



Antenna Composite Gain Test Report

Equipment	Wi-Fi 7 Tri-Band Mesh Router
Brand Name	LITEON
Model Name	WRB8326A, WRB8326B, WRB8326C, WRB8326D
Applicant	LITE-ON TECHNOLOGY CORP. Bldg. C, 90, Chien 1 Road, Chung Ho, New Taipei City 23585, Taiwan, R.O.C.
Manufacturer	LITE-ON TECHNOLOGY CORP. Bldg. C, 90, Chien 1 Road, Chung Ho, New Taipei City 23585, Taiwan, R.O.C.
Standard	KDB 662911 D03 v01
Sample Received	Aug. 29, 2024
Start Test Date	Sep. 02, 2024
Final Test Date	Sep. 02, 2024


Approved by: Jackson Tsai

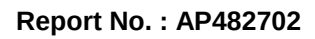
SPORTON INTERNATIONAL INC. Hsinhua Laboratory

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



Table of Contents

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

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1. Operation Mode and Antenna Information

Antenna Position	RF Port	Brand Name	Model Name	Ant. Type	Connector	Modes of Operation
2G 5GAnt1	1	LITEON	20301-002000A000	PIFA	I-Pex	2.4G+5G
2G 5GAnt2	2	LITEON	20301-002020A000	PIFA	I-Pex	2.4G+5G

Note:

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

2G 5GAnt1~2G 5GAnt2 could transmit/receive simultaneously.

2. Table for Multiple Listing

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

Brand Name	Model Name	SKU	5GE	2.5GE	USB 2.0	IoT(2.4G)
LITEON	WRB8326A	SKU 1	V	V	V	V
	WRB8326B	SKU 2	V	V	-	V
	WRB8326C	SKU 3	V	-	-	V
	WRB8326D	SKU 4	-	V	-	V

From the above models, model: WRB8326A was selected as representative model for the test and its data was recorded in this report.

3. Test Frequency

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

Band [MHz]	Test Frequency [MHz]
2400-2483.5	2450
5150-5250	5200
5250-5350	5300
5470-5725	5600
5725-5850	5785

4. Testing Location

Test Lab. : Sporton International Inc. Hsinhua Laboratory				
☒ Wen 33rd.St.	ADD:	No.14-1, Ln. 19, Wen 33rd St., Guishan Dist., Taoyuan City 333010, Taiwan (R.O.C.)		
	TEL:	886-3-318-0787	FAX:	886-3-318-0287
Test Condition	Test Site No.	Test Engineer	Test Environment (°C / %)	Test Date
Radiated	05CH03-HY	Vivi Jiang	23.5-24.5°C / 45-55%	02/Sep/2024

Note:

Testing Site Information

Brand Name: TDK

Dimension: 11m*6m*6m

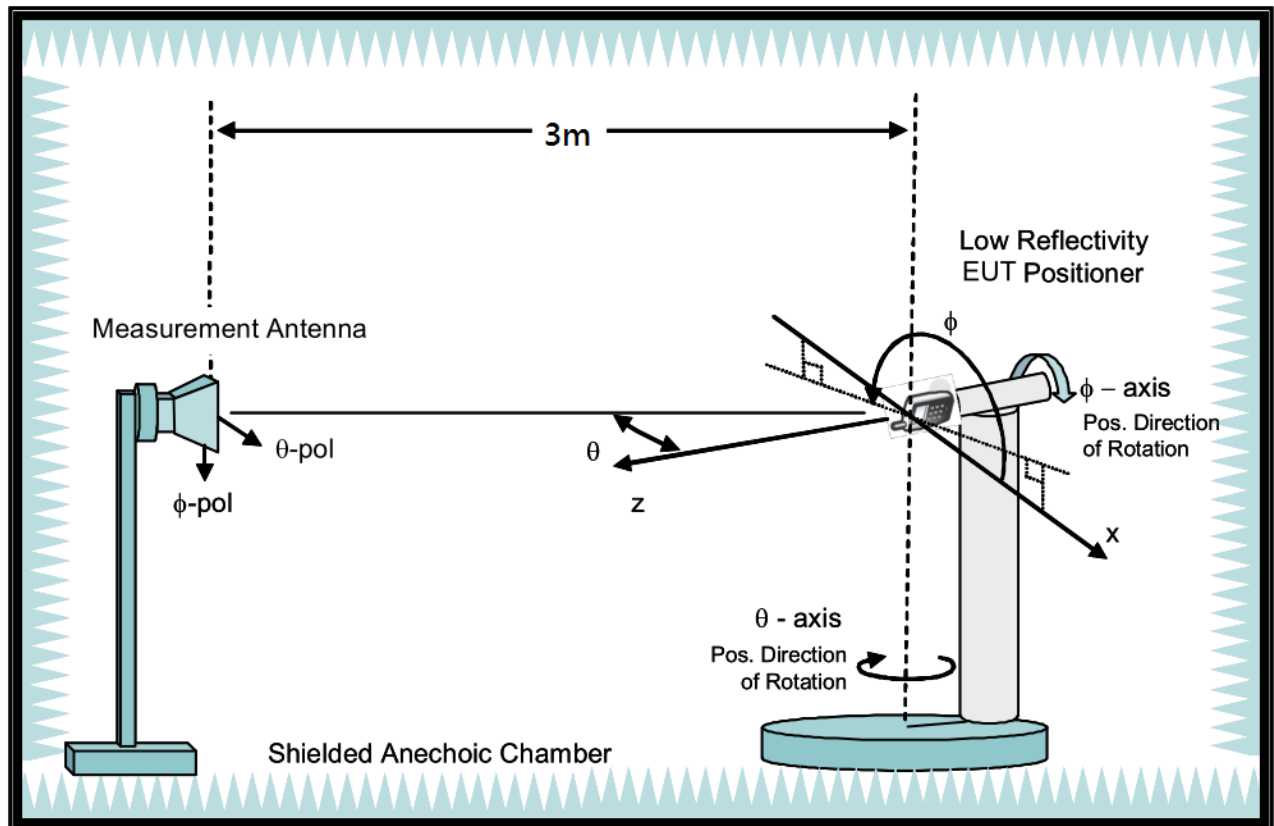
Characteristic: Fully Anechoic Chamber

5. Test Facility and Configuration

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

Measurement antenna: Dual Polarization Horn antenna
Turntable: Multi-axis positioner (Theta and Phi angle).

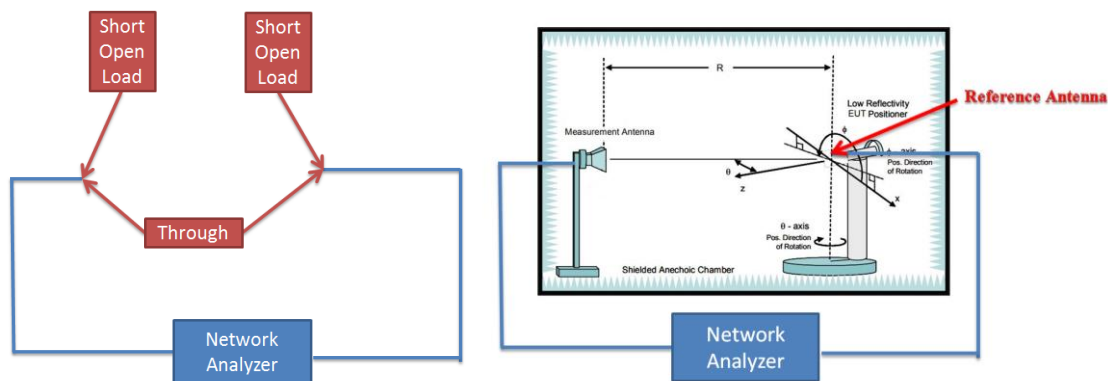
#Reference to CTIA "ctia-test-plan-for-wireless-device-over-the-air-performance-ver-3-7-1"



6. Reference Calibration

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

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



Frequency (MHz)	2400	2450	2500	5150	5200	5300	5600	5750	5800	5900	6000	6500	7000	7200
G(theta) reading (dB)	-33.55	-33.38	-32.91	-32.29	-32.48	-32.25	-32.33	-32.85	-32.67	-33.37	-32.53	-33.75	-34.72	-35.33
G(phi) reading (dB)	-33.11	-32.68	-32.48	-32.45	-32.85	-31.35	-32.76	-32.68	-32.57	-32.81	-32.85	-33.62	-34.33	-35.29
Reference gain (dBi)	10.3	10.3	10.1	11.1	11.3	11.7	12.1	11.5	11.2	11.1	11.3	11	11.1	10.5
Factor(theta) (dB)	43.85	43.68	43.01	43.39	43.78	43.95	44.43	44.35	43.87	44.47	43.83	44.75	45.82	45.83
Factor(phi) (dB)	43.41	42.98	42.58	43.55	44.15	43.05	44.86	44.18	43.77	43.91	44.15	44.62	45.43	45.79

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.

Factor = gain factor + power gain conversion= (Reference antenna gain)-(G reading)



7. Test Method

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

DG steps:

1. Each Phi and Theta polarization antenna gain are measured for all test angles.
2. Composite Phi and Theta antenna gain are computed, using formula in KDB662911 D01 d) (i) and e) (ii), for all angles.
3. Composite antenna gain are examined for all angles to determine max gain and Phi/Theta position. Max gain and phi/theta position are listed in section 8 tables.

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

8. Measured Values and Calculation of Maximum Gain Positions

DG_1SS max value position

Frequency (Hz)	2.45G	5.2G	5.3G	5.6G	5.785G
Ant. 1 (dBi)	-2.23	-0.62	1.5	3.41	3.72
Ant. 2 (dBi)	1.25	2.51	1.62	0.94	-0.85
DG [1SS] (dBi)	2.69	4.1	4.57	5.27	4.74
Polarization	Phi	Theta	Phi	Theta	Theta
$\Theta(^{\circ})$	135	97.5	22.5	97.5	97.5
$\Phi(^{\circ})$	150	225	172.5	255	255

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

DG_1SS max value position calculation

Frequency (Hz)	2.45G	5.2G	5.3G	5.6G	5.785G
Ant. 1 [$10^{(G/20)}$]	$10^{(-2.23/20)}$	$10^{(-0.62/20)}$	$10^{(1.5/20)}$	$10^{(3.41/20)}$	$10^{(3.72/20)}$
Ant. 2 [$10^{(G/20)}$]	$10^{(1.25/20)}$	$10^{(2.51/20)}$	$10^{(1.62/20)}$	$10^{(0.94/20)}$	$10^{(-0.85/20)}$
Ant. 1 [$10^{(G/20)}$] value	0.774	0.931	1.189	1.481	1.535
Ant. 2 [$10^{(G/20)}$] value	1.155	1.335	1.205	1.114	0.907
Sum All Antenna [Amax]	1.928	2.266	2.394	2.595	2.441
DG [$10 \cdot \log(A_{max}^2/N_{ant})$]	2.69	4.1	4.57	5.27	4.74

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

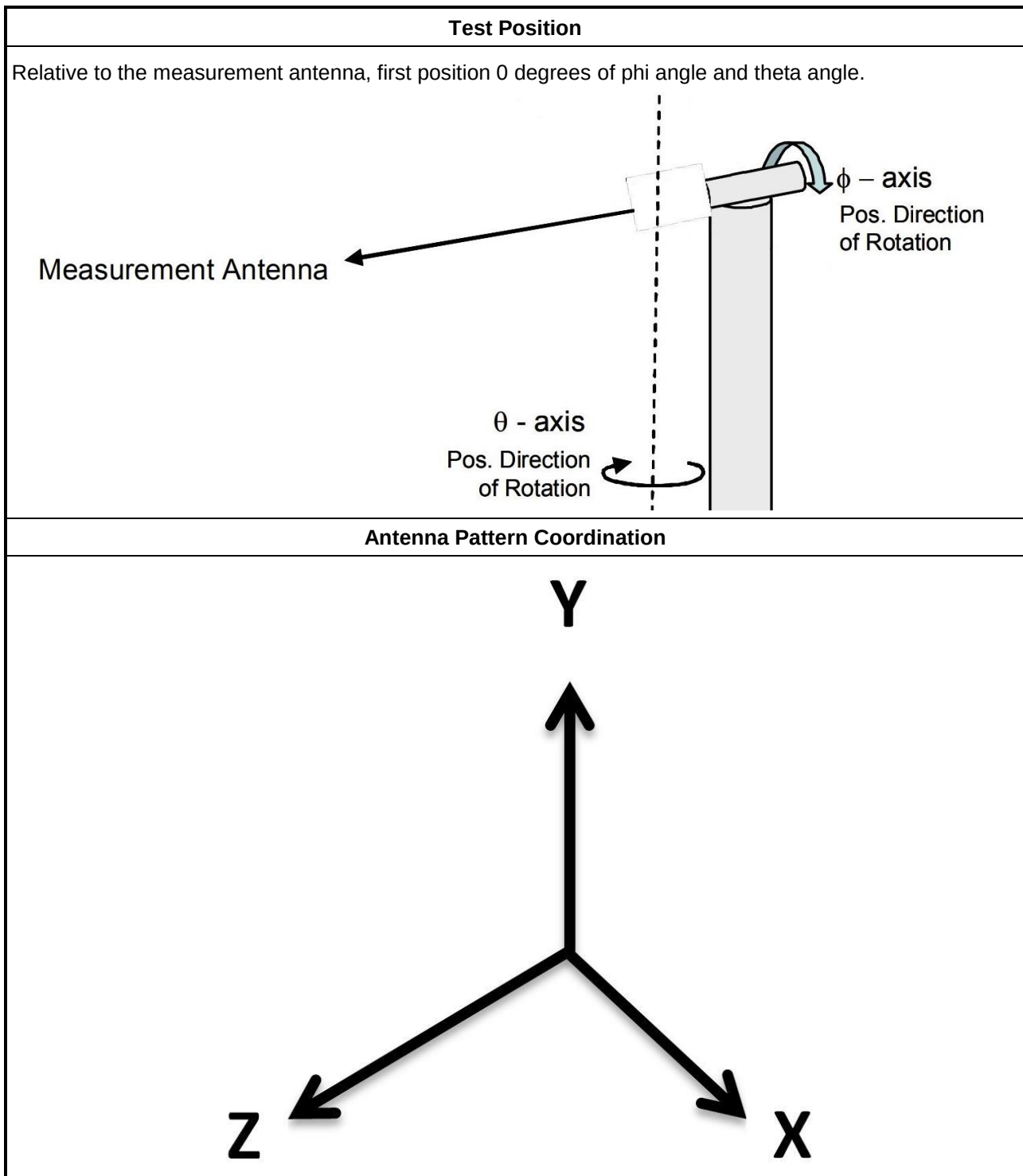
9. Summary of Test Result

Freq(Hz)	2.45G	5.2G	5.3G	5.6G	5.785G
Ant. 1 Max Gain (dBi)	2.35	2.35	2.46	3.44	3.72
Ant. 2 Max Gain (dBi)	2.33	2.51	2.18	3.35	3.43
Ant. 1 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$	Phi/157.5/315	Theta/82.5/345	Theta/90/345	Theta/90/345	Theta/97.5/255
Ant. 2 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$	Phi/142.5/150	Theta/97.5/225	Theta/97.5/232.5	Theta/105/307.5	Theta/97.5/75
Max Gain (dBi)	2.35	2.51	2.46	3.44	3.72
DG [1SS] (dBi)	2.69	4.1	4.57	5.27	4.74
DG [2SS] (dBi)	2.35	2.51	2.46	3.44	3.72

Note:

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

10. Test Setup



Note:

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

**11. Test Equipment and Calibration Data**

Instrument	Brand	Model No.	Serial No.	Characteristics	Calibration Date	Calibration Due Date
Horn Antenna	SCHWARZBECK	BBHA9120D	BBHA 9120D-1531	1GHz~18GHz	Dec. 20, 2023	Dec. 19, 2024
Dual Polarization Horn Antenna	Sporton	S0209DP	S0209DP-001	2GHz~9GHz	NCR.	NCR..
ENA Series Network Analyzer	AGILENT	E5071C	MY46419477	100kHz~8.5GHz	Jul. 30, 2024	Jul. 29, 2025
VNA Calibration Kit	TS RF	TS85033E-F	-	DC~9GHz	N.C.R.	N.C.R.
Multi-axis positioner	Sporton	MAPS01	MAPS01-001	Theta / Phi axis	N.C.R.	N.C.R.
Test Software	SPORTON	SENSE-RDG	V1.0.8	-	N.C.R.	N.C.R.

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

NCR means Non-Calibration required.



12. Test Results

Please refer to the appendix.

Appendix A – Radiated Composite Gain of 2.4GHz/5GHz.....	Page 13
Appendix B – Antenna Pattern of 2.4GHz/5GHz.....	Page 22
Appendix C – Test Photos.....	Page 26

————THE END————



Freq(Hz)	2.45G	5.2G	5.3G	5.6G	5.785G
Ant. 1 Max Gain (dBi)	2.35	2.35	2.46	3.44	3.72
Ant. 2 Max Gain (dBi)	2.33	2.51	2.18	3.35	3.43
Ant. 1 Polarization/Θ(°)/Φ(°)	Phi/157.5/315	Theta/82.5/345	Theta/90/345	Theta/90/345	Theta/97.5/255
Ant. 2 Polarization/Θ(°)/Φ(°)	Phi/142.5/150	Theta/97.5/225	Theta/97.5/232.5	Theta/105/307.5	Theta/97.5/75
Max Gain (dBi)	2.35	2.51	2.46	3.44	3.72
DG [1SS] (dBi)	2.69	4.1	4.57	5.27	4.74
DG [2SS] (dBi)	2.35	2.51	2.46	3.44	3.72



Radiated Composite Gain Data of 2.4GHz/5GHz

Appendix A

DG 1SS Result

Freq(Hz)	2.45G/Pol.	Phi-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+		
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°)	-1.86/-2.37	-2.91/-3.42	-4.11/-5.05	-6.11/-7.28	-8.58/-9.78	-10.76/-11.02	-10.51/-9.35	-7.85/-6.46	-5.29/-4.3	-3.52/-2.99	-2.65/-2.54	-2.63/-2.96	-3.39/-3.92	-4.63/-5.43	-6.54/-7.85	-9.86/-12.7	-14.14/-14.33	-14.73/-12.44	-9.89/-8.92	-6.18/-4.94	-3.92/-3.08	-2.4/-1.92	-1.71/-1.51	-1.47/-1.61
Θ(7.5°)	-1.55/-2.03	-2.52/-2.94	-3.47/-4.34	-5.42/-6.68	-8.27/-10.22	-11.92/-12.65	-11.54/-9.52	-7.6/-6.13	-4.94/-4.07	-3.41/-2.96	-2.75/-2.7	-2.83/-3.15	-3.6/-4.1	-4.77/-5.73	-6.95/-8.5	-10.65/-13.47	-14.26/-14.83	-14.61/-12.12	-10.86/-8.88	-7.36/-6.06	-4.93/-3.91	-2.94/-2.24	-1.71/-1.38	-1.26/-1.33
Θ(15°)	-1.7/-2.17	-2.5/-2.79	-3.36/-4.13	-5.13/-6.49	-8.42/-10.9	-12.36/-12	-10.11/-8.09	-6.31/-5.02	-4.07/-3.46	-2.97/-2.69	-2.54/-2.61	-2.74/-2.91	-3.23/-3.62	-4.24/-5.14	-6.44/-8.28	-11.18/-12.71	-13.9/-13.29	-12.01/-10.45	-9.04/-8.45	-7.67/-6.74	-5.44/-4.15	-3.12/-2.37	-1.82/-1.48	-1.34/-1.48
Θ(22.5°)	-2.04/-2.29	-2.08/-2.22	-3.34/-4.13	-5.15/-6.71	-8.53/-9.74	-9.4/-8.22	-6.78/-5.42	-4.06/-3.66	-2.34/-1.89	-1.68/-1.69	-1.88/-2.24	-2.69/-3.12	-3.45/-3.79	-4.25/-4.99	-6.21/-8	-9.47/-10.51	-10.49/-10.24	-9.31/-8.1	-7.53/-6.84	-6.54/-6.2	-5.58/-4.37	-3.42/-2.71	-2.17/-1.79	-1.64/-1.7
Θ(30°)	-1.47/-1.74	-2.01/-2.5	-3.15/-4.03	-5.06/-6.29	-7.31/-7.67	-7.22/-6.29	-5.28/-4.23	-3.23/-2.42	-1.65/-1.2	-0.99/-1.05	-1.39/-2.13	-3.15/-43	-5.09/-5.39	-5.54/-5.66	-5.97/-6.31	-6.87/-7.89	-9.09/-9.72	-8.73/-7.17	-5.82/-5.07	-4.76/-4.57	-4.24/-3.7	-3.11/-2.58	-2.05/-1.72	-1.48/-1.4
Θ(37.5°)	-1.33/-1.85	-2.42/-2.94	-3.83/-5.04	-6.36/-7.7	-8.6/-8.83	-8.09/-6.91	-5.82/-4.87	-3.94/-3.04	-2.23/-1.57	-1.24/-1.34	-1.91/-3.14	-4.66/-5.96	-6.63/-7.07	-6.64/-6.13	-5.29/-5.09	-5.73/-6.98	-8.63/-9.12	-8.61/-6.67	-5.16/-4.37	-3.9/-3.48	-3/-2.45	-1.84/-1.39	-1.16/-1.1	-1.17/-1.31
Θ(45°)	-3.65/-4.32	-4.36/-4.21	-4.3/-4.74	-5.55/-6.74	-7.83/-8.44	-8.47/-6.78	-5.53/-4.69	-3.67/-2.66	-1.76/-1.12	-0.68/-0.56	-0.89/-1.84	-3.27/-4.74	-5.74/-6.53	-6.8/-5.55	-4.47/-3.77	-4.02/-4.83	-6.17/-7.7	-8.16/-7.12	-5.82/-4.79	-4.07/-3.55	-3.16/-2.74	-2.19/-1.92	-1.96/-2.28	-2.83/-3.43
Θ(52.5°)	-6.89/-7.2	-7.03/-6.57	-5.96/-5.5	-5.33/-5.37	-5.42/-5.52	-5.74/-5.9	-5.15/-4.57	-3.42/-2.59	-1.95/-1.41	-1.01/-0.95	-1.29/-2.23	-3.85/-5.75	-6.79/-7.66	-8.73/-7.96	-8.04/-7.81	-7.17/-7.19	-7.8/-8.7	-9.47/-9.04	-8.69/-7.32	-6.19/-5.68	-5.68/-5.74	-5.57/-5.21	-4.86/-4.88	-5.38/-6.2
Θ(60°)	-8.89/-11.03	-10.37/-8.39	-6.92/-6.12	-5.6/-5.12	-4.82/-4.84	-5.51/-6.67	-7.54/-7.45	-6.55/-5.76	-5.42/-5.59	-6.01/-6.02	-5.98/-6.21	-6.23/-6.08	-5.84/-6.22	-7.11/-8.13	-8.97/-9.68	-10.28/-10.05	-9.46/-8.8	-7.97/-7.58	-7.72/-7.11	-6.02/-5.1	-4.49/-4.12	-3.93/-3.69	-3.81/-4.36	-5.39/-7.04
Θ(67.5°)	-7.85/-6.8	-5.96/-5.27	-4.12/-3.76	-3.54/-3.89	-3.93/-3.89	-4.03/-4.42	-4.82/-5.01	-4.9/-4.81	-5.07/-5.7	-6.74/-7.46	-7.32/-7.01	-7.42/-8.95	-10.69/-10.88	-9.72/-8.12	-6.58/-5.79	-5.99/-6.85	-7.65/-7.73	-7.11/-6.5	-5.87/-5.21	-4.46/-3.61	-2.75/-1.88	-1.28/-1.23	-1.97/-3.45	-5.66/-7.05
Θ(75°)	-7.74/-6.54	-5.18/-4.16	-3.52/-3.23	-3.17/-3.31	-3.13/-3.31	-3.86/-4.78	-6.01/-7.34	-8.54/-9.05	-9.16/-8.84	-8.49/-7.85	-6.9/-6.11	-6.02/-6.81	-8.22/-10.22	-11.43/-12.39	-12.06/-10.47	-9.51/-9.18	-8.77/-8.52	-8.14/-8.17	-8.15/-8.07	-7.49/-6.01	-4.05/-2.33	-1.14/-0.79	-1.6/-3.68	-7.22/-9.21
Θ(82.5°)	-7.68/-5.54	-3.86/-3.14	-3.29/-3.84	-4.47/-4.83	-4.79/-4.62	-4.71/-5.06	-5.55/-5.93	-5.54/-5.33	-5.32/-5.28	-5.58/-5.57	-5.43/-6	-7.34/-8.75	-8.89/-8.39	-8.42/-9.29	-10.77/-10.45	-8.88/-7.8	-7.1/-6.51	-6.65/-7.35	-6.88/-9.01	-7.44/-4.49	-2.25/-1.09	-0.81/-1.26	-2.75/-5.76	-9.41/-9.63
Θ(90°)	-7.76/-5.61	-4/-3.7	-3.68/-4.81	-6.31/-7.43	-7.86/-7.97	-8.05/-8.09	-7.23/-5.78	-4.58/-3.73	-3.05/-2.95	-3.18/-2.98	-2.66/-3.22	-5.15/-8.51	-10.42/-8.02	-5.54/-3.94	-3.16/-3.28	-4.76/-7.25	-7.85/-4.76	-7.26/-8.33	-9.87/-9.66	-6.85/-4.04	-2.19/-1.44	-1.53/-2.46	-4.41/-7.41	-9.94/-9.98
Θ(97.5°)	-6.54/-5.74	-5.45/-5.63	-6.07/-6.87	-7.9/-5.87	-7.94/-7.53	-7.78/-7.52	-6.43/-4.58	-4.88/-4.63	-3.86/-3.05	-2.21/-1.05	-0.25/-0.56	-2.2/-5.81	-11.45/-11.92	-6.4/-3.2	-1.66/-1.34	-2.19/-3.95	-5.16/-6.22	-6.98/-8.01	-7.86/-6.69	-5.04/-3.97	-3.42/-3.11	-3.05/-3.5	-4.79/-6.92	-8.49/-7.29
Θ(105°)	-7.85/-6.8	-6.75/-6.74	-5.98/-5.63	-5.95/-6.6	-6.8/-6.23	-5.3/-4.72	-4.88/-5.71	-6.95/-7.89	-7.95/-7.21	-5.66/-3.48	-1.71/-0.81	-0.91/-2.23	-4.97/-8.19	-9.6/-8.33	-6.49/-5.11	-4.45/-4.1	-4.42/-4.11	-4.7/-6.31	-7.96/-8.44	-7.91/-7.64	-7.58/-6.99	-5.93/-5.18	-5.52/-7	-9.08/-8.94
Θ(112.5°)	-4.65/-3.67	-3.51/-4.56	-5.03/-4.36	-4.27/-4.65	-4.9/-4.47	-3.77/-3.35	-3.59/-4.28	-5.47/-6.7	-7.58/-7.69	-7.03/-5.5	-3.27/-1.72	-1.39/-2.29	-3.88/-5.61	-71/-7.84	-8.33/-7.2	-6.06/-5.3	-5.24/-4.64	-4.65/-5.72	-6.74/-6.72	-6.11/-5.63	-4.92/-4.48	-4.51/-4.49	-5.01/-5.42	-5.82/-5.32
Θ(120°)	-6.2/-5.62	-5.18/-5.16	-5.61/-4.16	-3.64/-4	-4.92/-5.88	-6.13/-6.1	-6.45/-7.16	-7.69/-7.65	-7.22/-6.69	-6.49/-5.82	-3.84/-2.32	-1.67/-2.06	-3.06/-4.14	-4.33/-3.41	-2.75/-3.54	-5.63/-7.74	-8.46/-8.39	-8.92/-10.07	-9.74/-7.91	-6.17/-4.69	-3.25/-2.34	-2.32/-2.4	-2.71/-3.48	-4.4/-6.06
Θ(127.5°)	-8.89/-4.88	-3.62/-2.18	-1.03/-0.63	-1.08/-2.3	-4.05/-6.23	-7.94/-8.73	-7.87/-6.72	-5.71/-5.06	-4.81/-4.47	-2.91/-1.31	-0.72/-1.43	-2.38/-3.56	-4.16/-5.35	-5.12/-2.38	-0.52/-0.23	-1.32/-2.81	-3.84/-4.38	-4.85/-4.8	-6.85/-2.65	-1.71/-1.04	-0.42/-0.02	-0.19/-0.98	-2.28/-4.2	-5.94/-6.06
Θ(135°)	-3.54/-0.6	-3.72/-2.44	-1.28/-1.04	-1.93/-3.83	-4.97/-6.11	-6.19/-5.52	-4.34/-3.09	-2.03/-1.29	-0.95/-0.52	0.51/-1.73	2.89/-1.83	0.36/-1.38	-2.83/-4.31	-6.82/-6.86	-4.53/-3.84	-4.49/-5.28	-5.44/-5.73	-6.12/-5.81	-4.58/-3.14	-2.07/-1.28	-0.61/-0.12	0.04/-0.21	-0.8/-1.57	-2.47/-2.92
Θ(142.5°)	-7.31/-6.89	-7.12/-6.83	-5.55/-4.36	-3.66/-3.17	-2.91/-2.97	-3.23/-3.34	-3.27/-3.08	-2.92/-2.84	-2.2/-1.67	0.18/-1.29	1.88/-0.75	-0.37/-1.7	-3.03/-5	-5.83/-5.07	-4.23/-3.69	-3.26/-2.88	-2.69/-2.73	-2.79/-2.43	-2.09/-1.57	-1.19/-0.88	-0.51/-0.07	0.30/-25	-0.43/-1.75	-3.68/-6.2
Θ(150°)	-1.15/-0.92	-1.1/-1.19	-1.13/-0.68	-1.20/-3	-3.31/-0.08	-1.07/-0.63	-2.55/-3.5	-4.54/-5.52	-6.52/-5.73	-3.83/-2.1	-1.27/-1.21	-1.7/-2.61	-4.05/-5.85	-7.49/-7.15	-6.83/-6.29	-5.44/-4.09	-2.64/-1.49	-0.59/-0.1	0.62/-0.86	0.98/-1.09	1.23/-1.41	1.61/-62	1.33/-61	-0.44/-1.11
Θ(157.5°)	-1.62/-1.45	-1.37/-1.38	-1.16/-0.65	-0.140.16	0.03/-0.58	-1.49/-2.61	-3.74/-4.62	-5.15/-5.04	-4.41/-3.4	-2.36/-1.75	-1.82/-2.01	-2.93/-4.36	-6.27/-7.98	-8.31/-7.26	-5.87/-4.72	-3.72/-2.88	-2.15/-1.59	-1.12/-0.77	-0.65/-0.67	-0.8/-0.88	-0.9/-0.07	0.840.16	-0.54/-0.74	-1.28/-1.63
Θ(165°)	-7.74/-7.27	-6.79/-6.3	-5.67/-4.78	-3.88/-3.32	-3.33/-3.77	-4.36/-4.78	-4.91/-4.71	-4.23/-3.7	-3.18/-2.73	-2.31/-2.1	-2.29/-2.9	-3.82/-4.97	-6.05/-6.6	-6.37/-6.49	-4.57/-3.7	-3.08/-2.84	-3.01/-3.39	-3.89/-4.42	-5.03/-5.65	-6.08/-6.07	-5.7/-5.41	-5.41/-5.7	-5.98/-6.4	-7.37/-8.09
Θ(172.5°)	-11.28/-11.73	-11.8/-11.88	-12.35/-11.19	-10.45/-10.32	-9.23/-8.27	-7.15/-6.08	-2.97/-2.61	-3.79/-3.31	-2.86/-2.81	-2.61/-2.61	-2.86/-3.39	-4.01/-4.67	-5.15/-4.44	-5.54/-5.37	-4.59/-4.85	-4.86/-5.28	-6.12/-7.28	-6.88/-10.29	-10.17/-10.87	-11.14/-10.67	-10.18/-9.6	-2.91/-2.22	-9.46/-9.77	-9.84/-10.13
Θ(180°)	-5.25/-6.11	-7.08/-8.1	-9.56/-11.35	-12.55/-12.19	-11.07/-9.74	-8.56/-7.63	-6.93/-6.23	-5.49/-4.79	-4.27/-3.99	-3.86/-3.81	-3.9/-4.21	-4.72/-5.37	-6.02/-6.7	-7.48/-8.37	-9.1/-9.69	-10.47/-11.42	-11.19/-10.81	-10.7/-9.26	-8.04/-7.12	-6.38/-5.64	-4.9/-4.24	-4.03/-4.25	-4.44/-4.37	-4.21/-4.38
Freq(Hz)	2.45G/Pol.	Theta-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
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°)	-14.58/-13.29	-11.95/-10.68	-9.45/-8.34	-7.38/-6.69	-6.27/-5.88	-5.71/-5.59	-5.59/-5.84	-6.37/-6.99	-7.73/-8.78	-10.13/-11.54	-13.23/-15.48	-16.17/-15.24	-13.93/-12.82	-11.17/-9.9	-8.9/-8.19	-7.67/-7.11	-6.47/-5.99	-5.78/-5.71	-5.75/-5.97	-6.41/-7.15	-8.14/-9.56	-10.98/-12.28	-13.85/-15.38	-14.9/-14.83
Θ(7.5°)	-11.91/-12.18	-11.1/-10.1	-9.01/-7.92	-7.08/-6.44	-5.97/-5.68	-5.51/-5.57	-5.62/-5.91	-6.51/-7.24	-8.23/-9.46	-11.1/-11.84	-12.99/-13.5	-13.52/-12.57	-11.96/-11.37	-10.15/-9.24	-8.6/-8.07	-7.8/-7.56	-7.24/-6.79	-6.45/-6.24	-6.16/-6.13	-6.34/-6.86	-7.77/-8.73	-9.68/-10.63	-11.72/-11.9	-12.32/-12.06
Θ(15°)	-7.36/-5.93	-9.79/-9.12	-8.12/-7.1	-6.34/-5.75	-5.49/-5.23	-5.11/-5.07	-5.21/-5.53	-6.16/-6.59	-7.41/-8.63	-9.72/-10.28	-10.56/-10.92	-11.03/-10.74	-10.36/-9.88	-9.14/-8.29	-7.64/-7.07	-6.64/-6.54	-6.53/-6.46	-6.29/-6.15	-6.06/-5.94	-5.96/-6.22	-6.65/-7.29	-8.15/-8.93	-9.79/-10.68	-10.57/-10.47
Θ(22.5°)	-9.01/-8.78	-8.15/-7.73	-6.76/-5.92	-5.04/-4.48	-4.25/-4.16	-4.16/-4.23	-4.35/-4.69	-5.13/-5.63	-6.22/-6.97	-7.9/-8.25	-8.37/-8.39	-8.42/-8.14	-7.83/-7.79	-7.36/-7.14	-6.39/-5.64	-5.19/-4.97	-4.88/-4.93	-5.04/-5.05	-5.04/-4.98	-4.9/-4.83	-4.95/-5.25	-5.77/-6.4	-7.03/-7.65	-8.23/-8.7
Θ(30°)	-5.92/-5.84	-5.45/-4.9	-4.38/-3.82	-3.31/-2.88	-2.65/-2.7	-2.85/-3.2	-3.57/-4.1	-4.61/-5.12	-5.48/-5.85	-6.3/-6.84	-6.82/-6.6	-6.71/-6.79	-6.83/-6.92	-7.17/-6.3	-6.01/-4.89	-3.98/-3.31	-2.85/-2.58	-2.5/-2.6	-2.91/-3.25	-3.43/-3.35	-3.2/-3.24	-3.55/-4.07	-4.66/-5.3	-5.55/-5.96
Θ(37.5°)	-3.6/-3.36	-3.40/-2.68	-2.46/-2.33	-2.19/-2.06	-1.99/-2.14	-2.37/-2.83	-3.5/-4.4	-5.37/-5.94	-6.35/-6.39	-6.35/-5.97	-5.68/-5.8	-6.04/-6.62	-6.66/-6.85	-6.58/-6.58	-3.42/-2.45	-1.62/-1.06	-0.75/-0.73	-1.01/-1.48	-1.9/-1.99	-1.81/-1.63	-1.72/-2.02	-2.58/-3.17	-3.55/-3.63	-3.75/-3.45
Θ(45°)	-2.92/-2.91	-2.79/-2.7	-2.7/-2.68	-2.7/-2.64	-2.53/-2.53	-2.69/-2.96	-3.41/-4.09	-4.94/-5.68	-6.06/-6.08	-														



Radiated Composite Gain Data of 2.4GHz/5GHz

Appendix A

Θ(22.5°)	3.93/3.85	2.99/1.57	0.05/1.76	-3.96/-6.91	-10.68/-12.45	-12.89/-10.24	-8.17/-1.78	-6.39/-5.14	-3.39/-1.64	-0.06/-1.18	2.39/3.33	4/4.57	4.49/3.81	2.95/1.62	0.27/-1.21	-3.39/-6.35	-10.97/-11.43	-9.52/-6.49	-5.01/-3.26	-1.86/-0.57	0.29/0.55	0.78/1.27	1.97/2.62	3.42/3.95
Θ(30°)	2.52/39	2.51/84	0.47/-0.84	-2.53/-5.21	-8.19/-10.85	-10.63/-8.38	-6.45/-4.84	-3.68/-2.8	-1.46/-0.22	0.77/1.8	2.68/3.68	4.26/4.36	4.06/3.55	2.54/1.35	-0.18/-1.69	-3.77/-6.61	-10.87/-15.42	-15.36/-10.51	-5.98/-2.97	-1.8/-1.35	-1.28/-1.2	-1.1/-0.45	0.25/1.15	1.64/2.25
Θ(142.5°)	0.97/0.96	0.77/0.42	-0.94/-2.01	-3.2/-4.8	-6/-7.6	-3.06/-9.22	-8.15/-6.73	-4.67/-2.78	-1.14/-0.23	0.21/0.18	0.81/1.72	2.62/2.62	2.21/94	1.49/0.86	-0.04/-1.89	-5.36/-9.12	-11.84/-14.47	-14.71/-15.11	-8.85/-5.01	-1.67/0.32	-0.68/0.38	-0.54/-1.07	-1.18/-0.57	0.15/0.65
Θ(45°)	0.84/1.81	2.11/1.86	0.84/0.65	2/3.75	-4.11/-4.52	-5.59/-7.63	-8.81/-8.91	-7.33/-4.83	-1.79/-0.46	-0.88/-2.3	-3.61/-1.38	0.59/0.9	1.46/1.45	1.17/1.42	0.98/-0.94	-4.83/-9.28	-9.89/-8.82	-9.9/-10.24	-8.2/-1.48	-1.71/-0.54	-0.62/-1.48	-1.91/-3.12	-4.69/-3.48	-1.84/0.12
Θ(52.5°)	0.72/1.08	0.61/0.53	0.11/-0.88	-2.88/-4.69	-4.32/-3.34	-3.9/-6.54	-11.16/-13.3	-10.78/-8.21	-6/-5.04	-6.02/-8.94	-8.11/-2.69	-0.66/0.17	0.95/0.73	0.69/0.42	-0.89/-3.07	-7.44/-12.25	-10.76/-8.89	-8.85/-10.43	-9.85/-5.54	-2.58/-1.58	-1.22/-2.11	-3.96/-6.31	-5.37/-2.84	0.14/1.01
Θ(60°)	0.15/1.05	1.99/1.64	0.86/1.135	-4.02/-6.61	-6.11/-5.06	-4.66/-7.65	-10.66/-12.78	-12.97/-12.21	-8.15/-6.77	-8.35/-10.95	-7.65/-3.93	-1.66/-1.29	-1.27/-0.73	-0.97/-1.54	-2.51/-4.47	-9.37/-12.05	-14.85/-9.76	-9.4/-10.5	-11.32/-10.62	-7.58/-5.98	-5.71/-5	-5.2/-6.81	-9.22/-5.9	-2.73/-0.75
Θ(67.5°)	-0.35/0.53	0.99/1.03	0.3/-1.45	-4.68/-8.85	-8.55/-8.44	-8.08/-6.77	-6.31/-8.06	-10.62/-10	-6.97/-4.78	-4.52/-7.11	-5.54/-3.39	-2.45/-2.54	-1.16/-0.42	-0.72/-1.45	-2.76/-4.32	-8.66/-13.27	-10.82/-8.56	-8.51/-11.88	-13.19/-13.39	-9.54/-7.22	-5.69/-5.6	-5.31/-5.27	-4.71/-3.71	-2.34/-1.32
Θ(75°)	-2.77/-1.96	-2.07/-2.69	-3.2/-3.96	-6.88/-10.48	-8.49/-6.93	-7.91/-9.59	-9.75/-8.48	-8.47/-10.68	-10.32/-8.81	-7.1/-6.53	-3.87/-1.44	-0.83/-0.82	-1.91/-2.84	-3.06/-2.32	-1.3/-2.47	-5.46/-6.71	-8.23/-7.72	-9.98/-11.69	-15.16/-10.76	-8.11/-8.37	-7.69/-6.36	-5.1/-3.44	-3.24/-5.06	-8.16/-5.11
Θ(82.5°)	-3.99/-3.33	-4.47/-2.29	-8.56/-8.81	-8.7/-7	-6.19/-6.23	-6.72/-8.66	-8.17/-6.93	-7.54/-7.36	-8.52/-6.28	-3.04/-3.48	-3.37/-3.05	-2.85/-3.69	-4.18/-4.5	-4.68/-2.49	-2.23/-4.41	-5.26/-7.34	-6.57/-7.42	-8.55/-11.77	-11.67/-12.5	-9.97/-8.57	-6.7/-5.04	-3.94/-4.22	-5.09/-5.83	-5.65/-4.65
Θ(90°)	-2.4/-2.61	-5.08/-7.86	-10.23/-9.23	-7.19/-7.81	-10.32/-9.7	-7.98/-5.41	-4.31/-4.72	-6.16/-8.92	-9.55/-7.15	-5.3/-4.61	-4.51/-4.01	-2.35/-2.8	-3.35/-5.83	-6.11/-5.65	-4.5/-4.63	-4.33/-5.34	-5.62/-5.82	-9.46/-13.05	-12.32/-8.1	-7.8/-7.95	-6.14/-4.34	-3.43/-3.58	-4.99/-5.55	-3.51/-2.51
Θ(97.5°)	-9.32/-9.63	-9.37/-8.43	-7.92/-6.49	-5.33/-5.97	-7.04/-7.42	-6.21/-6.12	-7.01/-6.67	-7.69/-8.53	-10.42/-10.16	-4.66/-4.6	-5.13/-6.27	-5.84/-6.65	-4.93/-4.02	-4.31/-6.06	-7.72/-5.64	-5.34/-4.57	-5.64/-8.19	-10.25/-11.56	-11.11/-8.4	-7.73/-5.12	-4.76/-5.86	-6.88/-7.98	-8.95/-7.23	-5.64/-6.35
Θ(105°)	-7.51/-9.82	-8.55/-6.69	-5.4/-3.29	-2.56/-3.67	-5.56/-5	-4.35/-4.4	-7.04/-9.88	-9.29/-8.74	-12.33/-14.14	-9.3/-6.52	-4.14/-5.26	-4.52/-4.42	-3.07/-2.63	-2.93/-5.15	-18.14/-8.72	-4.68/-4.46	-5.72/-8.13	-5.04/-6.92	-7.39/-7.62	-6.22/-4.98	-5.58/-6.89	-7.13/-7.86	-7.77/-5.51	-4.42/-4.57
Θ(112.5°)	-9.75/-11.51	-11.74/-8.8	-6.32/-3.79	-2.79/-2.55	-4.38/-6.36	-6.71/-6.69	-9.56/-11.66	-10.22/-8.67	-10.85/-10.07	-7.69/-7.69	-8.06/-9.01	-7.76/-7.14	-5.83/-5.71	-5.43/-5.95	-5.8/-6.79	-5.49/-6.48	-8.42/-9.23	-8.17/-10.29	-9.77/-8.82	-6.59/-5.49	-8.79/-12.22	-6.2/-4.79	-5.98/-7.02	-5.63/-6.16
Θ(120°)	-6.19/-9.69	-10.95/-11.44	-12.36/-6.66	-3.75/-2.76	-2.81/-4.73	-6.54/-8.79	-11.56/-10.56	-13.95/-12.64	-9.81/-10.43	-10.74/-8.71	-7.82/-6.66	-9.58/-8.74	-2.77/-3.97	-2.77/-3.97	-2.77/-3.97	-5.68/-5.58	-10.73/-7.25	-4.68/-7.17	-10.88/-8.8	-8.88/-10.09	-8.72/-14.4	-12.71/-6.59	-10.39/-6.06	-4.58/-5.41
Θ(127.5°)	-3.16/-2.65	-3.83/-5.16	-8.93/-4.92	-4.17/-2.56	-2.88/-4.12	-5.92/-7.85	-7.23/-6.6	-6.98/-8.97	-12.09/-13.27	-7.68/-7.37	-11.17/-1.21	-4.45/-3.26	-5.42/-4.17	-4.55/-3.17	-6.56/-6.87	-4.77/-2.98	-2.73/-5.04	-6.87/-9.45	-15.45/-10.86	-7.61/-9.95	-10.34/-14.05	-12.79/-13.39	-7.35/-8.99	-9.04/-4.43
Θ(135°)	-5.91/-4.32	-3.26/-5.37	-8.19/-7.74	-4.77/-3.4	-4.05/-5.68	-7.12/-8.4	-9.19/-8.71	-6.22/-5.51	-9.05/-12.78	-8.72/-6.19	-5.95/-7.24	-9.51/-7.28	-6.46/-3.94	-5.96/-6.9	-3.59/-4.36	-6.69/-5.97	-6.86/-6.66	-6.08/-7.71	-13.35/-7.7	-8.28/-6.91	-5.84/-9.22	-9.07/-11.83	-7.74/-6.64	-7.16/-5.04
Θ(142.5°)	-8.4/-7.98	-7.58/-7.25	-8.95/-4.74	-2.34/-2.37	-1.35/-1.47	-3.03/-6.42	-12.33/-11.05	-8.61/-8.29	-8.33/-7.41	-7.09/-1.78	-6.71/-6.8	-7.98/-5.78	-6.05/-4.75	-5.44/-6	-5.78/-9.53	-9.77/-11.53	-9.37/-6.73	-6.6/-8.01	-11.39/-14.03	-7.44/-6.34	-4.93/-3.35	-3.55/-5.36	-5.88/-5.86	-10.82/-8.49
Θ(150°)	-9.47/-9.51	-9.38/-9.24	-8.53/-8.05	-4.75/-6.34	-5.19/-5.09	-6.31/-8.51	-12.04/-12.55	-10.67/-10.36	-10.25/-9.88	-7.82/-7.28	-8.52/-10.07	-11.71/-11.57	-12.01/-9.49	-6.3/-5	-5.16/-6.63	-7.8/-6.33	-6.94/-9.88	-10.86/-11.81	-12.27/-11.35	-8.92/-7.03	-7.05/-6.48	-4.67/-5.16	-6.86/-9.26	-13.62/-13.75
Θ(157.5°)	-0.94/-0.43	-0.39/-0.91	-1.1/-1.28	-1.76/-2.12	-2.5/-3.5	-4.9/-6.77	-8.69/-9.79	-10.56/-11.19	-11.84/-10.32	-7.89/-5.6	-4.63/-3.89	-3.25/-2.77	-2.34/-1.79	-1.22/-1.41	-2.63/-3.93	-4.44/-4.84	-6.53/-10.21	-13.8/-14.71	-14.22/-12.75	-9.99/-8.15	-6.46/-4.23	-2.49/-1.88	-1.78/-1.82	-1.97/-1.54
Θ(165°)	-0.04/0.62	0.91/0.8	0.62/0.36	-0.5/-1.85	-3.47/-5.41	-7.74/-10.55	-12.62/-13.47	-14.02/-12.27	-11.25/-10.18	-8.65/-6.15	-5.61/-5.56	-6.1/-5.72	-5.69/-5.67	-6.09/-7.26	-8.22/-7.98	-8.13/-9.29	-11.12/-13.36	-14.68/-15.18	-15.31/-15.8	-14.77/-15.6	-11.98/-8.52	-7.29/-5.68	-4.06/-2.75	-1.91/-1.35
Θ(172.5°)	-4/-3.9	-4.08/-3.77	-3.58/-3.99	-4.77/-5.88	-6.84/-8.34	-10.39/-13.27	-14.9/-15.57	-14.32/-11.92	-10.21/-8.98	-7.92/-6.19	-4.76/-3.9	-3.55/-3.4	-3.46/-3.86	-4.22/-4.91	-5.72/-6.58	-7.48/-8.35	-8.81/-9.43	-9.92/-10.62	-12.17/-14.56	-15.26/-14.28	-12.54/-10.96	-10.01/-8.86	-6.7/-4.69	-4.22/-4.19
Θ(180°)	-14.28/-13.32	-12.3/-10.96	-9.56/-8.16	-7.64/-7.48	-5.57/-8.83	-8.42/-9	-9.46/-10.3	-11.42/-11.6	-11.28/-10.9	-10.78/-10.3	-9.55/-8.73	-8.11/-7.8	-7.54/-6.89	-6.34/-5.75	-5.78/-6.19	-6.43/-6.76	-7.18/-7.28	-8.47/-9.67	-10.9/-11.67	-12.45/-12.6	-11.45/-10.68	-11.82/-13.58	-15.3/-15.05	
Freq(Hz)	5.3GPol.	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°)	-12.6/-8.41	-5.77/-4.03	-2.5/-1.49	-0.54/0.44	1.17/1.67	2.09/2.33	2.32/2.07	1.57/0.78	-0.25/-1.33	-2.4/-4.04	-6.23/-9.21	-11.21/-13.83	-14.27/-10.51	-7.31/-4.64	-2.68/-1.48	-0.15/0.75	1.44/1.6	1.84/1.88	1.62/1.43	0.91/0.27	-0.45/-1.68	-3.47/-6.09	-9.12/-11.74	-15.32/-14.94
Θ(7.5°)	-11.71/-9.58	-7/-4.72	-2.84/-1.64	-0.77/0.3	0.65/1.2	1.51/1.51	1.39/1.26	0.95/0.47	-0.35/-0.96	-2.05/-3.65	-6.15/-9.06	-12.58/-13.05	-12.13/-8.69	-5.86/-4.39	-1.94/-0.46	0.39/0.98	1.42/1.89	2.03/2.1	2/1.81	1.23/0.58	0.2/-0.76	-2.21/-3.63	-5.14/-6.78	-8.64/-10.35
Θ(15°)	-7.67/-9.04	-5.57/-2.89	-0.97/0.28	0.71/0.8	0.82/0.59	0.15/-0.51	-1.04/-1.03	-1.29/-1.54	-1.21/-2.24	-2.54/-2.99	-3.84/-5.22	-7.18/-10.01	-11.57/-9.19	-6.13/-3.31	-1.74/-0.17	0.58/1.2	1.33/1.29	1.13/1.05	0.78/0.49	0.54/0.45	0.21/-1.04	-0.42/-0.58	-1.14/-1.99	-3.75/-8.3
Θ(22.5°)	-7.7/-7.87	-4.62/-2.12	-0.45/0.82	1.58/1.55	1.28/0.67	-0.58/-1.78	-2.74/-3.1	-2.91/-2.24	-1.62/-1.36	-1.72/-2.53	-3.48/-5.17	-7.15/-9.54	-9.9/-6.98	-4.08/-2.17	-0.86/0.27	1.06/1.57	1.49/0.89	0.31/-0.03	-0.45/-0.41	-0.08/0.22	0.15/-0.27	-0.57/-0.75	-0.89/-1.63	-2.97/-5.04
Θ(30°)	-5.59/-4.41	-3.2/-2.25	-1.36/-0.54	0.48/0.93	1.03/0.75	0.48/0.49	0.09/-0.66	-1.23/-1.22	-1.21/-1.48	-2.38/-3.4	-4.48/-5.46	-6.95/-7.98	-6.88/-5.14	-3.85/-2.95	-2.4/-1.27	-0.69/-0.06	0.37/1.07	1.39/1.38	1.29/1.06	0.47/0.05	-0.5/-1.1	-1.58/-1.85	-2.26/-2.85	-4.28/-5.74
Θ(37.5°)	-2.88/-2.52	-1.97/-1.66	-1.46/-0.9	-0.22/0.08	-0.19/-0.52	-0.68/-0.55	-0.23/-0.01	-0.01/0.38	-1.07/-1.77	-4/-6.56	-7.12/-6.85	-5.67/-3.58	-2.41/-1.77	-0.85/-0.5	-0.63/-0.65	-0.76/-0.36	0.38/0.29	-0.54/-0.77	-0.58/-0.06	0.49/-0.17	-1.89/-2.95	-3.87/-4.86	-5.65/-5.64	-3.95/-2.56
Θ(45°)	-1.61/-1.07	-0.61/-0.42	-0.84/-0.67	-0.87/-1.14	-1.71/-2.11	-2.22/-2.3	-1.33/0.05	1.07/0.92	0.14/-1.76	-4.39/-6.71	-5.57/-4.03	-3.21/-2.66	-1.98/-1.85	-1.49/-1.41	-1.73/-1.33	-0.77/-0.93	-1.51/-1.6	-1.09/-0.34	0.08/0.03	-1.44/-2.36	-3.34/-3.97	-3.97/-4.19	-3.22/-2.16	-1.93/-1.85
Θ(52.5°)	-1.53/-0.88	-0.15/-0.27	-1.17/-1.95	-2.69/-3.3	-5.13/-5.36	-4.74/-2.44	-0.71/0.68	1.45/1.31	-0.23/-2.85	-5.2/-6	-3.99/-2.57	-1.77/-1.22	-1.25/-2.48	-2.68/-2.49	-2.38/-1.44	-1.19/-1.41	-0.95/-2.3	-1.92/0.07	-0.04/-0.67	-1.08/-2.51	-2.75/-3.19	-3.14/-2.48	-1.54/-0.9	-0.97/-1.42
Θ(60°)	-0.13/-0.9	-1.21/-1.74	-2.47/-2.19	-0.54/-2.01	-4.54/-5.73	-4.15/-2.64	-2.52/-1.31	0.31/0.98	0.25/-2.77	-5.02/-7.26	-4.86/-3.38	-2.04/-1.69	-2.86/-2.53	-4.25/-4.5	-3.87/-2.03	-0.51/0.13	-1.42/-3.61	-3.04/-8.1	0.27/-1.42	-4.44/-3.13	-1.94/-2.28	-1.38/-1.52	-0.58/-0.13	-0.15/-0.54
Θ(67.5°)	-0.28/-1.05	-1.94/-3.2	-2.75/-0.53	-0.72/-1.09	-2.44/-2.2	-0.98/-0.65	-0.83/-1.21	-0.03/0.47	-0.75/-3.17	-4.34/-3.97	-2.69/-3.4	-3.03/-3.29	-2.09/-2.28	-4.27/-3.88	-3.19/-1.84	-2.02/-1.52	-1.27/-3.24	-2.48/-0.63	-0.31/-2.57	-0.43/-2.35	-1.46/-2.04	-1.06/0.01	0.25/-0.09	-0.33/-0.56
Θ(75°)	0.2/-0.62	-1.3/-3.55	-2.76/-0.32	0.69/-0.69	-0.91/-0.73	-0.32/-0.33	-0.59/-0.29	-0.22/-0.57	-0.59/-0.81	-0.96/-1.82	-2.28/-3.83	-4.95/-5.7	-5.72/-5.08	-4.57/-2.19	-0.68/0.79	-0.30/-61	-0.44/-1.82	-1.89/-0.45	0.27/0.3	-1.18/-0.97	0.04/-1.71	-1.65/-1.35	-0.5/-0.53	-0.18/-0.43
Θ(82.5°)	0.88/-0																							



Radiated Composite Gain Data of 2.4GHz/5GHz

Appendix A

Θ(67.5°)	-3.6/-3.79	-2.18/-0.83	-0.18/-1.46	-4.81/-8.88	-9.04/-10.92	-10.08/-6.71	-6.54/-9.09	-12.92/-10.03	-7.63/-6.35	-8.17/-7.21	-3.51/-1.29	-1.65/-3.34	-3.96/-3.41	-3.03/-3.51	-5.1/-7.8	-14.13/-14.69	-11.77/-7.85	-6.99/-8.17	-12.57/-13.42	-9.38/-7.08	-5.34/-4.63	-5.32/-5.84	-6.06/-6.28	-5.14/-3.89
Θ(75°)	-2.1/-1.27	-1.47/-2.29	-4.23/-6.72	-9.08/-6.92	-6.85/-10.58	-13.86/-7.6	-4.35/-5.2	-11.55/-12.18	-7.43/-5.58	-5.83/-5.82	-4.54/-3.73	-3.08/-3.26	-3.62/-2.95	-2.18/-3.87	-5.47/-6.76	-11.49/-14.69	-11.05/-7.37	-7.3/-9.33	-12.03/-13.24	-13.66/-10.15	-6.99/-5.42	-4.83/-5.01	-4.6/-5.17	-4.38/-3.01
Θ(82.5°)	-2.66/-2.45	-3.92/-6.44	-9.01/-12	-13.52/-14.72	-13.08/-13.39	-13.61/-10.18	-7.7/-7.19	-8.51/-10.47	-11.4/-10.52	-9.11/-7.35	-4.25/-3.46	-4.93/-5.34	-4.59/-3.14	-3.6/-5.09	-7.38/-9.47	-10.21/-14.4	-13.68/-9.76	-9.63/-8.8	-10.54/-13.8	-14.89/-12.82	-9.15/-5.43	-4/-3.5	-2.9/-4.37	-6.17/-3.89
Θ(90°)	-5.91/-5.81	-5.5/-6.68	-8.11/-9.9	-10.96/-10.55	-9.81/-11.12	-12.95/-10.33	-9.41/-8.33	-7.39/-6.74	-9.09/-10.05	-6.02/-5.02	-6.61/-6.41	-5.13/-4.27	-5.11/-5.6	-5.25/-4.16	-4.42/-7.31	-8.49/-9.77	-9.08/-10.32	-7.84/-7.75	-9.5/-12.45	-12.8/-8.3	-6.58/-6	-4.01/-3.95	-3.68/-5.05	-7.34/-8.3
Θ(97.5°)	-6.23/-5.08	-4.47/-3.79	-4.07/-4.43	-5.33/-5.88	-8.99/-12.7	-12.83/-8.56	-6.15/-6.84	-6.42/-6.56	-8.3/-9.99	-11.17/-6.79	-5.92/-4.56	-1.27/-1.69	-3.8/-7.33	-6.57/-6.77	-6.89/-8.34	-6.57/-6.9	-8.1/-8.81	-10.32/-8.49	-10.14/-10.61	-9.37/-9.28	-7.74/-5.71	-3.67/-3.99	-5.58/-7.44	-7.74/-8.03
Θ(105°)	-11.43/-7.6	-4.01/-2.05	-1.25/-0.87	-1.54/-2.59	-4.87/-8.18	-8.42/-7.67	-8.75/-7.06	-4.64/-7.13	-9.41/-9.92	-8.36/-6.39	-7.23/-6.14	-3.43/-2.17	-4.35/-7.11	-12.62/-14.47	-11.87/-8.94	-8.88/-7.32	-9.53/-8.5	-7.03/-8.45	-9.92/-10.35	-12.41/-9.95	-8.12/-5.38	-5.75/-6.44	-8.74/-9.81	-8.85/-10.06
Θ(112.5°)	-6.19/-5.33	-4.01/-1.64	-0.88/-0.3	-0.3/-2.49	-4.1/-4.57	-4.07/-5.07	-5.44/-5.66	-5.53/-6.3	-7.57/-9.94	-6.45/-6.12	-7.04/-7.07	-4.81/-3.07	-3.41/-5.93	-6.52/-10	-12.03/-9.4	-5.77/-5.92	-8.55/-8.36	-7.18/-9.26	-9.88/-8.97	-9.41/-7.65	-6.64/-7.52	-8.89/-12.03	-15.51/-8.43	-4.49/-3.98
Θ(120°)	-4.27/-6.48	-4.22/-3.22	-2.7/-1.45	-1.78/-5.14	-6.12/-4.69	-4.86/-4.99	-5.57/-6.05	-8.17/-10.22	-10.27/-10.44	-8.93/-8.56	-7.51/-6.85	-4.49/-7.75	-6.2/-6.17	-1.77/-4.58	-7.82/-9.29	-6.23/-7	-8.9/-8.29	-10.3/-12.78	-10.48/-7.63	-8.51/-9.75	-10/-10.89	-14.59/-14.61	-11.46/-5.17	-3.33/-3.8
Θ(127.5°)	-5.98/-4.66	-5.42/-6.72	-6.97/-6.73	-4.96/-4.37	-6.41/-7.93	-11.78/-9.57	-4.66/-3.96	-6.31/-11.88	-15.88/-14.24	-11.31/-8.6	-5.49/-4.15	-7.34/-7.27	-15.57/-4.93	-2.63/-2.09	-2.86/-5.26	-6.12/-7.09	-5.98/-8.01	-7.55/-13.38	-8.98/-4.82	-7.77/-10.61	-8.06/-10.99	-8.77/-6.84	-9.3/-15.7	-9.84/-7.68
Θ(135°)	-7.95/-6.96	-6.54/-8.83	-9.15/-10.21	-8.63/-9.82	-12.8/-14.8	-13.92/-9.94	-7.34/-4.71	-4.6/-6.75	-9.89/-8.03	-8.03/-10.33	-10.75/-8	-5.43/-4.71	-8.86/-14.03	-8.89/-5.68	-2.86/-3.26	-7.59/-6.63	-7.86/-4.53	-5/-7.42	-8.21/-6.72	-7.23/-7.24	-8.13/-12.8	-14.7/-10.48	-5.23/-6.67	-5.21/-4.36
Θ(142.5°)	-3.89/-2.93	-2.92/-5.48	-4.88/-2.13	-2.44/-4.03	-5.22/-7	-8.16/-7.65	-8.02/-7.29	-7.02/-9.45	-12.83/-8.88	-7.88/-7.83	-5.44/-3.35	-5.11/-6.82	-5.3/-3.17	-3.67/-3.9	-4.86/-8.69	-11.05/-12.12	-11.83/-6.64	-5.6/-5.69	-5.24/-5.08	-5.07/-5.41	-6.62/-5.12	-8.63/-9.73	-10.8/-11.48	-11.14/-5.37
Θ(150°)	-8.72/-7.68	-8.15/-8.13	-11.75/-12.53	-10.98/-10.46	-11.51/-10.43	-8.9/-8.39	-9.17/-10.68	-12.44/-14.83	-13.03/-11.07	-10.6/-10.57	-12.41/-14.48	-9.22/-6.39	-9.58/-13.1	-11.08/-8.5	-11.15/-13.32	-10.63/-9.21	-7.05/-4.97	-5.62/-8.31	-11.84/-12.57	-10.97/-11.02	-8.66/-4.64	-2.91/-2.6	-3.13/-5.31	-9.48/-11.35
Θ(157.5°)	-4.52/-4.84	-4.67/-3.74	-3.51/-3.61	-3.86/-4.49	-5.87/-6.63	-6.3/-6.15	-6.41/-6.71	-7.64/-10.44	-13.86/-10.51	-7.78/-5.2	-3.63/-3.56	-4.26/-4.57	-4.2/-4.04	-4.09/-5.42	-7.76/-11.19	-14.44/-13.82	-13.5/-13.79	-14.45/-11.76	-8.67/-7.34	-6.36/-4.94	-3.33/-2.57	-2.72/-2.54	-2.08/-3.69	-6.15/-5.11
Θ(165°)	-1.92/-1.12	-0.7/-0.79	-1.22/-1.8	-2.8/-4.12	-5.4/-6.47	-7.92/-10.1	-12.17/-14	-14.86/-14.75	-14.49/-12.56	-9.69/-7.53	-6.56/-5.89	-5.19/-4.26	-3.46/-2.68	-2.56/-3.22	-3.47/-3.1	-3.79/-5.66	-7.91/-8.82	-9.5/-10.35	-12.35/-12.99	-11.36/-7.54	-5.37/-3.96	-2.92/-2.24	-1.92/-2.2	-2.07/-2.11
Θ(172.5°)	-5.84/-6.3	-7.18/-7.33	-7.15/-7.21	-7.24/-7.73	-7.76/-8.54	-9.63/-11.25	-12.54/-11.27	-10.84/-10.21	-9.64/-9.03	-7.16/-4.89	-3.6/-3.05	-3.19/-3.66	-3.8/-3.9	-4.01/-4.67	-5.32/-5.69	-6.3/-7.42	-8.78/-10.95	-13.43/-15.41	-15.48/-15.33	-12.99/-10.16	-8.85/-8.58	-8.25/-8.29	-8.11/-6.78	-6.04/-5.79
Θ(180°)	-12.76/-12.11	-10.3/-9.46	-9.03/-8.51	-8.06/-8.33	-9.45/-10.49	-11.04/-11.75	-12.05/-12.52	-13.28/-13.37	-13.92/-12.15	-10.99/-9.97	-8.37/-7.52	-6.62/-6.61	-6.84/-6.74	-6.91/-7.42	-8.12/-9.3	-9.39/-9.27	-9.71/-10.46	-11.61/-11.47	-11.34/-12.57	-13.35/-13.17	-14.52/-15.06	-13.73/-13.03	-13.08/-12.77	-13.04/-14.99
Freq(Hz)	5.785GPol.	Theta/-	-/-	-/-	-/-	-/-	-/-	-/-	-/-	-/-	-/-	-/-	-/-	-/-	-/-	-/-	-/-	-/-	-/-	-/-	-/-	-/-	-/-	-/-
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°)	-9.3/-7.7	-4.97/-3.17	-1.83/-0.76	0.31/-1.3	2.11/-2.59	2.95/-2.88	2.84/-2.69	2.47/-2.19	1.66/-0.75	-0.33/-1.59	-3.41/-5.41	-7.73/-9.8	-10.09/-7.78	-5.39/-3.35	-2.03/-0.87	0.36/-1.48	2.16/-2.46	2.6/-2.83	2.62/-2.56	2.36/-2.08	1.34/-0.34	-0.61/-1.98	-3.41/-4.78	-6.83/-8.75
Θ(7.5°)	-9.25/-7.52	-4.91/-3.07	-1.94/-1.29	-0.94/-0.15	0.74/-1.61	2.06/-2.55	2.64/-2.61	2.41/-2.37	2.03/-1.31	0.16/-1.42	-3.6/-5.8	-8.52/-11.81	-12.33/-8.38	-5.35/-3.21	-1.99/-0.77	0.15/-0.99	1.43/-1.91	2.08/-1.98	2.03/-1.87	1.26/-0.71	-0.11/-1.29	-2.7/-4.47	-6.55/-7.9	-8.84/-9.25
Θ(15°)	-6.94/-5.84	-4.93/-3.89	-2.75/-1.67	-0.81/-0.38	-0.03/-0.41	0.99/-1.32	1.46/-1.63	1.39/-1.1	0.50/-1.5	-0.84/-2.34	-4.5/-7.16	-11.84/-15.69	-15.34/-9.77	-6.64/-4.17	-3.03/-1.79	-1.07/-0.14	0.39/-0.66	0.71/-0.91	0.77/-0.53	-0.03/-1.09	-4.76/-5.37	-5.67/-6.54	-7.65/-7.93	
Θ(22.5°)	-4.71/-5.01	-4.36/-3.08	-2.29/-0.89	0.26/-0.67	1.07/-1.16	0.95/-0.73	0.59/-0.73	0.62/-0.55	0.49/-0.02	-1.38/-3.69	-7.64/-14.04	-14.69/-11.19	-8.56/-6.7	-5.3/-4.44	-3.33/-2.51	-1.13/-0.29	0.01/-0.11	-0.26/-0.56	-0.81/-1.2	-1.48/-1.69	-2.13/-2.59	-2.42/-2.68	-3.1/-3.68	-4.32/-4.42
Θ(30°)	-4.27/-4.08	-2.35/-0.86	0.33/-1.1	1.1/-0.6	0.45/-0.61	0.97/-1.02	0.53/-0.18	-0.88/-1.16	-1.61/-1.66	-3.06/-5.52	-7.96/-8.48	-6.1/-4.35	-4.15/-3.96	-3.78/-4.17	-5.33/-5.79	-4.91/-3.32	-2.17/-1.31	-0.96/-0.87	-1.13/-1.52	-2.31/-3.16	-3.43/-3.2	-2.7/-2.22	-1.78/-1.74	-2.73/-2.11
Θ(37.5°)	-4.73/-2.32	-0.68/-0.12	-0.5/-1.08	-1.26/-1.31	-1.61/-1.81	-2.03/-1.94	-3.44/-6.55	-10.16/-8.35	-6.46/-5.81	-6.69/-6.64	-6.01/-3.61	-2.19/-2	-2.21/-3.56	-4.79/-4.76	-3.66/-2.61	-2.01/-1.94	-2.85/-3.5	-3.79/-4.65	-6.24/-7.27	-7.82/-4.98	-3.5/-2.51	-1.57/-1.03	-1.62/-2.99	-4.71/-6
Θ(45°)	-1.59/-1.07	-1.13/-0.62	0.06/-0.51	0.2/-0.87	-2.29/-3.78	-4.7/-4.81	-4.71/-5.32	-6.03/-7.86	-6.97/-4.14	-3.42/-2.72	-2.79/-0.91	-0.54/-1.09	-1.73/-2.24	-2.44/-2.46	-3.37/-4.91	-4.63/-4.27	-4.65/-5.2	-7.72/-6.71	-5.8/-7.01	-7.46/-8.41	-7.31/-6.81	-5.82/-4.36	-2.89/-2.36	-2.25/-2.45
Θ(52.5°)	0.64/-1.07	1.28/-0.98	0.83/-0.48	0.29/-1.14	-3.05/-5.51	-5.92/-2.71	-0.91/-1.19	-2.8/-5.09	-7.79/-9.44	-8.67/-6.01	-3.16/-1.3	-1.71/-1.3	-0.50/-5.2	0.61/-0.97	-3.95/-5.6	-3.62/-1.98	-1.35/-2.23	-3.34/-3.91	-3.39/-3.62	-4.63/-5.22	-6.91/-6.37	-4.61/-3.37	-1.95/-0.74	0.13/-0.46
Θ(60°)	0.90/-0.98	1.21/-0.88	0.34/-0.96	-1.08/-1.05	-2.55/-6.21	-6.33/-1.44	0.82/-1.46	1.04/-0.34	-1.51/-4.69	-8.31/-5.83	-3.22/-1.67	-0.9/-0.03	1.01/-1.81	0.77/-1.61	-3.52/-3.8	-0.95/-1.01	-0.66/-0.53	-0.88/-1.43	-2.81/-3.4	-2.28/-1.22	-1.84/-1.97	-1.97/-1.18	-0.39/-0.09	0.77/-1.2
Θ(67.5°)	1.02/-1.75	1.51/-0.18	-1.59/-1.35	-1.23/-0.86	-1.22/-1.95	-2.52/-2.4	-0.06/-1.5	1.65/-1.2	-0.02/-2.58	-4.85/-3	-1.24/-1.1	-1.42/-0.98	0.91/-0.3	-0.2/-1.63	-2.57/-2.85	-2.1/-2.56	-1.49/-1.06	-1.58/-3.22	-3.98/-3.91	-2.72/-1.43	-2.15/-2.11	-1.72/-0.17	0.66/-0.3	-0.20/-8.5
Θ(75°)	1.82/-2.74	1.24/-0.04	-2.45/-0.98	-0.96/-0.58	1.81/-9.2	1.57/-1.18	2.04/-2.7	1.29/-0.57	-0.3/-1.05	-1.54/-0.25	0.11/-0.82	-0.56/-0.41	1.57/-2.22	2.36/-0.05	-1.83/-2.87	-3.16/-1.54	-0.73/-2.55	-1.83/-0.28	-0.99/-2.59	-2.57/-0.98	-1.07/-2.53	-0.22/-0.54	1.72/-1.15	0.27/-2.14
Θ(82.5°)	1.93/-2.86	0.82/-1.14	-3.13/-2.92	-3.05/-1.15	0.91/-1.44	0.88/-1.32	3.24/-4.18	3.83/-3.47	2.64/-1.33	0.22/-0.17	1.07/-0.1	-0.58/-0.93	1.57/-2.87	2.24/-0.79	-1.16/-2.41	-3.10/-0.4	0.64/-1.16	1.58/-0.05	0.27/-0.48	0.92/-0.39	0.43/-1.04	1.51/-2.19	1.75/-0.81	1.25/-3.1
Θ(90°)	2.33/-2.9	2.52/-1.1	-1.41/-3.07	-4.69/-1.9	0.99/-2.33	1.59/-0.17	0.17/-2.14	3/-2.6	2.49/-1.58	0.64/-0.67	-1.97/-2.59	-2.92/-1.22	-0.62/-2.05	2.51/-0.91	-0.41/-1.53	-2.33/-0.73	0.45/-1.66	2.19/-2.62	1.71/-1.83	1.91/-1.84	1.36/-1.17	2.13/-1.89	0.75/-0.75	0.85/-2.28
Θ(97.5°)	2.56/-3.6	2.46/-1.1	-0.43/-0.58	0.36/-2.3	3.16/-3.32	2.87/-2.43	2.6/-2.64	1.90/-8.8	1.42/-7.5	3.06/-2.47	1.19/-1.94	-0.74/-0.45	0.97/-2.15	1.36/-0.21	-1.58/-0.84	-0.41/-2.37	2.89/-3.73	4.74/-4.58	4.63/-9.2	3.78/-1.82	1.12/-2.6	2.75/-2.02	-1.17/-1.64	1.48/-2.39
Θ(105°)	0.85/-3.05	0.51/-7.7	0.82/-1.98	0.59/-2.13	2.62/-3.22	3.39/-3.68	3.52/-2.4	1.62/-0.63	-0.78/-0.04	1.21/-3.2	0.07/-4.28	-1.69/-1.41	-0.41/-0.58	0.78/-0.44	-1.22/-0.45	-0.77/-1.97	2.83/-9.3	4.33/-7.5	3.09/-3.81	3.82/-1.4	2.05/-2.27	2.16/-0.65	-1.65/-0.78	1.46/-2.47
Θ(112.5°)	-0.19/-2.04	-1.56/-1	-0.82/-0.8	-2.01/-0.45	1.78/-3.23	3.32/-2.82	2.28/-2.76	2.29/-0	-1.22/-1.4	3.36/-0.85	-2.92/-5.42	-0.92/-0.94	0.56/-1.47	-1.02/-1.37	-3.52/-3.72	-3.26/-1.09	0.65/-2.06	2.42/-2.94	1.81/-1.67	0.81/-2.28	-0.23/-0.97	1.39/-1.21	-2.74/-1.51	1/-2.24
Θ(120°)	-1.82/-0.2	-2.17/-3.71	-1.27/-1.44	-0.28/-0.04	0.71/-3.2	0.76/-0.07	0.35/-2.24	2.68/-0.27	-2.88/-0.86	1.29/-1.37	-2.44/-4.2	-3.36/-2.1	-1.24/-3.04	-2.98/-3.65	-3.12/-0.99	-1.67/-4.27	-2.65/-0.38	0.06/-1.74	-2.75/-0.88	-1.54/-5.84	-3.77/-2.92	-3.68/-5.13	-4.33/-3.75	-0.35/-0.26
Θ(127.5°)	-6.44/-8.57</																							



Radiated Composite Gain Data of 2.4GHz/5GHz

Appendix A

Θ(22.5°)	0.99/0.76	-0.11/-1.37	-2.84/-3.89	-5.46/-8.08	-10.81/-13.34	-15.11/-15.52	-13.28/-11.89	-9.64/-7.2	-4.53/-2.52	-1.08/-0.53	-0.050/-5	0.84/-1.5	1.38/0.78	-0.19/-1.57	-3/-4.5	-6.8/-10.15	-17.72/-18.08	-14.34/-9.7	-7.36/-4.87	-3.28/-1.92	-1.27/-1.39	-1.49/-1.16	-0.57/-0.52	0.13/0.83
Θ(30°)	-0.2/-0.32	-0.59/-1.37	-3.09/-4.69	-6.95/-9.91	-13.25/-16.32	-17.24/-16.65	-14.9/-11.34	-7.87/-5.59	-3.61/-2.16	-0.92/-0.13	0.35/-0.4	1.37/-1.31	1.14/0.88	0.3/-0.55	-2.02/-3.69	-5.96/-8.93	-13.8/-18.3	-17.72/-10.95	-6.81/-4.07	-3.32/-2.52	-2.13/-2.57	-3.33/-3.21	-2.25/-1.55	-1.17/-0.42
Θ(37.5°)	-0.04/-0.03	-0.41/-1.55	-3.84/-6.45	-10.45/-17.27	-18.28/-18.47	-18.2/-11.43	-14.72/-12.14	-9.01/-6.18	-3.69/-2.46	-1.88/-2.27	-2.48/-1.98	-1.18/-1.45	-1.52/-0.79	-0.64/-0.86	-1.16/-2.58	-5.24/-8.59	-12.22/-17.06	-17.56/-18.09	-11.81/-6.35	-2.95/-1.12	-0.80/-0.02	-0.62/-1.12	-1.81/-1.6	-1.25/-0.2
Θ(45°)	-0.33/0.2	0.06/-0.89	-2.64/-5.23	-8.67/-17.95	-18.07/-13.97	-10.77/-10.33	-11.42/-13.23	-12.12/-9.09	-5.83/-8.88	-3.87/-5.16	-7.87/-5.25	-3.06/-3.16	-1.79/-0.94	-0.99/-0.23	-0.2/-2.34	-5.75/-9.07	-11.01/-13.15	-17.04/-15.36	-9.97/-5.99	-3.59/-2.14	-1.66/-2.48	-3.07/-4.26	-5.27/-3.99	-2.27/-1.38
Θ(52.5°)	-0.93/-0.52	-1.13/-2.77	-3.6/-5.25	-8.09/-17.24	-18.97/-13.37	-10.49/-11.17	-12.74/-15.34	-14.65/-11.86	-9.63/-9.19	-10.32/-15.51	-17.97/-7.33	-5.22/-4.21	-2.66/-2.53	-2.5/-2.46	-3.94/-6.03	-9.35/-13.01	-12.33/-12.81	-14.03/-18.17	-15.27/-8.74	-4.55/-3.41	-2.78/-2.86	-3.89/-4.83	-4.59/-4.1	-1.12/-0.91
Θ(60°)	-0.81/-0.8	-1.07/-2.76	-4.81/-8.2	-11.09/-16.54	-18.16/-13.32	-10.02/-9.45	-10.94/-15.3	-18.39/-18.96	-13.41/-11.75	-13.53/-12.97	-7.84/-6.04	-5.45/-5.39	-5.84/-4.78	-3.98/-3.9	-3.95/-5.13	-8.93/-17.26	-18.1/-12.2	-14.38/-17.17	-17.96/-10.77	-7.96/-5.77	-4.15/-3.66	-4.25/-5.6	-9.17/-3.9	-4.21/-1.29
Θ(67.5°)	-2.43/-3.15	-2.95/-3.34	-4.06/-6.74	-11.39/-18.26	-17.72/-16.01	-12.14/-11.06	-12.99/-17.39	-17.71/-14.33	-10.41/-7.96	-6.33/-6.28	-5.6/-5.26	-4.96/-4.9	-3.64/-2.93	-2.96/-3.81	-5.53/-7.27	-10.72/-18.41	-15.51/-13.1	-12.87/-18.86	-16.71/-14.43	-10.41/-7.82	-5.2/-4.11	-4.98/-6.55	-7.71/-5.74	-3.55/-2.27
Θ(75°)	-7.91/-6.83	-9.69/-9.04	-7.62/-7.68	-11.48/-16.59	-15.69/-13.24	-13.56/-15.69	-18.19/-16.6	-14.81/-15.69	-17.29/-15.19	-8.86/-5.12	-2.23/-1.92	-2.52/-2.52	-3.69/-4.12	-5.11/-4.99	-4.9/-6.18	-10.61/-12.87	-13.14/-10.99	-13.53/-17.61	-19.78/-11.02	-9.98/-9.77	-8.37/-6.24	-5.98/-5.74	-6.63/-7.46	-10.29/-9.33
Θ(82.5°)	-10.01/-12.74	-16.54/-18.85	-14.32/-9.87	-9.58/-9.23	-8.28/-8.08	-9.03/-12.36	-13.74/-12.23	-11.61/-10.88	-12.45/-7.97	-2.99/-2.07	-2.73/-4.27	-5.15/-5.34	-4.42/-3.97	-4.92/-4.47	-5.28/-6.83	-12.18/-11.36	-10.81/-11.49	-15.97/-17.22	-14.44/-13.08	-12.64/-12.03	-9.06/-6.78	-5.85/-6.33	-6.11/-6.98	-8.37/-10.01
Θ(90°)	-6.33/-7.61	-10.96/-15.09	-11.25/-8.68	-9.23/-11.39	-14.26/-12.68	-8.97/-6.4	-6.24/-7.66	-10.01/-12.79	-14.06/-10.23	-6.06/-3.8	-2.88/-3.43	-3.18/-3.95	-3.87/-4.81	-5.16/-5.53	-5.66/-7	-8.88/-12.17	-11.99/-11.1	-14.83/-18.77	-15.35/-12.43	-13.14/-14.92	-11.12/-8.13	-6.41/-6.04	-6.81/-8.02	-7.4/-7.33
Θ(97.5°)	-11.42/-9.27	-8.6/-7.91	-6.72/-5.7	-7.63/-12.41	-15.26/-10.47	-7.5/-8.56	-12.84/-10.38	-13.15/-12.66	-13.94/-10.73	-5/-3.84	-3.67/-5.65	-6.9/-6.82	-7.15/-5.44	-4.62/-5.58	-9.88/-9.97	-13.12/-13.23	-15.7/-17.03	-19.2/-17.78	-19.09/-16.62	-16.24/-12.06	-11.19/-12.05	-14.6/-14.02	-14.5/-12.2	-11.25/-11.66
Θ(105°)	-11.98/-10.05	-7.98/-5.44	-4.6/-4.07	-4.95/-7.93	-8.2/-6.89	-6.28/-6.12	-12.68/-13.98	-13.81/-15.29	-17.87/-15.94	-10.13/-6.65	-3.95/-4.4	-3.94/-4.27	-4.78/-6	-7.45/-8.62	-11/-13.91	-13.65/-11.57	-12.11/-17.96	-14.48/-12.61	-13.62/-18.78	-15.51/-14.96	-17.66/-18.41	-18.49/-19.41	-14.35/-9.72	-10.36/-10.36
Θ(112.5°)	-18.04/-13.53	-11.97/-7.92	-4.87/-3.89	-3.55/-4.8	-5.68/-5.63	-7/-9.49	-12.27/-12.2	-10.53/-9.52	-11.22/-9.7	-9.02/-8.23	-9.28/-9.76	-7.06/-5.92	-5.27/-8.64	-13.2/-15.07	-11.45/-13.69	-9.75/-9.71	-12.58/-17.87	-11.59/-11.85	-13.17/-17.73	-17.21/-15.31	-17.98/-18.17	-11.62/-9.83	-12.51/-15.72	-17.97/-18.91
Θ(120°)	-11.64/-12.42	-15.2/-17.74	-12.82/-8.25	-7.14/-5.96	-5.69/-5.65	-6.25/-9.18	-17.4/-19.06	-17.43/-14.68	-15.74/-16.71	-19.03/-18.42	-19.1/-13.65	-14.23/-9.91	-9.36/-7.12	-8.14/-10.51	-7.06/-12.21	-13.46/-11.65	-18.34/-11.65	-17.22/-8.97	-13.23/-14.84	-13.6/-15.17	-13.55/-16.77	-12.63/-19.17	-16.77/-9.56	-8.49/-10.2
Θ(127.5°)	-10.1/-8.79	-10.52/-12.48	-15.11/-18.05	-10.8/-3.33	-8.04/-8.69	-8.67/-7.2	-6.04/-7.74	-13.65/-18.25	-18.19/-14.63	-12.2/-11.12	-11.17/-9.98	-7.55/-5.51	-7.43/-2.44	-2.83/-4.7	-12.39/-12.97	-9.84/-8.52	-10.82/-16.26	-12.45/-14.05	-18.06/-16.63	-14.12/-10.06	-15.19/-18.29	-15.38/-8.57	-9.06/-15.38	-17.13/-10.5
Θ(135°)	-4.51/-3.88	-2.87/-5.63	-9.21/-9.63	-10.8/-12.59	-15.62/-16.14	-12.97/-11.73	-11.51/-10.95	-10.88/-12.26	-15.23/-14.25	-14.59/-17.84	-18.35/-14.39	-18.64/-17.9	-18.31/-8.15	-8.13/-8.95	-6.71/-8.8	-15/-19.29	-18.24/-16.2	-13.36/-13.38	-15.54/-10.88	-9.69/-7.75	-6.36/-8.57	-13.34/-15.72	-10.24/-9.32	-9.35/-4.96
Θ(142.5°)	-9.53/-10.75	-8.6/-6.3	-8.11/-10.23	-10.77/-9.93	-8.2/-5.72	-8.42/-11.45	-17.06/-14.63	-9.01/-7.13	-13.75/-9.26	-6.68/-5.91	-5.47/-7.08	-12.29/-11.45	-11.75/-5.85	-5.31/-5.44	-7.46/-11.99	-9.24/-12.53	-17.89/-15.45	-17.54/-17.95	-13.88/-9.99	-7.37/-6.04	-4.24/-3.06	-3.75/-4.04	-4.48/-8.12	-13.71/-1.55
Θ(150°)	-15.22/-17.1	-18.24/-17.3	-19.12/-19.03	-18.1/-17.73	-17.72/-17.71	-15.09/-13.85	-13.74/-13.45	-15.24/-16.35	-16.34/-15.66	-13.94/-15.24	-19.05/-16.48	-13.1/-12.08	-8.13/-12.03	-8.16/-6.27	-8.02/-11.6	-12.12/-10.9	-10.81/-14.67	-15.86/-17.52	-15.12/-11.49	-8.62/-7.23	-9.92/-9.01	-7.09/-6.98	-7.32/-9.71	-15.38/-19.05
Θ(157.5°)	-2.68/-2.63	-2.25/-2.76	-3.18/-3.68	-4.47/-5.38	-6.18/-7.17	-8.29/-9.28	-10.41/-11.42	-12.64/-14.55	-18.34/-18.16	-14.56/-12.3	-11.71/-10.29	-8.81/-7.66	-7.34/-6.23	-5.14/-5.51	-7.65/-9.6	-9.43/-8.98	-10/-13.91	-17.97/-19.31	-18.63/-13.96	-9.51/-7.07	-5.92/-4.98	-3.52/-2.53	-2.33/-2.49	-2.64/-2.53
Θ(165°)	-3.63/-3.15	-3.17/-3.65	-3.87/-3.75	-4.06/-4.94	-6.14/-7.13	-9.87/-11.73	-14/-15.57	-16.94/-17.21	-17.54/-17.47	-15.35/-12.39	-10.91/-10.61	-11.27/-10.62	-10.62/-10.5	-11.1/-13.06	-15.38/-14.94	-14.26/-16.02	-17.71/-18.59	-18.29/-17.91	-18.44/-18.75	-17.33/-18.81	-19.34/-17.51	-17.75/-12.76	-8.03/-9.61	-5.62/-5.14
Θ(172.5°)	-6.22/-6.06	-6.27/-6.39	-6.4/-6.84	-7.21/-7.85	-9.05/-10.53	-12.33/-14.41	-16.86/-18.76	-19.12/-18.46	-16.97/-15.91	-15.1/-13.57	-12.36/-11.89	-12.24/-12.77	-13.36/-13.96	-15.09/-16.43	-17.33/-17.85	-17.77/-16.87	-15.77/-15.09	-14.84/-15.59	-17.08/-17.51	-18.62/-19.14	-17.85/-16.2	-13.58/-11.14	-9.13/-7.44	-7.15/-6.7
Θ(180°)	-15.68/-14.52	-13.53/-11.07	-9.46/-8.48	-8.49/-8.82	-9.05/-9.04	-9.41/-9.92	-10.21/-10.45	-11.44/-12.23	-12.6/-13.7	-15.35/-17.39	-18.53/-18.49	-18.33/-18.3	-17.61/-15.97	-14.31/-12.62	-11.61/-11.68	-11.01/-10.52	-10.27/-10.05	-9.74/-9.52	-10.21/-11.01	-12.23/-13.32	-15.65/-17.37	-18.51/-17.93	-19.29/-18.63	-17.93/-17.65
Freq(Hz)	5.63GPol	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°)	-16.53/-11.75	-8.59/-6.61	-4.71/-3.4	-2.45/-1.5	-0.74/-0.21	0.18/0.49	0.38/0.21	-0.19/-0.74	-1.62/-2.67	-3.49/-4.85	-6.79/-9.31	-11.63/-15.67	-16.89/-12.89	-8.62/-6.73	-4.93/-5.33	-2.11/-1.03	-0.36/-0.22	0.27/0.49	0.32/0.17	-0.18/-0.57	-1.27/-2.5	-4.17/-4.66	-9.12/-12.8	-18.69/-18.12
Θ(7.5°)	-11.76/-10.15	-8.33/-4.68	-4.63/-3.32	-2.24/-1.46	-0.93/-0.38	-0.07/0	-0.22/-0.29	-0.57/-0.75	-1.53/-2.11	-3.43/-5.39	-8.29/-11.88	-17.66/-17.61	-17.3/-12.32	-8.67/-6.21	-4.74/-2.88	-1.77/-1.07	-0.53/-0.14	-0.09/0.15	0.21/0.19	-0.15/-0.95	-1.42/-2.35	-3.79/-5.53	-7.9/-10.04	-12.18/-12.22
Θ(15°)	-8.65/-8.3	-7.01/-5.44	-3.74/-2.55	-2.08/-1.99	-1.94/-2.03	-2.47/-2.86	-3.1/-3.02	-3.41/-3.86	-4.28/-4.88	-5.28/-6.03	-7/-8.38	-10.86/-14.79	-17.33/-12.06	-8.15/-5.45	-4.19/-2.59	-1.02/-1.23	-1.51/-1.38	-1.57/-1.41	-1.72/-1.6	-2.92/-3.64	-4.19/-4.52	-5.54/-6.9	-8.39/-8.97	
Θ(22.5°)	-7.68/-6.95	-5.51/-3.91	-2.62/-1.73	-1.6/-2.19	-2.85/-3.82	-5.83/-7.23	-7.71/-7.23	-6.28/-5.36	-4.71/-4.3	-4.48/-6.54	-6.98/-8.73	-10.93/-13.88	-14.53/-9.83	-6.31/-4.48	-3.21/-2.19	-1.07/-0.33	-0.39/-1.13	-1.75/-2.12	-2.39/-2.24	-2.42/-2.73	-3.54/-7.3	-5.17/-5.03	-5.09/-6.17	-7.72/-7.2
Θ(30°)	-4.73/-4.23	-3.31/-2.77	-2.21/-1.61	-1.24/-1.45	-2.1/-3.51	-4.76/-5.17	-5.39/-5.29	-4.91/-4.55	-4.38/-4.83	-5.29/-6.35	-7.88/-9.91	-10.69/-12.83	-12.85/-11.22	-9.11/-7.21	-5.53/-3.21	-1.82/-1.04	-0.55/0.33	0.52/0.13	-0.61/-1.46	-2.73/-3.58	-4.58/-6.13	-7.52/-6.81	-5.3/-4.39	-4.05/-4.29
Θ(37.5°)	-3.72/-3.99	-3.49/-2.89	-2.85/-2.06	-1.35/-1.93	-3.8/-6.26	-7.66/-8.1	-7.84/-6.54	-4.72/-3.64	-3.42/-4.29	-5.96/-9.3	-10.33/-9.71	-8.92/-7.32	-7.07/-7.17	-6.25/-6.42	-4.12/-3.1	-2.33/-0.98	0.4/0.81	-0.31/-2.04	-3.55/-4.12	-3.96/-4.64	-5.99/-6.16	-6.61/-6.35	-5.87/-5.47	-4.27/-2.99
Θ(45°)	-2.72/-2.88	-2.63/-1.73	-1.47/-0.92	-0.79/-1.21	-2.36/-5.06	-7.84/-10.01	-8.59/-6.47	-4.87/-4.63	-4.53/-5.28	-6.11/-7.58	-7.01/-6.07	-6.13/-6.61	-7.18/-8.15	-8.76/-9.32	-8.35/-5.31	-2.86/-2.5	-2.58/-2.15	-1.96/-1.89	-2.32/-2.72	-4.21/-4.31	-5.02/-6.41	-5.91/-5.07	-3.84/-3.25	-3.21/-2.88
Θ(52.5°)	-2.27/-2.49	-2.17/-1.32	-1.41/-1.29	-1.56/-3.73	-6.22/-9	-10.31/-7.42	-5.67/-4.51	-4.28/-4.68	-5.53/-6.3	-6.35/-6.74	-5.37/-4.74	-5.38/-5.82	-7.16/-9.98	-11.77/-11.93	-8.93/-6.23	-5.37/-3.94	-2.49/-2.86	-2.84/-2.71	-4.92/-6.34	-4.98/-5.88	-4.71/-4.36	-4.82/-4.04	-2.58/-2.16	-2.2/-2.16
Θ(60°)	-1.87/-3.03	-3.57/-3.24	-1.51/-0.74	-0.27/-1.85	-4.83/-7.25	-5.86/-3.96	-3.63/-3.86	-3.67/-3.8	-5.27/-6.33	-7.98/-9.8	-7.15/-7.47	-7.78/-8.5	-12.35/-11.93	-9.21/-6.92	-4.1/-2.95	-3.91/-5.25	-4.89/-4.71	-5.09/-7.28	-12.43/-9.1	-8.31/-6.8	-5.14/-3.91	-1.72/-0.37	-0.17/-1.4	
Θ(67.5°)	-1.24/-2.47	-2.29/-2.37	-1.43/-0.68	-0.42/-2.39	-4.82/-5.17	-3.43/-2.26	-2.46/-2.89	-2.76/-4.04	-6.91/-7.21	-4.47/-5.03	-5.24/-8.87	-11.36/-14.89	-12.31/-11.56	-9.32/-11.31	-8.1/-6.64	-6.37/-4.66	-3.75/-4.82	-5.09/-3.29	-3.35/-6.08	-8.96/-6.84	-5.11/-5.51	-4.42/-2.58	-0.51/0.71	-0.77/-0.27



Radiated Composite Gain Data of 2.4GHz/5GHz

Appendix A

Θ(67.5°)	-6.48/-8.5	-8.04/-6.73	-5.11/-5.41	-8.16/-12.62	-14.65/-15.2	-13.71/-11.12	-10.47/-11.44	-18.75/-14.75	-9.53/-7.4	-7.99/-11.43	-10.11/-5.48	-4.21/-5.47	-6.88/-7.21	-7.44/-7.21	-8.04/-11.57	-19.54/-18.23	-15.67/-11.36	-10.32/-11.21	-14.89/-15.89	-12.67/-9.45	-6.29/-5.13	-4.68/-4.9	-5.82/-6.95	-6.48/-5.5
Θ(75°)	-5.4/-4.92	-6.06/-6.43	-7.32/-7.7	-8.59/-8.89	-9.81/-11.78	-16.41/-13.85	-9.38/-9.93	-15.93/-13.26	-6.38/-4.89	-4.29/-4.98	-5.82/-5.45	-3.49/-3.49	-4.77/-5	-4.52/-6.16	-7.21/-7.56	-13.58/-19.12	-11.59/-9.21	-8.88/-10.66	-12.31/-15.37	-15.68/-10.09	-6.48/-4.64	-4.57/-5.12	-5.71/-6.74	-5.65/-5.92
Θ(82.5°)	-5.49/-5.27	-7.27/-9.19	-10.77/-12.79	-15.53/-17.19	-17.37/-18.7	-18.43/-17.03	-14.31/-14.92	-18.14/-16.71	-11.91/-10.62	-8.86/-6.17	-4.27/-3.16	-3.57/-3.62	-5.4/-6.26	-8.24/-8.83	-10/-11.03	-13.79/-18.07	-19.13/-12.05	-11.06/-11.29	-17.48/-19.03	-18.22/-14.42	-9.22/-5.39	-4.65/-5.49	-6.03/-6.42	-7.99/-5.9
Θ(90°)	-10.54/-10.66	-7.29/-8.84	-10.77/-14.64	-17.48/-15.41	-10.62/-12.08	-18.36/-18.88	-18.96/-13.56	-12.8/-12.72	-11.61/-10	-5.88/-4.42	-5.31/-5.16	-4.95/-3.85	-3.95/-4.36	-7.33/-6.63	-7.57/-9.53	-12.77/-14.78	-14.91/-17.32	-16.92/-11.49	-15.05/-17.05	-13.92/-12.41	-10.16/-8.04	-6.22/-6.13	-5.79/-6.39	-10.96/-13.57
Θ(97.5°)	-10.07/-9.46	-7.74/-8.24	-8.8/-9.73	-9.83/-8.35	-9.88/-14.02	-17.91/-13.47	-9.17/-9.01	-9.5/-11.97	-13.04/-13.76	-13.02/-7.88	-6.09/-3.69	-1.2/-2.09	-2.5/-6.74	-8.24/-11.25	-9.81/-11.46	-12.44/-13.37	-15.67/-18.27	-18.64/-14.9	-16.86/-14.78	-12.66/-12.01	-9.77/-8.72	-7.64/-7.69	-8.41/-10.78	-13.72/-15.37
Θ(105°)	-17.98/-11.39	-7.3/-5.24	-5.02/-2.94	-2.75/-3.1	-6.26/-8.91	-8.97/-10.41	-17.53/-15.34	-8.54/-9.02	-10.83/-15.57	-14.14/-9.36	-3.96/-3.24	-5.85/-8.14	-13.45/-16.46	-15.61/-11.85	-10.99/-10.37	-17.97/-17.61	-9.14/-11.71	-15.17/-18.63	-18.51/-12.51	-11.73/-10.85	-11.73/-10.86	-10.14/-14.76	-16.06/-13.69	
Θ(112.5°)	-15.31/-11.25	-7.82/-3.45	-2.93/-1.31	-1.37/-1.78	-3.21/-4.12	-3.1/-3.39	-5.27/-6.77	-7.91/-8.25	-9.13/-11.93	-9.04/-9.85	-7.82/-5.8	-4.56/-3.78	-4.03/-7.67	-7.5/-12.83	-12.83/-11.29	-7.5/-9.23	-15.44/-13.7	-14.75/-16.04	-18.92/-13.94	-9.01/-9.72	-10.41/-11.01	-16.16/-15.37	-17.99/-10.57	-9.78/-10.53
Θ(120°)	-8.17/-14.61	-10.05/-6.45	-4.18/-3.2	-2.49/-5.74	-6.56/-6.06	-4.6/-3.27	-4.21/-6.95	-9.28/-9.97	-10.09/-11.58	-10.98/-13.11	-12.33/-11.43	-5.01/-6.82	-7.5/-12.37	-5.42/-12.55	-14/-14.33	-8.23/-7.49	-9.58/-11.13	-13.76/-18.3	-12.75/-8.68	-8.39/-12.35	-10.06/-11.01	-19.34/-17.97	-11.66/-6.16	-6.88/-6.95
Θ(127.5°)	-11.72/-14.28	-17.61/-18.7	-9.84/-8.44	-6.64/-4.12	-5.23/-8.1	-12.45/-10.99	-8.23/-7.43	-8.14/-12.09	-18.82/-17.46	-11.96/-10.15	-10.92/-11.89	-16.75/-8.8	-18.9/-5.18	-5.15/-4.26	-6.67/-8.02	-9.97/-9.7	-14.33/-11.27	-10.31/-15.07	-9.14/-7.27	-7.06/-10.97	-10.08/-11.24	-19.79/-7.86	-11.73/-19.4	-9.66/-9.58
Θ(135°)	-8.27/-5.74	-5.79/-9.27	-10.74/-18.53	-18.45/-17.66	-16.2/-18.3	-17.72/-13.14	-10.07/-7.97	-7.85/-7.78	-9.24/-11.31	-13.89/-14.16	-12.54/-17.41	-15.87/-11.32	-16.2/-18.03	-14.03/-17.25	-7.28/-8.95	-19.11/-13.33	-10.74/-6.48	-8.95/-13.47	-7.51/-5.42	-6.33/-6.5	-9.26/-17.17	-17.58/-10.99	-8.48/-14.65	-11.25/-7.04
Θ(142.5°)	-5.56/-5.18	-2.96/-4.1	-5.42/-5.35	-8.24/-12.79	-10.97/-9.68	-9.13/-10.85	-16.16/-15.98	-13.73/-16.22	-17.99/-10.98	-9.77/-10.95	-8.57/-7.43	-16/-18.58	-8.19/-3.23	-4.73/-6.32	-9.75/-14.31	-12.93/-16.82	-16.4/-11.7	-8.62/-7.58	-4.57/-3.51	-4.83/-6.13	-5.91/-7.69	-10.56/-10.08	-10.81/-11.54	-14.93/-6.34
Θ(150°)	-10.89/-11.45	-11.13/-9.69	-13.02/-16.27	-14.84/-12.98	-12.49/-10.94	-10.99/-12.23	-16.49/-16.41	-15.55/-18.35	-18.47/-18.67	-17.54/-13.61	-14.57/-16.2	-9.64/-8.67	-16.01/-18.05	-13.62/-8.55	-11.36/-17.58	-19.14/-16.95	-17.39/-12.88	-11.25/-14.69	-18.82/-14.52	-11/-11.33	-7.66/-4.39	-3.04/-2.39	-3.76/-6.91	-9.46/-11.7
Θ(157.5°)	-8.01/-8.9	-7.85/-5.99	-4.97/-4.7	-4.88/-4.66	-4.95/-5.75	-6.54/-7.32	-8.73/-10.19	-11.87/-14.7	-19.41/-17.66	-17.7/-14.01	-11.29/-10.68	-9.95/-9.33	-10.05/-11.55	-10.47/-9.85	-12.06/-15.65	-17.44/-15.8	-14.85/-16.98	-17.87/-14.46	-9.33/-6.4	-4.96/-4.85	-4.49/-4.16	-4.25/-4.45	-4.66/-6.81	-9.31/-8.15
Θ(165°)	-2.41/-2.05	-1.85/-2.24	-2.58/-2.37	-2.61/-3.19	-3.94/-5.04	-7.19/-10.04	-12.79/-16.26	-18.94/-18.51	-18.8/-18.99	-16.61/-14.97	-14.37/-14.88	-15.02/-13.77	-12.15/-10.7	-11.22/-15.3	-16.6/-12.87	-18.69/-19.04	-18.98/-18.78	-16.21/-14.19	-12.61/-11.33	-10.6/-9.46	-7.91/-7.44	-7.49/-6.63	-4.68/-3.35	
Θ(172.5°)	-6.99/-6.13	-6.67/-7.54	-7.39/-6.35	-6.25/-6.78	-6.92/-8.14	-10.12/-13.23	-17.62/-17.33	-18.44/-18.48	-17.87/-17.95	-13.91/-10.53	-10.26/-12.92	-13.62/-12.98	-13.34/-14.91	-16.98/-17.96	-18.35/-18.35	-18.18/-18.23	-17.15/-17.72	-19.03/-19.24	-17.91/-17.29	-16.74/-18.34	-18.67/-18.64	-18.05/-11.84	-9.46/-6.62	
Θ(180°)	-13.49/-12.63	-11.54/-11.21	-11.31/-11.96	-12.11/-13.77	-16.7/-19.21	-18.5/-16.33	-14.06/-13.48	-14.6/-15.19	-15.23/-15.24	-15.7/-15.61	-14.25/-13.19	-12.41/-12.46	-13.15/-12.96	-13.29/-13.47	-12.97/-13.01	-12.25/-11.62	-11.73/-12.31	-13.09/-13.66	-14.46/-16.64	-18.9/-17.83	-18.6/-18.54	-18.93/-18.34	-18.7/-18.92	-18.44/-17.74
Freq(Hz)	5.785GPol	ThetaAnt. 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gain	Θ(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°)	-11.67/-10.02	-7.7/-6.21	-4.93/-3.58	-2.39/-1.44	-0.77/-0.37	-0.03/-0.04	0.09/-0.01	-0.1/-0.46	-0.9/-1.92	-3.11/-4.34	-6.04/-7.76	-9.97/-13.34	-14.28/-11.42	-8.36/-6	-4.62/-3.24	-2.12/-1.14	-0.52/-0.27	0.11/-0.18	0.16/-0.08	-0.22/-0.48	-1.01/-2.04	-3.27/-4.75	-6.58/-8	-10.25/-11.77
Θ(7.5°)	-10.18/-9.32	-7.11/-5.52	-4.49/-3.72	-3.12/-2.28	-1.29/-0.44	-0.08/-0.5	0.50/25	-0.22/-0.38	-0.87/-1.86	-3.13/-5.1	-7.84/-10.2	-13.15/-17.46	-16.89/-10.68	-7.34/-5.34	-4.16/-2.87	-2.09/-1.5	-1.2/-0.95	-0.78/-0.74	-0.61/-0.66	-1.26/-1.68	-2.23/-3.04	-3.93/-5.06	-6.74/-7.51	-8.52/-9.62
Θ(15°)	-7.95/-6.72	-5.59/-4.7	-4.06/-3.46	-2.66/-2.08	-1.42/-1.05	-0.43/-0.24	-0.14/-0.18	-0.81/-1.63	-2.85/-3.65	-4.62/-6.04	-7.92/-10.4	-14.73/-19.03	-18.01/-11.09	-7.91/-5.54	-4.42/-3.38	-2.85/-2.29	-1.76/-1.44	-1.42/-1.13	-1.55/-1.52	-2.08/-2.85	-3.83/-4.85	-5.22/-5.83	-6.51/-7.09	-8.18/-9.8
Θ(22.5°)	-5.51/-4.58	-3.89/-3.59	-3.74/-2.88	-1.81/-1.5	-1.03/-0.96	-1.06/-1.26	-1.59/-1.53	-1.96/-2.46	-2.67/-3	-4.07/-6.2	-10.08/-16.6	-19.11/-17.02	-13.06/-9.67	-7.17/-5.34	-4.08/-2.93	-1.69/-1.16	-1.19/-1.57	-1.8/-2.09	-2.11/-2.53	-3.05/-3.26	-3.58/-4.19	-4.05/-4.42	-5.11/-6.12	-6.91/-6.2
Θ(30°)	-4.26/-3.77	-3.55/-3.15	-2.54/-1.91	-1.87/-2.23	-1.91/-1.81	-1.74/-2.19	-3.07/-3.96	-4.41/-4.86	-5/-4.43	-5.13/-7.75	-11.99/-16.32	-17.32/-10.45	-9.23/-6.92	-4.81/-4.74	-5.14/-5.68	-5.36/-7	-2.46/-1.17	-0.67/-0.71	-1.75/-2.98	-4.09/-4.78	-4.58/-4.21	-4.53/-4.51	-4.32/-4.13	-3.89/-3.84
Θ(37.5°)	-6/-3.73	-1.6/-0.63	-1.1/-2.1	-2.42/-2.6	-3.07/-3.79	-4.24/-4.67	-6.84/-11.43	-16.11/-11.85	-8.87/-6.3	-8.28/-9.28	-10.35/-19.2	-5.37/-4.94	-4.98/-6.32	-7.63/-7.43	-6.51/-5.01	-3.37/-2.82	-3.49/-4.3	-4.78/-5.25	-5.78/-6.15	-7.06/-5.94	-5.72/-4.73	-3.25/-2.05	-2.44/-0.66	-5.31/-6.55
Θ(45°)	-2.93/-3.74	-3.8/-2.56	-1.07/-0.02	-0.18/-1.66	-3.73/-7.07	-11.93/-17.49	-18.07/-17.7	-12.61/-0.06	-7.17/-6	-4.88/-5.38	-7.97/-5.7	-5.62/-6.25	-6.74/-7.42	-6.16/-4.65	-5.13/-6.57	-7.71/-8.98	-8.82/-7.09	-6.79/-5.33	-5.64/-6.43	-6.67/-7.93	-6.36/-5.94	-5.02/-3.59	-2.53/-1.56	-1.23/-2.41
Θ(52.5°)	-1.56/-1.74	-1.19/-0.24	0.68/-0.66	0.42/-1.79	-5.06/-11.03	-18.06/-15.72	-12.35/-11.56	-10.92/-10.22	-9.59/-9.3	-12.41/-13.17	-9.89/-7.42	-9.73/-8.6	-7.07/-4.17	-3.57/-5.11	-9.59/-12.65	-11.17/-9.59	-4.27/-3.52	-3.15/-3.86	-3.67/-3.73	-4.81/-6.03	-9.36/-8.38	-5.36/-2.68	-1.73/-0.56	-1.07/-1.03
Θ(60°)	-1.21/-1.42	-0.55/-0.31	1.31/-0.3	0.12/-1.67	-4.55/-10.09	-12.02/-6.24	-3.68/-3.23	-3.83/-3.97	-5.23/-4.26	-10.37/-9.09	-8.37/-7.5	-7/-5.52	-3.91/-3.16	-5.86/-10.8	-15.33/-15.45	-7.64/-5.86	-3.95/-2.58	-2.84/-3.29	-3.65/-3.01	-2.56/-3.7	-5.88/-5.73	-5.1/-2.04	-0.03/-0.67	0.61/-0.05
Θ(67.5°)	0.13/-1.17	1.33/-0.89	0.56/-0.17	-1.5/-3.37	-5.51/-6.6	-5.38/-3.46	-2.8/-1.65	-2.27/-3.65	-8.77/-6.71	-6.25/-7.51	-9.19/-8.33	-5.27/-9.43	-8.32/-13.29	-16.02/-15.15	-11.59/-9.92	-8.18/-4.84	-7.63/-7.1	-4.22/-3.51	-6.44/-5.88	-4.22/-1.17	0.29/-0.75	0.40/-0.27		
Θ(75°)	1.38/-2.18	1.04/-3.1	-0.56/-0.89	-2.44/-2.5	-2.43/-3.21	-3.44/-2.39	-3.07/-1.17	-2.39/-4.6	-5.89/-5.06	-4.39/-3.13	-3.72/-6.27	-8.78/-8.61	-4.91/-1.78	-2.83/-10.06	-17.73/-17.45	-15.43/-7.45	-5.39/-5.74	-4.41/-2.81	-3.76/-4.16	-4.42/-4.23	-5.02/-0.82	-3.71/-1.77	1.08/-0.27	2.03/-8.2
Θ(82.5°)	1.89/-2.84	1.61/-0.44	-1.91/-3.41	-5.04/-6	-4.62/-4.58	-4.59/-2.47	0.32/-0.87	-0.32/-0.5	-0.96/-1.63	-1.32/-1.13	-2.3/-6.78	-11.94/-9.43	-5.81/-4.28	-5.63/-9.88	-13.26/-11.39	-10.84/-5.17	-2.42/-0.37	0.12/-1.57	-1.21/-0.8	-0.69/-2.45	-2.11/-6	-2.20/-37	1.84/-2.58	2.51/-3.1
Θ(90°)	1.78/-1.72	2.44/-2.48	-0.5/-5.5	-7.93/-7.34	-5.07/-3.52	-4.58/-4.57	-2.57/-1.03	-0.94/-1.65	-2.92/-4.3	-3.87/-2.54	-4.47/-8.91	-17.18/-10.46	-9.54/-1.56	-0.91/-4.61	-8.84/-10.02	-11.83/-5.75	-2.18/-0.07	1.10/-27	-1.18/-0.39	-0.13/-1.59	-1.7/-3.96	-2.4/-0.66	0.98/-2.5	2.11/-96
Θ(97.5°)	2.01/-2.94	3.04/-2.4	0.46/-0.56	-0.55/-0.4	-1.55/-3.58	-6.3/-4.16	-0.53/-0.67	-1.04/-3.36	-4.28/-2.47	-0.97/-0.07	-2.22/-8.92	-4.84/-1.74	-5.05/-1.49	-3.41/-9.26	-5.17/-1.33	0.91/-0.33	3.722/-67	2.58/-1.88	1.8/-0.43	-2.77/-3.8	-2.77/-1.1	0.67/-0.49	1.87/-83	
Θ(105°)	0.332/-7.7	1.542/-8.5	0.73/-0.11	-0.24/-0.75	-2.04/-3.54	-3.21/-1.38	-1.29/-2.58	-3.82/-4.82	-6.58/-5.74	-3.48/-2.05	-4.03/-14.19	-11.12/-7.66	-7.87/-3.35	-3.17/-9.7	-10.78/-5.04	-3.350/-4.1	1.84/-3.24	3.652/-0.9	1.191/-7.8	2.1/-0.11	-1.41/-5.19	-3.26/-0.18	0.34/-0.09	0.51/-1.7
Θ(112.5°)	-1.06/-1.53	-0.36/-0.47	-1.1/-1.31	-1.75/-3.01	-2.12/-1.43	-0.57/-0.39	-1.06/-1.86	-2.91/-6.43	-5.12/-4.31	-0.63/-6.2	-7.9/-14.96	-8.91/-6.16	-6.62/-8.26	-8.23/-11.1	-13.88/-6.04	-4.38/-2.68	-0.032/-2	1.630/-21	-1/-0.88	-1.03/-2.24	-5.13/-7.52	-3.21/-2.14	-0.79/-1.84	-1.87/-0.47
Θ(120°)	-1.34/-0.41	-0.05/-2.07	-1.75/-2.15	-1.75/-1.19	-1.52/-3.21	-4.98/-4.18	-2.16/-0.23	-5.08/-2.49																



Radiated Composite Gain Data of 2.4GHz/5GHz

Appendix A

Θ(105°)	-7.49/-14.5	-17.67/-18.45	-13.76/-9.76	-7.81/-6.46	-11.63/-14.22	-12.25/-11.95	-15.95/-18.27	-16.93/-12.19	-13.68/-16.36	-15.65/-11.51	-6.91/-7.83	-11.26/-14.08	-7.14/-4.25	-3.53/-6.17	-10.1/-11.27	-8.14/-10.68	-9.18/-6.09	-3.96/-7.24	-8.14/-9.23	-7.56/-5.1	-5.08/-6.82	-7.93/-8.96	-11.34/-9.88	-5.74/-6.5	
Θ(112.5°)	-13.28/-18.25	-17.68/-15.27	-19.12/-13.64	-11.1/-8.57	-9.99/-16.38	-18.52/-16.74	-18.97/-19.08	-18.45/-16.69	-17.35/-18.53	-13.59/-16.51	-12.78/-12.7	-17.45/-18.55	-15.81/-8.23	-4.14/-3.35	-15.3/-9.51	-8.18/-12.32	-13.82/-9.86	-16.12/-17.65	-18.9/-12.69	-8.16/-5.47	-8.71/-15.29	-8.55/-6.87	-6.77/-7.61	-7.68/-7.76	
Θ(120°)	-8.46/-10.3	-11.21/-10.21	-19.06/-13.42	-7.68/-6.27	-16.06/-13.42	-7.68/-6.27	-18.03/-18.96	-18.96/-18.07	-14.09/-18.43	-14.37/-9.36	-6.54/-6.56	-10.72/-11.27	-7.82/-9.92	-12.64/-9.45	-5.19/-3.45	-2.78/-6.24	-13.32/-8.15	-7.32/-8.3	-9.35/-13.76	-14.76/-7.26	-11.72/-8.1	-10.72/-18.76	-18.8/-9.65	-9.7/-9.14	-7.66/-3.78
Θ(127.5°)	-3.15/-3.81	-5.65/-7.19	-12.39/-10.04	-6.47/-4.69	-4.77/-6.11	-8.67/-14.08	-18.83/-10.03	-8.51/-10.13	-12.67/-19	-9.46/-9.55	-18.88/-10.89	-6.85/-4.93	-7.56/-14.07	-18.5/-10.73	-10.31/-7.01	-4.5/-2.57	-1.79/-4.97	-7.74/-10.03	-16.93/-9.3	-7/-18.99	-13.67/-15.19	-14.13/-8.88	-14.37/-9.27	-7.22/-4.39	
Θ(135°)	-17.02/-16.16	-12.3/-16.17	-18.88/-14.13	-6.62/-4	-4.28/-4.66	-9.29/-12	-15.35/-14.97	-7.42/-5.27	-8.3/-18.17	-14.48/-6.54	-4.71/-5.05	-5.42/-4.53	-4.24/-5.07	-18.1/-9.86	-7.21/-8.87	-9.56/-6.47	-6.87/-6.98	-7.62/-11.65	-18.96/-15.98	-18.79/-8.98	-13.54/-10.82	-9.6/-17.5	-14.85/-12.72	-11.68/-12.98	
Θ(142.5°)	-18.29/-15.67	-14.12/-14.79	-13.76/-10.1	-5.76/-3.17	-2.22/-2.71	-4.58/-4.44	-16.26/-13.92	-9.98/-9.38	-9.25/-9.81	-12.2/-19.22	-18.06/-16.86	-10.23/-8.1	-15.17/-10.7	-12.84/-17.08	-18.25/-17.78	-10.54/-8.46	-8.3/-9.98	-16.7/-18.08	-15.02/-15.31	-13.7/-10.77	-17.33/-16.77	-14.29/-17.01	-18.73/-17.87		
Θ(150°)	-10.29/-9.7	-12/-14.53	-11.75/-8.8	-6.97/-4.9	-4.47/-5.45	-7.14/-10.91	-17.77/-18.88	-14.68/-13.19	-12.09/-9.34	-6.44/-5.08	-5.84/-8.16	-12.13/-14.89	-17.25/-12.24	-9.62/-8.54	-6.81/-5.98	-5.78/-7.07	-10.4/-14.17	-13.57/-12.73	-14.07/-13.73	-11.99/-9.99	-8.88/-8.99	-8.55/-9.49	-14.26/-19.19	-18.71/-13.17	
Θ(157.5°)	-5.58/-4.31	-3.76/-4.13	-4.37/-4.64	-5.18/-5.2	-5.63/-6.65	-8.66/-11.2	-14.77/-19.5	-18.14/-17.25	-14.35/-11.37	-8.22/-5.87	-5.11/-4.96	-5.38/-4.58	-5.04/-4.32	-3.49/-3.23	-3.87/-5.19	-6.95/-8.83	-11.23/-13.3	-14.46/-15.44	-14.62/-14.15	-16.33/-18.61	-16.55/-12.2	-10.27/-9.76	-9.1/-9.01	-8.53/-6.65	
Θ(165°)	-1.56/-0.49	-0.08/-0.35	-1.31/-2.2	-3.38/-4.69	-6.29/-8.76	-12.52/-16.65	-18.36/-18.21	-18.02/-15.12	-13.79/-12.2	-9.94/-8.59	-7.35/-6.91	-6.9/-6.45	-6.62/-7.06	-7.77/-8.75	-9.4/-10.06	-10.5/-11.54	-12.55/-14.16	-16.16/-18.76	-18.2/-17.7	-18.74/-17.53	-11.23/-7.81	-6.56/-6.65	-6.37/-6.51	-6/-3.5	
Θ(172.5°)	-5.58/-4.69	-5.11/-6.72	-8.63/-9.51	-9.27/-9.39	-10.02/-11.86	-15.28/-18.59	-18.61/-18.99	-15.54/-13.35	-11.25/-9.75	-8.1/-6.3	-5.39/-4.17	-3.49/-3.1	-3.08/-3.53	-4.04/-4.99	-6.29/-7.34	-8.55/-9.85	-11.59/-13.25	-14.96/-16.94	-17.72/-18.58	-18.86/-19.17	-13.96/-11.98	-12.11/-13.12	-11.22/-8.95	-7.76/-6.56	
Θ(180°)	-18.68/-18.7	-16.86/-15.05	-13.43/-12.95	-13.61/-15.87	-19.17/-18.06	-17.99/-18.32	-17.17/-18.17	-18.34/-16.71	-15.39/-14.19	-13.14/-11.99	-11.31/-10.51	-9.37/-8.38	-7.69/-7.45	-7.59/-8.49	-9.64/-10.15	-10.25/-10.38	-10.9/-11.4	-12.3/-13.48	-15.27/-17	-16.35/-15.24	-14.02/-11.8	-10.01/-9.65	-10.05/-11.67	-14.34/-17.53	
Freq(Hz)	5.2GPaL	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°)	-16.51/-13.84	-11.92/-9.65	-7.96/-6.75	-5.95/-5.66	-5.24/-5.5	-5.5/-5.62	-6.09/-6.65	-7.37/-8.06	-8.89/-9.6	-10.98/-13.07	-15.81/-18.05	-17.39/-19.27	-17.68/-14.26	-11.68/-10.38	-8.96/-7.9	-6.72/-6.14	-5.33/-5.44	-5.35/-5.82	-5.82/-6.18	-6.6/-7.27	-8.4/-10.27	-12.8/-16.82	-19.03/-18.22	-18.04/-19.25	
Θ(7.5°)	-19.44/-19.1	-15.67/-11.56	-8.79/-6.77	-5.45/-4.74	-4.59/-5.26	-6.41/-6.97	-7.39/-8.02	-8.67/-8.82	-9.31/-10.11	-11.18/-11.84	-12.12/-12.82	-13.49/-13.67	-12.45/-10.52	-9.04/-7.32	-5.99/-4.94	-3.96/-3.58	-3.39/-3.76	-4.29/-4.99	-5.83/-5.96	-6.02/-6.51	-6.8/-7.41	-9.27/-9.11	-10.31/-11.27	-15.1/-18.62	
Θ(15°)	-18.25/-17.49	-11.72/-8.45	-6.25/-4.87	-3.33/-2.07	-1.2/-1.31	-1.81/-2.86	-4.45/-6.82	-9.35/-10.64	-9.92/-9.23	-8.59/-8.06	-7.69/-7.94	-7.55/-7.81	-7.67/-7.17	-6.04/-4.36	-3.39/-2.36	-1.79/-1.67	-1.62/-2.28	-3.05/-4.05	-5.08/-5.55	-5.29/-4.86	-4.27/-3.95	-4.16/-4.67	-5.9/-6.75	-9.49/-15.49	
Θ(22.5°)	-17.75/-14.43	-10.74/-8.84	-6.14/-5.48	-4.77/-3.22	-1.78/-1.05	-0.41/-0.4	-1.29/-2.82	-4.84/-6.61	-7.42/-7.26	-6.56/-6.22	-5.71/-5.82	-6.25/-6.75	-6.45/-5.85	-4.54/-3.59	-3.16/-2.49	-2.17/-1.99	-1.84/-2.38	-2.76/-3.65	-4.65/-4.82	-4.33/-3.71	-3.12/-2.46	-2.42/-3.14	-4.7/-5.2	-10.96/-17.89	
Θ(30°)	-19.11/-14.61	-10.78/-8.73	-6.47/-6.78	-6.11/-4.68	-2.66/-2.01	-0.61/-1.25	-1.26/-1.6	-2.67/-4.84	-6.83/-7.35	-7.58/-8.34	-9.92/-10.09	-8.64/-7.5	-6.14/-4.84	-4.06/-3.44	-1.43/-4.72	-5.58/-5.96	-5.06/-4.13	-2.61/-1.76	-1.77/-2.69	-3.28/-3.92	-4.57/-5.67	-8.4/-11.54	-6.12/-10.96		
Θ(37.5°)	-17.31/-13.57	-11.44/-10.17	-9.74/-8.74	-8.09/-7.12	-4.89/-3.71	-3.11/-2.95	-2.4/-1.89	-1.81/-3.01	-4.86/-7.51	-10.19/-12.73	-13.25/-13.4	-12.36/-10.66	-9.17/-7.46	-5.56/-3.54	-2.79/-2.43	-3.37/-5.22	-7.86/-7.36	-5.05/-3.67	-3.54/-3.75	-4.01/-5.1	-6.37/-6.18	-6.39/-7.62	-11.33/-15.42	-18.12/-18.48	
Θ(45°)	-12.07/-9.86	-7.09/-6.88	-8.41/-8.68	-8.71/-9.6	-10.06/-7.16	-5.22/-3.66	-3.19/-2.68	-1.56/-1.38	-1.86/-4.32	-8.71/-6.48	-18.47/-12.01	-7.79/-6.52	-6.35/-6.6	-6.05/-5	-4.57/-5.38	-3.65/-3.45	-8.26/-9.31	-6.23/-2.96	-2.34/-3.74	-7.71/-10.65	-10.21/-6.85	-8.45/-9.7	-9.66/-9.7	-14.42/-12.49	
Θ(52.5°)	-7.89/-7.04	-6.71/-7.93	-13.11/-17.56	-18.89/-17.96	-18.15/-10.14	-6.72/-5.18	-4.01/-2.68	-1.70/-6.88	-1.03/-3.15	-8.40/-18.78	-5.15/-10.18	-6.57/-5.07	-5.31/-5.92	-5.06/-4.51	-7.91/-11.74	-4.91/-9.99	-1.46/-3.99	-6.34/-6.68	-4.41/-4.66	-5.47/-7.16	-10.38/-14.42	-13.73/-9.93			
Θ(60°)	-7.19/-6.25	-7.77/-12.59	-19.21/-11.22	-5.96/-5.88	-7.49/-9.89	-9.68/-8.16	-7.44/-8.24	-5.61/-2.73	-1.34/-2.52	-5.72/-12.51	-11.76/-7.48	-4.67/-2.96	-2.3/-2.98	-4.44/-4.49	-4.22/-3.06	-3.33/-5.84	-9.54/-9.75	-5.05/-2.19	-2.03/-4.47	-6.99/-4.34	-3.7/-5.02	-5.06/-3.61	-4.89/-7.93	-9.8/-8.89	
Θ(67.5°)	-7.15/-5.73	-9.26/-15.13	-1.96/-9.63	-3.1/-3.46	-4.37/-5.86	-5.98/-5.21	-5.4/-7.59	-7.36/-3.18	-1.33/-2.5	-5.54/-13.32	-10.25/-6.69	-3.93/-3.46	-2.6/-3.28	-4.16/-6.39	-3.28/-1.77	-6.27/-6.86	-6.67/-6.37	-4.39/-7.1	-5.47/-6.34	-3.07/-3.77	-4.14/-4.63	-6.53/-7.84	-9.41/-8.78		
Θ(75°)	-6.28/-7.77	-14.77/-13.28	-6.76/-4.26	-2.53/-3.05	-1.88/-2.11	-3.37/-4.25	-4.33/-4.54	-4.02/-3.43	-2.65/-2.59	-4.41/-8.95	-15.52/-7.22	-3.84/-3.69	-3.43/-4.96	-6.05/-4.86	-2.87/-1.07	-1.42/-0.72	-3.27/-7	-6.11/-3.34	-2.89/-4.82	-5.79/-4.68	-3.47/-3.28	-2.64/-2.8	-5.46/-8.25	-6.7/-6.07	
Θ(82.5°)	-5.16/-9.87	-14.71/-13.86	-5.58/-3.06	-2.23/-3.82	-2.12/-0.78	-0.38/-2.3	-5.23/-5.14	-3.66/-2.76	-2.46/-3.6	-4.72/-5.95	-7.98/-6.69	-5.3/-6.8	-6.31/-6.91	-7.99/-4.28	-2.08/-1.1	-0.49/-0.59	-4.86/-6.74	-2.74/-1.28	-3.45/-5.3	-4.02/-2.02	-2.53/-3.21	-1.81/-2.83	-4.39/-7.81	-10.88/-8.27	
Θ(90°)	-10.37/-10.48	-12.67/-17.93	-10.11/-4.46	-1.9/-2.71	-1.88/-0.58	0.53/-0.59	-1.04/-4.35	-5.82/-6.26	-4.15/-3.39	-5.53/-5.21	-5.41/-4.18	-5.78/-9.37	-6.87/-4.73	-7.34/-3.85	-2.31/-3.2	0.82/-0.61	-1.99/-4.81	-2.86/-1.7	-3.53/-2.64	0.32/-0.18	-2.41/-1.48	-0.79/-3.84	-11.03/-10.88	-13.23/-15.69	
Θ(97.5°)	-11.91/-13.59	-17.78/-17.48	-7.4/-7.03	-3.63/-3.8	-0.52/-0.15	0.28/-0.37	-0.64/-0.71	-2.63/-6.6	-7.71/-4.68	-2.96/-3.15	-6.15/-4.75	-7.1/-7.83	-8.16/-12.72	-7.1/-2.95	-0.761/-3.4	2.51/-2.3	-1.33/-4.63	-2.53/-0.54	-2.42/-1.13	0.77/-1.4	-2.01/-1.26	-3.32/-3.92	-12.43/-8.06	-6.11/-10.6	
Θ(105°)	-19.22/-14.66	-17.48/-13.3	-5.78/-7.32	-3.93/-6.07	-0.36/-0.62	1.01/-0.7	-3.53/-2.79	-0.78/-1.72	-9.73/-10.14	-2.68/-1.02	-3.41/-4.44	-9.89/-9.86	-6.53/-9.28	-3.73/-1.98	-6.22/-12.7	-0.13/-0.41	-5.4/-5.13	-1.17/-0.76	-2.57/-0.77	0.67/-0.34	-0.82/-0.84	-2.36/-3.31	-11.66/-16.58	-10.42/-12.57	
Θ(112.5°)	-16.29/-8.86	-13.65/-15.19	-6.63/-8.51	-7.53/-12.62	-3.64/-0.18	0.77/-0.33	-3.72/-6.71	-2.67/-1.28	-5.13/-13	-8.07/-2.87	-2.85/-3.57	-7.71/-7.52	-12.62/-11.04	-7.14/-5.89	-3.68/-3.64	-3.53/-4.32	-5.57/-2.82	-0.45/-0.44	-2.29/-0.36	0.78/-2.97	-2.39/-0.11	-4.65/-1.1	-16.36/-18.66	-9.97/-10.1	
Θ(120°)	-18.52/-15.21	-18.59/-14.5	-14.12/-11.82	-15.07/-8.81	-6.19/-9.26	-1.48/-1.87	-3.91/-5.09	-3.38/-2.47	-3.59/-5.98	-11.37/-10.57	-5.35/-4.21	-5.76/-6.09	-8.32/-14.39	-9.95/-4.84	-5.08/-7.42	-4.82/-4.32	-4.97/-6.88	-3.84/-4.17	-7.51/-7.53	-6.04/-7.96	-4.69/-6.24	-8.59/-15.98	-15.01/-8.87	-7.71/-10.6	
Θ(127.5°)	-14.51/-12.32	-18.46/-19.08	-11.95/-9.3	-16.75/-8.74	-4.96/-2.07	-2.19/-4.75	-9.59/-7.17	-4.11/-3.17	-5.13/-13.37	-1.55/-4	-2.73/-4.11	-5.89/-6.66	-8.26/-8.12	-5.22/-3.52	-3.64/-6.94	-8.22/-10.53	-13.16/-14.37	-9.99/-16.55	-8.4/-9.64	-13.18/-10.81	-9.74/-14.93	-18.82/-12.09	-10.57/-11.1	-7.67/-10.42	
Θ(135°)	-10.13/-19.02	-16.21/-14.36	-13.21/-9.53	-8.33/-5.06	-2.13/-0.92	-0.85/-1.82	-4.77/-10.57	-10.84/-6.3	-5.49/-8.08	-18.76/-7.18	-3.21/-2.78	-4.9/-9.58	-18.27/-18.56	-10.87/-7.17	-12.85/-16.92	-17.11/-10.32	-11.11/-11.87	-10.34/-10.12	-7.94/-55	-7.73/-16.4	-17.89/-15.02	-14.48/-11.66	-8.69/-8.97	-9.93/-9.68	
Θ(142.5°)	-12.02/-16.58	-19.77/-14.74	-18.26/-18.79	-10.03/-5.88	-3/-1.49	-1.01/-1.85	-4.46/-9.7	-12.99/-8.04	-5.54/-6.71	-12/-19.99	-15.67/-10.22	-8.72/-15.24	-16.53/-16.82	-12.27/-7.45	-5.98/-6.3	-7.58/-7.67	-14.51/-10.82	-16.92/-17.61	-18.43/-12.87	-11.74/-19.01	-17.42/-16.48	-18.51/-15.98	-10.73/-12.66	-16.02/-11.57	
Θ(150°)	-9.64/-11.81	-10.48/-9.91	-12.38/-12.73	-8.98/-5.08	-2.26/-0.72	-0.56/-2.14	-4.75/-8.81	-12.45/-11.46	-8.57/-5.73	-9.35/-13.34	-1.748/-14.28	-8.74/-7.96	-8.43/-7.74	-8.21/-9.29	-8.63/-6.87	-6.19/-6.71	-10.14/-15.67	-15.35/-12.17	-9.34/-7.52	-7.33/-7.92	-10.61/-18.64	-17.52/-15.19	-19.21/-16.57	-14.05/-10.63	
Θ(157.5°)	-17.1/-12.96	-9.23/-7.48	-8.09/-9.34	-10.41																					



Radiated Composite Gain Data of 2.4GHz/5GHz

Appendix A

Θ(157.5°)	-6.38/-6	-6.66/-7.21	-7.54/-7.58	-6.99/-7.83	-10.91/-16.99	-18.79/-17.92	-13.85/-11.13	-10.01/-10.18	-9.82/-7.92	-5.61/-3.86	-3.2/-3.35	-4.37/-4.49	-3.55/-2.7	-2.92/-4.15	-5.99/-8.84	-11.55/-12.04	-11.59/-12.09	-12.39/-11.89	-12.86/-18.93	-19.02/-16.44	-13.65/-11.32	-10.28/-10.73	-8.36/-8.75	-11.92/-8.32
Θ(165°)	-5.55/-4.75	-4.35/-4.14	-5.51/-7.4	-9.4/-11.75	-14.4/-16.55	-18.32/-18.25	-17.11/-16.69	-16.4/-17.14	-15.09/-10.8	-7.66/-6.08	-5.19/-5.03	-4.69/-3.96	-3.49/-2.89	-2.23/-1.98	-2.63/-3.87	-5.15/-6.12	-6.98/-8.13	-9.3/-11.52	-16.18/-18.13	-18.59/-10.87	-7.69/-6.05	-5.52/-5.37	-4.57/-5.28	-6.25/-7.17
Θ(172.5°)	-10.76/-12.16	-11.82/-10.37	-10.51/-12.79	-16.6/-17.79	-18.46/-19.15	-18.92/-17.74	-17.38/-13.97	-11.66/-10.82	-10.58/-10.35	-8.58/-6.73	-5.6/-4.82	-4.22/-4.02	-3.98/-4.27	-4.05/-4.43	-4.86/-5.11	-5.67/-6.49	-7.62/-9.94	-14.05/-17.78	-17.14/-18.66	-12.84/-9.82	-8.8/-8.95	-10.21/-10.58	-8.86/-8.19	-8.88/-8.74
Θ(180°)	-17.93/-17.9	-17.46/-16.49	-14.61/-12.64	-10.49/-9.32	-9.36/-9.57	-10.6/-11.85	-14.53/-18.88	-18.46/-19.33	-17.45/-14.45	-11.64/-10.33	-8.57/-7.7	-6.7/-6.47	-6.75/-7.29	-7.93/-8.25	-8.08/-8.73	-10.55/-12.91	-13.69/-13.2	-13.59/-13.45	-14.74/-16.52	-18.65/-17.89	-17.83/-18.27	-13.77/-12.21	-13.5/-15.89	-17.78/-19.2
Freq(Hz)	5.6GPol.	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°)	-13.07/-12.04	-11.96/-10.85	-8.86/-7.22	-5.61/-4.56	-3.63/-2.83	-2.13/-1.77	-1.96/-2.46	-3.1/-3.36	-4.14/-4.96	-6.26/-7.54	-9.26/-11.28	-13.09/-14.02	-13.54/-11.74	-9.85/-8.1	-6.84/-6.19	-5.5/-4.6	-3.98/-3.58	-3.54/-3.24	-3.55/-3.43	-3.7/-4.2	-5.12/-5.67	-6.21/-7.88	-10.62/-12.71	-13.37/-13.06
Θ(7.5°)	-14.51/-11.8	-10.43/-8.99	-7.37/-6.3	-5.32/-4.82	-4.37/-4.05	-4.11/-3.85	-3.48/-3.18	-2.74/-2.5	-2.4/-2.41	-3.16/-4.22	-5.76/-7.58	-9.33/-10.97	-11.48/-9.51	-7.38/-5.23	-3.94/-3.09	-2.79/-2.42	-2.39/-2	-1.89/-2.06	-2.52/-3.49	-4.88/-6.44	-8.2/-8.8	-12.23/-15.07	-19.21/-18.21	-19.05/-17.12
Θ(15°)	-14.08/-11.28	-8.82/-6.69	-5.11/-3.98	-2.98/-2.69	-2.34/-2.33	-2.58/-2.6	-2.07/-1.45	-1.11/-0.95	-1.05/-0.77	-1.24/-2.32	-4.12/-6.22	-8.4/-9.46	-9.73/-8.71	-7.19/-4.74	-3.32/-1.79	-1.41/-0.94	-0.98/-1.08	-1.36/-1.73	-2.25/-3.32	-3.78/-5.28	-6.06/-6.97	-8.17/-10.31	-12.78/-15.86	-17.47/-16.38
Θ(22.5°)	-11.15/-10.53	-8.14/-6.24	-4.21/-2.78	-2.27/-2.55	-2.67/-2.48	-1.84/-1.06	-0.83/-0.62	-0.43/-0.38	-0.67/-1.23	-2.38/-3.88	-6.41/-9.09	-9.21/-7.74	-6.43/-5.76	-5.26/-5.27	-5.41/-4.82	-4.16/-3.67	-3.59/-3.86	-4.52/-4.26	-3.82/-3.48	-3.9/-4.48	-5.1/-5.92	-5.56/-5.51	-6.26/-8.4	-8.92/-9.89
Θ(30°)	-11.39/-10.02	-6.8/-4.46	-3.56/-2.7	-2.51/-2.36	-2.66/-3.22	-3.63/-3.51	-3.37/-3.41	-4.09/-4.74	-5.39/-5.62	-7.41/-8.89	-10.08/-9.04	-6.97/-5.55	-4.98/-4.8	-5.09/-5.77	-6.37/-6.35	-5.05/-5.17	-6.94/-11.17	-16.22/-17.66	-12.25/-8.31	-5.79/-4.62	-3.67/-3.07	-3.08/-3.63	-4.59/-6.54	-8.31/-11.23
Θ(37.5°)	-7.97/-6.19	-4.3/-3.6	-3.47/-3.74	-3.85/-3.88	-3.8/-3.08	-2.38/-1.92	-1.34/-0.87	-1.22/-3.18	-6.36/-9.25	-11.41/-11.86	-9.49/-7.17	-5.76/-4.8	-4.9/-7.1	-7.49/-6.79	-6.27/-5.25	-13.22/-10.65	-10.25/-11.23	-8.94/-7.45	-5.47/-5.16	-6.29/-7.78	-9.46/-10.34	-10.13/-8.46		
Θ(45°)	-3.56/-1.7	-1.52/-2.72	-4.22/-5.95	-6.56/-5.09	-4.08/-3	-1.88/-0.52	0.740/0.87	-0.68/-3.11	-7.3/-13.74	-16.92/-11.46	-7.02/-4.41	-3.76/-3.35	-4.08/-5.66	-6.07/-4.37	-3.08/-2.63	-2.66/-3.99	-7.6/-14.83	-19/-15.35	-10.44/-8.08	-7.19/-8.28	-11.04/-13.1	-16.72/-14.08	-8.77/-7.32	-6.81/-5.07
Θ(52.5°)	-1.46/-0.72	-0.87/-2.26	-3.68/-5.92	-7.21/-5.8	-4.8/-2.98	-1.71/-0.31	0.871/1.67	1.02/-0.54	-0.26/-6.84	-3.88/-2.74	-2.57/-3.31	-4.06/-4.61	-4.9/-4.37	-2.9/-2.52	-1.55/-3.27	-5.18/-8.33	-11.16/-9.97	-7.93/-5.66	-4.16/-4.02	-6.92/-8.89	-7.09/-7.36	-6.16/-5.26	-4.38/-2.49	
Θ(60°)	-2.02/-1.77	-2.38/-6.09	-10.84/-18.51	-19.1/-10.97	-7.7/-7.19	-7.21/-3.98	-0.840/0.64	0.6/-0.41	-1.96/-3.82	-7.02/-7.75	-4.76/-2.37	-1.95/-2.7	-4.45/-3.84	-2.76/-1.93	-1.43/-0.28	0.47/-0.53	-1.87/-3.51	-6.82/-9.8	-4.37/-2.85	-2.79/-3.07	-4.43/-4.66	-5.31/-5.39	-4.6/-2.53	
Θ(67.5°)	-3.03/-3.56	-4.15/-9.6	-17.98/-14.16	-11.3/-6.3	-3.37/-2.2	-3.53/-5.35	-4.23/-1.18	-0.47/-0.66	-1.05/-1.95	-4.42/-5.2	-1.93/-0.67	-0.59/-1.94	-3.85/-2.76	-1.72/-1.4	-0.170/0.33	0.1/-1.93	-2.17/-5.45	-6.59/-4.85	-3.8/-4.36	-3.49/-2.78	-3.73/-4.76	-3.49/-3.25	-3.86/-5.16	-6.71/-4.77
Θ(75°)	-2.65/-2.56	-6.09/-18.01	-10.73/-6.16	-8.11/-3.54	-1.60/0.3	-0.12/-1.55	-3.02/-2.04	0.23/1.09	-0.26/-3.05	-5.87/-4.91	-1.98/-0.55	-0.16/-0.56	0.440/0.13	-0.34/-0.69	-0.250/0.4	-0.3/-0.25	-1.4/-3.71	-3.39/-4.26	-5.12/-4.73	-3.02/-1.39	-1.49/-2.61	-2.29/-2.51	-4.26/-6.82	-8.47/-4.39
Θ(82.5°)	-2.81/-2.52	-7.49/-18.42	-7.97/-4.64	-6.74/-3.03	-1.15/-0.08	-0.84/-1.35	-0.98/-1.19	-0.44/-1.1	1.52/-0.47	-6.39/-5.65	-2.79/-2.34	-1.42/-0.74	0.330/0.5	1.06/-0.24	-0.64/-0.34	-0.790/0.73	-1.5/-2.2	-3.97/-2.93	-1.72/-1.85	-2.12/-2.13	-2.79/-2.19	-1.48/-2.29	-5.75/-10.45	-8.94/-3.58
Θ(90°)	-1.51/-2.58	-4.73/-10.76	-7.11/-3.83	-5.69/-2.31	0.52/0.27	1.41/-0.26	-1.68/-1.18	-0.72/-0.52	0.570/0.08	-1.94/-4.54	-3.95/-3.38	-2.61/-2.13	-2.22/-1.55	-1.31/-1.25	-1.29/-1.64	-0.071/0.63	-1.13/-1.75	0.460/0.78	-1.21/-1.77	-0.85/-0.01	-0.84/-1.07	1.74/-0.84	-6.34/-12.81	-8.34/-5.55
Θ(97.5°)	-3.3/-2.7	-7.32/-15.08	-7.83/-2.58	-5.33/-1.81	-0.16/-2.25	3.08/0.52	1.07/-0.74	-1.61/-0.73	-0.3/-0.37	-1.72/-1.99	-0.45/-1.48	-0.28/-1.31	0.38/-0.38	-1.26/-0.82	-0.480/0.77	0.930/0.67	0.940/0.64	-0.190/0.3	1.03/-1.52	0.862/4.3	1.69/-3.39	-14.67/-14.16	-5.57/-6.2	
Θ(105°)	-3.13/3	-9.58/-9.36	-3.58/-2.07	-3.46/-1.32	-0.361/0.97	1.67/1.71	-1.490/0.8	-0.92/-2.07	-1.51/-1.02	-4.45/-6.94	-2.25/-2.46	-0.57/-1.74	0.61/-1.11	-0.20/-1.21	-3.02/-5.38	-1.02/0.36	0.13/-0.56	-1.45/-1.08	-0.96/-2.52	-3.19/-1.48	1.83/3.35	1.61/-4.47	-19.12/-12.35	-4.34/-3.83
Θ(112.5°)	-7.31/-5.74	-12.65/-10.38	-5.37/-4.83	-5.27/-2.96	-0.50/0.66	0.15/-0.35	0.11/1.73	1.35/-2.45	-4.61/-1.04	-1.47/-1.54	-3.76/-2.75	-2.16/-2.21	0.82/-1.7	-0.070/0.15	-2.6/-8.64	-6.82/-1.91	-2.63/-2.02	-2.45/-1.03	-3.07/-1.54	-2.2/-6.32	-0.67/1.13	-1.39/-9.15	-12.27/-7.68	-2.58/-3.87
Θ(120°)	-13.93/-9.09	-17.99/-16.26	-5.8/-6.61	-4.13/-7.73	-3.51/-1.65	0.06/-0.52	-1.51/-1.6	-0.46/-1.18	-5.27/-10.13	-4.16/-0.58	-3.33/-3.92	-5.41/-2.95	-2.42/-2.12	-2.35/-3.2	-2.89/-6.45	-1.83/-4.15	-4.01/-4.62	-13.4/-7.16	-6.39/-11.27	-5.61/-2.02	-6.86/-18.17	-13.44/-12.3	-12.13/-10.01	-6.94/-10.56
Θ(127.5°)	-18.79/-19.03	-18.82/-12.51	-8.67/-8.76	-7.2/-5.37	-3.06/-2.94	-3.1/-2.09	-1.71/-1.94	-2.83/-6.58	-0.93/-3.92	-3.68/-4.51	-4.43/-3.6	-2.12/-3.14	-6.3/-4.62	-6.89/-9.65	-10.01/-7.14	-9.83/-14.85	-11.36/-10.64	-18.85/-18.65	-12.22/-13.44	-5.93/-11.22	-13.34/-14.23	-12.13/-10.01	-6.33/-10.56	
Θ(135°)	-18.32/-15.57	-17.03/-14.53	-10.25/-7.17	-6.42/-6.71	-5.61/-3.3	-2.34/-3.35	-4.05/-3.64	-3.79/-4.81	-11.28/-11.57	-4.32/-1.57	-1.76/-3.24	-4.74/-3.55	-1.84/-2.3	-3.12/-3.69	-7.05/-19.05	-14.02/-15.03	-9.16/-18.15	-9.12/-10.91	-14.37/-17.12	-14.73/-12.8	-16.49/-12.9	-14.82/-13.79	-9.96/-16.06	-14.65/-16.94
Θ(142.5°)	-18.26/-15.65	-11.88/-12.04	-9.7/-6.45	-4.53/-1.68	-0.59/-0.96	-1.37/-2.34	-3.41/-3.11	-1.98/-2.73	-7.28/-19.03	-8.8/-3.51	-2.1/-3.32	-7.28/-8.82	-6.58/-7.6	-6.81/-5.64	-8.46/-9.27	-11.48/-8.77	-13.19/-18.64	-18.2/-18.38	-14.1/-18.94	-16.83/-10.99	-12.11/-14.57	-16.3/-8.92	-11.33/-8.1	-14.59/-14.65
Θ(150°)	-7.06/-14.42	-9.75/-9.34	-9.32/-8.19	-8.98/-7.59	-5.32/-4.69	-4.36/-4.73	-5.34/-5.02	-4.33/-4.06	-5.57/-9.63	-18.27/-12.82	-7.92/-7.48	-8.21/-11.37	-18.19/-16.6	-11.79/-7.31	-4.26/-2.67	-2.94/-3.52	-4.12/-4.67	-8.04/-7.67	-6.95/-6.14	-4.91/-5.1	-8.26/-13.51	-17.71/-17.73	-11.63/-7.57	-5.28/-4.44
Θ(157.5°)	-7.41/-5.76	-5.1/-6.7	-10.68/-18.14	-18.91/-7.99	-4.87/-4.36	-5.23/-6.73	-7.74/-8.89	-8.97/-7.81	-6.82/-7.84	-12.73/-13.66	-8.92/-6.86	-5.54/-8.6	-5.42/-6.94	-8.84/-9.98	-10.08/-9.11	-7.96/-7.43	-7.41/-9.04	-11.39/-13.09	-11.1/-7.39	-4.19/-2.41	-1.69/-3.04	-5.93/-8.07	-8.41/-8.29	-9.26/-9.88
Θ(165°)	-5.65/-5.67	-7.61/-10.6	-12.99/-13.62	-16.73/-17.34	-16.15/-12.83	-10.76/-9.25	-9.13/-8.38	-7.78/-7.48	-6.89/-1.06	-8.13/-11.26	-14.85/-16.42	-16.24/-16.02	-17.35/-17.68	-18.58/-18.96	-16.47/-13.49	-11.96/-12.04	-11.33/-10.28	-7.95/-5.29	-3.32/-1.31	-0.230/4.2	0.09/-0.93	-3.04/-6.59	-13.06/-18.32	-9.33/-6.7
Θ(172.5°)	-7.91/-8.14	-10.55/-14.56	-17.5/-18.59	-18.68/-13.49	-9.73/-8.15	-7.8/-7.97	-8.6/-1.98	-9.95/-11.13	-11.44/-11.66	-11.17/-11.9	-13.56/-16.24	-19.39/-18.85	-17.18/-14.83	-12.84/-11.41	-10.38/-9.15	-8.22/-7.99	-7.13/-6.43	-5.77/-5.2	-4.85/-5.2	-5.84/-6.54	-7.41/-9.3	-13.25/-18.05	-18.6/-12.94	-9.08/-8.17
Θ(180°)	-19.19/-18.37	-15.65/-12.72	-12.57/-12.68	-13.72/-13.36	-11.09/-9.74	-9.26/-8.76	-8.4/-7.81	-7.65/-8.24	-8.67/-9.27	-9.51/-9.67	-10.05/-11.01	-12.23/-13.83	-16.96/-19.16	-17.13/-18.53	-19.02/-17.32	-17.02/-17.01	-16.24/-17.59	-17.99/-17.98	-18.6/-15.17	-12.91/-11.76	-9.75/-8.77	-12.4/-15.04	-18.5/-18.36	
Freq(Hz)	5.785GPol.	PhiAnt. 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°)	0.590/41	-0.36/-1.38	-2.61/-3.94	-4.34/-4.62	-5.67/-1.09	-9.41/-11.66	-12.25/-10.69	-8.53/-5.84	-4.44/-3.19	-2.1/-1.2	-0.81/-0.56	-0.53/-0.61	-1.05/-1.6	-2.24/-2.3	-2.66/-3.45	-4.92/-6.59	-8.21/-9.7	-11.06/-11.75	-11.41/-9.94	-7.53/-5.78	-4.71/-3.46	-2.02/-1.46	-0.94/-0.61	-0.66/-0.15
Θ(7.5°)	-2.56/3	-3.45/-3.87	-4.67/-5.42	-6.49/-7.25	-8.53/-9.68	-11.24/-13.21	-14.28/-17.02	-13.78/-9.39	-6.79/-4.53	-2.78/-1.44	-0.460/0.1	0.250/0.31	0.05/-0.2	-0.75/-1.34	-1.65/-2.69	-4.27/-5.85	-7.6/-8.95	-10.77/-11.28	-10.05/-7.77	-5.97/-4.66				



Antenna Pattern of 2.4GHz/5GHz

Appendix B

Total Gain Data

Freq(Hz)	2.450Pol.	TotalAnt. 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°)	-5.70/-6.09	-6.49/-6.56	-6.65/-6.79	-6.82/-6.82	-6.98/-7.23	-7.48/-7.67	-7.74/-7.78	-7.73/-7.55	-7.19/-6.76	-6.21/-5.87	-5.82/-6.03	-6.35/-6.77	-7.24/-7.61	-7.77/-7.75	-7.81/-7.92	-8.24/-8.31	-8.33/-8.32	-8.38/-8.31	-7.95/-7.57	-6.97/-6.36	-5.71/-5.26	-4.95/-4.78	-4.90/-5.08	-5.26/-5.46
Θ(7.5°)	-4.08/-4.39	-4.68/-4.86	-5.01/-5.27	-5.51/-5.78	-6.18/-6.70	-7.05/-7.52	-7.48/-7.47	-7.30/-6.98	-6.60/-6.32	-6.04/-5.86	-6.02/-6.32	-6.79/-7.45	-8.23/-9.04	-9.39/-9.67	-9.89/-10.08	-10.34/-10.33	-10.08/-9.79	9.55/-9.06	-8.77/-8.66	-7.89/-7.41	-6.87/-6.29	-5.57/-4.95	-4.46/-4.21	-4.03/-3.98
Θ(15°)	-3.25/-3.49	-3.59/-3.63	-3.82/-4.14	-4.58/-5.02	-5.53/-5.86	-5.99/-6.06	-5.86/-5.57	-5.16/-4.83	-4.58/-4.53	-4.53/-4.60	-4.83/-5.28	-5.82/-6.29	-6.84/-7.31	-7.70/-8.08	-8.52/-9.09	-9.78/-10.26	-10.55/-10.51	-10.27/-9.65	-8.96/-8.65	-8.26/-7.98	-7.37/-6.60	-5.73/-4.86	-4.18/-3.72	-3.40/-3.23
Θ(22.5°)	-3.19/-3.27	-3.19/-3.11	-3.20/-3.58	-3.92/-4.20	-4.33/-4.33	-4.12/-3.71	-3.32/-2.97	-2.55/-2.27	-2.21/-2.24	-2.47/-2.85	-3.42/-4.14	-4.91/-5.44	-5.69/-5.78	-5.67/-5.76	-5.93/-6.38	-7.04/-7.74	-8.43/-8.95	-9.01/-8.79	-7.23/-6.54	-7.95/-7.56	-6.72/-6.34	-5.70/-4.94	-4.21/-3.66	-3.26/-2.99
Θ(30°)	-2.26/-2.06	-1.73/-1.53	-1.60/-1.80	-2.04/-2.18	-2.22/-2.19	-2.02/-1.75	-1.51/-1.32	-1.18/-1.17	-1.23/-1.50	-1.92/-2.56	-3.43/-4.55	-5.84/-6.87	-6.97/-6.28	-5.47/-4.80	-4.58/-4.54	-4.75/-5.13	-5.47/-5.52	-5.38/-5.42	-5.58/-5.89	-6.15/-6.05	-5.68/-5.21	-4.77/-4.39	-3.87/-3.41	-2.91/-2.43
Θ(37.5°)	-0.54/-0.11	0.16/0.26	0.02/-0.39	-0.79/-1.20	-1.49/-1.74	-1.75/-1.69	-1.56/-1.52	-1.48/-1.50	-1.68/-1.95	-2.55/-3.46	-4.90/-7.01	-8.72/-9.01	-7.59/-6.22	-5.10/-4.57	-4.16/-4.10	-4.28/-4.50	-4.40/-3.88	-3.46/-3.15	-3.05/-3.34	-3.78/-3.94	-3.62/-3.07	-2.64/-2.40	-2.21/-1.91	-1.47/-0.93
Θ(45°)	-0.11/-0.12	0.23/0.12	-0.28/-0.80	-1.43/-2.04	-2.46/-2.69	-2.66/-2.39	-1.98/-1.55	-1.17/-0.89	-0.74/-0.85	-1.27/-2.01	-3.31/-5.29	-7.58/-8.95	-8.26/-6.56	-5.17/-3.93	-3.16/-2.80	-2.94/-3.34	-3.75/-4.01	-3.95/-3.53	-3.07/-2.77	-2.61/-2.06	-1.39/-1.02	-0.83/-0.79	-0.71/-0.44	
Θ(52.5°)	-2.15/-2.18	-2.01/-1.91	-2.10/-2.53	-3.04/-3.28	-3.17/-2.86	-2.42/-2.03	-1.55/-1.21	-0.69/-0.41	-0.39/-0.64	-1.26/-2.37	-4.12/-6.78	-10.42/-13.29	-12.67/-10.34	-8.25/-6.71	-5.27/-4.25	-3.53/-3.11	-3.05/-3.22	-3.78/-4.45	-4.87/-4.43	-3.65/-3.12	-2.85/-2.49	-1.85/-1.29	-1.02/-1.12	-1.53/-1.92
Θ(60°)	-2.61/-2.68	-2.41/-2.02	-2.04/-2.41	-3.02/-3.47	-3.63/-3.71	-4.01/-4.34	-4.46/-4.22	-3.65/-3.12	-3.09/-3.65	-4.69/-5.72	-7.38/-10.16	-11.25/-9.29	-7.37/-6.76	-7.53/-9.26	-10.72/-10.29	-8.07/-6.74	-4.11/-1.38	-3.05/-3.73	-5.08/-5.98	-5.13/-5.33	-2.47/-2.04	-1.89/-1.69	-1.58/-1.63	-1.90/-2.19
Θ(67.5°)	-0.31/-0.82	-1.26/-1.60	-1.97/-2.70	-3.63/-4.67	-5.33/-5.59	-5.48/-4.90	-4.04/-3.27	-2.64/-2.37	-2.59/-3.31	-4.14/-4.76	-5.63/-6.74	-6.42/-5.31	-4.96/-5.24	-5.97/-6.64	-7.05/-7.07	-6.78/-6.15	-5.30/-4.65	-4.32/-4.39	-4.81/-5.33	-5.93/-3.27	-0.09/-0.07	0.15/0.19	0.21/0.24	
Θ(75°)	-1.92/-2.65	-3.18/-3.47	-3.67/-3.79	-3.80/-3.37	-2.54/-1.64	-0.99/-0.65	-0.64/-0.89	-1.38/-2.14	-3.60/-5.87	-8.26/-9.41	-10.67/-11.80	-8.95/-6.24	-5.33/-5.51	-5.79/-5.98	-6.02/-5.50	-4.58/-3.69	-3.07/-2.91	-2.88/-3.06	-3.49/-4.19	-4.88/-4.42	-2.93/-1.38	-0.20/0.37	0.31/-0.24	-0.91/-1.53
Θ(82.5°)	-4.93/-4.48	-3.56/-2.89	-2.59/-2.37	-1.85/-1.06	-0.32/0.14	0.31/0.22	-0.03/-0.24	-0.32/-0.64	-1.72/-3.39	-4.80/-5.65	-6.46/-6.61	-5.92/-5.77	-6.28/-6.50	-6.21/-5.80	-5.47/-4.75	-3.80/-2.89	-2.17/-1.67	-1.45/-1.39	-1.61/-2.12	-2.88/-3.17	-2.60/-1.75	-1.12/-0.90	-1.28/-2.29	-3.56/-4.57
Θ(90°)	-4.72/-4.41	-3.38/-2.47	-2.25/-2.46	-1.51/-2.00	-1.43/-1.09	-1.07/-1.15	-1.06/-0.59	0.07/0.37	-0.51/-1.18	-2.07/-2.74	-3.38/-3.72	-4.25/-5.64	-6.82/-6.56	-5.28/-4.07	-3.58/-3.49	-3.59/-3.71	-3.65/-3.55	-3.50/-3.56	-3.52/-3.51	-3.50/-3.18	-2.71/-1.72	-1.67/-2.06	-2.37/-2.63	-3.21/-4.06
Θ(97.5°)	-4.54/-5.23	-5.12/-4.06	-3.12/-2.87	-2.81/-2.30	-1.72/-1.54	-1.89/-2.66	-3.21/-3.06	-2.25/-1.71	-1.67/-1.87	-2.06/-2.19	-2.08/-1.98	-2.61/-3.89	-4.95/-5.79	-6.35/-6.49	-6.73/-7.26	-7.13/-6.59	-5.17/-4.40	-4.24/-4.38	-4.68/-4.99	-4.87/-4.42	-3.96/-3.36	-2.69/-2.44	-2.74/-3.19	-3.52/-3.89
Θ(105°)	-4.95/-5.56	-6.42/-6.16	-4.93/-3.99	-3.63/-3.50	-3.53/-3.89	-4.60/-5.53	-6.36/-6.72	-6.63/-6.41	-6.41/-6.37	-6.43/-6.61	-6.38/-5.90	-6.82/-5.81	-6.21/-5.79	-4.72/-5.30	-6.47/-7.61	-8.17/-10.29	-9.71/-7.62	-6.17/-5.33	-4.96/-5.21	-5.80/-5.90	-5.68/-5.73	-4.94/-3.61	-3.06/-3.35	-3.82/-4.17
Θ(112.5°)	-2.98/-3.78	-4.65/-4.51	-5.59/-5.04	-3.88/-3.89	-3.63/-4.55	-3.27/-3.12	-3.22/-3.32	-3.91/-4.89	-6.42/-7.12	-6.71/-6.68	-5.82/-4.49	-4.79/-4.00	-4.60/-5.16	-5.54/-5.72	-5.37/-4.15	-3.31/-3.17	-3.71/-4.05	-3.78/-3.08	-2.28/-2.09	-3.08/-4.49	-4.44/-3.38	-2.42/-3.56	-1.71/-1.06	-1.40/-2.22
Θ(120°)	-4.66/-6.02	-6.92/-7.25	-6.76/-5.64	-4.77/-4.32	-3.98/-3.45	-2.83/-2.21	-1.75/-1.60	-1.89/-2.77	-4.32/-5.26	-5.34/-6.51	-8.38/-6.54	-3.82/-2.77	-3.10/-4.00	-4.17/-2.92	-1.57/-0.98	-0.99/-1.20	-1.49/-1.60	-1.51/-1.22	-0.60/-0.36	-1.08/-2.61	-3.22/-3.14	-4.03/-4.16	-2.58/-1.67	-2.05/-3.39
Θ(127.5°)	-2.76/-4.29	-5.28/-4.80	-3.79/-3.47	-4.16/-5.51	-6.56/-6.81	-6.34/-5.59	-4.57/-3.72	-3.48/-3.96	-4.78/-4.88	-4.46/-4.42	-4.62/-4.23	-3.38/-3.06	-4.02/-6.00	-6.74/-4.38	-1.27/-1.12	-1.21/-1.77	-2.08/-1.93	-1.54/-0.87	0.03/0.62	0.51/-0.08	-0.35/-0.36	-0.85/-1.86	-2.34/-1.89	-1.43/-1.61
Θ(135°)	-1.65/-3.53	-5.29/-5.62	-5.69/-6.84	-9.86/-15.02	-15.23/-13.75	-10.63/-7.73	-5.34/-6.31	-2.59/-2.18	-2.26/-2.40	-2.45/-2.39	-1.63/-2.84	-3.16/-3.39	-4.27/-6.30	-9.61/-9.22	-5.95/-4.07	-3.88/-4.09	-4.47/-4.46	-4.30/-3.70	-2.63/-1.76	-1.37/-1.28	-1.02/-0.63	-0.51/-0.87	-1.19/-0.90	-0.51/-0.80
Θ(142.5°)	-4.26/-4.96	-5.61/-6.02	-6.35/-6.44	-6.00/-4.95	-3.98/-3.38	-3.12/-2.89	-2.67/-2.55	-2.71/-3.25	-4.22/-5.23	-5.78/-5.91	-6.42/-7.59	-8.93/-10.09	-12.07/-15.88	-15.12/-9.75	-5.92/-4.22	-3.66/-3.57	-3.55/-3.60	-3.63/-3.51	-3.00/-2.56	-2.43/-2.58	-2.72/-2.65	-2.42/-2.61	-3.31/-4.00	-3.56/-4.57
Θ(150°)	-0.06/-0.38	-0.85/-1.35	-1.78/-1.94	-1.85/-1.66	-1.68/-2.02	-2.64/-4.39	-4.42/-6.52	-7.15/-6.09	-12.16/-13.64	-13.51/-14.10	-10.58/-11.13	-11.70/-13.05	-14.24/-14.11	-12.19/-8.13	-5.50/-3.85	-2.91/-2.43	-2.22/-2.09	-1.96/-1.70	-1.19/-0.85	-0.51/-0.24	0.05/0.38	0.68/0.80	0.71/0.44	0.21/0.08
Θ(157.5°)	-1.33/-2.00	-2.72/-3.46	-4.05/-4.13	-4.00/-3.68	-4.08/-4.67	-5.56/-6.59	-7.57/-8.25	-8.58/-8.67	-8.44/-8.00	-7.39/-7.38	-7.97/-8.61	-9.70/-10.48	-11.48/-11.56	-10.32/-8.49	-6.77/-5.51	-4.62/-4.03	-3.51/-3.06	-2.57/-2.03	-1.57/-1.12	-0.71/-0.27	0.11/1.30	2.39/1.44	0.42/0.18	-0.35/-0.95
Θ(165°)	-7.51/-8.25	-8.75/-8.88	-8.70/-8.01	-7.18/-6.57	-6.41/-6.44	-6.32/-5.97	-5.47/-4.94	-4.36/-3.99	-3.75/-3.70	-3.71/-3.94	-5.57/-5.33	-6.26/-7.29	-8.26/-9.08	-9.77/-10.03	-9.90/-9.21	-8.56/-8.13	-7.63/-7.07	-6.44/-5.78	-5.19/-4.79	-4.48/-4.24	-4.24/-4.23	-4.32/-4.27	-4.32/-4.87	-5.94/-6.70
Θ(172.5°)	-9.14/-8.37	-7.56/-6.86	-6.40/-5.82	-5.51/-5.45	-5.32/-5.10	-4.69/-4.16	-3.63/-3.20	-2.83/-2.59	-2.48/-2.51	-2.52/-2.77	-3.25/-3.89	-4.60/-5.38	-6.12/-6.86	-7.51/-8.07	-8.52/-8.88	-9.19/-9.36	-9.37/-9.31	-9.38/-9.93	-10.20/-10.59	-11.25/-12.07	-12.89/-13.01	-12.48/-11.92	-11.51/-11.13	-10.33/-9.39
Θ(180°)	-4.52/-4.44	-4.37/-3.46	-4.45/-4.58	-4.68/-4.82	-4.91/-4.81	-4.52/-4.19	-3.97/-3.86	-3.77/-3.72	-3.72/-3.80	-3.90/-4.13	-4.46/-4.93	-5.44/-5.97	-6.40/-6.74	-7.06/-7.34	-7.53/-7.69	-7.85/-8.02	-8.09/-8.16	-8.31/-8.42	-8.33/-8.10	-7.77/-7.31	-6.72/-6.11	-5.90/-5.99	-5.94/-5.49	-4.80/-4.33
Freq(Hz)	5.2GPoL	TotalAnt. 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°)	-0.14/-0.38	-0.64/-0.93	-1.50/-1.75	-1.79/-1.87	-1.89/-1.88	-1.80/-1.86	-1.52/-1.21	-1.04/-1.16	-1.33/-1.49	-1.16/-0.99	-0.68/-0.43	-0.23/-0.30	-0.63/-0.73	-1.14/-1.18	-1.25/-1.71	-1.76/-2.12	-2.46/-3.04	-2.98/-2.85	-2.78/-2.18	-1.56/-1.16	-0.88/-0.92	-0.78/-0.87	-0.91/-1.01	-1.20/-0.80
Θ(7.5°)	-0.15/-0.53	-1.47/-1.55	-2.20/-2.35	-2.45/-2.54	-2.65/-2.65	-2.77/-2.75	-2.67/-2.77	-2.75/-2.42	-2.52/-1.88	-1.24/-0.79	-0.49/-0.26	-0.19/-0.22	-0.28/-0.44	-0.26/-0.29	-0.68/-0.71	-1.02/-1.43	-1.68/-1.74	-2.02/-1.94	-1.87/-1.57	-1.44/-1.62	-1.25/-1.18	-1.15/-0.95	-0.70/-0.55	-0.65/-0.12
Θ(15°)	0.04/-0.28	-0.64/-0.97	-1.56/-1.87	-2.57/-3.16	-3.79/-4.66	-5.11/-5.29	-5.14/-3.96	-3.22/-2.71	-1.89/-1.56	-1.09/-0.58	-0.07/0.24	0.39/0.50	0.40/0.56	0.52/0.74	0.54/0.64	-0.07/-0.62	-1.27/-1.80	-2.40/-2.56	-2.65/-2.18	-1.94/-1.65	-1.38/-1.37	-1.52/-1.13	-0.34/-0.02	-0.02/0.06
Θ(22.5°)	-0.00/0.66	1.07/0.86	-0.10/-0.67	-1.33/-1.75	-2.09/-2.75	-3.37/-3.66	-3.15/-2.39	-1.91/-1.41	-0.94/-0.61	-0.40/-0.20	0.50/1.06	1.22/1.36	0.87/0.35	0.08/-0.05	0.13/0.15	0.06/0.20	0.32/0.27	0.36/0.11	-0.48/-0.68	-0.83/-0.79	-0.80/-0.92	-1.03/-0.47	0.17/0.31	0.24/0.11
Θ(30°)	0.59/0.62	0.33/0.10	-0.46/-1.00	-1.47/-1.90	-2.76/-3.95	-4.32/-4.51	-4.18/-3.02	-1.72/-0.71	0.09/0.29	0.53/0.42	0.37/0.55	0.36/0.33	0.75/1.26	1.40/1.29	2.05/2.39	2.20/1.24	-0.05/-0.94	-2.00/-2.54	-2.50/-1.63	-1.68/-1.06	-1.61/-2.08	-2.04/-1.23	-0.40/-0.33	
Θ(37.5°)	0.93/0.84	0.73/1.16	0.58/0.49	-1.63/-2.46	-3.58/-4.61	-5.61/-6.34	-6.11/-4.50	-2.50/-1.08	-0.28/-0.48	-1.25/-2.47	-2.28/-1.73	-1.88/-1.93	-1.02/-0.18	0.11/0.80	1.93/2.21	2.07/1.74	1.37/0.62	-0.24/-0.71	-1.17/-1.60	-1.42/-0.69	-0.43/-0.10	0.28/0.44	0.33/0.43	0.81/0.92
Θ(45°)	0.47/0.84	1.07/0.76	0.01/-0.86	-1.44/-1.88	-2.55/-3.3																			



Antenna Pattern of 2.4GHz/5GHz

Appendix B

Θ(22.5°)	1.49/1.11	0.89/0.36	-0.02/-0.16	0.02/0.10	-0.03/-0.31	-0.62/-1.00	-1.37/-1.29	-1.55/-1.65	-1.33/-0.91	-0.51/-0.13	0.21/0.56	0.73/0.50	-0.04/-0.50	-0.67/-0.69	-0.63/-0.40	-0.05/-0.07	-0.51/-1.24	-1.72/-2.01	-1.59/-1.14	-0.80/-0.31	0.09/0.17	0.77/0.95	1.26/1.65	1.77/1.93
Θ(30°)	1.48/1.17	0.50/1.10	-0.00/0.09	-0.23/-0.71	-0.73/-1.01	-1.43/-2.09	-2.96/-3.79	-4.25/-4.25	-3.47/-1.71	-0.48/0.02	0.37/1.34	1.82/1.48	0.93/0.71	-0.44/-0.52	-2.05/-3.49	-3.61/-2.79	-1.92/-0.95	-0.60/-0.52	-0.96/-1.46	-1.93/-2.14	-1.57/-0.98	-0.71/0.08	0.75/1.19	1.59/1.95
Θ(142.5°)	-1.05/1.58	1.02/1.43	0.90/0.18	-0.31/-0.66	-1.46/-2.91	-3.88/-4.51	-6.59/-10.65	-13.81/-9.85	-5.61/-3.26	-1.50/-0.87	-1.02/-0.74	-0.60/-0.17	-0.31/-0.17	-1.11/-3.11	-4.23/-3.95	-2.90/-2.55	-3.87/-2.57	-1.82/-1.38	-3.87/-2.57	-2.07/0.99	1.66/1.66	1.19/0.26		
Θ(45°)	1.23/0.68	-0.34/-0.41	0.07/0.95	1.08/0.12	-1.17/-3.92	-8.81/-14.83	-15.35/-15.05	-11.55/-8.92	-4.84/-1.73	-0.16/0.72	-0.33/-0.67	-0.32/-0.93	-0.36/-0.10	-0.72/-1.24	-3.00/-5.96	-7.34/-6.55	-8.38/-6.81	-6.00/-4.35	-3.71/-2.79	-2.25/-2.25	-1.95/-1.95	-1.88/-1.47	-0.39/0.80	1.62/1.81
Θ(52.5°)	1.75/1.67	1.60/1.69	2.22/2.17	1.85/0.14	-2.16/-5.86	-9.84/-13.48	-11.34/-10.64	-10.22/-7.77	-6.13/-4.82	-4.54/-5.20	-5.32/-2.80	-2.11/-1.55	-1.27/-2.34	-4.58/-5.94	-7.00/-8.65	-4.11/-3.20	-2.52/-2.66	-2.02/-1.69	-1.83/-1.89	-2.93/-3.62	-2.63/-0.84	0.66/2.10	2.42/2.06	
Θ(60°)	1.23/1.33	1.57/1.80	2.33/1.78	0.76/-0.73	-3.27/-7.74	-10.72/-0.61	-3.54/-3.14	-3.59/-3.40	-8.80/-4.74	-5.52/-5.90	-7.28/-7.23	-4.96/-2.32	-1.10/-0.73	-2.85/-4.43	-5.12/-6.11	-5.09/-4.91	-3.31/-1.92	-2.03/-2.37	-2.74/-2.40	-2.07/-3.06	-2.14/0.38	1.81/2.39	2.34/1.88	
Θ(67.5°)	0.99/1.61	1.81/1.58	1.60/1.23	-0.65/-2.88	-5.01/-6.04	-4.78/-2.77	-2.11/-1.22	-2.17/-3.33	-3.73/-4.45	-5.35/-5.45	-4.75/-3.37	-3.01/-3.66	-2.99/-2.91	-4.85/-6.06	-7.40/-9.99	-10.94/-9.32	-7.47/-3.97	-2.31/-3.68	-6.88/-6.56	-3.64/-2.52	-3.35/-2.48	-1.43/0.36	1.24/1.43	1.21/1.29
Θ(75°)	2.21/2.95	1.81/1.98	0.27/-0.07	-1.50/-1.60	-1.70/-2.64	-3.23/-2.09	0.14/0.27	-2.20/-0.45	-3.12/-1.96	-1.33/-0.95	-2.36/-2.33	-1.46/-0.09	-0.58/-0.68	-6.84/-7.14	-11.40/-7.16	-4.46/-4.13	-3.08/-2.15	-3.19/-3.84	-4.11/-3.23	-2.68/-3.00	-1.11/-0.12	1.91/2.61	2.71/3.36	
Θ(82.5°)	2.62/3.46	2.14/0.89	-1.38/-2.94	-4.67/-5.68	-4.40/-4.41	-4.41/-2.32	0.47/0.98	-0.25/-0.40	-0.62/-1.11	-0.62/0.05	-0.16/-1.59	-2.98/-1.22	-2.59/-0.96	-3.73/-6.31	-8.32/-8.20	-9.06/-4.95	-2.33/-0.08	0.44/-1.13	-1.11/-0.74	-0.61/-2.18	-1.34/-2.67	-0.24/1.37	2.50/3.09	2.88/3.61
Θ(90°)	2.03/1.96	2.88/2.79	-0.11/-5.00	-7.47/-6.71	-4.00/-2.95	-4.40/-4.41	-2.47/-0.79	-0.87/-1.32	-2.37/-3.26	-1.75/-0.37	-1.86/-3.88	-4.70/-2.99	-2.89/0.27	-0.02/-2.49	-5.15/-6.76	-8.99/-5.24	-1.95/0.15	1.17/0.55	-1.01/-0.30	0.05/-1.24	-1.12/-2.53	-0.89/0.42	1.81/3.03	2.31/2.08
Θ(97.5°)	2.27/3.18	3.39/2.76	0.95/-0.06	-0.07/0.25	-0.95/-3.20	-2.10/-3.68	0.03/1.11	-0.46/-2.80	-3.74/-2.16	-0.64/0.72	-0.40/-2.55	-0.46/-0.91	-0.58/-0.36	-2.18/-7.13	-8.75/-5.73	-4.42/-1.07	1.00/3.06	2.63/1.97	1.95/-0.14	-1.98/-2.59	-1.55/-0.25	1.18/0.80	1.99/1.91	
Θ(105°)	0.39/2.93	2.07/3.48	1.75/1.71	-6.91/1.24	-0.65/-2.43	-2.18/-0.87	-1.02/-3.36	-2.56/-3.42	-5.19/-5.31	-3.12/-1.31	-2.33/-5.39	-1.59/-2.11	-2.78/-8.87	-5.44/-4.22	-2.66/0.76	1.89/3.28	3.87/2.27	1.29/1.82	2.14/0.13	-1.06/-4.15	-2.68/0.18	0.71/0.06	0.60/1.82	
Θ(112.5°)	-0.90/1.75	0.36/1.30	1.09/1.70	1.45/0.66	0.38/0.44	1.36/1.37	0.34/-0.64	-1.72/-3.06	-3.67/-3.62	-0.04/-2.40	-4.85/-5.31	-3.20/-1.80	-2.12/-4.94	-4.84/-8.87	-10.31/-4.91	-2.66/-1.96	0.09/2.31	1.73/0.31	-0.93/-0.67	-0.39/-1.53	-4.00/-5.91	-3.00/-1.08	-0.67/-1.29	-1.22/0.80
Θ(120°)	-0.52/0.54	0.36/0.72	0.21/0.37	0.91/0.12	-0.34/-1.39	-1.78/-0.69	-0.05/0.61	-0.03/-1.78	-3.96/-6.59	-3.77/-6.08	-9.06/-8.92	-10.25/-3.28	-5.58/-10.93	-5.15/-11.49	-10.25/-3.28	0.02/-3.08	-2.89/0.58	0.27/-4.62	-2.62/-1.77	-5.55/-9.96	-7.42/-4.10	-3.18/-1.79	-0.05/0.45	
Θ(127.5°)	-4.46/-7.29	-6.34/-5.53	-4.23/-3.58	-3.32/-1.79	-2.17/-3.21	-4.70/-4.17	-2.23/-1.71	-2.32/-5.59	-14.37/-12.77	-6.65/-6.06	-8.90/-7.47	-7.13/-6.54	-12.98/-4.50	-4.30/-4.06	-4.34/-5.30	-6.20/-9.00	-9.69/-2.27	-2.49/-7.15	-4.93/-1.11	-2.28/-3.10	-6.85/-3.86	-3.79/-4.42	-2.39/-2.67	
Θ(135°)	-4.03/-2.24	-3.04/-5.17	-5.81/-8.25	-8.99/-10.81	-11.30/-10.73	-9.35/-7.19	-5.33/-4.16	-4.80/-6.26	-6.88/-7.29	-5.72/-6.10	-10.34/-15.35	-13.33/-10.21	-13.77/-12.34	-7.83/-7.93	-4.88/-4.06	-10.27/-12.20	-7.64/-3.07	-4.53/-10.74	-7.05/-2.18	-1.91/-2.79	-5.46/-10.86	-8.40/-5.56	-5.34/-9.34	-6.67/-4.21
Θ(142.5°)	-5.07/-4.66	-6.21/-3.97	-5.08/-5.10	-8.65/-11.75	-10.03/-4.72	-6.32/-7.85	-10.72/-11.10	-10.04/-11.14	-10.97/-7.73	-6.69/-4.83	-7.36/-6.05	-13.05/-12.20	-5.11/-2.63	-4.41/-5.85	-6.63/-10.93	-7.44/-5.56	-3.79/-3.40	-4.67/-5.70	-3.93/-2.44	-2.58/-4.44	-6.49/-6.14	-6.25/-3.74	-6.45/-3.82	
Θ(150°)	-4.29/-6.33	-7.05/-6.27	-6.39/-4.61	-2.72/-8.14	-2.81/-4.88	-8.16/-11.48	-12.88/-14.48	-15.11/-15.35	-13.72/-14.63	-14.54/-12.38	-12.88/-13.97	-9.17/-7.54	-11.03/-11.72	-10.89/-8.61	-7.93/-7.76	-9.47/-6.56	-3.73/-3.67	-5.12/-9.24	-13.93/-12.11	-7.72/-9.09	-7.31/-4.22	-2.65/-1.70	-2.65/-4.51	-4.57/-3.88
Θ(157.5°)	-4.64/-3.50	-2.39/-1.02	0.02/0.65	0.50/2.52	-0.04/-1.65	-6.08/-6.23	-7.80/-8.88	-9.41/-9.22	-8.34/-7.59	-9.78/-11.48	-10.20/-10.08	-9.33/-8.72	-9.56/-10.79	-9.01/-7.69	-9.31/-9.65	-6.88/-5.38	-4.88/-4.48	-3.83/-3.39	-2.73/-2.58	-2.90/-3.66	-3.77/-3.78	-3.84/-3.64	-3.61/-5.66	-4.73/-5.81
Θ(165°)	-2.09/-1.65	-0.95/-0.69	-0.76/-0.73	-1.10/-1.57	-2.37/-3.65	-6.05/-8.72	-10.47/-11.07	-11.09/-10.37	-11.37/-13.38	-13.80/-11.91	-11.55/-12.93	-13.16/-12.31	-11.16/-9.70	-10.19/-13.36	-14.57/-8.96	-5.19/-4.16	-4.30/-5.10	-5.84/-6.67	-7.51/-7.45	-7.04/-6.61	-6.27/-5.68	-4.83/-4.92	-6.25/-6.36	-4.48/-3.12
Θ(172.5°)	-5.73/-4.69	-5.29/-5.66	-5.07/-3.93	-3.68/-4.41	-4.92/-6.03	-7.66/-10.29	-13.50/-13.51	-14.75/-15.30	-15.06/-14.81	-12.27/-9.59	-7.89/-8.69	-6.82/-7.10	-6.92/-6.39	-6.16/-6.84	-6.88/-7.96	-8.52/-9.40	-10.51/-11.53	-12.64/-13.64	-13.97/-12.54	-10.70/-9.55	-8.43/-8.17	-8.19/-8.41	-8.85/-7.36	-6.66/-6.41
Θ(180°)	-11.83/-11.73	-10.80/-10.47	-9.03/-8.30	-8.64/-10.70	-12.40/-12.89	-13.56/-13.91	-12.58/-11.91	-12.64/-13.35	-13.34/-13.35	-13.42/-12.63	-11.76/-11.66	-11.41/-11.58	-12.18/-11.92	-11.86/-12.08	-11.83/-12.04	-11.21/-10.77	-10.92/-11.39	-11.86/-11.48	-11.25/-11.04	-9.73/-9.07	-8.81/-8.76	-9.92/-9.78	-9.84/-10.37	-12.40/-14.27
Freq(Hz)	2.45GPol	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°)	-3.69/-4.10	-4.53/-4.88	-5.40/-5.98	-6.52/-7.05	-7.48/-7.58	-7.59/-7.35	-7.04/-6.74	-6.41/-5.96	-5.56/-5.27	-5.17/-5.01	-4.80/-4.69	-4.64/-4.78	-5.00/-5.35	-5.86/-6.55	-7.31/-8.12	-9.04/-9.70	-9.25/-8.50	-8.73/-7.44	-6.70/-6.09	-5.64/-5.47	-5.30/-5.16	-4.74/-4.31	-4.02/-3.65	-3.41/-3.47
Θ(7.5°)	-4.20/-4.80	-5.23/-5.60	-5.82/-6.30	-6.89/-7.38	-7.83/-8.09	-8.18/-8.00	-7.75/-7.23	-6.75/-6.28	-5.82/-5.50	-5.31/-5.00	-4.73/-4.50	-4.34/-4.22	-4.24/-3.40	-4.57/-5.15	-5.90/-6.73	-7.75/-8.70	-8.80/-8.56	-8.19/-7.42	-6.75/-6.14	-5.70/-5.47	-5.35/-5.06	-4.63/-4.33	-4.09/-3.78	-3.78/-3.91
Θ(15°)	-4.97/-5.51	-5.91/-6.16	-6.48/-6.63	-6.80/-7.06	-7.64/-8.18	-8.54/-8.48	-8.29/-7.81	-7.16/-6.50	-5.29/-5.65	-4.75/-4.58	-4.37/-4.21	-4.13/-4.15	-4.36/-4.71	-5.27/-5.66	-6.45/-6.78	-7.10/-7.10	-6.58/-6.06	-5.62/-5.17	-4.88/-4.63	-4.54/-4.16	-4.05/-4.05	-4.07/-4.14	-4.19/-4.63	
Θ(22.5°)	-5.09/-5.32	-5.51/-5.85	-5.97/-5.87	-6.89/-5.94	-6.57/-7.35	-8.06/-8.43	-8.13/-7.68	-6.97/-6.20	-5.36/-4.77	-4.38/-4.12	-3.95/-3.90	-3.89/-3.95	-4.02/-4.17	-4.44/-4.74	-5.11/-5.35	-5.53/-5.65	-5.43/-5.08	-4.67/-4.17	-3.76/-3.45	-3.25/-3.07	-2.96/-2.91	-3.10/-3.33	-3.60/-3.82	-4.19/-4.71
Θ(30°)	-3.88/-4.39	-5.01/-5.48	-5.71/-5.80	-5.79/-5.97	-6.36/-7.11	-7.79/-8.26	-8.57/-8.34	-7.54/-6.52	-5.16/-4.00	-3.19/-2.72	-2.83/-2.50	-2.82/-3.45	-3.93/-4.45	-4.89/-5.09	-5.15/-5.11	-5.04/-4.81	-4.41/-3.93	-3.47/-3.02	-2.69/-2.41	-2.15/-1.91	-1.73/-1.72	-1.90/-2.15	-2.43/-2.86	-3.24/-3.69
Θ(37.5°)	-4.32/-5.60	-6.68/-7.17	-7.50/-7.89	-8.10/-8.47	-7.82/-7.91	-8.06/-8.31	-8.76/-9.04	-8.81/-7.46	-5.74/-4.02	-2.64/-1.85	-1.47/-1.64	-2.18/-3.05	-4.05/-4.96	-5.37/-5.48	-5.18/-4.84	-3.38/-3.81	-3.22/-2.77	-2.42/-2.17	-2.07/-2.01	-1.80/-1.46	-1.15/-0.98	-0.91/-0.97	-1.38/-2.07	-2.91/-3.83
Θ(45°)	-8.06/-9.75	-9.63/-8.52	-7.40/-6.78	-6.62/-6.70	-6.82/-6.92	-6.39/-6.48	-6.44/-6.85	-6.23/-6.96	-5.97/-4.59	-3.01/-1.80	-0.99/-0.77	-1.09/-1.92	-3.10/-4.30	-5.05/-5.17	-4.98/-4.36	-3.55/-2.78	-2.23/-1.89	-1.76/-1.86	-2.16/-2.22	-2.00/-1.62	-1.25/-1.01	-0.90/-1.18	-0.47/-1.34	-4.74/-6.71
Θ(52.5°)	-9.81/-9.87	-9.30/-8.60	-7.49/-6.43	-6.01/-6.14	-6.42/-6.76	-7.02/-6.80	-6.25/-6.03	-5.95/-5.94	-5.60/-6.48	-3.14/-1.66	-0.52/-0.06	-0.27/-1.06	-2.29/-3.52	-4.36/-4.51	-4.65/-4.32	-3.54/-2.80	-2.25/-2.01	-2.29/-2.80	-3.36/-3.47	-3.16/-2.83	-2.63/-2.52	-2.72/-3.25	-4.31/-5.74	-7.44/-9.25
Θ(60°)	-11.72/-11.97	-10.80/-8.62	-6.65/-5.40	-4.86/-4.61	-4.32/-4.05	-4.03/-4.16	-4.13/-3.92	-3.98/-4.58	-5.53/-6.54	-6.84/-5.74	-3.95/-2.69	-2.26/-2.86	-3.58/-4.50	-5.13/-5.41	-5.38/-4.99	-4.06/-4.39	-3.64/-3.75	-4.08/-4.38	-4.61/-4.39	-3.93/-3.47	-3.35/-3.64	-4.13/-4.87	-6.02/-7.63	-8.85/-10.81
Θ(67.5°)	-8.28/-6.01	-4.02/-2.51	-1.43/-0.79	-0.72/-1.09	-1.46/-1.69	-1.47/-2.34	-2.59/-2.54	-2.48/-2.70	-3.22/-3.93	-4.62/-5.38	-6.14/-6.63	-7.34/-8.51	-9.40/-9.87	-9.74/-8.67	-6.91/-5.43	-4.76/-4.75	-5.14/-5.47	-5.06/-4.39	-3.65/-3.20	-2.92/-2.86	-3.17/-3.59	-4.02/-4.56	-5.95/-8.42	-10.62/-9.15
Θ(75°)	-5.69/-3.47	-2.15/-1.61	-1.19/-0.92	-1.08/-1.80	-2.72/-3.44	-4.10/-4.81	-5.06/-4.93	-4.68/-4.35	-3.68/-2.98	-2.30/-1.82	-1.64/-1.89	-2.43/-3.24	-4.39/-6.03	-8.11/-9.67	-9.33/-7.93	-6.65/-5.52	-4.82/-4.57	-4.65/-4.39	-3.81/-3.41	-3.31/-3.33	-3.25/-3.11	-2.94/-3.03	-4.10/-6.58	-9.35/-8.12



Antenna Pattern of 2.4GHz/5GHz

Appendix B

Θ (75°)	0.25/0.68	-0.20/-2.11	-2.77/-3.41	-6.42/-2.85	-0.74/0.46	-0.00/-0.84	-1.10/-0.36	0.63/1.14	-0.19/-2.70	-5.15/-4.71	-1.87/-0.35	0.13/-0.11	-0.13/0.22	1.08/0.44	-0.09/0.34	0.09/0.24	-1.27/-3.10	-2.76/-3.99	-4.93/-4.55	-2.88/-1.28	-1.36/-2.45	-1.89/-2.05	-3.48/-4.61	-4.10/-1.81
Θ (82.5°)	-0.83/-0.12	-2.60/-6.30	-6.06/-4.45	-6.39/-2.85	-0.98/0.10	-0.56/-0.84	-0.30/-0.58	0.16/1.37	1.57/-0.34	-5.63/-5.35	-2.63/-1.90	-1.10/-0.32	0.96/1.49	1.53/-0.09	-0.36/0.09	0.06/1.18	-1.03/-1.73	-3.51/-2.57	-1.62/-1.74	-1.97/-1.82	-2.22/-1.61	-0.77/-1.48	-3.53/-6.85	-6.42/-1.94
Θ (90°)	-0.24/-0.30	-2.52/-6.26	-5.87/-3.42	-5.44/-2.10	0.64/2.34	1.45/-0.04	-0.90/-0.39	-0.22/-0.15	0.93/0.20	-1.78/-3.96	-3.61/-2.81	-1.89/-1.65	-1.90/-1.15	-0.96/-0.76	-0.84/-1.01	0.66/2.00	-0.04/-0.26	1.50/1.23	-0.67/-1.67	-0.35/0.61	-0.00/1.53	2.28/0.08	-4.20/-8.69	-5.57/-2.34
Θ (97.5°)	-2.53/-1.33	-4.37/-6.95	-4.95/-1.18	-2.96/-1.05	0.21/2.33	3.12/2.60	1.56/0.40	-0.42/-0.18	-0.11/-0.15	-1.34/-1.46	-0.20/-1.21	0.13/-0.78	0.48/-0.29	-1.04/-0.41	-2.55/-2.70	0.18/1.69	2.05/1.71	1.37/0.89	-0.10/0.22	-0.83/-1.16	1.18/2.99	2.46/-1.33	-6.06/-8.22	-4.60/-2.84
Θ (105°)	-2.33/-2.16	-6.28/-5.35	-1.39/-0.51	-1.63/-0.88	0.05/2.17	1.82/1.75	1.60/1.27	0.18/-1.32	-1.15/-0.36	-2.32/-2.68	-1.87/-2.35	-0.37/-1.24	0.91/-0.65	-1.58/-1.02	-2.87/-4.58	-0.61/-1.49	1.00/0.31	-0.72/1.27	-0.87/-2.12	-2.99/-0.91	2.41/4.09	2.79/-2.03	-8.25/-8.08	-2.36/-2.42
Θ (112.5°)	-3.80/-4.08	-8.57/-6.81	-3.02/-2.21	-2.06/-1.29	-0.19/0.91	0.24/-0.28	0.26/2.02	1.71/-1.93	-4.16/-0.80	-0.67/-0.55	-2.85/-2.62	-2.05/-1.83	1.20/-1.17	0.40/0.39	-2.40/-7.74	-5.46/-1.22	-1.59/-0.94	-1.22/-0.75	-2.74/-1.28	-2.11/-5.36	-0.06/1.52	-0.62/-6.82	-7.74/-4.48	-0.02/-0.91
Θ (120°)	-5.53/-5.12	-5.79/-6.72	-3.56/-1.83	-1.18/-4.15	-3.26/-1.57	0.24/-0.14	-1.00/-1.07	-0.26/-1.11	-4.95/-8.86	-3.33/-0.24	-2.46/-2.47	-4.08/-2.72	-1.84/-1.03	0.24/-0.10	-1.21/-4.04	-8.13/-3.91	-3.08/-3.95	-3.83/-4.39	-12.21/-6.69	-6.11/-10.52	-4.97/-1.75	-6.47/-12.90	-7.29/-4.37	-2.96/-3.80
Θ (127.5°)	-3.70/-1.58	-1.68/-2.68	-4.94/-6.32	-3.96/-3.71	-2.76/-2.77	-2.57/-1.59	-0.85/-1.09	-2.19/-6.32	-9.52/-5.28	-3.27/-3.38	-2.52/-2.28	-2.63/-3.11	-2.01/-2.89	-4.74/-3.02	-3.23/-6.42	-6.88/-5.83	-6.59/-5.92	-7.04/-9.36	-15.64/-13.13	-10.76/-12.25	-5.03/-10.57	-12.31/-7.91	-7.35/-8.68	-5.67/-5.69
Θ (135°)	-13.20/-9.26	-11.41/-10.03	-8.55/-5.30	-3.72/-3.40	-3.53/-2.63	-2.01/-2.58	-2.66/-1.69	-1.81/-3.31	-9.27/-8.04	-3.12/-1.26	-1.67/-2.41	-2.05/-0.88	-0.40/-1.61	-2.36/-1.78	-3.09/-4.25	-6.13/-6.73	-4.08/-5.56	-12.33/-11.94	-13.35/-8.83	-7.92/-11.80	-9.91/-9.65	-5.71/-7.11	-7.19/-8.91	
Θ (142.5°)	-9.18/-6.32	-7.21/-10.71	-9.19/-3.84	-1.17/0.65	0.87/0.06	-0.80/-2.08	-2.85/-1.84	-0.54/-1.41	-6.23/-15.37	-8.30/-3.12	-1.29/-1.31	-2.73/-4.02	-3.79/-5.37	-6.45/-3.64	-3.81/-6.52	-10.63/-8.21	-7.81/-6.27	-7.09/-8.14	-11.04/-15.65	-11.54/-8.29	-9.19/-8.77	-12.01/-7.45	-10.49/-15.33	-11.04/-8.96
Θ (150°)	-5.80/-7.02	-6.40/-7.23	-7.85/-6.87	-6.63/-6.15	-4.75/-4.49	-4.21/-4.43	-4.84/-4.75	-4.15/-3.84	-4.31/-5.55	-7.39/-6.63	-5.35/-6.34	-7.84/-9.78	-15.32/-14.36	-9.73/-7.01	-4.06/-2.35	-2.27/-2.33	-1.79/-3.05	-5.26/-6.13	-6.13/-5.81	-4.70/-4.83	-6.46/-6.29	-5.43/-6.31	-5.82/-5.05	-5.01/-4.29
Θ (157.5°)	-3.85/-2.87	-2.80/-3.94	-5.82/-7.21	-6.72/-4.90	-3.90/-4.13	-5.04/-6.41	-6.79/-6.86	-6.45/-5.82	-5.06/-4.87	-4.84/-3.43	-2.17/-1.75	-1.89/-1.66	-1.37/-1.31	-4.56/-5.96	-6.38/-6.14	-6.01/-7.29	-8.85/-9.44	-8.88/-7.10	-4.05/-2.24	-1.42/-2.44	-4.57/-6.19	-5.37/-5.50	-7.38/-6.02	
Θ (165°)	-2.59/-2.18	-2.67/-3.26	-4.80/-6.47	-8.66/-10.69	-12.18/-11.29	-10.06/-8.74	-8.49/-7.78	-7.22/-7.03	-6.28/-5.53	-4.88/-4.93	-4.74/-4.73	-4.40/-3.70	-3.32/-2.75	-2.13/-1.89	-2.45/-3.42	-4.33/-5.13	-5.62/-6.06	-5.56/-4.36	-3.10/-1.22	-0.17/0.73	0.76/0.23	-1.10/-2.93	-3.99/-5.07	-4.51/-3.92
Θ (172.5°)	-6.09/-6.69	-8.13/-8.97	-9.72/-11.78	-14.51/-12.12	-9.18/-7.82	-7.48/-7.53	-8.06/-7.94	-7.71/-7.96	-7.98/-7.95	-6.67/-5.58	-4.96/-4.52	-4.09/-3.88	-3.78/-3.90	-3.51/-3.64	-3.79/-3.67	-3.75/-4.17	-4.36/-4.83	-5.17/-4.97	-4.60/-5.01	-5.05/-4.87	-5.04/-6.11	-8.46/-9.86	-8.42/-6.94	-5.97/-5.44
Θ (180°)	-15.50/-15.12	-13.45/-11.20	-10.46/-9.65	-8.80/-7.88	-7.13/-6.64	-6.87/-7.03	-7.45/-7.48	-7.30/-7.91	-8.13/-8.12	-7.44/-6.98	-6.24/-6.04	-5.63/-5.74	-6.35/-7.02	-7.44/-7.86	-7.74/-8.17	-9.67/-11.48	-11.77/-11.85	-12.24/-12.14	-13.24/-12.78	-11.88/-10.81	-9.12/-8.31	-7.43/-7.71	-9.90/-12.43	-15.11/-15.75
Freq(Hz)	5.785GPol.	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°)	0.78/0.68	0.29/-0.13	-0.54/-0.94	-0.64/-0.10	0.30/0.38	0.38/0.01	-0.16/-0.23	-0.30/0.08	0.07/0.11	0.24/0.35	0.16/0.01	-0.20/-0.33	-0.72/-1.04	-1.31/-0.97	-0.84/-0.97	-0.97/-0.65	-0.41/-0.30	-0.56/-0.24	-0.59/-0.34	-0.21/-0.06	-0.38/-0.40	0.12/0.06	0.18/0.19	-0.12/0.14
Θ (7.5°)	-2.32/-2.48	-2.34/-2.04	-2.02/-2.15	-2.59/-2.42	-2.22/-1.72	-1.44/-1.24	-1.12/-1.00	-0.77/-0.33	-0.05/0.23	0.33/0.55	0.71/0.79	0.63/0.52	0.22/0.07	-0.21/-0.34	-0.27/-0.61	-0.97/-0.90	-0.93/-0.57	-0.65/-0.92	-0.81/-0.69	-0.72/-0.68	-0.81/-0.78	-0.97/-1.38	-1.44/-1.37	-1.59/-1.84
Θ (15°)	-1.69/-2.55	-2.96/-3.37	-3.31/-3.07	-2.98/-3.50	-4.01/-3.84	-3.51/-3.07	-2.98/-2.65	-2.42/-2.00	-1.60/-0.88	-0.78/-0.55	-0.26/0.31	0.49/0.57	-0.04/-0.58	-1.38/-1.67	-2.16/-1.94	-2.04/-1.59	-1.89/-2.36	-2.71/-2.69	-2.31/-2.41	-2.19/-2.59	-2.49/-3.08	-3.03/-2.96	-2.25/-1.92	-1.72/-1.43
Θ (22.5°)	-1.35/-1.55	-1.99/-1.61	-1.45/-1.71	-1.73/-1.93	-2.01/-2.20	-2.64/-2.83	-2.65/-2.57	-2.70/-2.32	-1.79/-1.25	-0.84/-0.08	0.45/0.85	0.96/0.55	0.13/-0.61	-1.06/-1.92	-2.62/-2.75	-2.71/-2.75	-3.28/-3.86	-4.40/-4.84	-5.27/-5.13	-4.18/-3.64	-2.57/-2.19	-1.72/-1.20	-0.79/-0.91	-1.65/-1.35
Θ (30°)	1.58/1.77	1.34/0.86	0.65/0.49	-0.35/-1.57	-2.68/-2.76	-2.12/-1.35	-1.21/-1.57	-2.57/-3.27	-3.92/-2.82	-1.29/0.25	0.89/1.18	1.05/0.82	0.05/-0.73	-1.26/-1.80	-2.93/-3.60	-4.21/-4.40	-4.94/-6.08	-6.97/-7.58	-6.40/-4.96	-4.16/-3.43	-2.98/-2.59	-1.44/-1.16	-0.75/0.08	0.19/0.98
Θ (37.5°)	0.01/-0.05	-1.15/-2.97	-5.02/-5.56	-5.96/-5.95	-5.85/-5.57	-5.67/-4.76	-4.37/-4.15	-4.21/-4.99	-7.74/-8.97	-4.60/-0.97	0.73/1.03	0.77/0.01	-0.05/-0.63	-1.02/-1.05	-0.93/-0.72	-1.32/-2.53	-4.05/-4.98	-6.60/-9.33	-11.95/-11.18	-8.20/-4.79	-2.51/-1.71	-1.83/-2.09	-2.15/-1.32	-0.67/0.13
Θ (45°)	-2.25/-1.98	-2.69/-2.80	-3.06/-3.78	-4.60/-5.39	-6.55/-6.18	-4.68/-3.14	-2.31/-1.69	-1.79/-2.65	-4.91/-6.90	-6.01/-1.94	0.60/1.70	1.46/0.63	-0.08/-0.25	-0.73/-1.52	-3.01/-4.30	-4.09/-3.38	-4.22/-6.14	-9.25/-9.98	-10.91/-14.11	-11.40/-7.19	-5.90/-4.69	-3.31/-3.44	-4.15/-4.07	-2.54/-2.16
Θ (52.5°)	-2.26/-1.03	-0.13/0.02	-0.46/-1.53	-2.59/-3.55	-4.87/-5.50	-4.15/-0.95	0.57/0.44	-0.54/-1.60	-3.47/-8.05	-9.18/-1.90	0.91/1.77	1.37/1.17	1.84/1.77	1.32/-0.20	-1.87/-3.50	-2.63/-2.72	-4.28/-6.65	-9.73/-10.34	-9.70/-10.17	-9.97/-8.04	-6.15/-4.65	-4.18/-4.94	-4.51/-4.78	-4.90/-3.58
Θ (60°)	-1.90/-0.23	0.69/0.32	-1.00/-3.22	-5.81/-4.85	-4.68/-6.13	-5.78/-2.42	-0.59/0.16	-0.09/-0.90	-2.24/-4.29	-8.42/-4.78	-0.66/-1.18	1.49/1.24	1.29/1.90	2.08/1.23	-0.07/-1.18	-0.71/-2.22	-3.08/-4.20	-4.66/-5.54	-8.33/-11.18	-8.79/-4.45	-3.21/-3.41	-3.55/-6.03	-8.49/-8.05	-4.95/-2.92
Θ (67.5°)	-2.66/-1.98	-1.17/-1.20	-1.54/-3.28	-4.86/-3.58	-2.32/-3.09	-4.87/-5.21	-2.23/-1.08	-0.34/0.02	-1.01/-3.35	-6.55/-3.85	-0.25/0.61	0.16/-0.18	0.95/1.20	1.23/0.52	-0.21/-0.91	-1.26/-2.53	-1.67/-2.57	-4.77/-6.53	-5.98/-6.36	-6.26/-4.37	-3.26/-3.60	-4.81/-5.42	-5.55/-7.09	-6.82/-3.80
Θ (75°)	-1.84/-0.68	-1.31/-3.64	-6.80/-7.25	-5.59/-1.83	0.30/0.72	0.27/-0.50	-0.20/-0.26	-0.84/-0.63	-1.24/-2.89	-4.56/-3.15	-1.45/-1.02	0.12/0.20	1.09/0.87	1.88/1.35	0.54/-0.80	-1.61/-2.21	-2.23/-4.48	-4.46/-3.44	-4.11/-6.90	-6.58/-3.60	-3.01/-3.32	-2.40/-2.74	-3.48/-6.55	-8.28/-3.71
Θ (82.5°)	-2.73/-2.17	-4.67/-8.46	-11.04/-8.94	-6.83/-2.52	-0.01/0.79	-0.07/-0.52	0.73/2.01	2.28/1.56	0.26/-1.64	-4.35/-4.78	-1.21/0.04	0.66/0.11	1.72/2.37	3.03/2.28	0.50/-1.66	-2.62/-1.09	-2.08/-3.21	-3.02/-3.95	-3.67/-4.32	-3.58/-2.65	-2.89/-2.11	-0.39/-1.11	-2.94/-7.34	-7.52/-2.94
Θ (90°)	-2.51/-1.21	-3.75/-7.92	-8.62/-6.45	-6.02/-2.51	0.34/1.51	1.03/-1.35	-2.06/-0.19	1.31/1.53	1.52/0.79	-0.88/-4.52	-5.31/-2.66	-0.93/-0.40	-0.04/-0.31	0.39/0.55	0.65/-0.79	-1.18/0.50	-2.17/-2.34	-1.83/-0.59	-0.95/-1.80	-2.08/-0.31	-0.89/0.29	1.01/-0.69	-4.59/-8.52	-7.27/-3.43
Θ (97.5°)	-2.60/-1.26	-3.99/-4.43	-4.47/-2.20	-3.16/-0.45	1.67/3.02	3.50/2.22	0.24/-1.07	-0.57/-0.21	0.82/1.68	1.01/-0.87	-1.29/-2.00	-0.12/-0.18	0.30/-0.18	0.15/-1.33	0.49/-1.06	-0.89/0.71	-0.47/-1.42	-0.36/0.78	0.80/0.06	-0.12/-1.66	-0.77/1.89	2.40/-1.33	-8.04/-9.60	-4.80/-2.62
Θ (105°)	-4.75/-2.98	-5.17/-3.53	-1.82/-0.26	-3.01/-0.39	1.33/2.90	2.93/2.53	2.39/1.67	1.24/-0.14	-1.45/-0.58	0.12/-0.72	-1.75/-3.13	-0.52/-1.02	0.01/-1.27	-1.30/0.20	-0.36/-1.71	-3.68/-2.07	-1.98/-1.23	-1.45/-0.47	-0.78/0.12	-0.46/-3.02	-0.08/2.74	1.73/-3.51	-12.29/-7.78	-3.01/-3.06
Θ (112.5°)	-2.84/-2.24	-5.46/-4.61	-3.15/-3.57	-4.49/-1.73	-0.26/1.73	1.21/0.06	-0.21/1.35	1.42/-1.11	-2.90/0.59	1.55/-0.45	-3.78/-4.57	-0.54/-1.40	0.76/-1.29	-0.88/-0.41	-2.49/-6.55	-6.41/-3.81	-3.90/-4.38	-2.01/0.11	-0.76/-1.26	-3.41/-7.79	-0.94/1.61	0.26/-7.81	-15.96/-6.97	-0.56/-0.19
Θ (120°)	-5.10/-4.05	-4.95/-5.71	-4.70/-3.68	-3.32/-4.30	-2.73/0.09	0.03/-1.78	-3.05/-0.97	0.10/-2.87	-6.39/-1.43	0.68/1.93	-1.05/-2.65	-4.31/-3.21	-0.44/-0.36	0.55/0.03	-1.49/-3.46	-8.24/-8.64	-7.07/-5.70	-6.54/-4.20	-8.41/-4.55	-5.28/-11.50	-5.85/-1.19	-5.40/-13.14	-12.18/-8.09	-3.24/-3.28
Θ (127.5°)	-6.55/-3.75	-3.90/-4.71	-5.32/-5.30	-4.38/-4.90	-2.59/-1.57	-0.68/-0.68	-1.33/-1.88	-3.53/-6.82	-7.26/-3.07	-1.38/-1.82	-1.96/-1.91	-3.43/-4.10	-4.41/-3.66	-3.23/-2.39	-2.96/-5.78	-8.01/-8.81	-8.73/-7.61	-10.17/-13.27	-14.28/-6.77	-6.43/-15.14	-7.99/-11.38	-11		

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

