



Antenna Composite Gain Test Report

FCC ID	MSQ-RTBE6M00
Equipment	ROG Rapture GT-BE98 Pro BE30000 Quad-band Gaming Router
Brand Name	ASUS
Model Name	GT-BE98 Pro
Applicant	ASUSTeK COMPUTER INC. 1F., No. 15, Lide Rd., Beitou, Taipei City 112, Taiwan
Manufacturer	ASUSTeK COMPUTER INC. 1F., No. 15, Lide Rd., Beitou, Taipei City 112, Taiwan
Sample Received	Jun. 16, 2023
Start Test Date	Jun. 26, 2023
Final Test Date	Jun. 26, 2023

Approved by: Sam Chen

Sporton International Inc. Hsinchu Laboratory

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History of this test report

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1. Operation Mode and Antenna Information

Ant. Position	Port				Brand	Model Name			Antenna Type	Connector	Modes of Operation
	WLAN 2.4GHz	WLAN 5GHz	WLAN 6GHz UNII 5/6	WLAN 6GHz UNII 7/8		WLAN 2.4GHz / WLAN5GHz	WLAN 6GHz UNII 5/6	WLAN 6GHz UNII 7/8			
6GL Ant1	-	-	1	-	Whayu	-	C660-510595-AW1	-	Dipole	I-PEX	6GHz UNII 5~6
6GL Ant2	-	-	2	-	Whayu	-	C660-510596-AW1	-	Dipole	I-PEX	6GHz UNII 5~6
6GL Ant3	-	-	3	-	Whayu	-	C660-510597-AW1	-	Dipole	I-PEX	6GHz UNII 5~6
6GL Ant4	-	-	4	-	Whayu	-	C660-510598-AW1	-	Dipole	I-PEX	6GHz UNII 5~6
6GH Ant1	-	-	-	1	Whayu	-	-	C660-510595-AW2	Dipole	I-PEX	6GHz UNII 7~8
6GH Ant2	-	-	-	4	Whayu	-	-	C660-510596-AW2	Dipole	I-PEX	6GHz UNII 7~8
6GH Ant3	-	-	-	2	Whayu	-	-	C660-510597-AW2	Dipole	I-PEX	6GHz UNII 7~8
6GH Ant4	-	-	-	3	Whayu	-	-	C660-510598-AW2	Dipole	I-PEX	6GHz UNII 7~8
2G5G Ant1	4	1	-	-	Whayu	C660-510591-AW1	-	-	Dipole	I-PEX	2.4GHz, 5GHz UNII 1~3
2G5G Ant2	1	4	-	-	Whayu	C660-510592-AW1	-	-	Dipole	I-PEX	2.4GHz, 5GHz UNII 1~3
2G5G Ant3	2	3	-	-	Whayu	C660-510593-AW1	-	-	Dipole	I-PEX	2.4GHz, 5GHz UNII 1~3
2G5G Ant4	3	2	-	-	Whayu	C660-510594-AW1	-	-	Dipole	I-PEX	2.4GHz, 5GHz UNII 1~3

Note:

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

2G5GAnt1~4 can be used as transmitting/receiving antenna.

2G5GAnt1~4 could transmit/receive simultaneously.

6GHz Operation Mode (4TX/4RX) – UNII 5~6

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

6GL Ant1~4 could transmit/receive simultaneously.

6GHz Operation Mode (4TX/4RX) – UNII 7~8

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

6GH Ant1~4 could transmit/receive simultaneously.



2. Test Frequency

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

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

3. Testing Location

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

Test Condition	Test Site No.	Test Engineer	Test Environment (°C / %)	Test Date
Radiated	05CH03-HY	Rex Liao	23.5-24 / 40-50	Jun. 26, 2023

Note:

Testing Site Information

Brand Name: TDK

Dimension: 11m*6m*6m

Characteristic: Fully Anechoic Chamber

4. Test Facility and Configuration

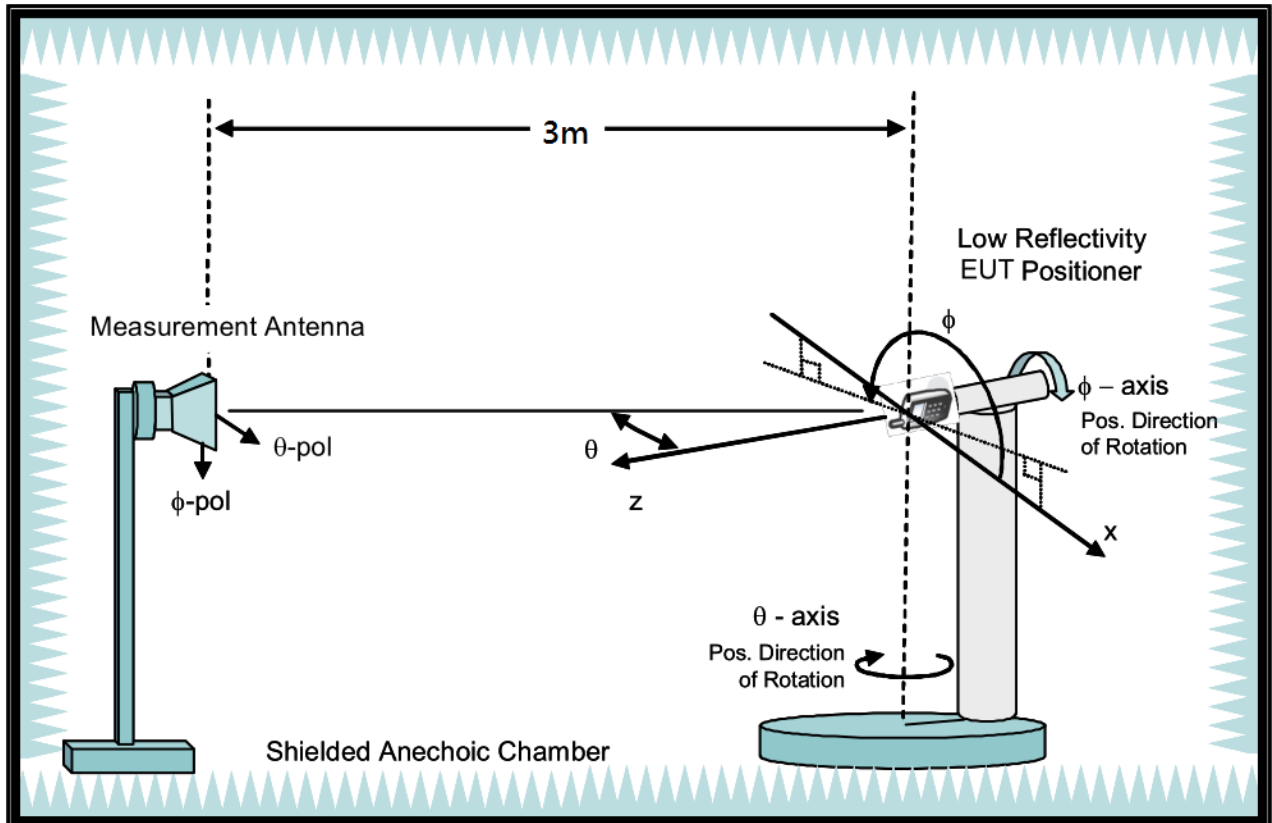
Test configuration: Reference to CITA OTA distributed-axes system configuration.

Chamber: Fully Anechoic Chamber.

Measurement antenna: Dual Polarization Horn antenna

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

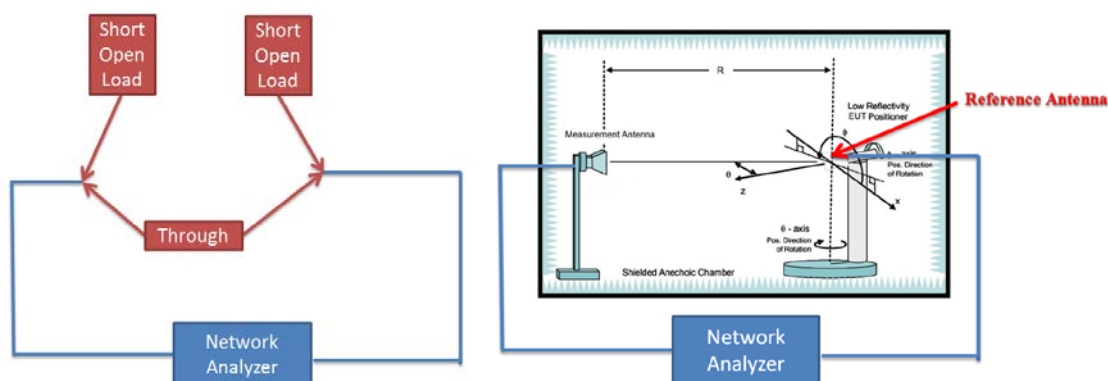
#Reference to CTIA "ctia-test-plan-for-wireless-device-over-the-air-performance-ver-3-7-1"



5. Reference Calibration

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

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



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

Note:

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

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

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

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

6. Test Method

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

DG steps:

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

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

7. Measured Values and Calculation of Maximum Gain Positions

For 2G5G Ant1~4:

DG_1SS max value position

Frequency (Hz)	2.45G	5.2G	5.3G	5.6G	5.785G
Ant. 1 (dBi)	-2.98	1.02	-3.23	-0.13	-1.08
Ant. 2 (dBi)	-2.37	0.48	-0.22	1.93	1.97
Ant. 3 (dBi)	3.25	-0.11	1.31	-0.88	-1.2
Ant. 4 (dBi)	1.41	-2.18	0.47	-1.67	-1.08
DG [1SS] (dBi)	6.24	5.9	5.76	5.94	5.78
Polarization	Theta	Theta	Theta	Theta	Theta
$\Theta(^{\circ})$	60	97.5	90	90	82.5
$\Phi(^{\circ})$	352.5	255	352.5	285	277.5

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

DG_1SS max value position calculation

Frequency (Hz)	2.45G	5.2G	5.3G	5.6G	5.785G
Ant. 1 [$10^{(G/20)}$]	$10^{(-2.98/20)}$	$10^{(1.02/20)}$	$10^{(-3.23/20)}$	$10^{(-0.13/20)}$	$10^{(-1.08/20)}$
Ant. 2 [$10^{(G/20)}$]	$10^{(-2.37/20)}$	$10^{(0.48/20)}$	$10^{(-0.22/20)}$	$10^{(1.93/20)}$	$10^{(1.97/20)}$
Ant. 3 [$10^{(G/20)}$]	$10^{(3.25/20)}$	$10^{(-0.11/20)}$	$10^{(1.31/20)}$	$10^{(-0.88/20)}$	$10^{(-1.2/20)}$
Ant. 4 [$10^{(G/20)}$]	$10^{(1.41/20)}$	$10^{(-2.18/20)}$	$10^{(0.47/20)}$	$10^{(-1.67/20)}$	$10^{(-1.08/20)}$
Ant. 1 [$10^{(G/20)}$] value	0.71	1.125	0.689	0.985	0.883
Ant. 2 [$10^{(G/20)}$] value	0.761	1.057	0.975	1.249	1.255
Ant. 3 [$10^{(G/20)}$] value	1.454	0.987	1.163	0.904	0.871
Ant. 4 [$10^{(G/20)}$] value	1.176	0.778	1.056	0.825	0.883
Sum All Antenna [Amax]	4.101	3.947	3.883	3.963	3.892
DG [$10 \cdot \log(A_{max}^2/N_{ant})$]	6.24	5.9	5.76	5.94	5.78

Note:

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

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

**For 6G Ant1~4:****DG_1SS max value position**

Frequency (Hz)	6.175G	6.475G
Ant. 1 (dBi)	0.37	1.69
Ant. 2 (dBi)	-2.97	-2.72
Ant. 3 (dBi)	-0.28	-0.12
Ant. 4 (dBi)	0.96	0.82
DG [1SS] (dBi)	5.66	6.09
Polarization	Theta	Theta
$\Theta(^{\circ})$	82.5	82.5
$\Phi(^{\circ})$	15	7.5

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

Frequency (Hz)	6.695G	6.995G
Ant. 1 (dBi)	-0.72	-2.1
Ant. 2 (dBi)	-2.28	-1.04
Ant. 3 (dBi)	-0.28	2.39
Ant. 4 (dBi)	0.82	-0.33
DG [1SS] (dBi)	5.48	5.92
Polarization	Theta	Theta
$\Theta(^{\circ})$	82.5	75
$\Phi(^{\circ})$	52.5	195

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

DG_1SS max value position calculation

Frequency (Hz)	6.175G	6.475G
Ant. 1 [10 ^{^(G/20)}]	10 ^{^(0.37/20)}	10 ^{^(1.69/20)}
Ant. 2 [10 ^{^(G/20)}]	10 ^{^(-2.97/20)}	10 ^{^(-2.72/20)}
Ant. 3 [10 ^{^(G/20)}]	10 ^{^(-0.28/20)}	10 ^{^(-0.12/20)}
Ant. 4 [10 ^{^(G/20)}]	10 ^{^(0.96/20)}	10 ^{^(0.82/20)}
Ant. 1 [10 ^{^(G/20)}] value	1.044	1.215
Ant. 2 [10 ^{^(G/20)}] value	0.71	0.731
Ant. 3 [10 ^{^(G/20)}] value	0.968	0.986
Ant. 4 [10 ^{^(G/20)}] value	1.117	1.099
Sum All Antenna [Amax]	3.839	4.031
DG [10*log(Amax ² /Nant)]	5.66	6.09

Frequency (Hz)	6.695G	6.995G
Ant. 1 [10 ^{^(G/20)}]	10 ^{^(-0.72/20)}	10 ^{^(-2.1/20)}
Ant. 2 [10 ^{^(G/20)}]	10 ^{^(-2.28/20)}	10 ^{^(-1.04/20)}
Ant. 3 [10 ^{^(G/20)}]	10 ^{^(-0.28/20)}	10 ^{^(2.39/20)}
Ant. 4 [10 ^{^(G/20)}]	10 ^{^(0.82/20)}	10 ^{^(-0.33/20)}
Ant. 1 [10 ^{^(G/20)}] value	0.92	0.785
Ant. 2 [10 ^{^(G/20)}] value	0.769	0.887
Ant. 3 [10 ^{^(G/20)}] value	0.968	1.317
Ant. 4 [10 ^{^(G/20)}] value	1.099	0.963
Sum All Antenna [Amax]	3.757	3.952
DG [10*log(Amax ² /Nant)]	5.48	5.92

Note:

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

Directional gain (1SS) = 10*log(10^{^(G_{ant1}/20)}+10^{^(G_{ant2}/20)}+ +10^{^(G_{ant3}/20)} +10^{^(G_{ant4}/20)}+.....)²/N_{ant})

8. Summary of Test Result

For 2G5G Ant1~4:

Freq(Hz)	2.45G	5.2G	5.3G	5.6G	5.785G
Ant. 1 Max Gain (dBi)	3.22	2.16	1.26	2.44	3.08
Ant. 2 Max Gain (dBi)	3.31	2.91	2.84	2.86	4.2
Ant. 3 Max Gain (dBi)	4.09	4.07	3.99	3.62	3.02
Ant. 4 Max Gain (dBi)	1.94	2.3	2.28	2.41	3.66
Ant. 1 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$	Theta/97.5/345	Theta/97.5/262.5	Theta/75/45	Phi/172.5/180	Phi/165/195
Ant. 2 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$	Theta/105/202.5	Theta/60/67.5	Theta/105/247.5	Theta/82.5/247.5	Theta/180/75
Ant. 3 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$	Theta/52.5/352.5	Theta/60/0	Theta/60/7.5	Theta/60/0	Theta/90/202.5
Ant. 4 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$	Theta/67.5/337.5	Theta/90/187.5	Theta/90/150	Theta/97.5/187.5	Theta/82.5/187.5
Max Gain (dBi)	4.09	4.07	3.99	3.62	4.2
DG [1SS] (dBi)	6.24	5.9	5.76	5.94	5.78
DG [2SS] (dBi)	4.09	4.07	3.99	3.62	4.2
DG [4SS] (dBi)	4.09	4.07	3.99	3.62	4.2

Note:

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

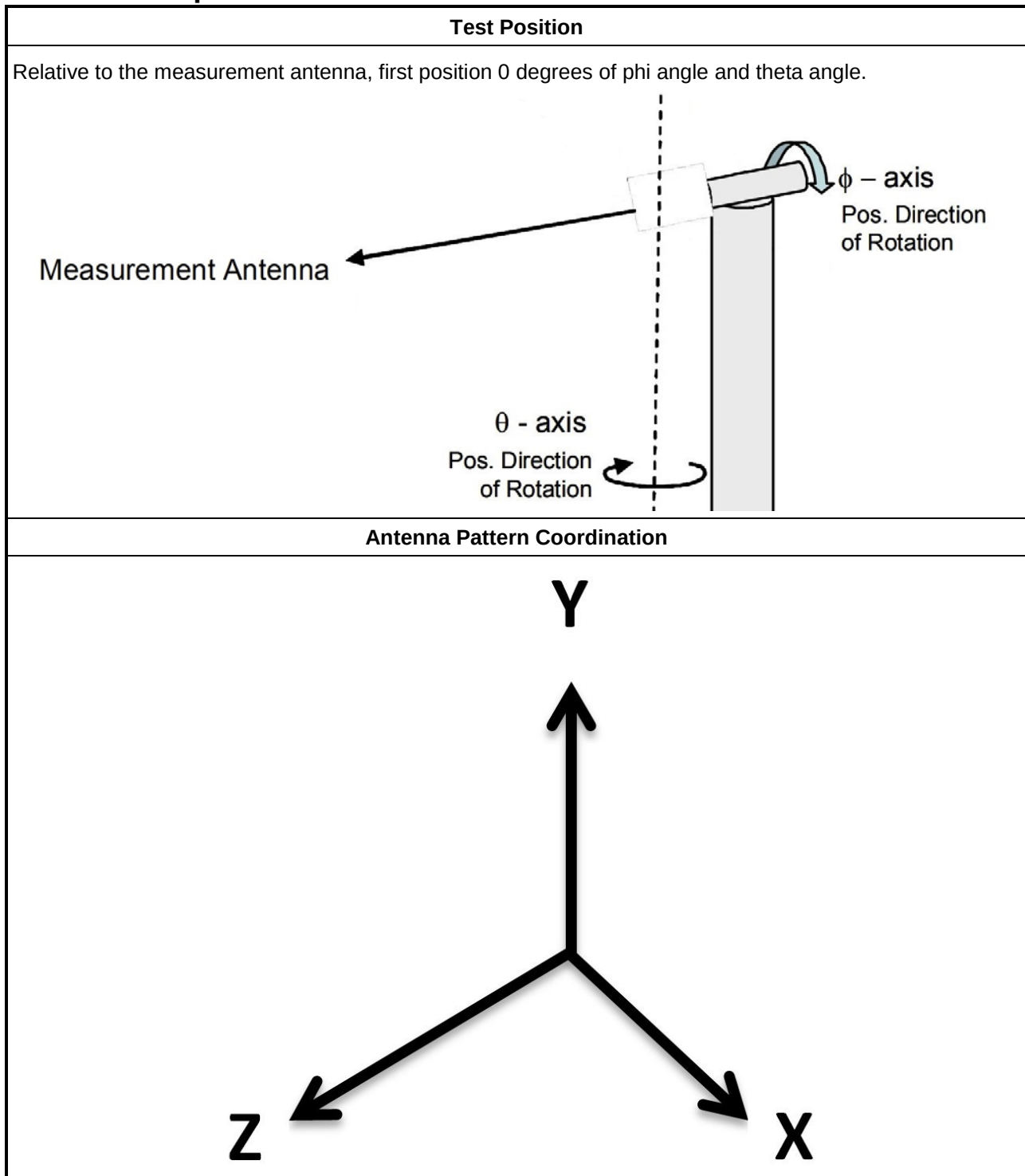
For 6G Ant1~4:

Frequency (Hz)	6.175G	6.475G	6.695G	6.995G
Ant. 1 Max Gain (dBi)	1.8	1.69	1.38	1.91
Ant. 2 Max Gain (dBi)	1.95	1.21	2.3	3.01
Ant. 3 Max Gain (dBi)	1.82	1.56	3.5	3.51
Ant. 4 Max Gain (dBi)	1.74	2.31	3.29	2.92
Ant. 1 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$	Theta/82.5/127.5	Theta/82.5/7.5	Theta/82.5/120	Theta/105/97.5
Ant. 2 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$	Theta/90/60	Theta/82.5/97.5	Theta/97.5/352.5	Theta/97.5/7.5
Ant. 3 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$	Theta/60/195	Theta/82.5/352.5	Theta/120/307.5	Theta/67.5/142.5
Ant. 4 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$	Theta/60/150	Theta/120/232.5	Theta/82.5/300	Theta/82.5/247.5
Max Gain (dBi)	1.95	2.31	3.5	3.51
DG [1SS] (dBi)	5.66	6.09	5.48	5.92
DG [2SS] (dBi)	1.95	2.31	3.5	3.51
DG [4SS] (dBi)	1.95	2.31	3.5	3.51

Note:

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

9. Test Setup



Note:

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

**10. Test Equipment and Calibration Data**

Instrument	Brand	Model No.	Serial No.	Characteristics	Calibration Date	Calibration Due Date
Horn Antenna	SCHWARZBECK	BBHA9120D	BBHA 9120D-1543	1GHz~18GHz	May 11, 2023	May 10, 2024
Dual Polarization Horn Antenna	Sporton	S0209DP	S0209DP-001	2GHz~9GHz	N.C.R.	N.C.R.
ENA Series Network Analyzer	AGILENT	E5071C	MY46419477	100kHz~8.5GHz	Jul. 20, 2022	Jul. 19, 2023
VNA Calibration Kit	TS RF	TS85033E-F	-	DC~9GHz	N.C.R.	N.C.R.
Multi-axis positioner	Sporton	MAPS01	MAPS01-001	Theta / Phi axis	N.C.R.	N.C.R.
Test Software	SPORTON	SENSE-RDG	V1.0.8	-	N.C.R.	N.C.R.

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



11. Test Results

Please refer to the appendix.

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Freq(Hz)	2.45G	5.2G	5.3G	5.6G	5.785G
Ant. 1 Max Gain (dBi)	3.22	2.16	1.26	2.44	3.08
Ant. 2 Max Gain (dBi)	3.31	2.91	2.84	2.86	4.2
Ant. 3 Max Gain (dBi)	4.09	4.07	3.99	3.62	3.02
Ant. 4 Max Gain (dBi)	1.94	2.3	2.28	2.41	3.66
Ant. 1 Polarization/θ(°)/Φ(°)	Theta/97.5/345	Theta/97.5/262.5	Theta/75/45	Phi/172.5/180	Phi/165/195
Ant. 2 Polarization/θ(°)/Φ(°)	Theta/105/202.5	Theta/60/67.5	Theta/105/247.5	Theta/82.5/247.5	Theta/180/75
Ant. 3 Polarization/θ(°)/Φ(°)	Theta/52.5/352.5	Theta/60/0	Theta/60/7.5	Theta/60/0	Theta/90/202.5
Ant. 4 Polarization/θ(°)/Φ(°)	Theta/67.5/337.5	Theta/90/187.5	Theta/90/150	Theta/97.5/187.5	Theta/82.5/187.5
Max Gain (dBi)	4.09	4.07	3.99	3.62	4.2
DG [1SS] (dBi)	6.24	5.9	5.76	5.94	5.78
DG [2SS] (dBi)	4.09	4.07	3.99	3.62	4.2
DG [4SS] (dBi)	4.09	4.07	3.99	3.62	4.2



Radiated Composite Gain of 2.4GHz and 5GHz UNII 1~3

Appendix A

DG 1SS Result

Freq(Hz)	2.45GPol.	PhiL	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°)
DG(dB)	Φ(0°)Φ(7.5°)	Φ(15°)Φ(22.5°)	Φ(30°)Φ(37.5°)	Φ(45°)Φ(52.5°)	Φ(60°)Φ(67.5°)	Φ(75°)Φ(82.5°)	Φ(90°)Φ(97.5°)	Φ(105°)Φ(112.5°)	Φ(120°)Φ(127.5°)	Φ(135°)Φ(142.5°)	Φ(150°)Φ(157.5°)	Φ(165°)Φ(172.5°)	Φ(180°)Φ(187.5°)	Φ(195°)Φ(202.5°)	Φ(210°)Φ(217.5°)	Φ(225°)Φ(232.5°)	Φ(240°)Φ(247.5°)	Φ(255°)Φ(262.5°)	Φ(270°)Φ(277.5°)	Φ(285°)Φ(292.5°)	Φ(300°)Φ(307.5°)	Φ(315°)Φ(322.5°)	Φ(330°)Φ(337.5°)	Φ(345°)Φ(352.5°)
Θ(0°)	-5.65/-6.21	-7.2/-7.69	-7.99/-7.59	-7.74/-8.51	-8.66/-0.05	-7.14/-6.56	-6/-5.27	-5.1/-4.7	-4.79/-4.83	-4.76/-4.78	-4.53/-4.14	-5.51/-5.53	-6.24/-6.95	-7.73/-9.22	-9.92/-9.24	-8.6/-8.34	-8.29/-6.77	-7.24/-1.72	-6.87/-6.23	-5.18/-4.27	-4.33/-4.95	-5.06/-4.43	-3.9/-4.05	-4.74/-5.85
Θ(7.5°)	-7.16/-8.05	-8.84/-9.41	-9.04/-8.59	-8.31/-9.13	-9.57/-8.58	-7.94/-7.37	-6.82/-6	-5.53/-5.44	-5.38/-5.46	-5.58/-5.15	-4.72/-4.73	-5.29/-5.58	-5.55/-6.39	-7.27/-8.17	-8.93/-9.3	-10.02/-9.74	-9.14/-8.02	-7.15/-6.68	-6.84/-6.48	-5.08/-3.47	-4.38/-4.99	-5.14/-4.33	-3.98/-4.46	-5.67/-6.87
Θ(15°)	-8.48/-8.88	-9.71/-10.03	-10.74/-10.4	-10.66/-11.13	-10.98/-10.46	-9.73/-8.26	-7.94/-7.32	-7.27/-7.44	-7.67/-8.78	-8.59/-7.87	-6.91/-6.64	-6.83/-6.83	-6.28/-6.03	-6.14/-6.48	-7.19/-8.3	-9.43/-9.73	-10.04/-9.12	-7.63/-6.94	-7.88/-7.85	-6.47/-5.98	-6.65/-7.21	-7.38/-6.68	-6.65/-7.22	-7.75/-8.73
Θ(22.5°)	-9.62/-10.86	-10.45/-11.21	-11.21/-11.03	-11.59/-12.58	-12.07/-11.66	-8.61/-8.72	-8.57/-8.6	-8.89/-9.68	-11.17/-10.7	-10.11/-9.25	-8.72/-8.36	-8.6/-8.97	-8.82/-6.65	-5.61/-5.29	-4.99/-5.54	-6.12/-7.13	-7.92/-8.25	-8.05/-8.44	-9.38/-9.13	-9.34/-9.66	-10.14/-9.04	-8.79/-8.93	-10.03/-10.15	-9.76/-9.44
Θ(30°)	-8.93/-10.01	-10.98/-11.27	-10.21/-9.69	-9.79/-10.38	-10.13/-9.21	-9.26/-8.87	-8.41/-7.98	-7.91/-9.16	-10.56/-9.69	-8.85/-8.21	-8.22/-7.42	-7.84/-9.25	-10.53/-8.43	-6.61/-5.37	-5.05/-5.22	-6.82/-6.56	-7.43/-8.01	-8.39/-9.89	-10.75/-10.79	-9.81/-9.18	-9.25/-8.26	-7.46/-7.84	-8.71/-10.33	-10.11/-9.34
Θ(37.5°)	-7.86/-9.72	-12.01/-10.2	-8.8/-8.93	-9.22/-9.76	-9.71/-9.06	-9.36/-9.46	-8.64/-8.42	-8.61/-9.17	-9.56/-8.5	-6.77/-7.18	-7.68/-7.21	-7.31/-8.94	-11.73/-8.96	-7.34/-6.32	-6.42/-7.3	-8.33/-9.15	-8.3/-7.47	-8.16/-9.78	-10.97/-10.49	-8.05/-6.89	-7.24/-7.14	-7.7/-8.04	-9.39/-10.67	-9.01/-7.81
Θ(45°)	-7.09/-9.68	-12.57/-9.03	-7.27/-7.93	-8.77/-10.67	-10.5/-9.39	-9.59/-8.47	-8.02/-8	-8.48/-9.51	-10.41/-8.4	-6.53/-6.88	-8.07/-7.4	-6.33/-7.84	-11.47/-10.85	-8.6/-8	-9.24/-10.84	-11.71/-11.41	-10.73/-8.95	-8.33/-9.6	-9.17/-6.9	-6.05/-6.49	-7.37/-6.98	-7.56/-9	-11.01/-10.56	-8.35/-6.27
Θ(52.5°)	-6.68/-10.12	-12.62/-8.56	-6.52/-7.54	-9.36/-9.7	-10.21/-9.89	-8.58/-8.55	-8.09/-7.87	-8.31/-11.15	-12.02/-9.01	-7.15/-7.91	-8.94/-8.24	-10.53/-8.43	-6.61/-5.37	-10.51/-10.06	-11.25/-11.38	-11.06/-10.3	-10.42/-11.1	-10.33/-10.42	-8.67/-6.09	-5.5/-6.49	-6.62/-6.81	-7.22/-8.71	-10.09/-9.53	-8.14/-6.29
Θ(60°)	-7.07/-10.12	-12.17/-9.24	-8.43/-8.06	-8/-7.43	-8.61/-8.69	-8.56/-9.33	-7.92/-7.15	-9.11/-11.14	-9.72/-8.08	-7.19/-8.24	-10.01/-9.98	-8.13/-8.35	-11.89/-10.96	-11.22/-10.64	-10.58/-9.85	-10.78/-12.51	-11.67/-10.79	-9.48/-7.52	-6.88/-6.7	-5.79/-5.63	-6.57/-7.09	-7.23/-8.42	-8.6/-7.17	
Θ(67.5°)	-9.22/-12.16	-11.5/-7.49	-7.09/-8.19	-7.92/-7.54	-8.15/-7.57	-8.57/-9.71	-7.54/-6.63	-9.02/-10.61	-8.35/-8.21	-8.22/-9.11	-11.05/-10.76	-10.62/-10.05	-10.37/-10.74	-11.61/-12.07	-10.17/-9.57	-9.05/-10.82	-12.25/-12.63	-11.24/-9.92	-8.37/-6.48	-6.57/-6	-4.79/-7.52	-6.85/-6.33	-6.49/-7.89	-9.29/-8.5
Θ(75°)	-9.23/-10.72	-9.96/-7.23	-6.12/-7.7	-9.19/-9.21	-8.34/-7.86	-9.34/-9.21	-7.97/-8.39	-9.76/-8.64	-7.8/-8.57	-9.83/-9.1	-8.65/-9.84	-10.22/-10.03	-10.26/-9.5	-9.63/-9.58	-8.91/-8.22	-8.01/-9.53	-11.47/-11.45	-9.95/-10.54	-8.22/-6.53	-7.49/-6.92	-5.48/-6.47	-8.1/-7.5	-7.02/-7.87	-9.03/-9.51
Θ(82.5°)	-9.12/-10.39	-10.56/-8	-6.71/-6.14	-7.45/-8.2	-6.71/-6.8	-8.96/-8.22	-8.13/-9.91	-9.51/-8.11	-7.98/-9.25	-10.34/-8.88	-8.08/-8.81	-8.55/-9.73	-12.11/-11	-10.05/-8.51	-8.4/-7.7	-7.4/-8.54	-10.81/-11.65	-10.77/-10.71	-9.44/-8.39	-9.14/-10.59	-8.51/-7.61	-7.83/-7.69	-6.92/-7.93	-8.86/-10.22
Θ(90°)	-11.9/-9.7	-8.13/-7.49	-7.69/-6.6	-7.21/-7.14	-6.86/-8.23	-8.11/-7.08	-8.19/-10.18	-10.12/-10.01	-10.31/-10.47	-9.78/-10.64	-9.4/-9.46	-8.44/-8.27	-11.74/-12.37	-10.58/-9.91	-9.42/-8.67	-6.74/-7.29	-9.08/-10.12	-10.77/-11.88	-10.44/-8.47	-9.3/-10.39	-8.37/-7.56	-7.72/-7.3	-6.1/-7.46	-8.25/-10.13
Θ(97.5°)	-9.45/-7.73	-7.53/-9.81	-7.66/-5.63	-7.65/-7.03	-6.46/-8.89	-7.22/-6.72	-8.64/-9.56	-9.42/-10.55	-10.96/-9.86	-8.73/-10.58	-9.89/-9.86	-7.47/-6.7	-10.81/-12.22	-10.46/-10.24	-9.38/-8.63	-8.46/-8.67	-9.11/-9.58	-9.83/-11.93	-10.94/-9.06	-9.08/-9.68	-8.89/-8.87	-7.87/-5.83	-5.51/-6.95	-8.78/-10.39
Θ(105°)	-10.42/-11.4	-8.04/-6.81	-4.69/-4.24	-6.87/-8.04	-6.78/-7.93	-6.61/-6.31	-8.65/-9.72	-9.45/-9.21	-9.49/-9.25	-9.43/-9.55	-7.97/-7.05	-6.48/-6.04	-8.06/-9.36	-9.11/-10.63	-9.25/-8.41	-9.85/-9.92	-10.36/-11.07	-11.34/-12.22	-11.83/-8.53	-7.8/-9.36	-9.2/-8.08	-6.55/-6.5	-6.33/-8.23	-9.88/-10.57
Θ(112.5°)	-11.38/-8.03	-5.66/-5.26	-4.43/-4.99	-8.19/-9.01	-9.28/-11.3	-9.97/-8.06	-8.25/-6.88	-9.12/-9.81	-9.49/-9.71	-10.78/-10.33	-8.49/-7.16	-6.21/-6.55	-8.22/-8.09	-7.91/-7.5	-7.09/-8	-9.48/-9.52	-11.07/-12.3	-11.77/-11.74	-11.45/-9.91	-9.31/-9.36	-7.06/-6.86	-10.23/-9.87	-7.38/-8.56	-11.18/-11.88
Θ(120°)	-6.97/-6.83	-7.74/-7.73	-6.46/-6.94	-9.52/-11.3	-12/-11.5	-10.71/-10.89	-10.65/-8.72	-9.79/-10.26	-9.13/-8.3	-9.83/-9.5	-7.96/-6.78	-5.93/-6.86	-8.99/-7.74	-6.16/-4.8	-5.39/-7.41	-8.94/-10.95	-12/-10.7	-9.33/-8.59	-10.22/-9.7	-6.7/-5.94	-7.1/-10.29	-11.09/-6.51	-5.14/-6.39	-7.5/-6.75
Θ(127.5°)	-7.34/-8.12	-9.73/-11.42	-8.92/-6.51	-6.23/-7.43	-8.93/-8.96	-8.84/-9.11	-8.65/-9.28	-8.45/-9.21	-6.25/-6.65	-8.69/-10	-8.46/-7.19	-7.91/-9.94	-11.95/-9.54	-5.67/-3.83	-4.13/-5.87	-8.2/-10.5	-9.81/-8.01	-6.59/-5.92	-6.83/-6.21	-5.13/-6.14	-6.42/-9.15	-7.67/-6.65	-6.33/-8.23	-9.88/-10.72
Θ(135°)	-7.43/-7.78	-9.05/-8.93	-8.32/-6.57	-6.79/-8.28	-8.31/-7.9	-7.36/-6.83	-6.55/-7.06	-8.21/-7.47	-5.89/-6	-6.81/-7.13	-5.61/-5.43	-6.49/-8.19	-9.88/-8.51	-5.35/-3.8	-4.52/-6.87	-9.53/-9.91	-7.74/-6.78	-5.62/-5.47	-7.27/-8.87	-9.92/-10.21	-9.68/-9.27	-5.58/-7.8	-7.18/-7.44	-8.38/-8.75
Θ(142.5°)	-5.06/-4.78	-6.31/-7.28	-6.85/-6.09	-6.96/-10.19	-11.04/-9.8	-8.34/-6.48	-5.99/-6.39	-7.12/-9.62	-6.24/-6.19	-6.09/-4.55	-3.27/-3.13	-4.62/-5.76	-8.41/-6.07	-3.33/-2.25	-2.54/-3.84	-5.8/-6.41	-5.97/-6.59	-8/-9.33	-10.43/-11.17	-9.79/-8.75	-8.36/-7.57	-7.07/-7.73	-8.71/-9.47	-9.12/-9.61
Θ(150°)	-3.42/-2.7	-3.25/-4.37	-5.15/-5.61	-6.52/-9.15	-1.37/-11.22	-8.91/-6.93	-5.59/-4.53	-4.26/-4.53	-5.21/-5.12	-4.23/-3.52	-3.21/-3.79	-5.72/-8.61	-9.97/-6.55	-3.52/-1.49	-0.97/-1.44	-6.29/-3.78	-4.65/-6.17	-8.44/-9.49	-8.3/-7.02	-6.15/-6.39	-8.26/-9.41	-10.27/-9.42	-7.49/-5.13	
Θ(157.5°)	-2.77/-2.28	-2.87/-3.95	-5.07/-6.2	-7.4/-9.16	-10.65/-10.53	-8.73/-7.17	-5.69/-4.46	-3.95/-4.14	-4.86/-4.75	-4.18/-3.92	-4.52/-6.77	-7.27/-8.94	-9.58/-8.46	-5.94/-3.94	-3.42/-3.68	-4.3/-4.8	-5.31/-6.17	-7.02/-7.57	-7.89/-8.88	-9.1/-8.03	-7.99/-9.59	-10.25/-9	-7.74/-6.84	-5.77/-4.23
Θ(165°)	-3.84/-3.71	-4.42/-5.9	-7.31/-7.96	-8.71/-9.03	-8.83/-7.68	-6.91/-6.51	-6.29/-6.11	-6.14/-6.26	-6.71/-7.27	-7.43/-7.28	-7.33/-7.57	-7.78/-7.94	-8.39/-8.46	-8.26/-7.59	-7.31/-7.27	-7.96/-8.05	-7.43/-7.01	-6.54/-6.1	-6.48/-7.62	-8.46/-8.63	-10.19/-9.56	-9.64/-8.24	-6.93/-6.07	-5.47/-4.86
Θ(172.5°)	-6.29/-6.48	-5.71/-8.32	-9.21/-8.69	-8.16/-6.91	-6.33/-6.42	-6.62/-7.2	-7.76/-7.88	-9.91/-10.84	-11.41/-11.04	-6.93/-6.09	-8.56/-7.87	-7.37/-7.25	-6.84/-6.98	-6.84/-7.33	-7.93/-8.42	-8.56/-9.16	-6.93/-7.54	-6.93/-7.54	-6.84/-6.98	-6.85/-6.82	-7.25/-8.24	-8.76/-8.09	-7.64/-7.26	-7.29/-6.93
Θ(180°)	-7.79/-7.63	-7.77/-7.41	-7.06/-6.67	-6.32/-6.38	-7.15/-8.42	-8.83/-8.75	-8.87/-8.54	-7.88/-7.63	-7.64/-7.77	-7.51/-7.57	-6.99/-6.44	-6.13/-6.1	-6.03/-5.99	-6.04/-6.08	-6.6/-6.95	-7.67/-7.54	-7.46/-7.32	-7.68/-8.3	-8.47/-8.22	-8.03/-7.73	-7.79/-8.37	-8.75/-8.58	-8.51/-8.12	-7.93/-7.87
Freq(Hz)	2.45GPol.	ThetaL	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°)
DG(dB)	Φ(0°)Φ(7.5°)	Φ(15°)Φ(22.5°)	Φ(30°)Φ(37.5°)	Φ(45°)Φ(52.5°)	Φ(60°)Φ(67.5°)	Φ(75°)Φ(82.5°)	Φ(90°)Φ(97.5°)	Φ(105°)Φ(112.5°)	Φ(120°)Φ(127.5°)	Φ(135°)Φ(142.5°)	Φ(150°)Φ(157.5°)	Φ(165°)Φ(172.5°)	Φ(180°)Φ(187.5°)	Φ(195°)Φ(202.5°)	Φ(210°)Φ(217.5°)	Φ(225°)Φ(232.5°)	Φ(240°)Φ(247.5°)	Φ(255°)Φ(262.5°)	Φ(270°)Φ(277.5°)	Φ(285°)Φ(292.5°)	Φ(300°)Φ(307.5°)	Φ(315°)Φ(322.5°)	Φ(330°)Φ(337.5°)	Φ(345°)Φ(352.5°)
Θ(0°)	-6.78/-6.67	-6.64/-6.13	-5.7/-5.53	-5.82/-6.17	-6.12/-6.14	-6.64/-7.42	-8.35/-8.03	-8.15/-8.55	-9.7/-10.72	-9.36/-8.6	-8.04/-7.71	-7.8/-7.18	-6.43/-5.8	-5.75/-5.34	-5.45/-5.44	-5.06/-5.37	-5.82/-6.46	-6.59/-6.87	-7.65/-8.26	-8.6/-8.46	-8.37/-9.58	-9.69/-10.26	-10.51/-10.45	-9.5/-8.22
Θ(7.5°)	-5.81/-5.81	-5.84/-5.2	-4.58/-4.21	-4.44/-4.79	-4.79/-4.59	-4.76/-5.45	-6.44/-6.71	-6.61/-7	-7.73/-8.58	-9.25/-9.32	-9.68/-9.6	-9.71/-9.46	-9.35/-8.74	-8.23/-7.22	-6.66/-6.3	-5.95/-6	-6.15/-6.52	-7.3/-8.22	-9.23/-9.32	-9.9/-9.72	-10.11/-9.2	-8.98/-8.6	-9.26/-9.49	-8.09/-6.52
Θ(15°)	-5.87/-5.08	-4.81/-4.46	-3.92/-3.5	-3.54/-3.87	-4/-3.94	-4.01/-4.61	-5.58/-5.72	-5.23/-5.09	-5.21/-5.7	-6.26/-6.71	-7.59/-8.52	-9.21/-9.2	-9.85/-10.8	-10.86/-9.82	-7.18/-6.14	-6.08/-9.53	-6.05/-6.73	-7.48/-9.04	-9.73/-9.49	-10.17/-10.24	-10.14/-9.21	-8.08/-7.75	-7.88/-9.06	-9.24/-7.89
Θ(22.5°)	-4.02/-3.76	-3.77/-4.33	-5.41/-5.68	-4.98/-4.54	-4.35/-4.43	-3.98/-3.59	-3.42/-8.27	-2.01/-54	-1.61/-1.97	-2.4/-3	-3.89/-4.91	-5.88/-6.59	-6.94/-7.21	-7.58/-10.4	-5.67/-4.8	-4.68/-4.68	-4.46/-4.58	-4.86/-5.27	-5.32/-5.32	-6.15/-6.39	-4.53/-3.94	-3.51/-3.13	-3.11/-3.44	-3.94/-4.54
Θ(30°)	-1.43/-2.31	-3.24/-4.1	-4.59/-3.6	-2.09/-1.44	-1.59/-2.19	-2.54/-1.97	-1.38/-0.36	0.76/-1.46	1.															



Radiated Composite Gain of 2.4GHz and 5GHz UNII 1~3

Appendix A

Θ(15°)	-8.96/-10.41	-10.59/-10.36	-8.72/-6.51	-6.92/-7.89	-8.81/9.96	-11/-9.65	-8.63/-7.74	-7.11/-7.59	-7.36/-7.63	-8.43/-8.09	-6.77/-6.68	-6.56/-8.24	-8.57/-9.57	-10.65/-9.52	-8.84/-8.36	-6.95/-7.36	-9.18/-9.26	-9.78/-10.1	-10.56/-10.59	-10.92/-10.98	-12.23/-11.27	-11.71/-11.24	-10.62/-9.28	-9.45/-9.65
Θ(22°)	-9.23/-9.58	-8.63/-7.98	-9.17/-8.65	-8.53/-8.19	-9.43/-11.64	-11.83/-11.23	-8.78/-9.53	-9.15/-8.75	-10.78/-10.46	-10.72/-8.95	-9.47/-10.61	-11.59/-11.11	-9.67/-9.71	-10.79/-8.62	-8.02/-7.56	-7.58/-9.48	-11.13/-10.82	-9/-8.88	-11.23/-11.38	-9.28/-9.13	-11.35/-11.13	-9.81/-10.53	-8.68/-8.24	-10.37/-9.2
Θ(30°)	-9.45/-11.16	-5.99/-7.44	-10.61/-10.05	-9.37/-10.72	-10.03/-10.27	-10.72/-10.94	-10.82/-10.27	-9.67/-9.93	-10.97/-10.65	-9.72/-9.74	-9.35/-8.57	-10.66/-12.27	-10.66/-9.63	-10.95/-9.23	-7.34/-8.53	-10.11/-11.59	-12.31/-12.47	-9.95/-10.18	-11.67/-11.92	-9.04/-6.95	-12.02/-12.01	-9.71/-9.92	-9.41/-8.67	
Θ(37.5°)	-9.89/-11.91	-10.93/-10.1	-10.26/-10.7	-10.5/-11.02	-11.71/-11.22	-11.48/-10.98	-11.32/-11.29	-12.41/-12.11	-8.91/-9.04	-9.78/-9.2	-10.64/-10.06	-7.89/-11.57	-11.28/-8.65	-10.77/-9.77	-9.88/-10.79	-12.65/-11.09	-10.58/-12.37	-12.92/-12.01	-11.85/-10.46	-10.65/-11.75	-10.89/-9.92	-10.36/-10.58	-9.25/-9.13	-9.25/-7.87
Θ(45°)	-8.31/-8.24	-10.71/-7.08	-7.45/-10.2	-8.72/-9.61	-10.45/-10.24	-11.77/-10.6	-11.24/-10.06	-8.49/-10.45	-9.69/-11.42	-11.31/-11.21	-6.46/-13.72	-8.4/-7.94	-11.34/-12.31	-10.76/-10.27	-10.05/-11.04	-9.45/-10.79	-9.75/-10.89	-8.47/-9.09	-11.08/-9.16	-9.29/-10.76	-10.71/-10.95	-10.35/-10.36	-11.67/-10.99	-9.47/-11.21
Θ(52.5°)	-6.64/-9.14	-9.75/-6.99	-8.02/-6.83	-6.06/-7.74	-6.88/-8.96	-10.4/-10.6	-9.97/-10.44	-9.31/-8.08	-5.59/-6.72	-10.62/-10.85	-10.38/-10.97	-7.63/-8.51	-10.65/-11.57	-12.18/-11	-9.88/-10.03	-8.58/-11.37	-9.84/-12.47	-9.08/-9.64	-8.87/-9.69	-9.42/-7.8	-9.16/-9.54	-11.39/-7.88	-8.03/-8.16	
Θ(60°)	-10.37/-5.31	-9.04/-8.23	-10.49/-9.72	-6.66/-5.95	-9.83/-9.14	-8.59/-11.6	-11.43/-12.11	-8.83/-8.42	-7.23/-6.06	-6.95/-8.86	-8.62/-8.35	-10.9/-7.1	-8.48/-10.63	-12.54/-10.76	-10.76/-7.87	-10.26/-10.83	-9.61/-10.52	-7.43/-12.64	-9.55/-10.92	-11.85/-10.49	-7.79/-8.4	-8.89/-9.88	-6.56/-6.87	-10.72/-12.12
Θ(67.5°)	-12.02/-7.89	-10.12/-5.96	-8.96/-7.12	-10.49/-9.53	-11.07/-10.96	-6.61/-10.35	-11.46/-11.37	-11.95/-10.29	-10.01/-9.26	-8.41/-9.5	-8.83/-11.11	-12.14/-9.2	-9.72/-10.12	-11.02/-9.46	-8.84/-8.84	-12.31/-8.41	-8.44/-9.65	-9.95/-12.14	-9.25/-9.56	-9.97/-9.81	-9.38/-9.75	-10.67/-11.28	-7.65/-10.68	-7.74/-9.83
Θ(75°)	-7.64/-7.24	-10/-10.06	-8.42/-7.39	-10.68/-7.25	-8.27/-9.98	-11.95/-8.78	-9.83/-10.64	-10.05/-11.47	-10.56/-6.92	-9.81/-10.72	-9.87/-10.93	-11.14/-7.58	-9.29/-9.83	-7.97/-6.04	-7.91/-7.6	-9.99/-9.01	-8.75/-12.18	-8.23/-7.2	-10.48/-9.36	-9.74/-9.69	-9.27/-7.24	-11.51/-10.61	-8.96/-7.29	-6.85/-10.44
Θ(82.5°)	-11.52/-7.34	-7.81/-10.35	-11.04/-10.4	-7.9/-10.44	-12.82/-10.66	-10.2/-12.08	-11.97/-8.86	-11.22/-11.46	-11.49/-8.82	-10.88/-12.08	-10.31/-10.27	-10.86/-11.28	-10.63/-9.59	-11.93/-8.13	-10.37/-10.15	-11.28/-8.42	-10.61/-10.78	-8.19/-7.11	-9.39/-8.53	-12.23/-9.79	-11.21/-8.57	-11.3/-9.44	-6.46/-11.5	-8.63/-11.65
Θ(90°)	-7.19/-7.85	-8.01/-8.75	-10.83/-8.84	-8.66/-10.05	-9.35/-10.64	-11.39/-10.34	-10.44/-10.25	-11.27/-8.48	-8.64/-11.51	-9.71/-9.27	-9.11/-11.6	-10.91/-11.39	-12.2/-7.47	-8.95/-8.98	-10.87/-6.6	-8.05/-11.71	-10.48/-8.16	-11.09/-11.96	-10.22/-9.54	-7.66/-9.4	-10.38/-8.15	-7.62/-7.23	-5.67/-11.14	
Θ(97.5°)	-7.79/-7.08	-6.77/-7.74	-9.66/-7.69	-8.13/-8.73	-7.61/-10.21	-11.01/-10.06	-12.23/-11.7	-12.4/-11.06	-11.31/-9.71	-10.79/-12.48	-7.47/-9.1	-7.52/-10.14	-10.6/-9.7	-8.61/-8.52	-7.55/-7.49	-11.38/-9.64	-7.18/-10.89	-7.79/-9.67	-9.52/-12.5	-8.26/-8.06	-9.56/-9.9	-8.78/-9.8	-5.27/-5.33	
Θ(105°)	-8.35/-6.29	-7.99/-9.75	-5.07/-7.4	-10.85/-12.07	-9.9/-8.5	-10.82/-10.28	-10.8/-12.38	-10.38/-8.18	-9.84/-11.48	-11.03/-11.93	-10.49/-8.33	-8.62/-8.26	-7.25/-11.01	-9.66/-9.99	-9.69/-10.09	-12.72/-7	-7.22/-10.81	-8.91/-8.3	-10.15/-6.04	-6.44/-9.3	-7.13/-8.86	-9.78/-8.51	-7.41/-6.2	-9.16/-11.01
Θ(112.5°)	-7.63/-8.11	-11.29/-7.54	-6.63/-6	-8.63/-7.65	-10.71/-9.96	-12.16/-9.03	-8.49/-11.08	-10.4/-9.46	-9.42/-12.32	-9.72/-11.84	-9.98/-9.29	-10.67/-10.41	-8.83/-10.84	-9.39/-9.5	-12.21/-5.82	-8.85/-6.1	-9.32/-11.72	-9.76/-9.84	-9.2/-6.76	-9.25/-9.16	-9.01/-10.41	-7.93/-7.94	-6.53/-5.75	-8.4/-5.07
Θ(120°)	-1.14/-6.05	-4.7/-4.42	-7.49/-5.91	-7.89/-6.44	-8.41/-8.77	-10.55/-6.66	-8.42/-11.66	-12.15/-9.13	-10.71/-11.02	-10.21/-8.39	-7.86/-9.06	-12.35/-10.7	-7.61/-7.95	-5.35/-6.36	-9.21/-6.15	-6.75/-8.64	-5.34/-8.45	-9.62/-9.59	-8.98/-7.1	-9.99/-5.66	-4.31/-2.88	-6.46/-3.23		
Θ(127.5°)	-5.79/-2.88	-6.09/-10.94	-6.27/-6.54	-7.44/-7.15	-8.4/-7.08	-8.1/-8.55	-7.38/-10.44	-10.66/-6.75	-7.94/-9.14	-10.67/-8.33	-7.39/-7.82	-8.43/-6	-7.22/-9.26	-9.43/-8.21	-7.31/-3.43	-11.13/-9.12	-7.47/-6.72	-8.26/-7.56	-8.08/-7.9	-7.17/-9.1	-7.4/-9.37	-6.59/-6.71	-5.7/-7.03	-1.58/-5.1
Θ(135°)	-6.84/-5.04	-5.77/-3.18	-7.65/-5.18	-7.1/-6.85	-9.02/-7.59	-6.45/-6.53	-7.1/-8.25	-9.42/-8.66	-10.11/-11.91	-11.24/-9.59	-8.07/-6.58	-10.02/-11.75	-8.13/-7.46	-5.49/-6.44	-9.22/-8.57	-6.71/-6.39	-8.03/-9.32	-7.48/-7.6	-8.23/-7.74	-9.98/-12.34	-8.06/-6.81	-5.82/-8.47	-1.57/-3.12	-5.85/-6.62
Θ(142.5°)	-6.35/-6.5	-4.14/-3.78	-7.51/-7.35	-8.15/-7.51	-9.92/-9.48	-10.57/-8.06	-8.23/-9.48	-9.34/-11.96	-11.12/-9.92	-8.68/-7.7	-4.96/-4.74	-7.37/-5.19	-5.79/-10.3	-11.2/-9.56	-5.22/-4.24	-6.73/-6.86	-6.87/-3.38	-9.86/-12.19	-6.32/-5.85	-9.31/-10.73	-10.35/-8.26	-6.39/-4.84	-3.61/-5.54	-7.73/-6.29
Θ(150°)	-4.19/-4.09	-6.11/-9.96	-8.4/-5.42	-4.09/-4.78	-6.13/-9.33	-10.39/-8.94	-8.95/-9.74	-12.24/-11.42	-9.67/-10.41	-7.9/-4.15	-2.88/-3.11	-5.89/-7.12	-6.31/-4.18	-4.47/-3.54	-5.12/-7.34	-9.67/-9.86	-10.15/-7.03	-5.51/-6.88	-5.44/-7.13	-9.36/-7.39	-6.62/-6.69	-6.33/-5.9	-7.94/-4.88	-7.72/-4.11
Θ(157.5°)	-3.43/-4.24	-6.71/-6.67	-6.51/-6.15	-5.42/-5.33	-4.88/-5.98	-8.93/-9.49	-7.15/-7.59	-7.08/-6.26	-5.88/-5.5	-3.1/-1.86	-2.79/-3.46	-2.72/-2.07	-2.45/-6.29	-1.36/-0.92	-2.11/-4.11	-5.7/-9.74	-10.22/-7.35	-7.51/-8.8	-8.62/-7.07	-11.39/-6.64	-3.5/-4.5	-6.35/-5.16	-3.62/-3.9	-4.98/-5
Θ(165°)	-5.02/-6.01	-6.77/-7.22	-7.71/-7.34	-7.31/-5.67	-5.55/-6.54	-10.27/-10.94	-6.53/-4.74	-3.24/-2.4	-2.08/-1.46	-1.75/-0.63	-0.18/-0.08	0.09/-0.12	0.10/63	0.5/-0.72	-3.6/-6.08	-7.88/-9.07	-8.03/-7.98	-6.83/-5.76	-4.3/-4.15	-5.9/-7.03	-8.12/-7.13	-5.34/-3.84	-4.28/-4.45	-3.53/-3.95
Θ(172.5°)	-3.35/-3.83	-2.94/-3.76	-4.87/-5.61	-6.62/-7.81	-8.14/-6.99	-6.91/-5.29	-4.83/-4.61	-4.82/-4.99	-4.34/-4	-3.24/-2.65	-2.38/-2.08	-1.5/-1.07	-0.65/-0.74	-1.55/-2.73	-4.25/-6.16	-8.37/-9.29	-8.68/-7.1	-6.31/-6.37	-5.37/-5.96	-5.96/-6.07	-5.51/-4.75	-3.43/-3.19	-3.42/-3.74	-8.44/-2.9
Θ(180°)	-5.72/-5.01	-4.34/-2.99	-3.05/-3.84	-3.49/-3.75	-4.45/-3.55	-3.52/-4.33	-3.87/-4.17	-3.83/-3.75	-3.55/-2.91	-2.62/-2.37	-2.26/-2.34	-2.35/-2.76	-3.05/-3.2	-3.65/-4.17	-4.44/-5.21	-5.45/-5.27	-5.84/-4.93	-4.78/-4.19	-4.01/-3.97	-3.47/-3.06	-3.16/-3.21	-3.39/-3.2	-3.81/-4.58	-4.67/-5.38
Freq(Hz)	5.305Pol.	ThetaL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DG(dB)	Φ(0°)/Φ(7.5°)	Φ(15°)/Φ(22.5°)	Φ(30°)/Φ(37.5°)	Φ(45°)/Φ(52.5°)	Φ(60°)/Φ(67.5°)	Φ(75°)/Φ(82.5°)	Φ(90°)/Φ(97.5°)	Φ(105°)/Φ(112.5°)	Φ(120°)/Φ(127.5°)	Φ(135°)/Φ(142.5°)	Φ(150°)/Φ(157.5°)	Φ(165°)/Φ(172.5°)	Φ(180°)/Φ(187.5°)	Φ(195°)/Φ(202.5°)	Φ(210°)/Φ(217.5°)	Φ(225°)/Φ(232.5°)	Φ(240°)/Φ(247.5°)	Φ(255°)/Φ(262.5°)	Φ(270°)/Φ(277.5°)	Φ(285°)/Φ(292.5°)	Φ(300°)/Φ(307.5°)	Φ(315°)/Φ(322.5°)	Φ(330°)/Φ(337.5°)	Φ(345°)/Φ(352.5°)
Θ(0°)	-8.85/-9.32	-8.28/-8.32	-9.25/-9.8	-10.3/-10.73	-11.54/-10.66	-10.45/-10.52	-9.75/-10.05	-9.16/-9.1	-8.45/-8.79	-8.51/-8.04	-8.11/-7.58	-7.67/-7.76	-8.3/-8.92	-8.66/-9.74	-7.91/-8.28	-7.91/-8.06	-7.37/-7.55	-7.81/-8.94	-9.61/-8.98	-8.77/-10.22	-9.22/-9.34	-9.76/-9.98	-9.55/-9.89	-10.07/-8.75
Θ(7.5°)	-8.57/-9.32	-8.71/-7.43	-7.17/-7.45	-6.43/-6.19	-6.53/-6.05	-6.33/-7.48	-7.93/-8.84	-9.73/-9.94	-10.65/-9.77	-9.95/-10.22	-11.08/-10.79	-10.15/-9.57	-9.88/-9.42	-8.4/-9.5	-8.12/-9.18	-9.76/-9.91	-9.76/-9.92	-9.75/-9.31	-8.25/-8.4	-8.21/-8.22	-8.17/-8.73	-8.86/-8.8	-8.96/-8.4	-7.35/-9.1
Θ(15°)	-4.66/-4.69	-5.65/-6.89	-6.63/-9.01	-8.57/-5.6	-6.41/-5.36	-5.09/-4.58	-4.64/-3.36	-4.77/-4.53	-4.64/-4.32	-4.37/-4.5	-4.78/-4.61	-5.66/-5.25	-4.88/-5.13	-5.54/-6.6	-6.38/-6.88	-6.44/-5.47	-6.88/-3.94	-4.04/-5.1	-6.02/-6.84	-6.25/-6.8	-4.3/-3.85	-3.18/-3.03	-3.46/-3.56	-3.35/-4.09
Θ(22.5°)	-4.27/-2.81	-2.03/-2.44	-4.14/-5.37	-6.94/-5.41	-3.84/-3.11	-3.98/-4.94	-3.78/-2.73	-1.89/-2.22	-3.32/-5.72	-6.46/-7.42	-7.28/-6.18	-6.01/-5.99	-3.92/-3.93	-4.85/-6.55	-6.89/-5.38	-4.69/-3.86	-2.95/-1.9	-3.04/-6.43	-5.29/-4.77	-5.71/-4.43	-4.11/-6.69	-4.09/-4.72	-2.39/-1.77	-2.33/-3.69
Θ(30°)	0.150/-6	0.610/-55	0.06/-1	-0.91/-1.14	-3.05/-2.38	-1.83/-1.57	-1.67/-0.87	-0.64/-1.39	-2.14/-3.19	-4.95/-5.1	-6.49/-4.67	-4.98/-5.99	-5.32/-4.4	-4.22/-3.87	-3.47/-3.39	-5.54/-5.67	-2.56/-3.83	-6.63/-6.3	-2.11/-2.32	-1.62/-1.43	-2.27/-2.67	-0.640/-38	-0.42/-1.06	-0.56/-0.12
Θ(37.5°)	-1.53/-0.97	0.860/-14	0.010/-97	1.11/-91	1.49/-105	0.360/-62	1.15/-77	2.05/-172	0.79/-0.3	-0.020/-53	0.15/-146	-2.44/-0.71	-0.20/-43	-0.11/-82	-2.23/-1.07	-1.78/-3.31	-1.27/-1.43	0.420/-32	0.350/-5	0.81/-0.26	-0.67/-1.68	-1.68/-1.96	-2.15/-0.03	-0.14/-0.6
Θ(45°)	0.81/-1.27	-0.29/-0.28	0.130/-33	1.36/-1.67	0.30/-48	1.41/-2	1.930/-68	0.230/-02	1.180/-68	0.61/-99	1.42/-04	1.061/-29	0.440/-98	1.52/-13	0.590/-51	1.120/-02	1.59/-19	3.23/-19	2.762/-86	2.752/-79	1.250/-0.74	-0.37/-1.45	-1.020/-12	0.38/-1.38
Θ(52.5°)	2.782/-57	2.053/-5	4.143/-36	3.932/-46	2.791/-88	1.380/-23	2.493/-18	3.793/-26	1.752/-54	2.873/-04	2.461/-96	2.572/-22	2.050/-86	0.51/-27	2.712/-5	1.531/-83	2.742/-44	2.892/-68	3.123/-53	3.443/-16	2.782/-64	2.523/-12	2.713/-12	2.362/-81
Θ(60°)	5.34/-16	4.313/-89	4.064/-84	4.975/-23	4.984/-31	4.514/-09	3.944/-66	3.743/-4	3.073/-59	3.823/-07	3.131/-44	1.91/-78	1.71/-16	1.28/-01	2.04/-37	2.52/-06	4.161/-69	3.512/-32	1.91/-74	2.042/-14	3.212/-65	4.013/-73	2.993/-38	3.174/-37
Θ(67.5°)	3.932/-7	2.943/-09	3.653/-35	4.213/-66	4.63/-08	4.283/-98	4.675/-43	4.444/-61	4.454/-85	4.045/-35	3.444/-15	3.083/-17	3.462/-64	1.663/-24	3.923/-55	4.464/-64	5.122/-11	3.752/-36	3.292/-55	2.344/-41	4.013/-95	4.613/-88	3.327/-7	3.684/-23
Θ(75°)	2.993/-66	3.13/-35	3.																					



Radiated Composite Gain of 2.4GHz and 5GHz UNII 1~3

Appendix A

Θ (67.5°)	-5.91/-7.7	-10.31/-10.76	-7.18/-7.86	-8.72/-11.03	-9.46/-12.49	-12.14/-11.26	-11.37/-10.05	-11.16/-10.14	-10.71/-9.16	-9.97/-10.93	-11.77/-10.02	-10.53/-9.26	-9.64/-11.57	-12.28/-11.92	-11.84/-10.42	-12.35/-10.89	-10.64/-7.77	-10.39/-7.53	-11.67/-11.19	-11.49/-11.06	-6.86/-9.37	-10.17/-9.43	-3.82/-3.88	-5.81/-9.4
Θ (75°)	-6.82/-8.58	-8.56/-11.58	-6.76/-11.83	-10.59/-10.44	-10.51/-11.25	-10.39/-9.88	-10.95/-10.56	-9.34/-12.33	-12.68/-12.08	-7.51/-10.32	-10.97/-11.62	-10.35/-10.93	-11.49/-10	-8.93/-7.5	-9.53/-7.98	-12.49/-11.52	-10.97/-10.77	-10.22/-8.99	-11.55/-10.35	-10.67/-8.43	-9.23/-8.71	-8.99/-9.11	-10.18/-7.18	-7.65/-7.75
Θ (82.5°)	-5.77/-9.27	-6.93/-9.99	-6.21/-8.08	-10.77/-9.3	-8.74/-12.2	-11.68/-9.66	-10.85/-11.74	-9.65/-10.62	-11.05/-12.03	-9.9/-10.36	-12.58/-12.34	-10.11/-9.53	-10.51/-9.25	-6.02/-7.32	-7.08/-5.42	-8.8/-9.72	-10.28/-8.97	-11.84/-9.1	-11.99/-10.07	-7.63/-7.23	-11.43/-8.59	-9.53/-8.29	-8.02/-5.96	-5.04/-8.02
Θ (90°)	-12.23/-9.55	-7.38/-8.08	-9.52/-7.62	-7.07/-7.55	-11.77/-10.06	-9.86/-11.96	-11.5/-10.28	-8.8/-12.38	-11.82/-10.94	-10.18/-7.79	-10.58/-10.55	-11.17/-11.15	-10.77/-10.17	-10.38/-7.94	-11.9/-9.91	-10.84/-8.84	-10.59/-8.11	-11.04/-11.04	-7.24/-10.01	-10.6/-10.29	-9.11/-9.22	-8.42/-8.26	-10.68/-9.48	-10.36/-7.95
Θ (97.5°)	-5.06/-10.15	-5.95/-6.13	-4.92/-6.41	-9.07/-10.72	-10.06/-9.96	-9.63/-11.44	-11.45/-11.84	-9.67/-10.19	-10.37/-8.54	-11.09/-7.18	-10.75/-12.14	-11.47/-11.72	-10.35/-10.5	-9.47/-9.95	-8/-4.53	-10.78/-9.87	-8.11/-9.38	-11.13/-10.28	-9.71/-8.31	-7.95/-7.59	-8.77/-5.89	-8.32/-5.38	-11.13/-8.65	-5.87/-7.56
Θ (105°)	-6.67/-4.76	-5.35/-7.06	-4.96/-3.8	-8.99/-8.31	-12.29/-11.16	-8.72/-9.23	-10.03/-7.81	-7.86/-9.97	-9.9/-9.78	-9.04/-7.89	-7.34/-9.06	-10.37/-11.47	-8.86/-11.01	-10.44/-8.31	-6.14/-5.14	-8.62/-8.57	-7.12/-8.75	-10.4/-12.15	-5.9/-10.01	-5.4/-8.86	-10.87/-8.33	-10.9/-10.02	-7.85/-8.24	-5.1/-9.11
Θ (112.5°)	-6.98/-3.62	-4.99/-6.59	-7.77/-8.67	-9.68/-9.56	-9.63/-11.45	-7.66/-7.48	-11.47/-9.17	-5.73/-4.55	-9.25/-9.08	-8.96/-8.58	-8.95/-7.76	-8.71/-8.89	-8.69/-8.19	-8.34/-9.66	-7.36/-9.68	-8.89/-6.57	-6.43/-10.02	-10.37/-10.4	-6.52/-8.02	-6.04/-6.44	-7.78/-7.83	-6.63/-4.04	-9.04/-5.22	-4.85/-6.38
Θ (120°)	-2.64/-4.16	-4.13/-1.06	-2.7/-3.65	-2.8/-3.69	-4.68/-7.55	-8.13/-7.36	-9.31/-10.56	-5.75/-4.41	-9.57/-8.29	-10.59/-7.36	-6.56/-10.6	-10.19/-10.02	-11.12/-9.3	-5.76/-9.24	-8.33/-4.39	-6.12/-5.35	-5.98/-7.36	-10.82/-9.64	-7.13/-10.13	-3.63/-3.93	-6.16/-9.38	-5.04/-5.5	-3.46/-3.98	-1.19/-5.8
Θ (127.5°)	-6.33/-17	-2.03/-3.06	-4.78/-7.72	-7.54/-4.94	-5.62/-7.32	-8.83/-6.14	-7.27/-8.32	-7.05/-5.55	-6.39/-4.91	-8.23/-7.7	-8.59/-8.7	-9.14/-6.35	-6.59/-5.55	-5.77/-5.24	-6.02/-6.16	-7.49/-3.72	-4.3/-5.2	-6.76/-7.92	-6.12/-6.14	-8.39/-6.05	-9.34/-9.38	-6.78/-6.36	-4.73/-5.65	-1.74/-1.78
Θ (135°)	-1.01/-3.97	-0.52/-3.2	-1.63/-4.5	-5.49/-5.36	-4.85/-8.25	-4.92/-4.64	-6.18/-8.77	-8.28/-6.59	-8.6/-9.25	-6.52/-6.58	-7.35/-8.29	-9.05/-7.32	-7.65/-5.34	-2.06/-4.43	-4.2/-4.08	-6.6/-6.04	-6.63/-4.93	-6.89/-6.32	-11.42/-8.35	-7.75/-8.86	-9.47/-8.14	-5.81/-5.65	-4.72/-2.87	-5.12/-4.37
Θ (142.5°)	-0.53/-3.12	-2.18/-0.37	-3.32/-5.82	-5.49/-6.16	-5.67/-6.32	-7.66/-8.31	-7.96/-10.22	-9.58/-10.21	-7.62/-7.02	-7.32/-5.63	-4.22/-8.19	-3.52/-4.77	-8.23/-7.85	-7.37/-7.63	-7.14/-4.97	-3.84/-4.88	-5.86/-6.73	-8.16/-10.46	-8.66/-6.85	-5.88/-8.74	-5.5/-4.97	-7.88/-3.31	-2.57/-2.54	-4.98/-4.5
Θ (150°)	-2.22/-2.18	-3.06/-5.82	-8.63/-7.22	-5.26/-6.45	-6.34/-7.55	-10.28/-7.21	-7.58/-8.68	-8.28/-8.01	-7.75/-6.35	-4.31/-3.35	-3.76/-5.6	-4.11/-3.85	-5.71/-6.08	-5.93/-3.9	-1.14/-2.38	-4.91/-5.02	-7.2/-7.39	-5.32/-5.33	-4.79/-5.8	-9.34/-6.98	-7.79/-6.9	-6.53/-4.33	-6.03/-6.91	-2.72/-1.97
Θ (157.5°)	-2.93/-2.02	-3.25/-9.73	-5.95/-4.09	-3.01/-3.93	-5.99/-7.83	-8.57/-7.6	-5.17/-5.88	-8.12/-7.12	-7.8/-7.65	-4.46/-2.68	-1.82/-1.19	-0.7/-1.09	-2.3/-2.38	-1.41/-0.63	-0.66/-2.06	-4.13/-8.55	-10.05/-8.54	-8.1/-5.27	-3.9/-5.91	-10.09/-6.25	-3.58/-4.9	-6.81/-4.68	-1.81/-0.31	-0.56/-2.64
Θ (165°)	-3.07/-4.4	-8.45/-4.41	-3.8/-4.11	-3.86/-3.86	-4.29/-5.74	-7.9/-8.22	-6.56/-3.94	-3.47/-3.3	-2.75/-2.86	-1.64/-0.21	0.79/-1.67	2.53/-2.79	2.88/-2.51	2.09/-1.19	-0.82/-2.15	-4.26/-6.05	-7.54/-6.49	-5.85/-5.2	-3.21/-3.35	-4.91/-8.1	-7.45/-5.26	-1.77/-0.56	-0.35/-1.44	-1.56/-2.04
Θ (172.5°)	-0.65/-2.64	-3.58/-4.35	-4.08/-2.98	-2.97/-2.46	-3.32/-4.98	-5.74/-5.74	-3.67/-2.25	-0.92/-0.28	0.54/-1.06	1.22/-1.7	2.01/-2.32	2.81/-3.2	3.19/-2.66	1.65/-0.83	-0.81/-2.62	-3.94/-6.08	-6.48/-5.58	-4.19/-3.04	-2.47/-1.42	-1.22/-1.56	-1.35/-0.76	-0.43/-1.76	-2.76/-2.59	-1.53/-0.31
Θ (180°)	-1.72/-3.39	-2.73/-1.4	-0.78/-1.38	-1.33/-2.19	-2.51/-3.25	-3.19/-2.35	-1.55/-0.5	-0.12/-0.5	1.2/-1.99	2.21/-2.61	2.74/-2.71	2.69/-2.11	2/-1.42	1.03/-0.19	-0.58/-1.24	-1.55/-2.25	-2.32/-2.18	-2.33/-1.81	-1.51/-0.5	-0.12/-1.21	1.18/-1.33	1.35/-1.1	0.25/-0.36	-0.45/-0.89
Freq(Hz)	5.785GPol.	Theta-	-/-	-/-	-/-	-/-	-/-	-/-	-/-	-/-	-/-	-/-	-/-	-/-	-/-	-/-	-/-	-/-	-/-	-/-	-/-	-/-	-/-	-/-
DG(90)	Φ(0°)/Φ(7.5°)	Φ(15°)/Φ(22.5°)	Φ(30°)/Φ(37.5°)	Φ(45°)/Φ(52.5°)	Φ(60°)/Φ(67.5°)	Φ(75°)/Φ(82.5°)	Φ(90°)/Φ(97.5°)	Φ(105°)/Φ(112.5°)	Φ(120°)/Φ(127.5°)	Φ(135°)/Φ(142.5°)	Φ(150°)/Φ(157.5°)	Φ(165°)/Φ(172.5°)	Φ(180°)/Φ(187.5°)	Φ(195°)/Φ(202.5°)	Φ(210°)/Φ(217.5°)	Φ(225°)/Φ(232.5°)	Φ(240°)/Φ(247.5°)	Φ(255°)/Φ(262.5°)	Φ(270°)/Φ(277.5°)	Φ(285°)/Φ(292.5°)	Φ(300°)/Φ(307.5°)	Φ(315°)/Φ(322.5°)	Φ(330°)/Φ(337.5°)	Φ(345°)/Φ(352.5°)
Θ (0°)	-9.91/-9.37	-8.61/-8.97	-9.06/-8.58	-8.33/-8.37	-8.83/-8.6	-8.84/-9.67	-10.53/-11.31	-10.7/-10.69	-10.93/-11.25	-11.12/-11.35	-10.42/-10.56	-10.62/-10.78	-10.87/-11.19	-10.25/-11.2	-11.02/-11.39	-12.01/-12.16	-11.03/-10.02	-9.44/-9.48	-8.85/-8.75	-8.59/-9.14	-8.2/-8.08	-9.67/-10.01	-9.67/-9.98	-10.64/-10.96
Θ (7.5°)	-12.12/-11.5	-11.15/-12.19	-12.32/-12.14	-11.74/-11.66	-11.02/-8.56	-7.16/-6.33	-6.81/-5.87	-5.53/-5.01	-5.22/-5.29	-5.71/-6.47	-7.42/-8.2	-9.49/-9.34	-9.04/-8.06	-8.09/-8.59	-7.64/-7.02	-6.44/-6.99	-7.82/-7.37	-7.25/-8.95	-9.27/-9.7	-10.21/-10.68	-10.33/-10.94	-11.42/-10.8	-11.86/-11.98	-12.39/-12.11
Θ (15°)	-7.02/-6.51	-6.92/-7.82	-7.78/-6.54	-6.68/-7.35	-7.04/-6.44	-6.25/-5.04	-3.89/-2.96	-3.46/-4.07	-4.84/-4.96	-5.07/-4.96	-4.88/-5.17	-5.77/-5.16	-6.04/-5.85	-5.45/-6.38	-6.59/-6.43	-6.41/-8.03	-8.82/-7.58	-6.73/-6.44	-7.13/-8.59	-8.79/-8.25	-7.95/-8.85	-8.09/-8.17	-7.22/-7.4	-8.8/-8.18
Θ (22.5°)	-7.37/-5.29	-4.84/-5.56	-4.62/-3.94	-3.55/-1.65	-1.03/-1.74	-1.53/-0.06	0.09/-1.32	-2.27/-2.33	-1.1/-0.62	-1.47/-3.04	-2.9/-3.02	-2.79/-2.31	-3.03/-4.14	-3.4/-3.18	-2.4/-3.14	-3.5/-3.98	-4.79/-3.35	-2.75/-3.76	-3.68/-2.58	-2.24/-3.12	-4.61/-6.71	-9.13/-7.53	-5.72/-5.42	-6.81/-7.64
Θ (30°)	-1.13/-0.68	-1.27/-1.71	-1.51/-0.83	-1.36/-1.39	0.12/-0.92	-1.37/-1.1	-2.85/-3.67	-3.44/-3.07	-3.24/-1.82	-1.08/-1.62	-0.45/-0.07	-0.26/-0.82	-1.92/-1.44	-1.31/-1.41	0.05/-0.39	-1.02/-2.47	-1.06/-0.65	-2.03/-0.62	-1.21/-1.96	-1.31/-1.2	-0.82/-0.56	-1.03/-0.78	-0.41/-0.06	-0.54/-0.26
Θ (37.5°)	1.71/-1.33	1.69/-2.74	1.86/-1.45	1.58/-0.87	0.77/-1.14	1.36/-2.04	1.53/-2.7	1.47/-1.47	1.19/-0.81	1.21/-24	0.02/-0.1	-1.74/-0.84	0.54/-0.29	-0.47/-1.24	0.08/-0.72	0.4/-2.19	0.5/-0.07	-1.79/-1.63	-1.08/-1.33	-2.76/-1.65	0.02/-0.83	1.69/-1.61	2.81/-3.72	4.06/-2.69
Θ (45°)	2.04/-2.19	3.04/-1.7	2.28/-2.6	3.35/-1.95	3.04/-3.56	2.74/-1.46	2.85/-2.66	2.65/-3.71	2.69/-2.12	2.86/-1.96	1.02/-1.81	1.51/-0.96	1.73/-2.16	1.57/-0.45	0.03/-0.22	1.24/-0.23	1.93/-0.04	0.61/-0.43	2.49/-0.53	0.25/-0.95	1.52/-2.63	2.81/-0.58	1.45/-1.92	2.21/-2.46
Θ (52.5°)	1.24/-0.31	1.92/-24	0.16/-1.73	0.15/-0.62	1.48/-2.59	3.31/-68	1.97/-122	1.22/-1.76	3.3/-1.96	2.15/-0.32	1.11/-1.56	2.03/-1.06	0.90/-36	1.45/-0.39	0.49/-1.12	1.12/-2.25	1.82/-1.3	1.09/-2.31	1.48/-2.06	2.43/-3.37	2.62/-0.09	1.85/-0.59	0.91/-1.07	1.39/-0.21
Θ (60°)	2.85/-3.44	3.27/-3.53	4.25/-4.24	5.29/-3.88	4.47/-3.97	4.31/-3.98	3.97/-4.5	4.16/-3.26	3.08/-3.23	3.61/-3.82	3.46/-2.54	2.77/-3.06	2.33/-4.17	2.22/-4.14	4.21/-3.14	3.63/-3.05	3.01/-3.24	2.74/-3.28	5.23/-4.68	4.83/-1.94	3.12/-45	2.87/-2.08	3.26/-2.47	3.9/-3.16
Θ (67.5°)	4.58/-4.06	3.75/-4.27	4.31/-3.67	3.18/-2.99	3.48/-3.83	3.99/-4.29	3.95/-4.5	3.08/-4.27	4.08/-3.48	4.19/-3.75	3.94/-3.35	3.42/-2.57	4.07/-3.5	4.11/-4.88	5.25/-3.58	4.03/-3.63	4.02/-4.05	4.11/-5.18	4.99/-5.35	4.27/-3.78	2.68/-1.46	4.57/-5.11	4.29/-4.78	4.87/-4.61
Θ (75°)	1.91/-2.03	1.87/-2.78	3.43/-4.14	3.72/-4.31	4.3/-4.4	4.34/-5.08	5.11/-5.09	3.68/-3.69	4.37/-4.77	4.22/-4.91	5.09/-4.71	3.93/-3.55	4.68/-3.66	4.37/-4.01	4.07/-3.11	3.99/-4.78	4.59/-3.83	2.52/-4.75	4.85/-4.5	3.83/-7.1	4.82/-2.92	3.07/-3.94	2.96/-3.37	
Θ (82.5°)	3.38/-4.75	2.98/-2.83	3.04/-5.09	4.95/-4.86	5.46/-3.81	4.71/-4.12	4.24/-5.27	5.62/-4.41	5.58/-4.98	5.08/-5.03	4.54/-7.1	3.59/-4.13	5.06/-5.48	5.33/-4.34	4.96/-5.25	5.62/-5.04	5.41/-4.46	5.33/-6.3	5.65/-6.78	3.95/-3.87	3.76/-3.24	4.06/-3.97	4.77/-3.03	4.07/-3.85
Θ (90°)	5.74/-16	1.39/-2.84	2.89/-3.57	3.11/-4.96	3.96/-4.8	4.51/-4.14	3.51/-4.15	4.96/-4.97	4.74/-4.24	5.02/-5.2	4.28/-3.04	1.51/-1.62	4.19/-4.11	5.65/-6.7	5.33/-5.24	5.18/-4.32	5.75/-33	4.62/-5.34	5.41/-5.49	4.13/-5.09	3.97/-4.84	5.74/-5.68	5.68/-3.52	5.37/-3.43
Θ (97.5°)	3.11/-1.65	-0.01/-2.52	2.73/-45	0.93/-76	1.08/-1.01	2/-1.06	2.84/-3.18	3.52/-64	2.87/-3.83	5.35/-4.8	5.04/-3.07	3.38/-4	5.01/-45	5.21/-499	3.92/-5	5.26/-4.95	5.02/-3.43	1.24/-0.1	4.66/-4.77	5.35/-5.4	5/-3.84	5.04/-3.54	5.06/-2.38	3.75/-3.83
Θ (105°)	1.88/-2.62	-0.28/-0.26	1.96/-0.36	-0.75/-0.38	-0.93/-0.77	-0.04/-0.21	-0.03/-0.63	1.11/-0.1	1.65/-1.09	1.56/-2.33	2.82/-3.53	1.05/-2.39	2.94/-3.52	3.72/-24	4.15/-3.3	5/-3.63	2.44/-1.87	3.53/-3.99	2/-3.83	4.24/-4.77	0.94/-0.16	5.65/-3.56	1.84/-2.53	2.33/-1.47
Θ (112.5°)	1.28/-0.33	-1.25/-4.07	-2.85/-3.91	-5.58/-0.41	-1.76/-0.41	-1.39/-1.98	-1.61/-0.66	0.18/-1.75	-1.14/-0.41	-0.1/-1.88	-1.19/-0.24	1.58/-1.84	3.96/-3.65	4.71/-0.85	-0.45/-1.7	-0.05/-1.38	2.33/-2.89	1.82/-1.34	1.66/-1.54	1.72/-0.97	1.51/-1.07	2.66/-0.91	0.39/-0.43	-1.6/-1
Θ (120°)	-0.21/-0.32	-3.27/-0.82	-1.03/-2.6	-6.27/-3.1	0.51/-2.46	-3.71/-4.97	-3.36/-1.66	-0.77/-1.68	-2.76/-1.77	-2.77/-1.62	0.04/-0.77	0.3/-0.47	1.31/-1.46	1.14/-1.26	0.12/-1.35	1.76/-1.03	0.75/-0.38	-1.19/-0.13	-1.98/-1.77	0.84/-0.37	0.07/-2.27	-1.61/-2.97	-4.21/-4.32	-1.35



Sporton International Inc. Hsinchu Laboratory



Radiated Composite Gain of 2.4GHz and 5GHz UNII 1~3

Appendix A

Θ(22.5°)	-17.86/-19.14	-14.81/-11.74	-14.05/-18.43	-18.92/-18.44	-17.84/-17.8	-18.16/-17.85	-15.35/-18.9	-17.78/-18.35	-17.86/-19.07	-17.37/-14.22	-15.72/-18.12	-18.45/-14.8	-11.18/-12.02	-13.46/-10.54	-9.04/-7.87	-9/-13.81	-19.11/-18.24	-15.72/-15.22	-17.33/-15.38	-15.71/-15.25	-15.21/-16.45	-18.01/-18.74	-19.86/-16.58	-18.66/-17.98
Θ(30°)	-17.81/-19.14	-17.03/-10.94	-13.46/-18.43	-13.09/-16	-12.44/-11.97	-13.37/-13.77	-13.2/-12.84	-12.12/-15.8	-18.51/-17.2	-14.29/-16.95	-10.15/-11.41	-18.59/-19.1	-15.98/-14.48	-13.95/-11.9	-10.43/-10.61	-11.82/-17.23	-18.92/-18.29	-17.07/-18.89	-18.73/-18.61	-18.67/-18.38	-18.59/-18.08	-19.12/-18	-17.69/-18.52	-19.35/-19.02
Θ(142.5°)	-18.15/-17.92	-18.36/-17.92	-18.94/-18.57	-13.5/-13.67	-18.83/-19.13	-18.52/-16.68	-14.5/-14.8	-18.05/-18.82	-11.41/-12.96	-13.59/-10.86	-16.05/-11.85	-11.88/-17.28	-18.07/-14.01	-15.61/-19.23	-16.17/-14.1	-18.93/-17.55	-18.79/-11.56	-19.12/-17.37	-17.41/-17.96	-18.83/-13.45	-18.4/-15.11	-16.84/-16.13	-17.73/-16.68	-14.73/-16.88
Θ(45°)	-10.43/-9.61	-17.91/-13.33	-11.68/-10.88	-16.13/-12.47	-14.2/-18.51	-18.46/-18.35	-18.88/-17.94	-19.24/-18.1	-15.87/-18.1	-19.24/-16.34	-14.14/-17.36	-16.78/-16.86	-16.84/-19.08	-14.71/-13.9	-16.09/-18.82	-18.91/-15.45	-17.65/-17.35	-19.43/-13.07	-15.48/-18.62	-18.82/-18.45	-19.1/-18.96	-17.67/-18.42	-18.01/-14.88	-14.27/-18.64
Θ(52.5°)	-11.71/-19.03	-12.24/-12.56	-17.29/-12.93	-12.89/-14.74	-10.67/-15.09	-14.51/-18.04	-17.88/-18.56	-18.42/-11.3	-12.19/-17.02	-15.52/-15.57	-18.96/-18.58	-17.21/-13.7	-18.03/-15.48	-18.65/-18.26	-18.07/-18.02	-19/-16.06	-18.98/-18.54	-16.48/-18.7	-17.96/-15.15	-19.28/-17.94	-17.63/-17.46	-17.52/-18.81	-15.2/-10.2	-15.86/-11.87
Θ(60°)	-13.71/-7.69	-18.48/-16.02	-17.63/-19.59	-12.86/-12.15	-19.76/-17.7	-15.05/-16.35	-17.97/-18.75	-16.06/-12.95	-10.01/-8.56	-8.5/-9.36	-10.96/-10.9	-13.3/-12.36	-13.74/-17.96	-18.72/-17.7	-17.19/-17.66	-18.57/-16.98	-15.8/-18.92	-17.88/-16.53	-17.98/-17.87	-17.98/-19.24	-18.09/-18.37	-14.3/-14.68	-16.72/-16.83	
Θ(67.5°)	-16.57/-10.63	-18.98/-9.53	-17.87/-10.27	-13.4/-16.04	-19.07/-18.18	-12.18/-16.67	-16.54/-18.28	-18.34/-12.81	-16.05/-13.19	-12.95/-17.37	-19.02/-14.52	-19.24/-12.21	-10.94/-15.1	-18.32/-18.42	-16.68/-18.66	-18.53/-18.18	-17.64/-13.99	-17.67/-19.24	-17.12/-18.84	-17.42/-18.07	-18.38/-13.03	-16.27/-18.85	-13.06/-18.64	-10.08/-15.23
Θ(75°)	-10.01/-17.77	-13.48/-18.53	-14.44/-18.59	-18.23/-13.83	-11.61/-14.8	-17.51/-12.88	-16.52/-17.95	-18.71/-18.24	-18.34/-10.5	-14.32/-13.56	-18.53/-19.2	-19.05/-10.1	-15.46/-13.47	-16.82/-14.49	-12.33/-11.87	-16.76/-17.98	-18.79/-18.38	-12.13/-17.9	-15.49/-17.97	-18.12/-17.97	-18.53/-18.54	-18.47/-16.3	-18.05/-8.32	-10.38/-14.17
Θ(82.5°)	-16.82/-18.05	-12.4/-17.86	-17.48/-18.75	-17.04/-17.78	-18.09/-17.64	-17.14/-18.49	-17.92/-14.38	-18/-18.69	-18.99/-10.61	-14.39/-18.77	-16.2/-16.08	-13.94/-13.8	-13.39/-10.12	-18.17/-15.6	-14.61/-14.79	-17.85/-15.36	-14.92/-18.22	-15.58/-15.26	-12/-17.31	-18.72/-18.62	-18.39/-17.72	-17.75/-12.21	-9.25/-17.55	-16.18/-19.02
Θ(90°)	-8.18/-14.15	-14.94/-17.78	-18.2/-14.71	-15.58/-13.01	-9.55/-15.97	-18.26/-19.21	-18.74/-11.44	-17.18/-13.04	-12.1/-11.8	-12.8/-19.33	-16.64/-12.32	-14.76/-14.68	-12.93/-15.74	-17.53/-15.91	-15.67/-12.15	-17.81/-11.11	-17.04/-18.99	-18/-18.42	-13.2/-19.36	-17.72/-16.93	-18.9/-18.4	-16.57/-16.85	-17.31/-8.76	-7.84/-18.14
Θ(97.5°)	-13.77/-11.46	-18.93/-12	-18.41/-14.56	-12.05/-11.06	-10.78/-17.38	-18.16/-19.31	-17.31/-17.94	-18.13/-15.1	-17.88/-18.55	-14.5/-12.62	-9.36/-18.92	-16.38/-14.69	-17.73/-18.86	-17.43/-18.86	-11.02/-13.26	-15.8/-14.89	-18.41/-18.16	-11.45/-18.49	-19.27/-19.2	-18.69/-19.15	-15.84/-18.58	-18.77/-16.3	-13.9/-13.27	-7.96/-11.32
Θ(105°)	-14.1/-10.6	-19.08/-11.83	-6.09/-9.5	-17.56/-16.93	-12.45/-12.6	-17.23/-18.69	-14.55/-19.01	-18.28/-11.95	-15.66/-17.52	-18.14/-18.02	-11.97/-12.9	-9.61/-10.54	-10.52/-14.03	-16.25/-16.39	-11.32/-12.23	-18.9/-16.55	-10.47/-17.73	-11.66/-17.76	-13.69/-12.62	-18.12/-10.63	-10.95/-12.04	-16.66/-17.57	-18.16/-15.38	-17.17/-18.77
Θ(112.5°)	-13.13/-12.19	-16.49/-13.1	-11.76/-7.97	-14.5/-11.31	-15.35/-14.09	-18.77/-17.34	-14.92/-17.13	-18.35/-14.78	-15.53/-17.47	-14.07/-18.8	-14.05/-18.39	-14.04/-18.02	-16.05/-17.71	-16.01/-18.78	-19.08/-9.51	-12.75/-11.14	-13.91/-16.31	-15.1/-18.98	-13.88/-12.51	-15.07/-10.91	-16.49/-16.11	-13.58/-17.08	-9.63/-12.03	-18.21/-6.73
Θ(120°)	-3.41/-9.61	-3.86/-9.67	-12.81/-5.96	-11.69/-18.21	-18.85/-18.41	-15.55/-17.27	-16.04/-16.64	-16.2/-17.41	-18.48/-17.23	-16.12/-15	-17.96/-18.08	-17.91/-18.79	-15.83/-11.94	-11.31/-9.81	-7.81/-7.86	-8.17/-13.19	-13.43/-14.28	-18.45/-17.17	-18.95/-16.26	-18.95/-16.26	-18.35/-15.02	-18.15/-10.75	-9.64/-5.73	-7.94/-7.07
Θ(127.5°)	-5.55/-5.13	-7.88/-14.67	-8.8/-14.28	-13.91/-14.01	-18.48/-18.6	-11.52/-12.43	-11.22/-17.14	-18.16/-16.72	-14.49/-11.2	-13.61/-10.43	-9.47/-14.7	-14.36/-12.18	-17.8/-14.3	-18.44/-16.75	-18.38/-10.54	-17.06/-10.05	-6.78/-4.92	-10.3/-9.12	-17.77/-18.84	-16.41/-14.34	-14.28/-18.03	-18.21/-18.25	-16.87/-14.39	-3.67/-5.56
Θ(135°)	-9.63/-7.56	-6.99/-10.69	-19.02/-8.11	-10.04/-18.74	-18.78/-11.26	-10.41/-11.64	-12.18/-18.05	-13.06/-17.57	-19.12/-19.57	-18.34/-16.69	-13.38/-12.02	-18.01/-16.83	-11.96/-17.02	-8.01/-11.21	-14.98/-14.74	-13.17/-13.25	-16.47/-18.52	-17.66/-13.63	-12.61/-13.91	-18.34/-18.88	-18.43/-16.48	-17.81/-11.76	-5.64/-10.91	-14.22/-7.29
Θ(142.5°)	-9.22/-12.27	-12.53/-14.93	-15.46/-16.69	-14.07/-13.44	-14.0/-10.06	-17.45/-11.19	-8.26/-17.73	-17.81/-19.1	-18.65/-17.23	-17.59/-18.05	-9.81/-7.57	-8.99/-10.28	-17.23/-18.28	-17.88/-11.14	-7.22/-17.28	-14.34/-14.78	-11.52/-14.18	-17.18/-54	-17.04/-18.26	-17.74/-11.53	-14.44/-11.85	-16.79/-18.08	-8.85/-6.51	-11.21/-9.18
Θ(150°)	-10.58/-10.83	-18.12/-18.52	-7.59/-6.85	-7.4/-9.43	-11.15/-16.35	-12.66/-14.25	-18.51/-7.86	-17.37/-14.44	-12.06/-12.84	-13.74/-7.41	-9.51/-11.52	-18.63/-17.57	-18.48/-7.78	-9.45/-11.29	-13.19/-18.7	-17.83/-9.92	-8.78/-11.86	-11.53/-19.19	-17.65/-11.04	-6.52/-6.66	-15.9/-10.47	-6.52/-6.66	-14.21/-8.63	-5.49/-9.4
Θ(157.5°)	-7.79/-8.39	-10.46/-4.68	-4.79/-7.66	-11.36/-18.58	-17.73/-14.91	-18.43/-18.15	-10.85/-9.65	-8.56/-7.4	-9.06/-12.54	-6.59/-3.35	-3.31/-4.81	-3.97/-2.35	-3.02/-4.74	-2.89/-2.55	-5.41/-7.58	-9.2/-18.06	-17.4/-10.73	-10.09/-12.46	-11.29/-9.49	-18.5/-11.72	-8.61/-9	-11.96/-9.73	-7.06/-8.06	-15.75/-13.46
Θ(165°)	-5.46/-8.73	-7.45/-7.65	-9.38/-10.15	-12.27/-12.42	-10.29/-12.31	-18.39/-14.31	-8.97/-8.49	-7.38/-6.06	-5.98/-4.31	-4.44/-2.82	-1.95/-9.04	0.290/47	0.360/95	1.02/-0.22	-3.62/-8.71	-12.17/-12.61	-11.72/-11.45	-9.88/-7.78	-5.67/-4.78	-5.36/-7.66	-14.58/-14.88	-17.1/-14.23	-15.01/-11.5	-7.93/-6.87
Θ(172.5°)	-8.53/-11.1	-5.79/-4.3	-5.14/-6.84	-12.9/-17.87	-18.79/-17.47	-14.97/-9.82	-8.9/-6.69	-6.06/-6.32	-5.58/-5.38	-4.44/-3.74	-3.35/-2.2	-1.9/-1.31	-0.58/-0.48	-1.27/-2.58	-4.62/-8.08	-13.48/-18.95	-18.49/-13.94	-11.14/-11	-8.89/-8.85	-9.82/-9.89	-10.5/-9.73	-11.96/-13.83	-13.55/-8.84	-6.67/-6.69
Θ(180°)	-16.26/-11.1	-6.99/-6.47	-10.96/-18.61	-17.41/-17.77	-14.97/-10.14	-8.13/-7.61	-6.8/-6.64	-6/-6.39	-5.68/-4.8	-4.93/-5.04	-5.05/-5.76	-6.48/-7.13	-8.12/-8.87	-10.52/-12.7	-14.83/-18.87	-18.49/-19.22	-15.84/-12.32	-11.27/-8.88	-8.22/-7.52	-7.11/-7.01	-7.41/-8.28	-8.96/-6.59	-5.6/-4.95	-5.98/-9.35
Freq(Hz)	5.30Pol.	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°)	-19.05/-18.6	-18.52/-18.04	-19.37/-18.81	-19.05/-18.97	-19.15/-16.81	-13.55/-12.8	-11.07/-12.09	-10.68/-9.97	-10.91/-10.28	-10.17/-11.07	-11.66/-11.8	-12.78/-14.53	-16.58/-19.22	-18.12/-17.93	-17.46/-18.1	-16.79/-17.17	-16.3/-15.12	-13.2/-14.08	-14.05/-13.67	-12.84/-15.96	-13.33/-13.45	-14.34/-16.8	-16.2/-14.95	-16.26/-14.93
Θ(7.5°)	-13.32/-12.53	-14.15/-15.7	-16.91/-16.96	-16.83/-18.43	-18.56/-18.13	-17.67/-17.48	-18.58/-18.13	-18.78/-18.5	-17.34/-17.19	-18.93/-18.82	-18.36/-15.18	-13.9/-11.72	-18.74/-18.99	-19.29/-18.59	-18.63/-17.77	-18.95/-17.27	-15.5/-14.78	-12.14/-10.96	-10.3/-10.77	-8.46/-9.25	-9.28/-8.88	-9.7/-9.57	-11.15/-10.15	-9.78/-13.32
Θ(15°)	-11.92/-11.49	-15.04/-15.99	-19.25/-16.61	-13.77/-11.33	-11.88/-12.48	-12.86/-11.78	-10.02/-9.81	-8.73/-8.83	-8.88/-6.21	-9.32/-10.10	-12.21/-12.74	-13.91/-11.77	-11.57/-12.92	-14.48/-15.25	-16.71/-14.41	-11.19/-9.07	-7.32/-6.48	-6.8/-6.81	-6.13/-6.66	-6.91/-6.64	-8.01/-7.38	-8.24/-8.18	-8.68/-9.1	-8.37/-11.37
Θ(22.5°)	-12.32/-8.92	-7.31/-8.15	-10.99/-12.55	-14.37/-13.76	-12.45/-12.07	-12.18/-13.84	-13.86/-14.77	-14.86/-13.55	-15.72/-15.31	-14.23/-12.43	-10.89/-10.22	-13.55/-12.03	-9.8/-7.99	-8.4/-10.02	-10.54/-7.03	-6.39/-6.43	-5.4/-4.74	-5.76/-7.13	-7.31/-6.54	-6.87/-6.06	-6.79/-7.7	-8.03/-10.5	-8.39/-8.07	-6.29/-8.2
Θ(30°)	-8.14/-7.14	-6.13/-5.97	-6.49/-7.1	-5.41/-5.72	-7.94/-5.88	-6.22/-5.99	-5.46/-4.09	-4.28/-5.4	-6.9/-3.83	-8.8/-10.48	-16.25/-10.99	-9.3/-11.41	-11.52/-12.46	-10.75/-7.81	-7.23/-6.05	-7.07/-8.97	-6.2/-7.28	-10.51/-9.99	-8.29/-6.9	-7.18/-5.62	-6/-6.2	-5.35/-4.4	-6.02/-6.35	-4.03/-6.02
Θ(37.5°)	-6.66/-9.85	-5.5/-4.09	-7.08/-7.05	-6.37/-4.39	-5.87/-7.92	-6.23/-4.58	-3.26/-2.58	-1.53/-1.54	-2.75/-5.34	-5.04/-3.94	-4.89/-4.87	-3.39/-5.4	-5.33/-6.1	-4.59/-7.12	-7.44/-8.61	-6.65/-6.1	-7.15/-8.3	-5.42/-5.62	-4.71/-4.39	-5.65/-5.1	-5.71/-7.79	-8.55/-6.69	-5.18/-6.82	-7.84/-5.63
Θ(45°)	-7.55/-6.8	-7/-7.29	-5.78/-5.37	-2.81/-3.21	-7.01/-5.21	-7.08/-7.76	-11.12/-13.1	-17.5/-18.31	-8.19/-8.43	-10.25/-8.09	-5.75/-5.05	-5.59/-7.44	-11.72/-5.34	-4.19/-6.09	-4.79/-4.84	-7.3/-5.44	-6.52/-7.88	-4.21/-2.57	-2.8/-3.17	-3.47/-3.59	-4.71/-5.42	-7.6/-9.63	-6.09/-4.79	-6.75/-7.9
Θ(52.5°)	-4.01/-5.74	-5.54/-5.68	-3.63/-3.24	-3.06/-4.55	-1.66/-3.3	-3.67/-2.57	-0.13/-0.15	0.13/-0.42	-1.44/-1.47	-2.18/-1.8	-3.49/-5.6	-3.12/-5.88	-4.33/-7.95	-8.89/-3.38	-2.99/-3.43	-5.79/-4.55	-7.35/-6.88	-2.48/-2.45	-3.75/-2.96	-4.51/-5.45	-2.81/-3.55	-4.6/-4.6	-4.67/-3.32	-6.47/-2.97
Θ(60°)	-1.86/-6.9	-2.14/-2.78	-3.76/-0.46	-2.49/-1.23	0.26/-1.3	-1.65/-1.06	-2.41/-2.16	-3.68/-4.5	-3.9/-1.5	-1.99/-4.14	-2.16/-4.37	-3.89/-2.7	-3.65/-3.37	-3.62/-2.75	-3.19/-3.74	-5.09/-6.14	-3.6/-2.89	-5.2/-5.8	-5.62/-6.09	-6.28/-4.2				



Radiated Composite Gain of 2.4GHz and 5GHz UNII 1~3

Appendix A

Θ(75°)	-11.48/-12.75	-8.61/-15.73	-8.05/-17.09	-14.4/-18.32	-18.3/-17.26	-14.05/-13.17	-18.16/-16.68	-15.57/-18.99	-18.41/-18.9	-9.49/-17.66	-18.11/-18.45	-16.15/-13.16	-17.03/-15.62	-17.99/-17.38	-14/-17.66	-17.25/-18.78	-18.53/-18.3	-18.68/-16.02	-17.42/-18.16	-19.57/-18.37	-18.1/-17.82	-18.93/-14.27	-18.9/-9.12	-11.05/-13.4
Θ(82.5°)	-9.48/-17.85	-10.98/-12.6	-16.36/-13.48	-18.12/-12.51	-10.91/-18.75	-17.66/-18	-16.78/-17.46	-13.39/-12.96	-19.02/-18.4	-15.16/-18.22	-18.67/-17.8	-12.31/-11.89	-12.9/-14.94	-18.26/-18.28	-10.17/-11.82	-12.73/-11.06	-14.96/-17.78	-18.63/-17.84	-18.86/-18.97	-18.44/-19.14	-18.66/-17.15	-19.09/-11.61	-14.75/-16.6	-9.22/-17.85
Θ(90°)	-18.95/-9.9	-10.02/-12.86	-15.44/-18.45	-12.22/-18.49	-18.41/-15.1	-16.8/-18.99	-14.64/-18.45	-18.03/-18.39	-16.32/-17.71	-18.75/-16.81	-16.64/-13.65	-13.93/-17.26	-17.85/-12.43	-16.81/-19.23	-18.41/-16.63	-15.9/-16.78	-15.55/-13.81	-14.44/-18.49	-18.55/-19.21	-18.66/-19.21	-18.98/-14.53	-12.34/-16.22	-14.59/-14.37	-14.3/-12.33
Θ(97.5°)	-7.12/-17.41	-10.44/-11.69	-16.99/-12.92	-19.39/-17.61	-19.13/-18	-17.6/-18.03	-17.8/-18.93	-16.91/-15.58	-15.32/-13.14	-17.72/-18.52	-18.57/-18.24	-17.71/-18.5	-18.54/-14.72	-18.69/-18.68	-12.33/-8.45	-17.95/-13.99	-15.04/-18.5	-17.63/-17.75	-19.04/-18.96	-19.17/-12.21	-16.31/-13.75	-14.33/-10.73	-18.27/-13.61	-8.25/-13.1
Θ(105°)	-8.61/-17.81	-17.57/-18.25	-9.09/-8.47	-14.12/-16.82	-18.25/-17.25	-15.45/-18.57	-12.89/-8.99	-12.77/-15.34	-17.69/-13.16	-13.63/-18.69	-10.56/-11.77	-12.23/-19	-17.33/-17.67	-17.32/-14.74	-9.81/-7.08	-9.82/-12.42	-7.99/-17.79	-12.1/-16.59	-12.08/-10.63	-17.05/-16.79	-17.94/-18.81	-17.33/-14.39	-18.61/-13.39	-8.56/-13.6
Θ(112.5°)	-19.06/-12.42	-14.04/-18.08	-18.73/-15.92	-18.58/-18.05	-18.19/-17.32	-15.09/-15.99	-15.76/-17.72	-15.93/-16.38	-17.16/-18.9	-12.91/-18.02	-16.79/-18.62	-15.28/-17.33	-14.24/-18.36	-17.64/-16.79	-9.3/-12.69	-12.64/-8.77	-12.67/-19.05	-13.44/-12.96	-13.78/-10.95	-8.65/-12.45	-12.94/-10.95	-17.39/-16.46	-9.64/-18.21	
Θ(120°)	-7.27/-12.46	-5.19/-4.58	-9.32/-4.37	-4/-11.03	-10.23/-11.94	-16.77/-18.22	-15.72/-13.75	-12.05/-15.12	-15.75/-15.83	-17.55/-15.22	-15.38/-19.14	-15.43/-14.22	-18.54/-13.34	-7.41/-11.31	-12.1/-7.29	-8.71/-9.15	-8.3/-16.58	-18.68/-17.27	-19.09/-17.45	-18.34/-12.75	-11.59/-16.82	-15.28/-10.36	-15.11/-13.91	-6.12/-10.64
Θ(127.5°)	-8.27/-11	-6.72/-5.36	-5.47/-14.28	-18.35/-17.92	-18.4/-13.75	-16.62/-13.85	-11.63/-8.77	-18.5/-17.72	-10.44/-12.86	-19.09/-11.82	-13.4/-12.86	-14.03/-11.39	-10.49/-15.21	-12.54/-9.57	-9.88/-9.82	-13.2/-5.2	-6.75/-12.11	-11.45/-10.6	-12.56/-12.6	-13.11/-18.3	-18.92/-13.75	-15.19/-9.76	-10.32/-12.87	-6.5/-1.48
Θ(135°)	-2.04/-10.04	-1.56/-19.07	-6.88/-9.17	-6.99/-10.14	-7.47/-12.96	-9.35/-6.5	-8.14/-12.12	-17.59/-11.6	-18.46/-14.36	-12.18/-17.71	-16.06/-12.76	-15.71/-15.5	-12.14/-14.89	-6.86/-12.35	-8.56/-8.9	-18.39/-12.64	-17.92/-18.56	-14.81/-13.24	-14.28/-16.23	-17.52/-16.51	-13.55/-13.23	-11.02/-18.44	-15.91/-9.45	-13.99/-5.34
Θ(142.5°)	-5.37/-6.16	-7.42/-5.28	-13.21/-11.59	-16.17/-12.43	-8.1/-8.39	-14.9/-14.55	-11.07/-17.38	-12.26/-16.38	-18.4/-14.89	-17.1/-12.02	-6.61/-9.49	-6.49/-10.06	-11.49/-18.99	-18.09/-17.43	-19.15/-7.5	-5.69/-9.84	-18.39/-14.64	-18.83/-16.9	-12.12/-15.5	-18.25/-18.66	-12.92/-13.27	-16.25/-11.25	-18.77/-5.53	-5.47/-18.69
Θ(150°)	-10.3/-4.53	-4.69/-8.32	-13.48/-3.6	-10.72/-17.02	-13.49/-9.81	-15.66/-12.61	-13.88/-16.36	-16.47/-15.29	-11.4/-9.98	-8.75/-5.44	-4.71/-7.69	-8.79/-10.71	-11.56/-10.41	-18.48/-16.05	-5.72/-3.72	-8.11/-8.35	-12.04/-13.58	-12.19/-12.68	-7.28/-9.62	-19/-13.96	-14.36/-11.91	-7.22/-7.82	-13.18/-17.24	-6.88/-6.53
Θ(157.5°)	-1.436/-5.69	-6.02/-12.45	-5.437/-5.3	-8.57/-12.14	-15.68/-9.83	-19.06/-19.05	-10.63/-7.92	-9.97/-6.44	-18.86/-18.19	-6.22/-4.57	-4.79/-5.51	-3.43/-3.5	-0.84/-1.02	-1.09/-1.26	-4.45/-11.81	-8.24/-13.67	-14.29/-11.05	-9.64/-11.05	-15.43/-10.83	-7.77/-9.09	-10.78/-8.07	-4.37/-3.68	-8.27/-19.16	
Θ(165°)	-1.64/-1.69	-9.91/-6.02	-8.45/-14.66	-15.34/-18.97	-18.09/-13.85	-11.69/-12.42	-12.19/-9.36	-7.96/-6.52	-5.45/-4.28	-3.25/-1.23	-0.31/-1.11	1.78/-1.92	2.53/-0.2	3.082/-1.2	0.11/-2.52	-5.25/-10.95	-18.15/-12.45	-9.45/-7.15	-5.74/-6.62	-10.72/-17.15	-17.94/-12.19	-8.15/-6.98	-7.25/-10.88	-6/-3.08
Θ(172.5°)	-3.2/-13.09	-10.95/-7.21	-7.93/-11.25	-15.98/-17.31	-19.16/-18.3	-16.07/-9.4	-6.06/-4.45	-3.11/-2.74	-2.73/-2.32	-1.89/-0.85	0.0/-1	1.72/-56	2.782/-65	2.050/-67	-1.63/-5.06	-9.3/-15.47	-18.74/-18.56	-11.59/-8.88	-7.18/-5.86	-5/-1.68	-7.36/-6.54	-6.7/-9.84	-8.66/-4.74	-2.27/-1.61
Θ(180°)	-6.15/-11.58	-5.95/-5.4	-8.32/-17.22	-18.88/-19.1	-17.82/-14.29	-9.89/-8.04	-6.84/-5.05	-4.59/-3.71	-3.08/-2	-1.52/-1.78	-1.67/-1.53	-1.62/-2.36	-2.94/-3.18	-3.61/-4.99	-7.19/-10.06	-13.64/-18.95	-18.93/-19.11	-13.73/-9.55	-8.01/-6.14	-5.13/-3.13	-3.68/-3.69	-3.72/-1.9	-1.68/-1.62	-1.41/-3.47
Freq(Hz)	5.785GPol.	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°)	-15.17/-15.42	-14.66/-14.83	-16.04/-13.57	-12.19/-12.45	-14.23/-11.58	-11.33/-12.62	-18.66/-16.46	-16.78/-16.54	-15.71/-17.57	-16.58/-17.84	-17.66/-17.39	-18.42/-18.07	-18.03/-18.45	-18.15/-18.16	-17.63/-18.02	-17.69/-16.15	-13.76/-12.96	-13.31/-12.55	-11.84/-11.74	-10.78/-12.21	-12.62/-12.66	-16/-13.47	-14.09/-16.37	-14.53/-17.33
Θ(7.5°)	-16.73/-17.61	-17.81/-18.89	-18.59/-18.08	-15.67/-15.66	-13.14/-9.36	-6.95/-6.55	-6.69/-6.48	-6.39/-5.78	-5.72/-5.74	-6.56/-7.08	-8.36/-9.75	-11.38/-13.22	-13.4/-13.23	-11.79/-11.39	-10.31/-9.92	-10.15/-10.77	-11.62/-11.37	-12.3/-14.48	-13.39/-15.7	-18.55/-18.96	-17.94/-19.03	-18.57/-18.1	-18.49/-18.29	-18.34/-17.61
Θ(15°)	-10.81/-9.32	-10.34/-13.23	-12.28/-9.72	-10.62/-10.24	-10.9/-10.19	-9.79/-10.93	-10.44/-10.98	-10.53/-11.22	-12.84/-13.52	-14.45/-13.13	-12.56/-11.13	-10.41/-9.4	-10.51/-10.8	-10.73/-16.09	-10.41/-11.39	-10.75/-10.85	-12.1/-14.6	-18.16/-17.68	-18.57/-18.32	-17.88/-19.12	-17.55/-19.14	-18.7/-14.82	-18.54/-18.34	-18.17/-15.48
Θ(22.5°)	-12.53/-10.46	-10.01/-12.73	-12.63/-10.73	-12.31/-11.73	-10.09/-9.56	-9.25/-8.04	-7.2/-6.74	-7.29/-8.39	-9.25/-9.44	-10.92/-11.51	-8.9/-7.27	-7.85/-8.42	-8.35/-7.38	-7.63/-11.12	-7.85/-8.88	-9.25/-10.89	-8.84/-7.21	-9.54/-11.05	-15.43/-10.83	-7.77/-9.09	-10.78/-8.07	-4.37/-3.68	-8.27/-19.16	
Θ(30°)	-9.24/-7.28	-6.12/-8.3	-12.81/-9.04	-6.18/-5.76	-4.54/-4.28	-5.39/-8.82	-15.67/-18.17	-18.32/-18.83	-16.28/-14.62	-15.35/-11.55	-8.47/-8.86	-7.43/-5.93	-7.9/-10.97	-11.05/-11.24	-5.48/-5.54	-10.18/-9.66	-5.9/-4.11	-3.73/-4.86	-8.39/-11.06	-11.19/-10.49	-8.39/-6.34	-5.24/-5.34	-6.13/-6.77	-8.19/-5.96
Θ(37.5°)	-3.03/-6.4	-4.63/-5.63	-6.35/-7.02	-5.56/-7.89	-4.86/-4.47	-4/-2.28	-1.45/-0.73	-1.01/-1.63	-3.03/-3.43	-4.86/-5.53	-9.12/-8.31	-10.62/-9.21	-7.84/-11.37	-7.46/-5.29	-5.86/-4.4	-4.07/-4.56	-4.92/-5.24	-6.22/-7.46	-5.21/-6.48	-5.43/-4.13	-4.02/-4.31	-2.19/-3.8		
Θ(45°)	-4.53/-4.64	-1.83/-3.72	-3.98/-3.77	-3.32/-3	-1.71/-2.92	-1.26/-2.16	-1.47/-1.51	-1.94/-1.25	-0.93/-1.04	-2.23/-3.85	-6.14/-6.41	-5.86/-6.95	-4.53/-7.42	-7.36/-4.25	-4.08/-5.46	-0.18/-3.55	-5.88/-5.56	-4.46/-5.94	-6.57/-6.65	-6.23/-5.48	-4.08/-5.76	-4.03/-1.95	-2.14/-1.05	
Θ(52.5°)	-6.03/-4.64	-2.81/-1.82	-5.38/-2.18	-3.34/-7.06	-4.29/-2.08	-4.75/-5.99	-4.94/-6.76	-4.31/-3.72	-4.16/-5.86	-6.05/-8.44	-5.14/-3.6	-6.39/-6.3	-6.38/-5.88	-4.75/-7.86	-8.73/-4.73	-5.4/-4.85	-1.42/-5.02	-3.8/-2.84	-6.55/-4.92	-4.14/-4.13	-3.56/-3.58	-4.14/-4.83	-6.37/-8.4	-3.82/-7.9
Θ(60°)	-3.79/-3.46	-2.58/-0.9	-2.16/-2.92	-1.37/-1.97	-0.66/-1.62	-0.99/-1.45	-0.85/-0.85	-1.3/-3.69	-3.25/-3.03	-3.46/-2.44	-4.4/-2.6	-5.37/-3.55	-4.19/-4.02	-4.54/-4.75	-6.55/-5.56	-2.27/-2.89	-5.6/-2.57	-3.48/-2.4	-2.71/-3.16	-3.77/-2.72	-4.72/-3.18	-5.06/-6.72	-3.07/-4.97	
Θ(67.5°)	-4.55/-3.17	-2.98/-4.13	-3.65/-2.24	0.33/-1.17	-2.22/-0.31	-0.63/-0.7	-0.62/-0.1	-0.74/-0.54	-0.62/-0.16	-0.13/-6.54	-3.33/-2.33	-3.72/-5.06	-3.27/-5.21	-4.47/-5.26	-3.91/-4.36	-3.79/-5.51	-3.61/-2.45	-3.59/-3.07	-2.69/-0.4	-1/-3.78	-6.16/-8.26	-5.25/-2.33	-6.89/-2.93	-1.25/-6.06
Θ(75°)	-4.48/-2.72	-4.23/-2.14	-4.48/-2.23	-2.89/-1.84	-1.4/-0.91	-1.14/-1.8	-0.62/-1.63	-1.12/-2.4	-2.58/-0.87	-2.84/-1.7	-1.39/-1.38	-2.97/-3.92	-1.51/-5.82	-7.8/-5.15	-4.62/-3.96	-2.86/-2.23	-3.66/-4.27	-5.14/-2.32	-0.71/-0.88	-1.77/-2.44	-2.45/-2.54	-0.68/-5.23	-6.8/-2.48	-8.33/-5.21
Θ(82.5°)	-1.11/-0.88	-3.15/-6.08	-4.64/-1.36	-0.96/-0.13	0.31/-1.88	-2.58/-2.44	-0.59/-1.96	-0.35/-0.98	0.48/-0.66	-4.74/-4.1	-4.08/-2.24	-8.39/-5.36	-5.4/-3.99	-6.01/-6.41	-3.12/-2.06	-1.13/-1.41	-2.01/-2.81	-0.85/-2.23	-1.09/-1.08	-1.76/-0.78	0/-2.48	-0.75/-2.1	-0.15/-0.88	-1.83/-2.83
Θ(90°)	-0.2/-4.2	-8.93/-7.46	-4.01/-4.31	-1.58/-0.23	1.71/-0.45	2.21/-1.85	1.81/-0.09	2.811/-9.2	1.36/-1.5	-0.29/-1.57	-1.57/-0.56	-11.09/-14.69	-6.72/-3.26	6/-3.25	0.12/-1.9	-1.55/-2.19	0.50/-16	0.07/-3.27	-2.01/-0.76	-2.28/-8.52	-1.08/-1.06	-0.34/-1.5	-2.94/-6.15	
Θ(97.5°)	-4.3/-4.72	-8.61/-7.02	-7.12/-10.05	-3.89/-1.21	-4.05/-5.96	-4.18/-2.53	-1.91/-2.53	-0.62/-3.17	-4.48/-4.64	-3.6/-4.8	-5.29/-6.59	-8.07/-9.68	-3.18/-1.15	-4.47/-7.33	-2.93/-2.1	-2.72/-1.82	-1.82/-3.43	-2.27/-4.01	-0.31/-0.88	-1.84/-0.52	-0.79/-4.14	0.59/-3.65	-1.91/-1.68	-4.99/-4.77
Θ(105°)	-2.31/-3.74	-9.73/-18.45	-8.04/-7.43	-4.34/-0.49	-2.78/-2.86	-3.29/-5.66	-4.08/-5.63	-2.89/-6.04	-2.39/-3.37	-4.84/-8.26	-7.19/-5.44	-15.72/-9.36	-8.97/-2.57	-3.61/-8.49	-6.520/-57	-0.3/-3	-3.24/-3.3	0.29/-0.76	-3.51/-0.68	-1.47/-1	-2.32/-6.16	-1.94/-0.73	-0.66/-1.58	-1.83/-2.31
Θ(112.5°)	-5.25/-5.02	-13.69/-18.71	-18.04/-13.52	-19.03/-5.59	-4.53/-3.5	-5.83/-14.06	-11.27/-6.76	-6.77/-9.67	-11.26/-10.59	-6.82/-18.28	-8.95/-6.11	-6.05/-18.7	-0.63/-2.76	-1.57/-9.44	-8.54/-3.71	-5.61/-9.18	-4.25/-3.95	-3.19/-4.49	-1.62/-3.51	-4.49/-4.03	-3.36/-13.4	-1.6/-6.78	-4.04/-3.44	-6.15/-4.51
Θ(120°)	-5.85/-6.21	-11.85/-8.69	-6.19/-9.76	-10.06/-8.44	-5.37/-7.38	-10.53/-13.01	-10.41/-8.93	-9.29/-5.76	-10.97/-8.96	-18.19/-19.21	-14.01/-8.17	-8.08/-5.28	-4.78/-1.77	-4.58/-10.39	-4.16/-1.36	-1.05/-5.13	-2.83/-6.74	-4.53/-5.1	-9.44/-9.58	-5.61/-3.15	-8.04/-12.73	-		



Radiated Composite Gain of 2.4GHz and 5GHz UNII 1~3

Appendix A

Θ (112.5°)	-8.5/-7.22	-11.39/-10.64	-9.58/-17.53	-18.27/-18.04	-15.9/-17.58	-16.32/-10.45	-14.14/-18.91	-17.47/-14.08	-12.67/-18.5	-17.9/-18.76	-13.48/-10.12	-18.3/-18.04	-15.72/-17.98	-18.11/-14.87	-16.3/-15.93	-18.73/-17.1	-18.02/-15.89	-17.77/-14.48	-18.86/-17.32	-13.13/-16.25	-14.33/-15.32	-7.1/-9.37	-10.28/-12.11	-8.01/-11.29
Θ (120°)	-6.81/-10.94	-9.86/-5.95	-14.53/-17.54	-18.53/-17.98	-12.17/-15.4	-16.58/-8.88	-12.72/-18.61	-17.58/-16.27	-18.69/-18.98	-17.89/-12.81	-15.8/-17.81	-16.46/-18.16	-11.05/-14.16	-11.1/-11.46	-18.92/-11.34	-14.85/-16.19	-17.89/-16.99	-17.08/-17.99	-17.5/-18.66	-19.14/-10.48	-8.76/-14.06	-18.22/-13.24	-7/-5.19	-15.95/-6.6
Θ (127.5°)	-8.27/-8.09	-13.17/-17.63	-8.24/-12.02	-18.32/-14.58	-9.12/-10.76	-19.52/-15.54	-15.98/-18.02	-18.51/-10.62	-10.02/-14.42	-17.68/-12.4	-17.58/-12.28	-15.08/-13.62	-19.15/-14.44	-17.76/-14.01	-16.18/-11.3	-13.06/-14.86	-19.33/-17.1	-12.37/-15.22	-17.22/-10.08	-7.38/-8.64	-19.23/-8.23	-4.23/-13.01		
Θ (135°)	-12.76/-11.8	-6.06/-3.19	-13.53/-10.92	-17.54/-14.5	-14.47/-17.21	-19.15/-11.99	-7.82/-10.14	-15.02/-11.29	-10.32/-13.73	-13.02/-10.09	-14.75/-12.22	-12.19/-11.8	-17.19/-16.42	-18.12/-11.55	-11.92/-11.52	-9.47/-10.8	-11.98/-10.33	-9.58/-13.51	-18.72/-18.73	-18.1/-18.74	-13/-9.17	-15.07/-12.33	-6.12/-8.94	-17.62/-19.39
Θ (142.5°)	-18.87/-11.8	-2.77/-5.35	-13.08/-12.45	-17.91/-18.76	-18.02/-18.37	-14.52/-13.77	-17.69/-12.07	-13.26/-17.87	-13.35/-10.74	-7.17/-6.21	-6.32/-7.61	-18.84/-10.71	-10.41/-15.84	-18.27/-14.13	-11.26/-9.58	-14.1/-12.59	-14.34/-16.63	-17.84/-17.48	-16.4/-19.1	-18.83/-11.29	-15.41/-17.29	-15.41/-11.07	-9.64/-18.04	-7.92/-2.25
Θ (150°)	-5.5/-5.79	-6.86/-14.95	-16.51/-12.53	-15.11/-15.9	-14.83/-18.13	-17.74/-12.7	-9.34/-10.95	-17.59/-17.83	-15.76/-13.8	-10.15/-5.11	-6.57/-10.4	-8.32/-4.78	-4.25/-6.55	-11.91/-17.4	-13.88/-13.05	-16.6/-16.63	-17.91/-12.54	-8.71/-7.62	-12.99/-17.4	-17.53/-18.22	-19.42/-15.82	-11.28/-5.76	-13.88/-4.78	
Θ (157.5°)	-3.69/-6.85	-11.78/-18.57	-15.01/-11.87	-8.04/-6.58	-10.17/-11.3	-16.55/-15.24	-16.55/-13.27	-13.62/-14.6	-14.2/-9.46	-6.01/-4.53	-5.71/-5.1	-4.89/-7.25	-7.58/-7.24	-7.24/-8.71	-8.39/-7.88	-9.56/-13.13	-17.94/-17.83	-15.08/-18.51	-12.97/-17.1	-17.49/-12.43	-9.95/-7.16	-7.37/-7.56	-5.98/-4.65	-4.8/-4.04
Θ (165°)	-11.15/-13.73	-19.11/-16.41	-11.8/-8.93	-7.03/-6.98	-6.94/-10.33	-16.46/-19.11	-14.15/-13.14	-10.29/-8.27	-8.37/-8.11	-6.41/-5.77	-6.27/-6.42	-6.66/-8.96	-5.86/-5.25	-6.1/-7.76	-11.16/-14.22	-16.78/-16.85	-15.87/-17.86	-17.45/-14.58	-13.84/-16.46	-16.65/-13.16	-7.12/-9.45	-3.37/-2.96	-4.65/-5.79	-5.7/-6.99
Θ (172.5°)	-4.29/-5.16	-6.65/-9.78	-14.14/-15.79	-13.77/-9.75	-8.51/-9.14	-7.83/-9.85	-11.93/-10.96	-12.18/-12.78	-13.29/-11.71	-12.41/-11.16	-9.41/-7.71	-6.31/-5.99	-6.01/-6.28	-7.72/-9.76	-11.06/-13.17	-13.62/-13.87	-13.61/-11.98	-12.4/-11.4	-11.11/-9.98	-12.19/-11.81	-9.37/-6.15	-3.53/-2.06	-2.83/-4.79	-4.87/-4.14
Θ (180°)	-5.8/-5.69	-4.87/-3.11	-2.49/-1.88	-1.47/-2.54	-4.23/-5.43	-7.53/-9.2	-9.69/-10.83	-9.93/-9.17	-7.64/-6.18	-6.11/-5.48	-4.71/-4.57	-4.08/-3.75	-4.01/-4.19	-3.98/-3.81	-3.48/-3.44	-4.21/-4.88	-5.61/-6.69	-7.38/-8.53	-9.59/-9.65	-8.61/-7.1	-4.88/-4.43	-3.13/-3.13	-5.2/-8.08	-8.84/-7.72
Freq[Hz]	5.2GPol.	Theta/Ant. 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gain	Φ(0°)Φ(7.5°)	Φ(15°)Φ(22.5°)	Φ(30°)Φ(37.5°)	Φ(45°)Φ(52.5°)	Φ(60°)Φ(67.5°)	Φ(75°)Φ(82.5°)	Φ(90°)Φ(97.5°)	Φ(105°)Φ(112.5°)	Φ(120°)Φ(127.5°)	Φ(135°)Φ(142.5°)	Φ(150°)Φ(157.5°)	Φ(165°)Φ(172.5°)	Φ(180°)Φ(187.5°)	Φ(195°)Φ(202.5°)	Φ(210°)Φ(217.5°)	Φ(225°)Φ(232.5°)	Φ(240°)Φ(247.5°)	Φ(255°)Φ(262.5°)	Φ(270°)Φ(277.5°)	Φ(285°)Φ(292.5°)	Φ(300°)Φ(307.5°)	Φ(315°)Φ(322.5°)	Φ(330°)Φ(337.5°)	Φ(345°)Φ(352.5°)
Θ (0°)	-18.76/-17.97	-17.34/-18.18	-19.09/-17.31	-15.69/-16.61	-14.36/-14.34	-13.03/-12.77	-12.34/-11.83	-11.93/-12.31	-12.4/-12.89	-14.4/-16.07	-18.27/-18.59	-18.87/-17.6	-19.36/-18.91	-18.34/-17.51	-15.25/-14.73	-14.36/-13.15	-13.09/-13.19	-12.59/-13.68	-12.51/-13.29	-12.19/-13.81	-16.35/-14.76	-14.97/-17.98	-18.65/-18.23	-19.3/-17.66
Θ (7.5°)	-17.66/-17.45	-15.99/-18.17	-17.45/-15.21	-13.9/-14.83	-18.16/-18.36	-17.89/-14.06	-13.88/-12.63	-13.1/-13.4	-11.41/-10.27	-10.93/-12.59	-15.54/-18.05	-16.9/-18.14	-18.46/-19.57	-18.39/-18.84	-16.67/-14.98	-13.48/-13.81	-13.09/-14.26	-14.24/-14.44	-13.22/-15.31	-11.97/-14.51	-18.08/-15.09	-18.9/-17.56	-17.89/-18.76	-17.93/-17.99
Θ (15°)	-13.81/-11.89	-10.33/-11.77	-13.46/-15.03	-14.42/-10.68	-8.95/-9.25	-8.67/-9.11	-8.46/-8.53	-9.27/-10.64	-11.33/-14.67	-15.62/-13.74	-10.79/-9.85	-10.69/-10.03	-9.91/-10.13	-9.64/-9.52	-11.1/-15.11	-17.24/-18.03	-18.93/-18.07	-14.18/-10.76	-10.92/-9.51	-10.95/-14.19	-14.34/-13.39	-15.88/-17.83		
Θ (22.5°)	-9.05/-6.61	-6.46/-8.52	-9.91/-7.55	-6.38/-6.41	-6.6/-7.15	-8.39/-7.47	-8.07/-7.4	-6.17/-5.05	-5.37/-6.56	-8.23/-8.3	-9.92/-14.11	-15.95/-11.4	-10.53/-9.55	-10.7/-12.25	-14.85/-11.53	-10.74/-9.37	-10.3/-11.01	-10.58/-11.28	-13.71/-14.87	-15.96/-16.68	-13.07/-13.68	-12.1/-12.08	-11.32/-11.38	-12.88/-13.14
Θ (30°)	-10.73/-9.06	-10.17/-12.05	-10.84/-12.24	-11.25/-10.58	-9.97/-12.9	-9.43/-11.97	-11.62/-12.91	-9.2/-9.39	-7.27/-6.57	-7.08/-7.15	-18.81/-16.13	-11.59/-8.31	-10.95/-15.57	-13.62/-12.49	-18.74/-12.28	-7.98/-8.76	-15.28/-17.45	-17.11/-19.26	-13.89/-8.7	-8.26/-11.4	-15.27/-15.93	-17.67/-16.63	-15.45/-12.39	-8.37/-9
Θ (37.5°)	-7.1/-5.45	-7.68/-7.34	-5.39/-6.36	-3.07/-2.83	-4.1/-4.65	-3.92/-3.72	-3.49/-3.48	-3.24/-3.99	-3.5/-6.12	-6.74/-4.88	-5.57/-6.12	-11.58/-11.08	-13.22/-18.84	-17.91/-10.23	-18.62/-11.93	-12.07/-14.15	-15.25/-11.24	-7.73/-5.1	-6.85/-8.62	-18.64/-8.87	-11.01/-11.63	-7.77/-8.59	-10.03/-9.91	
Θ (45°)	-8.68/-8.07	-9.07/-4.36	-3.64/-6.02	-5.62/-5.99	-5.3/-5.75	-5.15/-2.47	-4.19/-3.96	-3.82/-3.39	-2.88/-2	-4.58/-2.78	-3.63/-2.9	-2.67/-4.05	-5.42/-8.85	-18.82/-7.55	-10.97/-7.92	-3.64/-5.06	-6.62/-4.25	-3.1/-3.03	-2.16/-2.16	-2.45/-2.64	-6/-10.35	-6.95/-7.44	-6.32/-9.22	-6.81/-5.49
Θ (52.5°)	-9.95/-9.67	-9.42/-5.71	-9.43/-6.2	-4.03/-2.93	-2.77/-3.98	-5.28/-10.08	-9.37/-3.71	-0.31/-1.31	-8.7/-5.79	-6.46/-13.3	-2.89/-4.67	-5.82/-6.36	-1.67/-2.61	-7.75/-5.72	-5.73/-4.43	-3.92/-3.48	-2.54/-0.27	-1.8/-1.8	-1.64/-0.6	-0.84/-1.18	-6.8/-4.75	-3.34/-4.5	-3.36/-8.69	-4.42/-4.51
Θ (60°)	-3.69/-6.68	-4.57/-5.15	-2.85/-1.12	0.240/-0.23	1.88/-2.91	1.81/-9.1	1.85/-2	1.84/-2.1	-1.31/-1.06	-1.25/-2.22	-3.34/-7.74	-8.3/-6.16	-4.96/-3.81	-4.84/-1.81	-7.1/-2.18	-4.16/-3.44	-2.22/-2.79	-4.19/-2.97	-0.30/-1.57	-0.49/-1.2	-0.92/-3.55	-2.3/-6.01	-2.85/-5.29	-4.25/-3.95
Θ (67.5°)	-5.64/-11.37	-6.5/-4.26	-1.31/-5.27	-0.75/-3.91	-3.41/-2.62	-1.4/-2.15	-0.440/-1.7	-1.09/-0.42	-1.91/-0.92	0.320/-0.4	-3.66/-4.08	-6.15/-5.49	-3.33/-4.67	-4.08/-3.36	-4.41/-0.9	-4.16/-2.95	-2.25/-1.95	-3.29/-3.9	-4.14/-3.63	-0.070/-89	-1.72/-1.26	-3.91/-5.99	-2.61/-6.55	-4.89/-2.87
Θ (75°)	-5.59/-9.68	-11.88/-9.25	-5.42/-4.1	-2.652/-4.3	0.02/-0.93	-0.91/-3.76	-1.28/-0.24	0.42/-0.2	-2.15/-2.54	-2.71/-2.29	-1.31/-10.96	-1.38/-3.38	-4.29/-1	-3.37/-0.93	-4.98/-1.41	-1.13/-0.73	-0.10/-31	-0.76/-0.28	0.93/-1.76	1.331/-45	-2.31/-3.35	-1.38/-2.27	-4.68/-2.27	-4.19/-3.23
Θ (82.5°)	-2.62/-8.41	-19.26/-11.58	-4.45/-2.3	-2.080/-2.1	0.02/-0.02	0.45/-1.88	-1.26/-2.98	-1.13/-0.12	-2.01/-8	0.48/-2.5	-4.3/-18.08	-9.17/-4.68	-2.86/-5.94	0.85/-1.24	-1.77/-10.35	1.27/-0.65	0.751/-57	-0.741/-97	2.472/-12	1.661/-27	-1.052/-0.4	0.28/-3.11	-1.27/-1.05	-3.93/-1.32
Θ (90°)	-3.26/-0.98	-18.76/-7.88	-4.22/-0.48	0.621/-5.6	-1.86/-1.27	0.611/-19	0.1/-0.22	-1.03/-1.46	0.070/-28	-0.18/-1.29	-5.56/-16.71	-8.95/-5.02	-0.52/-2.14	0.951/-	-0.24/-1.74	-2.49/-0.52	-0.320/-35	-1.371/-0.9	2.162/-5	1.566/-14	-0.250/-56	0.63/-5.39	-3.07/-1.93	-2.07/-0.05
Θ (97.5°)	-2.49/-3.89	-7.48/-6.65	-5.67/-2.16	-4.32/-4.71	-3.89/-5.7	-5.71/-3.72	-6.52/-4.03	-4.5/-4.36	-5.23/-6.56	-3.73/-3.54	-8.11/-18.63	-1.4/-1.34	0.90/-94	1.43/-0.3	-2.1/-2.96	-3.09/-8.66	0.421/-23	0.480/-7	0.96/-0.39	0.660/-63	-2.240/-8	0.57/-9.99	-2.73/-1.54	-2.98/-2.08
Θ (105°)	-2.95/-2.4	-5.39/-11.18	-5.04/-2.48	-8.31/-5.93	-4.44/-5.21	-1.22/-0.6	-3.46/-4.9	-1.38/-0.41	-5.43/-3.77	-2.86/-5.94	-9.48/-18.33	-7.48/-5.65	-3.97/-10.3	-0.221/-15	-1.63/-3.46	-4.29/-2.55	1.222/-87	0.211/-31	2.012/-29	0.40/-46	-1.774/-64	-4.42/-2.31	-3.76/-0.22	
Θ (112.5°)	-2.61/-2.18	-6.49/-5.76	-4.85/-3.25	-12.44/-13.02	-4.63/-7.19	-6.97/-3.35	-9.9/-9.23	-3.02/-3.31	-2.72/-2.91	-3.24/-3.45	-11.54/-9.64	-8.75/-2.39	0.61/-0.16	0.28/-0.42	-1.63/-3.52	-4.11/-2.88	0.331/-24	-2.41/-3.03	-1.13/-1.33	-1.850/-71	-2.33/-1.11	-2.61/-4.64	-8.76/-8.76	-0.610/-41
Θ (120°)	-2.47/-3.92	-9.57/-10.75	-3.1/-6.95	-13.13/-13.9	-9.25/-18.44	-19.03/-18	-9.27/-19.8	-14.45/-9.02	-6/-5.2	-1.53/-3.83	-6.38/-6.91	-14.37/-6.41	-1.63/-1.26	-1.77/-4.46	-7.16/-8.53	-1.03/-5.55	-3.11/-0.74	-2.79/-3.46	-0.24/-1.69	-2.14/-3.84	-9.14/-3.41	-3.85/-8.83	-18.89/-7.95	-2.72/-5.1
Θ (127.5°)	-13.78/-10.37	-10.83/-9.26	-11.18/-10.47	-8.33/-5.01	-9.8/-5.86	-3.61/-2.5	-3.48/-5.62	-4.54/-7.9	-10.81/-14.26	-12.61/-3.88	-11.25/-15.42	-11.26/-3.65	-5.89/-6.9	-7.18/-7.93	-19.42/-9.49	-8.14/-6.17	-7.11/-11.41	-9.78/-11.27	-10.41/-10.91	-11.61/-5.51	-6.97/-12.94	-10.53/-9.85	-7.96/-6.68	
Θ (135°)	-5.93/-7.03	-5.54/-11.05	-8.83/-12.74	-9.23/-8.32	-11.54/-9.5	-6.31/-5.98	-4.55/-4.37	-4.46/-5.37	-9.13/-13.52	-13.97/-8.08	-7.28/-16.52	-10.77/-6.6	-5.98/-7.11	-13.46/-14.65	-4.98/-8.71	-13.79/-8.98	-3.55/-3.86	-3.66/-3.9	-4.52/-7.76	-5.49/-7.9	-3.67/-2	-6.08/-7.51	-4.47/-4.4	-5.95/-5.32
Θ (142.5°)	-5.24/-4.18	-10.33/-13.6	-18.93/-19.4	-17.6/-16.73	-12.55/-9.86	-11.2/-14.16	-16.58/-17.63	-18.34/-18.16	-15.18/-17.11	-9.7/-9.86	-17.58/-17.27	-17.59/-3.16	-2.44/-0.48	-7.81/-6.41	-7.24/-1.94	-16.5/-13.74	-9.27/-6.3	-4.16/-4.03	-4.08/-3.01	-3.59/-6.98	-5.86/-10.33	-17.94/-18.98	-8.85/-5.92	-3.81/-2.32
Θ (150°)	-6.59/-9.27	-12.77/-7.27	-10.58/-15.16	-17.71/-16.98	-13.21/-9.49	-12.33/-9.81	-5.67/-5.8	-10.56/-17.38	-9.75/-18.64	-7.91/-4.69	-8.94/-13.27	-11.12/-5.92	-7.07/-2.21	0.411/-1.06	-3.98/-9.02	-14.52/-10.52	-12.06/-14.63	-10.99/-6.3	-6.27/-7.79	-12.76/-16.43	-15.95/-6.35	-4.78/-4.79	-7.44/-12.92	-141/-12.23
Θ (157.5°)	-11.94/-15.24	-10.8/-8.57	-10.95/-16.29	-17.48/-11.53	-9.02/-6.87	-9.2/-7.88	-8.99/-8.96	-8.89/-8.55	-11.34/-11.23	-8.41/-8.95	-12.06/-16.39	-11.01/-5.94	-5.55/-5.04	-0.21/-6.69	-7.96/-8.2	-11.02/-16.93	-17.03/-12.73	-8.89/-7.17	-9.77/-14.78	-10.53/-8.44	-8.9/-11.1	-8.29/-8.53	-10.1/-7.16	-5.9/-8.46
Θ (165°)	-13.91/-14.11	-11																						



Radiated Composite Gain of 2.4GHz and 5GHz UNII 1~3

Appendix A

Θ (165°)	-9.08/-18.24	-15.35/9.45	-9.2/-9	-5.97/-4.32	-5.02/-7.91	-17.36/-13.42	-8.4/-4.96	-4.95/-5.44	-7.18/-10.11	-9.26/-6.05	-4.13/-2.48	-1.18/-0.83	-2.01/-4.45	-8.44/-9.58	-10.2/-10.72	-12.5/-17.01	-18.15/-18.61	-15.18/-11.88	-6.14/-6.96	-8.63/-18.14	-7.93/-13.14	0.63/1.06	-0.17/-1.45	-3.75/-5.95
Θ (172.5°)	-0.94/-0.1	-2.17/-5.6	-6.56/-4.89	-4.28/-5.35	-6.01/-5.67	-8.1/-6.89	-6.51/-6.7	-5.94/-5.48	-5.29/-4.22	-2.88/-2.64	-1.7/-0.41	0.29/0.38	-2.02/-1.54	-2.8/-3.71	-4.97/-6.07	-6.22/-7.99	-8.65/-9.31	-8.74/-7.88	-7.13/-5.99	-4.89/-4.06	-2.52/-1.55	-0.78/-2.17	-5.06/-7.21	-6.16/-20.9
Θ (180°)	-3.45/-2.94	-4.06/-2.38	0.75/1.79	1.79/1.6	0.93/-0.95	-1.41/-2.64	-2.45/-2.68	-1.8/-1.72	-1.2/-0.66	-0.17/0.19	0.69/1.45	1.84/1.99	-2.02/-1.54	1.02/0.6	0.32/-0.33	-1.07/-1.19	-1.39/-2.31	-2.3/-2.66	-2.66/-2.59	-4.2/-2.99	-3.76/-3.24	-3/-5.04	-8.2/-6.43	-4.57/-3.8
Freq(Hz)	5.63GPol.	Theta/Ant. 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gain	Φ(0°)/Φ(7.5°)	Φ(15°)/Φ(22.5°)	Φ(30°)/Φ(37.5°)	Φ(45°)/Φ(52.5°)	Φ(60°)/Φ(67.5°)	Φ(75°)/Φ(82.5°)	Φ(90°)/Φ(97.5°)	Φ(105°)/Φ(112.5°)	Φ(120°)/Φ(127.5°)	Φ(135°)/Φ(142.5°)	Φ(150°)/Φ(157.5°)	Φ(165°)/Φ(172.5°)	Φ(180°)/Φ(187.5°)	Φ(195°)/Φ(202.5°)	Φ(210°)/Φ(217.5°)	Φ(225°)/Φ(232.5°)	Φ(240°)/Φ(247.5°)	Φ(255°)/Φ(262.5°)	Φ(270°)/Φ(277.5°)	Φ(285°)/Φ(292.5°)	Φ(300°)/Φ(307.5°)	Φ(315°)/Φ(322.5°)	Φ(330°)/Φ(337.5°)	Φ(345°)/Φ(352.5°)
Θ (0°)	-18.13/-17.94	-16.88/-14.6	-16.71/-17.86	-18.66/-18.05	-18.07/-18.36	-19.17/-18.04	-19.45/-18.77	-18.1/-18.08	-19.06/-18.27	-18.61/-18.35	-18.05/-18.34	-18.63/-18.28	-18.03/-17.86	-18.45/-17.56	-18.17/-17.69	-16.14/-16.5	-16.83/-14.56	-13.9/-14.41	-13.54/-12.39	-12.24/-12.27	-13.83/-11.57	-12.05/-12.12	-14.48/-14.85	-13.29/-15.16
Θ (7.5°)	-19.06/-16.53	-14.77/-14.73	-13.99/-13.12	-9.16/-9.04	-8.96/-8.67	-7.25/-6.94	-6.32/-6.68	-6.74/-7.26	-7.3/-7.4	-8.73/-10.8	-11.86/-11.91	-13.06/-14.24	-14.62/-15.14	-14.86/-15.18	-17.38/-17.86	-17.55/-19.24	-17.31/-17.62	-18.25/-17.95	-17.78/-17.22	-19.14/-17.27	-18.63/-17.4	-18.74/-17.54	-18.46/-18.63	-17.4/-18.91
Θ (15°)	-15.57/-16.7	-18.77/-17.01	-12.88/-10.41	-9.41/-6.17	-7.11/-8.42	-12.12/-15.35	-15.67/-16.08	-14.56/-12.63	-11.67/-11.69	-12.26/-13.43	-13.44/-11.92	-12.02/-14	-15.77/-18.2	-18.52/-18.88	-16.55/-13.91	-11.42/-11.35	-11.53/-11.55	-14.01/-14.17	-14.48/-15.64	-15.64/-14.89	-12.71/-11.28	-11.4/-10.62	-13.39/-13.45	-12.4/-16.47
Θ (22.5°)	-10.3/-10.39	-10.01/-10	-9.24/-7.41	-4.95/-4.3	-4.93/-4.69	-3.92/-3.23	-2.24/-2.33	-2.92/-4.27	-4.88/-4.39	-4.35/-5.96	-6.22/-4.95	-5.47/-3.74	-10.49/-11.38	-12.78/-13.33	-11.64/-10.53	-11.94/-15.6	-17.38/-19.65	-12.93/-9.64	-9.04/-7.16	-6.69/-7.57	-9.93/-10.94	-9.79/-9.96	-13.23/-18.37	-12.54/-10.71
Θ (30°)	-5.62/-5.8	-6.95/-7.95	-10.51/-8.43	-5.83/-6.75	-7.4/-7.55	-7.66/-8.27	-8.81/-7.74	-7.39/-6.6	-6.9/-6.51	-6.32/-6.33	-7.94/-8.15	-8.39/-7.16	-4.59/-3.26	-4.81/-7.93	-3.97/-6.09	-6.37/-5.12	-3/-1.77	-2.88/-3.07	-4.71/-4.28	-4.13/-3.96	-6/-6.33	-5.39/-6.91	-11.83/-7.52	
Θ (37.5°)	-7.09/-6.38	-4.85/-4.89	-6.42/-6.83	-5.9/-5.77	-4.4/-3.33	-2.39/-1.38	-3.52/-4.03	-3.91/-5.13	-5.72/-4.48	-5.17/-6.6	-6.28/-4.86	-3.54/-8.79	-7.17/-3.14	-4.12/-3.01	-4.45/-9.99	-6.93/-6.8	-6.68/-5.26	-5.07/-6.79	-9.07/-8.14	-6.17/-2.3	-0.94/-1.84	-6.17/-2.95	-2.72/-4.64	-6.8/-9.82
Θ (45°)	-4.87/-7.04	-5.71/-5.13	-6.37/-5.31	-2.45/-4.52	-3.66/-2.08	-1.14/-0.89	-1.83/-1.56	-0.63/-0.55	-0.69/-3.1	-3.29/-4.77	-5.44/-4.76	-4.12/-8.1	-9.19/-5.07	-5.77/-5.64	-3/-6.81	-4.84/-5.51	-7.32/-8.38	-7.14/-5.35	-4.96/-4.55	-5.2/-5.1	-5.71/-5.52	-8.03/-8.41	-5.56/-8.37	-6.8/-9.46
Θ (52.5°)	-5.77/-7.85	-6.63/-6.07	-5.94/-7.61	-6/-2	-6.22/-7.11	-5.32/-6.15	-8.81/-5.97	-3.85/-3.62	-3.6/-2.13	-5.26/-3.74	-5.29/-7.03	-6.55/-10.44	-8.78/-7.02	-7.99/-6.12	-2.71/-4.06	-5.97/-3.97	-2.94/-2.61	-0.73/-1.31	-2.22/-6.98	-6.52/-6.2	-5.3/-5.35	-4.67/-8.23	-8.03/-7.16	
Θ (60°)	-8.51/-6.91	-6.89/-2.67	-1.4/-3.09	-1.93/0.08	-0.15/-1.29	0.77/0.95	0.63/-1.02	1.86/1.15	-1.14/-4.08	-1.6/-3.11	-3.6/-4.29	-9.81/-7.93	-9.77/-4.86	-4.57/-4.97	-5.32/-7.03	-2.39/-2.01	-2.89/-3.36	-4.26/-1.18	-0.13/0.02	-2.63/-2.48	-4.49/-3.71	-5.06/-2.68	-3.02/-5.77	-5.63/-9.78
Θ (67.5°)	-7.79/-10.02	-8.89/-4.51	-3.89/-3.61	-2.58/-3.32	-1.5/0.65	0.06/-1.91	-1.12/-1.6	0.18/-0.12	-1.27/-1.14	-1.07/-1.77	-2.45/-1.09	-6.74/-4.38	-6.71/-2.53	-2.89/-2.67	-1.39/-3.93	-4.56/-1.7	-6.62/-5.15	-3.82/-1.97	-1.45/-1.71	-2.58/-2.76	-3/-2.93	-2.36/-2.48	-2.09/-1.55	-5.12/-5.55
Θ (75°)	-10.19/-8.29	-5.87/-6.18	-5.37/-2.54	-4.71/-0.7	-1.14/0.18	1.19/0.05	0.04/0.17	0.74/-0.9	-2.29/-1.35	-1.08/-0.88	-5.15/-5.63	-8.76/-6.26	-6.21/-2.15	-3.56/-2.05	-1.12/-1.35	-4.39/-1.06	-2.17/-1.37	-1.55/-0.78	-0.46/0.46	-1.46/-1.49	-0.32/-2.49	-0.64/-1.23	-4.02/-5.16	-3.86/-3.57
Θ (82.5°)	-6.39/-10.77	-7.77/-11.48	-5.48/-3.39	-3.61/-0.62	-2.32/-1.17	1.1/-1.41	-0.25/-1.51	-1.04/-0.17	-2.08/-0.81	-3.47/-1.77	-7.18/-12.75	-18.03/-8.82	-0.43/-3.62	0.19/-0.98	-0.9/-0.63	-3.33/-1.67	0.89/-2.86	1.51/1.2	1.91/1.83	0.87/0.96	1.02/0.7	0.64/-0.48	-4.58/-7.37	-1.45/-2.1
Θ (90°)	0.22/-4.63	-15.39/-12.35	-2.52/-4.2	-4.08/0.94	-5.55/-0.96	-2.44/-4.68	-4.31/-4.84	-4.23/0.04	-1.89/-1.73	-3.88/-0.84	-0.96/-9.39	-10.86/-5.57	-3.35/-1.39	2.04/-1.22	-2.78/-0.04	-1.24/-1.01	1.52/1.8	0.27/0.05	1.35/1.84	1.93/2.05	0.16/-1.21	-0.72/-0.68	-3.11/-5.89	1.72/-2.02
Θ (97.5°)	-8/-0.71	-8.42/-6.19	-3.9/-7.62	-15.54/-1.99	-12.69/-6.41	-6.38/-11.44	-13.6/-10.19	-6.32/-3.04	-5.6/-2.5	-4.47/-2.79	-19.71/-11.22	-15.32/-2.77	-2.03/-3.27	0.64/-0.39	-1.01/-0.87	-1.68/-2.77	1.42/-1.2	1.41/1.35	2.18/2.14	2.13/0.94	-4.65/0.08	0.58/-0.85	-3.37/-4.98	0.96/0
Θ (105°)	-5.45/0.34	-10.65/-5.82	-7.34/-6.67	-14.53/-8.65	-6.8/-7.34	-6.04/-3.25	-7.76/-9.5	-3.56/-6.81	-19.11/-13.37	-11.16/-8.58	-6.14/-5.24	-6.96/-5.56	-4.11/-3.9	-0.25/-1.6	-2.14/-3.14	-3.11/-2.24	1.02/0.94	2.13/-26	1.46/-0.32	-0.45/-0.52	-3.65/-1.23	1.13/-35	-11.69/-7.15	-0.37/-2.44
Θ (112.5°)	-0.09/-3.68	-4.98/-6.44	-4.47/-8.56	-18.38/-9.99	-13.13/-6.37	-5.01/-6.73	-6.86/-5.17	-1.03/-4.23	-5.57/-9.44	-8.17/-6.28	-8.25/-11.4	-6.5/-3.62	-2.01/-2.22	0.35/-2.46	-4.38/-8.71	-6.01/-4.9	-1.13/-1.03	-1.1/-2.74	-1.75/-2.31	1.17/-0.6	-3.11/-3.73	0.26/-4.85	-17.2/-5.74	-6.44/-1.81
Θ (120°)	-7.63/-4.27	-7.06/-3.57	-8.71/-6.46	-18.09/-6.39	-5.99/-17.98	-13.09/-15.06	-12.78/-10.66	-9.21/-4.67	-2.29/-2.23	-4.14/-6.82	-2.52/-14.02	-7.51/-8.72	-5.03/-8.32	-3.96/-2.83	-6.56/-11.63	-18.54/-10.6	-3.2/-6.29	-8.58/-7.64	-8.56/-7.98	-4.67/-2.83	-5.61/-14.13	-10.03/-18.86	-17.72/-12.57	-3.16/-2.55
Θ (127.5°)	-15.64/-14.54	-18.34/-13.91	-12.71/-12.1	-9.94/-8.9	-8.5/-5.13	-8.71/-4.44	-2.97/-7.3	-13.19/-7.66	-5.84/-7.11	-5.12/-18.33	-13.37/-10.55	-13.51/-14.95	-8.27/-8.21	-11.39/-10.52	-17.24/-14.61	-11.75/-10.3	-19.53/-18.1	-7.66/-6.65	-5.46/-4.71	-11.34/-7.29	-18.69/-14.52	-7.1/-5.89	-9.39/-19.1	-8.27/-11.48
Θ (135°)	-4.66/-12.9	-11.73/-10.1	-7.7/-15.21	-17.61/-12.29	-10.85/-13.85	-14.93/-13.84	-11.31/-10.23	-6.39/-9.7	-17.2/-15.93	-12.11/-19	-15.25/-18.9	-11.8/-5.32	-10.59/-9.3	-18.51/-18.2	-13.25/-16.47	-12.29/-9.62	-8.6/-10.85	-10.54/-12.79	-18.22/-10.19	-6.75/-6	-5.15/-7.06	-14.59/-19.03	-8.05/-3.97	-6.63/-9.56
Θ (142.5°)	-7.78/-8.15	-13.07/-8.37	-5.19/-10.06	-16.86/-16.17	-14.4/-14.25	-18.02/-17.59	-19.15/-13.02	-7.42/-4.7	-7.61/-16.1	-16.2/-7.92	-17.46/-13.16	-5.58/-9.59	-3.31/-3.04	-7.93/-12.52	-4.88/-7.06	-12.35/-13.92	-9.87/-3.69	-3.23/-4.76	-3.57/-2.73	-4.23/-9.6	-8.67/-7.32	-8.61/-14.09	-10.93/-7.48	-4.97/-6.03
Θ (150°)	-6.63/-9.15	-12.18/-15.18	-0.95/-10.38	-14.03/-17.7	-11.76/-10	-9.08/-10.39	-8.84/-7.39	-12.71/-5.5	-18.24/-10.8	-9.46/-13.47	-5.52/-8.24	-9.84/-6.7	-0.92/-2.64	-6.51/-7.81	-5.86/-6.06	-9.37/-18.01	-8.38/-7.35	-7.49/-3.73	-9.35/-6.19	-12.08/-14.61	-9.9/-9.7	-13.84/-10.55	-1.25/0.02	-1.27/-1.49
Θ (157.5°)	-9.61/-10.65	-14.7/-11.52	-9.85/-11.88	-14.8/-13.27	-13.26/-11.92	-9.71/-5.15	-19.07/-19.01	-17.84/-18.13	-13.68/-8.31	-5.54/-6.94	-12.22/-14.27	-9.58/-6.86	-3.63/-1.96	-1.55/-1.19	-3.93/-10.99	-17.22/-17.69	-14.67/-8.61	-5.16/-5.63	-8.79/-18.33	-17.48/-12.65	-14.93/-13.49	-4.35/-1.18	-1.53/-7.12	-15.93/-9.59
Θ (165°)	-6.89/-9.09	-9.06/-10.47	-11.75/-9.28	-7.8/-5.31	-4.4/-2.68	-2.26/-2.73	-3.26/-2.43	-6.27/-4.75	-8.47/-6.15	-4.33/-4.54	-6.46/-9.47	-10.55/-7.76	-5.05/-5.6	-8.45/-10.06	-8.91/-9.52	-9.87/-7.16	-6.91/-6.4	-6.86/-4.41	-3.54/-1.11	-1.67/-2.4	-5.86/-8.1	-5.32/-3.12	-3.93/-6.05	
Θ (172.5°)	-13.32/-8.8	-6.8/-3.73	-2.28/-2.02	-1.65/-1.42	-1.1/-1.64	-2.17/-1.64	-2.4/-3.23	-4.19/-4.27	-3.63/-2.99	-3.49/-3.7	-1.32/-3.76	-4.96/-6.24	-7.07/-2.8	-7.1/-5.51	-4.67/-3.82	-3.55/-3.81	-4.06/-3.51	-3.4/-3.59	-2.88/-2.57	-1.97/-2.21	-1.66/-0.94	-0.38/-0.71	-3.25/-5.89	-9.87/-17.26
Θ (180°)	-5.68/-4.5	-4.05/-3.45	-2.73/-1.34	0.37/1.6	2.43/2.54	2.58/2.55	2.41/2.39	1.98/1.86	1.27/0.48	-0.18/-0.88	-1.42/-2.23	-2.84/-3.32	-3.22/-2.84	-2.97/-3.26	-3.1/-2.75	-1.99/-1.36	-0.65/-0.69	-0.5/-0.24	-0.19/-0.16	0.34/0.53	0.71/0.3	-2.72/-5	-6.16/-7.03	-7.02/-6.71
Freq(Hz)	5.785GPol.	Phi/Ant. 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gain	Φ(0°)/Φ(7.5°)	Φ(15°)/Φ(22.5°)	Φ(30°)/Φ(37.5°)	Φ(45°)/Φ(52.5°)	Φ(60°)/Φ(67.5°)	Φ(75°)/Φ(82.5°)	Φ(90°)/Φ(97.5°)	Φ(105°)/Φ(112.5°)	Φ(120°)/Φ(127.5°)	Φ(135°)/Φ(142.5°)	Φ(150°)/Φ(157.5°)	Φ(165°)/Φ(172.5°)	Φ(180°)/Φ(187.5°)	Φ(195°)/Φ(202.5°)	Φ(210°)/Φ(217.5°)	Φ(225°)/Φ(232.5°)	Φ(240°)/Φ(247.5°)	Φ(255°)/Φ(262.5°)	Φ(270°)/Φ(277.5°)	Φ(285°)/Φ(292.5°)	Φ(300°)/Φ(307.5°)	Φ(315°)/Φ(322.5°)	Φ(330°)/Φ(337.5°)	Φ(345°)/Φ(352.5°)
Θ (0°)	-15.21/-16.62	-18.59/-18.4	-17.48/-18.45	-18.25/-17.33	-17.41/-17.97	-18.05/-18.57	-17.64/-18.46	-19.14/-18.74	-19.19/-18.04	-19.15/-18.93	-18.19/-18.83	-19.15/-17.75	-18.69/-18.34	-18.61/-18.83	-17.86/-18.86	-18.62/-17.74	-18.74/-19.76	-18.51/-17.71	-18.46/-18.2	-16.89/-15.62	-17.99/-18.18	-17.71/-19.26	-18.37/-19.1	-17.16/-15.49
Θ (7.5°)	-14.72/-17.91	-18.14/-19.25	-18.81/-17.86	-18.96/-17.88	-16.17/-18.11	-16.69/-19.07	-18.69/-17.84	-18.2/-18.19	-18.33/-18.19	-18.16/-18.69	-17.96/-17.73	-18.14/-18.03	-18.79/-18.28	-18.44/-17.83	-18.73/-17.89	-19.23/-17.37	-17.48/-18.14	-17.83/-18.87	-18.49/-18.22	-18.99/-19.62	-17.76/-17.55	-17.65/-17.95	-15.28/-11.56	-12.93/-14.02
Θ (15°)	-17.97/-18.06	-18.15/-19.25	-12.53/-12.41	-11.95/-16.28	-15.95/-16.28	-16.75/-17.61	-15.85/-16.67	-16.75/-17.61	-15.85/-16.67	-16.74/-19.32	-18.47/-18.06	-15.54/-14.79	-14.93/-13.63	-11.11/-10.34	-16.1									



Radiated Composite Gain of 2.4GHz and 5GHz UNII 1~3

Appendix A

Θ(7.5°)	-7.5/-8.76	-9.02/-7.85	-6.93/-6.65	-7.87/-9.38	-10.51/-10.82	-11.38/-12.83	-15.15/-16.99	-18.33/-19.28	-19.17/-18.26	-16.14/-14.5	-13.86/-13.44	-12.27/-10.96	-10.69/-10.55	-10.27/-9.78	-9.28/-8.63	-8.06/-8.12	-9.06/-10.66	-12.79/-15.32	-17.83/-18.72	-18.72/-18.54	-17.54/-13.55	-11.71/-11.55	-11.99/-10.86	-8.77/-7.21
Θ(15°)	-10.42/-11.4	-13.16/-12.93	-10.95/-9.67	-10.26/-12.23	-13.66/-13.25	-12.19/-12.73	-13.57/-13.04	-11.95/-11.41	-11.23/-10.8	-10.49/-10.54	-11.24/-12.09	-12.4/-12.64	-13.6/-14.17	-13.68/-11.82	-9.69/-8.63	-8.34/-8.63	-9.16/-10.55	-12.41/-13.94	-15.73/-18.24	-18.69/-18.54	-13.27/-11.12	-10.07/-10.25	-11.88/-13.66	-13.47/-11.08
Θ(22.5°)	-10.81/-11.42	-11.94/-13.15	-16.11/-18.58	-18.47/-19.04	-18.54/-19.01	-16.23/-14.2	-12.92/-10.15	-7.85/-6.53	-6.13/-6.22	-6.87/-8.1	-9.84/-12.22	-14.04/-14.73	-14.49/-14.48	-15.16/-13.99	-10.94/-9.16	-9.04/-9.36	-9.04/-8.57	-8.4/-8.74	-9.98/-12.64	-15.59/-14.36	-12.11/-10.65	-9.86/-9.17	-8.55/-7.79	-8.39/-9.98
Θ(30°)	-9.12/-11.21	-11.39/-9.63	-8.73/-8.42	-7.88/-7.78	-8.68/-11.25	-16.98/-19.07	-17.61/-11.92	-7.57/-5.13	-4.4/-4.88	-6.37/-8.76	-11.78/-13.41	-12.03/-9.89	-7.83/-6.38	-6.36/-7.8	-9.26/-9.43	-9.91/-11.16	-9.8/-7.02	-5.67/-5	-6.4/-10.13	-13.85/-9.53	-6.49/-5.28	-5.1/-5.18	-4.85/-4.38	-4.83/-6.37
Θ(37.5°)	-6.2/-6.44	-8.3/-8.87	-6.34/-3.93	-2.44/-2.13	-3.09/-5.58	-9.66/-12.53	-12.27/-13.77	-10.52/-6.43	-5.14/-6.63	-10.03/-12.88	-10.18/-7.4	-5.94/-5.1	-4.09/-3.2	-3.14/-44	-6.46/-8.92	-11.38/-12.86	-10.44/-1.07	-4.78/-4.28	-6.27/-12.84	-10.91/-5.57	-3.65/-3.79	-5.1/-6.21	-6.22/-5.88	-6.07/-6.45
Θ(45°)	-0.07/0.23	-0.59/-2.32	-3.38/-2.25	-0.510-2.4	-0.45/-2.54	-4.88/-2.52	-9.38/-8.98	-6.74/-7.4	-9.78/-9.06	-6.06/-4.0	-3.12/-2.87	-2.48/-2.06	-2.02/-2.4	-4.03/-4.74	-11.72/-12.68	-9.94/-7.73	-6.09/-5.31	-6.84/-11.52	-7.56/-3.47	-2.48/-3.66	-5.98/-6.45	-4.79/-3.02	-1.75/-0.81	
Θ(52.5°)	3.91/3.48	3.07/2.39	1.27/0.26	0.430-8	0.17/-1.56	-2.82/-2.39	-2.52/-3.72	-5.48/-7.32	-6.25/-6.02	-7.19/-7.08	4.44/-2.21	-1.26/-1.24	-1.44/-1.8	-2.13/-2.28	-3.39/-6.32	-10.83/-9.63	-6.25/-5.45	-5.92/-6.06	-6.76/-8.02	-4.66/-1.95	-1.6/-3.25	-5.2/-4.04	-0.84/-1.75	3.37/4.08
Θ(60°)	2.12/1.23	1.94/2.1	1.82/0.91	0.140-42	-0.91/-2.52	-1.41/0.25	-0.53/-2.97	-3.33/-4.08	-5.09/-4.11	-5.35/-9.61	-6.32/-2.43	-0.9/-0.68	-0.62/-0.77	-1.47/-2.16	-3.49/-5.11	-6.19/-5.51	-3.91/-4.01	-5.57/-5.52	-3.97/-4.13	-2.78/-0.92	-0.93/-0.35	-5.73/-4.01	-0.04/-1.7	2.25/2.25
Θ(67.5°)	0.04/-0.48	-1.32/-0.17	0.75/0.52	0.17/-0.21	-1.31/-4.03	-2.49/0.8	0.56/-1.74	-0.99/-1.31	-3.83/-3.06	-4.45/-12.13	-7.17/-2.56	-1.06/-0.63	-0.32/-0.62	-2.1/-3.91	-4.41/-2.9	-1.63/-1.68	-2.6/-3.47	-3.37/-1.94	-1.25/-1.62	-0.75/0.3	-0.73/-4.64	-10.53/-8.42	-3.33/-0.49	-0.13/-0.49
Θ(75°)	-1.74/-0.99	-3.94/-6.16	-4.09/-3.65	-3.13/-1.75	-1.09/-2.74	-3.08/0.35	0.72/-1.2	-0.36/0.24	-1.96/-2.87	-3.51/-8.89	-8.93/-3.11	-0.86/-0.21	0.01/-0.14	-1.31/-3.07	-4.05/-2.22	0.12/-0.03	-1.91/-1.54	0.06/0.54	0.18/-0.1	0.69/0.6	-2.47/-12.92	-11.27/-7.1	-6.55/-6.36	-4.97/-2.39
Θ(82.5°)	0.21/0.61	-2.05/-7.41	-5.97/-3.9	-3.79/-3.2	-1.61/-2.05	-2.9/-0.15	0.8/-0.17	-0.58/-0.35	-1.42/-2.67	-3.67/-6.88	-5.88/-1.91	-0.02/0.28	-0.04/-0.42	-1.18/-2.29	-3.67/-1.4	1.44/-1.53	-0.87/0.56	1.74/-1.42	0.42/-1.08	1.93/0.33	-6.13/-6.42	-2.36/-2.72	-4.88/-7.19	-6.74/-9.22
Θ(90°)	0.04/-1.6	-3.4/-7.4	-8.23/-2.56	-1.68/-2.99	-2.19/-1.69	-3.06/-2.59	-0.94/-0.28	-0.31/-1.91	-1.99/-2.49	-3.81/-3.39	-5.86/-3.12	-3.32/-2.37	4.19/-1.19	0.89/0.08	-0.58/-1.6	2.41/-5.5	0.49/2.12	2.71/-0.11	-5.36/-1.09	-0.23/-2.78	-6.74/-10.54	-10.04/-9.4		
Θ(97.5°)	-2.10/5.2	0.07/-4.27	-10.11/-3.05	-2.07/-4.96	-5.84/-3.57	-3.1/-4.4	-5.13/-1.81	-1.85/-4.61	4.46/-4.05	-2.71/-1.83	-2.72/-2.12	0.14/-1.42	1.27/-0.3	-3.39/-5.49	-4.46/-1.25	0.60/5.5	0.44/-1.24	1.58/0.93	1.06/-1.28	1.12/-2.01	-3.77/0.63	-0.27/-4.69	-10.22/-17.62	-18.66/-8.52
Θ(105°)	-5.34/-1.51	-1.43/-5.91	-17.98/-6.63	-3.56/-6.36	-12.78/-9.46	-4.97/-4.53	-7.66/-5.55	-3.72/-6.28	-9.22/-8.89	-5.2/-0.2	-1.8/-1.76	-0.15/-1.25	1.43/0.09	-3.09/-5.71	-5.53/-4.05	-1.39/0.29	-0.25/-0.54	0.56/-1	0.67/0.3	-0.07/-3.66	-2.12/0.26	-2.92/-1.28	-15.48/-13.72	-12.87/-17.89
Θ(112.5°)	-5.34/-2.11	-1.91/-5.28	-17.96/-11.1	-6.67/-7.79	-13.16/-16.9	-9.61/-7.54	-11.07/-8.08	-5.26/-6.97	-11.84/-17.05	-6.51/-3.21	-3.32/-3.63	-1.89/0.04	0.26/-1.41	-9.93/-8.29	-9.93/-5.86	-1.4/-0.46	-2.04/-2.99	-0.55/0.52	-0.79/-2.51	-2.39/-4.45	-3.27/-3.47	-15.02/-10.59	-7.12/-8.3	-9.73/-11.49
Θ(120°)	-5.42/-2.59	-2.58/-5.28	-12.5/-18.83	-10.71/-9.2	-11.35/-15.8	-11.7/-8.14	-9/-14.85	-10.2/-6.88	-8/-15.71	-13.93/-5.65	-3.23/-2.76	-2.84/-2.54	-2.75/-4.02	-5.63/-6.81	-6.49/-5.37	-4.2/-4.02	-4.49/-5.38	-2.18/-0.4	-2.55/-7.59	-7.05/-7.07	-6.61/-7.22	-9.1/-6.35	-6.59/-10.48	-14.5/-13.95
Θ(127.5°)	-6.55/-2.91	-2.5/-4.64	-10.2/-19.58	-12.7/-9.22	-8.91/-10.6	-11.85/-9.09	-6.95/-8.76	-4.83/-6.67	-5.64/-8.93	-17.85/-7.61	-3.47/-2.44	-2.94/-3.55	-7.97/-8.36	-7.78/-7.34	-7.88/-8.71	-5.33/-3.82	-5.87/-9.97	-3.82/-2.1	-5.86/-12.33	-9.39/-9.93	-6.69/-1.64	-4.3/-6.6	-10.64/-12.1	-12.31/-14.35
Θ(135°)	-5.44/-3.47	-3.05/-4.39	-7.73/-13.05	-15.9/-10.38	-17.13/-16.61	-9.25/-10.73	-7.1/-6.89	-8.18/-5.3	-3.12/-3.72	-6.75/-8.92	-6.84/-4.29	-3.07/-3.02	-5.87/-6.82	-7.02/-6.76	-5.04/-7.64	-14.59/-10.62	-5.11/-5.1	-5.62/-3.22	-4.23/-9.62	-15.02/-8.32	-6.63/-6.82			
Θ(142.5°)	-7.09/-7.69	-9.42/-10.88	-11.1/-11.96	-13.35/-10.75	-8.39/-8.95	-12.43/-12.02	-7.74/-6.89	-7.99/-6.56	-4.18/-3.53	-4.4/-5.89	-6.56/-5.18	-3.2/-2.06	-2.11/-3.03	-4.27/-5.42	-7.42/-10.02	-13.3/-17.15	-14.07/-9.96	-8.99/-11.2	-12.24/-9.02	-8.33/-8.9	-7.67/-6.71	-8.52/-15.86	-17.53/-11.05	-8.39/-7.25
Θ(150°)	-18.42/-17.93	-12.4/-9.45	-7.92/-7.51	-7.96/-6.53	-9.34/-12.31	-16.44/-12.61	-8.94/-8.35	-9.41/-9.1	-6.87/-5.48	-5.47/-6.09	-7.04/-8.28	-9.04/-8.43	-8.23/-9.4	-11.03/-12.65	-16.03/-15.75	-11.07/-8.96	-8.71/-10.11	-11.65/-10.51	-7.52/-5.38	-4.82/-5.67	-7.42/-10.06	-13.65/-18.34	-18.81/-15.7	-17.39/-17.77
Θ(157.5°)	-7.24/-6.67	-5.08/-4.36	-4.64/-6.06	-7.95/-10.12	-13.03/-18.73	-16.44/-11.24	-9.02/-8.9	-10.19/-12.39	-14.24/-13.43	-12.28/-11.98	-11.81/-12.27	-14.27/-15.53	-14.09/-11.68	-10.07/-9.61	-8.87/-7.25	-6.39/-7.27	-10.21/-14.34	-13.64/-10.66	-8.22/-6.47	-5.71/-6.1	-7.66/-10.08	-12.79/-14.55	-14.19/-10.87	-7.87/-6.85
Θ(165°)	-8.11/-8.08	-7.04/-6.7	-7.5/-9.88	-13.29/-18.13	-17.13/-18.75	-14.35/-10.94	-9.43/-9.24	-9.57/-10.18	-11.39/-12.93	-14.72/-16.64	-19.14/-19.06	-16.12/-12.91	-11.23/-11.17	-11.53/-12.36	-12.31/-11.36	-11.74/-14.55	-19.06/-15.87	-13.48/-11.49	-10.48/-10.93	-12.86/-15.73	-17.98/-17.37	-14.14/-10.66	-8.24/-7.51	
Θ(172.5°)	-13.38/-14.88	-16.74/-16.29	-17.33/-18.53	-18.94/-17.31	-18.01/-17.45	-16.03/-12.34	-12.11/-11.81	-12.15/-12.6	-13.21/-13.64	-13.99/-14.79	-16.41/-19.17	-18.18/-18.32	-18.61/-18.42	-18.53/-18.88	-18.62/-16.98	-15.41/-15.2	-15.5/-15.7	-16.37/-18.05	-17.64/-18.24	-18.31/-17.92	-17.22/-17.61	-18.21/-18.59	-18.84/-17.24	-14.37/-13.51
Θ(180°)	-14.11/-13.13	-12.74/-13.78	-15.47/-16.54	-16.4/-15.62	-15.46/-15.95	-16.58/-16.96	-16.83/-16.61	-17.31/-19.61	-18.94/-18.41	-17.96/-19.05	-17.79/-16.59	-15.02/-14.43	-14.5/-14.32	-14.07/-13.88	-13.83/-14.8	-16.32/-17.09	-17.4/-17.05	-17.37/-17.69	-19.26/-17.87	-19.22/-18.83	-17.77/-18.59	-18.7/-16.75	-15.03/-13.99	-13.79/-14.41
Freq[Hz]	5.2GPol.	PhiAnt.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gain	Φ(0°)/Φ(7.5°)	Φ(15°)/Φ(22.5°)	Φ(30°)/Φ(37.5°)	Φ(45°)/Φ(52.5°)	Φ(60°)/Φ(67.5°)	Φ(75°)/Φ(82.5°)	Φ(90°)/Φ(97.5°)	Φ(105°)/Φ(112.5°)	Φ(120°)/Φ(127.5°)	Φ(135°)/Φ(142.5°)	Φ(150°)/Φ(157.5°)	Φ(165°)/Φ(172.5°)	Φ(180°)/Φ(187.5°)	Φ(195°)/Φ(202.5°)	Φ(210°)/Φ(217.5°)	Φ(225°)/Φ(232.5°)	Φ(240°)/Φ(247.5°)	Φ(255°)/Φ(262.5°)	Φ(270°)/Φ(277.5°)	Φ(285°)/Φ(292.5°)	Φ(300°)/Φ(307.5°)	Φ(315°)/Φ(322.5°)	Φ(330°)/Φ(337.5°)	Φ(345°)/Φ(352.5°)
Θ(0°)	-17.92/-19.22	-18.32/-18.1	-18.29/-18.21	-15.53/-14.71	-15.52/-14.71	-13.86/-14.71	-14.05/-12.94	-11.31/-11.52	-17.35/-18.1	-18.83/-18.45	-17.67/-18.37	-19.17/-18.53	-18.72/-17.68	-18.96/-19.09	-18.21/-19.22	-17.43/-16.79	-16.05/-16.2	-11.41/-12.77	-12.35/-11.84	-12.08/-11.16	-10.36/-10.05	-11.15/-12.53	-13.82/-14.45	-16.72/-16.71
Θ(7.5°)	-17.54/-17.77	-18.91/-18.96	-16.48/-16.23	-17.96/-12.27	-13.2/-15.41	-15.14/-15.16	-12.96/-11.55	-11.34/-11.47	-11.59/-12.25	-12.95/-13.39	-16.87/-19.07	-18.49/-18.14	-16.84/-16.75	-17.93/-16.87	-15.07/-15.16	-17.37/-12.47	-12.14/-13.39	-12.79/-14.33	-13.75/-14.33	-16.81/-17.58	-17.68/-18.26	-19.68/-17.94	-16.97/-18	-17.58/-19.22
Θ(15°)	-18.99/-19.34	-19.1/-17.97	-19.18/-12.55	-10.56/-10.77	-11.67/-14.81	-16.68/-17.76	-17.28/-15.45	-14.01/-16.14	-16.53/-17.46	-16.58/-15.62	-14.37/-13.66	-18.53/-18.94	-17.57/-17.77	-17.04/-18.43	-17.55/-15.77	-17.69/-17.6	-11.97/-11.84	-14.29/-16.79	-15.17/-12.11	-11.81/-15.2	-14.31/-18.35	-17.42/-19.25	-15.69/-14.1	-17.82/-18.47
Θ(22.5°)	-12.16/-13.66	-17.68/-17.96	-16.94/-18.71	-13.28/-11.33	-13.39/-10.71	-18.89/-17.85	-17.32/-19.09	-18.64/-19.1	-15.38/-14.41	-13.52/-14.57	-16.68/-19.17	-17.5/-17.34	-18.48/-17.75	-15.95/-18.29	-19.09/-18.87	-18.39/-18.28	-16.75/-10.37	-15.71/-16.31	-15.53/-12.32	-11.78/-14.28	-18.08/-13.13	-9.71/-11.28	-15.65/-16.8	-13.27/-13.53
Θ(30°)	-17.54/-18.57	-15.58/-10.53	-12.18/-19.22	-17.47/-17.49	-18.67/-19.24	-15.62/-15.63	-17.84/-18.64	-18.98/-18.3	-17.93/-18.04	-18.69/-19.28	-18.68/-18.71	-18.32/-18.75	-17.95/-17.58	-17.89/-18.96	-18.52/-18.38	-18.38/-18.72	-17.98/-16.22	-13.75/-15.34	-18.82/-16.25	-16.52/-17.77	-17.73/-18.78	-19.11/-15.7	-11.24/-10.28	-15.89/-17.92
Θ(37.5°)	-14.21/-15.39	-18.42/-12.05	-11.22/-17.93	-19.43/-19.51	-17.19/-19.09	-15.83/-12.78	-15.57/-16.36	-14.66/-17.86	-17.54/-18.72	-18.71/-18.14	-18.53/-17.91	-18.94/-18.38	-16.84/-16.38	-18.24/-18.98	-16.83/-18.63	-19.1/-17.72	-19.02/-15.67	-18.47/-14.75	-15.02/-14.92	-13.7/-16.23	-18.77/-15.97	-12.49/-16.38	-18.05/-17.59	-17.9/-14
Θ(45°)	-18.38/-18.1	-18.06/-17.92	-18.86/-18.51	-18.63/-18.63	-18.44/-17.81	-18.91/-17.48	-16.16/-19.18	-10.53/-13.48	-18.35/-17.45	-19.02/-17.78	-18.34/-17.37	-13.57/-11.35	-17.57/-18.09	-18.11/-18.34	-16.7/-17.95	-19.89/-18.55	-18.88/-15.19	-16.88/-18.08	-9.8/-19.2	-18.11/-17.75	-18.56/-18.78	-15.89/-18.82	-18.2/-14.61	
Θ(52.5°)	-17.77/-19.3	-17.79/-14.98	-19.01/-17.98	-17.64/-18.23	-10.77/-11.73	-19.15/-17.15	-17.84/-18.57	-17.28/-18.36	-15.81/-16.07	-15.47/-18.93	-18.66/-19.33	-17.9/-13.83	-18.34/-18.7	-16.66/-15.64	-13.71/-17.63	-18.49/-18.6	-13.85/-1							



Radiated Composite Gain of 2.4GHz and 5GHz UNII 1~3

Appendix A

Θ(60°)	3.52/3.99	2.01/2.32	2.01/0.09	-1.81/-2.5	-4.98/-3.74	-3.37/-4.83	-2.37/-3.07	-5.44/-6.28	-5.55/-3.62	-2.29/-2.37	-3.66/-3.42	-5.03/-6.09	-4.71/-7.12	-9.46/-6.25	-4.28/-1.97	-3.36/-1.59	-0.41/-5.09	-0.86/-6.95	-2.94/-3.72	-4.03/-5.59	-1.81/-2.48	-0.73/-0.35	0.28/1.79	1.82/4.7
Θ(67.5°)	0.28/-2.66	-1.99/-2.24	-0.99/-1.2	-0.47/-3.47	-2.05/-5.71	-2.05/-3.53	-1.94/-1.4	-2.92/-2.79	-5.44/-1.13	-2.48/-0.63	-3.42/-4.7	-4.8/-2.82	-0.25/-3.02	-5.29/-3.78	-1.01/-0.95	-0.48/-0.68	0.4/-1.2	-2.61/-6.77	-4.17/-4.66	-4.95/-1.51	-0.84/-0.93	-0.2/-0.39	-1.75/-1.96	-0.60/1.89
Θ(75°)	0.06/0.54	0.89/0.07	-0.51/0.95	-0.33/-1	-1.74/-1.68	-3.61/-3.3	-1.57/-2.01	-4.44/-0.55	-6.56/-0.87	-0.71/-1.54	-1.06/0.34	-0.78/0.73	2.6/-0.47	-0.58/0.92	2.21/1.49	-0.61/-0.58	-1.69/-1.88	-3.25/-3.62	-2.73/-3.4	-1.95/-0.52	-9.72/-1.44	-2.38/-2.75	-0.46/-0.66	-0.66/-0.61
Θ(82.5°)	0.09/-0.28	-0.27/1.2	1.46/-0.5	-1.24/-2.4	-1.55/-1.1	-4.22/-1.3	-3.88/-2.65	-5.29/-1.75	-6.31/-2.81	0.86/0.36	0.44/-0.94	-0.21/1.2	1.58/0.31	0.89/2.38	1.14/-0.18	-0.63/-3.13	-1.16/-1.63	1.8/-1.37	-0.85/-1.8	-0.94/-4.08	-3.67/-2.88	-3.15/-0.37	-2.51/-4.7	-3.43/0.35
Θ(90°)	2.69/-0.62	1.29/-2.11	1.31/-3.59	-0.78/-3.18	-3.24/-1.75	-5.64/-0.7	-6.73/-4.06	-6.24/-2.42	-6.61/-2.68	-0.57/-0.15	0.08/-0.74	-1.88/0.28	-0.99/-6.45	-1.40/-31	-0.97/-1.42	-4.55/-2.4	-0.73/-1.38	-0.58/-2.32	-2.78/-2	-0.94/-2.89	-0.92/-0.7	-1.23/-1.2	2.19/-1.78	-8.67/1.31
Θ(97.5°)	-5.63/-3.1	-6.14/-15.9	-6.67/-6.56	-3.44/-4.42	-7.22/-4.36	-8.36/-1.5	-7.32/-4.08	-7.95/-5.94	-4.85/-2.01	-4.51/-2.25	-2.16/-2.69	0.02/-0.67	-1.51/-2.84	0.15/0.47	0.91/-2.81	-1.51/-2.61	-0.4/-3.96	-3.06/-4.27	-5.58/-1.51	-1.67/-2.66	-1.49/-4.4	-4.34/-1.57	-1.71/-8.62	-13.42/-7.1
Θ(105°)	6.14/-7.78	-5.46/-9.63	-1.33/-11.27	-1.49/-5.2	-12.92/-6.84	-6.54/-5.25	-5.4/-4.37	-6.98/-3.86	-8.31/-4.16	0.61/0.33	-0.36/-3.33	0.21/1.22	1.98/-0.73	1.32/0.19	0.75/-3.74	-1.88/-2.61	-2.85/-2.03	-0.35/-4.81	-4.24/-3.74	-2.31/-3.21	-3.24/-4.7	-4.92/-0.79	-2.79/-3.8	-3.54/-3.25
Θ(112.5°)	-5.3/-0.54	-4/-0.02	-2.73/-12.87	-2.88/-5.99	-4.95/-10.85	-6.79/-11.39	-5.85/-9.07	-9.7/-3.5	-5.61/-2.71	-5.59/-4.19	-2.66/-3.87	-3.05/-0.78	-3.25/-3.71	-1.79/-5.11	-1.29/-3.79	-3.24/-4.19	-0.73/-1.96	-2.49/-8.1	-8.66/-6.33	-0.95/-10.46	-5.44/-9.61	-5.13/-0.75	-0.07/-3.81	-1.81/-2.87
Θ(120°)	-19.21/-18.32	-12.67/-18.12	-18.36/-9.4	-10.98/-17.96	-12.1/-10.83	-12.8/-12.46	-14.84/-12.32	-16.79/-15.06	-7.55/-5.89	-7.96/-6.98	-14.81/-9.26	-5.25/-7.66	-12.38/-6.6	-14.23/-6.82	-6.69/-5.55	-0.73/-15.29	-10.62/-10.19	-12.31/-8.24	-7.47/-10.2	-6.16/-10.21	-10.67/-9.11	-7.83/-17.61	-16.28/-6.9	
Θ(127.5°)	-4/-2.48	-11.43/-8.52	-13.29/-5.4	-5.8/-16.28	-16.3/-7.94	-12.95/-10.79	-11.68/-9.26	-11.57/-17.27	-17.8/-11.9	-5.92/-5.2	-9.62/-14.39	-18.49/-14.88	-8.62/-10.83	-9.64/-12.24	-13.38/-9.83	-9.32/-12.67	-18.76/-8.27	-19.48/-13.96	-12.74/-12.8	-12.18/-11.91	-10.22/-16.63	-15.97/-13.02	-10.28/-4.68	-6.67/-10.26
Θ(135°)	-13.02/-10	-11.5/-17.95	-12.9/-7.16	-13.67/-11.31	-5.84/-8.92	-5.67/-7.71	-7.57/-10.41	-9.56/-10.88	-19.09/-8.8	-8.46/-5	-5.51/-7.47	-5.93/-5.94	-7.4/-6.03	-12.55/-12.47	-6.72/-10.13	-6.92/-18.2	-10.95/-4.92	-10.53/-14.69	-10.89/-11.47	-6.99/-13.67	-17.64/-10.02	-15.43/-16.52	-15.43/-16.52	
Θ(142.5°)	-1.77/-18.26	-6.79/-5.36	-9.44/-10.91	-10.05/-16.65	-10.57/-19.02	-8.07/-7.23	-3.49/-7.48	-6.69/-4.57	-5.04/-11.44	-9.2/-3.9	-5.02/-4.52	-6.19/-10.55	-9.27/-11.16	-18.73/-14.48	-9.66/-6.48	-10.1/-5	-3.68/-10	-9.98/-13.16	-17.57/-5.2	-3.81/-13.65	-9.41/-10.97	-17.99/-18.79	-12.33/-10.03	-9.27/-9.14
Θ(150°)	-6.06/-4.17	-6.53/-6.25	-9.85/-11.33	-19.25/-14.7	-10.49/-9.2	-8.39/-9.3	-6.66/-5.51	-6.83/-5.76	-7.78/-10.84	-8.48/-5.25	-4.41/-4.85	-3.65/-3.53	-5.21/-5.4	-4.62/-4.87	-6.42/-7.54	-2.33/-2.39	-6.71/-6.13	-13.34/-11.57	-10.06/-7.12	-6.14/-11.09	-17.29/-11.81	-11.87/-15.53	-19.66/-15.49	-18.24/-12.84
Θ(157.5°)	-9.64/-9.77	-12.5/-14.85	-12.24/-10.44	-7.4/-5.86	-6.79/-8.26	-5.25/-4.01	-11.11/-17.53	-13.83/-10.1	-7.46/-6.43	-8.48/-7.69	-6.58/-6.34	-6.25/-1.87	-8.42/-6.92	-4.39/-2.19	-3.09/-4.94	-4.2/-6.15	-11.55/-10.51	-11.49/-10.07	-6/-4.95	-8.02/-18.69	-11.38/-7.47	-8.36/-9.66	-9.82/-8.58	
Θ(165°)	-18.29/-15.23	-10.16/-6.33	-5.62/-4.97	-6.25/-9.5	-16.36/-12.98	-7.61/-6.79	-8.37/-7.61	-6.56/-7.46	-8.23/-8.01	-7.28/-7.11	-4.73/-7.28	-8.12/-9.04	-7.25/-7.65	-10.15/-16.59	-18.02/-14.84	-10.75/-6.72	-4.88/-5.03	-6.4/-6.71	-6.58/-8	-14.32/-18.22	-17.78/-18.66	-18.75/-18.43		
Θ(172.5°)	-11.56/-11.57	-9.75/-10.31	-9.87/-10.07	-14.7/-19.32	-18.6/-18.01	-16.67/-13.68	-10.27/-7.3	-6.28/-6.3	-6.51/-7.75	-8.35/-8.12	-8.05/-6.78	-6.51/-6.94	-7.37/-8.26	-8.87/-9.33	-8.48/-7.89	-8.49/-9.55	-11.7/-13.59	-11.2/-9.76	-9.67/-11.91	-17.72/-18.13	-12.58/-8.69	-8.45/-9.47	-12.75/-15.85	-16.62/-15.13
Θ(180°)	-17.77/-18.52	-18.89/-17.42	-19.4/-18.36	-18.55/-18.93	-18.59/-18.37	-18.48/-18.7	-19.28/-19.13	-17.66/-19.2	-16.35/-14.69	-15.24/-14.83	-16.3/-17.05	-18.49/-18.29	-18.81/-17.5	-17.49/-14.6	-13.61/-12.46	-11.88/-12.95	-14.73/-18.05	-18.26/-18.28	-18.76/-19.06	-18.17/-17.8	-16.99/-13.65	-11.36/-11.17	-9.97/-11.58	-15.3/-15.78
Freq(Hz)	5.60GPol.	PhiAnt. 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gain	Φ(0°)/Φ(7.5°)	Φ(15°)/Φ(22.5°)	Φ(30°)/Φ(37.5°)	Φ(45°)/Φ(52.5°)	Φ(60°)/Φ(67.5°)	Φ(75°)/Φ(82.5°)	Φ(90°)/Φ(97.5°)	Φ(105°)/Φ(112.5°)	Φ(120°)/Φ(127.5°)	Φ(135°)/Φ(142.5°)	Φ(150°)/Φ(157.5°)	Φ(165°)/Φ(172.5°)	Φ(180°)/Φ(187.5°)	Φ(195°)/Φ(202.5°)	Φ(210°)/Φ(217.5°)	Φ(225°)/Φ(232.5°)	Φ(240°)/Φ(247.5°)	Φ(255°)/Φ(262.5°)	Φ(270°)/Φ(277.5°)	Φ(285°)/Φ(292.5°)	Φ(300°)/Φ(307.5°)	Φ(315°)/Φ(322.5°)	Φ(330°)/Φ(337.5°)	Φ(345°)/Φ(352.5°)
Θ(0°)	-14.24/-15.97	-17.82/-14.53	-17.73/-14.78	-14.85/-16.99	-13.6/-13.3	-13.55/-11.23	-10.33/-10.01	-11.14/-9.28	-10.62/-11.63	-12.97/-12.78	-12.56/-13.72	-14.31/-15.16	-16.69/-18.18	-18.32/-15.53	-17.94/-17.34	-13.67/-16.85	-14.63/-13.84	-14.37/-13.25	-11.04/-11.32	-12.51/-12.74	-11.3/-12.46	-14.6/-15.77	-12.47/-14.16	-18.24/-16.32
Θ(7.5°)	-18.13/-15.56	-15.03/-16.8	-18.97/-19.3	-17.79/-18	-16.83/-13.98	-13.03/-10.14	-9.61/-10	-11.74/-10.41	-11.34/-11.27	-10.86/-9.99	-10.54/-12.38	-13.47/-12.71	-15.7/-15.11	-13.62/-16.54	-14.53/-16	-13.64/-12.64	-18.04/-13.57	-11.63/-12.38	-10.62/-10.46	-10.19/-12.46	-14.32/-12.48	-12.87/-12.5	-13.9/-15.46	
Θ(15°)	-17.71/-17.68	-10.45/-8.03	-9.8/-8.88	-14.72/-18.77	-18.47/-11.79	-9.48/-9.35	-11.91/-13.64	-15.87/-16.51	-15.59/-16.9	-16.53/-12.93	-13.81/-13.61	-13.04/-12.06	-14.11/-16.41	-18.97/-17.5	-18.43/-12.27	-14.51/-14.56	-13.27/-14.91	-8.96/-7.46	-9.28/-11.39	-13.56/-13.08	-14.22/-15.7	-15.68/-15.92	-18.01/-16.63	-15.19/-17.11
Θ(22.5°)	-14.78/-15.26	-17.81/-18.65	-16.88/-10.03	-11.69/-14.1	-9.11/-17.53	-13.71/-12.06	-12.27/-12.5	-15.91/-15.63	-11.81/-12.02	-13.28/-15.36	-15.36/-18.27	-16.75/-16.92	-18.72/-17.71	-18.12/-11.94	-9.64/-11.2	-18.17/-14.93	-9.99/-15.88	-15.46/-13.26	-10.46/-11.36	-14.17/-18.81	-14.71/-18.81	-18.45/-18.81	-17.69/-19.17	
Θ(30°)	-17.37/-19.03	-11.48/-13.19	-15.2/-12.83	-15.89/-12.01	-9.01/-14.85	-16.89/-13.81	-13.97/-14.14	-16.45/-17.67	-15.29/-14.07	-18.19/-18.66	-15.48/-17.45	-16.89/-10.07	-9.93/-16.15	-11.89/-11.15	-17.98/-13.81	-13.08/-10.11	-14.25/-18.28	-15.54/-15.33	-12.12/-13.02	-18/-14.51	-18.87/-17.71	-16.89/-13.63	-12.89/-18.64	-15.86/-14
Θ(37.5°)	-18.28/-15.63	-9.5/-14.72	-16.52/-12.64	-13.02/-18.17	-10.74/-10.23	-18.59/-12.58	-12.66/-18.63	-18.69/-13.85	-11.58/-12.34	-18.19/-14.9	-17.96/-18.2	-18.87/-18.43	-17.68/-18.12	-17.34/-11.95	-12.71/-17.34	-18.51/-14.96	-16.78/-19	-18.01/-18.14	-15.95/-16.68	-19.19/-14.96	-11.3/-13.12	-18.79/-18.09	-19.37/-11.6	-15.9/-18.5
Θ(45°)	-13.75/-18.32	-8.6/-18.51	-14.8/-12.24	-13.95/-16.65	-19.06/-18.91	-14.31/-16.4	-16.46/-15.05	-18.17/-18.74	-17.52/-17.69	-17.55/-16.66	-17.07/-18.43	-18.61/-10.33	-17.49/-17.69	-17.79/-17.78	-13.44/-13.82	-18.97/-18.39	-18.71/-18.8	-15.79/-12	-15.01/-14.32	-14.98/-18.15	-18.93/-16.43	-17.48/-16.2	-18.24/-18.39	-18.1/-13.5
Θ(52.5°)	-16.67/-18.6	-15.48/-14.48	-14.7/-8.66	-8.82/-17.96	-15.41/-18.44	-14.37/-16.2	-19.13/-13.02	-16.55/-12.08	-17.57/-17.83	-16.47/-19.24	-18.23/-14.34	-18.22/-17.76	-19.16/-17.22	-16.96/-17.85	-17.97/-17.54	-18.13/-16.92	-13.79/-14.39	-11.38/-10.75	-19.11/-10.72	-13.88/-18.38	-11.03/-10.14	-16.42/-17.7	-18.53/-16.79	-18.78/-19.22
Θ(60°)	-13.57/-16.21	-18.6/-13.32	-8.47/-16.59	-7.27/-16.77	-11.6/-17.28	-18.43/-17.41	-16.55/-15.05	-18.89/-13.85	-13.9/-14.3	-18.86/-18.69	-18.76/-18.92	-16.56/-18.02	-19.1/-15.43	-12.9/-18.18	-12.56/-19.02	-16.98/-10.49	-12.95/-11.73	-12.6/-9.49	-11.57/-11.78	-18.11/-18.62	-12.05/-9.87	-15.17/-18.93	-9.57/-7.46	-12.15/-18.98
Θ(67.5°)	-15.63/-13.19	-13.93/-17.48	-11.94/-18.56	-13.16/-15.11	-12.15/-16.96	-17.87/-17.74	-19.07/-18.88	-18.24/-19.03	-15.26/-17.82	-15.95/-18.2	-18.88/-14.05	-18.27/-16.49	-17.55/-17.96	-17.68/-18.38	-14.32/-17.6	-15.96/-16.14	-17.58/-17.01	-7.81/-12.4	-13.32/-18.04	-11.67/-9.25	-7.53/-17.6	-13.92/-12	-8.05/-6.54	-10.58/-13.82
Θ(75°)	-12.52/-11.12	-18.59/-18.19	-11.72/-18.62	-15.44/-17.79	-18.35/-19.19	-17.69/-18.61	-18.61/-14.23	-18.28/-15.04	-18.45/-19.22	-13.8/-17.79	-19.47/-16.29	-18.07/-10.07	-17.2/-14.5	-18.22/-10.39	-11.24/-17.1	-19.39/-14.3	-18.94/-13.43	-7.87/-17.23	-14.38/-13.4	-12.37/-12.13	-13.59/-9.56	-10.39/-14.1	-16.22/-10.29	-16.78/-18.7
Θ(82.5°)	-18.21/-14.36	-17.71/-18.32	-14.36/-14.44	-19.28/-18.35	-17.45/-15.5	-16.66/-15.73	-19.35/-15.44	-19.1/-17.88	-17.88/-18.53	-14.58/-17.62	-18.76/-18.31	-18.66/-18.97	-18.8/-12.99	-11.1/-13.05	-15.84/-17.95	-17.52/-10.65	-18.65/-13.22	-11.04/-17.62	-10.72/-14.06	-12.69/-19.19	-13.7/-46	-16.88/-12.13	-9.47/-11.99	-17.16/-17.47
Θ(90°)	-17.34/-19.02	-15.56/-16.47	-17.75/-18.05	-18.56/-13.03	-16.22/-16.19	-17.28/-17.89	-18.5/-14.25	-18.37/-18.57	-18.2/-18.2	-13.92/-16.13	-17.79/-18.67	-18.27/-18.49	-15.27/-14.91	-13.18/-13.68	-18.64/-19.12	-18.68/-18.36	-15/-11.59	-17.98/-18.01	-10.34/-13.53	-18.65/-14.45	-11.48/-11.43	-18.17/-12.38	-11.25/-18.52	-18.95/-17.45
Θ(97.5°)	-19.08/-16.26	-12.82/-18.85	-18.41/-17.99	-18.45/-18.76	-17.74/-15.76	-19.3/-18.04	-18.59/-19.11	-17.63/-18.51	-19.04/-18.47	-18.59/-16.64	-12.37/-13.7	-13.15/-14.83	-15.16/-13.36	-13.81/-12.6	-11.54/-14.91	-12.84/-15.96	-18.07/-10.88	-11.41/-17.84	-14.22/-10.25	-10.3/-9.46	-13.32/-15.22	-16.71/-18.09	-19.12/-18.41	
Θ(105°)	-18.23/-10.55	-8.6/-18.84	-18.25/-15.57	-12.06/-16.97	-17.71/-16.01	-16.81/-18.5	-17.04/-15.48	-17.8/-18.96	-18.6/-16.51	-15.97/-10.71	-13.54/-19.36	-14.5/-												