

DBA6171CX Series 5G Swivel Blade

Application Guide with Cable Loss Data

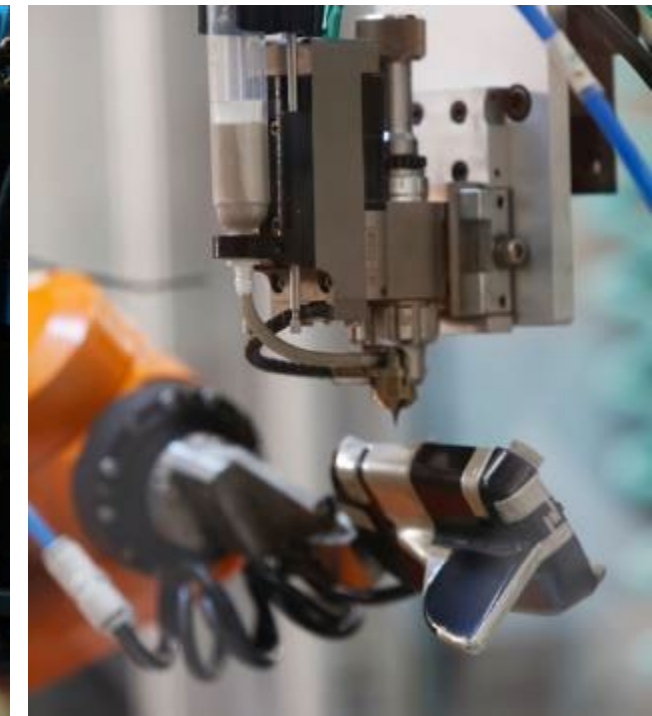
Date: 2-Aug-2022

Revision: 2.0

EVERY CONNECTION COUNTS



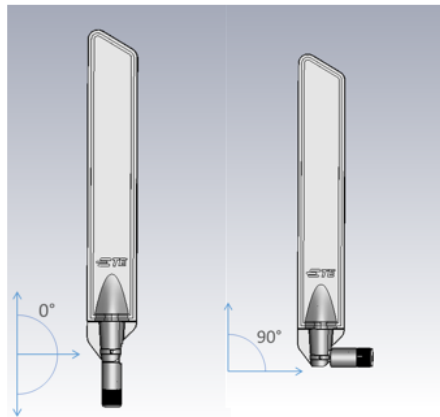
Laird™
External Antennas
is now part of



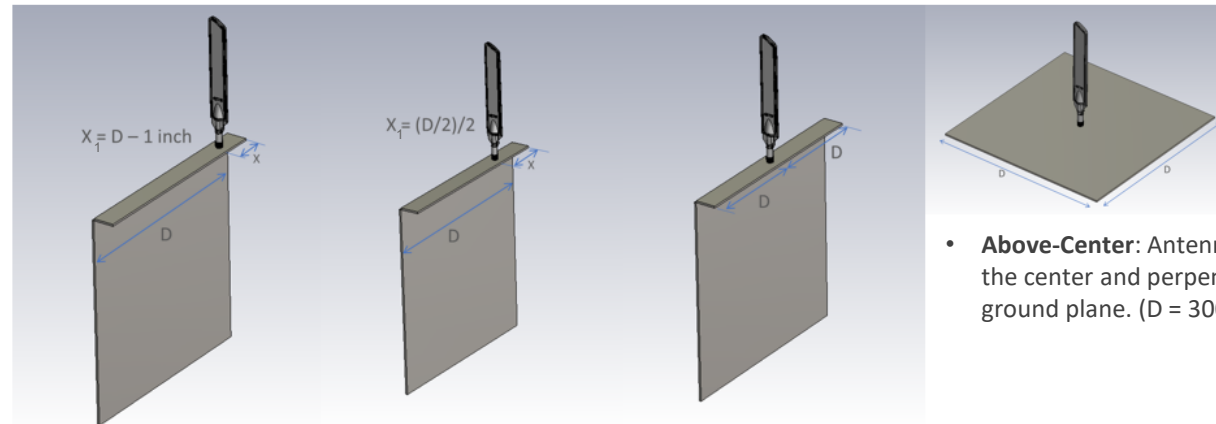
Description

- Antenna (P/N: DBA6171C1-BSMAM) used for VSWR and gain performance measurement.
- Below are the test configurations in free space and with ground plane (300 x 300 mm):

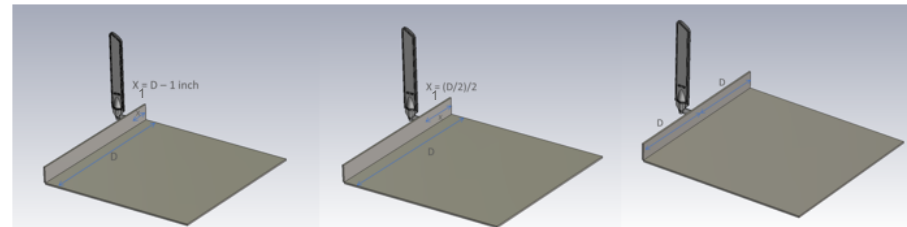
Test	Knuckle Position	Ground Plane				
		No Ground Plane Free Space	Side-Side	Side-Mid	Side-Center	Above-Center
VSWR	0	Yes	Yes	Yes	Yes	Yes
	90	Yes	Yes	Yes	Yes	No
Gain/ Total Efficiency	0	Yes	Yes	Yes	Yes	Yes
	90	Yes	Yes	Yes	Yes	No



- **Free Space:** Measurement with knuckle rotation at 0 / 90 deg.

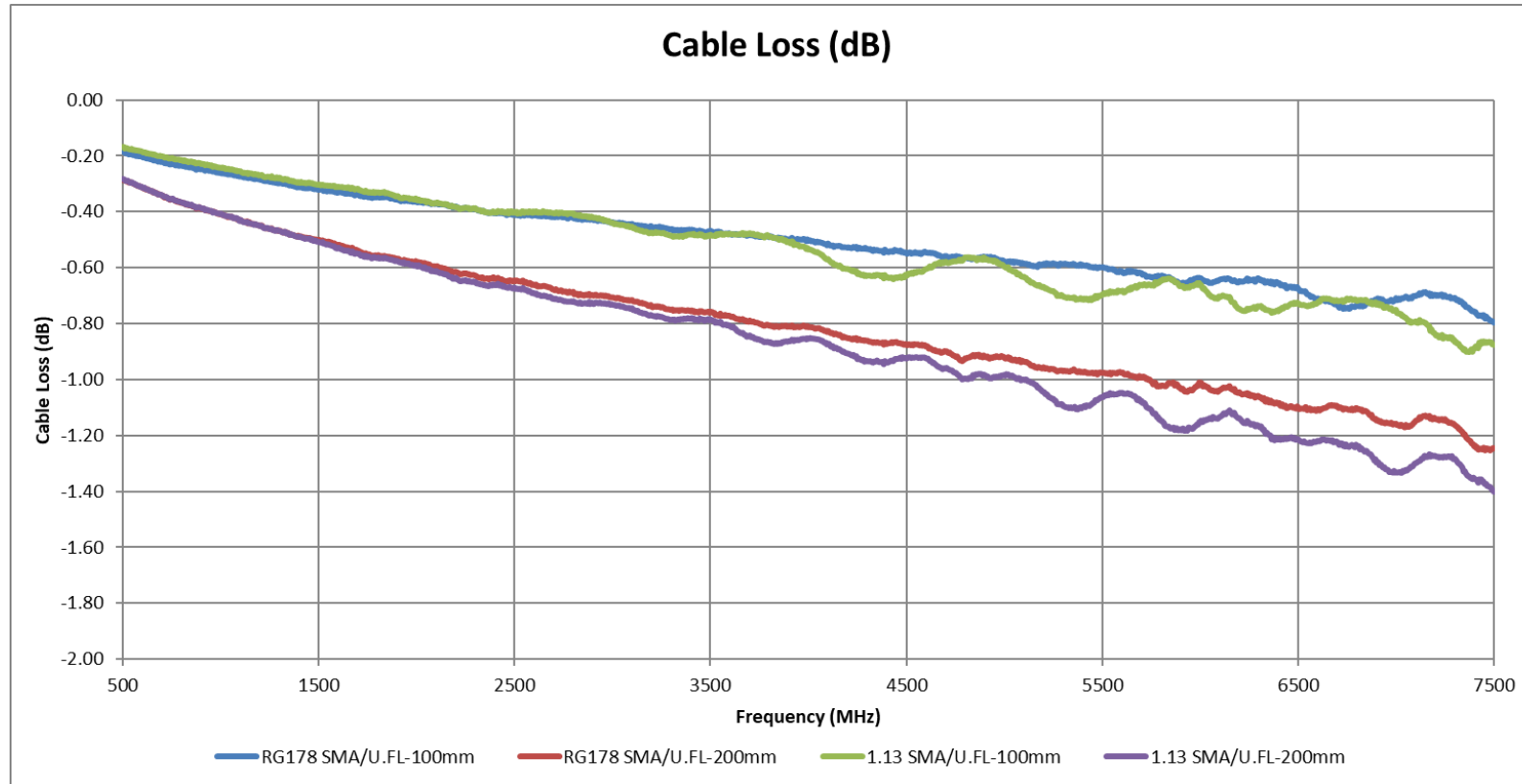


- **Above-Center:** Antenna located at the center and perpendicular to the ground plane. (D = 300mm)



- Measurement beside ground plane; knuckle rotation at 0 / 90 deg each location.
 - #1. **Side-Side:** Input port 1 inch from the edge of ground plane. ($X_1 = 275\text{mm}$)
 - #2. **Side-Mid:** Input port in between the half of ground plane and the edge of ground plane. ($X_1 = 225\text{mm}$)
 - #3. **Side-Center:** Input port located at the middle of ground plane side. ($D = 150\text{mm}$)

Cable Loss (dB)



Test cables configuration:

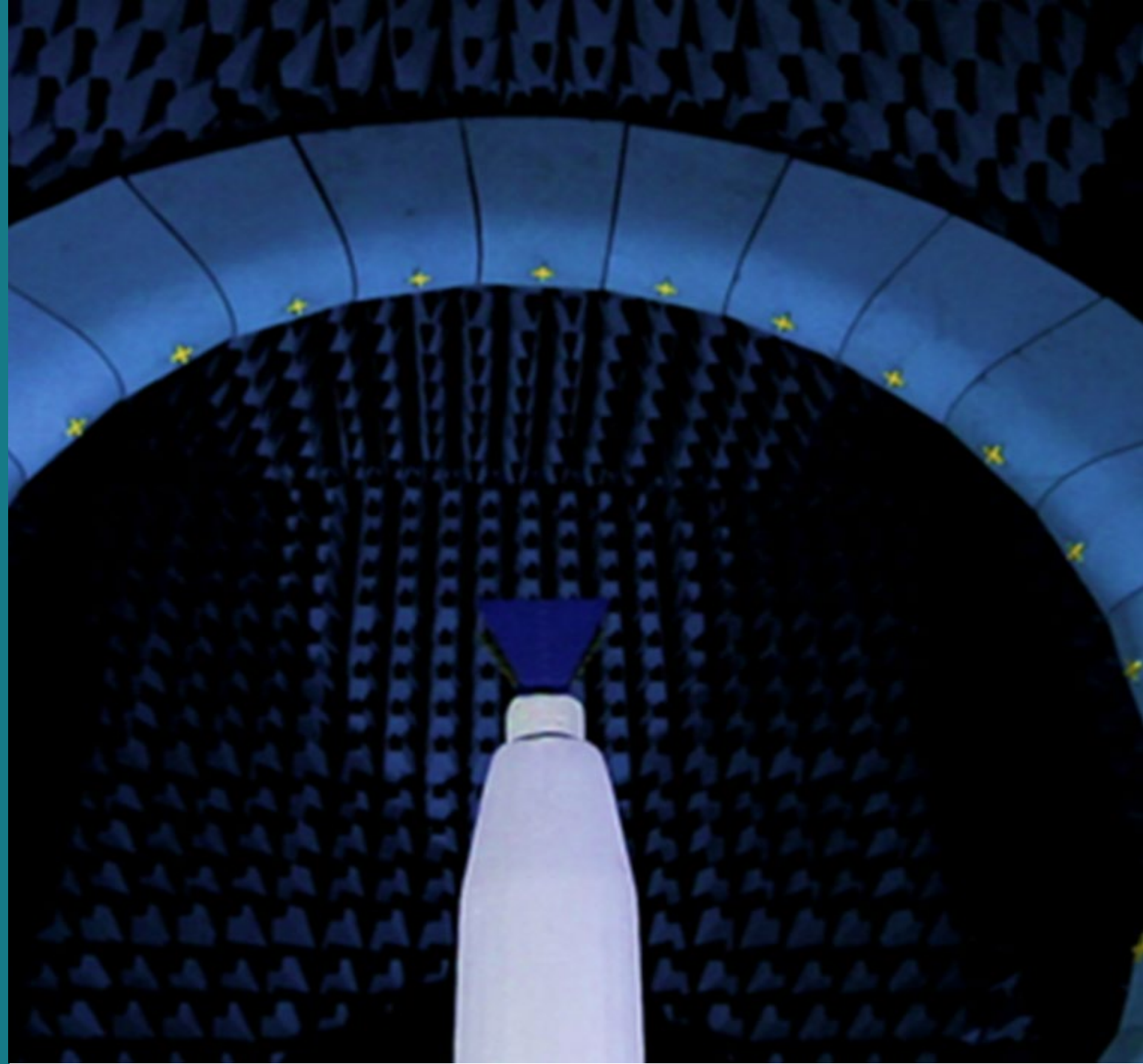
- 100mm – 1.13 SMA Bulk Head & U.FL
- 200mm – 1.13 SMA Bulk Head & U.FL
- 100mm – RG178 SMA Bulk Head & U.FL
- 200mm – RG178 SMA Bulk Head & U.FL

Cable Loss (dB) - Max	RG178 SMA/U.FL-100mm	RG178 SMA/U.FL-200mm	1.13 SMA/U.FL-100mm	1.13 SMA/U.FL-200mm
617-698	-0.21	-0.32	-0.19	-0.32
698-960	-0.22	-0.34	-0.20	-0.34
1427-1606	-0.32	-0.49	-0.29	-0.50
1710-2200	-0.34	-0.54	-0.32	-0.55
2300-2700	-0.39	-0.63	-0.39	-0.65
3300-4200	-0.46	-0.75	-0.48	-0.78
5150-6000	-0.58	-0.95	-0.64	-1.01
6000-7125	-0.63	-1.01	-0.65	-1.11

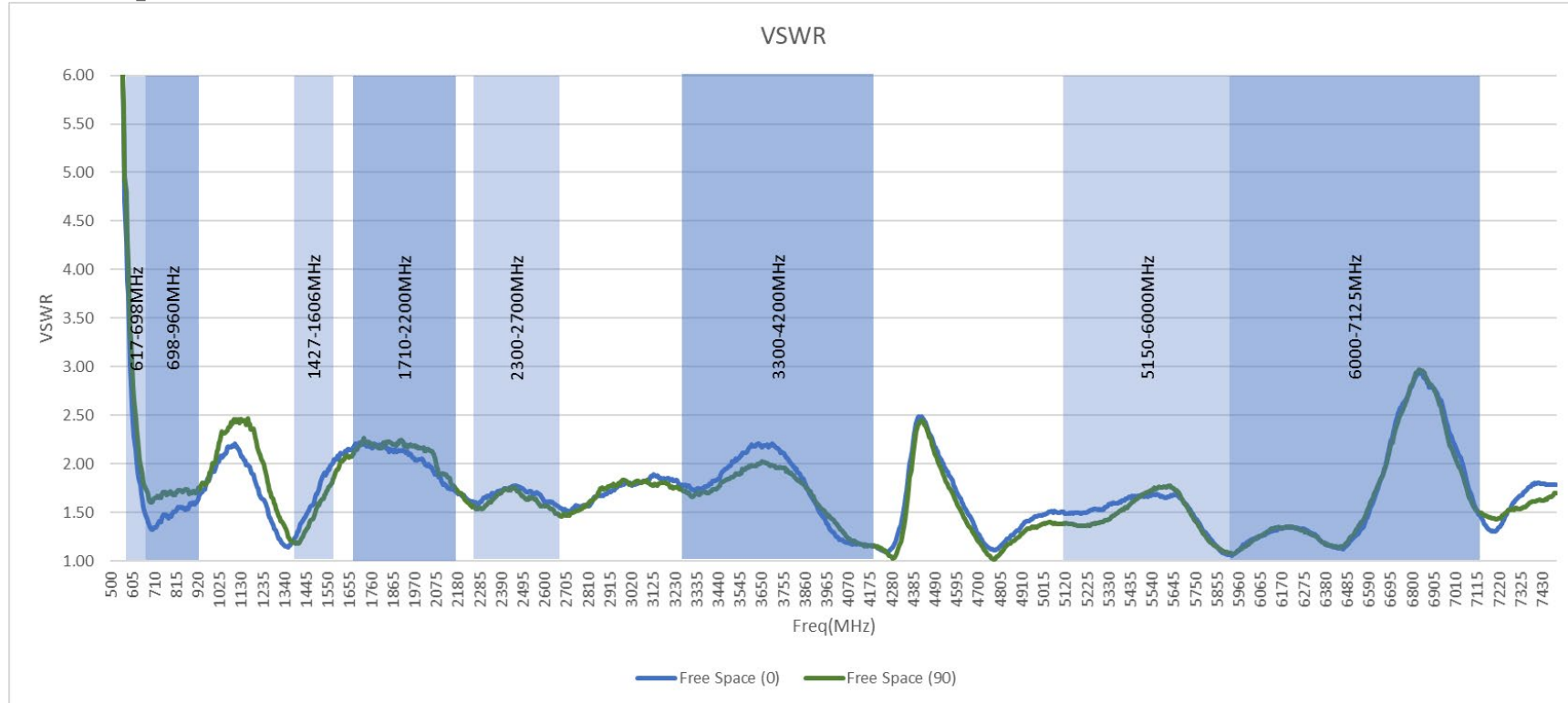
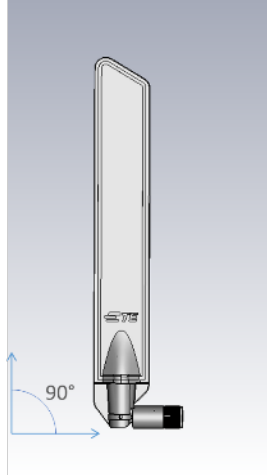
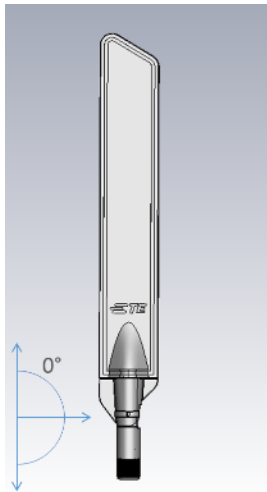
Antenna Performance

VSWR

EVERY CONNECTION COUNTS



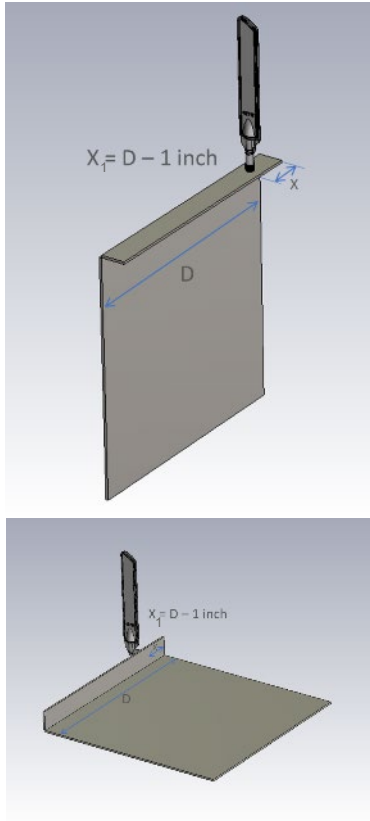
VSWR – Free Space



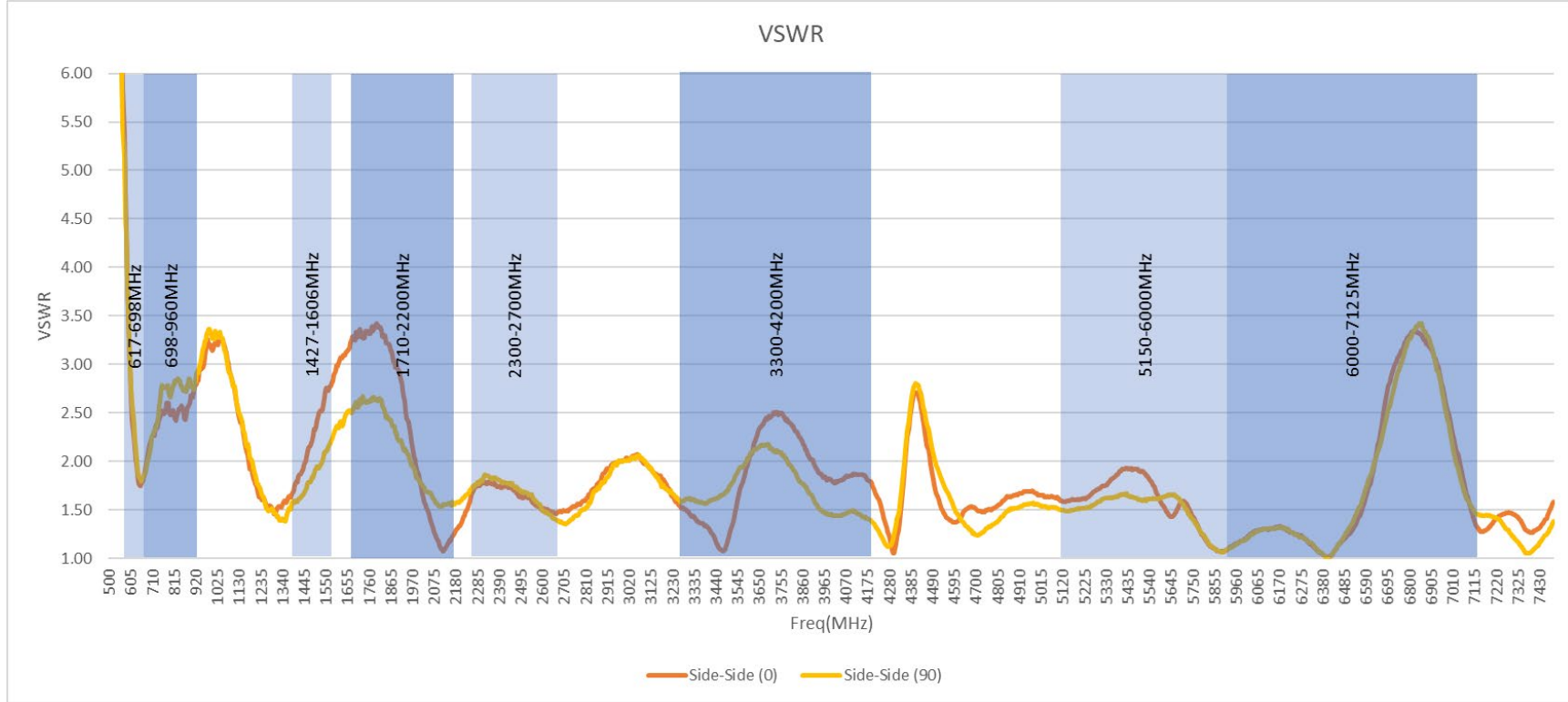
VSWR - Max	Free Space (0)	Free Space (90)
617-698	2.14	2.48
698-960	1.79	1.81
1427-1606	2.08	1.96
1710-2200	2.23	2.26
2300-2700	1.78	1.76
3300-4200	2.21	2.02
5150-6000	1.69	1.77
6000-7125	2.94	2.97



VSWR – Side-Side



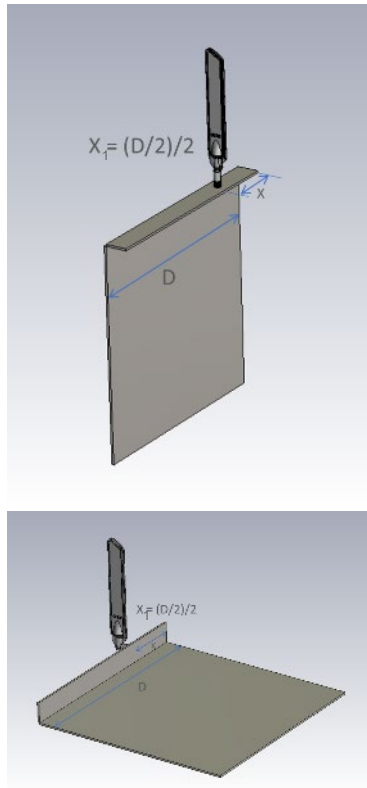
(X1 = 275mm)



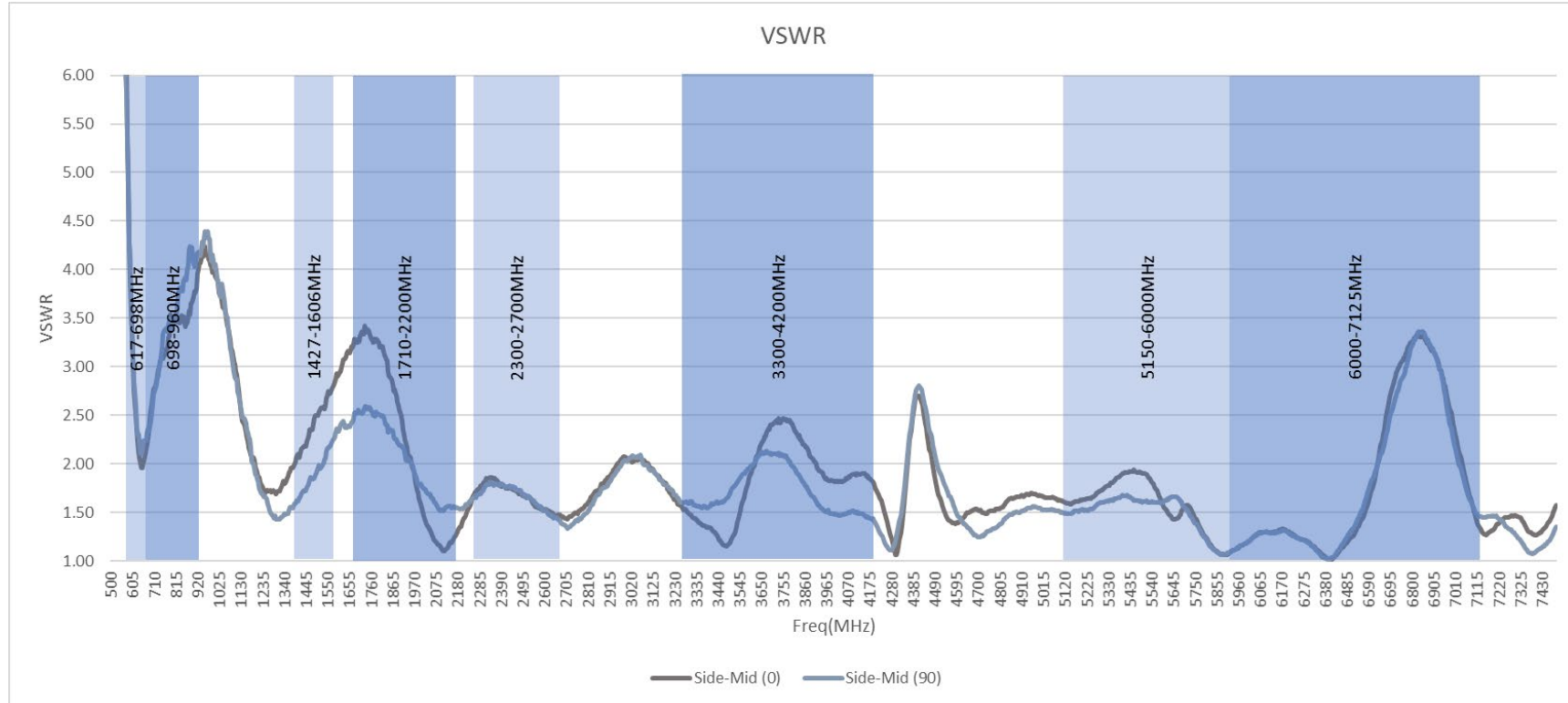
VSWR - Max	Side-Side (0)	Side-Side (90)
617-698	2.25	2.41
698-960	2.99	3.18
1427-1606	2.98	2.36
1710-2200	3.42	2.67
2300-2700	1.79	1.86
3300-4200	2.51	2.18
5150-6000	1.93	1.66
6000-7125	3.34	3.43



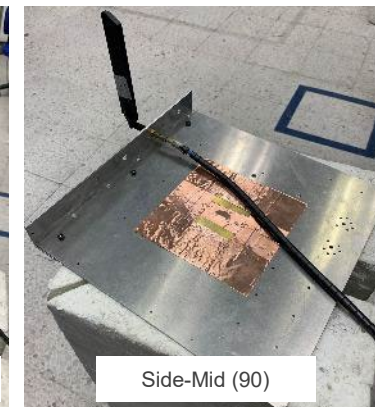
VSWR – Side-Mid



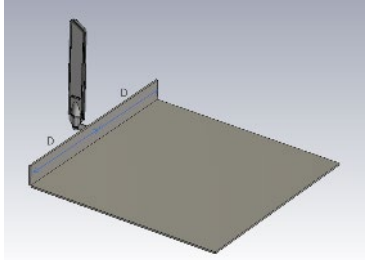
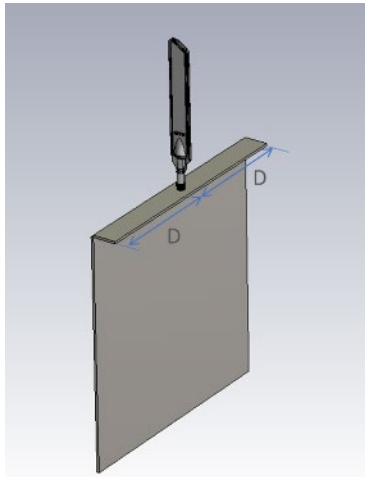
(X1 = 225mm)



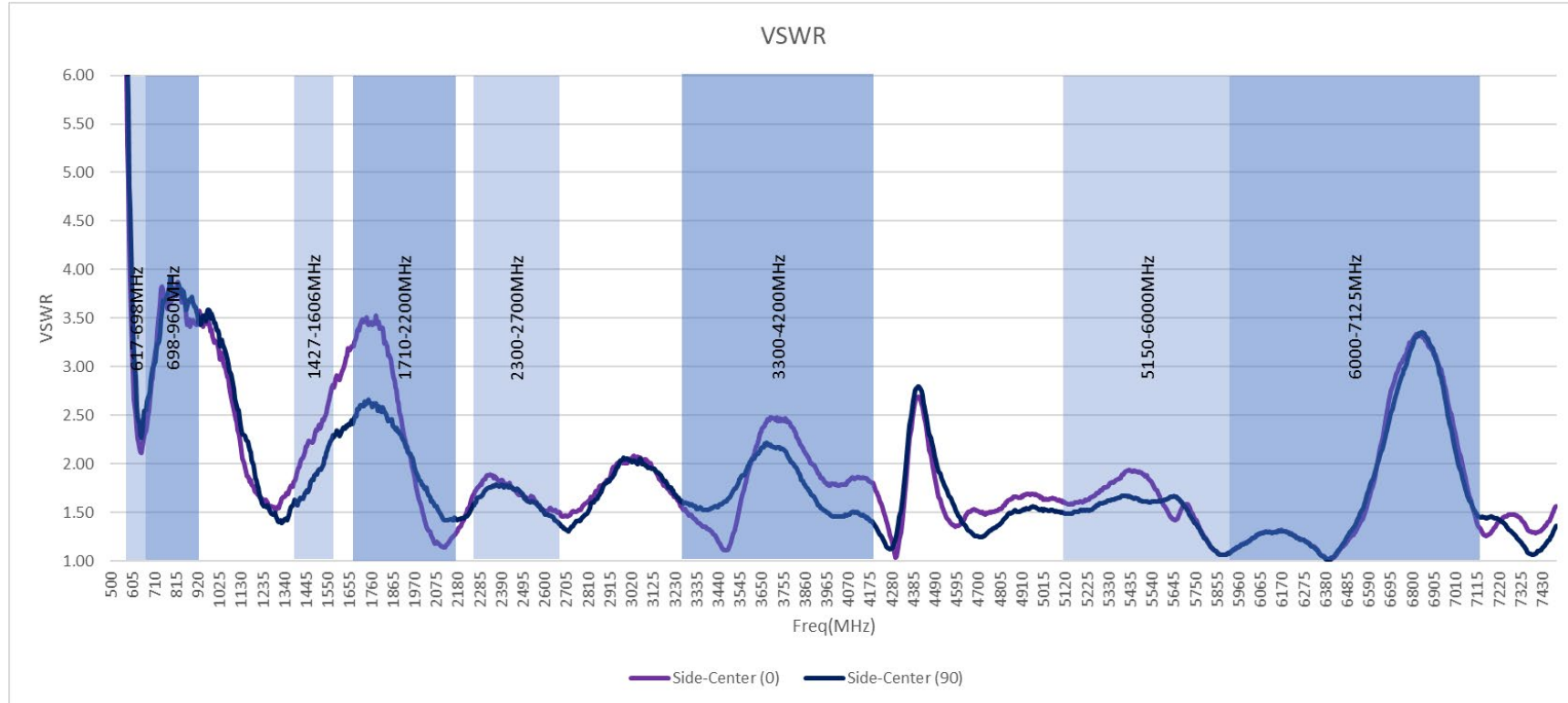
VSWR - Max	Side-Mid (0)	Side-Mid (90)
617-698	2.55	2.61
698-960	4.25	4.39
1427-1606	2.93	2.36
1710-2200	3.42	2.59
2300-2700	1.87	1.82
3300-4200	2.47	2.13
5150-6000	1.94	1.68
6000-7125	3.32	3.36



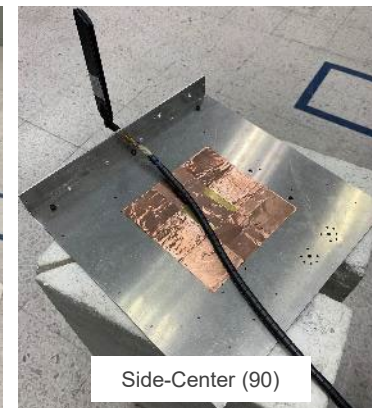
VSWR – Side-Center



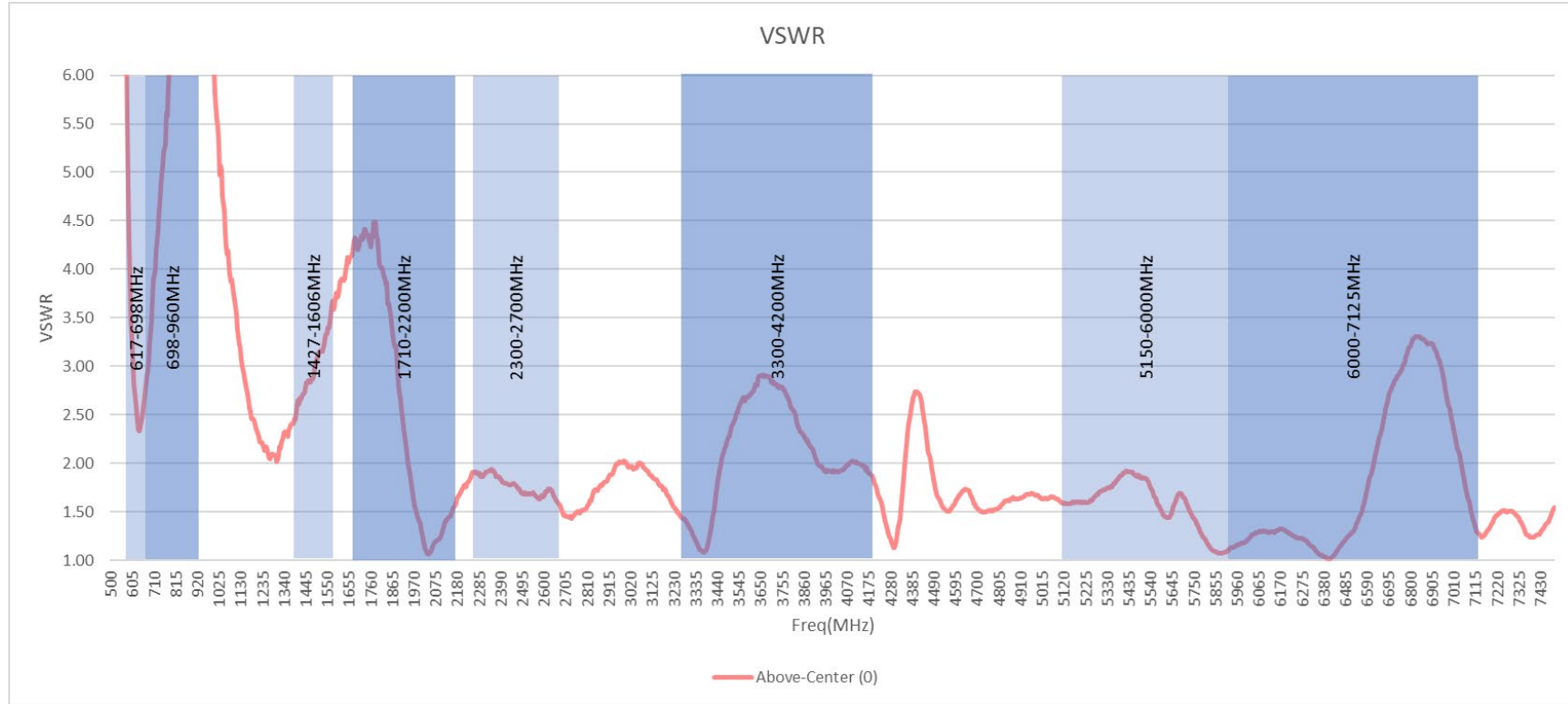
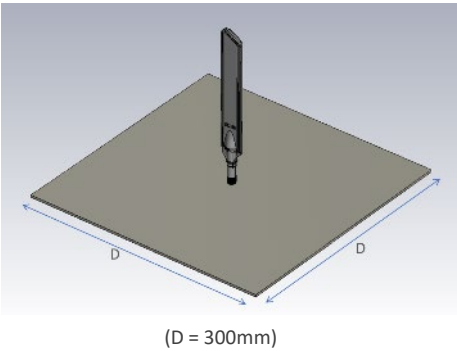
(D = 150mm)



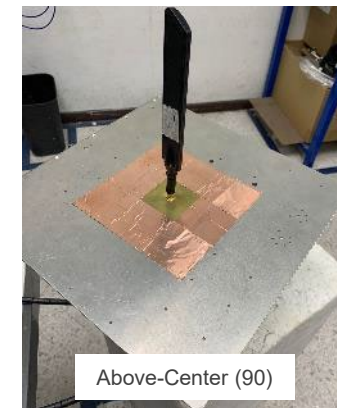
VSWR - Max	Side- Center (0)	Side- Center (90)
617-698	2.75	2.88
698-960	3.87	3.92
1427-1606	2.91	2.34
1710-2200	3.53	2.66
2300-2700	1.89	1.78
3300-4200	2.48	2.21
5150-6000	1.93	1.67
6000-7125	3.33	3.35



VSWR – Above-Center



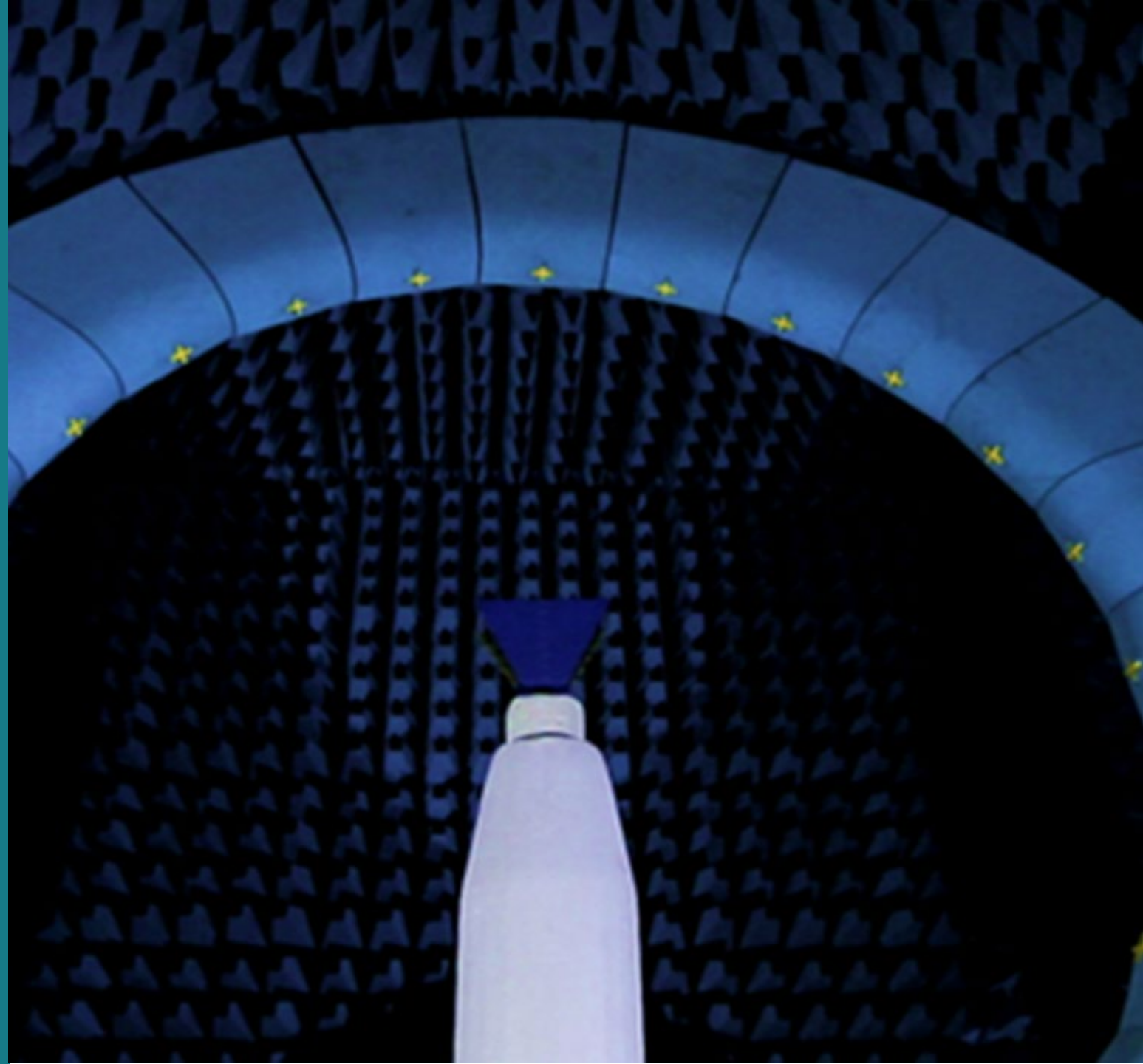
VSWR - Max	Above-Center (0)
617-698	3.35
698-960	8.07
1427-1606	3.75
1710-2200	4.49
2300-2700	1.93
3300-4200	2.91
5150-6000	1.92
6000-7125	3.31



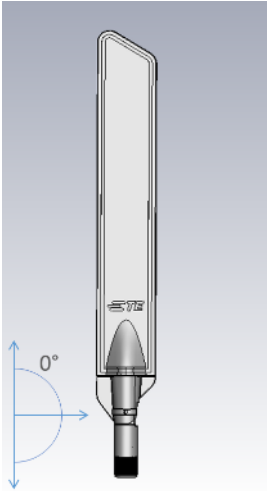
Antenna Performance

Total Efficiency & Gain

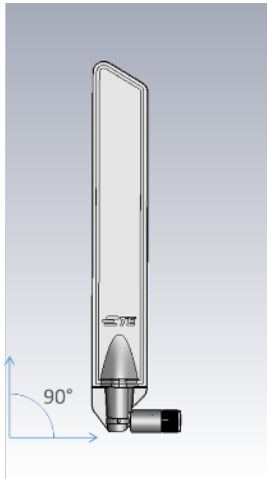
EVERY CONNECTION COUNTS



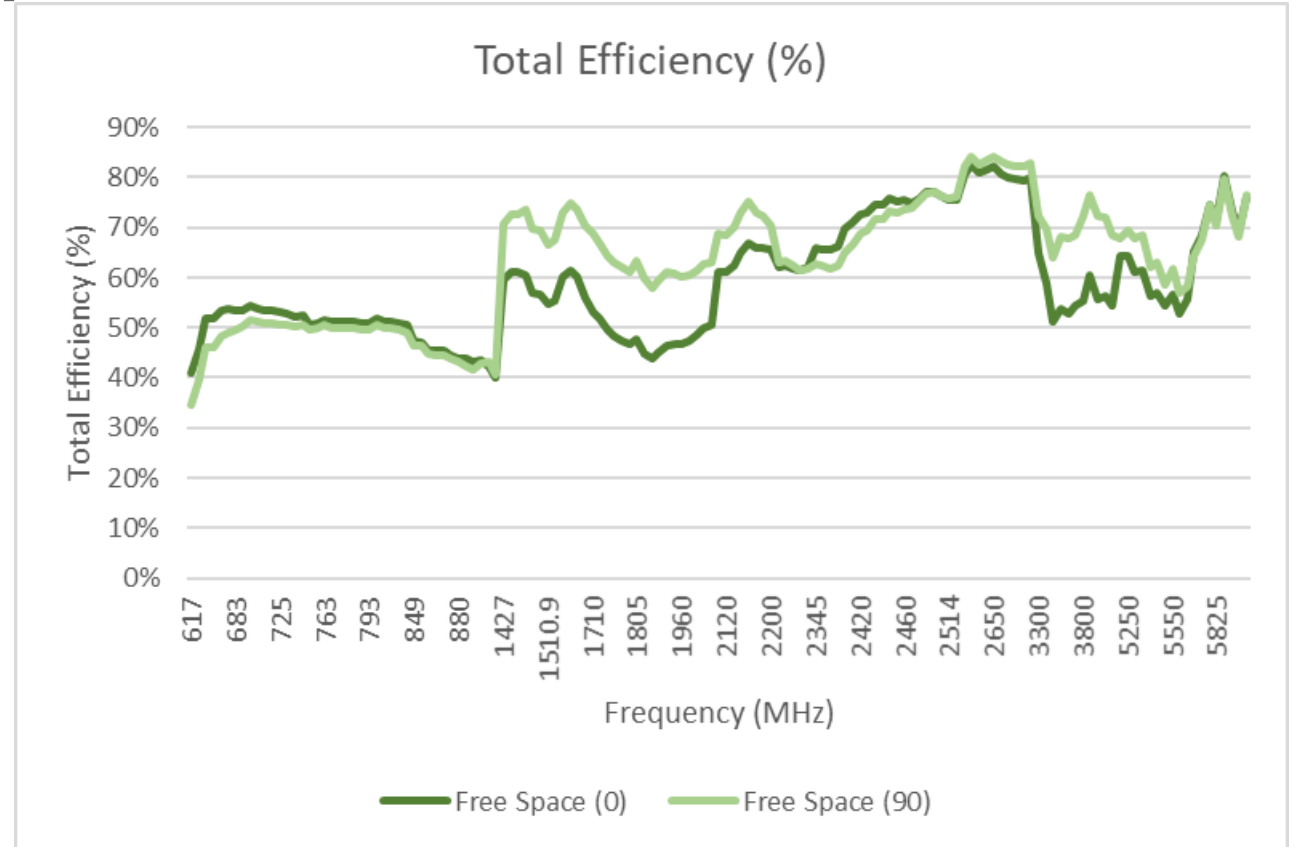
Total Efficiency, % – Free Space



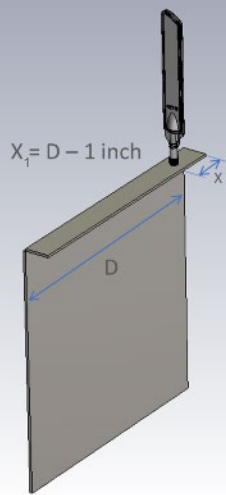
3D Total Efficiency (%)	Free Space (0)	Free Space (90)
- Average		
617-698	51%	45%
698-960	49%	48%
1427-1606	59%	71%
1710-2200	53%	65%
2300-2700	74%	73%
3300-4200	56%	70%
5150-6000	65%	67%



3D Total Efficiency (%)	Free Space (0)	Free Space (90)
- Min		
617-698	41%	34%
698-960	40%	41%
1427-1606	55%	67%
1710-2200	44%	58%
2300-2700	61%	61%
3300-4200	51%	64%
5150-6000	53%	57%

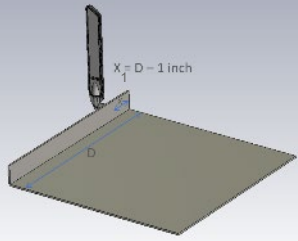


Total Efficiency, % – Side-Side

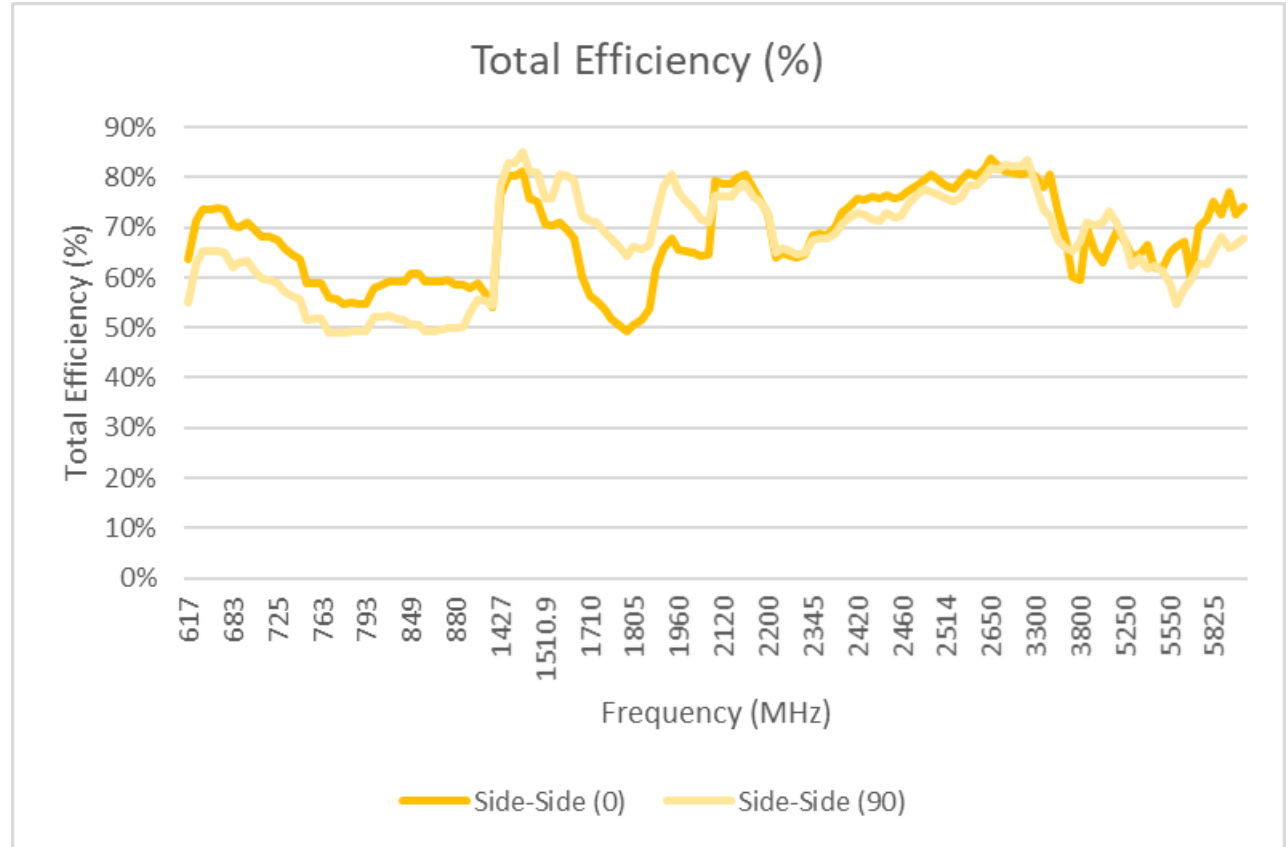


3D Total Efficiency (%)	Side-Side (%)	
	Side-Side (0)	Side-Side (90)
- Average		
617-698	71%	63%
698-960	60%	53%
1427-1606	74%	80%
1710-2200	65%	73%
2300-2700	75%	74%
3300-4200	69%	71%
5150-6000	68%	63%

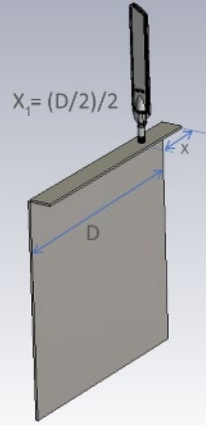
3D Total Efficiency (%)	Side-Side (%)	
	Side-Side (0)	Side-Side (90)
- Min		
617-698	64%	55%
698-960	54%	49%
1427-1606	68%	76%
1710-2200	49%	64%
2300-2700	64%	65%
3300-4200	60%	65%
5150-6000	60%	55%



(X1 = 275mm)

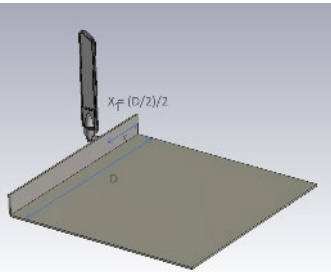


Total Efficiency, % – Side-Mid

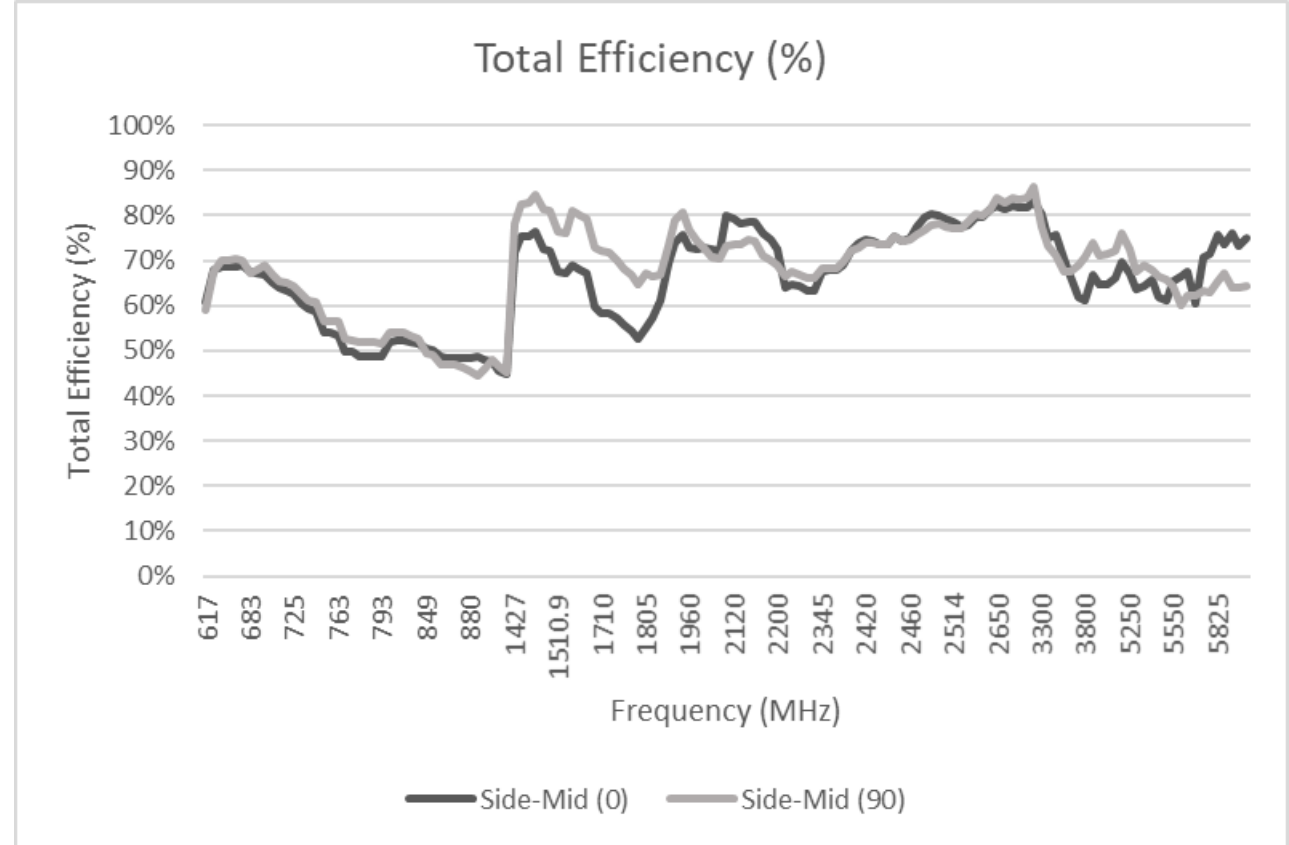


3D Total Efficiency (%)	3D Total Efficiency (%)		
	- Average	Side-Mid (0)	Side-Mid (90)
617-698		67%	68%
698-960		53%	54%
1427-1606		71%	80%
1710-2200		68%	72%
2300-2700		75%	75%
3300-4200		68%	71%
5150-6000		68%	66%

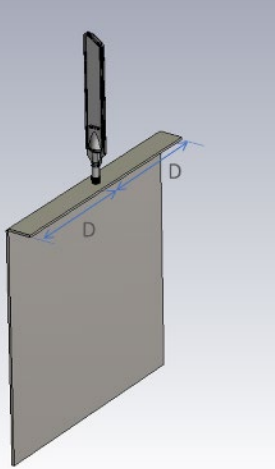
3D Total Efficiency (%)	3D Total Efficiency (%)		
	- Min	Side-Mid (0)	Side-Mid (90)
617-698		61%	59%
698-960		45%	45%
1427-1606		67%	76%
1710-2200		53%	65%
2300-2700		63%	66%
3300-4200		61%	68%
5150-6000		60%	60%



(X1 = 225mm)

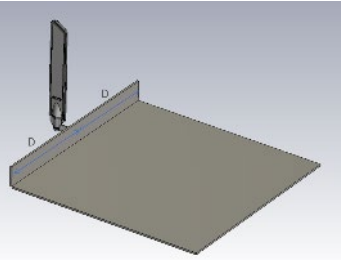
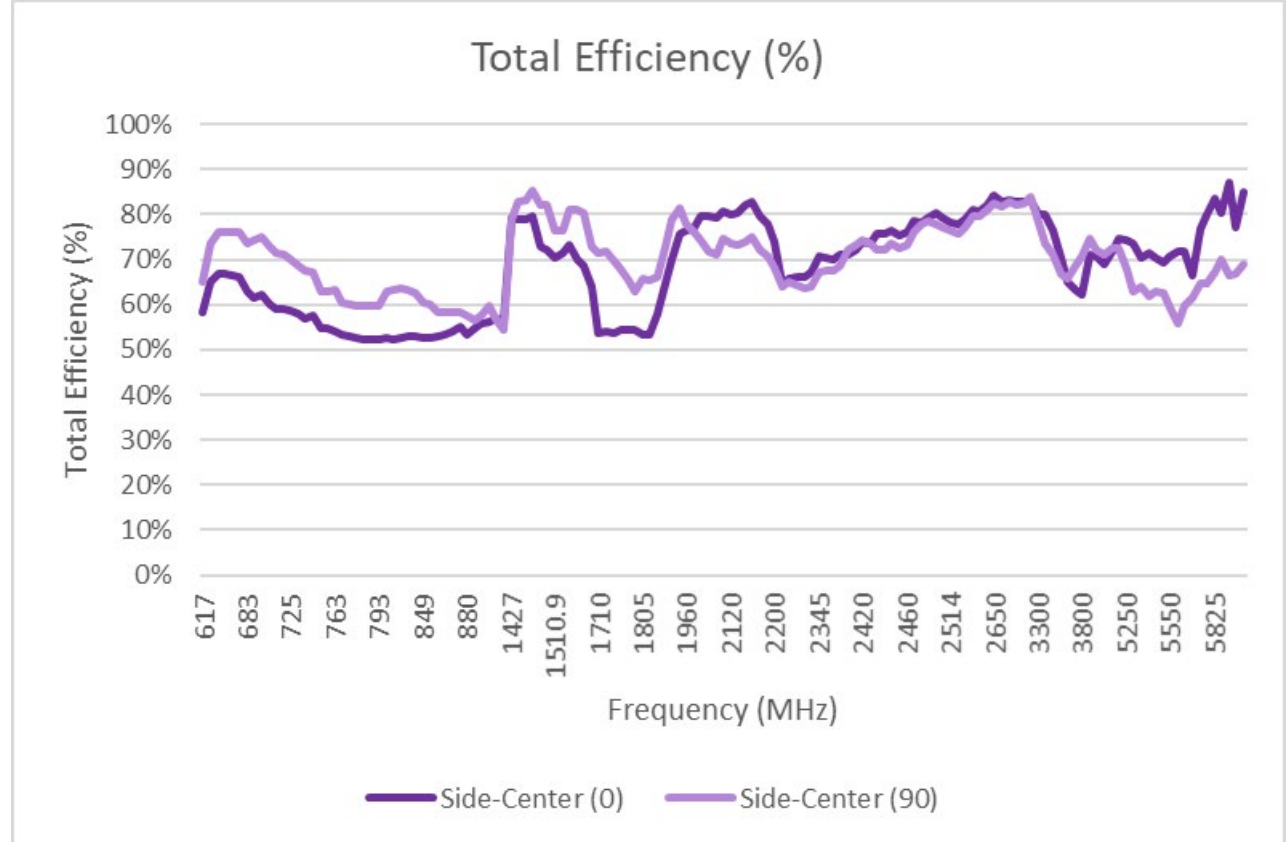


Total Efficiency, % – Side-Center



3D Total Efficiency (%)	Side-Center (0)	Side-Center (90)
- Average	(0)	(90)
617-698	64%	74%
698-960	55%	63%
1427-1606	74%	81%
1710-2200	69%	72%
2300-2700	76%	74%
3300-4200	71%	71%
5150-6000	75%	64%

3D Total Efficiency (%)	Side-Center (0)	Side-Center (90)
- Min	(0)	(90)
617-698	58%	65%
698-960	52%	54%
1427-1606	69%	76%
1710-2200	53%	63%
2300-2700	64%	64%
3300-4200	62%	66%
5150-6000	66%	56%

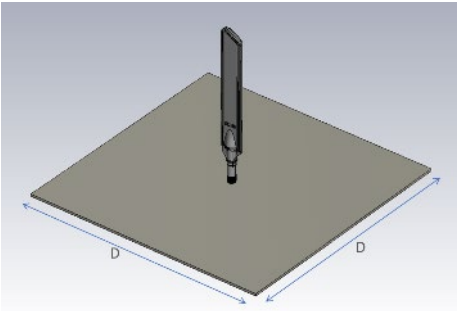


(D = 150mm)

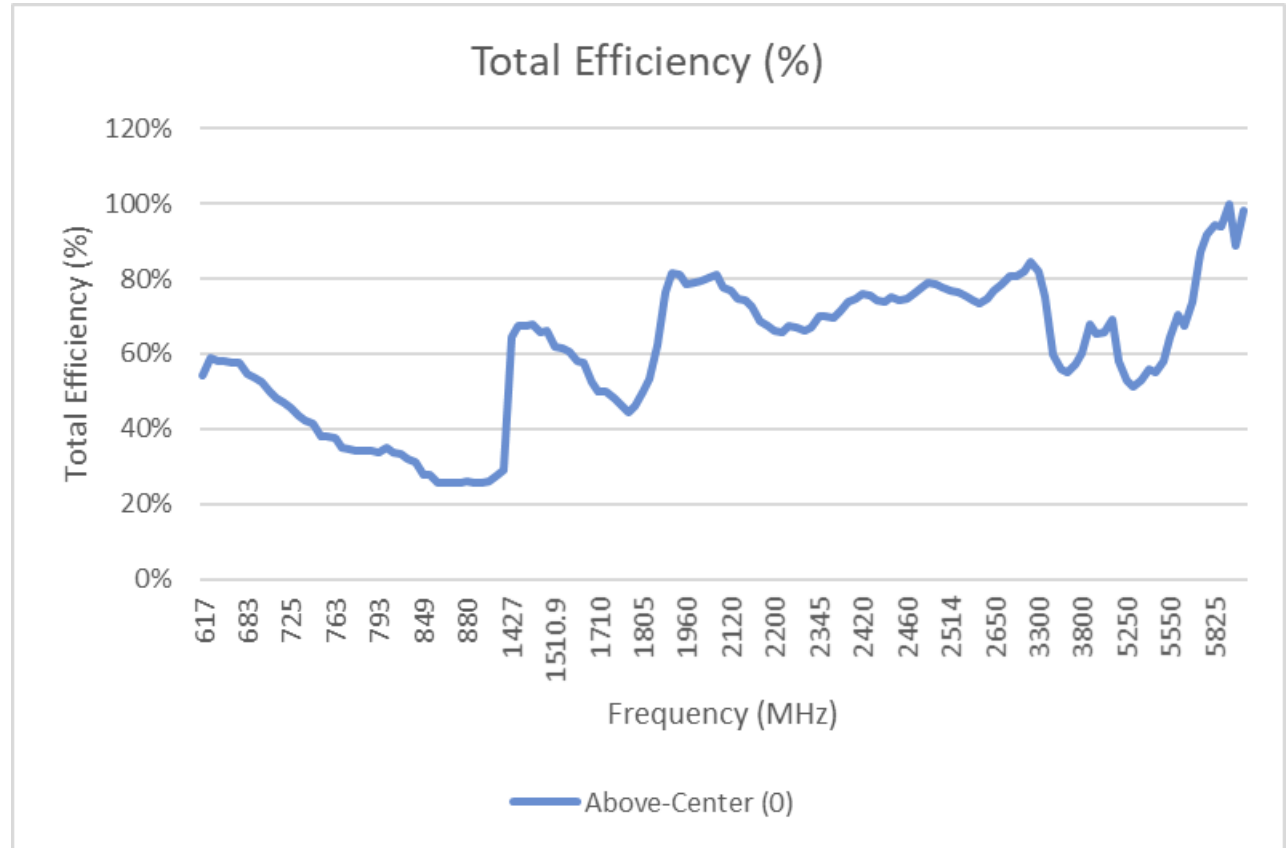
Total Efficiency, % – Above-Center

3D Total Efficiency - Average	(%) Above- Center (0)
617-698	57%
698-960	35%
1427-1606	63%
1710-2200	67%
2300-2700	75%
3300-4200	65%
5150-6000	73%

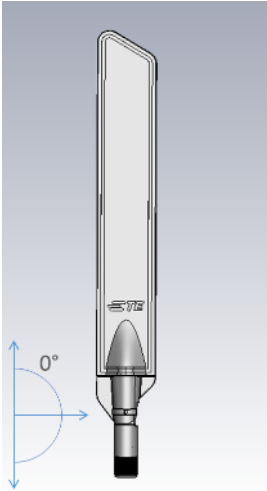
3D Total Efficiency - Min	(%) Above- Center (0)
617-698	54%
698-960	25%
1427-1606	58%
1710-2200	44%
2300-2700	66%
3300-4200	55%
5150-6000	51%



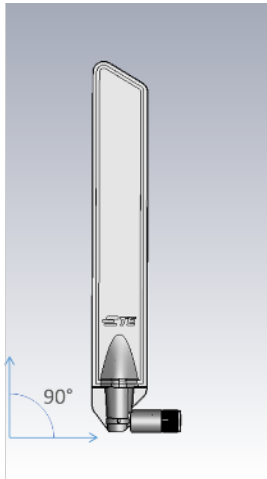
(D = 300mm)



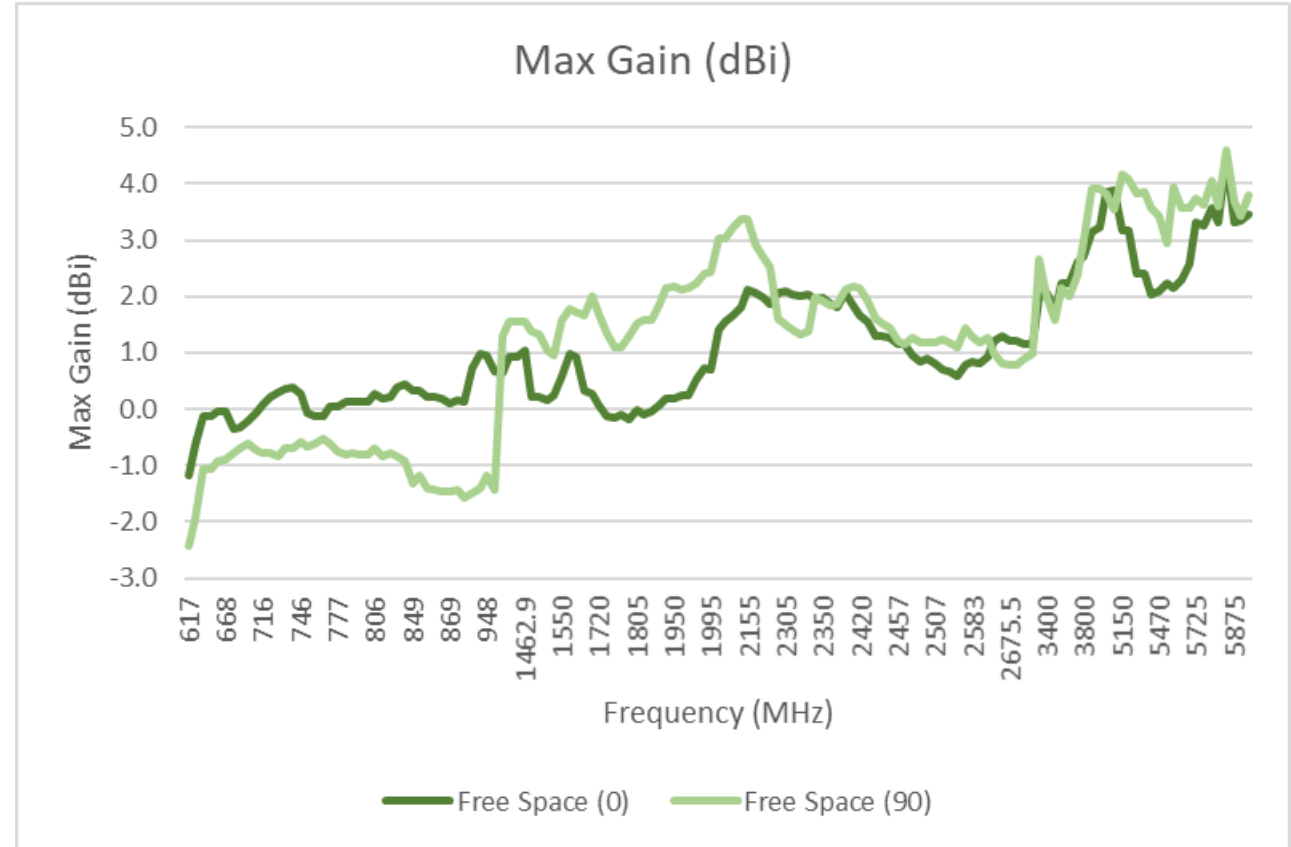
3D Gain, dBi – Free Space



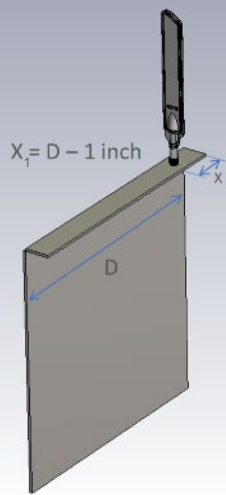
3D Max Gain (dBi)	Free Space (0)	Free Space (90)
617-698	0.0	-0.7
698-960	1.0	-0.5
1427-1606	1.0	1.8
1710-2200	2.1	3.4
2300-2700	2.1	2.2
3300-4200	3.9	3.9
5150-6000	4.4	4.6



3D Max Gain (dBi)	Free Space (0)	Free Space (90)
- Average	(0)	(90)
617-698	-0.3	-1.2
698-960	0.2	-1.0
1427-1606	0.6	1.4
1710-2200	0.8	2.2
2300-2700	1.4	1.4
3300-4200	2.8	2.9
5150-6000	3.0	3.8

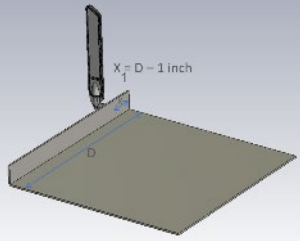


3D Gain, dBi – Side-Side

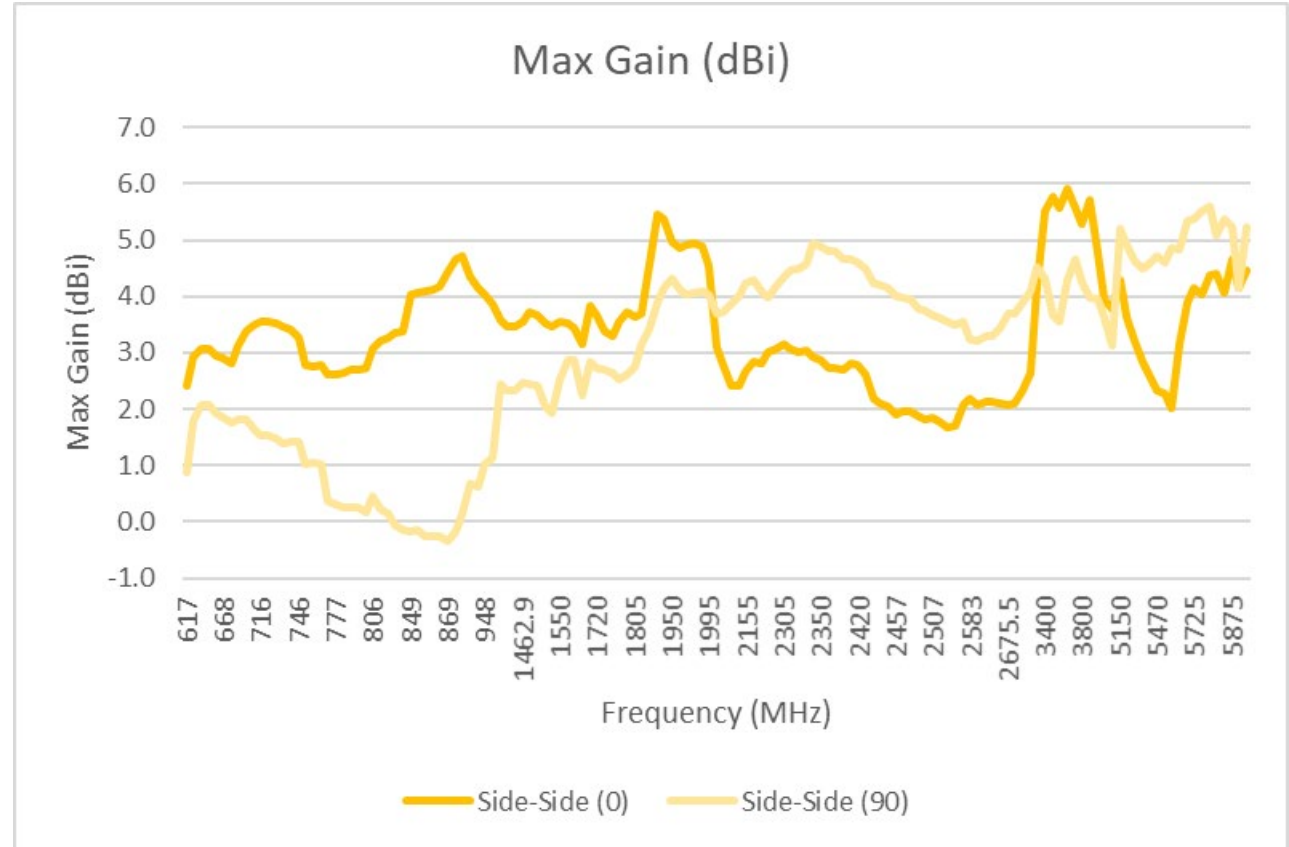


3D Max Gain (dBi)	Side-Side (0)	Side-Side (90)
617-698	3.1	2.1
698-960	4.7	1.8
1427-1606	3.7	2.9
1710-2200	5.5	4.3
2300-2700	3.1	4.9
3300-4200	5.9	4.7
5150-6000	4.7	5.6

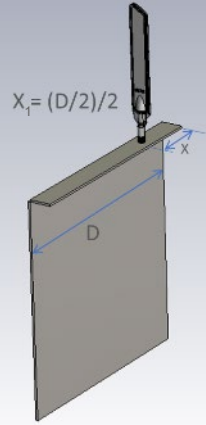
3D Max Gain (dBi)	Side-Side (0)	Side-Side (90)
- Average		
617-698	2.9	1.8
698-960	3.5	0.7
1427-1606	3.5	2.4
1710-2200	3.9	3.6
2300-2700	2.4	4.1
3300-4200	5.1	4.0
5150-6000	3.7	5.0



(X1 = 275mm)

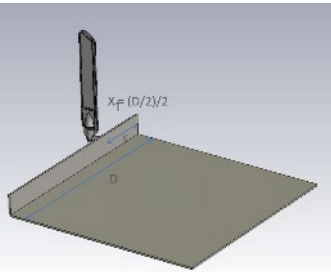


3D Gain, dBi – Side-Mid

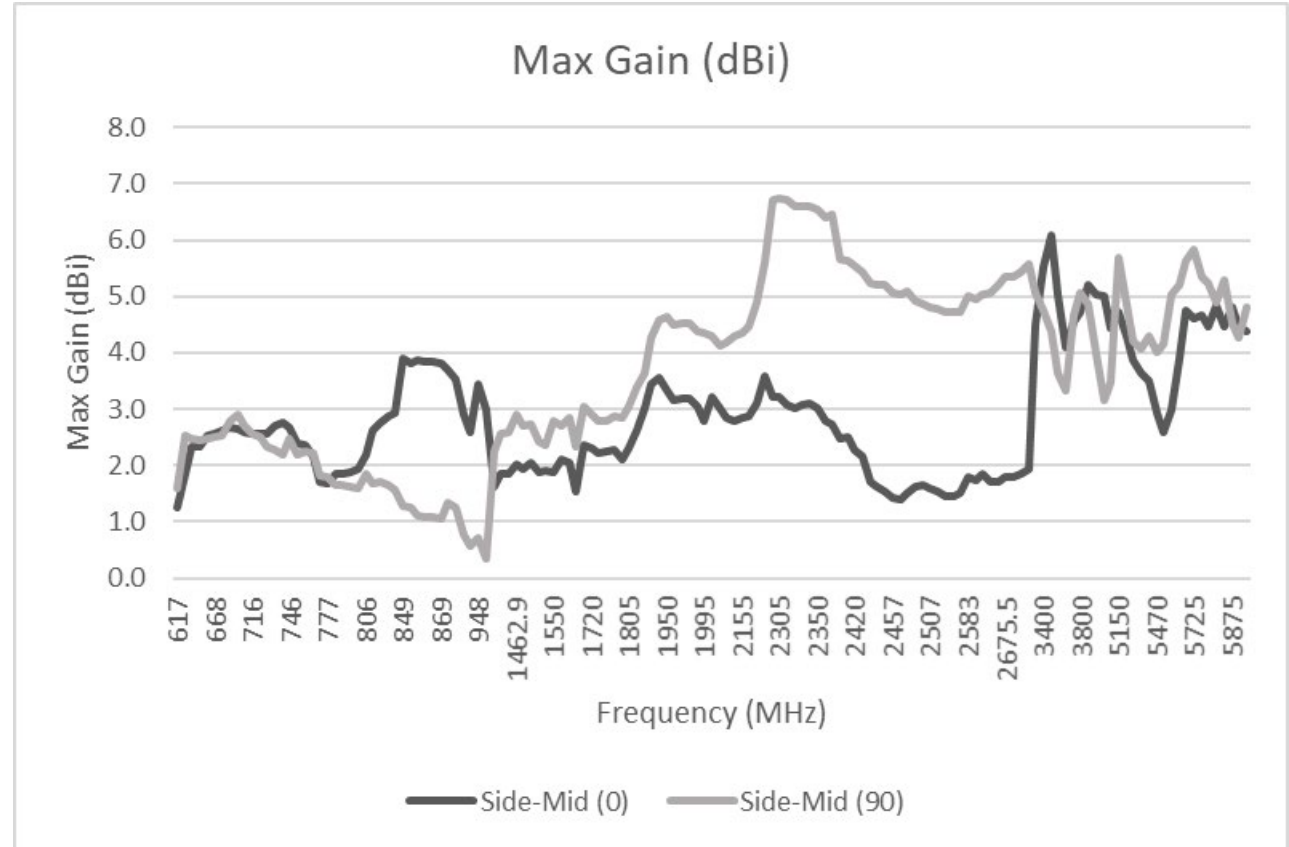


3D Max Gain (dBi)	Side-Mid (0)	Side-Mid (90)
617-698	2.7	2.8
698-960	3.9	2.9
1427-1606	2.1	2.9
1710-2200	3.6	5.6
2300-2700	3.2	6.8
3300-4200	6.1	5.1
5150-6000	4.8	5.8

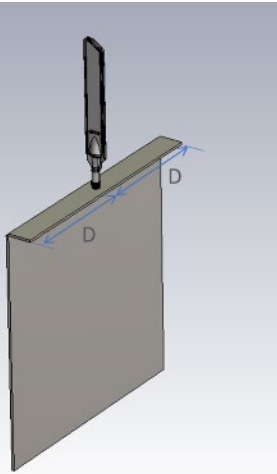
3D Max Gain (dBi)	Side-Mid (0)	Side-Mid (90)
- Average		
617-698	2.3	2.4
698-960	2.8	1.8
1427-1606	1.9	2.6
1710-2200	2.9	4.0
2300-2700	2.1	5.6
3300-4200	5.0	4.3
5150-6000	4.2	4.9



(X1 = 225mm)

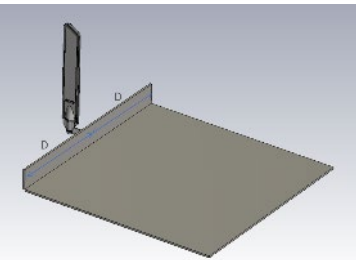


3D Gain, dBi – Side-Center

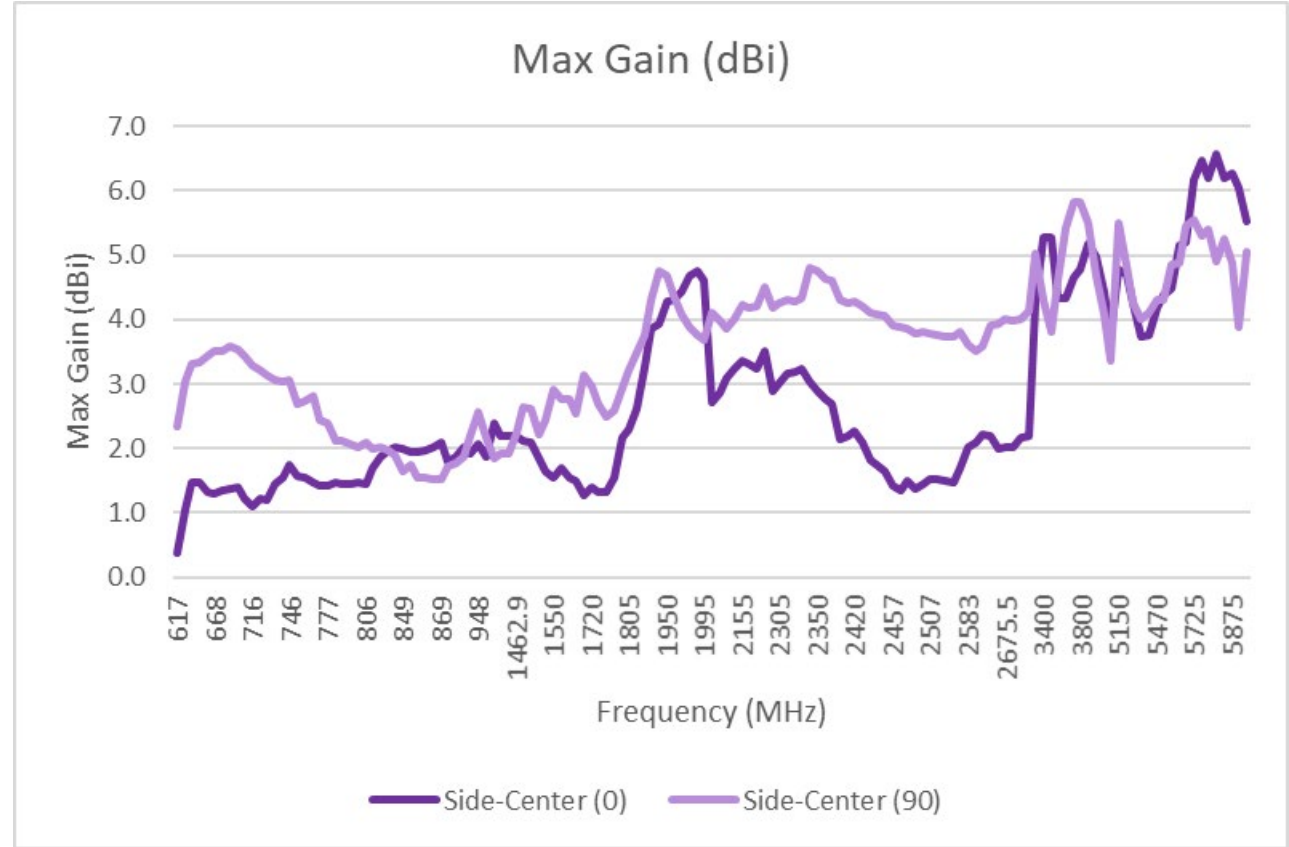


3D Max Gain (dBi)	Side-Center (0)	Side-Center (90)
617-698	1.5	3.6
698-960	2.1	3.6
1427-1606	2.4	2.9
1710-2200	4.8	4.8
2300-2700	3.2	4.8
3300-4200	5.3	5.8
5150-6000	6.6	5.6

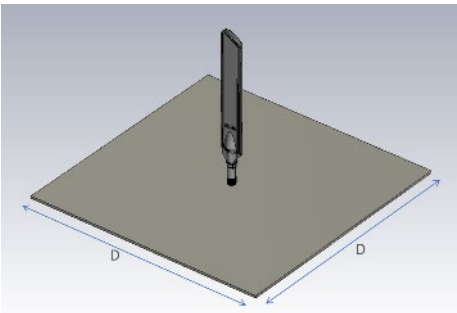
3D Max Gain (dBi)	Side-Center (0)	Side-Center (90)
- Average	(0)	(90)
617-698	1.2	3.3
698-960	1.7	2.4
1427-1606	2.0	2.4
1710-2200	3.2	3.8
2300-2700	2.2	4.1
3300-4200	4.7	4.8
5150-6000	5.3	4.9



(D = 150mm)



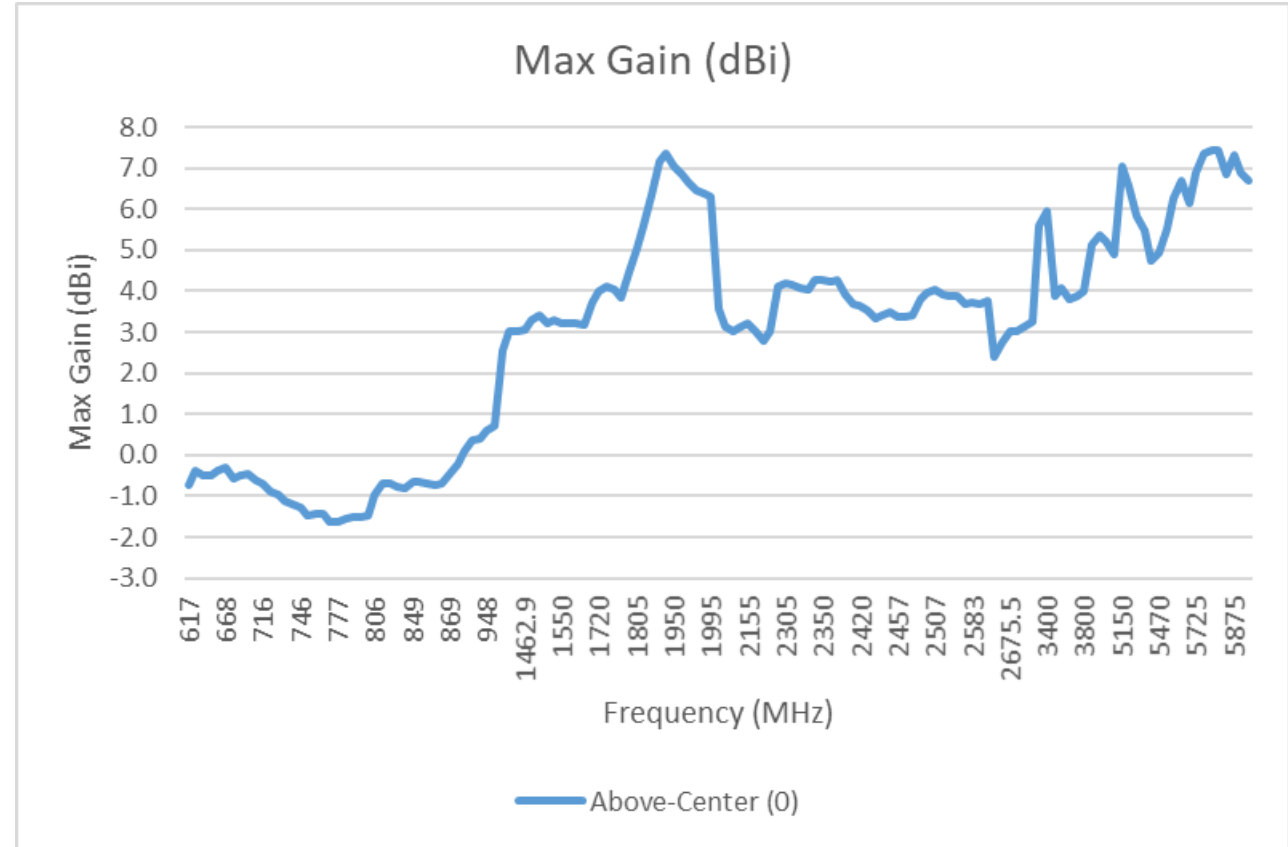
3D Gain, dBi – Above-Center



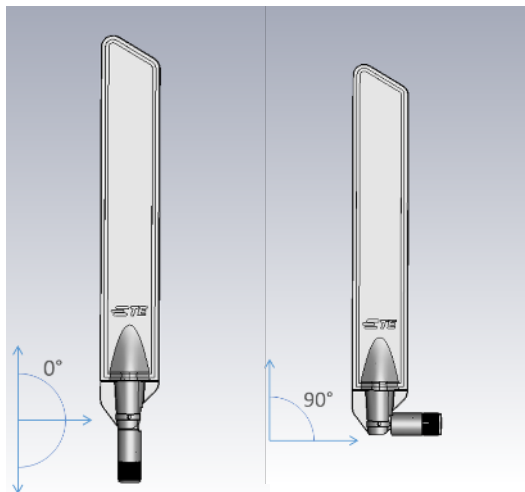
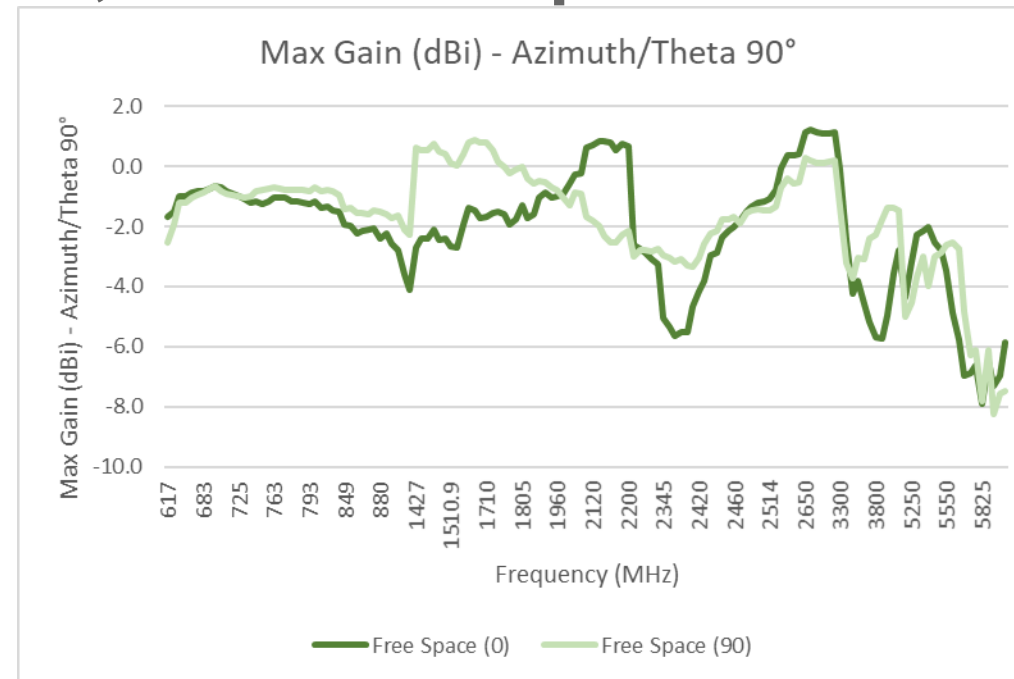
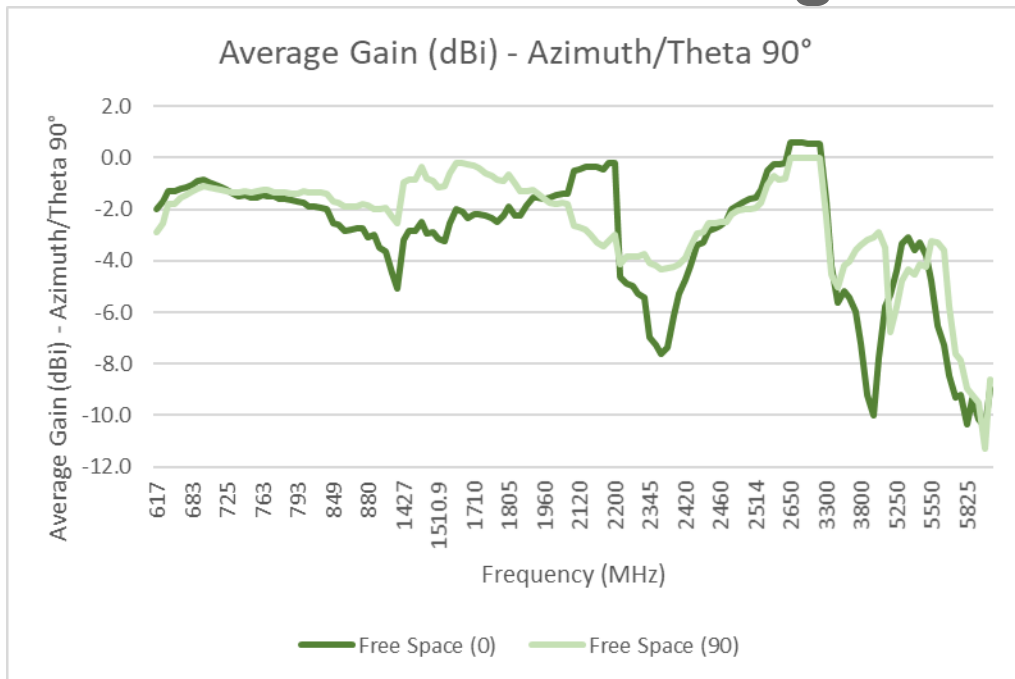
(D = 300mm)

3D Max Gain (dBi)	Above-Center (0)
617-698	-0.3
698-960	0.7
1427-1606	3.4
1710-2200	7.4
2300-2700	4.3
3300-4200	5.9
5150-6000	7.5

3D Max Gain (dBi) - Average	Above-Center (0)
617-698	-0.5
698-960	-0.7
1427-1606	3.1
1710-2200	5.1
2300-2700	3.7
3300-4200	4.8
5150-6000	6.5



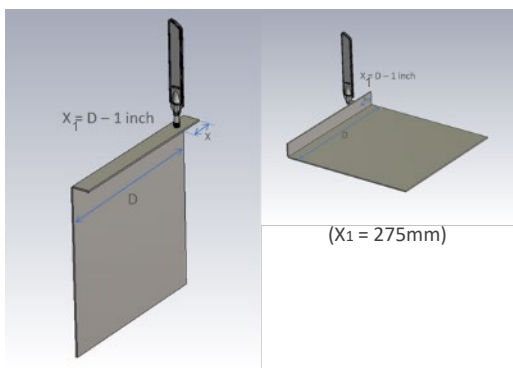
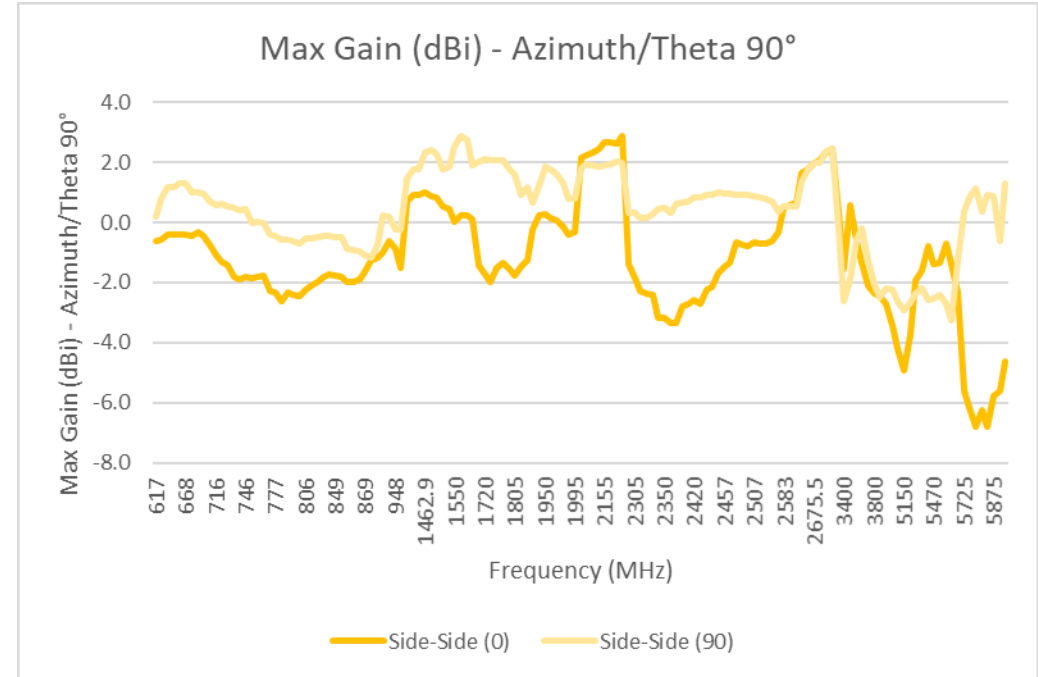
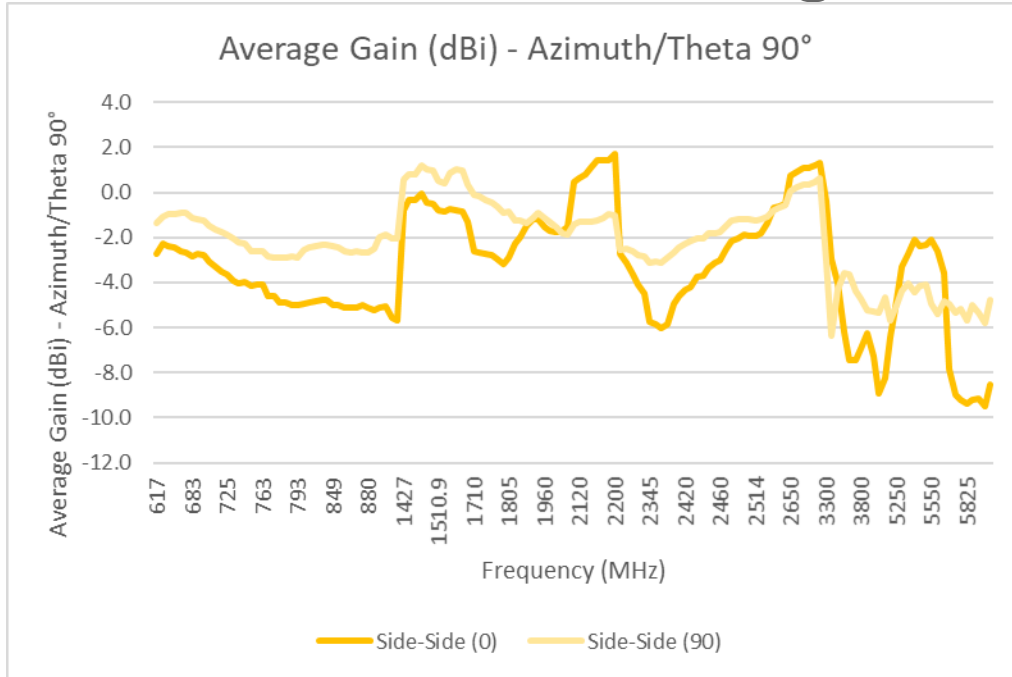
Azimuth/Theta 90° Average/Max Gain, dBi - Free Space



Average Gain (dBi) - Azimuth/Theta 90°	Free Space (0)	Free Space (90)
617-698	-1.3	-1.8
698-960	-2.0	-1.5
1427-1606	-2.7	-0.7
1710-2200	-1.4	-1.6
2300-2700	-2.2	-2.1
3300-4200	-5.6	-3.5
5150-6000	-5.9	-5.7

Max Gain (dBi) - Azimuth/Theta 90°	Free Space (0)	Free Space (90)
617-698	-0.7	-0.8
698-960	-0.7	-0.7
1427-1606	-1.4	0.9
1710-2200	0.9	0.8
2300-2700	1.2	0.3
3300-4200	-0.1	-1.3
5150-6000	-2.0	-2.6

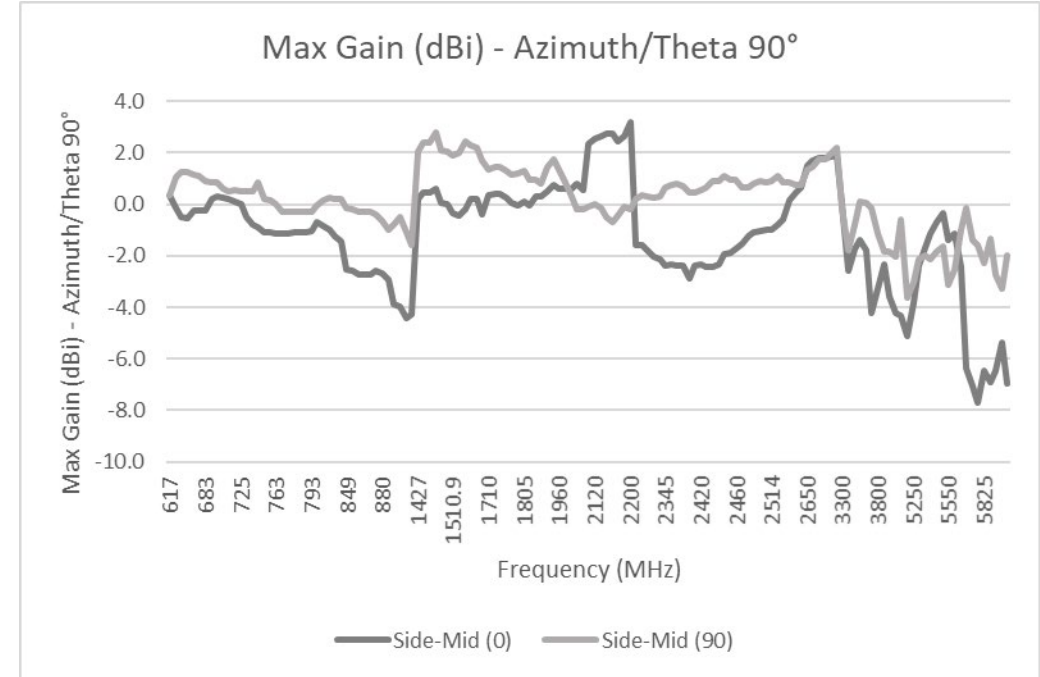
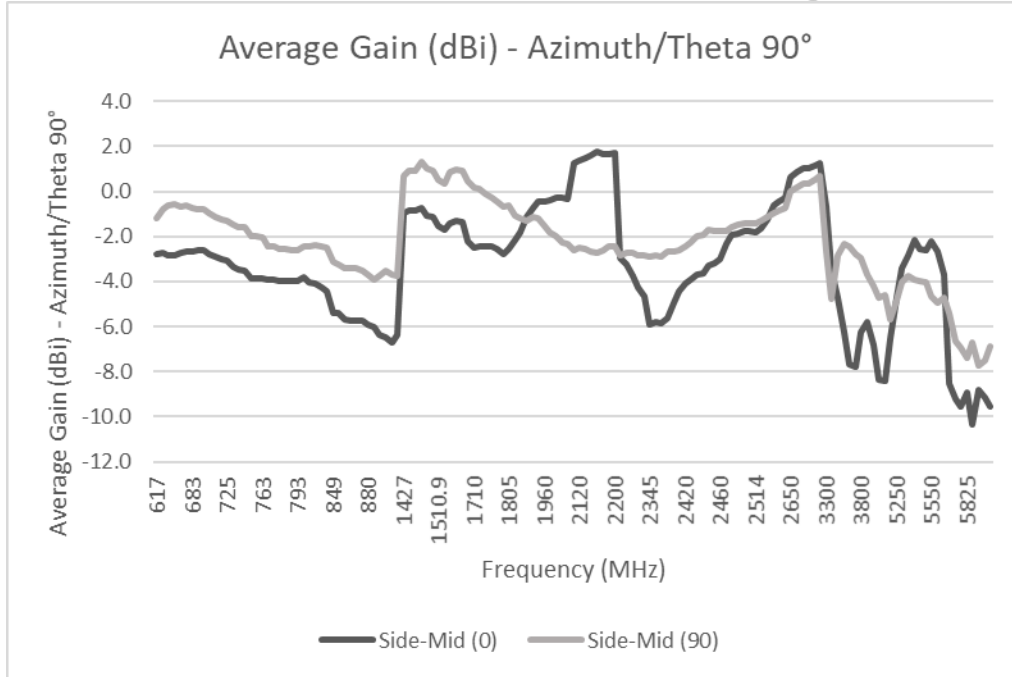
Azimuth/Theta 90° Average/Max Gain, dBi - Side-Side



Average Gain (dBi) - Azimuth/Theta 90°	Side-Side (0)	Side-Side (90)
617-698	-2.6	-1.1
698-960	-4.5	-2.3
1427-1606	-0.6	0.8
1710-2200	-0.9	-1.1
2300-2700	-1.9	-1.4
3300-4200	-5.2	-4.5
5150-6000	-4.8	-4.9

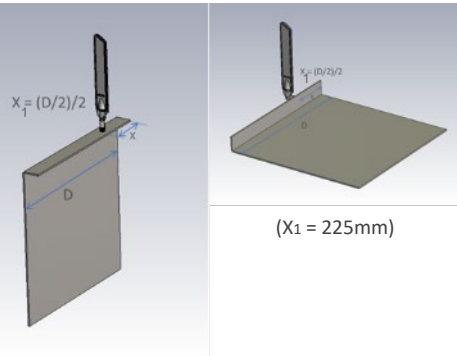
Max Gain (dBi) - Azimuth/Theta 90°	Side-Side (0)	Side-Side (90)
617-698	-0.3	1.3
698-960	-0.3	1.0
1427-1606	1.0	2.9
1710-2200	2.9	2.1
2300-2700	2.5	2.5
3300-4200	0.6	-0.2
5150-6000	-0.7	1.3

Azimuth/Theta 90° Average/Max Gain, dBi - Side-Mid



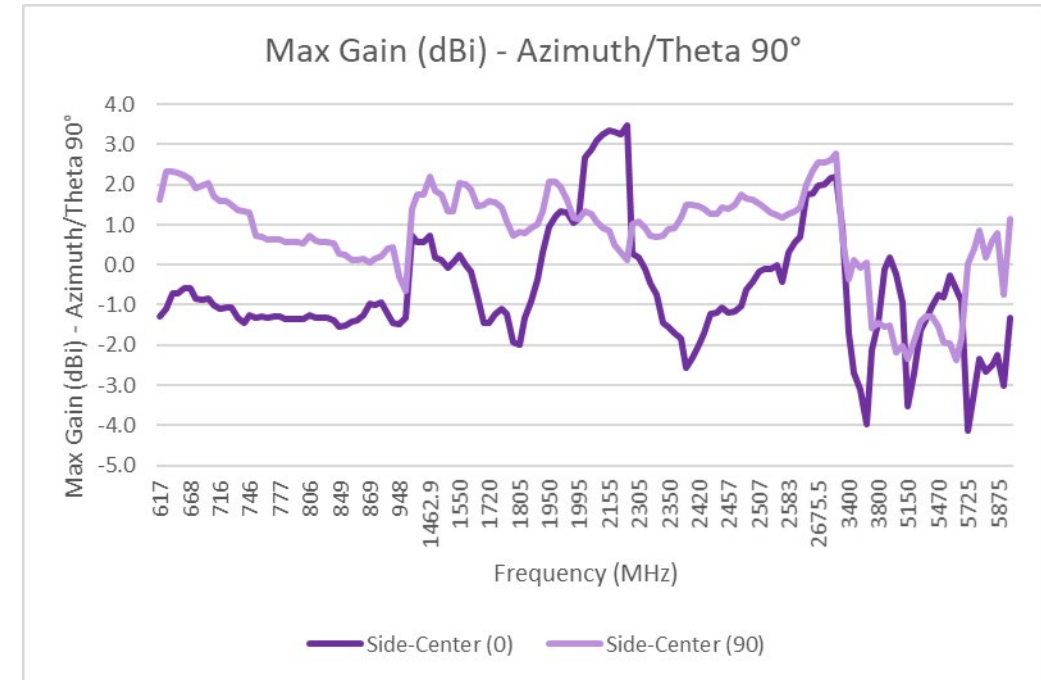
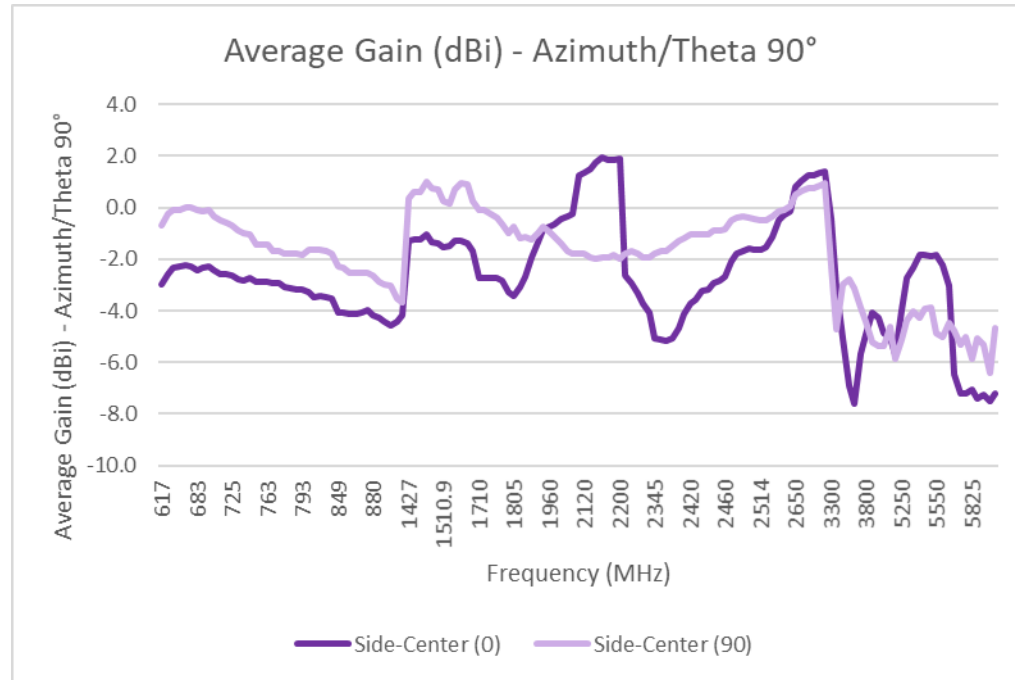
Average Gain (dBi) - Azimuth/Theta 90°	Side-Mid	
	Side-Mid (0)	Side-Mid (90)
617-698	-2.7	-0.7
698-960	-4.3	-2.4
1427-1606	-1.2	0.9
1710-2200	-0.3	-1.4
2300-2700	-1.9	-1.5
3300-4200	-5.3	-3.4
5150-6000	-4.9	-5.3

Max Gain (dBi) - Azimuth/Theta 90°	Side-Mid	
	Side-Mid (0)	Side-Mid (90)
617-698	0.3	1.2
698-960	0.3	0.9
1427-1606	0.6	2.8
1710-2200	3.2	1.7
2300-2700	1.9	2.2
3300-4200	0.0	0.1
5150-6000	-0.4	-0.2



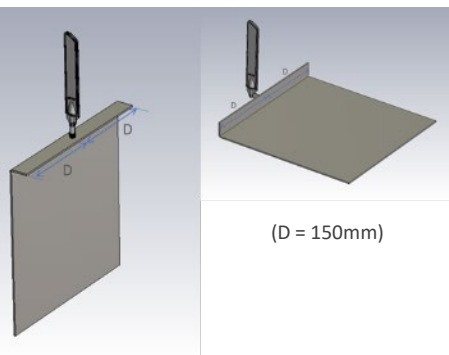
Azimuth/Theta 90° Average/Max Gain, dBi

- Side-Center

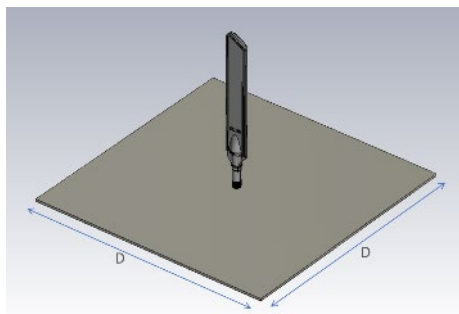
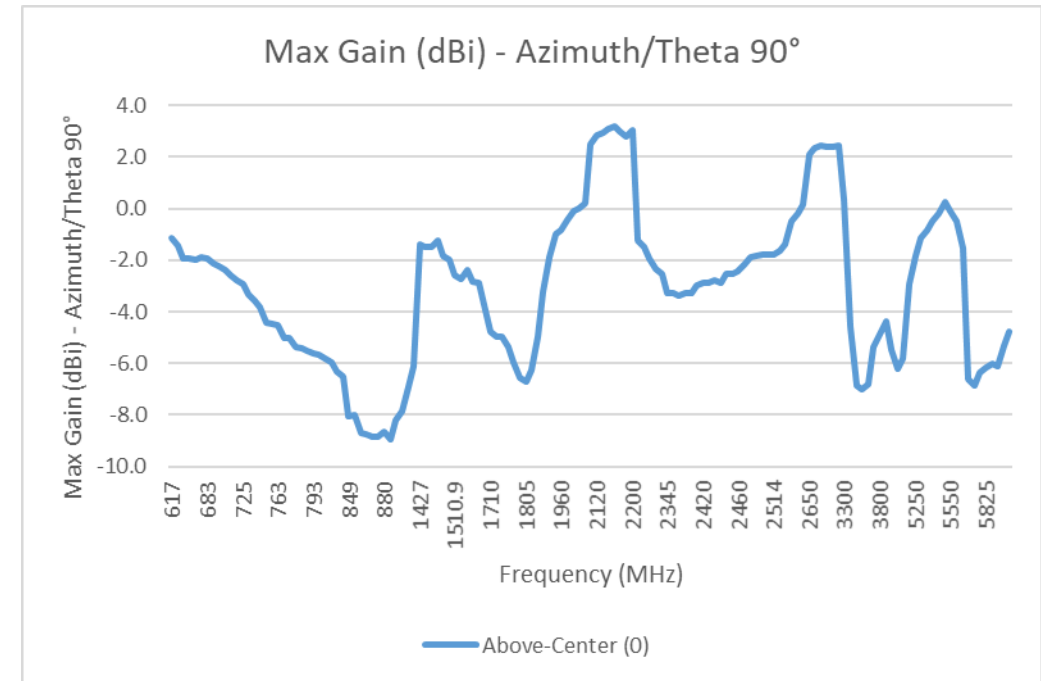
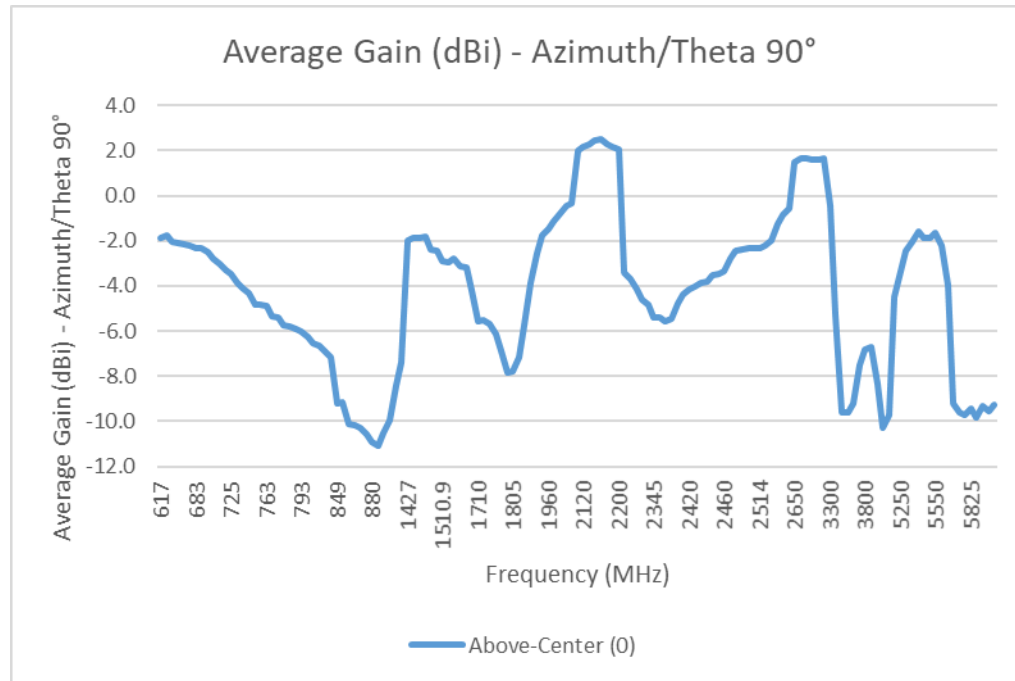


Average Gain (dBi) - Azimuth/Theta 90°	Side-Center (0)	Side-Center (90)
617-698	-2.4	-0.2
698-960	-3.3	-1.7
1427-1606	-1.3	0.6
1710-2200	-0.5	-1.2
2300-2700	-1.7	-0.6
3300-4200	-4.3	-3.9
5150-6000	-4.1	-4.8

Max Gain (dBi) - Azimuth/Theta 90°	Side-Center (0)	Side-Center (90)
617-698	-0.6	2.3
698-960	-0.9	2.0
1427-1606	0.7	2.2
1710-2200	3.5	2.1
2300-2700	2.2	2.8
3300-4200	0.9	0.7
5150-6000	-0.3	1.1



Azimuth/Theta 90° Average/Max Gain, dBi - Above-Center



(D = 300mm)

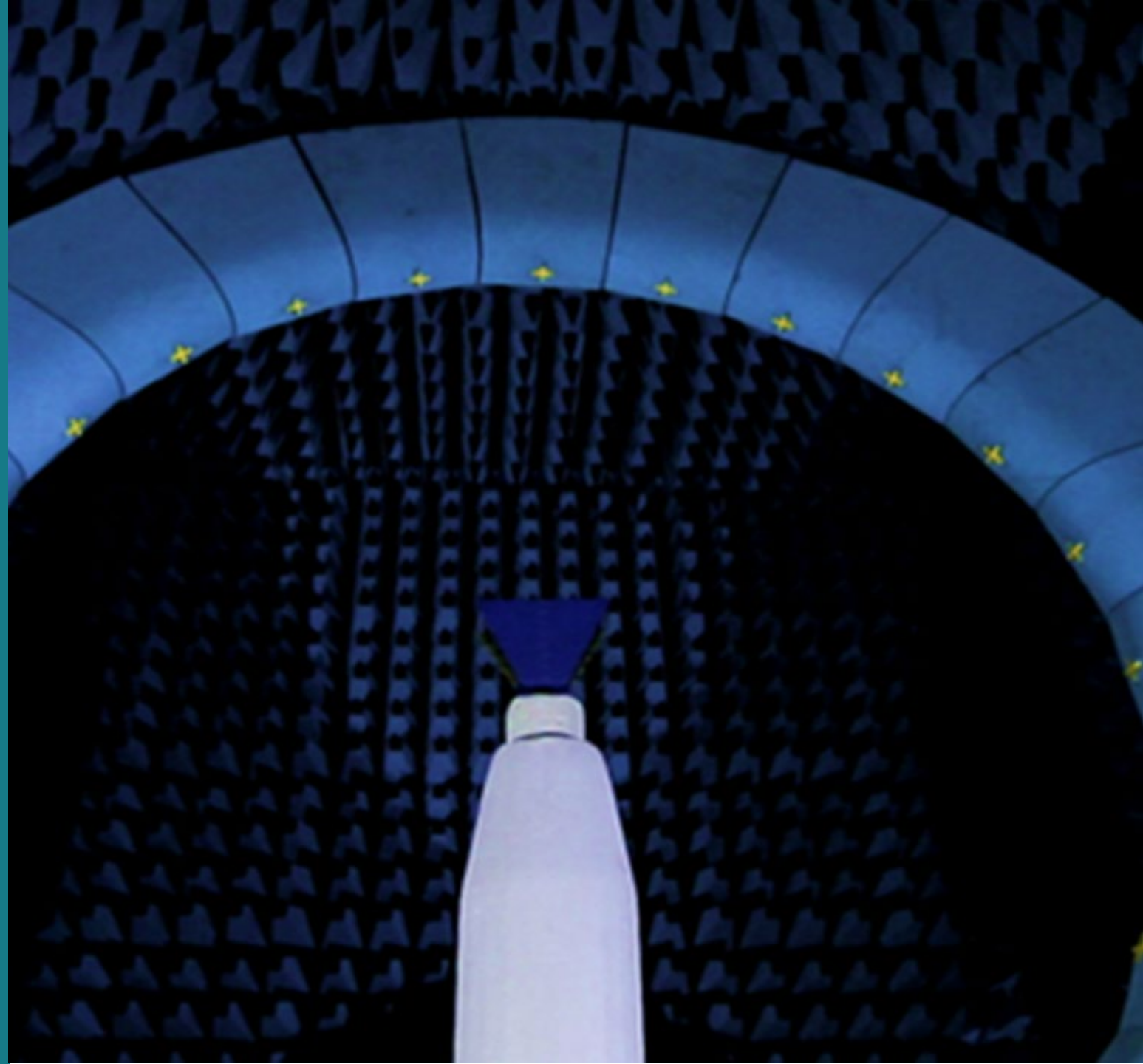
Average Gain (dBi) - Azimuth/Theta 90°	Above-Center (0)
617-698	-2.1
698-960	-5.8
1427-1606	-2.5
1710-2200	-0.9
2300-2700	-1.9
3300-4200	-6.5
5150-6000	-4.4

Max Gain (dBi) - Azimuth/Theta 90°	Above-Center (0)
617-698	-1.1
698-960	-2.2
1427-1606	-1.3
1710-2200	3.2
2300-2700	2.4
3300-4200	0.3
5150-6000	0.2

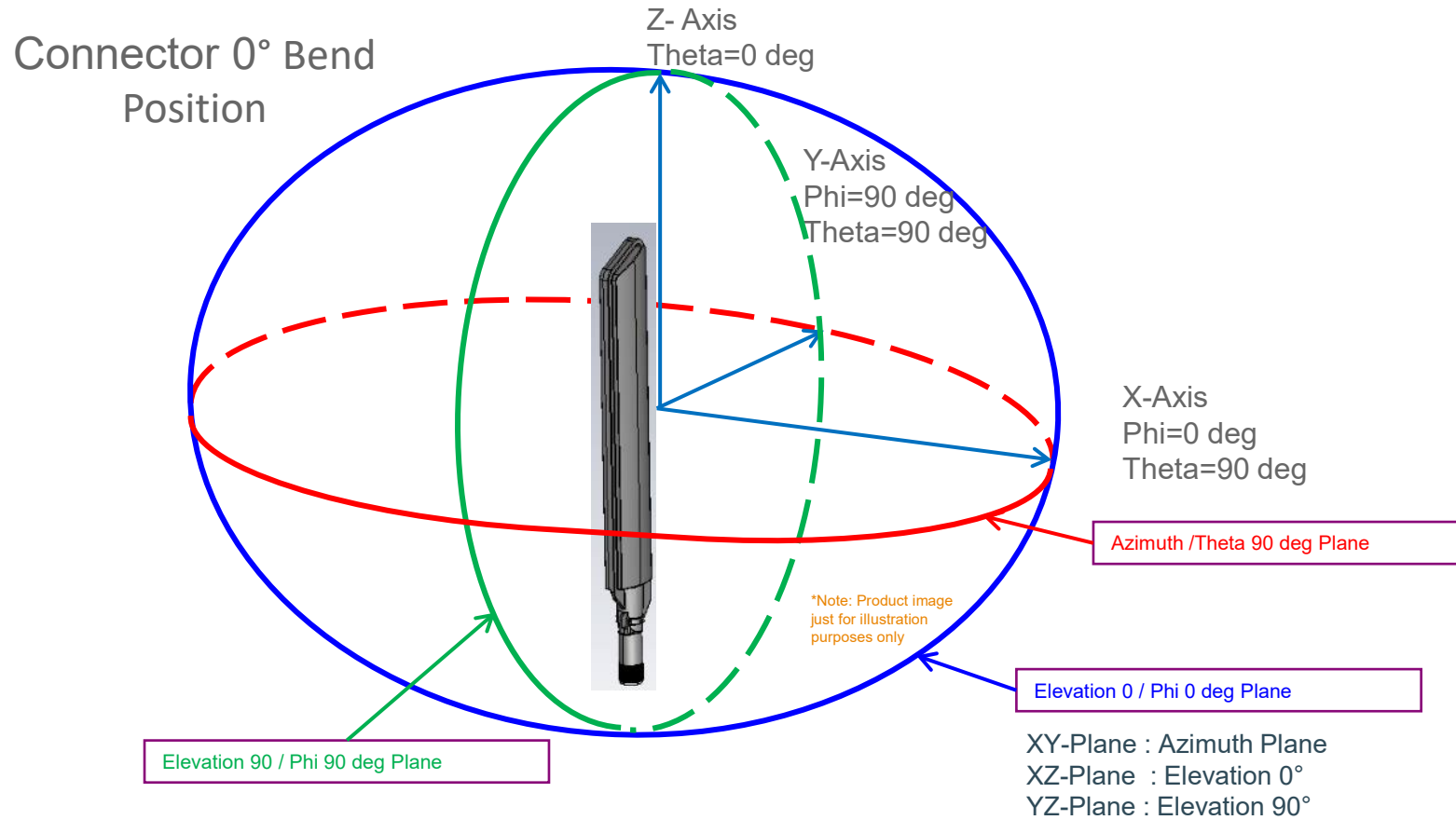
Antenna Performance

Radiation Patterns

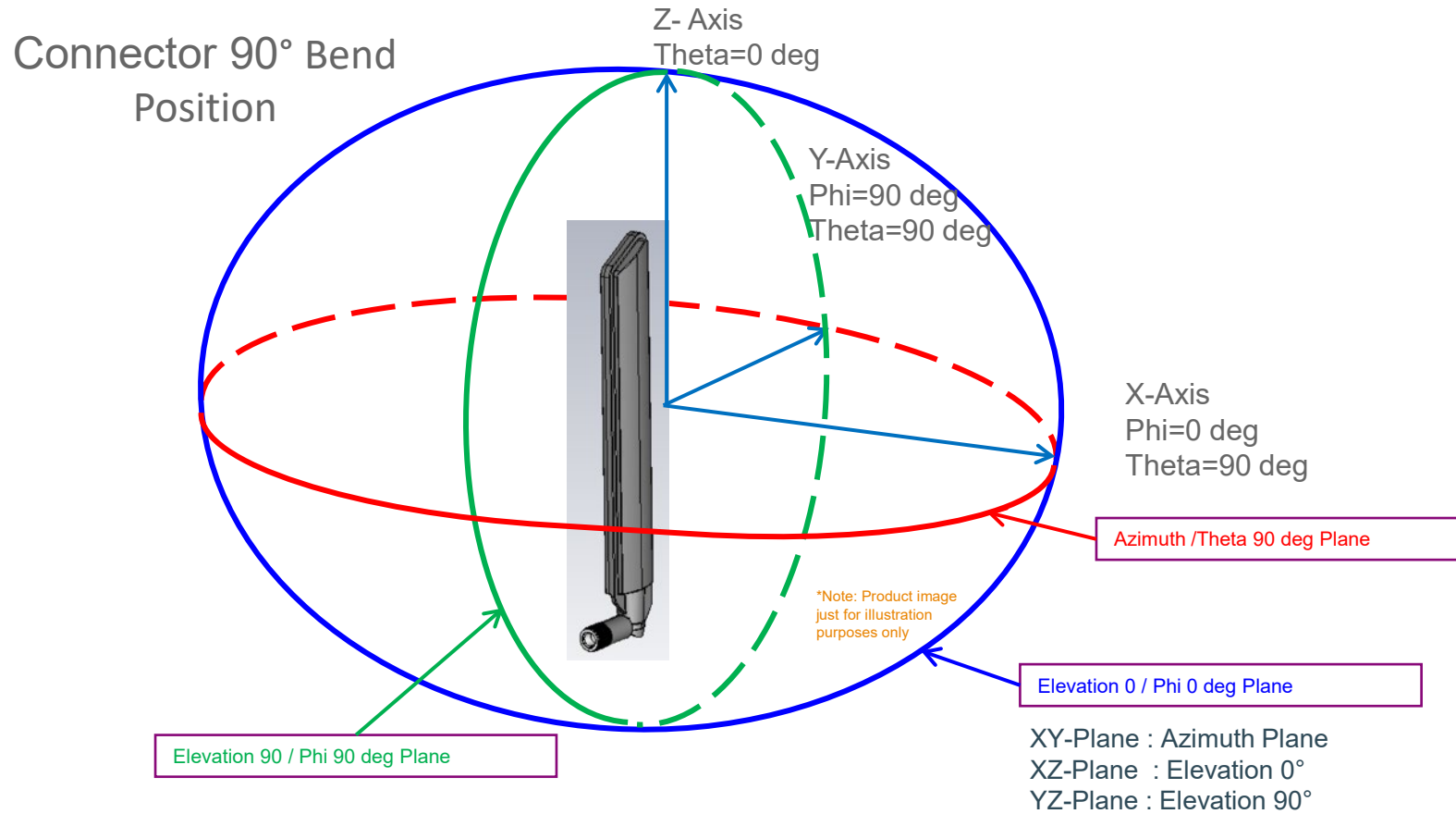
EVERY CONNECTION COUNTS



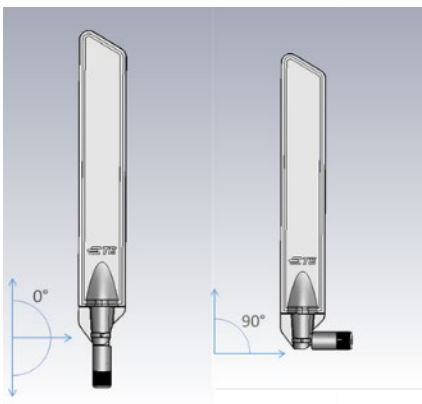
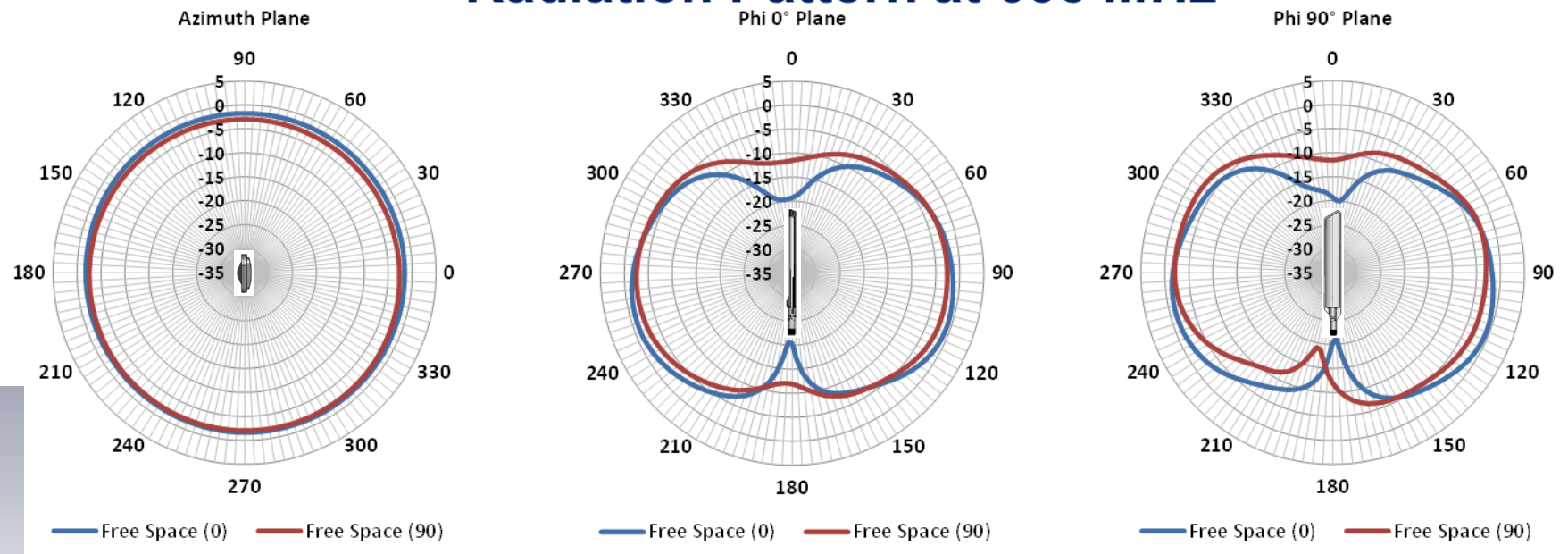
3D Gain Measurement Coordinate System



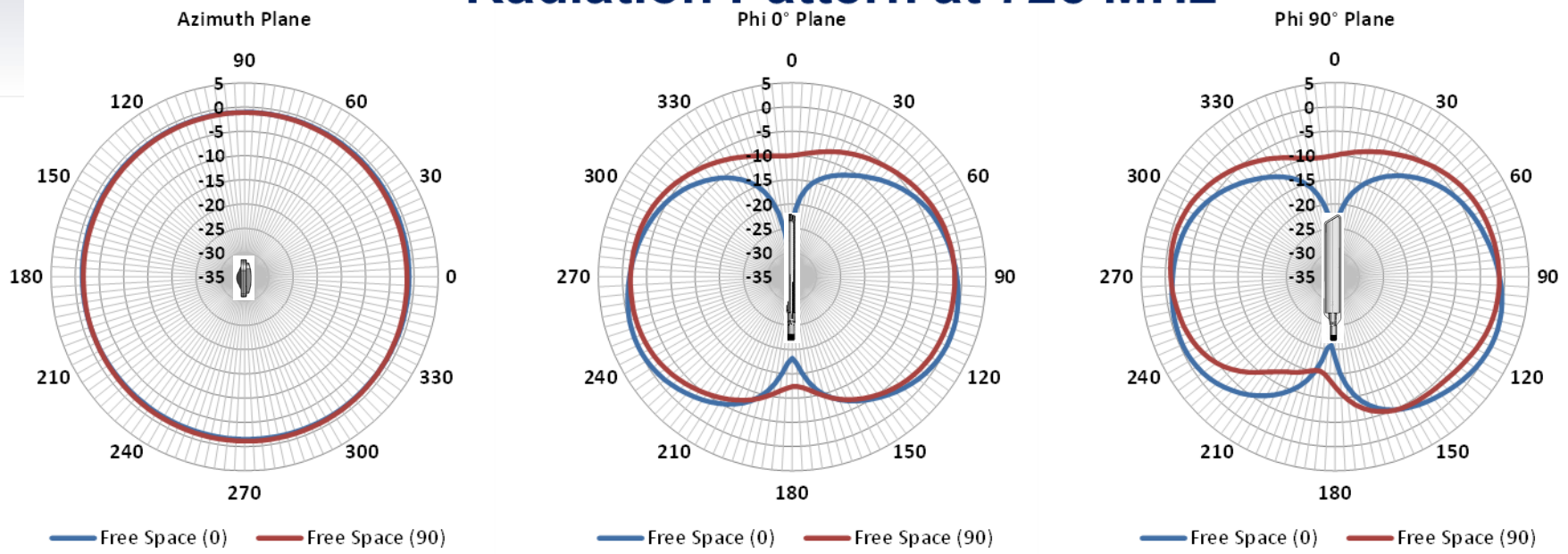
3D Gain Measurement Coordinate System



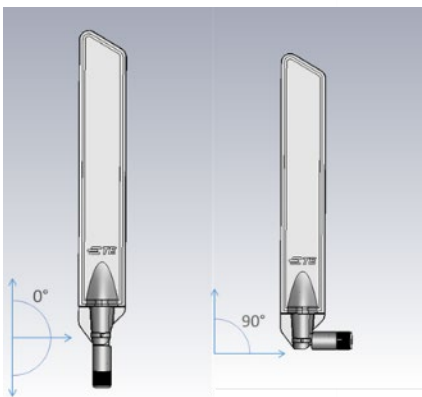
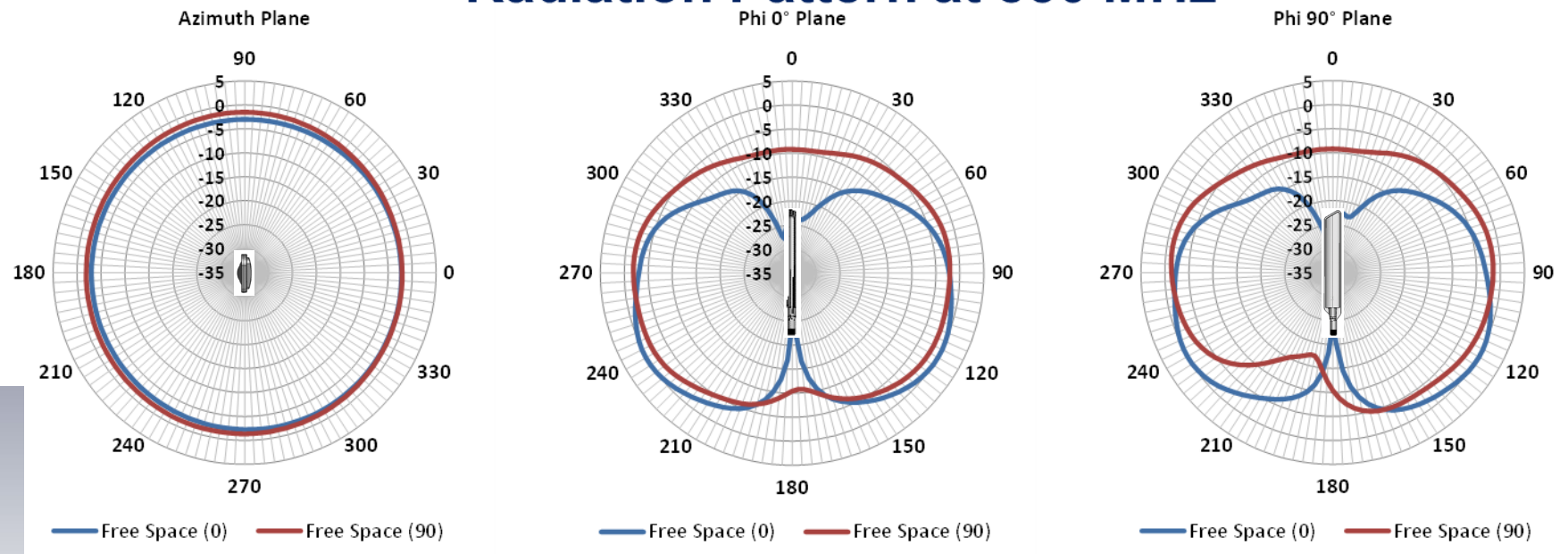
Radiation Pattern at 633 MHz



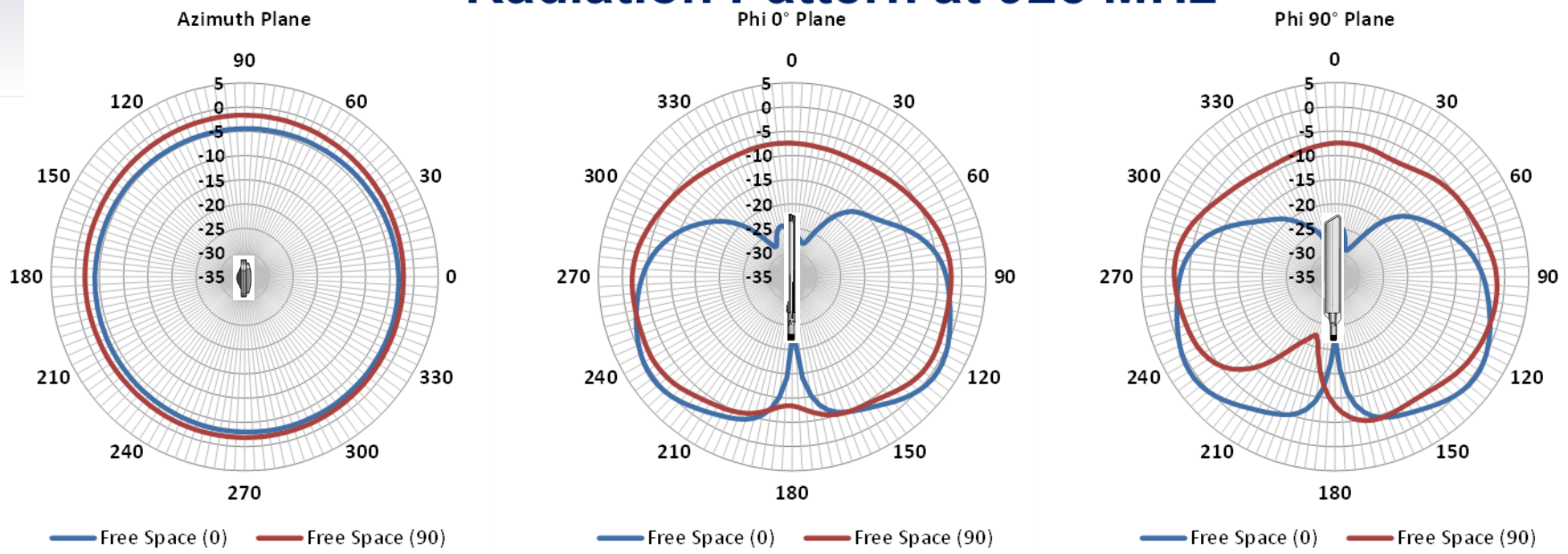
Radiation Pattern at 725 MHz



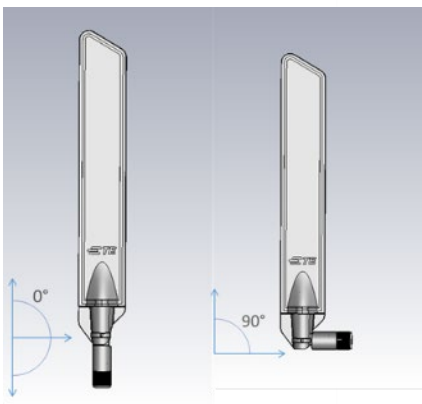
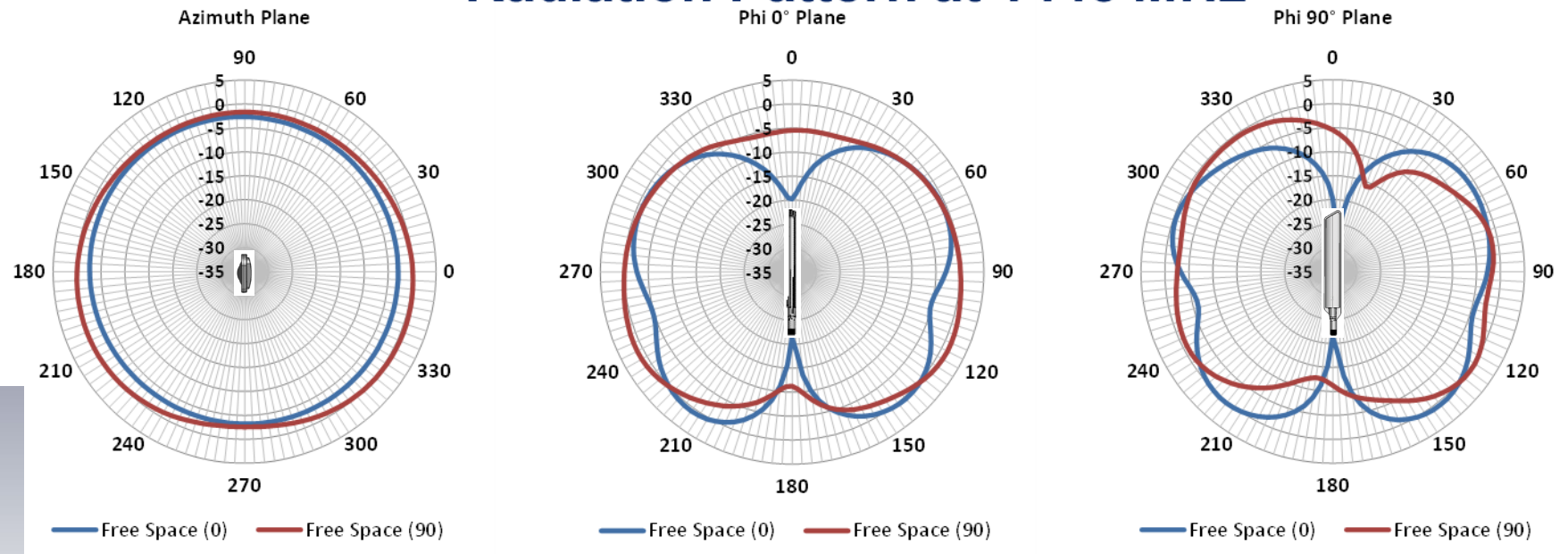
Radiation Pattern at 850 MHz



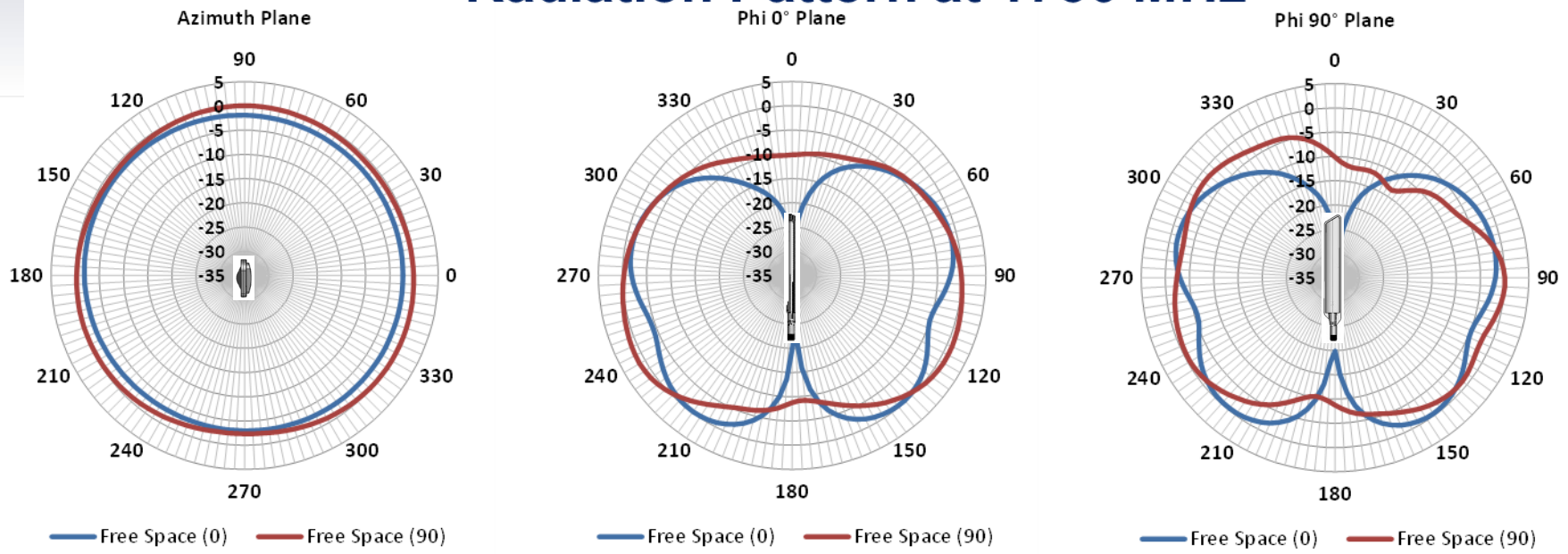
Radiation Pattern at 925 MHz



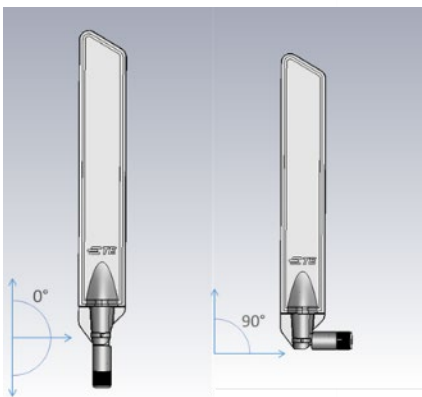
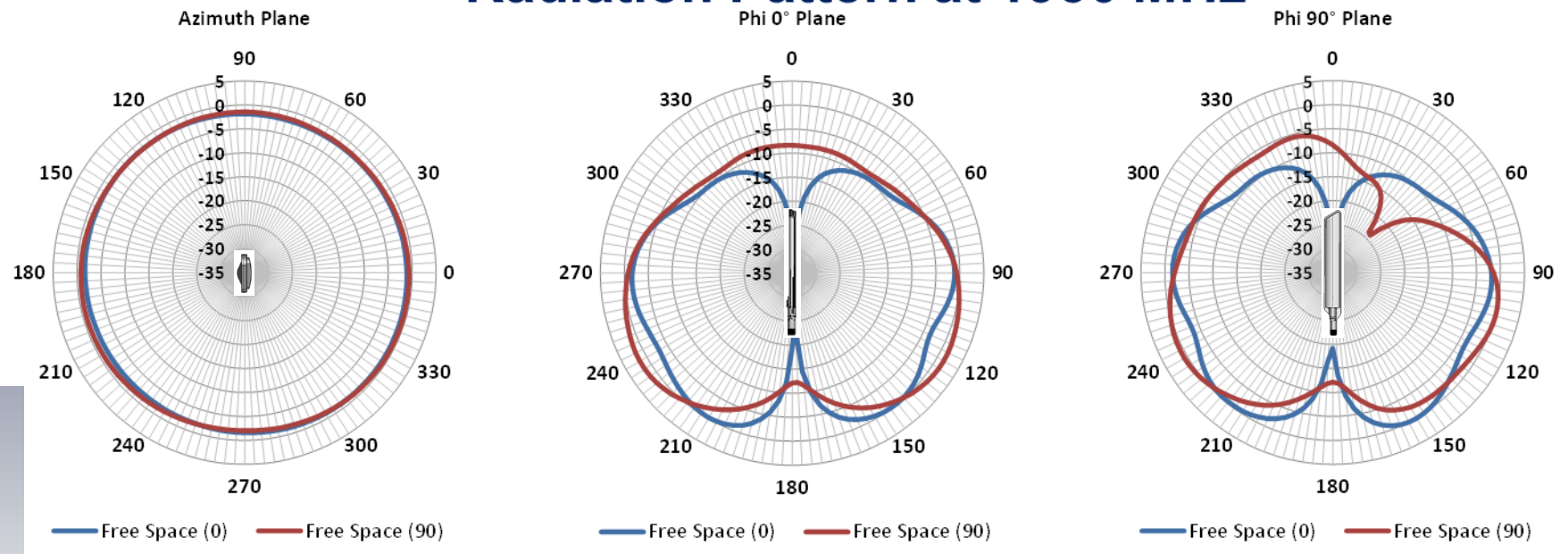
Radiation Pattern at 1448 MHz



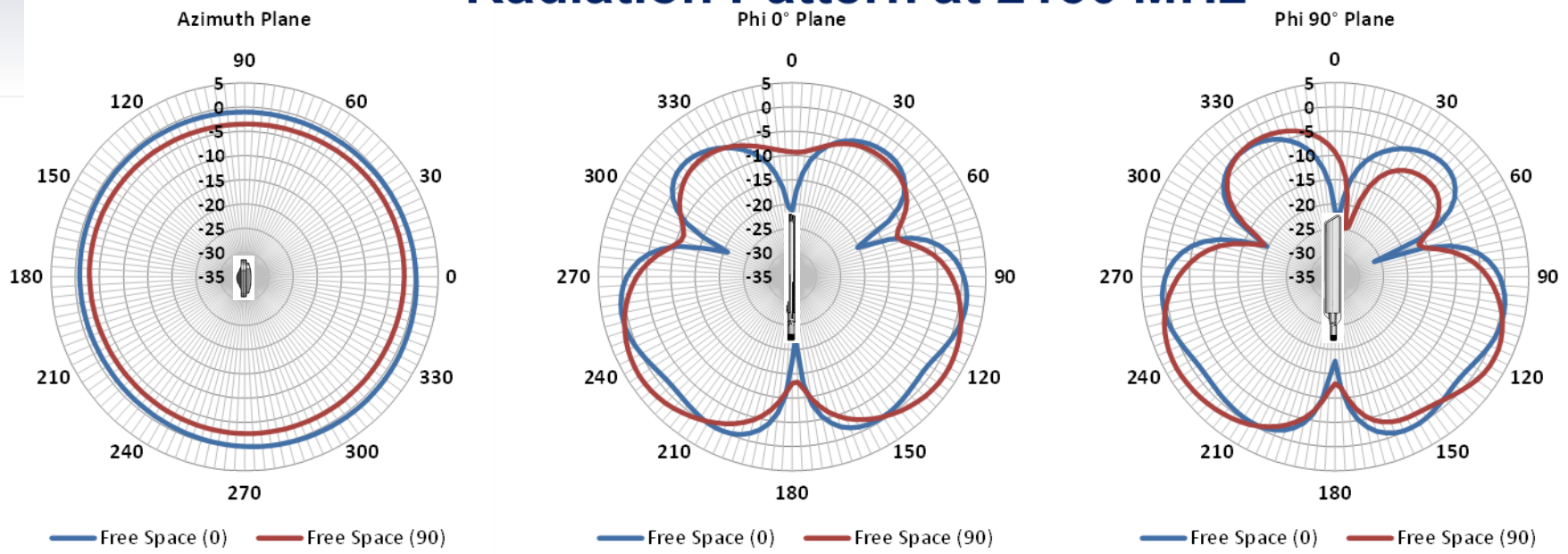
Radiation Pattern at 1730 MHz



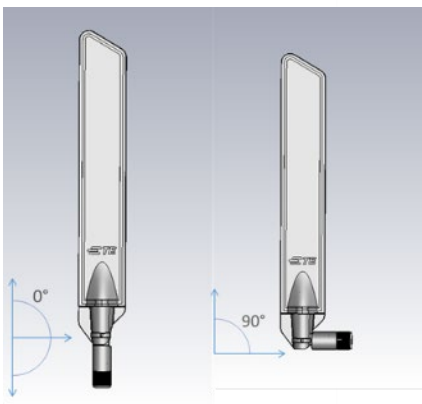
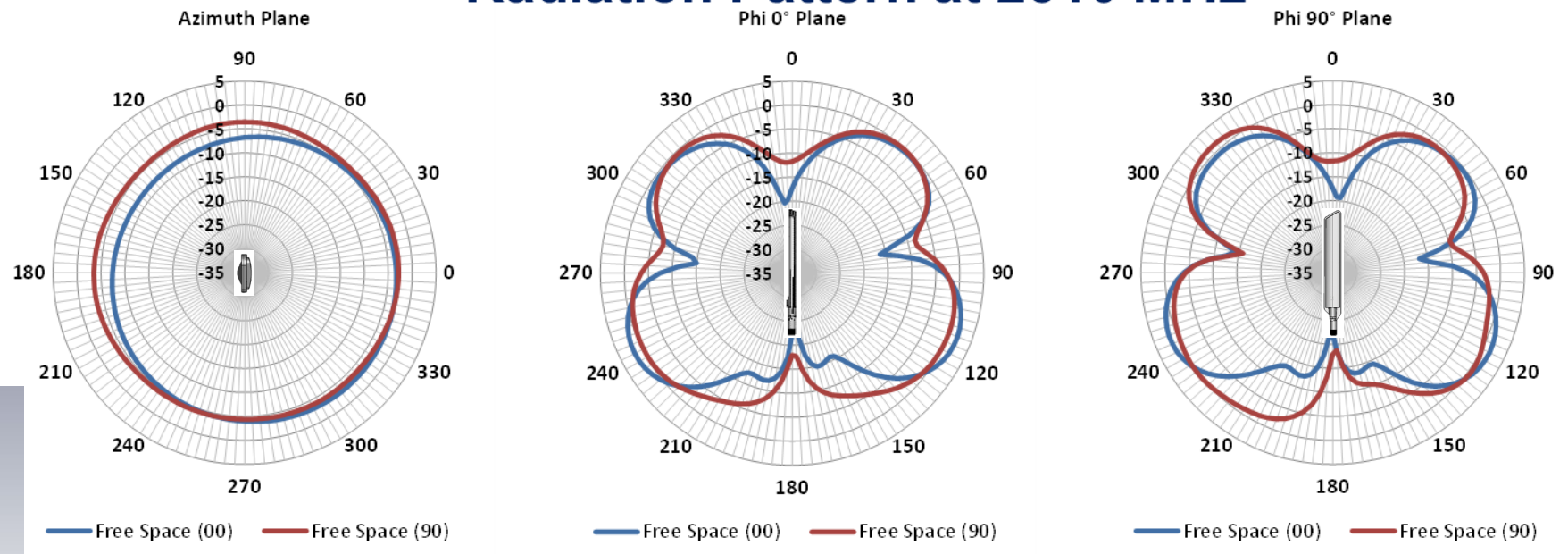
Radiation Pattern at 1930 MHz



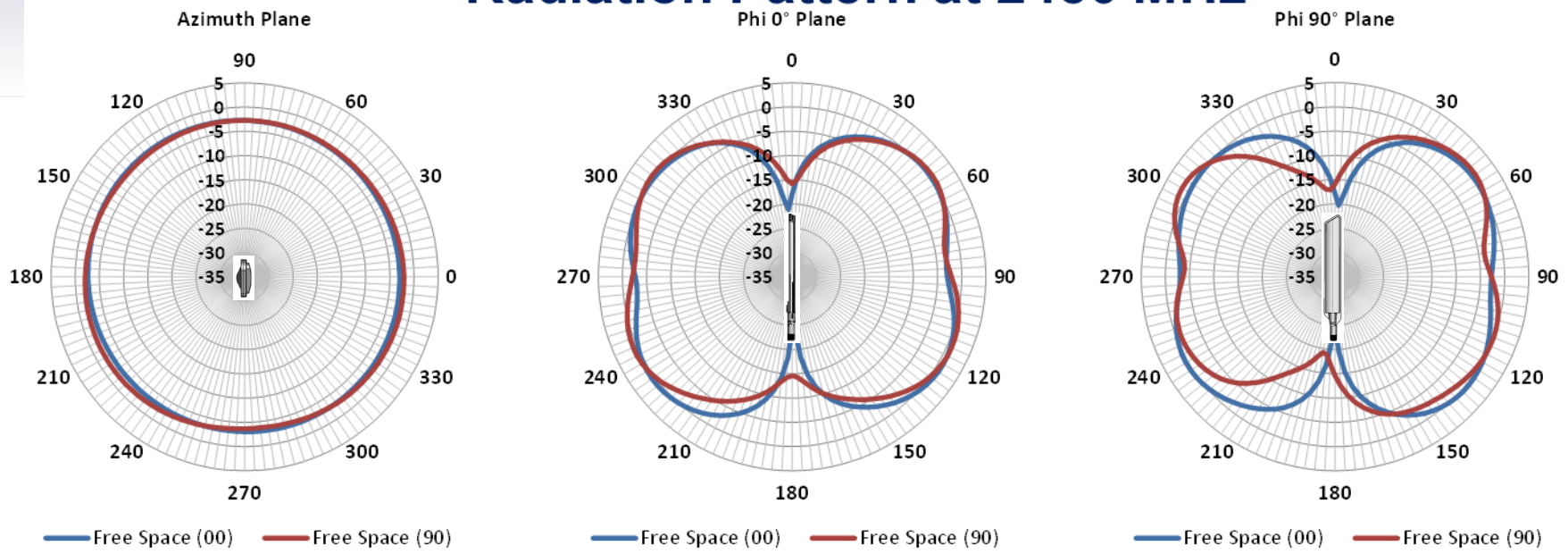
Radiation Pattern at 2130 MHz



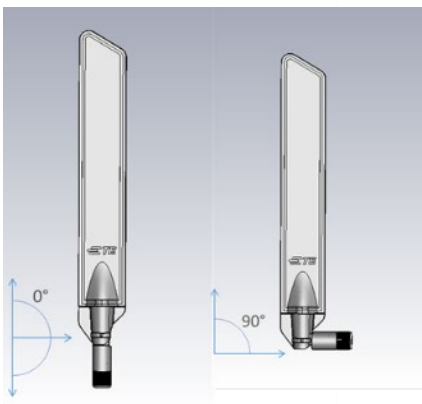
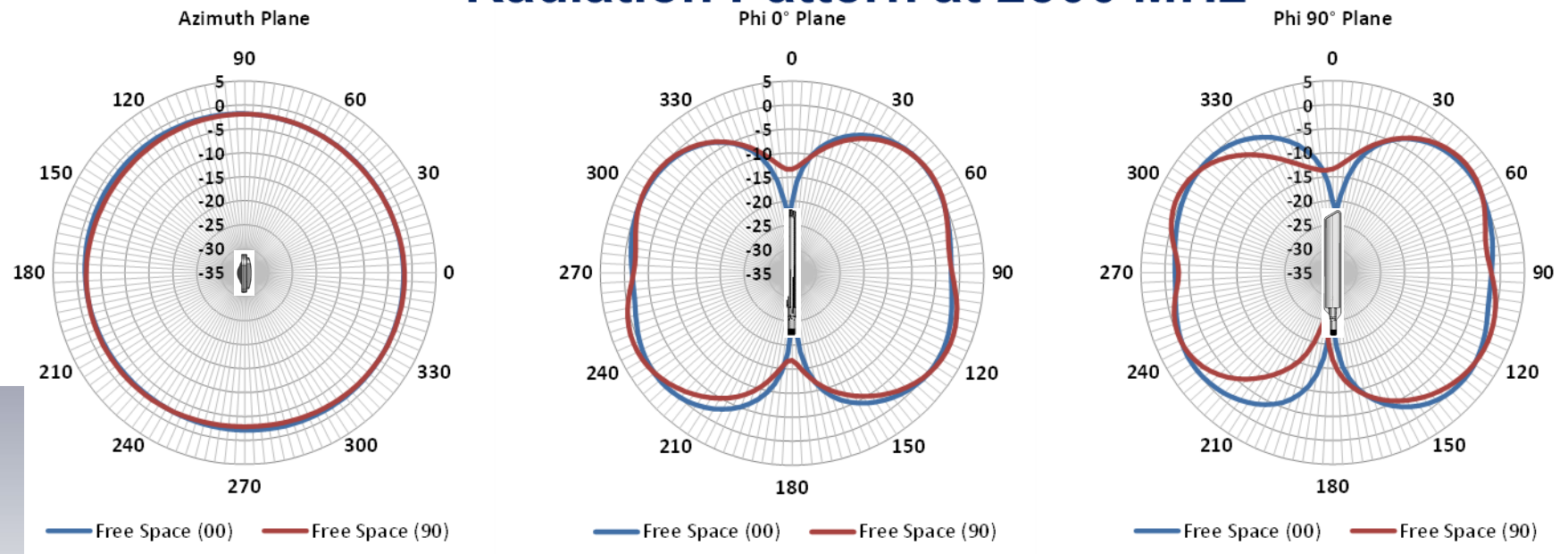
Radiation Pattern at 2310 MHz



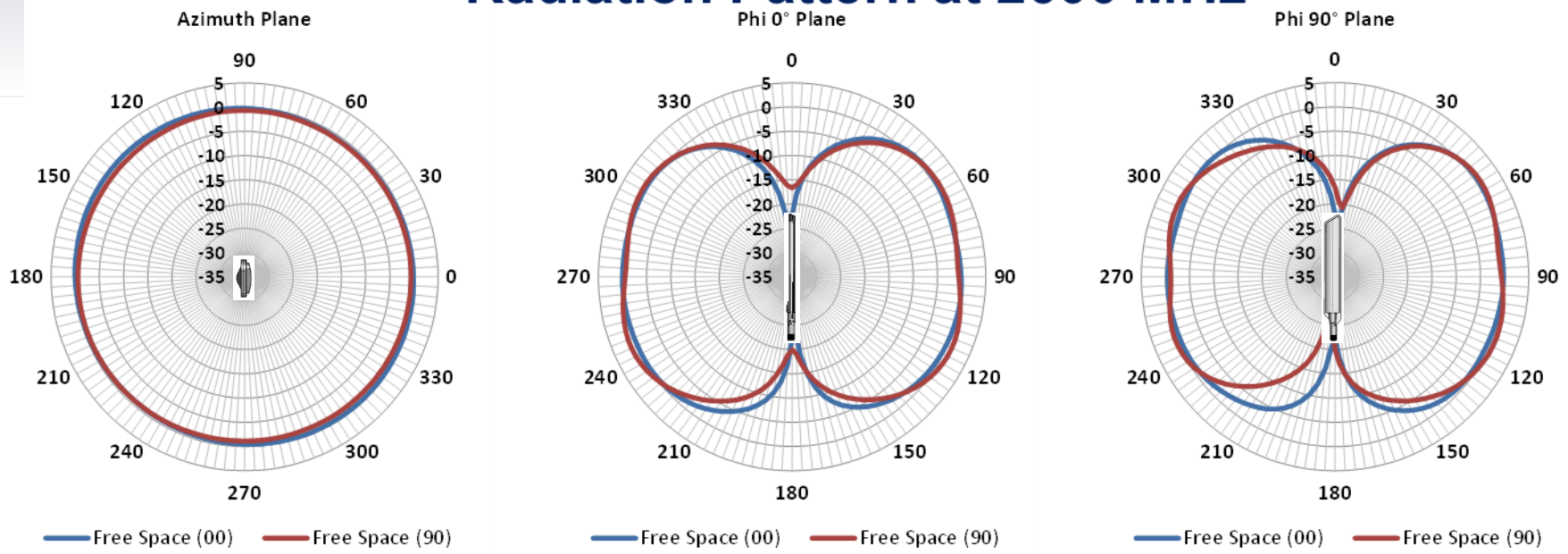
Radiation Pattern at 2450 MHz



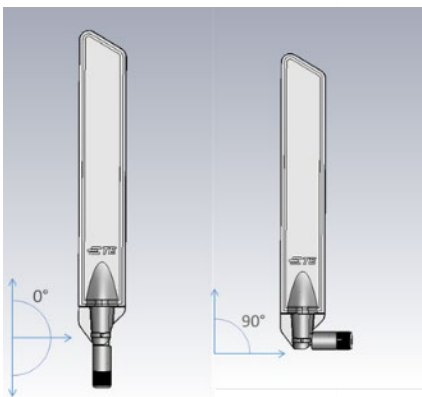
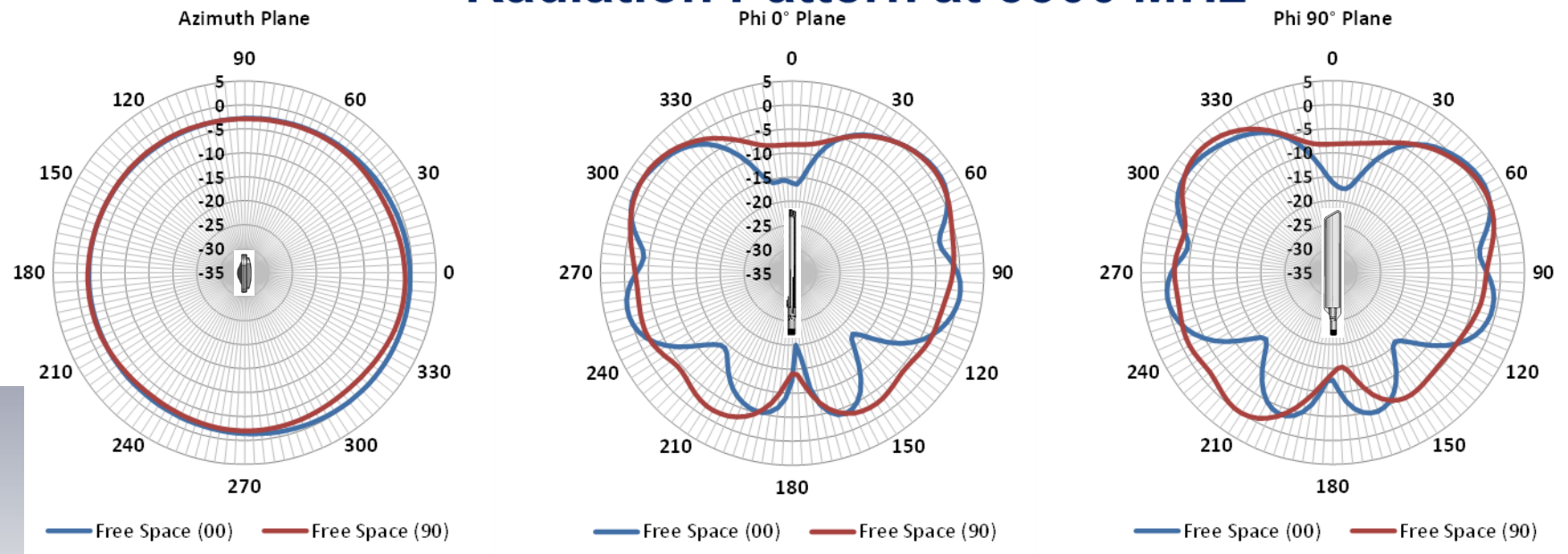
Radiation Pattern at 2500 MHz



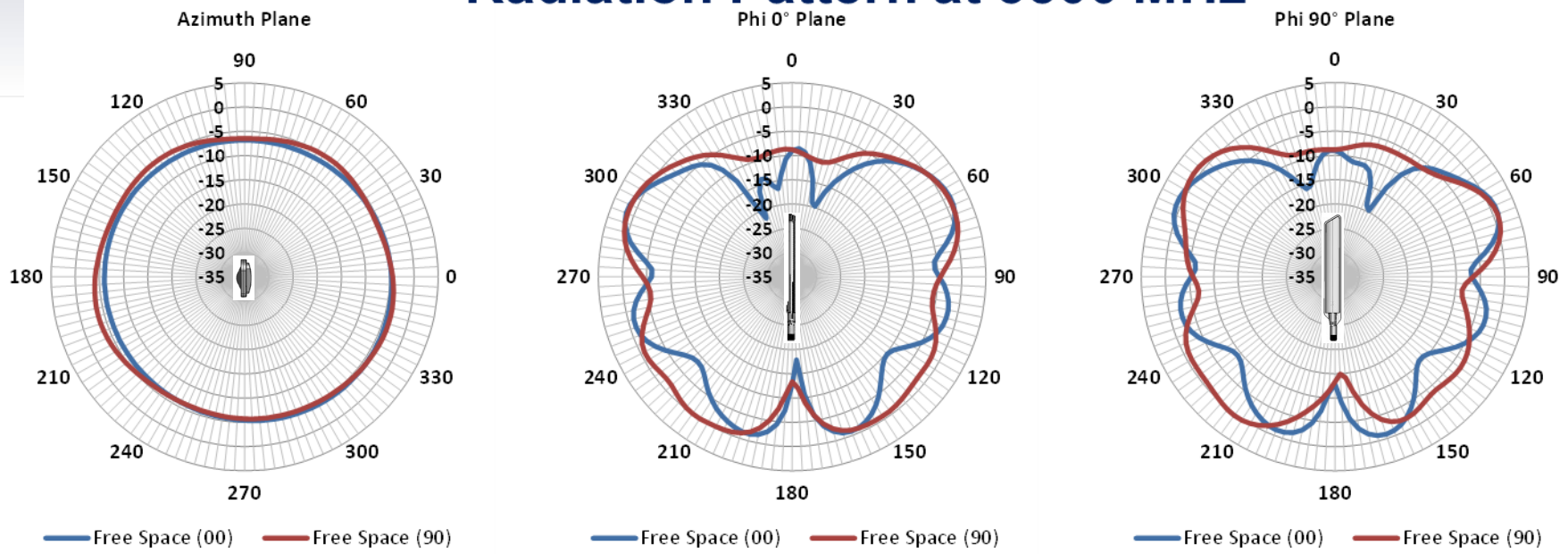
Radiation Pattern at 2600 MHz



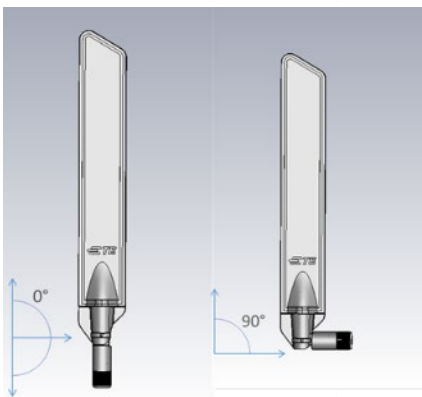
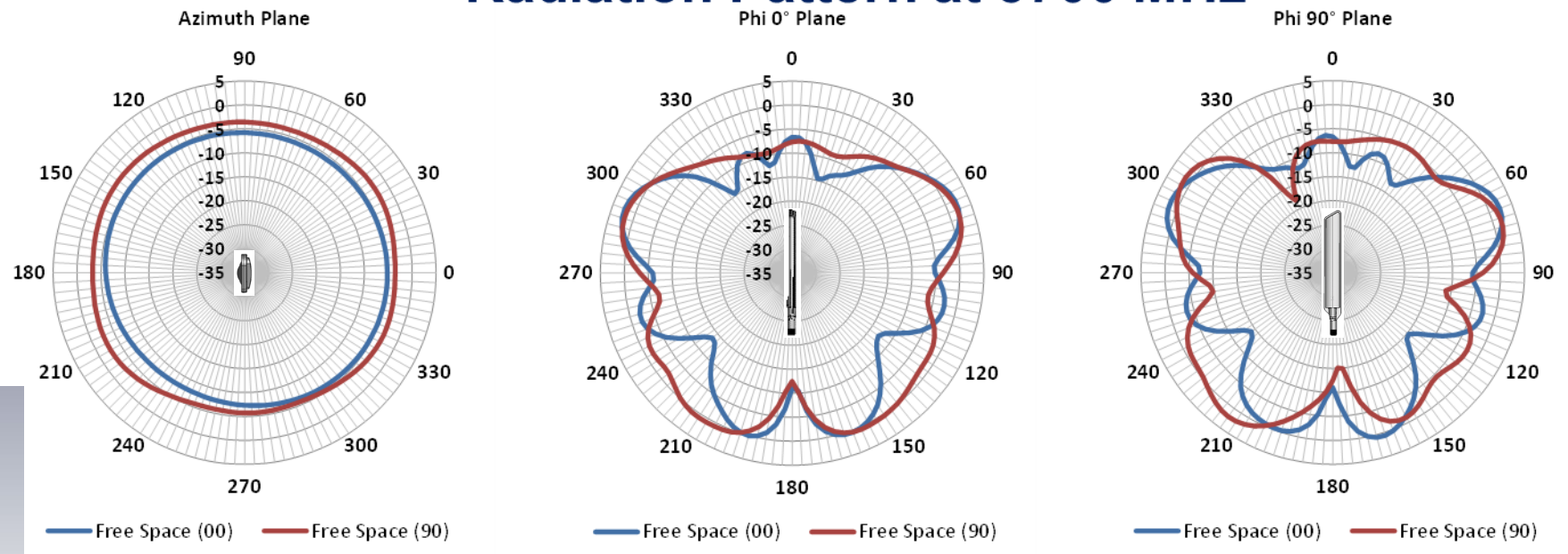
Radiation Pattern at 3300 MHz



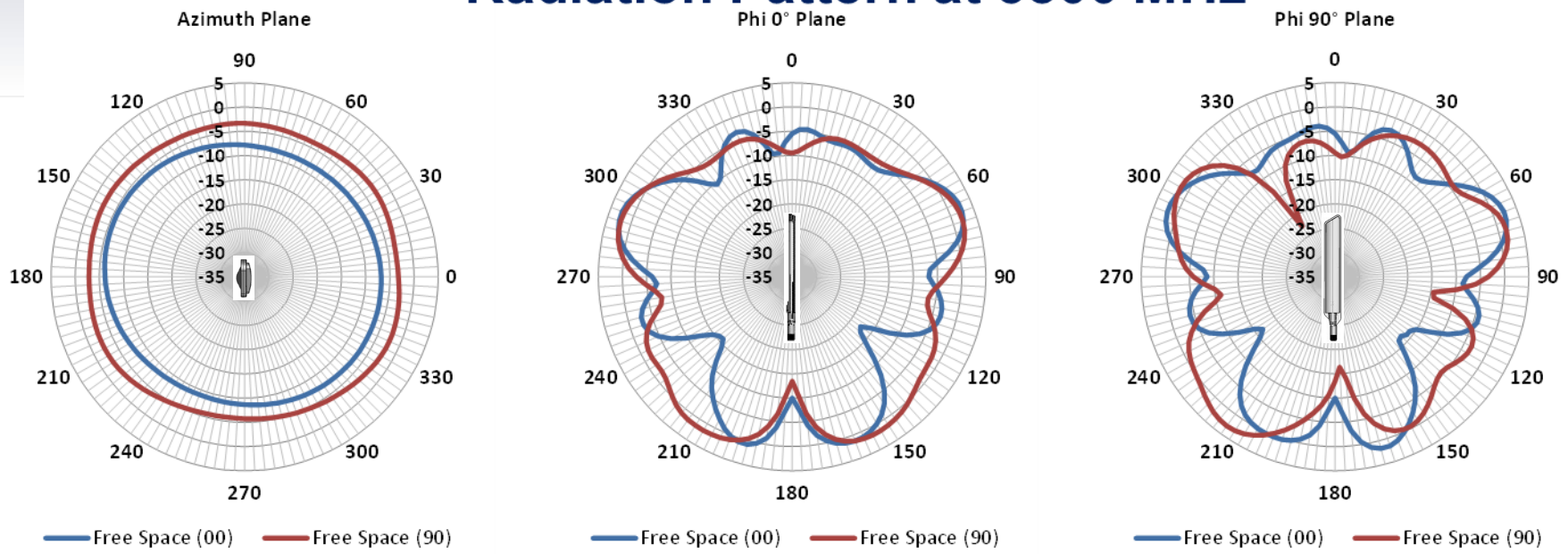
Radiation Pattern at 3500 MHz



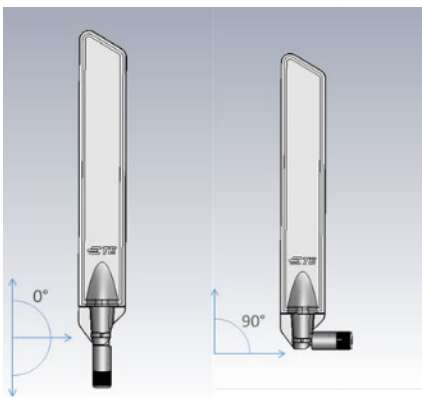
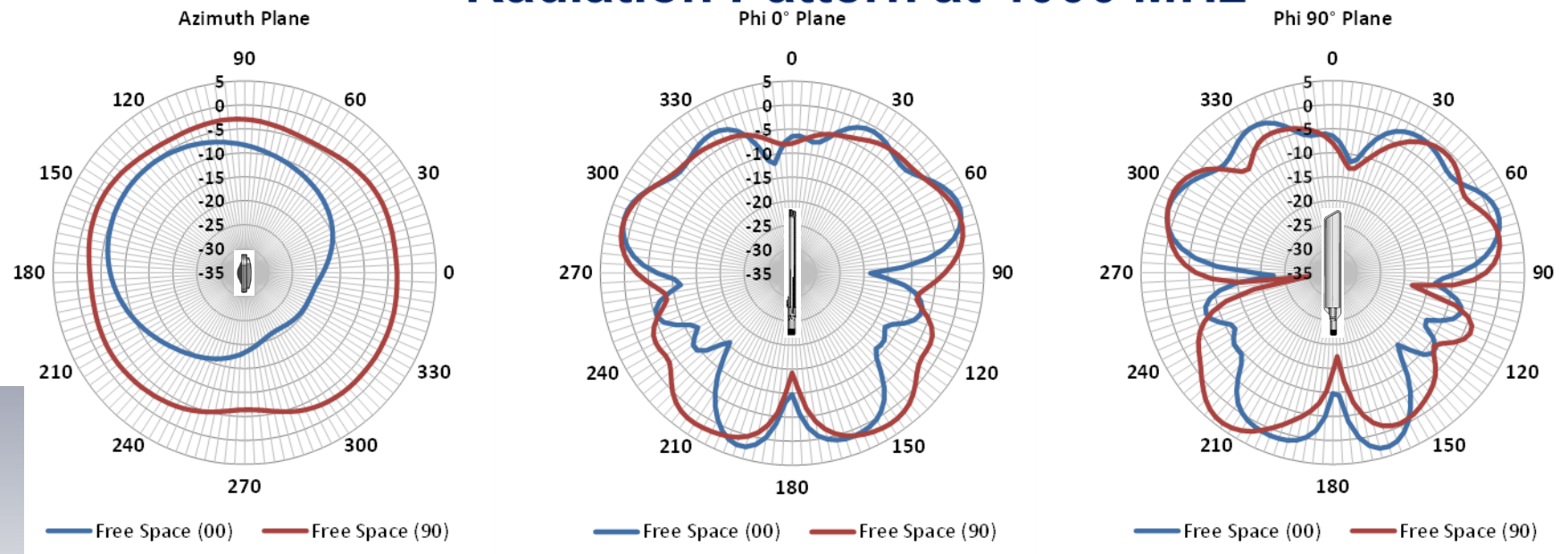
Radiation Pattern at 3700 MHz



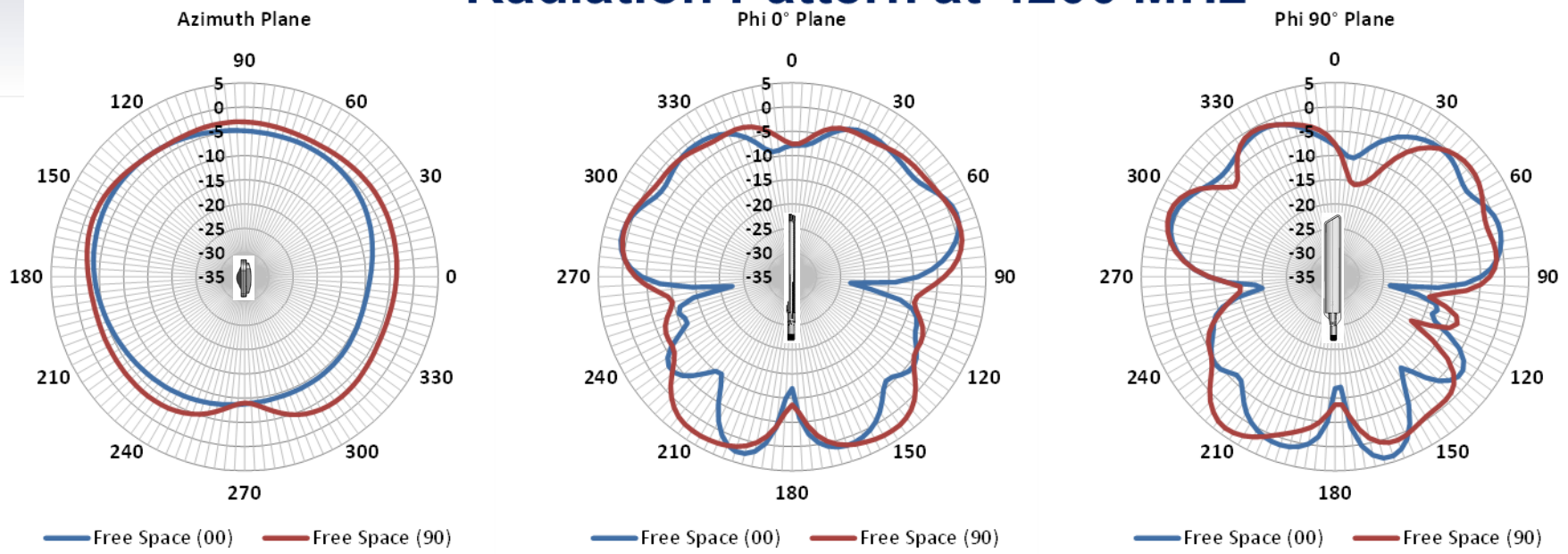
Radiation Pattern at 3800 MHz



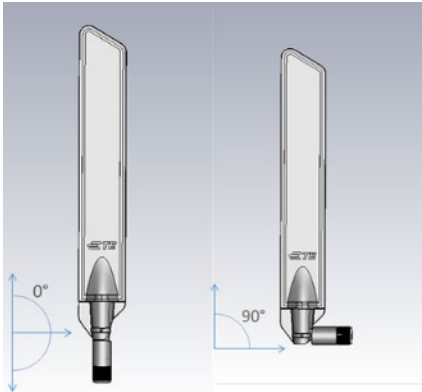
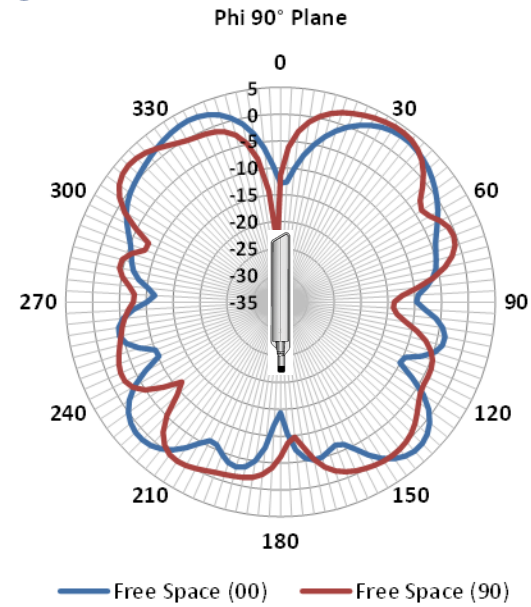
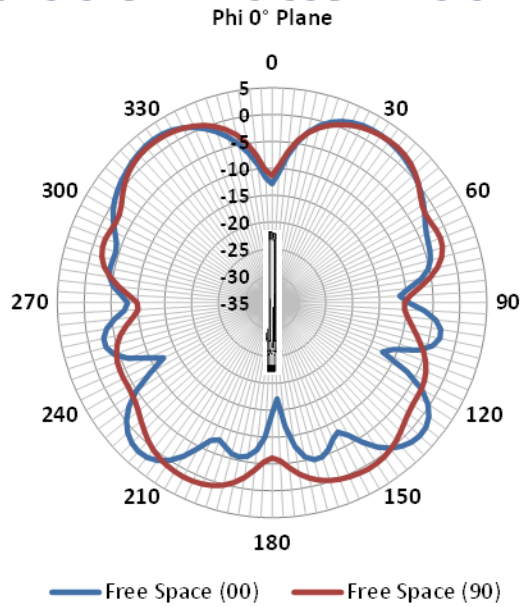
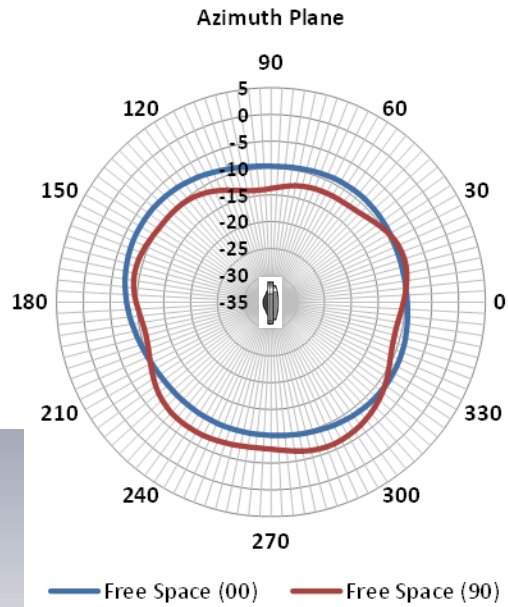
Radiation Pattern at 4000 MHz



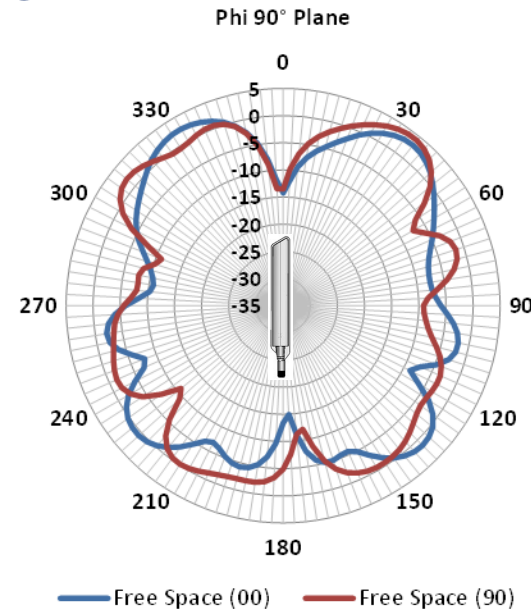
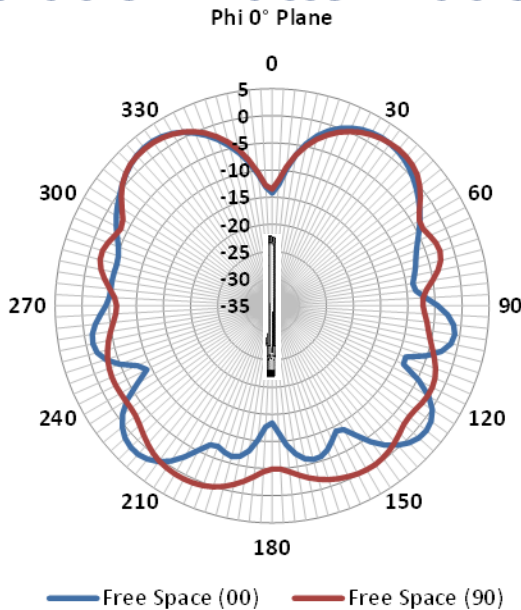
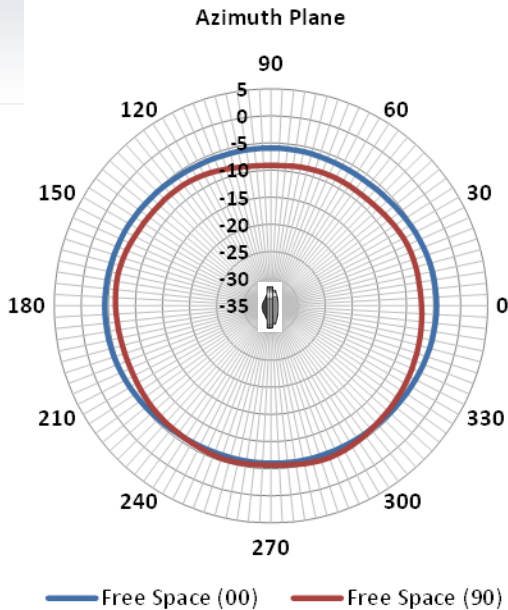
Radiation Pattern at 4200 MHz



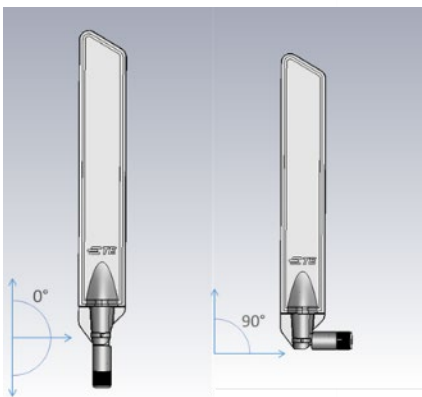
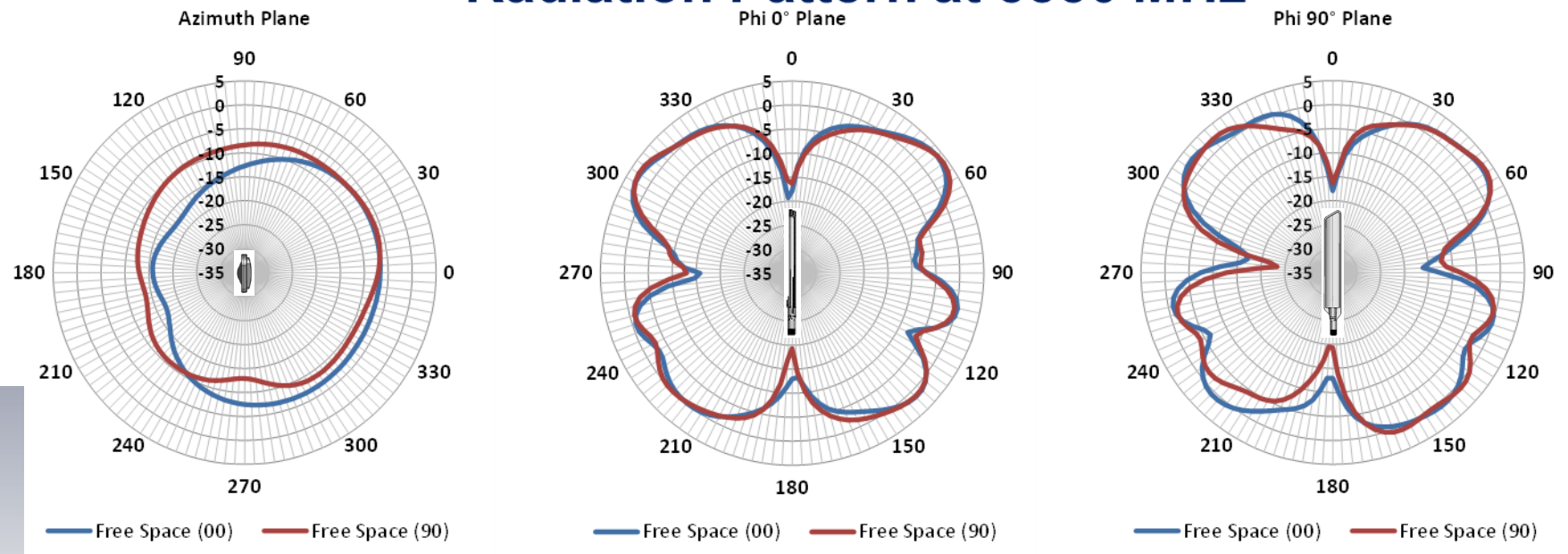
Radiation Pattern at 4900 MHz



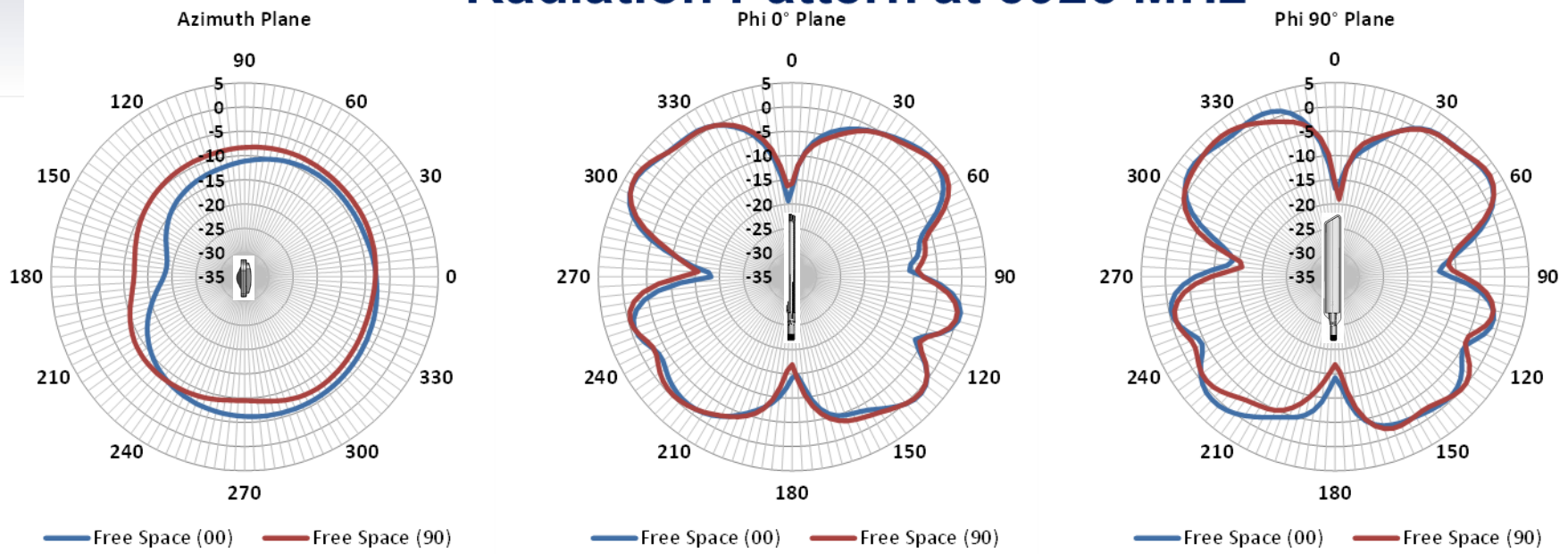
Radiation Pattern at 5150 MHz



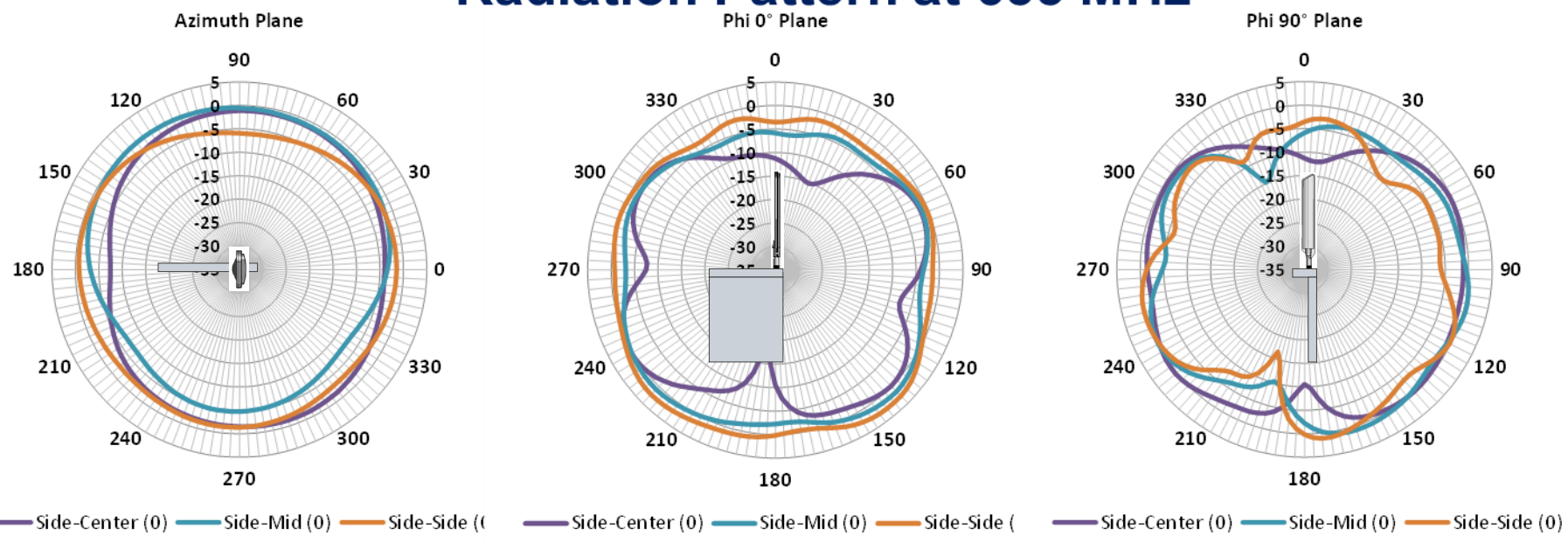
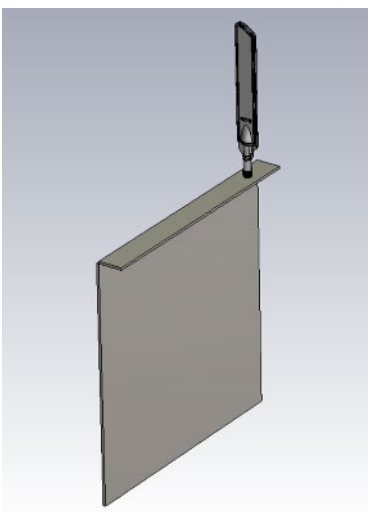
Radiation Pattern at 5850 MHz



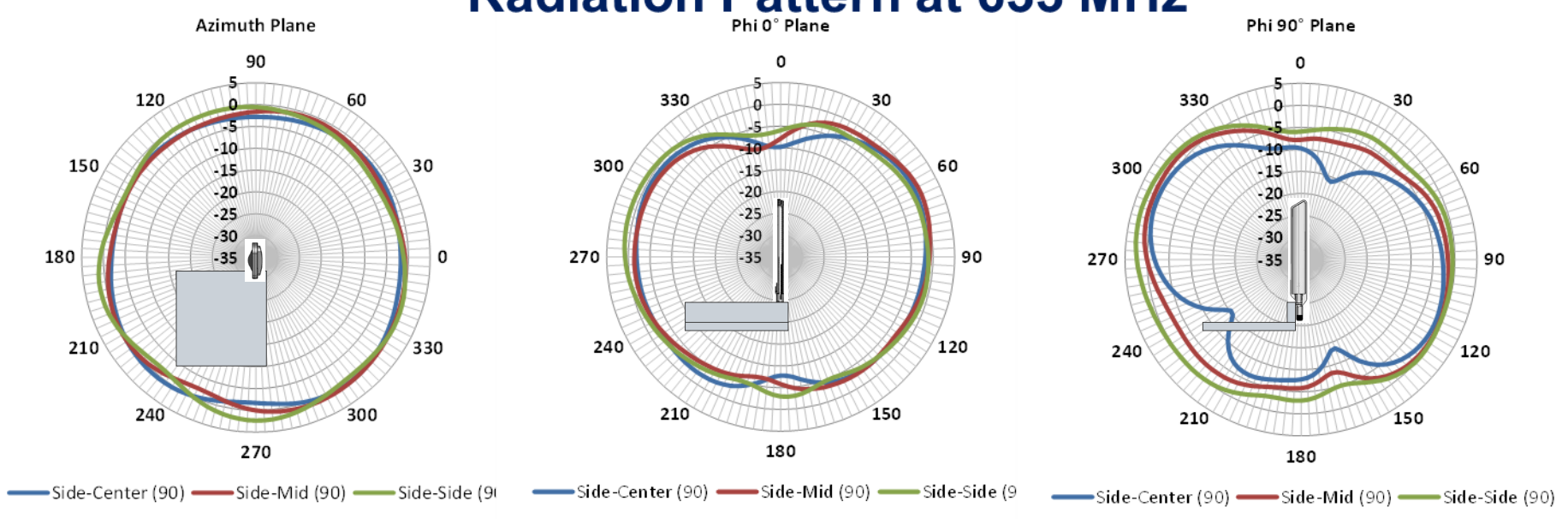
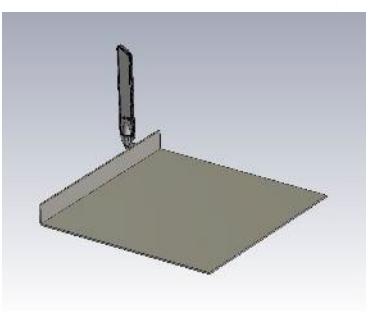
Radiation Pattern at 5925 MHz



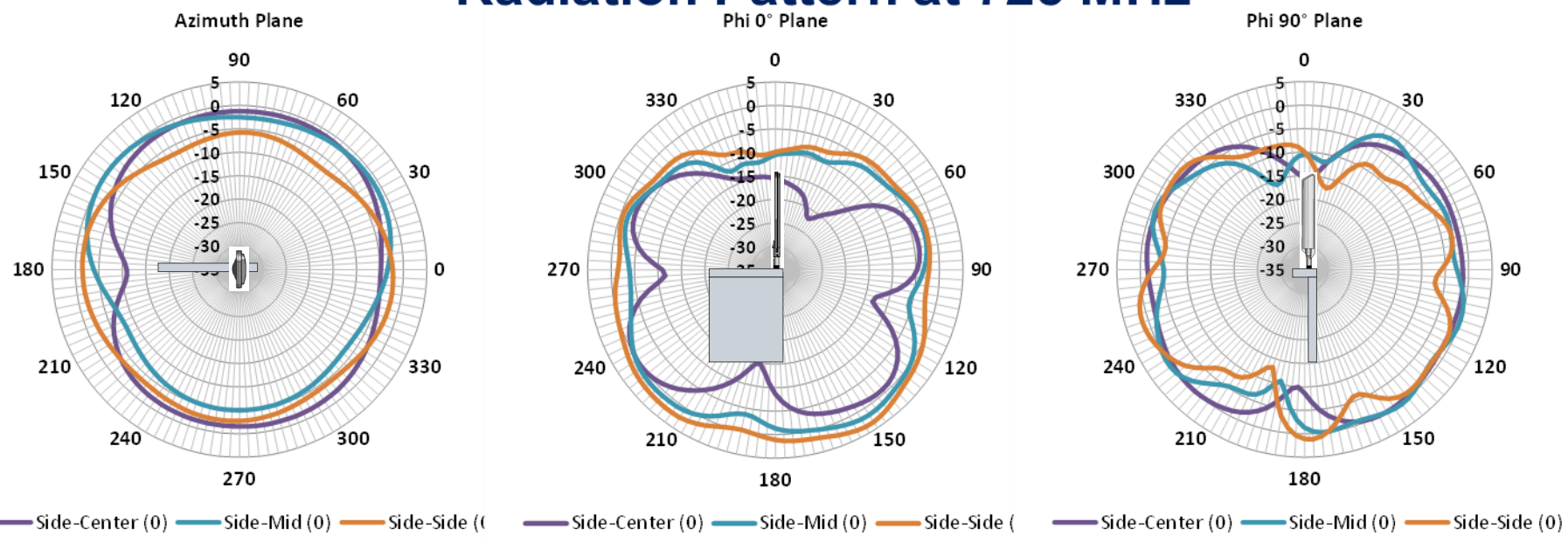
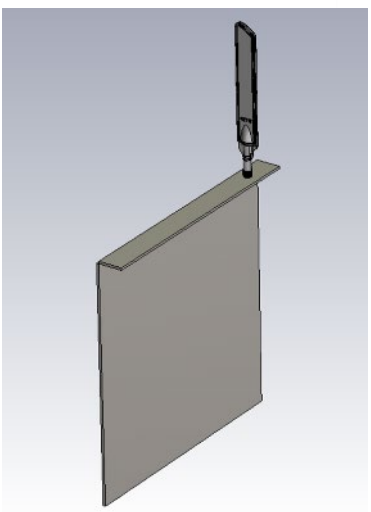
Radiation Pattern at 633 MHz



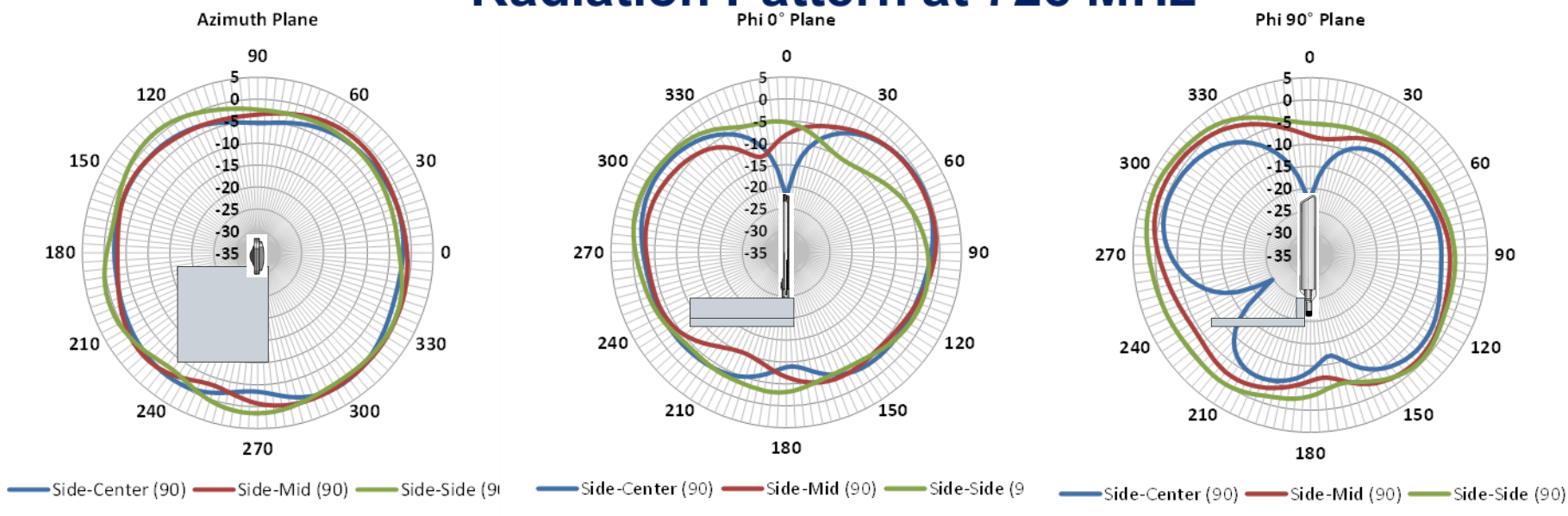
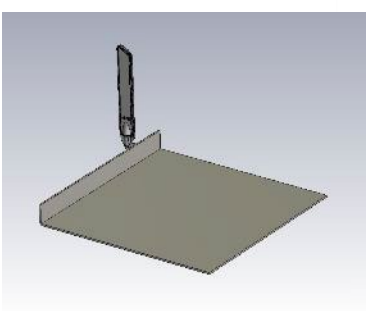
Radiation Pattern at 633 MHz



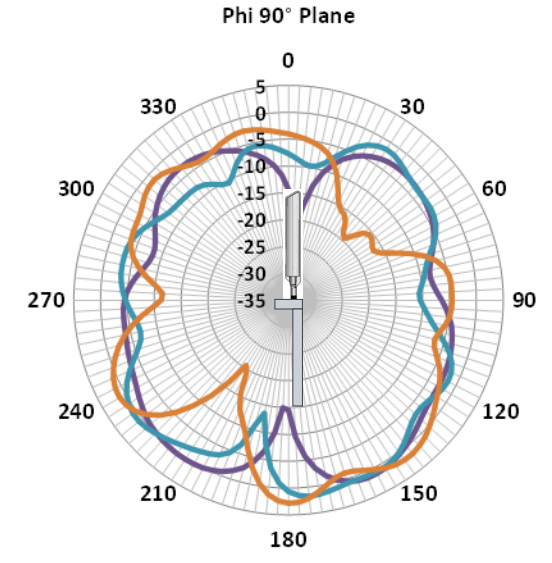
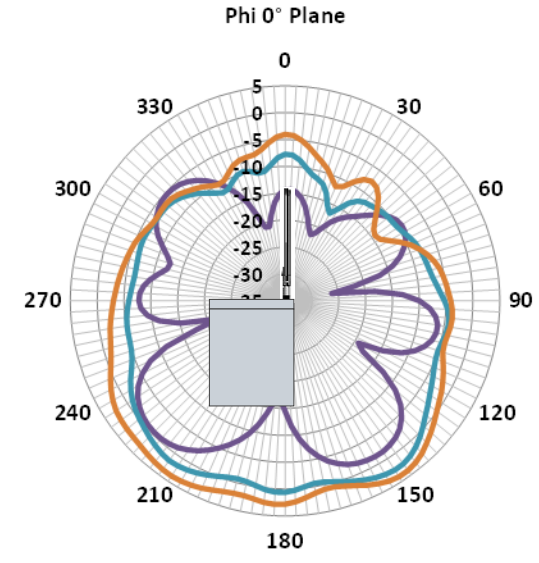
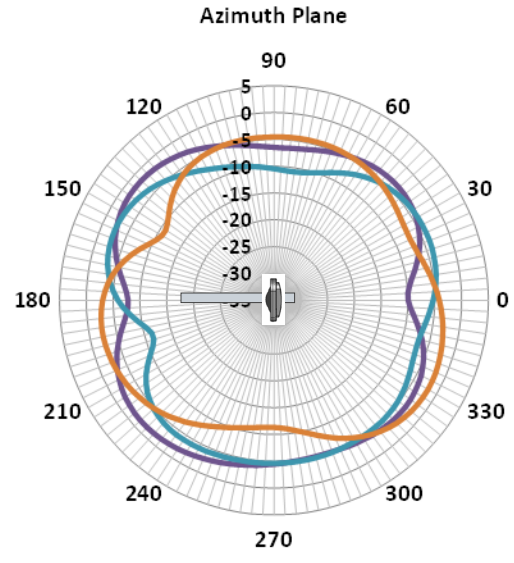
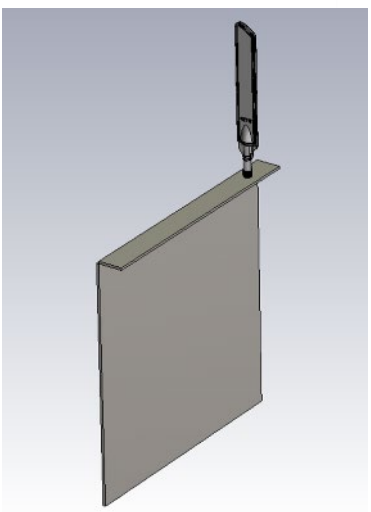
Radiation Pattern at 725 MHz



Radiation Pattern at 725 MHz

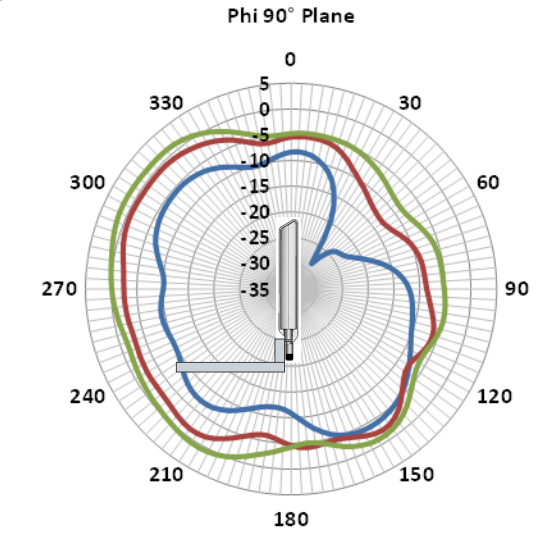
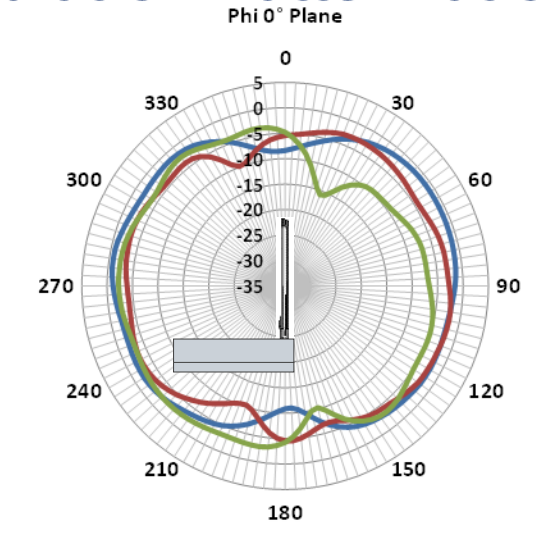
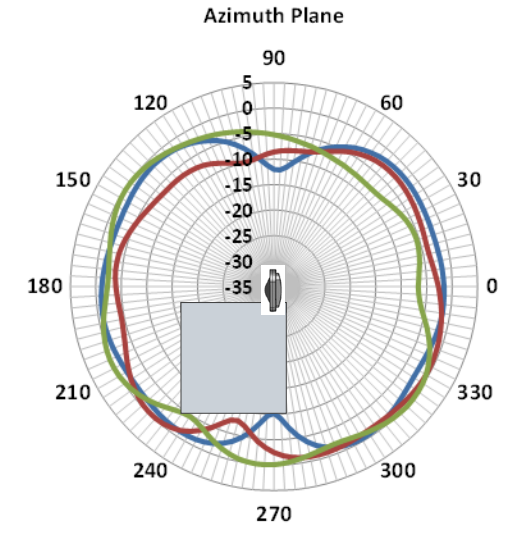
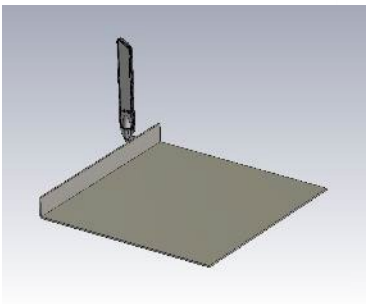


Radiation Pattern at 850 MHz



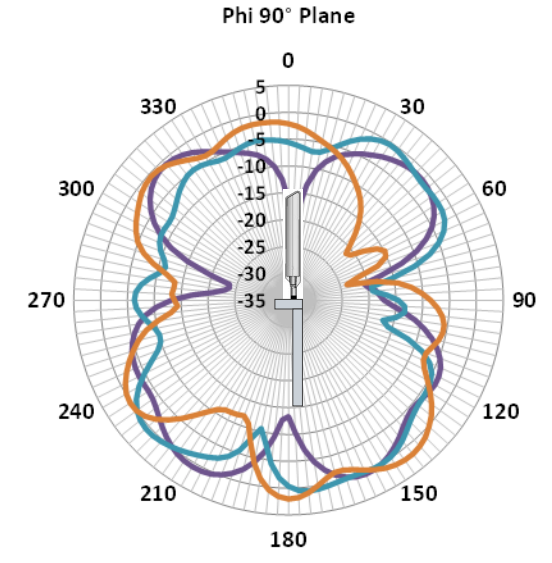
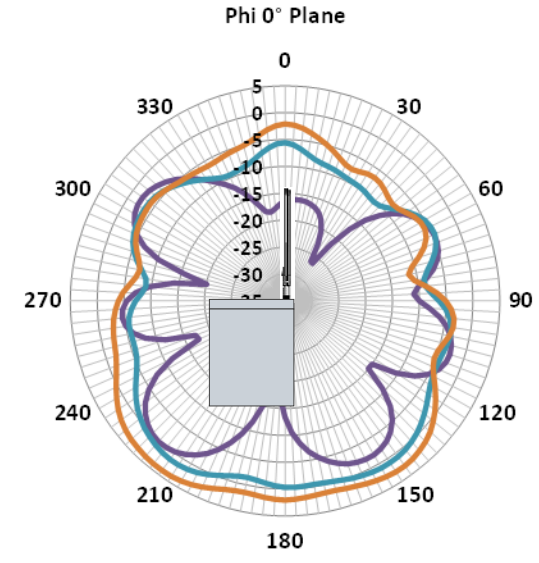
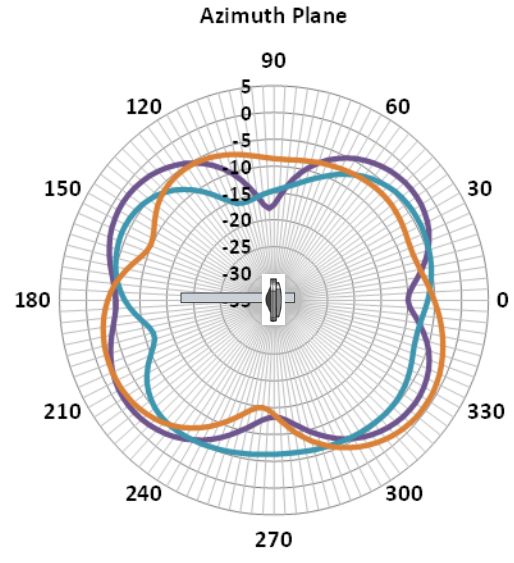
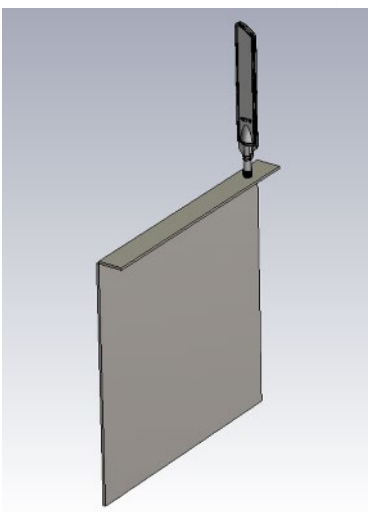
— Side-Center (0) — Side-Mid (0) — Side-Side (0) — Side-Center (0) — Side-Mid (0) — Side-Side (0) — Side-Center (0) — Side-Mid (0) — Side-Side (0)

Radiation Pattern at 850 MHz



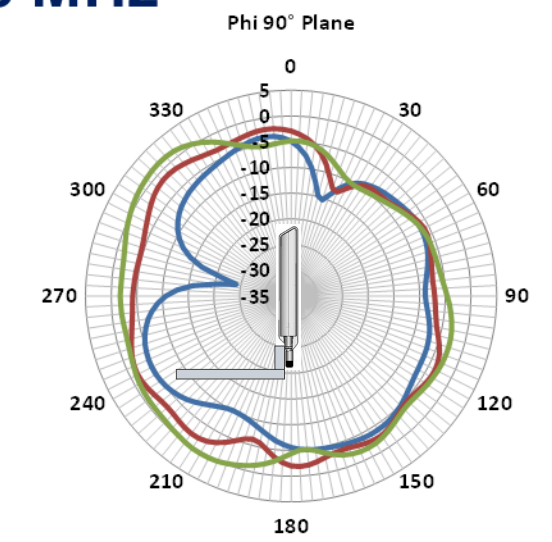
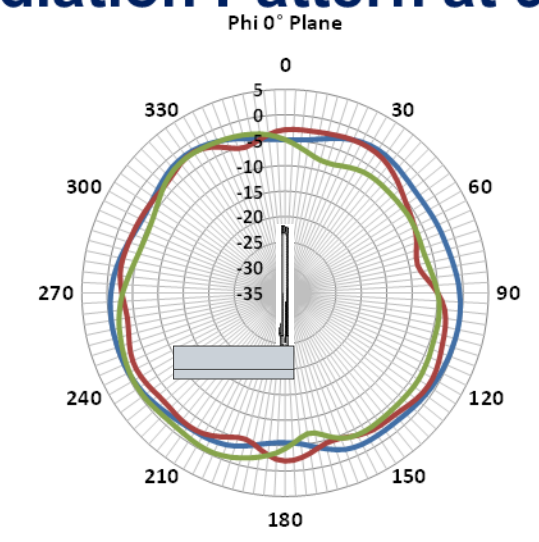
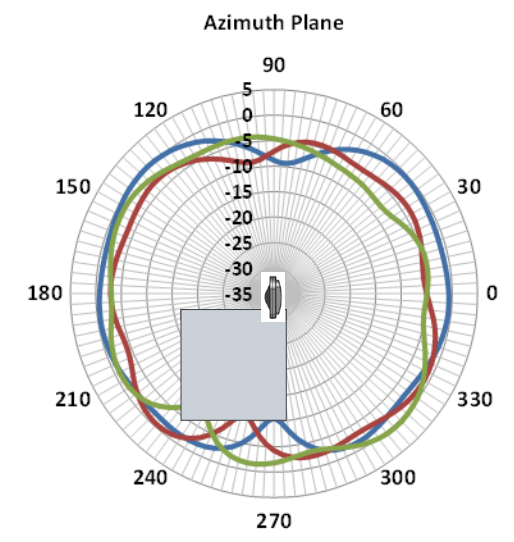
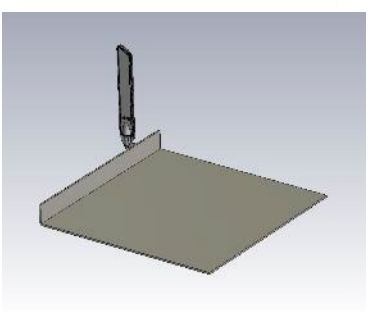
— Side-Center (90) — Side-Mid (90) — Side-Side (90) — Side-Center (90) — Side-Mid (90) — Side-Side (90) — Side-Center (90) — Side-Mid (90) — Side-Side (90)

Radiation Pattern at 925 MHz



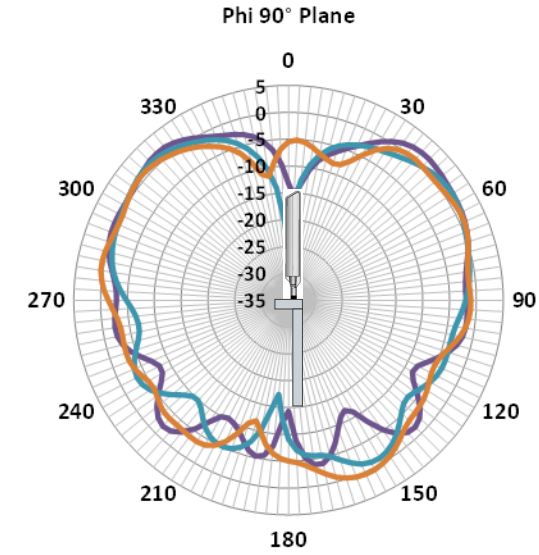
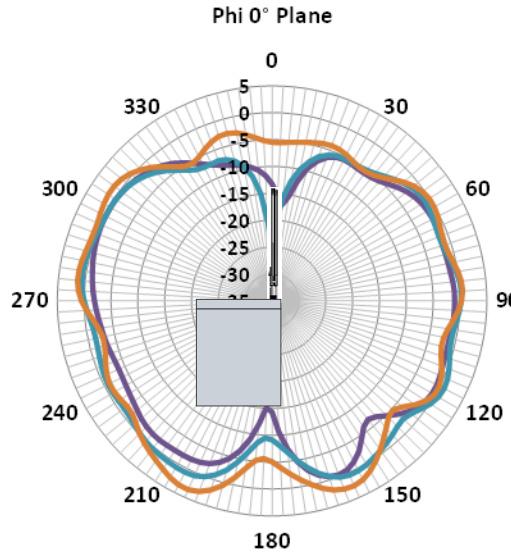
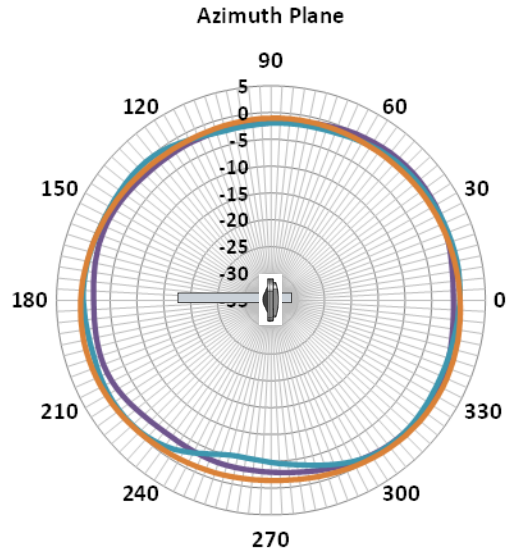
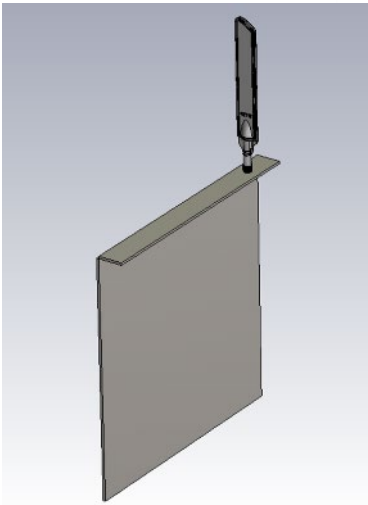
— Side-Center (0) — Side-Mid (0) — Side-Side (0) — Side-Center (0) — Side-Mid (0) — Side-Side (0) — Side-Center (0) — Side-Mid (0) — Side-Side (0)

Radiation Pattern at 925 MHz



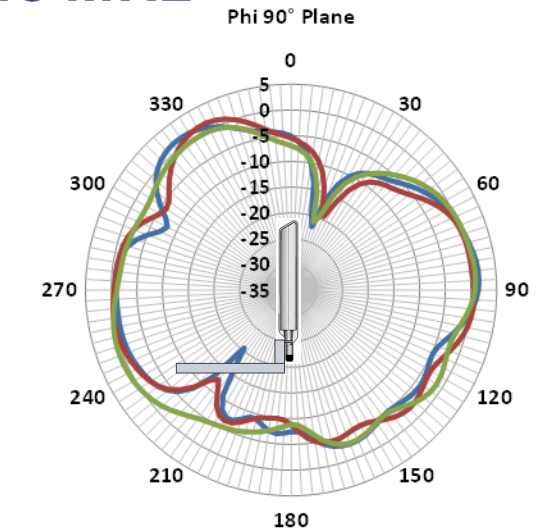
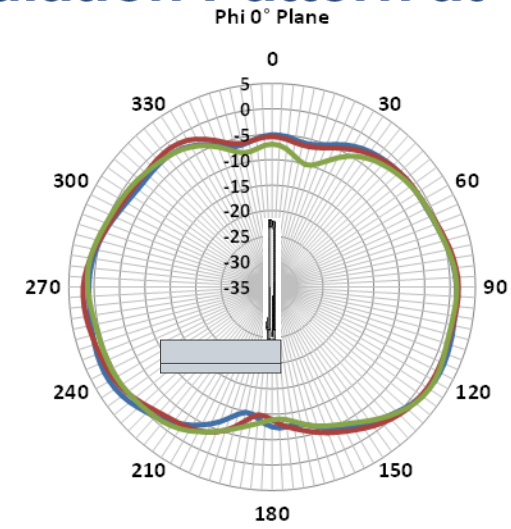
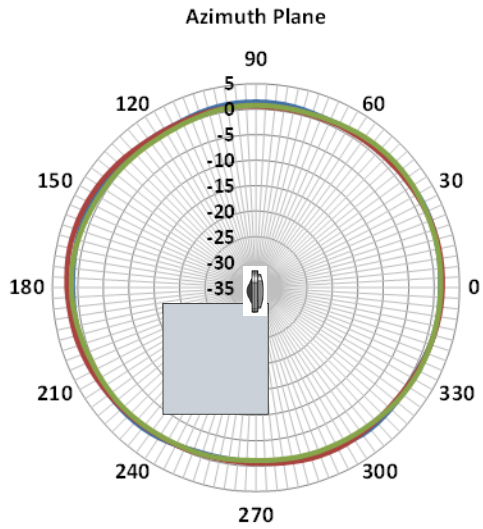
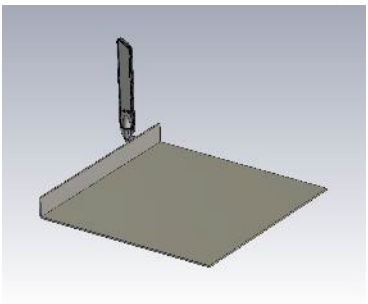
— Side-Center (90) — Side-Mid (90) — Side-Side (90) — Side-Center (90) — Side-Mid (90) — Side-Side (90) — Side-Center (90) — Side-Mid (90) — Side-Side (90)

Radiation Pattern at 1448 MHz



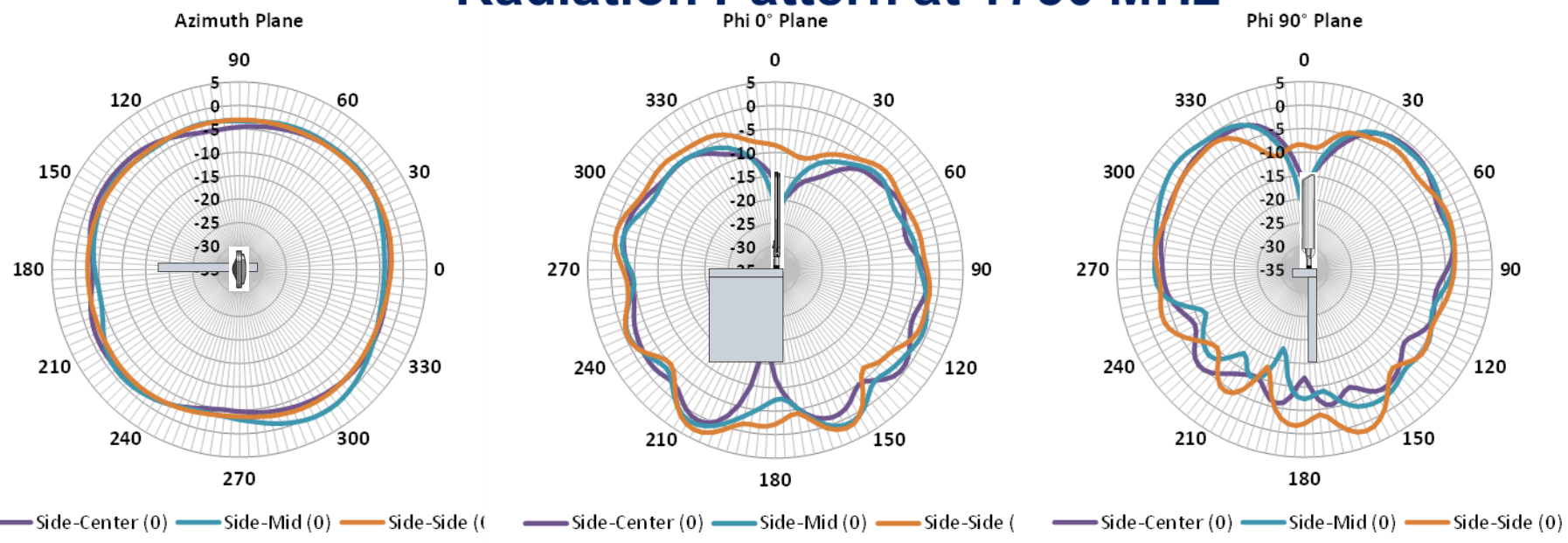
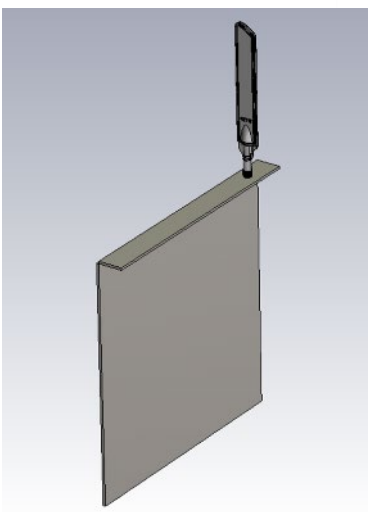
— Side-Center (0) — Side-Mid (0) — Side-Side (0) — Side-Center (0) — Side-Mid (0) — Side-Side (0) — Side-Center (0) — Side-Mid (0) — Side-Side (0)

Radiation Pattern at 1448 MHz

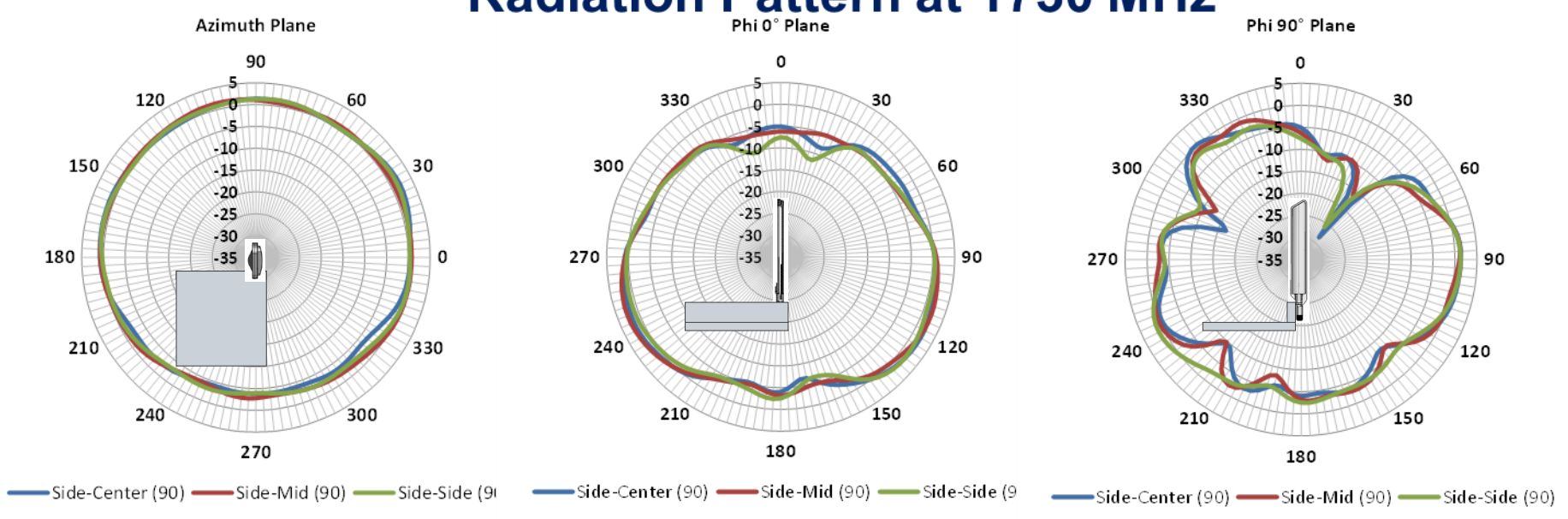
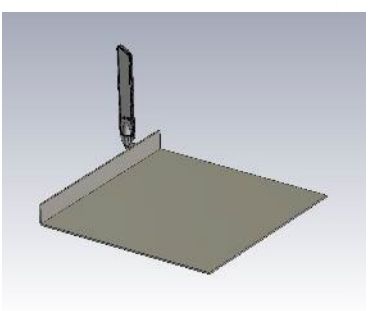


— Side-Center (90) — Side-Mid (90) — Side-Side (90) — Side-Center (90) — Side-Mid (90) — Side-Side (90) — Side-Center (90) — Side-Mid (90) — Side-Side (90)

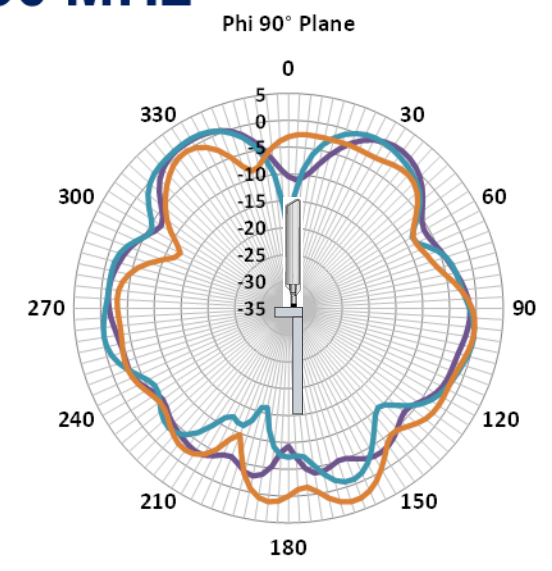
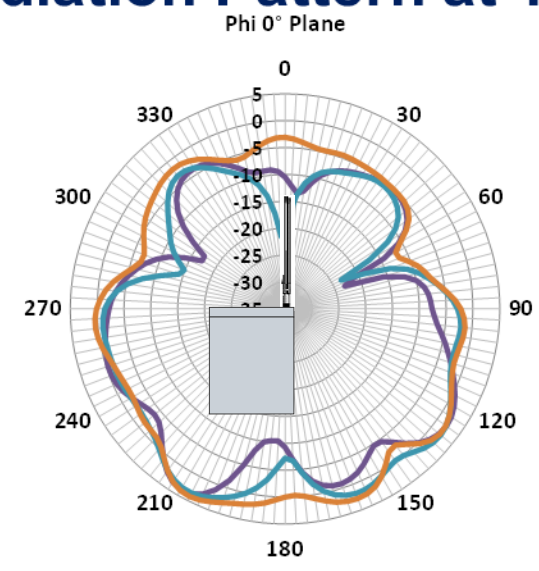
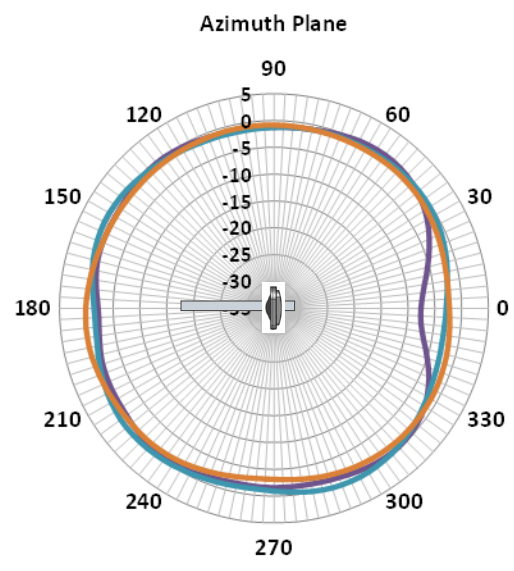
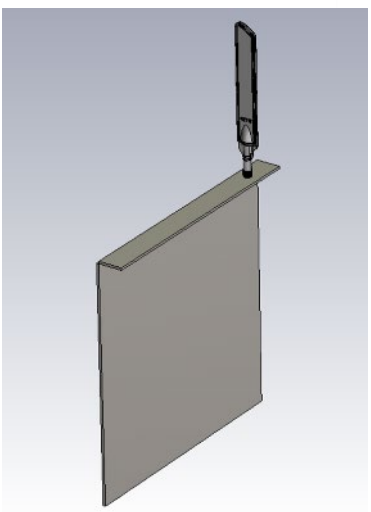
Radiation Pattern at 1730 MHz



Radiation Pattern at 1730 MHz

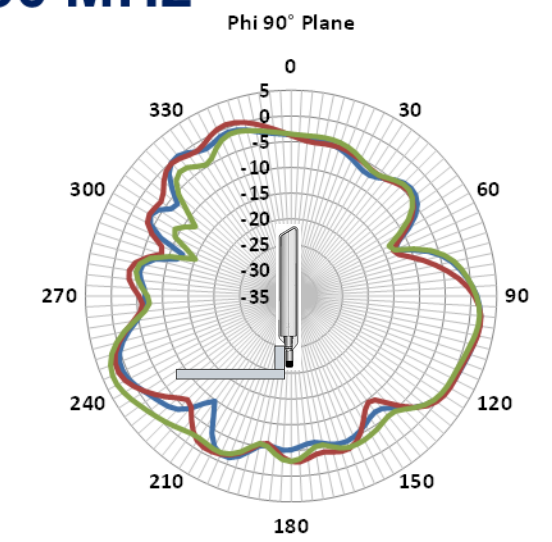
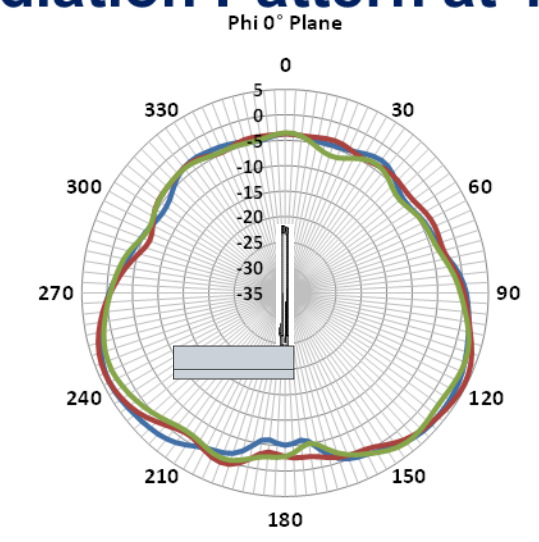
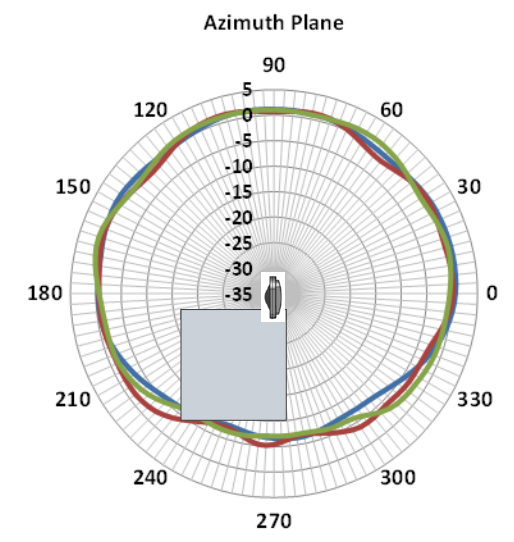
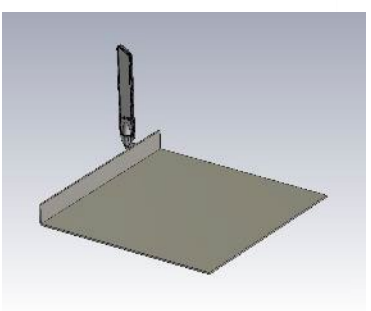


Radiation Pattern at 1930 MHz



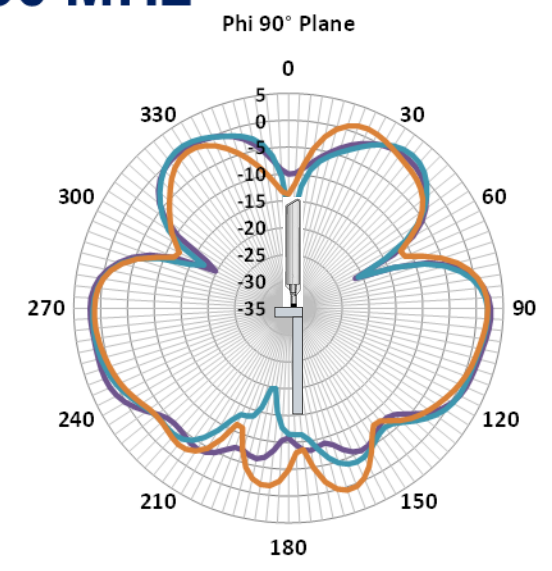
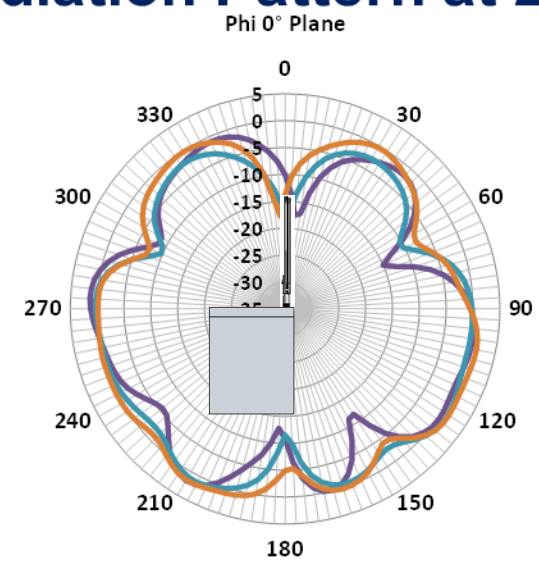
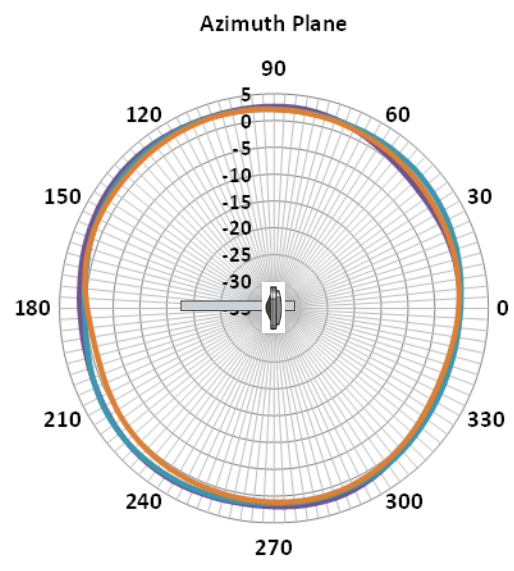
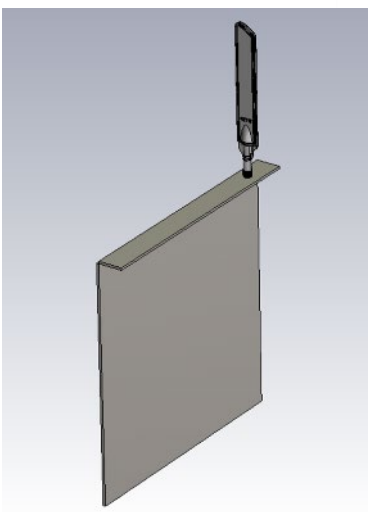
— Side-Center (0) — Side-Mid (0) — Side-Side (0) — Side-Center (0) — Side-Mid (0) — Side-Side (0) — Side-Center (0) — Side-Mid (0) — Side-Side (0)

Radiation Pattern at 1930 MHz



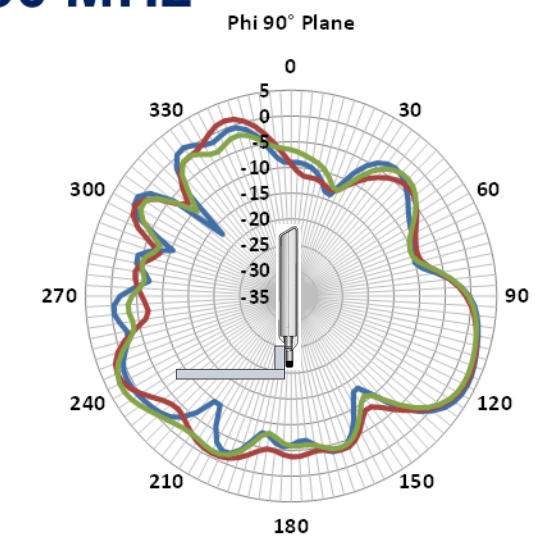
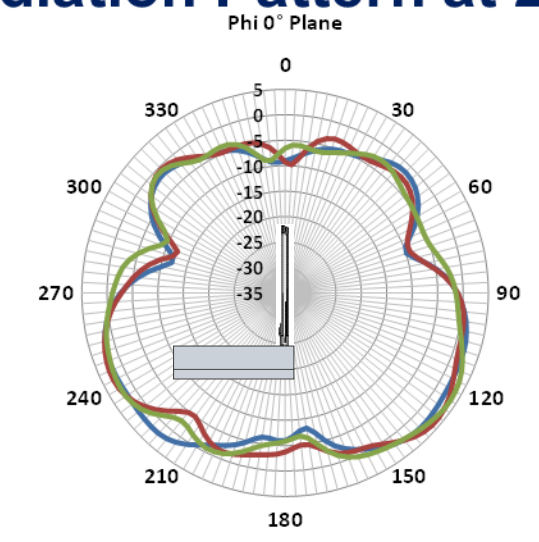
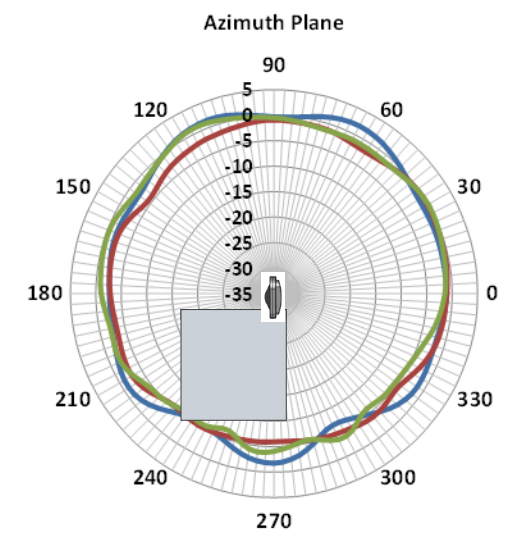
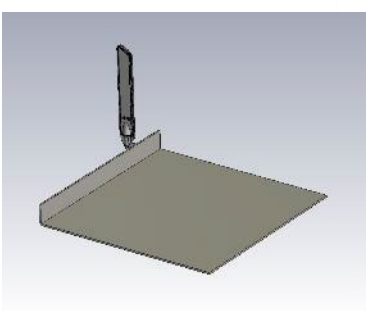
— Side-Center (90) — Side-Mid (90) — Side-Side (90) — Side-Center (90) — Side-Mid (90) — Side-Side (90) — Side-Center (90) — Side-Mid (90) — Side-Side (90)

Radiation Pattern at 2130 MHz



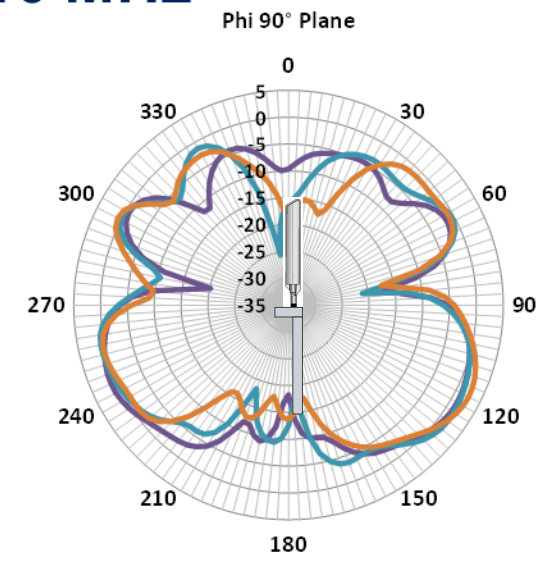
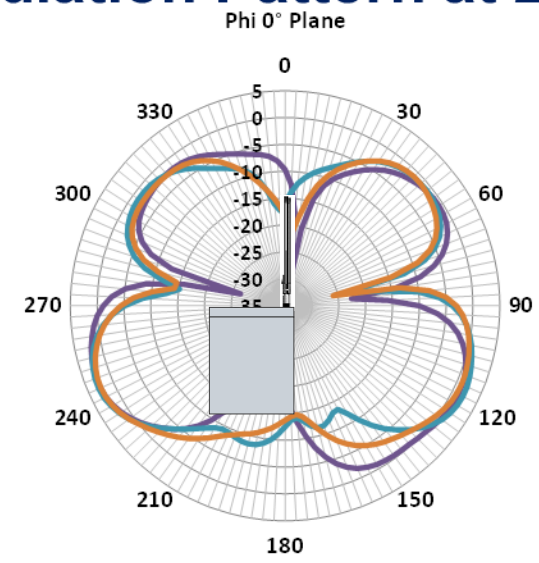
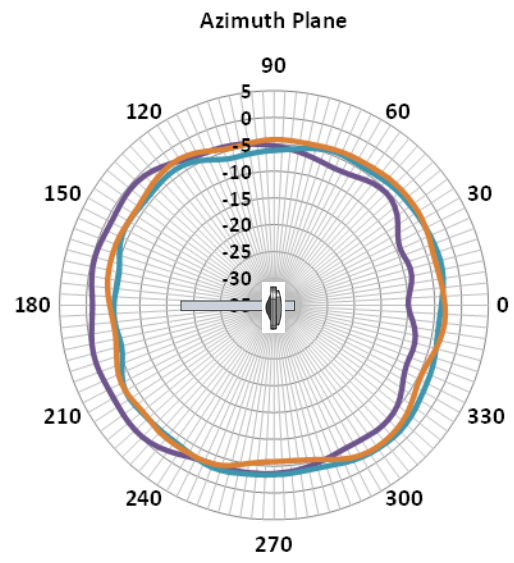
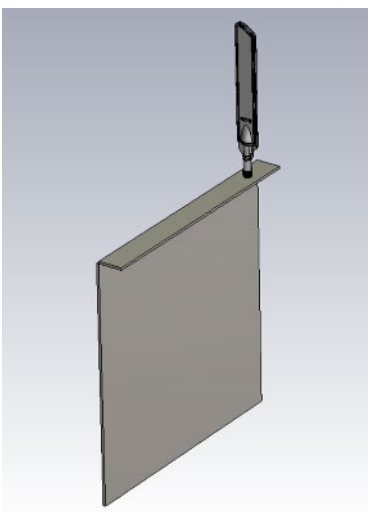
— Side-Center (0) — Side-Mid (0) — Side-Side (0) — Side-Center (0) — Side-Mid (0) — Side-Side (0) — Side-Center (0) — Side-Mid (0) — Side-Side (0)

Radiation Pattern at 2130 MHz



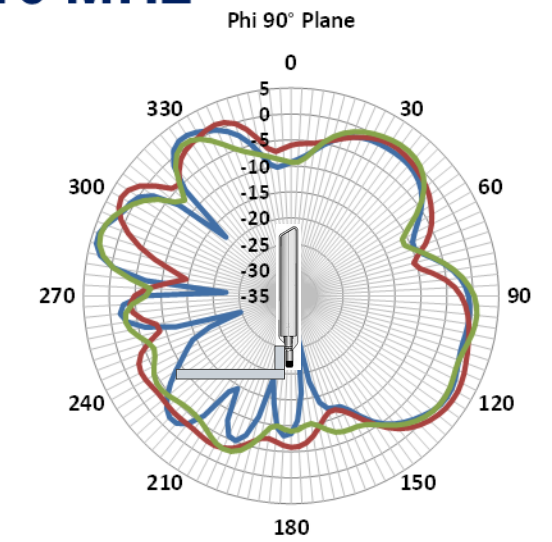
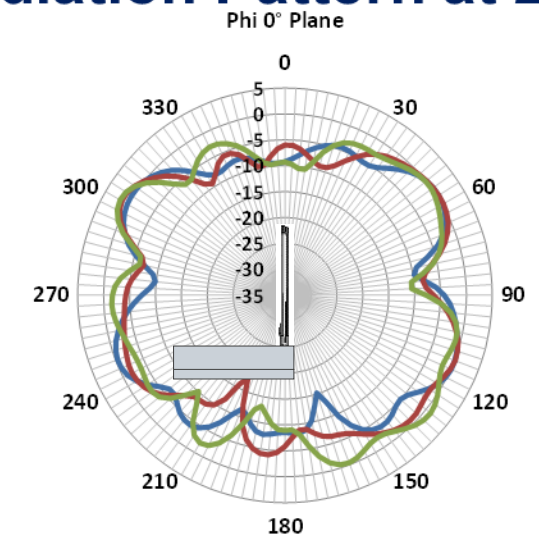
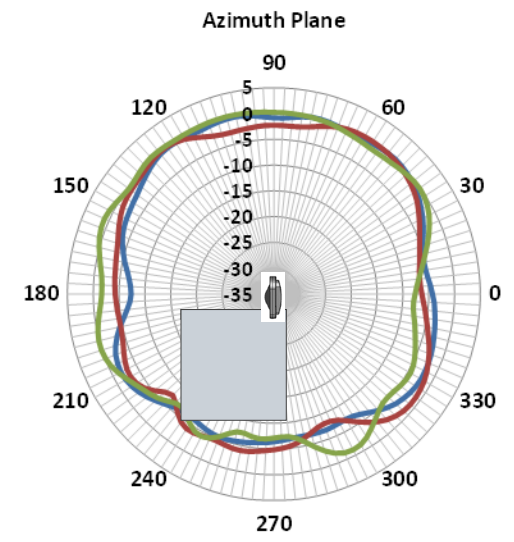
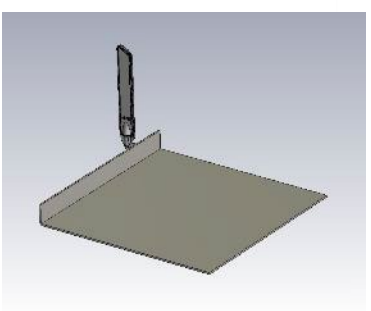
— Side-Center (90) — Side-Mid (90) — Side-Side (90) — Side-Center (90) — Side-Mid (90) — Side-Side (90) — Side-Center (90) — Side-Mid (90) — Side-Side (90)

Radiation Pattern at 2310 MHz



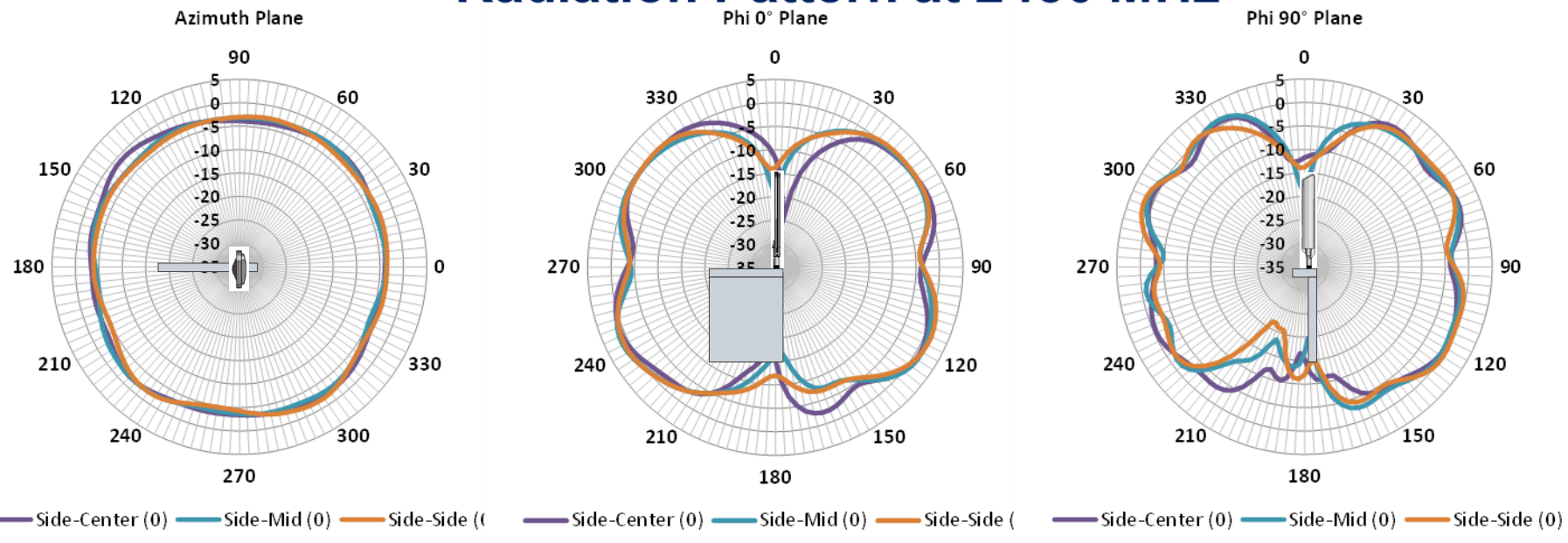
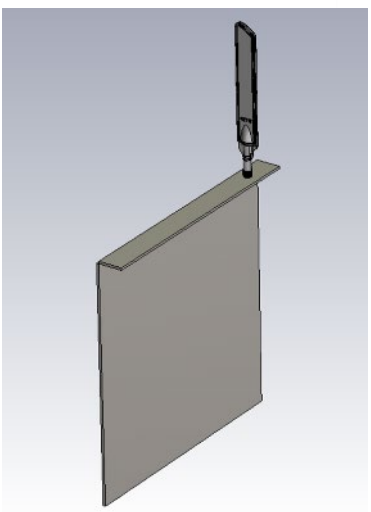
— Side-Center (0) — Side-Mid (0) — Side-Side (0) — Side-Center (0) — Side-Mid (0) — Side-Side (0) — Side-Center (0) — Side-Mid (0) — Side-Side (0)

Radiation Pattern at 2310 MHz

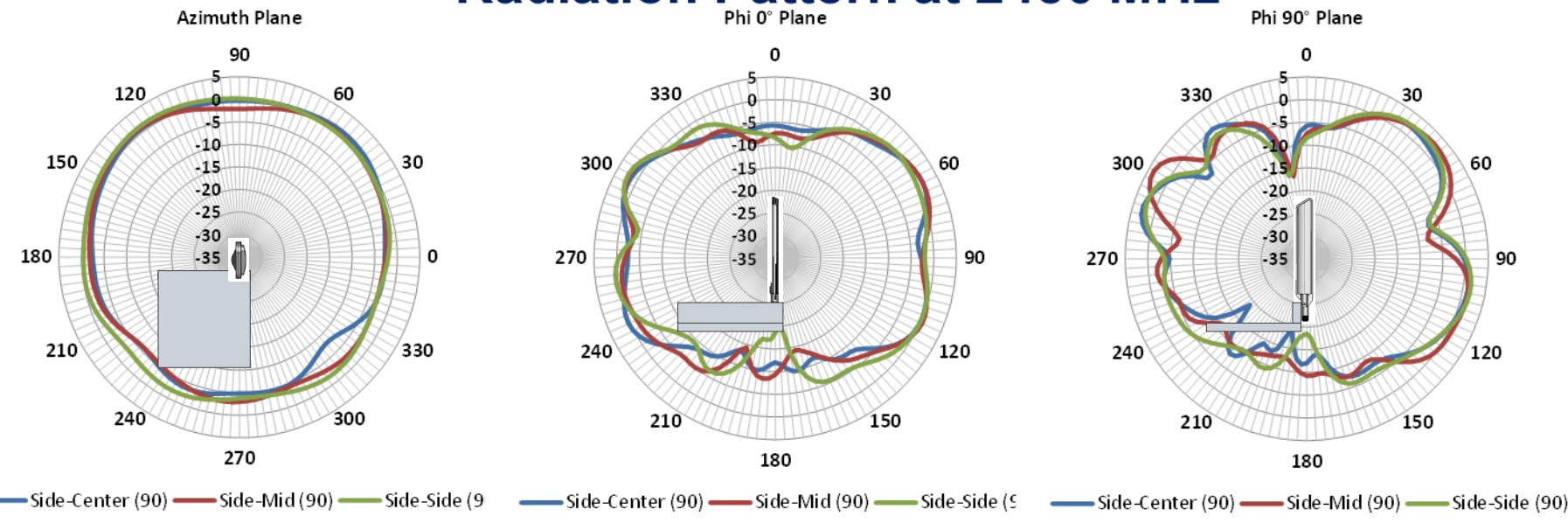
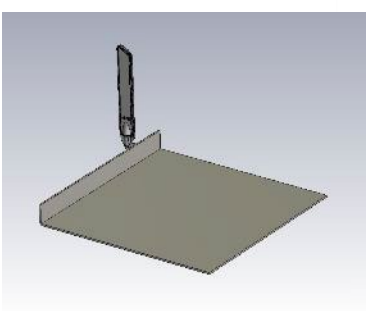


— Side-Center (90) — Side-Mid (90) — Side-Side (90) — Side-Center (90) — Side-Mid (90) — Side-Side (90) — Side-Center (90) — Side-Mid (90) — Side-Side (90)

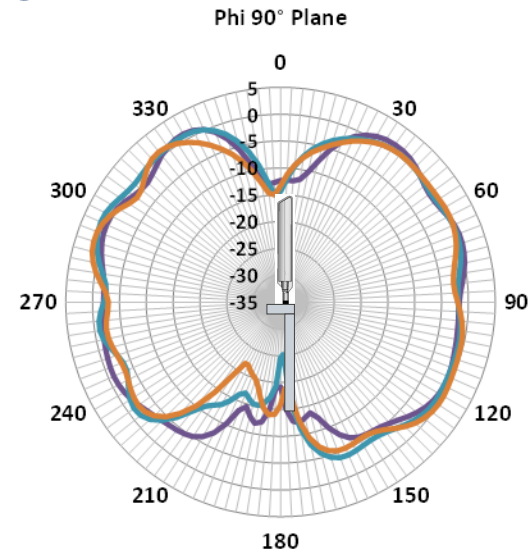
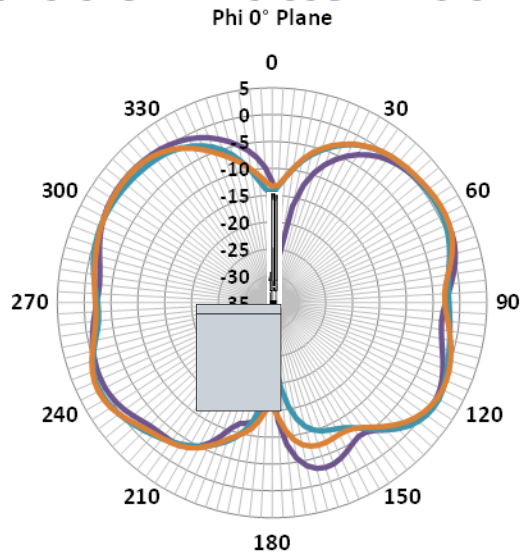
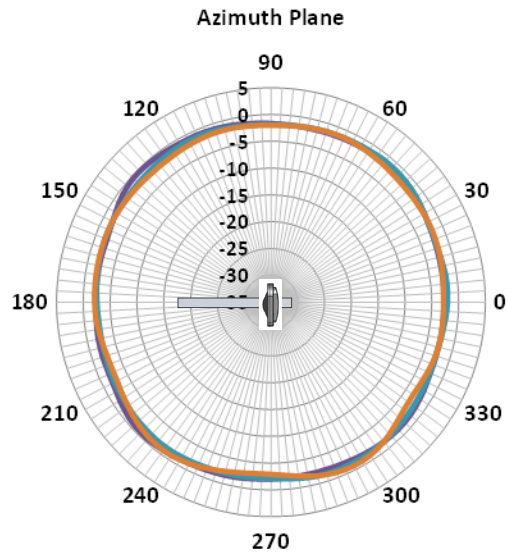
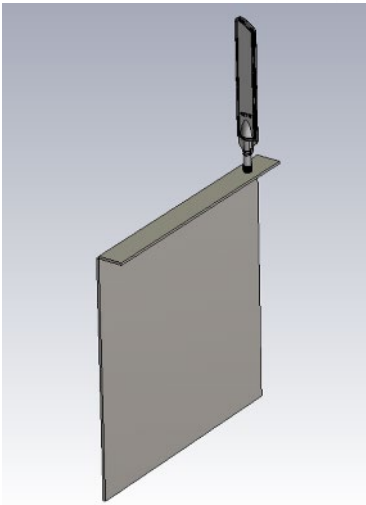
Radiation Pattern at 2450 MHz



Radiation Pattern at 2450 MHz

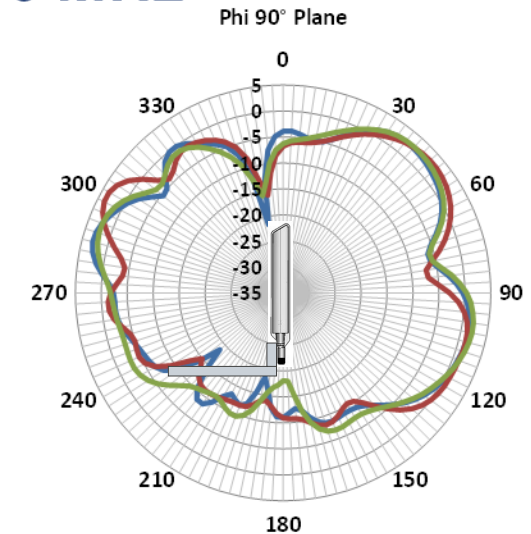
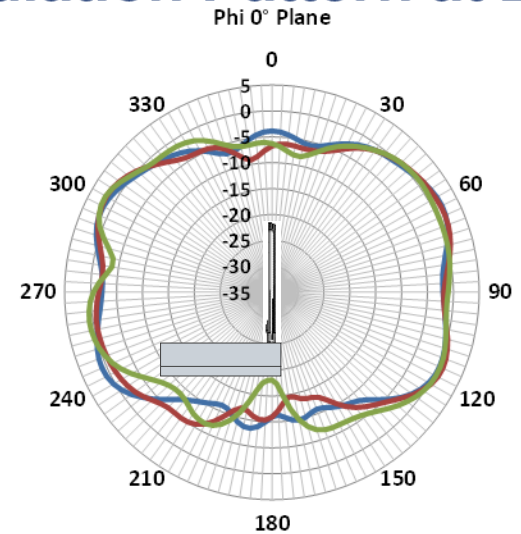
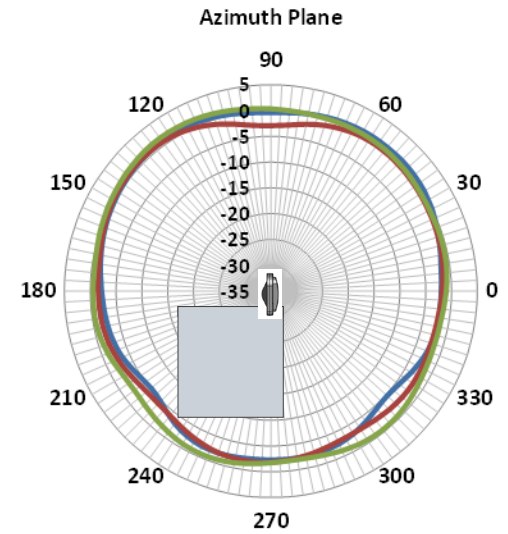
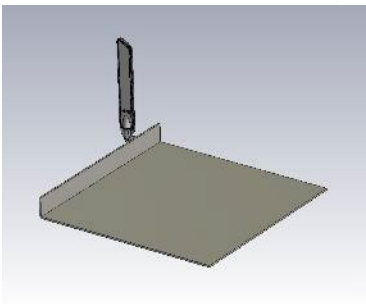


Radiation Pattern at 2500 MHz



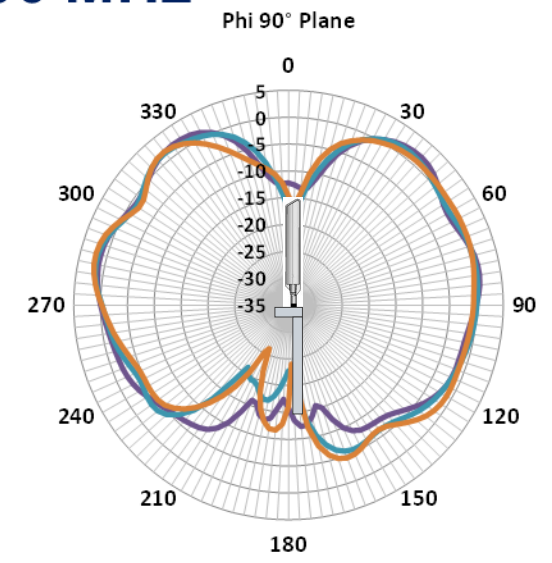
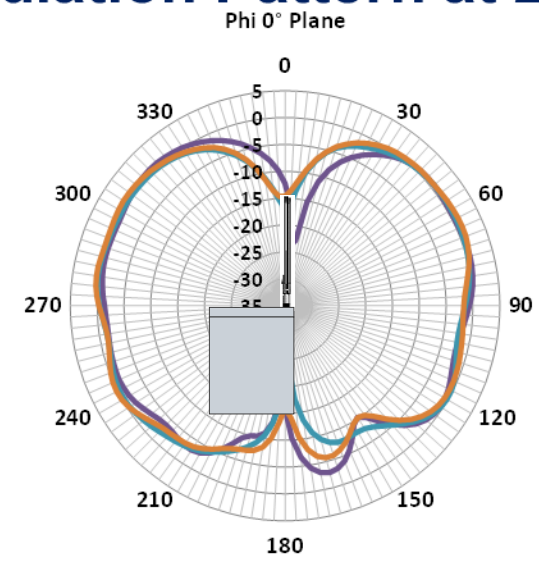
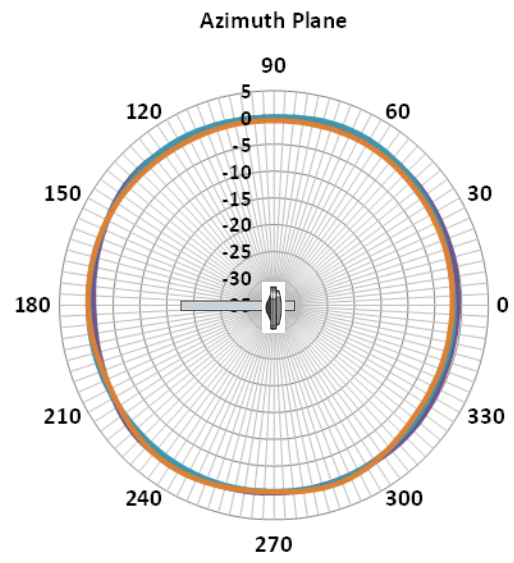
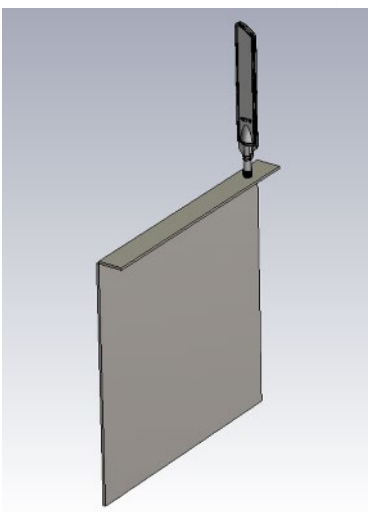
— Side-Center (0) — Side-Mid (0) — Side-Side (0) — Side-Center (0) — Side-Mid (0) — Side-Side (0) — Side-Center (0) — Side-Mid (0) — Side-Side (0)

Radiation Pattern at 2500 MHz



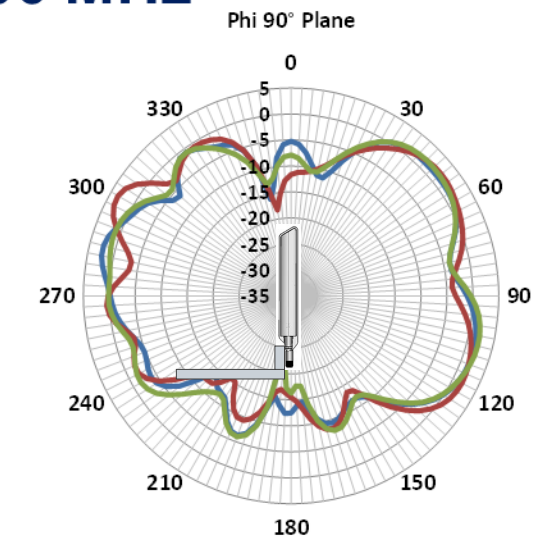
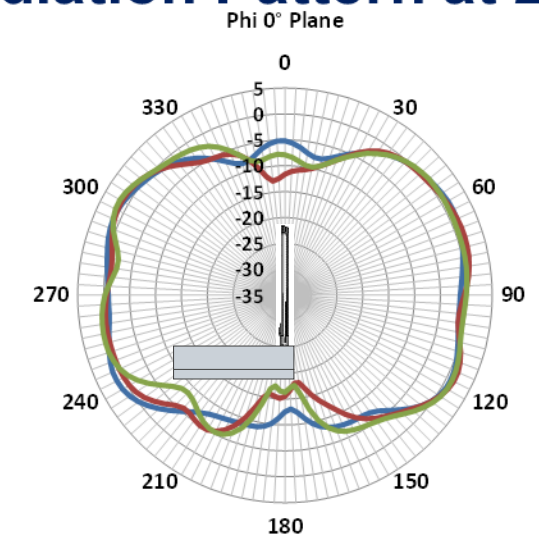
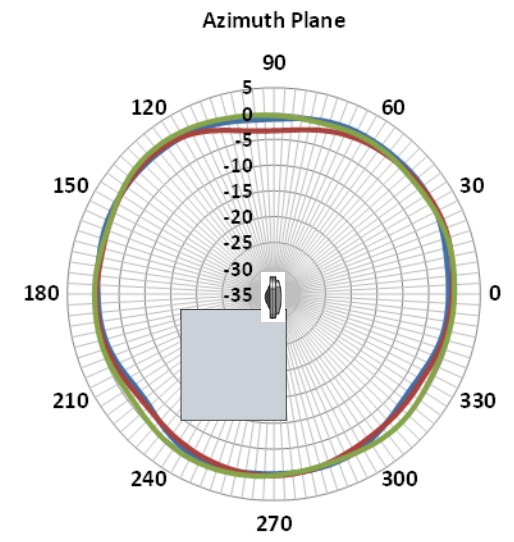
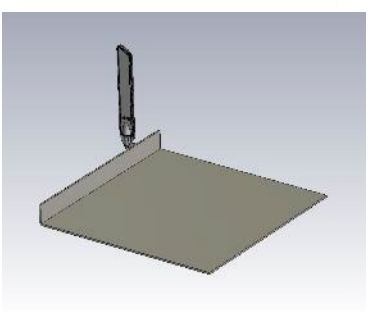
— Side-Center (90) — Side-Mid (90) — Side-Side (90) — Side-Center (90) — Side-Mid (90) — Side-Side (90) — Side-Center (90) — Side-Mid (90) — Side-Side (90)

Radiation Pattern at 2600 MHz



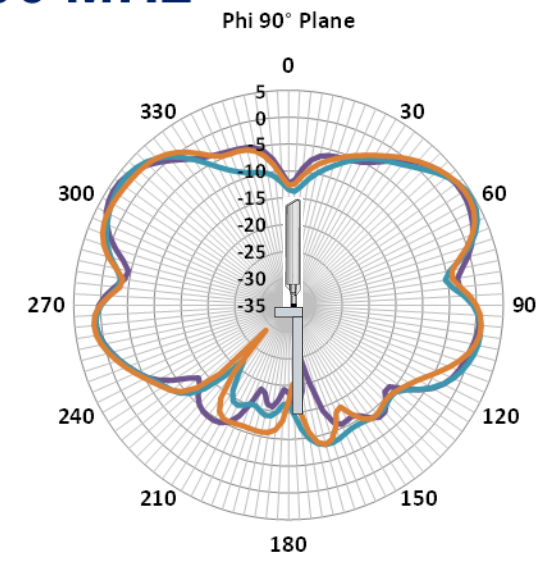
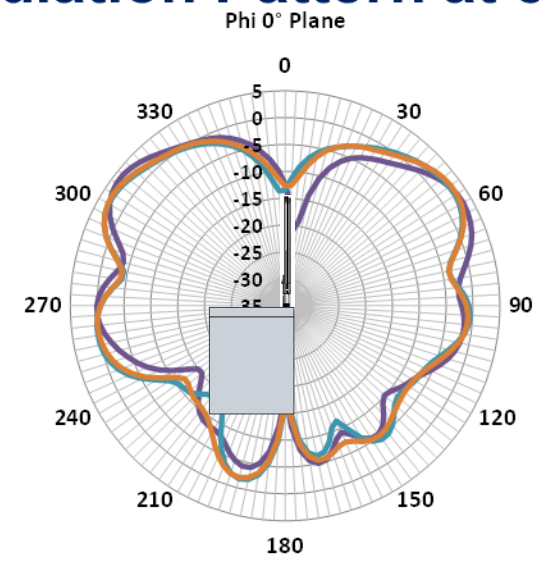
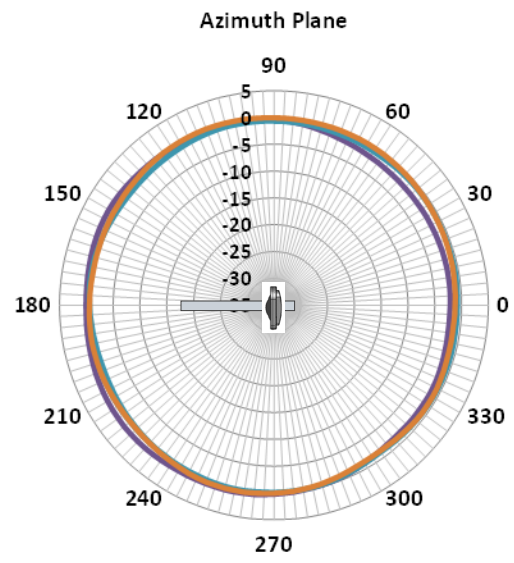
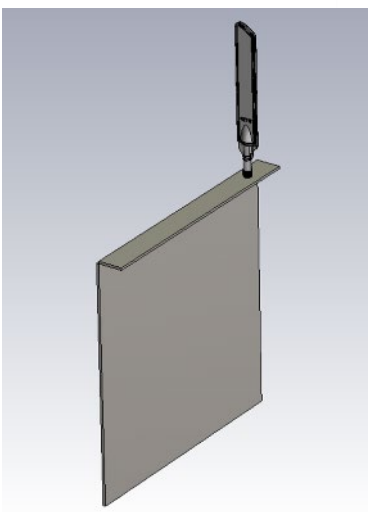
— Side-Center (0) — Side-Mid (0) — Side-Side (0) — Side-Center (0) — Side-Mid (0) — Side-Side (0) — Side-Center (0) — Side-Mid (0) — Side-Side (0)

Radiation Pattern at 2600 MHz



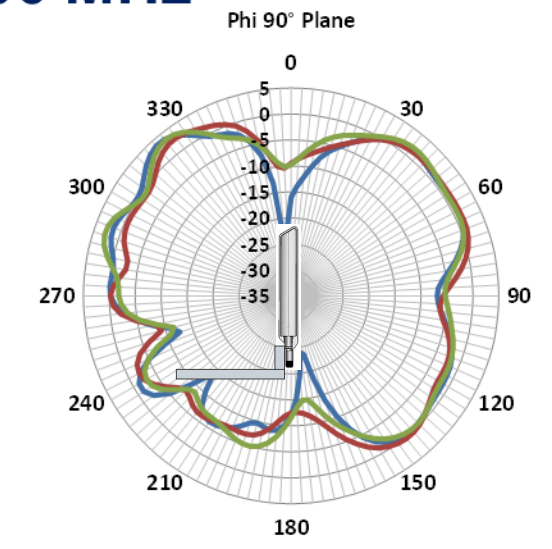
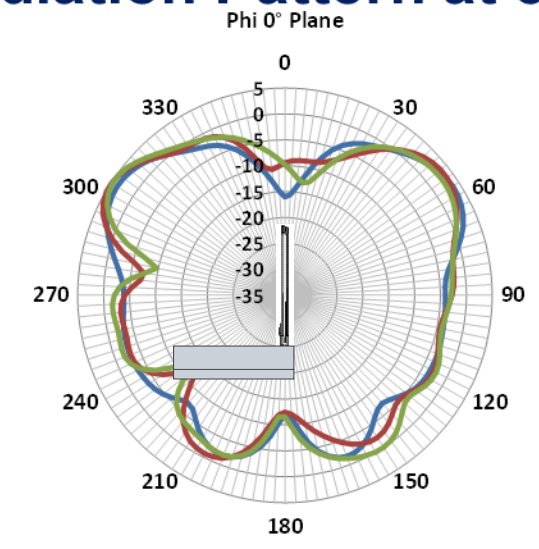
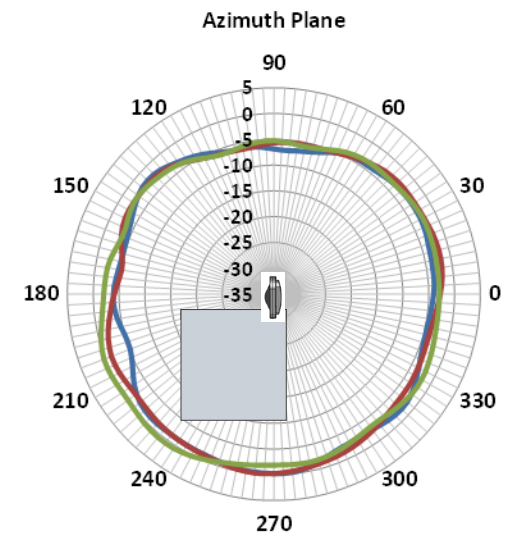
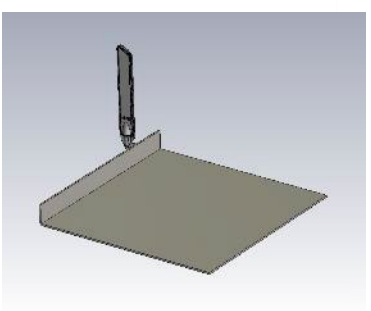
— Side-Center (90) — Side-Mid (90) — Side-Side (90) — Side-Center (90) — Side-Mid (90) — Side-Side (90) — Side-Center (90) — Side-Mid (90) — Side-Side (90)

Radiation Pattern at 3300 MHz



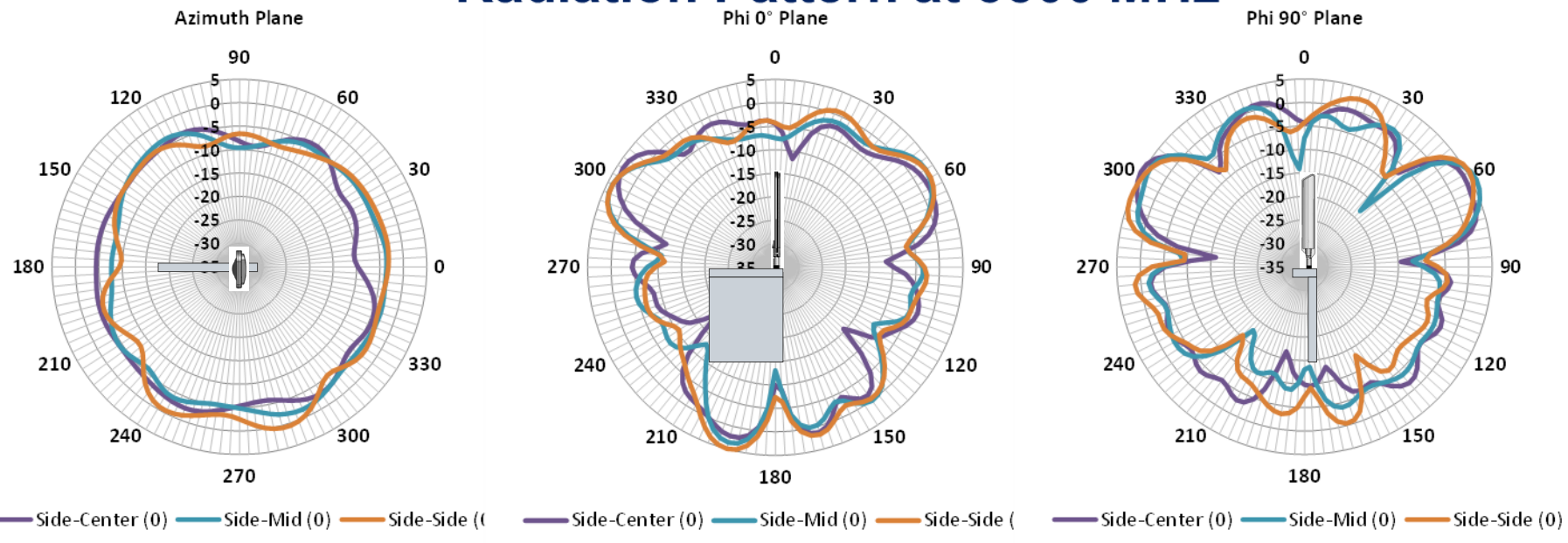
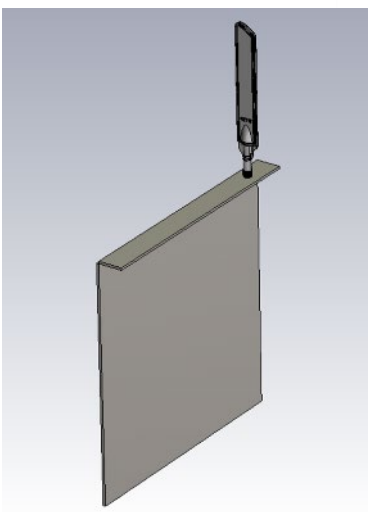
— Side-Center (0) — Side-Mid (0) — Side-Side (0) — Side-Center (0) — Side-Mid (0) — Side-Side (0) — Side-Center (0) — Side-Mid (0) — Side-Side (0)

Radiation Pattern at 3300 MHz

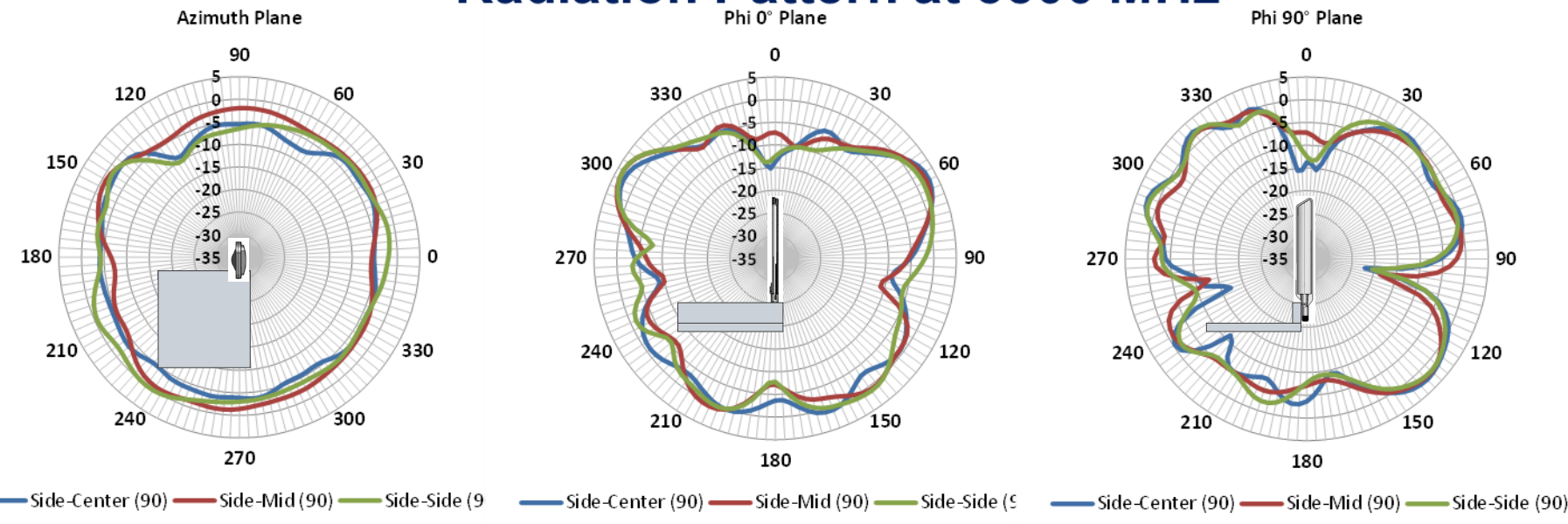
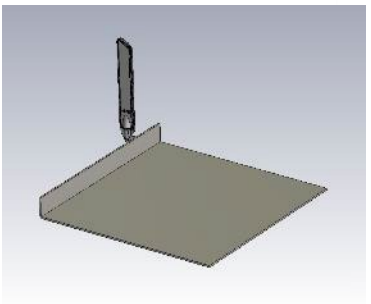


— Side-Center (90) — Side-Mid (90) — Side-Side (90) — Side-Center (90) — Side-Mid (90) — Side-Side (90) — Side-Center (90) — Side-Mid (90) — Side-Side (90)

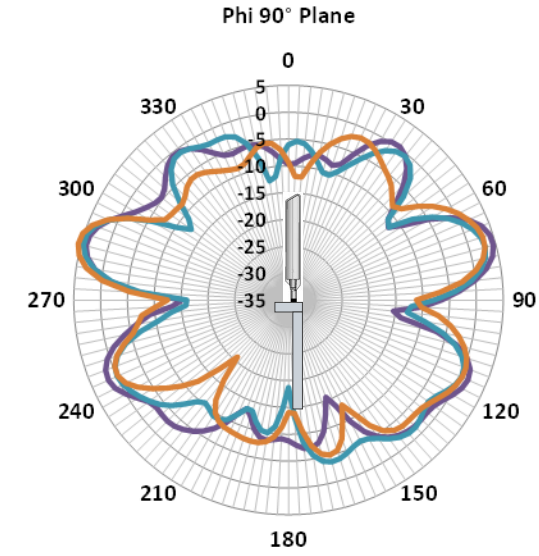
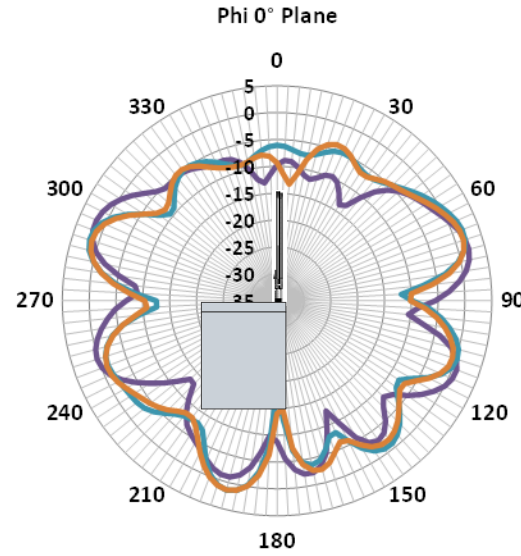
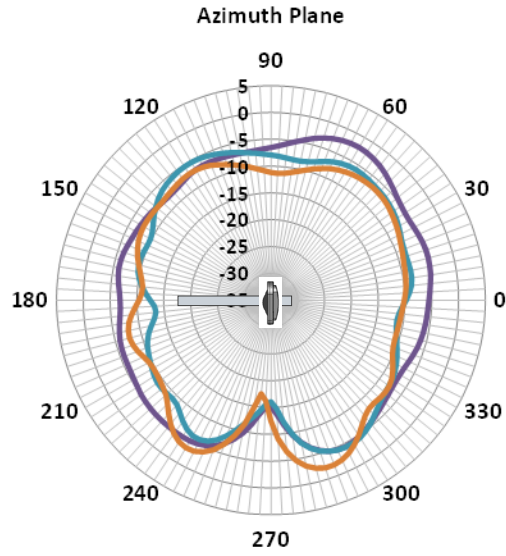
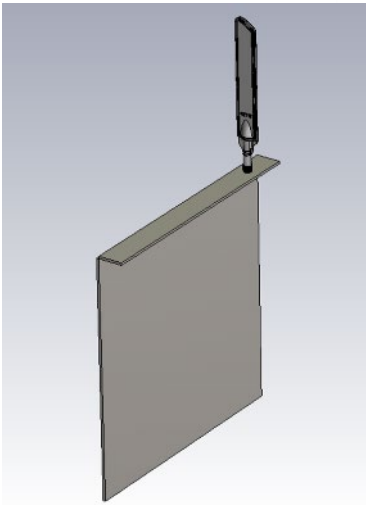
Radiation Pattern at 3500 MHz



Radiation Pattern at 3500 MHz

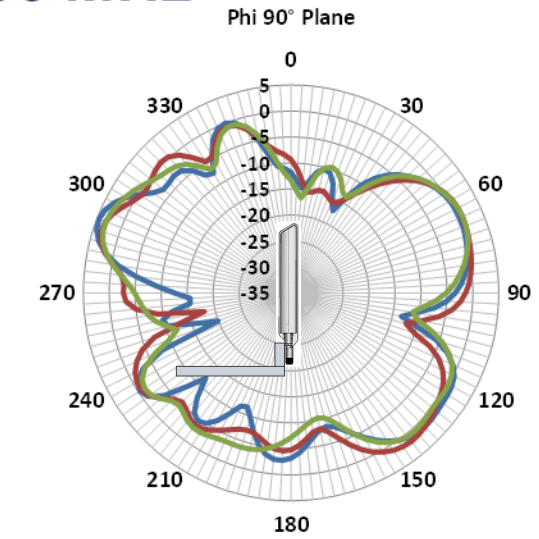
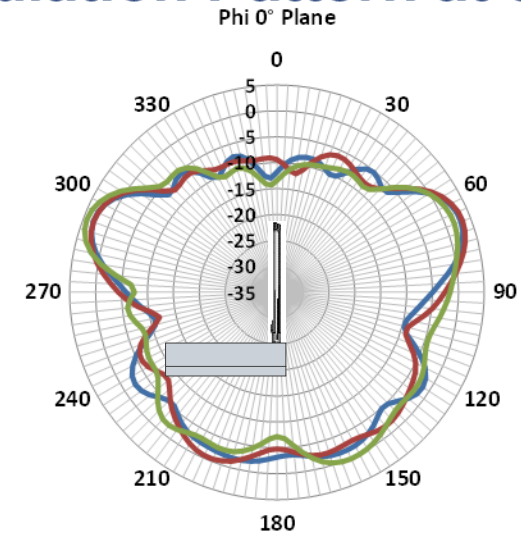
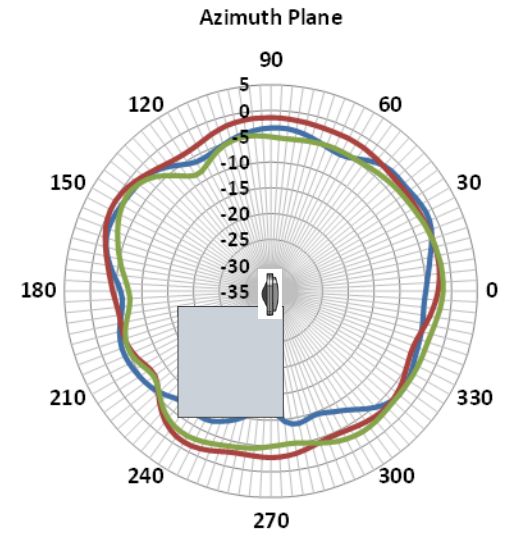
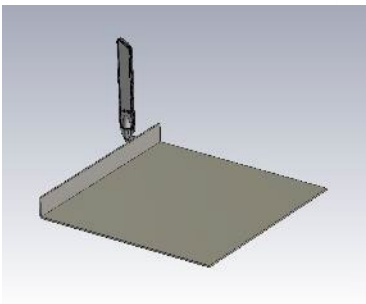


Radiation Pattern at 3700 MHz



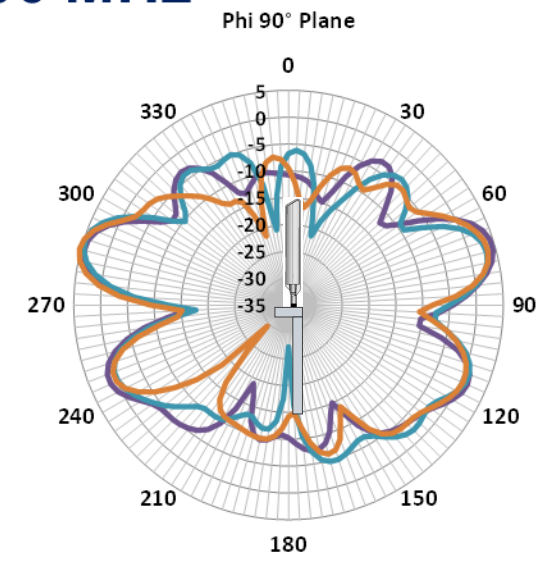
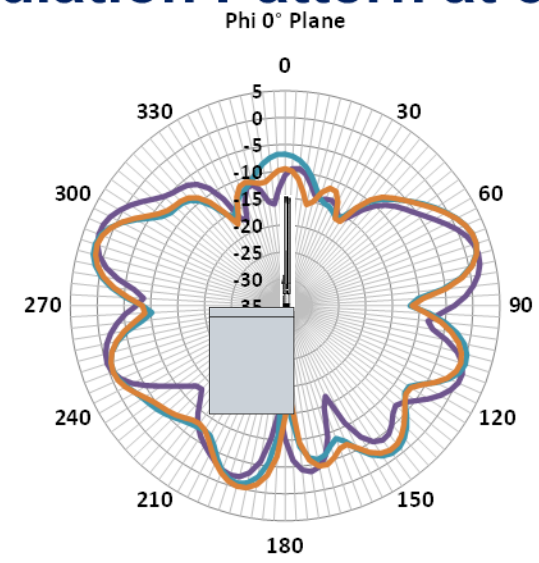
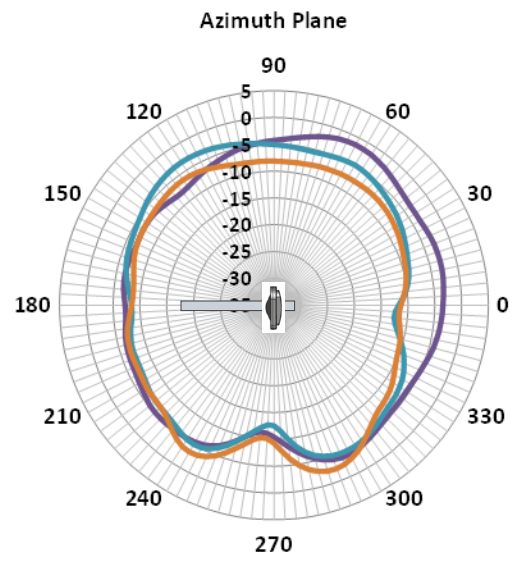
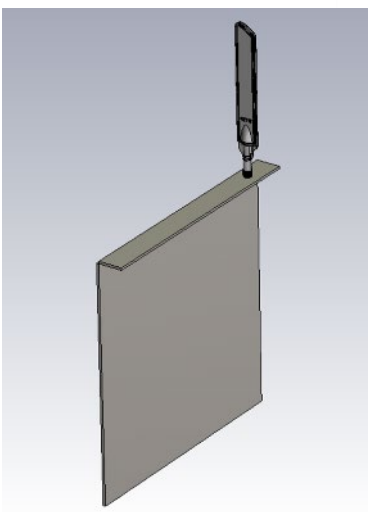
— Side-Center (0) — Side-Mid (0) — Side-Side (0) — Side-Center (0) — Side-Mid (0) — Side-Side (0) — Side-Center (0) — Side-Mid (0) — Side-Side (0)

Radiation Pattern at 3700 MHz



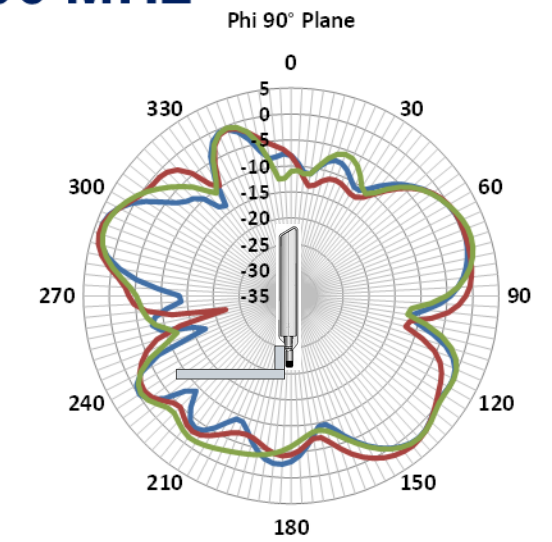
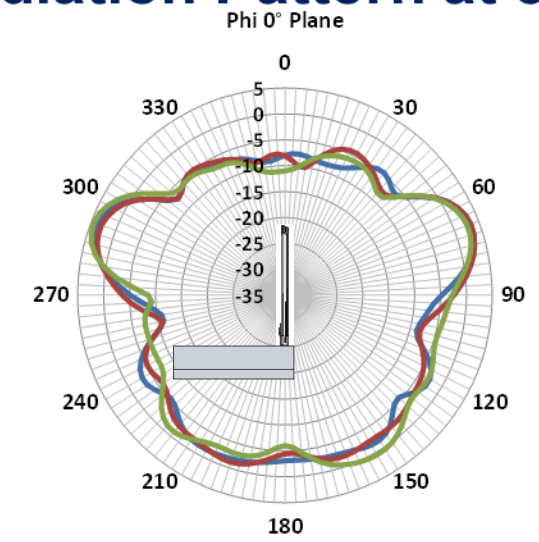
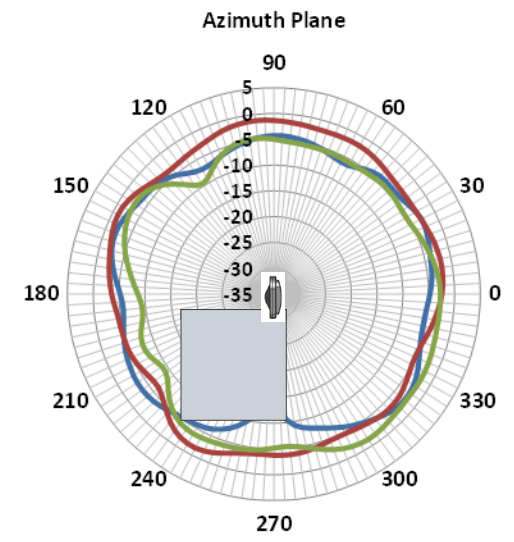
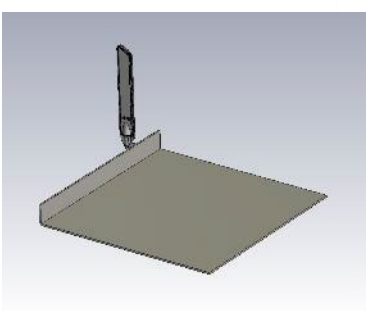
— Side-Center (90) — Side-Mid (90) — Side-Side (90) — Side-Center (90) — Side-Mid (90) — Side-Side (90) — Side-Center (90) — Side-Mid (90) — Side-Side (90)

Radiation Pattern at 3800 MHz



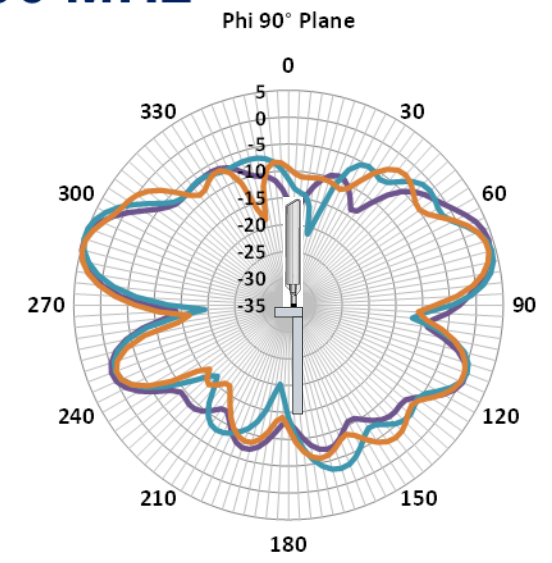
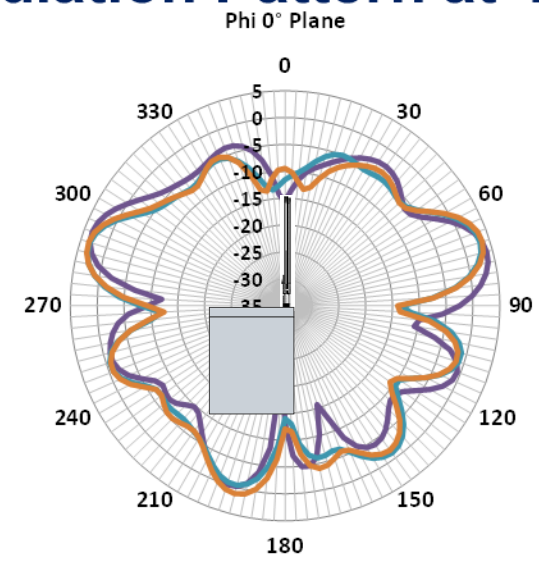
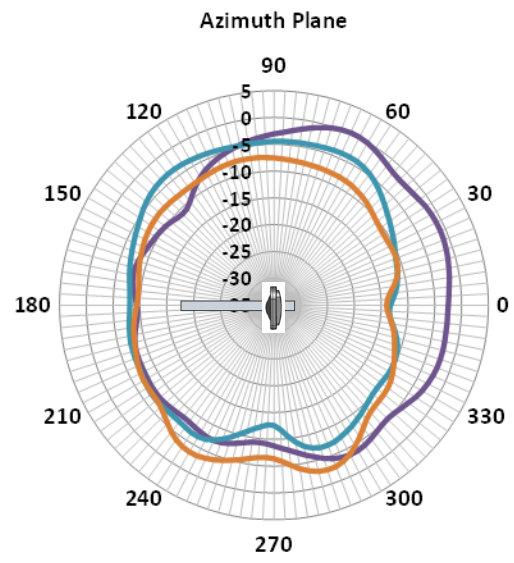
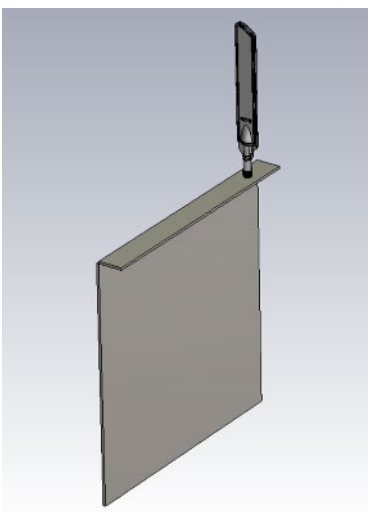
— Side-Center (0) — Side-Mid (0) — Side-Side (0) — Side-Center (0) — Side-Mid (0) — Side-Side (0) — Side-Center (0) — Side-Mid (0) — Side-Side (0)

Radiation Pattern at 3800 MHz



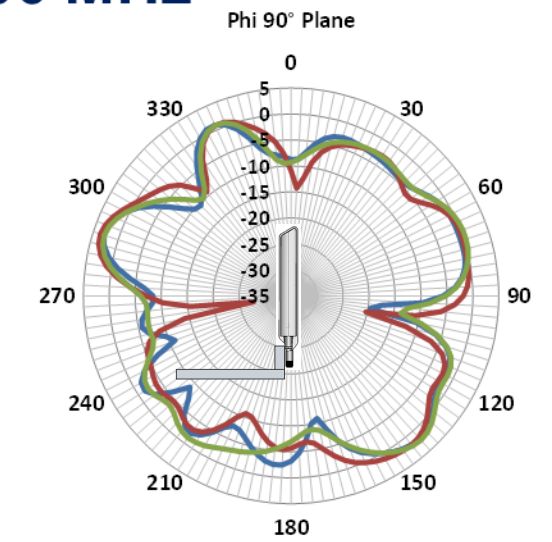
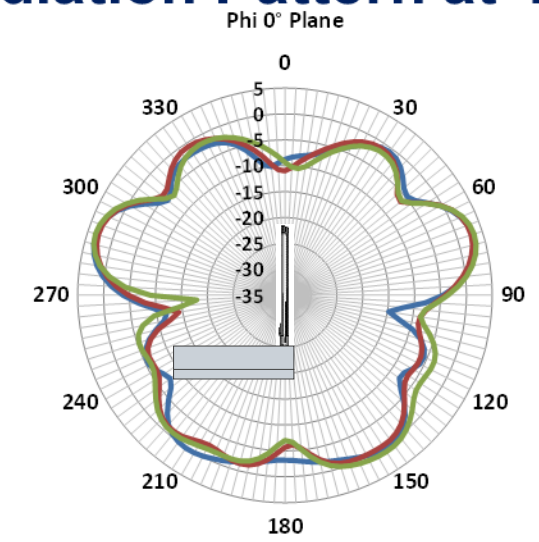
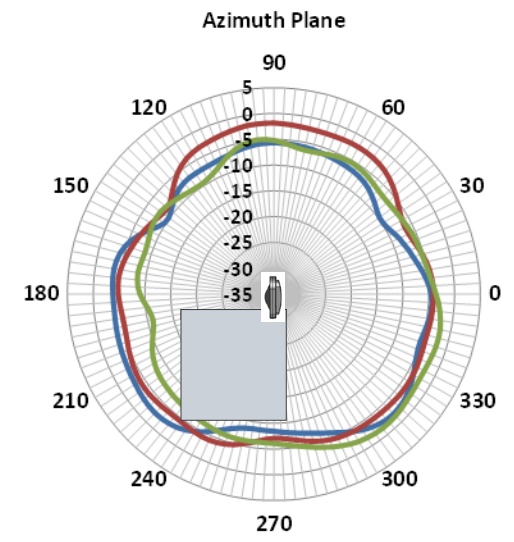
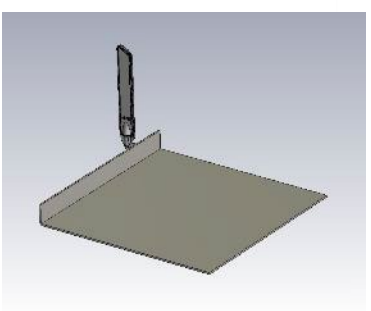
— Side-Center (90) — Side-Mid (90) — Side-Side (90) — Side-Center (90) — Side-Mid (90) — Side-Side (90) — Side-Center (90) — Side-Mid (90) — Side-Side (90)

Radiation Pattern at 4000 MHz



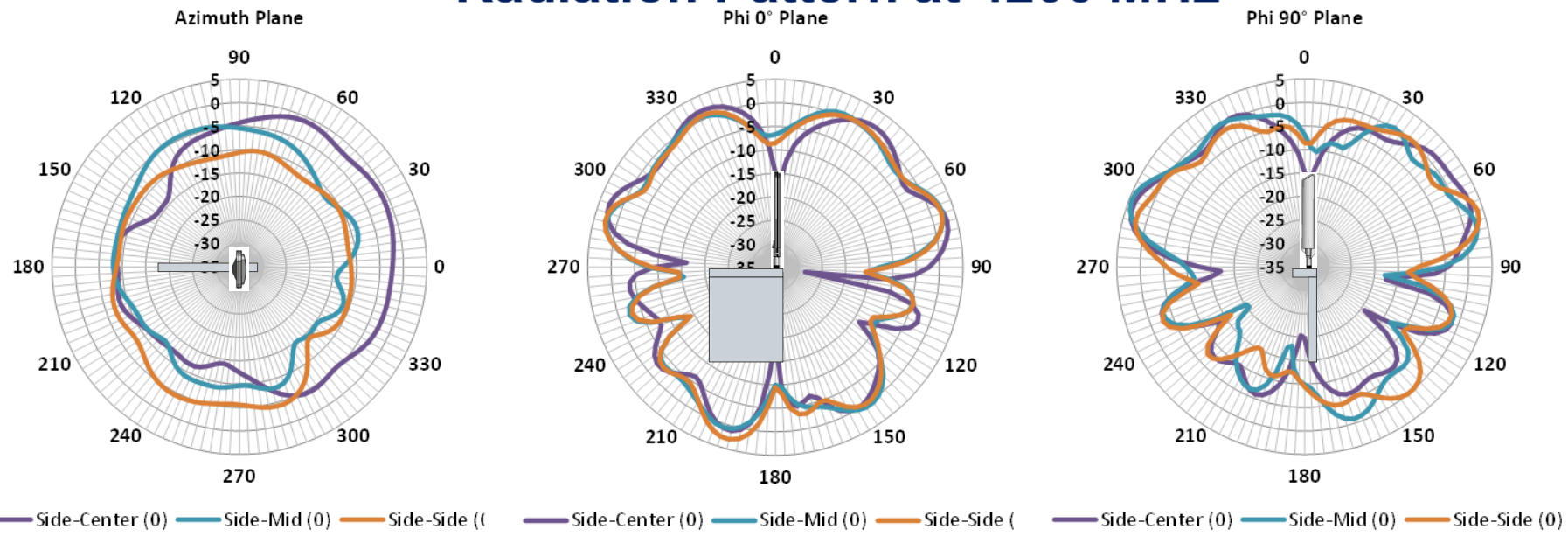
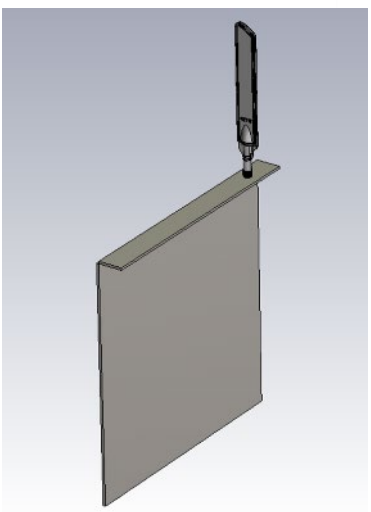
— Side-Center (0) — Side-Mid (0) — Side-Side (0) — Side-Center (0) — Side-Mid (0) — Side-Side (0) — Side-Center (0) — Side-Mid (0) — Side-Side (0)

Radiation Pattern at 4000 MHz

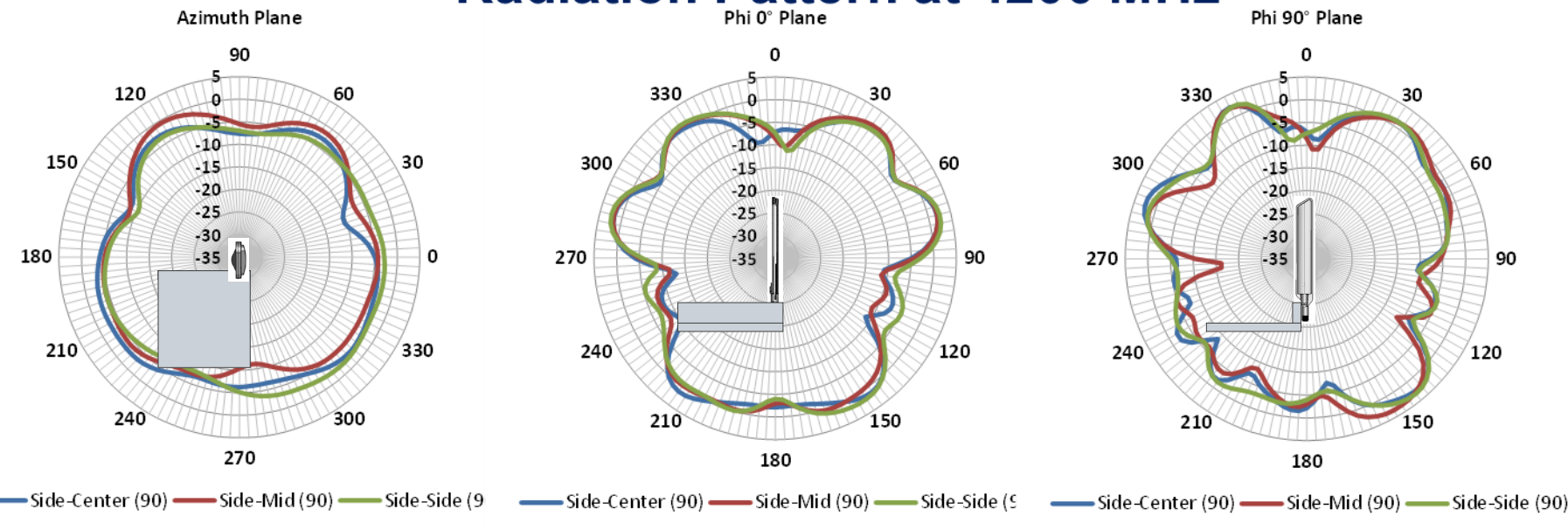
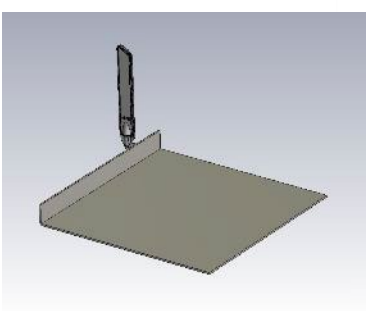


— Side-Center (90) — Side-Mid (90) — Side-Side (90) — Side-Center (90) — Side-Mid (90) — Side-Side (90) — Side-Center (90) — Side-Mid (90) — Side-Side (90)

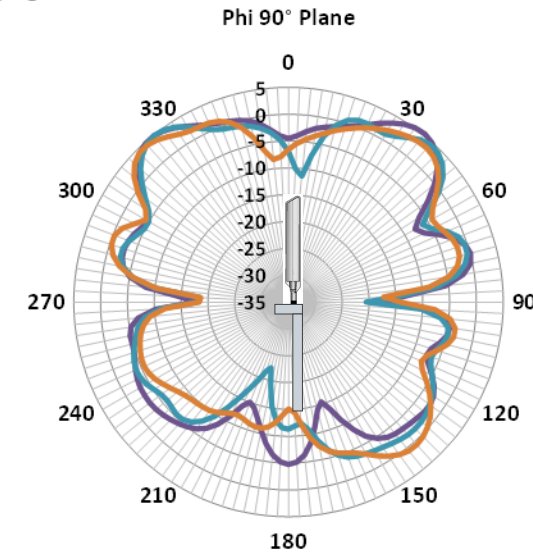
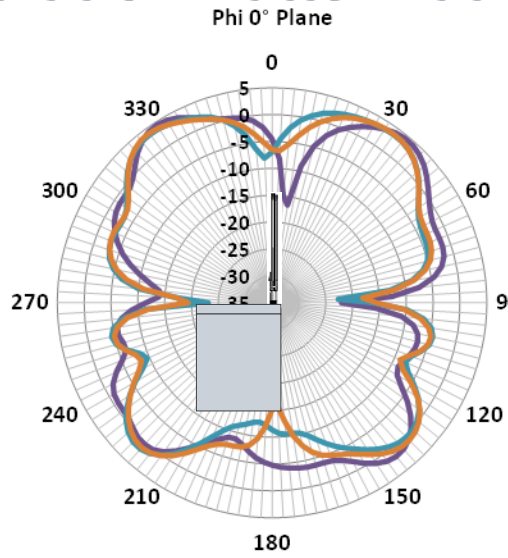
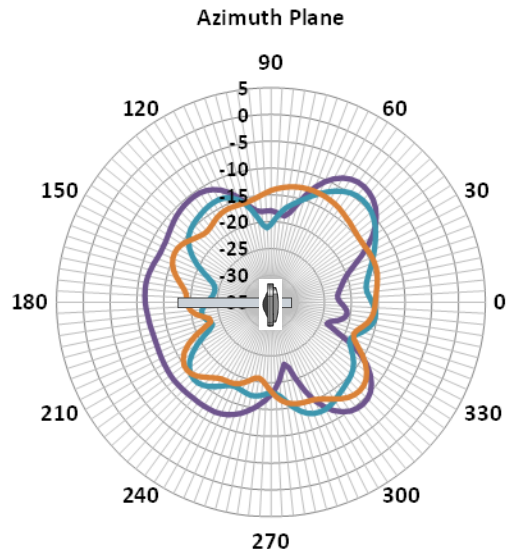
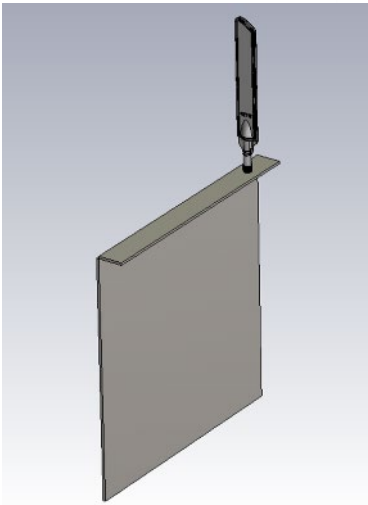
Radiation Pattern at 4200 MHz



Radiation Pattern at 4200 MHz

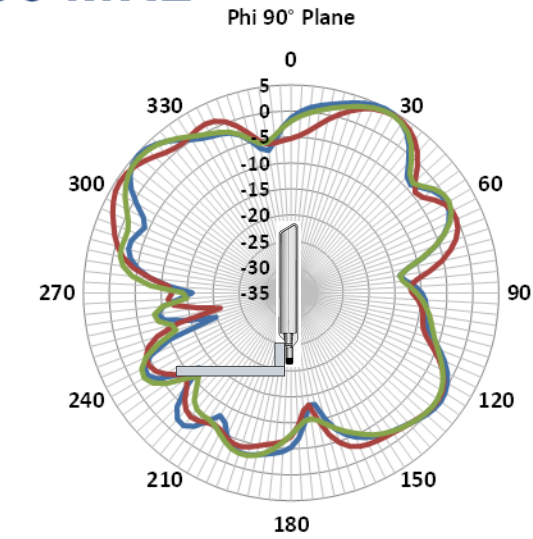
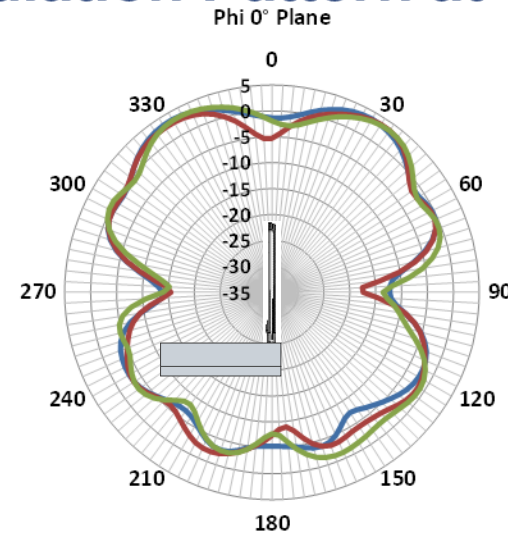
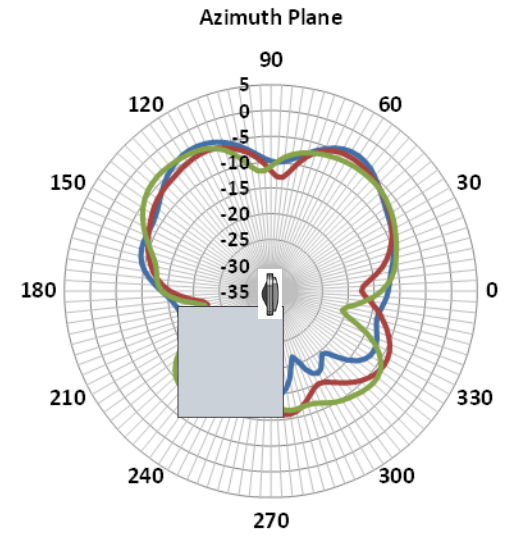
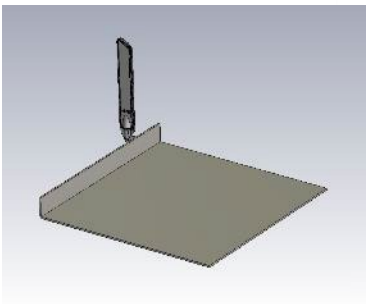


Radiation Pattern at 4900 MHz



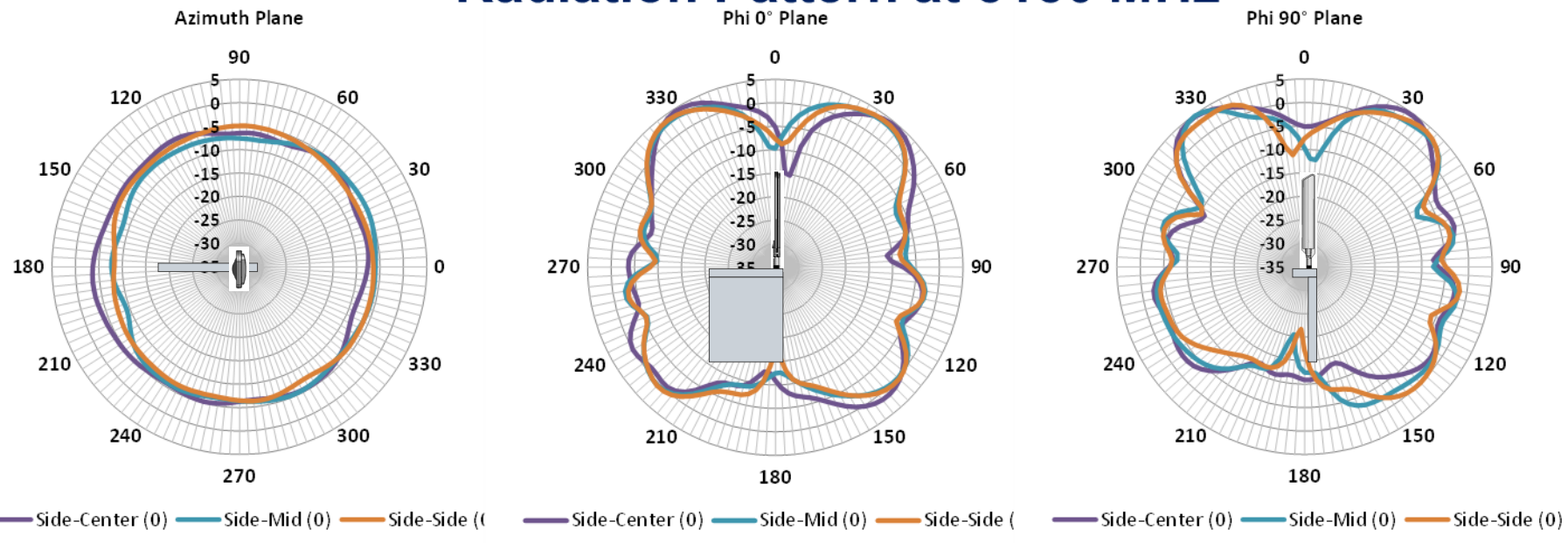
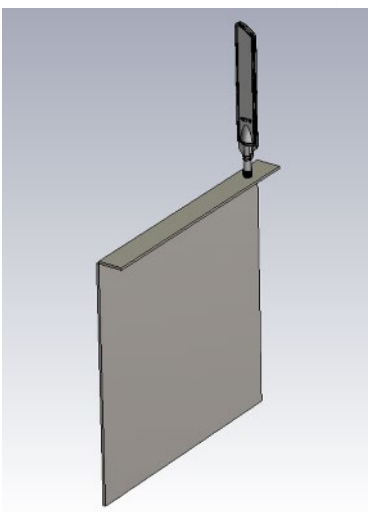
— Side-Center (0) — Side-Mid (0) — Side-Side (0) — Side-Center (0) — Side-Mid (0) — Side-Side (0) — Side-Center (0) — Side-Mid (0) — Side-Side (0)

Radiation Pattern at 4900 MHz

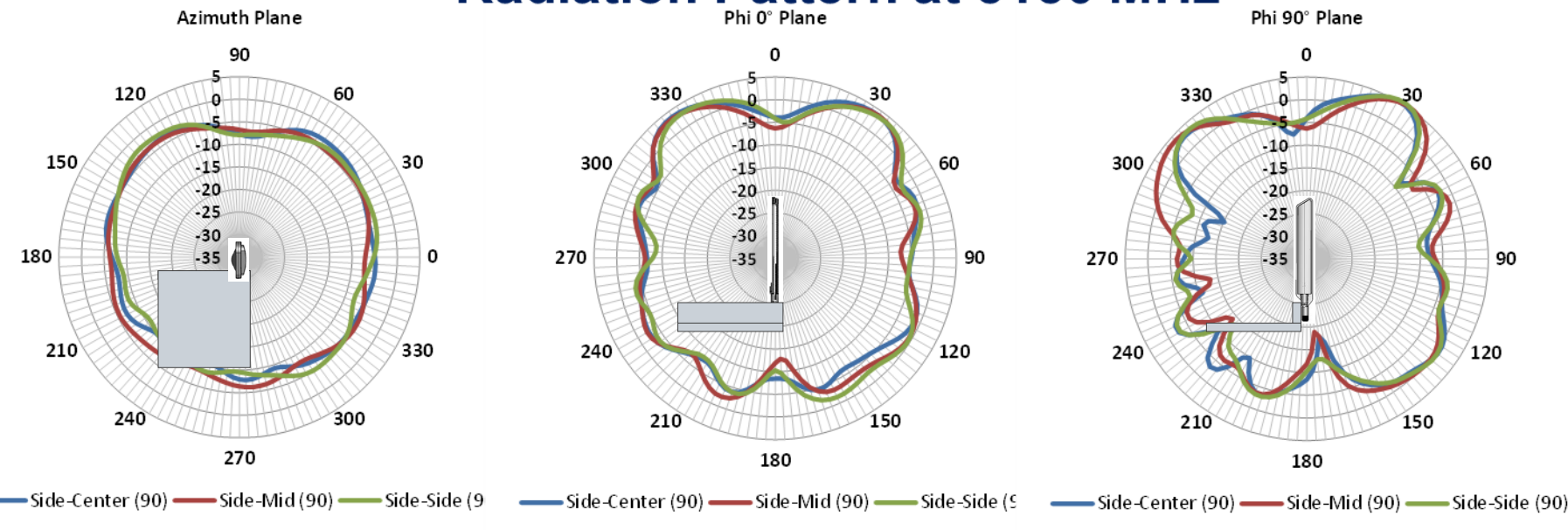
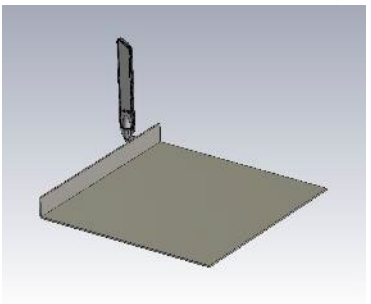


— Side-Center (90) — Side-Mid (90) — Side-Side (90) — Side-Center (90) — Side-Mid (90) — Side-Side (90) — Side-Center (90) — Side-Mid (90) — Side-Side (90)

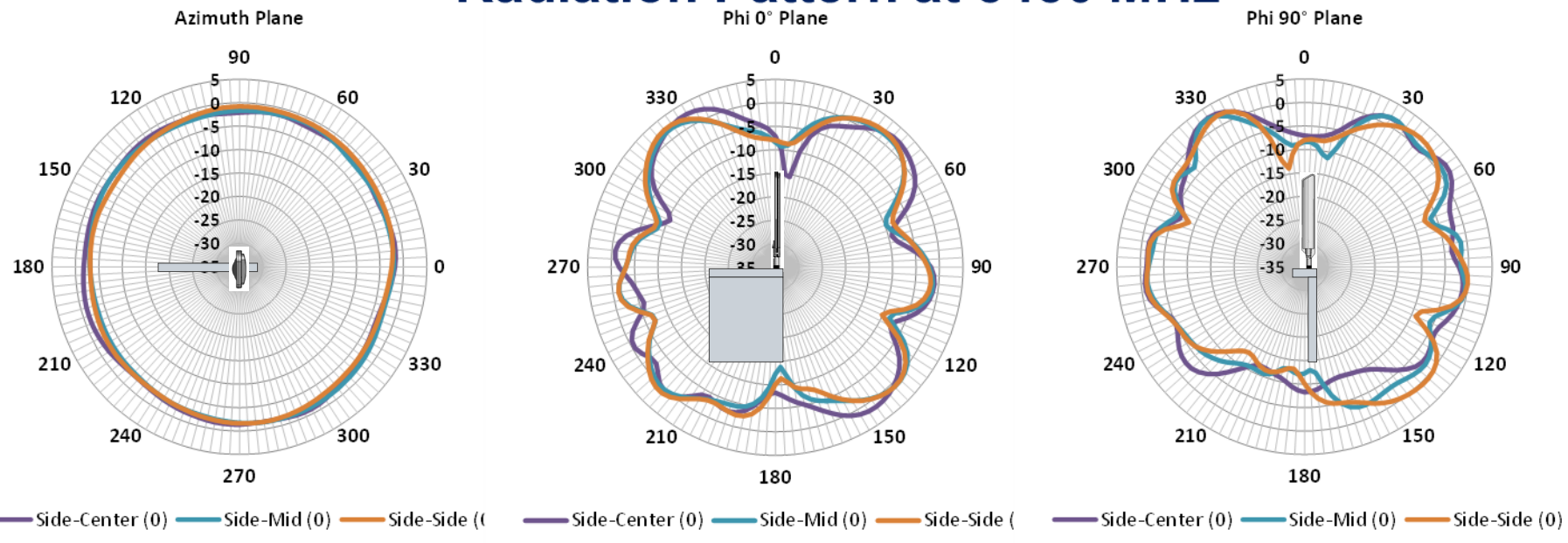
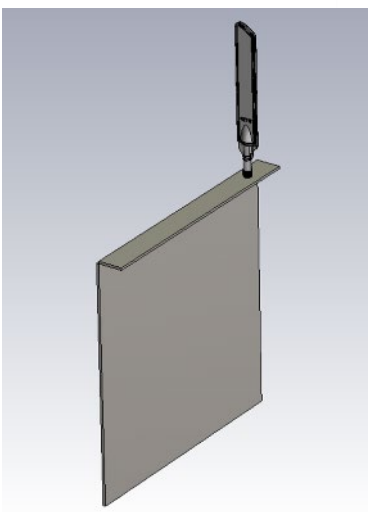
Radiation Pattern at 5150 MHz



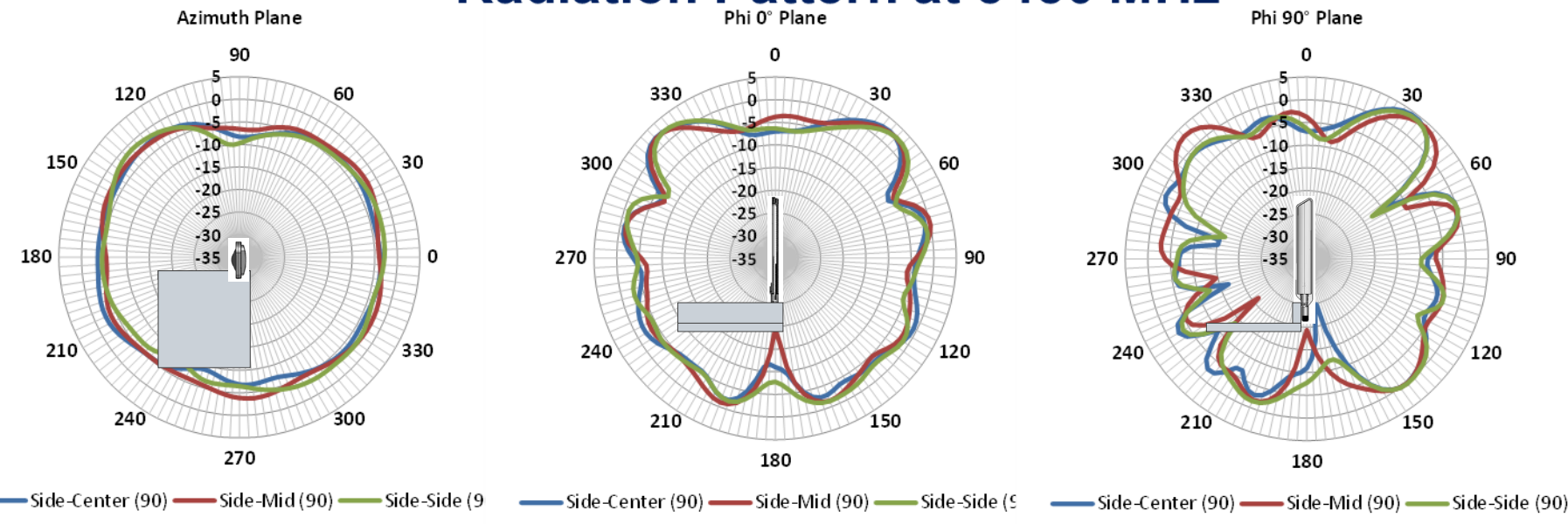
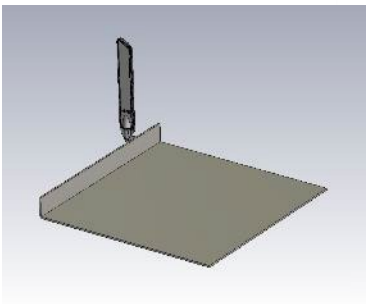
Radiation Pattern at 5150 MHz



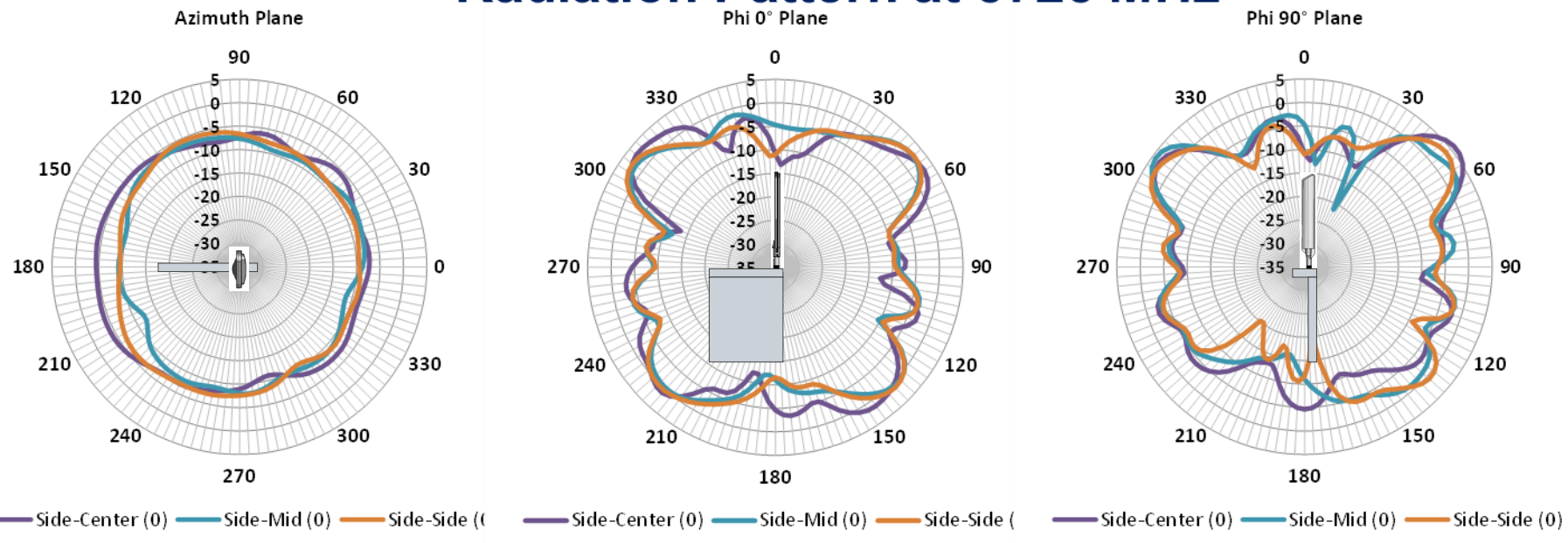
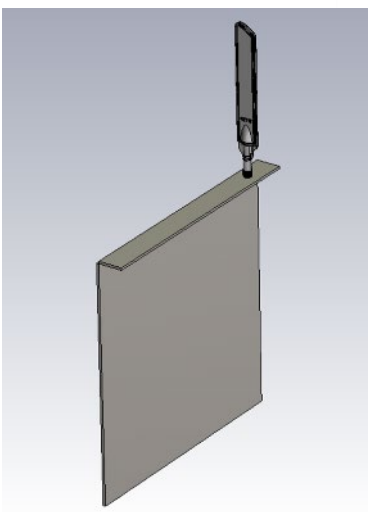
Radiation Pattern at 5450 MHz



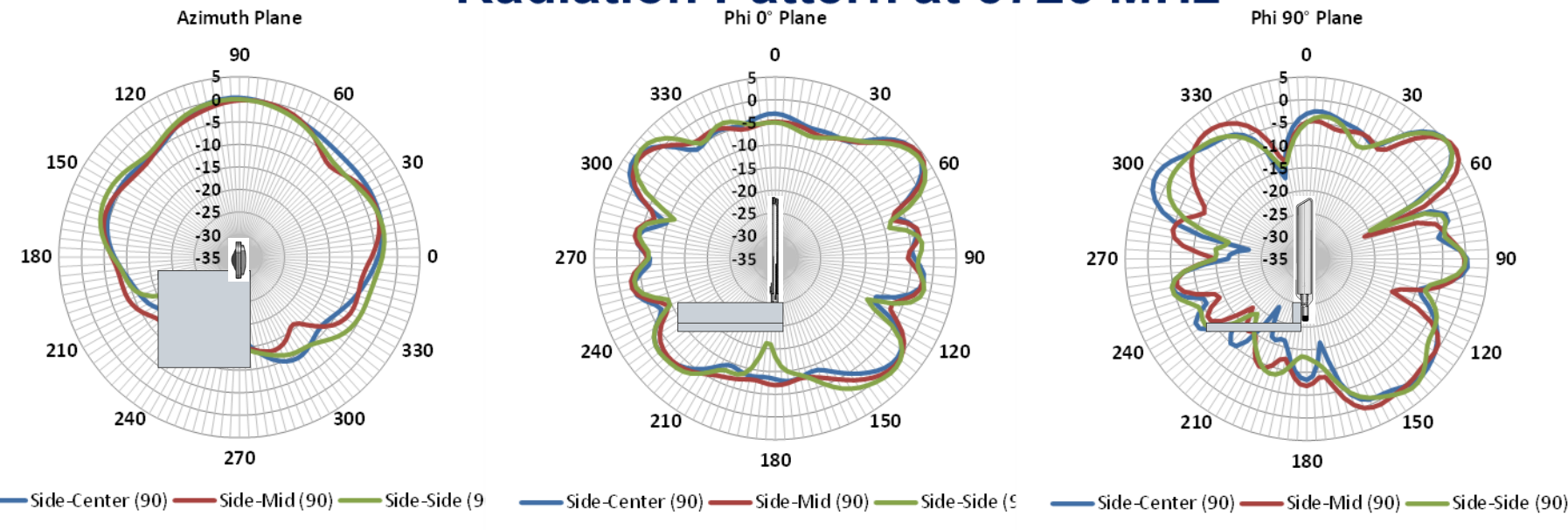
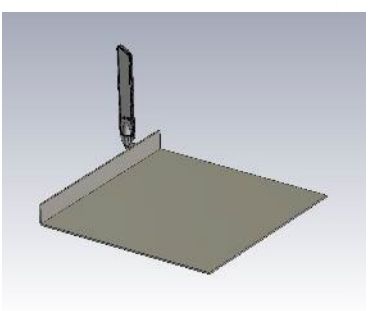
Radiation Pattern at 5450 MHz



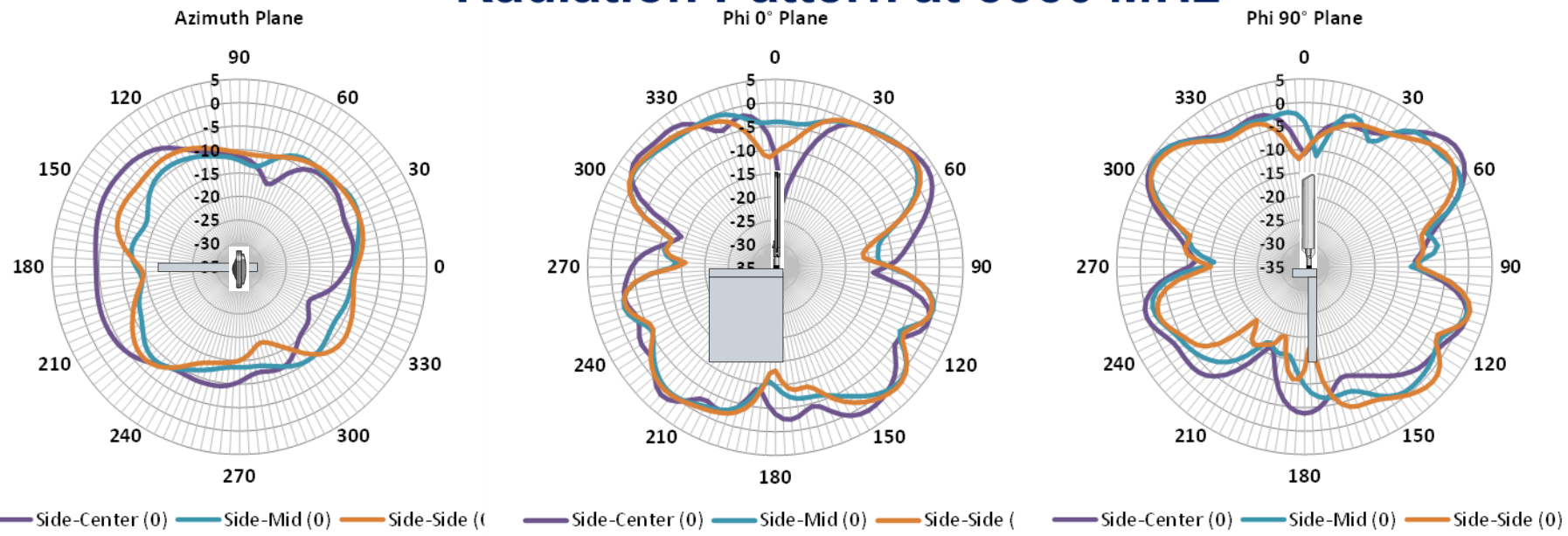
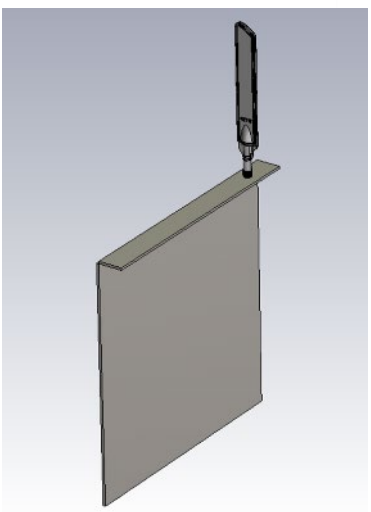
Radiation Pattern at 5725 MHz



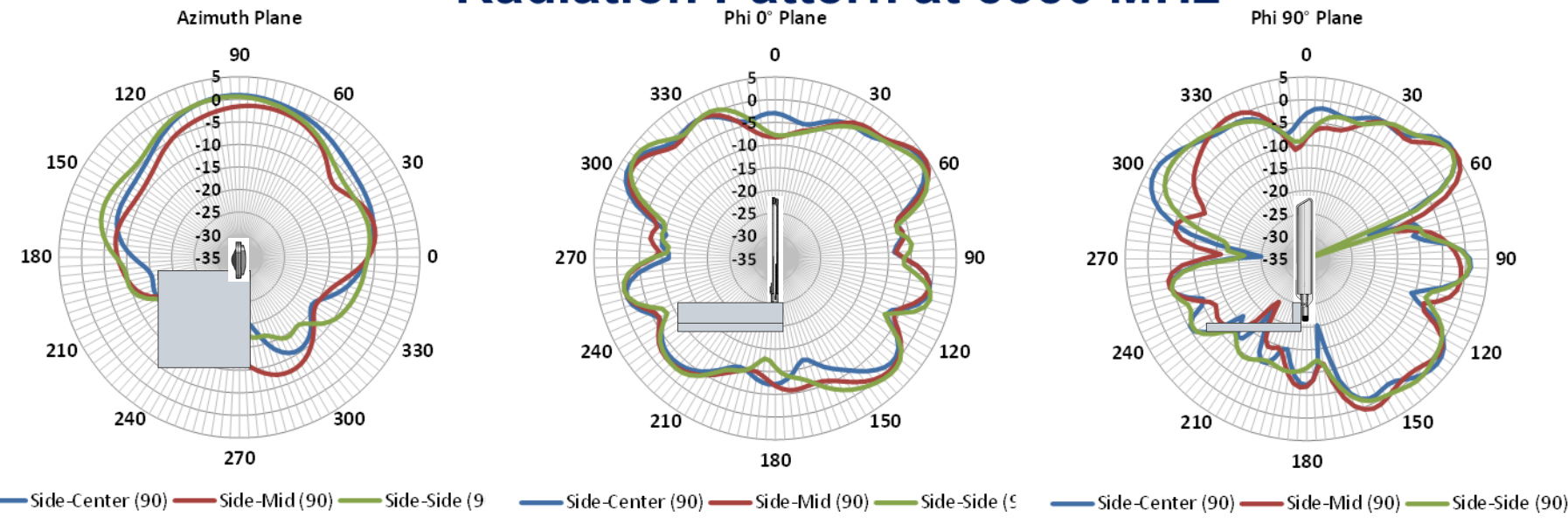
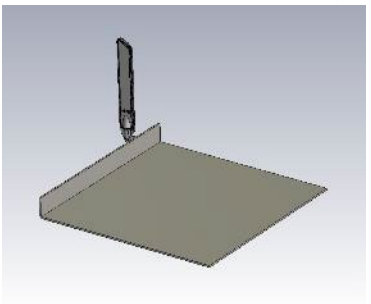
Radiation Pattern at 5725 MHz



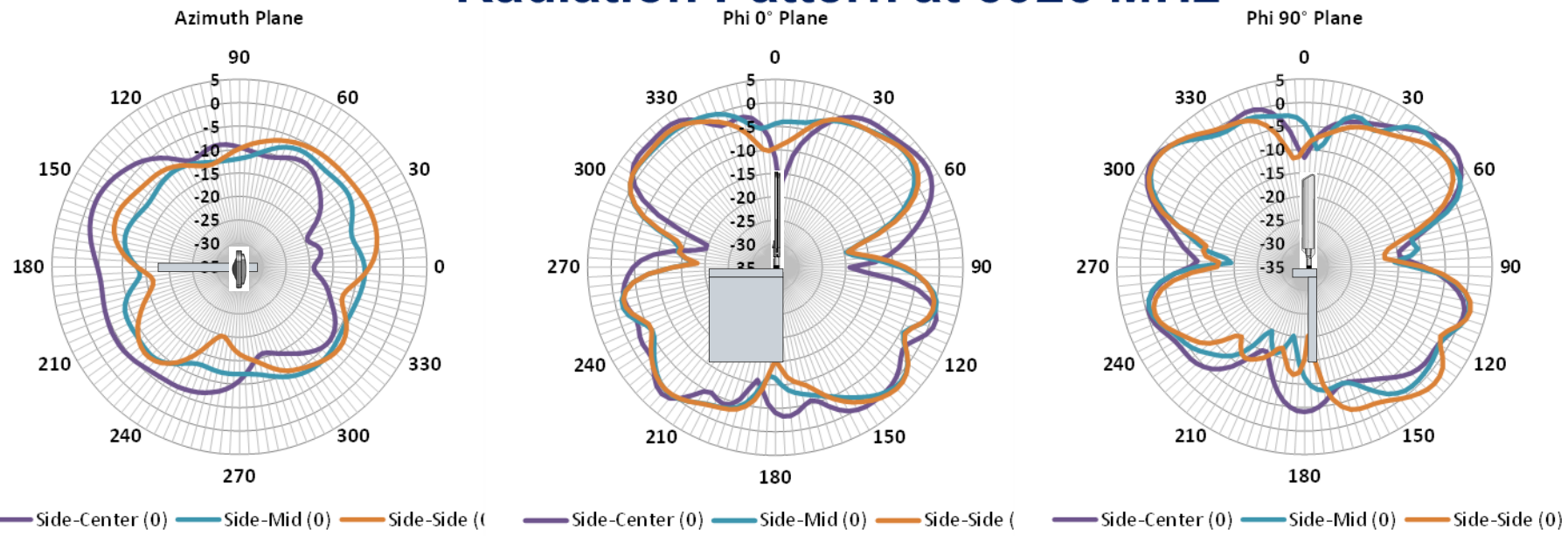
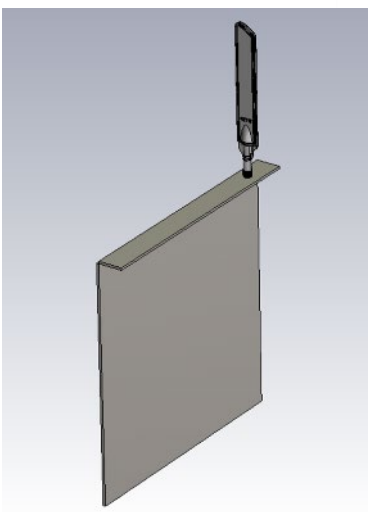
Radiation Pattern at 5850 MHz



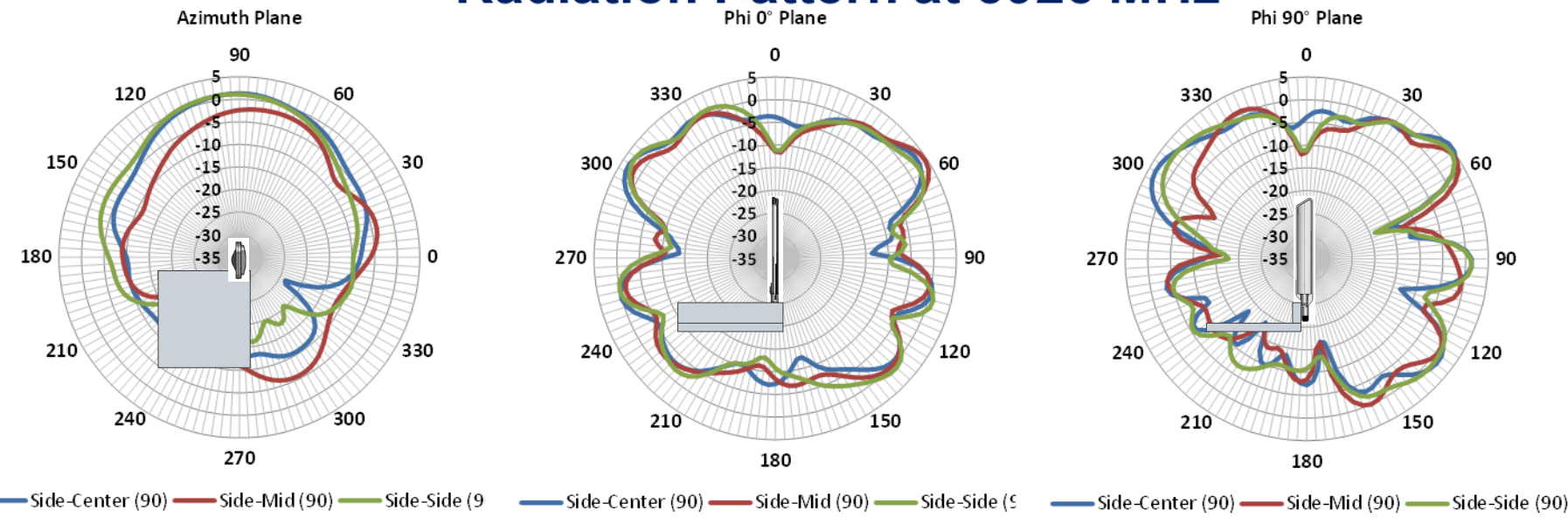
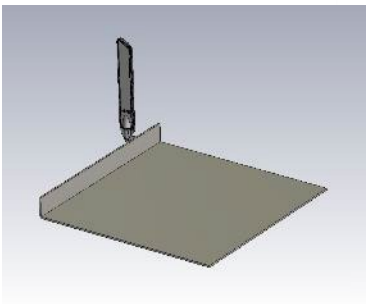
Radiation Pattern at 5850 MHz



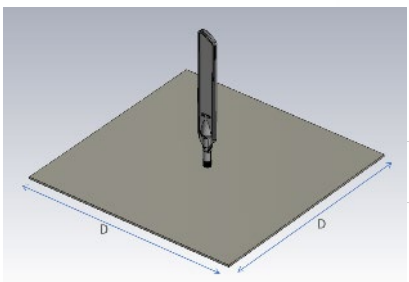
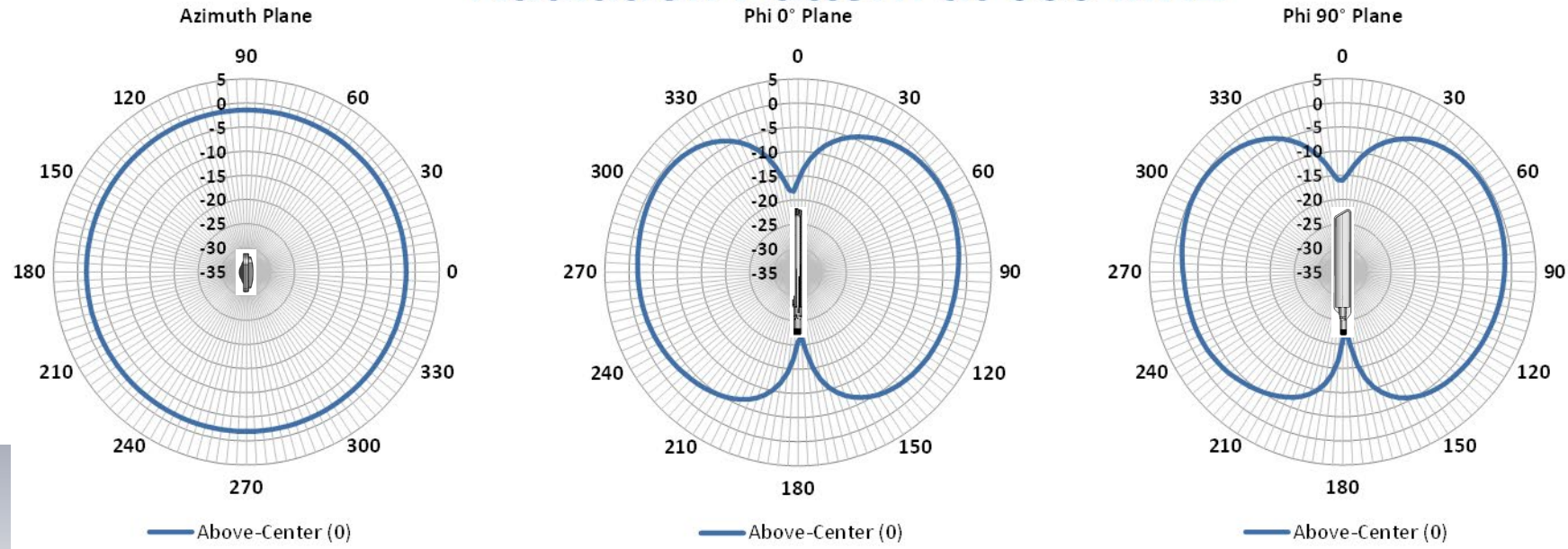
Radiation Pattern at 5925 MHz



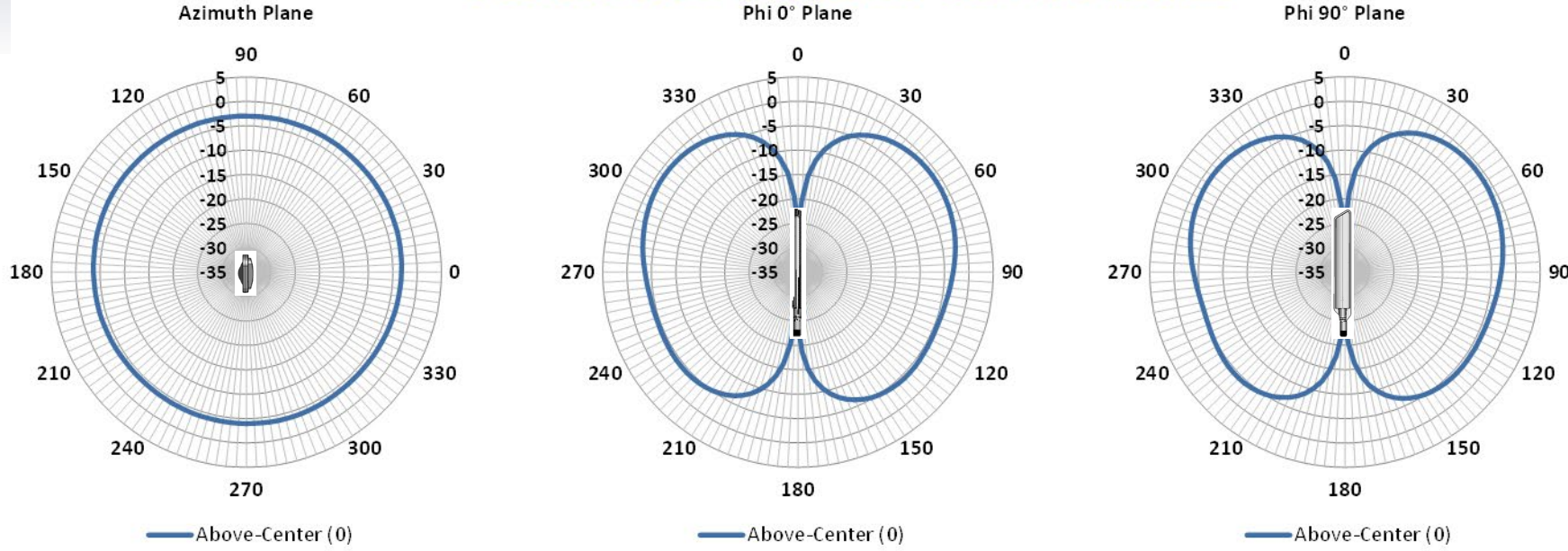
Radiation Pattern at 5925 MHz



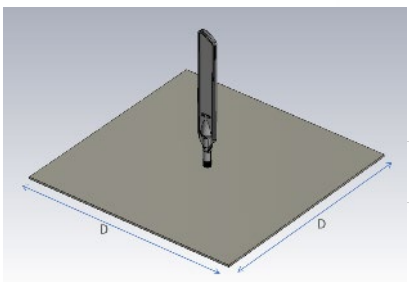
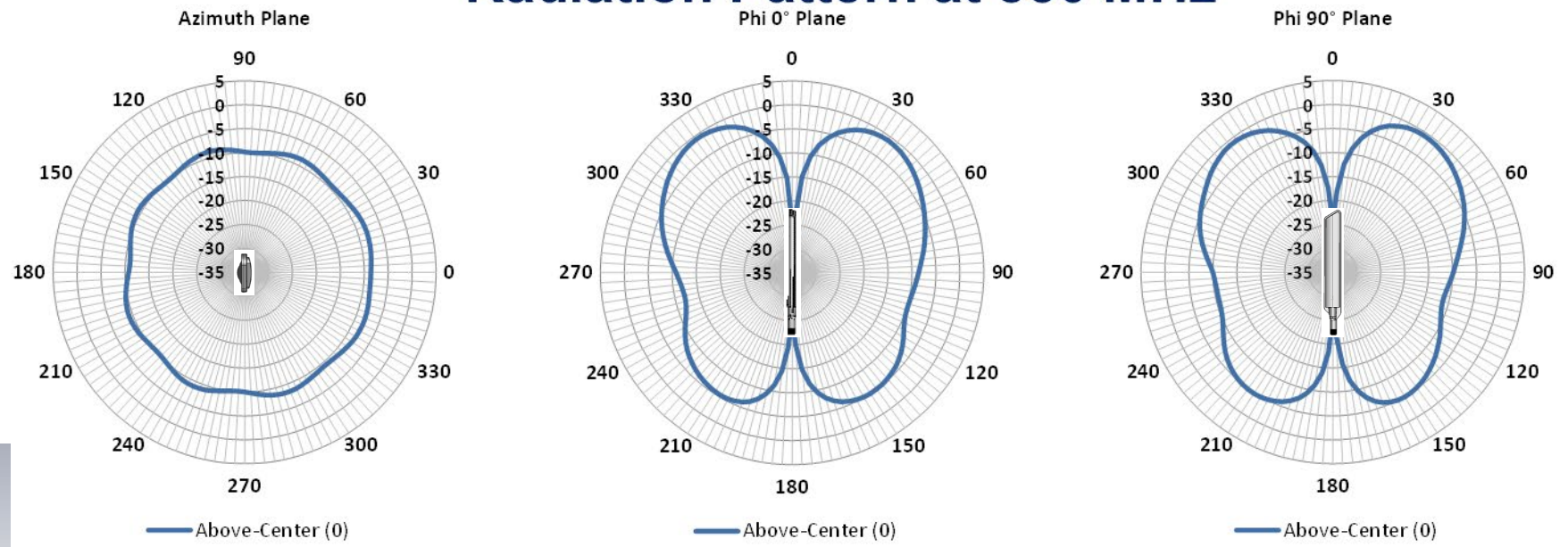
Radiation Pattern at 633 MHz



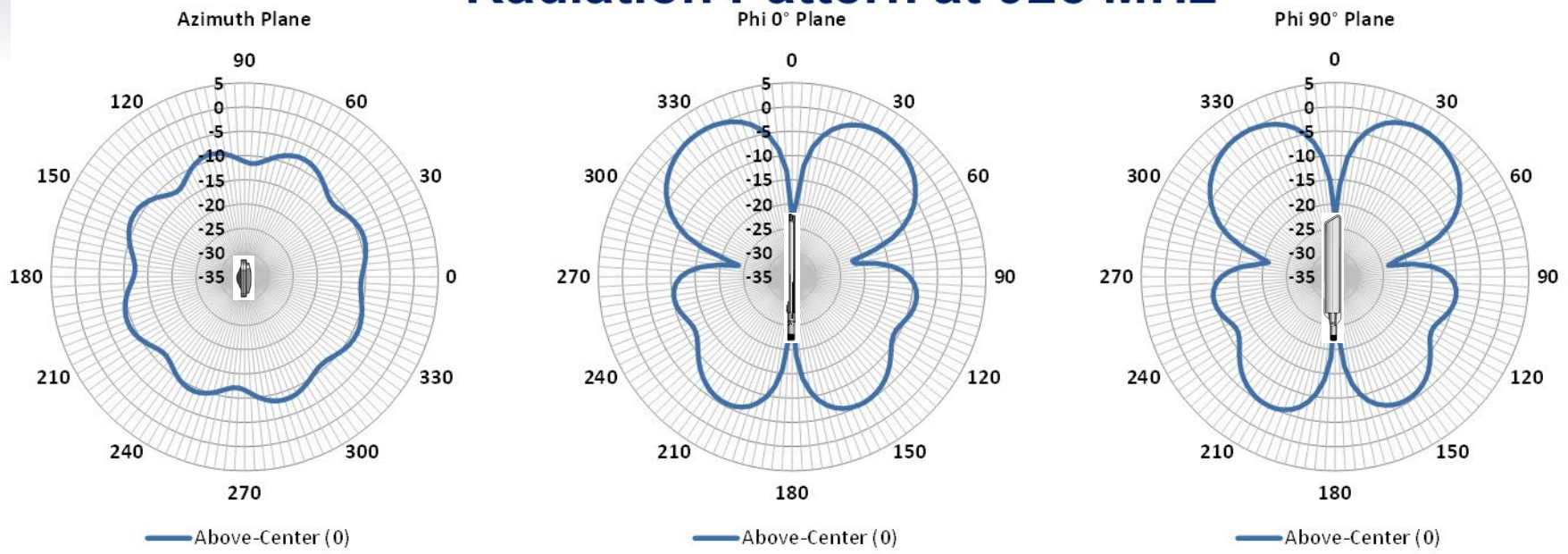
Radiation Pattern at 725 MHz



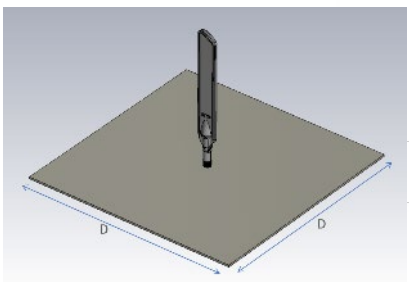
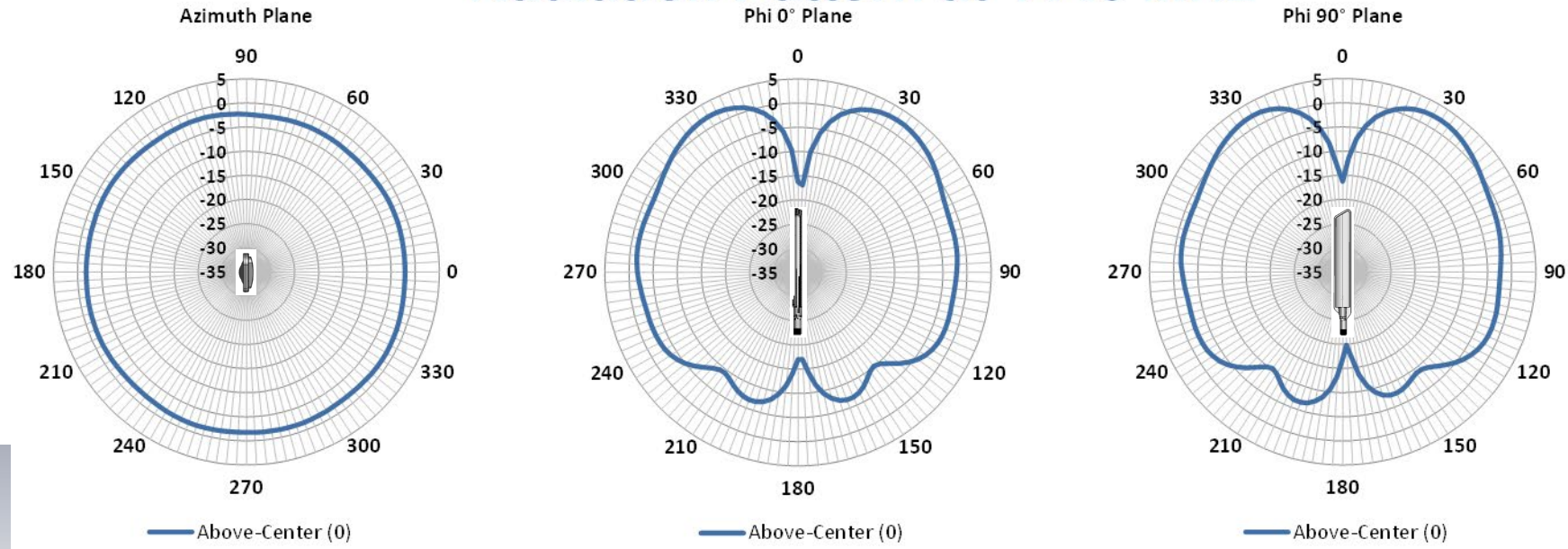
Radiation Pattern at 850 MHz



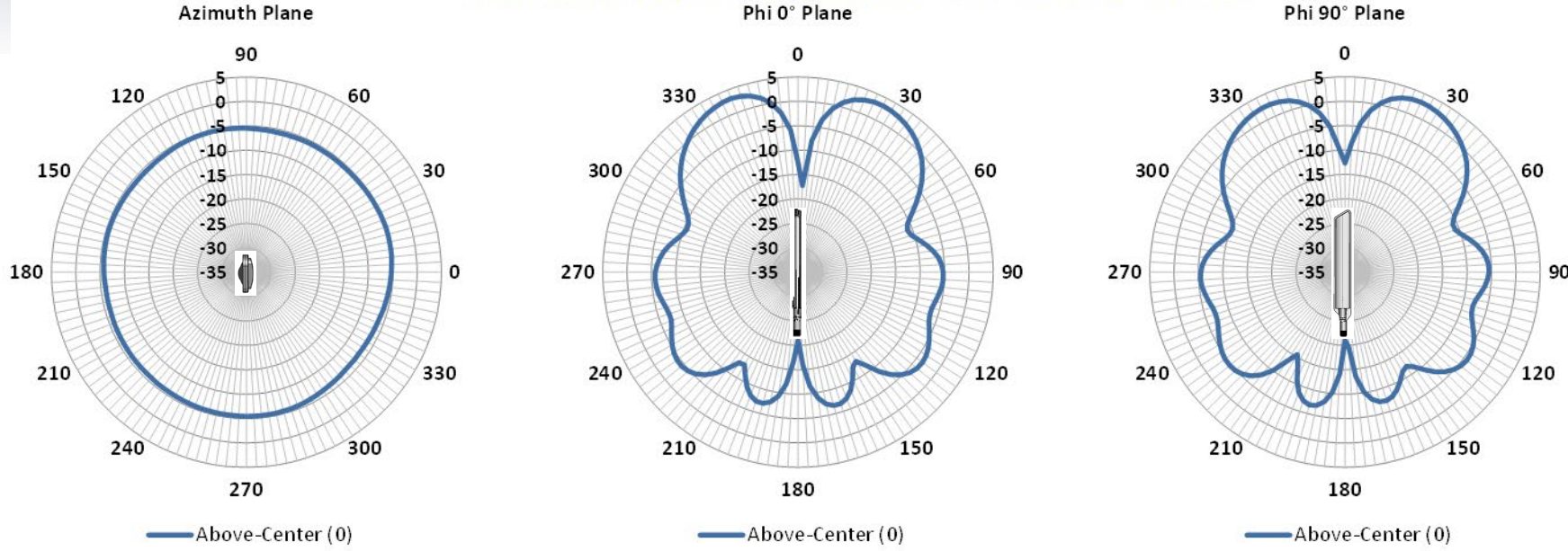
Radiation Pattern at 925 MHz



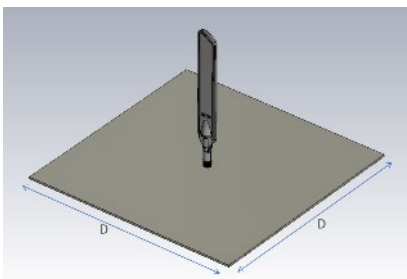
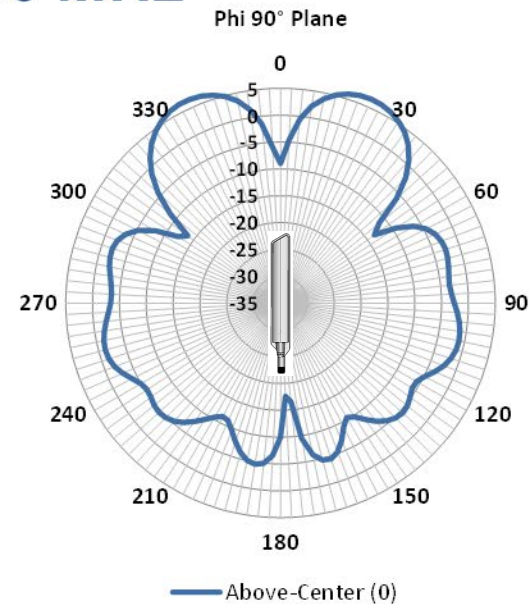
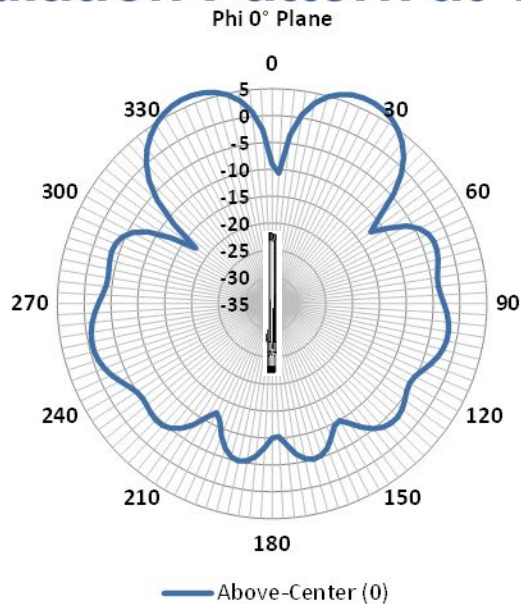
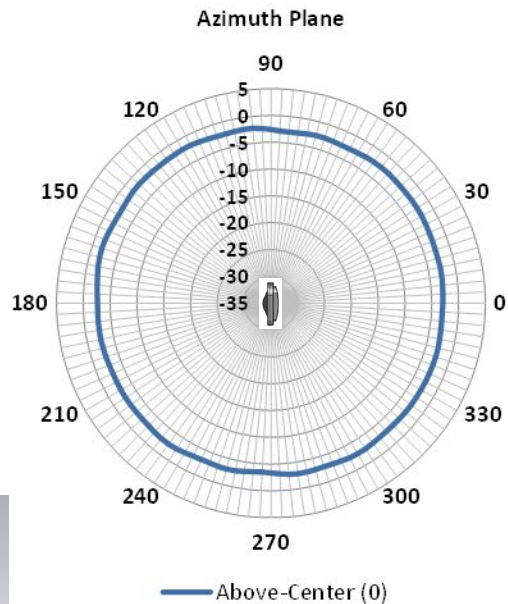
Radiation Pattern at 1448 MHz



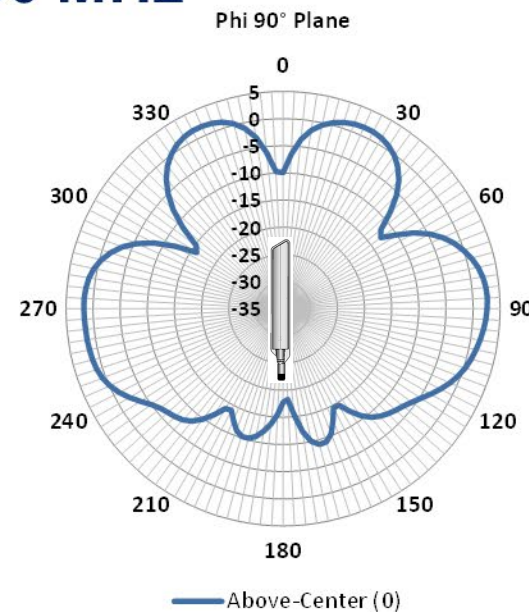
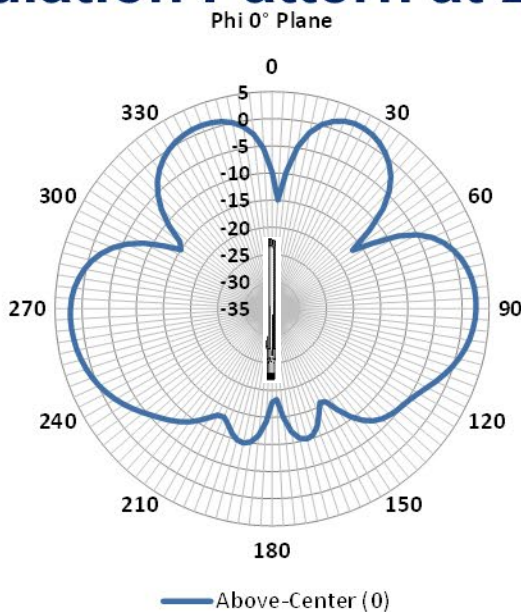
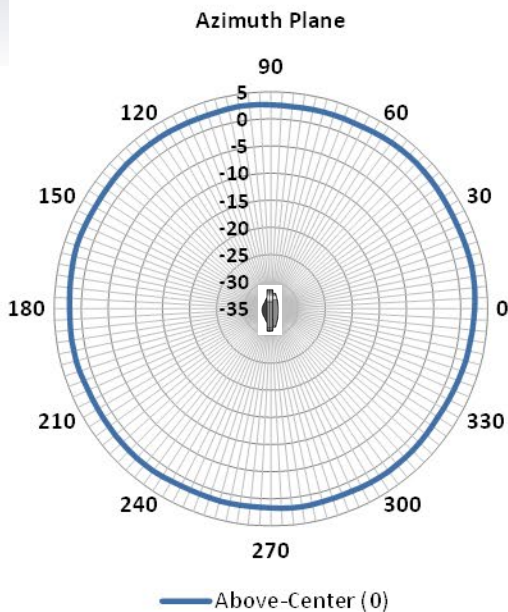
Radiation Pattern at 1730 MHz



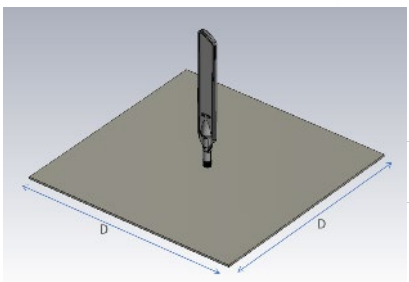
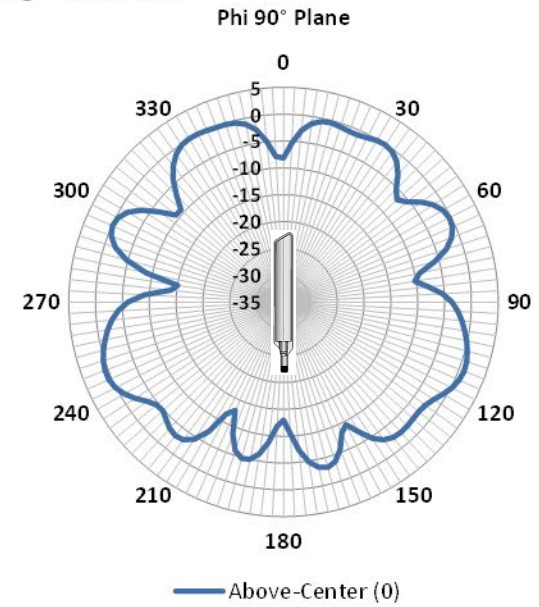
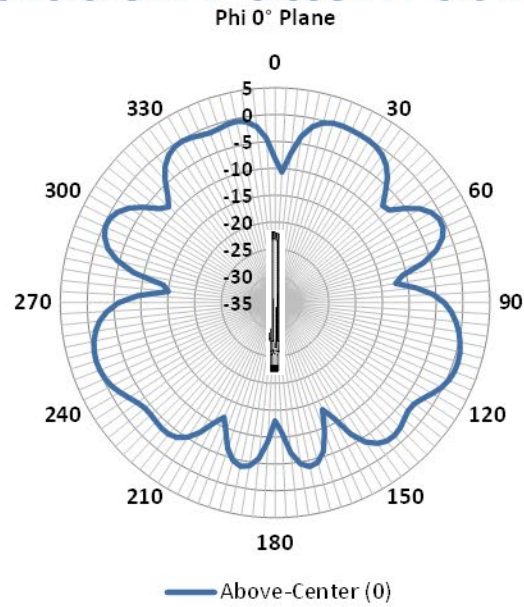
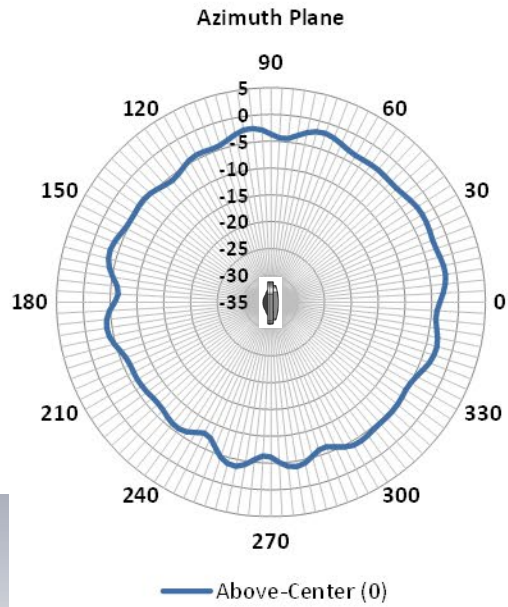
Radiation Pattern at 1930 MHz



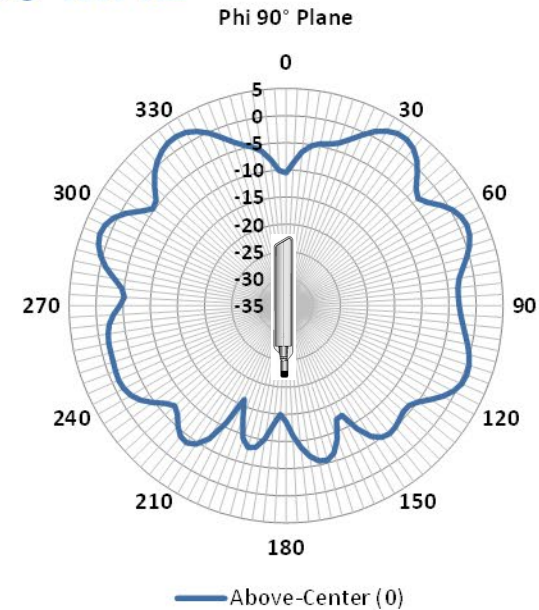
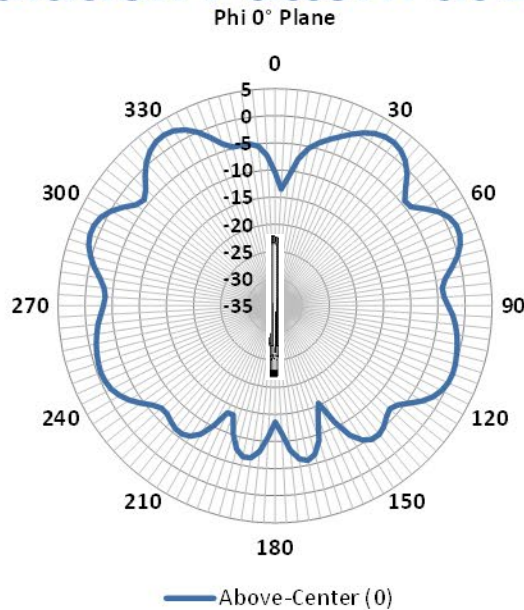
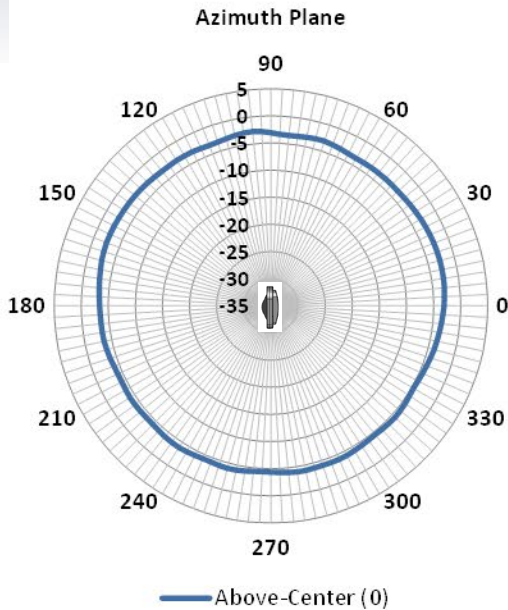
Radiation Pattern at 2130 MHz



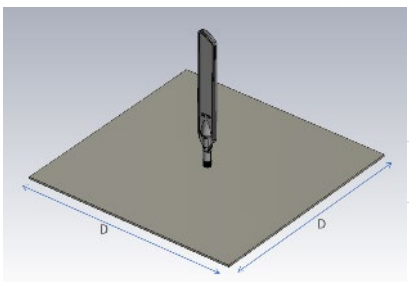
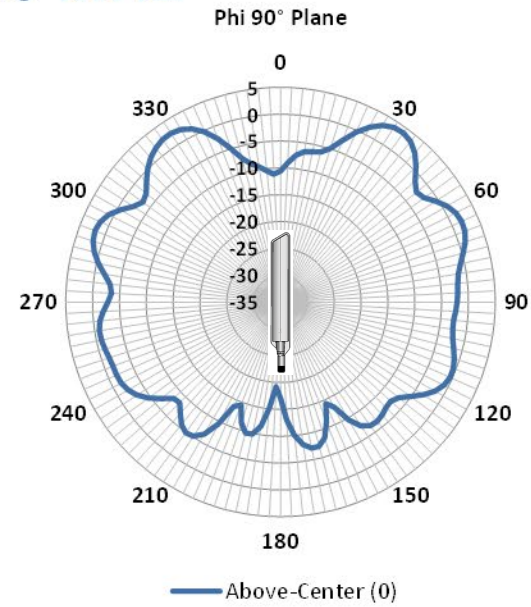
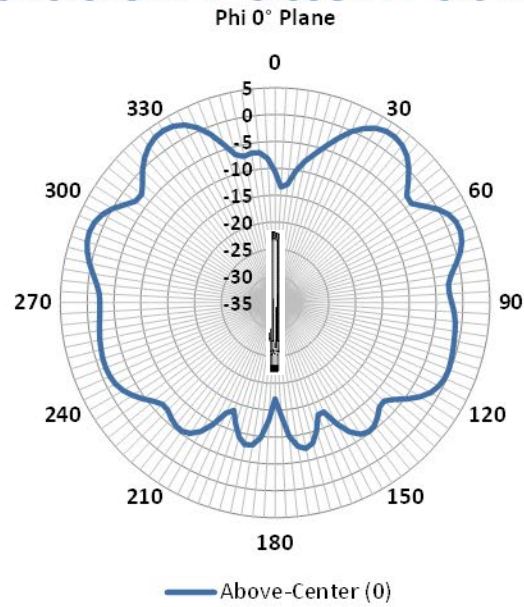
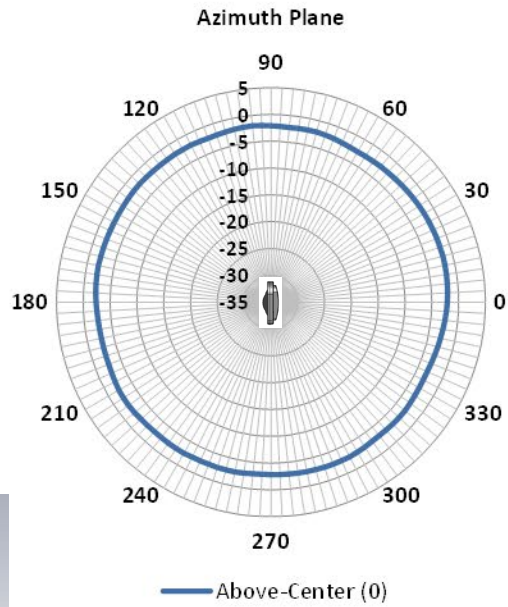
Radiation Pattern at 2310 MHz



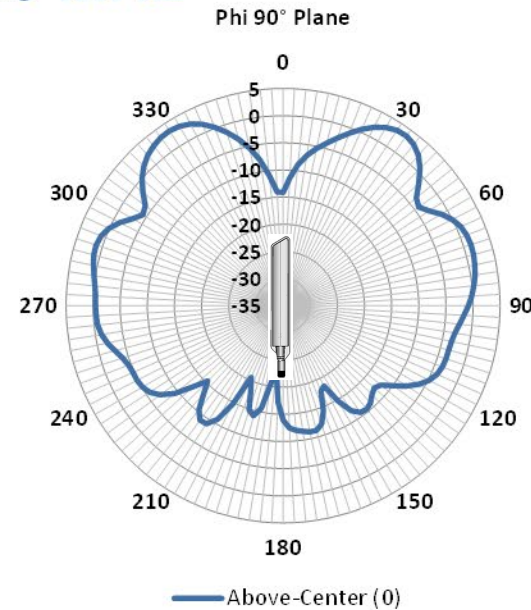
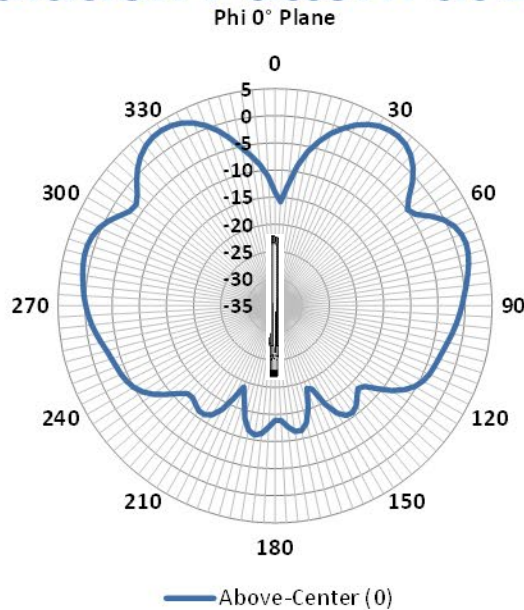
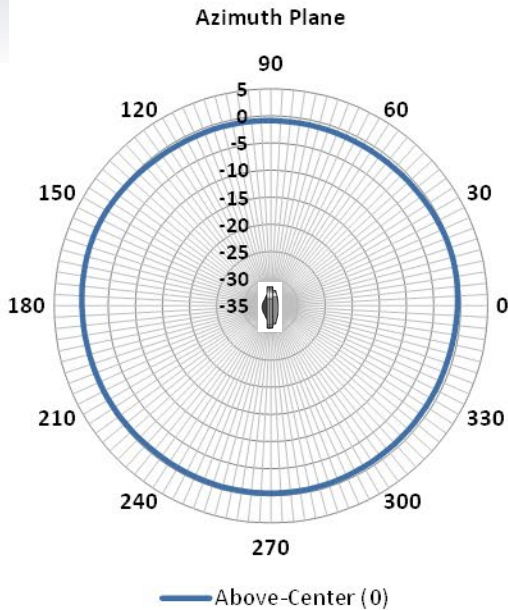
Radiation Pattern at 2450 MHz



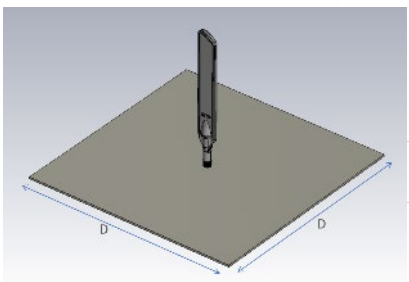
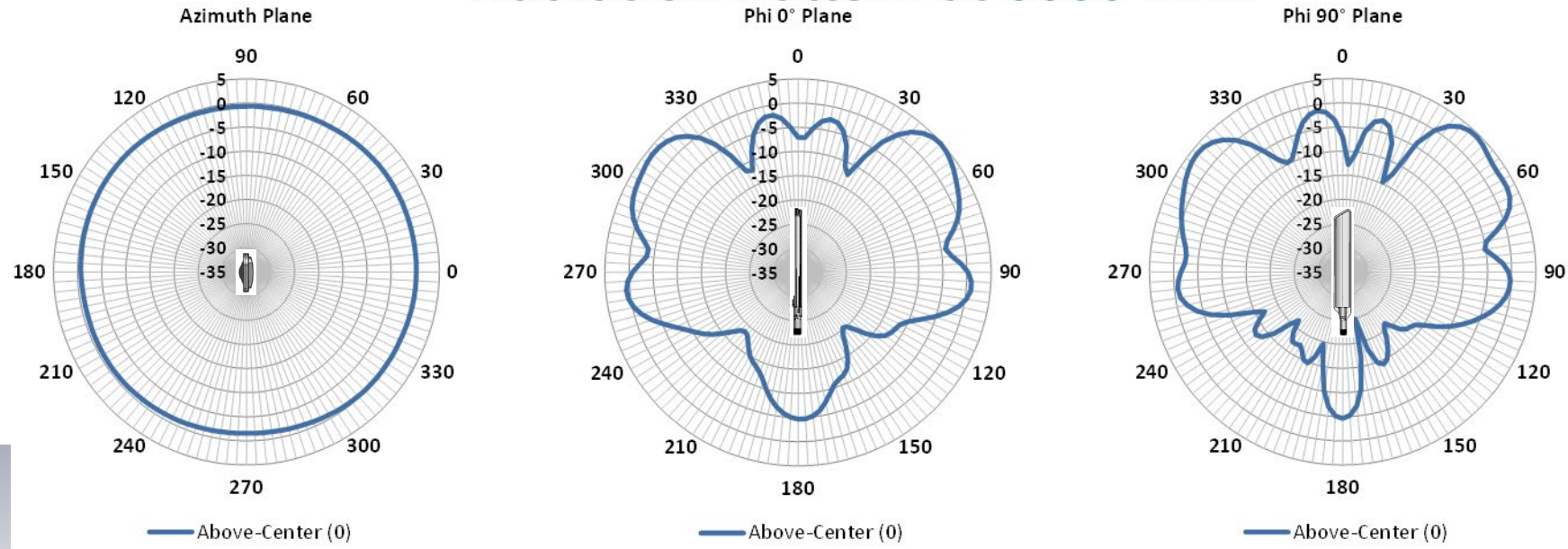
Radiation Pattern at 2500 MHz



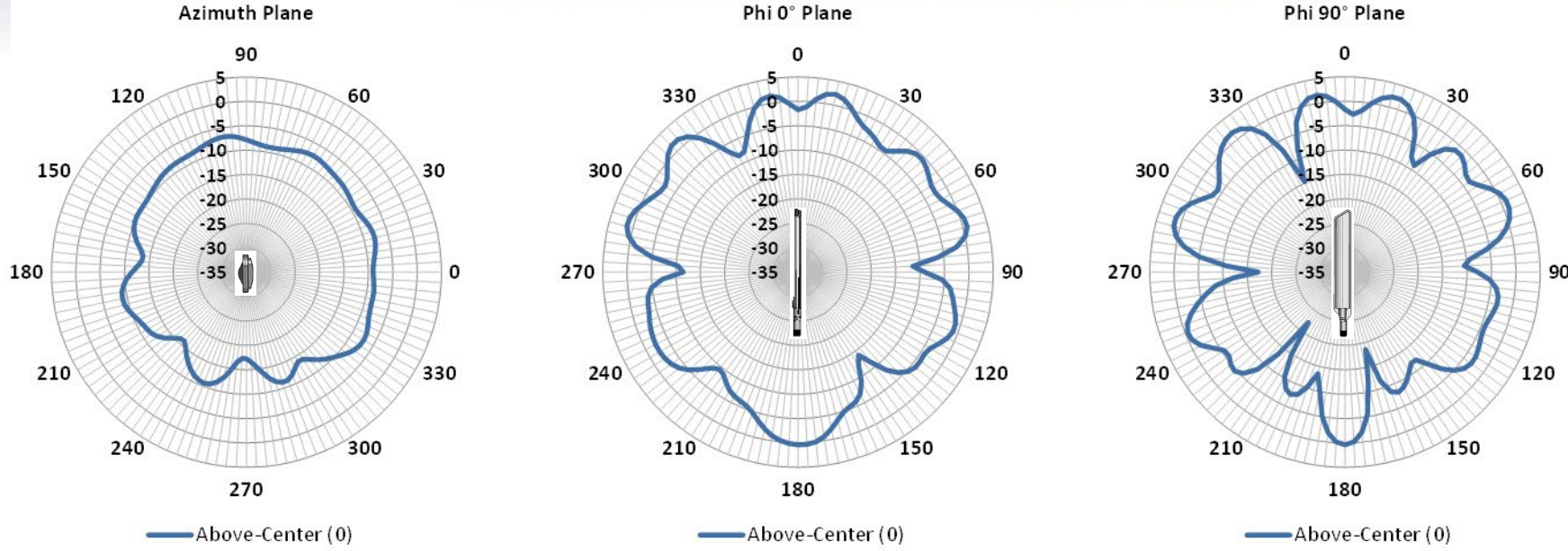
Radiation Pattern at 2600 MHz



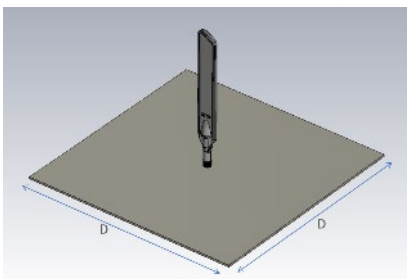
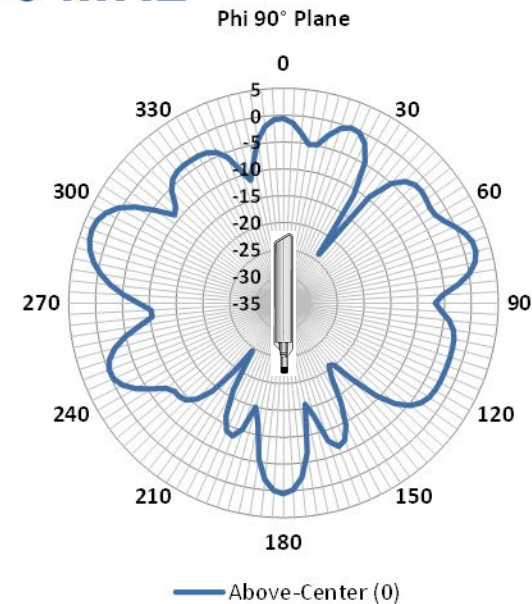
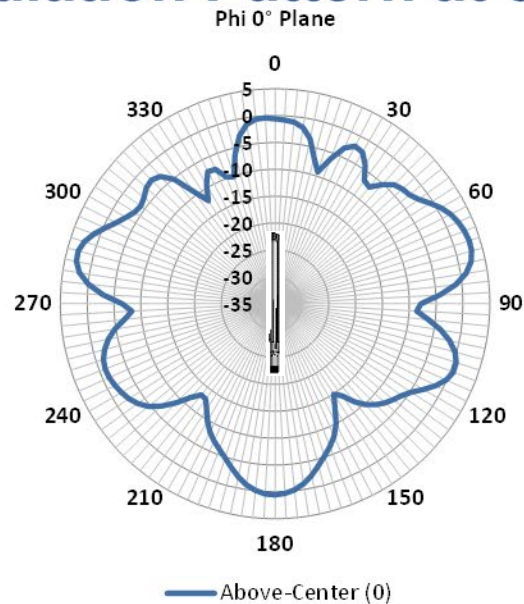
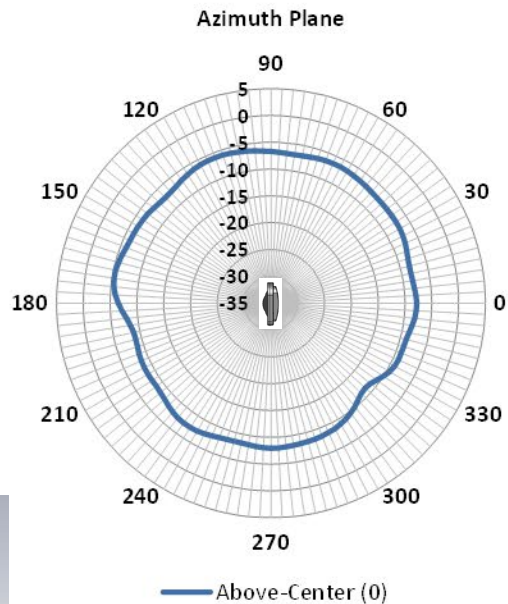
Radiation Pattern at 3300 MHz



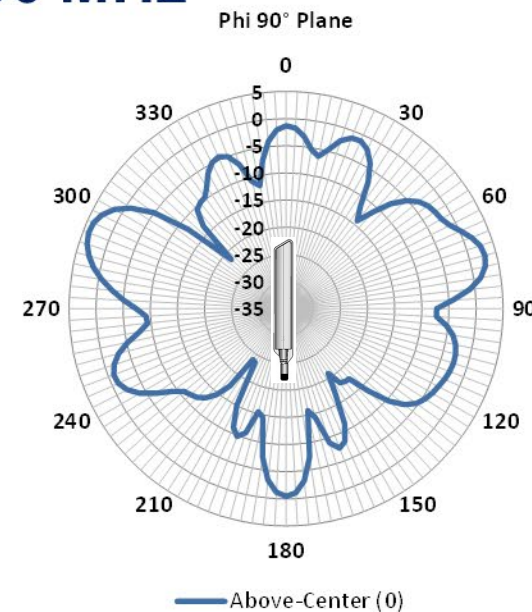
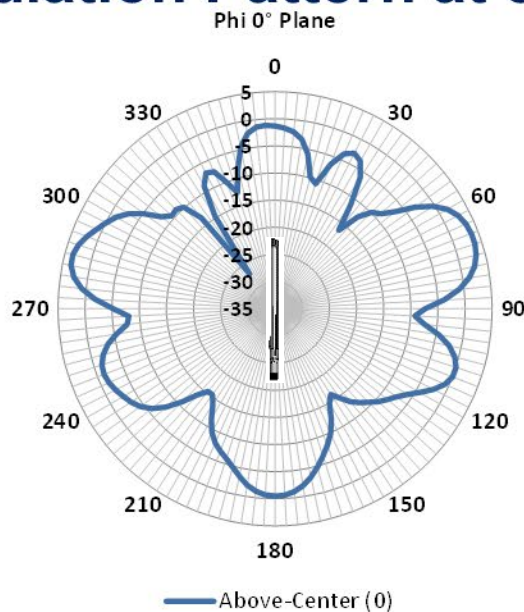
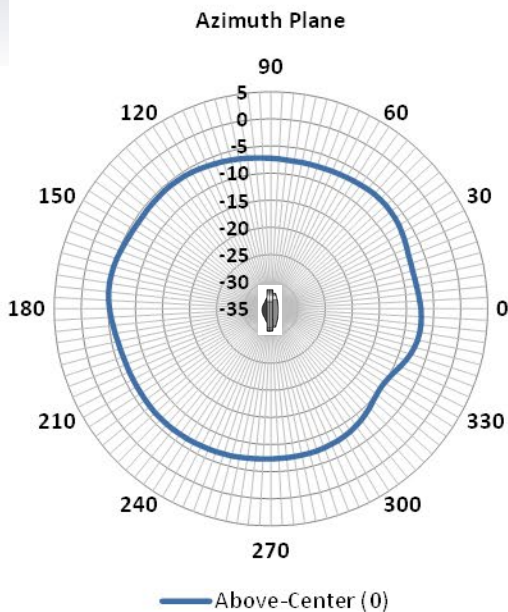
Radiation Pattern at 3500 MHz



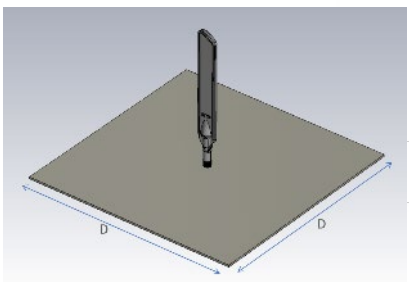
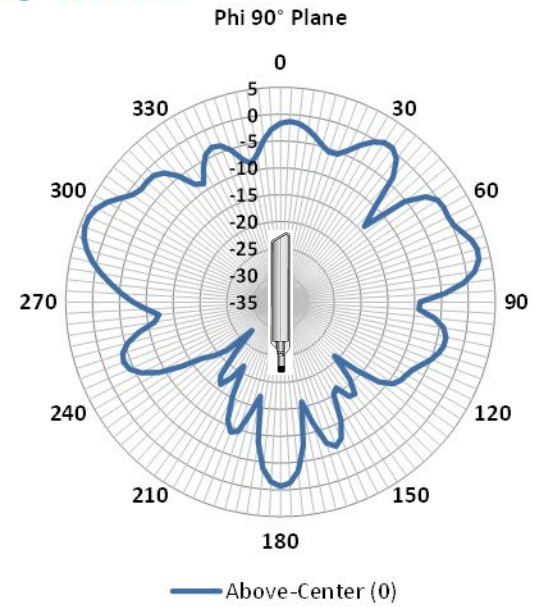
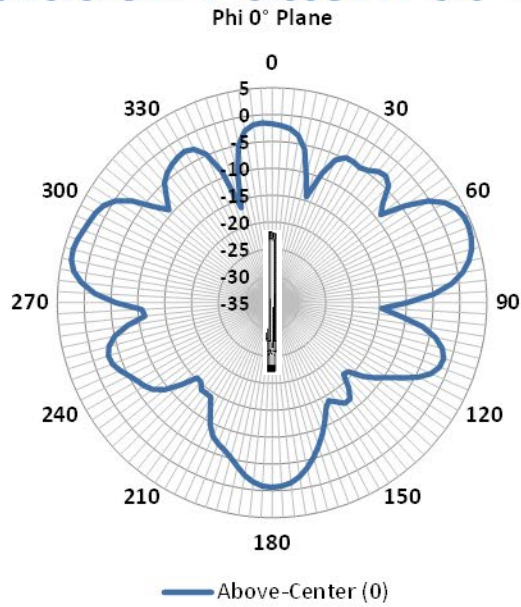
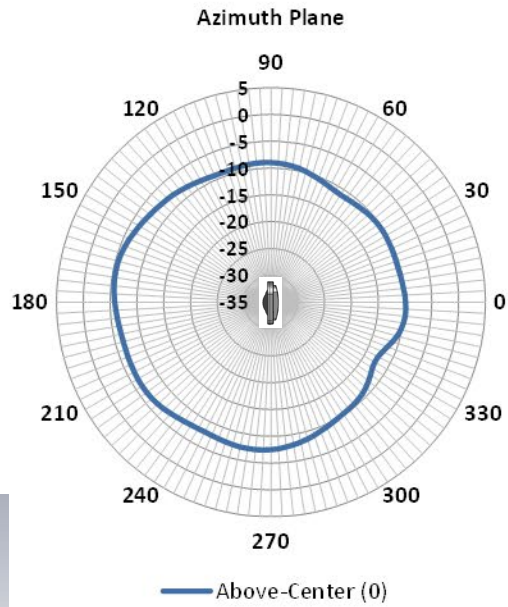
Radiation Pattern at 3700 MHz



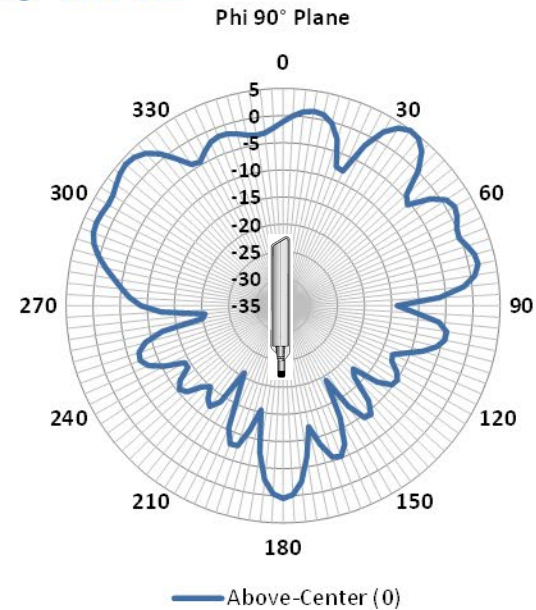
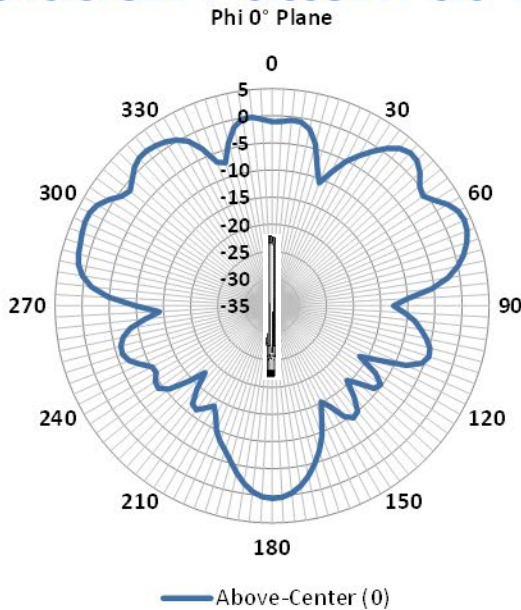
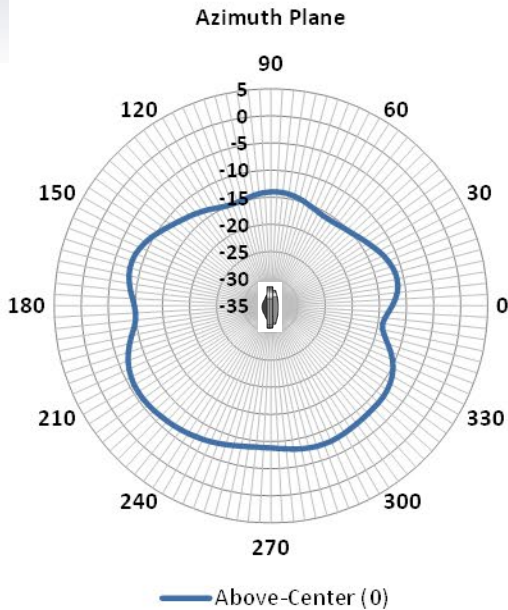
Radiation Pattern at 3800 MHz



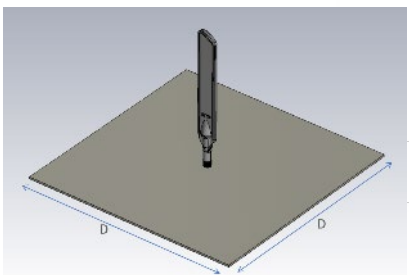
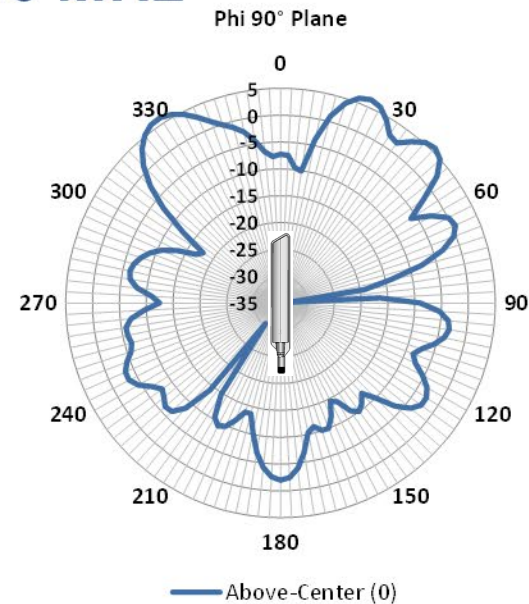
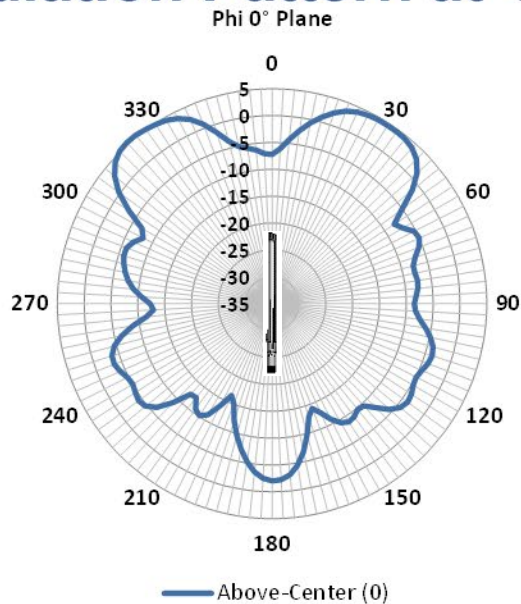
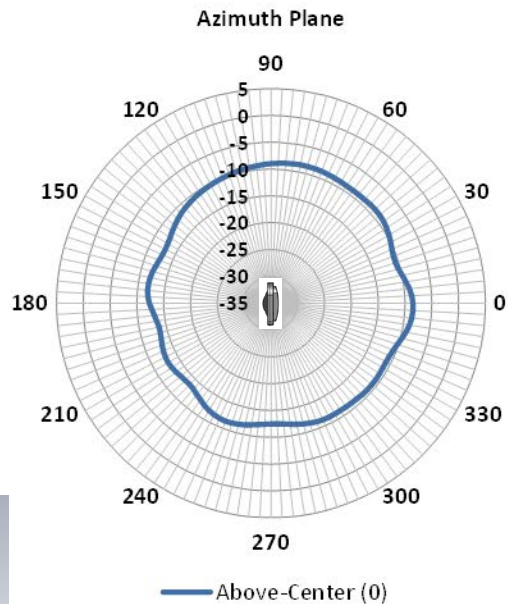
Radiation Pattern at 4000 MHz



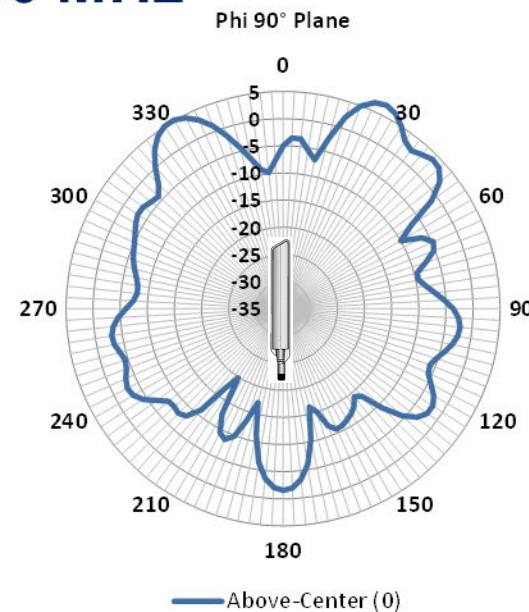
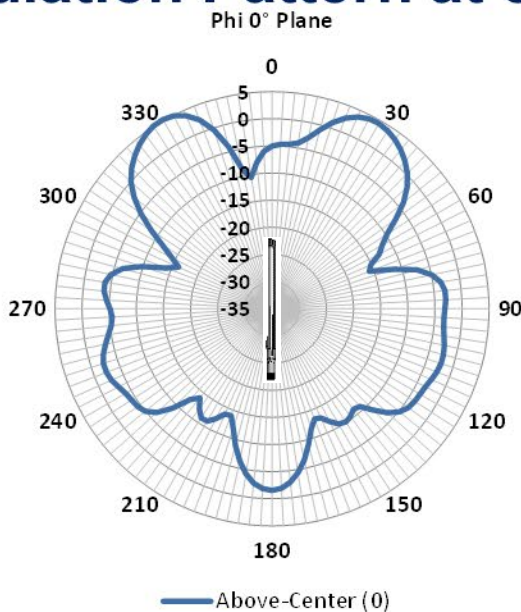
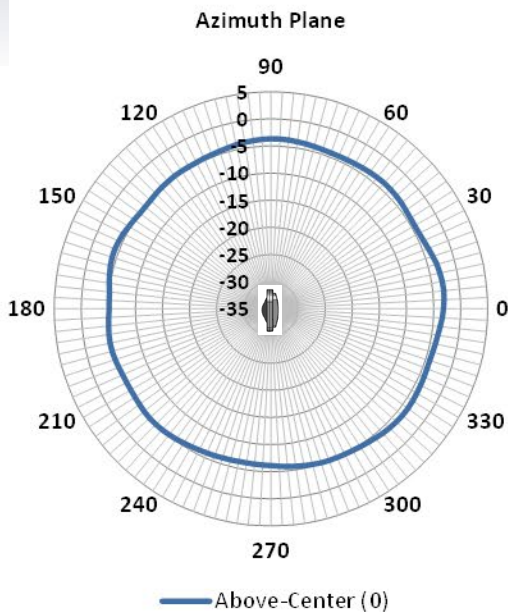
Radiation Pattern at 4200 MHz



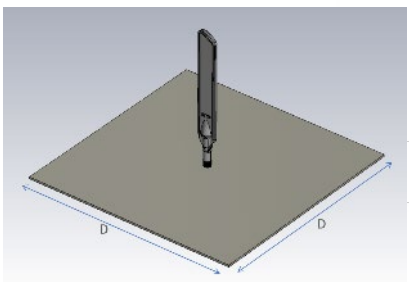
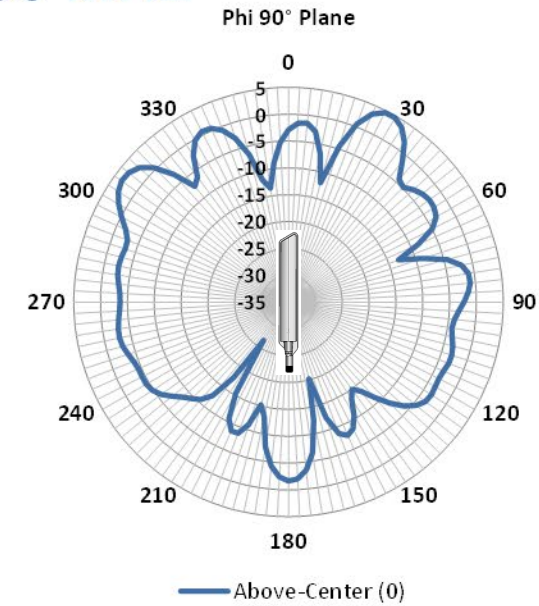
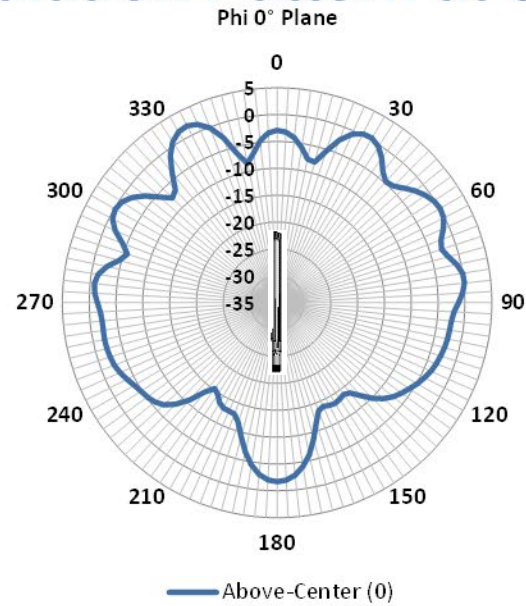
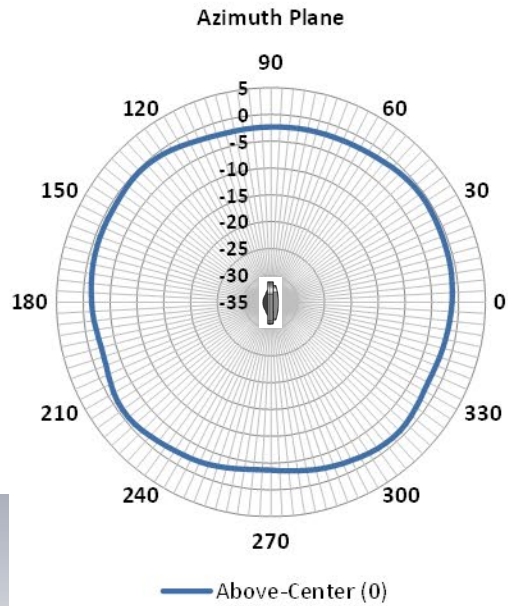
Radiation Pattern at 4900 MHz



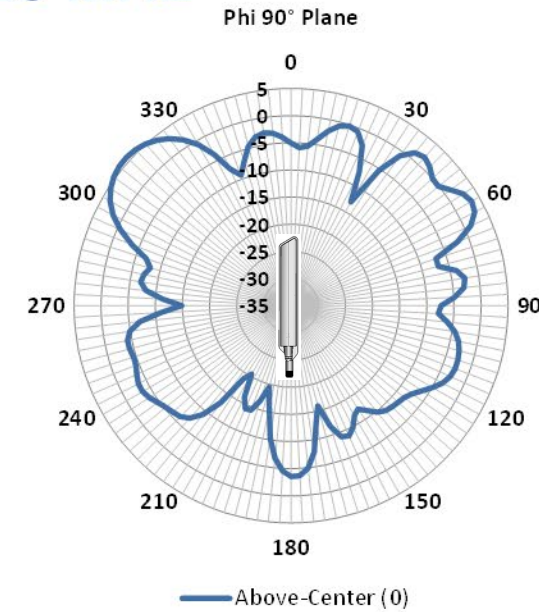
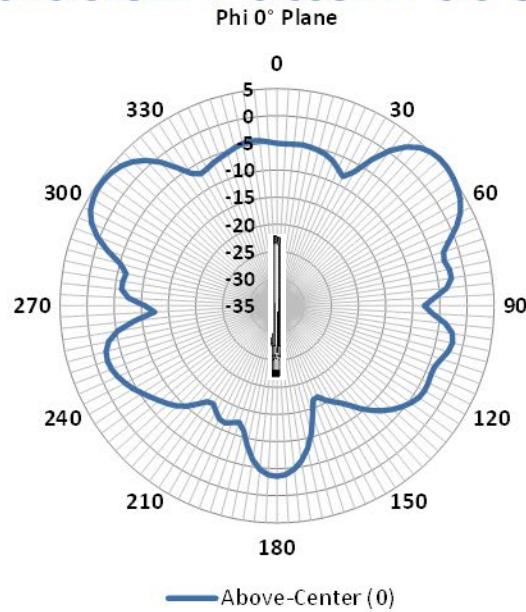
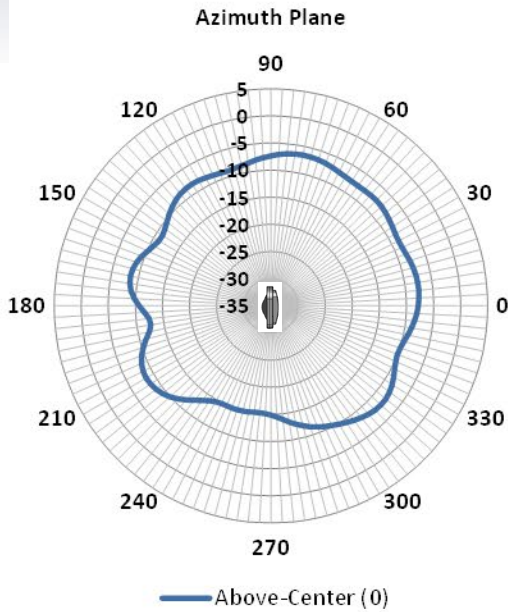
Radiation Pattern at 5150 MHz



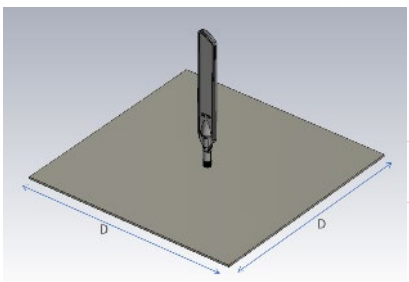
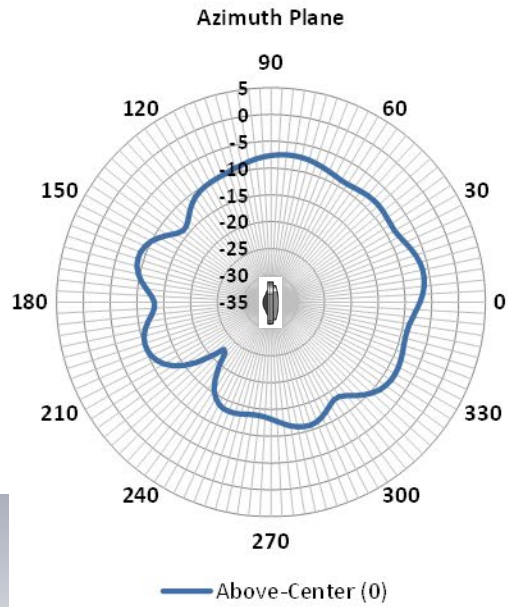
Radiation Pattern at 5450 MHz



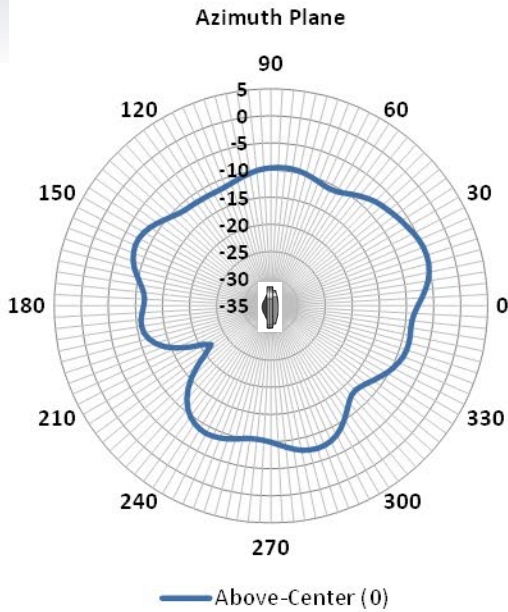
Radiation Pattern at 5725 MHz



Radiation Pattern at 5850 MHz



Radiation Pattern at 5925 MHz



**ANY
CONNECTION
CAN CHANGE
THE WORLD**

EVERY CONNECTION COUNTS

