

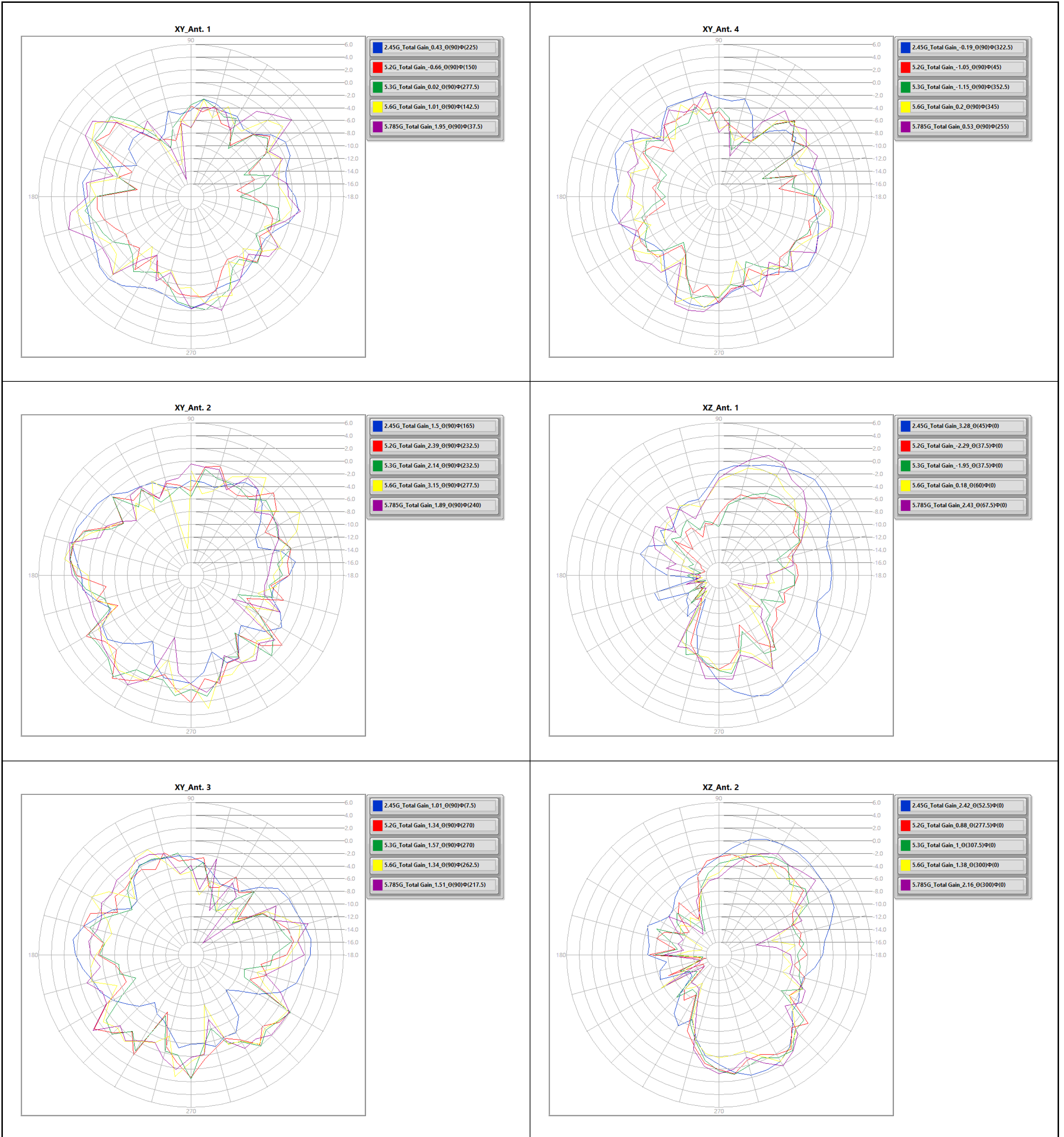


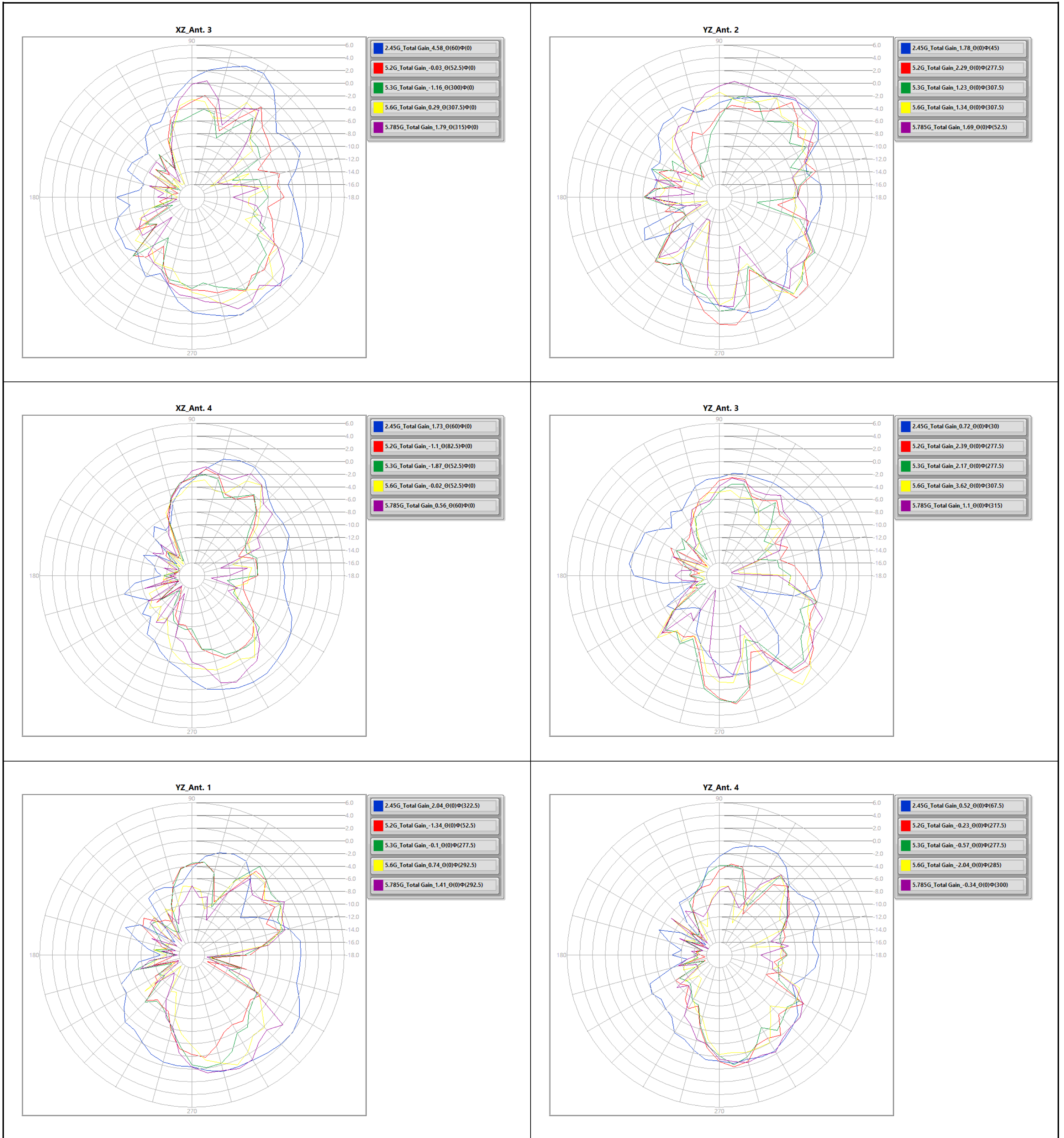
Antenna Pattern_Radio 1

Appendix D

Theta (°)	12.99	13.18	13.37	13.56	13.75	13.94	14.13	14.32	14.51	14.70	14.89	15.08	15.27	15.46	15.65	15.84	16.03	16.22	16.41	16.60	16.79	16.98	17.17	17.36	17.55	17.74	17.93	18.12	18.31	18.50	18.69	18.88	19.07	19.26	19.45	19.64	19.83	20.02	20.21	20.40	20.59	20.78	20.97	21.16	21.35	21.54	21.73	21.92	22.11	22.30	22.49	22.68	22.87	23.06	23.25	23.44	23.63	23.82	24.01	24.20	24.39	24.58	24.77	24.96	25.15	25.34	25.53	25.72	25.91	26.10	26.29	26.48	26.67	26.86	27.05	27.24	27.43	27.62	27.81	28.00	28.19	28.38	28.57	28.76	28.95	29.14	29.33	29.52	29.71	29.90	30.09	30.28	30.47	30.66	30.85	31.04	31.23	31.42	31.61	31.80	31.99	32.18	32.37	32.56	32.75	32.94	33.13	33.32	33.51	33.70	33.89	34.08	34.27	34.46	34.65	34.84	35.03	35.22	35.41	35.60	35.79	35.98	36.17	36.36	36.55	36.74	36.93	37.12	37.31	37.50	37.69	37.88	38.07	38.26	38.45	38.64	38.83	39.02	39.21	39.40	39.59	39.78	39.97	40.16	40.35	40.54	40.73	40.92	41.11	41.30	41.49	41.68	41.87	42.06	42.25	42.44	42.63	42.82	43.01	43.20	43.39	43.58	43.77	43.96	44.15	44.34	44.53	44.72	44.91	45.10	45.29	45.48	45.67	45.86	46.05	46.24	46.43	46.62	46.81	47.00	47.19	47.38	47.57	47.76	47.95	48.14	48.33	48.52	48.71	48.90	49.09	49.28	49.47	49.66	49.85	50.04	50.23	50.42	50.61	50.80	50.99	51.18	51.37	51.56	51.75	51.94	52.13	52.32	52.51	52.70	52.89	53.08	53.27	53.46	53.65	53.84	54.03	54.22	54.41	54.60	54.79	54.98	55.17	55.36	55.55	55.74	55.93	56.12	56.31	56.50	56.69	56.88	57.07	57.26	57.45	57.64	57.83	58.02	58.21	58.40	58.59	58.78	58.97	59.16	59.35	59.54	59.73	59.92	60.11	60.30	60.49	60.68	60.87	61.06	61.25	61.44	61.63	61.82	62.01	62.20	62.39	62.58	62.77	62.96	63.15	63.34	63.53	63.72	63.91	64.10	64.29	64.48	64.67	64.86	65.05	65.24	65.43	65.62	65.81	66.00	66.19	66.38	66.57	66.76	66.95	67.14	67.33	67.52	67.71	67.90	68.09	68.28	68.47	68.66	68.85	69.04	69.23	69.42	69.61	69.80	69.99	70.18	70.37	70.56	70.75	70.94	71.13	71.32	71.51	71.70	71.89	72.08	72.27	72.46	72.65	72.84	73.03	73.22	73.41	73.60	73.79	73.98	74.17	74.36	74.55	74.74	74.93	75.12	75.31	75.50	75.69	75.88	76.07	76.26	76.45	76.64	76.83	77.02	77.21	77.40	77.59	77.78	77.97	78.16	78.35	78.54	78.73	78.92	79.11	79.30	79.49	79.68	79.87	80.06	80.25	80.44	80.63	80.82	81.01	81.20	81.39	81.58	81.77	81.96	82.15	82.34	82.53	82.72	82.91	83.10	83.29	83.48	83.67	83.86	84.05	84.24	84.43	84.62	84.81	85.00	85.19	85.38	85.57	85.76	85.95	86.14	86.33	86.52	86.71	86.90	87.09	87.28	87.47	87.66	87.85	88.04	88.23	88.42	88.61	88.80	88.99	89.18	89.37	89.56	89.75	89.94	90.13	90.32	90.51	90.70	90.89	91.08	91.27	91.46	91.65	91.84	92.03	92.22	92.41	92.60	92.79	92.98	93.17	93.36	93.55	93.74	93.93	94.12	94.31	94.50	94.69	94.88	95.07	95.26	95.45	95.64	95.83	96.02	96.21	96.40	96.59	96.78	96.97	97.16	97.35	97.54	97.73	97.92	98.11	98.30	98.49	98.68	98.87	99.06	99.25	99.44	99.63	99.82	100.01	100.20	100.39	100.58	100.77	100.96	101.15	101.34	101.53	101.72	101.91	102.10	102.29	102.48	102.67	102.86	103.05	103.24	103.43	103.62	103.81	104.00	104.19	104.38	104.57	104.76	104.95	105.14	105.33	105.52	105.71	105.90	106.09	106.28	106.47	106.66	106.85	107.04	107.23	107.42	107.61	107.80	107.99	108.18	108.37	108.56	108.75	108.94	109.13	109.32	109.51	109.70	109.89	110.08	110.27	110.46	110.65	110.84	111.03	111.22	111.41	111.60	111.79	111.98	112.17	112.36	112.55	112.74	112.93	113.12	113.31	113.50	113.69	113.88	114.07	114.26	114.45	114.64	114.83	115.02	115.21	115.40	115.59	115.78	115.97	116.16	116.35	116.54	116.73	116.92	117.11	117.30	117.49	117.68	117.87	118.06	118.25	118.44	118.63	118.82	119.01	119.20	119.39	119.58	119.77	119.96	120.15	120.34	120.53	120.72	120.91	121.10	121.29	121.48	121.67	121.86	122.05	122.24	122.43	122.62	122.81	123.00	123.19	123.38	123.57	123.76	123.95	124.14	124.33	124.52	124.71	124.90	125.09	125.28	125.47	125.66	125.85	126.04	126.23	126.42	126.61	126.80	126.99	127.18	127.37	127.56	127.75	127.94	128.13	128.32	128.51	128.70	128.89	129.08	129.27	129.46	129.65	129.84	130.03	130.22	130.41	130.60	130.79	130.98	131.17	131.36	131.55	131.74	131.93	132.12	132.31	132.50	132.69	132.88	133.07	133.26	133.45	133.64	133.83	134.02	134.21	134.40	134.59	134.78	134.97	135.16	135.35	135.54	135.73	135.92	136.11	136.30	136.49	136.68	136.87	137.06	137.25	137.44	137.63	137.82	138.01	138.20	138.39	138.58	138.77	138.96	139.15	139.34	139.53	139.72	139.91	140.10	140.29	140.48	140.67	140.86	141.05	141.24	141.43	141.62	141.81	142.00	142.19	142.38	142.57	142.76	142.95	143.14	143.33	143.52	143.71	143.90	144.09	144.28	144.47	144.66	144.85	145.04	145.23	145.42	145.61	145.80	145.99	146.18	146.37	146.56	146.75	146.94	147.13	147.32	147.51	147.70	147.89	148.08	148.27	148.46	148.65	148.84	149.03	149.22	149.41	149.60	149.79	149.98	150.17	150.36	150.55	150.74	150.93	151.12	151.31	151.50	151.69	151.88	152.07	152.26	152.45	152.64	152.83	153.02	153.21	153.40	153.59	153.78	153.97	154.16	154.35	154.54	154.73	154.92	155.11	155.30	155.49	155.68	155.87	156.06	156.25	156.44	156.63	156.82	157.01	157.20	157.39	157.58	157.77	157.96	158.15	158.34	158.53	158.72	158.91	159.10	159.29	159.48	159.67	159.86	160.05	160.24	160.43	160.62	160.81	161.00	161.19	161.38	161.57	161.76	161.95	162.14	162.33	162.52	162.71	162.90	163.09	163.28	163.47	163.66	163.85	164.04	164.23	164.42	164.61	164.80	164.99	165.18	165.37	165.56	165.75	165.94	166.13	166.32	166.51	166.70	166.89	167.08	167.27	167.46	167.65	167.84	168.03	168.22	168.41	168.60	168.79	168.98	169.17	169.36	169.55	169.74	169.93	170.12	170.31	170.50	170.69	170.88	171.07	171.26	171.45	171.64	171.83	172.02	172.21	172.40	172.59	172.78	172.97	173.16	173.35	173.54	173.73	173.92	174.11	174.30	174.49	174.68	174.87	175.06	175.25	175.44	175.63	175.82	176.01	176.20	176.39	176.58	176.77	176.96	177.15	177.34	177.53	177.72	177.91	178.10	178.29	178.48	178.67	178.86	179.05	179.24	179.43	179.62	179.81	179.99	180.18	180.37	180.56	180.75	180.94	181.13	181.32	181.51	181.70	181.89	182.08	182.27	182.46	182.65	182.84	183.03	183.22	183.41	183.60	183.79	183.98	184.17	184.36	184.55	184.74	184.93	185.12	185.31	185.50	185.69	185.88	186.07	186.26	186.45	186.64	186.83	187.02	187.21	187.40	187.59	187.78	187.97	188.16	188.35	188.54	188.73	188.92	189.11	189.30	189.49	189.68	189.87	190.06	190.25	190.44	190.63	190.82	191.01	191.20	191.39	191.58	191.77	191.96	192.15	192.34	192.53	192.72	192.91	193.10	193.29	193.48	193.67	193.86	194.05	194.24	194.43	194.62	194.81	195.00	195.19	195.38	195.57	195.76	195.95	196.14	196.33	196.52	196.71	196.90	197.09	197.28	197.47	197.66	197.85	198.04	198.23	198.42	198.61	198.80	198.99	199.18	199.37	199.56	199.75	199.94	200.13	200.32	200.51	200.70	200.89	201.08	201.27	201.46	201.65	201.84	202.03	202.22	202.41	202.60	202.79	202.98	203.17	203.36	203.55	203.74	203.93	204.12	204.31	204.50	204.69	204.88	205.07	205.26	205.45	205.64	205.83	206.02	206.21	206.40	206.59	206.78	206.97	207.16	207.35	207.54	207.73	207.92	208.11	208.30	208.49	208.68	208.87	209.06	209.25	209.44	209.63	209.82	209.99	210.18	210.37	210.56	210.75	210.94	211.13	211.32	211.51	211.70	211.89	212.08	212.27	212.46	212.65	212.84	213.03	213.22	213.41	213.60	213.79	213.98	214.17	214.36	214.55	214.74	214.93	215.12	215.31	215.50	215.69	215.88	216.07	216.26	216.45	216.64	216.83	217.02	217.21	217.40	217.59	217.78	217.97	218.16	218.35	218.54	218.73	218.92	219.11	219.30	219.49	219.68	219.87	219.99	220.18	220.37	220.56	220.75	220.94	221.13	221.32	221.51	221.70	221.89	222.08	222.27	222.46	222.65	222.84	223.03	223.22	223.41	223.60	223.79	223.98	224.17	224.36	224.55	224.74	224.93	225.12	225.31	225.50	225.69	225.88	226.07	226.26	226.45	226.64	226.83	227.02	227.21	227.40	227.59	227.78	227.97	228.16	228.35	228.54	228.73	228.92	229.11	229.30	229.49	229.68	229.87	229.99	230.18	230.37	230.56	230.75	230.94	231.13	231.32	231.51	231
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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 $\Theta(0-180)\Phi(270)$







Antenna Pattern Radio 2

Appendix E

Freq(Hz)	Theta	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(105)	Phi(120)	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)			
6.475GHz	0.00	-2.09	-1.09	-3.78	2.67	-1.33	2.00	0.26	3.71	-2.15	1.61	-1.57	3.45	0.57	0.05	1.55	2.00	-1.47	1.42	2.41	0.78	-0.97	-2.61	-1.40	2.03	1.92	-0.69	0.04	-0.07	4.21	-5.90	3.10	-4.05	2.80	-0.60	2.59	0.13	1.01	-2.74	0.05	2.43	2.77	1.57	0.31	1.10	1.17	-0.50	2.87
Gain	0.00	0.70	1.50	2.25	3.00	3.75	4.50	5.25	6.00	6.75	7.50	8.25	9.00	9.75	10.50	11.25	12.00	12.75	13.50	14.25	15.00	15.75	16.50	17.25	18.00	18.75	19.50	20.25	21.00	21.75	22.50	23.25	24.00	24.75	25.50	26.25	27.00	27.75	28.50	29.25	30.00	30.75	31.50	32.25	33.00	33.75	34.50	35.25
Theta	0.00	7.5	15	22.5	30	37.5	45	52.5	60	67.5	75	82.5	90	105	120	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	352.5			
Gain	0.00	0.70	1.50	2.25	3.00	3.75	4.50	5.25	6.00	6.75	7.50	8.25	9.00	9.75	10.50	11.25	12.00	12.75	13.50	14.25	15.00	15.75	16.50	17.25	18.00	18.75	19.50	20.25	21.00	21.75	22.50	23.25	24.00	24.75	25.50	26.25	27.00	27.75	28.50	29.25	30.00	30.75	31.50	32.25	33.00	33.75	34.50	35.25
Theta	0.00	7.5	15	22.5	30	37.5	45	52.5	60	67.5	75	82.5	90	105	120	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	352.5			
Gain	0.00	0.70	1.50	2.25	3.00	3.75	4.50	5.25	6.00	6.75	7.50	8.25	9.00	9.75	10.50	11.25	12.00	12.75	13.50	14.25	15.00	15.75	16.50	17.25	18.00	18.75	19.50	20.25	21.00	21.75	22.50	23.25	24.00	24.75	25.50	26.25	27.00	27.75	28.50	29.25	30.00	30.75	31.50	32.25	33.00	33.75	34.50	35.25
Theta	0.00	7.5	15	22.5	30	37.5	45	52.5	60	67.5	75	82.5	90	105	120	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	352.5			
Gain	0.00	0.70	1.50	2.25	3.00	3.75	4.50	5.25	6.00	6.75	7.50	8.25	9.00	9.75	10.50	11.25	12.00	12.75	13.50	14.25	15.00	15.75	16.50	17.25	18.00	18.75	19.50	20.25	21.00	21.75	22.50	23.25	24.00	24.75	25.50	26.25	27.00	27.75	28.50	29.25	30.00	30.75	31.50	32.25	33.00	33.75	34.50	35.25
Theta	0.00	7.5	15	22.5	30	37.5	45	52.5	60	67.5	75	82.5	90	105	120	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	352.5			

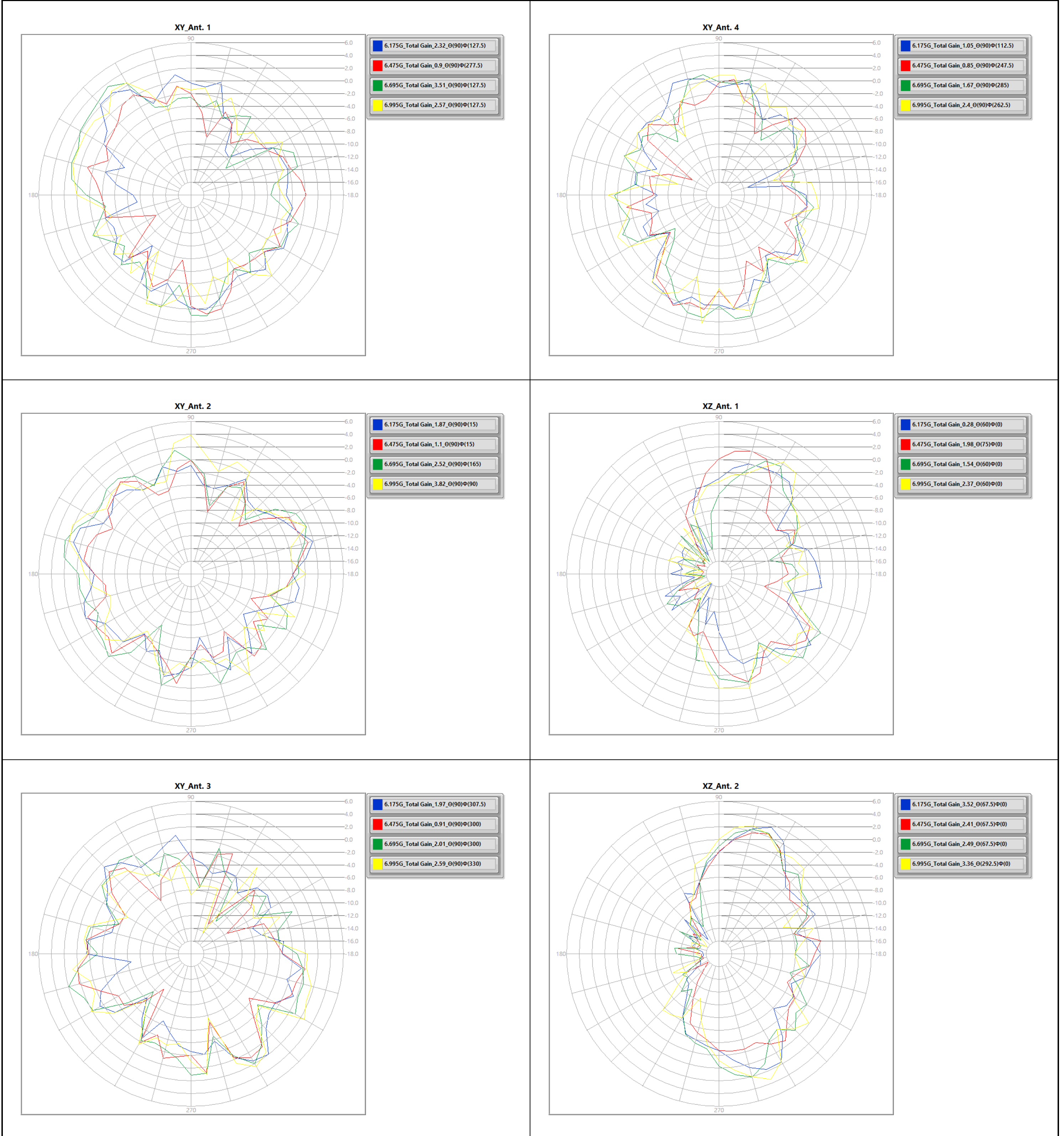


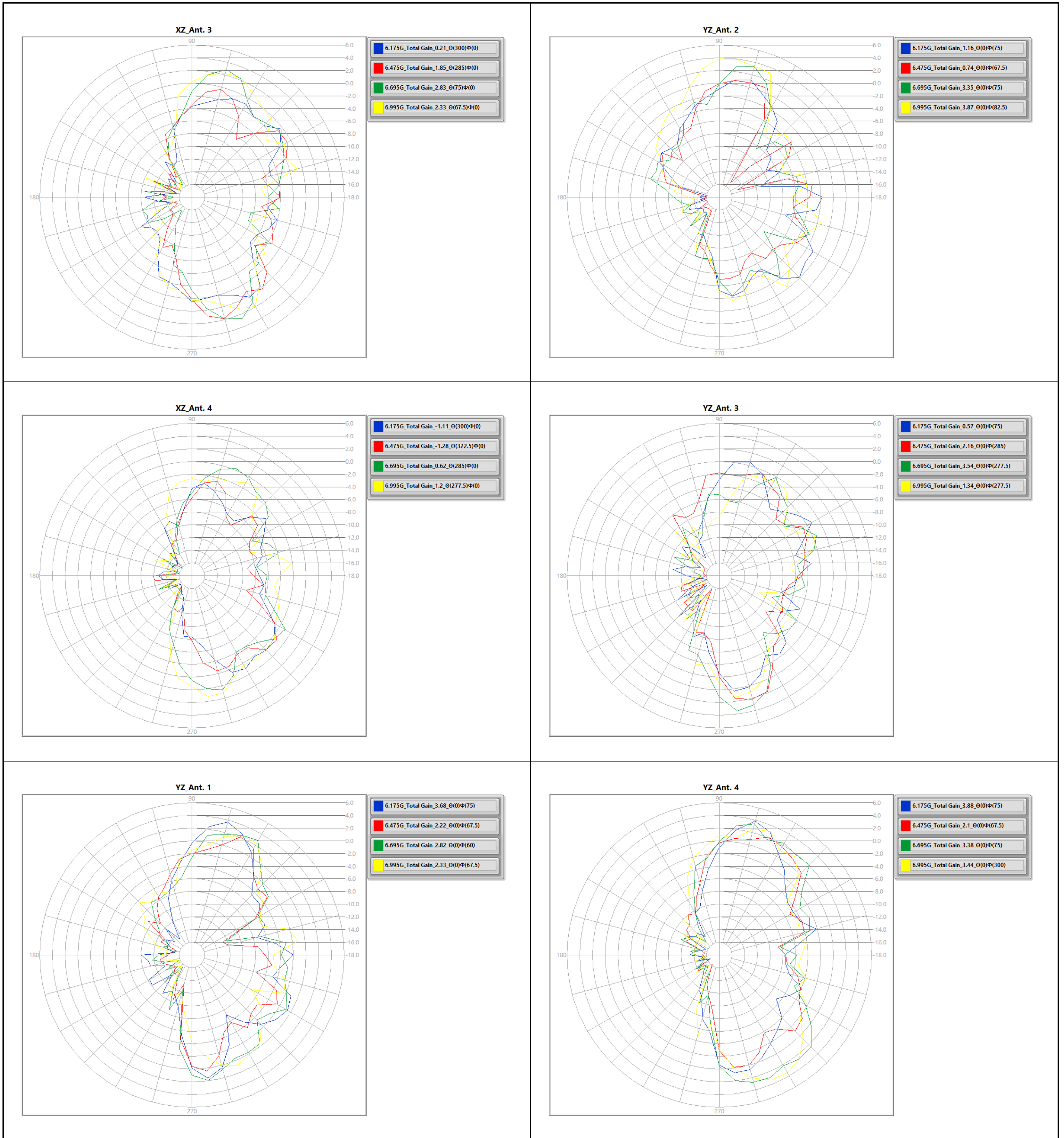
Antenna Pattern_Radio 2

Appendix E

Theta	Phi	Gain	Phi(0°)	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(10°)	Phi(0°)	9.38/13.46	-12.24/8.14	9.62/12.70	-6.99/10.49	6.70/7.57	-5.07/7.12	-10.36/10.56	-7.95/7.43	-11.20/9.07	-10.54/13.00	-14.79/12.17	-10.94/13.59	-14.67/11.10	-16.24/7.12	-10.47/14.20	-10.59/11.49	-9.29/9.67	-10.53/4.68	-11.64/10.73	-8.41/8.20	-9.75/8.45	-10.28/9.41	-9.53/8.40	-14.35/9.38		
Theta(12.5°)	Phi(0°)	-13.50/12.90	-13.22/11.02	-11.55/12.23	-12.30/9.45	-6.32/8.76	-8.13/10.29	-14.38/14.24	-10.23/8.32	-9.11/10.25	-12.68/15.25	-15.86/13.65	-9.35/13.66	-15.29/15.37	-10.92/7.66	-15.59/15.34	-15.15/12.07	-12.62/11.62	-8.39/4.80	-13.72/11.50	-9.33/10.82	-10.41/8.49	-13.48/6.19	-13.91/12.30	-13.42/10.84		
Theta(15°)	Phi(0°)	-14.38/12.56	-11.99/9.44	-10.86/15.26	-13.29/13.26	-12.06/8.87	-8.56/9.78	-13.20/9.36	-7.47/8.28	-10.98/11.57	-11.86/10.43	-15.85/14.14	-11.87/13.06	-15.70/15.95	-14.18/9.58	-11.23/14.22	-11.71/9.18	-15.35/11.25	-7.70/5.35	-14.52/14.88	-6.90/12.39	-8.08/13.66	-9.29/10.16	-11.78/13.16	-15.42/15.19		
Theta(17.5°)	Phi(0°)	-15.16/15.54	-13.89/11.40	-13.97/14.29	-10.51/12.36	-13.64/11.68	-11.74/12.77	-13.38/12.17	-10.69/12.48	-10.47/9.35	-9.92/12.70	-15.44/13.68	-14.14/14.89	-15.79/14.27	-12.06/10.89	-13.43/13.53	-15.28/14.04	-15.24/14.93	9.81/10.81	-15.48/15.18	-10.46/15.07	-14.89/11.56	-12.28/13.99	-15.37/10.36	-14.08/15.27		
Theta(20°)	Phi(0°)	-14.85/15.13	-15.79/14.64	-10.97/11.27	-14.59/15.88	-15.60/16.06	-13.74/13.20	-12.05/12.90	-11.22/9.62	-9.79/9.31	-8.69/10.50	-15.37/15.81	-14.28/14.77	-13.89/14.65	-14.21/15.56	-15.70/15.39	-14.31/13.59	-13.84/14.86	-15.72/12.82	-13.59/15.53	-15.56/11.99	-12.68/13.52	-15.90/12.92	-11.36/13.42	-14.81/14.80		
Theta(22.5°)	Phi(0°)	-14.53/15.20	-13.52/13.28	-14.14/14.30	-12.01/11.09	-10.56/11.54	-14.47/15.04	-15.69/12.82	-10.78/10.64	-11.67/12.26	-11.28/12.25	-14.50/15.37	-13.82/12.23	-12.64/15.39	-15.55/14.76	-12.87/14.34	-15.24/14.38	-12.67/13.86	-16.45/15.30	-15.45/14.41	-15.95/14.40	-13.13/14.01	-14.27/15.61	-12.90/13.52			
Theta(25°)	Phi(0°)	-15.35/15.57	-15.29/14.05	-12.59/11.40	-11.90/13.56	-14.71/15.68	-14.71/15.28	-15.22/15.35	-14.53/13.98	-13.31/12.78	-11.60/12.29	-12.94/12.07	-11.18/12.57	-15.62/15.17	-14.12/12.90	-14.27/14.53	-13.89/11.46	-11.01/10.67	-11.33/12.61	-14.36/15.00	-15.00/15.49	-15.02/15.85	-15.96/15.25	-15.11/14.90	-12.33/14.02		
Theta(27.5°)	Phi(0°)	-13.45/13.91	-14.47/14.46	-13.31/13.76	-13.63/13.81	-13.12/13.32	-13.62/14.13	-14.05/13.57	-12.85/12.69	-12.32/12.14	-12.31/13.79	-15.18/15.57	-15.62/14.54	-13.45/13.42	-14.10/14.64	-15.16/15.84	-14.59/13.45	-14.13/15.08	-15.72/15.73	-15.44/15.47	-15.54/15.23	-15.69/15.18	-14.89/14.59	-15.22/14.51	-14.36/14.06		
Theta(30°)	Phi(0°)	-12.75/12.00	-12.82/12.66	-13.93/13.97	-14.23/13.77	-13.75/14.72	-14.55/13.95	-13.43/12.65	-12.68/12.88	-12.67/13.00	-14.25/14.65	-14.17/13.95	-12.35/11.89	-12.31/14.15	-14.28/13.65	-14.02/13.35	-12.24/12.30	-12.23/15.56	-12.60/12.45	-13.35/13.17	-13.45/13.57	-13.18/13.33	-14.16/14.66	-13.84/14.78	-14.32/14.63		
Phi(0°)	Gain	6.475GPol	TotalAnt. 4																								
Theta(32.5°)	Phi(0°)	-8.25/8.22	-7.80/8.02	-8.24/8.54	-8.49/8.18	-8.16/7.74	-7.76/7.39	-7.55/7.26	-7.08/7.43	-7.71/8.20	-8.26/8.22	-8.00/7.53	-7.66/8.14	-8.98/8.96	-8.64/9.28	-9.27/9.30	-9.52/9.35	-9.76/9.52	-9.10/8.60	-8.69/8.17	-8.23/8.01	-7.99/8.08	-8.18/8.58	-8.94/8.42	-8.86/8.82		
Theta(35°)	Phi(0°)	-9.25/10.43	-10.76/11.21	-12.25/12.73	-13.20/12.85	-12.47/11.71	-10.62/9.62	-8.60/8.38	-7.94/7.54	-7.53/7.48	-7.50/7.15	-6.95/6.71	-6.58/6.54	-6.58/6.95	-7.82/8.14	-7.86/8.06	-7.40/7.25	-7.29/7.12	-7.01/6.79	-7.18/7.15	-7.69/8.15	-8.54/9.06	-9.52/9.70	-9.48/9.00	-9.57/9.47		
Theta(37.5°)	Phi(0°)	-7.33/8.13	-9.32/9.75	-8.48/6.80	-7.05/8.04	-8.41/7.37	-5.85/4.84	-4.19/4.01	-4.39/4.92	-5.53/6.61	-7.55/7.83	-8.48/8.61	-9.04/9.41	-9.17/8.74	-8.50/8.11	-8.11/8.53	-8.47/8.15	-7.09/6.69	-6.44/5.60	-5.25/4.78	-4.63/5.02	-5.35/6.61	-7.33/8.05	-8.02/7.72	-7.33/7.10		
Theta(40°)	Phi(0°)	-8.16/7.81	-8.44/9.27	-9.69/11.30	-15.22/15.69	-13.66/8.91	-6.08/4.89	-3.90/3.71	-4.02/5.12	-6.48/7.10	-6.88/6.02	-5.48/6.20	-7.04/7.16	-6.43/5.98	-6.58/6.57	-7.69/9.58	-8.37/6.70	-5.49/5.57	-5.98/3.37	-4.14/2.57	-4.26/2.31	-4.17/6.47	-6.77/7.01	-7.40/8.16	-8.91/8.98		
Theta(42.5°)	Phi(0°)	-7.49/6.57	-7.27/9.82	-11.88/10.82	-9.07/8.19	-6.69/6.29	-6.12/5.57	-5.09/3.80	-3.10/3.75	-4.04/4.03	-3.99/3.35	-4.14/3.71	-3.76/3.89	-2.80/2.25	-2.90/2.90	-3.70/4.56	-3.87/3.65	-4.69/5.85	-5.76/4.17	-4.84/4.20	-4.16/4.83	-5.20/6.66	-6.04/7.15	-10.73/8.38			
Theta(45°)	Phi(0°)	-4.96/5.51	-7.15/7.89	-8.53/8.33	-11.88/12.34	-11.60/9.58	-6.63/3.91	-2.93/3.93	-5.78/5.96	-4.30/3.70	-2.80/3.24	-4.13/2.86	-2.31/1.44	-1.28/1.77	-0.91/1.79	-2.29/1.57	-2.73/3.34	-4.37/6.24	-4.68/2.06	-1.55/3.04	-6.57/6.12	-5.11/3.50	-2.78/3.84	-4.88/6.33	-6.33/4.73		
Theta(47.5°)	Phi(0°)	-4.69/4.85	-6.58/8.00	-6.20/4.45	-5.95/7.15	-7.57/5.14	-1.76/0.72	0.29/3.24	-2.70/4.40	-5.18/4.49	-2.47/1.11	-2.38/3.83	-3.76/2.09	-1.48/2.78	-1.79/0.42	-3.05/2.59	-4.84/3.99	-1.84/1.95	-1.53/1.07	-1.09/1.23	-1.60/2.98	-3.56/4.94	-3.01/5.21	-5.08/4.74	-3.56/4.09		
Theta(50°)	Phi(0°)	-7.99/4.67	-2.29/3.50	-2.80/1.31	-2.92/5.46	-3.84/0.61	1.240/4.7	0.99/1.50	0.77/1.34	2.29/3.09	0.120/5.0	-2.80/2.36	-1.76/2.97	-3.68/4.14	-2.86/0.51	-0.45/0.39	-2.53/0.77	-2.71/2.38	-3.33/2.60	-1.76/3.72	-4.50/7.24	-1.59/3.35	-3.30/2.85	-3.30/2.85	-4.33/4.30		
Theta(52.5°)	Phi(0°)	-7.31/4.94	-1.26/1.80	-1.41/0.21	0.22/3.54	4.22/1.78	1.202/1.2	1.71/1.64	1.21/2.47	-2.98/3.09	0.120/5.3	-7.61/6.00	-1.59/0.26	-3.68/3.64	-5.47/1.69	-0.70/0.38	-1.48/1.49	-2.46/4.65	0.67/0.80	-3.86/2.04	-1.56/3.50	-3.52/6.84	-0.17/0.80	-1.76/2.00	-3.39/4.68		
Theta(55°)	Phi(0°)	-4.04/5.39	-1.69/2.23	-1.24/1.59	1.69/1.99	-5.40/2.06	1.98/3.60	0.82/3.21	-2.68/2.00	-0.03/1.52	-10.64/7.76	-4.38/1.14	2.58/3.25	6.11/3.34	-1.33/1.02	-2.38/0.12	0.47/1.20	0.81/1.35	-1.46/0.12	-2.33/3.16	-3.26/3.73	0.09/0.26	-1.46/2.63	-3.25/2.47			
Theta(57.5°)	Phi(0°)	-2.58/6.46	-3.45/3.22	0.96/2.14	1.52/1.59	-5.27/1.71	0.82/2.72	0.84/0.93	-0.46/0.05	-2.87/1.26	-0.58/2.67	-13.78/9.13	-6.69/5.75	-2.49/1.81	7.99/4.15	0.99/2.78	-2.43/0.47	1.66/1.32	1.41/0.09	-0.02/1.74	-1.54/4.64	4.55/5.25	-0.64/0.21	-1.77/3.54	-2.64/2.12		
Theta(60°)	Phi(0°)	-3.26/6.86	-6.12/3.73	-1.18/0.94	0.57/2.29	-5.61/1.76	-1.10/1.42	0.82/1.42	0.50/1.92	-2.07/0.05	-4.10/1.77	-0.99/3.64	-6.48/7.55	-4.16/2.28	-8.13/3.93	-3.25/5.00	-1.32/1.24	1.062/5.8	0.67/0.80	-3.86/2.04	-1.56/3.50	-3.52/6.84	-0.17/0.80	-1.76/2.00	-3.39/4.68		
Theta(62.5°)	Phi(0°)	-4.04/5.39	-1.69/2.23	-1.24/1.59	1.69/1.99	-5.40/2.06	1.98/3.60	0.82/3.21	-2.68/2.00	-0.03/1.52	-10.64/7.76	-4.38/1.14	2.58/3.25	6.11/3.34	-1.33/1.02	-2.38/0.12	0.47/1.20	0.81/1.35	-1.46/0.12	-2.33/3.16	-3.26/3.73	0.09/0.26	-1.46/2.63	-3.25/2.47			
Theta(65°)	Phi(0°)	-2.58/6.46	-3.45/3.22	0.96/2.14	1.52/1.59	-5.27/1.71	0.82/2.72	0.84/0.93	-0.46/0.05	-2.87/1.26	-0.58/2.67	-13.78/9.13	-6.69/5.75	-2.49/1.81	7.99/4.15	0.99/2.78	-2.43/0.47	1.66/1.32	1.41/0.09	-0.02/1.74	-1.54/4.64	4.55/5.25	-0.64/0.21	-1.77/3.54	-2.64/2.12		
Theta(67.5°)	Phi(0°)	-3.26/6.86	-6.12/3.73	-1.18/0.94	0.57/2.29	-5.61/1.76	-1.10/1.42	0.82/1.42	0.50/1.92	-2.07/0.05	-4.10/1.77	-0.99/3.64	-6.48/7.55	-4.16/2.28	-8.13/3.93	-3.25/5.00	-1.32/1.24	1.062/5.8	0.67/0.80	-3.86/2.04	-1.56/3.50	-3.52/6.84	-0.17/0.80	-1.76/2.00	-3.39/4.68		
Theta(70°)	Phi(0°)	-5.73/7.50	-8.17/4.73	-2.32/0.82	-0.81/0.43	-6.84/3.11	-2.49/0.34	-0.28/2.78	-3.39/2.05	-5.14/4.17	-2.29/3.87	-13.21/9.43	-6.68/7.17	-7.78/3.28	-7.02/6.54	-5.43/8.38	-5.66/1.74	0.96/0.85	-0.46/0.19	-2.89/0.15	-2.82/8.78	-4.10/7.73	-3.54/2.93	-3.98/7.79	-5.16/3.88		
Theta(72.5°)	Phi(0°)	-7.57/8.31	-10.58/6.53	-3.62/3.18	-2.05/4.34	-6.34/3.13	-4.01/2.45	-2.33/4.24	-5.14/3.55	-6.58/6.30	-4.58/5.49	-11.27/10.73	-7.45/6.76	-9.33/5.99	-8.15/8.44	-7.17/10.53	-9.79/5.25	-4.96/3.10	-4.76/3.57	-9.23/4.82	-7.38/8.87	-5.20/9.58	-4.66/4.30	-5.14/7.88	-8.30/5.64		
Theta(75°)	Phi(0°)	-9.53/10.09	-11.63/7.87	-6.20/5.11	-4.20/5.16	-8.56/4.38	-5.59/6.32	-6.24/6.39	-6.94/5.72	-7.57/9.17	-10.08/13.11	-9.25/8.39	-12.85/8.29	-9.17/9.54	-5.44/10.27	-11.72/9.74	-7.67/7.04	-5.70/4.64	-11.50/9.68	-9.77/8.64	-8.63/8.64	-6.59/6.05	-6.15/9.20	-4.75/9.20	-8.59/5.29		
Theta(77.5°)	Phi(0°)	-11.81/13.20	-13.35/10.03	-8.99/7.67	-7.92/5.42	-8.18/5.85	-4.87/8.14	-8.47/5.85	-7.18/8.44	-8.57/9.68	-8.30/10.63	-11.25/12.68	-10.36/9.64	-11.90/11.34	-11.94/9.24	-8.69/11.36	-7.86/11.38	-4.75/9.19	-7.48/4.02	-13.02/8.44	-10.43/6.78	-10.23/14.19	-12.11/6.98	-8.40/10.64	-9.13/9.98		
Theta(80°)	Phi(0°)	-11.93/13.57	-14.23/11.15	-9.40/11.50	-10.08/8.03	-8.62/6.61	-6.13/6.82	-10.55/10.57	-9.79/7.71	-11.23/9.04	-10.09/12.78	-9.39/12.58	-10.67/11.99	-12.24/10.43	-15.10/6.36</												

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 $\Theta(0-180)\Phi(270)$







Antenna Pattern_Radio 3 & Radio 4

Appendix F

Total Gain Data

Freq(Hz)	2.45GPol.	TotalAnt.1	θ		φ		θ		φ		θ		φ		θ		φ		θ		φ		θ		φ	
Gain	Φ(0°)Φ(7.5°)	Φ(15°)Φ(22.5°)	Φ(30°)Φ(37.5°)	Φ(45°)Φ(52.5°)	Φ(60°)Φ(67.5°)	Φ(75°)Φ(82.5°)	Φ(90°)Φ(97.5°)	Φ(105°)Φ(112.5°)	Φ(120°)Φ(127.5°)	Φ(135°)Φ(142.5°)	Φ(150°)Φ(157.5°)	Φ(165°)Φ(172.5°)	Φ(180°)Φ(187.5°)	Φ(195°)Φ(202.5°)	Φ(210°)Φ(217.5°)	Φ(225°)Φ(232.5°)	Φ(240°)Φ(247.5°)	Φ(255°)Φ(262.5°)	Φ(270°)Φ(277.5°)	Φ(285°)Φ(292.5°)	Φ(300°)Φ(307.5°)	Φ(315°)Φ(322.5°)	Φ(330°)Φ(337.5°)	Φ(345°)Φ(352.5°)		
θ(0°)	-1.37/-1.60	-1.77/-1.80	-1.68/-1.63	-1.58/-1.44	-1.26/-1.25	-1.33/-1.25	-1.00/-0.85	-0.84/-1.08	-1.47/-1.63	-1.52/-1.30	-1.21/-1.10	-0.99/-0.94	-1.00/-1.16	-1.39/-1.61	-1.72/-1.75	-1.75/-1.50	-1.70/-1.86	-2.05/-2.02	-1.75/-1.50	-1.28/-1.05	-0.81/-0.65	-0.57/-0.73	-0.99/-1.20	-2.53/-2.78		
θ(7.5°)	2.72/3.22	3.49/3.40	-3.15/2.98	2.97/2.88	2.65/2.33	2.12/2.02	-1.98/-1.76	-1.38/-1.05	0.88/-1.00	-1.36/-1.54	-1.40/-1.10	0.91/0.78	0.67/0.58	0.52/0.55	0.71/0.90	-1.09/-1.20	-1.29/-1.38	-1.54/-1.77	-1.95/-1.92	-1.75/-1.66	-1.69/-1.69	-1.63/-1.48	-1.30/-1.42	-1.80/-2.19		
θ(15°)	-3.29/3.96	-4.40/4.42	-4.33/4.41	-4.68/4.94	-4.63/4.11	-3.90/3.63	-3.28/2.63	-1.87/-1.21	-0.85/-0.95	-1.32/-1.65	-1.65/-1.47	-1.38/-1.41	-1.45/-1.39	-1.23/-1.12	-1.12/-1.18	-1.30/-1.40	-1.46/-1.64	-1.97/-2.36	-2.70/-2.83	-2.82/-2.85	-2.94/-3.05	-3.10/-3.02	-2.79/-2.57	-2.53/-2.78		
θ(22.5°)	-2.12/2.51	-2.98/3.38	-3.77/4.26	-4.88/5.52	-5.71/5.26	-4.88/4.62	-3.52/2.82	-2.14/1.54	-1.15/-1.05	-1.24/-1.55	-1.77/-1.88	-2.05/2.39	-2.85/3.16	-3.16/2.97	-2.76/2.56	-2.43/2.29	-2.14/2.16	-2.50/3.01	-3.44/3.63	-3.59/3.50	-3.57/3.77	-4.02/4.08	-3.88/3.33	-2.63/2.19		
θ(30°)	0.98/0.88	-1.20/1.87	-2.85/3.73	-4.14/4.01	-3.69/3.38	-2.89/2.33	-1.73/1.34	-1.28/1.35	-1.49/1.40	-1.17/1.05	-1.14/1.36	-1.74/2.30	-3.25/4.44	-5.47/6.02	-5.90/5.19	-4.28/3.41	-2.66/2.17	-1.96/1.94	-1.99/1.98	-1.88/1.90	-2.21/2.80	-3.47/3.90	-4.00/3.59	-2.64/1.63		
θ(37.5°)	0.470/1.18	0.29/0.34	-1.79/3.35	-3.50/2.35	-1.34/0.85	-0.50/0.18	0.21/0.43	0.35/0.03	-0.55/0.82	0.67/0.31	0.11/0.26	0.67/1.41	2.66/4.50	-6.53/8.18	-7.66/5.47	-3.56/2.23	-1.38/0.67	-0.130/1.07	0.180/0.05	-0.18/0.53	-1.21/2.12	-2.92/3.12	-2.83/2.38	-1.83/-1.21		
θ(45°)	0.160/0.99	1.63/1.23	-0.41/2.53	-2.74/1.09	0.200/0.77	0.890/0.93	1.02/1.24	1.35/2.15	0.890/4.44	0.160/2.22	0.450/4.48	0.16/0.69	-2.26/4.53	-6.92/7.47	-6.03/3.42	-1.39/0.25	0.320/0.77	1.21/1.60	1.60/1.35	1.01/0.61	-0.05/0.93	-1.50/1.43	-0.72/0.06	0.150/0.00		
θ(52.5°)	0.65/1.44	2.35/2.14	0.53/1.45	-1.61/0.37	0.65/1.14	1.23/1.06	0.97/1.20	1.47/1.58	1.44/1.04	0.540/2.24	0.340/5.90	0.49/0.39	-2.14/4.50	-5.87/5.56	-3.67/1.51	0.000/0.69	1.01/1.44	2.102/6.66	2.832/6.64	2.25/1.66	0.19/0.21	-0.81/0.71	0.16/1.10	1.32/0.90		
θ(60°)	0.050/0.89	2.08/2.08	0.64/0.95	0.97/0.44	0.200/0.97	1.29/1.03	0.68/0.93	1.40/1.59	1.45/1.00	0.38/0.23	0.43/0.16	0.14/0.19	-1.48/3.49	-5.10/4.80	-3.10/1.34	-0.040/0.64	1.10/1.72	2.58/2.27	3.52/3.31	2.68/1.74	0.36/1.16	-1.88/1.74	-0.61/0.72	1.03/0.38		
θ(67.5°)	-1.37/0.24	-1.14/1.24	0.06/0.99	-1.19/1.57	-0.78/0.72	1.35/0.79	-0.04/0.21	0.90/0.04	0.62/0.04	-0.58/0.93	-1.15/0.98	-0.52/0.56	-1.84/4.02	-5.21/4.08	-2.64/1.53	-0.390/5.3	1.15/1.68	2.29/2.91	3.29/3.15	2.47/1.39	-0.30/2.18	-2.64/2.30	-1.12/0.27	0.42/0.72		
θ(75°)	-2.94/1.49	0.15/0.34	-0.59/1.17	-1.49/2.78	-1.72/0.33	1.11/0.33	-0.83/0.52	0.410/5.44	-0.22/1.25	-1.81/1.73	-1.49/1.65	-1.27/1.19	2.42/4.23	4.65/3.55	-2.96/2.51	-1.31/0.06	0.510/0.59	0.95/1.78	2.49/2.64	2.09/0.93	-0.94/2.94	-3.13/2.91	-1.93/0.42	-0.35/1.99		
θ(82.5°)	-5.01/3.46	-1.56/-1.02	-1.23/1.28	-2.39/4.27	-2.63/0.24	0.32/0.79	-2.01/1.29	-0.15/0.04	-1.03/2.41	-2.93/2.27	-1.64/1.57	-1.51/1.74	-3.02/4.44	-4.23/3.35	-2.93/2.70	-2.01/1.17	-0.98/1.03	-0.350/5.2	1.23/1.51	0.82/0.68	-2.89/4.77	-3.90/4.13	-3.46/1.63	-1.77/3.73		
θ(90°)	-5.27/4.58	-3.57/3.35	-2.54/1.39	-2.38/5.19	-3.65/0.97	-0.49/1.93	-3.59/2.96	-1.90/1.91	-3.04/4.61	-4.88/3.27	-1.79/1.67	-2.17/2.63	-3.94/5.56	-5.13/3.56	-2.69/3.03	-3.82/3.56	-3.26/2.93	-1.88/1.03	-0.02/0.62	0.00/1.27	-3.29/4.98	-4.05/5.36	-6.05/3.05	-2.60/4.24		
θ(97.5°)	-4.61/4.28	-4.19/5.14	-4.11/2.20	-2.98/6.19	-4.42/1.75	-1.49/3.06	-4.44/3.94	-3.27/3.38	-4.50/6.41	-6.57/3.98	-2.13/2.12	-2.92/3.86	5.53/6.85	5.28/3.46	-2.93/4.12	-5.35/4.81	-4.46/4.12	-3.11/2.15	-0.81/0.26	-1.11/2.26	-4.02/5.15	-4.27/6.65	-9.81/5.07	-3.53/4.19		
θ(105°)	-4.25/4.34	-3.32/4.00	-5.03/3.01	-3.17/6.82	-6.51/3.70	-2.99/4.40	-5.28/4.51	-3.75/3.51	-4.20/6.29	-7.84/5.45	-3.09/2.80	-4.09/5.57	-6.62/6.83	5.15/3.58	-3.44/4.95	-6.52/6.23	-3.74/4.01	-5.07/5.78	-2.96/2.85	-3.72/4.01	5.07/5.78	-4.84/4.70	-12.26/4.54	-4.25/4.50		
θ(112.5°)	-5.27/3.69	-3.07/4.22	-5.54/4.58	-4.36/6.95	-7.85/5.51	-4.25/4.85	-5.33/4.82	-4.81/5.20	-5.81/7.60	-9.74/8.41	-6.25/6.53	-6.63/6.63	-5.38/4.51	-5.26/6.83	-6.39/5.70	-5.35/5.98	-6.02/6.03	-6.20/6.51	-6.36/5.32	-6.14/6.56	-4.97/5.77	-10.30/6.28	-4.58/5.34			
θ(120°)	-7.91/5.79	-4.38/4.98	-5.74/6.00	-6.45/8.03	-9.46/8.87	-7.80/7.48	-7.08/6.85	-7.18/6.49	-5.47/5.71	-7.01/7.50	-6.69/6.73	-7.10/6.68	-7.07/7.43	-6.24/5.95	-6.60/6.59	-6.11/5.51	-6.41/8.92	-9.66/8.92	-9.20/10.37	-9.92/8.29	-9.02/8.50	-6.72/8.46	-10.05/7.29	-5.90/7.04		
θ(127.5°)	-11.01/7.86	-6.59/8.19	-9.98/8.22	-7.30/7.24	-8.00/9.52	-10.01/8.83	-7.90/8.31	-9.55/7.80	-5.36/4.64	-5.51/3.37	-8.96/9.19	-8.18/7.57	-7.99/8.53	-8.23/8.61	-8.86/8.55	-8.42/7.80	-8.60/10.02	-8.98/8.60	-8.86/11.51	-12.28/10.96	-12.45/11.05	-9.09/10.45	-10.96/10.14	-10.18/11.53		
θ(135°)	-12.25/8.71	-7.78/9.44	-12.73/11.08	-8.09/6.69	-7.18/9.47	-11.21/9.33	-7.21/6.97	-6.73/9.48	-4.83/5.82	-5.66/6.53	-6.17/6.49	-7.28/8.49	-8.90/8.78	-8.69/8.41	-7.98/7.36	-7.75/8.84	-8.30/7.75	-8.55/10.71	-12.02/11.69	-14.16/14.67	-13.44/11.12	-10.68/11.51	-15.14/15.30			
θ(142.5°)	-14.56/11.66	-10.06/10.22	-10.56/9.40	-7.64/6.83	-7.46/9.68	-12.41/10.13	-8.34/8.17	-10.02/10.97	-8.28/6.32	-5.65/5.53	-6.46/6.00	-7.24/9.03	-10.36/9.28	-8.53/7.92	-7.17/7.10	-7.98/8.51	-8.47/8.50	-9.77/11.80	-13.83/12.24	-13.13/15.23	-14.85/14.51	-12.04/11.08	-13.08/15.55			
θ(150°)	-10.46/10.72	-11.60/11.64	-11.41/11.42	-11.39/11.99	-13.00/14.31	-12.14/10.67	-7.91/8.22	-9.38/10.94	-10.47/8.77	-7.39/6.02	-5.18/5.48	-6.84/8.27	-12.77/14.89	-13.09/10.69	-9.41/8.29	-7.47/7.26	-7.54/7.91	-8.35/9.15	-10.60/12.35	-12.64/10.73	-9.98/9.95	-10.57/10.72	-9.99/9.06	-9.04/9.84		
θ(157.5°)	-8.65/8.13	-8.33/8.75	-8.85/9.21	-10.46/12.71	-14.70/14.38	-11.71/9.59	-8.09/7.56	-7.79/7.94	-7.82/6.97	-5.74/4.58	-3.85/4.08	-5.20/7.29	-10.24/12.16	-13.24/10.40	-11.51/10.40	-9.32/8.69	-7.94/7.52	-7.59/8.23	-8.87/9.70	-10.48/10.15	-9.48/9.07	-8.93/8.92	-8.76/8.57	-8.72/9.00		
θ(165°)	-11.26/9.56	-8.86/8.80	-8.51/8.01	-7.83/8.03	-9.57/9.07	-9.40/9.24	-8.71/8.15	-7.71/7.33	-6.76/6.20	-5.76/5.39	-3.51/5.80	-6.89/8.53	-10.84/13.04	-13.95/15.17	-15.86/14.35	-11.98/10.78	-9.86/9.21	-9.26/9.76	-9.97/10.07	-10.41/11.08	-12.11/12.39	-12.63/12.77	-12.93/13.14	-13.08/12.58		
θ(172.5°)	-13.08/11.73	-10.89/10.37	-10.55/10.58	-10.17/9.95	-9.84/9.68	-9.63/9.62	-9.59/9.32	-8.99/8.68	-8.38/8.40	-8.50/8.67	-9.05/9.78	-10.96/12.35	-14.13/15.74	-15.74/15.60	-15.34/13.37	-12.49/12.46	-12.23/12.21	-13.00/13.59	-14.20/14.16	-13.64/14.08	-15.25/15.29	-14.35/15.53	-14.63/15.33	-15.08/15.38		
θ(180°)	-15.42/14.29	-13.76/13.95	-14.27/14.68	-14.92/15.23	-15.32/14.78	-14.34/13.88	-13.05/12.60	-12.31/11.31	-11.77/11.96	-12.31/12.67	-12.87/13.82	-13.90/15.12	-15.34/14.58	-14.79/14.60	-14.18/14.15	-15.47/16.04	-14.86/15.26	-14.86/15.81	-15.35/15.22	-14.80/14.18	-13.93/13.51	-13.08/13.56	-13.91/14.65	-14.86/15.74		
Freq(Hz)	5.2GPol.	TotalAnt.1	θ		φ		θ		φ		θ		φ		θ		φ		θ		φ		θ		φ	
Gain	Φ(0°)Φ(7.5°)	Φ(15°)Φ(22.5°)	Φ(30°)Φ(37.5°)	Φ(45°)Φ(52.5°)	Φ(60°)Φ(67.5°)	Φ(75°)Φ(82.5°)	Φ(90°)Φ(97.5°)	Φ(105°)Φ(112.5°)	Φ(120°)Φ(127.5°)	Φ(135°)Φ(142.5°)	Φ(150°)Φ(157.5°)	Φ(165°)Φ(172.5°)	Φ(180°)Φ(187.5°)	Φ(195°)Φ(202.5°)	Φ(210°)Φ(217.5°)	Φ(225°)Φ(232.5°)	Φ(240°)Φ(247.5°)	Φ(255°)Φ(262.5°)	Φ(270°)Φ(277.5°)	Φ(285°)Φ(292.5°)	Φ(300°)Φ(307.5°)	Φ(315°)Φ(322.5°)	Φ(330°)Φ(337.5°)	Φ(345°)Φ(352.5°)		
θ(0°)	2.11/1.98	1.94/2.00	-2.35/2.14	2.08/1.91	-1.89/1.72	1.46/1.64	-1.79/1.84	-2.09/2.17	-1.82/1.32	-0.90/1.33	-1.80/1.71	-1.31/0.89	0.84/1.19	-1.26/1.14	0.83/0.83	-0.95/1.03	-0.98/0.93	-1.17/1.47	-1.34/1.51	-1.43/1.60	-1.59/1.78	-1.80/1.92	-1.80/1.72	-2.05/2.28		
θ(7.5°)	0.94/0.56	-0.38/0.60	-0.72/0.62	-0.64/0.58	-0.60/0.50	-0.41/0.86	-1.24/1.55	-2.23/3.03	-3.18/2.98	-2.75/3.24	-3.94/3.72	-3.37/3.46	-3.38/3.41	-3.07/2.78	-2.88/3.01	-3.21/3.02	-2.64/2.43	-2.31/2.05	-1.82/1.62	-1.38/1.32	-1.27/1.21	-1.06/0.91	-0.67/0.65	-0.30/0.83		
θ(15°)	-2.87/3.22	-2.82/2.73	-2.40/2.74	-2.82/2.62	-2.43/2.04	-1.78/1.95	-2.01/2.20	-2.27/2.51	-2.48/1.57	-0.83/0.63	-0.62/0.45	-0.53/0.77	-1.20/1.80	-2.03/1.81	-1.86/1.96	-1.94/1.92	-1.88/1.84	-1.82/1.73	-1.36/0.79	-0.37/0.55	-1.10/1.69	-1.78/1.96	-2.40/2.65	-2.39/2.39		
θ(22.5°)	-0.43/0.58	-0.81/1.32	-1.62/2.53	-3.18/3.41																						



Antenna Pattern_Radio 3 & Radio 4

Appendix F

Theta	2.492/29	4.534/21	2.752/13	4.04/9.51	1.501/03	1.931/24	1.111/56	3.66/3.67	-4.87/2.94	-2.15/5.09	-2.07/1.98	0.20/2.50	-1.00/1.68	0.66/0.90	-1.80/3.86	-2.21/1.23	-4.03/3.93	9.09/8.86	-4.72/7.45	4.92/4.03	-3.79/12.26	-2.58/0.14	1.35/3.37	2.73/21
Theta(7.5)	-2.22/0.69	2.192/52	-0.84/0.72	4.20/-0.18	0.21/1.34	2.96/4.12	4.34/3.41	-0.37/-2.14	-2.30/-4.07	0.76/4.39	-3.89/1.09	1.00/-1.81	-0.80/1.71	1.09/-1.89	-0.66/-1.15	0.09/-0.47	-3.97/-4.26	-7.32/-7.98	-2.35/-3.98	3.74/-2.62	-3.87/-4.56	-4.63/-0.62	-2.81/2.97	0.37/-0.06
Theta(15)	-5.61/0.36	2.422/57	0.30/0.93	-3.84/2.83	1.89/1.08	5.13/3.77	4.68/3.01	0.26/0.48	0.86/0.87	3.11/1.63	4.86/-1.32	0.04/1.85	1.25/1.10	-0.68/4.38	-1.06/2.56	0.19/-0.68	-3.23/1.83	-2.36/4.67	-1.00/-1.34	0.10/2.97	0.97/-2.22	-12.86/0.66	-0.88/2.34	0.81/0.56
Theta(22.5)	-3.39/0.22	3.64/3.64	2.18/0.96	-2.47/3.59	1.67/0.25	5.07/3.79	3.69/2.52	0.11/0.87	1.69/1.50	2.93/2.42	-7.03/2.00	1.31/2.25	1.63/0.06	-1.47/4.72	-2.88/3.76	-0.36/-1.56	-2.73/1.44	-0.38/2.64	2.31/0.97	0.66/2.60	-0.87/1.28	-11.85/0.79	0.87/1.46	0.77/1.01
Theta(30)	-4.02/-1.40	2.89/3.01	1.51/1.44	-2.91/2.67	1.54/1.40	4.62/2.26	0.92/1.84	1.49/0.41	2.02/2.02	-7.27/-3.97	0.83/1.93	0.29/0.29	-2.47/-4.29	-3.89/-4.97	-1.10/3.83	-2.69/2.73	-1.54/2.44	-5.30/-3.52	-0.22/3.32	-2.20/3.23	-2.20/3.23	-10.57/0.96	-0.02/0.68	0.44/2.98
Theta(37.5)	-4.89/-4.40	0.96/1.50	0.15/2.50	-2.91/4.49	0.17/3.43	3.05/0.06	-2.09/2.4	-0.35/-1.74	0.65/0.21	1.32/6.05	-8.74/-2.67	0.30/0.04	-1.32/2.70	-2.55/4.14	-4.44/5.24	-3.36/5.53	-3.65/5.89	-4.10/3.55	-7.62/6.59	-3.87/1.98	-5.78/1.29	-12.62/2.65	-1.27/1.49	-0.61/7.47
Theta(45)	-5.21/8.92	-0.48/0.04	-1.07/3.98	-5.64/0.99	-3.44/2.77	0.28/2.66	-4.23/2.08	-2.53/3.35	-1.57/1.67	-2.15/6.85	-9.13/6.28	-0.35/-1.60	-4.92/-1.54	-4.06/7.70	-5.11/7.62	-6.62/8.57	-5.47/6.49	-4.37/6.83	-10.86/7.63	-5.25/-11.07	-11.73/7.22	-8.62/7.09	-1.26/3.35	-2.88/7.34
Theta(52.5)	-12.24/9.48	-0.98/-2.18	-4.38/8.00	-7.29/2.30	-6.02/5.26	-0.85/5.23	5.36/3.25	-1.59/1.85	-2.15/2.57	-6.89/10.48	-11.65/4.33	-1.88/1.40	-5.05/3.14	-6.20/7.65	-7.30/7.80	-10.79/15.21	-12.04/11.83	-5.11/2.52	-8.53/8.17	-5.07/0.05	-8.43/11.57	-10.64/14.40	-3.12/6.13	5.24/7.99
Theta(60)	-12.05/10.00	-4.44/4.94	-7.51/10.40	-5.06/3.54	-8.28/4.08	-4.13/4.30	-4.07/2.55	-3.90/3.12	-3.17/4.50	-13.51/15.41	-12.77/3.56	-6.11/8.54	-4.49/4.29	-9.82/6.90	-8.13/9.82	-11.88/14.12	-11.81/15.58	9.54/11.33	-10.92/10.18	8.05/9.68	-12.72/13.07	-15.30/10.44	-7.30/6.37	-6.05/13.37
Theta(67.5)	-13.53/10.21	-6.62/6.40	-4.71/9.19	-4.91/7.43	-6.84/6.48	-7.30/8.13	-7.93/6.16	-4.81/6.56	-10.03/12.95	-13.99/14.75	-7.44/4.24	-5.13/7.73	-8.16/5.07	-6.24/11.23	-11.30/14.96	-7.30/12.25	-10.55/15.58	-11.54/9.49	-8.67/13.41	-6.51/6.15	-15.38/7.11	-11.76/12.09	-11.36/5.89	-10.07/13.61
Theta(75)	-14.53/14.40	-9.24/-7.62	-8.82/6.61	-11.90/9.19	-8.12/10.35	-14.48/9.52	-9.09/11.21	-5.79/10.58	-12.91/12.00	-12.32/11.23	-9.37/6.96	-5.73/7.21	-7.46/7.84	-7.66/8.66	-9.60/10.30	-12.48/13.13	-12.83/10.03	-10.84/10.91	-11.92/15.53	-15.42/13.27	-9.60/14.27	-15.58/14.97	-12.54/10.03	-12.89/15.18
Theta(82.5)	-15.38/15.63	-11.01/10.39	-13.60/9.49	-6.89/10.46	-7.03/7.95	-14.98/9.26	-10.98/11.87	-6.41/6.55	-13.00/14.90	-10.04/5.94	-6.21/7.46	-6.90/9.58	-10.67/10.93	-6.90/8.84	-8.79/14.05	-10.65/11.16	-15.37/14.91	-12.23/11.92	-15.22/14.74	-11.37/7.26	-14.71/11.48	-8.91/15.94	-15.68/12.20	-11.19/15.19
Theta(90)	-15.69/11.11	-12.07/10.01	-9.98/9.84	-11.83/6.17	-3.11/10.48	-6.84/7.01	-8.82/8.01	-8.29/5.71	-7.83/10.80	-10.13/7.41	-6.12/7.03	-9.03/13.08	-12.66/9.30	-11.82/9.13	-9.87/10.76	-10.67/15.01	-14.07/13.56	-14.16/14.23	-15.57/9.58	-12.26/11.32	-11.58/15.04	-14.77/13.33	-14.05/14.16	-14.30/13.72
Theta(97.5)	-10.90/15.41	-14.72/15.40	-12.97/10.20	-9.21/9.84	-11.71/8.82	-6.35/6.62	-10.36/7.13	-9.37/6.96	-5.73/7.21	-7.46/7.84	-7.66/8.66	-9.60/10.30	-12.48/13.13	-12.83/10.03	-10.84/10.91	-11.92/15.53	-15.42/13.27	-10.47/11.96	-13.20/12.88	-15.62/15.59	-15.42/13.27	-9.60/14.27	-15.58/14.97	-13.38/12.53
Theta(105)	-11.92/10.13	-11.14/11.29	-11.11/12.39	-13.52/14.63	-12.39/12.79	-15.02/12.27	-12.36/12.12	-10.89/9.51	-8.48/8.44	-9.42/10.69	-12.28/10.77	-10.83/14.94	-14.34/12.90	-11.75/13.24	-13.40/12.26	-12.30/14.06	-15.42/11.98	-10.37/11.06	-14.14/15.38	-15.48/13.22	-13.35/16.12	-12.42/9.99	-9.93/12.01	
Theta(112.5)	-14.53/13.65	-13.71/13.65	-13.70/12.76	-12.89/11.95	-11.35/11.83	-13.55/14.52	-15.16/15.87	-13.50/13.20	-14.71/14.23	-14.69/14.45	-15.78/16.16	-15.51/15.24	-15.26/14.17	-11.30/11.78	-13.59/13.37	-13.27/12.19	-12.57/12.71	-13.18/13.93	-16.08/15.38	-15.00/15.34	-15.07/15.52	-15.38/14.95	-15.25/14.96	-13.68/14.68
Theta(120)	-13.92/13.71	-14.46/14.99	-15.18/13.82	-12.68/13.37	-12.88/11.90	-12.24/11.48	-13.30/13.17	-12.13/12.03	-10.84/10.27	-10.60/11.98	-12.22/12.07	-11.87/13.74	-12.53/11.71	-11.56/11.86	-13.20/13.66	-13.32/13.87	-15.40/15.33	-14.42/14.61	-14.89/15.30	-15.14/15.28	-15.77/14.64	-15.72/14.19	-13.26/14.56	
Freq(Hz)	2.45GPol	TotalAnt	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
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)	-2.97/3.18	-3.64/4.09	-4.24/4.35	-4.38/4.33	-4.41/4.50	-4.71/4.70	-4.59/4.41	-4.24/4.14	-4.06/3.99	-3.97/4.09	-4.27/4.35	-4.32/4.37	-4.46/4.42	-4.33/4.31	-4.35/4.42	-4.37/4.34	-4.51/4.78	-4.76/4.63	-4.43/4.26	-4.10/3.92	-3.65/3.34	-3.17/3.07	-3.06/3.11	-3.05/2.94
Theta(7.5)	-4.22/4.19	-4.26/4.42	-4.61/4.85	-5.03/5.04	-4.94/4.80	-4.55/4.29	-3.96/3.70	-3.59/3.47	-3.34/3.18	-3.07/3.00	-3.06/3.11	-3.22/3.34	-3.37/3.67	-3.58/3.64	-3.78/3.93	-4.07/4.25	-4.47/4.80	-4.79/4.70	-4.42/4.12	-4.07/3.71	-3.65/3.55	-3.48/3.48	-3.59/3.71	-4.17/4.26
Theta(15)	-4.54/4.30	-3.97/3.81	-3.98/4.52	-5.27/6.05	-6.39/6.15	-5.46/4.70	-4.03/3.57	-3.29/3.05	-2.71/2.35	-2.09/2.03	-2.11/2.18	-2.46/3.04	-3.50/3.69	-3.72/3.76	-3.94/4.18	-4.42/4.70	-5.05/5.06	-4.99/4.46	-3.79/3.23	-2.77/2.59	-2.62/2.71	-2.78/2.92	-3.26/3.75	-4.16/4.44
Theta(22.5)	-3.91/0.45	-3.93/3.40	-4.22/5.00	-6.24/7.53	-6.15/6.52	-4.85/4.57	-4.85/4.57	-4.27/4.24	-3.70/3.14	-2.71/2.61	-2.60/2.69	-3.03/3.53	-4.02/4.41	-4.57/4.47	-4.40/4.49	-4.84/5.42	-6.28/6.65	-6.33/6.93	-3.57/4.74	-2.23/2.00	-1.94/1.87	-1.76/1.74	-1.93/2.28	-2.74/3.34
Theta(30)	-2.16/3.17	-4.26/5.27	-6.40/7.70	-8.60/8.24	-6.68/5.28	-4.49/3.98	-3.86/4.20	-4.71/4.87	-6.16/4.40	-4.36/4.35	-4.11/3.80	-3.58/3.49	-3.68/4.01	-4.42/4.60	-4.41/4.16	-4.22/4.80	-6.02/7.32	-7.43/5.68	-3.94/2.85	-2.22/1.78	-1.36/0.89	-0.42/0.06	0.03/0.13	-0.51/1.22
Theta(37.5)	0.12/-1.16	-3.05/5.36	-8.06/9.84	-8.47/6.10	-4.05/2.64	-1.76/1.24	-1.08/1.46	-2.09/2.54	-2.81/3.35	-4.22/4.66	-4.12/3.36	-2.78/2.31	-1.86/-1.71	-2.12/2.87	-3.52/3.51	-3.25/3.48	-4.39/5.46	-5.69/4.97	-3.46/2.31	-1.63/1.17	-0.61/0.02	0.59/1.15	1.48/1.53	1.35/0.88
Theta(45)	1.56/0.51	-1.38/3.78	-6.14/7.65	-6.42/4.02	-2.10/0.74	0.22/0.95	1.22/0.80	0.04/0.56	-0.72/-1.16	-2.04/2.32	-1.49/0.72	-0.73/0.91	-0.41/0.33	0.34/0.52	-1.84/2.62	-2.43/2.22	-2.56/3.18	-3.74/3.57	-2.44/-1.04	-0.23/0.01	0.09/0.30	0.63/1.12	1.61/1.93	2.10/2.01
Theta(52.5)	2.05/0.01	-0.77/2.83	-4.81/5.81	-5.10/3.14	-1.80/3.35	1.46/2.24	2.47/1.95	0.00/0.36	0.57/0.49	0.21/1.18	0.87/1.53	0.20/1.25	-0.19/1.20	-0.59/2.09	-2.00/1.59	-2.59/2.00	-2.61/2.86	-1.85/1.99	0.59/0.35	-0.08/0.22	0.17/0.16	0.73/1.37	1.95/2.25	
Theta(60)	2.17/1.10	-0.75/2.69	-3.98/4.27	-3.79/2.45	-0.66/0.93	2.01/2.66	2.86/2.49	1.58/1.05	1.29/1.23	0.47/0.07	1.18/2.19	1.85/0.45	0.11/1.22	1.88/1.30	-0.04/1.26	-1.66/1.34	-0.98/0.99	-1.42/2.07	-1.42/2.04	0.89/0.12	-0.95/-1.39	-1.28/0.85	-0.08/0.83	1.71/2.30
Theta(67.5)	1.69/0.72	-0.84/2.29	-2.89/2.27	-2.96/2.26	-0.70/0.93	1.95/2.41	2.59/2.61	2.15/1.51	1.13/0.54	-0.55/1.19	0.21/1.59	1.29/0.16	-0.22/1.14	1.71/1.02	-0.40/1.69	-2.26/1.68	-0.97/0.67	-1.00/1.76	-0.98/0.70	1.04/0.15	-1.68/2.42	-2.37/1.75	-0.71/0.42	1.33/1.83
Theta(75)	1.07/0.50	-0.54/1.61	-2.26/2.67	-2.99/2.66	-1.40/0.17	1.20/1.53	1.65/2.00	1.98/2.29	0.28/0.91	-2.10/3.23	-2.07/0.04	0.18/1.16	-1.15/0.31	1.01/0.56	-0.59/1.97	-3.49/3.04	-1.73/0.94	-0.93/1.72	-1.39/0.20	0.39/1.06	-2.62/3.27	-3.16/2.46	-1.24/0.01	0.78/1.16
Theta(82.5)	0.25/0.41	-1.26/2.04	-2.56/2.93	-3.10/3.03	-2.35/1.01	0.07/0.41	0.55/1.17	1.43/0.85	-0.47/2.23	-3.51/2.26	-4.59/1.75	-1.33/2.74	-2.72/1.31	-0.64/0.75	-1.07/1.93	-3.70/4.11	-3.06/2.33	-2.10/2.63	-1.99/0.32	0.44/2.61	-4.63/5.01	-4.48/3.48	-2.05/0.65	0.07/0.28
Theta(90)	-1.53/2.00	-2.78/2.97	-2.93/2.35	-3.85/4.85	-5.10/2.98	-1.05/0.46	-0.30/0.56	1.04/0.40	-1.22/4.49	-4.95/6.91	-7.65/6.37	-2.42/3.86	-4.42/3.60	-3.07/3.35	-2.65/2.30	-3.65/4.72	-4.17/3.46	-3.02/3.77	-3.56/4.10	-1.38/3.45	-5.56/6.11	-5.67/4.82	-3.54/1.98	-1.44/1.46
Theta(97.5)	-2.50/2.10	-2.39/2.66	-2.93/3.65	-4.85/6.61	-6.59/3.29	-1.22/0.93	0.98/0.28	-0.33/1.38	-3.06/5.16	-5.97/7.12	-6.31/2.71	-2.08/4.09	-5.09/4.86	-5.40/6.44	-4.64/3.31	-4.28/5.34	-5.25/4.71	-4.15/4.88	-4.96/3.12	-3.19/5.52	-6.95/6.70	-5.73/4.91	-3.99/2.68	-2.57/2.81
Theta(105)	-3.05/2.79	-2.82/3.26	-3.97/4.84	-5.91/7.44	-6.36/2.97	-1.50/2.09	-3.02/3.75	-2.83/3.32	-3.76/4.41	-4.59/5.19	-5.78/3.33	-2.89/4.44	-4.45/4.08	-4.93/4.89	-7.34/5.28	-6.62/6.20	-5.62/5.12	-5.27/6.81	-8.02/6.51	-5.08/7.39	-8.49/7.28	-5.92/5.26	-5.09/3.93	-3.37/3.42
Theta(112.5)	-3.31/3.89	-3.93/3.98	-4.88/5.97	-6.44/6.28	-4.59/2.88	-2.98/4.91	-5.59/4.01	-4.06/5.09	-4															