



# Antenna Composite Gain Test Report

Equipment	Wi-Fi 7 Router
Brand Name	Q Fiber
Model Name	W1700K
Applicant	Gemtek Technology Co., Ltd. No. 15-1 Zhonghua Road, Hsinchu Industrial Park, Hukou, Hsinchu, Taiwan, 30352.
Manufacturer	Gemtek Technology Co., Ltd. No. 15-1 Zhonghua Road, Hsinchu Industrial Park, Hukou, Hsinchu, Taiwan, 30352.
Sample Received	Aug. 17, 2023
Start Test Date	Aug. 22, 2023
Final Test Date	Oct. 04 , 2023



Approved by: Jackson Tsai

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### 1. Operation Mode and Antenna Information

Antenna Position	RF Port	Brand Name	Model Name	Ant. Type	Connector	Modes of Operation
2G5G Ant1	1	Gemtek	WAPE-269BE_Dual_Ant1	PIFA	UFL	2.4G+5G
2G5G Ant2	2	Gemtek	WAPE-269BE_Dual_Ant2	PIFA	UFL	2.4G+5G
2G5G Ant3	3	Gemtek	WAPE-269BE_Dual_Ant3	PIFA	UFL	2.4G+5G
2G5G Ant4	4	Gemtek	WAPE-269BE_Dual_Ant4	PIFA	UFL	2.4G+5G
6G Ant1	1	Gemtek	WAPE-269BE_6E_Ant1	PIFA	UFL	6G
6G Ant2	2	Gemtek	WAPE-269BE_6E_Ant2	PIFA	UFL	6G
6G Ant3	3	Gemtek	WAPE-269BE_6E_Ant3	PIFA	UFL	6G
6G Ant4	4	Gemtek	WAPE-269BE_6E_Ant4	PIFA	UFL	6G

Note:

#### 2.4GHz and 5GHz Operation Mode (4TX/4RX)

2G5G Ant1, 2G5G Ant2, 2G5G Ant3 and 2G5G Ant4 could transmit/receive simultaneously.

#### 6GHz Operation Mode (4TX/5RX)

6G Ant1, 6G Ant2, 6G Ant3 and 6G Ant4 could transmit/receive simultaneously.

### 2. Test Frequency

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

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



### 3. Testing Location

<b>Test Lab. : Sporton International Inc. Hsinhua Laboratory</b>				
<input checked="" type="checkbox"/> Wen 33rd.St.	<b>ADD:</b>	No.14-1, Ln. 19, Wen 33rd St., Guishan Dist., Taoyuan City 333010, Taiwan (R.O.C.)		
	<b>TEL:</b> 886-3-318-0787	<b>FAX:</b> 886-3-318-0287		
Test Condition	Test Site No.	Test Engineer	Test Environment (°C / %)	Test Date
Radiated	05CH03-HY	Rex Liao	23.5~24.5°C / 50~55%	22/Aug/2023~04/Oct/2023

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

#### 4. Test Facility and Configuration

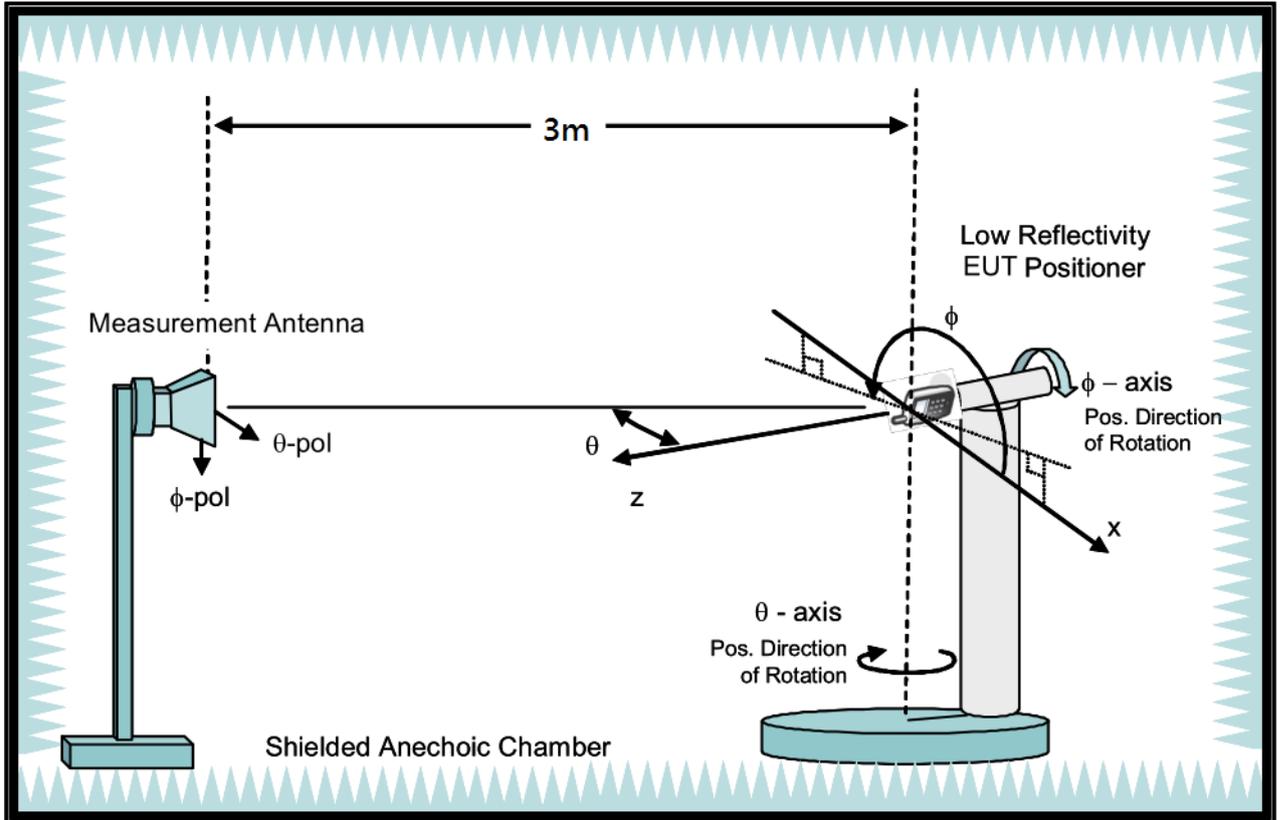
Test configuration: Reference to CITA OTA distributed-axes system configuration.

Chamber: Fully Anechoic Chamber.

Measurement antenna: Dual Polarization Horn antenna

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

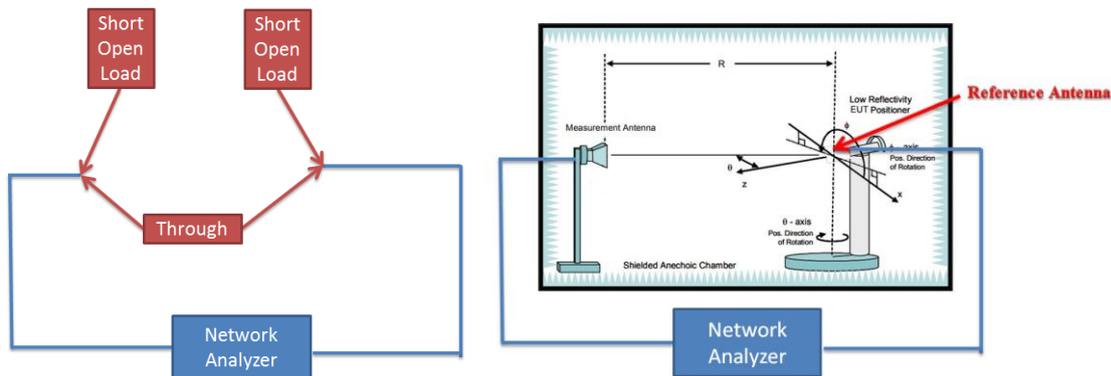
#Reference to CTIA “ctia-test-plan-for-wireless-device-over-the-air-performance-ver-3-7-1”



### 5. Reference Calibration

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

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



Frequency (MHz)	2400	2450	2500	5150	5200	5300	5600	5750	5800	5900	6000	6500	7000	7200
G(theta) reading (dB)	-33.75	-33.64	-32.91	-32.21	-32.45	-32.33	-32.57	-32.94	-32.78	-33.35	-32.91	-33.81	-34.54	-35.64
G(phi) reading (dB)	-33.19	-32.12	-32.48	-32.51	-32.64	-31.68	-32.24	-32.45	-32.45	-32.85	-32.45	-33.62	-34.48	-35.24
Reference gain (dBi)	10	10.4	10.6	12.3	12.5	13.3	13.3	13.2	13.1	13	13.2	12.4	11.8	11.1
Factor(theta) (dB)	43.75	44.04	43.51	44.51	44.95	45.63	45.87	46.14	45.88	46.35	46.11	46.21	46.34	46.74
Factor(phi) (dB)	43.19	42.52	43.08	44.81	45.14	44.98	45.54	45.65	45.55	45.85	45.65	46.02	46.28	46.34

Note:

$$G \text{ reading (dB)} = 20 \cdot \log(V2/V1) = 10 \cdot \log(P2/P1)$$

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

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

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



## **6. Test Method**

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

DG steps:

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

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



### 7. Measured Values and Calculation of Maximum Gain Positions

#### DG\_1SS max value position

Frequency (Hz)	2.45G	5.2G	5.3G	5.6G	5.785G
Ant. 1 (dBi)	-0.83	-3.56	-3.52	-4.64	-4.48
Ant. 2 (dBi)	-5.72	-1.15	-1.95	-2.39	-2.23
Ant. 3 (dBi)	-0.34	1.39	1.36	1.58	0.84
Ant. 4 (dBi)	2.85	3.3	2.63	1.87	2.41
DG [1SS] (dBi)	5.52	6.39	6	5.54	5.56
Polarization	Theta	Phi	Theta	Phi	Phi
$\Theta$ (°)	60	0	7.5	0	7.5
$\Phi$ (°)	292.5	277.5	195	285	285

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

#### DG\_1SS max value position calculation

Frequency (Hz)	2.45G	5.2G	5.3G	5.6G	5.785G
Ant. 1 [10^(G/20)]	10^(-0.83/20)	10^(-3.56/20)	10^(-3.52/20)	10^(-4.64/20)	10^(-4.48/20)
Ant. 2 [10^(G/20)]	10^(-5.72/20)	10^(-1.15/20)	10^(-1.95/20)	10^(-2.39/20)	10^(-2.23/20)
Ant. 3 [10^(G/20)]	10^(-0.34/20)	10^(1.39/20)	10^(1.36/20)	10^(1.58/20)	10^(0.84/20)
Ant. 4 [10^(G/20)]	10^(2.85/20)	10^(3.3/20)	10^(2.63/20)	10^(1.87/20)	10^(2.41/20)
Ant. 1 [10^(G/20)] value	0.909	0.664	0.667	0.586	0.597
Ant. 2 [10^(G/20)] value	0.518	0.876	0.799	0.759	0.774
Ant. 3 [10^(G/20)] value	0.962	1.174	1.169	1.199	1.102
Ant. 4 [10^(G/20)] value	1.388	1.462	1.354	1.24	1.32
Sum All Antenna [Amax]	3.776	4.175	3.989	3.785	3.792
DG [10*log(Amax^2/Nant)]	5.52	6.39	6	5.54	5.56

Note:

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

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



**DG\_1SS max value position**

Frequency (Hz)	6.175G	6.475G	6.695G	6.995G
Ant. 1 (dBi)	0.33	0.83	-0.07	0.57
Ant. 2 (dBi)	-0.09	0.19	1.11	1.68
Ant. 3 (dBi)	-1.26	-2.28	-3.13	-2.34
Ant. 4 (dBi)	-1.43	-2.18	-1.39	-3.77
DG [1SS] (dBi)	5.44	5.27	5.29	5.33
Polarization	Theta	Theta	Theta	Theta
$\Theta$ (°)	82.5	82.5	82.5	82.5
$\Phi$ (°)	270	270	262.5	262.5

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

**DG\_1SS max value position calculation**

Frequency (Hz)	6.175G	6.475G	6.695G	6.995G
Ant. 1 [10 <sup>^(G/20)</sup> ]	10 <sup>^(0.33/20)</sup>	10 <sup>^(0.83/20)</sup>	10 <sup>^(-0.07/20)</sup>	10 <sup>^(0.57/20)</sup>
Ant. 2 [10 <sup>^(G/20)</sup> ]	10 <sup>^(-0.09/20)</sup>	10 <sup>^(0.19/20)</sup>	10 <sup>^(1.11/20)</sup>	10 <sup>^(1.68/20)</sup>
Ant. 3 [10 <sup>^(G/20)</sup> ]	10 <sup>^(-1.26/20)</sup>	10 <sup>^(-2.28/20)</sup>	10 <sup>^(-3.13/20)</sup>	10 <sup>^(-2.34/20)</sup>
Ant. 4 [10 <sup>^(G/20)</sup> ]	10 <sup>^(-1.43/20)</sup>	10 <sup>^(-2.18/20)</sup>	10 <sup>^(-1.39/20)</sup>	10 <sup>^(-3.77/20)</sup>
Ant. 1 [10 <sup>^(G/20)</sup> ] value	1.039	1.1	0.992	1.068
Ant. 2 [10 <sup>^(G/20)</sup> ] value	0.99	1.022	1.136	1.213
Ant. 3 [10 <sup>^(G/20)</sup> ] value	0.865	0.769	0.697	0.764
Ant. 4 [10 <sup>^(G/20)</sup> ] value	0.848	0.778	0.852	0.648
Sum All Antenna [Amax]	3.742	3.67	3.678	3.693
DG [10*log(Amax <sup>2</sup> /Nant)]	5.44	5.27	5.29	5.33

Note:

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

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



8. Summary of Test Result

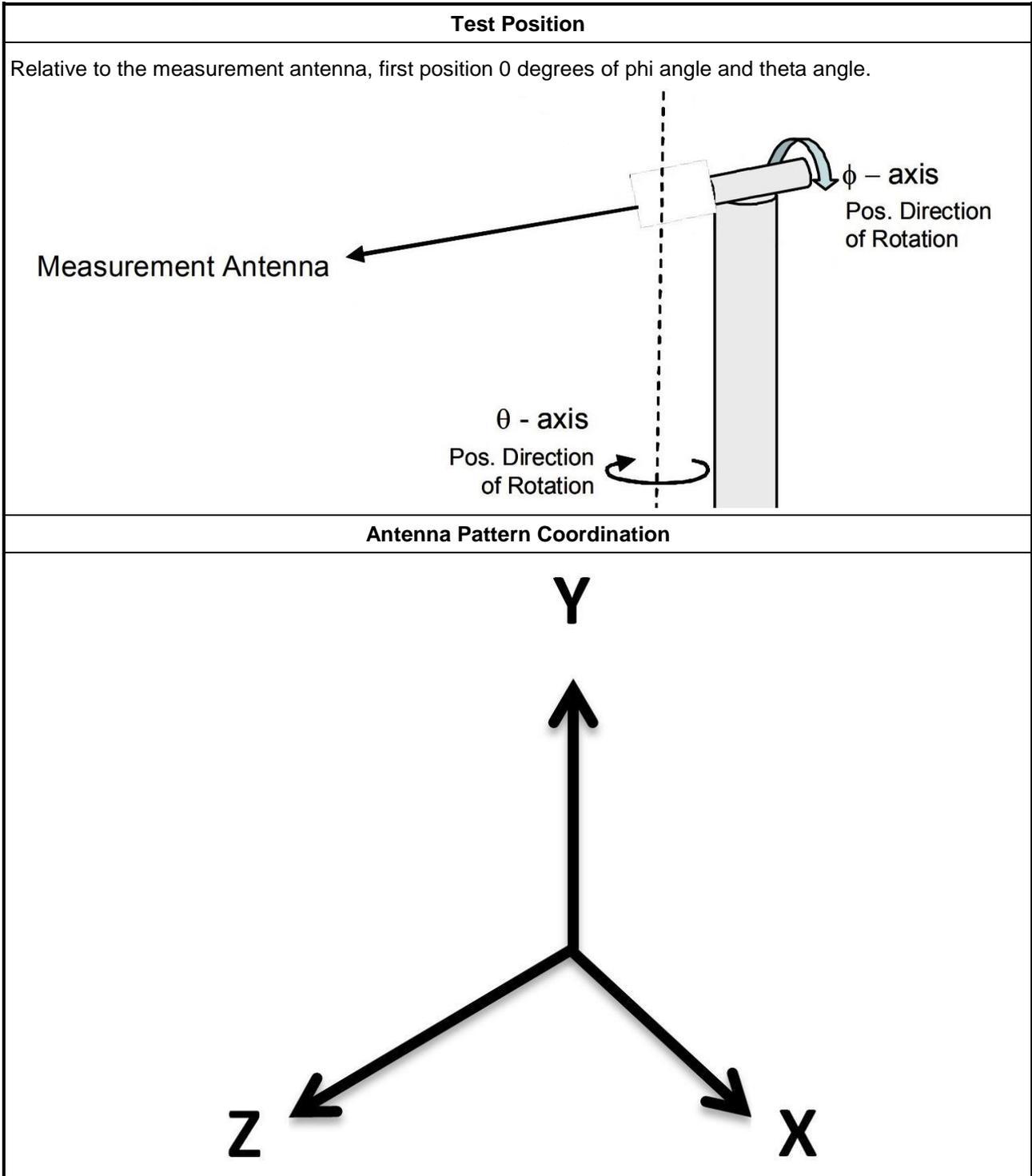
Freq(Hz)	2.45G	5.2G	5.3G	5.6G	5.785G
Ant. 1 Max Gain (dBi)	2.06	2.52	1.65	1.52	2.35
Ant. 2 Max Gain (dBi)	1.82	2.02	2.25	1.38	1.2
Ant. 3 Max Gain (dBi)	1.11	1.88	1.48	1.65	1.22
Ant. 4 Max Gain (dBi)	3.1	3.3	2.63	2.13	2.54
Ant. 1 Polarization/Θ(°)/Φ(°)	Phi/82.5/352.5	Phi/7.5/330	Theta/0/75	Phi/15/165	Theta/75/240
Ant. 2 Polarization/Θ(°)/Φ(°)	Phi/22.5/82.5	Phi/30/45	Phi/22.5/52.5	Phi/15/52.5	Phi/22.5/37.5
Ant. 3 Polarization/Θ(°)/Φ(°)	Theta/67.5/270	Phi/112.5/232.5	Theta/7.5/202.5	Theta/0/202.5	Phi/30/307.5
Ant. 4 Polarization/Θ(°)/Φ(°)	Theta/67.5/292.5	Phi/0/277.5	Theta/7.5/195	Phi/15/97.5	Theta/37.5/187.5
Max Gain (dBi)	3.1	3.3	2.63	2.13	2.54
DG [1SS] (dBi)	5.52	6.39	6	5.54	5.56
DG [2SS] (dBi)	3.1	3.39	3	2.54	2.56
DG [4SS] (dBi)	3.1	3.3	2.63	2.13	2.54

Freq(Hz)	6.175G	6.475G	6.695G	6.995G
Ant. 1 Max Gain (dBi)	1.93	1.63	2.07	1.37
Ant. 2 Max Gain (dBi)	3.15	2.11	3.23	1.68
Ant. 3 Max Gain (dBi)	3.26	2.19	3.36	2.12
Ant. 4 Max Gain (dBi)	1.93	1.52	1.12	1.21
Ant. 1 Polarization/Θ(°)/Φ(°)	Theta/82.5/255	Theta/82.5/277.5	Theta/82.5/270	Theta/82.5/270
Ant. 2 Polarization/Θ(°)/Φ(°)	Theta/45/202.5	Theta/45/210	Phi/90/270	Theta/82.5/262.5
Ant. 3 Polarization/Θ(°)/Φ(°)	Theta/45/67.5	Phi/22.5/315	Theta/75/97.5	Theta/67.5/90
Ant. 4 Polarization/Θ(°)/Φ(°)	Theta/75/90	Theta/75/82.5	Theta/37.5/67.5	Theta/60/82.5
Max Gain (dBi)	3.26	2.19	3.36	2.12
DG [1SS] (dBi)	5.44	5.27	5.29	5.33
DG [2SS] (dBi)	3.26	2.27	3.36	2.33
DG [4SS] (dBi)	3.26	2.19	3.36	2.12

Note:

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

### 9. Test Setup



Note:

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



### 10. Test Equipment and Calibration Data

Instrument	Brand	Model No.	Serial No.	Characteristics	Calibration Date	Calibration Due Date
Horn Antenna	SCHWARZBECK	BBHA9120D	BBHA 9120D-1543	1GHz~18GHz	May 11, 2023	May 10, 2024
Dual Polarization Horn Antenna	Sporton	S0209DP	S0209DP-001	2GHz~9GHz	N.C.R.	N.C.R.
ENA Series Network Analyzer	AGILENT	E5071C	MY46419477	100kHz~8.5GHz	Jul. 28, 2023	Jul. 27, 2024
VNA Calibration Kit	TS RF	TS85033E-F	-	DC~9GHz	N.C.R.	N.C.R.
Multi-axis positioner	Sporton	MAPS01	MAPS01-001	Theta / Phi axis	N.C.R.	N.C.R.
Test Software	SPORTON	SENSE-RDG	V1.0.8	-	N.C.R.	N.C.R.

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



## 11. Test Results

Please refer to the appendix.

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Appendix E – Test Photos..... Page 53

————THE END————



## Radiated Composite Gain Data of 2.4GHz&5GHz

## Appendix A

Freq(Hz)	2.45G	5.2G	5.3G	5.6G	5.785G
Ant. 1 Max Gain (dBi)	2.06	2.52	1.65	1.52	2.35
Ant. 2 Max Gain (dBi)	1.82	2.02	2.25	1.38	1.2
Ant. 3 Max Gain (dBi)	1.11	1.88	1.48	1.65	1.22
Ant. 4 Max Gain (dBi)	3.1	3.3	2.63	2.13	2.54
Ant. 1 Polarization/ $\theta$ (°)/ $\phi$ (°)	Phi/82.5/352.5	Phi/7.5/330	Theta/0/75	Phi/15/165	Theta/75/240
Ant. 2 Polarization/ $\theta$ (°)/ $\phi$ (°)	Phi/22.5/82.5	Phi/30/45	Phi/22.5/52.5	Phi/15/52.5	Phi/22.5/37.5
Ant. 3 Polarization/ $\theta$ (°)/ $\phi$ (°)	Theta/67.5/270	Phi/112.5/232.5	Theta/7.5/202.5	Theta/0/202.5	Phi/30/307.5
Ant. 4 Polarization/ $\theta$ (°)/ $\phi$ (°)	Theta/67.5/292.5	Phi/0/277.5	Theta/7.5/195	Phi/15/97.5	Theta/37.5/187.5
Max Gain (dBi)	3.1	3.3	2.63	2.13	2.54
DG [1SS] (dBi)	5.52	6.39	6	5.54	5.56
DG [2SS] (dBi)	3.1	3.39	3	2.54	2.56
DG [4SS] (dBi)	3.1	3.3	2.63	2.13	2.54



# Radiated Composite Gain Data of 2.4GHz&5GHz

# Appendix A

## DG 1SS Result

Freq(Hz)	2.45GPol.	PhiL	Phi(30°)	Phi(45°)	Phi(60°)	Phi(75°)	Phi(90°)	Phi(105°)	Phi(120°)	Phi(135°)	Phi(150°)	Phi(165°)	Phi(180°)	Phi(195°)	Phi(210°)	Phi(225°)	Phi(240°)	Phi(255°)	Phi(270°)	Phi(285°)	Phi(300°)	Phi(315°)	Phi(330°)	Phi(345°)	
DG(dB)	Phi(0°)	Phi(15°)	Phi(30°)	Phi(45°)	Phi(60°)	Phi(75°)	Phi(90°)	Phi(105°)	Phi(120°)	Phi(135°)	Phi(150°)	Phi(165°)	Phi(180°)	Phi(195°)	Phi(210°)	Phi(225°)	Phi(240°)	Phi(255°)	Phi(270°)	Phi(285°)	Phi(300°)	Phi(315°)	Phi(330°)	Phi(345°)	
Theta(0°)	-1.02-0.32	0.54/1.29	2.05/2.72	3.28/3.67	3.94/3.03	4.04/3.95	3.78/3.51	3.08/2.48	1.72/0.93	0.46/0.15	-0.10/-0.37	-0.59/-0.62	-0.24/0.53	1.36/1.99	2.42/2.69	2.99/3.2	3.35/3.32	3.19/3.02	2.83/2.62	2.36/2	1.50/92	0.22/0.51	-1.11/-1.37	-1.41/-1.32	
Theta(7.5°)	-0.18/0.08	0.47/0.93	1.49/2.04	2.49/2.78	2.95/3.06	3.04/2.85	2.61/2.38	2.16/1.9	1.41/0.66	-0.15/0.46	-0.32/-0.16	-0.33/-0.59	-0.63/-0.01	1.04/2	2.79/3.4	3.88/4.22	4.38/4.43	4.43/4.34	4.13/3.71	3.12/3.34	1.59/5.05	0.32/0	-0.11/-0.12	-0.17/0.23	
Theta(15°)	0.92/0.68	0.51/0.49	0.74/1.23	1.78/2.29	2.74/3.12	3.32/3.35	3.23/3.06	2.91/2.78	2.43/1.73	0.68/-0.17	-0.23/0.14	0.32/0.2	0.03/0.15	0.87/1.85	2.94/3.8	4.39/4.75	4.96/5.06	5.11/5.09	4.94/5.2	3.85/2.96	1.99/1.22	0.7/0.6	0.78/1.01	1.16/1.13	
Theta(22.5°)	1.77/1.4	0.87/0.28	0.08/0.63	1.56/2.48	3.23/3.8	4.11/4.55	4.06/3.82	3.63/3.38	3.05/2.4	1.39/0.34	-0.18/0.03	0.39/0.49	0.53/0.75	1.29/2.09	2.98/3.76	4.34/6.3	4.87/4.99	5.06/4.97	4.73/4.29	3.66/2.81	1.83/1.01	0.52/0.54	0.92/1.37	1.72/1.91	
Theta(30°)	2.28/2.17	1.64/0.74	0.06/0.55	1.76/2.88	3.66/4.16	4.44/4.48	4.27/3.88	3.46/3.14	2.78/2.41	1.84/1.09	0.26/0.18	-0.03/0.47	0.10/1.49	1.93/2.47	2.96/3.42	3.84/3.8	4.54/4.67	4.68/4.47	4.03/3.46	2.82/2.2	1.49/0.84	0.43/0.5	0.85/1.31	1.76/2.13	
Theta(37.5°)	2.01/2.37	2.27/1.62	0.89/1.11	2.15/3.25	3.97/4.33	4.46/4.38	4.11/3.59	2.87/2.15	1.61/1.43	1.33/0.98	0.17/-1.09	-2.09/-1.2	0.36/1.43	1.96/2.3	2.61/2.84	3.05/3.38	3.65/3.71	3.63/3.7	2.47/1.74	1.31/1.17	1.18/1.07	0.91/0.89	1.01/1.13	1.31/1.59	
Theta(45°)	1.06/1.16	1.89/1.74	1.47/1.84	2.71/3.62	4.25/4.46	4.27/3.87	3.47/2.96	2.2/2.1	0.30/1.5	0.56/0.76	0.28/-1.08	-3.33/-3.38	-1.10/4.8	1.38/2	2.42/2.57	2.58/2.49	2.26/2.15	1.91/3.2	0.48/-0.32	-0.64/-0.54	-0.21/-0.04	0.0/1.1	0.25/0.28	0.37/0.6	
Theta(52.5°)	1.04/1.26	1.38/1.18	1.05/1.8	2.84/3.76	4.34/4.4	3.94/3.35	3.08/2.94	2.4/1.17	-0.56/1.35	-0.77/-0.02	0.1/-0.91	-3.38/-3.23	-0.87/0.56	1.27/1.71	1.86/1.91	1.99/1.94	1.92/1.87	1.52/0.81	-0.07/-0.45	-0.53/-0.82	-1.62/-2.08	-2.29/-2.09	-1.68/-0.85	0.11/0.62	
Theta(60°)	1.94/2.5	2.64/2.09	0.86/0.64	1.66/2.82	3.63/3.87	3.64/3.53	3.69/3.78	3.31/1.96	-0.48/-2.7	-2.07/-0.33	0.59/0.11	-1.96/-2.01	0.23/1.67	1.86/1.33	1.84/1.03	1.68/1.81	1.84/1.83	1.51/1.12	1.31/2.01	2.31/6.2	0.21/6.2	-0.15/-2.03	-2.76/-2.9	-2.87/-1.77	-0.1/1.8
Theta(67.5°)	0.83/2.19	3.18/3.15	2.18/1.41	1.65/2.4	2.85/2.75	2.68/2.07	3.43/3.52	2.96/1.56	-0.83/-3.35	-3.12/-1.07	0.01/0.45	-2.36/2	0.36/1.91	1.67/0	-0.04/1.5	2.18/2.4	2.26/2.45	2.29/2.22	2.64/3.2	3.3/2.3	-0.05/-2.45	-2.15/-1.74	-2.52/-2.84	-1.39/-0.12	
Theta(75°)	-0.18/0.06	1.46/2.21	2.05/1.83	2.08/2.46	2.47/2.03	1.88/2.32	2.54/2.66	2.32/1.32	-0.32/-2.08	-2.41/-1.3	-0.43/-0.22	-1.28/-1.84	-0.28/1.02	0.46/-0.36	0.99/2.24	2.19/1.79	1.99/2.36	2.35/2.19	2.38/2.88	2.93/1.85	-0.71/-3.49	-2.61/-1.64	-2.12/-1.08	0.62/0.78	
Theta(82.5°)	0.27/0.55	1.54/2.02	1.66/1.4	1.39/1.2	1.07/1.16	1.75/2.48	2.93/1.7	2.76/1.45	-0.85/-3.01	-2.98/-2.2	-1.01/-0.02	-0.68/-1.64	-0.27/1.12	1.27/1.1	1.49/1.65	1.26/0.9	0.84/1.28	1.41/1.72	2.53/3.18	2.99/1.57	-1.14/-2.8	-1.17/-1.27	-2.03/-0.5	1.11/1.1	
Theta(90°)	-0.77/0.03	1.48/1.86	1.15/0.98	1.52/1.36	0.8/0.71	1.58/2.47	2.76/2.69	2.11/0.62	-1.76/-3.31	-3.11/-1.93	-0.39/0.8	-0.25/-1.56	0.26/1.84	1.96/0.57	0.01/1.38	1.92/1.32	1.19/1.66	1.85/2.6	3.84/4.8	4.15/2.5	-0.14/-1.34	-0.74/-0.93	-2.21/-0.37	1.18/0.74	
Theta(97.5°)	-0.31/-0.16	1.04/1.56	0.73/0.08	0.91/0.2	0.25/0.08	1.34/2.48	2.53/2.25	1.88/0.48	-1.72/-3.31	-3.74/-2.55	-0.43/0.36	-1.11/-1.16	0.61/1.93	2.05/1	0.64/1.91	1.16/0.04	1.42/8.9	3.74/0.9	4.49/4.86	4.52/2.89	-0.16/-2.74	-1.96/-2.05	-3.28/-0.6	1.29/1.28	
Theta(105°)	-0.34/0.24	1.35/1.75	1.04/-0.08	0.44/1.01	0.53/0.46	-0.25/0.84	1.37/1.74	1.64/0.44	-1.51/-3.16	-4.3/-2.94	-0.75/0.39	-0.05/0.28	0.06/1.11	1.26/0.74	1.51/2.38	1.82/1.39	1.87/1.39	1.62/2.58	2.75/3.38	3.41/1.91	-1.27/-3.3	-1.79/-1.29	-2.39/-0.39	1.18/0.78	
Theta(112.5°)	-1.73/-0.17	1.24/1.52	0.86/-0.48	-0.55/0.69	1.1/0.7	0.49/0.74	0.63/0.56	0.25/0.83	-2.2/-3.49	-3.9/-2.54	-1.03/0.53	-1.46/-2.66	-1.36/0.55	0.55/0.59	2.58/2.55	2.28/0.55	-1.05/-0.57	0.49/1.21	2.25/3.15	3.03/1.41	-1.57/-2.97	-2.02/-1.6	-1.84/-0.51	0.43/-0.48	
Theta(120°)	-2.36/-2.44	-0.33/0.84	1.34/1.2	0.71/0.42	0.16/-0.59	-1.32/-1.33	-1.07/-1.03	0.56/0.43	-0.57/-2.44	-4.09/-3.55	-2.12/-1.78	-2.23/-1.85	0.09/1.76	1.9/1.6	1.46/0.28	-2.03/-2.47	-0.43/-1.57	2.34/1.96	1.67/1.86	1.69/0.28	-2.47/-3.33	-3.06/-3.01	-2.33/-0.5	0.57/-0.29	
Theta(127.5°)	-0.34/-1.15	-1.69/-2.42	-0.24/-0.96	-0.26/0.07	-0.75/-1.65	-1.01/-1.75	-0.06/0.25	-1.49/-3.22	-4.12/-2.99	-1.24/0.45	-0.63/0.49	-1.41/-0.01	-1.17/1.94	-1.34/0.09	1.18/1.41	-0.68/-1.1	-0.96/-1.7	-2.54/-2.83	-3.02/-3.97	-4.5/-2.63	-0.80/0.25	-4.5/-2.63	-0.80/0.25	-3.80/0.25	
Theta(135°)	-0.67/0.1	0.29/-0.66	-2.46/-3.44	-2.52/-1.14	-0.05/0.69	0.9/0.55	-0.06/-0.31	-0.43/-1.13	-2.39/-3.54	-4.07/-3.48	-2.8/-2.74	-2.65/-2.18	-1.76/-1.57	-1.32/0.35	0.82/1.76	1.95/1.15	0.31/0.27	-0.06/-1.77	-4.1/-3.84	-2.46/-1.73	-1.29/0.94	-1.03/-2.1	-3.98/-4.73	-2.96/-1.53	
Theta(142.5°)	-3.6/-1.69	-0.04/0.44	0.19/-0.15	-0.23/-0.21	-0.11/-0.12	-0.16/-0.42	-1.09/-1.85	-2.15/-2.27	-2.45/-2.71	-2.93/-2.98	-2.8/-2.43	-2.1/-1.73	-1.58/-1.27	-0.95/-1.0	0.55/1.07	0.93/0.24	-0.24/-0.6	-1.74/-0.6	-6.35/-5.45	-3.46/-2.51	-2.06/-2.05	-1.9/-2.33	-3.18/-0.46	4.24/-4.1	
Theta(150°)	-4.22/-3.51	-1.74/-0.38	0.80/0.77	1.02/1.02	0.84/0.46	-0.14/-0.81	-0.85/-1.26	-2.52/-2.62	-2.75/-2.9	-3.27/-3.73	-3.96/-4.07	-3.98/-4.24	-3.87/-2.72	-1.45/0.48	0.3/0.79	0.91/0.64	0.43/0.4	-1.53/-3.09	-5.14/-6.34	-6.4/5.3	-4.99/-4.61	-4.21/-3.24	-2.61/-2.29	-2.48/-3.24	
Theta(157.5°)	-1.93/-2.5	-2.36/-1.88	-0.87/-0.02	0.53/0.82	0.88/0.96	0.85/0.46	-0.16/-0.94	-1.72/-2.29	-2.59/-2.75	-2.65/-2.39	-1.87/-1.29	-0.69/-0.32	-0.24/0.35	-0.24/0.35	0.24/0.36	0.26/0.01	-0.39/-0.97	-1.99/-3.36	-4.4/-4.75	-4.59/-3.73	-2.82/-2.15	-1.42/-1.07	-0.89/-0.73	-0.76/-1.04	
Theta(165°)	-2.31/-3.37	-4.01/-4.07	-3.5/-2.41	-1.44/-0.58	-0.2/-0.06	-0.31/-0.69	-1.32/-1.74	-2.02/-2.07	-1.93/-1.68	-1.23/-0.67	0.1/0.79	1.16/1.07	0.54/-0.34	-1.17/-1.78	-1.88/-1.98	-2.07/-2.24	-2.44/-2.7	-3.34/-4.08	-4.51/-4.3	-3.65/-2.79	-1.91/-1.26	-0.89/-0.85	-0.97/-1.12	-1.15/-1.44	
Theta(172.5°)	-6.69/-6.37	-6.63/-6.37	-5.74/-7.2	-3.72/-3.06	-2.9/-3.08	-3.38/-3.74	-4.03/-4.16	-4.17/-4.23	-4.24/-3.74	-4.34/-3.94	-1.07/1.66	-2.92/1.98	-4.54/-3.78	-4.88/-5.28	-4.95/-4.38	-4.09/-4.21	-4.65/-4.16	-5.78/-6.22	-6.13/-6.33	-3.64/-3.16	-3.06/-3.19	-3.61/-4.04	-4.48/-5.03	-4.48/-5.03	
Theta(180°)	-6.85/-5.91	-5.16/-4.85	-4.86/-5.05	-5.1/-5.24	-5.91/-7	-7.82/-7.93	-8.16/-8.18	-8.24/-8.21	-8.24/-7.85	-7.25/-6.57	-6.34/-6.61	-7.52/-8.88	-9.45/-8.87	-7.59/-6.4	-5.82/-5.85	-6.3/-7.07	-7.91/-8.27	-8.54/-8.5	-8.51/-8.18	-7.75/-7.31	-7.09/-7.15	-7.69/-7.84	-7.83/-8.01	-8.06/-7.59	





# Radiated Composite Gain Data of 2.4GHz&5GHz

# Appendix A

Theta	-4.01/-1.13	-0.63/-3.65	-2.34/-2.75	-1.03/-2.3	-1.45/0.09	0.73/0.22	0.92/1.15	-0.44/-0.86	-0.71/-1.55	-1.13/-1.37	-2.34/-1.58	0.04/0.08	1.22/1.47	-0.28/0.27	-1.31/-2.15	-2.62/-1.62	-3.13/-1.76	-1.37/0.08	1.30/2.1	-1.18/0.81	1.6/-0.3	0.61/1.83	2.36/0.8	-1.09/-1.51
Theta (67.5°)	-2.54/-0.95	-0.3/-2.12	-2.86/-3.04	-0.94/-3.09	-1.83/0.49	0.95/0.7	0.92/0.52	-1.2/-2.11	-2.71/-4.06	-2.81/-4.74	-5.35/-2.72	-0.36/-0.41	0.54/2.02	0.04/-0.89	-3.24/-1.19	-1.22/-1.64	-2.24/-1.9	-2.36/-0.44	-0.06/-2.99	-3.44/-0.98	-0.16/0.18	-0.26/0.45	0.31/-0.77	-1.75/-0.97
Theta (75°)	-2.55/-0.38	0.25/-1.6	-2.77/-3.81	-1.63/-3.27	-1.75/-0.03	-0.01/-0.87	-0.38/-1.26	-4.1/-4.41	-4.06/-5.36	-4.31/-6.73	-6/-3.93	-2.46/-1.37	-1.13/-0.19	-0.03/1.08	-0.99/-1.94	-3.37/-2.19	-2.59/-2.45	-1.75/0.68	1.94/-0.71	-1.26/-1.24	-1.78/0.24	-1.58/-3.95	-1.61/-1.58	-1.61/-0.22
Theta (82.5°)	-0.57/1.3	1.33/-0.42	-2.08/-4.02	-3.46/-2.73	-2.53/0.17	-0.49/-1.9	-1.13/-2.98	-4.87/-5.33	-6.32/-4.06	-5.76/-10.14	-6.02/-4.03	-2.8/-2.7	-2.86/-1.27	-1.23/-0.97	-1.69/-0.09	-0.28/-1.27	-1.37/-0.68	-0.71/1	0.96/0.07	-0.13/-1.33	-3.19/-0.46	-1.95/-4.99	-2.8/-0.91	-1.07/-0.46
Theta (90°)	-0.83/1.14	1/-0.64	-2.08/-4.98	-3.14/-2.07	-3.27/-0.92	-1.37/-3.41	-2.21/-5.11	-5.83/-6.31	-7.73/-5.02	-7.02/-11.58	-9.74/-6.66	-4.25/-3.85	-2.55/-3.58	-1.51/-1.97	-2.15/0.03	-0.48/-1.49	0.78/1.62	0.59/0.61	0.81/0.27	-0.06/1.73	-1.04/-2.34	-1.9/-6.78	-3.25/-0.28	-1.81/-0.25
Theta (97.5°)	-0.41/0.6	0.66/-1.1	-2.41/-4.31	-3.81/-1.34	-3.14/-1.42	-1.99/-3.47	-3.36/-7.46	-8.77/-8.15	-8.13/-6.23	-9.61/-11.59	-9.02/-6.52	-5.22/-5.43	-3.25/-3.81	-2.6/-2.58	-1.55/-0.45	0.40/0.48	-0.26/-1.35	0.37/1.94	-1.45/-2.72	-3.06/-2.91	-0.9/-3.31	-3.85/-5.9	-3.82/-2.9	-2.75/0.15
Theta (105°)	-2.07/-0.24	-0.71/-1.07	-2.11/-4.6	-2.29/-1.41	-2.51/-2.87	-2.97/-3.33	-2.23/-6.3	-8.95/-9.93	-8.62/-7.07	-9.93/-9.52	-8.53/-6.85	-4.94/-4.88	-2.97/-4.58	-1.87/-1.78	-0.68/1.01	-0.92/-1.68	0.65/-0.02	-1.0/2.9	2.37/1.31	-3.06/-3.01	-1.37/-3.71	-5.11/-4.52	-5.66/-2.29	-2.7/-0.64
Theta (112.5°)	-2.91/-2.08	-2.18/-1.33	-2.25/-4.56	-2.56/-1.93	-2.98/-1.87	-3.12/-4.99	-2.51/-6.77	-9.5/-8.85	-10.15/-8.31	-10.48/-10.35	-9.44/-7.29	-7.37/-4.22	-3.16/-2.59	-2.72/-1.25	0.35/0.65	-0.57/1.54	-0.68/1.12	-1.96/-1.53	-3.08/-3.1	-3.46/-1.63	-6.39/-5.16	-7.3/-5.44	-5.31/-2.37	
Theta (120°)	-4.76/-2.41	-2.46/-2.65	-2.22/-3.11	-3.09/-3.11	-3.16/-2.42	-2.09/-4.38	-3.54/-2.82	-6.04/-8.23	-11.45/-7.93	-8.57/-9.77	-10.49/-9.36	-10.54/-5.87	-3.3/-2.77	-2.22/-1.21	-0.41/0.03	1.05/2.91	0.27/0.88	1.05/2.98	2.65/0.69	-0.16/-0.1	-2.8/-2.6	-3.77/-3.83	-6.74/-5.46	-3.87/-5.58
Theta (127.5°)	-3.92/-1.63	-1.07/-0.17	-0.92/-3.11	-4.51/-4.06	-4.23/-3.37	-2.24/-4.04	-3/-1.83	-2.35/-5.15	-8.56/-10.65	-6.71/-7.05	-8.47/-6.62	-10.16/-6.76	-2.31/-3.47	4.75/-1.4	2.81/0.3	-1.39/0.2	0.74/0.27	-0.85/0.84	-2.94/-3.52	-5.68/-5.78	-5.89/-5.87	-3.61/-5.05	-5.82/-4.59	-3.54/-5.29
Theta (135°)	-0.45/2.06	1.61/0.31	-0.55/-2.71	-4.59/-3.46	-5.39/-4.78	-2.62/-3.81	-4.21/-2.92	-3.38/-4.37	-5.51/-11.11	-9.64/-7.35	-6.75/-7.1	-8.59/-7.83	-5.1/-3.26	-1.18/-0.42	0.82/0.2	-2.13/-1.99	-3.34/-3.89	-4.09/-0.96	0.23/-0.32	-4.8/-6.48	-6.44/-9.26	-8.02/-6.75	-4.66/-3.52	-2.41/-1.84
Theta (142.5°)	-1.33/-1.09	-1.09/-0.64	0.51/0.24	-2.75/-4.64	-3.92/-5.29	-6.71/-5.99	-4.17/-2.33	-3.48/-7.19	-9.48/-8.75	-6.97/-7.74	-7.33/-7.18	-4.66/-3.12	-3.68/-4.97	-2.04/0.71	-1.62/-3.77	-4.72/-7.07	-1.15/-0.39	1.17/0	-1.35/-2.56	-3.72/-3.36	-3.95/-6.09	-6.87/-7.86	-6.51/-4.36	-1.27/-0.28
Theta (150°)	-1.73/-0.85	-0.62/-1.33	-2.67/-2.49	-3.46/-2.85	-3.48/-4.67	-4.94/-4.95	-4.22/-4.06	-5.17/-6.43	-9.89/-11.94	-7.92/-6.32	-4.85/-4.26	-3.4/-2.53	-2.13/-1.86	-3.17/-5.87	-4.76/-3.21	-2.87/-0.7	0.55/0.28	-0.23/-1.61	-3.9/-4.8	-4.99/-5.57	-4.57/-5.11	-8.19/-11.8	-9.57/-5.75	-3.55/-2.45
Theta (157.5°)	-4.76/-3.13	-1.93/-2.02	-3.26/-2.94	-1.08/0.32	0.87/0.47	-0.48/-1.47	-1.97/-2.67	-5.12/-8.52	-9.12/-7.91	-8.06/-9.8	-9.41/-6.69	-4.83/-4.98	-7.18/-6.48	-4.76/-3.82	-4.24/-3.92	-1.89/-0.28	0.1/-0.59	-1.81/-3.11	-4.95/-6.12	-6.63/-6.12	-4.4/-6.1	-7.3/-8.81	-6.74/-5.82	-4.99/-3.56
Theta (165°)	-2.99/-1.78	-1.01/-1.06	-1.37/-1.39	-1.56/-2.06	-3.29/-4.61	-5.76/-6.84	-6.22/-5.82	-6.07/-6.12	-6.16/-5.72	-5.3/-5.18	-5.44/-5.67	-5.81/-6.34	-6.3/-5.6	-5.25/-5.36	-6.2/-5.42	-4.7/-3.33	-1.94/-1.88	-2.83/-4.57	-7.62/-8.27	-8.44/-9	-8.98/-7.31	-5.59/-5.52	-5.34/-5.24	-4.09/-3.56
Theta (172.5°)	-3.46/-3.64	-3.53/-2.29	-1.57/-1.51	-1.82/-2.38	-2.89/-3.18	-3.4/-3.73	-3.74/-3.45	-3.53/-4.19	-5.53/-7.23	-8.18/-8.73	-7.89/-6.65	-6.65/-6.32	-6.25/-7.01	-8.27/-9.54	-9.8/-7.55	-6.06/-5.22	-4.99/-6.62	-10.15/-12.62	-11.13/-10.16	-10.42/-9.95	-9.45/-8.1	-6.86/-6.53	-6.37/-6.17	-6.11/-4.91
Theta (180°)	-8.56/-8.49	-7.9/-6.87	-6.88/-6.7	-6.67/-6.79	-7.03/-7.78	-7.96/-8.85	-9.27/-9.84	-10.79/-12.07	-12.83/-12.12	-10.71/-10.16	-9.55/-9.31	-9.63/-9.36	-9.44/-9.57	-9.24/-8.45	-8.07/-7.84	-7.32/-6.88	-6.65/-6.47	-7.34/-7.14	-6.63/-6.86	-8.06/-9.5	-9.97/-10.67	-8.8/-9.35	-10.14/-8.51	-8.83/-10.02
Freq(Hz)	5.785GPol	Theta	Phi	Phi	Phi	Phi	Phi	Phi	Phi	Phi	Phi	Phi	Phi	Phi	Phi	Phi	Phi	Phi	Phi	Phi	Phi	Phi	Phi	Phi
DG(dB)	Phi(0°)Phi(7.5°)	Phi(15°)Phi(22.5°)	Phi(30°)Phi(37.5°)	Phi(45°)Phi(52.5°)	Phi(60°)Phi(67.5°)	Phi(75°)Phi(82.5°)	Phi(90°)Phi(97.5°)	Phi(105°)Phi(112.5°)	Phi(120°)Phi(127.5°)	Phi(135°)Phi(142.5°)	Phi(150°)Phi(157.5°)	Phi(165°)Phi(172.5°)	Phi(180°)Phi(187.5°)	Phi(195°)Phi(202.5°)	Phi(210°)Phi(217.5°)	Phi(225°)Phi(232.5°)	Phi(240°)Phi(247.5°)	Phi(255°)Phi(262.5°)	Phi(270°)Phi(277.5°)	Phi(285°)Phi(292.5°)	Phi(300°)Phi(307.5°)	Phi(315°)Phi(322.5°)	Phi(330°)Phi(337.5°)	Phi(345°)Phi(352.5°)
Theta (7°)	4.23/4.56	4.77/4.73	4.62/4.69	4.36/4.47	2.62/2.02	1.37/0.78	-0.04/-0.21	-0.15/0.24	0.96/1.46	2.43/1.3	3.42/3.93	4.35/4.54	4.87/5.01	4.93/4.68	4.19/3.83	3.56/3	2.25/2	1.85/1.48	0.76/0.17	0.41/1.13	1.59/1.95	2.79/3.36	3.21/3.3	3.82/4.12
Theta (7.5°)	4.15/4.22	4.23/3.98	3.62/3.26	2.61/1.97	1.72/1.24	0.76/0.84	0.4/-0.1	0.32/0.6	1.31/1.94	2.39/3.11	3.31/3.15	3.54/3.82	4.04/4.48	4.82/4.81	4.64/4.4	4.09/3.46	2.52/2.03	1.81/1.48	1.05/0.57	0.57/0.72	1.37/1.84	2.27/3.09	3.52/3.58	3.83/4.16
Theta (15°)	3.81/3.8	3.89/3.41	2.48/1.43	0.17/-0.7	-0.44/0.19	0.53/0.52	0.41/0.38	-0.11/-0.37	-0.32/-0.13	0.65/1.32	1.57/1.86	2.57/3.03	3.65/4.3	4.72/4.73	4.44/4.06	3.57/2.91	2.25/1.72	1.16/0.93	0.53/0.24	-0.07/-0.48	-0.73/-0.63	-0.36/0.42	1.42/1.5	2.85/3.63
Theta (22.5°)	4.69/4.46	4.35/3.66	2.31/2.1	0.23/-0.55	-0.61/-0.25	-0.21/-0.45	-0.74/-1.1	-1.38/-1.48	-1.56/-2.09	-2.17/-1.46	-0.11/2.7	1.72/0.26	2.94/3.36	3.35/3.54	3.48/3.34	2.88/2.83	2.92/2.75	2.34/2.01	1.94/1.92	1.28/-0.25	-1.57/-1.11	0.51/0.47	2.16/3.05	3.65/4.37
Theta (30°)	3.54/3.14	2.95/2.11	1.61/1.59	0.89/0.49	-1.84/-2.38	-2.64/-2.97	-3.24/-3.58	-3.31/-3.45	-4.01/-3.28	-1.85/-1.17	-0.51/0.37	0.43/1.33	2.73/3.06	2.44/2.24	2.77/3.51	4.11/4.17	3.56/2.66	1.51/1.19	1.65/0.83	0.34/0.5	-0.5/-0.07	1.79/1.48	2.04/2.07	1.92/3.15
Theta (37.5°)	2.95/3.01	2.13/1.25	0.1/-0.61	-0.66/-0.36	-1.07/-0.19	-0.3/-0.98	-1.69/-2.79	-2.88/-2.35	-2.13/-2.42	-2.19/-1.46	-0.67/0.34	0.92/35	3.06/3.34	3.16/2.79	2.48/3.5	4.08/3.77	2.59/0.44	-0.25/0.11	0.48/0.51	0.66/0.61	0.55/0.12	-0.11/1.1	0.48/0.74	1.05/1.7
Theta (45°)	3.87/3.05	2.71/3.07	1.15/-1.82	-1.75/0.13	-1.73/-1.28	-0.55/-0.93	-1.69/-2.59	-3.28/-2.13	-0.75/0.14	0.34/0.55	1.33/1.88	2.21/2.12	2.32/3.1	3.17/3.27	2.62/25	1.65/1.18	0.72/0.13	1.21/1.96	1.82/1.07	-0.01/-1.48	-1.58/-1.03	0.86/0.78	1.69/3.51	
Theta (52.5°)	2.21/1.6	0.94/1.95	1.03/-1.5	-1.95/-0.65	-0.34/-0.03	-0.59/-1.08	-3.47/-4.71	-3.57/-1.89	-0.45/1.08	0.69/0.76	-0.92/0.5	0.61/-0.02	0.31/1.51	1.82/2.97	2.72/2.72	2.56/1.82	0.17/0.01	0.83/1.41	1.33/1.25	-0.48/-1.41	-1.42/-0.18	0.91/1.56	-0.51/0.49	
Theta (60°)	1.32/0.69	-2.13/-1.9	-0.57/-2.03	-1.6/-0.46	-0.38/-0.74	-1.04/-1.15	-2.4/-4.62	-3.08/-1.69	-0.69/0.68	1.52/-0.12	-0.76/0.29	-0.79/-0.42	0.1/0.97	0.78/0.85	0.45/0.44	2.26/3.04	3.05/1.39	-0.07/-2.13	-0.85/0.22	0.57/0.85	-0.9/-2.32	-1.48/-0.92	0.3/0.06	-1.62/-1.02
Theta (67.5°)	2.75/2.21	0.49/-2.88	-4.56/-2.49	-1.34/-0.57	-0.99/-1.3	-1.95/-0.6	-1.57/-3.12	-1.94/-0.59	1.25/2.05	2.61/2.32	0.95/0.01	-0.42/0.82	1.09/2.47	2.01/1.9	0.64/0.47	1.47/3.18	2.1/0.04	-0.94/-1.75	-0.52/-0.95	-0.36/0.03	-1.37/-2.32	-1.38/-0.7	-0.78/0.61	-0.64/0.45
Theta (75°)	3.06/3.03	2.32/-0.6	-5.87/-3.01	-2.36/-1.13	-0.87/-1.13	-1.34/0.83	-0.71/-2.93	-1.31/-0.25	1.64/2.3	2.68/3.38	1.64/0.11	-0.57/1.12	0.63/1.43	2.19/2.22	1.55/-0.36	0.98/2.99	2.25/0.25	1.54/0.93	1.85/0.81	-1.07/-1.54	-1.77/-3.23	-3.07/-2.64	-0.77/0.83	0.99/1.4
Theta (82.5°)	2.15/2.78	2.38/-0.39	-6.07/-2.77	-2.35/-2.44	-0.18/-0.13	0.21/0.64	0.5/-2.1	-0.54/0.25	1.53/2.14	1.23/2.82	1.54/0.18	-1.81/1.06	0.99/-0.12	-0.56/1.85	1.74/0.46	0.93/2.71	1.93/0.84	1.63/2.5	3.66/3.05	0.26/-1.25	-1.51/-3.1	-4.11/-1.17	0.48/1.45	0.78/1.37
Theta (90°)	1.45/2.25	1.97/0.36	-6.48/-2.72	-2.98/-2.06	0.37/0.67	0.67/1.97	0.56/-1.8	-0.24/0.26	1.23/1.83	1.02/2.52	0.41/-0.38	-2.21/-0.16	-0.61/0.42	-1.87/0.15	0.88/0.58	1.08/1.9	1.5/-0.03	0.88/1.42	3.05/2.18	0.19/-0.6	-2.08/-2.41	-3.04/-1.76	0.43/1.34	1.2/0.17
Theta (97.5°)	-0.33/0.18	1.47/-0.76	-6.03/-1.39	-1.3/-1.41	0.19/-1.14	0.72/2.1	1.25/-1.47	-0.03/-0.14	1.17/1.17	0.26/0.52	-0.75/-1.85	-3.99/-2.16	-0.73/0.11	-3.59/-0.42	-0.06/-0.92	0.16/-0.53	-2.07/-1.58	-2.68/-0.56	-0.15/-0.33	-3.1				





# Radiated Composite Gain Data of 2.4GHz&5GHz

# Appendix A

Theta (°)	1911-2.92	4551-6.01	7719-4.99	11691-15.57	17031-12.38	9281-8.98	7171-6.53	5231-4.24	3281-2.56	2391-2.22	1891-1.59	1371-1.09	071-0.72	1191-1.97	3114-5.59	6831-9.63	12531-13.59	11911-9.93	8071-5.99	4741-3.76	2761-2.02	1441-1.12	1371-1.43	1061-1.15	
Theta (30°)	-1.69-3.37	-6.13-7.16	-7.79-7.76	-8.14-10.46	-14.09-12.07	-8.89-8.98	-9.11-7.53	-6.06-5.81	-5.63-5.09	-4.06-2.95	-1.86-1.24	-0.98-0.83	-0.84-0.55	-0.15-0.72	-2.65-5.42	-8.25-10.75	-12.48-10.57	-7.32-5.72	-4.84-3.99	-2.68-1.59	-1.08-0.96	-0.52-0.1	0.09-0.37	-0.62-0.91	
Theta (45°)	-1.59-3.04	-5.77-8.1	-8.23-5.9	-7.61-9.41	-12.72-9.26	-7.59-8.01	-8.99-10.52	-6.86-7.61	-5.58-5.43	-4.26-4.92	-1.40-0.8	0.56-0.43	-0.32-0.82	-0.76-0.97	-3.17-7.46	-11.75-15.07	-11.42-8.04	-6.45-5.66	-4.42-4.45	-2.38-0.92	-0.60-0.35	0.64-0.91	1.12-0.88	0.40-0.29	
Theta (60°)	-2.31-3.8	-6.03-8.72	-11.44-11.78	-9.79-11.74	-18.09-12.93	-11.87-14.25	-14.54-12.56	-10.04-7.27	-6.16-5.88	-5.36-4.41	-4.07-2.28	-1.65-1.59	-0.18-0.37	-1.16-2.22	-5.33-14.45	-18.71-18.19	-15.23-12.59	-9.84-8.29	-7.55-5.26	-2.65-1.19	-0.52-0.13	0.13-0.37	0.26-0.37	-0.86-1.23	
Theta (75°)	-4.07-5.97	-7.42-8.73	-9.96-10.33	-12.47-14.71	-19.03-18.08	-19.04-18.79	-14.58-12.47	-9.54-6.81	-6.96-10.63	-11.59-7.72	4.25-1.1	-1.47-2.4	-1.33-1.51	4.53-4.6	-5.41-14.41	-18.74-17.25	-12.16-10.57	-7.21-7.68	-6.83-4.57	-2.87-1.95	-1.11-1.08	-0.05-0.37	-0.11-1.08	-1.64-2.29	
Theta (90°)	-4.22-4.89	-5.58-5.43	-6.71-10.51	-16.19-17.36	-18.24-19.08	-14.58-16.74	-11.66-8.15	-10.06-12.76	-11.29-8.61	-10.71-2.04	-1.07-1.86	-1.04-0.83	-3.96-6.55	-6.14-18.06	-14.31-12.78	-8.49-8.25	-6.55-6.69	-5.01-4.03	-3.95-3.41	-2.15-1.75	-0.66-0.03	-0.71-1.56	-2.01-2.86	-0.52-2.86	
Theta (105°)	-5.81-7.65	-7.01-8.65	-11.53-13.55	-19.11-15.38	-19.11-17.62	-18.73-16.32	-13.47-18.87	-16.35-14.36	-16.93-12.46	-12.26-9.03	-7.31-3.48	-2.89-2.91	-2.07-2.97	-5.91-8.43	-8.01-18.35	-10.36-7.38	-5.61-7.33	-5.33-4.19	-2.51-2.9	-4.31-5.01	-3.96-3.19	-1.31-0.24	-0.93-2.14	-2.88-4.02	
Theta (120°)	-5.26-6.91	-5.61-5.66	-10.34-11.28	-15.13-18.87	-17.58-16.95	-17.17-17.13	-18.47-17.57	-18.56-17.91	-16.98-12.17	-13.55-10.34	-11.27-6.24	-5.19-5.53	4.61-6	-8.21-10.24	-8.59-15.89	-6.55-5.81	-4.48-4.75	-3.89-4.22	-1.86-3.4	-3.52-4.9	-3.91-2.99	-1.68-0.58	-0.98-2.32	-3.13-4.13	
Theta (135°)	-5.77-9.85	-7.98-7.59	-12.82-14.27	-15.09-15.4	-18.52-16.5	-13.59-11.53	-15.14-18.86	-18.54-17.84	-18.69-17.81	-18.54-10.65	-13.48-9.06	-8.42-8.15	-5.92-7.23	-9.54-10.64	-9.07-9.95	-4.45-3.25	-2.63-3.18	-2.84-1.84	-0.41-2.61	-2.73-3.97	-4.99-3.65	-2.83-1.79	-1.55-3.48	-4.13-4.73	
Theta (150°)	-5.18-8.01	-6.13-8.21	-13.27-15.02	-16.67-13.16	-18.03-18.35	-18.28-11.19	-10.31-11.96	-15.58-19.15	-17.93-15.37	-19.14-15.18	-14.28-12.88	-9.86-8.82	-7.38-9.76	-14.86-12.34	-9.85-8.18	-4.62-3.01	-2.76-4.02	4.08-3.29	-1.75-5.2	4.81-5.2	-7.21-5.55	-3.35-2.19	-1.83-3.95	-4.14-3.83	
Theta (165°)	-7.14-10.44	-6.99-7.99	-11.47-11.74	-18.07-17.93	-18.18-13.7	-14.45-16.54	-12.43-11.76	-13.79-13.29	-16.25-15.51	-18.13-14.49	-12.04-12.72	-12.28-12.19	-9.39-16.2	-19.17-13.03	-9.09-5.9	-4.87-4.41	-3.76-2.32	-4.25-5.48	-2.67-4.32	-5.31-6.07	-4.77-8.86	-1.68-0.58	-0.68-2.32	-3.69-4.93	
Theta (180°)	-8.83-9.65	-7.05-7.97	-11.74-10.34	-11.13-14.05	-18.02-14.45	-11.52-9.67	-10.48-12.82	-17.93-18.54	-15.32-15.02	-12.75-16.67	-9.97-15	-18.11-7.77	-8.71-12.85	-17.78-11.1	-7.91-6.61	-6.66-6.25	-4.16-3.57	-6.78-7.61	-0.41-5.93	-6.92-6.01	-11.13-9.59	-5.29-3.74	-1.67-3.86	-4.66-4	
Theta (210°)	-4.73-5.07	-6.25-8.61	-12.77-13.96	-10.66-11.9	-17.93-18.15	-18.51-11.95	-9.53-9.62	-15.41-8.53	-18.19-17.79	-18.42-17.71	-12.76-18.5	-18.85-16.06	-9.62-13.54	-12.75-11.32	-6.96-4.64	-5.41-4.22	-4.51-3.81	-5.62-6.74	-3.83-4.69	-4.86-7.95	-10.03-8.09	-7.31-4.21	-4.11-4.97	-3.99-3.79	
Theta (225°)	-5.99-6.96	-6.11-6.41	-8.81-11.85	-11.25-18.01	-18.31-16.23	-15.99-14.2	-16.41-18.6	-17.23-17.66	-17.93-18.53	-17.99-19.12	-13.25-18.09	-18.62-17.48	-9.39-13.37	-17.96-10.09	-5.41-4.91	-5.41-3.43	-4.64-5.18	-4.63-5.47	-3.65-5.42	-7.77-8.86	-10.14-10.88	-7.62-6.05	-6.42-5.11	-5.19-4.15	
Theta (240°)	-5.17-6.2	-7.58-6.68	-8.87-9.92	-9.51-12.3	-12.49-13.13	-12.24-8.46	-8.66-10.64	-10.63-10.76	-13.79-18.87	-18.19-19.06	-17.75-9.71	-15.75-17.58	-7.57-10.58	-13.92-7.95	-8.92-4.99	-5.93-4.36	-4.28-5.18	-5.88-6.22	-3.99-5.48	-6.63-7.9	-10.37-13.13	-9.62-6.03	-7.82-7.78	-4.51-3.76	
Theta (255°)	-4.47-6.14	-6.18-6.47	-7.08-6.28	-7.91-11.52	-10.81-10.18	-8.74-7.2	-6.88-9.13	-13.52-8.61	-8.96-14.11	-17.81-17.6	-17.43-11.7	-12.64-13.27	-10.11-16.21	-18.71-11.74	-11.87-10.43	-7.96-5.8	-5.41-7.35	-6.87-5.7	-4.11-6.48	-6.14-6.01	-8.16-16.96	-15.84-18.73	-13.81-7.04	-4.71-3.2	
Theta (270°)	-8.8-8.24	-5.79-6.1	-8.27-7.2	-6.83-10.72	-14.12-14.87	-17.49-12.87	-8.75-10.34	-16.06-12.55	-10.15-11.5	-16.51-10.7	-13.46-12.36	-12.61-18.6	-11.17-11.79	-12.98-11.57	-18.47-13.54	-10.09-9.96	-5.41-3.43	-4.64-5.18	-4.63-5.47	-3.65-5.42	-7.77-8.86	-10.14-10.88	-7.62-6.05	-6.42-5.11	
Theta (285°)	-14.14-14.38	-12.67-14.15	-11.37-10.74	-11.91-9.12	-10.79-11.82	-10.87-9.54	-8.21-8.85	-18.38-18.88	-14.41-10.9	-16.74-17.26	-18.37-18.95	-18.23-18.45	-16.54-19.2	-13.71-17.05	-18.28-18.1	-15.33-14.61	-16.41-18.17	-13.49-9.63	-8.61-4.44	-12.33-11.98	-13.05-14.15	-11.81-8.83	-7.59-9.91	-7.59-9.91	
Theta (300°)	-14.14-14.7	-10.84-7.8	-5.27-10.43	-3.76-4.19	-5.04-6.02	-7.46-10.51	-14.88-15.02	-13.04-13.64	-16.51-17.65	-18.16-17.73	-16.29-16.44	-18.34-17.86	-18.11-18.6	-18.31-17.84	-18.16-17.57	-18.09-18.67	-18.02-14.59	-12.06-11.19	-10.3-8.56	-8.31-9.49	-12.66-16.38	-14.91-9.91	-8.61-9.21	-18.71-12.2	
Theta (315°)	-10.72-8.8	-7.41-5.85	-4.74-6.69	-5.13-6.01	-6.91-6.26	-10.58-15.26	-18.77-17.57	-18.23-18.81	-18.25-18.17	-18.09-18.27	-18.31-18.24	-17.89-14.52	-11.64-9.96	-10.19-10.27	-14.1-16.09	-19.11-18.35	-18.23-17.87	-16.31-15.07	-14.23-11.92	-13.61-9.11	-13.31-14.49	-11.91-9.76	-8.88-10.05	-12.18-12.7	
Theta (330°)	-10.67-11.77	-10.82-8.89	-7.78-7.1	-6.63-6.43	-6.67-7.16	-8.44-11.74	-14.52-17.24	-16.71-15.92	-15.59-15.81	-16.24-16.22	-16.16-73	-16.19-15.49	-16.71-13.4	-15.34-13.14	-11.71-6.6	-12.38-13.34	-16.38-18.86	-18.08-18.34	-18.81-17.54	-17.96-16.09	-14.11-4.2	-10.38-11.49	-12.09-10.62	-10.41-10.18	
Theta (345°)	-18.07-18.61	-18.77-18.81	-13.35-12.55	-13.06-14.48	-16.65-16.74	-17.64-17.45	-18.71-17.97	-17.87-19.05	-18.69-18.46	-17.52-17.82	-19.01-18.72	-17.02-16.5	-17.82-17.58	-18.73-18.87	-18.18-17.76	-18.28-18.18	-17.36-16.29	-15.99-15.21	-14.27-14.43	-14.86-16.31	-16.94-16.61	-18.71-17.87	-18.71-17.87	-18.71-17.87	-18.71-17.87
Gain (0°)	0.75-6.42	4.72-3.05	-1.4-0.42	0.29-0.78	1.19-1.44	1.65-1.58	1.22-0.8	0.38-0.34	-1.14-2.14	-3.61-5.44	-8.07-12.29	-18.71-16.97	-10.85-7.41	-4.85-2.8	0.02-0.38	0.52-0.46	0.37-0.27	0.24-0.24	-1.42-2.79	-4.03-5.06	-7.28-11.41	-15.44-17.21	-16.11-8.82	-16.11-8.82	
Gain (7.5°)	-0.54-6.31	-4.95-3.72	-2.35-1.36	-0.51-0.06	0.25-0.27	0.1-0.21	-0.56-0.98	-1.73-6.27	-3.89-3.55	-6.82-9.35	-12.95-17.42	-16.98-12.75	-8.99-5.74	-3.52-0.23	0.47-0.9	1.11-1.04	1.02-1.06	1.22-0.89	0.03-1.1	-2.06-2.29	-4.01-6.68	-11.69-16.61	-18.02-16.39	-18.02-16.39	
Gain (15°)	-10.47-7.31	-5.22-3.83	-2.84-2.02	-1.45-0.84	-0.55-0.82	-1.57-2.38	-3.74-5.08	-6.41-6.99	-8.34-10.44	-14.04-18.9	-18.46-17.43	-17.32-15.09	-11.71-8.23	-5.13-2.95	-1.55-0.57	0.10-0.47	0.52-0.18	-0.08-0.19	-0.19-1.12	-2.03-1.02	-4.24-5.75	-6.84-8.57	-12.12-17.43	-16.94-13.65	
Gain (22.5°)	-10.04-6.92	-5.19-4.13	-3.56-3.08	-2.61-1.68	-1.32-1.63	-2.34-3.52	-4.45-4.69	-4.29-4.21	-4.81-5.73	-6.74-7.87	-9.89-13.75	-17.57-14.86	-11.37-8.59	-6.14-0.41	-0.13-0.3	0.09-0.27	-0.71-1.13	-1.29-1.36	-1.96-3.49	-5.43-7.55	-8.86-10.15	-11.51-12.65	-13.86-13.33	-13.86-13.33	
Gain (30°)	-9.38-8.06	-6.21-4.47	-4.14-4.8	-3.07-4.05	-3.38-4.01	-5.43-6.41	-5.61-5.4	-5.42-5.76	-6.66-6.43	-5.48-6.33	-8.91-13.3	-17.72-16.74	-14.71-12.85	-9.92-9.48	-6.01-3.8	0.84-1.12	0.59-0.45	-1.22-1.26	-1.45-2.94	-4.74-6.59	-9.14-12.36	-15.92-17.37	-13.75-10.6	-13.75-10.6	
Gain (37.5°)	-7.36-8.04	-7.85-9.33	-3.13-4.1	-6.17-5.98	-4.39-4.66	-6.27-6.41	-5.46-5.04	-5.39-6.35	-6.96-6.86	-5.51-4.43	-4.96-7.69	-11.11-10.17	-8.09-5.22	-2.85-1.16	0.41-2.2	1.23-0.87	-0.09-1.14	-1.98-2.35	-1.98-3.08	-5.52-7.16	-8.81-10.36	-14.44-17.41	-14.44-17.41	-14.44-17.41	
Gain (45°)	-7.33-6.53	-6.71-6.02	-4.16-5.4	-6.92-8.62	-7.07-7.46	-8.97-7.73	-7.74-7.18	-8.12-10.46	-7.79-5.52	-3.72-2.4	-1.19-3.53	-9.89-13.17	-11.37-11.16	-6.39-3.98	-3.90-7.1	-0.02-0.66	-2.05-3.18	-2.27-2.26	-3.81-4.18	-5.77-8.32	-10.23-12.67	-18.17-17.81	-18.17-17.81	-18.17-17.81	
Gain (52.5°)	-7.91-5.37	-4.97-6.83	-6.09-8.43	-6.57-11.09	-11.41-11.42	-12.42-10.28	-11.89-10.98	-15.02-11.67	-6.25-4.9	-4.81-5.48	-1.87-3.78	-7.05-12.7	-15.77-9.11	-5.61-4.01	-3.02-2.94	-1.41-1.02	-1.43-1.28	-2.41-2.73	-2.94-2.71	-3.25-4.77	-4.92-9.55	-11.11-15.34	-18.14-13.87	-12.11-10.87	
Gain (60°)	-7.51-5.9	-5.21-6.45	-6.77-7.18	-11.16-12.46	-10.31-11.49	-13.92-14.56	-12.62-13.12	-13.19-7.78	-5.61-6.85	-4.42-5.97	-3.44-3.95	-5.18-7.73	-16.82-11.6	-9.98-3.73	-3.47-3.86	-1.74-0.61	-1.82-1.93	-1.29-1.64	-2.18-3.62	-3.81-5.2	-5.25-8.22	-9.51-11.76			



# Radiated Composite Gain Data of 2.4GHz&5GHz

# Appendix A

Freq(Hz)	ThetaAnt 1	ThetaAnt 2	Phi(15°)Phi(22.5°)	Phi(30°)Phi(37.5°)	Phi(45°)Phi(52.5°)	Phi(60°)Phi(67.5°)	Phi(75°)Phi(82.5°)	Phi(90°)Phi(97.5°)	Phi(105°)Phi(112.5°)	Phi(120°)Phi(127.5°)	Phi(135°)Phi(142.5°)	Phi(150°)Phi(157.5°)	Phi(165°)Phi(172.5°)	Phi(180°)Phi(187.5°)	Phi(195°)Phi(202.5°)	Phi(210°)Phi(217.5°)	Phi(225°)Phi(232.5°)	Phi(240°)Phi(247.5°)	Phi(255°)Phi(262.5°)	Phi(270°)Phi(277.5°)	Phi(285°)Phi(292.5°)	Phi(300°)Phi(307.5°)	Phi(315°)Phi(322.5°)	Phi(330°)Phi(337.5°)	Phi(345°)Phi(352.5°)
5785GPol.	ThetaAnt 1	ThetaAnt 2	Phi(15°)Phi(22.5°)	Phi(30°)Phi(37.5°)	Phi(45°)Phi(52.5°)	Phi(60°)Phi(67.5°)	Phi(75°)Phi(82.5°)	Phi(90°)Phi(97.5°)	Phi(105°)Phi(112.5°)	Phi(120°)Phi(127.5°)	Phi(135°)Phi(142.5°)	Phi(150°)Phi(157.5°)	Phi(165°)Phi(172.5°)	Phi(180°)Phi(187.5°)	Phi(195°)Phi(202.5°)	Phi(210°)Phi(217.5°)	Phi(225°)Phi(232.5°)	Phi(240°)Phi(247.5°)	Phi(255°)Phi(262.5°)	Phi(270°)Phi(277.5°)	Phi(285°)Phi(292.5°)	Phi(300°)Phi(307.5°)	Phi(315°)Phi(322.5°)	Phi(330°)Phi(337.5°)	Phi(345°)Phi(352.5°)
Gain	Phi(0°)Phi(7.5°)	Phi(15°)Phi(22.5°)	Phi(30°)Phi(37.5°)	Phi(45°)Phi(52.5°)	Phi(60°)Phi(67.5°)	Phi(75°)Phi(82.5°)	Phi(90°)Phi(97.5°)	Phi(105°)Phi(112.5°)	Phi(120°)Phi(127.5°)	Phi(135°)Phi(142.5°)	Phi(150°)Phi(157.5°)	Phi(165°)Phi(172.5°)	Phi(180°)Phi(187.5°)	Phi(195°)Phi(202.5°)	Phi(210°)Phi(217.5°)	Phi(225°)Phi(232.5°)	Phi(240°)Phi(247.5°)	Phi(255°)Phi(262.5°)	Phi(270°)Phi(277.5°)	Phi(285°)Phi(292.5°)	Phi(300°)Phi(307.5°)	Phi(315°)Phi(322.5°)	Phi(330°)Phi(337.5°)	Phi(345°)Phi(352.5°)	
0	-11.09-8.56	-6.46-4.36	-2.51-1.19	-0.77-0.33	-0.050-0.05	-0.12-0.52	-1.16-1.79	-2.19-2.98	-4.52-6.2	-7.36-8.69	-10.74-12.4	-12.76-14.4	-8.41-6.14	-5.02-2.46	-3.45-2.4	-1.4-0.88	-0.6-0.29	0.050-0.9	-0.13-0.37	-0.96-1.75	-2.76-3.58	-4.55-6.4	-11.21-15.87	-17.99-14.94	
7.5	-8.63-6.86	-4.93-3.86	-3.25-2.65	-2.22-1.81	-1.39-1.12	-0.91-0.79	-1.12-1.54	-1.71-2.46	-3.63-4.79	-5.95-7.06	-9.44-13.57	-16.65-14.4	-10.36-7.4	-5.43-3.79	-2.48-1.22	-0.42-0.13	0.060-0.48	0.720-3.4	-0.34-1.13	-1.84-2.89	-4.19-6.32	-8.76-9.5	-10.29-11.4	-12.95-12.11	
15	-11.21-9.34	-7.45-5.95	-4.72-4.29	-3.89-3.82	-3.62-3.06	-2.94-2.9	-3.15-3.58	-4.4-5.72	-6.63-7.31	-8.29-9.46	-11.54-16.28	-17.99-17.16	-10.2-6.1	-3.92-2.61	-1.87-1.14	-0.74-0.75	-0.59-0.26	-0.48-0.89	-1.71-1.49	-2.3-3.49	-4.45-3.5	-6.51-8.65	-10.95-12.24	-14.31-12.77	
22.5	-11.5-9.93	-8.98-8.31	-6.2-9.3	-4.52-4.77	-4.57-3.69	-3.73-3.44	-5.91-8.24	-9.66-9.68	-8.65-11.5	-13.26-13.58	-12.45-13.59	-19.14-16.31	-10.13-6.34	-4.3-2.82	-1.76-0.93	-0.53-0.24	0.430-0.6	0.270-2.4	-0.35-0.6	-1.01-2.01	-3.75-0.68	-8.45-10.61	-15.85-17.79	-14.21-12.16	
30	-6.12-5.4	-5.99-6.71	-5.88-5.26	-4.57-5.67	-7.6-6.52	-6.09-8.24	-12.35-14.23	-10.92-8.08	-7.52-7.26	-7.09-6.41	-5.81-8.13	-14.86-19.2	-14.31-10.15	-8.18-6.56	-3.44-0.58	1.04-1.46	1.370-0.6	-1.28-1.06	-0.88-1.41	-2.09-2.79	-4.46-6.2	-7.14-8.31	-10.93-11.45	-11.09-8.65	
37.5	-7.13-4.35	-3.68-4.28	-5.82-5.17	-4.63-6.13	-9.65-6.14	-5.09-6.65	-6.17-7.29	-6.08-4.62	-5.16-6.8	-6.17-7.02	-5.78-7.13	-10.17-10.6	-8.7-8.5	-7.48-6.51	-2.65-0.44	0.810-11	1.39-1.85	-2.84-1.83	-1.41-2.8	-4.13-2.85	-3.15-1.78	-8.11-7.77	-8.71-7.29	-8.79-9.81	
45	-6.51-7.17	-4.16-2.16	-3.43-6.89	-4.35-0.53	-12.19-8.11	-6.65-8.47	-9.22-10.15	-9.49-9.22	-8.2-5.1	-3.23-2.59	-2.14-2.86	-6.69-9.07	-7.97-8.37	-5.38-3.3	-3.73-0.05	0.27-1.63	-2.24-3.41	-2.49-2.27	-4.4-4.81	-5.47-7.75	-5.66-9.77	-6.39-7.79	-9.14-8.01	-5.74-5.48	
52.5	-2.99-3.62	-5.22-2.79	-2.26-7.1	-7.41-7.23	-11.13-5.75	-5.38-7.34	-8.36-10.43	-11.8-9.64	-6.26-3.55	-2.75-2.7	-1.47-1.71	-7.35-8.18	-8.89-9.33	-4.38-3.72	-4.73-1.55	-2.02-3.22	-1.85-1.75	-2.17-2.77	-3.41-5.33	-6.58-6.42	-7.47-7.28	-7.83-7.89	-5.15-5.08	-5.01-3.99	
60	-2.11-2.63	-4.87-4.63	-3.56-7.1	-6.69-5.91	-10.49-6.61	-8.41-11.71	-10.8-9.64	-6.78-7.66	-6.91-8.37	-5.88-2.16	-4.71-7.78	-6.78-6.63	-2.98-4.01	-5.44-3.42	-2.54-1.54	-0.68-0.98	-1.23-2.91	-3.29-4.45	-5.74-5.01	-9.5-8.38	-5.85-4.32	-5.09-4.48	-5.14-5.11	-5.09-4.88	
67.5	-3.6-3.84	-2.28-5.05	-6.55-8.26	-6.9-8.6	-16.66-9.23	-17.04-12.23	-11.53-10.29	-7.95-7.38	-5.48-4.43	-2.46-2.79	-4.09-2.77	-3.53-3.37	-15.17-5.24	-2.08-4.58	-5.61-2.79	-2.76-0.18	1.480-67	-0.87-3.21	-2.3-3.24	-4.61-3.32	-6.81-12.4	-10.48-6.6	-5.14-3.46	-5.28-5.73	
75	-4.38-4.4	-2.3-3.82	-8.08-8.91	-7.41-10.76	-14.96-8.64	-8.31-5.01	-5.97-5.83	-6.23-6.14	-6.23-5.41	-2.02-2.6	-2.26-2.87	-5.43-6.69	-11.87-11.28	-2.71-3.54	-3.56-2.48	-0.531-0.3	2.350-96	0.23-3.16	-0.63-2.64	-2.61-3.9	-7.8-17.62	-19.02-8.22	-2.92-1.52	-3.17-4.88	
82.5	-5.31-4.87	-2.73-3.72	-1.11-7.24	-7.45-5.42	-3.84-3.44	-7.42-4.28	-6.62-4.66	-7.94-6.49	-5.06-0.43	-2.73-3.65	-8.09-5.72	-16.13-11.19	-6.77-4.11	-3.38-1.14	0.34-3.16	1.550-24	-0.54-1.67	-0.37-1.62	-2.67-8.3	-10.17-17	-19.07-8.16	-1.49-1.06	-1.43-6.22		
90	-4.74-3.06	-1.9-2.76	-11.68-6.66	-7.51-12.84	-3.13-3.3	-2.54-3.29	-5.69-6.14	-5.81-4.42	-9.58-6.68	-7.11-2.24	-5.76-3.9	-11.18-8.1	-19.19-9.45	-12.11-7.42	-4.21-2.26	0.25-0.71	-0.09-1.31	-1.55-3.5	-1.98-7.46	-4.29-6.82	-10.27-14.12	-10.51-6.22	-1.86-1.52	-0.64-3.59	
97.5	-5.8-4	-1.57-1.82	-12.49-4.02	-5.23-8.9	-1.48-3.01	-1.4-3.21	-5.2-8.12	-5.4-4.98	-10.88-7.47	-11.26-5.19	-9.31-8.76	-18.84-15.1	-15.5-6.79	-12.94-11.07	-8.94-4.82	-2.73-3.99	-4.97-4.53	-5.51-4.01	-4.27-5.93	-6.3-9.5	-7.95-8.99	-7.55-9.49	-1.34-1.03	-8.22-4.33	
105	-3.06-4.14	-1.56-1.93	-11.21-3.07	-4.34-1.0	-1.79-3.01	-0.96-3.13	-1.79-3.01	-0.96-3.13	-1.79-3.01	-0.96-3.13	-1.79-3.01	-0.96-3.13	-1.79-3.01	-0.96-3.13	-1.79-3.01	-0.96-3.13	-1.79-3.01	-0.96-3.13	-1.79-3.01	-0.96-3.13	-1.79-3.01	-0.96-3.13	-1.79-3.01	-0.96-3.13	-1.79-3.01
112.5	-4.43-4.17	-1.15-2.83	-12.61-3.89	-4.67-6.35	-1.95-3.79	-2.69-4.63	-5.56-12.78	-14.13-17.89	-15.63-17.32	-11.67-9.94	-9.4-12.63	-14.65-15.9	-16.22-7.92	-7.42-9.84	-10.76-15.62	-10.45-17.89	-9.03-6.62	-6.26-7.2	-5.69-6.07	-7.08-9.23	-4.19-3.78	-2.41-2.59	-3.07-3.42	-4.93-4.79	
120	-3.14-5.16	-1.81-3.66	-17.69-3.46	-4.42-9.19	-5.63-4.96	-4.21-4.36	-3.48-7.21	-11.25-10.37	-9.89-10.63	-7.5-7.48	-9.88-11.67	-16.13-18.01	-18.36-9.01	-8.9-17.82	-11.9-8.63	-14.19-11.85	-16.3-12.36	-6.41-4.49	-3.79-9.51	-13.86-4.55	-1.36-0.44	-6.06-9.45	-7.48-6.15		
127.5	-5.73-6.49	-4.34-5.11	-18.38-6.5	-4.22-7.92	-7.9-8.04	-11.29-7.14	-5.02-5.55	-8.26-7.68	-8.63-8.95	-7.46-8.93	-11.32-11.38	-9.95-14	-18.59-10.61	-8.53-17.86	-8.93-11.28	-5.97-9.54	-12.86-16.55	-12.89-18.52	-10.38-7.61	-5.59-5.38	-14.85-6.02	-6.09-6.49	-17.39-12.41	-15.51-10.4	
135	-8.51-10.57	-10.62-8.21	-18.34-7.35	-7.12-11.09	-9.15-9.19	-18.61-13.27	-10.36-16.78	-18.4-13.23	-15.51-14.03	-8.89-10.65	-15.69-17.07	-17.14-18.04	-18.14-17.04	-17.59-11.62	-7.89-11.6	-8.72-9.87	-17.71-10.04	-8.79-13.77	-6.36-13.58	-9.84-11.27	-13.57-6.73	-6.26-7.04	-7.98-11.73	-10.27-11.44	
142.5	-18.52-14.37	-14.41-18.45	-14.41-18.45	-9.71-13.11	-11.73-13.12	-17.11-13.11	-9.71-13.11	-11.73-13.12	-17.11-13.11	-9.71-13.11	-11.73-13.12	-17.11-13.11	-9.71-13.11	-11.73-13.12	-17.11-13.11	-9.71-13.11	-11.73-13.12	-17.11-13.11	-9.71-13.11	-11.73-13.12	-17.11-13.11	-9.71-13.11	-11.73-13.12	-17.11-13.11	
150	-10.38-18.34	-18.01-16.46	-11.34-10.43	-9.78-9.32	-8.61-8.56	-10.6-12.54	-13.29-12.19	-9.85-14.35	-8.84-7.52	-8.9	-11.56-12.65	-10.22-12.54	-18.27-17.03	-18.14-15.07	-11.91-13.7	-12.63-12.02	-8.47-6.82	-7.76-13.25	-18.33-19	-11.91-7.76	-10.95-10.1	-9.3-8.78	-8.87-7.83	-10.79-17.85	
157.5	-19.29-17.95	-15.98-18.83	-19.32-15.36	-13.45-12.42	-12.94-17	-18.11-18.7	-18.8-15.92	-15.89-18.27	-18.21-16.03	-18.21-18.85	-16.65-14.57	-18.39-17.29	-14.8-16.05	-17.97-18.76	-15.68-12.62	-13.07-14.71	-12.36-10.13	-11.77-16.28	-14.67-17.34	-19.41-8.98	-6.75-6.53	-5.82-6.76	-9.34-8.82	-11.96-18.24	
165	-7.76-7.17	-7.38-8.66	-10.67-14.84	-18.28-18.65	-13.86-12.77	-16.84-9.01	-18.57-17.6	-17.16-14.04	-13.08-16.47	-18.3-18.99	-17.2-15.38	-17.42-18.77	-18.57-15.14	-12.16-10.04	-9.07-10.01	-14.28-18.44	-18.44-17.69	-17.96-18.84	-16.18-12.25	-9.87-10.21	-13.8-14.27	-12.75-10.29	-11.35-8.88		
172.5	-8.92-8.41	-9.32-13.52	-17.87-14.77	-18.58-14.42	-12.14-11.29	-13.17-11.55	-19.24-14.44	-12.73-10.4	-10.72-11.51	-12.34-14.19	-16.78-17.06	-18.77-17.41	-18.41-18.58	-17.69-14.59	-13.89-15.44	-18.27-17.95	-17.84-18.35	-18.08-18.18	-19.18-15.61	-11.62-10.31	-9.5-8.55	-8.87-8.65	-8.59-9.16		
180	-14.24-15.96	-16.44-15.37	-16.36-17.2	-16.36-18	-18.51-18.63	-17.81-17.72	-18.17-18.04	-18.42-18.19	-18.16-18.08	-15.76-13.39	-13.17-13.82	-14.69-15.78	-16.59-17.19	-17.67-18.14	-17.73-17.58	-17.81-18.73	-18.33-18.25	-16.31-14.14	-12.83-11.86	-11.22-11.47	-11.64-10.83	-10.3-9.77	-9.9-10.87	-10.95-12.22	
2.45GPol.	ThetaAnt 1	ThetaAnt 2	Phi(15°)Phi(22.5°)	Phi(30°)Phi(37.5°)	Phi(45°)Phi(52.5°)	Phi(60°)Phi(67.5°)	Phi(75°)Phi(82.5°)	Phi(90°)Phi(97.5°)	Phi(105°)Phi(112.5°)	Phi(120°)Phi(127.5°)	Phi(135°)Phi(142.5°)	Phi(150°)Phi(157.5°)	Phi(165°)Phi(172.5°)	Phi(180°)Phi(187.5°)	Phi(195°)Phi(202.5°)	Phi(210°)Phi(217.5°)	Phi(225°)Phi(232.5°)	Phi(240°)Phi(247.5°)	Phi(255°)Phi(262.5°)	Phi(270°)Phi(277.5°)	Phi(285°)Phi(292.5°)	Phi(300°)Phi(307.5°)	Phi(315°)Phi(322.5°)	Phi(330°)Phi(337.5°)	Phi(345°)Phi(352.5°)
Gain	Phi(0°)Phi(7.5°)	Phi(15°)Phi(22.5°)	Phi(30°)Phi(37.5°)	Phi(45°)Phi(52.5°)	Phi(60°)Phi(67.5°)	Phi(75°)Phi(82.5°)	Phi(90°)Phi(97.5°)	Phi(105°)Phi(112.5°)	Phi(120°)Phi(127.5°)	Phi(135°)Phi(142.5°)	Phi(150°)Phi(157.5°)	Phi(165°)Phi(172.5°)	Phi(180°)Phi(187.5°)	Phi(195°)Phi(202.5°)	Phi(210°)Phi(217.5°)	Phi(225°)Phi(232.5°)	Phi(240°)Phi(247.5°)	Phi(255°)Phi(262.5°)	Phi(270°)Phi(277.5°)	Phi(285°)Phi(292.5°)	Phi(300°)Phi(307.5°)	Phi(315°)Phi(322.5°)	Phi(330°)Phi(337.5°)	Phi(345°)Phi(352.5°)	
0	-15.81-16.98	-14.89																							





# Radiated Composite Gain Data of 2.4GHz&5GHz

# Appendix A

Theta (165°)	-7.781-8.04	-7.991-7.99	-7.416-6.68	-7.071-10.28	-15.391-15.37	-12.881-11.68	-13.431-12.43	-9.851-9.23	-7.971-7.34	-7.521-9.22	-14.131-17.44	-18.381-13.27	-11.571-11.47	-12.291-11.88	-12.181-15.76	-18.161-15.79	-14.151-12.61	-10.871-9.74	-8.731-8.02	-9.291-12.21	-14.521-11.52	-7.721-5.83	-5.811-6.07	-6.711-7.35	
Theta (172.5°)	-14.531-15.84	-17.171-14.1	-13.641-16.44	-18.251-15.9	-16.681-15.83	-13.781-14.4	-15.091-12.65	-9.551-8.98	-9.951-12.32	-15.131-17.62	-19.141-18.28	-18.631-16.27	-14.941-16.1	-18.831-19.69	-18.491-14.1	-12.341-12.06	-13.591-16.31	-17.751-17.02	-14.411-12.92	-13.151-15.28	-11.481-11.52	-10.101-10.8	-11.261-12.67	-13.191-13.74	
Theta (180°)	-9.151-9.84	-10.861-11.69	-13.561-15.84	-16.711-18.21	-16.911-18.45	-18.131-14.02	-11.311-11.64	-14.711-18.59	-16.841-13.57	-11.851-11.12	-10.751-11.23	-12.711-16	-18.581-18.58	-18.871-16.69	-16.911-16.1	-14.541-13.08	-14.641-18.92	-11.751-19.12	-18.831-18.92	-11.111-9.44	-14.541-12.61	-11.481-11.52	-8.521-8.13	-8.911-9.01	-9.971-9.26
Freq(Hz)	5.65GPol	Theta/Ant 2	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Gain	Phi(0°)Phi(7.5°)	Phi(15°)Phi(22.5°)	Phi(30°)Phi(37.5°)	Phi(45°)Phi(52.5°)	Phi(60°)Phi(67.5°)	Phi(75°)Phi(82.5°)	Phi(90°)Phi(97.5°)	Phi(105°)Phi(112.5°)	Phi(120°)Phi(127.5°)	Phi(135°)Phi(142.5°)	Phi(150°)Phi(157.5°)	Phi(165°)Phi(172.5°)	Phi(180°)Phi(187.5°)	Phi(195°)Phi(202.5°)	Phi(210°)Phi(217.5°)	Phi(225°)Phi(232.5°)	Phi(240°)Phi(247.5°)	Phi(255°)Phi(262.5°)	Phi(270°)Phi(277.5°)	Phi(285°)Phi(292.5°)	Phi(300°)Phi(307.5°)	Phi(315°)Phi(322.5°)	Phi(330°)Phi(337.5°)	Phi(345°)Phi(352.5°)	
Theta (0°)	-1.381-1.56	-1.421-1.94	-6.071-8.7	-13.581-15.52	-10.421-12.29	-9.721-9.5	-5.641-3.71	-2.351-1.5	-1.021-0.69	-0.411-0.35	-0.661-1.03	-1.231-1.6	-2.541-3.55	-4.681-6.68	-9.191-12.59	-18.531-18.41	-13.531-9.91	-7.431-5.53	-3.761-2.63	-2.061-1.6	-1.081-0.81	-0.531-0.44	-0.411-0.83	-0.411-0.83	
Theta (7.5°)	-1.651-2.39	-3.161-3.5	-4.316-3.64	-10.461-12.79	-16.351-18.85	-15.191-9.97	-6.321-5	-4.431-3.66	-2.351-1.3	-0.811-0.47	-0.031-0.21	-0.011-0.36	-0.351-0.39	-0.831-1.63	-2.741-0.2	-5.541-7.48	-10.411-14.06	-15.081-11.85	-9.581-7.38	-4.931-2.27	-2.461-2.08	-1.611-1.28	-1.031-1.01	-1.171-1.26	
Theta (15°)	-2.141-2.74	-3.761-4.7	-6.511-9.76	-14.921-17.67	-16.211-11.59	-7.991-5.61	-3.871-3.03	-2.761-2.41	-1.841-1.1	-0.411-0.4	0.511-0.1	-0.071-0.4	-1.031-1.79	-3.121-5.04	-6.781-8.51	-10.251-10.71	-10.521-8.98	-7.311-6.14	-4.91-3.78	-2.941-2.63	-2.491-2.21	-1.861-1.54	-1.811-1.82	-1.811-1.82	
Theta (22.5°)	-3.041-3.87	-5.111-7.5	-12.311-17.94	-17.511-18.7	-12.171-8.66	-6.491-4.36	-2.931-2.91	-3.041-2.1	-1.271-0.74	-0.141-0.1	0.321-0.6	-0.111-0.68	-0.651-1.44	-2.771-3.96	-5.521-7.72	-10.191-12.77	-14.081-10.63	-8.321-6.99	-6.21-6.08	-4.991-3.62	-2.671-2.08	-1.831-1.66	-1.231-1.25	-1.761-2.57	
Theta (30°)	-2.671-3.71	-5.211-8.4	-12.481-13.03	-12.031-9.93	-9.121-9.97	-7.981-6.44	-2.851-3.05	-3.571-5.24	-1.241-1.35	-1.451-1.8	-1.781-1.3	-1.841-1.8	-0.681-1.8	-2.91-4	-7.491-10.18	-11.931-17.15	-18.841-14.29	-12.211-8.78	-5.561-6.15	-5.611-6.66	-2.371-1.66	-1.181-0.33	-0.341-1.11	-1.311-4.16	
Theta (37.5°)	-3.381-5.66	-8.011-10.89	-11.131-10.95	-7.931-6.2	-5.331-4.73	-4.321-2.95	-1.891-2.61	-3.461-3.24	-2.261-2.54	-2.811-1.75	-1.551-0.52	-1.161-0.75	-0.851-2.59	-3.771-6.22	-8.941-13.57	-17.541-18.05	-17.911-15.14	-11.491-8.9	-6.51-6.34	-7.231-4.03	-1.771-1	-1.391-0.89	-0.541-1.07	-1.541-1.53	
Theta (45°)	-4.551-6.37	-7.881-9.19	-10.341-9.11	-6.391-5.1	-3.571-2.53	-3.311-5.25	-3.791-3.11	-3.731-3.41	-2.451-2.77	-4.51-3.15	-2.821-1.76	-2.611-1.67	-2.881-2.01	-4.811-5.2	-9.931-8.01	-10.481-11.57	-9.331-8.01	-5.871-8.22	-0.351-0.5	-1.291-1.37	-0.621-0.72	-1.561-0.42	-1.561-0.42		
Theta (52.5°)	-3.421-3.75	-5.561-7.6	-9.311-7.42	-5.381-4.31	-3.831-3.7	-5.291-5.48	-3.831-3.85	-3.771-3.95	-4.851-3.45	-3.421-3.6	-5.121-4.26	-5.821-4.19	-3.041-5.74	-11.681-11.73	-10.911-12.98	-10.611-9.25	-10.781-12.35	-8.831-6.5	-9.571-7.54	-6.011-2.32	-0.131-1.36	-2.531-0.12	0.221-1.09	-2.861-4.76	
Theta (60°)	-2.891-2.44	-7.281-9.19	-9.691-6.8	-3.651-3.56	-4.14-4.8	-5.711-5.15	-4.241-4.7	-3.991-3.33	-4.641-6.42	-5.231-5.93	-7.321-6.52	-10.791-8.44	-7.141-11.82	-11.511-9.97	-10.921-10.77	-7.861-10.17	-15.161-15.15	-9.241-9.44	-11.631-8.17	-5.961-1.86	-0.211-0.66	-1.171-1.33	-1.031-1.26	-1.411-2.14	
Theta (67.5°)	-2.321-3.53	-6.591-11.49	-9.881-6.91	-3.981-2.95	-2.651-3.91	-4.731-5.14	-4.991-4.05	-3.861-3.41	-3.541-5.98	-8.071-9.37	-8.991-8.47	-11.171-7.97	-15.911-13.51	-13.291-10.47	-11.111-11.66	-11.751-18.25	-16.151-10.24	-13.031-7.89	-5.421-2.98	-1.211-1.62	-1.181-0.87	-0.421-0.91	-1.211-1.64	-1.211-1.64	
Theta (75°)	-2.811-4.63	-7.081-11.26	-8.161-5.1	-3.321-2.34	-2.311-3.9	-4.881-4.61	-4.691-4.07	-3.791-3.62	-3.941-7.21	-7.311-11.35	-11.771-8.96	-9.571-7.25	-7.111-9.65	-11.021-15.24	-18.441-18.97	-17.231-14.35	-11.861-18.18	-18.591-11.67	-11.921-7.05	-5.51-2.82	-2.381-1.95	-1.231-1.14	-1.561-1.18	-0.891-1.35	
Theta (82.5°)	-3.991-4.82	-6.181-6.35	-6.851-8.48	-3.771-1.77	-1.931-3.4	-6.111-6.45	-6.251-4.15	-4.311-3.43	-4.311-9.99	-8.391-12.69	-12.371-11.3	-8.441-5.86	-4.921-1.1	-9.761-13.68	-12.751-12.72	-15.511-12.56	-17.811-18.06	-11.831-11.41	-9.11-7.84	-5.231-4.04	-3.81-3.08	-2.281-2.1	-1.251-1.03	-0.791-1.66	
Theta (90°)	-3.581-4.56	-5.051-6.14	-6.541-8.66	-3.051-1.43	-1.611-4.76	-4.631-5.33	-10.541-4.39	-4.671-6.29	-4.661-11.53	-9.631-10.35	-12.731-11.51	-7.951-5.57	-4.841-7.68	-9.931-9.68	-11.481-14.79	-9.521-10.71	-6.531-18.01	-11.621-10.79	-9.551-5.51	-7.031-6.6	-4.81-4.04	-1.831-3.08	-1.291-1.22	-1.891-2.35	
Theta (97.5°)	-4.511-5.65	-6.131-6.99	-5.791-5.52	-4.81-2.25	-2.171-4.48	-3.321-4.31	-10.391-7.05	-6.81-5.8	-7.671-11.83	-11.411-10.66	-11.031-13.59	-8.451-6.31	-6.251-6.82	-10.531-13.88	-12.421-13.71	-9.721-8.02	-11.661-11.38	-10.571-11.26	-11.961-8.38	-10.711-10.47	-6.821-5.77	-4.51-3.6	-3.471-3.35	-1.661-2.35	
Theta (105°)	-4.331-4.81	-4.611-4.22	-3.861-3.39	-4.41-3.07	-2.611-3.97	-2.671-6.48	-10.251-8.79	-9.281-7.79	-9.411-12.86	-9.771-15.99	-9.651-11.85	-12.411-9.72	-10.511-11.2	-11.931-12.02	-10.661-16.69	-15.541-11.17	-17.721-14.09	-12.351-18.45	-18.581-15.11	-18.831-15.78	-8.891-7.2	-7.571-4.29	-4.781-6.76	-3.241-3.09	
Theta (112.5°)	-4.771-4.36	-4.511-4.41	-4.641-3.37	-3.461-2.9	-3.41-3.16	-4.251-7.79	-9.151-9.31	-9.431-8.76	-12.741-14.54	-9.821-8.72	-14.631-16.65	-11.481-14.4	-10.151-11.32	-12.101-18.59	-12.041-15.3	-16.581-18.04	-15.561-18.18	-17.221-17.93	-15.161-18.81	-19.081-17.95	-11.441-9.89	-6.611-5.8	-4.151-5.98	-3.811-5.18	
Theta (120°)	-7.311-6.84	-4.611-4.46	-2.921-2.67	-3.191-3.92	-3.821-2.12	-2.021-6.23	-11.471-10.75	-7.111-7.75	-13.271-18.64	-12.821-8.77	-10.561-17.76	-13.771-13.78	-18.591-14.04	-17.261-17.6	-16.181-18.55	-17.481-13.24	-16.11-12.08	-11.651-14.81	-17.711-16.02	-18.871-18.66	-12.791-13.84	-6.881-8.82	-12.041-9.26	-3.321-3.89	
Theta (127.5°)	-8.081-7.16	-4.631-3.79	-2.811-2.27	-3.321-4.46	-3.531-2.16	-2.911-6.41	-11.061-7.62	-6.021-8.86	-18.541-18.71	-13.711-15.54	-13.921-18.5	-10.411-10.89	-10.821-17.62	-10.821-18.28	-12.511-11.61	-16.081-18.12	-8.821-11.52	-13.151-13.07	-17.511-13.81	-18.861-15.12	-18.211-12.7	-9.551-10.8	-14.881-15.48	-6.911-5.91	
Theta (135°)	-12.811-11.52	-6.361-4.7	-4.21-4.31	-2.81-2.18	-1.881-2.38	-4.081-2.34	-19.021-10.24	-7.821-11.66	-16.871-17.47	-17.771-15.84	-15.021-14.18	-18.861-15.27	-11.081-6.23	-8.961-17.18	-9.331-11.81	-18.181-17.16	-18.561-13.31	-11.951-18.27	-10.391-13.71	-17.151-15.33	-12.431-11.18	-14.771-18.12	-13.181-10.8	-13.181-10.8	
Theta (142.5°)	-11.471-18.54	-17.681-10.4	-7.151-4.17	-2.411-1.88	-3.041-5.53	-10.511-17.4	-12.451-8.1	-8.21-13.03	-18.011-17.89	-18.41-17.35	-16.321-12.12	-10.951-15.2	-18.411-18.61	-18.581-17.93	-17.451-15.06	-10.231-9.63	-11.221-11.3	-18.311-17.57	-11.731-8.65	-12.071-18.95	-18.771-19.91	-14.211-18.5	-18.031-11.14	-8.871-8.69	
Theta (150°)	-7.561-7.33	-6.051-9.84	-4.861-3.44	-2.731-2.1	-2.711-5.25	-9.391-7.78	-8.811-15	-11.051-10.63	-18.241-14.14	-10.661-8.62	-9.111-8.8	-13.11-13.1	-14.921-19.83	-12.511-18.92	-18.781-17.78	-15.331-14.75	-18.081-18.78	-16.131-19.43	-18.741-17.98	-11.671-13.38	-14.951-17.96	-14.351-9.6	-7.811-3.3	-7.811-3.3	
Theta (157.5°)	-8.231-8.19	-6.211-9.6	-4.941-9.99	-5.631-7.13	-10.041-12.97	-10.221-7.63	-5.311-3.96	-5.041-9.85	-16.911-18.24	-17.621-16.19	-16.611-17.11	-16.751-17.11	-17.911-13.14	-12.541-18.77	-17.181-16.6	-13.411-13.33	-9.221-14.74	-11.241-15.74	-17.511-17.62	-14.861-9.01	-6.211-6.58	-6.651-8.61	-13.621-18.72	-17.941-12.1	
Theta (165°)	-12.561-14.85	-18.331-18.2	-14.061-11.2	-9.421-9.87	-9.451-8.66	-9.481-11.4	-11.141-9.7	-8.251-7.2	-7.681-10.88	-17.711-19.41	-17.621-17.92	-18.581-18.36	-18.421-15.94	-12.131-11.5	-12.141-12.26	-10.971-9.4	-9.031-9.18	-10.21-12.63	-15.791-18.1	-18.621-10.65	-7.51-6.88	-6.651-8.94	-8.261-8.76	-9.931-12.06	
Theta (172.5°)	-13.041-10.21	-8.781-8.9	-8.091-6.96	-6.751-7.38	-6.931-6.32	-6.511-7.16	-4.281-3.7	-7.021-2.94	-11.511-12.95	-12.431-11.22	-10.751-11.77	-14.651-18.9	-18.751-18.71	-18.431-17.32	-17.921-15.36	-12.241-12.03	-9.131-8.76	-9.581-11.4	-14.111-14.38	-13.531-13.56	-14.631-15.95	-14.871-14.83	-15.011-15.28	-15.011-15.28	
Theta (180°)	-18.021-16.86	-17.051-15.69	-13.711-11	-10.311-10.82	-10.051-8.13	-7.251-7.19	-8.711-11.47	-14.441-15.1	-14.931-14.53	-15.351-17.93	-18.291-18.13	-17.551-17.34	-17.511-15.36	-13.331-11.73	-10.371-9.66	-8.691-7.81	-7.341-7.75	-8.481-8.78	-9.591-10.2	-10.891-11.64	-12.411-13.37	-17.061-17.73	-17.581-18.37	-17.581-18.37	
Freq(Hz)	5.785GPol	Theta/Ant 2	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Gain	Phi(0°)Phi(7.5°)	Phi(15°)Phi(22.5°)	Phi(30°)Phi(37.5°)	Phi(45°)Phi(52.5°)	Phi(60°)Phi(67.5°)	Phi(75°)Phi(82.5°)	Phi(90°)Phi(97.5°)	Phi(105°)Phi(112.5°)	Phi(120°)Phi(127.5°)	Phi(135°)Phi(142.5°)	Phi(150°)Phi(157.5°)	Phi(165°)Phi(172.5°)	Phi(180°)Phi(187.5°)	Phi(195°)Phi(202.5°)	Phi(210°)Phi(217.5°)	Phi(225°)Phi(232.5°)	Phi(240°)Phi(247.5°)	Phi(255°)Phi(262.5°)	Phi(270°)Phi(277.5°)	Phi(285					





# Radiated Composite Gain Data of 2.4GHz&5GHz

# Appendix A

Theta	Phi	Gain	Phi(7.5)	Phi(15)	Phi(22.5)	Phi(30)	Phi(37.5)	Phi(45)	Phi(52.5)	Phi(60)	Phi(67.5)	Phi(75)	Phi(82.5)	Phi(90)	Phi(105)	Phi(120)	Phi(135)	Phi(150)	Phi(165)	Phi(180)	Phi(195)	Phi(210)	Phi(225)	Phi(240)	Phi(255)	Phi(270)	Phi(285)	Phi(300)	Phi(315)	Phi(330)	Phi(345)	
Theta(60)	Phi(0)	-7.14/-7.58	-12/-11.59	-8.79/-7.47	-7.36/-6.99	-9.97/-9.53	-9.82/-8.66	-6.83/-8.18	-10.07/-7.94	-8.05/-11.7	-13.49/-10.55	-8.04/-5.72	-4.77/-6.21	-9.87/-12.97	-10.41/-7.67	-6.54/-8.3	-5.14/-3.89	-4.53/-5.09	-4.68/-4.03	-4.26/-5.36	-8.11/-10.51	-11.36/-13.87	-17.92/-13.12	-17.57/-17.8	-9.11/-10.32							
Theta(67.5)	Phi(7.5)	-4.57/-3.33	-5.21/-10.82	-10.45/-8.49	-8.51/-10.93	-10.68/-7.93	-9.99/-10.56	-6.86/-7.38	-8.31/-7.83	-8.09/-8.79	-10.76/-10.88	-5.71/-5.52	-3.02/-4.85	-11.89/-11.28	-8.48/-10.76	-9.22/-5.7	-4.53/-4.24	-6.59/-5.83	-5.13/-4.88	-5.1/-8.71	-10.91/-13.41	-16.76/-13.87	-19.02/-18.12	-18.54/-19.14	-7.73/-5.59							
Theta(75)	Phi(15)	-5.19/-3.52	-6.41/-6.99	-6.09/-7.25	-9.71/-9.48	-8.88/-9.86	-10.51/-9.4	-6.53/-6.9	-7.4/-6.89	-7.71/-8.34	-9.32/-9.73	-7.88/-5.34	-4.2/-5.41	-10.2/-11.27	-11.87/-8.82	-9.25/-6.66	-4.83/-3.9	-7.15/-5.39	-4.53/-2.87	-3/-0.5	-9.86/-10.18	-13.85/-14.29	-18.47/-18.12	-17.71/-13.55	-6.97/-4.19							
Theta(82.5)	Phi(22.5)	-5.93/-6.82	-5.03/-4.78	-6.64/-7.48	-7.57/-8.29	-9.37/-6.59	-8.26/-8.7	-4.95/-6.38	-7.4/-7.72	-8.56/-8.86	-9.12/-8.82	-7.55/-3.65	-3.76/-6.34	-9/-9.6	-8.8/-12.99	-11.05/-7.54	-3.61/-3.87	-7.76/-4	-1.84/-0.53	-0.84/-0.02	-6.2/-6.49	-9.06/-12.44	-17.78/-18.36	-17.35/-10.16	-6.13/-0.49							
Theta(90)	Phi(30)	-9.43/-7.69	-7.18/-6.51	-8.03/-6.18	-5.69/-8.94	-8.93/-6.18	-6.05/-7.11	-5.99/-5.43	-6.01/-6.27	-7.35/-7.78	-9.47/-9.68	-8.99/-5.52	-4.93/-7.09	-11.23/-9.44	-10.5/-7.53	-3.29/-2.37	-7.55/-7.31	-4.46/-1.19	-1.21/-3.89	-6.85/-5.18	-8.99/-12.63	-15.36/-13.52	-12.53/-10.45	-4.39/-6.67								
Theta(97.5)	Phi(37.5)	-9.72	-1.99/-9.16	-7.93/-6.6	-6.42/-8.52	-8.37/-4.52	-6.64/-7.57	-5.42/-5.15	-6.16/-6.75	-6.54/-6.89	-7.85/-9.23	-8.98/-6.74	-8.06/-11.78	-12.95/-10.59	-9.77/-10.47	-8.38/-6.35	-5.77/-3.66	-7.43/-8.18	-8.11/-5.02	-3.86/-6.46	-11.45/-9.57	-11.45/-14.62	-14.02/-17.94	-12.53/-10.29	-7.25/-8.08							
Theta(105)	Phi(45)	-6.99/-8.37	-18.47/-11.24	-10.85/-6.44	-4.75/-8.97	-7.61/-5.42	-5.28/-5.89	-6.32/-6.17	-6.61/-6.26	-6.32/-6.7	-6.35/-7.85	-11.02/-10.11	-12.36/-18.36	-11.37/-11.56	-9.22/-7.02	-6.79/-5.14	-6.18/-4.64	-8.54/-11.5	-12.96/-14.36	-11.19/-18.05	-16.45/-15.74	-16.43/-10.51	-16.39/-17.8	-15.74/-12.81	-9.11/-7.96							
Theta(112.5)	Phi(52.5)	-12.27/-17.03	-18.35/-12.89	-9.4/-8.53	-7.9/-8.24	-8.15/-5.28	-5.56/-6.97	-7.34/-6.46	-7.58/-7.26	-6.48/-7.24	-8.72/-10.9	-12.81/-15.87	-16.84/-15.44	-6.95/-7.34	-6.47/-6.35	-10.48/-6.71	-5.12/-8.05	-17.75/-14.78	-10.28/-11.22	-9.19/-8.45	-8.34/-7.04	-15.85/-10.82	-16.29/-13.52	-13.96/-16	-12.69/-7.41							
Theta(120)	Phi(60)	-18.71/-16.76	-18.98/-18.17	-14.67/-9.51	-8.96/-8.9	-6.58/-6.88	-6.21/-5.51	-6.57/-7.04	-8.84/-8.87	-9.36/-11.01	-12.9/-15.62	-15.48/-12.49	-9.13/-8.63	-5.3/-5.21	-7.11/-7.49	-10.89/-9.27	-18.83/-16.29	-8.79/-9.21	-4.59/-3.17	-3.76/-2.55	-3.64/-10.44	-11/-18.4	-18.66/-16.44	-12.34/-10.56								
Theta(127.5)	Phi(67.5)	-12.77/-15.85	-14.77/-18.03	-12.89/-17.17	-18.57/-10.89	-9.14/-8.11	-9.17/-7.5	-9.51/-9.41	-9.99/-9.71	-9.82/-12.41	-12.76/-13.44	-8.37/-6.93	-8.14/-7.24	-8.55/-7.95	-4.75/-4.22	-7.09/-10.47	-12.41/-10.72	-15.98/-14.09	-14.57/-11.86	-5.11/-5.92	-12.68/-9.89	-8.29/-13.52	-18.67/-11.4	-12.3/-17.63	-13.54/-17.22							
Theta(135)	Phi(75)	-13.83/-13.68	-11.34/-10.63	-13.59/-18.18	-18.75/-15.44	-14.04/-15.81	-12.42/-9.09	-9.9/-12.94	-13.01/-11.18	-9.78/-9.93	-9.56/-6.06	-6.63/-7.51	-8.95/-8.41	-5.43/-5.22	-5.62/-8.04	-19.21/-13.62	-11.87/-10.56	-6.74/-5.52	-7.33/-10.51	-14.43/-7.8	-4.49/-6.08	-9.78/-10.14	-10.39/-9.69	-10.96/-18.63								
Theta(142.5)	Phi(82.5)	-10.81/-10.68	-16.59/-18.05	-14.51/-12.05	-17.01/-14.5	-16.09/-17.76	-17.83/-10.14	-7.86/-7.85	-7.17/-6.95	-8.95/-2.59	-5.16/-5.95	-4.53/-5.66	-7.99/-13.31	-8.91/-7.07	-6.04/-5.24	-9.42/-10.12	-11.26/-8.9	-9.2/-6.66	-7.31/-7.89	-9.2/-6.66	-5.73/-6.68	-7.55/-11.26	-18.07/-18.32	-13.71/-14.4								
Theta(150)	Phi(90)	-17.55/-18.88	-18.19/-18.6	-18.52/-15.66	-12.62/-13.77	-14.23/-18.6	-15.66/-12.31	-9.71/-9.49	-10.99/-11.32	-11.51/-11.13	-10.42/-9.81	-8.63/-7.61	-7.4/-5.05	-5.31/-7.83	-7.13/-7.98	-9.75/-10.78	-17.87/-12.63	-10.33/-10.74	-10.23/-8.13	-6.89/-7.45	-9.02/-12.47	-15.19/-18.94	-19.03/-17.82	-15.02/-16.55	-11.97/-12.23							
Theta(157.5)	Phi(97.5)	-14.5/-17.49	-15.31/-11.69	-9.26/-8.96	-8.35/-8.36	-8.78/-10.44	-14.1/-18.29	-17.28/-18.55	-14.98/-13.27	-13.49/-13.61	-9.07/-8.65	-7.39/-6.82	-5.78/-7.21	-12.65/-11.41	-7.95/-7.23	-7.07/-7.22	-17.57/-8.57	-18.46/-17.71	-17.63/-12.48	-12.86/-15.7	-18.05/-18.37	-17.97/-17.77	-14.53/-14.38	-11.88/-10.95								
Theta(165)	Phi(105)	-12.61/-13.22	-11.94/-12.13	-12.42/-12.96	-11.53/-9.95	-8.23/-7.14	-17.17/-6.89	-6.15/-4.76	-13.76/-3.95	-4.4/-3.98	-3.99/-4.94	-4.78/-4.64	-6.37/-6.13	-7.57/-6.71	-6.75/-7.6	-9.74/-12.59	-14.94/-18.38	-18.62/-15.97	-11.53/-10.79	-13.43/-14.82	-14.88/-15.77	-13.09/-12.87	-15.11/-14.21	-8.91/-7.35	-7.51/-9.48							
Theta(172.5)	Phi(112.5)	-16.04/-15.21	-14.6/-13.1	-12.67/-13.28	-13.93/-15.14	-14.16/-11.63	-10.77/-10.24	-7.44/-5.41	-5.37/-6.22	-5.43/-3.9	-3.72/-3.92	-3.62/-3.93	-4.79/-5.58	-7.11/-9.98	-14.22/-16.51	-18.36/-17.75	-15.71/-14.61	-14.4/-14.83	-13.87/-13.84	-15.97/-17.88	-16.85/-14.45	-11.6/-9.69	-9.33/-9.62	-8.21/-7.53	-9.19/-14.83							
Theta(180)	Phi(120)	-19.27/-17.43	-18.8/-18.06	-18.97/-17.62	-15.24/-13.02	-11.37/-10.55	-9.91/-11	-8.56/-9.74	-6.91/-6.18	-6.12/-6.2	-6.14/-6.19	-6.65/-7.51	-8.63/-10.54	-13.28/-17.84	-17.52/-17.84	-15.37/-12.22	-10.51/-9.7	-10.52/-12.74	-14.67/-12.63	-9.91/-7.96	-6.59/-6.19	-6.71/-7.53	-7.88/-8.43	-9.59/-11.66	-15.04/-18.83							
Theta(187.5)	Phi(127.5)	5.6GPol	PhiAnt 3																													
Theta(195)	Phi(135)	Gain	Phi(7.5)	Phi(15)	Phi(22.5)	Phi(30)	Phi(37.5)	Phi(45)	Phi(52.5)	Phi(60)	Phi(67.5)	Phi(75)	Phi(82.5)	Phi(90)	Phi(105)	Phi(120)	Phi(135)	Phi(150)	Phi(165)	Phi(180)	Phi(195)	Phi(210)	Phi(225)	Phi(240)	Phi(255)	Phi(270)	Phi(285)	Phi(300)	Phi(315)	Phi(330)	Phi(345)	
Theta(202.5)	Phi(142.5)	0	-8.19/-3.07	-11.2/-11	-9.23/-7.5	-5.78/-3.97	-2.92/-1.88	-1.01/-3.05	0.23/0.68	0.82/0.78	0.88/0.9	0.48/-0.19	-0.22/-2.09	-3.42/-5.1	-7.31/-9.5	-10.53/-9.3	-7.29/-3.53	-3.86/-2.51	-1.37/0.53	-0.19/0.07	0.68/1.38	1.58/1.9	0.92/0.6	0.43/0.74	-1.28/-2.92	-4.34/-5.52						
Theta(210)	Phi(150)	Theta(75)	-8.23/-8.53	-10.02/-11.05	-9.79/-7.74	-5.25/-3.46	-2.15/-1.24	-0.34/0.22	0.61/0.63	0.63/0.82	0.74/0.32	-0.61/-0.43	-2.97/-4.77	-4.82/-7.32	-9.94/-12.01	-13.89/-12.17	-9.2/-9.68	-5.64/-2.7	-3.02/0.01	-1.21/0.73	-0.64/0.08	0.88/0.85	0.21/0.38	0.16/0.84	-1.32/-2.09	-3.83/-5.45						
Theta(217.5)	Phi(157.5)	Theta(90)	-7.8/-11.92	-14.37/-13.81	-10.22/-7.34	-5.42/-4.77	-4.71/-3.91	-3.34/-2.41	-1.31/-0.65	-0.48/-0.36	-0.5/-0.87	-1.27/-1.91	-3.35/-5.39	-7.13/-8.64	-11.85/-16.73	-18.75/-17.35	-12.27/-9.14	-7.03/-4.99	-3.13/-1.92	-1.23/-0.6	0.06/0.25	-0.05/-0.25	-0.21/0.7	-1.5/-1.84	-1.96/-3.11	-4.01/-4.98						
Theta(225)	Phi(165)	Theta(105)	-12.82/-18.28	-19.24/-14.27	-18.91/-16.8	-6.69/-6.23	-5.98/-5.58	-4.77/-3.19	-1.87/-1.12	-0.82/0.76	-1.12/-1.01	-0.78/-1.42	-3.55/-4.77	-9.22/-12.43	-18.11/-19.2	-15.38/-11.8	-9.65/-7.23	-6.5/-0.9	-3.76/-2.51	-1.39/-0.85	-0.81/-1.23	-1.29/0.89	-1.33/-2.44	-3.51/-4.73	-7.13/-8.95							
Theta(232.5)	Phi(172.5)	Theta(120)	-8.25/-14.04	-15.75/-15.01	-14.49/-9.41	-6.3/-5.3	-5.6/-7.7	-8.91/7.33	-5.74/-5.55	-3.22/2.59	-2.36/-1.86	-1.23/-1.55	-2.34/-3.27	-5.48/-7.19	-7.57/-9.07	-12.24/-17.78	-18.15/-14.97	-13.37/-11.3	-9.31/7.07	-5.46/-4.12	-2.84/-2.17	-1.47/0.93	-0.56/-2.44	-1.11/-1.71	-7.63/-7.46							
Theta(240)	Phi(180)	Theta(135)	-7.6/-16.23	-18.16/-18.18	-14.47/-10.17	-9.35/-8.65	-7.06/-7.04	-8.74/-8.07	-6.58/-5.75	-5.63/-5.24	-3.99/-3.34	-3.47/-3.33	-3.19/-3.29	-4/-6.33	-7.26/-7.33	-10.54/-11.1	-8.81/-8.01	-9.37/-11.81	-11.37/-9.45	-8.2/-5.65	-3.82/-3.1	-3.21/-3.76	-2.61/-1.3	-1.4/-2.4	-4.43/-6.72	-7.38/-7.4						
Theta(247.5)	Phi(187.5)	Theta(150)	-13.51/-18.99	-17.43/-18.53	-13.39/-9.86	-12.61/-6.31	-8.06/-6.97	-8.72/-4.75	-5.07/-4.79	-5.85/-5.78	-4.73/-4.91	-5.32/-4.23	-3.03/-3.41	-4.87/-7.93	-8.86/-6.43	-7.82/0.93	-7.38/-3.93	-18.05/-19.18	-17.81/-15.23	-10.45/-7.1	-4.79/-4.39	-5.69/-4.4	-2.64/-5.58	-7.39/-3.35	-2.06/-4.55	-7.51/-8.74						
Theta(255)	Phi(195)	Theta(165)	-10.81/-18.26	-18.82/-17.63	-11.71/-9.16	-12.46/-16.44	-8.99/-5.98	-5.53/-6.28	-4.77/-4.1	-4.5/-5.09	-6.99/-8	-6.17/-5	-4.72/-5.18	-9.07/-13.4	-10.25/-7.57	-11.01/-10.9	-9.96/-7.6	-7.77/-11.72	-12.52/-11.23	-9.44/-7.34	-6.46/-6.78	-5.89/-2.45	-2.88/-5.35	-1.73/-5.62	-1.91/-3.48	-8.03/-8.42						
Theta(262.5)	Phi(202.5)	Theta(180)	-10.09/-18.29	-15.21/-16.38	-14.27/-13.93	-13.67/-11.96	-9.15/-7.78	-6.78/-6.54	-4.33/-3.8	-3.76/-5.29	-9.59/-12.5	-9.37/-6.29	-10.18/-13.2	-11.96/-8.37	-8.01/-7.06	-8.57/-14.63	-11.37/-11.17	-13.93/-17.66	-15.34/-17.03	-9.46/-9.2	-10.19/-7.22	-5.25/-5.99	-5.39/-3.61	-2.98/-5.03	-13.27/-8.36							
Theta(270)	Phi(210)	Theta(195)	-8.74/-10.05	-10.98/-18.04	-18.83/-14.98	-11.44/-9	-11.79/-9.03	-7.46/-6.0																								





# Radiated Composite Gain Data of 2.4GHz&5GHz

# Appendix A

Theta (150°)	-8.891-6.28	-8.591-14.12	-17.941-13.69	-8.381-8.55	-6.981-7.55	-11.721-18.13	-18.921-14.97	-9.981-8.08	-6.811-5.37	-4.931-6.12	-7.741-6.69	-7.331-8.04	-8.491-5.66	-3.831-5.98	-9.441-13.12	-10.711-6.5	-6.071-11.62	-17.151-18.84	-13.151-12.02	-13.821-17.42	-16.371-18.2	-11.371-9.21	-13.411-14.73	-17.741-15.67
Theta (157.5°)	-12.491-13.52	-15.251-14.57	-13.581-15.39	-16.551-17.81	-10.771-6.57	-5.691-4	-2.991-3.34	-4.061-4.52	-4.251-3.93	-3.811-3.31	-2.451-2.2	-2.611-3.4	-7.421-10.04	-9.411-9.01	-8.611-8.26	-7.261-7.77	-11.291-19.02	-19.191-18.28	-12.241-9.01	-8.521-10.92	-15.061-18.74	-18.881-17.43	-13.951-10.94	-11.911-12.79
Theta (165°)	-13.141-14.51	-15.971-14.83	-13.211-15.05	-8.571-7.71	-7.971-6.1	-7.211-8.3	-7.351-7.05	-7.951-7.47	-5.571-4.9	-5.821-6.12	-6.141-9.04	-10.581-7.3	-4.641-5.05	-2.521-2.98	-5.181-9.01	-15.551-18.3	-10.721-10.99	-11.271-14.65	-17.351-14.13	-12.641-14.63	-11.711-16.76	-15.871-16.3	-16.381-13.95	-11.531-11.74
Theta (172.5°)	-8.751-8.6	-9.011-9.42	-9.491-9.81	-10.431-9.93	-8.771-7.09	-5.761-5.05	-4.611-3.2	-4.671-4.06	-3.171-3.26	-3.971-3.72	-3.911-4.81	-4.961-5.87	-7.211-8.2	-8.691-10.93	-14.221-18.06	-18.191-16.14	-11.921-10.08	-9.821-10.95	-13.361-16.35	-15.311-12.66	-11.981-10.7	-7.831-7.08	-7.621-6.42	-5.331-6.9
Theta (180°)	-11.741-12.25	-11.751-13.04	-14.431-15.68	-15.711-16.92	-18.451-17.44	-17.791-17.68	-17.951-16.02	-14.411-14.23	-14.821-14.81	-14.321-13.91	-14.211-14.06	-14.881-18.58	-18.761-18.16	-18.031-17.49	-16.251-15.06	-14.471-15.12	-17.491-18.28	-18.311-18.09	-18.411-14.13	-9.611-8.02	-7.791-7.32	-6.541-7.03	-7.861-7.85	-8.221-9.51
Freq(Hz)	5.30Pol.	PhiAnt.4																						
Gain	Phi(0°)Phi(7.5°)	Phi(15°)Phi(22.5°)	Phi(30°)Phi(37.5°)	Phi(45°)Phi(52.5°)	Phi(60°)Phi(67.5°)	Phi(75°)Phi(82.5°)	Phi(90°)Phi(97.5°)	Phi(105°)Phi(112.5°)	Phi(120°)Phi(127.5°)	Phi(135°)Phi(142.5°)	Phi(150°)Phi(157.5°)	Phi(165°)Phi(172.5°)	Phi(180°)Phi(187.5°)	Phi(195°)Phi(202.5°)	Phi(210°)Phi(217.5°)	Phi(225°)Phi(232.5°)	Phi(240°)Phi(247.5°)	Phi(255°)Phi(262.5°)	Phi(270°)Phi(277.5°)	Phi(285°)Phi(292.5°)	Phi(300°)Phi(307.5°)	Phi(315°)Phi(322.5°)	Phi(330°)Phi(337.5°)	Phi(345°)Phi(352.5°)
Theta (0°)	-12.331-16.45	-18.261-12.05	-8.041-5.58	-3.461-1.79	-0.881-0.13	0.661-3.6	1.461-3.2	1.581-1.8	0.911-0.07	-0.611-1.53	-2.871-3.48	-4.991-8.59	-11.611-12.18	-12.781-9.92	-6.561-5.43	-2.861-1.69	-0.821-0.27	0.341-1.4	1.461-1.8	1.180-9.9	0.320-1.7	-0.211-3.7	-2.491-2.98	-4.961-8.98
Theta (7.5°)	-11.661-15.81	-15.971-11.68	-8.631-6.44	-4.241-2.65	-1.691-0.82	-0.340-2.8	0.890-9.7	0.680-9.4	1.130-4.9	-0.221-0.8	-2.121-4.07	-5.441-8.32	-15.491-18.46	-16.131-10.61	-6.371-3.75	-2.261-0.94	-0.070-4.4	0.871-1.1	1.711-5.2	1.511-6.2	0.921-0.49	-0.641-0.58	-2.321-4.59	-5.461-7.36
Theta (15°)	-11.331-17.75	-17.341-11.84	-7.981-6.01	-4.661-3.81	-2.841-2.11	-1.991-1.53	-0.971-0.78	-0.831-0.8	-0.451-0.57	-1.331-1.57	-1.591-2.91	-4.841-7.06	-10.441-18.67	-18.381-15.73	-9.821-6.1	-4.41-2.88	-1.811-1.18	-0.641-0.53	-0.651-0.49	0.070-3.7	0.480-1.2	-0.611-0.84	-1.111-2.72	-4.471-6.91
Theta (22.5°)	-15.691-17.51	-10.791-6.3	-5.091-5.83	-6.651-5.97	-3.821-2.58	-1.861-1.06	-0.821-0.68	-0.631-1.13	-1.641-2.22	-3.771-5.33	-5.211-5.46	-7.061-5.95	-12.611-18.1	-16.691-13.41	-13.111-12.04	-9.811-6.44	-3.971-2.15	-0.961-1.08	-1.511-1.47	-0.780-2.6	1.261-1.5	1.130-3.6	-0.931-3.02	-5.521-8.64
Theta (30°)	-9.221-10.9	-8.221-5.5	-4.571-4.85	-6.591-7.33	-5.911-3.64	-1.661-0.81	-0.880-1.73	-1.141-1.38	-1.561-2.27	-3.071-3.53	-4.711-6.4	-3.591-4.81	-12.411-10.36	-15.671-18.17	-17.311-14.95	-11.621-8.39	-6.911-6.21	-4.331-3.44	-0.941-0.56	-0.360-2.6	0.360-0.07	-0.861-2.04	-4.451-6.41	
Theta (37.5°)	-7.721-15.49	-18.121-11.69	-7.661-5.46	-5.441-4.87	-3.331-2.4	-1.191-0.55	-0.281-0.48	-1.331-2.73	-3.491-2.85	-2.531-3.15	-4.411-5.99	-3.991-3.71	-6.911-8.2	-7.431-9.01	-11.111-12.89	-12.931-13.16	-16.441-10.87	-5.511-3.05	-1.361-0.58	0.331-2.9	0.771-1.82	-2.751-2	-1.391-1.97	-3.411-4.43
Theta (45°)	-11.131-17.57	-13.321-12.54	-11.431-7.59	-5.871-4.23	-2.551-2.09	-1.331-1.73	-1.821-1.76	-1.941-2.39	-3.191-3.03	-2.621-4.45	-7.851-11.16	-8.471-6.38	-7.461-12.49	-18.711-9.62	-7.421-1.74	-10.161-10.21	-8.961-9.4	-7.831-4.32	-1.550-1.1	1.641-8.6	0.121-1.4	-3.011-2.76	-1.691-2.77	-6.641-8.75
Theta (52.5°)	-18.391-15.3	-9.061-13.35	-13.141-5.45	-4.371-4.1	-5.151-2.5	-1.751-2.27	-2.261-1.74	-2.251-3.1	-3.261-3.94	-4.811-5.65	-9.281-6.17	-9.361-6.51	-9.281-12.37	-10.131-7.4	-6.821-9.46	-18.911-14.97	-15.691-11.79	-5.441-3.33	-3.631-5.08	-3.220-4.4	1.011-0.38	-1.711-3.54	-2.391-2.42	-8.151-14.74
Theta (60°)	-9.921-15.51	-13.371-18.65	-13.541-4.5	-3.441-4.16	-6.711-2.95	-1.641-1.93	-1.931-2.11	-3.141-4.12	-3.731-3.37	-4.621-5.65	-6.411-13.7	-10.051-4.9	-4.511-5.69	-7.411-9.67	-9.081-8.15	-10.841-14.51	-17.411-18.12	-16.851-9.61	-8.351-9.14	-4.741-2.67	-2.931-1.15	-1.081-3.75	-4.991-5.04	-7.671-12.41
Theta (67.5°)	-6.781-8.46	-7.671-10.75	-18.531-18	-5.661-4.4	-4.961-2.52	-2.191-1.52	-1.961-1.5	-1.381-3.2	-3.771-3.06	-3.971-1.03	-10.881-11.94	-7.891-4.9	-4.621-8.32	-6.211-8.2	-9.611-7.24	-12.511-10.24	-14.421-14.7	-18.851-7.33	-4.351-4.83	-4.971-3.79	-6.891-0.8	-1.671-6.71	-9.311-5	-5.811-6.64
Theta (75°)	-3.711-3.69	-3.961-7.76	-6.681-9.18	-7.771-4.34	-3.131-2.3	-3.521-1.96	-2.171-1.48	-2.611-1.74	-6.891-4.66	-7.081-9.43	-9.921-11.7	-12.151-9.16	-5.971-5.23	-7.721-7.32	-6.781-5.08	-6.241-6.71	-2.501-7.33	-5.531-8.08	-6.721-5.01	-9.271-5.46	-9.911-6.43	-2.381-12.68	-10.981-3.96	-4.961-6.85
Theta (82.5°)	-3.611-3.12	-2.671-6.48	-8.591-10.73	-7.331-3.41	-3.771-3.06	-2.731-1.21	-2.581-2.71	-3.651-7.84	-7.271-6.21	-8.971-13.25	-14.771-14.64	-11.241-8.21	-8.131-9.26	-5.491-4.49	-5.131-5.14	-4.991-5.92	-7.541-6.54	-5.451-7.43	-4.111-6.65	-3.291-6.63	-10.421-7.65	-4.371-10.32	-12.771-3.74	-4.531-3.6
Theta (90°)	-2.311-2.4	-2.261-6.04	-6.371-7.26	-11.751-4.49	-3.971-3.45	-3.531-1.81	-3.061-3.42	-3.541-5.84	-8.771-3.71	-8.561-9.3	-11.021-14.89	-16.761-13.96	-7.561-6.87	-5.661-5.92	-3.231-6.69	-7.741-3.67	-2.471-2.66	-1.841-3.91	-3.111-5.5	-4.671-5.28	-7.831-11.95	-7.761-11.54	-16.411-7	-3.461-4.2
Theta (97.5°)	-1.291-2.93	-4.611-2.74	-4.081-6.67	-8.351-3.78	-4.121-2.87	-3.981-1.95	-3.771-4.67	-5.661-11.01	-3.981-7.77	-11.211-9.17	-10.511-11.55	-16.211-13.48	-11.521-10.69	-3.771-4.64	-6.141-2.7	-2.851-2.17	-0.391-3.57	-6.411-8.03	-4.611-5.28	-4.841-19.25	-3.731-11.9	-19.151-4	-5.361-5.42	-9.521-12.79
Theta (105°)	-2.151-4.98	-5.211-7.44	-6.271-8.32	-10.051-4.61	-7.261-4.41	-3.841-3.15	-4.451-4.27	-4.391-11.66	-12.981-14.16	-14.831-12.11	-11.981-18.03	-18.791-13.33	-8.311-5.93	-4.681-3.25	-4.761-5.7	-4.051-0.18	-6.421-6.48	-0.50	-2.361-8.51	-10.961-18.57	-11.331-16.78	-12.211-15.65	-16.271-11.6	-9.111-3.78
Theta (112.5°)	-5.911-6.24	-8.181-9.51	-5.921-7.56	-7.831-7.54	-7.951-1.51	-4.561-5.11	-1.871-1.33	-16.031-11.7	-14.591-14.31	-18.311-12.6	-11.611-13.73	-5.231-7.02	-3.691-6.07	-3.821-1.04	-3.361-0.67	-4.111-12.13	-8.751-18.57	-13.741-10.03	-6.981-13.85	-17.391-13.26	-12.511-13.85	-17.351-13.26	-12.241-9.65	-11.921-12.6
Theta (120°)	-12.641-14.18	-12.161-6.79	-5.711-5.55	-12.661-4.4	-10.711-8.1	-7.361-7.16	-7.381-8.66	-11.211-17.8	-17.991-16.66	-11.821-8.17	-13.371-16.72	-13.371-9.43	-8.251-4.55	-5.591-5.56	-11.391-2.47	-10.481-14.63	-3.531-5.25	-4.921-5.55	-5.031-5.55	-11.851-14.12	-12.261-12.22	-18.811-18.47	-19.021-16.84	
Theta (127.5°)	-16.611-12.75	-10.911-8.57	-6.361-5.33	-6.011-6.53	-8.661-18.26	-9.521-9.14	-11.011-16.75	-16.211-15.01	-17.611-17.76	-12.151-9.42	-11.671-11.01	-11.631-7.73	-6.461-9.88	-5.991-2.39	-8.361-6.74	-3.831-2.99	-4.841-5.11	-6.111-13.13	-12.771-12.72	-5.131-6.15	-6.111-13.98	-18.911-15.67	-11.061-15.32	-15.311-14.6
Theta (135°)	-9.911-12.5	-8.121-6.81	-6.071-6.54	-6.711-7.03	-8.691-13.15	-10.891-9.29	-11.451-12.51	-13.081-14.19	-13.951-11.57	-9.311-9.43	-11.531-14.56	-14.581-25.5	-5.871-5.23	-6.551-7.11	-6.371-10.05	-5.311-5.23	-5.041-0.68	-7.341-7.95	-9.731-8.38	-9.451-18.55	-18.051-13.68	-10.411-13.69	-17.921-12.8	
Theta (142.5°)	-7.171-7.38	-6.911-7.21	-7.581-7.22	-7.051-8.13	-6.131-6.48	-6.591-7.18	-8.521-10.42	-11.721-12.35	-11.061-10.7	-14.851-16.49	-12.451-12.51	-17.621-8.44	-4.911-5.38	-9.811-9.78	-3.231-1.71	-0.911-2.58	-5.391-9.41	-13.531-9.11	-8.461-9.75	-14.611-18.25	-9.021-6.22	-11.291-10.74		
Theta (150°)	-7.471-5.72	-5.221-6.44	-11.741-15.54	-9.031-7.06	-6.981-8.41	-11.011-10.52	-9.661-7.92	-7.581-8.7	-9.781-11.7	-19.231-18.63	-15.291-15.77	-12.911-12.62	-13.161-8.57	-9.151-7	-5.581-9.65	-6.591-2.98	-2.811-2.4	-3.911-9.22	-15.451-16.97	-16.531-18.48	-18.341-17.52	-17.161-18.22	-13.751-8.4	-8.761-9.11
Theta (157.5°)	-10.261-9.87	-6.561-6.21	-7.881-9.49	-9.091-9.22	-12.021-14.08	-12.951-11.61	-11.461-12.11	-13.611-15.18	-18.151-18.18	-9.971-9.92	-7.591-9.96	-8.861-10.87	-11.311-10.91	-11.341-8.33	-5.361-3.05	-1.571-2.35	-4.751-6.48	-10.611-18.4	-13.051-12.3	-18.351-17.82	-17.671-14.81	-11.681-10.95	-10.051-9.97	-13.121-13.28
Theta (165°)	-12.341-9.67	-7.221-6.55	-5.691-4.54	-3.841-3.91	-4.711-6.46	-8.291-10.59	-12.551-13.47	-12.421-11.22	-10.611-10.36	-10.831-12.66	-16.311-17.88	-13.411-9.76	-7.611-6.69	-6.731-7.27	-8.871-11.93	-9.941-7.17	-6.161-7.11	-10.411-13.1	-11.291-10.91	-11.661-10.93	-14.771-17.41	-11.511-10.03	-9.751-10.7	-17.971-17.02
Theta (172.5°)	-12.781-9.82	-7.241-6	-5.441-4.6	-4.071-4.1	-4.791-5.99	-7.171-9.5	-9.311-11.04	-11.821-11.94	-13.681-13.46	-12.161-14.6	-12.711-9.53	-8.421-7.52	-7.121-8.1	-10.611-14.55	-16.891-12.04	-16.161-5.95	-5.351-5.94	-8.191-11.07	-14.371-18.02	-15.211-11.56	-12.291-11.99	-10.031-10.09	-12.511-14.77	-14.611-13.94
Theta (180°)	-11.511-10.25	-8.711-8.54	-8.531-7.89	-7.731-8.31	-8.451-8.47	-8.811-9.94	-10.921-10.31	-9.881-10.86	-11.831-12.97	-17.811-17.45	-18.321-18.55	-18.421-16.33	-17.341-18.71	-17.591-17.72	-12.351-9.41	-8.561-8.64	-9.461-11.3	-14.021-15.47	-14.151-11.4	-9.611-8.96	-9			



# Radiated Composite Gain Data of 2.4GHz&5GHz

# Appendix A

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°)	-13.34/-18.19	-14.89/-10.24	-5.83/-3.4	-1.94/-0.66	0.26/1.04	1.66/2.06	2.33/2.36	2.25/2.24	2.32/1.62	0.75/-0.12	-1.48/-2.62	-4.43/-8.39	-13.22/-13.29	-10.74/-8.66	-6.58/-4.92	-3.26/-2.21	-1.26/-0.14	0.75/0.95	1.11/1.58	1.46/0.62	0.57/0.46	-0.74/-1.41	-1.71/-3.94	-6.4/-8.37	
Θ(7.5°)	-9.36/-9.87	-8.55/-7.34	-4.51/-2.98	-2.14/-1.31	-0.36/0.38	1.01/1.12	0.86/0.81	0.85/0.56	0.34/0.02	-1.02/-2.08	-2.53/-3.94	-6.23/-8.15	-11.87/-19.2	-15.63/-9.93	-6.81/-4.26	-2.71/-1.39	-0.51/0.4	1.42/1.9	1.89/1.91	2.41/2.41	1.47/1.1	0.69/0.62	-1.67/-2.41	-4.5/-7.71	
Θ(15°)	-6.59/-7.45	-8.02/-7.2	-6.32/-5.55	-5.82/-5.99	-4.84/-3.06	-1.94/-1.06	-0.12/0.08	-0.51/-0.67	-0.59/-0.97	-1.71/-2.25	-3.11/-4.52	-5.18/-6.32	-9.08/-10.94	-12.23/-12.21	-9.05/-5.51	-3.13/-1.66	-0.55/0.44	1/1.22	1.07/1.11	1.35/1.19	0.6/0.26	0.28/0.13	-0.46/-1.08	-2.85/-5.23	
Θ(22.5°)	-9.08/-11.16	-9.83/-7.15	-5.26/-4.54	-6.18/-7.2	-6.48/-4.72	-3.05/-1.52	-0.85/-1.07	-1.72/-2.2	-2/1.7	-1.48/-1.52	-2.12/-2.87	-4.01/-4.77	-5.18/-6.85	-9.68/-12.86	-11.67/-8.08	-5.78/-4	-2.26/-1.32	-0.45/0.06	-0.02/-0.39	-0.23/0.24	-0.3/-0.85	-0.31/-0.55	-1.1/-1.4	-2.65/-5.81	
Θ(30°)	-7.25/-10.25	-10.71/-9.29	-5.33/-3.25	-3.83/-4.96	-6.85/-5.96	-4.6/-3.72	-3.15/-3.13	-3.15/-3.63	-3.56/-2.67	-2.77/-3.5	-2.86/-3.27	-4.49/-4.32	-4.06/-5.91	-9.63/-14.35	-17.55/-15.01	-14.38/-12.07	-8.41/-6.26	-4.36/-2.99	-1.85/-1.15	-1.37/-1.55	-0.09/1.25	0.04/1.29	-1.75/-2.3	-3.2/-4.42	
Θ(37.5°)	-7.96/-10.66	-12.06/-9.04	-5.96/-5.13	-5.53/-4.73	-5.4/-5.89	-5.14/-3.4	-3.19/-2.92	-2.84/-2.84	-2.84/-3.81	-4.23/-3.38	-2.85/-2.52	-2.47/-3.66	-5.71/-9.74	-18.51/-14.38	-12.02/-12.44	-15.86/-18.02	-14.61/-12.81	-8.72/-5.79	-4.21/-3.1	-2.08/-0.61	-0.09/0.99	-0.95/-3.51	-6.73/-4.76	-3.84/-4.92	
Θ(45°)	-12.09/-13.67	-14.61/-16.82	-9.4/-8.42	-7.15/-5.27	-4.53/-5.25	-4.27/-2.98	-1.94/-2.18	-3.35/-3.6	-3.74/-3.98	-2.73/-2	-1.94/-1.8	-2.88/-5.76	-10.65/-11.89	-18.45/-12.57	-10.01/-9.02	-11.21/-14.79	-18.15/-17.5	-9.5/-5.22	-2.65/-2.3	-3.62/-4.9	-5.3/-2.51	-2.08/-2.24	-1.83/-5.45	-4.87/-6.06	
Θ(52.5°)	-15.92/-9.98	-11.28/-15.22	-7.65/-7.59	-9.79/-10.16	-4.08/-2.33	-3.13/-2.62	-1.97/-2.84	-3.47/-5.64	-8.14/-5.48	-2.03/-1.74	-2.78/-4.19	-6.86/-8.21	-8.81/-11.78	-18.92/-12.35	-10.02/-13.58	-12.77/-12.73	-11.36/-9.13	-8.38/-7.25	-3.31/-1.92	-3.2/-1.94	-2.04/-3.9	-4.48/-1.32	-1.21/-5.02	-7.49/-8.42	
Θ(60°)	-19.01/-10.7	-10.62/-18.43	-8.65/-9.41	-8.86/-11.51	-4.76/-3.06	-3.76/-3.5	-1.57/-2.21	-4.07/-6.04	-6.98/-5.6	-3.45/-3.49	-6.38/-9.85	-10.2/-9.8	-8.2/-6.72	-9.47/-8.93	-6.77/-9.07	-11.07/-13.42	-18.23/-15.18	-11.01/-8.21	-5.57/-6.6	-8.39/-3.84	-1.46/-4.22	-3.56/-3.03	-1.75/-6.14	-10.03/-10	
Θ(67.5°)	-14.52/-10.87	-9.49/-18.36	-13.71/-9.23	-6.84/-12.08	-6.2/-3.53	-3.52/-3.04	-1.1/-3.18	-5.31/-6.73	-8.24/-7.82	-5.24/-6.5	-9/-9.08	-8.95/-7.42	-5.72/-4.04	-4.58/-8.66	-10.48/-6.42	-8.86/-12.46	-10.31/-12.62	-10.47/-6.92	-6.56/-10.47	-8.52/-4.01	-4.31/-3.93	-6.23/-5.32	-5.05/-8.33	-1.63/-8.66	
Θ(75°)	-10.8/-5.72	-5.82/-13.08	-15.73/-11.4	-6.81/-10.52	-6.65/-3.62	-2.91/-3.05	-1.93/-6.65	-8.04/-8.66	-8.01/-7.29	-7.57/-11.17	-13.61/-9.28	-7.84/-5.35	-5.84/-6.62	-5.37/-2.62	-5.04/-6.46	-6.68/-11.88	-10.2/-17.66	-11.16/-4.16	-2.9/-6.51	-5.55/-6.8	-11.42/-5.25	-6.43/-11.81	-8.76/-10.21	-9.18/-5.27	
Θ(82.5°)	-7.23/-2.72	-3.86/-8.53	-14.57/-11.89	-8.81/-8.34	-9.44/-2.94	-2.66/-4.35	-2.8/-5.67	-7.16/-8.02	-7.57/-5.62	-9.24/-12.87	-9.52/-7.23	-6.11/-7.04	-6.08/-4.47	-5.88/-4.6	-4.49/-3.56	-4/7.82	-5.84/-7.81	-10.14/-5.45	-4.39/-4.6	-3.89/-7.18	-18.52/-7.29	-7.53/-14.53	-10.1/-7	-6.43/-7.1	
Θ(90°)	-5.68/-2.92	-4.47/-7.33	-9.65/-12.23	-5.7/-7.02	-9.53/-4.69	-4.24/-6.01	-4.1/-9.09	-9.39/-10.29	-10.48/-6.77	-12.94/-15.8	-12.59/-8.11	-5.91/-6.49	-6.75/-7.45	-3.72/-2.07	-3.7/-8.14	-3.18/-3.01	-4.91/-4.27	-4.03/-3.88	-3.29/-2.01	-7.04/-11.84	-6.64/-17.69	-7.87/-5.14	-6.64/-5.23	-6.64/-5.23	
Θ(97.5°)	-6.54/-3.65	-4.65/-5.88	-11.07/-8.97	-6.88/-6.03	-8.23/-5.01	-6.62/-8.87	-6.08/-13.44	-10.23/-10.64	-11.1/-8.41	-11.24/-7.59	-7.27/-8.43	-6.74/-6.13	-3.98/-3.04	-3.42/-1.47	-2.55/-2.82	-3.76/-6.68	-2.47/-0.05	-6.93/-11.41	-8.65/-8.86	-4.85/-17.5	-11.93/-17.64	-11.63/-10.48	-6.19/-5.41		
Θ(105°)	-9.41/-5.43	-7.71/-8.06	-9.98/-8.89	-5.43/-5.53	-6.38/-8.17	-7.96/-10.75	-7.35/-15.93	-14/-17.96	-13.13/-10.52	-18.53/-14.51	-11.41/-7.49	-6.66/-7.9	-7.11/-6.66	-2.91/-2.1	-3.15/0.54	-2.67/-4.76	-2.68/-2.19	-3.27/-1.97	-0.93/-2.78	-14.69/-13.19	-6.56/-18.95	-18.69/-19.11	-14.59/-7.55	-11.71/-5.83	
Θ(112.5°)	-11.6/-12.77	-9.92/-7.97	-9.68/-11.92	-6.8/-5.36	-6.22/-9.68	-11.09/-15.15	-10.26/-18.79	-18.86/-18.74	-13.37/-18.44	-14.4/-13.43	-13.76/-9.26	-10.39/-7.19	-5.93/-5.57	-3.91/-1.61	-2.84/-0.79	-4.02/-2.15	-5.41/-6.46	-2.96/-2.34	-13.46/-12.77	-10.59/-11.74	-13.52/-14.75	-12.21/-19.02	-17.89/-9.63	-18.22/-9.58	
Θ(120°)	-18.39/-13.32	-9.19/-9.59	-11.50/-11.4	-7.62/-6.81	-5.69/-7.13	-7.94/-14.56	-15.84/-9.84	-16.02/-18.41	-18.08/-17.3	-11.77/-19.01	-13.98/-10.24	-13.98/-10.24	-13.98/-10.24	-13.98/-10.24	-13.98/-10.24	-13.98/-10.24	-13.98/-10.24	-13.98/-10.24	-13.98/-10.24	-13.98/-10.24	-13.98/-10.24	-13.98/-10.24	-13.98/-10.24	-13.98/-10.24	-13.98/-10.24
Θ(127.5°)	-15.84/-14.06	-7.78/-5.65	-6.04/-11.63	-17.3/-12.8	-6.35/-5.88	-6.36/-12.74	-13.62/-9.48	-11.85/-14.67	-12.09/-18.63	-15.57/-13.86	-13.71/-10.08	-15.56/-10.51	-6.61/-6.98	-7.88/-3.73	0.53/-0.78	-2.12/-5.48	-4.33/-4.38	-4.44/-3.5	-14.83/-18.39	-12.86/-18.6	-11.33/-16.97	-13.48/-16.36	-16/-10.9	-7.98/-13.16	
Θ(135°)	-9.71/-3.98	-4.33/-7.01	-8.71/-11.37	-16.08/-13.21	-9.43/-7.99	-9.17/-9.57	-8.45/-6.88	-6.89/-8.15	-10.12/-17.79	-14.95/-10.21	-13.72/-17.59	-13.57/-13.33	-15.55/-6.04	-2.78/-2.15	-2.38/-2.3	-3.45/-4.84	-10.08/-14.57	-10.09/-2.6	-2.45/-3.87	-8.95/-15.51	-15.1/-15.41	-15.06/-10.1	-9.05/-13.68	-14.4/-16.24	
Θ(142.5°)	-11.3/-9.36	-6.16/-5.04	-3.72/-3.97	-7.1/-14.7	-9.48/-9.62	-12.24/-10.97	-5.82/-4.71	-6.12/-9.11	-11.42/-12.89	-10.78/-12.38	-12.63/-11.65	-7.45/-7.99	-12.18/-11.74	-2.91/-1.01	-0.66/-4.83	-0.73/-1.92	-5.42/-2.15	0.03/1.11	-4.26/-10.28	-12.71/-10.21	-9.64/9.61	-10.91/-9.1	-9.29/-17.35	-10.98/-8.22	
Θ(150°)	-8.13/-5.73	-5.59/-8.69	-11.22/-6.27	-4.12/-4.77	-6.55/-9.28	-12.99/-11.15	-7.6/-6.3	-7.43/-10.11	-14.94/-17.12	-12.35/-8.44	-7.72/-10.35	-14.08/-11.65	-5.64/-4.92	-4.97/-6.33	-5.76/-4.1	-3.44/-2.04	-0.29/-0.24	-0.8/-4.85	-15.89/-17.92	-18.18/-18.27	-18.11/-18.28	-16.54/-16.89	-15.89/-17.43	-16.61/-9.59	
Θ(157.5°)	-9.6/-6.24	-5.52/-6.55	-8.72/-7.72	-4.86/-3	-1.92/-2.33	-4.6/-5.1	-7.58/-7.46	-9.51/-13.07	-16.71/-17.45	-16.63/-17.84	-17.16/-10.99	-8.99/-8.75	-10.9/-9.16	-6.23/-6.25	-6.2/-4.37	-1.5/-3.03	-0.08/-0.85	-3.27/-8.43	-18.12/-17.45	-19.07/-15.39	-11.68/-9.97	-8.83/-12.01	-14.42/-18.19	-19.13/-15.88	
Θ(165°)	-10.33/-8.67	-7.89/-7.14	-7.44/-8.22	-7.94/-8.87	-9.72/-10.31	-11.06/-10.76	-10.61/-10.67	-10.32/-10.02	-8.83/-9.93	-9.79/-8.58	-7.86/-7.73	-8.47/-10.57	-16.32/-18.44	-11.36/-6.99	-4.82/-4.01	-3.52/-3.42	-2.92/-3.4	-5.85/-9.96	-18.34/-18.06	-18.63/-18.3	-18.61/-18.1	-13.88/-17.12	-18.35/-16.18	-13/-12.62	
Θ(172.5°)	-8.8/-8.78	-8.02/-6.63	-6.4/-6.12	-5.82/-6.15	-6.37/-6.16	-5.9/-5.7	-5.65/-5.89	-6.34/-7.41	-9.39/-12.88	-16.21/-17.69	-15.5/-12.41	-11.69/-10.9	-11.22/-12.31	-14.63/-19.09	-18.62/-11.81	-7.82/-6.01	-5.57/-7.69	-13.9/-18.95	-18.09/-16.84	-18.84/-17.49	-18.85/-14.17	-11.34/-11.35	-10.82/-10.26	-11.47/-11.54	
Θ(180°)	-14.87/-16.25	-18.35/-15.63	-15.53/-14.82	-13.36/-12.99	-12.65/-12.1	-11.22/-11.72	-13.86/-15.74	-16.47/-18.8	-18.93/-17.77	-17.98/-15.67	-13.79/-11.56	-10.61/-10.28	-10.04/-10.09	-10.38/-9.91	-9.56/-9	-8.54/-8.31	-8.83/-10.79	-12.03/-12.03	-12.09/-13.34	-18.1/-18.43	-17.23/-18.74	-13.74/-14.13	-16.45/-13.41	-14.77/-19.29	
Freq(Hz)	5.785GPol	Theta/Ant. 4																							
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°)	1.54/1.97	2.04/1.75	1.51/1.34	0.94/0.03	-1.26/-2.57	-3.85/-6.02	-8.49/-9.51	-11.02/-9.1	-6.36/-4.53	-2.32/-1.17	-0.52/0.6	1.32/1.64	2.01/1.91	1.85/1.61	0.92/0.24	-0.39/-1.46	-6.04/-8.42	-12.54/-16.56	-13.34/-9.31	-7.3/-5.95	-3.46/-4.5	-0.62/0.15	1.07/1.43		
Θ(7.5°)	1.21/1.8	1.16/0.61	-0.05/-0.19	-0.99/-2.43	-3.59/-4.95	-6.39/-8.73	-13.55/-15.19	-12.77/-10.95	-7.15/-5.23	-3.51/-1.95	-1.08/0.37	0.70/0.99	1.16/1.69	2.03/1.93	1.58/1.02	-0.57/-0.17	-1.29/-2.7	-4.24/-5.97	-7.79/-9.18	-9.08/-8.25	-6.14/-4.43	-2.8/-1	-0.03/0.33	1.09/1.55	
Θ(15°)	0.83/0.77	0.81/0	-1.45/-2.64	-4.23/-5.42	-5.19/-5.32	-5.63/-6.71	-8.59/-10.24	-12.89/-10.82	-8.65/-6.92	-4.24/-3.21	-2.95/-1.91	-0.71/-0.02	0.17/0.44	0.76/0.73	0.49/0.01	-0.61/-1.51	-2.73/-3.81	-4.97/-6.07	-7.61/-9.4	-11.09/-12.19	-12.06/-11.32	-9.97/-6.64	-4.24/-2.53	-0.50/0.76	
Θ(22.5°)	2.02/2.13	2.42/1.79	-0.07/-1.2	-3.12/-4.85	-5.24/-5.3	-5.58/-6.74	-7.45/-9.07	-9.97/-10.26	-8.31/-6.11	-4.35/-2.37	-1.42/-0.64	0.07/-													



## Radiated Composite Gain Data of 6GHz

## Appendix B

Freq(Hz)	6.175G	6.475G	6.695G	6.995G
Ant. 1 Max Gain (dBi)	1.93	1.63	2.07	1.37
Ant. 2 Max Gain (dBi)	3.15	2.11	3.23	1.68
Ant. 3 Max Gain (dBi)	3.26	2.19	3.36	2.12
Ant. 4 Max Gain (dBi)	1.93	1.52	1.12	1.21
Ant. 1 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$	Theta/82.5/255	Theta/82.5/277.5	Theta/82.5/270	Theta/82.5/270
Ant. 2 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$	Theta/45/202.5	Theta/45/210	Phi/90/270	Theta/82.5/262.5
Ant. 3 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$	Theta/45/67.5	Phi/22.5/315	Theta/75/97.5	Theta/67.5/90
Ant. 4 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$	Theta/75/90	Theta/75/82.5	Theta/37.5/67.5	Theta/60/82.5
Max Gain (dBi)	3.26	2.19	3.36	2.12
DG [1SS] (dBi)	5.44	5.27	5.29	5.33
DG [2SS] (dBi)	3.26	2.27	3.36	2.33
DG [4SS] (dBi)	3.26	2.19	3.36	2.12



# Radiated Composite Gain Data of 6GHz

# Appendix B

## DG 1SS Result

Freq(Hz)	6.175GPol.	Phi-	Phi+	Phi(30°)Phi(37.5°)	Phi(45°)Phi(52.5°)	Phi(60°)Phi(67.5°)	Phi(75°)Phi(82.5°)	Phi(90°)Phi(97.5°)	Phi(105°)Phi(112.5°)	Phi(120°)Phi(127.5°)	Phi(135°)Phi(142.5°)	Phi(150°)Phi(157.5°)	Phi(165°)Phi(172.5°)	Phi(180°)Phi(187.5°)	Phi(195°)Phi(202.5°)	Phi(210°)Phi(217.5°)	Phi(225°)Phi(232.5°)	Phi(240°)Phi(247.5°)	Phi(255°)Phi(262.5°)	Phi(270°)Phi(277.5°)	Phi(285°)Phi(292.5°)	Phi(300°)Phi(307.5°)	Phi(315°)Phi(322.5°)	Phi(330°)Phi(337.5°)	Phi(345°)Phi(352.5°)
DG(dB)	Phi(0°)Phi(7.5°)	Phi(15°)Phi(22.5°)	Phi(30°)Phi(37.5°)	Phi(45°)Phi(52.5°)	Phi(60°)Phi(67.5°)	Phi(75°)Phi(82.5°)	Phi(90°)Phi(97.5°)	Phi(105°)Phi(112.5°)	Phi(120°)Phi(127.5°)	Phi(135°)Phi(142.5°)	Phi(150°)Phi(157.5°)	Phi(165°)Phi(172.5°)	Phi(180°)Phi(187.5°)	Phi(195°)Phi(202.5°)	Phi(210°)Phi(217.5°)	Phi(225°)Phi(232.5°)	Phi(240°)Phi(247.5°)	Phi(255°)Phi(262.5°)	Phi(270°)Phi(277.5°)	Phi(285°)Phi(292.5°)	Phi(300°)Phi(307.5°)	Phi(315°)Phi(322.5°)	Phi(330°)Phi(337.5°)	Phi(345°)Phi(352.5°)	
Theta(0°)	-4.21-4.2	-6.28-6.65	-9.53-9.63	-13.01-13.1	-16.81-17.1	-21.11-21.5	-25.91-26.5	-31.11-31.8	-36.71-37.6	-42.71-43.8	-49.11-50.4	-55.91-57.4	-63.11-64.8	-70.71-72.6	-78.71-80.8	-87.11-89.4	-95.91-98.4	-105.1-107.7	-114.7-117.4	-124.7-127.4	-135.1-137.8	-145.9-148.6	-157.1-159.8	-168.7-171.4	-180.7-183.4
Theta(7.5°)	-4.93-4.59	-6.62-6.29	-9.57-9.14	-13.14-12.7	-17.04-16.6	-21.44-21.1	-26.34-26.1	-31.74-31.6	-37.64-37.7	-43.94-44.2	-50.64-51.1	-57.74-58.4	-65.24-66.1	-73.14-74.2	-81.44-82.7	-90.14-91.6	-99.24-100.9	-108.7-110.5	-118.6-120.6	-128.9-131.1	-139.6-141.9	-150.7-153.1	-162.2-164.7	-174.1-176.6	-186.4-188.9
Theta(15°)	-5.73-5.38	-7.52-7.19	-10.57-10.1	-14.67-14.2	-19.82-19.4	-25.92-25.6	-32.92-32.7	-40.82-40.8	-49.52-49.7	-59.02-59.3	-69.32-69.7	-80.42-80.9	-92.32-92.9	-105.02-105.7	-118.52-119.3	-132.82-133.7	-147.92-148.9	-163.82-164.9	-180.52-181.7	-198.02-199.3	-216.32-217.7	-235.42-236.9	-255.32-256.9	-276.02-277.6	-297.52-299.1
Theta(30°)	-7.19-6.84	-9.18-8.85	-12.43-11.9	-16.83-16.4	-22.37-22.0	-29.07-28.8	-36.92-36.8	-45.92-45.9	-56.07-56.2	-67.37-67.6	-79.82-80.2	-93.42-93.9	-108.12-108.7	-123.92-124.6	-140.82-141.6	-158.82-159.7	-177.92-178.9	-198.12-199.2	-219.52-220.6	-242.12-243.3	-265.92-267.2	-290.92-292.2	-317.12-318.4	-344.52-345.8	-373.12-374.4
Theta(45°)	-8.79-8.44	-10.88-10.5	-14.33-13.8	-19.03-18.6	-24.87-24.5	-31.97-31.7	-40.32-40.2	-49.92-49.9	-60.72-60.7	-72.62-72.6	-85.62-85.6	-99.62-99.6	-114.62-114.6	-130.62-130.6	-147.62-147.6	-165.62-165.6	-184.62-184.6	-204.62-204.6	-225.62-225.6	-247.62-247.6	-270.62-270.6	-295.62-295.6	-322.62-322.6	-350.62-350.6	-379.62-379.6
Theta(60°)	-10.59-10.2	-12.78-12.4	-16.43-15.9	-21.37-21.0	-27.51-27.2	-34.85-34.6	-43.39-43.3	-53.13-53.1	-64.07-64.0	-76.21-76.2	-89.55-89.5	-104.09-104.0	-119.83-119.8	-136.77-136.7	-154.91-154.9	-174.25-174.2	-194.89-194.8	-216.73-216.7	-239.77-239.7	-264.01-264.0	-289.55-289.5	-316.29-316.2	-344.23-344.2	-373.47-373.4	-403.91-403.9
Theta(75°)	-12.59-12.2	-14.88-14.5	-18.73-18.3	-24.83-24.5	-32.17-31.8	-40.75-40.5	-50.57-50.5	-61.63-61.6	-73.93-73.9	-87.47-87.4	-102.25-102.2	-118.27-118.2	-135.53-135.5	-154.05-154.0	-173.83-173.8	-194.95-194.9	-217.41-217.4	-241.21-241.2	-266.35-266.3	-292.85-292.8	-320.71-320.7	-350.03-350.0	-380.81-380.8	-413.05-413.0	-446.75-446.7
Theta(90°)	-14.79-14.4	-17.18-16.8	-21.23-20.8	-26.93-26.6	-34.27-34.0	-43.25-43.2	-53.87-53.8	-66.13-66.1	-79.93-79.9	-95.27-95.2	-112.15-112.1	-130.57-130.5	-150.53-150.5	-172.05-172.0	-195.17-195.1	-219.89-219.8	-246.21-246.2	-274.13-274.1	-303.65-303.6	-334.77-334.7	-367.49-367.4	-401.81-401.8	-437.73-437.7	-475.25-475.2	-514.37-514.3
Theta(105°)	-17.19-16.8	-19.68-19.3	-24.03-23.6	-30.33-30.0	-38.67-38.4	-49.15-49.1	-60.77-60.7	-73.53-73.5	-88.43-88.4	-105.27-105.2	-124.15-124.1	-145.07-145.0	-167.93-167.9	-192.73-192.7	-219.47-219.4	-248.15-248.1	-278.77-278.7	-311.33-311.3	-345.85-345.8	-382.33-382.3	-420.77-420.7	-461.15-461.1	-503.47-503.4	-547.73-547.7	-593.93-593.9
Theta(120°)	-19.79-19.4	-22.38-22.0	-26.93-26.5	-33.43-33.1	-41.93-41.7	-52.53-52.5	-65.23-65.2	-79.93-79.9	-96.63-96.6	-115.33-115.3	-136.13-136.1	-159.03-159.0	-184.03-184.0	-211.13-211.1	-240.33-240.3	-271.63-271.6	-305.13-305.1	-350.73-350.7	-408.53-408.5	-478.63-478.6	-560.93-560.9	-655.33-655.3	-762.73-762.7	-883.13-883.1	-1017.53-1017.5
Theta(135°)	-22.59-22.2	-25.18-24.8	-30.83-30.4	-38.43-38.1	-48.03-47.8	-59.73-59.7	-73.53-73.5	-89.43-89.4	-107.43-107.4	-127.53-127.5	-149.73-149.7	-174.03-174.0	-200.43-200.4	-228.93-228.9	-259.53-259.5	-292.23-292.2	-327.03-327.0	-373.93-373.9	-433.03-433.0	-504.33-504.3	-587.93-587.9	-684.73-684.7	-794.73-794.7	-918.13-918.1	-1055.13-1055.1
Theta(150°)	-25.59-25.2	-28.18-27.8	-34.03-33.6	-41.63-41.3	-51.23-51.0	-62.93-62.9	-76.73-76.7	-92.63-92.6	-110.63-110.6	-130.73-130.7	-152.93-152.9	-177.23-177.2	-203.63-203.6	-232.13-232.1	-262.73-262.7	-295.43-295.4	-340.23-340.2	-397.13-397.1	-466.23-466.2	-547.53-547.5	-641.13-641.1	-747.93-747.9	-867.93-867.9	-1002.33-1002.3	-1155.33-1155.3
Theta(165°)	-28.79-28.4	-31.38-31.0	-37.33-36.9	-45.93-45.6	-56.53-56.3	-69.23-69.2	-84.03-84.0	-100.93-100.9	-119.93-119.9	-141.13-141.1	-164.53-164.5	-190.13-190.1	-217.83-217.8	-247.73-247.7	-279.83-279.8	-324.13-324.1	-381.63-381.6	-452.33-452.3	-536.23-536.2	-633.33-633.3	-744.73-744.7	-871.53-871.5	-1014.93-1014.9	-1175.93-1175.9	-1355.53-1355.5
Theta(180°)	-32.19-31.8	-34.78-34.4	-40.83-40.4	-49.43-49.1	-60.03-59.8	-72.73-72.7	-87.53-87.5	-104.43-104.4	-123.43-123.4	-144.53-144.5	-167.73-167.7	-193.13-193.1	-220.73-220.7	-250.53-250.5	-282.63-282.6	-327.03-327.0	-384.73-384.7	-455.63-455.6	-540.73-540.7	-640.13-640.1	-753.93-753.9	-882.33-882.3	-1025.53-1025.5	-1183.53-1183.5	-1357.13-1357.1
Theta(195°)	-35.79-35.4	-38.38-38.0	-44.53-44.1	-53.13-52.8	-63.73-63.5	-76.43-76.4	-91.23-91.2	-108.13-108.1	-127.13-127.1	-148.23-148.2	-171.43-171.4	-196.73-196.7	-224.33-224.3	-254.13-254.1	-286.23-286.2	-330.63-330.6	-387.33-387.3	-457.23-457.2	-540.33-540.3	-637.53-637.5	-749.93-749.9	-877.53-877.5	-1020.53-1020.5	-1179.53-1179.5	-1345.13-1345.1
Theta(210°)	-39.59-39.2	-42.18-41.8	-48.43-48.0	-57.03-56.7	-67.63-67.4	-80.33-80.3	-95.13-95.1	-112.03-112.0	-131.03-131.0	-152.13-152.1	-175.33-175.3	-200.63-200.6	-228.13-228.1	-257.73-257.7	-289.43-289.4	-343.83-343.8	-410.53-410.5	-490.63-490.6	-584.13-584.1	-691.93-691.9	-814.13-814.1	-951.53-951.5	-1103.53-1103.5	-1271.53-1271.5	-1446.13-1446.1
Theta(225°)	-43.59-43.2	-46.18-45.8	-52.53-52.1	-61.13-60.8	-71.73-71.5	-84.43-84.4	-99.23-99.2	-116.13-116.1	-135.13-135.1	-156.23-156.2	-179.43-179.4	-204.73-204.7	-232.23-232.2	-261.83-261.8	-293.53-293.5	-347.93-347.9	-424.63-424.6	-514.73-514.7	-618.23-618.2	-735.13-735.1	-866.33-866.3	-1012.73-1012.7	-1175.33-1175.3	-1354.13-1354.1	-1548.13-1548.1
Theta(240°)	-47.79-47.4	-50.38-50.0	-56.83-56.4	-65.43-65.1	-76.03-75.8	-88.73-88.7	-103.53-103.5	-120.43-120.4	-139.43-139.4	-160.53-160.5	-183.73-183.7	-209.03-209.0	-236.53-236.5	-266.23-266.2	-308.13-308.1	-372.43-372.4	-450.13-450.1	-542.63-542.6	-650.73-650.7	-775.53-775.5	-917.13-917.1	-1075.53-1075.5	-1250.73-1250.7	-1443.73-1443.7	-1654.73-1654.7
Theta(255°)	-52.19-51.8	-54.78-54.4	-61.23-60.8	-70.83-70.5	-82.43-82.2	-95.13-95.1	-109.93-109.9	-126.83-126.8	-145.83-145.8	-166.93-166.9	-190.13-190.1	-215.43-215.4	-242.93-242.9	-272.63-272.6	-314.53-314.5	-368.83-368.8	-436.73-436.7	-519.23-519.2	-617.33-617.3	-732.13-732.1	-864.73-864.7	-1015.73-1015.7	-1185.73-1185.7	-1374.73-1374.7	-1582.73-1582.7
Theta(270°)	-56.79-56.4	-59.38-59.0	-65.83-65.4	-75.43-75.1	-87.03-86.8	-100.73-100.7	-116.53-116.5	-134.43-134.4	-154.43-154.4	-176.53-176.5	-200.73-200.7	-227.03-227.0	-255.53-255.5	-286.13-286.1	-328.83-328.8	-383.73-383.7	-451.83-451.8	-534.13-534.1	-631.63-631.6	-745.13-745.1	-875.53-875.5	-1022.93-1022.9	-1187.33-1187.3	-1369.73-1369.7	-1570.13-1570.1
Theta(285°)	-61.59-61.2	-64.18-63.8	-70.63-70.2	-80.23-79.9	-91.83-91.6	-105.53-105.5	-121.33-121.3	-139.23-139.2	-159.23-159.2	-181.33-181.3	-205.53-205.5	-231.83-231.8	-259.33-259.3	-289.03-289.0	-340.93-340.9	-405.03-405.0	-482.33-482.3	-573.83-573.8	-680.53-680.5	-803.53-803.5	-943.93-943.9	-1101.93-1101.9	-1277.33-1277.3	-1470.13-1470.1	-1680.13-1680.1
Theta(300°)	-66.59-66.2	-69.18-68.8	-75.63-75.2	-85.23-84.9	-96.83-96.6	-110.53-110.5	-126.33-126.3	-145.23-145.2	-166.23-166.2	-189.33-189.3	-214.53-214.5	-241.83-241.8	-270.33-270.3	-301.03-301.0	-343.93-343.9	-399.03-399.0	-466.33-466.3	-546.83-546.8	-640.53-640.5	-748.53-748.5	-871.53-871.5	-1009.53-1009.5	-1162.53-1162.5	-1330.53-1330.5	-1512.53-1512.5
Theta(315°)	-71.79-71.4	-74.38-74.0	-80.83-80.4	-90.43-90.1	-102.03-101.8	-115.73-115.7	-131.53-131.5	-149.43-149.4	-169.43-169.4	-191.53-191.5	-215.73-215.7	-242.03-242.0	-269.53-269.5	-308.23-308.2	-358.13-358.1	-419.23-419.2	-491.53-491.5	-576.03-576.0	-673.73-673.7	-785.73-785.7	-913.13-913.1	-1056.13-1056.1	-1224.13-1224.1	-1407.13-1407.1	-1601.13-1601.1
Theta(330°)	-77.19-76.8	-79.78-79.4	-86.23-85.8	-95.83-95.5	-107.43-107.2	-121.13-121.1	-136.93-136.9	-154.83-154.8	-174.83-174.8	-196.93-196.9	-221.13-221.1	-247.43-247.4	-274.93-274.9	-313.63-313.6	-363.53-363.5	-424.63-424.6	-497.93-497.9	-584.43-584.4	-684.13-684.1	-797.13-797.1	-924.53-924.5	-1067.53-1067.5	-1235.53-1235.5	-1417.53-1417.5	-1612.53-1612.5
Theta(345°)	-82.79-82.4	-85.38-85.0	-91.83-91.4	-101.43-101.1	-113.03-112.8	-126.73-126.7	-142.53-142.5	-160.43-160.4	-180.43-180.4	-202.53-202.5	-226.73-226.7	-253.03-253.0	-280.53-280.5	-319.23-319.2	-369.13-369.1										





# Radiated Composite Gain Data of 6GHz

# Appendix B

## Gain Result

Freq(Hz)	6.175GPol.	PhiAnt.1	PhiAnt.2	PhiAnt.3	PhiAnt.4	PhiAnt.5	PhiAnt.6	PhiAnt.7	PhiAnt.8	PhiAnt.9	PhiAnt.10	PhiAnt.11	PhiAnt.12	PhiAnt.13	PhiAnt.14	PhiAnt.15	PhiAnt.16	PhiAnt.17	PhiAnt.18	PhiAnt.19	PhiAnt.20	PhiAnt.21	PhiAnt.22	PhiAnt.23	PhiAnt.24	PhiAnt.25	PhiAnt.26	PhiAnt.27	PhiAnt.28	PhiAnt.29	PhiAnt.30	PhiAnt.31	PhiAnt.32	PhiAnt.33	PhiAnt.34	PhiAnt.35
Gain	Phi(0°)Phi(7.5°)	Phi(15°)Phi(22.5°)	Phi(30°)Phi(37.5°)	Phi(45°)Phi(52.5°)	Phi(60°)Phi(67.5°)	Phi(75°)Phi(82.5°)	Phi(90°)Phi(97.5°)	Phi(105°)Phi(112.5°)	Phi(120°)Phi(127.5°)	Phi(135°)Phi(142.5°)	Phi(150°)Phi(157.5°)	Phi(165°)Phi(172.5°)	Phi(180°)Phi(187.5°)	Phi(195°)Phi(202.5°)	Phi(210°)Phi(217.5°)	Phi(225°)Phi(232.5°)	Phi(240°)Phi(247.5°)	Phi(255°)Phi(262.5°)	Phi(270°)Phi(277.5°)	Phi(285°)Phi(292.5°)	Phi(300°)Phi(307.5°)	Phi(315°)Phi(322.5°)	Phi(330°)Phi(337.5°)	Phi(345°)Phi(352.5°)												
Theta(0°)	-8.34-7.37	-9.01-13.07	-13.01-13.44	-15.62-18.28	-18.37-19.45	-18.75-18.68	-13.98-12.36	-11.25-9.52	-8.6-8.46	-6.33-7.96	-7.55-7.73	-7.84-9.11	-9.59-10.8	-9.07-9.7	-10.31-10.32	-10.83-10.67	-11.55-14.27	-12.81-14.27	-13.71-13.51	-11.92-11.04	-10.33-9.49	-8.54-8.46	-7.51-6.62	-8.21-8.28												
Theta(7.5°)	-9.91-10.26	-9.63-9.79	-10.95-9.95	-9.2-10.18	-11.52-11.62	-11.13-10.74	-10.36-10.16	-10.29-9.48	-8.53-8.49	-8.46-8.09	-7.09-6.71	-7.31-8.96	-9.42-8.96	-9.96-12.61	-15.27-17.29	-19.07-18.03	-18.22-18.1	-16.21-12.77	-11.37-10.36	-9.48-8.4	-8.16-8.14	-7.8-8.31	-8.86-8.46	-8.1-8.57												
Theta(15°)	-9.3-10.44	-17.75-17.01	-12.87-10.28	-8.88-7.73	-7.97-9.16	-11.27-13.09	-11.75-8.84	-6.48-4.83	-4.02-4.05	-4.68-5.66	-6.18-3.77	-9.19-12.17	-15.4-18.56	-18.13-18.63	-18.37-18.33	-18.11-16.86	-15.99-15.02	-15.58-15.76	-14.46-11.8	-9.4-8.27	-7.2-6.4	-5.96-6.24	-7.8-9.22													
Theta(22.5°)	-14.19-13.66	-14.39-16.73	-13.71-11.14	-10.02-7.61	-6.77-7.93	-11.73-16.74	-9.59-5.59	-4.85-5.31	-6.44-7.99	-8.18-6.93	-6.31-7.88	-10.85-12.93	-13.48-13.24	-14.14-17.06	-18.21-18.56	-17.97-17.67	-12.59-9.89	-8.64-8.97	-10.81-10.33	-6.99-7.29	-5.99-5.92	-6.6-7.18	-7.15-6.97	-8.16-12.01												
Theta(30°)	-15.13-18.26	-17.93-17.87	-17.74-13.6	-11.68-8.65	-7.13-7.76	-9.4-8.76	-6.09-4.93	-5.17-5.62	-5.51-6.31	-6.86-5.93	-5.87-7.02	-8.86-10.08	-11.8-14.13	-13.8-14.62	-16.91-15.79	-13.01-11.25	-9.43-7.48	-6.29-6.8	-7.54-6.81	-4.79-3.16	-2.65-2.96	-4.18-6.09	-8.15-8.3	-8.34-10.37												
Theta(37.5°)	-9.5-14.44	-17.75-14.06	-15.86-16.49	-10.97-8.17	-6.88-6.48	-6.4-6.4	-7.26-8.38	-8.05-6.91	-5.68-5.62	-6.1-7.08	-6.96-8.32	-10.63-8.35	-7.58-8.98	-13.32-18.02	-18.92-13.63	-8.2-7.06	-7.05-6.32	-5.49-5.61	-5.33-4.66	-3.46-2.36	-2.87-4.75	-6.8-7.11	-6.83-6.68	-7.48-7.46												
Theta(45°)	-11.16-12.85	-15.57-13.29	-13.08-15.79	-9.94-7.52	-7.08-6.7	-6.94-7.3	-8.45-8.16	-6.97-7.19	-7.35-7.22	-5.48-6.65	-5.61-8.07	-12.29-10.24	-7.96-6.97	-8.81-18.02	-16.55-15.29	-5.51-3.62	-4.92-6.33	-5.24-5.35	-5.13-3.39	-2.49-1.66	-1.96-2.75	-3.08-4.01	-6.57-7.57	-7.26-8.38												
Theta(52.5°)	-11.74-13.03	-14.8-15.55	-10.3-14.27	-11.63-7.79	-8.65-8.67	-7.83-7.46	-9.6-12.4	-8.93-8.89	-8.19-8	-6.76-4.23	-5.69-8.31	-11.09-10.86	-15.21-9.62	-11-18.04	-8.62-11.06	-6.96-6.14	-5.62-4.61	-5.88-8.8	-9.73-6.98	-5.54-3.77	-2.58-2.02	-2.99-5.34	-8.43-6.52	-6.25-8.23												
Theta(60°)	-12.48-13.81	-10.32-10.22	-10.02-14.4	-13.68-8.66	-10.79-10.59	-9.92-10.23	-12.76-11.77	-8.93-7.97	-6.97-9.93	-13.95-8.04	-10.11-13.25	-11.22-9.16	-14.71-17.42	-14.73-13.16	-8.32-11.75	-7.14-7.33	-7.41-6.38	-8.06-8.4	-3.46-2.75	-1.46-1.59	-1.23-2.82	-1.46-3.49	-1.0-9.39													
Theta(67.5°)	-15.02-18.55	-12.89-12.81	-10.01-14.84	-10.67-10.61	-15.4-14.54	-11.78-10.13	-11.55-19.26	-10.75-8.59	-9.67-14.56	-12.84-8.33	-11.12-14.72	-14.62-10.59	-15.58-18.36	-18.22-16.47	-5.15-8.29	-11.62-10.68	-17.55-12.89	-8.29-5.58	-5.45-3.52	-3.24-2.67	-2.12-4.08	-1.52-2.58	-4.95-4.04	-7.85-10.66												
Theta(75°)	-12.96-17.88	-15.34-12.93	-10.56-15.35	-11.23-12.41	-13.25-14.64	-15.69-11.66	-11.94-14.65	-14.71-12.16	-17.13-18.34	-11.21-9.45	-11.55-13.16	-15.09-10.84	-18.66-17.88	-18.13-18.39	-8.49-6.91	-11.32-14.39	-18.18-8.94	-6.98-4.29	-3.82-1.42	-2.35-2.89	-3.01-1.07	-1.69-5.36	-8.97-11.7	-9.06-10.42												
Theta(82.5°)	-14.4-18.86	-17.54-11.43	-13.27-17.26	-12.7-14.72	-17.14-13.29	-10.67-9.81	-11.83-12.53	-11.51-11.61	-17.6-17.36	-14.09-11.62	-14.33-15.32	-18.76-18.56	-17.95-18.26	-17.03-17.45	-7.72-9.41	-10.98-8.17	-4.96-1.77	<b>-0.99-0.1</b>	-0.51-2.63	-3.56-2.87	-1.81-4.84	-12.48-13.6	-10.9-39													
Theta(90°)	-14.24-18.94	-15.34-12.9	-11.85-12.43	-15.78-13.1	-16.91-13.74	-10.99-7.83	-11.58-12.14	-9.41-9.77	-14.94-14.16	-13.22-12.92	-18.26-18.83	-18.08-17.44	-14.19-17.62	-8.63-17.77	-9.68-8.64	-18.6-18.14	-8.62-4.03	-3.82-3.28	-2.18-0.98	-1.68-3.34	-3.76-4.21	-3.54-6.36	-16.12-12.81	-10.42-9.15												
Theta(97.5°)	-12.37-14.94	-18.47-13.65	-12.95-8.84	-18.33-17.45	-14.24-10.23	-15.25-8.62	-10.63-10.4	-10.18-12.32	-11.55-13.28	-11.77-12.48	-18.37-16.43	-18.23-17.16	-15.21-18.56	-15.71-16.77	-15.44-12.72	-19.32-17.87	-8.77-4.64	-5.44-4.73	-3.04-2.12	-3.52-5.06	-4.52-3.22	-3.79-7.56	-16.37-17.39	-10.76-9.05												
Theta(105°)	-15.54-18.56	-17.95-14.05	-9.07-8.31	-14.62-12.6	-14.7-15.5	-14.17-18.08	-12.97-10.79	-10.54-8.71	-12.57-15.75	-13.09-13.71	-16.17-18.17	-13.08-18.55	-14.25-18.27	-11.82-12.55	-10.65-17.94	-18.44-16.89	-6.18-6.08	-10.95-9.18	-4.14-3.92	-3.46-6.81	-5.73-8.33	-3.93-8.71	-16.11-18.76	-11.3-10.4												
Theta(112.5°)	-16.71-17.14	-18.33-14.29	-9.82-8.67	-10.41-16.63	-12.77-16.84	-18.4-17.02	-18.36-14.48	-12.09-10.12	-17.79-13.62	-13.43-18.57	-18.23-18.58	-14.34-18.75	-14.63-16.11	-11.46-15.58	-18.22-18.69	-6.44-7.93	-9.04-5.16	-3.33-2.38	-3.84-7.95	-7.92-3.77	-5.37-12.22	-15.64-17.7	-13.12-17.1													
Theta(120°)	-18.58-18.33	-17.41-12.05	-6.87-7.89	-7.71-10.14	-15.69-18.31	-11.49-12.68	-12.68-11.22	-10.91-9.18	-11.41-18.99	-17.76-17.79	-15.53-17.88	-18.16-15.9	-18.67-15.42	-19.09-17.5	-11.71-15.93	-8.71-19.4	-6.16-12.58	-12.07-8.92	-6.32-5.29	-5.49-10.62	-10.4-2.26	-3.41-14.54	-18.55-18.74	-15.51-17.97												
Theta(127.5°)	-17.44-13.57	-14.82-12.37	-9.15-7.74	-7.65-10.92	-10.7-18.07	-16.27-11.62	-8.71-6.73	-9.19-11.59	-17.53-18.49	-17.26-14.72	-11.89-13.43	-11.11-16.84	-17.5-17.35	-18.52-13.91	-10.39-9.64	-9.07-13.21	-15.95-8.92	-11.71-9.64	-6.85-7.3	-5.31-11.39	-16.54-6.09	-8.74-18.73	-12.45-19.01	-17.66-17.15												
Theta(135°)	-14.26-15.84	-13.72-13.66	-7.42-6.67	-7.32-9.34	-10.86-12.12	-12.96-11.66	-14.44-8.35	-6.24-8.9	-11.79-13.42	-11.02-9.95	-11.28-14.74	-13.22-13.96	-18.41-15.29	-9.75-8.1	-10.39-10.75	-13.63-13.76	-8.63-5.79	-9.96-18.76	-13.97-10.88	-10.79-11.38	-9.37-11.84	-15.38-16.48	-17.31-18.48	-16.73-14.9												
Theta(142.5°)	-16.05-16.6	-14.17-11.59	-9.71-6.93	-8.3-9.04	-11.41-15.08	-8.75-6.48	-6.9-9.9	-7.92-8.43	-10.88-12.98	-11.5-8.89	-10.33-18.09	-18.61-18.74	-18.58-17.8	-11.51-10.87	-12.51-12.74	-8.34-6.18	-6.1-9.16	-14.01-9.78	-6.95-6.97	-6.59-5.85	-6.59-10.58	-14.23-17.19	-18.46-18.08	-17.51-17.66												
Theta(150°)	-18.06-12.39	-12.3-8.8	-8.31-9.27	-9.26-8.03	-7.16-7.96	-8.92-10.06	-10.46-11.87	-8.66-7.25	-8.32-11.89	-12.98-11.25	-13.02-15.76	-18.47-17.95	-14.44-14.45	-18.54-13.26	-13.13-10.82	-8.56-7.45	-5.73-10.03	-18.85-15.89	-9.14-7.56	-6.29-7.62	-8.61-13.53	-18.01-18.33	-18.44-17.93	-18.11-18.81												
Theta(157.5°)	-18.12-13.81	-13.67-18.6	-18.17-15.74	-13.09-11.88	-14.39-19.09	-14.42-8.61	-7.52-8.49	-9.28-9.17	-9.44-10.86	-12.88-14.95	-14.31-12.91	-14.56-18.14	-18.35-18.39	-13.6-18.84	-12.72-13.62	-15.29-15.08	-13.19-11.36	-10.53-11.49	-12.38-11.73	-12.56-13.25	-15.44-17.71	-16.75-17.11	-17.73-18.01													
Theta(165°)	-16.01-10.29	-9.6-9.1	-8.24-9.1	-9.62-6.83	-8.18-8.06	-8.18-8.06	-11.96-11.96	-14.02-17.49	-18.35-18.94	-18.09-16.12	-18.23-19.09	-17.96-18.7	-18.39-13.06	-9.13-8.15	-9.89-12.69	-17.31-17.41	-17.39-13.06	-12.2-12.35	-13.28-13.46	-14.48-14.35	-14.38-15.04	-14.64-13.56	-13.24-12.87													
Theta(172.5°)	-15.68-15.28	-12.81-11.45	-11.31-11.16	-10.46-10.97	-11.95-13.01	-13.09-12.83	-13.31-14.31	-14.03-13.52	-14.26-14.76	-15.25-16.45	-17.82-18.57	-18.3-18.4	-18.93-18.54	-18.47-17.97	-16.93-17.22	-18.34-17.52	-18.91-15.17	-12.94-11.63	-10.9-10.49	-10.88-13.34	-12.49-13.5	-14.54-15.45	-17.55-17.01	-16.71-16.22												
Theta(180°)	-14.49-13.72	-14.12-11.85	-10.54-9.94	-9.6-8.96	-10.99-13.04	-14.99-17.33	-19.17-17.59	-16.56-16.87	-17.08-18.09	-17.43-18.15	-18.02-18.62	-18.69-18.06	-18-17.82	-17.95-14.29	-12.05-11.12	-10.89-10.89	-10.84-10.73	-10.74-10.94	-10.83-11.41	-11.55-12.55	-13.42-14.78	-16.51-16.53	-17.07-18.74	-18.37-16.69												
Theta(187.5°)	-11.64-8.47	-7.56-7.66	-6.87-9.93	-5.58-6.07	-6.64-6.74	-6.8-7.56	-8.51-8.88	-9.01-9.42	-10.17-11.53	-12.87-13.44	-13.78-13.69	-13.35-13.17	-12.3-10.98	-10.76-10.59	-10.38-9.98	-10.34-10.63	-10.2-10.08	-10.21-9.99	-10.36-11.53	-12.89-13.27	-14.25-15.45	-18.63-17.13	-18.41-18.58	-16.19-13.9												
Theta(195°)	-10.36-10.13	-8.36-8.31	-7.71-7.5	-7.67-8.9	-9.2-8.97	-9.56-10.27	-11.7-12.11	-12.5-13.72	-16.69-14.83	-18.67-18.59	-18.26-13.99	-10.66-9.39	-9-7.91	-6.53-6.66	-5.44-8.66	-5.96-5.54	-5.39-5.75	-6.03-6.52	-7.6-8.63	-9.31-6.93	-10.03-10.65	-11.82-13.18	-12.93-10.96	-9.06-9.74												
Theta(202.5°)	-8.02-8.18	-6.57-4.93	-4.85-4.18	-6.04-6.77	-8.28-10.26	-11.11-11.57	-11.96-13.31	-12.56-13.72	-16.47-10.14	-1.11-11.57	-2.86-3.56	-4.6-3.14	-2.86-3.02	-2.83-2.41	-2.72-3.45	-4.61-5.87	-6.61-7.08	-8.11-8.65	-9.04-9.21	-9.64-11.08	-13.13-14.47	-13.79-13.96	-10.17-17.17													
Theta(210°)	-8.4-9.41	-8.11-6.73	-5.75-5.2	-4.95-6.15	-9.22-11.51																															





# Radiated Composite Gain Data of 6GHz

# Appendix B

Theta	8.65/-13.66	-12.51/-12.13	-18.59/-18.33	-14.68/-13.23	-7.36/-11.47	-9.75/-9.88	-7.56/-6.84	-6.41/-7.64	-18.86/-11.07	-13.07/-9.7	-17.76/-5.54	-8.11/-10.52	-6.26/-4.36	-6.48/-7.4	-7.56/-9.12	-10.66/-18.54	-9.73/-6.81	-8.5/-5.27	-5.55/-4.17	-7.25/-5.83	-1.75/-3.08	-3.76/-4.75	-2.19/-3.28	-5.42/-6.69																									
Theta (60°)	-10.11/-13.66	-9.77/-10.99	-18.47/-14.4	-15.9/37	-7.29/-9.41	-3.91/-5.72	-6.56/-5.9	-5.19/-6.84	-14.65/-9.19	-17.37/-14.62	-12.65/-7.08	-8.69/-9.32	-8.03/-4.06	-9.11/-8.66	-6.9/-9.84	-11.01/-10.07	-7.09/-12.61	-18.1/-14.62	-3.91/-3.17	-4.72/-5.12	-0.86/-2.29	-4.41/-5.27	-3.2/-3.24	-5.59/-6.63																									
Theta (75°)	-8.67/-17.15	-11.34/-13.47	-16.41/-10.2	-11.67/-17.03	-7.19/-7.08	-3.69/-5.49	-4.57/-4.6	-3.91/-5.58	-11.37/-10.07	-15.64/-14.06	-11.37/-7.85	-7.02/-12.17	-18.99/-6.35	-11.66/-11.66	-10.97/-7.1	-8.67/-9.5	-7.8/-7.4	-18.41/-8.59	-0.680/88	-0.76/-5.83	-1.85/-1.5	-4.37/-6.7	-5.1/-5.13	-6.39/-6.67																									
Theta (90°)	-8.99/-12.76	-10.78/-16.13	-18.03/-10.11	-12.43/-6.33	-6/-2.92	-4.46/-4.63	-5.94/-6.52	-6.62/-6.8	-9.25/-8.8	-12.61/-11.8	-8.11/-6.62	-5.16/-16.55	-13.44/-8.33	-13.19/-6.63	-10.64/-5.18	-7.7/-12.44	-7.89/-5.85	-5.25/-0.69	<b>2.33/13</b>	1.48/-2.53	-0.88/-1.54	4.04/-10.12	-4.63/-5.99	-6.88/-5.57																									
Theta (105°)	-7.16/-12.9	-16.76/-17.23	-18.71/-12.9	-8.43/-5.58	-5.33/-3.58	-4.33/-6.64	-7.51/-5.77	-7.55/-8.79	-9.02/-8	-10.86/-11.26	-9.48/-9.3	-5.35/-16.01	-10.43/-10.3	-14.78/-8.4	-11.35/-5.8	-9.17/-9	-8.21/-3.58	-2.83/-1.6	2.53/-2.75	1.75/-1.53	-2.78/-2.05	-3.88/-1.05	-6.04/-8.58	-7.95/-7.05																									
Theta (120°)	-6.74/-9.54	-16.21/-16.51	-17.94/-17.33	-9.35/-9.94	-4.92/-4.34	-5.23/-3.58	-9.75/-10.19	-9.75/-9.69	-10.97/-9.37	-14.93/-11.6	-12.66/-14.28	-15.55/-14.58	-8.29/-9.2	-18.96/-10.09	-16.18/-6.25	-13.27/-8.59	-11.61/-6.2	-6.11/-5.3	0.91/2.9	0.42/-5.39	-3/-1.04	-3.66/-16.95	-9.05/-7	-7.61/-4.74																									
Theta (135°)	-7.33/-12.9	-15.19/-19.05	-19.2/-18.77	-9.72/-5.03	-4.35/-4.1	-4.27/-2.38	-5.81/-5.2	-8.29/-8.56	-11.16/-8.94	-15.22/-9.1	-9.33/-10.72	-7.66/-12.49	-6.78/-9.13	-12.52/-11.62	-8.25/-8.86	-10.72/-9.8	-8.38/-6.56	-8.55/-2.14	-0.38/-0.8	-1.86/-7.02	-3.93/-1.93	-6.51/-11.84	-9.67/-6.48	-8.68/-6.38																									
Theta (150°)	-8.51/-12.52	-18.74/-18.67	-17.59/-17.82	-17.23/-8.77	-5.29/-3.55	-4.4/-3.02	-5.3/-5.16	-10.58/-14.09	-15.08/-16.1	-15.99/-13.21	-13.54/-14.6	-11.28/-10.1	-9.22/-9.46	-15.66/-14.62	-9.77/-9.96	-5.43/-4.67	-15.1/-16.11	-19.14/-4.7	-2.91/-2.62	-4.48/-8.9	-4.56/-3.18	-6.25/-10.51	-7.86/-7.03	-7.61/-7.88																									
Theta (165°)	-10.84/-13.74	-15.58/-19.22	-18.04/-17.12	-19.13/-9.03	-7.36/-4.42	-1.97/-2.87	-5.59/-6.99	-9.29/-14.23	-17.46/-16.98	-16.14/-16.05	-14.12/-13.2	-17.61/-10.45	-9.06/-10.74	-11.96/-12.49	-6.5/-7.95	-9.97/-11.3	-5.81/-7.05	-9.71/-11.3	-6.08/-4.2	-5.81/-2.72	-4.81/-11.37	-7.66/-5.38	-5.57/-9.2	-5.71/-7.88																									
Theta (180°)	-14.37/-15.28	-18.07/-16.15	-18.82/-13.77	-18.95/-13.13	-12.13/-9.6	-4.46/-2.84	-3.84/-5.09	-12.37/-15.01	-12.43/-12.17	-14.84/-18.99	-15.32/-15.2	-18.88/-12.05	-15.71/-14.3	-10.72/-8.65	-10.56/-10.48	-18.23/-8.08	-1.29/-2.66	-10.9/6.2	-6.93/-6.93	-7.64/-9.83	-4.3/-7.89	-9.28/-10.99	-7.68/-4.59	-5.16/-10.56																									
Theta (195°)	-10.75/-18	-16.45/-11.89	-18.5/-17.92	-18.17/-18.85	-17.9/-11.04	-9.51/-8.58	-5.47/-4.34	-8.12/-12.12	-17.32/-12.91	-17.57/-13.38	-10.97/-19	-18.61/-13.63	-11.62/-17.98	-12.67/-8.16	-6.01/-10.58	-15.4/-14.25	-6.05/-7.4	-8.39/-4.55	-5/-4.07	-3.83/-3.56	-6.78/-11.51	-10.05/-10.77	-10.13/-7.14	-6.28/-8.08																									
Theta (210°)	-10.83/-18.49	-18.32/-18.45	-18.39/-16.24	-15.04/-13.05	-14.04/-12.52	-9.81/-11.06	-11.62/-9.91	-7.30/-9.27	-7.95/-10.1	-15.49/-15.14	-12.32/-18.7	-18.99/-18.31	-14.31/-16.08	-11.83/-11.22	-11.44/-10.79	-12.22/-8.88	-7.5/-8.45	-12.1/-10.02	-12.16/-10	-11.22/-10.77	-15.55/-11.25	-8.07/-9.4	-11.37/-9.2	-10.07/-10.86																									
Theta (225°)	-19.31/-13.06	-11.67/-16.54	-15.71/-13.06	-9.07/-10.34	-12.11/-10.73	-8.73/-8.79	-10.03/-11.12	-11.48/-11.74	-9.8/-11.98	-13.92/-10.04	-9.92/-12.45	-18.43/-18.39	-18.91/-14.44	-9.49/-7.44	-7.25/-9.16	-10.3/-8.23	-9.69/-16.28	-17.44/-13.02	-9.85/-9.55	-15.7/-18.2	-14.2/-15.09	-10.38/-8.51	-7.46/-7.72	-11.63/-18.38																									
Theta (240°)	-19.16/-18.29	-17.01/-18.11	-14.81/-18.11	-10.66/-9.06	-6.73/-7.21	-7.58/-5.79	-5.11/-6.03	-8.25/-9.28	-9.95/-9.87	-7.64/-8.76	-8.95/-10.4	-13.34/-18.39	-18.6/-18.53	-13.79/-7.42	-8.21/-10.39	-15.28/-17.51	-14.07/-14.44	-18.06/-14.91	-8.05/-6.82	-8.58/-10.41	-9.64/-9.86	-9.68/-10.38	-12.27/-11.78	-12.85/-17.63																									
Theta (255°)	-11.24/-8.99	-9.24/-8.16	-7.87/-10.05	-11.41/-11.77	-11.28/-9.17	-7.09/-6.54	-6.5/-6.85	-7.37/-8.7	-7.63/-7.74	-9.12/-13.06	-15.31/-16.36	-17.75/-18.8	-14.88/-15.88	-13.87/-7.33	-4.8/-5.02	-16.21/-6.39	-6.94/-14.23	-9.86/-6.82	-4.83/-5.19	-5.98/-6.07	-5.26/-5.03	-9.68/-7.48	-10.85/-16.26	-18.54/-16.86																									
Theta (270°)	-17.76/-17	-14.43/-15.5	-17.11/-17.09	-16.1/-14.43	-12.18/-11.08	-10.18/-9.6	-8.92/-8.54	-10.1/-12.68	-15.27/-17.86	-18.52/-18.48	-19.29/-17.97	-19.18/-17.14	-14.67/-13.93	-13.88/-12.6	-13.3/-14.37	-11.18/-9.51	-7.22/-5.24	-4.42/-4.35	-4.61/-5.5	-6.18/-6.2	-6/-5.84	-6.75/-7.94	-8.79/-9.49	-10.33/-14.01																									
Theta (285°)	-18.93/-16.71	-12.33/-10.36	-8.67/-10.1	-6.15/-3.66	-4.99/-5.16	-6.55/-8.22	-9.59/-10.52	-9.95/-8.7	-8.39/-8.6	-10.6/-15.25	-18.77/-17.82	-19.15/-18.27	-18.8/-15.38	-12.55/-11.9	-9.8/-8.8	-8.8/-6.7	-7.72/-7.2	-7.34/-7.77	-7.64/-7.37	-7.2/-7.09	-7.33/-8.05	-8.93/-11.25	-13.81/-16.57	-17.78/-18.06																									
Theta (300°)	Gain	Phi(0°)	Phi(7.5°)	Phi(15°)	Phi(22.5°)	Phi(30°)	Phi(37.5°)	Phi(45°)	Phi(52.5°)	Phi(60°)	Phi(67.5°)	Phi(75°)	Phi(82.5°)	Phi(90°)	Phi(97.5°)	Phi(105°)	Phi(112.5°)	Phi(120°)	Phi(127.5°)	Phi(135°)	Phi(142.5°)	Phi(150°)	Phi(157.5°)	Phi(165°)	Phi(172.5°)	Phi(180°)	Phi(187.5°)	Phi(195°)	Phi(202.5°)	Phi(210°)	Phi(217.5°)	Phi(225°)	Phi(232.5°)	Phi(240°)	Phi(247.5°)	Phi(255°)	Phi(262.5°)	Phi(270°)	Phi(277.5°)	Phi(285°)	Phi(292.5°)	Phi(300°)	Phi(307.5°)	Phi(315°)	Phi(322.5°)	Phi(330°)	Phi(337.5°)	Phi(345°)	Phi(352.5°)
Theta (0°)	-5.36/-3.77	-4.05/-4.12	-3.53/-2.82	-2.98/-3.45	-3.82/-4.36	-5.38/-7.2	-8.29/-9.1	-12.07/-14.86	-17.69/-18.52	-17.11/-13.83	-11.33/-8.42	-6.54/-5.88	-5.9/-5.53	-4.41/-4.27	-4.93/-4.94	-4.37/-4.41	-5.56/-5.68	-7.53/-8.97	-11.46/-14.13	-16.86/-17.93	-18.11/-18.94	-14.29/-10.81	-9.05/-7.55	-6.66/-6.86																									
Theta (7.5°)	-4.63/-4.35	-5.66/-7.11	-7.39/-8.45	-9.69/-10.28	-11.41/-13.43	-14.87/-15.88	-17.08/-18.66	-18.99/-18.23	-13.89/-10.47	-7.77/-5.42	-3.59/-5.22	-1.07/-1.71	-0.10/-0.07	-0.24/-1.07	-0.18/-0.88	-0.24/-1.07	-0.18/-0.88	-0.24/-1.07	-0.18/-0.88	-0.24/-1.07	-0.18/-0.88	-0.24/-1.07	-0.18/-0.88	-0.24/-1.07	-0.18/-0.88																								
Theta (15°)	-2/-2.32	-2.84/-4.8	-6.06/-5.16	-5.07/-5.59	-6.68/-8.24	-9.57/-9.87	-11.27/-13.8	-14.84/-15.98	-17.39/-14.77	-9.52/-7.57	-7.65/-7.57	-6.22/-4.34	-3.1/-2.55	-1.9/-1.07	-0.4/-0.43	-0.58/-0.28	-0.43/-1.56	-2.24/-2.37	-3.19/-5.28	-7.65/-10.56	-16.25/-18.59	-12.37/-7.75	-5.42/-3.98	-2.82/-1.97																									
Theta (22.5°)	-1.29/-2.25	-3.37/-4.74	-5.64/-6.3	-6.79/-7.3	-7.68/-7.7	-8.62/-10.11	-11.88/-14.7	-14.38/-14.61	-17.31/-18.85	-19.71/-10.72	-7.2/-6.85	-4.78/-4.19	-4.4/-3.42	-3.96/-4.22	-5.03/-2.0	0.1/0.41	0.88/-2.15	-4.41/-4.94	-4.47/-5.33	-7.24/-11.5	-15.46/-16.06	-11.87/-8.82	-4.61/-2.82	-1.4/-1.76																									
Theta (30°)	-2.48/-3.44	-2.83/-2.89	-5.22/-6.7	-6.01/-7.85	-11.57/-18.18	-18.36/-18.03	-19.55/-15.26	-10.1/-9.77	-4.1/-2.4	-3.04/-3.9	-4.04/-1.72	0.571/0.5	0.81/1.3	0.150/2.7	-0.44/-1.45	-2.66/-3.84	-4.92/-9.19	-11.13/-12.52	-15.72/-9.6	-6.66/-2.55	-1.45/-1.62	-0.79/-1.54																											
Theta (37.5°)	-5.58/-3.68	-2.77/-3.01	-5.18/-6.37	-6.67/-11.51	-11.33/-10.93	-11.89/-12.83	-11.63/-10.2	-9.12/-7.95	-6.88/-5.25	-6.03/-11.4	-6.24/-3.26	-3.28/-3.85	-1.840/2.2	0.891/1.1	-0.04/-0.68	0.761/1.54	1.150/5.7	-0.54/-1.95	-2.03/-3.53	-4.08/-4.07	-10.44/-14.92	-15.67/-7.84	-4.56/-5.15	-4.64/-4.61																									
Theta (45°)	-2.48/-3.91	-4/-3.91	-5.67/-4.1	-8.94/-8.99	-7.88/-6.19	-5.52/-6.4	-8.53/-8.39	-13.9/-16.89	-8.57/-9.95	-3.31/-6.12	-5.97/-6.4	-3.5/-2.95	-1.55/1.04	1.290/2.3	-0.59/-8.1	-0.47/-0.89	-1.86/-1.46	-1.03/-3.16	-3.51/-4.25	-9.31/-13.32	-10.23/-8.47	-6.98/-2.44	-4.69/-2.4	-2.23/-1.74																									
Theta (52.5°)	-5.63/-2.53	-8.08/-6.11	-10.09/-10.24	-11.78/-10.19	-6.51/-4.89	-4.54/-4.9	-4.08/-4.25	-5.76/-5.81	-7.16/-7.15	-4.77/-11.1	-7.13/-5.5	-1.76/-1.2	-0.061/1.3	2.992/3.8	1.2/0.61	0.602/8.2	0.061/1.6	-1.51/-1.03	-2.04/-2.2	-5.09/-13.4	-8.15/-13.52	-12.72/-9.6	-6.66/-2.55	-1.45/-3.88																									
Theta (60°)	-7.77/-6.58	-6.63/-11.16	-10.92/-12.62	-10.95/-6.04	-3.34/-2.57	-2.98/-3.6	-1.91/-2.3	-2.26/-0.7	-0.64/-5.02	-3.11/-4.82	-5.15/-9.7	-3.17/-1.06	-7.3/-0.85	0.35/-0.68	-4.53/-2.9	0.990/3.3	-0.16/-0.69	-0.84/-0.02	-0.09/-2.42	-4.93/-6.54	-7.71/-8.4	-8.73/-6.53	-5.8/-9.84	-13.57/-9.6																									
Theta (67.5°)	-5.77/-6.14	-8.74/-9.28	-7.13/-8.08	-7.13/-3.29	-2.8/-2.01	-2.63/-3.51	-0.52/-1.82	-1.03/-0.02	0.31/-0.42	-4.12/-3.83	-7.27/-6.43	-4.04/-2.67	-3.99/-0.2	1.44/-2.91	-8.2/-3.45	-0.56/-3.5	-2.69/-3.1	-1.91/-1.4	-0.2/-1.5	-3.44/-2.28	-6.64/-6.31	-15.45/-9.4	-4.98/-4.35	-6.43/-6.16																									
Theta (75°)	-6.67/-5.99	-11.55/-9.08	-6.21/-5.98	-4.72/-4.1	-2.12/-3.05	-3.67/-4	-0.96/-2.58	-1.79/-0.03	0.77/-2.23	-4.4/-6.14	-4.88/-4.69	-3.78/-0.9	-4.12/-0.35	1.71/-0.35	-5.25/-3.68	-0.05/-0.55	-2.05/-0.63	0.01/-0.36	0.090/1.1	-3.74/-5.23	-7.37/-7.94	-18.75/-6.87	-4.28/-7.05	-9.56/-9.42																									
Theta (82.5°)	-5.74/-5.66	-10.77/-9	-6.71/-4.97	-2.94/-3.03	-6.67/-3.08	-5.55/-5.96	-1.83/-3.48	-2.88/-1.35	0.01/-2.38	-3.11/-4.82	-5.15/-9.7	-3.17/-1.06	-7.3/-0.85	0.35/-0.68	-4.53/-2.9	0.990/3.3	-0.16/-0.69	-0.84/-0.02	-0.09/-2.42	-4.93/-6.54	-7.71/-8.4	-8.73/-6.53	-5.8/-9.84	-13.57/-9.6																									
Theta (90°)	-6.47/-5.22	-10.3/-9.65	-6.09/-6.29	-3.08/-9.02	-0.33/-2.1	-6.62/-5.54	-2.51/-3.58	-4.48/-3.77	-1.44/-2.79	-2.67/-2.88	-6.17/-4.77	-4.88/-3.55	-8.86/-1.51	-2.99/-1.7	-7.46/-6.4	0.220/4.7	0.631/6.4	0.551/6.7	1.150/9.9	-1.38/-7.35	-11.27/-11.99	-17.18/-7.46	-4.83/-3.22	-17.63/-12.61																									



# Radiated Composite Gain Data of 6GHz

# Appendix B

Theta (°)	-11.77-12.2	-12.52-14.47	-10.22-10.42	-13.1-18.5	-17.71-16.73	-12.86-15.9	-17.57-15.56	-11.05-18.83	-9.49-17.98	-12.22-8.85	-7.51-13.92	-10.16-12.46	-14.81-14.67	-17.61-18	-19.18-8.11	-13.02-7.97	-6.93-4.54	-1.99-0.91	1.04-0.22	-0.31-3.5	-1.61-3.33	-7.39-5.89	-6.12-12.5	-11.03-11.59	
Theta (105°)	-12.77-13.45	-8.89-15.96	-10.47-8.6	-13.06-17.78	-16.62-11.73	-15.03-13.05	-10.9-7.84	-8.05-17.83	-9.11-11.32	-10.48-9.21	-9.18-17.9	-11.02-18.23	-14.04-16.72	-13.76-17.99	-14.51-21.7	-12.05-6.63	-6.15-8.43	-9.23-3.57	-0.33-1.24	-1.13-0.66	-2.63-3.28	-9.91-5.73	-8.79-13.3	-14.02-14.5	
Theta (112.5°)	-9.54-11.77	-8.82-14.76	-10.31-9.86	-18.06-18.08	-17.69-12.96	-18.55-12.02	-7.92-8.63	-17.77-15.97	-15.81-10.96	-9.98-13.15	-10.12-18.9	-18.34-17.14	-9.21-18.89	-18.82-17.55	-11.11-8.4	-17.83-6.1	-17.49-5.44	-6.88-2.77	-2.95-2.89	-5.31-8.26	-3.71-2.5	-16.76-7.7	-10.95-9.98	-14.55-7.66	
Theta (120°)	-8.97-7.51	-7.46-12.19	-15.26-9.99	-14.72-17.04	-17.81-11.57	-9.56-16.76	-12.51-18.19	-10.41-18.82	-17.75-11.64	-12.76-18.2	-17.94-15.73	-17.56-13.54	-10.73-18.41	-15.38-18.4	-9.05-16.19	-7.71-7.09	-18.65-9.99	-8.18-3.84	-9.95-7.06	-9.97-7.1	-3.99-4.65	-15.62-8.1	-10.71-17.14	-14.58-9.28	
Theta (127.5°)	-9.41-10.4	-10.68-16.38	-18.08-14.65	-16.38-16.11	-13.43-16.11	-9.49-23.23	-11.73-15.13	-11.94-19.29	-14.37-17.98	-14.83-16.38	-13.92-9.14	-18.86-10.55	-17.61-12.09	-14.07-16.7	-18.61-21.1	-18.16-12.45	-5.22-3.76	-3.51-9.89	-11.67-8.76	-11.69-6.03	-18.28-13.37	-7.34-5.28	-14.23-11.13	-13.07-11.26	
Theta (135°)	-14.41-8.73	-10.39-8.46	-17.33-14.51	-16.85-8.26	-6.97-8.25	-16.07-11.12	-11.53-7.09	-6.65-13.74	-15.93-14.26	-17.02-17.83	-13.01-9.36	-19.02-15.95	-17.48-17.7	-16.53-9.86	-9.26-11.14	-18.49-10.65	-9.33-7.17	-5.52-7.8	-7.39-8.9	-8.08-7.52	-9.72-10.09	-7.61-10.06	-11.47-12.69	-13.47-14.62	
Theta (142.5°)	-8.72-7.51	-10.41-12.14	-14.77-18.28	-19.12-15.68	-13.51-7.49	-5.23-6.08	-9.09-12.65	-8.14-11.23	-11.87-7.84	-8.15-11.95	-9.37-7.66	-15.15-16.63	-18.45-17.73	-7.89-10.33	-14.28-15.07	-13.13-13.1	-9.64-13.37	-14.74-13.2	-18.59-14.69	-9.68-7.49	-5.59-4.87	-10.87-19	-17.27-15.53	-14.01-13.84	
Theta (150°)	-12.3-8.9	-9.97-10.56	-10.51-15.66	-18.41-17.99	-18.66-18.8	-16.44-14.64	-13.87-9.48	-8.47-14.03	-17.66-19.9	-7.77-10.38	-17.85-18.28	-19.13-17.73	-16.05-13.09	-16.49-15.79	-10.29-10.9	-10.43-7.88	-9.18-16.12	-18.37-17.61	-17.83-18.55	-14.51-10.82	-10.73-7.93	-9.21-31	-9.95-13.02	-18.23-12.79	
Theta (157.5°)	-17.46-17.92	-11.98-10.77	-15.34-17.99	-18.12-11.02	-7.54-6.91	-9.45-16.82	-17.52-12.44	-11.91-14.64	-15.94-14.29	-12.29-12.04	-14.11-18.26	-11.99-11.33	-16.97-13.53	-12.52-9.72	-7.81-17.9	-8.14-14.75	-19.08-13.59	-8.38-8.05	-10.59-10.48	-10.15-10.26	-9.13-9.14	-7.98-8.72	-12.26-16.99		
Theta (165°)	-15.34-14.01	-16.38-17.17	-17.99-17.09	-14.04-12.43	-14.41-19.57	-18.12-11.57	-8.71-7.17	-7.81-8.48	-8.79-10.74	-17.54-18.3	-18.15-14.34	-9.83-11.13	-14.81-14.09	-10.94-10.88	-9.99-8.34	-8.22-8.32	-9.81-13.76	-15.32-10.57	-9.08-7.4	-5.45-3.89	-3.61-3.48	-4.31-5.4	-5.31-5.78	-9.43-14.45	
Theta (172.5°)	-15.38-14.93	-15.5-12.28	-11.32-12.57	-13.95-13.04	-12.12-13.45	-12.68-11.92	-10.48-10.03	-10.34-12.52	-13.59-13.5	-17.28-18.89	-17.64-17	-15.93-18.28	-17.98-17.69	-17.08-18.78	-17.33-18.21	-18.43-17.88	-18.36-18.77	-14.99-12.98	-10.97-8.5	-6.81-5.91	-6.17-6.64	-7.29-8.11	-9.21-10.98	-12.49-12.6	
Theta (180°)	-14.03-15.91	-17.32-18.01	-18.12-15.88	-13.61-13.37	-11.55-10.28	-10.52-11.45	-13.31-13	-12.03-10.92	-10.81-11.12	-10.29-9.39	-10.05-11.91	-13.66-14.24	-14.51-17.08	-18.55-18.04	-18.44-14.95	-14.03-13.63	-11.77-10.28	-9.81-9.86	-10.06-8.68	-7.58-6.89	-7.17-4.9	-4.71-7.63	-8.55-9.35	-11.08-12.78	
Gain	Phi(75°)	Phi(15°)	Phi(30°)	Phi(45°)	Phi(60°)	Phi(75°)	Phi(90°)	Phi(105°)	Phi(120°)	Phi(135°)	Phi(150°)	Phi(165°)	Phi(180°)	Phi(195°)	Phi(210°)	Phi(225°)	Phi(240°)	Phi(255°)	Phi(270°)	Phi(285°)	Phi(300°)	Phi(315°)	Phi(330°)	Phi(345°)	
Theta (0°)	-12.16-13.11	-15.91-15.15	-14.46-14.72	-14.98-16.41	-19.06-18.7	-18.21-17.84	-17.38-18.88	-18.19-18.76	-18.42-16.86	-14.82-13.61	-13.1-13.3	-13.97-13.63	-13.32-14.39	-14.96-14.73	-13.95-14.28	-15.1-15.92	-11.06-12.46	-18.62-13.48	-18.62-13.43	-19.2-18.04	-18.28-17.98	-17.61-19.3	-18.47-14.12	-12.92-12.74	-15.31-16.62
Theta (7.5°)	-6.09-6.94	-7.02-7.45	-8.15-11.1	-8.21-8.76	-10.39-12.01	-13.48-14.78	-16.07-18.5	-17.72-18.49	-18.62-18.04	-15.97-12.64	-10.04-9	-7.95-7.29	-7.21-7.82	-7.58-7.28	-8.55-9.29	-8.99-9.4	-11.08-18.34	-13.94-17.11	-17.84-19.09	-18.28-14.96	-12.67-10.9	-9.79-8.56	-7.45-7.45	-7.16-6.7	
Theta (15°)	-4.92-5.28	-4.29-4.17	-4.76-5.69	-6.19-7.48	-9.13-11.88	-14.47-15.48	-15.31-17.23	-17.19-18	-18.85-18.02	-19.22-16.79	-12.05-9.78	-8.66-7.82	-8.46-8.15	-7.23-6.99	-7.44-6.98	-7.09-8.57	-9.85-9.35	-9.24-11.9	-16.02-18.73	-17.42-16.03	-11.44-9.07	-6.91-5.49	-4.51-3.74	-4.11-5.49	
Theta (22.5°)	-5.94-8.2	-5.22-6.17	-6.61-7.13	-8.55-9.37	-10.37-12.57	-17.31-18.62	-18.58-18	-18.02-17.52	-13.77-13.64	-17.12-18.89	-16.21-13.94	-12.95-11.37	-11.26-12.01	-11.24-10.61	-8.79-6.88	-6.08-3.77	-2.99-3.65	-5.21-7.02	-8.11-9.93	-13.82-18.04	-14.91-9.6	-6.37-5.12	-4.22-4.5	-5.43-6.59	
Theta (30°)	-5.67-5.21	-4.42-4.9	-5.82-7.48	-12.95-15.87	-14.46-11.68	-9.99-9.1	-10.13-11.9	-15.17-18.1	-15.59-15.57	-15.83-16.18	-17.82-17.33	-8.94-7.83	-8.17-7.6	-7.11-5.5	-3.41-2.86	-2.13-1.24	-0.96-0.96	-0.59-0.56	-1.22-2.82	-4.29-6.02	-8.89-11.58	-8.26-5.22	-5.14-6.43	-7.87-8.1	
Theta (37.5°)	-6.26-7.12	-7.39-6.85	-7.76-10.65	-13.78-11.06	-8.62-6.58	-5.89-7.65	-9.05-10.56	-17.14-18.56	-18.08-13.86	-8.03-8.37	-15.51-9.38	-5.21-4.8	-9.32-6.23	-4.02-3.19	-2.48-1.48	1.07189	1.6083	0.22-0.51	-0.9-0.99	-2.34-3.29	-3.75-3.31	-6.52-5.47	-6.41-6.33	-5.52-6.67	
Theta (45°)	-7.17-8.63	-8.23-9.69	-15.76-18.62	-13.34-8.69	-7.66-6.56	-7.21-11.72	-10.81-13.79	-9.08-11.09	-12.71-15.5	-5.06-5.19	-9.23-7.52	-5.41-5.13	-5.75-2.18	-1.19-0.26	-0.41-0.54	0.26-0.82	-0.14-0.39	-1.09-2.58	-2.65-3.5	-3.14-1.3	-5.81-6.65	-5.65-6.22	-6.14-3	-4.39-6.62	
Theta (52.5°)	-6.05-4.75	-5.69-7.87	-10.56-10.63	-6.23-5.22	-7.55-7.68	-8.79-18.36	-12.42-9.51	-6.72-6.88	-4.75-2.18	-5.74-3.89	4.43-5.61	-6.73-4.53	-3.35-3.66	-2.01-0.03	-0.14-1.97	0.84122	0.34-1.74	-0.85-0.53	-1.27-1.8	-2.61-4.69	-6.26-5.53	-3.91-4.4	-5.07-3.99	-8.24-7.91	
Theta (60°)	-5.02-5.35	-5.24-7.5	-10.08-9.97	-6.66-5.64	-4.81-6.92	-9.74-19.25	-13.31-12.67	-6.06-5.19	-2.41-1.52	-6.49-2.05	-6.41-9.6	-4.71-7.19	-1.66-1.42	-2.33-1.42	-2.08-0.03	0.0613	0.23-1.42	-2.62-1.59	-2.31-1.59	-6.67-8.83	-4.91-6.61	-3.65-7.57	-9.09-9.54		
Theta (67.5°)	-3.26-5.42	-5.94-7.33	-10.06-9.43	-6.77-8.53	-4.41-6.65	-5.48-12.79	-7.77-7.59	-11.79-5.88	-3.31-3.99	-7.71-9.8	-8.42-6.59	-5.52-6.52	-4.35-4.88	-3.31-1.76	-4.14-5.2	-2.32-2.28	-2.62-0.29	-1.08-0.38	-1.81-3.44	-9.09-9.71	-5.84-3.3	-3.54-8.38	-4.82-1.4		
Theta (75°)	-3.85-4	-6.66-7.81	-7.99-5.23	-6.68-5.98	-4.68-5.72	-3.42-8.67	-6.71-5.38	-5.04-6.13	-5.68-4.57	-6.14-3.01	-6.51-3.71	-6.81-5.98	-4.07-6.86	-2.55-4.78	-5.43-3.71	-3.81-0.3	-3.32-1.1	0.47228	1.41233	-1.43-1.03	-9.64-8.9	-4.71-3.19	-5.58-6.72	-2.97-1.4	
Theta (82.5°)	-3.89-7.24	-5.77-6.04	-4.38-5.63	-6.06-6.87	-6.03-4.21	-5.84-5.43	-6.41-8.34	-7.39-3.6	-9.28-6.99	-7.04-2.34	-6.81-2.85	-6.52-6.17	-3.92-5.42	-4.14-3.18	-6.95-8.55	-1.25-1.35	-0.06167	1.24111	-0.12-0.05	-1.86-2.06	-9.95-8.24	-7.31-3.95	-8.15-5.7	-3.74-10.8	
Theta (90°)	-4.03-8.92	-6.92-5.08	-5.39-3.32	-4.69-5.98	-4.83-3.02	-4.13-6.61	-5.47-8.64	-10.35-2.36	-1.64-7.63	-7.15-2.88	-6.07-4.38	-4.91-4.4	-4.09-8.2	-7.57-5.04	-6.64-7.8	-2.06-0.96	1.56238	1.85034	1.24005	-3.28766	-9.17-3.9	-5.10-5.4	-10.97-6.4	-5.03-1.99	
Theta (97.5°)	-7.68-12.22	-8.02-4.66	-6.05-3.62	-3.97-4.8	-4.13-3.13	-5.32-4.75	-6.59-6.35	-8.74-9.33	-16.88-11.27	-6.84-3.42	-11.09-5.7	-6.55-5.74	-6.91-11.01	-11.99-6.59	-12.39-8.09	-4.56-3.92	0.46-0.29	-1.48-1.76	-2.02-2.75	-5.72-18.72	-8.03-6.78	-5.51-5.47	-11.41-5.19	-5.69-4.49	
Theta (105°)	-10.27-13.12	-9.41-6.35	-4.95-2.22	-4.25-4.42	-5.26-3.56	-4.92-4.9	-9.08-5.97	-8.61-7.5	-12.48-12.16	-9.27-7.87	-10.46-9.66	-9.82-8.29	-12.79-13.33	-11.98-11.41	-10.01-9.53	-8.66-7.01	-7.13-5.32	-7.94-8.96	-11.71-9.1	-15.24-16.23	-7.73-5.98	-6.31-6.28	-16.01-17.7	-7.68-8.83	
Theta (112.5°)	-9.37-8.86	-12.11-8.83	-4.84-3.75	-4.78-7.72	-5.07-4.13	-4.07-4.1	-8.72-5.17	-7.39-11.69	-17.02-19.45	-11.42-10.19	-10.68-4.75	-6.91-11.3	-17.72-18.56	-8.42-16.79	-8.66-12.22	-8.75-6.08	-10.79-9.57	-6.21-10.71	-12.46-10.06	-17.47-12.54	-7.58-9.23	-10.53-6.87	-8.26-8.95	-5.82-8.24	
Theta (120°)	-9.63-11.14	-18.05-16.78	-8.31-8.81	-9.51-9.1	-5.91-3.1	-4.24-6.63	-9.57-6.84	-12.34-17.47	-18.99-13.26	-12.15-7.62	-17.81-10.26	-12.15-7.62	-9.99-8.89	-16.81-10.09	-13.41-6.99	-8.44-15.76	-3.53-1.21	-6.27-6.75	-3.73-5.92	-11.61-11.3	-4.74-13.89	-5.08-3.47	-9.22-5.69	-10.09-5.74	-4.55-6.43
Theta (127.5°)	-13.77-11.78	-18.15-8.7	-18.96-16.09	-9.31-9.62	-8.92-8.94	-5.85-10.65	-9.99-13.43	-16.01-14.26	-6.22-9.3	-12.38-7.87	-14.71-13.91	-14.75-14.11	-10.57-10.8	-19.03-17.86	-6.64-6.41	-18.18-9.93	-4.48-12.41	-16.42-6.4	-5.27-10.78	-11.59-3.72	-4.87-6.61	-2.87-4.21	-7.61-6.1		
Theta (135°)	-6.74-6.42	-10.43-8.76	-12.39-7.54	-9.13-13.79	-18.79-13.82	-1																			



# Radiated Composite Gain Data of 6GHz

# Appendix B

Theta (deg)	-14.95/-12.69	-12.54/-13.85	-17.91/-12.61	-7.77/-13.8	-7.23/-4.78	-6.81/-10.7	-6.52/-3.75	-4.71/-6.17	-7.02/-7.65	-6.16/-6.4	-6.39/-9.88	-7.75/-6.8	-5.21/-5.44	-6.81/-9	-19.17/-13.17	-7.57/-9.16	-5.79/-5.88	-9.77/-24	-17.56/-13.21	-10/-3.81	-2.51/-4.07	-9.08/-9.35	-4.68/-2.4	-4.42/-9.39	
Gain	Phi(0)Phi(7.5)	Phi(15)Phi(22.5)	Phi(30)Phi(37.5)	Phi(45)Phi(52.5)	Phi(60)Phi(67.5)	Phi(75)Phi(82.5)	Phi(90)Phi(97.5)	Phi(105)Phi(112.5)	Phi(120)Phi(127.5)	Phi(135)Phi(142.5)	Phi(150)Phi(157.5)	Phi(165)Phi(172.5)	Phi(180)Phi(187.5)	Phi(195)Phi(202.5)	Phi(210)Phi(217.5)	Phi(225)Phi(232.5)	Phi(240)Phi(247.5)	Phi(255)Phi(262.5)	Phi(270)Phi(277.5)	Phi(285)Phi(292.5)	Phi(300)Phi(307.5)	Phi(315)Phi(322.5)	Phi(330)Phi(337.5)	Phi(345)Phi(352.5)	
Theta (0)	-6.59/-6.04	-4.75/-4.26	-3.97/-3.48	-4.19/-4.31	-4.56/-4.68	-5.44/-6.71	-8.11/-9.67	-11.39/-12.6	-14.66/-16.42	-14.86/-12.15	-10.69/-9.29	-7.44/-5.66	-4.55/-4.2	-4.33/-4.46	-4.26/-3.89	-3.47/-3.62	-4.22/-5.09	-6.03/-7.8	-10.35/-11.6	-11.74/-13.68	-16.19/-14.33	-13.87/-12.5	-10.19/-9.65	-8.04/-6.74	
Theta (7.5)	-4.94/-5.1	-5.03/-4.69	-4.44/-4.57	-4.41/-4.34	-4.21/-4.06	-5.01/-6.18	-7.3/-8.7	-10.23/-12.15	-14.95/-15.21	-19.03/-16.04	-13.87/-11.66	-10.08/-8.47	-6.72/-6.62	-7.22/-7.43	-6.88/-6.12	-5.79/-5.35	-5.33/-5.62	-5.97/-7.46	-10.01/-12.28	-14.04/-18.93	-18.53/-15.19	-11.18/-9.72	-8.64/-8.1	-6.68/-5.32	
Theta (15)	-2.9/-2.32	-3.07/-3.08	-2.65/-2.32	-2.26/-2.94	-3.06/-3.3	-4.65/-6.43	-8.71/-11.88	-15.43/-15.53	-15.59/-15.97	-13.46/-12.42	-13.59/-14.49	-11.07/-7.36	-6.58/-6.69	-5.43/-5.15	-6.26/-7.42	-6.04/-4.4	-3.9/-4.02	-4.15/-4.74	-5.67/-7.66	-11.14/-14.12	-17.96/-19.07	-14.7/-12.47	-9.41/-6.33	-5.32/-4.37	
Theta (22.5)	-2.13/-0.49	0.11/-1.04	-1.28/-0.86	-1.23/-2.43	-3.05/-4.36	-5.32/-6.48	-4.95/-7.07	-7.41/-7.42	-7.98/-7.76	-9.11/-8.75	-9.43/-9.83	-9.81/-11	-10.24/-10.4	-10.44/-10.25	-4.58/-4.71	-4.37/-5.29	-6.11/-7.74	-9.98/-11.16	-14.21/-15.89	-17.46/-17.46	-14.8/-12.15	-11.24/-10	-10.22/-12.14		
Theta (30)	-8.47/-6.34	-5.24/-4.25	-3.67/-3.58	-2.66/-0.9	0.36/-1.31	-1.0/-7.2	-2.56/-3.8	-3.49/-4.01	-5.36/-6.57	-14.18/-13.78	-11.19/-11.64	-12.71/-7.29	-4.75/-3.88	-3.19/-1.92	-2.13/-4.3	-5.15/-7.46	-8.71/-7.27	-5.17/-5	-5.64/-5.38	-5.28/-5.72	-10.32/-12.92	-10.01/-5.44	-3.3/-3.08	-2.48/-3.65	
Theta (37.5)	-2.1/-1.84	-2.26/-4.18	-3.86/-7.79	-4.10/-23	1.951/88	1.350/01	-1.72/-2.96	-3.94/-4.64	-6.99/-11.06	-13.54/-13.22	-9.45/-7.44	-5.71/-4.14	-4.54/-4.26	-4.38/-5.23	-3.65/-2.96	-4.61/-9.45	-7.43/-2.63	-2.44/-2.07	-1.16/-2.02	-2.76/-3.44	-5.17/-6.67	-6.51/-6.46	-3.63/-2.34	-2.33/-1.66	
Theta (45)	-0.31/-1.09	-1.42/-2.89	-1.97/-4.08	-1.950/0	2.673/26	1.970/11	-1.974/-0.09	-1.34/-1.91	-4.09/-8.24	-12.91/-12.81	-7.53/-4.97	-4.73/-4.49	-3.63/-5.46	-6.65/-7.56	-8.4/-4.67	-3.75/-6.2	-4.49/-2.73	-1.71/-1.46	-2.2/-3.83	-1.64/-1.71	-6.43/-6.68	-7.75/-4.11	-4.37/-2.7	-0.110/08	
Theta (52.5)	-2.74/-3.31	-3.86/-5.7	-3.85/-2.32	0.612/64	3.123/26	2.440/98	2.081/69	0.630/68	-1.93/-5.47	-7.87/-10.93	-9.65/-5.62	-3.55/-5.2	-4.17/-5.05	-4.11/-6.06	-7.06/-4.4	-2.71/-5.22	-4.21/-4.06	-3.72/-3.22	-5.54/-6.25	-6.88/-3.97	-3.57/-3.75	-2.87/-3.26	-5.32/-5.84	-2.17/-0.75	
Theta (60)	-3.1/-1.88	-1.92/-3.65	-5.42/-2.96	0.712/13	2.953/17	2.741/45	2.532/23	2.372/16	-1.32/-3.9	-6.19/73	-9.29/-57	-4.6/-3.34	-3.56/-5.6	-7.08/-3.1	-2.89/-4.6	-3.75/-5.01	-5.31/-6.53	-6.62/-9.62	-6.83/-3.29	-3.56/-4.81	-2.45/-3.69	-1.14/-10.05	-3.34/-2.26		
Theta (67.5)	-1.9/-3.06	-0.33/-1.96	-3.58/-1.69	0.32/27	2.12/62	2.791/51	2.762/36	2.557/47	-0.98/-0.65	-4.15/-9	-2.76/-5.73	-6.24/-2.42	-2.61/-4.75	-5.47/-6.15	-7.42/-5.21	-5.52/-4.79	-3.64/-3.74	-4.46/-5.49	-5.57/-4.99	-9.4/-9.99	-8.43/-9.2	-14.7/-3.3	-2.28/-3.03		
Theta (75)	-1.27/-0.48	0.14/-2.04	-2.65/-1.62	-0.83/-0.25	0.761/5	1.930/08	1.692/31	2.861/34	-0.020/49	-2.46/-5.66	-8.34/-8.93	-5.65/-2.14	-2.71/-7.7	-9.94/-7.43	-8.41/-10.71	-6.04/-11.65	-5.12/-3.22	-2.79/-2.58	-3.51/-3.65	-3.08/-3.97	-9.95/-5.27	-2.95/-4.62	-10.53/-4.01	-0.480/43	
Theta (82.5)	-2.23/-1.2	-1.19/-2.93	-2.98/-1.3	-0.4/-2.21	-1.59/-2.06	0.59/-1.51	0.461/47	2.350/7	-0.070/48	-1.43/-3.23	-6.83/-8.99	-4.17/-2.21	-3.71/-7.93	-10.89/-11.73	-10.55/-12.17	-11.99/-13.55	-11.04/-8.39	-2.57/-2.19	-1.26/-2.92	-2.86/-3.71	-5.96/-4.3	-1.21/-5.7	-10.88/-3.07	-1.03/-0.19	
Theta (90)	-8.47/-3.55	-2.32/-3.3	-1.48/-0.96	-1.5/-3.6	-5.06/-2.73	-1.49/-4.95	-1.620/14	0.67/-0.4	-0.740/44	-0.621/48	-5.920/56	-3.79/-3.22	-6.470/44	-12.980/11.89	-15.770/10.55	-16.110/17.57	-14.920/6.78	-2.420/0.7	-4.920/6.3	-5.630/2.67	-9.760/4.41	-3.220/5.22	-14.950/2.3	-4.060/3.1	
Theta (97.5)	-7.91/-5.17	-3.86/-4.71	-7.15/-4.76	-2.93/-3.53	-6.04/-6.03	-3.76/-7.22	-4.49/-2.28	-1.9/-2.84	-2.92/-1.76	-1.96/-2.23	-5.64/-7.1	-4.76/-5.12	-8.02/-10.44	-16.970/18.26	-9.350/7.29	-7.480/14.91	-17.640/14.59	-8.590/7.06	-14.780/9.73	-5.150/5.6	-9.640/8.21	-7.680/10.99	-17.550/9.54	-9.930/7.97	
Theta (105)	-8.74/-6.47	-4.81/-5.4	-9.58/-11	-5.67/-2.44	-4.07/-6.6	-5.220/84	-11.050/5.95	-5.070/7.38	-7.110/5.8	-4.710/2.95	-3.240/43	-5.410/5.87	-12.500/12.97	-17.770/17.68	-7.340/13.3	-3.460/13.1	-14.930/14.05	-15.480/18.75	-14.680/8.62	-6.830/3.76	-11.450/6.95	-13.930/12.9	-16.160/7.77	-10.020/10.82	
Theta (112.5)	-11.350/7.03	-14.240/4.99	-8.040/1.56	-12.110/6.3	-4.430/6.7	-4.590/5.13	-11.190/8.76	-9.040/12.69	-9.880/5.56	-5.760/3.48	-3.120/2.98	-5.860/4.68	-10.020/18.45	-14.130/13.83	-1.470/2.33	-4.610/1.37	-3.970/6.9	-8.840/10.81	-16.710/8.81	-10.620/7.4	-8.110/14.42	-8.110/12.9	-10.010/4.73	-9.410/6.77	
Theta (120)	-11.210/15.14	-8.530/5.61	-3.520/5.48	-1.710/4.49	-4.990/3.62	-4.260/4.21	-3.980/5.02	-5.480/7.51	-7.790/4.72	-1.920/1.76	-1.960/2.23	-5.640/7.1	-4.760/5.12	-8.020/10.44	-16.970/18.26	-9.350/7.29	-7.480/14.91	-17.640/14.59	-8.590/7.06	-14.780/9.73	-5.150/5.6	-9.640/8.21	-7.680/10.99	-17.550/9.54	-9.930/7.97
Theta (127.5)	-6.210/11.2	-1.840/10.9	-6.200/9.9	-5.610/17.35	-8.440/7.7	-5.550/13.2	-1.110/2.79	-7.890/6.95	-9.200/7.07	-3.560/4	-3.210/2.36	-3.870/4.06	-6.010/6.45	-3.660/3.85	-1.870/44	0.330/2.48	-2.090/3.77	-6.310/1.74	-5.370/8.09	-11.230/13.8	-8.380/8	-16.320/18.1	-14.870/12.04		
Theta (135)	-7.470/12.53	-18.580/17.64	-10.780/3.72	-4.040/10.31	-16.610/15.32	-13.550/15.7	-3.450/3.96	-6.140/8.54	-2.840/10.3	-0.640/2.13	-3.270/3.61	-3.710/3.01	-1.730/3.01	-2.730/2.16	-1.720/8.1	-4.410/3.9	-5.170/4.74	-3.730/13.45	-6.320/6.67	-11.250/13.47	-8.240/8.61	-7.340/5.94	-7.630/10.59		
Theta (142.5)	-9.110/10.14	-14.610/9.98	-8.450/6.16	-7.670/11.96	-15.250/14.02	-10.850/13.46	-18.230/13.72	-7.390/5.45	-3.130/2.92	-3.710/3.47	-3.590/3.43	-2.690/2.52	-1.950/1.6	-2.250/5.04	-5.040/6.99	-11.710/6.23	-7.610/5.92	-8.670/3.8	-7.910/19.03	-13.990/8.32	-9.080/10.25	-18.460/18.36	-17.730/18.25	-18.850/13.64	
Theta (150)	-1.710/18.42	-12.340/9.66	-10.150/17.97	-17.840/13.77	-14.220/13.52	-10.910/10.35	-10.810/10.21	-12.140/11.02	-7.610/4.79	-3.210/2.59	-2.210/5.1	-1.510/2.62	-3.620/4.69	-6.260/5.9	-7.110/13.46	-10.330/8.63	-3.710/8.1	-4.230/5.1	-6.190/11.2	-13.640/11.61	-10.850/13.79	-16.640/9.2	-9.480/10.38	-11.250/11.35	
Theta (157.5)	-11.610/13.86	-14.690/15.12	-14.330/12.77	-11.380/12.5	-16.080/18.19	-13.340/10.4	-9.860/9.26	-7.410/11.64	-2.120/0.78	-1.020/1.51	-1.290/1.76	-3.420/3.68	-3.030/4.34	-5.040/4.89	-6.840/11.91	-18.150/14.76	-10.750/12.57	-12.530/6.79	-5.760/9.1	-15.610/18.62	-13.380/8.86	-9.510/18.78	-17.880/12.28	-12.210/10.4	
Theta (165)	-12.920/12.74	-11.960/11.21	-10.690/10.02	-11.170/13.1	-15.160/9.6	-18.420/18.23	-15.720/14.3	-7.430/11.93	-9.230/7.89	-7.590/7.08	-5.970/6.6	-7.280/6.94	-7.160/7.34	-7.140/8.96	-13.430/17.91	-17.310/18.55	-17.880/16.7	-12.920/8.77	-6.310/6.26	-8.610/11.1	-12.280/14.39	-9.760/17.86	-15.930/14.63	-12.270/12.04	
Theta (172.5)	-14.440/14.31	-13.830/13.35	-11.390/6.1	-9.550/10.91	-12.280/13.38	-12.250/10.47	-9.180/9.7	-10.310/11.32	-11.530/12.03	-12.240/11.71	-12.360/13.36	-14.310/15.94	-16.810/18.01	-17.240/17.7	-18.340/17.16	-18.140/16.18	-14.020/13.52	-15.740/17.76	-18.020/15.16	-14.960/12.05	-9.530/8.04	-7.810/7.53	-8.410/10.03	-13.160/54	
Theta (180)	-14.680/16.97	-15.520/18.05	-18.670/18.33	-16.420/15.87	-16.150/13.48	-10.540/9.06	-9.610/9.92	-10.130/9.66	-8.960/9.21	-10.680/11.51	-11.850/12.54	-13.350/13.89	-13.710/16.7	-18.680/17.63	-18.620/18.65	-19.060/18.68	-14.260/12.72	-14.170/14.44	-19.370/14.85	-12.070/9.61	-8.680/9.04	-10.360/11.67	-12.470/14.31	-14.240/12.45	
Gain	Phi(0)Phi(7.5)	Phi(15)Phi(22.5)	Phi(30)Phi(37.5)	Phi(45)Phi(52.5)	Phi(60)Phi(67.5)	Phi(75)Phi(82.5)	Phi(90)Phi(97.5)	Phi(105)Phi(112.5)	Phi(120)Phi(127.5)	Phi(135)Phi(142.5)	Phi(150)Phi(157.5)	Phi(165)Phi(172.5)	Phi(180)Phi(187.5)	Phi(195)Phi(202.5)	Phi(210)Phi(217.5)	Phi(225)Phi(232.5)	Phi(240)Phi(247.5)	Phi(255)Phi(262.5)	Phi(270)Phi(277.5)	Phi(285)Phi(292.5)	Phi(300)Phi(307.5)	Phi(315)Phi(322.5)	Phi(330)Phi(337.5)	Phi(345)Phi(352.5)	
Theta (0)	-12.320/14.31	-16.660/15.28	-11.280/9.05	-7.450/9.22	-4.610/7.37	-2.920/2.36	-2.260/2	-1.230/0.84	-1.260/1.69	-1.960/2.83	-4.150/2.29	-6.180/8.29	-11.020/12.75	-13.830/12.37	-10.810/8.98	-7.250/7.1	-4.530/4.48	-3.090/2.93	-2.760/2.32	-1.340/8.33	-1.430/2.1	-2.650/4.46	-6.290/5.67	-7.950/6	
Theta (7.5)	-7.330/7.64	-9.280/13.33	-16.630/16.3	-11.960/8.45	-6.150/4.37	-3.760/3.72	-3.810/4.14	-4.050/3.75	-3.430/3.82	-4.660/4.73	-4.280/5.67	-7.830/7.64	-8.830/12.66	-18.110/16.32	-13.030/10.46	-9.010/8.12	-6.480/5.42	-4.710/3.75	-3.510/3.39	-2.930/2.29	-1.580/0.7	-0.980/1.66	-2.670/4.25	-4.610/5	
Theta (15)	-6.190/7.1	-7.910/10.46	-13.490/18.81	-18.160/16.76	-12.510/9.19	-6.810/5.85	-5.650/5.96	-5.890/5.73	-5.440/3.33	-5.470/4.7	-4.180/5.8	-7.030/5.94	-6.910/12.13	-18.610/16.1	-12.330/										



# Radiated Composite Gain Data of 6GHz

# Appendix B

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°)	-6.34-6.12	-6.29-6.04	-5.55-5.45	-5.16-5.54	-6.04-6.35	-6.91-7.42	-7.71-8.95	-10.43-10.05	-10.15-10.73	-11.85-12.02	-10.15-8.93	-8.88-7.26	-6.11-6.15	-6.96-5.89	-4.85-5.33	-6.11-6.63	-6.76-6.81	-7.27-6.46	-8.01-8.79	-9.66-10.68	-11.73-13.34	-13.04-11.23	-10.27-8.96	-8.94-7.78
Θ(7.5°)	-3.28-3.47	-2.99-2.38	-3.01-3.34	-3.67-4.86	-5.91-7.07	-8.18-8.88	-9.63-9.91	-10.51-10.10	-10.34-10.61	-11.25-10.39	-8.97-8.55	-8.05-5.87	-4.44-4.12	-3.38-2.84	-2.93-3.5	-3.95-4.72	-5.26-6.77	-7.94-9.27	-10.76-12.71	-14.61-15.68	-14.03-12.5	-9.77-7.24	-5.82-4.1	-4.64-3.69
Θ(15°)	-4.48-3.6	-3.41-3.72	-3.09-3.51	-4.42-5.89	-7.17-8.01	-8.23-8.83	-9.71-9.74	-9.52-9.05	-8.11-7.87	-6.25-8.71	-8.49-8.89	-9.19-7.63	-8.22-3.3	-2.61-2.03	-1.72-2.25	-2.89-3.11	-3.41-3.69	-3.91-4.44	-5.23-6.57	-8.67-13.37	-18.58-17.89	-12.19-7.84	-5.62-5.5	-5.51-4.53
Θ(22.5°)	-3.33-2.26	-2.61-3.02	-2.42-3.18	-4.62-6.14	-7.32-6.76	-6.06-7.24	-8.21-7.18	-6.29-6.19	-6.21-5.69	-7.61-9.85	-13.06-12.39	-10.15-9.73	-3.76-1.78	-1.59-0.7	-0.05-0.32	-1.39-2.92	-4.32-6.06	-4.79-4.09	-4.41-5.08	-5.89-7.02	-9.36-14.06	-13.99-11.64	-9.01-6.84	-5.66-4.68
Θ(30°)	-3.79-3.44	-3.05-3.03	-2.62-1.29	-1.13-1.75	-2.96-3.51	-4.98-7.06	-6.17-5.4	-5.16-4.81	-4.51-6.69	-4.98-6.53	-8.31-6.51	-6.54-7.74	-5.84-1.43	-3.65-1.73	-0.28-0.69	-1.31-2.73	-6.81-10.73	-6.69-4.73	-5.07-5.45	-4.77-11.22	-11.74-9.51	-7.77-8.44	-7.21-4.88	-4.89-4.88
Θ(37.5°)	-5.37-4.67	-5.08-7.14	-6.05-2.36	-0.71-0.57	-0.96-1.76	-3.01-2.68	-2.04-2.28	-2.02-2.98	-4.11-5.58	-7.71-7.55	-6.31-7.08	-10.02-13.27	-11.3-6.3	-3.93-2.48	-1.76-3.14	-3.68-6.04	-10.13-8.66	-7.55-4.94	-4.49-5.09	-5.51-5.4	-4.32-2.74	-3.55-6.66	-6.62-5.64	-6.16-5.88
Θ(45°)	-0.74-0.12	-2.23-2.91	-3.66-2.75	-1.59-1.17	-0.31-0.02	-0.28-2.13	0.90-0.72	0.52-1.26	-3.27-3.66	-5.2-6.51	-7.67-11.43	-14.83-13.11	-12.8-8.45	-4.35-2.57	-3.81-6.97	-4.23-4.9	-9.83-9.93	-5.81-6.16	-4.31-7.03	-8.21-5.68	-6.78-5.32	-4.8-3.88	-2.81-0.7	-3.65-2.26
Θ(52.5°)	-2.31-1.75	-3.04-3.88	-3.01-3.14	-1.72-0.58	0.731-0.8	1.352	1.981-98	1.34-2.02	-1.62-2.21	-3.74-6.15	-9.51-10.42	-12.13-12.51	-7.82-10.2	-7.82-4.45	-5.41-10.59	-6.31-5.2	-7.82-6.32	-5.03-5.32	-5.22-6.64	-8.47-10.32	-4.96-3.18	-3.85-3.67	-3.08-5.67	-4.38-4.22
Θ(60°)	-7.16-3.8	-3.22-5.9	-6.08-5.38	-3.4-0.9	0.921-95	2.532-49	2.382-2	1.11-1.74	-1.76-2.04	-1.59-3.11	-5.74-7.6	-9.99-17.06	-16.85-9	-8.3-4.71	-5.03-11.04	-6.45-6.17	-9.01-7.62	-6.09-9.07	-11.35-11.71	-12.47-11.85	-5.39-4.95	-5.5-3.32	-5.58-8.99	-5.34-8.39
Θ(67.5°)	-5.82-1.84	-1.09-2.13	-4.02-2.64	-3.86-0.93	1.141-81	2.321-86	2.622-63	1.71-0.86	-0.58-1.14	-1.83-4.23	-5.58-5.37	-7.02-10.47	-12.42-6.36	-5.18-5.19	-5.13-17.7	-4.61-6.96	-9.53-9.25	-7.09-9.03	-11.61-8.93	-11.21-10.69	-8.37-10.91	-5.44-3.8	-8.26-7.96	-5.38-7.3
Θ(75°)	-5.04	0.59-0.52	-2.07-5.21	-4.02-1.34	0.461-58	1.791-87	2.933-36	2.233-79	-0.24-0.62	-1.77-4.72	-5.96-6.36	-8.92-12.19	-10.51-6.11	-6.26-5.84	-6.33-5.39	-4.66-5.33	-10.13-8.94	-6.18-3.66	-6.44	-8.34-7.53	-11.48-19	-5.06-4.52	-7.72-6.48	-5.25-4.44
Θ(82.5°)	-4.81-0.84	0.36-0.78	-2.07-4.84	-4.68-2.09	-0.220-63	0.905-55	1.832-36	1.43-0.01	0.02-0.91	-2.18-5.1	-3.81-4.63	-12.18-12.41	-8.3-6.39	-5.94-8.44	-8.59-5.73	-4.98-4.68	-13.05-6.41	-4.83-3.13	-2.82-3.58	-4.89-5.74	-8.14-6.23	-3.61-5.82	-10.18-5.96	-7.14-5.64
Θ(90°)	-5.91-2.8	-3.02-1.68	-3.33-5.11	-5.98-3.58	-1.29-0.8	0.11-2.15	-0.210-62	0.38-0.47	-0.09-0.81	-1.34-3.51	-2.64-3.9	-11.68-13.26	-9.25-7.5	-6.32-10.7	-1.57-5.41	-11.08-10.96	-5.52-3.27	-3.39-3.75	-4.38-5.34	-6.86-7.35	-5.18-17.7	-10.69-5.57	-8.48-6.6	-5.88-6.6
Θ(97.5°)	-10.32-6.71	-3.65-3.85	-5.41-6.38	-6.82-5.5	-3.39-0.74	-1.57-1.48	-1.76-0.65	-1.04-1.08	-0.98-1.71	-1.95-3.9	-2.63-4.32	-12.91-11.47	-10.38-6.37	-6.85-10.4	-12.54-10.62	-12.65-9.2	-9.63-17.06	-8.23-4.96	-7.66-7.52	-7.81-8	-7.96-9.12	-8.82-8.2	-12.21-11.1	-14.64-8.96
Θ(105°)	-10.45-10.35	-7.01-8.15	-9.58-9.53	-8.55-6.19	-6.42-1.03	-2.96-4.8	-1.96-1.17	-2.72-3.23	-3.16-3.77	-3.04-2.81	-2.65-4.18	-8.78-15.73	-12.74-7.43	-11.01-13.77	-15.22-18.95	-15.93-10.37	-9.23-16.59	-14.25-11.98	-13.59-13.76	-13.11-18.64	-9.63-7.74	-9.19-9.21	-11.89-13.74	-17.62-10.95
Θ(112.5°)	-5.36-6.57	-8.44-9.39	-10.51-12.92	-8.64-6.36	-8.88-1.91	-3.63-5.56	-2.93-2.98	-4.81-5.04	-3.75-5.46	-3.47-7.54	-3.47-7.54	-8.79-13.55	-16.82-12.36	-11.89-10.18	-18.24-10.57	-11.21-17.88	-17.78-15.16	-14.54-18.97	-11.81-12.74	-14.81-13.72	-10.58-18.29	-12.02-11.11	-11.18-5.55	-11.18-5.55
Θ(120°)	-11.99-11.52	-6.67-5.55	-5.74-10.12	-9.66-7.38	-10.34-5.36	-5.37-6.24	-4.91-7.02	-6.47-7.09	-5.59-6.6	-4.22-1.47	-3.66-3.91	-7.32-11.88	-12.08-12.28	-9.06-6.82	-15.96-10.6	-8.64-10.23	-13.38-17.41	-12.78-18.5	-19.28-14.06	-11.26-12.13	-13.84-11.95	-13.32-15.04	-11.95-9.5	-14.41-7.52
Θ(127.5°)	-11.68-14.86	-11.49-8.1	-6.91-8.19	-10.19-10.06	-10.41-10.36	-12.7-8.65	-8.05-12.44	-9.43-8.77	-5.67-5.4	-3.46-1.95	-2.67-5.14	-7.13-11.12	-11.83-8.67	-7.22-7.47	-7.89-7.86	-5.11-7.84	-17.9-18.42	-11.45-17.49	-17.63-16.92	-17.77-17.35	-18.23-15.02	-11.88-7.44	-11.08-13.57	-17.26-9.89
Θ(135°)	-8.04-15.23	-18.45-18.3	-9.31-6.15	-7.44-11.47	-10.56-9.96	-18.94-11.1	-11.87-17.38	-10.86-6.64	-4.96-3.72	-3.19-2.67	-1.58-3.7	-6.35-7.63	-9.08-6.96	-3.67-2.96	-3.98-7.1	-10.98-5.3	-14.98-18.11	-7.59-15.4	-17.59-17.4	-16.66-13.41	-18.2-11.6	-9.72-12.35	-15.38-4.89	-6.64-8.37
Θ(142.5°)	-10.01-15.14	-18-14.58	-11.44-11.26	-13.95-14.13	-8.11-8.08	-10.47-13.79	-15.06-9.8	-7.22-4.42	-3.53-3.19	-3.67-4.12	-4.12-4.92	-4.97-4.7	-4.75-3.24	-4.51-9.52	-4.91-8.52	-12.74-10.82	-9.58-12.22	-14.03-18.68	-17.08-15.71	-16.93-17.46	-19.18-17.35	-13.05-13.95	-13.31-11.71	-12.27-14.57
Θ(150°)	-18.71-14.68	-11.91-11.43	-13.59-18.08	-19.35-18.54	-13.04-11.3	-14.14-12.65	-11.67-5.01	-3.48-3.11	-3.43-4.11	-4.14-12.65	-6.25-5.61	-7.11-7.5	-4.39-4.24	-4.42-7.7	-9.91-8.62	-12.78-8.86	-13.07-8.15	-16.4-14.29	-16.56-14.29	-15.28-17.11	-17.73-18.25	-17.43-14.3	-16.62-15.26	-16.62-15.26
Θ(157.5°)	-16.69-18.41	-17.69-17.94	-18.75-16.31	-13.41-14.22	-17.96-18.13	-12.24-8.82	-6.77-5.7	-5.11-5.25	-5.61-6.04	-6.97-8.27	-7.69-5.94	-8.27-10.74	-9.71-11.1	-9.57-8.85	-9.38-8.57	-6.31-9.7	-9.39-8.88	-12.52-17.62	-18.29-18.45	-17.41-18.06	-13.77-10.38	-10.41-16.71	-13.72-10.69	-11.34-11
Θ(165°)	-19.19-13.77	-10.27-8.48	-8.31-6.16	-7.91-9.21	-13.58-18.25	-15.34-9.99	-7.51-5.94	-4.89-3.86	-3.81-4.26	-5.31-8.09	-9.65-10.91	-12.58-10.95	-11.31-12.06	-10.53-8.25	-7.61-7.04	-15.43-18.24	-15.56-14.42	-17.09-17.31	-19.36-17.79	-16.33-13.74	-13.69-14.58	-15.22-17.72	-16.66-16.6	-18.59-17.87
Θ(172.5°)	-18.24-18.06	-18.17-17.43	-15.54-12.78	-11.99-12.77	-12.77-11.6	-9.47-8.69	-7.22-6.64	-4.71-8.09	-8.22-6.63	-9.84-11.2	-13.67-13.7	-14.81-13.49	-11.07-11.77	-16.92-17.59	-18.96-19.3	-15.96-13.28	-11.91-11.48	-12.49-14.43	-16.16-17.86	-18.61-17.79	-17.39-15.21	-17.73-15.21	-16.68-18.9	-18.22-17.81
Θ(180°)	-17.14-18.84	-18.39-18.23	-17.87-18.18	-18.49-19.52	-17.58-17.67	-15.15-14.23	-12.26-11.35	-12.42-12.64	-12.74-12.4	-11.61-11.86	-10.92-10.74	-14.83-15.55	-16.43-16	-15.71-13.36	-14.37-14.48	-15.53-17.08	-17.02-16.74	-18.41-17.82	-18.32-17.78	-14.15-15.22	-12.14-11.79	-12.2-13.65	-14.81-13.12	-13.17-15.1
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°)	-8.51-9.52	-9.77-10.52	-11.73-14.24	-15.38-14.74	-13.63-11.92	-10.27-8.74	-7.97-6.3	-6.97-6.26	-5.71-5.33	-5.56-5.06	-6.37-7.5	-6.73-7.07	-8.84-9.62	-10.87-10.84	-10.63-11.09	-11.81-11.94	-10.89-10.71	-9.96-9.45	-9.17-7.2	-6.62-6.54	-5.17-6.06	-5.5-5.71	-6.55-6.02	-6.68-7.55
Θ(7.5°)	-9.17-12.22	-12.33-13.32	-12.16-10.29	-9.68-8.89	-8.53-8.51	-8.63-8.34	-8.38-7.96	-7.21-6.33	-6.37-5.84	-5.33-4.77	-5.89-7.12	-6.79-8.05	-10.43-10.86	-12.79-14.96	-15.33-13.58	-13.07-11.67	-10.92-9.84	-9.31-9.14	-8.82-8.16	-7.71-6.57	-5.51-5.13	-4.72-4.56	-4.81-5.27	-5.19-6.51
Θ(15°)	-4.12-6.28	-10.15-17.14	-17.35-14.41	-13.26-11.85	-10.42-9.27	-8.23-8.39	-9.84-9.99	-9.25-8.11	-7.69-7.4	-7.82-7.98	-7.18-7.63	-8.14-7.8	-9.75-11.3	-11.81-15.6	-14.11-16.38	-10.49-10.59	-10.44-10.05	-8.49-8.64	-7.85-6.66	-5.95-4.96	-4.03-3.95	-4.87-5.73	-3.89-4.92	-3.89-4.92
Θ(22.5°)	-3.96-6.21	-10.35-13.04	-15.78-18.96	-18.53-19.07	-17.78-17.21	-14.11-1																		



# Radiated Composite Gain Data of 6GHz

# Appendix B

Theta	Phi	Phi(15)	Phi(22.5)	Phi(30)	Phi(45)	Phi(60)	Phi(75)	Phi(90)	Phi(105)	Phi(120)	Phi(135)	Phi(150)	Phi(165)	Phi(180)	Phi(195)	Phi(210)	Phi(225)	Phi(240)	Phi(255)	Phi(270)	Phi(285)	Phi(300)	Phi(315)	Phi(330)	Phi(345)
Theta(45)	Phi(0)	-1.360-1.4	-0.25-0.57	-1.271-1.75	-1.38-1.3	-0.770-15	0.01-31	-0.010-18	-1.73-2.78	-3.85-9.03	-11.52-7	-6.41-7.85	-9.18-10.04	-9.41-8.97	-8.66-10.09	-9.15-6.37	-4.26-5.15	-7.06-8.71	-9.19-5.57	-4.87-5.89	-9.01-9.72	-8.54-9.4	-2.01-2.33	-6.11-6.01	-3.47-3.21
Theta(52.5)	Phi(0)	-5.34-3.38	-3.33-3.01	-2.93-3.42	-1.650-1	-0.177-0.6	-0.43-0.39	-0.74-1.11	-2.2-1.36	-2.04-5.21	-7.19-9.54	-7.33-5.85	-5.66-5.81	-3.24-3.98	-7.44-10.39	-6.26-3.64	-4.64-3.61	-5.96-10.24	-7.26-6.38	-2.82-0.41	-5.95-7.26	-8.87-4.86	-1.06-0.32	-3.33-5.44	-4.85-5
Theta(60)	Phi(0)	-4.50-5.75	-4.72-4.07	-3.15-3.53	-1.180-0.22	-0.02-0.76	-0.280-7.1	0.41-0.09	-2.77-2.84	-2.45-3.36	-4.26-7.96	-10.57-1.8	-5.13-3.59	-2.57-0.87	-6.44-8.57	-7.61-5.84	-4.85-3.52	-5.25-7.85	-6.29-3.98	-2.75-4.49	-5.61-5.93	-10.57-6.95	-1.47-1.55	-4.42-3.01	-3.84-5.78
Theta(67.5)	Phi(0)	-2.06-2.66	-4.22-3.84	-1.64-1.1	0.040-7.6	0.03-0.36	0.361-4.9	1.290-7	-1.52-3.39	-3.69-5.03	-5.9-6.84	-10.81-10.41	-8.29-4.41	-1.490-17	-1.21-6.5	-8.61-6.1	-5.26-6.55	-6.02-6.41	-6.32-4.11	-2.16-4.08	-4.79-4.91	-10.06-9.52	-2.58-2.04	-5.18-2.43	-4.72-5.88
Theta(75)	Phi(0)	-2.13-2.69	-5.85-3.14	-0.04-0.41	-0.080-22	-1.14-1.79	-0.961-27	1.931-24	-0.91-2.68	-2.25-6.53	-8.48-7.15	-9.78-10.86	-12.18-6.47	-1.31-0.3	-1.21-4.77	-10.45-7.32	-4.58-7.47	-6.56-6.09	-3.57-2.52	-2.54-5.17	-3.3-2.52	-8.29-10.48	-3.63-4.04	-4.89-2.84	-8.99-7.54
Theta(82.5)	Phi(0)	-2.46-4.09	-8.97-4.05	-1.1-5.5	-1.13-3.54	-4.43-3.7	-4.0-4.2	0.960-8.6	-0.91-2.68	-1.07-3.48	-7.28-10.43	-10.36-8.65	-2.99-1.3	-1.48-4.08	-5.82-8.47	-4.86-5.96	-3.36-2.34	-4.03-3.92	-3.02-2.61	-1.43-3.92	-8.25-9.51	-8.11-3.92	-3.21-2.74	-13.83-9.32	
Theta(90)	Phi(0)	-3.12-5.24	-13.94-7.08	-3.41-4.37	-3.89-4.5	-5.07-5.35	-3.56-1.1	-1.34-1.25	-2.67-4.26	-1.89-2.85	-4.63-7.16	-18.34-10.23	-7.2-10.03	-6.37-3.28	-3.43-4.47	-5.2-5.68	-3.42-8.16	-6.11-5.63	-3.71-2.87	-1.49-5.26	-5.61-4.09	-7.94-6.85	-3.31-5.96	-7.78-6.75	-14.03-6.83
Theta(97.5)	Phi(0)	-7.19-17.41	-11.15-8.65	-3.59-6.4	-7.34-5.31	-4.43-4.01	-2.39-0.37	-0.98-2.25	-4.21-5.77	-3.38-4.44	-4.58-9.48	-13.67-13.78	-9.27-12.48	-9.11-5.52	-6.58-8.44	-4.6-6.11	-3.55-6.12	-8.23-10.52	-8.34-9.77	-7.08-17.68	-10.41-6.03	-5.37-1.6	-5.5-14.81	-17.78-14.03	-7.91-5.52
Theta(105)	Phi(0)	-18.33-9.28	-3.71-5.12	-4.47-7.3	-11.16-8.56	-8.32-4.84	-2.52-0.62	-2.76-4.11	-3.78-6.83	-4.07-5.3	-5.19-4.76	-15.06-17.68	-17.79-9.45	-6.78-7.12	-7.88-7.93	-8.47-9.93	-9.93-11.78	-8.94-14.27	-13.41-13.14	-11.13-8.97	-12.55-13.06	-14.88-13.33	-8.48-10.49	-18.91-17.68	
Theta(112.5)	Phi(0)	-6.62-3.66	-2.18-6.93	-12.64-17.14	-12.39-11.08	-9.72-8.25	-4.47-3.48	-5.72-8.02	-6.11-4.88	-3.52-5.39	-6.78-6.35	-8.98-6.81	-9.12-11.17	-16.39-12.43	-11.57-10.95	-7.78-8.63	-7.98-6.92	-18.64-18.39	-11.81-9.89	-15.58-17.63	-18.01-13.29	-18.01-6.94	-8.32-11.27	-9.91-15.29	-8.78-9.57
Theta(120)	Phi(0)	-9.98-12.82	-16.54-18.13	-12.13-8.66	-5.36-5.91	-8.91-14.13	-8.57-6.83	-11.68-11.11	-5.56-6.46	-2.94-4.05	-6.06-7.83	-11.17-10.0	-7.52-5.5	-7.28-12.39	-11.13-15.23	-7.96-9.41	-10.61-9.39	-11.19-16.39	-13.96-1.12	-16.01-6.03	-14.69-11.65	-10.3-8.21	-14.44-13.59	-3.66-6.82	
Theta(127.5)	Phi(0)	-12.13-9.6	-6.12-3.44	-6.67-6.63	-5.25-7.1	-7.58-12.04	-16.45-18.57	-18.15-10.58	-7.38-5.58	-4.26-5.28	-6.27-6.77	-8.12-6.75	-5.24-3.26	-4.76-5.12	-12.03-10.33	-18.51-18.47	-16.31-17.36	-16.18-11.43	-17.56-10.08	-15.92-9.03	-15.88-8.82	-17.63-14.1	-15.16-14.55	-9.88-4.77	
Theta(135)	Phi(0)	-3.35-5.51	-11.17-9.08	-8.16-10.14	-10.75-8.63	-10.15-10.62	-13.81-13.52	-11.81-9.21	-5.97-6.09	-6.14-6.79	-7.6-5.7	-6.36-8.17	-7.62-6.09	-4.88-3.77	-5.36-6.9	-8.58-15.97	-14.35-19.18	-14.12-14.75	-12.99-12.45	-16.27-18.16	-13.24-15.12	-19.23-17.5	-18.07-10.78	-10.13-6.09	-11.3-5.07
Theta(142.5)	Phi(0)	-7.03-10.25	-13.03-13.13	-13.11-12.36	-14.47-18.21	-16.21-12.53	-10.94-9.45	-8.87-7.56	-6.28-7.74	-8.9-68	-9.37-6.33	-5.61-6.13	-8.54-10.86	-7.81-6.6	-9.4-9.36	-9.2-11.14	-15.67-10.93	-9.96-8.84	-14.07-11.23	-16.22-12.52	-7.74-5.36	-17.81-12.64	-6.77-5.73	-7.33-6.36	
Theta(150)	Phi(0)	-18.26-18.92	-18.36-17.54	-18.03-18.68	-19.17-18.2	-18.13-15.03	-12.37-10.42	-11.09-11.59	-9.28-10.74	-12.13-9.33	-7.95-6.83	-5.96-6.36	-7.66-8.9	-12.01-14.22	-15.23-13.14	-11.77-10.14	-15.87-7.94	-7.97-7.82	-12.27-9.12	-14.41-19	-17.72-18.62	-19.28-14.48	-15.86-18.53	-16.46-17.38	-17.46-16.13
Theta(157.5)	Phi(0)	-18.95-18.59	-18.54-15.89	-15.39-17.81	-17.29-18.38	-18.71-16.37	-13.34-14.23	-16.5-19.83	-19.09-19.15	-18.37-12.18	-8.62-7.26	-7.95-9.1	-8.41-9.1	-14.63-18.35	-17.76-16.8	-17.36-16.32	-12.87-11.04	-9.33-12.03	-18.83-18.21	-18.36-18.3	-13.27-12.27	-13.24-14.69	-17.94-18.83	-16.08-15.19	-12.88-14.45
Theta(165)	Phi(0)	-13.73-12.52	-12.21-11.64	-10.55-11.44	-12.66-13.7	-15.56-16.47	-16.75-16.69	-15.87-16.25	-18.53-17.01	-14.16-11.05	-9.15-7.72	-6.7-5.4	-5.15-6.56	-10.47-9.51	-10.43-10.47	-10.59-13.87	-18.33-18.8	-15.23-18.87	-16.05-15.41	-15.79-16.25	-15.68-17.48	-18.14-6.1	-12.43-14.02	-14.11-10.12	-11.97-14.14
Theta(172.5)	Phi(0)	-15.86-17.52	-15.98-16.94	-17.15-16.88	-16.21-15.42	-15.06-14.53	-15.13-13.13	-14.71-14.65	-14.13-13.3	-12.07-11.01	-10.16-9.03	-7.18-6.31	-5.81-5.75	-6.43-7.96	-9.05-9.58	-10.17-12.15	-15.33-17.22	-15.10-10.72	-11.21-11.98	-12.49-13.45	-12.38-12.68	-11.83-12.52	-11.08-11.12	-10.87-11.1	-11.75-13.95
Theta(180)	Phi(0)	-10.53-10.66	-11.09-12.71	-15.14-15.97	-17.33-17.88	-18.99-18.36	-18.03-18.68	-19.21-15.72	-13.51-11.75	-11.05-10.68	-9.55-8.46	-8.63-9.17	-10.13-10.36	-10.13-10.33	-11.06-11.32	-12.41-14.56	-16.77-17.97	-17.71-17.38	-14.9-13.48	-13.29-13.9	-15.12-14.68	-12.92-11.49	-11.03-10.8	-11.1-11.37	-11.55-11.03
Phi(0)	Phi(0)	Phi(15)	Phi(22.5)	Phi(30)	Phi(45)	Phi(60)	Phi(75)	Phi(90)	Phi(105)	Phi(120)	Phi(135)	Phi(150)	Phi(165)	Phi(180)	Phi(195)	Phi(210)	Phi(225)	Phi(240)	Phi(255)	Phi(270)	Phi(285)	Phi(300)	Phi(315)	Phi(330)	Phi(345)
Gain	Phi(0)	Phi(15)	Phi(22.5)	Phi(30)	Phi(45)	Phi(60)	Phi(75)	Phi(90)	Phi(105)	Phi(120)	Phi(135)	Phi(150)	Phi(165)	Phi(180)	Phi(195)	Phi(210)	Phi(225)	Phi(240)	Phi(255)	Phi(270)	Phi(285)	Phi(300)	Phi(315)	Phi(330)	Phi(345)
Theta(0)	Phi(0)	8.13-8.94	9.56-10.26	9.47-8.67	9.42-10.29	10.9-9.24	9.32-8.81	8.48-8.19	7.72-7.45	7.25-6.84	6.59-7.11	7.36-7.05	7.22-7.79	7.81-7.65	8.5-8.85	9.37-9.95	10.21-10.15	10.42-10.41	10.15-9.42	8.73-9.67	11.12-10.93	9.11-8.32	8.23-8.09	8.21-8.51	8.19-8.71
Theta(7.5)	Phi(0)	7.92-8.39	9.92-11.16	10.19-7.6	10.27-11.48	11.46-11.56	12.88-13.7	12.91-12.96	13.1-12.64	11.89-10.9	10.16-9.31	9.52-10.9	8.89-9.26	10.86-10.66	9.04-9.23	10.58-11.36	10.61-10.03	9.82-9.27	7.91-6.75	5.84-5.05	5.16-5.44	5.84-5.26	5.14-6.31	7.73-8.1	7.86-8.22
Theta(15)	Phi(0)	17.85-18.53	17.55-17.42	13.19-11.58	11.51-12.69	13.71-17.84	17.07-17.84	19.09-17.76	18.88-16.33	14.01-11.88	11.05-10.73	11.10-10.84	8.33-6.91	8.69-9.93	8.16-8.66	12.12-13.94	13.58-13.97	14.42-13.72	11.53-9.54	5.57-7.72	7.38-6.05	8.41-7.31	5.93-7.77	6.46-8.06	10.05-13.5
Theta(22.5)	Phi(0)	11.17-14.86	12.87-9.58	7.32-7.92	11.05-13.12	12.67-10.87	9.29-7.73	7.02-7.96	9.95-11.11	10.2-8.99	10.69-12.45	12.54-12.21	10.81-9.21	10.57-14.44	11.25-10.48	16.15-18.85	19.14-13.83	11.94-12.55	14.28-11.86	9.42-8.34	8.01-8.02	8.42-7.85	7.08-6.73	6.54-6.51	7.02-8.11
Theta(30)	Phi(0)	10.86-11.81	7.48-5.99	5.99-0.77	12.07-14.84	14.69-9.01	7.24-6.51	5.75-5.53	5.44-5.88	6.35-6.56	8.47-8.57	7.94-9.83	12.09-15.68	14.95-10.98	10.62-16.89	13.81-17.8	17.9-9.98	8.99-10.24	9.11-8.32	9.21-7.33	4.75-5.44	6.14-8.21	9.12-6.67	3.86-3.11	3.71-6.34
Theta(37.5)	Phi(0)	17.78-11.75	7.91-7.5	10.79-11.4	9.93-12.97	18.18-0.02	6.29-6.04	4.82-3.03	3.44-5.1	3.65-4.97	7.04-7.99	10.46-11.04	12.62-15.78	14.61-14.73	12.54-17.67	18.22-13.64	17.04-17.58	9.12-12.9	10.09-5.9	3.86-1.75	1.03-3.53	7.73-8.84	6.74-3.52	1.42-2.33	5.54-8.45
Theta(45)	Phi(0)	10.54-10.83	9.86-12.08	18.8-14.41	11.29-13.01	19.19-12.84	7.46-5.56	3.99-2.67	2.37-2.4	2.27-3.45	3.22-2.25	3.73-6.05	8.54-10.77	12.49-9.7	13.49-18.77	17.71-8.91	11.37-16.5	12.56-13.03	10.38-12.47	9.25-7.06	3.11-3.47	4.73-4.47	6.82-7.03	5.19-6.79	10.8-11.4
Theta(52.5)	Phi(0)	7.16-12.57	16.43-17.87	18.37-15.65	17.43-18	18.75-16.11	11.28-6.69	4.59-3.16	1.92-2.31	1.63-1.24	0.17-1.15	2.8-4.01	6.71-7.45	10.13-11.45	12.9-18.71	14.44-6.83	10.16-9.34	10.22-13.18	18.64-18.13	10.09-10.3	8.26-7.11	6.68-6.63	10.59-12.68	8.15-9.58	7.53-5.65
Theta(60)	Phi(0)	9.53-13.54	17.14-17.45	16.59-18.24	16.41-13.65	10.72-13.78	18.24-6.39	6.86-6.99	4.97-4.78	2.26-2.35	0.69-0.74	1.96-2.92	4.32-5.92	8.45-17.19	12.08-14.49	16.06-13.63	9.36-11.77	9.02-11.25	8.03-8.74	18.12-12.97	11.38-10.82	11.61-11.64	14.5-13.11	12.21-12.86	7.09-6.28
Theta(67.5)	Phi(0)	13.71-14.41	13.07-13.96	17.69-18.55	16.17-8.07	7.3-10.33	18.99-6.39	5.05-6.87	6.06-8.08	4.03-2.0															







# Antenna Pattern of 2.4GHz&5GHz

# Appendix C

Theta (°)	Phi (°)	Gain (dBi)	Phi(15°)	Phi(22.5°)	Phi(30°)	Phi(37.5°)	Phi(45°)	Phi(52.5°)	Phi(60°)	Phi(67.5°)	Phi(75°)	Phi(82.5°)	Phi(90°)	Phi(97.5°)	Phi(105°)	Phi(112.5°)	Phi(120°)	Phi(127.5°)	Phi(135°)	Phi(142.5°)	Phi(150°)	Phi(157.5°)	Phi(165°)	Phi(172.5°)	Phi(180°)	Phi(187.5°)	Phi(195°)	Phi(202.5°)	Phi(210°)	Phi(217.5°)	Phi(225°)	Phi(232.5°)	Phi(240°)	Phi(247.5°)	Phi(255°)	Phi(262.5°)	Phi(270°)	Phi(277.5°)	Phi(285°)	Phi(292.5°)	Phi(300°)	Phi(307.5°)	Phi(315°)	Phi(322.5°)	Phi(330°)	Phi(337.5°)	Phi(345°)	Phi(352.5°)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
Theta (15°)	Phi(0°)	-1.10/-1.16	-1.39/-1.61	-1.77/-2.37	-2.29/-3.04	-2.94/-3.83	-3.74/-4.83	-4.68/-5.93	-5.76/-7.17	-6.98/-8.54	-8.34/-10.00	-9.84/-11.71	-11.46/-13.46	-13.19/-15.34	-14.94/-17.22	-16.70/-19.22	-18.46/-21.34	-20.22/-23.50	-21.98/-25.74	-23.74/-28.04	-25.50/-30.39	-27.26/-32.78	-29.02/-35.20	-30.78/-37.64	-32.54/-40.10	-34.30/-42.58	-36.06/-45.06	-37.82/-47.54	-39.58/-50.02	-41.34/-52.50	-43.10/-54.98	-44.86/-57.46	-46.62/-59.94	-48.38/-62.42	-50.14/-64.90	-51.90/-67.38	-53.66/-69.86	-55.42/-72.34	-57.18/-74.82	-58.94/-77.30	-60.70/-79.78	-62.46/-82.26	-64.22/-84.74	-65.98/-87.22	-67.74/-89.70	-69.50/-92.18	-71.26/-94.66	-72.92/-96.54	-74.68/-98.42	-76.44/-100.30	-78.20/-102.18	-79.96/-104.06	-81.72/-105.94	-83.48/-107.82	-85.24/-109.70	-87.00/-111.58	-88.76/-113.46	-90.52/-115.34	-92.28/-117.22	-94.04/-119.10	-95.80/-120.96	-97.56/-122.82	-99.32/-124.68	-101.08/-126.54	-102.84/-128.40	-104.60/-130.26	-106.36/-132.12	-108.12/-133.98	-109.88/-135.84	-111.64/-137.70	-113.40/-139.56	-115.16/-141.42	-116.92/-143.28	-118.68/-145.14	-120.44/-146.90	-122.20/-148.76	-123.96/-150.62	-125.72/-152.48	-127.48/-154.34	-129.24/-156.10	-131.00/-157.96	-132.76/-159.72	-134.52/-161.48	-136.28/-163.34	-138.04/-165.20	-139.80/-167.06	-141.56/-168.92	-143.32/-170.78	-145.08/-172.64	-146.84/-174.50	-148.60/-176.36	-150.36/-178.22	-152.12/-180.08	-153.88/-181.94	-155.64/-183.80	-157.40/-185.66	-159.16/-187.52	-160.92/-189.38	-162.68/-191.24	-164.44/-193.10	-166.20/-194.96	-167.96/-196.82	-169.72/-198.68	-171.48/-200.54	-173.24/-202.40	-175.00/-204.26	-176.76/-206.12	-178.52/-207.98	-180.28/-209.84	-182.04/-211.70	-183.80/-213.56	-185.56/-215.42	-187.32/-217.28	-189.08/-219.14	-190.84/-220.90	-192.60/-222.76	-194.36/-224.52	-196.12/-226.38	-197.88/-228.24	-199.64/-230.10	-201.40/-231.96	-203.16/-233.82	-204.92/-235.68	-206.68/-237.54	-208.44/-239.40	-210.20/-241.26	-211.96/-243.12	-213.72/-244.98	-215.48/-246.84	-217.24/-248.70	-219.00/-250.56	-220.76/-252.42	-222.52/-254.28	-224.28/-256.14	-226.04/-258.00	-227.80/-259.86	-229.56/-261.72	-231.32/-263.58	-233.08/-265.44	-234.84/-267.30	-236.60/-269.16	-238.36/-271.02	-240.12/-272.88	-241.88/-274.74	-243.64/-276.60	-245.40/-278.46	-247.16/-280.32	-248.92/-282.18	-250.68/-284.04	-252.44/-285.90	-254.20/-287.76	-255.96/-289.62	-257.72/-291.48	-259.48/-293.34	-261.24/-295.20	-263.00/-297.06	-264.76/-298.92	-266.52/-300.78	-268.28/-302.64	-270.04/-304.50	-271.80/-306.36	-273.56/-308.22	-275.32/-310.08	-277.08/-311.94	-278.84/-313.80	-280.60/-315.66	-282.36/-317.52	-284.12/-319.38	-285.88/-321.24	-287.64/-323.10	-289.40/-324.96	-291.16/-326.82	-292.92/-328.68	-294.68/-330.54	-296.44/-332.40	-298.20/-334.26	-300.00/-336.12	-301.76/-337.98	-303.52/-340.04	-305.28/-341.90	-307.04/-343.86	-308.80/-345.72	-310.56/-347.68	-312.32/-349.54	-314.08/-351.40	-315.84/-353.26	-317.60/-355.12	-319.36/-356.98	-321.12/-360.72	-322.88/-362.58	-324.64/-364.44	-326.40/-366.30	-328.16/-368.16	-330.00/-370.02	-331.76/-371.88	-333.52/-373.74	-335.28/-375.60	-337.04/-377.46	-338.80/-379.32	-340.56/-381.18	-342.32/-383.04	-344.08/-384.90	-345.84/-386.76	-347.60/-388.58	-349.36/-390.44	-351.12/-392.30	-352.88/-394.16	-354.64/-396.02	-356.40/-397.88	-358.16/-400.00	-360.00/-401.86	-361.76/-403.74	-363.52/-405.60	-365.28/-407.46	-367.04/-409.32	-368.80/-411.18	-370.56/-413.04	-372.32/-414.90	-374.08/-416.76	-375.84/-418.62	-377.60/-420.48	-379.36/-422.34	-381.12/-424.26	-382.88/-426.18	-384.64/-428.04	-386.40/-430.00	-388.16/-431.86	-390.00/-433.74	-391.76/-435.66	-393.52/-437.58	-395.28/-439.44	-397.04/-441.36	-398.80/-443.22	-400.56/-445.14	-402.32/-447.06	-404.08/-448.92	-405.84/-450.78	-407.60/-452.64	-409.36/-454.56	-411.12/-456.42	-412.88/-458.28	-414.64/-460.14	-416.40/-464.04	-418.16/-465.90	-420.00/-469.80	-421.76/-471.66	-423.52/-473.52	-425.28/-475.38	-427.04/-477.24	-428.80/-479.10	-430.56/-480.96	-432.32/-482.82	-434.08/-484.68	-435.84/-486.54	-437.60/-488.40	-439.36/-490.26	-441.12/-492.12	-442.88/-493.98	-444.64/-495.84	-446.40/-497.70	-448.16/-499.56	-450.00/-501.42	-451.76/-503.28	-453.52/-505.14	-455.28/-507.00	-457.04/-508.86	-458.80/-510.72	-460.56/-512.58	-462.32/-514.44	-464.08/-516.30	-465.84/-518.16	-467.60/-520.02	-469.36/-521.88	-471.12/-523.74	-472.88/-525.60	-474.64/-527.46	-476.40/-529.32	-478.16/-531.18	-480.00/-533.04	-481.76/-534.90	-483.52/-536.76	-485.28/-538.62	-487.04/-540.48	-488.80/-542.34	-490.56/-544.26	-492.32/-546.12	-494.08/-548.00	-495.84/-549.86	-497.60/-551.74	-499.36/-553.60	-501.12/-555.46	-502.88/-557.32	-504.64/-559.18	-506.40/-561.04	-508.16/-562.90	-510.00/-564.76	-511.76/-566.62	-513.52/-568.48	-515.28/-570.34	-517.04/-574.24	-518.80/-576.06	-520.56/-578.14	-522.32/-580.00	-524.08/-581.96	-525.84/-583.92	-527.60/-585.94	-529.36/-588.00	-531.12/-590.16	-532.88/-592.44	-534.64/-594.84	-536.40/-597.60	-538.16/-600.84	-540.00/-603.96	-541.76/-607.20	-543.52/-610.56	-545.28/-614.28	-547.04/-618.12	-548.80/-621.84	-550.56/-625.56	-552.32/-629.44	-554.08/-633.24	-555.84/-637.08	-557.60/-640.92	-559.36/-644.76	-561.12/-648.60	-562.88/-652.44	-564.64/-656.28	-566.40/-660.06	-568.16/-663.90	-570.00/-667.74	-571.76/-671.58	-573.52/-675.42	-575.28/-679.36	-577.04/-683.34	-578.80/-687.30	-580.56/-691.44	-582.32/-695.64	-584.08/-699.96	-585.84/-704.52	-587.60/-709.64	-589.36/-714.84	-591.12/-720.36	-592.88/-725.88	-594.64/-731.74	-596.40/-737.84	-598.16/-744.00	-600.00/-750.48	-601.76/-757.32	-603.52/-764.76	-605.28/-772.30	-607.04/-780.96	-608.80/-789.36	-610.56/-798.00	-612.32/-806.92	-614.08/-816.24	-615.84/-824.88	-617.60/-833.52	-619.36/-842.08	-621.12/-850.84	-622.88/-859.36	-624.64/-868.16	-626.40/-877.32	-628.16/-886.56	-630.00/-895.28	-631.76/-904.84	-633.52/-914.48	-635.28/-924.48	-637.04/-934.80	-638.80/-945.44	-640.56/-956.28	-642.32/-967.44	-644.08/-978.96	-645.84/-991.32	-647.60/-1004.64	-649.36/-1017.60	-651.12/-1030.16	-652.88/-1047.00	-654.64/-1057.56	-656.40/-1068.24	-658.16/-1080.00	-660.00/-1091.84	-661.76/-1104.72	-663.52/-1119.60	-665.28/-1134.72	-667.04/-1154.96	-668.80/-1176.48	-670.56/-1203.84	-672.32/-1234.08	-674.08/-1264.72	-675.84/-1296.36	-677.60/-1329.36	-679.36/-1365.60	-681.12/-1402.08	-682.88/-1439.52	-684.64/-1477.68	-686.40/-1515.12	-688.16/-1553.28	-690.00/-1592.00	-691.76/-1630.72	-693.52/-1669.04	-695.28/-1708.32	-697.04/-1747.36	-698.80/-1787.12	-700.56/-1826.56	-702.32/-1866.24	-704.08/-1905.60	-705.84/-1945.12	-707.60/-1984.32	-709.36/-2023.84	-711.12/-2063.28	-712.88/-2102.64	-714.64/-2142.48	-716.40/-2182.08	-718.16/-2221.84	-720.00/-2261.84	-721.76/-2301.60	-723.52/-2341.68	-725.28/-2381.92	-727.04/-2422.56	-728.80/-2463.12	-730.56/-2504.64	-732.32/-2546.40	-734.08/-2589.36	-735.84/-2634.48	-737.60/-2682.96	-739.36/-2732.32	-741.12/-2781.60	-742.88/-2831.68	-744.64/-2881.44	-746.40/-2931.84	-748.16/-2982.72	-750.00/-3034.32	-751.76/-3087.84	-753.52/-3143.68	-755.28/-3204.48	-757.04/-3266.56	-758.80/-3331.20	-760.56/-3399.60	-762.32/-3474.96	-764.08/-3519.60	-765.84/-3569.92	-767.60/-3621.60	-769.36/-3674.88	-771.12/-3729.84	-772.88/-3794.40	-774.64/-3865.44	-776.40/-3937.20	-778.16/-4010.40	-780.00/-4087.60	-781.76/-4166.08	-783.52/-4233.36	-785.28/-4301.28	-787.04/-4370.56	-788.80/-4439.44	-790.56/-4508.80	-792.32/-4588.32	-794.08/-4657.84	-795.84/-4728.00	-797.60/-4807.92	-799.36/-4879.60	-801.12/-4952.88	-802.88/-5030.40	-804.64/-5101.84	-806.40/-5172.00	-808.16/-5243.36	-810.00/-5315.68	-811.76/-5390.72	-813.52/-5469.60	-815.28/-5550.24	-817.04/-5632.56	-818.80/-5708.16	-820.56/-5782.40	-822.32/-5844.96	-824.08/-5909.60	-825.84/-5977.44	-827.60/-6048.96	-829.36/-6120.00	-831.12/-6193.76	-832.88/-6251.36	-834.64/-6308.64	-836.40/-6372.00	-838.16/-6447.36	-840.00/-6522.72	-841.76/-6604.80	-843.52/-6689.04	-845.28/-6771.36	-847.04/-6851.36	-848.80/-6930.24	-850.56/-7007.04	-852.32/-7080.72	-854.08/-7163.20	-855.84/-7243.92	-857.60/-7319.68	-859.36/-7397.92	-861.12/-7470.56	-862.88/-7538.88	-864.64/-7600.80	-866.40/-7672.48	-868.16/-7745.44	-870.00/-7814.40	-871.76/-7885.68	-873.52/-7957.20	-875.28/-8030.56	-877.04/-8104.64	-878.80/-8177.28	-880.56/-8246.72	-882.32/-8314.40	-884.08/-8381.84	-885.84/-8449.44	-887.60/-8517.60	-889.36/-8597.44	-891.12/-8677.76	-892.88/-8749.20	-894.64/-8813.44	-896.40/-8885.28	-898.16/-8953.28	-900.00/-9022.32	-901.76/-9090.72	-903.52/-9157.60	-905.28/-9220.96	-907.04/-9298.08	-908.80/-9379.68	-910.56/-9451.60	-912.32/-9527.36	-914.08/-9591.12	-915.84/-9662.40	-917.60/-9735.12	-919.36/-9802.56	-921.12/-9872.80	-922.88/-9944.16	-924.64/-10000.32	-926.40/-10084.08	-928.16/-10177.76	-929.92/-10255.20	-931.68/-10343.68	-933.44/-10415.36	-935.20/-10483.20	-937.00/-10551.60	-938.76/-10618.72	-940.52/-10682.40	-942.28/-10749.36	-944.04/-10816.80	-945.80/-10904.16	-947.56/-10999.44	-949.32/-11081.76	-951.08/-11171.04	-952.84/-11251.04	-954.60/-11318.40	-956.36/-11393.84	-958.12/-11470.40	-959.88/-11537.60	-961.64/-11603.20	-963.40/-11695.68	-965.16/-11767.04	-966.92/-11832.96	-968.68/-11919.36	-970.44/-12006.72	-972.20/-12103.20	-973.96/-12193.12	-975.72/-12281.04	-977.48/-12370.48	-979.24/-12458.40	-981.00/-12547.84	-982.76/-12626.40	-984.52/-12705.12	-986.28/-12782.88	-988.04/-12851.36	-989.80/-12921.60	-991.56/-13000.80	-993.32/-13070.08	-995.08/-13139.60	-996.84/-13209.36	-998.60/-13289.28	-1000.36/-13369.44	-1002.12/-13439.68	-1003.88/-13500.32	-1005.64/-13591.84	-1007.40/-13644.48	-1009.16/-13700.32	-1010.92/-13756.16	-1012.68/-13812.00	-1014.44/-13878.88	-1016.20/-13947.84	-1017.96/-14016.96	-1019.72/-14108.32	-1021.48/-14180.16	-1023.24/-14243.36	-1025.00/-14319.60	-1026.76/-14385.36	-1028.52/-14438.88	-1030.28/-14500.32	-1032.04/-14572.80	-1033.80/-14639.04	-1035.56/-14700.48	-1037.32/-14775.84	-1039.08/-14823.36	-1040.84/-14882.88	-1042.60/-14949.12	-1044.36/-15021.60	-1046.12/-15099.84



# Antenna Pattern of 2.4GHz&5GHz

# Appendix C

θ (75°)	-0.69-0.58	-0.65-1.36	-1.52-1.05	-0.23-0.34	-0.95-1.59	-1.92-2.42	-2.44-2.71	-2.54-2.28	-2.71-3.17	-4.28-5.83	-6.02-5.62	-8.29-7.12	-7.33-11.00	-11.26-16.16	-3.37-3.21	-3.69-2.37	-1.58-3.11	-4.46-3.65	-3.96-3.48	-4.07-7.21	-0.94-1.54	-1.49-0.50	0.22-0.02	0.33-0.00
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 (75°)	-1.10-1.24	-1.27-2.04	-1.87-1.13	-0.96-0.73	-0.97-2.13	-1.57-1.01	-2.22-3.55	-2.87-2.22	-3.15-6.03	-5.04-5.42	-7.17-5.74	-9.10-6.75	-6.69-8.29	-10.35-11.44	-8.09-7.28	-5.08-4.43	-5.05-5.15	-5.36-3.59	-3.24-3.20	-3.55-2.54	-1.28-1.06	-0.70-0.88	-0.91-0.38	0.63-0.36
θ (90°)	-1.69-1.88	-1.28-1.90	-1.95-1.83	-1.46-0.58	-0.54-2.96	-1.99-2.39	-6.57-3.03	-4.11-6.07	-4.49-10.84	-8.98-8.51	-9.87-9.90	-7.55-5.31	-3.79-6.61	-8.49-8.58	-10.67-13.35	-7.53-7.46	-7.59-4.30	-5.17-2.01	-3.46-2.31	-4.16-4.88	-2.08-1.90	-1.54-2.19	-1.07-1.46	-0.47-0.27
θ (105°)	-1.83-2.29	-2.22-2.82	-2.34-2.57	-3.04-1.43	-1.04-2.78	-0.78-1.21	-7.94-4.62	-7.28-10.72	-10.67-9.12	-9.12-11.70	-7.86-6.00	-4.37-4.94	-8.23-10.78	-11.54-12.48	-9.07-7.54	-6.32-6.98	-7.48-5.08	-7.98-5.12	-6.21-8.12	-3.91-2.87	-1.64-2.22	-2.42-2.59	-0.72-0.89	-0.72-0.89
θ (120°)	-2.21-2.06	-1.54-1.40	-1.43-2.21	-1.36-2.00	-1.71-2.62	-0.60-1.75	-7.27-6.39	-7.03-7.59	-8.84-10.27	-9.98-11.74	-7.80-7.63	-7.14-8.65	-8.44-6.95	-5.77-9.96	-10.09-14.61	-13.66-10.21	-11.45-9.52	-10.68-8.38	-8.42-7.64	-6.43-2.09	-4.43-2.09	-2.03-5.66	-2.42-1.37	-2.42-1.37
θ (135°)	-4.47-2.06	-1.56-2.41	-2.47-2.62	-2.19-1.90	-2.68-2.09	-0.33-3.08	-6.92-7.06	-6.41-6.86	-11.23-9.96	-8.91-8.35	-12.01-9.95	-7.02-8.98	-6.96-9.11	-8.81-11.95	-9.95-13.43	-14.70-10.21	-15.49-10.92	-14.69-9.93	-6.34-7.09	-8.70-9.65	-3.99-1.96	-5.82-3.94	-3.90-4.48	-3.02-3.47
θ (150°)	-5.21-4.63	-2.40-2.06	-1.60-1.37	-1.96-2.57	-3.13-1.11	-0.40-3.64	-6.34-6.53	-4.75-5.81	-9.59-6.06	-6.95-6.78	-8.84-13.86	-11.47-12.53	-11.35-8.85	-11.93-14.75	-10.97-8.84	-11.08-10.52	-11.94-6.98	-10.03-11.91	-8.84-5.05	-6.18-10.57	-3.18-3.64	-2.99-4.76	-6.68-7.17	-2.73-2.22
θ (165°)	-5.57-5.07	-2.30-1.69	-0.96-0.80	-1.94-3.46	-2.71-1.20	-1.88-4.10	-5.99-4.59	-3.81-6.00	-13.03-8.46	-7.43-8.76	-7.35-9.10	-9.99-6.86	-7.84-13.24	-11.59-8.56	-14.04-15.36	-8.12-10.68	-11.89-9.48	-11.80-6.87	-8.78-10.37	-5.57-6.20	-6.24-4.58	-6.37-9.65	-4.14-3.03	-4.14-3.03
θ (180°)	-5.04-5.63	-2.78-1.41	-1.47-1.58	-2.10-1.99	-1.38-1.60	-3.05-4.68	-5.22-4.82	-5.37-7.16	-8.89-11.25	-12.52-10.75	-9.71-12.46	-14.18-13.17	-10.15-5.81	-7.66-8.19	-7.17-9.05	-15.05-14.22	-10.76-10.38	-11.12-15.15	-12.32-4.61	-5.53-8.30	-8.76-7.09	-6.99-8.95	-8.88-11.19	-6.06-3.78
θ (195°)	-3.70-5.84	-5.86-3.98	-3.45-2.92	-2.02-1.26	-2.12-4.15	-6.42-6.34	-4.67-4.16	-6.69-10.88	-8.65-7.17	-8.29-10.26	-12.86-9.69	-7.82-7.79	-10.19-9.36	-6.84-6.86	-14.74-15.69	-16.07-11.19	-9.30-10.41	-9.56-8.37	-7.27-4.14	-5.52-5.81	-3.94-4.15	-5.44-7.99	-1.13-3.43	-4.44-3.82
θ (210°)	-5.47-4.68	-3.38-2.54	-2.60-3.01	-4.18-6.66	-9.48-11.10	-7.43-4.03	-2.81-3.09	-4.62-7.05	-8.43-8.20	-7.69-5.63	-4.22-4.56	-6.62-10.59	-15.12-12.13	-11.26-14.76	-15.24-14.20	-12.20-10.62	-8.20-6.65	-6.71-7.48	-6.37-4.85	-4.77-4.64	-3.15-2.51	-3.69-5.13	-6.88-7.55	-8.11-6.95
θ (225°)	-6.53-7.19	-7.61-7.59	-6.56-5.37	-5.08-7.66	-8.46-7.82	-7.85-8.53	-9.13-7.84	-5.97-5.05	-4.81-5.75	-7.12-8.82	-12.52-14.66	-15.47-12.59	-10.21-10.14	-9.20-8.68	-9.15-16.60	-10.21-8.56	-7.87-7.76	-7.95-7.94	-7.95-7.61	-8.81-8.35	-6.71-6.60	-4.92-4.10	-3.85-2.00	-5.01-6.09
θ (240°)	-10.71-9.16	-8.19-7.75	-7.02-6.49	-6.45-6.81	-6.49-5.86	-5.76-5.15	-3.93-3.18	-3.13-3.88	-5.23-7.51	-9.94-11.68	-11.59-10.44	-10.09-10.45	-11.78-14.27	-15.78-16.01	-15.45-12.41	-11.28-10.39	-9.85-9.27	-8.57-8.16	-8.35-9.08	-10.59-10.54	-9.37-8.57	-8.17-9.08	-9.69-10.57	-11.00-11.43
θ (255°)	-8.62-9.05	-9.92-10.23	-10.52-9.78	-9.41-10.09	-9.23-7.90	-6.91-6.37	-6.80-8.54	-11.56-13.49	-12.77-11.01	-10.25-10.30	-10.05-10.42	-11.48-13.61	-15.00-13.67	-12.26-10.53	-9.50-8.77	-7.69-6.83	-6.60-7.43	-8.09-8.40	-9.10-9.56	-9.33-9.09	-8.70-8.23	-7.95-7.68	-7.82-8.53	-9.42-8.76
θ (270°)	5.785GPol	TotalAnt. 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gain	Φ(0°)Φ(7.5°)	Φ(15°)Φ(22.5°)	Φ(30°)Φ(37.5°)	Φ(45°)Φ(52.5°)	Φ(60°)Φ(67.5°)	Φ(75°)Φ(82.5°)	Φ(90°)Φ(97.5°)	Φ(105°)Φ(112.5°)	Φ(120°)Φ(127.5°)	Φ(135°)Φ(142.5°)	Φ(150°)Φ(157.5°)	Φ(165°)Φ(172.5°)	Φ(180°)Φ(187.5°)	Φ(195°)Φ(202.5°)	Φ(210°)Φ(217.5°)	Φ(225°)Φ(232.5°)	Φ(240°)Φ(247.5°)	Φ(255°)Φ(262.5°)	Φ(270°)Φ(277.5°)	Φ(285°)Φ(292.5°)	Φ(300°)Φ(307.5°)	Φ(315°)Φ(322.5°)	Φ(330°)Φ(337.5°)	Φ(345°)Φ(352.5°)
θ (0°)	0.11-0.03	0.13-0.11	0.28-0.41	0.16-0.11	-0.09-0.27	-0.16-0.36	-0.16-0.53	-0.41-0.10	0.14-0.17	-0.32-0.08	0.14-0.17	0.03-0.04	0.16-0.54	0.60-0.37	0.11-0.13	0.42-0.55	0.66-0.66	0.38-0.42	0.54-0.54	0.52-0.41	0.28-0.32	0.32-0.12	-0.03-0.09	0.27-0.27
θ (7.5°)	0.31-0.27	0.17-0.28	0.40-0.55	0.75-0.64	0.57-0.55	0.20-0.41	0.94-1.02	0.57-0.31	0.33-0.19	0.00-0.22	0.47-0.53	0.27-0.06	-0.00-0.22	0.47-0.53	0.32-0.34	0.77-0.78	0.65-0.73	0.58-0.27	0.17-0.17	0.25-0.27	0.02-0.04	-0.01-0.19	-0.24-0.21	-0.12-0.01
θ (15°)	0.91-0.96	0.79-0.86	1.01-1.51	0.96-0.58	0.56-1.06	0.03-0.39	0.61-0.55	0.40-0.04	-0.68-1.19	-1.43-1.18	-0.45-0.58	-0.31-0.38	-0.46-1.10	0.16-0.26	-0.09-0.59	-0.76-0.62	-0.47-0.43	-0.60-0.91	-1.20-1.29	-1.15-1.15	-1.31-0.95	-0.61-0.22	0.19-0.38	0.06-0.35
θ (22.5°)	0.64-0.98	1.24-1.23	1.29-1.30	0.88-0.95	1.16-0.65	-0.23-0.10	0.32-0.03	-0.33-0.91	-1.55-1.58	-1.55-1.33	-0.40-0.30	0.41-0.26	-0.55-0.39	-0.71-1.63	-2.37-2.70	-2.68-2.23	-1.44-0.52	0.22-0.40	-0.02-0.75	-1.16-1.34	-1.06-0.45	-0.13-0.16	0.58-0.57	0.35-0.47
θ (30°)	-0.79-0.18	0.66-0.95	0.95-0.79	0.62-0.08	0.39-0.53	-1.28-0.68	0.25-0.11	-0.77-1.17	-2.64-1.70	-0.85-0.55	-0.47-1.27	-0.90-0.76	-1.30-1.26	-1.09-1.35	-1.37-1.62	-1.90-1.85	-1.04-0.29	0.75-0.55	-1.67-0.97	-0.31-0.03	0.29-0.17	-0.03-0.41	-0.75-1.31	-0.75-1.31
θ (37.5°)	-1.58-0.41	0.38-0.85	1.00-0.93	0.98-0.63	-0.59-0.53	-2.00-1.71	-1.23-1.60	-1.97-1.92	-1.49-0.53	-0.73-0.72	-1.32-1.65	-1.42-1.74	-2.28-2.14	-3.87-2.39	-0.90-0.57	-0.33-0.02	0.51-1.02	0.87-1.09	-0.52-0.02	0.90-0.78	-0.31-0.35	-0.37-0.69	-1.53-2.13	-1.53-2.13
θ (45°)	-2.82-1.63	-1.44-1.11	-0.65-0.14	0.77-0.80	-0.06-0.96	-0.70-1.32	-1.02-1.79	-1.29-1.23	-2.23-3.54	-1.95-1.54	-1.46-1.20	-1.24-1.48	-1.86-2.43	-1.07-1.53	-2.01-1.73	-0.38-0.33	-0.98-0.15	0.10-0.57	-0.15-0.18	0.58-0.38	-0.34-0.26	-0.08-1.17	-2.69-3.06	-2.69-3.06
θ (52.5°)	-4.11-3.58	-2.63-1.58	-1.29-0.71	0.12-0.45	0.27-0.20	-0.48-0.94	-1.56-1.47	-2.12-2.08	-1.48-2.54	-2.70-2.86	-1.97-1.90	-2.74-3.99	-4.28-3.82	-4.46-3.10	-2.00-0.07	-0.94-0.75	0.20-1.07	0.97-1.03	0.32-1.11	-0.98-0.43	0.72-0.68	-0.78-0.21	-1.48-2.74	-4.22-3.63
θ (60°)	-4.03-3.20	-2.28-2.00	-2.16-1.72	-0.24-0.40	0.00-0.80	-0.86-1.27	-1.76-1.72	-3.32-2.48	-1.40-3.38	-3.23-3.13	-2.61-2.85	-3.78-4.41	-4.06-4.19	-5.19-5.13	-3.51-2.65	-0.73-0.41	-0.33-0.44	-0.88-0.90	-0.11-1.52	-0.81-0.15	-0.00-1.42	-1.61-1.10	-1.51-2.47	-3.01-2.84
θ (67.5°)	-3.60-4.04	-2.56-1.84	-1.85-2.15	-1.39-0.11	-0.24-1.39	-1.16-1.57	-2.59-2.77	-4.34-2.86	-3.18-2.65	-2.57-3.44	-5.01-6.10	-7.40-6.07	-3.32-3.04	-4.03-4.46	-5.12-3.15	-2.45-1.82	-2.24-2.61	-3.83-3.73	-3.41-4.10	-1.27-1.46	-1.32-1.33	-1.64-1.54	-1.80-1.02	-1.91-1.80
θ (75°)	-4.38-4.12	-2.05-1.92	-1.96-1.88	-2.14-0.96	-0.09-1.19	-3.34-2.12	-2.55-3.89	-3.23-3.76	-1.46-3.04	-4.12-3.68	-6.32-9.69	-9.09-7.28	-6.22-5.15	-4.24-4.65	-3.90-6.41	-1.81-3.95	-4.53-3.49	-5.51-4.30	-3.92-1.93	-1.72-1.53	-1.29-1.51	-3.76-2.78	-0.81-0.16	-0.63-1.73
θ (82.5°)	-3.42-3.12	-1.91-2.47	-2.35-2.11	-2.47-1.97	-0.57-1.07	-2.84-1.92	-2.43-5.42	-2.50-4.37	-1.53-1.98	-6.22-6.14	-8.80-10.13	-8.10-6.86	-6.82-8.42	-6.48-6.01	-4.79-5.69	-6.38-7.53	-5.80-4.27	4.21-1.68	-2.87-0.93	-1.12-1.48	-1.97-2.57	-3.44-1.94	-0.45-0.58	-0.80-1.57
θ (90°)	-2.33-2.34	-1.60-2.26	-3.24-2.28	-3.29-2.02	-2.26-2.41	-2.71-1.83	-2.19-4.95	-2.58-3.63	-1.54-3.63	-7.00-5.97	-12.45-12.75	-11.00-6.21	-6.72-8.57	-7.36-7.63	-6.60-9.37	-6.83-6.91	-7.89-9.03	-5.02-2.09	-2.16-0.91	-1.66-1.21	-1.92-2.33	-3.83-3.30	-0.85-0.37	-0.34-0.87
θ (97.5°)	-2.13-2.09	-1.92-2.62	-3.15-3.03	-2.23-2.41	-2.64-4.33	-3.24-1.14	-1.40-3.84	-2.55-4.80	-1.63-5.69	-7.68-8.35	-11.72-12.42	-12.74-8.01	-8.86-6.29	-6.88-1.18	-8.14-11.09	-8.67-9.21	-8.53-9.54	-10.31-4.53	-4.73-2.15	-3.40-5.00	-3.36-2.88	-4.17-3.11	-2.25-0.23	-0.21-0.75
θ (105°)	-3.10-2.02	-1.26-2.34	-3.30-3.29	-2.68-1.86	-2.20-4.29	-3.96-0.68	-2.32-3.91	-3.26-5.50	-2.48-6.01	-9.30-7.22	-11.34-9.92	-14.28-8.87	-9.12-5.53	-5.18-5.52	-7.59-15.42	-13.14-11.19	-11.82-10.39	-14.55-10.76	-3.93-4.14	-5.37-3.55	-4.05-3.95	-5.02-3.32	-4.49-1.61	0.73-1.04
θ (112.5°)	-2.93-1.59	-1.24-1.94	-2.61-1.79	-1.12-1.33	-2.62-2.65	-1.77-1.45	-4.20-5.85	-4.04-4.27	-4.73-13.04	-7.58-7.71	-9.94-12.23	-13.67-12.81	-11.00-6.21	-6.72-8.57	-7.45-6.07	-8.65-11.38	-8.72-14.23	-10.28-9.95	-11.22-17.18	-13.21-7.05	-4.96-3.67	-8.20-9.38	-4.45-1.44	-0.60-1.60
θ (120°)	-3.84-2.23	-1.81-2.52	-2.17-1.66	-0.96-1.57	-1.62-1.05	-0.74-0.98	-3.74-6.02	-5.67-5.24	-6.57-8.42	-7.87-7.07	-8.64-9.19	-14.18-15.37	-14.89-14.16	-11.08-12.90	-8.11-8.69	-8.92-8.54	-10.26-4.59	-6.83-8.03	-3.74-3.25	-8.42-7.14	-8.			



# Antenna Pattern of 2.4GHz&5GHz

# Appendix C

Theta (°)	14.91-8.08	-4.91-6.44	-9.55-6.48	-7.45-7.03	-5.14-4.80	-4.03-4.44	-5.28-4.71	-5.97-6.65	-8.09-10.16	-11.75-13.99	-13.29-9.13	-6.55-6.54	-3.96-2.64	-2.51-4.29	-5.98-2.34	-0.32-0.69	-5.28-3.00	-0.04-0.72	-0.42-1.91	-2.98-1.46	-1.88-0.48	-8.84-13.74	-12.18-12.21	-9.04-9.85
Theta (127.5°)	-10.50-8.46	-6.79-6.98	-8.01-9.49	-9.57-7.22	-5.58-5.13	-4.73-5.25	-7.78-6.41	-6.69-7.23	-7.96-11.00	-11.82-12.17	-7.94-6.58	-6.78-4.57	-4.74-5.20	-2.66-1.58	-4.77-6.01	-2.71-2.42	-4.41-3.00	-3.27-4.70	-3.42-3.87	-10.85-6.87	-5.79-12.27	-15.31-10.57	-6.63-11.01	-12.31-14.52
Theta (135°)	-5.40-5.99	-5.08-5.35	-6.64-10.06	-13.24-8.66	-7.85-8.31	-6.06-6.60	-7.79-7.78	-6.07-6.25	-7.56-9.24	-8.97-5.82	-4.11-5.22	-5.65-6.61	-3.60-3.67	-3.92-3.32	-3.12-4.48	-6.25-10.62	-4.69-1.63	-3.24-0.95	-3.46-5.58	-8.93-6.50	-4.21-6.85	-9.18-8.21	-6.72-6.56	-8.16-9.84
Theta (142.5°)	-5.39-4.64	-4.88-5.76	-7.21-9.08	-11.62-9.98	-7.90-8.17	-9.01-7.24	-6.04-6.04	-5.87-6.57	-6.41-5.56	-6.10-5.64	-4.97-5.69	-4.31-4.67	-5.93-6.71	-4.36-5.53	-3.18-4.01	-5.44-2.28	-0.42-0.27	-1.29-4.48	-5.77-7.32	-8.66-6.39	-5.14-6.15	-7.20-7.89	-6.99-5.72	-9.19-9.21
Theta (150°)	-6.24-5.17	-5.15-6.13	-7.42-9.13	-11.03-12.35	-10.76-9.27	-8.89-9.26	-8.73-8.90	-10.25-10.62	-10.62-10.40	-9.80-8.81	-7.39-6.12	-5.31-3.16	-3.22-5.41	-4.67-6.33	-4.56-2.86	-1.59-0.94	-1.61-2.35	-2.72-4.19	-5.67-6.98	-8.42-10.14	-10.69-13.98	-15.49-14.94	-12.47-10.74	-10.12-7.64
Theta (157.5°)	-6.31-5.79	-5.26-4.80	-4.79-5.54	-5.26-6.03	-7.12-9.45	-12.78-15.72	-14.88-15.19	-13.53-11.97	-12.33-12.37	-6.63-6.57	-6.99-6.40	-4.55-7.41	-4.17-4.37	-3.40-1.81	-1.22-1.97	-3.62-4.85	-5.92-8.71	-13.17-11.38	-11.02-12.13	-14.10-14.20	-10.94-10.85	-9.45-9.56	-10.02-13.73	
Theta (165°)	-7.37-7.47	-6.47-6.20	-5.85-5.61	-5.28-5.25	-4.69-4.54	-5.07-5.14	-4.82-3.90	-3.33-3.68	-4.19-3.84	-3.83-4.76	-4.54-3.96	-4.60-5.09	-4.58-3.81	-3.88-4.52	-6.23-8.20	-9.32-7.91	-6.40-6.12	-5.53-5.29	-6.80-8.52	-10.65-12.65	-12.05-11.26	-10.58-9.06	-6.53-5.65	-6.52-7.02
Theta (172.5°)	-11.26-9.76	-7.83-6.40	-5.66-4.72	-4.23-4.04	-3.95-3.94	-4.28-4.87	-4.46-3.82	-4.21-5.33	-5.07-3.73	-3.58-3.73	-3.04-2.96	-3.02-2.84	-3.36-4.40	-5.97-7.59	-10.04-12.35	-12.29-10.58	-9.77-10.49	-11.13-11.78	-14.20-14.51	-14.32-13.19	-10.79-9.17	-8.66-9.13	-7.87-7.03	-7.91-10.26
Theta (180°)	-9.36-7.87	-7.01-6.63	-7.03-6.67	-6.49-6.80	-6.93-6.88	-7.14-7.20	-7.49-7.41	-6.21-6.30	-5.86-5.88	-5.48-5.26	-5.20-5.05	-5.30-6.37	-7.70-9.27	-10.35-10.91	-10.37-9.44	-9.07-9.09	-8.93-11.86	-12.26-9.21	-6.84-5.46	-5.11-5.46	-6.34-7.09	-7.19-7.48	-8.29-9.03	-9.24-9.16
Freq(Hz)	5.6GPol.	TotalAnt. 3																						
Gain	Phi(0°)Phi(7.5°)	Phi(15°)Phi(22.5°)	Phi(30°)Phi(37.5°)	Phi(45°)Phi(52.5°)	Phi(60°)Phi(67.5°)	Phi(75°)Phi(82.5°)	Phi(90°)Phi(97.5°)	Phi(105°)Phi(112.5°)	Phi(120°)Phi(127.5°)	Phi(135°)Phi(142.5°)	Phi(150°)Phi(157.5°)	Phi(165°)Phi(172.5°)	Phi(180°)Phi(187.5°)	Phi(195°)Phi(202.5°)	Phi(210°)Phi(217.5°)	Phi(225°)Phi(232.5°)	Phi(240°)Phi(247.5°)	Phi(255°)Phi(262.5°)	Phi(270°)Phi(277.5°)	Phi(285°)Phi(292.5°)	Phi(300°)Phi(307.5°)	Phi(315°)Phi(322.5°)	Phi(330°)Phi(337.5°)	Phi(345°)Phi(352.5°)
Theta (0°)	0.700.98	1.281.18	1.091.09	1.101.16	1.111.07	1.081.06	1.111.21	1.271.07	1.271.61	1.641.63	1.601.49	1.591.67	1.761.74	1.831.91	1.971.88	1.681.27	1.831.86	1.751.76	1.931.67	1.441.35	1.221.69	1.221.69	1.611.33	1.681.34
Theta (7.5°)	0.510.53	0.900.81	0.750.77	0.911.02	1.010.88	1.121.23	1.110.84	0.871.14	0.990.75	0.620.46	0.400.44	0.500.63	0.670.69	0.700.56	0.610.69	0.750.83	0.850.88	0.910.81	0.400.44	1.221.28	0.790.93	0.970.86	1.030.80	0.850.94
Theta (15°)	0.870.53	0.800.79	0.830.63	0.530.16	-0.47-0.64	-0.81-0.53	-0.09-0.03	-0.20-0.27	-0.37-0.37	-0.12-0.03	-0.41-0.87	-0.88-0.69	-0.72-0.57	-0.55-0.81	-0.88-0.67	-0.37-0.06	0.520.83	0.981.17	1.260.97	0.36-0.01	-0.04-0.42	-1.02-0.94	-0.48-0.51	0.21-1.18
Theta (22.5°)	0.620.72	0.920.12	1.350.89	0.590.19	-0.40-0.80	-0.77-0.42	-0.02-0.12	0.00-0.26	-0.87-0.91	-0.54-0.60	-0.97-0.95	-1.06-1.65	-2.13-2.28	-2.60-2.81	-2.46-1.39	-0.63-0.30	-0.30-1.00	0.430.90	1.100.77	0.05-0.88	-1.16-0.47	-1.00-0.56	-0.41-0.09	-0.63-0.30
Theta (30°)	-1.39-2.07	-1.71-1.93	-0.84-0.36	-0.23-0.41	-1.58-3.35	-4.53-3.93	-3.10-2.59	-2.22-2.13	-2.03-1.56	-1.03-1.24	-1.54-1.63	-2.05-2.20	-2.19-3.10	-5.01-6.09	-4.78-2.62	-1.63-1.82	-2.39-3.48	-3.38-2.73	-2.74-2.94	-2.42-1.84	-1.39-0.71	0.03-0.71	-1.74-2.68	-2.91-1.01
Theta (37.5°)	-0.59-1.09	-1.32-1.28	-1.79-2.06	-3.14-3.81	-4.18-5.17	-6.94-5.45	-3.73-3.31	-4.07-3.22	-3.36-2.97	-3.05-2.94	-2.51-1.65	-1.08-1.68	-1.71-1.98	-2.73-3.22	-3.33-3.54	-4.32-3.99	-4.57-4.14	-3.48-1.83	-0.69-1.12	-2.38-3.48	-2.50-0.84	-0.77-1.49	-2.65-3.89	-4.11-2.86
Theta (45°)	-0.470.09	-0.99-0.63	-0.63-1.76	-5.47-10.12	-6.48-5.96	-7.64-5.14	-4.28-4.76	-4.10-3.94	-3.00-3.66	-4.74-3.86	-2.57-2.34	-2.34-3.04	-3.52-2.43	-2.64-3.44	-5.18-5.77	-5.95-5.15	-5.04-2.73	-4.11-2.01	-3.49-3.39	-2.50-5.36	-6.68-2.90	-1.19-1.52	-3.69-2.24	
Theta (52.5°)	-2.82-3.84	-4.26-1.93	-1.67-3.00	-7.32-12.81	-7.32-5.49	-4.79-4.53	-3.40-3.15	-3.46-2.91	-3.02-3.77	-3.49-3.70	-3.66-3.22	-4.85-3.88	-4.43-5.27	-5.36-5.80	-4.01-3.43	-3.92-5.33	-4.69-5.31	-4.81-4.13	-3.57-4.28	-4.84-2.25	-2.70-4.79	-5.95-5.29	-1.51-1.96	-4.55-4.82
Theta (60°)	-1.71-1.71	-1.70-6.69	-5.79-6.38	-8.94-9.84	-7.29-6.84	-5.63-4.04	-2.40-2.47	-3.18-3.91	-5.72-5.56	-3.50-3.82	-5.38-6.62	-7.29-5.93	-4.36-4.12	-5.42-4.90	-5.98-6.39	-3.95-3.35	-5.04-8.61	-9.24-9.92	-7.45-7.13	-6.73-5.49	-4.54-5.35	-5.20-3.47	-2.48-6.69	-9.28-7.47
Theta (67.5°)	-4.50-2.66	-4.05-6.09	-8.38-13.31	-8.67-7.74	-7.79-7.07	-5.68-4.70	-3.65-4.23	-4.03-3.96	-5.28-4.74	-3.83-3.48	-5.31-5.93	-4.45-2.64	-4.83-5.66	-6.02-9.43	-5.14-4.48	-5.69-9.48	-8.75-5.54	-5.52-9.28	-12.44-11.91	-8.83-6.15	-4.61-6.10	-5.66-7.69	-7.41-6.92	
Theta (75°)	-2.23-1.34	-1.64-3.20	-7.33-16.08	-7.74-5.75	-6.95-6.66	-5.16-4.95	-4.05-4.54	-4.52-3.52	-3.63-3.96	-3.78-4.62	-7.08-6.17	-3.73-3.32	-3.20-3.03	-2.81-2.73	-7.41-6.12	-3.85-2.68	-5.22-7.34	-3.69-1.00	-0.47-3.11	-6.52-9.32	-15.12-5.69	-4.12-13.76	-13.15-9.37	-9.02-5.56
Theta (82.5°)	-2.31-1.05	-1.34-3.04	-4.46-15.07	-8.54-6.36	-6.80-8.53	-6.05-9.51	-4.08-4.56	-2.71-3.02	-3.74-5.52	-4.59-6.06	-4.07-4.54	-2.53-1.18	-3.65-1.99	-5.31-3.17	-2.56-3.72	-5.60-5.88	-3.54-0.93	-0.25-5.68	-5.00-8.19	-14.85-8.15	-6.57-14.92	-15.05-8.70	-7.38-5.81	
Theta (90°)	-3.49-2.46	-2.76-3.64	-5.90-15.09	-7.22-5.24	-7.31-7.09	-5.43-6.38	-5.85-5.16	-6.34-4.10	-2.20-3.15	-4.77-5.40	-4.93-4.29	-5.06-5.11	-4.57-2.62	-3.22-1.89	-4.56-5.08	-4.03-0.50	-5.21-3.61	-1.78-0.59	-0.03-0.50	-7.96-5.74	-7.57-14.47	-13.45-7.70	-6.59-6.47	
Theta (97.5°)	-3.92-3.85	-3.99-5.13	-8.47-15.24	-8.62-7.11	-7.10-8.20	-6.37-7.81	-5.27-5.10	-5.77-3.57	-2.32-4.01	-5.52-5.69	-4.56-4.63	-4.03-4.28	-2.76-1.49	-3.93-4.92	-1.56-1.69	-5.37-5.14	-2.00-1.15	-4.03-4.95	-7.20-9.49	-7.89-11.66	-10.67-14.69	-12.51-6.24	-5.99-4.89	
Theta (105°)	-4.91-4.40	-4.45-11.57	-11.93-13.05	-8.18-6.20	-7.35-6.93	-6.97-8.69	-6.86-6.48	-5.88-3.92	-3.22-4.82	-6.72-6.18	-6.21-6.13	-8.36-6.75	-4.71-3.19	-3.07-2.77	-2.62-1.28	-4.98-0.86	-1.26-5.35	-4.76-0.66	-2.12-3.57	-12.24-14.35	-12.99-8.82	-8.51-15.05	-15.59-8.54	-4.55-5.25
Theta (112.5°)	-4.81-3.93	-6.88-14.50	-10.93-12.69	-9.78-8.13	-7.79-9.34	-7.78-7.32	-7.61-5.15	-5.40-5.51	-3.60-4.24	-6.69-5.97	-6.29-9.34	-13.28-6.38	-4.64-2.45	-1.67-3.06	-4.75-0.20	-1.80-6.88	-6.29-6.08	-4.79-3.36	-7.09-3.96	-11.29-7.63	-15.14-9.88	-11.63-8.25	-7.38-14.10	
Theta (120°)	-10.72-9.89	-8.63-10.73	-9.36-6.84	-6.27-6.92	-9.56-7.88	-7.14-6.77	-5.63-5.88	-5.65-5.14	-6.27-6.95	-8.58-13.33	-14.74-7.80	-4.31-3.23	-2.34-2.20	-3.85-2.20	-4.45-3.79	-6.29-0.34	-4.48-4.79	-1.99-0.34	-2.67-4.42	-4.38-14.24	-10.80-11.92	-16.13-14.28	-10.14-15.10	
Theta (127.5°)	-12.95-11.51	-10.52-10.43	-9.51-7.84	-8.22-9.34	-10.58-10.60	-8.11-6.59	-6.38-5.95	-6.81-7.06	-6.27-5.37	-6.08-7.78	-13.89-15.26	-9.38-3.60	-4.01-4.23	-3.81-3.12	-0.78-0.22	-2.04-2.98	-4.32-3.26	-4.53-4.98	-15.03-11.83	-8.67-11.22	-7.50-14.95	-12.69-8.79	-6.16-14.53	-10.79-14.04
Theta (135°)	-8.78-8.84	-6.43-5.93	-9.08-9.96	-9.00-7.44	-10.52-12.51	-11.62-9.50	-8.97-7.89	-9.05-10.19	-10.45-9.69	-7.97-9.41	-12.37-11.87	-8.06-4.70	-2.51-1.06	-3.24-2.99	-0.97-1.41	-4.30-6.90	-7.07-5.05	-3.51-2.28	-4.45-8.41	-10.30-7.36	-6.31-7.70	-9.28-10.09	-8.57-12.19	-10.33-8.25
Theta (142.5°)	-5.78-6.51	-6.72-7.16	-9.12-8.76	-7.39-6.32	-7.96-8.57	-9.23-8.74	-8.39-7.74	-7.59-9.15	-10.08-9.23	-8.41-7.95	-10.27-7.75	-5.60-3.64	-2.10-1.75	-3.10-4.35	-4.25-4.59	-4.50-5.66	-1.72-0.27	0.31-1.58	-5.59-7.07	-6.83-6.10	-4.97-7.38	-8.00-13.26	-9.18-8.54	
Theta (150°)	-7.92-7.00	-7.46-9.27	-13.13-12.44	-9.03-6.60	-5.81-5.65	-5.80-7.33	-8.89-8.31	-6.65-6.14	-7.04-8.51	-9.44-10.61	-12.66-11.28	-7.51-4.52	-3.13-3.49	-4.14-8.41	-6.11-5.15	-3.00-7.03	0.59-0.52	-0.04-2.70	-8.51-11.21	-14.22-14.75	-10.99-10.55	-12.93-14.33	-11.22-11.83	-10.79-9.19
Theta (157.5°)	-12.63-11.78	-11.68-11.90	-12.28-10.66	-9.42-8.80	-7.84-9.32	-5.82-5.66	-5.55-5.11	-5.73-6.96	-8.56-10.42	-12.85-12														