



## Chapter 14 Reflector Antennas

### GTD Pattern of Offset Elliptical Reflector

Aperture Radius (in.) X-axis: 5.901  
 Aperture Radius (in.) Y-axis: 5.901  
 Focal Length (in.): 5.075  
 Offset along X-axis: .000  
 X-Plane Beamwidth: 120.00  
 Y-Plane Beamwidth: 120.00 @ 10.00 dB  
 Pointing of Feed from Axis: .00 (180.00)  
 Reflector Subtended Angle: 120.69  
 Left Hand Circular Feed  
 Euler Angles: .00 180.00 .00  
 Axes of Rotation: 1 X-axis, 2 Y-axis, 3 Z-axis: 3 2 3  
 Feed Location:  
 X-axis (in.): .000  
 Y-axis (in.): .000  
 Z-axis (in.): 5.075  
 Aperture Plane Location along Z-axis: 3.500  
 Aperture Integration Radius 10.000  
 Number of integration points: 61  
 Plane of Scan (Phi): .00  
 Output of Reflected Component Only  
  
 Theta Pattern Angle: .00  
 Phi Pattern Angle: .00

Frequency GHz	Theta		Phi		RHC		LHC	
	Ampl.	Phase	Ampl.	Phase	Ampl.	Phase	Ampl.	Phase
1.000	5.90	-171.6	5.90	98.4	8.91	-171.6-141.48		.0
1.200	7.49	136.1	7.49	46.1	10.50	136.1-240.00		.0
1.400	8.83	83.8	8.83	-6.2	11.84	83.8-135.40		-97.1
1.600	9.99	31.5	9.99	-58.5	13.00	31.5-135.46		90.0
1.800	11.01	-20.8	11.01	-110.8	14.02	-20.8-134.49		153.4
2.000	11.93	-73.1	11.93	-163.1	14.94	-73.1-135.46		90.0
2.200	12.75	-125.4	12.75	144.6	15.76	-125.4-240.00		.0
2.400	13.51	-177.7	13.51	92.3	16.52	-177.7-129.43		3.6
2.600	14.20	130.0	14.20	40.0	17.21	130.0-129.44		90.0
2.800	14.85	77.7	14.85	-12.3	17.86	77.7-141.48		180.0
3.000	15.45	25.3	15.45	-64.7	18.46	25.3-129.44		180.0
3.200	16.01	-27.0	16.01	-117.0	19.02	-27.0-126.43		135.0
3.400	16.53	-79.3	16.53	-169.3	19.54	-79.3-141.48		180.0
3.600	17.03	-131.6	17.03	138.4	20.04	-131.6-126.43		45.0
3.800	17.50	176.1	17.50	86.1	20.51	176.1-147.50		90.0
4.000	17.95	123.8	17.95	33.8	20.96	123.8-129.44		90.0
4.200	18.37	71.5	18.37	-18.5	21.38	71.5-135.46		180.0
4.400	18.77	19.2	18.77	-70.8	21.78	19.2-123.42		180.0
4.600	19.16	-33.1	19.16	-123.1	22.17	-33.1-123.42		180.0
4.800	19.53	-85.5	19.53	-175.5	22.54	-85.5-117.38		93.6
5.000	19.88	-137.8	19.88	132.2	22.89	-137.8-119.90		90.0
5.200	20.22	169.9	20.22	79.9	23.23	169.9-123.35		-7.1
5.400	20.55	117.6	20.55	27.6	23.56	117.6-117.40		90.0
5.600	20.87	65.3	20.87	-24.7	23.88	65.3-129.44		180.0
5.800	21.17	13.0	21.17	-77.0	24.18	13.0-123.16		-166.0
6.000	21.47	-39.3	21.47	-129.3	24.48	-39.3-120.41		135.0
6.200	21.75	-91.6	21.75	178.4	24.76	-91.6-240.00		.0
6.400	22.03	-143.9	22.03	126.1	25.04	-143.9-117.40		.0
6.600	22.30	163.7	22.30	73.7	25.31	163.7-122.45		26.6
6.800	22.55	111.4	22.55	21.4	25.57	111.4-123.42		90.0
7.000	22.81	59.1	22.81	-30.9	25.82	59.1-129.44		180.0
7.200	23.05	6.8	23.05	-83.2	26.06	6.8-117.40		180.0
7.400	23.29	-45.5	23.29	-135.5	26.30	-45.5-120.41		135.0
7.600	23.52	-97.8	23.52	172.2	26.53	-97.8-129.44		.0
7.800	23.75	-150.1	23.75	119.9	26.76	-150.1-115.46		36.9
8.000	23.97	157.6	23.97	67.6	26.98	157.6-113.88		.0

# Chapter 14 Reflector Antennas

8.200	24.18	105.3	24.18	15.3	27.19	105.3-123.42	.0
8.400	24.39	53.0	24.39	-37.0	27.40	53.0-117.40	90.0
8.600	24.59	.6	24.59	-89.4	27.60	.6-117.40	179.6
8.800	24.79	-51.7	24.79	-141.7	27.80	-51.7-240.00	.0
9.000	24.99	-104.0	24.99	166.0	28.00	-104.0-129.44	.0
9.200	25.18	-156.3	25.18	113.7	28.19	-156.3-129.44	90.0
9.400	25.37	151.4	25.37	61.4	28.38	151.4-240.00	.0
9.600	25.55	99.1	25.55	9.1	28.56	99.1-240.00	.0
9.800	25.73	46.8	25.73	-43.2	28.74	46.8-113.88	90.0
10.000	25.90	-5.5	25.90	-95.5	28.91	-5.5-141.48	90.0

Theta Pattern Angle: .00  
Phi Pattern Angle: .00

Frequency	Theta	Phi	RHC	LHC
GHz	Ampl. Phase	Ampl. Phase	Ampl. Phase	Ampl. Phase

20.000 31.93 -101.1 31.93 168.9 34.94 -101.1-129.44 .0  
Aperture Plane Location along Z-axis: 3.500  
Aperture Integration Radius 10.000  
Number of integration points: 61  
Plane of Scan (Phi): .00  
Output of Sum of Reflected and Diffracted Components

Theta Pattern Angle: .00  
Phi Pattern Angle: .00

Frequency	Theta	Phi	RHC	LHC
GHz	Ampl. Phase	Ampl. Phase	Ampl. Phase	Ampl. Phase

1.000	5.92	-173.5	5.92	96.6	8.93	-173.4	-62.43	69.5
1.200	7.65	134.8	7.65	44.8	10.66	134.8	-62.11	-14.3
1.400	8.99	81.6	9.00	-8.4	12.00	81.6	-62.19	-95.4
1.600	9.98	29.1	9.99	-60.9	12.99	29.1	-62.02	-174.7
1.800	10.92	-22.3	10.92	-112.3	13.93	-22.3	-61.50	107.6
2.000	11.90	-74.2	11.90	-164.2	14.91	-74.2	-60.79	28.6
2.200	12.74	-126.8	12.74	143.2	15.75	-126.8	-60.30	-52.5
2.400	13.42	-179.2	13.42	90.8	16.43	-179.2	-60.38	-133.5
2.600	14.06	129.0	14.05	39.0	17.06	129.0	-61.05	148.6
2.800	14.73	77.2	14.73	-12.8	17.74	77.2	-61.74	73.7
3.000	15.37	24.9	15.37	-65.1	18.38	24.9	-62.08	-2.0
3.200	15.90	-27.5	15.90	-117.5	18.91	-27.5	-62.19	-80.7
3.400	16.41	-79.4	16.41	-169.4	19.42	-79.4	-62.71	-165.8
3.600	16.95	-131.4	16.95	138.7	19.96	-131.4	-63.84	104.6
3.800	17.48	176.3	17.48	86.3	20.49	176.3	-65.48	13.2
4.000	17.93	123.8	17.93	33.8	20.94	123.8	-66.46	-74.5
4.200	18.35	71.6	18.35	-18.4	21.36	71.6	-65.88	-160.1
4.400	18.79	19.4	18.79	-70.6	21.80	19.4	-64.22	118.5
4.600	19.21	-33.0	19.21	-123.1	22.22	-33.1	-62.39	33.7
4.800	19.59	-85.6	19.59	-175.6	22.60	-85.6	-61.04	-51.7
5.000	19.92	-138.0	19.92	132.0	22.93	-138.0	-60.61	-134.6
5.200	20.26	169.7	20.26	79.7	23.27	169.7	-60.72	147.6
5.400	20.60	117.3	20.60	27.3	23.61	117.3	-60.77	73.2
5.600	20.90	64.8	20.90	-25.2	23.91	64.8	-60.01	-1.5
5.800	21.17	12.4	21.17	-77.6	24.18	12.4	-59.08	-80.4
6.000	21.45	-39.8	21.45	-129.8	24.46	-39.8	-58.52	-163.4
6.200	21.74	-92.0	21.74	178.0	24.75	-92.0	-58.51	114.6
6.400	22.01	-144.4	22.01	125.6	25.02	-144.4	-59.22	35.0
6.600	22.25	163.3	22.25	73.3	25.26	163.3	-59.02	-38.9
6.800	22.50	111.2	22.50	21.2	25.51	111.2	-58.33	-113.5
7.000	22.77	59.0	22.77	-31.0	25.78	59.0	-57.37	168.9
7.200	23.02	6.7	23.02	-83.4	26.03	6.7	-56.98	88.9
7.400	23.25	-45.6	23.25	-135.7	26.26	-45.7	-57.42	8.2
7.600	23.48	-97.8	23.48	172.1	26.49	-97.9	-57.98	-65.1
7.800	23.72	-150.1	23.72	119.9	26.73	-150.1	-58.43	-136.2
8.000	23.96	157.6	23.96	67.6	26.97	157.6	-58.08	152.6

*Chapter 14 Reflector Antennas*

8.200	24.17	105.2	24.17	15.2	27.18	105.2	-58.10	76.1
8.400	24.38	52.9	24.38	-37.1	27.39	52.9	-58.50	-3.6
8.600	24.59	.7	24.59	-89.3	27.60	.7	-60.24	-81.9
8.800	24.80	-51.7	24.80	-141.7	27.81	-51.7	-62.38	-151.6
9.000	25.00	-104.1	25.00	165.9	28.01	-104.1	-64.25	137.7
9.200	25.18	-156.4	25.18	113.6	28.19	-156.4	-64.09	60.9
9.400	25.37	151.3	25.37	61.3	28.38	151.3	-64.96	-27.7
9.600	25.56	99.0	25.56	9.0	28.57	99.0	-67.06	-123.5
9.800	25.74	46.6	25.74	-43.4	28.75	46.6	-69.90	132.6
10.000	25.90	-5.8	25.90	-95.8	28.91	-5.8	-73.19	29.0