



Antenna Composite Gain Test Report

FCC ID	MSQ-RTBE7800
Equipment	BE18000 Tri Band WiFi Router
Brand Name	ASUS
Model Name	BT10, BE18000
Applicant	ASUSTeK COMPUTER INC. 1F., No. 15, Lide Rd., Beitou, Taipei City 112, Taiwan
Standard	KDB662911 D03 v01
Sample Received	Feb. 22, 2024
Start Test Date	Mar. 04, 2024
Final Test Date	Mar. 13, 2024

Approved by: **Sam Chen**

Sporton International Inc. Hsinchu Laboratory

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



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1. Operation Mode and Antenna Information

Antenna Position	RF Port	Brand Name	Model Name	Ant. Type	Connector	Modes of Operation
2G5G Ant1	2	PSA	RFDPA230512IMAB903	Dipole Antenna	I-PEX	2.4GHz, 5GHz UNII 1~3
2G5G Ant2	1	PSA	RFDPA230512IMAB903	Dipole Antenna	I-PEX	2.4GHz, 5GHz UNII 1~3
5G Ant3	4	PSA	RFDPA230512IMAB903	Dipole Antenna	I-PEX	5GHz UNII 1~3
5G Ant4	3	PSA	RFDPA230512IMAB903	Dipole Antenna	I-PEX	5GHz UNII 1~3
6G Ant1	1	PSA	RFDPA230512IMAB903	Dipole Antenna	I-PEX	6GHz
6G Ant2	4	PSA	RFDPA230512IMAB903	Dipole Antenna	I-PEX	6GHz
6G Ant3	3	PSA	RFDPA230512IMAB903	Dipole Antenna	I-PEX	6GHz
6G Ant4	2	PSA	RFDPA230512IMAB903	Dipole Antenna	I-PEX	6GHz

Note:

2.4GHz Operation Mode (2TX/2RX)

2G5G Ant1~2 can be used as transmitting/receiving antenna.

2G5G Ant1~2 could transmit/receive simultaneously.

5GHz Operation Mode (4TX/4RX)

2G5G Ant1~2 and 5G Ant3~4 can be used as transmitting/receiving antenna.

2G5G Ant1~2 and 5G Ant3~4 could transmit/receive simultaneously.

6GHz Operation Mode (4TX/4RX)

6G Ant1~4 can be used as transmitting/receiving antenna.

6G Ant1~4 could transmit/receive simultaneously.

2. Table for EUT Information

EUT	Integrated circuit packaging (Location: UP1/BUP7)
1	FCFBGA Package
2	FCBGA Package

Note: The above information was declared by manufacturer.



3. Test Frequency

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

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

4. Testing Location

Testing Location		
Sporton International Inc. Hsinhua Laboratory		
<input checked="" type="checkbox"/>	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	Vivi Jiang	23.5-24.5 / 45-55	Mar. 04, 2024~Mar.13, 2024

Note:

Testing Site Information

Brand Name: TDK

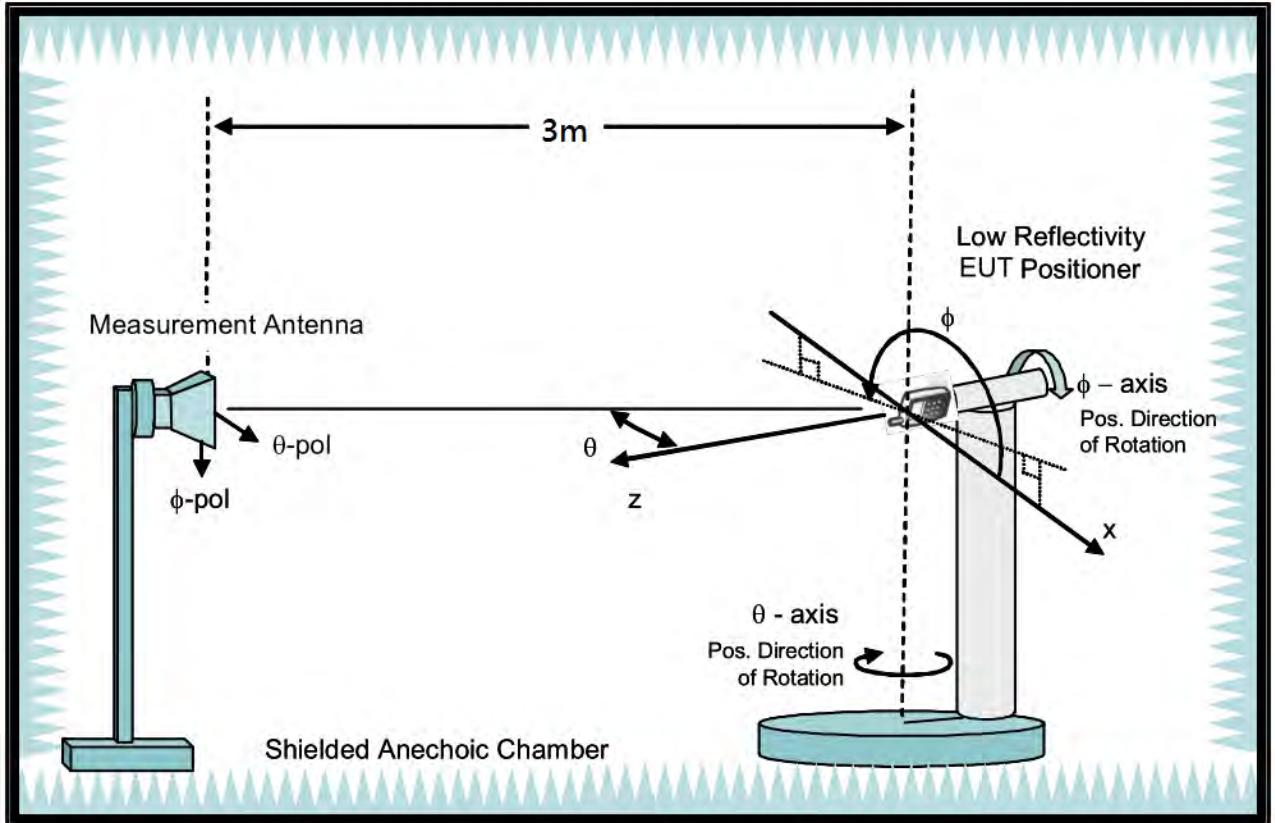
Dimension: 11m*6m*6m

Characteristic: Fully Anechoic Chamber

5. Test Facility and Configuration

Test configuration: Reference to CITA OTA distributed-axes system configuration.
 Chamber: Fully Anechoic Chamber.
 Measurement antenna: Dual Polarization Horn antenna
 Turntable: Multi-axis positioner (Theta and Phi angle).

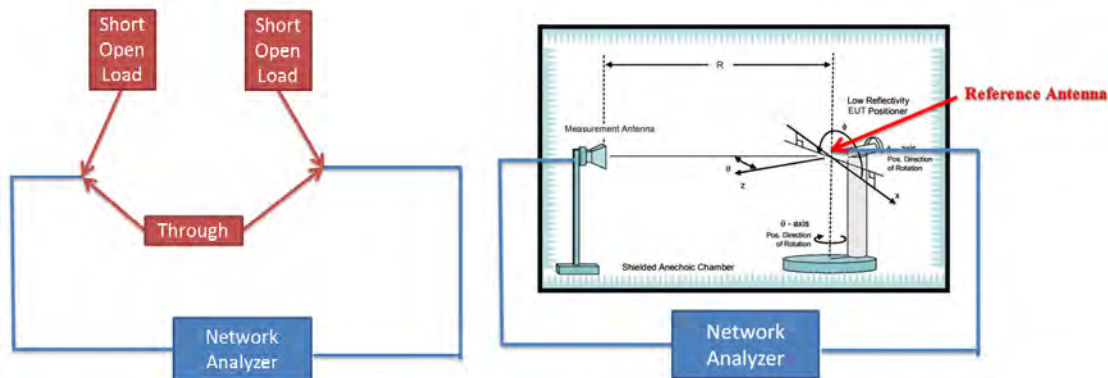
#Reference to CTIA "ctia-test-plan-for-wireless-device-over-the-air-performance-ver-3-7-1"



6. Reference Calibration

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

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



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

Note:

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

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

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

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



7. Test Method

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

DG steps:

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

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



8. Measured Values and Calculation of Maximum Gain Positions

DG_1SS max value position

Frequency (Hz)	2.45G	5.2G	5.3G	5.6G	5.785G
Ant. 1 (dBi)	1.23	-3.08	3.84	2.16	3.59
Ant. 2 (dBi)	2.42	0.53	0.9	3.04	1.67
Ant. 3 (dBi)	-	0.08	-1.83	3.72	2.47
Ant. 4 (dBi)	-	0.67	-4.84	-4.03	-3.12
DG [1SS] (dBi)	4.86	5.7	6.12	7.72	7.52
Polarization	Theta	Theta	Theta	Theta	Theta
Θ (°)	97.5	82.5	105	90	90
Φ (°)	277.5	180	345	15	15

Frequency (Hz)	6.175G	6.475G	6.695G	6.995G
Ant. 1 (dBi)	-5.43	-2.49	-0.56	1.21
Ant. 2 (dBi)	0.32	-2.79	-0.29	1.91
Ant. 3 (dBi)	-4.85	-1.7	-1.43	-0.99
Ant. 4 (dBi)	3.81	1.65	1.07	-3.68
DG [1SS] (dBi)	5.33	4.88	5.77	5.89
Polarization	Theta	Theta	Theta	Theta
Θ (°)	15	60	60	67.5
Φ (°)	202.5	247.5	247.5	240

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



DG_1SS max value position calculation

Frequency (Hz)	2.45G	5.2G	5.3G	5.6G	5.785G
Ant. 1 [10^(G/20)]	10^(1.23/20)	10^(-3.08/20)	10^(3.84/20)	10^(2.16/20)	10^(3.59/20)
Ant. 2 [10^(G/20)]	10^(2.42/20)	10^(0.53/20)	10^(0.9/20)	10^(3.04/20)	10^(1.67/20)
Ant. 3 [10^(G/20)]	-	10^(0.08/20)	10^(-1.83/20)	10^(3.72/20)	10^(2.47/20)
Ant. 4 [10^(G/20)]	-	10^(0.67/20)	10^(-4.84/20)	10^(-4.03/20)	10^(-3.12/20)
Ant. 1 [10^(G/20)] value	1.152	0.701	1.556	1.282	1.512
Ant. 2 [10^(G/20)] value	1.321	1.063	1.109	1.419	1.212
Ant. 3 [10^(G/20)] value	-	1.009	0.81	1.535	1.329
Ant. 4 [10^(G/20)] value	-	1.08	0.573	0.629	0.698
Sum All Antenna [Amax]	2.473	3.854	4.048	4.865	4.751
DG [10*log(Amax^2/Nant)]	4.86	5.7	6.12	7.72	7.52

Frequency (Hz)	6.175G	6.475G	6.695G	6.995G
Ant. 1 [10^(G/20)]	10^(-5.43/20)	10^(-2.49/20)	10^(-0.56/20)	10^(1.21/20)
Ant. 2 [10^(G/20)]	10^(0.32/20)	10^(-2.79/20)	10^(-0.29/20)	10^(1.91/20)
Ant. 3 [10^(G/20)]	10^(-4.85/20)	10^(-1.7/20)	10^(-1.43/20)	10^(-0.99/20)
Ant. 4 [10^(G/20)]	10^(3.81/20)	10^(1.65/20)	10^(1.07/20)	10^(-3.68/20)
Ant. 1 [10^(G/20)] value	0.535	0.751	0.938	1.149
Ant. 2 [10^(G/20)] value	1.038	0.725	0.967	1.246
Ant. 3 [10^(G/20)] value	0.572	0.822	0.848	0.892
Ant. 4 [10^(G/20)] value	1.551	1.209	1.131	0.655
Sum All Antenna [Amax]	3.695	3.507	3.884	3.942
DG [10*log(Amax^2/Nant)]	5.33	4.88	5.77	5.89

Note:

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

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



9. Summary of Test Result

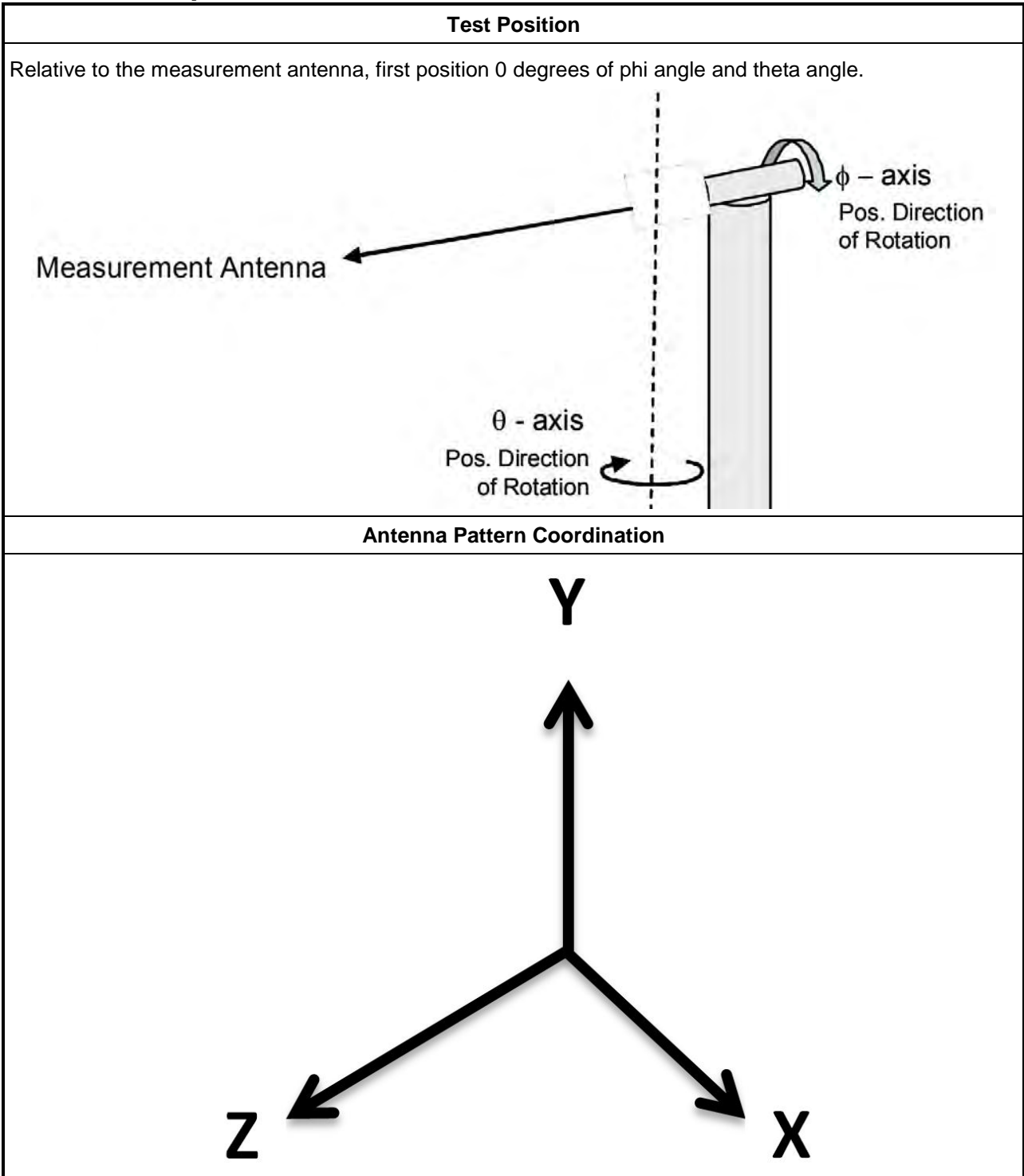
Freq(Hz)	2.45G	5.2G	5.3G	5.6G	5.785G
Ant. 1 Max Gain (dBi)	2.39	3.69	3.93	3.99	3.59
Ant. 2 Max Gain (dBi)	2.55	2.22	2.55	3.84	3.38
Ant. 3 Max Gain (dBi)	-	3.16	2.79	3.72	2.47
Ant. 4 Max Gain (dBi)	-	2.53	2.56	2.33	3.71
Ant. 1 Polarization/ Θ (°)/ Φ (°)	Phi/120/67.5	Theta/127.5/262.5	Theta/127.5/262.5	Theta/120/262.5	Theta/90/15
Ant. 2 Polarization/ Θ (°)/ Φ (°)	Theta/75/37.5	Theta/82.5/345	Theta/112.5/60	Theta/90/22.5	Theta/97.5/352.5
Ant. 3 Polarization/ Θ (°)/ Φ (°)	-	Theta/52.5/60	Theta/82.5/15	Theta/90/15	Theta/90/15
Ant. 4 Polarization/ Θ (°)/ Φ (°)	-	Theta/82.5/187.5	Theta/45/247.5	Theta/37.5/247.5	Theta/45/247.5
Max Gain (dBi)	2.55	3.69	3.93	3.99	3.71
DG [1SS] (dBi)	4.86	5.7	6.12	7.72	7.52
DG [2SS] (dBi)	2.55	3.69	3.93	4.72	4.52
DG [4SS] (dBi)	-	3.69	3.93	3.99	3.71

Freq(Hz)	6.175G	6.475G	6.695G	6.995G
Ant. 1 Max Gain (dBi)	3.42	2.5	2.46	2.81
Ant. 2 Max Gain (dBi)	3.07	2.65	2.57	2.83
Ant. 3 Max Gain (dBi)	3.47	3.58	2.44	3.53
Ant. 4 Max Gain (dBi)	3.85	3.26	3.95	3.38
Ant. 1 Polarization/ Θ (°)/ Φ (°)	Theta/45/330	Phi/45/37.5	Phi/105/225	Theta/112.5/112.5
Ant. 2 Polarization/ Θ (°)/ Φ (°)	Theta/60/172.5	Theta/105/240	Theta/112.5/240	Theta/97.5/240
Ant. 3 Polarization/ Θ (°)/ Φ (°)	Theta/105/277.5	Theta/105/255	Theta/105/255	Phi/90/172.5
Ant. 4 Polarization/ Θ (°)/ Φ (°)	Theta/15/195	Theta/15/202.5	Theta/15/210	Phi/112.5/172.5
Max Gain (dBi)	3.85	3.58	3.95	3.53
DG [1SS] (dBi)	5.33	4.88	5.77	5.89
DG [2SS] (dBi)	3.85	3.58	3.95	3.53
DG [4SS] (dBi)	3.85	3.58	3.95	3.53

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).

10. Test Setup



Note:

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



11. Test Equipment and Calibration Data

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

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

NCR means Non-Calibration required.



12. Test Results

Please refer to the appendix.

Appendix A – Radiated Composite Gain of 2.4GHz and 5GHz U-NII 1 ~ U-NII 3.....Page 15
Appendix B – Radiated Composite Gain of 6GHz U-NII 5 ~ U-NII 8.....Page 29
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Appendix D – Antenna Pattern of 6GHz U-NII 5 ~ U-NII 8.....Page 47
Appendix E – Test Photos..... Page 53

Freq(Hz)	2.45G	5.2G	5.3G	5.6G	5.785G
Ant. 1 Max Gain (dBi)	2.39	3.69	3.93	3.99	3.59
Ant. 2 Max Gain (dBi)	2.55	2.22	2.55	3.84	3.38
Ant. 3 Max Gain (dBi)	-	3.16	2.79	3.72	2.47
Ant. 4 Max Gain (dBi)	-	2.53	2.56	2.33	3.71
Ant. 1 Polarization/ $\theta(^{\circ})/\phi(^{\circ})$	Phi/120/67.5	Theta/127.5/262.5	Theta/127.5/262.5	Theta/120/262.5	Theta/90/15
Ant. 2 Polarization/ $\theta(^{\circ})/\phi(^{\circ})$	Theta/75/37.5	Theta/82.5/345	Theta/112.5/60	Theta/90/22.5	Theta/97.5/352.5
Ant. 3 Polarization/ $\theta(^{\circ})/\phi(^{\circ})$	-	Theta/52.5/60	Theta/82.5/15	Theta/90/15	Theta/90/15
Ant. 4 Polarization/ $\theta(^{\circ})/\phi(^{\circ})$	-	Theta/82.5/187.5	Theta/45/247.5	Theta/37.5/247.5	Theta/45/247.5
Max Gain (dBi)	2.55	3.69	3.93	3.99	3.71
DG [1SS] (dBi)	4.86	5.7	6.12	7.72	7.52
DG [2SS] (dBi)	2.55	3.69	3.93	4.72	4.52
DG [4SS] (dBi)	-	3.69	3.93	3.99	3.71



Radiated Composite Gain of 2.4GHz and 5GHz U-NII 1 ~ U-NII 3

Appendix A

θ(75°)	0.060.6	0.590.31	0.27/-0.18	-1.76/-4.38	-5.18/-2.88	-1.19/-0.05	0.23/1.03	1.05/1.42	2.03/1.52	0.52/0.93	1.82/96	2.69/0.83	1.79/1.75	-0.17/3.16	-5.53/-1.33	-1.6/-6.84	-6.6/-2.43	-0.47/0.83	1.16/1.58	1.03/-0.23	-0.84/-2.02	-0.40/0.96	1.88/2.1	1.08/0.12
θ(75°)	-0.45/0.38	-0.12/0.37	0.58/-0.05	-1.83/-5.52	-5.37/-4.79	-3.94/-3.25	-0.78/-1.01	-1.96/0	1.54/1.86	1.42/0.81	0.84/0.46	0.42/-0.41	0.36/0.33	0.79/-0.12	-2.29/-3.59	-3.39/-5.17	-3.34/-1.3	-0.77/0.44	0.67/0.57	1.26/0.23	0.78/0.27	-0.77/-0.32	1.37/0.97	-0.70/0.03
θ(82.5°)	-0.25/-1.02	-1.16/-0.18	-1.02/3.03	-3.84/-4.5	-3.65/-4.12	-3.85/-3.37	-3.7/-1.71	-0.52/-0.4	0.93/1.28	1.94/1.5	1.39/0.83	-0.71/-1.93	-2.86/-1.12	0.04/0.86	-0.79/-3.75	-3.48/-3.35	-4.61/-2.84	-0.28/-1.08	0.80/44	-0.42/0.97	1.76/1.27	0.36/0.21	0.54/0.72	-0.19/1.23
θ(90°)	1.27/1.45	0.93/1.49	-0.77/-3.17	-3.46/-4.55	-4.81/-6.03	-2.85/-2.92	-2.82/-2.56	-0.63/0.81	1.51/1.75	1.52/0.64	0.7/0.11	-1.09/-2.18	-1.44/-0.27	1.67/0.64	-1.46/-3.79	4.24/-3.73	-4.77/-2.2	-2.66/-1.31	-2.41/-1.15	0.04/0.17	1.79/2.03	1.3/1.17	1.36/0.89	-0.43/2.07
θ(97.5°)	1.08/1.16	1.69/0.48	-3.92/-5.02	-4.49/-6.31	-7.67/-6	-1.97/-1.66	-1.5/-0.27	-0.29/-0.6	0.58/0.96	1.61/0.41	-2.16/-2.28	0.07/0.06	0.76/0.73	-0.12/-3.14	-3.3/-5.73	-8.16/-2.26	-3.52/-3.08	-3.27/-2.58	-2.22/-2.42	-1.32/0.3	1.39/0.43	-0.57/0.71	0.86/-0.98	-0.58/1.59
θ(105°)	-2.22/-0.53	-0.4/-0.3	-3.93/-5.08	-3.74/-6.61	-5.18/-6.39	-4.22/-1.74	-0.04/0.22	-0.56/-0.16	0.89/0.78	0.54/-2.44	-6.64/-5.12	-2.35/-1.45	0.54/1.54	1.72/-1.18	-4.17/-9.82	-8.01/-5.65	-1.65/-2.04	-5/-3.52	-2.35/-2.72	-1.31/-0.08	0.03/0.54	-2.02/-1.89	-0.15/-1.32	-4.47/-2.44
θ(112.5°)	-5.28/-3.06	-1.89/-2.11	-5.38/-8.18	-7.2/-9.07	-8.3/-11.53	-8.39/-4.22	-1.59/1.05	1.67/1.61	0.78/0.91	-1.54/-3.82	-3.23/-2.74	-4.85/-4.85	-2.68/-2.08	-1.66/-3.67	-5.71/-4.09	-2.08/-2.11	-1.55/-2.9	-3.76/-3.88	-5.01/-1.63	-2.53/-1.07	1.65/0.35	-0.73/-1.75	-0.74/-2.36	-5.32/-3.99
θ(120°)	-6.37/-5.41	-4.92/-5.38	-6.79/-6.96	-6.22/-7.43	-7.72/-9.91	-8.55/-6.4	-3.81/-2.49	-1.14/-1.15	-0.19/0.41	-0.39/-2.74	-3.56/-3.65	-4.36/-4.63	-4.98/-1.86	-1.74/-1.12	-3.98/-2.57	-0.88/0.8	-4.09/-8.24	-3.96/-3.79	-4.84/-3.27	-1.72/-0.82	0.07/1.02	-1.35/-2.02	-1.07/-1.31	-6.83/-6.42
θ(127.5°)	-2.3/-2.71	-2.57/-5.59	-8.23/-9.75	-9.19/-9.93	-4.45/-4.86	-4.12/-2.42	-2.64/-2	-1.57/-1.34	-1.62/-1.74	-2.86/-3.66	-2.55/-0.66	-2.28/-4.37	-4/-3.92	-0.47/-2.26	-4.98/-5.41	-2.22/-3.23	-5.66/-7.88	-6.23/-2.93	-2.67/-2.17	-0.76/0.6	-0.53/-2.04	-3.47/-6.74	-2.59/-3.31	-2.99/-3.26
θ(135°)	-4.46/-3.4	-2.02/-3.22	-5.94/-6.63	-5.19/-4.57	-3.94/-3.66	-4.52/-5.34	-3.33/-1.64	-1.04/-0.74	-0.99/-1.87	-1.26/-0.76	0.24/0.76	0.04/0.31	-1.51/-1.71	-1.86/-1.75	-3.03/-3.25	-1.84/-3.42	-6.4/-4.78	-1.65/-4.27	-2.76/-4.47	-5.33/-0.12	0.38/1.06	-2.2/-3.59	-3.18/-3.69	-4.15/-2.48
θ(142.5°)	-7.57/-9.45	-7.65/-6.14	-5.92/-5.95	-4.61/-4.83	-4.3/-5.4	-3.92/-2.01	-0.66/0.27	1.08/1.43	1.18/0.69	-0.71/-0.95	-0.49/-1.31	-3.12/-4.67	-2.87/-2.2	-1.32/-2.83	-1.94/-0.62	0.78/-1.24	-3.01/-3.37	-6.59/-4.61	-3.34/-3.84	-3.53/-0.84	-0.59/-0.52	-2.12/-4.47	-5.81/-5.66	-4.53/-5.47
θ(150°)	-8.47/-9.2	-9.41/-7.98	-7.08/-6.81	-5.17/-2.33	-1.16/-1.51	-3.96/-5.15	-4.1/-2.39	-1.22/-0.81	-0.9/-1.78	-1.98/-1.58	-1.91/-2.8	-2.96/-2.69	-1.57/-1.04	-1.64/-2.7	-4.71/-5.46	-4.6/-5.34	-6.73/-4.01	-2.46/-2.56	-4.61/-3.66	-3.09/-1.39	-1.25/-2.07	-3.08/-3.54	-5.31/-8.62	-9.25/-7.64
θ(157.5°)	-5.96/-6.54	-8.42/-10.68	-10.89/-10.22	-9.5/-8.05	-6.29/-5.53	-5.01/-5	-4.58/-3.7	-2.79/-2.38	-1.88/-1.49	-1.43/-0.97	0.01/0.42	0.31/-0.35	-1.23/-1.6	-1.42/-1.76	-2.07/-1.67	-2.49/-4.67	-6.84/-6.39	-5.77/-5.84	-4.56/-4.06	-5.78/-6.93	-5.11/-2.93	-1.51/-0.78	-0.87/-1.98	-3.72/-5.66
θ(165°)	-4.03/-4.59	-5.45/-6.44	-6.82/-8.05	-8.57/-7.92	-6.71/-5.94	-5.54/-5.58	-5.7/-4.72	-3.22/-2.43	-2.25/-2.4	-2.62/-2.58	-2.05/-1.5	-1.09/-0.6	-0.28/0.65	-1.91/-3.43	-4.05/-4.95	-5.83/-5.8	-5/-4.78	-6.05/-7.12	-6.47/-5.37	-4.31/-3.93	-3.58/-2.67	-1.81/-1.63	-2.31/-3.27	-3.97/-3.88
θ(172.5°)	-3.36/-3.03	-3.13/-3.97	-4.99/-5.84	-7.33/-8.91	-10.21/-11.14	-10.09/-9.24	-8.25/-6.16	-5.16/-4.27	-3.49/-2.96	-2.45/-2.08	-2.28/-2.72	-3.39/-4.38	-5.49/-6.73	-8.29/-8.88	-7.37/-5.98	-4.11/-2.9	-2.82/-3.5	-4.35/-4.81	-5.26/-4.98	-4.69/-4.57	-4.58/-4.81	-5.29/-5.29	-5.27/-5.43	-5.07/-4.19
θ(180°)	-3.29/-3.87	-4.56/-5.25	-6.43/-6.43	-6.62/-7.18	-7.49/-7.41	-6.8/-6.43	-6.76/-6.63	-6.34/-6.07	-6.17/-6.59	-6.88/-7.19	-7.32/-7.56	-7.93/-8.4	-8.38/-8.69	-8.12/-7.25	-6.51/-6.22	-6.35/-6.77	-7.16/-7.47	-7.86/-6.81	-6.07/-5.38	-4.9/-4.4	-4/-3.97	-4.09/-3.93	-3.55/-3.63	-3.66/-3.37
Freq(Hz)	5.7856Pol	Theta	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DG(dB)	Φ(0°)Φ(7.5°)	Φ(15°)Φ(22.5°)	Φ(30°)Φ(37.5°)	Φ(45°)Φ(52.5°)	Φ(60°)Φ(67.5°)	Φ(75°)Φ(82.5°)	Φ(90°)Φ(97.5°)	Φ(105°)Φ(112.5°)	Φ(120°)Φ(127.5°)	Φ(135°)Φ(142.5°)	Φ(150°)Φ(157.5°)	Φ(165°)Φ(172.5°)	Φ(180°)Φ(187.5°)	Φ(195°)Φ(202.5°)	Φ(210°)Φ(217.5°)	Φ(225°)Φ(232.5°)	Φ(240°)Φ(247.5°)	Φ(255°)Φ(262.5°)	Φ(270°)Φ(277.5°)	Φ(285°)Φ(292.5°)	Φ(300°)Φ(307.5°)	Φ(315°)Φ(322.5°)	Φ(330°)Φ(337.5°)	Φ(345°)Φ(352.5°)
θ(0°)	0.83/1.23	1.29/1.17	1.12/1.33	1.46/1.06	0.53/0.01	-0.41/0.9	-1.57/-1.81	-2.05/-2.27	-2.49/-2.58	-2.4/-2.1	-1.74/-1.48	-1.32/-1.18	-0.88/-0.61	-0.28/-0.31	-0.37/-0.23	-0.03/0.37	0.46/0.46	0.12/0.23	-0.82/-1.26	-1.56/-1.85	-2.51/-2.82	-3.33/-3	-2.22/-0.93	0.05/0.65
θ(7.5°)	-0.4/-0.36	-0.35/-0.51	-0.57/-0.4	-0.12/-0.16	0.02/0.13	-0.06/-0.16	-0.41/0.79	-1.19/-1.39	-1.74/-2.28	-1.99/-1.08	-0.39/0.03	0.29/0.48	0.76/1.11	1.13/0.86	0.71/0.53	0.49/0.54	0.41/0.16	0.07/0.03	-0.17/-0.72	-1.21/-1.83	-2.7/-3.53	-3.83/-3.45	-2.66/-1.77	-1.06/-0.72
θ(15°)	-0.34/-0.28	-0.18/-0.09	0.12/0.24	0.28/0.51	0.59/0.46	0.21/0.14	-0.55/-1.13	-1.68/-1.82	-2/-2.29	-1.87/-1.01	0.02/1.1	1.91/2.36	2.59/2.56	2.23/1.57	0.74/0.09	-0.09/0	0.29/0.67	0.98/1.36	1.42/1.13	0.53/0	-0.61/-1.28	-1.79/-1.2	-0.7/-0.55	-0.43/-0.55
θ(22.5°)	-0.89/-0.83	-0.32/0.06	0.39/0.52	0.84/0.05	-1/-2.29	-3.85/-4.45	-5.06/-5.4	-5.7/-5.03	-4.52/-3.59	-2.36/-0.79	0.53/1.49	1.96/2.15	2.27/1.99	1.35/0.55	0.35/1.27	1.96/2.18	2.1/1.93	1.93/2.01	2.11/1.84	1.42/1	0.74/0.5	0.58/0.97	1.32/1.22	0.42/-0.51
θ(30°)	-0.45/-0.11	0.71/0.87	0.46/0.4	1.08/1.22	0.81/0.36	-1.39/-2.41	-3.55/-3.67	-3.86/-4.45	-3.56/-2.47	-1.38/-0.47	1.04/1.64	1.78/2.25	2.37/1.55	0.46/0.08	0.62/1.72	2.42/2.53	2.42/2.53	2.72/2.61	2.44/2.15	1.99/2	1.89/2.09	1.76/1.29	1.25/1.24	1.03/0.37
θ(37.5°)	-0.45/0.93	-0.49/0.68	-1.16/0.03	1.78/2	1.57/1.26	0.58/0.28	-1.62/-2.21	-2.49/-2.61	-2.01/-1.27	-1.06/-0.82	0.78/2.21	2.59/1.88	0.65/0.76	-1.8/-1.02	-0.09/0.87	1.88/2.4	2.72/2.3	2.32/2.32	2.38/2.61	2.71/2.67	1.72/0.64	0.51/0.09	0.72/1.16	0.59/0.23
θ(45°)	-1.44/-1.18	-1.54/-2.31	-1.81/-0.29	1.19/1.41	0.75/0.09	-1.01/-1.7	-1.28/-1.23	-1.39/-1.27	-1.07/-0.79	0.25/0.74	0.68/1.27	1.52/1.13	-0.62/-2.01	-1.95/-1.83	-0.79/0.67	1.63/2.04	2.19/2.3	2.11/1.97	2.67/3.03	2.55/2.2	1.94/0.02	-0.46/-0.29	-0.43/-0.88	-2.24/-1.73
θ(52.5°)	-0.37/-0.99	-2.73/-5.1	-6.25/-5.34	-4.7/-2.66	-1.31/-0.79	-0.45/-1.1	-1.59/-1.09	-0.45/-0.43	-1.15/-1.47	-0.74/0.16	0.69/0.93	1.84/1.49	-1.22/-2.28	-0.86/-0.89	-1.65/-1.64	-1.43/-0.45	0.64/1.79	1.40/0.99	1.65/2.22	2.25/1.5	-0.42/-1.34	-1.11/0.26	0.68/0.22	-0.58/-1
θ(60°)	0.75/1.43	1.45/0.06	-1.33/-2.05	-1.97/-1.8	-0.97/0.26	-0.08/-0.83	-1.63/-1.03	-0.2/-0.67	-1.0/0.5	1.15/1.68	2.29/1.58	1.95/2.44	0.86/-1.26	0.40/1.9	-1.55/-0.78	0.16/-0.01	-0.57/-0.24	0.72/1.77	1.98/2.23	1.69/0.4	-3.14/-2.6	-1.23/-0.15	0.09/0.75	-1.25/0.23
θ(67.5°)	3.51/4.39	4.91/3.87	3.19/1.3	0.54/0.35	1.09/1.78	1.31/0.32	-1.18/-0.83	0.21/0.44	0.1/1.21	2.83/51	3.57/2.81	2.44/3.75	3.08/1.7	1.30/88	-0.15/-1.54	-0.92/-1.07	-0.82/-0.92	0.47/1.98	2.4/1.58	0.42/-0.4	-1.7/-1.17	-0.06/1.6	1.74/0.78	1.15/2.96
θ(75°)	4.96/5.77	5.84/4.51	4.14/2.03	0.36/1.25	-0.07/0.47	0.11/0.54	-1.32/-2.52	-1.55/-0.52	-0.47/0.84	2.15/2.96	3.15/5.59	2.96/3.15	4.33/3.38	2.48/2.38	0.77/-0.23	-1.82/-0.53	-0.08/-0.53	0.14/0.84	1.44/1.41	0.91/0.38	-1.75/-1.49	1.72/3.74	3.13/2.39	1.89/3.94
θ(82.5°)	5.13/5.5	6.15/4.19	3.73/3.24	2.26/0.29	-1.76/-0.73	-1.37/0.76	-1.1/-3.33	-3.99/-1.82	-0.19/0.54	1.74/2.9	2.91/2.96	2.18/2.41	4.32/4.72	4.48/3.38	2.68/0.98	0.83/2.41	1.64/-0.18	0.92/0.83	1.13/2.23	1.26/0.6	-1.48/0.95	3.03/3.91	3.11/3.33	3.44/4.94
θ(90°)	6.16/6.64	7.52/5.82	5.47/4.4	2.63/0.02	-0.27/-0.24	0.14/1.69	1.35/0.71	-3.87/-5.66	-2.17/-0.58	0.72/2.63	2.23/2.72	3.41/2.73	4.91/5.23	4.41/3.03	2.84/1.76	2.01/2.02	1.38/1.02	2.52/0.55	1.41/2.68	-0.81/-1.24	0.87/2.27	4.26/3.94	2.3/2.7	3.63/5.26
θ(97.5°)	4.65/5.46	6.12/5.54	5.59/4.81	3.6/1.8	2.22/1.4	2.46/5	2.32/1.07	-2.05/-4.48	-3.58/-2.17	-0.82/1.84	2.37/2.76	3.02/2.37	4.72/4.89	3.29/2.78	1.58/2.49	1.83/2.37	1.42/0.88	1.80/1	1.18/0.35	-0.78/1.47	2.18/3.6	3.57/3.49	3.32/2.77	4.29/5.13
θ(105°)	3.64/5.12	4.93/3.64	3.72/3.55	2.49/1.39	2.89/2.47	1.94/1.34	1.11/1.18	-0.79/-2.89	-3.49/-2.72	-0.07/1.03	0.07/0.01	-0.08/0.99	2.72/2.96	0.57/-1.07	-3.08/1.21	1.36/0.79	-0.12/-0.47	0.71/1.86	0.89/0.33	1.66/0.78	2.44/2.45	3.39/2.97	2.91/3.7	3.62/3.79
θ(112.5°)	1.78/3.4	4.47/3.69	2.42/1.56	1.64/0.17	-0.19/-0.02	-0.79/-0.38	0.61/0.19	-0.64/-0.75	-2.59/0.05	0.78/1.32	1.59/0.3	-0.56/-0.31	1.47/1.05	-0.53/0.35	-0.34/0.24	2.28/2.04	0.93/0.13	-0.03/0.14	2.19/-0.4	1.71/0.73	0.86/1.53	1.97/3.03	2.3/3.84	3.09/1.66
θ(120°)	1.73/2.63	3.33/2.12	0.60/1.6	0.28/0.4	1.42/1.34	-0.86/-1.07	0.70/0.96	0.60/47	0.02/0.72	1.13/3.05	3.33/1.1	0.43/1.11	-0.88/-0.4	1.67/0.17	1.07/-0.78	1.62/0.17	0.61/0.54	2.52/25	0.72/-1.26	2.17/2.1	2.94/-0.71	-2.13/-0.99	0.06/2.86	1.16/-2.44
θ(127.5°)	0.23/1.6	0.65/-1.11	-4.14/-4.8	-1.99/-0.28	0.38/0.84	-1.5/-2.7	-2.6																	



Radiated Composite Gain of 2.4GHz and 5GHz U-NII 1 ~ U-NII 3

Appendix A

Table with columns for Frequency (MHz), Polarization, and Gain for various antenna configurations. The table is organized into sections for 2.4GHz and 5GHz frequencies, each with a 5GHz Polarization section and a 2.4GHz Polarization section. Each section contains a grid of gain values for different antenna types and orientations.



Radiated Composite Gain of 2.4GHz and 5GHz U-NII 1 ~ U-NII 3

Appendix A

Theta	7.5°	15°	22.5°	30°	37.5°	45°	52.5°	60°	67.5°	75°	82.5°	90°	97.5°	105°	112.5°	120°	127.5°	135°	142.5°	150°	157.5°	165°	172.5°	180°
Gain	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Theta	7.5°	15°	22.5°	30°	37.5°	45°	52.5°	60°	67.5°	75°	82.5°	90°	97.5°	105°	112.5°	120°	127.5°	135°	142.5°	150°	157.5°	165°	172.5°	180°
Gain	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000



Radiated Composite Gain of 2.4GHz and 5GHz U-NII 1 ~ U-NII 3

Appendix A

Theta (°)	Phi(7.5°)	Phi(15°)	Phi(22.5°)	Phi(30°)	Phi(37.5°)	Phi(45°)	Phi(52.5°)	Phi(60°)	Phi(67.5°)	Phi(75°)	Phi(82.5°)	Phi(90°)	Phi(105°)	Phi(120°)	Phi(135°)	Phi(142.5°)	Phi(150°)	Phi(157.5°)	Phi(165°)	Phi(172.5°)	Phi(180°)			
Theta (15°)	-1.71/1.18	-6.67/6.61	-5.86/6.04	-6.85/7.79	-8.56/9.26	-9.63/9.68	-9.93/9.83	-9.02/8.32	-7.76/7.38	-6.91/6.56	-6.47/6.59	-7.17/7.73	-8.29/8.83	-9.03/8.99	-8.96/8.82	-8.47/8.07	-7.37/6.61	-6.01/5.46	-5.39/5.55	-5.93/6.4	-7.08/7.5	-8.38/9.67	-10.7/8.78	-9.21/8.6
Theta (180°)	-1.71/1.18	-6.67/6.61	-5.86/6.04	-6.85/7.79	-8.56/9.26	-9.63/9.68	-9.93/9.83	-9.02/8.32	-7.76/7.38	-6.91/6.56	-6.47/6.59	-7.17/7.73	-8.29/8.83	-9.03/8.99	-8.96/8.82	-8.47/8.07	-7.37/6.61	-6.01/5.46	-5.39/5.55	-5.93/6.4	-7.08/7.5	-8.38/9.67	-10.7/8.78	-9.21/8.6



Radiated Composite Gain of 2.4GHz and 5GHz U-NII 1 ~ U-NII 3

Appendix A

Theta (°)	Phi (°)	Phi (7.5°)	Phi (15°)	Phi (22.5°)	Phi (30°)	Phi (37.5°)	Phi (45°)	Phi (52.5°)	Phi (60°)	Phi (67.5°)	Phi (75°)	Phi (82.5°)	Phi (90°)	Phi (97.5°)	Phi (105°)	Phi (112.5°)	Phi (120°)	Phi (127.5°)	Phi (135°)	Phi (142.5°)	Phi (150°)	Phi (157.5°)	Phi (165°)	Phi (172.5°)	Phi (180°)
Theta (75°)	1.310.12	1.137.7	5.181.449	2.721.081	1.261.069	0.611.163	3.515.82	9.581.1446	15.818.73	7.081.631	8.191.532	4.961.514	6.061.897	10.721.1268	9.441.614	6.681.849	11.121.1508	15.891.1301	11.011.1134	10.431.688	6.251.684	8.611.558	7.361.464	2.720.16	
Theta (85°)	1.521.29	1.191.4	3.841.576	5.531.392	2.761.223	4.281.67	9.831.989	8.671.971	15.971.1325	9.741.734	7.641.627	5.581.329	3.081.238	3.851.803	9.051.878	10.541.138	15.661.158	17.931.1137	9.061.558	8.621.942	5.681.607	8.051.808	4.831.168	1.260.47	
Theta (90°)	1.782.33	2.790.69	2.471.78	10.421.96	5.210.56	6.317.72	8.116	5.551.819	18.291.1302	8.841.794	6.641.48	2.921.036	0.511.044	3.231.72	8.961.933	13.951.1183	8.911.861	10.991.1429	11.251.138	8.621.942	10.511.142	10.631.845	3.741.081	0.030.68	
Theta (95°)	1.332.25	2.731.29	1.341.364	5.671.529	4.271.49	5.931.827	10.321.1069	11.311.1311	18.431.1871	18.351.1058	6.721.465	4.861.11	0.761.156	2.281.278	5.131.799	14.311.939	12.021.1054	16.811.976	8.591.1196	8.321.852	9.111.1512	10.811.659	3.711.167	0.340.18	
Theta (100°)	1.561.137	0.981.163	4.061.808	11.521.944	7.761.68	6.641.849	11.471.1518	12.631.947	9.311.959	11.171.901	7.111.859	10.831.787	4.791.372	3.341.416	11.251.927	10.521.1373	15.021.158	9.041.844	10.481.1097	6.721.56	6.651.68	7.311.458	2.661.257	1.181.2	
Theta (105°)	3.551.239	2.891.379	7.261.109	17.141.1848	18.381.173	12.81.934	10.281.995	8.961.98	10.771.1053	11.091.861	1.721.664	6.391.255	0.881.281	2.931.544	6.421.705	18.641.1891	11.071.997	6.991.219	18.611.826	7.951.478	5.281.703	8.311.587	3.291.164	1.831.23	
Theta (110°)	2.771.224	3.371.556	9.481.119	14.531.1501	12.261.104	8.991.799	8.521.1069	15.961.1494	14.261.1487	13.451.976	7.791.482	3.031.144	3.511.349	3.181.342	5.911.109	18.141.1135	6.941.1074	8.711.192	17.981.195	10.841.88	5.661.718	6.991.521	3.361.31	3.71.352	
Theta (115°)	4.831.326	5.641.1076	17.561.1582	14.481.1568	18.241.1939	18.351.1287	9.821.1144	17.271.1827	17.761.1482	18.421.1819	12.931.53	3.881.339	3.021.46	3.211.366	7.441.1001	10.861.1184	8.641.114	6.671.131	13.061.112	18.991.12	9.471.954	8.761.905	7.181.72	6.781.468	
Theta (120°)	7.151.61	8.431.1165	12.631.1546	19.091.1907	15.011.1391	14.911.157	16.011.1924	18.381.1871	17.461.1377	12.791.1831	19.071.1208	12.361.172	8.091.804	4.671.277	7.181.897	19.011.848	12.631.866	13.511.866	17.341.1353	17.211.807	15.571.1573	13.611.992	14.551.1045	9.061.66	
Theta (125°)	15.291.1137	10.021.1051	12.321.1759	15.651.1095	11.391.1344	15.981.1934	18.111.1809	19.061.1699	11.591.818	6.771.778	8.451.934	12.011.1291	12.411.1217	9.31.614	8.841.1812	9.521.424	5.671.483	7.781.1387	14.851.1373	18.211.1169	17.711.1844	18.411.1459	19.151.1291	11.211.1441	
Theta (130°)	14.531.1276	10.581.1307	9.211.1023	13.091.1866	18.121.1972	18.591.1734	16.191.1829	18.651.116	8.311.61	4.461.47	1.431.226	3.231.492	9.161.1077	8.411.779	4.281.338	3.911.504	6.111.701	8.51.933	10.381.1272	13.181.1426	18.391.1656	18.231.1773	14.521.1624	14.771.1379	
Theta (135°)	19.081.1597	13.431.1163	9.851.1015	10.121.1227	18.151.1493	13.271.119	13.041.1519	17.151.1895	18.221.111	8.61.57	4.981.555	5.461.586	6.431.111	5.861.21	0.741.215	4.751.62	7.551.1093	13.841.1589	17.791.157	12.441.1341	16.811.1727	16.211.1711	18.711.1774	18.111.1881	
Theta (140°)	16.191.1306	11.621.1085	10.071.1086	13.021.1395	15.21.1451	12.071.1048	10.471.1217	13.531.1334	11.251.896	7.711.793	8.751.953	10.791.1234	14.171.1454	9.41.596	4.651.338	2.781.284	5.071.858	12.131.1543	16.11.1471	19.021.1906	14.381.1052	10.081.1089	12.311.1433	17.921.1882	
Theta (145°)	9.521.804	7.141.655	6.121.606	6.821.796	10.081.1238	13.651.1342	12.761.1257	12.941.1371	13.861.1314	12.951.1296	13.731.1517	16.931.1775	19.11.1823	4.621.862	9.011.1274	13.331.1307	13.721.134	10.911.877	5.851.641	4.961.663	9.111.132	17.171.1328	17.171.1328		
Theta (150°)	16.451.1469	12.481.1013	8.281.964	6.411.639	7.581.911	10.571.1272	15.441.1876	17.311.807	17.211.1665	16.471.1661	16.841.1854	18.851.1864	18.451.1742	16.891.1763	18.211.1816	19.821.1897	17.791.1758	13.751.1192	10.761.1027	9.921.913	8.611.596	9.921.1286	15.781.1868	17.171.1912	
Theta (155°)	18.911.1892	18.841.1733	15.421.1496	15.041.143	15.21.1662	16.771.1761	18.641.1773	15.161.1308	11.941.1154	11.731.1241	13.431.1465	16.231.1739	17.021.1664	16.911.1858	18.561.1891	18.911.1756	19.871.184	17.391.1771	18.611.1824	18.351.1889	18.751.1978	18.431.1664	17.731.194	17.661.1777	
Phi (7.5°)	5.661.94	Phi (15°)	Phi (22.5°)	Phi (30°)	Phi (37.5°)	Phi (45°)	Phi (52.5°)	Phi (60°)	Phi (67.5°)	Phi (75°)	Phi (82.5°)	Phi (90°)	Phi (97.5°)	Phi (105°)	Phi (112.5°)	Phi (120°)	Phi (127.5°)	Phi (135°)	Phi (142.5°)	Phi (150°)	Phi (157.5°)	Phi (165°)	Phi (172.5°)	Phi (180°)	
Phi (0°)	9.051.1153	13.581.1427	14.371.1396	13.531.1174	9.771.792	6.151.479	3.751.306	2.551.226	2.11.221	2.371.25	2.981.36	4.561.6	7.531.95	11.931.1485	18.261.1745	13.331.1003	7.531.567	4.351.313	2.481.223	1.941.17	1.581.166	2.171.316	4.441.599	6.351.716	
Phi (7.5°)	6.691.914	10.991.1263	15.321.1771	17.811.138	10.071.745	5.451.375	2.841.231	1.911.162	1.721.18	2.091.249	3.161.341	5.951.806	10.041.1192	13.131.1363	12.951.1147	9.621.815	6.991.617	5.541.492	4.221.358	3.481.336	3.331.334	3.331.344	3.81.46	4.861.548	
Phi (15°)	5.291.64	7.81.985	12.811.1691	18.911.1708	12.791.946	6.931.532	4.221.352	3.071.284	2.81.34	2.651.45	6.881.86	10.841.1272	11.421.957	9.081.835	8.641.837	7.971.743	7.421.717	7.421.738	6.651.571	5.081.476	4.071.368	3.451.354	3.711.413		
Phi (22.5°)	4.21.591	6.881.1105	13.581.1705	17.761.1814	15.121.1203	10.411.914	7.761.748	7.751.789	8.081.902	9.971.1049	11.141.117	12.481.1229	10.161.804	7.071.704	7.321.735	7.711.716	7.381.743	7.321.64	5.791.487	3.911.325	2.721.2	1.351.094	1.061.128	2.161.315	
Phi (30°)	6.321.886	10.831.1073	11.611.1382	17.31.1862	16.61.1662	16.71.1386	11.71.96	7.561.648	5.681.56	6.541.384	9.991.1134	12.771.1404	12.151.1508	9.311.915	9.021.852	7.911.802	8.861.1076	12.421.953	6.081.354	2.031.318	1.221.113	1.121.096	1.251.149	2.761.401	
Phi (37.5°)	11.391.143	13.491.14	11.921.1075	11.561.1338	14.151.1462	13.451.1074	8.451.67	3.41.22	1.851.237	8.371.64	9.811.1138	10.311.861	12.911.659	6.481.792	9.041.97	11.331.1923	13.861.755	6.51.615	2.51.729	2.211.212	2.841.273	2.651.276	4.131.651		
Phi (45°)	9.041.957	10.231.1387	14.21.1416	14.81.16	16.591.1936	14.921.951	5.861.353	2.061.135	1.321.222	3.661.62	8.781.957	7.451.631	5.741.514	4.571.411	4.751.595	6.781.875	16.111.1905	13.221.898	5.381.199	1.341.327	5.41.534	6.091.841	9.161.753	6.841.676	
Phi (52.5°)	2.171.137	3.451.498	5.941.864	12.341.1357	13.671.1241	8.721.492	2.661.175	1.481.71	2.161.293	3.251.044	4.571.505	4.791.48	3.921.11	2.671.15	6.851.648	5.161.17	8.961.148	19.271.1282	10.211.102	9.711.773	6.881.633	4.521.441	5.061.538	2.831.178	
Phi (60°)	1.771.69	2.711.439	5.651.835	10.341.1074	9.891.851	5.441.331	2.171.146	1.641.82	4.241.52	4.421.315	1.721.007	2.661.304	2.471.101	1.371.216	5.031.536	5.411.911	11.721.139	9.441.628	4.181.249	4.181.249	4.181.249	4.181.249	4.181.249		
Phi (67.5°)	2.211.196	2.051.149	2.081.406	8.791.1048	8.51.727	5.251.224	0.220.08	0.521.141	2.561.322	1.910.34	1.270.23	2.931.507	2.931.507	2.931.507	2.931.507	2.931.507	2.931.507	2.931.507	2.931.507	2.931.507	2.931.507	2.931.507	2.931.507		
Phi (75°)	3.231.034	2.441.149	2.611.48	7.51.1073	11.311.1474	9.151.509	2.551.605	0.570.02	2.221.372	4.041.729	2.361.323	3.031.275	3.391.266	3.481.366	8.91.853	10.851.179	10.821.83	2.871.254	2.681.365	3.281.162	1.631.144	3.131.51	3.371.189	2.431.125	
Phi (82.5°)	4.491.555	4.131.343	6.061.1032	9.691.692	4.951.599	6.751.627	4.191.38	4.731.358	3.761.388	2.961.222	3.641.574	8.881.873	7.891.511	6.971.71	8.231.1155	10.211.1422	7.021.268	3.591.321	4.651.362	1.381.187	1.681.148	1.791.331	3.371.189	2.361.249	
Phi (90°)	4.31.348	3.161.351	6.841.1126	13.791.1222	8.981.922	8.671.509	4.551.61	3.251.069	0.451.038	1.271.355	8.661.1482	10.871.684	4.891.569	9.961.1271	12.231.1326	14.431.1614	9.031.505	7.891.74	6.221.605	2.761.158	0.791.037	1.051.252	2.141.34	5.211.935	
Phi (97.5°)	3.781.254	1.741.179	6.381.158	1.711.139	8.261.818	7.591.641	6.611.624	7.381.148	2.641.215	2.821.506	9.891.496	5.981.439	5.871.947	11.581.121	9.761.1698	18.471.1041	12.861.98	18.381.655							



Radiated Composite Gain of 2.4GHz and 5GHz U-NII 1 ~ U-NII 3

Appendix A

Theta (°)	-3.83/4.41	-5.76/6.5	-6.84/6.97	-7.06/6.61	-6.12/5.65	-5.37/5.42	-5.36/5.23	-5.13/5.02	-4.85/4.84	-4.79/4.56	-4.42/4.12	-4.22/4.49	-4.61/4.65	-4.58/4.88	-5.27/5.96	-6.43/6.67	-6.65/6.39	-6.21/5.76	-5.05/4.37	-3.69/3.18	-2.83/2.57	-2.54/2.83	-2.88/3.12	-3.74/3.85
Theta (7.5°)	-4.2/4.93	-5.63/6.99	-8.18/9	-9.93/8.92	-7.31/5.41	-4.34/3.37	-2.28/1.73	-1.24/0.95	-0.6/0.56	-0.65/1.16	-1.75/2.17	-2.92/3.44	-3.56/3.6	-3.56/3.46	-3.51/3.56	-3.77/3.87	-4.12/4.59	-5.13/5.69	-6.54/6.98	-7.56/7.6	-7.51/7.25	-7.37/7.16	-6.41/5.71	-5.16/4.55
Theta (15°)	-4.46/4.08	-3.87/5.34	-7.12/9.35	-12.19/13.05	-11.03/8.24	-6.46/5.2	-4.13/3.29	-2.51/2	-1.47/1	-0.65/0.66	-1.03/1.64	-2.51/2.88	-2.67/2.12	-1.6/1.23	-0.87/0.79	-1.13/2.07	-3.4/4.99	-6.63/8.66	-10.93/13.93	-16.9/19.46	-19.1/19.39	-14.32/10.67	-8.54/6.33	-5.02/4.36
Theta (22.5°)	-1.49/1.81	-2.7/2.94	-4.28/6.12	-8.72/10.92	-14.57/18.66	-15.77/12.78	-9.91/7.14	-5.59/4.36	-3.2/2.06	-1.22/1.14	-1.74/2.78	-4.06/4.36	-3.16/1.83	-1.14/0.81	-0.81/1.36	-2.9/5.46	-9.52/17.12	-18.42/10.81	-7.33/6.06	-5.6/6.54	-8.37/9.42	-8.84/8.58	-8.9/7.52	-4.42/2.45
Theta (30°)	-1.74/1.59	-1.95/1.97	-2.68/4.53	-5.98/7.18	-9.41/13.86	-18.07/18.57	-13.71/9.25	-6.49/5.03	-4.23/3.32	-2.21/2.04	-2.79/3.84	-5.41/7.17	-7.13/5.32	-4.21/3.38	-3.02/3.65	-5.66/9.6	-14.12/10.9	-6.29/4.69	-4.28/4.57	-4.49/4.8	-5.58/7.9	-9.42/7.79	-5.61/4.64	-4.31/3.49
Theta (37.5°)	-3.39/3.07	-2.71/3.08	-3.07/4.33	-6.09/8.11	-10.59/14.33	-19.02/18.28	-12.91/10.75	-8.72/7.25	-5.78/4.61	-3.11/2.55	-3.47/4.94	-7.43/11.41	-11.7/9.46	-8.57/7.4	-6.53/6.18	-6.88/9.05	-15.83/18.63	-14.93/7.22	-3.14/1.78	-2.46/4.11	-6.01/7.66	-10.82/13.88	-11.8/9.28	-6.31/4.4
Theta (45°)	-2.44/2.36	-2.07/2.71	-4.59/5.22	-5.66/6.31	-7.7/9.58	-10.39/6.4	-4.83/4.55	-5.26/6.42	-7.4/6.87	-4.67/3.31	-3.91/7.21	-12.24/19.57	-18.73/17.32	-18.64/11.65	-7.67/5.96	-5.64/6.54	-10.51/15.46	-10.81/6.46	-4.54/3.18	-1.84/0.8	-0.87/2.1	-4.83/9.98	-6.01/4.03	-3.41/3.09
Theta (52.5°)	-4.3/3	-2.59/2.67	-3.24/3.28	-2.8/2.48	-3.33/4.85	-3.45/2.28	-1.45/0.91	-0.89/0.98	-1.45/2.61	-2.97/2.95	-2.58/4.58	-6.14/4.45	-4.66/6.91	-12.95/19.02	-10.1/7.35	-9.15/11.03	-13.84/18.78	-11.42/5.28	-2.41/1.47	-1.1/0.44	-0.35/1.18	-0.94/0.55	-0.96/1.83	-2.83/3.17
Theta (60°)	-1.87/1.41	-1.83/2.98	-5.12/5.79	-4.33/3.9	-4.86/4.71	-2.59/0.32	0.35/0.78	0.84/0.56	0.45/0.07	-0.95/2.31	-3.1/2.32	-1.2/0.07	0.5/0.07	-3.15/12.73	-9.27/7.3	-10.59/9.31	-14.76/19.1	-7.87/3.6	-1.64/0.75	-0.87/0.98	-1.13/0.79	-1.19/0.39	0.37/0.96	-1.94/2.01
Theta (67.5°)	-2.25/2.55	-3.08/5.72	-6.25/6.68	-7.17/9.24	-10.03/5.75	-3.22/1.97	-2.23/1.45	-0.56/0.75	1.63/0.41	-1.22/1.92	-1.01/0.65	1.3/0.02	-0.05/0.22	-1.28/6.97	-13.56/11.58	-11.11/14.13	-17.65/11.07	-6.36/3.7	-2.17/0.14	0.98/0.61	-0.48/2.25	-1.2/0.44	-0.09/0.66	-1.9/2.9
Theta (75°)	-4.57/5.07	-5.64/7.94	-9.03/12.31	-16.08/13.36	-10.27/8.53	-6.54/6.56	-5.33/7.2	-10.26/5.03	-1.34/0.39	-1.41/3.51	-2.49/0.56	0.5/0.97	-1.97/1.14	0.28/1.62	-7.85/15.46	-10.25/10.26	-9.81/13.64	-12.23/8.65	-4.22/1.77	-1.07/1.2	-1.43/1.96	-2.14/1.14	-0.38/2.8	-6.38/6.92
Theta (82.5°)	-5.61/6.55	-7.48/7.37	-9.15/11.9	-11.14/11.54	-11.39/14.64	-13.08/10.85	-12.6/12.41	-7.97/3.79	-0.65/0.15	-0.52/1.34	-11.34/3.01	-5.74/8.01	-7.54/3.75	0.35/3.1	1.71/1.18	-6.58/14.92	-18.38/18.13	-18.92/13.9	-16.71/14.95	-8.28/8.02	-8.57/5.61	-1.05/2.85	-5.47/7.32	-10.93/5.6
Theta (90°)	-6.75/7.75	-7.95/6.18	-11.58/16.4	-8.53/7.68	-8.18/19.3	-11.05/11.49	-10.06/8.66	-6.45/3.9	0.07/1.82	1.58/0.29	0.39/0.73	0.14/2.04	-2.57/3.94	0.05/0.93	-5.88/19.35	-12.58/7.51	-6.8/8.8	-11.86/8.79	-8.97/4.42	-2.56/1.95	-0.85/0.13	-1.35/3.6	-6.14/4.27	-6.1/4.9
Theta (97.5°)	-7.57/9.93	-8.57/9.09	-17.74/11.23	-6.34/9.77	-14.47/10.37	-5.81/5.63	-4.09/3.09	-2.34/0.77	1.32/1.66	1.87/0.35	1.63/3.72	-3.01/2.21	-0.48/0.1	0.93/3.33	-9.68/18.58	-15.7/6.37	-9.89/12.21	-15.31/10.69	-5.6/8.5	-6.11/2.95	-0.8/2.34	-3.45/5.57	-4.75/3.56	-5.25/3.87
Theta (105°)	-9.82/7.42	-7.28/5.86	-14.38/12.14	-6.1/9.17	-11.77/13.62	-7.63/5.23	-3.03/3.73	-4.86/2.84	-1.35/1.1	-1.34/3.01	-5.74/8.01	-7.54/3.75	0.35/3.1	1.71/1.18	-6.58/14.92	-18.38/18.13	-18.92/13.9	-16.71/14.95	-8.28/8.02	-8.57/5.61	-1.05/2.85	-5.47/7.32	-10.93/5.6	
Theta (112.5°)	-13.87/11.71	-11.64/11.63	-19.17/12.66	-7.92/11.71	-12.86/18.57	-10.73/6.16	-4.6/2.42	-0.94/0.91	-0.8/0.78	-1.35/3.95	-5.3/4.88	-5.84/7.22	-3.06/1.66	-3.5/4.94	-15.88/16.03	-17.01/11.64	-5.61/6.94	-5.96/11.22	-9.78/7.04	-11.52/6.08	-1.86/3.26	-1.97/3.12	-4.03/5.62	-18.23/11.46
Theta (120°)	-19.14/18.62	-19.47/16.09	-18.57/18.06	-11.23/10.16	-14.34/17.25	-14.96/12.25	-5.92/2.87	-1.87/1.1	-0.7/1.04	-2.69/4.41	-4.35/2.96	-4.31/3.34	-11.57/6.88	-9.51/7.95	-7.29/9.19	-15.19/18.29	-10.89/10.41	-7.22/12.31	-5.58/6.01	-6.2/3.03	-2.75/0.33	-4.67/8.82	-5.9/3.65	-11.42/15.34
Theta (127.5°)	-10.02/11.77	-6.57/12.13	-12.83/13.49	-12.86/18.71	-8.72/9.37	-8.93/4.75	-3.36/1.92	-0.59/1.21	-3.15/5.28	-6.83/8.2	-7.98/4.72	-4.1/8.27	-7.86/6.08	-3.69/8.52	-15.68/13.85	-11.64/10.62	-12.75/19.53	-8.51/11.08	-3.9/4.21	-5.55/1.66	-1.08/2.74	-6.17/8.89	-10.84/13.15	-10.81/10.2
Theta (135°)	-8.24/9.81	-7.69/10.36	-12.07/10.1	-6.28/5.53	-4.31/4.35	-4.12/4.81	-3.5/1.83	-1.72/2.36	-3.38/4.99	-5.69/4.99	-3.09/1.66	-0.84/2.12	-4.71/3.93	-3.49/4.01	-9.83/15.21	-11.57/17.6	-18.33/12.04	-6.29/18.58	-5.26/7.81	-12.73/3.95	-0.83/3	-1.22/11.27	-18.59/18.03	-16.23/8.48
Theta (142.5°)	-14.54/13.3	-17.63/17.85	-18.67/16.7	-6.44/3.46	-2.98/3.82	-5.85/5.76	-4.47/2.6	-1.61/1.96	-3.82/8	-15.09/15.97	-9.21/5.54	-5.41/8.69	-13.27/11.36	-9.37/18.01	-7.41/6.57	-5.92/11.83	-9.72/9.98	-17.72/6.55	-6.61/8.02	-6.35/2.07	-2.88/3.99	-5.33/6.61	-9.59/6.02	-6.6/14.73
Theta (150°)	-16.8/18.42	-19.31/16.98	-17.78/19.17	-16.54/7.53	-4.8/4.14	-5.5/8.29	-8.25/7.54	-6.33/6.31	-9.53/16.99	-16.24/14.13	-10.91/7.16	-5.73/5.47	-5.87/7.63	-9.93/8.95	-8.09/9.35	-8.1/11.21	-18.94/14.24	-9.99/9.03	-9.92/11.34	-9.73/7.92	-9.65/13.5	-14.91/14.03	-14.32/14.33	-14.24/14.03
Theta (157.5°)	-13.63/16.82	-19.01/18.07	-17.79/17.35	-19.18/15.08	-11.19/10.27	-10.47/10.74	-10.18/5.1	-7.1/6.63	-5.82/4.85	-3.41/2.31	-1.45/0.74	-0.74/1.83	-3.63/4.88	-5.58/7.02	-7.99/7.13	-6.63/9.1	-15.16/18.09	-18.17/14.52	-13.49/12.92	-14.15/16.7	-13.49/9.98	-8.5/8.12	-8.62/9.92	-11.21/12.06
Theta (165°)	-14.98/15.37	-16.35/16.51	-14.75/14.69	-15.44/15.07	-14.42/14.12	-16.89/17.94	-17.7/12.41	-9.1/7.16	-5.05/3.02	-1.28/0.31	-0.05/0.2	-0.55/0.91	-1.54/2.93	-5.49/9.24	-13.66/16.67	-14.47/12.64	-11.92/10.79	-9.86/9.47	-10.32/10.48	-9.13/7.48	-5.91/5.09	-4.71/5.36	-7.28/9.91	-12.64/14.19
Theta (172.5°)	-13.73/12.26	-12.43/13.56	-13.2/12.2	-12.01/14.14	-16.95/19.24	-18.85/18.01	-13.56/10.35	-8.44/6.67	-4.79/3.31	-2.14/1.46	-1.65/2.33	-3.7/5.46	-7.43/9.91	-13.37/18.56	-18.38/19.21	-14.7/11.65	-9.62/8.39	-7.41/6.68	-6.65/6.72	-6.87/6.42	-6.35/6.87	-8.11/10.37	-13.13/15.99	-17.42/14.93
Theta (180°)	-12.31/13.45	-16.9/18.72	-18.65/15.77	-13.95/12.08	-10.6/9.6	-7.5/6.91	-6.97/6.46	-6.09/6.16	-6.93/7.69	-8.56/9.8	-10.93/12.09	-13.9/16.01	-17.35/17.59	-16.36/15.53	-13.79/11.77	-10.7/10.18	-9.81/9.88	-10.06/9.98	-10.16/10.06	-9.7/9.36	-9.27/8.74	-8.74/8.39	-8.47/9.45	-11.66/11.83
Freq (GHz)	5.785/5.785	5.785/5.785	5.785/5.785	5.785/5.785	5.785/5.785	5.785/5.785	5.785/5.785	5.785/5.785	5.785/5.785	5.785/5.785	5.785/5.785	5.785/5.785	5.785/5.785	5.785/5.785	5.785/5.785	5.785/5.785	5.785/5.785	5.785/5.785	5.785/5.785	5.785/5.785	5.785/5.785	5.785/5.785	5.785/5.785	5.785/5.785
Gain	Phi(0°)/Phi(0°)	Phi(15°)/Phi(15°)	Phi(30°)/Phi(30°)	Phi(45°)/Phi(45°)	Phi(60°)/Phi(60°)	Phi(75°)/Phi(75°)	Phi(90°)/Phi(90°)	Phi(105°)/Phi(105°)	Phi(120°)/Phi(120°)	Phi(135°)/Phi(135°)	Phi(150°)/Phi(150°)	Phi(165°)/Phi(165°)	Phi(180°)/Phi(180°)	Phi(195°)/Phi(195°)	Phi(210°)/Phi(210°)	Phi(225°)/Phi(225°)	Phi(240°)/Phi(240°)	Phi(255°)/Phi(255°)	Phi(270°)/Phi(270°)	Phi(285°)/Phi(285°)	Phi(300°)/Phi(300°)	Phi(315°)/Phi(315°)	Phi(330°)/Phi(330°)	Phi(345°)/Phi(345°)
Theta (0°)	-2.92/2.32	-2.39/2.49	-2.69/2.52	-2.33/2.57	-2.81/3.07	-3.23/3.41	-3.9/3.62	-3.73/3.66	-3.88/4.05	-4.2/4.19	-4.33/4.76	-5.25/5.61	-5.51/5.21	-4.51/4.13	-3.51/2.94	-2.37/2.12	-2.33/2.74	-3.74/4.46	-5.33/6.15	-6.6/6.98	-8.24/9.04	-9.62/8.4	-7.05/5.86	-4.58/3.47
Theta (7.5°)	-4.34/3.98	-3.48/3.15	-3.07/2.84	-2.1/2.64	-2.98/3.12	-3.29/3.94	-4.83/6.13	-7.8/9.54	-10.31/10.12	-8.86/7.1	-5.7/4.74	-4.1/3.62	-3.19/2.79	-2.71/3.09	-3.53/4.08	-3.97/3.63	-3.52/3.48	-3.43/3.35	-3.23/3.41	-3.09/3.31	-3.73/4.43	-5.18/5.42	-5.57/5.47	-5.16/4.77
Theta (15°)	-7.53/7.25	-6.39/5.09	-3.88/4.07	-3.31/3.87	-4.46/4.95	-6.12/7.8	-10.1/12.63	-17.24/18.19	-18.15/16.6	-11.49/8.25	-5.97/4.33	-3.2/2.48	-2/1.69	-1.88/2.54	-3.96/4.96	-4.68/4.03	-3.48/3.25	-3.26/3.09	-3.31/3.47	-3.59/3.12	-3.08/3.21	-3.44/3.43	-3.95/4.98	-6.05/7.18
Theta (22.5°)	-15.18/18.66	-18.03/13.4	-9.79/10.48	-9.94/10.9	-11.63/15	-18.52/17.49	-19.01/17.89	-19.04/17.48	-18.64/18.33	-13.77/9.73	-6.78/4.79	-3.63/3.15	-3.12/4	-4.91/5.8	-5.79/4.17	-2.09/0.66	-0.36/0.83	-1.05/0.91	-0.96/1.7	-2.23/3.17	-4.01/4.88	-5.2/4.97	-4.39/5	-6.09/10.08
Theta (30°)	-16.71/13.79	-10.84/12.53	-16.07/13.37	-8.28/7.09	-9.22/13.56	-18.2/17.16	-16.81/13.58	-13.52/15.01	-17.0															

Freq(Hz)	6.175G	6.475G	6.695G	6.995G
Ant. 1 Max Gain (dBi)	3.42	2.5	2.46	2.81
Ant. 2 Max Gain (dBi)	3.07	2.65	2.57	2.83
Ant. 3 Max Gain (dBi)	3.47	3.58	2.44	3.53
Ant. 4 Max Gain (dBi)	3.85	3.26	3.95	3.38
Ant. 1 Polarization/ θ (°)/ Φ (°)	Theta/45/330	Phi/45/37.5	Phi/105/225	Theta/112.5/112.5
Ant. 2 Polarization/ θ (°)/ Φ (°)	Theta/60/172.5	Theta/105/240	Theta/112.5/240	Theta/97.5/240
Ant. 3 Polarization/ θ (°)/ Φ (°)	Theta/105/277.5	Theta/105/255	Theta/105/255	Phi/90/172.5
Ant. 4 Polarization/ θ (°)/ Φ (°)	Theta/15/195	Theta/15/202.5	Theta/15/210	Phi/112.5/172.5
Max Gain (dBi)	3.85	3.58	3.95	3.53
DG [1SS] (dBi)	5.33	4.88	5.77	5.89
DG [2SS] (dBi)	3.85	3.58	3.95	3.53
DG [4SS] (dBi)	3.85	3.58	3.95	3.53



Radiated Composite Gain Data of 6GHz U-NII 5 ~ U-NII 8

Appendix B

DG 1SS Result

Table with columns: Freq(Hz), DG(dB), and 28 Phi values. The table is divided into two main sections for Phi(15)*Phi(22.5) and Phi(30)*Phi(37.5).



Radiated Composite Gain Data of 6GHz U-NII 5 ~ U-NII 8

Appendix B

Table with columns for frequency (MHz), polarization (Theta, Phi), and gain (dBm) for various U-NII channels (5, 6, 7, 8) and their combinations. The table lists gain values for 30-degree and 45-degree angles for each channel and combination.



Radiated Composite Gain Data of 6GHz U-NII 5 ~ U-NII 8

Appendix B

Theta	8.94/8.28	-5.53/3.59	-2.48/1.89	-1.84/2.67	-2.95/3.62	-4.68/5.18	-5.42/5.51	-5.81/6.69	-8.46/9.46	-11.07/11.68	-11.23/10.75	-9.58/8.62	-7.95/10.27	-5.81/4.43	-3.34/2.44	-2.23/2.27	-2.85/3.11	-4.21/4.66	-5.17/5.18	-8.07/9.44	-9.94/8.93	-8.21/7.86	-8.02/8.53	-8.07/7.69	
Theta(22.5)	-8.94/8.28	-5.53/3.59	-2.48/1.89	-1.84/2.67	-2.95/3.62	-4.68/5.18	-5.42/5.51	-5.81/6.69	-8.46/9.46	-11.07/11.68	-11.23/10.75	-9.58/8.62	-7.95/10.27	-5.81/4.43	-3.34/2.44	-2.23/2.27	-2.85/3.11	-4.21/4.66	-5.17/5.18	-8.07/9.44	-9.94/8.93	-8.21/7.86	-8.02/8.53	-8.07/7.69	
Theta(30)	-16.66/13.1	-7.49/3.84	-1.94/1.53	-0.84/0.6	-0.35/0.69	-1.49/3	-4.81/6.61	-9.84/12.53	-11.34/11.23	-12.79/11.97	-10.47/10.96	-11.99/12.64	-14.49/13.61	-8.75/5.43	-3.09/1.79	-1.27/1.31	-1.02/1.12	-1.89/2.91	-4.2/6.14	-8.14/8.02	-7.47/8.26	-10.08/10.76	-9.49/9.2	-10.27/13.19	
Theta(37.5)	-8.37/7.68	-5.44/4.65	-3.19/1.13	-0.88/1.73	1.01/0.59	-2.7/5.4	-10.11/11.27	-17.93/18.48	-9.54/8.69	-12.06/12.08	-10.47/8.63	-6.56/7.64	-15.04/18.82	-10.08/5.24	-1.50/6.5	1.55/1.85	1.25/0.04	-0.79/1.75	-2.84/3.39	-4.73/6.75	-8.53/14.51	-17.97/13.3	-17.65/14.41	-8.9/7.36	
Theta(45)	-6.93/6.38	-4.62/4.55	-2.57/0.07	1.25/1.11	0.4/2.16	-3.12/3.51	-2.83/2.63	-3.75/5.27	-5.41/4.95	-7.05/17.5	-10.53/7.84	-5.74/3.21	-4.94/9.88	-5.53/2.68	-2.06/1.02	-0.47/0.29	0.31/1.11	0.6/1.25	-3.1/4.08	-5.79/6.12	-7.55/11.18	-17.98/16.53	-15.3/15.54	-9.4/7.08	
Theta(52.5)	-3.43/2.87	-2.87/3.98	-1.74/0.51	-1.08/4.47	-0.82/4.84	-7.51/7.23	-5.82/4.76	-4.32/4.89	-4.2/3.17	-5.95/14.21	-7.66/9.9	-5.15/1.34	-2.67/4.16	-2.52/4.42	-4.14/0.87	-0.04/0.34	0.89/0.97	0.71/0.32	-2.26/5.51	-6.27/6.66	-8.79/11.26	-18.25/14.66	-15.9/9.79	-3.86/2.68	
Theta(60)	-4.48/1.07	-1.73/4.94	-2.27/0.69	-2.13/4.2	-3.23/2.43	-2.95/5.55	-9.18/13.99	-17.53/11.49	-5.68/2.85	-2.18/3.42	-6.35/10.08	-11.33/3.1	-2.3/6.1	-4.22/5.87	-2.21/1.44	-2.35/0.71	0.91/1.37	-2.08/4.35	-6.21/8.38	-6.21/8.38	-14.76/13.91	-13.42/10.99	-12.19/12.08	-3.52/2.76	
Theta(67.5)	-5.62/2.97	-5.28/9.15	-3.64/0.66	-0.43/0.67	-0.86/2.18	-3.44/3.01	-2.65/4.51	-9.2/14.14	-9.37/4.2	-1.9/2.14	-3.04/6.68	-16.18/7.07	-7.98/9.49	-4.87/2.89	-3.71/3.22	-3.44/7.1	-6.62/3.9	-3.64/3.54	-4.2/5.5	-7.93/8.88	-10.48/9.75	-9.62/10.73	-12/18.9	-10.18/8.24	
Theta(75)	-6.26/9.66	-8.81/4.71	-0.59/0.82	0.26/1.07	-1.73/2.65	-4.01/3.2	-3.95/6.24	-7.83/6.99	-7.19/8.65	-5.87/1.94	-1.5/3.39	-8.35/8.6	-5.42/6.9	-7.39/3.96	-3.22/4.45	-4.23/7.16	-10.51/8.75	-6.2/7.3	-7.1/7.62	-8.34/10.42	-10.58/12.25	-9.28/15.4	-12.25/12.28	-14.27/8.32	
Theta(82.5)	-6.59/4.38	-1.8/2.48	-1.79/1.49	-4.28/7.65	-10.63/10.37	-7.5/4.85	-2.2/2.51	-7.01/9.11	-4.11/7.22	-11.12/5.89	-4.45/5.82	-6.43/6.02	-6.14/2.68	-2.59/6.21	-2.43/3.03	-7.08/8.34	-7.79/9.13	-10.39/10.49	-8.74/8.85	-11.04/6.99	-6.26/11.38	-10.57/12.39	-12.6/11.63	-8.04/5.99	
Theta(90)	-5.26/2.05	-0.95/2.73	-1.31/2	-7.12/12.55	-11.74/9.19	-4.34/3.01	-2.91/4.49	-6.09/9.78	-5.79/5.26	-18.52/18.18	-7.05/5.93	-8.01/5.93	-3.6/4.96	0.55/0.52	-3.5/2.87	-4.01/3.61	-3.93/6.92	-7.39/4.91	-10.88/14.17	-10.98/10.13	-8.07/17.15	-10.71/9.71	-5.99/8.09	-5.51/3.17	
Theta(97.5)	-5.86/4.2	-1.57/0.94	-2.95/8.63	-10.43/13.5	-12.93/7.03	-3.37/3.17	-3.7/4.58	-8.83/17.26	-8.04/11.5	-17.12/14.38	-6.61/9.62	-16.53/12.14	-8.74/4.23	-0.1/1.27	0.78/0.5	1.03/2.07	-2.49/4.37	-4.56/4.06	-5.45/5.72	-8.79/11.41	-9.62/14.94	-14.78/13.53	-14.6/10.9	-9.93/6.83	
Theta(105)	-4/4.62	-1.02/1.69	-6.32/9.19	-7.96/11.34	-6.98/7.1	-8.2/3.9	-8.83/7.77	-14.81/18.58	-8.75/14.14	-6.21/10.35	-15.05/18.7	-15.01/8.24	-2.18/0.82	-1.6/0.8	2.46/1.1	-0.91/4.34	-6.92/5.76	-8.03/5.65	-10.43/10.27	-13.91/11.69	-6.99/10.12	-17.5/18.08	-18.91/5.38		
Theta(112.5)	-4.38/7.69	-0.58/0.77	-5.82/7.32	-7.25/8.24	-10.25/14.95	-17.01/6.33	-5.35/12.9	-18.45/7.93	-11.08/14.06	-14.75/11.23	-4.18/6.64	-5.78/8.03	-8.26/8.76	-11.07/5.76	-10.43/3.85	-0.6/0.4	-1.9/7.45	-6.82/3.71	-5.19/5.6	-10.19/17.62	-10.07/10.99	-8.99/11.5	-14.19/12.72	-12.33/4.17	
Theta(120)	-4.1/6.13	-0.77/2.82	-11.64/2.31	-2.17/6.4	-8.52/10.64	-11.62/14.21	-15.26/15.89	-17.86/11.64	-14.79/15.42	-17.86/11.64	-14.79/15.42	-17.86/11.64	-14.79/15.42	-17.86/11.64	-14.79/15.42	-17.86/11.64	-14.79/15.42	-17.86/11.64	-14.79/15.42	-17.86/11.64	-14.79/15.42	-17.86/11.64	-14.79/15.42	-17.86/11.64	-14.79/15.42
Theta(127.5)	-13.29/5.77	-2.45/5.39	-5.91/2	-3.23/10.54	-7.29/5.86	-11.22/10.68	-16/16.11	-16.02/17.78	-18.33/17.89	-10.46/9.77	-12.3/9.33	-5.44/3.38	-4.06/3.36	-6.89/17.8	-14.33/8.91	-8.91/6.09	-7.78/9.04	-6.87/3.58	-2.52/3.96	-6.92/10.69	-11.43/10.66	-13.71/16.36	-18/13.38	-15.45/16.44	
Theta(135)	-8.89/7.35	-11.34/18.22	-11.37/12.28	-17.95/12.58	-11.72/11.66	-14.04/14.25	-8.49/7.74	-9.26/13.7	-14.93/11.58	-18.38/12.41	-4.36/2.7	-3.27/2.19	-1.20/5.4	0.49/4.68	-5.21/7.44	-7.01/13.55	-14.03/12.64	-7.79/6.24	-5.33/9.13	-9.72/7.24	-8.57/15.2	-14.33/14.5	-11.16/6.09	-8.2/9.22	
Theta(142.5)	-9.83/12	-10.02/7.56	-5.76/2.27	-3.35/1.86	-3.8/10.09	-18.23/8.08	-5.73/4.84	-13.82/15.74	-9.05/2.7	-12.25/17.95	-14.99/10.8	-8.13/6.59	-4.53/2.74	-4.85/6.61	-10.47/8.05	-11.05/8.56	-11.78/17.32	-15.79/15.64	-17.91/9.64	-19.3/19.4	-19.11/8.64	-9.26/6.11	-6.66/7.4	-8.97/7.32	
Theta(150)	-14.35/12.02	-13.13/12.65	-10.3/12.17	-18.06/17.86	-15.83/17.61	-17.89/17.19	-11.37/10.1	-13.09/18.02	-17.55/18.86	-13.77/16.35	-18.49/13.73	-10.84/12.8	-6.39/9.13	-9.37/11.22	-12.56/11.77	-15.45/17.45	-17.97/10.89	-10.19/9.99	-14.28/12.43	9.06/18.59	-9.54/9.59	-8.42/8.86	-11.9/15.32		
Theta(157.5)	-6.83/7.8	-9.98/13.29	-14.66/13.7	-14.53/16.32	-16.64/14.04	-12.45/12.29	-13.66/14.01	-15.09/18.61	-17.78/12.13	-13.03/12.95	-12.23/14.41	-13.25/11.67	-12.77/10.47	-7.43/6.46	-8.97/12.15	-10.46/11.7	-11.87/9.67	-9.37/12.49	-17.36/19.01	-16.58/14.23	-14.27/18.79	-16.86/16.94	-18.59/14.79	-9.91/7.34	
Theta(165)	-9.04/8.98	-10.2/12.78	-16.82/18.93	-18.67/17.91	-18.49/17.81	-18.13/18.99	-17.45/18.65	-19.15/18.83	-17.9/19.11	-18.73/15.29	-11.07/8.95	-9.6/11	-13.04/14.96	-14.65/11.79	-8.11/5.81	-5.13/6.44	-11.61/16.47	-14.71/18.5	-18.02/11.01	-6.63/5.84	-7.32/9.47	-9.57/11.01	-12.64/13.41	-11.43/9.67	
Theta(172.5)	-18.09/18.86	-18.08/18.98	-17.35/16.64	-18.31/19.03	-18.36/17.8	-17.95/18.39	-18.28/17.7	-17.76/16.55	-14.4/11.85	-10.56/10.47	-10.79/14.07	-9.58/8.62	-7.92/7.57	-7.61/7.12	-7.81/9.48	-11.96/13.95	-15.27/16.93	-17.47/18.38	-13.83/10.47	-9.78/10.85	-11.21/12.7	-13.41/13.64	-14.89/15.49	-14.86/16.48	
Theta(180)	-9.11/10.16	-11.02/12.46	-14.9/15.67	-16.8/18.15	-18.24/17.95	-19.54/17.97	-18.82/17.34	-17.18/15.37	-12.76/11.62	-11.41/10.06	-10.86/10.73	-10.32/9.92	-9.03/9.55	-10.41/10.98	-10.6/10.06	-10.28/10.98	-13.11/15.2	-16.88/16.99	-17.29/19.14	-15.74/14.07	-13.11/11.75	-11.17/12.06	-12.81/11.44	-8.74/8.55	
Freq(Hz)	6.995GPol.	ThetaAnt. 1	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	
Gain	Phi(0)Phi(7.5)	Phi(15)Phi(22.5)	Phi(30)Phi(37.5)	Phi(45)Phi(52.5)	Phi(60)Phi(67.5)	Phi(75)Phi(82.5)	Phi(90)Phi(97.5)	Phi(105)Phi(112.5)	Phi(120)Phi(127.5)	Phi(135)Phi(142.5)	Phi(150)Phi(157.5)	Phi(165)Phi(172.5)	Phi(180)Phi(187.5)	Phi(195)Phi(202.5)	Phi(210)Phi(217.5)	Phi(225)Phi(232.5)	Phi(240)Phi(247.5)	Phi(255)Phi(262.5)	Phi(270)Phi(277.5)	Phi(285)Phi(292.5)	Phi(300)Phi(307.5)	Phi(315)Phi(322.5)	Phi(330)Phi(337.5)	Phi(345)Phi(352.5)	
Theta(0)	-7.25/8.03	-9.26/12.01	-15.22/15.76	-13.42/9.73	-8.06/6.28	-5.24/4.28	-3.72/3.19	-3.51/3.21	-2.66/2.12	-2.03/2.53	-3.45/4.73	-5.67/6.13	-7.38/8.91	-11.42/14.13	-17.75/18.97	-18.43/12.95	-10.38/8.29	-7.1/6.69	-5.16/4.69	-4.17/4.13	-4.72/4.34	-4.61/4.46	-4.59/4.9	-5.52/6.3	
Theta(7.5)	-6.3/5.75	-9.6/14.22	-19.03/17.79	-18.17/14.85	-11.92/9.4	-7.51/5.79	-5.42/4.87	-5.01/4.7	-4.35/4.22	-4.22/4.48	-4.63/5.26	-6.4/6.95	-7.25/7.81	-9/9.87	-10.51/10.48	-9.86/8.08	-6.42/5.18	-4.52/3.82	-3.35/3.09	-2.24/2.28	-2.2/2.43	-3.18/3.31	-3.82/4.18	-4.71/5.58	
Theta(15)	-5.08/6.7	-9.06/11.42	-16.93/18.96	-19.03/13.76	-10.68/8.22	-6.59/5.32	-5.25/5.04	-4.39/3.65	-3.71/3.92	-4.58/4.66	-5.69/6.35	-6.06/5.65	-5.49/5.35	-6.47/7.19	-7.19/7.19	-7.02/6.19	-5.45/4.97	-4.17/3.25	-2.51/2.79	-3.14/3.5	-3.93/3.32	-2.83/4.29	-3.55/4.97		
Theta(22.5)	-4.53/4.7	-5.34/7.78	-11.53/18.99	-18.51/13.22	-11.41/11.4	-12.39/13.83	-12.6/10.4	-8.57/7.06	-5.78/4.79	-4.57/4.47	-4.86/5.44	-5.17/4.49	-3.33/2.39	-2.18/2.76	-4.44/7.02	-9.22/9.18	-7.85/7.01	-6.27/5.42	-4.54/3.49	-3.16/3.07	-3.1/2.97	-2.59/2.31	-2.32/2.55	-3.3/3.82	
Theta(30)	-0.73/0.91	-2.41/5.4	-7.82/7.2	-6.69/7.55	-9.05/11.6	-13.11/12.17	-11.15/10.57	-9.03/9.7	-9.32/9.39	-9.15/9.96	-6.63/6.07	-4.9/2.77	-1.01/0.32	-0.85/1.22	-4.03/6.08	-7.78/8.21	-7.94/7.2	-5.63/6.65	-4.5/3.91	-2.85/4.24	-2.08/2.14	-3.42/4.49	-4.34/2.5	-1.53/0.81	
Theta(37.5)	-0.89/1.28	-1.88/2.45	-2.64/2.92	-4.33/7.96	-10.68/9.68	-8.48/8.61	-7.84/6.89	-5.23/4.96	-5.32/5.97	-6.92/7.6	-4.77/6.82	-6.2/2.72	-1.47/1.68	-2.27/2.53	-2.38/3.41	-5.81/9.76	-13.74/9.96	-8.09/5.51	-3.26/3.21	-4.03/3.82	-3.98/4.31	-3.72/3.31	-1.94/0.34	0.23/0.29	
Theta(45)	-2.05/2.08	-1.55/2.16	-2.69/4.75	-1.22/1.17	-9.5/8.03	-9.27/10.95	-14.58/16.07	-8.13/7.77	-7.24/5.63	-5.18/6.66	-6.16/4.67	-4.17/4.46	-4.47/4.7	-3.79/4.35	-6.86/12.32	-18.39/9.81	-4.23/2.31	-3.12/1.74	-2.45/3.26	-2.5					

Radiated Composite Gain Data of 6GHz U-NII 5 ~ U-NII 8

Appendix B

Theta	Phi	Phi(7.5)	Phi(15)	Phi(22.5)	Phi(30)	Phi(37.5)	Phi(45)	Phi(52.5)	Phi(60)	Phi(67.5)	Phi(75)	Phi(82.5)	Phi(90)	Phi(105)	Phi(120)	Phi(135)	Phi(150)	Phi(165)	Phi(180)	Phi(195)	Phi(210)	Phi(225)	Phi(240)	Phi(255)	Phi(270)	Phi(285)	Phi(300)	Phi(315)	Phi(330)	Phi(345)	
0	0	-15.59/14.85	-15.51/18.36	-18.65/19.3	-16.12/15.51	-15.18/15.2	-15.66/17.05	-17.07/16.16	-15.65/18.65	-18.36/17.39	-17.32/15.38	-14.02/12.47	-12.67/15.85	-18.86/18.65	-14.12/11.74	-10.45/10.25	-10.54/11.67	-13.89/15.88	-13.43/10.23	-9.09/10.5	-12.4/12.73	-13.5/16.3	-18.7/18.69	-18.22/19.02	-17.14/18.13						
0	15	6.175GPol	Theta/Ant. 3																												
0	30	Gain	Phi(7.5)	Phi(15)	Phi(22.5)	Phi(30)	Phi(37.5)	Phi(45)	Phi(52.5)	Phi(60)	Phi(67.5)	Phi(75)	Phi(82.5)	Phi(90)	Phi(105)	Phi(120)	Phi(135)	Phi(150)	Phi(165)	Phi(180)	Phi(195)	Phi(210)	Phi(225)	Phi(240)	Phi(255)	Phi(270)	Phi(285)	Phi(300)	Phi(315)	Phi(330)	Phi(345)
0	45	Theta(°)	-1.02/9.15	-8.19/12.73	-6.26/5.79	-5.55/5.02	-4.65/4.85	-5.33/4.42	-5.6/6.69	-7.63/8.64	-10.19/11.16	-11.83/12.37	-13.08/13.27	-11.94/10.13	-9.09/8.74	-8.6/8.66	-8.66/8.67	-8.42/1.72	-6.99/6.67	-7.13/8.64	-10.14/11.07	-12.86/12.18	-11.67/12.94	-16.5/17.26	-17.62/16.95	-14.84/12.85					
0	60	Theta(°)	-9.94/9.05	-9.03/9.19	-8.73/8.8	-9.09/9.37	-9.26/9.82	-8.42/7.58	-7.73/9.11	-10.29/11.05	-14.36/18.82	-17.74/18.71	-17.33/17.1	-16.53/13.52	-10.79/9.09	-7.76/6.84	-6.06/5.73	-5.23/4.88	-4.51/4.85	-5.31/5.74	-6.4/17.1	-8.79/9.27	-8.48/9.86	-12.06/13.01	-13.73/12.84	-11.71/10.45					
0	75	Theta(°)	-12.2/10.76	-9.02/7.7	-8.38/9.83	-11.06/11.44	-11.53/11.21	-11.73/10.47	-9.96/10.57	-11.66/14.89	-17.92/18.35	-17.58/13.81	-12.58/13.83	-11.53/8.81	-6.63/4.85	-3.69/2.74	-1.93/1.39	-1.28/1.65	-2.05/2.16	-4.7/2.23	-2.32/2.93	-4.7/2.23	-8.59/9.21	-11.36/14.79	-14.89/11.6	-10.96/11.5					
0	90	Theta(°)	-6.06/8.33	-10.1/8.05	-7.26/8.5	-10.03/8.96	-8.86/9.27	-9.45/9.79	-8.49/8.86	-10.31/13.55	-14.56/12.85	-10.46/8.22	-6.57/5.58	-5.53/5.92	-5.93/5.96	-5.66/4.77	-3.87/3.04	-2.21/1.74	-2.11/2.37	-2.26/2.32	-2.9/3.39	-2.96/2.23	-2.28/3.12	-4.92/6.06	-6.31/7.07	-6.83/6.26					
0	105	Theta(°)	-5.76/6.38	-7.73/8.81	-8.44/7.85	-6.65/6.36	-7.38/8.3	-9.46/9.46	-8.15/6.46	-5.46/5.41	-6.48/8.44	-8.93/8.2	-6.08/3.53	-2.56/2.51	-3.26/4.58	-3.55/2.9	-2.8/3.12	-2.9/3.25	-2.55/2.32	-2.9/4.27	-4.74/4.48	-5.43/6.77	-6.06/6.06	-5.6/5.23	-4.54/4.29						
0	120	Theta(°)	-5.42/9.08	-11.65/13.96	-9.16/7.89	-9.49/11.32	-11.71/10.2	-10.45/11.06	-9.6/8.87	-8.75/7.57	-5.86/5.21	-5.27/5.81	-5.19/3.31	-3.25/3.59	-4.03/4.53	-3.41/3.04	-3.02/3.18	-4.17/5.42	-6.51/4.91	-3.95/3.25	-3.76/5.25	-7.29/10.67	-10.74/8.79	-10.18/11.95	-11.06/8.34	-5.86/4.23					
0	135	Theta(°)	-11.91/17.38	-16.76/18.18	-12.79/11.25	-12.9/18.04	-16.05/10.21	-8.82/9.14	-9.27/9.51	-9.72/9.1	-6.76/5.03	-4.21/3.66	-5.02/6.43	-5.34/3.51	-3.58/3.76	-3.73/2.46	-1.63/2.36	-4.78/7.06	-6.28/4.81	-3.46/3.49	-2.37/2.69	-4.1/5.24	-7.04/10.69	-11.83/13.07	-19.44/18.32	-12.01/10.39					
0	150	Theta(°)	-10.36/12.61	-13.38/10.63	-14.31/15.23	-18.67/18.1	-16.68/10.7	-9.68/8.64	-7.07/5.95	-6.26/6.49	-6.26/5.34	-4.23/4.23	-5.5/4.01	-4.36/2.22	-2.34/3.53	-2.79/1.2	-0.25/2.01	-6.26/6.21	-3.69/3.35	-3.57/3.44	-3.85/3.86	-5.27/7.87	-9.44/7.39	-10.85/12.14	-10.57/17.77						
0	165	Theta(°)	-4.74/9.84	-9.02/7.7	-8.38/9.83	-11.06/11.44	-11.53/11.21	-11.73/10.47	-9.96/10.57	-11.66/14.89	-17.92/18.35	-17.58/13.81	-12.58/13.83	-11.53/8.81	-6.63/4.85	-3.69/2.74	-1.93/1.39	-1.28/1.65	-2.05/2.16	-4.7/2.23	-2.32/2.93	-4.7/2.23	-8.59/9.21	-11.36/14.79	-14.89/11.6	-10.96/11.5					
0	180	Theta(°)	-6.06/8.33	-10.1/8.05	-7.26/8.5	-10.03/8.96	-8.86/9.27	-9.45/9.79	-8.49/8.86	-10.31/13.55	-14.56/12.85	-10.46/8.22	-6.57/5.58	-5.53/5.92	-5.93/5.96	-5.66/4.77	-3.87/3.04	-2.21/1.74	-2.11/2.37	-2.26/2.32	-2.9/3.39	-2.96/2.23	-2.28/3.12	-4.92/6.06	-6.31/7.07	-6.83/6.26					
0	195	Theta(°)	-5.76/6.38	-7.73/8.81	-8.44/7.85	-6.65/6.36	-7.38/8.3	-9.46/9.46	-8.15/6.46	-5.46/5.41	-6.48/8.44	-8.93/8.2	-6.08/3.53	-2.56/2.51	-3.26/4.58	-3.55/2.9	-2.8/3.12	-2.9/3.25	-2.55/2.32	-2.9/4.27	-4.74/4.48	-5.43/6.77	-6.06/6.06	-5.6/5.23	-4.54/4.29						
0	210	Theta(°)	-5.42/9.08	-11.65/13.96	-9.16/7.89	-9.49/11.32	-11.71/10.2	-10.45/11.06	-9.6/8.87	-8.75/7.57	-5.86/5.21	-5.27/5.81	-5.19/3.31	-3.25/3.59	-4.03/4.53	-3.41/3.04	-3.02/3.18	-4.17/5.42	-6.51/4.91	-3.95/3.25	-3.76/5.25	-7.29/10.67	-10.74/8.79	-10.18/11.95	-11.06/8.34	-5.86/4.23					
0	225	Theta(°)	-11.91/17.38	-16.76/18.18	-12.79/11.25	-12.9/18.04	-16.05/10.21	-8.82/9.14	-9.27/9.51	-9.72/9.1	-6.76/5.03	-4.21/3.66	-5.02/6.43	-5.34/3.51	-3.58/3.76	-3.73/2.46	-1.63/2.36	-4.78/7.06	-6.28/4.81	-3.46/3.49	-2.37/2.69	-4.1/5.24	-7.04/10.69	-11.83/13.07	-19.44/18.32	-12.01/10.39					
0	240	Theta(°)	-10.36/12.61	-13.38/10.63	-14.31/15.23	-18.67/18.1	-16.68/10.7	-9.68/8.64	-7.07/5.95	-6.26/6.49	-6.26/5.34	-4.23/4.23	-5.5/4.01	-4.36/2.22	-2.34/3.53	-2.79/1.2	-0.25/2.01	-6.26/6.21	-3.69/3.35	-3.57/3.44	-3.85/3.86	-5.27/7.87	-9.44/7.39	-10.85/12.14	-10.57/17.77						
0	255	Theta(°)	-4.74/9.84	-9.02/7.7	-8.38/9.83	-11.06/11.44	-11.53/11.21	-11.73/10.47	-9.96/10.57	-11.66/14.89	-17.92/18.35	-17.58/13.81	-12.58/13.83	-11.53/8.81	-6.63/4.85	-3.69/2.74	-1.93/1.39	-1.28/1.65	-2.05/2.16	-4.7/2.23	-2.32/2.93	-4.7/2.23	-8.59/9.21	-11.36/14.79	-14.89/11.6	-10.96/11.5					
0	270	Theta(°)	-6.06/8.33	-10.1/8.05	-7.26/8.5	-10.03/8.96	-8.86/9.27	-9.45/9.79	-8.49/8.86	-10.31/13.55	-14.56/12.85	-10.46/8.22	-6.57/5.58	-5.53/5.92	-5.93/5.96	-5.66/4.77	-3.87/3.04	-2.21/1.74	-2.11/2.37	-2.26/2.32	-2.9/3.39	-2.96/2.23	-2.28/3.12	-4.92/6.06	-6.31/7.07	-6.83/6.26					
0	285	Theta(°)	-5.76/6.38	-7.73/8.81	-8.44/7.85	-6.65/6.36	-7.38/8.3	-9.46/9.46	-8.15/6.46	-5.46/5.41	-6.48/8.44	-8.93/8.2	-6.08/3.53	-2.56/2.51	-3.26/4.58	-3.55/2.9	-2.8/3.12	-2.9/3.25	-2.55/2.32	-2.9/4.27	-4.74/4.48	-5.43/6.77	-6.06/6.06	-5.6/5.23	-4.54/4.29						
0	300	Theta(°)	-5.42/9.08	-11.65/13.96	-9.16/7.89	-9.49/11.32	-11.71/10.2	-10.45/11.06	-9.6/8.87	-8.75/7.57	-5.86/5.21	-5.27/5.81	-5.19/3.31	-3.25/3.59	-4.03/4.53	-3.41/3.04	-3.02/3.18	-4.17/5.42	-6.51/4.91	-3.95/3.25	-3.76/5.25	-7.29/10.67	-10.74/8.79	-10.18/11.95	-11.06/8.34	-5.86/4.23					
0	315	Theta(°)	-11.91/17.38	-16.76/18.18	-12.79/11.25	-12.9/18.04	-16.05/10.21	-8.82/9.14	-9.27/9.51	-9.72/9.1	-6.76/5.03	-4.21/3.66	-5.02/6.43	-5.34/3.51	-3.58/3.76	-3.73/2.46	-1.63/2.36	-4.78/7.06	-6.28/4.81	-3.46/3.49	-2.37/2.69	-4.1/5.24	-7.04/10.69	-11.83/13.07	-19.44/18.32	-12.01/10.39					
0	330	Theta(°)	-10.36/12.61	-13.38/10.63	-14.31/15.23	-18.67/18.1	-16.68/10.7	-9.68/8.64	-7.07/5.95	-6.26/6.49	-6.26/5.34	-4.23/4.23	-5.5/4.01	-4.36/2.22	-2.34/3.53	-2.79/1.2	-0.25/2.01	-6.26/6.21	-3.69/3.35	-3.57/3.44	-3.85/3.86	-5.27/7.87	-9.44/7.39	-10.85/12.14	-10.57/17.77						
0	345	Theta(°)	-4.74/9.84	-9.02/7.7	-8.38/9.83	-11.06/11.44	-11.53/11.21	-11.73/10.47	-9.96/10.57	-11.66/14.89	-17.92/18.35	-17.58/13.81	-12.58/13.83	-11.53/8.81	-6.63/4.85	-3.69/2.74	-1.93/1.39	-1.28/1.65	-2.05/2.16	-4.7/2.23	-2.32/2.93	-4.7/2.23	-8.59/9.21	-11.36/14.79	-14.89/11.6	-10.96/11.5					
0	360	Theta(°)	-6.06/8.33	-10.1/8.05	-7.26/8.5	-10.03/8.96	-8.86/9.27	-9.45/9.79	-8.49/8.86	-10.31/13.55	-14.56/12.85	-10.46/8.22	-6.57/5.58	-5.53/5.92	-5.93/5.96	-5.66/4.77	-3.87/3.04	-2.21/1.74	-2.11/2.37	-2.26/2.32	-2.9/3.39	-2.96/2.23	-2.28/3.12	-4.92/6.06	-6.31/7.07	-6.83/6.26					
15	0	Gain	Phi(7.5)	Phi(15)	Phi(22.5)	Phi(30)	Phi(37.5)	Phi(45)	Phi(52.5)	Phi(60)	Phi(67.5)	Phi(75)	Phi(82.5)	Phi(90)	Phi(105)	Phi(120)	Phi(135)	Phi(150)	Phi(165)	Phi(180)	Phi(195)	Phi(210)	Phi(225)	Phi(240)	Phi(255)	Phi(270)	Phi(285)	Phi(300)	Phi(315)	Phi(330)	Phi(345)
15	15	Theta(°)	-8.78/9.2	-9.53/10.31	-10.19/10.22	-11.2/13.13	-14.15/14.9	-16.25/17.77	-18.49/16.38	-13.42/12.16	-12.09/12.51	-10.87/8.43	-7.14/7.02	-7.84/8.21	-8.53/8.52	-8.37/8.19	-8.47/8.47	-11.14/13.09	-13.79/12.5	-12.42/11.38	-16.26/18.28	-16.47/15.01	-14.82/11.87	-10.39/9.86	-10.93/11.74	-10.87/8.83					
15	30	Theta(°)	-8.18/8.55	-6.32/10.15	-10.67/11.31	-11.66/11.52	-11.15/12.07	-13.56/15.69	-17.17/17.85	-17.45/15.58	-12.88/12.28	-11.29/11.79	-10.24/9.01	-8.23/8.24	-8.9/9.55	-10.32/9.85	-10.05/10.21	-10.59/11.73	-13.33/14.18	-14.7/14.27	-16.44/18.56	-15.63/13.76	-14.54/12.05	-9.73/8.41	-7.86/8.42	-8.57/7.8					
15	45	Theta(°)	-7.52/9.13	-10.73/10.56	-9.71/9.64	-9.78/9.63	-10.56/11.57	-13.42/14.18	-15.85/17.49	-18.3/16.54	-11.72/9.59	-9.12/8.91	-8.04/6.96	-6.78/7.87	-9.09/9.22	-9.04/7.85	-8.55/9.92	-9.6/11.37	-12.78/13.82	-13.22/14.26	-19.12/19.29	-12.44/11.19	-12.56/11.22	-11.71/11.82	-10.41/9.53	-9.23/7.75					
15	60	Theta(°)	-11.16/12.01	-10.59/11.06	-11.16/9.04	-7.63/8.45	-9.82/14.11	-18.44/14.56	-11.01/10.67	-12.9/13.32	-8.92/6.15	-5.43/5.68	-5.26/4.45	-4.35/5.17	-6.14/7.16	-8.18/9.03	-9.57/9.02	-9.76/11.67	-15.07/18.54	-17.71/17.44	-19.12/17.76	-15.27/12.29	-11.52/13.16	-12.5/14.12	-15.09/14.21	-12.31/11.07					
15	75	Theta(°)	-6.34/8.09	-9.27/8.53	-8.4/8.44	-10.34/14.6	-17.12/15.45	-11.64/10.27	-9.7/10.43	-10.61/9.72	-7.64/6.55	-5.03/4.77	-3.81/2.85	-2.85/2.73	-2.64/3.22	-4.5/5.78	-7.86/9.95	-16.64/18.5	-18.22/18.2	-18.89/17.16	-16.48/15.45	-12.13/10.41	-10.88/10.81	-12.39/11.22	-9.17/8.61	-10.77/8.95					
15	90	Theta(°)	-4.6/4.2	-4.6/1.79	-5.9/7.22	-8.8/12.29	-18.17/17.54	-17.53/17.88	-14.85/14.72	-11.62/8.42	-5.9/3.97	-4.05/4.91	-2.72/2.03	0.39/0.1	-0.48/1.73	-2.63/3.72	-4.01/5.59	-9.24/11.81	-16.67/19.09	-17.85/16.35	-12.										



Radiated Composite Gain Data of 6GHz U-NII 5 ~ U-NII 8

Appendix B

Theta	2.79/5.54	-6.64/6.04	-5.08/-4.8	-10.51/14.94	-17.65/10.68	-8.67/8.39	-6.19/4.37	-4.9/6.59	-12/-6.81	-3.78/2.86	-4.09/7.67	-12.67/8.82	-10.59/11.17	-12.51/11.61	-7.1/8.35	-15.99/17.77	-11.47/14.59	-12.08/16.17	-13.21/9.83	-14.61/13.77	-12.03/8.53	-12.1/4.21	-4.45/8.66	-7.05/2.36																							
Theta(120°)	-2.79/5.54	-6.64/6.04	-5.08/-4.8	-10.51/14.94	-17.65/10.68	-8.67/8.39	-6.19/4.37	-4.9/6.59	-12/-6.81	-3.78/2.86	-4.09/7.67	-12.67/8.82	-10.59/11.17	-12.51/11.61	-7.1/8.35	-15.99/17.77	-11.47/14.59	-12.08/16.17	-13.21/9.83	-14.61/13.77	-12.03/8.53	-12.1/4.21	-4.45/8.66	-7.05/2.36																							
Theta(127.5°)	-2.59/-1.8	-2.17/-3.92	-4.61/9.35	-17.76/18.55	-11.54/9.24	-9.63/11.1	-7.16/4.19	-3.36/5.38	-9.91/9.68	-5.31/-7.47	-8.23/-13.18	-18.03/16.04	-17/18.36	-17.92/18.07	-8.36/-8.13	-8.98/9.66	-11.02/12.67	-18.06/18.61	-14.49/12.85	-17.12/12.13	-4.71/10.17	-11.47/16.24	-15.05/13.69	-4.96/-3.77																							
Theta(135°)	-7.62/4.77	-7.8/8.54	-13.21/11.37	-8.53/7.72	-6.02/4.25	-3.99/5.83	-10.39/17.93	-12.15/9.58	-9.81/10.42	-10.11/9.69	-10.61/14.05	-14.71/17.8	-17.5/13.09	-10.16/9.81	-10.17/13.06	-18.42/17.52	-8.45/12.2	-18.01/10.16	-9.82/13.02	-9.5/15.13	-11.62/11.05	-7.63/19.46	-9.34/8.8																								
Theta(142.5°)	-11.23/10.54	-18.51/18.75	-14/7.22	-4.78/3.88	-6.58/6.68	-6.66/7.09	-8.69/10.63	-13.24/11.35	-8.15/6.48	-6.8/8.43	-9.4/15.51	-17.92/11.35	-5.48/6.73	-7.63/14.62	-13.56/7.96	-7.78/11.79	-19.02/17.86	-10.91/9.95	-8.78/8.19	-8.43/11.89	-13.72/18.96	-9.59/8.28	-12.18/13.9	-15.24/11																							
Theta(150°)	-6.67/9.74	-7.52/6.99	-6.71/4.17	-4.5/5.01	-6.71/13.91	-18.16/14.71	-12.57/12.65	-11.93/10.62	-9.23/7.95	-7.83/8.79	-8.31/9.05	-12.63/12.47	-6.45/5.81	-5.62/7.67	-9.94/11.45	-9.33/9.35	-8.88/10.94	-18/16.73	-12.87/10.41	-8.56/8.22	-13.16/17.94	-18.34/14.14	-15/13.59	-8.76/5.39																							
Theta(157.5°)	-7.33/7.88	-8.36/13.71	-17.07/11.73	-10.99/9.87	-9.6/14.35	-15.72/16.39	-18.3/17.89	-18.55/18.81	-18.03/18.03	-18.95/12.94	-11.22/9.81	-5.98/3.84	-4.07/4.91	-5.53/13.23	-14.17/8.58	-5.49/4.86	-6.57/9.03	-10.58/9.6	-8.67/7.7	-6.32/5.9	-8.13/13.84	-17.54/18.54	-19.12/9.9	-6.71/6.71																							
Theta(165°)	-9.61/12.5	-17.87/18.75	-17.45/14.72	-10.32/8.27	-8/7.12	-5.61/5.36	-6.36/7.76	-9.97/12.98	-16.37/17.17	-14.89/12.12	-10.28/9.83	-11.25/10.61	-7.9/7.56	-11.48/18.6	-10.71/7.76	-7.41/9.04	-11.84/17.11	-17.76/13.53	-13.44/13.31	-15.44/16.71	-15.4/12.45	-11.98/11.85	-11.53/9.68	-8.55/8.75																							
Theta(172.5°)	-16.73/13.19	-10.44/9.24	-9.57/10	-8.86/8.35	-7.78/7.51	-8.12/8.21	-8.82/9.22	-10.93/11.95	-13.6/14.68	-14.82/14.13	-14.1/12.98	-13.85/17.07	-18.67/17.39	-18.79/18.36	-18.21/18.22	-18.88/14.29	-12.19/12.27	-13.39/16.38	-18.89/17.86	-18.76/18.58	-18.63/18.51	-15.88/12.26	-11.39/13.41	-15.52/17.81																							
Theta(180°)	-18.67/18.16	-14.72/11.79	-9.69/8.63	-7.2/6.44	-5.92/6	-6/6.04	-6.6/7.93	-7.59/8.54	-10.26/12.41	-14/14.79	-16.54/16.63	-15.73/13.73	-12.07/12.09	-13.16/15.02	-18.28/17.95	-18.28/18.67	-18.15/18.22	-17.35/16.31	-12.14/11.59	-10.98/10.34	-10.2/11.41	-11.68/10.64	-10.78/12.13	-14.98/18.01																							
Freq(Hz)	6.995GPol.	PhiAnt.4	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+																							
Gain	Phi(7.5°)	Phi(15°)	Phi(22.5°)	Phi(30°)	Phi(37.5°)	Phi(45°)	Phi(52.5°)	Phi(60°)	Phi(67.5°)	Phi(75°)	Phi(82.5°)	Phi(90°)	Phi(97.5°)	Phi(105°)	Phi(112.5°)	Phi(120°)	Phi(127.5°)	Phi(135°)	Phi(142.5°)	Phi(150°)	Phi(157.5°)	Phi(165°)	Phi(172.5°)	Phi(180°)	Phi(187.5°)	Phi(195°)	Phi(202.5°)	Phi(210°)	Phi(217.5°)	Phi(225°)	Phi(232.5°)	Phi(240°)	Phi(247.5°)	Phi(255°)	Phi(262.5°)	Phi(270°)	Phi(277.5°)	Phi(285°)	Phi(292.5°)	Phi(300°)	Phi(307.5°)	Phi(315°)	Phi(322.5°)	Phi(330°)	Phi(337.5°)	Phi(345°)	Phi(352.5°)
Theta(0°)	-7.04/8.51	-10.38/12.88	-13.79/12.46	-9.08/6.34	-4.31/2.62	-1.42/0.65	0.080/0.33	0.490/0.2	0.28/0.32	-1.54/2.53	-3.86/5.19	-7.13/9.61	-12.28/15.7	-18.36/15.2	-11.48/9.1	-7.56/6.39	-5.34/4.66	-4.27/3.81	-3.08/3.06	-3.09/2.68	-2.8/3.13	-3.51/3.95	-4.38/4.82	-5.41/6.04																							
Theta(7.5°)	-11.97/14.37	-14.71/11.24	-10.06/8.72	-7.83/6.72	-5.74/5.68	-5.2/5.06	-4.73/4.26	-4.2/4.04	-3.77/3.56	-3.51/3.48	-3.54/3.72	-4.14/5.21	-6.82/9.33	-12.82/18.95	-15.82/11.03	-7.8/5.03	-3.22/1.75	-0.70/2	0.730/8	0.780/61	0.36/0.37	-1.37/2.87	-4.66/6.33	-8.08/9.98																							
Theta(15°)	-18.67/18.81	-13.29/11.72	-11.67/11.61	-11.34/11.89	-12.04/12.54	-12.22/12.32	-11.77/10.88	-10.77/9.88	-10.78/11.84	-10.96/8.38	-6.64/5.34	-4.74/4.46	-4.83/4.27	-9.03/13.19	-17.66/14.27	-8.75/5.53	-3.53/2.25	-1.12/0.43	0.050/29	0.11/0.37	-0.91/1.78	-2.67/4.05	-6.26/8.39	-11.94/17.83																							
Theta(22.5°)	-12.66/13.32	-15.44/12.09	-10.18/10.05	-10.8/12.28	-16.21/17.21	-15.91/14.03	-13.75/11.89	-9.44/8.22	-7.11/6.54	-6.9/7.58	-8.24/8.78	-8.43/7.06	-6.34/6.06	-6.73/8.35	-9.4/8.18	-7.34/7.77	-8.53/8.42	-7.77/7.3	-5.85/4.74	-4.44/5.32	-6.06/6.86	-7.53/7.97	-8.78/9.35	-12.11/13.41																							
Theta(30°)	-13.16/12.92	-18.9/16.02	-8.96/7.21	-8.03/10.76	-15.2/13.43	-9.82/7.94	-6.64/6.08	-5.74/5.58	-5.47/5.52	-4.86/4.53	-5.04/6.81	-9/9.21	-6.63/4.88	-4.68/4.44	-4.64/5.54	-6.98/9.77	-12.3/13.42	-11.93/9.19	-8.05/7.62	-7.53/8.66	-11.63/14.44	-18.36/19.09	-18.29/17.15	-12.67/12.21																							
Theta(37.5°)	-5.1/7.39	-10.89/8.8	-5.36/5.2	-6.29/10.15	-17.78/18.32	-18.44/14.03	-10.65/6.66	-5.47/4.78	-5.45/4.73	-7.67/5.26	-3.66/4.06	-6.18/8.24	-10.52/11.78	-12.38/11.33	-10.68/12.87	-12.5/13.11	-13.12/11.52	-9.07/5.56	-3.02/3.1	-5.03/7.22	-8.99/12.88	-19.09/17.5	-13.82/12.07	-18.65/9.75																							
Theta(45°)	-5.03/6.79	-8.14/5.57	-3.69/3.21	-3.41/3.89	-6.63/8.87	-10.44/9.42	-7.91/8.04	-8.11/6.73	-7.18/8.83	-12.57/7.39	-3.08/2.56	-3.99/6.53	-7.82/8.34	-11.72/17.18	-18.5/16.32	-8.64/9.72	-10.14/11.93	-6.79/5.88	-4.92/4.18	-4.81/6.21	-7.26/9.43	-13.98/18.72	-14.49/8.78	-7.84/6.88																							
Theta(52.5°)	-5.15/4.54	-5.34/4.29	-3.53/2.8	-2.16/2.95	-3.36/5.28	-11.6/17.65	-11.36/8.9	-11.26/13	-10.72/8.28	-7.84/7.3	-5.87/5.39	-8.54/9.18	-5.25/6.24	-10.91/10.45	-13.2/10.5	-8.87/11.03	-14.86/18.38	-14.93/9.55	-8.28/5.18	-2.93/3.67	-4.77/5.66	-6.85/10.87	-10.91/6.58	-4.29/5.11																							
Theta(60°)	-5.03/3.96	-3.78/3.16	-3.62/4.32	-4.63/4.78	-4.2/7.12	-11.01/18.72	-8.49/6.95	-9.92/15.4	-11.95/9.83	-6.77/5.01	-6.23/10.35	-18.15/14.24	-4.38/1.88	-6.91/8.96	-17.53/9.12	-18.39/19.12	-17.95/11.98	-9.23/7.93	-7.14/5.7	-3.03/3.49	-3.96/4.65	-9.97/11.25	-6.57/4.92																								
Theta(67.5°)	-5.67/6.07	-4.73/4.05	-6.31/8.19	-9.04/8.39	-9.28/11.2	-17.83/3.72	-8.05/3.4	-1.95/6.59	-10.31/10.08	-6.14/3.21	-4.11/11.36	-18.11/17.23	-8.38/1.52	-1.17/6.93	-14.34/8.72	-10.53/14.53	-12.07/13.16	-11.1/12.87	-10.52/8.45	-6.96/4.35	-2.74/0.17	-1.01/5.07	-12.13/12.74	-5.29/4.38																							
Theta(75°)	-4.89/7.05	-5.51/9.13	-14.64/15.03	-18.38/16.87	-13.27/18.49	-6.04/1.42	1.51/2.86	2.45/3.36	-2.71/4.3	-8.85/7.82	-3.52/5.06	-11/11.41	-16.61/3.56	0.93/1.66	-7.22/8.08	-7.17/8.85	-7.85/6.36	-6.55/7.2	-5.93/6.6	-8.85/8.32	-2.55/0.21	-2.04/4.44	-11.23/8.96	-3.28/3.4																							
Theta(82.5°)	-3.21/5.25	-5.32/9.23	-15.37/16.46	-14.37/18.38	-16.67/11.12	-9.88/3.11	1.51/1.63	1.69/2.76	1.190/2.2	-4.3/8.58	-3.45/2.3	-2.41/1.85	-7.26/9.99	-4.18/6.04	-9.76/10.08	-5.12/3.88	-7.02/11.24	-11.33/9.57	-3.74/4.03	-5.68/4.04	-0.070/29	-1.57/13.33	-6/3.84	-1.59/1.18																							
Theta(90°)	-7.09/5.26	-3.99/6.92	-15.23/9.77	-9.13/12.04	-18.08/9.28	-15.74/6.68	-2.29/1.88	-2.510/0.9	0.110/9.7	-3.28/8.28	-8.72/4.71	-1.410/0.3	-2.57/12.28	-15.85/10.56	-12.1/17.64	-6.26/18.62	-18.65/10.39	-10.35/4.47	-5.39/2.73	-1.17/0.56	-2.74/2.29	-3.46/1.48	-3.24/4.59																								
Theta(97.5°)	-8.89/4.22	-4.15/12.07	-18.75/12.35	-9.4/6.94	-8.32/7.72	-9.23/4.51	-1.43/2.39	-1.83/1.07	-0.02/0.25	-2.84/4.9	-6.89/5.5	-1.220/0.6	-2.6/12.41	-12.69/10.08	-11.28/11.16	-18.21/17.85	-15.65/15.41	-14.74/9.03	-11.35/6.77	-10.08/5.28	-4.49/2.63	-3.78/6.51	-5.16/6.76	-8.36/10.68																							
Theta(105°)	-6.46/4.73	-6.29/13.85	-12.13/7.23	-5.77/5.63	-8.17/8.64	-8.26/8.14	-4.24/1.96	-2.28/0.99	-0.93/0.13	0.171/1.33	-3.85/2.72	0.231/8.3	1.2/5.26	-18.49/18.35	-11.3/10.54	-12.96/17.27	-10.42/11.37	-15.32/10.71	-14.18/8.09	-19.06/8.6	-5.03/2.49	-4.35/1.78	-4.97/9.84	-8.37/7.75																							
Theta(112.5°)	-4.27/2.91	-4/15.33	-3.96/6.26	-8.26/9.22	-8.48/5.96	-6.93/4.82	-3.37/3.8	-9.22/4.25	-1.21/2.74	-4.92/2.51	1.233/3.8	2.77/0.69	-9.5/9.13	-8.04/10.27	-13.37/15.3	-14.75/9.19	-17.36/15.12	-18.75/6.86	-18.85/7.54	-2.6/2.39	-6.46/13.1	-7.14/13.61	-6.73/8.83																								
Theta(120°)	-3.11/2.72	-6.4/17.81	-6.7/5.97	-9.05/12.43	-7.11/8.58	-6.57/6.13	-4.08/6.53	-7.9/6.89	-9.18/9.1	-6.48/4.46	-5.52/8.6	-3.640/19	1.09/1.13	-8.34/17.34	-9.47/7.12	-5.54/12.64	-18.03/8.27	-12.04/9.37	-19.03/7.08	-17.85/10.51	-3.92/4.04	-8.99/9.44	-8.75/16.43	-12.9/10.3																							
Theta(127.5°)	-8.97/12.93	-18.81/11.51	-8.5/10.91	-12.75/16.77	-18.94/7.99	-7.39/6.49	-7.62/8.41	-5.03/10.06	-6.10/11.76	-11.63/10.26	-12.8/18.83	-17.92/9.15	-4.73/4.33	-9.86/10.22	-10.2/6.5	-7.29/9.3	-18.36/8.28	-18.23/8.22	-11.91/10.55	-9.14/5.69	-3.06/5.34	-9.81/14.81	-18.17/16.14	-10.71/9.28																							
Theta(135°)	-12.2/17.96	-18.88/18.36	-18.41/15.78	-8.87/8.06	-8.23/15.25	-10.34/7.61	-7.99/10.62	-10.24/8.22	-8.08/9.64	-10.22/11.69	-13.65/15.34	-11.16/9.57	-6.96/8.56	-16.11/13.2	-12.85/11.64	-10.18/14.42	-15.62/8.64	-18.79/9.3	-9.58/18.99	-18.19/9.83	-10.28/9.55	-12.51/13.79	-13.5/19	-8.36/8.98																							
Theta(142.5°)	-2.03/14.97	-18.51/16.55	-13.22/8.99	-7.37/5.92	-5.8/5.37	-7.96/8.04	-7.31/5.66	-5.88/7.88	-9.21/10.05	-9.69/9.61	-11.27/12.43	-10.14/7.42	-7.34/8.42	-16.09/18.39	-14.96/14.48	-9.62/12.86	-18.65/14.56	-17.97/7.33	-6.49/10.63	-18.54/13.73	-11.36/12.38	-14.53/17.45	-18.05/19.52	-13.57/10.82																							
Theta(150°)	-13.74/15.4	-17.73/18.01	-12.21/7.88	-5.81/6.12	-7.39/8.94	-10.84/18.78	-10.53/12.3	-6.21/5.05	-4.49/5.69	-7.87/11.22	-13.57/14.82	-13.71/10.76	-9.35/10.51	-14.1/17.25	-18.58/18.85	-18.58/18.26	-17.24/16.56	-8.28/7.86	-9.44/11.85	-8.98/8.61	-11.44/17.7	-18.18/13.33	-15.36/15.53	-17.63/15.25																							
Theta(157.5°)	-18.39/17.93	-17.59/18.14	-18.8/18.33	-14.67/13.98	-15.84/18.78	-16.24/8.99	-5.18/3.21	-2.42/2.55	-3.63/5.84	-9.5/15.21	-14.93/11.46	-9.88																																			

