



# Radiated Composite Gain Data

# Appendix A

Theta (°)	Phi (°)	Gain	Phi(15°)	Phi(22.5°)	Phi(30°)	Phi(37.5°)	Phi(45°)	Phi(52.5°)	Phi(60°)	Phi(67.5°)	Phi(75°)	Phi(82.5°)	Phi(90°)	Phi(105°)	Phi(120°)	Phi(135°)	Phi(150°)	Phi(165°)	Phi(180°)	Phi(195°)	Phi(210°)	Phi(225°)	Phi(240°)	Phi(255°)	Phi(270°)	Phi(285°)	Phi(300°)	Phi(315°)	Phi(330°)	Phi(345°)
0(15°)	0(15°)	6.27/6.49	6.75/7.03	-7.46/8.21	-8.96/9.57	-9.85/10.16	-10.91/12.23	-13.97/15.88	-17.31/17.32	-16.25/14.51	-12.56/10.75	-9.09/8.05	-7.81/7.91	-7.72/6.48	-5.41/5.05	-5.45/5.45	-5.45/5.45	-5.45/5.45	-5.45/5.45	-5.45/5.45	-5.45/5.45	-5.45/5.45	-5.45/5.45	-5.45/5.45	-5.45/5.45	-5.45/5.45	-5.45/5.45	-5.45/5.45	-5.45/5.45	-5.45/5.45



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Theta	Phi	Gain	Phi(7.5)	Phi(15)	Phi(30)	Phi(45)	Phi(60)	Phi(75)	Phi(90)	Phi(105)	Phi(120)	Phi(135)	Phi(150)	Phi(165)	Phi(180)	Phi(195)	Phi(210)	Phi(225)	Phi(240)	Phi(255)	Phi(270)	Phi(285)	Phi(300)	Phi(315)	Phi(330)	Phi(345)
Theta(0)	Phi(0)	3.33/2.99	-2.56/5.9	-4.71/4.24	4.49/4.12	-0.79/5.91	-3.2/5.3	5.74/5.6	-1.91/6.49	-4.43/3.73	-2.06/2.13	-2.91/1.35	1.43/1.93	3.04/2.5	0.11/0.45	0.43/1.24	-0.71/5.24	-6.15/5.64	6.19/2.42	-3.56/6.17	-4.72/5.97	-7.61/2.83	-4.75/3.76	-4.63/5.27	-4.98/3.79	
Theta(7.5)	Phi(7.5)	-3.6/2.6	-4.8/7.825	-7.41/3.84	2.94/1.17	-2.99/4.89	-4.53/3.62	-4.36/6.76	-4.93/4.87	-2.66/2.02	-0.32/3.09	-1.66/2.8	-1.3/3.7	-6.07/5.26	4.07/5.47	-3.9/5.24	-6.33/6.69	-6.16/5.64	-7.61/8.62	-3.51/6.07	-3.12/4.81	-5.75/4.71	-5.17/2.07	-2.15/3.26	-4.8/4.31	
Theta(15)	Phi(15)	-1.75/5.03	-2.29/3.7	-1.09/0.8	0.95/2.21	-3.83/3.34	-5.01/3.45	-4.35/6.12	-1.97/4.39	-6.08/2.1	-5.12/2.45	-4.27/6.51	-1.27/1.88	-6.81/5.21	0.95/3.29	-3.24/3.52	-6.61/4.58	-7.47/6.21	-6.92/5.36	-4.98/5.31	-5.03/4.33	-4.93/2.73	-2.29/2.15	-1.99/1.69	-1.68/3.78	





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Theta	150°	157.5°	165°	172.5°	180°	187.5°	195°	202.5°	210°	217.5°	225°	232.5°	240°	247.5°	255°	262.5°	270°	277.5°	285°	292.5°	300°	307.5°	315°	322.5°	330°	337.5°	345°																				
Gain	Phi(0°)	Phi(7.5°)	Phi(15°)	Phi(22.5°)	Phi(30°)	Phi(37.5°)	Phi(45°)	Phi(52.5°)	Phi(60°)	Phi(67.5°)	Phi(75°)	Phi(82.5°)	Phi(90°)	Phi(97.5°)	Phi(105°)	Phi(112.5°)	Phi(120°)	Phi(127.5°)	Phi(135°)	Phi(142.5°)	Phi(150°)	Phi(157.5°)	Phi(165°)	Phi(172.5°)	Phi(180°)	Phi(187.5°)	Phi(195°)	Phi(202.5°)	Phi(210°)	Phi(217.5°)	Phi(225°)	Phi(232.5°)	Phi(240°)	Phi(247.5°)	Phi(255°)	Phi(262.5°)	Phi(270°)	Phi(277.5°)	Phi(285°)	Phi(292.5°)	Phi(300°)	Phi(307.5°)	Phi(315°)	Phi(322.5°)	Phi(330°)	Phi(337.5°)	Phi(345°)
Theta	0°	7.5°	15°	22.5°	30°	37.5°	45°	52.5°	60°	67.5°	75°	82.5°	90°	97.5°	105°	112.5°	120°	127.5°	135°	142.5°	150°	157.5°	165°	172.5°	180°	187.5°	195°	202.5°	210°	217.5°	225°	232.5°	240°	247.5°	255°	262.5°	270°	277.5°	285°	292.5°	300°	307.5°	315°	322.5°	330°	337.5°	345°
Gain	Phi(0°)	Phi(7.5°)	Phi(15°)	Phi(22.5°)	Phi(30°)	Phi(37.5°)	Phi(45°)	Phi(52.5°)	Phi(60°)	Phi(67.5°)	Phi(75°)	Phi(82.5°)	Phi(90°)	Phi(97.5°)	Phi(105°)	Phi(112.5°)	Phi(120°)	Phi(127.5°)	Phi(135°)	Phi(142.5°)	Phi(150°)	Phi(157.5°)	Phi(165°)	Phi(172.5°)	Phi(180°)	Phi(187.5°)	Phi(195°)	Phi(202.5°)	Phi(210°)	Phi(217.5°)	Phi(225°)	Phi(232.5°)	Phi(240°)	Phi(247.5°)	Phi(255°)	Phi(262.5°)	Phi(270°)	Phi(277.5°)	Phi(285°)	Phi(292.5°)	Phi(300°)	Phi(307.5°)	Phi(315°)	Phi(322.5°)	Phi(330°)	Phi(337.5°)	Phi(345°)
Gain	Phi(0°)	Phi(7.5°)	Phi(15°)	Phi(22.5°)	Phi(30°)	Phi(37.5°)	Phi(45°)	Phi(52.5°)	Phi(60°)	Phi(67.5°)	Phi(75°)	Phi(82.5°)	Phi(90°)	Phi(97.5°)	Phi(105°)	Phi(112.5°)	Phi(120°)	Phi(127.5°)	Phi(135°)	Phi(142.5°)	Phi(150°)	Phi(157.5°)	Phi(165°)	Phi(172.5°)	Phi(180°)	Phi(187.5°)	Phi(195°)	Phi(202.5°)	Phi(210°)	Phi(217.5°)	Phi(225°)	Phi(232.5°)	Phi(240°)	Phi(247.5°)	Phi(255°)	Phi(262.5°)	Phi(270°)	Phi(277.5°)	Phi(285°)	Phi(292.5°)	Phi(300°)	Phi(307.5°)	Phi(315°)	Phi(322.5°)	Phi(330°)	Phi(337.5°)	Phi(345°)



Radiated Composite Gain Data

Appendix A

Table with columns for frequency (Freq[Hz]), theta (Theta), and various gain values (Phi(0) to Phi(360)). Rows include gain data for frequencies from 5.785 GHz to 10.0 GHz and theta values from 0 to 180 degrees.











Freq(Hz)	TotalAnt. 3																																																
Gain	0°	15°	30°	45°	60°	75°	90°	105°	120°	135°	150°	165°	180°	195°	210°	225°	240°	255°	270°	285°	300°	315°	330°	345°																									
1105°	1.71/0.96	-1.13/1.23	2.13/0.58	0.73/8.64	-2.79/5.04	3.43/4.01	-4.12/4.24	3.10/5.27	6.46/12.04	-5.59/1.35	3.15/4.25	-3.74/3.74	3.84/4.61	-6.79/6.77	9.87/7.06	-9.91/8.57	-14.79/10.29	6.68/6.32	-6.01/6.61	6.89/6.05	-5.62/3.11	0.12/1.14	-1.12/3.51	-0.55/1.28																									
1125°	-2.32/5.52	-2.11/3.83	-0.49/1.08	-2.68/6.34	-6.04/5.15	-4.43/3.55	-6.47/3.97	-3.58/1.73	-7.50/4.41	-5.11/1.84	-3.50/3.35	-4.21/6.09	-3.49/6.14	-6.28/5.27	-7.84/11.36	-4.72/9.23	-9.81/8.50	6.68/5.19	-8.77/6.09	8.89/7.78	-4.80/5.64	-3.40/3.63	-3.53/3.94	-0.93/1.26																									
1200°	-6.05/6.48	-9.33/6.00	-3.02/4.14	6.75/9.61	-11.25/9.92	-6.99/9.34	-7.97/7.78	-1.97/1.80	-6.70/6.49	-7.89/7.28	-6.94/4.55	-4.79/8.68	-11.63/11.97	-11.85/10.08	-9.22/8.30	-4.04/10.50	-9.84/10.55	9.84/10.55	-11.28/12.56	-12.41/6.90	-4.74/7.78	-9.07/6.65	-6.95/9.55	-7.62/4.75																									
1275°	-6.73/7.92	-9.65/9.53	-14.01/10.27	-7.38/7.19	-11.30/13.13	-9.86/10.50	-14.49/10.70	-10.48/15.50	-11.92/8.81	-13.67/11.17	-8.59/9.31	-3.72/5.56	-4.94/6.26	-6.32/9.02	-15.08/8.14	-15.10/8.96	-15.39/11.82	9.31/11.37	-15.52/12.06	-14.06/7.83	-4.50/8.45	-11.68/7.56	-9.78/6.56	-7.73/9.18																									
1350°	-11.06/12.31	-11.77/9.64	-7.36/8.37	5.17/7.69	-9.45/11.05	-11.82/12.35	-11.82/12.35	-6.71/10.37	-11.72/6.00	-8.19/12.35	-10.10/10.13	-8.65/10.37	-12.67/11.96	-15.03/12.86	-9.01/8.27	-11.00/12.11	-13.23/12.27	-11.87/6.74	-8.80/10.04	-8.66/11.99	-10.10/11.71	-4.54/4.46	-6.93/12.17	-12.05/12.58																									
1425°	-2.47/2.99	-4.12/5.10	-6.80/9.72	-11.93/11.17	-7.27/8.64	-7.20/12.36	-8.27/2.47	-11.70/10.29	-12.61/9.50	-5.94/8.58	-12.82/14.15	-8.39/9.46	-12.48/14.76	-13.05/8.67	-5.94/9.30	-12.21/11.40	-15.76/12.44	-12.01/8.52	-7.15/9.54	-13.31/11.50	-7.14/7.00	-4.91/5.12	-4.76/5.27	-3.79/3.28																									
1500°	-6.15/7.36	-5.96/5.51	-4.97/5.77	-8.66/7.21	-7.11/8.98	-7.15/6.04	-7.63/8.72	-9.18/6.33	-6.37/12.55	-9.29/8.88	-11.33/13.45	-12.09/13.41	-13.99/13.95	-14.12/13.90	-11.74/14.24	-13.42/15.68	-10.76/6.22	-5.47/6.30	-9.11/12.62	-10.57/11.16	-12.93/10.20	-8.46/6.99	-4.03/4.04	-5.04/4.79																									
1575°	-8.87/7.43	-8.73/9.24	-8.73/12.1	-4.92/6.24	-11.24/9.54	-7.95/11.58	-9.20/4.97	-3.46/3.60	-5.52/12.15	-16.12/8.55	-6.88/7.80	-9.13/8.02	-8.07/8.53	-10.40/10.69	-11.60/11.76	-11.70/13.44	-10.67/11.74	-5.73/6.30	-8.07/9.86	-9.68/10.45	-12.29/11.41	-8.24/7.54	-9.48/8.91	-8.55/10.92																									
1650°	-6.11/6.74	-5.07/8.34	-9.37/9.53	-10.27/8.69	-6.36/7.07	-7.67/6.95	-5.70/6.59	-8.73/12.04	-14.10/12.94	-9.95/12.7	-6.85/8.06	-9.20/10.42	-10.49/9.43	-8.57/7.59	-7.73/10.29	-13.72/13.28	-11.55/10.96	-10.54/11.25	-10.88/10.53	-9.43/10.20	-9.60/9.77	-8.77/6.53	-5.01/5.20	-5.22/4.71																									
1725°	-8.89/8.49	-7.70/7.16	-7.10/7.65	-7.58/8.72	-10.83/11.21	-8.86/7.24	-7.07/7.54	-8.30/8.68	-9.59/9.67	-8.62/7.40	-7.47/8.57	-8.54/9.59	-9.32/7.85	-8.06/7.95	-7.92/9.70	-11.34/12.70	-13.65/14.71	-13.81/11.80	-10.25/9.47	-8.47/7.86	-8.13/8.11	-8.23/8.67	-9.11/9.25	-9.08/9.74																									
1800°	-15.11/15.87	-15.44/15.32	-15.03/13.81	-12.77/12.86	-11.39/9.87	-10.09/7.10	-11.96/13.20	-12.57/11.25	-11.74/13.44	-15.14/15.31	-14.43/14.96	-13.91/13.64	-12.58/12.89	-12.80/12.09	-13.08/12.87	-12.33/13.51	-13.95/12.76	-11.64/9.61	-9.03/8.94	-8.60/8.47	-9.17/10.61	-11.44/12.64	-13.62/14.06	-14.18/13.30																									



# Antenna Pattern

# Appendix B

Theta	Phi	150°	157.5°	165°	172.5°	180°	187.5°	195°	202.5°	210°	217.5°	225°	232.5°	240°	247.5°	255°	262.5°	270°	277.5°	285°	300°	307.5°	315°	322.5°	330°	337.5°	345°																				
Gain	Phi(0)/Phi(7.5)	Phi(15)/Phi(22.5)	Phi(30)/Phi(37.5)	Phi(45)/Phi(52.5)	Phi(60)/Phi(67.5)	Phi(75)/Phi(82.5)	Phi(90)/Phi(97.5)	Phi(105)/Phi(112.5)	Phi(120)/Phi(127.5)	Phi(135)/Phi(142.5)	Phi(150)/Phi(157.5)	Phi(165)/Phi(172.5)	Phi(180)/Phi(187.5)	Phi(195)/Phi(202.5)	Phi(210)/Phi(217.5)	Phi(225)/Phi(232.5)	Phi(240)/Phi(247.5)	Phi(255)/Phi(262.5)	Phi(270)/Phi(277.5)	Phi(285)/Phi(292.5)	Phi(300)/Phi(307.5)	Phi(315)/Phi(322.5)	Phi(330)/Phi(337.5)	Phi(345)/Phi(352.5)																							
Theta	0°	7.5°	15°	22.5°	30°	37.5°	45°	52.5°	60°	67.5°	75°	82.5°	90°	97.5°	105°	112.5°	120°	127.5°	135°	142.5°	150°	157.5°	165°	172.5°	180°	187.5°	195°	202.5°	210°	217.5°	225°	232.5°	240°	247.5°	255°	262.5°	270°	277.5°	285°	292.5°	300°	307.5°	315°	322.5°	330°	337.5°	345°
Theta	0°	7.5°	15°	22.5°	30°	37.5°	45°	52.5°	60°	67.5°	75°	82.5°	90°	97.5°	105°	112.5°	120°	127.5°	135°	142.5°	150°	157.5°	165°	172.5°	180°	187.5°	195°	202.5°	210°	217.5°	225°	232.5°	240°	247.5°	255°	262.5°	270°	277.5°	285°	292.5°	300°	307.5°	315°	322.5°	330°	337.5°	345°

E1(XY plane) –  $\Theta(90)\Phi(0-360)$   
 E2(XZ plane) –  $\Theta(0-180)\Phi(0)$  and  $\Theta(0-180)\Phi(180)$   
 E3(YZ plane) –  $\Theta(0-180)\Phi(90)$  and  $\Theta(0-180)\Phi(270)$



