



Antenna Composite Gain Test Report

FCC ID	MSQ-RTBE6J00
Equipment	ROG Rapture GT-BE19000 WiFi 7 Tri-band Gaming Router
Brand Name	ASUS
Model Name	GT-BE19000
Applicant	ASUSTeK COMPUTER INC. 1F., No. 15, Lide Rd., Beitou, Taipei City 112, Taiwan
Standard	KDB662911 D03 v01
Sample Received	Dec. 21, 2022
Start Test Date	Dec. 23, 2022
Final Test Date	Jan. 17, 2023

Approved by: **Sam Chen**

Sporton International Inc. Hsinchu Laboratory

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



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1. Operation Mode and Antenna Information

For EUT 1:

Antenna Position	RF Port			Brand Name	Model Name	Ant. Type	Connector	Modes of Operation
	WLAN 2.4GHz	WLAN 5GHz	WLAN 6GHz					
2G5G Ant1	1	1	-	WHA Yu	C660-510591-A	Dipole	I-PEX	2.4GHz, 5GHz UNII 1~3
2G5G Ant2	4	4	-	WHA Yu	C660-510592-A	Dipole	I-PEX	2.4GHz, 5GHz UNII 1~3
2G5G Ant3	3	3	-	WHA Yu	C660-510593-A	Dipole	I-PEX	2.4GHz, 5GHz UNII 1~3
2G5G Ant4	2	2	-	WHA Yu	C660-510594-A	Dipole	I-PEX	2.4GHz, 5GHz UNII 1~3
6G Ant1	-	-	1	WHA Yu	C660-510587-A	Dipole	I-PEX	6GHz
6G Ant2	-	-	2	WHA Yu	C660-510588-A	Dipole	I-PEX	6GHz
6G Ant3	-	-	3	WHA Yu	C660-510589-A	Dipole	I-PEX	6GHz
6G Ant4	-	-	4	WHA Yu	C660-510590-A	Dipole	I-PEX	6GHz

For EUT 2:

Antenna Position	RF Port			Brand Name	Model Name	Ant. Type	Connector	Modes of Operation
	WLAN 2.4GHz	WLAN 5GHz	WLAN 6GHz					
2G5G Ant1	1	1	-	WHA Yu	C660-510591-AW1	Dipole	I-PEX	2.4GHz, 5GHz UNII 1~3
2G5G Ant2	4	4	-	WHA Yu	C660-510592-AW1	Dipole	I-PEX	2.4GHz, 5GHz UNII 1~3
2G5G Ant3	3	3	-	WHA Yu	C660-510593-AW1	Dipole	I-PEX	2.4GHz, 5GHz UNII 1~3
2G5G Ant4	2	2	-	WHA Yu	C660-510594-AW1	Dipole	I-PEX	2.4GHz, 5GHz UNII 1~3
6G Ant1	-	-	1	WHA Yu	C660-510587-AW1	Dipole	I-PEX	6GHz
6G Ant2	-	-	2	WHA Yu	C660-510588-AW1	Dipole	I-PEX	6GHz
6G Ant3	-	-	3	WHA Yu	C660-510589-AW1	Dipole	I-PEX	6GHz
6G Ant4	-	-	4	WHA Yu	C660-510590-AW1	Dipole	I-PEX	6GHz

Note:

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

2G5G Ant1~4 can be used as transmitting/receiving antenna.

2G5G Ant1~4 could transmit/receive simultaneously.

6GHz Operation Mode (4TX/4RX)

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

6G Ant1~4 could transmit/receive simultaneously.



2. Table for Multiple Listing

The difference for each EUT is shown as below:

EUT	Enclosure/Antenna Color	Heatsink Color on the Back of the EUT
1	Black	Red
2	White	Black

Note 1: The difference between EUT 1 and EUT 2 is only color, there is only EUT 1 tested and recorded in this report

Note 2: The above information was declared by manufacturer.

3. Test Frequency

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

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

4. Testing Location

Testing Location		
Sporton International Inc. Hsinhua Laboratory		
<input checked="" type="checkbox"/>	HWA YA	ADD : No.13-1 & 14-1, Ln. 19, Wen 33rd St., Guishan Dist., Taoyuan City 333, Taiwan R.O.C.

Test Condition	Test Site No.	Test Engineer	Test Environment (°C / %)	Test Date
Radiated	05CH03-HY	Rex Liao	23~24 / 40~50	Dec. 23, 2022 ~ Jan. 17, 2023

Note:

Testing Site Information

Brand Name: TDK

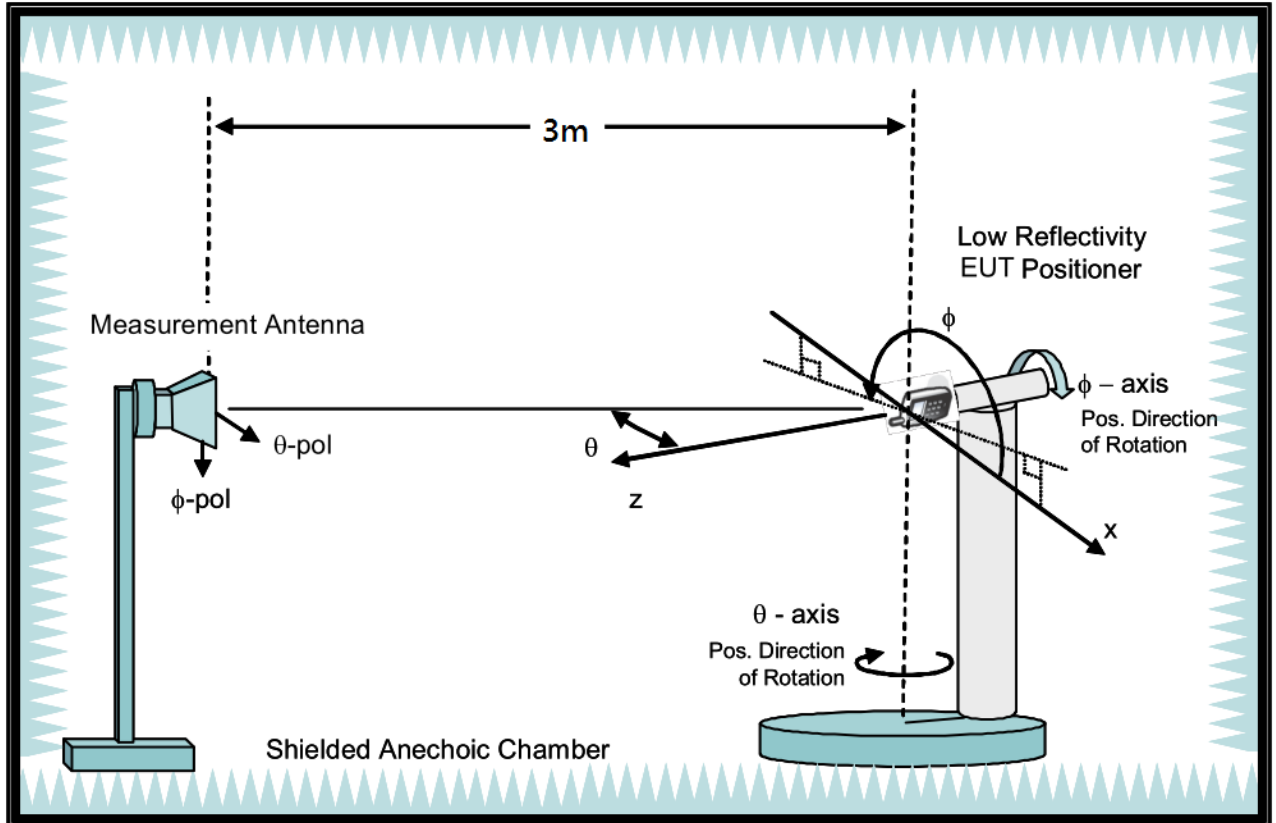
Dimension: 11m*6m*6m

Characteristic: Fully Anechoic Chamber

5. Test Facility and Configuration

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

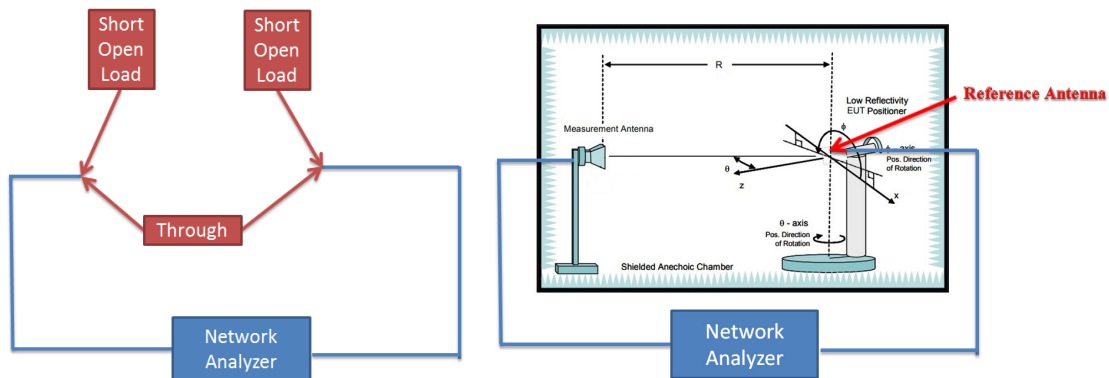
#Reference to CTIA "ctia-test-plan-for-wireless-device-over-the-air-performance-ver-3-7-1"



6. Reference Calibration

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

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



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

Note:

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

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

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

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



7. Test Method

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

DG steps:

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

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



8. Measured Values and Calculation of Maximum Gain Positions

DG_1SS max value position

Frequency (Hz)	2.45G	5.2G	5.3G	5.6G	5.785G
Ant. 1 (dBi)	0.15	-2.37	-4.82	-1.93	-0.82
Ant. 2 (dBi)	-0.56	0.43	0.1	-0.31	-2.03
Ant. 3 (dBi)	0.6	-1.08	2.11	1.39	1.62
Ant. 4 (dBi)	-0.34	-2.5	0.96	-0.66	-0.72
DG [1SS] (dBi)	5.99	4.72	5.97	5.72	5.64
Polarization	Theta	Theta	Theta	Theta	Theta
Θ (°)	90	90	82.5	90	60
Φ (°)	75	127.5	142.5	22.5	195

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

DG_1SS max value position calculation

Frequency (Hz)	2.45G	5.2G	5.3G	5.6G	5.785G
Ant. 1 [10^(G/20)]	10^(0.15/20)	10^(-2.37/20)	10^(-4.82/20)	10^(-1.93/20)	10^(-0.82/20)
Ant. 2 [10^(G/20)]	10^(-0.56/20)	10^(0.43/20)	10^(0.1/20)	10^(-0.31/20)	10^(-2.03/20)
Ant. 3 [10^(G/20)]	10^(0.6/20)	10^(-1.08/20)	10^(2.11/20)	10^(1.39/20)	10^(1.62/20)
Ant. 4 [10^(G/20)]	10^(-0.34/20)	10^(-2.5/20)	10^(0.96/20)	10^(-0.66/20)	10^(-0.72/20)
Ant. 1 [10^(G/20)] value	1.017	0.761	0.574	0.801	0.91
Ant. 2 [10^(G/20)] value	0.938	1.051	1.012	0.965	0.792
Ant. 3 [10^(G/20)] value	1.072	0.883	1.275	1.174	1.205
Ant. 4 [10^(G/20)] value	0.962	0.75	1.117	0.927	0.92
Sum All Antenna [Amax]	3.988	3.445	3.978	3.866	3.827
DG [10*log(Amax^2/Nant)]	5.99	4.72	5.97	5.72	5.64

Note:

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

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



DG_1SS max value position

Frequency (Hz)	6.175G	6.475G	6.695G	6.995G
Ant. 1 (dBi)	1.75	-1.11	2.13	0.39
Ant. 2 (dBi)	1.95	2.41	-1.18	0.89
Ant. 3 (dBi)	-2.78	-2.79	-2.51	-1.69
Ant. 4 (dBi)	-2.11	-1.66	-1.75	-2.03
DG [1SS] (dBi)	5.99	5.46	5.38	5.5
Polarization	Theta	Theta	Theta	Theta
Θ (°)	60	60	75	82.5
Φ (°)	82.5	75	90	247.5

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

DG_1SS max value position calculation

Frequency (Hz)	6.175G	6.475G	6.695G	6.995G
Ant. 1 [10^(G/20)]	10^(1.75/20)	10^(-1.11/20)	10^(2.13/20)	10^(0.39/20)
Ant. 2 [10^(G/20)]	10^(1.95/20)	10^(2.41/20)	10^(-1.18/20)	10^(0.89/20)
Ant. 3 [10^(G/20)]	10^(-2.78/20)	10^(-2.79/20)	10^(-2.51/20)	10^(-1.69/20)
Ant. 4 [10^(G/20)]	10^(-2.11/20)	10^(-1.66/20)	10^(-1.75/20)	10^(-2.03/20)
Ant. 1 [10^(G/20)] value	1.223	0.88	1.278	1.046
Ant. 2 [10^(G/20)] value	1.252	1.32	0.873	1.108
Ant. 3 [10^(G/20)] value	0.726	0.725	0.749	0.823
Ant. 4 [10^(G/20)] value	0.784	0.826	0.818	0.792
Sum All Antenna [Amax]	3.985	3.751	3.717	3.769
DG [10*log(Amax^2/Nant)]	5.99	5.46	5.38	5.5

Note:

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

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



9. Summary of Test Result

Freq(Hz)	2.45G	5.2G	5.3G	5.6G	5.785G
Ant. 1 Max Gain (dBi)	2.09	1.52	1.17	1.98	1.08
Ant. 2 Max Gain (dBi)	1.84	2.29	2.9	3.09	2.51
Ant. 3 Max Gain (dBi)	2.91	2.7	3.04	2.48	3.39
Ant. 4 Max Gain (dBi)	2.14	1.21	1.19	3.23	1.87
Ant. 1 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$	Theta/97.5/165	Theta/67.5/270	Theta/67.5/270	Theta/97.5/232.5	Theta/82.5/247.5
Ant. 2 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$	Theta/52.5/262.5	Theta/60/262.5	Theta/90/97.5	Theta/60/247.5	Theta/90/97.5
Ant. 3 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$	Theta/52.5/180	Theta/60/180	Theta/60/180	Theta/90/37.5	Theta/75/195
Ant. 4 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$	Theta/60/172.5	Theta/82.5/165	Theta/82.5/157.5	Theta/82.5/180	Theta/67.5/165
Max Gain (dBi)	2.91	2.7	3.04	3.23	3.39
DG [1SS] (dBi)	5.99	4.72	5.97	5.72	5.64
DG [2SS] (dBi)	2.99	2.7	3.04	3.23	3.39

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)

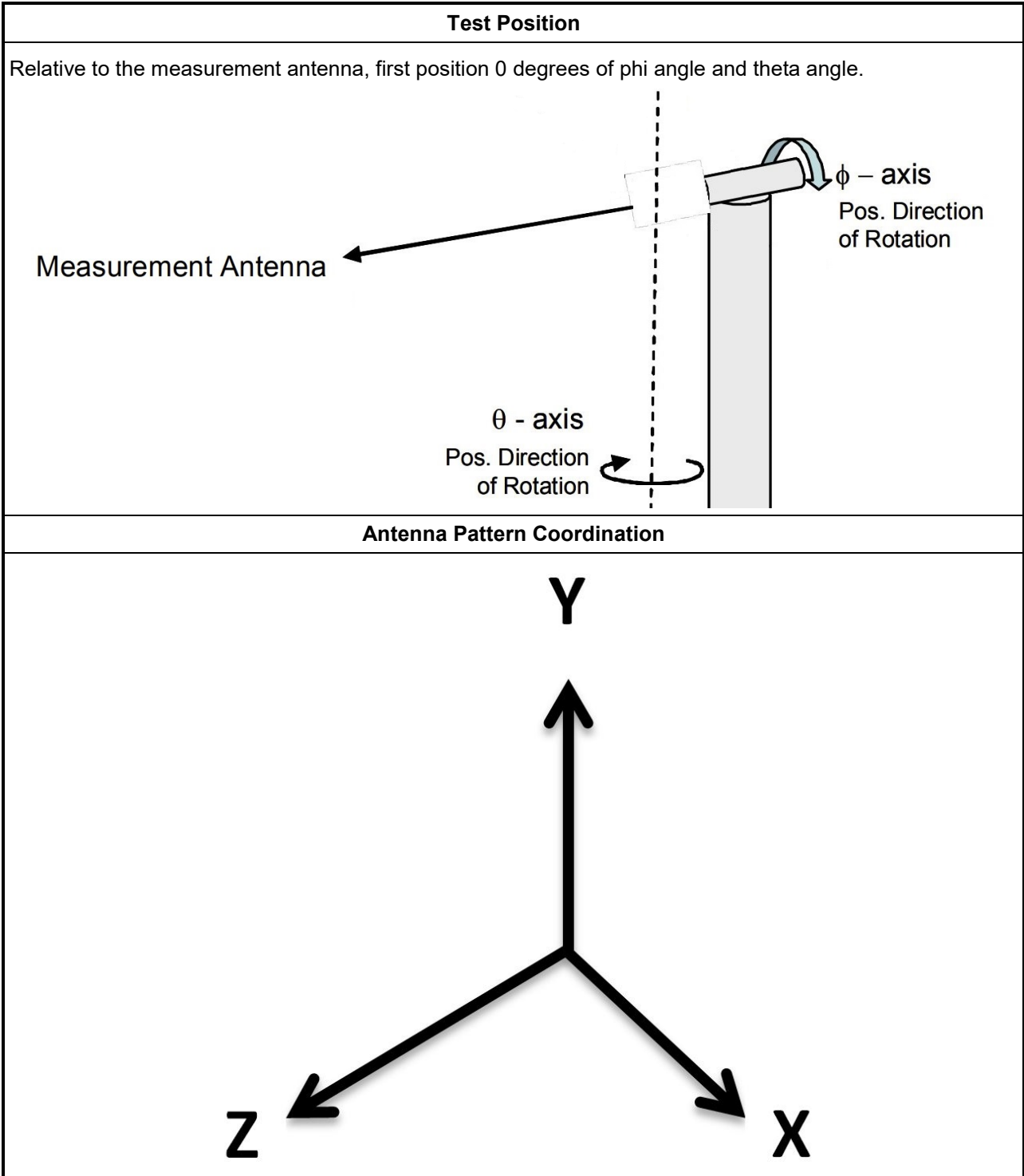


Frequency (Hz)	6.175G	6.475G	6.695G	6.995G
Ant. 1 Max Gain (dBi)	1.75	1.52	2.13	2.17
Ant. 2 Max Gain (dBi)	1.95	2.41	2.19	1.64
Ant. 3 Max Gain (dBi)	1.61	1.96	1.51	1.93
Ant. 4 Max Gain (dBi)	1.98	1.44	1.47	2.21
Ant. 1 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$	Theta/60/82.5	Theta/97.5/90	Theta/75/90	Theta/52.5/112.5
Ant. 2 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$	Theta/60/82.5	Theta/60/75	Theta/52.5/82.5	Theta/82.5/262.5
Ant. 3 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$	Theta/97.5/322.5	Theta/60/352.5	Theta/97.5/187.5	Theta/52.5/0
Ant. 4 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$	Theta/60/345	Theta/60/345	Theta/52.5/337.5	Theta/52.5/337.5
Max Gain (dBi)	1.98	2.41	2.19	2.21
DG [1SS] (dBi)	5.99	5.46	5.38	5.5
DG [2SS] (dBi)	2.99	2.46	2.38	2.5

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)

10. Test Setup



Note:

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



11. Test Equipment and Calibration Data

Instrument	Brand	Model No.	Serial No.	Characteristics	Calibration Date	Calibration Due Date
Horn Antenna	SCHWARZBECK	BBHA9120D	BBHA 9120D-1543	1GHz~18GHz	May 31, 2022	May. 30, 2023
Dual Polarization Horn Antenna	Sporton	S0209DP	S0209DP-001	2GHz~9GHz	N.C.R.	N.C.R.
ENA Series Network Analyzer	AGILENT	E5071C	MY46419201	100kHz~8.5GHz	Feb. 21, 2022	Feb. 20, 2023
VNA Calibration Kit	TS RF	TS85033E-F	-	DC~9GHz	N.C.R.	N.C.R.
Multi-axis positioner	Sporton	MAPS01	MAPS01-001	Theta / Phi axis	N.C.R.	N.C.R.
Test Software	SPORTON	SENSE-RDG	V1.0.8	-	N.C.R.	N.C.R.

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

NCR means Non-Calibration required.



12. Test Results

Please refer to the appendix.

Appendix A – Radiated Composite Gain of 2.4GHz and 5GHz U-NII 1 ~ 3.....	Page 16
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Appendix C – Antenna Pattern of 2.4GHz and 5GHz U-NII 1 ~ 3.....	Page 41
Appendix D – Antenna Pattern of 6GHz U-NII 5 ~ 8.....	Page 48
Appendix E – Test Photos.....	Page 54



Freq(Hz)	2.45G	5.2G	5.3G	5.6G	5.785G
Ant. 1 Max Gain (dBi)	2.09	1.52	1.17	1.98	1.08
Ant. 2 Max Gain (dBi)	1.84	2.29	2.9	3.09	2.51
Ant. 3 Max Gain (dBi)	2.91	2.7	3.04	2.48	3.39
Ant. 4 Max Gain (dBi)	2.14	1.21	1.19	3.23	1.87
Ant. 1 Polarization/ $\theta(^{\circ})/\Phi(^{\circ})$	Theta/97.5/165	Theta/67.5/270	Theta/67.5/270	Theta/97.5/232.5	Theta/82.5/247.5
Ant. 2 Polarization/ $\theta(^{\circ})/\Phi(^{\circ})$	Theta/52.5/262.5	Theta/60/262.5	Theta/90/97.5	Theta/60/247.5	Theta/90/97.5
Ant. 3 Polarization/ $\theta(^{\circ})/\Phi(^{\circ})$	Theta/52.5/180	Theta/60/180	Theta/60/180	Theta/90/37.5	Theta/75/195
Ant. 4 Polarization/ $\theta(^{\circ})/\Phi(^{\circ})$	Theta/60/172.5	Theta/82.5/165	Theta/82.5/157.5	Theta/82.5/180	Theta/67.5/165
Max Gain (dBi)	2.91	2.7	3.04	3.23	3.39
DG [1SS] (dBi)	5.99	4.72	5.97	5.72	5.64
DG [2SS] (dBi)	2.99	2.7	3.04	3.23	3.39



Radiated Composite Gain Data_2.4GHz, 5GHz U-NII 1~3

Appendix A

Θ(15°)	Θ(22.5°)	Θ(30°)	Θ(37.5°)	Θ(45°)	Θ(52.5°)	Θ(60°)	Θ(67.5°)	Θ(75°)	Θ(82.5°)	Θ(90°)	Θ(97.5°)	Θ(105°)	Θ(112.5°)	Θ(120°)	Θ(127.5°)	Θ(135°)	Θ(142.5°)	Θ(150°)	Θ(157.5°)	Θ(165°)	Θ(172.5°)	Θ(180°)	
-9.8/-9.14	-9.89/-7.6	-8.29/-9.66	-10.72/-11.9	-10.7/-9.79	-9.11/-9.33	-9.89/-10.52	-11.74/-12.9	-11.56/-12.23	-12.44/-12.51	-12.12/-11.16	-11.54/-11.36	-10.82/-10.26	-10.65/-11.13	-11.45/-10.99	-11.04/-12.48	-12.68/-12.63	-10.55/-8.9	-7.93/-8.51	-9.92/-10.95	-12.11/-11.39	-12.24/-12.26	-12.62/-11.57	-11.28/-10.5
Φ(15°)	Φ(15°)	Φ(15°)	Φ(15°)	Φ(15°)	Φ(15°)	Φ(15°)	Φ(15°)	Φ(15°)	Φ(15°)	Φ(15°)	Φ(15°)	Φ(15°)	Φ(15°)	Φ(15°)	Φ(15°)	Φ(15°)	Φ(15°)	Φ(15°)	Φ(15°)	Φ(15°)	Φ(15°)	Φ(15°)	Φ(15°)



Radiated Composite Gain Data_2.4GHz, 5GHz U-NII 1~3

Appendix A

Table with columns for Frequency (Freq), Gain, and various antenna configurations (Theta/Ant 1 to 2). Each cell contains a numerical value representing gain data for a specific configuration and frequency. The table is organized into blocks for different frequency ranges.



Radiated Composite Gain Data_2.4GHz, 5GHz U-NII 1~3

Appendix A

Large data table with columns for Frequency (MHz), Phi Ant 2, Gain, and various Phi values from 0 to 345 degrees. Contains numerical data for various frequency bands.



Radiated Composite Gain Data_2.4GHz, 5GHz U-NII 1~3

Appendix A

Theta	(15°)	(22.5°)	(30°)	(37.5°)	(45°)	(52.5°)	(60°)	(67.5°)	(75°)	(82.5°)	(90°)	(97.5°)	(105°)	(112.5°)	(120°)	(127.5°)	(135°)	(142.5°)	(150°)	(157.5°)	(165°)	(172.5°)	(180°)		
Gain	Φ(15°)Φ(15°)	Φ(15°)Φ(22.5°)	Φ(30°)Φ(37.5°)	Φ(45°)Φ(52.5°)	Φ(60°)Φ(67.5°)	Φ(75°)Φ(82.5°)	Φ(90°)Φ(97.5°)	Φ(105°)Φ(112.5°)	Φ(120°)Φ(127.5°)	Φ(135°)Φ(142.5°)	Φ(150°)Φ(157.5°)	Φ(165°)Φ(172.5°)	Φ(180°)Φ(187.5°)	Φ(195°)Φ(202.5°)	Φ(210°)Φ(217.5°)	Φ(225°)Φ(232.5°)	Φ(240°)Φ(247.5°)	Φ(255°)Φ(262.5°)	Φ(270°)Φ(277.5°)	Φ(285°)Φ(292.5°)	Φ(300°)Φ(307.5°)	Φ(315°)Φ(322.5°)	Φ(330°)Φ(337.5°)	Φ(345°)Φ(352.5°)	
Gain	-1.88-11.81	-17.06-11.73	-16.97-14.52	-12.78-12.57	-11.61-11.73	-13-12.74	-14.17-14.19	-14.54-15.72	-15.84-19.41	-14.81-17.44	-18.74-18.85	-15.83-17.79	-18.05-17.76	-18.85-18.65	-15.55-16.69	-14.81-14.87	-14.24-12.51	-11.99-12.13	-11.31-11.11	-11.84-13.02	-13.75-14.87	-17.29-19.49	-17.86-18.26	-18.67-18.13	
Theta	(0°)	(7.5°)	(15°)	(22.5°)	(30°)	(37.5°)	(45°)	(52.5°)	(60°)	(67.5°)	(75°)	(82.5°)	(90°)	(97.5°)	(105°)	(112.5°)	(120°)	(127.5°)	(135°)	(142.5°)	(150°)	(157.5°)	(165°)	(172.5°)	(180°)
Gain	-17.86-11.36	-18.37-17.87	-18.88-19.56	-15.73-13.78	-12.36-12.44	-11.41-11.19	-10.74-10.19	-14.10-13.03	-13.72-14.64	-13.13-14.69	-19.74-18.94	-17.37-17.76	-18.24-18.27	-18.82-18.88	-18.95-15.97	-14.21-15.68	-17.69-17.49	-13.69-13.81	-12.11-13.02	-11.84-13.03	-13.75-14.87	-17.29-19.49	-17.86-18.26	-18.67-18.13	
Theta	(0°)	(7.5°)	(15°)	(22.5°)	(30°)	(37.5°)	(45°)	(52.5°)	(60°)	(67.5°)	(75°)	(82.5°)	(90°)	(97.5°)	(105°)	(112.5°)	(120°)	(127.5°)	(135°)	(142.5°)	(150°)	(157.5°)	(165°)	(172.5°)	(180°)
Gain	-17.86-11.36	-18.37-17.87	-18.88-19.56	-15.73-13.78	-12.36-12.44	-11.41-11.19	-10.74-10.19	-14.10-13.03	-13.72-14.64	-13.13-14.69	-19.74-18.94	-17.37-17.76	-18.24-18.27	-18.82-18.88	-18.95-15.97	-14.21-15.68	-17.69-17.49	-13.69-13.81	-12.11-13.02	-11.84-13.03	-13.75-14.87	-17.29-19.49	-17.86-18.26	-18.67-18.13	



Radiated Composite Gain Data_2.4GHz, 5GHz U-NII 1~3

Appendix A

Theta	Phi	Gain	Phi(0°)	Phi(15°)	Phi(30°)	Phi(45°)	Phi(60°)	Phi(75°)	Phi(90°)	Phi(105°)	Phi(120°)	Phi(135°)	Phi(150°)	Phi(165°)	Phi(180°)	Phi(195°)	Phi(210°)	Phi(225°)	Phi(240°)	Phi(255°)	Phi(270°)	Phi(285°)	Phi(300°)	Phi(315°)	Phi(330°)	Phi(345°)
Theta(0°)	Phi(0°)	-3.33/2.99	-2.56/5.9	-4.71/4.25	-4.49/4.12	-0.79/5.91	-3.2/5.3	-5.74/5.6	-1.91/6.49	-4.43/3.73	-2.06/12.3	-2.91/1.35	1.43/1.93	3.04/2.5	0.11/0.45	0.43/1.24	-0.71/5.24	-6.15/5.64	-6.19/2.42	-3.56/6.17	-4.72/9.57	-7.61/2.83	-4.75/3.76	-4.63/5.27	-4.98/3.79	
Theta(0°)	Phi(15°)	-3.6/2.6	-4.87/8.25	-7.41/3.84	-2.94/1.17	-2.99/4.89	-4.53/6.32	-4.36/6.76	-4.3/3.87	-2.66/2.02	-0.32/3.09	-1.66/2.8	-1.3/3.7	-6.07/5.26	-4.07/5.47	-3.9/5.32	-6.33/6.69	-6.16/16.69	-7.61/8.69	-3.51/6.37	-3.12/4.81	-5.75/4.71	-5.17/2.07	-2.15/3.26	-4.8/4.31	
Theta(0°)	Phi(30°)	-1.75/0.03	-2.29/3.7	-1.09/0.8	0.95/2.21	-3.83/3.34	-5.01/3.45	-4.35/6.12	-1.97/4.39	-6.08/2.1	-5.12/2.45	-4.27/6.51	-1.27/1.88	-0.58/3.13	-0.95/3.29	-3.24/3.52	-6.51/6.58	-6.92/5.36	-6.92/5.36	-5.03/4.33	-4.93/2.73	-2.29/2.15	-1.99/1.69	-1.68/3.78	-4.39/0.03	
Theta(0°)	Phi(45°)	0.43/0.87	-1.22/1.27	1.37/0.19	1.54/5.74	-3.4/3.12	-1.45/4.84	-3/0.76	-8.15/2.34	-2.64/0.84	-1.52/1.1	-1.98/1.88	-2.29/0.17	-0.48/0.11	-1.43/1.54	-8.9/2.04	-4.1/3.63	-1.9/6.62	-2.52/4.25	-3.75/2.4	-6.46/6	-3.44/1.11	-1.9/0.56	0.1/2.02	-0.96/0.42	
Theta(0°)	Phi(60°)	0.74/1.15	-1.34/1.37	0.15/6.08	-1.96/5.81	-4.19/3.67	-1.43/8.45	-2.87/2.6	-6.74/2.89	-3.11/2.22	-1.41/0.09	-1.09/0.22	0.29/1.94	-4.23/2.59	-2.04/2.58	-7.2/3.02	-3.33/2.07	-3.01/5.67	-2.06/4.53	-3.49/3.04	-9.99/2.69	-4.26/1.71	-2.69/0.04	-0.45/3.42	-4.77/0.03	
Theta(0°)	Phi(75°)	1.39/1.31	-0.88/1.69	0.43/5.43	-1.73/3.57	-5.67/5.57	-5.67/5.57	-6.57/5.73	-2.18/6.68	-4/9.63	-12.49/4.08	-8.52/12.07	-5.96/7.2	-5.91/3.53	-2.51/6.12	-12.3/8.23	-6.75/5.98	-6.97/9	-6.21/5.16	-3.56/5.87	-14.18/3.99	-6.24/0.18	-0.48/0.79	-0.69/1.45	-4.39/0.03	
Theta(0°)	Phi(90°)	1.66/1.04	-1.22/1.33	2.08/0.93	-0.82/8.13	-2.95/5.25	-3.55/4.37	-4.31/4.95	-3.6/5.46	-8.91/16.83	-5.84/1.62	-4.11/4.82	-4.53/9.09	-4.1/4.86	-7.07/7.07	-11.8/8.15	-3.04/8.95	-17.86/11.09	-6.98/6.55	-6.46/6.35	-7.63/6.3	-5.85/3.28	0.07/1.1	-1.21/5.57	-0.61/1.24	
Theta(0°)	Phi(105°)	-2.43/5.75	-2.28/4.12	-0.95/1.25	-2.79/7	-6.9/5.34	-4.74/3.7	-6.7/5.63	-4.58/8.57	-8.18/4.58	-5.31/2.22	-4.6/4.6	-5.15/6.55	-3.63/6.35	-6.67/6	-9.29/12.32	-4.92/12.92	-11.15/8.87	-7.02/5.41	-9.67/6.36	-9.79/8.37	-5.03/5.93	-3.55/3.88	-3.66/4.08	-0.99/1.35	
Theta(0°)	Phi(120°)	-6.36/6.78	-10.82/8.35	-3.5/1.52	-8.1/1.17	-13.84/6.38	-10.61/10.7	-8.58/9.28	-8.36/8.28	-7.09/6.75	-8.27/7.58	-8.75/7.38	-8.24/14.48	-16.81/12.93	-12.96/11.6	-9.67/12.82	-4.23/13.25	-14.55/6.97	-10.38/11.75	-13.54/13.64	-14.38/17.63	-4.95/8.7	-9.68/7	-7.32/11.01	-8.33/4.93	
Theta(0°)	Phi(135°)	-7.03/8.74	-10.36/12.01	-16.1/10.88	-8.97/7.62	-12.3/14.31	-14.76/11.23	-16.5/13.77	-12.46/18.09	-14.83/11.96	-17.72/12.04	-9.56/5.2	-4.85/5.83	-5.11/6.53	-6.8/9.57	-17.3/8.72	-18.84/10.25	-17.94/12.82	-10.56/12.41	-18.61/14	-18.2/8.27	-5.18/10.48	-14.87/9.7	-10.49/6.81	-8.14/9.78	
Theta(0°)	Phi(150°)	-11.92/13.35	-13.09/10.39	-7.68/8.81	-5.36/6.03	-10.33/11.74	-12.94/13.95	-12.77/11.94	-8.24/11.21	-11.08/14.36	-12.84/13.53	-11.35/12.05	-13.93/12.94	-17.75/14.39	-12.13/11.8	-11.97/18.17	-15.23/19.29	-13.17/17.13	-11.77/18.18	-11.39/14.07	-10.94/12.69	-4.83/4.67	-7.26/13.39	-13.28/14.91	-13.28/14.91	
Theta(0°)	Phi(165°)	-2.63/3.21	-4.55/5.4	-7.2/10.3	-13.1/12.16	-10.58/9.26	-17.93/13.72	-10.5/3.65	-4.44/10.89	-13.95/11.37	-8.56/14.9	-17.73/18.37	-11.93/10	-15.16/18.9	-14.77/12.12	-6.93/11.3	-18.29/16.44	-13.06/9.02	-7.61/10.42	-11.29/15.38	-11.89/17.31	-7.83/5.34	-4.97/5.79	-3.92/3.69	-3.92/3.69	
Theta(0°)	Phi(180°)	-7.11/8.06	-6.47/5.82	-5.27/6.2	-9.18/7.51	-7.42/9.49	-7.44/6.35	-7.99/9.47	-9.95/7.27	-7.16/13.81	-15.14/17.23	-18.53/18.02	-18.98/18.72	-16.1/15.89	-17.15/18.15	-13.88/18.57	-19.06/18.77	-11.57/6.43	-5.69/6.6	-9.62/13.83	-12.29/14.96	-18.18/12.02	-9.72/7.73	-4.32/4.37	-5.57/5.59	
Theta(0°)	Phi(195°)	-9.46/7.73	-9.35/9.75	-9.27/7.52	-5.16/6.57	-12.25/10.3	-8.4/14.19	-11.94/9.63	-4.66/5.03	-6.8/13.09	-11.94/6.39	-7.22/8.27	-9.64/8.49	-8.53/2.25	-12.78/15.03	-13.69/12.79	-12.92/15.15	-7.09/2.73	-8.7/11.8	-12.61/14.18	-18.55/16.39	-10.56/9.05	-10.96/9.84	-9.07/11.72	-9.07/11.72	
Theta(0°)	Phi(210°)	-7.18/2.1	-8.25/9.16	-10.2/10.8	-11.54/9.21	-6.9/8.02	-9.09/7.97	-6.29/9.74	-9.36/13.28	-18.41/19	-14.31/9.67	-8.28/9.03	-9.97/11.09	-11.76/10.73	-9.34/8.06	-8.16/10.89	-15.37/14.78	-12.33/12.99	-12.41/13.96	-14.85/14.57	-11.31/10.53	-11.42/12.6	-12.75/9.43	-6.9/6.72	-6.17/5.75	
Theta(0°)	Phi(225°)	-9.62/9.01	-8.09/7.48	-7.51/7.99	-8.39/10.37	-15.24/18.18	-12.18/9.23	-8.69/9.61	-12.46/16.12	-19.37/18.28	-14.14/11.3	-11.18/12.76	-12.75/14.07	-11.78/9.02	-8.61/8.33	-8.27/10.31	-12.3/13.99	-15.98/17.44	-19.2/18.41	-16.78/13.56	-10.44/9	-9.04/8.96	-9.12/10.6	-10.93/10.51	-10.73/11.47	
Theta(0°)	Phi(240°)	-17.45/19.05	-17.97/18.23	-18.13/18.94	-19.35/15.53	-12.53/10.94	-10.91/11.45	-10.05/15.23	-15.03/12.78	-12.73/14.99	-18.49/18.42	-17.16/18.96	-19.06/18.86	-18.06/17.79	-17.66/18.95	-18.6/17.06	-16.69/18.83	-19.04/18.12	-17.92/15.67	-14.46/13.9	-12.6/11.36	-11.77/12.95	-12.97/13.83	-15.04/16.54	-16.22/15.23	
Theta(0°)	Phi(255°)	5.6/Pol.	PhiAnt. 3																							
Theta(0°)	Gain	Phi(0°)	Phi(15°)	Phi(30°)	Phi(45°)	Phi(60°)	Phi(75°)	Phi(90°)	Phi(105°)	Phi(120°)	Phi(135°)	Phi(150°)	Phi(165°)	Phi(180°)	Phi(195°)	Phi(210°)	Phi(225°)	Phi(240°)	Phi(255°)	Phi(270°)	Phi(285°)	Phi(300°)	Phi(315°)	Phi(330°)	Phi(345°)	
Theta(0°)	Gain	Phi(0°)	Phi(15°)	Phi(30°)	Phi(45°)	Phi(60°)	Phi(75°)	Phi(90°)	Phi(105°)	Phi(120°)	Phi(135°)	Phi(150°)	Phi(165°)	Phi(180°)	Phi(195°)	Phi(210°)	Phi(225°)	Phi(240°)	Phi(255°)	Phi(270°)	Phi(285°)	Phi(300°)	Phi(315°)	Phi(330°)	Phi(345°)	
Theta(0°)	Gain	Phi(0°)	Phi(15°)	Phi(30°)	Phi(45°)	Phi(60°)	Phi(75°)	Phi(90°)	Phi(105°)	Phi(120°)	Phi(135°)	Phi(150°)	Phi(165°)	Phi(180°)	Phi(195°)	Phi(210°)	Phi(225°)	Phi(240°)	Phi(255°)	Phi(270°)	Phi(285°)	Phi(300°)	Phi(315°)	Phi(330°)	Phi(345°)	



Radiated Composite Gain Data_2.4GHz, 5GHz U-NII 1~3

Appendix A

Theta (112.5°)	-2.82/-2.8	-2.92/1.65	-1.13/-3.1	-5.38/-6.39	-2.29/-1.84	-7.47/-21.1	-3.99/-12.2	-0.59/-15.64	-10.65/-6.59	-3.6/-2.56	-2.11/-6.49	-9.33/-10.48	-7.18/-22.2	-4.02/-4.57	-7.57/-12.74	-9.86/-10.2	-19.31/-11.2	-9.53/-7.45	-8.45/-17.36	-9.79/-15.4	-3.93/-2.48	-1/2.25	-3.04/-3.41	-1.92/-0.55		
Theta (120°)	-7.05/-6.11	-3.99/-4.68	-5.07/-5.31	-12.23/-4.59	-8.72/-3.99	-8.83/-3.74	-7.58/-6.06	-3.03/-18.99	-6.02/-3.49	-5.35/-7.17	-5.55/-16.81	-8.69/-17.76	-16.29/-17.65	-8.66/-17.67	-11.54/-14.74	-5.89/-15.99	-16.02/-8.87	-17.93/-10.01	-10.55/-17.36	-18.32/-5.68	-13.16/-6.91	-3.43/-6.19	-8.73/-11.96	-5.67/-4.54		
Theta (127.5°)	-18.56/-18.68	-18.11/-9.41	-10.42/-13.53	-10.01/-15.85	-12.88/-8.24	-10.98/-13.31	-11.62/-16.66	-6.67/-18.5	-15.11/-6.33	-8.35/-10.62	-19.15/-10.36	-2.92/-7.77	-12.69/-3.95	-6.83/-11	-18.92/-9.73	-10.95/-10.83	-9.75/-11.45	-10.67/-16.3	-12.66/-14.02	-16.16/-15.03	-13.09/-13.99	-16.95/-17.56	-16.96/-11.97	-18.61/-16.05		
Theta (135°)	-7.88/-8.77	-11.48/-18.83	-9.57/-9.63	-13.27/-15.27	-17.67/-15.44	-9.98/-14.38	-18.35/-18.86	-17.71/-9.55	-7.16/-15.17	-9.96/-6.62	-8.68/-16.21	-14.3/-10.59	-11.48/-18.82	-18.34/-17.05	-15.64/-9.81	-12.15/-25	-16.11/-17.12	-16.44/-15.68	-18.79/-18.45	-18.52/-19.25	-6.11/-14.6	-6.41/-10.92	-12.85/-12	-10.88/-7.3		
Theta (142.5°)	-8.36/-7.55	-6.79/-6.54	-7.48/-9.23	-11.11/-7.7	-8.84/-12.68	-7.37/-8.3	-9.61/-17.03	-12.04/-7.97	-4.25/-5.26	-14.48/-12.11	-12.71/-10.5	-8.38/-10.25	-18.26/-15.2	-10.69/-8.4	-7.66/-10.62	-18.35/-15.88	-10.48/-9.54	-9.18/-18.09	-17.82/-17.45	-12.26/-17.82	-14.46/-15.34	-12.36/-10.63	-14.66/-5.5	-2.63/-4.58	-7.58/-12.34	-14.6/-12.19
Theta (150°)	-3.37/-2.46	-2.62/-2.56	-4.05/-6.06	-5.41/-5.56	-5.88/-3.16	-2.56/-7.8	-14.03/-8.69	-5.22/-5.71	-5.42/-5.05	-10.94/-13.25	-12.22/-11.74	-12.12/-15.9	-13.22/-12.15	-14.95/-14.68	-11.78/-10.17	-12.18/-13.1	-9.58/-8.73	-8.06/-10.01	-14.16/-15.34	-12.62/-10.83	-6.46/-6.5	-5.44/-5.37	-6.95/-6.39	-6.65/-6.76		
Theta (157.5°)	-5.47/-6.93	-5.51/-3.59	-2.56/-2.23	-3.43/-4.19	-4.98/-8.44	-11.26/-7.47	-4.61/-5.61	-10.02/-11.01	-6.96/-6.17	-6.51/-8.24	-9.31/-10.67	-11.68/-16.8	-19.02/-14.76	-11.58/-6.79	-6.93/-9.12	-10.08/-8.21	-6.85/-5.98	-5.83/-9.86	-11.74/-10.73	-13.49/-11.99	-6.72/-5.11	-3.53/-1.61	-1.29/-1.64	-2.09/-3.09		
Theta (165°)	-7.92/-7.91	-6.64/-6.35	-7.53/-10.33	-12.56/-5.65	-3.82/-3.28	-5.72/-11.35	-16.29/-11.66	-8.47/-6.75	-3.47/-7.46	-6.11/-9.32	-12.74/-12.03	-13.62/-16.57	-16.31/-16.68	-11.75/-8.82	-8.82/-8.66	-10.92/-8.36	-6.74/-6.51	-8.13/-12.52	-12.11/-11.3	-12.55/-10.57	-6.79/-4.41	-4.34/-9.99	-6.03/-5.95	-6.76/-7.33		
Theta (172.5°)	-3.14/-3.88	-4.91/-4.89	-4.53/-3.85	-3.34/-3.49	-6.31/-9.75	-13.91/-12.01	-11.11/-6.5	-12.79/-12.25	-13.11/-15.05	-18.21/-19.14	-18.23/-14.06	-15.22/-18.11	-16.66/-19.1	-18.07/-18.39	-19.23/-18.91	-14.71/-13.06	-12.87/-11.67	-12.24/-14.39	-14.31/-14.31	-14.79/-13.43	-11.46/-8.76	-8.6/-5.42	-4.65/-3.53	-2.93/-2.82		
Theta (180°)	-7.12/-5.94	-5.05/-4.7	-5.37/-5.74	-7.39/-11.84	-17.69/-16.45	-12.66/-13.65	-19.22/-18.09	-19.01/-18.93	-16.47/-17.05	-18.89/-18.86	-17.96/-11.87	-9.13/-8.14	-8.36/-9.83	-9.99/-10.48	-10.41/-10.16	-10.68/-11.62	-13.36/-13.82	-15.37/-17.87	-19.23/-18.74	-18.74/-18.48	-18.74/-18.72	-15.13/-16	-11.34/-10.73	-11.12/-11.27		
Gain	Phi(7.5°)	Phi(15°)	Phi(30°)	Phi(45°)	Phi(60°)	Phi(75°)	Phi(90°)	Phi(105°)	Phi(120°)	Phi(135°)	Phi(150°)	Phi(165°)	Phi(180°)	Phi(195°)	Phi(210°)	Phi(225°)	Phi(240°)	Phi(255°)	Phi(270°)	Phi(285°)	Phi(300°)	Phi(315°)	Phi(330°)	Phi(345°)		
Gain	Phi(7.5°)	Phi(15°)	Phi(30°)	Phi(45°)	Phi(60°)	Phi(75°)	Phi(90°)	Phi(105°)	Phi(120°)	Phi(135°)	Phi(150°)	Phi(165°)	Phi(180°)	Phi(195°)	Phi(210°)	Phi(225°)	Phi(240°)	Phi(255°)	Phi(270°)	Phi(285°)	Phi(300°)	Phi(315°)	Phi(330°)	Phi(345°)		
Gain	Phi(7.5°)	Phi(15°)	Phi(30°)	Phi(45°)	Phi(60°)	Phi(75°)	Phi(90°)	Phi(105°)	Phi(120°)	Phi(135°)	Phi(150°)	Phi(165°)	Phi(180°)	Phi(195°)	Phi(210°)	Phi(225°)	Phi(240°)	Phi(255°)	Phi(270°)	Phi(285°)	Phi(300°)	Phi(315°)	Phi(330°)	Phi(345°)		
Gain	Phi(7.5°)	Phi(15°)	Phi(30°)	Phi(45°)	Phi(60°)	Phi(75°)	Phi(90°)	Phi(105°)	Phi(120°)	Phi(135°)	Phi(150°)	Phi(165°)	Phi(180°)	Phi(195°)	Phi(210°)	Phi(225°)	Phi(240°)	Phi(255°)	Phi(270°)	Phi(285°)	Phi(300°)	Phi(315°)	Phi(330°)	Phi(345°)		
Gain	Phi(7.5°)	Phi(15°)	Phi(30°)	Phi(45°)	Phi(60°)	Phi(75°)	Phi(90°)	Phi(105°)	Phi(120°)	Phi(135°)	Phi(150°)	Phi(165°)	Phi(180°)	Phi(195°)	Phi(210°)	Phi(225°)	Phi(240°)	Phi(255°)	Phi(270°)	Phi(285°)	Phi(300°)	Phi(315°)	Phi(330°)	Phi(345°)		
Gain	Phi(7.5°)	Phi(15°)	Phi(30°)	Phi(45°)	Phi(60°)	Phi(75°)	Phi(90°)	Phi(105°)	Phi(120°)	Phi(135°)	Phi(150°)	Phi(165°)	Phi(180°)	Phi(195°)	Phi(210°)	Phi(225°)	Phi(240°)	Phi(255°)	Phi(270°)	Phi(285°)	Phi(300°)	Phi(315°)	Phi(330°)	Phi(345°)		
Gain	Phi(7.5°)	Phi(15°)	Phi(30°)	Phi(45°)	Phi(60°)	Phi(75°)	Phi(90°)	Phi(105°)	Phi(120°)	Phi(135°)	Phi(150°)	Phi(165°)	Phi(180°)	Phi(195°)	Phi(210°)	Phi(225°)	Phi(240°)	Phi(255°)	Phi(270°)	Phi(285°)	Phi(300°)	Phi(315°)	Phi(330°)	Phi(345°)		
Gain	Phi(7.5°)	Phi(15°)	Phi(30°)	Phi(45°)	Phi(60°)	Phi(75°)	Phi(90°)	Phi(105°)	Phi(120°)	Phi(135°)	Phi(150°)	Phi(165°)	Phi(180°)	Phi(195°)	Phi(210°)	Phi(225°)	Phi(240°)	Phi(255°)	Phi(270°)	Phi(285°)	Phi(300°)	Phi(315°)	Phi(330°)	Phi(345°)		
Gain	Phi(7.5°)	Phi(15°)	Phi(30°)	Phi(45°)	Phi(60°)	Phi(75°)	Phi(90°)	Phi(105°)	Phi(120°)	Phi(135°)	Phi(150°)	Phi(165°)	Phi(180°)	Phi(195°)	Phi(210°)	Phi(225°)	Phi(240°)	Phi(255°)	Phi(270°)	Phi(285°)	Phi(300°)	Phi(315°)	Phi(330°)	Phi(345°)		
Gain	Phi(7.5°)	Phi(15°)	Phi(30°)	Phi(45°)	Phi(60°)	Phi(75°)	Phi(90°)	Phi(105°)	Phi(120°)	Phi(135°)	Phi(150°)	Phi(165°)	Phi(180°)	Phi(195°)	Phi(210°)	Phi(225°)	Phi(240°)	Phi(255°)	Phi(270°)	Phi(285°)	Phi(300°)	Phi(315°)	Phi(330°)	Phi(345°)		
Gain	Phi(7.5°)	Phi(15°)	Phi(30°)	Phi(45°)	Phi(60°)	Phi(75°)	Phi(90°)	Phi(105°)	Phi(120°)	Phi(135°)	Phi(150°)	Phi(165°)	Phi(180°)	Phi(195°)	Phi(210°)	Phi(225°)	Phi(240°)	Phi(255°)	Phi(270°)	Phi(285°)	Phi(300°)	Phi(315°)	Phi(330°)	Phi(345°)		
Gain	Phi(7.5°)	Phi(15°)	Phi(30°)	Phi(45°)	Phi(60°)	Phi(75°)	Phi(90°)	Phi(105°)	Phi(120°)	Phi(135°)	Phi(150°)	Phi(165°)	Phi(180°)	Phi(195°)	Phi(210°)	Phi(225°)	Phi(240°)	Phi(255°)	Phi(270°)	Phi(285°)	Phi(300°)	Phi(315°)	Phi(330°)	Phi(345°)		
Gain	Phi(7.5°)	Phi(15°)	Phi(30°)	Phi(45°)	Phi(60°)	Phi(75°)	Phi(90°)	Phi(105°)	Phi(120°)	Phi(135°)	Phi(150°)	Phi(165°)	Phi(180°)	Phi(195°)	Phi(210°)	Phi(225°)	Phi(240°)	Phi(255°)	Phi(270°)	Phi(285°)	Phi(300°)	Phi(315°)	Phi(330°)	Phi(345°)		
Gain	Phi(7.5°)	Phi(15°)	Phi(30°)	Phi(45°)	Phi(60°)	Phi(75°)	Phi(90°)	Phi(105°)	Phi(120°)	Phi(135°)	Phi(150°)	Phi(165°)	Phi(180°)	Phi(195°)	Phi(210°)	Phi(225°)	Phi(240°)	Phi(255°)	Phi(270°)	Phi(285°)	Phi(300°)	Phi(315°)	Phi(330°)	Phi(345°)		
Gain	Phi(7.5°)	Phi(15°)	Phi(30°)	Phi(45°)	Phi(60°)	Phi(75°)	Phi(90°)	Phi(105°)	Phi(120°)	Phi(135°)	Phi(150°)	Phi(165°)	Phi(180°)	Phi(195°)	Phi(210°)	Phi(225°)	Phi(240°)	Phi(255°)	Phi(270°)	Phi(285°)	Phi(300°)	Phi(315°)	Phi(330°)	Phi(345°)		
Gain	Phi(7.5°)	Phi(15°)	Phi(30°)	Phi(45°)	Phi(60°)	Phi(75°)	Phi(90°)	Phi(105°)	Phi(120°)	Phi(135°)	Phi(150°)	Phi(165°)	Phi(180°)	Phi(195°)	Phi(210°)	Phi(225°)	Phi(240°)	Phi(255°)	Phi(270°)	Phi(285°)	Phi(300°)	Phi(315°)	Phi(330°)	Phi(345°)		
Gain	Phi(7.5°)	Phi(15°)	Phi(30°)	Phi(45°)	Phi(60°)	Phi(75°)	Phi(90°)	Phi(105°)	Phi(120°)	Phi(135°)	Phi(150°)	Phi(165°)	Phi(180°)	Phi(195°)	Phi(210°)	Phi(225°)	Phi(240°)	Phi(255°)	Phi(270°)	Phi(285°)	Phi(300°)	Phi(315°)	Phi(330°)	Phi(345°)		
Gain	Phi(7.5°)	Phi(15°)	Phi(30°)	Phi(45°)	Phi(60°)	Phi(75°)	Phi(90°)	Phi(105°)	Phi(120°)	Phi(135°)	Phi(150°)	Phi(165°)	Phi(180°)	Phi(195°)	Phi(210°)	Phi(225°)	Phi(240°)	Phi(255°)	Phi(270°)	Phi(285°)	Phi(300°)	Phi(315°)	Phi(330°)	Phi(345°)		
Gain	Phi(7.5°)	Phi(15°)	Phi(30°)	Phi(45°)	Phi(60°)	Phi(75°)	Phi(90°)	Phi(105°)	Phi(120°)	Phi(135°)	Phi(150°)	Phi(165°)	Phi(180°)	Phi(195°)	Phi(210°)	Phi(225°)	Phi(240°)	Phi(255°)	Phi(270°)	Phi(285°)	Phi(300°)	Phi(315°)	Phi(330°)	Phi(345°)		
Gain	Phi(7.5°)	Phi(15°)	Phi(30°)	Phi(45°)	Phi(60°)	Phi(75°)	Phi(90°)	Phi(105°)	Phi(120°)	Phi(135°)	Phi(150°)	Phi(165°)	Phi(180°)	Phi(195°)	Phi(210°)	Phi(225°)	Phi(240°)	Phi(255°)	Phi(270°)	Phi(285°)	Phi(300°)	Phi(315°)	Phi(330°)	Phi(345°)		
Gain	Phi(7.5°)	Phi(15°)	Phi(30°)	Phi(45°)	Phi(60°)	Phi(75°)	Phi(90°)	Phi(105°)	Phi(120°)	Phi(135°)	Phi(150°)	Phi(165°)	Phi(180°)	Phi(195°)	Phi(210°)	Phi(225°)	Phi(240°)	Phi(255°)	Phi(270°)	Phi(285°)	Phi(300°)	Phi(315°)	Phi(330°)	Phi(345°)		
Gain	Phi(7.5°)	Phi(15°)	Phi(30°)	Phi(45°)	Phi(60°)	Phi(75°)	Phi(90°)	Phi(105°)	Phi(120°)	Phi(135°)	Phi(150°)	Phi(165°)	Phi(180°)	Phi(195°)	Phi(210°)	Phi(225°)	Phi(240°)	Phi(255°)	Phi(270°)	Phi(285°)	Phi(300°)	Phi(315°)	Phi(330°)	Phi(345°)		
Gain	Phi(7.5°)	Phi(15°)	Phi(30°)	Phi(45°)	Phi(60°)	Phi(75°)	Phi(90°)	Phi(105°)	Phi(120°)	Phi(135°)	Phi(150°)	Phi(165°)	Phi(180°)	Phi(195°)	Phi(210°)	Phi(225°)	Phi(240°)	Phi(255°)	Phi(270°)	Phi(285°)	Phi(300°)	Phi(315°)	Phi(330°)	Phi(345°)		
Gain	Phi(7.5°)	Phi(15°)	Phi(30°)	Phi(45°)	Phi(60°)	Phi(75°)	Phi(90°)	Phi(105°)	Phi(120°)	Phi(135°)	Phi(150°)	Phi(165°)	Phi(180°)	Phi(195°)	Phi(210°)	Phi(225°)	Phi(240°)	Phi(255°)	Phi(270°)	Phi(285°)	Phi(300°)	Phi(315°)	Phi(330°)	Phi(345°)		
Gain	Phi(7.5°)	Phi(15°)	Phi(30°)	Phi(45°)	Phi(60°)	Phi(75°)	Phi(90°)	Phi(105°)	Phi(120°)	Phi(135°)	Phi(150°)	Phi(165°)	Phi(180°)	Phi(195°)	Phi(210°)	Phi(225°)	Phi(240°)	Phi(255°)	Phi(270°)	Phi(285°)	Phi(300°)	Phi(315°)	Phi(330°)	Phi(345°)		
Gain	Phi(7.5°)	Phi(15°)	Phi(30°)	Phi(45°)	Phi(60°)	Phi(75°)	Phi(90°)	Phi(105°)	Phi(120°)	Phi(135°)	Phi(150°)	Phi(165°)	Phi(180°)	Phi(195°)	Phi(210°)	Phi(225°)	Phi(240°)	Phi(255°)	Phi(270°)	Phi(285°)	Phi(300°)	Phi(315°)	Phi(330°)	Phi(345°)		
Gain	Phi(7.5°)	Phi(15°)	Phi(30°)	Phi(45°)	Phi(60°)	Phi(75°)	Phi(90°)	Phi(105°)	Phi(120°)	Phi(135°)	Phi(150°)	Phi(165°)	Phi(180°)	Phi(195°)	Phi(210°)	Phi(225°)	Phi(240°)	Phi(255°)	Phi(270°)	Phi(285°)	Phi(300°)	Phi(315°)	Phi(330°)	Phi(345°)		
Gain	Phi(7.5°)	Phi(15°)	Phi(30°)	Phi(45°)	Phi(60°)	Phi(75°)	Phi(90°)	Phi(105°)	Phi(120°)	Phi(135°)	Phi(150°)	Phi(165°)	Phi(180°)	Phi(195°)	Phi(210°)	Phi(225°)	Phi(240°)	Phi(255°)	Phi(270°)	Phi(285°)	Phi(300°)	Phi(315°)	Phi(330°)	Phi(345°)		
Gain	Phi(7.5°)	Phi(15°)	Phi(30°)	Phi(45°)	Phi(60°)	Phi(75°)	Phi(90°)	Phi(105°)	Phi(120°)	Phi(135°)	Phi(150°)	Phi(165°)	Phi(180°)	Phi(195°)	Phi(210°)	Phi(225°)	Phi(240°)	Phi(255°)	Phi(270°)	Phi(285°)	Phi(300°)	Phi(315°)	Phi(330°)	Phi(345°)		
Gain	Phi(7.5°)	Phi(15°)	Phi(30°)	Phi(45°)	Phi(60°)	Phi(75°)	Phi(90°)	Phi(105°)	Phi(120°)	Phi(135°)	Phi(150°)	Phi(165°)	Phi(180°)	Phi(195°)	Phi(210°)	Phi(225°)	Phi(240°)	Phi(255°)	Phi(270°)	Phi(285°)	Phi(300°)	Phi(315°)	Phi(330°)	Phi(345°)		
Gain	Phi(7.5°)	Phi(15°)	Phi(30°)	Phi(45°)	Phi(60°)	Phi(75°)	Phi(90°)	Phi(105°)	Phi(120°)	Phi(135°)	Phi(150°)	Phi(165°)	Phi(180°)	Phi(195°)	Phi(210°)	Phi(225°)	Phi(240°)	Phi(255°)	Phi(270°)	Phi(285°)	Phi(300°)	Phi(315°)	Phi(330°)	Phi(345°)		

Freq(Hz)	6.175G	6.475G	6.695G	6.995G
Ant. 1 Max Gain (dBi)	1.75	1.52	2.13	2.17
Ant. 2 Max Gain (dBi)	1.95	2.41	2.19	1.64
Ant. 3 Max Gain (dBi)	1.61	1.96	1.51	1.93
Ant. 4 Max Gain (dBi)	1.98	1.44	1.47	2.21
Ant. 1 Polarization/ θ (°)/ ϕ (°)	Theta/60/82.5	Theta/97.5/90	Theta/75/90	Theta/52.5/112.5
Ant. 2 Polarization/ θ (°)/ ϕ (°)	Theta/60/82.5	Theta/60/75	Theta/52.5/82.5	Theta/82.5/262.5
Ant. 3 Polarization/ θ (°)/ ϕ (°)	Theta/97.5/322.5	Theta/60/352.5	Theta/97.5/187.5	Theta/52.5/0
Ant. 4 Polarization/ θ (°)/ ϕ (°)	Theta/60/345	Theta/60/345	Theta/52.5/337.5	Theta/52.5/337.5
Max Gain (dBi)	1.98	2.41	2.19	2.21
DG [1SS] (dBi)	5.99	5.46	5.38	5.5
DG [2SS] (dBi)	2.99	2.46	2.38	2.5

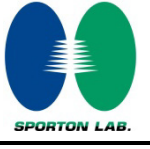


Radiated Composite Gain Data_6GHz U-NII 5~8

Appendix B

DG 1SS Result

Table with 31 columns for frequency bands (e.g., 6.175G/Pol, Phi(0)Phi(7.5)) and multiple rows of data points representing gain measurements across various frequencies and polarizations.



Gain Result

Table with columns for Frequency (Freq/Hz), Polarization (Pol.), and various Gain values for 28 different antenna configurations (e.g., PhiAnt. 1, 2, ..., PhiAnt. 28). Rows list gain results for frequencies from 6.175GHz to 6.895GHz.



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Theta	(22.5°)	(30°)	(37.5°)	(45°)	(52.5°)	(60°)	(67.5°)	(75°)	(82.5°)	(90°)	(97.5°)	(105°)	(112.5°)	(120°)	(127.5°)	(135°)	(142.5°)	(150°)	(157.5°)	(165°)	(172.5°)	(180°)	(187.5°)	(195°)	(202.5°)	(210°)	(217.5°)	(225°)	(232.5°)	(240°)	(247.5°)	(255°)	(262.5°)	(270°)	(277.5°)	(285°)	(292.5°)	(300°)	(307.5°)	(315°)	(322.5°)	(330°)	(337.5°)	(345°)
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°)																				
6.955GHz Pol. ThetaAnt. 1	-11.37/-11.57	-10.43/-13.3	-18.66/-18.8	-16.05/-19.13	-17.47/-18.97	-14.15/-15.89	-16.51/-18.55	-19.14/-19.06	-18.23/-18.25	-18.82/-18.26	-18.27/-15.34	-13.09/-13.04	-11.79/-11.8	-13.96/-11.7	-16.79/-18.52	-17.71/-19.42	-18.76/-19.28	-18.29/-18.23	-17.72/-18.96	-17.77/-18.87	-18.28/-17.48	-16.65/-18.07	-16.69/-19.27	-18.17/-17.57																				



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Theta	(75°)	(82.5°)	(90°)	(97.5°)	(105°)	(112.5°)	(120°)	(127.5°)	(135°)	(142.5°)	(150°)	(157.5°)	(165°)	(172.5°)	(180°)	Freq(Hz)	6.175GPol.	ThetaAnt 2	(75°)	(82.5°)	(90°)	(97.5°)	(105°)	(112.5°)	(120°)	(127.5°)	(135°)	(142.5°)	(150°)	(157.5°)	(165°)	(172.5°)	(180°)																			
Gain	(75°)	(82.5°)	(90°)	(97.5°)	(105°)	(112.5°)	(120°)	(127.5°)	(135°)	(142.5°)	(150°)	(157.5°)	(165°)	(172.5°)	(180°)	(180°)	6.175GPol.	ThetaAnt 2	(75°)	(82.5°)	(90°)	(97.5°)	(105°)	(112.5°)	(120°)	(127.5°)	(135°)	(142.5°)	(150°)	(157.5°)	(165°)	(172.5°)	(180°)	6.175GPol.	ThetaAnt 2	(75°)	(82.5°)	(90°)	(97.5°)	(105°)	(112.5°)	(120°)	(127.5°)	(135°)	(142.5°)	(150°)	(157.5°)	(165°)	(172.5°)	(180°)	6.175GPol.	ThetaAnt 2
Gain	(75°)	(82.5°)	(90°)	(97.5°)	(105°)	(112.5°)	(120°)	(127.5°)	(135°)	(142.5°)	(150°)	(157.5°)	(165°)	(172.5°)	(180°)	(180°)	6.175GPol.	ThetaAnt 2	(75°)	(82.5°)	(90°)	(97.5°)	(105°)	(112.5°)	(120°)	(127.5°)	(135°)	(142.5°)	(150°)	(157.5°)	(165°)	(172.5°)	(180°)	6.175GPol.	ThetaAnt 2	(75°)	(82.5°)	(90°)	(97.5°)	(105°)	(112.5°)	(120°)	(127.5°)	(135°)	(142.5°)	(150°)	(157.5°)	(165°)	(172.5°)	(180°)	6.175GPol.	ThetaAnt 2



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Theta (°)	Theta (°)	Theta (°)	Theta (°)	Theta (°)	Theta (°)	Theta (°)	Theta (°)	Theta (°)	Theta (°)	Theta (°)	Theta (°)	Theta (°)	Theta (°)	Theta (°)	Theta (°)	Theta (°)	Theta (°)	Theta (°)	Theta (°)	Theta (°)	Theta (°)	Theta (°)	Theta (°)	Theta (°)	Theta (°)	Theta (°)	Theta (°)	Theta (°)	Theta (°)	Theta (°)	Theta (°)	Theta (°)	Theta (°)	Theta (°)	Theta (°)	Theta (°)	Theta (°)	Theta (°)	Theta (°)	
Theta (127.5°)	-15.52-18.11	-15.67-19.12	-14.41-15.41	-18.61-17.85	-14.92-18.81	-18.04-18.04	-18.91-18.63	-18.59-17.17	-18.09-18.12	-14.91-18.64	-17.96-15.88	-17.02-14.06	-11.36-13.92	-13.78-16.01	-14.81-13.76	-13.05-18.84	-10.23-13.57	-18.79-15.31	-16-19.02	-17.82-17.28	-16.56-17.69	-18.52-17.69	-13.56-18	-18.23-19.38																
Theta (135°)	-12.48-13.98	-19.24-19.15	-18.83-14	-11.2-18.1	-17.55-18.83	-15.41-18.64	-18.52-19.31	-17.7-16.49	-17.79-13.11	-14.2-13.87	-11.73-19.07	-12.34-16.15	-18.18-18.47	-18.27-18.12	-18.21-16.51	-12.62-11.07	-14.59-13.57	-18.88-14.51	-15.46-18.57	-13.49-17.28	-12.71-14.91	-17.11-15.97	-17.53-18.81	-14.36-11.29																
Theta (142.5°)	-15.92-19.39	-18.95-12.96	-12.59-12.56	-12.61-13.59	-15.38-17.63	-18.81-18.45	-18.38-18.18	-18.17-19.29	-13.34-18.91	-18.48-15.47	-15.98-9.02	-7.89-10.42	-11.94-16.49	-16.26-18.77	-17.96-19.1	-17.89-18.3	-17.54-16.41	-10.99-10.55	-18.86-18.96	-17.58-14.92	-11.59-11.17	-18.55-16.48	-14.11-14.68																	
Theta (150°)	-16.31-10.94	-13.51-17.54	-15.86-16.87	-18.41-18.98	-18.31-19.48	-18.47-14.01	-18.33-18.31	-17.02-18.81	-18.2-17.41	-18.49-17.63	-18.51-15.47	-12.85-13.12	-11.84-17.35	-12.04-10.74	-15.26-15.63	-18.26-18.79	-14.28-18.81	-13.75-17.99	-13.72-10.49	-12.09-11.77	-16.51-15.87	-18.96-11.9	-7.03-8.67	-17.97-17.21																
Theta (157.5°)	-18.45-18.93	-18.57-18.39	-13.67-14.28	-9.92-15.85	-17.98-18.43	-18.26-18.07	-18.98-14.63	-15.64-17.85	-12.21-10.65	-14.65-12.81	-18.88-17.52	-16.1-11.96	-12.92-18.16	-12.83-8.94	-8.18-10.27	-13.38-11.31	-14.88-18	-12.68-17.93	-15.79-11.47	-18.38-14.37	-11.58-8.82	-9.42-13.26	-16.47-17.57																	
Theta (165°)	-13.09-9.45	-10.18-12.48	-12.71-10.59	-15.38-17.63	-19.33-19.11	-19.61-18.14	-17.49-17.56	-15.08-15.36	-11.58-7.74	-6.15-6.44	-7.92-10.62	-11.96-13.21	-14.81-17.33	-12.59-10.9	-9.93-11.4	-10.45-10.77	-11.69-17.28	-18.07-16.56	-18.81-18.95	-19.71-14.14	-11.28-14.83	-14.67-16.59	-19.01-18.84	-18.13-16.68																
Theta (172.5°)	-12.85-11.05	-9.91-8.31	-9.25-9.1	-10.11-14.72	-13.95-15.38	-14.17-18.95	-17.9-18.54	-17.33-15.6	-12.83-10.63	-8.96-8	-7.26-7.68	-7.58-8.04	-9.45-10.48	-12.13-13.91	-17.16-17.74	-19.18-18.34	-17.05-18.25	-16.67-16.56	-18.32-18.25	-18.78-17.47	-13.22-13.54	-10.13-9.08	-11.82-17.97	-18.93-17.84																
Theta (180°)	-13.56-10.22	-7.85-6.34	-7.3-9.51	-10.40-10.51	-10.3-13.47	-14.41-15.45	-13.54-14.47	-12.16-12.76	-11.13-9.9	-9.18-7.63	-7.16-5.88	-6.99-6.93	-8.27-9.17	-9.88-9.35	-10.64-9.68	-11.13-12.45	-10.87-14.1	-12.61-14.18	-12.79-13.83	-13.96-13.42	-13.12-9.61	-9.37-11.77	-17.51-15.5	-16.46-19.06																
Gain	Phi(7.5°)	Phi(15°)	Phi(30°)	Phi(45°)	Phi(60°)	Phi(75°)	Phi(90°)	Phi(105°)	Phi(120°)	Phi(135°)	Phi(150°)	Phi(165°)	Phi(180°)	Phi(195°)	Phi(210°)	Phi(225°)	Phi(240°)	Phi(255°)	Phi(270°)	Phi(285°)	Phi(300°)	Phi(315°)	Phi(330°)	Phi(345°)																
Theta (0°)	-18.52-17.84	-18.15-18.24	-17.83-18.43	-18.89-17.8	-19.43-18.34	-18.94-18.32	-18.11-18.95	-18.86-19.35	-19.03-17.73	-17.85-19.38	-18.22-17.84	-17.37-18.25	-18.28-18.43	-18.23-17.72	-18.97-17.83	-18.59-18.06	-17.58-19.26	-18.91-17.81	-18.43-18.02	-18.58-17.77	-18.06-18.67	-18.26-18.84	-18.21-17.51	-19.01-18.01																
Theta (7.5°)	-18.01-18.37	-18.71-18.69	-17.27-18.31	-16.25-14.88	-13.33-14.28	-13.15-13.73	-13.91-15.49	-14.77-13.13	-16.63-17.59	-19.75-18.77	-19.14-18.66	-18.1-18.17	-16.87-15.68	-14.76-15.12	-14.42-13.34	-15.14-13.26	-14.11-13.71	-17.97-18.05	-18.78-18.63	-17.54-17.67	-18.48-18.63	-17.48-13.61	-18.97-17.85	-18.97-17.85																
Theta (15°)	-14.11-14.24	-13.74-11.56	-10.63-12.41	-15.08-15.5	-15.34-13.22	-12.34-12.73	-11.57-13.32	-13.54-16.98	-18.41-17.61	-10.28-15.72	-18.27-15.75	-13.21-15.21	-11.71-17.51	-15.15-16.14	-18.55-17.82	-14.44-17.23	-16.26-14.8	-15.12-13.66	-13.78-18.03	-17.23-15.58	-16.91-13.11	-17.45-16.54	-15.48-16.76	-18.1-19																
Theta (22.5°)	-13.2-12.68	-10.91-12.61	-13.31-9.23	-9.77-7.63	-7.16-6	-6.47-5.85	-7.59-8.79	-10.15-10.62	-11.24-12.53	-10.2-9.58	-9.61-10.86	-15.42-14.9	-10.98-8.11	-9.44-14.26	-12.66-9.5	-8.94-11.59	-10.58-11.49	-10.36-8.15	-8.84-8.31	-10.38-9.29	-10.19-12.18	-13.24-14.36	-13.96-11.17	-10.82-12.34																
Theta (30°)	-9.43-7.05	-10.06-14.81	-14.1-16.84	-16.71-18.57	-19.01-18.59	-17.86-18.68	-15.61-18.1	-17.88-14.22	-17.58-13.77	-11.96-8.87	-7.74-6.24	-7.1-9.07	-6.98-6.63	-11.29-9.01	-10.7-8.04	-8.76-7.03	-7.34-6.89	-6.64-6.65	-8.71-12.21	-9.12-9.86	-8.75-9.7	-10.94-5.88	-9.93-11.33																	
Theta (37.5°)	-9.11-7.34	-7.3-9.86	-9.34-7.37	-5.55-4.78	-4.98-5.49	-5.54-8.05	-7.88-6.22	-7.12-10.53	-4.88-7.72	-8.92-9.28	-9.09-6.64	-11.49-10.99	-5.88-6.33	-9.07-4.3	-4.04-8.43	-6.62-7.55	-5.65-5.11	-7.35-8.88	-6.47-6.02	-7.07-12.01	-7.45-9.99	-8.75-9.04	-9.94-6.32	-9.61-11.87																
Theta (45°)	-7.51-7.53	-9.36-10.53	-11.4-12.95	-18.95-10.75	-11.26-15.65	-17.72-17.31	-17.98-12.37	-11.39-10.01	-10.01-6.48	-8.21-6.53	-5.96-5.74	-5.89-8.86	-5.56-6.26	-6.72-3.48	-5.49-5.28	-4.53-3.82	-4.09-5.16	-5.87-5.55	-5.82-6.29	-6.13-6.87	-7.3-5.76	-5.92-5.12	-9.18-6.94	-7.53-7.64																
Theta (52.5°)	-7.61-4.1	-7.55-6.06	-3.42-3.24	-2.62-7.28	-1.50-2	1.032-1.9	1.37-0.22	-1.08-2.21	-5.68-4.94	-8.16-7.28	-5.41-8.2	-4.72-5.11	-4.54-8.33	-4.11-3.82	-4.22-5.24	-2.02-0.53	-3.79-3.39	-4.41-3.21	-3.01-5.12	-5.22-4.47	-4.77-5.74	-3.57-1.9	-5.79-6.82	-5.92-6.29																
Theta (60°)	-6.79-7.27	-6.71-5.26	-10.68-8.58	-5.08-4.57	-3.71-4.14	-3.77-4.94	-3.47-3.36	-5.91-8.65	-5.17-8.34	-4.78-6.2	-5.76-3.96	-6.62-5.24	-5.47-3.26	-4.5-3	-5.46-2.46	-3.78-1.44	-4.28-4.83	-2.71-2.25	-2.17-2.55	-2.16-2.33	-4.03-4.11	-4.86-4.05	-6.51-3.58	-4.13-5.36																
Theta (67.5°)	-5.05-3.14	-4.61-7	-3.9-5	-4.02-3.52	-6.72-3.9	-4.49-1.67	-4.75-4.31	-3.98-3.61	-5.52-1.88	-6.65-6.84	-2.73-4	-4.9-4.71	-5.97-4.7	-3.67-2.25	-2.01-3.25	-1.5-0.64	-0.78-1.52	-1.99-3.08	-2.84-2.79	-2.28-5.28	-3.74-6.6	-2.67-7.06																		
Theta (75°)	-4.66-6.27	-4.83-5.08	-5.73-5.14	-3.62-9.02	-1.14-1.39	-0.64-2.61	-1.18-0.8	-1.98-3.56	-3.88-4.82	-7.67-5.43	-5.51-6.19	-3.79-4.68	-5.61-3.43	-6.88-2.33	-3.64-8.39	-2.26-2.99	-0.71-1.51	-1.91-1.86	0.11-1.43	-4.81-2.36	-3.49-3.37	-3.61-1.7	-4.95-9.33	-9.92-3.61																
Theta (82.5°)	-10.54-7.01	-4.46-5.64	-3.76-6.76	-6.94-4.74	-2.51-7.27	-3.92-3.83	-4.16-3.18	-6.77-5.85	-6.95-3.57	-2.71-6.38	-4.49-6.71	-5.93-5.66	-7.2-5.8	-3.04-4.27	-2.45-0.05	-2.17-0.88	-1.11-1.28	-2.05-2.58	-1.82-2.66	-1.88-1.88	-0.97-1.29	-4.04-2.95	-5.15-6.14	-6.17-8.01																
Theta (90°)	-6.68-9.81	-6.27-6.67	-5.71-8.21	-4.94-2.18	-3.28-6.05	-1.49-6.61	-2.16-3.1	-2.29-6.25	-3.17-4.3	-5.15-6.61	-5.51-8.96	-5.36-5.72	-6.17-2.82	-6.2-3.32	-4.22-5.09	-4.83-5.08	-3.64-3.92	-1.97-1.92	-2.19-2.73	-3.84-5.83	-6.01-6.47	-9.09-8.91	-11.68-9.52																	
Theta (97.5°)	-18.89-7.33	-6.55-7.46	-4.46-8.24	-4.14-3.07	-2.19-5.87	-1.38-6.7	-2.35-3.69	-4.25-8.04	-2.78-2.01	-4-6.37	-8.09-10.55	-5.53-3.85	-8.93-6	-5.22-2.73	-3.08-5.19	-2.85-4.69	-3.02-2.83	-1.13-1.35	-3.25-2.12	-1.54-5.52	-3.23-3.1	-5.81-5.02	-10.72-9.06	-8.35-57																
Theta (105°)	-12.93-17.82	-7.04-5.6	-7.09-6.25	-8.46-6.15	-5.22-9.17	-3.65-8.33	-7.12-6.62	-6.76-12.06	-5.88-3.74	-5.61-4.57	-11.44-11.16	-6.45-9.44	-13.13-5.56	-8.39-4.65	-4.85-3.81	-5.29-2.89	-3.81-3.35	-2.56-5.24	-2.13-5.04	-3.21-4.55	-5.02-3.84	-4.26-4.71	-10.05-15.04	-10.81-10.15																
Theta (112.5°)	-17.48-9.14	-7.88-6.95	-8.69-10.91	-7.28-8.32	-11.38-5.74	-6.24-8.41	-7.32-4.41	-5.25-7.33	-8.88-5.41	-6.24-8.1	-7.39-4.25	-11.04-10.72	-11.29-8.85	-5.68-5.65	-4.07-6.47	-4.4-6.94	-3.99-2.02	-6.54-5.18	-3.40-4.03	-6.74-5.55	-9.79-2.44	-11.27-18.29	-7.88-7.22																	
Theta (120°)	-15.16-9.79	-6.6-6.67	-7.82-6.37	-5.51-5.38	-1.22-6.97	-10.69-9.04	-11.05-11.57	-9.33-8.28	-6.47-6.82	-10.99-12.29	-16																													



Radiated Composite Gain Data_6GHz U-NII 5~8

Appendix B

Table with columns for Frequency (MHz), Polarization, and Gain (dBi) for various antenna configurations (Theta, Phi, and Frequency). The table lists gain values for configurations from (180°, 180°) to (0°, 0°) across 6 GHz and 6.6 GHz bands.



Radiated Composite Gain Data_6GHz U-NII 5~8

Appendix B

Table with 28 columns for Gain and 28 rows for various antenna configurations (Theta and Phi angles). Includes sub-headers for Frequency, Antenna, and Gain.



Antenna Pattern_2.4GHz, 5GHz U-NII 1~3

Appendix C

Table with 29 columns for frequency and 29 columns for gain values. Includes headers for frequency (MHz), total antenna gain, and various gain angles (0 to 180 degrees).



Antenna Pattern_2.4GHz, 5GHz U-NII 1~3

Appendix C

Table with multiple columns representing antenna gain in different directions (Theta and Phi) for various frequencies (5.75GHz, 5.2GHz, 5.0GHz) and polarization (Pol.). Includes sub-headers for TotalAnt and Gain, and a grid of values for each direction.

