



Antenna Composite Gain Test Report

Equipment	Wi-Fi 6E Extender
Brand Name	technicolor, Google Fiber
Model Name	OWA7111TCH3, OWA7111TCH3P, OWA7111GFR, GE6E210T
Applicant	Vantiva USA LLC 4855 Peachtree Industrial Blvd., Suite 200, Norcross, Georgia 30092 U.S.A.
Manufacturer	Fuhong Precision Component (BacGiang) Co., Ltd. Dinh Tram Industrial Park Viet Yen District, BAC GIANG PROVINCE, Vietnam
Sample Received	Dec. 21, 2022
Start Test Date	Dec. 22, 2022
Final Test Date	Apr. 19, 2023



Approved by: Jackson Tsai

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1. Operation Mode and Antenna Information

Antenna Position	RF Port	Brand Name	Model Name	Ant. Type	Connector	Modes of Operation
2G 5G Ant1	1	NA	NA	PCB	I-Pex	2.4GHz+5GHz
2G 5G Ant2	2	NA	NA	PCB	I-Pex	2.4GHz+5GHz
BLE Ant	1	NA	NA	PCB	I-Pex	Bluetooth
6G Ant1	1	NA	NA	PCB	I-Pex	6GHz
6G Ant2	2	NA	NA	PCB	I-Pex	6GHz
6G Ant3	3	NA	NA	PCB	I-Pex	6GHz
6G Ant4	4	NA	NA	PCB	I-Pex	6GHz

Note:

2.4GHz and 5GHz Operation Mode (2TX/2RX)

2G 5G Ant1~2G 5G Ant2 could transmit/receive simultaneously.

Bluetooth Operation Mode (1TX/1RX)

BLE Ant can be used as transmitting/receiving antenna.

6GHz Operation Mode (4TX/4RX)

6G Ant1~6G Ant4 could transmit/receive simultaneously.

2. Test Frequency

The listed frequency of each bands are selected to represent each frequency bands

Band [MHz]	Test Frequency [MHz]
2400-2483.5	2400, 2450, 2483.5
5150-5250	5200
5250-5350	5300
5470-5725	5600
5725-5850	5785
5925-6425	6175
6425-6525	6475
6525-6875	6695
6875-7125	6995

3. Table for Multiple Listing

The brand/model names in the following table are all refer to the identical product.

Brand Name	Model Name	Description
technicolor	OWA7111TCH3, OWA7111TCH3P, OWA7111GFR	All the models are identical, the difference model for difference brand served as marketing strategy.
Google Fiber	GE6E210T	

Note: OWA7111TCH3 was measured during the test.

4. Testing Location

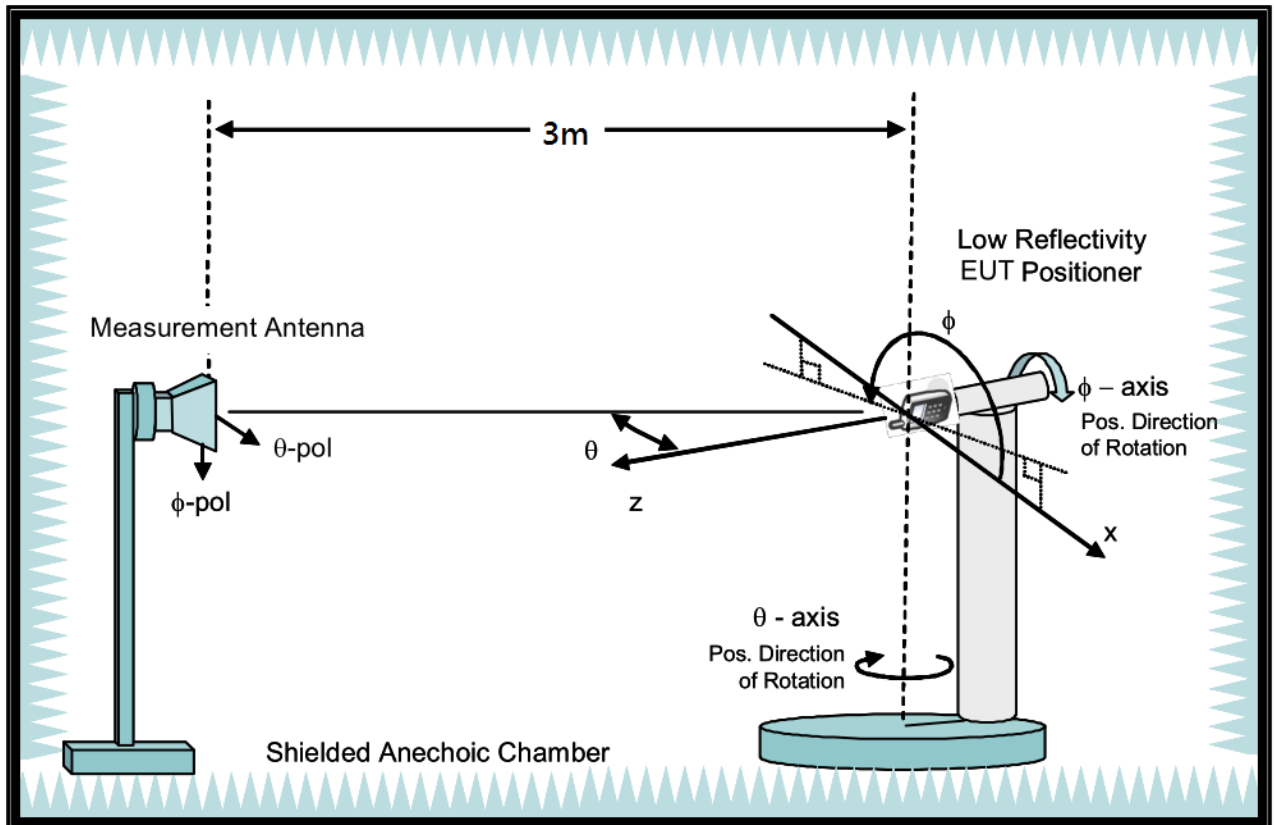
Test Lab. : Sporton International Inc. Hsinhua Laboratory				
<input checked="" type="checkbox"/> Wen 33rd.St.	ADD:	No.14-1, Ln. 19, Wen 33rd St., Guishan Dist., Taoyuan City 333010, Taiwan (R.O.C.)		
	TEL:	886-3-318-0787	FAX:	886-3-318-0287
Test Condition	Test Site No.	Test Engineer	Test Environment (°C / %)	Test Date
Radiated	05CH03-HY	Rex Liao	23.5~24.5°C / 50~55%	Dec/22/2022~Apr/19/2023

Note:
 Testing Site Information
 Brand Name: TDK
 Dimension: 11m*6m*6m
 Characteristic: Fully Anechoic Chamber

5. Test Facility and Configuration

Test configuration: Reference to CITA OTA distributed-axes system configuration.
 Chamber: Fully Anechoic Chamber.
 Measurement antenna: Dual Polarization Horn antenna
 Turntable: Multi-axis positioner (Theta and Phi angle).

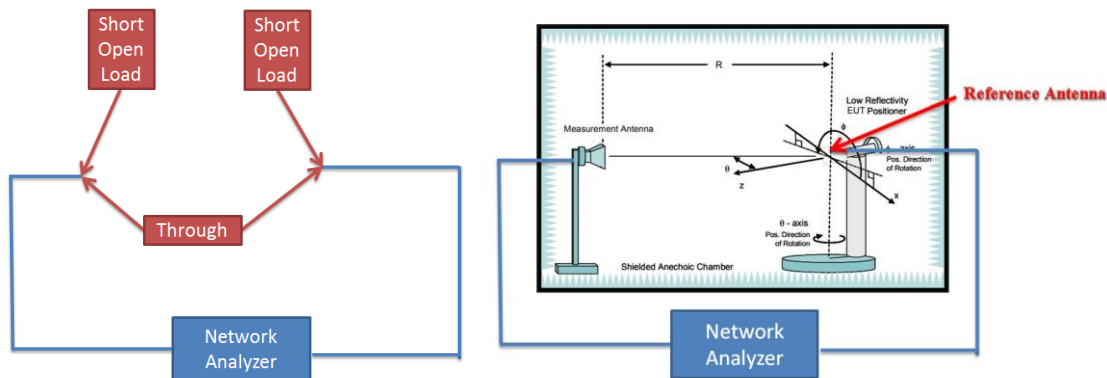
#Reference to CTIA "ctia-test-plan-for-wireless-device-over-the-air-performance-ver-3-7-1"



6. Reference Calibration

Connected cables to VNA calibration kit and use network analyzer internal function to do calibration. Do short, open and load to each side. Then connect through to both side and calibrate G values. The cable loss is calibrated and set inside the network analyzer.

Measurement Antenna is connected to port1 of Network analyzer and reference antenna connected to port 2 of Network Analyzer. Record G values and used with reference antenna gain to calculate gain factor.



Frequency (MHz)	2400	2450	2500	5150	5200	5300	5600	5750	5800	5900	6000	6500	7000	7200
G(theta) reading (dB)	-33.55	-33.27	-32.92	-32.91	-32.73	-32.02	-32.67	-32.82	-32.98	-33.18	-32.8	-33.92	-34.62	-35.57
G(phi) reading (dB)	-33.15	-32.7	-32.41	-32.61	-32.43	-31.72	-32.37	-32.51	-32.52	-32.66	-32.5	-33.62	-34.32	-35.48
Reference gain (dBi)	10.1	10.4	10.7	12.5	12.7	13.5	13.4	13.3	13.3	13.2	13.4	12.5	12.1	11.4
Factor(theta) (dB)	43.65	43.67	43.62	45.41	45.43	45.52	46.07	46.12	46.28	46.38	46.2	46.42	46.72	46.97
Factor(phi) (dB)	43.25	43.1	43.11	45.11	45.13	45.22	45.77	45.81	45.82	45.86	45.9	46.12	46.42	46.88

Note:

$$G \text{ reading (dB)} = 20 \cdot \log(V_2/V_1) = 10 \cdot \log(P_2/P_1)$$

V₂ is the voltage of VNA port2 is measured, V₁ is the voltage of VNA port1 is the reference source.

P₂ is the power of VNA port2 is measured, P₁ is the power of VNA port1 is the reference source.

$$\text{Factor} = \text{gain factor} + \text{power gain conversion} = (\text{Reference antenna gain}) - (G \text{ reading})$$



7. Test Method

EUT set on multi-axis positioner and adjust EUT's physical center to measurement reference center. Measurement antenna set at phi polarization and 1.5 meter height. Port 1 of Network analyzer connect to antenna 1 of EUT. Record G value every 7.5 degree from 0 to 352.5 degree on Phi angle and 0 to 180 on theta angle of multi-axis positioner. Then set measurement antenna to theta polarization and repeat process. Repeat process to each antenna of EUT.

DG steps:

1. Each Phi and Theta polarization antenna gain are measured for all test angles.
2. Composite Phi and Theta antenna gain are computed, using formula in KDB662911 D01 d) (i) and e) (ii), for all angles.
3. Composite antenna gain are examined for all angles to determine max gain and Phi/Theta position. Max gain and phi/theta position are listed in section 7 tables.

Note: Antenna gain = G reading + factor, The factor of chapter five includes reference antenna gain factor and power gain conversion.



8. Measured Values and Calculation of Maximum Gain Positions

DG_1SS max value position

Frequency (Hz)	2.45G	5.2G	5.3G	5.6G	5.785G
Ant. 1 (dBi)	1.56	-0.04	-1.52	-0.06	1.75
Ant. 2 (dBi)	-3.22	-0.52	-0.25	-0.12	0.14
DG [1SS] (dBi)	2.51	2.73	2.15	2.92	3.99
Polarization	Phi	Phi	Phi	Phi	Phi
Θ(°)	67.5	52.5	52.5	52.5	52.5
Φ(°)	180	15	22.5	195	202.5

Note: The DG 1SS max value position is the maximum value of section 12 table DG 1SS Result.

DG_1SS max value position calculation

Frequency (Hz)	2.45G	5.2G	5.3G	5.6G	5.785G
Ant. 1 [10^(G/20)]	10^(1.56/20)	10^(-0.04/20)	10^(-1.52/20)	10^(-0.06/20)	10^(1.75/20)
Ant. 2 [10^(G/20)]	10^(-3.22/20)	10^(-0.52/20)	10^(-0.25/20)	10^(-0.12/20)	10^(0.14/20)
Ant. 1 [10^(G/20)] value	1.197	0.995	0.839	0.993	1.223
Ant. 2 [10^(G/20)] value	0.69	0.942	0.972	0.986	1.016
Sum All Antenna [Amax]	1.887	1.937	1.811	1.979	2.239
DG [10*log(Amax^2/Nant)]	2.51	2.73	2.15	2.92	3.99

Note:

Directional Gain (1SS) is the max value of every look angle. Each position value is calculated by KDB662911 D01 d) (i).

$$\text{Directional gain (1SS)} = 10 \cdot \log(10^{(G_{ant1}/20)} + 10^{(G_{ant2}/20)} + 10^{(G_{ant3}/20)} + 10^{(G_{ant4}/20)} + \dots)^2 / N_{ant}$$



DG_1SS max value position

Frequency (Hz)	6.175G	6.475G	6.695G	6.995G
Ant. 1 (dBi)	-2.68	-0.71	-0.51	-1.5
Ant. 2 (dBi)	2.13	3.01	0.42	-0.25
Ant. 3 (dBi)	-5.22	0.01	-0.17	-0.49
Ant. 4 (dBi)	-1.19	-10.7	-8.33	1.09
DG [1SS] (dBi)	4.69	5.17	4.5	5.78
Polarization	Phi	Phi	Phi	Phi
Θ(°)	90	90	75	97.5
Φ(°)	142.5	165	195	75

DG_1SS max value position calculation

Frequency (Hz)	6.175G	6.475G	6.695G	6.995G
Ant. 1 [10 ^{^(G/20)}]	10 ^{^(-2.68/20)}	10 ^{^(-0.71/20)}	10 ^{^(-0.51/20)}	10 ^{^(-1.5/20)}
Ant. 2 [10 ^{^(G/20)}]	10 ^{^(2.13/20)}	10 ^{^(3.01/20)}	10 ^{^(0.42/20)}	10 ^{^(-0.25/20)}
Ant. 3 [10 ^{^(G/20)}]	10 ^{^(-5.22/20)}	10 ^{^(0.01/20)}	10 ^{^(-0.17/20)}	10 ^{^(-0.49/20)}
Ant. 4 [10 ^{^(G/20)}]	10 ^{^(-1.19/20)}	10 ^{^(-10.7/20)}	10 ^{^(-8.33/20)}	10 ^{^(1.09/20)}
Ant. 1 [10 ^{^(G/20)}] value	0.735	0.922	0.943	0.841
Ant. 2 [10 ^{^(G/20)}] value	1.278	1.414	1.05	0.972
Ant. 3 [10 ^{^(G/20)}] value	0.548	1.001	0.981	0.945
Ant. 4 [10 ^{^(G/20)}] value	0.872	0.292	0.383	1.134
Sum All Antenna [Amax]	3.433	3.629	3.356	3.892
DG [10*log(Amax ² /Nant)]	4.69	5.17	4.5	5.78

Note:

Directional Gain (1SS) is the max value of every look angle. Each position value is calculated by KDB662911 D01 d) (i).

$$\text{Directional gain (1SS)} = 10 * \log(10^{(G_{ant1}/20)} + 10^{(G_{ant2}/20)} + 10^{(G_{ant3}/20)} + 10^{(G_{ant4}/20)} + \dots)^2 / N_{ant}$$



9. Summary of Test Result

2G5G

Frequency (Hz)	2.45G	5.2G	5.3G	5.6G	5.785G
Ant. 1 Max Gain (dBi)	1.79	1.21	1.5	2.17	2.68
Ant. 2 Max Gain (dBi)	1.95	1.39	1.8	2.7	3.87
Ant. 1 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$	Phi/67.5/187.5	Theta/82.5/120	Theta/45/120	Theta/60/112.5	Theta/52.5/112.5
Ant. 2 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$	Theta/97.5/7.5	Theta/67.5/307.5	Theta/67.5/307.5	Theta/75/307.5	Theta/82.5/300
Max Gain (dBi)	1.95	1.39	1.8	2.7	3.87
DG [1SS] (dBi)	2.51	2.73	2.15	2.92	3.99
DG [2SS] (dBi)	1.95	1.39	1.8	2.7	3.87

BLE

Freq(Hz)	2.4G	2.45G	2.4835G
Ant. 1 Max Gain (dBi)	2.5	3.4	3.98
Ant. 1 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$	Phi/30/127.5	Phi/67.5/120	Phi/67.5/120

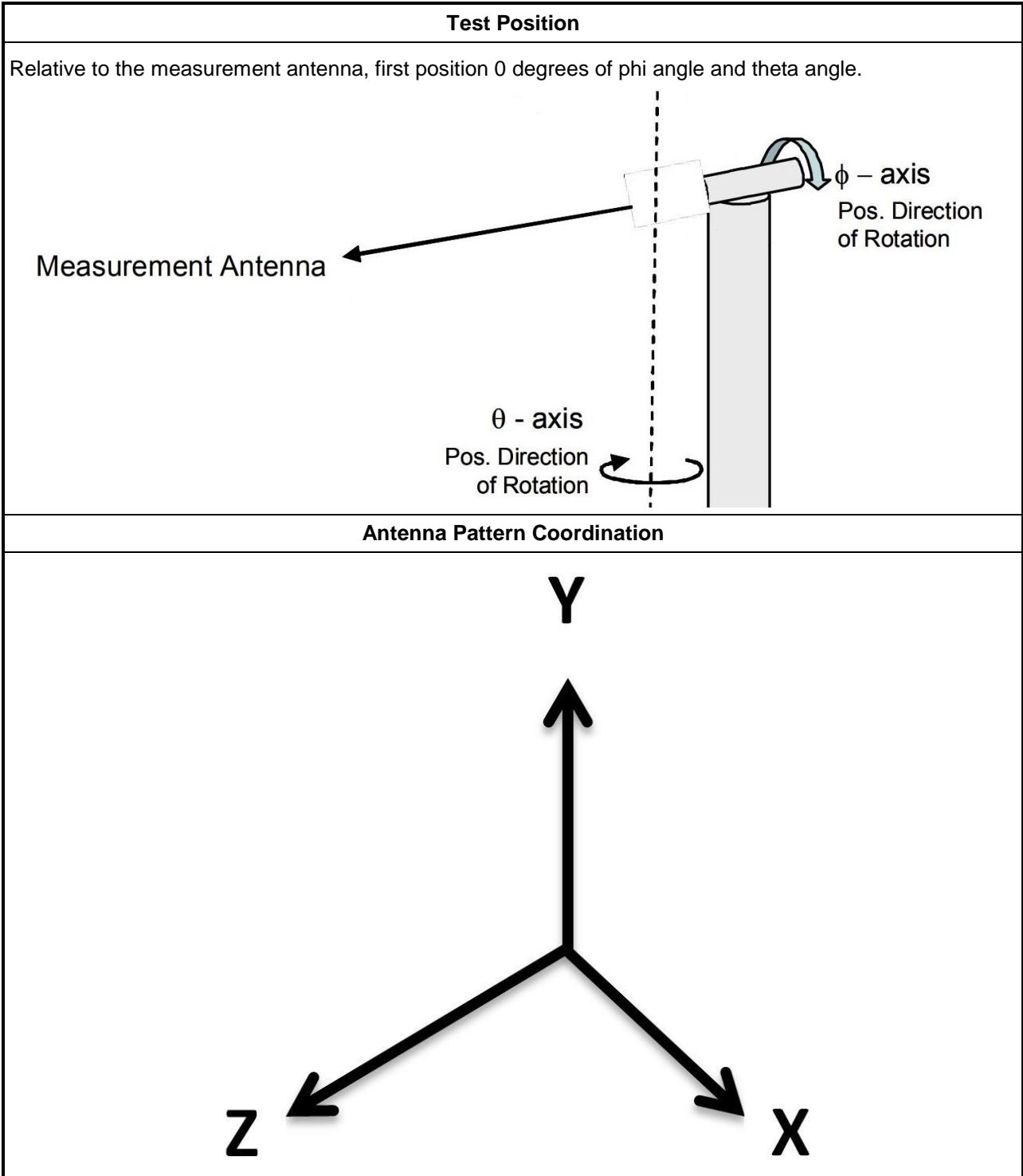
6G

Frequency (Hz)	6.175G	6.475G	6.695G	6.995G
Ant. 1 Max Gain (dBi)	1.51	1.68	1.23	2.01
Ant. 2 Max Gain (dBi)	2.4	3.01	3.32	3.22
Ant. 3 Max Gain (dBi)	2.23	2.76	4.06	3.84
Ant. 4 Max Gain (dBi)	2.06	1.85	2.35	3.51
Ant. 1 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$	Theta/45/277.5	Phi/157.5/0	Theta/52.5/255	Phi/45/15
Ant. 2 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$	Phi/75/142.5	Phi/90/165	Phi/90/165	Phi/82.5/157.5
Ant. 3 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$	Phi/60/37.5	Phi/90/240	Phi/67.5/22.5	Phi/97.5/240
Ant. 4 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$	Theta/82.5/22.5	Phi/97.5/255	Phi/90/255	Phi/97.5/255
Max Gain (dBi)	2.4	3.01	4.06	3.84
DG [1SS] (dBi)	4.69	5.17	4.5	5.78
DG [2SS] (dBi)	2.4	3.01	4.06	3.84
DG [4SS] (dBi)	2.4	3.01	4.06	3.84

Note:

1. Antenna max gain is the max value of each individual antenna through all measurement angles.
2. The max gain is the max value of all antennas.
3. Directional Gain (2SS) = Directional Gain (1SS) – 3dB. If directional gain is less than max gain, use max gain as directional gain. Refer to KDB662911D01 (F) (2) (e) (ii)
4. Directional Gain (4SS) = Directional Gain (1SS) – 6dB. If directional gain is less than max gain, use max gain as directional gain. Refer to KDB662911D01 (F) (2) (e) (ii)

10. Test Setup



Note:

Photos of Test Position: Please refer to the test photos in the appendix.



11. Test Equipment and Calibration Data

Instrument	Brand	Model No.	Serial No.	Characteristics	Calibration Date	Calibration Due Date
Horn Antenna	SCHWARZBECK	BBHA9120D	BBHA 9120D-1543	1GHz~18GHz	May 31, 2022	May 30, 2023
Dual Polarization Horn Antenna	Sporton	S0209DP	S0209DP-001	2GHz~9GHz	N.C.R.	N.C.R.
ENA Series Network Analyzer	AGILENT	E5071C	MY46419477	100kHz~8.5GHz	July. 20, 2022	July. 19, 2023
VNA Calibration Kit	TS RF	TS85033E-F	-	DC~9GHz	N.C.R.	N.C.R.
Multi-axis positioner	Sporton	MAPS01	MAPS01-001	Theta / Phi axis	N.C.R.	N.C.R.
Test Software	SPORTON	SENSE-RDG	V1.0.8	-	N.C.R.	N.C.R.

Note: Calibration Interval of instruments listed above is one year. NCR means Non-Calibration required.



12. Test Results

Please refer to the appendix.

Appendix A – Radiated Composite Gain of 2.4GHz&5GHz.....Page 14

Appendix B – Radiated Composite Gain of Bluetooth.....Page 23

Appendix C – Radiated Composite Gain of 6GHz.....Page 26

Appendix D – Antenna Pattern of 2.4GHz&5GHz.....Page 37

Appendix E – Antenna Pattern of Bluetooth.....Page 41

Appendix F – Antenna Pattern of 6GHz.....Page 43

Appendix G – Test Photos.....Page 49

————THE END————



Radiated Composite Gain Data of 2.4GHz&5GHz

Appendix A

Freq(Hz)	2.45G	5.2G	5.3G	5.6G	5.785G
Ant. 1 Max Gain (dBi)	1.79	1.21	1.5	2.17	2.68
Ant. 2 Max Gain (dBi)	1.95	1.39	1.8	2.7	3.87
Ant. 1 Polarization/ $\theta(^{\circ})/\phi(^{\circ})$	Phi/67.5/187.5	Theta/82.5/120	Theta/45/120	Theta/60/112.5	Theta/52.5/112.5
Ant. 2 Polarization/ $\theta(^{\circ})/\phi(^{\circ})$	Theta/97.5/7.5	Theta/67.5/307.5	Theta/67.5/307.5	Theta/75/307.5	Theta/82.5/300
Max Gain (dBi)	1.95	1.39	1.8	2.7	3.87
DG [1SS] (dBi)	2.51	2.73	2.15	2.92	3.99
DG [2SS] (dBi)	1.95	1.39	1.8	2.7	3.87



Radiated Composite Gain Data of 2.4GHz&5GHz

Appendix A

DG 1SS Result

Freq(Hz)	2.45GPol.	PhiH	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°)																											
DG(dB)	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°)	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°)					
0(°)	0.620/0	0.620/38	-0.03/-0.6	-1.25/-2.05	-3.05/-3.85	-4.97/-5.68	-6.71/-7.58	-8.53/-8.55	-7.66/-5.34	-3.54/-2.16	-1.18/-0.48	-0.010/31	0.480/51	0.440/25	-0.1/-0.59	-1.34/-2.3	-2.91/-3.47	-4.23/-4.19	-4.28/-4.59	-5.26/-6.18	-6.56/-6.18	-6.05/-6.31	-3.55/-2.14	-1.14/-0.34	0.190/49	0(°)	0.620/0	0.620/38	-0.03/-0.6	-1.25/-2.05	-3.05/-3.85	-4.97/-5.68	-6.71/-7.58	-8.53/-8.55	-7.66/-5.34	-3.54/-2.16	-1.18/-0.48	-0.010/31	0.480/51	0.440/25	-0.1/-0.59	-1.34/-2.3	-2.91/-3.47	-4.23/-4.19	-4.28/-4.59	-5.26/-6.18	-6.56/-6.18	-6.05/-6.31	-3.55/-2.14	-1.14/-0.34	0.190/49		
0(75°)	0.770/89	0.860/64	0.23/-0.35	-1.06/-1.9	-2.93/-3.68	-4.44/-7.5	-5.17/-5.7	-6.22/-6.4	-4.44/-7.5	-5.17/-5.7	-6.22/-6.4	-2.82/-1.64	-0.77/-0.16	0.240/46	0.520/47	0.310/02	-0.37/-0.93	-1.17/-2.71	-3.39/-4.17	-5.57/-5.4	-5.33/-5.54	-5.89/-6.09	-6.76/-7.1	-3.55/-2.14	-1.14/-0.37	0.190/53	0(75°)	0.770/89	0.860/64	0.23/-0.35	-1.06/-1.9	-2.93/-3.68	-4.44/-7.5	-5.17/-5.7	-6.22/-6.4	-4.44/-7.5	-5.17/-5.7	-6.22/-6.4	-2.82/-1.64	-0.77/-0.16	0.240/46	0.520/47	0.310/02	-0.37/-0.93	-1.17/-2.71	-3.39/-4.17	-5.57/-5.4	-5.33/-5.54	-5.89/-6.09	-6.76/-7.1	-3.55/-2.14	-1.14/-0.37	0.190/53
0(15°)	0.810/94	0.910/73	0.33/-0.28	-1.05/-1.98	-2.98/-3.68	-3.81/-3.9	-4.17/-4.46	-4.65/-4.45	-3.76/-2.8	-1.78/-0.92	-0.290/12	0.330/4	0.340/18	-0.08/-0.41	-0.86/-1.49	-2.41/-3.59	-4.33/-5.06	-6.17/-6.69	-6.69/-6.4	-5.91/-5.23	-4.39/-3.43	-2.46/-1.6	-0.85/-0.23	0.240/58	0(15°)	0.810/94	0.910/73	0.33/-0.28	-1.05/-1.98	-2.98/-3.68	-3.81/-3.9	-4.17/-4.46	-4.65/-4.45	-3.76/-2.8	-1.78/-0.92	-0.290/12	0.330/4	0.340/18	-0.08/-0.41	-0.86/-1.49	-2.41/-3.59	-4.33/-5.06	-6.17/-6.69	-6.69/-6.4	-5.91/-5.23	-4.39/-3.43	-2.46/-1.6	-0.85/-0.23	0.240/58				
0(22.5°)	0.730/8	0.690/45	0/0.67	-1.59/-2.76	-3.33/-4.05	-4.02/-4.13	-4.38/-4.52	-4.32/-3.62	-2.67/-1.72	-0.97/-0.27	0.130/33	0.360/3	0.420/35	-0.36/-0.78	-1.37/-2.17	-3.26/-4.27	-5.14/-6.36	-6.11/-6.36	-6.47/-7.36	-6.83/-4.52	-3.43/-2.55	-1.76/-1.1	-0.55/-0.1	0.260/56	0(22.5°)	0.730/8	0.690/45	0/0.67	-1.59/-2.76	-3.33/-4.05	-4.02/-4.13	-4.38/-4.52	-4.32/-3.62	-2.67/-1.72	-0.97/-0.27	0.130/33	0.360/3	0.420/35	-0.36/-0.78	-1.37/-2.17	-3.26/-4.27	-5.14/-6.36	-6.11/-6.36	-6.47/-7.36	-6.83/-4.52	-3.43/-2.55	-1.76/-1.1	-0.55/-0.1	0.260/56				
0(30°)	0.470/45	0.26/-0.05	-0.49/-1.21	-2.24/-3.54	-4.29/-5.29	-5.33/-5.51	-5.54/-5.24	-4.46/-3.39	-2.24/-1.26	-0.50/0.2	0.310/44	0.480/46	0.460/35	0.14/-0.26	-0.86/-1.63	-2.61/-3.57	-4.87/-6.43	-6.06/-9.61	-6.69/-4.9	-3.64/-2.69	-1.89/-1.24	-0.74/-0.31	0.060/33	0(30°)	0.470/45	0.26/-0.05	-0.49/-1.21	-2.24/-3.54	-4.29/-5.29	-5.33/-5.51	-5.54/-5.24	-4.46/-3.39	-2.24/-1.26	-0.50/0.2	0.310/44	0.480/46	0.460/35	0.14/-0.26	-0.86/-1.63	-2.61/-3.57	-4.87/-6.43	-6.06/-9.61	-6.69/-4.9	-3.64/-2.69	-1.89/-1.24	-0.74/-0.31	0.060/33						
0(37.5°)	0.270/21	0.06/-0.17	-0.53/-1.12	-2.07/-3.55	-5.16/-6.58	-7.24/-7.46	-7.1-5.82	-4.31/-2.97	-1.77/-0.83	-0.150/26	0.470/56	0.610/71	0.820/87	0.720/28	-0.36/-1.1	-2.06/-3.2	-4.62/-6.14	-7.95/-10.31	-10.94/-10.83	-8.25/-6.35	-4.81/-3.42	-2.21/-1.28	-0.64/-0.19	0.060/21	0(37.5°)	0.270/21	0.06/-0.17	-0.53/-1.12	-2.07/-3.55	-5.16/-6.58	-7.24/-7.46	-7.1-5.82	-4.31/-2.97	-1.77/-0.83	-0.150/26	0.470/56	0.610/71	0.820/87	0.720/28	-0.36/-1.1	-2.06/-3.2	-4.62/-6.14	-7.95/-10.31	-10.94/-10.83	-8.25/-6.35	-4.81/-3.42	-2.21/-1.28	-0.64/-0.19	0.060/21				
0(45°)	-0.09/-0.08	-0.07/-0.14	-0.38/-0.84	-1.65/-3.07	-5.16/-7.79	-9.77/-10.35	-9.19/-6.73	-4.51/-2.98	-1.85/-1	-0.360/0.1	0.150/11	0.090/19	0.405/2	0.420/0.1	-0.66/-1.47	-2.48/-3.77	-5.47/-7.3	-9.51/-11.85	-12.22/-12.05	-10.9/-8.9	-6.64/-4.3	-2.64/-1.37	-0.57/-0.15	-0.01/-0.06	0(45°)	-0.09/-0.08	-0.07/-0.14	-0.38/-0.84	-1.65/-3.07	-5.16/-7.79	-9.77/-10.35	-9.19/-6.73	-4.51/-2.98	-1.85/-1	-0.360/0.1	0.150/11	0.090/19	0.405/2	0.420/0.1	-0.66/-1.47	-2.48/-3.77	-5.47/-7.3	-9.51/-11.85	-12.22/-12.05	-10.9/-8.9	-6.64/-4.3	-2.64/-1.37	-0.57/-0.15	-0.01/-0.06				
0(52.5°)	-1.44/-1.42	-1.28/-1.22	-1.31/-1.65	-2.32/-3.5	-5.41/-8.64	-12.28/-14.91	-13.28/-10.57	-7.25/-5.38	-4.19/-3.42	-2.88/-2.56	-2.48/-2.53	-2.42/-1.95	-1.28/-0.68	-0.4/-0.43	-0.66/-1.1	-1.91/-3.05	-4.55/-6.13	-7.93/-9.08	-10.48/-11.66	-11.78/-9.92	-7.51/-4.98	-3.16/-2.1	-1.55/-1.36	-1.31/-1.4	0(52.5°)	-1.44/-1.42	-1.28/-1.22	-1.31/-1.65	-2.32/-3.5	-5.41/-8.64	-12.28/-14.91	-13.28/-10.57	-7.25/-5.38	-4.19/-3.42	-2.88/-2.56	-2.48/-2.53	-2.42/-1.95	-1.28/-0.68	-0.4/-0.43	-0.66/-1.1	-1.91/-3.05	-4.55/-6.13	-7.93/-9.08	-10.48/-11.66	-11.78/-9.92	-7.51/-4.98	-3.16/-2.1	-1.55/-1.36	-1.31/-1.4				
0(60°)	-2.14/-1.99	-1.89/-1.88	-2.2/-2.98	-4.14/-5.63	-7.56/-10.1	-11.68/-11.21	-10.72/-9.84	-6.25/-7.08	-4.65/-4.06	-3.69/-3.28	-2.41/-1.46	-0.460/24	0.620/83	0.860/55	-0.28/-1.46	-2.91/-4.49	-6.34/-8.46	-10.98/-12.56	-10.85/-10.61	-8.51/-6.23	-4.53/-3.83	-2.59/-2.58	-2.69/-2.44	-2.69/-2.44	0(60°)	-2.14/-1.99	-1.89/-1.88	-2.2/-2.98	-4.14/-5.63	-7.56/-10.1	-11.68/-11.21	-10.72/-9.84	-6.25/-7.08	-4.65/-4.06	-3.69/-3.28	-2.41/-1.46	-0.460/24	0.620/83	0.860/55	-0.28/-1.46	-2.91/-4.49	-6.34/-8.46	-10.98/-12.56	-10.85/-10.61	-8.51/-6.23	-4.53/-3.83	-2.59/-2.58	-2.69/-2.44	-2.69/-2.44				
0(67.5°)	-0.77/-0.32	-0.15/-0.23	-0.75/-1.89	-3.62/-5.78	-8.19/-8.3	-10.14/-9.38	-8.68/-7.51	-6.02/-4.78	-3.86/-3.04	-2.11/-1.19	-0.360/45	1.312/12	2.512/41	1.941/39	0.73/-0.24	-1.53/-2.75	-3.95/-5.05	-6.11/-7.33	-8.16/-8.07	-7.51/-6.55	-5.65/-5	-4.35/-4.39	-2.66/-1.2	-1.81/-3.6	0(67.5°)	-0.77/-0.32	-0.15/-0.23	-0.75/-1.89	-3.62/-5.78	-8.19/-8.3	-10.14/-9.38	-8.68/-7.51	-6.02/-4.78	-3.86/-3.04	-2.11/-1.19	-0.360/45	1.312/12	2.512/41	1.941/39	0.73/-0.24	-1.53/-2.75	-3.95/-5.05	-6.11/-7.33	-8.16/-8.07	-7.51/-6.55	-5.65/-5	-4.35/-4.39	-2.66/-1.2	-1.81/-3.6				
0(75°)	-1.52/-1.17	-0.91/-1.06	-1.63/-2.63	-4.13/-5.63	-6.11/-5.87	-5.58/-5.4	-5.5/-5.94	-6.51/-6.65	-5.88/-4.78	-3.52/-2.21	-1.08/-0.1	0.91/78	2.152	1.591/13	0.41/-0.62	-1.58/-2.2	-2.99/-3.93	-4.76/-5.27	-5.67/-6.17	-6.91/-7.62	-8.22/-8.16	-6.54/-3.35	-2.79/-1.88	-1.52/-1.59	0(75°)	-1.52/-1.17	-0.91/-1.06	-1.63/-2.63	-4.13/-5.63	-6.11/-5.87	-5.58/-5.4	-5.5/-5.94	-6.51/-6.65	-5.88/-4.78	-3.52/-2.21	-1.08/-0.1	0.91/78	2.152	1.591/13	0.41/-0.62	-1.58/-2.2	-2.99/-3.93	-4.76/-5.27	-5.67/-6.17	-6.91/-7.62	-8.22/-8.16	-6.54/-3.35	-2.79/-1.88	-1.52/-1.59				
0(82.5°)	-1.75/-2.1	-2.34/-2.76	-3.86/-5.47	-7.76/-10.18	-9.15/-6.9	-5.24/-3.92	-3.09/-2.83	-3.05/-3.57	-4.13/-4.13	-3.29/-2.36	-1.48/-0.73	0.050/65	0.850/98	1.181/13	0.53/-0.41	-1.44/-2.75	-3.66/-6.51	-8.12/-9.18	-9.81/-10.64	-12.12/-12.56	-10.08/-6.98	-4.21/-2.73	-2.06/-1.72	-1.49/-1.48	0(82.5°)	-1.75/-2.1	-2.34/-2.76	-3.86/-5.47	-7.76/-10.18	-9.15/-6.9	-5.24/-3.92	-3.09/-2.83	-3.05/-3.57	-4.13/-4.13	-3.29/-2.36	-1.48/-0.73	0.050/65	0.850/98	1.181/13	0.53/-0.41	-1.44/-2.75	-3.66/-6.51	-8.12/-9.18	-9.81/-10.64	-12.12/-12.56	-10.08/-6.98	-4.21/-2.73	-2.06/-1.72	-1.49/-1.48				
0(90°)	-2.43/-3.73	-4.96/-5.44	-6.35/-7.8	-8.96/-10	-10.67/-9	-7.04/-6.69	-4.69/-4.35	-3.65/-3.38	-3.44/-3.16	-2.31/-1.33	-0.61/-0.12	0.210/3	0.380/78	1.110/91	0.27/-0.54	-1.65/-3.26	-5.27/-7.05	-7.72/-8.04	-9.04/-10.07	-9.94/-11	-6.57/-4.17	-2.69/-1.83	-1.51/-1.58	-1.73/-1.88	0(90°)	-2.43/-3.73	-4.96/-5.44	-6.35/-7.8	-8.96/-10	-10.67/-9	-7.04/-6.69	-4.69/-4.35	-3.65/-3.38	-3.44/-3.16	-2.31/-1.33	-0.61/-0.12	0.210/3	0.380/78	1.110/91	0.27/-0.54	-1.65/-3.26	-5.27/-7.05	-7.72/-8.04	-9.04/-10.07	-9.94/-11	-6.57/-4.17	-2.69/-1.83	-1.51/-1.58	-1.73/-1.88				
0(97.5°)	-1.63/-3.12	-5.83/-8.27	-9.22/-9.28	-9.11/-9.34	-9.05/-8.16	-7.24/-6.29	-5.34/-4.67	-4.13/-4.4	-2.79/-1.87	-0.730/24	0.060/36	1.581/7	1.942/12	1.811/5	0.6/-0.02	-1.02/-2.3	-4.02/-5.77	-6.84/-7.8	-8.69/-9.07	-8.49/-6.46	-4.55/-3.33	-2.51/-1.76	-1.19/-1.1	-1.07/-1.17	0(97.5°)	-1.63/-3.12	-5.83/-8.27	-9.22/-9.28	-9.11/-9.34	-9.05/-8.16	-7.24/-6.29	-5.34/-4.67	-4.13/-4.4	-2.79/-1.87	-0.730/24	0.060/36	1.581/7	1.942/12	1.811/5	0.6/-0.02	-1.02/-2.3	-4.02/-5.77	-6.84/-7.8	-8.69/-9.07	-8.49/-6.46	-4.55/-3.33	-2.51/-1.76	-1.19/-1.1	-1.07/-1.17				
0(105°)	-2.77/-3.81	-5.89/-7.63	-7.45/-6.44	-6.02	-6.07/-5.91	-5.58/-5.46	-5.16/-4.63	-4.41/-4.32	-3.9/-2.93	-1.73/-0.69	0.180/9	1.502/25	2.542/46	1.781/01	0.46/-0.26	-1.21/-2.24	-3.74/-5.34	-6.14/-6.64	-7.81/-9.32	-9.55/-9.05	-8.59/-7.13	-5.12/-3.63	-2.72/-2.43	-2.48/-2.56	0(105°)	-2.77/-3.81	-5.89/-7.63	-7.45/-6.44	-6.02	-6.07/-5.91	-5.58/-5.46	-5.16/-4.63	-4.41/-4.32	-3.9/-2.93	-1.73/-0.69	0.180/9	1.502/25	2.542/46	1.781/01	0.46/-0.26	-1.21/-2.24	-3.74/-5.34	-6.14/-6.64	-7.81/-9.32	-9.55/-9.05	-8.59/-7.13	-5.12/-3.63	-2.72/-2.43	-2.48/-2.56				
0(112.5°)	-4.02/-4.95	-8.16/-7.35	-7.57/-5.55	-5.67/-5.28	-5.13/-5.12	-5.02/-5.01	-4.34/-4.31	-2.81/-2.42	-2.14	-0.91/-0.27	0.441/06	1.491/87	1.981/59</																																								



Radiated Composite Gain Data of 2.4GHz&5GHz

Appendix A

Theta	2.91-2.33	2.35-2.44	-2.871-3.72	-4.39-5.68	-7.55-9.14	-11.99-15.72	-18.57-17.51	-13.53-10.14	-7.81-6.05	-4.88-3.72	-2.79-2.27	-2.11-1.27	-2.44-3.08	-4.24-5.89	-7.46-8.64	-9.47-9.51	-9.13-9.26	-10.18-11.54	-14.63-18.17	-17.31-14.24	-10.86-8.75	-7.12-6.1	-5.04-2.33	-3.77-3.31
Theta(30°)	-3.73-3.18	-1.33-2.42	-3.39-4.41	-5.81-7.34	-8.59-9.28	-10.85-12.83	-16.44-17.99	-13.48-10.15	-7.24-5.09	-3.83-3.21	-2.79-2.22	-1.97-1.92	-2.16-2.8	-3.82-5.21	-6.37-6.8	-6.75-6.84	-6.61-7.46	-8.06-9.48	-12.31-17.41	-18.13-18.44	-17.78-14.04	-10.79-8.4	-6.89-5.55	-4.7-1.8
Theta(45°)	-5.18-4.76	-4.15-4.33	-5.43-6.84	-7.43-7.44	-7.37-8.18	-10.19-13.71	-18.72-18.6	-17.46-11.28	-7.57-5.71	-4.83-5.42	-4.64-5.12	-5.49-3.87	-2.64-1.85	-1.22-1.52	-1.88-2.22	-3.16-4.17	-5.25-7.8	-9.95-9.87	-11.56-16.47	-18.43-18.93	-15.94-13.42	-12.06-11.57	-11.69-9.78	-7.03-5.54
Theta(60°)	-4.27-3.03	-1.73-1.52	-2.57-4.08	-6.23-7.48	-8.19-8.75	-11.51-14.84	-17.13-17.22	-16.61-6.49	-12.09-9.5	-7.58-6.75	-5.96-5.68	-4.13-5.26	-1.87-1.42	-1.29-3.24	-3.52-4.07	-5.56-6.22	-8.42-11.59	-14.91-17.99	-17.64-16.21	-17.98-17.52	-18.09-15.67	-11.55-9.22	-8.16-7.97	-6.17-9.7
Theta(75°)	-6.01-3.22	-2.62-2.23	-3.64-5.09	-6.87-7.24	-8.09-8.45	-12.52-17.55	-17.91-15.17	-16.69-8.59	-7.83-5.42	-7.37-8.18	-9.04-10.44	-10.01-7.22	-4.34-2.1	-1.58-2.33	-2.42-3.89	-5.74-7.39	-8.67-10.74	-14.32-17.49	-16.89-17.85	-17.49-16.87	-17.91-17.96	-14.59-15.84	-13.22-10.39	-7.09-5.4
Theta(90°)	-7.27-5.25	-3.37-2.53	-4.14-6.28	-7.79-8.22	-8.95-10.46	-13.14-14.99	-13.37-11.84	-9.71-7.96	-7.09-6.39	-5.58-5.96	-6.52-6.53	-4.51-2.99	-1.95-1.82	-2.48-3.03	-2.42-2.55	-3.66-5.47	-5.72-6.09	-7.19-9.8	-14.29-14.12	-11.37-11.5	-14.99-18.16	-17.31-14.82	-18.51-13.76	-9.47-7.03
Theta(105°)	-6.94-7.1	-6.94-6.33	-6.31-6.89	-10.52-12.39	-11.9-12.02	-13.38-17.01	-14.96-10.29	-7.55-5.14	-3.53-4.31	-4.5-5.6	-7.06-8.06	-6.46-4.39	-3.26-3.11	-2.72-3.91	-5.07-6.26	-6.98-6.62	-7.05-9.61	-10.14-11.16	-8.73-8.44	-11.54-18.37	-18.31-18.78	-17.89-16.15	-12.52-7.62	-10.77-13.4
Theta(120°)	-9.24-8.09	-6.19-6.38	-7.16-7.72	-9.1-12.24	-18.41-18.13	-18.27-14.18	-11.44-8.47	-6.05-4.94	-4.88-4.82	-4.47-5.62	-6.75-6.7	-5.08-4.4	-4.29-3.73	-4.06-3.3	-4.05-6.74	-7.8-6.33	-5.01-9.3	-8.07-11.62	-14.03-11.32	-8.79-7.83	-8.04-10.3	-10.19-8.88	-9.97-13.68	-15.13-11.21
Theta(135°)	-14.16-10.47	-8.41-7.47	-8.71-8.37	-10.55-12.18	-14.94-17.85	-18.51-16.83	-15.04-12.91	-11.161-7.9	-5.31-5.02	-6.22-8.82	-9.96-8.16	-6.81-6.03	-5.57-4.3	-4.06-4.41	-5.95-6.85	-8.88-7.85	-8.51-8.46	-9.62-13.41	-17.64-14.11	-10.19-8.46	-8.71-12.38	-14.19-9.24	-8.91-7.95	-10.13-14.52
Theta(150°)	-9.81-14.57	-12.44-9.94	-9.73-10.08	-9.33-10.15	-13.34-15.78	-17.15-13.43	-12.43-11.46	-8.78-6.68	-5.72-6.22	-7.26-10.72	-14.11-15.33	-12.97-10.52	-8.26-4.85	-3.81-5.42	-4.59-7.28	-8.01-6.47	-5.43-9.93	-14.2-18.89	-18.86-14.39	-14.09-12.77	-7.95-6.69	-13.74-11.46	-8.88-9.09	-8.77-13.4
Theta(165°)	-6.76-10.17	-18.29-11.18	-9.65-9.11	-10.34-9.38	-11.42-16.06	-17.23-13.12	-11.29-10.95	-11.76-11.21	-11.21-11.42	-11.76-18.87	-14.72-13.67	-13.07-10.66	-9.59-9.97	-6.86-7.39	-5.84-4.83	-8.06-6.38	-6.18-8.2	-11.19-19.1	-18.4-18.22	-14.03-10.24	-11.55-17.58	-11.73-13.71	-16.58-9.94	-8.22-6.04
Theta(180°)	-7.35-12.49	-13.04-17.38	-13.83-12.44	-11.81-11.84	-10.41-12.69	-13.93-12.13	-9.81-7.97	-7.44-8.52	-12.09-18.33	-18.34-13.29	-9.51-9.31	-8.03-9.4	-8.43-8.3	-8.21-13.36	-9.36-13.52	-13.03-6.95	-2.81-5.37	-9.46-17.95	-18.18-17.68	-10.64-8.14	-9.55-9.42	-14.83-18.95	-16.54-10.19	-9.89-9.26
Theta(210°)	-5.98-8.01	-10.39-17.87	-18.49-11.62	-13.29-12.66	-14.76-15.77	-18.46-15.88	-13.07-11.54	-10.63-11.34	-13.78-17.68	-13.88-10.2	-6.63-6.38	-8.21-7.71	-7.59-4.94	-6.02-8.01	-5.63-10.49	-18.24-8.32	-6.25-6.29	-7.74-17.87	-19.29-18.4	-14.47-7.54	-12.19-14.24	-12.29-14.44	-18.68-17.8	-18.55-11.41
Theta(225°)	-8.54-8.82	-13.13-18.16	-12.69-11.57	-13.15-13.38	-13.29-12.58	-11.62-13.77	-19.07-18.35	-18.78-18.5	-16.56-12.09	-8.21-9.99	-3.11-2.57	-3.47-3.03	-4.38-5.09	-10.79-15.14	-14.6-18.17	-18.83-12.37	-12.17-9.51	-11.08-15.83	-17.88-16.72	-13.89-10.41	-10.52-14.96	-13.54-18.52	-18.02-18.25	-18.11-11.2
Theta(240°)	-10.21-8.55	-8.13-10.79	-14.86-13.46	-12.99-12.99	-12.85-14.72	-18.48-17.75	-18.44-19.06	-15.99-12.93	-11.57-12	-9.76-7.3	-6.68-5.95	-6.46-5.6	-5.65-6.28	-9.99-15.33	-18.58-18.64	-13.61-13.97	-18.3-19.11	-18.92-18.28	-18.25-18.7	-18.47-17.81	-14.59-18.21	-18.36-17.82	-13.55-11.1	-14.77-17.64
Theta(255°)	-8.61-11.05	-11.44-11.25	-10.68-14.97	-17.71-18.62	-17.03-14.32	-12.93-13.28	-13.98-14.23	-10.62-14.95	-11.81-7.69	-5.15-4.14	-3.73-4.07	-4.45-4.42	-6.41-5.51	-7.45-10.44	-13.03-17.7	-17.92-15.91	-15.1-14.87	-18.51-10.71	-15.13-18.48	-14.77-14.54	-9.28-13.03	-14.57-11.46	-17.39-10.42	-8.97-6.69
Theta(270°)	-9.96-11.12	-14.15-13.83	-12.21-8.88	-12.55-15.31	-18.79-17.75	-17.98-14.92	-18.49-17.77	-15.56-12.53	-9.63-7.62	-6.89-6.99	-5.77-10.16	-10.38-8.88	-6.48-5.04	-10.68-17.76	-18.31-16.75	-14.19-17.55	-19.02-18.44	-18.56-17.71	-14.77-11.02	-9.13-9.29	-10.66-12.67	-15.48-15.75	-13.42-11.15	
Theta(285°)	-9.76-10.16	-12.61-17.08	-17.73-16.14	-14.87-16.25	-17.73-17.4	-18.43-17.53	-13.62-11.38	-9.53-8.49	-8.14-8.65	-10.01-11.29	-11.09-9.85	-8.56-9.38	-5.68-5.28	-10.51-14.36	-16.34-13.88	-12.62-13.36	-14.98-17.38	-18.71-18.89	-18.57-18.12	-14.25-12.63	-12.74-14.12	-16.12-17.02	-14.32-11.33	
Theta(300°)	-12.96-13.29	-13.77-14.24	-14.87-14.91	-16.16-18.87	-18.22-18.38	-18.92-19.41	-12.89-11.61	-10.77-10.25	-10.03-10.06	-10.43-11.1	-11.58-10.98	-10.07-9.23	-8.93-9.37	-10.66-12.73	-14.9-16.33	-16.25-16.2	-16.24-16.21	-16.05-16.2	-17.69-18.49	-17.31-15.94	-14.48-13.93	-14.49-14.27	-13.27-12.59	-12.34-12.61
Theta(315°)	-9.02-9.49	-10.29-11.32	-12.68-14.04	-15.53-17.79	-18.34-18.47	-18.15-18.63	-13.9-12.68	-12.14-11.71	-11.43-11.77	-12.98-14.93	-17.39-19.13	-18.22-17.86	-18.37-18.45	-17.82-17.37	-18.39-17.92	-17.99-18.36	-19.19-17.39	-16.28-16.44	-17.66-18.39	-17.66-17.94	-16.63-13.41	-11.73-10.6	-9.99-9.17	
Theta(330°)	-8.76-8.64	-9.32-9.89	-10.68-11.59	-12.95-14.61	-17.52-17.61	-17.93-17.98	-18.35-18.07	-18.31-17.21	-18.42-17.94	-18.43-18.33	-18.46-19.35	-18.11-18.93	-18.12-18.35	-18.95-18.7	-17.31-18.73	-18.44-18.52	-18.04-18.96	-18.53-17.51	-18.19-17.46	-16.15-13.9	-12.41-11.6	-10.61-9.32	-8.43-9.75	-9.76-9.3
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°)	-18.66-18.57	-17.18-16.09	-12.95-10.73	-9.14-7.95	-6.67-5.71	-4.94-4.35	-4.18-4.15	-4.04-4.04	-4.13-4.28	-5.06-6.2	-7.88-9.39	-10.83-12.95	-16.12-18.21	-18.22-17.91	-14.24-11.28	-9.25-7.99	-6.83-6.07	-5.18-4.36	-3.56-3.07	-3.04-3.22	-3.67-4.44	-5.42-6.54	-7.67-8.75	-10.55-13.98
Theta(7.5°)	-18.43-18.86	-16.03-12.1	-10.65-9.22	-8.07-6.7	-5.68-4.74	-3.85-3.63	-3.49-3.49	-3.57-3.61	-3.36-3.37	-3.22-3.94	-6.5-8.3	-9.94-11.69	-13.84-18.1	-17.39-19.29	-15.98-12.63	-10.72-9.26	-8.37-6.74	-6.87-6.03	-5.13-4.32	-3.83-3.79	-4.25-5.03	-6.18-7.49	-8.81-9.98	-12.31-16.88
Theta(15°)	-17.61-17.54	-12.21-9.78	-7.87-7.84	-6.38-4.79	-3.54-2.89	-2.47-2.24	-2.05-1.99	-2.07-1.99	-1.91-1.94	-1.73-1.67	-4.65-1.16	-7.97-10.46	-13.65-19.93	-18.41-19.42	-15.42-10.38	-9.27-8.1	-7.89-8	-6.33-8.84	-5.58-7.96	-5.87-6.62	-8.27-9.56	-11.51-16	-13.77-16.91	
Theta(22.5°)	-16.62-17.46	-12.95-9.52	-7.33-5.58	-3.94-2.64	-1.93-1.73	-1.39-0.94	-0.72-0.52	-0.45-0.46	-0.66-0.81	-1.44-2.53	-3.65-5	-7.06-10.52	-16.95-18.9	-14.15-10.13	-8.21-7.46	-7.34-7.56	-8.04-8.66	-9.11-8.82	-7.98-7.25	-6.73-6.38	-6.55-6.95	-7.52-8.79	-10.47-11.95	-13.73-15.12
Theta(30°)	-11.99-11.67	-12.57-10.31	-6.92-5.23	-3.75-2.81	-2.22-1.6	-0.83-0.34	0.060-0.33	0.410-0.45	0.540-0.41	-0.23-1.23	-2.45-4.06	-6.24-9.64	-16.46-16.94	-12.12-9.42	-8.41-6.87	-9.86-11.6	-14.33-14.41	-11.89-7.89	-6.95-6.41	-7.33-8.44	-8.88-9.26	-9.77-10.13	-11.88-14.59	-15.16-15.34
Theta(37.5°)	-8.88-7.34	-7.48-6.62	-4.65-3.63	-2.89-2.12	-1.85-1.48	-1.10-0.52	0.210-0.67	0.91-0.3	1.090-0.1	0.170-0.55	-1.37-2.58	-4.16-6.45	-9.35-12.28	-12.09-10.31	-9.88-11.45	-12.8-13.14	-12.84-10.41	-8.61-8.92	-7.91-7.44	-9.21-10.1	-11.28-14.27	-17.97-18.26	-16.03-12.01	
Theta(45°)	-10.29-8.28	-6.49-4.31	-3.26-1.43	-0.78-0.77	-1.49-1.87	-1.89-1	-0.610-0.67	1.151-0.46	1.51-0.7	1.07-1.03	-0.81-1.26	-2.2-3.17	-5.34-9.7	-10.98-12.92	-13.25-14.6	-13.96-16.21	-14.36-10.49	-9.99-9.6	-9.07-10.52	-14.7-18.94	-17.04-18.54	-16.88-15.81	-15.61-18.24	-17.15-14.1
Theta(52.5°)	-9.8-7.71	-6.01-4.25	-2.61-1.68	-0.61-0.72	-1.06-1.66	-1.88-1.85	-1.81-1.22	-0.470	0.530-0.66	0.540-0.3	-0.07-0.19	-1.11-2.11	-4.39-3.72	-9.06-12.45	-11.35-16.76	-16.8-16.72	-12.91-19.2	-10.05-10.78	-11.06-10.79	-11.21-11.89	-14.96-17.98	-18.28-17.57	-17.76-17.97	-18.62-13.62
Theta(60°)	-10.84-10.58	-7.87-4.32	-2.01-1.04	-0.78-1.26	-1.6-2.18	-2.21-2.05	-2.44-2.68	-2.28-2.49	-2.04-1.34	-0.9-0.1	-1.2-0.83	-1.55-2.												



Radiated Composite Gain Data of 2.4GHz&5GHz

Appendix A

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(75°)	-5.19/-4.54	-5.22/-9.27	-8.86/-5.63	-5.77/-6.89	-8.66/-14.5	-15.14/-16.22	-12.98/-8.84	-6.97/-6.89	-7.02/-6.34	-5.89/-9.99	-4.37/-4.43	-5.06/-6.27	-5.08/-2.82	-1.77/-2.72	-2.75/-2.36	-2.52/-2.07	-3.14/-4.52	-5.83/-7.32	-10.3/-11.06	-9.29/-6.94	-6.81/-9.51	-18.35/-17.2	-9.7/-5.71	-5.59/-6.89					
Theta(82.5°)	-10.09/-10.05	-11.02/-11.27	-11.67/-6.99	-9.39/-11.31	-14.86/-17.83	-18.13/-15.36	-12.72/-11.13	-8.51/-7.06	-6.21/-4.46	-4.32/-3.21	-2.78/-3.43	-5.1/-5.78	-3.89/-1.98	-1.99/-1.6	-0.99/-2.21	-2.85/-3.18	-4.66/-6.12	-7.06/-8.36	-9/-7.8	-7.8/-6	-9.15/-13.61	-18.24/-18.18	-11.51/-9.74	-8.13/-9.57					
Theta(90°)	-11.6/-8.7	-11.01/-10.24	-14.6/-9.54	-8.94/-10.61	-12.96/-18.51	-18.82/-17.24	-15.2/-17.63	-19.55/-12.46	-14.15/-10.11	-8.81/-4.61	-4.23/-4.03	-3.08/-3.53	-2.96/-2.78	-2.61/-1.56	-1.13/-2.16	-2.53/-2.72	-3.12/-3.83	-6.38/-7.55	-10.53/-9.44	-10.8/-9.38	-8.51/-13.23	-15.41/-18.93	-15.33/-15.26	-11.46/-10.42					
Theta(97.5°)	-18.51/-13.78	-8.49/-8.24	7.99/-10.81	-9.82/-9.96	-12.22/-18.28	-18.72/-17.84	-16.31/-12.38	-10.48/-14.23	-14.61/-12.02	-12.48/-9.05	-8.59/-13	-7.15/-5.42	-3.83/-2.68	-1.41/-1.55	-1.22/-1.29	-3.73/-2.76	-2.93/-5.26	-8.84/-18.16	-18.32/-14.52	-15.13/-12.67	-8.51/-10.27	-12.29/-9.45	-12.92/-9.79	-10.86/-11.12					
Theta(105°)	-16.28/-15.2	-12.52/-9.79	-10.31/-11.85	-13.16/-13.65	-11.8/-14.88	-18.08/-18.44	-18.19/-11.73	-11.46/-13.63	-10.08/-8.9	-9.26/-9.35	-12.73/-12.53	-9.56/-11.1	-8.83/-5.21	-2.46/-2.92	-2.92/-2.53	-4.19/-3.19	-3.8/-3.43	-14.59/-19.11	-18.86/-18.72	-17.12/-18.61	-18.18/-19	-17.64/-16.37	-12.35/-6.37	-6.41/-11.38					
Theta(112.5°)	-8.11/-11.96	-14.64/-13.68	-13.77/-17.82	-11.85/-11.85	-14.36/-9.84	-9.18/-9.32	-13.48/-18.85	-14.59/-12.71	-11.03/-9.51	-7.37/-7.97	-8.14/-11.5	-11.14/-18	-19.15/-15.4	-13.59/-9.51	-9.57/-7.05	-4.86/-2.88	-8.14/-6.93	-4.26/-7.01	-10.71/-17.56	-15.63/-16.44	-15.99/-17.9	-18.77/-12.37	-12.26/-9.78	-8.07/-11.86	-11.66/-9.86				
Theta(120°)	-8.6/-10.66	-12.56/-14.02	-15.19/-16.33	-18.71/-15.52	-12.63/-13.6	-17.34/-19	-17.61/-12.55	-9.49/-6.46	-5.68/-5.24	-5.72/-5.21	-6.85/-6.82	-7.77/-11.29	-7.94/-7.02	-4.89/-7.06	-4.09/-8.12	-10.8/-8.82	-4.44/-6.35	-11.2/-16.37	-17.24/-18.32	-12.17/-13.22	-9.29/-12.27	-15.02/-15.29	-11.12/-14.45	-9.35/-8.7					
Theta(127.5°)	-11.2/-12.57	-17.17/-18.14	-14.95/-16.11	-17.74/-17.35	-13.52/-12.97	-16.61/-18.77	-18.41/-19	-8.24/-7.81	-7.17/-6.38	-6.49/-7.07	-4.81/-5.17	-5.16/-6.03	-3.92/-2.96	-2.85/-2.73	-7.18/-11.79	-15.38/-6.31	-7.77/-7.74	-9.81/-13.52	-12.99/-16.65	-12.86/-10.2	-11.75/-10.69	-14.68/-18.32	-15.93/-18.28	-14.22/-15.72					
Theta(135°)	-14.09/-15.28	-18.26/-16.51	-11.96/-11.73	-10.81/-10.85	-11.45/-13.1	-13.42/-13.62	-13.75/-15.75	-16.61/-12.03	-8.91/-7.87	-6.88/-6.23	-4.41/-4.18	-4.15/-4.97	-6.53/-6.02	-8.12/-13.27	-16.59/-18.76	-18.65/-17.97	-19.67/-17.27	-14.57/-15.61	-17.34/-16.44	-13.72/-9.71	-9.08/-12.88	-10.13/-13.89	-17.82/-17.83	-17.62/-15.02					
Theta(142.5°)	-15.33/-18.83	-16.29/-10.8	-8.08/-8.99	-10.58/-10.3	-9.83/-10.71	-13.35/-14.33	-13.52/-11.82	-10.56/-10.22	-10.09/-9.32	-8.31/-6.49	-5.17/-6.21	-10.06/-13.08	-11.75/-3.77	-7.92/-8.65	-8.54/-14.37	-18.91/-16.66	-17.67/-16.35	-16.67/-18.73	-18.35/-18.92	-17.16/-12.71	-9.39/-11.2	-16.14/-17.92	-12.89/-7.48	-7.26/-9.67					
Theta(150°)	-10.56/-15.49	-13.15/-12.77	-12.35/-13.35	-17.64/-13.51	-10.55/-9.53	-10.14/-11.54	-12.79/-14.18	-16.15/-16.72	-17.58/-15.33	-12.37/-9.78	-9.59/-13.64	-18.2/-15.3	-7.53/-3.45	-2.52/-2.43	-3.54/-6.62	-10.27/-17.06	-18.34/-15.66	-18.3/-17.78	-18.13/-17.55	-17.56/-10.88	-8.09/-8.36	-12.49/-18.68	-16.83/-10.66	-7.93/-7.79					
Theta(157.5°)	-11.88/-16.83	-18.27/-14.55	-13.33/-13.91	-17.91/-18.45	-17.49/-14.2	-12.92/-12.95	-13.78/-15.58	-13.80/-13.03	-15.73/-13.23	-11.94/-12.11	-9.99/-15.14	-12.84/-7.71	-5.32/-3.33	-3.21/-4.32	-5.93/-7.3	-9.55/-14.02	-17.54/-16.51	-16.71/-18.23	-16.71/-18.23	-16.71/-18.23	-9.61/-10.84	-17.77/-9.95	-17.45/-11.51	-11.02/-10.91					
Theta(165°)	-17.15/-14.73	-14.03/-14.89	-15.58/-16.73	-18.05/-18.31	-18.52/-17.92	-18.02/-17.46	-17.85/-18.76	-18.26/-18.32	-17.69/-16.92	-17.85/-18.35	-17.35/-14.99	-12.33/-9.52	-6.95/-5.03	-4.36/-4.62	-6.24/-9.17	-13.27/-18.3	-17.84/-18.17	-17.78/-16.84	-16.38/-15.25	-13.55/-12.65	-13.11/-15.3	-15.93/-14.65	-15.03/-16.46	-18.17/-18.61					
Theta(172.5°)	-18.18/-10.1	-17.74/-18.06	-18.1/-18.7	-18.53/-18.01	-17.77/-17.71	-19.11/-17.71	-18.22/-17.31	-15.79/-13.9	-12.21/-11.31	-10.87/-11.12	-12.58/-14.06	-13.96/-12.21	-10.77/-10.34	-10.55/-11.71	-14.01/-17.1	-19.06/-17.87	-17.97/-17.86	-16.91/-17.38	-18.71/-18.9	-18.49/-17.8	-16.71/-15.21	-12.41/-11.26	-11.55/-10.23	-13.42/-15.74					
Theta(180°)	-13.33/-13.69	-13.33/-11.97	-11.46/-12.41	-13.04/-14.06	-15.35/-15.92	-15.71/-14.94	-13.77/-12.95	-12.47/-12.81	-13.58/-14.29	-14.14/-14.34	-14.97/-15.67	-16.21/-17.13	-16.93/-16.65	-15.95/-15.57	-15.92/-17.62	-17.66/-18.3	-19.06/-18.66	-18.31/-17.82	-18.71/-17.8	-17.35/-17.98	-18.76/-17.95	-14.67/-13.53	-12.94/-12.95	-13.44/-13.97					
Freq(Hz)	5.785GPol.	ThetaAnt 1																											
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°)	-13.43/-19.04	-1.789/-15.4	-11.98/-9.09	-6.86/-5.02	-3.49/-2.24	-1.34/-0.85	-0.50/-0.35	-0.42/-0.52	-0.6/-0.81	-1.3/-2.08	-3.35/-4.93	-7.04/-9.56	-12.17/-18.12	-18.27/-25.09	-10.47/-17.47	-5.44/-4	-2.32/-0.5	0.050/0.33	0.23/-0.15	-0.69/-1.32	-0.69/-1.32	-0.69/-1.32	-0.69/-1.32	-0.69/-1.32	-0.69/-1.32				
Theta(7.5°)	-16.43/-18.92	-18.78/-14.98	-11.18/-8.26	-5.54/-3.69	-2.2/-1.24	-0.58/-0.16	0.27/0.56	0.850/0.94	0.690/0.31	-0.17/-0.79	-1.83/-3.55	-5.92/-8.83	-12.34/-16.82	-16.67/-12.64	-9.13/-6.98	-5.23/-4.09	-3.12/-2.4	-1.81/-1.55	-1.42/-1.48	-1.7/-2.1	-2.76/-3.33	-3.81/-4.58	-5.44/-6.84	-9.28/-12.02					
Theta(15°)	-18.43/-17.42	-19.06/-17.55	-11.71/-9.95	-4.87/-2.93	-1.75/-1.13	-0.75/-0.42	0.12/0.2	0.510/0.51	0.420/0.2	0.130/0.2	-0.68/-2.19	-4.66/-7.88	-11.19/-14.9	-17.17/-15.06	-10.25/-6.92	-4.91/-3.61	-2.67/-1.98	-1.78/-2.07	-2.07/-1.84	-2.07/-2.44	-3.01/-3.91	-4.89/-5.88	-6.55/-7.91	-10.31/-14.56					
Theta(22.5°)	-16.61/-17.54	-18.68/-14.75	-8.59/-6.07	-3.91/-2.57	-2.06/-1.76	-1.31/-0.82	-0.59/-0.45	-0.25/-0.08	0.15/-0.13	-0.31/-0.58	-1.27/-3.08	-5.76/-7.84	-11.10/-15.95	-17.32/-13.77	-9.34/-7.34	-4.13/-3.9	-3.57/-3.54	-3.76/-4.66	-4.13/-3.9	-3.76/-4.66	-4.13/-3.9	-3.76/-4.66	-4.13/-3.9	-3.76/-4.66	-4.13/-3.9				
Theta(30°)	-15.08/-16.15	-17.5/-12.43	-8.33/-6.18	-4.09/-2.45	-1.74/-0.89	-0.130/0.19	0.340/0.26	0.10/0.37	0.690/0.82	-0.03/-1.24	-2.17/-3.58	-5.4/-6.81	-9.76/-16.77	-17.97/-13.89	-10.61/-8.56	-7.07/-7.24	-8.24/-8.47	-7.98/-7.78	-7.18/-5.74	-4.61/-4.14	-3.74/-3.78	-4.81/-6.84	-8.89/-11.61	-18.38/-17					
Theta(37.5°)	-16.44/-11.2	-11.71/-9.8	-7.97/-5.56	-3.52/-2.57	-1.81/-0.64	0.17/0.81	1.61/1.87	2.312/2.43	2.216/2.61	2.076/1.61	0.81/-2.21	-0.86/-1.63	-3.74/-6.36	-11.78/-16.48	-17.17/-13.17	-10.79/-7.89	-6.17/-6.74	-6.17/-6.74	-6.17/-6.74	-6.17/-6.74	-6.17/-6.74	-6.17/-6.74	-6.17/-6.74	-6.17/-6.74	-6.17/-6.74				
Theta(45°)	-11.53/-11.73	-13.89/-9.79	-8.66/-6.63	-4.23/-2.79	-1.47/-0.89	-0.53/-0.12	0.741/1.57	2.12/2.52	2.62/4	1.820/2.59	-0.92/-2.72	-4.17/-5.9	-9.01/-16.82	-17.27/-10.24	-5.88/-4.7	-4.17/-4.04	-4.65/-5.74	-6.07/-7.06	-8.11/-7.65	-8.32/-10.67	-11.86/-8.37	-7.63/-7.83	-11.27/-18.12	-18.38/-14.27					
Theta(52.5°)	-11.19/-7.69	-6.92/-5.83	-5.83/-4.98	-3.54/-2.55	-2.24/-1.2	-1.47/-0.69	0.31/1.5	2.412/2.68	2.54/2.56	2.14/1.23	0.16/-1.36	-2.75/-4.21	-7.23/-11.85	-16.63/-17.83	-10.21/-7.92	-6.61/-5.91	-7.28/-8.04	-9.99/-11.66	-12.12/-12.61	-13.67/-13.04	-10.98/-11.99	-13.37/-11.85	-14.41/-18.42	-18.73/-13.24					
Theta(60°)	-8.77/-6.64	-5.93/-6.28	-5.92/-4.78	-3.46/-2.15	-2.03/-2.34	-2.37/-1.51	-0.620/2.6	1.081/8.2	2.061/7.4	1.260/1.1	-1.03/-1.77	-2.83/-1.7	-5.47/-7.87	-13.36/-19.93	-18.74/-16.46	-10.13/-10.27	-9.07/-9.42	-11.07/-10.73	-10.61/-10.58	-10.39/-13	-11.75/-17.36	-14.41/-16.2	-13.97/-15.88	-17.46/-12.38					
Theta(67.5°)	-10.27/-6.3	-3.85/-3.65	-4.2/-3.77	-2.26/-1.47	-1.55/-1.59	-2.12/-2.13	-1.29/-0.19	0.831/6.1	1.791/2.17	-1.29/-1.78	-2.23/-3.62	-6.38/-10.33	-17.65/-17.91	-18.12/-17.91	-17.41/-15.19	-14.39/-16.58	-14.91/-16.15	-14.02/-17.62	-18.26/-17.86	-12.76/-18.49	-17.12/-17.23	-13.72/-13.41	-11.98/-18.96						
Theta(75°)	-11.44/-5.13	-3.6/-2.29	-2.84/-3.91	-2.94/-1.79	-0.71/-0.84	-1.15/-1.4	-1.41/-0.78	-0.309/0.69	-0.34/-0.51	-1.28/-2.11	-2.68/-2.88	-3.58/-5.58	-6.96/-11.66	-15.43/-18.12	-18.02/-17.51	-18.78/-18.14	-14.97/-18.79	-13.55/-10.32	-12.24/-9.3	-9.14/-10.9	-17.94/-19.41	-17.12/-18.92	-17.28/-18.45	-14.74/-12.94					
Theta(82.5°)	-6.04/-5.89	-6.13/-5.87	-4.98/-4.46	-1.95/-1.09	-1.34/-1.08	-1.44/-1.86	-1.81/-1.58	-1.54/-2.21	-3.02/-4.04	-4.44/-4.23	-3.84/-4.82	-4.2/-6.59	-8.56/-11.82	-12.03/-16.76															



Radiated Composite Gain Data of 2.4GHz&5GHz

Appendix A

Theta	15.59-18.81	17.32-17.85	17.01-16.15	17.51-18.23	18.52-15.28	14.28-11.64	11.77-14.27	12.38-10.91	10.88-12.36	12.64-12.6	13.65-14.19	12.91-10.52	10.65-11.76	12.03-14.4	11.83-14.22	15.12-17.8	17.31-17.4	19.21-19.45	17.24-18.56	19.36-17.76	18.03-17.93	18.56-16.43	14.68-13.31	13.47-12.29
Theta(120°)	-18.75-17.38	-18.41-17.77	-17.93-18.18	-17.97-18.46	-18.81-15.84	-12.76-13.26	-14.22-13.77	-14.67-12.53	-11.16-10.61	-12.47-17.15	-18.13-15.45	-17.56-18.67	-15.61-15.17	-16.65-12.13	-14.67-18.24	-14.62-17.99	-17.26-18.03	-17.93-19.12	-18.11-19.07	-16.43-17.98	-19.21-18.18	-17.33-11.38	-12.88-16	-13.48-15.26
Theta(135°)	-18.51-17.86	-17.71-18.33	-18.41-16.7	-15.64-19.29	-18.07-17.72	-13.73-11	-11.88-13.85	-14.09-13	-12.12-8.9	-15.62-18.14	-19.12-17.49	-15.29-12.9	-16.54-18.56	-14.39-11.6	-17.71-17.09	-17.29-18.03	-15.56-19.01	-15.15-16.76	-16.08-13.92	-12.37-11.72	-17.61-19.22	-17.76-18.34	-14.72-18.2	-18.07-19.03
Theta(142.5°)	-18.96-17.83	-18.14-17.82	-19.22-18.04	-18.53-19.07	-18.65-14.95	-13.41-11.36	-11.83-13.31	-14.88-14.1	-14.3-16.03	-19.01-17.55	-18.21-18.79	-14.78-17.14	-17.99-19.09	-18.73-19.09	-16.98-18.83	-17.61-18.75	-17.42-13.72	-10.86-10.98	-13.62-16.09	-14.99-13.36	-15.21-18.9	-18.81-18.69	-15.38-14.18	-18.22-17.71
Theta(150°)	-19.18-19.14	-17.69-19.21	-18.03-18.45	-17.28-16.63	-16.45-14.94	-15.49-15.92	-15.87-15.56	-17.43-18.96	-18.21-17.97	-17.87-18.41	-18.24-17.62	-16.33-18.3	-18.69-19.91	-18.12-14.62	-14.11-17.11	-17.74-19.33	-9.76-9.95	-11.39-13.1	-12.61-10.98	-12.91-13.92	-11.39-13.1	-12.61-10.98	-18.91-17.7	-17.65-18.18
Theta(165°)	-16.48-18.1	-17.73-18.21	-19.01-18.98	-18.11-17.87	-18.51-17.59	-17.82-17.98	-16.06-15.19	-15.15-16.01	-16.31-16.45	-15.88-14.66	-14.65-16.1	-17.81-17.3	-16.49-16.92	-16.82-18.26	-14.34-18.48	-17.15-13.02	-11.71-12.03	-14.83-14.54	-13.21-11.86	-11.33-12.04	-17.74-15.56	-18.09-18.7	-18.09-17.6	-18.09-17.6
Theta(180°)	-18.51-17.23	-18.54-17.8	-18.71-18.3	-17.47-17.9	-18.32-18.7	-17.59-17.56	-18.51-17.61	-16.32-14.35	-13.28-12.62	-12.27-12.46	-13.46-14.28	-15.43-16.57	-16.98-15.68	-13.87-12.49	-12.01-12.43	-13.38-14.46	-13.81-13.02	-12.3-12	-12.04-11.75	-11.08-10.74	-11.33-12.65	-14.53-16.61	-17.46-17.71	-18.34-18.41
Theta(172.5°)	-18.53-16.91	-14.82-14.21	-14.79-15.26	-15.35-15.21	-15.71-17.12	-16.08-15.35	-16.16-15.81	-16.31-12	-13.22-12.27	-11.99-11.75	-11.81-13.42	-12.82-12.82	-12.56-12.25	-12.31-12.65	-13.55-14.83	-15.81-15.87	-15.31-14.98	-14.61-14.32	-14.34-14.72	-16.17-8.4	-18.13-17.94	-17.71-18.53	-18.29-17.69	
Theta(180°)	-16.86-16.36	-15.96-15.72	-16.03-15.26	-16.13-16.4	-16.99-17.56	-17.54-18	-18.75-17.5	-19.27-18.23	-17.81-18.26	-17.23-16.36	-15.01-14.24	-14.07-14.26	-14.92-15.52	-16.08-16.74	-12.17-12.83	-17.41-17.83	-15.82-17.98	-17.72-17.97	-18.67-17.39	-18.34-17.73	-18.38-18.07	-17.55-18.68	-18.98-18.39	
Freq(Hz)	5.2GPol.	ThetaAnt 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°)	-15.91-17.22	-19.33-17.34	-15.21-12.7	-11.39-9.99	-9.18-8.39	-8.53-8.66	-7.73-7.4	-6.66-6.16	-5.94-6.25	-6.54-7.34	-8.32-9.43	-11.11-13.1	-16.05-19.28	-19.1-18.73	-17.01-14.33	-11.99-10.39	-8.97-8.32	-7.78-7.67	-6.51-7.54	-7.47-7.24	-7.27-7.34	-7.71-8.32	-9.18-10.52	-11.61-12.74
Theta(7.5°)	-12.55-15.34	-17.58-17.63	-15.97-13.53	-11.59-10.88	-8.98-8.28	-8.35-8.76	-8.34-8.27	-7.61-7.19	-7.21-7.72	-8.63-9.83	-11.71-13.66	-16.05-19.16	-18.42-18.69	-18.48-16.18	-14.27-12.59	-11.21-9.93	-8.52-7.6	-6.96-6.66	-6.81-7.47	-7.85-7.63	-7.31-7.67	-6.77-6.88	-7.52-8.27	-9.29-10.36
Theta(15°)	-11.72-14.01	-16.91-18.02	-18.22-15.06	-12.81-10.88	-9.74-9.15	-9.31-9.53	-9.51-9.28	-9.19-8.8	-9.04-9.58	-10.82-12.37	-15.48-18.22	-17.39-18.61	-18.66-18.5	-15.29-13	-11.36-10.19	-9.58-8.53	-7.47-6.38	-5.54-4.88	-4.66-4.92	-5.01-5.21	-5.09-5.11	-5.21-5.52	-6.21-7.2	-8.39-9.53
Theta(22.5°)	-9.13-11.05	-15.21-17.71	-18.21-17.35	-11.26-10.85	-10.61-10.59	-10.53-9.95	-9.88-10.12	-10.29-11.12	-12.52-14.55	-17.49-17.67	-19.21-19.14	-16.85-14.17	-12.36-10.6	-9.13-8.38	-7.71-7.24	-6.18-4.96	-3.71-2.84	-2.46-2.59	-2.73-2.99	-3.29-3.56	-4.27-5.34	-4.27-5.34	-4.72-5.34	-6.33-7.76
Theta(30°)	-7.22-10.04	-14.51-19.14	-18.09-18.63	-17.78-15.83	-14.96-14.07	-13.07-11.71	-11.39-10.96	-10.61-10.66	-10.83-11.82	-12.96-14.18	-15.65-16.61	-17.91-18.77	-14.24-11.8	-10.44-9.17	-7.87-6.83	-6.04-5.78	-4.82-4.13	-3.13-2.7	-2.38-1.98	-1.71-1.43	-1.28-1.18	-1.12-1.53	-2.38-3.48	-4.64-5.92
Theta(37.5°)	-8.51-10.14	-12.26-17.28	-18.56-18.9	-18.54-19.04	-18.71-16.82	-16.26-17.4	-13.84-13.01	-12.68-12.22	-12.91-14.52	-16.88-17.54	-18.26-18.25	-18.22-18.46	-17.34-13.28	-9.99-7.96	-7.41-6.45	-5.34-4.85	-4.26-3.76	-3.24-3.13	-2.63-1.95	-1.25-0.81	-0.94-1.1	-0.88-0.65	-0.79-1.51	-3.35-0.63
Theta(45°)	-6.67-6.99	-7.86-10.48	-14.45-14.83	-15.93-17.95	-17.95-19.15	-18.36-18.13	-15.69-14.72	-14.48-14.37	-15.04-13.37	-16.47-17.69	-18.71-19.34	-18.87-16.17	-15.27-13.72	-8.87-7.2	-5.59-5.01	-4.34-3.65	-2.67-1.99	-1.99-1.94	-1.83-1.66	-1.41-1.16	-0.63-0.5	-0.63-0.5	-1.54-4.27	
Theta(52.5°)	-4.91-5.39	-6.12-8.76	-12.21-11.48	-12.28-14.79	-12.66-12	-13.41-17.3	-18.22-18.42	-19.42-17.43	-18.22-18.22	-17.24-17.17	-17.34-18.33	-19.06-17.3	-13.44-13.1	-8.58-6.3	-8.61-9.18	-7.11-6.5	-6.14-6.68	4.06-4.13	-3.1-9.5	-1.27-0.94	-1.05-0.81	-0.73-1.02	-0.69-0.02	-0.93-3.29
Theta(60°)	-3.54-3.72	-5.1-6.55	-7.88-8.09	-9.84-11.12	-9.89-12.2	-14.32-17.3	-18.41-18.84	-18.77-18.23	-17.75-17.59	-17.58-15.46	-16.15-18.09	-18.42-17.91	-12.33-11.68	-9.76-6.16	-6.5-6.05	-5.72-3.9	-3.27-2.89	-1.91-1.82	-1.51-0.62	-0.38-0.07	0.26-0.6	-0.81-0.54	-1.91-3.62	
Theta(67.5°)	-3.03-4.69	-6.22-7.41	-7.88-8.58	-9.84-11.02	-9.62-13.15	-15.79-16.02	-16.85-15.81	-16.95-15.12	-18.31-19.03	-19.79-17.26	-18.41-17.69	-17.46-18.52	-14.87-5.5	-8.18-2.4	-6.25-7.4	-4.85-5.08	-2.79-2.07	-1.34-1.1	-0.85-0.19	0.31-3.9	0.26-1.33	-1.77-0.82	-1.26-2.42	
Theta(75°)	-4.26-7	-5.77-7.79	-7.93-9.07	-11.78-7.27	-8.13-11.42	-13.97-16.25	-16.47-16.58	-18.39-18.69	-19.84-4	-17.81-17.59	-15.24-16.29	-18.74-18.35	-10.75-6.81	-8.22-6.75	-7.17-5.98	-5.34-5.93	-4.63-4.25	-3.75-2.45	-1.63-2.05	-1.71-0.89	-0.13-0.16	0.25-0.9	-2.31-1.86	-2.18-1.92
Theta(82.5°)	-4.12-6.7	-3.31-5.61	-6.09-6.49	-9.45-5.36	-8.02-11.03	-14.83-14.34	-14.26-12.95	-14.26-12.95	-13.71-16.18	-14.59-12.54	-18.01-13.2	-16.28-14.37	-13.59-15.35	-9.17-5.42	-5.5-5.69	-4.89-3.38	-3.21-3.21	-2.37-1.95	-1.37-1.71	-1.63-1.13	-0.07-0.11	-0.29-0.91	-2.26-3.29	-3.04-2.38
Theta(90°)	-4.05-6	-2.63-7.89	-6.11-6.61	-9.54-4.25	-8.09-13.69	-12.02-11.27	-10.22-10.35	-11.37-14.31	-13.19-9.58	-12.73-8.65	-11.02-12.43	-13.18-14.26	-12.816-11	-5.65-5.96	-4.91-5.35	-4.84-3.94	-3.36-3.3	-2.43-2.72	-1.92-2.65	-2.86-2.51	-1.09-0.21	-0.96-1.93	-2.89-3.86	-2.43-4.14
Theta(97.5°)	-4.84-5.22	-2.88-8.08	-6.81-5.29	-7.32-3	-6.75-8.75	-9.64-10	-8.26-8.18	-8.91-13.36	-13.69-12.56	-13.24-8.64	-9.53-11.89	-11.15-11.16	-11.53-6.03	-5.14-8.21	-8.19-8.6	-8.51-6.47	-8.03-6.32	-6.11-7.48	-3.71-4.22	-5.89-3.87	-1.67-1.23	-2.41-3.98	-5.71-5.16	-2.31-1.76
Theta(105°)	-4.38-4.05	-3.34-6.71	-4.99-4.12	-6.12-2.9	-6.06-8.27	-9.63-10.26	-8.23-7.28	-7.71-9	-10.28-10.52	-11.12-7.74	-11.27-7.4	-12.26-14.97	-11.44-7.52	-8.97-9.4	-8.21-9.62	-11.04-0.93	-11.37-9.27	-9.38-9.86	-5.58-7.12	-8.76-6.57	-3.48-2.4	-3.59-5.81	-7.38-5.26	-1.69-1.5
Theta(112.5°)	-5.62-7.34	-2.69-6.43	-5.84-5.36	-5.97-6.28	-7.37-11.9	-15.58-14.59	-10.94-9.02	-9.01-10.5	-12.75-16.89	-15.78-10.9	-11.05-11.48	-10.84-12.63	-18.29-13.78	-5.99-9.12	-8.83-11.27	-18.78-12.74	-10.14-9.22	-16.35-9.05	-5.07-9.11	-12.41-5.75	-3.21-2.49	-2.54-3.7	-5.69-3.54	-1.82-2.9
Theta(120°)	-5.81-6.11	-4.38-5.1	-6.25-6.23	-5.53-7.46	-8.48-10.13	-16.54-17.48	-14.59-12.82	-12.37-13.06	-16.06-16.63	-12.47-10.95	-11.02-9.7	-10.91-12.1	-10.58-11.9	-11.71-9.96	-11.81-6.14	-9.25-14.02	-7.41-10.02	-15.51-5.92	-4.27-9.71	-11.15-5.26	-3.24-3.14	-3.61-5.7	-9.03-6.25	-3.41-3.25
Theta(135°)	-12.87-10.82	-8.57-10.88	-12.33-12.13	-10.05-9.47	-10.53-12.28	-17.88-13.57	-16.66-11.9	-9.72-10.15	-10.91-11.5	-12.93-12.57	-12.67-12.46	-12.78-10.91	-9.54-3.98	-8.03-6.17	-9.61-7.8	-11.28-7.52	-9.01-18.65	-15.6-6.87	-6.49-16.69	-18.13-10.37	-7.08-7.7	-7.3-10	-12.16-6.71	-6.04-6.5
Theta(142.5°)	-10.58-9.92	-8.01-9.13	-9.55-9.81	-10.83-10.46	-10.48-13.22	-15.67-17.71	-14.76-12.14	-11.27-12.06	-12.82-15.98	-16.09-13.97	-12.34-11	-11.41-11.91	-12.31-9.47	-10.12-13.18	-10.96-12.12	-14.11-8.77	-18.53-17.24	-18.11-10.52	-9.34-16.18	-17.29-18.33	-15.03-14.8	-17.43-13.99	-17.44-15.13	-11.71-10.73
Theta(150°)	-13.83-13.58	-12.51-10.34	-9.25-9.48	-10.86-10.03	-9.74-11.9	-17.13-18.35	-18.81-14.09	-11.88-11.52	-11.89-12.42	-11.97-13.1	-11.97-13.1	-13.97-15.11	-16.85-14.72	-13.21-13.6	-15.61-18.88	-15.52-15.96	-18.65-18.37	-18.76-13.8						



Radiated Composite Gain Data of 2.4GHz&5GHz

Appendix A

Theta	172.5°	171.75°	18.35°/18.02°	18.51°/19.07°	17.83°/18.04°	18.71°/17.33°	16.95°/14.96°	15.83°/17.7°	18.46°/17.86°	18.56°/15.6°	14.09°/13.49°	13.9°/15.21°	17.92°/18.71°	18.03°/17.91°	17.88°/16.05°	14.84°/14.7°	15.23°/15.39°	15.16°/14.34°	14.03°/13.68°	14.05°/13.79°	14.28°/15.17°	15.57°/17.46°	18.17°/18.26°	17.25°/18.03°	18.74°/18.11°
Freq(Hz)	18.36°/18.94°	18.3°/18.02°	18.3°/18.02°	18.3°/18.02°	18.3°/18.02°	18.3°/18.02°	18.3°/18.02°	18.3°/18.02°	18.3°/18.02°	18.3°/18.02°	18.3°/18.02°	18.3°/18.02°	18.3°/18.02°	18.3°/18.02°	18.3°/18.02°	18.3°/18.02°	18.3°/18.02°	18.3°/18.02°	18.3°/18.02°	18.3°/18.02°	18.3°/18.02°	18.3°/18.02°	18.3°/18.02°	18.3°/18.02°	18.3°/18.02°
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°)	-13.24/-16.11	-18.94/-18.29	-18.57/-17.19	-13.33/-10.22	-8.38/-6.81	-5.54/-5.03	-4.74/-4.61	-4.42/-4.22	-3.95/-4.07	-4.29/-4.81	-5.63/-6.75	-8.21/-10.14	-12.41/-15.71	-17.44/-18.04	-17.76/-15.02	-11.53/-9.84	-8.55/-7.72	-6.48/-5.59	-4.74/-	-3.51/-3.53	-3.84/-2.6	-5.18/-6.19	-7.24/-8.28	-9.51/-11	
Theta(7.5°)	-12.13/-15.29	-18.06/-17.89	-18.56/-16.01	-13.10/-	-8.42/-7.37	-6.53/-5.79	-5.51/-5.1	-5.06/-4.93	-4.93/-5.11	-5.57/-6.09	-6.94/-7.9	-9.35/-11.37	-13.78/-18.11	-18.15/-18.05	-17.56/-15.38	-12.13/-10.21	-8.13/-6.85	-5.92/-5.05	-4.54/-4.18	-3.67/-3.37	-3.38/-3.48	-3.97/-4.7	-5.63/-6.37	-7.96/-9.56	
Theta(15°)	-11.34/-14.29	-18.69/-19.06	-19.02/-16.26	-13.74/-11.01	-9.72/-8.76	-8.01/-7.65	-7.31/-6.9	-6.44/-6.03	-6/-6.49	-6.92/-7.63	-8.23/-9.98	-10.01/-11.55	-14.11/-17.94	-18.23/-17.89	-17.45/-13.63	-11.28/-8.96	-7.02/-5.66	-4.48/-3.49	-2.96/-2.37	-2.03/-1.89	-1.81/-2.03	-2.46/-3.24	-4.14/-5.47	-7.02/-8.9	
Theta(22.5°)	-9.02/-10.8	-15.34/-17.79	-18.2/-16.68	-13.12/-11.14	-10.91/-9.89	-8.64/-7.94	-7.44/-7.57	-7.64/-8.01	-8.47/-8.87	-9.1/-9.73	-10.12/-10.02	-10.62/-12.48	-15.42/-18.61	-18.2/-16.64	-12.74/-9.4	-8.85/-	-4.26/-3.68	-3.11/-2.03	-0.790/0.3	0.650/0.48	0.011/0.04	-2.26/-3.66	-4.64/-6.07	-7.12/-7.97	
Theta(30°)	-8.08/-10.21	-13.26/-17.6	-17.69/-16.47	-13.45/-11.95	-11.68/-10.98	-9.76/-8.67	-8.96/-8.97	-8.68/-9.1	-9.13/-9.32	-10.18/-10.43	-11.37/-12.96	-14.64/-16.04	-17.31/-17.56	-17.17/-15.24	-13.05/-11.64	-8.56/-4.22	-3.57/-2.52	-1.040/2.4	0.851/0.8	0.850/0.98	0.80/0.3	-0.46/-1.48	-2.61/-4.14	-5.42/-7.11	
Theta(37.5°)	-7.77/-7.74	-10.91/-18.54	-19.24/-16.46	-14.38/-13.61	-13.31/-12.54	-11.71/-10.6	-10.77/-10.61	-10.38/-10.55	-11.58/-11.35	-11.77/-13.47	-17.05/-17.83	-18.41/-17.98	-13.45/-11.38	-8.35/-6.59	-6.38/-5.7	-4.58/-3.89	-3.4/-2.07	-1.41/-1.21	-0.84/-0.37	0.0/2.4	0.560/0.83	0.56/-0.26	-1.1/-2.37	-4.26/-5.62	
Theta(45°)	-6.3/-6.54	-10.12/-19.03	-19.11/-18.85	-17.93/-19.09	-16.92/-14.89	-13.52/-13.53	-15.02/-15.94	-15.94/-16.33	-17.93/-16.43	-14.41/-15.05	-17.39/-16.8	-18.58/-17.35	-11.63/-11.26	-9.54/-5.92	-5.48/-6.85	-6.3/-4.76	-3.88/-3.07	-2.46/-2.1	-1.31/-0.6	-0.25/-0.2	-0.35/-0.24	-0.22/-0.28	0.04/-0.18	-2.13/-4.98	
Theta(52.5°)	-5.13/-6.2	-7.15/-12.55	-13.32/-13.91	-18.29/-14.1	-13.55/-12.8	-12.04/-13.61	-14.75/-15.86	-16.82/-18.73	-18.18/-18.73	-18.67/-17.76	-18.12/-18.79	-16.39/-18.66	-11.37/-8.52	-9.32/-6.44	-6.14/-8.77	-6.47/-4.03	-4.06/-3.55	-2.67/-2.2	-1.59/-0.92	-0.37/-0.17	0.011/-0.07	-0.74/-1.42	-0.320/2.2	-0.71/-1.87	
Theta(60°)	-3.53/-7.46	-7.28/-9.03	-11.39/-13.89	-19.59/-13.39	-14.16/-18.63	-18.69/-17.99	-18.37/-18.5	-17.45/-18.68	-16.6/-14.96	-18.45/-19.81	-18.27/-17.94	-18.38/-17.72	-14.58/-8.01	-9.25/-7.84	-6.96/-9.61	-4.46/-3.82	-3.96/-2.84	-1.48/-1.23	-1.13/-0.53	0.2/0.4	0.571/0.64	1.24/0.05	0.610/0.4	-1.48/-1.85	
Theta(67.5°)	-4.44/-6.67	-5.81/-9.01	-12.12/-17.95	-15.27/-12.72	-15.23/-17.47	-17.74/-18.55	-17.65/-18.19	-17.48/-18.08	-17.16/-17.8	-18.18/-18.43	-17.68/-19.14	-13.84/-11.87	-11.87/-5.56	-6.71/-7.68	-7.44/-10.62	-5.6/-4.01	-4.43/-3.21	-1.07/-0.63	0.520/0.62	0.450/0.78	1.122/0.4	2.02/0.11	-0.03/-1.01	-1.88/-1.86	
Theta(75°)	-3.25/-4.16	-2.58/-7.02	-6.73/-11.6	-9.97/-9.85	-13.68/-16.1	-17.78/-18.71	-19.11/-18.78	-19.22/-17.04	-15.67/-15.33	-17.4/-17.85	-17.88/-17.91	-12.34/-9.91	-14.67/-5.59	-4.82/-8.37	-9.34/-11.64	-4.71/-3.46	-3.35/-1.76	-1.080/2.1	1.471/2.9	0.671/1.51	2.362/2.7	2.280/0.2	-1.53/-2.78	-1.41/-1.9	
Theta(82.5°)	-4.03/-4.28	-2.42/-7.67	-5.34/-14.33	-9.11/-10.16	-14.36/-13.83	-17.5/-17.1	-18.69/-18.11	-17.29/-18.96	-17.95/-18.64	-14.24/-17.62	-14.13/-16.17	-7.19/-7.58	-7.29/-3.26	-4.85/-9.72	-7.87/-6.25	-3.75/-3.14	-1.11/-1.41	-0.490/5.9	0.850/0.86	0.91/5.5	2.512/1.7	1.91/-0.1	-2.36/-5.5	-1.83/-0.18	
Theta(90°)	-3.48/-3.32	-1.38/-6.3	-3.11/-10.35	-6.57/-7.55	-8.48/-9	-12.81/-12.92	-12.16/-10.36	-11.58/-11.64	-16.63/-14.58	-10.78/-16.61	-11.27/-16.6	-8.23/-6.46	-6.88/-2.41	-3.03/-1.74	-6.3/-4.34	-3.31/-1.36	-0.58/-2.16	-0.2/-0.42	-0.38/-0.42	-0.57/-0.48	1.281/0.4	-0.38/-0.72	-3.02/-5.12	-2.35/-0.67	
Theta(97.5°)	-5.13/-6.2	-2.66/-6.19	-3.12/-8.61	-4.43/-6.32	-6.23/-6.76	-8.97/-8.78	-9.32/-9.1	-8.68/-9.1	-14.63/-14.5	-10.08/-11.03	-8.39/-15.61	-7.78/-7.16	-7.58/-3.12	-3.08/-6.35	-1.81/-5.09	-4.66/-2.52	-2.89/-4.56	-2.65/-3.52	-1.53/-1.91	-3.02/-2.42	-0.560/4.1	-0.57/-1.8	-3.4/-2.82	-0.71/-1.23	
Theta(105°)	-6.44/-4.94	-4.43/-6.7	-5.58/-9.24	-7.35/-6.51	-8.8/-8.07	-13.16/-13.13	-12.28/-10.26	-8.73/-6.88	-8.09/-8.61	-10.51/-12.6	-8.88/-11.23	-7.4/-6.45	-9.24/-4.74	4.11/-7.07	-14.41/-7.62	-8.23/-5.71	-8.59/-6.75	-4.51/-5.22	-11.1/7	-5.37/-4.96	-1.71/-0.6	-1.25/-1.85	-3.87/-1.83	-0.69/-2.25	
Theta(112.5°)	-7.14/-5.4	-4.12/-4.05	-4.62/-7.97	-11.76/-8.64	-10.59/-13.02	-17.51/-14.41	-9.89/-8.3	-7.86/-8.7	-10.15/-11.9	-13.25/-10.65	-8.71/-10.21	-9.41/-12.39	-9.85/-6.69	-4.37/-8.18	-11.51/-5.17	-6.28/-5.24	-6.55/-3.92	-6.36/-1.46	-0.43/-3.64	-0.37/-0.42	-0.730/4.7	0.12/-2.77	-6.49/-2.8	-0.15/-1.64	
Theta(120°)	-10.47/-4.72	-3.62/-5.36	-5.86/-8.46	-13.81/-12.82	-10.95/-16.12	-17.51/-14.41	-9.89/-8.3	-7.86/-8.7	-10.15/-11.9	-13.25/-10.65	-8.71/-10.21	-9.41/-12.39	-9.85/-6.69	-4.37/-8.18	-11.51/-5.17	-6.28/-5.24	-6.55/-3.92	-6.36/-1.46	-0.43/-3.64	-0.37/-0.42	-0.730/4.7	0.12/-2.77	-6.49/-2.8	-0.15/-1.64	
Theta(127.5°)	-8.51/-8.99	-6.72/-6.46	-5.98/-8.51	-11.12/-13.06	-10.84/-10.21	-14.85/-17.98	-12.61/-9.62	-8.11/-8.93	-11.77/-14.26	-11.41/-8.82	-8.73/-10.61	-10.84/-10.99	-8.16/-7.53	-7.92/-7.38	-16.76/-5.55	-6.69/-11.47	-4.76/-13.81	-18.06/-6.24	-3.9/-14.97	-19.12/-6.34	-5.04/-4.64	-3.41/-9.03	-8.75/-5.56	-2.68/-3.52	
Theta(135°)	-11.01/-12.96	-10.71/-8.16	-9.72/-13.56	-14.29/-11.84	-12.31/-12.61	-15.11/-14.18	-18.34/-11.94	-8.11/-8.18	-9.11/-10.16	-10.81/-10.67	-10.56/-10.42	-10.43/-8.89	-6.54/-8.27	-11.87/-6.41	-11.09/-6.49	-7.15/-19.17	-18.37/-6.52	-4.61/-14.08	-15.11/-10.54	-7.23/-10.16	-6.76/-9.9	-18.03/-17.73	-17.88/-17.94	-15.39/-13.1	
Theta(142.5°)	-12.02/-11.78	-7.8/-5.95	-7.73/-10.57	-10.53/-11.74	-13.54/-11.98	-11.03/-13.59	-16.46/-14.26	-13.07/-12	-12.69/-16.32	-18.25/-14.09	-9.6/-8.34	-9.93/-11.78	-8.81/-7.23	-7.26/-3.05	-13.71/-13.05	-18.42/-12.48	-16.93/-11.5	-18.47/-11.07	-9.57/-17.5	-14.02/-15.2	-16.02/-19.2	-18.66/-14.96	-12.57/-6.3	-5.68/-7.54	
Theta(150°)	-18.25/-17.22	-14.01/-13.39	-14.29/-15.07	-15.02/-12.98	-13.24/-16.08	-18.85/-18.47	-18.01/-18.12	-18.12/-15.39	-12.54/-11.96	-12.01/-11.83	-11.34/-11.63	-14.09/-15.8	-16.79/-18.77	-14.35/-12.4	-12.08/-11.1	-12.81/-17.26	-18.77/-17.89	-15.76/-13.18	-16.25/-18.62	-18.83/-18.36	-18.58/-17.82	-19.03/-16.7	-14.27/-15.31	-17.46/-18.09	
Theta(157.5°)	-13.31/-11.04	-15.15/-18.66	-10.71/-8.16	-9.72/-13.56	-14.29/-11.84	-12.31/-12.61	-15.11/-14.18	-18.34/-11.94	-8.11/-8.18	-9.11/-10.16	-10.81/-10.67	-10.43/-8.89	-6.54/-8.27	-11.87/-6.41	-11.09/-6.49	-7.15/-19.17	-18.37/-6.52	-4.61/-14.08	-15.11/-10.54	-7.23/-10.16	-6.76/-9.9	-18.03/-17.73	-17.88/-17.94	-15.39/-13.1	
Theta(165°)	-17.51/-18.08	-16.69/-16.94	-18.25/-19.06	-18.46/-18.88	-18.73/-18.51	-17.99/-19.49	-16.48/-17.42	-17.94/-18.93	-18.11/-18.8	-18.42/-14.66	-11.73/-11.69	-11.73/-11.75	-12.67/-14.2	-16.69/-17.7	-18.22/-18.18	-17.14/-5.99	-14.68/-17.02	-18.89/-18.9	-17.84/-18.04	-18.32/-16.45	-18.94/-17.8	-18.03/-16.77	-15.18/-18.24	-18.17/-19.92	
Theta(172.5°)	-18.22/-18.07	-18.56/-18.7	-18.97/-17.99	-18.23/-17.97	-18.26/-18.72	-17.38/-18.59	-18.11/-18.5	-17.59/-17.81	-19.29/-19.15	-18.45/-15.7	-13.51/-12.73	-12.13/-11.83	-11.89/-11.8	-12.19/-13.43	-14.81/-16.63	-18.45/-18.61	-18.75/-19.39	-18.26/-18.56	-18.07/-18.01	-18.14/-17.76	-19.25/-19.11	-18.91/-18.1	-17.68/-18.22	-19.28/-18.68	
Theta(180°)	-18.01/-18.66	-18.08/-18.18	-18.73/-18.06	-18.72/-18.8	-17.68/-17.33	-17.74/-17.74	-19.21/-18.25	-18.04/-16.83	-16.61/-16.89	-16.95/-17.32	-18.13/-17.86	-19.37/-18.44	-18.19/-19.07	-18.42/-18.14	-17.73/-18.08	-18.63/-18.04	-18.69/-18.04	-18.46/-17.47	-18.76/-18.56	-18.33/-18.78	-17.95/-18.71	-17.69/-18.11	-17.84/-18.16	-17.87/-18.42	
Freq(Hz)	5.785GPol.	Theta/Ant. 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°)	-4.83/-4.47	-4.16/-4.31	-4.08/-4.02	-4.02/-4.31	-5.27/-6.73	-8.18/-10.07	-12.94/-15.71	-18.17/-18.75</																	



Freq(Hz)	2.4G	2.45G	2.4835G
Ant. 1 Max Gain (dBi)	2.5	3.4	3.98
Ant. 1 Polarization/ Θ (°)/ Φ (°)	Phi/30/127.5	Phi/67.5/120	Phi/67.5/120



Radiated Composite Gain Data of Bluetooth

Appendix B

Gain Result

Freq(Hz)	240Pol.	PhiAnt.1	PhiAnt.2	PhiAnt.3	PhiAnt.4	PhiAnt.5	PhiAnt.6	PhiAnt.7	PhiAnt.8	PhiAnt.9	PhiAnt.10	PhiAnt.11	PhiAnt.12	PhiAnt.13	PhiAnt.14	PhiAnt.15	PhiAnt.16	PhiAnt.17	PhiAnt.18	PhiAnt.19	PhiAnt.20	PhiAnt.21	PhiAnt.22	PhiAnt.23	PhiAnt.24	PhiAnt.25	PhiAnt.26	PhiAnt.27	PhiAnt.28	PhiAnt.29	PhiAnt.30	PhiAnt.31	PhiAnt.32	PhiAnt.33	PhiAnt.34	PhiAnt.35
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°)												
0	-6.14-7.73	-9.51-10.68	-10.99-9.54	-7.56-5.52	-3.92-2.66	-1.71-0.84	-0.15-0.29	0.60-0.82	0.94-0.89	0.69-0.27	-0.34-1.16	-2.18-3.48	-5.12-7.22	-9.68-11.97	-12.38-10.51	-8.15-6.16	-4.51-3.22	-2.25-1.48	-0.87-0.38	-0.04-0.08	0.01-0.18	-0.47-0.89	-1.44-2.15	-3.12-4.4												
7.5	-5.47-7.12	-8.92-10.52	-10.99-9.54	-7.56-5.52	-3.92-2.66	-1.71-0.84	-0.15-0.29	0.60-0.82	0.94-0.89	0.69-0.27	-0.34-1.16	-2.18-3.48	-5.12-7.22	-9.68-11.97	-12.38-10.51	-8.15-6.16	-4.51-3.22	-2.25-1.48	-0.87-0.38	-0.04-0.08	0.01-0.18	-0.47-0.89	-1.44-2.15	-3.12-4.4												
15	-5.78-7.06	-8.45-9.56	-9.69-8.44	-6.65-4.84	-3.41-2.22	-1.34-0.47	0.25-0.76	1.15-1.4	1.54-1.52	1.29-0.89	0.31-0.46	-1.42-2.67	-4.27-6.26	-8.83-11.61	-13.17-11.79	-9.12-6.86	-4.98-3.55	-2.43-1.55	-0.84-0.32	-0.03-0.02	-0.08-0.27	-0.37-0.79	-1.36-2	-2.83-3.88												
22.5	-4.94-5.94	-7.31-9.11	-11.03-11.38	-9.43-6.9	-4.85-3.22	-1.75-0.52	0.51-2.6	1.84-2.21	2.42-3.8	2.13-6.05	0.98-0.1	-1.03-2.49	-4.31-6.56	-9.39-12.2	-12.87-10.74	-8.1-5.9	-4.13-2.81	-1.81-0.97	-0.35-0.04	0.18-0.18	0.07-0.14	-0.55-1.14	-1.88-2.73	-3.63-4.44												
30	-5.62-6.22	-7.06-8.14	-9.27-9.73	-9.03-7.53	-6.03-4.46	-2.78-1.24	0.04-1	1.75-2.23	2.49-2.5	2.28-1.81	1.09-0.07	-1.25-2.98	-5.18-9	-11.76-14.75	-12.9-9.5	-8.84-4.91	-3.39-2.28	-1.41-0.73	-0.29-0.08	-0.05-0.11	-0.24-0.53	-1.08-1.82	-2.77-3.82	-4.81-5.46												
37.5	-7.77-8.52	-9.3-9.96	-10.81-11.59	-11.49-10.3	-9.14-7.57	-5.28-3.12	-1.49-0.25	0.68-1.34	1.75-1.9	1.77-1.31	0.55-0.57	-2.06-4.03	-6.63-10.09	-13.8-14.03	-10.87-8.08	-6.14-4.79	-3.81-3.09	-2.54-1.23	-1.85-1.79	-1.87-0.22	-2.25-2.63	-3.24-3.97	-4.94-6.18	-7.31-7.86												
45	-9.03-9.16	-9.02-8.7	-8.92-10.21	-12.03-13.28	-13.21-10.97	-7.33-4.36	-2.29-0.97	-0.05-0.54	0.94-1.06	0.81-0.2	-0.81-2.22	-4.12-6.81	-10.47-14.45	-14.27-10.95	-8.09-6.07	-4.72-3.96	-3.52-3.38	-3.36-3.45	-3.67-4.07	-4.65-5.24	-5.85-6.37	-6.69-6.79	-6.99-7.57	-8.36-8.85												
52.5	-6.29-6.29	-5.84-5.22	-5.09-5.78	-7.23-9.11	-11.14-11.54	-8.27-4.95	-2.87-1.19	-0.19-0.46	0.87-1.01	0.77-0.03	-1.18-2.98	-5.52-9.61	-17.49-17.21	-13.68-9.22	-6.34-4.45	-3.23-2.5	-2.03-1.76	-1.72-1.98	-2.43-2.92	-3.18-3.22	-3.25-3.31	-3.43-3.65	-4.04-4.68	-5.61-6.25												
60	-6.65-5.95	-4.84-3.79	-3.29-3.61	-4.71-6.7	-9.37-10.15	-6.57-3.4	-1.35-0.09	0.71-1.2	1.24-1.11	0.72-0	-1.13-2.75	-4.93-8.04	-12.57-19.16	-18.24-13.95	-9.66-7.21	-5.69-4.51	-3.32-3.22	-1.71-1.44	-1.37-1.33	-1.33-1.47	-1.77-2.25	-2.88-3.59	-4.31-5.14	-6.17-6.87												
67.5	-10.31-9.21	-7.03-4.98	-3.77-3.54	-4.22-6.01	-9.07-11.54	-8.01-4.28	-1.88-0.37	0.55-0.9	0.75-0.2	0.75-0.2	-0.63-1.63	-2.98-4.78	-6.97-9.69	-15.13-18.28	-12.1-10.3	-8.69-6.93	-5.24-0.05	-3.22-2.62	-2.21-2.16	-2.52-3.16	-3.82-4.42	-4.91-5.3	-5.96-7.06	-8.44-9.82												
75	-6.28-6.05	-5.05-3.68	-2.77-2.66	-3.25-4.73	-7.22-10.83	-11.79-7.97	-4.6-2.36	-0.97-0.5	-0.88-2.03	-3.55-5.06	-6.69-8.7	-10.48-12.13	-15.73-18.52	-18.2-14.38	-11.43-8.86	-6.38-4.39	-2.93-1.91	-1.06-0.39	-0.12-0.35	-1.1-2.05	-2.67-2.65	-2.31-2.19	-2.66-3.71	-4.98-5.81												
82.5	-6.46-5.18	-3.98-2.93	-2.31-2.29	-2.77-3.86	-5.44-7.2	-8.51-8.66	-7.33-5.05	-2.92-1.65	-1.46-2.23	-3.31-4.29	-6.17-9.29	-12.55-18.52	-18.06-18.79	-16.6-13.12	-11.53-9.13	-9.27-9.32	-8.4-3.39	-2.53-2.72	-2.43-3.18	-4.41-5.68	-5.84-4.92	-4.08-3.79	-4.33-5.85	-7.63-7.65												
90	-9.33-6.53	-4.66-3.44	-2.72-2.25	-2.75-3.62	-5.05-6.68	-7.76-8.02	-7.87-0.1	-5.76-4.72	-4.44-5.12	-6.16-7.15	-8.58-10.29	-11.67-14.3	-17.25-18.85	-17.72-18.98	-15.38-14.34	-11.92-9.76	-5.21-4.9	-5.06-6	-6.19-5.11	-11.92-11.68	-9.32-7.43	-6.69-6.81	-6.69-8.51	-11.76-12.48												
97.5	-10.01-6.52	-4.55-3.43	-2.75-2.49	-2.49-2.83	-3.58-4.57	-5.51-6.04	-6.1-5.54	-5.06-4.96	-5.5-6.79	-8.2-9.14	-10.07-10.84	-11.74-14.09	-18.53-18.82	-18.72-13.51	-10.64-9.51	-8.95-8.7	-8.5-8.39	-8.64-8.88	-12.35-14.99	-15.8-14.29	-12.24-10.79	-10.18-10.51	-12.18-15.82	-17.86-16.29												
105	-12.22-8.94	-6.54-5.13	-4.24-3.74	-3.61-4.7	-4.19-4.96	-6.01-6.91	-6.94-5.98	-5.04-4.98	-6.13-8.37	-10.44-11.03	-11.37-11.92	-12.52-14.54	-18.06-18.79	-16.6-13.12	-11.53-9.13	-9.27-9.32	-8.54-5.69	-6.67-5.03	-12.44-15.25	-15.28-11	-12.72-9.66	-8.43-5.9	-7.42-10.16	-13.61-15.5												
112.5	-7.73-8.59	-8.84-5.33	-4.19-3.66	-3.76-4.19	-4.69-5.15	-5.96-7.3	-8.77-9.09	-8.66-7.76	-8.39-9.39	-9.81-8.51	-11.67-14.3	-17.25-18.85	-17.72-18.98	-15.38-14.34	-11.92-9.76	-5.21-4.9	-5.06-6	-6.19-5.11	-11.92-11.68	-9.32-7.43	-6.69-6.81	-6.69-8.51	-11.76-12.48													
120	-7.92-9.72	-9.57-7.86	-6.13-5.05	-4.75-4.92	-5.15-5.05	-5-5.34	-6.16-6.88	-7.13-7.18	-7.26-6.86	-6.06-5.98	-6.78-7.76	-9.05-12.19	-16.63-15.3	-14.31-13.88	-10.87-9.07	-8.97-8.92	-8.2-8.42	-10.31-11.92	-9.61-6.81	-4.77-3.19	-1.96-1.15	-0.91-1.18	-1.79-2.65	-3.94-5.82												
127.5	-10.01-11.79	-10.73-8.52	-6.43-9.3	-4.27-4.34	-4.69-4.8	-4.63-6.69	-5.21-5.84	-6.21-6.22	-5.85	-4.34-5.54	-5.55-6.62	-8.14-10.77	-14.39-15.27	-15.32-13.81	-12.05-12.5	-14.44-13.81	-12.63-13.66	-16.11-14.65	-11.15-8.76	-6.94-5.4	-4.13-3.22	-2.79-2.84	-3.33-4.15	-5.41-7.36												
135	-8.35-9.92	-10.97-10.61	-9.46-7.56	-6.99-7.47	-6.86-10.4	-10.83-10.46	-10.51-10.95	-11.54-11.61	-10.89-9.92	-9.53-10.71	-8.18-11.67	-18.17-18.67	-18.11-14.27	-12.31-11.49	-12.28-14.96	-14.96-12.05	-10.95-11.56	-12.27-11.48	-10.27-9.5	-9.28-9.11	-8.55-7.44	-6.25-5.51	-5.36-5.58	-6.08-6.95												
142.5	-9.57-13	-9.16-18.8	-14.46-10.53	-8.51-7.6	-7.88-8.61	-10.01-11.39	-12.16-12.4	-12.54-13.07	-14.37-15.37	-13.91-11.2	-9.03-7.59	-6.84-6.35	-6.44-5.94	-6.31-7.55	-10.37-15.68	-17.19-13.01	-11.14-10.83	-10.58-9.7	-8.61-7.77	-7.36-7.27	-7.06-6.56	-6.77-5.2	-5.11-5.58	-6.44-7.64												
150	-16.89-18.06	-17.66-14.69	-10.93-8.37	-6.65-5.54	-5.06-5.21	-5.73-6.3	-6.63-6.66	-6.64-6.9	-7.31-7.4	-6.71-5.42	-4.28-5.56	-3.31-4.24	-3.74-4.24	-5.12-6.59	-9.24-13.74	-18.1-18.01	-15.15-13.2	-11.83-10.39	-9.01-7.86	-7.11-6.62	-6.25-6.95	-5.75-5.78	-6.28-7.48	-9.66-12.4												
157.5	-17.92-19.25	-15.4-12.91	-10.25-8.67	-7.49-6.65	-6.28-6.4	-6.91-7.47	-7.88-8.1	-8.54-9.39	-10.38-10.71	-9.63-8.04	-6.77-6	-6.19-6.75	-7.8-8.75	-10.19-11.72	-12.63-12.54	-11.91-11.23	-10.48-9.76	-9.23-8.94	-8.77-8.68	-8.56-8.51	-8.54-8.81	-9.52-10.91	-12.63-18.3													
165	-17.45-16.45	-14.96-13.29	-13.06-12.29	-11.58-11.11	-10.98-11.15	-11.39-11.36	-10.82-10.4	-10.81-12.03	-14.3-18.16	-19.03-18.81	-18.01-17.27	-15.61-14.69	-14.12-13.91	-12.66-12.07	-11.57-11.23	-10.91-10.64	-10.33-10.31	-10.58-11.2	-12.23-13.59	-15.08-16.24	-16.76-16.54	-16.16-16.06	-16.78-17.72													
172.5	-15.02-15.01	-14.69-14.27	-13.68-13.1	-12.56-12.07	-11.46-10.65	-9.67-8.53	-7.88-6.95	-6.95-7.34	-7.91-8.77	-9.98-11.48	-13.11-15.07	-17.78-19.18	-18.3-17.41	-18.78-17.51	-14.53-12.5	-11.14-10.19	-9.47-8.83	-8.4-8.3	-8.43-8.78	-9.42-10.42	-11.55-12.53	-13.37-14.09	-14.73-14.98	-14.88-14.85												
180	-12.71-13.48	-13.66-13.16	-12.29-11.44	-10.83-10.35	-9.78-9	-8.14-7.3	-6.55-6.25	-6.36-6.7	-7.09-7.53	-8.21-8.96	-9.8-10.84	-12.15-13.97	-16.29-18.73	-19.51-17.62	-14.77-12.4	-10.71-9.44	-8.38-7.45	-6.81-6.43	-6.25-6.2	-6.34-6.65	-6.98-7.3	-7.67-8.26	-9.11-9.9	-10.72-11.68												
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°)												
0	-1.65-1.25	-0.97-0.82	-0.76-0.85	-1.07-1.45	-1.97-2.7	-3.69-4.87	-6.88-9.35	-10.91-13.36	-13.71-16.8	-19.17-0.77	-5.43-4.09	-3.07-2.27	-1.68-1.24	-0.96-0.88	-0.98-1.29	-1.72-2.25	-2.93-3.62	-4.57-5.69	-7.01-8.62	-10.49-12.17	-12.77-11.63	-9.57-7.78	-6.11-4.69	-3.55-2.6												
7.5	-1.83-1.34	-1.03-0.86	-0.79-0.85	-1.05-1.4	-1.93-2.68	-3.61-4.71	-6.15-8	-10.47-13	-14.21-12.69	-10.07-7.85	-6.11-4.71	-3.65-2.78	-2.09-1.58	-1.29-1.16	-1.24-1.48	-1.82-2.24	-2.8-3.48	-4.3-3.57	-6.67-8.23	-10.17-12.04	-12.79-11.57	-9.39-7.36	-5.67-4.32	-3.26-2.46												
15	-2.58-2.22	-1.96-1.82	-1.75-1.76	-1.88-2.2	-2.67-3.2	-4.2-5.2	-6.84-8.24	-10.68-13.35	-15.24-13.75	-11.8-6.6	-6.84-5.38	-4.26-3.38	-2.67-2.14	-1.81-1.69	-1.74-1.9	-2.14-2.49	-2.97-3.61	-4.47-4.59	-6.83-8.53	-10.51-12.18	-12.41-10.98	-9.85-7.88	-6.31-5.1	-4.1-3.31												
22.5	-4.65-4.17	-3.72-3.3	-2.93-2.59	-2.42-2.45	-2.7																															



Radiated Composite Gain Data of 6GHz

Appendix C

Freq(Hz)	6.175G	6.475G	6.695G	6.995G
Ant. 1 Max Gain (dBi)	1.51	1.68	1.23	2.01
Ant. 2 Max Gain (dBi)	2.4	3.01	3.32	3.22
Ant. 3 Max Gain (dBi)	2.23	2.76	4.06	3.84
Ant. 4 Max Gain (dBi)	2.06	1.85	2.35	3.51
Ant. 1 Polarization/ $\theta(^{\circ})/\phi(^{\circ})$	Theta/45/277.5	Phi/157.5/0	Theta/52.5/255	Phi/45/15
Ant. 2 Polarization/ $\theta(^{\circ})/\phi(^{\circ})$	Phi/75/142.5	Phi/90/165	Phi/90/165	Phi/82.5/157.5
Ant. 3 Polarization/ $\theta(^{\circ})/\phi(^{\circ})$	Phi/60/37.5	Phi/90/240	Phi/67.5/22.5	Phi/97.5/240
Ant. 4 Polarization/ $\theta(^{\circ})/\phi(^{\circ})$	Theta/82.5/22.5	Phi/97.5/255	Phi/90/255	Phi/97.5/255
Max Gain (dBi)	2.4	3.01	4.06	3.84
DG [1SS] (dBi)	4.69	5.17	4.5	5.78
DG [2SS] (dBi)	2.4	3.01	4.06	3.84
DG [4SS] (dBi)	2.4	3.01	4.06	3.84



Radiated Composite Gain Data of 6GHz

Appendix C

DG 1SS Result

Freq(Hz)	6.175GPol.	PhiH	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°)	
DG(dB)	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(°)	0.3906	0.59086	0.65069	0.39014	0.43011	0.29068	0.07005	0.18026	0.13005	-0.21038	-0.38243	-0.19101	0.69113	1.47145	1.23088	0.61032	-0.02050	-0.87104	-0.93065	-0.73095	-1.39024	-2.88036	-3.30287	-2.37027	-1.33066
Theta(7.5°)	0.42002	0.32065	0.82029	0.68035	-0.27077	-1.04112	-1.07133	-1.92046	-2.96281	-3.12039	-2.63195	-1.16044	0.11053	0.77098	1.05	0.49007	-0.9164	-2.35034	-3.49033	-3.95048	-3.83037	-4.27036	-3.14217	-1.23068	
Theta(15°)	-0.31006	0.53090	1.41171	1.52095	0.6045	0.4025	0.2014	-0.1070	-1.39024	-3.64005	-3.34021	-1.19011	0.69113	1.47145	1.23088	0.61032	-0.02050	-0.87104	-0.93065	-0.73095	-1.39024	-2.88036	-3.30287	-2.37027	-1.33066
Theta(22.5°)	0.3906	0.59086	0.65069	0.39014	0.43011	0.29068	0.07005	0.18026	0.13005	-0.21038	-0.38243	-0.19101	0.69113	1.47145	1.23088	0.61032	-0.02050	-0.87104	-0.93065	-0.73095	-1.39024	-2.88036	-3.30287	-2.37027	-1.33066
Theta(30°)	-0.19023	-0.29025	0.1018	-0.32031	-0.32071	-1.19069	-1.27095	-0.62038	0.16068	0.44005	-1.73028	-2.23013	0.14064	0.87166	2.02187	1.72141	0.73002	-0.25044	-0.73056	0.11074	0.78021	-0.72096	-1.1804	-1.15083	
Theta(37.5°)	2.46219	1.46044	0.17029	0.29068	0.76092	0.93082	0.24010	-0.0401	0.01041	1.02096	0.6007	-0.56027	0.11031	0.93114	0.4306	0.99047	-0.25059	-0.4105	0.9075	0.78106	1.16107	0.32074	-2.02092	0.89197	
Theta(45°)	1.95186	1.45074	0.78072	0.82066	0.9081	0.7043	0.45010	0.49116	1.69149	1.60064	1.4318	1.73192	1.46046	1.60064	1.4318	1.73192	1.46046	-0.14072	-1.34026	0.16073	1.44102	0.91066	0.27065	-0.50049	1.42169
Theta(52.5°)	3.35272	2.22178	1.54201	2.21198	1.89168	1.31092	0.18009	0.59119	1.61171	2.17241	2.43227	1.97199	2.02234	2.41242	2.68266	1.24048	-0.44032	-1.69043	-0.80023	0.01034	0.71065	1.51155	1.4415	2.46316	
Theta(60°)	3.39291	2.05186	2.22256	2.68239	2.15181	1.55088	0.13049	-0.06072	1.79262	3.27344	3.43257	2.02206	2.23298	2.46214	1.93207	1.46008	-0.97171	-1.47023	-1.63093	-1.03094	-0.01077	0.62041	-1.23052	2.02297	
Theta(67.5°)	2.02203	1.63122	1.22143	1.62151	1.67188	1.44083	0.21113	-1.59038	1.04165	2.39289	3.42356	2.8423	1.97194	1.75211	2.4237	1.76149	-0.45154	-3.24043	-3.86036	-2.73179	-0.43082	-1.12076	-1.78045	1.49182	
Theta(75°)	0.4061	0.51088	1.07157	1.56145	1.26155	2.15264	1.99069	-0.25121	0.52182	2.37303	3.23373	3.65304	1.63111	0.99179	2.85265	3.26251	0.84042	-1.85027	-2.30335	-2.23059	-1.3069	-0.43038	-0.4009	0.3801	
Theta(82.5°)	-1.76026	-0.52077	2.61289	1.93198	1.7623	2.11242	2.64235	1.53108	0.86202	3.43438	3.35326	3.36276	1.3816	1.97279	2.83257	3.13261	2.56266	1.15041	0.09004	-0.02069	0.39045	1.163	1.04004	-1.66082	
Theta(90°)	-1.84023	-2.80023	2.83328	2.83328	2.4214	2.42376	2.07197	1.96199	2.4215	3.17469	4.07262	2.7284	1.22097	2.64357	2.94237	2.99265	3.23353	2.91124	0.89089	-0.39021	2.91192	-0.22101	0.8708	-0.97059	
Theta(97.5°)	-1.46048	-4.52028	0.72238	2.26187	2.18227	1.88207	1.43003	-0.67096	-0.18056	0.09201	2.15148	0.62135	0.64099	2.05288	2.2414	0.95079	2.12287	2.86174	2.68164	0.18005	0.49039	-0.7065	-1.31027	-1.72034	
Theta(105°)	-0.56034	-2.08023	0.65051	0.5811	2.27267	2.18155	0.78045	-0.8002	1.06007	-0.69108	1.37115	0.31096	0.77026	1.34054	2.7822	1.14047	0.26164	1.83056	-3.38022	0.07187	-0.32069	0.39045	1.163	1.04004	-1.66082
Theta(112.5°)	-5.73022	-4.64037	-3.07149	-1.02025	-0.34045	0.88077	-0.04085	-0.39026	-1.26001	-0.40067	1.17219	1.95163	0.58065	-1.32058	1.29089	0.541023	0.37036	-1.53029	-1.98024	-2.44034	-1.46011	-1.82043	-2.27032		
Theta(120°)	-5.29042	-3.40501	-5.06043	-2.39098	-0.9209	-0.35093	-2.08044	-2.140237	-2.39093	-1.840113	0.95106	0.72016	-0.87014	-0.8501	0.20089	-1.35048	-0.39037	-0.970167	-1.38074	-2.460242	-1.430364	-3.7401	-1.53027	-0.910137	
Theta(127.5°)	-3.44094	-0.78039	-3.39022	-1.670105	-0.90056	-1.950293	-2.950323	-2.550194	-1.140206	-2.710402	1.75025	2.74268	1.19044	-0.03015	0.560166	-2.690255	-1.070208	-1.890305	-3.83028	-3.140404	-1.710108	-4.150325	-2.650194	-0.3506	
Theta(135°)	-1.280102	-2.58047	-3.160127	-0.81019	-2.070375	-3.010365	-4.070466	-4.130425	-3.76018	0.31048	0.27056	-1.38086	-2.46084	-2.080325	-5.360222	-0.790186	-2.790224	-1.90024	-1.91081	-2.59097	-2.59098	-1.14034	-6.12051	-5.190103	
Theta(142.5°)	-2.760237	-2.25048	-1.860157	-0.82041	-0.74038	-3.860455	-4.430423	-4.030457	-5.980454	-3.480216	-0.670101	-1.590411	-5.330569	-3.260197	-1.920461	-3.730454	-7.60099	-6.34013	-7.170441	-3.570465	-4.23039	-1.140341	-5.2506	-5.210398	
Theta(150°)	-0.790113	-0.37031	0.32058	-1.45017	-2.490359	-4.99047	-5.74058	-6.14074	-6.53048	-3.0202	-0.990109	-2.140353	-3.910333	-4.060466	-4.229	-2.380372	-4.61075	-7.970689	-7.560578	-4.79061	-7.5403	-5.130483	-3.73027	-2.470171	
Theta(157.5°)	-0.330178	-2.480198	-2.320267	-3.310434	-5.120567	-5.630443	-3.920464	-5.9707	-5.720147	-2.820183	-1.370182	-2.530303	-3.570319	-2.250243	-3.390484	-6.200681	-7.460768	-7.400768	-7.680678	-6.470698	-8.59047	-7.05035	-2.480192	-1.15021	
Theta(165°)	-5.14086	-4.450437	-4.430498	-5.350551	-5.370494	-5.25057	-6.18095	-6.770521	-6.82043	-3.6404	-5.94069	-6.920728	-6.640611	-5.780525	-4.40044	-5.49067	-6.11033	-6.44062	-6.390573	-5.24031	-3.120309	-3.220297	-2.730263	-3.320397	
Theta(172.5°)	-7.74047	-8.590831	-8.02089	-9.150956	-9.03084	-9.210914	-8.66013	-8.140999	-7.920731	-6.780635	-6.310613	-5.910562	-5.430579	-5.63057	-5.210473	-4.310333	-3.850333	-2.850226	-2.34027	-2.65023	-2.280251	-3.380425	-4.73045	-6.150682	
Theta(180°)	-10.110975	-9.43099	-9.230845	-8.180781	-7.77073	-8.21035	-8.730935	-9.750999	-10.060976	-9.610953	-9.950291	-8.01015	-6.940687	-7.06097	-7.570579	-7.61077	-7.84091	-7.56096	-7.47082	-7.86097	-10.08036	-10.52098	-11.390108	-9.61017	
Theta(187.5°)	-10.110975	-9.43099	-9.230845	-8.180781	-7.77073	-8.21035	-8.730935	-9.750999	-10.060976	-9.610953	-9.950291	-8.01015	-6.940687	-7.06097	-7.570579	-7.61077	-7.84091	-7.56096	-7.47082	-7.86097	-10.08036	-10.52098	-11.390108	-9.61017	
Theta(195°)	-2.680268	-2.610261	-2.870301	-3.670425	-3.980299	-1.81074	-0.16015	-0.41057	-0.7608	-0.96011	-1.51079	-1.97024	-2.210252	-2.87031	-3.120305	-2.920254	-2.180175	-1.07083	-0.72041	-0.04025	0.21017	-0.15056	-1.470237	-2.370274	
Theta(202.5°)	-1.990173	-1.91055	-1.83018	-2.050219	-2.230251	-1.950102	-0.42024	-0.41062	-0.7308	-0.63083	-1.210143	-1.320116	-1.270146	-1.680197	-1.990237	-2.52015	-1.620101	-0.970115	-0.99023	0.36044	0.20034	-1.020156	-2.240278	-2.370238	
Theta(210°)	-0.550202	-0.390177	-0.15061	-1.610203	-2.230223	-2.390186	-1.32087	-0.42033	-0.43067	-0.55058	-0.880118	-1.11017	-1.150172	-2.580304	-3.370357	-3.910377	-3.080244	-1.730149	-1.560158	-0.66007	-1.04095	-1.280197	-2.010143		
Theta(217.5°)	-1.23019	-0.550109	-0.160127	-2.820303	-3.13047	-3.410309	-2.740227	-1.470138	-1.890276	-2.370222	-2.060253	-4.14034	-3.370298	-2.820126	-1.330195	-1.770151	-1.470116	-0.93046	0.2206	0.54054	0.62071	-0.44016	-1.340258	-2.520274	
Theta(225°)	-0.57073	0.25006	0.410102	-1.91087	-0.43025	0.78106	1.21113	0.65018	-0.19016	-1.710218	-3.310147	-5.060382	-4.81064	-3.81036	-4.120264	-1.48037	0.12034	1.12057	0.90068	1.58019	1.91077	1.53017	0.530133	-1.220118	
Theta(232.5°)	0.27073	0.93015	0.03039	-0.14002	0.17095	1.12011	0.94108	1.20087	0.55025	-1.480232	-3.470443	-4.23037	-3.430265	-3.770426	-2.650119	-0.17077	1.28023	1.88046	1.97026	1.97047	1.66063	1.63214	2.22011	0.28037	
Theta(240°)	-0.51046	-0.55095	-0.90088	-0.13005	-0.11026	-0.07002	-0.04009	0.04055	-1.72028	-4.570568	-6.680685	-5.250408	-4.76096	-3.720326	-1.07039	0.0706	0.84108	1.61033	2.1205	2.0623	2.62093	2.28093	1.6608	1.16008	
Theta(247.5°)	0.33009	-0.71012	-1.81035	-1.4																					



Radiated Composite Gain Data of 6GHz

Appendix C

Theta (°)	1.3126	0.79075	0.571042	-1.134-1.44	-1.84-2.28	-2.06-1.83	-1.58-1.61	-1.79-1.41	-0.69-0.3	-0.160-17	0.210-02	-0.36-0.26	0.210-72	1.191-32	1.321-17	0.860-44	-0.14-0.41	-0.46-0.44	0.060-84	0.870-64	0.02-0.02	0.13-0.03	-0.120-18	0.620-93
Theta (30°)	1.642-02	1.91-15	0.21-0.59	-0.9-0.82	-0.330-3	0.420-26	0.260-27	0.20-25	0.681-15	1.050-94	1.140-52	-0.320-0	0.81-36	1.832-36	2.342-2	1.650-77	-0.1-1.3	-2.48-3	-2.68-1.46	0.211-16	1.311-19	0.740-19	0.221-43	2.212-26
Theta (37.5°)	3.182-33	1.761-35	1.010-18	-0.47-0.77	-0.51-0.41	-0.080-0	-0.27-0.13	0.150-23	0.751-63	1.731-12	0.13-0.23	-0.33-0.04	0.621-08	1.441-94	2.122-29	2.21-64	0.33-0.74	-1.41-1.67	-1.82-1.83	-1.37-0.52	0.411-15	1.891-64	1.642-61	3.443-61
Theta (45°)	3.843-61	2.942-73	2.741-82	0.65-0.14	-0.21-0.37	-0.72-1.17	-1.31-1.12	-0.86-0.34	0.160-79	1.741-82	0.880-58	1.042-12	2.231-23	1.842-32	2.392-73	2.562-28	1.530-45	-0.91-1.85	-1.55-0.02	1.241-25	0.750-68	0.781-48	2.022-75	3.123-73
Theta (52.5°)	4.244-32	3.663-27	2.811-88	1.40-61	0.830-02	-0.22-0.95	-1.01-0.4	0.110-57	0.480-67	1.281-57	1.491-61	1.882-85	2.912-73	3.052-82	3.012-39	2.521-95	1.410-98	-0.65-1.28	0.520-95	0.531-28	1.180-96	1.150-67	1.262-41	3.714-07
Theta (60°)	4.133-49	3.163-3	2.722-15	1.81-77	2.221-46	0.650-22	-0.67-0.77	0.461-1	1.681-98	1.461-8	1.852-16	2.683-51	3.363-64	3.823-46	3.013-64	2.931-35	0.39-2.35	-1.8-0.66	-0.190-18	0.980-74	0.39-0.47	0.221-3	2.412-23	2.953-55
Theta (67.5°)	3.584-07	4.314-38	3.572-35	1.612-39	2.942-34	1.660-26	-0.48-0.81	-0.421-58	2.222-44	1.791-04	0.961-93	2.753-69	4.284-35	4.393-91	3.913-82	1.931-27	-0.67-3.58	-3.83-3.45	-1.88-1.32	-0.74-0.39	0.540-67	0.191-38	2.672-84	3.213-61
Theta (75°)	2.222-47	2.842-85	2.131-91	1.832-53	1.991-88	2.041-51	0.680-57	0.230-48	2.052-26	2.172	2.362-58	2.552-81	4.044-4	4.53-48	2.462-86	2.863	0.76-1.99	-3.08-0.49	-0.770-12	0.651-24	1.273-33	0.440-7	1.631-65	
Theta (82.5°)	0.861-4	1.340-33	-0.320-61	0.751-71	0.272-05	2.222-83	3.312-15	0.93-0.97	0.461-25	1.772-03	2.882-61	2.742-83	3.713-91	4.023-43	2.952-77	3.43-04	3.12-34	0.190-39	0.03-0.25	0.59-0.23	0.870-5	1.640-15	-0.51-08	2.581-08
Theta (90°)	-2.10-22	-0.380-23	1.382-26	2.011-62	1.073-09	2.644-1	4.163-68	3.03-0.6	-0.190-89	1.841-98	3.33-98	3.983-33	2.783-44	2.93-26	3.072-53	2.842-66	3.073-25	3.392-43	3.052-4	1.771-79	1.280-25	-0.040-73	-0.18-0.07	-0.63-2.74
Theta (97.5°)	-4.84-2.27	-4.27-1.56	1.292-51	2.451-91	1.253-49	2.743-81	4.043-43	2.970-43	1.530-56	2.132-2	2.322-52	3.684-05	2.63-54	3.273-54	2.31-96	2.030-24	0.672-63	3.85-36	3.710-91	1.371-49	2.232-01	1.571-06	-0.71-1.61	-2.35-3.4
Theta (105°)	-1.9-3.6	-4.55-5.55	-2.390-96	1.921-03	2.364-2	3.653-66	3.462-85	2.01-0.06	1.990-37	0.70-99	1.862	3.094-24	2.933-17	3.083-18	2.761-95	0.1-0.63	-0.791-84	3.212-99	3.931-42	0.13-1.88	-0.810-5	1.670-79	-0.99-1.09	0.75-0.34
Theta (112.5°)	-1.51-2.28	-1.83-0.47	-0.38-0.5	-1.320-31	2.474-26	3.813-23	0.671-139	-2.171-12	1.33-1.18	0.381-11	2.22-32	2.453-13	2.681-79	1.911-5	1.741-83	0.661-136	-0.780-29	0.981-02	3.343-81	0.78-0.82	-0.78-0.04	-2.51-1.06	-1.46-1.8	-0.91-0.32
Theta (120°)	-3.31-4.28	-1.04-1.64	-2.47-0.88	-0.180-39	0.711-42	1.910-85	-0.2-3.94	-3.89-0.92	0.480-38	-0.941-96	2.311-47	1.82-43	1.41-1.18	-1.63-0.35	1.730-24	-0.62-1.9	-0.650-05	-0.760-1	-0.340-69	-0.91-3.56	-2.13-3.92	-2.040-06	-2.11-3.71	-1.01-1.05
Theta (127.5°)	-0.81-1	0.62-0.24	-1.361-13	-0.520-8	0.710-15	-2.28-3.35	-4.39-5.59	-4.45-0.49	-0.36-0.95	-0.230-62	1.952-07	2.552-69	2.482-17	2.271-51	0.841-52	-2.81-107	-1.21-1.65	-2.43-6.08	-3.01-0.82	-1.14-3.08	0.32-7.9	-0.54-1.64	-3.82-3.73	-0.471-16
Theta (135°)	-1.5-1.15	-0.14-1.64	-1.030-59	0.75-0.09	-1.36-1.52	-2.71-4.93	-6.37-4.23	-2.29-2.05	-2.05-1.36	-1.78-0.22	0.390-7	0.81-91	2.221-31	0.32-0.18	-1.02-4.07	-6.1-3.71	-2.81-2.64	-2.31-4.49	-4.71-33	-1.14-7.13	-0.67-1.27	-2.71-2.74	-4.04-6.4	-4.99-3.58
Theta (142.5°)	-3.09-2.05	-2.67-1.67	-2.51-1.08	0.170-4	-0.41-2.18	-3.94-6.31	-6.85-5.94	-3.85-2.74	-3.74-5.7	-6.34-4.9	-3.06-1.61	-0.95-2.02	-1.81-1.84	-3.08-2.88	-3.08-4.29	-7.31-8.78	-11.1-6.51	-5.7-3.27	-2.22-0	-0.83-4.14	-3.73-2.05	-1.36-1.06	-1.21-2.5	-1.58-1.61
Theta (150°)	-1.43-1.92	-0.79-0.23	-0.22-1.7	-3.98-4.19	-3.52-4.18	-4.16-4.71	-4.62-3.42	-3.27-3.5	-3.66-3.88	-4.5-17	-4.48-3.38	-3.68-4.87	-5.86-5.36	-3.49-3.48	-2.82-0.65	-1.03-2.76	-4.38-7.12	-8.39-5.34	-4.84-3.68	-2.3-3.22	-2.93-2.83	-3.16-3.63	-2.97-1.92	-0.490-29
Theta (157.5°)	-0.84-2.01	-1.69-1.35	-0.99-1.51	-2.36-2.85	-3.01-3.04	-3.61-4.78	-5.51-5.72	-5.82-5.7	-4.48-4.29	-3.77-2.6	-2.13-1.65	-2.64-3.7	-4.39-5.68	-6.14-3.8	-2.34-2.05	-2.62-3.4	-5.99-9.08	-10.57-8.83	-5.66-2.43	-2.17-2.77	-3.78-4.58	-2.77-1.16	-0.320-92	2.091-36
Theta (165°)	-2.78-2.77	-3.42-3.78	-4.13-4.76	-5.46-5.76	-5.62-5.25	-5.12-5.23	-5.32-5.67	-6.58-7.1	-6.76-7.59	-4.85-4.95	-3.97-2.87	-2.1-2.76	-4.31-5.3	-5.25-6.25	-7.66-8.89	-8.18-8.79	-10.21-8.62	-7.31-1.6	-3.59-2.92	-2.49-1.92	-1.36-1.06	-1.21-2.5	-1.58-1.61	-2-2.57
Theta (172.5°)	-5.92-6.29	-5.67-5.52	-5.52-5.8	-5.66-5.9	-5.6-5.74	-5.92-6.54	-7.67-7.87	-6.96-6.16	-5.45-5.61	-6.27-6.5	-6.71-7.2	-6.67-5.6	-4.48-4.22	-4.34-4.74	-5.13-5.75	-5.38-4.89	-4.88-4.6	-4.14-0.5	-3.8-3.4	-3.08-2.76	-2.41-3.08	-4.85-5.51	-6.29-6.81	-6.15-5.35
Theta (180°)	-10.38-10.47	-10.86-10.34	-9.67-9.08	-8.81-8.29	-8.19-8.09	-7.99-8.14	-8.32-8.95	-9.03-9.93	-10.17-10.7	-10.27-9.55	-9.46-9.19	-8.68-7.76	-7.03-6.66	-6.22-5.95	-5.81-5.35	-5.07-4.77	-4.93-4.85	-4.55-4.54	-4.72-5.01	-5.83-6.3	-7.27-8.24	-9.36-10.04	-10.42-11.25	-9.89-9.73
Freq(Hz)	6.955GPol.	Theta-1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DG(dB)	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°)	-1.28-0.68	-0.410-05	0.560-5	0.570-62	0.710-93	1.251-36	1.291-4	1.381-23	0.950-38	-0.177-83	-1.62-2.16	-2.64-2.43	-1.46-0.53	0.190-52	0.640-6	0.81-2	1.781-94	2.021-87	1.541-41	1.531-05	0.540-13	-0.51-1.03	-1.79-2.26	-2.87-2.2
Theta (7.5°)	-0.83-0.53	-0.04-0.07	0.20-37	0.650-79	1.31-57	1.871-17	1.751-81	1.531-17	0.450-31	-1.17-2.19	-3.13-3.97	-3.82-3.01	-1.71-0.74	-0.030-31	0.530-65	0.610-57	0.861-1	1.391-48	1.411-37	1.561-34	1.331-08	0.480-1.04	-0.69-1.25	-1.65-1.46
Theta (15°)	-0.49-0.06	-0.10-1.02	-0.270-25	-0.040-67	1.061-17	1.291-31	1.311-18	0.810-16	-0.571-04	-2.073-73	-3.51-5.97	-4.971-04	-2.861-91	-1.03-0.37	0.30-91	1.010-86	1.011-33	2.192-19	2.831-83	1.591-72	1.340-92	0.570-43	0.050-49	
Theta (22.5°)	0.570-27	0.2-0.36	-0.45-0.34	-0.53-0.77	-0.81-0.54	0.071-0	-0.15-0.17	-0.43-0.78	-1.23-1.94	-2.89-4.34	-5.07-4.67	-3.91-3.73	-3.41-2.64	-1.97-1.07	-0.65-0.64	-0.73-0.53	-0.220-28	0.750-88	1.081-78	2.122-53	2.592-49	2.351-68	0.90-9	0.991-05
Theta (30°)	1.280-31	0.451-13	0.370-33	-0.020-59	-0.89-0.84	-1.31-1.16	-1.69-1.56	-1.96-2.47	-2.58-3	-3.9-4.24	-3.82-2.92	-2.44-2.57	-2.92-3.35	-3.33-2.01	-1.22-1.72	-1.89-1.53	-1.07-0.57	-0.150-49	0.991-07	1.321-72	2.112-57	2.872-62	2.191-73	1.011-6
Theta (37.5°)	1.10-44	0.020-53	0-0.06	-0.63-1.57	-2.38-3.43	-3.82-3.07	-2.29-2.04	-2.16-2.7	-3.18-3.2	-3.73-3.96	-3.52-3.03	-2.38-2.37	-2.78-2.53	-2.25-1.4	-1.81-1.39	-0.930-01	0.270-38	1.251-48	1.070-67	0.951-51	2.282-74	3.22-99	2.312-2	1.250-65
Theta (45°)	0.80-49	-1.39-0.46	-1.33-1.62	-1.69-1.54	-2.03-1.98	-2.15-2.16	-1.92-1.95	-2.11-2.47	-3.48-4.15	-3.23-3.31	-2.92-2.26	-2.15-2.17	-2.62-3.23	-2.48-3.03	-2.66-2.91	-2.87-1.21	0.202-79	1.140-79	0.830-99	1.020-53	0.551-09	2.413-44	3.963-3	2.311-36
Theta (52.5°)	2.281-77	0.36-0.39	-0.73-1.39	-1.18-1.12	-1.61-1.31	-0.110-76	0.950-63	-0.2-0.7	-0.87-1.92	-3.51-4.84	-4.64-4.46	-5.77-4.71	-7.41-6.53	-4.31-4.78	-3.72-3.42	-2.63-0.53	0.371-09	1.491-34	1.542-01	1.661-66	1.471-2	1.822-13	1.882-21	2.32-33
Theta (60°)	1.931-61	0.540-22	-0.13-0.84	-0.94-1.88	-1.97-1.78	-0.671-0.14	-0.15-0.86	-1.47-2.05	-2.24-2.61	-3.68-5.08	-5.67-6.26	-7.15-6.85	-5.85-5.52	-4.31-3.96	-2.73-3.14	-1.580-5	0.160-29	0.230-66	1.320-72	0.271-0	-0.571-052	1.172-76	2.633-09	2.612-27
Theta (67.5°)	0.090-64	0.390-25	-0.370-34	-0.11-1.47	-2.41-3.48	-3.08-3.31	-4.12-5.59	-6.86-6.41	-6.88-5.41	-5.18-5.39	-6.53-6.61	-7.14-6.69	-6.13-6.71	-5.52-4.9	-3.32-2.92	-1.03-1.06	-0.59-0.65	-1.33-1.17	-0.55-0.31	0.21-1.12	-1.31-0.29	0.062-13	1.8	



Radiated Composite Gain Data of 6GHz

Appendix C

Theta	0(22.5°)	0(30°)	0(37.5°)	0(45°)	0(52.5°)	0(60°)	0(67.5°)	0(75°)	0(82.5°)	0(90°)	0(97.5°)	0(105°)	0(112.5°)	0(120°)	0(127.5°)	0(135°)	0(142.5°)	0(150°)	0(157.5°)	0(165°)	0(172.5°)	0(180°)		
Gain	0.26/-0.33	-1.54/-2.59	-4.46/-6.81	-9.47/-11.27	-13.81/-16.17	-18.37/-18.51	-17.96/-18.37	-15.79/-12.03	-8.47/-5.8	-4.05/-2.81	-2.47/-2.28	-3.69/-3.46	-2.85/-2.49	-2.41/-2.57	-2.78/-3.57	-4.55/-6.33	-9.37/-13.93	-18.37/-18.88	-12.85/-9.24	-7.22/-5.53	-4.53/-4.36	-2.94/-2.35	-1.76/-0.85	-0.31/-0.04
Theta	0(22.5°)	0(30°)	0(37.5°)	0(45°)	0(52.5°)	0(60°)	0(67.5°)	0(75°)	0(82.5°)	0(90°)	0(97.5°)	0(105°)	0(112.5°)	0(120°)	0(127.5°)	0(135°)	0(142.5°)	0(150°)	0(157.5°)	0(165°)	0(172.5°)	0(180°)		
Gain	0.26/-0.33	-1.54/-2.59	-4.46/-6.81	-9.47/-11.27	-13.81/-16.17	-18.37/-18.51	-17.96/-18.37	-15.79/-12.03	-8.47/-5.8	-4.05/-2.81	-2.47/-2.28	-3.69/-3.46	-2.85/-2.49	-2.41/-2.57	-2.78/-3.57	-4.55/-6.33	-9.37/-13.93	-18.37/-18.88	-12.85/-9.24	-7.22/-5.53	-4.53/-4.36	-2.94/-2.35	-1.76/-0.85	-0.31/-0.04



Radiated Composite Gain Data of 6GHz

Appendix C

Theta (°)	-6.39/-7.43	-5.78/-8.73	-10.58/-8.02	-6.37/-6.34	-12.65/-13.37	-11.55/-8.04	-7.41/-8.07	-5.41/-2.72	-1.72/-2.96	-3.57/-2.64	-0.81/-2.1	-2.01/-0.99	0.54/0.05	0.08/-1.05	-4.23/-4.88	-6.14/5.5	-11.23/-16.41	-15.84/-18.06	-9.21/-6.84	-9.68/-12.85	-8.96/-7.62	-6.61/9.75	-12.22/-2.33	-3.85/-1.5
Theta (135°)	-6.87/-7.43	-6.52/-9.95	-9.54/-8.03	-10.08/-14.17	-14.8/-13.81	-12.84/-14.11	-10.96/-9.44	-8.12/-6.98	-5.97/-4.88	-4.83/-3.34	-3.47/-5.09	-3.54/-1.72	-0.54/-1.26	-0.21/-1.07	-3.78/-8.17	-16.16/-9.87	-14.63/-16.41	-11.88/-10.1	-7.99/-5.84	-8.61/-11.45	-6.63/-6.69	-4.99/-4.72	-14.73/-14.3	-10.46/-6.58
Theta (142.5°)	-11.91/-8.89	-9.77/-7.73	-8.49/-10.36	-10.29/-9.59	-9.31/-7.88	-6.09/-7.8	-10.25/-11.76	-10.89/-8.95	-8.31/-8.99	-7.57/-6.74	-6.31/-6.48	-7.95/-6.41	-3.72/-3.55	-4.25/-9.6	-10.1/-15.41	-16.85/-13.88	-17.95/-10.84	-8.96/-6.75	-5.75/-5.25	-8.22/-14.43	-19.44/-10.58	-13.01/-18.3	-11.83/-16	-11.69/-16.78
Theta (150°)	-6.23/-6.96	-7.12/-7.38	-6.98/-8.22	-10.46/-10.76	-8.84/-7.79	-6.41/-6.1	-8/-10.8	-13.49/-14.19	-10.97/-7.58	-6.47/-6.35	-6.03/-5.27	-5.64/-7.7	-9.99/-8.03	-6.04/-7.15	-10.59/-14.4	-19.12/-16.87	-12.66/-11.32	-8.93/-7.92	-8.68/-7.85	-8.62/-15.71	-14.53/-16.13	-18.61/-18.58	-13.48/-3.89	-6.26/-5.82
Theta (157.5°)	-7.01/-6.47	-17.58/-15.11	-11.14/-8.4	-8.19/-16.7	-13.19/-16.87	-18.43/-16.63	-18.13/-17.4	-13.55/-19.99	-9.43/-8.5	-7.98/-6.81	-6.18/-6.49	-8.35/-12.01	-15.66/-14.02	-10.24/-17.18	-5.89/-7.38	-11.82/-18.19	-18.25/-17.77	-18.91/-19.1	-12.77/-8.26	-7.38/-8.1	-8.11/-9.35	-10.47/-7.49	-5.71/-3.49	-2.33/-5.52
Theta (165°)	-11.19/-11.11	-11.63/-12.36	-12.45/-12.06	-13.76/-16.77	-19.02/-18.67	-18.37/-18.97	-18.66/-19.22	-17.07/-19.99	-17.27/-18.42	-17.02/-17.86	-12.07/-9.5	-8.85/-10.64	-15.32/-18.59	-17.27/-19.04	-17.76/-18.48	-18.81/-19.09	-14.23/-9.09	-6.58/-6.06	-5.83/-5.1	-3.64/-2.52	-2.31/-2.31	-3.44/-4.03	-4.46/-5.25	-7.09/-10.39
Theta (172.5°)	-9.46/-11.88	-12.09/-13.01	-14.06/-15.81	-16.05/-16.23	-12.82/-11.89	-11.79/-13.39	-16.73/-18.58	-18.75/-18	-16.03/-13.76	-13.15/-12.69	-12.44/-12.95	-12.41/-11.4	-10.64/-11.49	-14.12/-18.21	-17.36/-15.38	-11.53/-8.55	-7.49/-6.84	-6.14/-6.06	-5.66/-4.8	-3.64/-2.52	-2.06/-2.46	-3.32/-3.96	-4.88/-5.29	-5.79/-6.98
Theta (180°)	-16.74/-14.29	-16.68/-18	-19.75/-18.47	-16.56/-14.09	-12.11/-11.7	-11.36/-12.1	-12.6/-12.87	-13.19/-14.52	-15.85/-17.12	-17.69/-17.47	-18.67/-19	-19.05/-17.57	-17.17/-19.39	-19.31/-18	-15.96/-12.63	-10.43/-8.91	-8.8/-8.47	-7.36/-6.8	-7.07/-7.34	-7.57/-7.97	-8.92/-11.1	-13.23/-18.21	-17.79/-19.41	-13.67/-14.68
Theta (180°)	Gain	PhiAnt. 2	PhiAnt. 2	PhiAnt. 2	PhiAnt. 2	PhiAnt. 2	PhiAnt. 2	PhiAnt. 2	PhiAnt. 2	PhiAnt. 2	PhiAnt. 2	PhiAnt. 2	PhiAnt. 2	PhiAnt. 2	PhiAnt. 2	PhiAnt. 2	PhiAnt. 2	PhiAnt. 2	PhiAnt. 2	PhiAnt. 2	PhiAnt. 2	PhiAnt. 2	PhiAnt. 2	PhiAnt. 2
Theta (0°)	-8.52/-6.84	-6.64/-4.32	-2.97/-2.68	-2.36/-2.33	-1.81/-1.35	-0.93/-0.7	-0.94/-1.37	-2.09/-2.61	-3.41/-5.47	-6.07/-7.9	-9.78/-11.8	-13.95/-14.89	-11.91/-8.46	-6.16/-5.05	-3.94/-3.16	-2.25/-1.08	-0.53/-0.48	-0.51/-1.26	-1.99/-2.33	-2.44/-3.5	-4.05/-4.92	-6.29/-7.38	-10.48/-14.96	-15.24/-10.86
Theta (7.5°)	-10.33/-7.81	-6.15/-3.72	-2.66/-2.2	-1.61/-1.37	-0.78/-0.69	0.47/-0.56	-0.98/-1.53	-2.31/-2.66	-4.28/-5.47	-7.27/-9.6	-11.63/-13.8	-13.57/-12.47	-9.83/-8.74	-6.65/-6.54	-4.86/-4.2	-3.59/-2.86	-2.12/-1.35	-1.39/-1.62	-2.31/-2.77	-3.04/-3.49	-4.4/-7.6	-6.12/-7.73	-10.44/-15.01	-16.44/-10.39
Theta (15°)	-17.97/-10.76	-7.12/-4.63	-3.44/-3.18	-2.79/-2.1	-1.82/-1.62	-1.45/-1.31	-1.51/-1.95	-2.91/-4.18	-5.41/-5.91	-7.18/-9.77	-11.95/-12.43	-10.97/-9.99	-8.55/-7.26	-6.09/-5.36	-4.67/-3.79	-3.84/-4.06	-3.82/-3.1	-2.14/-2.84	-4.99/-6.36	-7.74/-7.28	-7.91/-9.11	-10.36/-11.86	-14.86/-18.39	-17.78/-18.51
Theta (22.5°)	-13.47/-10.21	-9.23/-7.79	-5.74/-8.43	-4.8/-4.2	-3.13/-2.5	-1.84/-2.31	-3.19/-3.76	-4.75/-6.12	-8.2/-9.71	-10.67/-11.92	-11.3/-9.49	-8.64/-8.17	-7.27/-6.4	-5.42/-4.85	-4.52/-5.18	-6.34/-6.18	-5.24/-4.86	-4.88/-5.96	-7.82/-7.24	-7.81/-7.1	-11.64/-14.55	-18.24/-19.23	-18.25/-18.7	-18.04/-14.99
Theta (30°)	-9.97/-7.69	-4.95/-3.55	-3.66/-3.13	-2.93/-2.89	-2.37/-1.79	-1.63/-1.86	-2.61/-3.6	-5.69/-6.51	-12.61/-18.19	-18.44/-18.52	-14.8/-11.04	-7.5/-6.54	-6.55/-7.4	-7.43/-6.49	-5.95/-6.72	-6.99/-6.56	-6.71/-7.14	-5.95/-4.17	-7.34/-5.45	-7.53/-8.42	-9.24/-10.16	-13.14/-16.24	-16.85/-17.96	-16.44/-10.39
Theta (37.5°)	-8.15/-8.77	-7.86/-5.17	-4.6/-5.43	-4.3/-3.21	-3.58/-4.34	-5.63/-6.34	-7.27/-9.37	-11.1/-12.68	-13.23/-12.77	-11.59/-10.2	-9.43/-9.14	-10.17/-10.3	-9.11/-9.9	-11.45/-11.37	-9.82/-7.65	-6.66/-5.24	-3.98/-3.63	-3.43/-4.6	-5.75/-6.1	-7.64/-10.22	-11.06/-10.83	-11.81/-14.78	-11.23/-10.19	-13.99/-17.01
Theta (45°)	-11.12/-8.54	-10.84/-7.19	-6.43/-5.7	-3.3/-3.21	-3.58/-4.34	-5.63/-6.34	-7.27/-9.37	-11.1/-12.68	-13.23/-12.77	-11.59/-10.2	-9.43/-9.14	-10.17/-10.3	-9.11/-9.9	-11.45/-11.37	-9.82/-7.65	-6.66/-5.24	-3.98/-3.63	-3.43/-4.6	-5.75/-6.1	-7.64/-10.22	-11.06/-10.83	-11.81/-14.78	-11.23/-10.19	-13.99/-17.01
Theta (52.5°)	-9.09/-4.53	-10.84/-7.19	-6.43/-5.7	-3.3/-3.21	-3.58/-4.34	-5.63/-6.34	-7.27/-9.37	-11.1/-12.68	-13.23/-12.77	-11.59/-10.2	-9.43/-9.14	-10.17/-10.3	-9.11/-9.9	-11.45/-11.37	-9.82/-7.65	-6.66/-5.24	-3.98/-3.63	-3.43/-4.6	-5.75/-6.1	-7.64/-10.22	-11.06/-10.83	-11.81/-14.78	-11.23/-10.19	-13.99/-17.01
Theta (60°)	-8.58/-6.51	-7.84/-6.47	-7.53/-9.31	-8.8/-10.93	-11.09/-9.2	-7.38/-7.68	-7.71/-8.79	-10.9/-11.3	-11.38/-14.29	-17.07/-17.39	-18.83/-19.1	-18.63/-17.91	-14.78/-13.87	-10.71/-7.7	-6.77/-6.42	-4.61/-3.95	-4.32/-4.67	-4.59/-3.9	-3.98/-7.38	-10.39/-12.75	-17.29/-18.67	-16.22/-11.58	-9.36/-11.45	-11.16/-10.98
Theta (67.5°)	-6.48/-6.87	-9.1/-12.03	-10.24/-11.08	-9.96/-10.47	-10.36/-11.58	-11.65/-11.72	-12.28/-15.16	-17.27/-18.57	-18.47/-18.49	-17.5/-18.36	-16.9/-14.6	-18.11/-19.7	-12.71/-11.6	-11.91/-9.99	-10.26/-7.3	-4.19/-2.66	-3.04/-3.04	-4.99/-5	-4.21/-7.09	-9.08/-19.04	-17.97/-17.8	-15.25/-18.82	-11.24/-13.91	-11.93/-8.76
Theta (75°)	-6.22/-7.26	-10.23/-9.97	-12.89/-11.17	-14.88/-15.06	-12.44/-10.91	-10.86/-10.66	-12.55/-12.99	-17.66/-18.92	-16.9/-15.76	-12.56/-10.99	-13.78/-18.14	-12.51/-10.59	-17.56/-18.61	-17.37/-14.72	-9.71/-6.31	-3.71/-5.58	-3.41/-5.28	-5.57/-8.36	-9.18/-16	-18.87/-18.74	-13.99/-14.83	-11.51/-17.91	-13.32/-7.89	
Theta (82.5°)	-16.22/-15.43	-11.49/-12.59	-13.86/-10.62	-13.77/-12.08	-12.69/-16.49	-13.88/-16.57	-16.63/-15.3	-15.51/-17.28	-14.16/-13.63	-11.88/-12.05	-12.84/-11.36	-11.94/-14.3	-8.39/-7	-11.68/-15.47	-15.85/-17.2	-12.06/-6.39	-4.23/-2.73	-3.65/-5.1	-4.13/-3.89	-8.28/-10.55	-14.52/-19.16	-18.88/-18.53	-18.57/-17.98	-18.42/-18.13
Theta (90°)	-10.92/-10.57	-18.99/-18.9	-16.43/-17.39	-18.51/-10.83	-18.36/-14.59	-14.03/-18.3	-17.19/-12.24	-15.49/-17.39	-17.02/-8.62	-7.62/-10.25	-12.81/-14.29	-12.2/-8.66	-9.53/-6.84	-8.14/-12.64	-18.25/-15.73	-2.62/-2.9	-4.33/-5.3	-7.47/-18.22	-18.19/-18.21	-18.11/-16.84	-16.87/-12.72	-15.67/-12.72	-16.54/-11.33	
Theta (97.5°)	-17.68/-18.56	-19.09/-18.59	-19.18/-17	-17.33/-13.51	-13.92/-15.59	-15.68/-10.21	-9.59/-10.21	-18.17/-16.36	-18.69/-12.3	-16.93/-10.91	-12.88/-11.67	-8.54/-5.99	-6.17/-7.6	-13.31/-10.12	-12.86/-15.87	-6.64/-4.82	-5.42/-5.36	-4.11/-11.28	-12.03/-18.25	-18.77/-14.22	-19.12/-13.32	-13.21/-15.56	-17.67/-17.63	
Theta (105°)	-10.33/-11.69	-12.78/-17.3	-17.97/-11.22	-9.33/-13.63	-17.79/-16.84	-18.47/-18.62	-15.9/-14.28	-15.86/-12.96	-18.94/-11.3	-11.52/-13.65	-10.79/-14.16	-14.54/-15.44	-10.42/-5.67	-7.38/-6.84	-18.78/-13.29	-19.09/-14.37	-7.42/-6.68	-9.42/-8.36	-8.03/-10.14	-17.63/-11.04	-16.56/-15.82	-17.02/-14.91	-6.77/-9.94	-16.52/-17.44
Theta (112.5°)	-11.63/-8.26	-10.62/-9.53	-13.53/-13.71	-8.39/-8.46	-16.87/-15.18	-14.67/-16.75	-15.82/-12.06	-11.07/-11.71	-12.54/-9.17	-15.28/-16.71	-12.68/-10.08	-13.27/-9.35	-12.56/-9.67	-14.84/-11.93	-8.11/-10.92	-3.45/-3.29	-7.69/-7.1	-4.6/-6.3	-18.71/-14.3	-18.13/-10.62	-16.19/-10.59	-7.44/-7.21	-4.54/-12.67	
Theta (120°)	-15.69/-9.84	-10.61/-13.14	-15.49/-15.78	-18.95/-17.43	-15.39/-13.02	-11.81/-13.27	-18.14/-17.18	-16.38/-18.87	-11.92/-18.72	-18.91/-12.53	-13.49/-13.67	-17.22/-12.44	-9.51/-7.89	-12.07/-11.34	-13.38/-18.54	-11.92/-9.53	-4.57/-4.92	-7.33/-11.01	-8.29/-6.33	-7.22/-10.57	-11.92/-12.58	-12.47/-7.56	-11.06/-7.63	-5.58/-9.69
Theta (127.5°)	-18.26/-18.98	-17.32/-19.14	-13.07/-15.77	-19.21/-17.99	-18.3/-18.26	-15.41/-8.78	-9.96/-13.21	-15.15/-13.35	-12.25/-13.17	-14.64/-17.17	-16.75/-19.21	-11.9/8.3	-8.89/-7.17	-13.88/-6.48	-6.47/-10.94	-17.28/-13.85	-13.27/-7.5	-12.45/-14.29	-9.16/-3.26	-6.72/-9	-8.79/-16.52	-14.93/-11.24	-19.45/-9.35	-11.61/-14.83
Theta (135°)	-16.63/-13.76	-16.43/-14.95	-10.17/-14.71	-12.82/-18.14	-11.2/-10.43	-18.01/-18.31	-13.48/-8.73	-7.8/-10.33	-11.46/-11.48	-13.31/-14.36	-18.82/-17.7	-17.04/-12.57	-12.28/-9.66	-15.47/-16.27	-15.1/-10.05	-16.11/-9.3	-3.93/-7.7	-7.05/-10.33	-8.96/-2.94	-5.88/-8.99	-9.71/-12.26	-15.26/-17.7	-14.23/-12.47	-13.09/-17.26
Theta (142.5°)	-14.51/-15.39	-12.86/-10.31	-6.89/-5.9	-7.08/-9.42	-13.22/-16.82	-13.81/-9.2	-8.6/-11.57	-14.19/-12.02	-11.49/-12.47	-18.47/-17.65	-17.97/-18.62	-10.29/-13.68	-12.37/-8.81	-9.73/-8.78	-7.84/-9.99	-6.62/-8.47	-7.41/9.35	-7.04/-2.75	-5.54/-12.83	-9.91/-13.81	-17.32/-14.16	-8.28/-6.37	-9.29/-13.36	
Theta (150°)	-4.59/-3.63	-4.32/-6.89	-8.42/-8.57	-9.27/-10.25	-9.56/-8.68	-8.77/-11.82	-14.39/-12.84	-12.64/-11.3	-9.96/-13.86	-18.6/-16.57	-12.39/-13.5	-17.33/-9.26	-10.19/-11.53	-7.22/-8.01	-10.54/-8.12	-8.12/-14.73	-12.94/-9.72	-7.93/-13.81	-8.41/9.4	-6.42/-12.49	-17.09/-13.55	-11.02/-12.14	-15.74/-15.94	-8.58/-0.57
Theta (157.5°)	-5.06/-7.24	-10.47/-12.61	-18.44/-11.62	-12.47/-17.12	-19.11/-10.63	-8.89/-10.7	-11.83/-10.91	-9.14/7.8	-9.43/-10.76	-13.91/-19.55	-18.16/-13.1	-10.64/-10.88	-11.29/-11.78	-13.56/-17.5	-14.18/-8.25	-1.81/-12.4	-14.41/-10.4	-6.94/-5.89	-10.83/-9.82	-12.01/-18.03	-19.04/-15.19	-11.65/-11.83	-12.68/-10.65	-7.75/-5.45
Theta (165°)	-17.53/-13.96	-13.49/-12.12																						



Radiated Composite Gain Data of 6GHz

Appendix C

Theta	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(0°)	-18.78/-17.89	-17.11/-16.72	-15.43/-14.22	-13.56/-12.95	-12.17/-11.41	-11.93/-12.16	-12.43/-13.08	-13.84/-14.26	-14.63/-14.63	-14.43/-14.25	-14.55/-14.15	-13.32/-12.81	-12.49/-12.3	-12.59/-12.77	-13.47/-13.41	-13.52/-13.86	-13.46/-12.97	-11.71/-11.24	-12.27/-13.66	-15.52/-19.55	-19.37/-19.07	-19.33/-17.8	-18.07/-18.42	-18.04/-18.41	
Theta(5°)	-2.72/-3.2	-4.12/-5.53	-7.2/-11.7	-12.11/-16.38	-18.88/-18.26	-12.99/-8.91	-7.83/-6.67	-5.84/-4.99	-4.39/-3.94	-3.51/-3.27	-3.12/-3.1	-3.08/-3.33	-3.61/-4.19	-5.16/-6.4	-8.24/-10.78	-14.59/-18.21	-17.93/-15.32	-13.41/-11.09	-8.32/-7.14	-6.4/-7.8	-3.69/-3.07	-2.54/-1.99	-2.01/-1.96	-1.82/-1.7	
Theta(10°)	-3.13/-3.71	-4.62/-5.82	-7.69/-10.2	-14.16/-17.73	-17.31/-14.17	-11.15/-8.33	-6.71/-5.84	-5.17/-4.74	-4.34/-4.09	-3.94/-3.68	-3.39/-2.99	-2.98/-2.95	-3.33/-4	-5.14/-6.53	-8.64/-11.57	-15.67/-17.91	-18.51/-16.23	-13.11/-11.15	-9.61/-7.88	-6.56/-5.18	-4.57/-3.82	-3.28/-2.68	-2.56/-2.31	-2.12/-2.78	
Theta(15°)	-3.51/-4.3	-5.47/-7.09	-9.63/-13.58	-18.74/-19.23	-18.17/-16.42	-11.37/-9.2	-5.79/-4.37	-3.51/-2.83	-2.52/-2.68	-2.94/-3.3	-3.31/-3.15	-2.94/-2.81	-3.24/-3.88	-5.23/-7.07	-9.33/-13.61	-17.84/-18.4	-16.91/-14.23	-13.67/-13.07	-10.61/-8.22	-6.21/-5.27	-4.81/-4.63	-3.15/-3.47	-3.21/-2.92	-2.29/-2.91	
Theta(20°)	-3.14/-4.33	-5.76/-6.79	-9.06/-13.22	-19.29/-18.92	-19.14/-14.15	-11.67/-11.7	-8.2/-6.47	-4.86/-3.78	-2.84/-2.52	-2.51/-2.56	-2.65/-2.73	-2.51/-2.56	-3.33/-5.06	-7.59/-10.13	-12.81/-15.01	-18.05/-18.21	-17.65/-13.32	-12.85/-9.22	-7.55/-6.47	-5.22/-4.17	-3.52/-3.25	-3.06/-2.68	-2.19/-1.98	-1.45/-2.16	
Theta(25°)	-2.83/-3.79	-5.94/-9.25	-10.56/-13.24	-16.51/-15.03	-12.82/-10.06	-7.86/-6.26	-4.91/-4.21	-3.61/-3.52	-3.76/-4.58	-5.11/-4.77	-4.55/-4.99	-4.66/-4.24	-5.05/-6.86	-8.47/-9.8	-10.47/-12.31	-14.16/-15.06	-15.18/-13.02	-10.53/-8.2	-6.46/-5.34	-4.58/-3.81	-3.27/-2.44	-1.94/-2.03	-2.39/-2.8	-2.59/-2.8	
Theta(30°)	-4.82/-5.14	-7.51/-10.22	-11.86/-15.55	-17.61/-12.64	-8.95/-6.15	-4.58/-3.76	-3.31/-3.03	-2.81/-2.43	-2/-2.4	-3.29/-3.06	-3.58/-4.68	-3.61/-4.17	-7.36/-9.69	-11.55/-12.84	-12.12/-11.18	-11.52/-11.83	-12.27/-11.07	-8.91/-6.58	-5.36/-5.12	-3.92/-2.71	-1.68/-2.04	-1.92/-1.45	-1.92/-2.49	-2.86/-4.22	
Theta(35°)	-3.03/-4.21	-7.55/-11.27	-12.71/-13.88	-11.63/-9.41	-7.51/-5.95	-5.46/-5	-4.57/-3.7	-3.2/-2.67	-2.16/-2.38	-4.14/-4.78	-5.61/-7.29	-5.81/-5.33	-6.71/-7.05	-10.08/-12.21	-9.66/-8.12	-7.71/-7.88	-7.01/-4.94	-4.36/-4.41	-4.39/-4.4	-4.12/-4.28	-4.02/-3.12	-2.69/-1.14	-0.54/-1.07	-0.79/-1.65	
Theta(40°)	-5.05/-7.14	-11.53/-13.27	-14.19/-13.85	-11.92/-10.23	-8.33/-6.57	-5.46/-4.67	-4.32/-4.12	-3.81/-3.95	-3.65/-3.27	-4.81/-6.86	-7.91/-8.42	-6.88/-5.97	-6.51/-9.55	-14.29/-10.18	-6.86/-7.25	-7.26/-8.32	-7.66/-6.44	-4.79/-4.23	-4.15/-4.72	-6.52/-6.25	-4.93/-3.12	-2.05/-0.86	0.34/0.53	-0.4/-3.43	
Theta(45°)	-4.93/-8.56	-11.02/-12.62	-11.53/-13.84	-17.91/-19.29	-13.86/-9.79	-7.87/-7.14	-7.39/-7.69	-7.27/-5.98	-5.35/-4.1	-4.13/-6.1	-8.55/-10.68	-10.32/-8.77	-7.92/-9.82	-18.07/-18.31	-10.73/-9.97	-8.32/-8.5	-7.76/-6.94	-5.87/-5.75	-6.54/-7.57	-7.39/-6.4	-4.74/-2.55	-3.88/-2.31	-3.88/-2.31	-3.63/-5.11	
Theta(50°)	-6.02/-11.71	-14.11/-17.49	-17.24/-17.89	-19.43/-13.8	-9.74/-7.6	-6.49/-5.87	-6.21/-6.51	-6.85/-6.81	-5.94/-6.06	-6.51/-7.98	-10.01/-11.64	-10.88/-9.04	-8.68/-10.78	-14.61/-15.18	-15.65/-18.73	-16.78/-10.9	-7.89/-6.1	-5.73/-5.65	-5.34/-4.61	-5.85/-6.85	-9.69/-9.41	-10.07/-6.07	-5.06/-4.22	-3.55/-5.92	
Theta(55°)	-9.72/-17.72	-14.54/-16.77	-15.99/-18.76	-18.03/-13.31	-9.26/-8.18	-8.13/-8.22	-8.12/-9.96	-7.51/-6.63	-5.62/-6.11	-6.4/-8.7	-12.13/-17.41	-14.93/-8.95	-7.11/-7.13	-12.02/-19.12	-15.07/-15.86	-14.58/-11.63	-8.51/-6.43	-6.33/-5.34	-3.34/-3.45	-4.71/-5.6	-7.81/-9.4	-11.88/-7.3	-5.46/-4.49	-4.5/-7.11	
Theta(60°)	-14.37/-17.85	-15.52/-18.66	-12.39/-16.65	-18.88/-14.49	-9.73/-10.18	-9.65/-10	-10.06/-9.75	-8.77/-8.4	-6.33/-6.08	-6.71/-7.88	-11.16/-16.8	-18.63/-11.04	-7.06/-7.53	-8.52/-15.76	-18.85/-15.77	-10.58/-10.71	-8.14/-7.83	-6.51/-5.49	-4.24/-4.84	-5.97/-7.82	-9.93/-9.59	-8.57/-8.01	-5.56/-5.02	-6.78/-11.1	
Theta(65°)	-15.35/-18.5	-14.37/-19.39	-13.83/-17.18	-18.29/-18.5	-15.96/-15.94	-11.97/-10.14	-8.72/-8.13	-7.46/-8.56	-7.9/-7.42	-7.33/-8.63	-12.38/-14.82	-18.47/-18.14	-11.66/-9.99	-10.15/-18.73	-18.64/-18.86	-11.92/-12.29	-9.89/-9.43	-8.42/-6.46	-6.17/-4.67	-7.25/-7.73	-8.81/-8.22	-8.38/-7.81	-8.07/-7.45	-9.68/-13.67	
Theta(70°)	-18.49/-18.12	-17.92/-18.84	-18.54/-18.53	-18.69/-19.17	-19.07/-19.46	-15.38/-11.71	-9.32/-9.2	-9.77/-11.51	-12.29/-10.99	-9.11/-9.71	-10.08/-10.16	-14.89/-17.2	-15.08/-18.1	-12.91/-16.45	-18.65/-14.16	-18.18/-17.17	-11.29/-8.7	-6.68/-4.99	-7.44/-7.07	-4.74/-4.07	-6.36/-5.68	-6.05/-7.18	-7.37/-6.62	-10.94/-18.17	
Theta(75°)	-12.63/-10.82	-18.18/-18.64	-18.18/-18.64	-17.76/-16.9	-17.02/-18.6	-18.14/-13.9	-10.89/-9.19	-10.75/-15.78	-14.55/-17.65	-16.12/-13.1	-11.29/-17.92	-16.99/-6.69	-7.72/-10.81	-8.73/-9.75	-19.18/-18.37	-16.84/-18.08	-12.54/-8.75	-9.25/-9.79	-11.31/-12.43	-11.33/-10.63	-8.73/-7.59	-11.33/-10.63	-8.73/-7.59	-10.23/-13.5	
Theta(80°)	-18.05/-18.96	-19.23/-18.24	-16.41/-18.56	-19.33/-19.22	-17.75/-17.98	-17.44/-15.87	-13.82/-14.27	-18.75/-18.41	-17.41/-18.86	-18.51/-12.03	-9.88/-9.25	-12.12/-18.47	-17.84/-7.63	-12.31/-10.99	-16.38/-17.39	-17.51/-18.45	-18.73/-17.99	-16.22/-13.65	-13.81/-13.98	-16.19/-11.88	-10.78/-10.87	-15.45/-17.76	-12.94/-14.53	-13.43/-15.84	
Theta(85°)	-13.31/-14.29	-19.34/-18.79	-17.12/-11.69	-13.14/-15.96	-19.02/-18.31	-18.75/-18.78	-18.89/-15.17	-11.53/-9.37	-10.61/-14.56	-18.06/-14.21	-8.05/-8.32	-8.37/-19.08	-19.04/-9.89	-8.40/-10.4	-7.02/-9.92	-17.63/-16.39	-13.52/-16.92	-14.73/-12.92	-7.49/-12.63	-13.74/-12.29	-18.51/-14.42	-18.14/-15.24	-12.65/-10.7	-9.18/-16.78	
Theta(90°)	-18.11/-19.15	-12.14/-13.86	-14.11/-11.01	-14.91/-12.45	-8.98/-8.48	-12.13/-15.28	-18.41/-14.46	-10.54/-10.64	-10.55/-11.19	-13.81/-7.73	-4.69/-2.93	-5.85/-11.92	-10.24/-10.69	-13.54/-14.39	-13.57/-17.72	-17.18/-18.78	-15.25/-14.22	-14.71/-16.47	-14.15/-15.35	-18.99/-18.72	-18.44/-14.13	-11.74/-12.59	-15.24/-18.41	-12.29/-13.84	-18.16/-15.61
Theta(95°)	-17.95/-14.8	-18.36/-19.28	-18.72/-16.59	-15.21/-10.55	-9.94/-9.26	-9.01/-10.41	-12.92/-12.95	-10.87/-6.69	-5.06/-6.76	-6.26/-4.9	-3.62/-2.98	-3.85/-4.83	-10.17/-10.18	-11.42/-11.71	-17.85/-19.01	-10.41/-12.05	-12.33/-18.54	-19.49/-17.01	-18.88/-15.37	-17.36/-17.48	-13.43/-12.89	-12.41/-11.51	-11.78/-10.47	-18.82/-18.82	
Theta(100°)	-10.03/-10.27	-11.31/-11.89	-11.33/-10.73	-11.35/-14.45	-13.99/-13.08	-14.77/-18.56	-17.87/-12.88	-7.19/-15.7	-4.78/-5.29	-6.79/-7.7	-7.41/-6.55	-6.41/-10.05	-4.01/-3.56	-4.52/-5.63	-6.16/-6.94	-9.68/-14.15	-18.38/-18.42	-19.12/-17.78	-17.93/-15.05	-11.35/-8.56	-6.83/-5.81	-5.97/-6.87	-8.01/-8.77	-9.19/-11.52	
Theta(105°)	-18.07/-9.65	-11.85/-12.28	-13.06/-14.28	-15.13/-14.04	-12.97/-12.8	-13.08/-11.02	-9.04/-8.29	-8.48/-10.55	-15.86/-18.25	-17.43/-14.12	-12.01/-10.69	-13.54/-14.39	-13.57/-17.72	-18.16/-18.78	-15.25/-14.22	-17.71/-16.47	-14.15/-15.35	-18.99/-18.72	-18.44/-14.13	-11.74/-12.59	-15.24/-18.41	-12.29/-13.84	-13.57/-18.01	-15.78/-10.74	
Theta(110°)	-18.65/-18.94	-18.25/-18.54	-17.33/-17.43	-14.33/-14.59	-14.91/-16.28	-14.82/-10.76	-8.22/-6.91	-6.48/-6.45	-5.97/-5.49	-4.76/-4.01	-3.79/-3.04	-2.03/-2.07	-3.14/-3.4	-4.21/-6.68	-11.36/-15.93	-17.53/-14.53	-10.76/-10.19	-12.34/-15.94	-17.73/-12.72	-9.44/-9.41	-10.29/-11.59	-10.34/-7.05	-5.97/-7.59	-11.71/-16.12	
Theta(115°)	-16.33/-14.1	-12.76/-12.43	-13.35/-15.15	-18.11/-18.84	-19.09/-17.28	-14.11/-11.97	-10.85/-10.76	-9.13/-8.1	-8.01/-8.4	-7.85/-9.53	-6.16/-6.94	-4.01/-3.56	-4.52/-5.63	-6.16/-6.94	-9.68/-14.15	-18.38/-18.42	-19.12/-17.78	-17.93/-15.05	-11.35/-8.56	-6.83/-5.81	-5.97/-6.87	-8.01/-8.77	-9.19/-11.52	-16.65/-14.8	
Theta(120°)	-13.11/-10.63	-10.28/-10.06	-10.39/-10.15	-10.36/-10.57	-10.83/-10.75	-9.43/-11.27	-9.34/-9.25	-9.29/-9.01	-8.41/-9.78	-7.87/-5.3	-6.62/-5.79	-4.85/-4.24	-6.91/-7.8	-9.59/-10.71	-11.11/-11.06	-9.12/-9.66	-4.71/-6.16	-6.16/-6.06	-6.35/-7.81	-9.17/-8.13	-18.21/-18.86	-16.62/-17.34	-18.21/-18.86		
Theta(125°)	-18.16/-18.99	-18.11/-18.52	-18.24/-18.09	-18.22/-17.71	-17.64/-17.93	-16.28/-14.93	-14.69/-15.61	-16.31/-17.46	-16.56/-15.28	-14.45/-13.77	-13.44/-12.88	-12.61/-12.52	-12.62/-13.31	-14.79/-16.46	-17.12/-17.72	-17.78/-17.93	-17.15/-17.44	-17.89/-15.27	-12.71/-13	-14.32/-16.84	-17.84/-18.58	-18.74/-17.87	-18.54/-18.63	-17.57/-18.3	
Theta(130°)	-6.05/-5.18	-4.67/-4.17	-4.02/-3.72	-3.47/-3.65	-3.49/-3.41	-3.61/-4.35	-5.32/-6.7	-8.86/-11.25	-14.41/-19.05	-18.18/-18.03	-16.85/-13.38	-10.18/-8.08	-6.61/-5.7	-5.04/-4.86	-4.73/-4.79	-5.07/-5.37	-6.28/-7.28	-8.52/-10.07	-10.47/-11.97	-14.31/-17.68	-18.55/-18.13	-18.03/-15.13	-12.31/-11.46	-9.43/-6.99	
Theta(135°)	-7.56/-7.28	-7.45/-7.16	-7.63/-7	-6.19/-6.78	-6.88/-7.83	-9.25/-11.86	-13.67/-16.12	-18.14/-18.34	-18.72/-18.21	-17.46/-14.38	-12.74/-10.34	-8.44/-7.11	-5.72/-4.55	-3.57/-2.96	-2.23/-1.96	-3.14/-1.29	-1.25/-1.23	-1.53/-2.21	-3.41/-19	-5.99/-7.77	-9.89/-12.23	-17.52/-18.21	-17.19/-13.01	-10.1/-8	
Theta(140°)	-11.03/-10.52	-8.49/-7.93	-7.39/-7.22	-7.14/-7.5	-7.36/-7.25	-7.33/-8.1	-8.66/-9.72	-11.62/-13.12	-13.83/-13.42	-12.05/-10.62	-9.07/-6.7	-6.75/-5.78	-4.91/-4.15	-3.53/-3.1	-2.41/-1.97	-1.35/-0.84	-0.51/-0.57	-1.39/-2.02	-2.63/-3.39	-4.23/-6.3	-10.27/-14.51	-17.66/-17.14	-16.16/-16.72		
Theta(145°)	-9.46/-7.18	-5.34/-4.45	-4.15/-3.92	-3.83/-4.22	-4.05/-4.35	-4.63/-5.16	-5.58/-5.76	-6.03/-4.75	-9.97/-12.72	-13.57/-12.8	-10.27/-8.48	-7.11/-5.79	-4.45/-3.86	-4.23/-4.33	-3.51/-2.88	-0.89/-0.25	0.20/-1.5	-0.41/-0.05	-1.65/-2.2	-2.97/-3.64	-4.73/-7.14	-10.27/-14.4	-17.24/-17.92	-18	



Radiated Composite Gain Data of 6GHz

Appendix C

Theta (°)	Phi (°)	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(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(15°)	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(15°)	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(15°)	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°)



Radiated Composite Gain Data of 6GHz

Appendix C

Theta	Phi	Phi(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°)	-1.89-1.79	-1.38-1.46	-2.31-1.61	-1.47-1.09	-1.51-2.61	-4.47-6.02	-8.75-10.64	-9.47-9.13	-10.12-10.55	-12.15-12.38	-12.79-13.64	-13.97-14.12	-16.88-17.97	-12.27-8.68	-6.43-4.94	-5.79-8.59	-15.49-17.81	-17.05-12.88	-9.28-6.44	-3.79-2.16	-0.78-0.22	-0.30-1	-0.58-0.93	-1.98-2.69
Theta(7.5°)	Phi(7.5°)	-3.19-2.37	-1.12-1.25	-1.39-1.85	-2.56-1.38	-1.79-1.78	-2.91-4	-6.09-7.55	-8.8-10.4	-11.87-14.44	-13.44-12.57	-12.39-11	-10.77-13.2	-13.64-13.56	-11.59-6.68	-4.34-2.96	-3.91-6.52	-8.36-9.18	-7.87-8.29	-9.27-8.53	-5.7-2.46	-0.60-19	-0.30-17	-0.37-127	-3.19-297
Theta(15°)	Phi(15°)	-1.95-3.55	-1.96-1.09	1.26-2.07	-0.45-0.07	-1.01-1.15	-2.25-2.99	-4.78-5.81	-7.51-9.52	-11.43-15.83	-16.43-17.75	-17.11-18.88	-18.58-19.25	-18.65-13.51	-12.38-7.72	-5.86-3.81	-4.92-6.06	-7.14-8.44	-6.96-7.8	-6.38-7.01	-5.09-3.67	-3.37-3.67	-2.92-3.04	-2.75-2.35	-2.78-2.16
Theta(22.5°)	Phi(22.5°)	-0.72-0.59	1.06-2.06	2.05-7.9	0.03-0.75	-2.87-3.12	-4.15-4.24	-4.59-4.79	-5.75-7.7	-9.06-12.18	-13.67-18.89	-16.78-16.05	-15.86-9.32	-5.44-5.11	-4.89-6.12	-5.98-6.46	-7.74-8.59	-10.54-8.52	-7.78-8.06	-7.07-10.68	9.51-4.44	-2.26-3.7	-4.91-4.56	-1.58-4.43	-2.85-2.72
Theta(30°)	Phi(30°)	-0.52-1.46	-0.84-0.48	-1.26-2.55	-2.56-3.19	-5.6-6.25	-7.62-5.42	-5.47-4.06	-3.72-6.55	-7.17-9.54	-9.46-14.24	-14.22-12.72	-14.26-9.3	-5-4.6	-4.65-4.16	-5.72-8.94	-11.79-10.61	-8.6-6.47	-6.31-9.4	-5.97-6.18	-7.6-4.23	-0.12-0.51	-4.57-3.55	-1.7-4.62	-3.31-3.74
Theta(37.5°)	Phi(37.5°)	-1.95-3.55	-1.96-1.09	1.26-2.07	-0.45-0.07	-1.01-1.15	-2.25-2.99	-4.78-5.81	-7.51-9.52	-11.43-15.83	-16.43-17.75	-17.11-18.88	-18.58-19.25	-18.65-13.51	-12.38-7.72	-5.86-3.81	-4.92-6.06	-7.14-8.44	-6.96-7.8	-6.38-7.01	-5.09-3.67	-3.37-3.67	-2.92-3.04	-2.75-2.35	-2.78-2.16
Theta(45°)	Phi(45°)	-3.34-2.14	-0.63-0.54	-0.93-0.56	-1.6-1.8	-3.9-3.17	-7.49-6.9	-8.14-8.41	-7.84-9.18	-6.97-8.97	-10.77-12.16	-8.45-9.27	-19.22-9.16	-4.88-6.96	-3.86-3.39	-6-6.71	-12.46-8.73	-10.54-12.46	-8.96-4.04	-4.47-3.93	-5.07-7.33	-6.62-8.65	-11.39-7.79	-7.14-9.52	-8.51-7.81
Theta(52.5°)	Phi(52.5°)	-6.19-5.29	-3.07-2.17	-1.31-1.2	-1.17-0.9	-1.36-2.25	-3.52-5.51	-5.65-6.94	-8.86-6.53	-9.93-11.6	-13.66-11.57	-10.43-13.42	-19.09-12.71	-9.94-9.67	-6.06-6.86	-8.33-9.88	-12.2-8.95	-9.03-14.94	-11.49-5.16	-5.45-4.06	-5.78-6.91	-10.25-7.25	-10.81-16.19	-10.71-7.38	-5.26-3.76
Theta(60°)	Phi(60°)	-4.73-3.26	-2.64-1.98	-2.28-2.35	-2.12-2.22	-2.57-3.19	-3.83-5.51	-7.11-8.24	-9.03-9.75	-11.96-17.82	-17.83-11.26	-14.76-18.87	-11.79-8.41	-10.10-7.3	-6.43-8.29	-11.65-9.84	-11.81-13.84	-12.34-2.57	-14.34-10.39	-7-11.65	-12.74-13.39	-14.3-10.39	-14.74-8.21	-9.42-5.61	-4.15-3.18
Theta(67.5°)	Phi(67.5°)	-2.65-3.3	-3.9-4.18	-5.72-8.72	-11.06-10.37	-9.26-8.52	-7.53-6.5	-6.28-7.86	-10.32-13.85	-10.07-7.39	-6.27-10.16	-11.12-5.71	-4.69-4.42	-7.72-6.42	-7.02-11.95	-11.52-13.86	-16.19-10.84	-13.72-17.34	-5.65-6.6	-11.15-7.23	-7.71-10.82	-12.79-18.4	-11.19-9.09	-7.89-3.65	-3.51-2.7
Theta(75°)	Phi(75°)	-9.79-8.78	-11.13-10.87	-13.03-10.61	-9.64-10.22	-12.05-11.4	-9.35-8.3	-8.41-8.46	-9.82-10.19	-9.73-8.7	-7.98-6.01	-5.36-3.37	-3.1-3.65	-4.82-4.72	-6.31-7.44	-11.13-11.2	-13.39-8.05	-14.48-16.48	-8.17-9.28	-13.63-11.9	-11.24-18.87	-16.87-13.61	-11.57-17.44	-16.63-9.46	-11.05-9.93
Theta(82.5°)	Phi(82.5°)	-11.77-8.82	-10.36-12.68	-13.97-15.67	-11.99-9.68	-8.88-9.2	-10.51-12.46	-13.53-14.32	-13.93-14.12	-12.03-11.03	-10.13-8.66	-6.43-5.03	-3.83-4.38	-5.81-6.11	-6.82-8.18	-11.72-16.49	-17.67-16.49	-16.87-16.49	-17.42-10.74	-11.3-16.38	-18.68-18.52	-13.84-10.76	-15.42-15.51	-17.33-12.66	-13.71-13.65
Theta(90°)	Phi(90°)	-0.52-1.46	-0.84-0.48	-1.26-2.55	-2.56-3.19	-5.6-6.25	-7.62-5.42	-5.47-4.06	-3.72-6.55	-7.17-9.54	-9.46-14.24	-14.22-12.72	-14.26-9.3	-5-4.6	-4.65-4.16	-5.72-8.94	-11.79-10.61	-8.6-6.47	-6.31-9.4	-5.97-6.18	-7.6-4.23	-0.12-0.51	-4.57-3.55	-1.7-4.62	-3.31-3.74
Theta(97.5°)	Phi(97.5°)	-1.95-3.55	-1.96-1.09	1.26-2.07	-0.45-0.07	-1.01-1.15	-2.25-2.99	-4.78-5.81	-7.51-9.52	-11.43-15.83	-16.43-17.75	-17.11-18.88	-18.58-19.25	-18.65-13.51	-12.38-7.72	-5.86-3.81	-4.92-6.06	-7.14-8.44	-6.96-7.8	-6.38-7.01	-5.09-3.67	-3.37-3.67	-2.92-3.04	-2.75-2.35	-2.78-2.16
Theta(105°)	Phi(105°)	-3.34-2.14	-0.63-0.54	-0.93-0.56	-1.6-1.8	-3.9-3.17	-7.49-6.9	-8.14-8.41	-7.84-9.18	-6.97-8.97	-10.77-12.16	-8.45-9.27	-19.22-9.16	-4.88-6.96	-3.86-3.39	-6-6.71	-12.46-8.73	-10.54-12.46	-8.96-4.04	-4.47-3.93	-5.07-7.33	-6.62-8.65	-11.39-7.79	-7.14-9.52	-8.51-7.81
Theta(112.5°)	Phi(112.5°)	-6.19-5.29	-3.07-2.17	-1.31-1.2	-1.17-0.9	-1.36-2.25	-3.52-5.51	-5.65-6.94	-8.86-6.53	-9.93-11.6	-13.66-11.57	-10.43-13.42	-19.09-12.71	-9.94-9.67	-6.06-6.86	-8.33-9.88	-12.2-8.95	-9.03-14.94	-11.49-5.16	-5.45-4.06	-5.78-6.91	-10.25-7.25	-10.81-16.19	-10.71-7.38	-5.26-3.76
Theta(120°)	Phi(120°)	-4.73-3.26	-2.64-1.98	-2.28-2.35	-2.12-2.22	-2.57-3.19	-3.83-5.51	-7.11-8.24	-9.03-9.75	-11.96-17.82	-17.83-11.26	-14.76-18.87	-11.79-8.41	-10.10-7.3	-6.43-8.29	-11.65-9.84	-11.81-13.84	-12.34-2.57	-14.34-10.39	-7-11.65	-12.74-13.39	-14.3-10.39	-14.74-8.21	-9.42-5.61	-4.15-3.18
Theta(127.5°)	Phi(127.5°)	-2.65-3.3	-3.9-4.18	-5.72-8.72	-11.06-10.37	-9.26-8.52	-7.53-6.5	-6.28-7.86	-10.32-13.85	-10.07-7.39	-6.27-10.16	-11.12-5.71	-4.69-4.42	-7.72-6.42	-7.02-11.95	-11.52-13.86	-16.19-10.84	-13.72-17.34	-5.65-6.6	-11.15-7.23	-7.71-10.82	-12.79-18.4	-11.19-9.09	-7.89-3.65	-3.51-2.7
Theta(135°)	Phi(135°)	-9.79-8.78	-11.13-10.87	-13.03-10.61	-9.64-10.22	-12.05-11.4	-9.35-8.3	-8.41-8.46	-9.82-10.19	-9.73-8.7	-7.98-6.01	-5.36-3.37	-3.1-3.65	-4.82-4.72	-6.31-7.44	-11.13-11.2	-13.39-8.05	-14.48-16.48	-8.17-9.28	-13.63-11.9	-11.24-18.87	-16.87-13.61	-11.57-17.44	-16.63-9.46	-11.05-9.93
Theta(142.5°)	Phi(142.5°)	-11.77-8.82	-10.36-12.68	-13.97-15.67	-11.99-9.68	-8.88-9.2	-10.51-12.46	-13.53-14.32	-13.93-14.12	-12.03-11.03	-10.13-8.66	-6.43-5.03	-3.83-4.38	-5.81-6.11	-6.82-8.18	-11.72-16.49	-17.67-16.49	-16.87-16.49	-17.42-10.74	-11.3-16.38	-18.68-18.52	-13.84-10.76	-15.42-15.51	-17.33-12.66	-13.71-13.65
Theta(150°)	Phi(150°)	-0.52-1.46	-0.84-0.48	-1.26-2.55	-2.56-3.19	-5.6-6.25	-7.62-5.42	-5.47-4.06	-3.72-6.55	-7.17-9.54	-9.46-14.24	-14.22-12.72	-14.26-9.3	-5-4.6	-4.65-4.16	-5.72-8.94	-11.79-10.61	-8.6-6.47	-6.31-9.4	-5.97-6.18	-7.6-4.23	-0.12-0.51	-4.57-3.55	-1.7-4.62	-3.31-3.74
Theta(157.5°)	Phi(157.5°)	-1.95-3.55	-1.96-1.09	1.26-2.07	-0.45-0.07	-1.01-1.15	-2.25-2.99	-4.78-5.81	-7.51-9.52	-11.43-15.83	-16.43-17.75	-17.11-18.88	-18.58-19.25	-18.65-13.51	-12.38-7.72	-5.86-3.81	-4.92-6.06	-7.14-8.44	-6.96-7.8	-6.38-7.01	-5.09-3.67	-3.37-3.67	-2.92-3.04	-2.75-2.35	-2.78-2.16
Theta(165°)	Phi(165°)	-3.34-2.14	-0.63-0.54	-0.93-0.56	-1.6-1.8	-3.9-3.17	-7.49-6.9	-8.14-8.41	-7.84-9.18	-6.97-8.97	-10.77-12.16	-8.45-9.27	-19.22-9.16	-4.88-6.96	-3.86-3.39	-6-6.71	-12.46-8.73	-10.54-12.46	-8.96-4.04	-4.47-3.93	-5.07-7.33	-6.62-8.65	-11.39-7.79	-7.14-9.52	-8.51-7.81
Theta(172.5°)	Phi(172.5°)	-6.19-5.29	-3.07-2.17	-1.31-1.2	-1.17-0.9	-1.36-2.25	-3.52-5.51	-5.65-6.94	-8.86-6.53	-9.93-11.6	-13.66-11.57	-10.43-13.42	-19.09-12.71	-9.94-9.67	-6.06-6.86	-8.33-9.88	-12.2-8.95	-9.03-14.94	-11.49-5.16	-5.45-4.06	-5.78-6.91	-10.25-7.25	-10.81-16.19	-10.71-7.38	-5.26-3.76
Theta(180°)	Phi(180°)	-4.73-3.26	-2.64-1.98	-2.28-2.35	-2.12-2.22	-2.57-3.19	-3.83-5.51	-7.11-8.24	-9.03-9.75	-11.96-17.82	-17.83-11.26	-14.76-18.87	-11.79-8.41	-10.10-7.3	-6.43-8.29	-11.65-9.84	-11.81-13.84	-12.34-2.57	-14.34-10.39	-7-11.65	-12.74-13.39	-14.3-10.39	-14.74-8.21	-9.42-5.61	-4.15-3.18
Theta(187.5°)	Phi(187.5°)	-2.65-3.3	-3.9-4.18	-5.72-8.72	-11.06-10.37	-9.26-8.52	-7.53-6.5	-6.28-7.86	-10.32-13.85	-10.07-7.39	-6.27-10.16	-11.12-5.71	-4.69-4.42	-7.72-6.42	-7.02-11.95	-11.52-13.86	-16.19-10.84	-13.72-17.34	-5.65-6.6	-11.15-7.23	-7.71-10.82	-12.79-18.4	-11.19-9.09	-7.89-3.65	-3.51-2.7
Theta(195°)	Phi(195°)	-9.79-8.78	-11.13-10.87	-13.03-10.61	-9.64-10.22	-12.05-11.4	-9.35-8.3	-8.41-8.46	-9.82-10.19	-9.73-8.7	-7.98-6.01	-5.36-3.37	-3.1-3.65	-4.82-4.72	-6.31-7.44	-11.13-11.2	-13.39-8.05	-14.48-16.48	-8.17-9.28	-13.63-11.9	-11.24-18.87	-16.87-13.61	-11.57-17.44	-16.63-9.46	-11.05-9.93
Theta(202.5°)	Phi(202.5°)	-11.77-8.82	-10.36-12.68	-13.97-15.67	-11.99-9.68	-8.88-9.2	-10.51-12.46	-13.53-14.32	-13.93-14.12	-12.03-11.03	-10.13-8.66	-6.43-5.03	-3.83-4.38	-5.81-6.11	-6.82-8.18	-11.72-16.49	-17.67-16.49	-16.87-16.49	-17.42-10.74	-11.3-16.38	-18.68-18.52	-13.84-10.76	-15.42-15.51	-17.33-12.66	-13.71-13.65
Theta(210°)	Phi(210°)	-0.52-1.46	-0.84-0.48	-1.26-2.55	-2.56-3.19	-5.6-6.25	-7.62-5.42	-5.47-4.06	-3.72-6.55	-7.17-9.54	-9.46-14.24	-14.22-12.72	-14.26-9.3	-5-4.6	-4.65-4.16	-5.72-8.94	-11.79-10.61	-8.6-6.47	-6.31-9.4	-5.97-6.18	-7.6-4.23	-0.12-0.51	-4.57-3.55	-1.7-4.62	-3.31-3.74
Theta(217.5°)	Phi(217.5°)	-1.95-3.55	-1.96-1.09	1.26-2.07	-0.45-0.07	-1.01-1.15	-2.25-2.99	-4.78-5.81	-7.51-9.52	-11.43-15.83	-16.43-17.75	-17.11-18.88	-18.58-19.25	-18.65-13.51	-12.38-7.72	-5.									



Radiated Composite Gain Data of 6GHz

Appendix C

Theta	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(105°)	-2.62/-2.02	-1.30/-0.35	-1.58/-4.16	-4.27/-7.1	-8.76/-7.96	-10.14/-13.42	-8.39/-5.72	-6.51/-5.99	-7.43/-8.89	-6.33/-5.67	-8.06/-7	-4.72/-5.42	-3.29/-0.79	-5.46/-7.97	-8.29/-11.06	-18.11/-9.04	-18.09/-11.95	-4.39/-2.01	-0.01/-5.34	-4.97/-3.14	-1.41/-4.76	-18.26/-9.16	-18.44/-9.33	-3.99/-4.28
Theta(112.5°)	-4.73/-2.78	-0.42/0.75	-0.37/-1.26	-2.08/-4.98	-5.34/-11.87	-7.28/-10.06	-9.07/-9.64	-8.38/-5.4	-6.54/-4.81	-2.96/-7.24	-6.49/-5.85	-6.38/-6.07	-4.3/-2.95	-7.93/-6.32	-7.58/-9.61	-17.74/-8.84	-13.64/-11.93	-6.37/-3.42	-3.14/-4.75	-7.07/-5.74	-3.97/-8.6	-18.21/-8.4	-14.29/-17.74	-12.62/-6.66
Theta(120°)	-4.31/-4.44	-2.73/-2.19	-1.54/-1.34	-3.34/-3.59	-5.08/-5.29	-7.51/-6.17	-7.86/-7.74	-7.02/-8.44	-7.26/-5.9	-6.91/-13.4	-13.26/-16.03	-17.25/-13.36	-8.82/-12.5	-8.37/-7.61	-5.48/-9.03	-13.65/-13.1	-6.48/-9.08	-10.25/-2.78	-6.62/-10.34	-15.45/-6.99	-8.68/-11.57	-16.08/-6.77	-10.42/-10.4	-17.08/-7.04
Theta(127.5°)	-5.91/-4.79	-4.13/-3.99	-3.39/-3.43	-4.41/-5.57	-8.37/-10.45	-11.75/-15.14	-13.24/-12.47	-11.67/-8.41	-8.66/-13.1	-13.51/-9.6	-10.95/-10.49	-6.12/-6.54	-6.65/-7.73	-3.71/-7.5	-5.48/-7.81	-8.75/-14.05	-5.83/-15.83	-7.87/-5.07	-17.92/-19.04	-11.27/-13	-18.44/-18.96	-5.73/-5.75	-5.64/-4.24	-8.73/-4.23
Theta(135°)	-4.05/-4.6	-7.47/-5.98	-4.87/-7.91	-10.81/-15.8	-18.71/-18.68	-16.67/-10.72	-8.89/-8.12	-7.2/-7.4	-8.41/-6.9	-8.44/-9.31	-10.31/-6.81	-4.45/-3.84	-4.96/-5.58	-6.51/-8.25	-5.12/-10.59	-6.55/-9.1	-7.94/-17.43	-11.03/-10.25	-18.44/-18.14	-9.88/-9.52	-16.71/-12.92	-18.52/-18.15	-18.84/-18.39	-11.53/-3.93
Theta(142.5°)	-6.55/-7.61	-8.77/-14.49	-16.82/-15.81	-17.63/-15.29	-14.14/-13.65	-13.47/-13.98	-14.52/-11.61	-10.38/-8.69	-7.14/-8.21	-8.59/-9.51	-10.12/-9.01	-9.06/-6.45	-7.91/-8.14	-5.93/-7	-6.35/-12.38	-15.63/-6.38	-4.3/-7.14	-9.62/-14.23	-17.51/-17.48	-18.07/-11.63	-8.88/-7.46	-7.16/-9.81	-11.44/-13.55	-18.12/-9.58
Theta(150°)	-19.21/-19.04	-18.24/-18.77	-18.67/-18.21	-18.68/-18.91	-17.42/-17.77	-18.29/-16.53	-17.21/-17.77	-15.03/-13.15	-10.81/-8.65	-6.51/-6.61	-6.61/-9.76	-15.62/-13	-16.34/-11.13	-7.75/-9.07	-9.74/-7.62	-5.31/-11.53	-10.64/-9.44	-13.29/-17.86	-15.34/-10.91	-15.15/-17.93	-15.61/-15.2	-13.64/-17.51	-18.91/-19.1	-18.73/-18.1
Theta(157.5°)	-13.41/-11.09	-10.49/-10.34	-10.67/-11.97	-12.37/-13.17	-12.12/-10.51	-9.83/-10.39	-12.64/-17.34	-18.31/-18.53	-18.86/-17.29	-18.89/-16.4	-12.11/-7.78	-5.42/-3.73	-2.6/-2.23	-1.43/-0.41	-2.14/-6.16	-7.17/-10.12	-11.42/-9.93	-9.28/-10.84	-15.02/-15.87	-12.91/-12.16	-14.05/-13.28	-12.15/-12.93	-14.45/-12.62	-12.73/-15.14
Theta(165°)	-9.22/-8.63	-9.21/-11.5	-11.83/-13.06	-14.14/-14.74	-16.31/-16.63	-16.88/-17.83	-18.91/-18.81	-18.29/-19.28	-19.05/-18.91	-18.17/-17.94	-18.52/-14.21	-10.72/-10.76	-12.08/-14.76	-14.39/-13.91	-10.61/-11.91	-14.14/-14.34	-13.92/-13.83	-13.81/-12.71	-11.81/-12.6	-14.74/-16.92	-19.05/-18.57	-16.41/-17.37	-15.05/-10.84	
Theta(172.5°)	-13.88/-14.9	-15.71/-17.58	-18.66/-18.85	-18.74/-18.34	-18.36/-18.26	-18.51/-16.56	-14.93/-14.69	-15.74/-16.78	-16.68/-16.97	-17.26/-17.04	-17.02/-15.76	-15.87/-18.18	-18.57/-18.09	-14.61/-12.3	-11.75/-11.45	-12.15/-13.6	-16.24/-17.82	-17.69/-18.35	-18.97/-17.87	-18.13/-17.45	-17.33/-16.41	-16.86/-18.17	-15.39/-14.19	-12.91/-12.65
Theta(180°)	-12.04/-12.56	-12.68/-13.33	-14.64/-15.89	-16.61/-15.55	-16.57/-18.79	-181/-18.2	-17.55/-17.75	-17.46/-16.96	-16.14/-14.72	-12.69/-11.62	-10.96/-10.77	-11.02/-11.72	-12.11/-13.14	-14.57/-16.89	-17.81/-17.71	-191/-17.14	-14.57/-13.2	-13.04/-13.97	-14.37/-13.11	-11.38/-10.53	-9.11/-8.52	-9.06/-10.33	-11.72/-11.86	-12.77/-11.33
Freq(Hz)	6.995GPol	PhiAnt.4																						
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°)	-14.73/-13.9	-11.62/-10.41	-8.61/-6.69	-5.45/-4.43	-3.55/-3.09	-2.51/-2.12	-2.02/-2.07	-2.34/-2.48	-2.81/-3.46	-4.17/-5.35	-6.36/-7.94	-9.67/-11.61	-13.21/-12.6	-10.96/-9.14	-6.59/-5.3	-4.21/-3.27	-2.34/-1.48	-1.01/-0.81	-0.98/-1.19	-1.47/-1.81	-2.46/-3.04	-4.53/-5.61	-6.91/-8.67	-10.02/-12.08
Theta(7.5°)	-9.94/-9.84	-10.59/-9.52	-7.15/-5.92	-4.67/-3.96	-3.61/-2.99	-2.18/-1.51	-1.46/-1.46	-1.71/-1.82	-2.21/-2.66	-3.52/-4.81	-5.99/-7.96	-10.08/-12.37	-14.07/-13.31	-11.47/-9.58	-7.91/-6.97	-5.97/-5.12	-4.17/-3.44	-2.97/-2.69	-2.73/-2.5	-2.79/-3.04	-3.18/-3.5	-4.29/-5.39	-6.94/-8.63	-8.47/-9.71
Theta(15°)	-6.89/-7.5	-7.54/-7.23	-6.59/-6.53	-6.55/-6	-4.87/-3.86	-2.88/-2.34	-2.13/-2.25	-2.61/-2.99	-3.55/-3.95	-4.52/-5.22	-6.25/-7.79	-9.67/-11.16	-12.22/-12.52	-13.36/-12.89	-12.79/-12.76	-11.18/-10.21	-9.63/-9.48	-8.61/-7	-5.6/-4.56	-3.53/-2.72	-2.42/-2.63	-3.78/-4.99	-6.73/-8.7	-7.66/-7.48
Theta(22.5°)	-8.15/-6.4	-5.92/-6.43	-6.68/-5.82	-4.76/-3.46	-2.47/-2.4	-2.46/-2.76	-3.07/-3.22	-3.83/-4.65	-5.29/-5.25	-5.39/-6.06	-7.12/-7.88	-8.37/-9.26	-11.14/-13.3	-13.89/-16.13	-17.11/-16.15	-11.65/-8.4	-6.47/-7.43	-3.59/-3.12	-3.11/-3.75	-5.11/-6.27	-6.41/-6.06	-5.82/-5.21	-5.72/-7.97	-8.94/-8.8
Theta(30°)	-9.35/-9.75	-8.17/-7.48	-6.73/-5.81	-4.43/-2.97	-2.59/-2.78	-2.78/-2.38	-2.08/-2.07	-2.62/-3.6	-3.16/-7.6	-9.34/-10.62	-11.03/-12.27	-13.32/-13.53	-13.52/-13.84	-16.75/-16.13	-10.66/-7.76	-6.34/-5.82	-4.78/-3.73	-3.11/-2.41	-1.86/-2.11	-2.51/-3.72	-5.92/-7.33	-7.76/-7.23	-6.27/-5.58	-8.98/-9.07
Theta(37.5°)	-9.36/-9.17	-9.81/-7.24	-5.44/-3.65	-3.21/-2.9	-3.78/-3.34	-2.84/-2.7	-2.71/-2.76	-3.33/-4.23	-6.02/-9.84	-13.78/-11.43	-11.04/-13.28	-13.66/-10.2	-8.79/-12.19	-8.14/-7.17	-6.04/-6.99	-7.48/-5.77	-4.73/-3.33	-2.66/-3.15	-2.42/-1.26	-1.63/-2.16	-2.64/-4.6	-7.03/-7.18	-5.13/-4.9	-5.18/-5.97
Theta(45°)	-5.36/-10.74	-16.81/-12.18	-8.66/-6.03	-5.26/-4.89	-3.86/-3.22	-3.03/-1.87	-0.54/-0.05	-0.23/-1.22	-2.56/-3.63	-6.49/-8.97	-8.88/-10.94	-18.79/-13.08	-10.64/-10.83	-5.87/-3.57	-2.34/-3.67	-2.95/-3.6	-3.94/-5.58	-3.48/-3.53	-4.02/-3.68	-3.07/-3.21	-3.44/-5.2	-6.89/-7.92	-6.74/-5.12	-4.43/-4.76
Theta(52.5°)	-5.95/-10.35	-11.97/-13.9	-11.87/-10.39	-7.41/-4.12	-2.24/-2.02	-1.74/-1.7	-0.92/-0.5	-0.29/-1.69	-2.48/-3.14	-6.62/-6.69	-6.21/-8.52	-15.28/-15.09	-12.19/-10.74	-6.52/-5.2	-3.84/-3.65	-3.79/-3.24	-4.99/-4.24	-3.98/-7.7	-2.16/-4.94	-0.41/-2.21	-4.99/-5.8	-7.97/-9.29	-5.69/-4.5	-5.77/-1.73
Theta(60°)	-8.16/-10.15	-12.73/-17.5	-18.42/-11.06	-6.46/-3.17	-2.37/-3.34	-3.16/-2.79	-2.37/-2.7	-2.04/-1.44	-2.31/-2.84	-4.07/-8.04	-9.44/-9.49	-9.13/-17.56	-18.66/-16.69	-8.84/-7.43	-4/-5.1	-3.21/-4.37	-3.97/-2.55	-2.33/-2.04	-1.95/-1.26	-2.29/-1.82	-1.89/-3.1	-4.52/-8.49	-9.91/-5.88	-3.47/-6.64
Theta(67.5°)	-8.11/-10.92	-12.67/-15.05	-11.71/-9.55	-4.46/-2.51	-2.47/-1.8	-2.41/-1.74	-1.75/-1.74	-3.19/-4.01	-2.11/-59	-1.45/-4.64	-12.97/-16.87	-18.63/-16.4	-12.27/-10.12	-6.35/-5.3	-5.75/-14.7	-7.44/-5.19	-6.21/-3.42	-4.72/-5.76	-5.2/-3.42	-4.72/-5.71	-3.44/-5.2	-3.66/-8.95	-13.82/-6.72	-4.19/-6.82
Theta(75°)	-7.25/-11.04	-18.41/-16.71	-17.25/-17.05	-7.86/-6.33	-4.26/-2.04	-2.49/-1.14	-1.79/-2.23	-2.65/-5.62	-2.28/-3.44	-2.84/-9.8	-14.67/-16.29	-15.61/-18.53	-11.35/-9.67	-8.13/-4.59	-4.42/-5.21	-6.54/-4.24	-3.87/-3.94	-3.11/-1.14	-1.38/-0.94	-0.41/-2.21	-4.99/-5.8	-8.42/-11.27	-11.61/-6.52	-5.57/-1.1
Theta(82.5°)	-18.81/-14.62	-13.24/-14.9	-15.52/-9.95	-7.94/-8.58	-3.59/-1.74	0.68/0.57	-1.33/-2.46	-1.92/-1.82	-4.71/-2.86	-3.01/-6.59	-18.61/-14.49	-10.68/-15.92	-17.74/-15.05	-16.27/-6.83	-6.65/-4.07	-4.06/-4.22	-6.77/-3	-1.14/-0.87	-0.15/-1.81	-1.94/-0.78	-4.14/-6.01	-13.29/-10.05	-11.49/-8.66	-6.85/-10.99
Theta(90°)	-16.44/-9.11	-15.32/-18.02	-18.39/-9.41	-5.78/-9.42	-4.62/-4.3	0.46/0	-1.11/-2.7	-4.31/-1.03	-6.27/-5.27	-6.53/-10.46	-17.91/-15.25	-12.11/-12.17	-18.66/-18.77	-15.07/-9.94	-6.16/-5.11	-4.11/-4.44	-4.44/-0.06	3.19/0.13	3.12/1.25	-0.21/-1.12	-3.52/-14.41	-14.48/-8.34	-13.13/-14.42	-13.29/-14.27
Theta(97.5°)	-18.06/-8.24	-10.64/-11.1	-7.27/-5.35	-3.37/-1.11	-1.71/-4.98	1.09/-0.51	-3.04/-3.95	-1.80/-1	-6.31/-4.18	-4.67/-4.6	-10.39/-9.34	-10.66/-9.59	-12.18/-10.96	-7.47/-8.27	-5.99/-4.6	-3.82/-6.44	-6.94/0.39	3.51/3.33	3.22/-1.4	-2.15/-2.02	-4.21/-7.8	-16.41/-14.56	-12.67/-18.29	-15.77/-16.63
Theta(105°)	-15.16/-10.06	-10.62/-13.87	-5.87/-4.32	-2.40/0.94	-0.29/-0.72	-1.07/-1.43	-3.74/-5.37	-1.42/-1.24	-8.86/-3.79	-4.03/-8.01	-12.56/-14.61	-19.12/-13.64	-11.08/-19.41	-7.54/-10.7	-7.04/-7.18	-3.01/-5.87	-10.66/0.32	2.28/1.33	-0.58/-7.94	-18.39/-6.9	-8.61/-8.4	-11.11/-18.89	-13.69/-14.81	-12.94/-8.49
Theta(112.5°)	-16.58/-14.44	-13.01/-14.47	-5.13/-3.47	-2.01/-1.44	-0.05/-0.53	-0.81/-0.05	0.11/-0.23	-0.44/-3.17	-2.15/-4.11	-4.79/-7.66	-9.33/-7.1	-12.21/-10.21	-8.82/-18.45	-7.45/-2.83	-8.58/-6.36	-4.94/-11.51	-18.47/-2.82	0.23/0.5	-1.24/-1.54	-12.56/-8.26	-6.61/-6.75	-16.11/-9	-6.22/-14.1	-12.97/-18
Theta(120°)	-19.14/-10.23	-7.81/-11.62	-8.12/-2.47	-2.02/-3.11	-0.53/0.66	0.99/1.06	0.64/0.1	-3.49/-2.86	-4.91/-3.02	-3.27/-5.34	-8.04/-8.37	-17.12/-9.76	-11.24/-18.32	-9.58/-8.66	-7.43/-7.63	-4.16/-7.5	-11.03/-7.44	-4.84/-3.17	-5.28/-2.51	-11.36/-12.84	-11.69/-17.55	-13.85/-8.17	-9.67/-15.83	-18.78/-10.94
Theta(127.5°)	-13.87/-10.64	-5.97/-7.01	-7.63/-5.53	-0.75/-0.29	-1.66/-3.61	-1.62/-1.99	-3.44/-4.16	-5.49/-8.9	-6.69/-4.15	-4.44/-6.22	-9.71/-13.82	-9.39/-6.95	-10.41/-17.89	-8.64/-5.21	-6.34/-8.94	-12.09/-12.72	-15.03/-12.97	-15.03/-12.97	-					

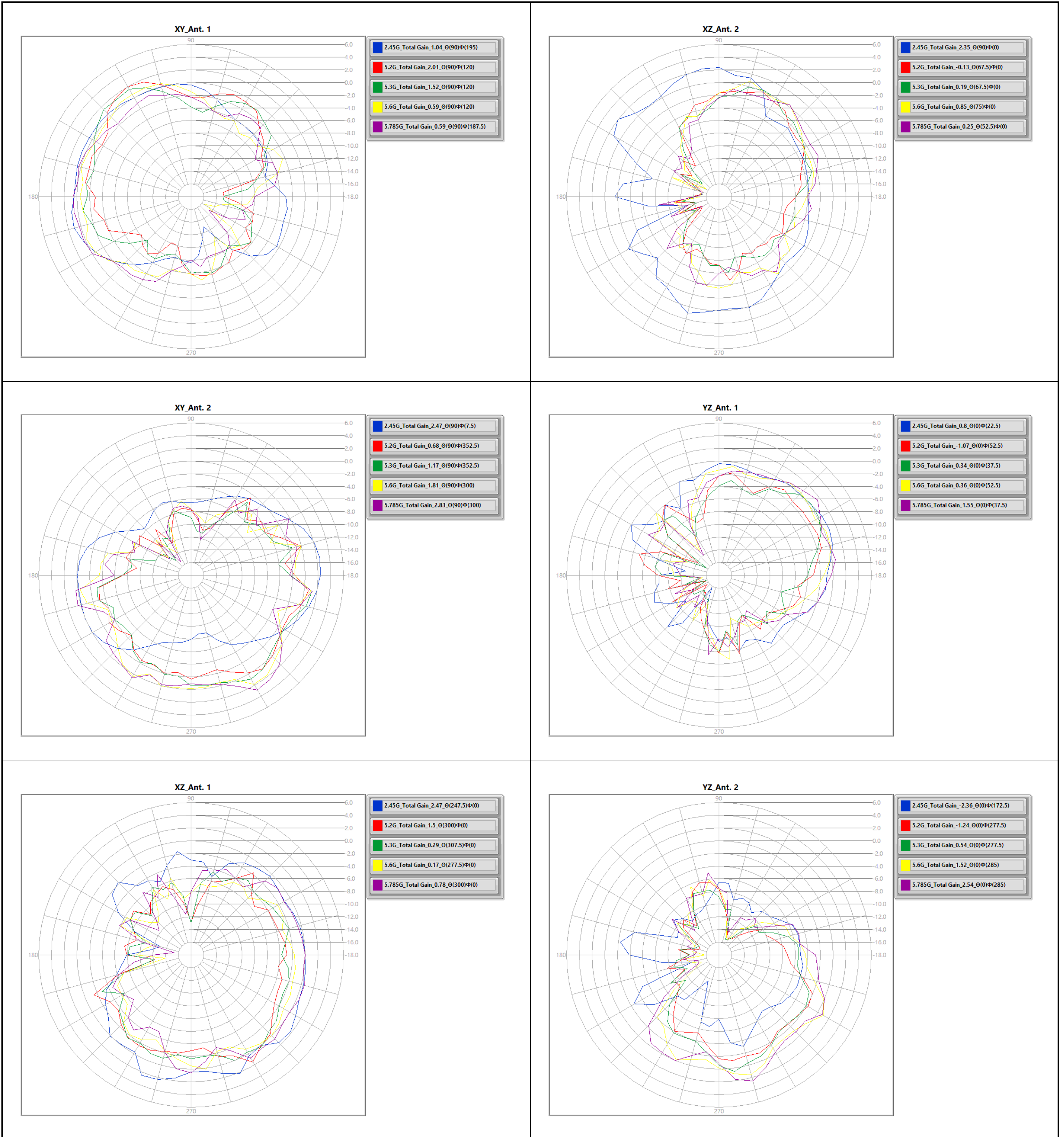


Antenna Pattern of 2.4GHz&5GHz

Appendix D

Theta	0.85/-0.22	0.61/-1.64	-2.23/-5.15	-5.88/-4.83	-6.96/-10.63	-15.05/-15.22	-13.31/-11.26	-10.79/-11.34	-12.93/-12.92	-14.23/-12.86	-9.86/-7.99	-5.51/-5.31	-5.59/-1.95	-1.59/-3.75	-4.53/-4.67	-2.06/-1.27	-1.47/-0.85	-0.65/-0.20	1.52/1.35	0.85/1.94	3.17/3.74	3.35/1.44	-0.02/-0.72	1.00/2.45
Theta(82.5°)	-0.83/-1.36	-0.27/-3.77	-3.29/-8.01	-5.63/-5.56	-9.66/-12.09	-15.10/-11.91	-9.80/-9.02	-9.39/-11.75	-15.38/-15.38	-12.68/-12.91	-9.04/-8.25	-3.94/-4.31	-3.90/-0.88	-1.69/-4.86	-3.93/-3.46	-1.62/-0.47	0.13/-0.57	-0.29/-0.72	0.90/0.91	0.98/1.93	3.04/3.09	2.97/1.31	-0.64/-2.48	0.67/2.10
Theta(90°)	-1.62/-1.43	-0.02/-4.51	-2.18/-6.86	-4.46/-5.03	-6.62/-7.71	-9.43/-8.56	-7.49/-6.27	-7.39/-8.54	-13.88/-12.95	-10.11/-13.40	-7.69/-8.40	-4.45/-3.67	-3.58/-0.38	-1.08/-3.82	-3.57/-2.98	-1.73/-0.31	0.34/-1.17	0.06/-0.17	-0.19/-0.23	-0.50/-0.20	1.81/1.78	0.68/0.06	-1.76/-3.22	-0.41/1.06
Theta(97.5°)	-3.26/-2.13	-1.57/-5.18	-2.51/-5.77	-2.94/-4.51	-5.28/-6.18	-8.10/-6.94	-6.06/-5.92	-6.27/-7.21	-13.12/-12.72	-9.39/-9.56	-6.35/-8.27	-4.76/-4.59	-3.75/-1.36	-1.61/-4.36	-5.51/-3.84	-3.92/-1.90	-1.98/-3.72	-2.45/-3.17	-1.45/-1.81	-2.87/-2.14	0.05/0.92	-0.05/-1.31	-2.60/-1.63	0.37/0.03
Theta(105°)	-4.91/-3.98	-3.88/-5.92	-4.43/-5.83	-3.75/-4.16	-5.52/-6.78	-8.86/-8.74	-8.42/-7.45	-7.46/-6.52	-7.40/-7.48	-9.28/-11.67	-6.93/-7.19	-5.38/-4.48	-5.59/-3.06	-2.60/-4.96	-8.50/-6.31	-7.17/-5.37	-7.59/-6.44	-4.25/-5.02	-0.91/-1.55	-5.16/-3.99	-0.81/0.02	-0.61/-1.32	-2.70/-0.89	0.12/-1.51
Theta(120°)	-6.71/-4.40	-3.19/-4.83	-4.88/-6.11	-7.65/-7.90	-9.39/-13.91	-12.54/-10.35	-9.77/-9.51	-9.53/-9.75	-9.58/-10.09	-10.34/-8.18	-7.38/-6.77	-6.42/-8.01	-9.46/-7.52	-5.14/-8.93	-14.23/-10.35	-5.80/-7.44	-4.93/-5.61	-14.48/-5.39	-1.70/-8.02	-10.69/-2.61	-0.96/-0.10	-0.89/-4.50	-10.07/-2.95	-0.09/-1.73
Theta(127.5°)	-8.05/-8.52	-6.07/-6.12	-5.76/-8.00	-10.41/-11.36	-10.18/-9.49	-12.44/-12.07	-9.98/-9.06	-7.64/-7.54	-8.48/-10.07	-9.81/-8.26	-8.18/-7.81	-8.07/-9.89	-7.76/-6.54	-6.98/-6.78	-11.44/-5.32	-6.03/-10.56	-4.36/-11.31	-15.10/-5.30	-3.71/-13.31	-13.12/-6.04	-4.44/-4.42	-2.95/-8.17	-8.28/-5.36	-2.55/-3.38
Theta(135°)	-10.33/-11.89	-10.03/-7.68	-9.07/-11.66	-10.44/-8.94	-8.80/-11.51	-12.17/-12.59	-11.58/-8.54	-6.95/-7.62	-8.45/-9.17	-9.98/-10.35	-9.15/-8.73	-9.11/-8.36	-9.35/-8.34	-6.25/-7.08	-10.93/-6.08	-9.30/-6.18	-6.16/-14.50	-11.96/-5.40	-4.26/-12.66	-13.27/-9.85	-6.93/-9.52	-6.07/-9.39	-14.18/-7.90	-6.17/-7.27
Theta(142.5°)	-11.14/-11.09	-7.45/-5.70	-7.40/-10.02	-9.79/-10.88	-12.10/-10.22	-8.99/-8.83	-9.69/-10.17	-10.69/-10.96	-11.60/-13.94	-15.52/-12.54	-9.03/-7.93	-8.41/-10.32	-9.25/-6.93	-6.95/-9.64	-12.45/-11.94	-8.64/-10.66	-14.41/-10.66	-15.48/-10.34	-9.09/-14.60	-12.77/-13.61	-11.77/-12.53	-13.94/-10.25	-8.29/-6.70	-4.97/-7.02
Theta(150°)	-15.67/-15.16	-12.77/-12.03	-10.42/-10.15	-10.93/-10.47	-11.62/-14.19	-14.32/-12.90	-12.04/-12.90	-13.88/-12.68	-11.04/-10.99	-10.99/-10.97	-10.69/-10.84	-13.04/-13.79	-14.53/-15.61	-12.77/-11.31	-11.18/-10.40	-11.77/-14.70	-13.00/-11.33	-11.19/-11.13	-13.55/-14.50	-14.49/-14.39	-14.96/-15.20	-15.06/-14.67	-11.08/-9.96	-9.87/-11.90
Theta(157.5°)	-9.98/-9.60	-12.40/-13.05	-12.07/-13.08	-14.83/-15.00	-15.43/-14.86	-14.94/-15.12	-13.84/-14.04	-14.40/-14.80	-13.50/-11.68	-10.24/-9.12	-8.19/-7.97	-8.64/-10.55	-11.18/-10.46	-10.27/-11.39	-12.29/-13.25	-13.86/-11.15	-10.57/-12.86	-14.54/-15.41	-15.06/-15.03	-15.42/-14.15	-13.77/-14.76	-15.03/-15.26	-14.83/-15.16	-13.43/-12.19
Theta(165°)	-15.11/-15.20	-14.40/-14.90	-15.36/-15.46	-14.69/-15.93	-15.78/-15.48	-14.65/-15.07	-14.06/-12.68	-12.47/-11.88	-11.82/-11.17	-10.54/-10.06	-10.25/-10.72	-10.82/-10.98	-11.72/-12.47	-12.64/-12.32	-11.99/-12.59	-13.48/-12.76	-12.45/-12.86	-13.91/-14.68	-13.48/-12.75	-13.29/-11.48	-11.60/-11.78	-12.63/-13.23	-12.76/-15.96	-15.52/-15.67
Theta(172.5°)	-15.05/-14.84	-15.44/-15.34	-15.72/-15.49	-15.02/-14.99	-15.47/-14.96	-14.15/-13.40	-13.81/-15.07	-14.99/-14.57	-15.90/-14.01	-12.73/-11.45	-10.69/-10.79	-11.11/-11.02	-10.94/-10.85	-11.15/-11.54	-11.81/-12.55	-13.54/-13.70	-13.58/-13.16	-12.64/-12.46	-12.60/-12.40	-12.78/-13.26	-14.02/-15.20	-15.51/-15.17	-14.45/-15.11	-15.99/-15.38
Theta(180°)	-15.17/-15.79	-15.18/-15.09	-15.71/-15.49	-15.45/-15.83	-14.60/-14.80	-14.79/-15.24	-15.75/-15.38	-14.91/-14.28	-14.59/-14.22	-14.97/-14.75	-14.87/-14.77	-15.71/-15.75	-15.89/-15.74	-15.15/-14.87	-14.99/-14.91	-15.38/-15.31	-14.84/-14.95	-15.59/-14.66	-15.62/-15.42	-15.63/-15.71	-15.38/-15.41	-14.89/-15.34	-15.34/-15.42	-15.46/-15.60
Freq(Hz)	5.785GPol.	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°)	-4.06/-3.98	-3.77/-3.91	-3.47/-3.02	-2.73/-2.56	-2.58/-2.68	-2.65/-2.67	-2.77/-2.76	-2.69/-2.69	-2.74/-2.73	-2.71/-2.84	-2.94/-2.78	-2.73/-2.69	-2.59/-2.66	-2.76/-2.86	-3.07/-3.14	-3.01/-3.14	-3.07/-3.23	-3.02/-2.89	-2.51/-2.67	-2.77/-2.89	-2.89/-2.93	-3.20/-3.45	-3.91/-3.76	
Theta(7.5°)	-2.71/-2.88	-2.84/-3.29	-3.32/-3.54	-3.90/-4.11	-4.21/-4.47	-4.76/-5.04	-5.10/-4.80	-4.44/-4.27	-4.08/-4.01	-3.97/-3.82	-3.66/-3.57	-3.52/-3.34	-3.32/-3.28	-3.07/-2.93	-2.73/-2.68	-2.84/-2.98	-2.84/-2.53	-2.31/-2.26	-2.30/-2.25	-2.11/-2.00	-2.04/-2.01	-2.03/-1.91	-2.04/-2.29	-2.31/-2.48
Theta(15°)	-2.10/-2.30	-2.42/-3.17	-3.61/-4.12	-4.56/-4.14	-5.04/-5.14	-4.97/-5.07	-5.01/-4.77	-4.78/-4.77	-4.64/-4.78	-4.81/-4.86	-4.71/-4.71	-4.58/-4.25	-4.12/-4.15	-4.10/-3.94	-3.86/-3.80	-3.64/-3.20	-2.63/-2.07	-1.70/-1.57	-1.72/-1.70	-1.62/-1.63	-1.56/-1.50	-1.30/-1.20	-1.36/-1.20	-1.31/-1.81
Theta(22.5°)	-1.14/-1.50	-2.59/-3.36	-4.54/-5.19	-5.77/-6.26	-6.05/-5.38	-5.22/-5.43	-5.47/-5.99	-5.79/-5.82	-5.82/-5.95	-6.20/-6.38	-6.29/-5.97	-5.56/-5.25	-5.19/-5.13	-4.80/-4.48	-4.37/-3.75	-2.92/-2.05	-1.49/-1.05	-0.74/-0.35	0.03/0.29	0.07/-0.19	-0.38/-0.58	-0.72/-0.86	-1.03/-0.49	-0.58/-0.68
Theta(30°)	-1.42/-1.57	-2.58/-4.09	-4.91/-5.15	-6.06/-7.42	-7.54/-7.63	-8.33/-8.84	-9.14/-8.55	-8.07/-7.35	-6.82/-6.49	-6.45/-6.15	-6.12/-5.94	-5.82/-5.97	-6.27/-6.02	-4.92/-3.67	-2.91/-2.17	-1.43/-0.75	-0.55/-0.47	-0.20/0.30	0.79/0.93	0.65/0.86	0.84/0.84	0.85/0.44	-0.27/-0.89	-1.38/-1.22
Theta(37.5°)	-1.27/-1.32	-2.57/-4.08	-5.23/-5.73	-5.94/-7.26	-8.04/-8.21	-9.53/-10.44	-10.92/-11.54	-11.42/-11.47	-11.72/-11.01	-9.80/-8.06	-7.37/-6.49	-5.80/-5.84	-6.32/-6.02	-4.02/-2.12	-1.10/-0.59	-0.16/0.05	-0.27/-0.46	-0.20/-0.25	-0.89/-1.21	-0.21/0.79	1.28/1.60	1.40/1.03	0.50/0.16	-0.65/-1.48
Theta(45°)	-0.57/-0.63	-1.97/-3.45	-2.89/-3.41	-4.65/-6.50	-8.23/-8.91	-8.96/-9.59	-9.88/-10.48	-11.68/-11.56	-10.99/-10.93	-11.02/-9.36	-7.95/-6.94	-6.49/-5.76	-4.47/-3.93	-3.54/-1.90	-1.33/-1.80	-1.66/-0.84	-1.11/-1.17	-1.07/-1.04	-0.85/-0.18	-0.18/-0.82	-0.65/-0.38	0.08/0.39	1.28/1.53	0.60/-0.59
Theta(52.5°)	0.25/-0.51	-1.70/-2.49	-2.39/-3.59	-6.03/-7.37	-8.64/-8.27	-9.09/-10.82	-11.05/-11.91	-14.28/-15.20	-15.60/-15.14	-15.01/-12.87	-8.60/-7.03	-6.47/-5.12	-3.08/-1.26	-0.61/1.06	0.13/-1.70	-1.66/-1.60	-2.28/-2.29	-1.40/-1.13	-1.00/-0.60	-0.16/-0.62	-0.66/-0.05	-0.53/-0.38	1.54/2.30	1.70/0.97
Theta(60°)	-0.70/-2.56	-2.27/-2.67	-2.66/-4.63	-6.84/-8.59	-11.56/-13.76	-13.05/-12.67	-11.26/-12.45	-14.78/-15.70	-15.14/-14.27	-15.28/-13.40	-9.19/-7.58	-7.93/-6.24	-4.52/-1.65	-1.92/-2.33	-1.36/-1.39	-0.90/-0.30	-0.72/-0.89	-0.35/-0.43	-0.26/0.47	0.70/0.50	0.84/1.58	1.58/0.93	2.22/2.48	2.12/1.52
Theta(67.5°)	-1.01/-1.64	-0.45/-1.34	-1.97/-4.89	-7.51/-8.30	-11.73/-14.89	-14.70/-15.47	-14.11/-11.76	-11.75/-12.47	-15.99/-12.84	-11.85/-13.57	-10.79/-7.72	-5.90/-6.24	-4.47/-1.42	-2.00/-3.18	-1.86/-1.96	-0.82/-0.14	-0.84/-0.22	0.73/0.83	1.26/1.36	1.36/1.83	2.32/3.30	2.43/0.96	1.03/0.53	0.97/1.05
Theta(75°)	-1.18/-0.54	0.82/-1.39	-1.32/-5.15	-5.71/-6.88	-8.59/-10.97	-14.39/-15.51	-12.48/-9.63	-8.89/-10.02	-13.29/-11.80	-10.42/-11.03	-8.51/-7.55	-5.85/-7.11	-5.76/-2.28	-1.32/-3.38	-2.54/-1.22	0.13/0.87	0.20/0.74	1.00/1.50	2.54/2.59	1.97/2.96	3.77/4.39	3.98/1.52	0.17/-0.59	1.08/1.72
Theta(82.5°)	-0.93/-0.51	0.13/-1.86	-0.77/-6.15	-4.31/-6.59	-6.78/-12.25	-14.42/-13.34	-8.19/-6.57	-7.26/-8.35	-10.40/-12.81	-11.80/-15.28	-9.00/-8.12	-5.49/-7.00	-6.77/-1.45	-1.33/-4.05	-3.58/-0.98	0.48/1.17	0.83/0.41	0.16/1.02	1.80/1.79	1.50/3.18	4.39/4.22	3.61/1.76	-0.98/-2.43	1.38/2.36
Theta(90°)	-2.46/-1.56	-0.75/-1.87	-0.22/-5.02	-3.31/-5.64	-4.25/-10.32	-12.17/-9.95	-7.49/-6.96	-7.11/-8.70	-10.25/-15.28	-10.58/-13.74	-7.27/-8.39	-5.40/-4.27	-5.89/0.28	0.46/-3.05	-4.13/-1.16	-0.63/-0.22	0.65/-1.06	-0.14/-0.46	-0.88/-0.62	-0.21/0.86	2.83/2.56	1.76/0.12	-2.30/-4.07	-0.09/1.25
Theta(97.5°)	-3.60/-2.33	-1.82/-2.84	-1.38/-6.34	-2.93/-4.81	-3.97/-7.38	-6.76/-6.70	-4.96/-4.14	-5.76/-7.53	-8.91/-13.54	-8.20/-9.50	-6.27/-10.02	-4.95/-3.70	-3.94/-0.09	0.26/-2.47	-4.47/-2.83	-2.33/-1.06	-1.62/-5.22	-3.14/-3.57	-2.61/-1.91	-2.70/-1.71	1.03/1.30	-0.34/-1.55	-3.31/-2.57	0.02/-0.33
Theta(105°)	-5.48/-3.69	-2.94/-2.88	-3.06/-6.53	-3.21/-3.90	-2.90/-5.48	-7.50/-7.49	-7.99/-7.98	-8.79/-9.40	-7.92/-8.58	-8.15/-8.96	-5.22/-7.10	-6.45/-2.61	-3.94/-1.67	-0.10/-2.15	-7.43/-5.01	-4.43/-4.36	-4.65/-6.22	-3.87/-5.51	-1.60/-1.75	-5.35/-3.42	0.44/1.47	0.92/0.68	-3.07/-0.94	0.04/-1.69
Theta(112.5°)	-5.49/-5.37	-3.68/-3.32	-4.12/-6.84	-4.79/-5.10	-7.58/-10.89	-14.34/-11.82	-7.95/-7.35	-7.66/-7.27	-7.99/-8.35	-7.85/-8.17	-													

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





Total Gain Data

Table with columns for Freq(Hz), 2dBPol, TotalAnt. 1, and 24 directional gain values (Theta 0 to Theta 180 degrees).

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

