



# Antenna Composite Gain Test Report

FCC ID	MSQ-RTAX6800
Equipment	AX6000 Dual Band Wi-Fi Router
Brand Name	ASUS
Model Name	RT-AX88U Pro
Applicant	ASUSTeK COMPUTER INC. 1F., No. 15, Lide Rd., Beitou, Taipei City 112, Taiwan
Manufacturer (1)	Compal Networking(KunShan) CO., LTD No.520,Nan Bang RD., Economic & Technical Development Zone, KunShan,JiangSu,China
Manufacturer (2)	Datamax Electronics (DongGuan) Co., Ltd. Niu Shan Foreign Economic Industrial Park, Dong Cheng District, Dong Guan City, Guang Dong, China
Manufacturer (3)	ARCADYAN TECHNOLOGY (VIETNAM) CO., LTD. Land plot No. D4-5-6, Thang Long Industrial Park (Vinh Phuc), Thien Ke Commune, Binh Xuyen District, Vinh Phuc Province, Vietnam
Manufacturer (4)	Lih Rong Electronic Enterprise Co.,Ltd. No. 486, Sec. 1, Wanshou Road, Guishan District, , Taoyuan City, Taiwan
Sample Received	Sep. 07, 2022
Start Test Date	Sep. 13, 2022
Final Test Date	Sep. 13, 2022



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
	2G	5G					
2G 5GAnt1	2	1	PSA	RFDPA171300SBLB820	Dipole	Reversed-SMA	2.4GHz, 5GHz UNII 1~3
2G 5GAnt2	3	4	PSA	RFDPA171300SBLB820	Dipole	Reversed-SMA	2.4GHz, 5GHz UNII 1~3
2G 5GAnt3	1	2	PSA	RFDPA171300SBLB820	Dipole	Reversed-SMA	2.4GHz, 5GHz UNII 1~3
2G 5GAnt4	4	3	PSA	RFDPA171300SBLB820	Dipole	Reversed-SMA	2.4GHz, 5GHz UNII 1~3

Note:

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

2G 5GAnt1~4 can be used as transmitting/receiving antenna.

2G 5GAnt1~4 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		
<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	Rex Liao	23.5-24.5 / 40-50	Sep. 13, 2022

Note:

Testing Site Information

Brand Name: TDK

Dimension: 11m\*6m\*6m

Characteristic: Fully Anechoic Chamber

#### 4. Test Facility and Configuration

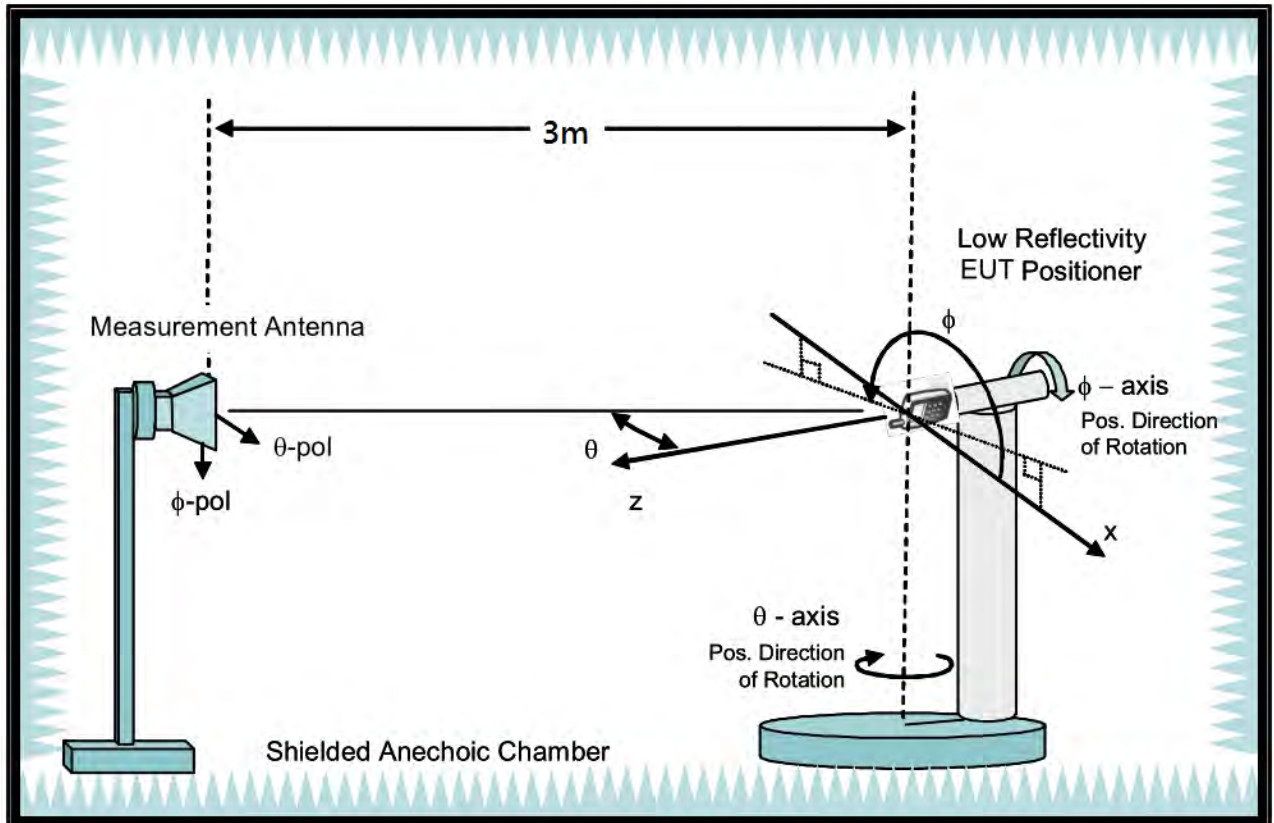
Test configuration: Reference to CITA OTA distributed-axes system configuration.

Chamber: Fully Anechoic Chamber.

Measurement antenna: Dual Polarization Horn antenna

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

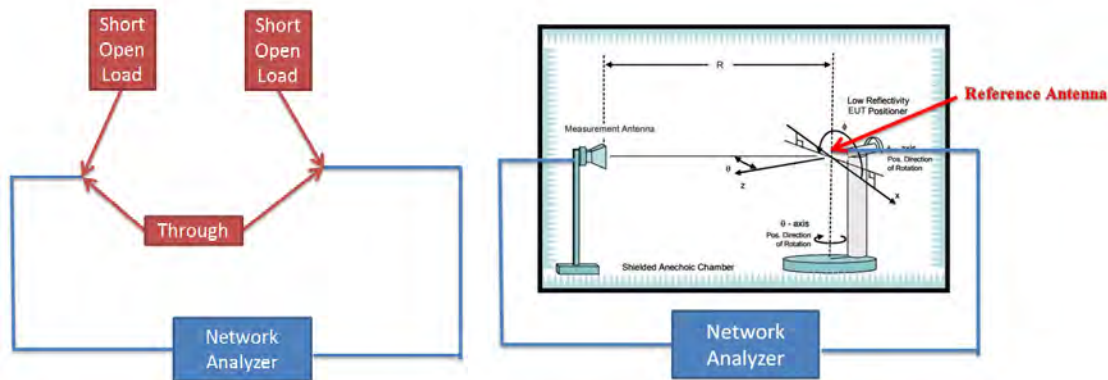
#Reference to CTIA "ctia-test-plan-for-wireless-device-over-the-air-performance-ver-3-7-1"



### 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:

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

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

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

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



## **6. Test Method**

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

DG steps:

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

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



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

#### DG\_1SS max value position

Frequency (Hz)	2.45G	5.2G	5.3G	5.6G	5.785G
Ant. 1 (dBi)	-0.56	-1.92	0.2	0.29	-0.23
Ant. 2 (dBi)	1.13	0.23	-0.6	1.39	2.6
Ant. 3 (dBi)	0.99	-0.23	-0.04	-0.11	1.6
Ant. 4 (dBi)	-0.39	2.7	-0.05	-0.73	0.2
DG [1SS] (dBi)	6.35	6.38	5.9	6.27	7.14
Polarization	Theta	Theta	Theta	Theta	Theta
$\Theta$ (°)	90	90	67.5	75	75
$\Phi$ (°)	90	45	97.5	67.5	90

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

#### DG\_1SS max value position calculation

Frequency (Hz)	2.45G	5.2G	5.3G	5.6G	5.785G
Ant. 1 [10^(G/20)]	10^(-0.56/20)	10^(-1.92/20)	10^(0.2/20)	10^(0.29/20)	10^(-0.23/20)
Ant. 2 [10^(G/20)]	10^(1.13/20)	10^(0.23/20)	10^(-0.6/20)	10^(1.39/20)	10^(2.6/20)
Ant. 3 [10^(G/20)]	10^(0.99/20)	10^(-0.23/20)	10^(-0.04/20)	10^(-0.11/20)	10^(1.6/20)
Ant. 4 [10^(G/20)]	10^(-0.39/20)	10^(2.7/20)	10^(-0.05/20)	10^(-0.73/20)	10^(0.2/20)
Ant. 1 [10^(G/20)] value	0.938	0.802	1.023	1.034	0.974
Ant. 2 [10^(G/20)] value	1.139	1.027	0.933	1.174	1.349
Ant. 3 [10^(G/20)] value	1.121	0.974	0.995	0.987	1.202
Ant. 4 [10^(G/20)] value	0.956	1.365	0.994	0.919	1.023
Sum All Antenna [Amax]	4.153	4.167	3.946	4.114	4.548
DG [10*log(Amax^2/Nant)]	6.35	6.38	5.9	6.27	7.14

Note:

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

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



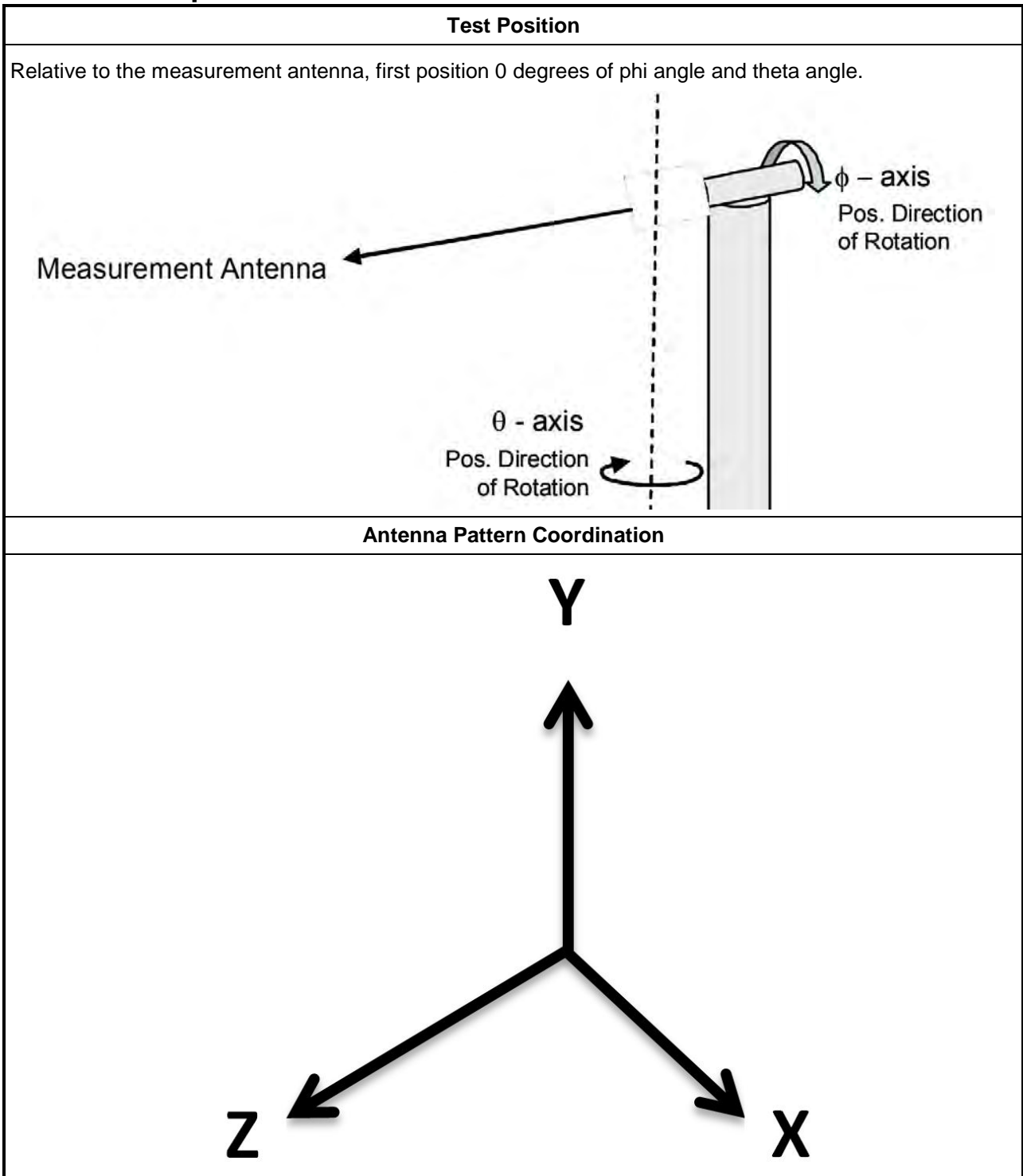
## 8. Summary of Test Result

Freq(Hz)	2.45G	5.2G	5.3G	5.6G	5.785G
Ant. 1 Max Gain (dBi)	2.01	2.66	2.74	3.53	3.93
Ant. 2 Max Gain (dBi)	1.25	1.8	1.59	2.37	2.6
Ant. 3 Max Gain (dBi)	1.61	2.05	1.47	2.32	2.49
Ant. 4 Max Gain (dBi)	1.81	2.7	1.47	3.17	3.83
Ant. 1 Polarization/ $\Theta$ ( $^{\circ}$ )/ $\Phi$ ( $^{\circ}$ )	Theta/60/180	Theta/90/217.5	Theta/90/135	Theta/97.5/217.5	Theta/97.5/217.5
Ant. 2 Polarization/ $\Theta$ ( $^{\circ}$ )/ $\Phi$ ( $^{\circ}$ )	Theta/90/82.5	Theta/90/75	Theta/97.5/225	Theta/75/60	Theta/75/90
Ant. 3 Polarization/ $\Theta$ ( $^{\circ}$ )/ $\Phi$ ( $^{\circ}$ )	Theta/60/112.5	Theta/90/105	Theta/97.5/37.5	Theta/75/105	Theta/67.5/37.5
Ant. 4 Polarization/ $\Theta$ ( $^{\circ}$ )/ $\Phi$ ( $^{\circ}$ )	Theta/97.5/37.5	Theta/90/45	Theta/97.5/352.5	Theta/97.5/330	Theta/97.5/322.5
Max Gain (dBi)	2.01	2.7	2.74	3.53	3.93
DG [1SS] (dBi)	6.35	6.38	5.9	6.27	7.14
DG [2SS] (dBi)	3.35	3.38	2.9	3.53	4.14
DG [4SS] (dBi)	2.01	2.7	2.74	3.53	3.93

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.
4. Directional Gain (4SS) = Directional Gain (1SS) – 6dB. If directional gain is less than max gain, use max gain as directional gain.

### 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	MY46419201	100kHz~8.5GHz	Feb. 21, 2022	Feb. 20, 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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Appendix B – Antenna Pattern of 2.4GHz and 5GHz U-NII 1~U-NII 3.....	Page 27
Appendix C – Test Photos.....	Page 34



## Radiated Composite Gain Data (2.4GHz and 5GHz UNII 1~UNII 3)

## Appendix A

Freq(Hz)	2.45G	5.2G	5.3G	5.6G	5.785G
Ant. 1 Max Gain (dBi)	2.01	2.66	2.74	3.53	3.93
Ant. 2 Max Gain (dBi)	1.25	1.8	1.59	2.37	2.6
Ant. 3 Max Gain (dBi)	1.61	2.05	1.47	2.32	2.49
Ant. 4 Max Gain (dBi)	1.81	2.7	1.47	3.17	3.83
Ant. 1 Polarization/ $\theta(^{\circ})/\phi(^{\circ})$	Theta/60/180	Theta/90/217.5	Theta/90/135	Theta/97.5/217.5	Theta/97.5/217.5
Ant. 2 Polarization/ $\theta(^{\circ})/\phi(^{\circ})$	Theta/90/82.5	Theta/90/75	Theta/97.5/225	Theta/75/60	Theta/75/90
Ant. 3 Polarization/ $\theta(^{\circ})/\phi(^{\circ})$	Theta/60/112.5	Theta/90/105	Theta/97.5/37.5	Theta/75/105	Theta/67.5/37.5
Ant. 4 Polarization/ $\theta(^{\circ})/\phi(^{\circ})$	Theta/97.5/37.5	Theta/90/45	Theta/97.5/352.5	Theta/97.5/330	Theta/97.5/322.5
Max Gain (dBi)	2.01	2.7	2.74	3.53	3.93
DG [1SS] (dBi)	6.35	6.38	5.9	6.27	7.14
DG [2SS] (dBi)	3.35	3.38	2.9	3.53	4.14
DG [4SS] (dBi)	2.01	2.7	2.74	3.53	3.93



# Radiated Composite Gain Data (2.4GHz and 5GHz UNII 1~UNII 3)

# Appendix A

## DG 1SS Result

Freq(Hz)	2.45GPol.	PhiL	Phi(0°)	Phi(15°)	Phi(30°)	Phi(45°)	Phi(60°)	Phi(75°)	Phi(90°)	Phi(105°)	Phi(120°)	Phi(135°)	Phi(150°)	Phi(165°)	Phi(180°)	Phi(195°)	Phi(210°)	Phi(225°)	Phi(240°)	Phi(255°)	Phi(270°)	Phi(285°)	Phi(300°)	Phi(315°)	Phi(330°)	Phi(345°)			
DG(dB)	Phi(0°)	Phi(15°)	Phi(30°)	Phi(45°)	Phi(60°)	Phi(75°)	Phi(90°)	Phi(105°)	Phi(120°)	Phi(135°)	Phi(150°)	Phi(165°)	Phi(180°)	Phi(195°)	Phi(210°)	Phi(225°)	Phi(240°)	Phi(255°)	Phi(270°)	Phi(285°)	Phi(300°)	Phi(315°)	Phi(330°)	Phi(345°)	Phi(300°)	Phi(315°)	Phi(330°)	Phi(345°)	
Theta(0°)	-2.44-2.47	-2.86-3.34	-3.53-3.92	-4.68-5.13	-5.51-5.95	-6.24-6.83	-6.67-6.54	-6.16-4.94	-3.98-3.66	-3.22-3.01	-2.96-2.98	-2.74-2.41	-2.28-2.69	-3.4-4.05	-4.33-4.67	-5.77-6.11	-6.55-6.75	-6.67-7.19	-6.47-5.86	-4.93-4.26	-3.57-2.99	-2.73-2.58	-2.43-2.61	-2.23-2.58	-2.73-2.58	-2.43-2.61	-2.23-2.58	-2.43-2.61	
Theta(7.5°)	-3-3.4	-3.92-4.69	-5.27-5.86	-6.3-6.69	-7.09-6.74	-6.95-7.4	-6.57-7.45	-7.08-6.55	-6.09-5.55	-5.18-4.56	-4.27-3.92	-3.51-2.66	-2.45-2.66	-2.89-3.2	-3.31-3.81	-4.51-4.92	-5.52-6.03	-6.61-6.85	-6.82-7.19	-6.68-6.52	-4.43-3.77	-3.51-2.87	-2.81-3.03	-2.72-2.72	-2.81-3.03	-2.72-2.72	-2.81-3.03	-2.72-2.72	
Theta(15°)	-5.18-5.47	-6.39-7.14	-7.9-8.03	-8.72-9.1	-8.72-8.89	-8.82-8.42	-8.48-8.12	-8.53-8.59	-7.79-7.51	-7.48-6.5	-6.64-5.22	-4.88-4.39	-3.71-3.17	-3.13-3.45	-3.91-4.25	-4.72-5.07	-5.76-6.54	-7.55-7.15	-7.42-7.72	-7.29-5.9	-4.91-4.58	-4.27-4.29	-4.1-4.18	-4.55-5.16	-4.1-4.18	-4.55-5.16	-4.1-4.18	-4.55-5.16	
Theta(22.5°)	-7.59-8.17	-8.24-8.88	-8.41-8.46	-8.86-9.52	-10.11-9.25	-9.28-9.38	-9.62-9.54	-9.73-10.21	-9.65-9.09	-8.29-6.92	-5.74-5.05	-5.02-5.59	-5.32-5.42	-4.35-4.76	-5.24-5.57	-5.71-6.24	-6.65-7.29	-7.48-7.51	-8.1-8.03	-7.69-6.51	-5.51-5.23	-5.34-5.74	-5.14-7.47	-5.14-7.47	-5.14-7.47	-5.14-7.47	-5.14-7.47	-5.14-7.47	
Theta(30°)	-8.45-8.64	-8.4-8.33	-8.48-8.95	-9.01-8.82	-8.89-9.05	-8.93-9.21	-8.57-8.91	-9.51-10.23	-10.07-9.7	-8.24-7	-5.82-5.21	-5.2-5.81	-6.01-5.71	-5.85-6.54	-7.22-7.63	-7.73-7.64	-6.99-7.1	-7.26-7.71	-8.26-8.18	-8.15-7.24	-7.12-6.46	-6.31-6.74	-6.27-5.59	-6.27-5.59	-6.27-5.59	-6.27-5.59	-6.27-5.59	-6.27-5.59	
Theta(37.5°)	-7.17-6.88	-6.72-7.47	-6.57-9.63	-10.39-9.76	-8.1-7.19	-7.13-7.55	-8.07-7.26	-7.18-7.8	-8.41-8.91	-7.7-6.85	-6.26-6.09	-6.04-5.61	-5.28-5.79	-7.07-7.64	-8.17-9.23	-9.37-8.95	-8.42-7.82	-7.47-7.61	-8.8-7.93	-7.03-6.59	-7.13-7.93	-7.84-8.81	-7.95-6.48	-5.55-6.2	-7.95-6.48	-5.55-6.2	-7.95-6.48	-5.55-6.2	
Theta(45°)	-5.43-5.51	-6.1-7.19	-8.48-9.68	-9.41-10.32	-8.9-7.07	-5.84-6.61	-6.88-5.57	-5.08-5.84	-7.09-8.41	-8.74-7.88	-7.45-6.93	-6.53-5.93	-5.46-5.61	-7.48-8.11	-9.07-8.79	-9.07-8.79	-9.48-8.3	-8.13-8.09	-8.08-7.5	-6.43-6.61	-7.23-7.55	-9.43-8.43	-8.95-8.14	-6.51-6.65	-8.95-8.14	-6.51-6.65	-8.95-8.14	-6.51-6.65	
Theta(52.5°)	-5.64-5.4	-5.78-6.33	-7.37-8.28	-8.61-8.98	-8.83-7.72	-6.19-6.66	-7.48-5.68	-4.85-5.83	-7.75-9.39	-9.62-9.06	-7.92-7.38	-7.31-6.97	-7.07-8.02	-7.99-8.68	-9.38-10.15	-10.69-9.25	-8.04-7.77	-7.24-7.9	-8.43-8.59	-8.41-7.1	-7.51-6.68	-9.4-9.24	-7.41-7.43	-7.91-6.7	-7.41-7.43	-7.91-6.7	-7.41-7.43	-7.91-6.7	
Theta(60°)	-8.08-7.05	-6.62-6.13	-6.32-7.15	-9.02-9.48	-9.49-7.69	-5.44-6.13	-6.31-7.63	-10.36-10.24	-10.37-9.88	-8.68-7.8	-8.05-8.33	-8.64-8.01	-7.01-6.98	-7.77-10.02	-12.79-10.95	-8.67-8.55	-8.14-7.96	-8.62-8.72	-8.29-7.38	-7.86-8.74	-8.06-6.39	-5.11-5.14	-6.88-8.4	-6.88-8.4	-6.88-8.4	-6.88-8.4	-6.88-8.4	-6.88-8.4	
Theta(67.5°)	-7.92-8.43	-7.88-6.66	-5.46-6.74	-8.23-8.97	-9.48-6.48	-4.17-5.11	-7.87-7.57	-6.79-8.2	-9.73-9.08	-9.99-10.23	-9.07-8.15	-8.47-8.41	-8.69-7.07	-5.94-6.04	-7.04-8.05	-9.97-9.43	-8.92-8.73	-9.17-7.55	-8.38-8.04	-7.05-7.12	-8.91-10.23	-8.55-6.09	-4.37-3.85	-4.87-6.99	-4.37-3.85	-4.87-6.99	-4.37-3.85	-4.87-6.99	
Theta(75°)	-7.17-7.42	-7.48-6.14	-4.81-5.79	-8.47-9.82	-8.69-5.43	-4.31-5.88	-7.51-6.43	-6.16-7.61	-9.05-10.11	-10.76-9.54	-8.19-8.14	-8.5-7.97	-7.78-7.04	-6.26-6.24	-7.41-7.71	-8.59-8.64	-8.95-8.68	-7.53-6.75	-8.02-7.99	-6.85-7.29	-9.08-9.71	-8.97-6.93	-5.33-5.26	-5.51-6.72	-8.97-6.93	-5.33-5.26	-5.51-6.72	-8.97-6.93	
Theta(82.5°)	-9.47-8.23	-7.99-6.37	-4.75-5.73	-7.77-8.26	-6.64-4.95	-5.16-6.55	-5.25-3.86	-4.41-7.38	-9.62-10.8	-9.31-7.58	-6.95-8.68	-8.45-7.84	-7.52-7.71	-7.05-6.32	-7.82-8.42	-7.31-7.69	-9.74-7.63	-5.75-5.21	-6.89-7.27	-6.89-8.15	-9.27-8.63	-8.29-8.34	-7.98-8.08	-8.93-9.76	-7.98-8.08	-8.93-9.76	-7.98-8.08	-8.93-9.76	
Theta(90°)	-11.47-9.87	-8.69-6.95	-4.52-6.96	-6.22-7.59	-6.96-5.39	-4.75-5.01	-4.94-7.47	-5.36-6.96	-8.63-8.88	-8.24-7.17	-7.28-9.1	-8.03-6.63	-8.08-8.96	-7.61-7.48	-8.69-8.36	-6.07-5.17	-6.52-6.88	-5.73-4.98	-5.03-4.65	-5.73-10.59	-10.17-7.66	-6.19-6.99	-8.42-9.93	-10.21-6.01	-6.19-6.99	-8.42-9.93	-10.21-6.01	-8.42-9.93	
Theta(97.5°)	-10.77-9.92	-8.51-7.09	-5.75-6.1	-7.12-7.39	-7.22-5.5	-4.17-5	-6.05-5.23	-4.49-5.54	-7.2-8.24	-8.21-7.38	-7.19-7.97	-7.77-7.5	-9.61-9.98	-9.87-10.16	-10.31-8.59	-6.12-6.05	-7.14-7.25	-5.92-4.56	-4.52-5.3	-6.81-10.79	-8.89-7.99	-5.24-5.53	-7.49-9.1	-10.54-10.31	-5.24-5.53	-7.49-9.1	-10.54-10.31	-7.49-9.1	
Theta(105°)	-9.39-8.94	-7.87-6.99	-7.67-9.61	-9.76-8.72	-7.77-6.31	-6.63-6.01	-5.23-4.55	-5.17-6.7	-7.72-7.35	-7.2-7.33	-7.91-7.69	-7.51-7.59	-8.81-10.76	-9.61-8.43	-9.21-8.93	-8.27-9.08	-9.31-7.14	-4.87-3.88	-5.24-6.09	-6.9-9.25	-8.81-7.24	-6.49-6.57	-7.18-7.79	-9.11-9.58	-6.49-6.57	-7.18-7.79	-9.11-9.58	-6.49-6.57	
Theta(112.5°)	-8.23-6.34	-5.13-5.21	-6.65-9.59	-11.76-9.92	-8.8-6.34	-4.82-7.44	-5.49-5.88	-6.39-6.35	-5.69-6.36	-7.65-9.82	-9.43-7.34	-7.68-5.87	-9.95-11.64	-11.29-9.38	-8.82-8.49	-8.3-8.74	-8.26-8.05	-7.27-5.13	-4.74-4.38	-6.13-8.3	-10.18-9.15	-8.06-9.71	-7.23-7.04	-7.31-8.24	-8.06-9.71	-7.23-7.04	-7.31-8.24	-8.06-9.71	
Theta(120°)	-7.79-7.78	-6.2-5.82	-8.16-11.17	-10.03-7.96	-7.22-8.45	-3.57-5.13	-8.44-7.16	-5.7-5.25	-5.29-7.1	-9.21-10.92	-7.44-5.66	-6.11-8.71	-8.03-9.65	-10.42-9.01	-7.81-8.3	-8.76-9.91	-9.38-7.45	-4.97-3.9	-3.59-3.5	-4.71-6.93	-7.46-7.47	-6.87-7.12	-8.67-7.86	-7.37-7.74	-6.87-7.12	-8.67-7.86	-7.37-7.74	-8.67-7.86	
Theta(127.5°)	-9.73-7.38	-7.69-8.03	-8.83-8.28	-6.77-6.41	-6.76-5.49	-5.17-6.94	-5.88-6.62	-5.32-6.62	-8.36-9.92	-6.22-8.14	-7.46-6.4	-6.76-7.1	-6.22-8.14	-8.97-6.88	-7.43-10.23	-10.67-12.49	-9.08-5.42	-5.66-2.96	-3.26-2.96	-5.06-6.61	-7.05-6.94	-5.88-6.19	-8.12-8.16	-7.95-8.3	-5.06-6.61	-7.05-6.94	-5.88-6.19	-8.12-8.16	
Theta(135°)	-7.02-7.29	-8.27-8.86	-8.42-6.91	-6.73-7.32	-7.39-6.27	-6.25-5.75	-3.95-4.17	-6.02-7.74	-7.94-7.01	-6.14-6.32	-7.71-9.45	-9.17-8.8	-7.61-9.64	-9.34-8.18	-9.3-11.16	-11.22-9.93	-6.01-4.34	-3.26-3.31	-4.29-5.02	-4.87-5.54	-7.49-9.33	-7.85-7.73	-7.84-7.49	-7.84-7.49	-7.85-7.73	-7.84-7.49	-7.85-7.73	-7.84-7.49	
Theta(142.5°)	-7.11-6.68	-7.87-9.25	-8.6-7.15	-6.03-5.44	-5.35-5.57	-8.62-6.15	-5.98-6.62	-6.99-6.34	-5.96-4.97	-4.88-5.78	-7.66-9.54	-9.45-8.38	-9.6-10.94	-12.47-10.54	-9.8-8.95	-7.31-4.93	-3.71-3.87	-4.26-4.09	-4.3-4.26	-4.4-5.54	-6.84-8.53	-9.38-9.1	-8.99-8.99	-9.24-8.86	-6.84-8.53	-9.38-9.1	-8.99-8.99	-9.24-8.86	
Theta(150°)	-7.05-6.1	-6.33-6.36	-5.95-6.36	-5.95-6.36	-6.93-5.77	-4.71-4.94	-5.55-5.45	-5.15-6.62	-5.45-5.22	-5.89-7.2	-8.38-8.68	-7.99-6.99	-7.73-7.42	-7.27-8.32	-3.72-3.63	-3.72-3.63	-3.72-3.63	-3.72-3.63	-3.72-3.63	-3.72-3.63	-3.72-3.63	-3.72-3.63	-3.72-3.63	-3.72-3.63	-3.72-3.63	-3.72-3.63	-3.72-3.63	-3.72-3.63	-3.72-3.63
Theta(157.5°)	-5.99-5.45	-6.09-6.52	-6.35-6.44	-7.71-7.48	-6.35-5	-4.21-3.96	-4.52-6.18	-5.63-5.98	-6.25-5.88	-5.64-5.73	-5.73-5.51	-4.71-5.39	-6.91-9.96	-11.74-11.21	-9.29-5.85	-4.05-3.09	-3.09-3.38	-3.79-3.67	-3.68-4.04	-4.24-5.18	-6.17-7.48	-9.03-9.52	-9.81-9.93	-7.88-7.23	-9.03-9.52	-9.81-9.93	-7.88-7.23	-9.81-9.93	
Theta(165°)	-5.89-6.05	-6.43-6.22	-6.45-6.88	-5.83-5.44	-4.39-4.9	-5.58-5.56	-5.79-6.49	-7.18-8.08	-8.59-8.05	-7.16-6.41	-5.24-4.38	-3.79-4.58	-6.51-8.94	-9.6-8.48	-6.96-5.89	-6.62-5.03	-4.56-4.5	-4.17-4.25	-4.49-4.67	-7.02-8.31	-9.36-10.13	-8.99-8.46	-7.39-6.12	-7.39-6.12	-8.99-8.46	-7.39-6.12	-8.99-8.46	-7.39-6.12	
Theta(172.5°)	-7.64-7.25	-6.86-6.09	-6.42-5.54	-5.83-3.73	-4.48-5.76	-7.06-7.87	-8.55-5.88	-8.96-9.88	-10.76-10.87	-10.53-9.2	-9.27-7.21	-6.79-7.34	-7.93-8	-7.81-7.09	-7.93-8	-7.93-8	-6.56-5.79	-5.32-5.28	-5.68-7.14	-7.59-8.4	-9.82-8.99	-8.95-8.05	-7.43-7.31	-8.95-8.05	-7.43-7.31	-8.95-8.05	-7.43-7.31	-8.95-8.05	
Theta(180°)	-10.06-9.64	-7.74-6.29	-5.59-5.07	-4.63-4.63	-5.21-6.33	-7.26-7.29	-6.91-6.87	-7.22-7.85	-9.43-10.87	-12.54-12.38	-12.11-11.12	-10.08-9.89	-10.5-10.4	-9.68-9.57	-9.53-9.26	-9.09-8.42	-7.43-6.99	-6.51-6.7	-6.76-7.11	-7.65-8.12	-8.53-8.16	-7.8-7.85	-8.47-9.19	-9.5-10.23	-7.8-7.85	-8.47-9.19	-9.5-10.23	-8.47-9.19	







# Radiated Composite Gain Data (2.4GHz and 5GHz UNII 1~UNII 3)

# Appendix A

Theta	-10.45/-9.65	-9.65/-10.46	-8.92/-9.69	-11.74/-10.11	-11.6/-9.33	-9.23/-9.84	-8.42/-9.51	-9.07/-11.34	-11.96/-11	-11.63/-10	-11.03/-10.42	-6.93/-7.93	-9.52/-9.9	-7.48/-7.81	-9.29/-9.66	-9.27/-8.36	-10.76/-12.52	-11.38/-11.34	-11.53/-9.16	-9.43/-11.77	-12.59/-8.4	-9.91/-9.85	-10.69/-9.25	-7.36/-10.98
Theta (82.5°)	-9.27/-7.47	-9/-9.78	-8.61/-8.51	-12.14/-10.02	-10.87/-11.16	-11.83/-10.66	-8.79/-10.29	-10.6/-7.47	-9.95/-10.93	-10.07/-9.07	-11.21/-10.62	-9.54/-10.81	-10.32/-8.16	-8.88/-8.73	-8.08/-6	-8.49/-7.92	-9.92/-9.64	-10.44/-10.98	-10.12/-11.82	-8.79/-6.96	-8.56/-6.48	-8.53/-5.42	-4.88/-7.66	-8.82/-10.72
Theta (90°)	-10.81/-10.51	-10.25/-11.97	-11.02/-10.95	-8.35/-8.73	-9.39/-8.69	-12.29/-10.82	-12.22/-9.42	-10.14/-9.99	-9.92/-8.36	-10.76/-11.29	-11.49/-9.85	-9.85/-9.14	-9.53/-7.09	-10.44/-9.41	-7.77/-6.76	-10.07/-7.38	-8.64/-11.92	-10.24/-10.69	-11.45/-10.64	-9.28/-9.8	-9.12/-6.85	-9.75/-9.51	-8.88/-7.57	-7.26/-8.95
Theta (97.5°)	-8.12/-7.95	-6.65/-8.43	-9.99/-11.3	-9.61/-7.62	-7.94/-8.97	-11.62/-8.56	-11.09/-9.28	-9.11/-8.07	-9.66/-10.71	-9.04/-9.95	-9.55/-9.24	-7.23/-8.64	-7.82/-8.36	-8.51/-6.07	-6.76/-5.83	-6.61/-9.18	-11.91/-10.97	-10.49/-9.76	-10.79/-10.27	-8.67/-8.11	-7.36/-5.67	-7.45/-7.09	-5.71/-7.44	-6.87/-7.79
Theta (105°)	-9.77/-10.55	-7.6/-7.5	-7.42/-9.97	-10.01/-7.49	-11.49/-11.31	-9.59/-12.03	-11.53/-8.61	-11.4/-7.97	-8.02/-6.72	-6.57/-8.56	-11.27/-12.62	-9.98/-8.69	-7.61/-9.61	-9.39/-9.23	-8.18/-6.79	-9.34/-9.4	-11.85/-10.78	-11.79/-12.32	-12.14/-11.3	-8.56/-10.21	-10.14/-7.13	-8.4/-8.07	-7.54/-8.51	-8.07/-9.48
Theta (112.5°)	-7.41/-9.72	-7.89/-8.89	-9.15/-7.26	-5.35/-7.29	-8.97/-10.58	-10.87/-10.85	-8.18/-11.89	-8.63/-6.15	-6.5/-7.05	-10.49/-12.43	-9.65/-8.28	-6.68/-6.68	-8.81/-7.7	-8.48/-10.84	-10.05/-8.14	-10.62/-8.8	-8.19/-9.23	-6.87/-11.39	-10.23/-11.19	-6.05/-8.73	-5.61/-5.1	-6.52/-8.34	-8.01/-7.46	-7.06/-10.69
Theta (120°)	-9.96/-9.02	-7.6/-7.89	-6.81/-7.57	-3.42/-6.62	-11.62/-8.04	-7.9/-10.96	-10.56/-9.95	-6.86/-6.09	-8.71/-6.7	-5.34/-9	-10.03/-7.89	-9.54/-11.4	-9.21/-8.16	-8.98/-7.61	-8.94/-9.89	-8.86/-8.23	-9.65/-12.39	-11.33/-11.37	-10.51/-12.34	-8.71/-9.67	-6.4/-6.9	-7.83/-9.26	-7.78/-8.46	-8.48/-7.34
Theta (127.5°)	-6.8/-8.36	-10.93/-8.39	-7.74/-6.2	-5.24/-5.09	-6.84/-7.09	-8.77/-7.58	-8.27/-11.09	-6.42/-4.34	-6.2/-5.21	-5.73/-7.44	-7.56/-8.57	-11.73/-10.09	-8.46/-9.96	-10.26/-8.85	-10.34/-10.71	-10.76/-11.87	-11.42/-9.43	-11.95/-10.68	-12.12/-11.06	-8.43/-8.7	-10.09/-10.55	-11.37/-9.88	-6.77/-7.79	-6.92/-6.98
Theta (135°)	-7.15/-8.49	-7.97/-7.78	-9.23/-6.95	-7.59/-8.42	-7.11/-8.47	-8.44/-6.4	-5.7/-6.42	-10.45/-9.52	-6.25/-6.99	-9.99/-8.79	-7.09/-9.34	-8.67/-9.79	-11.24/-10.3	-11.24/-8.78	-8.19/-8.24	-8.51/-8.58	-9.66/-6.27	-9.73/-7.13	-7.69/-10.85	-10.04/-6.71	-7.8/-10.19	-10.06/-6.47	-4.54/-6.9	-7.19/-7.31
Theta (142.5°)	-9.49/-10.13	-7.23/-7.94	-8.62/-5.18	-5.17/-5.54	-6.16/-4.67	-4.07/-7.95	-12.31/-6.46	-6.27/-6.97	-6.09/-8.32	-9.21/-7.93	-6.51/-9.1	-9.5/-12.11	-12.33/-8.85	-7.36/-6.69	-6.93/-6.29	-7.01/-9.76	-8.55/-8.53	-8.4/-7.5	-10.17/-12.2	-7.38/-4.37	-6.64/-9.14	-7.11/-5.62	-5.31/-5.48	-7.5/-10.79
Theta (150°)	-10.12/-9.7	-7.44/-5.48	-6.89/-6.64	-5.05/-2.03	-3.14/-4.88	-5.53/-8.91	-9.94/-5.8	-5.22/-6.44	-7.18/-6.94	-7.11/-8.08	-9.32/-8.56	-8.27/-6.56	-6.48/-7.14	-5.55/-4.98	-4.44/-3.73	-4.26/-3.9	-6.45/-8.11	-8.35/-9.2	-10.51/-7.79	-6.85/-7.29	-7.53/-9.12	-10.15/-10.38	-10.88/-11.68	-10.57/-10.25
Theta (157.5°)	-8.54/-7.85	-6.96/-5.39	-4.17/-3.2	-3.74/-4.32	-5.88/-6.49	-7.09/-7.45	-9.27/-7.47	-7.45/-10.06	-10.42/-9.64	-9.16/-10.01	-8.75/-8.81	-9.08/-9.4	-10.13/-9.93	-8.97/-8.54	-8.55/-5.85	-6.69/-7.75	-7/-5.29	-5.47/-6.86	-8.33/-7.26	-6.22/-6.13	-7.44/-7.48	-7.86/-8.51	-7.71/-8.84	-8.95/-9.01
Theta (165°)	-9.32/-9.77	-9.67/-9.25	-8.65/-8.15	-6.87/-5.32	-5.1/-5.71	-5.86/-6.05	-6.05/-6.29	-7.45/-9.91	-11.4/-10.01	-10.97/-10.92	-11.02/-11.5	-12.14/-11.33	-10.16/-9.6	-8.25/-6.01	-4.43/-5.57	-7.52/-8.3	-7.55/-6.46	-6.35/-7.73	-7.55/-7.02	-6.77/-7.61	-7.19/-6.92	-7.28/-6.67	-7.23/-6.46	-7.09/-8.06
Theta (172.5°)	-11.64/-11.02	-9.29/-7.6	-6.65/-5.52	-5.55/-6.43	-7.17/-7.66	-6.96/-6.24	-6.5/-6.31	-6.76/-6.55	-6.75/-6.78	-7.24/-7.63	-7.56/-7.79	-8.33/-7.88	-8.4/-7.84	-7.58/-8.7	-10.98/-9.59	-8.42/-6.44	-5.09/-4.98	-5.45/-6.02	-5.94/-6.08	-5.84/-5.25	-4.69/-4.97	-5.74/-6.99	-9.2/-9.93	-12.39/-11.99
Theta (180°)	-9.94/-9.98	-7.46/-7.21	-6.81/-7.05	-6.65/-6.77	-6.99/-6.92	-7.8/-8.51	-8.84/-8.54	-8.22/-9	-8.75/-8.39	-8.69/-8.24	-7.62/-7.8	-8.07/-7.85	-7.54/-8.53	-7.77/-7.7	-7.28/-6.86	-6.12/-5.65	-5.84/-6.38	-6.88/-7.62	-7.52/-7.95	-7.62/-7.09	-7.43/-7.66	-8.4/-9.33	-10.47/-11.99	-10.42/-10.78
Freq(Hz)	5.785GPol.																							
DG(dB)	Phi(0°)/Phi(7.5°)	Phi(15°)/Phi(22.5°)	Phi(30°)/Phi(37.5°)	Phi(45°)/Phi(52.5°)	Phi(60°)/Phi(67.5°)	Phi(75°)/Phi(82.5°)	Phi(90°)/Phi(97.5°)	Phi(105°)/Phi(112.5°)	Phi(120°)/Phi(127.5°)	Phi(135°)/Phi(142.5°)	Phi(150°)/Phi(157.5°)	Phi(165°)/Phi(172.5°)	Phi(180°)/Phi(187.5°)	Phi(195°)/Phi(202.5°)	Phi(210°)/Phi(217.5°)	Phi(225°)/Phi(232.5°)	Phi(240°)/Phi(247.5°)	Phi(255°)/Phi(262.5°)	Phi(270°)/Phi(277.5°)	Phi(285°)/Phi(292.5°)	Phi(300°)/Phi(307.5°)	Phi(315°)/Phi(322.5°)	Phi(330°)/Phi(337.5°)	Phi(345°)/Phi(352.5°)
Theta (7.5°)	-7.57/-8.25	-8.82/-8.57	-7.96/-7.72	-8.21/-7.26	-7.39/-7.39	-7.58/-8.28	-8.24/-8.72	-9.38/-9.93	-9.05/-8.75	-8.21/-8.42	-7.94/-7.98	-8.65/-8.86	-8.31/-8.3	-6.8/-6.5	-5.9/-5.63	-4.54/-4.87	-4.94/-4.55	-4.39/-4.51	-4.68/-4.4	-4/-4.41	-4.62/-4.21	-3.9/-3.93	-4.47/-4.82	-5.41/-7.35
Theta (15°)	-3.01/-3.65	-3.93/-4.96	-5.51/-5.68	-6.46/-7.81	-5.99/-5.7	-6.68/-6.63	-5.02/-4.62	-4.99/-5.69	-6.21/-5.46	-4.99/-4.56	-4.22/-4.99	-5.3/-5.47	-5.42/-5.71	-5/-3.64	-2.88/-2.91	-2.29/-2.08	-3.01/-3.36	-3.39/-3.34	-3.88/-3.78	-4/-3.97	-3.49/-3.12	-2.42/-1.55	-1.58/-1.76	-1.88/-2.27
Theta (22.5°)	-2.15/-2.84	-2.41/-3.52	-5.38/-8.63	-8.81/-5.3	-7.06/-6.53	-3.88/-2.73	-2.44/-3.41	-4.63/-4.97	-4.73/-4.99	-4.88/-6.1	-5.86/-4.43	-3.81/-3.32	-4.09/-3.53	-4.01/-2.71	-2.63/-2.94	-1.35/-0.77	-1.21/-1.68	-3.1/-4.03	-3.94/-4.5	-5.61/-3.12	-2.11/-1.95	-3.16/-3.99	-4.23/-3.73	-3.18/-2.56
Theta (30°)	-3.49/-5.42	-6.6/-7.04	-5.21/-6.39	-7.56/-7.83	-4.48/-4.45	-4.16/-3.1	-3.3/-2.79	-3.74/-3.51	-4.53/-6.48	-7.75/-7.06	-7.62/-9.12	-11.15/-6.18	-3.28/-2.99	-3.41/-2.7	-2.88/-4.91	-3/-2.44	-2.44/-2.42	-4/-5.68	-5.33/-5	-4.62/-4.09	-4.72/-5.87	-7.57/-7.5	-6.25/-3.16	-3.3/-3.51
Theta (37.5°)	-6.94/-5.37	-4.51/-5.33	-6.25/-4.31	-3.25/-2.01	-2.18/-4.71	-4.73/-4.73	-5.05/-4.66	-4.65/-3.26	-2.37/-1.81	-3.94/-6.16	-6.5/-4.46	-3.86/-5.61	-7.05/-7.04	-6.9/-6.39	-6.24/-3.31	-3.68/-2.96	-2.26/-5.01	-3.57/-2.39	-4.71/-3.54	-4.8/-5.02	-4.31/-3.5	-2.59/-4.66	-9.52/-10.16	-9.52/-8.89
Theta (45°)	1.282/25	2.332/82	2.852/82	0.90/78	1.11/39	-3/-2.28	-2.45/-1.22	-2.58/-2.17	-0.90/23	2.58/3.15	2.982/07	1.942/04	2.010/31	-0.22/-1.41	-0.53/-1.2	-1.96/-0.39	-2.35/-1.32	-0.490/37	0.571/103	-1.38/-2.54	-1.550/28	-0.45/-0.2	0.820/59	-0.33/-0.29
Theta (52.5°)	3.553/47	3.362/51	1.070/19	-0.78/1.86	0.080/38	2.173/53	3.634/08	0.640/72	0.330/92	-1.680/73	2.573/52	3.012/68	3.444/42	3.322/64	3.093/49	3.043/45	1.58/-0.35	1.32/36	2.751/93	1.09/106	1.572/14	1.512/78	3.353/19	3.974/41
Theta (60°)	0.63/-0.13	0.03/-0.76	0.78/3.48	2.742/68	2.562/77	1.813/06	3.072/54	2.853/73	2.142/16	2.45/183	-1.04/-0.53	-0.140/75	1.591/49	1.41/12	0.20/33	-0.08/1.65	-0.460/13	-0.620/96	0.451/79	-0.871/47	0.070/2	0.26/1.75	1.11/1.42	0.59/-0.02
Theta (67.5°)	3.923/53	3.773/64	5.194/75	2.742/56	0.830/67	1.2/-0.19	-0.03/1.65	3.691/97	2.883/99	3.952/53	2.980/24	2.632/38	1.142/23	1.670/87	-1.69/-0.17	0.61/16	2.092/65	1.572/69	2.021/74	1.090/6	0.520/47	1.532/14	2.833/17	
Theta (75°)	4.674/6	5.784/78	3.944/78	4.174/34	5.545/93	5.986/46	7.146/72	5.975/93	4.693/34	2.793/42	4.936/25	5.094/1	3.985/28	3.463/61	5.245/39	3.582/46	4.624/49	4.415/9	3.935/18	4.674/83	4.392/73	3.694/07	3.844/65	5.274/88
Theta (82.5°)	4.535/01	3.443/41	4.955/87	4.945/09	6.434/92	4.54/89	5.335/07	4.735/54	5.994/69	5.254/48	2.983/7	4.275/15	4.014/9	3.651/67	2.414/35	4.163/46	4.643/61	3.973/39	2.823/14	2.444/93	4.63/12	4.032/55	2.893/19	5.045/57
Theta (90°)	0.33/1.89	3.573/81	0.923/8	2.012/91	3.823/68	3.443/28	3.83/26	3.293/3	2.731/23	2.333/6	2.440/84	2.392/51	2.392/65	1.891/59	1.763/37	3.273/7	3.273/7	3.534/7	3.273/7	1.155/49	2.772/46	4.153/82	3.123/17	3.861/37
Theta (97.5°)	2.34	4.765/15	6.036/29	5.425/69	5.995/89	5.025/06	5.865/14	5.215/75	5.525/36	4.886/07	5.125/21	3.663/41	2.964/74	3.533/3	5.876/22	3.962/58	5.965/22	5.74/53	2.673/58	5.346/29	5.223/55	4.25/34	4.573/97	3.624/07
Theta (105°)	-0.030/93	-0.98/-1.76	0.410/59	0.610/98	1.891/61	-2.13/-3.21	-6.07/-2.8	-1.21/1.05	0.71/1.62	0.912/42	0.56/-1.25	-0.5/-1.17	-1.3/-1.05	-0.67/-2.22	-2.330/51	-1.42/-0.88	0.431/79	-0.61/-2.89	-4.32/-4.55	-1.271/92	1.09/-2.54	0.750/56	-1.95/-3.74	-0.060/24
Theta (112.5°)	-1.29/-2.83	-3.13/-2.6	-1.73/-0.57	-4.34/-4.64	-0.72/-0.8	2.521/81	1.622/05	0.72/-0	-2.98/-6.27	4.71/4.28	-2.56/-0.88	-1.450/38	-2.49/-1.66	-2.71/-3.45	-3.48/-1.43	-4.42/-4.59	-3.28/-3.73	-0.48/-4.18	-3.06/-4.81	-3.21/-1.16	-3.09/-6.08	-3.7/-2.29	-6.7/-2.22	10.142/05
Theta (120°)	0.08/-3.31	-2.43/-2.85	-1.90/88	0.41/-1.27	1.460/75	1.922/79	2.953/32	1.81/83	0.57/-1.1	1.39/-0.14	-0.5/-2.15	-3.48/-1.23	1.31/1.41	-2.1/-0.78	-2.28/-1.61	-2.71/-2.34	-2.46/-0.51	1.1/-0.52	-3.07/-1.13	-2.222/61	0.49/-3.15	-2.35/-1.05	1.38/-1.25	-0.39/1.29





# Radiated Composite Gain Data (2.4GHz and 5GHz UNII 1~UNII 3)

# Appendix A

## Gain Result

Freq(Hz)	2.45GPol.	PhiAnt.1	PhiAnt.2	PhiAnt.3	PhiAnt.4	PhiAnt.5	PhiAnt.6	PhiAnt.7	PhiAnt.8	PhiAnt.9	PhiAnt.10	PhiAnt.11	PhiAnt.12	PhiAnt.13	PhiAnt.14	PhiAnt.15	PhiAnt.16	PhiAnt.17	PhiAnt.18	PhiAnt.19	PhiAnt.20	PhiAnt.21	PhiAnt.22	PhiAnt.23	PhiAnt.24	PhiAnt.25	PhiAnt.26	PhiAnt.27	PhiAnt.28	PhiAnt.29	PhiAnt.30	PhiAnt.31	PhiAnt.32	PhiAnt.33	PhiAnt.34	PhiAnt.35
Gain	Phi(0°)Phi(7.5°)	Phi(15°)Phi(22.5°)	Phi(30°)Phi(37.5°)	Phi(45°)Phi(52.5°)	Phi(60°)Phi(67.5°)	Phi(75°)Phi(82.5°)	Phi(90°)Phi(97.5°)	Phi(105°)Phi(112.5°)	Phi(120°)Phi(127.5°)	Phi(135°)Phi(142.5°)	Phi(150°)Phi(157.5°)	Phi(165°)Phi(172.5°)	Phi(180°)Phi(187.5°)	Phi(195°)Phi(202.5°)	Phi(210°)Phi(217.5°)	Phi(225°)Phi(232.5°)	Phi(240°)Phi(247.5°)	Phi(255°)Phi(262.5°)	Phi(270°)Phi(277.5°)	Phi(285°)Phi(292.5°)	Phi(300°)Phi(307.5°)	Phi(315°)Phi(322.5°)	Phi(330°)Phi(337.5°)	Phi(345°)Phi(352.5°)												
Theta(0°)	-9.52/10.67	-13.35/18.49	-17.79/18.35	-19.17/37	-13.38/10.43	-8.81/7.77	-7.17/6.71	-6.18/5.74	-5.49/5.66	-5.65/6.27	-7.68/8.63	-8.55/8.5	-9.66/12.15	-15.31/18.32	-18.46/18.42	-19.13/13.94	-10.84/8.38	-8.62/8.38	-7.71/7.87	-7.44/7.1	-6.43/5.95	-5.48/5.31	-5.56/6.69	-7.66/9.16												
Theta(7.5°)	9.05/9.8	-12.34/-16.34	-19.64/18.68	-17.93/17.24	-15.04/-11.9	-10.6/9.53	-8.77/9.09	-7.54/7.14	-7.14/7.36	-7.6/8.41	-10.44/-12.04	-12.17/11.45	-12.82/-17.72	-18.97/18.76	-18.65/17.38	-17.23/-12.57	-10.13/9.24	-8.61/8.28	-8.08/8.07	-7.65/7	-6.28/8.67	-5.62/5.59	-6.13/7.25	-7.99/8.52												
Theta(15°)	-11.34/-10.85	-12.07/-14.78	-19.01/-18.35	-18.11/19.18	-18.41/13.5	-11.49/-10.59	-9.38/9.26	-9.65/10.23	-10.97/11.49	-11.67/12.15	-13.87/12.07	-19.17/17.88	-18.15/18.39	-18.68/18.73	-18.58/19.35	-17.22/-13.41	-10.95/9.66	-8.79/8.49	-8.32/9.01	-9.09/8.99	-8.92/8.66	-8.46/8.66	-9.06/10.5	-11.31/12.3												
Theta(22.5°)	-16.29/-16.13	-16.01/-18.34	-17.94/-18.31	-18.25/18.63	-18.75/14.75	-11.85/-10.22	-9.92/10.68	-12.22/14.36	-15.88/15.31	-13.41/12.06	-12.11/12.5	-14.32/17.3	-18.73/19.12	-18.06/16.95	-16.27/14.86	-13.28/11.82	-10.98/10.12	-9.42/8.97	-9.13/9.77	-10.28/11.7	-12.72/14.12	-14.54/14.16	-13.21/13.62	-14.52/15.78												
Theta(30°)	-18.51/18.42	-18.22/19	-18.74/19.3	-18.51/17.96	-18.06/17.37	-12.23/9.4	-8.48/9.39	-12.11/14.48	-14.74/13.8	-12.68/11.65	-10.8/9.77	-9.87/11.3	-13.75/14.89	-14.89/14.85	-16.76/16.62	-13.49/11.05	-10/9.8	-10.11/9.44	-9.47/9.81	-11.19/13.53	-17/18.74	-18.2/17.5	-17.1/18.98	-18.28/18.33												
Theta(37.5°)	-16.93/-15.02	-15.65/-18.41	-18.61/18.42	-15.86/18.89	-18.21/17.38	-11.69/9.05	-8.07/8.84	-10.11/10	-10.17/10.84	-11.63/11.87	-11.37/9.82	-9.6/9.6	-10.95/11.98	-12.67/12.81	-14.98/18.74	-18.97/14.13	-12.19/12.52	-12.39/10.85	-9.53/8.82	-9.41/10.75	-12.66/14.63	-16.5/18.39	-17.53/19.19	-16.36/17.71												
Theta(45°)	-16.58/16.56	-16.47/19.15	-18.84/17.81	-14.61/17.13	-19.12/16.62	-10.96/8.73	-8.15/8.49	-8.13/7.35	-7.92/9.21	-11.44/13.74	-14.45/13.12	-12.01/10.77	-10.07/10.34	-11.71/13.88	-14.97/16.14	-16.61/12.97	-10.61/11.49	-15.28/15.16	-10.37/8.15	-7.88/8.39	-9.26/10.89	-12.65/13.98	-14.47/13.47	-12.54/14.29												
Theta(52.5°)	-16.29/18.17	-17.83/16.95	-16.82/15.47	-13.88/15.37	-18.12/19.07	-11.37/8.48	-8.72/8.11	-7.27/7.27	-8.93/10.98	-14.21/17.45	-17.68/18.2	-16.65/13.89	-12.33/10.9	-10.44/11.79	-15.22/17.83	-15.85/11.07	-8.1/8.04	-11.25/17.53	-12.16/9.59	-9.36/8.08	-7.44/9.07	-10.9/11.61	-11.59/11.16	-11.41/13.39												
Theta(60°)	-18.67/18.86	-16.64/14.04	-12.53/12.65	-13.07/14.74	-18.28/18.36	-10.28/8.77	-7.66/9.98	-12.77/11.94	-13.42/17.39	-18.65/18.7	-18.91/12.27	-12.89/10.31	-8.7/11	-8.31/12.22	-18.9/15.93	-10.49/8.46	-9.11/11.45	-10.03/9.16	-11/10.1	-8.6/8.93	-9.75/9.35	-9.3/10.13	-12.83/12.76													
Theta(67.5°)	-18.04/18.33	-14.03/10.96	-9.51/10.1	-11.49/16.48	-19.1/12.99	-8.4/6.88	-8.24/9.31	-8.18/9.95	-11.23/9.92	-11.01/15.26	-18.85/18.66	-14.61/11.56	-6.71/5.62	-6.11/7.9	-10.95/12.98	-10.43/9.68	-10.19/13.4	-9.36/7.74	-9.29/10.02	-10.45/13.2	-12.6/9.2	-10.5/13.2	-12.6/9.2	-11.02/17.36												
Theta(75°)	-17.06/16.18	-11.05/9.25	9.38/10.85	-13.87/18.64	-16.15/10.1	-9.39/9.13	-9.71/8.64	-6.48/6.82	-9.05/11.36	-13.15/13.21	-15.42/17.4	-14.25/10.4	-9.54/8.65	-7.2/6.19	-6.51/8.1	-9.68/9.9	-11.99/8.13	-7.18/10.03	-11.29/8.62	-8.93/8.69	-9.41/13.3	-18.63/13.52	-9.29/8.76	-10.27/14.59												
Theta(82.5°)	-19.23/15.72	-11.59/10.08	-11.24/13.4	-16.37/17.97	-12.79/10.55	-13.6/11.53	-7.59/5.65	-6.62/6.59	-10.86/9.96	-12.56/17.65	-14.82/10.75	-10.04/9.15	-7.56/6.59	-7.02/8.41	-8.64/8.85	-15.14/9.6	-5.93/6.79	-7.59/8.96	-12.46/11.67	-9.78/11.99	-16.24/18.26	-14.94/13.83	-15.88/18.56													
Theta(90°)	-19.12/15.75	-12.25/10.88	-10.29/11.5	-13.95/16.07	-16.71/13.7	-11.51/7.76	-6.66/7.44	-6.35/7.48	-9.82/10	-11.32/9.75	-10.58/10.77	-9.81/8.81	-8.96/9.66	-8.7/7.26	-10.61/11.99	-7.09/5.57	-4.26/4.95	-9.04/17.75	-12.6/11.17	-12.72/12.58	-10.19/13.78	-15.28/18.69	-17.99/18.13													
Theta(97.5°)	-18.25/15.17	-11.84/10.26	-10.45/12.32	-16.92/17.33	-16.27/9.83	-7.52/7.72	-9.8/8.39	-4.93/5.97	-9.38/10.1	-9.51/10.37	-13.99/16.66	-11.17/9.82	-12.03/14.92	-14.58/13.47	-13.4/12.95	-10.45/8.94	-9.96/8.52	-7.71/6.66	-4.76/5.12	-8.41/12.77	-13.21/12.24	-10.84/11.27	-12.82/15.65	-19.22/19.17												
Theta(105°)	-17.46/17.12	-12.63/10.87	-11.24/14.06	-16.17/17.67	-15.19/6.7	-8.18/27	-9.64/7.69	-6.02/8.25	-10.98/9.72	-7.62/10.33	-14.61/11.99	-12.97/12.84	-14.99/16.72	-11.97/13.1	-12.33/11.22	-11.86/9.21	-6.11/14.4	-3.97/5.22	-8.94/13.68	-11.13/9.61	-10.2/9.39	-10.05/11.89	-16.18/51													
Theta(112.5°)	-19.19/13.46	-10.41/8.95	-10.02/12.58	-16.91/17.36	-18.13/9.33	-6.24/6.16	-8.99/13.43	-9.24/7.32	-6.24/5.97	-10.87/12.37	-17.58/13.11	-9.4/10.75	-14.33/15.35	-13.68/11.69	-12.06/14.03	-13.51/11.68	-10.49/9.24	-7.59/5.66	-4.17/4.45	-7.88/12.71	-12.72/12.58	-10.19/13.71	-8.07/8.88	-11.59/17.52												
Theta(120°)	-18.22/19.39	-15.8/12.1	-13.67/18.89	-13.06/10.22	-10.13/7.05	-5.24/7.06	-18.68/11.73	-5.38/4.59	-6.28/8.98	-12.44/15.07	-12.46/9.4	-8.03/8.58	-10.04/11.93	-12.18/11.6	-12.44/15.6	-18.01/15.83	-9.52/6.2	-5.52/6.2	-5.53/4.85	-6.8/10.7	-11.55/12.37	-12.29/11.11	-10.31/10.03	-10.94/15.41												
Theta(127.5°)	-18.2/14.95	-13.78/14.51	-14.74/10.27	-7.17/17.27	-9.58/9.19	-8.91/11.6	-10.55/14.1	-5.68/11.2	-10.78/14.56	-16.8/15.56	-12.35/9.57	-8.27/8.64	-9.26/9.77	-9.63/10.81	-13.01/16.74	-17.91/17.75	-9.35/9.58	-4.75/6.6	-4.91/4.76	-7.41/10.56	-11.33/11.95	-10.81/9.55	-10.66/11.2	-13.59/18.1												
Theta(135°)	-19.08/18.78	-16.81/14.76	-11.56/9.88	-9.91/11.35	-10.93/8.77	-7.02/5.71	-5.87/8.27	-11.81/11.2	-11.81/11.2	-10.96/11.57	-11.78/11.85	-11.47/13.02	-15.74/18.95	-18.36/16.4	-9.94/5.91	-5.08/4.69	-3.88/3.88	-5.76/5.84	-11.43/15.08	-13.12/11.10	-9.29/10.39	-12.91/18.54														
Theta(142.5°)	-19.25/18.4	-17.72/14.54	-12.76/11.96	-9.71/8.04	-7.64/7.53	-6.01/5.5	-7.16/4.63	-16.05/9.09	-6.7/8.89	-8.31/10.63	-12.86/15.22	-14.62/13.2	-16.38/18.77	-11.77/13.99	-13.79/16.41	-14.74/9.49	-6.98/6.66	-6.66/5.39	-4.01/3.84	-4.81/7.06	-9.48/12.58	-16.5/16.27	-14.08/14.03	-15.34/17.57												
Theta(150°)	-17.97/13.5	-11.12/9.58	-8.58/11	-8.07/10.13	-12.63/9.24	-6.74/7.02	-9.95/5.96	-12.13/7.79	-6.32/6.62	-8.91/11.89	-14.81/14.84	-12.6/11.91	-13.74/17.42	-18.44/16.29	-15.94/14.89	-9.43/6.32	-5.38/5.79	-6.15/6.65	-4.97/4.57	-5.01/6.51	-8.63/10.42	-11.86/13.9	-15.7/18.22	-17.73/17.63												
Theta(157.5°)	-14.32/12.09	-11.44/9.62	-9.22/10.86	-17.02/13.54	-7.84/5.35	-5.04/6.42	-8.86/11.56	-11.81/10.4	-9.16/8.84	-8.61/9	-8.92/10	-12.19/13.7	-18.44/15.93	-12.84/9.97	-7.46/5.73	-5.33/5.99	-6.81/6.52	-5.73/5.43	-5.42/6.36	-7/6.9	-9.99/11.47	-14.94/19.08	-17.98/17.28													
Theta(165°)	-14.26/16.32	-16.53/12.67	-12.22/13.75	-9.46/5.73	-4.16/4.24	-5.44/7.33	-9.52/11.2	-12.85/14.7	-14.43/11.59	-9.7/7.6	-7.15/7.7	-8.39/9.72	-12.06/15.59	-17.02/14.73	-11.53/9.82	-6.83/7.32	-7.06/6.93	-6.59/6.52	-6.63/7.08	-7.74/9.19	-10.45/12.07	-15.29/17.8	-13.92/12.59													
Theta(172.5°)	-18.36/18.32	-16.69/12.32	-10.92/8.29	-5.72/4.72	-5.29/7.04	-9.01/10.65	-11.18/11.71	-13.1/14.25	-15.39/14.19	-12.34/11.07	-10.81/11.67	-13.1/13.77	-14.23/15.44	-17.31/16.09	-15.37/13.4	-11.75/9.53	-9.03/8.75	-8.22/7.68	-7.61/7.79	-7.75/8.27	-8.67/9.19	-10.08/11.48	-12.45/12.46	-12.24/14.08												
Theta(180°)	-17.91/15.06	-11.56/10.33	-9.41/8.03	-7.12/7.28	-8.94/11.54	-13.72/12.32	-10.51/9.47	-9.46/10.05	-11.53/14.07	-17.68/17.93	-18.96/18.54	-18.45/17.57	-18.99/17.88	-17.98/18.46	-16.69/12.65	-10.4/9.51	-9.21/9.4	-9.1/9.32	-9.15/9.62	-10.11/10.55	-11.17/11.57	-12.48/13.3	-13.27/13.91	-15.39/18.59												
Theta(187.5°)	-18.39/8.25	-7.79/6.31	-5.8/6.19	-7.37/9.18	-9.84/9.84	-9.49/10.14	-11.08/13.13	-15.42/19.41	-19.2/18.55	-17.52/18.39	-14.07/10.39	-8.89/9.25	-9.65/8	-6.41/6.22	-7.15/7.79	-7.7/7.22	-7.58/8.58	-9.36/9.89	-11.26/13.18	-17.33/17.55	-18.82/18.5	-17.74/18.11	-16.07/13.77	-10.98/8.77												
Theta(195°)	-8.71/7.87	-7.63/6.96	-5.93/5.69	-6.18/7.26	-8.46/8.26	-8.42/8.66	-9.63/11.34	-13.5/16.03	-18.35/18.27	-17.81/17.94	-16.31/11.84	-10.9/12.34	-14.01/11.29	-8.71/8.22	-9.43/11.05	-10.78/9.95	-10.26/11.73	-13.29/14.09	-15.35/17.84	-19.32/18.49	-19.18/18.7	-17.88/15.27	-14.1/14.27	-12.53/10.25												
Theta(202.5°)	-16.45/15.07	-13.24/12.3	-11.28/9.81	-9.01/8.69	-8.31/8.53	-8.72/8.76	-9.02/10	-12.22/14.82	-15.4/15.97	-17.01/17.9	-16.23/13.71	-14.21/12.72	-18.3/16.95	-12.66/11.75	-13.92/13.07	-14.69/13.21	-13.78/15.99	-18.82/18.43	-17.37/18.01	-16.31/15.64	-17.54/16.51	-15.69/13.96	-13.64/14.11	-14.88/15.93												
Theta(210°)	-8.18/9.2	-10.89/11.94	-11.56/11.12	-12.58/13.28	-10.32/9.18	-9.																														



# Radiated Composite Gain Data (2.4GHz and 5GHz UNII 1~UNII 3)

# Appendix A

Theta	0(22.5°)	0(30°)	0(37.5°)	0(45°)	0(52.5°)	0(60°)	0(67.5°)	0(75°)	0(82.5°)	0(90°)	0(97.5°)	0(105°)	0(112.5°)	0(120°)	0(127.5°)	0(135°)	0(142.5°)	0(150°)	0(157.5°)	0(165°)	0(172.5°)	0(180°)			
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°)	
Gain	-12.14/-11.32	-10.67/-11.25	-12.9/-12.13	-11.68/-10.85	-9.22/-8.63	-9.63/-10.77	-10.46/-11.21	-11.53/-11.02	-10.58/-10.04	-10.81/-11.81	-14.06/-12.14	-10.93/-12.68	-11.48/-13.25	-12.68/-12.47	-13.95/-12.18	-12.95/-14.08	-12.41/-10.57	-11.47/-12.81	-11.78/-12.31	-11.54/-11.45	-12.32/-12.58	-13.89/-15.35	-16.63/-16.22	-17.3/-12.82	
Theta	0(7.5°)	0(15°)	0(22.5°)	0(30°)	0(37.5°)	0(45°)	0(52.5°)	0(60°)	0(67.5°)	0(75°)	0(82.5°)	0(90°)	0(97.5°)	0(105°)	0(112.5°)	0(120°)	0(127.5°)	0(135°)	0(142.5°)	0(150°)	0(157.5°)	0(165°)	0(172.5°)	0(180°)	
Gain	-13.02/-11.59	-12.87/-14.48	-14.14/-12.35	-17.1/-16.2	-11.66/-10.5	-10.79/-11.42	-12.34/-12.16	-11.76/-18.25	-14.35/-14.16	-13.78/-18.48	-17.59/-19.04	-18.34/-18.54	-18.47/-19.39	-18.25/-16.76	-13.96/-12.53	-11.06/-10.13	-9.11/-9.62	-9.8/-10.4	-9.8/-10.4	-9.8/-10.4	-9.8/-10.4	-9.8/-10.4	-9.8/-10.4	-9.8/-10.4	-9.8/-10.4
Theta	0(112.5°)	0(120°)	0(127.5°)	0(135°)	0(142.5°)	0(150°)	0(157.5°)	0(165°)	0(172.5°)	0(180°)	0(187.5°)	0(195°)	0(202.5°)	0(210°)	0(217.5°)	0(225°)	0(232.5°)	0(240°)	0(247.5°)	0(255°)	0(262.5°)	0(270°)	0(277.5°)	0(285°)	0(292.5°)
Gain	-15.41/-12.61	-17.68/-19.91	-19.29/-19.81	-14.28/-17.56	-16.63/-18.66	-10.99/-12.5	-12.46/-10.77	-6.28/-5.65	-4.72/-6.07	-6.73/-10.1	-8.62/-6.62	-8.72/-11.58	-14.95/-16.42	-19.72/-18.28	-14.75/-12.25	-12.92/-12.59	-10.84/-13.21	-9.23/-7.06	-6.71/-7.99	-10.53/-12.24	-10.94/-8.78	-7.89/-7.19	-7.89/-5.96	-9.26/-10.9	
Theta	0(22.5°)	0(30°)	0(37.5°)	0(45°)	0(52.5°)	0(60°)	0(67.5°)	0(75°)	0(82.5°)	0(90°)	0(97.5°)	0(105°)	0(112.5°)	0(120°)	0(127.5°)	0(135°)	0(142.5°)	0(150°)	0(157.5°)	0(165°)	0(172.5°)	0(180°)	0(187.5°)	0(195°)	0(202.5°)
Gain	-5.69/-6.61	-5.21/-4.86	-5.09/-6.36	-8.86/-8.33	-11.5/-15.2	-12.68/-8.8	-6.68/-7.02	-5.46/-4.04	-4.89/-8.12	-10.02/-9.07	-8.38/-8.02	-8.85/-9.29	-9.06/-7.94	-6.77/-7.56	-7.72/-9.78	-14.7/-12.8	-7.44/-7.46	-11.53/-8.86	-5.88/-6.08	-6.32/-7.08	-8.18/-8.81	-8.92/-8.34	-6.96/-6.89	-6.39/-6.93	
Theta	0(22.5°)	0(30°)	0(37.5°)	0(45°)	0(52.5°)	0(60°)	0(67.5°)	0(75°)	0(82.5°)	0(90°)	0(97.5°)	0(105°)	0(112.5°)	0(120°)	0(127.5°)	0(135°)	0(142.5°)	0(150°)	0(157.5°)	0(165°)	0(172.5°)	0(180°)	0(187.5°)	0(195°)	0(202.5°)
Gain	-6.79/-7.73	-5.94/-5.43	-4.92/-6.46	-5.31/-3.41	-7.1/-4.79	-5.41/-5.92	-4.92/-5.6	-4.58/-6.1	-5.67/-6.64	-6.2/-6.64	-11.54/-9.95	-8.79/-9.27	-8.51/-6.75	-6.67/-6.59	-8.19/-10.2	-9.3/-9.22	-11.67/-8.47	-6.14/-7.3	-4.12/-2.7	-3.25/-3.4	-4.64/-5.74	-4.64/-5.74	-9.3/-2.22	-6.75/-6.73	
Theta	0(22.5°)	0(30°)	0(37.5°)	0(45°)	0(52.5°)	0(60°)	0(67.5°)	0(75°)	0(82.5°)	0(90°)	0(97.5°)	0(105°)	0(112.5°)	0(120°)	0(127.5°)	0(135°)	0(142.5°)	0(150°)	0(157.5°)	0(165°)	0(172.5°)	0(180°)	0(187.5°)	0(195°)	0(202.5°)
Gain	-4.08/-4.34	-4.95/-5.68	-3.68/-3.78	-9.11/-3.23	-3.84/-5.2	-3.61/-3.62	-3.32/-3.25	-2.85/-3.33	-3.03/-5.97	-6.21/-5.79	-5.83/-4.89	-3.21/-2.63	-4.02/-8.43	-5.15/-6.48	-7.4/-6.22	-6.3/-9.22	-7.81/-1.68	-6.1/-5.77	-3.88/-5.41	-2.05/-3.4	-3.88/-3.75	-4.64/-5.48	-7.82/-5.72	-4.66/-5.1	
Theta	0(22.5°)	0(30°)	0(37.5°)	0(45°)	0(52.5°)	0(60°)	0(67.5°)	0(75°)	0(82.5°)	0(90°)	0(97.5°)	0(105°)	0(112.5°)	0(120°)	0(127.5°)	0(135°)	0(142.5°)	0(150°)	0(157.5°)	0(165°)	0(172.5°)	0(180°)	0(187.5°)	0(195°)	0(202.5°)
Gain	-8.43/-6.84	-5.37/-4.86	-3.98/-4.9	-7.61/-5.08	-2.74/-4.54	-4.04/-3.23	-3.63/-4.73	-2.84/-9.16	-7.32/-8.03	-7.68/-4.05	-2.74/-3.48	-4.29/-4.05	-4.58/-4.13	-3.49/-4.86	-4.94/-5.9	-4.29/-2.56	-5.13/-5.36	-7.32/-8.58	-5.9/-5.27	-7.96/-3.35	-3.03/-5.56	-5.51/-5.62	-5.43/-7.24	-9.82/-8.8	
Theta	0(22.5°)	0(30°)	0(37.5°)	0(45°)	0(52.5°)	0(60°)	0(67.5°)	0(75°)	0(82.5°)	0(90°)	0(97.5°)	0(105°)	0(112.5°)	0(120°)	0(127.5°)	0(135°)	0(142.5°)	0(150°)	0(157.5°)	0(165°)	0(172.5°)	0(180°)	0(187.5°)	0(195°)	0(202.5°)
Gain	-7.91/-6.32	-5.04/-4.88	-7.96/-4.48	-6.38/-5.5	-2.66/-4.08	-5.67/-5.71	-6.15/-5.65	-8.6/-3	-4.48/-2.17	-3.2/-5.41	-6.86/-3.68	-4.22/-3.81	-4.04/-4.86	-4.83/-4.95	-5.32/-3.6	-3.05/-3.66	-4.24/-4.87	-2.09/-2.75	-5.61/-9.51	-3.07/-4.44	-5.98/-3.07	-5.48/-4.11	-3.95/-4.73	-7.39/-8.1	
Theta	0(22.5°)	0(30°)	0(37.5°)	0(45°)	0(52.5°)	0(60°)	0(67.5°)	0(75°)	0(82.5°)	0(90°)	0(97.5°)	0(105°)	0(112.5°)	0(120°)	0(127.5°)	0(135°)	0(142.5°)	0(150°)	0(157.5°)	0(165°)	0(172.5°)	0(180°)	0(187.5°)	0(195°)	0(202.5°)
Gain	-1.33/-0.46	-0.69/-1.04	-2.77/-1.04	-2.04/-1.48	-0.23/-3.3	-5.55/-3.25	-0.87/-1.48	-0.93/-0.86	-1.35/-2.07	-2.89/-1.55	-2.19/-2.52	-3.65/-3.7	-0.59/-3.17	-4.52/-3.56	-3.67/-3.2	-4.44/-6.2	-3.34/-2.1	-2.87/-0.18	-2.11/-2.57	-2.5/-2.44	-1.26/-0.63	-1.24/-1.63	-1.51/-1.54	-1.93/-0.92	
Theta	0(22.5°)	0(30°)	0(37.5°)	0(45°)	0(52.5°)	0(60°)	0(67.5°)	0(75°)	0(82.5°)	0(90°)	0(97.5°)	0(105°)	0(112.5°)	0(120°)	0(127.5°)	0(135°)	0(142.5°)	0(150°)	0(157.5°)	0(165°)	0(172.5°)	0(180°)	0(187.5°)	0(195°)	0(202.5°)
Gain	0.21/0.06	0.4/0.33	-0.97/-0.9	-0.37/0.43	0.23/0.23	-2.61/-2.3	0.55/0.2	-2.72/-1.41	-0.37/0.42	-1.03/0.94	-2.11/-1.79	-4.44/-3.74	-4.09/-3.93	-1.89/-2.36	-0.85/-2.45	-4.89/-3.36	-4.59/-4.08	-2.96/0.35	-0.31/-0.35	-3.55/-3.17	-1.46/-0.75	0.45/0.53	-0.07/0.7	-2.16/-0.36	
Theta	0(22.5°)	0(30°)	0(37.5°)	0(45°)	0(52.5°)	0(60°)	0(67.5°)	0(75°)	0(82.5°)	0(90°)	0(97.5°)	0(105°)	0(112.5°)	0(120°)	0(127.5°)	0(135°)	0(142.5°)	0(150°)	0(157.5°)	0(165°)	0(172.5°)	0(180°)	0(187.5°)	0(195°)	0(202.5°)
Gain	-1.73/-4.34	-4.46/-4.7	-4.61/-1.76	-3.82/-3.01	-1.51/-2.99	-4.49/-4.28	-2.04/-3.73	-4.37/-3.3	-0.87/-1.67	-0.44/0.51	-2.67/-1.45	0.62/1.72	0.91/-1.01	-2.81/-3.5	-4.91/-8.7	-1.86/-2.62	-3.14/-2.32	-4.28/-4.67	-1.38/-3.25	-4.19/-6.67	-2.51/-2.27	-5.57/-3.73	-2.77/-3.86	-2.65/-1.82	
Theta	0(22.5°)	0(30°)	0(37.5°)	0(45°)	0(52.5°)	0(60°)	0(67.5°)	0(75°)	0(82.5°)	0(90°)	0(97.5°)	0(105°)	0(112.5°)	0(120°)	0(127.5°)	0(135°)	0(142.5°)	0(150°)	0(157.5°)	0(165°)	0(172.5°)	0(180°)	0(187.5°)	0(195°)	0(202.5°)
Gain	-2.75/-1.91	-3.07/-3.66	-4.58/-9.09	-1.99/-3.87	-1.91/-2.85	-3.46/-5.82	-2.81/-2.87	-1.81/-2.05	-3.37/-3.36	-7.36/-4.3	-9.94/-3.19	-3.27/-4.3	-6.03/-18.3	-5.57/-4.95	-7.22/-3.3	-0.41/0.19	-3.46/-3.93	-1.82/-0.41	-1.21/-2.25	-3.83/-3.03	-7.48/-2.11	-3.63/-4.68	-5.36/-2.52	-6.39/-6.93	
Theta	0(22.5°)	0(30°)	0(37.5°)	0(45°)	0(52.5°)	0(60°)	0(67.5°)	0(75°)	0(82.5°)	0(90°)	0(97.5°)	0(105°)	0(112.5°)	0(120°)	0(127.5°)	0(135°)	0(142.5°)	0(150°)	0(157.5°)	0(165°)	0(172.5°)	0(180°)	0(187.5°)	0(195°)	0(202.5°)
Gain	-1.53/-1.84	-1.27/-1.13	-0.96/-2.02	-3.63/-2.95	-2.13/-1.94	-2.58/-1.4	-0.54/0.49	-1.81/-1.31	-2.38/-1.3	-2.56/-1.3	-7.48/0.27	-0.40/0.59	-1.13/0.88	-2.08/0.02	-1.97/1.38	-1.42/-2.22	-2.59/-3.63	-1.97/1.38	-1.42/-2.22	-2.59/-3.63	-1.97/1.38	-1.42/-2.22	-2.59/-3.63	-1.97/1.38	-1.42/-2.22
Theta	0(22.5°)	0(30°)	0(37.5°)	0(45°)	0(52.5°)	0(60°)	0(67.5°)	0(75°)	0(82.5°)	0(90°)	0(97.5°)	0(105°)	0(112.5°)	0(120°)	0(127.5°)	0(135°)	0(142.5°)	0(150°)	0(157.5°)	0(165°)	0(172.5°)	0(180°)	0(187.5°)	0(195°)	0(202.5°)
Gain	-5.99/-5.82	-6.31/-5.06	-6.65/-2.99	-10.86/-6.16	-2.41/-2.82	-6.13/-5.86	-4.48/-5.63	-2.94/-1.86	-0.55/-3.03	1.25/-1.47	-1.84/0.53	-2.09/0.09	-0.54/0.58	-3.73/-3.06	-1.27/0.14	-1.55/-3.63	-2.56/-4.16	-6.63/-5.61	-11.61/-5.58	-3.4/-6.2	-3.22/-3.37	-5.95/-6.88	-4.85/-2.1	-8.45/-2.1	
Theta	0(22.5°)	0(30°)	0(37.5°)	0(45°)	0(52.5°)	0(60°)	0(67.5°)	0(75°)	0(82.5°)	0(90°)	0(97.5°)	0(105°)	0(112.5°)	0(120°)	0(127.5°)	0(135°)	0(142.5°)	0(150°)	0(157.5°)	0(165°)	0(172.5°)	0(180°)	0(187.5°)	0(195°)	0(202.5°)
Gain	-8.77/-12.7	-18.49/-15.11	-7.55/-5.56	-6.18/-11.44	-5.13/-11.8	-12.56/-7.41	-6.89/-6.49	-5.72/-15.74	-7.01/-13.65	-16.25/-11.13	-17.62/-12.1	-11.72/-11.01	-13.51/-12.32	-8.38/-17.66	-7.09/-10.94	-5.24/-7.62	-13.57/-6.1	-9.68/-6.31	-12.4/-8.1	-12.04/-12.88	-5.03/-10.3	-11.86/-8.55	-8.51/-9.1	-12.75/-8.87	
Theta	0(22.5°)	0(30°)	0(37.5°)	0(45°)	0(52.5°)	0(60°)	0(67.5°)	0(75°)	0(82.5°)	0(90°)	0(97.5°)	0(105°)	0(112.5°)	0(120°)	0(127.5°)	0(135°)	0(142.5°)	0(150°)	0(157.5°)	0(165°)	0(172.5°)	0(180°)	0(187.5°)	0(195°)	0(202.5°)
Gain	-6.55/-7.92	-6.78/-6.58	-7.62/-3.39	-4.45/-8.86	-6.29/-7.33	-5.46/-5.24	-5.56/-5.04	-4.05/-3.15	-14.96/-5.99	-7.33/-10.97	-4.76/-10.29	-3.86/-17.62	-10.62/-5.56	-11.76/-11.98	-4.72/-3.32	-4.76/-6.68	-10.01/-9.2	-8.8/-8.4	-8.16/-7.83	-7.31/-9.22	-6.39/-12.53	-8.79/-9.32	-12.65/-9.32	-8.24/-9.32	
Theta	0(22.5°)	0(30°)	0(37.5°)	0(45°)	0(52.5°)	0(60°)	0(67.5°)	0(75°)	0(82.5°)	0(90°)	0(97.5°)	0(105°)	0(112.5°)	0(120°)	0(127.5°)	0(135°)	0(142.5°)	0(150°)	0(157.5°)	0(165°)	0(172.5°)	0(180°)	0(187.5°)	0(195°)	0(202.5°)
Gain	-5.69/-5.7	-5.93/-6.07	-8.71/-18.89	-8.24/-11.39	-8.99/-3.56	-9.95/-8.8	-3.36/-6.43	-8.42/-12.1	-7.84/-3.24	-8.93/-8.7	-4.54/-11.29	-18.75/-8.77	-4.71/-4.95	-5.57/-9.5	-5.49/-7.28	-6.39/-9.63	-3.71/-8.4	-9.48/-5.91	-8.89/-13.09	-10.45/-8.11	-8.57/-10.25	-8.94/-9.72	-6.36/-9.71	-8.68/-6.82	
Theta	0(22.5°)	0(30°)	0(37.5°)	0(45°)	0(52.5°)	0(60°)	0(67.5°)	0(75°)	0(82.5°)	0(90°)	0(97.5°)	0(105°)	0(112.5°)	0(120°)	0(127.5°)	0(135°)	0(142.5°)	0(150°)	0(157.5°)	0(165°)	0(172.5°)	0(180°)	0(187.5°)	0(195°)	0(202.5°)
Gain	-18.89/-18.55	-18.84/-16.16	-13.65/-18.71	-16.45/-9.82	-7.81/-13.1	-5.47/-4.66	-12.03/-11.06	-17.12/-12.84	-8.31/-5.9	-7.57/-4.97	-9.95/-11.24	-10.85/-8.28	-8.71/-7.65	-13.54/-18.4	-18.11/-6.59	-7.89/-8.83	-6.								





# Radiated Composite Gain Data (2.4GHz and 5GHz UNII 1~UNII 3)

# Appendix A

Freq(Hz)	-17.71-19.16	-17.88-14.94	-14.14-11.02	-18.05-18.28	-17.51-11.47	-12.35-14.4	-18.54-17.96	-17.34-17.94	-18.78-15.24	-18.39-11.25	-14.26-18.31	-15.75-10.87	-15.14-15.38	-13.09-17.77	-18.98-17.3	-16.88-15.18	-16.05-19.01	-17.53-18.16	-15.11-11.25	-14.18-15.69	-19.06-15.65	-18.17-17.67	-17.91-15	-17.51-16.02
Theta	(82.5°)	(82.5°)	(82.5°)	(82.5°)	(82.5°)	(82.5°)	(82.5°)	(82.5°)	(82.5°)	(82.5°)	(82.5°)	(82.5°)	(82.5°)	(82.5°)	(82.5°)	(82.5°)	(82.5°)	(82.5°)	(82.5°)	(82.5°)	(82.5°)	(82.5°)	(82.5°)	(82.5°)
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°)
5.785GHz Pol. <td>Theta Ant. 1</td> <td>↓</td> <td>↓</td> <td>↓</td> <td>↓</td> <td>↓</td> <td>↓</td> <td>↓</td> <td>↓</td> <td>↓</td> <td>↓</td> <td>↓</td> <td>↓</td> <td>↓</td> <td>↓</td> <td>↓</td> <td>↓</td> <td>↓</td> <td>↓</td> <td>↓</td> <td>↓</td> <td>↓</td> <td>↓</td> <td>↓</td>	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°)	-18.26-11.93	-17.73-19.35	-16.25-18.67	-12.99-16.51	-18.01-19.6	-15.52-13.09	-13.31-13.5	-14.52-15.07	-15.61-13.93	-11.35-10.37	-10.34-12.2	-14.12-12.29	-12.78-14.24	-13.03-16.41	-16.99-15.83	-17.18-18.41	-18.95-18.88	-17.89-19.04	-19.16-19.93	-17.82-16.4	-15.76-16.56	-14.29-13.87	-17.47-17.83	-18.51-17.69
Θ(7.5°)	-11.69-11.93	-12.06-13.01	-13.8-13.67	-18.46-13.95	-13.56-13.52	-17.49-17.47	-15.99-18.29	-18.08-16.29	-15.19-17.88	-16.53-18.54	-17.36-18.25	-15.79-14.33	-13.93-14.58	-16.01-17.5	-17.69-18.5	-17.55-18.86	-16.99-15.87	-14.12-13.71	-10.58-10.5	-9.57-9.31	-9.56-8.7	-8.99-8.67	-9.05-11.82	-5.48-8.82
Θ(15°)	-7.84-8.4	-8.44-10.56	-9.39-9.8	-10.6-15.5	-13.12-10.54	-11.71-12.94	-9.43-10.07	-11.55-13.47	-15.93-15.37	-16.79-14.78	-13.71-17.42	-18.65-19.08	-18.28-16.02	-14.08-17.24	-16.08-18.8	-17.99-18.02	-15.41-14.1	-8.07-17.6	-13.88-9.74	-8.01-7.16	-7.34-5.66	-5.32-5.31	-4.88-5.82	-5.48-8.82
Θ(22.5°)	-4.86-8.05	-5.68-7.38	-8.85-11.75	-9.39-11.29	-12.49-12.92	-9.07-8.4	-8.60-10.63	-11.17-11.12	-11.55-10.93	-8.83-9.42	-8.43-8.58	-8.86-9.53	-10.29-7.9	-11.34-11.5	-12.51-16.36	-19.12-18.25	-12.14-9.4	-18.61-15.44	-16.09-15.62	-14.54-9.55	-7.75-5.56	-7.24-7.19	-8.39-10.39	-11.65-9.89
Θ(30°)	-8.98-10.42	-9.84-12.41	-11.94-13.75	-16.99-18.38	-9.76-12.65	-11.4-8.62	-9.69-9.62	-9.21-9.38	-12.21-14.42	-15.23-18.33	-19.47-18.47	-15.52-11.9	-10.07-9.74	-9.85-8.41	-9.47-12.93	-7.76-7.06	-15.32-17.57	-15.26-19.19	-18.08-17.92	-16.05-11.98	-11.01-13.27	-15.09-14.36	-19.12-13.71	-13.54-12.2
Θ(37.5°)	-16.92-19.57	-18.32-13.41	-19.28-13.04	-18.09-8.23	-5.85-13.01	-10.08-11.75	-19.18-15.66	-16.91-11.27	-7.91-7.43	-10.41-8.22	-8.21-9.54	-8.59-7.71	-8.69-11.1	-17.4-9.2	-11.08-8.61	-6.03-6.37	-8.91-9.71	-17.11-10.95	-17.43-11.34	-8.15-7.11	-6.71-9.8	-14.84-16	-16.61-15.35	-16.61-15.35
Θ(45°)	-6.03-3.96	-2.92-1.6	-1.96-1.9	-5.81-2.16	-2.46-4.91	-10.29-1.4	-5.21-6.6	-4.51-3.4	-5.03-4.68	-2.58-4.24	-4.04-3.97	-5.07-5.27	-2.69-5.01	-6.34-7.97	-7.26-9.13	-9.39-11.69	-8.03-5.02	-4.31-1.74	-4.32-6.06	-8.73-9.09	-8.21-3.11	-2.06-2.79	-1.23-3.16	-4.35-6.2
Θ(52.5°)	-0.44-0.74	0.08-0.71	-2.76-1.22	-2.10-7.2	-4.41-5.9	-4.77-3.18	-1.85-0.54	-5.41-4.55	-4.91-5.9	-16.24-5.85	4.14-5.27	-6.11-11.84	-8.69-2.26	-3.26-4.58	-6.62-4.09	-3.33-2.55	-7.42-9.02	-2.88-1.61	-6.05-4.83	-5.68-4.7	-4.03-1.5	-1.47-1.92	-0.24-0.72	-0.24-0.72
Θ(60°)	-6.37-3.66	-4.31-4.83	-5.23-2.28	-5.27-5.62	-6.59-4.41	-4.78-4.21	-4.94-4.98	-6.79-6.16	-3.88-3.98	-7.13-5.74	-3.64-3.33	-2.37-7.17	-7.16-4.4	-5.06-3.93	-2.5-3.9	-6.43-2.34	-4.44-6.12	-6.43-2.34	-4.44-6.12	-10.06-9.35	-6.72-5.57	-8.48-8.3	-6.79-3.87	-6.79-3.87
Θ(67.5°)	-4.74-5.46	-6.02-4.62	-6.53-2.33	-3.77-4.73	-3.63-2.7	-2.36-3.38	-6.86-2.64	-2.78-1.29	-0.59-3.55	-3.75-5.26	-1.87-5.35	-2.31-1.14	0.08-0.64	-1.52-3.73	-6.91-7.9	-9.63-3.89	-3.39-5.57	-3.14-1.75	-4.31-1.57	-2.15-0.39	-3.16-2.71	-3.63-7.51	-2.86-2.23	-1.47-4.21
Θ(75°)	0.34-0.24	0.75-0.29	0.45-9.13	-0.03-0.9	-0.71-0.5	-0.51-3.3	-0.23-0.14	-0.46-1.28	-0.93-2.36	-2.17-0.36	0.60-8.1	-1.87-2.93	-4.72-3.75	-3.36-3.16	-1.08-0.99	-4.78-5.93	-1.69-1.85	-1.94-0.58	-2.15-1.58	-1.90-0.54	-1.06-0.6	0.38-0.26	-0.36-0.55	1.38-0.28
Θ(82.5°)	-2.49-2.82	-1.14-1.31	-1.21-1.76	-4-2.95	-0.98-4.39	-0.97-2.37	-3.01-1.3	-0.35-0.25	0.48-1.58	1.08-0.56	0.09-1.65	1.44-0.8	1.75-1.92	-0.26-4.62	-2.12-1.93	-0.51-1.54	0.09-1.79	-0.51-2.44	-3.2-2.4	-7.56-3.01	-1.62-2.35	-1.11-7.3	-3.31-1.79	-3.25-2.41
Θ(90°)	-5.64-4.71	-3.79-3.2	-6.06-3.44	-0.14-1.28	-3.21-2.73	-1.97-1.72	-2.77-1.71	-2.49-2.25	-0.15-4.29	-9.33-1.76	-6.17-2.38	-3.36-9.34	-10.47-6.38	-2.09-2.81	-5.67-5.53	-4.91-2.05	0.17-1.37	-1.26-1.04	-2.64-2.92	-9-1.78	-5.13-4.35	1.18-0.49	-1.41-2.3	-2.96-6.34
Θ(97.5°)	-2.93-1.21	-0.54-0.22	-0.39-1.85	-1.79-0.28	-3.51-1.07	-1.94-1.73	-1.78-0.39	-2.42-3.28	0.61-6.7	0.66-1.4	1.67-1.47	0.13-1.97	-2.81-8.1	-3.45-2.55	1.56-3.93	0.23-1.29	2.75-6.03	1.61-3.75	-3.44-3.1	-4.04-0.75	-2.13-3.48	-3.26-5.7	-2.62-0.7	-3.21-2.23
Θ(105°)	-10.41-5.55	-6.98-7.33	-8.35-9.95	-7.33-6.93	-4.87-4.51	-5.34-6.31	-11.45-4.91	-7.05-1.74	-4.59-4.49	-4.78-1.84	-4.59-4.49	-4.78-1.84	-9.19-3.19	-2.78-1.02	-0.75-5.63	-1.86-5.51	-4.71-18.13	-3.27-2.09	-3.18-8.63	-7.86-10.85	-11.62-2.25	-4.76-11.74	-4.1-8.65	-6.64-5.29
Θ(112.5°)	-9.32-10.91	-8.27-7.21	-5.71-3.57	-13.68-8.4	-5.78-9.62	-8.56-7.33	-6.47-8.88	-4.06-8.16	-15.32-10.01	-5.99-3.49	-6.53-6.59	-7.98-6.5	-13.29-13.99	-10.16-9.47	-5.38-2.96	-6.53-16.46	-7.81-2.77	-7.23-11.83	-7.91-10.89	-11.39-1.22	-8.96-8.38	-7.59-2.04	-16.15-7.63	-4.56-4.44
Θ(120°)	-6.01-5.69	-4.69-7.53	-9.71-9.19	-7.27-11.32	-6.36-7.25	-3.53-8.41	-2.91-2.22	-6.17-7.48	-6.75-8.02	-2.36-9.42	-3.02-3.66	-7.57-8.17	-2.71-1.28	-7.09-11.45	-7.25-7.78	-6.37-10.56	-5.25-4.31	-3.51-5.6	-10.53-5.65	-10.16-3.39	-7.08-4.97	-5.96-11.7	-8.29-2.22	-6.27-9.51
Θ(127.5°)	-13.74-13.11	-13.97-15.34	-13.36-11.6	-11.53-18.18	-8.85-6.64	-4.98-5.97	-1.95-10.31	-7.66-14.77	-5.96-6.05	-6.65-11.3	-16.81-14.23	-11.35-14.07	-6.09-7.28	-8.71-7.7	-5.93-7.51	-6.98-13.93	-8.41-10.27	-18.29-8.97	-8.45-4.92	-7.63-18.5	-10.16-12.16	-17.52-17.29	-10.04-10.72	-10.04-10.72
Θ(135°)	-10.54-17.79	-18.74-15.91	-16.75-10.36	-11.51-14.72	-11.77-9.04	-12.89-11.22	-10.75-16.54	-19.11-13.3	-12.11-18.99	-13.21-7.77	-12.54-11.56	-13.67-17.47	-12.77-5.27	-9.09-17.45	-12.87-6.71	-3.71-4.43	-11.42-13.1	-17.49-17.84	-17.39-12.14	-9.57-18.59	-18.38-11.57	-10.29-13.91	-14.09-7.32	-10.81-8.36
Θ(142.5°)	-4.8-4.41	-5.03-5.03	-7.99-12.55	-14.37-10.38	-15.29-18.07	-18.92-13.76	-10.96-14.99	-18.45-19.02	-8.83-15.74	-18.21-18.88	-12.58-13.17	-18.91-14.29	-8.16-10.09	-10.02-12.54	-11.05-9.05	-7.35-13.78	-11.31-16.96	-15.05-19.92	-12.91-15.96	-19.37-11.91	-11.77-18.15	-13.51-11.5	-11.06-18.61	-15.02-8.42
Θ(150°)	-5.46-6.52	-6.16-6.89	-6.25-10.32	-10.29-9.43	-7.59-8.37	-9.27-10.89	-6.05-8.52	-5.85-7.03	-12.78-14.77	-13.61-8.82	-6.74-8.59	-8.83-11.95	-6.31-9.42	-6.62-9.42	-15.19-12.62	-6.92-9.42	-5.51-6.67	-11.01-13.45	-9.58-7.78	-10.31-7.41	-6.97-8.2	-4.72-3.84	-7.39-1.66	-7.39-1.66
Θ(157.5°)	-3.78-3.01	-2.94-3.36	-4.25-4.93	-5.04-6.4	-8.3-8.83	-4.86-2.9	-4.35-8.62	-9.21-5.52	-5.55-8.37	-7.51-7.46	-8.59-6.61	-5.29-5.71	-4.61-2.99	-0.92-0.58	2.11-4.07	-6.38-5.5	-4.83-6.22	-8.12-6.3	-5.87-6.81	-10.16-10.53	-4.62-3.21	-5.08-7.55	-10.51-9.06	-6.47-4.92
Θ(165°)	-14.27-13.75	-12.31-11.86	-10.49-9.21	-7.94-7.38	-9.84-8.01	-4.62-7.05	-10.85-7.23	-5.89-5.82	-5.94-8.2	-9.53-11.21	-12.58-14.72	-10.38-7.85	-8.62-4.32	-4.73-4.75	-5.33-8.69	-3.61-3.34	-4.18-6.47	-8.04-6.49	-6.29-5.16	-8.17-11.93	-12.51-5.72	-10.78-12.56	-10.83-11.93	-10.83-11.93
Θ(172.5°)	-8.27-9.46	-9.25-10.32	-13.52-13.86	-16.89-12.33	-11.09-11.81	-13.04-9.41	-5.85-3.15	-6.74-8.82	-9.64-12.85	-13.06-9.43	-6.33-5.94	-8.81-9.33	-7.98-9.09	-8.41-7.78	-9.83-9.92	-7.25-8.53	-11.71-14.63	-12.82-10.29	-8.57-7.82	-6.25-5.72	-8.86-7.24	-7.06-9.86	-7.06-9.86	-7.06-9.86
Θ(180°)	-15.46-15.57	-14.42-14.42	-17.41-17.86	-18.64-13.73	-12.69-13.7	-15.55-13.81	-13.11-16.93	-17.92-18.14	-12.71-11.15	-11.41-14.01	-14.66-15.53	-16.21-18.39	-18.11-14.05	-12.71-11.07	-10.49-11.3	-12.53-12.69	-11.62-12.81	-13.83-15.44	-19.37-17.58	-17.75-18.71	-18.59-18.48	-18.64-15.49	-16.52-16.38	-14.94-14.15
5.785GHz Pol. <td>Theta Ant. 2</td> <td>↓</td> <td>↓</td> <td>↓</td> <td>↓</td> <td>↓</td> <td>↓</td> <td>↓</td> <td>↓</td> <td>↓</td> <td>↓</td> <td>↓</td> <td>↓</td> <td>↓</td> <td>↓</td> <td>↓</td> <td>↓</td> <td>↓</td> <td>↓</td> <td>↓</td> <td>↓</td> <td>↓</td> <td>↓</td> <td>↓</td>	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									



# Radiated Composite Gain Data (2.4GHz and 5GHz UNII 1~UNII 3)

# Appendix A

Theta (112.5°)	-18.41-18.7	-18.721-15.62	-14.371-9.05	-10.951-9.97	-11.141-13.19	-15.241-18.12	-17.971-18.13	-18.051-18.89	-12.711-10.46	-13.921-17.81	-17.551-18.02	-18.081-18.16	-17.411-18.76	-13.691-13.62	-15.171-6.99	-11.971-11.62	-12.151-18.72	-19.731-18.8	-19.191-19.01	-18.511-17.29	-17.541-18.01	-11.651-13.47	-14.351-19.24	-18.231-17.26	
Theta (120°)	-17.741-16.04	-16.341-17.52	-18.221-22.06	-15.151-12.81	-14.281-16.47	-16.081-16.04	-12.671-17.15	-19.031-18.76	-12.311-7.18	-8.841-9.16	-7.041-7.35	-7.431-8.43	-10.361-13.19	-17.621-18.12	-18.981-17.7	-17.641-18.5	-17.411-19.05	-18.521-18.49	-19.191-19.93	-15.491-13.75	-15.811-16.8	-15.651-18.27	-16.841-19.15	-18.391-18.69	
Theta (127.5°)	-12.941-11.95	-17.251-18.92	-18.621-18.09	-15.171-13.79	-13.721-17.21	-17.721-19.07	-14.151-13.89	-17.831-17.23	-15.861-11.69	-11.151-10.7	-11.531-12.9	-15.621-18.06	-11.611-15.11	-16.611-14.09	-9.621-5.51	-12.411-12.07	-12.451-10.87	-12.451-10.87	-12.451-10.87	-12.451-10.87	-12.451-10.87	-12.451-10.87	-12.451-10.87	-12.451-10.87	-12.451-10.87
Theta (135°)	-18.771-17.66	-12.541-10.67	-13.141-12.55	-12.921-15.74	-15.141-11.92	-11.771-13.75	-15.561-15.23	-11.991-7.27	-6.111-9.33	-12.931-14.97	-19.231-18.69	-16.771-17.78	-10.341-15	-11.761-19.09	-18.531-18.63	-13.851-12.72	-13.211-14.09	-17.861-18.65	-15.661-12.74	-13.431-15.8	-19.241-16.3	-18.221-18.28	-18.231-14.04	-13.951-18.22	
Theta (142.5°)	-12.211-9.83	-11.261-13.89	-14.511-19.41	-14.951-11.2	-10.061-10.42	-12.431-13.75	-17.761-13.79	-11.011-9.48	-9.481-14.68	-17.581-14.58	-15.751-18.46	-15.631-13.96	-18.581-18.51	-16.611-18.03	-15.811-7.15	-6.311-12.12	-19.241-18.16	-18.281-17.13	-18.611-19.35	-13.371-14.48	-18.591-14.21	-16.671-16.13	-12.131-9.58	-9.741-12.42	
Theta (150°)	-18.921-17.59	-10.141-6.33	-4.671-3.5	-2.871-3.35	-4.721-6.22	-7.551-10.34	-16.311-17.74	-16.581-14.84	-11.151-10.7	-11.531-12.9	-15.621-18.06	-11.611-15.11	-16.611-14.09	-9.621-5.51	-12.411-12.07	-12.451-10.87	-12.451-10.87	-12.451-10.87	-12.451-10.87	-12.451-10.87	-12.451-10.87	-12.451-10.87	-12.451-10.87	-12.451-10.87	
Theta (157.5°)	-11.611-8.63	-6.311-5.33	-4.531-4.6	-5.941-8.08	-10.411-12.85	-16.381-18.2	-18.321-17.66	-13.181-9.5	-7.511-7.52	-8.031-8.2	-8.131-7.99	-8.331-8.64	-8.721-9.42	-10.611-11.2	-9.171-8.26	-9.651-13.73	-18.831-16.38	-12.541-9.98	-10.641-14.45	-19.151-19.15	-19.331-18.75	-18.681-17.7	-15.441-18.18	-13.831-13.7	
Theta (165°)	-11.881-9.82	-9.191-8.37	-9.281-11.13	-13.551-14.68	-16.941-19.14	-18.111-18.22	-17.981-15.62	-14.121-12.21	-10.861-10.76	-11.321-11.55	-12.121-9.9	-13.741-17.23	-17.881-16.46	-14.191-13.35	-14.141-16.72	-17.761-17.96	-18.711-17.25	-16.931-13.54	-13.561-15.18	-14.541-14.34	-12.741-11.41	-10.621-10.03	-10.281-11.62	-12.051-11.86	
Theta (172.5°)	-13.751-14.52	-14.611-14.09	-17.381-18.52	-19.311-18.78	-17.431-18.47	-16.641-15	-13.881-12.82	-14.021-16.63	-18.281-17.71	-14.991-13.7	-16.171-15.98	-19.281-18.39	-18.111-17.57	-13.561-12.98	-13.691-15.23	-16.991-17.14	-17.511-18.16	-14.121-12.65	-11.891-12.24	-11.541-11.62	-10.721-10.38	-10.021-9.61	-9.411-9.87	-10.961-12.26	
Theta (180°)	-10.191-9.48	-9.811-9.58	-9.651-9.53	-9.451-10.07	-11.171-12.81	-15.631-16.89	-17.621-18.73	-18.721-14.68	-12.091-9.74	-8.861-8.71	-9.111-10.54	-11.871-13.2	-15.251-15.95	-15.281-13.89	-12.651-12.32	-13.181-14.06	-15.841-17.67	-17.941-19.12	-17.611-17.76	-17.421-17.59	-16.911-15.58	-14.921-14.43	-13.871-12.43	-11.821-10.85	
Gain	Phi(7.5°)	Phi(15°)	Phi(30°)	Phi(45°)	Phi(60°)	Phi(75°)	Phi(90°)	Phi(105°)	Phi(120°)	Phi(135°)	Phi(150°)	Phi(165°)	Phi(180°)	Phi(195°)	Phi(210°)	Phi(225°)	Phi(240°)	Phi(255°)	Phi(270°)	Phi(285°)	Phi(300°)	Phi(315°)	Phi(330°)	Phi(345°)	
Gain	-18.621-18.96	-18.551-17.04	-14.91-12.94	-11.581-11.37	-11.061-10.12	-10.691-9.59	-8.151-7.86	-7.991-8.76	-9.171-9.97	-10.011-11.11	-10.341-11.98	-14.291-17.47	-18.391-18.47	-18.421-19.35	-18.041-18.57	-17.661-15.56	-13.741-12.15	-11.271-10.47	-9.971-10.81	-11.411-12.98	-14.491-16.42	-17.791-18.37	-18.091-18.67	-19.131-18.62	
Theta (7.5°)	-13.481-14.3	-17.071-18.5	-17.361-14.1	-12.411-13.7	-9.841-9.09	-9.351-10.03	-11.251-11.95	-13.141-14.04	-15.441-16.58	-17.891-17.55	-17.481-17.07	-14.561-13.63	-14.031-14.23	-14.951-16.39	-15.141-14.5	-13.591-12.3	-12.041-10.74	-9.681-9.05	-8.611-7.7	-7.621-7.6	-8.051-8.31	-8.731-9.58	-9.851-10.56	-11.361-12.76	
Theta (15°)	-4.871-4.74	-7.661-7.97	-8.571-8.53	-8.371-7.29	-6.071-6.3	-6.561-6.5	-6.321-6.46	-6.181-5.55	-4.881-4.68	-5.041-6.14	-7.711-10.27	-12.831-13.88	-16.101-10.99	-9.711-9.17	-9.241-8.69	-8.611-8.61	-7.641-7.06	-6.911-7.2	-7.41-8.96	-9.161-9.75	-10.261-10.96	-11.341-11.29	-11.361-10.25		
Theta (22.5°)	-6.751-4.59	-3.861-3.99	-4.731-5.04	-4.991-4.68	-5.481-7.11	-9.831-12.12	-13.581-13.95	-11.591-8.61	-6.361-5.17	-4.721-4.38	-4.211-4.02	-4.921-6.13	-7.851-9.04	-9.091-9.17	-8.341-6.95	-6.711-5.32	-4.671-4.43	-4.481-4.92	-5.21-4.44	-5.211-6.72	-7.791-7.96	-8.241-8.01	-8.221-8.59	-8.231-6.88	
Theta (30°)	-4.121-7.47	-5.41-6.53	-9.221-12.11	-12.971-18.01	-12.841-18.86	-12.221-22.91	-14.751-14.64	-15.831-16.67	-18.061-18.96	-15.511-8.13	-4.951-4.2	-4.181-4.05	-4.341-5.13	-5.561-4.99	-3.611-3.04	-2.931-3.05	-3.431-5.01	-5.231-3.79	-3.61-5.02	-6.721-6.2	-5.51-4.97	-4.511-4.41	-3.811-4.78	-3.911-4.84	
Theta (37.5°)	-1.711-7.69	-10.031-13.92	-15.041-11.16	-9.091-8.54	-5.991-3.78	-3.211-4.9	-11.081-3.6	-8.251-4.8	-9.391-2.89	-6.911-4.71	-6.271-2.47	-3.391-3.21	-2.861-2.47	-3.391-3.21	-2.861-2.47	-3.391-3.21	-2.861-2.47	-3.391-3.21	-2.861-2.47	-3.391-3.21	-2.861-2.47	-3.391-3.21	-2.861-2.47	-3.391-3.21	
Theta (45°)	-15.211-10.12	-5.741-5.3	-4.451-2.45	-1.861-2.26	-1.61-2.19	-2.91-2.51	-1.081-1.46	-2.741-4.02	-4.151-3.61	-4.141-5.96	-6.641-5.35	-5.061-7.33	-11.571-14.49	-7.611-3.99	-2.491-1.74	-1.361-3.97	-5.331-3.42	-2.171-2.32	-2.681-2	-1.491-2.05	-3.771-5.45	-4.871-2.91	-2.131-4.48	-9.961-13.85	
Theta (52.5°)	-4.021-1.53	-0.331-7.05	-0.991-0.8	-2.261-4.21	-6.771-9.07	-7.61-6.99	-9.871-11.02	-7.521-6	-5.361-3.53	-5.391-3.49	-4.081-3.74	-5.051-5.07	-4.11-4.53	-7.091-8.51	-7.231-9.53	-4.721-5.11	-2.541-3.71	-5.31-6.25	-5.591-7.12	-6.811-4.4	-5.411-3.92	-4.111-6.5	-7.761-6.34		
Theta (60°)	0.611-2.4	0.131-1.98	-3.411-7.3	-5.591-4.9	-6.731-14	-2.341-4.04	-5.991-4.8	-4.981-2.8	-6.751-4.06	-4.731-2.28	-1.071-1.6	-0.681-3.71	-5.331-4.23	-3.811-6.21	-8.991-6.45	-3.771-5.92	-11.221-6.72	-3.691-4.27	-6.71-6.29	-3.571-5.33	-6.671-4.52	-4.451-2.74	-0.811-3.0		
Theta (67.5°)	-2.641-4.95	-6.381-4.47	-2.010	0.930-2.2	-0.891-1.17	1.530-3.9	-0.111-6.9	1.741-0.47	-3.051-3.11	-3.61-9.57	-6.671-2.85	-2.351-3.02	-2.551-2.03	-1.411-2.5	-2.921-4.83	-2.051-2.37	-8.351-5.82	-2.121-3.57	-5.161-4.29	-1.441-2.31	-3.231-0.84	-1.021-1.19	-0.8501-14	1.011-0.52	
Theta (75°)	-4.341-6.22	-3.811-2.1	-1.0201-5.3	0.021-1.13	-0.9201-5.3	0.9601-3.8	-0.8201-14	1.0801-9.9	0.2901-5.2	1.3101-16	-2.891-4.92	-1.211-2.81	-2.061-2.96	-2.911-2.57	-1.561-2.09	-3.221-3.31	-9.261-2.78	0.671-4.02	-1.811-8.2	0.021-5.1	-2.621-3.44	-4.821-3.02	-4.821-3.02	-11.811-8.4	
Theta (82.5°)	-3.411-3.28	-1.641-2.99	-4.221-6.9	-4.531-5.82	-6.491-5.21	-3.841-5.53	-7.461-3.27	-5.741-3.66	-6.341-4.74	-1.6801-6.7	-2.271-1.6	-3.821-8.3	-4.281-4.02	-3.741-4.1	-5.311-5.3	-3.961-2.1	0.751-1.73	-4.581-2.62	-0.411-3.48	-5.771-4.21	-3.171-3.72	-5.681-2.09	-1.231-0.25		
Theta (90°)	-3.981-2.98	-2.261-3.03	-4.11-5.3	0.2301-1.4	0.5111-4.5	1.801-0.2	-1.491-0.33	0.5401-3	-0.611-3	-1.021-4	-3.511-0.55	-3.551-2	-1.871-2.33	-2.851-2.54	-2.421-0.64	-0.311-2.71	-6.191-3.01	0.181-3.03	-3.711-4.19	-1.651-3.79	-3.051-0.19	-1.241-5.86	-3.781-1.39	-0.991-1.5	
Theta (97.5°)	-6.331-7.1	-7.861-8.31	-8.41-2.2	-3.451-3.1	-0.931-4.5	-3.021-8.85	-3.451-1.6	-4.691-2.81	-1.641-2.89	-0.721-0.33	-4.911-2.4	-5.461-1.2	-1.391-2.73	-11.071-8.37	-6.531-3.31	0.311-1.3	-4.291-3.4	-5.21-2.9	-2.971-3.6	-5.341-2.29	-4.931-3.2	-10.331-6.65	-5.111-4.1		
Theta (105°)	-7.861-14.96	-13.331-10.36	9.941-10.06	-10.681-15.2	-15.431-10.08	-7.281-11.17	-18.361-6.98	-6.811-11.24	-17.811-11.05	-17.111-11.05	-14.281-7.57	-14.641-5.81	-6.141-9	-3.041-4.82	-7.291-6.33	-6.331-8.34	-7.341-4.04	-5.971-3.9	-3.811-8.15	-11.211-7.36	-9.771-7.77	-5.111-11.2	-9.711-6.56	-4.651-5.84	
Theta (112.5°)	-7.721-10.92	-9.841-8.91	-7.281-3.98	-2.191-2.3	-1.511-0.99	-0.911-2.07	-0.991-0.8	0.571-1.15	-3.981-4.86	-4.711-11.05	-14.341-18.81	-11.641-18.79	-6.541-5.83	-7.981-9.09	-5.951-3.14	-6.141-11.95	-12.241-6.65	-3.641-10.78	-12.711-18.42	-5.481-11.93	-7.711-4.55	-7.11-9.36	-8.811-5.08	-5.471-6.41	
Theta (120°)	-14.561-13.22	-10.791-9.59	-7.581-5.2	-4.111-11.9	-4.241-6.5	-7.721-6.1	-3.681-4.51	-4.551-5.1	-6.471-12.52	-12.361-9.02	-5.211-6.04	-13.221-17.85	-8.721-3.44	-4.391-3.86	-3.351-8.4	-8.141-15.95	-18.761-8.6	-6.391-10.2	-14.351-13.14	-13.271-14.8	-9.561-9.7	-9.21-8.91	-10.621-18.9		
Theta (127.5°)	-8.711-7.17	-7.11-5.13	-4.211-5.04	-6.591-10.59	-8.741-8.48	-5.471-8.5	-10.031-6.28	-5.761-6.6	-7.871-8.55	-7.211-11.42	-17.331-15.92	-18.391-17.87	-10.411-10.07	-8.391-11.79	-10.021-7.29	-9.271-14.86	-15.411-15.07	-17.921-17.53	-13.781-11.02	-10.711-16.02	-12.131-18.11	-17.111-17.6	-16.651-18.48	-18.671-14.15	
Theta (135°)	-14.191-11.31	-11.431-11.85	-11.581-9.98	-8.831-8.05	-6.451-5.94	-6.251-5.28	-5.281-4.44	-5.951-9.34	-11.191-8.55	-8.861-10.88	-13.141-13.32	-16.631-11.6	-9.421-19.07	-16.151-14.45	-18.921-17.37	-12.231-10.29	-9.951-14.15	-15.431-10.3	-13.741-16.87	-9.351-9.8	-14.761-11.01	-9.451-12.57	-12.521-15.58	-11.071-9.58	
Theta (142.5°)	-17.371-17.21	-13.641-9.73	-7.51-6.67	-4.631-4.45	-5.181-5.93	-6.951-6.82	-10.691-8.74	-6.941-7.89	-10.641-8.43	-7.271-7.26	-6.821-6.03	-6.831-8.94	-9.211-8.52	-11.311-9.64	-15.771-14.51	-11.361-6.77	-5.791-15	-8.961-10.35	-14.941-13.57	-10.441-8.27	-8.711-7.64	-6.421-7.41	-8.791-9.99	-10.011-11.36	
Theta (150°)	-8.911-12.02	-11.341-8.02	-5.951-5.23	-5.741-6.66	-8.41-9.1	-7.721-7.3	-7.521-6.99	-5.541-5.48	-5.011-6.11	-8.981-12.55	-14.751-9.93	-5.561-4.96	-6.281-6.65												







# Radiated Composite Gain Data (2.4GHz and 5GHz UNII 1~UNII 3)

# Appendix A

Theta	Phi	Gain	Phi(15°)	Phi(22.5°)	Phi(30°)	Phi(45°)	Phi(60°)	Phi(75°)	Phi(90°)	Phi(105°)	Phi(120°)	Phi(135°)	Phi(150°)	Phi(165°)	Phi(180°)	Phi(195°)	Phi(210°)	Phi(225°)	Phi(240°)	Phi(255°)	Phi(270°)	Phi(285°)	Phi(300°)	Phi(315°)	Phi(330°)	Phi(345°)																						
Theta(15°)	Phi(0°)	-9.27/-9.09	-9.19/-9.09	-8.81/-8.65	-8.38/-8.12	-7.59/-7.61	-7.56/-8.17	-8.69/-9.11	-9.21/-9.4	-10.03/-11.22	-11.71/-11.85	-12.28/-14.18	-16.18/-17.4	-17.15/-15.55	-14.91/-14.04	-12.72/-12.5	-12.11/-11.34	-10.91/-10	-9.12/-8.05	-7.43/-7.74	-6.84/-6.94	-10.66/-11.95	-13.49/-15.63	-15.79/-14.5	-12.08/-10.38																							
Theta(22.5°)	Phi(7.5°)	-7.2/-7.99	-9.52/-10.17	-10.75/-10.85	-11.68/-11.32	-10.61/-10.14	-10.02/-10.15	-10.46/-11.13	-10.83/-11.37	-11.61/-11.98	-11.2/-10.78	-11.13/-11.27	-11.23/-10.95	-10.49/-10.19	-10.03/-10.05	-9.99/-10.01	-10.63/-11.43	-11.67/-10.97	-10.24/-8.93	-8.28/-8.79	-6.87/-8.94	-9.13/-9.22	-9.12/-9.63	-9.26/-8.97	-8.15/-7.42																							
Theta(30°)	Phi(15°)	-7.62/-9.66	-13.16/-17.49	-17.92/-19.91	-18.03/-19.05	-18.42/-15.21	-12.91/-11.66	-11.56/-11.38	-13.12/-14.43	-15.01/-14.47	-12.75/-11.63	-10.65/-9.81	-8.73/-8.25	-8.18/-8.46	-8.86/-8.94	-8.38/-8.66	-9.91/-11.1	-11.83/-12.09	-11.64/-10.52	-9.24/-8.8	-8.22/-7.58	-6.85/-6.86	-5.93/-6.42	-6.76/-6.75	-6.67/-6.77																							
Theta(37.5°)	Phi(22.5°)	-11.12/-14.35	-14.26/-11.4	-8.71/-12.91	-6.66/-6.72	-6.9/-7.32	-7.12/-6.61	-6.38/-6.91	-7.83/-8.38	-9.55/-11.25	-12.81/-13.25	-12.21/-9.94	-8.63/-7.74	-8.18/-8.62	-8.43/-7.9	-7.59/-7.63	-8.11/-9.03	-10.03/-10.58	-10.33/-9.88	-9.08/-8.69	-7.72/-6.21	-5.4/-5.56	-4.94/-5.77	-6.82/-7.51	-8.24/-9.14																							
Theta(45°)	Phi(30°)	-9.99/-7.47	-4.89/-3.16	-2.27/-1.81	-1.79/-1.67	-1.91/-2.2	-2.11/-1.78	-1.61/-1.52	-1.81/-1.25	-2.52/-3.69	-5.36/-7.45	-7.84/-6.78	-5.58/-5.58	-6.4/-6.74	-7.83/-7.04	-6.32/-6.54	-6.23/-6.91	-7.57/-8.13	-8.71/-9.06	-9.68/-9.4	-8.01/-7.39	-5.84/-4.78	-4.97/-6.14	-7.91/-9.24	-10.35/-10.95																							
Theta(52.5°)	Phi(37.5°)	-5.71/-3.25	-1.39/-0.47	-0.24/-0.44	-0.68/-0.67	-0.87/-1.1	-0.71/-0.09	0.36/0.73	0.91/0.87	0.45/-0.46	-0.21/-3.24	-3.71/-3	-2.19/-2.08	-3.31/-5.28	-6.41/-6.03	-5.39/-5.2	-6.12/-7.03	-7.73/-7.86	-7.31/-6.89	-6.06/-4.17	-2.96/-2.61	-2.92/-5.89	-9.06/-11.21	-10.52/-10.8																								
Theta(60°)	Phi(45°)	-2.84/-1.31	-0.17/0.43	0.43/-0.2	-0.84/-1.19	-1.55/-1.91	-1.8/-0.6	0.22/0.73	1.24/1.61	1.25/0.18	-0.91/-1.68	-2.12/-1.53	-0.67/-0.55	-1.72/-3.55	-4.92/-5.23	-5.15/-5.04	-5.04/-5.08	-4.95/-4.92	-4.71/-4.37	-4.43/-4.86	-4.52/-3.19	-2.25/-2.47	-4.42/-8.25	-11.01/-8.09	-6.21/-4.76																							
Theta(67.5°)	Phi(52.5°)	-1.89/-1.25	-0.54/-0.15	-0.42/-0.95	-1.14/-1.48	-2.06/-2.87	-2.58/-1.07	-0.14/0.07	0.49/0.76	0.071/-1.24	-2.15/-2.53	-2.6/-2.34	-1.48/-1.02	-1.72/-2.93	-3.61/-3.56	-3.7/-3.27	-3.29/-3.28	-2.69/-2.2	-1.98/-2.01	-2.43/-3.86	-3.91/-3.21	-1.57/-3.28	-4.87/-6.21	-4.44/-2.81	-2.17/-2.29																							
Theta(75°)	Phi(60°)	-4.37/-4.18	-2.29/-2.1	-2.28/-3.05	-2.58/-2.05	-2.58/-3.57	-3.51/-1.66	-0.04/0.1	0.23/0.08	-0.92/-2.67	-3.77/-3.9	-3.93/-3.86	-3.23/-2.26	-2.09/-2.33	-2.36/-2.38	-2.01/-1.58	-1.24/-0.59	-1.11/-1.43	-1.86/-3.12	-2.54/-0.82	-0.39/-1.1	-2.77/-2.87	-1.71/-1.34	-1.89/-3.35																								
Theta(82.5°)	Phi(75°)	-8.18/-6.19	-3.04/-1.27	-1.06/-2.65	-2.69/-1.45	-1.28/-1.68	-1.94/-1.09	0.29/0.22	0.18/0.2	-0.69/-2.07	-3.04/-3.14	-3.18/-3.44	-3.55/-3.22	-3.12/-3.19	-3.02/-2.22	-1.61/-1.39	-1.36/-1.28	-0.68/-0.41	-1.01/-0.67	-0.64/-1.93	-1.49/-0.16	0.29/0.83	-1.92/-1.2	-0.58/-1.57	-3.81/-6.72																							
Theta(90°)	Phi(90°)	-12.87/-8.39	-3.92/-1.37	-0.86/-2.31	-2.66/-0.91	-0.28/-0.33	-0.57/-0.03	0.90/0.99	0.77/0.72	-0.42/-1.81	-2.42/-2.13	-1.14/-2.24	-2.78/-3.42	-3.81/-3.72	-2.72/-1.43	-1.21/-1.26	-1.21/-1.18	-1.03/-0.86	-1.31/-0.64	-0.69/-1.95	-1.84/-0.51	-0.24/-1.26	-1.84/-0.69	-1.87/-3.12	-7.25/-12.03																							
Theta(97.5°)	Phi(105°)	-10.75/-7.65	-3.97/-1.93	-1.32/-2.99	-4.07/-2.43	-1.91/-2.12	-2.21/-1.34	0.02/0.63	0.96/0.86	-0.24/-1.74	-2.05/-1.83	-1.89/-2.13	-2.54/-3.14	-3.3/-3.07	-2.58/-2.39	-3.15/-3.09	-3.09/-2.69	-1.74/-0.52	-0.52/-1.46	-1.54/-1.11	-1.75/-3.46	-1.71/-2.35	-2.89/-5.87	-10.56/-12.65																								
Theta(105°)	Phi(112.5°)	-11.81/-8.84	-5.73/-3.98	-3.8/-5.04	-5.53/-4.55	-4.63/-4.68	-4.76/-4.23	-2.771/-1.95	-1.03/-0.6	-1.62/-3.26	-3.3/-2.97	-2.84/-2.76	-2.34/-1.89	-1.88/-2.24	-2.94/-4.03	-5.43/-4.94	-4.13/-2.94	-2.65/-2.09	-1.71/-1.37	-1.44/-2.4	-3.42/-4.33	-6.18/-7.07	-4.49/-2.7	-3.46/-6.71	-11.59/-14.56																							
Theta(112.5°)	Phi(120°)	-18.59/-16.16	-10.79/-8.27	-8.46/-11.92	-13.28/-11.31	-9.01/-7.02	-6.94/-7.5	-6.42/-5.51	-3.9/-3.14	-4.18/-6.41	-7.1/-6.65	-5.09/-4.45	-4.03/-6.69	-6.19/-8.04	-7.89/-5.68	-3.87/-3.11	-3.46/-3.86	-3.97/-2.89	-2.05/-2.59	-4.26/-5.97	-7.41/-6.67	-4.53/-3.52	-4.76/-8.28	-13.84/-18.45																								
Theta(120°)	Phi(135°)	-16.81/-12.49	-8.83/-7.06	-7.8/-6.5	-11.39/-11.31	-7.92/-5.75	-6.54/-7.41	-9.44/-11.08	-10.15/-9.4	-11.32/-13.94	-13.66/-11.79	-9.55/-7.93	-7.35/-7.65	-7.89/-5.57	-8.34/-6.89	-4.96/-3.2	-2.23/-4.28	-3.59/-4.89	-4.67/-2.97	-2.55/-4.18	-5.81/-6.03	-4.41/-3.57	-4.11/-6.37	-10.43/-17.29																								
Theta(127.5°)	Phi(142.5°)	-18.41/-14.93	-13.85/-12.02	-10.25/-9.58	-9.5/-9.04	-7.74/-6.47	-6.56/-8.02	-9.74/-12.05	-13.46/-14.91	-16.03/-16.96	-18.98/-18.16	-12.74/-9.17	-8.25/-8.73	-8.51/-8.35	-7.89/-7.57	-6.28/-4.64	-4.13/-4.97	-6.71/-7.22	-5.94/-4.75	-4.85/-6.02	-5.03/-4.13	-4.37/-5.15	-5.43/-5.44	-6.16/-8.47	-13.83/-19.2																							
Theta(135°)	Phi(150°)	-17.75/-12.25	-17.23/-11.51	-7.77/-6.07	-5.43/-5.31	-5.22/-4.98	-5.37/-6.38	-8.36/-11.4	-13.71/-12.9	-10.68/-10.46	-10.97/-11.04	-8.62/-8.23	-8.04/-8.35	-10.56/-11.45	-9.69/-9.58	-5.29/-4.18	-4.41/-5.59	-7.08/-6.88	-6.98/-5.57	-5.61/-5.29	-5.95/-6.65	-6.72/-5.68	-6.96/-7.4	-10.07/-12.53																								
Theta(142.5°)	Phi(165°)	-14.56/-13.35	-11.09/-9.01	-7.15/-6	-5.53/-5.59	-5.73/-5.81	-5.96/-6.06	-6.77/-7.87	-9.16/-9.17	-10.16/-10.41	-10.16/-10.41	-9.21/-9.25	-8.29/-8.46	-4.31/-4.96	-6.84/-8.79	-11.22/-12.77	-13.14/-12.01	-10.71/-8.55	-7.34/-6.55	-6.56/-6.94	-5.46/-5.44	-6.25/-7.89	-10.59/-12.83																									
Theta(150°)	Phi(180°)	-15.11/-14.14	-12.79/-12.23	-11.18/-11.09	-11.5/-12.19	-12.32/-12.23	-12.17/-11.11	-10.14/-10.27	-10.56/-10.86	-11.1/-11.08	-10.11/-10.89	-11.99/-13.16	-14.3/-13.67	-12.02/-10.29	-8.43/-8.33	-9.44/-11.74	-16.44/-17.5	-16.24/-13.49	-12.11/-11	-10.22/-10.08	-8.82/-9.28	-8.79/-7.85	-6.87/-7.11	-7.8/-9.75	-12.08/-14.35																							
Theta(157.5°)	Phi(195°)	-16.14/-14.99	-15.37/-15.14	-15.43/-15.77	-18.78/-17.04	-18.54/-18.74	-18.86/-18.08	-18.34/-17.6	-16.12/-15.56	-16.01/-14.2	-12.82/-11.8	-12.31/-13.88	-17.09/-17.83	-17.08/-18.63	-18.57/-17.55	-18.3/-18.66	-13.4/-10.25	-8.15/-4.75	-7.51/-4.4	-9.8/-11.19	-11.96/-12.09	-11.21/-10.26	-9.74/-10.43	-11.71/-13.57	-14.55/-16.9																							
Theta(165°)	Phi(210°)	-17.38/-16.17	-16.27/-15.61	-14.95/-16.76	-15.31/-16.01	-15.56/-14.95	-15.39/-15.02	-15.7/-16.41	-15.65/-15.17	-14.17/-13.27	-12.15/-11.8	-10.59/-10.5	-11.18/-13.27	-13.22/-14.21	-14.8/-14.12	-12.96/-11.1	-9.54/-8.28	-7.51/-7.45	-7.89/-9.15	-11.16/-13.31	-16.22/-17.27	-18.78/-17.85	-16.98/-17.21	-18.18/-18.87	-19.41/-18.5																							
Theta(172.5°)	Phi(225°)	-17.74/-18.94	-17.65/-18.77	-17.02/-16.68	-16.15/-16.11	-15.4/-15.03	-14.66/-14.37	-13.07/-13.11	-12.54/-12.76	-12.61/-11.85	-11.58/-11.01	-10.65/-10.39	-10.34/-11.06	-11.88/-12.18	-12.02/-11.53	-11.41/-11.07	-11.02/-10.76	-10.81/-11.56	-12.61/-14.63	-18.28/-18.93	-17.83/-16.65	-18.07/-19.43	-18.87/-18.71	-17.87/-18.79	-18.79/-19.3																							
Theta(180°)	Phi(240°)	-18.82/-18.18	-17.41/-18.68	-18.09/-18.72	-17.9/-19.3	-19.3/-17.89	-18.75/-18.75	-18.51/-17.6	-16.04/-15.95	-15.14/-14.18	-13.75/-12.86	-12.49/-12.09	-11.75/-12.59	-13.58/-13.81	-14.82/-15.06	-15.4/-16.21	-16.13/-17.44	-18.48/-18.76	-18.81/-17.34	-15.49/-14.37	-13.41/-13.01	-12.92/-12.43	-12.93/-13.32	-14.08/-15.48	-16.62/-18.62																							
Theta(187.5°)	Phi(255°)	5.20/Pol	Phi(Ant 3)																																													
Gain	Phi(0°)	Phi(7.5°)	Phi(15°)	Phi(22.5°)	Phi(30°)	Phi(37.5°)	Phi(45°)	Phi(52.5°)	Phi(60°)	Phi(67.5°)	Phi(75°)	Phi(82.5°)	Phi(90°)	Phi(97.5°)	Phi(105°)	Phi(112.5°)	Phi(120°)	Phi(127.5°)	Phi(135°)	Phi(142.5°)	Phi(150°)	Phi(157.5°)	Phi(165°)	Phi(172.5°)	Phi(180°)	Phi(187.5°)	Phi(195°)	Phi(202.5°)	Phi(210°)	Phi(217.5°)	Phi(225°)	Phi(232.5°)	Phi(240°)	Phi(247.5°)	Phi(255°)	Phi(262.5°)	Phi(270°)	Phi(277.5°)	Phi(285°)	Phi(292.5°)	Phi(300°)	Phi(307.5°)	Phi(315°)	Phi(322.5°)	Phi(330°)	Phi(337.5°)	Phi(345°)	Phi(352.5°)
Theta(0°)	Phi(7.5°)	-15.31/-13.26	-12.67/-14.84	-16.78/-17.65	-15.54/-13.4	-15.28/-18.42	-18.94/-18.42	-19.05/-17.41	-18.29/-14.11	-11.74/-10.54	-8.79/-10.26	-12.02/-11.87	-10.91/-8.8	-8.54/-9.39	-12.48/-16.82	-15.89/-13.39	-12.84/-14.36	-19.38/-17.96	-19.26/-17.5	-17.81/-18.18	-18.91/-18	-19.11/-17.3	-18.11/-16.39	-15.3/-15.1	-16.81/-16.5																							
Theta(7.5°)	Phi(15°)	-11.67/-10.9	-10.08/-9.85	-11.81/-13.17	-13.75/-14.97	-16.06/-19.06	-15.88/-19.23	-17.17/-18.11	-18.57/-16.74	-16.36/-15.91	-17.12/-11.09	-15.71/-14.16	-13.82/-15.07	-16.57/-17.12	-17.54/-17.33	-12.66/-18.27	-17.84/-17.63	-18.29/-16.56	-18.55/-17.32	-19.71/-17.25	-15.93/-14.68	-13.11/-11.63	-10.61/-10.29	-9.54/-10.12																								
Theta(15°)	Phi(22.5°)	-11.76/-12.37	-11.58/-11.48	-12.71/-16.74	-18.85/-18.03	-18.3/-18.06	-18.71/-19.16	-18.52/-18.98	-18.82/-18.23	-19.13/-18.38	-18.46/-19.02	-18.54/-17.89	-15.38/-14.27	-14.41/-13.4	-12.22/-11.89	-10.76/-11.44	-12.93/-15.52	-18.97/-18.82	-18.79/-18.23	-17.79/-15.72	-14.13/-13.89	-14.37/-15.26	-18.48/-18.57	-17.77/-18.52	-14.73/-12.09																							
Theta(22.5°)	Phi(30°)	-9.1/-11.11	-13.44/-15.25	-18.18/-42	-16.21/-14.38	-15.71/-17.2	-19.14/-18.2	-19.23/-18.69	-19.1/-18.1	-18.64/-18.23	-14.68/-13.73	-12.89/-11.93	-12.09/-13.86	-16.85/-16.78	-13.52/-10.57	-8.81/-6.75	-8.02/-10.73	-13.72/-14.84	-14.47/-18.19	-18.23/-14.07	-11.53/-12.32	-11.82/-13.54	-18.46/-18.41	-17.41/-16.66	-12.03/-9.66																							
Theta(30°)	Phi(37.5°)	-12.59/-12.75	-13.47/-16.55	-14.95/-12.78	-12.84/-14.11	-15.61/-15.9	-14.61/-13.75	-14.41/-16.26	-18.78/-17.45	-15.09/-11.44	-10.88/-10.95	-13.02/-15.04	-17.1																																			







# Radiated Composite Gain Data (2.4GHz and 5GHz UNII 1~UNII 3)

# Appendix A

Theta (°)	Phi (°)	Phi(15°)	Phi(30°)	Phi(45°)	Phi(60°)	Phi(75°)	Phi(90°)	Phi(105°)	Phi(120°)	Phi(135°)	Phi(150°)	Phi(165°)	Phi(180°)	Phi(195°)	Phi(210°)	Phi(225°)	Phi(240°)	Phi(255°)	Phi(270°)	Phi(285°)	Phi(300°)	Phi(315°)	Phi(330°)	Phi(345°)																								
Theta (120°)	Phi(0°)	-4.66/-7.65	-9.09/-12.12	-9.39/-17.79	-10.94/-9.41	-4.34/-3.94	-3.37/-1.75	-1.86/-1.63	-2.97/-2.61	-3.01/-2.48	-2.91/-4.42	-6.59/-11.25	-10.62/-7.46	-3.81/-4.44	-3.84/-3.58	-6.32/-14.52	-14.07/-10.42	-6.88/-10.48	-9.04/-8.13	-8.84/-9.82	-6.53/-2.62	-5.42/-13.41	-10.41/-13.25	-8.36/-6.03	-6.33/-5.66																							
Theta (127.5°)	Phi(0°)	-10.15/-15.63	-12.07/-8.04	-13.31/-14.76	-13.95/-14.57	-10.18/-7.12	-7.36/-9.76	-9.63/-7.86	-5.54/-3.76	-4.5/-2.45	-6.38/-8.61	-10.42/-14.53	-18.18/-17.53	-11.01/-11.03	-12.95/-5.77	-4.26/-9.32	-9.17/-13.44	-15.32/-12.47	-8.53/-12.51	-19.53/-17.68	-13.09/-6.66	-6.97/-8.89	-11.94/-12.47	-17.74/-16.88	-8.31/-9.14																							
Theta (135°)	Phi(0°)	-13.31/-18.55	-18.96/-11.28	-9.79/-11.94	-13.20/-10.73	-5.75/-3.32	-3.42/-6.07	-2.61/-4.5	-5.63/-5.82	-8.16/-7.14	-6.84/-8.09	-9.67/-12.57	-14.21/-16.78	-11.71/-18.28	-17.47/-12.17	-7.97/-8.39	-17.34/-18.92	-15.18/-12.84	-13.27/-9.77	-16.56/-18.39	-17.65/-12.99	-17.19/-10.75	-16.59/-15.4	-15.35/-15.7	-10.10/-11.07																							
Theta (142.5°)	Phi(0°)	-7.85/-9.78	-17.85/-16.89	-11.79/-8.3	-8.72/-10.82	-10.44/-9.56	-7.03/-4.68	-4.14/-5.64	-6.96/-6.89	-6.86/-8.42	-9.49/-9.63	-12.47/-17.65	-15.2/-14.64	-15.99/-15.96	-10.25/-11.54	-18.24/-17.65	-19.14/-16.23	-14.56/-14.34	-7.75/-7.48	-8.4/-8.43	-6.85/-9.99	-7.83/-11.8	-13.24/-12.17	-9.97/-	-9.07/-10.27																							
Theta (150°)	Phi(0°)	-8.39/-10.7	-15.45/-18.53	-11.38/-7.19	-6.41/-6.8	-9.51/-12.78	-13.12/-9.18	-4.09/-2.25	-2.31/-2.5	-3.2/-3.5	-6.92/-8.48	-14.24/-17.65	-18.1/-17.02	-14.71/-12.28	-8.06/-8.24	-10.8/-12.78	-11.64/-8.93	-8.8/-9.19	-10.59/-13.88	-11.85/-9.47	-8.47/-6.31	-4.01/-3.46	-4.92/-6.47	-7.46/-8.07	-7.61/-9.31																							
Theta (157.5°)	Phi(0°)	-16.68/-17.35	-17.4/-12.53	-10.39/-8.36	-7.09/-8.16	-10.72/-11.99	-9.77/-8.21	-6.94/-7.1	-5.59/-3.7	-2.45/-2.83	-3.51/-3.06	-3.71/-4.44	-5.15/-4.84	-1.44/-2.71	-1.71/-2.49	-5.19/-8.54	-9.55/-8.59	-7.38/-6.02	-5.71/-6.8	-8.32/-8.67	-7.95/-6.69	-7.02/-10.28	-18.66/-18.45	-18.17/-15.75	-12.74/-12.39																							
Theta (165°)	Phi(0°)	-14.99/-14.46	-13.34/-14.31	-14.03/-11.75	-10.45/-10.75	-11.61/-14.43	-13.84/-10.34	-9.49/-9.24	-7.77/-6.61	-5.63/-6	-6.18/-8.81	-6.01/-6.81	-7.9/-8.75	-7.92/-6.77	-5.93/-6.44	-6.21/-6.31	-6.3/-7.7	-10.26/-13.26	-19.01/-18.28	-18.89/-16.64	-14.74/-12.66	-10.19/-9.54	-9.56/-9.55	-10.22/-10.69	-11.45/-13.05																							
Theta (172.5°)	Phi(0°)	-12.65/-13.27	-13.48/-12.3	-11.34/-9.57	-8.81/-8.34	-9.42/-10.82	-12.33/-13.51	-13.58/-12.96	-12.32/-12.98	-12.6/-12.56	-12/-12.91	-10.03/-10.03	-11.32/-11.21	-9.94/-10.6	-13.2/-18.54	-18.23/-17.77	-14.83/-12.29	-10.78/-8.5	-7.62/-7.17	-6.36/-6.05	-6.43/-6.82	-7.24/-7.61	-18.4/-19.03	-10.06/-11.25	-10.11/-11.71																							
Theta (180°)	Phi(0°)	-11.09/-10.21	-11.95/-11.1	-12.32/-12.37	-12.25/-12.41	-13.54/-16.81	-17.58/-18.37	-18.52/-18.04	-18.21/-17.83	-17.32/-13.88	-11.2/-10.13	-8.74/-8.87	-8.66/-10.85	-8.92/-10.04	-10.25/-10.85	-9.77/-9.56	-10.61/-11.61	-13.84/-14.64	-13.94/-12.52	-11.18/-12.51	-12.61/-10.42	-12.17/-14.29	-12.78/-12.5	-12.71/-11.71																								
Freq(Hz)	Theta/Ant	2.45GPol	Phi/Ant 4	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-																							
Gain	Phi(0°)	Phi(7.5°)	Phi(15°)	Phi(22.5°)	Phi(30°)	Phi(37.5°)	Phi(45°)	Phi(52.5°)	Phi(60°)	Phi(67.5°)	Phi(75°)	Phi(82.5°)	Phi(90°)	Phi(97.5°)	Phi(105°)	Phi(112.5°)	Phi(120°)	Phi(127.5°)	Phi(135°)	Phi(142.5°)	Phi(150°)	Phi(157.5°)	Phi(165°)	Phi(172.5°)	Phi(180°)	Phi(187.5°)	Phi(195°)	Phi(202.5°)	Phi(210°)	Phi(217.5°)	Phi(225°)	Phi(232.5°)	Phi(240°)	Phi(247.5°)	Phi(255°)	Phi(262.5°)	Phi(270°)	Phi(277.5°)	Phi(285°)	Phi(292.5°)	Phi(300°)	Phi(307.5°)	Phi(315°)	Phi(322.5°)	Phi(330°)	Phi(337.5°)	Phi(345°)	Phi(352.5°)
Theta (0°)	Phi(0°)	-10.81/-9.89	-9.16/-8.47	-8.07/-8.29	-8.72/-9.03	-9.65/-10.09	-10.71/-11.53	-12.57/-13.85	-15.29/-15.29	-15.71/-17.25	-18.31/-17.46	-17.41/-17.73	-16.34/-13.4	-10.92/-10.35	-11.31/-9.11	-11.07/-10.36	-10.42/-11.16	-12.04/-11.52	-12.24/-12.41	-12.96/-13.66	-14.18/-17.18	-17.92/-17.77	-17.2/-15.37	-15.64/-14.36	-12.41/-11.56																							
Theta (7.5°)	Phi(0°)	-13.71/-13.9	-12.51/-10.89	-10.08/-10.55	-10.65/-10.84	-10.51/-10.49	-10.81/-11.52	-12.67/-14.06	-14.98/-16.39	-18.68/-18.29	-18.19/-15.81	-14.63/-17.3	-11.72/-9.97	-8.66/-8.52	-9.58/-10.2	-9.34/-8.79	-9.31/-10.46	-11.62/-11.58	-11.86/-11.45	-11.97/-12.5	-13.25/-14.08	-16.77/-17.37	-18.96/-16.67	-18.17/-19.76	-15.39/-13.51																							
Theta (15°)	Phi(0°)	-15.81/-15.78	-16.85/-15.75	-14.54/-14.82	-16.07/-16.27	-15.21/-14.6	-14.22/-14.43	-14.91/-15.21	-17.33/-18.85	-18.1/-17.22	-19.39/-15.34	-12.46/-10.65	-10.32/-9.91	-8.54/-8.21	-9.31/-11.18	-11.62/-10.75	-10.42/-11	-11.89/-12.39	-12.67/-12.3	-12.83/-13.22	-13.39/-12.96	-14.04/-17.27	-17.83/-19.25	-18.49/-17.75	-19.19/-18.43																							
Theta (22.5°)	Phi(0°)	-13.51/-12.77	-12.89/-13.93	-14.62/-16.09	-17.71/-18.87	-19.16/-19.18	-18.99/-18.72	-19.47/-18.91	-18.11/-18.52	-17.94/-17.79	-18.78/-14.39	-10.98/-9.34	-9.09/-9	-9.53/-9.37	-11.11/-14.19	-16.88/-18.97	-14.05/-13.78	-12.61/-12.5	-12.51/-12.34	-13.95/-15.02	-15.04/-13.33	-12.41/-12.44	-13.55/-15.88	-14.22/-15.55	-13.73/-15.15																							
Theta (30°)	Phi(0°)	-13.87/-12.54	-12.52/-12.71	-13.81/-15.49	-15.73/-13.38	-12.26/-12.53	-14.69/-18.08	-18.22/-17.79	-17.95/-18.12	-17.86/-17.66	-13.92/-11.23	-9.69/-9.44	-9.89/-10.76	-10.99/-11.09	-13.86/-19.17	-18.67/-18.45	-18.72/-18.47	-13.51/-11.44	-11.37/-12.63	-15.88/-19	-17.17/-13.9	-12.81/-11.58	-11.92/-14.06	-13.81/-11.23	-10.81/-12.46																							
Theta (37.5°)	Phi(0°)	-14.98/-15.72	-15.01/-14.85	-15.99/-18.74	-17.62/-12.49	-9.42/-8.5	-9.74/-12.68	-15.83/-15.93	-16.99/-19.11	-18.27/-17.48	-11.81/-9.74	-9.36/-11.08	-12.43/-11.31	-9.98/-11.85	-18.02/-18.85	-19.27/-18.87	-18.17/-18.79	-15.81/-11.62	-10.85/-12.18	-17.61/-18.65	-13.11/-11.06	-11.98/-13.61	-14.23/-17.29	-16.39/-11.8	-10.81/-12.23																							
Theta (45°)	Phi(0°)	-12.92/-15.44	-11.81/-18.73	-17.47/-19.05	-17.15/-15.13	-11.87/-7.7	-8.5/-12.88	-11.84/-11.81	-14.13/-18.38	-19.08/-18.95	-15.17/-12.104	-11.56/-12.27	-13.71/-14.38	-11.58/-12.56	-17.88/-18.25	-19.01/-16.1	-16.24/-14.35	-16.67/-14.44	-11.97/-11.74	-14.34/-15.74	-14.77/-15.91	-11.07/-19.29	-18.9/-13.71	-15.37/-14.77	-13.52/-12.25																							
Theta (52.5°)	Phi(0°)	-12.11/-13.18	-16.54/-17.29	-17.99/-17.37	-15.04/-12.6	-11.72/-10.83	-10.32/-11.76	-12.31/-11.33	-12.29/-15.24	-18.38/-18.37	-16.54/-14.94	-14.53/-13.95	-13.49/-14.42	-15.99/-19.11	-18.45/-19.11	-15.99/-15.22	-15.3/-14.92	-16.77/-16.66	-13.33/-10.61	-12.66/-17.92	-15.78/-13.06	-14.17/-15.29	-18.67/-13.86	-11.43/-11.74	-13.46/-13																							
Theta (60°)	Phi(0°)	-13.25/-14.31	-17.12/-17.66	-18.27/-18.23	-17.8/-12.17	-11.47/-11.25	-11.17/-13.35	-14.51/-12.32	-12.31/-13.45	-18.14/-18.17	-18.92/-18.08	-14.58/-14.76	-14.16/-31	-15.87/-16.26	-16.37/-18	-18.78/-15.92	-13.09/-16.98	-15.35/-11.62	-14.18/-16	-14.6/-12.8	-16.81/-17.86	-16.61/-11.2	-8.48/-7.73	-8.83/-10.92																								
Theta (67.5°)	Phi(0°)	-11.72/-15.15	-17.77/-18.08	-14.52/-18.45	-17.76/-14.47	-12.48/-10.56	-9.63/-12.02	-15.61/-15.31	-14.28/-14.91	-18.22/-17.72	-19.06/-18.35	-18.34/-15.47	-16.58/-18.95	-16.66/-14.85	-12.92/-15.15	-18.12/-18.09	-18.97/-13.61	-12.16/-13.1	-18.51/-12.91	-14.49/-18.53	-11.75/-12.38	-18.74/-17.28	-10.97/-8.08	-6.84/-6.26	-6.88/-8.68																							
Theta (75°)	Phi(0°)	-11.28/-13.33	-18.51/-15.54	-11.52/-12.34	-15.81/-13.57	-12.34/-9.89	-8.53/-9.97	-11.56/-13.53	-16.11/-19.51	-19.14/-18.21	-18.05/-19	-19.03/-17.85	-18.59/-18.42	-15.42/-13.37	-12.23/-13.37	-18.52/-17.32	-18.41/-14.5	-10.81/-10.52	-17.16/-16.87	-18.41/-10.52	-10.73/-15.1	-10.85/-12.47	-19.07/-13.89	-9.02/-6.96	-6.71/-6.79	-7.62/-9.37																						
Theta (82.5°)	Phi(0°)	-13.98/-14.56	-11.96/-15.17	-10.29/-6.8	-11.56/-10.6	-9.34/-8.49	-8.81/-10.79	-9.24/-9.99	-12.31/-19.97	-17.86/-18.01	-19.08/-19.16	-16.92/-17.82	-18.55/-19.23	-11.64/-14.52	-13.38/-13.05	-18.99/-18.85	-17.74/-16.49	-12.75/-11.94	-13.51/-9.9	-10.73/-13.85	-9.72/-13.09	-17.14/-11.65	-8.68/-8.09	-8.32/-9.27	-10.87/-13.1																							
Theta (90°)	Phi(0°)	-16.36/-16.51	-17.67/-18.39	-10.16/-9.93	-8.87/-10.4	-9.07/-6.85	-9.92/-11.51	-9.49/-8.25	-9.31/-12.64	-18.24/-19.48	-18.09/-15.82	-12.61/-15.29	-18.87/-17.19	-18.82/-14.94	-12.26/-13.7	-18.81/-17.91	-16.29/-13.04	-9.05/-9.15	-12.92/-12.11	-11.29/-9.64	-8.57/-13.47	-16.29/-10.02	-8.38/-7.92	-9.17/-10.98	-12.96/-14.92																							
Theta (97.5°)	Phi(0°)	-13.38/-14.63	-18.53/-18.11	-12.33/-6.87	-8.21/-8.65	-9.91/-8.23	-7.15/-9.95	-10.53/-9.58	-10.02/-12.77	-17.65/-15.9	-17.76/-15.9	-12.86/-14.77	-18.71/-18.75	-18.71/-14.47	-15.22/-17.94	-19.06/-15.63	-11.13/-10.1	-10.44/-12.9	-12.14/-7.87	-9.02/-11.38	-11.96/-18.03	-11.31/-8.14	-7.81/-7.67	-8.67/-10.62	-12.13/-12.28																							
Theta (105°)	Phi(0°)	-11.11/-12.61	-17.02/-18.34	-15.35/-12.85	-12.27/-9.34	-8.89/-8.28	-9.06/-11.94	-11.36/-9.9	-10.43/-13.07	-16.9/-17.87	-18.86/-18.68	-15.82/-12.9	-16.25/-18.54	-16.82/-18.23	-17.12/-16.24	-18.84/-15.52	-11.84/-14.26	-14.28/-10.67	-8.38/-8.53	-11.08/-12.17	-13.19/-11.38	-11.62/-10.95	-10.19/-10.15	-10.29/-10.76																								
Theta (112.5°)	Phi(0°)	-9.71/-10.36	-11.96/-17.59	-17.17/-15.18	-17.45/-11.73	-10.71/-10.42	-10.01/-13.28	-15.81/-15.11	-11.57/-15.1	-17.03/-14.75	-18.74/-18.93	-13.97/-14.1	-18.73/-17.25	-16.82/-18.78	-19.03/-19.54	-18.16/-13.82	-12.16/-13.08	-13.11/-14.09	-13.67/-10.99	-9.97/-9.92	-9.48/-10.78	-16.45/-17.98	-19.26/-15.98	-13.63/-10.83	-8.79/-8.41																							
Theta (120°)	Phi(0°)	-9.07/-9.22	-8.94/-12.63	-18.54/-17.85	-16.29/-12.06	-12.83/-13.08	-11.99/-14.52	-14.28/-12.47	-12.97/-15.68	-16.82/-16.7	-17.93/-19.08	-13.12/-15.2	-16.56/-18.74	-14.63/-16.57	-18.11/-18.12	-18.38/-14.04	-11.79/-13.05	-18.55/-18.69	-8.54/-5.42	-5.36/-7.08	-9.23/-10.48	-13.69/-18.85	-15.75/-14.74	-15.45/-12.64	-9.07/-7.75																							
Theta (127.5°)	Phi(0°)	-8.51/-8.63	-9.01/-12.94	-18.45/-17.83	-16.83/-11.66	-12.18/-13.07	-14.07/-16.28	-12.42/-10.17	-10.82/-13.04	-13.9/-14.05	-14.95/-15.41	-13.																																				





# Radiated Composite Gain Data (2.4GHz and 5GHz UNII 1~UNII 3)

# Appendix A

Theta	Phi	Gain	Phi(0°)	Phi(15°)	Phi(30°)	Phi(45°)	Phi(60°)	Phi(75°)	Phi(90°)	Phi(105°)	Phi(120°)	Phi(135°)	Phi(150°)	Phi(165°)	Phi(180°)	Phi(195°)	Phi(210°)	Phi(225°)	Phi(240°)	Phi(255°)	Phi(270°)	Phi(285°)	Phi(300°)	Phi(315°)	Phi(330°)	Phi(345°)
Theta(165°)	Phi(7°)	-7.67/-10.16	-9.21/-7.12	-5.84/-3.54	-2.83/-4.03	-4.53/-6.06	-7.95/-9.57	-9.74/-8.87	-7.02/-7.36	-9.7/-13.46	-18.49/-16.69	-14.86/-13.81	-13.68/-13.69	-17.38/-16.2	-14.36/-13.55	-15.87/-12.09	-7.28/-9.44	-14.78/-9.47	-7.11/-7.96	-10.08/-8.4	-9.23/-9.26	-9.61/-9.94	-10.46/-8.87	-8.08/-7.39	-5.95/-6.61	
Theta(172.5°)	Phi(7.5°)	-7.15/-9.49	-5.03/-4.93	-4.89/-5.94	-6.81/-6.64	-7.1/-7.83	-9.84/-13.23	-15.81/-19.06	-18.42/-18.89	-18.45/-18.04	-16.4/-16.98	-16.63/-18.72	-17.93/-17.58	-18.15/-18.91	-16.64/-17.82	-16.45/-16.66	-18.41/-12.06	-7.18/-8.78	-8.03/-8.93	-10.89/-11.54	-13.45/-17.76	-15.03/-10.19	-7.02/-6.09	-7.1/-7.55	-8.84/-7.67	
Theta(180°)	Phi(8°)	-9.12/-10.9	-11.65/-13.33	-13.34/-12.56	-15.81/-15.05	-15.33/-15.93	-14.52/-13.39	-13.49/-13.32	-13.49/-13.44	-16.4/-16.98	-15.79/-15.56	-13.36/-12.63	-13.77/-13.78	-13.54/-15.93	-16.67/-19.1	-17.3/-17.94	-18.8/-18.71	-17.92/-19.12	-18.56/-19.01	-15.2/-13.5	-12.49/-12.33	-11.41/-11.03	-12.82/-15.84	-10.59/-9.77	-10.81/-11.04	-11.14/-10.15
Theta(187.5°)	Phi(8.5°)	-10.99/-18.77	-18.46/-18.2	-16.88/-17.01	-15.31/-13.87	-10.54/-9.39	-9.98/-11.86	-15.18/-12.09	-13.49/-16.67	-12.82/-12.83	-16.89/-19.08	-17.94/-18.23	-17.83/-16.68	-17.77/-17.95	-18.41/-16.9	-12.81/-12.66	-14.16/-17.93	-12.69/-11.57	-18.24/-13.58	-9.87/-12.43	-14.97/-11.77	-15.45/-15.26	-17.95/-13.48	-14.33/-12.14	-16.01/-18.3	
Theta(195°)	Phi(9°)	-18.64/-17.62	-17.82/-18.49	-17.18/-17.09	-13.47/-13.09	-13.4/-11.78	-7.67/-7.06	-11.93/-9.95	-10.36/-15.55	-12.37/-13.86	-17.6/-15.81	-18.24/-19.06	-17.98/-17.32	-15.51/-15.65	-14.52/-12.41	-11.56/-17.46	-12.32/-16.29	-12.45/-11.14	-10.86/-9.85	-6.78/-8.8	-7.04/-7.13	-11.72/-14.95	-18.85/-19.23	-18.77/-17.88	-17.33/-17.13	
Theta(202.5°)	Phi(9.5°)	-17.41/-17.89	-17.77/-18.4	-15.72/-16.67	-18.59/-14.98	-11.03/-14.9	-13.78/-11.56	-13.38/-11.16	-10.1/-10.77	-8.89/-12.73	-13.97/-19.09	-19.18/-16.52	-17.32/-16.49	-14.81/-15.86	-15.89/-12.94	-14.96/-16.32	-18.18/-12.45	-16.85/-8.39	-11.17/-11.54	-11.62/-14.13	-14.83/-18.82	-18.69/-17.58	-18.25/-17.73	-18.58/-16.16	-15.75/-12.22	
Theta(210°)	Phi(10°)	-18.68/-13.19	-16.26/-15.16	-16.66/-16.21	-18.66/-18.42	-15.19/-17.98	-18.06/-18.56	-17.71/-14.34	-8.95/-11.12	-13.31/-16.24	-17.6/-18.46	-17.6/-17.69	-14.77/-17.16	-17.83/-18.45	-18.99/-17.93	-17.87/-19.3	-17.49/-12.01	-18.42/-13.49	-15.73/-17.9	-18.67/-11.4	-17.99/-16.81	-11.85/-12.33	-10.57/-13.32	-11.58/-16.81	-14.07/-19.84	
Theta(220°)	Phi(10.5°)	-11.93/-12.28	-12.58/-11.45	-18.49/-17.54	-18.47/-17.51	-17.17/-19.22	-18.65/-17.96	-17.97/-17.2	-11.49/-10.86	-13.85/-14.02	-18.21/-17.44	-18.97/-17.66	-17.13/-19.17	-17.43/-18.56	-18.73/-14.66	-19.03/-18.43	-18.19/-14.66	-14.66/-17.8	-17.28/-17.27	-16.25/-16.47	-17.02/-10.05	-13.98/-13.25	-19.13/-17.65	-18.01/-18.5	-8.07/-8.94	
Theta(225°)	Phi(11°)	-10.77/-11.39	-10.71/-16.27	-17.48/-17.73	-11.45/-16.15	-17.03/-15.03	-18.71/-15.99	-18.88/-13.39	-12.22/-14.65	-14.67/-13.72	-17.79/-17.74	-18.75/-18.78	-16.87/-15.31	-13.75/-18.15	-12.59/-14.78	-16.76/-18.84	-17.61/-15.83	-15.98/-18.68	-13.89/-10.64	-17.93/-17.41	-10.92/-16.98	-13.45/-15.71	-10.91/-11.43	-10.97/-9.36		
Theta(232.5°)	Phi(11.5°)	-10.61/-8.9	-8.13/-9.32	-18.32/-17.62	-15.56/-16.15	-14.66/-15.62	-19.12/-18.46	-14.22/-14.86	-18.9/-10.44	-12.72/-10.8	-16.04/-18.72	-18.52/-19.11	-18.61/-18.51	-18.91/-17.32	-18.74/-11.32	-16.31/-18.95	-16.59/-18.97	-19.6/-12.2	-11.91/-18.46	-18.77/-14.64	-10.57/-17.41	-18.65/-12.8	-8.04/-10.14	-10.37/-9.45		
Theta(240°)	Phi(12°)	-9.86/-16.03	-13.44/-18.32	-13.47/-18.75	-13.54/-18.19	-18.2/-15.47	-17.73/-10.44	-14.57/-16.35	-12.11/-10.96	-16.36/-18.24	-18.23/-16.55	-17.47/-12.41	-14.31/-17.51	-18.11/-18.11	-17.67/-17.58	-17.61/-19.05	-18.99/-18.67	-18.01/-18.62	-13.61/-8.71	-10.51/-10.43	-19.15/-16.19	-16.09/-18.85	-18.18/-15.06	-13.52/-14.75	-14.39/-12.51	
Theta(247.5°)	Phi(12.5°)	-10.82/-12.08	-10.47/-11.89	-13.21/-15.32	-15.83/-10.93	-12.89/-11.73	-18.06/-16.46	-19.76/-13.71	-13.67/-17.5	-14.5/-16.02	-18.16/-17.61	-15.63/-14.96	-18.66/-19.06	-19.01/-18.66	-18.62/-14.78	-17.51/-18.74	-18.14/-16.66	-17.91/-14.57	-16.69/-17.53	-12.31/-12.35	-18.34/-6.6	-7.23/-9	-14.26/-15.61	-15.51/-18.61	-14.55/-13.26	
Theta(255°)	Phi(13°)	-12.21/-11.08	-10.91/-11.23	-15.9/-8.9	-12.37/-9.15	-10.14/-11.75	-14.89/-16.82	-18.24/-17.97	-17.8/-17.42	-19.33/-14.97	-18.91/-18.02	-16.75/-17.56	-18.77/-18.32	-12.03/-10.53	-17.38/-14.45	-18.36/-13.22	-12.81/-15.32	-16.92/-18.37	-17.99/-11.07	-13.62/-13.67	-13.72/-14.56	-17.09/-12.52	-17.52/-18.45	-15.47/-15.81		
Theta(262.5°)	Phi(13.5°)	-17.71/-18.21	-15.74/-12.17	-12.89/-8.38	-9.77/-7.24	-17.03/-10.52	-8.74/-8.131	-12.31/-3.88	-18.71/-16.48	-15.14/-16.8	-19.11/-15.48	-18.49/-14.77	-18.76/-18.09	-13.98/-15.27	-16.19/-9.37	-18.73/-19.05	-12.64/-12.2	-11.01/-14.74	-16.21/-10.83	-9.74/-14.73	-13.58/-17.61	-18.72/-17.31	-12.11/-14.8	-10.94/-14.72		
Theta(270°)	Phi(14°)	-18.38/-18.3	-19.06/-14.99	-15.36/-12.28	-13.44/-14.05	-12.88/-16.47	-9.77/-14.4	-11.09/-11.65	-12.79/-18.06	-18.93/-19.05	-16.55/-15.41	-13.77/-14.47	-13.87/-18.7	-18.42/-19.43	-11.09/-11.68	-19.25/-13.74	-18.91/-19.31	-17.62/-15.88	-18.57/-16.8	-11.29/-9.72	-6.72/-12.7	-18.52/-19.03	-17.53/-15.25	-18.27/-16.77		
Theta(282.5°)	Phi(14.5°)	-18.24/-18.47	-14.48/-12.28	-9.42/-9.98	-13.33/-12.77	-10.91/-11.92	-10.03/-11.12	-12.56/-10.65	-12.41/-10.41	-18.04/-17.49	-17.26/-14.57	-13.22/-15.49	-15.04/-13.13	-10.46/-14.74	-16.27/-13.91	-15.38/-17.47	-18.28/-18.75	-16.26/-15.72	-16.32/-11.15	-9.23/-11	-10.22/-13.08	-17.97/-17.98	-18.98/-14	-15.35/-14.23	-18.28/-18.5	
Theta(290°)	Phi(15°)	-16.28/-19.05	-17.48/-18.13	-17.49/-11.46	-8.31/-12.41	-12.85/-9.82	-8.57/-9.52	-12.60/-10.69	-10.75/-14.06	-14.69/-16.14	-14.88/-18.62	-18.36/-19.48	-18.24/-17.27	-19.27/-18.89	-16.67/-14.61	-15.81/-11.71	-14.66/-7.77	-8.28/-9.93	-11.39/-16.47	-15.81/-18.03	-16.87/-17.99	-17.44/-18.55	-17.34/-15.88			
Theta(297.5°)	Phi(15.5°)	-16.66/-18.28	-18.33/-17.53	-17.24/-13.64	-17.21/-11	-7.51/-8.65	-11.52/-10.81	-6.37/-7.5	-11.54/-13.95	-15.35/-18.96	-18.97/-18.04	-19.45/-18.99	-18.11/-16.07	-14.06/-11.87	-11.83/-9.17	-6.75/-6.06	-10.71/-10.78	-4.55/-3.32	-10.52/-18.8	-14/-10.75	-13.84/-10.33	-14.31/-17.62	-16.61/-13.11	-10.65/-11.43	-11.44/-14.9	
Theta(300°)	Phi(16°)	-14.87/-12.97	-16.63/-14.93	-13.44/-13.64	-10.31/-6.59	-6.12/-5.86	-11.81/-13.44	-9.34/-9.28	-8.95/-9.32	-10.57/-13.58	-15.17/-16.64	-17.96/-18.33	-16.58/-12.14	-12.07/-10.18	-10.44/-9.03	-13.33/-11.88	-6.58/-4.8	-4.71/-8.89	-18.35/-17.1	-12.59/-17.44	-18.33/-11.61	-11.03/-14.15	-11.17/-12.34	-13.69/-13.03	-14.92/-13.77	
Theta(307.5°)	Phi(16.5°)	-13.53/-13.94	-14.85/-13.31	-13.41/-11.87	-10.10/-10.21	-17.10/-10.03	-9.75/-11.25	-10.92/-11.25	-11.88/-12.1	-13.26/-13.56	-13.91/-17.16	-17.02/-18.71	-16.98/-16.06	-12.62/-11.04	-9.39/-9	-7.21/-6.07	-6.84/-8.1	-12.46/-19.07	-15.15/-11.18	-17.77/-12.52	-17.17/-12.82	-12.22/-12.16	-10.13/-12.24	-12.28/-12.81		
Theta(315°)	Phi(17°)	-13.96/-12.99	-11.78/-10.44	-9.35/-9.69	-9.54/-9.25	-9.24/-9.35	-8.89/-10.43	-11.99/-12.44	-14.02/-14.77	-14.8/-15.33	-14.47/-15.82	-17.17/-16.02	-16.11/-13.67	-13.96/-13.13	-13.46/-12.89	-12.83/-12.92	-11.87/-15.78	-17.83/-18.06	-12.95/-12.33	-15.31/-18.63	-15.38/-11.19	-9.96/-9.89	-12.17/-13.21	-15.55/-16.25	-15.23/-14.54	
Theta(322.5°)	Phi(17.5°)	-17.88/-14.18	-13.71/-14.11	-13.07/-11.54	-12.45/-12.7	-11.27/-10.17	-9.61/-10.3	-9.61/-9.62	-10.01/-9.84	-9.48/-9.67	-10.25/-10.25	-10.43/-10.44	-10.47/-11.19	-11.91/-12.61	-13.44/-13.41	-14.81/-14.98	-13.58/-11.83	-10.99/-13.7	-10.41/-10.62	-11.22/-11.85	-9.87/-9.72	-9.62/-11.14	-13.99/-12.36	-13.91/-10.69	-14.96/-15.48	
Theta(330°)	Phi(18°)	-16.67/-18.99	-18.44/-18.56	-19.07/-19.1	-19.38/-14.84	-13.88/-14.29	-15.17/-15.38	-16.51/-16.13	-16.95/-17.56	-17.84/-18.91	-18.99/-17.68	-18.52/-19.46	-15.31/-14.45	-15.13/-14.77	-12.33/-13.61	-11.93/-13.42	-10.58/-10.72	-9.34/-10.73	-10.12/-9.62	-9.74/-9.48	-8.89/-7.4	-7.52/-7.84	-9.78/-11.76	-11.78/-16.76	-14.46/-16.08	
Theta(337.5°)	Phi(18.5°)	-12.33/-10.34	-7.74/-6.05	-4.67/-7.9	-4.16/-4.01	-4.78/-7.01	-10.37/-13.79	-16.79/-17.51	-18.91/-17.33	-18.86/-15.26	-13.71/-14.72	-12.49/-19.4	-18.49/-19.66	-16.06/-15.04	-14.68/-13.85	-12.16/-9.42	-12.55/-11.47	-10.61/-9.77	-12.81/-8.61	-10.77/-14.12	-14.28/-12.65	-11.07/-12.25	-13.32/-10.84	-12.08/-12.62		
Theta(345°)	Phi(19°)	-11.41/-9.5	-11.36/-13.51	-10.79/-9.54	-9.64/-6.27	-5.05/-6.04	-7.41/-7.67	-8.19/-9.19	-11.11/-13.5	-12.18/-8.81	-5.78/-6.07	-6.77/-6.41	-7.22/-7.71	-8.31/-7.76	-7.77/-8.1	-7.58/-7.03	-8.66/-6.31	-4.22/-5.67	-6.97/-9.39	-4.39/-7.22	-6.49/-6.14	-6.12/-9.01	-10.54/-8.96	-8.52/-7.96	-8.61/-8.96	
Theta(352.5°)	Phi(19.5°)	-7.36/-9.68	-10.1/-11.03	-9.99/-11.05	-7.93/-8.96	-7.49/-5.52	-5.05/-7.77	-6.52/-5.26	-5.86/-9.39	-6.76/-3.74	-4.52/-5.75	-4.47/-4.41	-5.13/-5.25	-5.94/-4.4	-4.22/-5.34	-6.04/-4.97	-6.84/-7.5	-3.68/-4.72	-6.17/-4.96	-4.54/-8.36	-5.94/-5.36	-7.54/-6.15	-5.99/-7.4	-7.86/-6.31	-6.21/-6.26	
Theta(360°)	Phi(20°)	-4.25/-4.79	-4.49/-4.65	-7.76/-8.86	-6.83/-7.26	-5.31/-5.29	-2.34/-2.4	-7.02/-5.41	-3.31/-3.57	-5.39/-5.64	-2.64/-2.57	-6.68/-2.95	-4.15/-3.91	-2.62/-4.4	-4.27/-3.63	-4.48/-5.35	-6.84/-4.08	-4.57/-5.08	-4.16/-3.26	-3.05/-2.27	-2.41/-6.44	-6.95/-8.05	-6.68/-5.3	-5.16/-7.44	-8.79/-17	
Theta(367.5°)	Phi(20.5°)	-6.43/-6.07	-7.34/-5.37	-7.45/-8.18	-5.99/-7.95	-8.39/-10.95	-8.81/-6.24	-4.07/-6.29	-4.47/-4.79	-4.01/-6.21	-9.52/-7.27	-7.27/-6.54	-6.14/-6.89	-7.35/-6.88	-5.55/-5.85	-5.72/-11.52	-7.11/-7.47	-4.67/-4.72	-2.39/-4.4	-5.29/-6.87	-9.08/-9.04	-7.53/-7.29	-6.66/-5.94	-4.27/-4.09	-3.42/-4.42	
Theta(375°)	Phi(21°)	-2.84/-4.53	-2.94/-6.99	-4.35/-4.62	-2.34/-1.85	-3.23/-2.74	-10.76/-3.79	-8.83/-6.77	-4.44/-3.48	-2.86/-2.82	-4.53/-3															



# Radiated Composite Gain Data (2.4GHz and 5GHz UNII 1~UNII 3)

# Appendix A

Theta (°)	-9.18/-9.87	-10.19/-11.08	-9.28/-9.09	-11.41/-11.17	-11.12/-11.25	-12.31/-11.89	-13.16/-11.6	-11.18/-11.09	-12.67/-12.02	-10.51/-11.56	-11.73/-14.01	-13.03/-15.62	-15.79/-18.08	-19.04/-17.98	-19.48/-14.04	-13.55/-13.34	-11.42/-11.22	-9.68/-9.67	-10.35/-11.18	-12/-11.99	-14.14/-17.83	-14.96/-15.68	-18.3/-16.66	-15.54/-13.7
Theta (15°)	-10.58/-10.59	-10.48/-9.93	-10.89/-10.5	-8.46/-8.74	-8.86/-7.83	-8.67/-8.78	-9.55/-10.8	-12.87/-13.49	-11.36/-11.97	-11.24/-11.12	-14.2/-13.12	-14.98/-16.04	-18.42/-18.82	-19.05/-14.47	-18.42/-16.97	-18.94/-18.04	-17.75/-13.59	-9.4/-8.81	-8.61/-9.28	-9.94/-10.61	-12.66/-16.28	-18.65/-19.15	-19.19/-17.27	-14.64/-14.46
Theta (22.5°)	-15.99/-18.13	-18.52/-18.81	-16.3/-15.06	-12.19/-11.43	-11.03/-10.36	-10.12/-8.27	-8.69/-9.3	-13.45/-13.47	-10.68/-10.87	-17.62/-18.88	-14.22/-18.14	-12.48/-16.33	-15.63/-18.72	-18.23/-17.83	-17.33/-13.38	-15.79/-11.64	-12.49/-10.54	-11.07/-12.85	-11.82/-10.36	-11.17/-14.56	-12.08/-13.73	-16.29/-18.86	-17.93/-17.64	-15.99/-16.11
Theta (30°)	-15.28/-18.25	-18.41/-17.38	-17.94/-19.08	-17.59/-13.58	-9.87/-10.79	-11.62/-11.73	-10.41/-10.01	-9.82/-10.54	-11.3/-13.66	-14.75/-15.38	-16.68/-16.67	-19.26/-17.74	-11.85/-14.53	-14.36/-18.05	-17.67/-18.26	-12.91/-10.68	-11.85/-12.5	-10.42/-13.35	-15.62/-11	-14.52/-18.77	-13.17/-13.19	-18.07/-17.46	-18.28/-17.81	-18.79/-18.27
Theta (37.5°)	-17.86/-18.95	-18.83/-17.85	-18.06/-11.93	-16.44/-18.76	-16.77/-16.11	-13.04/-17.14	-13.19/-11.6	-11.81/-14.88	-13.29/-15.6	-19.4/-17.7	-18.7/-19.23	-17.28/-18.22	-18.02/-15.39	-18/-18.07	-13.1/-17.87	-19.14/-15	-13.24/-16.37	-14.88/-14.37	-17.22/-11.9	-18.37/-13.53	-15.01/-18.61	-17.01/-19.11	-19.28/-16.54	-13.86/-11.89
Theta (45°)	-14.28/-18.66	-17.39/-18.43	-16.21/-14.69	-11.71/-12.3	-13.04/-17.18	-15.33/-13.69	-13.88/-11.37	-9.87/-10.94	-11.24/-19.31	-19.04/-17.43	-19.03/-18.6	-18.47/-18.06	-18.5/-18.17	-18.91/-18.11	-16.2/-17.32	-15.85/-18.53	-18.92/-18.77	-13.26/-10.38	-14.75/-12.59	-13.81/-10.96	-13.79/-13.58	-13.65/-17.13	-16.63/-16.2	-10.61/-13.52
Theta (52.5°)	-18.81/-17.67	-18.49/-17.15	-18.02/-18.22	-16.22/-16.82	-17.54/-14.93	-17.86/-11.82	-12.77/-10.38	-8.24/-10.23	-12.89/-16.54	-17.75/-15.35	-18.39/-15.42	-18.17/-17.92	-18.31/-18.76	-16.09/-18.79	-14.38/-15.82	-11.49/-17.65	-17.48/-18.5	-11.66/-14.16	-13.5/-8	-11.28/-18.26	-18.49/-18.69	-18.74/-18.44	-18.46/-12.44	-9.97/-10.99
Theta (60°)	-18.09/-18.73	-13.87/-15.95	-16.83/-19.22	-13.41/-13.46	-17.96/-17.84	-14.01/-17.67	-18.44/-12.08	-9.67/-10.21	-13.74/-18.51	-18.71/-16.56	-14.72/-17.13	-18.21/-17.98	-18.14/-16.24	-16.63/-14.8	-15.82/-18.6	-15.81/-16.87	-17.32/-17.16	-12.56/-12.59	-11.49/-10.26	-11.6/-17.77	-17.21/-18.94	-18.3/-14.77	-17.85/-10.36	-7.54/-10.93
Theta (67.5°)	-13.47/-18.66	-14.77/-18.39	-10.09/-15.27	-13.51/-17.17	-19.05/-16.18	-17.87/-18.7	-18.37/-15.64	-16.26/-17.72	-18.05/-18.95	-17.04/-16.99	-17.79/-18.74	-18.89/-17.71	-18.79/-18.38	-17.35/-13.75	-15.37/-19.06	-17.71/-18.03	-15.93/-18.94	-17.56/-15.34	-12.97/-14.11	-17.91/-16.6	-18.42/-17.68	-18.02/-18.34	-17.41/-10.91	-8.95/-12.21
Theta (75°)	-13.53/-14.06	-18.85/-17.21	-11.01/-18.1	-18.83/-15.63	-17.44/-15.28	-14.38/-13.46	-12.05/-10.35	-13.58/-17.55	-19.14/-18.34	-16.9/-19.37	-19.02/-15.53	-14.79/-14.62	-18.31/-17.99	-10.2/-9.66	-11.2/-14.9	-19/-13.81	-15.15/-18.79	-18.23/-17.65	-17.9/-18.95	-12.87/-18.75	-18.99/-15.43	-18.95/-17.98	-19.09/-14.61	-10.38/-18.16
Theta (82.5°)	-13.81/-8.66	-12.04/-13.52	-14.82/-10.59	-17.58/-18.28	-19.44/-17.89	-18.9/-19.23	-14.81/-11.59	-13.62/-9.34	-19.13/-18.28	-17.53/-13.21	-19.31/-18.33	-17.81/-18.98	-18.77/-17.86	-11.94/-12.6	-15.48/-11.67	-18.27/-12.45	-17.71/-18.27	-14.1/-19.39	-11.72/-16.98	-17.3/-10.2	-13.14/-8.01	-12.55/-11.75	-19.04/-18.65	-12.73/-19.2
Theta (90°)	-7.36/-15.45	-15.88/-19.72	-18.19/-18.04	-18.75/-12.96	-19.26/-15.12	-17.47/-13.89	-18.87/-14.5	-12.12/-14.7	-18.77/-18.61	-17.31/-15.59	-15.11/-17.88	-18.85/-15.03	-18.39/-18.14	-18.65/-13.61	-10.39/-13.67	-17.94/-15.57	-15.77/-19.12	-18.59/-18.09	-18.38/-18.12	-17.77/-12.93	-17.51/-15.13	-17.72/-14.97	-18.46/-14.91	-10.84/-8.9
Theta (97.5°)	-8.83/-9.78	-8.74/-17.37	-18.78/-17.95	-14.63/-10.58	-15.22/-13.44	-18.02/-13.15	-18.23/-9.72	-15.15/-18.28	-19.05/-16.45	-15.23/-13.92	-14.19/-14.76	-12.74/-12.15	-14.62/-19.02	-12.59/-9.05	-8.68/-17.32	-15.28/-15.42	-19.23/-18.85	-12.43/-12.41	-18.8/-16.66	-15.28/-11.36	-9.36/-7.93	-14.21/-16.61	-12.32/-8.23	-8.98/-7.61
Theta (105°)	-10.98/-16.33	-10.81/-18.96	-18.12/-18.01	-19.04/-13.14	-18.52/-18.26	-17.56/-18.09	-16.54/-11.35	-19.19/-12.48	-12.99/-13.33	-17.16/-18.72	-18.78/-18.67	-18.66/-19.06	-18.05/-19.23	-13.22/-11.31	-15.57/-15.33	-19.02/-14.77	-18.82/-19.19	-15.52/-19.1	-17.86/-19.22	-18.16/-15.5	-16.46/-14.61	-15.07/-11.06	-17.59/-15.99	-15.75/-14.11
Theta (112.5°)	-13.47/-16.66	-10.37/-11.05	-19.08/-15.71	-11.34/-17.68	-13.95/-17.9	-18.91/-19.66	-12.04/-17.25	-15.85/-10.61	-19.13/-18.7	-17.77/-18.64	-12.76/-12.61	-12.21/-14.21	-17.29/-17.61	-10.98/-13.61	-18.52/-13.82	-18.18/-18.7	-18.67/-19.08	-19.03/-13.37	-8.18/-17.38	-17.72/-12.93	-13.25/-8.07	-10.03/-10.57	-16.45/-18.83	-12.92/-13.93
Theta (120°)	-14.75/-13.65	-10.89/-10.68	-11.49/-18.82	-6.96/-10.24	-17.09/-11.91	-16.08/-18.29	-15.43/-19.23	-14/-18.2	-18.67/-17.98	-19.05/-18.83	-18.43/-14	-16.31/-18.35	-17.39/-15.46	-15.97/-12.73	-18.6/-10.8	-17.71/-17.97	-13.59/-19.34	-18.56/-18.83	-14.41/-17.36	-9.77/-17.58	-11.06/-12.1	-17.93/-18.32	-18.48/-16.15	-14.13/-14.21
Theta (127.5°)	-15.54/-17.31	-19.02/-13.17	-11.47/-10.59	-8.84/-10.79	-16.61/-10.21	-15.26/-13.89	-15.51/-18.14	-15.31/-11.37	-11.1/-18.31	-15.14/-14.46	-19.07/-18.13	-17.62/-17.83	-17.76/-12.15	-14.96/-18.77	-16.16/-18.52	-14.24/-11.96	-17.74/-13.53	-18.63/-15.29	-12.14/-15.47	-11.76/-17.19	-18.76/-18.43	-14.61/-18.84	-11.58/-11.64	-11.88/-11.61
Theta (135°)	-18.94/-18.23	-13.21/-15.41	-14.85/-12.25	-9.88/-12.63	-14.89/-12.87	-11.58/-12.65	-11.95/-10.77	-17.84/-16.62	-13.84/-15.42	-14.79/-12.24	-9.41/-15.48	-14.61/-16.57	-18.72/-19.18	-18.75/-13.54	-11.15/-10.32	-18.28/-10.78	-14.41/-18.85	-16.66/-11.93	-13.14/-17.44	-13.29/-7.46	-11.54/-16.99	-18.56/-14.14	-12.38/-13.34	-18.68/-15.53
Theta (142.5°)	-16.07/-19.51	-16.12/-16.9	-16.62/-9.62	-8.92/-11.59	-12.11/-11.82	-13.11/-15.7	-19.15/-8.1	-8.93/-17.79	-15.56/-15.72	-13.91/-17.53	-14.12/-18.39	-13.81/-17.87	-18.05/-12.24	-10.26/-8.01	-9.98/-16.02	-11.31/-16.01	-11.57/-16.67	-11.84/-8.88	-17.88/-18.7	-10.47/-8.27	-15.86/-17.35	-18.72/-17.96	-16.59/-18.99	-18.88/-18.3
Theta (150°)	-18.73/-18.28	-17.66/-13.69	-16.42/-12.51	-11.03/-6.61	-12.06/-14.08	-10.76/-14.45	-17.11/-11.1	-9.05/-11.48	-13.03/-14.33	-17.92/-18.47	-19.28/-17.68	-18.55/-18.48	-18.27/-17.28	-14.05/-12.4	-13.78/-18.54	-12.42/-7.79	-12.14/-14.8	-10.29/-11.62	-17.72/-17.21	-15.58/-10.42	-14.75/-19.28	-19.18/-18.59	-16.13/-18.12	-17.87/-18.2
Theta (157.5°)	-13.39/-18.21	-17.93/-18.46	-18.48/-12.3	-9.79/-7.7	-8.72/-13.53	-12.58/-9.59	-13.84/-12.78	-11.03/-12.76	-15.65/-17.77	-17.38/-17.94	-17.96/-19.19	-19.04/-17.44	-18.21/-17.53	-19.02/-15.47	-9.23/-11.61	-9.16/-9.55	-11.81/-14.88	-18.02/-13.33	-14.72/-16.41	-15.48/-14.54	-18.87/-18.31	-15.62/-19.32	-18.54/-17.82	
Theta (165°)	-12.73/-12.87	-13.68/-14.04	-12.01/-11.4	-8.6/-8.7	-10.16/-13.47	-13.19/-11.09	-10.44/-10.26	-10.71/-12.77	-14.29/-13.68	-18.09/-18.92	-17.9/-18.2	-17.81/-17.59	-15.24/-15.26	-11.81/-8.01	-6.09/-7.62	-8.57/-10.58	-12.82/-12.71	-12.41/-16.16	-15.06/-12.81	-13.14/-18.11	-11.81/-16.39	-16.49/-12.59	-13.14/-11.42	-11.44/-10.2
Theta (172.5°)	-15.33/-14.04	-12.52/-12.22	-12.13/-10.59	-9.66/-11.17	-10.93/-12.32	-14.41/-13.76	-16.75/-16.79	-18.17/-17.89	-18.2/-17.43	-18.95/-18.08	-19.22/-18.95	-18.83/-14.96	-16.69/-14.15	-18.43/-14.68	-13.02/-11.89	-11.28/-11.42	-14.45/-16.34	-14.21/-14.23	-14.21/-13.41	-10.65/-11.7	-11.22/-13.4	-16.76/-15.01	-18.73/-16.83	
Theta (180°)	-13.27/-15.61	-11.94/-12.83	-12.16/-11.44	-12.61/-12.34	-12.37/-15.03	-16.32/-15.45	-16.19/-17.63	-16.35/-17.26	-18.12/-18.07	-18.51/-18.26	-17.33/-18.14	-16.83/-12.65	-12.19/-11.3	-11.37/-10.9	-11.93/-11.18	-12.64/-15.14	-18.28/-18.75	-18.52/-18.63	-19.11/-19.33	-17.82/-15.19	-14.47/-13.75	-17.29/-18.72	-17.21/-18.79	-14.41/-16.3
Freq(Hz)	5.785GPol.	Theta/Ant 4																						
Gain	Phi(0°)Phi(7.5°)	Phi(15°)Phi(22.5°)	Phi(30°)Phi(37.5°)	Phi(45°)Phi(52.5°)	Phi(60°)Phi(67.5°)	Phi(75°)Phi(82.5°)	Phi(90°)Phi(97.5°)	Phi(105°)Phi(112.5°)	Phi(120°)Phi(127.5°)	Phi(135°)Phi(142.5°)	Phi(150°)Phi(157.5°)	Phi(165°)Phi(172.5°)	Phi(180°)Phi(187.5°)	Phi(195°)Phi(202.5°)	Phi(210°)Phi(217.5°)	Phi(225°)Phi(232.5°)	Phi(240°)Phi(247.5°)	Phi(255°)Phi(262.5°)	Phi(270°)Phi(277.5°)	Phi(285°)Phi(292.5°)	Phi(300°)Phi(307.5°)	Phi(315°)Phi(322.5°)	Phi(330°)Phi(337.5°)	Phi(345°)Phi(352.5°)
Theta (0°)	-14.05/-13.82	-12.68/-11.22	-11.98/-12.3	-13.67/-14.44	-16.87/-16.34	-17.24/-17.8	-18.41/-17.79	-17.39/-14.82	-16.36/-16.84	-14.56/-16.32	-16.65/-14.17	-15.23/-14.47	-14.21/-14.8	-17.11/-16.04	-16.96/-15.21	-16.12/-19.34	-18.86/-17.51	-18.59/-18.28	-18.22/-15.14	-12.18/-16.93	-18.96/-15.02	-13.44/-11.63	-11.31/-11.87	
Theta (7.5°)	-12.91/-14.67	-19.02/-19.14	-19.32/-18.41	-17.45/-18.76	-17.9/-17.9	-14.71/-15.3	-16.38/-18.04	-18.11/-17.32	-13.32/-14.22	-13.77/-11.72	-11.27/-10.16	-10/-9.76	-9.38/-9.81	-8.51/-9.48	-8.66/-9.51	-7.75/-9.04	-11.46/-12.9	-12.58/-13.88	-15.61/-14.31	-15.29/-18.15	-17.87/-12.23	-10.11/-10.12	-11.23/-12.04	-13.35/-13.46
Theta (15°)	-14.42/-15.58	-15.18/-15.13	-17.42/-16.52	-17.12/-16.37	-11.41/-11.76	-11.32/-11.53	-10.22/-9.1	-8.68/-10.06	-10.38/-9.05	-7.34/-7.62	-7.4/-7.73	-7.41/-8	-8.07/-8.35	-8.17/-6.61	-6.88/-7.6	-6.85/-5.84	-10.4/-12.39	-12.38/-12.39	-13.91/-15.16	-18.19/-19.06	-18.79/-17.33	-16.05/-14.45	-16.89/-18.45	-18/-17.13
Theta (22.5°)	-12.17/-15.85	-14.35/-13.34	-11.49/-14.89	-18.88/-15.49	-14.28/-15.43	-13.08/-10.05	-9.59/-9.77	-12.03/-12.9	-10.2/-9.39	-9.31/-11.4	-10.23/-7.75	-8.24/-7.39	-10.15/-9.64	-13.62/-9.72	-11.21/-11.82	-4.42/-3.71	-7.93/-8.78	-12.55/-14.84						













# Antenna Pattern (2.4GHz and 5GHz UNII 1~UNII 5)

# Appendix B

θ (127.5°)	-7.081-10.18	-12.021-8.80	-7.441-12.69	-9.201-7.37	-7.021-6.77	-8.341-8.46	-8.311-5.88	-7.781-9.05	-7.891-6.29	-4.781-5.33	-6.961-11.96	-12.731-14.23	-14.091-11.10	-14.251-13.26	-12.961-13.08	-10.171-7.89	-12.301-9.92	-15.391-10.33	-9.641-12.48	-12.971-9.14	-12.151-15.31	-14.491-9.77	-7.191-8.64	-7.481-15.16
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°)	-13.691-14.70	-12.301-10.57	-12.281-13.00	-13.001-12.08	-11.251-11.45	-11.491-11.81	-11.991-13.45	-13.221-13.10	-12.471-13.06	-13.421-13.14	-12.451-12.45	-12.511-13.31	-15.491-16.38	-13.631-10.17	-12.071-14.20	-15.781-15.28	-14.411-13.96	-16.291-15.07	-11.851-12.07	-12.571-14.36	-15.831-14.28	-12.271-11.30	-12.181-12.42	
θ (7.5°)	-9.811-10.22	-11.121-10.56	-12.151-12.00	-12.051-11.40	-15.811-14.94	-15.221-15.91	-15.331-15.10	-16.161-15.18	-15.351-15.76	-14.891-15.13	-14.801-12.85	-13.611-12.98	-10.671-10.53	-10.771-12.06	-11.251-10.93	-9.531-9.79	-9.091-10.09	-9.591-9.02	-8.711-8.25	-8.641-8.93	-9.741-9.73	-10.871-9.85		
θ (15°)	-7.601-8.69	-8.841-9.10	-10.421-10.44	-9.801-11.51	-12.211-11.40	-11.291-10.51	-11.361-11.12	-11.041-11.85	-12.541-13.61	-15.121-15.24	-15.461-15.05	-15.241-14.60	-14.271-14.19	-13.761-13.03	-11.441-10.99	-10.401-9.62	-10.461-10.56	-11.651-11.22	-10.761-10.27	-9.891-10.04	-9.191-7.73	-6.531-6.30	-6.131-5.34	-5.661-6.38
θ (22.5°)	-8.981-7.15	-5.741-6.30	-6.591-6.59	-6.361-5.97	-5.541-5.51	-5.761-5.64	-6.251-6.08	-6.611-7.08	-7.631-8.80	-10.251-12.49	-12.261-14.85	-14.441-15.53	-14.401-15.35	-13.451-11.18	-8.931-7.62	-8.591-8.83	-9.891-11.91	-14.681-12.64	-10.491-8.98	-8.081-7.96	-7.971-8.02	-9.201-11.51	-10.601-9.71	-8.411-9.83
θ (30°)	-4.311-3.00	-2.781-2.88	-3.411-3.38	-3.661-3.64	-3.561-3.77	-4.071-4.14	-4.101-4.94	-4.271-4.85	-4.621-5.45	-5.181-5.37	-6.111-6.48	-7.821-8.58	-9.811-10.95	-11.991-13.86	-14.291-12.94	-13.431-14.78	-15.901-13.67	-13.521-12.43	-9.491-7.68	-6.911-7.29	-8.751-8.07	-8.401-10.97	-15.441-14.45	-9.661-7.41
θ (37.5°)	-2.031-1.51	-3.581-6.08	-6.981-6.04	-5.351-5.76	-5.651-7.44	-9.201-9.40	-13.351-13.83	-15.371-14.97	-11.761-8.70	-5.951-4.93	-5.481-5.16	-3.421-4.08	-6.281-8.98	-7.421-9.05	-12.661-11.01	-9.291-10.51	-12.331-15.27	-15.411-15.41	-13.321-14.00	-12.751-9.27	-8.411-7.90	-7.701-10.43	-12.361-11.69	-8.161-4.99
θ (45°)	-2.931-2.92	-2.181-2.14	-4.071-5.99	-9.431-9.27	-6.221-5.06	-6.781-6.77	-5.951-5.32	-4.741-5.66	-6.961-6.88	-9.311-8.32	-8.841-7.33	-3.811-8.11	-2.641-0.33	-3.941-4.70	-5.711-4.03	-3.251-4.50	-4.931-6.61	-5.221-6.11	-6.921-4.03	-2.971-5.53	-6.771-9.41	-5.651-2.40	-2.821-3.84	
θ (52.5°)	-6.401-5.65	-4.991-8.22	-11.271-10.70	-6.851-4.85	-5.381-4.09	-2.781-2.22	-3.921-5.89	-4.421-4.53	-5.181-5.37	-4.901-4.79	-8.821-8.58	-8.721-5.17	-2.761-3.97	-4.771-3.61	-4.151-4.00	-3.981-4.53	-4.931-3.12	-4.491-3.81	-4.571-6.53	-3.611-2.91	-2.851-2.01	-1.911-2.73	-4.541-7.25	
θ (60°)	-8.051-12.08	-5.021-3.02	-2.071-0.81	-2.591-1.97	-1.301-2.64	-4.251-3.44	-2.441-3.72	-3.751-2.01	-1.401-1.90	-2.001-1.82	-2.951-6.42	-6.271-8.88	-8.481-8.14	-8.791-6.60	-4.391-4.57	-6.011-7.76	-7.761-4.21	-3.851-4.68	-4.431-5.84	-7.141-9.64	-6.251-5.69	-6.921-6.25	-4.981-3.93	-5.311-7.02
θ (67.5°)	-3.741-1.11	-0.701-0.46	0.211-0.32	-0.701-0.74	-0.341-0.74	-4.721-4.47	-6.971-8.60	-4.881-7.98	-7.651-7.87	-7.421-3.24	-2.191-3.52	-1.781-2.05	-3.721-1.64	-3.481-4.44	-3.521-3.64	-4.061-5.18	-4.391-6.69	-7.491-3.81	-2.831-4.77	-7.901-5.53	-4.651-7.61	-5.691-5.10	-5.321-6.50	-2.931-1.08
θ (75°)	-1.241-3.65	-4.381-5.13	-5.931-0.08	-1.981-0.01	-0.831-0.75	1.921-7.01	0.311-3.99	2.351-1.09	0.361-2.03	1.211-9.44	-5.091-3.72	-2.041-8.88	-0.501-3.99	0.031-1.53	-1.301-0.73	-0.861-0.21	-3.761-2.63	-4.371-0.93	-3.751-4.15	-1.181-0.95	-3.901-2.54	-1.171-1.75	-4.471-3.40	-0.951-0.49
θ (82.5°)	-4.291-8.26	-9.461-3.38	-4.191-0.38	-1.931-1.43	-0.841-1.06	-0.231-1.60	-2.411-3.72	-2.321-1.83	-1.301-0.65	-2.581-2.63	-3.261-3.09	-3.581-3.17	-2.581-2.45	-0.011-1.15	-2.801-4.47	-3.551-1.57	0.321-2.17	4.271-3.74	-5.481-6.42	-3.441-0.88	-3.571-0.91	-1.101-2.12	-1.551-4.02	-4.991-5.35
θ (90°)	0.071-1.82	-3.121-1.57	-3.931-1.02	-6.431-2.14	-3.361-1.56	-0.521-3.32	-3.401-0.93	-3.001-3.75	1.521-1.50	-1.001-1.28	-2.911-1.35	-1.001-1.28	-2.041-1.77	-0.011-1.29	-4.011-1.79	-2.711-6.63	-2.291-1.13	-2.671-4.49	-1.181-0.74	-3.681-0.63	-1.491-2.70	-4.021-1.37	-2.371-1.81	
θ (97.5°)	-2.041-7.28	-6.061-1.90	-2.271-2.01	-1.331-0.75	-0.561-0.60	-0.531-2.26	-1.621-0.46	1.171-1.01	0.311-5.16	1.601-1.58	-1.691-1.88	-1.581-1.48	-1.551-2.81	-2.761-1.13	-1.621-2.08	-0.881-1.71	-6.341-3.21	-0.761-1.20	-1.551-0.79	-3.751-4.15	-1.091-0.95	-3.221-1.76	-0.751-3.57	-1.541-3.51
θ (105°)	-5.921-5.59	-5.111-4.88	-6.721-3.64	-4.711-7.22	-7.481-9.24	-12.081-15.55	-14.451-13.64	-12.971-8.14	-5.321-6.71	-9.811-8.21	-4.151-4.62	-3.861-2.81	-4.521-5.67	-2.661-6.97	-9.751-4.73	-6.891-3.28	-3.861-9.15	-5.621-3.11	-8.531-9.20	-4.751-5.17	-13.901-3.83	-2.871-5.48	-9.591-10.03	-11.021-9.69
θ (112.5°)	-5.741-14.33	-7.681-12.04	-15.211-11.82	-7.611-1.18	-4.291-2.49	0.311-3.30	-3.481-3.77	-7.701-6.69	-7.211-8.34	-11.961-10.12	-5.501-1.46	-2.841-3.81	-4.861-5.32	-6.161-7.72	-14.991-10.49	-7.951-10.23	-7.741-5.96	-6.321-11.64	-5.201-5.01	-9.301-6.60	-4.101-5.64	-10.571-8.69	-11.381-9.69	
θ (120°)	-2.171-9.12	-11.831-11.20	-7.951-7.62	-6.411-6.60	-4.731-2.69	-1.231-2.33	-4.681-4.09	-2.871-6.65	-1.491-2.46	-2.381-3.28	-5.521-7.82	-7.921-3.75	-5.921-6.99	-5.081-4.84	-5.101-10.32	-6.091-7.99	-7.431-7.55	-5.921-8.88	-9.291-15.56	-6.521-6.65	-6.541-7.46	-8.661-4.41	-3.651-4.39	-3.631-1.48
θ (127.5°)	-4.051-8.25	-8.131-5.47	-7.061-9.26	-9.511-7.99	-8.861-9.52	-9.411-8.23	-10.021-8.13	-6.211-3.59	-4.141-4.63	-4.541-5.99	-8.291-9.50	-13.081-12.48	-11.641-10.89	-8.881-3.98	-4.391-6.86	-10.131-5.44	-10.141-7.47	-7.141-9.99	-11.451-10.17	-6.341-4.12	-6.191-8.87	-11.871-11.42	-11.081-11.79	-9.771-4.33
θ (135°)	-13.081-11.27	-11.561-12.71	-11.771-11.00	-6.831-6.09	-5.871-3.72	-3.021-2.38	-3.731-3.58	-5.681-4.84	-6.151-7.36	-6.811-5.63	-6.631-10.44	-10.011-11.79	-14.241-14.91	-12.901-13.87	-7.631-6.74	-15.291-14.86	-10.651-9.47	-12.081-10.40	-13.561-10.29	-8.971-7.03	-6.701-7.86	-13.141-8.96	-7.811-13.83	-14.871-13.53
θ (142.5°)	-7.081-9.44	-12.781-12.52	-8.481-5.67	-4.561-6.90	-7.821-7.20	-6.041-0.47	-4.261-5.17	-4.521-3.44	-6.661-7.87	-9.401-10.21	-13.091-12.33	-12.831-10.46	-14.801-12.75	-8.041-9.04	-12.441-10.35	-10.571-15.30	-9.201-5.87	-5.201-7.87	-13.521-11.71	-7.491-5.98	-5.951-7.40	-6.621-5.90	-6.871-5.82	-7.341-8.67
θ (150°)	-6.961-8.06	-9.471-8.81	-10.711-8.59	-7.661-7.01	-5.901-5.65	-5.101-4.89	-5.111-5.41	-3.661-4.37	-3.031-3.25	-3.141-4.43	-6.281-10.66	-15.351-11.86	-8.431-6.95	-7.001-6.68	-5.381-6.42	-7.561-9.84	-10.541-9.27	-7.701-7.17	-6.901-3.56	-3.251-3.81	-6.491-8.76	-10.211-8.63	-7.501-6.26	
θ (157.5°)	-14.881-14.24	-12.811-11.29	-9.521-9.81	-7.941-8.47	-11.731-10.71	-7.151-5.08	-4.301-4.99	-3.901-3.11	-2.831-3.33	-3.651-2.40	-5.111-5.94	-6.361-6.46	-5.011-3.66	-2.621-3.33	-4.311-5.54	-6.791-7.75	-7.851-6.47	-6.191-8.81	-11.311-10.25	-8.161-8.08	-8.441-10.78	-13.691-14.98	-14.731-10.76	-9.611-11.24
θ (165°)	-11.031-10.73	-12.161-12.66	-11.531-10.15	-9.821-10.86	-13.891-15.67	-11.951-8.36	-6.911-6.11	-5.441-6.63	-3.601-4.41	-5.481-5.59	-5.431-6.49	-7.001-7.52	-7.691-6.74	-5.961-4.97	-4.611-5.06	-7.561-10.84	-11.251-9.91	-10.221-12.16	-8.391-7.57	-6.871-6.15	-7.491-9.03	-11.761-12.35	-14.141-14.80	
θ (172.5°)	-11.371-12.74	-12.171-9.29	-9.291-8.99	-8.231-9.51	-11.761-13.17	-12.171-10.01	-8.081-7.24	-7.431-7.25	-7.431-9.51	-11.401-12.02	-12.351-12.93	-11.361-12.57	-11.311-9.83	-9.481-12.26	-14.971-15.65	-15.271-12.25	-10.601-9.35	-8.451-8.03	-7.291-7.01	-6.001-6.76	-7.721-8.02	-8.811-9.69	-9.411-9.26	
θ (180°)	-8.471-8.25	-8.041-8.41	-8.521-8.14	-7.611-7.95	-8.671-9.09	-9.381-9.78	-8.641-8.74	-8.771-8.40	-8.971-9.12	-9.241-9.35	-9.421-9.61	-8.901-8.17	-8.511-9.97	-10.111-9.30	-7.961-8.79	-9.001-10.08	-9.671-10.25	-11.671-12.63	-12.421-11.57	-12.441-10.37	-9.881-10.14	-10.911-10.04	-9.651-9.58	-9.201-8.74
Freq(Hz)	5.650Pol.	TotalAnt.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gain	Φ(0°)Φ(7.5°)	Φ(15°)Φ(22.5°)	Φ(30°)Φ(37.5°)	Φ(45°)Φ(52.5°)	Φ(60°)Φ(67.5°)	Φ(75°)Φ(82.5°)	Φ(90°)Φ(97.5°)	Φ(105°)Φ(112.5°)	Φ(120°)Φ(127.5°)	Φ(135°)Φ(142.5°)	Φ(150°)Φ(157.5°)	Φ(165°)Φ(172.5°)	Φ(180°)Φ(187.5°)	Φ(195°)Φ(202.5°)	Φ(210°)Φ(217.5°)	Φ(225°)Φ(232.5°)	Φ(240°)Φ(247.5°)	Φ(255°)Φ(262.5°)	Φ(270°)Φ(277.5°)	Φ(285°)Φ(292.5°)	Φ(300°)Φ(307.5°)	Φ(315°)Φ(322.5°)	Φ(330°)Φ(337.5°)	Φ(345°)Φ(352.5°)
θ (0°)	-12.071-11.35	-10.231-9.13	-9.511-10.49	-10.611-10.33	-10.921-10.62	-9.921-9.70	-9.251-8.57	-8.171-8.19	-8.271-8.34	-8.001-8.16	-7.901-8.41	-8.651-8.76	-8.301-7.83	-8.131-9.33	-9.161-9.49	-10.011-11.51	-11.481-11.67	-10.831-9.91	-10.071-11.03	-12.021-12.25	-11.891-11.52	-12.351-13.27	-13.541-12.03	-12.481-12.72
θ (7.5°)	-12.301-11.62	-12.241-12.71	-11.531-11.41	-11.121-11.16	-11.241-11.55	-12.031-13.48	-14.301-14.29	-15.311-15.25	-15.001-15.14	-14.981-15.68	-14.801-14.97	-15.221-12.92	-10.941-9.53	-10.121-10.92	-9.451-8.19	-7.821-8.97	-8.431-6.47	-5.741-5.86	-6.971-7.33	-7.351-7.03	-7.211-6.96	-6.831-6.72	-6.541-7.12	-9.081-11.81
θ (15°)	-4.681-5.83	-6.481-7.09	-7.611-7.77	-8.661-9.39	-10.441-11.39	-12.401-14.26	-14.171-12.94	-13.201-12.21	-11.871-11.79	-12.571-12.60	-12.441-13.72	-13.611-12.50	-11.281-10.06	-8.871-7.44	-7.261-6.67									





E1(XY plane) –  $\Theta(90)\Phi(0-360)$   
 E2(XZ plane) –  $\Theta(0-180)\Phi(0)$  and  $\Theta(0-180)\Phi(180)$   
 E3(YZ plane) –  $\Theta(0-180)\Phi(90)$  and  $\Theta(0-180)\Phi(270)$

