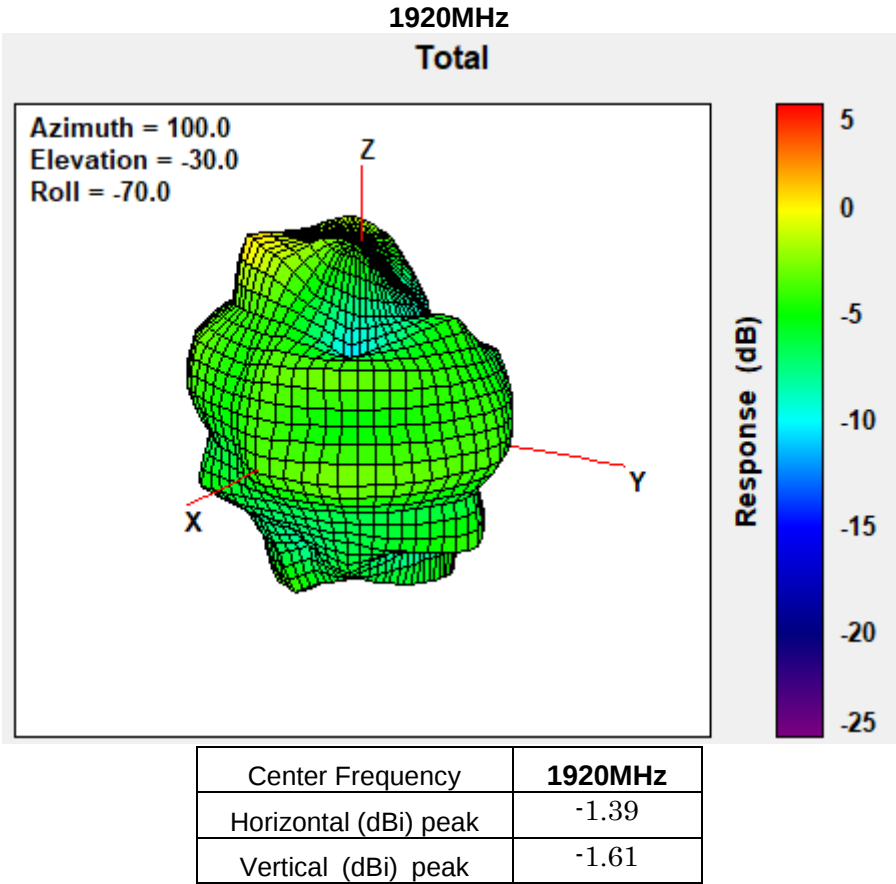
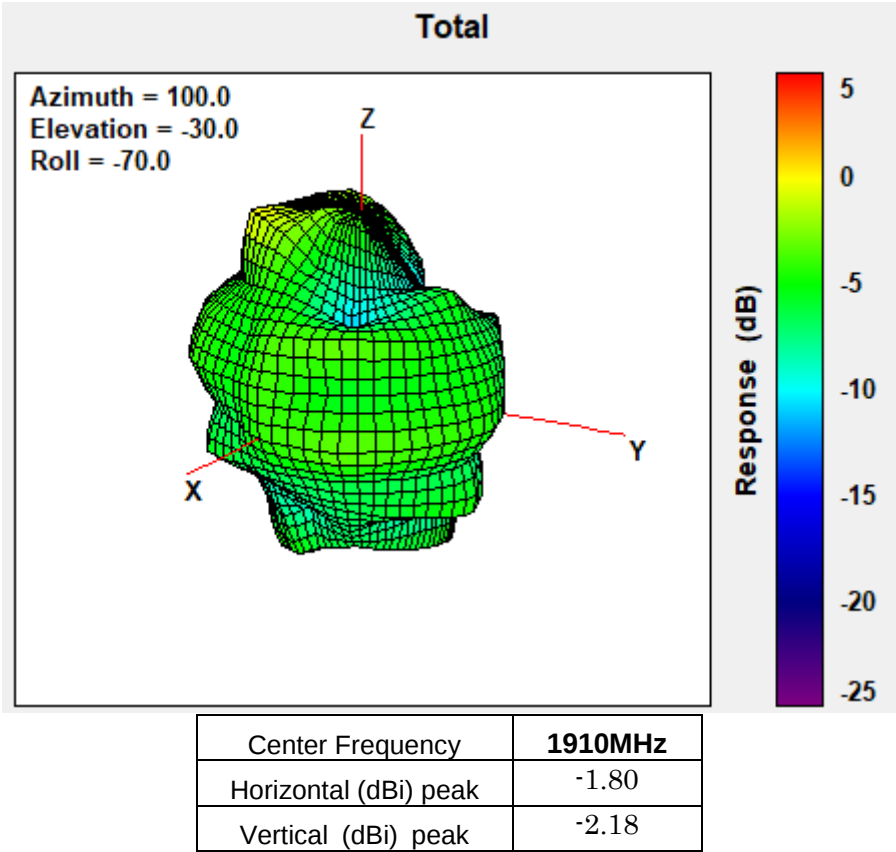


MIMO3 Antenna (DRx1)

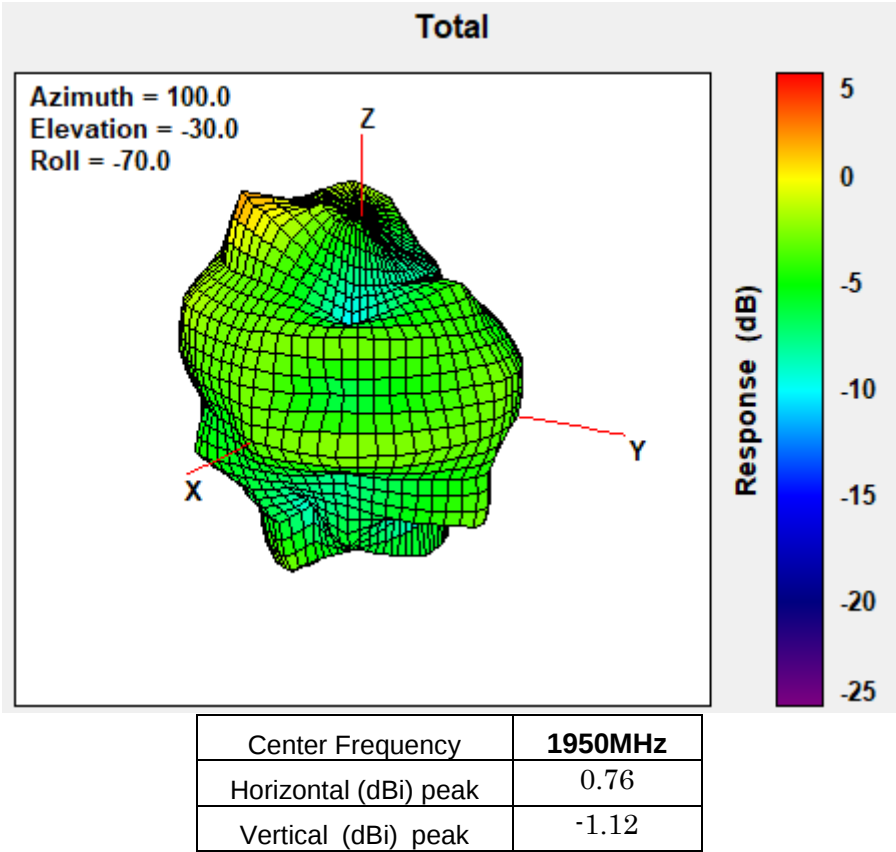


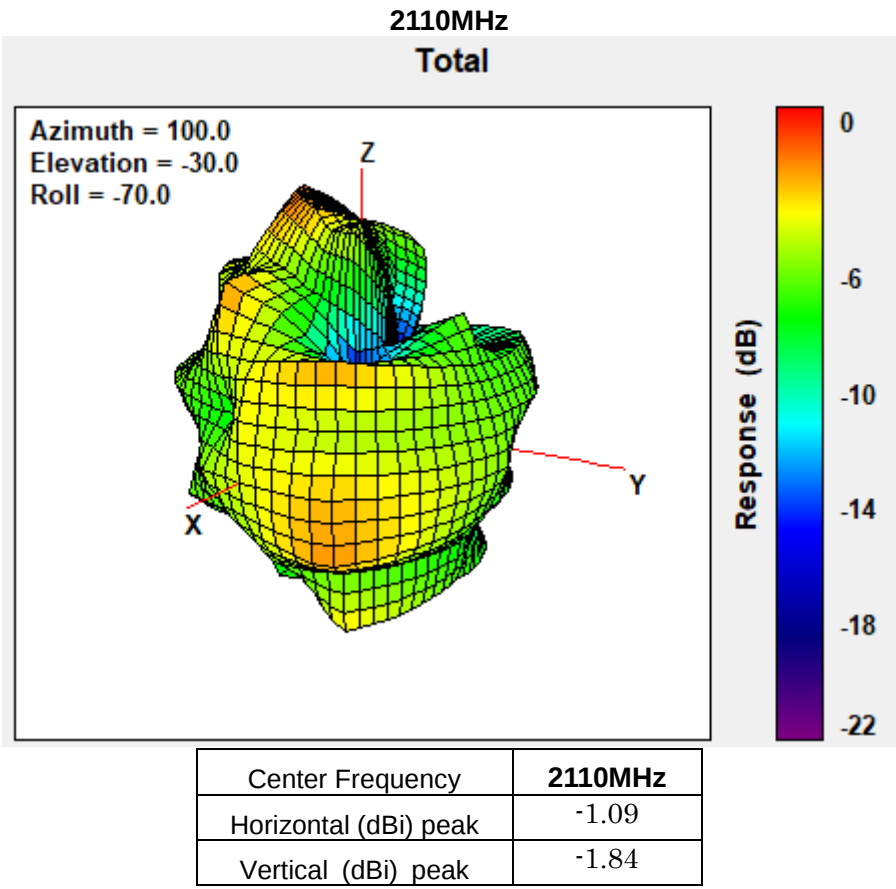
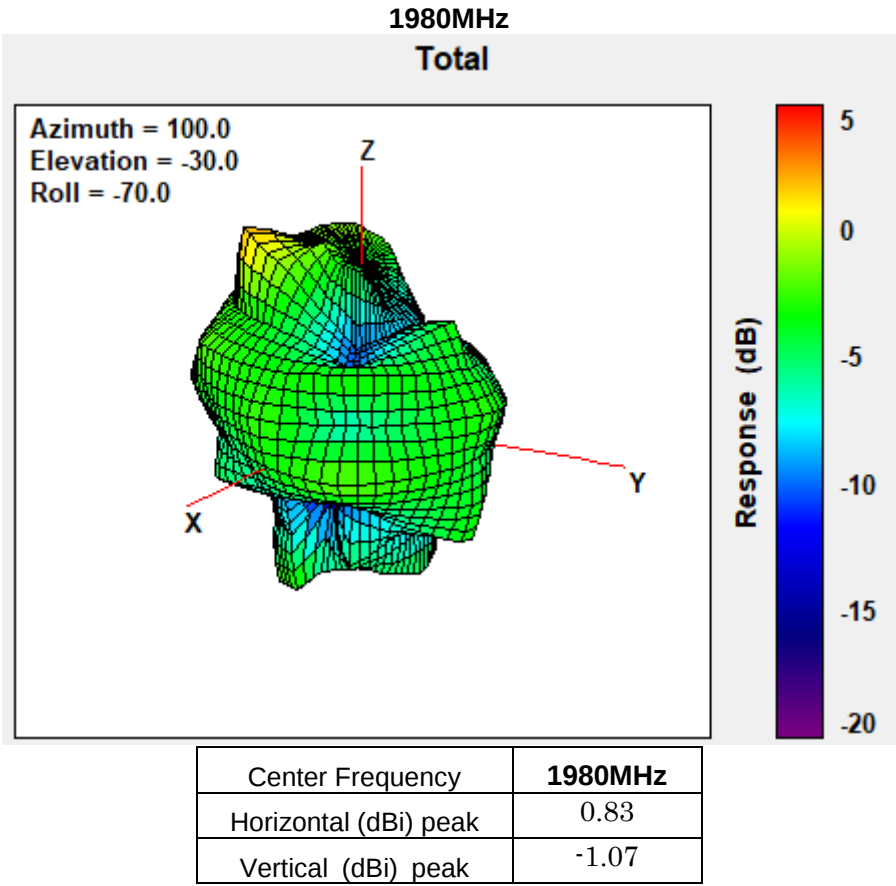


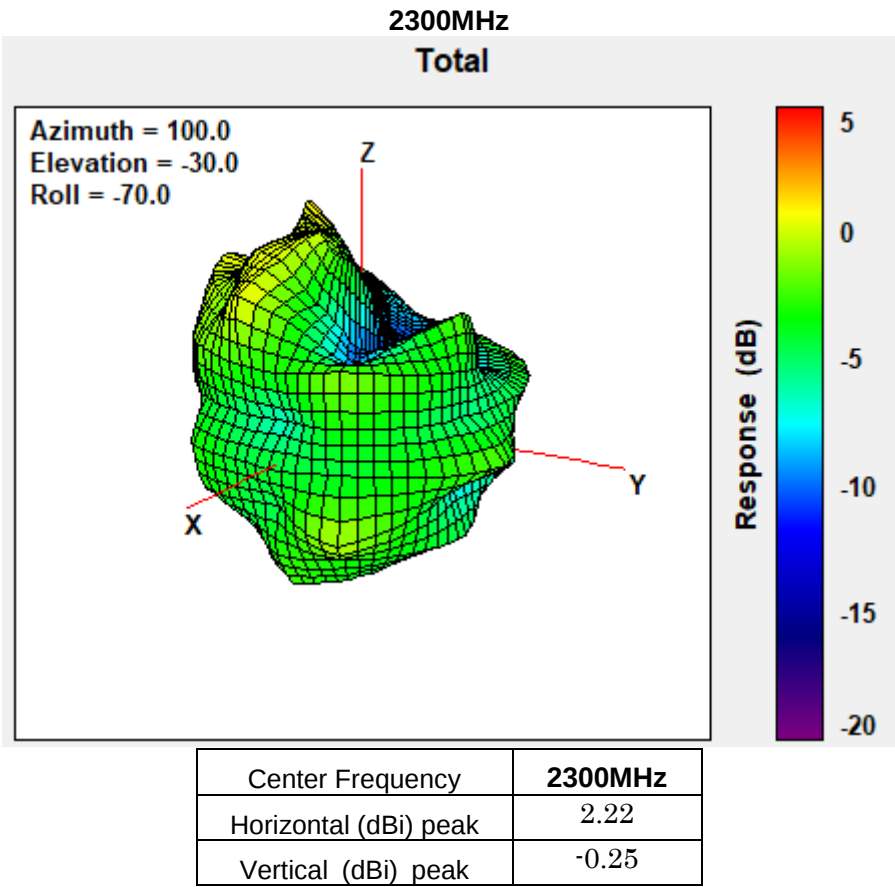
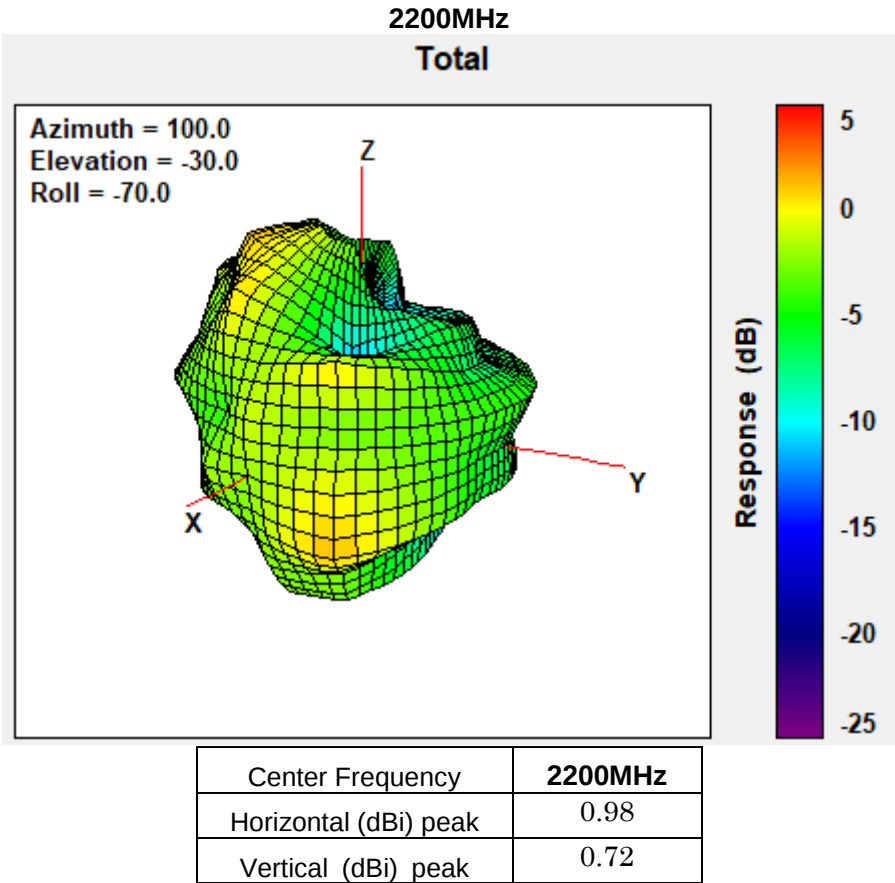
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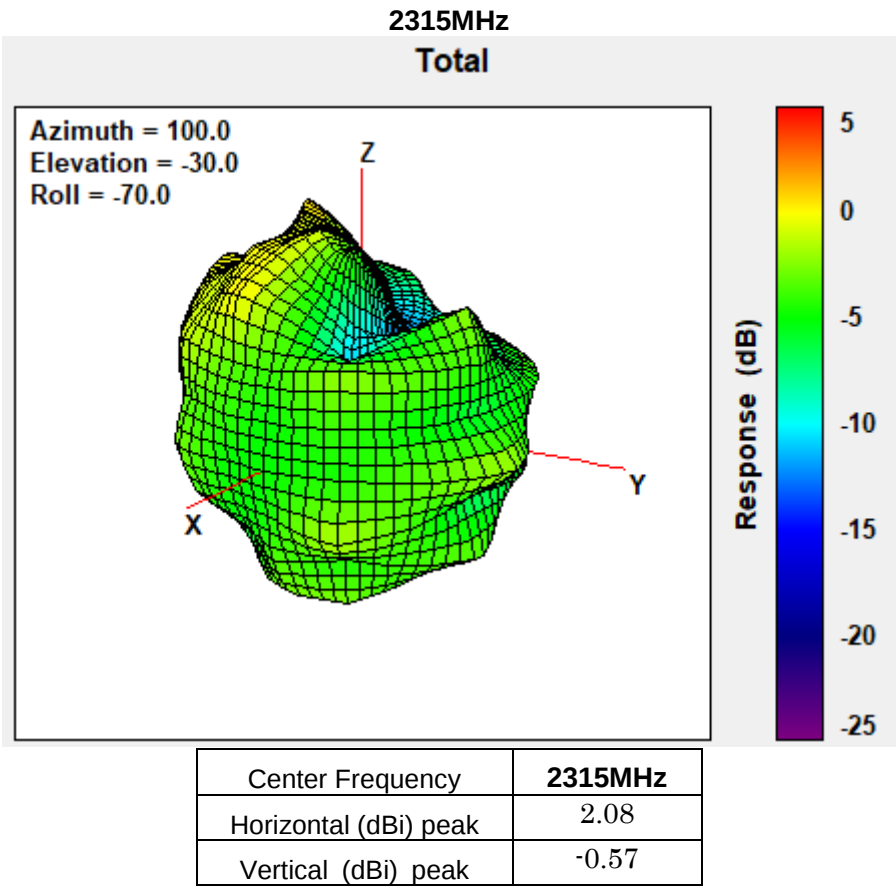
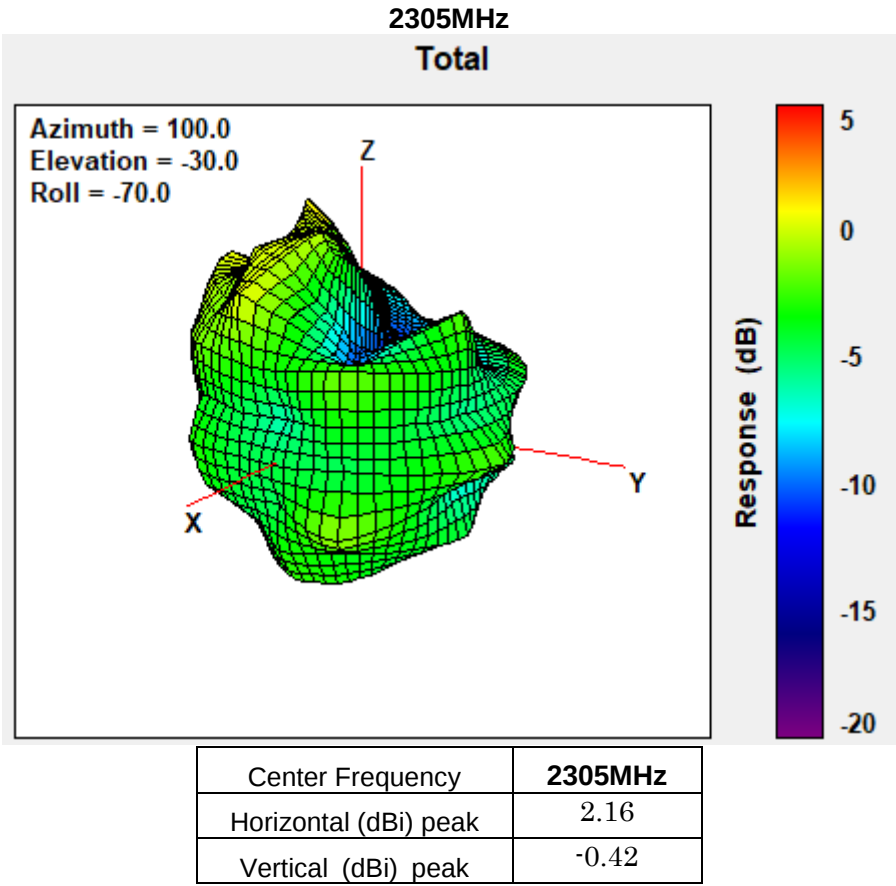


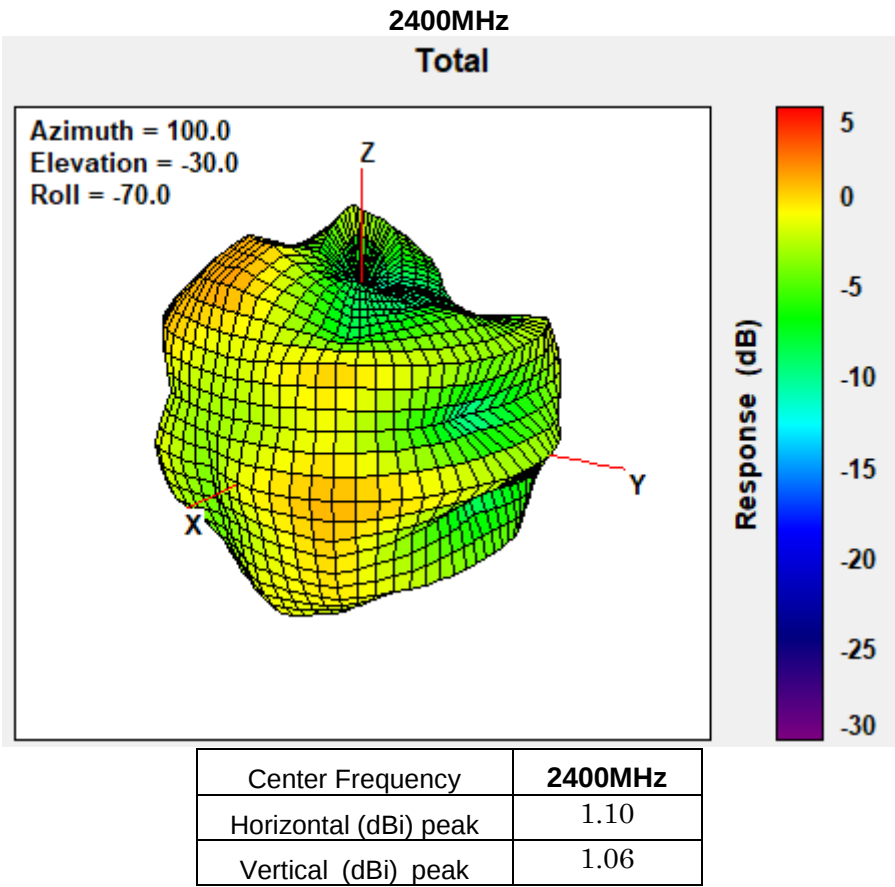
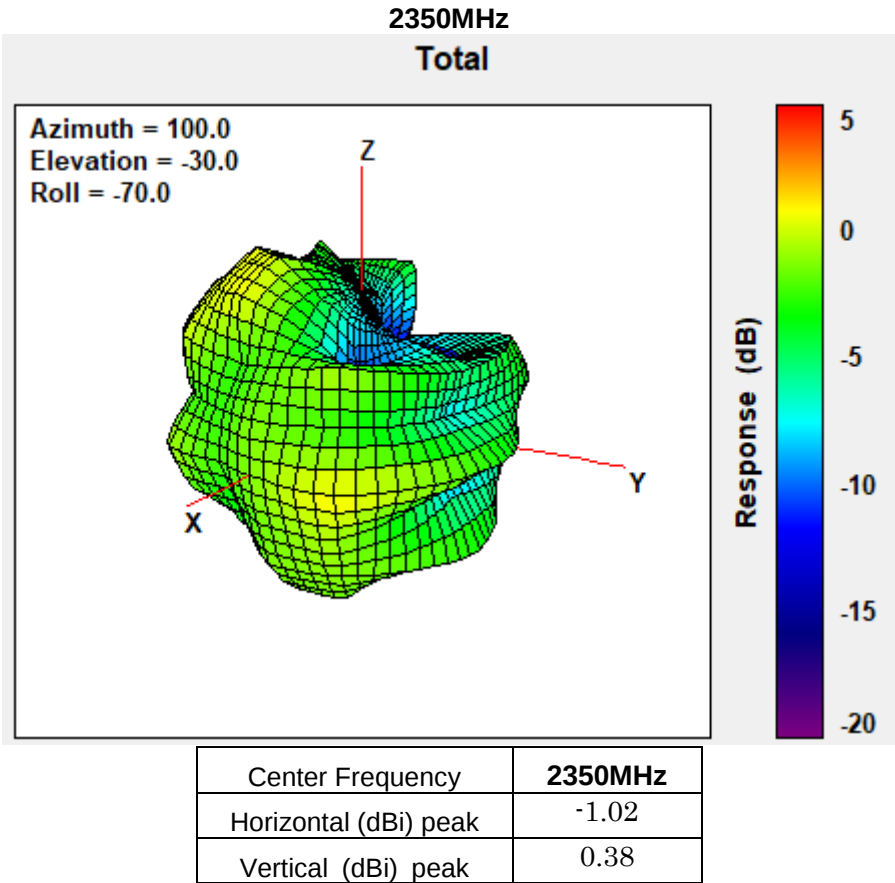
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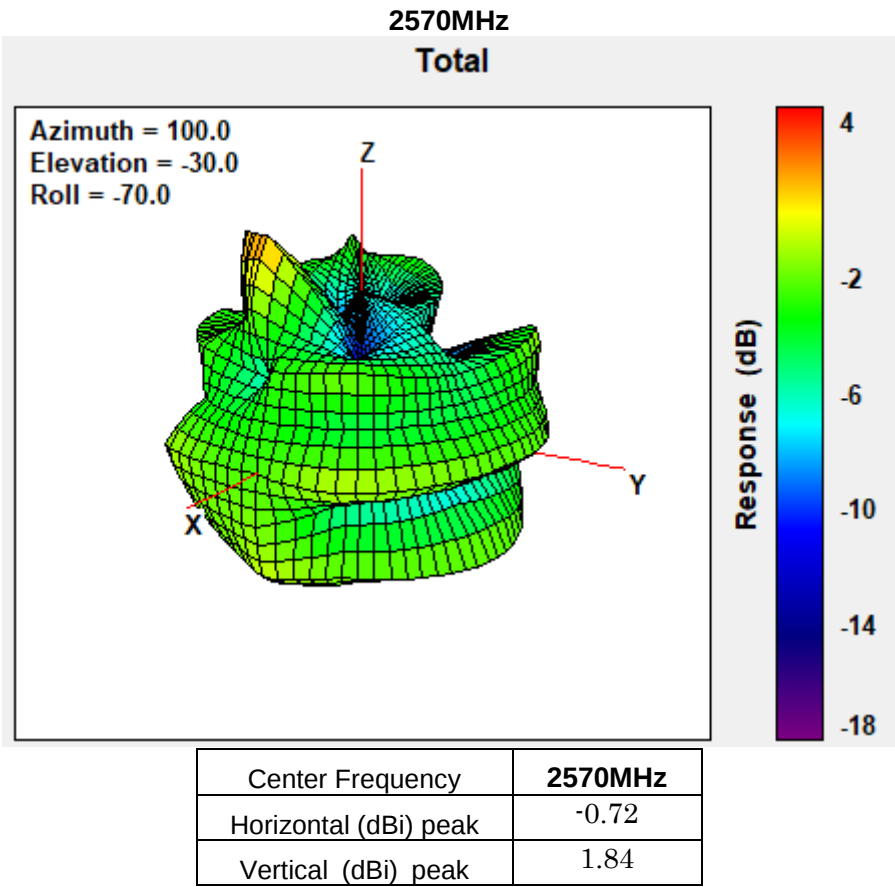
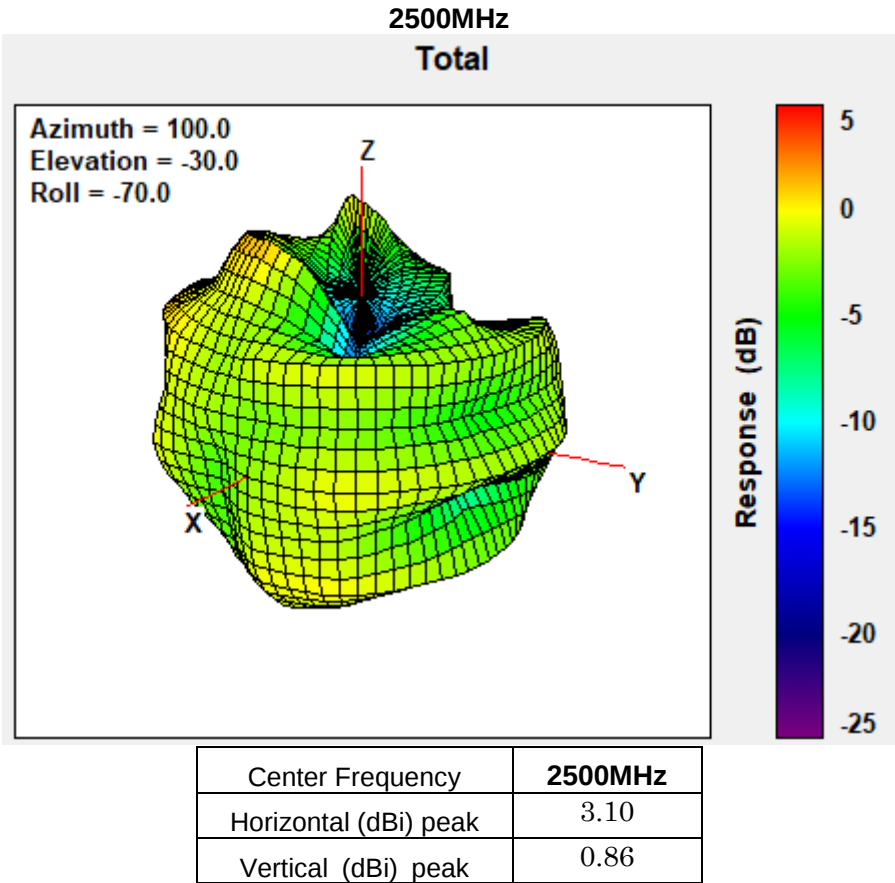


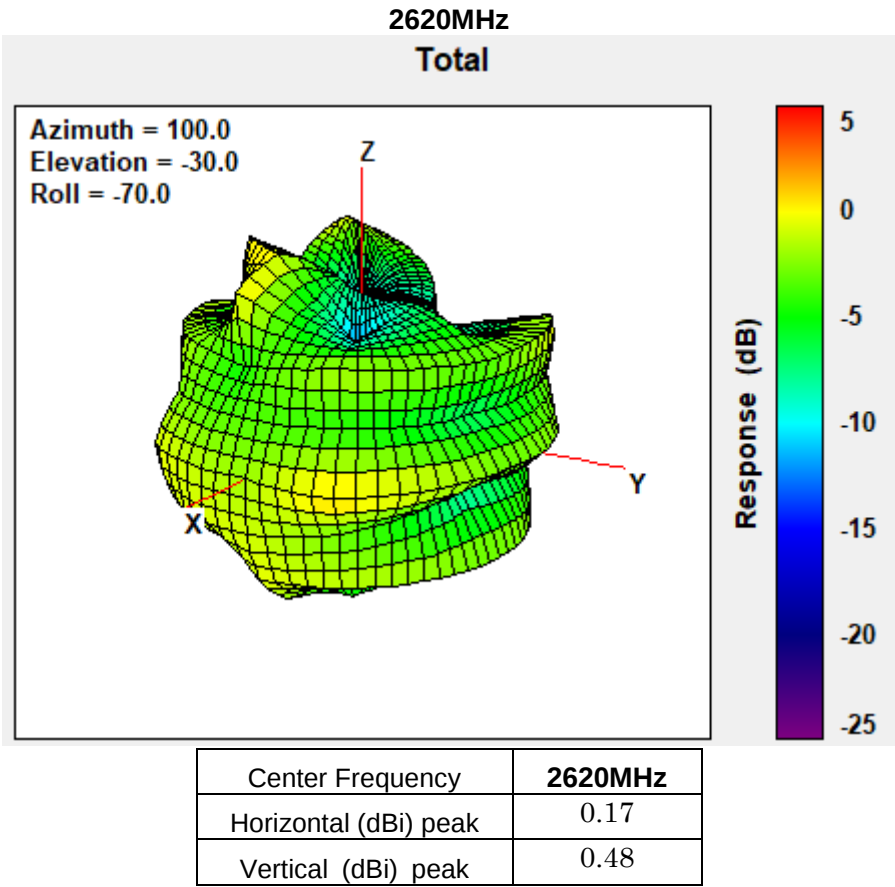
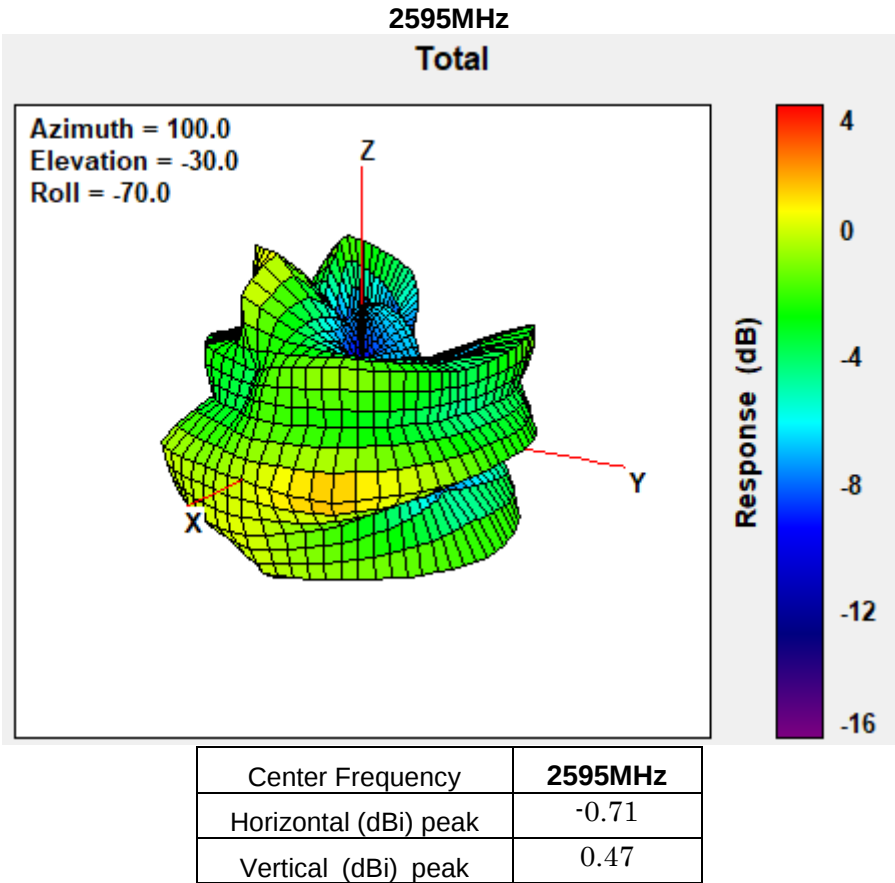


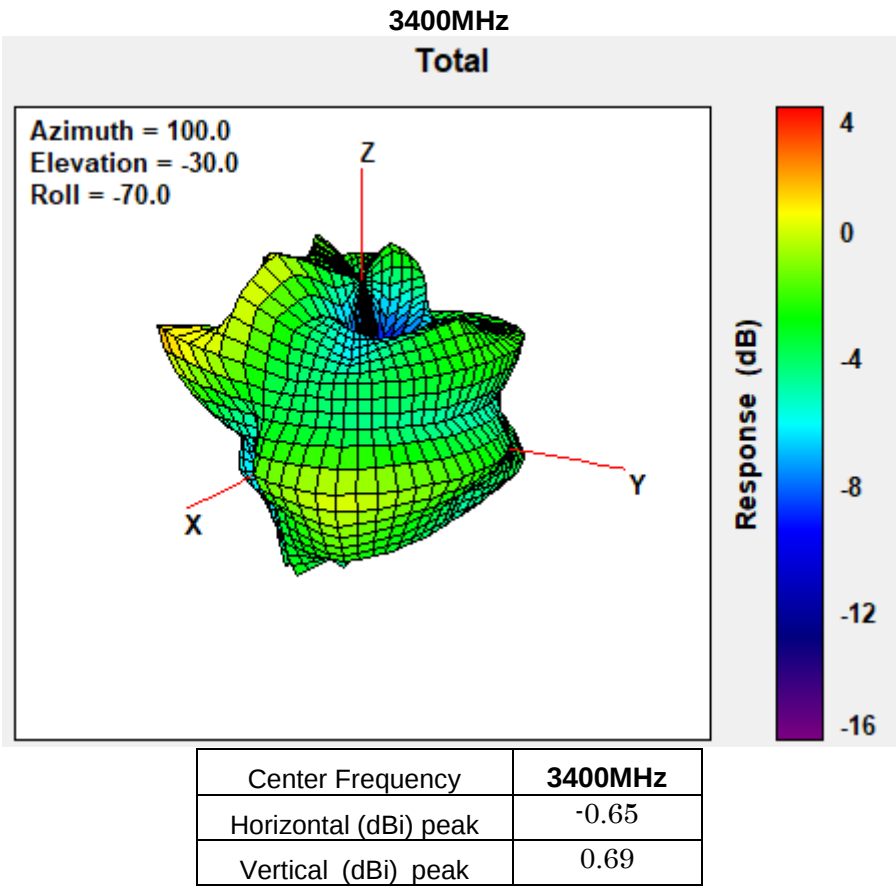
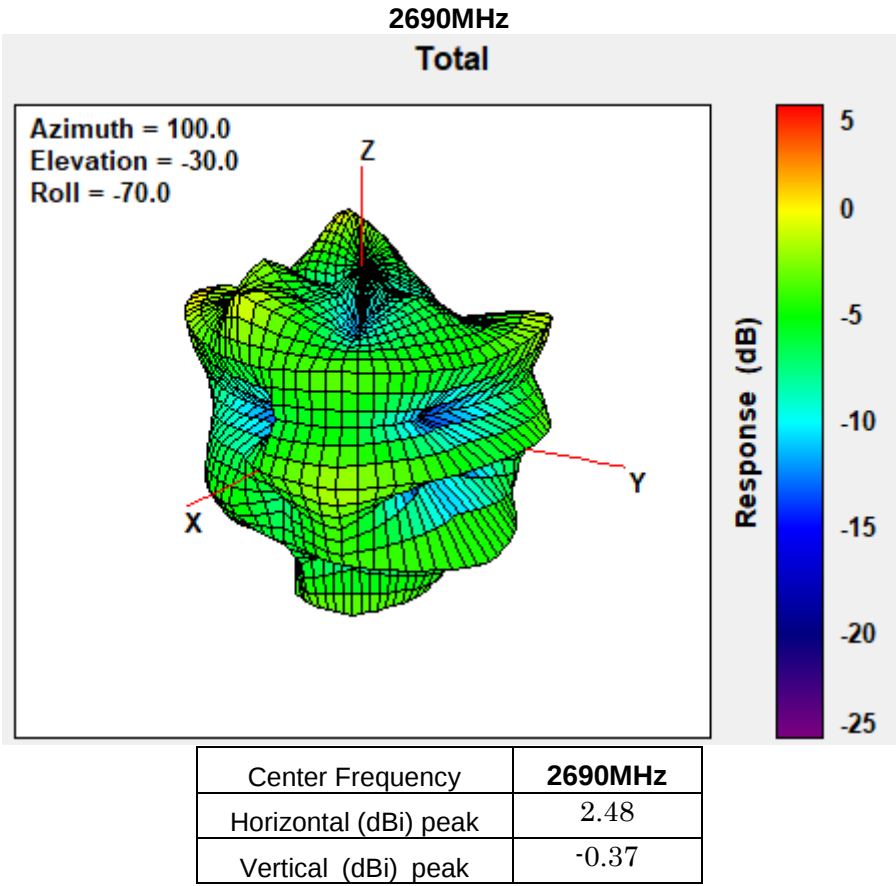


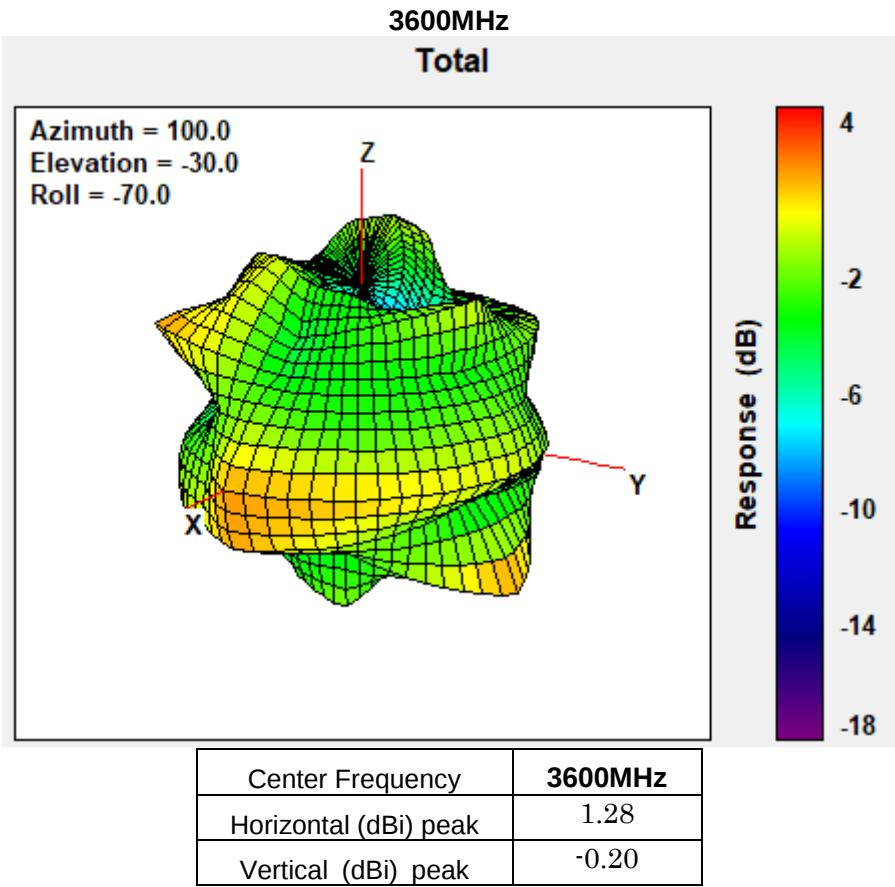
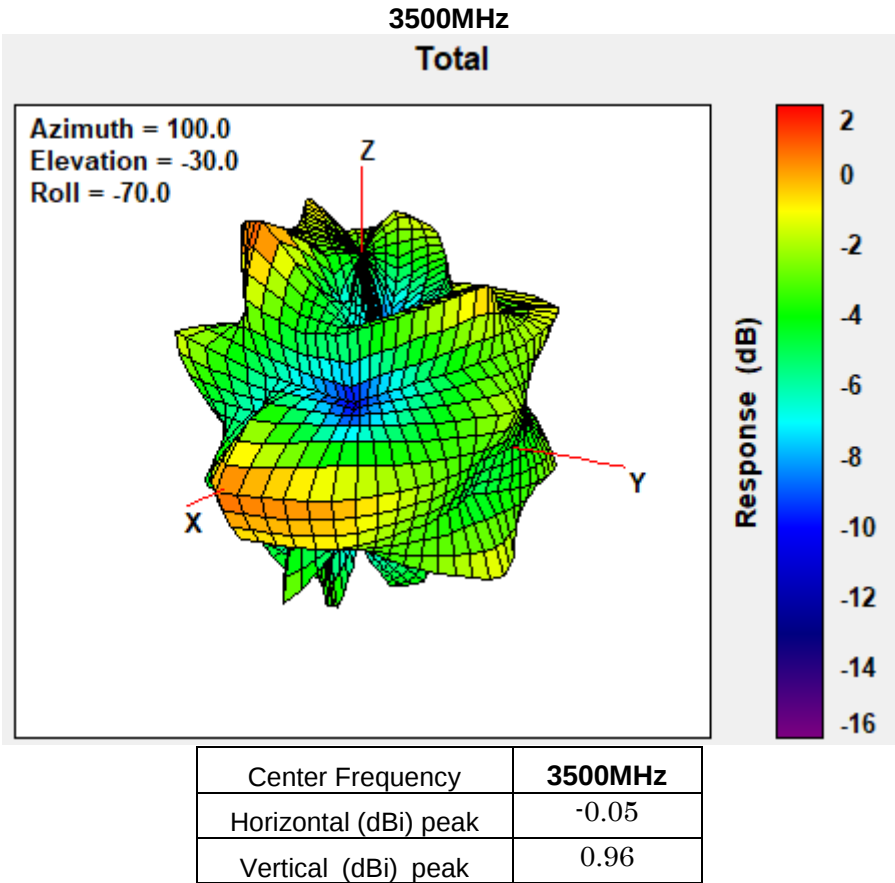


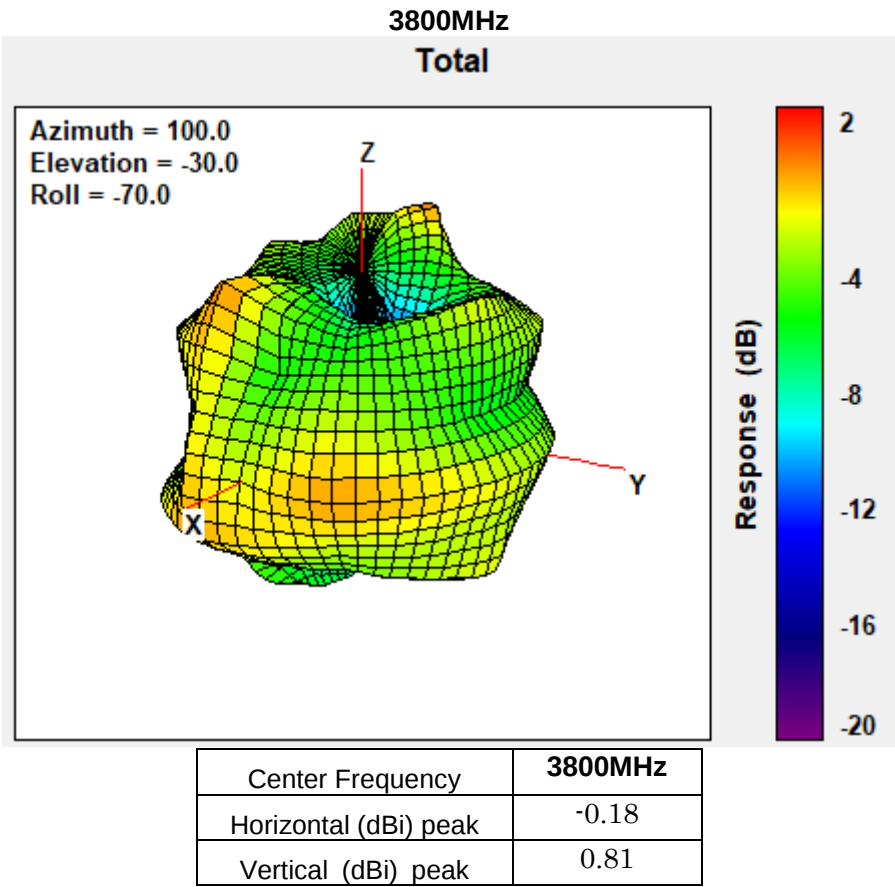
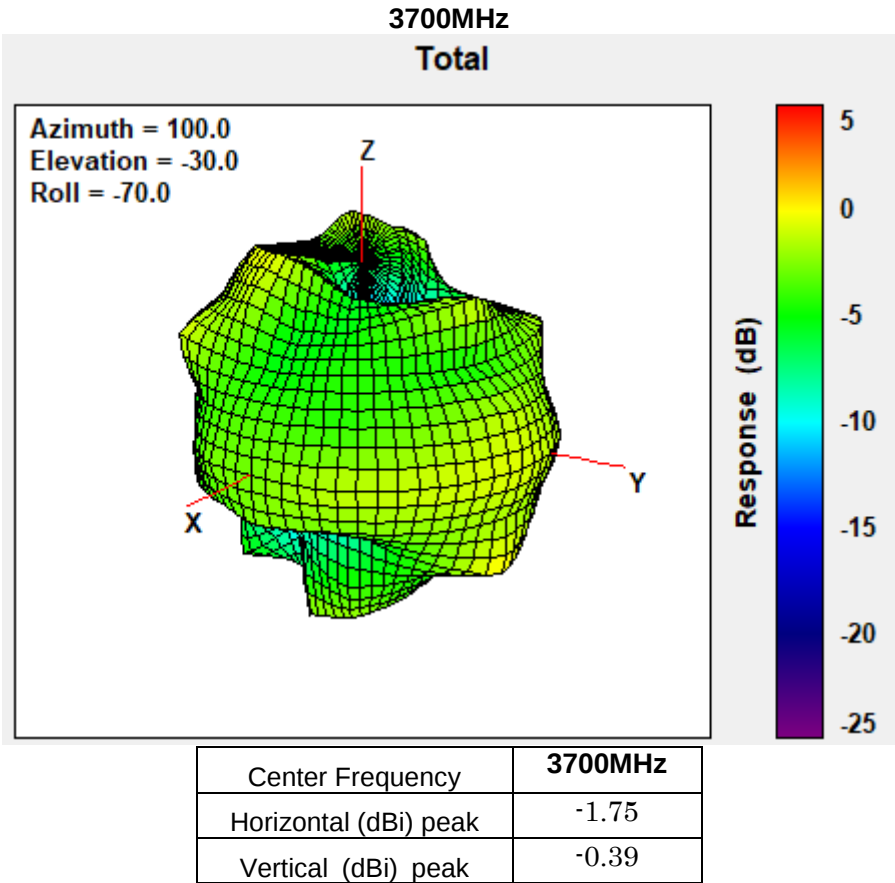


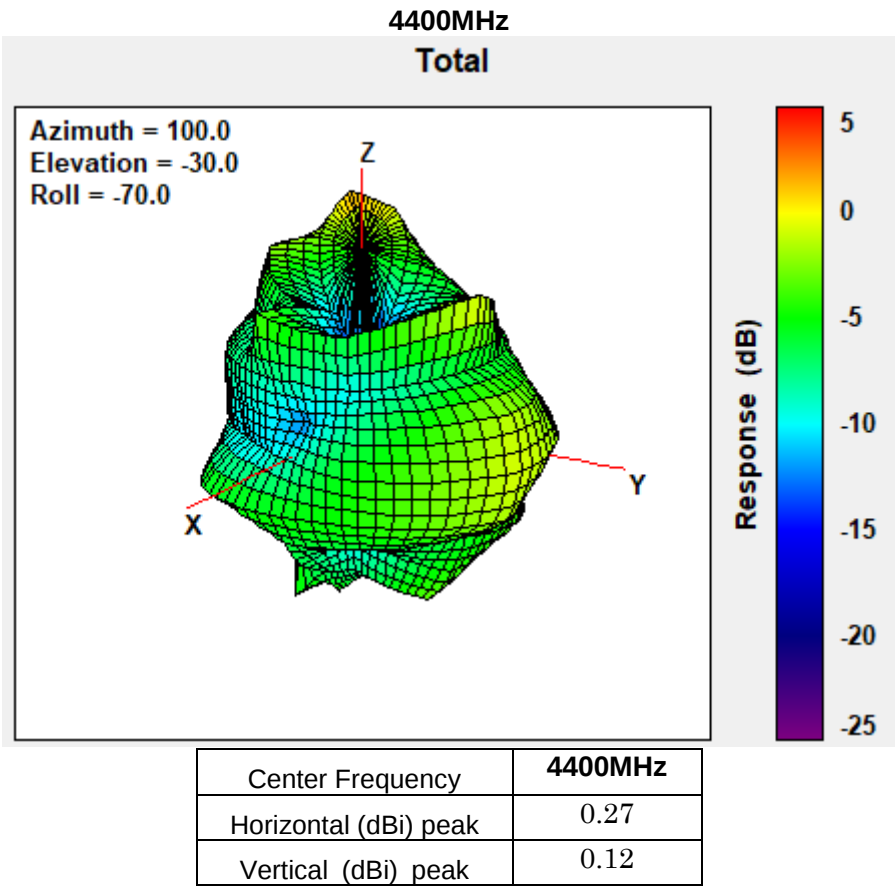
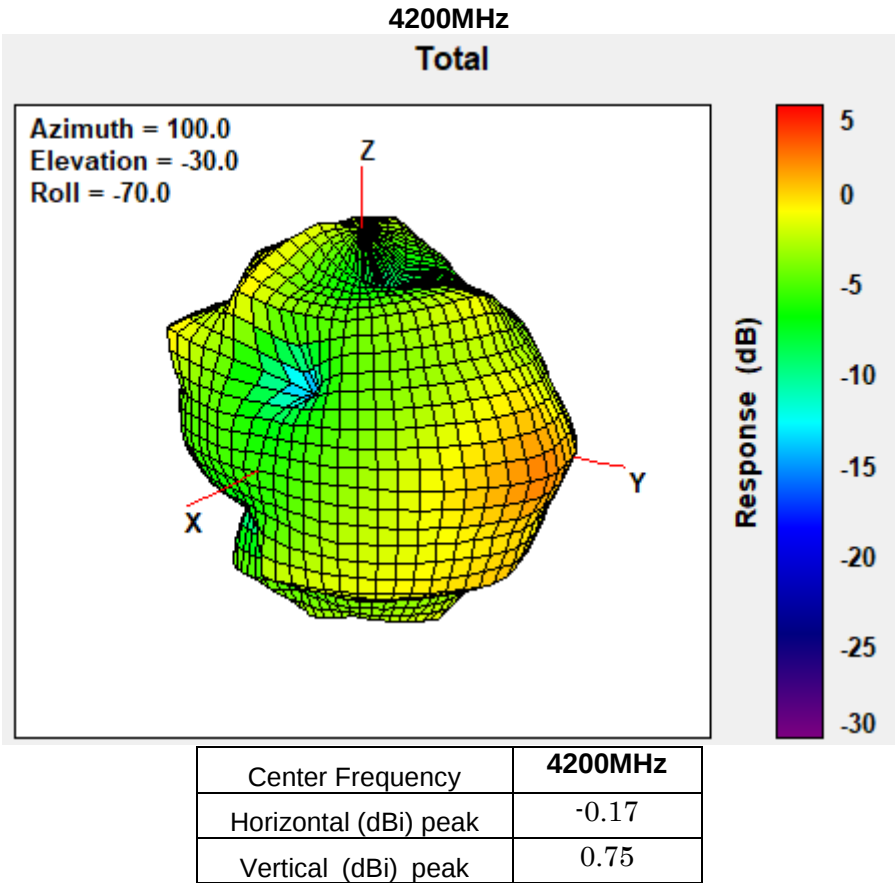


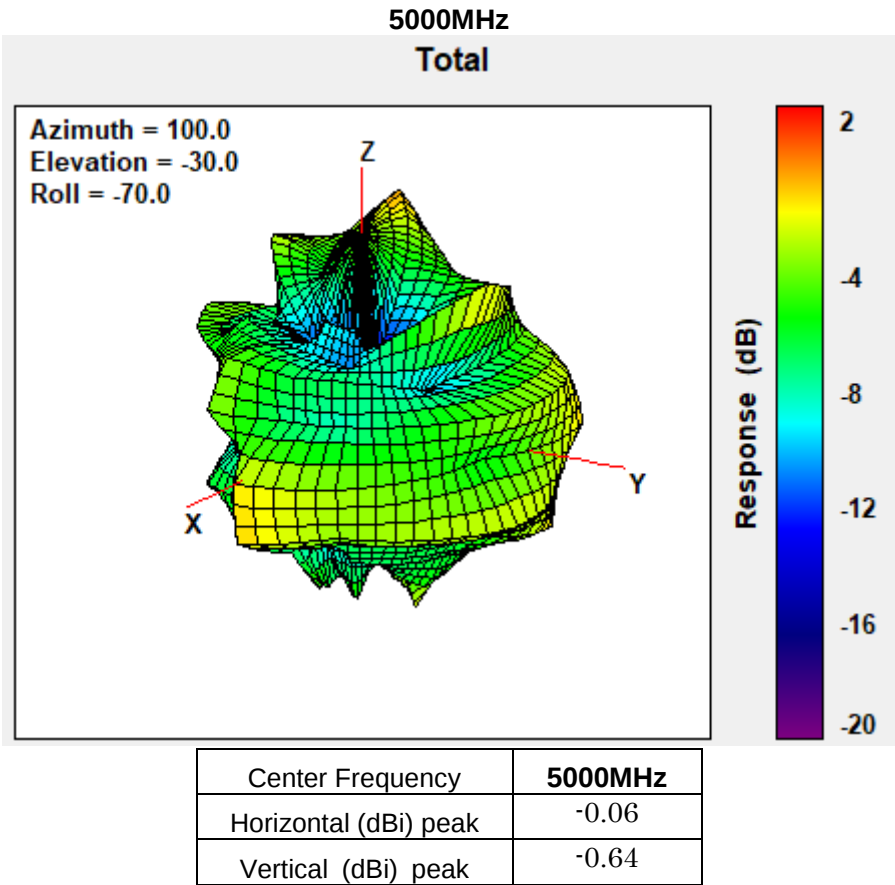
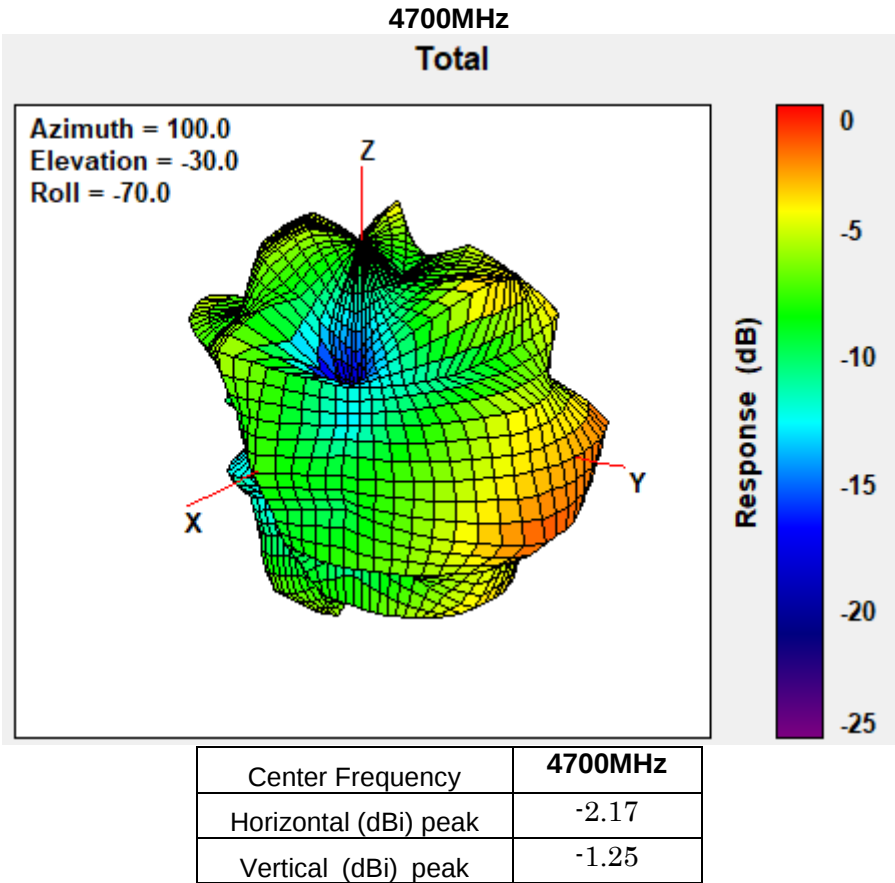








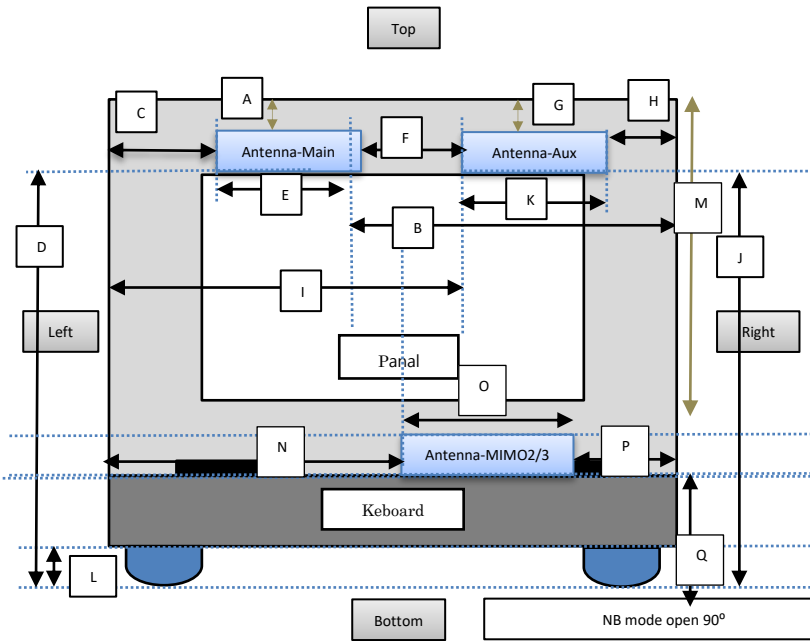




Section 4. Antenna Host Platform Location Information

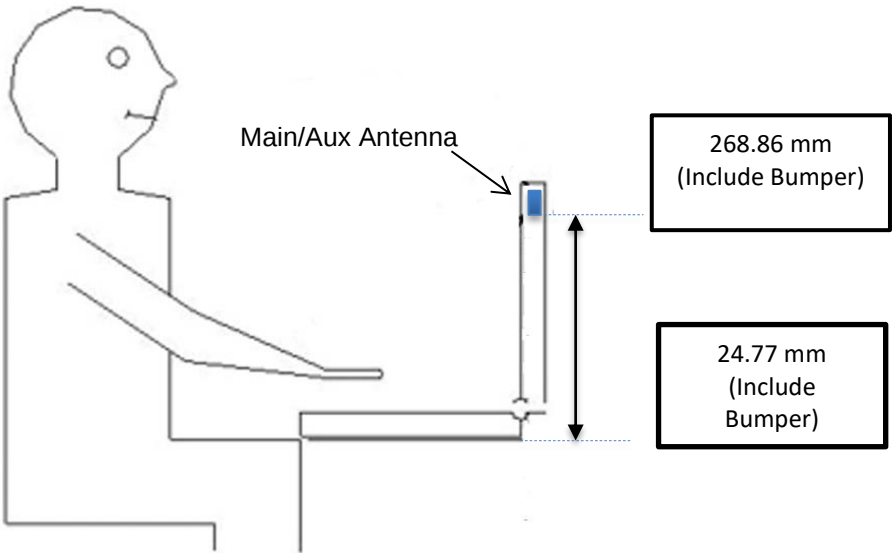
Include a **dimensioned photo(s) or dimensioned drawing(s)** of Main and Aux antenna placements (measurements are not required for receive-only antenna). Any antenna that transmits must show dimensions to bottom of laptop. Provide a description of the materials that are used for supporting or surrounding transmit antennas; for example, non-conductive plastics vs. conductive coated plastic or metallic materials.

Minimum Separation Distance			
Item	Antenna	Position	Distance (mm)
A	WWAN-Main	to Top	2.46
B	WWAN-Main	to Right	249.5
C	WWAN-Main	to Left	15.1
D	WWAN-Main	to Bottom	268.86
E	WWAN-Main	Main Antenna Length	91.4
F	Main-Aux	Main to Aux	152.01
G	WWAN-Aux	to Top	2.46
H	WWAN-Aux	to Right	15.1
I	WWAN-Aux	to Left	258.51
J	WWAN-Aux	to Bottom	268.86
K	WWAN-Aux	Aux Antenna Length	82.39
L	NB	Bumper thickness	1.8
M	WWAN-MIMO2/3	to Top	246.05
N	WWAN-MIMO2/3	to Left	168
O	WWAN-MIMO2/3	MIMO2/3 Antenna Length	80
P	WWAN-MIMO2/3	to Right	108
Q	WWAN-MIMO2/3	to Bottom	24.77



Section 5. Antenna dimensional information for SAR evaluation

Include a **dimensioned photo(s) or dimensioned drawing(s)** showing the distance (mm) between the transmit antennas and the user. For notebook/laptop hosts show lapheld position (example below). For tablet hosts show all orientations including lapheld, primary & secondary portrait, primary & secondary landscape positions. Include a description of any proximity sensors or power throttling implementations that limit or exclude use of any host orientation.



Section 6. Diagram Example of Co-Location Antenna Separation

Include a **dimensioned photo or dimensioned drawing** showing the distance (mm) between all WLAN transmit antennas and other co-located radiator transmit antenna such as Bluetooth, WWAN,..

(Note: Due to the evolving rules regarding co-location, each platform will need to be reviewed on a case by case basis)

Section 7. Diagram Example of Co-Location Antenna Separation

Include a dimensioned photo or dimensioned drawing showing the distance (mm) between all WLAN transmit antennas and other co-located radiator transmit antenna such as Bluetooth, WWAN,..

(Note: Due to the evolving rules regarding co-location, each platform will need to be reviewed on a case by case basis)

