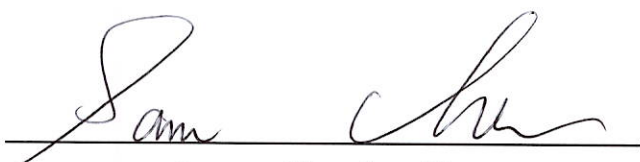


Antenna Composite Gain Test Report

FCC ID	2ABLKU4HM
Equipment	GigaSpire BLAST
Brand Name	Calix
Model Name	u4hm GM1028H
Applicant	Calix Inc. 1035 N. McDowell Blvd. Petaluma, CA94954 U.S.A.
Sample Received	Oct. 18, 2022
Start Test Date	Oct. 18, 2022
Final Test Date	Jan. 18, 2023



Approved by: Sam Chen

Sporton International Inc. Hsinchu Laboratory

No.8, Ln. 724, Bo'ai St., Zhubei City, Hsinchu County 302010, Taiwan (R.O.C.)



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History of this test report

[illegible]

1. Operation Mode and Antenna Information

Antenna Position	RF Port	Brand Name	Model Name	Ant. Type	Connector	Modes of Operation
2G Ant1	1	Walsin	RFDPA250505IMAB901	Dipole	I-PEX	2.4GHz, 5GHz UNII 1~3
2G Ant2	2	Walsin	RFDPA250511IMAB901	Dipole	I-PEX	2.4GHz, 5GHz UNII 1~3
5G Ant1	1	Walsin	RFPCA610706IM5B901	Dipole	I-PEX	2.4GHz, 5GHz UNII 1~3
5G Ant2	2	Walsin	RFPCA610706IM5B902	Dipole	I-PEX	2.4GHz, 5GHz UNII 1~3

Note:

2.4GHz Operation Mode (2TX/2RX)

2G Ant1~2G Ant2 can be used as transmitting/receiving antenna.

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

5GHz Operation Mode (2TX/2RX)

5G Ant1~5G Ant2 can be used as transmitting/receiving antenna.

5G Ant1~5G Ant2 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
2400-2483.5	2450
2400-2483.5	2483.5
5150-5250	5200
5250-5350	5300
5470-5725	5600
5725-5850	5785



3. Testing Location

Testing Location		
Sporton International Inc. Hsinhua Laboratory		
☒	HWA YA	ADD : No.13-1 & 14-1, Ln. 19, Wen 33rd St., Guishan Dist., Taoyuan City 333, Taiwan R.O.C.

Test Condition	Test Site No.	Test Engineer	Test Environment (°C / %)	Test Date
Radiated	05CH03-HY	Rex Liao	23-24 / 50-55	Oct. 18, 2022 ~ Jan. 18, 2023

Note:

Testing Site Information

Brand Name: TDK

Dimension: 11m*6m*6m

Characteristic: Fully Anechoic Chamber

4. Test Facility and Configuration

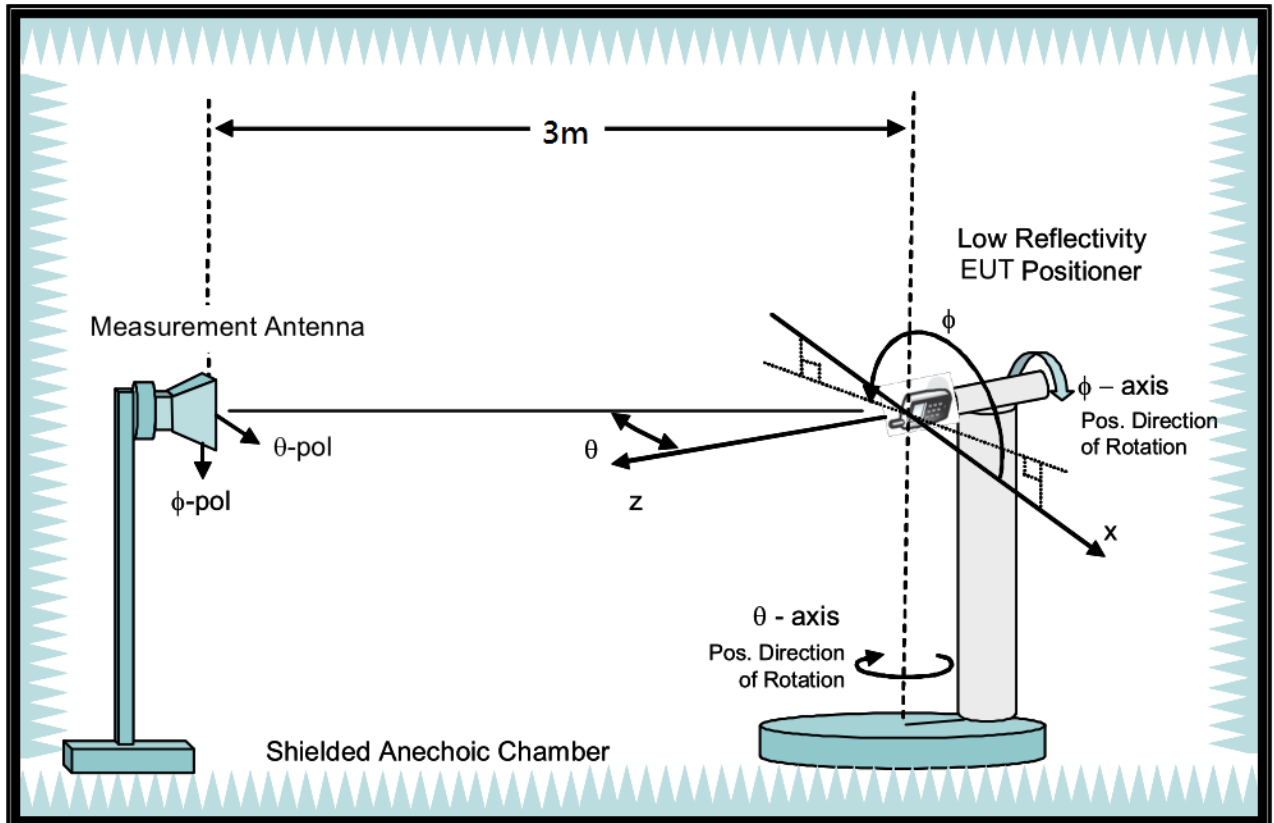
Test configuration: Reference to CITA OTA distributed-axes system configuration.

Chamber: Fully Anechoic Chamber.

Measurement antenna: Dual Polarization Horn antenna

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

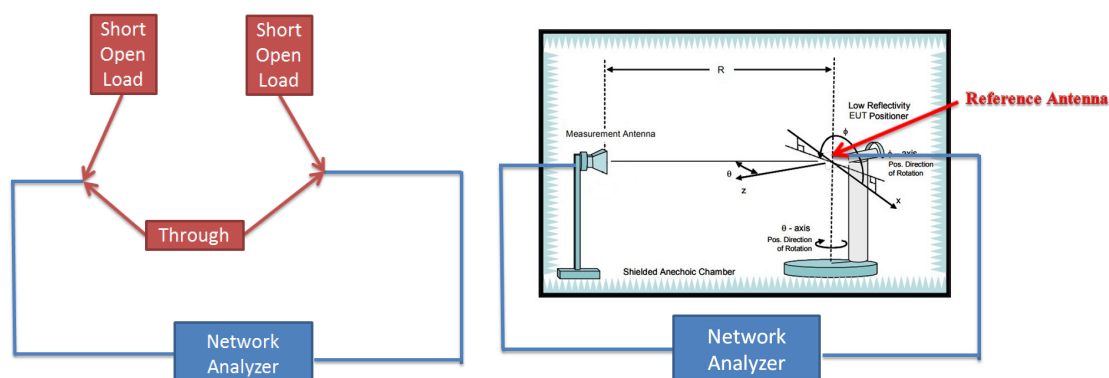
#Reference to CTIA "ctia-test-plan-for-wireless-device-over-the-air-performance-ver-3-7-1"



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

Note:

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

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

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

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

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)	-0.69	0.87	1.8
Ant. 2 (dBi)	2.62	1.91	0.73
DG [1SS] (dBi)	4.13	4.42	4.29
Polarization	Theta	Theta	Theta
$\Theta(^{\circ})$	97.5	97.5	97.5
$\Phi(^{\circ})$	247.5	247.5	277.5

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)	2.4G	2.45G	2.4835G
Ant. 1 [$10^{(G/20)}$]	$10^{(-0.69/20)}$	$10^{(0.87/20)}$	$10^{(1.8/20)}$
Ant. 2 [$10^{(G/20)}$]	$10^{(2.62/20)}$	$10^{(1.91/20)}$	$10^{(0.73/20)}$
Ant. 1 [$10^{(G/20)}$] value	0.924	1.105	1.23
Ant. 2 [$10^{(G/20)}$] value	1.352	1.246	1.088
Sum All Antenna [Amax]	2.276	2.351	2.318
DG [$10 \cdot \log(A_{max}^2/N_{ant})$]	4.13	4.42	4.29

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)	4.88	3.91	1.67	1.87
Ant. 2 (dBi)	3.24	4.2	4.57	5.31
DG [1SS] (dBi)	7.11	7.07	6.25	6.77
Polarization	Theta	Theta	Theta	Theta
$\Theta(^{\circ})$	97.5	97.5	97.5	97.5
$\Phi(^{\circ})$	187.5	187.5	187.5	90

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 [$10^{(G/20)}$]	$10^{(4.88/20)}$	$10^{(3.91/20)}$	$10^{(1.67/20)}$	$10^{(1.87/20)}$
Ant. 2 [$10^{(G/20)}$]	$10^{(3.24/20)}$	$10^{(4.2/20)}$	$10^{(4.57/20)}$	$10^{(5.31/20)}$
Ant. 1 [$10^{(G/20)}$] value	1.754	1.569	1.212	1.24
Ant. 2 [$10^{(G/20)}$] value	1.452	1.622	1.692	1.843
Sum All Antenna [Amax]	3.206	3.19	2.904	3.083
DG [$10 \cdot \log(A_{max}^2/N_{ant})$]	7.11	7.07	6.25	6.77

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

Freq(Hz)	2.4G	2.45G	2.4835G
Ant. 1 Max Gain (dBi)	1.93	2.73	2.52
Ant. 2 Max Gain (dBi)	2.72	2.14	1.14
Ant. 1 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$	Theta/97.5/22.5	Theta/97.5/37.5	Theta/75/67.5
Ant. 2 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$	Theta/105/240	Theta/105/247.5	Theta/105/247.5
Max Gain (dBi)	2.72	2.73	2.52
DG [1SS] (dBi)	4.13	4.42	4.29
DG [2SS] (dBi)	2.72	2.73	2.52

Note:

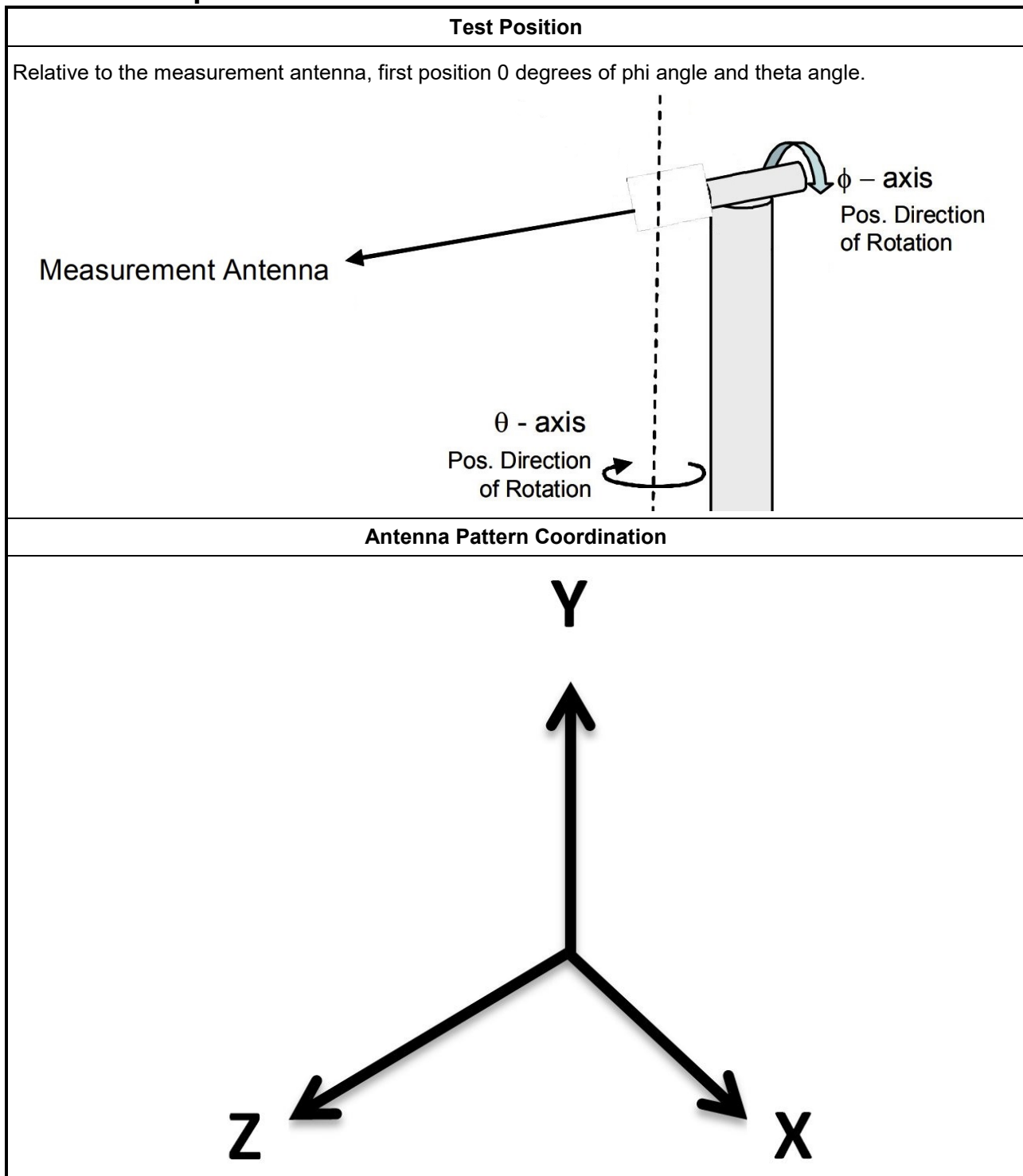
1. Directional Gain (2SS) = Directional Gain (1SS) – 3dB. If directional gain is less than max gain, use max gain as directional gain.
2. Each antenna max gain is the max value of measurement G of theta and phi through all measurement angles.
3. The max gain is the max value of all antennas.

Freq(Hz)	5.2G	5.3G	5.6G	5.785G
Ant. 1 Max Gain (dBi)	4.88	4.03	3.57	3.52
Ant. 2 Max Gain (dBi)	3.36	4.2	4.57	5.31
Ant. 1 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$	Theta/97.5/187.5	Theta/90/75	Theta/90/82.5	Theta/150/187.5
Ant. 2 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$	Theta/90/187.5	Theta/97.5/187.5	Theta/97.5/187.5	Theta/97.5/90
Max Gain (dBi)	4.88	4.2	4.57	5.31
DG [1SS] (dBi)	7.11	7.07	6.25	6.77
DG [2SS] (dBi)	4.88	4.2	4.57	5.31

Note:

1. Directional Gain (2SS) = Directional Gain (1SS) – 3dB. If directional gain is less than max gain, use max gain as directional gain.
2. Each antenna max gain is the max value of measurement G of theta and phi through all measurement angles.
3. The max gain is the max value of all antennas.

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 31, 2022	May. 30, 2023
Dual Polarization Horn Antenna	Sporton	S0209DP	S0209DP-001	2GHz~9GHz	N.C.R.	N.C.R.
ENA Series Network Analyzer	AGILENT	E5071C	MY46419201	100kHz~8.5GHz	Feb. 21, 2022	Feb. 20, 2023
VNA Calibration Kit	TS RF	TS85033E-F	-	DC~9GHz	N.C.R.	N.C.R.
Multi-axis positioner	Sporton	MAPS01	MAPS01-001	Theta / Phi axis	N.C.R.	N.C.R.
Test Software	SPORTON	SENSE-RDG	V1.0.8	-	N.C.R.	N.C.R.

Note: Calibration Interval of instruments listed above is one year.

NCR means Non-Calibration required.



11. Test Results

Please refer to the appendix.

Appendix A – Radiated Composite Gain of 2.4GHz.....	Page 16
Appendix B – Radiated Composite Gain of 5GHz U-NII 1 ~ U-NII 3.....	Page 22
Appendix C – Antenna Pattern of 2.4GHz.....	Page 29
Appendix D – Antenna Pattern of 5GHz U-NII 1 ~ U-NII 3.....	Page 32
Appendix E – Test Photos.....	Page 35



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Freq(Hz)	2.4G	2.45G	2.4835G
Ant. 1 Max Gain (dBi)	1.93	2.73	2.52
Ant. 2 Max Gain (dBi)	2.72	2.14	1.14
Ant. 1 Polarization/ $\theta(^{\circ})/\phi(^{\circ})$	Theta/97.5/22.5	Theta/97.5/37.5	Theta/75/67.5
Ant. 2 Polarization/ $\theta(^{\circ})/\phi(^{\circ})$	Theta/105/240	Theta/105/247.5	Theta/105/247.5
Max Gain (dBi)	2.72	2.73	2.52
DG [1SS] (dBi)	4.13	4.42	4.29
DG [2SS] (dBi)	2.72	2.73	2.52



Radiated Composite Gain Data of 2.4GHz

Appendix A

DG 1SS Result

Freq(Hz)	240Pol.	PhiH	Phi(30°)φ(37.5°)	Phi(45°)φ(52.5°)	Phi(60°)φ(67.5°)	Phi(75°)φ(82.5°)	Phi(90°)φ(97.5°)	Phi(105°)φ(112.5°)	Phi(120°)φ(127.5°)	Phi(135°)φ(142.5°)	Phi(150°)φ(157.5°)	Phi(165°)φ(172.5°)	Phi(180°)φ(187.5°)	Phi(195°)φ(202.5°)	Phi(210°)φ(217.5°)	Phi(225°)φ(232.5°)	Phi(240°)φ(247.5°)	Phi(255°)φ(262.5°)	Phi(270°)φ(277.5°)	Phi(285°)φ(292.5°)	Phi(300°)φ(307.5°)	Phi(315°)φ(322.5°)	Phi(330°)φ(337.5°)	Phi(345°)φ(352.5°)	
DG(dB)	Phi(0°)φ(7.5°)	Phi(15°)φ(22.5°)	Phi(30°)φ(37.5°)	Phi(45°)φ(52.5°)	Phi(60°)φ(67.5°)	Phi(75°)φ(82.5°)	Phi(90°)φ(97.5°)	Phi(105°)φ(112.5°)	Phi(120°)φ(127.5°)	Phi(135°)φ(142.5°)	Phi(150°)φ(157.5°)	Phi(165°)φ(172.5°)	Phi(180°)φ(187.5°)	Phi(195°)φ(202.5°)	Phi(210°)φ(217.5°)	Phi(225°)φ(232.5°)	Phi(240°)φ(247.5°)	Phi(255°)φ(262.5°)	Phi(270°)φ(277.5°)	Phi(285°)φ(292.5°)	Phi(300°)φ(307.5°)	Phi(315°)φ(322.5°)	Phi(330°)φ(337.5°)	Phi(345°)φ(352.5°)	
Theta(°)	Phi(0°)φ(7.5°)	Phi(15°)φ(22.5°)	Phi(30°)φ(37.5°)	Phi(45°)φ(52.5°)	Phi(60°)φ(67.5°)	Phi(75°)φ(82.5°)	Phi(90°)φ(97.5°)	Phi(105°)φ(112.5°)	Phi(120°)φ(127.5°)	Phi(135°)φ(142.5°)	Phi(150°)φ(157.5°)	Phi(165°)φ(172.5°)	Phi(180°)φ(187.5°)	Phi(195°)φ(202.5°)	Phi(210°)φ(217.5°)	Phi(225°)φ(232.5°)	Phi(240°)φ(247.5°)	Phi(255°)φ(262.5°)	Phi(270°)φ(277.5°)	Phi(285°)φ(292.5°)	Phi(300°)φ(307.5°)	Phi(315°)φ(322.5°)	Phi(330°)φ(337.5°)	Phi(345°)φ(352.5°)	
Theta(7.5°)	-7.23/-6.89	-5.71/-5.1	-4.94/-5	-5.25/-3.9	-5.54/-5.75	-6.18/-6.75	-7.46/-7.88	-7.83/-7.56	-7.58/-7.6	-6.89/-6.25	-5.69/-5.24	-4.96/-4.85	-4.81/-4.9	-4.97/-4.93	-4.84/-4.67	-4.65/-4.7	-4.85/-5.12	-5.75/-6.52	-7.22/-7.82	-8.54/-9.54	-10.69/-11.61	-11.92/-11.43	-10.32/-9.3	-8.79/-8.01	
Theta(15°)	-7.56/-7.16	-6.07/-5.57	-5.36/-5.32	-5.34/-5.35	-5.43/-5.76	-6.43/-7.22	-7.96/-8.11	-7.74/-7.72	-7.61/-6.98	-6.36/-5.74	-5.27/-4.91	-4.74/-4.71	-4.85/-5.11	-5.39/-5.51	-5.57/-5.59	-5.58/-5.57	-5.58/-5.9	-6.55/-7.18	-7.48/-7.8	-8.45/-9.4	-10.34/-11.11	-11.65/-11.75	-11.03/-10.12	-9.4/-8.26	
Theta(22.5°)	-7.4/-6.67	-6.07/-5.82	-5.65/-5.5	-5.34/-5.25	-5.28/-5.66	-6.3/-7.02	-7.81/-8.51	-8.47/-8.58	-8.55/-7.78	-6.69/-5.74	-5.05/-4.66	-4.56/-4.71	-5.06/-5.51	-5.93/-6.33	-6.69/-7.05	-7.41/-7.73	-8.26/-8.88	-8.83/-8.1	-7.63/-7.66	-8.25/-9.03	-9.71/-10.34	-10.9/-11.04	-10.65/-9.77	-8.71/-7.96	
Theta(30°)	-8.06/-7.61	-7.28/-6.96	-6.58/-6.21	-5.93/-6.74	-5.71/-6.07	-6.57/-7.1	-7.9/-9.1	-9.93/-10	-9.67/-9.09	-7.38/-5.95	-5/-4.51	-4.4/-4.56	-4.95/-5.42	-5.83/-6.14	-6.43/-6.71	-7.21/-7.96	-9.14/-10.85	-10.87/-10.21	-9.21/-8.88	-9.08/-9.45	-9.97/-10.51	-10.74/-10.79	-10.47/-9.75	-8.93/-8.42	
Theta(37.5°)	-11.67/-10.99	-10.1/-9.18	-8.65/-8.53	-8.59/-8.51	-8.37/-8.48	-8.6/-8.64	-9.08/-10.09	-10.68/-9.93	-8.66/-7.45	-6.39/-5.56	-5.02/-4.85	-5.01/-4.55	-6/-6.45	-6.63/-6.5	-6.27/-6.1	-6.11/-6.38	-7.13/-8.41	-10.29/-12.5	-13.35/-12.54	-11.11/-10.93	-11.03/-10.85	-10.49/-10.37	-10.34/-10.48	-10.89/-11.73	
Theta(45°)	-12.82/-11.2	-8.95/-8.94	-8.84/-8.69	-11.34/-12.61	-12.42/-11.71	-10.42/-8.75	-7.63/-7.07	-6.62/-6.15	-5.74/-5.64	-6.04/-6.6	-7.19/-8.02	-9.3/-10.91	-12/-12.9	-12.3/-10.94	-9.51/-8.33	-7.33/-6.71	-6.71/-6.68	-9.98/-14.12	-15.4/-14.03	-11.6/-10.99	-10.3/-10.06	-10.22/-10.8	-11.71/-12.57	-13.41/-13.51	
Theta(52.5°)	-8.53/-8.01	-8.24/-7.99	-7.71/-7.62	-7.75/-7.55	-7.55/-7.97	-7.46/-6.91	-5.95/-5.31	-4.71/-4.32	-4.43/-5.2	-6.89/-8.3	-9.51/-10.18	-10.3/-10.32	-10.86/-12.54	-14.4/-15.98	-15.2/-14.21	-12.52/-10.26	-9.19/-9.66	-12.18/-16.25	-15.23/-11.78	-9.92/-8.72	-8.58/-9	-9.9/-10.15	-10.95/-11.7	-10.55/-9.39	
Theta(60°)	-8.4/-8.18	-8.47/-8.47	-7.46/-6.13	-5.17/-4.73	-4.89/-5.74	-6.65/-7.49	-8.15/-7.35	-5.97/-5.03	-4.95/-5.89	-7.68/-9.42	-9.5/-8.65	-8.07/-7.74	-7.85/-8.62	-10.01/-11.09	-11.55/-11.41	-11.88/-11.65	-10.19/-9.61	-10.74/-13.11	-13.49/-10.97	-11.1/-8.49	-8.61/-9.2	-8.65/-8.88	-9.09/-8.95	-8.91/-8.95	
Theta(67.5°)	-12.74/-14.16	-13.63/-12.6	-10.77/-8.56	-6.83/-6.06	-6.27/-7.39	-9.01/-9.9	-8.25/-6.19	-5.18/-4.43	-4.25/-5.24	-7.61/-11.22	-13.74/-12.49	-11.46/-10.6	-10.84/-11.91	-12.73/-11.31	-9.8/-9.74	-11.12/-11.6	-9.65/-9.04	-10.22/-11.32	-13.42/-11.81	-11.32/-10.17	-10.33/-11.32	-10.94/-10.83	-9.23/-8.38	-8.67/-10.2	
Theta(75°)	-9.54/-11.09	-12.29/-13.24	-13.24/-13.08	-12.65/-10.46	-8.36/-6.7	-5.32/-4.04	-3.04/-2.43	-2.41/-2.91	-3.64/-4.62	-6.25/-8.71	-11.42/-12.87	-12.85/-12.38	-11.69/-10.95	-9.68/-8.27	-7.74/-8.45	-10.62/-11.45	-10.85/-8.81	-9.13/-12.47	-14.75/-11.55	-7.59/-6.03	-5.6/-5.93	-7.03/-7.34	-7.46/-6.75	-7.02/-8.02	
Theta(82.5°)	-6.76/-7.89	-9.23/-10.33	-10.61/-11.31	-11.75/-11.26	-10.85/-9.55	-7.13/-5.29	-4.34/-4.12	-4.53/-5.49	-6.63/-7.79	-9.71/-11.83	-12.36/-11.66	-10.98/-10.61	-10.3/-10	-9.45/-9.18	-9.74/-10.2	-9.88/-7.85	-5.27/-3.95	-4.43/-7.59	-14.8/-13.03	-7.85/-5.71	-4.59/-4.07	-4.3/-5.08	-5.49/-5.8	-5.81/-6.14	
Theta(90°)	-5.28/-6.63	-7.93/-9.16	-9.77/-9.68	-9.82/-9.69	-8.78/-8.64	-8.61/-8.01	-7.34/-7.01	-6.47/-5.47	-4.39/-4.11	-11.31/-13.12	-14.53/-15.89	-15.22/-13.81	-12.15/-11.87	-12.87/-12.51	-9.83/-7.04	-4.12/-2.76	-3.03/-5.43	-10.86/-13.32	-8.79/-6.46	-5.43/-4.72	-4.26/-4.18	-4.01/-3.59	-3.54/-4.09		
Theta(97.5°)	-6.44/-8.45	-10.14/-12.02	-13.12/-13.41	-11.38/-9.06	-7.64/-7.1	-7.28/-7.68	-7.33/-5.84	-4.23/-3.03	-2.23/-2.26	-3.68/-6.62	-10.73/-15.02	-15.71/-14.88	-13.8/-13.95	-13.65/-11.9	-10.47/-9.48	-8.78/-6.3	-4.1/-3.06	-3.41/-5.47	-9.98/-10.96	-7.74/-6.4	-6.01/-5.67	-5.09/-4.45	-3.78/-3.27	-3.41/-4.65	
Theta(105°)	-12.21/-11.93	-13.49/-15.67	-15.03/-13.95	-11.11/-8.56	-6.51/-5.17	-4.59/-4.44	-4.44/-3.4	-3.93/-3.18	-2.66/-2.36	-1.93/-11.61	-13.13/-11.67	-10.41/-9.68	-9.16/-8.22	-7.6/-6.39	-6.88/-5.83	-4.17/-3.48	-3.86/-5.51	-8.16/-8.98	-7.13/-6.33	-6.42/-4.74	-8.34/-9.09	-8.15/-8.53	-8.15/-8.67		
Theta(112.5°)	-4.38/-6.42	-8.54/-9.43	-9.94/-8.67	-7.04/-6.17	-5.22/-4.37	-3.95/-3.8	-3.78/-4.06	-4.83/-5.42	-5.16/-5	-6.43/-9.69	-12.33/-12.69	-12.02/-9.5	-8.06/-6.74	-5.38/-4.32	-4.29/-5.37	-6.51/-6.42	-5.59/-5.41	-6.53/-9.72	-14.2/-11.9	-8.22/-6.55	-5.97/-6.12	-6.99/-7.33	-6.8/-5.7	-4.24/-3.58	
Theta(120°)	-7.13/-10.06	-11.95/-11.88	-10.06/-7.68	-6.87/-6.12	-11.61/-14.01	-11.38/-7.9	-5.78/-4.68	-3.79/-2.51	-1.23/-0.94	-2.11/-4.65	-7.07/-10.01	-12.01/-11.15	-10.02/-8.88	-7.49/-6.33	-5.79/-5.31	-3.9/-2.09	-0.56/-0.7	-0.13/-1.63	-4.49/-8.57	-9.92/-8.56	-8.89/-10.1	-10.39/-9.34	-7.74/-6.41	-5.45/-5.56	
Theta(127.5°)	-7.46/-8.6	-9.22/-7.7	-5.6/-5.59	-5.04/-6.66	-7.47/-6.71	-7.22/-5.79	-4.74/-3.93	-2.76/-1.2	0.13/-0.59	0.04/-1.03	-2.16/-3.58	-4.53/-5.09	-4.22/-4.03	-5.06/-6.33	-9.88/-8.67	-5.77/-3.36	-1.63/-0.9	-1.28/-2.6	-3.5/-2.5	-1.07/-0.54	-0.94/-1.87	-2.97/-4.03	-4.98/-5.73	-6.29/-6.76	
Theta(135°)	-4.68/-4.81	-4.55/-3.45	-2.21/-1.69	-2.02/-2.77	-3.31/-3.98	-5.22/-7.07	-8.59/-8.75	-6.69/-4.28	-2.5/-1.65	-1.62/-1.81	-2.34/-3.19	-3.98/-4.81	-6.15/-8.09	-10.83/-12.36	-9.37/-6.73	-5.32/-5.6	-7.65/-10.97	-8.36/-3.18	-0.620/-0.39	0.42/-0.15	-0.671/-1.39	-1.84/-2.51	-3.69/-4.21		
Theta(142.5°)	-6.42/-5.73	-4.86/-3.61	-2.42/-1.89	-2.17/-3.2	-4.45/-5.88	-7.99/-11.06	-11.39/-8.71	-6.51/-4.7	-3.77/-3.32	-3.45/-3.85	-3.73/-4.16	-4.97/-6.03	-6.86/-6.94	-6.38/-5.5	-4.43/-3.66	-3.33/-3.81	-4.32/-4.59	-4.28/-3.86	-3.21/-2.6	-2.5/-2.87	-3.27/-3.4	-3.39/-3.83	-4.99/-4.02		
Theta(150°)	-6.97/-5.01	-3.88/-2.78	-1.81/-1.34	-1.46/-2.32	-3.77/-5.72	-7.59/-8.27	-7.26/-5.52	-3.91/-2.75	-1.99/-1.71	-1.96/-2.87	-4.26/-5.04	-5.28/-5.87	-7.03/-7.35	-6.43/-4.91	-3.84/-3.14	-2.61/-2.32	-2.35/-2.7	-2.89/-2.57	-2.19/-2.02	-2.16/-2.74	-3.84/-2.57	-6.38/-6.54	-6.18/-6.83	-5.84/-6.18	
Theta(157.5°)	-4.5/-3.87	-3.09/-2.45	-2.04/-2.01	-2.38/-3.35	-4.88/-6.76	-7.97/-7.7	-6.56/-5.11	-3.69/-2.52	-1.69/-1.35	-1.49/-2.13	-3.27/-4.65	-5.87/-6.75	-7.48/-7.42	-6.71/-5.37	-4.21/-3.53	-3.19/-3.27	-3.84/-4.66	-5.14/-4.62	-3.9/-3.33	-2.95/-2.77	-2.8/-2.98	-3.29/-3.67	-4/-4.29	-4.57/-4.71	
Theta(165°)	-4.92/-4.49	-4.21/-4.17	-4.41/-4.96	-5.74/-6.75	-7.33/-7.12	-6.66/-5.99	-5.13/-4.21	-3.38/-2.74	-2.24/-2.06	-2.27/-2.86	-3.83/-5.06	-6.46/-7.82	-8.93/-9.88	-8.75/-8.18	-7.67/-6.9	-6.75/-7.3	-8.76/-11.04	-11.88/-10.38	-8.58/-6.92	-5.54/-4.55	-3.89/-3.56	-3.61/-4.04	-4.67/-5.09	-4.57/-5.31	
Theta(172.5°)	-7.08/-6.65	-6.54/-6.87	-7.31/-7.3	-6.6/-5.61	-4.84/-4.47	-4.36/-4.18	-3.79/-3.43	-3.27/-3.21	-3.25/-3.44	-3.95/-4.7	-5.78/-7.08	-8.83/-10.99	-12.52/-13.16	-13.57/-12.93	-12.31/-12.02	-11.72/-12.57	-13.46/-13.86	-12.95/-11.81	-11.17/-9.02	-7.63/-6.69	-6.14/-5.94	-6.25/-7.02	-7.4/-4.99	-7.56/-7.89	
Theta(180°)	-12.15/-11.02	-9.7/-8.48	-7.23/-6.02	-4.89/-4.02	-3.51/-3.46	-3.57/-3.68	-3.62/-3.61	-3.83/-4.21	-4.61/-5.04	-5.69/-6.46	-7.25/-7.92	-8.45/-8.81	-9.04/-9.23	-9.23/-8.94	-8.65/-8.53	-8.63/-8.49	-8.29/-8.41	-8.9/-8.16	-8.9/-8.63	-8.58/-8.76	-9.15/-10.03	-11.43/-12.31	-12.89/-12.85	-13.94/-13.44	
Freq(Hz)	2.40Pol.	ThetaH	PhiH	Phi(30°)φ(37.5°)	Phi(45°)φ(52.5°)	Phi(60°)φ(67.5°)	Phi(75°)φ(82.5°)	Phi(90°)φ(97.5°)	Phi(105°)φ(112.5°)	Phi(120°)φ(127.5°)	Phi(135°)φ(142.5°)	Phi(150°)φ(157.5°)	Phi(165°)φ(172.5°)	Phi(180°)φ(187.5°)	Phi(195°)φ(202.5°)	Phi(210°)φ(217.5°)	Phi(225°)φ(232.5°)	Phi(240°)φ(247.5°)	Phi(255°)φ(262.5°)	Phi(270°)φ(277.5°)	Phi(285°)φ(292.5°)	Phi(300°)φ(307.5°)	Phi(315°)φ(322.5°)	Phi(330°)φ(337.5°)	Phi(345°)φ(352.5°)
DG(dB)	Phi(0°)φ(7.5°)	Phi(15°)φ(22.5°)	Phi(30°)φ(37.5°)	Phi(45°)φ(52.5°)	Phi(60°)φ(67.5°)	Phi(75°)φ(82.5°)	Phi(90°)φ(97.5°)	Phi(105°)φ(112.5°)	Phi(120°)φ(127.5°)	Phi(135°)φ(142.5°)	Phi(150°)φ(157.5°)	Phi(165°)φ(172.5°)	Phi(180°)φ(187.5°)	Phi(195°)φ(202.5°)	Phi(210°)φ(217.5°)	Phi(225°)φ(232.5°)	Phi(240°)φ(247.5°)	Phi(255°)φ(262.5°)	Phi(270°)φ(277.5°)	Phi(285°)φ(292.5°)	Phi(300°)φ(307.5°)	Phi(315°)φ(322.5°)	Phi(330°)φ(337.5°)	Phi(345°)φ(352.5°)	
Theta(0°)	-8.21/-8.48	-8.9/-9.37	-9.4/-10.34	-10.18/-9.71	-9.27/-8.98	-8.79/-8.6	-8.38/-8.2	-7.99/-7.69	-7.17/-6.57	-6.13/-5.98	-6.14/-6.32	-6.48/-6.86	-7.4/-8.1	-8.84/-9.41	-9.69/-9.66	-9.18/-8.49	-7.83/-7.38	-7.11/-6.93	-6.81/-6.65	-6.48/-6.24	-6.03/-5.86	-5.83/-6.03	-6.41/-6.8	-7.23/-7.66	
Theta(7.5°)	-7.33/-7.88	-8.09/-7.95	-7.56/-7.09	-6.71/-6.33	-5.99/-5.68	-5.54/-5.48	-5.54/-5.69	-5.94/-6.17	-6.21/-6.04	-5.97/-6.13	-6.44/-6.75	-7.04/-7.42	-7.76/-8.31	-8.93/-9.73	-10.09/-10.43	-11.17/-11.58	-11.38/-11.01	-10.72/-10.13	-9.35/-8.63	-8.03/-7.51	-7.02/-6.47	-6.02/-5.76	-5.79/-6.02	-6.34/-6.81	
Theta(15°)	-6.93/-7.19	-7.15/-6.84	-6.27/-5.63	-4.60/-4.55	-4.14/-3.69	-3.41/-3.35	-3.41/-3.59	-3.43/-4.18	-4.71/-5.15	-5.52/-5.92	-6.46/-6.98	-7.43/-7.7	-7.77/-7.88	-8.04/-8.29	-8.79/-9.59	-10.74/-11.11	-11.65/-11.49	-11.08/-11.21	-10.08/-9.12	-8.51/-8.06	-7.63/-7.15	-6.64/-6.33	-6.2/-6.24	-6.45/-6.76	
Theta(22.5°)	-6.41/-6.16	-5.77/-5.25	-4.66/-4.05	-3.49/-3.08	-2.78/-2.56	-2.43/-2.48	-2.63/-2.73	-2.76/-2.94	-3.33/-3.79	-4.33/-4.96	-5.83/-6.57	-6.81/-7.35	-7.61/-7.74	-7.68/-7.8	-7.85/-8.05	-8.5/-9.06	-9.74/-10.23	-9.74/-9.56	-9.09/-9.22	-9					



Radiated Composite Gain Data of 2.4GHz

Appendix A

Θ(15°)	-11.84/-9.23	-7.72/-7.21	-7/6.48	-5.7/-4.91	-4.39/-4.18	-4.2/-4.24	-4.27/-4.54	-5.2/-6.14	-7.34/-8.7	-9.39/-9.39	-9.38/-9.84	-10.11/-10.87	-12.18/-13.05	-12.91/-11.96	-10.75/-9.84	-9.21/-8.62	-7.9/-7.09	-6.66/-6.82	-7.44/-8.18	-9.07/-10.28	-11.41/-11.86	-11.89/-12.33	-12.99/-13.13	-13.01/-12.15
Θ(22.5°)	-10.98/-9.48	-8.36/-7.79	-7.14/-6.34	-5.47/-4.75	-4.39/-4.35	-4.34/-4.19	-4.1/-4.35	-5.04/-5.94	-7/-8.05	-9.02/-8.81	-9.3/-9.15	-9.43/-10.07	-11.09/-12.06	-12.57/-12.45	-11.87/-11.23	-8.88/-9.98	-9.58/-9.34	-9.03/-9.08	-9.3/-9.46	-9.63/-9.8	-9.6/-9.08	-8.8/-8.85	-9.16/-9.64	-10.51/-11.42
Θ(30°)	-9.3/-8.56	-7.79/-7.1	-6.3/-5.53	-4.96/-4.6	-4.52/-4.72	-4.79/-4.69	-4.66/-4.88	-5.32/-5.91	-6.57/-7.17	-7.67/-8.07	-8.19/-8.23	-8.4/-8.85	-9.6/-10.38	-11.22/-11.93	-11.55/-11.27	-11.21/-11.56	-11.83/-12.76	-13.47/-14.51	-14.87/-13.44	-11.9/-10.47	-9.44/-8.84	-8.67/-8.72	-8.9/-9.11	-9.41/-9.64
Θ(37.5°)	-10.29/-9.35	-8.1/-6.72	-5.46/-4.66	-4.27/-4.22	-4.42/-4.75	-5.04/-5.4	-5.74/-6.01	-6.26/-6.65	-7.02/-7.4	-7.75/-8.03	-8.21/-8.42	-8.67/-9.07	-9.63/-10.22	-10.71/-11.12	-11.34/-11.14	-10.81/-10.93	-11.75/-12.46	-14.18/-14.87	-14.89/-14.92	-13.17/-11.52	-10.81/-10.81	-11.23/-11.4	-11.46/-11.12	-10.77/-10.79
Θ(45°)	-15.48/-13.57	-10.07/-7.13	-5.15/-4.31	-4.18/-4.37	-4.68/-5.08	-5.52/-6.26	-7.16/-7.97	-8.77/-9.48	-10.09/-10.56	-10.79/-10.83	-10.94/-11.28	-11.78/-12.29	-12.8/-12.96	-12.71/-12.19	-11.51/-10.64	-9.78/-9.03	-8.71/-9.27	-10.14/-11.45	-12.52/-13.23	-12.96/-12.99	-13.85/-14.27	-16.07/-15.29	-15.13/-14.52	-14.48/-15.39
Θ(52.5°)	-10.62/-9.76	-7.98/-6.41	-5.27/-5.02	-5.41/-6.19	-7.26/-8.28	-8.38/-8.57	-9.04/-8.91	-8.5/-8.58	-10.05/-12.45	-14.29/-14.4	-13.65/-13.76	-14.09/-13.49	-13.03/-13.67	-13.33/-12.79	-12.45/-11.57	-9.94/-8.44	-7.7/-8.17	-10.1/-12.11	-14.09/-14.57	-15.23/-14.65	-15.39/-15.43	-15.37/-16.06	-15.03/-13.77	-13/-11.5
Θ(60°)	-8.8/-8.05	-7.76/-7.5	-6.94/-6.56	-6.98/-7.39	-8.06/-9.72	-10.51/-9.42	-8.64/-7.5	-6.53/-6.29	-6.89/-8.2	-8.8/-8.68	-8.12/-8.24	-8.36/-8.67	-8.83/-9.19	-9.82/-9.7	-9.02/-8.41	-8.57/-8.86	-8.92/-9.81	-12.1/-14.89	-14.93/-12.63	-11.51/-11.6	-12.32/-11.32	-9.5/-8.36	-8.33/-8.91	-9.78/-9.78
Θ(67.5°)	-11.79/-11.37	-10.99/-9.55	-8.13/-5.82	-4.56/-4.08	-4.51/-6.21	-9.75/-11.85	-11.82/-9.36	-7.79/-7.12	-7.1/-7.7	-8.43/-7.82	-7.7/-7.88	-8.36/-9.07	-9.5/-10.01	-9.8/-8.88	-7.92/-7.25	-7.43/-8.5	-9.34/-10.79	-13.43/-14.66	-12.86/-10.33	-9.45/-9.74	-10.92/-10.35	-9.49/-8.1	-8.02/-8.46	-9.51/-11.11
Θ(75°)	-13.11/-14.86	-14.09/-12.33	-10.65/-7.41	-5.4/-4.47	-4.52/-5.9	-8.91/-13.44	-11.86/-9.03	-7.77/-7.16	-7.76/-8.07	-8.84/-9.96	-10.56/-10.85	-11.4/-11.88	-11.93/-11.35	-10.2/-9.11	-8.52/-8.44	-9.34/-10.7	-10.68/-11.64	-12.23/-15.55	-15.11/-12.45	-9.79/-9.07	-9.28/-9.81	-10.33/-10.16	-9.46/-9.23	-9.43/-10.8
Θ(82.5°)	-9.92/-10.14	-10.49/-11.26	12.13/-11.5	-9.3/-8.07	-7.51/-7.48	-8.09/-8.75	-8.3/-6.94	-6.53/-7.11	7.98/-8.6	-9.22/-10.32	-11/-11.48	-11.82/-11.77	-11.61/-10.67	-9.74/-9.2	-9.26/-10.09	-11.04/-9.92	-8.58/-7.33	-7.5/-10.94	-15.19/-12.38	-8.35/-6.65	-5.81/-5.78	-6.73/-8.04	-8.8/-9.28	-9.6/-9.84
Θ(90°)	-8.07/-7.26	-6.52/-6.29	-6.66/-7.01	-6.56/-6.28	-6.61/-7.34	-8.53/-8.67	-9.09/-8.72	-8.3/-8.08	-8.06/-8.34	-9.1/-10.77	-11.99/-13.5	-13.94/-14.11	-14.5/-13.2	-11.38/-10.11	-9.58/-9.3	-9.27/-7.91	-5.68/-4.57	-5.19/-8.62	-15.04/-11.53	-7.72/-5.28	-3.92/-3.46	-4.09/-5.25	-6.05/-6.55	-7.28/-7.77
Θ(97.5°)	-7.06/-6.55	-5.88/-5.58	-5.85/-6.16	-6.09/-6.38	-7.31/-8.26	-9.87/-12.32	-13.53/-9.45	-6.82/-6	-5.88/-6.22	-7.38/-9.68	-11.5/-13.05	-13.82/-14.67	-15.37/-13.91	-11.67/-10.14	-8.97/-8.35	-8.71/-8.04	-5.88/-5.2	-6.06/-9.22	-14.04/-11.46	-8.3/-5.89	-4.19/-3.56	-3.94/-4.71	-4.95/-4.81	-5.25/-6.36
Θ(105°)	-8.91/-9.64	-8.15/-7.06	-6.93/-7.18	-6.55/-5.65	-5.59/-6.6	-8.76/-12.4	-12.24/-7.01	-4.58/-3.89	-4/-4.51	-5.61/-7.75	-10.05/-11.49	-13.55/-13.03	-11.71/-11.53	-10.64/-9.26	-7.92/-7.84	-7.47/-6.44	-5.17/-4.94	-5.71/-7.57	-10.65/-9.49	-8.19/-7.72	-6.98/-6.76	-7.27/-7.86	-7.42/-6.73	-6.71/-7.96
Θ(112.5°)	-8.95/-9.69	-7.75/-6.04	-5.45/-5.44	-4.74/-3.99	-3.89/-4.69	-6.63/-10.02	-11.13/-8.57	-6.47/-5.87	-5.96/-6.22	-6.81/-8.2	-9.95/-10.85	-10.64/-9.79	-8.99/-7.93	-6.89/-5.53	-5.43/-6.47	-6.85/-7.05	-6.74/-7.4	-9.93/-14.53	-14.66/-9.02	-6.53/-5.2	-4.83/-6.57	-4.36/-4.1	-8.56/-8.09	-6.78/-7.16
Θ(120°)	-7.47/-9.72	-9.42/-7.94	-7.46/-7.21	-6.5/-6.52	-7.86/-10.33	-13.46/-12.64	-10.91/-8.19	-6.56/-5.44	-4.74/-4.9	-6.14/-8.59	-10.72/-12.45	-11.89/-9.64	-7.9/-6.35	-5.33/-5.14	-6.14/-6.98	-6.81/-5.23	-3.75/-3.2	-4.14/-7.16	-13.43/-14.42	-9.7/-8.23	-7.9/-8.18	-8.79/-10.13	-9.8/-8.02	-6.14/-5.97
Θ(127.5°)	-7.61/-9.17	-8.39/-7.54	-5.71/-5.06	-5.87/-8.4	-11.89/-12.96	-11.01/-8.84	-6.7/-5.15	-3.69/-2.32	-1.41/-1.38	-2.25/-3.81	-5.77/-6.86	-7.68/-5.5	-3.99/-3.45	-4.11/-6.09	-7.83/-6.68	-5.4/-4.07	-2.66/-2.08	-2.8/-4.85	-6.75/-5.47	-3.46/-2.91	-3.63/-4.91	-6.01/-7.13	-8.03/-8.04	-7.41/-6.92
Θ(135°)	-6.05/-6.71	-7.14/-5.69	-3.67/-2.74	-3.17/-4.76	-6.08/-6.67	-7.86/-8.81	-9.12/-9.16	-6.47/-4.54	-3.23/-2.79	-2.89/-3.1	-3.24/-3.69	-4.56/-4.81	-4.26/-3.78	-4.73/-7.35	-10.94/-11.34	-7.04/-6.72	-8.6/-9.95	-7.66/-3.57	-1.21/-0.43	-0.66/-1.42	-2.26/-2.93	-3.53/-4.07	-4.93/-5.22	
Θ(142.5°)	-6.42/-6.19	-8.68/-4.32	-2.66/-1.84	-2.22/-3.89	-9.36/-12.92	-15.99/-14.8	-10.36/-8.26	-7.34/-7.23	-7.54/-7.3	-6.44/-5.64	-5.19/-5.15	-5.59/-6.75	-8.56/-6.75	-10.91/-9.47	-7.26/-5.62	-4.92/-5.63	-6.19/-5.71	-7.73/-6.76	-4.62/-3.42	-3.26/-3.67	-4.15/-4.3	-4.24/-4.41	-5.23/-5.67	
Θ(150°)	-5.51/-5.12	-3.85/-2.61	-1.51/-1.09	-1.56/-3.16	-5.88/-8.33	-10.93/-14.03	-15.07/-11.29	-8.27/-6.56	-5.7/-5.6	-6.27/-7.73	-8.34/-9.36	-8.98/-8.46	-8.38/-8.84	-8.63/-7.63	-6.17/-4.9	-3.78/-3.01	-2.63/-2.68	-3/-3.26	-3.42/-3.62	-4.05/-4.9	-5.95/-6.47	-6.9/-6.38	-5.79/-5.37	-5.32/-5.84
Θ(157.5°)	-4.91/-4.58	-3.74/-2.96	-2.38/-2.34	-3/-4.56	-7.15/-8.8	-10.34/-10.86	-10.3/-8.38	-6.28/-4.67	-3.61/-3.19	-3.29/-3.96	-5.21/-6.58	-7.11/-7.1	-7.14/-7.29	-6.88/-5.92	-4.9/-3.97	-3.04/-2.31	-2.01/-2.27	-2.84/-3.15	-3.16/-3.14	-3.3/-3.57	-3.91/-4.11	-4.14/-4.04	-3.92/-3.97	-4.19/-4.49
Θ(165°)	-6.53/-6.22	-5.82/-5.68	-5.73/-6.07	-6.83/-7.9	-8.04/-7.68	-7.62/-7.73	-7.59/-6.72	-5.44/-4.28	-3.52/-3.19	-3.1/-3.21	-3.59/-4.18	-4.88/-5.61	-6.45/-7.47	-8.22/-7.91	-6.72/-5.4	-4.35/-3.79	-3.97/-4.92	-6.04/-6.07	-5.35/-4.7	-4.14/-3.65	-3.29/-3.1	-3.18/-3.47	-4.02/-4.81	-5.89/-6.28
Θ(172.5°)	-10.22/-9.85	-9.78/-10.34	-10.91/-10.3	-8.6/-7.12	-6.31/-6.04	-8.08/-6.24	-6.47/-6.41	-5.94/-5.36	-5.08/-5.05	-5.09/-5.07	-5.14/-5.33	-5.89/-7.01	-8.83/-11.53	-14.01/-13.79	-11.59/-9.74	-8.7/-8.61	-9.67/-9.97	-9.87/-9.1	-7.75/-6.67	-5.63/-4.86	-4.47/-4.51	-4.99/-5.91	-7.06/-7.86	-9.08/-9.79
Θ(180°)	-13.66/-13.44	-12.24/-11.39	-10.46/-9.21	-7.84/-6.75	-6.2/-5.88	-5.77/-5.96	-6.46/-6.96	-7.29/-7.46	-7.82/-8.28	-8.69/-8.92	-8.62/-8.69	-9.23/-9.63	-10.49/-11.37	-12.31/-12.63	-12.81/-12.77	-12.47/-12.05	-11.57/-11.04	-10.47/-10.03	-9.85/-9.65	-9.35/-9.24	-9.58/-10.62	-12.25/-12.07	-13.04/-13.48	-14.46/-14.56
Freq(Hz)	2.4835GPol.	Thetel°	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓
DG(dB)	Φ(0°)/Φ(7.5°)	Φ(15°)/Φ(22.5°)	Φ(30°)/Φ(37.5°)	Φ(45°)/Φ(52.5°)	Φ(60°)/Φ(67.5°)	Φ(75°)/Φ(82.5°)	Φ(90°)/Φ(97.5°)	Φ(105°)/Φ(112.5°)	Φ(120°)/Φ(127.5°)	Φ(135°)/Φ(142.5°)	Φ(150°)/Φ(157.5°)	Φ(165°)/Φ(172.5°)	Φ(180°)/Φ(187.5°)	Φ(195°)/Φ(202.5°)	Φ(210°)/Φ(217.5°)	Φ(225°)/Φ(232.5°)	Φ(240°)/Φ(247.5°)	Φ(255°)/Φ(262.5°)	Φ(270°)/Φ(277.5°)	Φ(285°)/Φ(292.5°)	Φ(300°)/Φ(307.5°)	Φ(315°)/Φ(322.5°)	Φ(330°)/Φ(337.5°)	Φ(345°)/Φ(352.5°)
Θ(0°)	-7.08/-8.03	-9.16/-10.19	-10.96/-11.1	-10.96/-11.17	-11.68/-12.03	-11.87/-11.44	-10.75/-9.96	-8.89/-8.02	-7.44/-7.08	-6.78/-6.54	-6.52/-6.77	-7.12/-7.28	-7.28/-7.36	-7.57/-8.08	-8.9/-9.96	-10.52/-11.05	-12.13/-12.87	-12.82/-11.83	-10.66/-9.58	-8.84/-8.29	-7.79/-7.26	-6.62/-5.99	-5.57/-5.54	-5.85/-6.36
Θ(7.5°)	-5.32/-5.96	-6.88/-7.82	-8.26/-8.22	-8.33/-8.48	-8.56/-8.58	-8.43/-8.29	-8.29/-8.37	-8.11/-7.8	-7.57/-7.51	-7.35/-7.11	-7.14/-7.48	-7.81/-8.04	-8.09/-8.33	-8.6/-9.13	-9.99/-11.05	-12.24/-13.17	-13.3/-13.5	-13.33/-11.28	-9.74/-8.5	-7.59/-6.83	-6.24/-5.81	-5.37/-4.92	-4.52/-4.44	-4.65/-4.95
Θ(15°)	-4.51/-4.97	-5.62/-6.38	-6.89/-6.84	-6.09/-5.8	-5.71/-5.64	-5.41/-5.28	-5.31/-5.53	-5.67/-5.6	-5.58/-5.71	-5.73/-5.62	-5.59/-5.8	-6.1/-6.36	-6.66/-7.11	-7.43/-7.8	-8.46/-9.61	-10.89/-12.61	-15.49/-14.3	-12.49/-9.76	-7.83/-6.4	-5.29/-4.56	-4.14/-3.93	-3.83/-3.71	-3.63/-3.74	-3.97/-4.26
Θ(22.5°)	-5.69/-6.15	-6.59/-6.6	-5.94/-5.01	-4.18/-3.71	-3.48/-3.35	-3.24/-3.18	-3.25/-3.33	-3.31/-3.3	-3.39/-3.57	-3.71/-3.71	-3.81/-4.01	-4.25/-4.47	-4.82/-5.27	-5.43/-5.81	-6.07/-7.07	-7.96/-9.52	-10.52/-11.33	-10.72/-8.66	-6.81/-5.39	-4.4/-3.81	-3.51/-3.42	-3.44/-3.52	-3.79/-4.23	-4.78/-5.28
Θ(30°)	-8.31/-7.59	-6.56/-5.56	-4.49/-3.53	-2.74/-2.24	-2.01/-1.94	-2/-2.03	-2.04/-1.98	-1.78/-1.61	-1.5/-1.55	-1.66/-1.77	-2.01/-2.38	-2.74/-3.11	-3.42/-3.7	-4.01/-4.41	-4.81/-5.18	-5.4/-5.59	-6.01/-6.7	-7.48/-7.36	-6.27/-5.12	-4.21/-3.66	-3.44/-3.49	-3.74/-4.21	-5.02/-6.09	-7.28/-8.2
Θ(37.5°)	-6.01/-5.21	-4.24/-3.24	-2.22/-1.45	-0.99/-0.87	-0.99/-1.35	-1.87/-2.23	-2.26/-1.87	-1.27/-0.69	-0.120/0.32	0.540/0.52	0.19/-0.34	-0.93/-1.53	-1.97/-2.32	-2.61/-2.98	-3.38/-3.6	-3.27/-2.9	-2.81/-3.15	-3.88/-4.42	-4.27/-3.61	-2.97/-2.6	-2.7/-3.29	-4.16/-5.03	-5.77/-6.32	-6.61/-6.42
Θ(45°)	-3.29/-4.02	-4.15/-3.16	-1.62/-0.34	0.490/0.86	0.9/0.64	-0.04/-0.86	-1.29/-1.1	-0.44/-0.25	0.98/1.66	2.14/2.19	1.82/1.15	0.45/-0.03	-0.15/-0.22	-0.38/-0.7	-1.2/-1.55	-1.21/-0.6	-0.19/-0.29	-0.86/-1.38	-1.48/-1.26	-1/-0.94	-1.26/-1.95	-2.69/-2.94	-2.66/-2.32	-2.24/-2.54
Θ(52.5°)	-1.6/-2.87	-4.38/-4.97	-3.08/-0.72	0.95/1.85	2.2/2.21	1.78/1.11	0.540/2.7	0.59/1.14	1.54/1.86	2.1/1.95	1.23/0.2	-0.53/-0.57	-0.32/-0.09	0.03/-0.05	-0.36/-0.45	0.180/0.88	1.26/1.12	0.6/0.2	0.110/1.7	0.150/1.1	0/-0.27	-0.55/-0.57	-0.37/-0.15	-0.19/-0.65
Θ(60°)	0.610/2.7	-0.27/-0.94	-1.11/-0.07	1.3/2.19	2.47/2.4	1.93/1.3	0.77/0.69	1.4/2.26	2.68/2.57	2.07/1.23	-0.12/-1.06	-0.92/-0.82	-0.98/-1.13	-1.09/-1.19	-1.43/-1.03	0.4/1.55	2.11/2.01	1.50/94	0.79/0.87	1/1.13	1.090/0.1	0.440/2.9	0.560/0.9	1.040/9
Θ(67.5°)	1.83/1.46	0.85/0.08	-0.380/0.12	1.07/2.03	2.77/3.18	2.98/2.32	1.88/2.05	2.69/3.15	3.19/2.92	2.44/1.72	0.860/0.74	0.930/9	0.750/66	0.28/-0.71	-1.76/-1	0.67/1.85	2.52/2.59	1.91						



Radiated Composite Gain Data of 2.4GHz

Appendix A

Gain Result

Freq(Hz)	24GPol.	PhiAnt.1	-/-	-/+	+/-	+/+	-/-	-/+	+/-	+/+	-/-	-/+	+/-	+/+	-/-	-/+	+/-	+/+	-/-	-/+	+/-	+/+		
Gain	Φ(0°)Φ(7.5°)	Φ(15°)Φ(22.5°)	Φ(30°)Φ(37.5°)	Φ(45°)Φ(52.5°)	Φ(60°)Φ(67.5°)	Φ(75°)Φ(82.5°)	Φ(90°)Φ(97.5°)	Φ(105°)Φ(112.5°)	Φ(120°)Φ(127.5°)	Φ(135°)Φ(142.5°)	Φ(150°)Φ(157.5°)	Φ(165°)Φ(172.5°)	Φ(180°)Φ(187.5°)	Φ(195°)Φ(202.5°)	Φ(210°)Φ(217.5°)	Φ(225°)Φ(232.5°)	Φ(240°)Φ(247.5°)	Φ(255°)Φ(262.5°)	Φ(270°)Φ(277.5°)	Φ(285°)Φ(292.5°)	Φ(300°)Φ(307.5°)	Φ(315°)Φ(322.5°)	Φ(330°)Φ(337.5°)	Φ(345°)Φ(352.5°)
Θ(0°)	-6.53/-6.17	-6.17/-6.47	-6.06/-6.54	-6.03/-6.63	-6.09/-6.61	-6.10/-11.53	-6.10/-14.9	-6.12/-17.94	-6.15/-16.77	-6.18/-15.31	-6.19/-14.34	-6.21/-13.94	-6.23/-13.54	-6.25/-13.14	-6.27/-12.74	-6.29/-12.34	-6.31/-11.94	-6.33/-11.54	-6.35/-11.14	-6.37/-10.74	-6.39/-10.34	-6.41/-9.94	-6.43/-9.54	
Θ(7.5°)	-6.17/-5.66	-5.51/-5.66	-6.06/-6.54	-7.06/-7.62	-8.28/-9.29	-10.95/-13.12	-16.06/-18.47	-18.98/-17.93	-17.52/-16.6	-13.3/-10.72	-8.75/-7.25	-6.1/-5.31	-4.87/-4.76	-4.9/-5.19	-5.58/-6.03	-6.63/-7.24	-8.9/-07	-10.55/-12.24	-13.74/-14.95	-15.88/-16.95	-18.19/-19.1	-18.35/-15.99	-12.98/-10.46	-8.48/-7.17
Θ(15°)	-6.61/-6.04	-5.71/-5.67	-5.84/-6.12	-6.46/-6.92	-7.65/-9.06	-11.16/-13.81	-17.1/-19.18	-18.7/-19.13	-18.2/-15.2	-12.63/-10.44	-8.76/-7.41	-6.49/-5.87	-5.63/-5.68	-5.97/-6.34	-6.81/-7.31	-7.96/-8.71	-9.64/-10.97	-12.62/-14.07	-14.52/-14.32	-14.16/-14.35	-14.9/-15.5	-15.46/-14.58	-12.69/-10.65	-8.88/-7.58
Θ(22.5°)	-6.13/-7.47	-6.89/-6.52	-6.33/-6.3	-6.37/-6.71	-7.43/-8.88	-10.74/-12.7	-14.75/-17.42	-18.11/-19.17	-18.96/-16.47	-13.55/-11.18	-9.34/-8.02	-7.17/-6.72	-6.67/-6.95	-7.42/-7.99	-8.66/-9.47	-10.66/-12.29	-14.78/-17.66	-17.67/-14.97	-13/-11.8	-11.29/-11.28	-12.61/-12.53	-11.84/-10.7	-9.59/-8.68	
Θ(30°)	-10.82/-10.32	-9.44/-8.56	-7.9/-7.39	-7.16/-7.27	-7.84/-9.11	-10.67/-12.08	-13.59/-16.04	-18.08/-18.58	-18.34/-18.19	-14.56/-11.94	-10.02/-8.75	-7.92/-7.41	-7.3/-7.52	-7.89/-8.25	-8.58/-9.04	-9.92/-11.39	-14.2/-19.28	-19.15/-16.37	-12.79/-10.92	-10.06/-9.98	-10.41/-11.11	-11.69/-12.07	-11.9/-11.32	-10.89/-10.96
Θ(37.5°)	-14.72/-13.47	-11.98/-11.16	-10.81/-10.51	-10.33/-10.4	-10.89/-11.85	-12.96/-13.92	-15.26/-17.05	-17.32/-15.22	-12.89/-11.38	-10.37/-9.68	-9.22/-8.95	-8.83/-8.84	-9/-9.04	-8.93/-8.55	-8.01/-7.64	-7.47/-7.68	-8.65/-10.42	-13.09/-16.01	-15.43/-12.8	-11.19/-10.75	-11.1/-11.92	-12.76/-13.44	-13.29/-12.71	-12.82/-12.4
Θ(45°)	-18.87/-17.25	-16.34/-15.25	-15.63/-16.87	-18.33/-17.55	-14.85/-12.71	-11.33/-10.38	-9.95/-9.43	-8.32/-7.04	-6.18/-6.13	-6.91/-8.28	-9.98/-12.08	-14.59/-17.36	-18.15/-18.47	-16/-13.48	-11.43/-9.82	-8.61/-7.91	-8.05/-9.22	-11.77/-16.5	-18.06/-15.26	-11.9/-10.71	-10.75/-11.53	-12.84/-14.45	-15.9/-16.4	-17.4/-18.79
Θ(52.5°)	-12.72/-14.36	-17.62/-18.4	-18.72/-17.92	-15.65/-11.66	-8.97/-7.24	-6.22/-5.92	-6.23/-6.39	-5.75/-4.76	-4.15/-4.42	-5.59/-7.22	-8.94/-10.32	-10.93/-11.19	-11.81/-13.51	-16.92/-19.23	-18.69/-19.05	-17.66/-14.11	-12.58/-12.98	-15.8/-19.03	-17.66/-12.11	-9.58/-8.6	-8.41/-8.68	-9.38/-10.34	-11.39/-11.93	-11.86/-12.1
Θ(60°)	-9.66/-11.42	-13.85/-15.41	-14.3/-11.84	-9.53/-7.54	-6.25/-5.77	-5.53/-6.43	-7.87/-8.37	-7.33/-6.2	-5.79/-6.45	-7.94/-9.2	-9.11/-8.2	-7.23/-6.68	-6.85/-7.84	-9.64/-11.38	-12.45/-14.1	-17.69/-18.88	-14.79/-12.49	-12.53/-14.08	-14.86/-13.12	-11.25/-10.1	-9.22/-8.48	-8.05/-8.09	-8.36/-8.48	-8.45/-8.79
Θ(67.5°)	-15.16/-17.93	-19.27/-19.16	-16.83/-13.6	-11.39/-10.27	-10.1/-10.71	-11.21/-10.04	-7.35/-4.98	-3.64/-3.27	-3.86/-5.54	-8.91/-14.49	-18.01/-13.83	-11.28/-10.37	-10.8/-12.57	-14.09/-13.08	-12.18/-13.68	-16.62/-19.26	-12.54/-10.4	-9.82/-11.62	-16.34/-17.86	-18.53/-14.35	-11.21/-10.6	-10.32/-10.44	-11.05/-12.4	
Θ(75°)	-12.19/-14.56	-16.92/-18.93	-18.28/-17.83	-18.51/-15.37	-11.81/-8.91	-6.37/-4.02	-2.28/-1.29	-1.11/-1.67	-2.88/-4.49	-6.74/-9.82	-13.56/-15.66	-14.96/-13.78	-13.49/-13.19	-11.4/-9.44	-8.77/-10.07	-14.72/-18.47	-19.18/-13.5	-11.87/-13.32	-16.65/-12.27	-7.84/-5.82	-5.2/-5.38	-5.85/-6.26	-6.51/-7.03	-8.26/-10.01
Θ(82.5°)	-8.31/-11.13	-14.85/-18.22	-18.33/-19.24	-18.1/-14.35	-11.31/-8.77	-6.66/-4.9	-3.91/-3.85	-4.92/-7.17	-10.16/-12.8	-15.92/-18.52	-17.97/-15.68	-13.36/-12.17	-12.16/-12.65	-11.97/-10.89	-10.89/-12.76	-16.44/-15.3	-10.33/-7.22	-6.48/-8.86	-17.86/-14.13	-7.05/-4.3	-3.23/-3.12	-3.55/-3.97	-4.14/-3.47	-5.13/-6.42
Θ(90°)	-6.38/-9.12	-12.88/-17.33	-19.02/-18.11	-18.42/-17.58	-13.29/-10.71	-8.99/-7.71	-7.15/-7.14	-7.32/-7.17	-6.64/-6.44	-7.65/-10.72	-15.9/-15.72	-18.99/-19.77	-18.45/-18.46	-16.05/-14.07	-14.09/-17.85	-18.32/-14.61	-8.47/-5.42	-4.53/-6.22	-11.71/-14.55	-8/-5.07	-3.97/-3.84	-4.11/-4.25	-4.02/-3.67	-3.84/-6.2
Θ(97.5°)	-5.92/-8.59	-12.18/-16.64	-18.49/-17.82	-13.96/-10.85	-9.25/-8.44	-8.02/-7.47	-6.52/-5.17	-4.08/-3.64	-3.57/-3.94	-5.39/-8.37	-13.14/-17.88	-18.94/-17.92	-18.3/-18.04	-15.04/-12.54	-12.14/-14.63	-18.79/-14.11	-9.25/-6.51	-5.87/-7.95	-15.4/-15.87	-8.48/-5.67	-4.56/-4.2	-4.09/-3.85	-3.48/-3.14	-3.27/-4.26
Θ(105°)	-10.51/-12.61	-14.89/-18.22	-18.49/-18.34	-12.71/-9.03	-7.29/-6.54	-6.13/-5.42	-4.19/-3	-2.54/-2.92	-3.55/-3.99	-4.83/-6.56	-15.23/-17.5	-17.8/-15.18	-12.41/-11.21	-12.34/-17.65	-18.86/-12.89	-8.5/-6.21	-5.83/-7.95	-13.47/-15.88	-10.63/-8.01	-7.02/-7.32	-1.15/-8.68	-8.73/-8.45	-8.74/-8.79	
Θ(112.5°)	-5.58/-7.3	-9.08/-11.25	-13.77/-11.16	-7.56/-5.65	-5.14/-5.54	-6.22/-6.46	-6.02/-5.73	-6.52/-8.14	-8.61/-7.96	-8.29/-10.3	-13.15/-14.25	-13.2/-12.47	-11.56/-9.45	-7.36/-6.5	-7.17/-9.48	-9.66/-7.89	-8.34/-12.17	-13.97/-13.61	-11.71/-14.55	-4.94/-5.26	-6.01/-6.2	-5.74/-5.22	-4.77/-4.4	
Θ(120°)	-10.31/-13.95	-15.9/-17.65	-15.9/-11.19	-9.03/-9.22	-11.48/-15.89	-16.58/-12.32	-9.64/-8.46	-7.33/-5.2	-2.94/-1.78	-1.99/-3.45	-5.98/-9.51	-13.44/-16.52	-18.04/-17.51	-15.13/-12.6	-10.73/-9.27	-7.46/-5.27	-3.07/-1.74	-1.77/-3.51	-7.56/-15.72	-18.8/-12.34	-10.21/-10.21	-10.84/-10.04	-8.24/-7.19	-7.02/-7.97
Θ(127.5°)	-7.92/-9.59	-10.66/-9.86	-8.73/-8.71	-10.32/-12.52	-10.96/-7.85	-5.86/-9.49	-4.97/-5.09	-4.26/-4.22	-0.60/-43	0.590/-66	-0.88/-1.97	-2.86/-3.4	-3.86/-5.02	-7.67/-13.45	-18.45/-15.29	-10.74/-7.64	-4.93/-3.31	-3.37/-5.11	-7.08/-6.32	-4.38/-3.18	-2.85/-3.3	-4.65/-6.2	-6.79/-6.38	-6.17/-6.66
Θ(135°)	-3.73/-4.96	-5.45/-4.92	-4.54/-5.01	-6.26/-7.17	-6.55/-5.55	-5.36/-6.36	-8.45/-9.69	-7.34/-4.43	-2.38/-1.25	-0.84/-0.88	-1.16/-1.52	-1.83/-2.04	-2.35/-3.1	-4.68/-7.35	-10.98/-14.15	-13.69/-10.63	-7.97/-7.24	-9.1/-16.88	-17.7/-8.22	-4.49/-2.7	-1.93/-1.86	-2.27/-2.61	-2.48/-2.09	-2.05/-2.64
Θ(142.5°)	-5.19/-6.19	-6.52/-6.02	-5.57/-5.92	-7.42/-8.95	-11.74/-12.32	-13.52/-16.29	-14.22/-8.79	-5.06/-2.98	-1.89/-1.51	-1.65/-2.15	-2.93/-3.89	-4.9/-5.9	-6.8/-7.51	-7.93/-7.85	-7.34/-6.26	-7.42/-3.16	-2.12/-1.92	-2.71/-4.46	-7.07/-10.06	-11.48/-10.48	-8.97/-9.94	-7.23/-6.52	-5.52/-4.68	-4.23/-4.43
Θ(150°)	-4.63/-4.59	-4.39/-3.95	-3.55/-3.67	-4.58/-4.69	-9.21/-12.4	-14.45/-13.06	-9.63/-4.5	-4.08/-2.58	-1.69/-1.31	-1.33/-1.72	-2.52/-3.89	-5.98/-9.21	-14.55/-17.56	-14.67/-10.33	-7.85/-5.98	-4.28/-2.94	-2.08/-1.74	-1.92/-2.59	-3.75/-5.38	-7.41/-9.86	-12.85/-15.95	-16.46/-13.72	-10.58/-8.03	-6.09/-9.46
Θ(157.5°)	-3.48/-3.46	-3.39/-3.28	-3.33/-3.63	-4.98/-7.05	-10.04/-13.4	-14.17/-11.73	-9.6/-6.7	-4.95/-3.77	-2.98/-2.57	-2.48/-2.76	-6.67/-9.73	-14.25/-17.99	-18.47/-14.53	-11.1/-8.74	-7.03/-5.93	-5.3/-5.01	-5.02/-5.32	-5.8/-6.32	-6.63/-6.57	-6.27/-5.78	-5.26/-4.8	-4.46/-4.15	-3.84/-3.57	
Θ(165°)	-4.39/-4.89	-5.57/-6.31	-7.3/-8.83	-11.09/-14.31	-10.53/-13.06	-10.33/-8.16	-6.45/-6.11	-4.2/-3.72	-3.46/-3.43	-3.71/-4.24	-5.16/-6.31	-8.05/-10.53	-13.91/-19.23	-18.88/-17.61	-16.28/-13.06	-11.37/-10.72	-9.84/-12.54	-15.97/-19.63	-18.01/-18.47	-17.22/-17.89	-15.58/-18.04	-15.99/-13.56	-12.17/-11.17	-10.29/-9.46
Θ(172.5°)	-7.21/-8.19	-9.68/-11.63	-13.69/-14.19	-12.46/-10.1	-8.16/-6.76	-5.84/-5.12	-4.45/-3.92	-3.67/-3.71	-3.99/-4.47	-5.26/-6.31	-7.76/-9.68	-12.49/-16.44	-18.78/-18.59	-18.37/-15.92	-13.69/-12.65	-12.61/-13.17	-14.39/-16.91	-18.2/-17.96	-18.49/-13.92	-11.29/-9.52	-8.25/-7.28	-6.62/-6.32	-6.26/-6.4	-6.62/-6.91
Θ(180°)	-15.23/-15.21	-14.34/-12.69	-10.52/-8.52	-6.88/-5.71	-4.97/-4.68	-4.63/-4.73	-4.81/-4.9	-5.17/-5.64	-6.35/-7.23	-8.42/-9.58	-10.65/-11.51	-11.98/-11.85	-11.45/-11.11	-10.8/-10.64	-10.74/-11.32	-12.48/-13.61	-14.78/-16.08	-17.66/-17.69	-18.01/-14.56	-13.79/-13.45	-13.32/-13.23	-13.33/-13.34	-13.71/-14.42	-15.11/-15.52
Freq(Hz)	2.4GPol.	ThetaAnt.1	-/-	-/+	+/-	+/+	-/-	-/+	+/-	+/+	-/-	-/+	+/-	+/+	-/-	-/+	+/-	+/+	-/-	-/+	+/-	+/+		
Gain	Φ(0°)Φ(7.5°)	Φ(15°)Φ(22.5°)	Φ(30°)Φ(37.5°)	Φ(45°)Φ(52.5°)	Φ(60°)Φ(67.5°)	Φ(75°)Φ(82.5°)	Φ(90°)Φ(97.5°)	Φ(105°)Φ(112.5°)	Φ(120°)Φ(127.5°)	Φ(135°)Φ(142.5°)	Φ(150°)Φ(157.5°)	Φ(165°)Φ(172.5°)	Φ(180°)Φ(187.5°)	Φ(195°)Φ(202.5°)	Φ(210°)Φ(217.5°)	Φ(225°)Φ(232.5°)	Φ(240°)Φ(247.5°)	Φ(255°)Φ(262.5°)	Φ(270°)Φ(277.5°)	Φ(285°)Φ(292.5°)	Φ(300°)Φ(307.5°)	Φ(315°)Φ(322.5°)	Φ(330°)Φ(337.5°)	Φ(345°)Φ(352.5°)
Θ(0°)	-16.76/-17.67	-18.75/-19.13	-17.65/-18.59	-16.17/-14.02	-12.67/-11.59	-10.64/-9.87	-9.26/-8.66	-8.03/-7.55	-7.32/-7.36	-7.67/-8.3	-9.36/-10.61	-11.71/-12.95	-14.34/-15.67	-16.69/-16.81	-18.01/-14.6	-12.82/-11.29	-9.99/-9.95	-8.04/-7.28	-6.49/-6.57	-4.75/-4.39	-6.58/-6.87	-5.41/-5.39	-9.63/-10.96	-12.52/-14.41
Θ(7.5°)	-14.09/-15.28	-15.28/-14.15	-12.56/-11.01	-9.73/-8.72	-7.97/-7.16	-6.46/-5.89	-5.44/-5.26	-5.04/-4.5	-5.02/-5.34	-5.91/-6.69	-7.69/-9.78	-9.85/-11.1	-12.35/-14.05	-15.99/-18.45	-18.91/-18.66	-19.26/-18.66	-16.47/-14.48	-13.08/-11.87	-10.83/-10.19	-9.88/-9.71	-9.6/-9.42	-9.35/-9.43	-9.91/-10.62	-11.55/-12.74
Θ(15°)	-11.31/-11.48	-11.06/-10.13	-8.89/-7.72	-6.68/-5.77	-5.02/-4.25	-3.63/-3.23	-3.42/93	-2.98/-3.11	-3.41/-3.83	-4.35/-5.01	-5.69/-6.38	-7.03/-7.67	-8.31/-9.1	-9.98/-10.97	-12.29/-14.16	-16.99/-17.82	-19.28/-18.58	-17.37/-18.39	-16.09/-14.68	-14.1/-13.68	-13.3/-12.74	-12.05/-11.57	-11.32/-11.91	-11.22/-11.42
Θ(22.5°)	-11.49/-10.67	-8.63/-8.36	-7.15/-7.7	-4.74/-3.9	-3.26/-2.73	-2.34/-2.16	-2.17/-2.26	-2.42/-2.66	-3.04/-3.44	-3.94/-4.46	-4.97/-5.4	-5.81/-6.19	-6.52/-6.88	-7.23/-7.73	-8.38/-9.29	-10.62/-12.4	-15.24/-18.81	-18.41/-18.51	-17.42/-19.05	-19.57/-18.36	-17.39/-16.32	-15.54/-15.17	-14.64/-14.03	-13.21/-12.25
Θ(30°)	-8.84/-8.13	-7.39/-6.51	-5.47/-4.77	-3.59/-2.92	-2.46/-2.16	-2.1/-1.98	-2.1/-2.19	-2.26/-2.41	-2.6/-2.78	-3.04/-3.32	-3.56/-3.79	-4.03/-4.23	-4.38/-4.53	-4.71/-4.96	-5.39/-5.96	-6.77/-7.97	-9.84/-12.54	-15.97/-19.63	-18.01/-18.47	-17.22/-17.89	-15.58/-18.04	-15.99/-13.56	-12.17/-11.17	-10



Radiated Composite Gain Data of 2.4GHz

Appendix A

Θ(22.5°)	-12.11/-10.72	-9.34/-8.2	-7.18/-6.48	-6.14/-6.13	-6.47/-7.06	-7.52/-7.68	-7.82/-8.18	-8.96/-10.33	-12.61/-15.43	-18.85/-18.08	-19.28/-16.88	-15.48/-14.82	-14.84/-15.13	-15.11/-14.11	-12.56/-11.72	-10.04/-9.49	-9.19/-9.03	-9.14/-9.63	-10.48/-11.74	-13.29/-14.95	-15.71/-15	-13.66/-12.61	-12.32/-12.54	-12.92/-12.85
Θ(30°)	-13.04/-11.34	-9.56/-8.12	-6.98/-6.27	-6.12/-6.4	-6.98/-7.61	-7.72/-7.32	-7.7/-7.04	-7.41/-8.38	-9.91/-11.59	-13.28/-14.52	-14.52/-13.58	-12.5/-17.8	-11.63/-11.84	-12.27/-12.37	-12.1/-11.72	-11.55/-11.85	-12.65/-13.85	-15.47/-16.97	-17.37/-16.76	-15.99/-15.1	-14.35/-13.6	-12.81/-12.37	-12.41/-12.95	-13.78/-14.17
Θ(142.5°)	-14.56/-12.26	-9.82/-7.94	-6.05/-5.89	-5.78/-6.16	-6.78/-7.23	-7.35/-7.42	-6.82/-1.99	-6.56/-9.4	-10.22/-10.85	-11.46/-12.01	-12.62/-12.2	-11.98/-11.79	-11.83/-11.92	-11.63/-11.55	-11.42/-11.01	-11.96/-11.29	-12.71/-13.58	-16.17/-17.74	-17.21/-17.89	-15.71/-15.24	-13.67/-13.68	-13.99/-14.17	-14.19/-14.26	-14.84/-15.56
Θ(45°)	-18.39/-15.11	-11.71/-9.14	-7.26/-6.2	-5.75/-5.62	-5.66/-5.9	-6.61/-8.15	-10.43/-13.18	-16.22/-18.03	-17.53/-16.27	-15.38/-14.93	-14.94/-15.49	-16.51/-17.6	-18.19/-17.62	-16.14/-12	-12.83/-11.85	-10.86/-9.73	-8.88/-8.9	-9.87/-11.43	-13.18/-14.2	-14.38/-14.39	-15.06/-16.56	-18.77/-18.36	-18.2/-16.69	-16.92/-19.02
Θ(52.5°)	-17.31/-17.05	-13.94/-12.14	-10.79/-10.07	-9.56/-9.14	-8.84/-8.98	-10.14/-13.24	-17.73/-19.19	-17.01/-15.1	-15.75/-17.73	-18.5/-16.73	-15.48/-15.62	-15.47/-15.35	-15.78/-18.32	-18.15/-17.94	-18.71/-19.23	-16.86/-13.29	-10.92/-10.28	-11.05/-13	-15.65/-17.47	-17.68/-17.59	-17.75/-18.01	-18.19/-18.96	-18.89/-19.11	-18.35/-17.28
Θ(60°)	-16.64/-15.05	-15.62/-17.3	-19.14/-18.95	-19.35/-16.36	-12.99/-11.07	-10.84/-12.39	-14.16/-12.6	-9.94/-8.5	-8.14/-8.36	-8.27/-1.7	-7.31/-7.45	-7.73/-7.87	-8.26/-9.5	-11.13/-11.34	-10.96/-11.9	-15.47/-18.2	-18.47/-18.28	-19.18/-53	-17.44/-15.73	-14.62/-13.58	-12.81/-11.66	-10.93/-11.25	-12.69/-14.4	-15.65/-15.83
Θ(67.5°)	-14.77/-15.73	-17.68/-17.96	-18.52/-13.31	-10.34/-8.57	-7.69/-7.81	-9.15/-12.25	-15.05/-12.26	-9.18/-7.69	-7.44/-7.66	-7.49/-6.92	-6.67/-7.02	-7.63/-8.22	-9.01/-10.07	-10/-8.85	-8.41/-9.35	-11.97/-16.21	-17.96/-18.04	-17.89/-16.51	-15.82/-14.89	-13.93/-12.63	-11.28/-10.05	-9.49/-9.78	-10.85/-11.96	-12.77/-13.49
Θ(75°)	-17.1/-18.82	-17.87/-17.74	-18.01/-13.43	-10.19/-8.72	-8.54/-9.88	-13.11/-16.52	-12.29/-8.41	-6.56/-6.17	-6.77/-7.94	-9.25/-10.28	-10.97/-11.69	-12.22/-12.29	-12.38/-11.98	-10.44/-9.18	-9.27/-10.88	-14.25/-18.77	-18.35/-19.41	-16.93/-18.68	-18.51/-18.63	-13.87/-11.53	-10.96/-11.28	-11.75/-11.95	-12.08/-12.65	-13.54/-15.13
Θ(82.5°)	-11.31/-11.91	-12.66/-14.47	-18.01/-19	-14.31/-11.09	-9.56/-9.17	-9.39/-8.94	-7.27/-5.8	-5.3/-5.8	-6.96/-8.21	-9.27/-10.2	-11.28/-12.14	-12.31/-12.02	-12.05/-11.81	-10.65/-10.05	-10.72/-12.92	-16.94/-18.28	-18.22/-14.68	-13.21/-16.67	-18.57/-13.05	-8.53/-6.87	-6.69/-7.57	-8.97/-9.86	-9.95/-10.07	-10.4/-10.78
Θ(90°)	-7.91/-8.06	-8.61/-9.68	-12.26/-15.5	-15.34/-12.74	-10.46/-8.69	-7.93/-7.98	-8.44/-8.65	-8.67/-8.97	-9.55/-9.68	-9.72/-10.6	-12.53/-14.62	-15.57/-15.51	-15.97/-16.23	-14.46/-12.83	-12.58/-13.81	-18.19/-17.96	-11.84/-8.46	-7.94/-10.99	-17.68/-12.3	-7.2/-5.2	-4.61/-5.14	-6.61/-8.01	-8.34/-8.18	-8.04/-7.77
Θ(97.5°)	-5.7/-6.34	-7.25/-8.48	-10.58/-12.84	-14.21/-15.46	-16.5/-14.51	-12.52/-13.05	-10.24/-12.68	-9.04/-7.66	-7.62/-7.87	-8.33/-9.51	-11.72/-14.23	-16.05/-17.36	-18.61/-18.12	-14.58/-12.01	-11.14/-12.84	-18.58/-18.62	-11.08/-8.46	-8.53/-12.3	-18.63/-12.08	-7.28/-5.32	-4.61/-4.77	-5.65/-6.45	-6.37/-5.84	-5.52/-5.56
Θ(105°)	-3.86/-9.47	-9.64/-9.62	-10.49/-11.39	-10.43/-9.27	-9.51/-10.76	-12.13/-13.66	-12.31/-8.47	-5.89/-5.09	-5.44/-6.16	-6.92/-8.1	-9.92/-12.22	-14.85/-18.01	-16.94/-18.43	-14.3/-11.78	-11.76/-15.53	-18.33/-15.16	-10.23/-8.02	-7.8/-10.72	-18.78/-13.52	-6.61/-6.64	-5.84/-5.77	-5.3/-6.78	-6.53/-6.08	-6.18/-7.13
Θ(112.5°)	-8.42/-9.09	-9.03/-8.92	-10.07/-11.08	-8.82/-6.62	-6.08/-6.91	-8.79/-11.1	-11.51/-8.91	-7.51/-7.61	-8.44/-8.75	-8.69/-9.02	-9.88/-10.92	-12.14/-13.58	-13.62/-11.25	-8.96/-8.23	-9.93/-15.15	-18.49/-18.71	-13.66/-10.69	-10.95/-16.55	-18.33/-9.74	-6.35/-4.99	-4.71/-5.25	-6.47/-7.47	-7.5/-7.11	-6.99/-7.5
Θ(120°)	-8.85/-11.18	-13.32/-14.69	-17.98/-17.89	-12.91/-9.87	-9.91/-12.34	-17.71/-17.93	-17.26/-13.28	-11.48/-10.28	-8.61/-7.2	-6.77/-7.78	-10.42/-14.59	-19.07/-18.92	-16.25/-12.34	-10.28/-10.65	-14.31/-18.41	-18.75/-13.25	-8.78/-6.39	-6.53/-9.74	-16.87/-16.22	-9.44/-7.37	-7.2/-8.16	-9.93/-10.46	-9.16/-9.99	-4.74/-7.78
Θ(127.5°)	-7.77/-9.08	-10.56/-10.46	-9.66/-9.83	-11.54/-15.53	-9.11/-14.19	-10.82/-9.36	-9.02/-8.78	-7.89/-6.18	-4.38/-3.09	-2.52/-2.88	-4.18/-8.22	-6.92/-6.88	-6.49/-6.71	-8.47/-13.03	-16.47/-11.73	-9.55/-7.92	-5.53/-9.6	-4.21/-6.57	-10.42/-10.05	-7.25/-6.68	-6.16/-7.19	-9.4/-12.55	-13.27/-10.48	-8.19/-7.2
Θ(135°)	-4.63/-6.15	-7.43/-7.19	-6.36/-6.4	-7.87/-10.47	-10.64/-8.58	-7.56/-8.07	-9.87/-11.92	-11.23/-8.57	-6.34/-4.92	-3.95/-3.46	-3.43/-3.6	-3.54/-3.13	-2.85/-3.3	-5.02/-8.29	-12.4/-14.17	-16.19/-15.84	-10.6/-7.94	-8.25/-11.6	-13.76/-8.81	-5.63/-4.27	-3.91/-4.19	-5.06/-5.95	-5.91/-4.81	-3.86/-3.75
Θ(142.5°)	-5.01/-6.35	-7.27/-6.94	-6.01/-5.92	-7.38/-10.92	-14.23/-13.15	-12.42/-13.62	-18.44/-19.13	-12.19/-8.69	-7.23/-7.02	-7.35/-7.45	-7.15/-6.65	-6.01/-5.41	-5.35/-6.26	-8.42/-15.85	-15.37/-15.21	-9.32/-4.73	-5.32/-4.45	-5.25/-8.05	-13.64/-18.88	-14.56/-11.04	-9.32/-8.47	-8/-7.47	-6.53/-5.37	-4.48/-4.39
Θ(150°)	-3.9/-3.98	-4.09/-3.89	-3.64/-4.02	-5.56/-8.92	-10.72/-17.64	-18.09/-18.61	-17.82/-12.63	-8.82/-6.54	-5.3/-5.03	-6.57/-8.43	-10.47/-12.48	-14.89/-18.55	-18.85/-15.57	-11.69/-8.64	-5.92/-3.76	-2.29/-1.77	-2.18/-3.36	-5.18/-6.76	-18.86/-18.01	-6.14/-12.75	-10/-7.58	-5.59/-4.32	-5.59/-4.32	-5.59/-4.32
Θ(157.5°)	-3.27/-3.2	-3.27/-3.42	-3.78/-4.77	-6.83/-10.61	-17.44/-18.24	-16.41/-13.03	-11.01/-9.2	-7.4/-5.97	-4.99/-4.44	-4.25/-4.46	-5.04/-5.97	-7.49/-9.78	-12.74/-15.79	-15.65/-12.81	-9.96/-7.54	-5.37/-3.72	-2.77/-2.57	-2.89/-3.45	-4.24/-5.21	-6.21/-7.15	-7.78/-7.75	-7.1/-6.21	-5.32/-4.61	-4/-3.45
Θ(165°)	-5.6/-5.53	-6.42/-7.16	-8.32/-10.2	-13.52/-18.21	-17.04/-13	-10.44/-8.88	-7.95/-7.2	-6.51/-5.92	-5.49/-5.13	-4.81/-4.56	-4.58/-4.88	-5.63/-6.93	-8.87/-11.42	-13.82/-10.49	-11.98/-9.52	-7.47/-6.1	-5.5/-5.45	-5.64/-7.52	-5.79/-5.76	-5.58/-5.24	-4.79/-4.3	-3.83/-5.44	-3.58/-4.04	-4.73/-5.26
Θ(172.5°)	-10.33/-11.4	-13.05/-15.44	-18.16/-18.23	-14.86/-11.61	-9.47/-8.26	-7.66/-7.41	-7.41/-7.47	-7.44/-7.48	-7.51/-7.48	-7.36/-7.26	-7.73/-7.68	-8.5/-10.11	-12.6/-16.08	-18.56/-17.01	-14.11/-11.77	-10.17/-9.45	-9.45/-9.79	-9.83/-9.45	-7.06/-6.3	-5.74/-5.31	-5.04/-5.1	-5.68/-6.83	-8.29/-9.53	-8.29/-9.53
Θ(180°)	-15.82/-15.91	-15.71/-14.84	-13.34/-11.66	-9.83/-8.3	-7.49/-7.29	-7.65/-8.48	-9.74/-11.12	-7.66/-14.33	-16.41/-17.67	-18.35/-18.97	-17.77/-18.88	-19.18/-18.48	-16.61/-18.17	-17.24/-15.29	-14.16/-13.37	-12.93/-13.14	-14.1/-15.24	-15.69/-15.32	-14.58/-13.73	-13.04/-12.65	-12.62/-12.67	-12.67/-13.01	-13.98/-15.45	-16.31/-16.43
Freq(Hz)	2.4835GPol.	Theta/Ant. 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gain	Φ(0°)/Φ(7.5°)	Φ(15°)/Φ(22.5°)	Φ(30°)/Φ(37.5°)	Φ(45°)/Φ(52.5°)	Φ(60°)/Φ(67.5°)	Φ(75°)/Φ(82.5°)	Φ(90°)/Φ(97.5°)	Φ(105°)/Φ(112.5°)	Φ(120°)/Φ(127.5°)	Φ(135°)/Φ(142.5°)	Φ(150°)/Φ(157.5°)	Φ(165°)/Φ(172.5°)	Φ(180°)/Φ(187.5°)	Φ(195°)/Φ(202.5°)	Φ(210°)/Φ(217.5°)	Φ(225°)/Φ(232.5°)	Φ(240°)/Φ(247.5°)	Φ(255°)/Φ(262.5°)	Φ(270°)/Φ(277.5°)	Φ(285°)/Φ(292.5°)	Φ(300°)/Φ(307.5°)	Φ(315°)/Φ(322.5°)	Φ(330°)/Φ(337.5°)	Φ(345°)/Φ(352.5°)
Θ(0°)	-10.2/-11.5	-13.03/-14.56	-16.42/-17.93	-18.6/-18.73	-18.69/-18.08	-16.68/-14.81	-13.13/-11.87	-10.91/-10.24	-9.71/-9.32	-9.19/-9.09	-9.1/-9.44	-10.08/-10.67	-11.08/-11.66	-12.53/-14	-15.92/-18.15	-18.09/-17.57	-18.46/-18.56	-17.44/-15.27	-13.38/-11.8	-10.69/-9.93	-9.33/-8.72	-8.13/-7.7	-7.66/-8.04	-8.7/-9.43
Θ(7.5°)	-10.03/-11.48	-13.65/-16.5	-18.05/-18.23	-18.34/-17.17	-15.21/-13.58	-12.14/-10.88	-10.14/-9.82	-9.61/-9.51	-9.33/-9.26	-9.13/-8.86	-8.69/-8.76	-8.96/-9.1	-9.17/-9.43	-9.92/-10.74	-12.13/-15.5	-15.75/-18.01	-18.51/-19.26	-19.66/-16.69	-13.31/-11.62	-10.37/-9.35	-8.7/-8.3	-7.98/-7.72	-6.74/-7.95	-8.59/-9.34
Θ(15°)	-10.49/-11.97	-14.16/-17.01	-18.72/-17.38	-14.49/-12.37	-10.87/-9.62	-8.51/-7.73	-7.34/-7.34	-7.43/-7.35	-7.21/-7.12	-6.91/-6.58	-6.22/-5.99	-5.87/-5.5	-5.78/-5.6	-6.28/-6.9	-7.83/-9.15	-11.02/-13.64	-17.17/-18.21	-17.03/-13.19	-10.55/-8.68	-7.39/-6.61	-6.26/-6.24	-6.42/-6.66	-7.09/-7.83	-8.72/-9.67
Θ(22.5°)	-13.06/-15.15	-17.19/-17.35	-14.48/-11.32	-9.01/-7.55	-6.62/-5.98	-5.49/-5.26	-5.36/-5.61	-5.74/-5.68	-5.58/-5.44	-5.23/-4.83	-4.43/-4.07	-3.8/-3.59	-3.53/-3.59	-3.82/-4.24	-4.92/-5.85	-7.22/-9.06	-11.79/-14.97	-15.74/-12.79	-9.91/-7.76	-6.47/-5.82	-5.67/-5.8	-6.1/-6.59	-7.49/-8.71	-10.14/-11.63
Θ(30°)	-17.98/-16.6	-13.97/-11.36	-8.79/-6.66	-5.1/-4.1	-3.58/-3.41	-3.54/-3.82	-4.31/-4.86	-5.11/-5	-4.74/-4.47	-4.16/-3.79	-3.47/-3.24	-3.07/-2.99	-2.94/-2.94	-2.98/-3.1	-3.34/-3.73	-4.45/-6.62	-7.45/-9.86	-12.71/-13.44	-11.13/-8.73	-7.1/-6.31	-6.14/-6.35	-6.79/-7.56	-8.98/-11	-13.69/-16.66
Θ(37.5°)	-10.33/-9.54	-8.5/-7.26	-5.72/-4.34	-3.24/-2.58	-2.37/-2.6	-3.23/-4.02	-4.85/-5.36	-5.14/-4.46	-3.61/-2.85	-2.28/-1.93	-1.84/-1.94	-2.1/-2.3	-2.53/-2.76	-2.92/-3.01	-3.2/-9.8	-3.13/-3.66	-4.72/-6.3	-8.37/-9.8	-9.41/-7.86	-6.63/-5.67	-5.66/-6.22	-6.99/-7.83	-8.77/-9.78	-10.58/-10.61
Θ(45°)	-5.78/-6.46	-6.59/-5.99	-4.78/-3.47	-2.32/-1.53	-1.19/-1.34	-2.04/-2.97	-3.7/-4	-3.45/-2.47	-1.45/-0.68	-0.24/-0.28	-0.72/-1.37	-1.81/-1.92	-1.81/-1.84	-1.98/-2.08	-1.98/-1.67	-1.44/-1.59	-2.2/-3.29	-4.79/-5.91	-5.92/-5	-3.84/-3.07	-2.88/-3.19	-3.69/-3.96	-3.91/-3.96	-4.29/-4.85
Θ(52.5°)	-3.93/-5.25	-5.88/-5.29	-3.75/-2.01	-0.54/-0.5	0.91/-0.77	0.1/-1.8	-2.42/-2.38	-3.02/-1.95	-0.87/-0.27	-0.37/-1.25	-2.91/-4.77	-5.53/-4.82	-3.98/-3.49	-3.22/-2.78	-1.97/-1.08	-0.48/-0.42	-0.91/-1.95	-3.24/-3.89	-3.44/-2.45	-1.53/-0.89	-0.65/-0.85	-1.28/-1.49	-1.32/-1.26	-1.68/-2.57
Θ(60°)	-2.95/-3.65	-3.74/-3.14	-1.94/-0.6	0.56/-1.32	1.65/-1.45	0.53/-0.94	2.73/-3.76	-2.91/-4.4	-0.35/-0.15	-1.14/-3.53	-7.46/-9.63	-7.49/-6.27	-6.53/-7.26	-7.29/-6.25	-4.44/-2.48	-0.98/-0.3	-0.4/-1.34	-2.71/-3.35	-2.52/-1.31	-0.51/-0.16	-0.09/-0.26	-0.78/-1.24	-1.11/-0.94	-1.25/-2.04
Θ(67.5°)	-1.7/-2.01	-2.32/-2.49	-2.26/-1.6	-0.59/-0.42	1.16/-1.57	1.20/-13	-1.03/-1.28	-0.42/-0.39	0.68/-0.37	-0.82/-3.1	-5.26/-4.2	-2.49/-1.97	-2.37/-3.13	-3.88/-4.69	-5.4/-0.1	-2.36/-1.17	-							



Radiated Composite Gain Data of 2.4GHz

Appendix A

Θ(75°)	-13.61-15.04	-15.32-14.9	-13.07-10.49	-8.46-7.48	-7.34-8.08	-10.02-13.34	-18.06-18.28	-17.91-18.02	-17.72-14.82	-14.51-15.52	-16.57-17.1	-18.15-19.2	-18.16-16.66	-15.84-14.68	-13.15-12.17	-12.03-11.49	-10.89-10.9	-12.21-16.47	-19.38-14.81	-12.81-13.05	-14.37-16.8	-17.19-18.33	-13.91-11.82	-11.13-11.89
Θ(82.5°)	-12.66-12.2	-11.87-12.3	-12.85-12.66	-11.82-11.91	-12.46-12.47	-12.65-13.74	-15.64-17.03	-16.23-14.19	-13.1-13.36	-14.78-17.22	-18.77-18.35	-18.08-18.78	-17.45-14.89	-13.58-12.86	-13.29-13.8	-11.9-9.01	-7.32-6.95	-8.17-11.73	-18.95-18.74	-17.64-16.14	-14.67-13.84	-14.8-16.56	-16.41-14.81	-13.79-13.12
Θ(90°)	-12.91-11.86	-9.99-8.95	-8.35-7.55	-6.74-6.75	-8.12-10.72	-14.13-13.31	-19.28-17.96	-14.41-11.72	-10.14-10.4	-12.55-15.83	-18.44-18.25	-18.23-18.9	-18.07-15.36	-13.06-12.95	-13.51-12.31	-9.19-7.26	-6.67-7.13	-8.86-12.83	-18.65-18.34	-17.67-16.87	-13.24-10.91	-9.96-9.96	-10.07-9.89	-10.44-11.55
Θ(97.5°)	-18.31-15.87	-11.99-10.1	-9.4-8.72	-7.69-6.97	-7.25-8.66	-11.66-17.5	-19.23-15.02	-11.73-9.95	-8.63-8.72	-10.89-15.06	-18.65-18.21	-17.97-18.23	-16.22-14.64	-14.38-15.35	-14-10.13	-7.63-6.65	-6.54-7.19	-8.91-11.95	-15.48-18.18	-19.14-18.16	-14.35-12.16	-11.27-11.24	-11.15-10.73	-11.52-14.52
Θ(105°)	-17.95-17.8	-17.02-13.05	-11.59-11.09	-10.33-8.88	-7.79-7.75	-9.33-13.6	-18.67-18.64	-12.87-11.24	-8.58-8.32	-10.09-14.54	-19.07-18.22	-17.18-12.42	-10.29-10.34	-11.61-11.66	-9.17-6.98	-5.98-5.75	-6.16-7.54	-9.69-11.48	-11.94-12.24	-13.84-17.53	-19.17-18.74	-18.68-18.33	-18.56-17.9	-18.41-18.19
Θ(112.5°)	-14.88-17.49	-18.26-11.83	-9.1-8.28	-8.37-8.12	-7.45-7.22	-8-10.2	-14.3-17.84	-15.5-11.27	-9.22-9.48	-11.99-16.87	-19.09-18.15	-14.41-11.24	-9.8-9.65	-9.39-7.96	-6.42-5.83	-5.85-6.05	-7.11-9.74	-14.06-17.84	-18.39-18.41	-18.5-18.27	-15.25-12.88	-12.87-15.74	-18.39-18.42	-14.7-13.06
Θ(120°)	-13.71-17.08	-15.31-10.73	-8.29-7.75	-8.56-10.26	-11.72-12.57	-12.93-12.61	-11.58-10.15	-8.39-6.88	-6.38-7.8	-11.86-16.68	-18.81-17.85	-12.42-9.19	-7.63-6.87	-6.22-5.73	-5.69-6.04	-5.87-5.17	-4.93-5.65	-7.19-9.48	-12.16-14.09	-15.21-18.07	-17.86-18.75	-18.24-18.88	-17.85-17.6	-13.55-12.32
Θ(127.5°)	-17.79-18.31	-17.52-11.98	-8.26-6.48	-6.35-7.68	-10.17-14.01	-18.31-18.18	-14.81-9.76	-6.77-5.09	-4.7-5.94	-9.04-13.31	-17.22-18.76	-18.31-12.06	-8.46-6.57	-5.94-6.36	-7.54-8.36	-7.23-5.8	-5.21-5.75	-7.18-7.89	-8.67-6.91	-5.67-5.79	-7.27-8.96	-9.12-8.83	-9.66-12.11	-15.99-19.05
Θ(135°)	-18.26-16.51	-14.14-10.63	-7.1-5.07	-4.41-4.96	-6.45-8.87	-12.5-19.33	-17.81-14.17	-9.8-7.71	-6.92-7.4	-8.78-9.86	-9.91-10.33	-12.59-18.45	-18.68-15.17	-12.92-13.59	-16.44-15.37	-11.1-9.06	-9.13-11.25	-15.29-13.65	-8.38-5.06	-3.44-3.27	-4.17-5.51	-6.3-6.63	-7.64-10.11	-15.48-17.77
Θ(142.5°)	-17.86-14.73	-11.22-8.54	-6.13-4.5	-3.76-3.93	-5.01-7.02	-10.04-14.84	-18.03-17.83	-18.1-16.95	-17.26-17.27	-16.56-14.32	-11.79-9.91	-9.22-9.67	-11.17-13.53	-15.72-15.77	-13.68-11.56	-10.41-10.73	-13.2-18.19	-17.5-13.35	-8.12-5.19	-3.77-3.42	-3.98-5.13	-6.15-6.61	-7.23-8.97	-13.09-18.28
Θ(150°)	-18.85-16.09	-11.7-7.8	-6.71-5.26	-4.51-4.49	-5.22-6.85	-9.27-12.56	-15.94-17.11	-11.06-14.55	-15.94-17.11	-14.85-18.53	-18.77-19.14	-12.56-9.4	-8.04-7.59	-7.45-7.27	-7.02-7.11	-7.82-9.43	-11.93-14.5	-14.27-10.82	-7.61-5.47	-4.18-3.78	-4.11-4.95	-5.82-6.43	-7.03-8.37	-11.25-16.48
Θ(157.5°)	-16.21-13.48	-10.97-9.21	-7.85-6.81	-6.16-6.07	-6.63-7.83	-8.66-11.87	-13.42-12.91	-11.06-9.46	-8.3-7.88	-8.2-9.45	-11.88-14.16	-13.89-11.2	-9.01-7.5	-6.5-5.86	-5.5-5.52	-6.6-9.9	-8.61-10.79	-12.52-11.3	-8.81-7.02	-5.92-5.55	-5.76-6.41	-7.46-8.65	-9.84-11.25	-13.41-16.01
Θ(165°)	-14.82-11.8	-8.71-8.75	-8.3-7.97	-7.63-7.54	-7.96-8.85	-10.02-11.18	-11.8-11.41	-10.14-8.76	-7.59-7.02	-7.11-7.7	-8.65-10	-11.41-12.24	-11.83-10.31	-8.71-7.44	-6.72-6.61	-7.17-8.42	-10.9-15.32	-18.39-15.17	-11.59-9.48	-8.29-7.82	-7.9-8.56	-10.11-12.48	-15.39-17.86	-18.34-17.79
Θ(172.5°)	-14.5-11.39	-8.58-8.94	-9-9.08	-8.99-8.93	-9.3-9.9	-10.34-10.43	-10.38-10.32	-10.06-9.48	-8.75-8.33	-8.45-8.74	-9.13-9.66	-10.54-11.87	-13.48-14.79	-14.64-13.78	-13.22-13.59	-15.04-18.05	-18.99-17.92	-17.57-14.09	-12.18-10.85	-10.06-9.71	-9.9-10.82	-12.89-16.48	-18.29-18.03	-18-18.75
Θ(180°)	-16.64-13.82	-11.91-11.25	-11.21-10.4	-10.72-10.51	-10.69-10.77	-10.14-9.32	-8.81-8.69	-8.65-8.45	-8.07-7.95	-8.26-8.72	-9.11-9.48	-10.1-11.19	-12.67-14.34	-15.94-16.94	-17.17-16.34	-14.78-13.07	-11.56-10.56	-10.26-10.57	-11.05-11.45	-11.88-12.36	-13.63-16.06	-18.33-18.48	-18.4-18.71	-18.41-17.47
Freq(Hz)	2.45GPol.	Theta/Ant. 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gain	Φ(0°)/Φ(7.5°)	Φ(15°)/Φ(22.5°)	Φ(30°)/Φ(37.5°)	Φ(45°)/Φ(52.5°)	Φ(60°)/Φ(67.5°)	Φ(75°)/Φ(82.5°)	Φ(90°)/Φ(97.5°)	Φ(105°)/Φ(112.5°)	Φ(120°)/Φ(127.5°)	Φ(135°)/Φ(142.5°)	Φ(150°)/Φ(157.5°)	Φ(165°)/Φ(172.5°)	Φ(180°)/Φ(187.5°)	Φ(195°)/Φ(202.5°)	Φ(210°)/Φ(217.5°)	Φ(225°)/Φ(232.5°)	Φ(240°)/Φ(247.5°)	Φ(255°)/Φ(262.5°)	Φ(270°)/Φ(277.5°)	Φ(285°)/Φ(292.5°)	Φ(300°)/Φ(307.5°)	Φ(315°)/Φ(322.5°)	Φ(330°)/Φ(337.5°)	Φ(345°)/Φ(352.5°)
Θ(0°)	-7.69-8	-8.63-9.38	-10.24-10.89	-11.19-11.55	-12.22-13.08	-13.83-14.5	-15.26-15.66	-15.31-13.74	-12.07-10.97	-10.17-9.34	-8.65-8.26	-8.1-8.01	-7.98-7.99	-8.16-8.51	-9.05-9.79	-10.78-11.82	-12.76-13.42	-13.97-14.57	-15.11-15.25	-14.7-13.68	-12.51-11.18	-9.89-8.88	-7.86-7.54	-
Θ(7.5°)	-6.31-6.42	-6.7-7.03	-7.39-7.72	-7.95-8.27	-8.92-9.81	-10.9-11.99	-13.39-14.96	-16.31-15.67	-14.34-13.42	-12.67-11.89	-11.44-11.5	-11.8-11.91	-11.78-11.48	-11.35-11.42	-11.66-12.07	-12.64-13.6	-14.93-16.04	-16.12-15.43	-14.28-13.19	-12.06-10.86	-9.79-8.81	-7.83-7.08	-6.58-6.38	-6.31-6.25
Θ(15°)	-6.08-6.07	-6.16-6.27	-6.84-6.79	-6.94-7.04	-7.31-7.81	-8.55-9.33	-10.15-11.1	-12.52-12.65	-12.52-12.63	-12.95-13.86	-15.18-16.39	-17.25-17.65	-17.83-18.12	-18.24-18.01	-17.77-17.85	-17.51-16.31	-14.55-13.05	-11.81-10.79	-9.73-8.77	-8.15-7.61	-7.1-6.68	-6.39-6.27	-6.22-6.12	-
Θ(22.5°)	-7.07-6.97	-6.91-6.93	-7.50-7.21	-7.23-7.12	-7.08-7.21	-7.56-7.96	-8.25-8.46	-8.56-8.51	-8.41-8.58	-9.11-8.89	-11.07-12.83	-15.15-18.15	-17.48-18.75	-18.64-16.57	-19.19-18.61	-14.89-13.45	-12.05-11.03	-10.43-9.84	-9.05-8.29	-7.87-6.53	-7.32-7.13	-7.08-7.1	-7.17-7.16	-
Θ(30°)	-7.42-7.09	-6.74-6.5	-6.39-6.4	-6.5-6.68	-6.8-7.01	-7.28-7.41	-7.2-6.72	-6.02-5.44	-5.01-4.85	-4.94-5.44	-6.45-7.9	-9.8-12.21	-15.16-18.51	-17.84-18.51	-17.86-15.18	-12.54-10.51	-9.28-8.65	-8.32-8.25	-8.35-8.34	-7.9-7.24	-6.83-6.81	-7.07-7.36	-7.56-7.69	-7.74-7.64
Θ(37.5°)	-6.33-6.38	-6.06-5.36	-5.53-5.96	-3.78-3.92	-4.4-4.96	-5.64-6.44	-6.84-6.44	-5.24-3.31	-3.55-2.91	-2.44-2.56	-3.25-4.46	-5.97-6.7	-9.23-10.43	-11.05-11.33	-11.3-10.17	-8.31-6.64	-5.47-5.12	-5.32-5.69	-6.1-6.33	-6.05-5.69	-5.62-5.98	-6.44-6.72	-6.63-6.28	-6.04-6.08
Θ(45°)	-6.11-7.22	-8.03-7.28	-5.42-3.82	-2.9-2.6	-2.58-2.7	-2.84-3.19	-3.77-4.31	-4.24-3.74	-3.14-2.3	-1.33-0.77	-0.86-1.55	-2.59-3.71	-4.6-5.14	-5.6-6.37	-7.36-7.41	-5.93-4.09	-2.77-2.42	-2.68-3.21	-3.92-4.66	-5.21-5.56	-6-6.45	-6.67-6.59	-6.23-6.56	-5.17-5.32
Θ(52.5°)	-5.15-5.73	-7.07-8.8	-8.36-6.02	-4.34-3.57	-3.36-3.05	-2.44-1.89	-1.63-1.76	-1.96-1.92	-1.83-1.55	-0.78-0.03	0.08-0.48	-1.33-2.14	-2.61-2.77	-3.04-3.86	-5.22-5.75	-4.51-2.74	-1.49-1.12	-1.31-1.91	-2.79-3.99	-4.94-5.32	-5.49-5.59	-5.62-5.72	-5.87-5.68	-5.21-5
Θ(60°)	-2.16-1.84	-2.08-3.05	-4-3.59	-2.9-2.76	-2.98-3.25	-3.04-2.32	-1.38-0.08	-0.85-0.8	-0.56-0.3	0.11-0.57	0.54-0.2	-1.18-1.98	-2.22-2.05	-2.17-3.05	-4.61-8.47	-3.37-1.71	-0.56-0.05	-0.21-0.94	-2.13-3.29	-3.6-3.56	-3.88-4.43	-4.66-4.47	-4.07-3.73	-3.21-2.59
Θ(67.5°)	-1.54-1.75	-2.17-2.83	-3.23-2.67	-2.02-1.94	-1.75-1.56	-1.46-1.24	-0.73-0.35	-0.47-0.77	-0.84-0.48	0.22-0.73	0.49-0.48	-1.6-2.26	-2.02-1.66	-1.92-3.04	-3.8-2.85	-1.5-3.97	0.58-1.08	0.63-0.52	-1.66-2.25	-2.63-3.52	-4.83-5.66	-5.15-3.84	-2.73-2.22	-1.89-1.55
Θ(75°)	-1.05-1.55	-2.74-4.34	-4.93-4.14	-3.46-3.6	-2.93-1.89	-1.32-0.78	-1.10-1.37	0.55-0.3	-0.33-0.69	-0.28-0.25	1.8-10.5	-1.3-1.52	-1.07-0.81	-1.23-2.14	-2-1.06	-0.41-0.35	1.38-1.57	0.62-0.61	-2.16-1.84	-2.99-4.4	-4.89-3.8	-2.2-1.26	-0.9-0.99	-1.24-1.11
Θ(82.5°)	-0.11-0.06	-0.99-2.89	-3.74-2.86	-2.75-3.83	-3.53-2.03	-1.38-1.07	-0.71-0.44	0.01-0.42	0.34-0.15	0.47-0.75	0.36-0.36	-0.89-0.78	-0.38-0.33	-0.64-0.79	-0.29-0.15	-0.26-0.52	1.52-1.35	0.74-0.3	-0.14-1.12	-2.01-2.01	-1.14-0.14	0.88-0.79	0.25-0.49	-1.06-0.87
Θ(90°)	-1.9-1.26	-1.96-4.1	-4.76-2.69	-2.16-3.5	-4.14-2.37	-1.26-0.57	-0.06-0.27	-0.62-0.25	0.20-46	0.94-1.39	1.17-0.51	0.01-0.02	0.27-0.52	0.54-0.45	0.12-0.86	-1.52-0.33	0.97-1.31	1.32-0.99	0.31-0.47	-0.37-0.07	0.48-0.75	0.38-0.54	-1.54-2.31	-2.84-2.75
Θ(97.5°)	-1.31-1	-2.04-4.64	-4.71-3.93	-1.01-2.16	-3.37-2.63	-1.84-0.97	0.27-0.45	-0.25-0.49	-0.20-0.22	0.88-1.55	1.54-0.97	0.39-0.15	0.34-0.64	0.45-0.31	-1.78-3.02	-2.43-0.41	1.21-1.91	1.81-22	0.5-0.14	-0.36-0.83	-1.51-1.97	-1.98-1.67	-1.7-2.17	-2.42-2.03
Θ(105°)	-2.75-2.57	-4.58-10.18	-8.9-8.27	-0.93-1.21	-1.88-1.71	-1.79-1.98	-0.97-0.15	-0.35-0.86	-1.21-1	-0.34-0.4	0.66-0.27	-0.33-0.58	-0.14-0.12	-0.53-2.01	-3.5-3.52	-2.08-0.25	1.92-2.14	1.12-0.13	-1.13-2.15	-3.18-4.73	-5.55-4.19	-2.18-1.13	-1.62-3.46	-4.89-4.07
Θ(112.5°)	-3.05-1.93	-2.84-7.22	-18.65-6.36	-2.56-1.87	-1.83-1.55	-1.8-2.58	-2.65-2.19	-1.9-1.71	-1.74-1.48	-0.74-0.21	-0.49-1.36	-2.2-2.23	-1.67-1.84	-2.91-3.93	-3.89-3.13	-1.30-0.72	1.43-0.39	-1.42-2.21	-2.56-3.25	-4.52-6.33	-6.41-4.35	-1.93-0.55	-0.72-2.45	-4.9-4.93
Θ(120°)	-2.93-1.78	-2.61-6.38	-14.34-7.46	-3.6-2.48	-2.04-1.46	-1.39-1.56	-2.88-3.04	-3.24-2.95	-2.35-2.09	-1.63-1.21	-1.76-2.02	-2.58-2.94	-1.81-1.63	-1.76-2.02	-2.58-2.94	-1.77-0.58	-0.97-2.91	-2.89-2.99	-2.85-2.09	-0.89-0.11	-0.43-2.09	-4.59-4.89	-	-
Θ(127.5°)	-9.3-8.09	-9.67-																						



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Freq(Hz)	5.2G	5.3G	5.6G	5.785G
Ant. 1 Max Gain (dBi)	4.88	4.03	3.57	3.52
Ant. 2 Max Gain (dBi)	3.36	4.2	4.57	5.31
Ant. 1 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$	Theta/97.5/187.5	Theta/90/75	Theta/90/82.5	Theta/150/187.5
Ant. 2 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$	Theta/90/187.5	Theta/97.5/187.5	Theta/97.5/187.5	Theta/97.5/90
Max Gain (dBi)	4.88	4.2	4.57	5.31
DG [1SS] (dBi)	7.11	7.07	6.25	6.77
DG [2SS] (dBi)	4.88	4.2	4.57	5.31



Radiated Composite Gain Data of 5GHz

Appendix B

DG 1SS Result

Freq(Hz)	5.2G/Pol.	PhiL	PhiR	Phi(45°)Φ(52.5°)	Phi(60°)Φ(67.5°)	Phi(75°)Φ(82.5°)	Phi(90°)Φ(97.5°)	Phi(105°)Φ(112.5°)	Phi(120°)Φ(127.5°)	Phi(135°)Φ(142.5°)	Phi(150°)Φ(157.5°)	Phi(165°)Φ(172.5°)	Phi(180°)Φ(187.5°)	Phi(195°)Φ(202.5°)	Phi(210°)Φ(217.5°)	Phi(225°)Φ(232.5°)	Phi(240°)Φ(247.5°)	Phi(255°)Φ(262.5°)	Phi(270°)Φ(277.5°)	Phi(285°)Φ(292.5°)	Phi(300°)Φ(307.5°)	Phi(315°)Φ(322.5°)	Phi(330°)Φ(337.5°)	Phi(345°)Φ(352.5°)
DG(dB)	Phi(0°)Φ(7.5°)	Phi(15°)Φ(22.5°)	Phi(30°)Φ(37.5°)	Phi(45°)Φ(52.5°)	Phi(60°)Φ(67.5°)	Phi(75°)Φ(82.5°)	Phi(90°)Φ(97.5°)	Phi(105°)Φ(112.5°)	Phi(120°)Φ(127.5°)	Phi(135°)Φ(142.5°)	Phi(150°)Φ(157.5°)	Phi(165°)Φ(172.5°)	Phi(180°)Φ(187.5°)	Phi(195°)Φ(202.5°)	Phi(210°)Φ(217.5°)	Phi(225°)Φ(232.5°)	Phi(240°)Φ(247.5°)	Phi(255°)Φ(262.5°)	Phi(270°)Φ(277.5°)	Phi(285°)Φ(292.5°)	Phi(300°)Φ(307.5°)	Phi(315°)Φ(322.5°)	Phi(330°)Φ(337.5°)	Phi(345°)Φ(352.5°)
Theta(°)	-12.97/-11.93	-10.8-5.1	-8.1-9.1	-5.9-7.3	-3.98-9.14	-3.99-9.66	-10.35/-10.95	-11.57/-12.04	-11.83/-10.89	-9.71/-9.27	-8.03/-9.56	-9.26/-9.79	-10.25/-11.33	-12.58/-13.01	-11.36/-9.46	-8.35/-7.14	-6.53/-5.91	-5.25/-5.5	-6.04/-5.55	-7.17/-7.64	-8.22/-7.96	-8.89/-9.61	-9.22/-11.27	-8.49/-9.61
Theta(7.5°)	-9.98/-8.64	-11.25/-13.97	-13.17/-12.97	-11.33/-9.26	-7.56/-6.42	-5.56/-4.89	-4.88/-5.34	-5.82/-6.75	-7.19/-7.27	-7.21/-7.6	-8.03/-8.51	-9.44/-10.03	-11.43/-12.9	-14.15/-15.74	-13.64/-12.49	-10.91/-9.67	-8.46/-7.57	-6.62/-6.07	-5.33/-4.62	-4.15/-3.86	-3.71/-3.7	-3.79/-3.95	-4.14/-4.64	-5.21/-5.51
Theta(15°)	-6.61/-7.88	-9.85/-11.32	-11.08/-9.18	-7.78/-6.79	-6.48/-6.16	-5.78/-5.61	-6.09/-6.72	-6.73/-6.91	-7.05/-7.86	-8.65/-9.6	-10.07/-10.53	-11.13/-12.61	-13.77/-13.79	-11.59/-10.1	-9.43/-8.03	-7.26/-6.7	-6.62/-6.73	-6.46/-5.85	-4.67/-3.96	-3.37/-2.8	-2.57/-2.46	-2.57/-3.08	-3.78/-4.59	-4.88/-4.98
Theta(22.5°)	-6.84/-6.49	-7.74/-8.8	-9.35/-9.05	-8.29/-7.56	-7.75/-7.73	-7.14/-7.2	-7.7/-8.15	-8.4/-8.83	-9.25/-9.53	-9.93/-9.81	-10.41/-10.46	-10.3/-10.19	-10.24/-10.21	-10.06/-8.6	-4.66/-3.79	-3.46/-3.79	-4.87/-5.77	-5.44/-4.78	-4.07/-3.78	-4.25/-5.02	-5.77/-6.95	-7.84/-7.09	-5.82/-5	
Theta(30°)	-4.93/-5.56	-7.48/-8.28	-8.55/-10.14	-10.3/-11.17	-12.17/-11.51	-12.19/-13.9	-14.25/-14.26	-15.55/-15.4	-15.52/-13.42	-11.03/-9.29	-7.56/-6.49	-6.78/-7.93	-8.72/-8.72	-8.84/-9.19	-9.39/-8.33	-6.88/-5.06	-3.44/-2.78	-2.74/-3.39	-3.91/-4.04	-3.89/-3.87	-4.9/-6.87	-7.84/-7.39	-7.48/-6.3	-4.87/-4.53
Theta(37.5°)	-11.9/-10.53	-12.06/-13.03	-15.21/-15	-14.33/-13.62	-12.44/-12.66	-12.95/-12.72	-11.94/-10.53	-12.75/-14.64	-13/-9.6	-8.76/-9.62	-10.6/-10.34	-8.73/-8.8	-9.88/-9.28	-8.16/-7.45	-7.7/-8.12	-7.27/-5.81	-4.62/-3.47	-3.48/-5.42	-7.35/-7.6	-10.3/-11.56	-10.04/-10.32	-9.11/-8.2	-7.63/-8.03	-9.38/-10.74
Theta(45°)	-12.39/-13.3	-12.66/-12.73	-10.77/-8.58	-8.14/-8.21	-8.66/-8.7	-9.4/-9.68	-8.25/-6.58	-6.28/-7.15	-6.89/-7.26	-9.53/-10.9	-11.87/-14.39	-12.13/-12.11	-12.63/-11.99	-9.97/-8.82	-7.97/-7.21	-6.67/-7.08	-7.29/-7.39	-7.26/-8.11	-11.34/-14.05	-12.24/-13.12	-15.41/-15.39	-14.16/-11.62	-7.74/-7.42	-8.69/-9.69
Theta(52.5°)	-12.38/-15.3	-12.38/-12.38	-10.69/-9.52	-9.49/-11.47	-12.29/-9.93	-8.8/-9.42	-7.85/-6.9	-8.03/-8.1	-5.76/-4.79	-5.19/-6.01	-6.06/-5.83	-5.66/-6.34	-7.03/-8.53	-10.06/-9.25	-8.33/-7.8	-8.32/-12.82	-14.56/-16.07	-12.07/-11.81	-14.8/-14.47	-9.67/-11.48	-15.01/-12.81	-11.08/-10.81	-9.7/-7.98	-8.42/-8.6
Theta(60°)	-13.66/-14.77	-13.61/-11.67	-11.13/-10.76	-11.75/-11.12	-9.35/-9.67	-12.99/-12.38	-11.9/-10.59	-10.27/-11.8	-10.21/-7.34	-6.51/-7.19	-8.28/-10.6	-11.39/-11.12	-10.4/-10.83	-9.89/-10.61	-11.4/-12.65	-11.82/-11.98	-13.31/-11.94	-11.58/-12.96	-12.85/-12.85	-10.74/-8.44	-9.48/-9.31	-10.34/-12.79	-11.65/-8.92	-9.2/-11.27
Theta(67.5°)	-9.4/-7.96	-9.15/-8.68	-9.32/-13.6	-15.25/-13.08	-10.66/-8.69	-9.37/-9.1	-8.55/-11.04	-11.31/-11.82	-12.52/-8.72	-6.54/-7.42	-11.22/-9.16	-11.86/-15.76	-11.22/-9.16	-8.33/-8.05	-10.16/-12.5	-12/-11.43	-10.47/-9.82	-12.79/-9.78	-12.04/-12.58	-9.9/-10.6	-13.6/-16.02	-14.81/-13.56	-14.27/-14.53	-11.23/-10.22
Theta(75°)	-8.39/-7.06	-7.6/-7.71	-8.28/-8.98	-8.96/-9.1	-7.71/-7.36	-7.11/-6.19	-6.84/-9.19	-10.49/-11.82	-14.02/-11.85	-9.09/-8.02	-8.79/-10.21	-13.3/-15.25	-12.49/-9.51	-6.75/-6.54	-8.2/-10.92	-13.28/-10.58	-8.03/-8.45	-8.16/-6.71	-8.52/-9	-12.54/-15.21	-13.15/-10.85	-13.41/-14.97	-15.69/-15.19	-14.61/-10.77
Theta(82.5°)	-13.54/-9.75	-8.56/-8.13	-7.38/-6.59	-6.6/-6.71	-7.85/-8.16	-7.44/-6.17	-4.31/-5.45	-5.8/-6.11	-6.16/-10.42	-8.62/-4.09	-3.62/-6.16	-8.6/-8.12	-11.42/-7.93	-7.19/-10.45	-12.85/-9.57	-6.02/-6.35	-8.34/-5.45	-6.13/-9.33	-7.9/-12.41	-10.26/-9.26	-10.34/-12.13	-13.39/-14.73	-15.37/-15.71	-16.19/-15.65
Theta(90°)	-14.92/-12.4	-8.71/-7.27	-6.66/-6.15	-6.23/-6.87	-8.02/-10.89	-10.34/-7.19	-3.61/-3.16	-3.6/-3.05	-4.95/-7.71	-4.25/-7.79	-2.61/-4.94	-10.47/-15.05	-11.75/-9.64	-8.3/-8.89	-9.34/-12.17	-8.17/-5.7	-4.25/-4.27	-8.45/-6.22	-4.18/-8.68	-11.15/-11.23	-8.11/-8.2	-8.39/-7.18	-10.7/-10.28	-9.36/-10.23
Theta(97.5°)	-12.85/-15.54	-14.52/-9.45	-6.16/-5.56	-5.6/-5.84	-7.2/-9.6	-14.29/-4.79	-2.56/-2.49	-2.78/-3.87	-6.13/-7.13	-2.35/-1.7	-2.89/-6.3	-8.88/-13.46	-13.83/-14.92	-12.02/-8.96	-6.93/-7.92	-8.76/-4.23	-2.53/-11.34	-8.37/-5.92	-9.22/-6.08	-4.82/-5.37	-5.48/-5.65	-4.59/-8.33	-9.99/-9.36	-10.55/-11.22
Theta(105°)	-8.62/-8.08	-6.33/-6.06	-5.7/-5.85	-9.63/-9.29	-10.72/-12.01	-3.86/-6.75	-6.71/-7.42	-6.33/-6.2	-6.97/-5.66	-1.95/-1.75	-2.57/-4.77	-5.09/-5.34	-5.09/-8.22	-13.8/-12.42	-7.64/-4.27	-4.19/-5.01	-7.04/-6.97	-4.52/-4.28	-6.3/-6.19	-4.55/-6.15	-7.25/-4.95	-8.14/-8.25	-7.56/-9.32	-10.99/-11.87
Theta(112.5°)	-8.75/-8.67	-5.64/-5.81	-7.28/-7.35	-9.29/-8.78	-9.04/-7.41	-8.05/-6.16	-9.39/-10.88	-10.17/-8.99	-4.25/-7.99	-2.61/-5.35	-2.61/-4.94	-8.45/-8.98	-8.3/-8.89	-9.34/-12.17	-8.17/-5.7	-4.25/-4.27	-8.45/-6.22	-4.18/-8.68	-11.15/-11.23	-8.11/-8.2	-8.39/-7.18	-10.7/-10.28	-9.36/-10.23	-11.08/-14.95
Theta(120°)	-10.19/-8.53	-5.49/-4.38	-6.18/-5.9	-4.97/-5.21	-7.04/-6.65	-7.08/-11.12	-11.47/-13.17	-14.75/-12.86	-14.03/-10.43	-3.96/-1.63	-1.49/-2.6	-8.55/-10.94	-12.19/-8.51	-8.89/-8.44	-7.61/-11.53	-8.34/-8.46	-10.01/-7.02	-9.16/-10.25	-8.27/-7.54	-6.07/-8.48	-10.13/-10.37	-10.65/-9.43	-8.99/-7.16	-8.36/-10.79
Theta(127.5°)	-9.37/-7.68	-6.87/-6.06	-2.27/-2	-1.8/-2.47	-4.64/-5.84	-5.19/-4.77	-9.28/-12.69	-13.6/-15.08	-13.2/-8.86	-6.35/-3.91	-4.63/-7.71	-11.08/-9.02	-6.85/-5.4	-8.54/-7.41	-12.32/-8.87	-12/-9.43	-9.64/-8.61	-7.04/-9.66	-6.7/-4.91	-6.08/-6.71	-7.2/-10.14	-9.04/-10.91	-8.42/-8.25	-7.83/-8.08
Theta(135°)	-5.22/-5.46	-4.35/-4.88	-4.91/-3.53	-3.43/-3.44	-3.36/-3.83	-4.48/-5.66	-5.69/-6.94	-9.6/-11.44	-8.44/-7.59	-7.73/-6.15	-3.22/-2.24	-4.98/-6.83	-6.38/-9.17	-8.64/-6.37	-12.93/-14.88	-9.05/-2.84	-5.02/-6.19	-7.58/-4.88	-7.58/-1.46	-1.9/-8.26	-11.95/-14.03	-13.27/-9.68	-9.64/-6.76	-7.59/-6.12
Theta(142.5°)	-11.77/-9.2	-8.87/-7.45	-6.54/-5.49	-4.65/-4.55	-4.77/-4.76	-5.65/-6.33	-7.67/-11.08	-14.71/-11.82	-12.1/-13.22	-8.52/-4.88	-2.32/-1.73	-1.45/-2.14	-5.14/-5.28	-3.74/-7.51	-8.49/-8.42	-4.86/-3.52	-5.7/-12.74	-13.78/-6.71	-9.33/-6.69	-2.14/-2.83	-5.98/-5.93	-7.22/-6.48	-4.97/-6.93	-8.89/-11.88
Theta(150°)	-10.53/-14.4	-7.86/-7.15	-6.61/-6.6	-6.99/-7.27	-7.14/-6.87	-6.4/-7.15	-9.31/-10.81	-9.79/-8.85	-9.08/-7.95	-5.91/-4.42	-3.4/-8.26	-4/-5.26	-5.29/-2.49	-1.32/-2.9	-4.55/-6.54	-6.8/-5.68	-5.48/-3.32	-15.03/-14.92	-10.85/-10.32	-11.42/-9.65	-10.68/-14	-12.54/-9.85	-7.85/-6.49	-6.95/-6.92
Theta(157.5°)	-9.11/-9.86	-10.34/-10.39	-9.67/-8.37	-8.05/-7.83	-7.4/-7.65	-7.78/-8.59	-9.62/-9.73	-9.78/-9.33	-9.58/-7.87	-5.09/-2.83	-3.25/-5.17	-6.45/-6.59	-5.58/-7.51	-10.17/-9.25	-7.43/-7.59	-7.23/-8.82	-11.2/-12.49	-13.54/-12.48	-12.75/-14.09	-13.96/-11.43	-9.96/-5.92	-4.34/-4.06	-5.46/-7.68	
Theta(165°)	-5.96/-6.58	-7.54/-7.89	-7.91/-8.1	-8.83/-9.1	-9.2/-8.99	-8.47/-7.77	-6.35/-5.53	-4.91/-5.05	-6.34/-5.82	-6.29/-7.2	-7.92/-10.36	-11.44/-10.2	-9.95/-11.44	-11.78/-11.61	-9.32/-8.26	-8.07/-9.53	-12.2/-13.62	-13.65/-11.99	-11.97/-11.69	-13.25/-13.32	-10.77/-9.07	-7.18/-5.45	-5.17/-5.78	
Theta(172.5°)	-9.48/-11.3	-12.36/-11.8	-11.37/-10.63	-8.78/-7.4	-6.46/-5.45	-5.09/-5.09	-4.79/-4.73	-4.6/-4.48	-4.28/-3.87	-3.12/-2.29	-2.05/-2.46	-3.48/-4.5	-4.51/-4.3	-4.58/-5.3	-6.03/-6.46	-6.93/-7.93	-9.15/-10.75	-11.88/-13.17	-13.53/-11.5	-9.95/-8.68	-7.49/-7.01	-6.52/-6.05	-6.25/-6.32	-6.57/-5.9
Theta(180°)	-4.02/-4.36	-4.89/-5.14	-5.21/-4.67	-4.29/-4.08	-3.92/-3.78	-3.58/-3.42	-3.45/-3.37	-2.9/-2.16	-1.57/-1.24	-0.84/-0.66	-0.75/-1.27	-1.96/-2.49	-2.4/-2.23	-2.3/-2.66	-2.92/-3.08	-3.54/-4.18	-5.03/-5.82	-6.76/-7.13	-7.05/-6.52	-5.94/-5.51	-5.35/-5.1	-5.24/-5.28	-4.67/-4.35	-4.18/-3.98
Freq(Hz)	5.2G/Pol.	ThetaL	ThetaR	Phi(45°)Φ(52.5°)	Phi(60°)Φ(67.5°)	Phi(75°)Φ(82.5°)	Phi(90°)Φ(97.5°)	Phi(105°)Φ(112.5°)	Phi(120°)Φ(127.5°)	Phi(135°)Φ(142.5°)	Phi(150°)Φ(157.5°)	Phi(165°)Φ(172.5°)	Phi(180°)Φ(187.5°)	Phi(195°)Φ(202.5°)	Phi(210°)Φ(217.5°)	Phi(225°)Φ(232.5°)	Phi(240°)Φ(247.5°)	Phi(255°)Φ(262.5°)	Phi(270°)Φ(277.5°)	Phi(285°)Φ(292.5°)	Phi(300°)Φ(307.5°)	Phi(315°)Φ(322.5°)	Phi(330°)Φ(337.5°)	Phi(345°)Φ(352.5°)
DG(dB)	Phi(0°)Φ(7.5°)	Phi(15°)Φ(22.5°)	Phi(30°)Φ(37.5°)	Phi(45°)Φ(52.5°)	Phi(60°)Φ(67.5°)	Phi(75°)Φ(82.5°)	Phi(90°)Φ(97.5°)	Phi(105°)Φ(112.5°)	Phi(120°)Φ(127.5°)	Phi(135°)Φ(142.5°)	Phi(150°)Φ(157.5°)	Phi(165°)Φ(172.5°)	Phi(180°)Φ(187.5°)	Phi(195°)Φ(202.5°)	Phi(210°)Φ(217.5°)	Phi(225°)Φ(232.5°)	Phi(240°)Φ(247.5°)	Phi(255°)Φ(262.5°)	Phi(270°)Φ(277.5°)	Phi(285°)Φ(292.5°)	Phi(300°)Φ(307.5°)	Phi(315°)Φ(322.5°)	Phi(330°)Φ(337.5°)	Phi(345°)Φ(352.5°)
Theta(0°)	-8.74/-9.57	-9.01/-9.36	-9.03/-10.48	-10.77/-10.56	-10.88/-11.29	-11.58/-11.64	-10.13/-9.42	-8.79/-8.38	-5.59/-5.09	-5.02/-5.24	-5.76/-6.31	-6.99/-7.98	-9.02/-10.22	-11.96/-14.55	-15.72/-15.75	-14.54/-14.42	-13.45/-13.57	-12.24/-10.74	-8.74/-7.1	-6.38/-6.31				
Theta(7.5°)	-6.19/-6.43	-6.28/-5.9	-5.5/-5.87	-6.74/-6.06	-7.68/-11.52	-12.28/-13.55	-13.47/-12.13	-8.23/-7.67	-7.15/-7.26	-7.46/-7.6	-6.73/-6.47	-5.87/-5.24	-4.75/-8.47	-5.33/-5.86	-6.61/-7	-7.92/-8.93	-10.46/-11.78	-12.25/-11.55	-12.1/-12.44	-13.37/-13.39	-13.01/-12.45	-10.56/-8.78	-7.58/-6.66	
Theta(15°)	-10.18/-10.68	-9.71/-9.04	-9.01/-9.63	-10.12/-11.67	-13.05/-14.19	-14.16/-12.6	-11.77/-9.42	-6.87/-6.19	-5.73/-5.71	-5.35/-4.88	-4.16/-3.45	-3.11/-3.08	-3.01/-2.62	-2.01/-1.68	-1.68/-1.95	-2.5/-2.38	-4.49/-5.65	-6.59/-7.47	-7.98/-8.15	-8.55/-8.33	-8.12/-8.72	-10.17/-11.68	-11/-9.46	-9.78/-9.86
Theta(22.5°)	-11.79/-11.41	-10.57/-9.37	-8.57/-8.84	-9.53/-11.18	-12.49/-12.35	-11.32/-9.41	-8.47/-6.64	-5.59/-5.02	-4.88/-4.73	-4.37/-4.06	-3.92/-4.02	-4.61/-5.42	-5.53/-5	-3.92/-2.62	-0.9/-1.29	-2.28/-3.27	-4.17/-4.78	-5.34/-5.99	-6.33/-6.16	-6.22/-6.95	-8.16/-9.57	-10.94/-11.18	-12.18/-12.18	
Theta(30°)	-10.78/-																							



Radiated Composite Gain Data of 5GHz

Appendix B

Θ(22.5°)	-8.39/-7.33	-5.85/-4.01	-3.37/-3.59	-3.44/-3.53	-4.12/-5.12	-5.66/-5.36	-4.74/-4.43	-4/-4.07	-4.6/-5.31	-5.12/-4.59	-4.42/-4.89	-5.79/-6.63	-7.51/-8.04	-8.05/-7.45	-7.16/-7.55	-7.61/-7.51	-7.36/-8.22	-9.97/-10.39	-7.88/-5.78	-5.14/-5.45	-6.75/-8.54	-9/-9.96	-10.55/-9.91	-8.76/-8.35
Θ(30°)	-7.69/-5.86	-5.68/-5.82	-6.3/-6.88	-7.58/-8.41	-9.52/-10.95	-12.3/-10.43	-9.43/-9.43	-9.26/-8.78	-7.11/-5.66	-5.01/-4.56	-4.64/-5.17	-5.38/-5.85	-7.74/-11.84	-15.19/-10.47	-7.91/-7.16	-7.25/-7.93	-7.48/-8.46	-4.26/-5.55	-6.81/-5.77	-4.18/-4.31	-6.02/-9.64	-13.09/-14.87	-15.77/-13.66	-10.48/-8.43
Θ(37.5°)	-4.74/-4.88	-5.75/-6.12	-5.96/-9.45	-12.97/-13.01	-13.08/-13.1	-11.37/-9.08	-9.66/-9.54	-8.59/-7.33	-6.95/-7.47	-7.47/-7.11	-8.64/-9.58	-8.69/-5.99	-8.5/-9.1	-13.37/-11.03	-7.63/-5.33	-4.45/-6.51	-8.66/-8.52	-5.79/-4.71	-8.16/-7.71	-5.33/-5.9	-7.12/-8.36	-10.26/-9.65	-9.07/-7.92	-7.15/-6.33
Θ(45°)	-9.1/-6.31	-6.62/-7.9	-10.69/-10.22	-9.58/-9.57	-9.15/-10.04	-11.08/-13.61	-14.85/-15.9	-14.12/-14.65	-14.45/-11.41	-8.81/-7.55	-8.92/-9.82	-10.3/-10.79	-10.73/-10.83	-10.86/-10.63	-9.53/-8.56	-8.37/-7.61	-5.96/-6.13	-9.07/-11.16	-8.63/-9.93	-11.56/-12.12	-13.13/-13.88	-12.5/-12.56	-13.56/-15.31	-11.96/-11.4
Θ(52.5°)	-12.16/-14.13	-14.16/-15.61	-14.77/-13.59	-12.83/-10.76	-11.7/-10.38	-11.46/-13.55	-11.27/-8.01	-8.23/-10.52	-9.3/-5.71	-3.76/-4.36	-5.01/-4.77	-5.11/-4.69	-4.64/-5.67	-7.08/-8.63	-8.36/-6.98	-7.03/-8.64	-8.86/-8.45	-9.81/-12.72	-12.78/-12.92	-15.65/-10.8	-11.72/-11.65	-12.45/-11.8	-10.89/-11.76	-10.54/-12.08
Θ(60°)	-11.99/-9.85	-9.51/-9.44	-8.39/-8.62	-9.61/-11.3	-13.35/-15.41	-11/-9.41	-10.62/-9.7	-10.53/-10.23	-8.22/-7.77	-6.17/-4.3	-3.38/-3.69	-5.67/-7.57	-7.33/-5.85	-5.03/-6.8	-7.75/-12.27	-13.32/-11.51	-14.37/-12.77	-10.52/-9.33	-14.4/-12.82	-12.59/-15.99	-13.92/-15.82	-15.63/-12.76	-13.38/-13.43	-13.65/-14.59
Θ(67.5°)	-13.92/-12.23	-10.74/-10.07	-10.22/-10.52	-11.16/-13.32	-15.59/-13.33	-11.76/-11.32	-9.33/-7.59	-8.67/-15.42	-14.58/-15.19	-14.5/-13.1	-10.51/-10.26	-12.43/-12.17	-11.59/-8.61	-6.15/-7.05	-10.62/-15.19	-14.59/-15.47	-15.51/-13.85	-10.59/-10.67	-11.71/-13.68	-10.9/-11.15	-10.99/-12.15	-13.87/-14.55	-12.57/-12.6	-12.47/-15.41
Θ(75°)	-10.1/-10.6	-11.27/-11.07	-11.14/-10.93	-11.28/-11.22	-10.85/-9.8	-7.12/-5.81	-4.09/-3.81	-7.04/-8.99	-9.65/-10.87	-5.84/-5.47	-6.18/-6.64	-7.47/-9.31	-10.74/-9.29	-6.71/-5.86	-7.16/-8.34	-8.71/-11.63	-10.81/-8.72	-11.7/-8.06	-8.27/-8.46	-9.79/-13.94	-14.9/-15.56	-12.58/-11.64	-10.99/-11.83	-9.57/-10.3
Θ(82.5°)	-8.19/-9.44	-9.25/-9.02	-9.13/-9.31	-9.61/-9.22	-8.81/-7.55	-6.62/-4.01	-3.86/-3.94	-4.71/-8.5	-9.04/-9.9	-7.93/-3.93	-3.49/-6.22	-10.29/-11.56	-8.24/-7.23	-7.69/-9.72	-10.64/-7.45	-7.24/-8.85	-8.83/-10.66	-10.71/-8.55	-12.75/-9.12	-9.6/-7.75	-11.33/-11.66	-9.48/-11.01	-12.38/-8.2	-7.9/-7.6
Θ(90°)	-11.64/-11.05	-11.99/-10.63	-6.66/-4.28	-4.14/-5.46	-9.65/-11.52	7.99/-7.51	-5.38/-4.93	4.95/-4.78	-4.21/-7.45	-7.02/-4.17	-3.42/-5.55	-6.99/-9.42	-12.36/-13.22	-12.37/-10.76	-12.11/-12.27	-8.22/-6.66	-7.4/-11.73	-8.96/-9.93	-8.04/-7.09	-7.3/-8.8	-10.47/-13.79	-12.91/-12.73	-14.86/-13.92	-15.95/-15.13
Θ(97.5°)	-15.1/-13.89	-9.31/-7.5	-8.24/-8.03	-8.43/-10.04	-10.42/-9.94	-5.16/-5.03	-5.3/-2.99	-2.17/-2.55	-4.42/-8.22	-7.27/-3.91	-3.76/-4.45	-5.05/-8.35	-10.04/-15.88	-15.25/-15.63	-14.57/-15.54	-9.33/-7.05	-11.93/-8.12	-4.52/-7.04	-4.91/-8.16	-9.54/-8.62	-10.77/-11.82	-10.66/-9.32	-11.95/-15.38	-15.89/-15.72
Θ(105°)	-12.21/-11.65	-10.7/-9.55	-8.34/-8.98	-9.6/-9.59	-10.8/-8.49	-8.76/-4.18	-1.52/-0.24	-7.74/-10.61	-7.22/-3.82	-3.42/-5.37	-6.98/-7.81	-7.7/-6.21	-12.54/-14.38	-9.92/-6.63	-6.87/-8.72	-3.85/-5.64	-6.78/-5.43	-10.96/-7.74	-11.64/-11.25	-9.49/-9.72	-6.55/-11.7	-8.47/-7.66	-9.94/-12.74	
Θ(112.5°)	-9.29/-10.49	-9.44/-9.56	-8.99/-9.14	-8.36/-8.53	-8.7/-8.87	-9.45/-7.78	-4.64/-3.75	-3.04/-3.82	-5.5/-8.4	-10.5/-6.44	-5.86/-8.4	-12.19/-10.5	-9.75/-8.06	-9.18/-7.51	-8.77/-3.45	-4/-6.83	-12.45/-12.18	-9.66/-7.78	-12/-12.73	-12.08/-10.16	-14.03/-6.9	-13.47/-7.47	-8.12/-10.57	-12.5/-11.61
Θ(120°)	-10.3/-8.7	-6.23/-7.35	-8.06/-8.77	-12.23/-8.17	-6.62/-8.95	-8.84/-8.29	-9.79/-9.99	-9.98/-11.06	-13.42/-12.2	-8.46/-4.9	-3.31/-3.26	-5.77/-8.18	-9.48/-9.81	-10.64/-15.48	-13.2/-9.71	-10.55/-9.6	-10.10/-36	-10.62/-11.41	-15.11/-13	-14.12/-11.56	-9.47/-12.38	-7.82/-7.9	-12.29/-9.86	-11.9/-9.57
Θ(127.5°)	-5.62/-5.66	-4.28/-4.2	-4.95/-4.93	-4.01/-5.76	-5.96/-6.79	-9.95/-8.36	-6.78/-8.23	-10.35/-12.26	-13.9/-10.55	-5.12/-2.15	-1.26/-4.39	-11.26/-13.82	-7.26/-8.62	-13.21/-9.18	-15.44/-11.91	-10.24/-5.28	-8.25/-9.08	-7.49/-9.9	-6.64/-10.56	-6.41/-7.23	-8.73/-12.22	-9.86/-6.85	-6.64/-6.59	
Θ(135°)	-15.67/-16.12	-13.59/-15.67	-10.6/-8.43	-6.86/-4.19	-4.46/-5.42	-5.54/-6.14	-8.3/-11.69	-15.25/-10.88	-7.13/-5.45	-3.69/-2.55	-2.92/-3.08	-6.08/-8.24	-4.12/-3.57	-6.9/-7.31	-7.29/-10.46	-13.97/-3.84	-5.26/-5.67	-3.72/-6.68	-7.2/-1.74	-10.05/-8.74	-12.99/-15.12	-8.38/-8.29	-8.73/-12.82	-14.8/-13.81
Θ(142.5°)	-6.85/-9.73	-6.72/-7.42	-7.2/-7.17	-8.15/-9.33	-7.4/-7.27	-6.69/-7.16	-7.77/-8.35	-10.11/-9.11	-8.32/-9.32	-6.5/-5.76	-5/-2.22	-1.64/-2.7	-3.58/-4.96	-13.47/-4.75	-6.53/-4.27	-8.51/-11.21	-8.34/-7.95	-13.09/-5.45	-4.32/-9.2	-14.82/-13.48	-8.9/-9.69	-12.51/-9.87	-10.15/-7.48	
Θ(150°)	-6.61/-6.15	-5.77/-6.67	-6.79/-6.1	-5.38/-6.32	-6.53/-7.07	-6.65/-5.53	-5.54/-8.33	-4.71/-8.4	-8.15/-9.21	-7.62/-6.02	-2.92/-1.6	-2.46/-3.49	-3.04/-4.59	-5.15/-4.99	-7.63/-4.84	-7.36/-14.29	-13.41/-13.26	-7.49/-8.08	-12.14/-13.18	-9.95/-7.34	-7.18/-5.79	-5/-5.55		
Θ(157.5°)	-6.47/-6.42	-7.23/-8.14	-8.3/-9.03	-9.46/-10.13	-10.11/-9.25	-8.21/-8.64	-11.16/-11.45	-9.52/-8.91	-9.91/-11.07	-11.84/-10.74	-7.57/-5.42	-5.3/-6.34	-7.38/-6.27	-5.31/-7.49	-7.55/-5.43	-5.51/-8.16	-10.39/-11.11	-10.52/-11.76	-11.41/-8.84	-8.77/-10.24	-11.17/-12.13	-12.23/-9.41	-7.78/-7.59	-7.26/-7.23
Θ(165°)	-3.8/-5.26	-6.21/-7.7	-9.34/-10.79	-10.67/-10.97	-10.83/-10.76	-10.76/-9.56	-7.95/-6.52	-5.75/-5.18	-5.06/-4.9	-5.21/-6.23	-7.66/-8.41	-9.29/-11.47	-15.29/-14.81	-10.7/-8.18	-6.55/-6.52	-5.43/-5.21	-5.46/-6.54	-8.2/-8.6	-9.96/-9.29	-8.91/-9.26	-10.69/-10.6	-7.57/-4.65	-3.05/-2.02	-1.6/-2.46
Θ(172.5°)	-9.78/-11.82	-12.08/-12.87	-11.87/-10.18	-9.51/-9.56	-8.63/-7.06	-5.67/-4.59	-3.99/-3.68	-3.54/-3.26	-2.92/-2.84	-3.19/-4.23	-5.64/-6.89	-8.24/-10.44	-13.73/-15.35	-13.03/-10.03	-8.99/-8.88	-9.65/-10.18	-10.45/-10.89	-9.62/-8.75	-8.18/-6.95	-5.79/-5.43	-5.59/-7.05	-5.6/-5.36	-6.01/-7.05	-8.51/-10.28
Θ(180°)	-7.32/-8.14	-7.51/-7.27	-6.98/-6.56	-6.27/-5.72	-4.83/-4.12	-3.65/-3.52	-4.1/-4.85	-5.73/-5.87	-5.05/-4.44	-4.42/-5.3	-6.82/-7.05	-5.95/-5.66	-6.23/-7.34	-7.58/-7.41	-7.51/-8.09	-9.19/-10.52	-12.2/-12.82	-13.26/-11.59	-10.37/-9.84	-9.58/-9.43	-8.78/-8.38	-8.05/-6.88	-6.05/-6.29	-6.33/-6.49
Freq(Hz)	5.66GPol.	ThetaL	-/-	-/-	-/-	-/-	-/-	-/-	-/-	-/-	-/-	-/-	-/-	-/-	-/-	-/-	-/-	-/-	-/-	-/-	-/-	-/-	-/-	-/-
DG(dB)	Φ(0°)/Φ(7.5°)	Φ(15°)/Φ(22.5°)	Φ(30°)/Φ(37.5°)	Φ(45°)/Φ(52.5°)	Φ(60°)/Φ(67.5°)	Φ(75°)/Φ(82.5°)	Φ(90°)/Φ(97.5°)	Φ(105°)/Φ(112.5°)	Φ(120°)/Φ(127.5°)	Φ(135°)/Φ(142.5°)	Φ(150°)/Φ(157.5°)	Φ(165°)/Φ(172.5°)	Φ(180°)/Φ(187.5°)	Φ(195°)/Φ(202.5°)	Φ(210°)/Φ(217.5°)	Φ(225°)/Φ(232.5°)	Φ(240°)/Φ(247.5°)	Φ(255°)/Φ(262.5°)	Φ(270°)/Φ(277.5°)	Φ(285°)/Φ(292.5°)	Φ(300°)/Φ(307.5°)	Φ(315°)/Φ(322.5°)	Φ(330°)/Φ(337.5°)	Φ(345°)/Φ(352.5°)
Θ(0°)	-3.55/-3.42	-3.41/-3.69	-4.52/-6.14	-6.68/-7.71	-9.06/-9.92	-10.58/-10.56	-10.73/-9.77	-8.3/-11.8	-6.78/-6.34	-5.77/-5.37	-5.27/-5.23	-4.92/-4.39	-4.02/-4.18	-5.08/-6.49	-7.91/-9.69	-12.12/-41	-13.26/-14.92	-15/-12.57	-11.31/-9.51	-8.37/-6.98	-6.26/-5.94	-5.65/-4.93	-3.92/-3.97	-4.36/-4.41
Θ(7.5°)	-6.26/-6.3	-6.44/-6.76	-7.24/-7.3	-7.66/-8.19	-9.74/-10.63	-12.12/-12.52	-12.04/-10.93	-8.94/-6.99	-5.75/-4.63	-3.56/-2.94	-2.79/-3.66	-3.63/-4.07	-8.99/-11.09	-12.51/-12.95	-13.74/-13.89	-14.31/-12.64	-10.38/-8.95	-7.47/-6.51	-6.24/-6.27	-6.23/-6.32	-6.61/-6.59	-6.26/-5.91		
Θ(15°)	-9.24/-9.86	-10.09/-9.78	-9.83/-9.44	-8.5/-8.03	-8.08/-8.42	-9.43/-10.98	-13.01/-13.19	-10.7/-8.14	-6.69/-6.17	-5.78/-4.95	-4.17/-4.03	-4.17/-4.51	-4.72/-5.19	-5.92/-6.6	-7.8/-8.41	-9.38/-11.14	-13.34/-14.17	-14.76/-13.81	-12.44/-9.99	-8.17/-7.22	-7.11/-7.13	-6.87/-7.12	-7.32/-7.68	-7.53/-8.42
Θ(22.5°)	-13.4/-15.36	-15.55/-13.27	-12.43/-12.16	-12.41/-10.53	-8.46/-7.45	-7.56/-9.44	-11.99/-14.69	-14.47/-12.56	-12.04/-12.17	-13.32/-11.4	-8.66/-7.09	-6.33/-5.67	-5.43/-5.59	-5.98/-6.58	-7.13/-7.24	-7.65/-8.66	-10.85/-13.67	-15.14/-13.38	-10.98/-9.73	-8.85/-7.84	-7.8/-8.52	-9.65/-10.93	-10.85/-10.82	-10.46/-11.96
Θ(30°)	-11.51/-9.49	-8.51/-8.65	-9.88/-12.48	-15.17/-14.11	-12.23/-10.75	-10.96/-10.29	-9.6/-8.42	-7.43/-6.99	-7.73/-9.01	-9.5/-9.58	-8.46/-6.01	-4.82/-5.44	-5.61/-5.06	-5.21/-6.83	-10.07/-11.54	-11.66/-10.73	-10.53/-13.66	-15.45/-11.68	-7.53/-7.29	-7.58/-7.69	-10.01/-13.84	-13.53/-12.78	-13.56/-13.08	
Θ(37.5°)	-10.92/-12.02	-11.69/-11.37	-10.34/-9.68	-9.62/-10.27	-10.93/-11.09	-10.24/-8.65	-7.45/-6.13	-6.29/-5.4	-4.36/-3.74	-3.84/-4.65	-4.54/-4.63	-5.74/-6.82	-6.87/-6.49	-7.39/-8.79	-10.06/-9.79	-8.86/-9.26	-12.53/-15.67	-13.11/-11.69	-11.42/-10.48	-6.58/-4.84	-5.72/-7.04	-6.9/-7.77	-7.79/-7.81	-9.28/-10.33
Θ(45°)	-7.51/-9.39	-9.44/-10.97	-12.43/-12.11	-10.39/-8.67	-8.4/-7.27	-6.16/-4.9	-4.58/-5.67	-5.26/-3	-2.44/-3.49	-4.38/-4.43	-3.28/-2.57	-3.02/-3.13	-3.35/-4.6	-5.62/-6.71	-6.79/-5.7	-6.79/-7.85	-10.72/-13.25	-13.01/-11.67	-13.91/-15.1	-9.26/-7.88	-5.95/-5.43	-5.92/-4.96	-5.44/-5.1	-4.88/-4.16
Θ(52.5°)	-12.82/-15.81	-15.57/-14.52	-13.58/-10.7	-8.91/-8.7	-9.98/-9.63	-7.34/-6.33	-5.87/-4.26	-3.73/-3.62	-3.87/-6.2	-5.76/-4.16	-3.06/-3.28	-3.23/-4	-3.71/-4.08	-4.62/-6.52	-6.61/-7.28	-5.72/-5.24	-4.55/-10.48	-13.92/-11.92	-10.96/-14.26	-15.67/-12.86	-9.37/-6.7	-6.09/-7.31	-8.84/-11.17	
Θ(60°)	-8.33/-10.8	-13.84/-15	-15.04/-13.34	-11.24/-9.89	-6.92/-4.42	-4.19/-3.95	-2.76/-1.98	-2.19/-1.33	-0.03/-0.24	-0.72/-1.09	-1.6/-2.41	-2.74/-5.54	-8.47/-7.15	-5.26/-7.19	-10.38/-8.4	-4.85/-3.4	-4.53/-4.04	-3.87/-5.98	-5.37/-6.11	-10.06/-7.84	-11.13/-12.96	-11.29/-9.1	-10.1/-8.39	-8.79/-9.09
Θ(67.5°)	-10.25/-10.8	-11.68/-10.83	-8.65/-6.85	-4.55/-3.67	-1.83/-0.7	0.30/-94	2.082/-67	2.873/-59	2.942/-75	3.732/-64	1.020/-54	0.03/-0.53	-0.130/-47	-0.38/-3.14	-9.58/-10.4	-6.28/-4.44	-4.91/-4.88	-2.8/-5.59	-4.78/-3.42	-5.38/-2.48	-5.87/-7.19	-7.73/-10.8	-9.4/-10.22	-9.51/-11.14
Θ(75°)	-0.99/-6.54	-6.59/-4.53	-3.23/-3.3	-3.81/-4.13	-1.67/-0.8	2.13/-46	3.834/-20.4	4.163/-92	4.163/-92	5.820/-95</														



Radiated Composite Gain Data of 5GHz

Appendix B

Θ (22.5°)	-7.36/-6.02	-5.02/-4.55	-4.81/-5.04	-4.64/-4.69	-5.23/-6.07	-7.07/-7.53	-6.86/-6.34	-6.27/-7.61	-9.27/-10.95	-10.9/-10.01	-10/-11.87	-13.27/-14.36	-15.76/-17.2	-17.35/-13.97	-12.37/-12.72	-13.39/-12.42	-10.67/-10.54	-12.66/-15.55	-13.42/-11.96	-12.77/-13.54	-14.06/-14.31	-12.44/-11.11	-10.6/-9.64	-8.01/-7.7	
Θ (30°)	-7.58/-6.75	-6.93/-7.46	-8.04/-7.84	-7.99/-8.27	-8.87/-10.99	-13.68/-13.43	-11.53/-11.11	-11.42/-11.41	-8.99/-6.53	-5.46/-5.94	-7.31/-8.97	-8.9/-8.3	-9.5/-14.37	-19.15/-11.43	-9.18/-9.57	-10.64/-9.59	-7.06/-5.64	-6.5/-8.74	-9.53/-7.56	-6.71/-8.26	-11.81/-17.33	-18.07/-18.62	-19.01/-15.85	-19.11/-16.17	-11.32/-8.59
Θ (142.5°)	-8.19/-6.92	-7.74/-7.04	-7.61/-10.34	-13.78/-14.33	-14.37/-14.65	-15.44/-16.05	-17.69/-15.68	-13.37/-12.21	-10.31/-9.36	-8.78/-9.17	-13.27/-17.66	-17.02/-10.15	-6.53/-11.88	-17.14/-12.67	-8.88/-6.6	-5.6/-6.5	-8.57/-8.83	-5.57/-6.18	-10.74/-9.98	-6.41/-12.22	-19.01/-18.5	-13.51/-16.3	-10.9/-9		
Θ (45°)	-12.62/-9.94	-11.89/-13.03	-16.81/-14.71	-12.24/-11.99	-11.67/-12.12	-12.91/-17.29	-18.42/-16.59	-16.26/-17.07	-17.4/-15.42	-11.14/-9.79	-11.45/-13.39	-15.22/-18.11	-18.12/-14.79	-13.68/-13.13	-11.34/-14.07	-11.83/-14.38	-10.76/-19.25	-12.94/-11.27	-9.66/-12.14	-12.14/-16.33	-18.67/-18.18	-15.61/-17.95	-18.12/-18.88	-15.27/-15.1	
Θ (52.5°)	-18.83/-18.73	-17.83/-19.06	-19.37/-17.99	-18.75/-14.6	-18.82/-17.86	-16.98/-13.62	-11.85/-14.74	-7.37/-11.05	-13.86/-11.37	-10.11/-11.47	-12.39/-12.55	-14.83/-13.38	-12.17/-13.61	-16.56/-19.03	-16.21/-11.8	-8.35/-10.39	-16.39/-19.89	-12.08/-14.13	-16.03/-17.38	-18.97/-12.71	-16.57/-19.44	-19.17/-18.7	-18.49/-17.2	-18.04/-18.52	
Θ (60°)	-16.87/-14.73	-17.88/-17.59	-17.32/-17.92	-18.44/-16.79	-14.92/-17.07	-14.13/-13.82	-16.47/-10.84	-10.87/-10.31	-9.64/-13.21	-14.58/-12.75	-11.29/-10.54	-11.7/-12.71	-11.99/-9.07	-8.4/-9.52	-9.48/-13.59	-18.88/-14.86	-18.45/-19.05	-17.03/-13.52	-16.45/-14.02	-13.26/-18.17	-16.35/-19.65	-18.2/-13.56	-14.42/-14.74	-15.45/-17.5	
Θ (67.5°)	-18.72/-18.1	-16.77/-17.98	-18.09/-18.09	-17.71/-18.62	-18.09/-14.08	-12.36/-16.53	-12.2/-4.91	-10.51/-18.59	-17.49/-18.45	-17.74/-18.87	-14.34/-12.7	-13.62/-17.53	-17.13/-14.16	-10.44/-13.4	-18.17/-18.58	-17.53/-18.27	-18.56/-15.79	-16.61/-17.67	-18.47/-18.53	-12.61/-14.94	-15.07/-18.14	-17.78/-16.07	-16.25/-15.32	-14.53/-18.28	
Θ (75°)	-18.37/-17.96	-17.8/-15.99	-14.14/-14.45	-16.92/-18.16	-12.86/-9.19	-6.51/-6.96	-5.06/-4.58	-8.01/-9.5	-13/-18.64	-11.15/-11.25	-13.38/-13.19	-13.37/-11.97	-11.15/-8.69	-7.17/-7.71	-11.83/-18.9	-16.61/-18.16	-13.01/-12.58	-17.22/-8.65	-11.16/-8.99	-9.38/-15.27	-17.17/-18.25	-17.65/-18.93	-17.81/-16.92	-16.04/-19.01	
Θ (82.5°)	-14.4/-19.25	-17.43/-17.6	-18.45/-14.13	-16.62/-12.54	-8.92/-6.51	-7.29/-5.73	-6.1/-8.86	-12.69/-18.55	-18.33/-18.7	-17.51/-12.09	-12.41/-15.83	-18.42/-13.66	-9.23/-6.33	-6.87/-11.24	-18.55/-17.09	-13.83/-17.46	-16.47/-15.76	-16.01/-17.07	-18.33/-12.85	-15.41/-13.14	-14.22/-19.21	-18.48/-18.57	-16.06/-11.43	-10.94/-11.51	
Θ (90°)	-12.89/-14.07	-15.1/-12.8	-9.53/-7.36	-7.79/-8.86	-12.44/-16.51	-12.61/-14.79	-12.82/-17.33	-15.66/-9.84	-7.15/-11.33	-18.84/-12.01	-9.06/-13.36	-15.4/-19.12	-18.02/-15.27	-13.86/-10.75	-13.18/-18.23	-12.22/-8.64	-7.61/-12.44	-13.72/-16.51	-14.79/-15.29	-12.68/-11.87	-12.05/-18.7	-14.55/-16.86	-17.85/-17.16	-18.95/-17.84	
Θ (97.5°)	-18.33/-17.08	-14.13/-12.74	-12.91/-13.07	-9.32/-10.68	-12.78/-18.49	-8.13/-8.16	-9.35/-5.99	-5.43/-5.91	-9.1/-18.06	-11.81/-7.92	-6.88/-8.12	-6.83/-9.42	-11.77/-18.92	-17.87/-18.88	-16.48/-18.79	-8.75/-6.02	-12.12/-10.22	-7.94/-18.75	-9.45/-18.42	-12.47/-9.37	-16.31/-12.73	-17.74/-12.19	-14.79/-17.95	-19.31/-19.42	
Θ (105°)	-15.16/-18.19	-18.99/-16.91	-12.35/-10.55	-9.51/-10.11	-18.22/-9.93	-8.16/-6.51	-5.49/-3.03	-3.9/-7.21	-6.82/-18.78	-11.84/-6.45	-5.96/-8.83	-8.42/-10.06	-6.38/-5.35	-13.41/-10.55	-13.24/-10.72	-4.05/-7.31	-6.38/-5.48	-12.93/-9.95	-12.78/-15.2	-10.83/-18.59	-12.84/-17.54	-12.35/-10.98	-14.04/-14.19		
Θ (112.5°)	-12.88/-16.2	-17.53/-18.19	-17.06/-15.25	-16.8/-15.75	-14.57/-9.84	-8.96/-9.72	-4.54/-4.99	-6.93/-8.51	-13.49/-17.32	-17.55/-9.89	-10.09/-13.83	-18.74/-19.27	-17.27/-14.05	-8.52/-11.75	-17.82/-10.4	-10.21/-10.43	-13.24/-16.7	-12.13/-11.41	-18.34/-16.37	-17.22/-16.51	-18.88/-10.9	-15.07/-10.99	-11.48/-14.93	-15.73/-13.35	
Θ (120°)	-12.5/-15.84	-12.7/-18.77	-18.58/-12.42	-14.16/-10.69	-8.8/-14.96	-11.26/-8.49	-14.13/-13.82	-10.82/-11.78	-12.34/-14.48	-17.57/-18.21	-19.18/-16.55	-13.51/-11.54	-12.45/-15.63	-17.53/-18.64	-17.35/-18.25	-18.94/-13.15	-15.17/-18.35	-14.56/-15	-19.15/-15.08	-16.65/-12.18	-13.73/-18.32	-18.19/-18.19	-18.5/-11.83	-14.36/-10.53	
Θ (127.5°)	-11.05/-13.58	-10.48/-13.56	-16.87/-17.53	-12.52/-12.41	-8.82/-8.44	-14.84/-17.53	-16.29/-18.16	-18.65/-17.71	-15/-12.83	-7.99/-6.12	-4.7/-7.57	-12.61/-15.92	-9.35/-10.53	-14.02/-9.19	-18.65/-12.83	-12.41/-13.69	-8.54/-17.3	-11.73/-9.57	-7.9/-14.19	-5.35/-9.19	-11.55/-11.91	-16.47/-12.6	-17.89/-14.62	-18.43/-13.51	
Θ (135°)	-18.75/-18.57	-17.06/-18.28	-15.19/-13.6	-14.15/-10.17	-9.75/-8.24	-6.64/-8.02	-12.36/-17.27	-18.9/-15.61	-14.67/-12.61	-10.51/-11.93	-16.29/-11.77	-13.83/-15.18	-9.14/-8.2	-10.55/-6.26	-7.09/-18.1	-18.09/-6.81	-8.24/-8.96	-7.32/-9.12	-10.66/-4.3	-11.11/-13.69	-14.09/-18.1	-12.27/-11.96	-8/-14.1	-18.41/-17.17	
Θ (142.5°)	-19.22/-18.45	-13.57/-13.67	-18.88/-11.26	-13.69/-13.42	-13.09/-13.11	-11.61/-12.92	-13.69/-11.68	-10.28/-11.07	-9.79/-9.43	-11.98/-16	-17.84/-19.19	-12.34/-7.95	-7.67/-8.21	-6.75/-6.13	-8.65/-3.72	-11.8/-17.03	-14.05/-9.66	-6.15/-11.51	-17.5/-16.15	-10.92/-13.4	-12.99/-13.05	-18.41/-17.64			
Θ (150°)	-18.62/-18.96	-17.84/-18.06	-18.82/-16.29	-14/-17.71	-18.24/-12.42	-18.28/-13.92	-11.04/-11.36	-12.84/-12.96	-12.51/-14.59	-17.19/-18.98	-10.01/-16.89	-7.14/-9.39	-18.35/-16.66	-12.53/-7.38	-6.89/-3.84	-4.8/-10.95	-9.66/-16.98	-19.11/-17.03	-18.41/-10.73	-9.93/-12.77	-18.41/-18.28	-17.24/-17.87	-17.89/-14.32	-13.8/-14.1	
Θ (157.5°)	-19.09/-18.84	-17.76/-18.78	-18.21/-19.25	-19/-18.33	-16.75/-15.54	-13.84/-12.62	-11.61/-11.74	-12.04/-11.97	-12.48/-13.95	-16.17/-17.5	-13.44/-10.48	-9.97/-11.84	-18.32/-15.23	-8.47/-6.89	-7.37/-7.83	-10.55/-19.29	-18.34/-14.46	-11.4/-12.06	-13.17/-9.95	-8.87/-12.19	-12.04/-12.94	-17.57/-19.28	-18.74/-18.86	-18.83/-19.1	
Θ (165°)	-16.05/-19.35	-17.98/-18.08	-18.1/-16.76	-12.42/-10.81	-11.06/-10.98	-10.94/-11.47	-12.82/-14.13	-15.19/-14.07	-12.55/-10.43	-8.56/-7.91	-8.03/-8.33	-8.99/-11.86	-18.51/-16.89	-10.42/-9.04	-9.6/-10.76	-11.17/-9.72	-7.92/-7.2	-8.44/-11.39	-17.77/-19.05	-18.64/-17.67	-17.67/-16.71	-13.8/-11.4	-10.72/-9.78	-9.64/-12.23	
Θ (172.5°)	-10.9/-13.84	-14.79/-14.1	-11.91/-10.3	-9.25/-8.87	-8.87/-8.15	-7.68/-7.17	-7.39/-7.35	-7/-6.27	-5.74/-5.47	-5.52/-6.65	-8.08/-8.71	-9.11/-10.9	-15.1/-18.49	-14.15/-11.17	-10.53/-11.09	-10.59/-10.73	-11.97/-14.17	-16.67/-14.71	-11.82/-10.1	-9.33/-9.22	-8.81/-8.17	-8.33/-7.89	-8.22/-9.95		
Θ (180°)	-18/-19.14	-15.42/-13.66	-12.35/-11.38	-10.1/-8.6	-6.83/-5.66	-4.95/-4.35	-4.84/-6.53	-5.66/-6.06	-6.07/-6.12	-6.94/-9.16	-12.67/-13.25	-11.08/-10.66	-11.88/-13.13	-11.78/-10.12	-9.42/-9.58	-10.42/-11.58	-12.86/-13.47	-14.74/-15.59	-16.62/-17.16	-16.98/-14.67	-11.56/-10.9	-11.93/-12.04	-11.81/-13.82	-16.46/-16.97	
Freq(Hz)	5.60PdL	ThetaAnt. 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gain	Φ(0°)/Φ(7.5°)	Φ(15°)/Φ(22.5°)	Φ(30°)/Φ(37.5°)	Φ(45°)/Φ(52.5°)	Φ(60°)/Φ(67.5°)	Φ(75°)/Φ(82.5°)	Φ(90°)/Φ(97.5°)	Φ(105°)/Φ(112.5°)	Φ(120°)/Φ(127.5°)	Φ(135°)/Φ(142.5°)	Φ(150°)/Φ(157.5°)	Φ(165°)/Φ(172.5°)	Φ(180°)/Φ(187.5°)	Φ(195°)/Φ(202.5°)	Φ(210°)/Φ(217.5°)	Φ(225°)/Φ(232.5°)	Φ(240°)/Φ(247.5°)	Φ(255°)/Φ(262.5°)	Φ(270°)/Φ(277.5°)	Φ(285°)/Φ(292.5°)	Φ(300°)/Φ(307.5°)	Φ(315°)/Φ(322.5°)	Φ(330°)/Φ(337.5°)	Φ(345°)/Φ(352.5°)	
Θ (0°)	-8.79/-9.36	-8.81/-10.4	-14.89/-19.35	-17.21/-18.52	-19.25/-17.72	-16.51/-13.59	-12.06/-10.53	-9.26/-8.7	-8.63/-8.35	-8.73/-7.41	-7.59/-8.32	-6.68/-8.35	-8.36/-8.65	-9.84/-11.74	-13.31/-15.44	-19.26/-18.13	-18.36/-18.76	-17.56/-13.85	-11.25/-9.03	-7.74/-7.03	-6.84/-7.02	-7.2/-6.46	-5.68/-6.34	-7.17/-7.63	
Θ (7.5°)	-10.3/-11.54	-13/-15.95	-19.15/-18.43	-18.27/-17.15	-18.97/-14.74	-17.62/-15.12	-12.81/-10.81	-9.77/-8.64	-7.92/-6.72	-6.57/-5.42	-6.05/-7.22	-7.24/-6.51	-6.4/-7.47	-9.61/-11.79	-13.69/-16.38	-18.88/-19.01	-19.17/-17.12	-17.94/-15.24	-12.5/-18.04	-9.67/-8.88	-8.4/-7.81	-7.19/-6.99	-7.24/-7.59	-8.06/-8.89	
Θ (15°)	-13.13/-16.05	-19.04/-18.7	-16.87/-16.87	-14.29/-13.54	-12.84/-13.14	-14.68/-16.26	-16.02/-14.09	-11.73/-9.6	-8.07/-7.29	-6.78/-6.96	-6.29/-6.97	-4.98/-9.84	-10.38/-11.11	-12.08/-12.39	-19.22/-17.18	-17.65/-17.68	-17.28/-14.05	-11.59/-10.36	-9.8/-9.24	-8.32/-7.74	-7.46/-8.27	-9.03/-11.3			
Θ (22.5°)	-15.07/-18.29	-18.22/-14.76	-13.39/-12.49	-12.64/-12.83	-12.07/-12.27	-12.62/-13.99	-16.47/-19.03	-17.19/-14.04	-12.83/-13.23	-14.43/-13.14	-10.2/-8.85	-8.44/-8.45	-8.54/-8.63	-8.99/-9.83	-11.08/-10.88	-8.95/-9.39	-11.25/-15.09	-19.31/-18.07	-17.34/-17.75	-16.88/-14.15	-13.21/-12.71	-11.72/-11.61	-10.93/-10.97	-10.85/-12.35	
Θ (30°)	-18.19/-16.6	-13.8/-11.61	-12/-15.3	-18.63/-17.13	-17.43/-18.21	-18.72/-17.7	-17.17/-18.08	-16.51/-11.18	-15.11/-17.08	-17/-15.52	-13.39/-13.63	-8.07/-8.38	-8.21/-8.75	-8.19/-6.89	-6.82/-8.86	-13.65/-17.44	-17.73/-13.67	-12.41/-15.11	-19.02/-13.42	-10.09/-10.22	-10.63/-11.88	-16.02/-18.07	-17.47/-16.95	-18.28/-18.69	
Θ (37.5°)	-16.98/-17.71	-16.96/-15.7	-13.05/-12.45	-13.69/-15.37	-16.67/-18.38	-18.38/-18.35	-18.69/-14.85	-16.75/-11.41	-8.36/-7.02	-7.22/-8.23	-9.76/-11.19	-10.63/-11.06	-12.65/-12.72	-13.01/-12.75	-13.41/-13.44	-11.2/-12.2	-17.26/-19.02	-13.97/-13.57	-15.65/-15.4	-12.72/-11.11	-11.09/-10.69	-12.42/-12.72	-10.45/-12.05	-16.24/-17.64	
Θ (45°)	-18.29/-18.97	-17.21/-17.82	-18.88/-17.73	-14.96/-14.58	-19.14/-18.47	-19/-16.88	-13.44/-12.57	-10.68/-6.94	-5.58/-6.43	-5.74/-5.75	-4.07/-2.72	-2.27/-2.49	-2.89/-3.35	-4/-6.89	-10.87/-10.9	-11.48/-13.67	-14.94/-18.54	-18.93/-12.92	-15.35/-18.77	-10.61/-9.99	-8.29/-8.57	-12.10/-10.37	-13.11/-11.15	-16.24/-14.85	
Θ (52.5°)	-18.41/-18.41	-17.7/-17.43	-17.93/-16.6	-13.51/-13.85	-16.58/-16.55	-15.06/-13.28	-9.67/-6.24	-5.49/-4.44	-3.35/-4.83	-4.38/-2.47	-1.12/-1.34	-1.67/-2.48	-2.17/-2.28	-2.95/-5.91	-9.23/-14.83	-13.16/-14.48	-15.96/-14	-14.66/-18.15	-18.69/-18.62	-13.61/-15.85	-19.06/-14.79	-10.56/-10.28	-9.69/-10.25	-12.79/-16.44	
Θ (60°)	-14.54/-19	-18.07/-19.04	-18.57/-14.67	-11.71/-9.27	-5.7/-3.62	-4.82/-9.47	-2.64/-1.73	-1.81/-1.3	0.39/-1.65	-															



Radiated Composite Gain Data of 5GHz

Appendix B

Θ(75°)	-9.56/-6.57	-6.87/-7.42	-10.15/-12.29	-12.21/-11.84	-12.86/-14.44	-14.64/-14.52	-11.99/-10.35	-10.78/-12.16	-15.31/-13.65	-8.72/-2.72	-8.13/-9.62	-14.05/-17.97	-17.44/-16.1	-13.14/-11.02	-11.53/-12.71	-14.04/-10.19	-8.19/-9.12	-8.66/-9.74	-11.75/-9.53	-13.71/-17.97	-17.98/-13.99	-14.93/-17.19	-18.02/-18.67	-19.06/-13.17
Θ(82.5°)	-14.38/-9.42	-8.09/-7.1	-8.74/-10.05	-11.73/-14.44	-14.33/-11.55	-9.33/-8.49	-5.51/-4.07	-4.53/-4.43	-7.27/-10.82	-8.47/-5.25	-4.33/-5.22	-8.09/-14.4	-14.96/-13.43	-13.13/-18.76	-18.14/-12.83	-8.58/-7.4	-7.33/-6.19	-6.86/-9.23	-10.02/-13.25	-19.01/-18.96	-19.31/-18.54	-17.52/-18.07	-19.28/-18.92	-19.26/-18.88
Θ(90°)	-17.39/-12.96	-8.41/-7.69	-8.22/-9.59	-11.61/-11.97	-10.44/-10.95	-15.22/-8.91	-5.11/-4.94	-6.45/-4.19	-5.22/-6.11	-6.34/-4.64	-6.22/-5.32	-10.62/-18.9	-12.22/-13.29	-16.26/-16.85	-18.68/-17.65	-14.88/-10.05	-10.98/-9.27	-6.17/-7.89	-16.26/-15.82	-14.42/-15.06	-9.73/-10.4	-11.09/-10.89	-9.27/-9.92	-13.71/-17.56
Θ(97.5°)	-14.24/-18.47	-17.32/-11.97	-9.27/-8.61	-8.39/-7.78	-8.97/-13.14	-15.46/-17	-7.02/-6.49	-6.38/-6.98	7.6/-7.27	-4.68/-3.61	-3.93/-7.12	-10.98/-16.49	-15.85/-18.26	-18.89/-14.14	-13.53/-12.06	-18.63/-18.13	-10.79/-17.77	-17.38/-8.37	-9.06/-6.75	-6.08/-4.88	-5.91/-4.83	-5.95/-11.06	-12.44/-9.86	-11.22/-13.35
Θ(105°)	-13.6/-9.46	-6.1/-6.17	-7.12/-10.03	-11.17/-13.99	-19.06/-18.92	-15.88/-14.74	-18.67/-18.36	-11.78/-9.68	-7.52/-6.04	-3.78/-3.65	-3.23/-4.42	-5.74/-9.4	-9.74/-11.16	-15.03/-13.53	-10.64/-6.62	-7.03/-8.96	-18.35/-10.55	-7.56/-8.92	-8.91/-7.82	-5.04/-5.56	-6.78/-7.26	-11.71/-14.06	-12.96/-14.62	-16.79/-18
Θ(112.5°)	-17.3/-14.47	-10.93/-9.17	-6.97/-8.14	-9.5/-10.62	-12.18/-12.57	-18.02/-18.64	-12.62/-12.33	-12.22/-11.68	-11.06/-10.69	-6.27/-5.43	-8.84/-9.79	-9.2/-8.14	-12.68/-9.19	-14.17/-8.87	-13.06/-19	-14.17/-8.87	-10.16/-6.22	-5.31/-5.16	-4.84/-10.41	-17.53/-17.96	-11.53/-17.69	-12.53/-17.56	-18.39/-18.35	
Θ(120°)	-9.99/-8.78	-7.07/-6.4	-5.92/-5.4	-5.09/-5.57	-8.78/-11.59	-12.28/-16.23	-17.18/-18.68	-18.08/-16.71	-18.27/-12.17	-5.12/-1.71	-0.88/-2.13	-7.53/-10.86	-12.48/-9.76	-10.33/-11.38	-13.02/-13.26	-8.32/-9	-11.62/-14	-8.41/-15.04	-14.13/-8.49	-9.98/-8.73	-14.4/-10.25	-12.91/-11.1	-10.58/-6.29	-7.89/-10.6
Θ(127.5°)	-10.87/-9.71	-7.64/-4.77	-2.72/-1.89	-2.21/-2.78	-3.9/-6.22	-8.68/-9.88	-11.17/-13.54	-16.33/-17.87	-14.66/-8.18	-5.15/-3.89	-4.44/-7.46	-12.29/-8.36	-7.2/-5.93	-10.93/-15.32	-14.53/-18.44	-19.02/-15.09	-18.11/-12.8	-6.45/-8.58	-15.17/-11.66	-14.51/-15.89	-10.37/-11.87	-8.56/-10.69	-8.13/-11.12	-9.52/-10.21
Θ(135°)	-5.07/-4.97	-5.31/-5.23	-4.76/-4.2	-3.34/-3.02	-3.51/-4.03	-4.05/-4.4	-5.14/-6.17	-8.99/-11.92	-8.41/-6.68	-6.94/-5.8	-3.33/-3.7	-5.37/-8.48	-9.8/-8.8	-10.02/-10.72	-17.14/-18.44	-8.5/-5.29	-8.91/-11.53	-16.42/-10.72	-13.86/-5.18	-6.91/-16.15	-15.3/-15.76	-14.52/-11.59	-9.56/-5.96	-6.47/-6.25
Θ(142.5°)	-12.49/-9	-8.49/-7.63	-5.23/-4.05	-3.96/-4.15	-4.09/-4.11	-4.43/-5.05	-6.77/-11.35	-16.31/-13.67	-15.5/-17.55	-8.6/-3.17	-1.29/-2.12	-2.93/-4.75	-7.93/-6.92	-6.03/-10.98	-11.74/-17.63	-8.3/-6.06	-9.93/-14.31	-14.93/-8.39	-16.31/-11.15	-7.18/-9.94	-12.31/-7.06	-6.09/-6.48	-6.61/-9.35	-10.11/-12.37
Θ(150°)	-10.39/-8.58	-7.29/-6.09	-5.38/-5.56	-5.79/-6.04	-6.23/-6.07	-6.09/-7.61	-10.95/-13.25	-11.96/-12.7	-12.87/-10.1	-5.98/-2.97	-1.85/-2.71	-3.68/-6.71	-8.88/-4.26	-2.31/-3.25	-5.79/-15.56	-10.91/-6.67	-9.31/-11.8	-17.06/-17.58	-13.12/-15.96	-12.98/-9.12	-10.61/-17.92	-18.41/-11.82	-8.92/-7.62	-7.99/-9.7
Θ(157.5°)	-8.67/-9.97	-10.24/-10.32	-9.37/-1.69	-6.99/-6.75	-6.65/-6.56	-7.15/-8.44	-9.6/-10.2	-10.18/-9.88	-9.34/-8.12	-5.42/-3	-1.91/-2.54	-4.73/-7.14	-6.93/-5.04	-5.42/-6.63	-16.92/-17.55	-8.6/-6.43	-7.19/-8.87	-11.56/-16.13	-15.41/-14.64	-14.74/-15.59	-18.91/-17.75	-15.14/-8.89	-7.08/-5.67	-5.68/-6.75
Θ(165°)	-4.5/-5.39	-6.68/-7.05	-6.82/-7.44	-8.1/-8.46	-8.52/-8.32	-8.4/-8.4	-7.74/-6.76	-6.11/-5.75	-5.92/-6.72	-7.86/-9.79	-13.18/-18.95	-17.85/-17.23	-13.85/-12.26	-12.83/-16.51	-18.55/-19.21	-12.89/-10.33	-10.31/-13.12	-17.14/-16.89	-14.8/-12.85	-12.3/-13.15	-15.62/-14.54	-10.86/-8.39	-6.4/-4.71	-4.14/-4.44
Θ(172.5°)	-11/-12.3	-12.87/-12.25	-11.94/-10.82	-9.48/-8.55	-7.71/-6.88	-6.49/-6.59	-6.91/-7.35	-7.68/-7.79	-7.49/-6.88	-6.13/-5.34	-4.93/-4.85	-5.12/-5.86	-6.22/-6.36	-6.62/-7.34	-8.43/-4.95	-10.5/-11.86	-13.81/-16.54	-18.2/-18.45	-15.48/-11.54	-9.36/-8.23	-7.76/-7.76	-7.75/-7.72	-7.54/-8.33	-8.67/-9.14
Θ(180°)	-2.28/-2.63	-3.42/-3.66	-3.87/-4.32	-4.74/-5.26	-5.92/-6.81	-7.47/-8	-8.54/-8.06	-6.41/-4.49	-2.84/-1.76	-0.92/-0.47	-0.35/-0.6	-1.02/-1.44	-1.55/-1.61	-1.83/-2.29	-2.88/-3.54	-4.38/-5.36	-6.77/-8.37	-10.43/-11.58	-10.78/-8.86	-7.02/-6	-5.39/-4.68	-4.28/-3.72	-3.04/-2.73	-2.39/-2.21
Freq(Hz)	5.2GPol.	ThetaAnt. 2		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gain	Φ(0°)Φ(7.5°)	Φ(15°)Φ(22.5°)	Φ(30°)Φ(37.5°)	Φ(45°)Φ(52.5°)	Φ(60°)Φ(67.5°)	Φ(75°)Φ(82.5°)	Φ(90°)Φ(97.5°)	Φ(105°)Φ(112.5°)	Φ(120°)Φ(127.5°)	Φ(135°)Φ(142.5°)	Φ(150°)Φ(157.5°)	Φ(165°)Φ(172.5°)	Φ(180°)Φ(187.5°)	Φ(195°)Φ(202.5°)	Φ(210°)Φ(217.5°)	Φ(225°)Φ(232.5°)	Φ(240°)Φ(247.5°)	Φ(255°)Φ(262.5°)	Φ(270°)Φ(277.5°)	Φ(285°)Φ(292.5°)	Φ(300°)Φ(307.5°)	Φ(315°)Φ(322.5°)	Φ(330°)Φ(337.5°)	Φ(345°)Φ(352.5°)
Θ(0°)	-10.18/-11.02	-11.22/-10.23	-11.49/-10.43	-13.88/-12.6	-11.85/-11.95	-12.38/-11.63	-12.11/-12.27	-12.08/-11.8	-11.34/-11.11	-11.32/-11.49	-11.62/-10.51	-8.65/-7.74	-6.71/-6.108	-5.86/-5.99	-6.06/-6.21	-5.57/-7.07	-8.15/-9.91	-17.12/-16.11	-18.48/-18.89	-17.27/-19.17	-18.57/-19.42	-16.36/-13.78	-11.24/-9.17	-3.77/-3.32
Θ(7.5°)	-8.58/-8.05	-7.83/-7.58	-7.49/-7.94	-9.17/-10.36	-10.86/-11.79	-12.88/-14.87	-14.71/-13.44	-12.18/-11.2	-10.09/-9.58	-9.09/-8.47	-7.54/-6.55	-5.8/-5.02	-4.39/-4.26	-4.37/-4.47	-4.61/-4.85	-5.33/-5.92	-6.93/-8.29	-10.23/-12.03	-12.9/-12.25	-12.4/-13.15	-14.93/-16.57	-18.08/-18.32	-15.12/-12.57	-11.03/-9.74
Θ(15°)	-18.59/-19.04	-18.18/-17.69	-18.07/-18.58	-17.18/-19.15	-19.1/-18.61	-16.07/-13.82	-11.42/-9.5	-7.75/-6.43	-5.33/-4.62	-3.84/-3.29	-3.06/-3.07	-3.44/-3.95	-4.23/-4.08	-3.67/-3.33	-3/-2.7	-2.67/-2.95	-3.58/-4.7	-6.29/-6.07	-8.68/-8.22	-7.85/-7.91	-8.62/-8.95	-12.49/-17.37	-19.13/-17.23	-18.04/-17.3
Θ(22.5°)	-14.64/-12.83	-12.86/-13.19	-13.42/-14.4	-15.27/-17.84	-19.78/-15.51	-19.18/-16.66	-7.66/-5.51	-4.94/-4.83	-4.32/-4.3	-4.27/-1.77	-4.16/-4.88	-6.11/-7.14	-6.93/-5.04	-5.42/-6.63	-1.51/-1.33	-1.21/-1.6	-2.83/-4.99	-6.72/-7.35	-17.9/-7.35	-16.68/-15.54	-9.54/-10.37	-11.68/-14.55	-17.92/-18.1	-18.69/-16.75
Θ(30°)	-14.28/-13.46	-13.11/-12.68	-13.48/-13.28	-11.83/-12.47	-14.85/-12.94	-9.09/-6.52	-5.39/-4.86	-4.57/-4.59	-5.04/-5.56	-5.86/-5.09	-4.2/-3.81	-3.53/-3.05	-2.51/-2.22	-2.6/-3.79	-5.54/-7.79	-8.71/-7.16	-4.84/-3.57	-3.95/-5.99	-8.35/-9.76	-10.37/-11.39	-11.93/-12.63	-11.74/-10.72	-11.34/-11.16	-12.38/-15.2
Θ(37.5°)	-8.55/-10.13	-11.27/-12.34	-12.52/-12.32	-11.98/-12.44	-11.18/-8.08	-5.55/-3.76	-2.84/-2.45	-2.54/-2.58	-2.56/-2.5	-3.01/-3.77	-4.21/-5.42	-6.19/-5.4	-4.15/-3.4	-3.3/-2.79	-2.91/-4.8	-6.55/-6.94	-7.57/-8.42	-11.35/-12.32	-12.52/-12.25	-11.25/-9.82	-8.44/-6.64	-6.43/-6.71	-6.92/-7.55	
Θ(45°)	-8.78/-11.66	-13.96/-13.46	-12.57/-11.31	-10.18/-8.29	-6.99/-6.51	-5.92/-4.94	-4.19/-4.1	-5.16/-6.08	-6.02/-5.92	-6.84/-6.88	-6.19/-7.03	-7.2/-5.06	-4.1/-3.1	-4.51/-4.62	-5.15/-6.45	-3.94/-8.84	-11.09/-13.17	-18.27/-18.3	-18.01/-18.54	-13.69/-8.94	-9.47/-8.11	-6.14/-6.08	-3.88/-3.93	-6.01/-8.27
Θ(52.5°)	-6.26/-6.8	-7.61/-8.85	-9.71/-10.02	-10.88/-13.7	-18.58/-16.85	-13.55/-13.86	-10.23/-8.23	-8.6/-7.99	-7.31/-7.83	-7.64/-9.88	-11.13/-13.08	-13.76/-10.43	-7.66/-6.33	-5.32/-5.18	-5.5/-7.37	-11.12/-13.07	-17.02/-16.55	-11.55/-11.01	-12.62/-10.18	-7.87/-8.94	-10.32/-10.08	-7.02/-6.92	-7.04/-6.62	-7.56/-6.64
Θ(60°)	-5.71/-6.78	-6.99/-6.55	-8.98/-7.1	-6.37/-6.17	-12.26/-15.52	-11.57/-10.04	-9.7/-6.1	-3.75/-3.24	-2.94/-3.2	-5.34/-4.84	-5.78/-6.55	-9.63/-10.39	-6.6/-6.42	-2.58/-2.35	-5.44/-7.17	-14.67/-9.45	-8.12/-8.67	-8.11/-8.92	-8.29/-11.84	-7.58/-6.21	-7.44/-6.64	-4.61/-4.95	-5.33/-5.18	-6.32/-5.8
Θ(67.5°)	-7.79/-8.25	-3.36/-8.35	-6.97/-8.89	-5.68/-5.34	-7.28/-9.69	-6.07/-5.74	-5.71/-3.29	-2.12/-3.05	-2.83/-2.94	-6.66/-6.3	-7.06/-6.9	-10.28/-9.33	-7.28/-4.79	-2.92/-2.23	-4.47/-7.21	-8.99/-6.69	-9.55/-16.9	-12.69/-12.79	-15.45/-7.26	-4.06/-3.86	-3.15/-3.78	-3.97/-4.36	-6.5/-6.62	-8.67/-7.88
Θ(75°)	-7.41/-6.43	-6.03/-6.74	-9.13/-11.81	-9.68/-6.53	-5.5/-5.16	-3.87/-3.62	-5.03/-2.88	-1.31/-2.36	-2.29/-2.55	-11.28/-8.95	-5.57/-4.77	-6.45/-5.44	-2.84/-1.86	-1.84/-2.88	-3.02/-1.94	-2.19/-2.58	-3.84/-7.27	-18.56/-14.88	-14.55/-10.15	-5.38/-6.73	-7.88/-7.34	-7.06/-6.22	-7.93/-8.36	-6.87/-6.62
Θ(82.5°)	-7.31/-6.36	-7.44/-8.62	-8.78/-9.28	-9.08/-8.7	-7.59/-4.32	-0.91/-0.01	-0.73/-0.32	-1.34/-8.42	-13.45/-4.5	-1.8/-2.52	-2.09/-0.92	1.530.7	-0.98/-4.01	-3.240.04	0.32/-1.08	-1.1/-3.21	-8.94/-8.92	-8.84/-18.31	-18.97/-13	-18.39/-12.95	-17.23/-11.66	-13.13/-13.42	-8.9/-7.57	
Θ(90°)	-10.41/-8.41	-8.32/-9.08	-7.79/-10.03	-8.66/-7.52	-5.59/-1.76	0.84/-1.15	0.42/-0.08	-2.23/-8.4	-10.73/-15.43	-7.8/-2.18	0.67/-1.04	0.67/-1.64	3.21/0.36	2.5/-1.79	-7.51/-2.26	0.62/-0.79	-3.170.55	-1.89/-3.59	-1.61/-3.71	-7.1/-3.28	-5.07/-8.76	-8.81/-10.08	-6.34/-8.18	-11.5/-6.9
Θ(97.5°)	-11.41/-18.29	-9.77/-10.55	-8.55/-7	-6.36/-3.03	-2.76/-1.81	-0.04/-0.21	-0.05/-0.13	-1.26/-6.73	-4.37/-6.7	-5.33/-0.76	7.09/-2.02	-0.680.37	2.74/3.24	1.4/-1.57	-12.5/-6.49	-0.03/-0.51	-3.82/-1.23	-1.66/-4.99	-0.07/-5.15	-4.54/-5.18	-4.6/-6.43	-12.42/-11.08		
Θ(105°)	-5.61/-4.72	-4.92/-3.17	-4.54/-3.22	-5.34/-3.72	-3.12/-5.6	-5.39/-3.4	-1.97/-1.72	-3.28/-2.32	0.86/-1.46	-5.7/-3.5	-2.62/-3.21	-4.84/-4.04	-1.330.73	0.980.05	-2.9/-15.3	-3.80.5	-4.78/-4.91	0.48/-4.56	-2.21/-1	-1.09/-1.31	-0.93/-4.1	-6.7/-8.09	-8.25/-8.96	-9.81/-10.8
Θ(112.5°)	-1.73/-1.31	-0.720.47	-0.48/-0.12	-1.31/-4.22	-4.15/-3.52	-3.24/-2.6	-1.92/-1.67	-1.4/-0.59	0.58/-3.87	-7.43/-9.13	-6.04/-9.23	-12.9/-13.47	-7.03/-2.9	-1.92/-4.11	-5.22/-17.96	-7.17/-1.27	-5.31/-8.42	-0.85/-2.56	-4.660.9	0.07/-1.58	-1.99/-4.43	-9.95/-7.61	-3.78/-2.17	-2.9/-4.1
Θ(120°)	0.29/-0.36	-1.05/-0.47	-0.3/-0.2	-0.47/-0.71	-1.46/-0.93	-0.33/-0.52	-1.14/-0.59	-0.24/-1.1	-2.03/-6.07	-8.87/-17.32	-12.57/-16	-13.83/-11.22	-6.84/-8.12	-16.93/-15.12	-13/-11.59	-8.76/-4.21	-4.81/-6.41	-3.13/-5.33	-10.39/-3.9	-3.97/-6.21	-5.06/-6.51	-3.6/-5.02	-1.250.83	-0.21/-1.2
Θ(127.5°)	-1.97/-2.58	-3.59/-3.1	-4.81/-5.8	-4.95/-2.95	-0.71/-0.5	1.47/-0.13																		



Radiated Composite Gain Data of 5GHz

Appendix B

Θ (120°)	-14.2/-8.93	-6.77/-6.17	-7.11/-11.19	-15.94/-11.69	-9.46/-9.73	-12.48/-15.49	-15.36/-14.42	-13.69/-13.67	-15.43/-12.99	-7.45/-3.67	-2.44/-3.02	-6.21/-8.26	-9.32/-9.36	-11.07/-18.74	-14.14/-12.33	-14.92/-19.3	-11.28/-10.23	-12.79/-13.88	-17.4/-17.05	-17.63/-17.87	-11.38/-13.21	-6.9/-7.01	-12.96/-14.06	-15.5/-15.27
Θ (127.5°)	-6.74/-5.55	-4.96/-3.58	-3.66/-3.49	-3.68/-6.22	-9.13/-11.42	-11.56/-7.8	-6.12/-7.44	-10.09/-13.36	-19.36/-14.35	-8.27/-4.3	-3.86/-7.23	-16.35/-17.85	-11.29/-12.88	-19.17/-16.82	-18.26/-17.67	-14.19/-18.68	-15.25/-8.86	-9.43/-18.41	-11.85/-12.99	-17.35/-11.44	-16.33/-15.33	-8.69/-19.03	-9.71/-6.8	-5.38/-6.91
Θ (135°)	-18.61/-19.73	-16.17/-19.09	-12.28/-9.71	-7.02/-4.99	-5.67/-8.63	-11.01/-10.44	-10.38/-12.72	-17.66/-12.45	-7.18/-5.67	-4.06/-1.92	-1.34/-2.68	-6.04/-8.56	-5.5/-5.21	-9.31/-18.17	-16/-6.9	-8.31/-8.41	-6.17/-10.3	-9.79/-5.22	-15.57/-10.17	-18.45/-18.17	-10.59/-10.68	-18.44/-17.99	-17.25/-16.49	
Θ (142.5°)	-5.46/-6.85	-7.08/-8.07	-9.69/-9.22	-9.2/-9.02	-8.37/-8.15	-8.14/-8.09	-8.6/-11.06	-17.36/-14.65	-13.2/-18.14	-13.71/-7.89	-5.34/-4.83	-5.14/-3.16	-2.42/-3.77	-6.44/-10.31	-18.31/-15.75	-10.54/-7.24	-15.66/-12.61	-10.92/-11.84	-18.8/-7.41	-8.69/-12.97	-18.18/-16.85	-13.02/-15.96	-19.12/-12.71	-9.91/-6.62
Θ (150°)	-5.29/-4.77	-5.43/-5.5	-5.47/-5.24	-5.01/-5.14	-5.26/-5.68	-5.42/-4.93	-6.62/-11.32	-13.86/-10.1	-10/-10.36	-6.94/-4.52	-3.17/-2.81	-4.07/-4.33	-2.61/-2.89	-5.26/-8.67	-17.39/-15.51	-6.91/-6.65	-11.14/-17.63	-16.69/-15.58	-15.65/-18.34	-11.1/-9.69	-12.78/-14.51	-9.25/-6.38	-6.17/-5.45	-4.57/-6.2
Θ (157.5°)	-5.03/-5.02	-6.27/-1.75	-7.52/-8.15	-8.79/-9.91	-10.57/-9.88	-9.21/-10.78	-17.83/-18.43	-13.05/-11.87	-13.39/-14.22	-13.33/-11.14	-8.44/-6.77	-6.91/-7.41	-6.31/-5.78	-8.17/-16.81	-15.67/-9.09	-6.87/-7.05	-10.27/-13.8	-16.36/-18.73	-15.88/-14.28	-14.22/-14.45	-17.02/-18.09	-13.41/-8.63	-6.71/-6.45	-6.04/-5.95
Θ (165°)	-2.44/-3.56	-5.02/-6.78	-8.92/-11.6	-15.16/-19.03	-17.94/-17.92	-17.98/-14.3	-9.43/-6.47	-5.11/-4.71	-5.13/-5.96	-7.89/-10.81	-14.47/-17.76	-17.73/-18.26	-18.1/-18.86	-19.08/-14.05	-9.53/-6.92	-6.36/-6.95	-9.05/-12.77	-15.3/-11.83	-9.89/-8.55	-8.18/-8.97	-10.98/-11.33	-8.24/-5.05	-3.04/-1.98	-1.45/-1.72
Θ (172.5°)	-15.21/-15.95	-15.41/-18.13	-19.43/-17.56	-17.81/-19.13	-15.73/-12.54	-8.82/-8.05	-6.62/-6.07	-6.13/-6.27	-6.13/-6.25	-6.94/-7.87	-9.25/-11.29	-14.1/-17.09	-18.76/-18.23	-18.45/-15.44	-13.76/-12.78	-14.13/-16.05	-17.79/-18.93	-13.34/-9.88	-7.85/-6.91	-6.57/-7.05	-7.92/-8.27	-8.42/-8.62	-9.76/-12.96	-16.92/-18.78
Θ (180°)	-6.32/-7.06	-7.4/-7.85	-8.13/-8.08	-8.53/-8.86	-8.99/-8.91	-8.78/-9.44	-10.19/-11.51	-13.57/-13.08	-10.65/-9.01	-7.96/-7.54	-7.25/-6.88	-7.22/-8.25	-9.73/-10.74	-11.77/-12.94	-14.43/-16.04	-18.44/-18.93	-18.12/-13.71	-11.02/-9.98	-9.69/-10.66	-12.02/-11.92	-10.27/-8.17	-6.98/-6.34	-5.48/-5.54	
Freq(Hz)	5.6GHzPol.	ThetaAnt. 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gain	Φ(0°)Ψ(7.5°)	Φ(15°)Ψ(22.5°)	Φ(30°)Ψ(37.5°)	Φ(45°)Ψ(52.5°)	Φ(60°)Ψ(67.5°)	Φ(75°)Ψ(82.5°)	Φ(90°)Ψ(97.5°)	Φ(105°)Ψ(112.5°)	Φ(120°)Ψ(127.5°)	Φ(135°)Ψ(142.5°)	Φ(150°)Ψ(157.5°)	Φ(165°)Ψ(172.5°)	Φ(180°)Ψ(187.5°)	Φ(195°)Ψ(202.5°)	Φ(210°)Ψ(217.5°)	Φ(225°)Ψ(232.5°)	Φ(240°)Ψ(247.5°)	Φ(255°)Ψ(262.5°)	Φ(270°)Ψ(277.5°)	Φ(285°)Ψ(292.5°)	Φ(300°)Ψ(307.5°)	Φ(315°)Ψ(322.5°)	Φ(330°)Ψ(337.5°)	Φ(345°)Ψ(352.5°)
Θ (0°)	-4.78/-4.25	-3.99/-3.82	-3.61/-4.59	-5.72/-6.68	-8.19/-9.86	-11.41/-13.56	-15.83/-15.83	-13.99/-11.98	-11.12/-10.47	-9.84/-9.48	-9.03/-8.17	-7.24/-6.54	-5.88/-5.94	-6.63/-7.72	-9.06/-10.62	-12.17/-13.36	-14.59/-17.18	-18.49/-17.74	-19.1/-18.45	-17.78/-14.51	-12.66/-11.43	-10.42/-9.72	-8.39/-7.72	-7.57/-7.22
Θ (7.5°)	-8.39/-7.53	-6.94/-6.19	-5.95/-6.19	-6.68/-7.57	-9.16/-11.01	-13.19/-15.97	-18.09/-18.87	-14.94/-11.62	-9.69/-8.66	-8.19/-7.59	-6.99/-6.51	-5.94/-5.38	-5.23/-5.93	-7.23/-8.66	-10.59/-12.29	-13.11/-13.71	-14.86/-16.68	-16.75/-16.08	-14.38/-13.28	-11.37/-10.22	-10.21/-10.5	-11.93/-12.55	-12.89/-12.23	-10.68/-8.96
Θ (15°)	-11.46/-10.55	-9.61/-9.3	-9.38/-9.54	-9.41/-9.1	-9.64/-10	-10.66/-12.2	-16.03/-18.98	-17.33/-13.03	-11.71/-11.6	-11.42/-9.92	-8.18/-7.11	-6.41/-6.22	-6.27/-6.82	-7.68/-8.85	-9.71/-10.54	-11.42/-12.59	-14.19/-16.34	-17.9/-16.04	-13.94/-12.06	-10.79/-10.11	-10.46/-11.15	-11.79/-13.45	-14.66/-14.06	-12.37/-11.57
Θ (22.5°)	-17.99/-18.45	-18.91/-18.13	-18.14/-19.07	-19.54/-14.32	-10.91/-8.96	-8.91/-11.14	-13.75/-16.55	-17.78/-17.43	-18.05/-17.58	-18.76/-15.89	-13.45/-11.57	-10.34/-8.91	-8.34/-8.58	-9/-9.35	-9.3/-9.67	-11.55/-14.48	-17.62/-16.33	-17.12/-14.99	-15.88/-16.58	-8.77/-8.48	-9.93/-10.49	-13.71/-17.14	-18.32/-18.13	-17.23/-18.73
Θ (30°)	-11.95/-9.73	-9.71/-11.71	-13.88/-15.68	-17.75/-17.12	-13.49/-10.83	-10.92/-10.4	-9.64/-8.23	-6.9/-6.78	-7.85/-8.85	-9.57/-10.41	-9.9/-7.89	-6.57/-6.79	-7.46/-8.16	-9.07/-9.44	-9.88/-10.94	-12.55/-12.38	-12.41/-13.81	-15.08/-18.58	-17.93/-16.18	-11.02/-10.39	-10.55/-9.58	-10.8/-15.78	-15.71/-14.76	-15.15/-14.1
Θ (37.5°)	-11.67/-12.99	-12.91/-13.23	-13.67/-12.94	-11.69/-11.6	-11.86/-11.25	-10.06/-7.92	-6.31/-6.72	-5.98/-6.19	-6.48/-6.48	-6.49/-7.12	-5.79/-5.13	-7.21/-8.76	-7.78/-7.15	-8.4/-8.95	-12.76/-12.21	-11.74/-12.35	-14.11/-16.36	-18.96/-19.89	-13.36/-11.93	-7.29/-5.48	-6.87/-9.45	-8.08/-9.2	-11.77/-9.74	-9.59/-10.48
Θ (45°)	-6.49/-8.7	-8.4/-11.33	-12.99/-13.11	-12.08/-9.51	-7.39/-6.14	-4.68/-3.59	-4.13/-6	-6.39/-5.17	-5.32/-6.58	-7.25/-9.55	-9.27/-9.87	-12.81/-12.56	-12.24/-16.33	-19.24/-13.96	-8.84/-6.96	-6.7/-8.74	-12.67/-14.46	-13.84/-16.89	-18.83/-17.49	-14.33/-15.28	-9.69/-8.31	-8.75/-6.09	-6.93/-5.87	-4.96/-5.74
Θ (52.5°)	-13.85/-19.26	-19.55/-17.63	-15.43/-11.55	-10.58/-9.99	-10.46/-9.95	-7.32/-6.64	-8.15/-8.44	-8.21/-9.56	-12.94/-18.45	-18.06/-18.18	-18.8/-18.99	-16.51/-17.06	-14.43/-18.82	-18.51/-15.85	-10.03/-7.33	-5.81/-4.66	-4.5/-7.9	-12.58/-10.48	-15.46/-12.35	-14.35/-18.96	-18.31/-17.11	-14.69/-9.18	-8.55/-10.4	-11.01/-12.39
Θ (60°)	-9/-10.59	-15.78/-17.09	-17.56/-18.44	-17.85/-19.25	-18.51/-14.4	-10.5/-9.55	-10.72/-10.28	-10.82/-12.82	-8.79/-5.21	-5.64/-6.43	-6.45/-7.06	-7.09/-9.02	-8.16/-7.37	-8.03/-12.1	-19.16/-8.78	-3.89/-3.34	-4.47/-4.56	-5.5/-5.82	-5.2/-5.82	-10.3/-8.33	-13.34/-18.81	-17.11/-17.91	-16.11/-14.21	-16.78/-10.52
Θ (67.5°)	-10.48/-12.27	-14.6/-13.19	-13.75/-19.05	-18.03/-12.71	-9.38/-6.09	-5.02/-4.4	-2.86/-2.33	-1.37/-1.23	-0.89/-0.63	0.23/-1.29	-2.06/-3.7	-5.54/-5.6	-6.88/-2.37	-2.04/-2.78	-9.17/-18.64	-8.7/-5.21	-4.73/-4.96	-6.24/-7.07	-7.33/-4.1	-4.31/-5.64	-7.97/-12.63	-16.39/-18.53	-17.95/-17.2	-15.76/-14.2
Θ (75°)	-13.25/-10.44	-12.02/-10.53	-9.65/-10.3	-10.77/-10.61	-7.66/-4.79	-3.08/-1.74	-0.250/-4.2	0.50/-7.1	0.76/-1.7	1.83/-0.83	-2.59/-3.91	-5.38/-5.98	-5.5/-3.94	-4.65/-4.48	-7.79/-10.44	-10.69/-11.4	-11/-11.55	-9.65/-13.7	-7.68/-7.06	-7.51/-7.73	-4.52/-8.68	-13.04/-12.95	-12.09/-15.44	-13.77/-13.9
Θ (82.5°)	-5.07/-3.33	-3.77/-3.64	-4.89/-8.81	-11.54/-9.78	-6.78/-3.67	-2.47/-1.05	0.07/-0.73	0.48/-1.37	1.52/-1.74	-0.73/-6.75	-1.69/-0.47	1.350/-8.61	-1.17/-6.29	-8.01/-2.28	-2.08/-2.21	-1.31/-4.74	-5.72/-5.16	-8.23/-3.78	-4.15/-6.67	-4.27/-4.49	-11.19/-7.59	-5.95/-6.17	-5.85/-5.45	
Θ (90°)	-2.21/-6.9	-1.21/-1.84	-2.86/-5.55	-5.5/-3.71	-2.1/-4.3	-0.950	1.14/-0.29	0.760/-15	-2.93/-5.46	-6.48/-8.47	-0.51/-1.81	2.29/-2.87	1.47/-0.49	2.32/-3.35	-10.76/-3.95	0.750/-7.8	1.35/-1.65	-1.69/-0.08	-2.5/-1.27	-0.88/-4.48	-8.35/-4.44	-6.46/-5.25	-2.47/-1.89	-1.83/-1.77
Θ (97.5°)	-2.13/-3.29	-3.77/-6.04	-6.76/-7.66	-5.8/-3.38	-1.280/-7.9	1.082	1.75/-0.55	0.15/-1.63	-7.47/-4.46	-6.27/-2.19	0.960/-4.5	1.582/-3.3	3.394/-5.7	2.82/-1.03	-11.79/-3.64	0.81/-0.72	-2.12/-1.57	-0.93/-2.68	0.12/-1.89	-0.05/-3.98	-5.48/-0.26	-1.96/-2.87	-1.76/-1.01	-1.95/-2.26
Θ (105°)	-6.18/-6.04	-4.84/-3.12	-2.82/-6.21	-4.32/-3.92	-3.06/-4.07	0.450/-19	0.11/-0.44	-0.18/-4.21	-5.28/-0.14	-2.33/-4.1	-3.66/-1.66	-3.36/-0.21	0.633/-1.5	2.140	-5.02/-0.184	-0.72/-0.01	-3.680/-7.1	-0.04/-1.35	1.24/-5.51	-2.61/-7.13	-3.66/-2.71	-4.71/-6.3	-4.57/-4.07	-5.99/-3.13
Θ (112.5°)	-1.84/-0.52	-0.830/-0.66	-0.56/-0.86	-2.83/-2.29	-3.07/-3.79	-4.71/-5.26	-3.85/-2.89	-2.92/-3.46	-2.34/-1.13	-2.42/-7.35	-6.95/-4.82	-10.93/-12.26	-8.65/-4.49	-5.4/-7.7	-9.62/-15.11	-3.24/-0.86	-13.86/-6.66	-3.54/-3.16	-0.66/-2.16	-4.19/-1.96	-6.23/-7.12	-7.55/-10.14	-7.89/-5.51	-2.77/-0.47
Θ (120°)	0.410/-0.28	0.290/-0.26	0.04/-1.06	-2.11/-4.15	-5.38/-8.77	-11.07/-8.81	-8.88/-10.81	-6.81/-2.63	-1.75/-2.86	-7.75/-10.38	-11.74/-11.34	-12.73/-13.55	-15.78/-16.49	-11.81/-18.71	-13.54/-13.49	-18.29/-13.45	-12.89/-7.83	-6.43/-5.35	-3.42/-3.84	-2.97/-6.14	-6.36/-4.2	-3.16/-7.99	-1.620/-13	-1.24/-0.05
Θ (127.5°)	0.28/-1.49	-2.23/-3.1	-3.62/-6.21	-3.4/-4.17	-5.56/-5.65	-6.63/-7.03	-6.71/-4.52	-2.29/-2.82	-6.67/-10.61	-12.22/-10.53	-8.25/-4.73	-5.74/-5.75	-6.07/-6.7	-5.64/-8.39	-6.8/-8.10	-19.17/-7.38	-10.8/-12.03	-10.07/-0.77	-11.77/-10.09	-12.46/-13.92	-10.36/-3.2	-1.990/-1	-0.13/-5.2	1.14/-0.52
Θ (135°)	-6.25/-4.57	-6.08/-6.95	-6.47/-7.62	-7.32/-6.95	-6.97/-7.69	-7.83/-7.53	-8.77/-9.65	-10.07/-12.3	-15.46/-15.45	-12.91/-11.55	-11.97/-11.88	-13.74/-18.67	-18.24/-9.58	-7.42/-7.71	-11.54/-16.17	-12.27/-14.51	-6.42/-8.74	-5.78/-18.9	-12.49/-16.34	-7.97/-6.13	-3.54/-4.94	-1.74/-0.75	-0.88/-3.41	
Θ (142.5°)	-17.39/-18.21	-15.93/-10.58	-9.01/-7.74	-6.77/-7.11	-8.63/-10.19	-9.35/-6.93	-5.18/-4.48	-4.79/-5.09	-8.88/-4.96	-5.77/-8.06	-13.28/-13.95	-13.61/-15.58	-12.76/-10.38	-9.95/-14.8	-18.68/-14.1	-12.56/-16.05	-9.01/-15.3	-18.01/-18.19	-4.71/-8.43	-7.16/-9.63	-16.69/-19.54	-12.3/-9.88	-10.4/-11.13	-9.02/-10.31
Θ (150°)	-3.47/-6.14	-9.04/-10.9	-14.51/-13.84	-14.83/-10.83	-8.16/-6.55	-6.26/-7.71	-8.36/-6.85	-5.94/-5.56	-5.7/-6.23	-8.13/-11.46	-9.88/-9.59	-4.16/-3.6	-2.01/-0.33	-0.34/-1.26	-3.1/-4.12	-18.02/-6.08	-2.71/-3.97	-7.14/-6.94	-5.66/-7.16	-12.81/-16.22	-12.09/-8.43	-5.51/-4.21	-2.67/-3.06	-4.58/-4.17
Θ (157.5°)	-10.23/-8.03	-7.24/-7.25	-8.73/-9.97	-10.89/-12.97	-16.11/-17.16	-17.74/-13.81	-9.22/-6.86	-6.65/-8.06	-10.04/-11.51	-13.29/-16.27	-17.93/-13.93	-9.35/-7.01	-4.56/-1.99	-0.85/-1.49	-4.67/-11.08	-13.63/-9.83	-8.98/-11.67	-15.76/-15.51	-11.45/-9.43	-12.81/-18.71	-13.75/-11.15	-9.67/-8.37	-8.79/-10.74	-10.85/-9.91
Θ (165°)	-6.79/-5.2	-4.38/-3.67	-3.51/-3.85	-4.47/-5.08	-5.59/-5.7	-5.21/-4.18	-3.58/-3.71	-4.76/-6.5	-9.14/-11.82	-14.29/-15.87	-16.96/-17.44	-16.51/-14.94	-13.15/-11.55	-10.88/-13.36	-17.73/-15.64	-8.2/-4.75	-2.82/-2.56	-2.53/-3.44	-4.3					

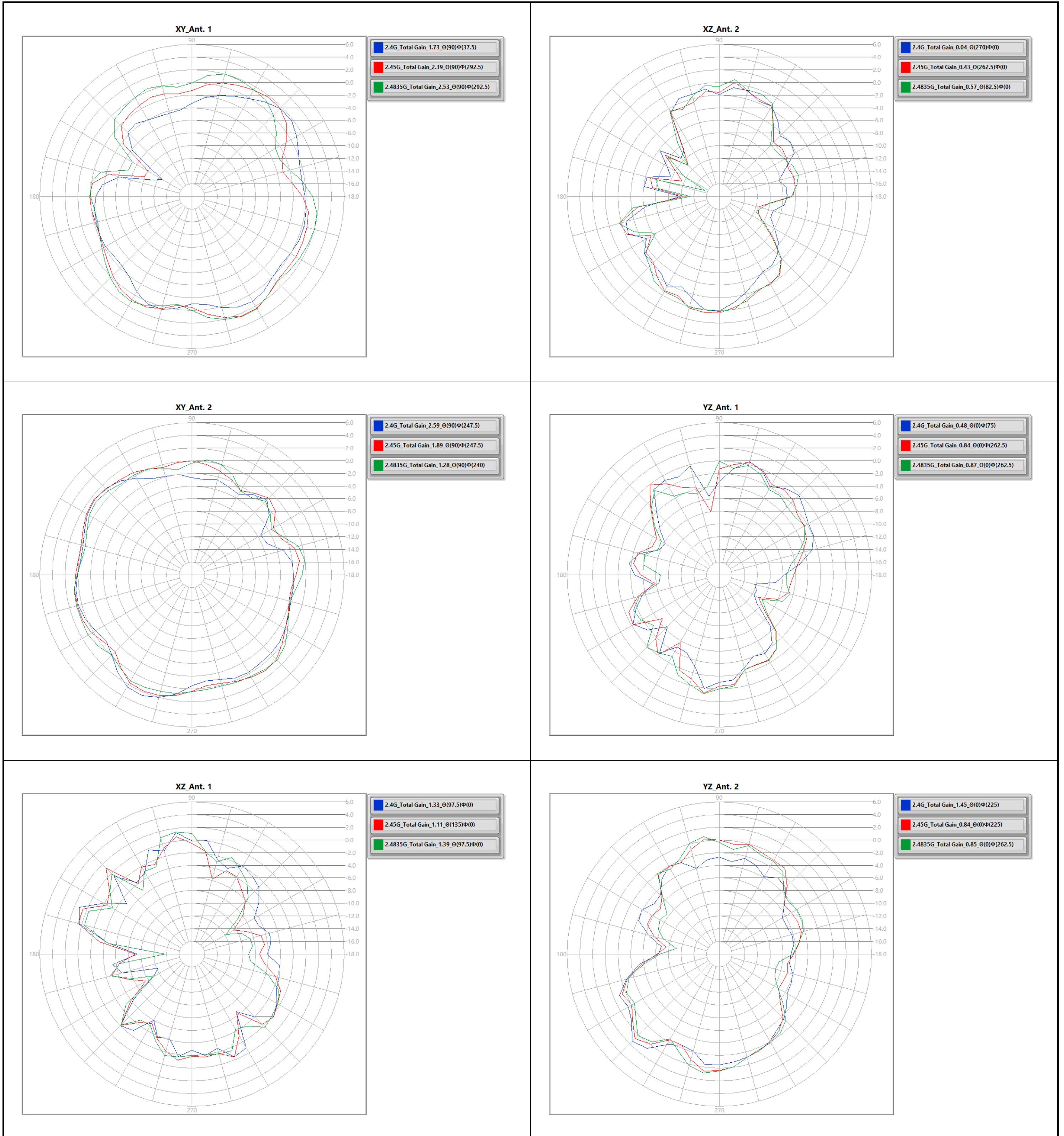


Antenna Pattern of 2.4GHz

Appendix C

Θ (22.5°)	-6.29/-6.11	-5.95/-6.02	-6.21/-6.29	-6.05/-5.54	-5.10/-4.87	-4.86/-4.79	-4.62/-4.49	-4.55/-4.66	-4.63/-4.64	-4.89/-5.28	-5.97/-7.00	-8.38/-10.11	-11.29/-12.96	-14.05/-13.98	-14.81/-14.22	-13.35/-11.86	-10.55/-9.47	-8.49/-7.64	-7.03/-6.53	-6.05/-5.64	-5.29/-5.17	-5.29/-5.42	-5.51/-5.64	-5.90/-6.20
Θ (30°)	-5.79/-5.60	-5.52/-5.49	-5.47/-5.40	-5.24/-5.00	-4.74/-4.70	-4.85/-4.97	-4.90/-4.59	-4.16/-3.80	-3.41/-3.15	-3.11/-3.40	-4.08/-5.12	-6.48/-8.17	-10.19/-12.19	-13.10/-14.03	-13.73/-12.13	-10.36/-9.01	-8.17/-7.71	-7.42/-7.27	-7.21/-7.02	-6.45/-5.69	-5.18/-5.16	-5.51/-5.84	-5.99/-5.96	-5.86/-5.81
Θ (37.5°)	-5.58/-5.67	-5.42/-4.74	-3.87/-3.24	-2.97/-2.93	-3.11/-3.48	-4.05/-4.72	-5.14/-4.89	-4.02/-3.24	-2.58/-2.01	-1.58/-1.63	-2.20/-3.24	-4.54/-6.06	-7.52/-8.74	-9.49/-9.73	-9.44/-8.40	-6.99/-5.77	-4.92/-4.74	-5.04/-5.47	-5.88/-6.03	-5.62/-5.10	-4.96/-5.29	-5.71/-5.96	-5.95/-5.62	-5.31/-5.34
Θ (45°)	-5.88/-6.69	-6.96/-5.91	-4.22/-2.92	-2.23/-2.05	-2.10/-2.24	-2.31/-2.50	-2.88/-3.18	-3.04/-2.66	-2.31/-1.72	-0.91/-0.41	-0.50/-1.17	-2.18/-3.27	-4.15/-4.72	-5.21/-5.95	-6.73/-6.55	-5.17/-3.56	-2.44/-2.20	-2.57/-3.10	-3.77/-4.51	-4.94/-5.25	-5.68/-6.13	-6.37/-6.35	-5.93/-5.38	-4.98/-5.06
Θ (52.5°)	-3.92/-3.90	-4.34/-4.74	-4.32/-3.36	-2.77/-2.69	-2.95/-2.90	-2.25/-1.48	-1.00/-0.94	-1.08/-1.17	-1.31/-1.25	-0.62/0.07	0.16/-0.39	-1.21/-1.97	-2.40/-2.54	-2.80/-3.59	-4.73/-4.90	-3.67/-2.15	-1.12/-0.88	-1.20/-1.82	-2.64/-3.83	-4.63/-4.99	-5.24/-5.41	-5.39/-5.44	-5.66/-5.35	-4.72/-4.20
Θ (60°)	-1.55/-0.98	-0.97/-1.47	-1.79/-1.41	-1.16/-1.51	-2.26/-3.04	-2.94/-2.08	-0.91/-0.27	-0.19/-0.21	-0.16/-0.09	0.18/0.62	0.60/-0.13	-1.11/-1.89	-2.13/-1.94	-2.05/-2.90	-4.28/-4.20	-2.62/-1.08	-0.01/-0.85	-2.01/-2.97	-3.12/-3.13	-3.61/-4.28	-4.47/-4.27	-3.80/-3.43	-2.93/-2.23	
Θ (67.5°)	-1.42/-1.51	-1.75/-2.09	-2.02/-1.21	-0.56/-0.60	-0.76/-1.06	-1.34/-1.18	-0.86/-0.20	-0.27/-0.52	-0.57/-0.26	0.33/0.79	0.55/-0.41	-1.52/-2.15	-1.94/-1.57	-1.80/-2.92	-3.50/-2.38	-1.00/0.08	0.91/1.27	0.71/-0.43	-1.54/-1.85	-2.08/-2.95	-4.43/-5.43	-4.98/-3.68	-2.46/-1.90	-1.62/-1.40
Θ (75°)	-0.82/-1.36	-2.51/-3.97	-4.31/-3.23	-2.27/-2.11	-1.59/-0.95	-0.77/-0.55	-0.04/0.43	0.61/0.36	-0.25/-0.53	-0.12/0.36	0.27/-0.41	-1.21/-1.45	-0.99/-0.70	-1.08/-1.90	-4.28/-4.20	-1.68/-0.74	-0.12/0.63	1.63/1.81	0.84/-0.50	-1.19/-1.63	-2.56/-3.84	-4.43/-3.59	-2.06/-1.18	-0.69/-0.65
Θ (82.5°)	0.12/0.31	-0.65/-2.42	-3.24/-2.43	-2.24/-3.20	-3.01/-1.65	-1.07/-0.84	-0.56/-0.35	0.11/0.57	0.53/0.34	0.60/0.82	0.41/-0.29	-0.81/-0.71	-0.30/-0.18	-0.42/-0.53	-0.08/0.03	0.03/0.98	2.05/1.95	1.27/0.56	-0.08/-1.05	-1.89/-1.85	-0.95/0.31	1.00/0.87	0.34/-0.33	-0.83/-0.62
Θ (90°)	-1.57/-0.90	-1.33/-2.87	-3.18/-1.46	-0.86/-1.82	-2.68/-1.78	-1.04/-0.50	-0.01/-0.20	-0.44/0.05	0.58/0.80	1.13/1.47	1.22/0.57	0.07/0.08	0.33/0.63	0.73/0.65	0.30/-0.56	-0.83/0.47	1.66/1.89	1.72/1.17	0.36/-0.40	-0.29/0.16	0.66/1.04	0.76/-0.07	-0.97/-1.61	-2.14/-2.21
Θ (97.5°)	-1.22/-0.86	-1.62/-3.55	-3.56/-1.10	-0.17/-0.92	-1.88/-1.66	-1.41/-0.87	0.32/0.57	0.05/-0.02	0.38/0.74	1.16/1.64	1.58/1.02	0.45/0.21	0.43/0.77	0.59/-0.18	-1.53/-2.25	-1.28/0.52	1.88/2.41	2.15/1.42	0.61/-0.07	-0.30/-0.75	-1.29/-1.57	-1.50/-1.22	-1.23/-1.60	-1.92/-1.79
Θ (105°)	-2.62/-2.44	-4.34/-8.37	-7.03/-2.26	-0.46/-0.52	-0.89/-0.74	-1.09/-1.69	-0.90/-0.09	-0.11/-0.39	-0.48/-0.26	0.10/0.54	0.71/0.33	-0.24/-0.30	0.26/0.49	-0.20/-1.56	-2.46/-1.90	-0.60/1.22	2.55/2.58	1.47/0.18	-0.78/-1.74	-2.82/-4.51	-5.37/-4.04	-2.08/-1.05	-1.53/-3.31	-4.70/-3.90
Θ (112.5°)	-2.77/-1.81	-2.72/-5.93	-8.64/-4.20	-1.55/-0.95	-0.78/-0.51	-0.87/-1.89	-2.36/-2.07	-1.71/-1.25	-1.03/-0.84	-0.43/-0.12	-0.43/-1.27	-1.95/-1.72	-1.05/-1.17	-2.03/-2.48	-1.96/-1.26	0.01/1.55	2.00/0.79	-1.19/-2.09	-2.45/-3.12	-4.35/-6.06	-5.88/-3.78	-1.59/-0.42	-0.65/-2.34	-4.47/-4.31
Θ (120°)	-2.58/-1.65	-2.38/-5.02	-7.33/-4.59	-2.40/-1.81	-1.60/-1.14	-1.10/-1.59	-2.07/-2.27	-2.08/-1.47	-0.90/-1.06	-1.24/-1.13	-1.31/-2.05	-2.34/-1.63	-0.80/-0.49	-0.43/-0.48	-0.85/-1.21	-0.34/0.72	0.50/-1.06	-2.27/-2.25	-2.40/-2.67	-2.70/-2.85	-2.72/-2.00	-0.81/-0.05	-0.35/-1.97	-4.07/-4.17
Θ (127.5°)	-8.72/-7.70	-9.01/-10.51	-7.84/-4.50	-2.89/-2.71	-2.97/-2.85	-2.57/-2.43	-2.24/-1.65	-0.93/-0.22	0.17/-0.19	-1.18/-2.45	-3.96/-5.08	-5.03/-3.43	-1.94/-1.14	-1.24/-2.41	-4.23/-4.44	-2.48/-1.48	-1.91/-2.49	-1.75/-0.80	-0.13/0.67	1.09/0.63	-0.50/-1.33	-1.35/-1.28	-1.99/-4.03	-7.63/-10.52
Θ (135°)	-11.05/-11.21	-10.25/-8.77	-6.48/-4.49	-3.31/-3.05	-3.48/-4.13	-4.73/-5.27	-5.15/-4.72	-3.73/-2.70	-1.94/-1.69	-1.93/-2.42	-3.02/-3.41	-3.45/-3.31	-3.30/-4.03	-5.54/-6.90	-5.58/-3.03	-1.54/-1.38	-1.74/-1.24	-0.13/0.48	0.84/1.29	1.32/0.61	-0.64/-1.88	-2.33/-2.31	-2.71/-4.02	-6.36/-8.79
Θ (142.5°)	-7.26/-7.57	-7.13/-6.55	-5.89/-4.29	-3.53/-3.19	-3.54/-4.35	-5.23/-5.94	-6.26/-6.50	-7.09/-7.89	-9.64/-11.00	-10.47/-9.08	-7.67/-5.92	-4.44/-3.58	-3.44/-3.79	-3.99/-3.24	-1.87/-0.99	-1.06/-1.94	-2.70/-2.06	-1.18/-0.99	-0.78/-0.39	-0.25/-0.57	-1.29/-2.08	-2.50/-2.55	-2.70/-3.45	-5.91/-6.28
Θ (150°)	-10.08/-10.63	-9.68/-8.29	-6.41/-5.09	-4.01/-3.44	-3.53/-4.24	-5.13/-5.72	-5.74/-5.60	-5.51/-5.37	-5.41/-6.04	-7.29/-8.50	-7.68/-6.42	-5.60/-5.13	-4.76/-4.31	-3.94/-4.11	-5.19/-6.82	-6.98/-5.34	-3.91/-3.01	-2.07/-1.17	-0.64/-0.66	-1.16/-1.95	-2.76/-3.36	-3.89/-4.84	-6.59/-6.79	
Θ (157.5°)	-11.61/-11.39	-9.87/-8.30	-6.87/-5.65	-4.69/-4.10	-4.05/-4.46	-5.15/-5.71	-5.70/-5.24	-4.69/-4.00	-3.20/-2.64	-2.45/-2.46	-2.46/-2.38	-2.29/-2.26	-2.32/-2.55	-2.83/-3.13	-3.42/-3.82	-4.13/-3.96	-3.32/-2.70	-2.26/-1.89	-1.44/-1.03	-0.89/-1.14	-1.76/-2.63	-3.69/-4.69	-5.59/-6.60	-8.11/-9.88
Θ (165°)	-6.80/-6.64	-6.18/-5.85	-5.73/-5.64	-5.48/-5.42	-5.70/-6.37	-7.09/-7.52	-7.41/-6.90	-6.06/-5.07	-3.97/-3.18	-2.75/-2.43	-2.07/-1.78	-1.59/-1.58	-1.74/-1.96	-2.23/-2.38	-2.40/-2.41	-2.47/-2.48	-2.53/-2.48	-2.89/-3.05	-3.01/-2.86	-2.71/-2.69	-2.87/-3.28	-3.91/-4.53	-4.99/-5.34	-5.71/-6.24
Θ (172.5°)	-7.34/-7.19	-6.92/-6.90	-7.26/-7.69	-7.99/-8.21	-8.73/-9.21	-9.82/-9.80	-9.56/-9.31	-8.90/-8.14	-7.25/-6.58	-6.25/-5.95	-5.62/-6.30	-5.11/-4.99	-4.99/-5.03	-5.08/-5.07	-5.05/-5.21	-5.54/-5.94	-6.16/-6.13	-6.13/-5.87	-5.60/-5.30	-4.93/-4.54	-3.64/-4.45	-4.87/-5.39	-5.64/-5.90	-6.35/-7.05
Θ (180°)	-12.53/-11.68	-10.74/-10.33	-10.23/-10.17	-9.85/-9.53	-9.47/-9.41	-9.04/-8.55	-8.19/-8.10	-8.10/-7.94	-7.39/-7.01	-7.03/-7.20	-7.29/-7.34	-7.62/-8.23	-9.08/-9.98	-10.86/-11.57	-12.02/-11.93	-11.44/-10.62	-9.65/-8.75	-8.23/-8.08	-8.06/-8.02	-8.02/-8.04	-8.34/-9.03	-9.73/-10.32	-10.96/-11.64	-12.19/-12.40
Freq(Hz)	2.4835GPol.	TotalAnt. 2	-/-	-/-	-/-	-/-	-/-	-/-	-/-	-/-	-/-	-/-	-/-	-/-	-/-	-/-	-/-	-/-	-/-	-/-	-/-	-/-	-/-	-/-
Gain	Φ(0°)/Ψ(7.5°)	Φ(15°)/Ψ(22.5°)	Φ(30°)/Ψ(37.5°)	Φ(45°)/Ψ(52.5°)	Φ(60°)/Ψ(67.5°)	Φ(75°)/Ψ(82.5°)	Φ(90°)/Ψ(97.5°)	Φ(105°)/Ψ(112.5°)	Φ(120°)/Ψ(127.5°)	Φ(135°)/Ψ(142.5°)	Φ(150°)/Ψ(157.5°)	Φ(165°)/Ψ(172.5°)	Φ(180°)/Ψ(187.5°)	Φ(195°)/Ψ(202.5°)	Φ(210°)/Ψ(217.5°)	Φ(225°)/Ψ(232.5°)	Φ(240°)/Ψ(247.5°)	Φ(255°)/Ψ(262.5°)	Φ(270°)/Ψ(277.5°)	Φ(285°)/Ψ(292.5°)	Φ(300°)/Ψ(307.5°)	Φ(315°)/Ψ(322.5°)	Φ(330°)/Ψ(337.5°)	Φ(345°)/Ψ(352.5°)
Θ (0°)	-6.62/-6.43	-6.45/-6.85	-7.39/-7.46	-7.04/-6.69	-6.55/-6.58	-6.55/-6.55	-6.41/-6.36	-6.35/-6.27	-6.33/-6.72	-7.21/-7.51	-7.78/-8.02	-8.16/-8.14	-8.00/-7.91	-7.84/-7.80	-7.94/-8.19	-8.52/-8.75	-8.70/-8.31	-7.95/-7.91	-8.00/-8.15	-8.44/-8.97	-9.59/-10.06	-9.96/-9.38	-8.46/-7.71	-7.25/-6.86
Θ (7.5°)	-6.69/-5.31	-5.16/-5.32	-5.68/-5.71	-5.53/-5.40	-5.38/-5.42	-5.42/-5.48	-5.39/-5.46	-5.68/-5.90	-6.32/-7.01	-7.66/-7.96	-8.18/-8.56	-9.04/-9.58	-10.01/-10.69	-11.12/-11.35	-11.46/-11.53	-11.55/-11.22	-10.52/-9.62	-8.96/-8.64	-8.56/-8.37	-8.23/-8.31	-8.37/-8.35	-8.16/-7.75	-7.11/-6.74	-6.44/-6.07
Θ (15°)	-5.05/-4.65	-4.43/-4.55	-4.77/-4.85	-4.75/-4.70	-4.64/-4.62	-4.53/-4.41	-4.28/-4.37	-4.71/-5.08	-5.52/-6.17	-6.76/-7.00	-7.25/-7.82	-8.69/-9.72	-11.10/-12.57	-13.40/-13.55	-13.74/-14.57	-14.99/-14.85	-14.39/-12.17	-10.58/-9.54	-8.84/-8.17	-7.47/-7.07	-6.78/-6.54	-6.41/-6.27	-5.95/-5.58	-5.36/-5.17
Θ (22.5°)	-5.45/-5.14	-5.03/-5.06	-5.10/-5.00	-4.72/-4.46	-4.27/-4.18	-4.12/-3.97	-3.83/-3.85	-4.08/-4.34	-4.64/-5.02	-5.38/-5.65	-6.22/-7.15	-8.39/-9.91	-11.74/-13.62	-14.28/-14.96	-14.68/-15.90	-14.42/-15.65	-13.79/-12.31	-10.73/-9.44	-8.51/-7.69	-6.88/-6.23	-5.66/-5.28	-5.20/-5.20	-5.17/-5.16	-5.33/-5.51
Θ (30°)	-6.15/-5.83	-5.61/-5.54	-5.42/-5.27	-4.96/-4.62	-4.37/-4.30	-4.28/-4.19	-3.93/-3.58	-3.26/-3.12	-3.08/-3.29	-3.60/-4.03	-4.75/-5.79	-7.02/-8.46	-9.97/-11.30	-12.66/-14.35	-14.79/-14.88	-13.84/-12.08	-10.13/-9.02	-8.20/-7.70	-7.40/-7.01	-6.49/-5.87	-5.35/-5.12	-5.25/-5.51	-5.79/-6.03	-6.22/-6.27
Θ (37.5°)	-6.51/-5.97	-5.27/-4.49	-3.81/-3.47	-3.46/-3.65	-3.94/-4.35	-4.76/-4.86	-4.35/-3.41	-2.63/-2.20	-1.92/-1.82	-1.94/-2.31	-3.02/-3.99	-5.12/-6.33	-7.24/-7.97	-8.69/-9.80	-11.27/-12.01	-10.45/-8.42	-6.80/-5.76	-5.40/-5.33	-5.36/-5.30	-5.23/-5.08	-5.15/-5.68	-6.59/-7.36	-7.81/-7.73	-7.32/-6.92
Θ (45°)	-6.59/-7.29	-6.97/-5.14	-3.22/-2.13	-1.79/-1.98	-2.38/-2.83	-3.37/-3.83	-3.72/-3.03	-2.36/-2.10	-1.94/-1.60	-1.22/-1.10	-1.38/-2.04	-2.97/-3.82	-4.26/-4.45	-4.70/-5.35	-6.74/-8.13	-7.55/-5.73	-4.05/-3.16	-2.91/-2.99	-3.14/-3.47	-4.01/-4.72	-5.72/-6.85	-8.00/-8.10	-7.48/-6.67	-6.06/-6.02
Θ (52.5°)	-4.32/-4.91	-5.99/-6.04	-4.56/-3.11	-2.31/-2.20	-2.44/-2.45	-2.26/-1.97	-1.58/-1.21	-0.94/-1.05	-1.58/-1.83	-1.35/-0.80	-0.70/-1.13	-1.84/-2.37	-2.53/-2.50	-2.48/-3.01	-4.41/-5.52	-4.67/-3.23	-2.02/-1.46	-1.50/-1.74	-2.29/-3.09	-4.29/-5.28	-6.03/-6.43	-6.40/-6.13	-5.71/-5.11	-4.54/-4.19
Θ (60°)	-1.14/-1.02	-1.61/-2.63	-3.23/-2.81	-2.16/-1.97	-2.51/-3.01	-2.91/-2.14	-1.12/-0.40	0.07/0.30	-0.03/-0.60	-0.67/-0.28	-0.18/-0.63	-1.32/-1.83	-1.92/-1.69	-1.57/-2.26	-3.90/-4.76	-3.24/-1.67	-0.62/-0.14	-0.19/-0.86	-1.84/-2.82	-3.47/-3.72	-4.09/-4.51	-4.38/-3.72	-3.09/-2.60	-2.10/-1.59
Θ (67.5°)	-0.53/-0.85	-1.54/-2.40	-2.75/-2.07	-1.39/-0.94	-0.81/-1.02	-1.38/-1.50	-1.04/-0.38	0.01/0.07	-0.17/-0.44	-0.26/0.26	0.19/-0.61	-1.59/-2.17	-2.06/-1.53	-1.58/-2.66	-4.13/-3.27	-1.50/-0.42	0.30/0.68	0.32/-0.73	-1.69/-1.85	-1.83/-2.49	-4.02/-5.25	-4.93/-3.31	-2.12/-1.39	-0.78/-0.50
Θ (75°)	-0.65/-1.52	-3.04/-4.70	-4.99/-3.64	-2.87/-2.45	-1.45/-0.65	-0.46/-0.63	-0.29/0.41	0.89/0.64	-0.17/-0.69	-0.51/0.06	0.19/-0.49	-1.40/-1.81	-1.33/-0.66	-0.83/-1.81	-2.38/-1.28	-0.58/-0.14	0.74/1.17	0.40/-0.76	-1.17/-					

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



Total Gain Data

Freq(Hz)	52G/POL	TotalAnt.																								
	Gain	φ(0°)φ(7.5°)	φ(15°)φ(22.5°)	φ(30°)φ(37.5°)	φ(45°)φ(52.5°)	φ(60°)φ(67.5°)	φ(75°)φ(82.5°)	φ(90°)φ(97.5°)	φ(105°)φ(112.5°)	φ(120°)φ(127.5°)	φ(135°)φ(142.5°)	φ(150°)φ(157.5°)	φ(165°)φ(172.5°)	φ(180°)φ(187.5°)	φ(195°)φ(202.5°)	φ(210°)φ(217.5°)	φ(225°)φ(232.5°)	φ(240°)φ(247.5°)	φ(255°)φ(262.5°)	φ(270°)φ(277.5°)	φ(285°)φ(292.5°)	φ(300°)φ(307.5°)	φ(315°)φ(322.5°)	φ(330°)φ(337.5°)	φ(345°)φ(352.5°)	
Θ(0°)	-12.25/-12.69	-10.76/-9.95	-9.77/-10.23	-10.52/-10.72	-10.27/-10.12	-9.28/-9.11	-9.78/-10.40	-11.31/-11.95	-11.57/-10.57	-9.21/-8.76	-9.88/-11.77	-11.75/-11.27	-10.22/-10.02	-10.16/-10.47	-10.63/-10.33	-10.13/-9.82	-9.91/-9.82	-9.72/-9.71	-9.41/-9.72	-10.40/-9.93	-9.87/-10.34	-11.20/-11.61	-11.26/-10.43	-10.54/-11.05		
Θ(7.5°)	-7.69/-8.75	-9.50/-9.39	-8.40/-8.46	-8.48/-8.82	-9.23/-9.58	-9.15/-8.78	-9.04/-9.75	-10.29/-11.5	-11.28/-10.99	-10.51/-11.68	-13.54/-15.12	-14.93/-15.54	-15.63/-14.09	-12.20/-12.46	-12.10/-11.82	-11.39/-10.52	-9.93/-9.48	-8.69/-8.15	-7.20/-6.89	-7.01/-6.89	-6.93/-6.78	-6.53/-6.57	-6.73/-6.62	-7.21/-6.65		
Θ(15°)	-6.69/-6.73	-6.73/-6.97	-6.78/-7.07	-7.25/-7.69	-8.48/-9.41	-10.13/-10.01	-10.89/-11.46	-10.54/-10.88	-11.46/-12.92	-14.33/-15.35	-13.87/-11.23	-9.28/-8.48	-7.90/-6.93	-5.48/-4.70	-4.73/-5.29	-6.36/-7.59	-9.17/-10.10	-8.92/-7.36	-6.66/-5.17	-5.34/-5.55	-6.02/-6.51	-6.60/-6.58	-6.56/-6.96	-6.58/-6.46		
Θ(22.5°)	-9.02/-8.79	-9.52/-8.64	-6.82/-5.97	-6.62/-6.48	-9.33/-11.81	-13.32/-13.16	-13.80/-12.84	-12.17/-12.12	-12.17/-10.12	-8.17/-7.59	-7.59/-7.02	-6.76/-7.04	-4.57/-5.61	-4.27/-5.92	-4.77/-3.90	-3.56/-6.30	-4.42/-5.71	-7.81/-7.98	-6.43/-5.90	-5.48/-5.39	-6.01/-7.37	-6.78/-9.99	-10.53/-10.83	-10.82/-9.77		
Θ(30°)	-8.67/-9.44	-9.94/-8.68	-7.17/-7.18	-8.37/-11.49	-14.05/-10.57	-15.08/-15.28	-13.62/-12.33	-13.92/-15.21	-15.71/-12.65	-8.74/-6.46	-5.85/-6.47	-7.59/-5.83	-8.03/-6.37	-5.66/-5.94	-6.47/-6.25	-5.76/-4.91	-4.26/-5.42	-4.75/-6.03	-6.62/-7.25	-7.64/-7.93	-7.64/-8.34	-10.63/-12.86	-14.75/-14.92	-12.21/-9.44		
Θ(37.5°)	-8.28/-6.38	-8.50/-6.01	-7.92/-9.59	-11.40/-13.55	-14.59/-15.79	-15.84/-13.64	-13.10/-11.93	-12.29/-10.33	-9.80/-11.31	-12.09/-13.15	-12.48/-10.69	-9.33/-9.72	-11.77/-12.34	-10.05/-7.92	-6.25/-5.42	-5.60/-6.38	-6.33/-5.74	-6.23/-8.20	-8.83/-9.94	-12.85/-12.47	-11.77/-10.39	-9.63/-10.34	-9.05/-8.28	-9.31/-9.68		
Θ(45°)	-10.94/-9.85	-9.95/-10.36	-11.95/-11.60	-11.08/-10.71	-11.06/-10.42	-10.18/-9.22	-7.71/-7.10	-7.32/-6.37	-6.93/-9.17	-9.11/-8.17	-9.45/-10.92	-9.03/-7.59	-7.84/-8.48	-9.96/-11.97	-12.40/-9.34	-6.67/-6.50	-6.62/-9.27	-7.82/-8.30	-13.43/-13.87	-12.27/-14.01	-10.04/-11.25	-12.02/-10.39	-8.77/-8.43	-8.78/-10.14		
Θ(52.5°)	-11.91/-12.04	-12.21/-13.64	-12.72/-11.21	-9.56/-7.74	-6.97/-7.23	-5.76/-3.85	-3.76/-3.36	-3.23/-2.88	-4.48/-4.96	-3.60/-4.28	-6.49/-7.19	-9.31/-12.09	-10.64/-10.38	-12.16/-13.66	-10.76/-9.99	-9.30/-13.87	-13.37/-11.42	-9.35/-10.37	-8.70/-8.19	-8.04/-10.95	-15.99/-15.27	-13.98/-10.82	-8.82/-9.12	-10.43/-11.27		
Θ(60°)	-13.08/-13.60	-12.07/-9.82	-8.34/-6.38	-7.87/-5.29	-3.99/-3.85	-4.69/-4.81	-2.78/-1.56	-0.82/-0.29	-2.39/-2.16	-1.93/-2.14	-2.95/-2.30	-3.72/-5.31	-5.26/-4.19	-4.08/-6.64	-11.71/-10.45	-9.57/-11.79	-14.23/-10.16	-8.28/-8.26	-8.77/-5.76	-8.53/-11.02	-7.80/-7.64	-8.45/-6.59	-6.68/-5.87	-6.78/-10.39		
Θ(67.5°)	-13.04/-9.99	-8.83/-8.59	-7.64/-6.81	-5.73/-4.84	-3.26/-1.82	-0.760/-37	0.64/-10.3	0.32/-0.07	0.04/-2.18	0.75/-0.32	-0.05/-0.19	-1.24/-1.90	1.31/-2.19	1.43/-3.07	-5.23/-7.66	-6.57/-9.79	-9.93/-9.46	-11.23/-9.71	-11.94/-9.77	-9.73/-8.83	-9.16/-12.06	-12.64/-11.52	-12.68/-14.49	-15.41/-14.40		
Θ(75°)	-5.15/-5.28	-3.91/-5.50	-6.34/-5.33	-2.99/-1.63	-1.35/-0.38	0.240/-7.0	1.260/-39	1.101/-70	0.732/-41	1.35/-3.02	-3.45/-2.39	-3.94/-2.99	-0.38/-1.83	3.352/-34	-0.90/-5.79	-6.45/-5.05	-12.52/-10.72	-13.27/-9.14	-9.69/-15.04	-13.96/-15.23	-13.12/-11.07	-9.07/-12.48	-10.08/-7.83	-8.77/-5.98		
Θ(82.5°)	-2.31/-2.40	-1.99/-2.85	-3.03/-2.09	-1.99/-1.43	-0.27/-1.1	2.29/-2.8	1.732/-11	1.231/-84	0.840/-73	-1.50/-5.1	-5.85/-3.03	-2.99/-3.02	-0.43/-1.37	1.800/-41	-2.93/-5.36	-4.15/-5.69	-7.64/-6.06	-8.46/-9.77	-9.27/-11.05	-7.05/-7.31	-5.61/-6.33	-4.69/-4.40	-6.42/-7.70	-6.53/-5.15		
Θ(90°)	-2.53/-2.61	-2.77/-2.24	-1.76/-0.40	1.032/-5.7	2.85/-7.7	3.44/-2.9	2.926/-61	2.202/-47	1.01/-103	-2.53/-5.18	-1.020/-81	-2.01/-0.84	-0.05/-3.8	3.221/-37	-1.56/-5.40	-3.34/-3.67	-0.90/-0.88	-2.95/-3.02	-4.32/-4.32	-6.66/-4.46	-2.65/-3.83	-1.79/-1.66	-2.74/-3.77	-3.44/-3.53		
Θ(97.5°)	-2.72/-2.22	-1.460/-20	1.030/-23	1.993/-44	3.342/-28	1.942/-31	3.092/-34	1.011/-33	-3.15/-2.51	-2.63/-3.82	-1.07/-0.33	-3.60/-1.11	1.884/-90	4.722/-59	-2.33/-6.57	-0.310/-5.0	-0.720/-87	-1.57/-0.04	-0.13/-3.08	-0.29/-3.44	-2.74/-5.84	-5.71/-4.08	-3.99/-6.59	-3.78/-1.87		
Θ(105°)	1.510/-54	1.590/-43	1.451/-57	2.383/-67	2.330/-89	1.050/-75	0.31/-1.82	-2.64/-2.44	-9.38/-3.59	-2.68/-4.56	-7.43/-4.60	-9.41/-7.27	-1.69/-1.60	1.17/-0.56	-2.38/-6.12	-2.12/-0.10	-3.46/-1.43	-1.030/-09	1.34/-2.27	0.01/-3.38	-2.64/-2.89	-3.77/-1.78	-0.10/-3.02	-0.90/-1.44		
Θ(112.5°)	3.282/-24	2.981/-12	0.881/-52	0.390/-61	-1.16/-2.76	-2.07/-2.59	-4.41/-5.64	-1.58/-4.47	-10.50/-2.42	-1.58/-4.47	-9.48/-7.96	-12.32/-9.70	-6.21/-3.05	-1.17/-4.52	-6.46/-8.16	-0.39/-2.84	-2.63/-0.55	-2.27/-1.53	0.83/-0.07	1.06/-0.30	-2.60/-2.14	-1.02/-0.34	-0.090/-79	0.01/-61		
Θ(120°)	2.801/-87	2.542/-23	-0.50/-0.20	-1.724/-7.2	-5.204/-2.5	-6.05/-7.90	-6.28/-6.98	-7.46/-7.93	-9.23/-6.6	-7.84/-8.50	-9.93/-9.11	-6.75/-7.78	-6.56/-5.80	-11.86/-7.81	-5.85/-13.96	-13.85/-8.35	-3.21/-1.61	-4.42/-3.65	0.45/-1.32	1.08/-0.69	-1.96/-2.74	1.193/-08	2.231/-82	2.101/-73		
Θ(127.5°)	-1.16/-1.33	-0.41/-3.42	-2.52/-4.58	-5.54/-6.79	-9.76/-5.83	-4.28/-3.52	-9.53/-13.19	-14.25/-15.30	-15.30/-13.95	-10.85/-7.57	-8.89/-14.14	-13.91/-15.48	-12.51/-9.79	-10.88/-6.04	-6.19/-2.73	-2.56/-3.68	-6.96/-1.15	0.400/-29	0.08/-1.79	-3.97/-5.87	-2.070/-02	-0.45/-1.83	-0.68/-1.44			
Θ(135°)	-4.26/-5.1	-2.08/-4.84	-7.24/-6.85	-8.68/-9.89	-9.82/-8.75	-10.34/-11.16	-10.96/-10.73	-11.60/-11.82	-10.73/-9.72	-5.86/-6.63	-6.47/-6.71	-10.73/-8.91	-6.58/-11.91	-8.82/-7.79	-8.70/-8.28	-6.12/-5.85	-6.88/-6.33	-8.65/-8.38	-1.09/-0.71	-1.48/-4.86	-8.67/-8.63	-1.41/-2.29	-2.69/-7.08	-7.21/-2.30		
Θ(142.5°)	-11.88/-13.86	-14.70/-9.85	-8.03/-7.31	-5.80/-5.94	-6.92/-7.52	-10.17/-13.2	-14.86/-13.56	-15.58/-13.86	-11.54/-10.44	-10.86/-15.55	-12.24/-6.48	-3.31/-9.00	-1.25/-2.26	-2.59/-4.78	-5.92/-6.63	-5.78/-5.05	-7.32/-14.29	-11.24/-8.90	-9.08/-5.46	-2.10/-5.26	-5.84/-10.51	-14.33/-10.59	-7.81/-8.51	-12.42/-13.11		
Θ(150°)	-15.48/-14.28	-12.37/-13.63	-12.34/-12.40	-14.64/-14.57	-14.19/-14.45	-13.39/-12.29	-11.48/-10.68	-9.59/-7.76	-7.26/-7.50	-8.72/-11.32	-14.33/-8.58	-4.48/-1.56	0.06/-1.93	0.62/-1.63	-3.41/-4.72	-5.75/-5.29	-6.14/-10.71	-15.04/-9.46	-9.04/-9.46	-8.72/-8.22	-10.29/-13.12	-11.60/-14.02	-9.02/-9.18	-11.67/-14.52		
Θ(157.5°)	-10.55/-9.85	-10.97/-11.10	-10.06/-10.05	-11.63/-11.71	-10.85/-12.23	-12.99/-13.27	-15.14/-14.25	-14.33/-14.28	-14.21/-13.33	-11.04/-9.51	-7.68/-5.28	-3.00/-1.43	-0.78/-1.05	-2.42/-4.62	-6.23/-6.38	-6.39/-7.05	-10.18/-14.18	-14.89/-14.45	-11.74/-12.03	-11.82/-13.23	-13.08/-11.09	-9.18/-7.07	-6.55/-7.69	-11.44/-13.65		
Θ(165°)	-6.58/-7.16	-8.54/-9.18	-9.45/-9.27	-10.44/-11.70	-13.26/-15.8	-13.98/-14.85	-13.01/-10.59	-8.97/-8.48	-8.03/-8.13	-8.19/-7.56	-6.36/-6.47	-3.84/-3.97	-4.73/-6.03	-8.28/-11.06	-11.43/-10.70	-8.93/-7.79	-7.77/-9.50	-12.27/-14.45	-15.04/-13.46	-12.61/-10.38	-9.56/-8.62	-8.57/-8.61	-7.95/-7.74	-7.70/-6.92		
Θ(172.5°)	-8.40/-9.35	-9.88/-9.90	-10.24/-11.38	-12.06/-9.89	-9.37/-8.48	-4.71/-6.59	-6.51/-5.66	-6.70/-6.54	-5.83/-4.92	-4.55/-4.76	-5.44/-5.64	-5.39/-5.30	-5.51/-5.80	-5.87/-5.63	-5.55/-5.98	-6.77/-7.88	-9.49/-12.26	-14.98/-16.05	-16.14/-10.78	-13.15/-11.43	-9.78/-9.44	-10.03/-7.76	-7.71/-7.86	-8.72/-7.82		
Θ(180°)	-7.75/-7.52	-7.12/-6.79	-7.24/-7.49	-6.95/-6.58	-6.58/-6.99	-5.36/-4.91	-4.71/-6.54	-5.21/-5.26	-5.52/-5.71	-5.59/-5.58	-4.05/-6.45	-6.70/-6.54	-6.09/-6.07	-6.44/-7.15	-7.51/-7.45	-7.64/-8.17	-8.56/-8.59	-8.48/-8.29	-8.52/-9.01	-9.85/-10.21	-10.97/-11.57	-12.27/-12.20	-10.02/-8.91	-7.87/-7.87		
Freq(Hz)	53G/POL	TotalAnt.																								
	Gain	φ(0°)φ(7.5°)	φ(15°)φ(22.5°)	φ(30°)φ(37.5°)	φ(45°)φ(52.5°)	φ(60°)φ(67.5°)	φ(75°)φ(82.5°)	φ(90°)φ(97.5°)	φ(105°)φ(112.5°)	φ(120°)φ(127.5°)	φ(135°)φ(142.5°)	φ(150°)φ(157.5°)	φ(165°)φ(172.5°)	φ(180°)φ(187.5°)	φ(195°)φ(202.5°)	φ(210°)φ(217.5°)	φ(225°)φ(232.5°)	φ(240°)φ(247.5°)	φ(255°)φ(262.5°)	φ(270°)φ(277.5°)	φ(285°)φ(292.5°)	φ(300°)φ(307.5°)	φ(315°)φ(322.5°)	φ(330°)φ(337.5°)	φ(345°)φ(352.5°)	
Θ(0°)	-8.04/-8.42	-8.68/-8.94	-9.49/-9.64	-9.32/-8.62	-8.33/-8.55	-8.60/-8.72	-8.08/-7.85	-8.08/-8.37	-8.59/-9.24	-9.99/-9.93	-8.78/-7.51	-7.21/-7.66	-8.29/-8.83	-8.93/-8.70	-8.50/-8.40	-8.58/-5.56	-8.65/-8.97	-9.32/-9.07	-8.80/-8.01	-7.21/-6.99	-6.78/-6.98	-7.95/-7.90	-7.73/-7.44	-7.59/-7.96		
Θ(7.5°)	-11.57/-12.03	-11.29/-10.74	-11.04/-11.30	-11.59/-10.56	-9.91/-9.74	-9.55/-9.70	-9.16/-8.75	-8.83/-8.37	-8.36/-8.94	-10.32/-11.68	-10.17/-9.82	-8.81/-9.64	-13.60/-15.46	-15.20/-13.94	-12.76/-12.17	-11.61/-11.08	-10.36/-9.59	-9.11/-8.79	-7.46/-6.39	-5.78/-5.54	-5.90/-7.01	-8.33/-8.53	-8.24/-8.04	-8.45/-10.07		
Θ(15°)	-11.34/-12.40	-11.29/-9.99	-9.92/-9.96	-10.27/-9.87	-9.46/-9.42	-9.47/-9.64	-10.08/-10.19	-11.53/-13.89	-14.54/-13.14	-12.28/-11.66	-11.29/-11.10	-10.83/-9.74	-8.38/-11.2	-6.65/-6.30	-6.33/-7.03	-8.24/-9.43	-10.39/-10.61	-10.07/-8.45	-7.72/-7.23	-7.32/-7.91	-8.97/-10.42	-11.81/-13.03	-13.34/-11.98	-10.92/-11.34		
Θ(22.5°)	-11.79/-11.62	-9.45/-8.11	-8.47/-9.33	-8.90/-8.21	-8.22/-8.91	-10.02/-10.76	-11.19/-10.65	-11.21/-13.08	-13.93/-13.89	-12.81/-10.83	-8.56/-8.16	-8.73/-9.46	-7.76/-6.00	-5.06/-4.72	-4.82/-4.87	-4.95/-5.26	-5.99/-7.27	-8.01/-7.77	-7.05/-6.78	-7.78/-10.50	-13.27/-12.56	-11.35/-11.98	-12.86/-10.73	-10.53/-11.15		
Θ(30°)	-10.58/-9.82	-8.93/-9.02	-9.16/-7.63	-6.35/-6.33	-6.84/-8.94	-12.22/-14.24	-14.46/-12.81	-12.51/-12.36	-11.63/-8.38	-6.65/-7.00	-8.11/-7.71	-7.19/-7.61	-7.65/-6.85	-5.47/-6.74	-5.07/-5.36	-5.34/-4.71	-4.45/-4.72	-5.64/-6.73	-6.99/-7.33	-8.01/-9.38	-9.64/-9.43	-9.13/-9.71	-9.86/-8.90	-8.52/-9.48		
Θ(37.5°)	-9.08/-9.05	-10.27/-9.37	-7.32/-6.69	-7.72/-9.95	-10.83/-11.44	-11.90/-13.42	-14.25/-15.63	-15.37/-12.38	-9.32/-8.51	-6.86/-6.82	-9.34/-9.48	-9.36/-10.39	-11.64/-11.30	-9.73/-7.61	-5.62/-4.75	-5.85/-7.74	-6.96/-5.26	-5.44/-6.83	-9.15/-11.53	-10.41/-11.90	-8.19/-9.05	-13.91/-10.59	-9.90/-9.80	-9.81/-10.44		
Θ(45°)	-8.70/-7.95	-8.73/-8.82	-8.33/-8.15	-8.49/-9.96	-11.16/-12.52	-11.98/-10.39	-7.33/-5.68	-5.20/-4																		



Antenna Pattern of 5GHz

Appendix D

Θ(22.5°)	-6.83/-7.76	-8.38/-9.52	-11.65/-13.12	-12.65/-10.73	-9.23/-7.41	-5.76/-4.97	-4.62/-3.97	-3.45/-3.13	-3.13/-3.66	-4.03/-3.96	-4.00/-4.71	-5.86/-6.79	-6.50/-5.54	-4.48/-3.22	-2.17/-1.49	-0.90/-0.62	-0.42/-0.64	-1.51/-3.07	-4.40/-4.70	-4.53/-4.27	-4.17/-3.47	-4.82/-5.10	-6.46/-5.50	-4.96/-5.03
Θ(30°)	-5.37/-6.50	-7.39/-8.71	-10.50/-12.25	-10.79/-10.19	-10.47/-9.28	-7.67/-6.08	-5.15/-4.47	-4.42/-4.40	-4.84/-5.33	-5.65/-4.92	-3.91/-3.32	-2.98/-2.62	-2.20/-2.03	-2.48/-3.63	-5.22/-6.94	-7.01/-4.98	-2.84/-1.71	-2.07/-3.21	-4.06/-4.43	-4.57/-4.31	-4.80/-5.75	-5.65/-5.10	-5.16/-2.47	-3.91/-4.84
Θ(37.5°)	-7.05/-7.90	-10.11/-11.27	-11.53/-11.20	-10.75/-10.66	-9.30/-6.98	-4.93/-3.38	-2.46/-2.16	-2.42/-2.47	-2.32/-2.00	-2.29/-3.00	-6.33/-4.54	-4.74/-4.16	-3.35/-2.70	-2.44/-2.17	-1.69/-1.68	-2.59/-3.48	-4.83/-3.70	-3.89/-5.77	-8.33/-8.37	-8.81/-9.29	-8.15/-6.94	-5.63/-3.94	-4.09/-4.73	-5.04/-5.84
Θ(45°)	-7.39/-9.84	-10.79/-10.44	-8.35/-6.34	-5.44/-4.81	-4.41/-4.84	-4.93/-4.28	-3.77/-2.94	-3.12/-3.38	-3.55/-3.67	-4.64/-5.84	-5.40/-4.47	-6.57/-4.77	-3.95/-4.03	-3.70/-3.42	-3.66/-4.85	-6.78/-8.31	-7.49/-5.77	-10.27/-11.80	-11.56/-13.71	-12.15/-8.75	-8.93/-7.71	-5.79/-4.62	-2.68/-2.42	-4.04/-5.76
Θ(52.5°)	-5.48/-6.45	-6.54/-7.54	-7.21/-6.53	-7.01/-9.41	-12.06/-10.82	-9.41/-10.15	-7.43/-5.50	-5.68/-5.46	-4.17/-3.51	-3.35/-4.03	-3.83/-3.89	-4.00/-4.80	-4.79/-4.45	-3.97/-3.92	-4.45/-6.20	-8.93/-11.10	-14.35/-14.61	-10.27/-10.06	-11.74/-9.31	-7.19/-8.47	-9.53/-6.63	-5.56/-5.44	-5.10/-3.83	-4.57/-3.42
Θ(60°)	-5.31/-6.41	-7.88/-8.86	-8.03/-6.20	-5.36/-6.46	-8.85/-11.10	-10.67/-9.50	-4.50/-5.45	-3.10/-2.73	-2.32/-3.20	-4.04/-3.97	-4.67/-5.48	-8.55/-9.82	-6.28/-4.31	-2.22/-1.88	-4.56/-3.88	-7.56/-8.11	-7.69/-6.61	-7.91/-10.57	-6.03/-4.20	-5.16/-4.99	-4.02/-4.41	-4.92/-4.54	-7.11/-5.31	
Θ(67.5°)	-5.97/-6.09	-6.29/-6.87	-7.63/-7.21	-5.43/-5.12	-7.00/-9.06	-6.70/-5.53	-5.48/-3.17	-1.90/-2.81	-2.47/-1.86	-3.28/-3.44	-4.73/-5.19	-8.47/-8.80	-6.89/-4.32	-2.42/-1.78	-3.75/-6.32	-8.44/-8.20	-8.15/-11.52	-11.71/-10.18	-13.19/-6.87	-3.92/-3.70	-3.03/-3.64	-3.82/-4.15	-6.06/-5.21	-6.90/-6.12
Θ(75°)	-5.34/-3.49	-3.42/-4.06	-6.60/-9.03	-7.75/-5.40	-4.77/-4.68	-3.52/-3.28	-4.23/-2.16	-0.85/-1.93	-2.08/-2.23	-6.80/-4.98	-3.65/-3.54	-5.75/-5.20	-2.69/-1.70	-1.53/-2.26	-2.45/-1.59	-1.92/-1.89	-2.48/-5.09	-8.24/-8.58	-9.92/-6.82	-4.78/-6.42	-7.48/-6.49	-6.40/-5.89	-7.52/-7.97	-6.62/-5.75
Θ(82.5°)	-6.53/-4.62	-4.74/-4.78	-5.75/-6.64	-7.20/-7.44	-6.76/-3.57	-0.330.57	0.521.21	0.39/-2.10	-4.16/-6.19	-7.27/-1.85	0.13/-0.65	-1.12/-0.74	1.630.86	-0.72/-3.79	-3.10/-0.26	0.85/-0.17	-0.17/-1.44	-4.77/-6.50	-6.38/-12.07	-15.98/-12.02	-15.82/-11.89	-14.36/-10.77	-12.32/-12.34	-8.52/-7.26
Θ(90°)	-8.62/-7.10	-5.35/-5.32	-4.99/-6.79	-6.72/-6.19	-4.36/-1.27	0.95/1.56	1.49/1.15	-0.26/-2.79	-4.14/-6.17	-4.00/-0.23	2.04/1.92	0.98/1.68	3.33/3.45	2.62/-1.70	-7.19/-2.14	0.74/0.30	-2.44/-0.00	-0.49/-2.22	-1.46/-3.45	-6.38/-3.00	-3.79/-6.49	-6.79/-7.46	-4.55/-5.95	-8.42/-6.54
Θ(97.5°)	-9.59/-15.37	-9.07/-8.19	-5.88/-4.72	-4.25/-1.78	-1.83/-5.10	0.080.31	0.75/1.69	-0.10/-3.84	-2.68/-3.97	-1.98/1.06	2.050.60	-0.290.46	2.803.27	1.44/-1.34	-9.97/-5.43	0.03/-0.44	-3.02/-1.13	-1.55/-3.35	0.070.10	-1.11/0.88	0.94/-1.98	-2.18/-4.18	-3.94/-4.80	-8.77/-9.06
Θ(105°)	-4.97/-3.46	-2.46/-1.41	-2.63/-2.40	-4.33/-3.33	-3.01/-5.40	-5.02/-3.09	-1.88/-1.63	-2.71/-1.59	1.45/-0.16	-1.62/-0.56	0.10/-0.76	-2.26/-2.56	-0.740.98	1.090.24	-2.22/-6.07	-2.11/0.97	-4.59/-3.86	1.11/1.40	-1.37/1.54	0.38/2.12	-0.07/-2.39	-5.51/-7.11	-6.99/-7.92	-9.02/-10.04
Θ(112.5°)	-1.61/-1.11	-0.320.92	0.400.52	-0.70/-3.32	-3.52/-3.01	-3.10/-2.49	-1.75/-1.31	-1.05/-0.26	0.87/-3.05	-3.76/-2.60	-1.03/-3.92	-7.40/-8.66	-4.97/-1.76	-1.60/-3.97	-4.70/-8.37	-3.83/-0.45	-4.58/-6.01	-0.68/-2.29	-3.58/1.67	1.18/-0.00	-0.17/-3.45	-8.07/-7.22	-3.60/-2.05	-2.78/-3.94
Θ(120°)	0.680.22	-0.080.52	0.710.26	1.540.52	-0.72/-0.57	-0.06/-0.40	-1.03/-0.52	-0.17/-0.98	-1.87/-5.12	-3.85/-1.59	-0.60/-1.96	-6.62/-8.03	-6.41/-5.85	-9.47/-9.85	-10.00/-9.33	-5.52/-2.97	-3.99/-5.71	-2.00/-4.89	-8.86/-2.60	-3.00/-4.28	-4.58/-4.98	-2.90/-4.06	-0.77/1.60	0.48/-0.66
Θ(127.5°)	-1.44/-1.81	-2.15/-0.84	-0.63/-0.41	-0.360.15	1.001.80	1.87/1.37	0.940.36	-1.20/-3.52	-6.82/-6.53	-4.86/-3.75	-4.16/-6.13	-6.30/-4.04	-2.64/-3.74	-6.79/-8.02	-6.05/-3.33	-3.55/-8.34	-10.17/-7.16	-4.22/-3.65	9.08/-10.45	-7.47/-6.40	-4.91/-1.72	-3.65/-1.76	-0.25/0.82	-1.14/-3.29
Θ(135°)	-0.08/-0.47	-2.18/-2.71	-2.64/-2.72	-2.23/-2.07	-2.31/-1.68	-0.62/-0.07	-0.23/-0.81	-2.89/-6.41	-6.60/-5.94	-6.60/-5.55	-3.21/-3.40	-5.13/-8.11	-9.16/-8.35	-8.81/-9.00	-13.43/-10.52	-5.90/-4.95	-7.76/-5.44	-7.35/-5.16	-6.04/-6.82	-6.06/-6.01	-5.00/-2.37	-0.89/-2.60	-0.19/0.91	0.61/-0.33
Θ(142.5°)	-6.40/-4.97	-4.95/-4.76	-2.92/-0.25	-1.77/-1.58	-1.69/-2.15	-2.59/-3.04	-4.24/-6.30	-6.94/-5.92	-5.35/-4.14	-2.60/-2.55	-1.19/-2.03	-2.82/-3.33	-6.61/-6.60	-5.16/-8.78	-10.35/-11.18	-6.45/-4.71	-5.32/-5.56	-13.44/-10.42	-6.29/-5.57	-3.13/-2.98	-6.44/-3.86	-3.99/-4.05	-4.30/-3.64	
Θ(150°)	-8.37/-6.89	-5.61/-4.42	-4.18/-4.38	-4.42/-4.56	-4.23/-3.21	-2.70/-4.12	-7.85/-11.60	-11.27/-10.74	-10.28/-8.27	-5.35/-2.62	-1.39/-1.20	-2.22/-3.55	-4.08/-2.39	-1.35/-1.46	-2.17/-5.26	-8.45/-6.45	-6.45/-8.27	-5.61/-5.53	-7.02/-11.28	-9.84/-7.52	-9.64/-15.20	-15.05/-10.92	-7.95/-5.97	-5.65/-6.50
Θ(157.5°)	-6.74/-8.38	-9.67/-9.56	-8.91/-7.25	-6.63/-6.21	-5.68/-5.07	-4.44/-3.04	-1.57/-0.68	-4.92/-2.04	-3.66/-4.50	-4.01/-2.73	-1.83/-2.31	-3.77/-5.21	-4.10/-2.30	-1.71/-2.28	-3.61/-4.97	-5.67/-5.83	-6.35/-5.68	-4.72/-4.96	-6.10/-7.71	-9.05/-10.79	-12.99/-10.42	-7.31/-4.94	-3.62/-2.99	-3.58/-5.06
Θ(165°)	-3.70/-4.07	-4.55/-4.65	-4.23/-3.41	-4.53/-4.44	-4.11/-3.94	-3.53/-4.28	-1.55/-1.04	-1.17/-1.67	-2.56/-3.67	-5.01/-6.93	-10.07/-13.83	-13.76/-13.22	-10.91/-9.49	-9.38/-10.97	-12.55/-15.11	-1.86/-9.10	-6.39/-4.74	-4.84/-5.74	-6.62/-5.91	-4.87/-8.41	-5.39/-5.71	-5.97/-6.05	-5.38/-4.24	-3.81/-3.93
Θ(172.5°)	-9.74/-10.97	-11.20/-10.93	-10.89/-10.18	-8.90/-7.98	-7.26/-6.60	-6.27/-6.29	-6.62/-7.04	-7.37/-7.47	-7.10/-6.59	-5.92/-5.15	-4.69/-4.67	-4.93/-5.54	-5.48/-5.17	-6.97/-8.05	-9.21/-10.38	-10.05/-9.07	-7.87/-7.20	-6.70/-6.42	-6.36/-6.61	-6.76/-6.41	-6.57/-7.10	-7.51/-6.30		
Θ(180°)	-1.92/-1.93	-2.19/-2.04	-1.81/-1.80	-1.60/-1.44	-1.28/-1.17	-1.36/-1.72	-1.93/-1.64	-1.17/-0.72	-0.44/-0.29	-0.060.03	-0.05/-0.38	-0.79/-1.08	-0.95/-0.75	-0.68/-0.72	-0.60/-0.94	-0.97/-0.83	-0.60/-0.42	-0.20/-0.08	-0.24/-0.50	-0.97/-1.58	-1.96/-1.94	-2.10/-2.19	-2.13/-2.20	-2.10/-2.04
Freq(Hz)	5.3GPol.	TotalAnt. 2	-/-	-/-	-/-	-/-	-/-	-/-	-/-	-/-	-/-	-/-	-/-	-/-	-/-	-/-	-/-	-/-	-/-	-/-	-/-	-/-	-/-	
Gain	Φ(0°)/Φ(7.5°)	Φ(15°)/Φ(22.5°)	Φ(30°)/Φ(37.5°)	Φ(45°)/Φ(52.5°)	Φ(60°)/Φ(67.5°)	Φ(75°)/Φ(82.5°)	Φ(90°)/Φ(97.5°)	Φ(105°)/Φ(112.5°)	Φ(120°)/Φ(127.5°)	Φ(135°)/Φ(142.5°)	Φ(150°)/Φ(157.5°)	Φ(165°)/Φ(172.5°)	Φ(180°)/Φ(187.5°)	Φ(195°)/Φ(202.5°)	Φ(210°)/Φ(217.5°)	Φ(225°)/Φ(232.5°)	Φ(240°)/Φ(247.5°)	Φ(255°)/Φ(262.5°)	Φ(270°)/Φ(277.5°)	Φ(285°)/Φ(292.5°)	Φ(300°)/Φ(307.5°)	Φ(315°)/Φ(322.5°)	Φ(330°)/Φ(337.5°)	Φ(345°)/Φ(352.5°)
Θ(0°)	-5.00/-4.71	-4.52/-4.20	-3.91/-4.68	-5.07/-5.45	-6.03/-6.86	-7.27/-7.19	-7.26/-7.41	-7.03/-6.60	-6.05/-8.33	-5.55/-5.74	-7.01/-6.99	-7.09/-7.14	-7.58/-7.99	-8.41/-8.45	-8.26/-8.06	-7.26/-6.61	-6.55/-6.68	-6.64/-6.85	-7.04/-7.47	-7.67/-7.29	-6.95/-7.22	-7.35/-7.43	-7.27/-7.15	-7.15/-7.62
Θ(7.5°)	-7.84/-7.14	-6.82/-6.63	-6.35/-6.61	-7.06/-6.95	-7.00/-7.31	-7.48/-7.52	-7.74/-7.21	-7.53/-7.98	-8.30/-8.31	-8.19/-8.01	-7.72/-7.39	-6.98/-6.62	-6.30/-6.27	-6.53/-6.57	-6.79/-7.50	-7.21/-7.20	-7.67/-7.95	-7.99/-7.55	-7.19/-7.16	-7.27/-7.08	-6.91/-6.86	-6.45/-6.07	-5.62/-5.96	-6.64/-7.33
Θ(15°)	-11.35/-11.86	-11.30/-11.47	-12.16/-13.77	-14.27/-14.97	-14.40/-12.82	-11.42/-10.67	-10.05/-9.72	-9.07/-7.96	-6.66/-5.64	-5.16/-4.75	-4.45/-4.10	-3.72/-3.19	-2.89/-2.83	-2.98/-3.29	-3.70/-4.43	-5.46/-6.77	-8.57/-9.88	-9.75/-8.66	-7.82/-7.27	-7.05/-6.53	-6.61/-6.65	-6.65/-6.59	-6.55/-7.34	-8.99/-10.15
Θ(22.5°)	-10.64/-11.09	-12.36/-13.28	-13.96/-16.15	-15.82/-15.53	-13.66/-9.74	-8.29/-6.84	-5.55/-5.20	-4.64/-4.05	-3.04/-2.51	-2.48/-2.66	-2.68/-2.43	-2.35/-2.75	-3.10/-3.01	-2.55/-2.11	-1.92/-1.90	-2.38/-3.34	-5.23/-7.82	-10.07/-10.21	-8.98/-7.99	-8.14/-8.86	-10.16/-10.77	-10.01/-10.58	-10.96/-9.60	-9.44/-10.34
Θ(30°)	-4.88/-8.55	-8.04/-8.06	-9.62/-11.95	-10.30/-9.30	-7.43/-5.75	-4.69/-3.79	-3.36/-3.36	-3.23/-3.03	-2.76/-2.88	-3.66/-4.17	-4.26/-6.09	-6.53/-6.50	-4.56/-2.88	-2.50/-3.03	-3.37/-3.09	-2.61/-2.25	-2.59/-3.28	-5.63/-7.56	-7.28/-6.70	-7.35/-9.55	-11.81/-11.04	-9.43/-8.86	-7.82/-6.52	-7.15/-7.94
Θ(37.5°)	-7.66/-12.01	-10.84/-10.87	-9.81/-7.00	-5.74/-5.56	-5.41/-5.34	-5.77/-6.04	-5.68/-4.83	-3.75/-2.81	-2.36/-2.12	-2.48/-2.76	-3.12/-4.69	-5.62/-4.00	-3.25/-2.49	-2.47/-2.63	-3.22/-4.57	-5.46/-5.08	-4.23/-4.35	-6.41/-9.28	-8.82/-7.64	-7.76/-7.48	-7.30/-7.00	-6.34/-6.58	-7.52/-6.99	-6.88/-4.72
Θ(45°)	-9.31/-11.75	-12.81/-13.29	-11.33/-8.99	-7.41/-5.55	-4.72/-4.86	-5.00/-4.49	-2.86/-2.19	-2.16/-2.26	-2.12/-1.96	-2.94/-4.64	-4.23/-5.19	-5.94/-4.70	-5.46/-6.04	-4.84/-3.67	-3.09/-3.35	-3.84/-4.85	-6.79/-9.31	-12.91/-10.09	-9.71/-13.15	-12.53/-12.35	-12.17/-9.68	-9.79/-8.74	-7.38/-7.83	-9.76/-10.12
Θ(52.5°)	-8.81/-7.74	-6.38/-6.39	-5.14/-5.02	-5.99/-6.32	-6.63/-6.75	-7.44/-8.86	-8.12/-7.03	-7.74/-7.54	-6.32/-5.95	-5.63/-5.47	-4.59/-4.70	-5.57/-6.81	-8.24/-7.10	-5.48/-3.88	-4.36/-6.39	-10.08/-13.08	-14.08/-11.95	-10.07/-11.51	-13.60/-9.90	-9.99/-7.85	-5.23/-6.92	-5.24/-5.12	-5.50/-6.68	
Θ(60°)	-4.94/-5.97	-5.68/-6.09	-6.52/-7.42	-8.45/-10.27	-11.14/-11.13	-12.68/-12.94	-14.27/-13.37	-10.04/-9.06	-8.19/-8.72	-10.58/-9.85	-9.71/-6.37	-6.26/-10.26	-9.40/-9.98	-6.10/-4.82	-8.07/-14.18	-13.48/-11.01	-10.06/-10.55	-11.01/-10.70	-13.18/-9.74	-5.08/-4.77	-6.30/-6.35	-5.72/-6.52	-7.58/-6.37	-6.04/-4.17
Θ(67.5°)	-7.71/-6.75	-5.74/-6.15	-8.73/-11.18	-9.85/-9.04	-9.59/-11.32	-8.75/-8.20	-8.87/-8.77	-5.31/-4.43	-3.70/-3.17	-2.87/-2.95	-4.18/-3.81	-7.68/-6.46	-8.15/-5.06	-2.12/-0.72	-1.57/-3.23	-5.52/-7.99	-8.43/-9.86	-8.48/-8.86	-8.52/-8.00	-6.16/-5.62	-3.85/-5.09	-4.02/-4.58	-6.05/-7.28	-9.02/-9.76
Θ(75°)	-7.76/-4.54	-4.13/-3.15	-4.07/-6.11	-7.88/-8.74	-7.56/-6.14	-4.52/-3.78	-4.59/-1.33	-1.320.70	-4.76/-3.20	-3.22/-2.10	-5.35/-6.30	-4.78/-3.20	-1.320.16	0.05/0.52	-0.67/-1.74	-2.95/-2.27	-5.62/-3.74	-4.05/-4.55	-5.69/-5.44	-6.91/-4.32	-6.19/-5.3			

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

