



**Radiated Composite Gain of 2.4GHz and 5GHz UNII 1~3**

**Appendix A**

Freq(Hz)	2.45G	5.2G	5.3G	5.6G	5.785G
Ant. 1 Max Gain (dBi)	2.87	3.7	3.88	4	2.78
Ant. 2 Max Gain (dBi)	3.24	2.67	2.84	2.05	2.18
Ant. 3 Max Gain (dBi)	2.93	2.76	3.15	2.08	2.38
Ant. 4 Max Gain (dBi)	4.12	3.53	3.97	4.25	4.33
Ant. 1 Polarization/Θ(°)/Φ(°)	Theta/97.5/255	Theta/135/225	Theta/135/232.5	Theta/127.5/232.5	Theta/112.5/232.5
Ant. 2 Polarization/Θ(°)/Φ(°)	Phi/37.5/172.5	Phi/105/262.5	Phi/105/262.5	Phi/30/210	Phi/30/202.5
Ant. 3 Polarization/Θ(°)/Φ(°)	Phi/45/75	Phi/52.5/277.5	Phi/45/277.5	Phi/45/270	Phi/82.5/270
Ant. 4 Polarization/Θ(°)/Φ(°)	Theta/112.5/337.5	Theta/97.5/307.5	Theta/120/307.5	Theta/120/307.5	Theta/120/330
Max Gain (dBi)	4.12	3.7	3.97	4.25	4.33
DG [1SS] (dBi)	4.86	3.85	4.11	4.39	4.64
DG [2SS] (dBi)	4.12	3.7	3.97	4.25	4.33
DG [4SS] (dBi)	4.12	3.7	3.97	4.25	4.33







Radiated Composite Gain of 2.4GHz and 5GHz UNII 1~3

Appendix A

Table with columns for frequency bands (e.g., e(80\*), e(87.5\*), e(89\*), e(82.5\*), e(87.5\*), e(105\*), e(112.5\*), e(120\*), e(127.5\*), e(135\*), e(142.5\*), e(150\*), e(157.5\*), e(165\*), e(172.5\*), e(180\*), e(187.5\*), e(195\*), e(202.5\*), e(210\*), e(217.5\*), e(225\*), e(232.5\*), e(240\*), e(247.5\*), e(255\*), e(262.5\*), e(270\*), e(277.5\*), e(285\*), e(292.5\*), e(300\*), e(307.5\*), e(315\*), e(322.5\*), e(330\*), e(337.5\*), e(345\*), e(352.5\*)) and rows of numerical gain values.







Radiated Composite Gain of 2.4GHz and 5GHz UNII 1~3

Appendix A

Table with columns for frequencies (Hz) and gain values (dBm) for various UNII channels. The table includes multiple rows for each channel and includes labels like 'Phi2' and 'Phi3'.



Radiated Composite Gain of 2.4GHz and 5GHz UNII 1~3

Appendix A

Table with columns for frequency (GHz) and gain (dBi) for various antenna models (e.g., S50Pa, S50Pa1, S50Pa2). The table lists gain values for multiple frequencies across different models.













Radiated Composite Gain of 2.4GHz and 5GHz UNII 1~3

Appendix A

Table with columns for frequency (MHz), gain (dBi), and various UNII channel identifiers (e.g., UNII-1, UNII-2, UNII-3). The table contains multiple rows of data representing different channels and their corresponding gain values.





## Radiated Composite Gain of 6GHz

## Appendix B

Freq(Hz)	6.175G	6.475G	6.695G	6.995G
Ant. 1 Max Gain (dBi)	3.78	3.12	3.87	3.87
Ant. 2 Max Gain (dBi)	2.13	2.61	4.1	4.3
Ant. 3 Max Gain (dBi)	2	2.27	2.94	4.77
Ant. 4 Max Gain (dBi)	3.1	2.54	3.75	3.85
Ant. 1 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$	Phi/75/180	Phi/82.5/187.5	Phi/82.5/187.5	Phi/75/187.5
Ant. 2 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$	Phi/105/292.5	Phi/97.5/277.5	Phi/105/277.5	Phi/112.5/285
Ant. 3 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$	Phi/90/75	Phi/82.5/90	Phi/97.5/90	Phi/90/82.5
Ant. 4 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$	Theta/90/345	Theta/112.5/322.5	Theta/112.5/300	Theta/97.5/337.5
Max Gain (dBi)	3.78	3.12	4.1	4.77
DG [1SS] (dBi)	4.6	4.1	5.71	5.16
DG [2SS] (dBi)	3.78	3.12	4.1	4.77
DG [4SS] (dBi)	3.78	3.12	4.1	4.77













Radiated Composite Gain of 6GHz

Appendix B

Table with columns for EIRP, Gain, and various frequency bands (e.g., 175.1314, 175.3083, etc.). The table contains numerical data points for each parameter.









Radiated Composite Gain of 6GHz

Appendix B

Table with columns for channel number (e.g., e(0), e(1), etc.) and corresponding gain values in dBm. It includes sub-tables for 'Phi04', 'Theta4', and 'Phi04 + Theta4' for three different gain categories (Gain, Gain, and Gain).





### Radiated Composite Gain of 6GHz

### Appendix B

θ(°)	3.28255	2.96025	-0.37135	2.02425	7.2291054	-7.81805	-10.941264	-17.96-13.83	9.820147	-18.761134	-10.291678	-10.784408	4.971155	-14.051573	-5.491372	-5.57418	-5.92046	0.24115	2.3619	-0.70111	1.88157	2.44328	1.83306	2.7335
θ(15°)	2.36172	1.49632	-2.38053	3.49387	4.82058	-13.360102	-8.92/915	16.511-19.14	-12.181-47	19.819	-11.861743	-10.811076	4.47133	9.24459	6.656	-5.69-12	-5.024-19	2.371-32	3.74436	-1.37071	2.91741	2.5722	0.76247	2.9123
θ(112.5°)	1.82044	1.61073	0.74068	3.21269	1.71653	-8.606114	-15.19146	11.371-17.78	-17.51171	9.31277	-0.971768	-5.69-61	2.26055	6.851433	-114.28	-17412.05	-1359-107	0.78014	-1.14225	-2.3805	3.97123	1.88311	0.23235	2.072
θ(120°)	0.55041	-0.6324	-2.59-136	3.79-444	7.77844	9.62457	-8.67182	14.29-18.87	-18.90-10.29	-12.33-18.42	-11.92057	8-12.783	4.35759	9.06-15.88	13.615	-5.99-866	-13.89-8.6	0.981-18	2.081-45	-4.580-93	2.521	1.62148	0.04102	1.76029
θ(135°)	0.18014	-0.41017	-1.743	-3.21396	3.33659	8.58147	8.961363	18.011-19.01	-18.671828	-14.851775	-15.831454	-19.061782	-18.441157	8.59128	-14.78165	6.503-39	-14.791136	4.33318	2.22057	-18.51344	1.69117	-3.231495	1.7005	2.11038
θ(142.5°)	0.07179	-0.33183	-1.56130	-5.12055	5.79561	-4.02117	-12.311483	-18.971932	-12.891788	-15.69184	9.261537	-17.011824	-14.991678	-18.121427	-13.041203	-10.31161	-16.631689	8.23759	-5.97170	-19.68102	0.41037	0.88452	-1.73144	-6.47129
θ(150°)	3.05101	-1.45145	5.13-38	3.51465	4.63832	9.23137	-12.151831	-18.391742	-17.591887	-19.161953	-18.69186	-13.61468	-10.701202	-13.361856	14.74118	9.571333	-17.81463	-13.281048	-11.11175	7.19165	5.941386	4.29142	0.59919	0.39146
θ(157.5°)	1.55137	0.98129	2.26141	6.42621	9.39132	-12.371799	-18.36158	-11.291117	-16.71154	-17.911487	-15.68191	8.89127	-17.79149	-11.42108	-10.4718	-12.76129	-11.41194	9.83195	9.23188	9.94194	8.181	5.61376	-1.92105	0.68178
θ(165°)	5.32033	4.51170	4.82178	-12.361383	-13.711932	-16.71126	-14.281672	-15.481473	-17.211288	-10.44128	-5.81195	-5.57133	6.84105	8.69169	8.31156	-5.97139	-11.531457	-18.721907	-14.881273	-10.98194	-12.66198	7.76171	-17.01126	-7.12181
θ(172.5°)	3.86038	7.23178	8.23198	7.01111	-16.211001	-14.50149	-19.16136	-18.361114	7.971722	4.94104	7.73421	7.3617	7.691745	8.99197	-11.22184	-14.20158	-10.081979	-18.791931	-10.45191	7.88107	6.41601	8.67167	4.79157	6.87162
θ(180°)	4.92242	4.98142	4.36457	13.541785	-18.611454	-17.42182	-18.881456	-10.26194	6.67187	6.49188	-3.9314	3.81349	-4.02125	5.01164	-6.58142	8.981358	-18.271889	-10.971538	-11.45192	7.26141	4.81445	3.37134	3.84193	4.16197

Gain	θ(°)	15°	112.5°	120°	135°	142.5°	150°	157.5°	165°	172.5°	180°
θ(90°)	2.36172	1.49632	-2.38053	3.49387	4.82058	-13.360102	-8.92/915	16.511-19.14	-12.181-47	19.819	-11.861743
θ(112.5°)	1.82044	1.61073	0.74068	3.21269	1.71653	-8.606114	-15.19146	11.371-17.78	-17.51171	9.31277	-0.971768
θ(120°)	0.55041	-0.6324	-2.59-136	3.79-444	7.77844	9.62457	-8.67182	14.29-18.87	-18.90-10.29	-12.33-18.42	-11.92057
θ(135°)	0.18014	-0.41017	-1.743	-3.21396	3.33659	8.58147	8.961363	18.011-19.01	-18.671828	-14.851775	-15.831454
θ(142.5°)	0.07179	-0.33183	-1.56130	-5.12055	5.79561	-4.02117	-12.311483	-18.971932	-12.891788	-15.69184	9.261537
θ(150°)	3.05101	-1.45145	5.13-38	3.51465	4.63832	9.23137	-12.151831	-18.391742	-17.591887	-19.161953	-18.69186
θ(157.5°)	1.55137	0.98129	2.26141	6.42621	9.39132	-12.371799	-18.36158	-11.291117	-16.71154	-17.911487	-15.68191
θ(165°)	5.32033	4.51170	4.82178	-12.361383	-13.711932	-16.71126	-14.281672	-15.481473	-17.211288	-10.44128	-5.81195
θ(172.5°)	3.86038	7.23178	8.23198	7.01111	-16.211001	-14.50149	-19.16136	-18.361114	7.971722	4.94104	7.73421
θ(180°)	4.92242	4.98142	4.36457	13.541785	-18.611454	-17.42182	-18.881456	-10.26194	6.67187	6.49188	-3.9314

Gain	θ(°)	15°	112.5°	120°	135°	142.5°	150°	157.5°	165°	172.5°	180°
θ(195°)	16.511-19.14	-12.181-47	19.819	-11.861743	-10.811076	4.47133	9.24459	6.656	-5.69-12	-5.024-19	2.371-32
θ(210°)	13.615	-5.99-866	-13.89-8.6	0.981-18	2.081-45	-4.580-93	2.521	1.62148	0.04102	1.76029	0.39146
θ(225°)	-11.92057	8-12.783	4.35759	9.06-15.88	13.615	-5.99-866	-13.89-8.6	0.981-18	2.081-45	-4.580-93	2.521
θ(240°)	-14.791136	4.33318	2.22057	-18.51344	1.69117	-3.231495	1.7005	2.11038	0.23235	2.072	0.76247
θ(255°)	-13.041203	-10.31161	-16.631689	8.23759	-5.97170	-19.68102	0.41037	0.88452	-1.73144	-6.47129	0.59919
θ(270°)	-10.31161	-16.631689	8.23759	-5.97170	-19.68102	0.41037	0.88452	-1.73144	-6.47129	0.59919	0.39146
θ(285°)	-13.041203	-10.31161	-16.631689	8.23759	-5.97170	-19.68102	0.41037	0.88452	-1.73144	-6.47129	0.59919
θ(300°)	-10.31161	-16.631689	8.23759	-5.97170	-19.68102	0.41037	0.88452	-1.73144	-6.47129	0.59919	0.39146
θ(315°)	-13.041203	-10.31161	-16.631689	8.23759	-5.97170	-19.68102	0.41037	0.88452	-1.73144	-6.47129	0.59919
θ(330°)	-10.31161	-16.631689	8.23759	-5.97170	-19.68102	0.41037	0.88452	-1.73144	-6.47129	0.59919	0.39146
θ(345°)	-13.041203	-10.31161	-16.631689	8.23759	-5.97170	-19.68102	0.41037	0.88452	-1.73144	-6.47129	0.59919
θ(360°)	-10.31161	-16.631689	8.23759	-5.97170	-19.68102	0.41037	0.88452	-1.73144	-6.47129	0.59919	0.39146







# Antenna Pattern of 2.4GHz and 5GHz UNII 1~3

# Appendix C

φ(°)	θ(°)	1.300-2.8		1.460-3.1		1.460-3.0		1.250-6.0		3.600-3.4		-4.975-6.5		-3.792-4.1		-0.650-3.0		-1.707-3.7		-12.460-2.0		-2.050-4.2		0.211-1.3		2.650-1.4		4.961-1.2		2.292-7.9		-5.014-3.2		-1.184-4.6		3.181-1.8		0.714-0.9		-1.960-4.9		-1.764-4.2		-7.450-5.5		2.450-4.0		0.320-5.8		
φ(°)	θ(°)	0.444	0.612	0.800	1.013	1.200	1.400	1.600	1.812	2.000	2.212	2.412	2.612	2.812	3.012	3.212	3.412	3.612	3.812	4.012	4.212	4.412	4.612	4.812	5.012	5.212	5.412	5.612	5.812	6.012	6.212	6.412	6.612	6.812	7.012	7.212	7.412	7.612	7.812	8.012	8.212	8.412	8.612	8.812	9.012	9.212	9.412	9.612	9.812	10.012
φ(85°)	θ(0°)	0.444	0.612	0.800	1.013	1.200	1.400	1.600	1.812	2.000	2.212	2.412	2.612	2.812	3.012	3.212	3.412	3.612	3.812	4.012	4.212	4.412	4.612	4.812	5.012	5.212	5.412	5.612	5.812	6.012	6.212	6.412	6.612	6.812	7.012	7.212	7.412	7.612	7.812	8.012	8.212	8.412	8.612	8.812	9.012	9.212	9.412	9.612	9.812	10.012
φ(85°)	θ(10°)	0.444	0.612	0.800	1.013	1.200	1.400	1.600	1.812	2.000	2.212	2.412	2.612	2.812	3.012	3.212	3.412	3.612	3.812	4.012	4.212	4.412	4.612	4.812	5.012	5.212	5.412	5.612	5.812	6.012	6.212	6.412	6.612	6.812	7.012	7.212	7.412	7.612	7.812	8.012	8.212	8.412	8.612	8.812	9.012	9.212	9.412	9.612	9.812	10.012
φ(85°)	θ(20°)	0.444	0.612	0.800	1.013	1.200	1.400	1.600	1.812	2.000	2.212	2.412	2.612	2.812	3.012	3.212	3.412	3.612	3.812	4.012	4.212	4.412	4.612	4.812	5.012	5.212	5.412	5.612	5.812	6.012	6.212	6.412	6.612	6.812	7.012	7.212	7.412	7.612	7.812	8.012	8.212	8.412	8.612	8.812	9.012	9.212	9.412	9.612	9.812	10.012



# Antenna Pattern of 2.4GHz and 5GHz UNII 1~3

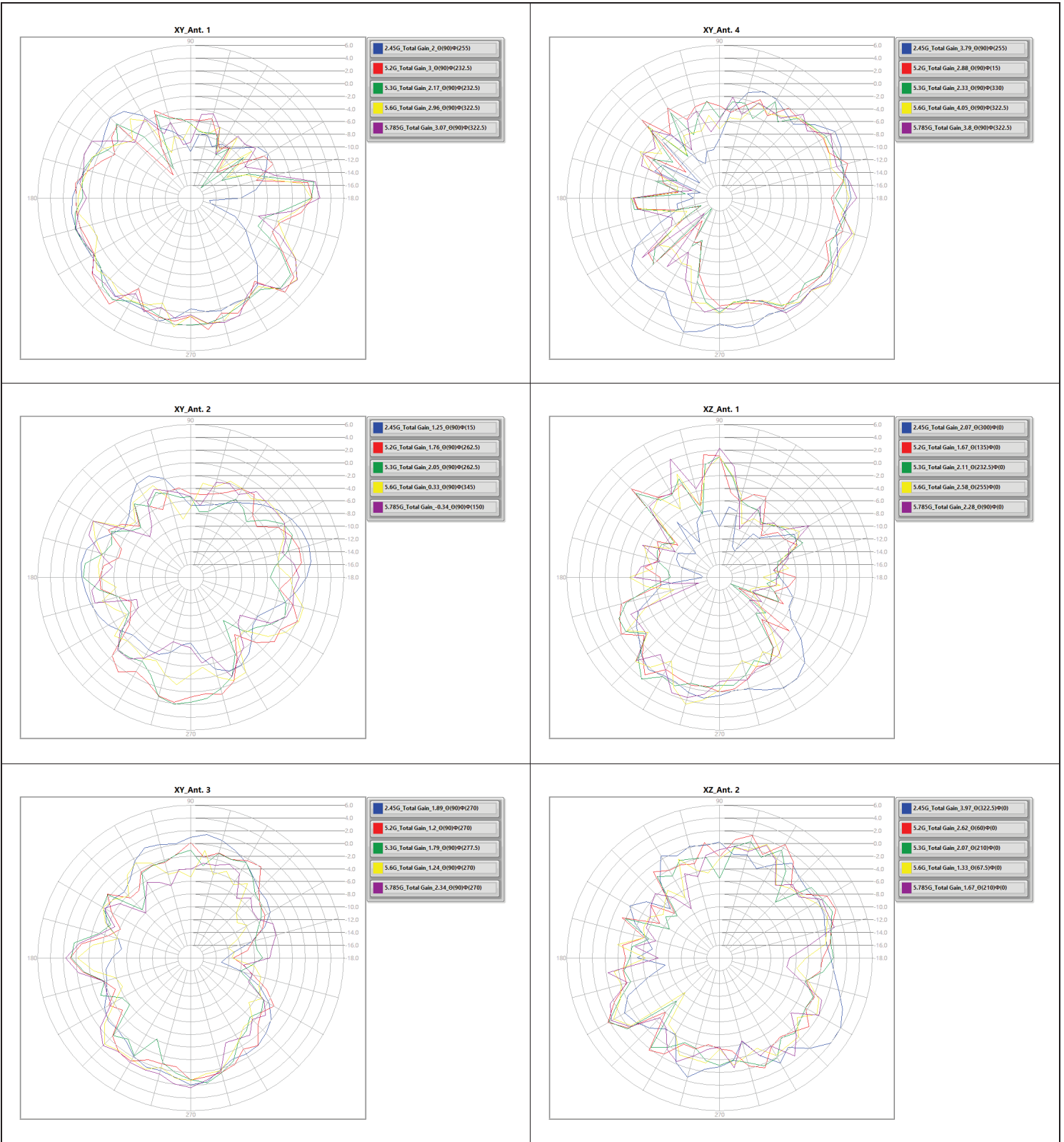
# Appendix C

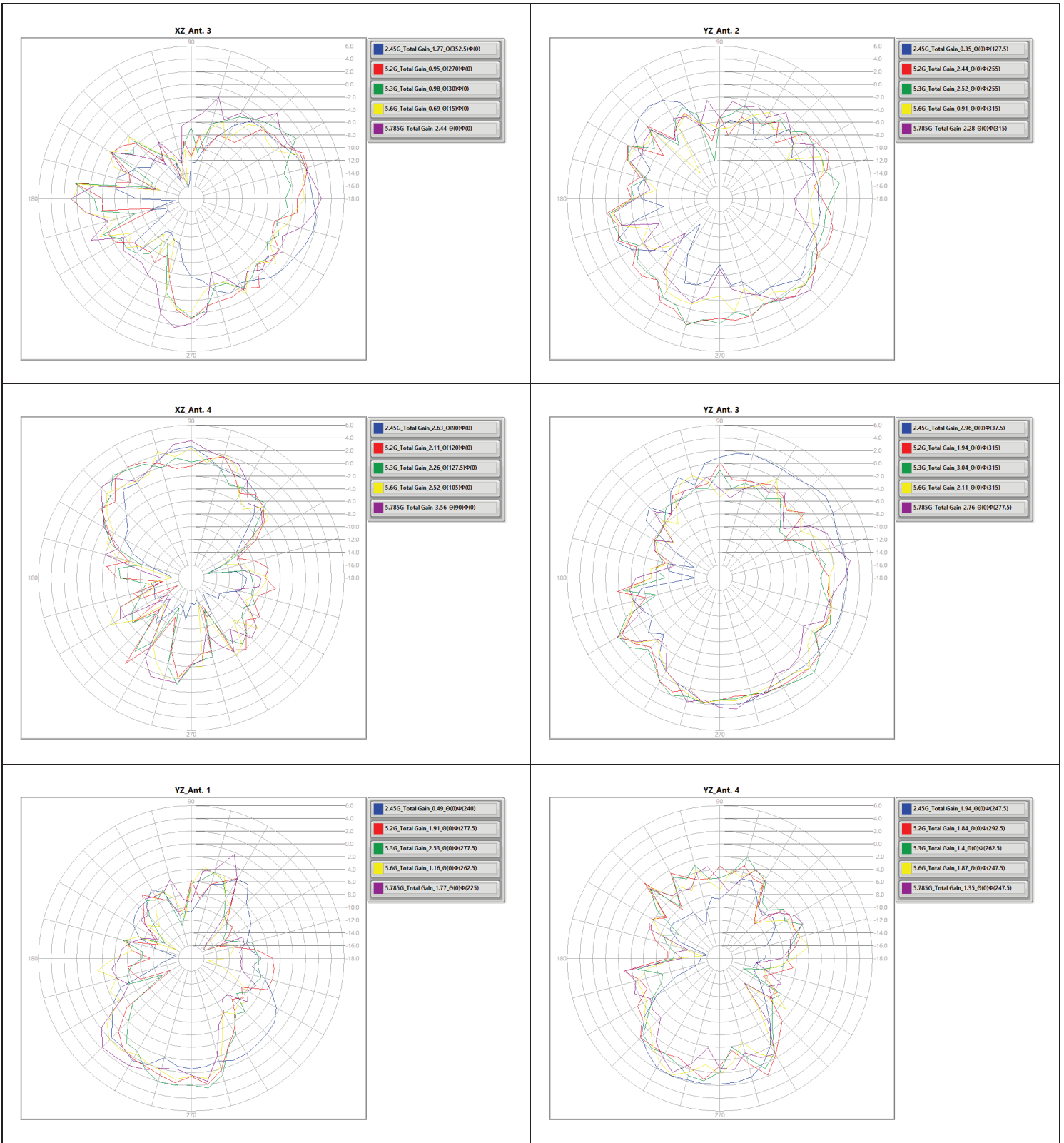
Gain	0°	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°	11°	12°	13°	14°	15°	16°	17°	18°	19°	20°	21°	22°	23°	24°	25°	26°	27°	28°	29°	30°	31°	32°	33°	34°	35°	36°	37°	38°	39°	40°	41°	42°	43°	44°	45°	46°	47°	48°	49°	50°	51°	52°	53°	54°	55°	56°	57°	58°	59°	60°	61°	62°	63°	64°	65°	66°	67°	68°	69°	70°	71°	72°	73°	74°	75°	76°	77°	78°	79°	80°	81°	82°	83°	84°	85°	86°	87°	88°	89°	90°	91°	92°	93°	94°	95°	96°	97°	98°	99°	100°																																																																																																					
(H1252)	-11.5814-28	-13.5504-75	-4.7715-36	-3.3060-61	-3.1723-203	0.0411-76	-4.2704-34	-1.194-49	-4.8111-42	-8.0310-37	-7.3610-81	-15.64-63	-8.074-28	-10.637-26	-5.214-23	-2.961-32	0.1070-76	0.230-50	1.941-25	0.881-13	-1.971-32	-5.794-56	-5.789-10	-12.241-27	-10.121-17	-8.804-10	-7.804-33	-6.804-33	-5.804-33	-4.804-33	-3.804-33	-2.804-33	-1.804-33	-0.804-33	0.1956-33	0.804-33	1.404-33	2.004-33	2.604-33	3.204-33	3.804-33	4.404-33	5.004-33	5.604-33	6.204-33	6.804-33	7.404-33	8.004-33	8.604-33	9.204-33	9.804-33	10.404-33	11.004-33	11.604-33	12.204-33	12.804-33	13.404-33	14.004-33	14.604-33	15.204-33	15.804-33	16.404-33	17.004-33	17.604-33	18.204-33	18.804-33	19.404-33	20.004-33	20.604-33	21.204-33	21.804-33	22.404-33	23.004-33	23.604-33	24.204-33	24.804-33	25.404-33	26.004-33	26.604-33	27.204-33	27.804-33	28.404-33	29.004-33	29.604-33	30.204-33	30.804-33	31.404-33	32.004-33	32.604-33	33.204-33	33.804-33	34.404-33	35.004-33	35.604-33	36.204-33	36.804-33	37.404-33	38.004-33	38.604-33	39.204-33	39.804-33	40.404-33	41.004-33	41.604-33	42.204-33	42.804-33	43.404-33	44.004-33	44.604-33	45.204-33	45.804-33	46.404-33	47.004-33	47.604-33	48.204-33	48.804-33	49.404-33	50.004-33	50.604-33	51.204-33	51.804-33	52.404-33	53.004-33	53.604-33	54.204-33	54.804-33	55.404-33	56.004-33	56.604-33	57.204-33	57.804-33	58.404-33	59.004-33	59.604-33	60.204-33	60.804-33	61.404-33	62.004-33	62.604-33	63.204-33	63.804-33	64.404-33	65.004-33	65.604-33	66.204-33	66.804-33	67.404-33	68.004-33	68.604-33	69.204-33	69.804-33	70.404-33	71.004-33	71.604-33	72.204-33	72.804-33	73.404-33	74.004-33	74.604-33	75.204-33	75.804-33	76.404-33	77.004-33	77.604-33	78.204-33	78.804-33	79.404-33	80.004-33	80.604-33	81.204-33	81.804-33	82.404-33	83.004-33	83.604-33	84.204-33	84.804-33	85.404-33	86.004-33	86.604-33	87.204-33	87.804-33	88.404-33	89.004-33	89.604-33	90.204-33	90.804-33	91.404-33	92.004-33	92.604-33	93.204-33	93.804-33	94.404-33	95.004-33	95.604-33	96.204-33	96.804-33	97.404-33	98.004-33	98.604-33	99.204-33	99.804-33	100.404-33





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 of 6GHz

# Appendix D

### Total Gain Data

Frequency	0°	15°	30°	45°	60°	75°	90°	105°	120°	135°	150°	165°	180°	195°	210°	225°	240°	255°	270°	285°	300°	315°	330°	345°
Gain	0.1260	0.1260	0.1260	0.1260	0.1260	0.1260	0.1260	0.1260	0.1260	0.1260	0.1260	0.1260	0.1260	0.1260	0.1260	0.1260	0.1260	0.1260	0.1260	0.1260	0.1260	0.1260	0.1260	0.1260



# Antenna Pattern of 6GHz

# Appendix D

Frequency	Theta	Phi	Gain	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain	Loss							
6GHz	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000							
		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						
		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000					
		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000				
		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			
		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			
		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		
		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000







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

