

Test Report

Specification		
Dimensions	10.6*6mm	L*W
Impedance	50 Ω	
Test environment	Free space	
Spectrum	Bluetooth	
Freq.Range	2.4-2.48G	
Manufacturer	iHNNK Inc.	

OTA Test Results for Frequency 2402.000 MHz

OTA Evaluation Results:

Total Radiated Power	-0.99 dBm
Peak EIRP	5.44 dBm
Directivity	6.43 dBi
Efficiency	-0.99 dB
Efficiency	79.68 %
Gain	5.44dBi (Peak gain)
NHPRP 45°	-2.82 dBm
NHPRP 45° / TRP	-1.83 dB
NHPRP 45° / TRP	65.62 %
NHPRP 30°	-4.54 dBm
NHPRP 30° / TRP	-3.56 dB
NHPRP 30° / TRP	44.09 %
NHPRP 22.5°	-5.80 dBm
NHPRP 22.5° / TRP	-4.81 dB
NHPRP 22.5° / TRP	33.01 %
UHRP	-2.44 dBm
UHRP / TRP	-1.45 dB
UHRP / TRP	71.63%
LHRP	-6.46 dBm
LHRP / TRP	-5.47dB
LHRP / TRP	28.37%
Front/Back Ratio	9.96
PhiBW	173.3 deg
PhiBW Up	137.2 deg
PhiBW Down	36.1 deg
ThetaBW	76.8 deg
ThetaBW Up	41.3 deg
ThetaBW Down	35.4 deg
Boresight Phi	45 deg
Boresight Theta	45 deg
Maximum Power	5.44 dBm
Minimum Power	-14.54 dBm
Average Power	-0.84 dBm
Max/Min Ratio	19.98 dB
Max/Avg Ratio	6.28dB
Min/Avg Ratio	-13.70 dB
Best Single Value	4.75 dBm
Best Position	Phi = 30 deg; Theta = 60 deg; Pol = Ver

Azimuth (deg)	Elevation 0 deg (dB)	Elevation 15 deg (dB)	Elevation 30 deg (dB)	Elevation 45 deg (dB)	Elevation 60 deg (dB)	Elevation 75 deg (dB)	Elevation 90 deg (dB)	Elevation 105 deg (dB)	Elevation 120 deg (dB)	Elevation 135 deg (dB)	Elevation 150 deg (dB)	Elevation 165 deg (dB)	Elevation 180 deg (dB)
0.00	0.44	0.39	1.73	1.34	1.99	1.86	1.90	1.27	0.46	-1.23	-4.80	-9.11	-7.19
15.00	0.78	1.49	3.05	3.20	4.14	3.61	3.57	2.24	0.50	-1.59	-4.82	-9.73	-6.43
30.00	0.85	2.49	3.91	4.85	4.90	4.38	3.42	1.67	-0.68	-2.64	-4.60	-10.15	-6.34
45.00	0.94	3.29	4.47	5.44	4.58	3.86	1.98	-0.03	-1.82	-2.67	-4.04	-10.29	-6.75
60.00	0.95	3.86	4.68	5.07	3.40	2.13	-0.42	-2.02	-2.43	-2.93	-3.74	-9.78	-6.86
75.00	1.23	4.12	4.58	4.06	1.43	-0.78	-3.53	-4.14	-3.95	-3.39	-3.54	-8.38	-6.73
90.00	1.24	4.03	4.53	3.08	-0.40	-3.48	-6.14	-7.21	-5.95	-3.76	-2.92	-6.83	-6.26
105.00	1.19	3.78	4.76	2.47	-0.93	-5.79	-8.04	-8.61	-6.07	-4.01	-2.27	-5.72	-5.31
120.00	1.18	3.39	5.11	2.54	-0.05	-6.23	-7.22	-5.87	-5.65	-5.19	-2.24	-5.04	-4.58
135.00	1.41	3.28	5.34	3.22	1.70	-4.31	-6.46	-5.17	-7.41	-8.06	-3.47	-4.86	-4.40
150.00	1.73	3.33	5.20	3.98	2.79	-2.06	-5.68	-5.52	-8.08	-9.73	-5.97	-4.98	-4.45
165.00	1.93	3.27	4.56	4.07	2.50	-0.85	-4.81	-5.34	-6.40	-10.01	-9.94	-5.66	-4.39
180.00	2.03	2.94	3.29	2.89	0.71	-1.98	-5.54	-5.94	-4.31	-10.09	-13.83	-6.45	-4.76
195.00	2.14	2.09	1.02	-0.14	-2.65	-5.61	-6.34	-6.53	-4.52	-7.14	-14.54	-7.03	-5.58
210.00	1.97	0.87	-1.63	-4.31	-5.78	-5.46	-3.12	-3.42	-3.99	-4.90	-10.54	-7.75	-6.23
225.00	1.51	-0.56	-4.36	-6.16	-4.80	-3.03	-1.36	-1.25	-2.11	-4.52	-6.53	-7.16	-6.23
240.00	1.22	-1.55	-5.50	-4.87	-3.23	-1.91	-1.47	-1.14	-2.85	-5.45	-5.16	-5.99	-5.95
255.00	1.07	-2.17	-5.52	-4.99	-3.08	-1.73	-2.30	-2.31	-5.67	-6.14	-4.72	-5.57	-5.92
270.00	0.97	-2.42	-5.36	-5.86	-4.01	-2.55	-3.53	-3.93	-8.52	-6.47	-4.30	-6.16	-6.95
285.00	0.74	-2.75	-4.98	-6.88	-5.05	-3.66	-4.24	-4.87	-7.97	-6.10	-4.05	-6.91	-7.78
300.00	0.46	-3.01	-4.53	-7.82	-5.68	-4.01	-4.12	-4.52	-6.34	-5.43	-3.65	-8.15	-8.40
315.00	0.11	-2.94	-3.66	-8.00	-6.57	-4.47	-4.65	-4.70	-5.00	-5.20	-3.45	-9.19	-8.69
330.00	-0.05	-2.41	-2.00	-6.24	-5.30	-4.90	-4.33	-5.13	-3.36	-4.28	-3.41	-9.91	-8.24
345.00	0.07	-1.34	-0.12	-2.72	-1.66	-2.22	-1.47	-2.80	-0.89	-2.42	-3.79	-9.85	-7.62
360.00	0.24	-0.02	1.27	0.21	1.00	0.97	1.04	0.50	0.20	-1.08	-4.41	-9.36	-7.04

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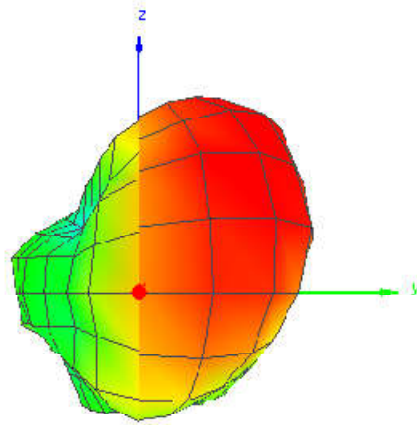
Azimuth (deg)	Elevation 0 deg (dB)	Elevation 15 deg (dB)	Elevation 30 deg (dB)	Elevation 45 deg (dB)	Elevation 60 deg (dB)	Elevation 75 deg (dB)	Elevation 90 deg (dB)	Elevation 105 deg (dB)	Elevation 120 deg (dB)	Elevation 135 deg (dB)	Elevation 150 deg (dB)	Elevation 165 deg (dB)	Elevation 180 deg (dB)
0.0	-9.53	-13.51	-18.20	-13.49	-10.59	-9.10	-7.32	-5.49	-5.93	-9.29	-11.82	-15.98	-8.78
15.0	-8.41	-9.02	-15.97	-13.36	-11.33	-8.63	-6.27	-5.25	-7.47	-11.62	-12.12	-16.98	-8.50
30.0	-5.62	-4.38	-6.87	-6.60	-9.66	-8.41	-5.99	-6.69	-9.52	-13.36	-11.08	-17.93	-9.48
45.0	-3.12	-0.94	-1.80	-2.85	-6.53	-8.21	-6.71	-8.87	-10.09	-12.68	-9.79	-20.07	-11.62
60.0	-1.35	1.35	1.04	-0.69	-4.56	-8.23	-7.80	-9.59	-9.42	-11.36	-9.07	-19.91	-13.75
75.0	0.08	2.98	2.91	0.78	-3.17	-7.60	-8.45	-10.15	-10.05	-9.32	-7.76	-13.99	-13.22
90.0	0.67	3.62	3.93	1.70	-2.35	-7.34	-8.45	-11.70	-10.67	-7.03	-5.64	-10.36	-10.66
105.0	0.53	3.56	4.36	2.01	-2.11	-7.89	-9.17	-12.52	-11.01	-6.15	-3.71	-7.58	-7.71
120.0	-0.12	2.62	3.98	1.31	-2.90	-9.29	-10.43	-12.08	-14.48	-7.45	-3.07	-6.15	-6.16
135.0	-1.22	0.89	2.57	-0.97	-4.76	-11.06	-10.98	-10.41	-19.34	-11.96	-4.08	-5.40	-5.42
150.0	-2.64	-1.45	0.06	-4.88	-7.29	-10.18	-10.48	-8.13	-11.15	-13.75	-6.62	-5.25	-5.24
165.0	-4.80	-4.34	-3.69	-6.95	-7.19	-7.45	-9.28	-7.13	-7.66	-10.92	-10.75	-5.86	-5.06
180.0	-7.10	-5.87	-6.37	-5.00	-4.85	-6.11	-7.67	-8.26	-7.31	-12.18	-15.36	-6.77	-5.85
195.0	-7.29	-6.22	-7.32	-5.17	-4.38	-6.34	-7.26	-9.75	-9.11	-13.92	-16.55	-7.76	-7.53
210.0	-5.86	-6.56	-8.44	-8.01	-7.18	-8.02	-8.39	-8.88	-11.93	-12.50	-13.60	-8.85	-9.83
225.0	-3.80	-6.90	-10.67	-11.64	-10.03	-9.70	-9.17	-8.54	-13.77	-15.71	-11.23	-8.62	-12.20
240.0	-2.15	-6.49	-12.10	-10.95	-8.10	-8.45	-8.04	-10.45	-13.75	-18.01	-11.04	-7.84	-12.92
255.0	-0.87	-5.68	-11.90	-10.32	-6.97	-6.74	-7.44	-12.62	-13.55	-17.23	-10.51	-7.11	-13.52
270.0	-0.26	-4.86	-11.33	-10.31	-7.07	-5.92	-6.73	-9.73	-14.26	-19.87	-9.06	-7.57	-15.03
285.0	-0.20	-4.54	-10.15	-10.58	-7.64	-6.23	-6.39	-7.41	-13.77	-14.54	-7.48	-7.95	-13.59
300.0	-0.80	-4.87	-8.80	-11.13	-8.96	-7.20	-6.23	-6.55	-10.86	-9.85	-6.48	-9.12	-12.14
315.0	-2.30	-5.89	-8.50	-11.86	-11.10	-8.52	-6.57	-6.80	-8.08	-7.78	-6.13	-10.66	-10.83
330.0	-4.53	-7.45	-8.53	-12.08	-12.16	-9.45	-6.91	-7.04	-6.33	-7.30	-6.64	-12.33	-10.00
345.0	-7.57	-10.88	-10.73	-11.86	-11.64	-9.25	-7.28	-6.72	-5.50	-7.84	-8.25	-13.82	-9.08
360.0	-9.79	-13.42	-15.15	-12.80	-11.00	-9.13	-7.28	-5.85	-5.63	-8.85	-10.59	-15.00	-8.41

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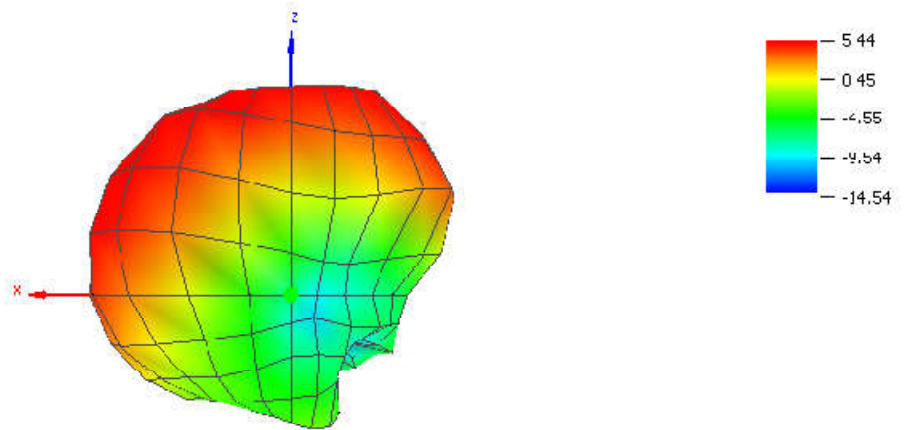
Azimuth (deg)	Elevation 0 deg (dB)	Elevation 15 deg (dB)	Elevation 30 deg (dB)	Elevation 45 deg (dB)	Elevation 60 deg (dB)	Elevation 75 deg (dB)	Elevation 90 deg (dB)	Elevation 105 deg (dB)	Elevation 120 deg (dB)	Elevation 135 deg (dB)	Elevation 150 deg (dB)	Elevation 165 deg (dB)	Elevation 180 deg (dB)
0.0	-0.02	0.21	1.69	1.19	1.74	1.49	1.35	0.24	-0.67	-1.97	-5.76	-10.10	-12.30
15.0	0.23	1.08	2.99	3.10	4.01	3.34	3.09	1.38	-0.25	-2.05	-5.72	-10.64	-10.64
30.0	-0.27	1.49	3.53	4.52	4.75	4.15	2.89	0.99	-1.29	-3.02	-5.70	-10.94	-9.23
45.0	-1.22	1.24	3.30	4.75	4.23	3.58	1.36	-0.63	-2.52	-3.13	-5.38	-10.78	-8.46
60.0	-2.90	0.28	2.22	3.74	2.64	1.71	-1.29	-2.86	-3.40	-3.61	-5.24	-10.22	-7.86
75.0	-5.11	-2.24	-0.39	1.30	-0.42	-1.79	-5.22	-5.40	-5.17	-4.66	-5.61	-9.78	-7.83
90.0	-7.85	-6.50	-4.39	-2.54	-4.81	-5.78	-9.99	-9.11	-7.73	-6.52	-6.24	-9.37	-8.23
105.0	-7.36	-9.13	-5.76	-7.51	-7.18	-9.95	-14.43	-10.88	-7.75	-8.12	-7.76	-10.31	-9.03
120.0	-4.69	-4.48	-1.31	-3.52	-3.23	-9.20	-10.04	-7.05	-6.26	-9.11	-9.87	-11.49	-9.75
135.0	-2.00	-0.46	2.08	1.13	0.58	-5.35	-8.34	-6.71	-7.69	-10.34	-12.27	-14.22	-11.20
150.0	-0.25	1.57	3.62	3.37	2.34	-2.79	-7.43	-8.96	-11.04	-11.92	-14.52	-17.23	-12.23
165.0	0.89	2.44	3.86	3.71	2.01	-1.92	-6.73	-10.06	-12.39	-17.26	-17.67	-19.10	-12.84
180.0	1.47	2.33	2.79	2.12	-0.70	-4.11	-9.65	-9.77	-7.33	-14.26	-19.12	-17.96	-11.29
195.0	1.61	1.40	0.33	-1.78	-7.50	-13.72	-13.53	-9.35	-6.37	-8.16	-18.84	-15.17	-9.98
210.0	1.19	0.01	-2.65	-6.72	-11.37	-8.97	-4.65	-4.87	-4.75	-5.73	-13.50	-14.23	-8.73
225.0	0.00	-1.71	-5.51	-7.60	-6.34	-4.08	-2.15	-2.15	-2.42	-4.86	-8.33	-12.58	-7.50
240.0	-1.46	-3.23	-6.57	-6.09	-4.94	-3.00	-2.56	-1.68	-3.22	-5.70	-6.46	-10.58	-6.92
255.0	-3.38	-4.74	-6.66	-6.50	-5.36	-3.38	-3.88	-2.73	-6.45	-6.49	-6.05	-10.84	-6.75
270.0	-5.14	-6.10	-6.63	-7.79	-6.97	-5.22	-6.36	-5.26	-9.87	-6.68	-6.07	-11.75	-7.68
285.0	-6.37	-7.46	-6.56	-9.30	-8.52	-7.16	-8.33	-8.41	-9.30	-6.77	-6.68	-13.65	-9.10
300.0	-5.53	-7.60	-6.57	-10.55	-8.44	-6.85	-8.27	-8.79	-8.24	-7.38	-6.86	-15.16	-10.79
315.0	-3.59	-6.01	-5.38	-10.31	-8.45	-6.65	-9.11	-8.87	-7.93	-8.69	-6.81	-14.63	-12.79
330.0	-1.96	-4.04	-3.09	-7.55	-6.30	-6.77	-7.82	-9.62	-6.42	-7.29	-6.22	-13.60	-13.00
345.0	-0.75	-1.85	-0.51	-3.29	-2.12	-3.18	-2.79	-5.06	-2.73	-3.90	-5.71	-12.08	-13.07
360.0	-0.21	-0.22	1.17	-0.02	0.72	0.52	0.35	-0.64	-1.11	-1.87	-5.61	-10.75	-12.75

Theta = 90, Phi = 0

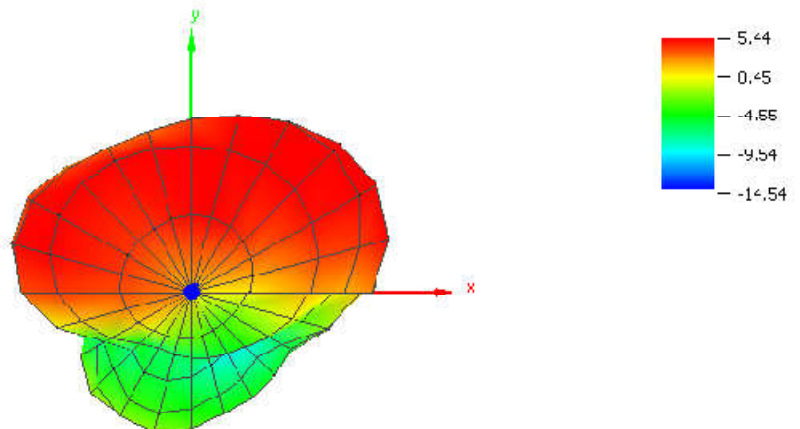
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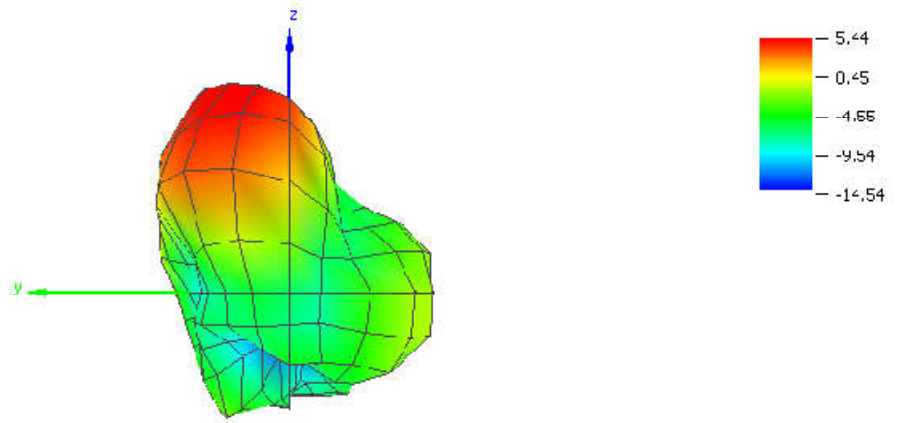
Theta = 90, Phi = 90



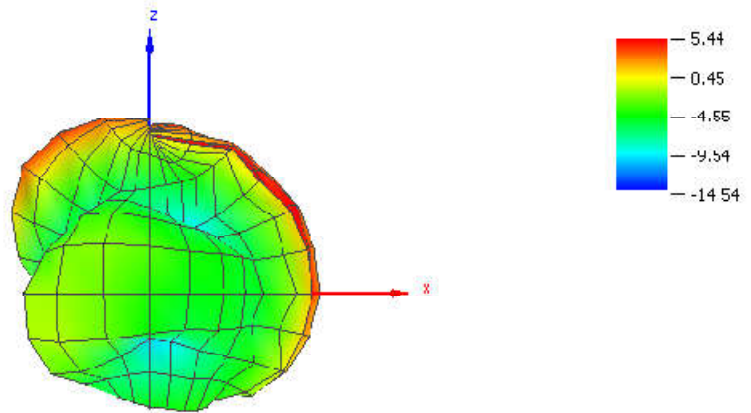
Theta = 0, Phi = 0



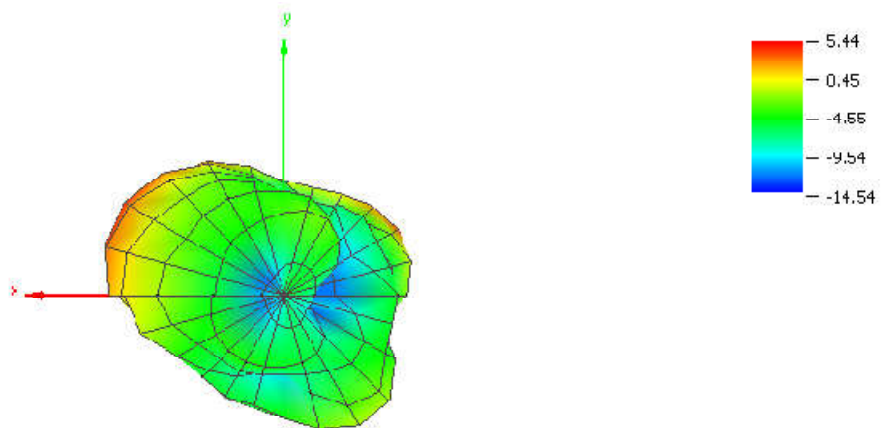
Theta = 90, Phi = 180



Theta = 90, Phi = 270



Theta = 180, Phi = 0



TA Test Results for Frequency 2441.000 MHz

OTA Evaluation Results:

Total Radiated Power	-1.82 dBm
Peak EIRP	4.51 dBm
Directivity	6.33 dBi
Efficiency	-1.82 dB
Efficiency	65.74 %
Gain	4.51 dBi
NHPRP 45°	-3.68 dBm
NHPRP 45° / TRP	-1.85 dB
NHPRP 45° / TRP	65.27 %
NHPRP 30°	-5.37 dBm
NHPRP 30° / TRP	-3.55 dB
NHPRP 30° / TRP	44.20 %
NHPRP 22.5°	-6.59 dBm
NHPRP 22.5° / TRP	-4.77 dB
NHPRP 22.5° / TRP	33.38 %
UHRP	-3.27 dBm
UHRP / TRP	-1.45 dB
UHRP / TRP	71.68%
LHRP	-7.30 dBm
LHRP / TRP	-5.48dB
LHRP / TRP	28.32%
Front/Back Ratio	11.10
PhiBW	171.5 deg
PhiBW Up	55.2 deg
PhiBW Down	116.3 deg
ThetaBW	41.0 deg
ThetaBW Up	24.0 deg
ThetaBW Down	17.0 deg
Boresight Phi	135 deg
Boresight Theta	30 deg
Maximum Power	4.51 dBm
Minimum Power	-13.88 dBm
Average Power	-1.75 dBm
Max/Min Ratio	18.39 dB
Max/Avg Ratio	6.25dB
Min/Avg Ratio	-12.13dB
Best Single Value	3.63 dBm
Best Position	Phi = 105 deg; Theta = 30 deg; Pol = Hor

RP_2441.000_tot

Azimuth (deg)	Elevation 0 deg (dB)	Elevation 15 deg (dB)	Elevation 30 deg (dB)	Elevation 45 deg (dB)	Elevation 60 deg (dB)	Elevation 75 deg (dB)	Elevation 90 deg (dB)	Elevation 105 deg (dB)	Elevation 120 deg (dB)	Elevation 135 deg (dB)	Elevation 150 deg (dB)	Elevation 165 deg (dB)	Elevation 180 deg (dB)
0.00	-0.25	-0.44	-0.16	-0.33	-0.05	-0.04	0.44	-0.07	-1.57	-3.69	-6.79	-11.89	-7.78
15.00	-0.36	0.49	1.21	1.69	2.39	1.92	2.18	1.11	-1.23	-3.11	-6.35	-10.49	-8.02
30.00	-0.18	1.63	2.40	3.32	3.40	2.97	2.48	1.08	-1.57	-3.06	-5.60	-9.26	-8.49
45.00	0.10	2.43	3.23	3.84	3.16	2.66	1.35	-0.25	-2.45	-3.03	-5.06	-9.18	-8.64
60.00	0.46	3.03	3.72	3.78	2.17	1.04	-1.27	-2.19	-3.41	-3.18	-4.98	-9.88	-8.96
75.00	0.65	3.24	3.95	3.37	0.64	-1.70	-4.29	-4.71	-5.17	-3.94	-4.51	-10.98	-8.81
90.00	0.32	3.08	3.96	2.66	-1.20	-4.54	-6.22	-7.89	-6.81	-4.26	-3.90	-12.08	-9.31
105.00	-0.25	2.61	4.06	1.93	-1.87	-5.55	-7.05	-9.04	-6.22	-4.46	-3.74	-11.82	-9.52
120.00	-0.59	2.14	4.35	1.79	-0.84	-4.53	-6.47	-7.01	-5.73	-5.22	-4.04	-10.61	-9.23
135.00	-0.60	1.83	4.51	2.27	1.00	-2.60	-5.74	-5.81	-6.30	-6.56	-4.73	-8.90	-9.57
150.00	-0.20	1.69	4.26	2.83	2.26	-0.72	-4.59	-5.60	-7.13	-7.73	-5.96	-6.98	-9.49
165.00	0.40	1.86	3.51	3.18	2.39	0.40	-3.40	-4.99	-7.86	-8.41	-7.54	-6.11	-9.09
180.00	0.64	1.83	2.41	2.68	0.98	-0.32	-3.81	-5.28	-7.53	-10.64	-9.61	-5.84	-8.13
195.00	0.33	1.41	1.09	0.78	-2.19	-3.97	-6.48	-7.87	-8.61	-10.69	-9.72	-6.16	-6.86
210.00	-0.30	0.35	-0.33	-2.13	-5.20	-7.51	-5.38	-7.97	-11.51	-8.32	-7.34	-6.88	-6.19
225.00	-0.96	-0.74	-1.53	-3.83	-4.61	-4.55	-3.10	-5.70	-7.94	-7.70	-5.49	-7.42	-5.99
240.00	-1.19	-1.82	-2.09	-3.89	-3.49	-3.10	-2.20	-4.54	-6.20	-6.90	-4.19	-7.45	-6.25
255.00	-0.85	-2.27	-2.56	-3.84	-3.81	-2.93	-1.94	-3.49	-5.58	-5.04	-3.39	-7.13	-6.54
270.00	0.10	-2.24	-3.03	-4.41	-5.56	-3.69	-2.31	-3.13	-4.26	-3.97	-3.19	-8.24	-6.58
285.00	0.95	-2.19	-3.81	-6.04	-7.84	-4.72	-2.94	-3.29	-3.45	-4.38	-4.11	-10.45	-7.06
300.00	1.18	-2.50	-4.33	-7.81	-9.69	-5.93	-3.88	-3.39	-3.46	-5.87	-5.25	-12.42	-7.79
315.00	1.06	-2.75	-4.18	-8.78	-10.06	-7.08	-5.25	-4.03	-3.85	-8.01	-6.59	-13.49	-8.03
330.00	0.79	-2.53	-3.25	-7.49	-7.96	-7.24	-5.73	-5.21	-3.86	-8.51	-7.15	-13.88	-8.05
345.00	0.39	-1.82	-1.68	-4.45	-4.17	-5.16	-3.02	-3.85	-2.83	-6.11	-6.77	-13.62	-7.78
360.00	-0.14	-0.80	-0.60	-1.26	-1.19	-1.19	-0.30	-0.78	-1.86	-4.09	-6.84	-12.18	-7.58

RP_2441.000_hor

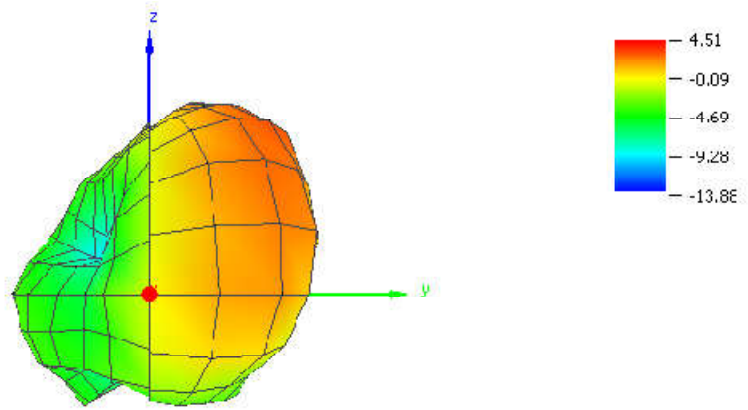
Azimuth (deg)	Elevation 0 deg (dB)	Elevation 15 deg (dB)	Elevation 30 deg (dB)	Elevation 45 deg (dB)	Elevation 60 deg (dB)	Elevation 75 deg (dB)	Elevation 90 deg (dB)	Elevation 105 deg (dB)	Elevation 120 deg (dB)	Elevation 135 deg (dB)	Elevation 150 deg (dB)	Elevation 165 deg (dB)	Elevation 180 deg (dB)
0.0	-10.35	-14.27	-18.82	-14.28	-10.05	-8.59	-7.95	-8.09	-8.98	-9.10	-11.87	-14.90	-8.69
15.0	-9.12	-9.24	-14.08	-10.90	-10.05	-8.03	-7.35	-6.45	-9.24	-8.98	-12.22	-14.38	-8.57
30.0	-5.40	-4.32	-5.58	-5.36	-7.76	-7.87	-6.45	-6.57	-9.88	-9.77	-12.28	-13.14	-9.10
45.0	-2.76	-1.05	-1.15	-2.18	-5.43	-7.75	-6.61	-7.83	-10.66	-9.57	-10.54	-13.02	-9.77
60.0	-0.98	1.17	1.27	-0.12	-4.03	-7.30	-7.85	-8.46	-9.18	-8.31	-8.95	-14.14	-11.21
75.0	-0.10	2.27	2.79	1.11	-3.01	-6.91	-8.08	-9.07	-8.74	-7.28	-7.44	-16.13	-12.44
90.0	-0.16	2.65	3.54	1.67	-2.84	-7.20	-8.53	-10.97	-9.83	-6.30	-6.02	-20.47	-15.99
105.0	-0.87	2.31	3.63	1.40	-3.51	-8.40	-9.37	-13.15	-10.27	-6.40	-5.27	-15.89	-19.71
120.0	-1.85	1.41	3.08	0.47	-4.90	-9.58	-9.94	-13.63	-12.79	-7.68	-4.84	-11.85	-16.18
135.0	-3.52	-0.36	1.51	-1.63	-6.70	-9.33	-10.14	-11.74	-18.76	-10.46	-5.30	-9.71	-13.12
150.0	-5.68	-3.15	-1.13	-5.71	-7.88	-7.67	-9.46	-9.44	-13.99	-13.04	-6.96	-8.16	-11.17
165.0	-8.37	-6.47	-4.74	-8.06	-6.20	-5.77	-7.93	-8.27	-10.37	-13.44	-9.52	-7.93	-9.71
180.0	-9.92	-7.69	-6.00	-5.23	-4.22	-4.94	-7.24	-9.28	-9.41	-15.49	-13.19	-8.51	-9.30
195.0	-8.54	-6.46	-5.26	-4.59	-4.27	-5.83	-7.33	-11.65	-10.72	-12.58	-15.13	-9.98	-8.77
210.0	-6.02	-5.65	-5.70	-6.71	-6.77	-8.56	-9.03	-11.13	-12.95	-9.67	-14.24	-13.08	-8.58
225.0	-4.22	-5.57	-7.24	-9.33	-8.88	-9.84	-9.53	-11.58	-14.51	-10.08	-15.52	-18.54	-8.94
240.0	-2.81	-6.05	-8.78	-11.79	-8.64	-9.38	-8.68	-14.23	-14.67	-11.54	-15.14	-19.01	-10.02
255.0	-1.70	-5.73	-9.71	-14.54	-10.13	-8.92	-8.94	-16.93	-14.07	-10.45	-10.61	-14.01	-11.06
270.0	-0.58	-4.83	-9.46	-15.20	-12.12	-9.01	-9.10	-13.26	-12.86	-9.60	-8.13	-14.37	-11.89
285.0	0.06	-4.32	-8.68	-13.24	-13.16	-9.00	-8.71	-10.39	-10.27	-9.12	-8.09	-16.15	-13.93
300.0	-0.14	-4.50	-8.14	-12.05	-13.13	-9.31	-8.32	-8.89	-8.18	-9.67	-9.22	-17.67	-16.75
315.0	-1.11	-5.49	-8.52	-11.37	-12.46	-9.51	-8.40	-8.87	-7.32	-10.72	-11.46	-17.58	-13.93
330.0	-2.84	-7.08	-9.25	-10.88	-11.08	-9.12	-8.68	-9.09	-7.42	-11.09	-12.74	-16.87	-11.24
345.0	-5.79	-10.11	-10.67	-11.18	-10.12	-9.07	-8.33	-8.95	-8.11	-10.18	-11.65	-16.16	-9.61
360.0	-9.57	-13.57	-15.34	-13.31	-9.75	-8.67	-7.83	-8.36	-8.99	-9.17	-11.62	-15.21	-8.52

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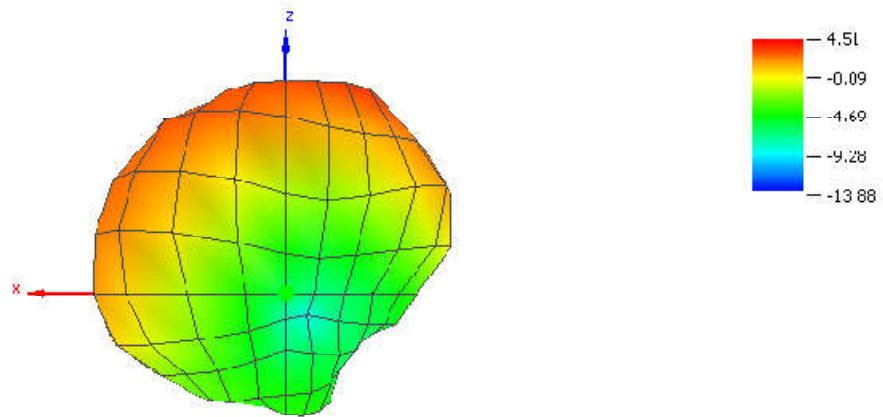
Azimuth (deg)	Elevation 0 deg (dB)	Elevation 15 deg (dB)	Elevation 30 deg (dB)	Elevation 45 deg (dB)	Elevation 60 deg (dB)	Elevation 75 deg (dB)	Elevation 90 deg (dB)	Elevation 105 deg (dB)	Elevation 120 deg (dB)	Elevation 135 deg (dB)	Elevation 150 deg (dB)	Elevation 165 deg (dB)	Elevation 180 deg (dB)
0.0	-0.69	-0.62	-0.22	-0.51	-0.51	-0.70	-0.24	-0.82	-2.44	-5.16	-8.41	-14.89	-15.01
15.0	-0.98	0.01	1.08	1.44	2.14	1.46	1.67	0.27	-1.98	-4.41	-7.65	-12.77	-17.21
30.0	-1.73	0.36	1.65	2.69	3.06	2.60	1.89	0.26	-2.27	-4.11	-6.65	-11.54	-17.30
45.0	-3.06	-0.17	1.27	2.59	2.51	2.24	0.59	-1.08	-3.16	-4.11	-6.51	-11.50	-15.04
60.0	-5.04	-1.56	0.06	1.50	0.98	0.35	-2.35	-3.36	-4.74	-4.77	-7.21	-11.93	-12.89
75.0	-7.33	-3.74	-2.35	-0.56	-1.81	-3.26	-6.64	-6.69	-7.69	-6.64	-7.61	-12.57	-11.27
90.0	-9.50	-7.15	-6.35	-4.26	-6.20	-7.94	-10.07	-10.83	-9.82	-8.53	-8.03	-12.76	-10.36
105.0	-9.01	-9.21	-6.16	-7.40	-6.90	-8.73	-10.89	-11.18	-8.39	-8.89	-9.02	-13.97	-9.96
120.0	-6.60	-5.98	-1.58	-4.04	-3.00	-6.15	-9.07	-8.08	-6.69	-8.87	-11.78	-16.64	-10.21
135.0	-3.70	-2.19	1.48	-0.01	0.19	-3.64	-7.70	-7.09	-6.56	-8.83	-13.88	-16.58	-12.09
150.0	-1.64	-0.04	2.78	2.18	1.82	-1.70	-6.30	-7.92	-8.13	-9.24	-12.85	-13.22	-14.43
165.0	-0.22	1.18	2.81	2.84	1.74	-0.81	-5.29	-7.75	-11.44	-10.05	-11.89	-10.77	-17.82
180.0	0.24	1.32	1.73	1.92	-0.57	-2.15	-6.43	-7.48	-12.06	-12.36	-12.13	-9.22	-14.42
195.0	-0.27	0.64	-0.06	-0.72	-6.38	-8.57	-13.98	-10.23	-12.74	-15.21	-11.19	-8.48	-11.34
210.0	-1.66	-0.91	-1.82	-3.99	-10.39	-14.22	-7.83	-10.83	-17.02	-14.06	-8.33	-8.07	-9.92
225.0	-3.74	-2.47	-2.89	-5.27	-6.65	-6.08	-4.23	-7.00	-9.02	-11.44	-5.94	-7.77	-9.05
240.0	-6.26	-3.88	-3.14	-4.66	-5.08	-4.27	-3.31	-5.03	-6.87	-8.73	-4.56	-7.77	-8.61
255.0	-8.37	-4.87	-3.49	-4.22	-4.96	-4.19	-2.91	-3.69	-6.25	-6.51	-4.30	-8.13	-8.44
270.0	-8.34	-5.71	-4.15	-4.78	-6.64	-5.20	-3.33	-3.57	-4.90	-5.36	-4.86	-9.45	-8.10
285.0	-6.40	-6.31	-5.52	-6.96	-9.36	-6.75	-4.28	-4.23	-4.46	-6.15	-6.33	-11.81	-8.06
300.0	-4.63	-6.82	-6.67	-9.87	-12.30	-8.59	-5.82	-4.83	-5.24	-8.21	-7.48	-13.96	-8.38
315.0	-2.99	-6.04	-6.17	-12.24	-13.78	-10.75	-8.13	-5.76	-6.45	-11.34	-8.30	-15.64	-9.32
330.0	-1.68	-4.41	-4.51	-10.16	-10.87	-11.80	-8.81	-7.50	-6.38	-12.00	-8.56	-16.91	-10.89
345.0	-0.80	-2.52	-2.26	-5.48	-5.44	-7.42	-4.54	-5.45	-4.36	-8.26	-8.48	-17.15	-12.44
360.0	-0.67	-1.03	-0.75	-1.54	-1.84	-2.05	-1.14	-1.61	-2.80	-5.71	-8.60	-15.17	-14.72

Unit: dBi

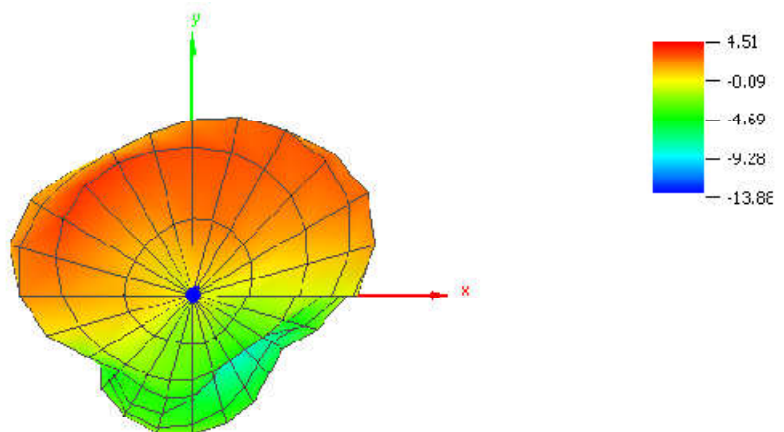
Theta = 90, Phi = 0



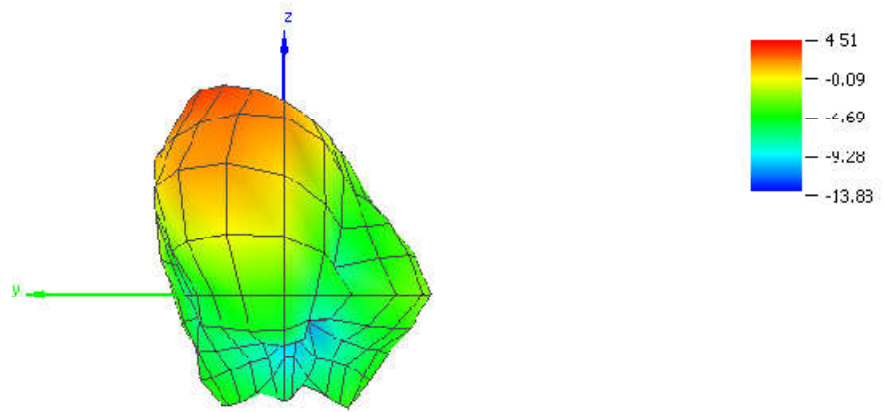
Theta = 90, Phi = 90



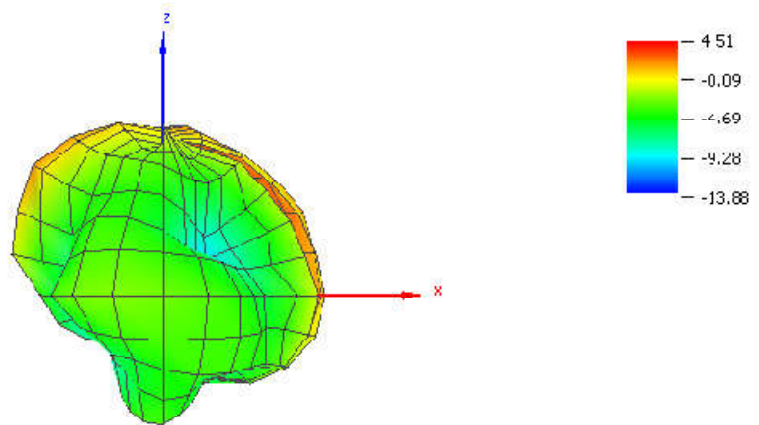
Theta = 0, Phi = 0



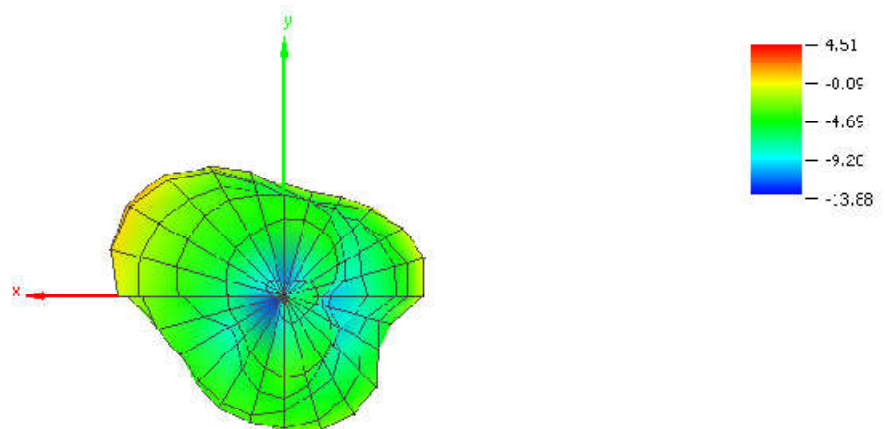
Theta = 90, Phi = 180



Theta = 90, Phi = 270



Theta = 180, Phi = 0



TA Test Results for Frequency 2480.000 MHz

OTA Evaluation Results:

Total Radiated Power	-1.80 dBm
Peak EIRP	4.21 dBm
Directivity	6.03 dBi
Efficiency	-1.90 dB
Efficiency	64.53 %
Gain	4.12 dBi
NHPRP 45°	-3.60 dBm
NHPRP 45° / TRP	-1.70 dB
NHPRP 45° / TRP	67.64 %
NHPRP 30°	-5.27 dBm
NHPRP 30° / TRP	-3.37 dB
NHPRP 30° / TRP	46.04 %
NHPRP 22.5°	-6.49 dBm
NHPRP 22.5° / TRP	-4.58 dB
NHPRP 22.5° / TRP	34.81 %
UHRP	-3.47 dBm
UHRP / TRP	-1.56 dB
UHRP / TRP	69.74%
LHRP	-7.09 dBm
LHRP / TRP	-5.19dB
LHRP / TRP	30.26%
Front/Back Ratio	13.23
PhiBW	174.3 deg
PhiBW Up	51.9 deg
PhiBW Down	122.4 deg
ThetaBW	46.0 deg
ThetaBW Up	23.4 deg
ThetaBW Down	22.6 deg
Boresight Phi	135 deg
Boresight Theta	30 deg
Maximum Power	4.12 dBm
Minimum Power	-12.04 dBm
Average Power	-1.92 dBm
Max/Min Ratio	16.16 dB
Max/Avg Ratio	6.05dB
Min/Avg Ratio	-10.13dB
Best Single Value	3.56 dBm
Best Position	Phi = 30 deg; Theta = 60 deg; Pol = Ver

RP_2480.000_tot

Azimuth (deg)	Elevation 0 deg (dB)	Elevation 15 deg (dB)	Elevation 30 deg (dB)	Elevation 45 deg (dB)	Elevation 60 deg (dB)	Elevation 75 deg (dB)	Elevation 90 deg (dB)	Elevation 105 deg (dB)	Elevation 120 deg (dB)	Elevation 135 deg (dB)	Elevation 150 deg (dB)	Elevation 165 deg (dB)	Elevation 180 deg (dB)
0.00	-0.63	-0.42	-0.26	0.45	0.69	0.68	0.13	-0.96	-2.81	-3.16	-4.91	-7.96	-6.28
15.00	-1.15	0.18	1.39	2.15	3.01	2.66	2.47	0.69	-1.34	-2.57	-4.62	-7.62	-6.60
30.00	-1.64	0.90	2.33	3.23	3.80	3.68	3.10	1.30	-1.12	-2.44	-3.82	-7.20	-6.98
45.00	-2.05	1.34	2.72	3.48	3.27	3.32	2.17	0.50	-1.19	-2.22	-3.56	-7.27	-6.66
60.00	-2.31	1.80	2.75	3.19	1.80	1.85	-0.17	-0.89	-2.09	-2.58	-3.89	-7.45	-5.98
75.00	-2.27	1.93	2.68	2.52	-0.15	-0.78	-3.46	-3.44	-4.14	-3.48	-3.98	-7.27	-5.80
90.00	-1.85	2.00	2.80	1.74	-2.22	-5.06	-7.17	-7.95	-6.65	-3.87	-3.67	-7.41	-6.34
105.00	-1.15	2.08	3.22	1.43	-2.47	-7.88	-8.98	-12.04	-7.45	-4.26	-3.51	-7.91	-7.64
120.00	-0.35	2.06	3.79	2.05	-1.28	-6.41	-7.09	-8.37	-7.86	-6.40	-4.13	-8.42	-9.27
135.00	0.25	2.03	4.12	2.78	-0.17	-4.48	-5.89	-6.15	-9.02	-9.19	-5.68	-9.15	-10.16
150.00	0.59	1.95	4.08	3.18	0.72	-2.58	-5.69	-6.19	-8.85	-8.91	-7.56	-8.73	-9.86
165.00	0.97	1.84	3.50	3.00	1.26	-1.22	-5.40	-7.20	-7.75	-7.33	-7.39	-7.32	-8.19
180.00	0.82	1.50	2.04	1.84	0.53	-1.25	-5.59	-8.36	-7.48	-5.78	-6.79	-5.94	-6.97
195.00	0.72	0.67	0.04	-0.56	-2.13	-3.75	-7.88	-8.47	-6.85	-3.86	-6.34	-5.30	-6.00
210.00	0.53	-0.94	-2.14	-3.40	-4.40	-7.19	-6.43	-6.91	-4.70	-3.46	-5.38	-5.11	-5.57
225.00	0.20	-2.67	-3.33	-3.90	-3.21	-3.65	-3.18	-4.50	-2.82	-3.38	-4.73	-5.79	-5.71
240.00	-0.16	-4.31	-4.23	-3.01	-1.94	-1.55	-1.40	-2.52	-2.55	-3.08	-4.64	-7.38	-6.36
255.00	-0.40	-5.10	-5.14	-2.67	-2.03	-1.12	-0.85	-1.72	-2.47	-3.10	-5.76	-9.55	-6.36
270.00	-0.45	-4.89	-6.41	-3.22	-3.77	-2.17	-1.67	-2.16	-2.74	-4.38	-7.64	-11.56	-6.06
285.00	-0.07	-4.37	-6.97	-4.27	-6.35	-4.11	-3.46	-3.47	-4.20	-7.24	-10.34	-11.06	-5.78
300.00	0.35	-3.54	-7.08	-6.09	-8.54	-6.54	-5.48	-5.01	-6.06	-10.60	-11.70	-10.62	-6.20
315.00	0.48	-3.11	-6.18	-7.81	-10.22	-7.91	-6.78	-6.12	-7.46	-10.19	-9.11	-10.27	-6.32
330.00	0.26	-2.52	-4.45	-7.32	-9.41	-7.89	-6.32	-6.65	-7.30	-8.79	-6.60	-9.89	-6.19
345.00	-0.03	-1.63	-2.45	-4.18	-4.28	-4.87	-3.59	-4.98	-5.71	-6.47	-5.41	-9.95	-6.20
360.00	-0.50	-0.52	-1.00	-0.47	-0.65	-0.36	-0.82	-1.95	-3.92	-3.70	-5.15	-8.37	-6.00

RP_2480.000_hor

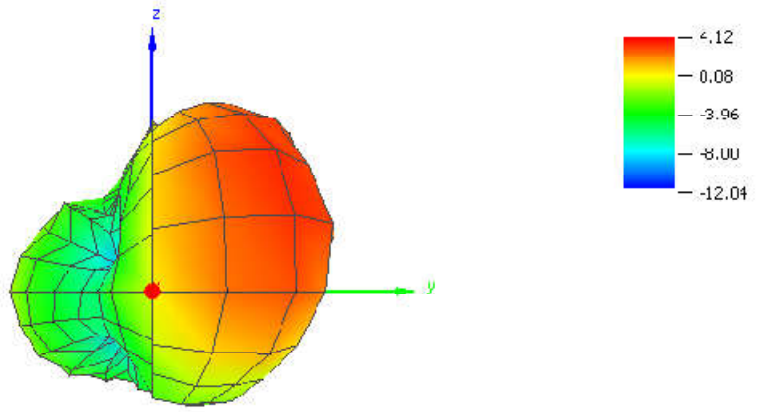
Azimuth (deg)	Elevation 0 deg (dB)	Elevation 15 deg (dB)	Elevation 30 deg (dB)	Elevation 45 deg (dB)	Elevation 60 deg (dB)	Elevation 75 deg (dB)	Elevation 90 deg (dB)	Elevation 105 deg (dB)	Elevation 120 deg (dB)	Elevation 135 deg (dB)	Elevation 150 deg (dB)	Elevation 165 deg (dB)	Elevation 180 deg (dB)
0.0	-9.09	-13.92	-16.54	-15.02	-12.05	-9.67	-8.33	-7.17	-7.47	-7.85	-9.36	-11.94	-8.01
15.0	-9.81	-11.61	-16.98	-12.81	-10.57	-8.69	-7.81	-6.60	-7.74	-8.81	-9.86	-12.16	-7.81
30.0	-7.87	-6.21	-7.99	-8.15	-8.87	-8.52	-7.55	-7.35	-9.01	-10.58	-10.12	-11.90	-8.34
45.0	-5.73	-2.88	-3.64	-4.28	-7.58	-8.65	-8.43	-9.88	-10.80	-11.77	-9.97	-12.94	-8.89
60.0	-4.23	-0.45	-0.68	-1.53	-6.10	-8.62	-10.20	-10.82	-11.35	-11.33	-9.57	-14.46	-9.41
75.0	-3.48	0.82	1.20	-0.11	-4.76	-8.54	-10.89	-11.47	-11.96	-9.46	-8.50	-15.24	-9.78
90.0	-2.95	1.49	2.41	0.78	-4.01	-9.20	-11.00	-14.84	-11.30	-7.07	-6.53	-13.21	-10.82
105.0	-2.54	1.60	2.78	0.82	-4.22	-11.11	-12.34	-18.27	-10.30	-6.18	-5.07	-11.51	-12.47
120.0	-2.58	0.80	2.23	0.04	-5.05	-13.69	-13.46	-18.35	-11.71	-8.03	-4.87	-10.55	-14.46
135.0	-3.41	-0.83	0.69	-1.71	-6.91	-14.78	-13.41	-15.03	-17.91	-11.99	-6.02	-10.90	-15.80
150.0	-5.29	-3.97	-2.52	-5.43	-10.30	-11.32	-11.67	-12.38	-14.29	-12.01	-8.38	-12.24	-14.83
165.0	-8.20	-8.11	-6.80	-9.47	-9.96	-8.32	-10.32	-11.57	-11.14	-11.30	-11.03	-12.42	-12.01
180.0	-12.14	-10.65	-8.48	-8.24	-6.08	-6.72	-9.24	-12.88	-11.14	-12.74	-15.56	-12.64	-9.48
195.0	-11.31	-8.89	-7.19	-7.44	-5.85	-7.10	-9.98	-12.69	-12.78	-13.24	-17.73	-12.61	-7.53
210.0	-7.25	-7.55	-7.42	-9.48	-7.43	-9.02	-11.29	-11.00	-14.47	-13.58	-14.03	-12.07	-6.37
225.0	-4.47	-7.12	-9.26	-13.47	-9.15	-9.22	-10.47	-11.63	-13.65	-13.93	-13.10	-11.54	-6.21
240.0	-2.58	-7.52	-13.26	-16.02	-9.77	-8.29	-9.39	-15.35	-11.68	-11.13	-13.78	-12.25	-6.87
255.0	-1.52	-8.18	-17.80	-14.96	-10.77	-7.65	-9.56	-16.29	-10.53	-9.42	-13.48	-14.31	-7.63
270.0	-0.89	-7.85	-16.92	-13.14	-11.82	-7.46	-9.14	-12.80	-9.84	-9.99	-13.69	-15.23	-8.65
285.0	-0.57	-7.20	-13.65	-13.30	-13.23	-8.02	-8.80	-10.48	-9.42	-12.89	-16.68	-13.44	-9.30
300.0	-0.67	-6.39	-11.49	-14.29	-14.94	-9.28	-8.70	-9.39	-8.90	-14.72	-19.13	-12.79	-10.81
315.0	-1.34	-6.49	-10.02	-15.98	-16.50	-9.95	-8.67	-8.65	-8.68	-11.98	-13.84	-12.62	-10.58
330.0	-2.78	-7.40	-9.25	-16.39	-15.70	-10.32	-8.41	-8.18	-8.39	-9.53	-10.37	-12.04	-9.31
345.0	-4.93	-9.31	-10.04	-15.45	-13.65	-10.43	-8.54	-7.73	-8.05	-8.08	-9.12	-12.87	-8.75
360.0	-8.15	-11.79	-14.11	-15.83	-12.17	-10.03	-8.51	-7.48	-7.61	-7.79	-9.18	-11.89	-7.87

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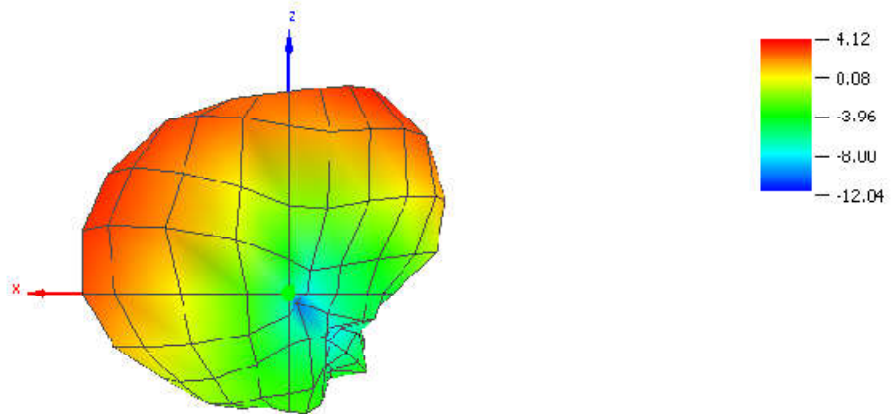
Azimuth (deg)	Elevation 0 deg (dB)	Elevation 15 deg (dB)	Elevation 30 deg (dB)	Elevation 45 deg (dB)	Elevation 60 deg (dB)	Elevation 75 deg (dB)	Elevation 90 deg (dB)	Elevation 105 deg (dB)	Elevation 120 deg (dB)	Elevation 135 deg (dB)	Elevation 150 deg (dB)	Elevation 165 deg (dB)	Elevation 180 deg (dB)
0.0	-1.30	-0.62	-0.36	0.32	0.45	0.26	-0.54	-2.15	-4.62	-4.96	-6.83	-10.17	-11.11
15.0	-1.78	-0.12	1.32	2.01	2.82	2.33	2.04	-0.21	-2.47	-3.74	-6.17	-9.51	-12.75
30.0	-2.83	-0.04	1.91	2.90	3.56	3.41	2.70	0.66	-1.89	-3.16	-4.98	-9.00	-12.68
45.0	-4.48	-0.72	1.57	2.69	2.89	3.04	1.77	0.08	-1.70	-2.73	-4.69	-8.65	-10.64
60.0	-6.79	-2.14	0.12	1.41	1.03	1.44	-0.62	-1.35	-2.64	-3.20	-5.26	-8.41	-8.60
75.0	-8.42	-4.54	-2.73	-0.91	-2.00	-1.58	-4.33	-4.18	-4.93	-4.75	-5.87	-8.02	-8.01
90.0	-8.34	-7.59	-7.82	-5.27	-6.91	-7.17	-9.49	-8.95	-8.47	-6.69	-6.84	-8.74	-8.25
105.0	-6.76	-7.77	-6.98	-7.39	-7.27	-10.69	-11.68	-13.22	-10.64	-8.73	-8.69	-10.41	-9.38
120.0	-4.31	-3.95	-1.41	-2.26	-3.65	-7.31	-8.23	-8.83	-10.16	-11.46	-12.14	-12.53	-10.84
135.0	-2.20	-1.13	1.50	0.88	-1.21	-4.90	-6.73	-6.75	-9.62	-12.42	-16.93	-13.93	-11.54
150.0	-0.70	0.66	3.00	2.53	0.36	-3.20	-6.96	-7.38	-10.32	-11.84	-15.25	-11.29	-11.53
165.0	0.40	1.38	3.07	2.75	0.92	-2.17	-7.09	-9.18	-10.42	-9.55	-9.85	-8.93	-10.51
180.0	0.59	1.23	1.64	1.40	-0.54	-2.70	-8.04	-10.25	-9.93	-6.75	-7.40	-6.98	-10.55
195.0	0.44	0.16	-0.87	-1.55	-4.54	-6.46	-12.03	-10.54	-8.13	-4.39	-6.67	-6.19	-11.27
210.0	-0.27	-2.00	-3.66	-4.63	-7.38	-11.85	-8.14	-9.05	-5.18	-3.91	-6.02	-6.09	-13.31
225.0	-1.61	-4.61	-4.61	-4.41	-4.49	-5.06	-4.08	-5.43	-3.20	-3.78	-5.42	-7.13	-15.31
240.0	-3.86	-7.12	-4.81	-3.24	-2.72	-2.58	-2.15	-2.75	-3.12	-3.82	-5.21	-9.09	-15.88
255.0	-6.85	-8.05	-5.38	-2.93	-2.65	-2.22	-1.48	-1.88	-3.21	-4.26	-6.56	-11.33	-12.34
270.0	-10.63	-7.95	-6.82	-3.69	-4.52	-3.69	-2.53	-2.55	-3.68	-5.77	-8.88	-13.99	-9.54
285.0	-9.67	-7.56	-8.02	-4.85	-7.34	-6.37	-4.97	-4.43	-5.75	-8.62	-11.49	-14.81	-8.33
300.0	-6.44	-6.71	-9.03	-6.80	-9.66	-9.84	-8.29	-6.98	-9.25	-12.72	-12.56	-14.66	-8.05
315.0	-4.19	-5.78	-8.49	-8.53	-11.38	-12.18	-11.32	-9.66	-13.59	-14.90	-10.89	-14.07	-8.36
330.0	-2.71	-4.23	-6.19	-7.90	-10.57	-11.56	-10.51	-11.93	-13.83	-16.84	-8.96	-13.98	-9.09
345.0	-1.72	-2.45	-3.28	-4.52	-4.81	-6.28	-5.27	-8.28	-9.51	-11.57	-7.82	-13.04	-9.72
360.0	-1.32	-0.86	-1.22	-0.60	-0.97	-0.85	-1.62	-3.37	-6.34	-5.85	-7.33	-10.92	-10.58

Unit: dBi

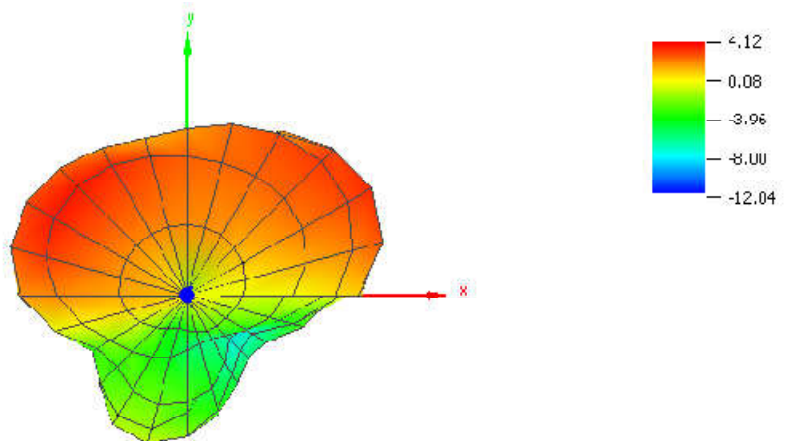
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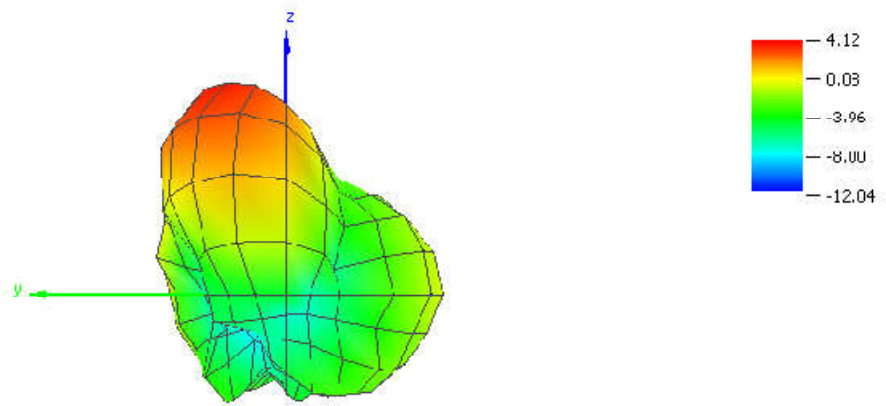
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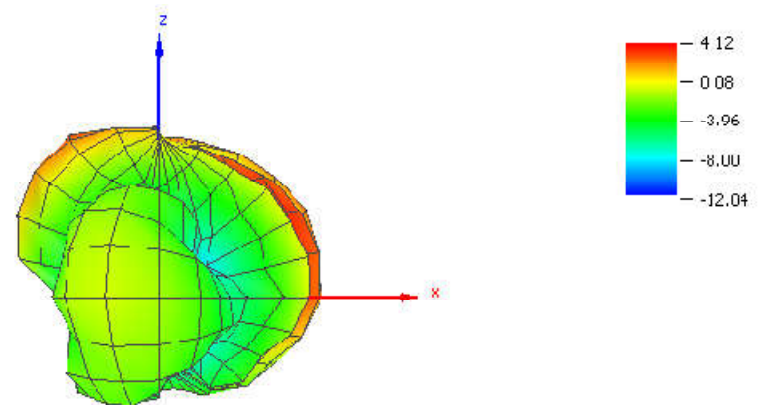
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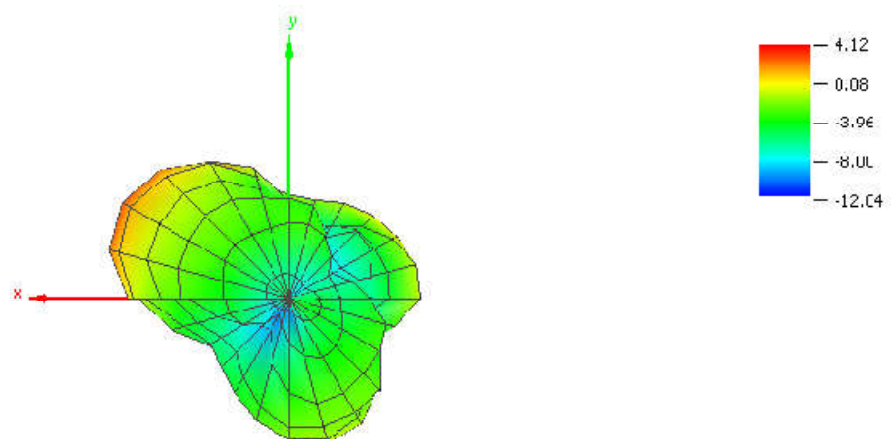
Theta = 90, Phi = 180



Theta = 90, Phi = 270



Theta = 180, Phi = 0



Unit: mm

Antenna Size:

