



Antenna Composite Gain Test Report

FCC ID	2ABLKU10XE
Equipment	GigaSpire BLAST u10xe
Brand Name	Calix
Model Name	u10xe GS4237
Applicant	Calix Inc. 1035 N. McDowell Blvd. Petaluma, CA94954 U.S.A
Manufacturer	NEWEB VIET NAM CO., LTD. Land Lot CN01, Dong Van III Industrial zone, Dong Van Ward, Duy Tien Town, Ha Nam Province, VietNam
Sample Received	Nov. 15, 2022
Start Test Date	Dec. 08, 2022
Final Test Date	Dec. 08, 2022

Approved by: Rex Liao

Sporton International Inc. Hsinchu Laboratory

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



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History of this test report

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1. Operation Mode and Antenna Information

Antenna Position	RF Port		Brand Name	Model Name	Ant. Type	Connector	Modes of Operation
	WLAN 2.4GHz	WLAN 5GHz					
2G 5G Ant1	1	3	WNC	81XKAC15.GFB	Dipole	I-PEX	2.4GHz / 5GHz UNII 1~3
2G 5G Ant2	2	4	WNC	81XKAC15.GFC	Dipole	I-PEX	
5G Ant3	-	1	WNC	81XKAC15.GGA	Dipole	I-PEX	5GHz UNII 1~3
5G Ant4	-	2	WNC	81XKAC15.GGA	Dipole	I-PEX	

Note:

2.4GHz Operation Mode (2TX/2RX)

2G 5G Ant1~2 can be used as transmitting/receiving antenna.

2G 5G Ant1~2 could transmit/receive simultaneously.

5GHz Operation Mode (4TX/4RX)

2G 5G Ant1~4 can be used as transmitting/receiving antenna.

2G 5G Ant1~4 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

3. Testing Location

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

Test Condition	Test Site No.	Test Engineer	Test Environment (°C / %)	Test Date
Radiated	05CH03-HY	Rex Liao	23~24 / 50~55	Dec. 08, 2022

Note:

Testing Site Information

Brand Name: TDK

Dimension: 11m*6m*6m

Characteristic: Fully Anechoic Chamber

4. Test Facility and Configuration

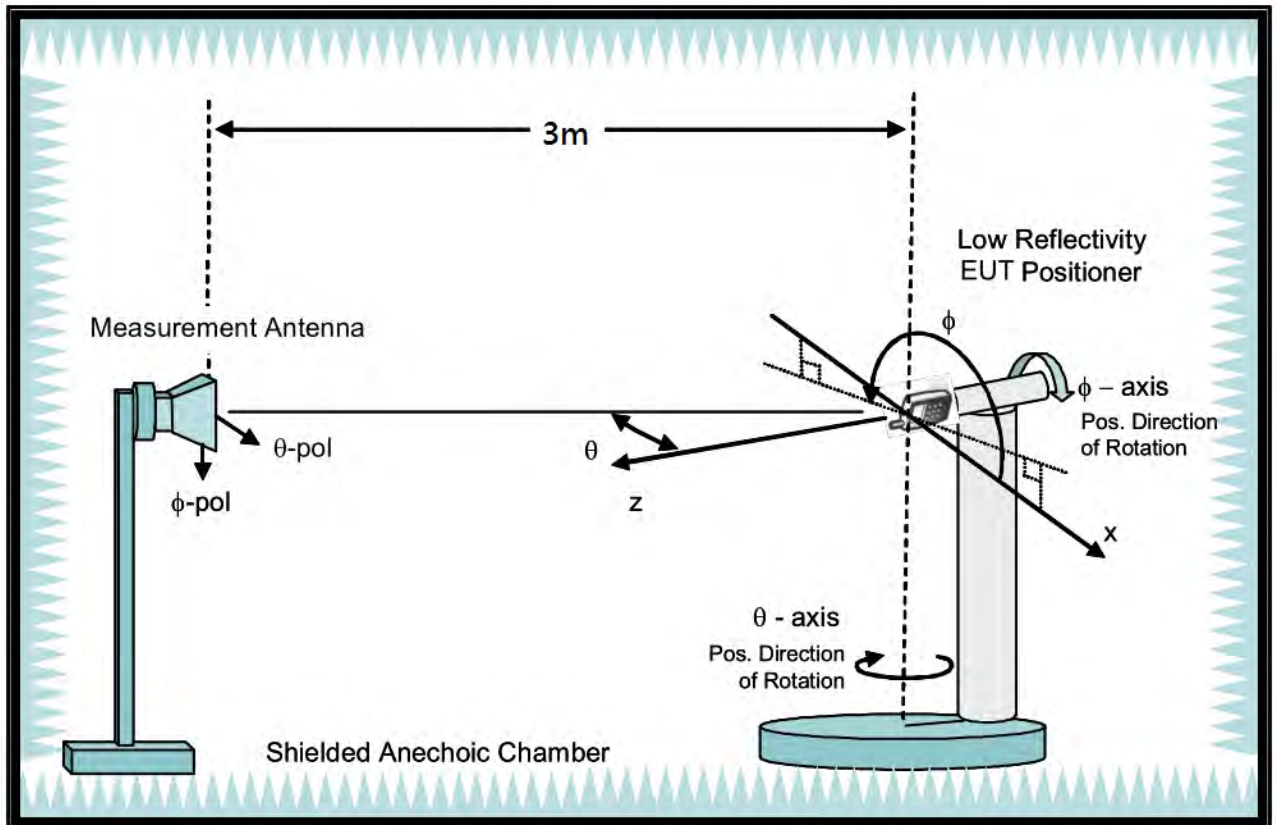
Test configuration: Reference to CITA OTA distributed-axes system configuration.

Chamber: Fully Anechoic Chamber.

Measurement antenna: Dual Polarization Horn antenna

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

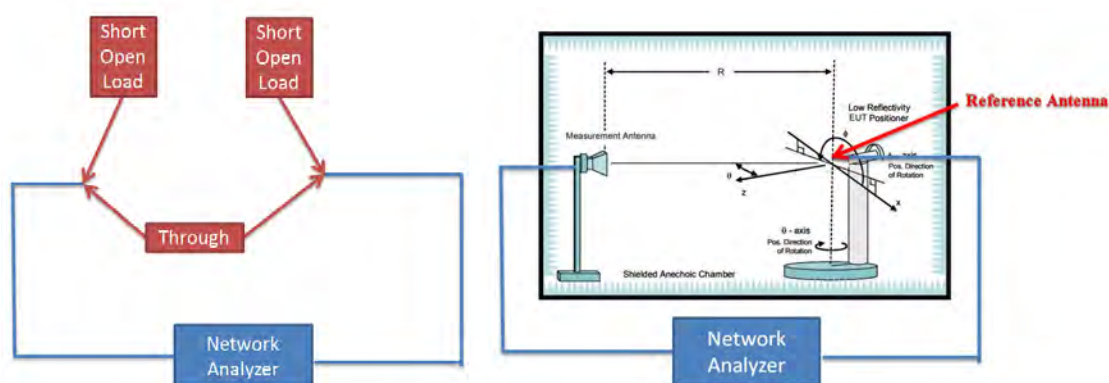
#Reference to CTIA "ctia-test-plan-for-wireless-device-over-the-air-performance-ver-3-7-1"



5. Reference Calibration

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

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



Frequency (MHz)	2400	2450	2500	5150	5200	5300	5600	5750	5800	5900	6000	6500	7000	7200
G(theta) reading (dB)	-33.55	-33.27	-32.92	-32.91	-32.73	-32.02	-32.67	-32.82	-32.98	-33.18	-32.8	-33.92	-34.62	-35.57
G(phi) reading (dB)	-33.15	-32.7	-32.41	-32.61	-32.43	-31.72	-32.37	-32.51	-32.52	-32.66	-32.5	-33.62	-34.32	-35.48
Reference gain (dBi)	10.1	10.4	10.7	12.5	12.7	13.5	13.4	13.3	13.3	13.2	13.4	12.5	12.1	11.4
Factor(theta) (dB)	43.65	43.67	43.62	45.41	45.43	45.52	46.07	46.12	46.28	46.38	46.2	46.42	46.72	46.97
Factor(phi) (dB)	43.25	43.1	43.11	45.11	45.13	45.22	45.77	45.81	45.82	45.86	45.9	46.12	46.42	46.88

Note:

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

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

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

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

6. Test Method

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

DG steps:

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

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

7. Measured Values and Calculation of Maximum Gain Positions

DG_1SS max value position

Frequency (Hz)	2.45G	5.2G	5.3G	5.6G	5.785G
Ant. 1 (dBi)	1.83	-3.02	0.01	0.8	0.56
Ant. 2 (dBi)	1.67	-2.85	-3.26	-1.82	-3.45
Ant. 3 (dBi)		-1.48	-3.15	2.99	2.85
Ant. 4 (dBi)		-3.58	-0.8	0.33	2.8
DG [1SS] (dBi)	4.76	3.32	4.34	6.76	7.06
Polarization	Theta	Theta	Theta	Theta	Theta
$\Theta(^{\circ})$	82.5	97.5	97.5	97.5	112.5
$\Phi(^{\circ})$	285	90	300	0	82.5

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

DG_1SS max value position calculation

Frequency (Hz)	2.45G	5.2G	5.3G	5.6G	5.785G
Ant. 1 [$10^{(G/20)}$]	$10^{(1.83/20)}$	$10^{(-3.02/20)}$	$10^{(0.01/20)}$	$10^{(0.8/20)}$	$10^{(0.56/20)}$
Ant. 2 [$10^{(G/20)}$]	$10^{(1.67/20)}$	$10^{(-2.85/20)}$	$10^{(-3.26/20)}$	$10^{(-1.82/20)}$	$10^{(-3.45/20)}$
Ant. 3 [$10^{(G/20)}$]		$10^{(-1.48/20)}$	$10^{(-3.15/20)}$	$10^{(2.99/20)}$	$10^{(2.85/20)}$
Ant. 4 [$10^{(G/20)}$]		$10^{(-3.58/20)}$	$10^{(-0.8/20)}$	$10^{(0.33/20)}$	$10^{(2.8/20)}$
Ant. 1 [$10^{(G/20)}$] value	1.235	0.706	1.001	1.096	1.067
Ant. 2 [$10^{(G/20)}$] value	1.212	0.72	0.687	0.811	0.672
Ant. 3 [$10^{(G/20)}$] value		0.843	0.696	1.411	1.388
Ant. 4 [$10^{(G/20)}$] value		0.662	0.912	1.039	1.38
Sum All Antenna [Amax]	2.447	2.932	3.296	4.357	4.508
DG [$10 \cdot \log(A_{max}^2/N_{ant})$]	4.76	3.32	4.34	6.76	7.06

Note:

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

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

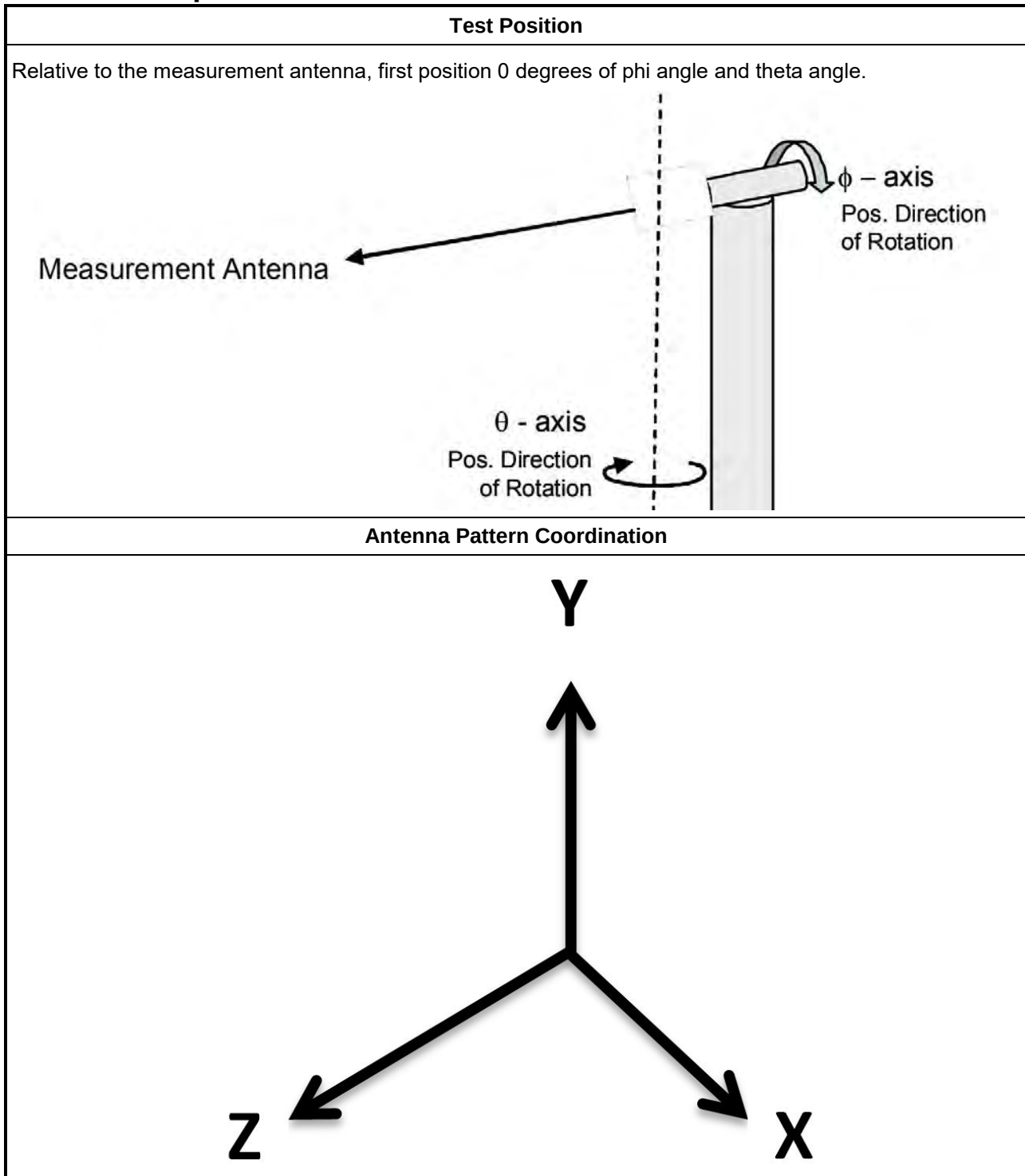
8. Summary of Test Result

Freq(Hz)	2.45G	5.2G	5.3G	5.6G	5.785G
Ant. 1 Max Gain (dBi)	2.88	0.9	1.02	3.27	1.99
Ant. 2 Max Gain (dBi)	3.07	0.72	0.74	2.25	1.46
Ant. 3 Max Gain (dBi)		1.13	2	2.99	3.26
Ant. 4 Max Gain (dBi)		0.82	1.2	1.82	2.95
Ant. 1 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$	Theta/105/97.5	Theta/105/37.5	Theta/90/300	Theta/97.5/97.5	Theta/82.5/105
Ant. 2 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$	Theta/112.5/255	Theta/97.5/255	Theta/90/82.5	Theta/105/255	Theta/97.5/255
Ant. 3 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$		Theta/52.5/75	Theta/52.5/75	Theta/97.5/0	Theta/105/352.5
Ant. 4 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$		Phi/135/45	Phi/127.5/30	Phi/120/0	Theta/112.5/75
Max Gain (dBi)	3.07	1.13	2	3.27	3.26
DG [1SS] (dBi)	4.76	3.32	4.34	6.76	7.06
DG [2SS] (dBi)	3.07	1.13	2	3.76	4.06
DG [4SS] (dBi)		1.13	2	3.27	3.26

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 31, 2022	May 30, 2023
Dual Polarization Horn Antenna	Sporton	S0209DP	S0209DP-001	2GHz~9GHz	N.C.R.	N.C.R.
ENA Series Network Analyzer	AGILENT	E5071C	MY46419477	100kHz~8.5GHz	July. 20, 2022	July. 19, 2023
VNA Calibration Kit	TS RF	TS85033E-F	-	DC~9GHz	N.C.R.	N.C.R.
Multi-axis positioner	Sporton	MAPS01	MAPS01-001	Theta / Phi axis	N.C.R.	N.C.R.
Test Software	SPORTON	SENSE-RDG	V1.0.8	-	N.C.R.	N.C.R.

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

NCR means Non-Calibration required.



11. Test Results

Please refer to the appendix.

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Freq(Hz)	2.45G	5.2G	5.3G	5.6G	5.785G
Ant. 1 Max Gain (dBi)	2.88	0.9	1.02	3.27	1.99
Ant. 2 Max Gain (dBi)	3.07	0.72	0.74	2.25	1.46
Ant. 3 Max Gain (dBi)		1.13	2	2.99	3.26
Ant. 4 Max Gain (dBi)		0.82	1.2	1.82	2.95
Ant. 1 Polarization/ $\theta(^{\circ})/\phi(^{\circ})$	Theta/105/97.5	Theta/105/37.5	Theta/90/300	Theta/97.5/97.5	Theta/82.5/105
Ant. 2 Polarization/ $\theta(^{\circ})/\phi(^{\circ})$	Theta/112.5/255	Theta/97.5/255	Theta/90/82.5	Theta/105/255	Theta/97.5/255
Ant. 3 Polarization/ $\theta(^{\circ})/\phi(^{\circ})$		Theta/52.5/75	Theta/52.5/75	Theta/97.5/0	Theta/105/352.5
Ant. 4 Polarization/ $\theta(^{\circ})/\phi(^{\circ})$		Phi/135/45	Phi/127.5/30	Phi/120/0	Theta/112.5/75
Max Gain (dBi)	3.07	1.13	2	3.27	3.26
DG [1SS] (dBi)	4.76	3.32	4.34	6.76	7.06
DG [2SS] (dBi)	3.07	1.13	2	3.76	4.06
DG [4SS] (dBi)		1.13	2	3.27	3.26



Radiated Composite Gain Data

Appendix A

DG 1SS Result

Freq(Hz)	2.45GPol.	PhiH	Φ(0°)/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°)
DG(0B)	Φ(0°)/Φ(7.5°)	Φ(15°)/Φ(22.5°)	Φ(30°)/Φ(37.5°)	Φ(45°)/Φ(52.5°)	Φ(60°)/Φ(67.5°)	Φ(75°)/Φ(82.5°)	Φ(90°)/Φ(97.5°)	Φ(105°)/Φ(112.5°)	Φ(120°)/Φ(127.5°)	Φ(135°)/Φ(142.5°)	Φ(150°)/Φ(157.5°)	Φ(165°)/Φ(172.5°)	Φ(180°)/Φ(187.5°)	Φ(195°)/Φ(202.5°)	Φ(210°)/Φ(217.5°)	Φ(225°)/Φ(232.5°)	Φ(240°)/Φ(247.5°)	Φ(255°)/Φ(262.5°)	Φ(270°)/Φ(277.5°)	Φ(285°)/Φ(292.5°)	Φ(300°)/Φ(307.5°)	Φ(315°)/Φ(322.5°)	Φ(330°)/Φ(337.5°)	Φ(345°)/Φ(352.5°)
Θ(0°)	-9.21-8.31	-7.62/-7.04	-6.34/-5.92	-5.58/-5.02	-4.69/-4.53	-4.55/-4.77	-5.1/-5.68	-6.52/-7.62	-8.84/-9.97	-11.28/-11.8	-11.58/-10.81	-9.93/-9.17	-8.25/-7.98	-6.67/-6.96	-5.75/-5.26	-4.84/-4.61	-4.53/-4.52	-4.61/-4.8	-5.22/-5.66	-6.12/-6.59	-7.15/-7.92	-8.69/-9.43	-9.99/-10.36	-9.97/-9.41
Θ(7.5°)	-9.99/-8.06	-7.07/-6.48	-6.06/-5.58	-5.47/-5.09	-4.87/-4.57	-5.01/-5.27	-5.65/-6.23	-7.03/-7.96	-8.75/-9.39	-9.89/-10.23	-10.21/-9.97	-9.68/-9.36	-8.97/-9.1	-7.33/-6.66	-6.18/-5.36	-4.76/-4.33	-4.11/-4.02	-4.09/-4.27	-4.66/-5.16	-5.87/-6.74	-7.79/-9.01	-10.21/-11.02	-11.42/-11.41	-10.71/-9.91
Θ(15°)	-8.52/-7.7	-7.15/-6.45	-6/-5.6	-5.37/-5.11	-5.04/-5.22	-5.52/-5.9	-6.41/-7.06	-7.91/-8.62	-9.08/-9.17	-9.08/-8.91	-8.69/-8.49	-8.34/-8.34	-8.5/-8.87	-8.38/-7.76	-7.17/-6.32	-5.22/-4.44	-3.99/-3.83	-3.82/-3.98	-4.43/-5.12	-6.12/-7.41	-8.97/-10.68	-12.29/-13.09	-12.93/-11.93	-10.57/-9.49
Θ(22.5°)	-7.99/-7.14	-6.6/-6.29	-6.06/-5.97	-5.88/-6.01	-5.82/-6.01	-6.3/-6.69	-7.22/-7.92	-8.42/-8.95	-9.45/-9.28	-8.83/-8.28	-7.79/-7.47	-7.35/-6.47	-7.83/-8.39	-8.72/-8.69	-7.75/-7.23	-5.86/-5	-4.49/-4.27	-4.17/-4.36	-4.94/-5.85	-7.12/-8.71	-10.68/-12.94	-13.85/-14.08	-13.2/-12.37	-10.55/-9.17
Θ(30°)	-7.72/-6.81	-6.32/-6.13	-6.17/-6.46	-6.88/-7.1	-7.29/-7.47	-7.72/-8.08	-8.32/-8.7	-8.88/-9.07	-9.31/-9.71	-9.17/-9.29	-7.41/-6.71	-6.28/-6.31	-6.67/-7.38	-8.37/-9.74	-9.69/-9.51	-8.43/-8.86	-5.9/-5.27	-4.99/-5.13	-5.71/-6.68	-8.03/-9.72	-11.87/-14.28	-15.1/-13.95	-13.15/-11.41	-10.02/-8.88
Θ(37.5°)	-6.96/-6.43	-6.32/-6.45	-6.99/-7.89	-8.82/-9.24	-9.41/-9.55	-9.59/-9.52	-9.42/-9.21	-9.38/-9.8	-9.94/-10.13	-10/-9.31	-7.9/-6.8	-6.28/-6.28	-6.8/-7.77	-9.06/-10.81	-11.99/-12.11	-12.55/-10.03	-8.07/-6.82	-6.15/-6.04	-6.52/-7.42	-8.7/-10.11	-11.26/-11.93	-11.62/-10.3	-8.81/-7.91	-7.38/-7.22
Θ(45°)	-6.47/-6.44	-6.59/-6.9	-7.54/-8.67	-9.8/-10.42	-10.43/-10.36	-10.66/-10.99	-11.47/-12.19	-12.14/-13.15	-12.9/-12.79	-12.47/-11.73	-11/-9.23	-8.13/-7.78	-8.01/-8.92	-10.51/-12.78	-15.04/-15.56	-15.36/-11.23	-8.84/-7.69	-7.27/-7.61	-8.63/-9.97	-10.68/-11.05	-10.13/-9.33	-8.83/-8.9	-7.34/-6.65	-6.26/-6.3
Θ(52.5°)	-6.15/-7.9	-7.87/-7.7	-7.55/-8.11	-9.61/-10.13	-11.05/-12.03	-12.18/-12.98	-14.68/-15.57	-15.18/-14.86	-14.09/-14.63	-15.91/-15.55	-14.74/-12	-10.54/-9.98	-10.2/-10.73	-11.8/-13.41	-14.29/-13.63	-10.59/-8.79	-7.88/-7.61	-7.96/-8.99	-9.78/-9.56	-9.98/-9.86	-9.66/-9.6	-9.83/-10.14	-10.25/-9.82	-9.04/-8.4
Θ(60°)	-9.59/-9.69	-9.59/-9.97	-10.06/-10.26	-11.44/-12.66	-13.43/-14.51	-14.83/-14.2	-13.87/-13.93	-14.54/-13.77	-13.11/-12.91	-13.7/-14.53	-13.44/-13.91	-11.44/-9.87	-9.17/-9.46	-11.18/-14.34	-14.98/-15.74	-11.98/-9.68	-8.34/-7.82	-8.02/-9.02	-9.11/-9.4	-10.55/-11.76	-12.6/-12.65	-11.56/-10.43	-10.27/-10.35	-10.81/-9.91
Θ(67.5°)	-10.16/-9.28	-9.03/-8.77	-11.08/-10.72	-10.56/-10.7	-10.68/-11.56	-12.27/-14	-13.62/-13.85	-12.94/-11.92	-11.92/-12.32	-13/-14	-12.78/-12.16	-11.14/-9.56	-9.3/-10.41	-12.54/-14.11	-15.47/-15.72	-12.94/-10.94	-9.34/-9.09	-8.82/-9.39	-10.31/-11.27	-11.92/-13.36	-13.97/-13.75	-11.4/-9.28	-8.03/-7.89	-8.72/-9.92
Θ(75°)	-11.1/-9.31	-7.94/-7.7	-8.19/-9.02	-9.49/-10.32	-10.93/-11.28	-11.72/-13.57	-14.73/-15.14	-14.61/-11.88	-10.68/-10.85	-11.83/-12.8	-13.59/-12.74	-11.97/-9.71	-8.84/-9.18	-10.21/-10.22	-14.95/-15.82	-15.85/-14.81	-12.28/-10.52	-9.04/-8.57	-8.62/-9.46	-11.33/-12.62	-13.76/-13.78	-14.48/-14.16	-11.77/-10.76	-10.84/-11.33
Θ(82.5°)	-11.17/-10.15	-9.38/-9.78	-11.04/-12.72	-12.63/-11.75	-11.99/-10.54	-10.24/-11.23	-12.42/-14.12	-14.22/-12.42	-11.53/-10.6	-10.6/-11.1	-12.09/-12.07	-11.98/-12.37	-11.4/-10.76	-10.6/-11.39	-12.93/-14	-14.61/-13.04	-10.47/-8.81	-7.96/-7.9	-8.78/-10.02	-10.78/-11.15	-11.23/-11.7	-12.25/-13.95	-14.76/-13.8	-12.64/-11.55
Θ(90°)	-12.33/-11.09	-10.63/-11.65	-13.26/-13.73	-12.35/-10.96	-10.27/-10.11	-9.69/-9.74	-10.37/-11.73	-13.77/-15.61	-15.05/-15.15	-14.24/-14.18	-13.39/-12.98	-13/-13.11	-13.09/-12.58	-12.24/-12.67	-13.44/-13.66	-13.79/-11.84	-10.72/-9.5	-9.13/-9.1	-9.67/-9.89	-9.32/-10.06	-12.4/-15.15	-15.72/-15.65	-14.58/-14.28	-14.32/-13.1
Θ(97.5°)	-13.05/-14.53	-14.78/-15.04	-15.44/-15.02	-13.24/-11.48	-10.25/-9.8	-8.98/-8.91	-9.13/-9.42	-10.29/-10.4	-11.08/-12.83	-15.77/-15.77	-13.92/-11.48	-10.32/-10.14	-11.05/-12.72	-16.17/-14.48	-15.16/-15.76	-14.52/-12.01	-10.03/-7.97	-8.81/-7.17	-8.61/-10.7	-11.72/-12.95	-14.72/-14.63	-13.78/-12.87	-12.15/-12	-11.93/-12.64
Θ(105°)	-11.84/-11.82	-12.68/-12.95	-14.1/-12.94	-11.07/-10.66	-9.31/-8.63	-7.13/-6.27	-7.83/-8.29	-8.79/-10.5	-13.03/-14.55	-15.7/-12.73	-10.61/-9.74	-10.43/-11.5	-13.03/-14.95	-14.19/-13.37	-13.2/-12.32	-11.64/-9.67	-8.5/-8.89	-9.66/-9.85	-9.64/-9.36	-9.01/-9.15	-10.15/-12.11	-13.59/-13.36	-13.21/-12.27	
Θ(112.5°)	-10.31/-10.92	-12.17/-14.58	-16.06/-13.45	-11.19/-10.68	-11.05/-10.36	-7.45/-5.29	-4.34/-4.29	-5.22/-6.82	-7.7/-8.94	-10.92/-14.43	-15.27/-15.26	-12.82/-11.83	-11.23/-11.62	-12.65/-12.39	-12.29/-13.05	-13.08/-15.25	-14.74/-12.48	-11.75/-11.38	-10.91/-10.96	-10.08/-8.5	-7.67/-7.86	-8.68/-9.59	-9.82/-9.52	-9.32/-9.5
Θ(120°)	-10.37/-10.26	-10.99/-12.06	-13.34/-14.61	-11.34/-9.01	-8.65/-9.18	-7.86/-5.71	-4.53/-4.53	-5.76/-7.68	-9.35/-11.21	-13.27/-15.57	-15.03/-11	-9.58/-9.66	-9.92/-9.96	-9.52/-9.08	-9.45/-10.79	-13.29/-12.99	-11.65/-10.24	-10.01/-10.58	-10.84/-10	-8.85/-7.61	-6.89/-7.08	-7.9/-9	-9.24/-8.9	-8.54/-9.66
Θ(127.5°)	-10.35/-10.23	-9.88/-10.44	-13.06/-13.75	-11.48/-8.22	-6.8/-6.44	-5.74/-4.69	-4.19/-4.67	-6.25/-7.58	-7.88/-9.07	-13.7/-14.96	-12.27/-9.87	-9.11/-10.28	-8.88/-9.35	-8.76/-7.65	-7.54/-8.72	-11.84/-12.71	-13.64/-12.02	-11.73/-11.01	-11.09/-11.43	-8.17/-7.23	-7.22/-7.61	-8.77/-8.83	-9.27/-9.69	
Θ(135°)	-11.11/-11.58	-11.41/-11	-11.39/-12.76	-11.48/-10.05	-8.43/-7.86	-7.8/-7.49	-7.22/-7.41	-7.55/-7.17	-7.13/-8.41	-10.39/-10.9	-9.66/-9.61	-11.61/-14.45	-14.02/-12.06	-10.66/-9.49	-9.63/-10.94	-12.74/-13.12	-11.9/-10.77	-9.89/-9.15	-8.81/-9.36	-11.16/-13.08	-11.68/-9.28	-8.14/-8.07	-8.62/-11.18	-10.37/-9.71
Θ(142.5°)	-12.68/-13.84	-13.28/-12.26	-11.68/-12.62	-12.45/-10.95	-9.77/-8.9	-9.15/-10	-10.85/-10.93	-10.25/-9.82	-10.51/-12.13	-12.21/-9.38	-7.32/-6.69	-7.58/-9.1	-9.27/-8.26	-8/-8.99	-9.74/-7.14	-10.11/-8.97	-8.28/-8.03	-7.43/-6.84	-6.12/-6.13	-7.26/-9.15	-10.38/-10.31	-10.94/-11.82	-15.24/-15.35	-12.52/-11.72
Θ(150°)	-13.42/-15.06	-15.34/-15.37	-10.62/-13.42	-12.54/-10.65	-9.18/-7.71	-7.17/-7.28	-7.75/-8.4	-9.36/-10.92	-13.17/-12.95	-11.46/-8.85	-7.33/-6.74	-6.91/-7.45	-6.47/-6.82	-6.47/-6.71	-7.71/-9.23	-10.62/-11.29	-9.97/-9.85	-8.84/-7.05	-6.24/-6.33	-7.18/-8.59	-10.11/-10.41	-11.23/-11.97	-15.86/-15.19	-13.79/-12.46
Θ(157.5°)	-16.02/-15.49	-14.8/-14.06	-13.63/-13.18	-12.27/-11.37	-10.41/-8.81	-8.03/-7.94	-8.35/-9.16	-10.59/-12.39	-13.11/-12.18	-10.93/-9.6	-8.55/-8.3	-8.56/-8.98	-8.99/-8.46	-8.01/-7.98	-8.66/-9.94	-11.69/-13.31	-13.52/-12.17	-10.56/-9.35	-8.89/-9.1	-9.78/-10.84	-10.73/-11.04	-11.27/-12.35	-14.25/-15.47	-14.52/-15.71
Θ(165°)	-12.46/-12.15	-12.22/-12.19	-12.04/-11.94	-12.14/-12.72	-12.06/-11.54	-11.45/-12.12	-12.91/-14.22	-15.53/-15.5	-13.7/-12.11	-11.05/-11.08	-10.77/-11.37	-11.86/-13.09	-14.52/-14.43	-13.04/-12.12	-11.86/-12.5	-12.63/-13.17	-12.53/-12.75	-13.33/-13.59	-15.11/-13.97	-13.29/-12.5	-12.14/-12.44	-12.78/-12.64	-12.55/-12.07	
Θ(172.5°)	-10.77/-10.45	-10.77/-11.12	-14.71/-14.17	-12.04/-12.46	-12.66/-13.84	-14.62/-15.52	-14.64/-15.66	-15.77/-15.42	-14.21/-12.59	-14.81/-15.58	-13.84/-15.97	-15.77/-15.43	-15.04/-15.64	-15.53/-15.61	-14.41/-14.12	-14.56/-15.42	-14.63/-13.68	-12.36/-11.5	-11.07/-14.74	-10.82/-10.28	-10.56/-10.7			
Θ(180°)	-9.76/-9.97	-10.44/-10.5	-11.22/-11.39	-12.18/-12.46	-13.14/-14.15	-14.33/-15.7	-15.32/-15.54	-15.55/-14.93	-13.92/-12.52	-11.71/-11.34	-11.32/-11.47	-11.93/-12.25	-12.18/-13.02	-13.38/-13.98	-14.53/-14.38	-14.99/-15.5	-15.21/-15.72	-15.69/-15.93	-15.24/-15.04	-13.79/-13.02	-11.57/-10.85	-10.06/-9.93	-9.82/-9.4	-9.39/-9.49
Freq(Hz)	2.45GPol.	ThetaH	Φ(0°)/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°)
DG(0B)	Φ(0°)/Φ(7.5°)	Φ(15°)/Φ(22.5°)	Φ(30°)/Φ(37.5°)	Φ(45°)/Φ(52.5°)	Φ(60°)/Φ(67.5°)	Φ(75°)/Φ(82.5°)	Φ(90°)/Φ(97.5°)	Φ(105°)/Φ(112.5°)	Φ(120°)/Φ(127.5°)	Φ(135°)/Φ(142.5°)	Φ(150°)/Φ(157.5°)	Φ(165°)/Φ(172.5°)	Φ(180°)/Φ(187.5°)	Φ(195°)/Φ(202.5°)	Φ(210°)/Φ(217.5°)	Φ(225°)/Φ(232.5°)	Φ(240°)/Φ(247.5°)	Φ(255°)/Φ(262.5°)	Φ(270°)/Φ(277.5°)	Φ(285°)/Φ(292.5°)	Φ(300°)/Φ(307.5°)	Φ(315°)/Φ(322.5°)	Φ(330°)/Φ(337.5°)	Φ(345°)/Φ(352.5°)
Θ(0°)	-7.45/-8.05	-8.79/-9.37	-9.54/-9.42	-9.21/-9.18	-9.33/-9.69	-10.1/-9.53	-9.04/-8.46	-7.9/-7.53	-7.05/-6.79	-6.53/-6.4	-6.29/-6.1	-6.19/-6.54	-7.01/-7.54	-8.1/-8.63	-9.28/-9.89	-10.53/-11	-11.47/-11.71	-11.59/-10.29	-9.36/-8.62	-7.94/-7.76	-7.11/-6.98	-7.05/-6.71	-6.48/-6.46	-6.67/-7
Θ(7.5°)	-6.38/-7.3	-8.5/-9.4	-10.1/-11.8	-11.14/-10.97	-10.76/-10.54	-10.33/-9.85	-9.45/-9.14	-8.67/-8.4	-8.21/-8.3	-7.73/-7.4	-7.65/-7.42	-7.38/-7.59	-7.8/-8.02	-8.41/-8.95	-9.76/-10.45	-10.67/-10.61	-10.48/-10.05	-9.49/-8.74	-7.88/-7.16	-6.55/-6.08	-5.62/-5.28	-5.01/-4.8	-4.7/-4.8	-5.08/-5.52
Θ(15°)	-5.33/-6.33	-7.59/-9.11	-10.62/-11.52	-12.55/-13.22	-12.55/-11.23	-10.09/-9.31	-8.76/-8.33	-7.97/-7.91	-7.92/-7.99	-7.91/-7.94	-8.04/-8.25	-8.55/-8.85	-9.04/-9.17	-9.31/-9.52	-9.97/-10.52	-10.79/-10.67	-10.9/-9.19	-8.15/-7	-6.82/-4.86	-4.16/-3.69	-3.39/-3.25	-3.2/-3.21	-3.31/-3.51	-3.91/-4.9
Θ(22.5°)	-4.99/-6.12	-7.4/-8.89	-10.73/-12.68																					



Radiated Composite Gain Data

Appendix A

Θ(22.5°)	-1.67/-1.68	-1.67/-1.64	-1.78/-1.88	-2.49/-3.16	-4.25/-5.87	-7.8/-8.57	-8.92/-9.19	-8.34/-8.74	-7.33/-7.23	-7.33/-6.35	-6.02/-4.93	-3.54/-2.7	-2.61/-2.79	-3.03/-3.44	-3.97/-5.02	-5.95/-6.43	-6.82/-7.54	-7.95/-8.48	-9.11/-10.18	-10.49/-9.29	-6.96/-5.58	-4.21/-3.52	-3.02/-2.53	-2.05/-1.7
Θ(30°)	-1.22/-0.94	-0.54/-0.46	-0.37/-0.65	-1.15/-2.26	-3.8/-6.2	-8.57/-9.05	-8.03/-8.45	-8.29/-7.75	-7.57/-7.38	-7.38/-7.21	-6.6/-5.6	-5.08/-4.75	-4.14/-3.54	-3.29/-3.26	-3.75/-4.74	-5.07/-4.91	-5.26/-6.22	-7.59/-8.43	-9.75/-11.02	-11.31/-11.02	-10.01/-7.78	-5.96/-4.34	-3.05/-2	-1.34/-1.18
Θ(37.5°)	-0.68/-0.51	-0.33/-0.03	0.50/0.6	0.08/0.75	-1.87/-4.05	-7.63/-8.96	-8.48/-9.05	-7.23/-6.64	-6.37/-6.43	-5.8/-4.9	-4.51/-4.28	-3.08/-4.55	-3.83/-3.55	-3.24/-2.41	-2.32/-2.83	-3.63/-4.81	-5.81/-7.31	-9.27/-8.8	-10.59/-10.81	-9.27/-8.8	-5.47/-3.25	-2.07/-1.18	-0.39/-0.17	
Θ(45°)	-0.51/0.07	0.07/0.45	0.58/0.71	0.4/-0.08	-1.02/-3.32	-6.25/-6.74	-5.09/-3.72	-3.87/-5.43	-6.34/-6.29	-4.54/-3.82	-4.07/-4.58	-4.52/-5.48	-6.17/-5.32	-5.54/-6.08	-3.75/-2.07	-1.04/-0.73	-1.59/-3.2	-4.92/-6.62	-9.19/-8.76	-7.77/-7.22	-6.9/-7.29	-6.2/-4.26	-2.98/-2	-1.18/-0.4
Θ(52.5°)	0.13/0.16	-0.28/-0	0.56/1.28	1.14/0.49	-0.54/-2.4	-2.61/-8.68	-7.98/-5.41	-4.33/-4.47	-5.89/-6.86	-5.48/-4.2	-4.44/-4.74	-4.97/-6.22	-5.58/-5.33	-6.45/-4.85	-2.53/-1.44	-0.48/-0.89	-9.26/-8.58	-6.89/-5.71	-6.14/-6.85	-5.82/-5.13	-3.67/-1.7	-0.91/-0.28		
Θ(60°)	-0.15/-0.33	-0.15/0.2	0.17/-0.2	-1.15/-2.24	-3.63/-5.2	-7.84/-8.89	-6.74/-9.6	-5.4/-5.91	-6.77/-7.61	-6.9/-6.14	-6.38/-6.71	-7.42/-6.34	-5.09/-5.4	-6.56/-6.28	-5.73/-2.45	-0.99/-1.18	-2.76/-4.5	-4.54/-5.13	-8.51/-9.26	-7.68/-6.52	-5.88/-6.34	-5/-4.31	-3.59/-2.62	-1.15/-0.3
Θ(67.5°)	-1.28/-1.71	-1.32/-0.4	0.48/0.5	-0.85/-3.12	-4.4/-5.42	-8.81/-10.12	-8.41/-6.85	-6.86/-7.99	-9.93/-11.6	-10.37/-7.97	-6.07/-6.16	-6.49/-6.2	-5.7/-6.37	-7.27/-7.43	-5.46/-3.18	-1.72/-1.83	-4.16/-5.1	-5.81/-7.43	-9.53/-10.29	-8.32/-7.48	-7.12/-5.96	-5.52/-4.99	-4.59/-3.49	-2.3/-1.4
Θ(75°)	-2.66/-2.88	-3.14/-2.52	-1.9/-1.39	-1.28/-2.14	-3.65/-5.58	-7.93/-9.1	-8.67/-6.6	-5.94/-6.12	-7.8/-9.6	-9.02/-7.15	-5.54/-5.33	-5.65/-6.09	-5.15/-3.72	-4.89/-7.63	-7.31/-4.85	-4.06/-5.56	-6.28/-7.26	-7.28/-5.84	-11.74/-11.14	-9.35/-7.78	-7.55/-6.45	-5.68/-5.4	-4.79/-3.7	-3.07/-2.21
Θ(82.5°)	-2.44/-3.47	-3.73/-3.58	-3.26/-3.1	-3.05/-3.58	-4.7/-6.75	-6.82/-5.46	-4.93/-5.57	-6.31/-7.31	-6.65/-6.55	-7.6/-26	-5.53/-4.92	-5/-4.52	-2.79/-2.74	-4.55/-5.88	-6.35/-7	-7.57/-5.67	-6.39/-6.48	-6.45/-9.48	-11.26/-9.63	-5.57/-5.24	-4.6/-4.08	-3.69/-3.12	-2.52/-2.66	-1.31/-2.27
Θ(90°)	-1.88/-3.3	-3.58/-3.44	-3.23/-3.12	-3.44/-4.74	-6.58/-8.12	-8.23/-5.8	-3.8/-4.17	-5.97/-6.27	-6.89/-8.77	-9.12/-7.45	-5.62/-5.41	-5.15/-3.98	-2.78/-3.02	-3.52/-4.89	-6.86/-8.36	-6.82/-7.43	-7.15/-6.9	-9.55/-11.19	-9.87/-8.46	-8.36/-6.5	-4.94/-3.08	-3.38/-3.39	-2.99/-2.81	-3.44/-3.05
Θ(97.5°)	-2.34/-2.9	-3.67/-4.33	-3.98/-2.9	-3.45/-5.17	-7.03/-7.17	-5.05/-4.64	-3.7/-3.71	-5.12/-6.55	-6.72/-6.06	-7.81/-9.31	-7.96/-6.26	-7.09/-8.4	-7.91/-6.03	-6.43/-8.28	-8.16/-6.93	-6.75/-8.61	-7.5/-8.99	-8.28/-8.77	-6.79/-8.3	-6.07/-5.58	-3.88/-3.16	-2.85/-2.27	-1.92/-2	-3.17/-3.09
Θ(105°)	-1.73/-1.91	-1.78/-2.7	-3.27/-4.04	-4.76/-6.06	-5.06/-3.33	-2.94/-3.77	-3.18/-3.03	-4.25/-6.85	-8.3/-8.05	-8.53/-10.63	-11.3/-10.61	-10.51/-11.32	-9.12/-8.64	-8.62/-9.54	-12.19/-10.11	-8.84/-8.59	-9.2/-10.36	-9.27/-8.63	-9.84/-9.47	-7.46/-6.08	-4.88/-4.88	-5.61/-5.07	-3.15/-2.2	-3.28/-2.5
Θ(112.5°)	-1.57/-1.44	-1.7/-2.82	-4.32/-6.3	-5.37/-5.86	-4.4/-3.62	-3.63/-3.57	-2.92/-2.62	-4.11/-6.31	-8.34/-9.22	-9.46/-9.47	-8.67/-8.06	-8.56/-9.23	-8.93/-6.56	-7.79/-6.84	-7.87/-6.96	-8.22/-10.14	-10.77/-11.82	-12.49/-9.61	-10.04/-9.63	-9.3/-8.47	-5.49/-5.14	-5.51/-4.29	-3.47/-2.47	-2.53/-2.33
Θ(120°)	-0.73/-1.43	-1.98/-2.6	-2.48/-2.96	-3.12/-4.6	-4.27/-3.97	-3.81/-6.43	-5.53/-6.42	-4.85/-6.13	-6.63/-6.06	-5.05/-4.8	-4.56/-4.81	-5.98/-8.37	-8.92/-10.21	-10.62/-9.8	-7.4/-8.85	-6.03/-6.63	-8.05/-9.97	-11.2/-8.64	-12.16/-9.16	-7.45/-7.04	-3.83/-2.89	-3.64/-2.96	-0.25/0.26	-0.92/-0.21
Θ(127.5°)	0.35/0.01	0.05/0.1	0.70/45	-0.36/-1.07	-1.21/-0.88	-0.93/-1.56	-2.53/-3.09	-2.58/-3.01	-4.01/-2.08	-1.05/-1.39	-2.9/-4.06	-7.34/-9.99	-9.38/-3.97	-9.72/-5.91	-8.24/-4.79	-8.06/-10.51	-10.51/-5.6	-8.07/-11.17	-10.25/-8.09	-5.87/-5.06	-3.86/-3.4	-5.52/-3.6	-0.88/0.13	-0.95/-0.5
Θ(135°)	-1.07/-0.32	0.6/0.82	0.59/1.1	1.71/2.12	1.98/0.95	-0.17/-2.35	-4.95/-5.61	-5.34/-4.57	-2.89/-1.86	-0.89/0.29	0.22/-2.88	-4.76/-5.83	-6.65/-6.28	-6.49/-6.16	-4.3/-7.82	-8.62/-8.7	-7.49/-6.1	-7.88/-10.46	-9.78/-8.14	-7.15/-5.73	-8.17/-6.29	-8.02/-5.75	-4.03/-3.41	-3.41/-2.54
Θ(142.5°)	-2.63/-2.74	-2.3/-1.31	-1.65/-1.54	-0.69/0.12	0.38/0.17	-0.57/-2.26	-4.69/-7.17	-7.96/-6.62	-6.19/-4.58	-2.89/-2.36	-5.18/-6.31	-6.69/-6.26	-3.63/-6.69	-8.43/-7.08	-8.73/-10.03	-8.15/-10.75	-8.68/-4.85	-11.3/-11.95	-10.57/-10.6	-12.62/-9.56	-9.82/-5.4	-7.40/-6.84	-6.23/-5.25	-4.81/-4.26
Θ(150°)	-3.9/-3.07	-3.13/-3.06	-2.09/-0.97	-0.43/-0.3	-1.04/-2.52	-4.1/-6.03	-8.26/-8.85	-8.84/-8.07	-5.57/-4.42	-7.84/-9.17	-8.44/-8.93	-9.59/-7.85	-7.89/-4.97	-8.44/-9.88	-9.45/-7.06	-8.09/-6.79	-4.44/-4.87	-8.44/-10.02	-9.65/-8.48	-10.88/-11.88	-10.33/-7.68	-7.46/-8.32	-7.46/-6.92	-5.74/-5.51
Θ(157.5°)	-5.38/-3.51	-2.34/-1.54	-0.92/-0.72	-0.8/-1.01	-1.41/-2.09	-2.78/-3.76	-5.06/-6.87	-9.02/-8.72	-8.04/-7.81	-7.54/-7.06	-7.73/-7.34	-6.47/-7.27	-8/-8.88	-9.46/-6.77	-4.64/-4.49	-6.45/-9.18	-9.82/-10.89	-11.92/-12.1	-11.74/-11.82	-11.76/-11.46	-9.66/-6.98	-10.29/-10.21	-8.67/-8.23	-7.33/-6.5
Θ(165°)	-6.4/-4.29	-2.71/-2.48	-2.56/-2.56	-2.79/-3.02	-3.16/-3.58	-4.35/-5.59	-7.11/-9.24	-11.11/-10.24	-11.28/-10.31	-8.99/-9.32	-8.89/-9.2	-9.65/-10.3	-10.03/-8.64	-6.86/-6.54	-5.04/-6.02	-8.08/-7.68	-9.48/-10.32	-12.29/-12.41	-11.12/-9.09	-7.81/-7.09	-6.61/-6.65	-6.42/-6.66	-6.89/-6.87	-6.33/-5.83
Θ(172.5°)	-4.79/-4.15	-3.64/-3.99	-4.1/-4.34	-4.79/-5.72	-6.31/-6.9	-7.79/-8.63	-9.16/-9.88	-10.55/-10.12	-9.76/-9.38	-8.75/-8.35	-8.3/-8.63	-8.87/-8.44	-8.03/-7.68	-7.33/-7.44	-7.62/-8.51	-9.21/-10	-11.04/-11.12	-11.63/-12.56	-11.37/-11.03	-9.94/-8.95	-8.33/-7.9	-7.18/-7.22	-7.37/-6.65	-6.29/-5.67
Θ(180°)	-7.05/-7.14	-7.54/-8.11	-8.35/-8.57	-8.86/-9.93	-10.75/-11.11	-11.08/-9.98	-9.35/-8.36	-7.99/-7.89	-8.09/-8.58	-8.92/-8.83	-8.35/-7.9	-7.58/-7.72	-8.22/-8.12	-7.19/-6.8	-6.89/-6.96	-6.39/-7.52	-7.56/-8.08	-9.1/-9.53	-10.03/-10.47	-11.18/-10.9	-10.18/-10.36	-10.19/-9.97	-9.32/-8.85	
Freq(Hz)	5.36GPol.	Theta+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DC(0dB)	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°)	-11/-12.02	-12.3/-10.83	-9.7/-8.52	-7.15/-6.09	-4.81/-3.94	-3.08/-2.56	-2.23/-1.98	-1.71/-1.76	-1.89/-2.29	-2.88/-3.57	-4.41/-5.47	-6.89/-8.94	-11.31/-12.04	-12.5/-10.8	-8.88/-7.24	-6.05/-5.05	-4.16/-3.31	-2.82/-2.49	-2.26/-2.33	-2.54/-2.54	-2.83/-3.45	-3.95/-4.56	-5.55/-6.6	-7.96/-9.78
Θ(7.5°)	-10.94/-10.78	-11.37/-10.16	-8.54/-7.33	-6/-5.13	-4.35/-3.59	-2.99/-2.83	-2.64/-2.39	-2.23/-2.32	-2.66/-3.12	-3.52/-4.04	-4.71/-5.34	-6.35/-8.01	-9.71/-12.03	-11.69/-10.38	-8.93/-7.51	-6.11/-4.98	-4.02/-3.26	-2.6/-1.97	-1.66/-1.8	-1.86/-1.91	-2.17/-2.64	-3.4/-4.14	-5.41/-6.99	-8.29/-9.56
Θ(15°)	-7.85/-7.86	-7.63/-7.57	-7.18/-6.37	-5.02/-3.99	-3.03/-2.09	-1.57/-1.28	-1.4/-1.47	-1.68/-1.7	-2.07/-2.47	-3.20/-3.58	-4.31/-5.12	-6.06/-7.11	-8.23/-9.43	-10.34/-9.5	-8.98/-8.95	-7.67/-6.39	-5.4/-4.5	-3.73/-3.01	-2.43/-2.09	-1.83/-1.52	-1.42/-1.49	-1.59/-2.66	-3.63/-4.67	-5.97/-7.1
Θ(22.5°)	-5.77/-5.98	-6.23/-5.59	-5.17/-4.25	-3.35/-2.34	-1.61/-1.02	-0.52/-0.08	-0.19/-0.6	-0.97/-1.26	-1.34/-1.65	-2.15/-2.53	-2.96/-3.88	-5.46/-6.27	-7.07/-7.8	-8.4/-8.78	-9.36/-10.15	-10.21/-9.85	-9.3/-7.83	-6.17/-4.55	-3.46/-2.72	-2.11/-1.5	-1.23/-1.37	-1.86/-2.48	-3.26/-3.94	-4.43/-4.98
Θ(30°)	-3.52/-3.57	-3.72/-4.17	-4.62/-4.17	-3.49/-2.33	-1.42/-1.06	-0.63/0.12	0.45/0.41	-0.13/-0.43	-0.18/0.01	-0.13/-0.51	-0.63/-1.48	-3.08/-4.64	-5.05/-5.53	-6.21/-6.89	-7.66/-8.44	-9.32/-9.79	-8.81/-7.48	-7.62/-7.2	-6.67/-5.16	-3.56/-2.34	-1.56/-1.36	-1.62/-1.9	-2.41/-3.2	-3.62/-3.51
Θ(37.5°)	-3.14/-3.55	-3.67/-4.01	-4.17/-3.19	-2.31/-1.84	-1.03/0.02	0.59/0.75	0.54/0.32	0.03/-0.33	0.48/0.18	-0.22/-1.02	-2.34/-3.4	-3.62/-4.19	-4.85/-5.76	-6.75/-7.32	-7.86/-7.59	-7.05/-6.71	-5.67/-3.49	-3.1/-3.76	-3.88/-3.55	-2.78/-2.21	-1.8/-1.48	-1.49/-1.94	-2.36/-2.61	
Θ(45°)	-2.06/-2.6	-3.11/-3.1	-2.33/-1.06	-0.5/-0.12	0.28/0.65	0.7/0.86	0.45/0.13	-0.04/0	0.18/0.86	1.19/0.67	0.11/0.3	-1.39/-2.81	-3.62/-4.49	-5.22/-5.38	-4.95/-5.07	-6.13/-5.89	-5.16/-3.49	-2/-1.58	-2.27/-2.67	-2.27/-2.51	-2.72/-6.9	-2.11/-0.85	-0.13/-0.21	-1.13/-1.6
Θ(52.5°)	0.07/0.23	-0.22/-1.2	-0.74/-0.08	0.28/0.84	0.79/0.82	0.85/0.86	0.57/0.21	0.28/0.99	1.38/1.4	1.30/-47	-0.69/-1.19	-2.14/-3.31	-3.4/-4.48	-5.12/-3.8	-2.99/-3.43	-3.98/-5.27	-4.17/-3.23	-2.36/-1.52	-0.61/-0.8	-1.75/-1.5	-1.54/-2.48	-2.63/-1.14	0.22/0.46	0.13/0.03
Θ(60°)	0.21/0.08	-0.49/-1.26	-0.88/0.15	0.77/1.67	1.51/1.17	0.87/0.78	1.32/1.49	2.22/2.57	2.33/1.88	1.46/0.74	-0.41/-1.07	-1.05/-1.05	-0.95/-2.51	-3.25/-2.73	-2.35/-2.08	-4.12/-5.48	-4.36/-4.29	-3.56/-1.51	-0.79/-1.58	-1.99/-1.34	-1.38/-2.78	-3.4/-2.29	-0.88/0.36	0.55/-0.09
Θ(67.5°)	0.83/0.18	-0.57/-0.62	0.06/3	0.69/1	0.93/1.73	1.93/1.73	1.71/73	2.27/2.69	2.04/0.94	0.87/1.08	0.84/0.59	0.5/0.62	-0.14/-1.17	-1.67/-1.85	-1.97/-1.68	-3.54/-6.06	-5.07/-4.44	-3.12/-1.48	-1.05/-1.61	-2.98/-2.9	-2.83/-2.39	-2.31/-1.38	-0.96/0.27	1.42/0.28
Θ(75°)	2.38/1.99	1.49/1.18	1.18/0.96	1.08/0.3	0.13/0.81	2.04/2.67	2.21/2.54	2.21/2.6	1.91/0.9	0.08/0.12	0.69/1.3	1.63/2.1	1.59/1.46	-0.35/-1.44	-2.08/-1.75	-2.94/-2.11	-4.42/-3.77	-1.84/-2.15	-1.42/-1.62	-1.98/-2.12	-1.21/-0.31	-1.03/-0.48	0.42/0.94	1.99/2.6
Θ(82.5°)	2.02/1.26	1.06/0.08	-0.76/-0.84	-0.11/0.16	1.32/53	3.21/3.26	2.81/94	2.76/3.06	1.9/-0.09	-1.33/-0.81	0.68/2.08	2.16/2.81	2.11/73											



Radiated Composite Gain Data

Appendix A

Θ(75°)	-7.94/-7.86	-6.37/-3.18	-1.26/-0.56	-1.63/-4.03	-5.86/-8.61	-10.45/-10.91	-8.4/-8.07	-6.8/-6.21	-7.65/-9.17	-9.48/-10.1	-10.31/-8.54	-5.96/-6.69	-8.54/-9.41	-9.15/-9.66	-6.08/-5.21	-4.21/-4.37	-4.15/-3.16	-2.36/-3.56	-5.83/-5.34	-3.61/-6	-7.73/-6.78	-4.52/-3.31	-5.4/-8.25	-9.44/-7.15
Θ(82.5°)	-2.73/-3.29	-3.81/-2.21	-1.56/-2.31	-3.81/-5.17	-6.15/-8.02	-9.42/-8.96	-9.84/-8.46	-8.29/-7.59	-7.96/-8.79	-8.57/-8.71	-9.47/-9.29	-6.9/-6.92	-8.04/-7.49	-9.13/-11.89	-10.37/-6.61	-7/-6.74	-4.4/-3.15	-3.72/-5.73	-7.03/-4.95	-2.83/-3.59	-6.09/-6.13	-6.23/-6.24	-6.99/-8.18	-6.37/-3.29
Θ(90°)	-4.78/-4.13	-4.96/-4.74	-4.32/-4.19	-3.79/-3.79	-5.65/-8.16	-10.2/-9.32	-7.84/-7.29	-7.3/-6.83	-9.6/-9.47	-7.69/-8.51	-10.92/-10.06	-7.05/-5.82	-6.83/-6.41	-7.64/-8.76	-7.82/-7.21	-9.8/-6.9	-7.01/-5.34	-4.63/-6.66	-8.27/-6.17	-4.14/-3.5	-3.59/-3.22	-3.37/-3.87	-4.62/-6.93	-8.23/-5.38
Θ(97.5°)	-5.15/-4.05	-4.45/-4.1	-3.25/-3.17	-3.68/-5.09	-5.47/-5.02	-4.84/-4.34	-6.47/-6.53	-7.58/-6.65	-6.4/-8.79	-6.26/-5.76	-8.32/-9.48	-8.19/-6.44	-6.71/-4.52	-4.88/-6.04	-10.57/-12.57	-11.14/-8.93	-7.64/-7.43	-6.04/-8.43	-9.41/-9.59	-4.84/-4.92	-4.7/-5.64	-2.49/-3.15	-3.93/-5.21	-6.84/-5.94
Θ(105°)	-4.87/-3.81	-5.42/-6.06	-6.03/-3.81	-2.83/-3.48	-5.47/-5.33	-4.48/-4.12	-4.21/-5.58	-5.67/-4.2	-5.86/-6.89	-7.65/-7.6	-8.27/-9.61	-9.77/-10.22	-8.55/-6.22	-6.08/-5.28	-8.05/-9.4	-8.76/-8.18	-10.46/-11.04	-8.28/-8.48	-8.89/-11.46	-7.72/-6.23	-6.67/-5.08	-4.56/-3.32	-3.53/-4.72	-6.5/-5.21
Θ(112.5°)	-5.45/-2.82	-2.18/-1.83	-2.66/-1.49	-0.99/-1.58	-2.4/-2.56	-1.79/-1.69	-2.53/-2.4	-5.3/-6.61	-6.9/-7	-5.78/-6.02	-6.55/-6.92	-7.06/-7.7	-9.88/-8.63	-9.41/-11.12	-8/-7.48	-7.42/-7.86	-4.81/-7.13	-10.18/-8.84	-9.59/-11.17	-6.88/-7.29	-5.9/-4.48	-4.27/-4.2	-4.23/-4.96	-6.42/-5.34
Θ(120°)	-2.89/-2.57	-3.85/-4.55	-4.47/-2.89	-1.82/-2.82	-3.7/-4.75	-3.35/-2.69	-3.84/-6.02	-7.82/-7.92	-6.79/-6.57	-6.65/-5.3	-6.06/-5.13	-6.34/-8.69	-9.43/-8.55	-8.37/-6.77	-9.45/-7.93	-7.43/-7.36	-6.1/-6.08	-8.1/-6.22	-10.19/-8.76	-7.91/-5.42	-5.48/-5.24	-5.47/-2.27	0.25/0.32	-1.13/-1.26
Θ(127.5°)	0.81/0.06	-2.47/-3.65	-2.31/-3.84	-2.9/-3.26	-2.75/-2.5	-2.86/-3.86	-6.03/-7.72	-7.48/-7.44	-5.45/-4.28	-3.42/-3.26	-2.75/-2.96	-3.23/-4.97	-7.65/-8.85	-8.09/-8.3	-6.62/-7.52	-5.75/-9.01	-9.23/-6.42	-4.82/-8.13	-10.55/-8.03	-6.37/-5.62	-2.27/-4.32	-4.56/-2.43	0.84/2.01	1.02/1.41
Θ(135°)	-1.58/-1.75	-1.39/-1.38	-0.64/0.1	-0.65/-0.31	-0.85/-1.56	-2.12/-1.99	-3.85/-5.93	-7.93/-8.33	-8.14/-6.42	-5.98/-4.73	-3.1/-2.87	-4.86/-6.4	-4.2/-3.05	-4.76/-9.33	-8.08/-8.48	-9.26/-8.87	-4.73/-5.84	-8.22/-10.03	-9.07/-6.72	-6.54/-6.62	-2.91/-3.65	-3.09/-5.05	-1.86/-0.94	-1.48/-2.04
Θ(142.5°)	-0.81/-0.6	0.56/0.85	0.06/-0.23	-1.59/-1.91	-1.62/-1.65	-2.01/-3.8	-6.05/-6.58	-6.01/-5.78	-5.61/-6.75	-5.14/-3.12	-3.14/-4.36	-6.56/-6.94	-3.67/-4.58	-11.41/-7.42	-7.54/-11.99	-7.65/-11.07	-8.61/-5.78	-4.92/-6.8	-7.07/-6.42	-6.44/-6.66	-4.11/-4.78	-3.04/-3.85	-2.91/-2.22	-3.37/-2.91
Θ(150°)	-0.32/-0.27	-1.14/-2.15	-3.04/-3.1	-2.18/-2.61	-2.84/-2.76	-3.31/-5.29	-7.19/-8.52	-7.58/-6.68	-6.5/-5.84	-4.53/-3.36	-4.23/-6.34	-10.88/-11.41	-6.99/-8.59	-8.12/-9.98	-9.11/-6.26	-8.25/-7.59	-4.31/-3.69	-7.15/-8.92	-7.87/-6.5	-7.39/-7.49	-4.93/-4.44	-3.71/-2.69	-2.81/-3.35	-3.25/-2.58
Θ(157.5°)	-2.71/-1.71	-1.48/-0.5	0.43/0.39	-0.09/-0.9	-2.49/-4.43	-5.42/-6.03	-6.32/-5.92	-6.39/-7.61	-8.89/-7.62	-6.49/-6.75	-7.68/-8.28	-8.07/-7.03	-6.73/-6.04	-5.26/-3.69	-1.81/-1.99	-4.72/-6.61	-6.31/-5.53	-6.41/-7.34	-7.72/-7.74	-8.27/-6.66	-4.89/-5.12	-4.93/-3.89	-4.17/-4.28	-4.13/-3.31
Θ(165°)	-3.84/-2.68	-1.39/-0.68	-0.82/-1.05	-1.37/-2.11	-2.98/-3.87	-4.78/-5.37	-6.25/-6.74	-7.5/-8.48	-9.31/-9.62	-9.57/-9.43	-9.14/-9.21	-8.64/-9.9	-10.01/-10.42	-8.82/-6.24	-5.13/-5.65	-6.75/-6.92	-7.54/-9.27	-10.26/-8.81	-6.86/-5.69	-4.73/-4.44	-4.91/-6.14	-7.72/-7.85	-6.74/-5.76	-5.43/-4.8
Θ(172.5°)	-2.99/-2.72	-2.34/-2.54	-2.54/-2.32	-2.66/-2.99	-3.39/-4.22	-5.22/-6.26	-6.88/-7.76	-8.75/-9.71	-10.49/-11.2	-10.48/-9.92	-8.84/-8.52	-9.1/-11.02	-11.87/-12.07	-11.09/-9.6	-8.62/-7.62	-6.9/-6.23	-6.29/-6.5	-6.2/-5.3	-5.09/-5.05	-5.13/-5.92	-6.71/-7.05	-7.01/-6.26	-5.3/-4.42	-3.76/-3.56
Θ(180°)	-5.68/-6.09	-6.28/-6.74	-7.78/-8.4	-8.27/-7.93	-8.23/-9.27	-10.26/-10.3	-9.53/-9.18	-9.18/-9.19	-8.75/-7.7	-6.75/-5.87	-5.17/-4.68	-4.38/-4.46	-4.72/-5.22	-5.9/-6.51	-6.86/-7.21	-7.7/-8.11	-8.4/-8.45	-8.11/-8.63	-9.63/-10.63	-11.25/-11.13	-9.52/-8.61	-7.69/-6.44	-6.04/-5.95	-6.39/-6.48
Freq(Hz)	5.785GPol.	Theta-	-/-	-/-	-/-	-/-	-/-	-/-	-/-	-/-	-/-	-/-	-/-	-/-	-/-	-/-	-/-	-/-	-/-	-/-	-/-	-/-	-/-	-/-
DG(dB)	Φ(0°)/Φ(7.5°)	Φ(15°)/Φ(22.5°)	Φ(30°)/Φ(37.5°)	Φ(45°)/Φ(52.5°)	Φ(60°)/Φ(67.5°)	Φ(75°)/Φ(82.5°)	Φ(90°)/Φ(97.5°)	Φ(105°)/Φ(112.5°)	Φ(120°)/Φ(127.5°)	Φ(135°)/Φ(142.5°)	Φ(150°)/Φ(157.5°)	Φ(165°)/Φ(172.5°)	Φ(180°)/Φ(187.5°)	Φ(195°)/Φ(202.5°)	Φ(210°)/Φ(217.5°)	Φ(225°)/Φ(232.5°)	Φ(240°)/Φ(247.5°)	Φ(255°)/Φ(262.5°)	Φ(270°)/Φ(277.5°)	Φ(285°)/Φ(292.5°)	Φ(300°)/Φ(307.5°)	Φ(315°)/Φ(322.5°)	Φ(330°)/Φ(337.5°)	Φ(345°)/Φ(352.5°)
Θ(0°)	-6.44/-6.55	-6.46/-6.91	-7.46/-7	-6.49/-5.58	-4.89/-4.87	-4.6/-4.16	-3.94/-4.31	-5.04/-5.59	-5.43/-5.33	-5.24/-5.34	-5.38/-5.43	-5.62/-6.14	-6.37/-6.6	-6.16/-5.92	-5.87/-5.42	-5.09/-5	-5.36/-5.7	-5.89/-6.17	-6.1/-5.88	-5.44/-5.66	-5.76/-5.76	-5.27/-5.47	-5.24/-5.28	-5.44/-5.71
Θ(7.5°)	-4.31/-4.17	-4.54/-4.94	-5.78/-5.99	-5.57/-4.98	-4.85/-5.35	-5.29/-4.94	-4.44/-4.42	-4.66/-4.98	-5.18/-4.97	-4.91/-5.11	-5.36/-5.88	-6.72/-7.45	-7.87/-7.3	-7.29/-7.11	-6.52/-5.93	-5.39/-5.03	-4.71/-4.35	-4.27/-4.35	-4.61/-4.79	-4.92/-5.18	-5.21/-5.16	-4.96/-4.89	-4.79/-4.71	-4.82/-4.4
Θ(15°)	-1.55/-1.95	-2.42/-2.86	-3.15/-3.61	-3.32/-2.93	-3/-2.97	-2.56/-2.08	-1.93/-2.24	-2.77/-2.97	-3.08/-3.26	-3.69/-4.01	-4.46/-6.14	-5.73/-6.2	-6.61/-7.11	-7.6/-8	-8.28/-7.53	-6.66/-5.56	-4.76/-3.91	-3.3/-2.75	-2.63/-2.51	-2.66/-2.89	-3.34/-3.96	-3.94/-3.47	-2.52/-1.83	-1.41/-1.22
Θ(22.5°)	0.3/-0.41	-1.33/-1.93	-1.95/-2.1	-1.78/-1.9	-2.41/-2.14	-1.54/-1.53	-1.74/-1.87	-2.02/-2.18	-2.35/-3.06	-3.39/-3.38	-3.58/-4.07	-4.52/-4.65	-4.46/-4.69	-5.98/-7.47	-8.59/-8.63	-7.66/-6.23	-4.89/-3.16	-1.94/-1.25	-1.08/-1.22	-1.4/-1.81	-2.23/-2.56	-2.45/-2.09	-1.45/-0.59	0.22/0.51
Θ(30°)	3.07/2.44	1.25/0.52	0.35/-0.07	-0.76/-1.76	-2.27/-2.02	-1.55/-1.49	-1.53/-1.3	-1.13/-1.48	-2.19/-3	-3.75/-3.39	-2.52/-2.15	-2.36/-2.35	-2.21/-2.79	-4.25/-5.71	-7.41/-8.48	-7.82/-5.61	-3.79/-2.41	-1.45/-1.12	-1.08/-1.18	-1.57/-1.62	-1.16/-0.33	0.21/0.63	1.42/2.7	2.88/3.22
Θ(37.5°)	3.72/3.92	3.74/3.45	2.93/1.52	-0.32/-1.25	-1.5/-1.23	-0.8/-0.86	-0.99/-1.27	-1.96/-2.93	-3.16/-2.46	-1.98/-1.68	-1.28/-0.79	-0.94/-0.84	-0.6/-1.42	-2.08/-2.34	-3.04/-3.98	-4.76/-4.33	-3.25/-1.9	-1.31/-1.34	-1.23/-0.6	-0.13/-0.46	-0.57/0.07	0.78/1.44	2.12/2.44	3.02/3.65
Θ(45°)	2.82/97	2.76/2.53	2.72/39	1.68/0.73	-0.67/-1.25	-1.71/-1.85	-2.36/-2.05	-1.59/-1.54	-0.97/-1.06	-1.27/-1.07	-0.31/0.62	0.82/1.14	1.23/0.37	-0.71/-1.83	-2.54/-4.02	-3.69/-2.23	-1.46/-1.56	-1.1/-0.72	-2.05/-3.93	-4.2/-1.71	-0.45/-0.23	-0.04/0.06	-0.19/0.71	1.87/2.49
Θ(52.5°)	1.51/2.14	2.322/9	3.26/2.48	1.19/-0.63	-1.52/-0.8	0.33/0.53	-0.47/-1.27	-1.02/-1.18	-1.99/-2.57	-1.64/-1.23	-0.50/-4.1	1.1/1.44	0.96/-0.15	-1.24/-2.05	-2.78/-3.78	-2.08/-2.15	-3.06/-2.28	-1.81/-2.64	-3.15/-2.9	-1.59/-0.26	1.18/1.7	1.40/64	0.48/0.11	0.34/1.34
Θ(60°)	3.21/4.09	4.08/3.83	3.51/1.65	0.21/-0.73	-0.38/0.03	0.44/0.98	0.79/-0.32	-0.61/-0.5	0.26/0.21	-0.4/-1.41	-1.34/-0.47	0.88/1.8	1.96/0.76	-1.11/-2.62	-2.96/-3.28	-2.94/-2.4	-3.54/-3.17	-2.3/-0.9	-0.81/-2.22	-1/0.68	0.96/1.2	2.16/2.53	2.18/2.33	3.03/3.89
Θ(67.5°)	3.96/4.07	4.08/3.79	2.29/0.05	-0.20/43	1.23/1.82	1.62/1.17	0.53/0.49	0.94/1.48	2.31/2.58	1.81/-0.09	-0.17/1.58	3.41/3.52	2.5/0.57	-0.81/-1.09	-2.19/-4.07	-3.32/-3.74	-2.35/-2.54	-2.01/-1.09	-1.5/-2.09	-1.63/-0.13	1.71/2.63	3.33/82	3.79/3.7	3.61/4.18
Θ(75°)	3.23/1.97	1.57/1.69	1.7/0.52	0.64/0.88	1.83/2.39	2.25/2.65	2.72/2.68	2.69/2.13	1.07/1.63	2.33/1.73	1.05/2.03	4.58/4.11	3.18/0.3	0.91/0.57	0.26/-2.6	-2.95/-2.05	-0.39/-1.37	-2.17/-0.47	-0.39/-0.83	1.1/1.67	1.92/3.13	3.74/3.99	3.79/4.21	4.36/4.21
Θ(82.5°)	3.81/3.32	2.15/1.85	0.88/0.54	0.59/0.32	1.49/2.45	3.55/4.27	3.94/4.31	4.89/4.1	2.58/2.1	2.44/2.23	2.46/4.38	6.12/4.38	2.77/0.55	1.52/0.85	-2.25/-4.66	-3.56/-0.99	2.08/1.55	-0.67/0.85	1.04/0.14	2.3/3.57	2.66/3.67	3.61/4.19	4.34/5.9	5.01/5.47
Θ(90°)	3.43/2.27	1.51/2.27	2.19/2.1	1.04/-0.04	2.38/3.77	5.4/5.73	4.61/4.04	4.76/4.17	1.87/-0.03	0.35/0.63	1.26/2.92	5.845.17	4.11/4.1	1.19/1.21	-0.86/-3.26	-2.65/0.55	2.83/95	1.18/2.15	2.24/1.92	4.235.72	4.744.73	4.55/4.39	4.65/4.7	4.14/5.33
Θ(97.5°)	4.82/2.56	2.29/2.73	1.47/2.24	2.22/1.86	3.36/4.97	6.35/6.21	5.27/4.25	4.37/3.61	0.89/-2.44	-0.60/-0.07	1.19/3.41	4.51/3.34	2.93/1.29	0.89/-0.21	-2.14/-5.2	-1.7/0.6	4.37/4.77	3.55/3.35	3.15/3.32	5.36/6.68	5.77/4.75	4.85/4.8	4.68/4.46	3.79/5.51
Θ(105°)	5.93/3.97	3.39/2.35	2.19/2.23	2.86/0.55	2.72/4.13	5.67/5.81	4.75/2.85	2.81/2.51	0.53/-2.75	-2.52/-2.64	-1.55/0.47	2.99/3.09	3.55/1.33	2.55/0.67	-2.34/-3.59	-3.94/-1.6	2.93/89	3.37/3.35	2.86/2.55	4.75/6.14	4.47/3.96	4.38/4.62	4.75/4.35	4.59/6.28
Θ(112.5°)	3.34/1.43	2.17/0.87	2.69/2.67	1.97/-0.79	2.775.16	6.54/7.06	5.88/4.03	2.88/2.23	-0.96/-4.31	-1.46/0.35	0.91/49	1.91/2.19	1.46/0.12	-1.87/-3.34	-1.6/-2.84	-5.12/-1.4	1.51/2.75	3.91/1.39	-2.51/-0.19	3.43/4.41	2.28/1.81	1.77/1.93	2.31/2	1.91/4.38
Θ(120°)	3.15/1.8	1.93/0.08	0.55/0.13	0.5/1.61	2.86/4.49	4.49/4.48	4.01/2.52	0.74/-1	-2.66/-3.46	-1.96/-0.18	-0.02/-0.49	-1.07/-1.03	-3.05/-0.91	-3.45/-3.14	-2.87/-2.85	-7.75/-5.32	-2.9/-0.26	0.19/-3.8	-8.08/-2.64	1.61/1.88	1/1.06	2.43/2.82	1.62/0.92	-0.09/2.4
Θ(127.5°)	2.99/2.53	1.87/1.51	0.18/0.61	0.91/2.08	2.69/2.49	3.23/3.7	1.96/-0.63	-2.66/-3.79	-3.02/-2.59	-1.8/-0.72	-1.02/-2.6	-4.17/-3.99	-2.14/-1.49	-8.25/-7.18	-3.13/-2.16	-4.29/-2.53	-1.77/1.1	0.05/-0.47	-6.39/-3.02	1.61/2.08	0.87/-0.72	1.51/1.3	1.35/0.51	0.99/1.14
Θ(135°)	1.05/1.12	-0.72/-1.04	-1.24/0.02	0.85/0.83	1.01/1.31	1.14/0.56	-0.44/-2.13	-3.03/-2.37	-2.14/-2.6	-1.88/-0.46	-0.27/-1.24													



Sporton International Inc. Hsinchu Laboratory



Radiated Composite Gain Data

Appendix A

Θ(22.5°)	-18.87/-18.98	-18.75/-19.29	-18.82/-16.83	-15.4/-14.73	-15.92/-14.89	-15.19/-15.76	-14.32/-12.85	-11.83/-12.04	-13.06/-15.49	-18.82/-17.25	-18.73/-15.01	-16.03/-15.44	-16.26/-17.64	-18.29/-18.53	-18.02/-18.93	-18.92/-17.89	-18.74/-18.61	-14.73/-12.6	-12.36/-13.51	-16.17/-18.72	-18.19/-18.34	-18.52/-19.14	-18.33/-18.24	-18.7/-19.19
Θ(30°)	-17.54/-19.28	-18.27/-18.23	-17.31/-14.99	-12.81/-13.07	-14.37/-14.26	-16.42/-16.12	-15.57/-15.15	-13.72/-12.85	-15.81/-19.12	-19.02/-19.51	-16.16/-18.14	-16.59/-18.7	-18.44/-17.78	-19.21/-18.85	-17.29/-17.86	-18.73/-17.56	-18.11/-19.07	-18.57/-17.22	-14.4/-12.96	-13.84/-15.79	-18.54/-17.79	-18.16/-17.7	-19.06/-18.3	-18.6/-17.91
Θ(42.5°)	-13.92/-14.41	-12.35/-12.92	-14.7/-16.48	-13.36/-15.49	-15.35/-14.96	-16.13/-13.76	-12.32/-11.85	-11.75/-12.5	-13.67/-15.5	-14.71/-12.35	-11.11/-11.21	-13.03/-16.62	-18.19/-17.78	-18.91/-19.44	-17.06/-15.05	-18.79/-19.44	-17.51/-17.01	-18.21/-18.02	-17.06/-12.96	-13.47/-17.9	-17.94/-18.77	-19.01/-17.76	-18.14/-16.77	-14.12/-12.55
Θ(45°)	-11.12/-11.83	-10.36/-10.21	-10.54/-10.05	-10.77/-12.06	-12.91/-12.04	-11.64/-10.99	-12.03/-12.54	-12.91/-14.61	-17.24/-16.12	-11.99/-9.43	-8.45/-8.7	-10.15/-13.56	-16.22/-16.49	-16.89/-16.31	-18.06/-14.2	-11.69/-10.57	-10.38/-11.75	-14.52/-17.79	-17.8/-12.79	-11.69/-13.73	-15.02/-19.07	-18.76/-17.24	-18.12/-13.88	-12.31/-10.97
Θ(52.5°)	-10.37/-11.36	-10.15/-9.05	-8.69/-8.64	-9.31/-9.02	-10.45/-11.46	-13.04/-12.27	-12.23/-11.6	-10.38/-13.92	-13.13/-18.91	-15.58/-11.57	-10.72/-11.05	-12.64/-15.53	-14.52/-13.88	-14.58/-12.95	-11.22/-9.51	-9.39/-9.03	-8.95/-8.28	-11.21/-18.79	-18.48/-15.09	-1.08/-11.44	-17.34/-17.29	-18.44/-17.53	-18.23/-12.84	-10.95/-10.4
Θ(60°)	-9.31/-11.82	-11.36/-9.31	-8.83/-9.27	-11.94/-13	-13.97/-12.76	-11.84/-10.54	-10.91/-1.94	-13.84/-15.94	-18.16/-18.45	-17.32/-14.04	-13.32/-14.68	-18.88/-17.91	-18.53/-16.53	-12.7/-15.6	-9.18/-7.55	-6.52/-3.3	-9.53/-11.28	-12.58/-15.02	-18.34/-15.02	-12.7/-11.55	-12.6/-18.01	-18.59/-17.92	-12.34/-9.11	-7.53/-8.04
Θ(67.5°)	-11.81/-13.25	-15.46/-11.51	-9/-8.66	-10.95/-14.93	-18.01/-18.44	-17.79/-17.55	-18.23/-17.6	-16.09/-16.17	-18.67/-19.04	-18.84/-14.17	-10.46/-9.95	-11.22/-17.46	-18.92/-18.26	-19.37/-13.71	-10.34/-8.18	-7.29/-8.16	-9.74/-13.33	-19.71/-18.27	-18.96/-18.14	-13/-13.97	-16.86/-18.15	-18.22/-19.31	-17.34/-15.16	-13.18/-12.54
Θ(75°)	-16.97/-18.17	-18.2/-15.47	-14.83/-12.89	-10.6/-12.15	-16.76/-17.69	-19.36/-18.01	-15.04/-11.85	-10.24/-10.21	-12.66/-17.74	-17.38/-16.75	-11.89/-9.63	-10.74/-13.65	-16.54/-12.32	-15.24/-18.1	-12.21/-8.1	-8.29/-12.47	-14.48/-15.06	-14.45/-18.06	-18.49/-14.64	-13.96/-12.92	-18.59/-18.25	-18.21/-17.29	-18.32/-16.18	-14.4/-13.6
Θ(82.5°)	-14.09/-18.46	-18.19/-15.05	-13.36/-14.35	-16/-16.18	-14.33/-13.93	-12.85/-11.51	-10.97/-10.5	-11.51/-15.8	-17.32/-17.7	-19.17/-14.17	-9.32/-7.85	-12.11/-16.98	-12.25/-11.69	-18.24/-12.5	-7.92/-8.28	-14.41/-13.46	-11.18/-12.13	-16.31/-16.01	-18.68/-14.63	-9.37/-10.31	-15.39/-19.39	-19.61/-14.9	-16.62/-18.55	-16.74/-13.58
Θ(90°)	-16.55/-18.84	-17.74/-15.86	-13.56/-13.01	-14.62/-15.64	-17.68/-18.52	-15.67/-10.73	-9.82/-12.2	-18.3/-18.01	-17.95/-16.74	-13.47/-9.88	-7.22/-6.25	-7.68/-10.06	-8.81/-10.07	-13.46/-16.27	-11.22/-11.36	-13.11/-12.14	-10.61/-11.87	-18.31/-18.44	-18.31/-18.44	-17.24/-12.31	-15.69/-18.58	-16.98/-12.82	-12.08/-15.79	-18.2/-18.06
Θ(97.5°)	-11.09/-12.24	-13.9/-17.46	-17.27/-14.81	-17.79/-18.12	-18.39/-17.66	-11.95/-10.29	-11.17/-12.48	-17.82/-19.32	-10.81/-8.07	-8.9/-10.2	-9.37/-7.34	-9.26/-13.07	-13.73/-12.51	-16.08/-18.11	-18.14/-17.58	-17.13/-14.62	-10.14/-9.48	-13.22/-17.86	-13.9/-18.39	-18.06/-16.67	-15.22/-18.51	-18.46/-15.36	-17.14/-18.23	-18.83/-14.23
Θ(105°)	-13.08/-15.02	-17.15/-16.83	-17.28/-14.78	-18.46/-15.3	-13.01/-12.18	-11.48/-11.23	-12.56/-13.06	-13.77/-18.26	-15.58/-13.73	-14.45/-17.14	-17.63/-14.33	-15.37/-18.28	-13.76/-16.04	-18.88/-17.54	-18.27/-14.83	-9.28/-9.32	-11.05/-12.85	-13.1/-12.5	-18.89/-19.09	-17.89/-14.81	-13.66/-18.87	-17.48/-18.16	-19.22/-18.11	-19.13/-14.58
Θ(112.5°)	-12.99/-14.42	-14.8/-19.05	-16.16/-12.43	-10.14/-9.2	-7.31/-6.7	-6.44/-6.76	-6.44/-7.58	-9.85/-12.52	-17.88/-16.79	-14.24/-13.64	-10.82/-10.52	-14.45/-11.97	-11.43/-10.57	-13.55/-13.02	-11.9/-15.01	-15.66/-15.86	-14.61/-18.89	-18.46/-18.69	-17.2/-15.73	-18.64/-15.68	-12.69/-17.04	-18.36/-15.24	-16.23/-17.95	-18.3/-17.6
Θ(120°)	-11.28/-9.51	-9.26/-9.68	-9.17/-10.03	-10.3/-11.5	-10.13/-9.7	-9.46/-8.88	-8.76/-7.5	-7.7/-8.88	-9.27/-7.75	-6.37/-6.4	-6.25/-8	-10.26/-14.37	-11.02/-15.06	-12.65/-10.79	-15.06/-10.59	-8.87/-13.6	-13.35/-15.04	-13.91/-18.22	-18.04/-13.27	-16.07/-11.72	-11.38/-14.2	-17.89/-19.21	-17.97/-15.71	-19.17/-12.77
Θ(127.5°)	-7.52/-6.99	-7.52/-8.24	-8.79/-6.45	-6.52/-5.88	-8.06/-6.1	-6.88/-7.55	-7.99/-8.86	-8.59/-7.74	-6.05/-4.35	-3.84/-3.99	-4.46/-7.14	-12.89/-11.82	-19.19/-11.64	-7.63/-7.23	-18.68/-14.86	-18.96/-10.14	-12.55/-19.22	-17.32/-18.12	-16.48/-10.86	-12.3/-11.9	-18.93/-14.58	-18.95/-15.46	-13.26/-10.08	
Θ(135°)	-9.46/-7.28	-7.06/-6.77	-6.42/-6.94	-6.01/-5.66	-4.63/-4.27	-4.58/-5.84	-8.13/-10.78	-12.09/-9.27	-5.51/-3.72	-3.02/-2.87	-3.76/-7.29	-9.75/-14.87	-12.44/-14.21	-15.05/-14	-10.83/-11.15	-13.27/-18.67	-7.37/-7.68	-18.42/-18.94	-17.99/-16.25	-13/-9.84	-15.28/-17.87	-18.14/-18.08	-17.8/-18.27	-15.28/-11.97
Θ(142.5°)	-18.22/-14.74	-15.58/-14.85	-11.73/-9.45	-7.46/-6.89	-7.71/-7.8	-8.66/-10.91	-13.4/-12.12	-15.24/-14.21	-13.84/-11.65	-9.21/-8.25	-9.79/-12.28	-15.08/-12.62	-11.84/-16.42	-16.94/-18.44	-16.81/-18.99	-11.38/-13.16	-19.13/-18.1	-18.67/-16.6	-13.19/-17.26	-18.23/-16.52	-18.6/-18.66	-17.3/-18.31	-19.27/-16.35	-19.12/-18.64
Θ(150°)	-18.4/-17.6	-18.3/-17.57	-16.78/-12.15	-8.76/-6.91	-7.03/-7.8	-11.14/-5.94	-14.41/-18.32	-15.94/-14.71	-13.17/-10.62	-9.93/-11.48	-16.84/-19.23	-18.59/-17.6	-17.76/-19.05	-18.43/-15.74	-11.65/-7.72	-8.79/-17.7	-19.03/-10.25	-14.64/-17.06	-18.14/-19.06	-18.93/-17.99	-17.57/-18.2	-16.13/-16.34	-16.24/-18.76	
Θ(157.5°)	-18.09/-13.76	-14.44/-18.72	-18.57/-16.55	-12.83/-10.17	-9.19/-9.15	-10.1/-11.94	-14.2/-16.32	-16.63/-15.23	-14.36/-15.25	-18.11/-17.89	-17.12/-11.53	-9.42/-9.09	-10.46/-13.84	-16.8/-14.66	-11.86/-11.24	-14/-17.57	-15.68/-17.41	-18.3/-19.16	-17.53/-18.8	-15.8/-14.94	-13.35/-12.08	-13.17/-17.3	-17.5/-17.74	-16.25/-17.87
Θ(165°)	-19.09/-16.27	-14.92/-16.02	-17.17/-14.62	-18.88/-18.36	-17.63/-16.23	-14.3/-13.71	-14.85/-18.63	-18.93/-17.92	-18.07/-18.59	-18.11/-17.61	-13.54/-11.31	-10.7/-11.03	-11.59/-10.62	-9.09/-4.83	-9.12/-11.24	-15.5/-17.67	-18.16/-17.4	-17.98/-18.99	-18.36/-17.07	-15.08/-12.64	-10.67/-10.03	-10.55/-12.56	-14.81/-17.3	-17.65/-17.92
Θ(172.5°)	-18.32/-16.37	-16.13/-17.58	-19.11/-18.26	-17.99/-19.39	-18.92/-18.2	-14.66/-13.21	-12.61/-12.7	-12.91/-13.3	-13.62/-13.74	-13.42/-13.07	-13/-13.08	-12.78/-11.96	-11.08/-10.76	-10.9/-12.17	-14.5/-18.36	-18.18/-17.8	-19.08/-17.6	-18.78/-16.59	-14.79/-13.92	-13.22/-12.64	-12.36/-12.88	-13.84/-16.56	-18.56/-17.74	-18.78/-18.1
Θ(180°)	-13.47/-13.76	-14.46/-17.04	-18.01/-18.75	-18.03/-18.94	-18.43/-19	-19.15/-16.34	-14.8/-14.49	-13.61/-12.95	-13/-13.61	-14.2/-14.57	-14.59/-15.21	-16.21/-17.44	-19.01/-18.4	-18.27/-17.41	-18.98/-18.93	-17.31/-18.93	-17.38/-15.79	-14.46/-14.15	-14.06/-14.18	-13.7/-13.68	-13.59/-14	-14.71/-15.59	-16.47/-15.51	-14.97/-14.2
Freq(Hz)	5.36GPol.	Theta/Ant. 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gain	Φ(0°)/Φ(7.5°)	Φ(15°)/Φ(22.5°)	Φ(30°)/Φ(37.5°)	Φ(45°)/Φ(52.5°)	Φ(60°)/Φ(67.5°)	Φ(75°)/Φ(82.5°)	Φ(90°)/Φ(97.5°)	Φ(105°)/Φ(112.5°)	Φ(120°)/Φ(127.5°)	Φ(135°)/Φ(142.5°)	Φ(150°)/Φ(157.5°)	Φ(165°)/Φ(172.5°)	Φ(180°)/Φ(187.5°)	Φ(195°)/Φ(202.5°)	Φ(210°)/Φ(217.5°)	Φ(225°)/Φ(232.5°)	Φ(240°)/Φ(247.5°)	Φ(255°)/Φ(262.5°)	Φ(270°)/Φ(277.5°)	Φ(285°)/Φ(292.5°)	Φ(300°)/Φ(307.5°)	Φ(315°)/Φ(322.5°)	Φ(330°)/Φ(337.5°)	Φ(345°)/Φ(352.5°)
Θ(0°)	-18.48/-18.05	-17.19/-15.52	-14.97/-15.4	-16.49/-17.45	-17.74/-17.49	-16.76/-16.79	-16.6/-16.14	-15.48/-15.15	-15/-15.26	-16.23/-18.12	-18.68/-17.79	-19.14/-18.52	-18.02/-18.72	-19.05/-17.73	-16.18/-16.03	-16.62/-17.67	-18.11/-17.17	-16.08/-15.36	-15.35/-16.53	-17.91/-17.25	-17.91/-18.87	-17.81/-18.87	-16.03/-18.65	-18.55/-17.78
Θ(7.5°)	-17.99/-17.05	-15.6/-14.94	-14.71/-14.4	-14.63/-15.23	-15.17/-13.82	-12.71/-12.36	-12.61/-12.64	-13.48/-14.29	-15.07/-15.92	-16.01/-16.47	-16.82/-16.91	-17.11/-17.64	-17.21/-17.18	-17.13/-16.4	-15.44/-15.39	-15.11/-15.32	-15.07/-14.01	-12.78/-12.27	-13.87/-14.12	-12.98/-13.13	-13.47/-13.57	-13.87/-14.12	-15.02/-16.08	-17.07/-16.85
Θ(15°)	-10.47/-10.28	-10.13/-10.53	-11.37/-12.27	-12.71/-12.63	-11.31/-9.08	-7.89/-1.74	-6.92/-6.77	-6.93/-7.07	-7.45/-7.69	-7.82/-8.43	-9.9/-75	-10.78/-11.95	-12.64/-12.99	-13.04/-13.33	-13.87/-14.89	-15.73/-15.38	-13.34/-11.5	-9.93/-8.99	-8.44/-8.08	-7.71/-7.33	-7.08/-7.08	-7.11/-7.37	-7.76/-8.59	-9.68/-10.46
Θ(22.5°)	-7.46/-7.65	-8.01/-9.13	-11.17/-13.39	-15.33/-13.65	-10.2/-7.85	-6.47/-5.14	-5.11/-4.93	-5.09/-5.38	-5.66/-5.55	-5.51/-5.66	-6.03/-7.34	-9.54/-11.8	-12.43/-12.25	-12.86/-14.18	-15.69/-17.79	-18.38/-19.12	-18.29/-17.17	-14.29/-11.73	-9.64/-8.04	-6.97/-6.07	-5.67/-5.71	-5.62/-5.35	-5.3/-5.86	-6.51/-6.99
Θ(30°)	-5.19/-6.84	-8.34/-11.31	-8.88/-17.7	-19.24/-16.43	-11.96/-9.61	-7.33/-5.47	-4.81/-4.64	-5.22/-5.61	-5.53/-4.82	-3.4/-0.8	-4.19/-5.37	-5.54/-9.76	-10.38/-10.95	-13.93/-13.95	-16.46/-17.98	-18.91/-18.07	-18.12/-18.11	-19.06/-17.42	-18.49/-18.47	-15.39/-10.33	-7.33/-5.81	-5.09/-4.35	-3.5/-3.28	-3.35/-3.91
Θ(37.5°)	-4.48/-6.46	-8.05/-10.81	-13.98/-13.68	-13.52/-13.78	-14.17/-11.65	-8.33/-6.04	-4.86/-4.5	-4.95/-5.81	-6.1/-6.4	-3.69/-3.5	-3.94/-5.23	-8.08/-10.92	-11.88/-12.9	-13.19/-14.65	-14.98/-14.43	-14.27/-13.73	-14.48/-15.14	-14.61/-15.19	-17/-16.76	-13.5/-10.74	-9.45/-7.6	-5.67/-4.52	-3.56/-3.25	-3.09/-3.37
Θ(45°)	-2.87/-5.04	-6.06/-7.75	-8.18/-6.65	-7.46/-8.12	-9.19/-9.94	-9.19/-7.44	-5.98/-5.24	-5.55/-5.84	-5.39/-3.63	-2.52/-2.65	-3.3/-4.6	-7.79/-17.8	-11.97/-14.56	-14.77/-14.02	-12.94/-10.52	-9.59/-8.72	-8.17/-8.77	-8.31/-9.72	-11.52/-12.22	-10.57/-10.94	-7.52/-6.6	-5.35/-2.94	-1.32/-0.87	-1.26/-1.44
Θ(52.5°)	-4.42/-3.08	-4.29/-6.26	-6.4/-5.44	-5.65/-5.45	-5.6/-5.25	-9.07/-8.41	-6.96/-5.17	-4.44/-4.4	-3.84/-3.42	-3.1/-4.06	-5.86/-8.4	-13.38/-18.06	-19.71/-17.56	-15.78/-12.82	-9.49/-8.09	-8.07/-8.93	-9.75/-9.35	-7.96/-7.47	-7.2/-9.95	-7.76/-5.24	-5.03/-5.29	-1.6/-4.59	-2.6/-3.1	-1.26/-0.93
Θ(60°)	-2.54/-2.84	-3.65/-4.94	-5.85/-5.28	-4.53/-3.91	-5.64/-7.62	-10.15/-11.43	-7.84/-4.4	-2.82/-2.56	-3.26/-5.11	-7.47/-10.49	-13.19/-14.35	-13.52/-12.99	-10.22/-9.99											



Radiated Composite Gain Data

Appendix A

Θ(60°)	-18.28/-18.89	-18.33/-18.77	-17.75/-18.87	-17.9/-18.44	-19.67/-17.87	-16.37/-14.12	-12.3/-12.13	-13.11/-13.55	-14.5/-15.3	-16.68/-15.43	-14.57/-12.47	-10.41/-9.87	-12.68/-16.04	-18.23/-17.98	-13.6/-11.14	-8.64/-9.26	-9.38/-10.09	-12.87/-18.91	-17.86/-17.52	-19.22/-19.37	-15.44/-16.93	-17.86/-18.66	-13.18/-13.98	-14.71/-17.42
Θ(75°)	-18.45/-18.26	-15.45/-13.64	-13.86/-13.74	-14.74/-14.53	-14.1/-13.3	-13.11/-12.38	-11.48/-11.26	-13.41/-17.96	-19.14/-17.41	-17.67/-18.95	-17.46/-17.12	-14.1/-13	-18.46/-11.91	-11.23/-12.63	-10.29/-6.1	-9.33/-11	-17.52/-14.33	-13.61/-13.65	-11.48/-12.22	-13.67/-14.17	-15.55/-16.62	-14.78/-13.03	-12.41/-13.7	-15.37/-18.28
Θ(82.5°)	-16.68/-16.66	-11.17/-8.06	-7.76/-9.25	-12.87/-14.45	-14.47/-18.37	-18.28/-17.77	-16.89/-14.83	-15.14/-17.92	-16.01/-18.11	-18.28/-19.02	-18.97/-18.6	-13.69/-13.49	-17.44/-19.37	-17.39/-17.16	-9.82/-8.64	-9.54/-11.41	-10.78/-12.68	-11.81/-9.66	-11.75/-11.66	-10.27/-15.71	-18.37/-16.79	-13.44/-13.55	-15.56/-18.01	-18.22/-15.83
Θ(90°)	-9.52/-11.68	-11.95/-10.71	-11.14/-13.38	-15.43/-17.63	-18.97/-19.24	-16.55/-15.58	-18.2/-18.48	-18.93/-14.23	-14.52/-18.58	-19.17/-17.96	-18.2/-18.82	-14.19/-14.94	-17.29/-16.99	-18.74/-18.67	-14.54/-10.3	-9.47/-12	-16.73/-19	-14.96/-14.11	-14.71/-13.38	-13.39/-9.83	-12.17/-15.54	-16.86/-15.45	-18.92/-18.68	-15.82/-11.29
Θ(90°)	-11.24/-11.67	-14.14/-18.82	-17.8/-18.3	-18.72/-16.6	-14.14/-14.6	-18.1/-18.45	-18.9/-19.06	-17.58/-17.84	-18.22/-16.17	-14.47/-14.78	-17.79/-17.63	-12.28/-10.92	-13.46/-11.97	-14.66/-18.29	-15.64/-10.89	-13.43/-14.58	-14.65/-14.71	-12.07/-8.92	-9.9/-11.9	-9.36/-9.96	-14/-19.19	-17.03/-15.12	-14.77/-14.83	-13.55/-12.91
Θ(97.5°)	-18.49/-17.44	-18.07/-15.96	-13.11/-15.49	-15.52/-15.2	-16.1/-18.33	-18.19/-11.77	-12.41/-17.81	-18.8/-18.2	-18.1/-13.51	-9.51/-8.99	-17.78/-15.04	-16.07/-16.48	-19.27/-17.16	-15.64/-17.46	-18.75/-17.68	-14.87/-12.93	-15.16/-17.71	-12.99/-14.94	-18.72/-18.79	-11.41/-10.87	-17.77/-18.49	-19.46/-15.88	-15.15/-17.69	-18.68/-18.11
Θ(105°)	-17.4/-16.2	-17.43/-17.91	-17.97/-18.57	-19.08/-19.21	-18.48/-13.58	-10.49/-10.38	-15.17/-18.9	-15.23/-12.84	-18.38/-16.98	-11.32/-9.28	-10.2/-17.13	-18.95/-16.15	-19.67/-17.08	-13.98/-14.1	-16.86/-18.47	-19.11/-17.81	-18.92/-18.09	-18.05/-15.42	-18.11/-18.53	-18.73/-17	-15.73/-16.1	-14.71/-15.89	-19.28/-18.94	-18.08/-17.36
Θ(120°)	-16.21/-12.9	-13.81/-13.25	-13.06/-11.29	-12.79/-16.18	-18.82/-18.94	-18.49/-17.31	-19.46/-14.13	-11.18/-10.96	-14.88/-13.76	-10.04/-10.58	-12.14/-15.38	-16.49/-13.95	-16.68/-16.41	-18.29/-17.35	-17.96/-18.75	-15.45/-14.31	-11.84/-13.69	-19.03/-14.75	-18.51/-19.26	-18.82/-19.22	-17.7/-17.28	-16.37/-17.91	-18.51/-18.68	-18.53/-16.24
Θ(120°)	-18.34/-18.95	-17.46/-18.74	-17.75/-15.19	-15.4/-14.91	-18.48/-18.73	-14.12/-11.79	-10.72/-13.42	-14.73/-12.29	-10.37/-9.7	-10.07/-9.43	-9.41/-13.7	-18.16/-14.54	-18.98/-13.75	-11.95/-17.57	-9.44/-14.75	-13.45/-17.37	-14.95/-15.03	-13.41/-15.25	-18.82/-17.91	-18.3/-18.3	-19.03/-19.01	-18.17/-18.49	-17.17/-19.05	
Θ(127.5°)	-15.82/-16.36	-18.29/-19.15	-18.73/-17.92	-18.63/-17.98	-12.24/-10.06	-10.46/-12.85	-18.2/-19.21	-17.07/-15.44	-12.64/-10.15	-8.13/-7.69	-7.32/-7.41	-8.15/-10.95	-16.23/-18.27	-17.89/-15.38	-12.44/-7.17	-13.2/-15.2	-17.56/-11.52	-11.87/-18.18	-18.17/-17.98	-14.5/-15.05	-13.21/-16.76	-17.49/-19.08	-18.37/-19.02	-18.94/-13.47
Θ(135°)	-12/-10.53	-10.38/-8.69	-8.57/-8.04	-11.04/-12.7	-18.97/-19.04	-18.43/-19.01	-18.49/-18.4	-19.42/-18.7	-11.58/-7.89	-6.76/-6.69	-6.02/-5.9	-8.22/-9.64	-11.35/-10.97	-13.42/-17.08	-17.07/-16.67	-12.82/-14.99	-6.27/-7.93	-18.29/-18.93	-18.5/-17.56	-13.37/-17.57	-12.17/-12.51	-8.53/-12.74	-14.74/-17.51	-18.96/-15.32
Θ(142.5°)	-9.36/-9.04	-9.18/-9.68	-13.08/-14.22	-19.19/-18.64	-17.93/-16.46	-16.17/-15.08	-15.95/-17.18	-18.96/-17.67	-12.92/-10.48	-10.54/-10.06	-10.32/-11.28	-13.03/-15.79	-14.6/-15.42	-17.37/-18.33	-18.56/-17.14	-17.45/-18.38	-17.04/-15.33	-17.87/-18.29	-14.83/-18.04	-13/-15.81	-12.18/-16.21	-14.47/-18.58	-17.59/-19.24	-19.53/-14.4
Θ(150°)	-11.16/-10.25	-12.08/-18.4	-19.32/-15.48	-10.86/-8.68	-8.4/-8.67	-9.84/-12.01	-14.64/-18.92	-17.66/-19.24	-17.56/-13.85	-11.11/-10.34	-11.9/-15.07	-18.21/-16.94	-13.68/-16.27	-18.4/-18.65	-15.75/-9.16	-7.8/-14.57	-13.72/-7.98	-10.17/-15.87	-17.22/-14.17	-14.45/-17.63	-17.58/-17.69	-16.19/-14.53	-16.08/-17.15	-18.18/-17.24
Θ(157.5°)	-14.71/-15.3	-17.16/-13.67	-10.99/-9.19	-8.02/-7.63	-8.06/-8.98	-10.24/-12	-13.96/-15.11	-17.41/-13.04	-18.21/-14.15	-12.58/-14	-18.76/-16.65	-14.04/-10.07	-9.81/-11.49	-13.41/-13.49	-8.68/-6.33	-7.32/-13.71	-18.29/-13.16	-14.23/-18.37	-15.97/-12.33	-11.05/-10.74	-10.64/-12.08	-12.88/-12.74	-13.21/-14.33	-15.79/-16.44
Θ(165°)	-13.51/-12.76	-11.53/-9.65	-8.31/-9.94	-8.63/-10.42	-12.13/-13.31	-12.13/-13.31	-12.61/-13.03	-14.83/-17.41	-18.79/-18.55	-17.86/-18.12	-15.46/-14.18	-14.8/-18.34	-18/-12.33	-9.57/-9.94	-12.27/-15.24	-16.47/-18	-18.7/-16.16	-12.26/-10.44	-18.7/-16.16	-12.26/-10.44	-8.75/-11.08	-13.53/-16.39	-18.71/-18.86	-18.96/-15.68
Θ(172.5°)	-14.31/-17.49	-18.22/-18.14	-17.73/-17.45	-17.29/-17.69	-18.16/-18.59	-16.42/-14.2	-12.48/-11.5	-11.49/-12.34	-13.03/-13.69	-13.85/-13.38	-13.17/-13.61	-14.64/-17.19	-18.36/-17.32	-14.05/-12.29	-12.24/-13.69	-16.83/-17.59	-18.66/-18.46	-15.12/-12.89	-12.47/-11.92	-10.67/-10.15	-10.46/-11.05	-11.22/-11.47	-11.78/-12.11	-12.27/-13.96
Θ(180°)	-12.19/-13.48	-12.19/-13.48	-14.46/-14.95	-15.04/-13.88	-14.21/-14.99	-15.53/-14.47	-14.05/-14.18	-14.73/-15.66	-15.85/-15.27	-14.52/-13.83	-13.31/-12.97	-12.92/-13.27	-13.73/-14.76	-15.68/-16.6	-17.18/-17.84	-18.37/-18.31	-18.13/-18.71	-17.86/-17.94	-18.65/-18.25	-18.49/-11.77	-17.54/-18.49	-17.44/-16.34	-15.93/-14.82	-13.49/-12.23
Freq(Hz)	5.785GHz	ThetAAnt. 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gain	Φ(0°)Φ(7.5°)	Φ(15°)Φ(22.5°)	Φ(30°)Φ(37.5°)	Φ(45°)Φ(52.5°)	Φ(60°)Φ(67.5°)	Φ(75°)Φ(82.5°)	Φ(90°)Φ(97.5°)	Φ(105°)Φ(112.5°)	Φ(120°)Φ(127.5°)	Φ(135°)Φ(142.5°)	Φ(150°)Φ(157.5°)	Φ(165°)Φ(172.5°)	Φ(180°)Φ(187.5°)	Φ(195°)Φ(202.5°)	Φ(210°)Φ(217.5°)	Φ(225°)Φ(232.5°)	Φ(240°)Φ(247.5°)	Φ(255°)Φ(262.5°)	Φ(270°)Φ(277.5°)	Φ(285°)Φ(292.5°)	Φ(300°)Φ(307.5°)	Φ(315°)Φ(322.5°)	Φ(330°)Φ(337.5°)	Φ(345°)Φ(352.5°)
Θ(0°)	-13.42/-13.15	-13.37/-14.28	-14.51/-14.41	-13.85/-12.63	-13.06/-13.77	-14.04/-14.47	-17.16/-16.03	-17.26/-18.59	-17.61/-18.11	-18.64/-18.38	-18.85/-18.55	-16.68/-18.73	-17.23/-15.76	-14.95/-14.74	-14.03/-14.36	-12.9/-12.67	-13.35/-13.97	-14.74/-17.78	-14.65/-14.45	-14.03/-14.14	-14.22/-14.14	-14.26/-19.4	-14.05/-14.34	-14.14/-13.61
Θ(7.5°)	-13.96/-12.55	-12.35/-13.23	-13.08/-13.62	-13.06/-12.26	-12.11/-12.87	-13.28/-12.75	-12.27/-11.48	-11.29/-10.95	-10.75/-10.2	-12.72/-11.65	-12.69/-13.13	-10.72/-11.65	-11.59/-15.92	-14.39/-14.83	-15.46/-15.6	-10.71/-14.5	-13.94/-13.91	-14.07/-14.69	-18.73/-15.66	-16.42/-17.39	-18.78/-18.45	-14.80/-17.51	-17.48/-17.73	-18.91/-15.64
Θ(15°)	-10.81/-10.38	-10.31/-10.94	-11.45/-11.75	-12.38/-13.04	-14.05/-13.74	-12.14/-10.33	-9.38/-8.84	-8.48/-8.02	-7.82/-7.75	-7.73/-7.85	-8.04/-8.48	-8.85/-9.39	-10.37/-11.85	-13.6/-15.92	-18.28/-18.2	-18.1/-16.63	-15.53/-14.2	-12.88/-11.28	-10.29/-9.76	-9.99/-10.48	-11.22/-12.01	-12.68/-12.98	-12.78/-11.93	-12.05/-10.89
Θ(22.5°)	-7.05/-6.38	-8.79/-8.94	-9.73/-9.95	-10.42/-12.26	-16.74/-19.22	-15.4/-12.53	-9.88/-8.28	-7.5/-7.06	-6.63/-6.81	-6.87/-6.64	-6.63/-6.69	-7.49/-8.15	-8.86/-10.09	-12.71/-17.4	-17.94/-19.87	-18.29/-17.11	-17.86/-13.92	-10.97/-9.55	-8.54/-8.04	-7.61/-7.87	-7.68/-7.08	-6.59/-6.3	-6.48/-6.74	-6.9/-6.68
Θ(30°)	-4.79/-5.82	-7.1/-7.59	-7.5/-8.04	-9.06/-11.74	-17.27/-18.3	-14.6/-10.81	-8.26/-6.58	-6.38/-6.58	-7.65/-9.21	-9.98/-8.84	-7.37/-6.56	-6.55/-7.36	-8.78/-10.72	-13.88/-18.07	-18.39/-14.79	-14.62/-16.6	-18.44/-18.96	-19.15/-12.7	-11.68/-9.77	-8.66/-8.12	-7.84/-6.24	-4.67/-3.58	-3.08/-3.04	-3.74/-4.46
Θ(37.5°)	-2.38/-2.7	-3.51/-4.79	-5.86/-8.21	-10.54/-11.08	-11.19/-12.43	-13.8/-12.92	-11.15/-9.47	-8.3/-8	-8.84/-10.38	-10.77/-13.1	-7.52/-4.51	-5.24/-6.73	-7.59/-9.65	-10.86/-10.36	-9.09/-9.19	-10.21/-10.87	-12.8/-15.45	-12.19/-19.03	-16.5/-13.18	-10.99/-44	-7.73/-6	-4.76/-4.04	-3.64/-3.38	-2.56/-1.96
Θ(45°)	-3.48/-3.85	-4.61/-5.84	-6.73/-7.31	-8.47/-10.2	-12.36/-12.57	-11.08/-9.47	-8.52/-7.45	-6.95/-6.7	-7.29/-7.94	-12.8/-10.04	-6.63/-5.23	-6.28/-7.35	-8.16/-11.75	-10.39/-9.19	-8.06/-8.01	-8.14/-7.95	-8.07/-9.14	-10.84/-12.98	-17.85/-19.08	-15.17/-12.07	-8.25/-6.35	-4.04/-4.36	-6.52/-6.75	-5.64/-3.47
Θ(52.5°)	-3.45/-3.08	-3.71/-4.62	-5.62/-7.46	-9.57/-12.79	-13.21/-11	-8.08/-6.32	-5.92/-6.29	-6.72/-7.15	-7.02/-7.78	-8.84/-7.9	-5.61/-5.65	-7.64/-9.6	-11.91/-13.24	-11.09/-9.39	-7.63/-6.32	-4.71/-4.59	-6.25/-7.29	-7.71/-8.03	-8.24/-8.5	-9.07/-9.66	-8.71/-6.25	-3.93/-3.57	-4.94/-8.83	-7.17/-3.69
Θ(60°)	-1.23/-1.52	-2.47/-3.98	-6.26/-11.21	-11.03/-11.09	-11.09/-11.66	-8.65/-6.12	-4.53/-3.84	-3.74/-3.58	-3.04/-3.65	-4.75/-5.71	-5.82/-9.51	-10.91/-10.63	-8.49/-7.59	-7.17/-4.2	-6.67/-4.86	-5.09/-6.65	-9.05/-9.74	-7.79/-6.12	-4.96/-5.27	-5.54/-5.24	-5.71/-4.25	-2.75/-2.19	-3.45/-4.78	-3.52/-1.26
Θ(67.5°)	-1.11/-1.48	-2.97/-5.13	-9.05/-15.05	-13.51/-9.1	-9/-7.54	-5.14/-4.16	-3.14/-1.74	-0.35/-0.52	-1.76/-3.61	-5.09/-8.34	-11.41/-12.28	-6.14/-2.22	-3.86/-4.19	-5.48/-6.58	-7.8/-6.94	-6.29/-7.8	-9.59/-9.58	-6.16/-4.33	-4.81/-5.22	-5.81/-6.85	-6.48/-6.05	-1.81/-1.62	-3.14/-15	-3.15/-1.31
Θ(75°)	-3.82/-4.22	-4.12/-4.67	-7.47/-14	-11.73/-6.96	-5.83/-4.22	-2.09/-1.38	-1.15/-0.39	0.25/-0.44	-2.59/-4.33	-4.43/-6.14	-9.09/-11.57	-3.97/-2.03	-0.71/-1.2	-1.49/-4.54	-10.36/-7.51	-5.02/-6.09	-13/-17.56	-15.57/-8.07	-5.88/-6.41	-5.35/-4.56	-2.85/-1.82	-2.58/-2.57	-2.28/-1.67	
Θ(82.5°)	-2.41/-2.63	-3.57/-4.61	-8.05/-12.37	-10.56/-6.26	-4.72/-2.85	-0.92/-0.62	-1.15/-0.46	1.99/-1.56	-0.79/-3.64	-5.15/-6.23	-8.87/-5.98	0.06/-0.08	-0.22/-0.13	-1.74/-5.96	-18.83/-11.54	-6.79/-4.99	-12.06/-18.53	-17.83/-5.66	-3.01/-3.84	-1.9/-1.34	-3.59/-6.04	-3.57/-1.51	-3.43/-2.46	-3.17/-0.49
Θ(90°)	-4.42/-5.65	-3.89/-2.64	-3.73/-4.84	-6.43/-5.41	-2.9/-2.1	-0.58/-0.81	-1.33/-0.26	1.67/-1.12	-2.02/-5.52	-5.06/-2.98	-4.72/-8.74	-1.24/-0.64	0.61/-0.81	-0.41/-4.04	-10.53/-18.85	-6.7/-5.79	-12.47/-12.2	-10.49/-2.69	-0.6/-1.02	-0.27/-1.05	-1.36/-4.71	-4.5/-1.87	-3.42/-4.53	-2.17/-3.1
Θ(97.5°)	-1.06/-3.21	-2.41/-2.2	-5.32/-5.53	-5.48/-2.34	-1/-1.53	-0.37/-1.1	-1.41/-0.4	1.60/-95	-2.3/-3.59	-4.88/-3.53	-4.7/-6.8	-2.83/-2.03	-0.64/-0.73	-1.61/-6.03	-7.61/-6.69	-6.41/-4.01	-9.52/-10.37	-6.78/-2.59	-0.26/-0.36	0.781/-82	-0.23/-5.58	-2.61/-4.02		



Radiated Composite Gain Data

Appendix A

Θ (105°)	-15.79/-18.23	-19.04/-18.61	-17.89/-13.16	-16.78/-18.65	-18.93/-15.78	-13.49/-19.01	-16.31/-13.15	-13.41/-16.69	-17.91/-15.19	-14.59/-16.79	-17.91/-17.75	-17.55/-15.73	-18.21/-18.64	-18.61/-15.91	-15.03/-19.13	-18.1/-18.08	-19.11/-17.62	-13.48/-12.98	-14.11/-19.12	-18.64/-16.44	-15.44/-17.65	-14.51/-14.96	-17.19/-15.04	
Θ (112.5°)	-18.38/-18.17	-18.45/-15.99	-13.88/-18.17	-18.26/-18.53	-14.86/-11.98	-13.94/-18.31	-18.16/-14.1	-15.58/-17.1	-13.04/-13.71	-19.05/-19.14	-17.81/-18.12	-15.37/-16.15	-18.94/-19.24	-17.42/-18.28	-14.89/-13.68	-16.13/-18.62	-18.19/-17.11	-18.69/-13.49	-14.21/-12.53	-13.94/-18.89	-16.31/-12.63	-15.27/-17.44	-18.21/-17.68	
Θ (120°)	-18.78/-18.22	-17.65/-17.29	-18.39/-18.97	-17.44/-18.44	-16.54/-16.57	-12.32/-15.61	-18.98/-15.18	-13.37/-14.65	-18.43/-18.79	-15.12/-13.09	-16.88/-17.82	-15.83/-18.35	-17.73/-18.1	-17.72/-18.3	-14.48/-14.32	-13.04/-18.11	-18.63/-18.75	-18.08/-15.34	-18.72/-12.52	-17.77/-14.46	-13.22/-15.12	-17.19/-14.71		
Θ (127.5°)	-17.22/-18.65	-17.71/-18.99	-15.11/-16.57	-18.85/-18.12	-13.79/-12.01	-13.9/-17.26	-18.14/-16.46	-11.8/-14.26	-19.06/-17.96	-14.04/-12.58	-14.21/-14.77	-17.91/-18.83	-16.97/-18.78	-18.55/-18.09	-15.35/-12.66	-18.51/-16.11	-18.69/-12.9	-18.83/-19.05	-14.15/-10.78	-16.61/-19.2	-14.74/-13.95	-19.09/-17.28	-18.53/-18.05	
Θ (135°)	-18.55/-18.72	-19.15/-17.96	-18.25/-13.94	-16.27/-14.16	-16.81/-17.49	-18.44/-17.48	-17.34/-18.74	-17.16/-39	-18.26/-18.75	-15.52/-13.03	-12.13/-16.34	-17.36/-12.53	-12.1/-16.61	-13.09/-11.66	-16.31/-17.83	-15.49/-17.6	-13.26/-15.73	-17.49/-16.27	-12.91/-11.06	-18.37/-18.33	-19.26/-15.33	-14.73/-12.62	-18.25/-17.97	
Θ (142.5°)	-12.65/-18.58	-19.75/-16.3	-19.51/-18.96	-18.52/-17.54	-16.72/-17.46	-18.21/-18.48	-19.07/-17.6	-18.55/-18.97	-19.12/-18.77	-15.66/-11.73	-12.45/-14.74	-15.35/-15.33	-18.68/-18.6	-19.01/-17.41	-18.59/-14.05	-15.25/-15.45	-11.6/-15.88	-17.18/-18.19	-19.32/-12.72	-14.61/-18.49	-13.71/-17.85	-18.82/-19.17	-15.04/-16.65	
Θ (150°)	-12.83/-12.95	-16.14/-17.75	-18.19/-17.18	-18.96/-18.04	-18.54/-17.87	-18.37/-17.84	-19.02/-18.53	-17.52/-18.07	-18.07/-17.55	-19.16/-17.09	-16.06/-13.8	-14.53/-18.87	-19.07/-18.1	-16.44/-15.43	-16.24/-18.53	-18.53/-17.31	-17.36/-18.74	-18.1/-18.27	-18.72/-18.16	-18.73/-18.01	-16.9/-15.68	-17.95/-18.02	-17.65/-18.1	
Θ (157.5°)	-17.15/-17.47	-18.14/-17.66	-17.69/-17.15	-18.64/-19.2	-17.67/-19.08	-18.64/-18.34	-18.93/-17.81	-18.21/-15.7	-17.98/-18.24	-18.82/-15.72	-13.72/-13.63	-15.12/-17.7	-17.87/-18	-18.05/-17.88	-17.79/-18.27	-17.4/-17.27	-18.17/-18.52	-18.6/-17.5	-17.43/-18.13	-17.62/-18.25	-18.55/-19.26	-19.11/-18.78	-16.39/-18.69	
Θ (165°)	-19.41/-19.08	-17.74/-18.98	-18.71/-17.99	-19.14/-18.06	-17.38/-17.51	-18.03/-18.08	-18.51/-19.13	-17.33/-17.9	-17.47/-17.67	-18.62/-18.06	-15.9/-15.23	-16.43/-19.09	-19.27/-18.48	-18.2/-15.92	-14.21/-13.73	-14/-14.25	-15.17/-16.62	-18.8/-19.02	-19.24/-19.03	-17.92/-18.07	-16.48/-15.09	-14.51/-15.86	-18.78/-18.09	
Θ (172.5°)	-19.01/-18.92	-18.17/-18.75	-19.01/-18.27	-18.26/-18.98	-18.23/-17.38	-18.75/-18.71	-18.07/-18.7	-19.07/-18.74	-18.36/-17.86	-18.54/-17.86	-15.68/-14.48	-13.78/-13.73	-13.24/-12.2	-11.4/-11.26	-12.1/-13.8	-15.87/-17.88	-18.22/-17.86	-18.37/-18.34	-18.36/-17.89	-18.85/-18.72	-18.01/-18.9	-18.64/-17.84	-17.87/-19.01	
Θ (180°)	-18.69/-18.22	-18.03/-17.24	-14.25/-12.9	-13.06/-13.72	-14.98/-16.16	-16.99/-18.94	-18.3/-19.21	-18.95/-18.14	-18.34/-18.87	-18.57/-18.08	-17.61/-16.82	-16.17/-15.84	-15.6/-15.74	-15.39/-15.91	-17.04/-17.92	-18.78/-19.28	-17.75/-17.9	-18.77/-18.76	-18.39/-18.36	-19.05/-18.66	-17.78/-18.66	-17.99/-18.32	-19.14/-18.48	
Freq(Hz)	5.2GPol.	Theta/Ant. 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Gain	Φ(0°)/Φ(7.5°)	Φ(15°)/Φ(22.5°)	Φ(30°)/Φ(37.5°)	Φ(45°)/Φ(52.5°)	Φ(60°)/Φ(67.5°)	Φ(75°)/Φ(82.5°)	Φ(90°)/Φ(97.5°)	Φ(105°)/Φ(112.5°)	Φ(120°)/Φ(127.5°)	Φ(135°)/Φ(142.5°)	Φ(150°)/Φ(157.5°)	Φ(165°)/Φ(172.5°)	Φ(180°)/Φ(187.5°)	Φ(195°)/Φ(202.5°)	Φ(210°)/Φ(217.5°)	Φ(225°)/Φ(232.5°)	Φ(240°)/Φ(247.5°)	Φ(255°)/Φ(262.5°)	Φ(270°)/Φ(277.5°)	Φ(285°)/Φ(292.5°)	Φ(300°)/Φ(307.5°)	Φ(315°)/Φ(322.5°)	Φ(330°)/Φ(337.5°)	Φ(345°)/Φ(352.5°)
Θ (0°)	-17.78/-18.62	-18.84/-18.86	-18.81/-17.88	-17.63/-18.55	-17.1/-15.67	-14.25/-13.49	-12.98/-12.47	-12.56/-12.77	-13.36/-13.66	-13.89/-14.39	-15.5/-16.26	-16.79/-17.41	-19.04/-18.14	-19/-19.09	-18.76/-18.21	-18.59/-18.13	-18.75/-18.4	-17.7/-17.34	-15.9/-15.16	-14.49/-14.07	-13.67/-13.45	-13.75/-13.63	-13.91/-14.49	-15.76/-16.84
Θ (7.5°)	-18.55/-18.47	-17.61/-19.06	-18.68/-18.82	-18.5/-13.37	-17.82/-18.24	-17.44/-18.45	-17.79/-16.27	-15.76/-14.81	-14.54/-13.49	-13.09/-12.85	-13.48/-14.11	-14.83/-15.76	-16.85/-19.04	-17.36/-18.4	-17.58/-18.91	-18.61/-17.7	-15.66/-14.53	-13.95/-14.04	-13.47/-13.15	-13.77/-14.45	-15.36/-16.15	-16.49/-18.4	-18.58/-17.66	
Θ (15°)	-18.93/-17.78	-18.62/-18.1	-18.53/-18.41	-18.14/-15.82	-15.5/-15.42	-16.01/-17.45	-17.8/-17.81	-19.43/-18.42	-16.47/-15.26	-14.34/-13.82	-13.79/-14.05	-14.67/-16.01	-16.78/-18.65	-18.97/-18.05	-17.3/-17.46	-18.83/-18.18	-18.32/-18.57	-19.22/-19.11	-18.17/-16.28	-15.33/-14.25	-13.52/-13.78	-14.33/-15.03	-15.35/-16.71	-17.79/-19.09
Θ (22.5°)	-17.96/-18.88	-17.69/-17.93	-17.71/-17.11	-17.28/-14	-12.45/-11.22	-11.68/-12.29	-13.25/-13.63	-13.56/-13.14	-12.69/-12.86	-13.76/-12.62	-13.47/-13.73	-17.1/-18.18	-16.54/-17.97	-18.71/-18.41	-17.25/-18.9	-18.37/-18.88	-18.74/-18	-18.44/-17.53	-18.83/-16.16	-13.62/-12.95	-13.49/-13.5	-16.54/-17.07	-17.15/-18.47	
Θ (30°)	-13.43/-16.24	-19.49/-18.32	-14.35/-12.89	-13.13/-32	-18.24/-11.46	-11.37/-11.84	-12.79/-12.28	-11.25/-11.65	-11.22/-10.03	-10.07/-9.78	-10.46/-11.84	-13.77/-15.5	-16.4/-16.91	-17.59/-18.1	-16.75/-15.94	-13.31/-14.38	-13.34/-13.61	-18.43/-18.55	-18.45/-15.98	-13.46/-12.19	-11.91/-12.27	-11.46/-10.39	-10.09/-11.26	
Θ (37.5°)	-14.4/-17.36	-17.1/-17.08	-15.49/-13.4	-11.79/-11.57	-11.1/-9.7	-9.02/-9.07	-9.92/-10.8	-10.69/-11.09	-11.02/-9.76	-8.88/-8.46	-8.52/-9.33	-10.6/-11.7	-12.12/-13.61	-16.45/-18.04	-15.33/-13.26	-12.74/-11.84	-9.99/-9.04	-8.63/-9.43	-11.82/-11.86	-10.51/-10.68	-11.75/-12.3	-13.22/-13.29	-11.41/-10.04	-10.18/-12.23
Θ (45°)	-14.54/-14.5	-15.75/-16.01	-14.38/-13.88	-12.24/-11.1	-10.13/-8.86	-7.97/-7.42	-7.36/-8.25	-8.33/-7.35	-7.31/-7.35	-7.65/-8.19	-9.27/-9.43	-9.45/-9.66	-8.87/-10.4	-11.19/-12.42	-12.49/-11.3	-9.31/-7.6	-7.71/-9.27	-6.69/-8.5	-8.11/-8.66	-9.76/-11.68	-13.23/-11.98	-10.88/-11.02	-10.64/-15.43	
Θ (52.5°)	-16.97/-15.16	-15.32/-16.53	-15.35/-16.35	-16.63/-13.84	-11.73/-9.26	-7.66/-7.36	-7.65/-8.14	-8.67/-8.53	-7.43/-6.92	-6.07/-6.24	-7.84/-9.58	-10.11/-8.99	-8.15/-9.1	-10.94/-11.56	-11.41/-9.64	-8.94/-8.36	-7.75/-7.71	-8.71/-8.19	-10.22/-11.6	-11.21/-8.55	-8.14/-10.02	-14.55/-17.48		
Θ (60°)	-12.52/-14.01	-15.97/-18.61	-15.93/-13.01	-12.66/-10.63	-9.39/-7.49	-6.75/-5.47	-6.32/-6.87	-6.57/-6.3	-7.58/-8.56	-6.84/-6.28	-6.96/-8.27	-8.37/-7.3	-7.62/-9.38	-10.46/-10.38	-10.36/-9.74	-10.65/-11.21	-9.27/-8.23	-8.53/-9.45	-9.14/-8.51	-7.71/-8	-9.63/-14.21	-14.04/-9.8	-7.51/-7.3	
Θ (67.5°)	-9.15/-14.2	-14.86/-16.6	-19.13/-16.16	-14.99/-10.55	-8.5/-17.2	-5.67/-5.61	-6.33/-1.67	-7.71/-5.81	-5.48/-7.65	-8.03/-6.46	-6.16/-1.77	-6.55/-7.65	-7.19/-7.75	-9.33/-9.23	-9.16/-8.52	-9.34/-9.45	-7.69/-8.54	-7.59/-8.3	-8.15/-8.3	-8.77/-9.17	-10.95/-11.6	-11.09/-9.89	-8.24/-7.08	
Θ (75°)	-10.18/-15.97	-16.97/-16.69	-17.99/-16.39	-16.3/-10.48	-7.3/-15.7	-4.46/-4.7	-5.48/-6.67	-6.86/-5.57	-5.45/-7.39	-9.24/-7.71	-6.45/-7.39	-7.73/-7.49	-7.94/-6.57	-6.39/-6.69	-8.03/-6.74	-5.69/-6.38	-6.57/-6.86	-5.39/-6.55	-9.99/-10.74	-9.23/-8.6	-10.41/-10.45	-8.22/-6.95	-7.06/-6.11	
Θ (82.5°)	-7.67/-17.96	-16.68/-15.37	-18.53/-13.9	-16.49/-8.88	-6.69/-4.49	-2.32/-2.03	-3.75/-4.66	-6.34/-4.4	-4.39/-7.8	-8.79/-10.3	-6.83/-7.58	-9.61/-9.24	-6.14/-6.04	-6.98/-6.05	-6.66/-6.63	-8.1/-5.38	-5.95/-4.78	-4.39/-4.45	-5.35/-7.83	-9.01/-7.85	-7.03/-7.8	-6.37/-6.55	-7.02/-8.36	
Θ (90°)	-4.57/-12.69	-15.93/-10.53	-19.19/-17.49	-18.43/-11.6	-6.57/-4.7	-3.93/-1.89	-1.73/-4.57	-7.01/-4.49	-4.06/-5.63	-10.16/-10.44	-6.04/-7.53	-7.88/-7	-6.84/-7.19	-5.27/-4.71	-5.98/-8.4	-7.28/-6.25	-4.83/-13.2	-2.84/-3.82	-5.65/-6.79	-7.04/-5.92	-5.37/-6.21	-5.61/-4.19	-5.17/-6.22	
Θ (97.5°)	-4.32/-8.9	-15.09/-11.51	-16.22/-18.47	-12.38/-17.08	-7.66/-5.89	-5.14/-2.59	-2.85/-5	-7.95/-5.49	-3.9/-5.42	-9.94/-9.89	-6.83/-6.96	-7.19/-5.09	-6.05/-6.06	-4.12/-5.01	-7.47/-6.12	-5.98/-5.38	-3.84/-1.27	0.72/-1.2	-3.6/-5.75	-5.17/-5.7	-5.91/-5.38	-4.03/-4.7	-6.15/-7.02	
Θ (105°)	-4.14/-12.09	-17.39/-13.73	-17.33/-17.51	-9.88/-19.2	-8.24/-6.33	-5.87/-3.69	-2.93/-3.38	-1.04/-7.86	-4.43/-6.44	-12.69/-10.03	-5.55/-7.06	-7.83/-8.99	-9.32/-5.04	-4.05/-5.44	-6.6/-1.7	-6.84/-5.97	-4.22/-3.41	-2.54/-5.57	-5.65/-8.28	-3.84/-3.84	-6.49/-4.64	-3.54/-6.03	-9.34/-9.12	
Θ (112.5°)	-5.85/-14.78	-17.47/-16.55	-10.68/-17.1	-9.89/-11.76	-10.86/-8.09	-6.88/-3.71	-5.81/-6.33	-9.24/-9.12	-5.74/-7.17	-12.88/-10.52	-6.64/-6.78	-6.41/-10.09	-11.78/-9.55	-3.91/-4.54	-6.38/-10.71	-11.63/-8.41	-6.2/-4.78	-5.91/-6.05	-8.12/-6.5	-2.95/-5.22	-7.78/-6.03	-4.91/-17.4	-18.25/-16.21	
Θ (120°)	-5.71/-9.63	-18.79/-18.5	-12.74/-8.38	-10.16/-10.96	-15.7/-12.64	-11.79/-11.9	-9.72/-12.07	-12.92/-9.69	-9.21/-12.36	-11.51/-8.46	-8.75/-8.47	-9.31/-12.39	-10.46/-8.72	-8.16/-7.38	-11.01/-6.3	-6.45/-4.55	-10.62/-10.31	-15.93/-7.79	-4/-6.23	-6.66/-6.78	-7.51/-10.92	-13.58/-14.94	-18.71/-9.52	
Θ (127.5°)	-10.43/-10.15	-18.01/-17.36	-15.48/-8.92	-9.26/-16.91	-14.77/-17.83	-16.31/-16.1	-12.23/-15.82	-18.52/-13.05	-11.59/-11.17	-11.92/-9.1	-6.56/-5.89	-8.76/-12.47	-11.61/-9.69	-8.11/-6.87	-6.57/-11.62	-8.04/-12.1	-7.19/-10.1	-10.38/-11.85	-10.06/-5.49	-4.64/-6.23	-8.81/-4.63	-5.85/-8.12	-14/-14.91	
Θ (135°)	-11.85/-9.58	-18.54/-13.17	-11.24/-12.45	-9.85/-12.54	-18.46/-18.96	-19/-18.21	-18.04/-17.02	-17.38/-18.88	-12.58/-11.1	-11.44/-11.4	-10.87/-10.07	-8.48/-9.34	-14.6/-14.78	-7.77/-6.42	-10.77/-11.64	-17.52/-9.71	-6.84/-10.96	-6.76/-10.36	-5.96/-4.13	-4.88/-6.12	-4.09/-4.69	-7.98/-9.58	-14.15/-18.47	
Θ (142.5°)	-14.15/-9.63	-12.08/-18.11	-12.9/-14.13	-15.16/-15.24	-15.96/-17.76	-17.17/-18.29	-18.46/-18.68	-17.69/-16.67	-16.56/-12.11	-10.71/-11.02	-11.4/-10.32	-9.93/-12.74	-15.76/-11.27	-8.39/-9.13	-11.78/-19.3	-12.44/-7.39	-6.8/-13.7	-5.03/-6.1	-5.8/-6.07	-6.26/-6.43	-10.43/-14.58	-12.22/-13.62	-14.6/-15.19	
Θ (150°)	-13.07/-13.68	-11.84/-13.81	-19.2/-21.45	-16.23/-19.33	-17.88/-18.56	-18.31/-18.82	-19.26/-18.25	-18.33/-18.87	-17.64/-16.7	-15.01/-12.86	-11.5/-10.94	-13.27/-16.77	-12.97/-12.55	-9.48/-9.88	-9.72/-11.2	-11.97/-11.96	-8.21/-6.91	-7.49/-9.08	-6.38/-10.15	-8.01/-6.92				



Radiated Composite Gain Data

Appendix A

Θ (150°)	-8.72/-10.47	-18.99/-17.7	-17.93/-18.74	-19.05/-18.2	-16.33/-18.27	-18.43/-17.49	-19.19/-19	-18.98/-17.78	-14.4/-15.54	-18.48/-17.67	-18.61/-18.77	-18.64/-18.35	-17.59/-18.21	-13.4/-12.64	-12.64/-14.61	-17.35/-17.72	-17.91/-18.56	-17.79/-18.96	-14.3/-12.26	-15.1/-18.48	-18.92/-14.73	-17.78/-17.76	-14.92/-19.23	-17.36/-14.13
Θ (157.5°)	-14.98/-14.25	-18.51/-17.95	-17.96/-17.84	-18.47/-18.3	-18.38/-18.41	-18.05/-18.85	-15.25/-13.83	-13.23/-14.34	-18.29/-18.94	-15.56/-14.01	-14.81/-15.07	-17.54/-18.32	-18.03/-19.61	-17.91/-15	-12.26/-12	-14.67/-17.67	-18.32/-17.69	-15.73/-14.52	-13.16/-14.21	-17.85/-19.33	-19.14/-16.59	-15.67/-11.25	-9.68/-11.68	-14.48/-15.44
Θ (165°)	-10.62/-17.85	-18.42/-19.42	-10.87/-17.52	-16.71/-15.2	-14.57/-16.15	-14.57/-16.21	-17.35/-14.34	-14.42/-15.16	-14.71/-14.37	-13.67/-13.61	-18.93/-18.44	-18.31/-19.05	-15.35/-18.41	-16.61/-18.44	-18.31/-19.05	-15.63/-17.31	-14.64/-16.62	-15.35/-15.46	-14.19/-13.99	-18.38/-18.91	-18.81/-14.44	-13.91/-13.45	-15.63/-18.64	
Θ (172.5°)	-18.93/-18.26	-17.27/-16.52	-16.39/-15.89	-14.96/-15.44	-17.83/-18.1	-16.94/-15.66	-16.04/-18.3	-17.5/-18.5	-18.77/-18.24	-16.8/-16.69	-16.79/-16.21	-15.67/-16.25	-17.59/-17.47	-14.74/-12.96	-12.29/-12.56	-12.03/-11.19	-10.89/-11.29	-12.12/-13.96	-15.89/-16.22	-16.58/-17.39	-18.55/-18.89	-17.63/-18.56	-18.81/-17.67	-18.42/-17.72
Θ (180°)	-18.8/-19.27	-17.15/-15.44	-15.94/-15.97	-15.21/-14.05	-14.14/-15.65	-17.57/-17.44	-18.16/-19.02	-16.84/-16.04	-14.56/-14.16	-13.59/-12.99	-12.28/-12.15	-12.27/-12.71	-13.39/-13.69	-13.7/-15.03	-18.28/-18.69	-18.13/-19.29	-17.3/-18.67	-18.75/-18.5	-18.9/-18.11	-17.61/-17.6	-14.91/-13.56	-13.31/-14.05	-17.42/-19.12	-17.95/-19.15
Freq(Hz)	5.66GPol.	Theta/Ant. 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gain	Φ(0°)/Φ(7.5°)	Φ(15°)/Φ(22.5°)	Φ(30°)/Φ(37.5°)	Φ(45°)/Φ(52.5°)	Φ(60°)/Φ(67.5°)	Φ(75°)/Φ(82.5°)	Φ(90°)/Φ(97.5°)	Φ(105°)/Φ(112.5°)	Φ(120°)/Φ(127.5°)	Φ(135°)/Φ(142.5°)	Φ(150°)/Φ(157.5°)	Φ(165°)/Φ(172.5°)	Φ(180°)/Φ(187.5°)	Φ(195°)/Φ(202.5°)	Φ(210°)/Φ(217.5°)	Φ(225°)/Φ(232.5°)	Φ(240°)/Φ(247.5°)	Φ(255°)/Φ(262.5°)	Φ(270°)/Φ(277.5°)	Φ(285°)/Φ(292.5°)	Φ(300°)/Φ(307.5°)	Φ(315°)/Φ(322.5°)	Φ(330°)/Φ(337.5°)	Φ(345°)/Φ(352.5°)
Θ (0°)	-15.84/-16.24	-16.38/-17.04	-19.34/-18.88	-18.36/-17.35	-18.88/-18.76	-18.24/-17.92	-16.57/-15.71	-15.17/-14.34	-13.31/-12.86	-12.27/-11.63	-10.83/-10.3	-10.62/-11.51	-11.95/-11.93	-11.54/-11.89	-13.17/-14.65	-15.11/-14.88	-14.95/-15.41	-15.58/-15.76	-15.66/-14.96	-14.92/-14.08	-13.98/-14	-13.5/-12.52	-11.94/-12.39	-13.72/-15.73
Θ (7.5°)	-11.58/-11.17	-11.65/-12.37	-12.89/-13.82	-13.14/-13.56	-14.44/-13.94	-13.18/-13.85	-14.71/-15.67	-15.05/-14.26	-13.79/-13.54	-13.05/-12.31	-11.55/-11.75	-13.03/-14.24	-15.38/-16.03	-17.59/-19.02	-17.29/-17.92	-18.67/-19.01	-18/-18.06	-18.98/-18.45	-18.25/-16.34	-14.89/-13.78	-13.06/-12.53	-11.61/-10.93	-10.61/-11.52	-11.79/-11.88
Θ (15°)	-8.88/-8.68	-8.96/-9.32	-8.99/-9.64	-9.62/-9.72	-10.09/-10.95	-12.14/-14.09	-15.64/-15.65	-15.07/-13.6	-12.45/-11.62	-10.94/-10.46	-10.02/-10.2	-11.1/-12.92	-14.87/-15.76	-15.17/-14.44	-13.71/-13.19	-13.04/-13.63	-15.04/-16.24	-17.65/-19.22	-18.96/-18.7	-16.65/-14.94	-12.99/-11.48	-10.62/-9.72	-9.13/-9.01	-9.13/-9.2
Θ (22.5°)	-9.46/-9.81	-10.6/-10.88	-10.08/-9.15	-8.79/-9.14	-9.59/-10.47	-11.96/-12.8	-14.29/-15.17	-14.8/-13.41	-12.53/-12.02	-11.14/-10.57	-10.08/-9.83	-11.27/-12.38	-14.16/-15.99	-15.06/-15.99	-17.55/-17.64	-16.85/-16.97	-18.6/-17.63	-18.33/-17.29	-18.78/-16.94	-14.99/-13.18	-11.52/-10.33	-10.28/-10.38	-10.15/-10	
Θ (30°)	-11.62/-14.57	-14.82/-15	-14.74/-14.04	-14.89/-15.15	-14.48/-12.31	-10.55/-10.97	-11.61/-11.48	-9.94/-9.34	-10.09/-11.23	-11.94/-12.7	-12.21/-10.96	-11.73/-14.58	-17.89/-18.28	-18.45/-18.42	-18.63/-15.81	-12.43/-10.28	-10.83/-13.75	-18.5/-17.56	-14.03/-11.76	-9.46/-86	-5.93/-6.13	-7.02/-9.16		
Θ (37.5°)	-9.84/-12.86	-13.85/-13.46	-13.37/-13.18	-11.22/-9.75	-9.32/-8.2	-8.33/-9.14	-10.7/-9.11	-6.72/-4.85	-4.73/-5.87	-7.25/-9.11	-11.45/-13.04	-11.78/-9.36	-8.46/-8.95	-10.14/-11.44	-13.01/-13.72	-12.91/-12.43	-12.47/-11.04	-10.28/-10.44	-9.61/-9.12	-9.69/-11.72	-13.01/-10.51	-8.44/-8.32	-8.27/-8.63	-8.57/-9.41
Θ (45°)	-11.15/-13.35	-17.58/-16.9	-13.48/-14.05	-13.72/-11.44	-9.69/-6.99	-5.43/-6.53	-8.45/-8.75	-6.58/-4.4	-3.93/-5.24	-6.77/-6.88	-7.45/-9.86	-11.3/-8.4	-6.1/-6.35	-7.94/-9.03	-10.25/-9.48	-7.82/-7.47	-8.02/-7.35	-7.8/-6.59	-5.81/-5.52	-5.57/-6.07	-7.94/-10.03	-9.31/-7	-5.97/-6.78	-8.95/-11.37
Θ (52.5°)	-13.89/-18.3	-18.33/-19.02	-16.57/-15.91	-18.47/-17.01	-16.62/-10.36	-5.88/-5.11	-6.03/-8.21	-6.55/-3.42	-2.02/-2.81	-5.49/-7.41	-7.76/-4.93	-4.08/-4.85	-6.15/-7.43	-8.77/-9.1	-7.41/-6.86	-7.78/-8.27	-7.4/-6.17	-5.29/-5.5	-6.13/-5.96	-6.92/-5.99	-10.32/-7	-4.2/-4.29	-7.25/-9.26	
Θ (60°)	-19.4/-14.97	-14.03/-17.91	-16.27/-13.37	-12.86/-10.91	-9.5/-8.5	-6.41/-4.93	-5.12/-6.46	-7.89/-6.03	-2.77/-1.44	-2.59/-5.32	-8.03/-7.99	-5.63/-3.6	-3.17/-3.92	-6.62/-8.7	-11.95/-12.34	-7.89/-6.18	-6.51/-6.66	-7.64/-5.93	-5.62/-6.76	-6.88/-6.72	-7.11/-8.21	-9.48/-6.27	-3.63/-3.83	-8.5/-19.14
Θ (67.5°)	-10.12/-12.1	-11.06/-13.74	-10.78/-15.77	-7.78/-6.99	-6.27/-6.15	-4.1/-2.16	-3.08/-4.16	-4.27/-4.88	-5.26/-3.69	-2.66/-4.03	-7.12/-5.99	-3.27/-2.26	-3.3/-5.74	-9/-12.12	-11.49/-8.81	-5.57/-4.9	-4/-4.65	-6.92/-6.09	-6.37/-6.49	-8.53/-9.59	-8.81/-9.26	-8.44/-6.09	-3.86/-3.53	-5.56/-7.56
Θ (75°)	-9.3/-11.41	-15/-18.21	-10.15/-8.8	-9.66/-9.07	-6.71/-4.04	-2.57/-1.34	-1.82/-1.65	-1.99/-2.68	-4.02/-5.71	-4.17/-3.22	-4.81/-7.61	-4.27/-1.38	-2.48/-4.35	-7.7/-11.36	-11.65/-9.97	-5.05/-3.31	-1.57/-3.16	-3.17/-2.51	-2.46/-3.5	-6.38/-7.1	-7.33/-5.9	-4.44/-3.76	-4.55/-5.68	
Θ (82.5°)	-4.13/-11.84	-10.27/-14.87	-16.75/-12.67	-11.49/-11.55	-4.62/-2.73	-1.93/-1.07	-1.89/-1.56	-0.58/-1.54	-3.85/-5.93	-5.15/-4	-4.75/-4.69	-2.49/-0.98	-3.33/-5.12	-7.61/-8.27	-6.66/-5.67	-4.32/-2.3	-0.3/-1.6	-0.51/-0.89	-1.3/-2.31	-4.05/-5.74	-7.58/-5.49	-3.89/-3.05	-3.04/-2.81	-3.29/-1.77
Θ (90°)	-2.22/-10.77	-9.67/-17.78	-12.19/-11.82	-9.47/-11.76	-3.17/-1.14	0.510/63	-0.91/-1.96	-0.29/-0.01	-3.08/-7.9	-5.27/-4.18	-5.59/-7.04	-4.4/-2.17	-1.89/-4.27	-6.33/-8.27	-7.19/-4.78	-3.340/06	0.010/14	0.70/62	-1.53/-2.35	-3/-4.07	-4.42/-4.24	-3.28/-1.63	-1.87/-4.46	-6.95/-13.97
Θ (97.5°)	-8.12/-15.99	-11.09/-9.36	-14.17/-10.47	-7.36/-12.22	-4.17/-10.47	-0.14/-0.2	-1.04/-2.82	-0.11/60.3	-2.17/-8.77	-7.69/-3.98	-3.94/-3.75	-3.9/-2.72	-5.61/6.62	-4.01/-4.13	-5.19/-6.27	-3.74/-1.2	0.771/95	2.040/14	-1.61/-1.06	-0.02/-2.09	-3.5/-3.46	-1.97/-0.64	-1.45/-5.07	-6.93/-2.94
Θ (105°)	-2.25/-9.25	-9.63/-14.6	-10.59/-11.52	-6.28/-11.24	-4.54/-2.75	-2.08/-0.46	-2.58/-6.2	-2.64/-0.53	-3.06/-8.45	-8.08/-5.24	-4/-8.11	-8.01/-1.4	-3.49/-5.13	-3.31/-5.15	-7.28/-5.66	-4.68/-2.42	-0.050/84	2.25/-0.29	-1.33/-2.01	-0.58/-0.27	-2.97/-4.65	-3.57/-2.24	-3.98/-9.59	-7.67/-0.97
Θ (112.5°)	-1.82/-12.17	-1.16/-15.66	-5.78/-11.4	-4.11/-12.72	-3.5/-2.24	-4.62/-2.65	-1.31/-4.62	-4.39/-10.67	-9.29/-3.91	-8.22/-7.59	-2.95/-3.21	-2.93/-3.21	-2.34/-1.16	-4.19/-3.23	-5.99/-7.1	-2.780/34	-0.2/-4.4	-5.62/-4	0.14/-1.45	-5.51/-4.1	-3.62/-6.08	-7.55/-8.17	-5.08/-10.5	
Θ (120°)	-1.66/-11.29	-13.33/-18.9	-14.89/-3.67	-3.85/-5.89	-10.23/-5.89	-6.38/-6.63	-7.35/-7.41	-7.06/-5.29	-4.41/-8.38	-12.89/-6.46	-3.74/-8.6	-5.04/-5.31	-6.25/-6.59	-6.93/-12.52	-14.9/-11.31	-4.83/-1.34	-3.63/-5.55	-12.23/-8.02	-12.31/-8.9	-4.66/-5.49	-6.97/-6.76	-15.58/-15.8	-15.61/-5.8	
Θ (127.5°)	-7.91/-8.47	-18.79/-13.13	-10.18/-4.97	-6.51/-8.51	-9.17/-10.92	-15.25/-14.03	-12.11/-16.71	-14.01/-8.12	-8.2/-13.71	-8.55/-4.52	-4.58/-6.7	-9.75/-8.49	-5.65/-6.25	-7.48/-6.11	-6.78/-7.73	-15.53/-6.53	-3.52/-1.43	-8.62/-7.66	-18.99/-5.68	-1.92/-3.44	-3.47/-3.6	-2.3/-6.41	-13.05/-15.19	-15.62/-17.92
Θ (135°)	-11.18/-9.53	-17.41/-8.53	-11.91/-6.44	-5.66/-8.98	-18.3/-17.59	-16.1/-19.08	-17.67/-14.44	-17.42/-12.83	-11.22/-10.43	-10.68/-5.51	-3.44/-4.49	-8.53/-12.1	-8.49/-5.71	-4.65/-3.01	-4.97/-12.93	-18.83/-9.57	-2.78/-7.1	-6/-8.95	-8.39/-5.57	-2.33/-2.61	-1.56/-3.79	-5.77/-6.84	-16.15/-10.98	-13.94/-18.97
Θ (142.5°)	-8.78/-9.91	-15.17/-10.19	-9.61/-13.31	-11.84/-11.09	-14.92/-17.79	-19.25/-7.52	-16.07/-17.91	-18.71/-12.65	-11.44/-7.99	-6.92/-7.54	-8.12/-9.99	-12.37/-13.53	-6.02/-4.75	-8.19/-10.46	-10.82/-9.65	-5.71/-6.96	-5.21/-13.27	-6.01/-6.66	-4.56/-7.07	-2.32/-4.51	-15.75/-15.65	-16.65/-19.22	-15.25/-9.69	
Θ (150°)	-9.57/-10.72	-9.12/-9.4	-6.85/-6.65	-10.35/-15.38	-15.05/-17.81	-18.19/-17.54	-17.83/-18	-19.18/-18.8	-15.73/-11.37	-10.15/-10.52	-11.04/-11.04	-13.12/-16.28	-18.07/-13.9	-8.4/-7.14	-8.56/-12.56	-13.6/-12.49	-11.27/-6.79	-6.38/-9.82	-12.99/-13.31	-7.57/-5.47	-6.71/-6.56	-10.34/-14.26	-9.51/-7.53	-7.38/-7.88
Θ (157.5°)	-18.73/-12.26	-7.92/-8.39	-10.31/-11.44	-14.16/-14.44	-18.77/-19.14	-17.4/-17.39	-17.16/-16.83	-14.53/-12.04	-10.85/-11.17	-12.03/-12.99	-12.53/-11.27	-11.36/-12.91	-15.03/-14.75	-13.29/-11.78	-10.31/-9.57	-10.32/-11.66	-11.23/-9.89	-10.7/-11.67	-10.7/-15	-6.02/-6.04	-8.26/-11.66	-14.57/-14.32	-10.37/-8.23	-9.8/-18.27
Θ (165°)	-11.51/-11.62	-11.02/-11.08	-13.5/-15.71	-18.66/-18.42	-18.81/-19.04	-19.51/-16.34	-15.18/-14.34	-14.03/-13.52	-13.14/-12.9	-12.26/-12.24	-12.79/-13.78	-14.68/-14.23	-11.75/-9.58	-7.49/-6.11	-5.55/-5.73	-6.45/-6.55	-6.39/-6.1	-6.16/-5.67	-5.31/-5.52	-6.23/-7.35	-9.29/-10.86	-12.04/-12.71	-13.63/-14.27	-17.3/-15.81
Θ (172.5°)	-18.12/-17.74	-19.44/-19.23	-18.29/-19.43	-18.29/-17.53	-18.36/-18.18	-17.3/-17.43	-15.28/-13.8	-14.12/-14.5	-15.54/-17.58	-18.56/-19.27	-18.28/-18.56	-18.31/-16.08	-14.28/-14.23	-15.24/-15.58	-14.34/-12.94	-12.05/-11.43	-10.83/-10.28	-9.98/-10.35	-11.05/-12.14	-13.04/-13.68	-14.21/-13.41	-13.69/-14.79	-15.77/-16.24	-14.99/-15.87
Θ (180°)	-9.77/-10.25	-10.33/-11.88	-12.85/-12.66	-12.44/-13.21	-13.87/-14.57	-14.87/-14.66	-14.61/-14.59	-15.51/-17.51	-18.44/-18.23	-19.38/-17.98	-19.14/-19.3	-18.68/-18.97	-19.02/-18.47	-17.7/-16.06	-14.76/-13.99	-13.45/-12.94	-12.77/-13.42	-14.31/-14.42	-14.01/-14.17	-14.68/-14.73	-15.1/-15.86	-17.37/-16.59	-13.94/-12.57	-10.69/-9.59
Freq(Hz)	5.785GPol.	Phi/Ant. 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gain	Φ(0°)/Φ(7.5°)	Φ(15°)/Φ(22.5°)	Φ(30°)/Φ(37.5°)	Φ(45°)/Φ(52.5°)	Φ(60°)/Φ(67.5°)	Φ(75°)/Φ(82.5°)	Φ(90°)/Φ(97.5°)	Φ(105°)/Φ(112.5°)	Φ(120°)/Φ(127.5°)	Φ(135°)/Φ(142.5°)	Φ(150°)/Φ(157.5°)	Φ(165°)/Φ(172.5°)	Φ(180°)/Φ(187.5°)	Φ(195°)/Φ(202.5°)	Φ(210°)/Φ(217.5°)	Φ(225°)/Φ(232.5°)	Φ(240°)/Φ(247.5°)	Φ(255°)/Φ(262.5°)	Φ(270°)/Φ(277.5°)	Φ(285°)/Φ(292.5°)	Φ(300°)/Φ(307.5°)	Φ(315°)/Φ(322.5°)	Φ(3	

Sporton International Inc. Hsinchu Laboratory



Radiated Composite Gain Data

Appendix A

Θ(45°)	-8.6/-5.58	-4.53/-3.63	-2.22/-0.95	0.07/0.84	1.47/1.88	1.67/0.82	-0.78/-2.47	-3.53/-3.22	-2.74/-2.79	-3.19/-3.53	-3.97/-3.71	-3.43/-4.53	-6.07/-7.42	-9.21/-11.22	-12.57/-14.63	-18.72/-18.12	-18.5/-17.04	-12.94/-12.64	-17.96/-18.21	-14.17/-13.69	-15.24/-15.06	-15.29/-15.2	-17.18/-17.7	-17.88/-13.15
Θ(52.5°)	-7.1/-4	-2.35/-1.18	-0.06/0.51	1.05/-1.46	1.68/-1.91	2.1/-5.4	-0.24/-2.83	-4.19/-2.96	-1.79/-1.87	-2.54/-2.86	-3.07/-2.71	-2.98/-4.72	-5.77/-7.68	-10.11/-10.25	-11.17/-15.68	-18.82/-18.07	-14.81/-17.64	-17.95/-19.38	-14.52/-14.59	-15.39/-11.33	-10.09/-13.69	-18.77/-16.61	-15.17/-19.19	-14.46/-4.74
Θ(60°)	-5.86/-4.53	-3.32/-2.28	-0.79/-0.22	1.24/-1.71	1.41/-2.5	1.47/-1.22	-0.41/-2.37	-1.88/-0.73	0.06/0.13	-0.84/-1.06	-1.54/-1.54	-1.8/-2.62	-3.58/-5.97	-7.22/-7.85	-10.22/-15.67	-18.42/-15.67	-16.88/-18.03	-17.92/-11.3	-12.08/-14.94	-12.46/-8.93	-10.02/-14.3	-19.31/-17.73	-16.68/-12.77	-9.98/-6.64
Θ(67.5°)	-4.55/-4.56	-4.19/-3.01	-1.8/-0.23	1.09/-1.52	1.17/-1.22	1.29/-0.49	-1.18/-2.49	-1.96/-0.56	-0.3/-0.3	-0.66/-0.87	-0.78/-0.2	-0.2/-0.77	-2.44/-5.2	-5.12/-5.72	-7/-8.98	-12.2/-15.9	-18.47/-18.96	-13.47/-9.91	-9.91/-11.83	-12.18/-12.67	-15.6/-16.67	-17.88/-15.44	-13.02/-10.84	-6.13/-4.65
Θ(75°)	-1.74/-1.52	-1.32/-0.96	-0.12/0.53	1.37/-1.09	0.06/-0.82	-0.68/-0.78	-1.8/-2.8	-1.32/-0.21	-0.5/-0.97	-1.56/-2.34	-2.02/-0.95	-0.12/-0.19	-1.5/-2.81	-3.27/-4.69	-5.25/-7.11	-9.75/-11.91	-18.04/-12.48	-6.55/-8.29	-11.59/-16.47	-17.11/-18.19	-13.86/-9.71	-9.31/-9.04	-5.58/-5.35	-3.35/-1.97
Θ(82.5°)	-1.08/-0.68	-1.71/-2.37	-1.61/-0.12	0.96/0.37	-0.64/-1.05	-0.00/0.28	-0.3/-0.38	0.67/0.33	-0.46/-1.78	-2.69/-3.47	-2.56/-1.03	0.3/0.65	-1.86/-2.43	-3.66/-5.48	-6.96/-6.59	-6.88/-14.95	-18.63/-10.95	-7.74/-10.09	-16.06/-14.93	-15.16/-17.71	-13.01/-10.77	-9.73/-10.31	-5.76/-5.01	-3.86/-1.09
Θ(90°)	-1.16/-1.81	-1.61/-3.28	-1.93/-1.47	-0.14/-1.52	-1.49/-1.26	-0.03/0.3	-0.89/-1.69	-1.49/-2.18	-3.55/-5.32	-7.84/-9.27	-8.78/-4.4	-2.51/-1.1	-2.63/-1.96	-3.07/-4.79	-6.2/-10.68	-10.77/-15.45	-16.3/-6.17	-4.63/-11.11	-12.92/-7.1	-5.72/-7.91	-5.79/-4.98	-5.53/-5.19	-3/-1.89	-3.29/-1.7
Θ(97.5°)	0.37/0.13	0.17/-2.38	-2.93/-4.31	-3.19/-5.47	-4.71/-3.34	-2.19/-1.53	-1.71/-1.93	-2.33/-4.7	-4.57/-6.32	-8.95/-11.35	-9.9/-6.1	-3.04/-2.63	-2.63/-3.22	-3.34/-7.8	-9.01/-12.72	-13.03/-18.79	-13.3/-4.97	-4.32/-11.27	-8.6/-4.61	-4.41/-5.94	-3.15/-2.3	-3.84/-4.74	-2.42/-0.91	-1.3/-0.86
Θ(105°)	-3.44/-4.74	-3.42/-5.12	-4.11/-5.01	-4.19/-6.43	-4.77/-6.63	-4.91/-2.87	-2.12/-2.84	-4.62/-7.23	-8.89/-9.36	-12.03/-14.74	-15.53/-9.44	-7.64/-6.66	-6.96/-9.01	-16.27/-12.68	-17.94/-15.18	-6.68/-5.57	-2.44/-9.22	-8.74/-5.66	-6.36/-5.61	-3.54/-3.75	-5.34/-3.41	-1.5/-1.52	-2.83/-3.67	
Θ(112.5°)	-2.04/-2.28	-1.87/-2.61	-3.71/-5.59	-7.13/-7.03	-9.82/-9.04	-7.55/-7.07	-6.99/-7.86	-9.56/-8.07	-8.5/-10.27	-18.79/-13.21	-11.05/-13.4	-17.31/-12.82	-9.39/-8.52	-8.62/-10.05	-15.26/-11.15	-12.13/-18.68	-7.63/-3.76	-3.4/-10.75	-11.79/-5.91	-4.09/-3.59	-1.69/-1.98	-3.32/-3.09	-1.94/-2.21	-2.82/-2.9
Θ(120°)	-3.31/-2.63	-3.56/-3.52	-4.28/-3.62	-3.86/-3.99	-5.26/-7.16	-6.45/-4.72	-4/-4.94	-6.35/-7.24	-10.08/-12.73	-19.29/-16.3	-12.88/-11.54	-11.16/-16.47	-12.67/-12.98	-15.42/-17.22	-10.31/-13.71	-7.56/-11.67	-11.26/-5.75	-5/-8.49	-9.77/-5.9	-4.92/-5.19	-2.24/-3.04	-3.71/-1.35	0.46/-1.41	-2.86/-1.96
Θ(127.5°)	-2.81/-3.38	-3.18/-4.27	-4.5/-5.58	-5.4/-6.39	-6.85/-4.63	-5.62/-7.29	-10.27/-16.53	-16.72/-13.22	-10.27/-8.85	-9.54/-13.13	-14.26/-18.27	-14.23/-18.14	-12.58/-17.88	-17.49/-5.02	-5.34/-13.16	-16.6/-3.27	-5.57/-7.66	-11.06/-4.06	-2.03/-3.52	-2.47/-5	-7.02/-4.69	-0.39/-0.89	-4.26/-2.33	
Θ(135°)	-4.92/-7.51	-6.64/-6.9	-6.79/-6.02	-6.56/-6.71	-12.41/-13.64	-9.92/-7.93	-8.62/-10.96	-10.37/-9.92	-12.88/-17.85	-19.09/-13.09	-8.39/-9.54	-11.03/-11.97	-12.48/-10.24	-11.01/-17.82	-13.13/-7.54	-18.44/-11.36	-4.4/-4.52	-6.71/-9.93	-12.1/-5.42	-3.55/-4.87	-4.05/-3.77	-5.97/-3.29	-1.38/-2.22	-6.43/-5.4
Θ(142.5°)	-4.6/-5	-5.32/-4.26	-4.48/-5.64	-7.79/-11.79	-18.09/-15.44	-10.75/-8.92	-7.41/-6.32	-6.49/-7.84	-9.94/-14.58	-17.5/-15.6	-18.35/-17.38	-11.25/-13	-18.79/-17.51	-15.18/-17.92	-5.2/-5.59	-15.61/-13.68	-14.15/-13.7	-7/-5.19	-4.34/-4.13	-4.99/-4.22	-4.09/-4.5	-5.67/-7.24	-4.89/-5.45	-6.98/-7.05
Θ(150°)	-5.9/-5.25	-5.47/-5.73	-6.83/-9.85	-14.92/-17.78	-12.16/-8.67	-6.82/-6.6	-7.26/-7.86	-16.72/-18.92	-18.31/-15.89	-13.66/-12.46	-17/-18.63	-12.08/-12.98	-17.16/-18.96	-18.92/-18.43	-18.73/-17.72	-13.79/-11.63	-15.68/-19.17	-17.69/-10.86	-8.65/-8.01	-7.25/-7.56	-8.25/-7.5	-6.44/-6.68	-7.76/-7.27	
Θ(157.5°)	-4.48/-4.34	-4.73/-5.57	-7.47/-10.45	-15.88/-18.58	-18.18/-14.57	-10.5/-7.92	-6.92/-7.34	-8.27/-9.24	-9.78/-10.15	-11.51/-13.88	-16.16/-18.04	-17.4/-14.95	-13.93/-14.42	-15.7/-15.89	-13.21/-10.81	-9.82/-10.25	-11.47/-13.93	-17.24/-17.46	-18.05/-18.46	-18.97/-16.88	-10.7/-7.82	-6.5/-5.97	-4.98/-5.08	-5.45/-5.36
Θ(165°)	-16.11/-9.33	-19.12/-17.5	-18.87/-17.46	-15.67/-13.18	-11.71/-10.69	-10.05/-9.71	-8.3/-7.04	-6.92/-7.54	-9.16/-13.63	-14.79/-19.13	-19.39/-18.12	-19.32/-18.45	-14.82/-13.28	-12.66/-12.17	-12.11/-12.36	-12.79/-12.45	-11.25/-10.72	-12.36/-16.32	-16.9/-13.89	-11.09/-8.85	-6.69/-4.98	-4.41/-4.45	-5.67/-7.24	-9.54/-12.25
Θ(172.5°)	-8.89/-9.97	-12.11/-13.21	-14.38/-15	-17.02/-19.16	-18.47/-18.75	-18.67/-19.17	-16.4/-14.81	-17.77/-18.98	-18.11/-17.91	-19.07/-18.46	-18.73/-15.06	-12.39/-10.58	-9.78/-9.92	-10.94/-12.56	-14.74/-18.31	-17.72/-16.87	-13.23/-19.08	-14.87/-12.78	-11.47/-10.78	-10.04/-9.18	-5.67/-6.41	-4.87/-4.71	-8.47/-8.71	
Θ(180°)	-18.07/-18.86	-17.67/-16.82	-13.73/-11.73	-11.03/-10.99	-10.57/-10.9	-11.55/-11.58	-11.52/-10.87	-10.29/-9.65	-9.29/-9.22	-9.99/-10.53	-11.54/-12.12	-12.56/-12.79	-13.18/-13.57	-14.05/-14.55	-14.44/-14.4	-14.59/-14.87	-15.29/-14.37	-13.31/-12.03	-10.94/-10.24	-10.52/-10.82	-11.42/-12.15	-12.71/-13.63	-14.57/-16.58	-18.48/-18.95
Freq(Hz)	5.6GPol.	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°)	-5.6/-5.87	-5.73/-5.28	-5.62/-5.48	-5.18/-5.89	-6.33/-6.24	-6.63/-7.74	-8.6/-8.94	-9.28/-9.57	-9.64/-9.88	-9.91/-9.63	-9.18/-8.66	-7.77/-7.31	-6.84/-6.41	-5.99/-5.78	-5.68/-5.43	-5.44/-5.66	-5.96/-6.29	-6.55/-6.98	-7.51/-8.57	-9.52/-9.72	-9.54/-9.18	-6.57/-8.14	-7.96/-7.84	-6.88/-5.65
Θ(7.5°)	-6.62/-6.61	-5.9/-5.5	-6.15/-5.81	-5.75/-6.38	-6.35/-6.58	-6.56/-6.25	-6.46/-6.81	-7.04/-7.91	-8.45/-9.09	-9.27/-9.2	-8.81/-8.37	-8.02/-7.58	-7.16/-6.82	-6.5/-6.19	-6.05/-6.02	-6.29/-6.47	-6.59/-6.49	-7.55/-8.47	-9.54/-10.69	-11.06/-11.23	-11.44/-10.98	-10.36/-9.57	-8.92/-8.9	-9.14/-7.23
Θ(15°)	-11.81/-12.5	-9.95/-8.6	-8.17/-7.27	-7.78/-8.11	-7.5/-7.25	-7.71/-8.09	-7.92/-7.76	-7.85/-8.4	-9.17/-10.43	-11.74/-12.68	-13.35/-13.45	-13.02/-12.36	-10.88/-9.19	-7.86/-7.09	-6.99/-7.41	-8.1/-8.61	-8.76/-8.9	-9.17/-9.75	-11.87/-11.08	-10.94/-10.29	-9.86/-9.74	-9.5/-10.16	-11.58/-11.02	
Θ(22.5°)	-9.58/-9.1	-8.57/-8.39	-7.4/-6.62	-6.62/-6.68	-7.18/-9.02	-10.34/-10.68	-12.96/-15.34	-16.17/-15.72	-16.71/-17.43	-18.84/-18.94	-18.84/-18.19	-18.2/-16.89	-15.41/-13.63	-11.82/-10.7	-10.61/-11.68	-12.94/-13.97	-14.09/-14.02	-13.09/-12.21	-11.76/-12.09	-12.25/-12.17	-12.08/-11.47	-10.27/-9.72	-9.51/-9.85	-8.85/-8.61
Θ(30°)	-6.65/-6.25	-6.88/-10.55	-10.29/-8.44	-6.08/-5.74	-6.47/-8.9	-13.39/-18.24	-16.43/-12.61	-11.01/-10.15	-10.08/-11.06	-12.05/-11.82	-11.89/-11.94	-11.6/-11.38	-11.12/-10.52	-9.91/-6.4	-10.63/-12.6	-14.75/-17.08	-17.82/-19.24	-18.61/-19.08	-16.76/-14.13	-12.22/-11	-9/-6.93	-5.86/-5	-4.56/-4.76	-5.2/-5.56
Θ(37.5°)	-5.67/-4.72	-10.25/-13.02	-11.73/-9.18	-7.88/-7.09	-7/-7.8	-13.93/-16.58	-10.82/-8.37	-7.59/-8.16	-8.85/-8.6	-7.5/-7.02	-7.04/-7.44	-8.89/-8.91	-9.91/-10.75	-11.73/-10.5	-15.36/-13.17	-10.7/-9.71	-11.89/-15.78	-16.01/-14.79	-11.77/-10.09	-9.53/-9.44	-8.03/-6.27	-4.96/-4.72	-4.34/-4.32	
Θ(45°)	-2.53/-3.67	-6.46/-8.11	-11.08/-13.59	-10.8/-10.06	-11.75/-14.35	-17.3/-19.06	-12.95/-15.8	-8.23/-9.05	-9.2/-8.85	-8.31/-8.4	-8.1/-7.72	-8.42/-8.55	-7.86/-8.5	-8.04/-6.94	-7.95/-6.08	-5.88/-8.35	-11.59/-12.59	-11.62/-10	-9.72/-10.96	-11.33/-9.89	-7.67/-7.36	-5.65/-6.59	-3.12/-1.44	-1.52/-1.92
Θ(52.5°)	-1.88/-1.94	-3.19/-4.87	-7.02/-6.8	-8.84/-8.66	-8.87/-10.3	-12.17/-12.14	-9.56/-6.63	-5.46/-6.51	-8.46/-9.72	-9.28/-9.33	-11.38/-11.92	-12.84/-12.97	-9.75/-9	-7.66/-7.09	-4.54/-3	-6.1/-8.8	-8.51/-7.46	-6.92/-8.45	-11.05/-10.29	-6.32/-4.95	-5.32/-5.8	-5.8/-5.68	-4.2/-2.14	-0.93/-0.5
Θ(60°)	-1.86/-2.24	-2.91/-4.05	-5.86/-7.49	-6.94/-7.94	-6.85/-10	-12.4/-17.79	-16.16/-12.83	-10.79/-11.72	-15.55/-16.1	-15.25/-15.36	-14.52/-14.08	-14.8/-15.28	-17.09/-15.48	-4.07/-4.6	-4.55/-6.05	-7.5/-7.03	-8.68/-14.03	-15.67/-13.89	-12.3/-9.7	-7.28/-6.54	-6.68/-6.89	-8.13/-5.04	-2.72/-1.61	
Θ(67.5°)	-1.24/-1.46	-2.25/-2.76	-2.78/-3.1	-2.35/-3.2	-3.88/-12.27	-17.92/-18.03	-18.49/-10.25	-8.88/-9.72	-11.47/-12.74	-17.38/-17.64	-15.41/-11.7	-9.56/-11	-10.36/-13.23	-16.68/-11.61	-6.78/-4.09	-5.57/-8.75	-8.17/-5.8	-6.14/-8.94	-16.81/-17.5	-9.39/-6.35	-6.03/-6.98	-6.23/-9.6	-7.79/-6.57	-8.99/-2.01
Θ(75°)	-6.16/-4.47	-3.81/-2.82	-1.62/-1.2	-1.54/-2.88	-6.3/-12.34	-13.3/-14.25	-15.09/-14.41	-10.04/-10.35	-17.54/-17.95	-18.4/-18.79	-18.84/-16.1	-13.01/-12.39	-10.39/-10.06	-11.17/-16.76	-12.31/-8.66	-6.14/-7.63	-10.39/-8.45	-7.61/-9.32	-11.96/-16.7	-10.14/-5.74	-4.53/-5.5	-7.83/-7.01	-7.49/-7.81	-9.32/-7.82
Θ(82.5°)	-5.55/-3.51	-2.78/-2.07	-1.39/-1.12	-2.28/-3.56	-5.42/-7.82	-8.26/-8.5	-13.71/-17.09	-16.34/-18.59	-18.75/-19.28	-18.75/-13.87	-9.55/-10.13	-11.07/-10.9	-10.37/-8.87	-13.33/-17.42	-15.14/-10.18	-8.91/-10.8	-9.11/-7.56	-7.05/-8.5	-12.99/-18.57	-11.52/-8.18	-6.48/-6.65	-6.66/-6.65	-6.52/-7.95	-10.39/-7.52
Θ(90°)	-6.62/-4.21	-3.66/-2.82	-1.26/-1.1	-0.15/-1.95	-4.17/-8.52	-11.75/-14.33	-18.18/-15.5	-17.13/-55	-17.85/-17.65	-19.07/-18.61	-17.5/-12.13	-10.36/-9.59	-10.52/-8.84	-9.63/-10.89	-15.43/-11.79	-13.35/-14.05	-14.44/-9.46	-10.26/-10.06	-14.74/-18.58	-11.28/-3.38	-4/-6.27	-7.39/-7.25	-5.31/-5.43	-8.15/-6.83
Θ(97.5°)	-7.8/-6.66	-4.06/-2.94	-2.54/-1.83	-1.74/-3.39	-6.04/-9.17	-11.81/-12.6	-																	