



Antenna Composite Gain Test Report

Equipment	WiFi 7 2.5G AP
Brand Name	Adtran
Model Name	SDG-9732iYYYYYYY(Y can be 0-9, a-z, A-Z, blank, "+" or "-" or "#")
Part Number	17600081FYYYYYYYY(Y can be 0-9, a-z, A-Z, blank, "+" or "-" or "#")
Applicant	Adtran 901 Explorer Boulevard, Huntsville, Alabama, United States, 35806-2807
Manufacturer	XAVi Technologies Corporation 22F., No.69, Sec. 2, Guangfu Rd., Sanchong Dist., New Taipei City 241, Taiwan (R.O.C.)
Standard	KDB 662911 D03 v01
Sample Received	Nov. 04, 2024
Start Test Date	Nov. 08, 2024
Final Test Date	Nov. 08, 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
2. Test Frequency	4
3. Testing Location.....	5
4. Accessories	5
5. Test Facility and Configuration.....	6
6. Reference Calibration	7
7. Test Method	8
8. Measured Values and Calculation of Maximum Gain Positions.....	9
9. Summary of Test Result	11
10. Test Setup	12
11. Test Equipment and Calibration Data	13
12. Test Results	14



Page No. : 3 of 14
Issued Date : Dec. 19, 2024
Report Version : 01

1. Operation Mode and Antenna Information

Antenna Position	RF Port	Brand Name	Model Name	Ant. Type	Connector	Modes of Operation
2G 5GAnt1	1	GALTRONICS	02102481-08068U1	Dipole	I-Pex	2.4G+5G
2G 5GAnt2	2	GALTRONICS	02102481-08068U1	Dipole	I-Pex	2.4G+5G
5GAnt3	3	GALTRONICS	02102481-08068U1	Dipole	I-Pex	5G
6G Ant1	1	GALTRONICS	02102481-08068U1	Dipole	I-Pex	6G
6G Ant2	2	GALTRONICS	02102481-08068U1	Dipole	I-Pex	6G
6G Ant3	3	GALTRONICS	02102481-08068U1	Dipole	I-Pex	6G

Note:

2.4GHz Operation Mode (2TX/2RX)

2G 5GAnt1~2G 5GAnt2 can be used as transmitting/receiving antenna.

5GHz Operation Mode (3TX/3RX)

2G 5GAnt1~2G 5GAnt2, and 5GAnt 3 can be used as transmitting/receiving antenna.

6GHz Operation Mode (3TX/3RX)

6G Ant1~6G Ant3 can be used as transmitting/receiving antenna.

1.1 Table for Multiple Listing

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

Model Name	Description
SDG-9732iYYYYYY(Y can be 0-9, a-z, A-Z, blank, "+" or "-" or "#")	All the models are identical, the difference model served as marketing strategy.

From the above models, SDG-9732i Smart was selected as representative model for the test and its data was recorded in this report.

2. 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
5850-5895	5885
5925-6425	6175
6425-6525	6475
6525-6875	6695
6875-7125	6995



3. Testing Location

Test Lab. : Sporton International Inc. Hsinhua Laboratory				
☒ Wen 33rd.St.	ADD:	No.14-1, Ln. 19, Wen 33rd St., Guishan Dist., Taoyuan City 333010, Taiwan (R.O.C.)		
	TEL: 886-3-318-0787	FAX: 886-3-318-0287		
Test Condition	Test Site No.	Test Engineer	Test Environment (°C / %)	Test Date
Radiated	05CH03-HY	Rofy Chen	23.5~24.5°C / 45~55%	08/Nov/2024

Note:

Testing Site Information

Brand Name: TDK

Dimension: 11m*6m*6m

Characteristic: Fully Anechoic Chamber

4. Accessories

Accessories				
Mount Plate	Brand Name	N/A	Model Name	N/A
T-bar Mount	Brand Name	N/A	Model Name	N/A

Reminder: Regarding to more detail and other information, please refer to user manual.

5. Test Facility and Configuration

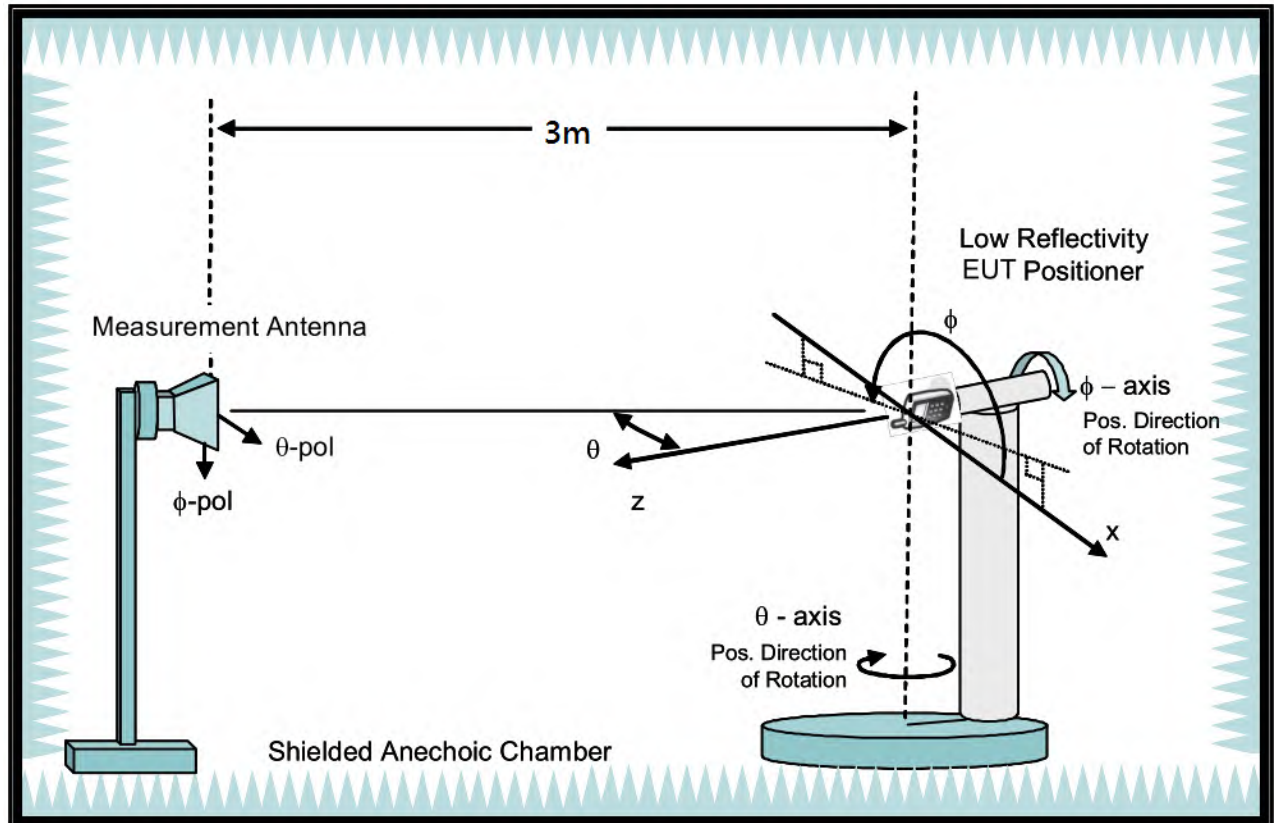
Test configuration: Reference to CITA OTA distributed-axes system configuration.

Chamber: Fully Anechoic Chamber.

Measurement antenna: Dual Polarization Horn antenna

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

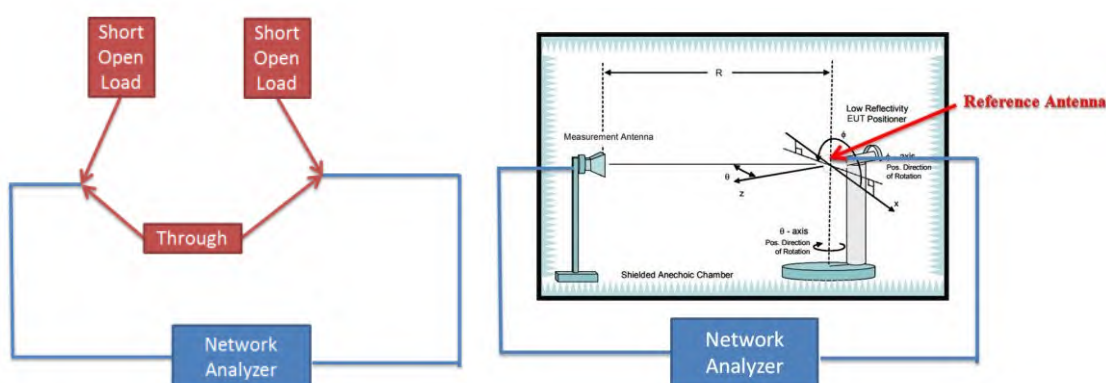
#Reference to CTIA "ctia-test-plan-for-wireless-device-over-the-air-performance-ver-3-7-1"



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.

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



7. Test Method

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

DG steps:

1. Each Phi and Theta polarization antenna gain are measured for all test angles.
2. Composite Phi and Theta antenna gain are computed, using formula in KDB662911 D01 d) (i) and e) (ii), for all angles.
3. Composite antenna gain are examined for all angles to determine max gain and Phi/Theta position. Max gain and phi/theta position are listed in section 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)	-0.24	3.84	-0.51	4.96	2.61
Ant. 2 (dBi)	3.69	1	5.98	5.14	5.5
Ant. 3 (dBi)		-2.61	-5.31	-14.66	-18.27
DG [1SS] (dBi)	4.96	5.91	6.05	6.74	5.75
Polarization	Theta	Theta	Theta	Theta	Theta
$\Theta(^{\circ})$	45	37.5	45	37.5	37.5
$\Phi(^{\circ})$	142.5	322.5	210	7.5	352.5

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

Frequency (Hz)	6.175G	6.475G	6.695G	6.995G
Ant. 1 (dBi)	1.21	3.05	3.58	2.34
Ant. 2 (dBi)	-0.7	2.19	3.67	1.96
Ant. 3 (dBi)	3.44	2.55	-0.99	2.53
DG [1SS] (dBi)	6.25	7.38	7.11	7.05
Polarization	Phi	Phi	Phi	Phi
$\Theta(^{\circ})$	67.5	82.5	67.5	60
$\Phi(^{\circ})$	150	262.5	15	60

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 ^{^(-0.24/20)}	10 ^{^(3.84/20)}	10 ^{^(-0.51/20)}	10 ^{^(4.96/20)}	10 ^{^(2.61/20)}
Ant. 2 [10 ^{^(G/20)}]	10 ^{^(3.69/20)}	10 ^{^(1/20)}	10 ^{^(5.98/20)}	10 ^{^(5.14/20)}	10 ^{^(5.5/20)}
Ant. 3 [10 ^{^(G/20)}]	-	10 ^{^(-2.61/20)}	10 ^{^(-5.31/20)}	10 ^{^(-14.66/20)}	10 ^{^(-18.27/20)}
Ant. 1 [10 ^{^(G/20)}] value	0.973	1.556	0.943	1.77	1.351
Ant. 2 [10 ^{^(G/20)}] value	1.529	1.122	1.991	1.807	1.884
Ant. 3 [10 ^{^(G/20)}] value	-	0.74	0.543	0.185	0.122
Sum All Antenna [Amax]	2.502	3.418	3.476	3.762	3.356
DG [10*log(Amax ² /Nant)]	4.96	5.91	6.05	6.74	5.75

Frequency (Hz)	6.175G	6.475G	6.695G	6.995G
Ant. 1 [10 ^{^(G/20)}]	10 ^{^(1.21/20)}	10 ^{^(3.05/20)}	10 ^{^(3.58/20)}	10 ^{^(2.34/20)}
Ant. 2 [10 ^{^(G/20)}]	10 ^{^(-0.7/20)}	10 ^{^(2.19/20)}	10 ^{^(3.67/20)}	10 ^{^(1.96/20)}
Ant. 3 [10 ^{^(G/20)}]	10 ^{^(3.44/20)}	10 ^{^(2.55/20)}	10 ^{^(-0.99/20)}	10 ^{^(2.53/20)}
Ant. 1 [10 ^{^(G/20)}] value	1.149	1.421	1.51	1.309
Ant. 2 [10 ^{^(G/20)}] value	0.923	1.287	1.526	1.253
Ant. 3 [10 ^{^(G/20)}] value	1.486	1.341	0.892	1.338
Sum All Antenna [Amax]	3.558	4.049	3.928	3.9
DG [10*log(Amax ² /Nant)]	6.25	7.38	7.11	7.05

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*log(10^{^(G_{ant1}/20)}+10^{^(G_{ant2}/20)}+ +10^{^(G_{ant3}/20)} +10^{^(G_{ant4}/20)}+.....)^2/N_{ant})

9. Summary of Test Result

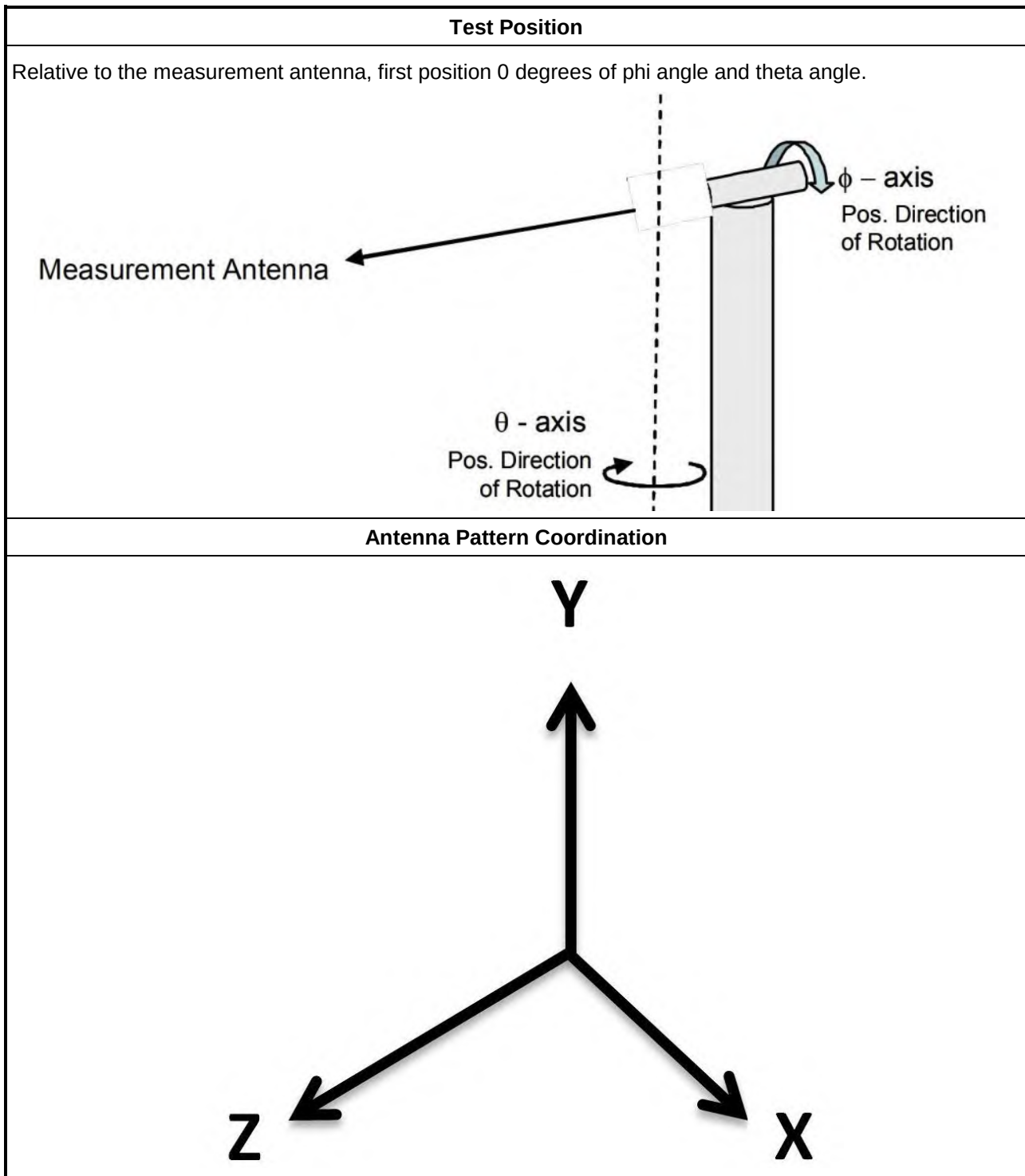
Freq(Hz)	2.45G	5.2G	5.3G	5.6G	5.785G
Ant. 1 Max Gain (dBi)	4.19	5.2	5.35	5.68	3.65
Ant. 2 Max Gain (dBi)	3.97	5.66	5.98	6.25	5.6
Ant. 3 Max Gain (dBi)	-	4.36	4.52	4.28	3.53
Ant. 1 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$	Theta/45/60	Theta/37.5/165	Theta/30/165	Theta/60/0	Theta/45/172.5
Ant. 2 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$	Phi/22.5/292.5	Theta/45/210	Theta/45/210	Theta/37.5/210	Theta/45/217.5
Ant. 3 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$	-	Phi/45/247.5	Phi/45/255	Phi/45/262.5	Phi/45/270
Max Gain (dBi)	4.19	5.66	5.98	6.25	5.6
DG [1SS] (dBi)	4.96	5.91	6.05	6.74	5.75
DG [2SS] (dBi)	4.19	5.66	5.98	6.25	5.6
DG [3SS] (dBi)	-	5.66	5.98	6.25	5.6

Freq(Hz)	6.175G	6.475G	6.695G	6.995G
Ant. 1 Max Gain (dBi)	4.66	4.96	4.11	3.69
Ant. 2 Max Gain (dBi)	4.46	4.62	4.32	3.88
Ant. 3 Max Gain (dBi)	3.44	3.97	3.84	4.56
Ant. 1 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$	Phi/82.5/240	Phi/82.5/232.5	Phi/82.5/232.5	Phi/45/225
Ant. 2 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$	Phi/52.5/270	Phi/52.5/277.5	Phi/67.5/7.5	Phi/60/7.5
Ant. 3 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$	Phi/67.5/150	Phi/75/285	Phi/75/285	Phi/82.5/300
Max Gain (dBi)	4.66	4.96	4.32	4.56
DG [1SS] (dBi)	6.25	7.38	7.11	7.05
DG [2SS] (dBi)	4.66	4.96	4.32	4.56
DG [3SS] (dBi)	4.66	4.96	4.32	4.56

Note:

1. Antenna max gain is the max value of each individual antenna through all measurement angles.
2. The max gain is the max value of all antennas..
3. Directional Gain (2SS) = Directional Gain (1SS) – 3dB. If directional gain is less than max gain, use max gain as directional gain. Refer to KDB662911D01 (F) (2) (e) (ii)
4. Directional Gain (3SS) = Directional Gain (1SS) – 4.77dB. 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	NCR	NCR
Multi-axis positioner	Sporton	MAPS01	MAPS01-001	Theta / Phi axis	NCR	NCR
Test Software	SPORTON	SENSE-RDG	V1.0.8	-	NCR	NCR

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

NCR means Non-Calibration required.



Freq(Hz)	2.45G	5.2G	5.3G	5.6G	5.785G
Ant. 1 Max Gain (dBi)	4.19	5.2	5.35	5.68	3.65
Ant. 2 Max Gain (dBi)	3.97	5.66	5.98	6.25	5.6
Ant. 3 Max Gain (dBi)		4.36	4.52	4.28	3.53
Ant. 1 Polarization/ $\theta(^{\circ})/\phi(^{\circ})$	Theta/45/60	Theta/37.5/165	Theta/30/165	Theta/60/0	Theta/45/172.5
Ant. 2 Polarization/ $\theta(^{\circ})/\phi(^{\circ})$	Phi/22.5/292.5	Theta/45/210	Theta/45/210	Theta/37.5/210	Theta/45/217.5
Ant. 3 Polarization/ $\theta(^{\circ})/\phi(^{\circ})$		Phi/45/247.5	Phi/45/255	Phi/45/262.5	Phi/45/270
Max Gain (dBi)	4.19	5.66	5.98	6.25	5.6
DG [1SS] (dBi)	4.96	5.91	6.05	6.74	5.75
DG [2SS] (dBi)	4.19	5.66	5.98	6.25	5.6
DG [3SS] (dBi)		5.66	5.98	6.25	5.6



Radiated Composite Gain Data of 2.4GHz/5GHz

Appendix A.1

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°)	-0.87/-2.15	-3.09/-3.91	-5.05/-4.73	-3.58/-2.53	-1.86/-1.14	-0.65/-0.39	-0.34/-0.14	-0.31/-0.15	-0.020/-3.1	0.570/7.9	0.9/0.9	0.688/-2.1	-0.47/-1.38	-2.62/-3.9	-4.78/-5.37	-3.82/-2.49	-1.36/-0.52	0.090/0.3	0.570/6.1	0.530/3.2	0.14/-0.05	-0.32/-0.48	-0.32/-0.23	-0.25/-0.46
Θ(7.5°)	-2.02/-3.13	-4.3/-5.45	-6.74/-6.14	-4.93/-3.37	-2.0/-0.84	0.070/7.1	0.230/4.3	0.261/0.5	0.680/1.6	-0.48/-0.68	-0.37/-0.03	0.130/0.8	-0.2/-1.62	-2.61/-3.83	-4.72/-4.2	-3.3/-2.62	-2.08/-1.6	-1.32/-0.87	-0.75/-0.07	0.671/1.7	0.181/3.8	1.20/8.7	0.580/1.8	-0.4/-1.1
Θ(15°)	-4.74/-6.71	-8.64/-8.82	-10.34/-10.11	-8.24/-5.63	-3.44/-1.66	-0.290/7.5	1.49/1.94	2.05/1.86	1.380/6.1	-0.52/-2.03	-2.84/-2.44	-1.81/-1.31	-1.05/-0.89	-1.03/-1.85	-3.64/-4.12	-4.63/-4.64	-4.5/-4.21	-3.27/-1.35	0.762/2.2	3.15/3.65	3.743/4.7	2.852/0.8	1.01/-0.07	-1.39/-2.95
Θ(22.5°)	-6.12/-8.46	-11.24/-13.16	-12.47/-10.57	-9.21/-6.47	-4.14/-2.19	-0.570/8	1.832/4.7	2.662/4.2	1.660/6.4	-1.14/-3.73	-6.48/-8.9	-7.7/-5.6	-4.02/-3.23	-2.82/-2.38	-2.33/-2.83	-4.06/-5.89	-6.89/-6.48	-4.67/-1.39	1.23/0.1	4.14/6.4	4.44/0.3	3.272/2.7	0.99/-0.47	-2.23/-4.22
Θ(30°)	-3.76/-4.97	-6.62/-8.44	-8.97/-7.24	-5.51/-4.26	-1.33/-1.92	-0.60/8	2.2/8.1	3.122/8.9	2.10/7.3	-1.56/-5.13	-10.13/-11.73	-8.57/-6.47	-5.04/-3.84	-2.5/-2.19	-1.42/-1.19	-1.65/-3.01	-5.84/-9.29	-7.78/-3.37	0.242/4.9	3.86/4.52	4.64/3.66	3.612/5.3	1.26/-0.02	-1.4/-2.61
Θ(37.5°)	-1.29/-1.84	-2.62/-3.5	-4.23/-4.18	-3.45/-2.7	-2.13/-1.31	-0.280/8.6	1.912/7.1	3.112/8.9	2.040/3.4	-2.72/-7.98	-10.18/-5.51	-3.42/-2.7	-2.89/-3.43	-3.08/-1.99	-1.1/-0.66	-0.79/-1.7	-3.89/-8.23	-12.56/-5.94	-1.26/-1.41	2.9/3.62	3.863/6.5	3.082/2.7	1.360/5.2	-0.25/-0.87
Θ(45°)	-0.24/-0.55	-0.83/-1.27	-2.03/-2.78	-2.75/-2.26	-1.89/-1.42	-0.630/2.6	1.08/1.84	2.4/2.52	1.930/3.6	-2.69/-3.38	-13.31/-8.11	-4.8/-3.45	-3.42/-3.9	-2.89/-2.02	-1.31/-0.9	-0.8/-1.22	-2.56/-5.26	-9.66/-9.21	-3.43/-0.38	1.232/0.4	2.382/3.3	2.11/1.71	1.150/9	0.850/3.9
Θ(52.5°)	-0.35/-0.86	-1.12/-1.25	-1.81/-2.75	-3.2/-5.6	-2.18/-1.89	-1.31/-0.63	0.18/0.05	1.772	1.48/-0.18	-3.71/-13.37	-11.24/-4.97	-2.67/-1.88	-1.88/-1.82	-1.57/-1.48	-1.51/-1.64	-1.82/-1.95	-2.64/-4.46	-6.85/-7.72	-3.84/-1.2	0.040/6.5	1.021/1.1	1.040/8.8	0.530/6.3	0.920/5
Θ(60°)	-0.69/-1.29	-1.83/-2.13	-2.86/-4.03	-4.27/2.51	-3.2/3.56	-1.96/-1.39	0.520/1.5	1.041/0.6	0.33/-1.4	-4.93/-11.85	-11.26/-5.06	-2.35/-0.75	-0.84/-1.34	-1.78/-2.2	-3.13/-4.42	-4.98/-3.8	-2.9/-3.29	-4.11/-4.74	-3.72/-2.07	-1.66/-1.35	-0.420/1.4	0.14/-0.18	-0.670/0.3	0.60/3.2
Θ(67.5°)	-2.34/-2.73	-2.95/-3.27	-4.42/-6.42	-7.31/-6.14	-4.68/-3.43	-2.82/-2.19	-1.24/-0.41	-0.14/-0.83	-1.52/-3.52	-7.54/-9.75	-4.66/-1.68	-0.69/-1.09	-2.37/-3.45	-3.36/-3.63	-5.59/-7.78	-6.52/-3.5	-2.13/-2.15	-2.8/-3.43	-3.04/-2.33	-2.56/-2.13	-0.60/1.4	0.05/-0.64	-1.73/-1.14	-0.69/-1.2
Θ(75°)	-3.76/-4.61	-4.34/-4.15	-5.06/-7.22	-9.34/-10.28	-7.28/-5.02	-3.95/-3.17	-2.47/-1.93	-1.81/-2.1	-2.9/-4.1	-7.38/-12.63	-10.59/-5.96	-3.84/-3.58	-4.76/-5.73	-4.39/-4.49	-6.57/-8.97	-7.73/-4.37	-2.89/-2.89	-3.81/-4.43	-3.61/-2.73	-3.15/-3.55	-2.1/-1.31	-1.08/-1.48	-2.02/-1.06	-0.93/-1.93
Θ(82.5°)	-4.3/-5.64	-5.65/-5.33	-6.28/-8.28	-10.44/-11.29	-7.87/-5.66	-4.43/-3.3	-2.49/-2.4	-2.65/-3.7	-4.15/-5.8	-12.76/-12.9	-8.14/-6.88	-3.72/-4.62	-6.98/-6.47	-5.21/-5.67	-8.31/-11.64	-9.73/-5.88	-4.18/-4.12	-5.1/-5.16	-3.63/-2.84	-3.91/-4.27	-3.37/-3.28	-4.23/-4.87	-3.75/-1.95	-1.76/-2.64
Θ(90°)	-6.31/-8.1	-8/-8.18	-9.15/-11.12	-14.49/-14.18	-9.6/-7.14	-5.38/-3.68	-2.63/-2.48	-3.17/-4.17	-5.08/-6.25	-8.99/-12.38	-10.28/-6.37	-4.95/-5.86	-9.39/-8.12	-5.86/-5.4	-6.18/-9.6	-14.42/-8.2	-5.32/-5.1	-7.32/-9.35	-6.51/-5.1	-5.92/-3.61	-1.72/-2.11	-4.48/-7.6	-6.17/-3.74	-3.56/-4.64
Θ(97.5°)	-6.7/-9.11	-9.6/-9.75	-10.68/-11.7	-14.24/-14.13	-9.53/-7	-5.73/-4.48	-4.06/-4.2	-4.93/-5.73	-6.16/-8.91	-12.84/-14.32	-10.86/-8.08	-8.28/-11.2	-10.85/-7.72	-6.43/-5.61	-5.99/-9.93	-11.87/-6.33	-4.87/-5.88	-9.28/-8.98	-6.28/-5.77	-7.22/-4.9	-4.4/-2.6	-6.89/-4.84	-4.66/-5.07	
Θ(105°)	-8.32/-11.26	-12.17/-12	-13.04/-12.87	-13.56/-12.88	-9.64/-6.88	-5.79/-5.63	-5.93/-6.95	-8.84/-9.98	-9.23/-10.55	-14.58/-14.52	-11.74/-8.26	-7.77/-9.82	-10.81/-9.13	-7.56/-5.33	-5.01/-8.73	-3.10/-3.78	-6.29/-7.08	-4.75/-5.54	-3.86/-4.22	-6.81/-6.73	-3.82/-3.1	-4.27/-7.1	-9.16/-7.5	-7.67/-8.38
Θ(112.5°)	-9.11/-11.71	-14.02/-13.26	-14.96/-14.86	-14.99/-13.58	-10.49/-7.73	-6.53/-6.68	-8/-10.16	-11.86/-10.11	-8.74/-10.39	-11.35/-10.39	-8.32/-7.09	-8.04/-11.2	-13.15/-13.49	-8.35/-5.92	-7.89/-14.22	-8.84/-5.24	-4.07/-4.23	-5.49/-4.78	-3.8/-5.07	-9.21/-9.05	-5.54/-4.78	-5.69/-7.99	-9.27/-6.78	-6.83/-8.72
Θ(120°)	-12.57/-15.37	-13.66/-12.17	-11.64/-12.54	-14.58/-14.78	-13.87/-12.11	-10.45/-10.11	-10.16/-10.64	-9.72/-8.61	-8.47/-9.54	-11.25/-11.91	-11.19/-9.91	-9.83/-11.21	-12.85/-10.92	-7.57/-5.87	-8.32/-12.2	-7.66/-5.59	-5.28/-6.54	-8.02/-4.44	-2.34/-2.93	-5.8/-7.21	-5.66/-5.2	-6.19/-8.25	-10.8/-8.28	-7.25/-9.22
Θ(127.5°)	-9.03/-10.94	-10.76/-10.94	-10.91/-11.08	-11.44/-11.41	-11.75/-12.33	-11.78/-10.44	-10.13/-10.45	-10.41/-10.55	-10.83/-11.54	-12.29/-9.77	-7.17/-6.61	-7.77/-6.61	-12.68/-10.62	-7.84/-6.78	-8.96/-10.88	-10.63/-8.98	-8.46/-8.95	-9.66/-3.07	-1.16/-1.54	-3.82/-6.34	-5.86/-5.85	-7.35/-8.52	-9.62/-7.21	-5.28/-5.67
Θ(135°)	-6.62/-6.87	-6.83/-7.32	-8.27/-9.16	-10.66/-11.24	-11.06/-10.23	-10.61/-11.67	-12.23/-12.77	-12.61/-10.78	-9.58/-8.99	-8.14/-7.36	-6.17/-5.42	-5.48/-7.6	-12.27/-14.88	-13.45/-11.5	-13.94/-14.83	-12.65/-7.99	-5.25/-4.42	-3.57/-1.91	-0.87/-1.44	-3.86/-8.17	-12.82/-14.14	-15.15/-13.93	-12.47/-8.44	-6.28/-8.71
Θ(142.5°)	-8.29/-7.15	-6.71/-7.1	-7.95/-8.08	-7.99/-8.89	-8.8/-8.73	-9.42/-10.56	-10.86/-9.7	-8.19/-7.47	-7.41/-7.59	-7.49/-6.7	-5.77/-5.15	-5.64/-7.59	-11.61/-15.15	-14.71/-14.25	-15.09/-12.3	-8.71/-5.88	-4.63/-4.37	-3.75/-2.65	-2.27/-3.23	-5.72/-8.62	-9.48/-9.43	-11.27/-13.17	-15.28/-13.13	-11.6/-10.53
Θ(150°)	-8.58/-7.43	-6.8/-6.68	-6.69/-6.73	-6.55/-6.34	-6.33/-6.51	-6.81/-6.45	-6.24/-5.12	-5.32/-4.9	-4.90/-4.5	-5.28/-5.36	-5.12/-4.99	-6.14/-7.53	-9.7/-10.81	-1.67/-10.22	-7.18/-8.02	-6.89/-4.61	-6.49/-7.16	-6.06/-8.14	-6.73/-7.22	-8.06/-8.14	-7.62/-7.75	-8.8/-10.4	-10.64/-10.81	-9.69/-9.78
Θ(157.5°)	-8.47/-7.95	-7.13/-6.59	-6.4/-6.45	-6.72/-6.78	-6.31/-5.6	-4.98/-4.58	-4.48/-4.65	-5.28/-6.4	-7.95/-8.87	-9.77/-9.75	-9.08/-8.74	-9.04/-9.73	-9.7/-9.22	-8.7/-8.59	-8.21/-8.35	-8.53/-9.16	-10.13/-10.66	-11.17/-10.58	-9.29/-8.19	-7.63/-7.51	-7.7/-8.29	-9.17/-10.19	-10.49/-10.49	-9.46/-9.9
Θ(165°)	-9.42/-9.23	-8.66/-8.13	-8.19/-8.68	-9.37/-9.04	-7.62/-6.22	-5.29/-4.79	-4.74/-5.13	-5.92/-7	-8.47/-10.08	-11.54/-12.26	-12.16/-11.63	-11.25/-10.37	-9.79/-9.66	-10.03/-10.47	-11.28/-12.51	-13.93/-14.5	-12.7/-11.35	-10.14/-8.9	-8.58/-7.66	-7.34/-7.57	-8.42/-9.91	-12.01/-14.27	-14.27/-13.44	-12.27/-11.05
Θ(172.5°)	-11.54/-10.71	-10.01/-10.04	-10.68/-11.62	-11.91/-10.88	-9.76/-8.93	-8.54/-8.51	-8.86/-9.79	-11.23/-12.65	-11.44/-13.71	-14.44/-14.76	-12.56/-10.79	-9.72/-9.43	-8.77/-10.82	-12.53/-13.41	-14.46/-14.8	-14.04/-12.21	-10.56/-9.81	-8.91/-8.6	-8.42/-8.59	-8.82/-9.31	-14.63/-15.52	-14.61/-15.13	-15.17/-13.86	
Θ(180°)	-10.97/-10.33	-10.12/-10.33	-10.59/-10.65	-10.42/-10.44	-10.94/-11.49	-12.24/-12.45	-13.43/-13.57	-14.23/-15.38	-15.34/-14.34	-13.6/-12.47	-12.46/-11.82	-10.84/-11.14	-11.29/-12.19	-12.73/-13.63	-13.41/-12.76	-12.11/-11.6	-11.39/-11.33	-11.54/-12.07	-12.13/-12.97	-13.59/-14.9	-15.33/-15.29	-15.58/-16.07	-15.5/-15.94	-15.42/-13.28
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°)	-0.75/-0.69	-1.23/-1.3	-1.24/-0.83	-0.350/0.8	0.330/5.2	0.480/2	-0.3/-0.97	-1.87/-3.13	-3.53/-4.14	-4.35/-4.02	-3.51/-2.9	-2.29/-1.65	-1.1/-0.78	-0.67/-0.72	-0.54/-0.45	-0.50/-0.68	-0.81/-1.06	-1.48/-2.04	-2.72/-3.56	-4.58/-5.63	-5.79/-9.41	-3.61/-2.71	-1.89/-1.26	-0.84/-0.6
Θ(7.5°)	-1.13/-1.1	-1.32/-1.53	-1.45/-1.64	-1.74/-1.85	-1.85/-2.12	-2.33/-2.22	-2.57/-2.88	-3.31/-3.78	-4.09/-3.97	-3.39/-2.69	-2.07/-1.51	-1.1/-0.63	-0.41/-0.27	-0.63/-0.57	-0.320/-4.1	0.961/-2.7	1.36/-1.25	0.940/0.3	-0.21/-1.2	-2.41/-3.8	-4.81/-4.85	-4.32/-3.68	-2.92/-2.3	-1.74/-1.33
Θ(15°)	-1.07/-0.88	-2.72/-0.52	-0.34/-0.21	-0.22/-0.36	-0.72/-1.24	-1.84/-2.56	-3.51/-4.54	-5.47/-6.02	-5.11/-3.23	-1.74/-0.67	0.020/3.6	0.490/4.5	0.23/-0.07	-0.68/-1.47	-0.970/-2	1.23/2	2.542/2.82	2.792/4.3	-1.26/-3.7	-5.87/-5.26	-4.15/-3.31	-2.58/-2.08	-1.63/-1.24	
Θ(22.5°)	-0.27/-0.09	0.170/4.6	0.730/9.3	1.030/9.9	0.80/5.2	0.07/-0.78	-2.25/-4.39	-7.08/-6.81	-2.98/-0.74	0.821/7.2	2.142/1.2	1.751/1.7	0.46/-0.36	-1.29/-2.2	-2.48/-1.25	0.391/7.6	2.793/4.2	3.683/4.4	2.721/4.4	-0.49/-3.31	-4.16/-3.28	-2.34/-1.55	-0.99/-0.66	-0.47/-0.37
Θ(30°)	0.650/8.2	1.091/3.5	1.561/7.4	1.821/8.3	1.81/7.2	1.430/6	-1.02/-3.8	-6.68/-4.7	-1.18/-1.2	2.663/4.3	3.613/3.8	2.821/9.9	1.080/2.1	-0.52/-1.87	-2.61/-2.68	-1.360/-44	1.973/0.7	3.633/6.5	3.051/8.1	-0.23/-0.3	-4.1/-2.7	-1.55/-0.78	-0.27/-0.05	0.010/1.3
Θ(37.5°)	1.321/5.8	1.92/1.4	2.292/3.8	2.362/2.9	2.272/3	2.071/2.1	-0.58/-3.92	-6.23/-2.68	0.672/8.7	4.134/6	4.3/4.3	2.281/0.2	0.22/-0	-0.15/-6.67	-2.34/-0.99	0.672/0.1	2.883/1.6	2.711/4.8	-0.64/-3.26	-2.91/-1.14	-0.020/5.6	0.790/9.4	1.181/0.7	
Θ(45°)	1.561/7.8	2.062/2.8	2.3																					



Radiated Composite Gain Data of 2.4GHz/5GHz

Appendix A.1

Θ(15°)	-2.79/3.35	-3.79/3.39	-1.73/0.54	0.0/47	0.47/0.56	0.83/0.95	0.96/0.68	0.16/-0.66	-1.36/-1.76	-1.91/-2.21	-2.79/3.88	-4.47/-5.02	-4.73/-4.44	-4.7/-5.22	-4.67/-3.87	-2.64/-1.25	-0.03/0.83	1.48/1.78	1.83/1.59	1.21/0.76	0.15/-0.65	-1.45/-1.71	-1.59/-1.79	-2.04/-2.55
Θ(22.5°)	-0.3/-1.15	-1.6/-0.77	1.44/-6.22	2.84/2.33	1.29/-0.06	0.16/0.6	0.94/0.47	-0.66/-1.6	-0.79/-1.51	-1.96/-2.28	-2.85/-4.06	-5.09/-4.5	-5.32/-4.46	-4.47/-4.64	-3.79/-2.39	-0.89/0.36	0.98/0.94	0.69/1.4	1.95/1.91	1.72/1.89	1.64/1.48	1.36/1.48	1.67/1.62	1.52/0.71
Θ(35°)	0.87/0.21	0.23/1.84	3.13/3.72	3.65/2.85	2.12/1.43	0.82/0.03	-0.82/-1.59	-2.64/-3.69	-2.96/-2.03	-2.21/-2.15	-1.64/-1.86	-3.46/-4.3	-3.86/-3.01	-3.5/0.3	-4.17/-1.16	0.78/1.8	2.92/3.74	3.31/3.36	1.19/1.36	1.42/1.4	1.61/1.74	2.11/2.32	2.73/0.05	2.61/1.78
Θ(37.5°)	1.15/0.95	1.09/2.62	3.78/4.16	3.56/3.08	3.22/3.23	2.52/0.89	-0.6/-0.93	-0.81/-1.35	-1.08/-0.72	-1.09/-0.11	0.57/0.51	-1.18/-3.55	-5.92/-5.1	-3.17/-3.75	-4.08/-0.22	1.61/2.08	3.23/4.54	4.03/2.14	1.52/34	3.15/4	4.53/4.22	3.25/2.43	1.02/2.09	2.49/1.69
Θ(45°)	0.28/0.58	1.32/2.36	3.37/3.59	2.57/2.41	3.5/4.1	3.51/1.43	-0.52/0.42	0.91/-0.26	-1.65/-1.29	-1.56/-0.56	2.03/3.12	2.26/-0.66	-3.13/-3.22	-2.55/-1.85	-3.87/-0.4	1.92/2.1	2.51/3.11	2.97/2.09	2.26/2.45	3.14/1.7	5.26/5.13	3.25/0.85	-1.97/-0.99	0.82/1.2
Θ(52.5°)	-1.33/0.38	0.91/1.31	2.32/2.41	1.29/0.86	2.11/3.59	3.37/1.48	0.34/0.93	0.03/-2.67	-2.78/-1.84	-2.1/-0.63	0.81/1.11	-0.23/-1.87	-1.43/-2.01	-1.39/-0.47	-2.79/-0.08	2.01/1.9	1.71/1.79	0.65/0.25	1.55/1.83	2.37/3.65	4.49/4.14	2/-2.04	-5.31/-3.7	-1.5/-1.05
Θ(60°)	-1.78/-0.13	0.69/0.33	0.55/1.07	0.14/-0.8	0.74/3.05	3.18/1.94	1.72/1.36	-0.95/-1.96	-1.19/-1.41	-2.41/-2.67	0.19/1.86	0.76/-1.02	-0.84/-1.77	-2.56/0.69	-0.23/-2.04	0.48/-0.11	-0.31/-0.52	-2.37/-1.58	0.21/0.18	2.08/2.77	2.37/1.4	-0.41/2.86	-4.9/-3.1	-2.15/-1.87
Θ(67.5°)	-1.35/-1.06	-0.43/-0.38	0.2/0.28	-0.39/-1.76	-0.39/1.77	1.85/0.89	1.31/0.38	-1.87/0.12	-1.7/-2.85	-2.41/-0.58	2.15/2.5	1.06/-0.39	-0.39/-3.01	-2.41/1.69	0.32/-2.6	-1.99/-3.06	-1.3/-1.31	-2.77/-1.34	1.36/0.09	2.57/2.6	0.12/-1.71	-2.68/-3.29	-3.74/-2.59	-2.52/-1.76
Θ(75°)	-1.27/-1.43	-1.39/-1.29	-0.51/-0.25	-1.15/-2.74	-0.93/1.2	1.1/-0	0.98/0.63	-2.27/-0.31	-1.03/-2.24	-2.01/-1.26	1.3/1.4	0.28/-0.63	-2.53/-2.85	-3.72/0.76	-0.59/-3.5	-3.74/-4.4	-2.44/-1.7	-2.18/-0.52	1.55/1.19	3.88/3.72	0.33/-3.39	-5.91/-5.02	-4.42/-2.54	-2.96/-2.38
Θ(82.5°)	-2.2/-2.92	-2.71/-1.98	-1.62/-1.6	-2.2/-3.93	-1.89/-0.31	0.88/-1.32	0.28/-1.05	-2.21/-0.37	-1.25/-2.71	-3.23/-0.33	1.65/0.85	-0.06/-1.72	-3.71/-6.08	-3.13/0.39	-2.5/-4.76	-5.31/-5.78	-2.45/-2.6	-2.23/-0.65	1.58/1.52	3.77/2.49	-2.14/-5.33	-6.77/-7.66	-6.71/-4.49	-5.46/-3.58
Θ(90°)	-4.32/-3.87	-3.28/-3.46	-2.93/-2.41	-3.45/-4.27	-1.85/-1	-1.33/-2.32	-1.29/-0.85	-2.87/-0.93	-1.34/-1.61	-3.16/-2.12	-0.28/-1.33	-1.16/-1.64	-5.33/-6.38	-6.31/-1.95	-3.32/-4.71	-5.53/-7.77	-4.63/-5.87	-4.17/-1.06	-0.31/-0.54	1.77/0.39	-3.87/-7.06	-7.88/-8.85	-8.15/-6.15	-6.82/-5.94
Θ(97.5°)	-5.69/-5.88	-4.73/-4.02	-3.51/-3.7	-3.89/-5.5	-2.74/-2.02	-2.24/-2.58	-1.97/-2.36	-3.42/-2.47	-3.67/-2.02	-3.83/-2.03	-1.39/-1.49	-2.07/-4.7	-5.18/-7.99	-6.78/-3.98	-7.54/-6.24	-7.61/-7.51	-6.52/-9.58	-5.87/-4.08	-1.8/-2.11	-1.03/-3.15	-9.34/-12.51	-10.28/-6.42	-7.96/-6.69	
Θ(105°)	-7.6/-6.82	-5.32/-5.74	-5.5/-4.08	-3.32/-6.21	-3.94/-3.18	-3.72/-3.71	-3.56/-3.42	-5.08/-4.35	-3.74/-2	-4.54/-3.46	-3.36/-2.63	-4.63/-5.77	-5.45/-8.17	-8.17/-7.61	-8.77/-5.92	-7.74/-8.3	-8.19/-8.92	-7.92/-5.7	-6.65/-5.44	-5.34/-6.26	-10.8/-9.51	-10.26/-11.8	-9.68/-9.32	-8.29/-7.49
Θ(112.5°)	-7.84/-7.89	-7.5/-7.52	-6.39/-4.33	-3.92/-7.32	-4.38/-3.42	-4.96/-4.88	-4.45/-5.43	-5.78/-6.59	-4.12/-2.36	-4.85/-4.4	-3.85/-2.81	-4.63/-7.52	-6.95/-9.82	-9.07/-6.74	-7.42/-6.36	-7.45/-7.71	-6.18/-8.45	-7.87/-5.37	-5.39/-4.66	-7.08/-10.04	-11.35/-9.3	-12.03/-11.27	-12.6/-8.73	-8.38/-12.4
Θ(120°)	-9.17/-8.41	-7.44/-5.44	-6.63/-5.63	-4.51/-5.63	-5.2/-3.94	-4.9/-4.81	-4.25/-5.53	-4.41/-8.4	-5.92/-4.63	-4.63/-3.29	-4.18/-3.07	-6.41/-7.4	-8.02/-10.99	-7.98/-8.92	-7.42/-8.94	-9.18/-7.76	-7.4/-5.2	-7.74/-5.07	-6.51/-5.09	-5.32/-5.49	-10.26/-11.8	-10.51/-10.02	-10.16/-9.91	-7.35/-7.05
Θ(127.5°)	-9.67/-10.13	-7.3/-5.02	-6.63/-5.86	-4.62/-6.52	-5.07/-4.75	-6.61/-6.2	-6.24/-6.42	-5.61/-6.21	-5.13/-5	-5.84/-7.37	-7.33/-5.67	-6.55/-7.64	-9.49/-10.41	-11.31/-9.68	-5.65/-10.3	-8.37/-9.86	-7.94/-7.1	-8.83/-4.91	-5.73/-6.9	-9.83/-11.09	-13.01/-13.07	-12.6/-10.65	-12/-10.28	-9.11/-6.82
Θ(135°)	-11.75/-8.29	-6.76/-5.29	-7.52/-7.12	-5.07/-5.75	-5.76/-6.18	-6.86/-5.89	-6.06/-6.35	-6.83/-6.49	-4.82/-7.94	-4.99/-5.05	-7.05/-9.53	-10.91/-4.59	-5.67/-8.74	-10.76/-11.13	-8.66/-12.38	-11.52/-13.5	-13.31/-9.34	-10.03/-9.15	-10/-11.99	-10.82/-11.19	-13.47/-12.48	-11.67/-11.89	-12.32/-8.04	-9.95/-9.3
Θ(142.5°)	-12.88/-8.29	-6.99/-6.18	-8.65/-6.67	-5.93/-7.4	-8.83/-6.71	-6.56/-7.73	-6.61/-6.28	-6.42/-6.2	-7.25/-7.71	-7.94/-10.01	-11.97/-7.61	-6.61/-12.87	-10.14/-11.94	-9.88/-10.18	-11.49/-12.36	-9.66/-6.97	-11.66/-12.56	-11.65/-9.97	-10.14/-13.02	-10.94/-9.66	-9.45/-12.22	-9.49/-7.33	-8.51/-11.08	
Θ(150°)	-12.76/-10.43	-9.62/-10.42	-11.14/-8.79	-7.52/-8.44	-10.37/-11.21	-6.69/-7.99	-7.2/-7.11	-7.32/-8.21	-10.21/-11.75	-12.6/-12.06	-11.22/-9.13	-7.26/-7.61	-8.94/-11.72	-10.75/-8.89	-9.43/-10.85	-11.82/-13.3	-11.26/-8.38	-8.3/-10.4	-11.42/-7.82	-7.48/-11.11	-10.43/-9.28	-9.93/-10.91	-12.89/-9.45	-8.06/-10.37
Θ(157.5°)	-12.25/-12.5	-11.86/-10.04	-9.46/-8.6	-8.28/-7.4	-7.09/-8.06	-8.46/-8.3	-9.11/-9.94	-9.97/-9.76	-8.22/-8.94	-10.83/-12	-12.51/-11.33	-11.21/-10.06	-8.91/-9.6	-10.82/-13.56	-12.03/-10.37	-11.18/-10.63	-8.46/-7.84	-8.83/-10.1	-9.3/-8.75	-9.96/-10.22	-8.32/-7.85	-8.9/-11.1	-13.32/-13.04	-10.95/-10.73
Θ(165°)	-10.69/-11.34	-12.4/-11.93	-11.61/-10.94	-11.08/-10.35	-9.63/-9.88	-10.78/-12	-10.86/-9.45	-8/-7.09	-6.99/-7.79	-8.52/-8.84	-8.27/-8.43	-8.77/-9.89	-10.4/-11.22	-10.57/-10.45	-8.85/-8.73	-9.03/-9.2	-9.38/-10.42	-10.54/-8.77	-7.52/-8.26	-9.06/-9	-7.72/-7.41	-7.83/-9.17	-11.57/-13.83	-13.62/-13.01
Θ(172.5°)	-8.68/-9.1	-9.53/-9.67	-9.74/-10.18	-9.84/-9.34	-9.26/-9.83	-9.84/-10.44	-10.2/-9.09	-8.45/-8.87	-9.58/-9.87	-10.32/-10.63	-10.33/-11.27	-12.38/-13.31	-13.62/-13.26	-14.04/-13.69	-13.76/-13.49	-14.2/-13.32	-12.14/-11.33	-9.62/-8.98	-9.42/-9.84	-9.62/-8.86	-8.28/-8.27	-8.46/-8.9	-8.94/-9.62	-10.54/-12.4
Θ(180°)	-13.2/-14.01	-13.62/-13.08	-12.54/-12.08	-11.48/-11	-10.62/-11.14	-11.23/-10.85	-10.55/-10.22	-10.93/-12.21	-13.22/-13.23	-13.49/-13.13	-13.29/-13.68	-13.09/-14.13	-13.77/-13.6	-14.09/-13.69	-13.14/-13.17	-11.32/-10.01	-9.38/-9.52	-9.94/-9.54	-9.54/-9.45	-9.38/-9.02	-9.11/-10.1	-11.18/-12.45	-13.06/-13.19	-13.55/-13.49
Freq(Hz)	5.3GPaL	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°)	-1.09/-1.62	-2.08/-2.39	-2.71/-2.9	-2.82/-2.68	-1.51/-1.3	-1.65/-1.94	-2.24/-2.58	-3.47/-4.75	-5.31/-5.78	-5.41/-5.14	-3.94/-3.05	-2.57/-2.14	-2.13/-1.83	-1.64/-2.07	-1.56/-3.16	-3.13/-3.01	-3.09/-3.39	-3.79/-3.93	-4.03/-4.15	-4.34/-3.98	-3.53/-3.92	-4.52/-3.74	-2.78/-2.06	-1.45/-1.2
Θ(7.5°)	-2/-2.42	-2.2/-2.05	-3.2/-2.63	-2.85/-2.95	-3.14/-3.51	-4.26/-4.28	-3.9/-4.18	-5.41/-6.01	-5.52/-4.13	-2.76/-1.91	-1.6/-2.05	-2.28/-1.98	-1.43/-1.7	-2.48/-2.77	-2.54/-2.16	-2.06/-2.17	-2.4/-3	-3.47/-3.32	-1.82/-2.09	-3.15/-3.99	-3.98/-4.16	-4.73/-4.47	-3.73/-2.8	-1.94/-1.72
Θ(15°)	-0.28/-0.03	-0.3/-0.71	-1.06/-1.35	-1.4/-0.8	-0.22/0.28	0.46/0.36	-0.13/-0.73	-0.87/-0.68	-0.37/-0.04	0.22/0.37	0.29/0.15	-0.34/-0.53	-0.71/-1.12	-1.53/-2.42	-2.54/-2.17	-1.93/-2.15	-2.8/-3.79	-5.09/-5.99	-5.52/-4.05	-4.48/-4.02	-3.45/-2.08	-1.34/-1.46	-3.38/-2.46	-1.25/-0.73
Θ(22.5°)	2.48/2.4	1.88/1.44	0.93/0.13	0.06/0.37	0.88/1.35	1.67/1.31	0.85/0.43	0.21/0.34	1.07/1.93	2.76/2.76	2.79/2.83	2.43/2.18	1.89/1.57	1.03/0.74	1.01/1.13	0.71/-0.43	-2.16/-3.73	-5.43/-6.51	-6.08/-4.66	-7.34/-6.97	-4.36/-2.6	-0.83/0.39	0.83/1.24	1.71/1.12
Θ(30°)	4.25/3.94	3.38/2.67	1.34/0.32	0.26/0.43	0.18/0.28	1.16/1.75	1.96/1.69	1.39/1.68	2.41/3	3.36/3.41	2.95/2.54	2.64/2.68	2.42/2.68	3.26/2.34	3.63/4.2	2.27/0.13	-1.07/-2.7	-4.46/-4.87	-5.34/-6.05	-8.77/-8.7	-4.54/-0.04	2.93/4.47	4.88/4.55	4.66/4.81
Θ(37.5°)	3.63/3.68	3.92/3.5	2.11/0.85	-0.42/-1.48	-1.05/0.38	1.93/15	3.58/3.37	2.52/3.55	3.85/3.68	2.77/2.18	3.23/4.68	5.11/4.1	2.94/2.66	3.48/4.43	5.23/4.9	2.46/-2.11	-1.2/-0.96	-2.45/-4.66	-4.1/-4.04	-5.76/-6.79	-1.57/2.15	4.57/5.57	5.44/4.76	4.12/3.94
Θ(45°)	3.21/3.78	4.24/4.85	4.24/3.05	1.77/0.84	-0.01/0.41	2.51/3.95	4.53/4.16	3.99/4.32	3.92/7.5	1.3/-0.09	0.73/3.5	4.73/7.6	3.14/3.16	4.56/4.95	6.05/5.9	2.86/-2.83	-2.59/0.33	0.85/-1.47	-3.12/-3.75	-3.72/-2.17	-0.56/1.88	3.34/4.22	5.41/3.77	2.83/2.79
Θ(52.5°)	4.09/4.53	4.65/0.98	4.84/4.28	3.75/3.63	1.87/0.32	1.94/3.51	3.78/3.52	3.56/3.86	3.47/2.65	3.02/1.92	1.85/4.25	5.16/4.95	5.28/4.96	4.72/4.19	4.57/4.53	2.39/-1.42	-1.21/0.88	1.4/-0.78	-3.46/-2.13	-1.59/-1.53	0.21/1.6	2.45/5.58	4.22/4.26	3.83/4.45
Θ(60°)	4.93/5.09	4.52/4.42	4.24/4.33	4.5/4.76	3.76/1.42	0.34/2.14	1.89/1.26	1.45/2.32	3.01/2.52	1.75/1.09	1.61/1.78	4.98/4.55	5.23/4.55	3.71/3.54	3.63/3.42	2.45/-0.14	0.41/-0.12	0.65/-0.8	-1.52/-0.37	-0.77/-2.49	-1.9/-0.1	1.88/0.85	4.76/4.65	4.12/4.15
Θ(67.5°)	4.37/4.96	4.25/5.57	2.78/2.67	3.76/4.55	3.86/1.24	-0.17/1.51	0.88/-0.87	-0.47/-1.33	1.77/1.12	0.62/0.37	0.08/2.58	2.93/1.1	3.89/2.55	2.36/2.63	2.67/1.12	0.2/-0.4	-1.59/-0.02	-0.72/0.94	-0.3/-2.77	-1.31/-0.63	2.07/3.79	4.52/3.73	2.73/3.2	
Θ(75°)	2.72/3.85	3.25/2.69	1.31/0.93	2.38/3.56	3.28/0.95																			



Radiated Composite Gain Data of 2.4GHz/5GHz

Appendix A.1

Θ(60°)	0.21/-1.23	0.06/0.97	0.23/-1.11	-2.1/-1.72	-0.38/0.78	-0.18/-0.93	0.98/1.65	1.45/1.19	1.55/1.3	0.45/-0.18	-0.56/1.68	0.08/1.72	3.17/1.8	-1.33/1.12	1.33/0.63	0.94/-0.47	-1.99/-2.38	-0.3/-1.47	-2.04/-0.21	-0.6/1.6	2.92/2.17	1.1/-0.67	-2.06/-4.2	-2.48/0.59
Θ(67.5°)	0.45/-1.72	-0.05/0.9	-0.1/-2.76	-3.22/-2.22	-0.46/0.48	-0.12/-0.97	-0.23/0.41	1.1/-1.17	0.75/0.7	0.87/0.32	-0.16/1.98	0.14/0.32	1.9/-0.07	-1.54/1.6	1.27/0.74	0.41/-1.8	-1.53/-1.75	-0.57/-2.92	-1.5/0.11	-0.39/0.48	1.08/-1.3	-1.76/-2.13	-3.28/-5.38	-2.49/0.7
Θ(75°)	-1/-3.56	-1.65/-0.21	-0.54/-3.1	-3.23/-3.05	-1.3/-0.04	-0.56/-2.01	-1.9/-1.61	-0.21/0.75	0.21/0	-0.13/-0.22	-0.8/1.45	0.72/-0.16	0.57/-0	-3.35/0.82	-0.15/-0.45	-1.19/-2.04	-2.07/-2.3	-1.01/-2.79	-0.24/1.79	1.48/0.45	0.34/-4.23	-6.13/-3.62	-3.69/-5.46	-4.33/-0.59
Θ(82.5°)	-1.68/-4.03	-2.52/-1.27	-1.21/-3.36	-4.27/-3.4	-2.2/0.18	-1.6/-1.57	-1.63/-2.42	-1.29/-0.32	-0.72/-1.1	-0.94/-1.76	-1.52/0.03	-0.36/-1.22	-1.56/-1.41	-3.33/-0.6	-2.6/-2.7	-2.36/-3.88	-2.12/-1.69	-3.31/-3.21	-0.02/2.38	1.46/0.57	-0.77/6.22	-7.78/-4.49	-4.38/-7.77	-6.05/-1.17
Θ(90°)	-4.21/-5.51	-3.29/-2.69	-2.38/-4.06	-5.44/-3.58	-2.91/-0.71	-2.34/-2.03	-3.03/-3.76	-2.18/-1.81	-0.61/-2.65	-2.57/-2.74	-3.38/-2.42	-1.4/-0.51	-3.18/-3.17	-4.23/-1.67	-4.96/-4.56	-4.77/-5.41	-3.45/-4.25	-7.07/-3.08	-0.96/0.64	0.65/-1.27	-3.45/-6.68	-9.09/-4.68	-6.48/-9.55	-8.89/-3.28
Θ(97.5°)	-6.33/-5.97	-3.81/-4.36	-4.43/-5.53	-5.94/-3.57	-4.26/-1.56	-1.12/-1.72	-3/-5.1	-3.84/-3.6	-1.87/-3.08	-2.95/-4.42	-3.67/-4.23	-2.78/-2.22	-4.32/-6.4	-6.45/-3.29	-6.66/-9.16	-8.88/-6.73	-4.39/-6.02	-10.72/-4.63	-3.79/-1.92	-2.31/-4.93	-7.63/-6.82	-8.66/-6.43	-8.08/-10.27	-10.26/-5.52
Θ(105°)	-6.62/-7.01	-5.91/-5.46	-5.11/-6.09	-6/4.39	-4.86/-2.64	-2.41/-4.48	-4.93/-6.27	-4.26/-3.89	-2.34/-3.92	-4.45/-5.1	-5.39/-6.62	-4.54/-3.29	-6.24/-7.24	-7.59/-5.95	-8.95/-7.65	-4.81/-7.31	-7.25/-10.13	-13.3/-7.31	-5.64/-5.76	-4.12/-7.68	-10.51/-9.24	-10.23/-8.61	-9.19/-9.52	-11.2/-7.06
Θ(112.5°)	-7.32/-6.78	-7.74/-6.24	-6.03/-5.94	-8.17/-4.09	-4.38/-3.58	-3.25/-5.55	-5.36/-7.29	-6.03/-5.22	-3.72/-4.11	-4.91/-5.53	-4.89/-7.18	-5.73/-5.15	-7.62/-9.52	-8.41/-8.01	-6.79/-7.5	-4.53/-7.88	-6.45/-7.91	-13.28/-8.18	-3.74/-3.87	-2.82/-6.61	-11.57/-6.8	-8.48/-11.04	-8.13/-10.61	-9.5/-6.81
Θ(120°)	-6.9/-7.74	-6.9/-7.61	-6.86/-6.39	-6.92/-4.72	-4.57/-7.12	-5.34/-7.38	-6.86/-7.31	-6.38/-5.63	-5.43/-5.69	-5.57/-4.9	-4.73/-5.88	-4.73/-5.59	-7.34/-7.9	-9.01/-8.96	-7.26/-8.28	-5.76/-5.9	-8.78/-7.59	-6.03/-6.42	-6.53/-9.35	-5.66/-7.12	-8.74/-14	-10.54/-12.18	-8.77/-9.53	-7.9/-5.07
Θ(127.5°)	-8.23/-8.41	-4.84/-5.25	-5.88/-7.49	-7.9/-5.48	-5.34/-4.56	-4.26/-6.81	-6.63/-6.64	-8.35/-7.03	-6.25/-5.73	-6.98/-5.52	-4.45/-5.83	-5.39/-6.43	-7.08/-6.85	-8.03/-10.8	-6.89/-7.79	-10.13/-11.98	-6.51/-7.94	-8.91/-6.11	-6.3/-7.86	-8/-14.2	-13.94/-13.57	-12.78/-10.63	-10.73/-10.13	-5.76/-5.89
Θ(135°)	-11.14/-7.22	-4.48/-4.87	-8.01/-8.92	-7.31/-5.5	-6.18/-7.35	-5.3/-6.67	-8.18/-6.33	-6.71/-7.1	-5.86/-3.89	-4.47/-5.48	-6.03/-9.04	-6.88/-6.5	-10.13/-7.96	-8.15/-9.97	-6.68/-8	-13.31/-12.88	-6.83/-7.66	-7.01/-9.54	-11.97/-9.06	-12.1/-10.31	-8.05/-13.55	-13.69/-10.16	-13.59/-11.73	-7.6/-8.37
Θ(142.5°)	-13.69/-9.41	-7.16/-8.24	-11.5/-8.99	-6.22/-5.04	-7.87/-9.92	-6.73/-6.78	-8.8/-6.66	-5.27/-6.76	-8.43/-6.27	-7.06/-8.74	-9.62/-8.49	-9.4/-11.53	-10.48/-7.74	-9.57/-12.53	-12.32/-13.1	-13.44/-11.04	-10.85/-11.92	-12.23/-13.34	-10.98/-6.99	-7.57/-9.33	-9.6/-11.17	-9.99/-10.94	-8.46/-6.37	-7.55/-10.78
Θ(150°)	-13.31/-10.22	-10.47/-12.13	-11.04/-9.99	-9.28/-7.9	-7.88/-6.03	-3.88/-4.1	-7.57/-11.04	-7.32/-5.11	-5.15/-6.78	-8.81/-9.51	-8.23/-7.71	-8.41/-9.59	-10.54/-10.72	-13.01/-13.35	-13.34/-13.55	-10.69/-11.75	-11.19/-8.2	-8.23/-9.59	-13.83/-10.91	-9.44/-10.12	-10.13/-9.84	-11.78/-13.58	-11.42/-9.24	-9.34/-12.37
Θ(157.5°)	-13.46/-12.65	-11.96/-11.83	-10.39/-9.27	-9.19/-8.69	-7.72/-5.88	-4.91/-5.46	-7.83/-10.53	-8.31/-6.52	-6.79/-9.1	-12.1/-12.37	-10.88/-11.27	-12.36/-12.62	-12.24/-12.01	-12.36/-13.54	-12.85/-9.45	-8.27/-9.48	-9.05/-9.19	-11.34/-13.31	-13.16/-12.42	-10.2/-8.65	-9.33/-10.34	-10.78/-10.45	-11.22/-10.83	-10.61/-11.74
Θ(165°)	-13.46/-13.98	-13.04/-12.78	-12.33/-13.44	-13.17/-11.97	-10.87/-9.44	-8.68/-8.8	-8.78/-8.32	-8.38/-9.37	-11.38/-14.1	-12.98/-13.06	-11.06/-10.86	-10.65/-11.19	-10.47/-11.12	-10.78/-9.49	-8.46/-8.84	-10.14/-11.03	-11.2/-12.44	-11.66/-9.34	-8.45/-9.4	-10.35/-10.48	-10.96/-12.11	-11.73/-12.18	-12.96/-13.44	-13.55/-12.87
Θ(172.5°)	-10.52/-11.82	-12.61/-13	-13.45/-13.75	-13.69/-13.85	-11.53/-9.27	-7.45/-7.01	-7.23/-7.14	-7.55/-7.75	-7.36/-7.24	-7.71/-7.94	-8.13/-8.72	-10.42/-12.12	-11.36/-11.35	-11.86/-12.75	-12.97/-13.31	-11.65/-11.34	-10.73/-10.48	-10.77/-9.72	-9.78/-10.08	-10/-9.32	-9.78/-9.77	-9.8/-9.7	-9.85/-10.43	-10.57/-10.13
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°)	-2.64/-2.56	-2.75/-2.95	-3.05/-3.4	-3.85/-3.52	-3.01/-2.5	-2.4/-2.4	-2.55/-2.6	-2.49/-2.89	-3.51/-3.04	-2.48/-2.39	-2.39/-2.38	-2.12/-1.91	-2.12/-2.44	-2.51/-2.45	-2.76/-2.07	-1.46/-1.12	-1.06/-1.23	-1.59/-1.32	-1.03/-1.42	-2.4/-3.01	-2.82/-2.73	-2.69/-2.5	-2.21/-2.1	-2.33/-2.67
Θ(7.5°)	-1.92/-2.21	-2.18/-2.09	-2.08/-1.38	-0.76/-0.24	-0.14/-0.25	-0.4/-0.74	-1.29/-2.32	-2.42/-1.97	-1.62/-1.87	-1.86/-1.62	-1.67/-2.3	-3.23/-3.69	-3.75/-3.49	-3.35/-3.02	-2.49/-2.1	-1.65/-1.44	-1.68/-1.68	-1.68/-1.97	-3.11/-4	-3.43/-2.3	-1.68/-1.49	-1.27/-1.1	-1.49/-1.8	
Θ(15°)	2.95/3.17	3.02/2.56	1.91/0.6	-0.02/-0.9	-0.89/-0.52	-0.52/-1.1	-2.12/-3.03	-3.3/-2.64	-1.86/-0.84	-0.37/-0.6	-0.9/-0.95	-0.9/-0.81	-0.4/0.05	0.42/0.51	0.29/0.15	0.15/0.4	0.67/0.57	0.06/-0.77	-1.36/-2.68	-4.86/-4.76	-2.3/-0.08	1.2/1.6	2.17/2.36	2.64/2.58
Θ(22.5°)	2.45/3.29	3.58/3.44	3.38/3.05	2.1/0.35	-1.62/-2.88	-3.38/-3.56	-4.1/-5.03	-6.31/-6.08	-4.71/-2.53	-1.43/-1.24	-0.61/1.06	2.74/3.69	4.02/3.91	3.46/2.85	2.42/2.18	1.51/0.27	-0.64/-1.2	-2.17/-3.34	-3.49/-3.68	-4.14/-1.99	0.38/2.1	2.92/2.76	2.13/1.8	1.98/2.15
Θ(30°)	4.23/3.76	3.07/2.26	1.88/2.31	2.14/1.56	0.52/-1.18	-2.41/-2.6	-3.57/-4.22	-3.04/-1.54	-0.79/-0.35	-0.37/-1.07	-1.1/1.21	3.49/4.74	5.34/5.03	3.72/2.74	2.77/3.25	3.11/1.77	-0.91/-4.3	-8.16/-9.4	-6.41/-3.5	-3.27/-2.22	0.04/1.17	0.99/0.64	1.41/2.56	3.49/3.98
Θ(37.5°)	5.44/4.2	3.65/2.82	1.84/1.07	1.6/2.58	2.32/0.74	-0.62/-2.29	-4.26/-4.03	-0.74/0.59	0.42/-1.13	-1.15/-0.88	0.22/2.78	4.34/9.1	5.21/4.69	4.29/4.63	4.84/3.2	3.71/2.33	-0.28/-2.47	-3.69/-6.24	-10.51/-6.41	-3.97/-4.73	-3.14/-0.63	1.03/2.37	3.6/4.6	5.44/5.75
Θ(45°)	3.83/3.71	3.76/3.64	3.08/1.68	1.65/2.81	2.89/1.47	0.45/-0.59	-4.2/-7.92	-1.34/0.46	0.56/1.89	3.21/3.49	3.94/4.22	4.74/4.81	3.98/3.49	3.07/4.5	5.18/4.67	4.66/4.34	1.51/-0.84	-0.37/-2.16	-6.33/-8.7	-6.85/-7.23	-3.42/0.71	1.54/1.82	3.39/4.07	4.43/4.41
Θ(52.5°)	2.77/3.33	3.41/3.45	3.41/3.23	2.5/2.47	2.82/1.13	-0.21/0.09	-4.02/-5.99	0.05/0.97	0.43/2.22	3.31/3.33	3.59/3.41	3.83/3.47	1.81/1.77	0.77/3.01	4.53/3	3.17/3.77	1.66/-0.57	-0.38/-2.17	-4.12/-6.96	-6.51/-4	-0.90/69	0.04/-0.71	0.71/1.57	1.39/1.93
Θ(60°)	3.37/3.44	2.86/2.4	2.68/3.69	2.77/1.66	1.71/-0.27	-1.47/-0.44	-3.48/-3.28	0.56/1.07	-0.87/0.96	1.65/2.04	2.46/2.39	4.18/3.99	2.76/2.38	0.86/1.46	3.62/2.35	0.28/2.58	1.59/-0.13	0.57/-2.29	-2.86/-4.91	-5.37/-3.36	-2.07/-2.18	-2.63/-2.78	-1.51/-1.31	-0.38/2.23
Θ(67.5°)	3.24/2.54	1.54/0.96	1.91/3.65	2.83/-0.8	-0.58/-1.62	-2.27/-0.7	-3.69/-1.68	0.36/0.4	-2.02/0.18	2.02/1.86	2.51/2.67	4.55/3.72	2.45/0.63	-0.37/2.45	3.89/1.86	-3.02/-0.01	0.46/-0.5	0.98/-3.06	-2.15/-2.66	-1.9/-0.87	-2.1/-1.86	-3.59/-3.69	-2.83/-2.57	-0.54/2.66
Θ(75°)	2.45/1.12	0.48/-0.32	0.15/2.72	2.45/-2.02	-2.33/-2.29	-3.51/-2.4	-2.31/-0.65	-1.05/-1.27	-2.67/-0.57	1.72/1.67	1.71/1.77	4.22/3.23	2.87/-0.08	-2.24/2.08	3.5/0.91	-4.61/-0.82	-0.33/-0.91	1.82/-3.16	-1.37/-1.07	-0.79/-0.23	-0.74/-0.71	-3.51/-3.89	-3.23/-2.55	-1.07/2.15
Θ(82.5°)	1.49/-0.37	-1.71/-1.37	-1.44/1.23	1.13/-4.63	-4.8/-2.76	-3.62/-2.65	-1.21/-0.76	-1.74/-2.61	-2.75/-0.48	1.29/1.33	0.89/0.82	2.67/0.71	-0.52/-3.16	-3.96/1.89	1.91/-0.44	-4.05/-0.44	-1.91/-1.18	0.86/-2.98	-0.83/-0.93	-0.01/-0.57	-0.17/-0.36	-4.22/-4.03	-3.96/-2.65	-0.85/1.51
Θ(90°)	-0.21/-2.6	-2.86/-2.18	-3.05/-0.4	-0.24/-5	-7.43/-3.53	-2.42/-1.82	-1.47/-0.69	-3.03/-3.52	-3.65/-3.25	-1.63/-0.87	-1.2/-2.65	-0.24/-0.91	-1.48/-4.3	-5.46/0.92	1.54/-0.56	-3.1/-2.05	-3.82/-3.97	-2.71/-3.23	-0.88/-1.46	-1.31/-2.36	-0.58/-1.41	-3.74/-4.69	-4.72/-3.93	-1.22/0.13
Θ(97.5°)	-2.57/-4.3	-3.79/-3	-3.99/-2.26	-2.42/-7.18	-9.04/-5.34	-2.53/-2.86	-1.89/-0.74	-3.22/-3.8	-4.94/-6.9	-4.22/-3.71	-4.28/-5.72	-4.01/-5.04	-2.05/-6.38	-6.21/-0.49	0.18/-1.96	-4.21/-3.49	-6.94/-8.57	-9.47/-2.91	-2.65/-4.6	-3.63/-5.56	-2.99/-3.33	-6.64/-6.27	-5.7/-5.24	-2.77/-1.67
Θ(105°)	-4.57/-5.26	-7.19/-4.01	-3.67/-2.9	-4.24/-7.85	-7.33/-7.19	-4.28/-2.92	-3.37/-1.66	-4.91/-6.17	-5.39/-6.3	-7.28/-6.56	-7.05/-6.68	-5.41/-5.92	-1.75/-4.23	-11.17/-3.6	-1.36/-1.68	-4.35/-6.34	-8.89/-8.07	-9.09/-5.33	-5.06/-5.48	-5.11/-8.24	-7.23/-4.47	-7.95/-6.49	-6.46/-7.2	-6.09/-5.23
Θ(112.5°)	-4/-3.92	-6.56/-6	-5.04/-4.05	-5.6/-8.64	-6.64/-8.31	-5.89/-3.68	-6.48/-3.32	-5.2/-7.7	-4.66/-2.8	-4.32/-6.95	-8.51/-5.05	-5.11/-3.78	-2.06/-8.91	-11.43/-7.35	-3.99/-4.56	-7.79/-8.61	-9.93/-11.34	-4.23/-4.55	-5.3/-3.54	-3.42/-7.41	-8.04/-4.07	-6.59/-7.55	-8.74/-6.33	-6.53/-3.18
Θ(120°)	-2.94/-3.12	-7.87/-6.7	-5.29/-5.83	-7.08/-11.02	-5.96/-7.03	-8.64/-4.92	-5.35/-4.79	-7.04/-8.52	-4.43/-2.92	-2.75/-4.24	-6.42/-6.22	-5.52/-4.31	-2.5/-8.39	-7.2/-7.43	-4.95/-4.29	-7.13/-7.05	-10.24/-8.31	-3.25/-7.05	-6.54/-2.34	-5.99/-7.35	-13.27/-7.12	-6.64/-6.47	-8.61/-6.95	-4.24/-1.84
Θ(127.5°)	-3.68/-5.45	-10.08/-6	-6/-6.9	-9.31/-8.91	-6.57/-8																			

Gain Result

Freq(Hz)	2.45GPol.	PhiAnt.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gain	Φ(0°)Φ(75°)	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°)	-4.7714-33	-4.13-14	-4.29-14.54	-4.82-5.28	-5.9-6.9	-8.25-10.13	-12.59-15.91	-19.21-17.73	-18.93-15.93	-13.46-11.16	-9.23-7.68	-6.66-5.93	-5.51-5.38	-5.53-5.73	-5.88-6	-6.12-6.37	-6.61-7.01	-7.74-8.8	-10.15-11.66	-13.66-16.42	-18.21-18.27	-17.56-15.27	-11.29-6.67	-6.8-5.49
Θ(75°)	-7.8-7.8	-7.84-7.89	-7.71-7.36	-6.74-5.96	-5.39-5.09	-5.5-25	-5.6-6.34	-7.33-8.75	-10.75-13.74	-18.22-17.86	-12.74-8.66	-6.16-4.4	-3.36-2.84	-2.69-2.82	-3.24-3.96	-4.9-6.24	-8.18-10.68	-14.69-18.23	-18.79-17.72	-13.84-11.72	-10.7-10.21	-9.74-9.49	-8.74-8.16	-7.9-7.67
Θ(15°)	-14.09-16.08	-17.16-15.83	-13.1-10.61	-8.6-5.56	-5.12-4.12	-3.5-3.12	-2.88-2.95	-3.45-4.44	-5.85-6.01	-11.5-17.86	-18.43-11.21	-6.98-4.28	-2.76-1.8	-1.37-1.42	-1.82-2.55	-3.79-5.64	-8.5-13.17	-18.28-15.32	-9.59-6.53	-4.79-3.84	-3.61-3.89	-4.65-5.61	-6.79-8.31	-10.1-12.04
Θ(22.5°)	-16.31-17.32	-18.31-16.98	-13.45-10.77	-8.56-6.63	-5.06-3.8	-2.84-2.03	-1.39-1.19	-1.51-2.28	-3.58-5.39	-8.33-13.46	-18.72-11.48	-6.84-4.09	-2.46-1.48	-1.04-0.96	-1.19-1.77	-2.87-4.59	-7.32-11.33	-14.61-10.45	-6.42-3.91	-2.39-1.58	-1.43-1.8	-2.79-4.31	-4.67-9.1	-12.51-15.67
Θ(30°)	-10.7-9.25	-8.69-6.81	-8.38-7.19	-7.19-6.42	-5.34-3.86	-2.34-0.96	-0.05-0.3	0.09-0.64	-1.86-3.64	-6.35-10.48	-15.07-11.91	-7.75-5.1	-4.02-2.32	-1.63-1.2	-1.04-1.2	-1.92-3.31	-5.7-9.38	-13.4-10.78	-6.69-4.08	-2.52-1.7	-1.37-1.56	-2.48-2.43	-6.81-10.2	-13.52-13.4
Θ(37.5°)	-8-6.19	-5.22-4.94	-5.01-5.26	-5.63-5.89	-5.54-0.42	-2.05-0.44	0.47-0.8	0.64-0.02	-1.18-3.08	-6.15-10.42	-13.02-9.81	-7.04-5.19	-4.33-3.21	-2.75-2.22	-1.73-1.59	-2.31-3.43	-5.8-9.56	-13.28-10.07	-6.3-4.13	-3.06-2.56	-2.32-2.47	-3.33-5.15	-8.09-10.92	-12.02-10.46
Θ(45°)	-7.06-5.61	-4.31-3.67	-3.52-3.87	-4.69-5.42	-5.67-4.86	-3.08-1.56	-0.74-0.29	-0.11-0.29	-1.14-2.98	-6.13-10.9	-14.84-11.64	-8.32-6.02	-4.76-4.31	-4.32-4.18	-3.53-2.96	-2.97-3.74	-5.88-8.8	-6.87-4.48	-4.23-4.25	-4.14-4.2	-4.83-6.4	-9.84-11.5	-10.02-8.44	
Θ(52.5°)	-6.64-6.48	-5.68-6.43	-3.93-4.12	-5.07-5.89	-6.19-6.01	-5.04-4.19	-3.46-2.66	-1.92-1.77	-2.54-5.49	-8.41-14.69	-18.56-12.13	-8.12-5.43	-4.14-4.05	-4.86-5.67	-5.49-4.8	-4.29-4.41	-5.77-8.51	-9.76-6.89	-4.76-4.43	-5.22-5.82	-5.49-5.28	-6.08-8.44	-12.62-12.38	-8.76-7.04
Θ(60°)	-6.26-6.73	-7.15-6.41	-5.57-5.8	-6.98-7.58	-7.18-6.72	-6.52-6.65	-6.15-4.93	-4.05-3.95	-4.88-7.04	-11.27-17.83	-15.34-10.09	-6.69-4.29	-3.14-3.27	-4.58-6.42	-8.45-9	-7.61-6.58	-6.92-7.95	-7.21-9.6	-3.82-4.58	-7.16-8.75	-6.59-5.14	-6.07-8.85	-17.69-13.3	-8.69-6.77
Θ(67.5°)	-8.61-8.49	-8.21-7.41	-6.97-8.03	-10.72-11.93	-9.67-7.77	-7.37-7.53	-6.85-5.64	-5-5.21	-6.18-7.97	-10.94-13.5	-11.45-8.17	-5.6-4.06	-3.69-4.43	-6.05-8.95	-14.48-14.72	-9.28-6.9	-5.48-6.48	-3.82-5.46	-9.61-10.7	-6.2-4.08	-4.6	-10.02-8.44		
Θ(75°)	-11.97-13.41	-11.16-8.79	-7.67-8.49	-12.03-18.05	-13.08-9.31	-8.08-7.81	-7.42-6.66	-6.21-6.4	-7.23-8.56	-10.67-13.66	-14.54-11.6	-8.57-6.54	-5.86-6.4	-8.18-11.79	-17.95-15.48	-9.3-6.79	-5.81-5.97	-6.35-5.57	-4.79-5.94	-10.49-14.84	-8.98-6.22	-6.2-9.98	-18.23-12.34	-9.06-9.49
Θ(82.5°)	-11.97-13.72	-16.45-12.27	-10.35-10.24	-13.09-13.79	-13.09-9.22	-7.67-6.97	-6.79-6.92	-7.36-8.1	-8.42-11.14	-14.04-17.14	-15.89-10.98	-7.98-6.43	-6.45-7.58	-9.59-12.86	-18.54-19.07	-12.75-9.64	-8.1-7.85	-8.15-6.7	-5.27-6.5	-13.1-17.39	-10.29-8.35	-9.68-15.61	-18.13-14.42	-9.28-9.73
Θ(90°)	-12.52-17.85	-18.81-17.79	-15.94-15.16	-16.73-18.15	-12.44-9.57	-8.29-7.06	-6.21-6.11	-6.53-7.3	-8.39-9.64	-11.47-13.52	-13.12-10.52	-8.6-8.04	-7.85-9.9	-1.36-12.7	-13.69-16.87	-17.67-11.86	-8.78-18.5	-10.41-11.05	-8.19-9.34	-18.21-12.31	-6.76-6	-8.71-17.98	-16.91-10.72	-9.98-10.74
Θ(97.5°)	-11.82-16.75	-17.93-18.1	-18.04-18.11	-18.92-15.96	-11.66-10.04	-10.19-9.65	-8.55-8.1	-8.29-9.13	-10.61-12.53	-14.98-14.14	-18.01-13.91	-11.93-11.61	-11.97-10.37	-14.32-13.57	-12.52-13.47	-12.44-9.47	-8.85-11.19	-18.11-11.55	-6.73-7.57	-13.63-10.89	-6.3-5.32	-7.39-13.47	-14.77-10.74	-10.83-11.42
Θ(105°)	-13.77-16.92	-18.13-18.34	-18.32-17.68	-18.48-13.64	-10.23-9.92	-9.82-11.89	-13.14-14.13	-15.94-18.47	-17.47-18.18	-17.12-13.36	-11.62-10.96	-11.68-12.78	-13.12-10.76	-8.77-9.64	-11.68-11.82	-13.54-16.49	-13.66-6.79	-4.08-5.23	-10.61-13.41	-7.83-5.86	-6.62-11.46	-18.37-13.47	-13.34-14.79	
Θ(112.5°)	-15.42-17.99	-18.6-16.59	-17.51-13.93	-17.28-15.02	-10.84-9.39	-9.92-11.82	-13.91-16.08	-18.09-17.85	-16.11-15.78	-18.21-17.46	-14.69-12.47	-11.76-12	-14.25-17.65	-13.3-10.36	-10.48-15.67	-14.71-10.37	-8.62-8.83	-10.24-7.13	-4.98-6.22	-11.95-13.73	-8.42-6.91	-6.77-12.97	-19.05-11.72	-10.68-13.4
Θ(120°)	-16.24-18.17	-15.51-12.63	-11.98-13.71	-17.35-18.7	-17.04-15.69	-15.52-12.17	-18.72-17.92	-17.59-17.9	-18.48-18.94	-18.71-15.37	-12.28-11.02	-10.62-11.17	-13.86-19.29	-18.31-13.48	-13.66-12.86	-8.8-7.25	-7.46-10.03	-13.99-7.53	-4.35-4.74	-7.75-8.72	-6.4-5.68	-6.78-10.72	-19.17-12.8	-9.86-11.86
Θ(127.5°)	-14.83-19.55	-15.33-14.44	-11.01-11.09	-11.88-12.88	-14.27-16.45	-17.94-17.82	-18.19-18.38	-17.75-17.65	-18.08-16.42	-12.73-10.36	-8.99-9.06	-9.41-10.56	-13.98-17.69	-16.53-12.48	-11.71-11.21	-11.11-12.12	-12.8-12.07	-7.22-3.02	-1.26-1.76	-4.08-6.51	-6.79-6.8	-8.03-11.79	-18.02-12.99	-9.29-13.57
Θ(135°)	-11.62-13.47	-15.24-10.98	-10.01-9.82	-10.48-11.22	-11.84-11.22	-11.95-12.97	-14.9-17.59	-18.04-17.5	-18.73-18.4	-18.56-17.41	-13.36-11.08	-10.81-10.74	-10.37-10.73	-14.93-18.03	-18.97-17.88	-16.73-13.12	-8.5-6.15	-8.31-1.67	-10.41-8.76	-7.43-9.94	-14.76-15.56	-16.18-18.96	-18.37-11.41	-9.86-9.37
Θ(142.5°)	-11.56-10.75	-9.95-8.79	-7.73-7.05	-7.08-6	-9.57-11.71	-14.29-17.16	-19-19.21	-18.8-18.13	-16.18-14.36	-13.07-14.62	-11.8-10.32	-9.57-10.2	-12.84-17.51	-17.79-17.66	-14.17-12.85	-8.78-6.12	-6.63-4.09	-3.59-3.11	-3.5-5.58	-10.58-15.77	-17.32-13.61	-17.08-18.17	-18.13-15.07	-12.55-11.89
Θ(150°)	-14.44-12.57	-10.95-9.4	-7.72-6.38	-6.55-6.66	-6.48-8.01	-10.1-12.87	-16.53-18.04	-18.19-18.1	-18.52-16.5	-14.79-13.27	-11.59-10.1	-9.35-9.4	-10.22-10.89	-10.94-10.13	-8.71-7.19	-5.94-5.25	-5.26-5.95	-6.91-7.76	-9.02-11.34	-14.12-14.34	-12.48-12.21	-17.14-17.84	-18.17-15.78	-18.16-16.4
Θ(157.5°)	-18.6-17.71	-14.64-11.98	-9.71-7.96	-6.77-6.13	-6.06-6.52	-7.43-8.65	-10.15-12.06	-14.53-17.75	-17.43-18.03	-19.17-17.38	-13.95-11.54	-10.32-9.61	-9.12-8.69	-8.18-7.7	-7.46-7.42	-7.79-8.58	-9.84-11.05	-11.45-10.86	-10.03-9.49	-9.4-9.62	-10.2-11.29	-13.71-15.77	-17.15-18.63	-17.59-18.01
Θ(165°)	-17.9-18.63	-16.92-14.42	-12.64-11.12	-9.9-8.86	-8.06-7.64	-7.65-7.93	-8.4-9.17	-10.37-11.93	-13.91-15.84	-17.11-16.52	-14.63-12.91	-11.64-10.78	-10.26-9.96	-9.94-10.44	-11.56-13.34	-15.8-16.72	-14.47-14.81	-9.81-8.37	-7.48-7.17	-7.36-8.16	-9.59-11.79	-14.89-18.63	-18.65-18.81	-19.07-18.74
Θ(172.5°)	-18.01-16.51	-13.63-13.63	-13.06-12.63	-12.31-11.9	-11.45-11.12	-11.08-11.21	-11.39-11.84	-12.63-13.49	-14.62-15.84	-17.44-18.01	-16.78-15.2	-14.22-14.11	-15.79-17.32	-18.1-17.97	-18.11-17.51	-16.94-16.24	-18.5-17.97	-18.11-17.51	-17.76-7.74	-7.53-7.75	-8.44-9.78	-12.08-15.72	-18.59-19.11	-18.67-17.81
Θ(180°)	-13.45-12.07	-11.62-11.08	-11.01-11	-11.06-11.25	-11.52-11.98	-12.72-13.17	-14.77-15.52	-16.55-18.08	-16.84-17.93	-18.11-18.17	-18.45-19.11	-18.49-19.39	-18.22-18.18	-16.35-14.94	-13.74-12.95	-12.48-12.29	-12.33-12.25	-12.93-13.61	-14.82-16.91	-17.81-18.7	-18.19-19.21	-17.58-19.07	-17.79-15.02	
Freq(Hz)	2.45GPol.	ThetaAnt.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gain	Φ(0°)Φ(75°)	Φ(15°)Φ(22.5°)	Φ(30°)Φ(37.5°)	Φ(45°)Φ(52.5°)	Φ(60°)Φ(67.5°)	Φ(75°)Φ(82.5°)	Φ(90°)Φ(97.5°)	Φ(105°)Φ(112.5°)	Φ(120°)Φ(127.5°)	Φ(135°)Φ(142.5°)	Φ(150°)Φ(157.5°)	Φ(165°)Φ(172.5°)	Φ(180°)Φ(187.5°)	Φ(195°)Φ(202.5°)	Φ(210°)Φ(217.5°)	Φ(225°)Φ(232.5°)	Φ(240°)Φ(247.5°)	Φ(255°)Φ(262.5°)	Φ(270°)Φ(277.5°)	Φ(285°)Φ(292.5°)	Φ(300°)Φ(307.5°)	Φ(315°)Φ(322.5°)	Φ(330°)Φ(337.5°)	Φ(345°)Φ(352.5°)
Θ(0°)	-10.32-13.5	-18.51-18.45	-18.24-15.18	-12.15-9.97	-8.33-7.04	-6.17-5.55	-5.05-4.58	-4.2-3.91	-4.03-4.5	-5.35-6.41	-7.59-8.8	-9.8-10.8	-11.78-13.3	-15.75-18.45	-17.95-18.2	-18.08-16.92	-13.96-11.65	-9.82-8.33	-7.02-6.02	-5.3-4.92	-4.72-4.73	-4.87-5.21	-5.66-6.23	-7.14-8.42
Θ(75°)	-12.83-14.38	-16.42-18.2	-17.18-18.51	-17.44-17.77	-16.41-12.57	-10.06-7.93	-6.13-4.89	-4.13-3.84	-3.91-4.24	-4.85-6.55	-6.44-5.77	-8.31-11.92	-16.89-18.53	-17.25-11.84	-8.71-6.78	-5.41-4.43	-3.76-3.44	-3.64-4.18	-4.85-5.66	-6.68-7.8	-6.82-9.38	-8.82-9.89	-10.78-11.73	
Θ(15°)	-13.12-12.23	-11.62-10.74	-8.79-7.785	-7.38-7.45	-8.22-9.42	-10.45-11	-10.07-9.83	-7.8-5.85	-4.25-3.14	-2.47-2.12	-2.23-2.59	-3.29-4.34	-9.55-19.1	-12.16-18.63	-15.49-9.73	-6.25-4.11	-2.61-1.64	-1.08-0.9	-1.03-1.45	-2.19-3.2	-3.42-4.58	-7.5-9.22	-10.96-12.35	-13.28-13.39
Θ(22.5°)	-11.47-9.87	-8.01-6.22	-4.61-3.37	-2.7-2.56	-2.82-3.29	-3.89-4.75	-5.83-6.81	-6.81-5.55	-3.75-2.27	-1.23-0.64	-0.45-0.66	-1.2-2.14	-3.46-5.33	-8-11.77	-14.59-10.78	-6.59-3.9	-2.13-1.02	-0.37-0.19	-0.37-0.89	-1.73-2.89	-4.27-5.72	-7.26-8.62	-9.85-10.99	-11.82-12.14
Θ(30°)	-9.57-9	-5.81-3.26	-2.14-0.8	-0.04-0.22	0.12-0.12	-0.55-1.34	-2.59-4.21	-5.59-5.34	-3.64-1.93	-0.7-0.04	0.33-0.26	-0.11-0.82	-1.83-2.96	-4.3-6.17	-8.49-10.15	-8.3-5.37	-3.25-1.81	-0.92-0.47	-0.48-0.84	-1.57-2.58	-3.72-4.49	-6.08-6.66	-7.43-8.15	-9.9-9.96
Θ(37.5°)	-7.99-6.47	-4.32-2.27	-0.48-0.89	0.67-0.94	1.89-1.71	1.29-0.4	-1.04-3.03	-5.13-5.37	-3.45-1.65	-0.46-0.2	0.42-0.34	-0.07-0.73	-1.43-1.9	-2.18										



Radiated Composite Gain Data of 2.4GHz/5GHz

Appendix A.1

Θ(22.5°)	-4.1/-6.54	-13.21/-18.92	-8.76/-5.4	-5.05/-6.54	-10.23/-18.58	-12.52/-6.5	-3.01/-1.43	-1.01/-1.53	-2.75/-4.57	-7.43/-10.41	-12.51/-14.4	-18.18/-17.94	-17.41/-13.14	-11.71/-11.77	-13.38/-16.42	-17.75/-16.31	-16.26/-18.01	-17.34/-17.74	-2.72/-0.11	0.84/0.64	-0.49/-2.11	-4.02/-5.73	-6.17/-5.21	-3.64/-3.38
Θ(30°)	-2.16/-4.78	-8.82/-6.86	-4.23/-8.21	-2.4/-3.51	-5.78/-8.98	-10.18/-9.4	-9.24/-8.66	-7.42/-5.92	-5.14/-4.91	-4.74/-4.03	-4.21/-6.88	-13.76/-18.2	-18.97/-13.89	-10.41/-11.6	-11.16/-8.63	-8.75/-10.53	-7.83/-5.56	-7.58/-15.18	-8.6/-3.74	-1.97/-1.89	-1.79/-1.93	-3.65/-7.13	-7.03/-3.64	-1.98/-1.36
Θ(142.5°)	-2.66/-4.39	-7.17/-5.64	-3.69/-2.79	-6.23/-3.04	-3.85/-3.82	-4.72/-1.46	-9.1/-8.11	-1.25/-6.64	-6.13/-5.25	-3.09/-1.18	-1.23/-4.34	-11.95/-1.99	-15.31/-13.5	-17.42/-11.64	-7.04/-2.94	-2.44/-5.2	-7.2/-5.28	-5.23/-17.43	-9.54/-5.44	-3.71/-3.33	-1.210.56	-1.432/-5.84	-10.32/-13.67	-1.59/-1.66
Θ(45°)	-5.71/-6.37	-6.22/-5.07	-4.74/-4.48	-5.72/-6.03	-4.51/-3.18	-3.04/-5.38	-5.73/-3.58	-4.35/-7.6	-10.58/-8.74	-5/-2.61	-1.92/-3.09	-6.75/-18.44	-18.3/-14.67	-9.08/-7.09	-8.61/-3.44	-1.1/-2.1	-8.8/-12.52	-9.33/-8.98	-10.5/-11.71	-11.47/-7.59	-1.22/-1.62	0.82/-4.35	-17.84/-8.01	-4.46/-4.6
Θ(52.5°)	-9.66/-6.62	-5.86/-5.79	-6.14/-6.98	-9.12/-11.15	-9.11/-3.58	-2.15/-4.73	-4.82/-2.94	-5.36/-11.35	-14.52/-11.88	-7.45/-5.15	-4.1/-4.82	-7.78/-15.11	-18.48/-16.91	-8.1/-5.05	-6.9/-5.56	-3.11/-3.26	-6.91/-10.05	-12.91/-9.78	-10.33/-15.34	-18.47/-10.19	-2.81/-0.24	-1.33/-6.35	-15.22/-10.79	-9.14/-12.49
Θ(60°)	-13.81/-8.24	-5.99/-6.13	-7.63/-8.66	-11.15/-13.74	-14.21/-5.41	-3.37/-7.09	-7.36/-3.37	-5.13/-6.95	-8.24/-17.11	-15.11/-10.91	-5.54/-5.28	-12.52/-12.31	-16.19/-16.91	-8.15/-4.74	-6.1/-10.08	-6.15/-6.42	-9.43/-10.06	-13.31/-17.57	-14.18/-18.08	-12.3/-9.83	-6.47/-3.81	-4.54/-5.91	-9.44/-13.47	-14.17/-17.99
Θ(67.5°)	-11.3/-10.26	-6.46/-6.75	-8.25/-10.69	-13.34/-14.28	-17.77/-7.85	-4.82/-9.43	-7.5/-4.68	-6.68/-6.34	-8.61/-18.03	-18.16/-13.24	-5.61/-5.85	-11.66/-9.8	-11.87/-15.3	-10.26/-5.6	-6.05/-14.09	-12.25/-13.29	-13.67/-8.43	-9.35/-17.31	-12/-17.4	-7.87/-6.93	-10.56/-9.56	-6.71/-4.64	-8.91/-14.06	-13.81/-13.69
Θ(75°)	-9.66/-10.07	-7.09/-8.16	-9.85/-12	-15.01/-16.14	-16.61/-9.17	-5.83/-11.02	-10.55/-6.87	-7.66/-6.16	-8.44/-16.49	-14.68/-14.58	-5.9/-6.57	-14.75/-12.38	-12.34/-12.74	-13.93/-8.33	-7.54/-18.77	-14.68/-19.29	-19.04/-8.76	-9.14/-19.07	-13.36/-13.33	-4.7/-4.46	-9.76/-14.45	-9.04/-5.86	-9.92/-18.01	-11.23/-11.52
Θ(82.5°)	-10.42/-12.06	-7.16/-9.23	-12/-15.42	-18.14/-18.69	-16.28/-11.01	-6.94/-12.29	-9.42/-6.76	-7.82/-7.24	-10.89/-18.18	-16.76/-11.01	-5.11/-8.57	-19.13/-13.22	-15.46/-14.14	-14.7/-8.31	-9.72/-17.91	-17.04/-17.58	-12.01/-7.68	-6.41/-16.04	-12.3/-9.46	-4.51/-7.22	-13.18/-11.56	-8.07/-9.18	-17.91/-12.37	-14.2/-10.49
Θ(90°)	-12.91/-16.5	-8.23/-10.68	-15.35/-15.11	-18.89/-17.13	-11.93/-10.75	-7.19/-12.15	-12.56/-8.23	-8.32/-9.1	-12.74/-14.59	-14.28/-15.57	-6.77/-8.85	-17.78/-17.01	-18.17/-15.03	-17.42/-12.3	-11.26/-18.05	-16.53/-17.15	-10.55/-15.03	-11.03/-11.66	-13.89/-11.77	-6.93/-10.37	-14.41/-9.9	-10.49/-14.42	-17.67/-11.84	-15.5/-11.98
Θ(97.5°)	-12.8/-17.19	-9.98/-12.93	-16.01/-13.92	-15.27/-18.64	-11.13/-11.03	-8.24/-12.77	-10.81/-8.39	-10.63/-10.62	-14.61/-12.92	-17.26/-13.04	-7.07/-12	-18.97/-17.68	-18.05/-18.34	-17.84/-12.36	-17.71/-16.46	-16.49/-15.43	-13.68/-17.7	-13.92/-16.84	-13.02/-7.32	-8.13/-13.13	-15.2/-10.78	-13.06/-18.37	-15.65/-11.96	-17.88/-11.37
Θ(105°)	-16.57/-17.71	-13.63/-17.66	-17.95/-11.31	-10.33/-19.08	-11.10/-74	-11.12/-134	-11.75/-91.3	-10.64/-15.52	-16.43/-13.22	-16.44/-16.38	-9.84/-13.35	-18.38/-18.92	-18.29/-17.7	-17.99/-15.25	-17.69/-13.63	-16.85/-15.14	-13.22/-16.31	-12.87/-9.66	-18.22/-8.85	-11.97/-13.38	-18.35/-12.29	-13.58/-15.85	-14.63/-14.82	-18.56/-16.18
Θ(112.5°)	-13.68/-17.79	-18.35/-17.63	-18.31/-10.36	-9.46/-16.56	-9.24/-9.27	-14.11/-14.73	-11.59/-9.54	-11.52/-13.52	-14.25/-12.29	-16.9/-15.64	-11.96/-17.56	-17.99/-18.81	-18.28/-19.25	-17.38/-11.78	-18.36/-15.61	-18.27/-9.97	-10.58/-18.7	-12.61/-9.53	-12.99/-9.46	-12.55/-15	-17.11/-9.07	-13.42/-17.96	-16.47/-14.09	-18.29/-17.88
Θ(120°)	-17.26/-18.09	-14.66/-11.28	-17.67/-11.89	-8.32/-11.46	-8.47/-7.87	-13.01/-15.6	-10.99/-8.89	-10.76/-19	-18.48/-14.96	-18.37/-18.04	-18.39/-18.43	-17.89/-16.27	-18.52/-18.4	-11.71/-16.46	-17.86/-16.92	-18.67/-13.02	-12.93/-15.34	-16.37/-12.36	-14.74/-11.05	-17.14/-9.36	-18.56/-14.92	-14.94/-18.87	-15.53/-16.21	-15.32/-16.21
Θ(127.5°)	-18.89/-18.15	-15.57/-8.76	-13.36/-10.69	-7.28/-10.37	-8.81/-8.28	-11.63/-11.32	-12.56/-12.79	-12.34/-13.2	-15.85/-18.9	-18.69/-17.89	-19.02/-15.07	-14.26/-17.5	-18.62/-18.48	-19.2/-14.2	-17.58/-18.27	-9.76/-12.08	-18.75/-12.38	-14.58/-13.56	-10.45/-13.63	-15.89/-13.14	-17.55/-17.98	-17.77/-17.78	-16.04/-15.24	-14.94/-12.75
Θ(135°)	-18.65/-11.38	-6.32/-5.74	-10.28/-12.01	-8.62/-8.92	-8.82/-8.68	-16.05/-10.59	-9.59/-13.6	-15.52/-13.44	-13.66/-14.66	-17.79/-17.56	-18.68/-17.25	-17.05/-15.77	-18.39/-19.25	-18.03/-17.98	-18.3/-16.54	-14.44/-18.02	-17.79/-9.4	-11.93/-17.97	-18.48/-18.27	-18.18/-12.61	-17.97/-15.14	-13.69/-18.1	-16.82/-11.86	-13.46/-13.01
Θ(142.5°)	-18.36/-9.11	-7.6/-10.79	-13.68/-9.05	-8.11/-11.08	-15.27/-16.14	-12.75/-13.71	-13.63/-17.17	-17.75/-15.32	-14.39/-15.77	-16.66/-17.7	-18.77/-17.8	-16.22/-17.3	-18.37/-18.86	-17.4/-19.05	-15.41/-12.71	-13.08/-16.09	-16.18/-12.52	-18.33/-14.92	-17.6/-13.11	-15.48/-12.22	-19.19/-12.27	-12.37/-14.79	-10.45/-7.65	-8.53/-14.7
Θ(150°)	-15.19/-10.68	-10.2/-14.66	-18.43/-11.39	-8.35/-9.72	-12.98/-15.07	-15.89/-13.92	-12.73/-12.67	-13.26/-14.49	-14.72/-15.39	-16.86/-18.19	-18.41/-18.59	-15.38/-18.02	-18.31/-17.74	-16.06/-12.77	-12.41/-12.14	-13.22/-18.25	-15.93/-12.37	-12.83/-15.65	-16.17/-13.53	-16.21/-19.05	-15.86/-11.32	-16.12/-14.09	-15.35/-16.82	
Θ(157.5°)	-16.21/-17.05	-18.24/-18.17	-18.18/-14.91	-15.01/-14.46	-12.96/-11.81	-11.47/-11.86	-13.42/-13.72	-12.96/-13.48	-15.04/-16.88	-18.12/-18.46	-18.11/-18.59	-15.89/-17.58	-15.92/-17.55	-19.1/-16.67	-14.13/-16.38	-18.15/-13.19	-9.7/-9.73	-10.94/-11.39	-11.65/-13.67	-18.42/-18.68	-14.7/-14.06	-14.6/-17.6	-18.97/-18.02	-14.37/-14.54
Θ(165°)	-18.46/-19.13	-18.37/-17.46	-18.12/-17.41	-15.52/-12.79	-10.82/-10.66	-11.88/-13.66	-14.35/-15.3	-14.19/-11.66	-10.37/-10.79	-12.86/-15.74	-14.16/-13.16	-15.55/-18.01	-18.36/-18.73	-14.59/-12.06	-12.77/-17.85	-18.48/-15.92	-14.24/-15.28	-14.05/-12.49	-12.6/-16.51	-18.76/-17.43	-14.07/-14.2	-14.06/-14.94	-17.46/-17.88	-18.43/-16.82
Θ(172.5°)	-18.96/-18.98	-18.73/-17.43	-15.59/-14.33	-12.64/-11.05	-10.39/-10.52	-11.87/-13.01	-12.62/-10.62	-12.56/-12.88	-12.21/-12.17	-13.44/-14.76	-15.63/-18.43	-17.97/-17.68	-17.77/-18.24	-18.15/-19.02	-18.89/-18.84	-18.73/-13.26	-16.83/-15.35	-14.89/-15.75	-17.29/-18.1	-18.59/-17.92	-16.52/-17.76	-18.97/-17.81	-17.61/-18.98	-17.86/-18.43
Θ(180°)	-18.13/-19.05	-18.4/-17.95	-15.89/-15.52	-14.79/-13.01	-11.84/-11.97	-12.68/-12.62	-11.93/-11.72	-12.97/-15.36	-16.93/-17.23	-17.2/-16.53	-17.36/-17.9	-17.28/-19.06	-19.02/-17.66	-19.3/-18.4	-18.18/-18.73	-18.21/-17.79	-16.58/-16.68	-18.02/-17.43	-16.80/-17.62	-16.83/-14.38	-13.69/-16.02	-19.15/-18.8	-18.73/-18.62	-19.19/-18.12
Freq(Hz)	5.3GPol.	ThetaAnt.1	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Gain	Φ(0°)Φ(7.5°)	Φ(15°)Φ(22.5°)	Φ(30°)Φ(37.5°)	Φ(45°)Φ(52.5°)	Φ(60°)Φ(67.5°)	Φ(75°)Φ(82.5°)	Φ(90°)Φ(97.5°)	Φ(105°)Φ(112.5°)	Φ(120°)Φ(127.5°)	Φ(135°)Φ(142.5°)	Φ(150°)Φ(157.5°)	Φ(165°)Φ(172.5°)	Φ(180°)Φ(187.5°)	Φ(195°)Φ(202.5°)	Φ(210°)Φ(217.5°)	Φ(225°)Φ(232.5°)	Φ(240°)Φ(247.5°)	Φ(255°)Φ(262.5°)	Φ(270°)Φ(277.5°)	Φ(285°)Φ(292.5°)	Φ(300°)Φ(307.5°)	Φ(315°)Φ(322.5°)	Φ(330°)Φ(337.5°)	Φ(345°)Φ(352.5°)
Θ(0°)	-8.61/-8.59	-8.41/-8.52	-8.94/-9.72	-10.09/-11.06	-10.96/-10.76	-10.73/-11.29	-11.35/-10.65	-9.66/-9.03	-9.07/-9.35	-9.95/-10.17	-9.69/-10.2	-11.64/-13.32	-15.01/-16.28	-16.16/-14.94	-13.79/-12.42	-11.42/-10.81	-10.86/-11.85	-13.46/-14.22	-14.35/-14.77	-15.26/-14.57	-13.22/-11.65	-10.45/-9.74	-8.99/-8.31	-8.01/-8.09
Θ(7.5°)	-17.57/-18.94	-19.07/-18.1	-18.58/-18.12	-17.78/-16.71	-15.75/-15.79	-17.07/-18.09	-17.05/-17.13	-18.08/-14.81	-11.69/-9.57	-7.85/-9.57	-4.69/-4.97	-5.92/-6.3	-6.46/-7.33	-8.71/-9.89	-10.05/-6.97	-10.14/-10.94	-11.26/-12.02	-12.65/-11.48	-9.6/-8.22	-7.28/-6.34	-5.94/-5.58	-5.62/-6.4	-7.94/-9.46	-11.55/-15.13
Θ(15°)	-8.14/-7.34	-6.75/-6.44	-7.52/-8.79	-10.21/-9.94	-9.28/-8.55	-8.12/-8.14	-9.22/-11.63	-10.44/-7.23	-4.63/-3.12	-2.06/-1.12	-0.61/-6.07	-0.99/-1.3	-2.19/-3.56	-5.31/-7.53	-9.03/-9.48	-9.91/-10.97	-12.03/-12.96	-14.55/-17.24	-15.65/-11.64	-8.16/-5.7	-4.36/-3.11	-2.21/-2.15	-2.69/-3.22	-4.55/-7.06
Θ(22.5°)	-2.01/-2.49	-2.2/-2.35	-2.96/-3.64	-3.74/-3.88	-4.44/-5.23	-5.79/-6.56	-8.11/-8.29	-6.78/-4.58	-2.18/-0.11	1.32/-2.32	2.92/-2.3	3.09/-2.73	1.91/-7.5	-1.33/-3.67	-4.55/-7.04	-9.2/-12.56	-16.58/-16.1	-10.64/-10.67	-10.68/-14.64	-18.86/-12.75	-7.59/-4.38	-2.03/-0.59	0.14/0.65	-0.90/-0.79
Θ(30°)	2.62/-1.92	1.71/-1.13	-0.01/-0.89	-0.89/-0.97	-2.28/-4.1	-4.76/-5.46	-5.77/-6.03	-5.58/-3.31	-0.56/-1.63	3.17/-4.25	4.93/-5.3	5.34/-9.2	3.82/-18	0.34/-1.23	-2.46/-4.35	-7.48/-12.97	-10.87/-11.92	-14.54/-9.99	-7.17/-8.58	-13.89/-18.39	-12.71/-5.27	-0.12/-6.6	3.71/-6.88	3.87/-5.3
Θ(37.5°)	3.54/-3.76	4.27/-4.14	3.06/-1.9	0.37/-0.77	-1.21/-1.36	-1.23/-0.8	-0.84/-2.31	-2.89/-1.07	0.59/-1.62	2.63/-58	4.43/-84	4.94/-39	2.84/-07	-1.16/-1.85	-1.02/-1.88	-5.57/-12.51	-7.78/-7.47	-12.78/-18.85	-7.77/-6.75	-7.91/-11.7	-9.82/-4.04	1.27/-4.28	5.24/-7.9	4.11/-3.84
Θ(45°)	2.38/-3.02	3.96/-3.78	4.49/-3.71	1.68/-0.38	0.42/-1.16	1.48/-1.99	0.50/-0.58	0.05/-0.58	1.07/-0.84	-1.17/-0.05	1.92/-2.3	3.87/-73	2.81/-12	-1.32/-3.18	-0.50/-1.29	-1.95/-7.24	-12.01/-5.27	-4.55/-9.84	-11.71/-6.14	-6.09/-8.81	-8.74/-5.31	-1.23/-1.81	3.26/-3.08	2.11/-7.1
Θ(52.5°)	3.06/-3.18	2.95/-3.87	4.26/-3.98	2.59/-1.95	1.48/-2.03	1.99/-2.63	2.78/-1.71	1.36/-0.96	-0.78/-1.34	-0.9/-0.29	1.12/-55	3.22/-82	2.47/-1.05	-0.42/-2.5	-2.21/-0.84	-1.04/-5.25	-9.87/-5.77	-2.94/-4.68	-10.08/-4.73	-4.09/-7.97	-7.49/-5.35	-3.41/-0.51	2.14/-3.1	3.02/-2.66
Θ(60°)	4.64/-4.29	2.48/-1.73	2.04/-0.31	3.41/-2.4	2.07/-2.12	2.13/-0.61	0.41/-0.02	-0.46/-0.1	0.17/-0.08	1.05/-1.8	2.22/-1.3	2.02/-0.51	-0.65/-1.8	-2.36/-1.89	-0.59/-1.81	-4.48/-6.85	-4/-3.99	-6.66/-3.8	-3.62/-10.09	-9.06/-5.5	-3.18/-0.12	3.12/-4.25	4.02/-4.04	
Θ(67.5°)	4.74/-4.59	2.34/-3.05	-0.41/-1.09	2.74/-1.83	1.04/-1.4	0.65/-1.																		



Radiated Composite Gain Data of 2.4GHz/5GHz

Appendix A.1

Θ(75°)	-7.68/-11.31	-9.46/-6.83	-7.68/-15.33	-14.95/-16.47	-8.51/-5.72	-12.34/-12.09	-7.98/-11.74	-12.06/-8.77	-14.07/-15.59	-11.16/-11.46	-7.42/-8.06	-11.63/-8.78	-10.71/-17.67	-12.38/-5.59	-4.15/-7.8	-8.36/-11.73	-13.17/-8.82	-6.86/-14.64	-5.98/-4.17	-11.73/-14.86	-7.66/-7.22	-16.54/-12.36	-9.26/-9.52	-18.75/-8.8
Θ(82.5°)	-7.82/-11.76	-8.65/-7.89	-8.01/-14.31	-17.84/-14.68	-9.26/-5.07	-13.21/-9.3	-7.81/-14.74	-12.51/-11.33	-19.3/-15.74	-15.8/-15.42	-9.94/-11.2	-12.55/-11.95	-18.46/-10.1	-11.55/-8.13	-7.75/-16.64	-9.02/-10.86	-9.62/-5.26	-8.92/-17.17	-7.1/-3.31	-9.14/-10.44	-7.09/-9.23	-14.72/-10.02	-10.74/-13.29	-18.17/-7.42
Θ(90°)	-11.53/-13.23	-10.25/-9.87	-10.11/-16.67	-18.22/-12.72	-10.11/-6.64	-13.54/-11.95	-11.88/-17.18	-14.55/-10.73	-12.63/-17.94	-16.43/-16.05	-15.8/-15.83	-12.91/-10.17	-13.62/-15.18	-12.13/-10.1	-9.22/-12.28	-16.17/-10.36	-12.95/-8.01	-10.71/-14.78	-10.63/-5.89	-7.81/-9.5	-8.78/-14.47	-11.19/-9.44	-13.25/-13.58	-18.21/-10.32
Θ(97.5°)	-15.02/-11.89	-9.83/-14.06	-16.88/-18.98	-16.08/-10.72	-13.01/-7.89	-9.63/-9.52	-9.36/-18.23	-18.22/-17.2	-16.71/-15.24	-17.6/-18.15	-17.3/-14.06	-12.56/-12.77	-18.53/-17.37	-15.95/-11.16	-10.36/-19.02	-10.98/-7.9	-9.58/-8.56	-18.67/-14.53	-14.69/-9.39	-11.08/-13.48	-13.96/-12.27	-8.03/-11.51	-17.23/-13.38	-18.18/-14.94
Θ(105°)	-18.02/-13.51	-12.72/-16.41	-16.53/-16.55	-12.82/-10.12	-12.92/-9.16	-11.3/-17.93	-14.92/-18.65	-18.68/-18.48	-18.38/-18.03	-18.41/-13.79	-15.9/-18.64	-16.25/-14.89	-18.01/-18.16	-16.36/-16.51	-14.31/-14.08	-11.49/-11.74	-13.04/-14.37	-18.69/-10.78	-15.7/-15.74	-13.57/-16.05	-15.1/-18.33	-11.12/-19.09	-18.9/-13.11	-18/-18.27
Θ(112.5°)	-18.03/-17.4	-16.38/-15.32	-16.35/-12.48	-16.12/-8.9	-9.93/-9.27	-10.31/-17.28	-13.17/-18.57	-18.21/-17.96	-16.88/-15.77	-18.55/-11.57	-11.19/-17.41	-18.36/-18.47	-17.92/-15.88	-16.11/-16.99	-10.61/-10.09	-14.14/-15.19	-9.34/-8.56	-17.48/-11.73	-5.96/-7.84	-5.9/-10.25	-18.69/-8.87	-7.6/-14.79	-14.83/-16.57	-18.29/-18.6
Θ(120°)	-15.86/-18.36	-10.9/-14.37	-17.46/-12.71	-10.87/-15.4	-9.06/-18.42	-10.92/-17.76	-14.64/-16.06	-18.12/-15.53	-16.06/-17.86	-18.81/-9.89	-9.91/-13.28	-13.92/-11.91	-13.3/-13.22	-14.45/-15.49	-9.78/-12.48	-11.73/-10.11	-16.29/-14.44	-10.55/-8.41	-11.78/-16.3	-8.95/-11.01	-10.25/-18.82	-12.54/-18.04	-18.1/-15.54	-11.26/-8.15
Θ(127.5°)	-15.97/-14.46	-5.76/-6.27	-9.32/-13.89	-11.6/-17.67	-9.2/-11.38	-10.31/-17.99	-13.28/-11.98	-18.48/-18.24	-13.61/-15.4	-18.22/-12.06	-9.79/-15.02	-12.98/-11.36	-11.6/-11.83	-13.17/-16.93	-11.37/-10.09	-17.27/-18.04	-15.31/-12.84	-11.19/-6.9	-8.98/-17.27	-11.17/-18.19	-19.04/-18.54	-16.35/-18.9	-17.94/-15.91	-8.61/-8.51
Θ(135°)	-17.27/-17.97	-4.96/-5.14	-10.58/-14.36	-9.39/-7.33	-10.28/-17.6	-10.87/-14.75	-18.21/-8.63	-9.08/-14.07	-12.15/-11.61	-14.5/-13.19	-14.22/-18.86	-15.67/-12.78	-18.69/-17.92	-11.83/-12.67	-7.97/-8.23	-18.89/-18.82	-13.89/-9.04	-6.96/-14.37	-14.05/-11.53	-18.03/-14.88	-10.03/-17.6	-19.47/-17.23	-18.93/-14.36	-10.44/-13.73
Θ(142.5°)	-17.99/-9.95	-7.94/-10.15	-17.72/-12.05	-7.33/-7.02	-13.02/-14.32	-8.1/-10.88	-18.99/-9.75	-8.16/-12.87	-19.25/-15.74	-16.79/-17.97	-18.18/-17.56	-17.54/-16.94	-18.38/-18.26	-18.32/-15.96	-18.35/-18.24	-18.09/-11.92	-16.09/-18.96	-14.38/-17.83	-16.99/-8.42	-8.94/-16.9	-16.64/-13.04	-10.53/-12.23	-8.9/-6.02	-6.27/-11.98
Θ(150°)	-18.89/-13.07	-14.57/-19.13	-17.14/-13.23	-10.44/-10.3	-17.12/-13.25	-7.55/-7.71	-13.49/-17.5	-11.41/-10.05	-14.44/-17.71	-15.37/-12.23	-10.7/-10.55	-11.22/-14.13	-18.03/-18.44	-18.88/-18.73	-18.47/-18.01	-12.85/-13.72	-7.35/-9.68	-18.77/-12.43	-8.35/-10.8	-12.21/-12.84	-14.96/-18.48	-14.15/-8.7	-8.87/-14.71	
Θ(157.5°)	-17.75/-17.82	-17.68/-18.14	-13.75/-10.63	-13.77/-10.84	-9.03/-9.67	-12.69/-15.52	-12.07/-10.37	-12.46/-16.7	-18.91/-17.56	-16.57/-18	-13.84/-18.54	-16.03/-14.16	-15.63/-17.99	-15.48/-9.26	-8.75/-11.35	-8.69/-9.38	-13.61/-17.13	-18.16/-17.43	-12.53/-9.07	-8.91/-11.05	-12.62/-12.89	-14.89/-11.94	-11.64/-14.13	
Θ(165°)	-17.17/-19.25	-17.67/-16.73	-15.46/-18.84	-19.23/-16.78	-13.11/-10.98	-10.05/-9.96	-10.09/-10.85	-13.18/-15.96	-17.24/-19.15	-17.55/-18.16	-15.73/-15.33	-14.29/-12.34	-12.81/-9.93	-8.09/-8.28	-10.67/-12.49	-12.68/-16.11	-18.06/-14.42	-12.96/-16.3	-18.43/-18.9	-17.62/-17.51	-13.79/-14.75	-17.66/-16.98	-18.3/-17.12	
Θ(172.5°)	-11.16/-13.49	-16.34/-17.12	-17.16/-18.29	-18.6/-19.01	-15.44/-12.01	-10.29/-9.15	-8.56/-8.12	-7.86/-7.85	-7.97/-8.39	-9.19/-10.32	-10.42/-10.56	-13.04/-14.96	-12.9/-13.22	-14/-16.03	-17.24/-18.1	-17.47/-18.11	-17.47/-18.42	-18.9/-15.44	-14.72/-15.25	-15.35/-14.37	-14.16/-13.64	-13.14/-12.74	-12.33/-12.06	-11.69/-10.63
Θ(180°)	-18.67/-17.41	-17.43/-16.64	-15.15/-14.71	-14.56/-13.47	-11.7/-9.95	-8.79/-8.41	-8.46/-8.52	-8.45/-8.73	-9.61/-10.22	-10.75/-11.37	-11.88/-12.62	-14.07/-15.27	-14.7/-14.62	-15.66/-15.8	-14.71/-13.37	-12.11/-11.65	-11.98/-12.83	-14.12/-15.42	-15.84/-15.48	-14.53/-13.04	-12.22/-12.26	-13.21/-13.5	-13.89/-16.38	-18.91/-18.32
Freq(Hz)	5.785GPol.	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°)	-5.31/-4.82	-4.74/-4.91	-5.07/-5.56	-6.27/-6.63	-6.56/-6.85	-7.33/-7.73	-8.05/-8.68	-9.47/-9.47	-9.61/-9.94	-10.14/-9.96	-9.85/-10.47	-10.18/-9.1	-9.06/-9.14	-7.95/-7.03	-6.79/-6.74	-6.66/-6.48	-7.06/-7.58	-8.32/-8.44	-8.39/-8.68	-8.86/-9.08	-8.56/-7.81	-7.05/-6.49	-5.81/-5.37	-5.03/-5.21
Θ(7.5°)	-18.72/-18.87	-18.77/-14.77	-13.09/-10.99	-9.69/-8.54	-8.77/-9.88	-8.55/-8.76	-8.88/-9.24	-8.46/-8.84	-5.41/-4.68	-4.63/-4.38	-3.79/-3.57	-4.06/-4.56	-4.82/-5.13	-5.42/-5.64	-5.59/-5.41	-5.06/-4.98	-4.9/-5.11	-5.64/-5.92	-5.99/-6.9	-8.37/-9.32	-9.29/-9	-9.07/-10.31	-12.21/-14.03	-16.68/-17.93
Θ(15°)	-1.56/-1.16	-1.55/-2.29	-3.55/-6.24	-10.97/-18.65	-15.83/-10.7	-9.57/-10.39	-11.39/-10.09	-7.49/-4.96	-3.52/-2.75	-2.65/-2.87	-2.67/-2.02	-1.48/-1.16	-0.68/-0.46	-0.64/-1.5	-2.78/-3.93	-4.54/-4.04	-2.72/-1.9	-1.97/-2.87	-4.28/-6.92	-10.42/-8.18	-4.22/-1.9	-1.44/-2.42	-3.88/-4.71	-3.93/-2.78
Θ(22.5°)	-4.69/-2.84	-1.81/-1.28	-0.86/-1.6	-3.48/-6.98	-11.25/-13.86	-14.84/-16.3	-15.37/-12.61	-9.64/-7.51	-6.01/-5.31	-4.63/-3.54	-1.590/-59	1.912/-47	2.43/-93	1.02/-0.13	-1.78/-3.57	-6.08/-8.74	-1.77/-4.21	-2.88/-2.95	-3.98/-6.53	-8.96/-4.48	-1.110/-62	0.76/-0.44	-2.61/-9.41	-5.9/-5.77
Θ(30°)	-0.88/-1.64	-2.48/-4.16	-5.14/-3.62	-2.84/-2.54	-3.19/-6.49	-8.6/-8.95	-12/-10.23	-6.96/-4.81	-4.48/-4.87	-3.92/-1.57	0.35/-1.71	2.311/-8	0.53/-0.65	-2.12/-3.24	-4.69/-8.07	-14.55/-18.8	-15.97/-9.9	-6.51/-6.22	-8.1/-5.05	-1.54/-1.14	-3.41/-5.97	-4.79/-2.38	-1.46/-1.31	
Θ(37.5°)	2.6622/-5	1.8056	-3.26/-3.96	-0.24/-1.8	-2.47/-3.6	-7.23/-9.06	-3.5/-2.6	-6.85/-17.54	-12.78/-8.64	-4.67/-0.22	1.972/-86	3.05/-95	0.74/-607	-1.01/-3.88	-4.26/-4.84	-9.76/-12.12	-10.51/-14.3	-13.09/-10.54	-11.37/-12.37	-8.39/-6.59	-3.20/-14	2.272/-8	2.612/-61	
Θ(45°)	1.611/-6	2.342/-0.2	1.02/-1.24	-1.38/-1.1	1.2/-0.73	-1.04/-0.7	-4.64/-13.12	-2.81/-1.42	-3.36/-2.32	0.040/-86	1.142/-05	3.53/-95	2.120/-15	-1.250/-23	-0.67/-3.71	-1.130/-17	-7.42/-13.2	-5.74/-5.57	-8.88/-17.37	-13.42/-9.99	-7.66/-5.34	-3.68/-0.18	2.422/-62	21/-85
Θ(52.5°)	0.520/-5.3	1.071/-43	2.181/-94	1.040/-76	1.06/-19	-2.88/-0.75	-6.38/-9.8	-8.070/-43	0.030/-54	0.76/-0.2	-0.31/-33	1.861/-67	-0.75/-3.53	9.88/-3.2	-0.4/-4.34	-0.93/-1.78	-2.66/-7.38	-4.59/-5.89	-5.51/-8.44	-6.23/-9.37	-3.47/-6.07	-7.91/-4.87	-1.91/-0.2	-0.080/-1
Θ(60°)	0.830/-57	0.880/-74	1.889/-36	1.34/-0.56	0.24/-2.57	-4.57/-2.49	-10.65/-6.96	-0.720/-0.5	-0.42/-0.57	-0.92/-2.75	-4.17/-1.5	1.281/-44	-0.44/-2.44	-5.04/-7.82	-1.17/-1.97	-4.35/-1.52	-1.09/-6.62	-2.07/-3.48	-4.34/-8.69	-5.09/-2.67	-10.67/-1.72	-13.66/-5.94	-4.22/-2.74	-1.280/-14
Θ(67.5°)	0.69/-0.03	0.250/-18	1.173/-34	1.38/-4.24	-1.85/-3.2	-5.13/-4.01	-17.85/-8.42	-0.96/-1.16	-3.22/-1.93	0.51/-1.54	-2.7/-2.03	1.94/-1.71	0.05/-2.9	-3.79/-3.51	-0.880/-25	-6.310/-18	-1.91/-5.4	-0.95/-4.66	-4.95/-6	-2.46/-2.44	-10.15/-10.51	-8.35/-6.05	-5.13/-4.53	-2.60/-29
Θ(75°)	0.75/-0.92	-0.21/-0.83	-1.82/-0.7	1.37/-5.31	-4.13/-3.09	-6.37/-7.3	-10.72/-3.97	-3.08/-3.38	-5.77/-2.35	1.310/-78	-1.93/-2.4	1.131/-12	1.15/-1.94	-3.11/-2.55	-1.69/-0.42	-5.92/-0.67	-2.57/-5.75	0.46/-4	-3.4/-4.76	-2.58/-2.71	-6.84/-5.6	-5.68/-6.18	-4.76/-3.98	-2.50/-56
Θ(82.5°)	-0.03/-2.57	-2.79/-2.25	-3.860/-47	0.98/-7.48	-6.93/-3.08	-5.8/-8.46	-7.27/-4.27	-4.12/-4.12	-5.41/-1.16	1.280/-7	2.2/-2.69	-0.6/-0.39	-1/-4.07	-4.12/-2.73	-3.7/-2.04	-5.91/-1.08	-5.57/-4.92	-0.75/-3.97	-2.04/-4.83	-2.55/-4.05	-5.98/-6.82	-3.8/-3.57	-2.510/-62	
Θ(90°)	-2.47/-5.03	-4.47/-2.87	-5.46/-1.84	-0.96/-7.05	-10.96/-3.32	-3.63/-8.21	-7.25/-3.4	-6.45/-5.01	-6.17/-3.39	-0.66/-0.36	-3.38/-6.31	-4.12/-1.8	-1.49/-5.59	-6.02/-2.68	-3.99/-4.23	-4.99/-3.65	-8.65/-7.01	-4.25/-4.14	-2.08/-5.72	-3.74/-5.68	-3.04/-1.82	-4.19/-6.11	-3.78/-4.52	-4.34/-1.24
Θ(97.5°)	-6.4/-7.08	-6.21/-4.11	-5.94/-5.13	-3.41/-9.83	-11.82/-5.55	-4.28/-10.44	-5.23/-2.45	-6.92/-5.99	-5.37/-5.66	-2.94/-3.04	-4.74/-7.75	-6.84/-3.85	-3.1/-9.45	-9.57/-5.04	-6.21/-6.06	-5.12/-5.06	-13.51/-11.06	-10.19/-2.65	-6.56/-9.38	-6.29/-8.33	-4.71/-3.85	-8.21/-7.16	-4.75/-6.52	-8.24/-3.69
Θ(105°)	-8.55/-7.17	-13.4/-5.75	-5.23/-6.63	-7.25/-10.6	-9.48/-8.64	-5.74/-8.68	-6.88/-3.73	-9.6/-41	-6.17/-5.48	-6.93/-7.02	-7.57/-8.1	-12.78/-8.39	-6.37/-3.36	-3.43/-8.22	-16.84/-9.1	-10.67/-3.74	-9.71/-5.44	-9.24/-15.37	-8.26/-5.04	-5.71/-10.4	-6.97/-6.03	-5.7/-10.4	-18.25/-11.89	
Θ(112.5°)	-6.54/-4.93	-13.45/-8.56	-6.55/-6.42	-9.01/-12.24	-7.26/-12.69	-9.13/-7.29	-12.41/-6.57	-8.4/-9.06	-4.08/-2.91	-5.1/-13.17	-16.77/-15.2	-13.66/-8.82	-6.13/-10.1	-15.74/-9.15	-3.06/-3.97	-6.95/-13.37	-10.35/-18.02	-5.69/-2.85	-12.77/-10.55	-5.04/-11.7	-7.33/-5.13	-5.94/-9.15	-8.55/-11.19	-17.54/-6.58
Θ(120°)	-3.64/-7.42	-12.76/-9.22	-6.43/-7.67	-10.94/-17.2	-6.86/-9.02	-13.26/-6.12	-8.58/-11.33	-11.13/-10.09	-5.96/-3.29	-2.43/-6.72	-13.39/-17	-14.48/-10.21	-6.39/-9.13	-10.15/-9.81	-4.41/-3.27	-7.54/-18.16	-10.79/-18.48	-5.01/-6.32	-13.81/-6.39	-12.01/-12.68	-16.71/-9.95	-9.83/-8.53	-10.71/-12.3	-7.



Radiated Composite Gain Data of 2.4GHz/5GHz

Appendix A.1

Θ(112.5°)	-18.68/-18.98	-9.13/-10.88	-11.35/-18.57	-18.92/-19.04	-18.23/-18.03	-18.63/-14.28	-18.59/-18.71	-11.33/-16.64	-8.21/-8.79	-15.63/-11.72	-10.14/-7.99	-12.31/-15.1	-16.91/-17.67	-15.43/-10.58	-14.13/-10.86	-9.79/-9.23	-12.01/-14.44	-14.5/-9.74	-7.36/-9.84	-8.29/-14.89	-15.1/-18.61	-18.8/-11.08	-18.84/-11.86	-12.04/-13.59	
Θ(120°)	-18.93/-16.73	-11.35/-10.1	-11.26/-17.82	-19.19/-17.72	-17.64/-17.21	-18.3/-14.86	-11.89/-9.76	-10.71/-9.15	-9.42/-9.72	-6.57/-4.63	-5.12/-3.52	-14.56/-13.54	-15.58/-17.72	-18.67/-15.11	-12.52/-18.58	-17.5/-12.88	-13.9/-6.69	-9.88/-6.95	-6.18/-8.67	-9.41/-8.1	-18.62/-16.56	-7.23/-17.96	-12.46/-12.71	-14.82/-13.59	
Θ(127.5°)	-18.57/-17.14	-16.11/-12.12	-17.32/-17.06	-18.69/-15.03	-13.74/-14.42	-18.55/-18.13	-18.41/-11.61	-7.93/-7.18	-6.73/-8.5	-8.35/-10.03	-15.51/-15.52	-12.09/-9.85	-15.3/-10.24	-16.38/-16.16	-8.21/-17.32	-15.7/-15.38	-10.08/-9.96	-13.47/-7.79	-6.28/-7.2	-9.74/-11.29	-18.37/-13.83	-14.1/-10.34	-18.04/-15.15	-16.98/-19.47	
Θ(135°)	-18.94/-15.25	-15.51/-12.47	-17.01/-17.84	-17.17/-18.04	-13.98/-13.34	-10.81/-10.32	-9.87/-8.41	-9.8/-7.57	-4.92/-4.29	-3.63/-4.32	-8.9/-14.41	-8.35/-5.54	-8.87/-14.44	-12.65/-9.78	-8.06/-15.6	-18.82/-17.66	-18.61/-19.09	-18.55/-9.92	-9.37/-12	-11.7/-16.84	-14.5/-11.34	-12.49/-18.68	-16.19/-16.86	-15.95/-16.51	
Θ(142.5°)	-18.53/-13.85	-14.23/-13.19	-10.95/-10.23	-9.69/-10.39	-12.63/-14.62	-18.03/-18.9	-13.14/-10.1	-8.61/-7.77	-11.81/-13.77	-14.56/-18.11	-18.36/-8.59	-5.26/-5.97	-8.86/-14.9	-10.04/-7.21	-8.23/-14.39	-16.59/-15.6	-13.75/-11.71	-16.13/-14.08	-14.73/-12.38	-12.93/-18.1	-12.58/-17.36	-13.97/-17.18	-11.81/-16.21	-18.21/-14.56	
Θ(150°)	-14.21/-17.19	-18.91/-17.79	-17.83/-15.49	-13.81/-12.97	-13.37/-14.33	-14.85/-14.49	-13.25/-11.41	-10.78/-13.14	-18.97/-18.41	-18.89/-18.29	-14.3/-9.08	-8.75/-8.08	-11.04/-15.1	-9.84/-7.32	-9.07/-15.98	-16.96/-12.67	-12.82/-18.39	-18.85/-17.85	-18.61/-11.37	-10.35/-18.57	-12.55/-13.32	-17.35/-14.57	-18.14/-15.77	-10.94/-11.22	
Θ(157.5°)	-18.1/-18.64	-17.71/-17.62	-13.48/-12.42	-11.8/-11.39	-11.8/-13.42	-15.53/-17.22	-18.83/-18.71	-18.24/-14.79	-9.31/-9.88	-11.98/-15.56	-18.91/-18.93	-16.93/-15.91	-15.8/-15.1	-14.81/-18.14	-19.11/-12.53	-11.1/-9.79	-8.01/-8.03	-10.1/-16.1	-18.4/-17.48	-18.19/-17.19	-10.76/-9.72	-12.39/-14.85	-18.61/-18.56	-18.76/-18.79	
Θ(165°)	-10.61/-11.56	-13.35/-16.38	-17.89/-17.79	-18.84/-18.06	-17.53/-18.87	-18.51/-18.75	-18.03/-10.42	-14.11/-12.84	-12.87/-13.87	-14.4/-11.71	-9.51/-10.06	-12.19/-13.3	-13.58/-14.24	-17.74/-17.82	-15.26/-12.03	-9.7/-8.71	-7.16/-8.64	-13.6/-18.59	-17.84/-14.32	-13.43/-11.99	-9.87/-8.79	-9.38/-10.72	-11.23/-14.04	-18.06/-18.45	
Θ(172.5°)	-9.58/-10.53	-12.15/-13.89	-14.8/-17.3	-18.38/-19.2	-17.45/-19.4	-18.13/-17.76	-18.12/-15.59	-14.94/-17.53	-17.85/-17.5	-19.01/-15.97	-14.91/-15.02	-16/-18.71	-17.55/-18.06	-17.92/-14.28	-13.75/-14.94	-16.58/-18.84	-17.77/-18.43	-18.12/-15.37	-13/-12.3	-12.12/-11.7	-10.63/-9.4	-9.81/-11.32	-11.15/-10.74	-11.74/-15.13	
Θ(180°)	-19.21/-18.57	-18.61/-17.52	-17.95/-17.19	-14.83/-13.06	-12.19/-12.88	-14.63/-17.27	-18.73/-18.23	-17.74/-18.76	-17.51/-18.15	-17.79/-18.72	-17.42/-18.05	-18.36/-18.77	-19.05/-18.59	-17.77/-18.44	-18.86/-16.44	-12.94/-11.54	-10.79/-10.33	-10.21/-10.38	-11/-11.46	-12.02/-11.97	-11.51/-10.67	-10.92/-13.01	-17.75/-17.61	-19.21/-18.88	
Freq(Hz)	5.2GPol.	Theta/Ant. 2	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	
Gain	Φ(0°)Φ(7.5°)	Φ(15°)Φ(22.5°)	Φ(30°)Φ(37.5°)	Φ(45°)Φ(52.5°)	Φ(60°)Φ(67.5°)	Φ(75°)Φ(82.5°)	Φ(90°)Φ(97.5°)	Φ(105°)Φ(112.5°)	Φ(120°)Φ(127.5°)	Φ(135°)Φ(142.5°)	Φ(150°)Φ(157.5°)	Φ(165°)Φ(172.5°)	Φ(180°)Φ(187.5°)	Φ(195°)Φ(202.5°)	Φ(210°)Φ(217.5°)	Φ(225°)Φ(232.5°)	Φ(240°)Φ(247.5°)	Φ(255°)Φ(262.5°)	Φ(270°)Φ(277.5°)	Φ(285°)Φ(292.5°)	Φ(300°)Φ(307.5°)	Φ(315°)Φ(322.5°)	Φ(330°)Φ(337.5°)	Φ(345°)Φ(352.5°)	
Θ(0°)	-7.43/-13.53	-13.65/-13.74	-13.84/-13.4	-13.42/-14.18	-13.18/-14.18	-15.73/-18.42	-18.39/-17.3	-18.61/-18.21	-14.92/-13.64	-12.39/-11.52	-10.72/-9.55	-8.42/-7.55	-7.31/-7.23	-7.38/-7.75	-7.7/-9.26	-9.88/-10.16	-10.5/-10.93	-11.68/-11.97	-12.41/-13.5	-14.25/-14.12	-14.34/-15.05	-9.04/-8.22	-7.72/-7.36	-7.51/-7.33	
Θ(7.5°)	-5.12/-4.17	-3.72/-3.93	-4.05/-4.62	-5.48/-6.89	-8.76/-10.41	-12.03/-12	-11.06/-10.28	-11.25/-9.5	-8.27/-7.26	-6.79/-6.5	-6.43/-6.29	-5.93/-6.06	-6.28/-8.83	-9.22/-9.86	-10.57/-10.69	-11.23/-12.22	-11.89/-11.36	-11.8/-12.89	-11.03/-12.97	-13.12/-14.04	-15.06/-13.6	-11.62/-10.05	-9.66/-8.74	-7.62/-6.22	
Θ(15°)	-2.12/-1.46	-1.31/-1.29	-1.59/-1.81	-2.45/-2.89	-3.22/-3.68	-4.71/-5.36	-5.37/-4.96	-4.28/-3.89	-3.46/-3.53	-4.43/-4.77	-4.86/-5.03	-4.44/-4.47	-4.71/-3.26	-2.82/-3.75	-4.63/-4.53	-6.97/-7.42	-8.57/-9.34	-10.08/-10.97	-12.31/-15.48	-17.4/-12.44	-2.07/-5.74	-6.77/-5.03	-4.13/-3.16		
Θ(22.5°)	1.27/1.64	1.51/1	0.13/-0.84	-1.71/-2.19	-2.6/-2.92	-3.26/-4	-4.04/-3.92	-3.66/-3.26	-3.27/-3.93	-5.24/-8.24	-8.47/-4.26	-3.5/-3.3	-3.27/-3.28	-2.9/-2.05	-1.27/-0.99	-1.16/-1.57	-2.71/-4.23	-5.87/-7.06	-7.61/-8.43	-10.38/-13.37	-9.59/-6.87	-3.79/-2.3	-1.3/-0.9	-0.070/57	
Θ(30°)	3.12/3.33	2.81/1.98	0.55/-1.36	-2.99/-3.75	-3.63/-2.8	-2.17/-1.7	-1.81/-1.93	-1.92/-1.85	-2.82/-4.8	-9.23/-13.69	-6.72/-3.24	-2.21/-1.81	-1.57/-1.31	-0.54/0.24	1.64/-1.99	1.18/-0.59	-3.26/-6.8	-8.59/-9.2	-4.97/-4.31	-6.61/-12.04	-9.69/-4.57	-0.73/0.85	1.82/38	2.92/43	
Θ(37.5°)	1.66/1.62	0.81/0.97	-1.72/-4.45	-6.06/-6.16	-5.25/-3.52	-1.48/0.29	0.82/0.81	-0.34/-0.18	-1.53/-4.74	-10.47/-8.2	0.39/-1.75	1.73/-0.48	-0.46/0.17	2.05/3.86	4.46/3.76	1.77/-1.47	-4.95/-5.28	-2.15/-0.19	0.17/-1.93	-7.03/-2.44	0.24/1	0.2/-0.21	0.04/1.04		
Θ(45°)	-0.46/-0.22	-1.05/-2.33	-4.46/-6.5	-7.15/-7.98	-8.21/-5.68	-2.9/-0.44	1.47/2.1	1.51/0.82	0.23/-0.81	-3.1/-5.11	-4.42/-0.62	0.5/-0.04	0.51/1.74	3.73/5.24	5.66/4.71	2.36/1.08	-3.21/-1.97	0.19/1.34	1.75/0.61	-2.78/-2.11	-2.68/-3.3	-0.61/-0.28	-1.75/-3.03	-2.8/-1.44	
Θ(52.5°)	0.48/1.09	0.33/-0.51	-1.37/-1.67	-1.31/-2.58	-5.25/-5.51	-4.68/-3.1	-0.36/0.91	0.47/0.75	1.18/0.64	0.24/-3.81	-4.80/-46	1.96/2.71	2.81/2.86	2.66/3.5	4.24/3.61	1.09/-2.67	-2.95/-14.3	-0.44/0.81	1.12/-0.5	-1.56/-2.63	-2.9/-2.7	0.14/0.65	-1/-2.45	-2.16/-0.59	
Θ(60°)	1.03/1.26	0.69/-0.13	-0.54/0.09	1.09/-2.22	-2.88/-6.58	-6.11/-6.18	-4.11/-2.06	-1.74/0.63	1.92/0.1	0.17/-2.28	-4.46/-0.57	1.43/2.57	3.08/2.41	1.99/2.26	2.59/1.62	-0.98/-3.79	-3.61/-1.97	-0.24/-0.3	-0.24/-0.49	-2.02/-1.56	-3.21/-2.91	0.421/46	0.5/-0.99	-1.05/-0.4	
Θ(67.5°)	-0.94/-0.8	-0.26/-0.89	-0.82/-0.2	0.98/0.66	-1.44/-5.62	-6.12/-7.24	-8.52/-5.61	-3.78/0.25	0.71/-1.27	-0.94/-4.8	-7.1/-1.27	0.56/1.77	1.76/1.27	2.08/1.7	0.36/-1.67	-3.57/-3.58	-2.55/-2.26	-1.3/-1.15	-0.26/-0.29	-2.28/-2.6	-4.47/-2.6	0.91/57	1.58/-1.18	-1.82/-2.02	
Θ(75°)	-3.35/-1.22	-10.1/-10.5	-0.77/-0.42	1.18/1.42	-0.5/-5.17	-5.99/-7.23	-11.57/-8.6	-6.36/-1.28	-0.31/-1.86	-2.6/-3.1	-9.14/-4.63	-1.89/-0.76	0.57/-1.02	1.99/1.56	-0.34/-3.49	-5.26/-4.31	-6.67/-5.92	-4.23/-3.18	-0.9/-1.52	-2.75/-4.22	-7.23/-2.69	-0.34/-1.21	0.25/-1.5	-3.85/-4.58	
Θ(82.5°)	-5.96/-2.76	-1.26/-1.38	-1.8/-1.29	0.07/0.84	-0.85/-4.66	-5.74/-6.95	-11.33/-9.53	-7.22/-3.42	-3.64/-1.75	-7.77/-9.42	-10.9/-4.52	-4.57/-3.24	-0.23/-0.98	0.27/0.34	-2.61/-5.54	-8.88/-7.33	-11.53/-11.89	-2.42/-1.56	-4.71/-4.48	-7.23/-5.18	-2.04/-1.45	-2.91/-3.96	-6.97/-5.39		
Θ(90°)	-7.17/-4.62	-2.92/-2.91	-2.66/-3.21	-1.5/-0.94	-2.04/-5.01	-7.03/-9.55	-13.82/-9.28	-6.69/-4.16	-4.42/-9.99	-10.11/-17.75	-8.21/-6.88	-5.67/-5.51	-4.68/-3.23	-4.34/-3.58	-6.34/-7.54	-5.81/-10.92	-9.51/-7.79	-4.65/-9.23	-2.9/-1.55	-3.81/-4.26	-6.19/-6.72	-4.76/-4.16	-4.67/-7.05	-9.33/-6.01	
Θ(97.5°)	-9.6/-89	-5.05/-4.79	-3.16/-2.9	-1.32/-0.53	-1.6/-4.68	-6.09/-10.13	-10.33/-9.29	-5.99/-3.96	-6.67/-12.42	-7.24/-8.33	-2.15/-1.87	-5.09/-4.1	-8.87/-8.27	-9.2/-11.32	-13.79/-13.3	-11.17/-12.3	-4.17/-9.13	-6.58/-10.3	-3.21/-9.43	-11.12/-18.4	-3.84/-6.02	-7.27/-8.57	-14.22/-7.52		
Θ(105°)	-8.31/-5.01	-6.14/-5.78	-4.89/-4.63	-1.39/-0.84	-1.03/-3.84	-7.31/-9.3	-9.14/-6.79	-4.75/-3.34	-3.21/-6.47	-5.12/-4.85	-0.55/-0.59	-1.86/-5.72	-15.82/-18.28	-9.61/-11	-11.63/-7.86	-5.44/-2.04	-3.59/-0.84	-8.83/-1.23	-2.38/-4.85	-9.18/-6.23	-2.78/-9.12	-9.5/-10.31	-10.03/-10.16		
Θ(112.5°)	-7.8/-9.48	-8.66/-8.12	-7.9/-5.49	-14.45/-14.95	-13.43/-10.26	-11.09/-10.43	-6.95/-9.78	-7.48/-13.05	-17.61/-10.29	-9.35/-7.64	-8.14/-10.41	-13.57/-13.03	-4.99/-13.65	-18.23/-4.88	-5.43/-2.75	-8.5/-11.69	-10.28/-4.33	-6.09/-1.57	-3.71/-7.1	-9.79/-0.69	-1.49/-5.47	-16.07/-6.47	-1.73/-6.89	-6.63/-12.09	-13/-14.26
Θ(120°)	-7.51/-9.84	-8.61/-12.92	-6.67/-9.3	-2.85/-1.58	-2.17/-7.59	-6.05/-5.2	-5.61/-7.36	-7.12/-14.4	-3.18/-4.25	-3.75/-3.5	-1.34/-1.76	-5.24/-14.46	-15.93/-4.37	-4.18/-3.56	-10.62/-15.01	-7.26/-4.89	-5.01/-1.83	-6.06/-7.66	-5.19/-5.2	-1.86/-9.18	-13.99/-6.55	-4.07/-3.46	-7.8/-9.37	-15.66/-16.9	
Θ(127.5°)	-11.28/-7.89	-9.16/-11.03	-11.36/-8.75	-4.95/-3.3	-4.15/-6.13	-6.42/-5.12	-5.76/-7.95	-8.99/-5.44	-4.86/-5.76	-5.65/-10.1	-11.96/-18.48	-18.74/-10.54	-10.46/-4.75	-3.1/-4.23	-6.48/-12.03	-10.39/-10.23	-8.57/-9.61	-15.1/-18.38	-9.04/-11.98	-7.29/-7.5	-8.74/-7.67	-4.31/-9.37	-10.03/-10.31	-13.65/-9.67	
Θ(135°)	-8.09/-7.25	-10.65/-10.44	-14.45/-14.95	-13.43/-10.26	-11.09/-10.43	-6.95/-9.78	-7.48/-13.05	-17.61/-10.29	-9.35/-7.64	-8.14/-10.41	-13.57/-13.03	-4.99/-13.65	-18.23/-4.88	-5.43/-2.75	-8.5/-11.69	-10.28/-4.33	-6.09/-1.57	-3.71/-7.1	-9.79/-0.69	-1.49/-5.47	-16.07/-6.47	-1.73/-6.89	-6.63/-12.09	-13/-14.26	
Θ(142.5°)	-12.74/-11.91	-14.47/-18.22	-16.65/-18.26	-13.99/-12.29	-14.74/-17.85	-18.8/-18.44	-17.16/-17.53	-14.67/-14.25	-16.21/-18	-18.43/-17.45	-17.21/-13.85	-17.57/-17.88	-15.35/-11.9	-11.24/-10.85	-8.92/-7.33	-7.71/-9.37	-18.21/-12.45	-10.8/-18.52	-18.34/-17.84	-12.59/-15.89	-12.39/-8.49	-14.45/-11.74	-13.08/-17.66	-11.74/-11.39	
Θ(150°)	-13.99/-10.63	-9/-9.78	-11.31/-14.36	-18/-18.06	-17.97/-18.27	-17.65/-15.1	-15.36/-15.57	-17.1/-17.43	-15.85/-14.74	-15.62/-18.35	-18.6/-12.13	-12.1/-13.24	-12.61/-13.84	-18.76/-18.39	-11.36/-8.34	-9.51/-12.48	-18.37/-14.39	-12.18/-17.81	-18.1/-12.91	-8.47/-8.68	-14.3/-12.77	-13.05/-17.23	-17.15/-16.65	-13.3/-13.7	
Θ(157.5°)	-11.48/-12.37	-12.62/-12.55	-13.71/-13.38	-12.78/-13.07	-15.03/-18.11	-18.82/-18.16	-18.31/-18.61	-18.47/-17.43	-15.41/-13.63	-13.83/-15.42	-17.46/-15.64	-12.45/-12.62	-18.65/-17.75	-18.94/-18.67	-11.63/-11.08	-13.84/-16.74	-19.19/-18.14	-18.43/-17.92	-18.42/-12.96	-1					



Radiated Composite Gain Data of 2.4GHz/5GHz

Appendix A.1

Θ(165°)	-14.81/-14.18	-13.39/-13.2	-13.81/-15.92	-19.39/-18.16	-17.44/-17.01	-14.09/-12.2	-11.34/-10.38	-10.91/-13.25	-16.69/-16.58	-14.3/-12.82	-13.07/-14.07	-12.99/-14.41	-16.15/-17.97	-18.61/-18.99	-16.37/-11.17	-9.28/-9.47	-12.53/-18.98	-18.84/-17.62	-17.05/-14.78	-12.63/-10.48	-9.62/-11.41	-15.2/-17	-19.43/-18.2	-17.94/-17.51
Θ(172.5°)	-16.26/-16.1	-14.94/-13.2	-12.42/-12.74	-13.58/-14.35	-14.68/-14.01	-13.33/-12.96	-13.98/-15.89	-18.82/-18.34	-16.21/-14.19	-13.78/-14.64	-16.55/-18.55	-18.3/-17.65	-18.58/-18.17	-17.58/-15.31	-13.33/-12.36	-11.88/-12.97	-14.06/-14.27	-14.1/-15.24	-16.04/-14.66	-13.63/-12.7	-12.8/-15.33	-18.17/-18.76	-19.2/-18.51	-17.91/-17.8
Θ(180°)	-19.10/-18	-18.15/-17.99	-18.43/-18.37	-17.81/-18.55	-19.01/-18.42	-18.86/-19.16	-19.07/-18.18	-18.96/-19.09	-17.88/-16.98	-17.53/-18.57	-17.13/-18.76	-18.29/-19.22	-17.75/-18.08	-18.93/-17.59	-16.58/-15.76	-14.41/-13.83	-13.5/-12.94	-18.84/-16.6	-18.48/-15.99	-18.48/-19.19	-19.01/-18.2	-18.33/-18.24	-18.75/-17.79	-18.35/-18.34
Freq(Hz)	5.6GPol	Theta/Ant. 2	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-
Gain	Φ(0°)/Φ(7.5°)	Φ(15°)/Φ(22.5°)	Φ(30°)/Φ(37.5°)	Φ(45°)/Φ(52.5°)	Φ(60°)/Φ(67.5°)	Φ(75°)/Φ(82.5°)	Φ(90°)/Φ(97.5°)	Φ(105°)/Φ(112.5°)	Φ(120°)/Φ(127.5°)	Φ(135°)/Φ(142.5°)	Φ(150°)/Φ(157.5°)	Φ(165°)/Φ(172.5°)	Φ(180°)/Φ(187.5°)	Φ(195°)/Φ(202.5°)	Φ(210°)/Φ(217.5°)	Φ(225°)/Φ(232.5°)	Φ(240°)/Φ(247.5°)	Φ(255°)/Φ(262.5°)	Φ(270°)/Φ(277.5°)	Φ(285°)/Φ(292.5°)	Φ(300°)/Φ(307.5°)	Φ(315°)/Φ(322.5°)	Φ(330°)/Φ(337.5°)	Φ(345°)/Φ(352.5°)
Θ(0°)	-7.73/-5.69	-5.19/-4.39	-3.6/-3.46	-3.81/-4.09	4.1/-4.1	4.28/-4.9	-7.76/-9.34	-11.22/-15.29	-18.2/-17.51	-17.27/-12.43	-9.33/-7.3	-5.81/-4.8	-3.86/-3.05	-2.53/-2.64	-3.15/-3.43	-3.7/-4.1	-4.59/-5.51	-7.38/-9.23	-10.09/-11.31	-14.58/-17.1	-19.17/-18.6	-17.95/-17.6	-16.94/-14.29	-12.07/-9.83
Θ(7.5°)	-2.06/-1.75	-1.77/-2.29	-2.98/-3.44	-4.07/-4.7	-5.4/-6.36	-6.9/-7.94	-8.94/-9.31	-10.27/-11.56	-13.39/-15.17	-15.49/-15.33	-16.02/-17.05	-16.16/-13.02	-10.24/-5.78	-4.24/-3.62	-3.36/-2.81	-2.31/-2.11	-2.14/-2.69	-4.16/-5.78	-6.87/-8.18	-11.92/-18.3	-18.22/-17.81	-11.86/-8.54	-5.99/-4.52	-3.69/-2.91
Θ(15°)	2.38/2.37	1.88/1.04	-0.59/-2.31	-4.63/-7.56	-11.63/-17.11	-18.56/-18.59	-17.74/-15.74	-14.24/-13.2	-12.16/-11.03	-8.81/-6.6	-4.66/-2.82	-1.88/-1.45	-1.49/-1.94	0.030/-4.2	0.750/-7.4	0.1/-1.16	-3.33/-5.73	-8.47/-11.62	-13.05/-12.29	-12.66/-13.04	-9.86/-5.95	-1.86/-0.1	1.24/-1.83	
Θ(22.5°)	4.18/3.93	3.22/2.1	0.38/-1.86	-4.62/-7.08	-7.85/-7.81	-7.74/-8.14	-10.22/-14.6	-18.54/-13.04	-8.43/-6.33	4.91/-3.4	1.24/-1.16	2.26/2.51	2.31/1.93	1.68/1.6	1.92/2.27	2.44/-1.99	0.73/-1.3	-3.86/-6.64	-9.42/-13.74	-19.14/-18.4	-16.32/-10.94	-6.56/-2.86	-0.01/-1.85	3.11/3.84
Θ(30°)	4.724.85	4.072.88	1.15/-0.64	-1.7/-2.57	-3.79/-4.11	-2.89/-2.53	-3.7/-5.6	-5.32/-3.44	-1.9/-1.22	-1.17/-1.6	-1.68/-0.44	1.09/2.08	2.13/-1.67	1.71/3.5	4.584.99	4.483.02	0.39/-3.04	-6.21/-8.43	-10.03/-10.73	-9.29/-10.63	-18.86/-12.15	-4.49/-0.85	1.49/2.81	3.744.28
Θ(37.5°)	5.086.14	4.64/3.36	2.28/2.16	2.35/-1.81	-0.07/-2.55	-3.34/-2.88	-2.57/-2.69	-1.57/-0.79	0.82/-1.1	1.04/-1.02	-5.45/-5.24	-0.34/-2.22	3.15/3.54	3.975/-27	6.256.11	4.6/-2.02	-0.36/-2.29	-3.53/-3.89	-4.33/-5.99	-6.38/-7.45	-17.83/-17.8	-1.08/-1.16	1.94/2.19	2.884.3
Θ(45°)	3.834.02	3.58/2.11	1.64/2.26	3.16/3.33	2.03/-0.38	-3.58/-4.58	4.53/-3.38	-2.89/-2.53	-0.55/-1.36	1.82/-1.3	-1.11/-4.02	0.52/3.82	4.32/3.78	3.11/4.26	5.34/8.2	2.92/0.77	-0.01/-0.27	0.37/-0.72	-3.41/-3.56	-3.23/-7.08	-10.52/-2.59	1.8/2.22	1.16/0.61	1.37/3.53
Θ(52.5°)	1.552.39	2.050.72	0.53/-1.08	1.92/-1.97	1.6/0.25	-2.89/-8.53	-11.86/-7.9	-6.55/-6.38	-3.37/-0.71	0.55/0.44	-2.04/-4.43	1.13/25	3.83/3.27	3.384.58	4.32/2.33	-0.98/-3.31	-1.55/0.16	0.83/-0.65	-2.42/-4.86	-4.45/-6.06	-5.64/0.86	2.89/-1.91	-0.86/-2.97	-1.20/-7.1
Θ(60°)	0.78/2.3	1.76/0.89	1.3/-1.6	0.74/-0.1	-0.2/-1.09	-2.92/-5.84	-11.39/-15.9	-11.38/-12.36	-6.97/-2.18	-0.31/-1.73	0.98/-2.29	0.86/3.35	4.42/3.57	3.02/4.28	4.04/0.93	-4.42/-11.43	-8.01/-0.81	0.28/-1.6	-2.98/-4.82	-4.84/-5.91	-2.64/-1.69	2.63/3.32	-4.56/-6.81	-5.28/-1.64
Θ(67.5°)	1.482.57	1.150.66	1.67/-1.79	0.14/-1.16	2.4/-3.5	-3.82/-4.33	5.48/-7.89	-8.57/-17.15	-9.56/-3.46	-1.75/-1.38	0.94/-1.76	-0.04/3	4.25/-1.73	1.13/3.14	3.05/-1.36	-6.51/-7.88	-9.96/-2.19	-0.04/-2.38	-3.01/-3.99	-5.07/-4.13	-2.29/-1.44	0.91/-2.41	-7.61/-9.64	-8.17/-1.38
Θ(75°)	1.431.79	-0.02/-0.05	1.69/-1.68	0.21/-2.41	-4.45/-5.48	-5.26/-4.8	-4.28/-5.49	-6.01/-7.86	-13.23/-6.12	-3.78/0.15	0.9/-0.88	0.01/-1.45	2.36/0.23	-2.67/0.91	2.09/-2.36	-6.16/-4.99	-8.94/-5.3	-0.6/-2.57	-3.08/-2.45	-4.1/-4.28	-2.20/-7.7	-1.34/-4.84	-11.99/-10.86	-7.13/-0.47
Θ(82.5°)	0.85/0.53	-1.48/-1.3	1.47/-1.32	0.02/-3.84	-4.91/-5.58	-5.3/-3.94	-3.39/-5.1	-6.71/-10.05	-11.72/-14.8	-6.87/-5.2	-1.6/-2.87	-3.41/-1.47	-0.44/-4.58	-6.49/-0.53	0.44/-3.33	-4.9/-3.72	-7.72/-10.9	-3.54/-3.68	-2.77/-2.62	-3.3/73	-3.87/-0.5	-4.26/-7.02	-13.83/-12.74	-6.52/-0.83
Θ(90°)	-0.27/-0.45	-2.04/-2.58	-0.63/-0.63	-1.72/-3.8	-4.02/-4.48	-3.98/-2.47	-2.05/-3.53	-5.64/-9.61	-16.4/-10.45	-9.95/-5.41	-4.41/-5.95	-4.75/-6.08	-7.93/-2.11	0/-2.39	-6.12/-5.57	-9.96/-18.1	-8.98/-5.8	-4.23/-3.32	-4.14/-4.82	-5.87/-3.09	-7.64/-7.94	-16.62/-13.33	-9.21/-2.84	
Θ(97.5°)	-1.61/-2.64	-3.85/-4.89	-2.42/-2.18	-4.01/-5.7	-5.33/-4.81	-3.27/-1.51	-1.84/-4.46	-6.33/-12.21	-14.31/-9.85	-13.96/-10.55	-12.24/-10.33	-10.49/-5.57	-2.16/-7.25	-11.38/-4.26	-2.22/-6.42	-12.22/-14.83	-14.82/-18.43	-15.33/-9.91	-5.09/-4.25	-6.3/-7.71	-9.9/-4.01	-8.62/-8.79	-18.68/-15.69	-9.02/-3.4
Θ(105°)	-3.29/-4.4	-5.48/-6.93	-4.35/-4.65	-6.4/-8.63	-6.6/-4.8	-3.29/-2.1	-2.37/-3.45	-7.13/-16.16	-17.12/-12.88	-10.09/-9.57	-13.35/-7.84	-8.42/-6.31	-1.53/-6.68	-16.75/-6.96	-5.9/-8.81	-16.38/-15.01	-11.06/-10.6	-7.23/-3.26	-7.62/-6.81	-16.69/-6.37	-9.27/-11.9	-17.1/-18.75	-9.85/-5.21	
Θ(112.5°)	-4.87/-4.27	-6.87/-6.5	-5.16/-1.3	-7.85/-8.07	-6.55/-4.25	-3.03/-3.32	-2.54/-4.87	-8.89/-12.71	-9.02/-6.53	-7.23/-8.45	-8.57/-3.59	-5.01/-4.87	-2.96/-17.84	-12.78/-10.1	-13.13/-13.71	-17.41/-16.47	-15.84/-8.63	-8.6/-8.32	-4.6/-0.97	-7.94/-9.13	-15.51/-4.46	-7.15/-17.41	-15.06/-18.17	-16.12/-4.55
Θ(120°)	-6.57/-5.22	-7.33/-5.16	-5.76/-6	-8.2/-8.21	-7.18/-5.55	-5.22/-5.04	-3.94/-5.23	-8.31/-10.58	-8.73/-6.9	-8.95/-8.26	-6.56/-2.94	-5.22/-6.17	-6.18/-17.4	-9.39/-7.72	-18.64/-8.85	-10.39/-6.39	-18.69/-8.91	-6.18/-8.35	-5/-1.11	-4.85/-7.89	-17.28/-6.73	-5.56/-18.45	-15.96/-18.74	-18.35/-6.36
Θ(127.5°)	-5.47/-6.24	-6.67/-8.14	-7.04/-6.89	-8.54/-9.49	-10.32/-10.29	-9.54/-7.39	-6.41/-8.13	-8.19/-6.41	-5.29/-6.73	-15.65/-13.57	-10.43/-9.79	-10.81/-13.49	-13.25/-10.58	-9.3/-6.14	-8.8/-10.24	-16.02/-16.35	-16.6/-18.6	-12.14/-16.5	-10.79/-4.99	-7.78/-13.33	-18.47/-7.58	-13.83/-18.49	-14.78/-17.31	-14.39/-8.38
Θ(135°)	-4.42/-5.81	-4.88/-7.02	-7.73/-8.25	-8.93/-10.73	-12.08/-12.29	-10.35/-15.78	-7.22/-7.44	-6.75/-7.72	-9.59/-13.89	-17.79/-17.56	-15.92/-16.79	-14.89/-10.49	-18.11/-14.57	-14.09/-10.31	-9.8/-12.74	-15.71/-12.8	-10.39/-18.76	-19.03/-17.15	-14.58/-15.6	-12.04/-14.83	-13.41/-18.23	-17.79/-18.46	-12.58/-6.67	
Θ(142.5°)	-8.44/-7.81	-6.65/-7.34	-8.59/-8.98	-9.95/-11.38	-13.53/-13.37	-10.88/-8.63	-6.67/-5.48	-6.62/-10.7	-18.27/-19.25	-18.29/-18.84	-16.28/-18.94	-12.51/-15.21	-18.01/-18.13	-15.2/-17.42	-18.99/-17.88	-18.39/-17.85	-15.58/-7.55	-6.38/-10.9	-14.1/-13.58	-14.73/-14.41	-9.21/-13.75	-19.29/-18.45	-17.46/-18.03	-16.95/-10.97
Θ(150°)	-8.35/-8.27	-6.48/-6.21	-6.99/-7.12	-8.13/-9.76	-11.61/-13.85	-14.25/-13.02	-12.3/-13.67	-16.52/-16.49	-15.68/-18.54	-17.97/-18.08	-18.19/-12.57	-14.86/-17.97	-19.07/-11.15	-10.44/-15.78	-17.37/-18.94	-17.53/-16.72	-13.7/-12.45	-14.17/-18.02	-19.01/-16.77	-17.27/-17.07	-12.48/-12.27	-14.51/-13.24	-15.64/-18.39	-17.83/-12.12
Θ(157.5°)	-10.54/-12.44	-12.88/-10.96	-10.47/-11.4	-12/-12.62	-13.84/-15.95	-18.7/-17.13	-14.71/-13.61	-14.85/-17.93	-17.67/-18.85	-16.05/-15.55	-17.23/-18.56	-18.96/-18.54	-18.52/-14.91	-16.99/-17.01	-12.92/-9.73	-9.75/-11.24	-13.76/-16.59	-17.98/-18.71	-18.85/-13.12	-12.78/-17.98	-18.38/-12.78	-14.78/-18.16	-16.32/-16.27	-16.72/-12.83
Θ(165°)	-13.81/-13.33	-13.32/-14.17	-14.72/-15.26	-16.35/-16.88	-18.76/-18.08	-18.36/-17.85	-17.34/-14.21	-12.33/-11.89	-12.72/-14.76	-18.94/-18.74	-17.47/-17.76	-16.07/-13.29	-11.98/-10.08	-9.21/-9.38	-12.47/-11.33	-18.49/-15.65	-15.07/-15.76	-18.16/-18.62	-16.34/-17.4	-11.59/-8.46	-7.89/-9.03	-10.95/-11.17	-11.85/-12.38	
Θ(172.5°)	-10.7/-10.46	-10.07/-10.98	-14.15/-17.29	-18.54/-19.38	-18.76/-17.88	-17.92/-19.3	-16.22/-14.33	-14.47/-16.2	-18.69/-18.31	-18.08/-19.03	-17.86/-18.5	-17.07/-15.18	-13.96/-13.13	-13.18/-14.51	-16.84/-19.2	-17.56/-18.49	-16.11/-17.11	-17.75/-18.13	-19.24/-18.7	-18.33/-18.06	-13.96/-11.5	-10.96/-11.31	-12.06/-11.38	-10.91/-11.42
Θ(180°)	-17.61/-17.66	-17.53/-18.9	-18.4/-18.47	-18.63/-18.99	-18.3/-17.65	-18.32/-18.11	-17.65/-18	-18.77/-18.43	-18.01/-16.04	-14.82/-14.3	-14.48/-14.91	-14.91/-15.27	-14.98/-14.69	-14.05/-14.32	-14.57/-15.2	-15.62/-16.25	-17.16/-18.28	-18.17/-18.54	-19.12/-19.04	-18.09/-18.35	-18.65/-17.23	-16.24/-16.45	-17.93/-18.46	-17.55/-19.06
Freq(Hz)	5.785GPol	Phi/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°)	-10.49/-10.86	-14.31/-18.92	-18.45/-18.53	-18.02/-18.63	-13.25/-11.88	-10.81/-8.91	-7.47/-6.16	-5.09/-4.21	-3.75/-3.53	-3.67/-4.1	-4.46/-4.78	-5.37/-6.57	-8.09/-10.34	-12.72/-13.97	-14.18/-15.24	-13.7/-11.38	-9.88/-9.31	-8.56/-7.05	-6.21/-6.09	-5.69/-4.62	-4.54/-5.47	-6.31/-6.49	-6.87/-7.76	-9.36/-10.39
Θ(7.5°)	-6.02/-8	-10.65/-12.55	-11.13/-10.31	-8.68/-8.23	-7.72/-9.69	-6.34/-6.08	-6.19/-6.45	-6.87/-7.28	-7.9/-9.43	-11.79/-14.07	-16.22/-18.36	-17.55/-18.28	-17.65/-18.02	-18.02/-18.02	-18.57/-18.47	-17.89/-15.08	-12.96/-10.21	-7.09/-5	-3.66/-2.27	-1.28/-1.13	-1.16/-1.17	-1.42/-2.17	-3.23/-4.7	
Θ(15°)	-7.57/-9.64	-9.92/-8.02	-6.68/-6.19	-5.92/-6.2	-6.95/-7.74																			



Radiated Composite Gain Data of 2.4GHz/5GHz

Appendix A.1

Θ(7.5°)	-6.06/-5.78	-5.89/-6.43	-6.75/-7.45	-8.39/-9.03	-8.59/-7.28	-6.12/-5.41	-5.32/-5.44	-4.81/-3.47	-2.33/-2.35	-3.57/-4.63	-4.45/-4.03	-4.49/-5.57	-6.28/-6.45	-6.62/-6.79	-7.06/-7.59	-8.39/-8.73	-8.03/-6.74	-5.77/-5.47	-5.6/-5.66	-5.54/-5.96	-7.28/-7.76	-6.84/-6.09	-6.07/-6.54	-7.24/-6.79
Θ(15°)	-13.91/-11.92	-11.51/-11.84	-12.05/-12.61	-13.42/-11.84	-8.82/-5.83	-3.79/-2.49	-1.84/-1.69	-1.76/-1.91	-2.2/-3.06	4.81/-7.2	-9.39/-10.61	-11.07/-11.52	-11.23/-10.13	-8.37/-7.16	-6.39/-6.38	-7.18/-8.73	-11.16/-12.73	-11.12/-9.29	-8.17/-7.47	-6.26/-5.65	-6.03/-7.02	-7.79/-8.43	-9.87/-12.44	-16.99/-17.03
Θ(22.5°)	-13.13/-12.6	-14.93/-18.38	-19.01/-14.47	-11.06/-14.7	-4.94/-3.23	-2.14/-1.56	-1.37/-1.62	-2.05/-2.44	-2.56/-2.82	-3.89/-5.24	-7.18/-9.49	-11.72/-15.15	-17.34/-14.09	-10.68/-8.42	-6.91/-6.06	-5.45/-5.18	-6.75/-7.45	-10/-13.07	-14.38/-12.18	-9.6/-8.84	-6.08/-8.26	-6.88/-5.91	-6.62/-6.05	-8.46/-12.01
Θ(30°)	-12.25/-11.84	-13.03/-18.29	-18.41/-14.3	-8.59/-6.02	-5.26/-4.59	-3.68/-2.57	-2.4/-3.2	-4.26/-4.42	-3.68/-2.74	-2.56/-3.52	-5.74/-8.48	-10.68/-13.82	-16.71/-14.31	-10.42/-9.72	-9.38/-8.97	-7.99/-5.91	-4.13/-4.42	-6.48/-10.33	-15.07/-17.83	-17.82/-17.37	-12.77/-7.5	-5.49/-4.57	-4.25/-4.87	-6.79/-9.77
Θ(37.5°)	-15.4/-13.46	-12.53/-11.37	-18.05/-18.61	-10.91/-8.25	-7.04/-6.64	-5.09/-3.39	-3.36/-4.56	-5.51/-5.15	-4.01/-3.27	-4.18/-6.85	-11.78/-14.78	-13.51/-18.11	-17.69/-10.31	-7/-7.11	-8.63/-11.14	-17.04/-7.12	-4.02/-5.22	-9.6/-15.62	-17.75/-18.11	-18.05/-13.92	-7.63/-4.28	-2.71/-2.62	-3.73/-6.27	-9.1/-11.54
Θ(45°)	-18.15/-17.36	-13.91/-14.32	-10.46/-17.46	-18.63/-11.73	-8.28/-8.55	-6.34/-5.9	-4.51/-5.17	-5.27/-5.31	-5.51/-5.34	-6.32/-12.61	-17.89/-11.17	-10.12/-18.12	-16.22/-10.6	-7.37/-8.29	-9.11/-11.42	-18.66/-5.55	-3.01/-4.64	-11.56/-17.96	-17.95/-17.86	-12.79/-8.9	-6.81/-4.16	-2.57/-2.31	-3.27/-5.45	-9.66/-15.54
Θ(52.5°)	-16.91/-18.5	-17.51/-11.86	-9.06/-12.18	-17.35/-13.04	-10.88/-10.7	-7.11/-5.68	-6.46/-6.1	-5.56/-6.55	-7.45/-7.7	-9.26/-10.8	-8.66/-8.66	-10.37/-11.4	-8.49/-11.12	-11.58/-10.77	-8.34/-11.03	-15.54/-7.11	-4.05/-6.61	-16.39/-17.97	-17.37/-18.77	-16.69/-11.11	-7.73/-5.98	-5.33/-4.89	-4.54/-5.51	-7.38/-11.96
Θ(60°)	-14.2/-14.94	-17.38/-16.25	-9.8/-10.3	-16.27/-13.28	-10.68/-9.89	-10.06/-9.13	-12.31/-8.84	-5.94/-6.52	-9.7/-10.8	-11.11/-8.54	-5.15/-6.17	-10.65/-11.44	-8.33/-9.23	-17.76/-15.92	-9.26/-8.81	-11.77/-9.63	-6.1/-9.21	-18.23/-17.54	-18.29/-18.92	-18.96/-15.37	-15.03/-11.3	-9.62/-4.97	-7.86/-7.48	-8.24/-13.25
Θ(67.5°)	-12.51/-12.34	-16.98/-17.8	-10.36/-8.97	-12.24/-13.05	-10.5/-12.91	-12.53/-11.09	-18.39/-14.7	-9.43/-9.22	-12.46/-15.1	-12.45/-8.97	-7.24/-8.74	-11.23/-10.07	-8.89/-11.69	-18.31/-16.85	-11.87/-9.45	-12.12/-11.92	-7.41/-12.1	-18.49/-14.93	-16.08/-18.32	-17.69/-17.51	-18.93/-18.56	-13.77/-12.57	-10.81/-9.61	-10.63/-13.95
Θ(75°)	-14.5/-14.07	-17.45/-17.68	-12.56/-9.46	-11.9/-15.69	-11.17/-13.11	-13.89/-13.08	-17.29/-17.25	-10.68/-9.69	-13.01/-18.21	-15.3/-8.59	-7.99/-9.42	-14.75/-12.42	-11.89/-14.85	-18.94/-16.63	-17.47/-12.61	-13.1/-11.33	-6.95/-11	-18.04/-11.09	-10.92/-14.96	-18.26/-16.36	-15.83/-17.6	-17.6/-13.76	-10.49/-11.83	-13.49/-18.3
Θ(82.5°)	-18.44/-18.56	-18.18/-19.02	-14.92/-10.98	-13.58/-18.12	-11.88/-13.01	-15.21/-15.81	-17.49/-17.92	-11.47/-10.98	-15.36/-19.05	-16.08/-9.24	-8.11/-10.86	-15.11/-12.19	-13.56/-18.92	-17.47/-16.53	-16.3/-12.27	-16.82/-14.92	-8.98/-14.34	-15.05/-12.06	-12.74/-14.28	-18.17/-14.19	-15.23/-18.42	-15.73/-12.94	-10.58/-11.24	-14.6/-17.71
Θ(90°)	-18.34/-17.45	-18.14/-18.9	-18.82/-14.1	-13.38/-16.75	-14.77/-14.39	-18.83/-17.68	-18.21/-18.11	-16.68/-14.69	-19.23/-19.02	-15.22/-10.57	-9.96/-12.54	-15.75/-14.23	-13.71/-18.57	-18.27/-17.81	-17.28/-13.49	-15.68/-18.79	-11.38/-16.45	-15.73/-11.91	-15.02/-16.08	-18.09/-13.97	-12.65/-15.92	-10.88/-13.19	-11.92/-11.59	-14.7/-18.76
Θ(97.5°)	-18.88/-17.99	-18.41/-18.3	-16.34/-13.46	-14.2/-18.6	-18.1/-15.13	-17.26/-19.04	-18.38/-18.31	-14.85/-14.16	-17.92/-18.14	-16.98/-10.56	-10.35/-15.93	-18.51/-15.66	-17.05/-17.83	-18.9/-18.79	-17.58/-13	-18.25/-18.26	-14.93/-17.4	-15.52/-12.17	-18.83/-16.77	-17.48/-14	-12.71/-16.7	-16.54/-13.96	-14.33/-13.97	-13.88/-16.83
Θ(105°)	-18.7/-10.5	-18.1/-18.57	-18.46/-15.95	-14.67/-17.85	-19.05/-16.44	-16.01/-19.01	-17.72/-18.27	-16.49/-13.92	-17.15/-18.78	-19.13/-12.55	-11.65/-16.93	-17.37/-15.64	-17.82/-18.02	-18.61/-18.64	-18.67/-15.89	-17.65/-18.16	-18.14/-14.65	-15.77/-12.95	-16.93/-17.47	-17.97/-17.47	-18.97/-16.94	-16.64/-15.75	-14.54/-17.73	-14.54/-17.73
Θ(112.5°)	-18.2/-18.16	-18.86/-10.83	-18.79/-16.27	-14.45/-16.4	-18.31/-18.93	-17.23/-16.36	-16.39/-18.81	-18.63/-15.07	-16.29/-17.19	-16.3/-13.85	-14.23/-18.07	-16.46/-13.02	-15.27/-18.39	-18.2/-18.49	-17.17/-16.9	-18.69/-19.14	-15.06/-13.45	-17.71/-13.87	-18.56/-16.98	-18.44/-17.9	-17.77/-17.66	-18.17/-16.37	-15.05/-14.2	-13.43/-15.7
Θ(120°)	-17.66/-15.38	-17.33/-17.72	-17.74/-16.41	-17.67/-18.32	-17.51/-19.29	-17.77/-15.55	-14.63/-17.23	-17.99/-15.76	-13.69/-11.19	-12.24/-12.82	-16.37/-17.41	-12.84/-10.82	-13.69/-18.68	-17.2/-18.23	-18.97/-18.31	-18.76/-16.5	-18.49/-16.71	-18.65/-11.76	-14.44/-17.19	-17.07/-18.95	-17.84/-18.95	-17.67/-13.55	-15.99/-17.54	-17.84/-18.34
Θ(127.5°)	-17.05/-16.3	-17.19/-18.12	-17.51/-15.45	-16.25/-17.9	-18.74/-17.05	-18.48/-17.58	-16.07/-18.7	-16.42/-15.42	-11.64/-10.85	-9.84/-10.5	-12.88/-14.64	-12.54/-10.02	-16.09/-18.52	-17.94/-16.83	-18.79/-18.5	-18.88/-14.51	-16.64/-18.14	-12.34/-11.53	-16.53/-17.68	-16.08/-17.74	-16.15/-19.22	-18.82/-14.2	-18.64/-18.3	-18.53/-17.7
Θ(135°)	-16.01/-11.48	-11.48/-18.16	-17.64/-18.13	-18.21/-18.38	-17.17/-18.05	-18.9/-15.3	-15.4/-13.93	-15.41/-16.57	-18.74/-11.01	-12.33/-12.64	-14.84/-15.3	-18.48/-15.3	-18.07/-16.63	-15.4/-18.54	-18.99/-14.63	-17.16/-18.72	-14.22/-13.45	-19.14/-18.4	-17.86/-18.65	-15.75/-17.69	-19.14/-18.4	-18.71/-17.18	-16.43/-18.85	-18.41/-19.33
Θ(142.5°)	-12.63/-17.82	-19.45/-18.05	-16.59/-13.67	-13.43/-16.33	-17.9/-18.47	-17.92/-18.47	-16.63/-16.15	-16.81/-18.85	-18.34/-18.88	-18.91/-18.67	-15.1/-13.74	-12.78/-14.04	-17.78/-18.7	-17.66/-18.17	-18.43/-17.53	-18.81/-18.82	-17.96/-18.6	-17.76/-19.02	-17.86/-17.22	-18.98/-18.55	-19.06/-19.07	-18.65/-17.84	-15.93/-18.14	-16.99/-13.35
Θ(150°)	-17.75/-15.29	-17.81/-18.29	-17.09/-19.17	-17.08/-18.57	-17.77/-18.33	-17.85/-17.44	-17.68/-14.4	-12.43/-12.3	-14.21/-16.83	-16.6/-16.78	-18.3/-17.82	-18.39/-15.96	-12.13/-11.82	-15.23/-17.25	-18.16/-17.99	-14.39/-13.89	-18.71/-18.74	-18.58/-18.27	-18.95/-18.72	-17.3/-18.4	-18.68/-15.81	-11.17/-10.06	-10.92/-16.29	-18.82/-18.33
Θ(157.5°)	-18.44/-17.83	-17.98/-17.76	-18.57/-17.72	-18.15/-18.99	-19.33/-19.02	-18.58/-19.19	-18.57/-13.77	-18.91/-18.53	-16.63/-14.3	-14.17/-19.14	-18.42/-18.54	-13.15/-17.2	-14.29/-14.65	-16.91/-17.71	-17.34/-18.06	-18.96/-17.86	-18.18/-17.95	-18.64/-17.72	-18.59/-18.4	-17.92/-16.55	-12.83/-12.07	-13.6/-16.7	-17.8/-17.9	-17.8/-17.9
Θ(165°)	-11.16/-11.12	-13.17/-17.38	-17.89/-19.21	-17.82/-18.33	-18.39/-18.83	-16.98/-16.51	-17.31/-17.99	-17.37/-17.44	-18.03/-17.32	-19.07/-18.51	-18.44/-17.36	-13.89/-10.47	-9.57/-11.03	-13.9/-16.87	-18.86/-18.71	-18.1/-18.39	-17.02/-15.14	-16.02/-18.41	-19.3/-18.16	-18.15/-17.88	-17.82/-17.21	-17.06/-16.99	-17.91/-16.73	-13.46/-11.8
Θ(172.5°)	-10.61/-11.9	-13.47/-16.52	-17.53/-17.6	-17.98/-18.65	-18.46/-19.12	-17.75/-17.56	-17.99/-16.59	-14.71/-13.94	-14.43/-16.36	-17.8/-17.37	-18.11/-17.77	-17.28/-17.18	-18.04/-18.01	-18.48/-18.84	-17.87/-18.67	-18.5/-18.74	-19.2/-19.33	-18.33/-18.13	-18.99/-19.32	-17.81/-18.64	-19.04/-17.6	-13.76/-12.58	-12.42/-11.47	-9.97/-9.85
Θ(180°)	-14.76/-16.38	-17.73/-18.47	-18.38/-17.95	-18.54/-18.38	-18.69/-18.63	-18.7/-18.47	-17.23/-18.29	-18.08/-18.11	-18.74/-18.81	-18.06/-17.95	-15.8/-16.9	-18.68/-17.69	-18.4/-18.44	-17.57/-17.16	-19.21/-17.62	-18.47/-18.49	-18.36/-18.45	-18.26/-18.07	-17.24/-18.4	-16.9/-16.32	-16.39/-15.59	-13.73/-13.28	-14.17/-14.35	-13.5/-13.69
Freq(Hz)	5.3GPol	PhiAnt.3	+	-	-	-	-	-	-	-	-	-	-	-	-	-	+	+	+	+	+	+	+	+
Gain	Φ(0°)Φ(7.5°)	Φ(15°)Φ(22.5°)	Φ(30°)Φ(37.5°)	Φ(45°)Φ(52.5°)	Φ(60°)Φ(67.5°)	Φ(75°)Φ(82.5°)	Φ(90°)Φ(97.5°)	Φ(105°)Φ(112.5°)	Φ(120°)Φ(127.5°)	Φ(135°)Φ(142.5°)	Φ(150°)Φ(157.5°)	Φ(165°)Φ(172.5°)	Φ(180°)Φ(187.5°)	Φ(195°)Φ(202.5°)	Φ(210°)Φ(217.5°)	Φ(225°)Φ(232.5°)	Φ(240°)Φ(247.5°)	Φ(255°)Φ(262.5°)	Φ(270°)Φ(277.5°)	Φ(285°)Φ(292.5°)	Φ(300°)Φ(307.5°)	Φ(315°)Φ(322.5°)	Φ(330°)Φ(337.5°)	Φ(345°)Φ(352.5°)
Θ(0°)	-6.56/-6.54	6.2/-5.3	-6.64/-6.5	-5.29/-5.36	-5.7/-5.88	-5.85/-5.81	-5.66/-5.5	-5.61/-6.7	-6.66/-6.68	-6.34/-16.2	6.2/-6.15	-6.94/-7.47	-7.51/-0.77	-7.03/-6.88	-6.68/-6.28	-5.9/-4.53	-5.08/-5.33	-6.08/-7.25	8.2/-8.56	-8.76/-9.42	-10.73/-11.4	-10.26/-8.96	-8.24/-7.6	-7.34/-6.97
Θ(7.5°)	-6.74/-7.16	-6.72/-6.33	-5.69/-5.23	-4.97/-5.16	-5.78/-6.37	-7.09/-8.46	-6.03/-14.44	-18.35/-17.58	-15.82/-15.3	-11.97/-9.34	-6.01/-6.82	-6/-5.5	-5.38/-5.42	-5.75/-6.06	-6.46/-6.14	-6.46/-6.15	-6.02/-6	-5.85/-7.89	-6.86/-6.55	-5.47/-6.19	-6.54/-6.15	-6.42/-7.21	-7.74/-8.01	-7.47/-8.01
Θ(15°)	-8.62/-7.87	-6.81/-5.67	-4.51/-3.55	-2.72/-2.23	-2.14/-2.34	-2.99/-4.12	-6/-8.26	-9.21/-8.56	-7.69/-7.22	-6.42/-5.54	-5.06/-4.84	-4.25/-3.74	-3.64/-4.04	-4.51/-4.5	-3.91/-2.92	-1.67/-0.56	0.21/-0.55	0.47/-0.05	-0.92/-2.09	-3.58/-4.54	-7.97/-10.93	-12.62/-10.63	-8.64/-8.37	-8.74/-9.12
Θ(22.5°)	-3.75/-3.47	-2.61/-7.3	-1.24/-0.61	-0.11/-0.04	-0.03/-0.46	-1.03/-1.96	-3.7/-5.99	-8.09/-8.48	-10.9/-11.69	-9.92/-7.55	-6.12/-5.31	-4.39/-3.38	-3.27/-3.92	-4.42/-3.95	-3.1/-2.32	-1.36/-0.29	0.81/-1.57	1.95/-1.91	1.33/-0.25	-1.17/-2.42	-2.97/-2.85	-2.27/-1.5	-1.05/-1.14	-1.97/-3.29
Θ(30°)	-0.11/-0.08	0.47/-1.26	1.53/-3.77	0.71/-0.01	0.33/-0.7	0.78/-0.22	1.91/-3.67	-5.14/-5.99	-6.25/-6.95	-8.73/-9.13	-7.26/-6.68	-7.09/-5.98	-4.81/-4.88	-5.45/-5.7	-5.44/-4.71	-3.6/-2.06	-0.04/-0.26	3.33/-15	1.78/-0.04	-0.86/-0.85	-1.4/-2.18	-0.86/-1.24	2.48/-2.61	1.91/-8.03
Θ(37.5°)	0.96/-1.62	2.37/-3.08	3.27/-2.51	0.82/-0.41	1.44/-2.21	2.11/-0.9	-0.3/-1.5	-1.93/-1.7	-1.41/-8.12	-3.05/-3.99	-3.45/-2.52	-3.27/-5.63	-7.29/-6.42	-6.15/-6.53	-5.78/-4.85	-5.1/-3.7	0.02/-3.13	4.13/-3.32	1.66/-1.33	2.45/-3.11	2.42/-0.48	-0.91/-0.31	1.88/-2.44	2.05/-1.23
Θ(45°)	0.71/-1.97	2.72/-3.17	3.69/-3.21	1.81/-58	2.66/-53	2.96/-153	0.02/-0.98	-1.19/-8.04	-0.77/-1.32	-2.63/-3.47	-2.37/-1	-0.65/-1.31	-3.13/-5.4	-5.74/-5.77	-4.61/-3.61	-4.55/-4.52	0.46/-6.38	4.523.94	3.12/-8.41	4.15/-11	2.95/-7.08	-1.69/-1.67	-0.4/-0.02	0.11/-0.07
Θ(																								



Radiated Composite Gain Data of 2.4GHz/5GHz

Appendix A.1

Θ(52.5°)	-11.01/-9.37	-10.53/-11.29	-10.71/-12.16	-13.78/-12.17	-13.54/-8.52	-7.52/-10.65	-18.49/-18.14	-11.33/-7.17	-7.85/-12.01	-13.71/-11.34	-7.92/-7.12	-8.69/-10.51	-11.35/-8.42	-8.1/-8.64	-8.18/-11.62	-8.1/-6.69	-8.64/-6.52	-5.26/-7.66	-10.71/-14.32	-18.29/-18.16	-11.55/-7.04	-4.98/-5.94	-8.76/-14.26	-16.56/-14.97
Θ(60°)	-10.21/-7.9	-7.68/-8.93	-12.65/-17.9	-10.89/-8.59	-9.88/-9.25	-7.98/-11.11	-17.68/-17.41	-12.69/-7.9	-8.12/-12.44	-17.24/-14.24	-9.22/-7.43	-9.1/-17.37	-13.76/-9.22	-12.2/-13.61	-11.64/-14.38	-10.29/-7.84	-10.88/-9.81	-7.11/-10.57	-11.72/-12.12	-17.63/-14.9	-15.39/-11.36	-8.74/-9.75	-11.39/-13.12	-16.36/-15.23
Θ(67.5°)	-10.57/-8.52	-8.68/-10.58	-16.03/-19.15	-10.42/-8.6	-9.52/-12.1	-10.75/-13.49	-19.26/-18.88	-13.72/-10.36	-11.37/-15.98	-18.86/-14.51	-8.3/-7.44	-10.07/-18.41	-13.41/-10.74	-18.4/-16.04	-11.12/-15.36	-12.78/-9.56	-13.29/-10.77	-8/-14.78	-11.52/-9.06	-18.5/-11.52	-15.44/-18.41	-14.52/-14.31	-14.77/-15.38	-17.86/-16.02
Θ(75°)	-12.55/-11.44	-13.58/-15.37	-17.98/-18.12	-13.82/-10.79	-11.81/-15.51	-13.08/-13.8	-19.2/-17.97	-14.66/-11.69	-14.07/-18.32	-16.19/-13.64	-10.46/-7.79	-11.76/-17.78	-18.21/-16.16	-17.69/-12.34	-9.38/-15.3	-15.2/-11.89	-16.96/-13.9	-8.72/-17	-10.79/-7.56	-18.38/-11	-11.64/-17.59	-17.73/-16.75	-16.09/-16.46	-18.57/-17.65
Θ(82.5°)	-13.02/-14.05	-17.74/-19.02	-17.69/-18.44	-16.5/-12.4	-12.83/-18.34	-15.2/-15.2	-18.71/-17.63	-18.38/-16.44	-18.1/-18.52	-15.18/-13.55	-11.9/-2	-14.72/-18.03	-17.99/-17.29	-18.88/-10.06	-10.62/-15.92	-17.45/-16.04	-19.02/-13.14	-9.26/-18.13	-9.6/-6.71	-18.52/-10.75	-11.25/-18.95	-18.92/-17.66	-16.16/-14.69	-16.63/-18.76
Θ(90°)	-14.74/-16.67	-18.16/-18.6	-18.48/-18.85	-18.63/-13.53	-12.71/-17.76	-17.85/-17.9	-18.29/-17.84	-19.19/-18.27	-17.99/-15.75	-14.44/-16.97	-12.72/-10.05	-13.71/-17.88	-18.57/-17.87	-17.03/-12.05	-13.99/-18.79	-17.34/-17.25	-17.7/-17.87	-12.49/-16.1	-12.88/-7.39	-15.58/-12.41	-11.5/-18.03	-18.05/-17.49	-17.07/-16.07	-13.61/-18
Θ(97.5°)	-13.77/-17.92	-17.75/-17.93	-17.42/-18.15	-18.58/-18.25	-15.74/-17.66	-17.94/-15.12	-17.7/-17.93	-17.52/-17.58	-15.02/-13.6	-13.67/-16.36	-14.44/-13.28	-18.2/-18.26	-18.47/-18.83	-18.23/-15.51	-15.06/-16.41	-18.61/-17.42	-18.19/-17.63	-15.15/-14.33	-16.77/-10.67	-18.92/-18.53	-15.35/-18.48	-17.76/-18.42	-16.87/-15.15	-11.89/-19.1
Θ(105°)	-19.29/-19.28	-18.67/-18.7	-18.64/-18.2	-18.95/-18.83	-18.1/-18.12	-17.68/-14.32	-18.38/-18.73	-18.65/-18	-15.14/-12.15	-12.4/-15.23	-14.69/-14.1	-18.81/-16.37	-13.79/-16.18	-18.28/-16.77	-14.14/-16.85	-18.61/-18.03	-18.22/-18.05	-18.72/-18.35	-19.11/-15.04	-14.86/-18.73	-18.05/-19.12	-17.62/-17.29	-18.08/-16.05	-11.05/-16.04
Θ(112.5°)	-18.59/-18.73	-18.04/-15.74	-16.43/-17.92	-18.45/-19.12	-18.13/-16.61	-18.54/-15.63	-17.78/-18.53	-17.46/-17.91	-17.37/-10.73	-11.06/-12.72	-11.69/-14.37	-19.29/-11.05	-12.21/-18.46	-17.97/-12.95	-14.19/-15.53	-19.11/-15.85	-18.6/-18.89	-17.69/-17.94	-18.17/-14.69	-15.66/-19.28	-18.32/-18.61	-13.56/-15.07	-16.34/-11.7	-11.71/-14.58
Θ(120°)	-18.7/-18.89	-18.53/-15.41	-16.05/-19.03	-18.75/-18.36	-17.37/-17.98	-18.94/-17.25	-18.61/-18.76	-15.84/-18.56	-17.38/-12.81	-11.89/-11.6	-9.81/-10.65	-16.57/-13.08	-11.56/-19	-18.8/-14.15	-13.32/-18.87	-15.81/-12.27	-18.79/-15.22	-18.07/-17.84	-18.28/-17.46	-18.23/-13.41	-18.2/-18.47	-12.15/-11.43	-14.31/-12.49	-11.6/-14.46
Θ(127.5°)	-18.11/-14.69	-16.41/-18.36	-17.68/-18.9	-18.69/-18.64	-18.44/-18.61	-18.03/-17.98	-17.73/-17.9	-14.96/-18.51	-18.66/-19.02	-15.14/-12.27	-12.77/-14.79	-17.18/-17.44	-18.14/-17.91	-18.09/-18.69	-13.76/-14.44	-12.44/-17.64	-19.15/-12.95	-19.18/-18.47	-14.82/-18.99	-18.83/-18.33	-13.85/-18.05	-14.27/-10.08	-15/-15.14	-16.17/-17.94
Θ(135°)	-16.48/-16.6	-14.38/-16.35	-18.29/-18.14	-18.56/-17.85	-19.03/-18.84	-18.56/-18.38	-16.78/-16.79	-15.23/-18.27	-17.91/-18.4	-18.48/-17.76	-16.58/-17.38	-16.58/-18.38	-15.84/-18.93	-17.45/-17.99	-15.29/-15.22	-15.79/-18.38	-18.21/-14.23	-17.11/-18.94	-15.73/-16.42	-18.34/-18.05	-12.94/-18.28	-13.86/-12.57	-13.42/-15.19	-18.82/-17.28
Θ(142.5°)	-15.39/-12.1	-13.63/-13.32	-14.94/-17.83	-17.44/-19.01	-17.38/-18.39	-18.76/-18.63	-18.26/-19.12	-17.42/-17.06	-16.45/-14.21	-13.51/-14.39	-13.99/-13.52	-15.2/-15.54	-14.18/-12.71	-19/-18.6	-15.77/-14.06	-16.99/-18.9	-17.02/-18.49	-17.95/-17.96	-17.8/-18.67	-18.32/-18.03	-17.96/-17.92	-17.88/-13.9	-14.29/-17.61	-18.23/-19.1
Θ(150°)	-12.9/-19.1	-17.91/-19.12	-15.09/-16.46	-18.14/-17.45	-19.02/-19.15	-18.15/-17.97	-18.41/-19.15	-18.44/-18.26	-18.66/-18.12	-16.42/-15.19	-15.2/-15.13	-15.8/-12.71	-13.21/-11.76	-13.67/-18.32	-18.39/-15.26	-18.44/-17.98	-18.81/-18.39	-17.46/-17.46	-18.92/-17.55	-19.36/-16.49	-18.47/-17.89	-17.58/-18.54	-18.27/-13.8	
Θ(157.5°)	-16.31/-16.52	-17.69/-18.18	-18/-18.35	-18.89/-17.82	-18.58/-17.64	-18.81/-18.85	-18.08/-18.23	-19.16/-19.06	-17.93/-16.8	-15.09/-15.84	-14.74/-13.91	-14.95/-18.49	-18.89/-16.49	-15.98/-14.22	-17.78/-18.39	-18.21/-18.9	-17.97/-16.85	-18.15/-18.23	-18.61/-19.42	-19.41/-18.67	-18.56/-18.85	-18.41/-17.85	-18.38/-18.01	
Θ(165°)	-18.85/-18.82	-17.74/-14.46	-14.96/-16.6	-17.71/-18.32	-17.84/-18.58	-17.68/-19.02	-18.57/-18.55	-18.68/-18.19	-18.73/-15.81	-16.47/-18.81	-17.9/-17.28	-16.25/-18.24	-19.09/-18.44	-16.55/-18.43	-17.43/-18.72	-17.84/-18.9	-18.15/-18.15	-18.19/-18.12	-18.95/-17.74	-16.33/-16.27	-17.67/-18.38	-17.95/-18.88	-17.63/-15.02	-15.15/-16.7
Θ(172.5°)	-18.76/-19.21	-16.52/-14.16	-14.23/-14.79	-15.84/-17.51	-18.37/-17.91	-17.65/-18.73	-18.3/-18.72	-18.29/-18.75	-17.95/-18.32	-18.68/-17.44	-15.94/-14.35	-14.91/-16.71	-17.9/-18.37	-19.23/-17.08	-15.76/-15.79	-17.11/-18.05	-19.24/-17.93	-18.36/-18.42	-17.9/-18.92	-19.28/-17.73	-18.1/-18.14	-18.5/-15.89	-14.25/-18.82	-15.87/-16.45
Θ(180°)	-18.76/-17.76	-18.42/-18.23	-18.85/-18.76	-18.13/-19.35	-18.62/-17.86	-18.11/-18	-18.66/-18.02	-17.52/-18.52	-18.17/-17.85	-18.34/-17.66	-18.47/-18.83	-17.87/-17.44	-17.77/-19.27	-16.51/-15.13	-14.93/-15.14	-16.42/-17.63	-18.59/-18.03	-18.85/-18.82	-18.37/-17.64	-18.56/-18.05	-18.65/-17.14	-18.49/-18.48	-18.65/-18.15	-18.61/-17.42
Freq(Hz)	5.785GPol.	Phi/Ant. 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
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°)	-4.25/-3.54	-3.15/-3.35	-3.58/-3.31	-3.18/-3.44	-3.82/-4.06	-4.31/-5.27	-6.45/-7.77	-9.13/-10.55	-12.52/-13.55	-12.46/-9.71	-7.48/-6.12	-5.53/-5.1	-4.39/-3.67	-3.24/-3.07	-3.23/-3.57	-3.97/-4.13	-4.53/-5.51	-7.63/-10.94	-14.16/-16.81	-18.76/-17.68	-18.76/-13.87	-10.85/-8.18	-6.79/-6.39	-5.79/-5.01
Θ(7.5°)	-3.01/-2.97	-2.91/-2.97	-3.41/-3.78	-4.2/-5	-6/-7.21	-8.78/-10.9	-13.91/-17.52	-18.49/-17.36	-14.44/-13.43	-11.94/-9.3	-7.6/-6.69	-6.44/-6.46	-6.14/-5.79	-5.41/-5.09	-4.75/-4.3	-4.02/-3.71	-3.33/-3.33	-3.8/-4.57	-5.39/-5.83	-6.19/-7.67	-9.39/-9.47	-8.84/-7.9	-6.54/-5.29	-4.38/-3.53
Θ(15°)	-3.79/-3	-2.41/-2.28	-2.73/-3.06	-3.59/-4.48	-5.57/-6.68	-7.39/-9.75	-11.07/-10.79	-10.59/-11.68	-14.26/-15.64	-14.84/-13.66	-12.07/-9.95	-8.92/-9.21	-9.54/-9.95	-9.72/-9.1	-7.82/-6.5	-5.57/-5.13	-4.89/-5.18	-5.69/-6.26	-7.13/-8	-9.75/-12.89	-17.01/-16.01	-12.59/-10.69	-9.25/-7.89	-6.24/-4.76
Θ(22.5°)	-4.42/-2.7	-1.44/-1.24	-1.49/-2.17	-3.61/-5.39	-6.4/-6.33	-6.31/-6.38	-6.55/-6.55	-6.64/-6.49	-6.07/-5.85	-6.8/-6.52	-6.88/-9.5	-8.75/-8.31	-7.68/-7.33	-7.38/-7.27	-5.93/-4.05	-3.15/-2.89	-2.5/-2.03	-1.61/-1.08	-0.76/-0.46	-0.8/-1.72	-3.25/-4.89	-6.72/-9.87	-13.66/-12.79	-9.57/-6.68
Θ(30°)	-1.05/-0.76	-0.92/-1.46	-2.3/-3.34	-3.32/-1.95	-1.24/-0.94	-1.15/-2.25	-3.82/-5.05	-5.09/-3.97	-2.89/-2.7	-2.86/-3.15	-3.72/-3.59	-3.03/-3.12	-3.52/-3.33	-2.54/-2.07	-1.98/-1.92	-1.81/-1.55	-1.12/-0.9	0/1.16	1.340/4.7	-1.58/-4.25	-5.45/-3.98	-2.22/-1.44	-1.62/-2.4	-2.83/-2.05
Θ(37.5°)	0.990/4.74	0.23/-1.76	-2.86/-2.3	-0.470/8.2	1.64/-1.72	0.7/-0.58	-1.95/-3.41	-4.59/-4.12	-2.49/-1.34	-1.82/-3.1	-2.84/-2.41	-1.71/-0.58	-0.21/-0.35	-0.13/-0.06	-0.28/-0.63	-0.88/-0.6	-0.31/-0.76	0.01/-1.54	2.24/-1.77	-0.19/-2.62	-3.86/-2.72	-0.490/5.3	0.250/-0.1	-0.050/4
Θ(45°)	0.810/9.7	0.38/-0.53	-1.27/-1	-0.080/7.8	1.170/8.4	0.860/9.8	0.51/-0.55	-1.81/-2.4	-1.230/1.3	0.11/-1.11	2.5/-2.52	-1.75/-0.1	0.840/5	-0.030/0.2	-0.29/-0.55	-1.07/-0.18	0.110/-0.73	-0.352/3.4	3.532/8.2	1.330/6.2	0.18/-0.15	0.84/-1.46	0.32/-0.45	-0.52/-0.2
Θ(52.5°)	-0.09/0.76	0.91/0.66	0.24/-0.25	-0.85/-0.46	-0.030/8.9	1.44/-1.23	0.47/-0.41	-0.81/-0.76	-0.260/7	1.310/9.5	-0.34/-1.03	0.020/4.9	0.710/5.2	0.11/-0.2	-0.68/-1.36	-1.22/-0.23	-0.56/-2.32	-1.69/-1.05	2.02/-1.56	0.88/-1.34	1.160/3.5	0.460/3.5	-1.22/-2.07	-1.35/-0.82
Θ(60°)	-0.39/-0.42	0.88/-1.93	1.610/0.4	-1.91/-1.43	-0.190/4.9	0.910/9	0.33/-0.25	-0.020/2.2	0.020/9	2.18/-1.57	0.310/-9	1.260/6.6	1.09/-1.06	-0.83/-1.78	-1.32/-0.84	0.540/-17	-0.82/-8.23	-3.2/-1.46	-1.56/-3.43	-4.12/-1.77	-0.56/-1.29	-1.2/-1.16	-2.81/-4.08	-1.51/-0.05
Θ(67.5°)	-0.45/-1.24	0.57/-1.8	1.35/-0.32	-2.38/-1.11	0.230/2.8	1.210/9.4	-0.2/-0.32	0.740/6.5	0.140/8.7	1.88/-1.2	0.16/-1.08	1.270/7.8	0.85/-0.57	-2.03/-1.88	-1.35/-0.92	-0.35/-1.03	-2.93/-4.48	-4.6/-2.96	-2.24/-3.17	-2.82/-1.94	-1.76/-4.28	-3.26/-2.68	-3.99/-5.88	-2.2/-0.15
Θ(75°)	-1.34/-2.37	-0.190/9.1	0.64/-0.66	-1.91/-1.06	-0.12/-0.17	0.810/0.4	-1.61/-1.18	0.310/8.2	0.040/0.2	0.730/9.1	-0.470/2.8	1.080/7.6	0.24/-1.67	-3.05/-2.61	-2.71/-7	-0.69/-1.93	-4.62/-4.31	-5.75/-3.69	-0.67/-1.37	-0.46/-1.4	-2.22/-6.21	-6.51/-3.3	-4.58/-7.51	-3.97/-1.17
Θ(82.5°)	-2.6/-2.96	-1.85/-0.35	-0.09/-1.14	-2.63/-1.24	-1.15/-0.38	-0.31/-0.27	-1.43/-1.06	-0.360/0.3	-0.6/-0.43	-0.16/-0.64	-1.36/-0.7	-0.33/-0.41	-1.1/-3.85	-4.52/-4.07	-3.95/-2.79	-2.35/-5.14	-0.01/-5.48	-8.44/-4.52	-1.05/-0.87	0.54/-1.09	-3.21/-8.41	-9.43/-5.59	-6.3/-10.96	-5.92/-2.82
Θ(90°)	-4.37/-4.95	-2.57/-1.53	-1.04/-1.75	-3.77/-1.94	-1.93/-1.42	-1.27/-0.03	-1.56/-1.88	-1.65/-1.52	-0.97/-1.38	-1.48/-1.42	-1.65/-2.48	-1.51/-0.93	-2.47/-5.34	-4.99/-5.43	-6.06/-5.14	-4.08/-7.79	-6.34/-6.24	-10.45/-5.74	-2.61/-2.33	-0.7/-2.84	-4.51/-9.47	-13.67/-5.75	-8.1/-13.33	-8.71/-4.03
Θ(97.5°)	-6.13/-6.7	-3.49/-2.61	-2.18/-3.39	-4.82/-2.64	-2.98/-2.36	-1.																		



12. Test Results

Please refer to the appendix.

Appendix A – Radiated Composite Gain of 2.4GHz/5GHz/6GHz.....	Page 15
Appendix B – Antenna Pattern of 2.4GHz/5GHz/6GHz.....	Page 35
Appendix C – Test Photos.....	Page 46

————THE END————



Freq(Hz)	6.175G	6.475G	6.695G	6.995G
Ant. 1 Max Gain (dBi)	4.66	4.96	4.11	3.69
Ant. 2 Max Gain (dBi)	4.46	4.62	4.32	3.88
Ant. 3 Max Gain (dBi)	3.44	3.97	3.84	4.56
Ant. 1 Polarization/Θ(°)/Φ(°)	Phi/82.5/240	Phi/82.5/232.5	Phi/82.5/232.5	Phi/45/225
Ant. 2 Polarization/Θ(°)/Φ(°)	Phi/52.5/270	Phi/52.5/277.5	Phi/67.5/7.5	Phi/60/7.5
Ant. 3 Polarization/Θ(°)/Φ(°)	Phi/67.5/150	Phi/75/285	Phi/75/285	Phi/82.5/300
Max Gain (dBi)	4.66	4.96	4.32	4.56
DG [1SS] (dBi)	6.25	7.38	7.11	7.05
DG [2SS] (dBi)	4.66	4.96	4.32	4.56
DG [3SS] (dBi)	4.66	4.96	4.32	4.56



Sporton International Inc.



Radiated Composite Gain Data of 6GHz

Appendix A.2

Θ(22.5°)	-3.78/4.31	-5.2/4.17	-2.92/2.44	-2.51/2.26	-2.32/-1.62	-0.29/0.6	0.5/0.33	0.4/-0.47	-2.43/-2.78	-2.38/-2.27	-3.32/-3.37	-2.86/2.04	-1.14/-0.18	0.46/0.88	1.25/1.6	1.76/1.65	1.45/0.79	0.47/0.84	1.45/2.09	2.64/3.11	3.23/3.27	2.76/1.86	0.63/-0.82	-2.18/-3.11
Θ(30°)	1.48/2.15	2.77/2.57	1.29/-0.55	-2.08/-1.49	0.16/1.31	1.97/2.09	2.23/2.14	1.62/0.47	-1.45/-1.54	-0.69/-0.25	0.26/1.6	2.64/3.03	2.83/1.62	0.1/-0.7	-0.02/1.15	1.15/1.01	0.72/0.44	0.85/1.1	1.27/1.55	2.31/2.99	3.48/3.68	3.46/2.84	1.26/-0.69	-1.61/-0.08
Θ(37.5°)	2.27/3.1	2.97/2.17	0.58/-0.82	-1.21/0.07	2.2/3.35	3.12/2.67	2.14/1.18	0.48/0.09	0.83/1.07	-0.39/-0.89	0.06/2.37	3.47/3.31	1.73/0.15	0.36/1.49	2.26/2.51	1.48/1.78	0.54/1.94	2.93/2.71	2.04/2.62	2.76/2.15	1.62/0.9	1.55/0.19	0.81/4	
Θ(45°)	3.67/3.07	1.93/1.73	2.56/3.01	2.8/3.26	4.52/4.67	3.78/3.43	3.39/2.48	1.14/0.42	1.85/3.09	3.22/4.48	1.38/0.89	1.97/2.33	2.51/3.72	4.67/4.76	3.74/2.98	3.26/2.8	0.21/-0.36	0.07/1.68	2.72/1.72	1.66/3.21	2.24/1.36	2.16/3.03	2.99/2.66	2.93/3.51
Θ(52.5°)	4.6/5.32	5.46/5.11	4.81/5.03	4.86/4.78	4.75/4.55	3.51/3.44	3.79/3.68	2.51/2.7	2.33/3.85	5.04/4.59	3.17/2.58	4.41/4.74	5.15/2.7	5.09/4.46	4.51/4.22	3.89/2.94	0.18/0.89	1.18/1.9	2.55/1.93	2.36/2.7	0.44/0.67	2.03/2.22	3.2/3.32	3.67/3.76
Θ(60°)	4.17/6.06	7.04/6.42	5.43/5.96	5.8/5	4.36/4.54	3.34/2.66	2.75/2.04	2.45/0.89	1.7/3.54	5.29/5.03	3.75/2.86	5.01/3.89	2.12/0.63	3.12/3.74	2.26/1.38	-1.38/-0.53	0.71/2.12	2.9/2.57	2.59/1.72	1.23/2.26	2.52/2.2	3/2.56		
Θ(67.5°)	4.09/5.95	7.11/6.5	5.23/5.85	6.22/5.35	5.08/4.49	3.09/2.72	2.94/2.55	2.71/1.71	1.26/3.64	4.84/4.72	4.63/3.85	5.75/5.61	4.74/2.35	2.22/1.4	2.57/3.94	3.01/3.07	2.45/1.66	1.07/3.44	4.03/3.51	3.85/2.57	0.65/0.46	2.01/3.08	3.24/3.75	4.58/4.17
Θ(75°)	4.2/5	5.99/5.87	4.37/4.96	5.94/4.68	4/2.83	3.69/3.21	2.83/0.43	2.97/1.74	0.13/2.72	3.87/4.04	4.7/3.74	4.52/5.76	4.1/3	2.79/2.16	1.46/4	3.89/3.9	4.73/2.99	3.27/5.43	5.46/4.46	3.97/2.6	1.76/1	2.42/3.3	3.66/4.57	4.87/4.09
Θ(82.5°)	4.11/4.25	4.77/4.75	3.54/4.36	4.31/3.57	2.52/2.37	3.16/2.49	1.33/-1.79	-0.25/1.46	0.85/2	2.81/3.65	4.62/3.03	3.16/2.15	2.68/1.7	-0.42/3.67	3.04/4.59	5.24/2.98	4.44/6.34	5.84/4.87	3.19/2.97	2.62/1.68	2.69/3.98	3.6/4.28	4.22/3.57	
Θ(90°)	2.67/2.71	3.68/2.98	2.09/3.12	3.07/2.04	1.49/1.7	0.86/0.8	0.74/-1.14	-2.44/0.11	1.23/-0.1	2.11/2.57	3.77/1.68	2.29/2.05	1.46/1.61	1.45/1.11	-1.67/2.44	1.27/3.73	3.9/1.94	2.75/4.54	4.74/2.54	1.36/2.19	1.81/1.51	2.32/3.22	2.69/3.4	3.42/5.4
Θ(97.5°)	1.71/1.32	2.43/1.28	0.21/1.32	2.16/0.32	0.44/0.83	-1.1/-0.97	-0.61/-1.81	-3.57/-1.31	-0.58/-1.37	-0.23/1.2	1.82/-0.66	0.18/-0.11	0.5/0.18	-0.17/-0.96	-3.79/0.03	-0.89/1.45	0.27/1.11	1.37/1.15	1.69/-1.4	-0.78/-0.73	-1.79/-0.65	1.28/1.97	1.05/2.29	2.71/1.05
Θ(105°)	-0.12/-1.37	0.86/0.55	-1.46/-0.75	1.15/-1.69	-0.41/0.96	-3.13/-2.93	-1.06/-1.96	-3.18/-3.19	-3.6/-3.55	-1.98/-0.53	0.15/-1.27	-2.2/-1.58	0.22/-0.48	-2.12/-1.68	-4.58/-1.44	-1.72/-0.9	-1.85/-2.84	0.38/-0.57	-0.83/-3.67	-1.9/-2.69	-3.67/-3.11	-0.98/0.13	-0.92/0.67	1.47/-0.91
Θ(112.5°)	-1.92/-2.96	-1.37/-0.22	-1.06/-2.4	-2.62/-1.51	-1.15/-1.72	-3.98/-2.2	-1.88/-2.78	-4.35/-8.6	-3.46/-2.86	-1.97/-1.45	-1.91/-0.72	-1.95/-1.36	0.34/-3.39	-2.23/-2.62	-8.01/-2.48	-1.67/-3.68	-2.97/-3.14	-0.28/-0.91	-0.95/-4.58	-1.71/-4.13	-5.76/-6.08	-3.44/-1.49	-2.97/-1.17	-0.8/-1.78
Θ(120°)	-2.92/-2.53	-2.86/-1.58	-1.52/-1.67	-2.53/-4.1	-4.69/-3.7	-3.8/-2.79	-2.88/-4.76	-7.95/-4.85	-2.43/-4.95	-4.26/-4.72	-2.84/-2.68	-3.51/-2.18	-1.93/-5.35	-4.58/-3.5	-6.82/-8.27	-5.61/-4.67	-6.82/-8.27	-5.61/-4.67	-5.27/-9.02	-5.64/-7.92	-1.19/9.43	-7.26/-1.47	-4.88/-2.04	-1.25/-2.37
Θ(127.5°)	-2.46/-2.73	-3.81/-2.74	-3.27/-2.51	-3.78/-4.54	-5.05/-5.32	-5.84/-6.22	-6.03/-6.76	-4.67/-4.22	-6.32/-6.53	-6.29/-6.66	-5.89/-7.87	-6.89/-6.56	-7.17/-7.62	-3.89/-6.57	-6.95/-6.59	-2.86/-1.82	-10.59/-9.15	-8.04/-5.56	-3.42/-8.11	-6.24/-9.22	-9.27/-9.96	-5.98/-4.97	-6.77/-2.95	-1.51/-1.88
Θ(135°)	-3.89/-2.9	-3.65/-3.69	-6.16/-6.9	-6.87/-7.62	-8.36/-7.25	-5.43/-5.42	-6.66/-7.71	-9.56/-8.5	-10.92/-10.58	-5.28/-5.02	-6.83/-8.56	-8.81/-6.1	-6.58/-7.8	-4.95/-6.34	-7.62/-4.66	-5.26/-5.75	-9.04/-10.2	-8.05/-10.99	-8.41/-6.39	-9.71/-10.47	-9.09/-7.9	-8.29/-4.69	-5.18/-3.62	-2.23/-3.5
Θ(142.5°)	-5.47/-6.34	-8.31/-7.99	-8.36/-8.28	-8.84/-9.91	-9.44/-8.91	-9.73/-8.76	-10.41/-10.59	-10.32/-10.68	-9.68/-9.83	-9.13/-8.13	-8.09/-8.05	-7.93/-6.16	-5.75/-5.45	-5.06/-4.58	-7.39/-9.78	-8.75/-8.46	-7.73/-8.98	-11.77/-10.46	-10.38/-11.69	-10.08/-8.13	-5.97/-10.08	-12.1/-11.07	-8.78/-6.61	-3.89/-4.09
Θ(150°)	-8.96/-10.01	-12.66/-13.12	-12.54/-9.81	-9.89/-9.87	-8.98/-8.92	-10.02/-10.3	-9.14/-9.69	-11.69/-11.57	-7.38/-7.59	-9.79/-8.9	-8.1/42	-9.15/-12.67	-10.69/-8.22	-8.64/-9.39	-8.99/-2.99	-8.82/-10.07	-11.3/-10.82	-10.16/-9.31	-9.68/-8.82	-8.1/-10.39	-10.85/-4	-11.2/-13.6	-13.3/-13.69	-10.87/-4.46
Θ(157.5°)	-9.82/-11.97	-13.93/-13.04	-13.52/-13.7	-13.11/-14.7	-9.37/-9.96	-10.14/-9.39	-9.43/-10.4	-11.75/-10.28	-8.59/-8.6	-8.65/-9.29	-9.23/-11.16	-11.52/-9.02	-8.42/-9.45	-9.81/-9.43	-10.74/-10.69	-10.53/-10.39	-10.97/-11.88	-11.94/-10.47	-7.82/-7.67	-9.48/-9.71	-10.54/-12.3	-11.94/-12.01	-12/-11.37	
Θ(165°)	-13.46/-12.94	-12.72/-11.74	-11.38/-12.25	-13.44/-13.09	-12.26/-11.97	-12.18/-12.59	-12.83/-13.28	-13.01/-11.93	-10.86/-9.82	-9.35/-9.8	-10.38/-11.7	-11.81/-11.47	-11.61/-12.37	-14.1/-13.48	-13.87/-12.24	-12.75/-13.46	-13.71/-14.05	-13.78/-12.1	-9.83/-8.05	-7.77/-8.18	-9.94/-10.73	-11.82/-11.61	-12.01/-13.02	-13.52/-13.46
Θ(172.5°)	-13.16/-12.62	-12.62/-12.78	-12.55/-11.97	-12.12/-11.85	-11.45/-11.31	-11.71/-11.97	-12.29/-11.57	-11.46/-12.69	-12.59/-12.06	-13.37/-13.73	-13.77/-13.52	-14.18/-13.95	-13.79/-12.32	-12.33/-12.58	-12.79/-12.87	-12.77/-12.78	-12.79/-14	-12.85/-13.11	-13.37/-12.87	-12.75/-11.85	-11.77/-11.85	-11.58/-10.59	-10.86/-11.1	-11.25/-12.69
Θ(180°)	-13.88/-13.91	-13.51/-13.88	-13.86/-13.62	-13.13/-13.27	-12.66/-12.67	-13.73/-13.19	-12.26/-12.41	-13.05/-13.35	-12.41/-12.34	-13.08/-13.44	-13.93/-13.62	-13.43/-13.86	-13.16/-13.59	-13.51/-13.27	-13.94/-13.51	-12.74/-13.98	-12.85/-13.55	-13.53/-13.8	-13.88/-12.9	-12.33/-12.66	-12.17/-12.77	-12.33/-13.48	-12.67/-12.65	-12.88/-13.95
Freq(Pol)	6.695/Pol	ThetaL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DG(dB)	Φ(0°)/Φ(7.5°)	Φ(15°)/Φ(22.5°)	Φ(30°)/Φ(37.5°)	Φ(45°)/Φ(52.5°)	Φ(60°)/Φ(67.5°)	Φ(75°)/Φ(82.5°)	Φ(90°)/Φ(97.5°)	Φ(105°)/Φ(112.5°)	Φ(120°)/Φ(127.5°)	Φ(135°)/Φ(142.5°)	Φ(150°)/Φ(157.5°)	Φ(165°)/Φ(172.5°)	Φ(180°)/Φ(187.5°)	Φ(195°)/Φ(202.5°)	Φ(210°)/Φ(217.5°)	Φ(225°)/Φ(232.5°)	Φ(240°)/Φ(247.5°)	Φ(255°)/Φ(262.5°)	Φ(270°)/Φ(277.5°)	Φ(285°)/Φ(292.5°)	Φ(300°)/Φ(307.5°)	Φ(315°)/Φ(322.5°)	Φ(330°)/Φ(337.5°)	Φ(345°)/Φ(352.5°)
Θ(0°)	-3.18/-3.5	-3.78/-3.45	-3.66/-3.44	-3.29/-3.12	-3.31/-3.38	-3.61/-4.07	-4.16/-3.71	-3.44/-4.02	-4.4/-4.21	-3.82/-3.76	-3.41/-3.1	-2.82/-2.42	-1.87/-1.31	-1.24/-1.44	-1.66/-2.13	-2.21/-2.24	-2.73/-3.15	-3.64/-3.79	-4.28/-5.09	-5/-5.19	-5.08/-4.69	-4.15/-3.98	-4.07/-3.9	-3.44/-3.46
Θ(7.5°)	-2.79/-2.48	-2.32/-2.26	-2.17/-1.86	-1.79/-1.93	-2.14/-2.38	-3.11/-3.09	-3.88/-4.36	-4.5/-5.39	-5.86/-9.48	-3.88/-3.01	-2.53/-2.7	-2.95/-3.4	-3.81/-4.48	-5.34/-5.29	-5.37/-5.38	-2.96/-2.62	-2.49/-2.69	-2.86/-3.38	-3.93/-4.87	-3.57/-3.65	-3.93/-4.87	-5.31/-4.77	-4.27/-3.62	
Θ(15°)	-1.22/-1.61	-2.38/-3.06	-3.94/-4.1	-4.16/-3.41	-3.29/-2.99	-3.03/-2.84	-3.34/-1.9	-5.26/-6.52	-8.4/-8.6	-7.09/-4.76	-3.08/-1.92	-6.18/-3.04	-4.5/-5.69	-7.58/-8.18	-3.24/-3.45	-5.12/-3.42	-3.2/-3.01	-2.86/-2.82	-2.94/-2.58	-2.65/-3.03	-3.22/-3.68	-4.59/-4.51	-3.34/-2.37	-1.73/-1.41
Θ(22.5°)	0.42/1.04	0.77/-0.03	-0.58/-0.67	-1.11/-1.2	-2.93/-3.75	-5.56/-6.33	-5.88/-6.62	-7.2/-7.81	-7.82/-7.38	-7.42/-6.76	-5.61/-4.52	-3.42/-3.3	-3.62/-4.6	-6.15/-6.76	-5.64/-4.75	-4.84/-6.37	-5.21/-4.27	-4.15/-4.34	-4.35/-5.1	-4.96/-4.28	-4.18/-4.88	-5.31/-4.28	-1.82/-0.77	-0.50/-0.27
Θ(30°)	1.69/1.63	0.18/-2.27	-2.25/-2.42	-2.42/-2.33	-1.92/-1.77	-3.62/-4.9	-3.86/-3.67	-4.48/-6.05	-4.49/-3.02	-3.66/-1.5	-8.99/-2.85	-2.34/-3.57	-5.18/-5.54	-6.63/-7.58	-4.23/-4.3	-5.75/-5.94	-5.73/-4.39	-3.58/-2.52	-2.06/-2.53	-4.12/-6.83	-6.96/-6.34	-5.96/-5.38	-1.98/-0.59	-0.39/0.69
Θ(37.5°)	0.91/1.8	-0.17/-2.29	-4.91/-1.48	-2.81/-1.96	-2.22/-3.16	-4.39/-4.1	-2.36/-1.91	-4.32/-6.57	-4.23/-3.78	-7.01/-12.83	-5.03/0.66	-0.71/-3.07	-4.62/5.04	-2.47/-0.98	-2.7/-3.8	-5.01/-6.15	-3.67/-2.15	-2.16/-2.19	-1.72/-1.32	-3.44/-5.63	-4.23/-2.61	-3.04/-5.89	-1.53/-2.71	-3.11/-0.07
Θ(45°)	-0.84/-1.66	-1.75/-2.03	-3.14/-4.81	-1.63/0.01	-0.78/-3.11	-5.27/-5.68	-3.24/-0.3	-3.99/-6.44	-3.19/-4.14	-6.75/-7.1	-7.64/-0.51	-5.99/-3.48	-5.07/-4.41	-1.11/-0.29	-2.74/-3.35	-2.58/-4.9	-2.53/-0.98	-1.98/-3.54	-3.24/-4.15	-6.03/-4.57	-1.5/-0.82	-0.22/-4.32	-4.56/-7.09	-6.72/-1.84
Θ(52.5°)	-4.99/-5.55	-3.94/-3.78	-4.81/-8.31	-2.39/-9.01	-0.93/-2.61	-7.41/-7.85	-5.44/-8.09	-5.25/-3.61	-1.82/-2.11	-6.71/-5.18	-5.97/-1.33	-3.84/-6.32	-4.15/-4.52	-4.14/-3.53	-5.45/-4.68	-3.96/-4.28	-2.86/-2.19	-1.69/-4.61	-5.44/-7.17	-8.76/-4.62	-0.85/-1.05	-1.46/-2.98	-8.71/-12.77	-8.03/-4.11
Θ(60°)	-7.14/-4.72	-5.12/4.53	-5.89/-9.89	-7.56/-4.21	-2.02/-3.9	-11.22/9.92	-7.71/-9.27	-2.66/-2.43	-2.38/-3.06	-7.72/-7.04	-4.91/-3.93	-6.28/-9.62	-5.63/-4.54	-9.87/-8.85	-7.24/-5.61	-6.32/-4.27	-4.03/-5.79	-3.55/-5.36	-7.81/-7.75	-11.02/-6.67	-2.58/-2.92	-2.65/-3.66	-6.98/-11.11	-11.63/-7.07
Θ(67.5°)	-7.4/-6.43	-4.61/-5.28	-6.82/-10.78	-10.73/-6.3	-4.86/-7.12	-11.43/-12.87	-10.25/-13.04	-4.64/-5.14	-4.63/-6.48	-10.17/-6.42	-4.19/-5.15	-11.08/-12.24	-8.86/-6.65	-10.67/-11.15	-8.4/-5.66	-6.51/-6.15	-5.63/-10.3	-6.56/-5.95	-7.5/-8.12	-9.22/-7.27	-7.11/-6.61	-3.87/-4.17	-7.08/-8.92	-11.39/-9.56
Θ(75°)	-8.56/-7.63	-5.26/-6.28	-7.13/-9.4	-8.82/-7.37	-7.54/-7.07	-12.63/-13.97	-13.33/-13.31	-7.9/-9.2	-7.81/-8.81	-10.69/-6.01	-6.66/-7.63	-11.52/-12.5	-5.64/-7.02	-5.46/-7.6	-6.32/-6.49	-6.73/-8.03	-8.04/-10.67	-9.9/-5.85	-5.54/-10.72	-8.82/-6.58	-11.08/-8.41	-4.94/-5.63	-8.25/-8.18	-10.87/-9.1
Θ(82.5°)	-8.67/-8.38																							

Gain Result

[illegible]



Radiated Composite Gain Data of 6GHz

Appendix A.2

Θ(22.5°)	-11.27/-14.85	-19/-15.12	-11.67/-10.36	-9.36/-7.79	-6.85/-6.22	-6.67/-8.38	-8.44/-5.61	-4.06/-4.46	-7.17/-9.46	-8.33/-7.35	-7.37/-7.58	-7.67/-8.44	-9.33/-8.17	-5.29/-3.37	-2.68/-1.64	-0.25/-0.87	1.25/0.99	0.22/-0.6	-0.62/-0.25	-0.21/-0.81	-1.4/-1.72	-2.52/-3.24	-3.85/-5.24	-6.45/-8.53
Θ(30°)	-2.63/-2.89	-2.72/-3.22	-4.37/-0.75	-10.16/-8.4	-4.95/-3.08	-3.91/-6.67	-7.43/-4.82	-3.09/-3.81	-6.51/-6.15	-3.68/-1.7	1.78/1.73	0.65/-1.92	-4.91/-4.48	-1.46/-1.09	2.06/-1.82	10.51	-0.22/-0.95	-1.34/-1.68	-1.53/-1.97	-2.32/-2.23	-1.95/-1.21	-1.46/-2.83	-4.07/-3.38	
Θ(142.5°)	-0.24/-0.07	-0.81/-1.28	-1.22/-2.13	-4.27/-5.67	-3.38/-1.72	-2.47/-5.64	-5.06/-3.92	-4.1/-6.47	-4.16/-4.75	-2.46/-1.65	-4.71/-2.5	0.79/0.85	-1.03/-5.53	-5.07/-2.61	-0.06/-2.08	2.94/2.56	0.71/-1.02	-2.1/-1.58	-0.63/-1.47	-2.84/-3.77	-3.67/-2.26	-1.97/-2.49	-1.85/-0.86	
Θ(45°)	-0.14/-0.38	-1.74/-2.09	-1.04/-0.15	-0.57/-1.42	-0.44/-0.13	-1.31/-3.49	-3.61/-4.1	-5.85/-5.37	-1.69/-0.32	-0.04/-2.66	-5.09/-5.22	-4.16/-3.41	-2.36/-1	0.72/-1.27	0.99/-1.23	2.82/2.4	-0.35/-2.09	-2.66/-2.1	-1.11/-1.59	-2.71/-1.12	-1.94/-0.89	-1.18/-0.23	0.48/-0.27	0.84/-0.1
Θ(52.5°)	0.27/-1.29	1.56/-0.2	-0.56/-1.06	1.82/-1.06	0.78/-0.28	-2.51/-4.75	-4.45/-6.74	-12.1/-6.12	-1.41/-0.15	1.20/-09	-0.95/-0.04	1.41/-83	1.42/-12	0.93/-0.22	0.25/-0.14	1.36/-1.26	-1.41/-1.03	-3.84/-3.07	-2.4/-2.85	-2.64/-0.69	-4.11/-1.33	0.26/-1.21	1.21/-1.07	0.85/-0.15
Θ(60°)	0.36/-2.12	3.53/-1.38	-0.26/-1.8	2.81/-4.3	0.79/-0.69	-1.31/-2.89	-3.53/-10.12	-15.09/-11.17	-4.17/-1.27	1.38/-1	-0.9/-0.38	2.31/-81	0.6/-2.44	-5.75/-9.28	-3.56/-2.93	-4.86/-3.41	-3.86/-5.38	-3.5/-3.5	-1.79/-3.02	-4.05/-2.07	-3.37/-2.47	-0.60/-0.02	0.09/-0.76	0.88/-1.09
Θ(67.5°)	0.68/-1.97	3.58/-1.87	-0.1/-1.64	2.13/-2.22	1.84/-1.1	-1.51/-4.28	-6.07/-11.59	-9.06/-9.68	-10.12/-2.17	0.30/-18	-0.78/-0.24	2.21/-81	-1.41/-7.01	-5.11/-4.68	-2.92/-1.61	-1.03/-0.21	0.91/-0.52	0.91/-0.69	0.41/-1.44	-2.46/-4.09	-4.3/-2.03	-0.79/-1.26	-0.82/-0.04	1.25/-0.1
Θ(75°)	-0.35/-0.53	2.54/-1.43	-1.05/-0.93	1.77/-1.12	0.07/-0.33	-3.33/-4.76	-4.53/-17.85	-7.72/-5.19	-10.23/-3.42	-0.91/-0.86	-1.76/-2.26	0.25/-1.99	-2.84/-4.8	-2.87/-1.05	-2.41/-0.33	2.65/-2.6	2.72/-1.8	30.02	1.29/-0.47	-1.93/-6.17	-2.97/-4.88	-2.46/-3.17	-1.26/-0.48	0.97/-0.23
Θ(82.5°)	-0.24/-0.16	1.64/-0.46	-1.84/-0.49	0.58/-1.4	-1.06/-1.42	-6.02/-4.29	-3.45/-10.41	-12.79/-4.39	-6.45/-3.87	-1.91/-1.36	-1.64/-3.79	-1.08/-1.04	-3.47/-5.41	-0.55/-1.14	-3.96/-7.1	4.02/-1.11	3.53/-25	2.39/-105	1.57/-0.12	-3.25/-4.58	-3.48/-6.17	-4.2/-3.05	-1.42/-1.41	1.03/-0.14
Θ(90°)	-1.55/-1.85	-0.23/-1.12	-3.03/-0.65	-0.83/-2.89	-1.32/-2.18	-6.19/-4	-3.52/-5.3	-10.32/-7.8	-2.82/-8.21	-2.61/-2.66	-2.7/-7.3	-4.52/-3.38	-6.64/-5.44	-2.68/-1.42	-6.21/-1.5	2.21/-0.27	2.54/-0.57	0.72/-1.6	0.3/-1.7	-5.24/-4.98	-5.91/-6.29	-5.65/-3.57	-3.15/-0.26	-0.77/-0.68
Θ(97.5°)	-2.83/-3.45	-1.58/-3.09	-3.71/-1.24	-1.53/-3.87	-1.75/-2.87	-8.13/-6.25	-5.48/-6.76	-10.17/-10.92	-6.38/-10.96	-7.11/-4.67	-5.42/-14.09	-8.58/-7.21	-7.21/-7.6	-3.38/-2.62	-7.04/-4.13	-0.98/-0.12	-0.78/-0.48	-0.92/-4.85	-3.19/-5.92	-8.22/-6.59	-7.75/-6.67	-4.07/-3.4	-4.34/-1.33	-1.64/-2.31
Θ(105°)	4.45/-6.27	-3.61/-4.63	-5.29/-2.52	-2.7/-4.32	-3.57/-1.44	-13.05/-10.59	-8.64/-10.58	-12.07/-9.76	-11.38/-16.65	-14.12/-7.79	-8.4/-16.17	-18.93/-10.47	-6.29/-10.36	-9.6/-2.21	-9.96/-4.95	-3.62/-2.99	-3.67/-5.22	-1.7/-5.2	-6.02/-5.6	-6.15/-9.41	-7.98/-10.38	-6.18/-4.66	-5.83/-5.79	-3.63/-4.65
Θ(112.5°)	-5.5/-7.26	-4.99/-4.97	-6.71/-4.84	-5.33/-3.67	-4.72/-5	-8.97/-6.3	-9.56/-10.79	-9.23/-17.9	-11.41/-11.46	-9.82/-8.65	-15.17/-8.85	-13.7/-8.25	-6.08/-15.9	-8.77/-4.5	-15.97/-3.79	-3.12/-3.81	-6.37/-4.53	-1.87/-5.29	-5.27/-6.07	-4.99/-15.62	-10.2/-18.93	-8.06/-5.12	-6.68/-4.27	-4.42/-4.43
Θ(120°)	-7.08/-6.32	-4.62/-4.39	-5.13/-4.8	-4.69/-6.88	-6.8/-3.32	-8.89/-6	-8.13/-11.59	-17.43/-10.6	-5.34/-13.4	-13.58/-19.08	-11.26/-7.26	-12.1/-9.03	-8.37/-16	-18.47/-6.88	-17.54/-10.9	-8.4/-12.71	-14.16/-15.57	-6.84/-9.51	-7.39/-18.88	-16.07/-14.68	-10.91/-11.67	-8.47/-5.39	-6.57/-5.55	-5.67/-5.59
Θ(127.5°)	-6.29/-6.18	-4.83/-4.5	-4.69/-4.07	-4.97/-6.43	-8.7/-8.29	-13.44/-17.93	-18.41/-15.85	-12.77/-10.06	-15.56/-17.83	-18.07/-19.26	-10.5/-11.94	-16.71/-12.83	-17.7/-12.77	-8.64/-10.87	-12.11/-12.14	-4.99/-11.07	-13.17/-17.25	-10.87/-11.34	-4.46/-8.11	-8.65/-19.13	-17.21/-19.14	-16.77/-12.78	-14.75/-17.38	-5.67/-5.59
Θ(135°)	-9.32/-8.56	-7.04/-6.64	-9.26/-8.75	-7.69/-9.23	-11.14/-12.16	-13.94/-14.43	-18.36/-18.39	-18.15/-16.48	-14.17/-18.57	-11.42/-8.3	-10.61/-18.3	-15.78/-9.43	-9.96/-8.92	-5.86/-8.53	-11/-7.28	-8.01/-9.59	-11.64/-14.59	-17.18/-16.59	-16.64/-10.21	-17.68/-13.97	-15.17/-12.36	-12.27/-8.66	-8.63/-8.28	-7.83/-9.43
Θ(142.5°)	-10.14/-9.18	-10.42/-13.61	-16.2/-11.86	-12.13/-17.08	-16.38/-14.04	-17.35/-18.96	-17.61/-16.37	-17.84/-10.85	-11.01/-19.5	-15.61/-11.67	-7.52/-6.72	-5.41/-6.7	-9.2/-14.42	-17.05/-13.23	-8.86/-8.66	-13.2/-12.38	-12.5/-14.39	-13.43/-10.52	-6.96/-11.46	-14.22/-18.11	-14.94/-13.07	-10.93/-13.7	-10.9/-33	
Θ(150°)	-12.21/-12.35	-16.43/-18.61	-15.18/-12.77	-13.99/-16.04	-14.51/-14.93	-18.15/-16.93	-17.31/-18.62	-18.22/-18.56	-14.1/-12.81	-13.94/-11.99	-12.15/-16.78	-17.77/-18.72	-13.16/-8.33	-8.26/-11.29	-11.94/-11.32	-17.69/-13.25	-19.23/-17.87	-16.29/-15.18	-17.69/-13.91	-10.61/-15.02	-16.09/-10.27	-14.29/-19.18	-18.93/-17.6	-18.97/-13.53
Θ(157.5°)	-13.2/-15.3	-17.98/-18.03	-19.27/-18.27	-17.64/-18.11	-17.71/-18.95	-17.15/-15.12	-13.91/-15.49	-15.8/-12.41	-10.88/-11.01	-10.26/-9.93	-10.93/-14.59	-16.46/-14.97	-18.98/-14.21	-9.8/-10.73	-14.32/-18.45	-18.76/-17.62	-19.32/-18.71	-14.87/-15.68	-16.6/-11.95	-6.81/-6.54	-9.72/-10.78	-11.81/-16.37	-15.88/-14.79	-14.03/-14.14
Θ(165°)	-18.66/-16.59	-15.53/-14.13	-13.87/-15.36	-18.34/-18.34	-17.63/-18.73	-19.15/-18.76	-18.99/-12.22	-18.1/-16.59	-12.07/-10.07	-9.51/-10.45	-11.34/-12.3	-13.46/-13.78	-13.95/-15.88	-18.94/-17.2	-19.61/-18.81	-18.39/-16.97	-17.47/-18.67	-18.83/-18.84	-16.81/-11.42	-9.61/-8.98	-9.98/-11.7	-13.69/-14.4	-16.96/-18.14	-18.46/-17.74
Θ(172.5°)	-17.62/-16.24	-16.86/-18.7	-18.79/-18.22	-16.77/-16.29	-16.82/-18.96	-19/-18.38	-18.74/-18.82	-18.55/-18.77	-17.47/-17.78	-19.34/-18.32	-18.1/-18.28	-18.91/-18.49	-18.77/-18.28	-18.68/-18.06	-19.11/-17.98	-17.52/-18.56	-17.88/-18.97	-18.07/-17.52	-19.27/-18.01	-16.05/-14.94	-13.97/-13.94	-13.63/-12.73	-13.29/-14.13	-15.82/-17.4
Θ(180°)	-18.61/-18.6	-18.03/-19.19	-18.96/-19.08	-17.98/-18.29	-16.82/-18.05	-17.98/-18.86	-18.78/-18.44	-19.02/-18.29	-18.9/-18.61	-18.63/-17.7	-18.39/-18.24	-18.12/-18.38	-18.29/-18.1	-19.12/-17.51	-19.18/-18.53	-18.09/-18.97	-18.29/-18.33	-17.68/-18.41	-18.5/-18.31	-18.05/-18.61	-17.79/-18.05	-17.87/-18.7	-17.71/-17.77	-17.87/-18.46
Freq(Hz)	6.995GPol.	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°)	-13.42/-16.51	-17.47/-11.59	-14.36/-16.47	-18.76/-18.67	-18.57/-18.52	-18.38/-17.86	-15.25/-14.22	-12.74/-11.41	-10.41/-11.04	-10.05/-9.18	-8.57/-7.79	-7.77/-8.28	-8.71/-8.74	-9.43/-10.77	-13.23/-17.18	-17.4/-17.59	-18.46/-16.6	-15.11/-13.42	-12.79/-11.51	-9.46/-8.4	-7.51/-7.5	-7.56/-8.26	-8.92/-9.63	-10.56/-11.92
Θ(7.5°)	-10.17/-10.69	-10.68/-12.01	-11.07/-12.44	-14.32/-16.57	-15.27/-14.73	-12.62/-10.88	-8.89/-7.89	-6.95/-6.43	-6.61/-6.66	-6.12/-6.37	-6.79/-7.9	-9.2/-11.2	-12.89/-13.58	-18.44/-17.98	-18.16/-16.84	-18.16/-48	-17.2/-17.8	-19.21/-18	-18.64/-15.92	-13.08/-11.64	-9.95/-9.07	-8.79/-9.05	-8.89/-8.99	-9.83/-9.91
Θ(15°)	-7.75/-8.39	-7.86/-7.06	-6.47/-6.34	-7.03/-7.67	-8.4/-9.78	-9.62/-8.52	-7.46/-7.16	-7.89/-9.17	-10.59/-9.95	-8.31/-7.82	-8.24/-8.97	-18.91/-14.85	-19.71/-19.72	-18.36/-18.53	-17.98/-18.71	-18.02/-16.07	-16.99/-17.49	-17.35/-16.91	-19.05/-12.18	-10.56/-10.24	-7.92/-7.99	-7.6/-7	-8.29/-6.02	-6.6/-5.6
Θ(22.5°)	-7.61/-7.96	-8.35/-7.75	-6.15/-4.67	-4.19/-5.41	-5.77/-8.31	-12.68/-11.78	-7.72/-6.94	-8.73/-11.53	-12.53/-12.37	-12.16/-13.33	-15.07/-17.6	-17.01/-17.54	-14.93/-11.24	-10.51/-11.96	-11.4/-9.28	-7.16/-7.05	-7.57/-8.39	-10.07/-12.42	-14.12/-16.75	-15.89/-12.56	-9.69/-7.99	-6.76/-6.35	-4.99/-4.81	-5.37/-6.86
Θ(30°)	-4.57/-4.91	-4.85/-4.94	-5.2/-7.73	-8.72/-6.58	-4.63/-5.82	-11.42/-12.63	-5.56/-3.29	-4.64/-9.09	-9.57/-9.99	-8.16/-13.8	-13.35/-6.84	-8.44/-12.3	-11.47/-10.86	-18.72/-13.25	-7.4/-6.4	-4.08/-5.87	-7.89/-7.42	-6.73/-6.92	-8.98/-11.03	-12.94/-17.99	-18.91/-15.3	-11.73/-9.81	-5.72/-8.43	-5.98/-5.32
Θ(37.5°)	-10.67/-1.7	-9.68/-3.81	-4.09/-4.92	-4.89/-6.36	-8.17/-11.05	-13.78/-7.83	-3.32/-2.78	-5.79/-12.16	-10.37/-10.59	-13.19/-16.65	-8.46/-2.57	-7.18/-14.66	-11.06/-8.35	-4.96/-2.75	-1.79/-1.38	-3.63/-7.33	-8.66/-5.47	-4.56/-4.96	-6.29/-10	-19.24/-18.5	-19.01/-19.31	-13.67/-17.95	-7.62/-8.12	-10.16/-11.51
Θ(45°)	-15.82/-14.91	-9.51/-7.2	-5.47/-5.27	-4.32/-4.63	-7.07/-16.06	-14.58/-5.83	-3.81/-4.72	-8.81/-7.8	-3.93/-7	-17.02/-9.5	-4.46/-2.4	-5.18/-13.29	-10.71/-4.84	-2.15/-2.7	-3.2/-2.07	-3.24/-6.89	-5.41/-4.69	-4.4/-5.43	-7.53/-13.29	-18.82/-15.82	-17.79/-18.61	-11.25/-18.9	-10.45/-12.64	-13.66/-12.77
Θ(52.5°)	-11.55/-16.22	-14.85/-11.7	-9.13/-7.22	-4.43/-3.68	-5.49/-11.31	-18.18/-7.61	-6.45/-10.08	-7.46/-3.15	-0.38/-3.29	-18.44/-8.91	-5.4/-36	-10.83/-17.02	-13.26/-5.64	-4.21/-6.89	-9.79/-7.88	-10.33/-8.78	-5.59/-5.13	-5.26/-9.48	-12.95/-17.77	-13.4/-13.1	-18.82/-19.01	-16.79/-15.45	-19.13/-18.27	-11.91/-9.13
Θ(60°)	-16.25/-18.04	-13.93/-13.25	-11.94/-10.33	-8.52/-6.3	-5.93/-10.48	-18.77/-11.25	-9.44/-12.1	-6.29/-0.44	-1.08/-3.29	-15.18/-9.73	-5.99/-5.82	-13.94/-17.81	-17.51/-9.45	-9.89/-17.09	-17.61/-14.68	-18.63/-7.29	-7.38/-6.6	-6.11/-6.66	-18.04/-18.28	-17.39/-18.94	-19.38/-18.7	-18.71/-17.51	-13.66/-15.57	-14.28/-10.85
Θ(67.5°)	-19.03/-16.21	-10.66/-15.01	-15.95/-12.75	-12.09/-7.35	-9.12/-18.9	-17.53/-15.84	-13.33/-16.4	-7.58/-7.71	-3.64/-5.53	-12.97/-7.21	-4.85/-6.39	-18.66/-18.31	-16.75/-18.06	-17.07/-16.92	-18.84/-17.51	-12.67/-7.34	-10.75/-10.47	-10.97/-16.36	-18.08/-16.16	-18.08/-18.25	-18.98/-18.74	-18.46/-15.8	-13.92/-15.06	-17.83



Radiated Composite Gain Data of 6GHz

Appendix A.2

Θ(75°)	0.05/1.04	0.82/0.24	-3.13/-3.21	-1.85/-0.5	-0.54/-1.81	0.38/2.57	2.51/1.01	0.34/0.4	1.34/1.09	1.82/1.26	-0.59/-0.06	-0.34/-1.14	-3.61/-3.07	-2.08/-3.22	-3.02/-3.33	-4.01/-2.04	-2.59/-4.35	-3.65/0.06	-0.42/-2.46	-3.32/-4.7	-2.64/-2.07	-1.93/-4.01	-6.05/-7.01	-3.1/-1.14
Θ(82.5°)	-1.72/-0.44	0.61/-0.47	-2.72/-3.22	-2.18/-0.85	-1.12/-1.89	0.69/2.05	1.76/-0.3	-0.53/-0.27	-0.10/-48	0.77/0.18	0.06/-0.24	-2.77/-3.72	-3.82/-2.35	-3.63/-8.43	-4.68/-3.94	-5.26/-1.91	-1.46/-0.91	-1.43/-1.23	-1.11/-3.17	-2.96/-4.24	-2.33/-3.23	-3.35/-3.42	-5.46/-6.18	-2.41/-1.74
Θ(90°)	-2.68/-1.58	-1.11/-1.19	-2.98/-4.79	-2.36/-1.7	-1.19/-1.5	-0.64/0.98	1.18/-0.21	-1.84/-0.89	-1.99/-0.24	-0.54/-1.01	-0.08/-0.74	-4.43/-4.71	-4.07/-3.41	-5.46/-8.33	-6.38/-6.51	-6.31/-4.27	-4.45/-2.37	-1.97/-3.54	-2.56/-4.06	-3.12/-5.4	-4.47/-6.38	-5.65/-5.29	-5.17/-5.44	-3.46/-2.62
Θ(97.5°)	-3.43/-2.65	-2.27/-2.7	-3.85/-5.02	-4.6/-3.57	-2.8/-2.62	-1.46/0.28	0.03/-1.05	-2.99/-2.47	-2.19/-0.52	-2.41/-1.8	-0.77/-1.75	-5.07/-6.62	-6.39/-5.49	-10/-15.93	-14.99/-9.9	-8.39/-8.07	-8.38/-6.89	-7.73/-8.31	-7.17/-9.92	-6.76/-7.89	-7.77/-10.51	-7.46/-7.76	-6.44/-4.86	-3.92/-2.83
Θ(105°)	-3.92/-3.84	-5.55/-4.34	-4.36/-6.97	-5.78/-4.78	-3.25/-3.34	-3.11/-2.3	-1.55/-1.4	-2.61/-2.49	-3.33/-1.86	-3.78/-2.24	-1.18/-2.87	-6.84/-7	-5.13/-4.5	-9.5/-10.96	-17.92/-13.45	-12.08/-11.54	-9.5/-8.72	-10.93/-14.37	-10.56/-18.33	-15.46/-14.16	-12.17/-13.41	-10.38/-9.15	-8.85/-6.74	-4.98/-3.23
Θ(112.5°)	-5.26/-4.94	-6.09/-6.19	-5.68/-7.3	-7.85/-6.44	-4.11/-4.53	-4.51/-3.14	-1.67/-1.91	-1.68/-3.26	-1.92/-2.86	-4.62/-3.27	-3.31/-3.82	-8.32/-9.53	-7.06/-6.9	-10.13/-14.29	-18.04/-14.79	-19.87/-9.55	-8.6/-11.97	-16.1/-11.85	-16.81/-11.98	-16.81/-9.98	-9.32/-9.52	-12.01/-13.82	-10.79/-6.91	-5.98/-4.74
Θ(120°)	-6.42/-7.42	-8.23/-9.49	-8.29/-9.46	-9.08/-7.53	-5.82/-4.52	-6.08/-5.82	-4.73/-4.83	-5.64/-4.4	-4.78/-4.84	-5.49/-5.26	-8.71/-7.82	-7.2/-8	-7.74/-8.85	-9.73/-13.9	-17.45/-17.47	-18.66/-12.85	-13.92/-13.62	-10.67/-14.32	-18.39/-10.84	-13.04/-12.11	-12.35/-12.97	-10.11/-12.85	-16.57/-10.26	-6.58/-5.21
Θ(127.5°)	-8.53/-8.03	-9.28/-13.64	-12.17/-11.57	-11.78/-7.73	-6.04/-4.48	-4.24/-6.05	-8.35/-9.41	-10.09/-9.21	-6.7/-6.18	-8.34/-14.01	-10.96/-6.48	-7.07/-7.81	-11.24/-12.88	-12.02/-13.52	-17.85/-11.71	-17.54/-13.24	-18.73/-18.9	-14.61/-18.19	-19.15/-15.46	-16.51/-11.47	-15.83/-12.31	-14.46/-17.81	-12.53/-14.16	-10.16/-7.41
Θ(135°)	-9.79/-10.86	-12.45/-15.48	-19.21/-13.35	-11.18/-11.23	-8.46/-6.73	-6.58/-7.81	-7.99/-7.89	-8.2/-8.37	-7.67/-7.68	-8.6/-7.53	-5.72/-7.43	-9.25/-9.27	-12.91/-16.83	-14.8/-15.43	-14.8/-18.32	-15.6/-17.47	-11.79/-12.71	-14.98/-18.15	-18.19/-14.68	-14.52/-19.2	-16.66/-18.36	-14.42/-19.19	-17.96/-13.09	-11.8/-9.24
Θ(142.5°)	-12.31/-12.08	-14.55/-15.83	-17.51/-13.25	-9.75/-9.38	-9.68/-8.96	-7.8/-8.54	-5.66/-5.19	-6.65/-7.7	-6.8/-7.56	-6.7/-6.63	-7.34/-8.37	-9.95/-14.68	-19.02/-17.93	-18.31/-18.44	-18.73/-17.73	-17.15/-13.47	-12.61/-14.28	-13.95/-13.65	-13.25/-15.98	-18.04/-18.23	-16.19/-19.37	-17.92/-18.8	-17.77/-16.41	-19.79/-15.66
Θ(150°)	-17.36/-17.62	-16.49/-17.05	-18.24/-17.26	-11.58/-9.4	-9.94/-11.87	-13.37/-13.89	-12.37/-12.72	-12.13/-11.73	-11.82/-11.02	-10.2/-10.73	-13.83/-16.96	-18.61/-18.03	-17.49/-15.73	-18.36/-17.67	-17.76/-18.82	-15.74/-11.16	-9.69/-11.48	-13.63/-15.85	-18.43/-18.59	-17.74/-18.89	-18.07/-18.67	-18.54/-17.53	-15.7/-16.1	-15.71/-18.55
Θ(157.5°)	-16.83/-17.23	-18.96/-18.42	-19.19/-17.58	-15.56/-14.08	-12.94/-11.36	-12.29/-14.95	-18.18/-18.16	-19.29/-17.65	-18.23/-17.46	-14.87/-16.83	-14.87/-13.97	-13.2/-13.17	-14.95/-19.01	-18.16/-15.7	-14.05/-16.05	-15.51/-12.51	-12.6/-14.73	-18.43/-18.18	-18.06/-17.92	-16.81/-19.49	-18.98/-17.91	-18.04/-17.11	-15.64/-15.78	-16.95/-16.87
Θ(165°)	-16.99/-16.95	-18.95/-18.2	-18.44/-19.02	-16.74/-14.55	-13.41/-12.19	-11.51/-11.05	-10.26/-8.38	-7.73/-8.83	-11.63/-13.99	-16/-18.1	-18.62/-19.09	-18.34/-17.65	-18.36/-18.75	-18.98/-17.23	-15.39/-15.23	-15.04/-14.39	-14.83/-16.53	-16.7/-18.46	-17.87/-18.09	-18.96/-16.51	-14.2/-14.19	-17.21/-18.62	-17.36/-18.65	-17.63/-17.61
Θ(172.5°)	-17.51/-18.35	-17.41/-19.08	-17.67/-18.58	-15.7/-13.35	-12.23/-11.79	-11.65/-11.81	-11.78/-12.31	-13.62/-16.04	-19.44/-17.85	-19/-18.41	-17.8/-15.51	-14.9/-15.11	-17.58/-17.79	-18.83/-18.26	-18.31/-18.41	-17.33/-18.16	-18.33/-18.97	-17.95/-18.09	-18.99/-16.81	-14.08/-13.38	-13.98/-15.2	-16.57/-18.16	-18.06/-16.52	-16.26/-16.4
Θ(180°)	-19.02/-18.81	-18.98/-18.81	-18.98/-17.86	-19.37/-18.77	-17.78/-19.02	-18.06/-17.86	-18.21/-18.24	-18.87/-18.84	-17.09/-18.6	-18.11/-19.02	-17.79/-19.2	-17.42/-19.02	-18.01/-17.82	-18.13/-18.06	-18.97/-17.99	-18.76/-19.29	-17.81/-18.19	-16.87/-16.32	-16/-16.64	-17.03/-15.95	-15.45/-15.39	-15.68/-16.34	-17.73/-17.02	-16.37/-18.34
Freq(Hz)	6.175GPol.	ThetaAnt. 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gain	Φ(0°)Φ(7.5°)	Φ(15°)Φ(22.5°)	Φ(30°)Φ(37.5°)	Φ(45°)Φ(52.5°)	Φ(60°)Φ(67.5°)	Φ(75°)Φ(82.5°)	Φ(90°)Φ(97.5°)	Φ(105°)Φ(112.5°)	Φ(120°)Φ(127.5°)	Φ(135°)Φ(142.5°)	Φ(150°)Φ(157.5°)	Φ(165°)Φ(172.5°)	Φ(180°)Φ(187.5°)	Φ(195°)Φ(202.5°)	Φ(210°)Φ(217.5°)	Φ(225°)Φ(232.5°)	Φ(240°)Φ(247.5°)	Φ(255°)Φ(262.5°)	Φ(270°)Φ(277.5°)	Φ(285°)Φ(292.5°)	Φ(300°)Φ(307.5°)	Φ(315°)Φ(322.5°)	Φ(330°)Φ(337.5°)	Φ(345°)Φ(352.5°)
Θ(0°)	-10.67/-11.29	-10.87/-14.74	-6.36/-5.14	-4.2/-3.42	-3.25/-3.53	-3.63/-4.2	-3.39/-3.98	-4.46/-5.08	-6.08/-7.36	-8.6/-9.66	-10.25/-10.12	-9.71/-8.97	-8.49/-8.04	-7.51/-7.25	-7.35/-7.4	-5.04/-4.62	-4.22/-3.66	-3.21/-3.09	-3.38/-4.14	-5.57/-5.2	-5.74/-5.73	-6.33/-7.61	-9.31/-10.41	
Θ(7.5°)	-8.25/-9.13	-10.17/-11.17	-10.77/-10.91	-11.15/-10.75	-10.24/-9.65	-9.25/-8.36	-6.94/-5.66	-4.89/-4.63	-4.42/-4.28	-4.6/-5.46	-7.09/-9.62	-12.45/-13.96	-11.1/-17.26	-4.69/-2.96	-1.97/-1.43	-1.2/-1.11	-1.15/-1.42	-2.11/-2.99	-3.87/-5.14	-6.7/-8.54	-10.27/-11.05	-10.58/-9.51	-8.37/-7.77	-7.82/-8.15
Θ(15°)	-5.15/-5.62	-6.71/-8.91	-10.91/-12.32	-11.53/-9.26	-7.39/-6.94	-8.05/-9.41	-9.34/-10.18	-15.76/-15.1	-9.52/-7.28	-6.33/-6.44	-7.84/-8.96	-13.31/-1.96	-9.41/-5.25	-2.32/-0.86	-0.48/-1.01	-1.82/-2.29	-2.34/-2.56	-3.59/-5.02	-6.51/-8.16	-10.37/-12.05	-12.28/-11.72	-9.07/-11.6	-6.57/-7.4	-7.71/-8.09
Θ(22.5°)	-3.14/-3.93	-5.09/-6.6	-8.59/-9.25	-6.84/-7.62	-6.34/-4.1	-3.15/-2.73	-2.99/-4.04	-6.21/-9.43	-12.31/-13.73	-12.72/-8.52	-8.6/-10.31	-9.03/-7.72	-4.7/-2.19	-1.63/-2.1	-3.28/-3.78	-3.53/-4.26	-5.01/-4.55	-4.21/-5.13	-6.86/-8.98	-12.69/-18.23	-12.91/-13.97	-12.21/-9.43	-5.25/-6.93	-2.78/-1.91
Θ(30°)	-6.75/-6.97	-6.86/-8.52	-10.92/-12.64	-15.24/-16.52	-10.05/-5.62	-3.78/-3.39	-3.41/-3.43	-4.12/-6.48	-11.29/-18	-17.02/-9.77	-7.46/-8.7	-5.96/-3.88	-1.8/-0.99	-2.03/-3.04	-2.27/-2.16	-2.44/-2.76	-3.71/-5.29	-7.48/-8.05	-5.87/-5.27	-7.57/-12.61	-12.39/-8.86	-7.1/-7.51	-6.49/-5.92	-6.85/-5.85
Θ(37.5°)	-7.7/-6.61	-7.66/-10.67	-13.71/-18.66	-19.3/-18.61	-15.77/-12.12	-8.28/-5.93	-4.72/-5.12	-7.74/-12.08	-17.13/-14.79	-9.33/-6.94	-4.49/-5.3	-4.7/-3.46	-2.27/-2.67	-2.87/-3.47	-2.55/-1.51	-0.9/-1.9	-2.4/-6.13	-13.31/-14.36	-7.14/-4.88	-6.8/-8.42	-5.72/-6.28	-10.93/-12.61	-5.9/-8.48	-18.72/-18.71
Θ(45°)	-5.47/-4.6	-6.51/-8.93	-10.46/-12.02	-12.14/-13.06	-11.99/-11.29	-10.03/-7.96	-4.59/-9.47	-13.52/-18.41	-17.45/-9.2	-5.65/-3.69	-4.14/-5.25	-7.84/-5.69	-4.94/-3.37	-1.24/-1.82	-1.19/-0.69	-2.64/-5.27	-6.78/-7.61	-11.5/-18.51	-14.26/-9.88	-9.17/-8.79	-3.03/-0.39	0.92/-1.33	-4.3/-9.79	-18.79/-8.41
Θ(52.5°)	-5.4/-4.07	-5.58/-7.48	-9.84/-11.01	-13.44/-17.89	-12.14/-8.56	-7.22/-8.41	-10.98/-14.01	-18.27/-17.55	-11.28/-6.8	-6.16/-6.98	-9.05/-8.4	-10.16/-11.1	-10.54/-4.01	-2.86/-5.03	-3.1/-2.06	-4.83/-10.98	-14.73/-18.81	-17.24/-17.57	-13.81/-10.37	-12.58/-7.44	-2.33/-0.05	-0.1/-2.72	-6.67/-10.37	-18.92/-10.64
Θ(60°)	-6.36/-6.05	-5.39/-8.49	-13.2/-18.75	-17.88/-18.56	-11.5/-6.64	-5.27/-6.87	-18.02/-18.67	-17.85/-14.95	-10.69/-9.82	-8.88/-13.02	-18.46/-18.5	-13.85/-1.39	-15.43/-9.98	-6.72/-11.4	-5.97/-3.58	-4.51/-12.03	-18.32/-17.67	-16.35/-19.35	-12.31/-16.61	-14.26/-7.63	-2.74/-1.3	-2.28/-7.4	-12.54/-13.27	-18.11/-12.68
Θ(67.5°)	-8.04/-7.34	-6.53/-8.05	-13.55/-19.27	-18.84/-13.44	-10.41/-7.01	-5.65/-9.67	-11.21/-15.57	-15.86/-14.01	-10.46/-11.83	-12.91/-15.56	-17.34/-11.99	-12.81/-17.11	-18.08/-14.99	-13.62/-18.64	-7.98/-6.65	-12.31/-16.06	-15.95/-11.19	-13.09/-18.38	-12.19/-18.56	-13.35/-8.04	-4.91/-447	-6.67/-18.05	-18.79/-15.84	-15.11/-13.73
Θ(75°)	-7.9/-7.48	-6.9/-7.9	-14.3/-19.25	-10.42/-10.37	-9.08/-7.44	-6.65/-11.44	-17.9/-13.56	-14.61/-15.23	-14.38/-18.1	-17.88/-19.36	-14.93/-11.11	-10.08/-11.02	-19.06/-12.17	-11.18/-14.98	-8.63/-8.46	-11.49/-12.97	-14.55/-13.16	-12.13/-19.26	-13.18/-18.91	-16.43/-10.44	-6.78/-7.96	-10.34/-18.05	-18.82/-15.38	-12.24/-11.78
Θ(82.5°)	-8.05/-10.2	-6.55/-7.46	-12.05/-15.57	-12.18/-8.71	-8.11/-7.86	-7.67/-11.8	-18.56/-14.01	-18.92/-18.86	-18.2/-18.52	-16.78/-18.2	-14.4/-11	-12.39/-16.12	-15.81/-10.54	-11.83/-13.24	-8.59/-9.24	-10.19/-12.81	-18.31/-19.16	-12.8/-18.65	-15.87/-14.44	-15.4/-12.93	-9.16/-10.22	-11.76/-15.44	-18.19/-13.39	-11.04/-11.4
Θ(90°)	-10.23/-8.57	-8.14/-9.08	-11.54/-13.13	-15.23/-10.93	-9.61/-10.01	-9.41/-11.62	-17.28/-14.32	-18.26/-18.72	-18.44/-18.88	-18.24/-18.01	-15.56/-13.28	-13.74/-18.83	-18.67/-17.38	-19.13/-16.64	-10.97/-12.94	-10.27/-12.08	-17.07/-12.9	-7.14/-11.31	-11.95/-13.72	-18.25/-12.54	-9.78/-11.08	-13.55/-15.23	-16.45/-13.92	-11.98/-13.78
Θ(97.5°)	-12.11/-11.1	-9.36/-10.45	-12.42/-11.78	-15.34/-12.55	-11.68/-13.49	-12.62/-14.2	-18.42/-12.96	-16.68/-18.48	-17.46/-18.75	-17.19/-18.24	-15.06/-14.68	-13.04/-14.5	-19.28/-18.05	-18.56/-13.22	-13.8/-18.46	-17.74/-16.67	-12.72/-8.24	-7.64/-12.1	-11.4/-15.23	-18.25/-17.2	-12.32/-14.7	-14.66/-17.48	-17.99/-19.62	-18.77/-19.02
Θ(105°)	-12.82/-11.77	-9.27/-10.58	-15.8/-12.72	-12.42/-13.64	-13.73/-14.94	-14.14/-14.47	-18.69/-19.21	-19.31/-18.46	-15.92/-16.46	-17.44/-14.11	-12.83/-14.22	-10.35/-11.31	-18.62/-12.33	-12.75/-12.23	-16.49/-18.53	-14.43/-12.98	-13.81/-9.88	-3.18/-16.03	-16.01/-18.76	-18.4/-18	-18.32/-18.88	-18.37/-17.12	-17.59/-18.68	-17.67/-18.14
Θ(112.5°)	-13.9/-12.26	-9.77/-11.17	-16.51/-16.71	-12.23/-12.17	-14.87/-18.6	-18.12/-19	-18.07/-17.78	-18.67/-17.76	-16.88/-16.08	-14.7/-11.1	-11.82/-12.01	-10.39/-15.09	-18.91/-18.92	-11.24/-11.33	-15.76/-14.61	-14.79/-12.94	-16.47/-8.54	-11/-17.82	-16.65/-18.42	-18.1/-18.42	-18.02/-18.75	-15.5/-16.79	-18.32/-18.37	-18.57/-17.21
Θ(120°)	-13.28/-11.36	-9.85/-10.01	-16.93/-18.15	-12.05/-11.95	-13.98/-16.25	-18.62/-19.08	-18.33/-																	



Radiated Composite Gain Data of 6GHz

Appendix A.2

Θ(127.5°)	-63/-8	-8.98/-6.59	-6.6/-7.67	-9.63/-10.04	-10.41/-9.35	-6.79/-5.63	-6.01/-7.98	-7.7/-6.19	-6.78/-9.01	-7.56/-7.11	-10.93/-10.99	-6.73/-8.98	-9.68/-15.42	-9.48/-11.69	-13.04/-18.53	-13.7/-13.48	-18.55/-19.22	-17.29/-13.49	-16.66/-17.8	-13.21/-17.56	-18/-13.13	-13.86/-14.02	-13.2/-8.32	-6.37/-5.95
Θ(135°)	-9.61/-10.16	-12.58/-10.61	-9.23/-10.57	-12.5/-14.34	-13.11/-11.39	-7.88/-5.89	-5.43/-7.63	-11.07/-11.51	-15.23/-13.17	-9.57/-13.19	-14.83/-12.62	-11.5/-10.72	-12.05/-18.67	-15.02/-18.56	-17.78/-17.4	-18.99/-16.42	-13.12/-12.52	-13.53/-18.25	-15.18/-16.35	-18.63/-18.09	-19.13/-15.57	-18.66/-15.11	-13.92/-9.76	-8.19/-8.75
Θ(142.5°)	-11.57/-15.41	-17.09/-17.98	-15.7/-13.48	-11.67/-10.7	-8.26/-9.38	-10.32/-10.29	-11.09/-10.82	-11.36/-12.56	-13.12/-16.25	-15.23/-12.79	-13.36/-15	-13.71/-13.77	-18.49/-17.63	-19.22/-14.78	-17.21/-17.61	-19.2/-18.87	-18.41/-17.96	-18.64/-19.47	-18.69/-18.39	-18.84/-17.54	-18.8/-15.71	-15.77/-15.41	-10.15/-9.93	
Θ(150°)	-13.56/-14.39	-17.31/-17.89	-18.73/-17.1	-14.72/-12.54	-10.72/-10.11	-10.95/-11.78	-10.44/-10.35	-13.6/-13.12	-10.2/-13.57	-17.46/-13.36	-12.53/-12.39	-12.31/-18.05	-18.78/-18.16	-17.6/-16.04	-15.55/-16.3	-14.82/-14.42	-12.76/-11.32	-11.54/-15.73	-18.46/-17.21	-18.72/-18.13	-17.57/-19.25	-19.01/-18.69	-18.82/-18.89	-19.31/-14.36
Θ(157.5°)	-17.71/-17.5	-18.85/-17.75	-17.61/-18.42	-17.04/-13.04	-11.12/-10.86	-10.88/-10.81	-11.36/-13.12	-15.42/-14.51	-15.11/-17.98	-18.08/-18.36	-14.68/-15.27	-15.95/-19.09	-18.02/-15.5	-19.01/-17.75	-15.99/-11.98	-11.29/-12.06	-12.87/-13.31	-14.44/-16.2	-18.37/-18.95	-17.97/-17.79	-18.16/-18.67	-18.47/-17.28	-15.66/-17.3	-18.02/-18.2
Θ(165°)	-17.7/-17.83	-18.63/-18.37	-16.77/-17.55	-17.51/-15.63	-15.23/-14.28	-14.9/-14.97	-15.92/-17.65	-17.51/-15.98	-16.66/-18.36	-17.78/-16.55	-17.78/-18.49	-19.17/-25	-17.08/-17.66	-18.16/-19.27	-18.16/-14.88	-15.91/-19.17	-19.26/-19.12	-19.41/-17.82	-18.73/-18.48	-18.99/-18.27	-18.61/-18.94	-19.26/-18.22	-18.24/-17.77	-17.91/-19.2
Θ(172.5°)	-18/-17.82	-18.55/-15.42	-14.77/-14.86	-15.17/-15.16	-13.93/-12.35	-13.01/-14.36	-14.35/-12.96	-13.25/-15.65	-16.28/-14.87	-16.87/-18.43	-18.87/-18.19	-19.23/-19.33	-18.24/-17.3	-17.3/-19.09	-17.86/-19.11	-18.64/-18.78	-17.53/-19.03	-17.63/-17.81	-18.27/-17.89	-18.94/-17.54	-18.17/-19.18	-18.45/-17.66	-18.95/-19.17	-18.6/-18.98
Θ(180°)	-18.13/-18.75	-18.39/-17.93	-18.54/-18.23	-17.53/-17.95	-15.85/-16.27	-18.6/-16.63	-14.61/-15.65	-18.93/-19.29	-15.33/-14.45	-16.85/-17.75	-18.89/-18.01	-18.16/-18.01	-18.05/-18.89	-17.75/-17.57	-18.21/-18.94	-17.75/-19.3	-17.28/-18.11	-18.77/-18.84	-19/-18.83	-18.08/-18.83	-18.06/-18.55	-19.08/-18.14	-17.72/-18.09	-18.22/-18.06
Freq(Hz)	6.995GPol.	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°)	-5.58/-5.43	-5.57/-5.94	-5.9/-5.17	-4.7/-4.88	-5.32/-5.23	-5.08/-5.61	-6.58/-5.64	-5.3/-11	-8.62/-7.71	-7.1/-7.28	-6.93/-6.83	-6.64/-6.07	-5.32/-4.75	-4.62/-4.35	-3.76/-4.2	-5.04/-5.44	-5.64/-6.17	-7.03/-7.48	-8.15/-9.73	-11.11/-11.87	-11.93/-10.71	-9.56/-8.5	-8.28/-8.14	-7.14/-6.24
Θ(7.5°)	-5.98/-5.94	-6.02/-6.02	-5.82/-5.29	-4.6/-4.43	-4.75/-5.56	-6.76/-7.49	-4.9/-10.8	-11.85/-15.23	-16.39/-12.6	-10.31/-8.39	-7.11/-7.05	-7.18/-7.47	-7.58/-7.86	-8.47/-7.78	-6.71/-6.19	-5.52/-4.5	-3.82/-3.34	-3.47/-3.15	-2.77/-3.39	-4.45/-5.12	-5.64/-5.82	-6.03/-6.8	-7.63/-7.73	-6.88/-6.23
Θ(15°)	-6.49/-7.83	-9.34/-10.56	-11.52/-12.03	-10.95/-9.69	-9.13/-8.26	-8.54/-7.98	-7.96/-6.68	-8.34/-9.19	-13/-18.41	-19.37/-17.72	-8.71/-6.4	-6.14/-7.42	-9.44/-12.42	-18.14/-14.6	-8.7/-5.56	-3.68/-2.76	2.9/-3.07	-3.22/-3.4	-3.65/-4.04	-4.23/-4.59	-5/-5.69	-6.22/-5.67	-6.58/-6.26	-6.01/-5.89
Θ(22.5°)	-3.22/-3.61	-4.87/-5.72	-4.46/-7.39	-8.92/-10.49	-11.2/-12.86	-18.45/-17.68	-13.93/-13.4	-12.03/-9.87	-9.17/-10.67	-13.65/-11.28	-8.45/-6.61	-5.87/-6.72	-8.86/-12.55	-15.8/-13.5	-10.31/-8.73	-8.14/-8.66	-6.1/-6.66	-5.77/-5.29	-4.86/-5.24	-5.75/-6.1	-7.45/-10.19	-10.95/-8.47	-6.48/-5.29	-4.21/-3.65
Θ(30°)	-2.68/-3.62	-5.82/-6.92	-1.71/-6.91	-6.68/-7.19	-9.69/-12.06	-14.77/-15.32	-15.7/-15.93	-15.04/-15.01	-12.67/-10.93	-11.79/-12.92	-12.05/-8.39	-8.67/-11.48	-18.23/-14.5	-9.67/-7.99	-9.72/-14.36	-17.04/-12.81	-8.77/-7.24	-6.71/-6.38	-2.52/-4.12	-7.62/-10.29	-11.35/-15.79	-12.09/-7.13	-7.02/-6.22	-4.47/-3.47
Θ(37.5°)	-6.01/-7.49	-11.39/-14.58	-17.88/-15.25	-11.34/-8.9	-8.52/-9.96	-13.05/-16.86	-15.86/-15.47	-17.53/-18.18	-17.29/-15.25	-17.54/-15.8	-12.89/-8.09	-8.67/-8.41	-9.74/-9.95	-5.95/-4.52	-9.63/-18.14	-19.01/-13.27	-8.64/-7.72	-7.66/-4.95	-3.11/-3.81	-7.99/-10.66	-7.17/-6.08	-5.89/-3.97	-5.53/-9.27	-7.98/-5.75
Θ(45°)	-6.47/-8.27	-9.32/-11.7	-18.84/-18.63	-16.14/-10.58	-6.22/-5.99	-9.79/-18.86	-18.98/-18.68	-16.6/-13.45	-14.76/-13.92	-18.27/-19.16	-17.54/-9.33	-7.45/-7	-6.47/-9.76	-5.84/-3.31	-7.54/-11.65	-13.35/-15.3	-9.46/-8.4	-18.21/-12.09	-4.82/-4.24	-10.09/-8.45	-4.11/-4.98	-3.3/-2.98	-6.69/-14.29	-11.88/-6.47
Θ(52.5°)	-6.41/-5.67	-13.21/-17.11	-18.07/-18.92	-18.01/-11.73	-6.86/-6.96	-12.36/-18.5	-17.82/-13.57	-16.7/-10.25	-12.61/-16.7	-14.11/-11.07	-15.3/-14.99	-9.26/-7.13	-4.34/-8.38	-10.92/-5.22	-17.88/-7.74	-11.32/-9.92	-10.62/-10.05	-5.66/-5.68	-11.7/-6.92	-2.62/-4.53	-3.97/-3.14	-8.27/-19.6	-14.38/-4.41	
Θ(60°)	-8.94/-7.19	-9.61/-15.34	-18.64/-18.92	-19.09/-14.45	-8.61/-9.18	-16.7/-18.19	-17.99/-12.6	-7.58/-7.25	-10.98/-17.72	-16.22/-11.7	-10.86/-11.27	-10.7/-11.23	-5.85/-5.55	-18.96/-9.37	-8.87/-7.03	-11.37/-18.55	-13.19/-15.06	-12.92/-10.55	-8.22/-8.01	-14.99/-5.86	-3.09/-5.61	-4.62/-3.9	-10.19/-15.03	-17.72/-11.88
Θ(67.5°)	-14.3/-11.57	-11.21/-16.64	-17.15/-19.03	-17.17/-14.42	-9.66/-10.21	-17.62/-18.81	-18.46/-18.91	-8.9/-8.79	-12.21/-19.1	-16.85/-11.12	-10.92/-12.55	-14.59/-15.56	-8.33/-5.29	-12.03/-13.9	-10.01/-8.53	-11.25/-18.22	-14.5/-18.05	-10.69/-9.79	-6.8/-8.64	-17.67/-6.12	-7.01/-7.9	-4.33/-5.2	-11.05/-11.21	-15.1/-16.92
Θ(75°)	-19.86/-13.73	-11.79/-17.85	-15.18/-15.84	-15.38/-13.54	-17.71/-11.91	-18.58/-18.86	-17.69/-17.56	-13.49/-8.89	-11.19/-18.15	-14.65/-12.83	-16.71/-13	-12.65/-18.18	-9.73/-6.46	-8.72/-12.48	-10.07/-9.13	-11.74/-18.62	-14.65/-18.4	-9.7/-8.69	-16.87/-13.19	-18.4/-8.56	-13.63/-9.91	-5.91/-8.35	-12.49/-9.87	-11.76/-13.96
Θ(82.5°)	-16.64/-12.32	-11.03/-16.65	-13.97/-14.62	-14.15/-14.27	-12.76/-15.09	-18.04/-17.79	-17.53/-18.07	-15.83/-11.02	-12.68/-16.42	-17.66/-13.6	-19.33/-18.32	-18.55/-17.43	-11.69/-8.69	-11.04/-13.22	-10.19/-9.29	-15.57/-13.83	-19.34/-17.18	-11/-13.25	-8.2/-18.69	-18.8/-17.18	-18.67/-10.44	-8.46/-15.29	-12.97/-8.93	-12.13/-13.52
Θ(90°)	-14.04/-10.56	-9.88/-13.91	-15.19/-13.78	-12.69/-12.68	-15.13/-18.93	-19.02/-18.67	-16.13/-17.8	-18.09/-11.88	-12.14/-16.53	-17.95/-16.7	-18.99/-18.34	-17.95/-17.75	-15.31/-9.7	-11.76/-15.66	-11.79/-9.91	-13.89/-11.63	-18.26/-17.69	-11.98/-14.66	-8.12/-13.76	-18.79/-16.64	-14.15/-14.74	-14.86/-18.73	-16.41/-10.41	-13.53/-14.41
Θ(97.5°)	-16.06/-10.85	-9.51/-11.73	-16.69/-15.09	-13.82/-13.28	-16.34/-18.39	-19.09/-18.91	-16.85/-17.96	-19.23/-14.49	-11.93/-18.28	-18.97/-18.23	-18.89/-19.19	-18.68/-18.22	-17.33/-11.81	-17.36/-18.54	-17.91/-13.2	-12.42/-9.79	-17.77/-18.45	-8.79/-13.96	-9.85/-12.02	-17.73/-19.2	-15.45/-18.06	-19.24/-17.88	-15.6/-11.54	-15.15/-16.1
Θ(105°)	-18.29/-10.14	-8.85/-11.42	-18.71/-15.29	-13.44/-13.79	-17.2/-18.95	-18.71/-18.58	-18.27/-18.67	-17.8/-12.65	-15.01/-19.44	-19.29/-18.8	-17.99/-17.98	-18.79/-18.59	-18.59/-16.61	-13.54/-12.3	-17.72/-16.03	-18.82/-10.07	-19.05/-16.98	-8.51/-15.47	-10.22/-14.37	-18.36/-17.59	-18.66/-17.95	-18.22/-18.32	-16.29/-14.34	-16.8/-18.5
Θ(112.5°)	-14.11/-8.79	-9.33/-12.57	-18.74/-17.43	-12.4/-15.03	-18.27/-19.15	-18.91/-17.29	-18.02/-17.98	-17.7/-16.36	-17.55/-16.66	-18.68/-12.33	-17.74/-19.16	-18.51/-15.8	-18.02/-17.59	-13.52/-12.13	-18.98/-13.37	-16.03/-16.82	-17.56/-16.08	-7.27/-17.85	-13.24/-18.96	-19.45/-19.32	-17.83/-16.89	-19.68/-12.91	-13.49/-14.41	-18.14/-18.5
Θ(120°)	-12.52/-9.37	-8.28/-12.3	-19.21/-18.13	-15.46/-16.99	-18.45/-18.66	-18.86/-18.83	-18.91/-19.22	-19.26/-17.33	-17.89/-17.73	-15.9/-19.26	-19.03/-18.5	-18.96/-14.36	-17.81/-17.66	-14.75/-11.13	-13.11/-13.23	-16.32/-15.92	-18.33/-16.57	-17.72/-19.22	-17.55/-19.83	-18.39/-17.8	-18.25/-19.03	-14.75/-12.1	-14.05/-18.13	-18.63/-14.7
Θ(127.5°)	-11.46/-9.95	-9.66/-14.07	-18.84/-19.02	-14.4/-13.57	-17.42/-18.49	-17.36/-15.52	-18.68/-18.88	-19.04/-18.35	-16.28/-16.58	-18.09/-19.18	-17.56/-17.72	-18.56/-14.35	-13.41/-13.86	-17.56/-15.54	-15.77/-18.09	-16.38/-18.32	-18.04/-17.37	-18.35/-18.08	-18.89/-18.16	-18.43/-18.48	-17.19/-15.38	-18.32/-13.4	-16.8/-17.94	-18.11/-12.19
Θ(135°)	-10.81/-9.76	-9.73/-14.69	-19.02/-18.7	-13.36/-11.69	-14.09/-17.18	-18.65/-14.76	-18.51/-15.67	-18.87/-16.84	-15.84/-17.56	-17.49/-18.87	-18.05/-19.16	-16.04/-13.74	-10.86/-18.5	-18.69/-17.36	-16.71/-18.08	-12.54/-18.6	-19.24/-17.87	-18.53/-18.98	-18.7/-17.92	-18.3/-17.79	-18.88/-18.28	-18.87/-14.74	-18.56/-16.76	-17.65/-14.91
Θ(142.5°)	-8.69/-8.1	-10.22/-11.77	-19.67/-18.86	-13.42/-11.16	-14.32/-18.36	-19.02/-16.45	-16.53/-18.92	-17.99/-15.27	-1.6/-15.32	-14.46/-15.15	-19.06/-17.75	-17.13/-16.28	-15.35/-19.14	-18.84/-19.1	-16.18/-16.73	-16.69/-15.2	-18.49/-17.86	-18.18/-18.11	-13.54/-18.53	-14.31/-17.61	-18.98/-18.05	-17.91/-18.68	-13.54/-11.13	
Θ(150°)	-11.11/-11.96	-14.54/-16.9	-18.26/-17.96	-15.32/-14.82	-16.12/-18.5	-17.21/-17.37	-17.2/-17.81	-17.46/-17.74	-18.93/-18.74	-17.67/-15.93	-17.96/-18.15	-18.78/-18.28	-17.19/-18.72	-18.19/-16.77	-18.48/-18.84	-17.99/-17.5	-18.15/-17.89	-18.78/-18.62	-18.5/-17.79	-14.56/-18.89	-16.76/-17.17	-17.23/-18.63	-15.34/-13.88	-17.65/-14.61
Θ(157.5°)	-14.2/-14.07	-16.97/-17.64	-19.16/-17.59	-18.31/-18.2	-18.95/-17.66	-18.14/-18.29	-17.71/-17.54	-17.92/-18.18	-18.67/-18.48	-17.11/-19.13	-18.74/-18.89	-17.26/-18.26	-18.53/-18.91	-19.1/-18.88	-17.57/-17.18	-17.81/-18.96	-18.97/-19.13	-17.69/-18.85	-18.23/-18.34	-18.13/-19.03	-14.25/-15.76	-15.9/-11.73	-16.29/-16.52	-17.89/-14.69
Θ(165°)	-18.47/-17.9	-19.32/-18.67	-17.68/-18.96	-18.8/-18.63	-19.15/-18.07	-17.77/-18.3	-17.13/-18.27	-18.28/-18.53	-18.39/-18.05	-18.5/-18.35	-19.12/-17.7	-18.16/-19.34	-1											



Radiated Composite Gain Data of 6GHz

Appendix A.2

Freq(Hz)	-18.94/-18.52	-18.18/-18.6	-19.16/-19.33	-18.81/-18.13	-19.33/-18.02	-18.9/-18.12	-18.75/-18.26	-18.84/-18.21	-18.84/-19.06	-19.16/-18.32	-17.78/-17.53	-17.74/-17.77	-17.97/-18.38	-18.27/-17.95	-18.22/-19.11	-18.62/-18.38	-18.36/-18.93	-18.45/-18.09	-17.46/-18.04	-19.55/-18.41	-17.35/-18.61	-18.9/-19.1	-17.09/-18.05	-19.05/-18.58
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°)	-14.34/-11.45	-10.93/-10.7	-9.33/-8.14	-7.33/-7.36	-7.22/-7.1	-6.66/-6.75	-6.29/-6.35	-6.46/-6.84	-7.31/-7.88	-8.73/-9.34	-10.14/-10.63	-10.78/-11.68	-13.07/-15.55	-16.4/-15.61	-14.06/-12.17	-10.15/-8.51	-7.01/-6.24	-5.49/-4.81	-4.67/-4.72	-4.76/-5.07	-5.58/-6.91	-8.83/-10.92	-12.79/-14.61	-17.53/-17.83
Θ(7.5°)	-8.23/-8.39	-8.31/-8.81	-10.93/-14.6	-16.82/-16.3	-11.79/-8.98	-7.46/-6.15	-5.26/-4.85	-5.08/-5.68	-7.04/-8.68	-10.76/-13.36	-16.31/-18.05	-18.37/-18.22	-19.41/-16.38	-14.82/-13.71	-11.96/-10.43	-8.63/-7.57	-6.96/-6.39	-5.73/-5.45	-5.35/-5.72	-6/-6.62	-7.06/-7.68	-8.45/-9.1	-9.36/-8.6	-7.69/-8.15
Θ(15°)	-3.55/-2.9	-2.19/-1.38	-1.9/-3.66	-6.47/-11.23	-18.52/-18.28	-17.65/-11.95	-9.44/-9.18	-9.9/-10.57	-11.19/-10.69	-11.1/-13.89	-16.66/-16.37	-17.1/-18.91	-17.98/-18.73	-17.1/-15.55	-11.99/-9.76	-9.25/-9.46	-7.88/-6.08	-4.92/-4.16	-4.76/-5.79	-6.96/-7.77	-8.45/-9.11	-10.82/-12	-10.85/-7.8	-5.49/-4.4
Θ(22.5°)	-3.98/-4.2	-4.59/-4.78	-3.95/-5.15	-7.87/-8.92	-8.81/-9.42	-11.35/-13.35	-13.57/-17.8	-17.99/-11.58	-7.99/-7.6	-8.67/-9.67	-10.46/-10.27	-9.29/-10.4	-15.71/-18.46	-16.15/-15.31	-14.35/-10.95	-8.66/-7.95	-7.96/-7.88	-7.61/-7.01	-6.46/-6.18	-5.48/-4.88	-5.04/-6.34	-9.56/-14.26	-12.66/-8.01	-5.55/-4.52
Θ(30°)	-3.27/-3.09	-2.58/-3.43	-6.16/-8.04	-8.3/-9.36	-9.51/-8.32	-5.11/-4.35	-5.88/-10.98	-18.96/-13.08	-8.9/-8.82	-13.9/-18.2	-18.76/-13.89	-11.55/-9.25	-8.86/-10.71	-11.63/-10.45	-18.43/-13.42	-8.96/-8.68	-8.23/-8.41	-8.85/-10.1	-11.18/-8.62	-4.81/-2.42	-2.06/-4.74	-13.09/-15.35	-8.07/-7.05	-7.23/-4.99
Θ(37.5°)	-2.20/05	0.85/-0.37	-3.33/-3.21	-1.41/-1.98	-4.16/-5.58	-2.95/-3.27	-7.86/-15.36	-16.97/-17.6	-12.27/-9.34	-7.27/-7.13	-9.3/-8.73	-7.56/-7.9	-9.63/-9.64	-9.12/-8.09	-10.61/-17.61	-19.4/-10.96	-6.81/-6.74	-7.66/-7.65	-7.54/-8.25	-4.76/-2.7	-1.71/-1.38	-15.25/-8.91	-5.57/-7.42	-10.42/-5.29
Θ(45°)	-7.25/-2.47	0.71/0.31	-2.39/-5.03	-4.15/-1.05	-2.14/-4.72	-4.37/-6.27	-9.89/-7.5	-7.97/-16.98	-12.85/-7.75	-6.38/-6.61	-6.39/-5.9	-6.43/-7.98	-9.94/-11.47	-14.22/-10.04	-7.98/-11.58	-18.21/-12.17	-5.16/-5.41	-7.9/-12.54	-12.53/-9.1	-5.59/-1.49	-0.46/-3.76	-17.93/-8.78	-6.27/-8	-10.86/-11.17
Θ(52.5°)	-14.82/-5.53	0.36/0.76	-1.11/-5.82	-9.98/-3.3	-2.68/-4.53	-6.96/-9.04	-10.44/-7.27	-12.64/-19.2	-11.92/-11.15	-12.09/-16.8	-12.34/-10.08	-10.73/-10.78	-12.19/-10.8	-18.44/-15.03	-9.25/-9.7	-12.4/-13.61	-4.87/-4.16	-6.93/-13.03	-17.52/-12.36	-9.06/-4.29	-2.05/-3.22	-7.92/-9.93	-10.12/-13.04	-11.12/-14.16
Θ(60°)	-7.19/-5.25	-2.67/-1.23	-1.75/-5.1	-1.476/-12.24	-5.95/-5.69	-11.52/-16.68	-10.97/-12.9	-16.62/-12.52	-12.97/-17.65	-17.1/-17.3	-14.04/-11.54	-12.58/-13.29	-15.29/-18.37	-19.18/-10.91	-10.51/-14.62	-7.13/-5.32	-5.17/-13.34	-17.18/-14	-17.46/-10.91	-4.86/-3.02	-6.01/-13.26	-19.4/-18.29	-11.81/-29	-11.12/-14.16
Θ(67.5°)	-4.5/-4.94	-6.03/-5.33	-5.49/-8.28	-9.88/-17.49	-13.62/-7.78	-14.78/-19.02	-17.66/-15.87	-11.12/-10.6	-18.06/-12.57	-11.61/-11.83	-13.31/-18.32	-8.84/-8.32	-13.89/-17.8	-18.87/-16.17	-19.43/-12.41	-9.85/-10.15	-12.94/-4.85	-6.43/-16.29	-18.08/-19.27	-18.08/-18.86	-8.2/-4.94	-7.73/-19.18	-18.93/-18.01	-11.84/-6.5
Θ(75°)	-4.99/-5.69	-8.04/-9.49	-8.14/-9.38	-11.62/-15.53	-18.97/-12.28	-15.88/-18.55	-18.5/-14.57	-11.05/-9.69	-17.32/-14.71	-13.42/-15.66	-14.11/-19.08	-9.36/-6.02	-11.5/-18.7	-18.02/-16.2	-16.23/-14.91	-11.22/-8.66	-18.86/-8.88	-8.82/-15.51	-17.71/-13.86	-16.32/-18.2	-8.88/-8.87	-13.71/-15.92	-15.37/-18.94	-11.47/-6.85
Θ(82.5°)	-7.98/-9.87	-11.28/-12.28	-10.02/-9.64	-11.37/-12.62	-18.57/-15.86	-15.85/-17.7	-18.87/-15.92	-11.96/-11.53	-16.67/-18.13	-15.95/-19.29	-8.94/-7.78	-16.25/-16.21	-18.62/-15.18	-12.18/-18.33	-11.96/-10.89	-18.1/-10.4	-13.49/-13.74	-19.17/-12.76	-17.48/-13.42	-8.82/-12.6	-18.34/-14.29	-12.95/-15.37	-11.34/-10.9	
Θ(90°)	-12.05/-15.7	-17.98/-15.69	-12/-10.35	-11.61/-11.39	-17.12/-17.67	-13.51/-18.6	-19.39/-15.41	-13.82/-13.74	-13.95/-17.91	-17.88/-17.69	-17.53/-19.04	-10.94/-10.36	-18.37/-18.9	-17.45/-14.97	-12.57/-14.05	-18.87/-14.34	-17.51/-12.02	-18.76/-13.91	-10.96/-10.9	-18.22/-15.3	-11.82/-18.85	-18.52/-15.94	-13.23/-11.86	-11.55/-13.07
Θ(97.5°)	-13.6/-18.09	-16.6/-14.83	-14.54/-11.31	-12.1/-12.57	-17.96/-18.4	-11.47/-14.19	-18.83/-18.87	-13.19/-18.52	-17.93/-17.19	-18.56/-18.6	-17.99/-18.77	-12.13/-16.07	-18.05/-17.59	-18.71/-12.15	-13.27/-16.64	-15.97/-17.56	-18.31/-12.73	-18.25/-14.96	-9.3/-11.52	-17.04/-12.14	-14.94/-18	-11.62/-15.71	-14.52/-13.25	-12.67/-14.13
Θ(105°)	-14.77/-17.27	-17.13/-17.97	-19.02/-17.74	-15.81/-15.32	-12.91/-17.87	-14.16/-12.15	-18.11/-19.1	-15.89/-18.97	-19.21/-19.1	-16.35/-19.25	-17.51/-18.75	-12.72/-12.64	-17.37/-16.6	-16.32/-9.74	-13.16/-18.86	-15.84/-11.58	-17.63/-13.44	-9.99/-14.4	-15.44/-14.8	-14.58/-16.85	-11.84/-14.35	-12.57/-19.49	-11.22/-14.15	
Θ(112.5°)	-9.73/-10.73	-9.44/-16.89	-18/-18.19	-18.69/-17.82	-18.31/-19.2	-12.13/-13.34	-17.96/-14.15	-12.64/-17.17	-18.3/-15.87	-12.69/-15.16	-18.91/-15.11	-12.11/-13.7	-16.68/-16.48	-11.97/-13.46	-16.84/-17.51	-10.56/-16.08	-17.25/-13.33	-13.26/-12.97	-12.98/-13.52	-14.33/-14.42	-12.58/-15.54	-15.09/-12.15	-10.98/-14.9	-11.9/-13.5
Θ(120°)	-10.77/-14.98	-10.94/-15.85	-17.81/-19.1	-18.46/-18.25	-17.6/-19	-12.24/-11.45	-17.81/-18.28	-13.45/-18.41	-16.89/-18.66	-14.35/-13.64	-16.21/-16.24	-18.1/-15.91	-15.77/-16.21	-15.28/-15.16	-18.91/-17.59	-16.09/-13.37	-14.82/-17.32	-15.08/-15.71	-18.93/-12.69	-11.81/-157	-14.29/-14.3	-9.32/-14.86	-14.04/-10.52	-12.67/-16.3
Θ(127.5°)	-15.21/-17.7	-15.67/-17.57	-18.94/-17.35	-18.48/-16.25	-17.33/-18.47	-19.03/-11.98	-15.62/-18.09	-18.37/-14.57	-15.64/-18.72	-14.05/-16.19	-18.03/-16.16	-17.19/-18.31	-16.99/-14.48	-15.99/-19.2	-16.86/-17.75	-17.71/-15.24	-16.49/-18.36	-16.44/-15.38	-16.52/-16.5	-13.87/-14.52	-17.06/-14.37	-13.45/-12.15	-18.58/-17.93	-17.94/-15.31
Θ(135°)	-13.49/-17.73	-15.61/-17.87	-18.57/-18.98	-19.46/-14.49	-16.58/-16.47	-18.27/-16.83	-13.26/-17.36	-18.1/-14.75	-13.16/-18.65	-17.39/-19.03	-18.17/-16.57	-13.89/-17.41	-15.71/-14.24	-17.77/-18.05	-19.05/-19.34	-18.03/-16.42	-17.24/-17.91	-18.88/-17.56	-14.4/-17.35	-19.2/-15.07	-11.47/-15.17	-15.73/-15.51	-11.09/-13.22	-12.07/-12.81
Θ(142.5°)	-8.34/-11.56	-12.23/-12.95	-14.52/-14.21	-18.69/-18.7	-15.8/-12.37	-13.83/-18.95	-16.5/-15.33	-17.4/-19.42	-14.6/-14.97	-17.5/-18.81	-18.11/-18.66	-18.89/-18.46	-18.72/-14.01	-18.72/-14.18	-18.86/-16.61	-18.88/-18.08	-18.23/-16.21	-16.68/-17.09	-17.32/-13.72	-14.5/-12.94	-18.46/-14.7	-9.3/-7.28	-12.41/-5.52	
Θ(150°)	-10.03/-10.84	-18.92/-18.33	-17.72/-19.23	-18.61/-16.64	-17.53/-18.8	-18.13/-17.4	-17.75/-14.37	-14.9/-19.08	-18.72/-19.16	-17.04/-17.91	-18.98/-17.66	-18.99/-17.63	-18.96/-18.54	-18.77/-12.11	-10.8/-15.24	-18.76/-16.87	-18.76/-19.66	-14.57/-12.7	-14.32/-16.1	-15.49/-16.64	-16.07/-12	-13.46/-14.32	-11.31/-10.21	-12.53/-12.7
Θ(157.5°)	-11.2/-14.81	-19.83/-18.16	-17.57/-15.09	-15.72/-18.42	-18.31/-17.74	-18.31/-17.97	-18.47/-17.86	-16.15/-14.33	-14.73/-17.81	-18.98/-17.55	-17.26/-17.7	-18.25/-18.5	-18.97/-18.24	-17.6/-12.3	-12.38/-18.47	-14.43/-13.05	-17.89/-19.04	-18.06/-18.43	-18.24/-13.63	-12.1/-12.68	-15.34/-18.28	-18.85/-14.31	-11.64/-13.48	-18.97/-12.43
Θ(165°)	-17.37/-18.94	-17.79/-15.22	-17.04/-18.96	-19.8/-18.12	-19.16/-17.99	-18.17/-18.81	-19.05/-18.63	-16.86/-14.37	-13.19/-13.58	-16.49/-18.62	-16.68/-18.19	-19.26/-18.51	-18.43/-18.89	-18.16/-18.04	-17.29/-16.17	-13.33/-14.91	-17.83/-15.75	-12.57/-11.9	-13.25/-14.49	-15.58/-17.46	-17.67/-19.05	-13.38/-9.46	-8.37/-8.91	-11.88/-16.57
Θ(172.5°)	-18.59/-17.26	-19.33/-16.29	-19.02/-18.61	-18.21/-18.58	-18.43/-17.58	-18.16/-17.54	-16.22/-17.87	-17.08/-19.13	-18.26/-18.11	-18.04/-18.1	-18.53/-18.82	-17.23/-18.2	-18.38/-18.73	-18.97/-18.25	-18.24/-18.42	-17.72/-15.26	-14.77/-15.34	-17.17/-17.03	-17.01/-18.28	-18.84/-18.04	-17.57/-17.66	-18.64/-18.94	-17.18/-18.88	
Θ(180°)	-18.61/-18.14	-17.21/-17.96	-18.99/-18.64	-18.54/-17.4	-16.72/-18.52	-18.75/-18.14	-16.28/-15.86	-16.81/-18.6	-16.58/-19.93	-16.85/-17.89	-18.69/-17.74	-18.38/-19.25	-17.51/-18.45	-18.54/-18.08	-18.33/-18.4	-17.68/-18.13	-19.27/-18.72	-18.6/-18.57	-18.15/-18.66	-18.53/-19.33	-17.87/-18.99	-18.66/-18.4	-17.48/-19.23	-17.41/-18.09
Freq(Hz)	6.475GPol.	Theta/Ant.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
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°)	-2.65/-2.97	-3.49/-4.58	-5.77/-7.03	-8.19/-8.61	-8.66/-9.38	-9.71/-9.73	-8.69/-7.48	-6.46/-5.51	-6.64/-3.82	-3.07/-2.74	-2.61/-2.61	-2.66/-2.65	-2.86/-3.26	-4.16/-5	-6.45/-8.63	-11.85/-14.29	-17.73/-18.19	-16.45/-13.13	-10.24/-8.25	-6.51/-4.8	-3.79/-3.18	-2.81/-2.4	-1.76/-1.39	-1.88/-2.54
Θ(7.5°)	-4.45/-4.86	-4.8/-4.42	-4.51/-5.52	-6.31/-6.57	-8.14/-10.44	-11.96/-13.09	-12.73/-9.6	-7.17/-5.94	-5.28/-4.74	-4.36/-4.45	-4.54/-5.1	-4.37/-4.3	-4.24/-4.25	-4.21/-4.5	-5.19/-5.39	-5.44/-5.4	-6.33/-7.3	-7.46/-7.34	-7.44/-7.7	-8.42/-7.9	-6.95/-6.28	-5.53/-4.63	-4.12/-3.88	-3.96/-3.83
Θ(15°)	-9.04/-10.89	-11.46/-8.29	-5.45/-4.5	-3.78/-3.89	-4.91/-5.57	-5.41/-4.33	-2.99/-1.97	-1.8/-8.22	-3.84/-9.5	-6.23/-7.96	-9.85/-11.31	-10.6/-8.74	-6.54/-5.21	-5.3/-5.36	-5.91/-6.79	-7.3/-5.48	-4.46/-4.83	-5.14/-5.22	-5.44/-6.56	-8.34/-8.75	-8.67/-7.63	-6.12/-6.13	-6.62/-7.09	-7.89/-8.63
Θ(22.5°)	-3.32/-2.58	-2.35/-2.49	-2.62/-2.06	-1.27/-1.07	-1.38/-2.67	-3.64/-2.15	-0.350/-83	0.64/-0.7	-3.42/-3.71	-5.45/-7.19	-9.77/-11.23	-7.54/-3.39	-0.650/-43	-0.17/-1.15	-1.95/-3.33	-5.76/-6.89								



Radiated Composite Gain Data of 6GHz

Appendix A.2

Θ(22.5°)	-2.96/-0.99	-0.55/-1.95	-3.71/-4.54	-5.22/-6.34	-7/-5.79	-5.01/-6.99	-11.45/-16.81	-17.11/-18.52	-18.42/-13.69	-10.97/-10.25	-9.02/-7.33	-5.7/-4.58	-4.41/-5.85	-8.12/-9.59	-9.61/-10.65	-15.79/-18.67	-17.13/-13.39	-12.19/-11.43	-11.02/-11.37	-10.4/-9.69	-9.94/-11.08	-14.12/-14.01	-8.7/-6.64	-6.54/-4.9
Θ(30°)	-2.17/-1.28	-3.3/-9.92	-9.15/-6.96	-6.36/-7.56	-6.47/-3.72	-3.21/-4.73	-7.56/-10.74	-11.36/-9.52	-6.59/-5.35	-6.22/-11.55	-16.45/-7.71	-4.79/-3.89	-4.97/-7.13	-8.81/-11.25	-10.72/-11.12	-17.89/-17.3	-17.89/-14.64	-15.47/-15.11	-11.6/-8.15	-7.2/-8.94	-8.11/-6.01	-8.76/-15.46	-7.61/-5.1	-5.1/-3.58
Θ(37.5°)	1.04/1.01	-1.46/-6.04	-12.69/-9.63	-7.69/-5.31	-4.79/-4.36	-4.19/-6.15	-6.45/-6.11	-7.8/-7.08	-4.08/-3.71	-7.51/-18.69	-8.76/-2.71	-2.03/-3.72	-7.71/-11.4	-12.61/-12.99	-17.98/-17	-13.86/-13.7	-10.12/-7.79	-9.25/-13.35	-12.48/-5.56	-3.63/-6.13	-5.77/-3.38	-5.91/-18.45	-5.9/-5.5	-5.99/-0.57
Θ(45°)	-0.57/-1.26	-1.27/-1.88	-5.04/-9.55	-3.06/-1.39	-3.72/-5.16	-7.25/-11.18	-7.11/-8.18	-16.56/-13.74	-8.39/-5.68	-5.46/-9.9	-19.1/-5.46	-3.82/-6.08	-13.98/-16.81	-12.64/-12.26	-16.38/-17.87	-8.32/-8.86	-7.51/-4.66	-5.68/-9.26	-14.02/-12.26	-7.17/-6.3	-3.04/-0.96	-2.72/-12.75	-11.65/-9.39	-9.44/-2.06
Θ(52.5°)	-12.68/-12.44	-4.83/-2.83	-5.67/-18.66	-4.6/-3.8	-4.86/-5	-8.55/-15.57	-9.87/-15.93	-16.24/-17.08	-13.4/-6.04	-5.51/-10.02	-17.26/-7.45	-6.34/-11.85	-12.04/-17.97	-15.13/-16.32	-14.09/-14.14	-5.46/-5.58	-6.94/-6.5	-4.66/-8.66	-14.91/-18.15	-16.01/-9.24	-2.89/-1.62	-3.27/-8.79	-17.13/-15.31	-12.31/-10.51
Θ(60°)	-12.04/-10.99	-7.36/-3.88	-5.86/-17.26	-12.42/-8.11	-6.09/-6.77	-13.36/-16.15	-12.04/-18.95	-8.58/-12.16	-16.55/-7.89	-8.32/-14.71	-14.17/-9.98	-9.12/-15.44	-11.61/-15.78	-18.2/-16.76	-11.67/-11.1	-6.94/-5.87	-7.08/-12.21	-7.32/-10.21	-14.36/-14.43	-15.18/-14.85	-6.4/-4.47	-4.83/-8.76	-11.76/-17.19	-17.68/-12.91
Θ(67.5°)	-7.25/-7.79	-7/-4.44	-6.17/-16.01	-18.68/-13.19	-10.12/-9.35	-13.97/-18.61	-14.11/-18.34	-11.24/-14.72	-18.88/-14.81	-15.44/-18.95	-13.47/-12.31	-14.74/-17.4	-10.29/-17.3	-18.67/-18.19	-12.82/-8.06	-10.1/-7.86	-7.39/-18.8	-12.42/-8.94	-16.57/-14.19	-9.28/-17.48	-13.74/-10.73	-8.34/-8.87	-10.89/-15.47	-15.79/-10.03
Θ(75°)	-7.43/-8.1	-8.47/-6.43	-6.84/-12.97	-18.66/-17.67	-13.03/-9.84	-19.15/-19.17	-18.31/-18.01	-16.96/-16.64	-18.03/-18.33	-17.86/-14.21	-14.78/-14.94	-18.9/-18.77	-12.47/-14.47	-16.84/-17.86	-15.36/-9.84	-11.08/-12.18	-10.41/-13.72	-19.15/-8.82	-10.99/-16.68	-8.82/-17.32	-18.03/-14.79	-11.25/-12.7	-12.98/-13.68	-18.58/-12.03
Θ(82.5°)	-10.26/-10.47	-12.09/-8.21	-8.38/-13.74	-18.37/-17.99	-13.34/-12.8	-18.57/-17.98	-18.75/-18.27	-18.17/-18.59	-17.52/-18.07	-17.57/-13.43	-17.89/-18.54	-17.83/-19.13	-11.81/-14.44	-15.7/-18.07	-14.08/-13.06	-13.18/-17.18	-16.49/-13.35	-17.11/-9.82	-11.95/-18.18	-12.23/-18.61	-18.74/-15.44	-15.1/-15.36	-13.04/-14.09	-18.2/-12.8
Θ(90°)	-14.98/-9.59	-15.46/-14.04	-11.61/-16.03	-19.29/-18.64	-14.2/-15.83	-19.02/-18.15	-17.6/-18.73	-17.96/-19.37	-17.48/-16.24	-19.24/-16.88	-17.58/-18.78	-19.12/-17.67	-14.27/-13.75	-14.54/-14.19	-17.51/-17.82	-14.16/-17.47	-19.13/-14.48	-13.27/-15.22	-14.17/-17.43	-18.64/-18.95	-19.12/-15.84	-18.02/-18.98	-13.45/-11	-16.58/-13.61
Θ(97.5°)	-17.19/-9.45	-16.43/-18.49	-17.05/-19.08	-18.18/-18.67	-15.71/-18.4	-18.96/-18.66	-18.24/-17.87	-18.45/-18.66	-13.74/-12.14	-19.77/-18.91	-18.33/-19.1	-13.63/-16.76	-14.48/-14.87	-17.96/-17.59	-14.65/-18.3	-19.07/-12.62	-13.3/-17.61	-19.47/-17.77	-18.45/-18.42	-19.21/-16.21	-17.56/-17.67	-15.43/-11.2	-17.33/-11.51	
Θ(105°)	-16.09/-11.12	-13.96/-18.77	-18.81/-18.78	-17.9/-17.58	-17.92/-16.77	-18.46/-18.68	-18.43/-19.1	-18.68/-18.96	-13.88/-10.2	-15/-18.42	-18.5/-18.53	-17.06/-19.29	-17.92/-19.62	-16.16/-15.31	-18.55/-17.6	-16.06/-17.83	-18.47/-11.82	-16.48/-17.62	-18.8/-11.72	-17.96/-15.88	-18.69/-18.45	-15.71/-11.93	-12.64/-18.17	
Θ(112.5°)	-17.68/-17.19	-15.57/-18.67	-12.11/-12.26	-17.15/-18.12	-17.41/-18.26	-17.63/-18.64	-17.67/-19.58	-18.68/-18.88	-16.92/-13.4	-14.34/-19.12	-17.88/-18.93	-14.73/-18.05	-18.67/-18.91	-18.85/-19.34	-18.22/-17.56	-17.63/-18.11	-18.21/-14.19	-12.71/-16.48	-17.24/-16.24	-12.75/-12.29	-19.07/-15.47	-17.6/-18.53	-15.02/-18.38	-15.72/-15.43
Θ(120°)	-18.61/-15.47	-15.35/-18.42	-12.3/-14.5	-14.93/-18.53	-18.32/-19.17	-18.73/-17.22	-15.33/-13.91	-17.44/-16.69	-18.2/-18.74	-18.25/-18.09	-19/-18.16	-15.92/-18.25	-11.84/-18.62	-18.28/-17.45	-19.37/-17.83	-17.4/-17.93	-17.92/-18.4	-14.5/-13.94	-17.65/-16.38	-11.96/-14.23	-18.67/-16.48	-17.18/-14.99	-19.58/-12.73	-17.94/-14.76
Θ(127.5°)	-18.45/-17.96	-17.39/-18.62	-14.54/-18.2	-16.97/-18.2	-19.05/-15.31	-18.32/-17.66	-18.91/-13.96	-13.65/-17.6	-17.83/-17.14	-15.91/-18.39	-17.92/-18.56	-18.9/-16.17	-12.71/-15.67	-16.28/-18.7	-19.07/-18.65	-16.35/-18.9	-15.66/-16.09	-12.8/-12.99	-18/-18.65	-8.99/-9.52	-18.77/-17.86	-18.37/-9.65	-15.64/-17.93	-18.78/-18.66
Θ(135°)	-15.19/-17.75	-16.91/-18.09	-17.73/-18.77	-18.68/-19.05	-12.13/-12.39	-18.61/-14.6	-15.5/-17.74	-14.55/-16.68	-18.5/-12.3	-10.92/-16.19	-18.13/-18.52	-19.67/-18.85	-17.83/-16.74	-18.49/-18.99	-18.69/-15.73	-17.15/-18.21	-16.96/-15.94	-10.57/-12.12	-17.64/-17.74	-14.24/-10.76	-11.76/-14.88	-18.66/-12.72	-13.06/-13.89	-11.16/-12.09
Θ(142.5°)	-10.48/-11.72	-13.84/-19.01	-18.78/-18.33	-17.29/-17.81	-18.68/-16.26	-18.33/-18.19	-14.71/-18.65	-14.03/-14.42	-13.8/-18.98	-15.91/-19.21	-17.66/-18.26	-17.83/-18.58	-18.9/-18.39	-17.01/-17.94	-18.33/-18.66	-18.4/-17.61	-11.39/-13.53	-18.74/-17.48	-15.9/-12.45	-15.11/-13.85	-14.46/-14.38	-13.95/-11.49	-14.54/-12.27	-13.89/-15.18
Θ(150°)	-10.37/-13.5	-18.36/-15.54	-17.39/-17.53	-18.48/-18.9	-16.6/-13.34	-18.86/-18.4	-17.63/-18.51	-17.89/-10.89	-10.09/-14.23	-16.39/-17.6	-17.95/-19.06	-18.71/-18.07	-17.34/-17.42	-18.96/-18.36	-18.73/-13.53	-11.56/-11.9	-15.34/-19.48	-17.02/-15.46	-14.34/-13.77	-17.03/-14.89	-11.98/-12.1	-17.4/-14.29	-14.72/-16.01	
Θ(157.5°)	-16.85/-18.06	-18.49/-17.27	-16.19/-17.76	-18.07/-17.57	-18.1/-17.85	-17.3/-17.56	-18.63/-17.55	-19.69/-19.03	-19.01/-18.91	-19.16/-17.9	-17.52/-19.06	-17.39/-18.03	-18.38/-19	-18.42/-17.67	-18.03/-19.39	-15.41/-10.66	-10.43/-14.81	-18.14/-18.78	-16.9/-12.84	-11.88/-13.19	-14.65/-15.34	-13.21/-12.94	-14.87/-13.16	-14.06/-14.21
Θ(165°)	-18.01/-18.42	-17.98/-17.67	-18.03/-18.08	-17.88/-18.45	-19.39/-18.9	-18.72/-19.02	-17.9/-14.39	-13.93/-15.59	-17.85/-17.74	-18.83/-17.93	-19.09/-18.52	-17.84/-19.12	-18.4/-17.91	-19.07/-19.28	-15.06/-13.06	-13.1/-14.98	-18.33/-19.3	-19.38/-16.14	-16.3/-15.85	-15.52/-14.85	-15.76/-17.35	-18.59/-18.94	-14.54/-12.27	-13.89/-15.18
Θ(172.5°)	-16.47/-18.22	-18.47/-17.99	-17.99/-17.4	-18.67/-19.03	-17.98/-18.6	-18.84/-17.74	-17.91/-17.95	-17.17/-17.5	-18.81/-18.53	-17.79/-18.48	-18.17/-17.59	-16.21/-15.66	-16.19/-17.56	-18.57/-17.27	-17.32/-19.23	-17.57/-18.63	-18.16/-14.97	-14.87/-16.2	-17.52/-18.22	-17.96/-18.21	-18.03/-17.98	-18.21/-18.12	-18.4/-19.13	-17.98/-16.55
Θ(180°)	-18.44/-17.76	-17.44/-18.39	-18.63/-17.75	-18.07/-17.67	-19.04/-19.03	-18.25/-18.44	-18.52/-18.47	-17.91/-17.86	-18.79/-18.67	-19.05/-17.47	-19.29/-18.21	-17.18/-18.06	-17.5/-18.23	-18.43/-18.04	-18.61/-18.12	-17.08/-17.19	-16.1/-18.29	-19.05/-17.46	-18.26/-18.82	-19.48/-18.3	-18.03/-19.07	-18.13/-19.17	-19.02/-18.23	-18.58/-18.37
Freq(Hz)	6.995GPol.	PhiAnt. 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gain	Φ(0°)/Φ(7.5°)	Φ(15°)/Φ(22.5°)	Φ(30°)/Φ(37.5°)	Φ(45°)/Φ(52.5°)	Φ(60°)/Φ(67.5°)	Φ(75°)/Φ(82.5°)	Φ(90°)/Φ(97.5°)	Φ(105°)/Φ(112.5°)	Φ(120°)/Φ(127.5°)	Φ(135°)/Φ(142.5°)	Φ(150°)/Φ(157.5°)	Φ(165°)/Φ(172.5°)	Φ(180°)/Φ(187.5°)	Φ(195°)/Φ(202.5°)	Φ(210°)/Φ(217.5°)	Φ(225°)/Φ(232.5°)	Φ(240°)/Φ(247.5°)	Φ(255°)/Φ(262.5°)	Φ(270°)/Φ(277.5°)	Φ(285°)/Φ(292.5°)	Φ(300°)/Φ(307.5°)	Φ(315°)/Φ(322.5°)	Φ(330°)/Φ(337.5°)	Φ(345°)/Φ(352.5°)
Θ(0°)	-10.95/-13.76	-16.88/-18.1	-17.15/-14.15	-11.04/-8.03	-6.58/-6.14	-4.73/-3.76	-2.97/-2.09	-1.6/-1.59	-1.61/-1.78	-1.96/-2.19	-2.84/-3.8	-4.61/-5.6	-7.5/-10.02	-12.75/-17.82	-18.12/-13.66	-10.83/-9.3	-7.81/-6.18	-5.06/-3.47	-3.93/-3.49	-3.6/-3.35	-3.77/-3.96	-4.65/-4.95	-5.67/-6.81	-9.37/-9.38
Θ(7.5°)	-7.49/-9.42	-11.01/-13.94	-18.72/-19.01	-18.56/-16.78	-11.86/-10.39	-9.29/-9.92	-7.46/-6.72	-6.53/-6.82	-7.13/-7.13	-6.64/-6.43	-6.78/-7.61	-8.4/-9.63	-10.92/-11.35	-11.29/-11.09	-11.29/-10.55	-10.57/-9.97	-9.11/-7.81	-6.45/-4.74	-3.49/-2.41	-1.74/-1.64	-1.36/-1.28	-1.66/-2.42	-2.71/-3.49	-4.38/-5.85
Θ(15°)	-11.24/-10.57	-8.91/-8.31	-8/-8.66	-9.14/-8.24	-5.83/-3.96	-3.13/-2.93	-3.49/-3.49	-5.02/-4.89	-4.14/-3.5	-3.43/-4.68	-5.93/-7.34	-7.76/-7.77	-7.64/-7.22	-5.8/-5.36	-5.73/-6.29	-6.37/-8.39	-12.44/-10.38	-6.09/-3.77	-2.12/-1.09	-1.4/-2.03	-3.05/-4.19	-5.66/-6.86	-8.83/-7.26	-7.59/-9.77
Θ(22.5°)	-12.69/-9.34	-6.08/-4.77	-3.27/-2.94	-3.41/-3.49	-3.07/-2.02	-0.92/-0.11	0.03/-0.77	-1.74/-2.54	-3.32/-4.11	-5.93/-10.8	-17.44/-17.92	-14.48/-11.35	-9.1/-8.27	-8.82/-9.63	-8.07/-6.41	-5.5/-5.83	-6.95/-10.29	-10.2/-5.56	-2.64/-1.34	-1.89/-2.89	-3.63/-3.34	-2.99/-4.09	-6.78/-11.52	-14.37/-15.89
Θ(30°)	-7.52/-2.1	1.11/-1.33	0.550/-0.7	-1.01/-2.68	-3.02/-1.73	-0.77/-0.25	-0.57/-0.05	0.41/-0.85	-3.02/-5.36	-9.31/-14.45	-12.13/-8.06	-6.18/-5.76	-6.53/-6.68	-8.09/-7.38	-7.52/-7	-6.93/-4.82	-10.53/-13.23	-16.56/-17.47	-12.42/-7.7	-6.65/-6.72	-7.14/-3.7	-1.24/-1.12	-4.48/-11.65	-9.09/-10.65
Θ(37.5°)	-8.83/-4.61	-1.77/-0.5	-3.11/-7.07	-7.15/-3.15	-2.07/-2.84	-1.72/-0.46	-2.25/-1.82	-1/-2.78	-3.78/-3.55	-5.09/-5.92	-4.49/-3.29	-2.22/-1.73	-1.4/-1.66	-1.99/-1.29	-1.21/-3.93	-6.05/-5.21	-6.06/-11.5	-15.96/-13.03	-8.71/-7.39	-9.11/-8.49	-6.21/-4.99	-3.02/-1.48	-3.85/-13.29	-15.55/-16.09
Θ(45°)	-13.71/-9.62	-6.23/-3.53	-3.44/-4.89	-3.60/-6.2	1.22/-0.18	-0.33/-0.08	-2.63/-3.42	-3.4/-5.45	-2.91/-0.56	-1.22/-2.88	-2.79/-2.78	-2.44/-0.71	1.160.66	0.110/-7.3	1.15/-1.04	-3.71/-4.6	-7.07/-15.11	-12.22/-19	-5.12/-7.1	-5.77/-2.23	-4.21/-11.68	-5.01/-3.21	-3.5/-2.62	-3.71/-5.53
Θ(52.5°)	-4.37/-1.51	0.28/-1.22	0.31/-1.18	-0.52/-1.46	2.34/-1.43	-0.36/-2.23	-4.83/-4.71	-6.37/-11.05	-4.64/-0.82	-0.56/-0.45	-0.95/-3.58	-1.03/-1.27	2.040.42	0.08/-1.2	1.810.32	-0.78/-2.78	-5.07/-11.8	-6.91/-6.26	-7.49/-7.06	-3.25/-1.57	-3.43/-10.66	-5.51/-3.61	-4.83/-2.71	-1.4/-3.05
Θ(60°)	-9.02/-1.24	1.08/-1.57	0.720/-0.2	-0.250/-6.2	2.53/-0.5	-2.83/-2.61	-4.45/-3.17	-3.92/-5.2	-2.38/-1.02	-1.03/-1.17	1.46/-1.9	-0.312.46	2.572.32	1.21/-8.9	1.71/-43	-0.46/-1.19	-0.2/-1.84	-4.04/-2.07	-3.01/-5.39	-1.4/-2.66	-10.49/-12.04	-11.89/-7.64	-5.77/-11.61	-10.73/-10.43
Θ(67.5°)	-11.32/-2.87	-0.490																						



Antenna Pattern of 2.4GHz/5GHz

Appendix B.1

Total Gain Data

Freq(Hz)	2.450Pol.	TotalAnt. 1	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Gain	Φ(0°)Ψ(7.5°)	Φ(15°)Ψ(22.5°)	Φ(30°)Ψ(37.5°)	Φ(45°)Ψ(52.5°)	Φ(60°)Ψ(67.5°)	Φ(75°)Ψ(82.5°)	Φ(90°)Ψ(97.5°)	Φ(105°)Ψ(112.5°)	Φ(120°)Ψ(127.5°)	Φ(135°)Ψ(142.5°)	Φ(150°)Ψ(157.5°)	Φ(165°)Ψ(172.5°)	Φ(180°)Ψ(187.5°)	Φ(195°)Ψ(202.5°)	Φ(210°)Ψ(217.5°)	Φ(225°)Ψ(232.5°)	Φ(240°)Ψ(247.5°)	Φ(255°)Ψ(262.5°)	Φ(270°)Ψ(277.5°)	Φ(285°)Ψ(292.5°)	Φ(300°)Ψ(307.5°)	Φ(315°)Ψ(322.5°)	Φ(330°)Ψ(337.5°)	Φ(345°)Ψ(352.5°)	
Θ(0°)	-3.97/-3.83	-3.97/-3.98	-4.12/-4.18	-4.08/-4.01	-3.94/-3.96	-4.08/-4.25	-4.35/-4.27	-4.07/-3.73	-3.89/-4.20	-4.73/-5.39	-5.32/-5.19	-4.94/-4.71	-4.59/-4.73	-5.14/-5.50	-5.62/-5.75	-5.85/-6.00	-5.88/-5.73	-5.65/-5.55	-5.30/-4.97	-4.71/-4.62	-4.53/-4.54	-4.64/-4.80	-4.61/-4.27	-3.96/-3.70	
Θ(7.5°)	-6.61/-6.94	-7.28/-7.50	-7.31/-6.98	-6.44/-5.73	-5.13/-4.86	-4.70/-4.51	-4.27/-4.05	-3.69/-3.39	-3.27/-3.42	-3.75/-4.07	-4.20/-3.89	-3.29/-2.69	-2.34/-2.33	-2.53/-2.70	-3.07/-3.30	-3.39/-3.49	-3.57/-3.51	-3.42/-3.33	-3.18/-3.18	-3.24/-3.48	-3.85/-4.35	-4.94/-5.53	-5.77/-5.93	-6.10/-6.23	
Θ(15°)	-10.57/-10.73	-10.27/-9.02	-7.42/-6.00	-4.89/-3.97	-3.39/-3.00	-2.70/-2.46	-2.25/-2.14	-2.09/-2.08	-1.97/-1.92	-1.96/-2.05	-2.13/-2.04	-1.74/-1.30	-0.99/-0.90	-1.02/-1.34	-1.64/-1.79	-1.84/-1.80	-1.61/-1.34	-1.00/-0.75	-0.46/-0.28	-0.29/-0.50	-0.99/-1.73	-2.83/-4.04	-5.38/-6.87	-8.39/-9.65	
Θ(22.5°)	-10.24/-9.15	-7.66/-5.87	-4.08/-2.64	-1.70/-1.12	-0.79/-0.53	-0.32/-0.17	-0.06/-0.14	-0.39/-0.60	-0.65/-0.55	-0.46/-0.42	-0.39/-0.31	-0.15/-0.00	0.08/0.02	-0.24/-0.61	-1.00/-1.26	-1.33/-1.22	-0.98/-0.63	-0.21/0.20	0.59/0.87	0.96/0.82	-0.39/-0.32	-1.46/-2.94	-4.83/-6.93	-9.14/-10.55	
Θ(30°)	-7.05/-5.51	-4.01/-2.61	-1.21/-0.01	0.73/1.07	1.21/1.41	1.68/1.86	1.87/1.82	1.13/0.63	0.35/0.31	0.35/0.41	0.45/0.52	0.58/0.56	0.48/0.38	0.25/0.00	-0.32/-0.68	-1.02/-1.21	-1.29/-1.11	-0.68/-0.08	0.45/0.85	0.99/0.90	0.62/0.10	-0.91/-2.34	-4.10/-6.00	-7.83/-8.34	
Θ(37.5°)	-4.98/-3.32	-1.74/-0.39	0.83/1.83	2.41/2.60	2.61/2.74	2.94/3.01	2.79/2.30	1.66/1.12	0.85/0.70	0.58/0.56	0.61/0.74	0.73/0.60	0.47/0.46	0.55/0.55	0.31/0.14	-0.79/-1.45	-2.01/-2.17	-1.69/-0.79	-0.05/0.36	0.42/0.29	0.14/-0.16	-0.83/-1.87	-3.25/-4.57	-5.78/-6.12	
Θ(45°)	-3.98/-2.66	-0.95/0.53	1.77/2.67	3.11/3.26	4.62/3.30	3.30/3.11	2.58/1.85	1.15/0.78	0.67/0.51	0.28/0.12	0.09/0.15	0.15/0.05	0.03/0.27	0.71/0.98	0.94/0.61	-0.06/-1.07	-2.21/-2.87	-2.51/-1.46	-0.68/-0.42	-0.52/-0.63	-0.63/-0.60	-0.74/-1.26	-2.14/-3.02	-3.87/-4.41	
Θ(52.5°)	-3.60/-3.02	-1.59/0.12	1.60/2.47	2.82/2.92	2.94/2.84	2.63/2.07	1.17/0.20	-0.39/-0.42	-0.16/-0.08	-0.17/-0.31	-0.37/0.27	-0.09/0.16	0.49/1.00	1.52/1.80	1.79/1.45	0.57/-0.74	-2.07/-2.60	-2.08/-1.15	-0.64/-0.62	-0.92/-1.17	-1.15/-1.01	-0.92/-1.15	-1.71/-2.35	-2.96/-3.46	
Θ(60°)	-4.07/-3.65	-2.67/-0.95	0.72/1.68	2.04/2.13	2.01/1.71	1.25/0.40	-0.86/-2.05	-2.50/-2.05	-1.23/-0.59	-0.30/-0.23	-0.18/-0.16	0.72/1.19	1.41/1.51	1.68/1.82	1.84/1.51	0.52/-0.86	-1.77/-1.75	-1.14/-0.56	-0.37/-0.77	-1.57/-1.27	-2.06/-1.84	-2.09/-2.68	-3.35/-3.95	-4.35/-4.40	
Θ(67.5°)	-5.59/-4.74	-3.80/-4.32	-0.71/0.27	0.81/1.00	0.81/0.49	-0.03/-1.12	-2.72/-3.98	-3.82/-2.80	-1.68/-0.87	-0.38/-0.07	0.26/0.84	1.47/1.69	1.41/1.02	0.90/1.10	1.37/1.18	0.27/-0.60	-0.92/-0.81	-0.53/-0.30	-0.46/-1.15	-2.01/-2.31	-1.88/-1.73	-2.59/-4.38	-6.31/-7.24	-6.99/-6.37	
Θ(75°)	-6.03/-5.31	-4.42/-3.38	-2.21/-1.41	-0.95/-0.84	-1.01/-0.93	-0.92/-1.81	-3.42/-4.90	-4.61/-3.33	-2.36/-1.71	-1.15/-0.61	-0.13/0.35	0.81/1.05	0.79/0.21	-0.16/0.13	0.65/0.58	-0.05/-0.57	-0.90/-1.07	-1.08/-0.93	-1.04/-1.65	-2.44/-2.84	-2.58/-2.65	-3.83/-6.16	-8.05/-7.95	-6.75/-6.23	
Θ(82.5°)	-5.86/-5.56	-4.57/-3.77	-3.14/-2.36	-1.89/-2.17	-2.69/-2.57	-2.36/-3.04	-4.22/-4.99	-4.24/-3.03	-2.50/-2.38	-2.04/-1.39	-0.73/-0.20	0.35/0.85	0.52/-0.51	-1.08/-0.83	-0.49/-0.67	-1.06/-1.60	-2.04/-2.27	-2.35/-2.17	-2.27/-3.02	-4.57/-5.03	-4.34/-4.40	-6.36/-9.71	-9.90/-8.06	-6.56/-5.98	
Θ(90°)	-5.69/-6.75	-6.13/-5.68	-5.82/-4.30	-2.82/-2.78	-2.99/-2.87	-3.08/-4.07	-4.92/-5.12	-4.12/-3.02	-2.71/-2.91	-2.89/-2.25	-1.33/-0.67	-0.06/0.46	-0.13/-1.73	-2.39/-1.76	-1.42/-1.42	-1.91/-2.82	-3.30/-3.71	-4.41/-4.60	-5.34/-4.95	-6.67/-6.09	-4.27/-4.11	-6.58/-12.38	-12.01/-7.90	-6.08/-5.26	
Θ(97.5°)	-3.98/-5.27	-5.04/-4.76	-6.80/-7.61	-5.54/-5.36	-4.99/-3.98	-4.19/-5.61	-6.37/-6.07	-4.89/-3.88	-3.72/-4.06	-3.93/-3.05	-2.08/-1.42	-0.89/-0.84	-1.92/-3.11	-2.54/-2.07	-1.91/-1.92	-2.98/-4.17	-5.19/-6.93	-7.40/-5.85	-4.23/-4.75	-6.36/-5.46	-3.69/-3.14	-4.45/-4.77	-7.96/-5.72	-4.57/-3.89	
Θ(105°)	-6.23/-7.93	-6.84/-5.69	-6.27/-7.80	-5.73/-5.28	-5.38/-4.58	-5.11/-7.70	-10.06/-8.89	-6.23/-4.27	-3.31/-3.20	-2.04/-1.39	-0.86/-0.84	-1.38/-2.17	-2.33/-2.50	-2.31/-2.83	-5.13/-3.78	-9.06/-9.25	-6.49/-3.78	-2.53/-3.46	-6.03/-6.48	-4.55/-3.54	-4.09/-6.58	-4.89/-5.44	-8.00/-6.79	-6.30/-6.16	
Θ(112.5°)	-6.31/-4.85	-10.74/-6.62	-9.32/-13.45	-10.47/-8.23	-6.64/-4.80	-4.56/-6.08	-8.08/-8.49	-6.90/-5.37	-4.72/-4.62	-4.43/-3.67	-2.81/-2.27	-0.26/-0.47	-0.39/-3.81	-4.40/-4.30	-4.23/-5.99	-6.02/-7.28	-6.61/-6.35	-5.94/-6.40	-3.71/-4.88	-7.91/-7.67	-6.83/-5.96	-4.30/-5.48	-6.32/-5.51	-5.30/-5.88	
Θ(120°)	-7.33/-8.73	-9.51/-7.79	-7.18/-9.91	-13.48/-13.04	-13.24/-11.07	-9.27/-9.03	-8.21/-6.55	-4.88/-3.75	-3.47/-3.62	-3.65/-3.41	-3.25/-3.41	-3.60/-3.40	-3.27/-4.03	-5.38/-5.74	-6.24/-7.69	-7.38/-6.30	-5.93/-5.96	-5.64/-4.12	-3.20/-4.31	-7.44/-8.25	-5.36/-3.62	-3.22/-3.96	-4.62/-4.54	-4.71/-6.02	
Θ(127.5°)	-11.16/-12.96	-13.22/-11.48	-10.18/-10.22	-10.81/-9.85	-9.19/-9.39	-9.73/-10.51	-11.23/-10.37	-8.69/-7.25	-6.35/-5.80	-5.04/-4.38	-4.29/-4.67	-4.74/-4.56	-5.31/-7.27	-9.13/-8.52	-8.38/-8.29	-7.29/-6.43	-5.65/-4.94	-3.62/-1.92	-1.10/-1.68	-3.62/-5.82	-6.47/-6.50	-6.42/-7.16	-7.54/-7.23	-7.03/-6.63	
Θ(135°)	-8.29/-7.99	-7.89/-7.34	-8.66/-8.81	-9.59/-9.86	-8.96/-7.93	-7.42/-7.25	-6.87/-6.28	-5.86/-5.63	-5.64/-5.68	-6.28/-6.83	-7.55/-7.77	-7.03/-6.36	-6.93/-8.27	-9.17/-8.61	-8.47/-8.49	-8.19/-7.14	-5.54/-4.35	-2.91/-1.45	-0.74/-1.44	-3.52/-7.00	-10.73/-11.86	-11.34/-10.24	-9.40/-7.83	-7.15/-7.67	
Θ(142.5°)	-10.32/-8.75	-7.54/-7.33	-7.03/-6.59	-6.71/-7.55	-8.96/-10.32	-10.47/-10.07	-9.10/-7.75	-6.50/-5.72	-5.45/-5.64	-6.14/-6.82	-7.23/-6.79	-6.21/-6.42	-7.94/-10.73	-12.54/-12.16	-10.54/-8.36	-6.19/-4.45	-2.85/-2.80	-3.42/-3.06	-2.65/-2.80	-3.38/-3.16	-8.90/-13.52	-15.09/-12.09	-10.76/-9.51	-8.77/-8.57	-9.18/-10.36
Θ(150°)	-12.64/-11.58	-10.12/-8.94	-7.35/-6.12	-5.41/-5.43	-6.12/-6.93	-7.64/-8.32	-8.88/-9.06	-9.20/-9.36	-9.92/-10.49	-11.02/-10.99	-10.16/-9.15	-8.67/-8.83	-9.47/-9.36	-8.18/-6.64	-5.32/-4.38	-3.78/-3.60	-3.97/-4.94	-6.19/-7.41	-8.45/-10.59	-12.41/-12.23	-10.63/-9.29	-8.56/-8.15	-7.69/-8.05	-9.43/-11.48	
Θ(157.5°)	-9.47/-10.56	-11.27/-10.87	-9.06/-7.58	-6.44/-5.85	-5.34/-5.44	-4.95/-4.96	-4.96/-5.10	-5.35/-5.53	-5.36/-5.51	-5.39/-5.36	-5.16/-4.97	-4.91/-4.87	-4.74/-4.54	-4.33/-4.18	-4.26/-4.61	-5.32/-6.40	-8.05/-9.82	-10.63/-10.17	-9.07/-7.90	-7.09/-6.51	-6.10/-5.83	-5.73/-5.86	-6.22/-6.92	-7.71/-8.64	
Θ(165°)	-8.46/-9.12	-9.99/-10.72	-10.92/-10.33	-9.37/-8.26	-7.09/-6.11	-5.45/-5.03	-4.71/-4.51	-4.43/-4.41	-4.40/-4.31	-4.26/-4.24	-4.24/-4.29	-4.22/-4.68	-5.02/-5.48	-6.06/-6.93	-6.12/-9.68	-11.52/-12.75	-12.56/-11.05	-9.23/-7.86	-6.68/-6.89	-5.40/-5.16	-5.15/-5.17	-5.36/-5.72	-6.17/-6.84	-7.57/-8.11	
Θ(172.5°)	-11.46/-11.28	-11.02/-11.22	-11.66/-11.54	-11.18/-10.88	-10.45/-9.64	-8.94/-8.40	-7.92/-7.56	-7.31/-7.15	-7.11/-7.00	-7.05/-7.24	-7.43/-7.63	-8.03/-8.79	-9.80/-11.22	-12.95/-13.78	-14.74/-15.04	-13.95/-11.84	-10.13/-8.69	-7.98/-7.40	-6.94/-6.73	-6.76/-7.02	-7.50/-7.92	-8.16/-8.45	-8.82/-9.52	-10.34/-10.76	
Θ(180°)	-12.11/-10.91	-10.69/-10.34	-10.27/-10.36	-10.41/-10.39	-10.60/-11.12	-11.70/-12.12	-12.58/-12.93	-13.52/-14.15	-14.07/-13.81	-13.71/-13.52	-14.91/-15.81	-15.46/-15.04	-15.65/-15.98	-15.25/-15.07	-14.13/-13.23	-12.70/-11.86	-11.20/-11.50	-11.44/-11.61	-11.80/-12.12	-13.29/-14.18	-14.38/-14.74	-14.80/-15.84	-14.93/-15.31	-15.23/-13.49	
Freq(Hz)	5.2GPol.	TotalAnt. 1	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	
Gain	Φ(0°)Ψ(7.5°)	Φ(15°)Ψ(22.5°)	Φ(30°)Ψ(37.5°)	Φ(45°)Ψ(52.5°)	Φ(60°)Ψ(67.5°)	Φ(75°)Ψ(82.5°)	Φ(90°)Ψ(97.5°)	Φ(105°)Ψ(112.5°)	Φ(120°)Ψ(127.5°)	Φ(135°)Ψ(142.5°)	Φ(150°)Ψ(157.5°)	Φ(165°)Ψ(172.5°)	Φ(180°)Ψ(187.5°)	Φ(195°)Ψ(202.5°)	Φ(210°)Ψ(217.5°)	Φ(225°)Ψ(232.5°)	Φ(240°)Ψ(247.5°)	Φ(255°)Ψ(262.5°)	Φ(270°)Ψ(277.5°)	Φ(285°)Ψ(292.5°)	Φ(300°)Ψ(307.5°)	Φ(315°)Ψ(322.5°)	Φ(330°)Ψ(337.5°)	Φ(345°)Ψ(352.5°)	
Θ(0°)	-4.80/-5.14	-5.38/-5.60	-5.68/-6.07	-6.09/-6.20	-6.38/-6.85	-7.18/-7.29	-7.30/-7.34	-7.37/-7.23	-7.07/-6.98	-6.70/-6.97	-7.19/-7.37	-7.92/-8.14	-7.75/-7.64	-8.19/-9.07	-9.45/-9.00	-8.44/-8.09	-7.81/-7.15	-6.48/-5.81	-5.35/-5.47	-5.85/-6.31	-6.25/-5.99	-5.60/-5.51	-5.63/-5.46	-4.79/-4.44	
Θ(7.5°)	-10.42/-10.69	-11.24/-12.52	-14.39/-14.79	-13.64/-12.23	-10.67/-9.28	-8.12/-6.94	-5.57/-8.46	-4.52/-4.07	-3.45/-8.27	-2.56/-2.88	-3.48/-3.67	-3.73/-4.36	-4.82/-4.79	-4.93/-5.33	-6.29/-6.86	-7.37/-7.68	-7.78/-7.36	-7.06/-6.70	-6.51/-6.15	-6.41/-6.89	-6.88/-7.10	-7.41/-7.63	-8.35/-9.09	-9.62/-9.86	
Θ(15°)	-3.84/-5.62	-7.80/-7.77	-7.88/-8.12	-8.16/-8.35	-8.46/-7.85	-8.83/-5.15	-3.39/-2.02	-1.28/-0.80	-0.30/0.09	0.27/0.03	-0.48/-0.93	-1.40/-2.15	-3.23/-4.23	-5.35/-6.84	-8.32/-9.22	-10.86/-11.56	-11.00/-9.82	-8.27/-6.52	-4.80/-3.46	-2.34/-1.70	-1.48/-1.25	-1.12/-1.08	-1.40/-2.30	-2.52/-2.90	
Θ(22.5°)	1.03/0.55	-2.14/-3.39	-4.27/-3.97	-3.15/-2.48	-2.79/-3.72	-4.68/-4.28	-2.76/-1.67	-1.18/-0.61	0.05/0.77	1.27/1.42	1.42/1.28	1.08/0.63	-0.28/-1.06	-1.66/-2.52	-4.33/-6.95	-11.12/-15.56	-14.61/-12.82	-10.17/-6.16	-3.19/-1.28	-0.17/0.07	-0.38/0.51	1.42/1.57	1.64/1.72		
Θ(30°)	2.26/1.43	1.02/0.47	-0.51/-1.49	-1.26/-3.03	-0.38/-1.54	-3.05/-3.81	-4.03/-4.22	-3.55/-1.54	0.65/0.30	3.47/4.07	4.29/4.38	4.23/3.74	3.00/1.86	0.64/0.26	-0.22/-0.27	-6.11/-10.47	-9.19/-8.61	-8.28/-5.62	-3.29/-2.30	-1.84/-2.35	-2.68/-1.36	0.71/2.24	3.16/3.40	2.95/2.71	
Θ(37.5°)	1.80/1.99	2.86/3.16	2.83/2.15	1.11/0.16	0.32/0.43	-0.41/-1.40	-1.55/-1.42	-0.50/-2.24	2.63/3.49	4.12/4.45	4.73/5.22	3.56/2.45	0.62/0.05	0.35/-0.21	-2.50/-4.05	-4.11/-4.									



Antenna Pattern of 2.4GHz/5GHz

Appendix B.1

Θ(22.5°)	-2.48/2.30	-1.71/-0.95	0.18/0.19	-0.96/-4.10	-9.62/-11.76	-5.82/2.68	-1.58/-1.79	-3.59/-6.00	-5.78/-3.44	-1.34/0.16	1.35/2.24	2.64/2.78	2.59/2.06	1.37/0.78	-0.01/-1.17	-3.20/-5.41	-4.85/-2.73	-1.89/-2.70	-3.76/-3.03	-1.09/0.53	1.24/1.57	1.28/0.14	-1.54/-2.51	-2.54/-2.42
Θ(30°)	-0.03/-1.32	-1.41/-1.18	-1.07/-0.24	-0.00/-0.42	-1.59/-4.81	-6.17/-6.25	-8.59/-10.30	-6.61/-4.20	-2.94/-2.15	-1.39/-0.94	1.02/1.89	2.39/1.87	0.74/-0.40	-1.83/-2.33	-2.63/-5.21	-13.14/-7.17	-3.34/-3.35	-5.53/-4.94	-2.58/-1.24	-0.61/-1.04	-3.03/-5.46	-4.54/-1.68	-0.33/-0.07	
Θ(142.5°)	2.94/2.33	2.56/2.70	1.94/0.70	0.22/3.36	1.16/-0.36	-1.54/-3.47	-5.34/-3.06	-0.87/-1.34	-5.65/-11.77	-7.96/-4.39	-1.68/-1.12	2.63/3.24	3.20/1.99	0.79/0.81	-0.64/-2.60	-1.05/-1.28	-7.39/-8.72	-3.05/-4.07	-10.16/-8.96	-6.21/-6.97	-0.27/1.11	2.42/3.31	3.41/3.32	
Θ(45°)	1.87/1.68	2.52/2.66	2.63/1.47	0.63/2.03	2.28/1.05	0.29/-0.52	-2.67/-2.30	-0.51/-1.12	-3.11/-1.90	0.38/1.32	1.79/2.95	4.31/4.31	2.78/0.46	-1.02/1.05	0.55/-3.07	-0.07/1.79	-4.17/-9.64	-2.32/-4.15	-7.91/-7.74	-10.00/-7.39	-1.89/1.19	1.14/1.02	2.55/3.04	2.80/2.62
Θ(52.5°)	0.93/0.91	1.29/1.57	2.52/2.49	1.46/1.14	2.05/2.23	-1.33/-0.68	-2.63/-1.82	0.23/0.56	0.39/0.81	0.85/-0.02	0.22/1.85	2.36/2.51	0.33/-2.33	-7.62/-0.47	1.95/-1.98	-0.85/-2.17	-1.95/-7.36	-2.72/-4.34	-4.36/-6.62	-5.84/-2.16	-0.69/0.06	-1.02/-3.49	-1.81/0.39	0.47/0.73
Θ(60°)	1.62/1.06	1.42/1.30	2.12/3.06	1.48/-0.25	1.42/-0.32	-3.38/-2.22	-3.75/-2.41	0.03/0.70	0.14/-0.42	-0.80/-2.29	-2.68/-0.54	1.31/2.21	0.83/-2.19	-3.67/-1.49	1.81/0.19	-3.04/1.58	-0.82/-5.57	-0.46/-2.69	-3.69/-4.06	-4.63/-2.36	-6.69/-4.92	-6.12/-5.70	-3.32/-1.97	-1.14/0.83
Θ(67.5°)	1.62/0.65	1.25/1.34	1.73/3.41	1.48/-3.52	-0.30/-0.91	-4.24/-3.56	-6.18/-2.91	-0.40/-0.17	-2.65/-1.79	0.74/-1.07	-1.31/-1.07	2.04/2.22	0.42/-2.78	-2.47/-0.32	1.37/1.26	-3.64/0.28	-1.33/-3.46	0.05/4.31	-2.11/-2.23	-2.12/-2.28	-6.62/-4.91	-6.20/-5.56	-3.97/-3.70	-2.49/0.98
Θ(75°)	1.33/-0.54	0.28/0.14	-0.80/-2.15	1.47/-4.99	-2.78/-1.20	-5.39/-6.06	-6.13/-3.30	-2.56/-2.28	-5.17/-2.15	1.55/1.03	1.35/1.54	1.42/-1.83	-2.62/-0.80	0.26/0.31	-3.96/-0.34	-2.21/-4.01	1.20/-3.64	-1.49/-1.44	-2.08/-2.45	-4.22/-2.68	-5.34/-5.24	-3.44/-2.91	-2.15/-1.04	
Θ(82.5°)	0.64/-2.08	-1.79/-1.20	-2.45/0.61	1.04/-6.72	-4.92/-0.95	-5.08/-5.85	-4.52/-3.90	-3.53/-3.36	-4.98/-1.01	1.36/0.81	-1.52/-2.12	-0.33/-0.10	-0.92/-3.25	-3.40/-1.13	-2.26/-1.89	-4.18/-0.65	-4.13/-2.08	-0.13/-3.58	-0.86/-0.99	-1.69/-3.15	-2.03/-0.82	-5.44/-5.12	-3.00/-3.13	-2.39/1.25
Θ(90°)	-1.96/-4.42	-3.45/-2.08	-4.18/-1.70	-0.49/-6.01	-7.50/-1.66	-3.21/-6.68	-5.96/-3.22	-5.82/-3.98	-5.29/-3.73	-0.55/-0.25	-3.14/-5.85	-3.58/-1.21	-1.23/-5.14	-5.07/-1.96	-2.85/-3.60	-4.87/-2.81	-7.28/-4.47	-3.37/-3.78	-1.51/-2.79	-2.30/-4.17	-2.01/-1.59	-3.40/-4.45	-3.32/-4.01	-4.17/-0.73
Θ(97.5°)	-5.84/-5.84	-4.64/-3.69	-5.60/-4.95	-3.18/-7.24	-9.36/-3.55	-3.17/-6.95	-3.81/-2.34	-6.61/-5.30	-5.06/-5.21	-2.79/-2.91	-4.51/-6.84	-5.81/-3.33	-2.98/-8.80	-8.67/-4.09	-4.80/-5.85	-4.12/-3.24	-8.10/-6.62	-9.61/-2.38	-5.94/-6.37	-5.05/-7.17	-4.22/-3.27	-5.11/-5.80	-4.51/-5.71	-7.82/-3.38
Θ(105°)	-8.09/-6.26	-10.04/-3.99	-4.92/-6.21	-6.19/-7.39	-7.86/-5.88	-4.67/-8.19	-7.90/-3.59	-8.56/-6.15	-4.53/-5.25	-6.04/-6.23	-6.25/-8.08	-9.81/-6.36	-2.64/-5.61	-11.72/-7.77	-6.08/-3.01	-2.80/-6.62	-11.53/-7.97	-10.03/-2.96	-8.73/-12.10	-7.88/-12.69	-7.44/-4.84	-5.60/-4.83	-5.50/-8.54	-15.11/-10.99
Θ(112.5°)	-6.24/-4.69	-11.66/-7.73	-6.12/-5.46	-8.24/-7.25	-5.38/-7.64	-6.67/-6.88	-9.76/-6.30	-7.97/-8.53	-3.86/-2.69	-4.91/-9.29	-10.13/-13.16	-12.39/-8.37	-5.85/-9.08	-12.91/-8.49	-2.36/-3.02	-6.19/-11.18	-6.81/-8.09	-5.41/-2.32	-7.86/-5.98	-2.44/-7.68	-7.02/-3.60	-3.68/-8.10	-7.63/-10.08	-14.89/-6.32
Θ(120°)	-3.39/-4.54	-8.72/-8.06	-6.10/-6.49	-7.69/-9.09	-4.81/-8.55	-8.92/-5.83	-7.62/-10.07	-10.34/-9.00	-5.56/-3.14	-2.33/-5.01	-8.30/-11.74	-11.18/-7.97	-5.58/-7.04	-8.78/-8.05	-3.30/-2.78	-6.14/-9.48	-9.71/-10.38	-3.94/-4.23	-9.67/-5.97	-7.21/-8.75	-9.37/-9.42	-7.97/-8.07	-9.98/-10.61	-6.04/-2.51
Θ(127.5°)	-5.19/-7.98	-5.56/-4.83	-6.47/-11.13	-10.76/-6.87	-5.08/-7.32	-9.22/-5.29	-5.01/-7.37	-9.54/-7.77	-6.64/-7.79	-3.69/-3.93	-4.69/-5.17	-5.38/-3.85	-5.25/-6.07	-9.66/-6.85	-5.28/-4.97	-13.60/-10.41	-12.85/-10.30	-7.42/-5.91	-7.43/-7.70	-7.76/-11.60	-9.32/-15.63	-13.85/-15.72	-10.05/-8.29	-3.47/-2.55
Θ(135°)	-9.29/-6.10	-4.66/-4.93	-9.42/-12.97	-8.89/-6.41	-6.51/-8.43	-9.89/-8.59	-6.53/-5.64	-7.85/-7.03	-4.65/-4.74	-5.96/-6.50	-7.73/-8.42	-6.42/-4.54	-6.59/-5.31	-8.09/-6.69	-4.85/-7.84	-15.50/-7.72	-8.13/-7.32	-6.36/-11.00	-12.94/-10.84	-12.07/-12.77	-6.36/-10.32	-10.68/-11.95	-14.39/-12.99	-8.77/-6.55
Θ(142.5°)	-11.27/-5.54	-6.57/-6.63	-15.04/-10.99	-7.06/-5.95	-6.88/-7.66	-7.07/-8.51	-8.17/-5.56	-6.14/-11.07	-12.92/-9.95	-8.71/-10.40	-9.64/-7.13	-5.56/-4.18	-4.80/-6.04	-9.81/-10.29	-15.66/-15.07	-10.92/-8.71	-12.49/-15.43	-11.30/-12.99	-14.92/-9.75	-8.53/-14.74	-13.98/-8.34	-6.46/-6.56	-4.64/-3.68	-4.55/-9.48
Θ(150°)	-10.10/-9.82	-12.93/-15.65	-14.89/-10.76	-9.01/-4.00	-12.81/-10.25	-7.20/-7.21	-10.75/-12.13	-10.21/-9.20	-9.95/-9.49	-8.29/-6.29	-4.89/-4.78	-5.09/-4.96	-5.06/-5.94	-8.49/-8.37	-8.18/-8.16	-8.12/-11.33	-11.62/-7.14	-6.88/-9.19	-15.83/-10.55	-6.97/-7.94	-10.70/-11.95	-12.42/-12.19	-8.26/-6.18	-4.55/-6.66
Θ(157.5°)	-11.42/-12.16	-12.31/-15.36	-12.59/-9.79	-9.85/-11.46	-12.40/-9.35	-8.53/-9.13	-10.74/-10.28	-7.81/-6.01	-6.24/-7.12	-9.29/-12.73	-13.95/-15.38	-15.07/-15.51	-12.75/-10.32	-10.03/-8.65	-7.08/-6.15	-7.65/-10.54	-9.09/-7.47	-8.87/-11.59	-15.57/-14.62	-10.57/-7.74	-8.02/-10.17	-11.46/-10.68	-10.05/-8.30	-8.45/-9.96
Θ(165°)	-10.06/-10.24	-11.45/-13.86	-13.57/-15.70	-15.97/-14.27	-11.86/-10.04	-4.84/-9.42	-9.56/-10.26	-11.48/-11.44	-10.26/-9.41	-8.69/-8.25	-7.40/-6.48	-6.08/-6.28	-6.43/-6.42	-6.93/-7.42	-5.94/-5.93	-6.53/-4.78	-8.49/-10.22	-10.53/-10.48	-11.50/-14.04	-15.77/-15.54	-15.03/-14.74	-12.33/-9.44	-7.85/-8.24	-9.56/-10.09
Θ(172.5°)	-9.83/-10.98	-12.11/-12.41	-11.99/-12.30	-12.06/-11.80	-11.09/-9.73	-8.89/-8.62	-7.88/-7.57	-7.20/-6.93	-6.54/-6.11	-5.85/-5.81	-5.67/-5.37	-6.10/-6.21	-5.56/-5.10	-5.44/-5.74	-6.33/-7.43	-8.49/-9.57	-10.47/-11.33	-11.39/-10.47	-10.95/-12.59	-13.80/-12.87	-12.70/-12.40	-12.09/-11.74	-11.47/-11.22	-10.95/-9.83
Θ(180°)	-9.97/-9.38	-9.57/-9.79	-9.32/-9.23	-9.04/-8.53	-8.30/-7.94	-7.57/-7.60	-8.00/-8.09	-8.08/-8.32	-9.07/-9.22	-9.09/-8.97	-8.61/-8.14	-7.87/-7.92	-8.31/-8.85	-10.00/-10.97	-10.94/-10.97	-10.97/-10.82	-11.07/-11.94	-12.47/-13.93	-10.75/-12.91	-11.80/-10.26	-8.87/-8.26	-8.60/-8.95	-8.58/-8.61	-8.91/-9.43
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°)	1.69/1.60	1.36/1.08	0.97/1.09	1.36/1.74	1.99/2.40	2.70/2.85	2.82/2.72	2.67/2.64	2.51/2.52	2.51/2.52	2.49/2.45	2.34/2.22	2.13/2.05	1.99/1.89	1.88/1.92	2.15/2.30	2.40/2.47	2.54/2.56	2.46/2.46	2.42/2.30	2.16/2.03	1.95/1.93	1.91/1.58	
Θ(7.5°)	1.86/1.61	1.27/0.96	0.79/0.63	0.74/0.99	1.33/1.72	2.07/2.35	2.47/2.37	2.24/2.12	2.05/2.01	1.99/1.97	1.93/1.84	1.77/1.71	1.74/1.63	1.68/1.73	1.82/1.94	2.12/2.31	2.49/2.67	2.84/2.95	2.75/2.84	2.84/2.86	2.84/2.79	2.66/2.49	2.39/2.29	2.18/2.05
Θ(15°)	1.60/1.18	0.82/0.50	0.16/-0.12	-0.30/-0.26	-0.03/0.36	0.80/1.16	1.34/1.41	1.38/1.36	1.30/1.24	1.15/1.02	0.88/0.68	0.60/0.59	0.65/0.95	0.89/1.05	1.91/2.30	2.70/3.05	3.33/3.54	3.66/3.68	3.64/3.47	3.24/3.02	2.72/2.55	2.33/2.32		
Θ(22.5°)	1.81/1.21	0.66/0.14	-0.37/-0.86	-1.24/-1.27	-1.04/-0.59	-0.08/0.36	0.55/0.69	0.78/0.88	0.90/0.96	0.81/0.54	0.19/-0.81	-1.23/-1.46	-1.60/-1.66	-1.60/-1.32	-0.90/-0.38	0.22/0.83	1.48/2.09	2.67/3.18	3.58/3.88	4.04/0.48	3.65/3.55	3.43/3.36	2.63/0.99	2.80/2.37
Θ(30°)	2.56/1.85	1.06/0.20	-0.73/-1.49	-1.84/-1.75	-1.40/-1.04	-0.76/-0.64	-0.54/-0.31	0.20/0.68	1.21/1.62	1.72/1.57	1.11/0.53	-0.21/-1.14	-1.97/-2.48	-2.40/-3.25	-2.61/-1.80	-0.89/-0.00	0.87/1.66	2.28/2.80	3.25/3.58	3.83/3.96	3.98/3.93	3.82/3.69	3.59/3.49	3.28/2.89
Θ(37.5°)	3.48/2.83	1.97/0.88	-0.48/-1.71	-2.24/-2.03	-1.63/-1.34	-1.32/-1.50	-1.62/-1.34	-0.39/0.76	1.95/2.78	3.13/2.95	2.20/1.15	-0.10/-1.63	-2.91/-3.52	-3.52/-3.41	-3.32/-2.89	-2.01/-0.96	0.02/0.83	1.44/1.90	2.25/2.53	2.79/3.07	3.40/3.68	3.86/3.97	4.08/4.14	4.20/3.83
Θ(45°)	3.83/3.29	2.42/1.22	-0.47/-2.25	-3.16/-2.95	-2.34/-1.89	-1.75/-1.85	-2.10/-1.90	-0.81/0.80	2.37/3.42	3.91/3.81	3.24/2.12	-0.86/-0.89	-2.47/-2.95	-1.99/-2.12	-2.66/-1.66	-0.62/0.32	0.98/1.28	1.31/1.24	1.33/1.72	2.16/2.07	3.71/4.06	4.20/4.20	4.03/3.68	
Θ(52.5°)	3.75/3.29	2.40/1.07	-0.83/-2.98	-4.14/-3.73	-2.81/-1.97	-1.33/-1.00	-0.95/-0.77	-0.02/-1.28	2.67/3.59	3.67/2.94	1.74/0.12	-1.10/-1.60	-1.18/-0.57	-0.47/-1.03	-2.08/-3.15	-3.54/-2.58	-0.93/0.55	1.45/1.67	1.37/0.84	0.55/0.81	1.55/2.51	3.41/3.94	4.13/4.09	3.83/3.40
Θ(60°)	3.63/3.25	2.34/0.95	-1.08/-3.36	-4.41/-3.64	-2.52/-1.48	-0.70/-0.19	-0.09/0.00	0.37/1.15	2.09/2.83	3.13/2.82	1.95/0.76	-0.53/-0.91	-0.73/-0.62	-1.10/-1.98	-3.36/-5.58	-7.54/-5.34	-2.08/0.10	1.29/1.64	1.24/0.47	-0.12/0.06	0.90/1.90	2.79/3.35	3.62/3.68	3.58/3.29
Θ(67.5°)	2.91/2.79	2.01/0.74	-1.02/-3.00	-4.13/-3.72	-2.68/-1.70	-1.14/-0.99	-1.10/-1.02	-0.51/-0.01	1.10/1.65	1.86/1.22	0.64/-0.24	-0.87/-1.27	-1.79/-2.61	-3.28/-3.71	-4.83/-7.26	-8.09/-4.92	-2.19/-0.38	0.70/1.16	0.95/0.35	-0.07/0.28	1.05/1.74	2.19/2.50	2.63/2.56	2.40/2.21
Θ(75°)	2.05/2.20	1.49/0.32	-1.16/-2.97	-4.35/-4.23	-2.96/-1.93	-1.70/-2.03	-2.50/-2.46	-1.71/-0.68	0.02/0.23	0.12/-0.27	-1.39/-2.61	-3.23/-3.20	-3.54/-4.21	-3.99/-3.62	-4.50/-6.32	-6.34/-4.71	-3.05/-1.50	-0.27/0.50	0.71/0.40	0.00/0.12	0.65			



Antenna Pattern of 2.4GHz/5GHz

Appendix B.1

Θ(60°)	1.722/57	2.051/17	1.451/71	0.820/13	0.80/0.83	-0.25/2.03	-4.65/6.05	-4.90/4.82	-2.10/0.46	1.272/13	1.320/92	2.393/51	4.763/93	3.164/64	4.531/96	-1.05/-3.91	-6.72/-0.53	0.77/-1.18	-2.34/-3.34	-1.95/-0.60	1.503/38	3.481/57	-3.04/-6.54	-3.78/-0.14
Θ(67.5°)	2.452/76	1.270/79	1.781/93	0.37/-0.70	-1.08/-1.24	-1.19/-1.97	-3.15/-3.52	-3.56/-8.19	-3.29/-0.38	0.402/0.1	1.190/09	0.823/06	4.692/12	1.493/60	3.710/68	-3.21/-5.41	-6.65/-1.42	1.09/-1.37	-2.35/-2.98	-2.51/-1.32	0.752/26	2.00/-0.42	-5.40/-9.02	-4.50/-0.64
Θ(75°)	2.381/97	0.040/06	1.791/79	0.35/-1.87	-2.80/-2.76	-2.23/-2.73	-2.78/-2.53	-2.08/-3.78	-3.55/-2.26	-1.460/60	1.191/26	2.022/11	2.731/45	-2.341/65	2.53/-0.96	-5.10/-4.31	-5.65/-4.07	-8.00/-1.94	-2.96/-1.18	-1.03/-2.21	0.051/03	-0.36/-2.84	-10.77/-10.06	-3.13/-1.51
Θ(82.5°)	1.530/65	-1.39/-1.13	1.521/40	0.14/-3.30	-3.67/-3.80	-3.48/-3.55	-2.81/-3.18	-3.02/-4.47	-3.76/-3.70	-3.52/-2.10	-1.03/-1.42	-0.54/-0.66	0.37/-2.60	-4.640/48	0.55/-2.55	-4.67/-3.24	-4.44/-5.64	-1.74/-3.19	-2.43/-0.80	-0.67/-2.08	-1.70/-0.41	-2.65/-4.22	-11.96/-10.21	-3.880/45
Θ(90°)	0.34/-0.25	-1.95/-4.24	-0.56/-0.55	-1.63/-3.42	-3.08/-2.73	-2.70/-2.35	-1.66/-2.46	-4.12/-0.45	-4.19/-5.78	-5.25/-4.69	-3.60/-4.13	-1.64/-2.79	-3.01/-3.06	-6.79/-1.10	0.06/-2.09	-5.81/-5.39	-4.81/-7.88	-6.80/-4.62	-2.45/-1.18	-1.97/-3.81	-4.10/-2.95	-4.79/-6.28	-14.22/-11.38	-7.25/-1.83
Θ(97.5°)	-1.25/-2.40	-3.74/-4.46	-2.32/-2.01	-3.76/-5.06	-4.20/-3.48	-2.23/-4.12	-1.49/-2.93	-4.14/-5.40	-5.91/-9.25	-9.33/-9.29	-4.30/-3.18	-1.79/-6.06	-8.67/-3.05	-2.13/-6.12	-9.42/-13.18	-7.26/-10.74	-13.78/-6.38	-2.50/-2.17	-4.10/-6.40	-7.38/-5.82	-6.38/-7.37	-15.14/-13.45	-7.76/-3.07	
Θ(105°)	-3.11/-3.82	-5.28/-6.25	-4.12/-4.42	-6.15/-7.94	-5.20/-3.37	-2.48/-2.01	-2.24/-2.41	-5.28/-6.44	-6.28/-6.88	-5.41/-9.07	-10.02/-7.46	-6.31/-5.15	-1.27/-5.07	-14.82/-6.02	-5.50/-8.03	-11.58/-12.72	-7.15/-8.66	-10.43/-9.30	-3.48/-1.91	-4.45/-5.97	-9.59/-6.06	-7.14/-9.06	-10.86/-15.09	-9.27/-5.01
Θ(112.5°)	-4.66/-3.73	-6.38/-5.28	-4.79/-5.91	-7.53/-7.71	-5.97/-3.55	-2.78/-3.17	-3.32/-3.59	-6.91/-7.27	-5.86/-3.76	-4.95/-6.93	-7.19/-3.34	-4.22/-4.47	-2.47/-15.32	-11.72/-7.82	-11.88/-11.77	-5.08/-6.11	-9.92/-8.11	-7.49/-7.62	-1.58/-0.36	-4.66/-7.32	-13.87/-4.24	-5.93/-9.33	-9.28/-14.98	-14.26/-3.48
Θ(120°)	-6.35/-4.87	-6.69/-4.34	-4.59/-5.71	-7.75/-7.80	-6.64/-5.09	-4.88/-4.83	-3.66/-4.26	-7.27/-6.16	-6.27/-4.38	-5.98/-5.94	-4.67/-2.24	-2.83/-5.05	-5.17/-14.38	-8.72/-5.47	-14.76/-8.76	-6.87/-4.39	-8.02/-5.05	-3.83/-5.96	-2.58/-0.43	-3.16/-7.30	-15.02/-6.04	-5.30/-15.01	-10.35/-14.89	-15.39/-5.99
Θ(127.5°)	-5.15/-5.98	-6.39/-7.31	-6.43/-6.57	-7.92/-8.45	-9.76/-9.69	-8.86/-7.02	-6.16/-7.79	-7.02/-4.33	-3.80/-3.57	-6.65/-3.87	-4.97/-7.61	-6.97/-8.80	-10.83/-9.96	-8.87/-5.13	-6.62/-9.65	-10.24/-10.60	-5.86/-6.91	-8.97/-7.88	-4.87/-3.20	-5.03/-11.61	-14.42/-7.22	-10.01/-11.64	-12.05/-14.94	-12.89/-7.47
Θ(135°)	-4.05/-5.56	-4.63/-5.88	-7.03/-7.87	-8.35/-9.35	-9.73/-11.51	-9.67/-7.13	-6.52/-7.01	-5.33/-5.12	-5.27/-5.19	-5.59/-4.75	-7.04/-13.17	-14.02/-9.86	-10.22/-5.67	-5.77/-11.31	-14.35/-14.91	-9.12/-8.46	-8.00/-9.27	-14.51/-13.68	-11.55/-12.43	-8.79/-10.50	-12.87/-16.69	-13.42/-15.78	-11.57/-7.76	
Θ(142.5°)	-8.00/-7.41	-6.33/-6.93	-8.16/-8.40	-9.28/-10.09	-11.19/-10.53	-9.51/-8.19	-6.05/-4.40	-4.48/-6.72	-6.91/-5.84	-6.85/-8.12	-10.98/-10.54	-9.24/-11.15	-10.62/-11.87	-11.30/-7.87	-15.50/-15.11	-10.33/-6.11	-6.10/-10.11	-12.60/-11.18	-11.93/-11.16	-8.36/-12.46	-15.85/-15.80	-14.93/-15.16	-14.25/-9.77	
Θ(150°)	-7.44/-7.40	-6.19/-5.96	-6.67/-6.48	-6.84/-7.66	-8.02/-8.05	-8.03/-8.22	-9.01/-9.14	-8.04/-7.25	-7.26/-9.07	-10.28/-11.42	-10.34/-8.57	-12.62/-14.82	-11.94/-9.63	-9.88/-10.56	-11.23/-15.32	-15.03/-13.70	-11.53/-11.14	-12.59/-14.95	-15.59/-11.60	-13.61/-13.42	-10.22/-11.15	-13.25/-11.85	-13.84/-15.40	-15.12/-11.94
Θ(157.5°)	-7.46/-8.46	-9.47/-9.57	-9.69/-10.63	-11.12/-8.85	-8.85/-8.54	-10.28/-13.12	-12.98/-10.39	-8.96/-9.36	-10.73/-13.00	-12.20/-11.80	-10.52/-12.07	-13.43/-13.48	-14.43/-13.19	-14.65/-14.53	-11.47/-8.66	-7.99/-9.01	-13.66/-15.00	-13.74/-10.70	-10.70/-11.85	-11.21/-10.81	-12.95/-15.42	-13.49/-14.20	-13.73/-10.96	
Θ(165°)	-11.27/-10.72	-10.34/-10.42	-11.23/-12.57	-14.60/-14.46	-15.04/-14.51	-12.71/-11.15	-10.36/-8.88	-8.55/-9.51	-11.26/-12.57	-12.88/-11.82	-12.07/-12.80	-11.67/-12.76	-13.10/-12.02	-11.13/-10.19	-8.45/-7.17	-7.58/-9.94	-11.55/-13.99	-13.55/-13.58	-14.56/-13.28	-11.60/-9.68	-7.74/-6.68	-12.51/-8.39	-10.37/-10.38	-10.89/-11.22
Θ(172.5°)	-9.63/-9.41	-8.85/-8.94	-10.19/-11.43	-12.38/-13.16	-13.25/-12.52	-12.03/-12.05	-11.95/-12.03	-13.11/-14.13	-14.27/-12.77	-12.41/-13.29	-14.15/-15.51	-14.63/-13.23	-12.67/-11.95	-11.83/-11.88	-11.73/-11.54	-10.84/-11.60	-11.95/-12.45	-12.54/-13.44	-14.34/-13.22	-12.36/-11.59	-10.33/-10.00	-10.20/-10.51	-11.29/-10.61	-10.12/-10.52
Θ(180°)	-15.30/-14.82	-14.82/-15.41	-15.40/-15.41	-15.22/-15.75	-15.63/-15.01	-15.57/-15.59	-15.28/-15.08	-15.85/-15.74	-14.93/-13.47	-12.96/-12.92	-12.60/-13.41	-13.27/-13.80	-13.14/-13.05	-12.83/-12.64	-12.45/-12.46	-11.96/-11.86	-11.95/-11.85	-12.51/-14.45	-15.76/-15.85	-15.76/-15.74	-15.82/-14.68	-14.15/-14.24	-15.31/-15.10	-14.92/-15.67
Freq(Hz)	5.785GPol	TotalAnt	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gain	Θ(0°)Φ(7.5°)	Θ(15°)Φ(22.5°)	Φ(30°)Φ(37.5°)	Φ(45°)Φ(52.5°)	Φ(60°)Φ(67.5°)	Φ(75°)Φ(82.5°)	Φ(90°)Φ(97.5°)	Φ(105°)Φ(112.5°)	Φ(120°)Φ(127.5°)	Φ(135°)Φ(142.5°)	Φ(150°)Φ(157.5°)	Φ(165°)Φ(172.5°)	Φ(180°)Φ(187.5°)	Φ(195°)Φ(202.5°)	Φ(210°)Φ(217.5°)	Φ(225°)Φ(232.5°)	Φ(240°)Φ(247.5°)	Φ(255°)Φ(262.5°)	Φ(270°)Φ(277.5°)	Φ(285°)Φ(292.5°)	Φ(300°)Φ(307.5°)	Φ(315°)Φ(322.5°)	Φ(330°)Φ(337.5°)	Φ(345°)Φ(352.5°)
Θ(0°)	-6.19/-0.60	-6.47/-1.23	-6.47/-6.19	-6.16/-6.14	-6.04/-5.86	-5.94/-5.48	-5.21/-4.79	-4.17/-3.71	-3.57/-3.28	-3.26/-3.38	-3.24/-2.86	-2.67/-2.67	-2.66/-2.54	-2.28/-2.50	-2.86/-2.93	-2.88/-2.78	-2.76/-3.16	-3.93/-4.06	-3.92/-4.28	-4.72/-2.49	-4.33/-5.25	-5.97/-6.87	-5.97/-6.21	-6.99/-0.73
Θ(7.5°)	1.271/37	1.150/64	0.280/11	-0.13/-0.65	-1.42/-2.17	-2.64/-3.39	-4.23/-5.40	-6.37/-6.97	-10.99/-12.35	-13.54/-14.79	-14.94/-14.89	-14.63/-13.32	-11.54/-11.11	-9.41/-10.18	-9.14/-11.81	-6.77/-5.19	-5.10/-3.96	-3.26/-2.16	-1.56/-2.80	-0.440/0.99	0.590/0.90	0.890/0.91		
Θ(15°)	3.753/47	3.122/73	2.071/43	0.650/0.5	-0.60/-1.31	-1.56/-1.91	-2.66/-3.65	-5.05/-6.59	-8.31/-9.08	-8.30/-7.65	-7.34/-6.50	-6.41/-6.86	-7.22/-7.16	-5.96/-4.45	-3.87/-3.59	-3.48/-3.24	-3.53/-4.44	-5.28/-5.68	-5.40/-4.76	-2.98/-1.11	0.321/75	3.113/93	4.324/34	4.253/93
Θ(22.5°)	4.094/03	3.923/48	2.862/54	2.351/81	0.82/-0.15	-0.17/-2.96	-4.30/-5.62	-6.84/-5.44	-4.25/-3.94	-3.38/-1.74	-0.390/1.8	0.681/32	1.851/93	1.841/72	0.92/-0.45	-2.63/-5.28	-7.40/-9.99	-5.71/-2.61	-0.141/97	3.223/72	3.964/14	4.354/33		
Θ(30°)	5.174/75	3.802/63	1.922/15	2.482/39	1.900/99	-0.20/-1.32	-2.49/-427	-5.46/-3.53	-1.34/-0.70	-0.89/-1.52	-1.730/07	1.932/73	2.942/93	2.502/24	2.523/05	3.541/83	3.592/47	-9.43/-9.26	-7.35/-3.64	0.002/31	2.922/59	2.583/35	4.565/20	
Θ(37.5°)	4.863/56	1.70/-0.09	-0.370/32	1.172/04	2.020/78	-1.22/-3.60	-5.23/-5.21	-3.72/-1.54	1.192/15	1.280/10	0.11/-1.46	2.593/07	2.892/45	2.784/14	5.195/06	4.122/81	1.901/23	-0.40/-3.90	-8.70/-6.37	-3.83/-0.83	1.832/72	2.471/33	1.803/56	5.135/58
Θ(45°)	2.442/34	1.240/96	0.740/74	1.001/08	1.010/42	-1.20/-3.56	-6.56/-6.14	-3.36/-1.60	0.242/13	2.782/75	2.661/46	1.452/72	3.302/54	5.435/7.9	4.893/07	1.901/01	-1.01/-4.72	-5.82/-4.00	-1.530/74	2.903/63	1.490/-0.41	1.252/54	3.133/13	
Θ(52.5°)	0.281/26	1.261/46	1.381/51	0.01/-0.36	0.14/-0.37	-1.87/-3.11	-5.18/-4.07	-1.93/-1.60	-0.681/62	2.643/33	2.800/37	1.312/76	2.922/23	2.023/54	4.464/21	0.05/-0.46	-2.44/-5.47	-7.22/-4.95	-2.17/0.09	2.923/02	0.991/153	-0.38/-0.61	-1.52/-0.46	
Θ(60°)	1.030/89	-0.33/-0.37	0.310/74	-0.63/-1.44	-2.28/-2.35	-2.60/-2.21	-2.30/-2.10	0.16/-0.31	-1.271/14	1.182/51	2.931/55	2.443/35	3.703/74	4.282/67	1.12/-0.26	-0.97/-0.01	-7.78/-7.53	-6.84/-4.32	-1.410/87	2.682/37	0.07/-1.88	-2.08/-4.06	-3.720/61	
Θ(67.5°)	1.154/-0.12	-2.44/-2.67	-0.96/-0.41	-0.72/-3.52	-5.21/-3.95	-2.91/-1.38	-1.10/-1.41	-0.41/-0.47	-1.550/30	0.051/48	2.332/62	3.472/53	2.831/69	-0.673/80	4.120/81	-2.46/-3.70	-0.760/30	-1.00/-6.53	-4.96/-4.26	-1.090/41	1.560/47	-2.83/-3.55	-3.89/-4.53	-1.451/43
Θ(75°)	-0.19/-1.63	-3.39/-3.57	-1.43/-0.57	-0.98/-6.43	-6.16/-4.98	-4.25/-2.33	-0.64/-0.89	-1.71/-1.68	-1.64/-1.16	-2.13/-1.49	0.891/81	3.782/09	2.000/87	-4.902/56	3.48/-0.93	-7.02/-4.31	-0.18/-0.07	-0.87/-6.53	-3.56/-1.65	0.910/46	0.57/-0.90	-4.89/-5.27	-5.39/-5.37	-3.070/55
Θ(82.5°)	-1.38/-3.32	-4.42/-4.45	-2.86/-2.04	-3.26/-7.48	-7.81/-5.98	-4.89/-2.16	-0.40/-0.96	-2.62/-3.63	-2.42/-3.33	-2.47/-2.03	-0.380/70	-2.49/-1.26	-2.29/-2.98	-6.41/20.1	-2.08/-1.50	-0.62/-0.13	-0.85/-1.08	-2.36/-5.53	-2.59/-0.97	0.58/-0.12	-0.83/-3.08	-6.47/-5.33	-7.46/-6.02	-2.930/-39
Θ(90°)	-2.15/-5.41	-5.37/-5.87	-4.86/-2.59	-3.91/-8.65	-9.84/-7.20	-5.05/-1.51	-0.69/-1.70	-3.01/-5.09	-2.89/-6.42	-7.31/-5.41	-3.50/-3.01	-0.32/-2.38	-5.12/-3.97	-8.29/-1.05	2.00/-6.68	-5.01/-4.05	-2.10/-5.00	-6.88/-4.80	-1.60/-1.73	-1.47/-2.85	-3.18/-4.36	-7.78/-6.48	-9.96/-8.25	-2.961/73
Θ(97.5°)	-3.55/-7.01	-6.18/-6.01	-6.09/-3.43	-5.28/-9.73	-11.57/-7.71	-4.15/-2.44	-2.63/-2.91	-3.35/-5.23	-5.19/-10.38	-6.62/-8.45	-7.29/-7.73	4.52/-8.11	-4.16/-6.32	-7.010/05	5.47/-5.92	-5.69/-11.35	-15.10/-5.12	-1.56/-3.21	-3.78/-6.17	-6.13/-5.39	-10.43/-8.07	-10.25/-9.22	-3.84/-3.43	
Θ(105°)	-5.22/-7.82	-7.84/-7.34	-6.18/-3.66	-5.66/-10.02	-10.03/-8.90	-5.80/-3.35	-3.02/-3.57	-6.88/-8.65	-5.90/-9.58	-10.16/-10.81	-11.51/-9.63	-4.96/-6.94	-4.53/-5.89	-14.21/-2.49	-1.28/-4.14	-10.03/-8.62	-7.37/-11.28	-13.07/-8.79	-2.86/-2.83	-3.83/-7.23	-11.61/-8.22	-13.17/-10.11	-10.61/-9.22	-4.66/-4.75
Θ(112.5°)	-5.41/-6.34	-7.01/-9.56	-8.05/-5.95	-6.98/-10.67	-11.10/-8.70	-6.82/-5.73	-6.05/-4.21	-6.00/-10.20	-7.73/-7.25	-7.36/-7.65	-7.64/-3.38	-3.51/-3.16	-2.92/-14.78	-13.02/-9.60	-9.69/-11.71	-6.40/-8.04	-11.36/-11.63	-7.71/-9.66	-2.02/-1.78	-4.99/-9.07	-14.57/-8.58	-15.15/-10.07	-12.93/-8.51	-5.67/-3.67



Antenna Pattern of 2.4GHz/5GHz

Appendix B.1

Θ (112.5°)	-8.58/-6.14	-5.52/-6.03	-3.65/-3.39	-5.22/-4.28	-2.86/-4.33	-4.55/-3.22	-3.83/-5.04	-4.16/-4.06	-4.55/-3.52	-3.55/-4.44	-3.92/-3.81	-4.77/-4.04	-5.19/-7.06	-6.91/-7.51	-10.72/-9.05	-10.09/-10.36	-12.64/-15.41	-14.18/-15.23	-9.93/-8.12	-8.87/-9.06	-10.93/-15.16	-12.29/-13.39	-10.59/-7.67	-6.52/-8.26
Θ (120°)	-8.44/-8.11	-6.84/-6.30	-4.48/-4.85	-6.14/-5.50	-3.99/-4.49	-6.08/-6.37	-6.45/-6.78	-5.48/-5.33	-5.36/-5.24	-5.56/-5.21	-4.65/-5.22	-5.33/-4.95	-6.12/-7.90	-8.09/-7.70	-10.17/-11.07	-11.40/-9.08	-12.18/-12.52	-12.56/-13.43	-15.39/-14.65	-9.02/-7.97	-12.80/-14.76	-11.16/-10.19	-9.29/-7.59	-7.46/-7.62
Θ (127.5°)	-9.87/-10.26	-7.21/-7.84	-6.38/-6.80	-7.44/-6.47	-6.74/-6.85	-6.42/-5.56	-6.35/-8.03	-7.35/-6.65	-6.85/-7.71	-7.57/-7.24	-7.99/-7.01	-6.55/-6.82	-8.55/-8.80	-7.68/-11.80	-12.20/-8.90	-9.53/-14.33	-15.00/-10.80	-16.18/-15.53	-13.13/-15.85	-15.42/-15.16	-12.56/-15.50	-12.70/-8.45	-11.11/-9.61	-9.50/-8.72
Θ (135°)	-14.22/-12.98	-7.64/-8.35	-8.44/-9.59	-9.56/-8.01	-8.02/-9.94	-9.55/-7.39	-6.78/-8.34	-9.36/-8.92	-7.47/-6.44	-7.37/-9.52	-10.33/-10.29	-8.94/-8.37	-7.76/-8.42	-10.79/-13.62	-14.49/-11.45	-13.53/-15.09	-15.08/-12.58	-14.47/-15.91	-13.58/-14.11	-15.17/-15.01	-11.78/-15.29	-12.64/-10.54	-11.39/-12.50	-10.41/-10.31
Θ (142.5°)	-13.80/-10.74	-10.07/-9.54	-10.03/-13.09	-11.86/-9.25	-8.43/-9.97	-12.79/-11.74	-9.66/-9.36	-10.53/-11.45	-10.79/-9.56	-8.39/-8.71	-9.89/-9.66	-10.05/-10.25	-11.24/-10.36	-15.00/-15.52	-13.49/-11.78	-14.39/-15.61	-14.83/-15.76	-15.49/-13.52	-10.48/-11.96	-13.01/-11.20	-11.67/-14.65	-15.58/-12.18	-12.61/-14.83	-14.94/-14.40
Θ (150°)	-11.97/-14.71	-14.72/-14.09	-11.42/-11.62	-12.56/-12.23	-12.60/-10.69	-9.21/-9.30	-9.87/-10.85	-11.63/-12.83	-13.48/-12.46	-12.26/-13.56	-13.43/-12.55	-12.76/-10.97	-10.60/-10.40	-11.99/-14.47	-14.73/-13.50	-15.48/-15.34	-15.92/-15.53	-14.30/-14.89	-15.76/-15.20	-16.04/-13.75	-14.00/-15.49	-15.23/-15.12	-15.05/-15.92	-14.99/-12.57
Θ (157.5°)	-14.20/-14.38	-14.67/-14.97	-15.28/-13.79	-14.09/-13.81	-14.22/-13.27	-11.09/-9.33	-9.80/-11.54	-13.05/-12.74	-11.34/-11.79	-14.48/-13.13	-11.06/-13.07	-13.04/-10.44	-10.22/-13.57	-15.50/-14.14	-14.04/-12.53	-14.61/-15.25	-15.25/-15.91	-15.02/-14.32	-14.80/-15.54	-15.37/-15.92	-15.43/-15.18	-15.44/-15.31	-15.26/-15.24	-15.73/-15.23
Θ (165°)	-15.69/-15.13	-14.93/-13.08	-13.59/-14.47	-14.97/-13.75	-12.81/-14.28	-14.43/-15.20	-15.46/-15.68	-16.02/-15.10	-15.37/-13.39	-14.45/-15.72	-15.09/-14.32	-13.62/-14.91	-15.56/-15.33	-14.37/-15.63	-15.08/-15.64	-15.36/-15.39	-15.02/-15.13	-14.24/-13.70	-14.96/-15.47	-14.34/-14.14	-14.74/-15.50	-15.10/-14.93	-15.17/-13.24	-13.18/-14.15
Θ (172.5°)	-15.18/-15.86	-14.14/-12.79	-12.97/-13.42	-14.18/-15.35	-15.58/-15.31	-14.29/-14.49	-15.17/-15.79	-15.29/-14.91	-13.13/-13.17	-14.05/-13.70	-13.18/-13.18	-13.38/-14.33	-15.23/-15.16	-15.70/-14.29	-13.58/-14.00	-14.63/-14.99	-15.46/-14.77	-14.86/-15.53	-15.07/-15.85	-15.09/-13.74	-13.91/-14.19	-13.97/-12.85	-12.28/-12.37	-14.19/-14.87
Θ (180°)	-15.38/-15.38	-15.34/-15.50	-15.08/-15.63	-14.64/-15.74	-15.11/-15.09	-15.46/-14.63	-15.78/-15.02	-14.55/-15.06	-15.45/-14.77	-14.78/-15.37	-15.53/-15.51	-15.30/-14.71	-15.18/-15.49	-14.40/-13.51	-13.44/-13.39	-13.78/-15.14	-14.48/-14.78	-15.13/-15.66	-15.38/-13.70	-13.62/-13.48	-13.61/-13.53	-15.61/-15.09	-15.54/-15.37	-15.49/-14.50
Freq(Hz)	5.785GPol.	TotalAnt. 3	-/-	-/-	-/-	-/-	-/-	-/-	-/-	-/-	-/-	-/-	-/-	-/-	-/-	-/-	-/-	-/-	-/-	-/-	-/-	-/-	-/-	-/-
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°)	-3.04/-2.70	-2.49/-2.82	-3.20/-3.05	-2.98/-3.04	-2.94/-2.56	-2.29/-2.54	-2.79/-2.63	-2.19/-2.49	-2.73/-2.26	-1.72/-1.91	-2.18/-2.30	-2.37/-2.73	-2.92/-2.96	-3.00/-2.90	-3.12/-3.15	-3.02/-2.88	-2.66/-2.90	-3.29/-2.79	-2.21/-2.39	-3.08/-2.85	-2.42/-2.39	-2.55/-2.52	-2.33/-2.71	-3.12/-3.24
Θ (7.5°)	-2.57/-2.83	-2.77/-2.83	-3.25/-3.26	-3.01/-2.72	-2.44/-2.18	-1.85/-1.76	-2.05/-2.56	-2.12/-1.72	-1.97/-2.71	-2.61/-2.21	-2.34/-3.06	-3.70/-4.06	-3.78/-3.49	-3.38/-3.34	-3.10/-2.72	-2.46/-2.19	-1.91/-1.83	-2.08/-2.25	-1.96/-1.77	-1.99/-2.46	-2.38/-1.94	-2.03/-2.37	-2.36/-2.32	-2.49/-2.55
Θ (15°)	-3.66/-2.77	-2.06/-1.85	-2.01/-1.86	-1.67/-1.69	-2.09/-2.56	-3.03/-3.42	-3.85/-4.09	-3.93/-3.78	-3.85/-3.83	-3.67/-4.20	-5.02/-5.87	-6.21/-6.59	-6.53/-6.21	-5.77/-5.41	-4.51/-3.46	-2.73/-2.45	-2.41/-2.57	-2.75/-2.88	-2.62/-2.47	-3.35/-5.18	-6.71/-7.31	-7.48/-7.49	-6.55/-5.90	-5.33/-4.57
Θ (22.5°)	-4.18/-2.27	-1.03/-0.78	-0.73/-0.97	-2.05/-3.70	-5.07/-5.57	-5.71/-5.56	-5.39/-5.21	-5.48/-5.71	-5.17/-4.14	-4.45/-6.07	-8.08/-8.46	-7.20/-5.90	-5.25/-5.51	-6.34/-6.57	-4.81/-2.70	-2.03/-2.19	-2.09/-1.69	-1.23/-0.60	-0.00/0.75	0.79/0.04	-1.46/-3.13	-4.92/-7.95	-12.09/-11.74	-9.02/-6.40
Θ (30°)	-0.96/-0.67	-0.73/-0.91	-1.24/-2.02	-2.58/-1.71	-1.16/-0.85	-1.07/-2.04	-3.21/-3.75	-3.75/-3.40	-2.76/-2.53	-2.63/-2.98	-3.49/-2.83	-1.54/-1.13	-1.12/-1.49	-1.97/-1.89	-1.49/-0.85	-0.62/-0.78	-0.62/-0.36	0.42/1.22	1.51/1.46	0.56/1.38	-3.13/-3.02	-1.76/-1.05	-1.23/-2.12	-2.68/-1.95
Θ (37.5°)	1.05/0.78	-0.14/-0.95	-1.55/-1.42	-0.16/0.89	1.69/1.76	0.76/-0.51	-1.79/-2.94	-3.54/-2.84	-1.79/-1.18	-1.69/-2.73	-2.07/-0.77	0.26/0.82	1.04/0.68	0.53/0.26	0.13/0.25	0.25/0.36	0.72/0.40	1.11/1.91	2.31/2.08	0.86/1.14	-3.10/-2.19	-0.05/0.79	0.37/0.07	0.02/0.46
Θ (45°)	0.91/1.07	0.43/-0.10	-0.72/-0.71	0.05/0.84	1.25/0.92	0.95/1.04	0.57/-0.49	-1.39/-1.49	-0.61/0.31	0.18/-1.02	-1.88/-0.92	-0.01/0.89	1.31/1.17	0.56/0.47	0.26/0.20	-0.12/0.89	1.16/0.49	0.85/2.87	3.68/2.94	1.67/0.86	0.29/0.48	1.58/1.87	0.44/-0.37	-0.31/-0.00
Θ (52.5°)	0.35/1.19	1.27/0.95	0.37/-0.14	-0.51/-0.08	0.26/1.12	1.60/1.37	0.60/-0.34	-0.63/-0.39	-0.06/0.76	1.36/1.00	0.05/0.05	0.88/0.78	0.77/0.92	0.54/0.13	-0.25/-0.95	-0.79/0.44	0.25/-1.28	-0.37/1.73	2.26/1.68	1.00/1.38	1.21/0.81	1.20/0.88	-0.96/-1.85	-1.08/-0.54
Θ (60°)	0.23/0.32	1.33/2.14	1.65/0.20	-1.14/-0.66	0.23/0.65	1.02/0.99	0.45/-0.16	0.07/0.33	0.09/0.95	2.22/1.64	0.64/1.41	1.77/0.78	1.14/1.22	-0.68/-1.69	-1.20/-0.72	0.64/0.52	-0.26/-2.12	-2.03/-0.64	-1.07/-2.71	-3.98/-1.60	-0.48/-1.10	-0.72/-0.88	-2.66/-3.85	-1.32/0.20
Θ (67.5°)	0.09/-0.59	0.89/1.90	1.40/-0.10	-1.58/-0.53	0.49/0.37	1.26/1.01	-0.09/-0.26	0.80/0.70	0.19/0.94	2.01/1.31	0.51/1.54	1.46/0.84	0.91/-0.49	-1.91/-1.64	-0.99/-0.84	-0.30/-0.88	-2.54/-4.21	-3.20/-2.13	-1.84/-2.01	-2.68/-1.53	-1.60/-4.11	-2.98/-2.52	-3.86/-5.64	-2.05/0.09
Θ (75°)	-0.94/-1.92	-0.03/0.95	0.69/-0.51	-1.48/-0.66	0.11/-0.11	0.87/0.11	-1.52/-1.09	0.37/0.87	0.15/0.17	0.94/1.08	-0.24/0.63	1.23/0.82	0.30/-1.56	-2.93/-2.06	-1.95/-1.51	-0.62/-1.82	-4.44/-4.15	-3.85/-2.59	-0.49/-0.31	-0.39/-1.02	-1.75/-5.99	-6.25/-3.18	-4.42/-7.01	-3.80/-1.03
Θ (82.5°)	-2.12/-2.48	-1.77/-0.28	-0.03/-1.00	-2.34/-1.04	-1.01/-0.31	-0.24/-0.19	-1.32/-0.99	-0.30/0.11	-0.42/-0.20	0.05/-0.43	-1.06/-0.44	-0.19/-0.35	-1.03/-3.69	-4.34/-3.39	-3.29/-2.69	-2.23/-4.94	-5.75/-5.22	-5.44/-3.38	-0.91/-0.04	0.60/-0.70	-2.66/-7.94	-8.87/-5.34	-6.01/-9.77	-5.56/-2.73
Θ (90°)	-3.99/-4.42	-2.45/-1.42	-0.95/-1.67	-3.60/-1.73	-1.77/-1.31	-1.14/0.12	-1.48/-1.78	-1.56/-1.45	-0.89/-1.19	-1.26/-1.30	-1.43/-2.16	-1.30/-0.86	-2.36/-5.11	-4.75/-4.73	-5.51/-4.96	-3.89/-7.42	-6.13/-6.00	-8.35/-4.34	-2.49/-1.37	-0.52/-2.42	-3.79/-8.93	-12.42/-7.24	-7.71/-11.59	-7.59/-3.89
Θ (97.5°)	-5.66/-5.99	-3.26/-2.51	-2.10/-3.26	-4.66/-2.50	-2.85/-2.27	-1.44/-0.03	-2.26/-2.76	-2.94/-2.77	-1.81/-2.09	-3.06/-2.86	-2.32/-3.84	-3.05/-2.10	-3.59/-7.93	-6.60/-6.07	-7.59/-8.51	-6.33/-11.01	-6.67/-8.24	-10.35/-7.54	-6.32/-4.97	-3.58/-5.58	-7.20/-12.24	-14.39/-10.08	-9.51/-12.15	-8.60/-4.61
Θ (105°)	-5.47/-7.36	-5.12/-3.40	-3.06/-4.39	-5.65/-4.03	-3.74/-3.13	-3.01/-1.88	-3.39/-4.21	-3.61/-2.77	-2.43/-3.11	-3.74/-3.95	-4.45/-5.15	-3.67/-3.16	-4.73/-8.20	-6.58/-8.89	-9.30/-8.74	-5.70/-9.81	-10.27/-13.43	-14.52/-13.94	-11.29/-9.30	-7.36/-8.92	-11.89/-12.96	-15.90/-15.26	-10.90/-11.07	-11.06/-6.35
Θ (112.5°)	-7.46/-7.26	-6.50/-4.85	-4.42/-5.63	-7.52/-4.38	-4.19/-4.28	-3.80/-3.46	-5.34/-6.05	-5.10/-4.18	-3.73/-3.67	-4.54/-5.21	-5.61/-5.66	-5.17/-4.66	-6.05/-9.22	-8.25/-8.67	-10.25/-9.91	-8.14/-10.64	-11.29/-13.16	-14.26/-13.60	-10.64/-9.03	-7.47/-7.88	-12.22/-15.30	-13.33/-15.34	-9.41/-10.04	-8.43/-6.57
Θ (120°)	-7.97/-8.66	-8.09/-7.44	-5.30/-6.35	-8.16/-6.29	-4.95/-5.93	-6.12/-5.44	-6.28/-6.27	-5.50/-4.88	-5.12/-5.20	-4.99/-5.43	-6.56/-5.76	-5.47/-6.47	-6.74/-8.17	-9.95/-10.84	-10.09/-11.22	-9.19/-9.14	-13.35/-14.87	-11.36/-14.53	-13.94/-14.93	-9.09/-8.38	-12.78/-15.84	-12.26/-12.18	-10.46/-8.86	-8.09/-7.10
Θ (127.5°)	-10.57/-9.93	-9.34/-8.72	-7.05/-7.59	-9.54/-7.63	-7.06/-5.56	-5.44/-6.89	-8.27/-8.43	-6.99/-7.07	-8.31/-7.71	-7.20/-8.60	-8.80/-7.71	-7.81/-8.27	-7.84/-9.07	-10.74/-13.63	-9.87/-10.23	-10.08/-13.30	-14.37/-14.18	-15.92/-13.69	-12.85/-13.32	-14.90/-16.28	-13.26/-15.65	-12.71/-8.97	-11.95/-11.02	-9.17/-9.49
Θ (135°)	-14.63/-11.44	-8.67/-10.13	-10.19/-9.65	-10.39/-8.37	-9.07/-7.66	-6.45/-6.62	-8.43/-9.51	-9.37/-8.80	-7.98/-7.48	-8.40/-10.62	-9.71/-9.84	-10.38/-8.78	-9.71/-9.22	-11.59/-12.84	-13.23/-12.83	-15.36/-13.78	-13.08/-15.47	-14.50/-13.46	-15.29/-14.08	-14.18/-15.31	-13.08/-15.22	-13.64/-9.07	-12.55/-13.33	-9.57/-11.76
Θ (142.5°)	-14.48/-12.63	-10.39/-11.13	-12.75/-11.10	-9.93/-8.80	-9.87/-13.21	-11.53/-10.22	-10.31/-11.27	-11.42/-10.99	-10.82/-10.77	-11.84/-11.48	-11.03/-10.71	-10.63/-10.77	-9.78/-9.00	-10.88/-15.47	-13.42/-14.25	-15.15/-15.35	-14.25/-14.48	-15.45/-15.00	-12.30/-10.98	-11.35/-11.07	-11.83/-15.39	-15.74/-11.68	-12.88/-15.34	-15.49/-15.38
Θ (150°)	-14.59/-13.05	-11.85/-11.85	-10.88/-12.06	-13.48/-11.56	-9.16/-8.80	-9.72/-10.91	-13.55/-15.16	-13.54/-11.59	-11.08/-11.80	-11.64/-12.96	-14.25/-14.15	-12.89/-11.39	-9.63/-10.08	-11.11/-14.73	-15.25/-15.51	-15.44/-14.97	-14.62/-14.90	-14.93/-15.14	-15.47/-15.29	-14.82/-14.87	-15.38/-14.78	-15.38/-14.84	-14.01/-15.85	-15.44/-15.03
Θ (157.5°)	-15.41/-13.69	-12.89/-12.98	-12.55/-13.58	-14.99/-14.42	-12.03/-11.20	-11.09/-11.03	-11.82/-13.83	-15.45/-14.89	-13.06/-12.18	-13.10/-13.88	-15.01/-12.92</													

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

