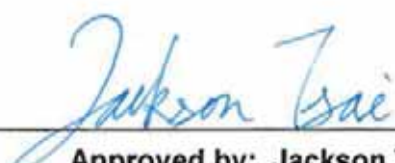




Antenna Composite Gain Test Report

Equipment	WiFi 7 Tri-radio concurrent indoor ceiling mount AP
Brand Name	Senao
Model Name	IAP4701A
Applicant	Senao Networks, Inc. 3F., No.529, Zhongzheng Rd., Xindian Dist., New Taipei City, Taiwan
Manufacturer	Senao Networks, Inc. 3F., No.529, Zhongzheng Rd., Xindian Dist., New Taipei City, Taiwan
Standard	KDB 662911 D03 v01
Sample Received	Oct. 31, 2023
Start Test Date	Nov. 03, 2023
Final Test Date	Nov. 04, 2023


Approved by: Jackson Tsai

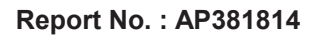
SPORTON INTERNATIONAL INC. Hsinhua Laboratory

No.52, Huaya 1st Rd., Guishan Dist., Taoyuan City 333411, Taiwan (R.O.C.)



Table of Contents

History of this test report.....	3
1. Operation Mode and Antenna Information	4
2. Test Frequency	4
3. Testing Location.....	5
4. Test Facility and Configuration.....	6
5. Reference Calibration	7
6. Test Method	8
7. Measured Values and Calculation of Maximum Gain Positions.....	9
8. Summary of Test Result	12
9. Test Setup	14
10. Test Equipment and Calibration Data	15
11. Test Results	16



Page No. : 3 of 16
Issued Date : Feb. 01, 2024
Report Version : 01



1. Operation Mode and Antenna Information

Antenna Position	RF Port	Brand Name	Model Name	Ant. Type	Connector	Modes of Operation
2G Ant1	1	Senao	5718A0738300	PIFA	I-Pex	2.4G
2G Ant2	2	Senao	5718A0739300	PIFA	I-Pex	2.4G
2G Ant3	3	Senao	5718A0740300	PIFA	I-Pex	2.4G
2G Ant4	4	Senao	5718A0741300	PIFA	I-Pex	2.4G
5G Ant1	1	Senao	5718A0742300	PIFA	I-Pex	5G
5G Ant2	2	Senao	5718A0743300	PIFA	I-Pex	5G
5G Ant3	3	Senao	5718A0744300	PIFA	I-Pex	5G
5G Ant4	4	Senao	5718A0745300	PIFA	I-Pex	5G
6G Ant1	1	ADVANCED WIRELESS & ANTENNA Inc.	A8P8P-100089	Alford loop	I-Pex	6G
6G Ant2	2	ADVANCED WIRELESS & ANTENNA Inc.	A8P8P-100090	Alford loop	I-Pex	6G
6G Ant3	3	ADVANCED WIRELESS & ANTENNA Inc.	A8P8P-100091	Alford loop	I-Pex	6G
6G Ant4	4	ADVANCED WIRELESS & ANTENNA Inc.	A8P8P-100092	Alford loop	I-Pex	6G

Note:

2.4GHz Operation Mode (4TX/4RX)

2G Ant1, 2G Ant2, 2G Ant3 and 2G Ant4 could transmit/receive simultaneously.

5GHz Operation Mode (4TX/4RX)

5G Ant1, 5G Ant2, 5G Ant3 and 5G Ant4 could transmit/receive simultaneously.

6GHz Operation Mode (4TX/4RX)

6G Ant1, 6G Ant2, 6G Ant3 and 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. Testing Location

Test Lab. : Sporton International Inc. Hsinhua Laboratory				
☒ 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%	Nov. 03, 2023~ Nov. 04, 2023

Note:

Testing Site Information

Brand Name: TDK

Dimension: 11m*6m*6m

Characteristic: Fully Anechoic Chamber

4. Test Facility and Configuration

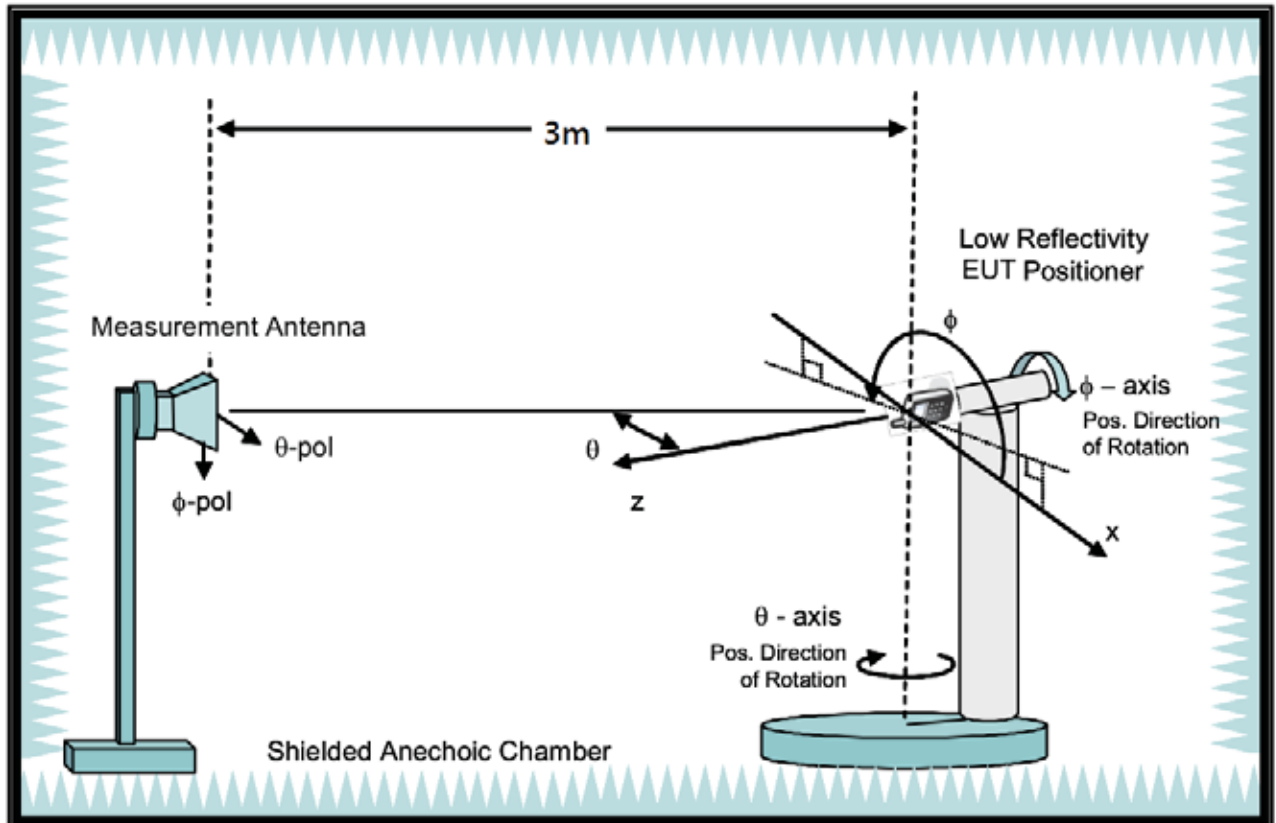
Test configuration: Reference to CITA OTA distributed-axes system configuration.

Chamber: Fully Anechoic Chamber.

Measurement antenna: Dual Polarization Horn antenna

Turntable: Multi-axis positioner (Theta and Phi angle).

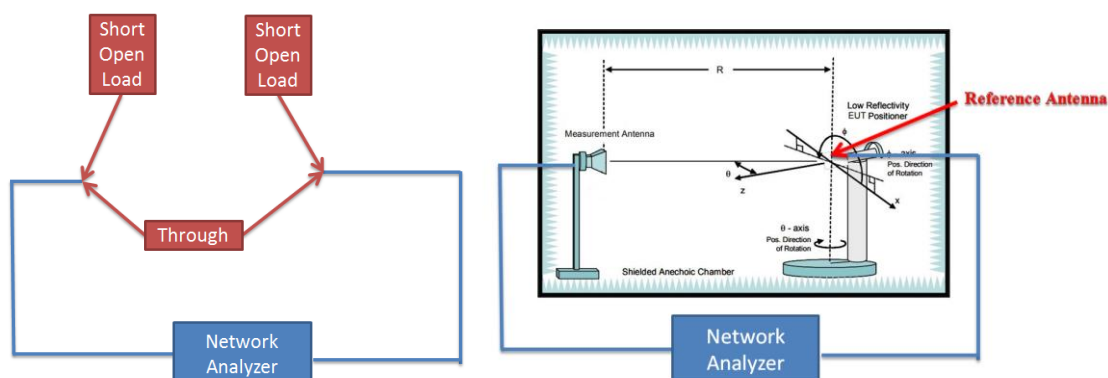
#Reference to CTIA "ctia-test-plan-for-wireless-device-over-the-air-performance-ver-3-7-1"



5. 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)	-33.75	-33.64	-32.91	-32.21	-32.45	-32.33	-32.57	-32.94	-32.78	-33.35	-32.91	-33.81	-34.54	-35.64
G(phi) reading (dB)	-33.19	-32.12	-32.48	-32.51	-32.64	-31.68	-32.24	-32.45	-32.45	-32.85	-32.45	-33.62	-34.48	-35.24
Reference gain (dBi)	10	10.4	10.6	12.3	12.5	13.3	13.3	13.2	13.1	13	13.2	12.4	11.8	11.1
Factor(theta) (dB)	43.75	44.04	43.51	44.51	44.95	45.63	45.87	46.14	45.88	46.35	46.11	46.21	46.34	46.74
Factor(phi) (dB)	43.19	42.52	43.08	44.81	45.14	44.98	45.54	45.65	45.55	45.85	45.65	46.02	46.28	46.34

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.

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



6. 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.



7. Measured Values and Calculation of Maximum Gain Positions

DG_1SS max value position

Frequency (Hz)	2.4G	2.45G	2.4835G
Ant. 1 (dBi)	2.6	-0.46	-2.96
Ant. 2 (dBi)	-2.91	-0.5	0.21
Ant. 3 (dBi)	-2.52	2.29	0.88
Ant. 4 (dBi)	-1.74	-0.69	2.69
DG [1SS] (dBi)	5.18	6.27	6.46
Polarization	Theta	Theta	Theta
$\Theta(^{\circ})$	15	60	52.5
$\Phi(^{\circ})$	292.5	45	135

Note: The DG 1SS max value position is the maximum value of section 11 table DG 1SS Result.

DG_1SS max value position calculation

Frequency (Hz)	2.4G	2.45G	2.4835G
Ant. 1 [$10^{(G/20)}$]	$10^{(2.6/20)}$	$10^{(-0.46/20)}$	$10^{(-2.96/20)}$
Ant. 2 [$10^{(G/20)}$]	$10^{(-2.91/20)}$	$10^{(-0.5/20)}$	$10^{(0.21/20)}$
Ant. 3 [$10^{(G/20)}$]	$10^{(-2.52/20)}$	$10^{(2.29/20)}$	$10^{(0.88/20)}$
Ant. 4 [$10^{(G/20)}$]	$10^{(-1.74/20)}$	$10^{(-0.69/20)}$	$10^{(2.69/20)}$
Ant. 1 [$10^{(G/20)}$] value	1.349	0.948	0.711
Ant. 2 [$10^{(G/20)}$] value	0.715	0.944	1.024
Ant. 3 [$10^{(G/20)}$] value	0.748	1.302	1.107
Ant. 4 [$10^{(G/20)}$] value	0.818	0.924	1.363
Sum All Antenna [Amax]	3.631	4.118	4.205
DG [$10 \cdot \log(A_{max}^2/N_{ant})$]	5.18	6.27	6.46

Note:

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

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)	5.2G	5.3G	5.6G	5.785G
Ant. 1 (dBi)	-0.01	3.87	5.45	4.73
Ant. 2 (dBi)	-0.96	1.21	4.39	4.94
Ant. 3 (dBi)	2.99	-0.88	-0.26	-0.29
Ant. 4 (dBi)	2.51	1.32	-1.28	1.07
DG [1SS] (dBi)	7.31	7.57	8.57	8.92
Polarization	Theta	Theta	Theta	Theta
$\Theta(^{\circ})$	67.5	75	75	67.5
$\Phi(^{\circ})$	22.5	217.5	150	150

Note: The DG 1SS max value position is the maximum value of section 11 table DG 1SS Result.

DG_1SS max value position calculation

Frequency (Hz)	5.2G	5.3G	5.6G	5.785G
Ant. 1 [$10^{(G/20)}$]	$10^{(-0.01/20)}$	$10^{(3.87/20)}$	$10^{(5.45/20)}$	$10^{(4.73/20)}$
Ant. 2 [$10^{(G/20)}$]	$10^{(-0.96/20)}$	$10^{(1.21/20)}$	$10^{(4.39/20)}$	$10^{(4.94/20)}$
Ant. 3 [$10^{(G/20)}$]	$10^{(2.99/20)}$	$10^{(-0.88/20)}$	$10^{(-0.26/20)}$	$10^{(-0.29/20)}$
Ant. 4 [$10^{(G/20)}$]	$10^{(2.51/20)}$	$10^{(1.32/20)}$	$10^{(-1.28/20)}$	$10^{(1.07/20)}$
Ant. 1 [$10^{(G/20)}$] value	0.999	1.561	1.873	1.724
Ant. 2 [$10^{(G/20)}$] value	0.895	1.149	1.658	1.766
Ant. 3 [$10^{(G/20)}$] value	1.411	0.904	0.971	0.967
Ant. 4 [$10^{(G/20)}$] value	1.335	1.164	0.863	1.131
Sum All Antenna [Amax]	4.64	4.779	5.364	5.588
DG [$10 \cdot \log(A_{max}^2/N_{ant})$]	7.31	7.57	8.57	8.92

Note:

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

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)	4.72	4.14	4.94	4.45
Ant. 2 (dBi)	4.22	4.46	2.35	4.54
Ant. 3 (dBi)	4.1	3.77	2.68	2.83
Ant. 4 (dBi)	2.68	3.2	3.84	3.42
DG [1SS] (dBi)	9.98	9.93	9.53	9.86
Polarization	Phi	Phi	Phi	Phi
$\Theta(^{\circ})$	60	60	45	52.5
$\Phi(^{\circ})$	307.5	300	285	262.5

Note: The DG 1SS max value position is the maximum value of section 11 table DG 1SS Result.

DG_1SS max value position calculation

Frequency (Hz)	6.175G	6.475G	6.695G	6.995G
Ant. 1 [$10^{(G/20)}$]	$10^{(4.72/20)}$	$10^{(4.14/20)}$	$10^{(4.94/20)}$	$10^{(4.45/20)}$
Ant. 2 [$10^{(G/20)}$]	$10^{(4.22/20)}$	$10^{(4.46/20)}$	$10^{(2.35/20)}$	$10^{(4.54/20)}$
Ant. 3 [$10^{(G/20)}$]	$10^{(4.1/20)}$	$10^{(3.77/20)}$	$10^{(2.68/20)}$	$10^{(2.83/20)}$
Ant. 4 [$10^{(G/20)}$]	$10^{(2.68/20)}$	$10^{(3.2/20)}$	$10^{(3.84/20)}$	$10^{(3.42/20)}$
Ant. 1 [$10^{(G/20)}$] value	1.722	1.611	1.766	1.669
Ant. 2 [$10^{(G/20)}$] value	1.626	1.671	1.311	1.687
Ant. 3 [$10^{(G/20)}$] value	1.603	1.543	1.361	1.385
Ant. 4 [$10^{(G/20)}$] value	1.361	1.445	1.556	1.483
Sum All Antenna [Amax]	6.312	6.271	5.994	6.223
DG [$10 \cdot \log(A_{max}^2/N_{ant})$]	9.98	9.93	9.53	9.86

Note:

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

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



8. Summary of Test Result

2G Ant.

Freq(Hz)	2.4G	2.45G	2.4835G
Ant. 1 Max Gain (dBi)	2.71	2.64	2.82
Ant. 2 Max Gain (dBi)	2.38	2.35	2.39
Ant. 3 Max Gain (dBi)	2.01	2.29	2.33
Ant. 4 Max Gain (dBi)	2.17	2.32	2.69
Ant. 1 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$	Theta/15/300	Phi/30/67.5	Theta/60/172.5
Ant. 2 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$	Phi/45/210	Theta/60/112.5	Theta/52.5/120
Ant. 3 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$	Phi/22.5/255	Theta/60/45	Phi/22.5/262.5
Ant. 4 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$	Phi/22.5/30	Phi/30/172.5	Theta/52.5/135
Max Gain (dBi)	2.71	2.64	2.82
DG [1SS] (dBi)	5.18	6.27	6.46
DG [2SS] (dBi)	2.71	3.27	3.46
DG [4SS] (dBi)	2.71	2.64	2.82

5G Ant.

Freq(Hz)	5.2G	5.3G	5.6G	5.785G
Ant. 1 Max Gain (dBi)	4.81	4.19	5.45	4.98
Ant. 2 Max Gain (dBi)	2.63	3.44	5.31	5.17
Ant. 3 Max Gain (dBi)	5.06	5.29	4.27	3.96
Ant. 4 Max Gain (dBi)	3.72	3.52	4.66	4.51
Ant. 1 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$	Theta/52.5/292.5	Theta/60/345	Theta/75/150	Theta/52.5/307.5
Ant. 2 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$	Theta/75/52.5	Theta/75/150	Theta/60/150	Theta/60/150
Ant. 3 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$	Theta/52.5/112.5	Theta/67.5/7.5	Theta/75/22.5	Theta/60/52.5
Ant. 4 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$	Theta/60/22.5	Theta/75/315	Theta/67.5/232.5	Theta/75/322.5
Max Gain (dBi)	5.06	5.29	5.45	5.17
DG [1SS] (dBi)	7.31	7.57	8.57	8.92
DG [2SS] (dBi)	5.06	5.29	5.57	5.92
DG [4SS] (dBi)	5.06	5.29	5.45	5.17

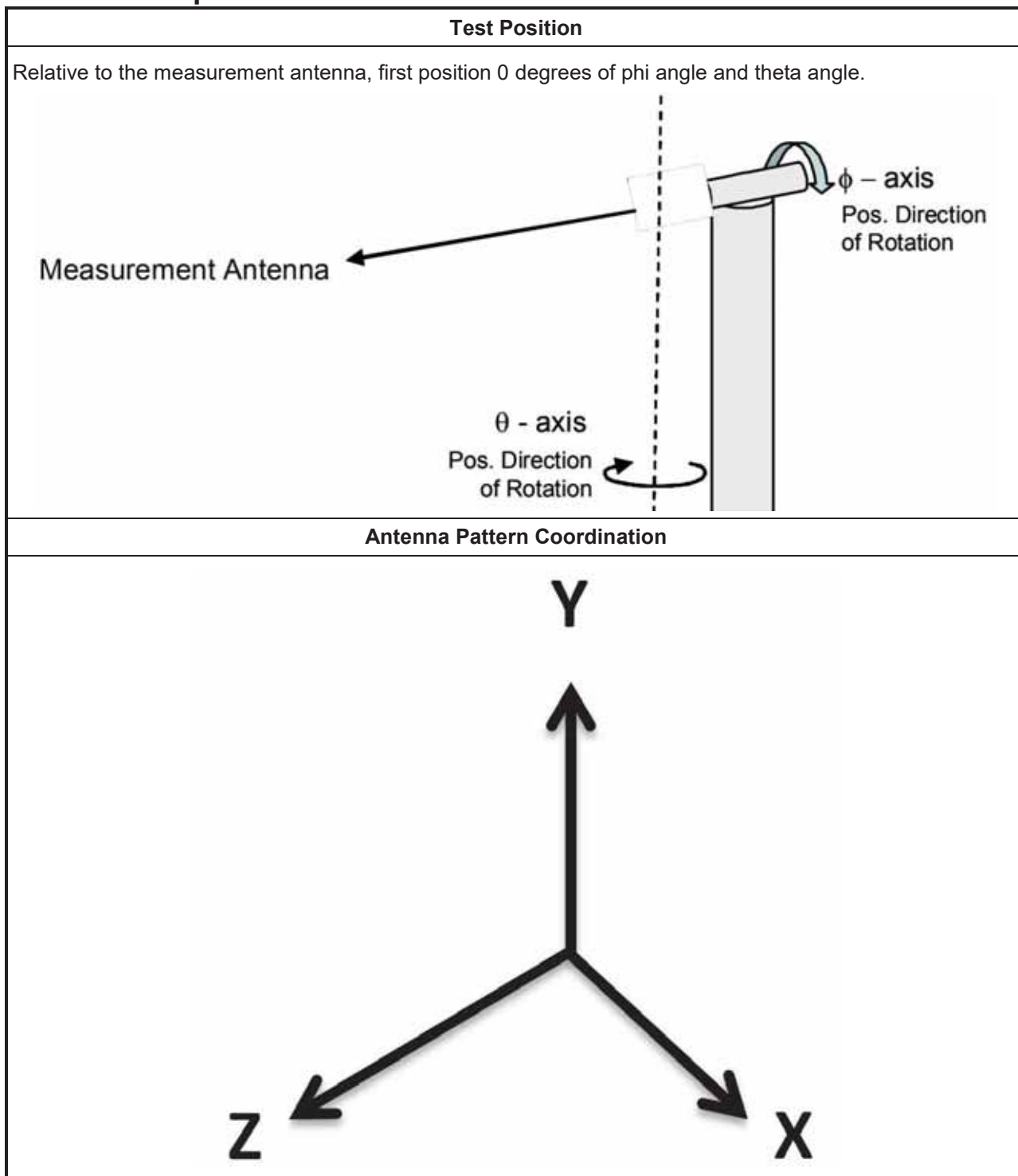
**6G Ant.**

Freq(Hz)	6.175G	6.475G	6.695G	6.995G
Ant. 1 Max Gain (dBi)	4.96	4.99	4.98	4.78
Ant. 2 Max Gain (dBi)	4.72	4.74	4.53	4.69
Ant. 3 Max Gain (dBi)	4.88	4.63	4.47	4.94
Ant. 4 Max Gain (dBi)	4.77	4.84	4.61	4.26
Ant. 1 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$	Phi/60/322.5	Phi/45/277.5	Phi/45/277.5	Phi/45/285
Ant. 2 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$	Phi/37.5/270	Phi/75/262.5	Phi/75/285	Phi/67.5/292.5
Ant. 3 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$	Phi/75/307.5	Phi/75/285	Phi/75/300	Phi/82.5/300
Ant. 4 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$	Phi/45/322.5	Phi/52.5/307.5	Phi/52.5/300	Phi/45/277.5
Max Gain (dBi)	4.96	4.99	4.98	4.94
DG [1SS] (dBi)	9.98	9.93	9.53	9.86
DG [2SS] (dBi)	6.98	6.93	6.53	6.86
DG [4SS] (dBi)	4.96	4.99	4.98	4.94

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)

9. Test Setup



Note:

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

**10. 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 11, 2023	May 10, 2024
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	Jul. 28, 2023	Jul. 27, 2024
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.



11. Test Results

Please refer to the appendix.

Appendix A – Radiated Composite Gain of 2.4GHz.....	Page 17
Appendix B – Radiated Composite Gain of 5GHz.....	Page 26
Appendix C – Radiated Composite Gain of 6GHz.....	Page 37
Appendix D – Antenna Pattern of 2.4GHz.....	Page 48
Appendix E – Antenna Pattern of 5GHz.....	Page 53
Appendix F – Antenna Pattern of 6GHz.....	Page 59
Appendix G – Test Photos.....	Page 65

————THE END————



Radiated Composite Gain Data of 2.4GHz

Appendix A

Freq(Hz)	2.4G	2.45G	2.4835G
Ant. 1 Max Gain (dBi)	2.71	2.64	2.82
Ant. 2 Max Gain (dBi)	2.38	2.35	2.39
Ant. 3 Max Gain (dBi)	2.01	2.29	2.33
Ant. 4 Max Gain (dBi)	2.17	2.32	2.69
Ant. 1 Polarization/ $\theta(^{\circ})/\phi(^{\circ})$	Theta/15/300	Phi/30/67.5	Theta/60/172.5
Ant. 2 Polarization/ $\theta(^{\circ})/\phi(^{\circ})$	Phi/45/210	Theta/60/112.5	Theta/52.5/120
Ant. 3 Polarization/ $\theta(^{\circ})/\phi(^{\circ})$	Phi/22.5/255	Theta/60/45	Phi/22.5/262.5
Ant. 4 Polarization/ $\theta(^{\circ})/\phi(^{\circ})$	Phi/22.5/30	Phi/30/172.5	Theta/52.5/135
Max Gain (dBi)	2.71	2.64	2.82
DG [1SS] (dBi)	5.18	6.27	6.46
DG [2SS] (dBi)	2.71	3.27	3.46
DG [4SS] (dBi)	2.71	2.64	2.82



Radiated Composite Gain Data of 2.4GHz

Appendix A

φ(22.5°)	3.332.52	1.08±0.15	0.01±0.71	1.372.08	2.693.14	3.32.98	2.150.38	-1.32±2.5	-1.39±0.51	2.23.47	4.364.85	4.934.58	3.782.42	0.81±0.96	-0.01±0.89	2.08±0.23	4.044.39	4.354	3.312.4	1.450.86	0.450.25	0.68±1.48	2.43.13	3.503.81
φ(30°)	1.481.2	0.840.38	0.03±0.53	1.031.73	2.452.85	2.742.11	0.89±0.65	-2.38±3.45	-2.62±0.8	0.85±2	3.294.08	4.544.4	4.183.17	1.54±0.49	-1.57±0.49	0.65±1.93	2.863.29	3.292.98	2.491.87	1.340.44	-0.28±1.03	-1.07±0.58	0.17±0.91	1.451.88
φ(37.5°)	-1.15±0.13	0.91±1	0.55±0.31	0.57±1.14	1.822.09	1.620.54	-0.76±1.92	-2.54±2.75	-2.95±2.16	-1.05±0.05	1.12±04	2.832.23	3.062.1	0.64±1	-1.84±1.03	0.01±1.06	1.82±08	1.98±1.63	1.21±1.02	0.740.48	-0.1±0.51	-0.57±0.59	-0.83±0.84	-0.93±0.94
φ(45°)	2.82±1.11	0.35±0.97	0.92±0.45	0.21±0.5	1.08±1.26	0.63±0.82	-2.39±2.81	-2.07±1.48	0.85±0.4	0.02±0	0.19±0.5	1.18±1.73	1.75±1.07	0.25±0.68	-1.52±1.17	-0.75±0.49	-0.38±0.37	-0.38±0.67	-0.54±0.34	-0.13±0.2	0.19±0.49	0.78±1.07	1.25±0.91	-0.08±1.83
φ(52.5°)	-1.64±1.64	-0.61±0.55	1.36±1.31	0.61±0.27	0.37±0.24	-0.63±0.29	-3.81±3.5	-2.16±0.96	0.14±0.87	1.27±1.11	0.53±0.08	0.16±0.19	0.23±0.22	-8.18±0.43	-1.11±0.92	-0.83±0.98	-1.17±1.32	-1.1±0.59	-1.74±2.21	-2.02±0.86	-0.12±0.29	0.44±0.59	0.85±0.94	-0.49±0.77
φ(60°)	-0.1±1.46	-1.42±0.25	2.09±1.5	0.92±0.33	-0.91±1.36	-2.08±2.88	-4.15±4.92	-3.51±2.49	-1.41±0.43	0.15±0.03	-0.45±0.93	-1.04±0.87	-1.29±1.98	-2.02±1.27	-2.45±2.1	-1.8±1.81	-1.75±0.97	-0.01±0.48	0.25±1.25	-1.78±0.86	0.05±0.98	0.43±0.22	-0.81±0.91	-1.03±1.29
φ(67.5°)	-1.9±2.42	-2.87±1.06	1.28±1.24	-0.62±2.58	-3.11±2.89	-2.57±2.97	-4.59±6.57	-4.72±3.74	-2.36±1.25	-0.57±0.73	-0.91±0.73	0.09±0.13	-1.17±2.14	-2.81±3.28	-3.81±3.29	-3±3.2	-4.22±2.67	0.87±0.04	-0.46±0.94	-1.08±0.86	-0.88±0.95	-1.24±2.11	-2.81±2.78	-2.83±2.68
φ(75°)	-3.31±3.45	-4.41±2.12	0.40±30	2.02±1.46	-4.72±3.57	-2.68±2.5	-4.24±6.15	-5.18±4.43	-3.88±2.33	-1.12±1.03	-1.48±1.82	-1.25±1.52	-2.12±2.5	-2.78±2.95	-3.51±3.99	-3.84±2.77	-2.49±1.93	-1.03±0.72	-2±3.3	-3.18±3.06	-2.52±3.35	-4.91±5.52	-4.83±3.91	-3.21±3.39
φ(82.5°)	-3.24±3.45	-5.52±2.99	0.15±0.41	-1.92±4.83	-5.13±4.55	-3.30±3.11	-4.12±5.02	-4.76±5.1	-5.16±3.76	-2.41±2.39	-2.38±1.96	-1.52±1.93	-2.78±3.96	-5.18±5.35	-5.2±6.18	-5.58±3.47	-2.53±2.47	-0.93±0.87	-3.05±4.48	-4.16±3.85	-2.97±2.79	-4.54±5.88	-4.99±4.37	-4.21±4.06
φ(90°)	-5.21±5.24	-7.32±4.88	-0.87±0.28	-2±4.6	-6.61±6.39	-5.03±4.83	-5.16±6.89	-6.88±6.51	-6.8±5.44	-3.71±3.33	-2.84±2.57	-2.2±2.75	-3.71±4.2	-4.72±4.78	-4.24±5.41	-6.87±3.51	-1.78±1.38	-1.35±1.49	-3.84±5.57	-5.21±4.85	-3.26±3	-4.82±6	-4.95±4.87	-5.11±5.25
φ(97.5°)	-6.71±6	-7.72±6.83	-2.01±1.53	-3.75±5.72	-6.14±0.87	-6.54±5.85	-6.96±6.78	-6.69±7.33	-7.02±5.57	-4.13±3.03	-3.92±2.84	-3.29±3.17	-4.41±6.06	-7.79±6.99	-5.53±5.42	-7.5±5	-3.19±2.31	-1.11±1.17	-2.99±5.55	-6.93±5.88	-3.71±3.2	-4.86±5.6	-4.93±5.84	-6.02±6.45
φ(105°)	-8.68±5.7	-7.47±5.1	-3.73±3.47	-5.89±5.91	-5.87±95	-7.82±6.17	-5.84±1	-6.79±6.52	-6.89±6.45	-6.14±5.26	-4.94±4.92	-4.88±5.43	-5.62±6.29	-7.31±8.1	-7.34±6.96	-8.43±6.45	-4.23±3.92	-1.42±1.05	-3.21±6.83	-6.36±6.45	-4.35±4.53	-7.31±7.8	-5.22±4.55	-6.92±6.48
φ(112.5°)	-9.1±5.9	-7.52±6.4	-4.98±6.08	-7.81±6.15	-4.36±3.57	-5.68±3.37	-4.83±5.81	-6.59±10.17	-18.86±4.3	-7.87±7.18	-5.49±4.74	-5.18±4.83	-5.24±6.22	-8.01±9.27	-6.93±6.95	-7.78±5.59	-4.88±4.47	-2.19±1.93	-4.24±6.64	-6.27±6.47	-3.98±3.1	-6.19±6.28	-4.51±6.99	-7.41±7.17
φ(120°)	-4.34±6.3	-7.82±6.91	-6.5±5.53	-4.29±4.27	-3.71±3.25	-3.53±3.79	-5.56±7.26	-7.74±8.32	-7.72±6.54	-5.52±6.4	-4.96±5.49	-7.43±9.23	-6.38±6.95	-6.23±6.95	-5.46±5.37	-6.79±5.55	-4.91±7.46	-7.13±4.54	-3.85±4.2	-4.28±6.09	-6.77±6.16	-7.41±7.78	-5.74±5.36	-7.71±8.97
φ(127.5°)	-6.4±6.8	-8.32±6.19	-7.49±6.53	-6.76±5.08	-3.55±0.48	-4.87±5.01	-4.67±4.96	-6.19±7.8	-7.17±7.21	-7.43±7.78	-7.28±6.82	-7.93±8.86	-6.75±5.08	-6.91±6.72	-6.46±7.71	-6.78±7.58	-5.29±4.4	-3.75±3.87	-4.37±6.84	-6.4±6.96	-6.21±5.24	-5.81±6.68	-5.13±5.19	-6.41±8.2
φ(135°)	-7.61±6.98	-8.81±6.78	-7.09±7.75	-7.08±4.81	-2.88±2.37	-2.84±2.64	-3.07±4.19	-6.71±5.7	-6.12±5.81	-6.37±7.18	-6.43±5.24	-5.08±5.27	-4.42±4.35	-6.42±5.13	-3.93±3.59	-3.92±4.47	-4.34±2.3	-4.14±4.3	-4.82±5.45	-5.88±6.5	-6.41±5.08	-6.31±5.41	-5.24±2.67	-6.36±6.71
φ(142.5°)	-5.06±5.12	-5.3±5.05	-4.57±4.44	-4.33±3.89	-2.88±2.39	-2.24±2.72	-3.96±4.66	-3.97±3.55	-4.18±5.11	-5.59±6.74	-5.96±4.34	-5.28±5.71	-5.96±4.12	-6.21±3.7	-2.77±2.71	-3.1±3.7	-4.39±5.86	-7.9±10.89	-10.05±6.65	-6.72±5.76	-5.51±5.58	-5.37±4.28	-3.74±0.65	-4.51±5.26
φ(150°)	-6.77±6.4	-5.48±4.37	-3.64±3.77	-4.68±5.3	-5.58±0.67	-6.55±0.95	-6.61±5.62	-4.33±3.54	-3.89±5.41	-4.48±4.24	-3.85±3.9	-5.17±4.3	-9.35±9.42	-7.35±4.21	-6.16±6.94	-7.82±8.73	-8.16±7.59	-8.12±9.58	-9.92±9.23	-7.22±6.18	-5.93±6.02	-5.69±5.55	-4.98±4.87	-6.09±6.72
φ(157.5°)	-8.38±7.25	-5.76±5.14	-4.82±5.45	-6.48±7.5	-6.18±7.84	-6.74±5.25	-4.39±4.15	-4.29±4.89	-5.36±5.29	-5.22±4.42	-3.97±4.18	-5.36±7.98	-9.9±9.38	-7.84±7.25	-7.84±8.74	-10.25±11.29	-8.44±7.4	-6.37±6.6	-7.13±7.71	-7.84±7.92	-7.75±8.01	-8.03±7.82	-7.78±7.8	-8.09±8.13
φ(165°)	-6.83±5.88	-5.19±5.29	-5.44±5.7	-6.23±6.93	-6.11±5.74	-4.86±4.27	-4.24±4.68	-5.67±6.76	-6.95±7.11	-6.63±4.33	-6.15±6.31	-7.2±9.17	-10.3±10.24	-10.07±9.4	-9.88±10.15	-10.44±9.42	-7.58±5.5	-4.39±4.2	-4.8±5.69	-6.43±7.2	-7.65±6.9	-6.58±6.5	-6.78±7.71	-7.36±7.12
φ(172.5°)	-6.28±6.17	-5.78±5.7	-6±6.4	-6.77±7.04	-6.73±6.21	-5.52±5.49	-6.18±6.87	-7.48±7.72	-7.87±7.73	-8.09±6.55	-8.76±6.83	-8.27±8.87	-10.48±11.36	-11.83±11.71	-11.59±10.18	-8.55±7.22	-8.89±5.09	-4.87±5.08	-6.66±6.13	-6.93±7.31	-8.15±9.39	-8.95±10.39	-9.9±8.8	-7.87±6.8
φ(180°)	-7.03±6.82	-7.04±7.18	-7.58±8.23	-8.65±9.09	-9.2±8.83	-8.63±8.7	-8.52±8.7	-9.19±8.98	-8.92±9.6	-10.47±11.45	-10.72±10.99	-10.22±9.73	-9.39±9.27	-8.52±9.15	-8.22±7.17	-6.39±6.14	-6.33±6.47	-6.58±7.28	-7.71±8.12	-8.29±8.66	-9±10.06	-10.55±10.25	-11.67±8.81	-7.97±7.34
Freq(Hz)	2.48355GHz	2.48355GHz	2.48355GHz	2.48355GHz	2.48355GHz	2.48355GHz	2.48355GHz	2.48355GHz	2.48355GHz	2.48355GHz	2.48355GHz	2.48355GHz	2.48355GHz	2.48355GHz	2.48355GHz	2.48355GHz	2.48355GHz	2.48355GHz	2.48355GHz	2.48355GHz	2.48355GHz	2.48355GHz	2.48355GHz	2.48355GHz
QdBS	φ(2°)φ(97.5°)	φ(15°)φ(22.5°)	φ(30°)φ(37.5°)	φ(45°)φ(52.5°)	φ(60°)φ(67.5°)	φ(75°)φ(82.5°)	φ(90°)φ(97.5°)	φ(105°)φ(112.5°)	φ(120°)φ(127.5°)	φ(135°)φ(142.5°)	φ(150°)φ(157.5°)	φ(165°)φ(172.5°)	φ(180°)φ(187.5°)	φ(195°)φ(202.5°)	φ(210°)φ(217.5°)	φ(225°)φ(232.5°)	φ(240°)φ(247.5°)	φ(255°)φ(262.5°)	φ(270°)φ(277.5°)	φ(285°)φ(292.5°)	φ(300°)φ(307.5°)	φ(315°)φ(322.5°)	φ(330°)φ(337.5°)	φ(345°)φ(352.5°)
φ(2°)	-6.17±0.29	-6.34±.22	0.82±1.25	1.45±1.48	1.36±1.13	0.80±73	0.65±0.67	0.89±1.35	1.75±2.15	2.41±2.46	2.42±22	1.87±129	0.51±0.04	-0.09±0.23	0.33±.77	1.21±54	1.71±1.81	1.27±0.72	0.14±0.18	-0.06±5.37	0.81±08	1.15±1.05	0.84±0.58	0.33±0
φ(7.5°)	0.78±0.7	0.77±1.2	1.57±1.89	2.07±1.94	1.87±1.21	0.73±0.25	-0.16±0.32	-0.86±0.39	0.75±0.99	1.07±1.05	1.64±0.98	0.84±0.58	0.23±0.01	0.16±34	0.49±0.57	0.86±0.81	1.05±1.2	1.11±0.89	0.78±0.02	1.42±1.81	2.05±2.28	2.32±1.5	1.86±1.52	1.18±0.8
φ(15°)	1.55±2.04	2.62±0.23	3.67±1.79	3.62±1.2	2.39±13	0.21±0.47	-0.55±0.02	0.57±1.23	1.49±1.99	1.16±0.87	0.19±0.29	0.22±0.38	1.21±96	2.55±0.83	2.82±.48	1.91±1.29	0.82±1.11	1.36±1.51	1.87±0.55	3.23±0.98	3.85±0.83	3.57±0.31	2.47±0.86	1.37±1.26
φ(22.5°)	1.58±2.32	3.38±3.34	4.81±4.85	4.62±3.99	3.86±1.34	0.31±1.3	-0.83±0.09	0.97±1.7	1.97±1.93	1.57±1.19	0.34±0.36	-0.47±0.4	1.62±1.91	3.82±0.91	3.95±1.47	2.61±1.54	0.99±1.33	1.67±1.77	1.89±5	3.39±0.86	4.13±4.11	3.76±1.34	2.34±1.57	1.59±1.3
φ(30°)	1.17±5	2.48±1.4	4.38±5	5.08±4.52	3.41±86	0.14±0.43	-0.02±0.21	1.89±1.61	2.22±.95	1.759±0.3	0.23±0.36	1.12±0.32	3.41±97	3.97±0.43	2.41±1.12	0.71±.36	1.91±1.87	1.68±1.76	2.36±1.1	3.58±0.7	3.62±0.44	1.76±1.07	0.63±0.74	0.63±0.74
φ(37.5°)	0.24±0.74	1.22±09	3.47±0.49	5.06±7.8	3.89±7.77	2.09±1.85	1.91±0.23	2.19±2.76	3.47±0.85	3.93±0.63	2.86±1	1.49±1.45	1.72±2.44	3.37±0.91	3.88±0.32	2.32±1.22	0.98±0.87	1.27±1.41	1.26±1.09	1.36±2.11	2.78±0.23	2.74±0.99	1.48±1.11	0.68±0.24
φ(45°)	0.88±0.85	1.01±1.09	3.06±4.49	5.18±9.82	4.11±19	2.96±2.9	3.62±0.72	3.88±1.3	4.95±28	5.24±66	3.72±82	1.92±1.96	2.41±2.85	3.45±0.92	3.95±46	2.59±1.05	0.93±0.52	0.92±1.63	2.08±1.3	1.77±1.96	2.23±0.84	2.56±2.13	1.72±1.5	1.02±0.51
φ(52.5°)	1.35±1.49	1.79±2.38	3.58±0.53	5.82±5.26	4.05±2.92	2.84±0.51	4.31±4.55	4.48±4.88	6.11±63	6.465.38	4.29±0.44	3.29±0.71	4.03±4	3.85±0.83	3.73±0.14	2.02±1.26	1.08±0.35	1.85±0.83	3.52±0.89	3.11±2.19	2.32±0.74	2.86±2.57	2.18±1.98	1.43±1.01
φ(60°)	1.50±1.81	2.17±0.34	4.01±5.24	5.86±5.31	3.81±2.37	2.46±0.6	4.59±4.9	4.84±4.88	6.54±6.28	6.26±53	4.48±0.88	4.04±0.73	5.12±0.87	4.18±0.76	3.69±0.25	2.21±2.3	1.18±1.35	2.11±2	4.14±4.55	4.94±0.75	2.82±0.36	2.81±0.52	2.37±0.52	1.98±1.1
φ(67.5°)	1.71±1.49	1.84±2.6	3.61±6.76	5.23±4.49	2.82±1.51	1.97±0.26	4.17±4.35	3.88±0.82	4.55±5.53	5.51±4.59	3.55±0.4	4.48±0.42	3.26±0	3.27±0.13	2.49±1.93	1.92±0.4	2.41±0.19	4.15±4.65	4.22±0.98	1.89±1.83	1.91±0.23	2.37±0.52	2.38±1.82	1.93±1.82
φ(75°)	1.69±1	0.95±1.92	3.06±4.07	4.29±5.3	1.29±0.14	0.61±0.21	3.28±0.47	2.97±0.23	3.53±4.7	4.81±0.82	2.78±0.9	3.56±0.92	3.83±4	2.78±0.56	2.18±1.77	1.93±0.2	2.38±0.84	3.74±2.5	3.94±0.84	2.17±5	1.68±1.52	1.43±0.69	2.15±0.91	2.15±0.91
φ(82.5°)	1.24±0.58	0.86±1.94	2.87±0.51	3.32±1.98	-0.42±1.51	0.08																		



Frq[Hz]	-18.86(-10.3)	-12.31(-11.98)	-12.54(-12.39)	-13.54(-14.34)	-15.36(-17.4)	-16.53(-17.8)	-17.58(-18.63)	-16.79(-16.3)	-16.36(-16.7)	-16.03(-16.2)	-17.07(-19.0)	-18.11(-17.55)	-17.2(-18.55)	-19.06(-17.3)	-18.16(-19.2)	-18.14(-17.7)	-18.06(-17.4)	-18.5(-18.49)	-17.41(-18.38)	-15.62(-15.08)	-14.45(-13.42)	-12.51(-11.9)	-11.76(-11.4)	-10.96(-10.5)
Phase[deg]	2.45(30)	ThetA=1																						
Gain	0.917(0.015)	0.917(0.0225)	0.917(0.037)	0.917(0.0625)	0.917(0.1025)	0.917(0.1525)	0.917(0.2125)	0.917(0.2825)	0.917(0.3525)	0.917(0.4225)	0.917(0.4925)	0.917(0.5625)	0.917(0.6325)	0.917(0.7025)	0.917(0.7725)	0.917(0.8425)	0.917(0.9125)	0.917(0.9825)	0.917(1.0525)	0.917(1.1225)	0.917(1.1925)	0.917(1.2625)	0.917(1.3325)	0.917(1.4025)
01575	4.71(4.29)	4.85(5.5)	4.39(4.7)	4.81(7.7)	5.05(10.38)	4.92(8.67)	4.86(8.59)	5.02(8.4)	4.71(7.2)	4.78(7.1)	4.73(6.8)	4.59(6.42)	4.53(6.1)	4.57(6.24)	4.53(6.1)	4.38(5.47)	4.39(5.5)	4.38(5.47)	4.38(5.47)	4.38(5.47)	4.38(5.47)	4.38(5.47)	4.38(5.47)	4.38(5.47)
01575	0.0175	0.0175	0.0175	0.0175	0.0175	0.0175	0.0175	0.0175	0.0175	0.0175	0.0175	0.0175	0.0175	0.0175	0.0175	0.0175	0.0175	0.0175	0.0175	0.0175	0.0175	0.0175	0.0175	
01575	1.67(1)	1.64(1.48)	1.13(0.38)	1.26(1.34)	0.96(1.78)	1.06(1.12)	1.14(0.38)	1.37(0.34)	1.07(0.45)	0.93(0.29)	0.82(0.25)	0.75(0.51)	0.98(0.32)	1.2(0.37)	0.96(0.25)	1.25(0.18)	1.25(0.18)	1.25(0.18)	1.25(0.18)	1.25(0.18)	1.25(0.18)	1.25(0.18)	1.25(0.18)	1.25(0.18)
012225	1.84(1.6)	1.84(1.95)	1.82(1.25)	0.02(0.22)	0.02(0.22)	0.02(0.22)	0.02(0.22)	0.02(0.22)	0.02(0.22)	0.02(0.22)	0.02(0.22)	0.02(0.22)	0.02(0.22)	0.02(0.22)	0.02(0.22)	0.02(0.22)	0.02(0.22)	0.02(0.22)	0.02(0.22)	0.02(0.22)	0.02(0.22)	0.02(0.22)	0.02(0.22)	
01575	0.0055	0.00603	0.00702	0.0041(0.58)	0.319(1.47)	18.16(14.12)	4.1(5.41)	4.26(3.47)	3.34(3.34)	3.39(4.43)	4.2(2.57)	7.46(5.63)	4.32(3.21)	3.2(3.78)	4.17(4.78)	11.76(10.71)	11.37(32)	8.48(3.34)	2.77(2.37)	2.32(1.05)	0.76(0.07)	0.60(0.6)	0.34(0.1)	0.39(0.43)
01275	4.75(4.42)	3.08(-1.62)	0.57(0.04)	0.02(0.67)	-3.3(3.41)	-11.1(16.1)	11.1(16.1)	6.12(5.62)	5.47(5.55)	5.39(4.41)	4.89(4.08)	3.62(3.25)	3.26(3.29)	2.72(3.84)	3.7(5.8)	4.16(4.76)	4.16(4.76)	4.16(4.76)	4.16(4.76)	4.16(4.76)	4.16(4.76)	4.16(4.76)	4.16(4.76)	4.16(4.76)
01575	-0.36(0.33)	-5.3(4.3)	-1.85(0.75)	0.07(0.09)	-1.1(3.29)	-0.46(2.3)	-4.9(4.28)	-4.02(4.1)	4.7(5.65)	5.29(5.06)	4.1(4.52)	1.43(3.93)	1.1(1.52)	-1.59(1.44)	-1.02(3.16)	-5.1(6.8)	8.77(7.14)	12.01(4.68)	-1.85(1.34)	2.84(0.61)	7.1(7.67)	6.59(5.44)	5.61(5.77)	4.25(5.04)
01625	-117(4.24)	-5.4(-3.83)	2.45(1.76)	0.19(0.01)	-0.79(0.52)	-4.52(4.48)	-3.7(3.23)	2.34(-3.92)	3.69(4.77)	0.07(1.24)	0.79(1.28)	0.84(0.07)	-0.56(1.42)	0.07(1.24)	0.07(1.24)	0.07(1.24)	0.07(1.24)	0.07(1.24)	0.07(1.24)	0.07(1.24)	0.07(1.24)	0.07(1.24)	0.07(1.24)	0.07(1.24)
01575	-1312(8.28)	-5.4(14)	2.5(1.3)	0.46(0.45)	-1.27(2.69)	-3.92(3.4)	-1.96(1.44)	2.22(3.32)	3.63(3.83)	-8.46(5.13)	-3.0(0.4)	1.4(2)	1.29(1.4)	0.96(0.73)	-1.07(2.58)	3.66(3.71)	4.7(5.6)	4.3(4.49)	1.51(1.6)	0.33(0.33)	7.33(-10.06)	-10.84(5.89)	7.21(7.02)	-0.1(1.78)
01675	5.8(-7.26)	-5.8(-6.47)	3.1(-1.88)	-1.35(-7.77)	-2.85(-4.77)	4.7(-7.33)	1.7(-7.49)	2.23(-3.38)	3.14(-7.28)	1.54(-3.65)</														



Radiated Composite Gain Data of 2.4GHz

Appendix A

(H757)	6.006139	6.21553	5.294635	6.295138	-14.3861493	-17.4619012	-18.8861794	-16.4815433	-14.451325	-12.731364	-13.39149	-6.1647	-4.47451	-3.65135	-3.83146	-10.05939	6.131121	-17.21214	7.980174	-7.88938	-11.821726	-17.851198	8.751698	4.691673
(H758)	4.061452	-4.831502	-5.1559	-7.28914	-10.41118	-14.021335	-14.981168	-16.581184	-17.441174	-18.351193	-19.311651	-10.07183	-7.581796	7.01141	6.52184	-11.21933	6.121488	-11.561191	-11.371134	-8.46141	6.311759	8.82116	6.631526	4.32139
(H825)	4.414524	6.461487	6.001689	6.889162	-10.821215	-14.751921	-17.591136	-16.62191	-10.031179	-14.111615	-15.871138	-10.071819	8.481103	-12.571144	-11.311543	-19.371163	-12.671297	-11.431738	7.081101	-11.951243	-7.741767	-7.481487	6.161545	4.731248
(H908)	7.31138	-8.97166	-5.83151	-6.33171	-10.381121	-14.021335	-16.181168	-8.581751	7.871924	-13.021195	-18.181171	-17.781196	-10.61118	-12.311611	-11.4511741	-18.871134	8.491487	-14.021191	-8.971225	-12.84174	6.371176	-7.681732	8.641612	6.98145
(H975)	8.231891	-10.07149	8.361167	7.876133	-14.851798	-17.571518	-14.981157	-10.251987	8.891087	-15.241184	-18.181135	-12.011554	-18.571195	-18.671187	-18.71137	-8.571674	7.87172	8.961133	-19.11127	8.82106	6.18177	8.871631	6.77185	5.96168
(H1125)	7.91113	-14.11135	-12.12122	-15.481106	-12.131158	-11.761129	-14.181124	-15.03115	-18.541158	-19.281109	-19.241322	-11.941165	-18.771198	-17.11132	-14.11856	7.591466	6.62185	-18.531149	8.641487	8.641487	-10.01108	8.381727	6.961421	
(H1152)	6.741193	-15.271168	-15.831162	-12.811401	5.24147	-4.2154	-7.9154	-15.681135	-12.371145	-15.911834	-17.711191	-11.621148	-11.841125	-11.471102	-12.511932	-18.891134	8.911765	-7.751775	6.771454	-4.17162	-18.891134	8.911765	6.771775	-4.281942
(H1207)	6.981105	-10.22184	7.54162	51374	2.83173	3.85168	-12.551197	-18.711236	7.88165	7.21189	-12.121165	-14.0611281	-12.911137	-11.87193	8.54168	8.871155	-12.3811641	-17.42185	6.021111	-11.116	-18.481121	-13.891126	6.97125	7.43176
(H1275)	8.381101	-11.21181	-11.891142	-11.381104	7.87168	-10.821162	-15.11135	-9.991479	8.61505	7.11847	-10.12119	-15.981195	-10.461122	-11.981164	-10.451183	-14.131257	8.891687	-10.021138	-12.881153	-17.281174	-14.111316	-12.541155	8.891454	8.84169
(H1278)	-1.729123	8.719142	6.819489	7.531625	-3.633127	4.351635	-10.821158	-14.881104	7.571198	8.291335	-17.741152	-11.44172	7.191687	-7.02163	6.83113	6.231474	-19.261134	-11.711487	6.87142	-10.14119	-17.4211929	-17.531194	-17.821171	-17.811938
(H1425)	6.041543	4.881475	5.831532	5.021417	3.51138	5.14148	-16.181163	-10.33172	4.47126	-10.37152	-18.791185	8.91732	7.22164	6.37155	-4.88174	5.98174	-11.651177	-18.071642	-11.811948	-10.351155	9.88179	-7.66163	5.761582	4.4418
(H1427)	7.221721	7.24158	6.511617	7.071727	7.3116	8.791137	-17.891138	9.27162	7.91198	-15.861185	-16.14154	-10.1613	8.681135	9.43179	6.32117	-10.10152	10.931133	-11.951128	-11.971101	-10.61189	8.771734	7.72172	7.56179	7.56179
(H1572)	8.531794	6.711458	5.961467	7.461744	10.211127	-15.181196	-17.961174	-11.831149	10.29172	-18.51184	-17.31101	-10.21129	16.51125	11.98197	8.71184	-10.21135	12.771105	6.21596	6.59167	8.07182	-12.031154	18.881193	-14.631179	-10.58119
(H1574)	6.151744	5.211416	5.211416	1.747102	-11.641147	-18.881781	-16.281745	-17.841174	-16.581174	-17.741123	-11.10137	-10.921188	-17.471198	-17.10135	-15.451132	10.59119	13.381113	7.86148	5.81591	8.82134	-15.091139	-10.591139	-10.461144	6.11144
(H1725)	4.28144	-4.66152	5.54134	-7.98193	-11.381143	-18.31117	-16.481102	-17.831147	-13.531182	-12.041102	-10.301152	-10.761111	-14.41157	-18.91197	-17.10138	-15.121188	-10.91192	8.51177	-7.28172	-3.84158	-10.981112	-12.131108	8.8194	-5.59145
(H1726)	6.58163	6.82136	8.011482	-10.211184	-11.831153	-18.71174	-16.881108	-18.631157	-15.271148	-14.311132	-13.011104	-10.45112	-10.291145	-10.651183	-10.761138	8.98193	8.73188	8.98191	-10.121147	-13.811168	-16.811578	-11.731118	9.48179	6.82132
Freq(Hz)	2.450(PH)	2.450(PH)	2.450(PH)	2.450(PH)	2.450(PH)	2.450(PH)	2.450(PH)	2.450(PH)	2.450(PH)	2.450(PH)	2.450(PH)	2.450(PH)	2.450(PH)	2.450(PH)	2.450(PH)	2.450(PH)	2.450(PH)	2.450(PH)	2.450(PH)	2.450(PH)	2.450(PH)	2.450(PH)	2.450(PH)	2.450(PH)
Gain	(H757)	(H758)	(H759)	(H760)	(H761)	(H762)	(H763)	(H764)	(H765)	(H766)	(H767)	(H768)	(H769)	(H770)	(H771)	(H772)	(H773)	(H774)	(H775)	(H776)	(H777)	(H778)	(H779)	(H780)
(H757)	-1.381187	-15.521136	-10.991495	6.121468	6.031516	6.43143	-3.761736	-3.781934	4.411524	-12.111131	-12.88116	-10.121126	-18.631148	-11.451614	-8.15121	6.531538	5.36133	-5.271536	-5.811743	7.81188	-10.16112	-13.931179		
(H758)	-1.9411589	-15.251132	-13.011128	-10.94163	8.131691	6.07139	-4.911484	-4.811489	5.571135	-10.261124	-11.611887	-10.771133	-16.071167	-7.411532	-3.28154	3.89134	3.31132	-3.28154	-4.11504	6.1117	8.34193	-11.221138		
(H759)	-1.10211038	-8.71743	-7.56177	-8.97178	8.77168	-7.64162	-5.21453	-4.08142	4.381527	-4.47103	-10.54117	-18.671151	-8.971136	-6.57142	-4.01136	-3.051235	2.071153	-1.01161	-0.44155	-0.91161	2.451139	-0.05169	8.511138	
(H760)	9.22185	-9.74193	5.32154	6.72189	-10.15197	-10.15197	-4.471335	-2.711236	2.91137	-4.89165	-11.91136	-9.51149	-9.4612	-4.24135	-2.78127	-2.961126	-1.19133	0.951181	1.030158	0.79314	-1.221135	2.351385	5.53175	
(H761)	6.521827	8.01124	8.44143	5.98169	8.44181	-7.19146	-3.212103	-1.341119	-1.561243	-3.771554	-7.941137	-15.581148	-10.24176	-4.281273	-1.901193	2.44131	-3.261254	-1.34123	0.571106	1.281132	1.231196	0.789129	6.561167	-3.02148
(H762)	4.85173	6.71124	5.351391	3.64129	5.47161	5.27137	2.95149	0.39124	5.621158	6.10115	-7.981155	-16.561171	-12.27185	7.46127	3.23125	3.521276	-1.881676	6.141305	0.67105	0.88186	0.869169	0.23151	-1.6313	
(H763)	9.71138	8.81918	6.861327	2.88121	2.82134	3.89126	-1.471156	-0.07112	0.6714	2.221429	4.58143	-10.861126	-11.771231	-7.96148	2.73125	-3.591476	-4.381285	-1.851118	-1.04163	0.84912	0.639132	0.18145	-1.57117	
(H764)	6.91144	6.37140	6.52124	6.91149	6.91149	6.91149	6.91149	6.91149	6.91149	6.91149	6.91149	6.91149	6.91149	6.91149	6.91149	6.91149	6.91149	6.91149	6.91149	6.91149	6.91149	6.91149	6.91149	
(H765)	7.82185	8.19137	6.18122	6.61137	1.881429	4.42111	-8.20193	1.34133	1.136161	6.57139	3.79115	-2.94116	2.38132	3.2313	2.89163	2.34148	7.69147	4.72141	4.2113	1.71618	0.91187	1.661142	3.84188	
(H766)	7.84143	7.81155	-4.75123	4.59141	1.95143	-4.39122	-0.60141	0.04055	0.421158	2.08142	5.57148	-3.17134	2.82139	3.31132	2.64132	-1.84152	5.771474	4.49152	4.91196	-1.571125	-1.351161	-1.771194	2.29123	-3.91156
(H767)	7.62147	6.291476	3.85122	6.86184	2.71153	6.71154	-1.47105	6.51115	1.421108	-1.601148	-0.401277	-1.71124	2.86127	3.48132	-1.69177	5.59147	4.94158	4.831621	-1.12161	0.481129	-1.171171	1.94124	3.91156	
(H825)	6.72167	4.67152	3.78133	2.42137	6.03174	6.11132	-1.81124	-1.73192	3.61271	3.591387	-4.57187	-1.361123	-1.99138	3.73134	3.18192	3.13149	6.29144	4.38126	4.85111	-1.87182	2.71114	-1.441157	1.81186	3.56139
(H908)	4.97154	7.35152	4.541385	3.3111	4.61747	7.78171	6.49164	7.55178	6.891378	4.44178	5.95132	2.111167	-2.46133	6.3193	3.93129	4.12161	6.31138	6.41148	-6.97134	2.98121	0.11124	2.28127	-1.951147	-1.51172
(H975)	7.33194	6.64132	2.82133	-3.89151	-14.10121	-12.41195	-6.46153	-4.28136	3.321277	3.45144	-6.88197	-0.37163	-4.171613	7.67124	6.81171	-5.07185	8.72143	6.09157	4.31182	-1.311935	3.411382	-3.87142	-1.79128	2.6146
(H976)	5.561708	1.84194	5.21169	6.89112	4.81171	6.81934	8.41131	4.911435	3.99114	6.11134	-10.861106	-10.79173	8.821139	-10.581197	-10.18139	-8.631137	-12.311161	8.98164	6.29145	2.791136	-3.311436	3.791268	2.33146	
(H1125)	8.821108	8.88155	5.4511	4.881452	6.721134	-18.191128	-5.06127	-1.321136	-1.63128	4.61143	-18.891148	-11.87171	8.491124	-12.321132	-14.141148	-15.48193	6.65167	6.86175	6.86175	4.35141	6.74164	6.371578	5.67166	
(H1126)	8.87176	-7.261178	-7.03129	9.541106	-12.05119	-13.41126	-3.981471	6.51154	-11.771188	-10.371103	-11.481178	-17.17137	-18.291133	-15.591149	-10.19136	-13.521182	-13.61194	-13.521182	-13.61194	-13.521182	-13.61194	-13.521182	-13.61194	-13.521182
(H1207)	-1.7210514	-16.091102	-10.98152	4.83165	8.851132	-14.881101	-7.291631	-6.88179	-6.221168	-16.71147	-10.991167	-15.931529	-11.481157	-14.421132	-13.421132	-10.03192	6.161103	-10.32192	-10.281123	-12.681127	-13.861143	-12.161104	9.44198	
(H1275)	9.171184	8.55148	8.591128	-16.481193	-14.561127	-11.101112	8.991128	-16.411178	-14.741155	-11.811391	-8.93137	-13.13129	-17.561182	-17.541182	-18.51148	-13.7111076	8.791107	9.83117	-7.34173	8.59186	-11.441128	-12.891118	-10.29128	
(H1425)	8.05148	6.05184	-11.211154	5.84113	5.85175	6.71148	-10.581128	-12.351114	-10.021105	6.29163	-7.03178	5.21152	6.66106	8.761153	-12.561137	-13.451197	8.8104	-7.1117	-7.53175	6.853	6.271125	-11.451127	-11.871138	-8.78178
(H1507)	-11.9811385	-11.58167	8.16174	5.481455	4.111143	5.57158	6.39128	-7.821785	7.88104	6.71134	7.31169	7.01179	6.81187	-10.021129	-11.01155	-11.041105	8.81173	7.84133	6.491199	-12.451189	-18.1117			



Radiated Composite Gain Data of 2.4GHz

Appendix A

(H120°)	-11.50±9.25	-12.40±18.01	-10.77±11.99	-15.20±11.78	-8.00±12.16	-17.50±12.52	-13.10±18.68	-18.47±15.55	-17.34±17.89	-18.23±18.51	-15.50±14.16	-14.81±18.77	-15.20±17.74	-18.30±19.16	-19.40±18.48	-18.80±15.64	-12.72±11.4	-12.10±15.07	-16.80±12.82	-8.30±7.25	-4.30±4.61	-7.87±4.88	-6.60±12.74	-18.50±16.97
(H127°)	8.50±8.88	-11.34±13.3	-10.78±13.1	-15.18±15.48	-11.55±14.4	-18.90±14.28	-13.30±17.12	-17.88±13.1	-16.60±13.9	-17.61±19.1	-17.44±12.8	-12.40±15.2	-16.78±17.2	-18.31±16.5	-18.90±18.8	-14.80±13	-12.26±12.7	-14.70±19.23	-18.10±13.4	-10.5±4.9	-8.61±9.6	-5.30±8.2	-8.90±10.73	-11.27±10.2
(H130°)	-4.60±7.86	-10.60±14.75	-14.30±14.55	-18.50±16.69	-13.30±15.28	-17.11±9.9	-16.50±16.05	-13.24±11.09	-11.60±12.91	-16.05±19.13	-17.34±13.02	-17.50±16.22	-17.50±17.02	-18.60±18.34	-17.34±17.49	-14.72±13.81	-14.11±15.44	-17.81±18.71	-11.33±8.62	-6.90±9.8	-6.33±8.24	-7.41±16.7	-6.60±6.66	
(H142°)	8.18±10.63	-15.20±19.06	-19.01±18.1	-18.60±16.33	-14.40±14.65	-15.90±14.4	-16.50±16.44	-13.87±11.7	-11.11±11.82	-15.44±17.36	-17.78±16.79	-15.30±17.12	-17.70±19.1	-18.30±17.96	-18.31±17.64	-18.40±19.56	-17.04±18.82	-15.70±14.12	-10.50±2.1	-8.40±5.6	-7.63±6.4	-6.48±6.61	-6.94±1.8	
(H150°)	-18.16±18.62	-18.74±18.38	-15.24±16.13	-18.50±19.04	-18.81±18.8	-16.88±19.12	-14.30±16.68	-16.78±15.1	-11.90±12.12	-15.88±19.15	-15.40±15.43	-16.43±18.02	-16.38±18.9	-18.50±18.56	-18.98±17.8	-17.26±17.57	-17.50±17.64	-15.67±10.07	-10.74±4.2	-8.88±6.6	-7.71±9.1	-8.74±11.18	-13.00±14.62	
(H157°)	-15.90±13.4	-12.20±12.34	-13.81±17.1	-18.50±17.55	-16.38±19.06	-17.76±18.04	-16.16±13.59	-11.60±12.99	8.60±9.7	-10.51±11.85	-12.60±12.33	-11.90±12.25	-12.96±13.89	-12.96±13.89	-16.20±17.36	-19.20±17.86	-18.40±18.07	-18.87±18.39	-17.80±18.63	-18.47±17.87	-15.60±14.69	-14.37±14.67	-15.52±12.72	-17.93±18.84
(H165°)	-15.47±13.67	-15.60±13.63	-15.62±19.02	-18.11±18.42	-16.01±17.62	-16.17±18.1	-15.20±14.19	-13.20±12.19	-11.19±12.16	-12.59±13.73	-12.87±12.88	-13.20±13.51	-14.59±16.12	-17.09±18.67	-17.20±18.08	-18.20±18.38	-18.60±18.08	-18.13±15.15	-18.52±18.1	-17.54±18.38	-17.60±18.51	-17.07±19.24	-16.10±18.24	
(H172°)	-15.90±13.67	-17.90±19.17	-17.50±18.17	-18.30±18.1	-17.67±18.1	-17.41±16.1	-15.71±14.1	-14.20±14.34	-14.54±15.68	-16.20±16.47	-16.21±15.63	-15.24±14.16	-14.70±15.11	-15.51±15.72	-15.59±15.86	-17.30±19.84	-18.90±18.4	-18.71±17.99	-15.91±15.72	-17.80±18.65	-17.80±17.93	-18.50±18.37	-18.30±19.05	
(H180°)	-18.64±17.91	-19.50±19.27	-17.57±17.65	-18.30±18.26	-18.61±17.73	-16.78±17.17	-15.34±14.64	-14.29±14.59	-15.59±16.42	-16.50±16.17	-15.41±14.6	-13.91±13.43	-13.34±13.67	-14.59±15.66	-17.17±17.77	-18.41±18.9	-19.25±17.27	-18.59±17.97	-16.41±18.93	-18.11±17.48	-18.97±17.94	-18.64±18.4	-17.80±18.62	
Frequency	2.450GHz	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Gain	0°(H120°)	0°(H127°)	0°(H130°)	0°(H142°)	0°(H150°)	0°(H157°)	0°(H165°)	0°(H172°)	0°(H180°)	0°(H180°)	0°(H180°)	0°(H180°)	0°(H180°)	0°(H180°)	0°(H180°)	0°(H180°)	0°(H180°)	0°(H180°)	0°(H180°)	0°(H180°)	0°(H180°)	0°(H180°)	0°(H180°)	
(H1)	4.44±1.41	4.64±0.2	5.04±0.05	6.56±1.73	8.23±0.8	8.84±0.1	8.20±1.58	6.70±4.26	6.15±1.91	5.76±0.54	5.43±0.43	5.50±0.58	6.46±0.85	6.96±0.69	6.34±1.3	6.42±1.1	8.06±0.8	6.99±10.7	6.71±13.25	-12.30±10.27	-10.80±10.41	8.50±1.77	6.74±0.53	5.23±1.47
(H7°)	5.62±0.57	6.03±0.27	6.51±0.46	7.20±1.59	7.88±0.45	8.40±10.83	12.26±13.54	-14.4±18.69	-13.02±13.28	-10.36±9.74	-7.37±1.37	-5.65±1.2	-4.90±1.40	-2.64±1.02	-5.07±1.24	-5.74±0.58	7.6±0.35	8.65±0.37	7.87±0.4	-6.33±1.74	-5.50±0.56	4.91±0.45	5.15±0.28	4.54±0.48
(H15°)	6.59±0.58	6.77±0.51	6.15±0.57	7.78±1.22	8.27±0.63	9.00±12.97	-14.00±16.66	-18.04±17.79	-15.87±13.81	-12.5±1.3	-8.72±1.26	-5.94±1.34	-4.68±1.37	-2.64±1.26	-2.71±1.3	-3.95±1.2	6.84±1.75	5.94±1.43	5.94±1.2	-2.70±1.22	-2.56±1.21	-0.04±1.84	5.45±0.47	
(H22°)	4.49±1.54	-4.80±1.35	-6.01±0.61	-7.67±1.35	8.66±0.77	-10.84±11.9	-12.42±1.34	-11.50±10.28	8.91±0.77	7.9±1.7	7.30±1.5	-5.94±1.18	-3.06±1.2	-1.57±1.19	-1.00±1.33	-2.50±1.74	4.63±1.71	5.64±0.36	2.23±1.34	-0.50±0.99	-1.5±1.25	-3.44±1.4	4.70±0.45	
(H30°)	0.020±0.3	0.14±0.1	0.17±0.17	0.23±1.12	2.62±1.38	-3.23±1.6	-0.74±1.26	4.44±1.25	4.26±1.25	2.01±1.2	2.78±1.4	2.57±1.3	3.34±1.3	3.29±1.3	2.76±1.73	2.86±1.22	3.93±0.65	7.50±1.71	6.01±0.43	-0.02±0.66	-2.54±1.14	0.41±0.72	1.27±1.23	-1.84±0.71
(H37°)	0.59±1.05	-0.52±0.58	-0.80±0.49	-0.80±0.25	3.85±1.49	4.38±1.25	-0.90±0.63	1.96±1.49	4.31±1.37	2.11±1.38	-0.70±1.37	-2.30±1.33	-3.61±1.41	-3.02±1.29	-3.03±1.21	-3.10±1.32	-4.02±1.76	3.98±0.99	-7.09±1.45	-4.9±1.2	3.21±1.36	-0.34±0.65	2.43±1.32	-1.51±0.74
(H45°)	1.38±1.38	-1.21±1.42	-1.72±1.18	-1.44±0.38	5.11±1.54	5.07±1.49	-2.07±1.28	2.93±1.26	4.99±1.29	2.71±1.3	3.79±1.39	-0.32±1.65	-4.29±1.23	-3.90±1.34	-3.50±1.18	8.81±1.32	7.11±1.28	-4.99±0.43	-0.90±1.27	-3.91±1.65	-0.60±0.96	1.84±1.17	2.40±1.17	
(H52°)	3.12±1.39	-3.50±1.47	-3.82±1.2	-2.66±1.4	6.70±1.49	6.20±1.94	-4.16±1.34	-4.77±1.12	6.31±1.4	8.23±1.4	-3.81±1.39	-3.48±1.42	5.54±1.46	5.75±1.56	5.53±1.25	4.80±1.45	4.96±1.43	8.03±1.7	7.44±1.51	5.59±1.67	-4.71±1.18	0.99±1.56	3.53±1.47	
(H60°)	4.33±1.49	-4.53±1.08	5.77±1.42	-4.34±1.68	8.91±1.79	7.20±1.92	-5.60±1.56	-5.63±1.78	7.22±1.48	4.37±1.56	-5.98±1.52	-5.44±1.54	5.44±1.54	6.41±1.54	6.50±1.52	6.10±1.55	5.59±1.49	7.34±1.7	6.71±1.61	5.60±1.38	-2.13±1.21	5.25±1.4	5.60±1.48	
(H67°)	5.29±1.54	4.67±1.62	4.89±1.32	5.64±1.7	8.10±1.58	8.03±1.67	4.69±1.52	8.90±1.64	7.34±1.4	4.01±1.78	-7.20±1.71	4.69±1.47	4.71±1.57	4.59±1.49	9.4±1.5	-7.76±1.73	4.61±1.7	4.57±1.64	4.49±1.72	-8.39±1.32	-7.50±1.49	3.01±1.68	5.55±1.56	
(H75°)	5.59±1.58	4.24±1.79	4.24±1.79	4.24±1.79	4.24±1.79	4.24±1.79	4.24±1.79	4.24±1.79	4.24±1.79	4.24±1.79	4.24±1.79	4.24±1.79	4.24±1.79	4.24±1.79	4.24±1.79	4.24±1.79	4.24±1.79	4.24±1.79	4.24±1.79	4.24±1.79	4.24±1.79	4.24±1.79	4.24±1.79	
(H82°)	4.62±1.65	4.62±1.65	4.62±1.65	4.62±1.65	4.62±1.65	4.62±1.65	4.62±1.65	4.62±1.65	4.62±1.65	4.62±1.65	4.62±1.65	4.62±1.65	4.62±1.65	4.62±1.65	4.62±1.65	4.62±1.65	4.62±1.65	4.62±1.65	4.62±1.65	4.62±1.65	4.62±1.65	4.62±1.65	4.62±1.65	
(H90°)	4.57±1.55	4.74±1.36	7.01±1.67	7.41±1.49	6.99±1.74	8.98±1.94	5.90±1.65	4.21±1.62	10.27±1.21	5.59±1.69	7.95±1.01	10.04±1.78	12.10±1.48	-10.77±10.99	-10.50±11.24	1.94±1.26	4.11±10.4	-10.29±1.93	0.95±10.92	-0.76±10.3	0.27±1.52	4.60±1.78	10.11±11.19	
(H127°)	-16.40±10.36	-10.50±10.27	-10.50±10.27	-10.50±10.27	-10.50±10.27	-10.50±10.27	-10.50±10.27	-10.50±10.27	-10.50±10.27	-10.50±10.27	-10.50±10.27	-10.50±10.27	-10.50±10.27	-10.50±10.27	-10.50±10.27	-10.50±10.27	-10.50±10.27	-10.50±10.27	-10.50±10.27	-10.50±10.27	-10.50±10.27	-10.50±10.27	-10.50±10.27	
(H130°)	-16.70±18.84	-17.93±18.83	-18.36±18.41	-17.50±19.16	-15.27±13.16	-15.02±17.14	-16.30±19.16	-16.81±18.37	-14.60±10.51	8.41±1.32	8.98±1.7	10.20±14.16	-11.57±16.11	-11.50±16.68	6.20±1.46	-11.40±16.47	4.40±1.9	8.65±1.36	8.83±1.78	-10.20±10.26	-10.54±10.29	-10.96±10.35	-14.91±15.14	
(H142°)	-17.37±17.84	-17.99±18.07	-18.15±18.78	-18.01±18.2	-14.12±12.04	-11.98±14.32	-13.90±18.17	-14.80±18.87	-13.20±10.89	-10.40±10.2	-10.09±10.63	8.94±11	13.71±17.1	-12.76±14.47	-11.79±12.16	-11.53±17.38	-13.63±11.26	9.97±1.36	8.92±1.91	12.91±17.1	-12.00±14.16	-16.00±18.54	-15.82±18.08	
(H150°)	-18.63±18.01	-18.18±18.68	-13.30±12.71	-13.75±17.34	-17.80±18.95	-18.17±12	-17.30±18.01	-18.30±15.1	-17.04±15.56	-16.80±17.37	-16.84±15.69	-14.81±14.72	-14.80±14.59	-11.40±14.22	-10.80±19.69	-18.81±18.62	-14.11±11.6	-10.27±19.48	0.97±1.29	-10.14±10.18	-13.50±18.62	-17.51±19.24	-15.91±18.68	
(H157°)	-17.71±14.24	-18.84±18.4	-6.93±10.4	-4.60±1.56	-8.00±10.39	-11.40±12.1	-10.30±12.85	-10.20±13.17	-12.24±15.44	-17.10±18.45	-16.90±18.47	-16.90±18.45	-12.20±10.96	-10.62±11.2	-10.20±10.95	-10.87±10.38	-6.80±1.82	6.65±10.4	-11.03±10.13	-13.50±18.52	-19.00±17.94	-16.00±17.94	-15.13±19.17	
(H165°)	-16.07±13.24	-10.65±17.5	-7.36±1.6	-6.49±1.02	7.86±1.83	8.61±10.52	-11.60±12.11	-12.30±12.05	-10.20±14.46	-13.33±14.12	-15.80±11.7	-17.36±16.1	-14.30±12.97	-12.24±10.12	-11.80±11.25	-10.2±0.45	6.20±10.93	-11.41±11.48	-14.16±18.88	-17.94±18.5	-17.67±19.62	-15.10±18.25	-18.25±18.38	
(H172°)	-16.07±13.24	-10.65±14.96	-13.74±13.04	-12.84±13.29	-13.60±13.24	-14.91±15.23	-15.05±18.4	-15.76±17.21	-14.83±14.27	-14.14±14.16	-16.11±17.24	-14.81±16.15	-16.80±16.18	-13.70±14.56	-13.75±14.12	-13.81±13.46	-13.89±14.14	-11.60±14.82	-15.37±16.14	-17.93±17.57	-18.00±19.08	-17.41±17.84	-18.00±19.08	
(H180°)	-16.06±16.38	-16.02±16.46	-16.53±16.35	-16.01±16.41	-16.00±16.48	-17.55±16.14	-16.14±16.27	-16.81±16.61	-16.50±19.21	-16.20±16.14	-16.20±18.69	-16.50±17.74	-16.71±16.71	-16.44±16.14	-16.72±16.16	-16.54±17.75	-16.07±16.49	-16.62±17.47	-16.21±16.75	-16.30±17.18	-17.41±16.76	-17.97±16.48	-17.80±19.24	
Frequency	2.450GHz	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	
Gain	0°(H120°)	0°(H127°)	0°(H130°)	0°(H142°)	0°(H150°)	0°(H157°)	0°(H165°)	0°(H172°)	0°(H180°)	0°(H180°)	0°(H180°)	0°(H180°)	0°(H180°)	0°(H180°)	0°(H180°)	0°(H180°)	0°(H180°)	0°(H180°)	0°(H180°)	0°(H180°)	0°(H180°)	0°(H180°)	0°(H180°)	
(H1)	-11.26±10.27	-10.83±1.74	6.54±1.71	-3.33±1.25	-1.46±1.91	6.52±1.07	6.26±1.47	6.88±1.31	-1.8±1.32	2.50±1.39	4.60±1.69	4.70±1.79	8.38±10.53	-10.23±1.72	-7.02±1.56	4.32±1.36	2.64±1.22	-1.89±1.67	-1.47±1.13	-1.18±1.15	-1.20±1.17	2.12±1.28	0.38±1.39	-7.22±1.84
(H7°)	6.60±10.36	-10.51±10.12	8.99±1.62	6.21±1.87	7.37±1.78	2.01±1.36	-6.90±1.78	4.81±1.93	1.09±1.38	-1.75±1.23	-3.26±1.47	6.64±1.74	-17.47±13.62	-10.59±1.67	4.50									



Radiated Composite Gain Data of 2.4GHz

Appendix A

E1(72.2)		-18.73-18.58	-15.65-14.78	-15.26-16.14	-16.36-15.59	-15.32-14.47	-13.11-12.88	-12.07-13.12	-13.83-13.99	-14.11-14.87	-16.69-18.07	-18.06-17.72	-17.34-16.84	-16.09-15.47	-15.55-16.74	-19.43-18.55	-18.35-18.08	-15.98-15.67	-16.50-18.06	-19.32-17.07	-18.21-17.57	-18.50-19	-17.19-19.35	-17.84-18.95	-19.34-18.49
F1(180°)		-17.10-18.13	-18.93-18.04	-17.49-18.92	-16.38-19.28	-18.86-17.11	-15.15	-15.29-16.22	-17.49-17.47	-17.34-18.29	-18.09-18.15	-17.37-18.91	-18.46-16.8	-15.34-14.74	-15.29-17	-18.53-18.22	-17.52-17.5	-18.62-19.1	-18.13-18.42	-18.36-18.22	-17.84-18.2	-18.36-18.87	-18.22-17.91	-17.84-19.21	-19-17.46
Gain		0°(70°/90°/5°)	0°(70°/90°/5°)	0°(70°/90°/5°)	0°(70°/90°/5°)	0°(70°/90°/5°)	0°(70°/90°/5°)	0°(70°/90°/5°)	0°(70°/90°/5°)	0°(70°/90°/5°)	0°(70°/90°/5°)	0°(70°/90°/5°)	0°(70°/90°/5°)	0°(70°/90°/5°)	0°(70°/90°/5°)	0°(70°/90°/5°)	0°(70°/90°/5°)	0°(70°/90°/5°)	0°(70°/90°/5°)	0°(70°/90°/5°)	0°(70°/90°/5°)	0°(70°/90°/5°)	0°(70°/90°/5°)	0°(70°/90°/5°)	0°(70°/90°/5°)
Freq(Hz)		2.455GHz	2.455GHz	2.455GHz	2.455GHz	2.455GHz	2.455GHz	2.455GHz	2.455GHz	2.455GHz	2.455GHz	2.455GHz	2.455GHz	2.455GHz	2.455GHz	2.455GHz	2.455GHz	2.455GHz	2.455GHz	2.455GHz	2.455GHz	2.455GHz	2.455GHz	2.455GHz	2.455GHz
E1(72.2)		-1.871-18.9	-1.841-18.9	-1.926-17	-1.324-15.5	-2.25-8.8	-6.83-12.9	-14.36-16.87	-14.71-16.8	-7.77-5.64	-4.08-2.77	-1.62-0.81	0.28-0.3	0.26-0.4	0.28-0.08	0.64-1.3	2.17-13.4	4.15-5.64	7.81-7.83	-11.05-14.2	8.82-7.08	5.8-4.65	4.15-3.5	-13-12.72	2.37-2.1
E1(180°)		-4.229-23.8	-3.345-23.6	-2.96-17	-3.42-15.9	-5.48-6.96	-8.76-15.1	-16.18-17.4	-16.53-11.85	-8.14-5.62	-4.11-2.71	-1.33-0.42	0.12-0.47	0.73-0.91	0.03-0.8	0.66-0.27	0.88-0.27	2.48-4.16	6.52-5.28	-10.77-9	-6.86-4.96	-4.09-3.89	-3.72-3.85	-4.22-4.47	-4.61-4.48
E1(15°)		-4.526-33.8	-3.02-27.6	-2.75-23.9	-3.44-14.05	-5.07-6.25	-7.76-16.02	-13.97-17.87	-17.72-11.41	-7.71-5.36	-3.94-2.33	-1.24-0.71	0.26-0.1	0.66-0.9	0.66-0.91	0.54-0.33	0.62-0.18	1.47-2.52	5.09-6.19	-10.86-9.34	-6.25-4.41	-3.47-3.32	-3.79-4.65	-5.61-6.16	-4.19-4.55
E1(120°)		-5.65-22.1	-2.12-22	2.49-22.2	-3.19-23.2	-4.15-24.84	-8.57-13.57	-16.59-13.1	-2.41-2.73	-3.98-2.14	-1.76-1.39	1.41-1.6	0.56-0.17	0.59-0.94	0.42-0.33	0.02-0.19	1.39-2.1	3.55-3.74	8.65-9.52	-6.20-4.08	-3.76-3.19	-4.36-5.64	-5.53-6.98	-4.71-5.25	-4.71-5.25
E1(135°)		-5.84-11.3	-1.92-21	2.39-23.6	-3.07-37.1	-3.61-37.8	-3.94-51.4	-5.79-37.7	-11.36-29.4	-5.71-46	-1.92-3.26	-2.27-1.3	0.23-0.37	0.23-0.37	0.23-0.37	0.23-0.37	0.23-0.37	0.23-0.37	0.23-0.37	0.23-0.37	0.23-0.37	0.23-0.37	0.23-0.37	0.23-0.37	0.23-0.37
E1(165°)		-0.02-0.95	-1.28-14.7	-1.45-15.1	-1.5-24	-1.32-34.1	-3.03-57	-2.91-51.4	-4.84-16.1	-2.89-8.08	-0.23-0.6	-1.98-2.92	-2.91-1.18	0.57-1.44	1.33-0.51	-5.51-3.1	-1.76-1.87	-2.02-23.3	-3.17-4.45	-5.65-6.09	-5.84-5.32	-4.91-4.78	-4.57-5.1	-4.29-2.48	-2.72-1.4
E1(180°)		-0.26-0.47	-0.39-0.51	0.03-0.38	0.26-0.56	-1.91-2.85	-2.46-16.5	-1.13	-1.48-4.05	-10.72	0.88-0.12	-1.89-37.4	-3.39-0.79	1.27-1.96	1.89-0.81	-3.59-0.94	-1.29-0.42	-2.20-23.9	-3.59-4.59	-4.94-7.45	-4.99-4.93	-4.76-4.86	-4.29-3.85	-3.26-1.96	-2.96-2.44
E1(15°)		-0.43-0.23	-0.48-0	0.73-0.51	1.63-0.66	-11.24	-2.24-10.6	-0.22-0.84	-2.51-21.9	0.19-1.52	1.56-0.42	-1.53-3.58	-3.71-1.25	0.81-0.49	0.87-0.12	-0.84-1.31	-1.56-1.98	-2.26-2.6	-3.41-4.26	-4.21-3.84	-3.84-4.43	-5.34-4.75	-3.27-2.54	-2.41-1.8	-0.44-0.47
E1(180°)		-0.03-0.64	-1.34-0.49	-0.00-0.02	1.25-0.06	-0.22-0.33	-3.41-21.03	-0.97-1.27	-2.85-2.77	0.07-0.47	1.33-0.05	-2.01-0.65	-3.31-1.26	0.10-0.41	-5.69-1.69	-2.15-1.4	-2.26-2.33	-2.03-2.12	-3.04-2.47	-4.13-3.9	-3.45-4.52	-5.14-4.17	-4.17-4.15	-1.81-1.91	-0.84-0.11
E1(15°)		-1.5-12.8	-2.84-21.7	-1.86-0.38	0.11-1.41	-0.64-1.5	-4.88-3.45	-2.30-2.53	-3.84-3.53	-0.84-0.77	0.77-0.61	-2.51-0.96	-3.76-2.13	-0.88-0.64	-1.32-0.16	-2.26-2.31	-2.54-3.12	-1.56-2.02	-3.31-4.79	-4.33-3.35	-3.32-4.5	-5.59-3.84	-1.64-1.06	-2.05-2.82	-1.92-0.87
E1(180°)		-1.82-0.35	-4.06-14.8	-3.45-18.7	-1.28-2.94	-5.51-6.68	-5.99-6.44	-3.74-13.9	-5.57-4.58	-1.75-0.43	-3.86-1.6	-3.24-2.36	-4.32-3.23	-2.32-1.16	-0.99-3.22	-3.24-2.33	-3.54-3.11	-2.47-2.74	-4.13-4.86	-4.01-3.2	-3.36-4.83	-5.71-5.37	-1.41-1.99	-2.29-3.35	-3.71-7.5
E1(15°)		-3.63-4.86	-4.26-5.1	-5.35-3.31	-2.67-1.26	-7.54-9.1	-7.92-6.51	-5.72-6.83	-7.43-6.74	-4.0-3	-2.81-3.77	-4.63-5.41	-4.96-4.57	-4.14-4.11	-4.67-5.35	-5.4-5.09	-4.76-3.96	-3.28-3.32	-4.77-5.29	-4.40-3.51	-3.69-5.07	-5.81-3.73	-1.8-1.87	-3.67-5.34	-4.83-3.6
E1(180°)		-8.36-5.57	-10.26-10.83	-10.34-5.02	-2.8-3.39	-5.57-5.71	-7.04-6.22	-6.98-9.64	-12.71-11.8	-5.14-3.67	-4.24-2.4	-1.58-3.1	-7.8-1.76	-7.08-7.36	-7.77-8.17	-7.56-6.91	-7.13-6.87	-5.84-5.61	-5.36-4.69	-4.17-4.55	-4.61-4.84	-7.01-5.57	-3.56-4.42	-2.78-5.87	-6.97-6.84
E1(112.5°)		-3.81-5.57	-8.42-8.7	-11.85-8.09	-4.52-4.48	-6.01-7.39	-6.13-4.9	-5.01-7.5	-12.71-6.6	-8.89-5.19	-7.42-7.7	-7.67-7.2	-7.06-7.25	-7.06-7.25	-6.83-7.12	-10.81-17	-6.74-6.23	-5.59-5.97	-6.21-7.33	-6.81-6.14	-8.66-6.08	-6.83-4.83	-6.89-7.07	-10.77-13.1	-9.77-10.3
E1(135°)		-0.91-9.12	-8.48-7.3	-8.76-10.46	-7.83-6.98	-7.84-7.89	-7.22-6.2	-6.4-6.96	-11.82-12	7.92-5.54	-4.89-7.53	-10.65-12.82	-11.32-8.97	-8.89-7.88	-10.27-11.96	-14.03-17.9	-14.31-3.98	-7.8-7.9	-7.5-7.69	-4.97-7.45	-6.09-10.54	-11.37-6.77	-5.49-5.34	-4.71-10.27	-10.27-6.88
E1(120°)		-0.42-13.39	-12.31-10.02	-10.13-11.43	-10.43-9.86	-8.76-8.43	-8.42-6.61	-5.68-6.87	-11.36-13.97	9.23-7.44	-1.81-2.85	-12.14-10.1	-8.2-8.76	-8.93-12.8	-15.95-15.58	-11.83-10.1	-9.98-9.09	-7.64-6.19	-7.04-6.23	-10.42-12.28	-11.76-7.44	-8.64-8.95	-10.88-11.36	-10.88-11.36	-10.88-11.36
E1(135°)		-0.02-19.25	-17.45-15.38	-17.46-19.44	-18.89-18.26	-17.46-18.24	-16.55-14.28	-10.31-16.45	-15.16-15.8	-11.26-9.35	-8.99-8.25	-6.66-7.4	-9.24-8.49	-8.21-9.4	-11.85-18.35	-17.75-18.54	-13.35-12.01	-10.4-8.49	-7.24-7.01	-7.75-6.03	-10.19-11	-11.26-18.51	-11.04-12.72	-12.76-14.31	-12.76-14.31
E1(180°)		-15.95-15.35	-15.84-15.91	-15.13-15.92	-15.23-14.32	-13.96-15.06	-15.21-18.72	-17.45-16.05	-15.03-17.44	-13.71-11.55	-10.34-9.38	-8.46-8.3	-6.4-6.74	-8.12-10.58	-12.51-10.47	-12.91-9.47	-9.52-9.77	-9.11-8.07	-7.3-7.38	-6.33-6.31	-12.58-13.59	-15.59-19.51	-17.74-17.57	-15.35-18.47	-15.35-18.47
E1(15°)		-18.33-18.11	-18.61-14.33	-12.84-12.31	-11.76-12.17	-13.33-14.73	-16.69-18.04	-16.21-18.01	-17.65-18.96	-16.35-15.37	-14.23-13.14	-12.41-12.1	-12.36-13.32	-16.78-16.23	-17.49-18.1	-18.02-17.92	-18.42-17.92	-14.32-11.69	-10.11-8.87	-10.88-17.15	-12.35-14.16	-16.89-18.21	-16.79-16.28	-17.26-18.57	-18.33-18.57
E1(180°)		-17.66-15.52	-12.74-16.38	-8.76-17.33	-7.74-17.41	-8.26-16.93	-10.76-16.72	-16.46-19.45	-16.45-19.45	-16.45-19.45	-16.45-19.45	-16.45-19.45	-16.45-19.45	-16.45-19.45	-16.45-19.45	-16.45-19.45	-16.45-19.45	-16.45-19.45	-16.45-19.45	-16.45-19.45	-16.45-19.45	-16.45-19.45	-16.45-19.45	-16.45-19.45	-16.45-19.45
E1(135°)		-17.31-17.12	-16.29-16.05	-8.62-9.78	-8.76-9.33	-10.44-11.77	-13.14-14.84	-14.15-14.42	-15.76-19.51	-17.67-19.57	-17.11-19.18	-17.31-19.18	-17.31-19.18	-17.31-19.18	-17.31-19.18	-17.31-19.18	-17.31-19.18	-17.31-19.18	-17.31-19.18	-17.31-19.18	-17.31-19.18	-17.31-19.18	-17.31-19.18	-17.31-19.18	-17.31-19.18
E1(172.5°)		-16.88-17.31	-16.66-17.27	-16.75-14.33	-16.71-17.9	-16.06-17.97	-18.02-19.77	-18.02-19.74	-18.01-19.48	-18.06-19.73	-19.22-19.84	-18.46-19.11	-17.96-18.65	-15.44-13.67	-12.24-11.31	-10.96-11.17	-11.88-13.02	-12.43-15.36	-16.11-16.65	-18.65-18.16	-16.76-16.42	-16.84-17.92	-17.65-17.84	-17.16-16.28	-15.96-16.18
E1(180°)		-15.95-15.35	-15.84-15.91	-15.13-15.92	-15.23-14.32	-13.96-15.06	-15.21-18.72	-17.45-16.05	-15.03-17.44	-13.71-11.55	-10.34-9.38	-8.46-8.3	-6.4-6.74	-8.12-10.58	-12.51-10.47	-12.91-9.47	-9.52-9.77	-9.11-8.07	-7.3-7.38	-6.33-6.31	-12.58-13.59	-15.59-19.51	-17.74-17.57	-15.35-18.47	-15.35-18.47
E1(15°)		-18.33-18.11	-18.61-14.33	-12.84-12.31	-11.76-12.17	-13.33-14.73	-16.69-18.04	-16.21-18.01	-17.65-18.96	-16.35-15.37	-14.23-13.14	-12.41-12.1	-12.36-13.32	-16.78-16.23	-17.49-18.1	-18.02-17.92	-18.42-18								



Radiated Composite Gain Data of 2.4GHz

Appendix A

θ(22.5°)	-12.69±5.57	-5.93±3.85	-2.2±1.07	-0.41±0.06	0.060	0.25±0.54	-0.81±1.04	-1.26±1.48	-1.85±2.34	-2.50±3.73	-4.99±6.97	-9.17±9.68	-8.06±4.33	-5.20±4.7	-4.83±4.97	-5.57±5.93	-5.58±4.86	-3.61±2.87	-2.63±2.92	-3.68±4.81	-4.15±7.85	-9.25±11.05	-13.62±13.1	-17.87±17.38
θ(30°)	-17.50±14.06	-8.67±3.77	-3.68±1.81	-0.7±0.23	0.2±0.41	0.66±0.75	-0.67±0.82	-0.68±0.99	-1.53±2.02	-2.35±2.56	-2.96±4.09	-6.29±7.73	-3.37±1.56	-4.01±2.97	-2.68±3.1	-1.11±5.14	-5.45±4.62	-3.41±2.57	-2.29±2.58	-3.43±4.8	-6.65±8.98	-11.51±13.68	-15.76±15.2	-18.8±18.97
θ(37.5°)	-17.56±17.12	-14.97±10.27	-6.81±2.86	-1.26±0.74	-0.86±1.12	-1.16±1.01	-0.54±0.47	-0.65±0.97	-1.33±1.49	-1.53±1.49	-1.66±2.41	-4.05±6.58	-7.77±5.8	-3.52±2.11	-1.69±2.16	-3.41±4.74	-5.15±4.31	-3.15±2.29	-1.86±1.94	-2.58±3.75	-5.36±7.55	-10.13±12.6	-14.27±15.16	-15.98±16.98
θ(45°)	9.46±7.93	-7.87±1.15	-5.97±3.15	-1.55±1.21	-1.61±1.94	-1.8±0.99	-0.73±0.81	-0.97±0.82	0.59±0.23	-0.09±0.28	-0.78±1.58	-2.85±4.62	6.24±5.95	-4.07±3.26	-1.58±1.85	-2.89±3.87	-4.96±3.39	-2.48±1.62	-0.94±0.74	-1.14±1.12	-3.55±3.13	6.57±7.52	8.04±9.58	8.16±7.7
θ(52.5°)	6.34±4.6	-4.14±6.9	-4.04±2.26	-1.11±1.18	-2.24±3.18	-2.76±1.91	-1.71±1.96	-1.87±1.06	0.16±0.1	1.110±56	-0.51±1.74	-2.93±4.12	-5.18±5.65	-4.8±3.11	-1.94±1.76	-2.2±2.57	-2.45±2.07	-1.65±0.96	-0.19±0.86	-2.47±4.25	-4.96±4.24	-3.23±2.81	-3.68±5.22	
θ(60°)	-4.64±2.52	-1.77±1.21	-1.57±1.38	-1.03±1.3	-1.35±5.92	-4.51±2.68	-2.84±1.17	-4.35±2.68	-0.850±21	0.32±0.33	-1.29±2.64	-4.57±6.66	-5.94±5.72	-5.91±7.2	-2.72±1.69	-1.64±1.9	-1.8±1.7	-1.87±1.5	0.410±4	0.33±0.89	-2.48±4.66	-6.43±5.59	-4.03±3.16	-3.715±19
θ(67.5°)	5.41±3.93	-2.6±1.2	-1.5±0.99	-1.01±1.48	-3.65±7.42	-6.08±2.75	-2.93±4.53	-4.86±3.21	-1.47±0.49	0.37±0.96	-1.97±3.38	-5.49±7.21	6.48±53	-4.54±8.91	-3.58±3.63	-2.61±3.12	-2.94±2.56	-2.64±2.1	-1.28±0.32	-0.24±1.33	-2.74±4.87	-6.85±5.52	-4.91±3.98	-3.95±51
θ(75°)	4.89±3.53	-3.76±2.99	-2.18±1.63	-1.62±1.25	-4.45±0.88	5.03±3	-3.54±5.47	-5.53±3.42	-1.67±0.15	-1.18±2.29	-3.52±4.62	-6.26±7.8	6.29±45	-4.42±5.26	-5.34±25	-4.07±4.45	-3.88±3.17	-3.07±2.96	-2.17±1.42	-1.02±2.77	-4.59±6.76	-8.57±7.64	-5.48±4.67	-4.8±51
θ(82.5°)	5.31±7.47	-4.07±2.62	-2.19±2.25	-2.64±3.45	6.3±93	4.97±1.8	-3.36±5.81	-6.98±4.55	-3.01±2.57	-2.94±3.69	-4.26±4.84	-6.89±6.41	6.34±4.14	-4.51±5.23	-7.59±5.45	-4.81±51	-4.71±3.82	-3.59±3.82	-3.45±2.54	-2.26±3.19	-6.13±7.72	-10.88±10.52	-6.63±5.33	-5.97±4.44
θ(90°)	2.27±5.29	5.33±3.43	2.11±2.74	3.39±4.08	7.59±1.68	6.55±2.24	4.74±7.22	5.54±7.73	5.64±4.56	3.85±0.55	5.03±6.87	9.93±9.14	5.04±4.64	4.99±7.11	4.83±5.33	5.75±6.71	5.74±4.65	3.94±4.64	4.96±3.82	2.85±3.18	5.717±5.69	9.49±10.7	7.12±5.17	5.72±7
θ(97.5°)	6.84±5.62	4.43±4.36	2.06±2.87	4.23±4.67	7.83±1.61	10.36±7.17	10.36±7.17	10.36±7.17	4.64±4.22	3.15±3.82	-5.76±7.88	9.09±6.79	4.74±43	5.81±6.9	-15.64±53	5.72±7.77	6.63±5.59	6.37±3.24	4.55±3.58	-3.88±4.34	5.91±5.69	8.19±10.5	4.82±5.21	4.82±5.21
θ(105°)	6.57±4.42	-7.9±93	3.71±3.36	5.64±5.24	71±31	-10.83±6.47	-7.02±8.96	-11±10.8	6.72±4.46	3.59±5.25	-7.51±3.86	-7.44±1.72	5.99±6.58	8.13±1.54	7.15±44	5.02±8.1	-11±3±9.36	8.82±12.99	-10.47±7.6	6.91±6.1	-6.85±6.55	-7.2±4.86	6.52±5.36	5.29±57
θ(112.5°)	6.42±4.12	-7.79±33	5.84±5.31	-7.72±7.65	-7.68±10.01	-10.39±6.68	-7.93±2.1	-6.57±10.3	7.97±5.59	4.85±3.83	6.8±4.5	6.25±7.06	4.11±7.97	6.83±1.45	-7.53±5.65	8.04±12.88	-13.76±6.8	9.75±143	-12.51±63	6.87±9.4	-9.42±9.1	6.74±8.4	8.147±5.2	-7.19±63
θ(120°)	8.54±7.21	-8.24±6.47	-6±36	-7.16±11.99	6.13±8.85	6.65±9.91	-6.46±8.81	-8.59±45	-7.22±5.68	-5.31±6.84	-5.83±5.85	-6.96±4.87	-6.37±4.22	-10.42±10.78	-7.38±7.45	-6.48±11.3	-13.86±13.39	-15.5±16.36	-14.72±10.36	-12.91±6.6	-11.32±12.61	-14.33±13.62	-10.56±9.97	-10.46±10.19
θ(127.5°)	-16.58±12.8	-12.17±13.29	-13.26±13.14	-16.58±17.82	-11.4±8.4	-7.3±7.16	-7.55±7.97	-8.3±4.78	-8.01±8.75	-6.58±6.04	-7.06±6.79	-7.52±6.56	6.18±10.39	-11.52±8.62	-6.95±5.4	-7.02±10.18	-15.82±18.31	-18.8±18.89	-13.55±11.67	-10.43±11.17	-13.15±15.81	-18.91±17.29	-17.42±18.88	-15.35±17.73
θ(135°)	-18.99±18.87	-17.41±18.68	-19.27±17.77	-18.94±18.57	-13.36±10.25	6.83±4.1	-8.71±9.93	-10.89±11.47	-11.66±11.47	-10.4±6.79	-7.72±7.78	-9.07±10.78	-11.29±10.37	-6.57±7.44	-5.84±4.7	-8.47±11.67	-16.74±18.64	-18.4±17.82	-15.02±17.55	-15.92±15.88	-18.25±18.88	-18.46±18.7	-18.54±18.18	-18.45±17.73
θ(142.5°)	-18.95±18.96	-19±17.81	-18.23±17.92	-17.85±18.06	-18.01±18.28	-18.15±73	-15.51±14.58	-13.85±11.34	-13.62±13.8	-16.87±13.96	-14.81±15.83	-16.45±15.65	-13.78±12.14	-11.21±10.93	-11.26±12.1	-13.21±14.1	-14.62±14.87	-14.94±14.81	-13.83±12.37	-10.56±18.6	-7.47±5.42	-6.65±5.95	6.2±4.86	7.97±4.68
θ(150°)	-18.74±17.83	-18.59±18.54	-18.72±18.12	-18.38±18.55	-18.36±15.29	-15.10±14.58	-13.91±10.98	-9.3±8.2	-7.62±7.68	-6.08±6.87	-6.88±8.84	-8.58±6.69	-9.31±10.34	-11.61±12.61	-13.20±12.92	-12.02±12.56	-12.55±12.71	-12.82±12.57	-12.48±11.94	-11.21±10.46	9.94±9.6	6.54±10.09	-11.46±13.4	-15.19±15.75
θ(157.5°)	-18.43±18.08	-18.54±18.16	-18.55±17.31	-18.14±18.47	-13.82±12.95	-12.47±12.28	-11.95±11.07	-8.81±8.9	8.54±8.57	-8.84±10.3	-6.08±0.55	-6.22±9.75	-10.35±10.92	-11.31±11.63	-11.87±12.21	-12.81±13.59	-14.58±15.74	-17.99±16.53	-18.51±17.99	-17.93±14.74	-18.93±14.41	-17.77±18.24	-17.93±18.61	-17.93±18.61
θ(165°)	-14.36±15.58	-17.52±18.89	-17.76±18.64	-18.11±17.73	-17.58±17.59	-17.15±16.46	-15.94±15.26	-14.98±12.78	-11.92±11.72	-12.00±12.65	-13.05±12.99	-12.65±12.55	-12.57±12.58	-13.11±13.52	-14.25±15.19	-15.33±15.17	-17.85±18.01	-18.04±18.16	-18.25±17.96	-17.14±16.06	-14.97±14.02	-13.34±13.16	-13.34±13.16	-13.34±13.16
Freq(Hz)	2.48350GHz	PhAnt4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
Gain	0°(7°)0°(7.5°)	0°(15°)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°)0°(187.5°)	0°(195°)0°(202.5°)	0°(210°)0°(217.5°)	0°(225°)0°(232.5°)	0°(240°)0°(247.5°)	0°(255°)0°(262.5°)	0°(270°)0°(277.5°)	0°(285°)0°(292.5°)	0°(300°)0°(307.5°)	0°(315°)0°(322.5°)	0°(330°)0°(337.5°)	0°(345°)0°(352.5°)
θ(7°)	0.546±2	0.20±1	0.33±0.77	-1.37±2.15	-1.34±4.54	6.52±9.47	-13.89±19.19	-18.76±12.4	-8.15±5.23	-3.05±1.49	6.44±23	0.66±96	1.21±136	1.31±32	6.47±3.34	-1.39±2.66	4.36±6.52	8.91±143	-18.81±18.13	-15.53±10.36	6.91±4.56	-3.04±2.53	-1.35±0.89	-0.55±0.21
θ(7.5°)	1.71±1	0.880±3	0.26±0.36	-1.24±2.39	-3.7±4.6	-7.75±12.1	-16.41±17.39	-26.75±11.29	-7.99±5.59	-3.62±1.48	-1.16±0.84	-8.4±0.22	0.29±0.12	6.32±0.63	-1.65±2.49	-3.63±5.26	-7.51±10.3	-15.89±17.22	-18.29±11.65	-7.98±4.69	-2.72±1.35	-0.36±0.32	0.73±1.01	0.73±1.01
θ(15°)	0.880±6	4.2±1.05	2.19±3.34	4.36±5.37	6.52±9.02	-10.13±13.4	15.67±13.14	24.64±9.97	-4.62±2.47	-1.26±0.49	0.23±0.17	-1.02±1.37	-1.65±2.49	-2.92±2.78	3.2±4.04	5.59±8.11	-18.33±10.86	-6.95±7.7	3.54±1.9	0.91±0.32	0.89±0.22	0.89±0.22	0.89±0.22	0.89±0.22
θ(22.5°)	5.15±4	-0.29±0.59	-1.42±0.21	3.81±4.8	6.3±54	5.69±5.54	8.27±11.71	17.25±17.48	11.97±6.87	1.56±0.16	0.79±0.7	3.55±4.07	3.91±3.47	3.39±3.5	5.29±7.3	7.52±9	-19.89±12.08	8.78±4.72	5.25±3.32	2.67±1.6	0.75±0.18	0.75±0.18	0.75±0.18	0.75±0.18
θ(30°)	2.071±1.32	0.251±0.99	-1.91±3.38	5.27±7.47	6.94±6.69	6.59±7.42	9.43±12.33	16.31±8.77	14.78±9.67	6.33±3.77	-1.77±0.26	0.89±1.04	0.89±0.09	1.72±2.9	4.69±5.76	5.34±25	3.76±4.1	6.4±7.9	-12.41±8.86	-17.71±13.16	9.717±9.7	7.02±4.66	5.96±5.24	4.25±13
θ(37.5°)	3.74±2.39	-1.31±0.86	-1.29±2.83	5.52±6.41	9.23±8.64	7.10±16	-13.07±1.35	-17.89±17.41	-15.94±11.14	7.35±4.58	-2.89±1.36	0.510±02	0.86±1.56	1.81±3.38	5.47±5.54	5.96±4.92	4.59±5.39	7.35±10.62	-16.07±19.23	-19.19±16.34	9.59±7.32	4.27±6.61	5.29±6.2	5.14±7.4
θ(45°)	3.32±0.59	-1.83±1.73	-0.95±1.77	-4.68±6.97	-10.36±10.37	-11.35±10.45	-16.71±16.71	-13.23±10.99	6.63±2.21	-4.22±2.82	2.19±1.22	0.21±0.45	3.35±3.6	4.77±5.1	-5.96±6.83	6.34±4.25	-12.1±16.08	-13.34±9.85	-15.99±10.26	-8.15±4.35	-6.30±4.66	3.96±3.06	2.92±2.92	2.92±2.92
θ(52.5°)	2.63±0.85	-3.23±1.55	-0.53±1.38	-4.33±5.64	-10.88±12.68	-16.44±18.83	-18.88±18.82	-18.07±16.53	-12.67±10.42	6.11±6.21	-4.71±3.27	-3.53±3.6	4.11±4.35	6.14±6.57	4.15±1.8	6.33±7.22	8.59±11.68	-16.47±15.86	-14.06±15.3	-15.41±13.32	7.71±6.07	5.91±5.72	4.86±3.64	4.28±2
θ(60°)	2.53±4.71	-6.22±5.54	-1.44±1.68	-4.01±2.78	6.5±12.4	-10.89±18.4	-17.71±18.4	-18.91±17.3	-13.93±10.65	6.77±6.63	-4.91±2.46	-1.41±2.52	-1.56±5.1	6.14±5.47	4.65±9.9	-7.73±7.83	8.21±10.23	-15.99±13.44	-16.51±13.08	-17.25±10.38	-6.66±4.76	-5.56±7.37	-7.8±4.04	-5.82±17
θ(67.5°)	3.63±0.67	-4.22±2.61	-3.36±3.37	-5.71±6.45	-6.88±12.64	-10.02±18.82	-14.71±17.21	-16.93±16.85	-13.91±14.2	7.65±12.97	-5.81±9.1	-4.64±5.02	-5.95±7.09	7.38±7.1	6.34±6.45	-6.44±6.01	-6.18±3.47	-13.29±12.42	-11.69±12.37	-16.51±12.92	-7.22±5.96	7.62±12.1	-12.98±10.01	-10.54±71
θ(75°)	5.74±2.4	-12.59±17.1	-6.59±6	-7.72±11.03	-11.36±13.58	-12.33±12.97	-10.21±12.14	-17.38±18.85	-14.45±11.65	-6.28±1.19	-3.71±0.55	-5.55±6.81	-6.87±2.44	-11.41±8.31	6.33±6.46	-5.41±5.46	-5.73±7.79	-11.53±12.93	-11.58±13.14	-15.18±9.84	-9.96±6.65	-12.93±18.35	-16.38±19.18	-16.45±18.37
θ(82.5°)	6.83±4.8	-17.41±17.47	-7.12±6.46	-8.47±14.13	-12.47±13.16	-16.88±12.8	-10.07±12.63	-17.92±17.99	-15.38±13.17	-11.15±11.1	-7.46±16.16	-5.97±6.69	8.86±12.08	-11.51±14	6.06±5.2	-5.7±5.49	5.38±6.42	6.81±12.38	-13.51±11.64	-15.17±18.2	-8.69±9.4	-14.72±18.14	-16.01±16.53	-14.65±8.58
θ(90°)	-11.31±10.86	-19.25±15.74	-6.01±6.09	-10.89±18.02	-15.37±14.68	-17.35±14.17	-																	



Radiated Composite Gain Data of 5GHz

Appendix B

Freq(Hz)	5.2G	5.3G	5.6G	5.785G
Ant. 1 Max Gain (dBi)	4.81	4.19	5.45	4.98
Ant. 2 Max Gain (dBi)	2.63	3.44	5.31	5.17
Ant. 3 Max Gain (dBi)	5.06	5.29	4.27	3.96
Ant. 4 Max Gain (dBi)	3.72	3.52	4.66	4.51
Ant. 1 Polarization/ $\theta(^{\circ})/\phi(^{\circ})$	Theta/52.5/292.5	Theta/60/345	Theta/75/150	Theta/52.5/307.5
Ant. 2 Polarization/ $\theta(^{\circ})/\phi(^{\circ})$	Theta/75/52.5	Theta/75/150	Theta/60/150	Theta/60/150
Ant. 3 Polarization/ $\theta(^{\circ})/\phi(^{\circ})$	Theta/52.5/112.5	Theta/67.5/7.5	Theta/75/22.5	Theta/60/52.5
Ant. 4 Polarization/ $\theta(^{\circ})/\phi(^{\circ})$	Theta/60/22.5	Theta/75/315	Theta/67.5/232.5	Theta/75/322.5
Max Gain (dBi)	5.06	5.29	5.45	5.17
DG [1SS] (dBi)	7.31	7.57	8.57	8.92
DG [2SS] (dBi)	5.06	5.29	5.57	5.92
DG [4SS] (dBi)	5.06	5.29	5.45	5.17



Radiated Composite Gain Data of 5GHz

Appendix B

φ(22.5°)	-1.270.45	-0.150.12	1.132.85	4.294.77	4.683.44	0.853.32	-3.04.72	0.020.43	-1.720.94	0.717.28	0.970.36	-2.177.22	-1.890.79	0.71.72	-3.074.28	-3.214.88	-0.20.51	0.41.05	2.312.94	-3.263.83	-3.99-2.97	-1.680.41	1.691.13	0.190.88
φ(30°)	-1.730.31	1.391.78	2.092.85	2.52.26	2.822.91	1.810.91	-2.160.77	-0.571.16	-1.30.43	0.910.	-0.510.12	0.181.39	2.021.84	1.430.45	0.150.36	-2.371.52	-4.89-2.42	-1.671.36	-1.961.16	-1.473.37	-2.64-0.87	0.380.88	1.691.18	-1.950.49
φ(37.5°)	-2.010.62	0.961.15	1.892.15	1.19-0.81	0.3201.06	0.930.64	-0.99-0.2	-0.44-1.63	-0.91.26	-1.410.28	-2.59-1.49	-0.01-0.32	-1.05-1.52	-2.63-0.26	1.280.14	-3.59-6.77	-0.37-0.59	-1.71-0.29	-1.42-0.61	-0.42-1.62	-2.24-0.15	0.91-0.1	-0.82-0.7	-0.88-1.96
φ(45°)	-1.43-0.15	0.99-0.7	0.86-0.4	0.040.92	1.451.66	-0.38-0.73	1.061.25	0.59-0.31	2.94-5.26	-3.96-03	1.250.26	0.630.35	0.4-0.08	-1.99-0.23	1.19-0.17	-2.29-1.73	-2.13-1.55	-6.73-3.76	-1.61-2.03	-1.17-1.82	-5.62-4.58	-2.01-1.76	-1.810.56	-0.46-1.51
φ(52.5°)	-1.02-0.76	-0.62-2.67	-0.19-0.15	-0.531.26	1.031.58	0.32-0.55	-0.41-2.33	-1.26-0.83	2.59-2.47	-1.82-0.14	0.87-0.46	1.11-0.36	-0.42-1.05	-2.25-0.61	0.64-0.54	-1.39-0.16	-1.06-1.26	-4.92-2.29	-1.82-2.1	-2.32-3.34	-1.99-3.78	-3.53-4.62	-3.73-2.23	-2.54-1.71
φ(60°)	-0.92-0.23	-0.78-1.79	-0.44-0.65	-3-0.47	0.140.42	0.48-0.	-1.71-3.46	-2.83-3.07	3.08-1.86	-2.14-1.38	-0.01-1	0.471.72	-3.33-3.91	-2.69-0.61	-1.22-2.1	-3.51-1.39	-1.71-1.02	-3.80-1.78	-3.52-0.34	-4.02-2.92	-1.51-3.39	-3.08-4.77	-5.16-3.22	-1.11-0.25
φ(67.5°)	-2.74-2.15	-1.78-1.28	-1.64-2.11	0.771-2.96	-1.18-0.13	-1.14-0.55	-4.02-1.94	-2.47-1.51	-2.25-2.26	-1.51-0.89	-1.84-0.21	-1.59-2.23	-2.14-2.1	-2.92-2.34	-4.14-0.96	-4.60-2.39	-2.67-2.11	-3.65-0.21	-2.27-1.72	-3.79-2.19	-3.09-2.7	-3.16-0.15	-4.26-1.36	0.150.
φ(75°)	-3.31-2.58	-2.43-1.14	-4.24-3.49	4.85-1.48	2.64-1.28	-2.49-2.44	-5.11-1.08	-2.69-3.53	-6.29-2.83	-2.99-3.31	-3.91-3.12	-1.9-5.3	-4.93-38	-5.98-3.39	-4.2-3.52	-3.01-2.84	-5.49-0.89	-1.85-1.62	-4.72-3.19	-5.99-3.77	-3.53-1.71	-3.51-1.64	-1.03-0.66	
φ(82.5°)	-5.58-4.04	-4.40-3.08	-6.70-5.94	5.33-0.46	4.54-2.23	-3.85-4.71	-4.76-1.04	5.21-1.	7.49-3.28	-1.49-3.43	4.5-2.93	-5.63-4.97	-2.86-0.76	4.46-4.	-5.59-4.97	-4.53-3.76	-3.49-4.65	-4.82-1.84	-4.50-4.73	-7.71-4.23	-5.71-3.	-4.06-2.3	-3.05-2.14	
φ(90°)	-7.62-5.94	-6.42-5.72	-7.25-6.39	4.49-0.62	4.29-5.63	5.08-5.7	-5.54-2.39	-6.33-6.84	4.19-5.75	-3.22-4.27	-6.26-4.23	-7.25-7.51	-3.77-6.68	-7.75-6.1	-6.44-5.72	-5.18-4.87	-6.79-6.26	-7.15-5.57	-5.42-4.92	-8.64-6.	-7.16-6.31	-6.73-6.62	-5.01-4.32	-4.36-5.51
φ(97.5°)	-9.57-8.92	-9.01-7.79	-8.32-7.69	4.90-7.37	7.57-6.21	6.49-8.78	-7.32-7.42	-5.91-5.36	-4.52-6.96	-7.28-6.15	4.48-5.96	-7.54-6.53	-8.96-8.56	-5.64-7.2	-7.92-7.71	-7.47-6.12	-7.86-6.37	-9.80-7.98	-7.74-6.59	-8.57-6.89	-5.91-6.29	-5.42-6.79	-4.42-5.79	
φ(105°)	-10.59-9.81	-9.18-7.71	-7.96-6.71	7.09-6.31	8.91-7.83	-7.63-6.91	-8.27-6.28	-6.17-6.44	9.62-7.59	-5.95-6.17	-7.85-6.1	-6.71-6.98	-8.72-6.46	-8.45-6.53	-6.24-7.13	-4.24-6.07	-7.05-6.83	-10.22-8.41	-11.61-9.74	-10.91-9.7	-7.73-7.99	-6.82-7.64	-5.71-7.41	
φ(112.5°)	-10.15-9.18	-9.47-8.65	-8.42-7.35	7.81-6.28	9.34-7.77	-6.99-7.96	-6.21-6.	4.22-6.57	8.47-7.48	-6.44-6.37	-8.97-7.56	-6.72-10.05	-8.40-7.99	-7.43-6.8	-11.59-9.13	-4.30-3.94	-4.27-7.88	-11.69-7.25	-9.91-8.91	-8.98-9.4	-6.08-6.4	-7.74-6.4	-6.51-6.53	-7.54-6.49
φ(120°)	-8.39-8.42	-8.21-6.43	-7.71-6.88	8.66-7.56	8.15-6.39	-8.23-7.84	-9.10-7.23	-7.61-9.59	8.37-6.42	7.11-6.48	-10.23-7.16	-7.08-7.33	-7.34-6.94	-6.84-6.94	-4.92-7.81	-7.51-9.36	-9.76-8.59	-10.71-9.8	-9.42-9.52	-7.97-6.54	-7.57-6.74	-7.02-5.67	-6.43-7.83	
φ(127.5°)	-7.67-7.77	-10.76-6.65	-7.43-6.74	8.22-6.15	-10.43-9.88	-7.39-9.49	-7.99-6.81	-7.53-6.12	4.26-5.15	-4.83-0.55	-7.97-7.32	-5.55-6.65	-7.22-6.5	-4.07-7	-7.50-7.21	-5.08-5.51	-8-4.7.81	-8-6.8-78	-7.53-6.5	-9.21-8.04	-4-3.7-35	-5-4-6-87	-7.55-6-07	-6.57-6.49
φ(135°)	-7.77-6.83	-10.48-6.52	-7.80-6.73	6.71-6.76	-9.02-11.7	-8.73-10.9	-6.63-6.52	-7.86-7.71	7.14-6.75	-6.78-6.94	-6.43-6.73	-6.17-7.91	-7.34-6.88	-6.35-6.17	-8.14-6.69	-7.07-6.18	-8.51-10.32	-7.13-7.05	-5.65-6.07	-7.35-10.46	-6.67-6.13	-6.44-3.67	-6.26-4.88	-4.78-6.63
φ(142.5°)	-6.32-6.58	-10.27-6.88	-5.50-6.59	-7.24-10.53	-6.35-6.03	-6.94-6.83	-8-4-4-2.68	-5.83-7.37	-10.19-4.59	-6.50-10.96	-10.57-13	-7.07-7.21	-9.34-6.11	-7.74-7.57	-7.57-7.47	-8-4-4-7.08	-9.31-11.88	-10.98-6.83	-7.99-6.49	-7.78-6.33	-5-61-6.94	-10.80-7.03	-4.53-4.94	-5.61-4.57
φ(150°)	-7.42-6.76	-8.71-7.77	-4.53-7.81	-8.40-6.83	-6.62-11.33	-11.37-6.73	-8.16-6.3	-6.16-6.3	-6.55-6.57	-10.56-12	-6.63-6.11	-8.14-7.3	-8.13-6.87	-10.23-9.44	-8.50-11	-12.22-10.31	-7.71-6.08	-6.41-7.73	-8.10-10.21	-6.81-7.66	-7.80-9.35	-4.64-5.87	-6.05-7.91	
φ(157.5°)	-7.14-7.72	-9.79-11.11	-6.97-10.91	-11.46-10.91	-11.61-1.85	-10.8-9.34	-10.46-12.29	-9.72-9.49	-6.26-8.85	-5.99-4.82	-9.96-10.26	-6.78-8.82	-8.90-6.68	-7.52-9.84	-8.45-6.68	-11.86-11.63	-8.4-5.67	-8.45-6.63	-6.21-6.95	-5.68-7.16	-8.16-9.47	-10.80-6.24	-6.18-5.68	-6.00-7.41
φ(165°)	-5.21-11.94	-8.75-9.33	-7.73-6.89	-9.56-10.91	-10.34-8.21	-7.15-7.41	-11.91-11.9	-11.98-6.44	-7.37-6.49	-6.60-10.02	-11.10-6.5	-8.14-8.54	-10.09-11.13	-6.76-6.62	-10.19-9.42	-6.96-6.61	-8.64-9.34	-6.37-6.99	-6.55-6.27	-6.89-8.23	-8.17-6.48	-5.94-5.38	-7.07-10.77	
φ(172.5°)	-4.97-11.51	-11.01-11.27	-11.49-11.21	-10.59-8.65	-6.73-6.47	-7.11-7.85	-8.11-10.14	-11.25-10.13	-8.29-8.73	-8.27-8.	-7.74-6.83	-7.47-8.92	-10.95-10.94	-10.19-9.84	-8-40-7.45	-7.73-8.13	-9.15-10.77	-11.10-10.89	-6.62-6.21	-6.86-6.79	-6.71-6.45	-4.82-4.42	-4.65-6.67	-7.62-10.23
φ(180°)	-10.82-12.77	-12.26-10.98	-11.49-11.01	-8.77-8.2	-1.54-15.79	-8.81-8.94	-10.25-10.18	-10.57-10.6	-10.55-8.77	-8.14-6.83	-7.71-6.01	-9.35-10.05	-10.39-9.47	-8.37-6.85	-8.46-6.94	-8.98-8.59	-8.92-8.92	-6.01-7.85	-6.33-6.51	-5.51-5.24	-5.52-5.52	-3.66-6.11	-7.34-6.95	
FreeRd	5.850.94	Ther	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Qd(84)	φ(7°/90°7.5°)	φ(15°/90°22.5°)	φ(30°/90°37.5°)	φ(45°/90°52.5°)	φ(60°/90°67.5°)	φ(75°/90°82.5°)	φ(90°/90°97.5°)	φ(105°/90°112.5°)	φ(120°/90°127.5°)	φ(135°/90°142.5°)	φ(150°/90°157.5°)	φ(165°/90°172.5°)	φ(180°/90°187.5°)	φ(195°/90°202.5°)	φ(210°/90°217.5°)	φ(225°/90°232.5°)	φ(240°/90°247.5°)	φ(255°/90°262.5°)	φ(270°/90°277.5°)	φ(285°/90°292.5°)	φ(300°/90°307.5°)	φ(315°/90°322.5°)	φ(330°/90°337.5°)	φ(345°/90°352.5°)
φ(7.5°)	-1.241-1.92	-2.6-2.48	-2.49-2.72	-1.96-1.66	-1.85-1.5	-1.08-0.7	-0.74-0.35	0.030.44	0.8465	0.830.74	6.48-11	-0.16-0.87	-1.74-2.55	-3.17-3.69	-3.87-3.18	-2.72-2.39	-1.72-1.42	-0.82-0.49	-0.25.26	0.30-1.	0.49-0.74	0.77-0.63	0.31-0.18	-0.21-0.75
φ(15°)	-2.71-3.9	-4.55-4.32	-3.76-3.35	-3.29-2.95	-1.91-1.33	-0.64-0.65	-0.31-0.16	0.120.13	0.6465	0.660.36	5.11-10.3	-0.49-0.76	-1.14-1.53	-2.09-2.3	-2.22-1.99	-1.59-1.26	-0.98-0.98	-0.59-0.67	-0.19-0.32	0.180.54	0.77-0.64	0.97-0.67	0.15-0.48	-1.46-2.28
φ(30°)	-4.49-6.09	-6.79-6.04	-5.19-4.29	-3.29-1.98	-0.99-0.11	0.51-0.15	1.39-1.16	0.600.56	0.98-0.89	-1.09-1.25	-0.91-0.97	-0.70-0.76	-0.44-0.51	-0.99-0.29	-0.91-0.1	-0.69-0.22	-0.41-0.26	-0.27-0.38	0.030-0.07	1.21-1.02	1.79-0.45	2.09-0.65	0.25-0.31	
φ(45°)	-5.90-6.48	-7.55-6.77	-5.90-4.66	-3.92-1.67	-1.22-0.34	1.02-0.17	3.15-2.98	4.44-4.61	3.40-3.65	3.42-3.11	2.76-3.02	2.94-3.15	2.22-2.19	1.38-1.15	1.10-0.84	1.59-0.34	2.62-0.21	2.98-1.91	1.71-0.17	1.39-1.52	1.44-0.94	1.66-0.61	1.38-0.94	
φ(60°)	-4.91-6.4	-6.51-6.01	-5.64-5.08	-3.91-2.77	-1.69-0.26	2.69-0.26	3.70-4.12	4.44-4.95	3.74-4.51	5.01-5.35	3.51-3.14	3.71-4.2	4.29-4.37	3.59-4.59	4.24-3.56	3.32-0.87	2.67-0.91	3.11-0.58	3.63-0.37	2.71-0.71	1.62-0.21	2.47-2.	2.68-0.36	
φ(75°)	-4.36-6.47	-4.35-6.49	-5.63-5.79	-5.72-4.49	-3.4-3.54	3.79-3.74	3.26-2.	2.40-3.2	4.48-4.34	4.98-4.39	3.99-3.99	5.16-78	5.86-5.92	5.91-6.2	5.46-6.72	4.10-35	3.19-3.35	3.81-0.63	3.12-0.29	3.03-0.21	2.29-0.71	4.01-0.54	4.12-0.99	3.22-0.66
φ(90°)	-6.34-6.83	-6.35-6.82	-6.91-6.64	-5.91-5.64	-3.96-3.65	-4.30-4.	0.99-1.43	3.91-5.23	5.82-5.42	5.42-5.15	4.85-5.24	5.98-6.02	5.34-5.15	4.43-5.26	4.66-5.47	3.74-4.10	3.41-3.24	3.54-0.08	4.40-0.48	4.28-0.47	3.35-0.28	3.38-0.35	3.87-0.57	
φ(105°)	-5.94-7.05	-6.85-7.77	-7.12-6.24	-3.87-6.45	-4.22-3.17	3.33-3.23	1.99-3.51	5.61-5.25	5.88-6.73	6.07-6.42	8.57-72	6.48-6.74	3.88-6.22	4.16-5.05	7.45-7.1	6.51-5.93	5.47-6.38	5.47-6.88	2.91-6.38	7.90-7.39	6.03-6.55	4.69-6.44	4.62-5.7	7.28-6.
φ(120°)	-5.72-6.79	-6.69-6.86	-6.96-6.03	-3.75-6.	5.42-6.26	3.93-5.	5.52-5.65	6.19-6.73	6.53-7.3	6.95-6.56	7.60-7.26	6.86-6.59	5.99-6.59	4.65-5.46	5.71-6.32	4.65-5.46	7.19-6.32	6.60-7.17	5.39-6.47	4.65-6.83	4.94-6.46	6.67-6.55	6.67-6.55	
φ(135°)	-5.99-6.72	-6.55-6.46	-6.07-6.54	-2.98-6.41	6.03-5.69	3.61-5.68	6.70-6.12	5.24-72	7.41-6.53	5.68-6.53	7.65-6.71	5.82-6.54	7.43-7.63	6.99-72	7.13-6.05	6.52-6.74	5.91-6.32	3.91-6.47	5.43-5.51	6.18-6.26	6.04-6.42	4.58-6.	5.57-6.28	6.36-6.27
φ(150°)	-6.83-6.61	-6.55-6.65	-5.95-6.59	-2.95-6.34	6.24-36	3.24-4.55	6.54-6.09	3.30-4.32	7.41-6.86	6.81-6.57	8.51-6.87	6.81-7.22	6.74-6.93	6.54-6.91	6.54-6.91	6.88-6.99	6.33-6.06	3.23-6.33	5.04-6.45	6.04-6.27	4.66-5.31	5.27-6.38	5.27-6.38	
φ(165°)	-4.02-6.48	-3.46-6.52	-4.74-6.49	-2.31-6.49	5.83-66	1.19-0.91	4.93-6.48	5.02-5.99	6.10-6.42	4.56-6.14	7.78-5.69	3.75-6.83	5.44-5.71	5.59-6.58	5.75-6.76	4.66-6.33	7.78-5.21	3.35-12	6.41-6.95	4.38-7.05	5.84-6.1			



Radiated Composite Gain Data of 5GHz

Appendix B

Gain Result

Frequency	5.02GHz	Phased 1	030°/030°/21°	030°/030°/21°	045°/030°/21°	060°/030°/21°	075°/030°/21°	090°/030°/21°	0105°/030°/21°	0120°/030°/21°	0135°/030°/21°	0150°/030°/21°	0165°/030°/21°	0180°/030°/21°	0195°/030°/21°	0210°/030°/21°	0225°/030°/21°	0240°/030°/21°	0255°/030°/21°	0270°/030°/21°	0285°/030°/21°	0300°/030°/21°	0315°/030°/21°	0330°/030°/21°	0345°/030°/21°		
Gain	0.007/0.07	0.019/0.21	0.261/2.4	2.28/2.4	3.35/3.5	4.61/5.6	7.73/10.3	15.09/17.5	19.48/15.5	11.03/8.23	5.84/4.06	2.97/2.13	1.74/1.44	1.31/1.34	1.56/2.06	2.75/3.44	4.48/5.52	7.74/9.59	11.74/14.1	16.77/19.09	15.73/12.03	10.09/4.7	2.72/3.61	5.53/4.68			
01°	2.86/1.3	-1.45/1.75	2.51/2.85	3.30/2.86	3.47/5.13	4.78/6.7	11.69/12.3	13.55/16.44	17.05/14.88	13.08/11.75	7.71/7.4	4.71/4.87	4.46/3.38	3.32/3.01	2.65/2.57	3.39/3	3.56/4.35	5.65/5.35	9.51/12.5	17.51/18.2	16.86/11.2	4.25/4.55	5.4/4.36	3.35/3.13			
02°	7.26/5.17	3.45/2.49	2.99/2.03	2.21/2.85	3.86/5.46	8.81/17.6	14.49/19.54	9.99/12.58	18.87/12.38	12.55/9.35	7.19/4.53	6.14/5.85	4.26/2.72	2.79/2.12	1.11/3.82	0.89/1.1	6.85/17.88	9.23/11.07	14.27/16.14	17.81/17.7	15.29/17.32	11.93/17.57	15.24/15.15	11.47/8.15			
03°	6.73/5.92	5.62/4.61	4.86/4.14	3.07/2.46	2.35/3.11	5.94/6.95	9.79/10.04	12.59/19.08	13.9/6.7	3.22/2.66	1.15/1.48	2.39/2.34	1.83/1.64	1.35/2.43	3.39/2.4	5.64/6.04	7.72/11.29	11.58/16.24	18.13/17.14	14.05/11.54	8.95/9.07	6.88/10.15	8.80/4.35				
04°	8.15/17.29	4.73/5.36	3.8/3.36	5.07/11.5	3.88/21.91	3.17/4.7	8.44/18.41	14.44/8.42	7.3/5.68	4.11/3.91	2.99/4.37	6.39/6.42	6.89/17.01	3.35/1.22	0.69/2.27	4.9/4.25	5.51/4.68	5.68/6.14	10.93/13.17	17.17/17.3	14.43/11.54	9.72/9.71	12.33/14.97	12.94/9.71			
05°	11.05/4.28	7.37/5.01	2.8/2.3	3.39/4.82	5.08/4.04	2.49/3.15	8.33/18.88	8.32/4.48	12.81/10.07	5.91/3.33	2.08/2.52	4.12/6.74	7.1/3.58	3.01/5.51	6.62/8.2	11.43/9.59	4.86/4.38	7.69/17.21	6.63/11.1	17.91/14.22	18.98/18.85	17.03/17.29	18.43/15.15	14.71/14.94			
06°	1.61/1.39	5.03/1.87	5.53/3.35	3.19/3.32	5.53/8.35	4.99/3.72	7.86/14.77	9.22/15.78	13.26/4.61	4.34/2.79	7.16/11.3	5.07/3.87	5.23/1.34	0.19/4.12	15.84/16.53	5.5/4.89	4.29/3.38	7.68/4.46	6.89/18.12	6.97/4.08	7.17/10.07	7.99/6.56	12.85/13.56	16.05/14.94			
07°	3.84/4.07	2.17/4.23	4.84/4.75	6.36/8.13	4.86/12.47	16.88/10.19	6.52/19.29	11.62/19.24	3.6/2.62	4.26/6.6	1.25/6.96	0.96/6.12	10.22/3.01	6.1/3.29	17.56/19.34	6.14/6.57	4.55/5.07	8.59/5.6	7.49/16.92	6.71/6.86	6.86/6.03	4.31/4.26	16.28/10.88	11.87/11.92			
08°	3.35/9.98	3.74/12.35	13.86/4.69	5.71/11.55	12.98/17.1	6.52/15.1	8.21/10.56	9.95/8.22	3.74/4.33	10.66/18.4	3.99/9.57	2.52/6.6	10.3/6.75	1.72/1.46	8.67/16.1	6.57/14.7	5.71/6.11	7.02/5.79	9.04/15.13	6.21/7.17	8.81/14.16	4.43/5.53	5.33/6.41	10.76/11.93			
09°	4.71/12.56	4.26/18.4	17.32/10.68	7.54/14.51	11.24/17.49	2.73/3.47	7.65/8.19	7.34/6.13	5.92/5.18	11.53/10.14	1.72/3.53	7.99/11.09	11.58/14.12	3.97/3.13	8.61/15.32	7.18/5.7	6.97/8.03	7.02/9.42	13.05/14.29	8.87/11.55	7.96/5.69	5.36/3.38	2.38/4.13	4.58/10.19			
10°	7.41/6.28	11.71/15.45	16.72/15.13	12.14/18.15	9.18/16.83	3.05/4.47	7.34/7.18	8.59/10.55	10.68/5.82	7.57/6.09	4.58/6.05	8.64/11.88	14.61/14.5	6.33/4.48	6.71/10.35	10.15/9.19	7.73/8.66	7.48/10.93	12.53/14.13	8.66/11.28	9.5/6.84	7.44/14.19	2.95/4.37	7.87/11.08			
11°	8.63/9.94	18.55/11.16	11.35/18.83	17.86/17.29	8.76/8.23	3.83/3.62	8.41/7.61	8.13/19.15	14.92/4.23	4.62/4.25	7.29/8.03	10.90/15.48	15.17/4.75	8.37/5.8	10.34/19.15	11.93/15.57	11.41/13.31	9.4/17.32	15.56/12.98	12.89/11.41	7.38/9.21	8.73/4.27	6.89/4.65	4.94/11.07			
12°	12.13/11.72	18.51/10.71	11.68/18.24	17.07/18.14	7.47/6.29	8.14/5.29	6.05/8.71	8.38/17.92	15.25/6.71	4.67/5.91	8.73/13	10.71/17.38	18.43/5.46	8.85/9.04	11.84/15.16	14.17/12.84	14.29/18.99	10.15/18.17	18.23/14.71	11.48/15.15	8.62/10.45	7.9/4.71	4.72/5.27	6.32/14.12			
13°	10.88/12	15.87/10.51	11.24/18.07	18.51/19.78	4.25/7.82	7.82/5.37	9.6/10.7	8.53/18.98	17.72/8.47	9.72/10.77	17.71/16.24	14.31/18.84	18.27/18.07	11.53/10.18	18.53/9.63	9.53/9.63	18.27/18.91	12.37/17.82	14.52/12.19	14.13/13.78	8.52/11.14	8.14/1.61	7.21/6.65	7.91/10.68			
14°	16.28/17.12	13.96/8.61	16.44/17.71	17.8/16.93	8.71/7.33	11.58/11.56	7.86/11.39	10.08/13.37	17.45/10.93	8.51/11.33	15.95/16.89	16.71/17.8	15.36/16.92	15.36/16.92	18.86/10.91	9.81/9.98	11.08/14.82	10.00/15.25	9.16/10.98	12.26/11.72	8.31/11.67	8.64/6.63	4.64/1.79	8.91/11.33			
15°	17.68/19.39	16.14/13.13	11.29/12.28	19.39/19.02	11.58/8.83	9.18/10.21	9.26/18.97	16.08/18.84	17.91/18.21	14.91/16.38	15.36/17.22	13.91/16.88	15.31/17.22	13.91/16.88	17.67/16.25	19.19/12.7	13.86/16.43	12.98/16.39	9.3/8.95	13.90/15.98	9.35/10.25	15.7/1.7	4.15/7.98	8.99/4.62	9.34/16.99		
16°	17.68/19.39	16.14/13.13	11.29/12.28	19.39/19.02	11.58/8.83	9.18/10.21	9.26/18.97	16.08/18.84	17.91/18.21	14.91/16.38	15.36/17.22	13.91/16.88	15.31/17.22	13.91/16.88	17.67/16.25	19.19/12.7	13.86/16.43	12.98/16.39	9.3/8.95	13.90/15.98	9.35/10.25	15.7/1.7	4.15/7.98	8.99/4.62	9.34/16.99		
17°	17.99/18.49	15.75/16	13.43/18.19	11.71/13.62	18.59/16.28	16.32/15.42	11.71/17.75	14.49/14.94	15.96/16.42	17.57/18.68	18.88/17.47	14.35/12.32	12.64/23.1	18.14/14.2	13.02/17.57	9.68/12.25	19.03/18.56	11.46/11.47	6.37/10.32	10.16/17.49	15.59/17.5	5.47/5.62	7.92/10.95	16.72/10.95			
18°	18.68/16.68	19.51/13.77	12.56/19.12	8.65/12.68	10.18/84	16.52/15.55	14.64/16.11	14.86/16.11	10.25/17.1	16.45/17.97	16.45/17.97	17.93/13.99	18.69/16.96	18.69/17.03	13.12/14.92	18.76/17.77	16.69/11.34	8.14/174	12.88/13.72	19.06/16.85	8.4/8.88	6.4/8.88	4.88/10.88	12.29/12.55			
19°	18.68/16.75	18.41/19.01	14.71/19.11	8.21/8.89	8.81/8.97	12.43/16.51	13.11/22.02	8.88/11.33	13.95/13.57	17.76/18.61	18.71/19.3	13.2/10.45	14.49/18.27	11.68/14.48	15.54/17.97	13.59/18.63	18.36/18.17	16.32/10.53	6.84/11.38	11.91/16.08	13.47/12.02	9.21/9.57	9.16/16.39	12.12/17.31			
20°	18.28/18.39	18.09/18.64	14.31/19.51	10.36/12.79	10.24/16.34	11.29/19.73	8.99/12.15	15.23/14.45	12.62/18.08	17.72/17.03	18.43/16.92	13.20/19.78	18.16/16.48	11.68/14.41	12.14/19.4	18.16/18.58	17.34/16.81	15.11/11.62	12.06/14.98	11.77/19.13	13.43/13.69	9.24/10.13	12.97/13.43	14.94/18.48			
21°	18.81/18.71	17.21/17.73	18.07/18.65	17.55/16.26	16.77/17.04	16.44/10.57	8.46/19.14	11.96/16.32	14.91/18.58	17.63/18.35	18.67/17.5	13.07/17.01	15.41/17.67	13.33/10.86	10.81/14.01	18.04/17.9	16.79/19.78	19.88/19.13	13.81/10.78	7.97/12.42	8.25/11.11	11.65/14.34	13.71/17.41	17.21/17.75			
22°	19.05/18.97	17.99/18.78	18.36/17.11	15.08/12.41	11.24/17.35	13.07/15.69	14.84/13.72	13.91/16.73	18.03/17.59	15.21/11.55	8.47/10.07	14.39/17.98	15.10/15.24	12.86/14.02	18.02/19.66	18.95/19.92	10.35/11.49	10.27/10.66	8.95/19.92	10.35/11.49	10.27/10.66	8.95/19.92	10.35/11.49	10.27/10.66	8.95/19.92		
23°	17.12/17.1	17.21/18.86	15.93/13.29	13.13/14.22	13.85/14.12	14.84/17.15	17.76/18.56	17.61/14.82	11.14/11.15	15.61/15.71	14.85/15.12	18.92/19.08	18.66/17.02	16.26/14.1	14.04/17.28	12.61/13.19	12.85/12.17	11.82/11.12	6.87/10.01	9.61/8.44	8.79/8.26	8.06/10.77	12.56/13.17	14.97/13.63			
24°	19.49/18.3	18.58/16.74	16.21/14.83	10.49/14.74	17.88/16.48	16.88/16.34	18.05/17.51	17.14/15.45	14.17/14.58	14.93/14.38	18.92/18.97	11.99/12.38	13.16/15.05	17.05/19.26	19.26/19.87	18.23/19.34	17.24/14.75	12.88/11.15	4.84/10.91	16.81/10.44	17.11/12.05	12.99/13.96	14.98/15.97	18.24/17.18			
Frequency	5.02GHz	Phased 1	030°/030°/21°	030°/030°/21°	045°/030°/21°	060°/030°/21°	075°/030°/21°	090°/030°/21°	0105°/030°/21°	0120°/030°/21°	0135°/030°/21°	0150°/030°/21°	0165°/030°/21°	0180°/030°/21°	0195°/030°/21°	0210°/030°/21°	0225°/030°/21°	0240°/030°/21°	0255°/030°/21°	0270°/030°/21°	0285°/030°/21°	0300°/030°/21°	0315°/030°/21°	0330°/030°/21°	0345°/030°/21°		
Gain	0.007/0.07	0.019/0.21	0.261/2.4	2.28/2.4	3.35/3.5	4.61/5.6	7.73/10.3	15.09/17.5	19.48/15.5	11.03/8.23	5.84/4.06	2.97/2.13	1.74/1.44	1.31/1.34	1.56/2.06	2.75/3.44	4.48/5.52	7.74/9.59	11.74/14.1	16.77/19.09	15.73/12.03	10.09/4.7	2.72/3.61	5.53/4.68			
01°	1.81/1.05	-1.67/1.68	17.5/19.31	11.3/16.75	4.89/4.42	2.79/2	1.54/1.26	1.04/0.8	6.73/4.74	1.01/1.38	1.62/2.76	4.45/4.45	8.33/10.5	15.08/18.4	12.47/15.83	12.3/9.75	7.73/6.61	5.86/5.27	4.55/4.11	3.53/3.99	4.43/4.79	4.9/5.35	4.55/5.76	6.42/10.3			
02°	8.16/10.17	-1.68/1.97	18.66/19.58	13.22/12.51	11.88/15.75	7.62/4.62	6.17/4.22	6.29/4.17	6.15/5.05	4.12/5.69	1.62/2.55	1.02/1.53	1.69/1.72	1.83/1.93	1.46/10.53	8.33/7.08	5.34/3.75	2.56/1.87	1.84/2.46	0.91/0.05	4.08/0.86	1.14/1.75	2.51/3.35	4.47/5.75			
03°	17.1/16.69	8.61/8.91	16.82/12.16	14.24/16.53	14.32/12.02	10.51/10.03	11.16/13.36	11.82/8.66	7.58/7.73	7.14/4.33	1.74/4.83	18.39/18.72	14.15/12.02	11.68/16.78	10.04/8.84	7.64/6.29	4.93/3.28	2.23/1.24	4.79/6.89	1.01/1.67	0.82/1.25	3.98/4.59	5.11/5.18	5.64/6.04			
04°	4.19/4.56	4.12/4.25	4.48/4.23	5.53/5.68	7.32/8.1	10.07/10.29	10.72/10.89	8.67/10.78	7.25/7.92	15.17/17.07	5.4/4.82	4.07/1.54	1.72/2.16	2.98/3.04	6.15/4.66	6.15/4.66	2.99/2.13	1.63/2.36									



Radiated Composite Gain Data of 5GHz

Appendix B

(H25)	3.213.19	-3.152.21	-1.390.85	-0.340.03	0.080.01	2.686.46	-8.136.51	-5.717.73	-11.877.678	-4.599.022	-1.731.88	-2.380.43	-5.397.09	-7.817.82	-7.533.83	-7.196.47	-6.889.34	-11.950.882	-18.131.538	-17.771.722	-11.144.09	-3.621	-1.431.37	-1.799.628
(H26)	3.744.88	6.660.82	-0.460.1	-1.240.24	2.391.91	2.334.13	-4.598.42	-5.761.192	-11.821.499	2.817.24	-2.432.14	-2.743.94	-5.517.56	-6.471.02	-1.823.16	-7.071.033	-15.419.88	-18.851.127	9.181.1026	-13.121.98	-11.021.632	5.51.52	5.296.97	-7.099.62
(H27)	1.630.11	0.261.1	-3.751.398	-3.364	-5.515.19	-5.767.71	-5.944.72	-8.881.74	-8.750.64	-8.220.1625	-11.498.36	-6.741.601	-6.31.874	-8.989.459	-1.793.011	-6.041.82	-16.911.846	-11.068.85	-11.661.171	-16.611.002	4.344.008	-3.739.489	-5.143.99	
(H28)	4.399.32	-1.992.48	-5.149.43	-6.871.48	8.861.62	6.533.44	-6.917.12	-14.619.98	-16.211.71	-11.233.64	-6.816.87	-6.192.81	-1.693.15	-7.049.29	-3.896.25	-16.21.22	-11.431.146	-13.339.88	-11.881.773	-9.781.12	-16.291.128	6.531.19	3.014.25	-4.481.47
(H29)	6.320.597	5.320.51	-6.361.121	-8.991.58	8.861.63	5.649.87	-12.981.96	-14.841.372	-8.881.781	-4.461.82	-6.958.49	-5.527.177	-1.123.63	-5.941.04	-4.21.52	-16.06.44	-13.981.92	-10.981.969	-10.281.74	-6.507.72	6.241.1366	-10.951.614	1.719.181	-7.061.21
(H30)	7.491.685	4.627.03	8.111.1086	-17.421.744	5.731.571	7.981.677	-10.891.951	-17.651.784	-10.381.598	9.317.1	-6.934.25	6.691.37	-3.551.26	-6.221.74	-6.851.61	-18.711.56	-15.781.55	-11.891.452	-7.851.871	6.317.04	-8.411.1599	8.191.812	-18.821.86	-1.741.76
(H31)	5.859.557	-6.021.62	8.150.1033	-12.161.1055	6.491.812	9.951.597	-17.191.865	-17.511.772	6.341.1164	-10.671.985	-7.267.22	-5.931.276	-2.511.203	6.931.64	-18.541.15	-13.591.399	-9.931.582	-5.647.67	-7.369.09	-10.137.6	6.031.757	8.961.419	-14.14.6	-1.414.6
(H32)	8.781.933	7.074	-11.321.133	-12.381.1173	7.619.806	-12.022.677	8.531.722	-14.011.653	-14.119.22	5.768.97	-7.967.57	8.191.456	-1.591.1322	-11.811.43	7.619.42	-12.141.658	-13.811.456	-14.361.81	6.591.105	9.51.891	-8.591.64	5.1761.23	3.871.65	-1.791.62
(H33)	-10.981.058	7.919	-13.091.1222	-13.331.799	-10.041.87	-11.131.1002	-10.531.711	-18.521.162	-12.431.87	4.281.921	-7.847.24	-12.361.45	2.521.127	-15.951.391	6.911.621	8.131.1623	-11.311.27	9.891.921	9.591.935	8.141.071	-8.261.22	-7.231.178	4.811.351	-4.091.576
(H34)	-12.291.1162	-11.151.931	-16.451.184	-10.991.1659	-10.591.12451	-12.711.213	8.961.594	-18.931.866	-12.091.811	5.611.275	-11.718.59	16.921.544	3.951.1034	-17.891.633	8.191.106	8.321.1626	-17.131.46	-16.881.1456	-12.041.193	8.261.1151	8.791.43	8.248.668	4.481.54	-4.917.94
(H35)	12.564.1524	-13.331.231	-19.191.48	-18.911.177	-18.911.177	-12.271.1352	-13.821.254	8.791.1036	-16.961.1981	-18.411.99	-11.751.194	-16.911.954	7.441.1931	-17.571.29	-16.261.602	9.391.1768	-18.491.1927	-15.991.1715	-11.411.471	8.931.1036	9.991.759	5.191.54	2.222.22	
(H36)	12.921.1681	-12.761.143	-18.171.35	-18.191.1436	-16.691.138	-15.161.1394	-10.791.149	-13.091.197	-17.761.1423	4.461.1148	-12.911.102	12.731.142	11.211.109	-16.871.1034	-14.621.1672	-15.981.161	-15.971.184	16.961.161	-18.361.161	-11.141.149	12.991.1056	8.791.788	5.661.602	-6.734.56
(H37)	14.571.1448	-18.991.1759	-18.991.1658	-18.471.1519	-17.741.1296	-17.218.1598	-13.151.281	-10.761.12	-17.961.11	-11.371.151	-12.211.881	-13.781.167	-16.981.107	-17.591.691	-17.731.139	-10.671.956	-10.711.1921	17.591.132	17.911.27	-14.719.164	-13.291.143	-10.714.63	1.7161.69	-5.391.82
(H38)	14.741.958	-18.991.1658	-18.341.1602	-18.111.1789	-15.271.1615	-13.131.1474	-15.751.13	-12.941.151	-15.991.162	-11.721.124	-17.441.162	-15.981.162	-15.921.162	-18.011.122	-18.621.978	-13.291.143	7.771.1919	-10.891.1519	-13.291.153	-17.641.149	-8.401.1086	9.321.155	8.151.794	9.751.196
(H39)	-17.691.1737	-18.991.1658	-17.691.1658	-18.991.1658	-18.991.1658	-18.991.1658	-18.991.1658	-18.991.1658	-18.991.1658	-18.991.1658	-18.991.1658	-18.991.1658	-18.991.1658	-18.991.1658	-18.991.1658	-18.991.1658	-18.991.1658	-18.991.1658	-18.991.1658	-18.991.1658	-18.991.1658	-18.991.1658	-18.991.1658	-18.991.1658
(H40)	-17.911.1615	-18.991.1658	-18.991.1658	-18.991.1658	-18.991.1658	-18.991.1658	-18.991.1658	-18.991.1658	-18.991.1658	-18.991.1658	-18.991.1658	-18.991.1658	-18.991.1658	-18.991.1658	-18.991.1658	-18.991.1658	-18.991.1658	-18.991.1658	-18.991.1658	-18.991.1658	-18.991.1658	-18.991.1658	-18.991.1658	-18.991.1658
(H41)	-12.571.1476	-17.541.1628	-17.361.1628	-13.181.1674	-16.671.1632	-16.671.1632	-16.671.1632	-16.671.1632	-16.671.1632	-16.671.1632	-16.671.1632	-16.671.1632	-16.671.1632	-16.671.1632	-16.671.1632	-16.671.1632	-16.671.1632	-16.671.1632	-16.671.1632	-16.671.1632	-16.671.1632	-16.671.1632	-16.671.1632	-16.671.1632
(H42)	-14.891.1725	-17.361.1603	-18.001.1609	-15.981.1645	-10.931.1659	-16.461.1661	-13.131.1627	-14.241.1677	-16.461.1661	-11.631.1672	-10.021.1604	-10.961.1676	-10.761.1633	-12.691.1659	-10.691.1635	-15.761.1602	-18.271.1685	-12.741.1639	-15.761.1602	-10.961.1659	-10.551.1627	-11.011.1668	-10.961.1659	-10.961.1659
(H43)	-14.331.1848	-18.431.1618	-16.191.1675	-16.191.1681	-17.491.1681	-17.491.1681	-17.491.1681	-17.491.1681	-17.491.1681	-17.491.1681	-17.491.1681	-17.491.1681	-17.491.1681	-17.491.1681	-17.491.1681	-17.491.1681	-17.491.1681	-17.491.1681	-17.491.1681	-17.491.1681	-17.491.1681	-17.491.1681	-17.491.1681	-17.491.1681
(H44)	-18.231.1848	-17.571.1736	-12.791.1648	-17.891.1673	-12.771.161	-7.321.168	-14.161.165	-16.981.1633	-12.591.1633	-18.121.1738	-18.961.1644	-14.741.1793	-17.541.1624	-13.121.1632	-18.991.1636	-10.071.1674	-17.711.1678	-12.711.1678	-12.711.1678	-12.711.1678	-12.711.1678	-12.711.1678	-12.711.1678	-12.711.1678
(H45)	-17.311.1628	-17.151.1746	-18.341.1671	-17.781.1681	-17.781.1681	-17.781.1681	-17.781.1681	-17.781.1681	-17.781.1681	-17.781.1681	-17.781.1681	-17.781.1681	-17.781.1681	-17.781.1681	-17.781.1681	-17.781.1681	-17.781.1681	-17.781.1681	-17.781.1681	-17.781.1681	-17.781.1681	-17.781.1681	-17.781.1681	-17.781.1681
(H46)	-14.311.1628	-17.881.1426	-13.411.1236	6.931.1618	7.791.897	-10.551.1237	-15.151.1636	-18.771.1628	-18.911.1628	-17.961.1628	-18.911.1628	-18.911.1628	-18.911.1628	-18.911.1628	-18.911.1628	-18.911.1628	-18.911.1628	-18.911.1628	-18.911.1628	-18.911.1628	-18.911.1628	-18.911.1628	-18.911.1628	-18.911.1628
FreeHd	5.859.557	Thetad1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Gain	(H25)(H26)	(H25)(H26)	(H25)(H26)	(H25)(H26)	(H25)(H26)	(H25)(H26)	(H25)(H26)	(H25)(H26)	(H25)(H26)	(H25)(H26)	(H25)(H26)	(H25)(H26)	(H25)(H26)	(H25)(H26)	(H25)(H26)	(H25)(H26)	(H25)(H26)	(H25)(H26)	(H25)(H26)	(H25)(H26)	(H25)(H26)	(H25)(H26)	(H25)(H26)	(H25)(H26)
(H47)	-12.711.1434	-18.141.1413	-11.031.38	4.751.485	3.471.258	-1.971.151	-1.141.032	0.711.034	0.981.134	-1.981.273	-3.027.263	4.917.58	-10.451.134	-18.211.135	-14.191.868	-6.071.467	-3.541.272	-1.721.123	-1.068	-0.831.122	-1.591.122	2.281.34	4.731.671	-7.611.1612
(H48)	-10.781.144	-17.971.1029	-12.861.42	7.361.553	3.811.233	-1.281.097	0.081.033	-1.161.136	2.991.734	-5.027.065	-9.071.894	-17.011.467	-18.141.133	-10.671.462	-6.091.429	-3.031.233	-1.481.12	-1.510.91	-0.831.122	-1.411.238	-2.161.332	4.731.671	-7.611.1612	-7.611.1612
(H49)	-10.971.1796	-17.771.177	-18.611.105	-17.291.1628	8.891.528	2.811.177	-1.331.134	-1.471.166	2.191.311	4.481.468	6.951.158	-18.211.191	-11.791.171	-11.791.171	6.461.754	-5.511.334	-2.431.156	-0.881.675	0.881.675	0.370.111	-0.141.37	-0.791.265	-3.841.611	-7.151.651
(H50)	2.921.483	6.811.602	-12.151.169	-17.129.1708	-17.941.1242	8.891.528	4.361.311	-2.031.141	-1.381.232	4.391.792	-5.141.743	5.511.614	5.291.414	7.361.139	-1.391.338	-1.261.46	-0.261.49	1.021.91	1.221.91	3.041.34	3.591.31	2.161	-1.191.105	-10.551.197
(H51)	0.861.31	0.351.122	-2.511.401	4.811.626	7.581.548	4.871.506	6.011.402	2.221.105	-1.151.139	-2.321.15	-4.811.54	-4.891.246	-1.161.76	-0.881.68	-1.061.56	0.191.35	-0.131.013	0.261.13	0.751.9	3.061.34	2.631.11	-0.281.03	-1.531.124	-0.081.86
(H52)	0.750.55	0.411.021	-1.271.14	-1.091.191	-3.091.35	3.981.491	5.641.17	-4.861.193	6.461.193	-1.713	-3.791.54	-1.261.12	1.901.81	1.261.76	0.211.75	-1.561.124	-0.261.26	0.091.1	-1.250.12	0.511.12	-1.591.171	-1.591.171	-1.591.171	-1.591.171
(H53)	1.781.14	1.911	0.241.19	0.311.275	2.71.284	4.521.15	-9.951.82	4.131.194	2.451.635	0.991.25	0.911.01	2.271.29	2.341.74	2.462.97	1.591.201	-1.301.94	0.711.103	-2.541.54	3.621.78	2.331.76	0.221.183	0.381.61	2.782.28	2.782.28
(H54)	1.962	1.661.2	0.211.24	3.551.45	8.811.13	6.191.87	-10.441.37	-1.821.24	6.741.919	-5.991.32	2.711.66	0.361.29	1.171.229	1.841.73	1.361.109	0.221.1	0.131.49	4.261.88	2.621.84	0.181.25	0.471.928	2.981.29	2.981.29	2.981.29
(H55)	2.782.81	1.131.102	-2.041.251	-1.691.18	-4.851.123	-14.211.471	-4.071.423	-1.551.203	2.011.24	-1.732.74	1.401.74	2.431.3	1.861.28	2.110.25	-2.381.17	-0.411.659	-1.851.234	-1.761.147	3.442.17	2.770.38	0.151.18	-1.411.36	1.892.71	1.892.71
(H56)	2.112.02	0.221.54	-4.991.267	-1.461.306	6.911.168	-1.081.43	-1.771.15	-2.571.11	1.561.89	-1.725.74	4.203.56	1.478.79	1.541.68	2.061.1	6.241.46	1.261.54	3.141.243	-1.381.21	0.811.12	3.361.05	1.911.172	-3.811.128	-1.692.11	-1.692.11
(H57)	0.811.027	-1.511.04	6.211.19	2.21.64	0.011.68	6.011.28	-1.21.48	-3.361.36	2.311.129	-1.194.13	5.641.49	0.871.33	4.344.47	3.844.07	1.982.13	4.52.12	2.991.46	5.591.34	-1.281.23	-2.381.29	3.241.71	0.801.13	6.841.3	0.911.34
(H58)	2.551																							



Radiated Composite Gain Data of 5GHz

Appendix B

(H0°)	5.69±5.85	4.17±8.89	-8.45±16.27	-15.09±7.27	4.84±7.29	4.91±9.43	-12.57±3.63	-3.94±0.06	3.47±0.06	1.08±1.3	-11.34±17.75	-12.36±16.82	-16.6±18.88	6.35±1.1	8.86±5.88	-5.41±5.87	-6.88±6.81	-4.99±3.63	5.19±9.51	-14.71±11.89	-8.13±8.65	-14.14±18.73	-18.62±16.58	-16.82±8.9
(H5°)	5.67±5.21	-5.29±7.2	-10.16±13.08	7.99±7.87	27.73±0.6	6.15±18.3	-7.26±3.5	5.05±5.36	3.93±0.84	2.42±7.4	-12.56±19.25	-16.32±17.5	-13.2±15.3	8.74±6.8	-11.97±9.8	-7.5±3.9	9.08±12.62	8.07±1.7	8.58±11.67	-14.79±14.3	-13.06±14.3	-18.12±17.97	-18.62±15.41	6.94±7.3
(H10°)	5.66±3.63	-7.35±7.6	-8.67±5.3	5.49±8	8.55±3.1	-11.65±3.87	-6.72±2.68	-6.44±9.51	6.71±3.35	-6.17±7.28	-10.26±17.51	-12.92±17.65	-13.96±14.18	8.81±12.87	-16.29±21.1	-10.57±5.14	-8.24±14.59	8.17±9.11	-11.17±2.98	-13.43±19.15	-16.44±16.09	-18.03±19.01	-16.12±15.03	-12.58±16.32
(H25°)	-13.54±8.83	-8.61±7.3	-8.73±5.81	4.88±9.59	10.2±3.88	-17.94±7.89	-8.61±4.33	-19.17±12.36	5.84±4.23	-12.06±18.58	-13.58±17.72	-14.15±17.66	-16.86±13.1	-11.99±17.9	-18.17±16.1	-12.06±5.64	-10.84±13.9	8.13±12.36	-13.04±9.85	-16.18±36	-16.99±18.5	-14.69±18.74	-15.4±12.24	-11.54±19.16
(H30°)	-16.67±13.17	-10.24±2.7	-9.57±5.42	5.86±11.07	-11.49±5.33	-16.52±7.68	-12.9±2.5	-16.97±16.82	6.54±12.27	-16.97±16.82	-17.59±17.66	-15.03±18.24	-10.14±12.71	-16.48±15.48	-18.38±17.1	-17.76±7.06	-10.21±7.71	7.95±14.44	-14.37±11.49	-18.16±14.46	-14.36±14.36	-16.8±18.74	-14.25±12.77	-11.78±19.09
(H35°)	-17.74±16.56	-16.53±10.28	9.13±6.21	6.73±11.65	-12.26±4.5	-17.69±2.83	-15.53±9.84	-12.34±10.49	8.02±17.84	-17.69±19.7	-13.54±15.74	-18.11±13.2	-10.01±13.9	-13.51±13.8	-16.33±19.92	-12.68±4.1	-10.51±7.47	-10.94±18.29	-11.98±12.87	-19.04±15.69	-12.3±11.29	-10.84±15.48	-12.83±15.1	-14.69±16.06
(H40°)	-13.37±18.25	-14.94±13.01	-14.5±9.3	8.43±11.81	-10.17±4.95	-18.91±10.86	-19.02±12.75	-12.41±15.49	-11.52±17.64	-16.14±10.85	-16.17±5.7	-17.76±16.46	8.22±13.88	-12.06±15.57	-14.34±15.59	-10.89±18.4	-10.71±16.25	-17.3±17.8	-15.09±16.41	-15.93±12.23	-17.39±17.08	-14.05±10.11	6.23±12.16	-14.69±16.06
(H45°)	-10.52±17.77	-18.13±12.7	-12.74±6.67	8.95±13.09	-10.67±16.76	-18.89±16.17	-18.73±18.81	-11.52±18.67	-17.53±11.13	-12.86±10.84	-18.35±10.03	-12.38±13.53	-12.23±17.92	-12.61±15.2	-14.86±17.4	8.48±9.25	8.67±1.4	-13.81±18.81	-14.81±7.62	-18.82±17.67	-16.36±8.93	-12.43±12.43	-11.95±19.01	-13.47±11.15
(H50°)	-13.26±15.03	-14.75±10.07	-18.16±8.57	8.97±13.1	-11.06±10.16	-18.88±14.73	-17.56±16.74	-15.46±14.4	-15.46±14.4	-15.46±14.4	-12.77±10.52	-12.42±12.36	-10.23±10.51	-15.85±15.87	8.52±11.42	-15.21±14.42	8.52±11.47	-17.36±17.68	-13.22±15.76	-18.29±17.66	-12.9±11.58	-10.52±10.19	8.61±7.02	8.48±7.03
(H55°)	6.31±11.74	-16.47±13.1	-18.62±15.6	8.65±14.7	8.89±12.23	-11.92±8.13	-18.79±9.45	-15.56±12.57	-15.14±10.55	-13.93±17.88	-17.76±12.1	-10.16±8.44	9.84±12.77	-16.87±14.7	-11.84±13.91	-16.82±15.77	-10.52±19.66	-17.98±16.92	-12.06±13.44	-18.86±14.81	-11.82±17.81	-12.03±12.43	-16.84±14.1	7.76±17.7
(H60°)	8.32±12.77	-17.76±10.31	-14.02±17.78	8.86±10.55	-11.58±7.8	-16.29±17.1	-15.67±16.16	-15.67±16.16	-15.67±16.16	-15.67±16.16	-15.67±16.16	-15.67±16.16	-15.67±16.16	-15.67±16.16	-15.67±16.16	-15.67±16.16	-15.67±16.16	-15.67±16.16	-15.67±16.16	-15.67±16.16	-15.67±16.16	-15.67±16.16	-15.67±16.16	-15.67±16.16
(H65°)	-10.16±4	-11.29±7.115	-14.56±14.92	-15.7±14.45	11.24±16.88	12.71±10	-18.56±16.56	10.29±16.94	16.86±17.73	-18.44±16.82	-18.50±12.85	12.96±13.84	7.97±9.76	-17.99±16.89	8.19±16.54	15.73±10.33	8.61±17.93	-14.87±17.77	-17.79±15.55	-18.15±11.71	-16.79±11.9	4.8±8.8	-12.77±8.1	-12.77±8.1
(H70°)	-11.31±9.82	-7.34±8.1	-11.29±11.69	-11.88±13.16	11.57±16.11	-18.31±7.31	-18.61±16.52	11.62±14.57	-18.41±17.38	-13.96±14.07	-11.78±12.1	8.43±15.32	17.36±11.98	-11.57±12.17	-11.78±11.16	-14.22±10.25	18.72±17.28	18.6±16.97	-17.84±19.05	-17.84±19.05	-17.84±19.05	-17.84±19.05	-17.84±19.05	-17.84±19.05
(H75°)	-10.30±13.3	-10.29±7.51	-17.23±18.42	-17.23±18.42	11.54±16.11	-18.56±16.86	-17.67±19	-17.63±14.49	-15.42±19.02	-18.15±16.43	-16.93±12.28	-11.24±10.84	-12.64±12.92	-13.16±16.45	-18.96±19.2	-18.96±19.2	-18.96±19.2	-18.96±19.2	-18.96±19.2	-18.96±19.2	-18.96±19.2	-18.96±19.2	-18.96±19.2	-18.96±19.2
(H80°)	-16.27±16.58	-15.29±18.67	-18.88±18.96	-17.68±16.22	-18.48±18.37	-16.07±16.22	-17.96±16.92	-16.26±17.84	-16.17±18.54	-15.86±18.5	-17.32±16.15	-18.16±16.39	-17.37±16.45	-18.86±17.43	-18.86±17.43	-18.86±17.43	-18.86±17.43	-18.86±17.43	-18.86±17.43	-18.86±17.43	-18.86±17.43	-18.86±17.43	-18.86±17.43	-18.86±17.43
(H85°)	-17.15±16.24	-13.93±18.06	-14.05±15.06	-16.02±17.07	-18.42±17.72	-19.11±17.76	-17.88±19.33	-15.14±10.2	-12.63±11.69	-11.86±12.16	-11.77±12.12	-12.63±17.39	-15.95±15.94	-14.14±14.2	-14.06±14.3	-15.99±16.42	-18.22±19.03	-18.91±16.58	-19.22±16.78	-19.01±16.19	-15.79±16.45	-14.82±14.83	-14.31±17.45	-17.84±17.4
(H90°)	-16.68±16.25	-19.21±7.59	-17.47±17.39	-17.47±17.39	-17.47±17.39	-17.47±17.39	-17.47±17.39	-17.47±17.39	-17.47±17.39	-17.47±17.39	-17.47±17.39	-17.47±17.39	-17.47±17.39	-17.47±17.39	-17.47±17.39	-17.47±17.39	-17.47±17.39	-17.47±17.39	-17.47±17.39	-17.47±17.39	-17.47±17.39	-17.47±17.39	-17.47±17.39	-17.47±17.39
FreeH0	5.20Phi	Theta0.2	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Gain	(H0°/90°)	(H5°/90°)	(H10°/90°)	(H15°/90°)	(H20°/90°)	(H25°/90°)	(H30°/90°)	(H35°/90°)	(H40°/90°)	(H45°/90°)	(H50°/90°)	(H55°/90°)	(H60°/90°)	(H65°/90°)	(H70°/90°)	(H75°/90°)	(H80°/90°)	(H85°/90°)	(H90°/90°)	(H95°/90°)	(H100°/90°)	(H105°/90°)	(H110°/90°)	(H115°/90°)
(H5°)	7.74±7.57	-7.75±7.6	7.73±1.6	6.88±9.15	8.88±11.24	-11.52±11.68	-12.89±14.3	-16.87±17.36	-13.29±17.77	-17.53±16.88	-18.69±17.72	-16.11±14.67	-14.1±12.3	-11.82±17.73	-11.41±10.17	-11.31±17.3	-11.18±13.9	-16.67±17.87	-13.86±19	-18.21±18.16	-16.86±16.55	-14.04±12.06	-10.85±9.97	8.84±7.94
(H10°)	-13.34±105	-15.48±14.86	-14.36±14.79	-15.26±15.75	-15.78±15.99	-16.11±13.14	-15.73±17.09	-17.29±12.47	-17.33±12.48	-11.66±14.3	-8.67±6.09	-7.63±6.84	-6.78±6.86	-6.86±7.19	-8.33±9.02	8.44±10.52	-12.08±12.26	-13.56±12.59	-15.78±10.36	-14.96±14.81	-13.89±12.68	-13.23±12.53	-12.24±12.53	-12.24±12.53
(H15°)	-13.38±16.53	-19.37±17.89	-16.18±13.1	-16.69±17.9	6.54±13.6	6.587±8.33	8.46±10.52	-11.49±11.91	-13.11±10.7	6.16±9.32	-7.25±9.33	-8.39±10.59	2.63±2.84	3.19±4.5	-5.36±5.67	8.39±10.52	-13.59±17.85	-17.79±18.87	-18.91±18.51	-12.49±17.91	-7.63±17.1	6.74±5.39	4.22±7.92	4.22±7.92
(H20°)	-18.71±16.78	-16.64±16.28	-7.97±4.2	6.21±4.7	3.33±3.7	4.83±5.6	7.04±7.48	-7.46±8.42	5.69±1.44	2.82±2.59	-1.176±1.2	1.257±1.89	1.391±1.4	6.45±9.38	6.717±0.7	2.03±3.67	5.59±4.2	4.96±6.88	-10.59±15.5	-18.91±19.21	-15.69±13.73	-11.72±7.87	6.42±11.35	6.42±11.35
(H25°)	-13.38±6.4	5.74±5.3	7.59±9.21	6.79±5.25	4.16±7.6	7.29±4.6	7.51±6.7	4.97±7.88	7.14±1.47	-1.54±4.6	6.26±5.29	0.971±5.84	1.687±3.6	4.93±9.99	1.226±4.8	-1.23±3.41	3.99±2.85	2.21±3.15	5.15±8.3	-12.88±16.29	-16.66±14.1	-15.21±14.62	-16.33±16.25	-16.33±16.25
(H30°)	-10.95±7.39	5.56±1.4	8.96±6.86	3.79±4.5	4.24±4.7	3.43±3.7	4.56±5.83	7.23±7.87	7.67±5.52	-1.087±1.38	-1.331±1.42	-1.6±2.25	2.15±1.87	1.058±1.4	5.86±4.4	-1.37±1.74	2.23±6.69	0.768±3.7	6.91±7.47	4.12±5.13	4.39±6.36	5.21±6.87	-14.17±17.86	-15.97±15.75
(H35°)	-10.77±7.65	4.891±7.3	7.28±2.1	3.86±7.54	5.50±1.97	2.86±1.49	6.26±6.64	6.05±5.76	4.57±4.47	-1.199±1.27	-1.269±1.45	2.55±2.33	4.491±4.44	2.59±2.52	5.519	-0.07±1.72	2.39±1.72	2.39±1.72	2.39±1.72	2.39±1.72	2.39±1.72	2.39±1.72	2.39±1.72	2.39±1.72
(H40°)	9.65±9.84	8.63±6.98	4.07±3.85	4.27±3.25	3.59±1.42	4.53±6.68	8.13±4.72	2.77±4.27	7.68±7.62	1.74±2.52	1.391±1.7	0.842±1.24	2.071±3.3	3.51±4.77	2.298±3.8	4.42±1.1	6.36±3.35	6.49±6.45	4.24±7.1	2.87±1.98	1.84±2.36	6.86±3.45	3.31±4.02	-12.59±12.71
(H45°)	9.13±8.82	6.26±1.37	-0.43±1.31	3.38±2.36	0.04±7.28	5.72±4.21	3.04±1.72	0.45±0.33	-1.77±1.2	-1.780±0.56	5.0±2.3	-0.550±3.9	4.73±4.46	-1.360±7.9	-1.79±2.5	3.99±0.95	-1.67±0.42	1.59±4.45	4.67±6.56	2.36±3.9	4.89±1.57	4.08±4.5	3.31±3.52	9.71±13.27
(H50°)	4.12±6.2	5.12±3.94	0.96±0.85	0.201±7.38	1.33±2.34	2.76±1.91	0.06±0.6	0.66±0.6	-1.69±1.04	0.07±0.94	3.22±1.51	1.29±0.07	0.487±1.76	1.81±2.09	2.241±0.6	2.38±0.95	0.84±0.43	2.50±3.76	5.73±7.55	5.73±7.55	5.73±7.55	5.73±7.55	5.73±7.55	5.73±7.55
(H55°)	4.36±4.3	4.18±0.56	1.30±7.9	1.87±2.63	0.813±1.7	-1.97±1.88	-1.88±2.1	0.94±0.48	0.652±0.4	1.33±1.48	1.48±0.45	0.26±0.27	4.97±0.65	8.51±2.72	3.86±1.98	0.94±0.22	1.02±2.25	0.710±1.4	0.371±1.8	0.940±1.4	1.120±1.7	-1.13±0.69	7.76±4.43	-3.72±5.35
(H60°)	4.04±3.56	4.37±7.3	0.850±3.3	1.777±6	0.082±0.382	-1.65±0.82	-1.65±0.82	0.63±0.91	0.59±0.46	0.71±1.22	-1.02±3.33	-1.43±1.2	3.41±1.2	6.59±1.96	5.19±1.8	0.13±1.34	0.371±1	0.01±0.92	8.62±0.85	0.901±1	1.220±1.61	0.921±1.71	0.817±0.78	-3.62±4.68
(H65°)	-11.02±1.42	-7.88±1.4	-0.64±1.31	0.03±0.33	-1.6±1.2	4.31±0.48	4.74±0.25	-3.42±7.32	1.28±1.47	0.34±1.41	-1.25±1.4	2.97±3.77	6.3±2.72	2.14±1.46	4.87±3.78	2.52±3.34	-2.02±2.22	-1.58±2.11	-1.03±1.4	0.101±0.8	0.19±0.83	2.52±3.35	0.94±1.77	5.32±3.8
(H70°)	-10.24±5.84	-11.36±8.62	-2.59±3.64	-3.06±3.36	7.657±0.64	4.51±0.64	4.76±0.34	61±0.47	3.81±3.24	-2.84±2.64	6.81±1.1	5.83±1.44	-7.72±6.65	2.77±4.26	6.15±4.8	5.09±6.17	4.48±1.87	5.18±4.45	2.26±2.54	2.03±2.09	5.67±2.68	-10.01±5.44	-10.01±5.44	-10.01±5.44
(H75°)	-10.01±6.78	-15.64±18.9	-6.45±7.6	6.14±2.47	-7.83±12.3	6.39±1.2	8.95±5.57	7.76±5.5	6.55±1.42	4.82±1.74	-5.86±1.7	6.99±6.58	-7.05±7.2	3.37±4.66	6.327±4.3	8.4±8.35	6.33±4.06	7.62±6.25	4.8±6.69	6.4±3.92	5.59±5.33	8.97±12.1	-11.74±8.7	4.117±9.8



Radiated Composite Gain Data of 5GHz

Appendix B

(H122.5)	-16.39-17.27	-17.23-15.03	-17.87-14.37	-15.18-10.47	-17.33-11.39	-18.20-19.25	-14.32-13.48	-17.53-18.62	-18.24-17.68	-15.73-12.14	-18.15-18.7	-18.24-15.2	-12.14-12.48	-10.35-15.02	-17.11-12.93	-17.18-5.5	-8.92-13.1	-17.87-12.1	-16.93-18.2	-12.27-16.8	-11.59-11.15	-17.11-17.08	-11.95-14.1	-17.75-17.21
(H120.7)	-17.71-18.32	-12.31-14.94	-18.25-18.14	-17.39-9.9	-17.46-10.06	-18.85-18.27	-16.24-15.75	-16.51-19.04	-15.65-11.87	-15.82-16.97	-17.27-16.15	-13.15-12	8.46-17.3	8.57-10.35	-13.84-12.96	-13.35-11.1	-12.11-11.55	-18.1-12.47	-17.64-18.2	-16.25-19.35	9.01-9.3	-16.47-17.09	-12.18-13	-10.03-13.8
(H120.2)	-17.26-17.09	-15.79-17.81	-17.87-17.86	-14.54-13.28	-18.86-11.49	-17.67-12.45	-17.64-13.54	-18.84-15.65	-18.26-11.07	-12.15-18.33	-14.61-12.34	8.25-18.33	-12.09-9.25	8.26-10.14	-10.01-12.02	-12.39-16.84	-18.97-15.76	-17.46-16.6	-15.71-17.75	-12.59-14.89	-12.22-14.71	-10.23-9.45	-11.74-10.24	
(H120.1)	-12.29-13.37	-12.78-18.02	-18.44-15.02	-17.32-12.74	-18.24-16.04	-14.94-17.1	-18.9-14.76	-18.93-14.35	9.3-15.02	-18.24-18.1	-15.27-17.97	8.93-13.99	-14.11-10.3	7.19-12.06	-18.17-18.9	-12.92-12.41	-11.87-18.3	-17.74-19.11	-15.01-11.31	-15.09-17.3	-12.98-18.2	8.32-11.29	-14.82-11.21	
(H142.5)	-14.57-17.73	-18.71-11.14	-13.13-18.46	-17.21-14.73	-11.89-14.9	-14.72-11.8	-17.43-15.75	-12.22-13.94	-13.3-18.67	-18.63-15.3	-12.26-14.7	-17.89-14.35	-10.24-15.28	-14.22-14.18	-14.81-13.75	-18.87-17.44	-18.88-18.72	-15.98-18.78	-15.09-17.13	-7.93-9.24	-11.87-10.79	8.9-12.39	-17.17-12.31	
(H150.7)	-17.15-18.12	-14.31-12.23	-11.33-18.43	-18.06-14.98	-15.46-18.87	-18.74-14.9	-16.72-17.92	-14.08-11.85	-11.5-14.05	-13.32-15.05	-19.18-12.75	-15.15-12.91	-11.87-17.35	-15.19-12.72	-12.99-15.1	-14.86-18.02	-19.08-19.1	-18.24-17.88	-16.21-17.51	-17.45-17.17	-13.45-13.35	-18.31-18.58	-13.71-19.73	
(H157.5)	-18.33-12.18	-18.41-17.96	-18.33-18.26	-19.05-17.45	-15.17-16.7	-16.68-17.16	-18.73-18.98	-18.78-14.46	-12.76-13.48	-17.03-12.74	-19.18-16.75	-17.72-12.59	-12.9-18.4	-17.33-8.5	9.51-136	-19.35-19.02	-17.76-19.08	-14.4-13.22	-17.16-18.87	-16.92-12.9	-13.22-14.24	-17.43-12.03	-13.26-16	
(H157.2)	-18.38-18.69	-18.18-89	-17.63-18.02	-17.83-18.53	-18.16-18.96	-16.78-17.1	-19.3-19.91	-18.91-17.43	-17.11-19.28	-16.95-18.99	-14.29-11.3	9.74-69	-12.45-18.1	-17.83-14.86	-16.02-17.34	-18.25-19.16	-15.12-12.12	-12.22-13.85	-18.93-14.3	-15.08-12.77	-12.3-13.91	-16.42-12.65	-10.89-18.39	
(H172.5)	-17.29-18.29	-15.68-19.13	-18.98-18.38	-18.18-19.03	-15.19-13.78	-18.58-18.05	-16.48-17.37	-17.8-14.84	-12.55-14.18	-11.20-11.11	-11.89-13.92	-17.39-18.12	-18.15-18.7	-18.22-17	-16.88-14.85	-14.53-13.86	-14.72-17.45	-18.41-18.98	-14.9-12.89	-12.89-11.89	-12.12-12.29	-11.19-14.86	-16.85-18.76	
(H172.2)	-18.76-18.55	-19.31-18.86	-16.22-16.6	-17.88-13.84	-18.26-18.18	-19.3-19.19	-18.37-17.18	-19.31-17.43	-16.27-13.81	-12.49-11.96	-11.2-11.68	-12.11-13.1	-16.52-18.98	-16.83-16.84	-12.23-13.01	-15.85-18.23	-17.62-18.78	-18.32-15.84	-11.93-11.37	-8.52-8.62	8.84-8.73	7.7-8.42	-16.24-12.84	
Frequency	5.625GHz	Threshld = 2																						
Gain	0.077(967.5)	0.037(9637.5)	0.045(96952.5)	0.077(96957.5)	0.077(96957.5)	0.077(96957.5)	0.077(96957.5)	0.077(96957.5)	0.077(96957.5)	0.077(96957.5)	0.077(96957.5)	0.077(96957.5)	0.077(96957.5)	0.077(96957.5)	0.077(96957.5)	0.077(96957.5)	0.077(96957.5)	0.077(96957.5)	0.077(96957.5)	0.077(96957.5)	0.077(96957.5)	0.077(96957.5)	0.077(96957.5)	
(H120.5)	-15.85-12.11	-13.11-18.5	-11.41-11.59	-11.46-12.86	-15.44-17.87	-18.88-17.57	-18.36-14.86	-12.31-9.81	7.615-7.57	-4.67-4.67	-4.4-4.4	4.4-4.3	4.86-5.31	5.56-8.85	-6.48-11.34	-14.71-19.29	-17.58-18.03	-17.54-15.11	-12.81-19.39	9.81-9.35	5.38-5.1	8.64-8.99	8.84-8.84	-10-10.51
(H17.5)	6.16-6.14	-7.25-7.95	8.21-11.35	-13.91-17.37	-10.64-17.22	-13.91-12.24	-10.41-9.75	8.41-9.3	9.34-8.57	-8.36-8.25	-0.07-8.66	8.89-9.04	-4.22-9.42	8.82-9.19	8.22-9.49	-10.11-11.74	-14.08-15.92	-12.29-12.83	-15.93-13.87	-3.98-9.87	-5.64-5.24	3.72-3.57	-3.69-3.6	-3.91-4.54
(H120.2)	2.52-3.03	-4.09-4.98	-6.36-9.01	-12.82-19.27	-17.19-14.13	-10.22-12.48	-7.59-7.45	-8.05-8.58	-8.42-7.34	5.94-6.41	2.90-1.99	-1.09-1.13	-1.76-2.3	8.23-8.44	-4.86-5.07	-5.06-5.7	-6.60-7.39	-7.78-8.39	3.97-8.8	7.41-8.23	5.1-5.81	-3.09-2.88	2.75-2.41	2.00-2.21
(H22.5)	4.01-4.82	-4.92-4.88	-4.98-4.87	-13.18-18.1	-10.41-6.11	4.38-4.06	-4.43-4.7	-1.81-2.76	-1.81-2.76	1.47-1.12	0.971-85	2.19-2.07	1.55-8.88	0.23-0.79	-2.94-1.3	-5.84-5.51	-4.37-3.01	4.25-4.3	6.5-8.05	6.91-10.92	-11.92-12.68	-10.69-12.68	-4.09-4.78	4.72-4.24
(H00.7)	-7.01-5.82	-4.93-4.45	-2.15-2.49	-5.79-13.4	-11.75-7.51	5.19-4.07	3.96-6.51	-5.79-3.79	9.19-2.75	1.31-2.19	1.31-2.19	1.31-2.19	1.84-2.04	2.12-1.64	0.34-0.6	0.74-0.49	0.13-0.11	-0.52-0.99	2.3-3.96	-5.65-5.75	-5.54-5.66	8.86-14.48	-18.38-17.6	-12.23-9.27
(H07.5)	-10.16-6.5	-7.34-5	-1.09-0.52	-3.56-9.02	-8.94-7	-4.68-2.75	-2.64-4.82	-0.82-7.55	-2.38-1.32	2.07-2.28	-1.1-1.79	-1.33-1.06	-0.44-1.4	1.34-2.28	1.99-9.32	-1.09-1.4	-1.09-1.33	2.24-3.17	-4.25-4.91	4.51-13.28	2.83-4.45	6.81-7.99	8.97-12.4	
(H04.5)	8.36-5.76	-10.45-10.27	-1.51-1.39	-4.15-7.7	-6.27-5.35	2.32-0.48	-1.71-3.76	-4.03-1.36	1.27-0.48	2.27-2.19	1.18-1.46	-0.371-26	-2.12-1.04	0.17-0.26	3.99-2.49	0.17-0.81	1.79-2.02	0.86-1.81	-6.68-6.96	-2.81-0.43	-0.69-2.83	2.26-1.91	2.77-3.35	-3.8-1.4
(H32.5)	5.3-3.22	-5.64-11.89	-1.51-1.36	-4.1-5.77	-4.77-5.61	5.27-12.1	6.671-11.09	8.89-1.94	2.89-2.68	2.63-2	4.28-2.86	2.73-2.68	-1.38-1.43	1.07-1.29	2.771-13	0.89-2.8	2.881-18	0.27-1.71	3.06-5.34	2.51-4.07	1.78-0.81	-4-15.6	-5.84-5.03	-5.78-5.03
(H0.5)	5.64-2.13	-0.78-4.71	-1.34-2.45	-4.71-1.67	-1.4-3.07	-7.46-4.14	3.53-2.48	4.5-2.04	3.12-1.16	2.4-2.6	5.174-36	3.89-5.05	1.2-0.83	0.85-0.17	2.15-0.2	0.021-85	-0.54-1.51	-1.16-1.42	-1.39-2.36	-1.28-0.74	1.2-2.04	-3.33-7.05	-7.78-13.87	4.92-4.45
(H87.5)	7.171-16.5	-1.56-3.71	-1.56-3.72	-3.44-0.53	0.83-1.53	-7.23-2.32	0.72-2.2	-2.4-2.34	3.17-1.77	1.07-2.47	3.07-2.51	3.07-2.51	0.7-1.7	0.31-1.24	0.15-1.19	0.11-0.88	5.73-3.39	-1.83-1.03	-0.46-1.66	-0.9-0.77	-0.83-0.52	-4.48-0.185	8.78-8.48	7.62-8.45
(H7.5)	7.531-18.9	5.19-4.03	-1.5-4.16	-2.21-0.62	1.89-1.43	5.74-4.77	2.21-0.8	-1.28-2.39	1.96-2.58	1.78-2.51	4.36-2.78	0.671-73	-0.01-55	0.15-13.7	-1.32-2	0.44-12.33	-3.76-0.35	-1.19-1.41	-0.83-2.76	-0.58-0.59	-2.48-1.16	4.2-8.9	6.11-14.7	6.44-11.23
(H82.5)	7.34-2.82	-1.58-2.25	-1.46-4.81	-2.81-0.68	1.18-1.43	7.14-1.59	1.81-2.31	-1.49-1.78	2.971-56	1.86-1.65	2.97-0.62	2.16-3.32	-1.19-1.79	0.52-1.44	2.81-2.47	3.4-2.4	0.7-1.11	0.25-1.32	-1.77-1.25	0.2-3.07	-1.17-0.26	4.2-7.6	4.7-16.8	7.75-12.01
(H9.5)	6.57-4.03	-3.12-5.14	-1.73-4.5	-4.27-1.58	4.19-1.58	-10.92-3.44	-0.31-3.84	-3.76-4.12	13.4-7.77	3.27-0	8.88-6.89	5.28-2.76	6.23-4.19	3.38-2.23	4.64-3.54	-2.58-4.42	-1.08-0.91	6.19-1.96	2.69-4.54	0.88-0.43	-1.98-1.39	6.31-5.49	-7.48-17.19	8.93-11.35
(H97.5)	7.91-8.21	-3.94-7.29	-3.98-6.21	-7.19-6.67	1.271-0.61	-12.57-5.64	-0.71-10.89	-0.61-1.62	3.23-3.52	-1.96-1.62	7.98-6.91	10.27-17.1	4.2-8	6.14-14.86	-4.09-8.61	-1.26-2.34	-2.971-4.46	-4.37-8.69	-1.26-2.34	3.14-7.22	8.7-9.47	7.38-15.54	-18.07-17.45	8.93-11.35
(H105)	8.34-7.93	-8.24-1.17	6.36-2.49	9.7-9.67	3.44-4.4	-11.98-1.88	4.48-4.49	7.37-4.07	1.8-1.22	5.71-1.27	3.28-0.76	10.88-1.7	12.42-10.57	8.32-5.36	-8.82-8.84	-6.50-4.35	4.88-1.78	4.43-2.15	3.83-9.91	4.28-4.19	6.37-10.2	-10.65-6.42	8.41-11.39	-10.48-12.59
(H112.5)	-10.17-12.1	-12.96-11.7	-16.7-1.74	-14.59-16.85	-7.4-8.41	-13.21-16	-7.19-6.05	-7.22-7.77	4.59-1.47	7.85-6.97	4.59-1.23	8.89-12.53	-15.16-10.2	9.41-12.8	-11.21-8.64	8.24-9.46	8.71-13.12	8.71-14.1	2.57-6.68	-7.23-9.56	-6.40-7.13	8.4-10.28	-13.57-10.97	6.93-10.08
(H10.5)	8.37-1.74	8.84-7.23	-5.02-4.89	-10.92-4.21	1.56-1.82	-10.74-10.2	-13.74-10.07	-10.37-8.03	8.33-8	6.13-0.61	-6.49-1.61	-12.77-16.05	-13.03-10.85	7.98-13.47	-16.34-13.54	7.84-3.29	-4.72-12.76	8.74-5.84	6.82-1.94	-17.23-0.55	-5.09-4.94	7.74-10.38	-13.15-12.7	9.26-12.36
(H127.5)	-14.26-10.71	-12.34-9.58	-7.02-11.17	-11.61-15.98	5.81-73	-14.21-19.36	8.70-15.5	-10.23-10.3	8.46-13.08	-8.36-8.86	-6.3-10.3	-17.77-13.7	-13.64-10.07	87.15-54	-15.82-17.9	6.11-10.02	6.38-5.64	-11.72-9.77	3.95-11.4	-15.62-0.45	6.19-13.29	5.54-12.97	-17.9-16.36	8.52-8.51
(H130.5)	-14.54-16.98	-18.54-11.13	-11.82-17.5	6.82-18.86	-14.84-17.22	-10.52-14.27	-13.69-8.53	-8.83-11.31	-11.81-11.87	-11.13-10.85	-13.27-17.69	-13.41-14.87	-18.9-18.65	-14.51-18.21	-12.35-10.31	-10.92-12.51	-9.48-13.88	-14.46-9.12	-11.18-14.3	-10.95-6.48	-4.21-11.57	-10.7-18.65	-12.99-18.28	-13.33-13.69
(H142.5)	-11.88-14.17	-12.96-11.82	-10.26-17.1	-4.82-9.57	-16.67-18.49	-12.77-13.53	-12.89-11.59	-10.44-11.85	-13.38-18.12	-11.33-12.1	-16.43-10.1	-17.88-12.91	9.54-18.76	-16.25-19.09	-18.98-16.98	-14.63-12.48	8.32-13.77	8.71-8.43	3.42-10.78	-14.37-10.9	6.48-2.64	-11.35-15.92	-16.39-12.19	-10.24-13.29
(H15.5)	-10.16-10.13	-17.44-11.87	-17.37-15.63	-15.85-15.23	-15.22-18.98	-12.56-18.98	-9.58-9.91	9.52-15.26	-17.89-18.82	-16.38-17.07	-16.58-18.42	-19.5-10.24	-10.72-10.77	-17.81-19.4	-10.97-9.78	-12.88-10.89	-12.89-12.07	-11.87-10.15	-9.59-4.03	-14.06-15.48	-14.28-10.77	-12.44-12.49	-11.14-13.08	-16.41-18.76
(H157.5)	-14.56-16.38	-18.15-19.24	-18.37-13.87	-11.16-11.17	-13.98-15.17	-10.01-12.62	-16.75-18.72	-18.17-14.2	-13.14-10.55	-11.41-14.8	-18.17-18.14	-18.29-18.84	-17.29-17.94	-18.23-19.58	-15.59-11.65	-10.92-13.65	-16.48-19.11	-10.68-15.08	-13.37-11.48	-15.86-18.78	-16.64-16.54	-17.09-17.48	-18.09-17.71	-18.31-17.61
(H174.9)	-18.19-19.2	-18.15-19.2																						



Radiated Composite Gain Data of 5GHz

Appendix B

f(157.5)	-17.73-14.87	-15.22-16.16	-15.01-17.86	-18.24-16.17	-18.22-16.65	-17.17-16.98	-13.02-16.87	-16.16-18.63	-17.22-16.18	-17.42-18.24	-18.86-16.58	-17.91-18.6	-18.18-18.34	-18.3-17.8	-17.61-18.7	-15.86-14.82	-13.22-12.99	-14.07-10.63	8.71-10.07	-14.56-16.17	-18.86-18.74	-17.35-17.28	-18.81-17.48	-18.89-17.53
f(182.5)	-16.41-13.44	-13.81-16.52	-17.86-18.25	-17.18-15.72	-14.55-15.45	-17.34-18.03	-17.16-18.91	-18.12-18.06	-18.12-18.74	-18.41-18.02	-18.46-18.43	-18.11-18.61	-18.04-18.74	-18.28-18.19	-14.21-16.16	8.71-9.88	-11.63-14.22	-16.61-16.58	-14.33-14.62	-16.86-19.27	-17.14-14.85	-13.47-13.01	-13.82-15.74	-17.97-18.06
f(192.5)	-18.02-15.44	-15.12-14.22	-13.52-16.63	-13.86-13.63	-13.24-13.74	-14.71-14.73	-14.36-13.03	-12.59-12.33	-12.52-12.52	-13.06-13.47	-14.23-14.35	-14.51-18.08	-18.16-18.42	-18.16-18.42	-14.21-12.09	-11.91-11.88	-13.44-14.62	-14.66-16.24	-16.75-18.36	-16.41-18.32	-14.56-18.67	-14.56-12.23	-12.37-14.41	-17.32-18.46
f(180)	-18.05-17.58	-17.38-19	-19.36-18.52	-16.57-15.57	-13.77-13.67	-14.13-13.42	-12.26-11.3	-11.96-11.6	-12.25-12.65	-13.54-13.72	-15.11-16.56	-17.95-18.17	-18.11-18.26	-18.08-18.27	-14.84-13.83	-13.91-14.77	-15.52-15.54	-16.14-17.84	-19.18-17.72	-17.97-18.32	-17.48-18.3	-18.21-17.85	-17.89-18.19	-17.35-18.18
Gain	5.925PnL	Threshold 3	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
φ(157.507.5)	φ(157.507.25)	φ(157.507.5)	φ(157.507.75)	φ(157.508.25)	φ(157.508.75)	φ(157.509.25)	φ(157.509.75)	φ(157.510.25)	φ(157.510.75)	φ(157.511.25)	φ(157.511.75)	φ(157.512.25)	φ(157.512.75)	φ(157.513.25)	φ(157.513.75)	φ(157.514.25)	φ(157.514.75)	φ(157.515.25)	φ(157.515.75)	φ(157.516.25)	φ(157.516.75)	φ(157.517.25)	φ(157.517.75)	φ(157.518.25)
φ(157.5)	8.62-10.13	-11.04-10.45	-8.16-8.8	-7.62-7.13	-6.87-6.43	-6.27-5.19	-7.16-7.19	-7.64-6.87	8.19-8.4	-10.10	-11.01-11.08	-14.05-15.54	-16.57-16.81	-16.45-19	-16.86-12.43	8.37-32	-6.88-4.82	-4.86-3.52	-3.14-7.2	-2.45-2.37	-2.66-3.37	-4.14-5.17	-6.27-6.87	-7.62-8.15
φ(157.5)	13.76-14.24	-16.67-16.69	-16.35-16.62	-16.65-16.67	-16.65-16.67	-16.65-16.67	-16.65-16.67	-16.65-16.67	-16.65-16.67	-16.65-16.67	-16.65-16.67	-16.65-16.67	-16.65-16.67	-16.65-16.67	-16.65-16.67	-16.65-16.67	-16.65-16.67	-16.65-16.67	-16.65-16.67	-16.65-16.67	-16.65-16.67	-16.65-16.67	-16.65-16.67	-16.65-16.67
φ(157.5)	17.98-16.23	-16.57-16.38	-16.51-16.38	-16.51-16.38	-16.51-16.38	-16.51-16.38	-16.51-16.38	-16.51-16.38	-16.51-16.38	-16.51-16.38	-16.51-16.38	-16.51-16.38	-16.51-16.38	-16.51-16.38	-16.51-16.38	-16.51-16.38	-16.51-16.38	-16.51-16.38	-16.51-16.38	-16.51-16.38	-16.51-16.38	-16.51-16.38	-16.51-16.38	-16.51-16.38
φ(157.5)	3.71-3.97	-5.24-6.12	-7.28-6.12	-4.37-3.98	-2.51-3.3	-3.14-3.91	-3.31-3.25	-4.24-3.24	0.31-1.1	-1.16-1.21	-5.81-1.1	-7.17	-7.18-6.87	-6.84-6.88	-5.84-5.82	-4.26-4.36	-7.41-7.63	-10.47-10.63	-9.74-10.63	-7.67-11.4	-10.47-10.63	-9.74-10.63	-7.67-11.4	-10.47-10.63
φ(157.5)	2.31-2.71	-5.02-2.25	-10.7-8.2	-4.17-15.54	-2.23-0.15	-1.34-3.7	-5.16-3.39	-1.13-0.63	1.86-1.72	-2.39-0.65	-2.99-1.4	-11.83	-3.49-5.28	-6.94-7.95	-6.97-8.3	-6.98-7.4	-3.71-4.6	-6.65-10.2	-12.83-9.24	-4.99-13.3	-3.14-13.3	-7.86-10.55	-4.16-13.3	-6.51-13.3
φ(157.5)	5.46-6.63	-2.96-1.94	-2.96-5.19	-7.15-4.6	-2.67-1.82	-1.23-1.11	-2.64-4.76	-4.21-4.4	0.86-1.72	-1.93-1.05	-8.27-0.15	-6.27-0.67	-7.74-7.07	-6.24-6.88	-6.24-6.88	-4.76-4.84	-6.73-6.83	-3.67-1.29	-4.82-4.21	-12.57-17.8	-16.42-5.88	-4.91-5.8	-6.42-5.88	-4.91-5.8
φ(157.5)	-1.28-0.4	-0.58-0.1	0.86-0.49	-1.75-6.74	-7.14-8.2	-1.47-4.6	-1.29-2.41	-1.03-3.48	3.62-1.76	0.06-0.49	-0.81-1.38	-13.04-1.96	-1.35-2.25	-3.85-4.26	-3.74-5.02	-6.84-9.19	-3.10-1.99	-4.43-7.38	-7.58-10.38	-2.31-4.88	-11.67-7.55	-4.74-9.19	-6.22-5.7	-4.05-2.99
φ(157.5)	-1.22-0.3	-0.26-0.1	0.35-1.18	-0.21-4.87	-5.29-3.88	-1.05-2.41	-2.43-0.8	-2.35-0.9	3.86-1.68	-1.21-1.46	-0.66-0.49	-0.81-1.85	-4.41-2.1	-4.21-0.13	-6.84-1.7	-2.08-0.55	-3.18-7.71	-6.53-9.22	-2.81-8.82	-6.84-1.84	-4.32-1.02	-4.32-1.02	-4.32-1.02	-4.32-1.02
φ(157.5)	3.00-3.28	2.14-1.31	0.30-0.84	-0.26-3.69	-3.26-1.68	0.41-2.34	2.53-0.62	2.68-4.2	2.21-1.48	0.95-0.48	1.31-0.65	1.21-0.61	1.58-1.57	2.62-0.16	1.3-3.1	-2.62-4.66	-0.70-1	2.27-4.65	-5.69-4.24	-3.62-12.09	-6.92-2.28	-4.9-8.83	0.96-3.27	-3.28-0.93
φ(157.5)	3.43-8.84	3.03-2.99	1.46-0.55	-1.66-4.89	-2.82-0.51	0.64-1.72	1.36-0.78	1.72-2.38	-1.91-2.71	0.03-0.99	1.30-0.85	0.37-0.16	0.58-1.07	-2.53-1.62	1.66-0.36	-2.34-6.68	-1.76-0.61	2.21-4.7	-6.87-1.85	-4.41-10.09	-6.56-2.83	-4.9-8.83	0.65-1.1	1.32-0.68
φ(157.5)	2.87-0.21	2.47-2.94	1.70-25	-2.16-6.42	-2.84-1.29	-0.70-15	0.03-0.55	0.03-0.43	-3.72-2.98	0.44-0.66	0.31-0.22	0.31-1.76	2.53-1.62	-1.07-0.86	0.99-0.29	-2.06-7.79	-3.76-11.59	-2.68-4.02	4.64-1.58	-3.91-6.49	-5.77-3.28	-1.69-2.5	1.84-0.19	-3.90-0.61
φ(157.5)	0.35-0.51	0.31-0.86	0.85-1.48	-3.84-6.96	-3.65-2.48	-2.34-1.69	-7.14-0.92	-2.16-2.07	-4.72-3.82	-1.68-1.18	-2.11-0.23	-0.97-1.6	2.02-1.4	-1.75-1.83	-0.41-1.17	-2.62-7.57	-4.73-3.97	-3.35-3.12	-3.32-4.65	-4.96-4.05	-1.74-0.37	-1.74-0.37	-1.74-0.37	-1.74-0.37
φ(157.5)	0.21-1	-1.84-0.66	-0.16-4.19	-6.13-12.47	-4.86-3.91	-4.13-3.6	-3.71-3.3	-4.47-5.53	-6.31-4.3	-6.02-7.12	-4.69-5.82	-1.68-0.57	1.43-1.3	-1.33-0.83	-3.52-2.26	-3.15-4.36	-8.49-7.08	-5.07-3.93	-4.13-6.2	-4.49-6.85	-6.77-5.94	-2.92-0.34	0.07-1.95	-6.42-49
φ(157.5)	0.91-2.81	-0.14-1.22	-1.84-1.51	-1.06-0.14	-5.91-5.4	-5.26-5.81	-6.49-5.51	-5.71-5.82	-7.36-4.19	-6.01-5.7	-7.16-3.41	-6.34-0.08	-4.32-5.1	-4.10-1.22	-3.72-6.07	6.53-7.4	-6.34-8.8	-8.71-8	-3.88-4.28	-3.88-4.28	-1.28-3.15	-1.28-3.15	-1.28-3.15	-1.28-3.15
φ(157.5)	3.39-4.89	-5.03-5.36	-4.06-10.48	-14.36-16.57	6.34-6.58	5.61-9	-5.07-0.66	-7.42-6.99	9.84-5.22	-4.25-4.23	-8.66-5.7	-3.10-1.99	0.92-1.1	3.11-3.25	-7.49-6.49	6.4-6.34	-13.33-16	-10.64-8.76	-13.74-12.45	-10.37-16.16	-6.23-10.41	-6.74-15.5	-3.99-5.51	-8.26-8.63
φ(157.5)	-10.57-15.7	-7.52-11.19	-7.52-11.19	-18.11-16.23	0.87-1.89	6.11-10.08	-6.83-9.4	-12.60-12.3	-12.60-12.3	-12.60-12.3	-12.60-12.3	-12.60-12.3	-12.60-12.3	-12.60-12.3	-12.60-12.3	-12.60-12.3	-12.60-12.3	-12.60-12.3	-12.60-12.3	-12.60-12.3	-12.60-12.3	-12.60-12.3	-12.60-12.3	-12.60-12.3
φ(157.5)	-16.31-14.29	-6.99-7.58	8.31-11.39	-13.99-16.67	-10.28	-7.71-62	-11.82-6.52	-18.56-11.08	-12.95-9.69	6.73-10.03	-6.07-4.7	-6.74-6.04	-5.23-5.55	-5.71-10.5	-8.57-6.49	-6.96-6.83	-13.78-16.45	-13.51-16.4	-18.94-11.85	-16.25-18.08	-18.93-12.3	-5.79-7.32	-4.47-10.07	-15.37-10.13
φ(157.5)	-0.21-13.79	8.91-8.51	-6.31-16.38	-12.06-11.39	-12.55-15.14	-13.61-16.2	-12.60-12.3	-13.61-16.2	-12.60-12.3	-13.61-16.2	-12.60-12.3	-13.61-16.2	-12.60-12.3	-13.61-16.2	-12.60-12.3	-13.61-16.2	-12.60-12.3	-13.61-16.2	-12.60-12.3	-13.61-16.2	-12.60-12.3	-13.61-16.2	-12.60-12.3	-13.61-16.2
φ(157.5)	-1.54-14.51	-16.44-16.15	-16.23-17.99	-16.56-16.42	-16.21-16.77	-14.68-12.21	-16.56-16.84	-16.56-16.8	-16.76-14.06	-12.36-15.52	-14.83-16.26	-8.62-6.1	-5.77-5.58	-5.33-6.9	-7.54-12.97	-14.83-10.33	-17.59-14.06	-16.41-16.81	-17.71-14.47	-15.71-16.32	-17.11-16.33	-16.15-11.41	-14.11-13.18	-13.87-15.47
φ(157.5)	-12.73-17	-16.56-16.11	-11.62-12.72	-16.56-16.78	-16.56-16.78	-16.56-16.78	-16.56-16.78	-16.56-16.78	-16.56-16.78	-16.56-16.78	-16.56-16.78	-16.56-16.78	-16.56-16.78	-16.56-16.78	-16.56-16.78	-16.56-16.78	-16.56-16.78	-16.56-16.78	-16.56-16.78	-16.56-16.78	-16.56-16.78	-16.56-16.78	-16.56-16.78	-16.56-16.78
φ(157.5)	-16.71-16.58	-16.71-16.58	-16.71-16.58	-16.71-16.58	-16.71-16.58	-16.71-16.58	-16.71-16.58	-16.71-16.58	-16.71-16.58	-16.71-16.58	-16.71-16.58	-16.71-16.58	-16.71-16.58	-16.71-16.58	-16.71-16.58	-16.71-16.58	-16.71-16.58	-16.71-16.58	-16.71-16.58	-16.71-16.58	-16.71-16.58	-16.71-16.58	-16.71-16.58	-16.71-16.58
φ(157.5)	-17.44-17.97	-17.52-18.66	-14.96-14.02	-11.88-11.75	-10.86-11.83	-14.25-15.13	-14.06-14.11	-15.59-16.63	-17.96-14.75	-12.56-10.31	-13.59-10.38	-11.81-13.7	-11.26-11.69	-12.42-11.54	-12.59-13.65	-17.36-18.82	-17.36-18.82	-17.36-18.82	-17.36-18.82	-17.36-18.82	-17.36-18.82	-17.36-18.82	-17.36-18.82	-17.36-18.82
φ(157.5																								



Radiated Composite Gain Data of 5GHz

Appendix B

(H1)	6.281769	-8.591027	-13.691178	-18.111797	-12.891028	-8.041696	-6.095054	-4.24136	3.6142	5.251684	-6.451799	-8.871128	-13.691027	-18.051823	-17.931653	-14.411023	-10.79168	8.591748	6.901612	-5.471432	-4.441384	-3.571348	-3.021396	-4.071844
(H1S)	-18.061859	-18.061859	-14.141327	-12.961111	-10.181937	8.831482	8.841743	5.841502	-4.26139	5.45147	-4.49148	5.141632	8.131498	-17.15135	-17.951714	-16.111337	-10.21178	8.531537	4.74132	-3.98141	-4.69154	6.051659	7.741867	-12.271478
(H2)	7.891377	7.141466	6.501657	6.491599	5.891572	5.381645	4.611677	2.81127	2.62135	4.54147	-4.49159	-7.071667	-7.371664	6.24154	7.34142	9.551492	-11.461128	-11.79165	7.911645	4.161614	6.001673	6.001678	4.121727	7.841784
(H2S)	8.361776	8.591415	-10.141085	8.191701	-6.421192	0.311053	1.29181	1.79139	0.760103	0.01029	0.091051	-0.79112	-1.971296	3.921623	-6.771126	-18.941142	8.07164	6.451761	9.211067	-11.791186	8.971865	6.971722	8.331137	-14.521014
(H3)	-1.671138	-1.211088	-1.111102	-2.781132	2.081113	0.380111	0.811167	1.81114	0.360154	0.930186	-0.111176	3.361451	-4.881482	-4.771507	5.771786	-12.981245	-13.391681	6.991586	6.891568	6.941632	7.221719	7.461634	4.481648	6.94113
(H3S)	2.231298	3.911284	2.001147	0.011	0.031064	-1.241287	-3.92147	-8.02142	1.050169	4.951429	2.81147	0.781098	-1.09119	-1.62126	-3.94159	9.911296	8.841598	8.831001	-12.331082	9.31915	-11.29181	-4.521282	-1.881571	-4.5125
(H4)	2.35168	0.94216	2.64106	-1.66115	-1.17115	-0.831197	-5.77125	1.432143	2.110178	-0.250165	2.082148	0.831379	8.611842	-4.331129	-0.29102	-7.74193	3.44118	3.11747	-17.551849	-5.291632	8.841454	2.541203	-2.321172	1.012125
(H5)	6.131044	0.77125	4.03199	-8.69120	-10.13119	-0.2112	0.080166	3.52122	1.7221	2.89124	2.07109	1.791086	-1.16127	4.371257	5.121	-1.471644	-3.161032	-1.462122	-1.811548	-2.94155	-4.891367	-2.470165	0.080146	2.05129
(H6)	-1.07106	2.01174	2.28219	-1.28185	2.23116	0.02182	2.57124	3.81148	1.44145	1.29143	3.11016	0.30129	1.87189	8.34121	-1.06018	1.24103	3.391252	0.561391	4.621425	-4.321493	-3.251776	-3.17728	2.05128	2.21139
(H7)	2.292167	3.71107	2.75123	-1.52129	3.29198	0.66216	2.17128	1.651691	6.25127	-2.19164	-2.731141	-2.371184	1.09177	0.591639	-1.08154	0.72142	-2.34128	4.161113	-2.75188	2.751129	0.07139	2.331	2.8117	
(H8)	2.692149	3.31127	2.78115	-1.42214	2.73014	1.60178	1.540166	1.991123	1.02171	3.541278	-0.281193	3.60121	1.520199	0.620133	4.811495	2.991158	1.39145	0.990166	0.481532	-5.442177	2.411139	0.970137	1.691129	1.97139
(H9)	2.761199	1.23109	1.552149	-2.07114	1.591173	1.501179	0.901117	7.4910184	0.670157	2.9411	5.24121	2.97164	0.81007	-1.261136	4.851437	2.011659	1.790136	0.03132	7.81145	1.8211019	1.09116	2.551	0.39141	
(H10)	1.15112	0.13135	0.080185	2.991748	1.021448	-4.37179	-1.85211	-15.171979	3.521168	2.7511	-0.89179	-3.32141	2.87147	1.980135	0.03147	-10.84184	-4.59164	4.32167	0.69147	4.46194	-2.98101	0.060103	0.511	7.4101
(H11)	0.031366	-4.31132	-1.24106	-4.211351	2.77163	5.52108	4.591493	-17.74178	5.991352	-4.151	-2.98149	3.221439	-3.421398	3.3411	1.781	-10.78179	-7.881403	-7.32189	4.52159	0.491152	0.42178	2.32125	1.961025	2.87183
(H12)	-1.64148	-5.81147	-3.89134	4.61167	5.09162	5.591628	4.511622	-16.87182	6.22165	4.421378	-3.25182	4.451	4.90139	6.451474	-3.35164	-7.79131	-10.891183	-12.77178	7.29173	-13.19167	0.891479	5.66147	6.431222	-3.641328
(H13)	6.031982	-3.76149	6.301486	-5.27181	7.57184	-7.991586	7.031116	-12.41112	-4.93182	-5.52137	-3.34117	8.411748	-4.37127	5.511548	-3.4153	-7.951939	-11.0311685	-6.89185	-10.61119	-11.691135	-15.391338	4.641107	7.841615	-6.81159
(H14)	-1.431119	-2.82165	-7.46172	-5.371225	-7.571086	9.331182	8.901189	-14.191105	6.61179	4.49154	-7.07123	-9.14146	-5.81015	4.54171	-4.65163	-8.441046	-14.811505	-14.89142	-11.441051	-18.550103	-10.97141	4.641135	8.69151	-10.141086
(H15)	-10.931121	-9.22118	-5.26184	-8.62183	3.74187	-12.241538	-11.191531	-13.311026	-8.5103	-9.771188	-16.15148	-8.08115	4.16177	-4.83131	-7.747105	-15.101448	-17.641165	-13.411044	-18.81118	-18.411035	-18.071891	8.97143	8.791123	-7.361124
(H16)	-1.661862	-8.91121	-12.181194	-12.291187	-10.021103	-7.8911441	-16.271126	-17.821114	-14.531137	-15.8911924	-10.671129	-14.26196	8.94178	8.2211532	8.23167	-11.951187	8.841187	-17.151174	-13.911479	-17.811163	-14.031124	-14.181128	-11.871153	-10.951119
(H17)	-18.1113	-11.81121	-11.61137	-17.131183	-16.7711258	-16.7811452	-12.771129	-15.981135	-14.8911379	-15.5511925	-13.111027	-12.791132	-10.3311	-8.831149	-9.391159	-7.381192	-12.971185	-15.391187	-17.81677	-18.711131	-16.981186	-10.96181	7.921158	-10.471144
(H18)	-1.871584	-1.811428	-14.861185	-12.071122	-14.0411309	-12.451124	-18.111505	12.961137	-13.341187	-15.251143	-14.221147	-8.601789	-7.731786	0.011129	-13.971185	-17.751132	-12.961129	-14.191178	-17.961141	-14.431109	-14.471121	-17.551161	-11.691134	-13.171141
(H19)	-10.02118	-17.781185	-18.021146	-18.01118	-18.841188	-18.961174	-18.0111879	-18.9811477	-14.441198	-13.351937	8.8312	8.191025	9.611145	-12.391138	-14.451147	-18.9311748	-19.0311748	-19.9111789	-17.5711371	-18.931168	-19.101125	-16.351193	-15.811784	-17.471144
(H20)	-1.7718147	-18.21117	-17.841173	-16.431184	-18.231192	-16.5811426	-14.161882	-18.841179	-19.1721178	-19.1812	-18.731859	-16.151169	-16.141846	-18.911731	-17.951178	-16.6811398	-12.151175	-13.711734	-18.621189	-19.16118	-18.391187	-13.031123	-12.31139	-14.991783
(H21)	-17.551184	-15.761117	-15.761117	-18.021183	-17.581181	-18.381187	-16.781189	-18.021183	-17.581181	-19.0811559	-14.5411475	-15.761184	-15.9911326	-12.3611191	-14.281185	-18.481186	-17.7911869	-17.811189	-18.951184	-19.231182	-18.021192	-18.631177	-17.71181	
(H22)	-13.961122	-12.351154	-14.3111579	-16.211596	-16.39116	-15.811644	-18.2911529	-18.591173	-18.141886	-18.321184	-17.4611925	-14.721158	-13.591133	-14.811558	-16.461179	-17.451196	-17.3311813	-17.3911889	-18.141189	-18.661179	-19.031187	-18.6911782	-18.8911496	-13.111339
Gain	5.7895701	PhdK1.3	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
(H23)	-7.49112	-7.381156	4.241507	4.241507	4.241507	4.241507	4.241507	4.241507	4.241507	4.241507	4.241507	4.241507	4.241507	4.241507	4.241507	4.241507	4.241507	4.241507	4.241507	4.241507	4.241507	4.241507	4.241507	4.241507
(H24)	6.261427	4.15161	4.051649	4.51163	5.59158	6.191008	6.2714	8.031956	10.371027	9.661807	4.121579	7.071141	4.730166	5.64156	6.671132	6.44155	5.59172	8.09115	10.0211454	18.631914	18.631916	13.941794	8.01139	8.231071
(H25)	4.78145	5.48161	4.94185	4.95161	6.35149	4.611641	6.311436	4.171506	11.421478	6.221644	5.72158	5.671502	4.861742	4.45142	5.591673	8.84195	8.89176	6.89164	-10.21161	-10.17165	5.49123	5.41165	4.771629	-5.771514
(H26)	7.371408	7.541705	6.231499	5.281524	5.671616	6.43171	7.241632	8.1811252	12.931644	4.731641	5.14163	5.471547	4.871678	5.131372	6.241146	4.111686	8.431711	6.151723	-12.021122	-13.64182	6.281634	12.691693	7.411632	5.941764
(H27)	4.83165	6.87188	5.241427	3.291356	4.321722	-10.451132	-12.581643	4.6115	-11.551132	-7.571156	-3.791147	1.891147	2.84104	6.51192	18.15172	5.991596	12.8911448	-15.561175	10.541132	-18.11138	-17.471136	1.7281459	3.1105137	3.671626
(H28)	2.921998	7.321615	4.221531	4.40154	4.581625	-10.991705	-7.391692	4.10119	-18.1211255	-10.53113	2.931121	-3.841147	3.47161	4.911924	-7.161701	8.911197	13.541133	-15.511532	-0.2811232	-19.391441	15.521161	-8.69143	7.1105133	5.091636
(H29)	6.341543	5.081422	3.681542	8.831126	7.791656	7.24119	2.3112	6.481176	17.501971	6.491784	3.25141	5.98115	8.581568	3.173	8.731135	8.81129	14.841913	-14.841172	-10.391117	-17.61182	-17.61182	4.83146	6.941148	5.62114
(H30)	7.371398	6.64196	6.64196	10.641113	7.641566	6.841174	3.891121	6.951101	13.411043	-14.411841	-10.71147	0.0715	5.081153	5.291635	9.211659	14.231578	7.681108	15.9911407	-16.751162	-16.98146	6.271161	6.591168	4.581164	
(H31)	4.281518	7.121617	4.541611	-11.57163	7.21497	-10.02142	-7.411742	-14.051708	-7.381163	8.32163	4.951485	2.96148	4.8014	4.02166	6.421189	-11.69131	-17.36119	6.921775	11.941148	-11.121677	-17.931158	8.0211261	8.79148	6.951673
(H32)	4.641534	3.981704	3.981704	-18.91109	6.811	8.83184	-16.37113	-10.53167	-16.68182	6.17156	9.22147	4.81111	5.56158	4.4196	6.581142	-12.1212	10.871139	8.111738	7.551191	-15.321142	-15.721141	-15.71146	5.351134	6.08145
(H33)	5.021588	4.26109	6.02168	-181155	10.82169	-10.721496	9.11185	10.531911	11.021651	7.23189	4.95164	6.75145	5.91103	6.911396	-18.981138	-18.541147	10.661179	-11.97164	5.851781	-14.551914	-18.191128	-18.021175	4.981521	-7.93119
(H34)	6.991489	6.821594	-10.851102	-10.421105	13.55119	-11.141143	8.771195	-12.081107	16.46134	8.89176	7.1184	7.961132	7.051188	6.191188	-18.971189	-18.971189	-15.961178	-16.51183	6.871138	-11.751167	-18.991169	6.961188	6.74187	7.581149
(H35)	-14.31163	-11.31161	-14.0711429	-11.211411	-11.491102	-11.741144	8.931132	-11.681128	-14.42188	6.741878	-7.6811	8.29166												



Radiated Composite Gain Data of 5GHz

Appendix B

(H25.2)	2.23(-2.2)	0.55(-1.8)	2.42(0.3)	4.65(-1.2)	1.52(0.4)	0.63(-1.8)	-1.44(-2.8)	-4.25(-5.2)	6.42(-6.3)	-3.34(-1.3)	-0.32(-0.8)	-4.63(-4.9)	-8.66(-7.0)	-3.83(-2.5)	0.14(0.9)	-0.72(-3.7)	-4.37(-2.8)	-1.46(-1.4)	-0.35(-1.2)	1.53(0.2)	-0.66(-3.8)	-1.46(-1.1)	1.73(-1.9)	0.93(-1.2)
(H26.1)	1.89(-1.4)	1.74(-2.2)	1.25(-1.8)	0.26(-1.7)	0.84(-0.4)	0.76(-1.4)	0.20(-3.4)	3.26(-1.4)	-1.69(-2.2)	2.19(-2.0)	-1.46(-3.0)	5.84(-2.5)	5.51(-4.1)	4.06(-3.8)	4.02(-2.2)	1.91(-1.0)	-3.32(-2.4)	2.16(-1.3)	0.15(0.7)	0.03(-0.4)	0.19(-0.8)	0.25(-2.6)	3.27(-1.6)	4.06(-1.3)
(H27.0)	1.04(-0.5)	1.78(2.5)	-1.9(-1.5)	0.59(-0.6)	0.11(-1.7)	0.77(0.4)	0.26(-1.7)	0.78(0.5)	-1.15(-1.8)	-3.69(-4.6)	5.14(-2.3)	4.34(-3.4)	4.04(-3.4)	2.62(-1.5)	2.76(-1.7)	-0.97(-2.2)	0.70(-2.2)	0.79(-2.2)	0.36(0.7)	0.03(-0.4)	0.09(-1.3)	1.97(-2.6)	2.61(-0.6)	4.46(-1.1)
(H27.5)	0.29(-0.1)	0.24(-0.7)	-7.04(-1.9)	0.31(-1.5)	0.59(-0.8)	1.15(-1.4)	0.29(-1.9)	4.89(-1.8)	0.54(-1.2)	-0.93(-2.2)	-5.67(-4.7)	-4.26(-7.0)	3.57(-3.7)	6.17(-4.1)	-1.25(-1.1)	2.27(0.9)	2.51(-1.4)	0.28(-1.7)	0.36(-1.4)	-0.66(-1.7)	0.61(-1.9)	2.22(-2.3)	1.89(-1.2)	-1.37(-0.4)
(H28.5)	0.44(-0.9)	0.28(-0.4)	8.24(-1.4)	0.53(-2.6)	0.22(-0.3)	0.74(-0.4)	0.83(-2.6)	-8.89(-3.5)	0.67(-1.2)	-1.91(-2.7)	-7.02(-9.7)	4.17(-9.5)	5.13(-10.7)	-1.47(-6.9)	-5.01(-4.3)	1.73(-1.5)	-2.03(-1.5)	-3.20(-1.4)	0.51(-1.1)	-0.31(-1.4)	0.31(-1.0)	0.26(-1.0)	-1.24(-3.9)	4.72(-3.1)
(H29.1)	1.55(-1.8)	4.43(-7.1)	7.4(-2.1)	-1.83(-4.8)	-4.83(-1.3)	-1.24(-1.6)	-1.75(-2.5)	6.6(-5.9)	3.74(-4.5)	-3.78(-3.6)	4.67(-11)	5.49(-11.4)	-4.89(-6.4)	-1.48(-6.9)	-5.01(-4.3)	1.73(-1.5)	-2.03(-1.5)	-3.20(-1.4)	0.51(-1.1)	-0.31(-1.4)	0.31(-1.0)	0.26(-1.0)	-1.24(-3.9)	4.72(-3.1)
(H30.5)	-2.91(-3.6)	-5.21(-11.2)	-7.59(-3.6)	-3.01(-5.9)	5.69(-2.4)	-2.89(-2.4)	2.03(-3.4)	7.22(-5.4)	-3.89(-4.5)	-6.82(-7.3)	6.79(-11.3)	-6.87(-7.8)	-6.87(-7.8)	-1.15(-10.2)	-8.22(-10.6)	3.44(-6.2)	2.13(-7.1)	5.52(-10.9)	-2.89(-3.2)	-4.78(-9.1)	-1.89(-4.5)	-2.33(-2.9)	-0.88(-6.7)	-7.03(-8.1)
(H31.5)	5.91(-3.2)	5.29(-15.9)	8.91(-4.8)	-4.5(-1.2)	7.29(-3.4)	3.93(-4.4)	4.19(-6.4)	-10.9(-7.2)	5.89(-7.2)	-6.95(-9.9)	-10.89(-9.1)	-9.39(-12.9)	5.34(-5.2)	-13.33(-15.7)	-14.29(-10.2)	7.67(-5.1)	5.53(-10.2)	7.17(-5.4)	9.36(-6.0)	6.24(-7.4)	4.46(-7.2)	3.9(-7.1)	-7.28(-9.3)	-7.54(-9.3)
(H32.5)	6.39(-4.5)	6.42(-1.6)	-10.37(-5.4)	5.3(-7)	8.97(-5.4)	5.76(-4.8)	5.76(-4.4)	-12.19(-8.1)	5.88(-3.8)	6.81(-6.8)	-10.89(-7.3)	7.59(-7.7)	8.02(-12.2)	-17.21(-10.7)	-11.54(-15.2)	9.18(-6.7)	8.92(-12.2)	10.22(-14.9)	15.22(-16.9)	7.58(-10.3)	4.83(-7)	8.29(-6.8)	-11.39(-11.4)	8.57(-7.4)
(H33.5)	6.34(-5.4)	-7.51(-8.8)	-16.29(-7.6)	7.79(-10.5)	8.77(-7.3)	5.96(-6.3)	-7.48(-4.4)	8.62(-6.7)	4.38(-10.7)	8.6(-5.7)	-14.29(-13.4)	4.52(-9.4)	-14.77(-16.3)	-16.29(-11.9)	-14.47(-19.1)	-10.36(-10.4)	-10.24(-14.2)	-13.82(-16.3)	-8.52(-9.8)	-12.19(-15.7)	-10.47(-15.3)	-8.61(-10.8)	-12.75(-14.6)	-12.75(-14.6)
(H34.5)	10.79(-4.5)	-8.95(-7.55)	-14.33(-10.6)	2.75(-12.3)	2.93(-5.4)	5.31(-5.6)	7.16(-6.8)	-10.13(-12.3)	9.51(-14.2)	-11.91(-14.2)	-14.33(-13.2)	12.99(-16.9)	8.19(-15.4)	-12.71(-16.2)	-14.29(-16.3)	16.19(-19.9)	14.27(-15.3)	14.27(-15.3)	14.27(-15.3)	14.27(-15.3)	14.27(-15.3)	14.27(-15.3)	14.27(-15.3)	14.27(-15.3)
(H35.5)	-14.9(-9.3)	0.11(-10.5)	-18.41(-11.4)	5.86(-12.1)	4.29(-11.4)	4.29(-11.4)	4.29(-11.4)	4.29(-11.4)	4.29(-11.4)	4.29(-11.4)	4.29(-11.4)	4.29(-11.4)	4.29(-11.4)	4.29(-11.4)	4.29(-11.4)	4.29(-11.4)	4.29(-11.4)	4.29(-11.4)	4.29(-11.4)	4.29(-11.4)	4.29(-11.4)	4.29(-11.4)	4.29(-11.4)	4.29(-11.4)
(H36.5)	-16.3(-9.1)	-10.22(-12.3)	-18.32(-14.4)	-11.15(-13.4)	14.73(-9.6)	5.69(-6.2)	0.98(-11.1)	11.75(-10.1)	13(-12.3)	6.71(-9.4)	-16.34(-12.4)	-14.4(-11.6)	16.84(-19.7)	17.69(-15.6)	13.57(-15.8)	18.24(-16.5)	18.14(-16.2)	13.99(-17.7)	15.26(-19.7)	14.89(-19.2)	14.01(-15.4)	16.09(-15.6)	15.11(-14.3)	-15.74(-12.7)
(H37.5)	-18.15(-9.8)	-15.59(-12.5)	-17.86(-13.6)	6.79(-9.6)	-15.62(-15.3)	9.73(-9.2)	-1.98(-15.1)	-18.39(-19.1)	-18.39(-13.4)	-12.14(-15.7)	-17.89(-14.2)	-18.39(-13.4)	-18.39(-13.4)	-18.39(-13.4)	-18.39(-13.4)	-18.39(-13.4)	-18.39(-13.4)	-18.39(-13.4)	-18.39(-13.4)	-18.39(-13.4)	-18.39(-13.4)	-18.39(-13.4)	-18.39(-13.4)	-18.39(-13.4)
(H38.5)	-18.29(-10.5)	-18.53(-19.8)	-16.79(-15.8)	-14.25(-14.3)	-12.52(-13.7)	-11.93(-7.4)	-7.46(-13.6)	-10.36(-12.8)	-15.95(-19.2)	-18.63(-18.4)	-17.31(-18.3)	-18.29(-19.6)	-18.69(-13.8)	-18.57(-19.5)	-18.69(-13.8)	-18.57(-19.5)	-18.69(-13.8)	-18.57(-19.5)	-18.69(-13.8)	-18.57(-19.5)	-18.69(-13.8)	-18.57(-19.5)	-18.69(-13.8)	-18.57(-19.5)
(H39.5)	-18.11(-10.8)	-18.43(-17.4)	-15.41(-14.2)	-14.89(-14.8)	-14.72(-12.1)	-12.12(-11.8)	-12.12(-11.8)	-11.43(-11.9)	-13.71(-17.4)	-14.94(-16.3)	-18.51(-16.8)	-18.58(-18.7)	-17.33(-18.3)	-18.54(-18.6)	-18.61(-18.7)	-18.41(-19.2)	-18.61(-18.2)	-17.19(-18.7)	-18.59(-14.8)	-14.64(-18.2)	-15.56(-15.8)	-17.14(-18.7)	-18.58(-18.4)	-18.58(-18.4)
(H40.5)	-17.42(-17.3)	-14.54(-12.3)	-10.75(-9.2)	-4.97(-9.2)	-11.79(-13.3)	-11.79(-13.3)	-14.11(-13.7)	-14.01(-14.9)	-11.92(-9.8)	-8.82(-9.5)	-11.69(-14.1)	-16.76(-17.2)	-15.62(-15.7)	-15.54(-14.8)	-15.54(-14.8)	-12.93(-12.1)	-12.93(-12.1)	-15.01(-15.7)	-15.74(-16.2)	-15.79(-16.4)	-15.48(-17.7)	-17.98(-17.4)	-18.17(-17.3)	-18.17(-17.3)
(H41.5)	-16.58(-15.7)	-13.26(-17.9)	-12.52(-11.7)	11.56(-14.2)	-12.81(-12.9)	-13.08(-14.9)	-10.85(-18.8)	-10.04(-17.1)	-12.95(-17.5)	-16.24(-17.3)	-10.91(-18.4)	-18.87(-18.3)	-18.39(-19.3)	-17.18(-15.6)	-14.92(-15.2)	-16.50(-17.8)	-17.80(-17.7)	-16.87(-14.6)	-15.61(-12.7)	-12.83(-12.1)	-12.78(-13.4)	-16.05(-17.4)	-18.12(-18.2)	-18.06(-18.0)
FreeGain	5.50(Phd. 4)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Gain	(H27.9)(H27.5)	(H27.9)(H27.5)	(H27.9)(H27.5)	(H27.9)(H27.5)	(H27.9)(H27.5)	(H27.9)(H27.5)	(H27.9)(H27.5)	(H27.9)(H27.5)	(H27.9)(H27.5)	(H27.9)(H27.5)	(H27.9)(H27.5)	(H27.9)(H27.5)	(H27.9)(H27.5)	(H27.9)(H27.5)	(H27.9)(H27.5)	(H27.9)(H27.5)	(H27.9)(H27.5)	(H27.9)(H27.5)	(H27.9)(H27.5)	(H27.9)(H27.5)	(H27.9)(H27.5)	(H27.9)(H27.5)	(H27.9)(H27.5)	(H27.9)(H27.5)
(H27.5)	-18.91(-12.4)	-18.91(-12.4)	-13.78(-11.1)	8.71(-7.2)	5.94(-5.2)	4.54(-5.3)	4.69(-5.1)	5.6(-5.1)	4.89(-5.4)	-7.84(-9.4)	-10.13(-10.9)	-12.59(-13.3)	-12.78(-13.6)	-11.13(-12.8)	-12.25(-12.9)	-11.40(-10.9)	-10.19(-9.5)	7.93(-11.1)	5.4(-7.4)	4.19(-3.2)	3.62(-3.8)	3.71(-3.9)	4.72(-5.7)	7.88(-11.3)
(H27.5)	-18.86(-12.2)	-18.86(-12.2)	-13.13(-13.3)	-12.21(-11.3)	-10.87(-9.7)	-8.97(-9.6)	-7.06(-9.4)	-4.95(-3.8)	-3.34(-3.3)	-3.07(-8.7)	-6.12(-7.5)	-10.93(-12.8)	-10.57(-15.0)	-12.12(-12.4)	-10.58(-11.1)	-6.08(-12.5)	-5.43(-12.7)	6.72(-7.7)	5.91(-7.4)	6.37(-9.8)	6.37(-9.8)	6.37(-9.8)	6.37(-9.8)	6.37(-9.8)
(H27.5)	-18.81(-19.3)	-18.81(-19.3)	-16.87(-14.3)	-16.89(-17.4)	-17.26(-11.0)	-17.26(-11.0)	8.49(-7.4)	6.71(-6.9)	6.53(-5.9)	7.02(-7.6)	4.49(-5.3)	-11.02(-13.7)	-14.96(-14.3)	-12.46(-10.1)	8.14(-7.3)	7.59(-11.4)	4.99(-4.5)	4.71(-5.2)	7.01(-9.7)	-12.74(-13.3)	4.64(-9.9)	5.57(-4.8)	5.91(-5.1)	6.27(-9.1)
(H22.5)	-16.09(-11.7)	4.94(-8.2)	-10.94(-12.5)	8.93(-6.1)	3.67(-3.3)	3.31(-3.8)	4.43(-5.2)	5.42(-5.2)	5.14(-4.8)	5.8(-7.2)	8.73(-13.2)	-18.17(-17.3)	-15.14(-13.2)	-14.86(-16.2)	7.92(-9.9)	8.15(-7.9)	8.15(-7.9)	8.15(-7.9)	8.15(-7.9)	8.15(-7.9)	8.15(-7.9)	8.15(-7.9)	8.15(-7.9)	8.15(-7.9)
(H27.5)	-13.08(-9.9)	4.46(-5.9)	4.59(-7.6)	5.58(-4.7)	3.98(-4.5)	5.11(-5.5)	5.14(-6.1)	4.77(-3.8)	2.5(-3.4)	4.17(-5.9)	-3.43(-3.9)	-1.71(-7.8)	-1.95(-8.7)	-3.89(-9.8)	4.12(-5.7)	-7.19(-7.3)	-12.19(-14.1)	7.26(-10.3)	2.84(-3.2)	3.4(-5.5)	7.46(-7.4)	6.99(-7.8)	-14.31(-17.8)	-14.31(-17.8)
(H27.5)	1.69(-5.4)	8.17(-7.1)	8.27(-7.5)	4.27(-3.8)	5.27(-3.9)	4.44(-2.5)	6.99(-7.1)	7.97(-7.1)	4.97(-3.8)	5.96(-5.2)	4.53(-4.2)	7.91(-5.6)	-16.91(-17.7)	7.97(-7.1)	7.97(-7.1)	7.97(-7.1)	7.97(-7.1)	7.97(-7.1)	7.97(-7.1)	7.97(-7.1)	7.97(-7.1)	7.97(-7.1)	7.97(-7.1)	7.97(-7.1)
(H27.5)	16.84(-17.1)	-15.54(-10.9)	-10.27(-11.8)	-7.1(-12.3)	3.96(-13.3)	3.88(-13.2)	6.59(-7.9)	7.7(-8.1)	7.7(-8.1)	7.7(-8.1)	7.7(-8.1)	7.7(-8.1)	7.7(-8.1)	7.7(-8.1)	7.7(-8.1)	7.7(-8.1)	7.7(-8.1)	7.7(-8.1)	7.7(-8.1)	7.7(-8.1)	7.7(-8.1)	7.7(-8.1)	7.7(-8.1)	7.7(-8.1)
(H27.5)	8.79(-16.1)	-12.51(-9.7)	9.24(-5.5)	2.49(-3.8)	5.78(-4.9)	3.01(-5.7)	4.14(-5.4)	4.03(-6.1)	3.3(-5.2)	9.19(-12.5)	-17.34(-17.7)	-16.95(-17.2)	-16.49(-17.7)	-15.54(-19.0)	-11.31(-9.1)	-7.42(-5.8)	-7.06(-4.9)	4.67(-7.1)	4.71(-7.2)	-7.39(-4.9)	-6.98(-4.7)	5.39(-7.9)	8.76(-9.7)	-13.70(-15.1)
(H27.5)	5.92(-15.2)	-16.47(-15.7)	-6.67(-10.8)	4.71(-6.3)	7.1(-6.4)	5.51(-5.4)	4.57(-6.3)	4.17(-7.2)	8.05(-14.1)	-12.99(-12.6)	-13.71(-12.6)	-18.49(-18.7)	-19.03(-13.5)	-19.03(-13.5)	-19.03(-13.5)	-19.03(-13.5)	-19.03(-13.5)	-19.03(-13.5)	-19.03(-13.5)	-19.03(-13.5)	-19.03(-13.5)	-19.03(-13.5)	-19.03(-13.5)	-19.03(-13.5)
(H27.5)	8.87(-16.1)	-12.26(-7.7)	-16.93(-13.2)	8.84(-5.1)	4.65(-5.1)	4.77(-4.2)	4.74(-5.1)	-12.81(-14.4)	7.36(-13.4)	-13.47(-12.7)	-18.12(-15.1)	-12.07(-15.4)	-14.44(-12.6)	4.53(-7.4)	-17.19(-16.7)	-12.96(-15.5)	-12.94(-16.0)	-10.86(-12.3)	-14.43(-9.6)	4.7(-12.4)	4.92(-11.4)	6.06(-11.3)	5.98(-11.3)	-16.93(-15.4)
(H27.5)	4.89(-10.6)	-8.53(-13.4)	-8.53(-13.4)	-7.36(-11.1)	7.36(-11.1)	7.36(-11.1)	7.36(-11.1)	7.36(-11.1)	7.36(-11.1)	7.36(-11.1)	7.36(-11.1)	7.36(-11.1)	7.36(-11.1)	7.36(-11.1)	7.36(-11.1)	7.36(-11.1)	7.36(-11.1)	7.36(-11.1)	7.36(-11.1)	7.36(-11.1)	7.36(-11.1)	7.36(-11.1)	7.36(-11.1)	7.36(-11.1)
(H27.5)	-10.14(-9.8)	-12.27(-11.5)	-10.27(-13.3)	-7.89(-5.2)	-4.39(-7.7)	-7.88(-4.8)	9.46(-11.1)	-13.71(-14.3)	-10.41(-17.7)	-14.14(-17.1)	-16.66(-19.5)	-17.92(-15.4)	-16.88(-18.6)	-16.96(-18.2)	-16.33(-9.5)	-12.34(-10.5)	-17.61(-5.3)	4.47(-11.0)	7.67(-5.6)	8.33(-10.7)	8.33(-10.7)	8.33(-10.7)	8.33(-10.7)	8.33(-10.7)
(H27.5)	-11.61(-11.3)	-11.61(-11.3)	-11.31(-13.1)	-6.19(-6.3)	3.88(-4.4)	6.55(-4.3)	-12.14(-12.8)	-14.11(-14.5)	-10.69(-15.8)	-13.56(-15.4)	-10.97(-17.7)	-17.87(-15.1)	-17.87(-15.1)	-17.87(-15.1)	-17.87(-15.1)	-17.87(-15.1)	-17.87(-15.1)	-17.87(-15.1)	-17.87(-15.1)	-17.87(-15.1)	-17.87(-15.1)	-17.87(-15.1)	-17.87(-15.1)	-17.87(-15.1)
(H27.5)	6.92(-9.2)	-12.14(-7.3)	-11.72(-12.4)	-10.59(-9.7)	7.68(-6.1)	8.64(-6.4)	-15.99(-15.5)	-13.86(-17.3)	-14.36(-14.4)	-10.59(-17.1)	-14.36(-14.4)	9.44(-11.2)	-18.57(-14.2)	-17.38(-17.7)	-17.97(-17.8)	-13.71(-13.4)	-14.81(-15.2)	-11.84(-15.6)	-16.66(-7.8)	-18.35(-17.4)	9.44(-11.2)	-16.61(-12.5)	-11.78(-11.7)	-14.71(-13.3)
(H27.5)	-11.61(-12.2)	-10.54(-13.9)	-11.31(-12.3)	-10.41(-11.4)	8.62(-7.9)	-10.42(-13.6)	-13.95(-15.1)	-16.91(-15.2)	-13.88(-16.1)	-10.59(-17.1)	-12.07(-17.6)	-14.31(-18.1)	-14.84(-18.1)	-14.84(-18.1)	-14.84(-18.1)	-14.84(-18.1)	-14.84(-18.1)	-14.84(-18.1)	-14.84(-18.1)	-14.84(-18.1)	-14.84(-18.1)	-14.84(-18.1)	-14.84(-18.1)	-14.84(-18.1)
(H27.5)	-11.61(-10.5)	-12.71(-13.7)	-11.47(-9.4)	-11.56(-14.4)	-12.34(-6.1)	-13.57(-16.1)	-17.04(-16.4)	-18.24(-19.9)	-2.91(-12.4)	-13.19(-17.1)	-17.34(-16.3)	-19.39(-16.6)	-11.15(-12.1)	-17.19(-17.5)	-19.03(-12.9)									



Radiated Composite Gain Data of 5GHz

Appendix B

φ(150°)	-1.12/5.33	-13.09/-7.77	-6.29/5	-8.38/-7.09	-6.78/-5.46	-5.45/4.91	-7.16/-4.48	-12.02/-6.98	-4.53/6.44	-8.40/-6.53	-5.47/-11.29	-11.94/2.95	-2.19/-5.18	-13.09/6.15	-5.46/-6.17	-7.25/-7.27	-4.19/-2.56	-4.21/2.77	-3.15/6.03	-7.63/2.26	-4.36/6.3	-3.42/4.59	-1.61/12.43	-18.91/17.48	
φ(112.5°)	5.56/6.15	-17.46/-11.23	-6.89/6.4	-12.16/-8.46	-8.64/7.3	-6.32/4.91	-8.59/6.91	-9.59/4.66	-7.94/-6.28	-10.57/8.02	-5.96/-16.26	-10.59/5.15	-5.76/-9.48	-15.5/-8.08	-7.24/-9.29	-6.67/7.02	-8.59/9.34	-9.14/7.08	-6.85/12.72	-10.47/-4.48	-5.23/-8.59	-8.89/5.63	-5.23/-7.24	9.96/9	
φ(150°)	-6.06/-6.59	-15.82/-11.52	-6.04/6.37	-11.48/-11.71	-7.71/7.99	-9.24/-6.36	-9.41/6.65	-12.28/9.1	-11.99/7.92	-8.35/-11.61	-6.54/-12.22	-6.11/-7.09	-7.91/-10.57	-19.29/-9.84	-5.37/6.1	-7.77/-10.31	-8.80/-9.06	-6.97/9.04	-10.84/-10.15	-10.81/4.87	-6.97/-12.46	-4.24/5.72	-5.51/8.96	-10.52/-13.92	
φ(127.5°)	5.15/-5.81	-12.15/-15.74	-9.52/-12.16	-15.59/-9.83	-8.71/-12.44	-10.59/-5.84	-13.14/-17.2	-12.74/-12.41	-9.56/9.84	-14.45/-12.64	-8.46/-11.87	-7.71/8.81	-7.49/-15.16	-17.47/-11.29	-6.55/-12.69	-10.85/-8.48	-8.97/-6.98	-2.77/-10.51	-17.14/-6.77	-8.09/-5.31	-18.65/-8.5	-7.93/-5.87	-9.96/-12.13	-12.17/-12.98	
φ(150°)	-9.36/9.5	-15.49/-17.05	-13.52/-15.06	-18.31/-17.77	-13.78/-9.84	-8.19/-7.98	-10.34/-13.37	-14.05/-11.15	8.14/-5.55	-11.65/-14.09	-17.89/-16.42	-18.93/-12.86	-13.82/-14.28	-16.78/-17.65	-11.62/-18.23	-14.49/-14.95	-14.95/-10.88	9.1/8.62	-8.98/-12.28	-16.84/-13.85	-16.39/-13.82	-19.29/-18.17	-18.94/-16.15	-9.54/-9.51	
φ(157.5°)	-9.86/-13.89	-12.32/-14.07	-16.62/-18.49	-18.86/-14.53	-11.1/8.69	-7.41/7.31	-8.59/-10.15	-12.51/-14.59	-13.32/-13.88	-11.15/-10.57	-12.14/-38	-12.38/-14.17	-18.34/-12.63	-12.03/-18.44	-15.12/-15.28	-18.59/-18.94	-18.91/-17.89	-18.59/-15.82	-15.12/-14.54	-15.91/-14.23	-11.21/-11.05	-14.02/-12.87	-17.17/-18.21	-14.41/-16.81	
φ(165°)	-11.81/-12.35	-12.84/-15.7	-18.4/-18.94	-17.38/-18.69	-17.19/-13.04	-13.62/-14.21	-15.38/-11.76	-11.96/-12.64	-12.84/-12.37	-12.96/-13.01	-13.95/-15.2	-14.42/-13.39	-14.81/-16.32	-14.39/-13.33	-12.9/-13.36	-14.14/-14.48	-13.46/-11.41	-11.48/-13.25	-12.91/-11.94	-12.72/-15.74	-19.16/-17.6	-16.56/-13.42	-17.71/-18.38		
φ(172.5°)	-11.31/11	-9.48/-8.85	-8.6/6.45	-11.11/-14.3	-16.57/-17.3	-17.33/-13.52	-11.52/-11.31	-12.18/-15.09	-16.77/-14.83	-12.99/-12.16	-14.91/-16.85	-18.87/-16.72	-13.86/-12.35	-12.23/-13.82	-16.28/-16.28	-16.2/-18.94	-18.11/-19.89	-18.74/-16.48	-19.18/-18.79	-18.62/-18.18	-18.42/-18.46	-18.23/-19.63	-19.11/-17.55	-13.77/-11.55	
φ(180°)	-18.93/-16.74	-17.56/-19.69	-18.18/-18.22	-18.13/-17.86	-18.13/-19.66	-18.4/-17.9	-17.28/-19.67	-18.32/-18.61	-18.71/-17.78	-19.21/-18.92	-18.66/-13.72	-11.76/-10.92	-11.28/-11.83	-12.77/-14.08	-14.44/-13.54	-13.15/-15.36	-18.86/-17.5	-19.08/-18.06	-17.79/-17.82	-17.17/-17.54	-17.58/-15.94	-14.69/-15.2	-14.89/-15.45		
Freq(Hz)	5.785GHz	Polariz. 4																							
Gain	φ(165°/167.5°)	φ(157°/162.5°)	φ(150°/163.5°)	φ(145°/165.5°)	φ(135°/166.5°)	φ(127°/167.5°)	φ(115°/168.5°)	φ(90°/169.5°)	φ(105°/169.12.5°)	φ(100°/168.12.5°)	φ(135°/169.142.5°)	φ(150°/169.157.5°)	φ(165°/169.172.5°)	φ(180°/169.187.5°)	φ(195°/169.202.5°)	φ(210°/169.217.5°)	φ(225°/169.232.5°)	φ(240°/169.247.5°)	φ(255°/169.262.5°)	φ(270°/169.277.5°)	φ(285°/169.292.5°)	φ(300°/169.307.5°)	φ(315°/169.322.5°)	φ(330°/169.337.5°)	φ(345°/169.352.5°)
φ(°)	-7.14/4.42	-4.47/-7.03	-8.68/-10.33	-13.33/-15.59	-15.97/-15.82	-12.72/-6.88	-8.97/-7.25	-5.69/-4.91	-5.02/-5.73	5.61/4.7	-4.03/-17	-4.38/-4.62	-5.27/-5.82	-5.65/-6.1	5.71/4.46	-7.79/-18.7	-7.31/-8.54	-10.40/-10.57	-11.78/-14.3	-17.45/-17.07	-18.96/-14.66	-11.61/8.23	-8.47/7.73	4.72/5.5	
φ(17°)	-6.60/-6.3	4.4/4.56	-6.63/-7.12	-6.97/-6.81	-8.88/-7.34	7.12/-6.99	-7.8/-9.94	-13.14/-14.56	-13.68/-14.22	-14.31/-11.8	-8.49/-7.29	-6.27/-6.22	-6.48/-7.34	-8.08/-8.21	-9.72/-14.17	-17.16/-18.12	-13.11/-11.59	-8.74/-7.19	6.88/-5.67	-4.87/-1.17	-5.04/-5.11	-4.32/-4.47	-4.88/-5.04	-5.25/-6.02	
φ(127°)	-12.78/-14.64	-18.84/-19.19	-17.49/-11.06	-8.43/-6.06	-3.68/-2.51	2.41/3.3	-3.18/-3.32	-3.64/-4.37	-2.85/-3.07	4.4/6.81	-6.65/-8.82	-10.59/-14.27	-13.13/-9.87	-17.14/-6.48	-7.54/-8.23	-7.59/-6.62	-6.27/-6.26	-6.18/-6.02	4.14/-6.66	-4.96/-4.82	-5.1/5.52	-5.66/-6.18	-7.31/7.5	-8.36/-10.3	
φ(22°)	-5.70/-13.55	-11.81/-11.91	-12.83/-6.5	-7.32/-6.43	-3.79/-3.47	2.41/3.36	-9.97/-8.43	-5.98/-3.66	-2.36/-1.65	2.53/-6.01	-3.77/-4.46	-6.33/-15.2	-18.89/-8.29	-4.33/-4.28	4.46/-6.83	-5.41/-4.5	-4.27/-4.38	-4.83/-6.58	8.69/-10.47	-13.96/-13.11	-10.27/-9.71	-7.16/-7.24	-7.86/-10.55	-16.21/-18.2	
φ(167°)	-18.63/-12.8	-11.67/-14.6	-12.94/-10.33	-7.71/-6.59	-3.93/-4.22	4.46/-4.12	-4.46/-4.12	-3.94/-4.22	-5.4/-4.7	2.26/-1.74	-2.55/-6.68	-10.15/-7.87	-6.3/8.15	-17.11/-10.99	-6.78/-6.83	-9.13/-6.34	-3.71/-3.01	-3.42/-3.13	3.01/-4.2	6.24/-6.5	-13.21/-12.81	-7.3/-3.62	-3.46/-5.16	-8.21/-8.78	
φ(37°)	-14.71/-11.82	-9.68/-10.05	-9.93/-8.3	-4.95/-3.83	-2.34/-3.07	-3.23/-2.95	-3.59/-3.64	-3.64/-4.1	-4.57/-3.91	-9.84/-8.71	-13.41/-14.72	-7.39/-6.45	-11.52/-15.17	6.65/-11.6	-11.62/-7.06	-8.27/-11.2	-8.5/-6.64	6.96/-19.91	-11.74/-8.62	-6.86/-6.43	-4.71/-1.21	-2.25/-5.07	-7.14/-6.4	-7.45/-11.63	
φ(172°)	-11.77/-11.62	-7.46/-4.42	-4.91/-6.4	-3.33/-1.9	2.81/-3.5	-3.35/-4.54	-6.04/-4.87	-1.4/-6.65	-1.95/-3.68	-8.92/-8.62	-10.58/-6.64	-10.71/-10.78	-14.11/-18.17	-13.82/-14.8	-6.91/-7.37	-5.67/-6.58	-3.93/-4.91	-7.12/-4.91	4.32/-8.67	-6.01/-5.7	-6.39/-6.26	-5.65/-8.24	-8.67/-6.84	-6.07/-5.43	
φ(52°)	-8.89/-17.6	-10.82/-6.4	-3.75/-4.94	-3.23/-3.59	-6.43/-5.38	-4.16/-4.31	-7.9/-4.64	-1.62/-1.89	-4.21/-5.2	-5.75/-10.11	-7.11/-7.92	-9.38/-10.9	-15.51/-15.55	-16.64/-11	-5.39/-4.38	-7.06/-4.54	-3.71/-5.98	6.75/-4.57	-3.61/-1.7	-7.49/-7.58	-7.11/-11.43	-13.22/-13.87	-10.91/-8.69	-5.77/-4.49	
φ(83°)	-15.33/-13.8	-13.87/-15.4	-4.5/-6.09	-3.11/-3.89	-6.92/-6.55	-3.54/-7.09	-8.99/-8.35	-1.96/-3.33	-12.47/-10.9	-4.76/-12.34	-9.59/-11.6	-8.43/-6.65	-8.77/-9.38	-14.29/-16.23	-6.29/-6.8	-10.49/-8.58	-6.19/-8.66	5.59/-5.55	-6.55/-6.57	-6.73/-5.58	-4.29/-6.63	-8.29/7.5	-7.81/-6.02	-9.41/-8.61	
φ(87°)	-8.52/-17.65	-10.82/-13.25	-8.17/-5.77	-2.51/-3.5	-7.94/-5.43	-2.44/-5.55	-16.8/-4.25	-2.46/-3.25	-17.25/-18.74	-10.16/-15.77	-11.89/-16.49	-15.25/-6.41	-6.79/-8.1	-16.16/-18.08	-14.99/-14.76	-7.95/-7.49	-7.57/-9.95	9.32/-8.84	-14.78/-17.56	-2.82/-3.28	-3.24/-5.44	-7.1/5	-7.57/-8.87	-13.24/-14.36	
φ(9°)	8.8/-12.85	4.75/-6.91	9.13/-4.13	-3.02/-3.63	-3.88/-5.95	2.78/-4.65	-17.21/-25.5	-13.34/-14.02	-16.4/-19.25	8.89/-16.96	-11.44/-15.02	-18.48/-6.62	-7.78/-9.12	-14.84/-18.99	-14.99/-11.26	4.12/-4.75	6.34/-12.19	-12.52/-5.65	-15.94/-10.29	2.17/-2.25	-6.46/-6.28	-10.05/-11.83	-8.49/-12.34		
φ(92°)	9.98/-8.8	-7.71/-14.8	-11.52/-6.9	-3.81/-3.99	-7.13/-7.86	-3.27/-11.28	-19.01/-6.75	5.48/-16.49	-13.22/-18.61	-16.07/-16.08	-10.51/-16.38	-16.03/-10.14	-8.48/-11.42	-17.49/-13.31	-18.84/-10.35	-5.63/-6.89	7.88/-18.06	9.8/-1.72	-11.74/-6.8	-2.81/-4.36	-12.26/-12.79	-12.29/-17.45	-11.4/-16.13	-15.82/-13.49	
φ(97°)	-11.41/-10.25	-9.5/-10.8	-13.52/-8.3	-4.64/-4.97	-9.07/-10.3	-4.28/-15.23	-16.97/-4.72	-7.43/-17.44	-15.64/-18.71	-8.20/-17.66	-8.74/-8.65	-14.98/-17.63	-10.98/-9.67	-17.74/-17.25	-16.59/-16.65	-6.29/-6.23	-8.45/-10.73	-7.82/-16.4	-13.91/-17.2	-7.424/-2.23	-14.94/-18.67	-14.2/-18.41	-15.47/-11.88	-15.92/-14.2	
φ(107°)	-2.44/-11.73	-11.81/9.01	14.19/-10.26	5.88/-6.48	-12.02/-11.67	-5.98/-15.3	-18.74/-32	6.89/-13.06	-18.81/-16.71	-8.53/-10.75	-9.12/-17.99	12.98/-17.89	-13.16/-12.33	-18.74/-14.23	-17.71/-18.94	9.5/-11.98	17.18/-19.27	10.94/-17.57	-11.48/-9.87	-12.75/-15.93	-16.98/-18.91	15.96/-13.24	17.86/-18.76		
φ(112°)	-17.79/-12.72	-10.82/-14.91	-13.26/-11.29	-4.78/-6.1	-10.56/-16.28	-3.89/-13.02	-18.26/-12.69	-11.79/-10.58	-19.35/-15.55	-17.31/-16.38	-15.99/-6.63	-11.77/-14.84	-13.11/-17.71	-18.92/-13.08	-15.31/-14.58	-4.45/-11.74	-15.4/-19.05	-16.16/-11.68	-19.05/-17.17	-17.53/-12.6	-18.91/-18.36	9.88/-11.84	-17.86/-13.12	-15.84/-19.02	
φ(115°)	-15.36/-11.82	-12.16/-13.38	-13.03/-13.01	-8.74/-10.17	-5.98/-7.44	-11.67/-12.84	-18.94/-16.59	-15.31/-10.15	-19.96/-13.3	-12.29/-8.97	-9.97/-19.1	-10.44/-13.11	-18.86/-16.38	-18.67/-17.85	-15.31/-14.51	-13.29/-3.98	-10.27/-13.68	-17.87/-17.24	-17.94/-17.74	-18.62/-13.32	-17.71/-18.24	-7.28/-11.7	-17.15/-14.98	-16.35/-17.67	
φ(120°)	-7.17/-12.42	-9.43/-9.58	-11.31/-11.78	6.38/-11.97	-12.88/-15.62	-17.66/-12.92	-15.31/-18.18	-15.13/-13.81	-17.59/-13.22	-16.04/-16.98	-9.87/-6.51	-7.6/-11.4	-14.03/-13.92	-10.94/-15.32	-10.94/-15.32	-18.77/-17.2	-16.4/-17.5	-14.91/-12.5	-15.36/-18.08	-18.76/-17.63	-18.73/-14.54	8.58/-12.97	8.42/-17.17	-16.24/-13.06	
φ(127°)	-12.64/-10.05	-10.65/-15.26	-10.33/-11.11	9.51/-12.12	-17.48/-15.71	-15.62/-14.94	-17.01/-18.34	-13.95/-15.75	-11.61/-16.35	-18.87/-10.53	-12.74/-11.1	-8.83/-12.87	-12.13/-11.37	-11.81/-15.4	-18.78/-18.22	-10.28/-8.95	-16.11/-14.15	-13.08/-14	-11.71/-15.7	-17.32/-13.4	-10.36/-13.41	8.73/-19.59	-15.81/-11.14	-16.88/-10.06	
φ(132°)	-10.42/-13.63	-13.52/-15.08	-11.01/-11.26	9.48/-10.87	-17.34/-18.63	-14.58/-16.39	-19.09/-18.46	-14.96/-13.1	-12.41/-11.94	-11.65/-10.81	-13.54/-16.18	-10.44/-17.69	-10.14/-12.23	-11.66/-12.21	-18.81/-17.61	-18.48/-17.81	8.18/-15.08	-16.69/-14.12	-10.41/-13.35	-13.76/-14.74	-16.18/-16.25	-13.41/-14.37	-15.12/-18.09	-16.87/-12.86	
φ(142°)	-8.21/-12.84																								



Radiated Composite Gain Data of 6GHz

Appendix C

Freq(Hz)	6.175G	6.475G	6.695G	6.995G
Ant. 1 Max Gain (dBi)	4.96	4.99	4.98	4.78
Ant. 2 Max Gain (dBi)	4.72	4.74	4.53	4.69
Ant. 3 Max Gain (dBi)	4.88	4.63	4.47	4.94
Ant. 4 Max Gain (dBi)	4.77	4.84	4.61	4.26
Ant. 1 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$	Phi/60/322.5	Phi/45/277.5	Phi/45/277.5	Phi/45/285
Ant. 2 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$	Phi/37.5/270	Phi/75/262.5	Phi/75/285	Phi/67.5/292.5
Ant. 3 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$	Phi/75/307.5	Phi/75/285	Phi/75/300	Phi/82.5/300
Ant. 4 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$	Phi/45/322.5	Phi/52.5/307.5	Phi/52.5/300	Phi/45/277.5
Max Gain (dBi)	4.96	4.99	4.98	4.94
DG [1SS] (dBi)	9.98	9.93	9.53	9.86
DG [2SS] (dBi)	6.98	6.93	6.53	6.86
DG [4SS] (dBi)	4.96	4.99	4.98	4.94



Sporton International Inc



Radiated Composite Gain Data of 6GHz

Appendix C

(H25°)	0.84084	1.94272	2.71212	1.81158	1.71181	1.37034	0.97106	1.15071	0.581212	3.441441	-5.531713	-8.811721	-6.851583	-0.071076	0.76179	2.88384	4.98579	6.43678	6.97716	7.45781	7.87164	7.29711	6.45536	3.75212
(H0°)	1.43031	1.19276	3.31043	3.67038	3.93034	3.1527	2.84211	1.19034	0.57105	-1.421238	-2.841438	-5.741851	-8.16163	-1.45121	34.24	4.77142	4.35458	5.06533	5.88811	6.61711	7.59778	7.55857	6.24556	4.44297
(H37°)	2.34254	1.95257	2.74265	3.60163	3.83034	1.32132	1.97196	1.071177	-2.05114	-5.541811	-3.951625	-6.081571	-4.481136	1.15216	1.76081	1.94349	5.07706	6.0287	6.98879	8.8185	7.16506	3.89455	5.37671	4.47283
(H52°)	5.13506	3.51281	2.39158	1.87156	33.89	3.6352	4.46358	1.95069	-0.511114	-8.18126	-4.051387	-2.581027	0.671122	1.5151	2.7141	5.66317	7.478	8.13819	8.4492	9.53815	8.07758	7.12573	5.15521	5.14455
(H67°)	5.59481	3.7544	4.53395	3.59132	5.38598	5.5343	5.94475	3.35219	1.33051	-1.861133	-0.821181	1.621134	4.14556	6.35849	6.89745	8.13723	6.34669	7.53761	8.1483	8.8817	8.8186	8.23724	5.18399	
(H82°)	2.58281	2.8316	4.6575	4.83585	6.16722	6.8652	6.68553	4.94518	4.98421	2.610	2.23075	-0.191003	-0.28138	4.14556	6.35849	6.89745	8.13723	6.34669	7.53761	8.1483	8.8817	8.8186	8.23724	5.18399
(H97°)	1.45159	2.8316	4.6575	4.83585	6.16722	7.966	6.75608	7.12686	6.18497	3.95424	2.23071	0.551107	0.92286	4.84562	6.36706	7.61784	8.13723	6.97107	7.3802	6.36822	8.99835	9.2485	8.11161	4.32032
(H112°)	1.44939	2.13261	4.18552	5.84549	7.47723	6.2619	6.83521	5.21551	3.38451	3.78414	2.2704	0.77109	1.74238	3.98475	5.71675	7.77781	8.08763	8.09814	7.81892	1.94533	9.22934	8.88838	7.09844	3.86241
(H127°)	0.43033	0.7313	4.15424	6.1547	5.12651	7.1958	6.65314	5.38377	2.82535	0.861152	-0.02041	1.53139	2.92529	4.43551	6.8653	7.374	7.5873	7.3764	8.65811	8.91837	7.4864	5.83218	2.84122	
(H142°)	0.8131	-1.53121	0.9228	2.87723	3.58714	4.33414	3.71018	3.54633	3.59575	1.831	-1.421238	-2.841438	-5.741851	1.69854	3.02251	4.24171	5.65544	5.88623	6.1785	6.73639	7.0368	5.0839	4.24151	1.44971
(H157°)	2.91339	4.8318	2.25915	2.64943	0.881161	2.17039	0.931162	1.310127	1.20536	-0.891197	-4.151633	-3.532142	-1.95339	-0.591259	1.85715	2.51102	2.15044	2.42223	2.355	3.54265	2.07143	1.51386	0.761919	
(H172°)	4.51149	7.8147	6.10336	6.781254	5.95135	-1.561198	-1.89119	-2.211403	-2.901247	3.58134	-5.61154	-2.05138	-4.571357	1.34147	1.29127	0.891038	2.6114	3.09137	2.9156	-1.42119	0.86103	0.60119	1.67148	-3.82129
(H187°)	8.12162	-10.28146	5.93127	3.450186	3.88137	3.310756	8.17175	3.312136	5.61159	4.34157	8.371136	-7.02143	-7.891429	6.69171	4.41377	2.431172	3.391213	1.02121	2.87116	-1.19124	1.931179	-1.281684	5.941788	-6.88181
(H202°)	8.89174	-6.50146	7.44184	4.25173	4.58107	5.171258	3.84111	4.251859	7.121758	8.53113	7.121758	-10.94174	-12.57123	7.291032	7.51146	4.05146	4.591481	3.291481	3.321381	4.911236	-4.71171	-4.07143	7.51145	-8.02174
(H217°)	9.821436	-10.281087	-10.16186	8.68101	8.411745	-10.451828	-10.011022	-8.891712	8.68185	-8.591127	-10.491151	-10.511087	-10.891482	8.2810	-0.03175	-10.161098	8.27118	6.451983	8.741658	-9.38144	-8.1712	6.961472	-10.241308	-8.77143
(H232°)	8.811935	-11.221024	-11.02178	-11.231016	-10.861198	-10.15167	-9.591499	-10.431149	-10.511933	-10.761031	-10.411264	8.671892	-10.431054	-10.88112	-0.89165	-0.89165	-5.901534	-8.85163	-5.13144	-5.061258	-5.481737	7.731493	6.831658	-11.461189
(H247°)	8.311851	-11.221024	-11.02178	-11.231016	-10.861198	-11.641151	-11.461103	-11.461103	-11.191127	-11.671173	-11.161819	-9.95177	-11.741122	-10.8194	-10.861188	-8.87114	-10.841106	-8.1714	4.88142	-4.551777	-7.45148	-8.971109	-0.98178	-10.28134
(H262°)	9.361017	-9.30116	-11.261181	-11.261102	-11.511086	-9.391128	-8.391128	-11.261103	-10.67165	-9.71177	-10.261134	-12.121232	-11.711069	-11.711069	-11.361188	-11.361188	-11.031086	-8.071114	-11.6311	-8.891033	-8.571071	-12.2711248	-11.421128	-11.60175
(H277°)	10.381057	-11.051101	-11.361128	-11.261142	-11.751143	-12.611121	-12.761117	-11.81949	7.211783	-10.331156	-11.731097	-11.961106	-11.741156	-12.451027	-12.711303	-11.061138	-11.68148	-7.41183	-11.05147	-11.741122	-12.061123	-12.48169	-7.18146	
(H292°)	-10.381057	-11.051101	-11.361128	-11.261142	-11.751143	-11.611127	-11.871135	-11.901176	-11.301182	-12.761132	-12.381187	-12.491123	-12.491123	-12.011214	-11.191124	-11.231129	-12.271103	-9.961103	-11.02147	-11.91188	-10.401109	-11.411042	-10.561121	
(H307°)	-11.321161	-11.81143	-12.31149	-12.31149	-12.31149	-12.31149	-12.31149	-11.791131	-11.01114	-12.111163	-12.261112	-12.261112	-12.261112	-12.31111	-11.341185	-11.881123	-12.121118	-10.791106	-10.77183	-7.51174	-7.64174	-6.93191	-10.10118	-10.10118
(H322°)	-11.311163	-12.11112	-12.071118	-11.521116	-11.621116	-12.071116	-12.071116	-11.881104	-11.881104	-11.881104	-11.881104	-11.881104	-11.881104	-12.071112	-12.071112	-11.881104	-12.071112	-12.071112	-12.071112	-12.071112	-12.071112	-12.071112	-12.071112	-12.071112
Freq(Hz)	6.89509P	7.241	7.241	7.241	7.241	7.241	7.241	7.241	7.241	7.241	7.241	7.241	7.241	7.241	7.241	7.241	7.241	7.241	7.241	7.241	7.241	7.241	7.241	7.241
Gain(dB)	0.0710975	0.0710975	0.0710975	0.0710975	0.0710975	0.0710975	0.0710975	0.0710975	0.0710975	0.0710975	0.0710975	0.0710975	0.0710975	0.0710975	0.0710975	0.0710975	0.0710975	0.0710975	0.0710975	0.0710975	0.0710975	0.0710975	0.0710975	0.0710975
(H1°)	4.48856	5.715	5.8251	5.38479	3.85286	1.91358	2.79163	-5.52143	2.37137	1.53275	3.87146	5.12548	5.41521	4.87431	3.65285	1.83105	-0.47118	3.37155	-5.74155	-5.75141	-4.23147	0.86011	1.63241	3.8639
(H37°)	4.35012	3.75703	2.95147	0.381	2.89144	-6.711536	-4.181278	-1.261	1.9592	4.095	5.51156	4.19813	4.9951	6.26111	5.47176	3.89273	1.88111	3.101474	4.48131	-1.7806	2.99134	4.99423	4.3564	
(H52°)	4.88146	3.15079	2.91175	1.85143	3.131184	-3.92157	6.38153	5.41153	5.211428	3.591148	-0.02007	2.2817	4.75129	5.51539	5.1431	3.92154	1.81022	1.54139	-5.85179	3.36181	1.95927	8.8113	4.7715	
(H67°)	4.77133	3.4324	2.77158	3.85274	1.11529	-3.49139	-3.811372	4.59153	6.68152	-3.53149	-4.14058	1.82146	4.85154	5.7157	4.82415	4.01197	2.97187	0.311124	-2.52134	-4.54174	5.96147	-1.56107	3.02034	1.7941
(H82°)	4.51536	4.89237	2.91378	2.82084	2.49145	-5.49173	4.79135	5.77139	8.96172	4.61028	-3.51106	1.86054	5.9156	4.3807	3.32191	0.581075	-2.8114	2.82014	-2.59138	-1.67139	-1.67139	2.23128	4.59162	
(H97°)	1.78824	5.0218	3.83149	2.52103	-1.56177	-3.05145	-8.41149	-4.22176	8.55149	6.19116	-1.25023	1.411	4.06149	4.73812	2.68014	-0.40127	0.051078	-1.96127	-3.04123	-3.76145	-3.96149	-1.81477	0.050217	1.66176
(H112°)	0.81337	4.98137	1.49113	1.82158	1.31102	-3.29145	-7.68151	-5.47158	-1.67143	-3.32011	2.95177	2.41176	1.96116	-0.31147	0.64035	1.913	-0.881247	-3.43125	-6.73137	-5.231107	-7.05199	-1.26123	7.17155	
(H127°)	-1.61217	2.75139	0.79126	-0.77011	1.72012	-3.63105	-8.96161	-1.51168	4.74132	-10.121028	-6.01126	0.47019	0.35045	-1.041138	-1.34156	0.81034	1.74145	-1.141475	-0.06198	-0.711765	-7.81232	0.55024	-0.131422	-7.48149
(H142°)	-7.15105	-10.12101	-1.08128	-2.48101	-1.11221	-6.431025	-10.10139	-7.01173	-6.61011	-7.88171	-8.61311	-2.92134	-2.24156	-4.57191	-1.151233	-1.81138	-2.21123	-3.2184	6.32194	-8.44182	-8.44182	-1.59148	-3.10141	-6.49158
(H157°)	8.87148	-6.15141	-8.81162	1.42147	4.751821	-5.91145	-10.17108	-6.71185	7.62177	-11.50142	-4.29142	-4.05114	-6.61186	-2.61147	-3.26125	-4.35014	-4.35014	-4.35014	-3.51173	-6.82168	-7.24167	-8.87123	-0.021748	-2.76148
(H172°)	-10.64172	-8.53128	-5.33128	-1.68134	7.05156	8.62149	-7.59174	-7.9118	7.95132	-8.48114	-11.5415	-6.02165	-6.74128	-4.94128	-5.83143	-5.06148	-7.59147	-5.38165	-6.11123	-7.99173	-8.97143	-9.011258	-6.48167	-4.57111
(H187°)	-12.27184	-10.79146	-8.46151	1.50144	4.82187	6.28107	-7.68155	-7.521102	-11.41146	-7.28178	-11.55182	-6.361051	-10.13174	-6.63162	6.17161	-6.59163	-10.30196	-6.57186	-7.77165	-6.91689	-10.71139	-9.09142	-8.061103	
(H202°)	-11.88153	-10.79146	-8.46151	1.50144	4.82187	6.28107	-7.68155	-7.521102	-11.41146	-7.28178	-11.55182	-6.361051	-10.13174	-6.63162	6.17161	-6.59163	-10.30196	-6.57186	-7.77165	-6.91689	-10.71139	-9.09142	-8.061103	
(H217°)	-11.361107	-10.54151	-11.141107	4.69187	-8.581124	-11.41123	-10.14196	-9.341181	-11.731107	-8.61145	-10.891156	-9.451102	-11.781104	-8.891136	-10.411033	-10.28111	0.021001	-11.021132	-11.841121	-5.79128	-8.75125	-11.461181	-11.461181	
(H232°)	-11.73107	-12.51192	-11.61131	-7.45191	-6.641137	-11.991171	-11.751101	-11.351101	-10.771107	-10.531182	-11.841102	-11.241102	-11.111107	-10.141107	-9.761161	-10.101103	-10.31167	-12.81191	-9.91103	-12.361107	-11.161121	-9.451107	-10.471126	-11.411126
(H247°)	-12.711153	-11.691112	-12.241112	-8.66110	-10.311183	-11.311178	-12.381102	-11.941107	-10.87193	-10.321132	-11.601132	-11.191138	-10.921187											





Radiated Composite Gain Data of 6GHz

Appendix C

(H25)	4.86144	3.831276	2.781335	2.81147	0.51054	1.851312	0.071689	6.581465	7.881111	-18.881832	-14.121739	-18.011828	-13.941011	6.551344	3.351389	-4.641444	-3.311155	-0.170158	0.991107	1.732128	2.832186	2.221531	0.311219	-3.121448
(H26)	5.551465	3.751254	2.031215	-1.431015	0.238178	0.033162	2.951533	6.841611	5.911748	-11.021828	-13.421431	-16.141830	-14.181812	6.461308	6.861466	0.980172	0.040171	0.570131	0.811133	1.251139	2.121433	2.371161	0.670119	-0.751273
(H27)	6.171043	2.581245	-4.441616	6.711615	-4.791516	-7.791319	2.761287	-4.501678	-7.081753	-7.421676	-11.181163	6.751912	-10.401830	-3.951201	2.681422	-2.521809	1.652195	3.691366	4.941766	6.441429	3.731077	0.040111	-1.111443	
(H28)	-1.460101	-1.411511	-4.271703	6.451487	3.221232	3.021318	-1.171219	6.381649	4.881584	5.511611	-7.091544	-5.801341	-4.352123	2.711236	-1.020137	1.121183	2.561311	4.611614	4.941487	4.211343	0.940187	1.721152	-0.551626	
(H29)	0.210192	0.951616	3.851374	-2.881186	0.661246	1.251119	0.661406	-3.691480	-1.071407	-3.941612	-4.241616	5.301382	-5.941712	0.941128	1.421119	3.191409	4.041423	2.752174	4.161426	4.241403	2.912166	0.781603	0.071111	
(H30)	-1.151629	0.451147	2.431026	6.791791	1.491613	2.321625	3.182153	0.041646	0.831217	-1.941212	-1.951426	3.741483	-0.841623	0.710185	-1.161834	0.832166	2.221511	-1.631736	0.381173	2.571538	4.141266	3.961578	4.671633	
(H31)	3.131236	-1.291297	-2.170163	1.801366	1.181618	2.192151	2.110182	1.781169	-2.581145	-2.381265	-1.431168	-5.481344	1.131127	-2.050198	0.950133	-0.231313	-4.914542	-0.042196	3.350144	4.070198	4.371403	4.451433	2.211321	
(H32)	5.841398	2.771384	2.411023	-0.050144	2.240156	0.811189	0.910145	-0.811211	1.081187	-3.601197	-3.821155	-2.421152	-2.651313	0.441221	-0.991186	1.672144	1.331131	0.771612	1.754134	4.121455	3.281913	3.511711	3.211915	
(H33)	6.121446	3.781483	3.231261	-2.021124	1.721216	0.941187	1.280163	-3.011119	-1.161205	-4.881131	3.011687	-5.491258	-2.431511	2.111277	-1.911611	1.222174	1.841609	-0.401744	2.541128	1.771525	2.221176	1.881436	-4.251339	
(H34)	7.881531	5.131688	-0.751842	-4.171421	0.970198	-1.420121	-2.421204	-4.611111	2.091337	-0.591621	-0.351099	7.711268	2.741948	4.021413	-2.331572	-1.471409	0.891132	-2.721533	2.181141	1.681344	-1.840157	-0.371022	0.361689	
(H35)	9.981197	6.431588	6.801615	6.071636	3.550134	2.161315	0.921744	6.041106	4.281523	-7.731837	-10.271038	9.261511	5.861118	7.221733	-2.041714	5.501438	2.081384	4.201511	2.051398	2.421711	5.481212	1.991227	0.741738	
(H36)	-1.981624	-0.581915	-1.761948	-7.121412	7.221468	6.871672	7.881616	9.131147	8.161197	6.191162	-10.071897	10.361156	10.961157	11.561139	9.481612	7.981614	8.191107	8.021419	8.971878	7.431614	4.171478	3.641134	-10.661174	
(H37)	16.591336	-16.231754	-17.591836	6.361110	9.361483	8.291214	-15.151814	-9.051617	17.271103	0.241165	-10.321011	-18.521113	14.971147	-14.451186	-10.141176	-11.461732	11.831213	8.671734	-10.47144	6.511813	-7.891144	7.591689	-12.991192	
(H38)	-16.591425	-16.811713	-14.151148	13.841915	3.111125	8.711125	8.711125	-10.711258	-12.251738	-13.151134	-15.041136	-13.701113	-18.111139	-15.851185	-13.731135	-14.091688	6.951273	-11.811133	-7.841786	9.791147	-10.411288	-13.261789	-14.531191	
(H39)	-17.271143	-17.761142	-14.841133	-17.231139	8.870111	-14.841176	-17.071183	-17.771153	-16.521111	-17.571187	-17.261149	-12.341182	-18.911128	-17.761188	-11.251183	-18.411198	-14.611451	-13.461134	-15.621138	-18.411195	-0.471175	-18.231137	-18.321193	
(H40)	-18.811814	-18.561185	-18.541183	-18.271149	-17.441165	-11.461111	-10.941154	-18.511182	-15.411341	-17.511407	-14.451186	-10.611132	-15.671188	-18.181189	-17.341189	-18.701177	-17.111418	-11.711619	-17.801185	-15.341185	-18.871151	-19.311188	-18.191184	
(H41)	-18.881187	-17.791171	-18.151187	-14.341133	-16.781189	-16.571154	-16.341177	-18.111616	-19.191188	-15.111411	-14.001176	-18.831181	-14.391178	-17.521173	-14.111213	-19.121426	-9.931197	-13.781114	-12.611458	-14.281166	-17.501184	-17.661186	-19.151185	
(H42)	-18.701187	-18.001187	-17.781186	-18.001187	-18.311671	-16.231184	-18.101171	-13.321188	-15.401114	-18.111138	-18.540114	-18.161113	-18.311183	-18.581198	-17.551197	-15.841181	-18.531174	-12.201141	-17.051184	-14.441186	-17.781186	-18.001188	-18.361193	
(H43)	-18.781171	-18.091182	-18.731184	-17.891133	-17.591177	-18.101178	-19.321188	-19.031181	-18.671128	-17.571174	-18.611186	-16.521183	-18.321187	-19.321187	-18.311185	-18.191184	-17.841177	-18.021191	-13.861123	-14.511713	-15.761133	-18.041179	-18.151183	
(H44)	-18.681184	-18.021182	-18.631179	-18.691167	-18.351176	-17.391138	-19.551188	-19.461199	-18.681163	-18.671183	-18.861173	-18.111184	-18.681185	-19.171181	-17.861187	-18.821173	-17.881188	-19.61171	-13.271179	-19.061145	-14.151138	-18.131185	-19.021189	
(H45)	-17.711187	-18.311189	-19.221187	-18.611178	-18.651186	-19.17138	-18.821177	-18.631172	-18.031173	-18.171182	-18.291177	-18.841186	-17.841181	-18.371172	-18.821182	-17.841184	-18.591174	-17.381186	-16.511133	-11.921123	-13.061179	-17.711185	-19.051187	
(H46)	-17.621189	-18.381174	-18.361185	-18.061182	-18.911181	-18.361193	-18.361193	-17.861188	-17.861188	-17.861188	-17.861188	-17.861188	-17.861188	-17.861188	-17.861188	-17.861188	-17.861188	-17.861188	-17.861188	-17.861188	-17.861188	-17.861188	-17.861188	
Freq(Hz)	6.855092	ThruVal.1	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	
Gain	0°(H25)	0°(H25)	0°(H25)	0°(H25)	0°(H25)	0°(H25)	0°(H25)	0°(H25)	0°(H25)	0°(H25)	0°(H25)	0°(H25)	0°(H25)	0°(H25)	0°(H25)	0°(H25)	0°(H25)	0°(H25)	0°(H25)	0°(H25)	0°(H25)	0°(H25)	0°(H25)	
(H25)	0.880132	0.620132	0.480138	0.481188	0.350181	0.719175	14.711518	-16.541739	5.339136	2.361167	0.991168	0.070118	0.111513	1.111186	-2.841535	4.571589	-7.381636	-11.221191	-10.8811108	-10.721485	6.881434	-3.391225	-1.251688	0.350133
(H26)	2.371319	1.445121	0.451616	1.791453	-1.071121	-11.071115	-11.121115	-10.391896	7.591586	4.261177	-2.240118	0.981167	1.420118	1.000151	-0.601183	3.241532	-4.891198	-9.071138	-10.971142	-4.921194	4.891177	6.971147	6.971147	
(H27)	4.021633	6.251913	-10.541131	6.711475	5.971481	7.671154	8.461849	-11.071121	0.071891	-0.801122	4.031212	0.330118	1.071151	0.881219	-1.671191	4.261125	-1.971138	-17.881131	4.761312	4.761312	1.871153	-2.711239	1.871153	
(H28)	-1.41158	2.731736	-3.161119	-1.591172	3.741513	-5.331639	5.951649	9.401215	-14.411233	-10.371148	-10.341142	-11.951416	2.441533	0.840156	-0.552145	-4.051411	-6.911609	-8.581559	5.951642	-0.591916	-12.311019	-7.691407	-4.431239	
(H29)	0.261481	-1.171212	-0.051608	-0.261338	7.581147	-18.441792	-14.261191	-10.911411	-18.341761	-12.611912	-12.531142	-11.611516	2.600165	0.710154	-0.502152	-3.351811	6.841878	6.921135	-14.571126	-11.461137	5.561138	0.060123	0.060123	
(H30)	1.681158	-1.74108	-0.861637	-1.331515	4.861619	-7.491478	-13.521193	-18.821176	-11.111689	-10.911686	-8.771534	-1.231158	2.691336	2.481131	-3.711744	8.021848	-10.181162	-10.351892	-12.081195	-11.731491	8.571736	10.231195	8.541336	
(H31)	2.971132	4.711193	-2.831337	-3.93132	3.651639	-3.651639	-12.261187	-12.261187	-12.381157	-14.131159	-18.331791	7.911511	4.761151	4.761151	4.761151	4.761151	4.761151	4.761151	4.761151	4.761151	4.761151	4.761151	4.761151	
(H32)	4.19122	2.64111	-4.811636	8.251697	5.351624	-11.111168	-17.331182	-16.781133	-11.471134	-17.541127	-10.261161	-6.871199	-7.171785	4.951734	5.801781	4.981435	-4.041146	6.591147	-18.471181	-13.351141	-14.411913	-3.891331	-0.041613	
(H33)	8.98167	7.671679	6.821688	14.261126	6.841807	-10.111168	-16.891184	-10.121011	-10.281154	-10.411154	-10.391154	-10.391154	-10.391154	-10.391154	-10.391154	-10.391154	-10.391154	-10.391154	-10.391154	-10.391154	-10.391154	-10.391154	-10.391154	
(H34)	-12.011117	-13.151183	-15.571196	-11.571149	-11.561131	6.491192	-17.861187	-19.101189	-11.811142	-16.341137	-17.151183	-16.771125	-18.971176	-15.671185	-10.621126	-15.211191	-15.481138	7.521111	-10.021175	-8.841146	-13.741155	-10.571731	-6.211128	
(H35)	-18.691188	-17.001187	-14.771161	-8.361143	-10.241162	-16.281137	-14.711201	-11.571191	-13.321179	-17.411164	-18.911142	-18.111134	-11.251101	-11.411115	-13.691194	-10.561182	-14.641186	-10.651128	-14.641186	-10.651128	-14.641186	-10.651128	-14.641186	
(H36)	-17.731169	-14.641164	-16.321656	6.791142	-14.021178	-14.021178	-14.021178	-14.021178	-14.021178	-14.021178	-14.021178	-14.021178	-14.021178	-14.021178	-14.021178	-14.021178	-14.021178	-14.021178	-14.021178	-14.021178	-14.021178	-14.021178	-14.021178	
(H37)	-17.851191	-17.411148	-18.591182	8.171131	-15.211184	-17.611192	-16.751198	-16.011191	-18.831167	-17.871187	-18.241191	-18.111146	-16.661192	-17.931179	-18.111146	-13.111192	-13.981181	-18.671158	-13.941123	-14.191188	-16.991141	-17.691141	-18.171187	
(H38)	-16.291183	-17.771133	-17.771133	-15.251142	-18.081187	-18.081187	-18.081187	-18.081187	-18.081187	-18.081187	-18.081187	-18.081187	-18.081187	-18.081187	-18.081187	-18.081187	-18.081187	-18.081187	-18.081187	-18.081187	-18.081187	-18.081187	-18.081187	
(H39)	-18.791182	-19.131192	-17.711186	-12.361172	-18.091174	-17.861188	-18.171148	-18.481186	-16.861182	-18.571188	-18.841144	-15.7211												



Radiated Composite Gain Data of 6GHz

Appendix C

(H9°)	1.150/0.61	4.43/0.3	-1.28/1.7	0.40/3.3	0.52/0.22	1.28/2.47	1.05/1.16	2.51/0.38	0.79/0.31	1.09/0.45	-2.53/-0.81	-0.92/-0.63	2.17/0.14	0.03/0.4	4.24/2.18	1.93/1.13	1.55/2.34	3.92/0.88	3.44/4.25	4.52/2.93	1.03/2.33	2.55/2.88	2.92/0.79	1.29/0.86
(H82°)	2.36/3.37	-3.89/-2.86	-2.01/-2.05	-0.33/-1.59	2.29/0.12	0.57/4.09	-1.76/0.96	1.23/0.82	3.23/-1.15	0.12/0.62	-3.79/-8.35	-2.54/-2.69	-3.8/-5.57	0.72/-1.57	2.08/0.96	1.51/1.11	1.72/1.76	3.39/1.93	2.74/2.41	4.28/2.21	-0.17/0.84	0.74/1.62	1.41/1.18	-2.63/-0.19
(H75°)	4.22/6.87	-7.21/4.49	-2.93/3.86	-2.44/3.99	-3.81/1.87	4.54/-2.25	-0.51/0.95	2.9/-2.62	6.42/-4.69	2.85/-2.71	-6.93/-2.27	-3.81/-5.69	-5.99/-3.63	2.49/-3	-4.11/2.4	-1.02/0.83	0.93/0.33	1.56/0.7	0.33/2.4	2.21/0.29	-1.86/-4.68	-2.27/1.52	-0.64/-4.79	-1.76/1.56
(H67°)	6.95/-1.64	-10.37/-3.42	-4.49/-5.99	-4.59/-7.86	7.12/5.12	7.88/-1.9	-7.22/1.25	6.27/-4.4	9.2/-9.7	-5.96/-6.33	-10.71/-10.4	-6.03/-9.9	-7.34/-6.4	-4.41/-5.38	8.3/-7.76	-5.17/3.84	-2.14/-4.08	-2/-5.4	-3.18/-9.2	-1.83/-4.94	-3.74/-7.47	-4.71/-4.33	-3.19/1.74	-4.17/4.31
(H105°)	-10.42/-16.46	-16.79/-1.76	-1.17/-1.19	-1.84/-7.88	-10.44/1.35	-8.33/-12.15	-14.35/-10.58	9.84/-10.35	-14.19/-10.36	-11.14/-10.65	-14.95/-12.65	-8.41/-13.53	-11.75/-10.32	-8.89/-8.67	6.92/-12.52	-12.58/-9.52	-7/8.73	7.52/11.57	8.85/6.62	-6.65/-6.78	-4.48/-6.02	-6.97/-4.96	-5.57/-8.28	-4.71/6.96
(H122°)	-15.15/-16.35	-12.67/-11.74	-14.18/-13.84	-1.82/6.86	-15.23/-14.54	-10.49/-10.79	-14.49/-11.56	-12.06/-11.21	-14.69/-13.02	-8.84/-14.83	-13.76/-13.09	-13.63/-17.65	-12.8/-10.84	8.82/-8.7	-11.81/-11.78	-10.76/-8.06	-11.01/-10.19	-7.24/8.5	-7.01/6.87	-6.33/-4.48	-5.11/-11.26	-9.86/-6.2	-11.07/-11.26	-6.27/-10.76
(H120°)	-19.44/-15.57	-14.74/-13.8	-15.44/-13.28	-12.76/-12.57	-11.71/9.76	-13.36/-17.61	-17.57/18.37	-11.57/-19.75	-12.92/-14.51	-11.31/-19.21	-15.83/-18.28	-13.22/-18.84	-11.07/-18.19	-11.81/-13.08	-11.21/-11.1	-8.49/-7.11	9.13/-11.25	-7.82/-6.85	-10.29/-8.23	-10.81/-17.74	-12.53/-8.74	-15.94/-11.08	-12.54/-14.72	-10.37/-16.17
(H127°)	-19.18/-18.36	-15.86/-15.26	-15.24/-14.22	-15.15/-15.72	-16.89/-14.34	-12.70/-10.89	-13.26/-17.52	-15.81/-17.72	-13.27/1.73	-16.28/-16.76	-18.44/-17.5	-19.16/17.3	-18.12/-14.6	-14.29/-15.15	-19.04/-18.47	-15.25/-15.21	-17.89/-15.56	-15.01/-16.2	-17.73/-11.41	-11.22/-9.89	-18.29/-13.83	-13.08/-12.84	-13.32/-14.42	8.71/-15.7
(H101°)	-18.14/-15.34	-14.71/-13.26	-14.86/-16.51	-17.1/-1.1	-17.76/-17.74	-18.59/-13.7	-17.38/-16.57	-18.71/-19.55	-14.33/-16.49	-16.81/-16.36	-19.49/-17.7	-18.65/-17.46	-18.99/-14.44	-17.35/-16.59	-15.42/-12.6	-14.02/-11.55	-14.62/-12.64	-13.51/-17.6	7.32/9.3	8.23/-10.94	-18.99/-13.82	-8.38/-15.11	-14.4/-12.95	-14.71/6.96
(H142°)	-19.34/-18.28	-14.22/-14.12	-17.23/-16.46	-16.71/-17.83	-19.33/-16.67	-12.71/-14.48	-14.54/-14.62	-18.44/-18.46	-18.65/-18.58	-14.62/-16.17	-18.55/-17.47	-15.05/-13.39	9.17/-13.21	-14.69/-19.21	-14.28/-15.15	-14.04/-14.4	-11.05/-9.86	-10.93/-13	-14.06/-12.23	-8.91/-9.78	-13.54/-18.92	-18.91/-13.37	-8.25/-10.62	-14.88/-17.8
(H107°)	-18.34/-17.56	-16.87/-17.61	-16.39/-17.22	-16.85/-17.28	-16.64/-16.68	-18.71/17.37	-16.49/-18.28	-15.55/-14.19	-18.43/-19	-17.82/17.54	-18.33/-18.74	-18.43/-18.58	-18.54/-18.58	-18.54/-18.58	-18.52/-17.5	-17.89/-19.23	-18.49/-16.98	-18.49/-16.98	-15.56/-17.9	-17.18/-19.83	-17.76/-19.33	-17.76/-19.33	-17.76/-19.33	-17.76/-19.33
(H120°)	-16.16/-17.56	-18.79/-16.5	-14.52/-13	-17.32/17.71	-18.84/-16.57	-18.33/-14.47	-17.47/-19.65	-18.84/-16.77	-15.95/-19.7	-19.36/-16.78	-18.29/-18.53	-17.23/-18.32	1.86/0.15	-18.13/-18.16	-18.24/-18.58	-18.52/17.4	-17.88/-19.03	-18.49/-16.98	-15.56/-17.9	-17.18/-19.83	-17.76/-19.33	-17.76/-19.33	-17.76/-19.33	-17.76/-19.33
(H101°)	-16.65/-19.22	-18.19/-16	-18.95/-17.67	-16.29/-18.95	-15.76/-17.32	-18.11/-18.38	-16.84/-17.4	-18.79/-18.99	-18.76/-18.49	-17.99/-17.59	-18.39/-16.48	-18.53/-19.02	-18.72/-19	-18.94/-18.7	-16.99/-15	-18.43/-9.52	-18.65/-17.92	-18.69/-18.61	-12.25/-10.13	-16.11/-16.92	-17.71/-12.05	-16.45/-19.13	-19.27/-17.87	-19.38/-18.86
(H127°)	-22.22/-15.56	-15.75/-16.18	-16.08/-15.64	-16.29/-17.58	-17.77/-17.88	-18.44/17.66	-18.91/-17.8	-18.91/-17.8	-18.11/-18.93	-18.92/17.61	-18.26/-19.02	-18.17/-18.76	-18.16/-19.32	-17.22/-17.47	-15.79/-13.79	-13.42/-14.38	-14.08/-14.36	-13.71/-18.27	-12.69/12.94	-13.23/-19.16	-14.44/-15.33	-18.74/-18.91	-17.99/-17.49	-15.24/-17.35
(H101°)	-17.73/-17.95	-17.26/-16.21	-16.28/-17.92	-18.37/-18.06	-17.93/-18.86	-18.86/-17.4	-18.55/-18.43	-18.92/-19.28	-17.85/-17.28	-18.49/-16.28	-16.75/-16.4	-17.71/-18.16	-17.50/-17.87	-18.08/-17.68	-18.07/-17.49	-18.28/-18.74	-18.98/-17.47	-18.83/-18.22	-18.75/-19.12	-18.13/-17.5	-17.32/-18.18	-17.92/-19.36	-17.96/-18.93	-18.15/-18.15
Freq(Hz)	6.1752/0.04	Thermal/2.1	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	
Gain	(H9°/H97.5°)	(H9°/H97.5°)	(H9°/H97.5°)	(H9°/H97.5°)	(H9°/H97.5°)	(H9°/H97.5°)	(H9°/H97.5°)	(H9°/H97.5°)	(H9°/H97.5°)	(H9°/H97.5°)	(H9°/H97.5°)	(H9°/H97.5°)	(H9°/H97.5°)	(H9°/H97.5°)	(H9°/H97.5°)	(H9°/H97.5°)	(H9°/H97.5°)	(H9°/H97.5°)	(H9°/H97.5°)	(H9°/H97.5°)	(H9°/H97.5°)	(H9°/H97.5°)	(H9°/H97.5°)	
(H7°)	-7.22/1.41	6.14/-2.26	-3.63/-1.1	-2.75/-2.36	2.44/-2.27	2.69/-2.87	-3.54/-4.42	-6.65/-7.11	8.85/-11.4	-15.34/-17.06	-12.44/8.3	-6.63/-5.02	-4.22/-3.54	3.98/-2.26	-1.73/-1.5	-1.39/-1.61	-2.02/-2.32	3.04/-3.6	4.44/-5.57	-7.08/-6.25	-8.4/-10.08	-11.01/-11.5	-11.31/-10.62	6.26/-4.26
(H15°)	-4.9/-3.68	2.81/-1.77	-1.21/-1.32	-1.58/0.24	2.68/3.15	-3.57/-4.34	-5.24/-6.08	-7.02/-7.86	8.9/-9.97	-10.43/-10.47	-9.73/8.63	-7.65/-7.35	-7.22/1.74	6.23/-4.9	-3.91/-5.15	-1.88/-1.88	-1.91/-2.28	2.88/-4.16	-5.54/-7.16	-9.13/-12.49	-15.54/-14.11	-11.31/-10.62	-7.53/-6.99	-1.75/-1.9
(H17°)	-4.87/-3.68	-2.97/-2.91	-2.37/-1.18	-3.26/-3.42	-3.34/-3.84	-3.36/-4.4	-5.12/-6.28	-7.74/-8.97	8.54/-12.1	-8.22/-8.68	-5.68/-5.06	-5.66/-5.37	-6.79/-6.64	6.23/-4.9	-3.91/-5.15	-1.88/-1.88	-1.91/-2.28	2.88/-4.16	-5.54/-7.16	-9.13/-12.49	-15.54/-14.11	-11.31/-10.62	-7.53/-6.99	-1.75/-1.9
(H22°)	-4.14/-1.88	-1.06/-1.41	-2.96/-4.78	-5.23/-4.07	3.02/-2.59	2.93/-7	-5.13/-7.03	-9.51/-12.19	-15.26/-16.18	-10.02/-8.85	-5.58/-5.32	-3.71/-4.41	-3.75/-3.22	0.798/-37	0.58/-1.09	-0.92/-0.42	-0.01/-0.45	0.47/-1.25	-2.43/-4.13	-6.26/-8.71	-11.61/-17.8	-18.32/-16.78	-16.66/-17.3	-7.31/-4.34
(H24°)	-5.94/-2.34	-0.44/0.58	-2.38/-4.27	-5.83/-2.63	7.93/-6.68	4.61/-5.06	5.67/3.74	9.85/-15.2	-10.72/-12.13	-14.11/-12.25	-15.16/-16.82	-3.27/-4.21	-1.91/0.78	0.71/1.19	0.16/-1.26	-1.21/-0.64	-0.01/-0.45	0.47/-1.25	-2.43/-4.13	-6.26/-8.71	-11.61/-17.8	-18.32/-16.78	-16.66/-17.3	-7.31/-4.34
(H37°)	7.48/-4.12	-3.37/-5.25	-6.9/-6.67	-6.94/-8.1	0.39/0.62	1.70/-11.28	-9.53/-8.25	9.04/-12.78	-18.23/-19.71	-14.87/-18.77	-5.34/-3.32	-1.97/-1.71	-0.32/0.56	0.12/-0.69	-1.81/-1.79	-1.21/-1.02	-1.19/-1.38	2.99/-2.39	-3.14/-18	-5.16/-74	-11.01/-14.9	-11.35/-10.03	-9.86/-9.64	-7.26/-6.49
(H39°)	3.98/-3.74	-7.27/-1.71	-7.73/-10.38	-11.94/-6.89	3.99/-6.62	9.68/-7.81	-12.91/-12.66	8.06/-7.22	-12.31/-17.87	-10.72/-18.87	-6.47/-5.13	-3.07/-3.19	-0.74/-1.53	-0.42/-0.81	-2.23/-1.62	-1.45/-1.92	-2.91/-4.81	-6.9/-5.69	-5.41/-8.87	-13.72/-19.05	-18.58/-10.65	-17.89/-12.61	-17.89/-12.61	-17.89/-12.61
(H52°)	-17.71/-13.45	-10.43/-11.14	-12.51/-13.38	-9.94/-12.2	4.81/-6.08	-10.87/-8.54	-13.52/-19.13	-12.38/-16.39	9.75/-17.02	-16.45/-12.84	-14.58/0.63	-9.96/-9.71	-3.76/-2.59	-8.51/-6.4	-4.33/-4.78	-5.28/-5.62	-5.65/-7.11	8.69/-63	0.66/-1.77	9.61/-10.55	-13.76/-12.6	-9.68/-8.63	-13.21/-12.65	-10.38/-13.23
(H13°)	-18.13/-14.93	-14.41/-7.63	-18.12/-14.15	-12.25/-13.58	4.25/-8.82	-16.41/-14.68	-15.33/-12.29	-18.95/-13.2	-11.07/-17.58	-16.42/-16.17	-15.24/-15.66	-9.89/-8.83	-2.79/-10.36	-3.54/-6.4	-5.41/7.84	-8.3/-10.36	-10.93/-8.83	-8.83/-7.42	-7.71/-11.97	-14.76/-15.23	-14.41/-14.84	-5.22/-6.22	-16.98/-13.2	-15.53/-12.86
(H87°)	-16.87/-12.46	-16.11/-12.74	-16.97/-18.03	-17.49/-15.23	-15.23/-11.95	-18.89/-14.84	-15.94/-17.67	-16.29/-16.11	-11.66/-14.77	-15.29/-11.55	-6.11/6.91	-11.71/12.1	-10.59/-11.56	7.97/-9.4	9.35/-11.35	-18.89/-17.81	-18.92/-15.68	-18.92/-15.68	-16.79/-11.68	-16.79/-11.68	-16.79/-11.68	-16.79/-11.68	-16.79/-11.68	-16.79/-11.68
(H87°)	-16.57/-12.44	-16.96/-17.86	-17.88/-16.17	-17.88/-16.17	12.27/-12.08	-16.33/-17.28	-14.38/-16.16	-15.03/-12.97	-11.66/-14.81	-15.29/-11.55	-6.11/6.91	-11.71/12.1	-10.59/-11.56	7.97/-9.4	9.35/-11.35	-18.89/-17.81	-18.92/-15.68	-18.92/-15.68	-16.79/-11.68	-16.79/-11.68	-16.79/-11.68	-16.79/-11.68	-16.79/-11.68	-16.79/-11.68
(H97°)	-19.25/-19.43	-14.33/-16.3	-19.18/-46	-18.41/-15.15	15.96/-14.78	-19.11/12.1	-16.86/-14.21	16.82/-14.79	13.34/-16.64	-14.88/-13.44	-11.81/-16.9	-17.74/-17.36	-12.37/-17.99	8.17/11.3	-11.52/-15.16	-13.21/-17.89	-15.23/-16.98	-10.37/-16.12	11.46/-11.9	-18.52/17.63	-18.39/-16.16	-16.31/-14.39	-15.61/-16.1	-15.71/-17.1
(H97°)	-19.25/-19.43	-14.33/-16.3	-19.18/-46	-18.41/-15.15	15.96/-14.78	-19.11/12.1	-16.86/-14.21	16.82/-14.79	13.34/-16.64	-14.88/-13.44	-11.81/-16.9	-17.74/-17.36	-12.37/-17.99	8.17/11.3	-11.52/-15.16	-13.21/-17.89	-15.23/-16.98	-10.37/-16.12	11.46/-11.9	-18.52/17.63	-18.39/-16.16	-16.31/-14.39	-15.61/-16.1	-15.71/-17.1
(H97°)	-19.18/-19.39	-16.99/-16.96	-16.23/-16.95	-16.71/-16.76	-16.08/-18.72	-18.73/-14.37	-18.93/-19.48	-15.73/-17.89	-16.28/-11.22	-16.62/-18.36	-16.37/-18.71	-17.83/-14.7	-13.18/-15.02	-12.28/-17.74	-18.87/-18.14	-14.07/-18.16	-15.18/-19.4	-16.78/-19.08	-15.96/-19.08	-16.88/-17.74	-17.79/-16.44	-16.25/-16.12	-15.16/-17.24	-15.87/-13.48
(H105°)	-16.16/-19.58	-18.55/-18.64	-18.14/-18.28	-18.01/-18.16	-16.08/-16.55	-15.02/-18.11	-17.88/-19.06	-17.95/-17.16	-17.71/-14.65	-15.75/-16.75	-15.29/-16.87	-18.09/-14.45	-12.07/-18.36	-18.01/-18.65	-17.62/-18.73	-14.94/-18.34	-14.48/-17.32	-16.25/-16.82	-18.12/-17.38	-19.33/-17.23	-18.94/-17.39	-19.34/-15.38	-15.15/-18.28	-16.03/-14.34
(H112°)	-16.28/-16.75	-16.77/-17.43	-18.44/-18.03	-18.08/-17.87	-17.81/-12.92	-15.95/-17.64	-17.82/-17.84	-17.82/-18.1	-14.73/-15.87	-18.93/-16.73	-16.37/-17.37	-18.98/-15.68	-12.21/-13.51	-16.11/-18.37	-17.82/-16.56	-18.23/-18.01	-15.92/-18.76	-15.92/-18.76	-15.92/-18.76	-15.92/-18.76	-15.92/-18.76	-15.92/-18.76	-15.92/-18.76	-15.92/-18.76
(H127°)	-16.47/-18.92	-18.71/-19.3	-17.09/-19.05	-18.91/-18.2	-16.25/-18.39	-18.12/-18.95	-18.91/-17.71	-18.09/-17.4	-14.7															



Radiated Composite Gain Data of 6GHz

Appendix C

θ(120°)	-12.40-15.58	-17.96-17.74	-11.96-15.34	-12.84-12.96	-13.91-8.88	-8.80-7.09	-8.28-12.36	-13.41-17.71	-10.43-11.88	-11.93-16.96	-18.83-17.73	-14.67-18.26	-16.71-13.1	-9.99-15.3	-17.71-13.93	-7.72-7.46	-10.28-12.4	7.28-11.18	-15.38-18.7	-8.82-7.11	-15.12-13.24	-11.87-6.87	-10.55-18.63	-18.15-10.63
θ(120°)	-14.91-19.08	-18.46-17.21	-16.78-17.87	-18.31-17.9	-18.48-18.21	-18.02-13.82	-14.69-13.12	-14.78-14.06	-12.45-15.12	-10.76-15.99	-13.89-13.1	-18.79-18.88	-13.24-9.85	-10.02-15.71	-18.86-15.1	-17.13-17.13	-18.82-18.41	6.86-14.78	-17.11-12.29	-11.86-14.77	-13.99-13.39	6.33-6.49	-16.3-18.63	-15.89-13.96
θ(120°)	-13.89-15.63	-18.41-17.81	-17.62-19.46	-19.09-19.74	-14.41-18.63	-18.43-17.79	-12.01-13.53	-14.52-16.28	-17.51-15.57	-14.67-18.47	-10.76-15.99	-13.89-13.1	-18.79-18.88	-13.24-9.85	-10.02-15.71	-18.86-15.1	-17.13-17.13	-18.82-18.41	6.86-14.78	-17.11-12.29	-11.86-14.77	-13.99-13.39	6.33-6.49	-16.3-18.63
θ(142.5°)	-14.52-13.32	-15.33-17.96	-19.02-18.2	-18.94-18.16	-17.17-18.62	-18.69-19.03	-18.36-18.74	-18.07-18.99	-17.15-16.38	-17.45-15.67	-19.21-15.91	-19.02-19.79	-17.61-14.25	-17.58-16.96	-18.46-18.39	-14.71-17.88	-17.59-12.59	-11.21-18.04	-19.93-11.55	-10.33-13.98	-18.79-15.75	9.79-9.86	-15.36-18.56	-13.75-16.12
θ(150°)	-16.61-16.38	-16.52-17.81	-17.87-17.98	-19.34-18.95	-18.75-17.82	-12.83-14.34	-15.29-18.32	-18.24-18.12	-18.81-17.75	-17.71-16.76	-18.15-17.97	-18.01-15.74	-18.23-17.52	-16.45-15.17	-18.17-17.47	-15.79-11.88	-13.82-17.47	-18.92-18.74	-12.01-18.38	9.4-12.08	-18.21-18.73	-18.08-18.45	-18.33-17.42	-15.11-15.52
θ(157.5°)	-13.60-17.67	-17.77-17.85	-18.24-19.03	-17.77-17.85	-16.83-16.96	-17.93-17.1	-18.26-17.14	-18.61-14.37	-18.14-17.77	-18.15-17.08	-18.24-17.93	-16.96-14.47	-18.21-13.06	-12.26-17.14	-19.08-18.99	-18.78-18.2	-18.55-18.86	-16.14-10.84	-8.22-11.6	-11.71-19.12	-18.46-17.76	-17.31-17.81	-18.47-18.72	-17.51-14.52
θ(165°)	-18.58-17.85	-18.81-18.53	-18.35-18.93	-18.68-18.68	-18.19-18.72	-18.64-19.35	-18.42-17.48	-18.51-19.07	-19.62-17.59	-19.15-17.58	-18.99-18.85	-17.88-19.1	-18.77-19.1	-17.12-18.54	-18.99-19.25	-18.69-18.36	-18.34-16.16	-16.59-15	-18.94-15.3	-14.89-14.12	-14.89-15.25	-14.65-14.01	-13.82-15.21	-18.12-18.82
θ(172.5°)	-19.18-14	-18.59-18.13	-18.38-18.27	-18.02-17.63	-18.91-19.01	-18.98-18.28	-18.48-17.67	-17.57-17.57	-17.86-17.37	-17.55-17.78	-19.24-17.87	-18.91-17.88	-19.18-21	-18.94-16.72	-18.99-16.05	-16.96-17.23	-17.72-16.62	-14.54-12.88	-12.59-14.28	-18.99-18.58	-17.71-17.43	-17.54-17.88	-18.74-18.22	-19.29-18.94
θ(180°)	-18.93-16.49	-18.36-18.72	-17.52-16.93	-18.36-16.67	-17.56-17.3	-18.68-18.37	-18.23-16.51	-17.01-17.61	-18.36-18.16	-18.59-18.51	-18.66-18.23	-18.68-18.61	-18.68-18.15	-18.46-18.25	-18.28-19.37	-18.14-16.65	-19.25-19.87	-18.39-19.34	-18.17-18.78	-17.71-17.64	-19.15-19.61	-18.92-18.72	-18.21-18.77	-16.53-16.34
Frequency	6.855GHz	Theta64.2	θ(120°)	θ(120°)	θ(120°)	θ(120°)	θ(120°)	θ(120°)	θ(120°)	θ(120°)	θ(120°)	θ(120°)	θ(120°)	θ(120°)	θ(120°)	θ(120°)	θ(120°)	θ(120°)	θ(120°)	θ(120°)	θ(120°)	θ(120°)	θ(120°)	θ(120°)
Gain	θ(120°)	θ(120°)	θ(120°)	θ(120°)	θ(120°)	θ(120°)	θ(120°)	θ(120°)	θ(120°)	θ(120°)	θ(120°)	θ(120°)	θ(120°)	θ(120°)	θ(120°)	θ(120°)	θ(120°)	θ(120°)	θ(120°)	θ(120°)	θ(120°)	θ(120°)	θ(120°)	θ(120°)
θ(120°)	6.36-5.12	7.71-3.11	2.95-2.77	2.95-2.83	3.22-3.71	4.28-5.11	5.9-6.88	4.9-17	9.19-7.5	6.03-4.75	3.88-3.39	2.93-2.39	2.4-2.87	3.31-3.6	5.14-23	7.63-9.09	-10.20-12	-13.47-15.1	12.88-13.77	-10.52-10.35	6.92-4.75	8.22-6.48	2.86-1.95	5.38-7.21
θ(120°)	2.889-2.94	3.03-4.07	5.59-6.88	8.89-10.44	-12.21-14.69	-18.61-17	-16.13-14.17	-12.74-11.17	-10.58-9.65	6.01-8.4	7.98-8.27	7.29-5.92	5.29-4.3	3.27-2.63	2.04-1.73	-1.81-2.4	2.37-2.81	3.67-4.33	4.99-6.78	5.88-6.88	7.94-6.51	5.34-3.48	3.86-3.2	3.32-3.09
θ(120°)	6.06-2.94	6.93-2.09	3.86-5.24	4.62-5.67	6.82-6.68	7.15-5.99	6.41-12.17	-14.71-14.52	-11.98-9.74	6.17-5.41	6.76-2.41	6.19-2.37	4.23-2.67	-2.4-7.9	-1.55-1.46	-1.34-1.27	-1.52-2.09	-2.76-2.41	-4.99-4.8	7.74-7.73	5.98-4.13	8.2-8.12	2.1-1.2	1.12-0.78
θ(22.5°)	0.07-0.7	-1.32-1.2	-2.41-2.36	-2.43-2.32	-4.18-5.23	5.87-6.24	7.31-6.16	-10.01-12.61	-6.15-6.28	6.88-7.69	5.71-6.81	-4.60-3.09	-0.87-0.3	0.19-0.54	-1.26-1.15	-0.46-0.49	-1.17-2.03	-2.76-3.81	5.06-7	-8.99-12.31	-15.02-11.88	4.54-3.67	2.04-0.9	6.10-34
θ(30°)	3.36-1.47	-2.92-1.76	-1.41-1.47	-2.19-3.37	3.65-4.66	6.95-6.49	8.79-10.43	-12.43-17.01	-16.16-14.28	-10.47-18.31	2.96-5.81	2.96-4.4	-1.42-1.47	0.159-0.48	0.63-1.29	2.27-3.38	3.56-3.36	4.89-5.25	6.97-10.45	-18.71-10.14	-6.86-6.02	1.28-0.91	0.64-1.3	1.86-1.3
θ(37.5°)	5.07-2.94	-1.22-0.97	-0.63-1.91	-4.4-3.37	-12.27-12.88	-16.61-18.38	-13.19-19.7	-10.88-12.58	-18.54-18.29	-13.59-11.7	-6.96-9.3	5.6-1.72	-1.56-3.73	2.74-1.97	4.12-1.06	4.39-5.96	7.44-6.41	5.09-6.5	7.94-9.57	-9.99-10.3	-11.3-10.83	3.45-3.4	2.07-1.58	3.98-0.67
θ(45°)	6.12-4.27	-5.23-4.11	-4.36-4.94	6.29-6.36	5.05-6.46	-16.02-10.94	-14.74-14.34	6.04-7.3	8.41-17.84	6.11-15.4	5.9-5.24	3.29-5.64	3.49-4.48	6.11-6.53	6.84-6.88	2.29-3.34	7.51-6.44	7.94-8.05	-10.09-11.96	-11.74-12.36	-13.79-10.75	3.12-4.98	6.67-4.68	9.96-0.57
θ(52.5°)	5.86-2.79	4.21-6.4	-7.03-8.33	-4.17-2.84	2.33-4.61	-15.22-14.65	-17.11-15.8	-10.66-14.73	7.88-13.12	-12.67-19.3	-12.62-16.76	3.97-6.43	6.91-9.55	8.88-7.37	9.31-9.77	-4.5-8.64	6.37-10.13	-12.71-12.4	-14.24-14.65	-14.14-16.26	-17.86-11.62	5.07-5.54	7.01-6.42	-13.14-10.23
θ(60°)	-13.83-5.59	5.71-7.31	-5.49-5.24	-7.07-4.8	2.96-5.6	-15.64-18.1	-19.15-15.4	-17.28-14.72	8.19-13.77	-15.76-19.12	-12.72-8.88	-3.96-7.4	-1.336-19.19	8.83-8.48	8.41-8.74	-10.3-9.07	-10.2-16.13	-12.71-12.57	-11.86-13.57	-17.86-18.13	-14.84-16.45	8.4-6.17	4.57-14.17	-10.69-13.02
θ(67.5°)	-1.98-13.43	-13.22-12.58	-6.02-5.3	-11.91-14.96	-6.08-15.59	-18.33-17.17	-14.02-14.14	-16.12-12.86	8.22-6.49	-11.38-18.78	-18.25-19.91	-13.69-8.62	-12.68-12.7	7.6-8.62	-0.02-0.09	-10.37-8.74	8.41-16.29	-18.92-14.73	-13.11-15.11	-16.31-17.67	-13.89-14.69	-12.78-7.51	4.54-15.78	-9.87-8.83
θ(75°)	-0.39-13.43	-12.86-10.14	-12.86-10.19	-14.04-18.29	-11.31-19.05	-18.37-17.17	-15.84-10.37	-16.96-13.75	8.89-6.61	-11.34-18.79	-16.11-19.91	-13.74-13.94	-13.01-8.62	6.3-8.8	9.82-9.29	8.19-10.88	-10.62-15.6	-18.01-12.48	-10.78-14.08	-14.51-16.6	-15.99-18.62	-18.5-10.11	6.86-18.11	-13.12-10.27
θ(82.5°)	-17.89-14.4	-17.86-19.29	-17.73-18.48	-16.39-15.95	-8.81-15.4	-11.73-18.07	-13.87-0.62	-15.99-16.02	-13.69-7.64	-12.26-18.97	-15.49-16.55	-10.85-13.62	-14.39-11.07	8.47-8.97	-10.63-8.7	9.35-10.31	-14.27-19.59	-17.88-13.94	-11.17-19.15	-15.69-16.55	-18.13-18.61	-17.63-12.37	8.11-14.5	-13.03-13.14
θ(90°)	-17.82-14.4	-18.95-17.1	-18.67-18.28	-18.16-10.14	-10.12-14.52	-12.42-12.67	-15.47-16.93	-13.61-18.91	-13.73-10.11	6.63-16.57	-13.22-16.61	-14.41-16.6	-16.99-18.08	-11.45-19.15	-13.67-19.33	-13.11-18.28	-17.44-18.58	-18.44-17.73	-17.17-19	-15.63-16.55	-18.13-18.69	-18.68-12.67	8.15-14.5	-13.03-14.51
θ(97.5°)	-16.62-16.14	-17.4-16.81	-17.51-18.11	-18.65-16.21	-15.68-19.77	-17.82-13.1	-13.58-18.87	-12.59-16.84	-12.59-12.72	-12.57-16.21	-13.74-12.88	-17.22-14.35	-17.65-18.95	-19.07-15.69	-15.69-18.81	-18.88-19.35	-17.49-17.47	-12.53-18.78	-18.91-17.65	-16.99-19.23	-17.67-12.36	-12.42-18.75	-15.89-18.32	-15.89-18.32
θ(105°)	-16.69-19.22	-19.33-17.27	-18.92-18.21	-18.29-13.93	-12.59-15.85	-18.19-19.51	-18.79-18.95	-18.49-19.58	-12.72-16.43	-16.75-15.77	-16.82-16.95	-14.86-11.71	-16.42-12.74	-17.59-18.76	-18.56-18.74	-17.77-18.8	-17.88-19.92	-16.36-17.36	-14.57-17.89	-18.92-19.22	-16.62-13.47	-18.91-19.23	-18.91-19.23	-18.91-19.23
θ(112.5°)	-17.88-17.87	-17.81-18.51	-18.38-18.54	-18.62-17.57	-15.71-18.09	-14.42-16.28	-18.78-18.37	-18.67-17.92	13.86-11.52	-17.29-17.92	-18.64-17.63	-16.75-15.15	-16.83-16.46	-17.44-18.38	-18.07-15.83	-17.17-19.4	-14.21-18.98	-18.38-18.64	-14.86-17.75	-17.87-17.32	-18.19-19.34	15.96-15.92	-18.39-19.25	-18.39-19.25
θ(120°)	-18.96-19.12	-18.95-18.28	-18.91-18.76	-17.44-18.74	-14.63-14.32	-12.01-14.98	-14.33-18.98	-18.69-16.26	-18.36-19.3	-11.58-14.97	-15.59-17.17	-18.32-18.76	-18.32-17.69	-18.92-18.36	-13.16-14.94	-17.01-18.5	-18.99-17.53	-19.08-19.69	-18.74-18.94	-15.91-18.01	-16.29-19.02	-17.45-18.97	-17.45-18.97	-17.45-18.97
θ(127.5°)	-18.95-18.63	-18.95-18.73	-18.96-18.71	-17.99-18.76	-18.11-18.78	-15.68-18.12	-13.42-13.03	-12.59-12.76	-15.74-17.17	-16.92-18.98	-19.15-17.4	-18.36-18.66	-18.29-18.15	-19.04-18.65	-14.22-18.28	-18.61-19	-17.21-19.07	-19.09-18.63	-18.47-18.91	-17.33-13.63	-18.68-19.32	-18.68-19.32	-18.68-19.32	-18.68-19.32
θ(135°)	-18.93-17.98	-18.88-18.94	-18.93-18.26	-18.92-16.21	-18.21-18.45	-12.94-15.82	-18.94-15.92	-15.03-13.49	-17.73-18.37	-17.73-17.81	-19.25-16.35	-14.39-18.29	-18.51-18.08	-13.47-18.07	-18.69-17.9	-13.96-14.34	-17.94-18.81	-18.42-18.88	-18.22-15.43	-17.76-18.32	-18.52-16.75	-17.67-18.11	-19.15-15.91	-19.15-15.91
θ(142.5°)	-18.98-17.19	-18.42-19.08	-19.72-19.14	-17.18-18.36	-17.18-18.36	-18.98-17.31	-17.19-19.26	-18.75-18.19	-18.68-18.55	-15.02-16.22	-15.34-17.71	-18.02-18.86	-14.71-18.25	-18.82-19.58	-18.44-18.8	-12.11-17.6	-18.13-17.83	-17.96-15.28	-15.22-18.17	-16.99-19.07	-15.67-17.69	-18.91-18.87	-18.48-17.98	-17.15-17.99
θ(150°)	-18.88-17.74	-18.26-18.09	-17.53-18.93	-18.74-17.77	-18.41-18.41	-17.97-18.41	-17.92-18.16	-16.36-19.38	-17.89-18.25	-15.19-13.27	-15.21-13.31	-18.22-12.16	-12.21-14.16	-17.39-18.89	-18.61-17.63	-18.81-18.23	-19.01-18.68	-18.41-17.78	-19.18-17.54	-18.94-18.74	-17.89-15.44	-18.28-19.03	-12.13-13.04	-12.13-13.04
θ(157.5°)	-18.19-17.7	-19.17-18.35	-19.11-18.04	-18.33-18.96	-17.41-17.77	-16.17-17.77	-16.01-18.57	-16.04-19.03	-17.70-18.55	-17.97-17.32	-17.02-13.06	-18.												



Radiated Composite Gain Data of 6GHz

Appendix C

	-18.09-18.99	-18.58-17.53	-17.62-18.2	-17.79-18.76	-17.79-19	-19.59-17.45	-17.02-17.31	-17.78-17.57	-16.99-18.32	-17.62-17.88	-18.11-17.44	-17.91-19.1	-17.58-18.79	-17.51-17.93	-18.4-18.26	-13.31-12.09	-13.71-15.33	-16.04-19.39	-19.52-16.93	-18.61-18.49	-17.96-19.13	-18.29-18.33	-19.32-17.45	-19.06-18.27
	-17.35-17.03	-16.44-19.13	-18.17-18.46	-18.87-18.78	-18.187	-17.48-18.46	-18.35-18.31	-17.52-16.15	-15.19-14.33	-15.25-16.32	-16.99-18.36	-17.81-18.65	-18.11-18.75	-18.21-17.3	-19.13-18.66	-17.18-13.06	-11.14-10.1	-16.30-16.99	-11.08-16.95	-12.22-10.52	-18.87-18.44	-18.2-18.52	-17.95-17.71	
	-16.53-16.09	-18.53-18.56	-18.69-17.84	-18.06-18.1	-17.78-18.84	-16.71-18.16	-18.09-18.7	-17.54-17.13	-16.22-19.13	-19.43-17.93	-17.64-18.64	-18.78-18.66	-19.01-17.61	-16.66-16.95	-18.31-18.6	-17.33-18.38	-19.06-19.19	-17.53-18.19	-16.98-18.64	-19.26-18.13	-18.51-18.49	-17.51-18.24		
Free(hz)	6.1759GHz	TheatKit_3	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+		
Gain	0.91709(dB)	0.91520(dB)	0.91637(dB)	0.91457(dB)	0.91570(dB)	0.91682(dB)	0.91697(dB)	0.91597(dB)	0.91507(dB)	0.91417(dB)	0.91327(dB)	0.91237(dB)	0.91147(dB)	0.91057(dB)	0.90967(dB)	0.90877(dB)	0.90787(dB)	0.90697(dB)	0.90607(dB)	0.90517(dB)	0.90427(dB)	0.90337(dB)	0.90247(dB)	
(dBS)	-1.261-1.21	-1.421-1.29	-0.859-0.68	-0.198-0.03	-0.288-0.02	1.071-1.02	1.242-0.62	3.371-4.16	5.143-3.86	7.844-2.26	10.569-10.59	8.744-6.63	2.972-2.21	1.751-1.17	0.955-0.85	0.944-0.99	1.271-1.83	2.451-1.97	4.261-5.41	6.671-7.67	7.831-6.69	8.744-8.51	9.731-8.54	
(dBS)	3.343-3.57	2.882-2.57	2.782-2.58	2.191-1.86	2.162-2.39	3.214-2.69	4.267-1.76	7.228-7.74	7.531-7.84	4.711-5.59	4.641-5.86	2.581-2.28	0.476-1.6	0.575-0.86	0.990-0.5	0.105-0.167	1.131-1.89	2.851-3.96	5.757-4.49	8.231-9.33	5.691-4.59	3.961-3.74	3.751-3.81	
(dBS)	3.120-2.7	2.213-2.36	3.971-3.75	3.931-3.65	4.944-1.11	4.852-1.22	1.533-1.09	1.533-1.09	1.533-1.09	1.533-1.09	1.533-1.09	1.533-1.09	1.533-1.09	1.533-1.09	1.533-1.09	1.533-1.09	1.533-1.09	1.533-1.09	1.533-1.09	1.533-1.09	1.533-1.09	1.533-1.09	1.533-1.09	
(dBS)	3.489-2.76	2.734-2.38	4.212-3.6	12.281-10.7	10.541-10.26	1.644-1.5	12.281-11.4	16.201-19.9	16.501-16.99	4.989-7.4	17.014-10.7	18.11-1.5	5.304-0.4	0.669-1.7	1.252-0.6	2.591-1.83	1.612-1.4	2.871-3.5	6.3711-3.84	15.681-13.72	13.61-9.77	2.714-3.5	3.381-3.0	
(dBS)	6.341-6.4	7.429-6.29	16.191-13.4	8.714-1.5	4.631-0.89	16.541-13.5	12.519-10.31	15.151-12.31	3.334-14.22	7.811-6.7	4.284-3.78	1.982-1.9	2.511-1.07	1.221-1.94	1.541-1.23	3.343-1.4	2.161-1.07	5.912-1.76	14.618-16.46	18.011-16.08	16.051-11.84	16.051-11.84		
(dBS)	9.14-13.6	7.464-3.5	11.021-15.99	12.871-10.2	17.731-19.6	18.511-18.28	14.161-18.7	18.021-18.7	17.371-19.5	4.931-5.02	3.771-3.89	2.091-1.77	3.821-0.6	2.091-0.69	2.781-0.75	5.071-1.5	5.991-1.2	4.911-9.95	17.791-18.64	17.691-15.07	14.281-9.62	4.781-7.34		
(dBS)	12.174-14.05	8.441-8.8	12.621-10.82	12.871-10.2	10.654-7.42	11.291-17.97	9.571-12.36	13.321-13.26	12.561-12.28	16.561-18.2	4.4-6.6	5.714-1.5	4.021-2.47	2.771-3.22	3.721-1.8	3.181-1.5	3.571-2.48	4.471-3.9	1.912-1.64	5.811-10.1	5.961-17.1	5.961-17.1		
(dBS)	10.361-14.72	12.121-12.38	13.341-18.12	14.051-19.16	15.241-8.1	4.161-13.73	10.651-10.92	13.631-10.98	12.861-13.49	18.791-15.58	18.811-15.15	4.711-7.9	4.191-6.2	4.871-6.1	4.291-3.44	4.871-6.1	4.291-3.44	4.871-6.1	4.291-3.44	4.871-6.1	4.291-3.44	4.871-6.1	4.291-3.44	
(dBS)	10.12-12.62	18.641-16.1	12.171-18.97	12.841-11.4	13.181-14.92	7.061-11.6	11.421-10.2	13.991-14.5	12.221-14.45	19.091-13.1	14.431-10.06	8.471-14.35	5.081-4.88	3.151-6.7	4.161-8.7	11.631-8.66	4.281-4.63	4.971-5.46	4.321-11.7	5.311-3.25	14.111-18.27	11.191-15.16	10.741-18.13	
(dBS)	10.741-9.79	13.611-6.72	14.831-14.38	12.411-16.76	8.231-18.58	7.911-11.9	13.421-10.1	18.981-16.74	10.891-12.07	19.091-11.45	9.841-14.64	4.251-10	17.181-9.39	5.971-6.78	4.611-5.88	4.931-10.95	15.741-18.45	6.721-18.02	14.441-17.68	18.111-14.14	18.111-14.14	18.111-14.14		
(dBS)	11.241-9.87	12.351-17.4	17.021-18.13	18.161-1	10.381-18.72	12.631-10.23	14.461-11.95	18.961-18.5	10.271-13.4	16.841-12.21	11.321-12.7	15.071-10.29	12.311-9.32	4.961-5.4	8.711-14.1	18.011-12.28	9.041-9.5	13.141-13	9.0					



Radiated Composite Gain Data of 6GHz

Appendix C

(H12)	1.271-18	0.02-0.25	-1.27-2.09	2.83-3.88	5.127-63	-11.35-18.74	-18.71-18.81	-8.09-4.82	7.68-9.59	-8.89-9.19	-3.29-1.38	-0.01-0.4	0.21-0.94	-1.51-1.23	-2.52-8.21	-3.94-4.36	-6.09-4.02	8.84-12.01	-14.50-17.75	-17.50-18.24	-14.10-10.04	7.29-4.83	-3.35-1.73	0.04-1.3
(H22)	-1.13-1.08	-1.47-2.78	-3.82-3.66	-3.87-3.58	7.61-14.24	-15.07-17.34	-18.72-12.14	4.54-6.75	7.2-8.77	7.90-9.81	-1.6-0.63	-0.0-0.63	0.6-0.7	0.75-0.85	0.24-0.52	0.80-2.08	-1.29-3.58	4.97-14.21	-18.63-18.7	-17.88-15.77	9.84-6.4	5.84-5.56	3.96-2.73	-1.86-1.28
(H32)	0.361-59	0.184-88	0.318-71	4.59-6.5	-1.27-11.39	-1.12-11.39	-17.58-11.16	4.6-6.06	6.32-10.68	7.18-8.62	-2.86-2.82	2.1-1.2	2.99-2.98	2.11-1.58	-1.83-1.64	-1.4-2.6	-3.07-3.49	0.99-18.48	-19.24-18.87	-18.1-16.94	-11.5-6.94	5.93-6.06	4.36-2.3	-2.36-1.82
(H37)	5.04-1.8	2.13-6.1	-5.43-6.03	5.51-4.86	-4.85-16.61	-13.23-13.63	-18.39-18.42	-12.75-10.11	8.45-11.1	-11.57-8.62	6.5-4.6	-4.67-7.4	2.1-1.88	2.2-1.9	-2.88-3.4	5.52-5.22	-3.4-3.81	8.1-18.13	-14.41-17.8	-10.2-12.53	-8.4-7.02	8.94-15.86	8.87-4.03	-6.31-1.78
(H42)	-1.674-8.68	-5.29-14.2	-5.49-7.3	-7.05-6.77	7.13-8.78	-8.49-17.77	-13.53-13.97	9.91-12.22	-13.76-14.51	-14.32-13.31	-18.51-18.91	-7.89-6.21	-8.64-7.77	8.7-8.47	-2.91-5.42	6.44-11.41	8.44-5.56	6.73-14.16	-11.52-10.11	-16.71-25.1	-11.73-11.12	9.54-9.45	8.36-6.05	-6.02-14.76
(H47)	-15.73-12.03	7.5-6.63	-7.01-10.36	-11.71-11.59	-6.69-11.12	-12.8-18.47	-11.07-18.11	-12.3-18.35	-18.27-18.18	-11.36-11	-18.21-18.16	-8.82-11.08	-12.08-12.23	-10.5-5.27	-6.09-11.25	-7.08-12.76	-11.69-7.85	6.87-13.26	-12.22-7.9	-18.39-17.7	-11.37-6.23	-14.5-18.18	-7.98-6.43	-7.24-12.66
(H52)	-17.4-11.45	-1.88-6.42	-6.71-10.57	-13.69-18.59	-13.93-11.24	-14.34-14.75	-11.1-16.3	-13.15-17.9	-18.86-17.42	-8.40-6.97	-16.16-16.93	-10.55-16.14	-18.95-18.58	-12.29-8.97	-11.71-8.83	4.28-12.04	-17.43-17.12	5.3-8.61	-18.14-8.71	-16.57-16.5	-12.8-8.68	-18.33-17	8.34-10.12	-14.02-18.37
(H57)	-18.83-10.42	-17.24-14.05	-4.91-11.83	-11.89-15.36	-18.62-12.78	-19.19-15.12	-10.02-12.87	-10.65-18.77	-17.99-14.71	-8.89-8.5	-18.96-14.24	-10.97-18.83	-18.36-18.68	-14.49-11.21	-19.01-19.21	-13.59-14	-18.36-13.01	4.02-10.77	-18.64-8.68	-18.42-45.1	-13.18-16	-16.26-8.37	-14.22-18.95	-17.89-18.7
(H62)	-18.33-12.22	-16.55-17.64	-13.02-18.98	-13.22-15.21	-16.02-16.41	-17.46-17.33	-11.71-12.35	-10.30-18.94	-18.36-15.42	-18.99-15.42	-18.82-14.74	-12.90-17.42	-18.95-18.9	-18.19-18	-14.93-12.1	-16.72-18.71	-16.51-16.64	17.23-13.14	4.39-14.12	-18.61-19.54	-14.02-12.42	-17.50-18.27	-18.91-18.8	-17.50-18.27
(H67)	-15.33-14.76	-15.49-17.8	-18.39-18.23	-11.64-14.53	-17.43-17.75	-17.75-17.85	-13.05-13.35	-13.86-19.13	-18.82-14.74	-12.90-17.42	-18.95-18.9	-18.19-18	-14.93-12.1	-16.72-18.71	-16.51-16.64	17.23-13.14	4.39-14.12	-18.61-19.54	-14.02-12.42	-17.50-18.27	-18.91-18.8	-17.50-18.27	-18.91-18.8	-17.50-18.27
(H72)	-17.29-15.76	-16.28-14.83	-16.35-18.69	-10.09-13.79	-18.44-18.11	-17.24-17.7	-16.89-17.98	-18.39-18.14	-18.62-18.58	-13.02-16.63	-10.04-16.1	-17.74-18.2	-18.94-18.8	-13.94-12.92	-10.12-17.18	-15.91-13.1	-16.26-14.71	-18.69-14.84	-17.26-13.02	-18.2-18.18	-15.83-17.48	-17.37-17.58	-18.29-17.73	-18.01-17.78
(H77)	-16.29-16.41	-17.69-17.68	-18.01-19.22	-12.32-12.52	-17.36-18.13	-19.02-18.7	-17.35-17.41	-17.23-18.15	-18.16-18.73	-14.59-17.47	-17.42-17.61	-15.91-16.23	-17.69-18.23	-18.51-18.19	-16.96-19.13	-14.78-15.53	-14.05-18.31	-18.39-12.29	-17.73-12.41	-18.06-18.19	-12.86-18.7	-14.26-19.16	-18.72-18.98	-18.73-17.48
(H82)	-17.56-14.05	-17.25-18.28	-19.02-18.09	-18.79-13.02	-18.26-17.32	-18.41-18.84	-18.26-17.89	-16.16-19.41	-17.89-15.45	-18.27-15.58	-18.91-13.54	-15.69-18.89	-17.30-18.09	-16.72-17.9	-18.89-18.37	-18.87-18.76	-12.73-15.86	-13.36-17.15	-17.54-19.13	-15.86-18.95	-10.89-18.17	-17.03-18.67	-17.9-18.26	-15.33-17.13
(H87)	-19.2-18.72	-15.84-17.83	-18.22-18.62	-19.12-16.2	-19.52-14.41	-17.86-17.94	-15.75-18.35	-17.33-14.02	-19.03-18.64	-17.74-16.48	-13.94-17.31	-18.96-17.12	-18.24-19.09	-16.43-15.92	-13.53-18.1	-17.71-13.77	-17.89-18.01	-14.98-16.81	-17.94-18.65	-18.38-18.23	-15.59-18.03	-16.45-18.76	-18.37-17.18	-15.51-17.1
(H92)	-18.16-18.52	-14.48-18.22	-18.84-17.11	-19.21-19.34	-19.27-13.62	-19.01-17.01	-17.71-15.51	-18.91-16.9	-14.54-18.18	-18.88-17.4	-14.84-18.4	-19.51-17.59	-18.64-16.25	-17.62-18.58	-17.64-17.7	-18.73-17.29	-17.13-17.87	-14.54-17.78	-18.27-19.05	-17.34-18.48	-15.57-15.52	-16.56-18.24	-17.93-18.81	-17.71-14.82
(H97)	-19.33-18.5	-18.5-18.1	-18.5-18.41	-18.26-18.41	-19.25-17.77	-18.26-18.14	-18.3-18.4	-14.91-18.32	-18.60-17.22	-18.41-17.67	-17.21-18.55	-14.5-14.65	-13.51-16.2	-18.01-18.2	-18.72-18.57	-17.59-14.83	-16.4-18.71	-18.27-19.05	-17.34-18.48	-15.57-15.52	-16.56-18.24	-17.93-18.81	-18.16-18.16	-14.17-13.08
(H102)	-11.54-12.19	-18.79-17.75	-17.81-17.63	-17.1-16.3	-17.85-18.3	-18.50-18.68	-14.95-17.98	-18.86-18.56	-18.02-14.18	-18.80-17.98	-18.84-18.77	-18.81-18.88	-14.96-17.4	-14.43-12.07	-14.52-10.83	-18.32-17.14	-18.79-17.07	-18.12-18.67	-17.81-13.38	-17.66-18.16	-18.44-18.15	-15.25-17.15	-18.1-18.63	-15.45-18.1
(H107)	-18.5-14.51	-18.44-18.47	-18.13-18.2	-18.79-17.59	-17.81-16.3	-15.61-18.63	-18.78-18.16	-15.51-14.02	-15.61-17.72	-18.25-18.11	-18.84-18.68	-18.99-18.87	-15.17-17.55	-19.26-18.47	-17.62-18.18	-18.46-18.82	-16.47-18.89	-17.71-18.56	-19.21-17.05	-17.71-18.93	-18.97-18.92	-18.64-17.48	-18.64-17.41	-17.61-18.34
(H112)	-17.99-17.67	-17.89-17.47	-18.25-19.09	-18.67-17.88	-18.36-18.43	-18.66-18.45	-18.54-18.41	-18.68-18.15	-17.13-19.5	-14.63-18.67	-18.75-18.11	-18.66-17.53	-13.35-19.78	-17.8-18.57	-18.50-18.35	-17.14-18.45	-18.19-18.35	-17.89-17.19	-18.63-17.14	-17.45-18.16	-17.72-18.03	-16.25-15.08	-18.01-18.28	-18.41-18.43
(H117)	-19.44-18.42	-18.43-18.35	-18.56-18.02	-18.09-18.57	-17.57-18.65	-17.97-18.18	-17.99-17.53	-17.98-18.69	-17.47-18.42	-18.51-18.68	-19.23-17.87	-17.99-18.69	-18.13-18.62	-14.90-13.56	-14.71-15.38	-18.54-17.63	-18.61-17.31	-18.60-17.79	-18.71-18.15	-16.22-16.38	-16.29-16.34	-18.66-18.91	-17.28-18.03	-17.46-18.39
(H122)	-18.43-18.31	-18.1-18.02	-17.86-18.34	-17.84-18.82	-18.48-18.15	-18.09-17.97	-18.1-18.39	-18.44-17.18	-18.88-17.59	-18.37-18.71	-18.43-18.73	-18.60-18.97	-18.65-18.18	-18.26-18.15	-18.77-18.34	-17.87-18.26	-17.86-18.37	-18.72-18.05	-17.84-18.98	-18.56-14.03	-13.3-13.9	-15.19-15.23	-11.16-17.28	-14.16-15.75
Freq(Hz)	6.995000	Phvke.3	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Gain	(H127)	(H132)	(H137)	(H142)	(H147)	(H152)	(H157)	(H162)	(H167)	(H172)	(H177)	(H182)	(H187)	(H192)	(H197)	(H202)	(H207)	(H212)	(H217)	(H222)	(H227)	(H232)	(H237)	(H242)
(H127)	-18.37-18.58	-9.5-8	-13.1-13.36	-0.070-59	1.211-69	2.142-44	2.642-73	2.712-63	3.107-55	1.240-32	-0.852-15	-3.5-0.57	8.14-10.67	-13.02-12.68	-11.99-9.7	-7.91-6.49	-5.23-0.43	3.17-17.27	-1.71-1.86	-1.71-1.41	-1.51-1.92	-2.77-10.4	-1.73-14.8	-1.37-14.8
(H132)	-7.69-9.4	-7.09-11.02	-9.81-8.48	-7.63-7.51	-7.48-7	4.39-5.54	-4.69-3.35	-3.21-2.55	2.29-2.38	3.07-1.41	-5.73-0.86	-10.55-12.78	-11.27-0.42	5.53-3.4	-1.88-0.76	0.171-06	1.71-2.25	2.03-2.08	2.60-2.82	2.65-2.76	2.52-2.62	1.36-0.45	4.97-2.63	4.54-0.68
(H137)	-7.64-8.33	-1.25-1.44	-3.59-2.07	-0.78-0.32	1.031-64	1.781-25	0.3-0.99	-1.98-2.26	2.26-2.59	-1.04-1.27	-10.33-8.87	-8.38-7.66	-7.79-6.21	4.97-1.83	-7.32-6.49	-5.21-3.47	-1.63-0.17	6.53-2.78	0.991-29	1.471-144	1.06-1.42	6.81-1.75	3.45-0.58	
(H142)	-4.63-6.59	4.27-4.77	-6.02-6.51	-5.47-6.66	-5.31-6.46	2.48-1.52	-1.62-0.24	-3.49-3.41	2.63-2.92	-4.62-6.97	-7.05-6.88	-11.93-18.1	-16.00-17.17	-17.72-6.97	-4.3-0.18	-0.25-0.12	2.11-2.65	3.21-0.33	3.53-0.45	3.16-2.97	2.87-2.31	1.13-0.49	-1.24-1.26	-1.53-0.87
(H147)	-7.14-6.88	4.89-4.75	-4.26-2.34	-4.79-6.53	-1.59-4.04	-4.66-5.1	-1.59-1.81	-1.79-1.04	-4.61-1.82	-4.56-6.31	-6.99-18.89	-13.49-15.15	-17.35-6.95	-17.35-6.95	-17.25-1.67	-2.43-2.87	2.56-1.86	0.891-81	2.111-81	1.89-2.7	1.13-0.49	-1.24-1.26	-1.53-0.87	
(H152)	-3.09-5.28	-4.29-2.39	-1.30-2.44	-3.82-1.31	-0.41-1.78	4.01-4.46	-4.03-3.85	-3.06-1.87	3.05-1.29	-3.72-2.46	-4.43-4.3	-14.74-17.37	-9.97-9.64	-7.68-7.24	-5.71-6.19	-6.63-6.83	-4.29-2.98	0.05-0.06	0.472-06	3.193-37	2.07-06	-1.03-0.46	0.23-1.01	-2.84-1.29
(H157)	-2.95-5.43	-1.30-2.54	-3.12-3.51	-8.26-2.61	-4.26-2.61	-1.49-1.41	0.52-0.13	0.04-0.09	0.871-16	-4.55-2.18	-4.68-1.73	-12.47-11.18	-8.53-12.34	-6.32-5.72	-4.54-5.16	-6.34-4.54	-1.57-0.41	1.63-0.81	0.042-07	2.663-36	3.33-0.44	-1.64-1.81	4.37-1	2.91-1.6
(H162)	-1.013-1.76	-11.99-6.64	-3.0-1.45	-1.19-1.64	2.2-2.32	-2.72-0.43	-4.4-7	-0.30-0.16	0.621-144	-4.73-3.85	-5.69-3.44	-8.83-8.64	-8.45-7.4	4.29-5.41	-3.19-1.42	-0.89-2.63	-0.340	1.19-2.82	2.89-2.27	1.623-11	3.10-1.3	1.13-0.63	0.21-0.43	-6.88-17.42
(H167)	-4.32-1.71	8.54-2.33	-0.79-2.34	-2.53-3.42	2.28-1.2	9.81-8.41	-10.32-12.33	-0.95-0.84	1.28-1.2	-1.53-1.5	-3.2-6.81	-6.89-6.97	-9.47-18.1	-7.81-4.99	-5.20-8.99	1.38-0.09	3.38-0.81	1.911-72	1.89-2.28	1.032-45	2.66-1.76	1.491-63	-1.24-14.0	-1.57-0.82
(H172)	8.88-7.91	7.34-6.95	2.01-4.81	5.04-6.47	0.23-0.65	9.18-4.43	3.08-1.3	9.1-2.23	1.38-0.16	-1.81-1.22	-2.86-4.49	-10.07-8.1	-7.94-14.9	-5.36-13.3	-4.68-9.56	0.81-1.34	3.81-2.99	2.87-1.49	2.033-55	2.73-2.19	2.81-1	-1.08-1.55	-3.42-0.35	
(H177)	9.57-9.26	8.32-8.25	2.27-2.96	-2.69-0.57	5.84-1.23	-1.55-0.59	1.311-109	3.31-2.37	6.89-1.18	-5.59-1.52	-3.30-5.92	-8.81-10.69	-7.14-18.19	-3.19-2.84	-8.93-0.3	-6.86-1.73	3.73-0.56	4.47-2.12	1.525-07	3.407-47	2.73-0.35	-1.69-1.27	-4.15-0.75	
(H182)	7.19-6.48	8.88-8.67	3.73-38	-3.02-0.67	-12.50-1.3	4.67-1.72	-1.85-4.87	1.82-1.71																



Radiated Composite Gain Data of 6GHz

Appendix C

(H07)	-12.78-17.99	-13.45-14.36	-11.22-11.89	-16.89-11.35	-12.08-15.55	-6.93-8.63	-14.53-18.28	-14.43-18.52	-18.26-17.85	-18.02-17.95	-14.07-17.93	-5.41-5.07	2.87-11.54	-6.43-8.08	-6.39-8.66	-12.09-11.74	-10.23-11.77	-10.16-8.98	-13.16-17.48	-8.16-16.4	-14.09-9.94	-8.67-7.51	-7.63-8.37	-7.81-8.73
(H7)	-13.31-18.55	-15.03-17.36	-18.11-18.03	-16.51-11.39	-6.88-15.7	-15.84-13.64	-18.71-19.14	-15.30-18.36	-18.83-18.38	-14.44-17.76	-10.19-11.12	-10.34-15	-11.79-12.46	-6.93-18.69	-13.75-14.19	-15.06-17.1	-10.02-17.7	-12.66-15.7	-18.21-17.18	-12.83-10.55	-13.92-13.02	-12.71-14.88	-11.54-17.31	-6.04-17.4
(H12)	-17.71-17.38	-15.45-12.11	-16.85-12.65	-14.39-11.77	-10.02-17.75	-16.84-18.12	-19.09-18.26	-16.46-18.46	-17.78-17.88	-14.83-15.03	-13.42-15.05	-15.14-13.53	-15.91-14.2	-9.71-16.2	-15.91-17.7	-16.24-18.63	-10.65-18.89	-12.63-17.26	-18.18-19.2	-17.91-18.4	-16.61-11.66	-17.41-15.22	-13.44-15.96	-6.26-6.8
(H2)	-17.89-17.9	-19.19-13.87	-15.34-15.34	-15.41-12.24	-11.23-18.67	-18.13-18.88	-18.49-18.34	-13.44-17.02	-18.48-16.16	-14.55-17.61	-17.76-16.25	-17.84-18.63	-17.39-13.1	-9.11-12.8	-18.79-19.1	-18.96-17.37	-11.36-15.13	-12.59-15.15	-14.41-18.9	-18.96-18.69	-15.98-13.17	-18.86-13.11	-15.01-19.1	-13.33-19.2
(H3)	-18.41-15.79	-18.71-17.09	-15.96-18.3	-17.36-13.39	-12.51-18.54	-18.56-17.28	-18.87-17.93	-15.11-15.65	-18.52-18.37	-13.12-17.52	-17.71-18.49	-15.41-19.09	-18.32-16.81	-10.54-12.31	-19.03-18.06	-18.51-18.08	-15.17-14.5	-18.82-13.49	-16.51-16.38	-17.81-18.39	-15.56-16.17	-18.18-14.75	-16.42-18.53	-18.43-12.49
(H7)	-18.34-14.62	-18.86-18.95	-17.21-18.51	-17.91-15.27	-14.84-18.01	-17.27-14.62	-18.96-17.35	-18.96-17.35	-18.96-17.35	-17.19-18.06	-14.42-18.87	-17.51-18.4	-17.05-17.87	-10.59-18.25	-18.51-19.31	-19.35-18.71	-19.31-13.76	-17.73-19.16	-14.29-17.28	-17.36-17.83	-16.41-18.77	-18.71-18.76	-17.41-18.71	-17.74-17.38
(H12)	-18.96-16.1	-17.73-18.63	-16.52-18.06	-18.01-19.02	-15.92-18.19	-18.13-16.64	-19.32-19.49	-17.74-19.4	-17.26-18.1	-14.83-16.88	-18.96-18.5	-18.73-18.25	-17.54-17.84	-16.84-16.57	-18.81-17.78	-17.59-18.3	-18.59-16.81	-18.15-18.43	-12.99-18.55	-18.47-17.87	-17.93-17.95	-18.71-18.26	-17.96-17.49	-18.59-17.92
(H12)	-18.41-17.46	-17.27-17.14	-17.22-17.17	-18.99-18.67	-18.92-17.97	-18.92-17.97	-18.92-17.97	-17.48-17.84	-18.49-19	-17.29-18.97	-17.24-16.19	-14.89-19.18	-19.17-19	-18.71-18.3	-18.19-19.32	-17.85-17.98	-18.99-18.68	-18.92-18.32	-14.45-18.64	-18.65-18.75	-17.82-18.99	-18.71-18.6	-18.69-17.12	-18.94-18.88
(H2)	-18.87-18.18	-18.41-17.86	-17.07-18.59	-17.07-17.96	-18.24-18.03	-19.22-17.71	-18.96-18.58	-17.98-18.33	-18.91-18.72	-18.47-18.87	-16.81-17.83	-18.87-17.99	-18.91-19.04	-17.81-18.5	-18.12-18.04	-18.69-17.85	-18.53-19.27	-18.31-17.8	-17.73-18.42	-18.47-17.86	-18.52-17.98	-18.71-18.65	-17.32-18.16	-18.41-18.83
(H12)	-18.91-18.36	-19.53-18.57	-14.25-18.11	-18.44-18.95	-18.23-17.81	-18.91-18.31	-18.29-18.08	-18.29-19.02	-15.27-18.39	-18.78-18.52	-13.74-16.62	-18.33-18.14	-17.55-18.21	-17.74-17.1	-18.25-18.32	-15.29-17.55	-18.57-17.85	-18.27-18.62	-18.97-18.11	-18.97-18.18	-17.28-11.52	-18.35-18.87	-17.76-18.37	-17.13-18.16
(H12)	-18.41-18.99	-18.84-18.23	-15.93-19.25	-18.27-19.19	-17.67-18.76	-18.02-17.93	-18.15-19.12	-16.16-19.26	-15.17-17.99	-19.22-17.94	-14.89-18.39	-13.98-16.7	-14.18-13.24	-14.49-17.18	-18.49-18.36	-17.65-19.29	-17.65-19.29	-18.12-18.11	-19.34-14.21	-17.16-19.25	-18.59-19.25	-18.59-19.25	-18.59-19.25	-18.59-19.25
(H12)	-18.65-17.8	-18.16-18.01	-18.16-18.01	-17.47-17.98	-18.16-18.14	-17.89-17.78	-18.97-18.93	-18.97-18.93	-17.89-17.78	-18.15-18.14	-18.15-17.82	-17.99-14.3	-14.44-16.61	-16.81-17.76	-18.17-17.82	-18.69-18.91	-18.97-18.23	-18.13-17.51	-17.51-17.86	-18.98-18.86	-18.52-18.15	-18.97-18.86	-17.13-18.91	-17.13-18.91
(H12)	-19.59-18.93	-18.11-18.89	-17.74-18.48	-17.94-18.32	-18.71-18.1	-18.67-17.97	-18.67-17.97	-18.67-17.97	-18.67-17.97	-18.67-17.97	-18.67-17.97	-18.67-17.97	-18.67-17.97	-18.67-17.97	-18.67-17.97	-18.67-17.97	-18.67-17.97	-18.67-17.97	-18.67-17.97	-18.67-17.97	-18.67-17.97	-18.67-17.97	-18.67-17.97	-18.67-17.97
(H12)	-18.16-18.98	-15.61-14.17	-17.41-18.7	-16.96-18.13	-17.95-17.15	-17.59-18.78	-18.58-13.1	-14.23-16.74	-17.87-18.94	-19.11-18.1	-18.26-18.78	-18.97-18.26	-18.97-18.26	-18.97-18.26	-18.97-18.26	-18.97-18.26	-18.97-18.26	-18.97-18.26	-18.97-18.26	-18.97-18.26	-18.97-18.26	-18.97-18.26	-18.97-18.26	-18.97-18.26
(H12)	-18.16-18.98	-17.73-18.77	-16.11-15.69	-17.85-18.84	-17.46-18.19	-18.72-18.98	-18.17-15.65	-18.09-18.53	-18.28-17.12	-17.71-18.84	-18.96-18.61	-18.83-18.2	-18.16-18.46	-18.36-16.58	-15.94-14.06	-15.81-18.45	-19.26-18.16	-18.87-18.16	-18.96-18.15	-18.74-18.12	-19.16-18.06	-17.89-18.08	-14.26-18.91	-14.59-15.15
(H12)	-18.46-17.89	-17.46-18.11	-17.83-18.82	-17.59-18.71	-18.34-18.91	-18.02-18.87	-18.16-18.45	-18.37-17.72	-18.18-16.4	-19.15-15	-15.39-16.47	-18.35-18.98	-18.51-18.33	-17.53-16.15	-16.44-18.58	-18.98-18.46	-19.09-17.86	-19.26-19.13	-18.92-18.58	-17.81-18.34	-18.28-14.12	-14.01-17.17	-19.03-18.54	-19.03-18.54
(H12)	-18.26-18.56	-18.26-18.56	-17.89-18.27	-18.48-18.36	-15.52-14.96	-15.76-17.15	-19.17-19	-18.42-18.23	-18.49-18.3	-18.83-18.53	-17.31-18.03	-18.56-17.19	-19.06-18.52	-17.69-18.45	-18.68-18.15	-18.41-18.86	-18.62-18.41	-18.43-17.53	-17.77-18.78	-18.58-18.2	-18.46-17.21	-16.89-14.91	-14.27-17.81	-18.69-18.92
Freq(Hz)	6.475GHz	Pin(dBm)	4	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Gain	(H07)(H7)	(H12)(H2)	(H3)(H7)	(H12)(H2)	(H3)(H7)	(H12)(H2)	(H3)(H7)	(H12)(H2)	(H3)(H7)	(H12)(H2)	(H3)(H7)	(H12)(H2)	(H3)(H7)	(H12)(H2)	(H3)(H7)	(H12)(H2)	(H3)(H7)	(H12)(H2)	(H3)(H7)	(H12)(H2)	(H3)(H7)	(H12)(H2)	(H3)(H7)	(H12)(H2)
(H07)	9.96-11.4	-11.73-14.3	0.53-0.47	2.802-2.1	1.471-1.6	1.031-1.8	2.332-2.4	2.482-1.4	1.511-1.5	0.93-0.51	2.12-1.7	6.087-8.1	8.979-7.9	8.777-10.3	-5.54-1.3	3.3-3.67	0.112-1.5	-1.45-1.13	-1.11-1.82	2.913-3.27	3.471-4.67	3.681-4.4	3.681-4.4	3.681-4.4
(H7)	-4.85-6.7	-4.79-14.8	-6.7-6.7	-6.93-6.62	-5.86-4.9	-4.23-3.76	-3.76-6.83	-3.44-3.12	3.01-3.06	-3.38-3.86	-4.48-3.79	-7.47-9.36	-11.15-12.76	-10.78-12.76	7.38-5	-3.01-1.42	-6.27-7.6	1.482-2.46	2.842-2.64	2.812-4.4	2.802-4.7	1.428-5.09	0.49	-1.66-3.38
(H12)	3.843-3.18	1.351-1.68	-0.63-1.53	-3.25-5.67	-6.17-11.18	-10.61-10.77	-12.98-16.72	-17.88-17.71	-12.98-19.08	-16.34-18.31	-15.27-12.58	-10.31-10.2	-10.63-10.48	-8.62-8.3	-6.89-5.36	-3.53-2.04	-1.04-0.36	0.071-0.33	2.962-0.47	0.820-0.44	0.820-0.44	0.21-0.92	1.871-1.91	1.871-1.91
(H2)	3.32-3.12	3.36-1.15	0.06-0.26	-1.6-3.6	5.11-4.9	5.67-4.89	-9.66-13.05	-14.34-14.08	-12.07-11.09	-14.17-18.08	-18.53-18.9	-18.87-12.69	-10.06-7.91	-6.69-4.78	-5.44-5.88	-2.42-0.65	2.22-2.48	2.262-2.6	2.212-2.5	2.692-2.4	1.751-4.1	1.161-1.8	1.541-3.2	1.541-3.2
(H3)	2.842-3.45	-1.99-1.93	-1.25-1.29	-1.61-2.68	4.847-6.31	4.847-6.31	-1.58-0.95	-7.33-5.79	5.21-5.88	6.71-11.16	-13.18-13.49	-13.49-17.7	-6.39-4.77	-5.89-4.17	-1.87-2.67	2.94-0.96	0.990-2.8	0.784-0.1	2.19-2.73	2.442-2.29	2.555-1	1.667-1.6	1.667-1.6	1.667-1.6
(H7)	1.08-0.51	6.22-1.12	-1.12-33	3.53-4.87	-17.10-12.1	-10.84-17.1	-11.29-13.9	-4.91-6.8	8.21-18.7	-15.04-17.1	-15.41-10.78	-10.61-13.58	-13.68-18.51	-8.81-19.3	-1.08-2.7	-1.54-0.92	1.93-2.1	2.513-3.6	3.475-1.5	3.713-4.1	2.531-3.2	0.416-0.1	2.123-0.9	1.476-1.6
(H12)	2.559-1.79	0.441-1.36	-0.86-1.3	2.91-4.45	7.78-7.53	5.53-1.58	4.074-11.1	4.58-7.12	4.58-7.12	-10.81-17.2	-18.91-18.4	9.16-9.34	2.94-9.17	4.14-1.99	-2.40-0.82	0.291-1.98	2.087-1.7	1.533-4.6	3.883-6.5	3.239-6.8	4.022-4.4	2.291-2.96	2.291-2.96	2.291-2.96
(H2)	0.52-1.39	0.52-1.39	0.52-1.39	0.52-1.39	0.52-1.39	0.52-1.39	0.52-1.39	0.52-1.39	0.52-1.39	0.52-1.39	0.52-1.39	0.52-1.39	0.52-1.39	0.52-1.39	0.52-1.39	0.52-1.39	0.52-1.39	0.52-1.39	0.52-1.39	0.52-1.39	0.52-1.39	0.52-1.39	0.52-1.39	0.52-1.39
(H7)	-7.59-3.3	0.01-0.96	0.04-0.16	1.51-0.61	1.87-1.89	1.82-0.57	0.011-33	0.771-1.24	0.3-1.6	4.22-5.4	-7.58-12.7	-3.37-13.6	-4.3-1.92	-0.22-0.84	0.111-46	2.955-19	3.831-78	1.052-32	0.271-58	1.752-36	3.32-18	1.091-19	1.091-19	1.091-19
(H12)	4.62-2.13	2.41-2.16	1.19-1.53	1.98-1.89	2.82-2.58	1.852-2.06	2.722-2.29	1.11-0.72	2.06-1.94	2.54-2.12	-4.94-18.4	-4.77-19.2	5.27-2.25	5.4-0.9	1.19-1.22	4.103-17	2.822-85	1.49-11.2	2.96-17	2.863-17	1.081-18	2.314-18	2.314-18	2.314-18
(H7)	-5.36-2.93	0.18-1.96	-0.21-0.74	1.98-0.86	2.73-1.42	2.76-0.87	1.391-1.49	2.139-0.86	0.161-1.92	2.284-1.35	-3.91-4.61	8.71-7.9	-7.02-2.9	6.72-4.1	-1.11-2	3.011-15	2.71-1	3.43-8	1.031-08	0.963-06	3.553-17	3.881-1	1.868-46	2.484-37
(H12)	-8.31-1.75	-13.33-0.38	-3.46-1.26	-0.23-1.4	1.26-0.56	0.51-2.97	-1.28-1.49	0.460-0.09	1.763-3.86	-0.24-1.47	-6.91-5.87	-8.83-18.7	-7.78-13.9	3.26-11.8	-2.22-0.44	-1.53-1.9	-0.53-0.82	2.893-38	1.830-36	1.113-29	4.031-182	1.823-13	1.823-13	1.823-13
(H7)	-12.25-9.45	4.38-3.17	-7.84-3.24	-2.03-2.73	-0.76-0.02	3.58-3.43	-1.18-3	-3.19-14.1	3.59-4.72	-7.36-6.97	-7.99-2.66	-8.98-18.8	-8.41-18	4.25-3.42	-3.19-2.7	-1.43-3.82	3.41-138	0.232-12	1.1-1.2	0.772-25	2.72-1	0.821-161	-1.64-1.75	-3.3-3.5
(H12)	-17.93-14.7	-8.29-6.01	-8.29-6.01	-4.05-5.06	-3.78-4.22	-7.78-10.27	-7.85-14.67	-2.84-1.61	-5.47-2.81	-8.53-8.57	-6.21-10.3	-10.45-10.1	-10.42-10.9	-12.01-5.63	-6.03-10.8	-6.04-16.2	-6.04-16.2	-4.19-2.68	-7.73-46	-1.76-14	-1.02-1.86	-5.77-53.3	-0.88-4.69	-5.88-4.69
(H12)	-18.63-18	-13.16-0.66	-9.73-1.4	-6.04-9.26	6.13-4.83	6.36-6.51	-7.36-6.86	-7.61-5.66	6.98-1.2	-11.19-14.08	-10.01-10.41	-11.10-11.29	-14.91-11.7	-17.74-9.6	-8.91-6	-4.92-5.25	-7.28-11.72	-10.53-12.51	-7.77-10.98	-7.51-9.04	-7.10-9.14	-6.82-7.77</		



Radiated Composite Gain Data of 6GHz

Appendix C

φ (deg)	-17.4/-15.09	-17.52/-14.9	-17.6/-17.88	-14.2/-17.26	-15.43/-14.82	-18.9/-18.83	-18.25/-18.41	-18.2/-12.8	-18.66/-14.68	-18.19/-16.64	-17.7/-18.6	-18.22/-18.32	-17.69/-18.02	-17.4/-18.28	-13.9/-17.17	-17.56/-18.43	-12.59/-12.67	-18.81/-13.76	-17.28/-19.1	-18.36/-18.92	-17.7/-18.17	-16.83/-16.75	-17.96/-17.21	-18.51/-17.18
φ (112.5)	-18.61/-18.59	-17.27/-17.26	-16.73/-18.06	-16.09/-19.13	-13.71/-16.58	-18.39/-17.75	-18.71/-18.25	-17.1/-14.35	-17.91/-14.36	-15.48/-18.24	-17.8/-17.15	-17.7/-18.03	-15.18/-18.03	-16.65/-15.88	-16.25/-15.97	-12.76/-17.42	-17.78/-10.88	-15.48/-16.98	-12.77/-18.94	-19.27/-17.36	-19.34/-18.9	-15.69/-18.64	-18.11/-15.01	-18.43/-17.55
φ (120)	-18.14/-18.41	-16.69/-17.9	-17.44/-18.9	-14.86/-17.13	-15.66/-18.41	-18.06/-16.71	-14.69/-16.74	-12.81/-16.11	-15.34/-17.9	-14.87/-17.85	-15.26/-17.66	-17.39/-18.25	-18.49/-18.77	-18.59/-17.62	-17.98/-14.71	-13.52/-19.16	-14.62/-13.93	-15.51/-18.49	-11.18/93	-18.43/-19.12	-16.92/-14.01	-18.09/-13.66	-17.83/-13.11	-17.08/-16.21
φ (127.5)	-18.48/-16.11	-19.43/-16.03	-14.46/-18.46	-13.71/-17.47	-10.02/-19.29	-14.56/-17.48	-19.87/-17.47	-12.68/-15.96	-14.79/-14.52	-18.86/-18.9	-13.9/-17.79	-17.57/-18.38	-18.58/-17.69	-18.96/-17.96	-13.15/-16.49	-17.29/-19.27	-18.6/-16.73	-18.82/-18.83	-14.48/-15.24	-18.49/-17.79	-19.11/-11.44	-19.12/-14.06	-15.17/-14.37	-18.54/-11.51
φ (142.5)	-17.65/-18.64	-16.19/-16.75	-16.13/-19.47	-17.15/-17.83	-15.18/-15	-18.24/-16.79	-18.41/-18.32	-18.3/-16.93	-13.89/-15.84	-19.33/-18.26	-17.85/-18.69	-17.2/-18.89	-17.98/-18.32	-18.28/-18.48	-18.2/-17.65	-17.1/-17.25	-18.88/-17.73	-12.48/-18.83	-19.02/-17.44	-17.55/-17.67	-16.41/-19.44	-19.22/-16.88	-18.88/-13.23	-16.48/-12.34
φ (150)	-15.69/-12.27	-11.61/-13.5	-15.15/-15.58	-16.28/-15.73	-16.64/-14.1	-18.76/-19.23	-15.02/-17.25	-18.21/-15.79	-18.23/-16.62	-16.17/-17.45	-18.26/-17.84	-18.89/-18.77	-18.49/-17.42	-13.94/-16.71	-18.26/-19.01	-18.31/-17.93	-17.89/-19.04	-19.04/-18.26	-17.77/-18.38	-18.12/-16.9	-18.89/-17.31	-13.26/-12	-16.33/-16.68	-16.33/-16.68
φ (157.5)	-17.93/-15.49	-13.87/-16.43	-14.08/-11.38	-12.46/-18.35	-13.36/-10.22	-11.22/-15.69	-14.63/-17.88	-19.2/-12.72	-13.71/-15.38	-15.24/-19.18	-17.14/-17.76	-15.17/-12.81	-18.89/-18.45	-16.69/-18.13	-18.28/-18.57	-18.4/-18.54	-18.89/-17.51	-17.61/-17.61	-18.16/-18.31	-18.24/-17.74	-18.19/-17.83	-18.86/-17.01	-17.9/-18.28	-16.39/-18.46
φ (165)	-19/-15.87	-13.78/-14.15	-16.84/-15.71	-14.1/-13.7	-13.37/-14.69	-15.97/-15.52	-13.93/-13.93	-13.75/-16.32	-18.42/-17.95	-18.21/-18.73	-17.14/-16.67	-18.64/-16.49	-18.89/-17.66	-18.6/-18.5	-18.11/-18.4	-18.6/-18.72	-18.51/-18.37	-17.76/-18.76	-18.01/-17.94	-15.14/-17.59	-18.44/-18.96	-18.88/-18.21	-15.15/-17.67	-18.45/-17.18
φ (172.5)	-16.84/-17.81	-17.65/-13.68	-11.76/-12.38	-12.71/-11.54	-10.96/-10.15	-11.31/-13.44	-15.51/-19.05	-18.86/-17.54	-18.86/-17.83	-16.35/-16.44	-18.95/-19.01	-18.21/-17.33	-16.52/-17.34	-18.46/-18.79	-17.58/-17.74	-17.54/-19.26	-16.71/-15.58	-17.58/-18.69	-19.2/-17.94	-17.83/-17.73	-18.81/-18.94	-18.03/-17.95	-18.31/-17.27	-17.07/-17.28
Free (deg)	0.9959Pd	Pin (d)	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
Gain	φ (deg)	φ (157.5)	φ (157.5)	φ (157.5)	φ (157.5)	φ (157.5)	φ (157.5)	φ (157.5)	φ (157.5)	φ (157.5)	φ (157.5)	φ (157.5)	φ (157.5)	φ (157.5)	φ (157.5)	φ (157.5)	φ (157.5)	φ (157.5)	φ (157.5)	φ (157.5)	φ (157.5)	φ (157.5)	φ (157.5)	φ (157.5)
φ (1)	-13.84/81	-5.86/-4.02	-3.6/1	0.030/66	1.21/17	2.07/24	2.93/31	3.34/325	2.87/233	1.85/13	-0.27/-0.32	-3.8/6.25	8.84/-15.91	-18.36/-15.68	-11.64/-6.65	-7.2/4.25	-5.77/-5.11	4.83/-4.56	-4.77/-4.14	-5.89/-4.31	-8.18/-10.88	-13.16/-14.98	-18.86/-17.86	-18.04/-13.91
φ (7.5)	-8.99/-13.22	-19.25/-16.6	-14.84/-11.16	-8.8/-4.22	-7.24/-6.92	4.76/6.75	-7.7/7.2	-8.53/-9.35	-13.41/-14.61	-18.64/-18.13	-18.64/-17.31	-18.64/-17.31	-18.64/-17.31	-18.64/-17.31	-18.64/-17.31	-18.64/-17.31	-18.64/-17.31	-18.64/-17.31	-18.64/-17.31	-18.64/-17.31	-18.64/-17.31	-18.64/-17.31	-18.64/-17.31	-18.64/-17.31
φ (150)	-4.13/-61	6.25/-0.47	-11.31/-13.27	-10.62/-6.01	-17.36/-5.63	4.49/-8.68	-4.03/-4.49	-6.37/-8.7	-8.81/-9.91	-8.42/-7.51	-6.48/-7.56	-9.89/-11	-11.44/-10.6	-9.69/-6.69	-3.32/-1.76	-8.9/-0.2	0.190/-51	0.871/-67	2.342/-93	3.453/-9	3.993/-68	3.112/-39	1.340/-35	-1.913/-11
φ (22.5)	-3.86/-2.34	-1.12/-12.2	-4.41/-5.97	-5.64/-4.18	-3.26/-3	2.66/-1.74	-0.74/-0.49	-0.93/-1.82	-3.00/-3.96	4.48/-6.59	-8.1/-11.15	-11.46/-10.71	-11.48/-9.32	-5.48/-0.31	-1.95/-2.64	-5.2/-6.62	-4.07/-1.04	-0.59/-1.06	2.19/-2.7	-3.34/-3.34	-2.82/-2.26	-1.14/-0.35	-1.04/-0.35	-4.98/-4.75
φ (37.5)	2.95/-2.57	-4.13/-3.3	-3.96/-4.31	-3.32/-0.76	-0.19/-1.59	-2.86/-3.1	-3.69/-4.36	-5.41/-6	5.12/-3.8	-3.67/-4.12	-5.32/-6.96	-6.29/-4.8	-4.29/-4.65	-5.86/-4.15	-1.89/-1.69	-1.89/-1.69	-1.17/0.34	2.971/-61	2.542/-84	1.861/-95	1.21/-0.82	-1.50/-29	0.6/-1.68	-0.6/-1.68
φ (45)	0.28/-1.54	-5.66/-6.32	-3.66/-3.77	-6.11/-1.06	1.05/-1.78	2.95/-4.5	-0.96/-0.83	-2.88/-4.91	-4.98/-4.35	-4.14/-5.96	-7.77/-14.06	-10.01/-5.26	-4.34/-11.34	-3.56/-3.09	-2.18/-1.72	-4.63/-5.2	2.63/73	3.18/74	2.442/-84	1.161/-93	2.26/-0.81	-1.04/-1.94	-2.48/-1.52	-3.12/-3.12
φ (52.5)	0.25/-1.79	4.93/-4.42	-3.51/-1.99	-5.66/-1.75	1.076/-26	0.362/-77	2.652/-61	7.78/-6.13	1.011/-1.98	-2.93/-4.35	-8.66/-18.4	-12.7/-10.13	-7.59/-4.96	-4/-2.1	-0.038/-88	-0.062/-36	2.642/-87	2.970/-42	3.033/-25	3.014/-53	3.143/-61	3.942/-91	1.8/-1.7	-712/3
φ (59.5)	-3.52/-4.9	4.4/-4.46	-2.25/-2.72	-0.66/-2.08	2.26/-1.81	2.733/-26	2.542/-75	2.981/-72	0.881/-61	-1.573/-67	-6.06/-11.08	-6.46/-15.61	-6.47/-16.69	-3.91/-1.97	0.971/-75	1.302/-2	2.51/-26	4.062/-55	2.06/-0.55	3.042/-52	1.843/-55	2.051/-67	1.84/-0.55	-10.25/-129
φ (67.5)	6.61/-5.11	-5.91/-0.47	-1.89/-1.26	0.281/-96	0.816/-16	-4.70/-52	1.061/-72	1.922/-31	2.321/-67	-1.39/-2.86	-4.19/-73	-6.03/-3.01	-6.19/-43	-3.85/-1.56	1.121/-89	1.963/-23	3.291/-29	1.546/-46	-0.41/-2.3	-2.66/-0.72	0.2/-0.4	-0.130/-83	1.756/-1.36	-4.19/-10.7
φ (75)	7.57/-4.47	-5.02/-5.37	-0.80/-3.35	-0.80/-4.4	0.271/-13	0.43/-91	4.49/-2	1.72/-0.24	1.570/-72	-0.08/-2.59	-3.47/-3.4	-72.93/-66	-4.67/-4.66	-4.65/-2.68	-4.65/-2.68	1.912/-41	3.391/-69	3.333/-45	-0.69/-2.7	2.16/-49	2.061/-32	1.061/-31	-3.52/-82	-0.62/-82
φ (82.5)	-8.14/-6.7	5.99/-6.77	-2.27/-1.36	-3.5/-4.41	0.52/-1.85	-1.2/-14.74	3.27/-15.16	-0.07/-0.2	0.340/-38	-1.38/-3.36	-3.77/-11.14	-8.39/-4.18	-5.73/-7.94	-4.64/-3.1	-1.75/-5.02	1.556/-93	3.443/-26	0.681/-19	1.773/-82	3.071/-11	1.578/-78	-1.72/-21	-4.54/-12	-6.19/-18
φ (90)	-8.61/-12.12	-7.52/-6.27	-5.07/-3.28	-5.1/-1.8	-6.17/-2.45	-7.44/-6.68	-1.46/-4.25	-3.56/-3.08	-2.071/-184	-1.584/-79	-4.79/-8.65	-14.44/-5.34	-5.95/-10.2	-6.94/-52	-3.92/-3.3	-0.23/-3.87	-1.36/-2.11	2.752/-25	6.686/-29	1.211/-63	-1.544/-2.64	-2.88/-5.41	-6.19/-18	-6.19/-18
φ (97.5)	-12.35/-19.88	-8.75/-6.35	-8.17/-6.46	-8.54/-4.69	-1.729/-40	-15.17/-4.32	-18.69/-6.09	-6.33/-5.08	-3.59/-2.52	-2.919/-68	-10.81/-11.54	-12.0/-6.84	-8.14/-12.18	-9.3/-42	-6.64/-6.91	-2.49/-4.3	5.4/-7.16	2.22/-1.32	2.83/-81	-1.426/-77	-1.426/-77	-5.71/-4.69	-5.71/-4.69	-5.71/-4.69
φ (105)	-17.02/-18.47	-8.86/-10.83	-9.73/-9.31	-11.67/-6.84	-4.51/-8.98	-11.48/-7.44	-4.83/-9.39	-8.86/-7.39	-2.21/-6.47	-3.71/-8.4	-11.48/-13.43	-13.68/-8.98	-11.15/-14.35	-13.64/-8.67	-7.48/-6.49	-6.83/-4.74	8.02/-6.22	4.58/-6.75	9.177/-41	-8.274/-65	-6.839/-76	-8.12/-7.44	-8.61/-8.67	-11.88/-12.08
φ (112.5)	-18.84/-17.98	-10.11/-13.45	-10.21/-10.36	-9.49/-7.63	-10.09/-17.11	-12.48/-6.53	-8.01/-4.32	-10.41/-9.94	-4.19/-4.6	-2.959/-10.07	-12.35/-7.83	-15.54/-11.32	-12.67/-17.95	-13.74/-10.14	-9.97/-10.29	-7.95/-10.61	-10.4/-8.7	-6.779/-5.69	7.34/-6.7	-6.168/-15	-11.23/-4.8	-15.33/-16.9	-13.26/-18.15	-13.26/-18.15
φ (120)	-19.06/-17.11	-11.69/-12.36	-13.95/-10.17	-10.07/-13.1	-11.74/-12.27	-11.37/-12.59	-10.56/-10.92	-12.39/-9.38	-8.67/-4.73	-12.63/-10.27	-14.71/-15.59	-16.34/-11.49	-13.87/-17.57	-16.09/-13.22	-15.84/-10.33	-12.91/-14.38	-8.96/-16.35	-7.76/-4.41	-8.4/93	-12.67/-49	-6.5/-11.28	-15.82/-8.67	-18.16/-36	-15.31/-7.29
φ (127.5)	-17.64/-17.05	-11.59/-13.02	-13.91/-14.94	-14.71/-15.92	-10.82/-16.64	-18.94/-123	-10.59/-8.6	-7.26/-11.61	-10.97/-12.03	-12.16/-13.44	-17.65/-16.99	-16.76/-13.68	-16.64/-18.05	-18.05/-19.07	-16.71/-16.03	-11.73/-16.6	-17.72/-16.31	-13.51/-16.42	-18.32/-16.98	-15.53/-18.35	-14.07/-10.97	-16.33/-16.98	-16.33/-16.98	-16.33/-16.98
φ (135)	-17.14/-16.72	-14.69/-13.86	-18.88/-12.17	-16.59/-14.03	-15.18/-17.31	-14.96/-19.3	-17.88/-19.21	-13.87/-16.44	-16.24/-14.9	-16.21/-16.76	-18.52/-15.86	-18.33/-16.36	-17.06/-18.92	-16.19/-16.55	-18.27/-17.92	-10.35/-17.29	-10.47/-13.31	-5.88/-6.32	-16.87/-16.42	-16.96/-17.76	-16.18/-14.04	-16.26/-17.64	-17.87/-18.13	-17.87/-18.13
φ (142.5)	-17.48/-16.72	-14.69/-13.86	-18.88/-12.17	-16.59/-14.03	-15.18/-17.31	-14.96/-19.3	-17.88/-19.21	-13.87/-16.44	-16.24/-14.9	-16.21/-16.76	-18.52/-15.86	-18.33/-16.36	-17.06/-18.92	-16.19/-16.55	-18.27/-17.92	-10.35/-17.29	-10.47/-13.31	-5.88/-6.32	-16.87/-16.42	-16.96/-17.76	-16.18/-14.04	-16.26/-17.64	-17.87/-18.13	-17.87/-18.13
φ (150)	-17.48/-16.72	-14.69/-13.86	-18.88/-12.17	-16.59/-14.03	-15.18/-17.31	-14.96/-19.3	-17.88/-19.21	-13.87/-16.44	-16.24/-14.9	-16.21/-16.76	-18.52/-15.86	-18.33/-16.36	-17.06/-18.92	-16.19/-16.55	-18.27/-17.92	-10.35/-17.29	-10.47/-13.31	-5.88/-6.32	-16.87/-16.42	-16.96/-17.76	-16.18/-14.04	-16.26/-17.64	-17.87/-18.13	-17.87/-18.13
φ (157.5)	-17.48/-16.72	-14.69/-13.86	-18.88/-12.17	-16.59/-14.03	-15.18/-17.31	-14.96/-19.3	-17.88/-19.21	-13.87/-16.44	-16.24/-14.9	-16.21/-16.76	-18.52/-15.86	-18.33/-16.36	-17.06/-18.92	-16.19/-16.55	-18.27/-17.92	-10.35/-17.29	-10.47/-13.31	-5.88/-6.32	-16.87/-16.42	-16.96/-17.76	-16.18/-14.04	-16.26/-17.64	-17.87/-18.13	-17.87/-18.13
φ (165)	-17.48/-16.72	-14.69/-13.86	-18.88/-12.17	-16.59/-14.03	-15.18/-17.31	-14.96/-19.3	-17.88/-19.21	-13.87/-16.44	-16.24/-14.9	-16.21/-16.76	-18.52/-15.86	-18.33/-16.36	-17.06/-18.92	-16.19/-16.55	-18.27/-17.92	-10.35/-17.29	-10.47/-13.31	-5.88/-6.32	-16.87/-16.42	-16.96/-17.76	-16.18/-14.04	-16.26/-17.64	-17.87/-18.13	-17.87/-18.13
φ (172.5)	-17.48/-16.72	-14.69/-13.86	-18.88/-12.17	-16.59/-14.03	-15.18/-17.31	-14.96/-19.3	-17.88/-19.21	-13.87/-16.44	-16.24/-14.9	-16.21/-16.76	-18.52/-15.86	-18.33/-16.36	-17.06/-18.92	-16.19/-16.55	-18.27/-17.92	-10.35/-17.29	-10.47/-13.31	-5.88/-6.32	-16.87/-16.42	-16.				



Antenna Pattern of 2.4GHz

Appendix D

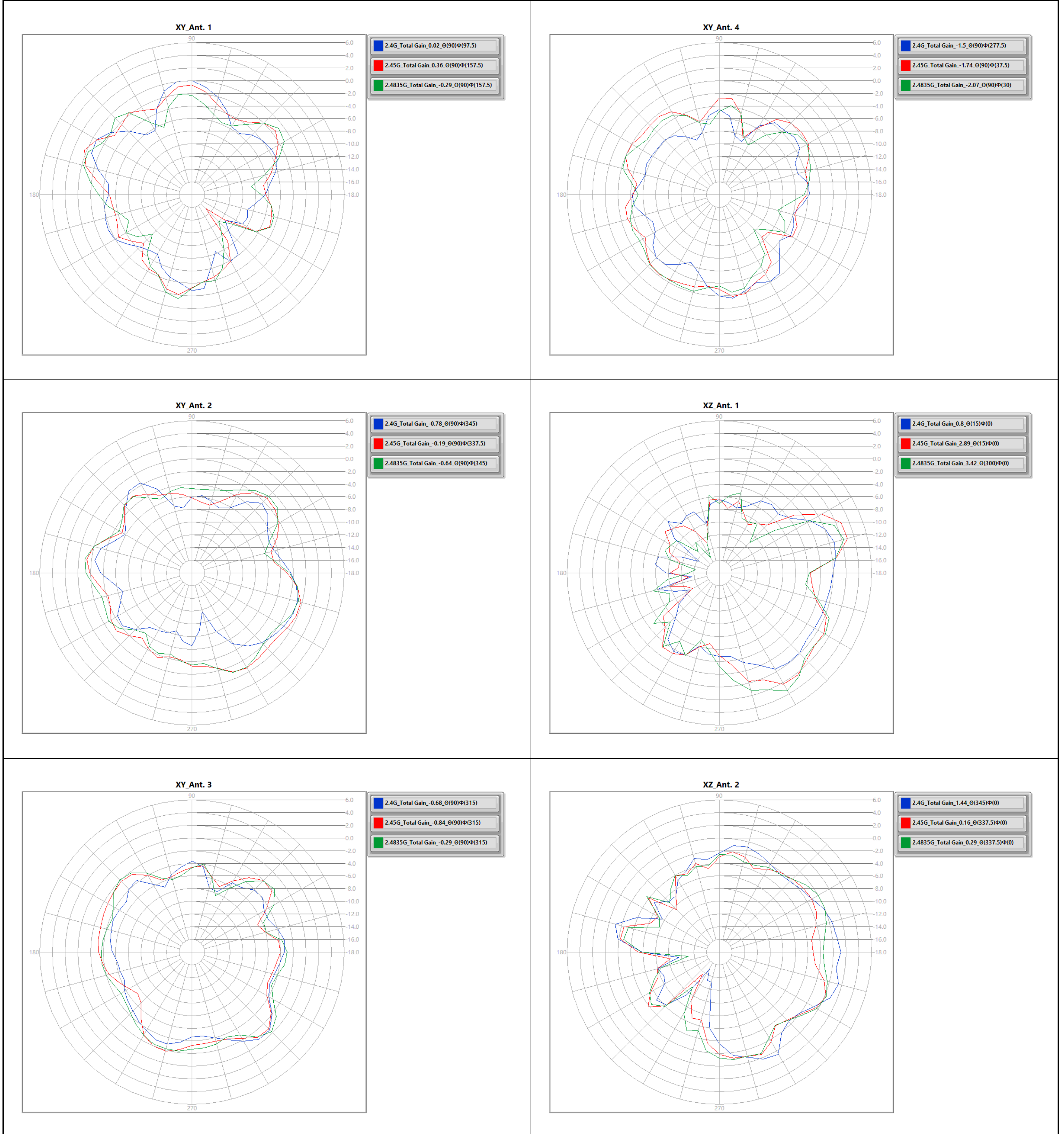
φ(25°)	1.452/1.2	2.702/2.97	-3.13/-3.28	-3.51/-3.82	4.10/-4.22	-4.99/-7.9	-3.44/-3.09	-2.60/-2.34	2.11/-1.99	-1.82/-1.57	-1.28/-1.01	-0.70/-0.28	0.16/0.55	0.73/0.69	0.40/-0.40	-0.52/-0.33	-0.25/0.05	0.40/0.72	0.95/1.08	1.09/1.03	0.87/0.74	0.58/0.33	0.00/-0.31	-0.50/-0.83	
φ(30°)	1.21/-1.50	2.44/-2.81	-2.65/-2.73	-3.01/-3.44	3.74/-3.74	-3.50/-2.99	-2.36/-1.77	-1.26/-1.08	-1.35/-1.77	2.21/-2.48	-2.58/-2.48	-2.08/-1.35	-0.45/-0.32	0.84/0.88	0.69/0.66	-0.62/-0.82	-0.64/-0.41	0.65/-1.5	1.46/-1.57	1.52/-1.37	1.29/-1.3	1.03/0.85	0.52/0.18	-0.42/-0.64	
φ(35°)	1.31/-2.29	2.77/-3.23	-2.38/-2.62	-1.88/-1.99	-2.51/-2.23	-2.24/-1.95	-1.39/-0.73	-0.30/-0.18	-0.49/-1.22	2.27/-0.43	-4.48/-0.10	-4.76/-0.47	-1.85/-0.36	0.63/0.63	0.78/0.67	-1.23/-1.97	-1.77/-0.62	-0.07/0.54	0.90/-0.05	1.04/0.97	0.90/0.89	0.75/0.51	0.12/-0.48	-0.48/-1.40	
φ(40°)	1.74/-2.52	-2.84/-2.63	-1.90/-1.04	-0.40/-0.22	0.46/-1.00	-1.47/-1.40	-0.89/-0.34	0.06/0.28	0.31/-0.08	-0.90/-0.20	-3.25/-4.32	-4.81/-4.34	2.91/-1.19	0.23/0.96	0.84/-0.14	-1.81/-3.26	-3.31/-2.24	-1.20/-0.64	-0.38/-0.25	-0.02/0.28	0.55/0.67	0.68/0.71	0.67/0.49	-0.01/-0.80	
φ(45°)	2.19/-2.61	-2.60/-2.18	-1.25/-0.20	0.56/0.51	0.38/-1.82	-2.54/-1.74	-0.50/-0.42	1.04/-1.38	1.50/-1.18	0.24/-1.18	-2.07/-3.48	-3.66/-3.67	-3.43/-2.41	-0.98/0.23	0.43/-0.47	-2.31/-3.89	-3.85/-2.84	-2.18/-2.05	-2.03/-1.68	-0.95/-0.16	0.25/0.43	0.49/0.53	0.49/0.20	-0.48/-1.40	
φ(50°)	2.86/-1.37	-3.12/-2.60	-1.52/-0.32	0.44/0.08	-1.58/-4.00	-4.24/-1.99	-0.15/0.96	1.35/-3.39	1.18/0.74	4.33/-2.11	-3.60/-1.35	-1.93/-1.35	-1.66/-0.20	-1.24/0.06	0.73/0.28	-1.51/-3.89	-4.24/-3.63	-3.48/-3.34	-3.02/-2.14	-1.49/-0.86	-0.59/-0.53	-0.38/-0.24	-0.28/-0.55	-1.20/-2.26	
φ(55°)	3.77/-2.43	-3.84/-3.00	-1.59/-0.66	0.01/-0.19	-1.71/-3.97	-4.18/-2.13	-0.41/-0.47	0.57/0.17	0.25/-0.61	-1.07/-3.74	-4.31/-2.29	-1.38/-0.49	-0.56/-0.85	-0.47/0.45	1.06/0.82	-1.23/-3.42	-4.09/-3.86	-4.26/-4.45	-3.09/-1.56	-0.74/0.63	-0.95/-1.49	-1.67/-1.53	-1.41/-1.47	-1.85/-2.63	
φ(60°)	2.47/-2.36	2.53/-1.88	-1.26/-0.58	0.05/-0.27	2.03/-4.72	-5.29/-3.05	-0.83/-1.11	1.31/-0.99	-1.40/-2.97	-3.89/-2.59	-1.06/-0.56	-0.99/-1.70	-1.87/-1.21	0.43/-0.58	-1.99/-3.53	-3.84/-3.30	-3.84/-4.69	-3.99/-2.06	-0.38/0.45	0.28/-0.38	0.82/-0.82	0.67/-0.61	0.78/-1.43		
φ(65°)	2.00/-2.62	-2.46/-1.87	-1.45/-1.15	-1.01/-1.95	-4.01/-6.15	-5.55/-3.28	-1.69/-1.00	-1.19/-2.04	2.71/-2.12	-2.26/-2.52	-2.26/-2.55	-0.86/-0.43	-1.11/-1.42	-1.39/-2.35	-1.88/-1.73	-3.03/-4.71	-4.56/-3.84	-3.61/-3.20	-2.81/-2.46	-1.28/-0.18	0.08/-0.23	-0.47/-0.45	-0.38/-0.61	-0.48/-1.42	
φ(70°)	2.98/-4.09	-5.55/-3.45	-2.31/-2.47	-1.34/-2.05	-3.67/-5.70	-6.86/-4.77	-6.19/-4.65	-5.65/-4.72	-3.88/-2.70	-2.89/-4.84	-5.52/-3.74	-1.99/-1.28	-1.84/-2.38	-4.33/-4.49	-3.20/-2.99	-3.86/-3.11	-4.25/-3.63	-4.32/-4.18	-3.30/-3.17	-2.42/-1.75	-0.71/-0.85	-1.19/-1.18	-0.68/-0.19	-0.21/-1.19	
φ(75°)	4.75/-5.62	-5.01/-2.86	-1.75/-1.87	-2.68/-4.50	-3.99/-1.50	-11.25/-6.55	-6.01/-4.16	-5.30/-4.76	-2.42/-2.14	-3.17/-2.23	-6.87/-5.76	-3.83/-2.41	-3.51/-2.66	-7.33/-6.89	-5.89/-5.42	-5.97/-2.20	-5.63/-4.01	-3.88/-3.25	-2.43/-2.78	-3.04/-2.44	-2.59/-2.47	-2.59/-1.77	-2.59/-1.77	-2.59/-1.77	
φ(80°)	3.96/-5.66	-5.53/-4.47	-0.42/-0.54	-0.59/-0.58	-6.97/-6.34	-7.91/-7.45	-6.76/-5.31	-6.20/-4.08	-3.66/-3.85	-6.89/-5.68	-10.41/-9.35	-6.93/-5.87	-6.86/-1.13	-16.57/-10.80	-11.79/-7.77	-7.74/-7.03	-6.29/-5.84	-2.90/-2.94	-2.88/-2.58	-2.73/-2.72	-2.47/-2.72	-2.47/-2.72	-2.47/-2.72	-2.47/-2.72	
φ(85°)	4.69/-7.44	-7.82/-1.41	-0.52/-0.49	-4.06/-3.10	2.91/-3.22	-4.03/-4.40	-3.05/-1.49	0.86/-1.12	1.28/-1.77	-4.19/-9.72	-16.98/-16.57	-10.47/-8.31	-4.77/-9.63	-10.91/-9.01	-9.58/-9.84	-9.48/-11.82	-12.01/-10.51	-8.60/-3.99	-2.38/-3.77	-5.89/-4.46	-3.23/-3.49	-4.21/-2.48	-3.68/-2.59	-2.10/-2.69	
φ(90°)	4.14/-5.45	-4.59/-4.04	4.27/-4.11	-3.89/-2.68	2.38/-2.59	-3.07/-3.44	-2.91/-2.37	-2.86/-4.01	4.04/-4.17	-3.59/-5.18	-10.35/-9.54	-10.57/-9.87	-7.14/-7.31	-11.91/-11.88	-10.86/-11.3	-9.10/-10.72	-7.44/-9.06	-12.04/-9.38	-5.32/-5.27	-4.73/-5.47	-6.42/-5.34	-6.16/-6.30	-5.25/-5.36	-3.90/-3.90	
φ(127°)	8.82/8.91	9.99/9.39	8.71/-9.36	6.87/-6.40	6.24/-7.39	9.38/-9.14	6.83/-5.13	5.19/-5.36	4.83/-5.06	6.65/-7.75	-7.52/8.77	-11.84/-13.76	-13.58/-11.74	-10.04/-9.38	-8.67/-8.05	-10.75/-8.89	-6.41/-5.83	-7.35/-8.73	-8.33/-8.68	-9.48/-11.01	-10.31/-8.84	-10.69/-9.61	-7.87/-6.30	-5.67/-6.52	
φ(130°)	8.55/-7.57	6.11/-5.44	-6.06/-7.43	-7.20/-5.69	3.28/-2.81	-3.60/-2.84	-6.84/-6.83	-8.72/-8.11	4.97/8.61	-8.82/-11.18	-10.26/-8.28	-6.80/-6.02	-6.03/-6.54	-6.65/-6.55	-6.32/-6.79	-8.74/-13.21	-12.54/-9.84	-7.63/-8.19	-5.02/-4.77	-5.69/-6.76	-8.02/-9.47	-10.48/-11.88	-11.76/-10.69	-9.58/-7.87	
φ(142°)	3.92/-3.69	-3.64/-3.58	-4.10/-4.39	-3.88/-2.39	-1.51/-1.58	-2.84/-5.88	-8.49/-11.33	-8.51/-6.65	-5.06/-4.52	-4.76/7.84	-6.75/-9.19	-3.94/-3.55	-3.87/-4.45	-4.73/-4.57	-4.26/-4.20	-4.92/-6.35	-7.54/-7.14	-4.77/-6.2	-6.15/-6.90	-6.07/-6.41	-6.59/-6.45	-6.00/-6.40	-4.83/-4.52	-4.42/-4.34	
φ(150°)	4.83/-6.52	-5.85/-0.53	-4.29/-4.69	-3.17/-2.67	4.23/-2.64	-3.48/-5.88	-6.49/-6.33	-5.48/-4.77	-4.83/-5.89	-7.62/-6.20	-7.89/8.44	-5.44/-5.18	-5.44/-5.75	-5.78/-5.55	-5.30/-5.22	-5.68/-6.65	-7.58/-7.45	-6.73/-6.40	-6.96/-6.90	-4.53/-4.54	-6.00/-6.29	-8.33/-7.44	-8.90/-8.68	-7.18/-7.47	
φ(157°)	6.19/-5.49	-4.70/-4.06	-3.86/-3.57	-3.74/-4.14	4.68/-5.26	-5.84/-6.61	-7.17/-7.13	-6.39/-6.48	-4.80/-4.56	-4.57/-6.06	-5.42/-6.78	-6.23/-6.88	-7.58/-8.12	-4.49/-6.83	-8.33/-4.46	-6.09/-10.38	-10.98/-9.63	-7.84/-6.61	-6.04/-6.22	-6.98/-6.12	-6.07/-6.73	-8.88/-9.74	-6.06/-6.18	-7.37/-6.80	
φ(162°)	2.54/-2.92	-2.90/-3.26	-3.76/-4.50	-5.60/-7.16	0.09/-1.24	-13.04/-12.43	-11.84/-10.26	-6.89/-7.18	-5.86/-5.16	-5.71/-5.72	-6.53/-7.14	-7.80/-8.17	-8.93/-10.16	-11.40/-12.40	-13.43/-13.72	-12.18/-9.67	-7.38/-6.06	-4.95/-4.29	-4.52/-4.45	-4.52/-4.45	-4.44/-3.69	-1.09/-1.18	-2.73/-2.46		
φ(172°)	2.28/-2.88	-3.54/-4.26	-5.02/-5.88	-7.21/-8.75	-10.48/-12.83	-15.30/-14.74	-15.29/-14.51	-12.82/-11.16	-10.86/-9.47	-8.98/-6.52	-8.29/-6.32	-8.69/-6.35	-10.22/-11.15	-11.55/-12.38	-13.36/-13.44	-12.47/-10.99	-8.54/-8.38	-7.24/-6.16	-6.39/-4.99	-4.78/-4.50	-4.11/-3.79	-3.50/-3.25	-2.91/-2.58	-2.34/-3.22	
φ(180°)	2.51/-5.83	-6.53/-7.06	-7.63/-8.48	-9.29/-9.88	-10.42/-10.65	-10.79/-10.29	-10.37/-10.56	-10.37/-10.56	-11.11/-11.22	-10.84/-10.41	-9.83/-9.66	-9.69/-9.69	-10.33/-10.11	-10.47/-10.33	-9.50/-9.43	-7.51/-7.38	-7.24/-6.16	-6.87/-6.77	-2.78/-3.17	-4.16/-4.73	-6.38/-6.11	-5.28/-5.45	-5.22/-5.24		
FreeRx	2.8355GPa	Tablet.2	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	
Gain	φ(°)/φ(90°)	φ(°)/φ(22.5°)	φ(°)/φ(37.5°)	φ(°)/φ(52.5°)	φ(°)/φ(67.5°)	φ(°)/φ(82.5°)	φ(°)/φ(97.5°)	φ(°)/φ(112.5°)	φ(°)/φ(127.5°)	φ(°)/φ(142.5°)	φ(°)/φ(157.5°)	φ(°)/φ(172.5°)	φ(°)/φ(187.5°)	φ(°)/φ(202.5°)	φ(°)/φ(217.5°)	φ(°)/φ(232.5°)	φ(°)/φ(247.5°)	φ(°)/φ(262.5°)	φ(°)/φ(277.5°)	φ(°)/φ(292.5°)	φ(°)/φ(307.5°)	φ(°)/φ(322.5°)	φ(°)/φ(337.5°)	φ(°)/φ(352.5°)	
φ(°)	-1.69/-1.76	-1.62/-1.82	-1.73/-1.73	-1.73/-1.81	-1.90/-2.01	2.07/-2.11	2.15/-2.09	-1.96/-1.29	2.41/-2.46	3.17/-2.06	-1.50/-1.72	-1.50/-1.49	-1.36/-1.48	-1.63/-1.85	2.14/-2.41	-2.60/-2.69	-2.60/-3.00	-3.16/-3.23	-3.28/-3.35	-3.39/-3.59	-3.72/-3.71	-3.57/-3.25	-2.80/-2.35	-1.94/-1.64	
φ(1°)	1.28/-1.38	1.50/-1.84	-2.20/-2.34	-2.72/-2.35	3.51/-3.80	4.02/-4.15	4.17/-3.88	-3.88/-3.73	3.73/-3.86	-2.90/-2.42	-1.93/-1.51	-1.20/-1.22	-1.26/-1.27	-1.48/-1.61	-1.43/-1.48	-1.50/-1.46	-1.38/-1.38	-1.43/-1.47	-1.48/-1.48	-1.50/-1.48	-1.50/-1.38	-1.43/-1.47	-0.88/-1.68	-1.88/-1.68	
φ(2°)	1.59/-2.54	0.60/-1.22	-1.89/-2.25	-2.98/-3.03	4.56/-5.18	5.59/-5.68	6.59/-5.65	-4.99/-4.75	4.41/-3.98	-3.44/-2.92	-2.44/-1.88	-1.60/-1.22	-1.40/-1.22	-1.47/-1.62	-1.40/-1.48	-1.46/-1.40	-1.36/-1.33	-1.47/-1.42	-1.50/-1.42	-1.52/-1.40	-1.47/-1.45	-0.47/-0.95	-0.50/-0.91	-0.59/-0.51	
φ(3°)	2.00/-3.15	0.80/-1.35	-1.38/-1.55	-1.99/-2.02	5.19/-5.69	6.58/-6.86	6.80/-6.46	-4.09/-3.57	3.11/-2.28	-2.36/-1.87	-1.40/-1.07	-0.60/-0.55	-0.29/-0.22	-0.61/0.51	0.22/-0.27	0.22/-0.18	-0.08/0.91	0.90/-1.01	0.90/-1.19	-0.39/-0.36	-0.08/0.91	0.94/-1.09	0.97/0.93		
φ(4°)	0.00/-0.32	0.89/-1.15	-1.33/-1.55	-1.99/-2.02	5.19/-5.69	6.58/-6.86	6.80/-6.46	-4.09/-3.57	3.11/-2.28	-2.36/-1.87	-1.40/-1.07	-0.60/-0.55	-0.29/-0.22	-0.61/0.51	0.22/-0.27	0.22/-0.18	-0.08/0.91	0.94/-1.05	0.94/-1.05	0.42/-0.47	0.47/-0.36	0.90/0.95	0.94/0.93	0.29/0.35	
φ(5°)	4.86/-1.41	-1.57/-1.99	-1.67/-1.30	-1.65/-1.05	-1.19/-1.43	-1.75/-1.80	-1.97/-2.05	-0.21/0.04	1.94/-1.61	-1.30/0.25	-2.98/-2.99	-2.78/-2.29	-1.83/-0.86	0.28/-0.03	-0.25/-1.09	-1.88/-2.22	-2.12/-1.86	-1.63/-1.42	-1.29/-1.09	-0.90/-0.58	-0.13/0.33	0.67/0.84	0.88/0.79	0.48/0.51	
φ(6°)	1.68/-2.68	-3.11/-2.71	-1.83/-2.77	0.18/0.65	0.18/0.65	0.00/0.65	0.41/0.40	0.01/0.41	0.83/0.75	0.81/0.51	0.21/0.32	-2.75/-2.82	-2.75/-2.82	-2.75/-2.82	-2.75/-2.82	-2.75/-2.82	-2.75/-2.82	-2.75/-2.82	-2.75/-2.82	-2.75/-2.82	-2.75/-2.82	-2.75/-2.82	-2.75/-2.82	-2.75/-2.82	
φ(65°)	2.47/-3.59	-3.49/-2.48	-1.08/0.43	1.55/0.82	1.55/0.82	1.16/0.17	-1.06/0.67	0.18/0.76	1.04/-1.25	2.03/-1.88	1.25/0.02	-1.18/-2.19	-3.08/-3.66	-3.44/-2.46	-1.37/0.83	-1.46/-2.41	-4.39/-5.22	-4.73/-5.31	-3.07/-2.40	-1.72/-0.22	0.90/0.68	0.90/0.46	0.79/0.59	1.07/0.91	
φ(70°)	2.57/-3.78	-3.79/-2.56	-0.89/0.69	1.89/-1.48	0.03/-1.29	2.86/-1.26	0.02/0.56	1.17/-1.23	1.41/-1.48	0.88/-0.38	-1.50/-2.81	-3.03/-2.78	-2.38/-1.76	-0.87/-0.22	-0.42/-1.72	-4.39/-5.22	-4.73/-5.31	-3.07/-2.40	-1.72/-0.22	0.90/0.68	0.90/0.46	0.79/0.59	1.07/0.91	1.07/0.91	
φ(75°)	3.22/-5.84	5.29/-3.76	-1.79/-0.15	0.78/0.54	0.19/-0.20	-3.14/-1.63	-0.30/-0.32	0.38/0.04	-0.04/-1.44	0.97/0.00	-4.26/-4.22	-2.61/-3.11	-0.72/-0.50	-0.01/0.40	0.29/-0.82	-3.31/-5.89	-5.04/-5.86	-3.76/-2.16	-0.50/-0.15	0.35/0.10	-1.04/-1.12	-1.04/-1.12	-1.28/-1.10	-1.00/-1.71	
φ(80°)	3.32/-5.05	6.15/-3.33	-1.42/-0.09	0.52/0.11	0.19/-0.20	-3.14/-1.63	-0.30/-0.32	0.38/0.04	-0.04/-1.44	0.97/0.00	-4.26/-4.22	-2.61/-3.11	-0.72/-0.50	-0.01/0.40	0.29/-0.82	-3.31/-5.89	-5.04/-5.86	-3.76/-2.16	-0.50/-0.15	0.35/0.10	-1.04/-1.12	-1.04/-1.12	-1.28/-1.10	-1.00/-1.71	
φ(85°)	2.58/-3.98	4.19/-2.70	-1.22/-0.46	0.49/-1.48	0.34/-0.40</																				

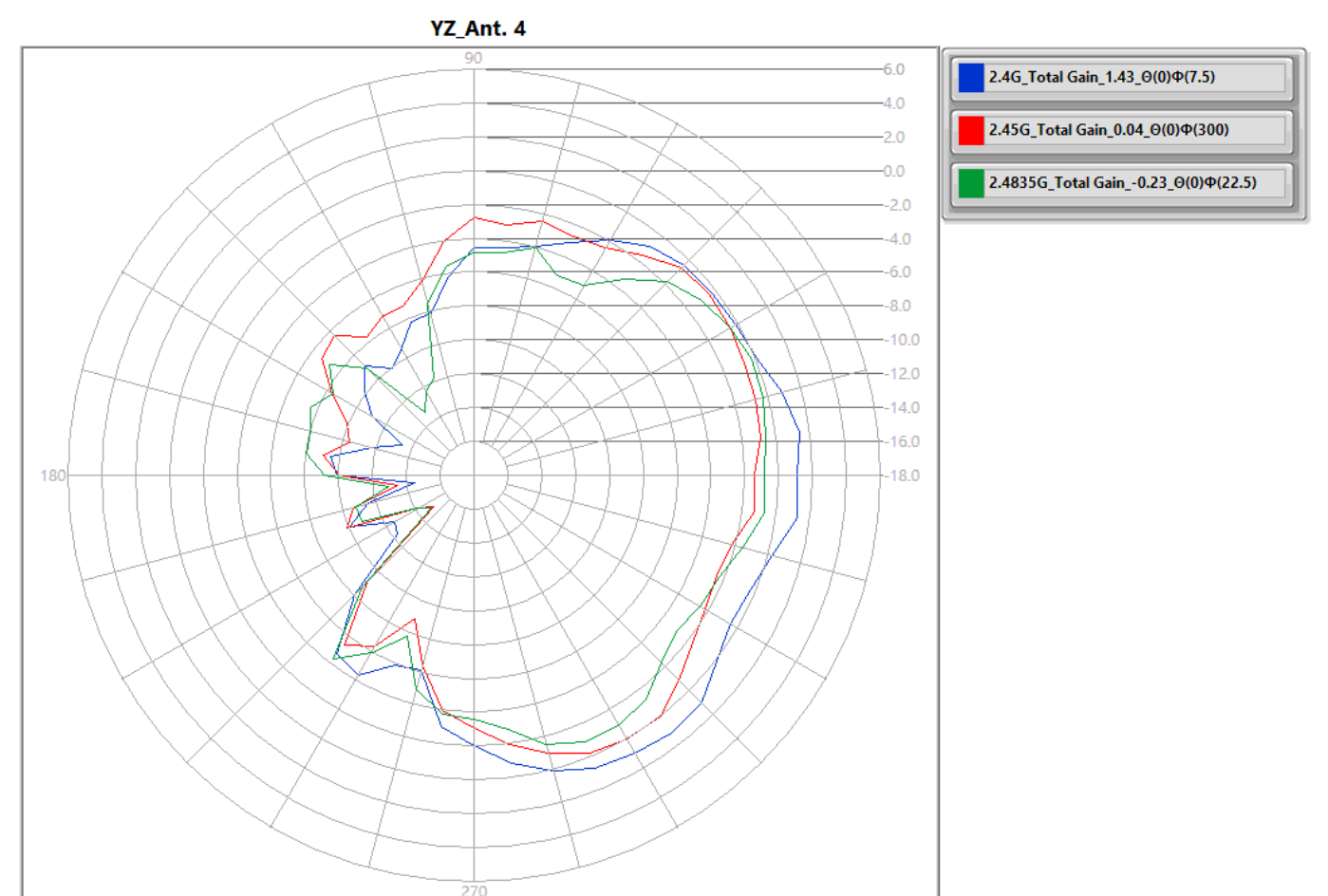
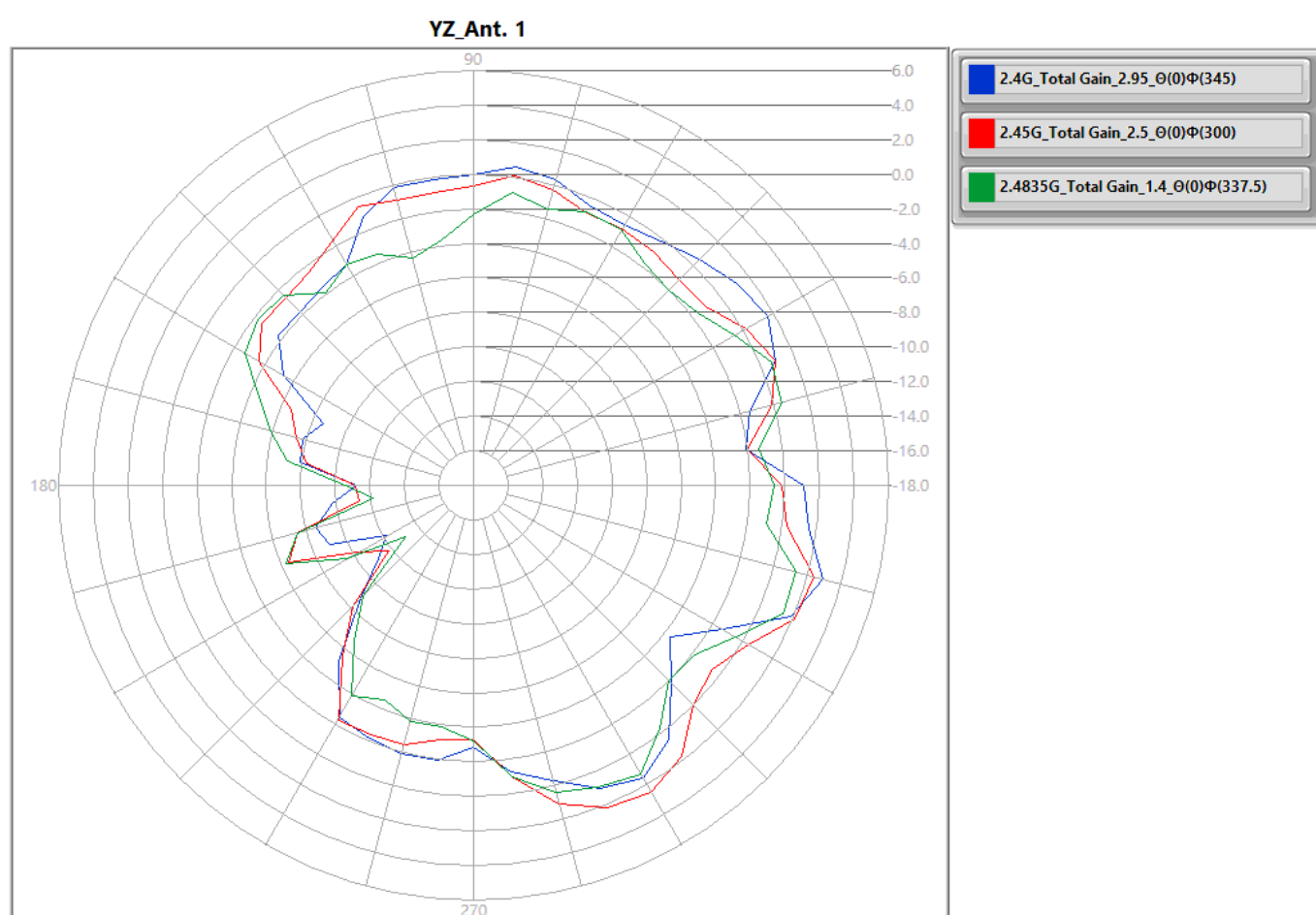
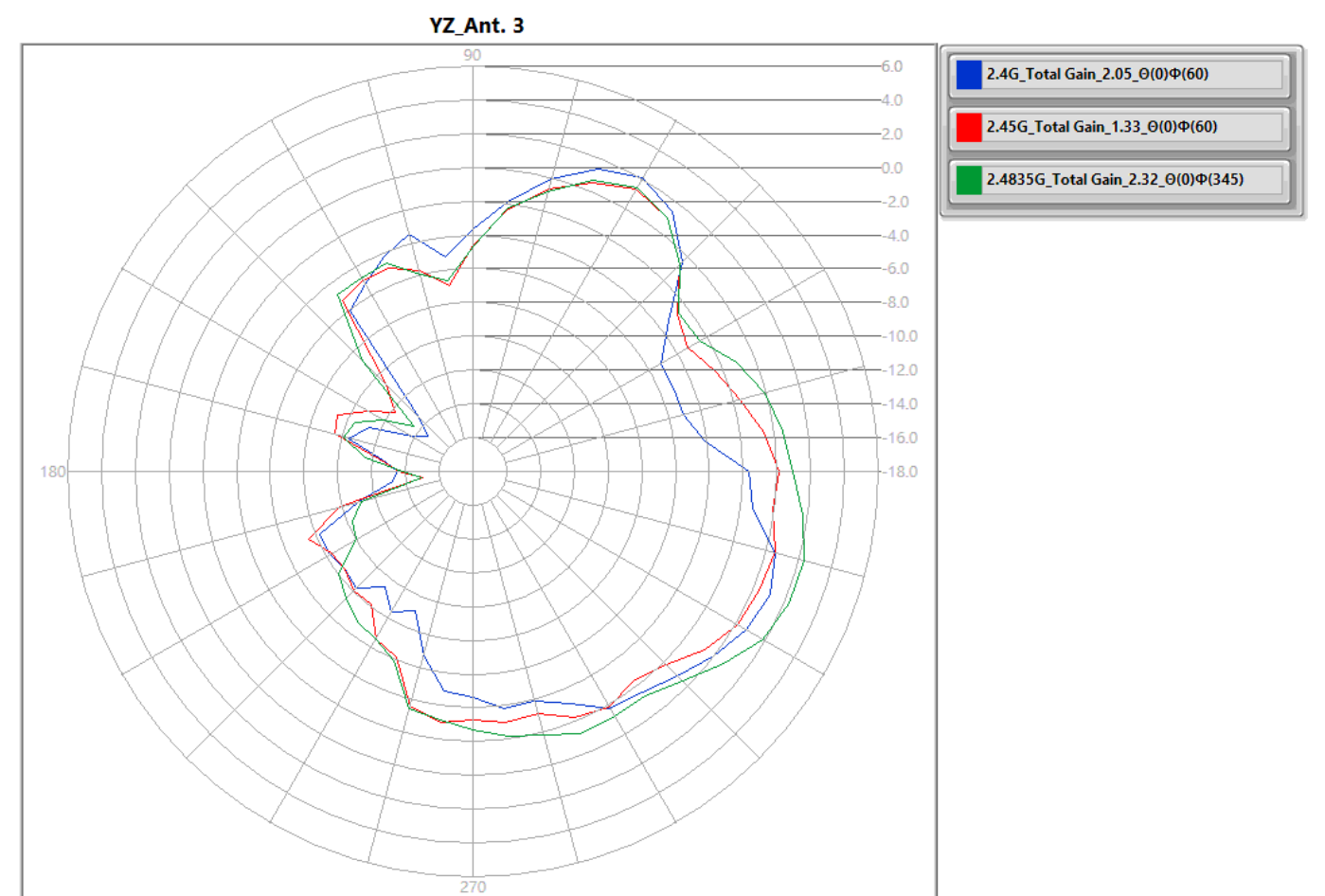
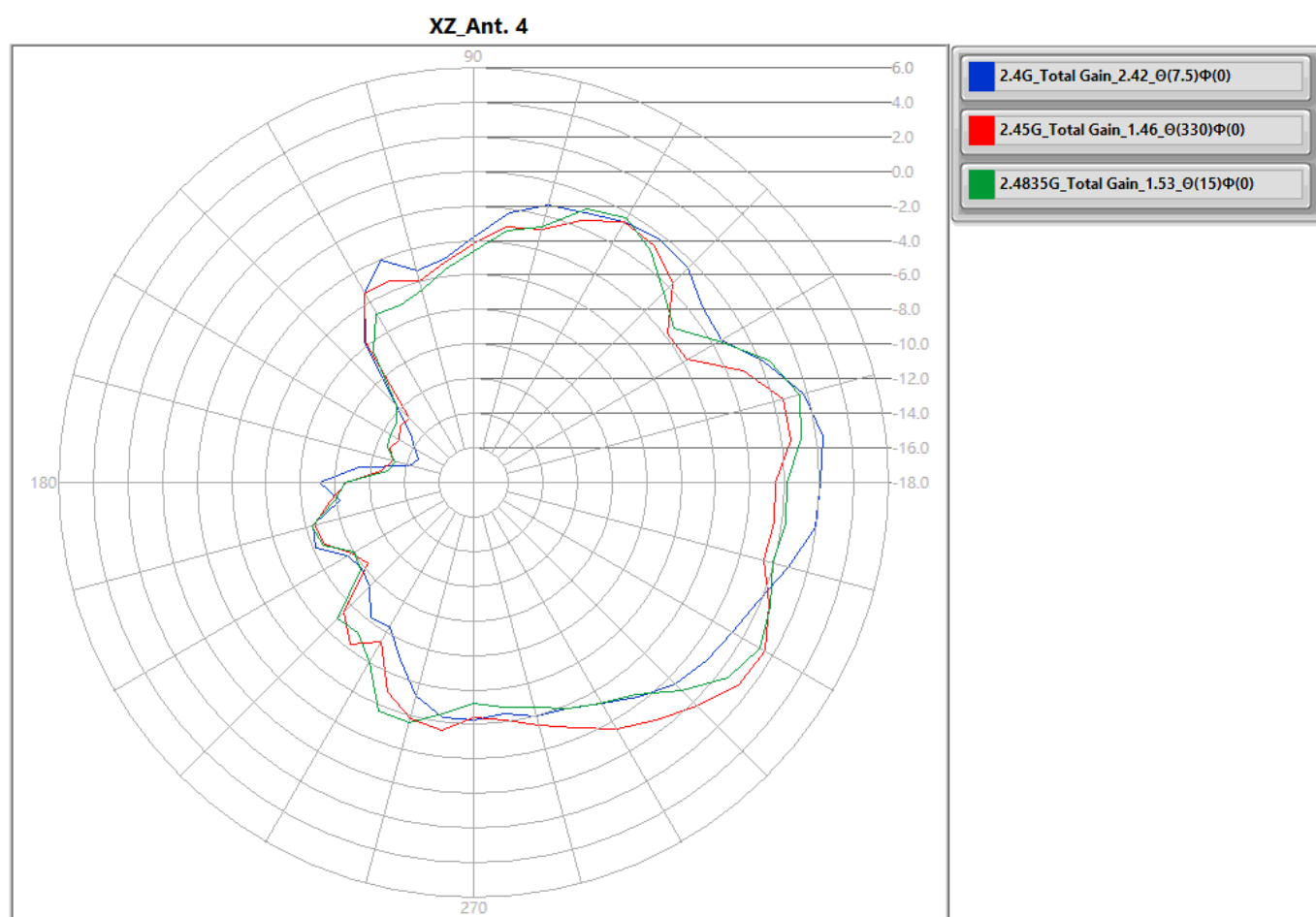
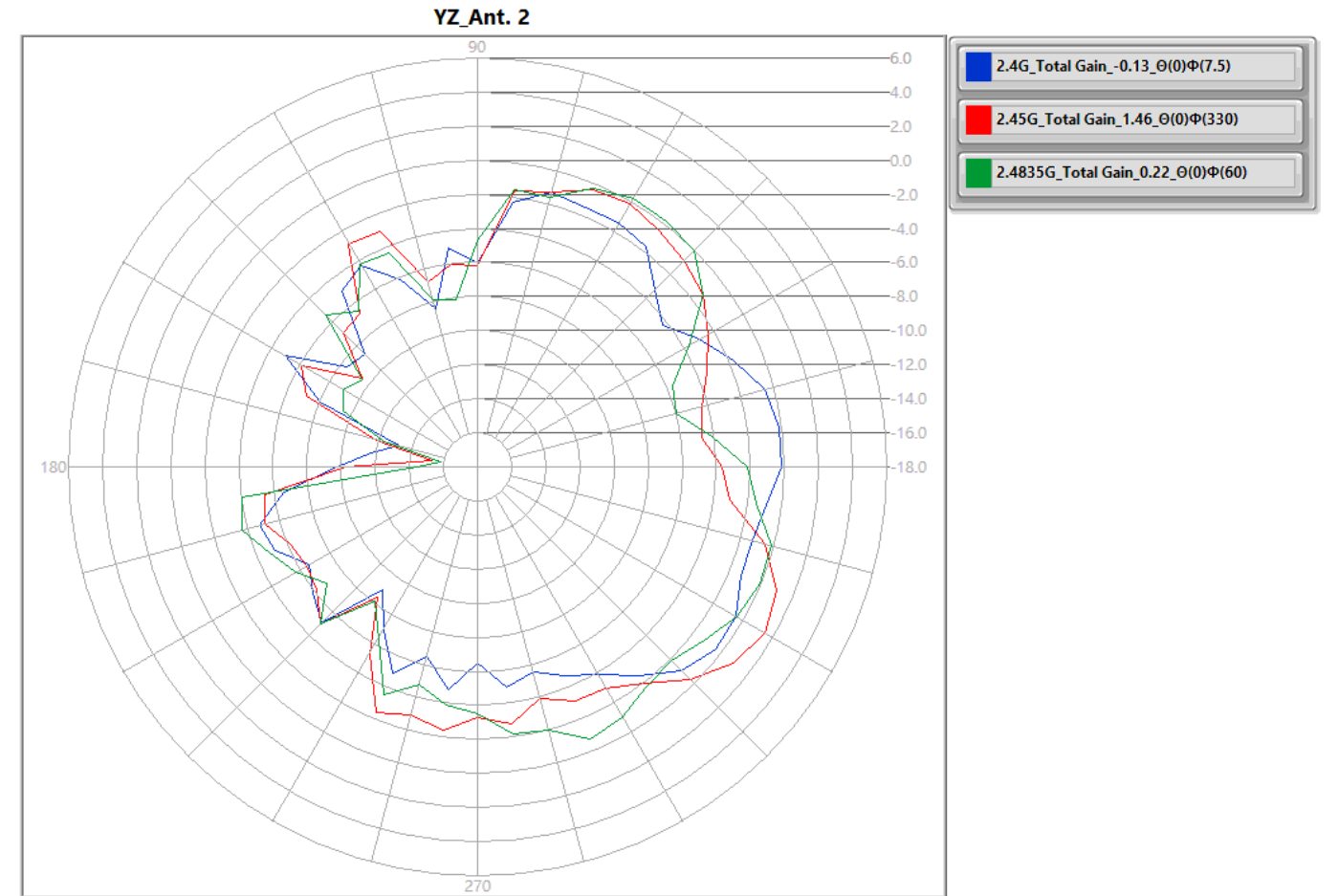
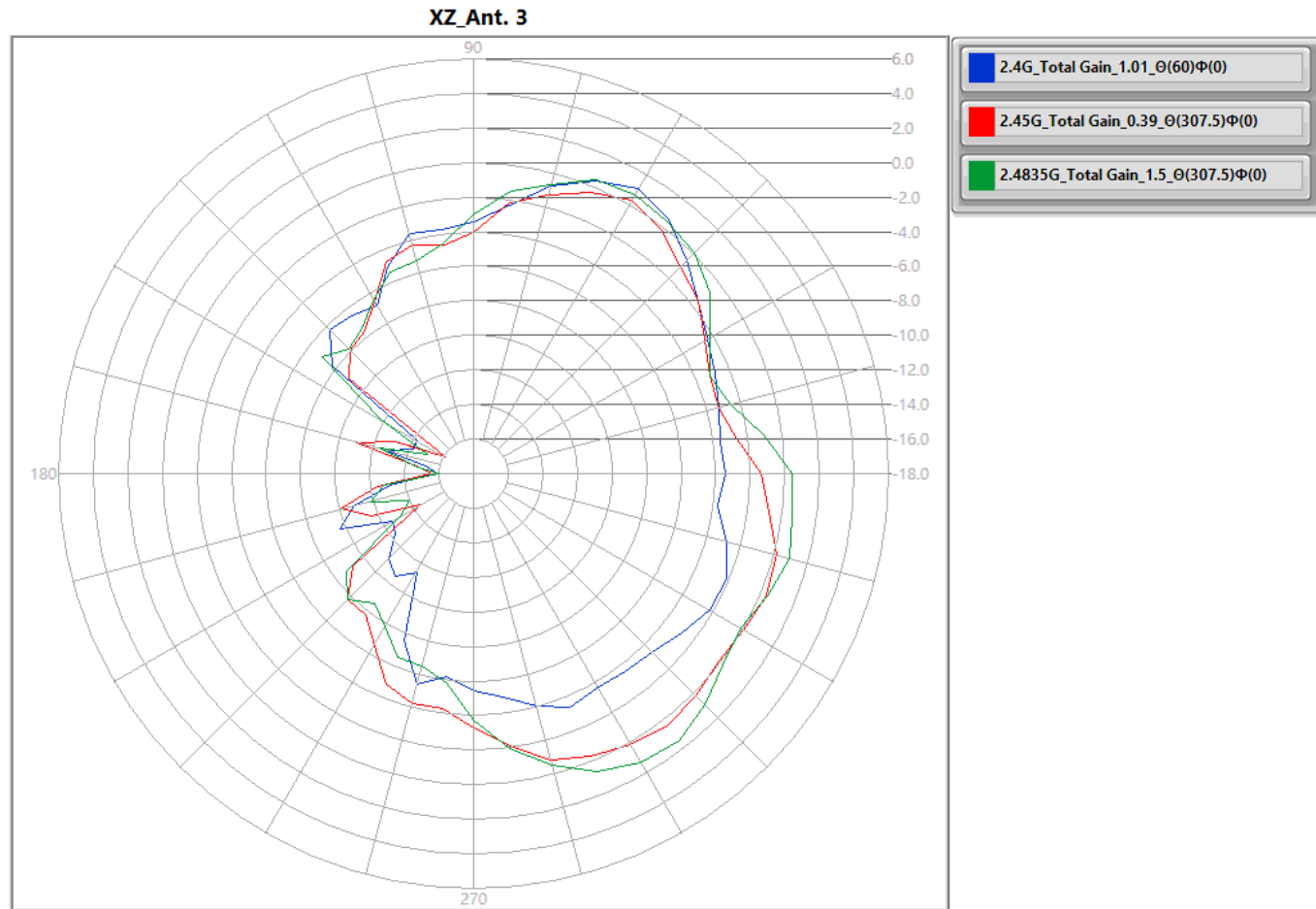
Antenna Pattern of 2.4GHz

Appendix D

(h1)	2.43922	1.98473	1.84011	1.58612	-1.53200	0.98808	0.80102	2.22021	1.51024	2.20126	-0.92240	1.82023	0.85504	0.37147	-1.58174	-1.58180	1.22564	0.38670	-1.21157	-1.28470	-1.98610	1.10	0.27127	-1.58141	-1.75873
(h7)	0.07561	2.40244	-0.89032	1.39624	-1.53320	-1.98465	-0.85175	-1.20111	0.50175	1.93700	-1.92031	-2.78141	0.51140	-1.02184	-2.71131	-1.59174	1.12661	0.76130	-1.83216	-2.34210	-2.33107	0.19	0.15032	-1.43204	-1.50074
(h82)	-1.48029	-3.86036	-1.17057	-0.87282	-0.52096	-3.43118	-2.28344	-4.29307	-1.04036	0.75923	-2.14343	-3.21247	1.96114	-2.23281	-3.09149	-3.90254	-1.87158	-1.72195	-2.21248	-2.20124	-2.28087	0.19	0.19141	-1.65173	-2.20144
(h9)	0.38631	-0.89280	-3.30161	0.21136	0.44834	-0.56938	-4.07515	0.13138	-3.55029	-1.88924	-3.70443	-4.11803	0.75371	-3.98042	-5.05285	-4.98336	-2.72122	-2.92223	-2.92223	-2.92223	-2.98110	0.13	0.23612	-3.24108	-4.07125
(h97)	0.45731	-0.83473	-4.55247	0.28910	0.44983	-0.72530	-4.59674	0.58657	-3.68194	-3.54489	-6.43490	-6.39596	0.78858	-5.78645	-6.44584	-5.51491	-4.15380	-3.55133	-3.16231	-3.94149	-3.89244	0.10	0.13404	-5.74123	-5.55508
(h10)	0.05260	-0.771021	-0.86878	-2.70279	-2.70279	-4.59618	-5.69618	-1.09374	-4.73142	-6.29349	-7.70073	-7.06640	0.46646	-6.89932	-7.18663	-6.67659	-4.54459	-3.75328	-3.56402	-4.54035	-2.44507	0.07	0.07647	-7.57507	-7.52684
(h112)	0.35474	-0.64816	-1.73669	-4.22532	-4.31684	-5.79381	-4.91721	0.86793	0.65449	-0.50717	-0.22462	-0.73420	0.65176	-0.88436	-0.18070	-0.72011	0.25543	-0.91600	-0.58665	-0.86461	-4.29736	0.20	0.20371	-4.77107	-5.88175
(h16)	0.41134	-0.29565	-0.64429	0.75506	0.75506	-0.78488	-0.48170	0.93476	0.80135	-0.52639	-0.88611	-1.10488	0.11	0.14139	-1.20710	-1.20710	0.72719	0.82634	0.89816	-0.87446	-1.56163	0.03	0.03487	-7.20149	-6.91881
(h127)	-0.38677	-7.80076	0.18931	0.84813	-0.78474	-7.90566	-4.77165	-4.02131	0.30706	-0.22826	-0.42167	-0.92157	-0.58619	-0.28150	-1.93512	-10.92027	0.36347	-0.82623	-0.67678	-0.78476	-8.89596	0.02	0.52686	-6.80176	-8.28434
(h17)	-0.77618	-0.93479	-1.18971	-1.46513	-12.32	-0.98118	-1.46710	0.99917	0.71482	-0.93141	-0.82074	-0.84473	-7.93197	-7.70357	-11.11181	-11.90410	-10.19100	0.92970	-0.55145	-0.75847	-5.85670	0.09	0.57816	-6.80176	-7.20271
(h142)	0.62076	-0.86190	-1.95013	-1.13112	-10.38160	-12.77135	-10.81120	-0.84485	0.68910	0.97040	-0.77639	-0.12635	-0.68949	-0.84467	-0.87419	-0.53918	0.85173	0.98712	-1.78485	-0.18714	-0.55955	0.06	0.88649	-6.32123	-6.37147
(h18)	-0.18138	-11.26810	-1.95419	-0.85213	-11.228134	-12.09134	-11.73128	-11.18011	-12	-0.81919	-0.58616	-1.04817	-0.88610	-1.033121	-1.033121	-1.033121	-0.88610	-0.88610	-0.88610	-0.88610	-0.88610	0.03	0.78472	-13.33191	-12.62104
(h15)	-15.103103	-10.88234	-11.6168	0.76744	-0.711032	-11.65111	-11.65111	-0.80730	-7.84417	-0.806102	-12.59138	-12.641038	-1.0411138	-11.089127	-11.089127	-0.82537	-0.88038	-0.80816	-10.252131	-12.06127	-12.071028	-11.87	0.02	-14.28133	-15.16152
(h16)	-0.218604	-0.218604	-0.218604	-0.218604	-0.218604	-0.218604	-0.218604	-0.218604	-0.218604	-0.218604	-0.218604	-0.218604	-0.218604	-0.218604	-0.218604	-0.218604	-0.218604	-0.218604	-0.218604	-0.218604	-0.218604	-0.218604	-0.218604	-0.218604	-0.218604
FreeH2	2.40501	Total 4	Total 4	Total 4	Total 4	Total 4	Total 4	Total 4	Total 4	Total 4	Total 4	Total 4	Total 4	Total 4	Total 4	Total 4	Total 4	Total 4	Total 4	Total 4	Total 4	Total 4	Total 4	Total 4	Total 4
Gain	0.01970(17)	0.01970(25)	0.01970(37)	0.01970(52)	0.01970(67)	0.01970(81)	0.01970(97)	0.01970(112)	0.01970(127)	0.01970(142)	0.01970(157)	0.01970(172)	0.01970(187)	0.01970(202)	0.01970(217)	0.01970(232)	0.01970(247)	0.01970(262)	0.01970(277)	0.01970(292)	0.01970(307)	0.01970(322)	0.01970(337)	0.01970(352)	
(h1)	2.06221	1.96199	2.03202	2.02595	1.98198	1.98134	1.99138	1.99119	1.50172	1.75151	1.73188	2.12230	2.38242	2.40240	2.40233	2.19253	1.89178	1.70171	1.73171	1.61515	1.33719	1.12011	1.28151	1.60121	
(h7)	2.42248	2.50238	2.98251	2.48524	2.24229	1.88194	1.44522	1.29210	1.96178	1.65178	1.37101	0.87789	0.80187	1.03182	1.06130	1.26232	1.22513	1.26124	1.06198	0.99103	1.05125	1.48178	2.09228		
(h16)	2.47141	2.40765	2.77141	2.55123	2.21294	1.84677	1.40577	1.04677	0.69104	0.47677	0.30577	0.18808	0.10747	0.07133	0.04667	0.02667	0.01667	0.00667	0.00167	0.00067	0.00017	0.00007	0.00001	0.00000	
(h17)	1.98106	1.74227	2.54252	1.98139	1.68139	1.38139	1.08139	0.78139	0.48139	0.18139	0.08139	0.03139	0.01139	0.00139	0.00039	0.00013	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	
(h18)	1.44036	0.78169	2.24232	2.29551	1.04059	0.85017	0.71015	0.54617	0.40049	0.28068	0.20015	0.09143	0.01120	-1.74016	-1.29303	-0.90017	0.27616	0.12612	-0.48404	-1.35150	-2.57130	-3.85141	-4.59066	-3.60149	
(h97)	-1.33075	0.17114	1.86211	1.83112	0.32024	-0.44437	-0.24642	0.78716	-1.18124	-1.35123	-1.07426	-0.28652	-1.08172	-1.31198	-1.37047	-0.67651	0.01010	0.02012	0.09012	0.18012	0.27012	-0.73817	-3.52323	-2.85119	
(h45)	-0.40044	-0.08881	1.68226	1.87018	0.08801	-0.74452	-0.24974	1.48324	-1.25823	-2.45178	-1.71028	-0.88015	-1.46194	-2.27118	-1.68614	-0.41625	0.04104	0.34084	1.07818	0.80129	-0.12549	-2.24301	-2.99268	-3.22611	-1.19071
(h82)	0.31048	-0.50014	1.08161	1.54807	0.01175	-0.95094	-0.30419	2.39135	-0.54934	-0.40236	-1.98137	-1.47196	-0.26529	-2.79270	-2.19156	-1.02048	-0.50141	0.15583	1.16837	0.01149	-2.35249	-2.46235	-1.92133	0.74036	
(h9)	0.60084	-1.18087	0.07068	0.60011	-0.53136	-0.30018	-1.94234	-4.21515	-5.40548	-5.40433	-3.00128	-2.28289	-3.20337	-3.93334	-2.46159	-1.00083	-1.14144	0.80500	0.96044	0.10149	-1.52179	-2.45303	-2.79516	-1.96140	
(h97)	-1.15156	-2.39220	-0.92013	0.129373	-1.50288	-3.84338	-3.19406	0.55212	-1.58749	-5.70515	-3.96317	-3.34371	0.83412	-4.44362	-2.62321	-1.76188	-2.50377	-1.78032	0.00805	0.03105	-1.37186	-3.21420	-4.22344	-2.34144	
(h16)	-1.41190	-3.30391	-2.44134	-1.12103	-2.28435	-5.90449	-6.48169	0.62941	-0.34610	-4.39366	-3.77107	-4.00318	-4.04412	-3.36338	-3.05288	-3.37419	-2.69114	0.70041	-0.05186	-2.06212	-3.28140	-4.28384	-3.11920		
(h82)	0.25257	-3.90447	-3.27282	-2.84268	-2.73366	-6.50492	-4.40554	-7.70867	-7.70867	-7.70867	-5.14537	-4.77422	-4.77422	-4.77422	-4.77422	-4.77422	-4.77422	-4.77422	-4.77422	-4.77422	-4.77422	-4.77422	-4.77422	-4.77422	
(h9)	0.37838	-3.21504	-3.31130	0.35635	-0.47490	-0.82456	-4.54454	7.70867	-0.74630	-5.79587	-6.77422	-5.95352	-4.24448	-4.88616	-5.09441	-3.24118	-4.08467	-3.85213	-0.81050	-1.57241	-2.59327	-4.87160	-0.98451	-4.29309	
(h97)	-0.49560	-6.58601	-3.45344	-3.34371	-3.40119	-11.88778	-6.21565	-1.02109	0.21416	-6.58411	-6.80665	-5.92174	-4.28535	-7.12162	-6.71540	-5.08512	-5.74818	-4.17143	-2.98195	-2.69337	-3.98274	-5.21669	-5.08440	-5.95854	
(h10)	2.57289	0.89056	4.13352	-4.22361	-5.67102	-10.26103	-0.71300	7.84485	-17.9162	-15.4617	-8.72160	-6.45495	-0.50265	-0.11942	-0.70540	-0.69547	-0.74819	-0.81142	-0.65939	-4.22477	-3.09672	-10.4533	-0.59528	-5.52523	
(h112)	0.48141	-1.47119	0.36499	-5.91481	-4.34687	-10.47899	-8.20734	7.95948	-5.88174	-7.28919	-0.90754	6.41622	0.59338	0.72488	0.88656	0.54911	0.54193	0.88687	-7.78873	5.83030	-5.34642	-11.3145	-4.2148	-5.91699	-7.14535
(h12)	0.33844	-7.24129	0.92055	0.75265	-0.36548	-0.58416	-0.94139	0.78198	-0.27472	-0.88780	-7.88474	0.75165	0.82178	-5.65747	-5.65740	-5.10458	0.87813	0.88978	-3.45270	-3.27422	-4.23751	0.62163	-1.31431	-5.53141	-4.83734
(h17)	0.68474	0.05118	10.87880	0.31478	-0.48933	-7.84105	-10.06783	0.94788	-0.94788	-0.94788	-7.36175	-7.70868	0.40003	0.82011	-0.87421	0.93350	0.47470	0.47470	0.47470	0.47470	0.47470	0.47470	0.47470	0.47470	0.47470
(h18)	-0.18138	-11.26810	-1.95419	-0.85213	-11.228134	-12.09134	-11.73128	-11.18011	-12	-0.81919	-0.58616	-1.04817	-0.88610	-1.033121	-1.033121	-1.033121	-0.88610	-0.88610	-0.88610	-0.88610	-0.88610	-0.88610	-0.88610	-0.88610	
(h142)	-1.34142	-1.11618	0.74480	0.34103	-12.28119	-10.58610	0.80761	0.97146	-1.12091	-1.12091	-0.55912	0.08810	0.84422	0.46716	0.73423	0.93172	0.84170	-0.59912	-12.25018	-0.59912	0.82487	-1.64810	-1.55319	-1.8805148	
(h157)	-15.020187	-10.56649	0.74600	0.74600	0.74600	0.74600	0.74600	0.74600	0.74600	0.74600	0.74600	0.74600	0.74600	0.74600	0.74600	0.74600	0.74600	0.74600	0.74600	0.74600	0.74600	0.74600	0.74600	0.74600	
(h157)	-15.020187	-10.56649	0.74600	0.74600	0.74600	0.74600	0.74600	0.74600	0.74600	0.74600	0.74600	0.74600	0.74600	0.74600	0.74600	0.74600	0.74600	0.74600	0.74600	0.74600	0.74600	0.74600	0.74600	0.74600	
(h172)	-11.360159	0.97147	0.19429	0.54868	0.75549	0.89812	-0.89812	0.62803	0.74748	0.81413	-0.81413	0.78293	0.41913	-1.02108	-1.06019	-1.386104	-1.386113	-1.276812	-1.323310	-1.445515	-1.541576	-1.4300154	-1.5581350	-1.5581350	
(h18)	0.16106	-0.46547	-0.66699	0.950106	-0.050106	-0.040493	-0.89893	-0.006107	-0.580107	-0.361058	-0.1061120	-1.1531185	-1.2301262	-1.3801327	-1.2721216	-1.1171219	-1.0211265	-1.1451459	-1.3801358	-1.2891246	-1.2701238	-1.2441229	-1.1851131	-1.293890	
FreeH2	2.40501	Total 4	Total 4	Total 4	Total 4	Total 4	Total 4	Total 4	Total 4	Total 4	Total 4	Total 4	Total 4	Total 4	Total 4	Total 4									

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





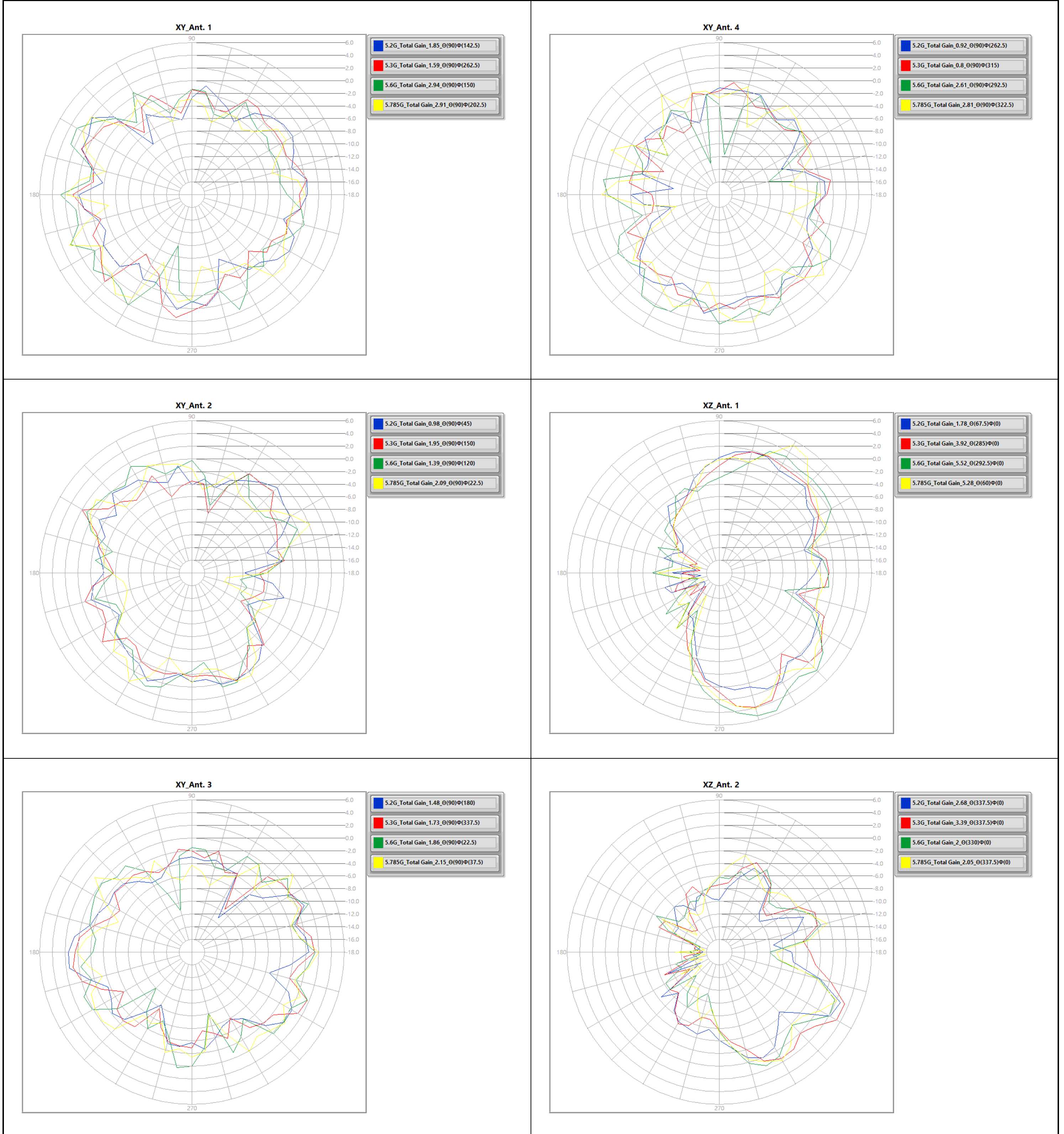


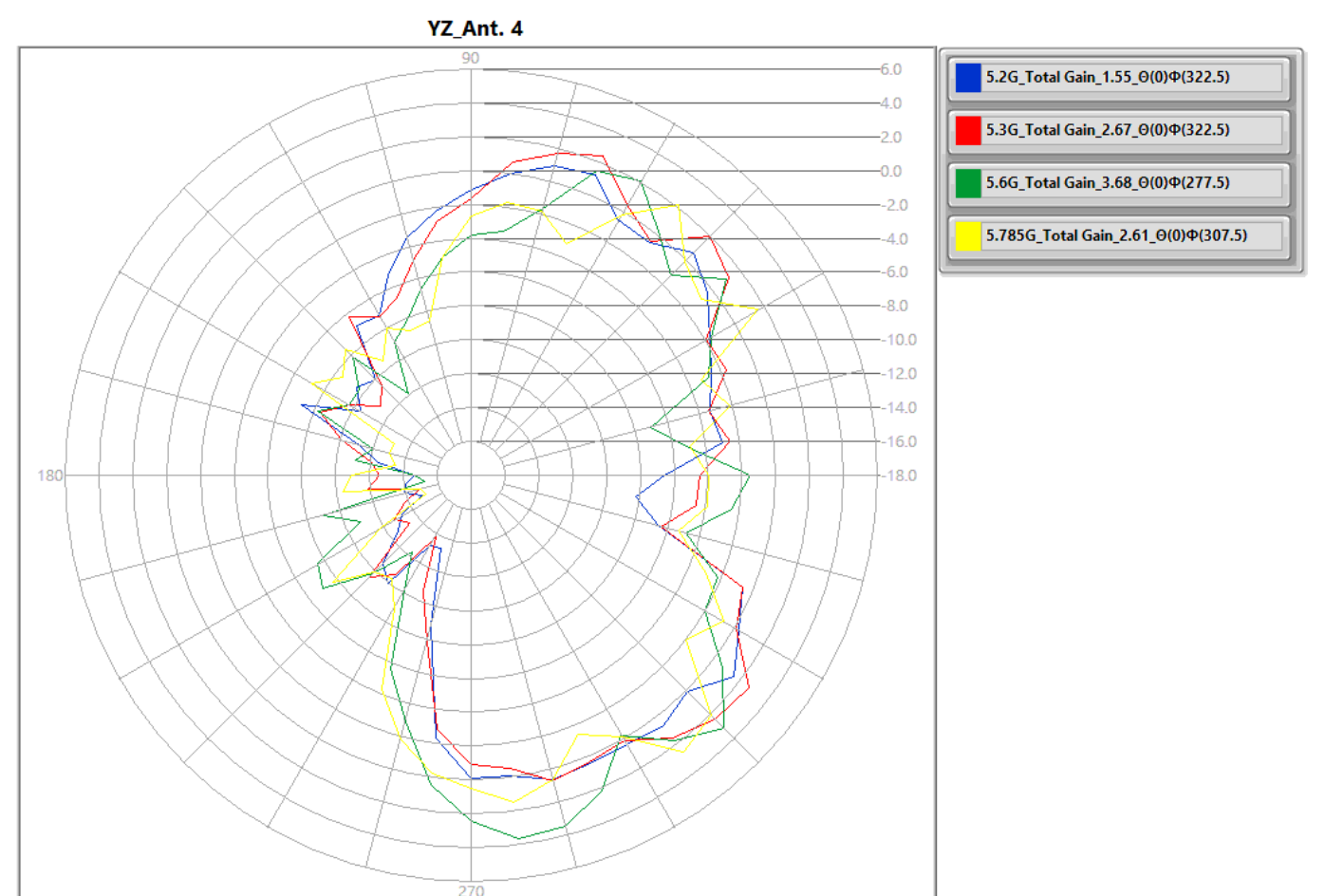
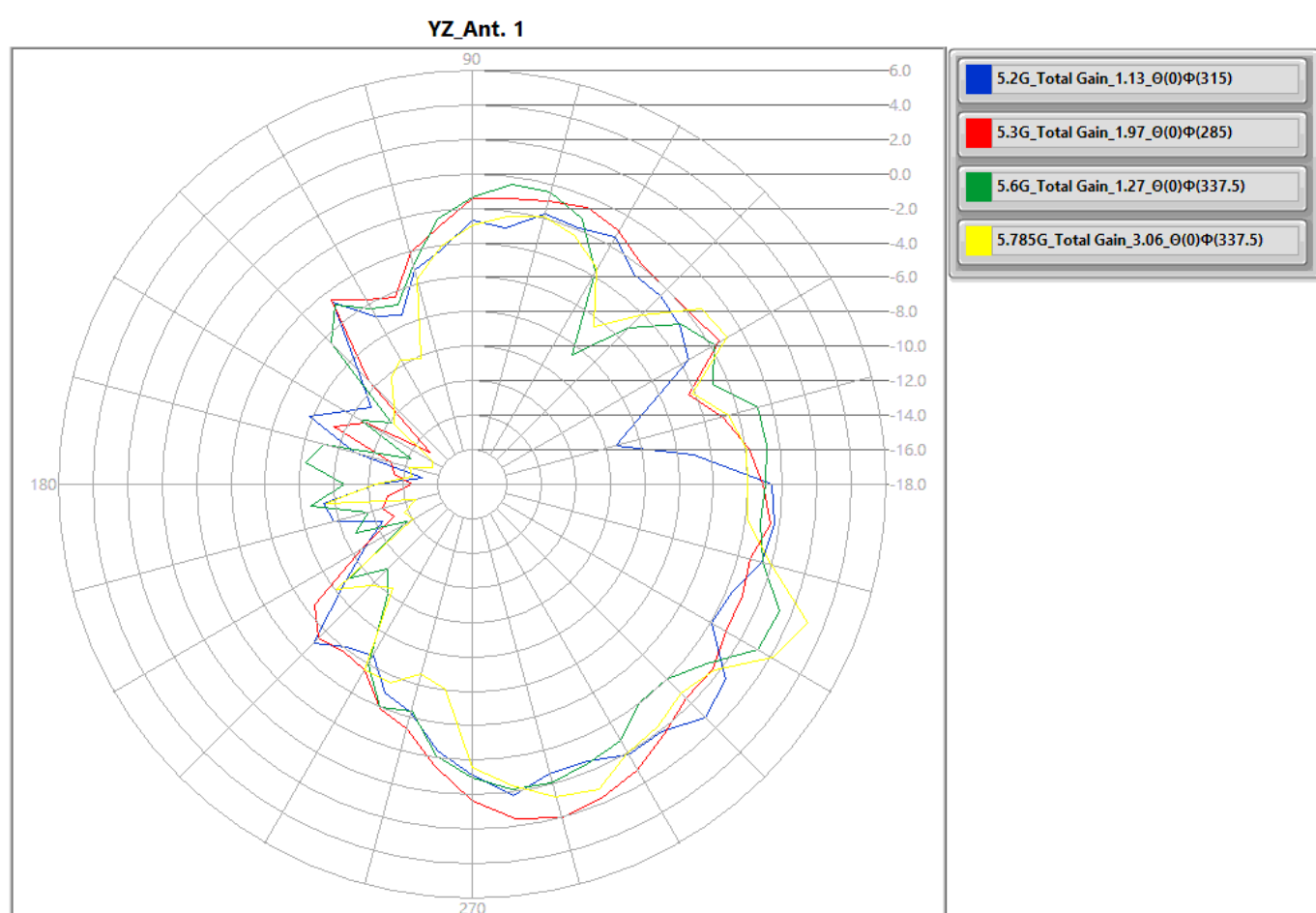
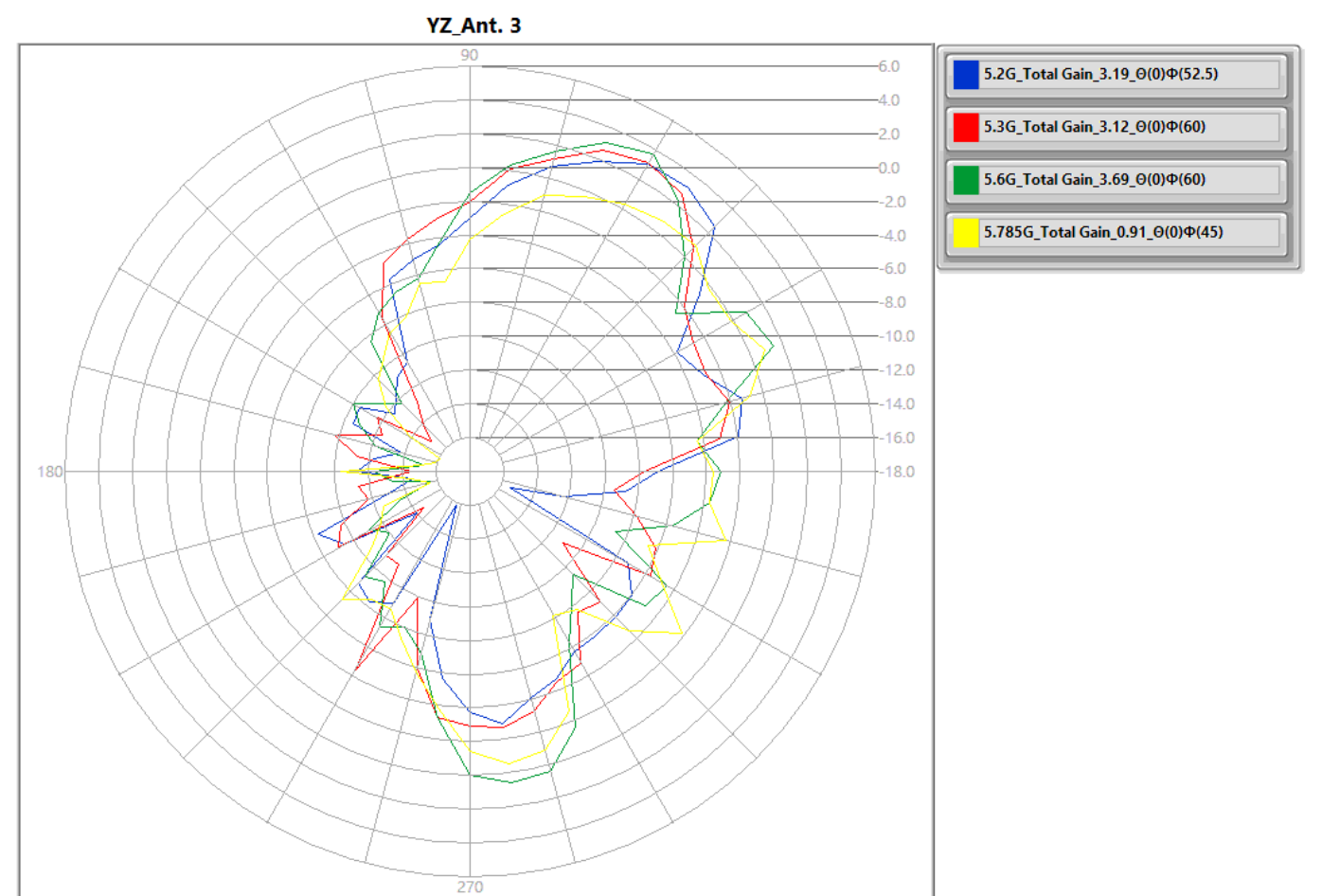
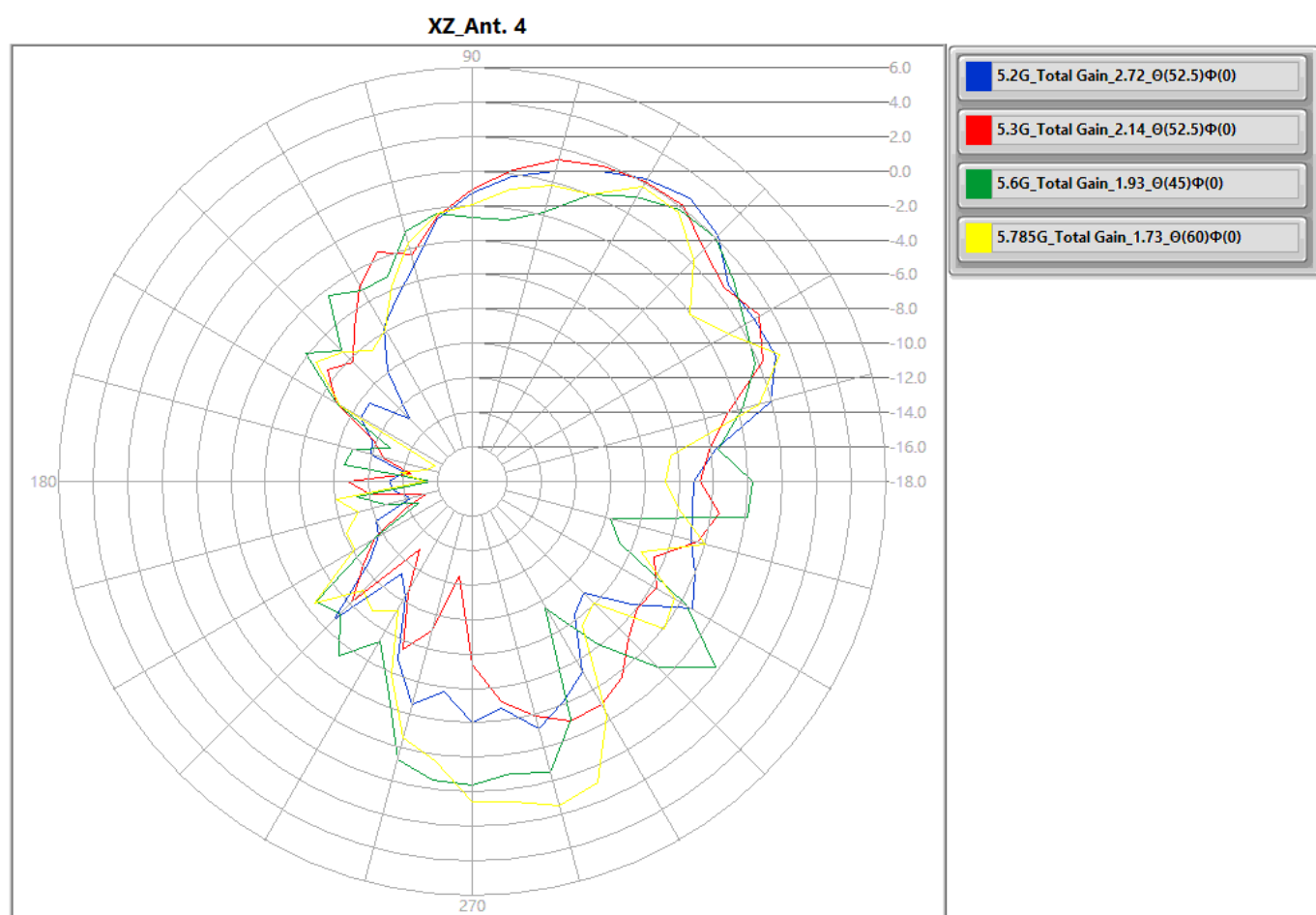
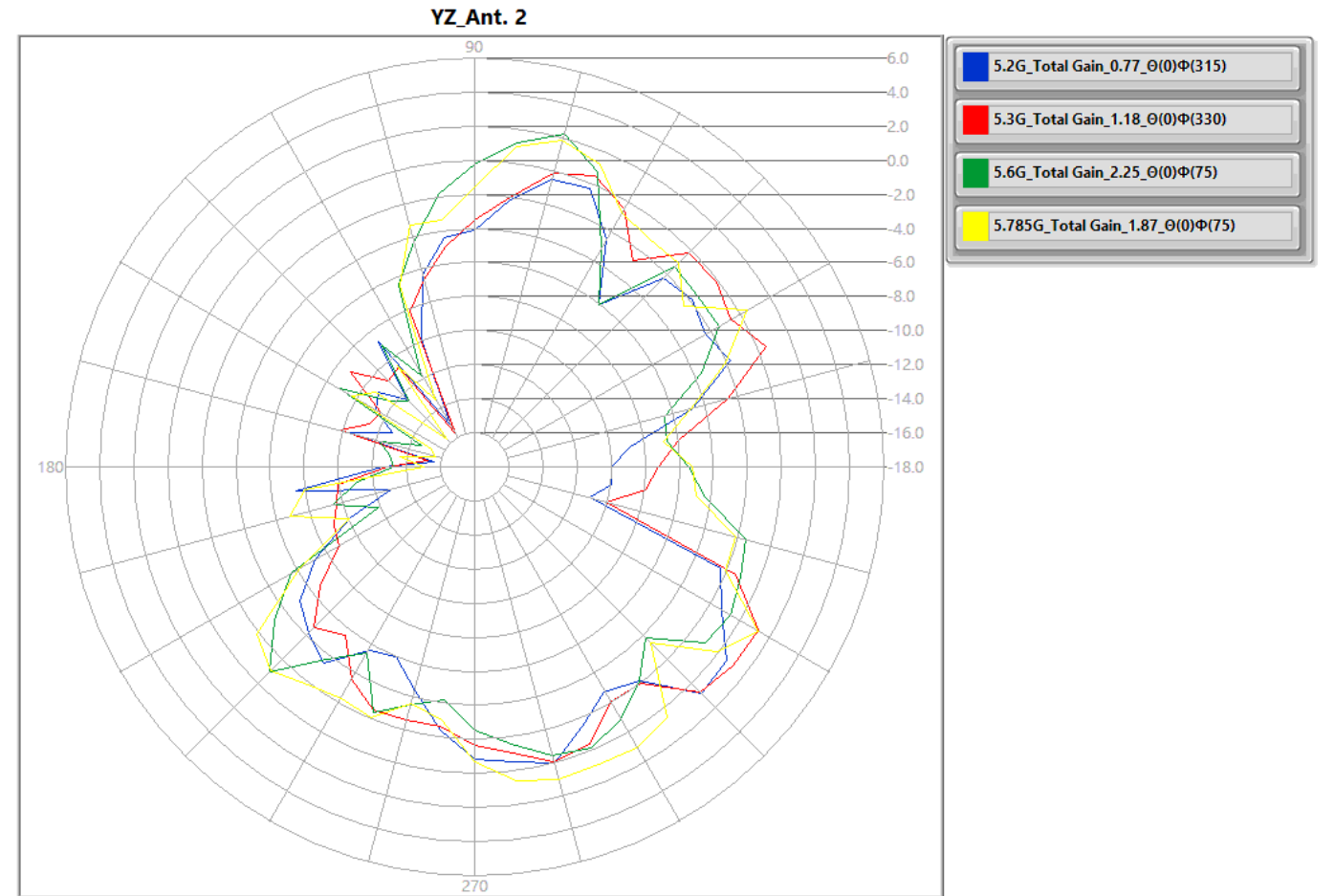
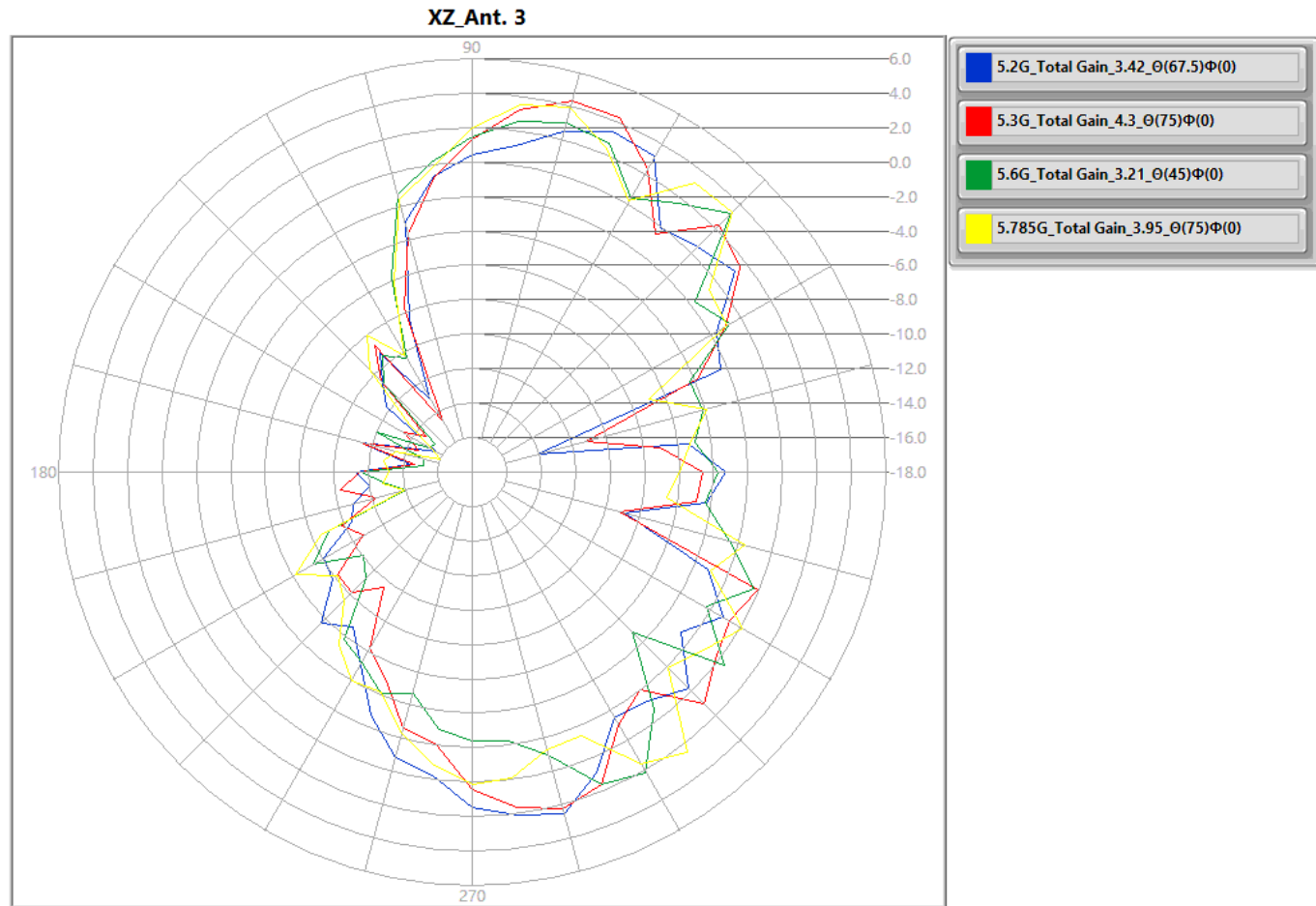
Antenna Pattern of 5GHz

Appendix E

(H25)	3.59:3.32	-3.61:3.81	-3.81:3.32	-2.75:2.38	-2.59:2.85	-2.51:1.99	-1.72:1.59	-2.29:2.81	-2.61:1.78	-1.96:1.70	-0.04:0.96	1.89:2.47	2.68:2.54	1.78:0.85	0.21:0.17	-0.64:1.34	-1.96:2.38	2.51:2.48	2.43:2.88	-4.17:0.06	-8.14:10.42	-11.18:10.52	9.25:8.64	-5.84:5.81
(H26)	7.25:3.53	-2.30:2.71	-4.80:5.70	-4.50:4.29	-6.87:6.45	-4.87:3.19	-2.36:2.12	-3.07:4.49	-3.81:0.88	0.98:1.45	1.18:1.02	1.41:1.90	2.20:2.26	2.07:1.82	1.83:1.32	0.94:0.38	0.33:0.38	-0.08:0.74	-1.25:1.33	-2.03:3.08	-3.91:5.40	-7.18:10.38	-10.32:9.49	-6.54:7.94
(H27)	-1.04:0.64	-2.97:1.47	-6.52:0.60	-3.50:3.06	-4.20:4.03	-2.93:4.40	-1.80:0.65	-1.57:0.79	-3.83:1.07	1.07:1.73	1.04:0.03	-1.08:2.13	2.31:1.10	0.48:1.34	1.48:1.48	1.41:1.63	2.02:2.16	2.04:2.74	-0.63:0.61	-1.07:1.65	-2.96:4.08	-4.15:4.32	-12.92:1.79	-5.57:7.98
(H28)	9.03:5.88	-4.50:6.76	-6.00:3.30	-3.04:3.27	-1.02:1.75	-2.09:4.47	-2.37:0.15	-0.68:3.58	-1.17:1.20	1.51:2.01	0.87:0.29	-1.73:2.31	-4.69:4.29	-0.56:1.62	1.55:1.39	1.52:0.47	-0.71:1.13	1.82:0.27	0.77:1.38	-1.95:1.29	-2.41:5.04	-3.80:2.27	-3.12:5.88	-6.87:1.21
(H29)	5.07:4.74	-3.75:4.86	-3.25:3.33	-7.33:3.61	-1.20:2.75	-2.62:0.65	-6.01:1.83	-0.32:3.15	-4.04:1.37	1.91:2.25	0.78:1.96	-1.80:1.45	-2.87:0.42	-0.19:1.78	0.45:0.53	0.91:1.68	-3.32:1.85	-0.28:0.57	2.19:4.00	-2.42:0.57	-1.14:4.26	-6.53:3.08	-3.21:3.68	-9.68:4.36
(H30)	-4.07:4.08	-3.21:0.77	0.21:1.17	1.30:1.14	1.20:0.23	-2.29:3.85	-2.50:0.48	1.17:1.20	0.47:0.04	2.26:1.71	2.20:2.15	0.27:0.48	-0.66:1.36	-0.19:1.79	-1.01:0.59	1.52:0.31	-0.50:0.48	0.07:0.97	-2.77:4.09	-2.11:0.84	0.94:0.79	-3.87:4.83	-1.19:3.39	-8.84:1.29
(H31)	-3.71:2.67	-2.32:0.04	0.91:0.26	0.83:2.23	1.89:0.14	-1.68:1.11	-0.33:1.59	1.85:1.63	1.98:1.41	2.94:0.47	2.29:0.48	0.28:0.16	0.05:0.08	0.54:1.06	-2.67:0.63	1.69:1.05	0.94:1.52	0.72:0.66	-1.49:1.24	0.20:1.07	1.01:0.22	-2.43:5.51	-4.98:1.39	-4.52:4.94
(H32)	7.82:2.27	-2.47:0.22	1.74:1.38	2.55:0.92	1.29:0.40	-1.53:1.82	-0.51:2.01	1.54:1.54	1.59:1.14	2.12:1.35	1.56:0.52	0.48:0.19	0.76:0.46	-0.03:0.46	-3.74:1.49	1.27:0.91	1.24:0.38	-0.02:0.31	1.10:0.98	1.16:0.87	-1.04:0.68	-7.19:4.07	-3.19:0.62	1.59:0.52
(H33)	5.72:2.45	-3.28:0.72	1.30:1.28	2.52:0.97	0.32:0.69	-2.36:2.67	2.22:0.73	-1.57:0.53	0.52:1.65	0.82:1.26	0.86:1.12	-0.82:2.20	-2.69:0.55	-0.56:2.73	-4.81:1.04	0.43:0.53	0.99:1.63	0.83:1.62	-0.57:1.07	0.88:1.06	1.29:0.65	-0.73:0.55	-7.55:0.49	-2.97:4.33
(H34)	9.74:5.68	-5.70:2.89	-4.12:0.11	0.98:0.02	-1.18:2.21	-4.66:3.51	-4.97:0.97	-3.24:2.35	-1.13:0.84	-0.24:0.35	-1.14:0.34	-2.51:0.82	-4.07:2.31	-1.59:0.85	-4.76:2.87	-2.39:1.73	-1.41:0.44	-0.88:1.86	-0.17:0.27	-0.89:0.44	-2.33:0.69	-7.90:5.61	-2.92:5.20	1.59:0.52
(H35)	9.53:4.76	-10.32:4.49	-1.56:1.73	-1.49:2.48	-3.35:0.51	-2.50:3.34	-4.40:2.32	-0.97:0.68	2.41:1.09	2.70:1.80	-0.89:0.55	5.58:3.81	5.71:4.17	2.42:4.19	5.75:4.05	4.39:4.48	3.52:1.51	1.49:4.27	2.41:0.81	-1.26:1.24	-1.63:2.48	-4.52:5.83	-4.12:5.54	-3.11:0.68
(H36)	8.26:4.68	-1.23:0.73	1.33:0.44	-0.17:0.57	-0.02:1.05	-0.15:0.65	-0.34:0.41	-4.80:1.71	-4.60:1.33	-4.62:0.53	-4.74:1.07	-6.63:0.53	-4.59:1.96	3.82:1.42	-5.88:0.81	6.88:0.53	7.18:0.58	4.41:0.81	-0.23:1.03	-1.54:0.43	6.26:10.83	9.71:1.18	-2.56:2.29	1.59:0.52
(H37)	8.64:10.82	-10.44:6.36	-3.07:0.63	-4.26:0.77	5.34:1.39	0.03:0.95	0.89:0.32	7.11:11.48	8.99:1.16	7.03:7.56	-5.52:1.32	4.14:1.62	5.60:0.90	5.14:1.12	-4.25:7.50	5.67:1.29	4.87:0.68	9.86:4.35	5.91:0.49	-4.53:0.36	-5.44:1.42	-7.62:7.74	8.75:4.74	-5.68:1.93
(H38)	-16.46:11.08	-11.07:8.37	-0.47:0.32	-0.56:0.53	0.04:0.51	0.98:0.18	-15.76:10.52	-8.89:4.72	7.22:6.41	-7.89:7.68	-8.56:4.73	-3.29:4.79	4.48:7.90	3.57:7.74	-7.29:4.74	-3.91:5.98	-1.01:4.64	5.60:1.47	-4.46:1.34	-4.91:5.53	-7.30:7.35	-6.38:5.35	-5.22:4.99	1.59:0.52
(H39)	8.74:10.34	-12.88:12.76	-9.96:4.59	-5.63:4.33	-5.68:4.41	-1.94:0.04	-4.70:4.11	-6.19:4.60	6.63:7.44	-7.19:6.10	-12.19:13.48	-8.70:16.16	6.34:6.86	0.06:0.68	-10.23:7.49	-12.17:4.33	-4.55:0.68	8.76:5.81	-11.88:9.55	-3.27:6.87	-6.47:4.35	-15.75:7.12	-3.98:7.01	1.59:0.52
(H40)	-7.64:11.33	-9.15:10.19	-13.41:7.89	-8.67:10.31	-4.19:8.12	-8.39:6.48	-12.42:6.34	-7.21:10.65	7.42:9.22	-10.65:8.88	-11.50:8.00	-8.65:4.84	-8.85:5.62	6.36:11.72	-7.81:8.85	-8.95:5.72	-4.59:11.34	-7.56:5.83	-4.22:8.84	-13.85:8.41	-4.30:5.71	-1.93:8.11	-1.46:11.13	-3.83:6.74
(H41)	-4.36:14.41	-10.96:10.53	-10.50:9.00	-11.22:12.38	-10.42:12.88	-8.69:7.43	-10.84:7.13	-7.18:13.41	-14.64:13.41	-12.83:9.87	-10.87:8.19	-10.41:11.70	-4.68:4.11	-13.70:10.54	-11.51:12.53	-5.93:4.50	-10.29:11.21	-6.97:4.99	-5.11:9.25	-14.19:13.85	-14.62:6.28	-8.53:10.07	-7.52:6.39	-10.67:7.87
(H42)	-10.53:8.78	-6.93:7.90	-10.30:10.99	-11.17:11.12	-12.91:15.16	-13.26:13.35	-11.27:13.10	-10.47:13.16	-15.60:12.85	-10.72:12.30	-11.02:7.76	-8.75:12.89	-14.60:10.93	-10.34:11.21	-12.00:13.76	-15.29:13.87	-8.70:6.87	-7.19:10.22	-11.89:14.38	-12.67:10.88	-14.01:6.48	-11.47:10.40	-11.70:7.41	1.59:0.52
(H43)	-10.26:11.80	-15.02:13.43	-12.30:13.17	-13.61:14.27	-14.77:10.54	-15.27:15.58	-12.76:11.83	-11.38:10.41	-11.31:14.84	-15.50:13.04	-12.87:11.30	-10.31:10.30	-3.81:8.95	-11.46:11.62	-12.13:14.48	-15.15:10.99	-13.49:11.12	-8.37:8.22	-10.15:10.94	-12.80:14.66	-14.60:15.21	-14.74:12.23	-8.66:10.18	-8.76:6.80
(H44)	-9.33:12.23	-13.11:14.42	-15.87:15.87	-15.31:15.35	-15.31:15.35	-9.12:9.51	-10.30:10.61	-11.65:12.10	-11.36:14.13	-15.86:15.67	-14.39:14.13	-14.58:15.42	-14.76:13.98	-15.15:14.99	-14.98:13.44	-13.56:13.29	-12.41:12.07	-12.92:13.91	-14.62:15.21	-14.84:13.71	-13.55:12.15	-10.66:10.71	-12.84:10.57	1.59:0.52
(H45)	-14.76:13.98	-12.69:11.92	-14.32:13.58	-11.47:13.41	-10.67:15.12	-15.74:13.51	-15.79:15.74	-13.77:12.60	-11.32:10.46	-10.82:11.12	-10.81:11.12	-14.16:12.29	-13.78:14.13	-12.27:12.33	-11.02:8.41	-8.47:9.34	-7.07:6.73	-7.06:7.31	-7.40:7.44	-7.60:7.98	-7.91:8.99	-8.69:10.75	-11.68:14.99	-15.43:14.43
(H46)	-15.49:15.38	-16.11:14.78	-14.36:13.87	-13.22:13.19	-12.70:12.46	-12.86:13.44	-12.50:12.31	-11.63:11.11	-10.35:10.38	-10.46:12.30	-12.49:11.61	-14.33:14.23	-14.96:13.16	-11.96:11.42	-12.91:12.46	-12.10:12.16	-10.35:9.84	-10.06:10.16	-10.26:10.91	-11.11:12.27	-12.12:12.06	-13.11:13.39	-14.54:15.48	-15.63:14.43
Frequency	3.53GHz	TableA.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gain	(H37)(H67.5)	(H15)(H22.5)	(H37)(H67.5)	(H45)(H62.5)	(H37)(H67.5)	(H15)(H22.5)	(H37)(H67.5)	(H15)(H22.5)	(H37)(H67.5)	(H15)(H22.5)	(H37)(H67.5)	(H15)(H22.5)	(H37)(H67.5)	(H15)(H22.5)	(H37)(H67.5)	(H15)(H22.5)	(H37)(H67.5)	(H15)(H22.5)	(H37)(H67.5)	(H15)(H22.5)	(H37)(H67.5)	(H15)(H22.5)	(H37)(H67.5)	(H15)(H22.5)
(H1)	3.88:3.83	3.84:3.88	3.84:4.10	4.37:4.19	4.35:3.82	4.23:4.69	7.22:7.14	7.18:7.18	7.07:7.29	7.08:7.16	6.45:6.19	4.27:4.23	5.70:5.67	5.76:5.47	5.46:5.53	5.07:5.33	4.11:5.15	3.83:5.72	5.59:5.01	4.58:4.97	4.80:4.78	4.44:4.41	4.10:3.58	3.46:3.50
(H2)	4.64:4.69	5.10:4.62	5.04:5.03	5.47:5.27	5.54:5.75	5.79:4.22	5.85:5.29	5.47:4.85	4.54:4.21	3.71:3.85	3.23:3.07	2.71:3.07	3.49:3.19	3.74:3.48	4.05:3.77	7.27:7.81	7.72:7.87	7.89:7.38	7.87:6.98	6.90:7.38	6.60:7.38	6.53:6.67	6.52:6.81	6.50:6.87
(H3)	2.03:2.07	-1.91:1.50	2.37:2.50	2.71:2.82	3.04:3.99	2.84:2.70	2.63:2.89	3.08:3.07	2.82:2.77	2.36:1.80	0.74:0.34	0.83:0.31	2.04:1.17	0.89:1.45	-2.21:1.36	-5.02:0.49	8.78:10.38	11.42:11.02	8.97:9.38	7.35:6.48	6.15:6.48	6.15:6.48	6.15:6.48	1.59:0.52
(H4)	1.70:1.34	-2.58:1.4	-3.76:2.27	-2.40:2.13	-1.76:1.21	-0.57:0.02	0.50:0.55	0.62:0.59	0.49:0.43	0.40:1.41	2.25:0.22	2.82:0.27	3.36:1.19	3.82:0.65	2.35:1.66	0.59:0.41	-1.63:2.52	-2.63:2.03	-1.42:1.40	-2.13:2.74	-3.34:2.20	-4.75:4.64	-3.40:2.22	-1.59:1.29
(H5)	3.89:4.40	3.49:2.33	-2.73:2.42	-3.17:2.27	2.31:1.42	-0.69:0.36	0.04:0.30	0.71:0.32	1.48:1.31	2.48:1.31	3.54:0.93	3.33:0.76	3.32:0.76	2.72:2.56	1.98:1.21	0.78:0.71	1.07:1.27	1.18:0.70	1.20:0.30	-1.04:1.11	-3.46:1.32	-5.13:3.54	-2.13:2.32	1.59:0.52
(H6)	8.65:6.17	2.04:1.07	3.17:0.48	6.50:5.22	7.55:6.45	3.97:1.97	0.15:0.42	-0.23:0.47	1.00:1.67	2.01:0.26	1.82:1.91	2.30:2.04	1.15:0.48	0.94:1.98	2.88:0.40	3.20:2.47	1.91:1.82	1.77:1.82	1.13:0.63	0.25:0.22	0.47:0.38	-8.80:4.72	-1.73:4.27	-5.86:0.67
(H7)	8.30:3.51	-2.19:3.39	-4.38:2.14	0.61:2.42	-6.81:4.44	-3.17:2.50	-0.22:0.61	-1.04:1.53	0.54:1.53	0.87:1.94	1.30:1.26	1.84:1.61	0.97:0.42	0.67:1.22	1.23:0.84	1.50:0.07	-2.86:1.87	-0.07:0.91	0.71:0.30	-1.02:0.70	0.07:0.38	-0.30:0.47	-5.68:1.13	-5.98:10.37
(H8)	4.59:1.43	2.29:3.19	-2.19:0.51	0.89:2.34	-2.46:1.13	-3.87:4.15	-2.89:1.59	-2.47:1.70	-1.24:1.34	1.80:2.15	2.89:1.69	2.92:0.33	1.33:0.87	2.20:1.64	-3.80:0.02	0.40:1.07	-1.30:0.69	-0.36:0.73	0.21:0.30	-2.63:1.18	0.81:0.98	-0.19:0.55	-0.22:1.29	-5.44:10.33
(H9)	3.87:0.21	-2.91:2.47	-1.44:1.77	-3.93:0.16	-2.61:2.45	-5.10:1.29	-0.51:1.00	-0.88:1.53	-0.67:1.32	1.19:1.22	2.00:2.00	2.46:1.73	1.42:1.48	2.29:1.69	-1.46:0.91	1.01:1.20	-1.49:0.44	0.47:0.43	0.20:0.36	-2.98:0.06	2.68:0.86	0.58:0.62	-2.77:2.06	-3.17:0.35
(H10)	2.72:1.48	-1.84:1.00	-1.27:2.52	-1.07:0.44	0.43:1.60	-0.71:0.38	0.04:0.13	0.75:0.29	0.59:1.47	3.17:0.02	2.46:0.73	0.54:1.62	1.99:0.05	-0.93:0.84	1.53:1.17	1.74:2.02	1.32:0.67	0.36:1.86	-1.70:0.67	1.34:0.62	0.30:1.03	-0.98:1.33	-3.87:5.20	1.59:0.52
(H11)	-4.41:2.27	-2.26:1.36	0.71:1.52	1.30:2.49	-0.89:2.41	-6.01:0.77	0.01:0.04	0.84:1.13	0.33:1.25	0.94:0.98	1.35:1.14	-2.20:1.35	0.48:0.69	0.08:0.51	0.80:1.52	0.48:0.69	0.08:0.51	0.80:1.52	0.48:0.69	0.08:0.51	0.80:1.52	0.48:0.69	0.08:0.51	0

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







Antenna Pattern of 6GHz

Appendix F

(#F57)	2.04/0.91	-0.29/0.85	-0.73/-0.08	1.53/1.30	1.39/1.14	2.22/2.78	1.12/2.86	1.02/0.97	0.50/0.77	-0.58/-1.45	-2.23/-1.80	-0.28/0.31	1.16/2.88	2.31/0.92	0.82/0.32	-1.03/2.77	1.78/2.47	3.60/2.68	1.77/2.80	3.72/4.47	3.83/4.57	3.33/2.28	2.85/2.82	1.71/1.03
(#F59)	-1.11/0.48	-1.20/0.54	-0.30/1.12	2.20/2.07	0.69/-1.43	2.09/0.35	1.51/0.28	1.36/0.39	-1.44/-0.98	0.71/-1.86	-2.36/-2.25	-1.38/-0.51	0.89/1.76	1.71/0.71	0.16/-0.83	-2.62/1.17	0.89/2.94	3.48/2.99	1.21/0.86	3.98/4.39	3.19/4.90	3.77/1.04	0.92/1.76	1.02/0.52
(#B2)	-0.42/-1.88	-2.58/2.75	-2.83/-1.00	0.58/1.20	-1.88/-1.95	-0.63/-1.45	-1.19/1.44	-2.20/-2.89	-2.64/-1.89	-3.44/-2.76	-2.45/-2.26	-3.00/-1.66	-0.44/-0.95	-1.51/-2.77	-4.62/-0.70	-0.33/-1.19	3.21/0.63	0.16/0.36	3.31/0.74	3.30/0.85	2.41/0.40	-2.07/0.58	0.09/0.67	
(#B9)	2.11/-1.45	-4.98/-0.67	-6.27/-3.83	-2.47/-0.63	-6.47/-2.28	-4.89/-1.83	-5.50/-2.63	-3.17/-0.88	-4.43/-1.59	-3.95/-0.94	-6.62/-0.16	-5.17/-2.42	-7.04/-2.20	-3.15/-2.37	-3.05/-1.40	-6.22/-3.87	-1.62/-0.80	0.77/0.32	2.84/-1.10	1.63/0.25	1.76/0.91	0.66/-2.88	0.18/-3.83	-2.96/-3.20
(#B7)	5.11/-0.91	8.05/-1.17	8.66/-0.73	5.88/-0.58	8.87/-0.84	8.06/-1.40	5.95/-0.94	5.34/-0.12	7.54/-0.67	5.51/-0.75	7.74/-0.50	8.63/-1.74	-0.39/-3.51	-0.69/-6.55	-5.58/-0.61	-11.12/-8.80	-3.76/-2.40	3.14/-2.76	4.73/-2.73	2.71/-2.84	-1.39/-0.63	-4.69/-4.49	-2.72/1.17	-4.61/-3.35
(#B10)	-4.59/-1.70	9.86/-13.96	-12.56/-12.17	9.53/-4.37	-11.68/-1.78	-9.03/-0.78	-10.28/-0.89	-6.20/-1.42	-0.88/-0.80	-6.70/-1.12	-10.52/-0.64	-11.68/-0.91	-0.78/-3.51	-0.69/-6.55	-5.58/-0.61	-11.12/-8.80	-3.76/-2.40	3.14/-2.76	4.73/-2.73	2.71/-2.84	-1.39/-0.63	-4.69/-4.49	-2.72/1.17	-4.61/-3.35
(#112)	-13.70/-13.32	-12.20/-15.32	-15.28/-15.18	9.61/-7.55	-4.44/-13.33	-10.33/-10.20	-12.00/-9.75	8.92/-10.13	-11.05/-11.11	-11.13/-8.69	-10.79/-9.65	-9.89/-7.86	-7.87/-9.91	-8.42/-12.74	-10.59/-8.02	-7.60/-8.11	-9.98/-7.87	6.01/-11.01	5.43/-5.55	5.41/-6.63	-3.84/-3.78	-4.72/-12.12	-8.92/-10.88	-4.61/-3.35
(#119)	-15.89/-13.28	-13.64/-13.15	-13.68/-15.22	-14.91/-11.87	-13.32/-15.67	-13.66/-12.98	-14.15/-11.70	-10.02/-8.43	-13.21/-14.50	-13.44/-16.33	-13.53/-13.15	-12.60/-11.41	-11.27/-12.02	-10.58/-11.69	-13.86/-15.76	-6.60/-8.84	6.38/-8.08	-11.16/-7.13	9.42/-8.03	-5.52/-7.86	-8.27/-8.97	-12.16/-12.32	-8.97/-11.89	
(#127)	-15.76/-14.21	-14.72/-15.06	-12.34/-14.96	-14.44/-13.43	-13.20/-14.43	-14.71/-10.53	-11.60/-8.46	-10.19/-14.29	-14.85/-12.91	-12.67/-16.03	-15.52/-15.68	-14.51/-13.29	-13.98/-11.31	-11.14/-15.79	-10.85/-11.35	-14.07/-12.28	-11.10/-14.47	-6.84/-14.95	-14.89/-12.43	-15.02/-15.34	-13.46/-12.11	-11.33/-11.66	-8.80/-13.82	
(#129)	-15.89/-15.89	-15.25/-16.12	-16.47/-16.28	-16.83/-16.52	-14.76/-14.56	-15.70/-15.38	-13.25/-15.26	-14.20/-15.28	-12.28/-16.50	-14.53/-15.99	-15.89/-15.49	-14.24/-12.86	-12.89/-15.62	-11.92/-13.81	-10.29/-15.35	-12.76/-12.13	-8.29/-12.67	-12.84/-12.76	-12.70/-12.27	-11.84/-8.84	9.05/-11.22	-12.77/-16.25	-12.50/-14.28	
(#140)	-10.07/-16.15	-15.48/-15.19	-15.02/-14.26	-14.52/-13.77	-15.23/-15.28	-15.75/-15.33	-10.48/-13.46	-10.07/-12.18	-14.08/-15.54	-14.89/-15.54	-15.20/-15.20	-15.63/-14.72	-14.81/-11.08	-11.21/-12.02	-12.34/-15.19	-15.93/-12.75	-11.15/-9.81	-10.38/-15.52	-14.01/-12.72	-15.71/-15.20	-12.00/-14.36	-15.30/-15.52	-11.59/-10.02	
(#150)	-15.42/-16.03	-15.22/-15.58	-15.60/-14.73	-15.76/-15.67	-13.89/-13.57	-14.18/-15.08	-15.71/-14.86	-15.51/-15.55	-15.60/-13.90	-14.42/-15.62	-15.95/-15.41	-15.16/-15.02	-14.71/-16.61	-15.31/-13.81	-14.92/-13.86	-15.20/-15.96	-15.18/-14.44	-16.44/-15.20	-15.24/-15.96	-15.64/-15.26	-15.38/-15.22	-15.40/-14.38	-15.40/-14.38	
(#157)	-11.16/-11.03	-13.47/-15.26	-14.55/-11.87	-11.72/-12.94	-14.85/-14.55	-13.74/-14.81	-15.60/-15.09	-15.64/-15.57	-15.69/-14.80	-10.02/-15.15	-15.89/-15.76	-16.15/-15.03	-16.20/-15.95	-15.50/-13.99	-14.71/-14.84	-11.91/-12.74	-12.13/-13.23	-13.23/-14.36	-13.39/-13.39	-13.67/-15.24	-15.95/-14.80	-13.90/-14.78	-14.52/-12.72	-13.72/-12.98
(#160)	-11.95/-11.01	-12.91/-13.49	-14.37/-15.30	-15.18/-15.42	-14.64/-15.64	-15.10/-15.49	-15.60/-15.07	-14.16/-15.70	-14.74/-14.49	-15.60/-15.12	-14.78/-14.43	-15.82/-15.12	-14.44/-15.10	-11.15/-15.25	-14.28/-15.26	-10.40/-13.77	-13.79/-16.22	-14.17/-14.45	-15.42/-15.74	-15.92/-16.06	-15.21/-13.97	-11.89/-11.77	-12.17/-15.51	
(#172)	-14.93/-14.32	-14.53/-15.48	-15.17/-15.09	-15.42/-14.29	-15.34/-15.15	-15.15/-15.68	-15.59/-15.29	-14.86/-14.19	-13.38/-12.78	-13.72/-14.81	-15.02/-15.08	-14.80/-14.80	-14.86/-13.85	-14.16/-15.34	-15.14/-15.15	-16.00/-16.02	-14.80/-11.92	-10.50/-9.86	9.70/-10.06	-10.25/-10.21	-11.31/-12.54	-14.60/-15.73	-15.75/-15.07	-15.54/-15.37
(#187)	-15.27/-14.87	-15.44/-15.40	-15.42/-14.36	-13.87/-14.31	-14.56/-14.78	-15.10/-15.35	-15.60/-15.64	-15.21/-15.12	-15.38/-14.40	-15.31/-15.53	-16.21/-15.25	-14.80/-15.49	-15.54/-15.90	-14.86/-15.24	-14.60/-14.39	-15.45/-16.06	-15.37/-14.77	-15.51/-15.58	-15.76/-15.54	-15.15/-15.73	-15.16/-15.51	-16.17/-15.54	-15.35/-14.16	-14.23/-15.90
Freq(kHz)	6.4750/6.51	Table(kHz)	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	
Gain	(#F57/0.57)	(#F59/0.2221)	(#B9/0.30715)	(#B10/0.963215)	(#B7/0.98715)	(#F57/0.62215)	(#B9/0.30715)	(#F59/0.915215)	(#F12/0.12715)	(#F13/0.14215)	(#F15/0.15715)	(#F16/0.17215)	(#F17/0.18715)	(#F19/0.20215)	(#F21/0.21715)	(#225/0.23215)	(#B4/0.30715)	(#B5/0.30715)	(#F27/0.27715)	(#B8/0.30715)	(#B9/0.30715)	(#F15/0.33215)	(#F37/0.33715)	(#B4/0.30715)
(#F57)	0.36/-1.27	-2.36/-1.91	-1.57/-1.40	-1.10/-0.80	0.41/0.24	0.11/0.35	0.05/0.70	0.68/0.65	0.66/0.68	0.77/0.66	0.90/-0.07	-0.02/0.85	-1.13/-1.38	-1.48/-1.53	-1.61/-1.54	-1.66/-1.73	-1.64/-1.64	-1.50/-1.43	-1.38/-1.45	-1.70/-1.97	-2.36/-2.76	-3.34/-3.38	0.15/-1.37	-3.12/-0.28
(#F59)	-0.60/-0.50	-0.30/-0.15	-0.44/-0.65	-0.95/0.73	-4.80/-0.21	-0.13/0.05	-0.10/-0.24	-0.37/-1.04	-1.76/-0.14	-2.66/-1.31	-3.36/-3.11	-2.76/-2.41	-1.97/-1.50	-1.09/-0.54	-0.18/0.14	0.03/0.25	0.77/0.97	1.22/1.18	1.01/0.88	0.74/0.60	0.39/0.44	0.46/0.29	0.86/0.29	0.46/0.29
(#B9)	1.34/0.69	0.03/0.05	0.21/0.34	0.96/-1.25	-1.41/-1.54	-1.31/1.03	-0.54/-0.14	-0.06/-0.29	0.77/-1.30	-2.91/-0.77	-0.59/-0.49	0.07/0.54	0.83/0.92	1.04/-1.46	1.61/-1.79	2.00/-2.28	2.58/0.80	2.91/0.22	3.06/2.99	2.80/2.81	2.78/2.92	3.16/0.26	2.89/2.17	0.46/0.29
(#B7)	0.48/0.36	0.30/0.29	0.59/0.43	1.70/-1.69	2.34/-3.36	-4.51/-0.65	-5.22/-4.52	-3.57/-2.93	0.27/-1.39	0.27/-1.39	0.33/0.31	0.34/0.31	0.30/0.31	0.30/0.31	0.30/0.31	0.30/0.31	0.30/0.31	0.30/0.31	0.30/0.31	0.30/0.31	0.30/0.31	0.30/0.31	0.30/0.31	0.30/0.31
(#112)	1.46/-1.48	0.56/0.15	0.70/0.52	0.16/-0.97	-1.31/-1.41	-2.25/-1.47	-4.89/-3.78	-3.62/-1.51	-5.40/-3.81	-4.22/-3.74	-1.71/-0.61	-1.01/-2.09	2.19/-1.04	0.38/0.86	0.90/-1.41	1.19/0.34	0.19/0.19	0.03/0.41	1.19/-1.80	2.06/2.09	3.06/3.30	3.66/4.52	5.04/0.67	2.18/0.98
(#119)	0.85/-1.22	1.71/-0.96	1.87/0.86	0.58/-1.96	0.46/-1.56	-2.50/-2.33	-3.77/-3.94	-1.48/-1.25	-3.20/-3.31	-4.02/-4.06	-3.25/-4.81	-4.36/-2.62	-3.21/-4.06	-1.62/-1.67	1.60/-1.63	2.60/2.18	1.41/1.85	1.26/1.16	2.90/1.71	2.60/1.18	2.19/-1.43	6.51/0.25	4.37/0.51	0.87/0.29
(#127)	0.69/-0.58	0.53/-0.23	0.43/-1.24	0.35/-0.63	-1.48/-1.87	0.09/-1.73	1.55/0.12	0.09/-1.46	-4.22/-5.25	-4.39/-6.98	-5.69/-6.24	-4.40/-1.80	-0.03/-0.37	-1.19/-0.10	0.18/-0.93	0.05/-1.29	2.54/2.57	2.36/2.19	2.90/3.21	3.09/3.27	1.55/1.71	0.87/0.29	0.87/0.29	0.87/0.29
(#129)	1.65/-0.98	0.03/-0.27	1.39/0.75	0.96/-1.41	-0.50/-0.60	-0.52/-0.42	-0.76/-0.48	-1.21/-1.46	-2.20/-2.40	-0.56/-0.27	-0.56/-0.27	-4.08/-3.39	-1.67/-0.93	0.21/0.46	0.29/0.42	1.11/0.71	1.03/0.75	2.09/2.04	2.59/2.64	3.59/0.69	4.21/-0.49	2.29/0.05	0.46/0.29	0.46/0.29
(#140)	4.54/-4.40	0.27/1.43	0.91/-1.12	1.15/-1.52	0.11/0.32	-0.77/-1.01	0.28/0.56	-1.12/-0.59	1.88/0.39	0.82/-1.10	3.26/0.44	1.71/-0.93	0.41/-1.21	1.42/-1.32	1.49/0.17	1.99/-1.11	2.38/1.13	3.70/3.72	3.78/3.74	3.70/3.72	3.78/3.74	3.78/3.74	3.78/3.74	3.78/3.74
(#150)	0.43/-0.94	-0.08/-1.02	-2.30/-0.67	-0.78/0.02	0.54/0.53	1.78/-1.45	-0.01/1.07	1.27/-1.22	0.71/-0.54	-1.07/-0.68	-2.94/-3.50	-3.70/-3.66	-0.90/-0.09	0.07/0.12	1.98/-1.96	1.19/0.53	2.47/0.94	2.73/0.89	3.79/2.17	3.89/2.90	3.55/3.82	4.45/2.23	2.41/0.14	0.97/-1.35
(#157)	2.55/-0.35	0.28/0.04	0.28/0.00	0.27/-0.25	0.53/0.60	1.58/-0.93	-1.78/-0.42	0.12/0.34	0.45/-1.10	-0.45/-0.33	-3.98/-0.40	-0.93/-0.55	-2.96/0.08	0.28/0.12	1.98/-1.76	0.75/-1.49	1.79/2.95	2.86/3.38	4.95/0.81	3.80/3.58	4.54/0.32	1.91/0.18	1.29/-1.28	1.29/-1.28
(#160)	3.88/0.67	-1.28/0.70	-3.45/-0.88	-0.42/-0.37	0.91/-1.78	-1.80/-2.38	0.27/0.82	-4.27/-1.10	0.86/-0.95	-1.41/-0.65	-4.83/-0.81	-8.41/-0.88	-4.81/-2.35	-1.01/-0.44	-0.57/0.05	2.35/0.36	0.89/2.60	1.93/2.42	2.96/2.80	3.80/3.29	4.26/1.59	0.02/0.34	0.13/-0.51	0.13/-0.51
(#169)	-1.46/-10.34	-0.59/0.32	0.44/-2.35	0.69/-0.68	-0.03/-0.82	-0.59/-1.22	-0.30/-2.09	-1.73/-0.58	0.32/-1.23	-0.26/-0.20	-0.89/-0.48	-0.83/-0.28	-0.63/-0.34	-0.03/-0.34	-2.27/-2.22	-4.48/-2.00	-0.35/-0.26	0.86/0.41	-0.25/0.65	0.73/0.33	3.84/2.78	-1.17/-2.27	-1.17/-2.27	-1.17/-2.27
(#B7)	0.52/0.11	-10.31/-0.67	0.21/-0.61	0.29/-0.69	-0.00/-1.08	-0.88/-1.54	-0.59/-3.06	-0.15/-0.63	-0.82/-0.60	-0.25/-2.20	-7.53/-0.99	0.75/-1.42	-1.78/-4.71	-0.82/0.74	-4.53/-0.88	-6.12/-0.85	-2.77/-1.45	-0.59/-1.31	-0.36/2.28	-4.28/-1.75	-0.96/0.50	-2.08/-2.29	-1.16/-1.45	-4.07/-1.58
(#112)	0.71/-12.53	-10.31/-0.17	-13.03/-16.10	-0.59/-0.62	-10.41/-0.32	-12.72/-0.76	-8.20/-2.36	-9.90/-0.64	-10.32/-0.58	-11.01/-0.42	-10.00/-13.56	-8.97/-0.57	-11.93/-0.54	-11.93/-0.54	-11.93/-0.54	-11.93/-0.54	-11.93/-0.54	-11.93/-0.54	-11.93/-0.54	-11.93/-0.54	-11.93/-0.54	-11.93/-0.54	-11.93/-0.54	-11.93/-0.54
(#119)	-14.02/-12.80	-15.08/-14.85	-14.33/-12.27	-11.14/-7.78	-12.16/-7.77	-8.53/-10.59	-8.01/-11.29	-6.88/-8.26	-12.71/-11.13	-8.73/-11.41	-13.42/-14.68	-11.90/-12.36	-12.12/-10.35	-14.16/-13.83	-0.88/-0.67	0.37/-1.40	-5.28/-2.45	-7.26/-7.19	-11.26/-4.59	-7.74/-7.69	-4.08/-4.05	-6.15/-5.80	-4.71/-4.88	-4.71/-4.88
(#127)	-14.27/-14.01	-15.01/-14.51	-14.76/-15.76	-12.28/-15.46	-11.32/-11.59	-13.94/-13.49	-8.83/-12.46	-10.3																

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

