



Antenna Composite Gain Test Report

1. Test Information

Report No.	AP163028
Equipment	Wireless Home Router
Brand Name	SAGEMCOM
Model Name	FAST 5290
Applicant	SAGEMCOM BROADBAND SAS 250 Route de l'Empereur - 92848 RUEIL MALMAISON CEDEX- FRANCE
Manufacturer	SAGEMCOM BROADBAND SAS 250 Route de l'Empereur - 92848 RUEIL MALMAISON CEDEX- FRANCE
Sample Received	May 08, 2021
Start Test Date	May 21, 2021
Final Test Date	Jun. 23, 2021
Issued Date	Nov. 23, 2021

2. Testing Location

Testing Location		
<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 / 54-56	May 21, 2021 ~ Jun. 23, 2021

3. Test Frequency

The middle frequency of each bands are selected to represent each frequency bands.

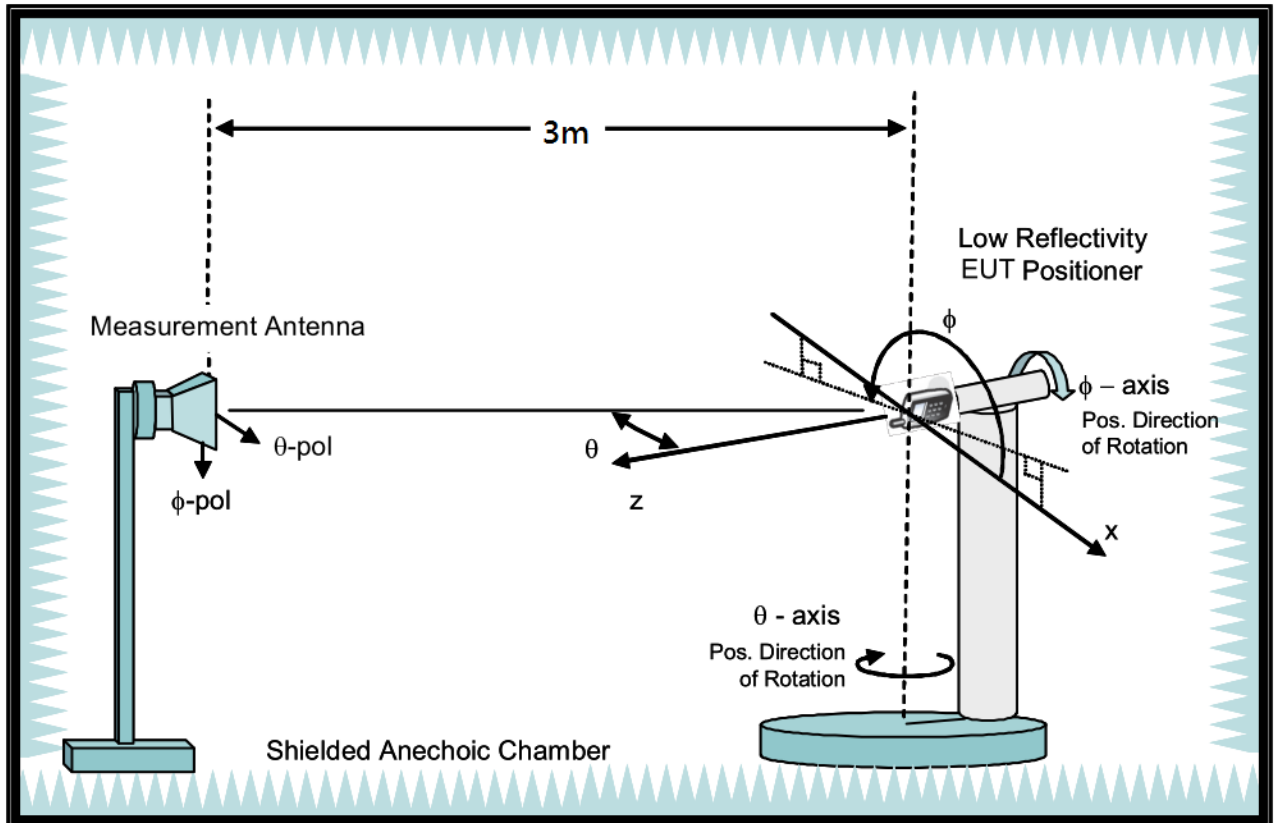
Band [MHz]	Test Frequency [MHz]
2400-2483.5	2450
5150-5250	5200
5250-5350	5300
5470-5725	5600
5725-5850	5785
5925 ~ 6425	6175
6425 ~ 6525	6475
6525 ~ 6875	6695
6875 ~ 7125	6995

4. Antenna system

Antenna Number	Brand Name	Model Name	Ant. Type	Connector	Support
Antenna 1	Galtronics	02102140-07252C1 DB1	PCB	I-PEX	WLAN 2.4GHz and WLAN 5GHz (U-NII 1, U-NII 2A, U-NII 2C, U-NII 3)
Antenna 2	Galtronics	02102140-07252C2 DB2	PCB	I-PEX	WLAN 2.4GHz and WLAN 5GHz (U-NII 1, U-NII 2A, U-NII 2C, U-NII 3)
Antenna 3	Galtronics	02102140-07252c3 DB3	PCB	I-PEX	WLAN 2.4GHz and WLAN 5GHz (U-NII 1, U-NII 2A, U-NII 2C, U-NII 3)
Antenna 4	Galtronics	02102142-07252CX 5G	PCB	I-PEX	WLAN 5GHz (U-NII 1, U-NII 2A, U-NII 2C, U-NII 3)
Antenna 5	Galtronics	02102475-07252-1 6G1	PCB	I-PEX	WLAN 6GHz (UNII 5 ~ 8)
Antenna 6	Galtronics	02102475-07252-2 6G2	PCB	I-PEX	WLAN 6GHz (UNII 5 ~ 8)
Antenna 7	Galtronics	02102475-07252-3 6G3	PCB	I-PEX	WLAN 6GHz (UNII 5 ~ 8)
Antenna 8	Galtronics	02102475-07252-4 6G4	PCB	I-PEX	WLAN 6GHz (UNII 5 ~ 8)

5. Test Configuration

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



6. Test Method

EUT set on multi-axis positioner. Measurement antenna set at phi polarization and 1.5 meter height. Port 1 of Network analyzer connect to antenna 1 of EUT. Record S21 value every 15 degree from 0 to 345 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.

7. Measured Values and Calculation of Maximum Directional Gain Positions

Frequency (Hz)	2.45G	5.2G	5.3G	5.6G	5.785G
Ant. 1 (S21+iwt)	1.62 +0.47 i	-5.94 +0.48 i	-1.32 -0.52 i	-0.8 -0.06 i	-3.15 -0.17 i
Ant. 2 (S21+iwt)	-1.37 +0.49 i	2.53 +0.68 i	-1.25 -0.11 i	1.23 -0.7 i	5.58 +0.14 i
Ant. 3 (S21+iwt)	-0.92 +0.56 i	-5.82 +0.45 i	1.81 -0.21 i	1.87 -0.77 i	-2.51 +0.29 i
Ant. 4 (S21+iwt)		1.17 +0.2 i	-2.24 -0.64 i	-3.61 -0.22 i	-2.55 +0.69 i
DG [1SS] (dBi)	4.65	4.68	5.22	5.53	5.91
Polarization	theta	phi	theta	theta	phi
$\Theta(^{\circ})$	60	120	105	105	105
$\Phi(^{\circ})$	165	225	315	315	240

Note:

$$1. A=10^{(S21/20)}$$

$$|A_{\theta} e^{iwt}| = |A_{\theta 1} e^{iwt1} + A_{\theta 2} e^{iwt2} + A_{\theta 3} e^{iwt3} + A_{\theta 4} e^{iwt4} + \dots|$$

$$|A_{\varphi} e^{iwt}| = |A_{\varphi 1} e^{iwt1} + A_{\varphi 2} e^{iwt2} + A_{\varphi 3} e^{iwt3} + A_{\varphi 4} e^{iwt4} + \dots|$$

where

$$e^{iwt} = \cos(wt) + i \sin(wt)$$

$$|A e^{j\omega t}| = \sqrt{Re^2 + Im^2}$$

“Re” is the real part and “Im” is the imaginary part

$$2. \text{ Directional gain (1SS)} = 10 \cdot \log(A_{\max}^2 / N_{\text{ant}})$$

Where A_{\max} is the maximum value of $|A_{\theta}|$ and $|A_{\varphi}|$ through all angles.

Calculation of max DG point:

2.45G:

$$|A_{\max} e^{iwt}| = |10^{(1.62/20)} (\cos(0.47) + i \sin(0.47)) + 10^{(-1.37/20)} (\cos(0.49) + i \sin(0.49)) + 10^{(-0.92/20)} (\cos(0.56) + i \sin(0.56))|$$

$$= |(1.07 + 0.55i) + (0.75 + 0.4i) + (0.76 + 0.48i)| = |2.59 + 1.43i| = \sqrt{8.74} = 2.96$$

$$DG(1SS) = 10 \cdot \log(2.96^2 / 3) = 4.65$$

5.2G

$$|A_{\max} e^{iwt}| = |10^{(-5.94/20)} (\cos(0.48) + i \sin(0.48)) + 10^{(2.53/20)} (\cos(0.68) + i \sin(0.68)) + 10^{(-5.82/20)} (\cos(0.45) + i \sin(0.45)) + 10^{(1.17/20)} (\cos(0.2) + i \sin(0.2))|$$

$$= |(0.45 + 0.23i) + (1.04 + 0.84i) + (0.46 + 0.22i) + (1.12 + 0.23i)|$$

$$= |3.07 + 1.52i| = \sqrt{11.75} = 3.43$$



$$DG(1SS)=10*\log(3.43^2/4)=4.68$$

5.3G

$$|A_{max} * e^{iwt}| = |10^{(-1.32/20)} * (\cos(-0.52) + i\sin(-0.52)) + 10^{(-1.25/20)} * (\cos(-0.11) + i\sin(-0.11)) + 10^{(1.81/20)} * (\cos(-0.21) + i\sin(-0.21)) + 10^{(-2.24/20)} * (\cos(-0.64) + i\sin(-0.64))|$$

$$= |(0.75 - 0.43i) + (0.86 - 0.1i) + (1.2 - 0.26i) + (0.62 - 0.46i)|$$

$$= |3.43 - 1.24i| = \sqrt{13.31} = 3.65$$

$$DG(1SS)=10*\log(3.65^2/4)=5.22$$

5.6G

$$|A_{max} * e^{iwt}| = |10^{(-0.8/20)} * (\cos(-0.06) + i\sin(-0.06)) + 10^{(1.23/20)} * (\cos(-0.7) + i\sin(-0.7)) + 10^{(1.87/20)} * (\cos(-0.77) + i\sin(-0.77)) + 10^{(-3.61/20)} * (\cos(-0.22) + i\sin(-0.22))|$$

$$= |(0.91 - 0.05i) + (0.88 - 0.74i) + (0.89 - 0.86i) + (0.64 - 0.14i)|$$

$$= |3.33 - 1.8i| = \sqrt{14.32} = 3.78$$

$$DG(1SS)=10*\log(3.78^2/4)=5.53$$

5.785G

$$|A_{max} * e^{iwt}| = |10^{(-3.15/20)} * (\cos(-0.17) + i\sin(-0.17)) + 10^{(5.58/20)} * (\cos(0.14) + i\sin(0.14)) + 10^{(-2.51/20)} * (\cos(0.29) + i\sin(0.29)) + 10^{(-2.55/20)} * (\cos(0.69) + i\sin(0.69))|$$

$$= |(0.69 - 0.12i) + (1.88 + 0.27i) + (0.72 + 0.21i) + (0.58 + 0.47i)|$$

$$= |3.86 + 0.84i| = \sqrt{15.61} = 3.95$$

$$DG(1SS)=10*\log(3.95^2/4)=5.91$$

Frequency (Hz)	6.175G	6.475G	6.695G	6.995G
Ant. 1 (S21+iwt)	-1.35 +0.19 i	-0.18 +0.3 i	-0.42 -0.58 i	5.85 +0.55 i
Ant. 2 (S21+iwt)	-3.37 +0.72 i	-4.86 +0.56 i	-4.72 -0.65 i	-14.36 +0.3 i
Ant. 3 (S21+iwt)	1.49 +0.23 i	-3.9 +0.2 i	-4.96 -0.73 i	4.32 +0.15 i
Ant. 4 (S21+iwt)	-0.41 +0.51 i	5.62 +0.31 i	6.18 -0.53 i	-8.65 +0.23 i
DG [1SS] (dBi)	5.11	6.19	6.29	6.22
Polarization	theta	phi	phi	theta
Θ(°)	60	150	150	90
Φ(°)	315	345	345	315



Calculation of max DG point:

6.175G

$$\begin{aligned} |A_{max} \cdot e^{iwt}| &= |10^{(-1.35/20)} \cdot (\cos(0.19) + i\sin(0.19)) + 10^{(-3.37/20)} \cdot (\cos(0.72) + i\sin(0.72)) + \\ &10^{(1.49/20)} \cdot (\cos(0.23) + i\sin(0.23)) + 10^{(-0.41/20)} \cdot (\cos(0.51) + i\sin(0.51))| \\ &= |(0.84 + 0.16i) + (0.51 + 0.45i) + (1.16 + 0.27i) + (0.83 + 0.47i)| \\ &= |3.34 + 1.35i| = \sqrt{12.96} = 3.6 \\ DG(1SS) &= 10 \cdot \log(3.6^2/4) = 5.11 \end{aligned}$$

6.475G

$$\begin{aligned} |A_{max} \cdot e^{iwt}| &= |10^{(-0.18/20)} \cdot (\cos(0.3) + i\sin(0.3)) + 10^{(-4.86/20)} \cdot (\cos(0.56) + i\sin(0.56)) + \\ &10^{(-3.9/20)} \cdot (\cos(0.2) + i\sin(0.2)) + 10^{(5.62/20)} \cdot (\cos(0.31) + i\sin(0.31))| \\ &= |(0.94 + 0.29i) + (0.48 + 0.3i) + (0.63 + 0.13i) + (1.82 + 0.58i)| \\ &= |3.86 + 1.3i| = \sqrt{16.63} = 4.08 \\ DG(1SS) &= 10 \cdot \log(4.08^2/4) = 6.19 \end{aligned}$$

6.695G

$$\begin{aligned} |A_{max} \cdot e^{iwt}| &= |10^{(-0.42/20)} \cdot (\cos(-0.58) + i\sin(-0.58)) + 10^{(-4.72/20)} \cdot (\cos(-0.65) + i\sin(-0.65)) + \\ &10^{(-4.96/20)} \cdot (\cos(-0.73) + i\sin(-0.73)) + 10^{(6.18/20)} \cdot (\cos(-0.53) + i\sin(-0.53))| \\ &= |(0.8 - 0.52i) + (0.46 - 0.35i) + (0.42 - 0.38i) + (1.76 - 1.03i)| \\ &= |3.44 - 2.28i| = \sqrt{17.02} = 4.13 \\ DG(1SS) &= 10 \cdot \log(4.13^2/4) = 6.29 \end{aligned}$$

6.995G

$$\begin{aligned} |A_{max} \cdot e^{iwt}| &= |10^{(5.85/20)} \cdot (\cos(0.55) + i\sin(0.55)) + 10^{(-14.36/20)} \cdot (\cos(0.3) + i\sin(0.3)) + \\ &10^{(4.32/20)} \cdot (\cos(0.15) + i\sin(0.15)) + 10^{(-8.65/20)} \cdot (\cos(0.23) + i\sin(0.23))| \\ &= |(1.67 + 1.03i) + (0.18 + 0.06i) + (1.63 + 0.25i) + (0.36 + 0.08i)| \\ &= |3.84 + 1.41i| = \sqrt{16.74} = 4.09 \\ DG(1SS) &= 10 \cdot \log(4.09^2/4) = 6.22 \end{aligned}$$

8. Test Result

Band [Hz]		2400-2483.5
Frequency	[Hz]	2.45G
Antenna1 Max gain	[dBi]	4.12
Antenna2 Max gain	[dBi]	3.66
Antenna3 Max gain	[dBi]	2.01
Max gain (uncorrelated)	[dBi]	4.12
Directional Gain (4T1S)	[dBi]	4.65
Directional Gain (4T2S)	[dBi]	4.12
Directional Gain (3T3S)	[dBi]	0.15

Note : 1.Directions Gain (3T2S) = Directional Gain (3T1S) – 3dB. If directional gain is less than max gain, use max gain as directional gain.

2.Max gain (uncorrelated) is the maximum gain of single antenna.

Band [Hz]		5150-5250	5250-5350	5470-5725	5725-5850
Frequency	[Hz]	5.2G	5.3G	5.6G	5.785G
Antenna1 Max gain	[dBi]	3.13	3.67	3.57	3.29
Antenna2 Max gain	[dBi]	4.52	5.1	5.33	5.58
Antenna3 Max gain	[dBi]	1.8	2.64	1.87	2.2
Antenna4 Max gain	[dBi]	3.19	1.58	2.36	3.7
Max gain (uncorrelated)	[dBi]	4.52	5.1	5.33	5.58
Directional Gain (4T1S)	[dBi]	4.68	5.22	5.53	5.91
Directional Gain (4T2S)	[dBi]	4.52	5.1	5.33	5.58
Directional Gain (4T4S)	[dBi]	-1.12	-0.46	-0.22	0.17

Note : 1.Directions Gain (TXBF 4T2S) = Directional Gain (TXBF 4T1S) – 3dB. If directional gain is less than max gain (uncorrelated), use max gain as directional gain.

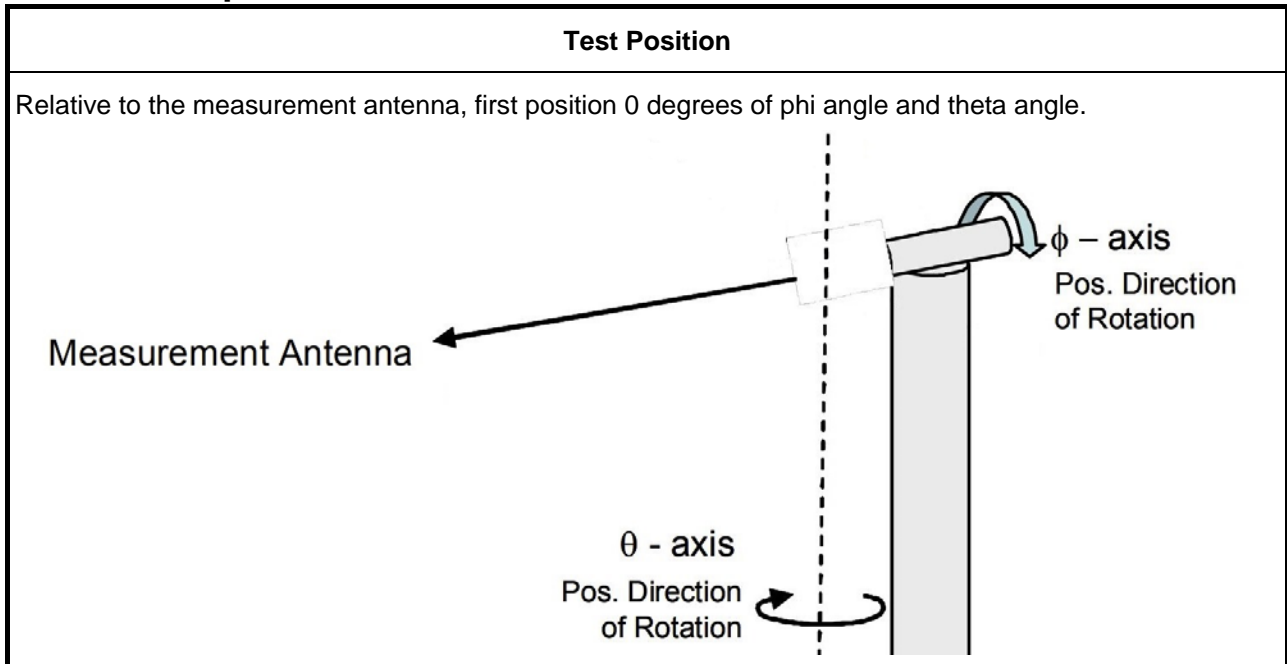
2.Max gain (uncorrelated) is the maximum gain of single antenna.



Band [Hz]		5925 ~ 6425	6425 ~ 6525	6525 ~ 6875	6875 ~ 7125
Frequency	[Hz]	6175	6475	6695	6995
Antenna1 Max gain	[dBi]	3.07	2.98	3.17	5.85
Antenna2 Max gain	[dBi]	4.39	4.2	4.57	5.95
Antenna3 Max gain	[dBi]	3.74	3.39	3.25	4.8
Antenna4 Max gain	[dBi]	4.68	5.79	6.18	4.91
Max gain (uncorrelated)	[dBi]	4.68	5.79	6.18	5.95
Directional Gain (4T1S)	[dBi]	5.11	6.19	6.29	6.22
Directional Gain (4T2S)	[dBi]	4.68	5.79	6.18	5.95
Directional Gain (4T4S)	[dBi]	-0.39	0.52	0.88	2.26

Note : 1.Directiona Gain (4T2S) = Directional Gain (4T1S) – 3dB. If directional gain is less than max gain (uncorrelated), use max gain as directional gain.
2.Max gain (uncorrelated) is the maximum gain of single antenna.

9. Test Setup



Note:

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



10. Test Results

Please refer to the appendix.

Appendix A – Antenna Composite Gain of 2.4GHz

Appendix B – Antenna Composite Gain of 5GHz

Appendix C – Antenna Composite Gain of 6GHz



Freq(Hz)	2.45G
Ant. 1 Max Gain (dBi)	4.12
Ant. 2 Max Gain (dBi)	3.66
Ant. 3 Max Gain (dBi)	2.01
Max Gain (dBi)	4.12
DG [1SS] (dBi)	4.65
DG [2SS] (dBi)	4.12
DG [SDM 3SS] (dBi)	0.15



DG Result

Table with columns for Freq(Hz), DG(dBi), and various Phi and Theta angles (0 to 345 degrees). It contains two main data sections for different frequency/polarization settings.



Gain Result

Table with columns: Freq(Hz), 2.45G, Pol., Phi, Ant. 1, Gain, and 24 azimuthal angles (0 to 345 degrees). It contains multiple data blocks for different antenna configurations (Ant. 1, 2, 3) and polar angles (0 to 180 degrees).



Freq(Hz)	5.2G	5.3G	5.6G	5.785G
Ant. 1 Max Gain (dBi)	3.13	3.67	3.57	3.29
Ant. 2 Max Gain (dBi)	4.52	5.1	5.33	5.58
Ant. 3 Max Gain (dBi)	1.8	2.64	1.87	2.2
Ant. 4 Max Gain (dBi)	3.19	1.58	2.36	3.7
Max Gain (dBi)	4.52	5.1	5.33	5.58
DG [1SS] (dBi)	4.68	5.22	5.53	5.91
DG [2SS] (dBi)	4.52	5.1	5.33	5.58
DG [SDM 4SS] (dBi)	-1.12	-0.46	-0.22	0.17



DG Result

Table with columns for Freq(Hz), DG(dB), and various Phi angles (0 to 345 degrees) for frequencies 5.2G, 5.3G, and 5.6G. The table contains multiple rows of data for each frequency, showing gain values in dB for different angles.



Radiated Composite Gain of WLAN 5GHz

Appendix B

Freq(Hz)	5.785G	Pol.	Phi	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DG(dBi)	Φ(0°)	Φ(15°)	Φ(30°)	Φ(45°)	Φ(60°)	Φ(75°)	Φ(90°)	Φ(105°)	Φ(120°)	Φ(135°)	Φ(150°)	Φ(165°)	Φ(180°)	Φ(195°)	Φ(210°)	Φ(225°)	Φ(240°)	Φ(255°)	Φ(270°)	Φ(285°)	Φ(300°)	Φ(315°)	Φ(330°)	Φ(345°)
Θ(0°)	1.9	2.19	2.72	1.89	0.83	0.94	0.42	0.72	1.55	1.14	2.04	2.2	1.87	2.03	2.42	1.52	1.85	0.93	-0.19	0.6	0.72	1.46	1.96	2.21
Θ(15°)	1.55	0.01	-0.34	0.18	-1.39	-0.76	-1.07	0.42	1.26	1.73	2.23	1.66	1.2	1.39	2.03	2.67	2.69	2.31	0.04	-0.11	0.44	2.22	2.14	1.82
Θ(30°)	-1.95	-1.97	-3.41	-1.07	-2.29	-3.11	-2.94	-1.84	0.33	-0.15	-0.27	0.17	0.42	1.73	3.03	2.02	1.43	1.67	-0.82	-1.03	0.67	0.66	1.06	-0.05
Θ(45°)	0.67	-0.14	-0.7	-1.41	-5.26	-4.53	-2.63	-2.59	-0.95	-1.26	-2.53	-2.03	-2.29	0.68	0.62	1.38	2.23	1.78	1.4	1.26	0.1	-0.6	-1.38	0.36
Θ(60°)	-5.14	-6.05	-4.68	-2.31	-2.01	-2.69	-3.14	-2.83	-1.82	-2.2	-0.25	-1.4	-3.08	-2.04	-0.57	0.36	-0.09	0.16	0.25	0.97	0.6	-0.43	-3.92	-3.06
Θ(75°)	-5.15	-5.56	-7.95	-4.18	-6.89	-5.95	-4.86	-3.66	-2.72	-1.78	-1.53	-2.5	-3.39	-1.87	0.08	1.56	0.44	-2.33	-1.36	-2.09	-1.66	-2.53	-1.69	-5.99
Θ(90°)	-1.24	-7.76	-7.88	-6.14	-9.03	-6.54	-4.42	-6.12	-2.85	-1.84	-0.91	-2.37	-0.54	0.48	1.74	2.84	3.24	0.73	0.48	-0.39	-0.95	-0.84	-2.06	-6.29
Θ(105°)	-1.36	-5.37	-6.68	-13.85	-15.31	-7.15	-7.46	-4.29	-7.46	-2.1	-1.76	-1.61	-1.29	1.15	0.14	1.68	5.91	2.05	2.66	1.26	1.22	1.81	-1.83	-8.01
Θ(120°)	-0.09	-3.26	-1.39	-2.68	-9.33	-7.98	-5.37	-3.37	-3.61	-5.16	-4.07	-2.65	-0.95	1	-2.2	-2.81	1.66	0.65	-0.56	2.97	-1.33	-0.94	-1.09	-4.79
Θ(135°)	-3.84	-4.16	-5.65	-3.4	-7.61	-4.92	-7.45	-6.19	-3.72	-4.2	-1.89	-1.82	-3.01	0.9	-0.79	0.93	-0.01	1.25	-1.92	-2.4	-4.93	-5.04	-5.12	-5.56
Θ(150°)	-1.76	-1.43	-4.6	-5.49	-2.49	-7.46	-4.12	-4.71	-2.8	-2.89	-3.83	-0.32	1.04	0.39	-1.89	0.47	0.39	-1.42	-2.81	-3.53	-2.85	-5.07	-4.99	-2.91
Θ(165°)	-1.26	-1.07	-1.87	-4.4	-3.31	-1.98	-5.18	-10.17	-11.22	-10.82	-5.81	-4.56	-3.03	-1.08	-0.77	-3.28	-3.13	-5.3	-11.47	-7.27	-8.31	-5.66	-2.81	-1.57
Θ(180°)	-0.13	-2.03	-0.9	-1.47	-2.18	-3.65	-4.97	-3.85	-1.54	-0.88	0.46	-0.06	-0.04	1.19	0.77	-0.34	-2.58	-4.08	-4.73	-4.59	-2.22	0.04	1.18	0.32
Freq(Hz)	5.785G	Pol.	Theta	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DG(dBi)	Φ(0°)	Φ(15°)	Φ(30°)	Φ(45°)	Φ(60°)	Φ(75°)	Φ(90°)	Φ(105°)	Φ(120°)	Φ(135°)	Φ(150°)	Φ(165°)	Φ(180°)	Φ(195°)	Φ(210°)	Φ(225°)	Φ(240°)	Φ(255°)	Φ(270°)	Φ(285°)	Φ(300°)	Φ(315°)	Φ(330°)	Φ(345°)
Θ(0°)	-0.06	1.24	1.57	1.37	1.44	2.03	2.12	2.04	1.67	1.58	1.5	1.02	0.44	0.92	1.09	1.53	1.86	2.23	2.42	2.54	2.33	2.04	1.43	0.77
Θ(15°)	-1.23	0.02	1.17	1.58	-0.1	0.4	0.66	1.16	1.29	1.03	1.08	0.79	1.24	1.14	0.65	0.63	1.46	0.43	1.36	1.61	1.29	1.68	0.75	-1.62
Θ(30°)	-1.29	-0.64	0.84	0.33	-0.07	-2.02	-3.13	-2.33	-2.02	-0.95	-0.63	-1.32	-1.17	0.67	1.73	0.97	0.54	0.38	-0.36	-1.95	-0.93	0.1	0.47	-0.43
Θ(45°)	-0.85	0.5	0.16	0.08	-0.32	-0.44	-0.59	-1.06	-1.16	-1.41	-1.35	-2.05	-2.08	-0.89	-3.61	0.25	-1.25	1.01	0.37	-1.01	-1.14	-2.33	-1.07	-0.77
Θ(60°)	-1.09	0.47	-1.91	-1.95	-2.49	-0.58	0.39	-0.85	-0.01	-0.64	1.07	-1.04	-1	-0.44	-1.21	-2	-3.95	-4.06	-0.8	1.16	-0.02	1.06	-0.66	-0.89
Θ(75°)	-1.48	-0.83	-0.06	0.1	-0.66	-1.84	-2.56	-0.55	-0.27	0.77	1.06	0.83	-1.14	-2.43	-2.99	0.23	-0.93	0.48	0.29	1.26	2.09	1.57	-1.4	-2.93
Θ(90°)	-3.36	-3.01	-1.73	-1.61	-4	-1.52	-1	-1.1	-1.07	-0.43	0.28	-1.23	-1.61	-1.39	-1.31	0.78	2.74	2.41	1.27	2.05	0.31	0.37	-0.91	-1.92
Θ(105°)	-1.54	-2.54	-1.1	-1.68	-1.04	-1.68	-0.28	-0.33	-1.13	0.17	-1.02	-1.61	-2.18	-0.73	-1.84	0.06	2.98	0.91	1.16	0.96	0.3	3.33	-1.52	-2.84
Θ(120°)	-6.15	-2.7	-2.2	-0.51	-0.65	-2.28	-1.86	0.34	-0.22	-0.08	-0.65	1.38	-3.36	-4.04	-2.04	-2.68	0.67	-4.41	2.32	2.25	-1.33	1.78	-3.56	-2.69
Θ(135°)	-5.56	-9.18	-6.83	-2.95	-1.39	-1.13	-0.23	0.11	0.04	0.62	2.08	0.37	0.79	-0.85	0.04	1.75	-0.86	-4.43	1.21	1.05	-1.78	1.64	-5.01	-4.1
Θ(150°)	-4.28	-4.09	-5.44	-2.19	-0.36	-1.16	0.54	-0.83	-0.46	-0.92	-1.84	-2.28	-1.43	-3.06	-1.11	0.32	-4.08	-2.88	0.13	-0.59	-2.52	-3.66	-5.04	-7.72
Θ(165°)	-10.16	-8.2	-3.47	-1.13	-0.63	0.1	0.07	-0.57	-2.92	-5.65	-2.21	-1.32	-1.63	-2.52	-4.34	-5.04	-2	-4.48	-4.17	-0.94	-1.83	-2.79	-1.08	-4.55
Θ(180°)	-5.3	-3.18	-1.58	0.16	-0.41	-2.15	-3.44	-2.23	-1.14	-1.07	-1.07	-2.12	-3.1	-1.23	0.19	-0.91	-1.73	-0.32	-0.36	-2.74	-2.12	0.06	0.05	-0.67



Gain Result

Table with columns for Freq(Hz), Gain, and various Phi and Theta angles (0 to 180 degrees) for frequencies 5.2G, 5.3G, and 5.6G. The table contains multiple rows of gain data for each frequency and angle combination.



Radiated Composite Gain of WLAN 5GHz

Appendix B

Table with 23 columns (Gain, Phi(0°) to Phi(345°)) and 100 rows of data. The table is divided into four frequency sections: 5.6G, 5.785G, 5.2G, and 5.3G. Each section contains 23 rows of gain data for various angles.



Radiated Composite Gain of WLAN 5GHz

Appendix B

Table with columns for Frequency (5.3G, 5.6G, 5.785G, 5.2G), Polarization (Pol.), and various angles (Theta, Phi) from 0 to 180 degrees. Each cell contains a numerical gain value.



Radiated Composite Gain of WLAN 5GHz

Appendix B

Table with columns for Frequency (5.2G, 5.3G, 5.6G, 5.785G), Polarization (Pol.), Phi angle, and Gain values for various Phi angles (0 to 345 degrees) and Theta angles (0 to 180 degrees).



Θ(30°)	-10.2	-8.67	-14.52	-6.19	-8.84	-18.88	-22.32	-14.29	-6.45	-7.59	-6.5	-1.7	-0.77	-1.43	-1.93	-7.09	-9.27	-8.4	-14.42	-29.15	-11.11	-8.27	-6.43	-4.83
Θ(45°)	-1.88	-3.01	-3.2	-5.95	-21.04	-15.61	-11.76	-9.84	-6.14	-4.84	-5.26	-2.84	-1.19	-0.97	-6.29	-4.68	-6.14	-15.95	-18.89	-9.34	-18.93	-16.43	-11.34	-3.36
Θ(60°)	-7.89	-8.65	-6.47	-3.28	-5.1	-9.21	-10.31	-9.96	-7.78	-7.09	-1.01	-1.24	-1.85	-2.36	-2.09	-8.65	-9.33	-14.59	-25.05	-9.55	-9.56	-6.2	-16.48	-7.9
Θ(75°)	-7.77	-3.63	-8.36	-5.86	-10.45	-13.29	-8.92	-11.53	-6.01	-3.36	-1.62	-1.1	-3	-4.67	-4.15	-3.8	-10.88	-25.23	-24.24	-12.67	-11.34	-16.19	-5.46	-15.74
Θ(90°)	-1.2	-12.24	-8.87	-9.44	-23.08	-14.31	-9.43	-9.31	-4.52	-2.51	-0.03	0.69	1.96	1.62	-3.01	-2.56	-4.22	-32.75	-13.47	-12.59	-7.24	-5.76	-8.15	-11.65
Θ(105°)	-1.68	-6.32	-4.93	-24.82	-23.38	-17.79	-12.62	-9.23	-9.42	-3.79	-0.72	-0.15	0.86	1.65	-0.76	-5.13	-2.55	-10.37	-6.18	-12.34	-4.4	-2.26	-3.24	-14.84
Θ(120°)	0.85	-2.69	-5.19	-0.97	-11.32	-18.47	-12.57	-5.98	-5.34	-2.77	-2.47	0.68	1.23	0.3	-2.41	-9.76	-3.83	-8.72	-18.17	-8.53	-16.6	-4.35	-3.34	-1.42
Θ(135°)	-5.84	-10.44	-4.86	-3.88	-8.1	-15.71	-14.09	-11.52	-3.65	-1.64	0.15	0.15	-2.12	-0.39	-2.42	-0.58	-6.28	-13.33	-18.75	-18.37	-12.97	-9.96	-5.6	-8.39
Θ(150°)	-3.18	-4.52	-5.68	-6.11	-9.93	-20.78	-15.79	-18	-4.55	-3.13	-2.27	1.82	2.29	1.76	-1.21	1.02	-8.31	-14.85	-13.29	-13.51	-8.52	-15.36	-13.09	-3
Θ(165°)	1.94	2.27	0.64	-3.81	-5.7	-8.94	-36.25	-14.1	-14.22	-19.36	-9.26	-6.17	-4.11	-3.02	-8.63	-12.38	-5.75	-8.71	-15.75	-14.72	-31.58	-11.31	-3.53	0.4
Θ(180°)	2.29	1.6	0.9	-1.19	-4.01	-10.24	-17.03	-8.9	-3.27	-1.17	1.7	2.25	2.6	3.7	2.55	-0.98	-8.9	-13.4	-24.53	-10.77	-5.47	0.55	2.67	2.56
Freq(Hz)	5.785G	Pol.	Theta	Ant. 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gain	Φ(0°)	Φ(15°)	Φ(30°)	Φ(45°)	Φ(60°)	Φ(75°)	Φ(90°)	Φ(105°)	Φ(120°)	Φ(135°)	Φ(150°)	Φ(165°)	Φ(180°)	Φ(195°)	Φ(210°)	Φ(225°)	Φ(240°)	Φ(255°)	Φ(270°)	Φ(285°)	Φ(300°)	Φ(315°)	Φ(330°)	Φ(345°)
Θ(0°)	-21.37	-8.47	-4.44	-2.56	-1.13	0.07	0.39	0.17	-1.58	-3.12	-6.3	-11.82	-21.09	-10.94	-5.22	-1.92	-0.36	1.11	1.46	1.15	-0.07	-2.32	-6.68	-13.36
Θ(15°)	-19.3	-11.51	-8.15	-6.54	-6.84	-4.77	-3.13	-2.38	-4.1	-9.22	-14.68	-25.36	-12.71	-8.41	-6.19	-2.07	1.92	0.49	1.9	2.24	0.02	-0.71	-5	-14.42
Θ(30°)	-23.96	-11.97	-10.08	-6.97	-5.29	-7.69	-9.1	-8.52	-15	-15.85	-17.99	-24.63	-16.71	-9.15	-5.02	-3.15	-0.93	-0.84	-0.81	-1.07	-2.29	-3.76	-6.87	-16.1
Θ(45°)	-15.57	-12.64	-12.2	-8.67	-13.78	-9.43	-9.09	-6.43	-8.92	-14.64	-13.21	-21.26	-17.05	-10.91	-19.35	-4.02	-3.25	-1.24	-1.24	-1.98	-11.27	-30.16	-15	-12.41
Θ(60°)	-14.74	-13.76	-24.37	-11.04	-21.72	-16.71	-12.59	-24.11	-13.65	-12.4	-11.95	-26.68	-11.59	-12.01	-8.75	-11.37	-12.66	-13.43	-6.63	0.69	-6.3	-7.4	-10.68	-22.08
Θ(75°)	-14.7	-12.84	-11.22	-11.02	-9.2	-14.24	-17.21	-15.72	-12.29	-8.86	-9.86	-11.7	-14.53	-12.84	-20.42	-9.39	-7.37	-4.28	-9.41	-6.51	-10.65	-10.02	-14.09	-20.55
Θ(90°)	-17.4	-16.43	-10.89	-7.44	-9.3	-6.94	-9.17	-9.73	-10.56	-6.5	-6.06	-10.5	-14.96	-14.62	-16.79	-26.23	-11.05	-7.34	-22.92	-11.79	-12.21	-18.06	-8.7	-11.31
Θ(105°)	-22.49	-15.87	-6	-5.89	-5.41	-4.55	-2.7	-4.53	-8.46	-5.6	-4.67	-10.18	-14.97	-15.44	-20.41	-14.33	-14.89	-15.88	-13.24	-15.19	-6.93	-4.25	-14.75	-17
Θ(120°)	-38.42	-11.99	-5.59	-3.03	-1.83	-3.19	-2.14	-1.17	-4.76	-3.06	-7.27	-6.32	-14.57	-16	-27.88	-8.95	-7.05	-14.19	-3.66	-12.05	-11.13	-4.09	-12.27	-13.5
Θ(135°)	-16.09	-25.35	-10.01	-4.85	-2.85	0.18	-1.17	0.67	-1.21	-1.37	-2.51	-5.14	-8.75	-20.66	-8.06	-1.3	-6.83	-9.73	-4.53	-7.09	-5.13	-8.44	-9.81	-13.92
Θ(150°)	-18.98	-12.64	-8.76	-5.68	-3.69	-1.01	0.92	-1.45	-1.6	-4.31	-5.09	-7.7	-12.92	-20.67	-8.67	-4.94	-9.18	-9.5	-1.79	-6.79	-16.29	-10.4	-11.9	-12.09
Θ(165°)	-18.05	-13.25	-7.02	-3.87	-2.2	0.92	2.25	0.73	-2.95	-12.58	-9.78	-11.09	-14	-18.67	-15.81	-12.68	-1.49	-2.43	-7.82	-1.96	-3.12	-5.02	-4.45	-7.9
Θ(180°)	-18.87	-10.05	-4.17	-0.8	-0.09	-0.33	-0.72	0.38	0.45	0.29	-2.36	-7.72	-17.64	-7.48	-2.1	-2.77	-3.3	1.14	1.92	-1.49	-1.3	0.22	-2.08	-7.27



Freq(Hz)	6.175G	6.475G	6.695G	6.995G
Ant. 1 Max Gain (dBi)	3.07	2.98	3.17	5.85
Ant. 2 Max Gain (dBi)	4.39	4.2	4.57	5.95
Ant. 3 Max Gain (dBi)	3.74	3.39	3.25	4.8
Ant. 4 Max Gain (dBi)	4.68	5.79	6.18	4.91
Max Gain (dBi)	4.68	5.79	6.18	5.95
DG [1SS] (dBi)	5.11	6.19	6.29	6.22
DG [2SS] (dBi)	4.68	5.79	6.18	5.95
DG [4SS] (dBi)	-0.39	0.52	0.88	2.26



DG Result

Table with columns for Freq(Hz), DG(dB), and various Phi angles (0 to 345 degrees) for three frequency bands: 6.175G, 6.475G, and 6.695G.



Radiated Composite Gain of WLAN 6GHz

Appendix C

Θ(180°)	-12.18	-13.05	-8.1	-9.2	-9.53	-8.24	-7.63	-8.6	-11.44	-8.56	-9.91	-8.87	-9.84	-11.17	-12.56	-9.56	-9.1	-9.84	-9.05	-7.12	-7.55	-7.73	-8.45	-10.88
Freq(Hz)	6.995G	Pol.	Phi	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DG(dBi)	Φ(0°)	Φ(15°)	Φ(30°)	Φ(45°)	Φ(60°)	Φ(75°)	Φ(90°)	Φ(105°)	Φ(120°)	Φ(135°)	Φ(150°)	Φ(165°)	Φ(180°)	Φ(195°)	Φ(210°)	Φ(225°)	Φ(240°)	Φ(255°)	Φ(270°)	Φ(285°)	Φ(300°)	Φ(315°)	Φ(330°)	Φ(345°)
Θ(0°)	-6.99	-5.89	-7.39	-10.17	-9.82	-14.4	-14.59	-14.67	-15.08	-14.17	-12.25	-12.2	-10.14	-9.75	-7.92	-9.41	-10.18	-11.87	-14.63	-13.91	-12.91	-12.51	-16.9	-11.9
Θ(15°)	-18.86	-21.3	-12.14	-10.07	-12.49	-11.18	-20.35	-13.39	-10.22	-12.95	-7.63	-8.77	-6.44	-6.71	-9	-8.18	-9.84	-10.39	-11.5	-11.26	-10.74	-11.15	-12.65	-10.64
Θ(30°)	-14.58	-10.35	-9.39	-8.08	-10.2	-8.68	-8.11	-7.38	-10.2	-15.1	-9.28	-8.83	-8.24	-7.79	-7.14	-9.18	-7.39	-5.45	-5.92	-10.28	-6.82	-12.49	-10.37	-12.49
Θ(45°)	-5.17	-7.65	-8.72	-10.74	-8.42	-8.05	-7.41	-6.59	-9.6	-8.36	-11.97	-11.41	-10.66	-9.65	-7.23	-4.29	-3.73	-8.01	-6.89	-6.56	-10.38	-11.05	-15.35	-6.94
Θ(60°)	-7.12	-6.11	-7.13	-12.57	-16.39	-14.26	-16.12	-7.02	-6.79	-7.98	-10.62	-8.85	-4.76	-7.38	-5.83	-6.59	-6.23	-15.77	-12.78	-11.34	-9.4	-7.82	-2.48	-2.88
Θ(75°)	-6.67	-8.16	-7.61	-10.92	-9.42	-10.74	-15.21	-11.89	-9.5	-10.89	-5.56	-8.02	-3.79	-5.02	-9.94	-13.17	-11.51	-12.49	-8.48	-5.16	-7.35	-6.14	-9.54	-6.25
Θ(90°)	-1.96	-8.19	-4.87	-13.2	-13.33	-14.3	-9.92	-8.09	-9.74	-10.48	-6.56	-9.09	-5.49	-6.96	-6.97	-9	-14.82	-10.21	-8.7	-11.09	-7.05	-5.04	-3.29	-5.51
Θ(105°)	-5.4	-8.82	-4.47	-4.71	-12.83	-30.09	-9.81	-9.4	-11.84	-7.3	-4.9	-8.04	-1.93	-5.98	-5.35	-8.4	-10.7	-9.97	-12.54	-6.77	-11.38	-15.81	-7.32	-10.54
Θ(120°)	-13.7	-12.72	-10.41	-7.24	-11.23	-15.33	-14.06	-12.03	-5.5	-6.2	-11.54	-6.95	-3.73	-9.01	-11.25	-11.32	-14.98	-10.35	-11.73	-14.63	-5.4	-3.86	-9.62	-11.18
Θ(135°)	-9.05	-12.7	-7.33	-13.78	-4.11	-10.28	-10.1	-18.94	-9.96	-9.08	-16.38	-7.05	-3.51	-9.63	-3.53	-6.29	-5.96	-13.3	-6.21	-20.41	-6.69	-11.04	-12.31	-2.5
Θ(150°)	-12.5	-16.88	-10.08	-16.73	-9.08	-6.53	-7.63	-7.67	-8.02	-11.48	-13.67	-12.36	-11.62	-5.36	-6.46	-5.1	-8.43	-13.38	-20.99	-13.65	-10.36	-4.77	-5.51	-7.74
Θ(165°)	-7.29	-8.43	-9.53	-6.8	-11.07	-10.18	-6.94	-9.94	-7.87	-7.8	-8.83	-10.68	-5.1	-5.01	-5.32	-7.67	-9.99	-7.85	-13.46	-16.81	-22.53	-14.07	-10.58	-5.95
Θ(180°)	-8.23	-11.58	-13.78	-14.61	-17.41	-13.95	-12.17	-11.43	-10.21	-10.8	-10.98	-10.1	-12.91	-11.21	-10.52	-10.39	-10.3	-12.86	-13.28	-13.49	-12.65	-10.55	-10.11	-10.61
Freq(Hz)	6.995G	Pol.	Theta	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DG(dBi)	Φ(0°)	Φ(15°)	Φ(30°)	Φ(45°)	Φ(60°)	Φ(75°)	Φ(90°)	Φ(105°)	Φ(120°)	Φ(135°)	Φ(150°)	Φ(165°)	Φ(180°)	Φ(195°)	Φ(210°)	Φ(225°)	Φ(240°)	Φ(255°)	Φ(270°)	Φ(285°)	Φ(300°)	Φ(315°)	Φ(330°)	Φ(345°)
Θ(0°)	-17.1	-22.99	-19.26	-18.96	-11.75	-12.11	-9.39	-9.39	-8.15	-11.03	-12.2	-13.2	-14.95	-19.01	-18.65	-12.72	-12.21	-9.12	-7.99	-7.81	-8.55	-9.4	-13.63	-15.42
Θ(15°)	-15.67	-12.52	-11.01	-8.77	-8.36	-8.78	-7.84	-9.72	-9.81	-6.27	-6.56	-6.76	-8	-8.98	-10.85	-10.34	-8.33	-9.47	-7.66	-9.63	-11.51	-8.46	-11.56	-14.11
Θ(30°)	-4.11	-2.19	-2.77	-5.48	-7.69	-1.91	-2.53	-5.93	-5.28	-5.2	-6.64	-6.06	-3.19	-3	-2.67	-4.31	-5.34	-1.73	-1.79	-3.3	-4.03	-5.53	-1.89	-1.37
Θ(45°)	0.86	-0.73	0.83	-1.3	-3.03	-3.09	-2.88	-1.44	-0.78	-3.07	-7.44	-3.75	-2.43	0.98	-1.67	-0.01	1.33	1.4	1.13	1.43	1.25	3.64	0.71	1.82
Θ(60°)	2.57	2.06	1.03	0.86	-2	-0.14	-0.19	0.94	-1.71	0	-2.74	-1.32	-1.57	-0.97	-2.93	1.4	3.54	0.84	1.95	1.98	4.6	4.41	5.72	5.9
Θ(75°)	3.05	1.18	-0.06	1.58	1.2	0.32	0.65	-1.64	-1.49	-3.01	-0.8	-0.19	0.18	-0.63	0.87	2.53	2.66	4.62	4.18	3.27	4.51	3.61	4.79	5.41
Θ(90°)	1.6	0.01	0.77	2.06	1.48	0.26	-0.55	-1.72	1.2	-2.47	1.93	-0.16	-0.59	0.04	1.79	4.05	4.09	3.29	3.41	3.15	5.42	6.22	6.21	1.87
Θ(105°)	-0.45	-0.89	0.14	0.05	-0.75	-0.3	0.36	-2.24	-2.92	-1.38	0.25	0.41	1.27	-1.98	0.87	4.29	2.73	2.99	2.99	2.34	3.74	3.1	3.31	-4.18
Θ(120°)	1.22	-0.17	0.04	0.8	0	-2.48	-4.74	-4.77	-4.68	-4.34	1.03	-0.61	1.2	-2.5	0.32	5.37	4.48	4.84	0.24	2.63	3.21	4.66	-1.28	-2.25
Θ(135°)	-0.22	-2.11	-1.72	-5.59	-6.43	-5.76	-8.77	-7.86	-13.28	-5.1	-2.86	-3.35	-4.07	-2.08	-2.87	0	-2.23	-1.65	1.39	3.65	2.41	1.53	-0.95	0.91
Θ(150°)	-7.14	-8.39	-11.05	-11.37	-18.61	-8.24	-12.3	-14.45	-14.64	-9.67	-10.43	-10.18	-8.08	-8.65	-3.92	-1.76	-1.07	-7.18	-2.9	-4.15	-2.98	2.4	-4.57	-4.97
Θ(165°)	-9.95	-13.07	-11.32	-7.69	-11.03	-9.17	-7.83	-9.14	-8.34	-10.39	-9.67	-9.46	-7.66	-7.59	-9.21	-4.86	-1.14	-1.24	-2.22	-1.27	-6.95	-8.25	-7.29	-8.77
Θ(180°)	-9.39	-13.93	-14.64	-9.7	-9.6	-9.08	-12	-12.45	-10.91	-8.06	-7.14	-8.25	-9.3	-9.39	-13.26	-10.7	-8.75	-8.89	-9.76	-12.27	-16.88	-10.04	-9.61	-11.21



Gain Result

Table with columns for Freq(Hz), Gain, Phi, and various Antenna angles (Ant. 1 to Ant. 24). It contains multiple data blocks for different frequencies (6.175G, 6.475G, 6.695G) and polarizations (Pol. Phi, Pol. Theta).



Radiated Composite Gain of WLAN 6GHz

Appendix C

Table with columns for Frequency (6.995G, 6.175G, 6.475G), Gain, and various Azimuth (Theta) and Elevation (Phi) angles from 0 to 180 degrees.



Radiated Composite Gain of WLAN 6GHz

Appendix C

Table with columns for Freq(Hz), Gain, and various Phi angles (0 to 345 degrees) for different antenna configurations (Ant. 2, Ant. 3).



Radiated Composite Gain of WLAN 6GHz

Appendix C

Table with 23 columns (Gain, Phi(0°) to Phi(345°)) and 100 rows of data. The table is divided into four frequency sections: 6.475G, 6.695G, 6.995G, and 6.175G. Each section contains a header row for Gain and Phi angles, followed by 18 rows of gain data for each angle. The last row of each section is a frequency and antenna configuration summary.



Radiated Composite Gain of WLAN 6GHz

Appendix C

Table with columns for frequency (6.175G, 6.475G, 6.695G, 6.995G), gain, and various angles (Theta and Phi) from 0 to 180 degrees. Each cell contains a numerical value representing the gain at that specific angle and frequency.



Θ(0°)	-5.41	-6.01	-5.36	-8.2	-10.05	-12.12	-16.05	-20.52	-16.65	-10.01	-14.1	-7.94	-7.59	-7.64	-7.4	-6.15	-8.52	-10.72	-14.95	-16.99	-15.14	-10.73	-10.29	-7.1
Θ(15°)	-2.05	-1.4	-2.64	-4.68	-5.74	-8.74	-26.75	-12.95	-10.53	-6.97	-4.07	-0.87	-0.79	0.21	-0.57	-4.39	-6.22	-8.07	-14.88	-8.91	-4.52	-1.61	-1.73	-0.34
Θ(30°)	-0.92	-3.1	-5.37	-9.96	-4.16	-7.34	-6.73	-22.95	-14.08	-8.47	-7.46	-9.98	-8.22	-4.06	-2.72	-4.4	-8.15	-9.45	-12.81	-7.83	-2.38	0.15	-0.93	-0.85
Θ(45°)	2.5	2.5	-0.7	-2.87	-7.43	-7.24	-16.4	-18.82	-10.27	-13.47	-9.63	-12.56	-6.67	-6.73	-7.36	-3.65	-5.79	-9.18	-15.04	-15.52	-8.33	-1.99	-2.38	1.63
Θ(60°)	0.73	0.88	-2	-5.52	-6.87	-18.55	-10.95	-18.35	-16.05	-14.52	-17.9	-7.22	-18.39	-9.32	-9.14	0.05	-3.15	-19.08	-10.58	-2.72	-2.49	-0.57	-5.9	-1.98
Θ(75°)	-7.13	-6.41	-1.5	-7.26	-5.81	-6.4	-5.84	-6.78	-8.73	-11.49	-4.58	-14.7	-9.59	-12.75	-3.2	-3.79	-5.35	-7.15	-17.54	-5.95	-1.39	-3.17	1.63	0.18
Θ(90°)	1.32	-2.02	-4.58	-7.43	-11.69	-12.12	-8.88	-14.75	-26.04	-12.17	-22.04	-5.68	-3.47	-9.63	-6.6	-9.71	-12.64	-9.92	-16.29	-4.23	-4.52	-5.52	-2.17	-3.18
Θ(105°)	1.6	1.29	-0.97	-0.1	-4.65	-7.67	-11.84	-13.82	-16.4	-11.38	-12.13	-6.01	-6.48	-1.43	-0.75	-11.56	-15.45	-15.44	-45.55	-10.27	-7	-12.75	-1.75	0.59
Θ(120°)	0.89	0.68	-0.98	1.14	-3.64	-4.62	-7.87	-10.52	-12.69	-19.38	-2.65	-17.18	-3.53	-5.5	-11.67	-3.57	-8.68	-8.41	-13.63	-6.17	-1.5	-2.95	0.55	-0.8
Θ(135°)	4.91	2.46	-1.87	2.24	-8.7	-8.12	-13.08	-16.99	-6.74	-9.34	-18.65	-17.21	-4.29	-3.8	-4.24	-3.31	-4.63	-12.11	-18.79	-9.26	-5.26	-1.35	-2.34	2.49
Θ(150°)	1.31	1.46	2.44	-0.05	-9.5	-7.14	-18.76	-12.36	-16.12	-13.52	-19.9	-12.84	-8.73	-7.37	-7.9	-8.48	-12.54	-12.08	-10.52	-7.03	-3.91	2.05	4.55	4.1
Θ(165°)	2.78	2.38	-0.17	-1.75	-10.68	-10.24	-19.98	-26.98	-12.03	-9.24	-6.32	-2.81	0.4	1.05	0.08	-1.33	-4.52	-13.28	-13.42	-10.23	-15.29	-4.17	0.31	2.24
Θ(180°)	-1.17	-1.99	-2.75	-2.7	-9.7	-20.51	-21.79	-18.65	-14.47	-6.06	-1.64	-3.17	-1.68	-1.23	-1.88	-3.3	-6.35	-15.82	-15.34	-5.74	-2.15	-0.17	0.43	0.65
Freq(Hz)	6.995G	Pol.	Theta	Ant. 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gain	Φ(0°)	Φ(15°)	Φ(30°)	Φ(45°)	Φ(60°)	Φ(75°)	Φ(90°)	Φ(105°)	Φ(120°)	Φ(135°)	Φ(150°)	Φ(165°)	Φ(180°)	Φ(195°)	Φ(210°)	Φ(225°)	Φ(240°)	Φ(255°)	Φ(270°)	Φ(285°)	Φ(300°)	Φ(315°)	Φ(330°)	Φ(345°)
Θ(0°)	-13.15	-16.29	-21.56	-12.55	-14.69	-10.66	-9.55	-5.54	-4.6	-7.63	-13.54	-11.18	-13.68	-13.19	-13.46	-10.1	-7.92	-7.21	-6.38	-5.59	-4.58	-5.87	-7.48	-11.31
Θ(15°)	-13.68	-9.24	-8.48	-6.77	-1.97	-3.68	-7.51	-7	-18.21	-18.29	-22.87	-14.31	-9.03	-3.12	0.4	2	2.81	2.58	0.74	1.58	-1.6	-2.32	-8.42	-13.59
Θ(30°)	-10.31	-10.39	-14.2	-11.3	-16.17	-15.54	-20.5	-10.35	-12.48	-15.23	-9.57	-6.02	-8.94	-7.33	-0.83	-1.18	0.34	1.43	1.8	-0.51	1.81	-0.34	-1.32	-5.7
Θ(45°)	-6.18	-9.63	-15.79	-14.76	-15.97	-16.16	-10.94	-7.12	-18.31	-8.87	-14.48	-12.27	-17.37	-6.72	-6.11	-7.68	-3.84	-1.91	0.58	-2.64	-1.92	-1.19	-5.74	-7.54
Θ(60°)	-12.23	-16.05	-15.88	-13.76	-15.08	-11.98	-18.82	-13.73	-19.64	-15.86	-15.76	-24.85	-10.39	-32.84	-5.92	-12.57	-3.05	-4.93	-6.38	0.09	-2.75	-16.28	-12.16	-13
Θ(75°)	-20.17	-12.86	-10.46	-12.14	-13.51	-13.58	-12.33	-23.03	-16.74	-21.52	-12.29	-10	-11.72	-16.87	-12.97	-9.98	-11.78	-4.37	-8.66	-9.7	-9.89	-11.52	-9.18	-7.53
Θ(90°)	-17.16	-11.31	-11.15	-10.92	-16.84	-15.3	-15.34	-10.73	-15.82	-10.96	-7.88	-23.48	-15.2	-17.8	-8.68	-9.46	-7.7	-7.14	-12.41	-10.52	-24.37	-8.65	-14.3	-9.81
Θ(105°)	-6.63	-2.89	-8.25	-4.45	-3.02	-5.68	-6.64	-8.53	-11.59	-8.71	-9.28	-7.19	-15.17	-8.4	-6.52	-9.42	-13.88	-8.63	-18.51	-14.05	-6.11	-15.63	-15.04	-16.32
Θ(120°)	-13.32	-5.65	-1.64	-2.75	-3.6	-3.33	-5.96	-2	-4.82	-6.25	-3.05	-15.16	-7.27	-4.85	-22.12	-2.28	-8.64	-19.35	-6.75	-7.01	-9.14	-2.9	-5.58	-10.6
Θ(135°)	-8.18	-4.15	-7.66	-0.19	-2.09	-3.26	-7.64	-4.65	-4.34	-4.33	-10.55	-16.93	-19.97	-20.21	-8.09	-10.9	-6.46	-0.37	-7.73	-10.95	-2.68	-5.13	-20.13	-12.27
Θ(150°)	-11.65	-6.48	-0.44	0.11	-1.95	-3.88	-0.52	-3.68	-6.36	-28.04	-9.01	-12.2	-17.51	-13.49	-7.46	-10.31	-4.21	-4.8	-2.19	-6.72	-4.59	-0.8	-3.2	-8.65
Θ(165°)	-12.47	-4.95	-1.78	-1.45	-0.33	-4.77	-1.01	-10.39	-2.32	-3.03	-11.84	-21.95	-14.78	-8.98	-2.67	0.37	2.23	3.4	0.91	-8.2	-17.48	-8.7	-7.75	-14.93
Θ(180°)	-17.02	-11.96	-5.06	-1.61	-4.99	-15	-1.55	-0.49	-6.6	-11.89	-10.03	-16.25	-12.96	-8.65	-4.4	-1.19	0.32	1.11	1.26	1.16	-0.03	-2.93	-7.04	-15.99