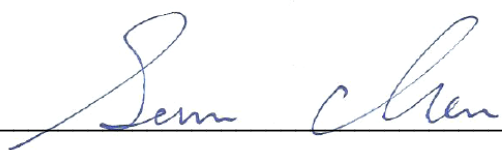


# Antenna Composite Gain Test Report

|                 |                                                                                                                                                |
|-----------------|------------------------------------------------------------------------------------------------------------------------------------------------|
| FCC ID          | 2BXL5-ARIA3629                                                                                                                                 |
| Equipment       | WiFi7 Tri-band Router W/SFP+ Cage and VoIP,<br>WiFi7 Tri-band Router,<br>WiFi7 Tri-band Router with VoIP,<br>WiFi7 Tri-band Router W/SFP+ Cage |
| Brand Name      | Hitron                                                                                                                                         |
| Model Name      | ARIA3629, ARIA3625, ARIA3625V, ARIA3625V-XPL, ARIA3626                                                                                         |
| Applicant       | Hitron Technologies Americas, Inc.<br>9000 E Nichols Ave, Suite 103 Centennial, CO 80112 USA                                                   |
| Manufacturer    | Hitron Technologies Inc.<br>No. 1-8, Li-Hsin 1st Rd. Hsinchu Science Park, Hsinchu 30078, Taiwan                                               |
| Standard        | KDB662911 D03 v02                                                                                                                              |
| Sample Received | Jul. 07, 2026                                                                                                                                  |
| Start Test Date | Jul. 22, 2026                                                                                                                                  |
| Final Test Date | Jul. 23, 2026                                                                                                                                  |



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.)



## **Table of Contents**

|                                                                          |           |
|--------------------------------------------------------------------------|-----------|
| <b>History of this test report.....</b>                                  | <b>3</b>  |
| <b>1. Operation Mode and Antenna Information .....</b>                   | <b>4</b>  |
| <b>2. Table for Multiple Listing .....</b>                               | <b>5</b>  |
| <b>3. Test Frequency .....</b>                                           | <b>6</b>  |
| <b>4. Testing Location.....</b>                                          | <b>6</b>  |
| <b>5. Test Facility and Configuration.....</b>                           | <b>7</b>  |
| <b>6. Reference Calibration .....</b>                                    | <b>8</b>  |
| <b>7. Test Method .....</b>                                              | <b>9</b>  |
| <b>8. Measured Values and Calculation of Maximum Gain Positions.....</b> | <b>10</b> |
| <b>9. Summary of Test Result .....</b>                                   | <b>12</b> |
| <b>10. Test Setup .....</b>                                              | <b>14</b> |
| <b>11. Test Equipment and Calibration Data .....</b>                     | <b>15</b> |
| <b>12. Test Results .....</b>                                            | <b>16</b> |

## History of this test report

[illegible]

## 1. Operation Mode and Antenna Information

| Antenna Position | RF Port | Brand Name | Model Name        | Antenna Type | Connector | Modes of Operation      |
|------------------|---------|------------|-------------------|--------------|-----------|-------------------------|
| 2G5GAnt1         | 1       | PSA        | EmP344c-B-I75(R)  | Dipole       | I-PEX     | WLAN 2.4GHz + WLAN 5GHz |
| 2G5GAnt2         | 2       | PSA        | EmP379a-B-I75(G)  | Dipole       | I-PEX     | WLAN 2.4GHz + WLAN 5GHz |
| 2G5GAnt3         | 3       | PSA        | EmP344e-B-I85(Y)  | Dipole       | I-PEX     | WLAN 2.4GHz + WLAN 5GHz |
| 2G5GAnt4         | 4       | PSA        | EmP344d-B-I130(W) | Dipole       | I-PEX     | WLAN 2.4GHz + WLAN 5GHz |
| 6GAnt1           | 1       | PSA        | EmP630b-B-I130(B) | Dipole       | I-PEX     | WLAN 6GHz               |
| 6GAnt2           | 2       | PSA        | EmP630a-B-I95(Br) | Dipole       | I-PEX     | WLAN 6GHz               |
| 6GAnt3           | 3       | PSA        | EmP630c-B-I90(Gr) | Dipole       | I-PEX     | WLAN 6GHz               |
| 6GAnt4           | 4       | PSA        | EmP630d-B-I60(BI) | Dipole       | I-PEX     | WLAN 6GHz               |

### 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)

6GAnt1~4 can be used as transmitting/receiving antenna.

6GAnt1~4 could transmit/receive simultaneously.

## 2. Table for Multiple Listing

The Equipment Names/model names in the following table are all refer to the identical product

| Equipment Name                             | Model Name    | Phone Port | SFP+ Cage | Braille       | Service Provider                         |
|--------------------------------------------|---------------|------------|-----------|---------------|------------------------------------------|
| WiFi7 Tri-band Router W/SFP+ Cage and VoIP | ARIA3629      | 2          | 1         | Not Supported | Other than the service provider, Explore |
| WiFi7 Tri-band Router                      | ARIA3625      | 0          | 0         | Not Supported | Other than the service provider, Explore |
| WiFi7 Tri-band Router with VoIP            | ARIA3625V     | 2          | 0         | Supported     | Other than the service provider, Explore |
|                                            | ARIA3625V-XPL |            |           |               | For the service provider: Explore        |
| WiFi7 Tri-band Router W/SFP+ Cage          | ARIA3626      | 0          | 1         | Not Supported | Other than the service provider, Explore |

Note 1: From the above models, model: ARIA3629 was selected as representative model for the test and its data was 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<br>(°C / %) | Test Date                     |
|----------------|---------------|---------------|------------------------------|-------------------------------|
| Radiated       | 05CH03-HY     | Rofy Chen     | 23.5-24.5 / 45-55            | Jul. 22, 2026 ~ Jul. 23, 2026 |

Note:

Testing Site Information

Brand Name: TDK

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

Characteristic: Fully Anechoic Chamber

## 5. Test Facility and Configuration

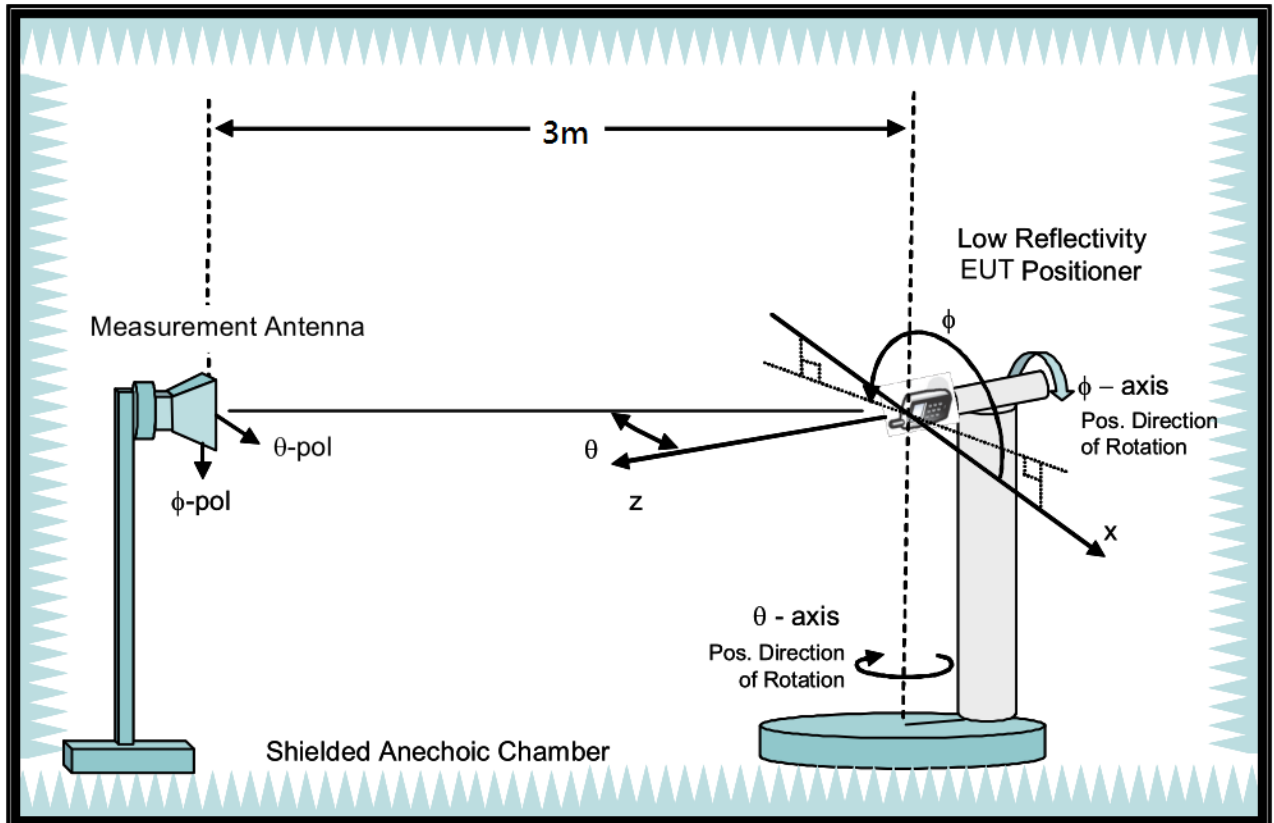
Test configuration: Reference to CITA OTA distributed-axes system configuration.

Chamber: Fully Anechoic Chamber.

Measurement antenna: Dual Polarization Horn antenna

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

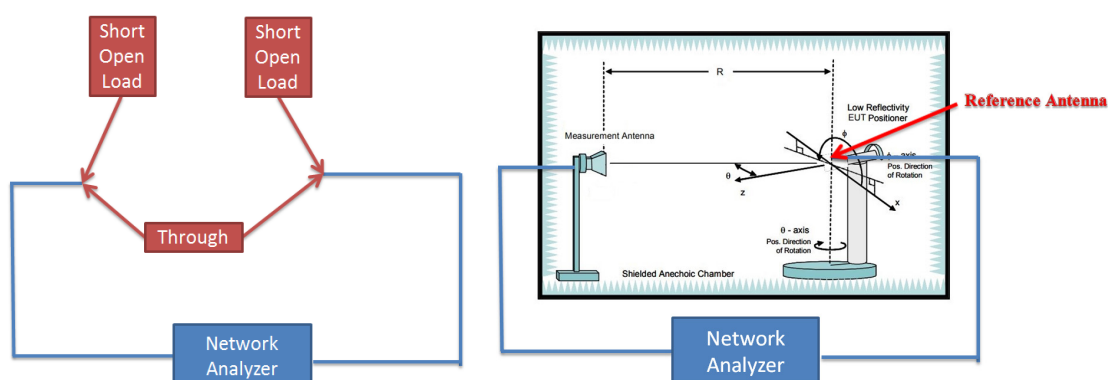
#Reference to CTIA "ctia-test-plan-for-wireless-device-over-the-air-performance-ver-3-7-1"



## 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) | -32.12 | -32.48 | -32.45 | -34.55 | -34.56 | -34.78 | -34.94 | -34.89 | -34.99 | -35.16 | -35.32 | -35.68 | -35.88 | -35.97 |
| G(phi) reading (dB)   | -32.35 | -32.11 | -32.43 | -34.12 | -33.95 | -34.23 | -34.56 | -34.68 | -34.78 | -35.32 | -35.45 | -35.67 | -35.86 | -36.11 |
| Reference gain (dBi)  | 10.2   | 10.2   | 10.2   | 11     | 11.3   | 11.6   | 12     | 11.6   | 11.4   | 11.3   | 11.4   | 11.1   | 11     | 10.3   |
| Factor(theta) (dB)    | 42.32  | 42.68  | 42.65  | 45.55  | 45.86  | 46.38  | 46.94  | 46.49  | 46.39  | 46.46  | 46.72  | 46.78  | 46.88  | 46.27  |
| Factor(phi) (dB)      | 42.55  | 42.31  | 42.63  | 45.12  | 45.25  | 45.83  | 46.56  | 46.28  | 46.18  | 46.62  | 46.85  | 46.77  | 46.86  | 46.41  |

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.

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

## 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

For 2G5GAnt1~4:

DG\_1SS max value position

| Frequency (Hz)     | 2.45G | 5.2G  | 5.3G  | 5.6G   | 5.785G |
|--------------------|-------|-------|-------|--------|--------|
| Ant. 1 (dBi)       | 2.1   | 3.11  | 2.74  | 0.78   | 1.49   |
| Ant. 2 (dBi)       | 0.12  | -0.02 | -1.42 | -19.94 | -19.43 |
| Ant. 3 (dBi)       | 1.88  | -3.37 | -1.01 | 5.8    | 5.32   |
| Ant. 4 (dBi)       | -5.37 | -5.06 | -6.24 | -2.69  | -9.04  |
| DG [1SS] (dBi)     | 6.17  | 5.26  | 5.1   | 5.75   | 4.84   |
| Polarization       | Phi   | Phi   | Phi   | Theta  | Theta  |
| $\Theta(^{\circ})$ | 90    | 45    | 52.5  | 97.5   | 105    |
| $\Phi(^{\circ})$   | 300   | 315   | 315   | 22.5   | 22.5   |

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)                            | 2.45G             | 5.2G              | 5.3G              | 5.6G               | 5.785G             |
|-------------------------------------------|-------------------|-------------------|-------------------|--------------------|--------------------|
| Ant. 1 [ $10^{(G/20)}$ ]                  | $10^{(2.1/20)}$   | $10^{(3.11/20)}$  | $10^{(2.74/20)}$  | $10^{(0.78/20)}$   | $10^{(1.49/20)}$   |
| Ant. 2 [ $10^{(G/20)}$ ]                  | $10^{(0.12/20)}$  | $10^{(-0.02/20)}$ | $10^{(-1.42/20)}$ | $10^{(-19.94/20)}$ | $10^{(-19.43/20)}$ |
| Ant. 3 [ $10^{(G/20)}$ ]                  | $10^{(1.88/20)}$  | $10^{(-3.37/20)}$ | $10^{(-1.01/20)}$ | $10^{(5.8/20)}$    | $10^{(5.32/20)}$   |
| Ant. 4 [ $10^{(G/20)}$ ]                  | $10^{(-5.37/20)}$ | $10^{(-5.06/20)}$ | $10^{(-6.24/20)}$ | $10^{(-2.69/20)}$  | $10^{(-9.04/20)}$  |
| Ant. 1 [ $10^{(G/20)}$ ] value            | 1.274             | 1.431             | 1.371             | 1.094              | 1.187              |
| Ant. 2 [ $10^{(G/20)}$ ] value            | 1.014             | 0.998             | 0.849             | 0.101              | 0.107              |
| Ant. 3 [ $10^{(G/20)}$ ] value            | 1.242             | 0.678             | 0.89              | 1.95               | 1.845              |
| Ant. 4 [ $10^{(G/20)}$ ] value            | 0.539             | 0.558             | 0.488             | 0.734              | 0.353              |
| Sum All Antenna [Amax]                    | 4.068             | 3.665             | 3.598             | 3.878              | 3.492              |
| DG [ $10 \cdot \log(A_{max}^2/N_{ant})$ ] | 6.17              | 5.26              | 5.1               | 5.75               | 4.84               |

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 6GAnt1~4:

DG\_1SS max value position

| Frequency (Hz)     | 6.175G | 6.475G | 6.695G | 6.995G |
|--------------------|--------|--------|--------|--------|
| Ant. 1 (dBi)       | 2.98   | 3.4    | 1.25   | -1.73  |
| Ant. 2 (dBi)       | 3.91   | 2.19   | -2.18  | 2.01   |
| Ant. 3 (dBi)       | 3.3    | -1.63  | 4.99   | 3.98   |
| Ant. 4 (dBi)       | -4.05  | 4.29   | 3.6    | 2.17   |
| DG [1SS] (dBi)     | 8.08   | 8.36   | 8.34   | 7.86   |
| Polarization       | Theta  | Theta  | Theta  | Theta  |
| $\Theta(^{\circ})$ | 105    | 90     | 97.5   | 105    |
| $\Phi(^{\circ})$   | 352.5  | 60     | 322.5  | 322.5  |

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 [ $10^{(G/20)}$ ]                  | $10^{(2.98/20)}$  | $10^{(3.4/20)}$   | $10^{(1.25/20)}$  | $10^{(-1.73/20)}$ |
| Ant. 2 [ $10^{(G/20)}$ ]                  | $10^{(3.91/20)}$  | $10^{(2.19/20)}$  | $10^{(-2.18/20)}$ | $10^{(2.01/20)}$  |
| Ant. 3 [ $10^{(G/20)}$ ]                  | $10^{(3.3/20)}$   | $10^{(-1.63/20)}$ | $10^{(4.99/20)}$  | $10^{(3.98/20)}$  |
| Ant. 4 [ $10^{(G/20)}$ ]                  | $10^{(-4.05/20)}$ | $10^{(4.29/20)}$  | $10^{(3.6/20)}$   | $10^{(2.17/20)}$  |
| Ant. 1 [ $10^{(G/20)}$ ] value            | 1.409             | 1.479             | 1.155             | 0.819             |
| Ant. 2 [ $10^{(G/20)}$ ] value            | 1.569             | 1.287             | 0.778             | 1.26              |
| Ant. 3 [ $10^{(G/20)}$ ] value            | 1.462             | 0.829             | 1.776             | 1.581             |
| Ant. 4 [ $10^{(G/20)}$ ] value            | 0.627             | 1.639             | 1.514             | 1.284             |
| Sum All Antenna [Amax]                    | 5.067             | 5.233             | 5.223             | 4.945             |
| DG [ $10 \cdot \log(A_{max}^2/N_{ant})$ ] | 8.08              | 8.36              | 8.34              | 7.86              |

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

## 9. Summary of Test Result

For 2G5GAnt1~4:

| Freq(Hz)                                               | 2.45G         | 5.2G            | 5.3G           | 5.6G              | 5.785G          |
|--------------------------------------------------------|---------------|-----------------|----------------|-------------------|-----------------|
| Ant. 1 Max Gain (dBi)                                  | 4.34          | 3.18            | 2.93           | 5.07              | 4.25            |
| Ant. 2 Max Gain (dBi)                                  | 3.08          | 4.92            | 3.91           | 3.58              | 3.43            |
| Ant. 3 Max Gain (dBi)                                  | 5             | 4.96            | 4.25           | 5.8               | 5.32            |
| Ant. 4 Max Gain (dBi)                                  | 5.01          | 2.8             | 2.97           | 3.87              | 3.64            |
| Ant. 1 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$ | Theta/60/15   | Phi/52.5/315    | Theta/97.5/30  | Theta/127.5/337.5 | Theta/127.5/345 |
| Ant. 2 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$ | Phi/82.5/90   | Phi/112.5/270   | Phi/112.5/270  | Phi/112.5/270     | Phi/90/37.5     |
| Ant. 3 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$ | Theta/105/195 | Theta/97.5/82.5 | Theta/90/75    | Theta/97.5/22.5   | Theta/105/22.5  |
| Ant. 4 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$ | Theta/60/150  | Theta/45/7.5    | Theta/52.5/7.5 | Theta/30/352.5    | Theta/30/345    |
| Max Gain (dBi)                                         | 5.01          | 4.96            | 4.25           | 5.8               | 5.32            |
| DG [1SS] (dBi)                                         | 6.17          | 5.26            | 5.1            | 5.75              | 4.84            |
| DG [1SS] (dBi) Revised                                 | 6.17          | 5.26            | 5.1            | 5.8               | 5.32            |
| DG [2SS] (dBi)                                         | 5.01          | 4.96            | 4.25           | 5.8               | 5.32            |
| DG [4SS] (dBi)                                         | 5.01          | 4.96            | 4.25           | 5.8               | 5.32            |

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. If directional gain is less than max gain, use max gain as directional gain. Refer to KDB662911D01 (F) (2) (e) (ii)
4. Directional Gain (2SS) = Directional Gain (1SS) – 3dB
5. Directional Gain (4SS) = Directional Gain (1SS) – 6dB

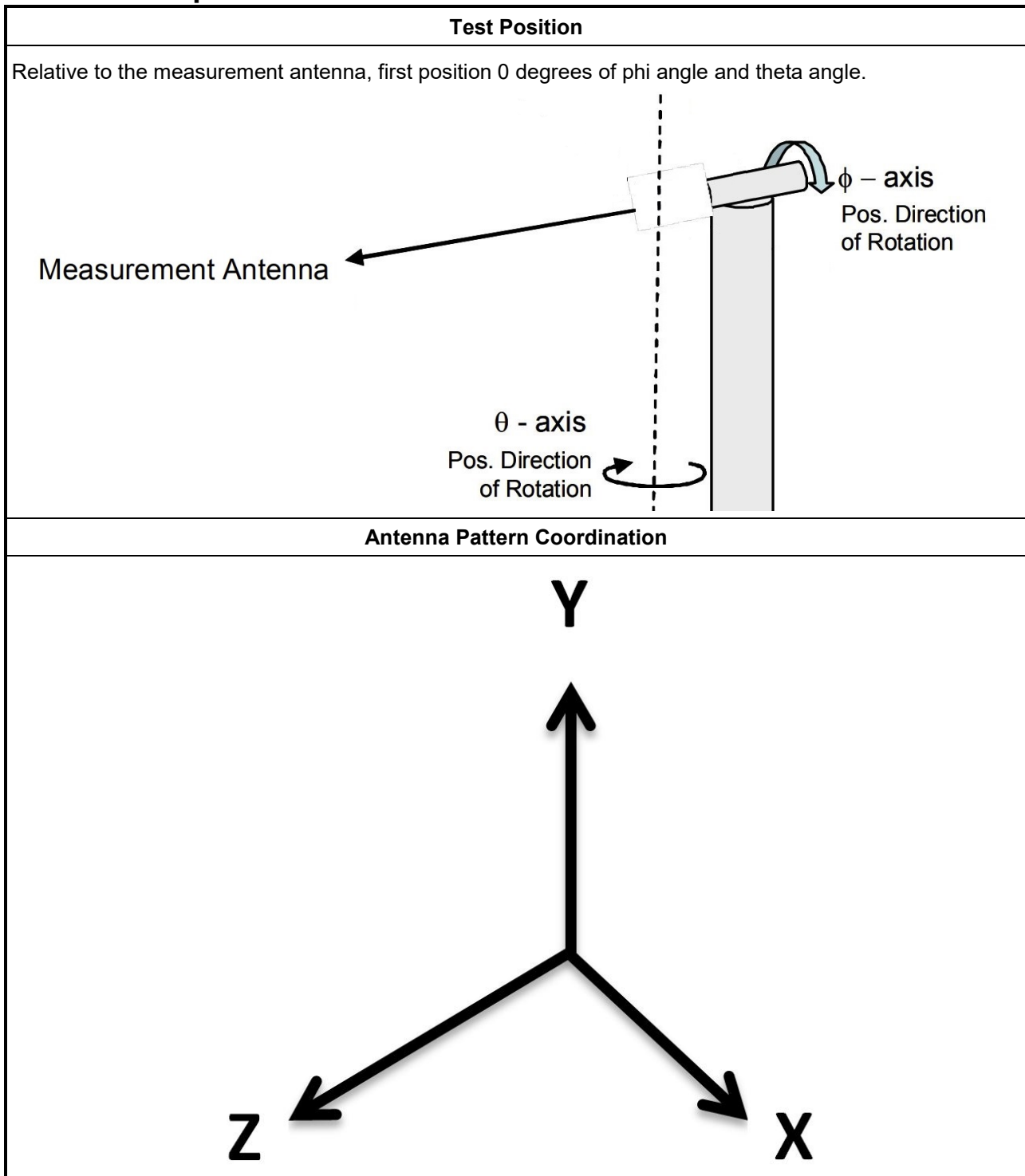
**For 6GAnt1~4:**

| Frequency (Hz)                                         | 6.175G            | 6.475G            | 6.695G            | 6.995G            |
|--------------------------------------------------------|-------------------|-------------------|-------------------|-------------------|
| Ant. 1 Max Gain (dBi)                                  | 6.17              | 6.76              | 5.33              | 5.89              |
| Ant. 2 Max Gain (dBi)                                  | 5.3               | 4.57              | 4.78              | 6.56              |
| Ant. 3 Max Gain (dBi)                                  | 4.29              | 4.27              | 4.99              | 4.76              |
| Ant. 4 Max Gain (dBi)                                  | 5.26              | 4.73              | 5.38              | 4.91              |
| Ant. 1 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$ | Theta/97.5/90     | Theta/97.5/90     | Theta/105/67.5    | Theta/97.5/90     |
| Ant. 2 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$ | Theta/105/7.5     | Theta/112.5/7.5   | Theta/142.5/255   | Theta/135/262.5   |
| Ant. 3 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$ | Theta/90/352.5    | Theta/97.5/255    | Theta/97.5/322.5  | Theta/97.5/322.5  |
| Ant. 4 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$ | Theta/112.5/277.5 | Theta/112.5/277.5 | Theta/112.5/277.5 | Theta/112.5/277.5 |
| Max Gain (dBi)                                         | 6.17              | 6.76              | 5.38              | 6.56              |
| DG [1SS] (dBi)                                         | 8.08              | 8.36              | 8.34              | 7.86              |
| DG [2SS] (dBi)                                         | 6.17              | 6.76              | 5.38              | 6.56              |
| DG [4SS] (dBi)                                         | 6.17              | 6.76              | 5.38              | 6.56              |

**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. If directional gain is less than max gain, use max gain as directional gain. Refer to KDB662911D01 (F) (2) (e) (ii)
4. Directional Gain (2SS) = Directional Gain (1SS) – 3dB
5. Directional Gain (4SS) = Directional Gain (1SS) – 6dB

## 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-1531 | 1GHz~18GHz       | Dec. 19, 2025    | Dec. 18, 2026        |
| 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    | Aug. 06, 2025    | Aug. 05, 2026        |
| 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, 5GHz..... | Page 17 |
| Appendix B – Radiated Composite Gain of 6GHz.....         | Page 31 |
| Appendix C – Antenna Pattern of 2.4GHz, 5GHz.....         | Page 42 |
| Appendix D – Antenna Pattern of 6GHz .....                | Page 49 |
| Appendix E – Test Photos.....                             | Page 55 |



-

| Freq(Hz)                      | 2.45G         | 5.2G            | 5.3G           | 5.6G              | 5.785G          |
|-------------------------------|---------------|-----------------|----------------|-------------------|-----------------|
| Ant. 1 Max Gain (dBi)         | 4.34          | 3.18            | 2.93           | 5.07              | 4.25            |
| Ant. 2 Max Gain (dBi)         | 3.08          | 4.92            | 3.91           | 3.58              | 3.43            |
| Ant. 3 Max Gain (dBi)         | 5             | 4.96            | 4.25           | 5.8               | 5.32            |
| Ant. 4 Max Gain (dBi)         | 5.01          | 2.8             | 2.97           | 3.87              | 3.64            |
| Ant. 1 Polarization/Θ(°)/Φ(°) | Theta/60/15   | Phi/52.5/315    | Theta/97.5/30  | Theta/127.5/337.5 | Theta/127.5/345 |
| Ant. 2 Polarization/Θ(°)/Φ(°) | Phi/82.5/90   | Phi/112.5/270   | Phi/112.5/270  | Phi/112.5/270     | Phi/90/37.5     |
| Ant. 3 Polarization/Θ(°)/Φ(°) | Theta/105/195 | Theta/97.5/82.5 | Theta/90/75    | Theta/97.5/22.5   | Theta/105/22.5  |
| Ant. 4 Polarization/Θ(°)/Φ(°) | Theta/60/150  | Theta/45/7.5    | Theta/52.5/7.5 | Theta/30/352.5    | Theta/30/345    |
| Max Gain (dBi)                | 5.01          | 4.96            | 4.25           | 5.8               | 5.32            |
| DG [1SS] (dBi)                | 6.17          | 5.26            | 5.1            | 5.75              | 4.84            |
| DG [1SS] (dBi) Revised        | 6.17          | 5.26            | 5.1            | 5.8               | 5.32            |
| DG [2SS] (dBi)                | 5.01          | 4.96            | 4.25           | 5.8               | 5.32            |
| DG [4SS] (dBi)                | 5.01          | 4.96            | 4.25           | 5.8               | 5.32            |



# Radiated Composite Gain Data\_2.4GHz, 5GHz

# Appendix A

## DG 1SS Result

| Freq(Hz)  | 2.45G/Pol.    | Phi-            | +               | +               | +               | +               | +               | +                 | +                 | +                 | +                 | +                 | +                 | +                 | +                 | +                 | +                 | +                 | +                 | +                 | +                 |                   |                   |                   |
|-----------|---------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| 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°)     | -3.26/2.98    | -2.43/-2.33     | -1.8/-1.7       | -1.71/-1.81     | -1.96/-2.19     | -2.39/-2.49     | -2.68/-2.87     | -2.86/-2.89       | -2.73/-2.49       | -2.34/-2.43       | -2.42/-2.5        | -2.61/-2.68       | -2.76/-2.58       | -2.31/-1.98       | -1.72/-1.62       | -1.61/-1.72       | -1.94/-2.1        | -2.17/-2.33       | -2.29/-2.11       | -2.06/-2.1        | -1.97/-2.07       | -2.07/-2.21       | -2.44/-2.82       | -3.24/-3.46       |
| Θ(7.5°)   | -3.39/-3.67   | -4/-3.71        | -3.08/-2.61     | -2.22/-1.96     | -2.28/-2.23     | -2.09/-2.21     | -2.02/-1.86     | -1.88/-1.81       | -1.5/-1.4         | -1.52/-1.67       | -1.95/-1.9        | -2.24/-2.71       | -2.79/-2.94       | -3.1/-3           | -2.84/-2.61       | -2.23/-2.22       | -1.7/-2.08        | -1.91/-1.58       | -1.49/-1.54       | -2.52/-2.84       | -2.76/-2.75       | -3.06/-3.1        | -3.22/-3.38       | -3.58/-3.52       |
| Θ(15°)    | -3.12/-3.25   | -2.9/-2.49      | -1.99/-1.41     | -1.34/-1.73     | -1.61/-2.17     | -2.25/-2.17     | -1.9/-1.71      | -1.25/-0.84       | -0.61/-0.51       | -0.54/-0.78       | -1.13/-1.62       | -2.12/-2.39       | -2.52/-2.57       | -2.8/-2.8         | -2.86/-2.84       | -2.41/-2.2        | -1.87/-1.6        | -1.22/-1.05       | -1.05/-1.11       | -1.21/-1.3        | -1.69/-2.03       | -2.38/-2.49       | -2.22/-2.34       | -2.36/-3.11       |
| Θ(22.5°)  | -2.24/-2.19   | -2.03/-2.22     | -2.04/-1.82     | -1.82/-1.59     | -1.61/-1.9      | -2.23/-2.53     | -2.64/-2.1      | -1.82/-1.36       | -0.8/-0.48        | -0.57/-0.88       | -1.42/-2.05       | -2.23/-2.02       | -1.88/-1.95       | -2.08/-2.58       | -2.94/-3.18       | -2.97/-2.4        | -2.27/-1.64       | -1.08/-0.56       | -0.13/-0.09       | 0.11/-0.04        | -0.43/-1          | -1.75/-3.02       | -2.36/-1.76       | -1.83/-2.31       |
| Θ(30°)    | -1.4/-1.27    | -1.27/-1.29     | -1.4/-1.49      | -1.48/-1.39     | -1.5/-1.81      | -1.93/-2.26     | -2.34/-2.16     | -1.84/-1.55       | -1.44/-1.31       | -1.28/-1.67       | -1.97/-2.27       | -1.98/-1.43       | -1.25/-1.21       | -1.57/-1.99       | -2.59/-3.05       | -3.07/-2.52       | -1.85/-1.27       | -0.72/-0.29       | 0.10/34           | 0.590/3           | -0.28/-1.08       | -1.57/-1.84       | -1.5/-1.17        | -1.13/-1.54       |
| Θ(37.5°)  | -0.91/-0.72   | -0.55/-0.58     | -0.71/-0.81     | -0.64/-0.72     | -0.75/-1.27     | -1.51/-1.62     | -1.66/-1.55     | -1.67/-1.71       | -1.89/-2.35       | -2.4/-2.41        | -2.73/-2.56       | -1.7/-0.84        | -0.20/0.8         | 0.1/-0.22         | -0.56/-1.2        | -1.4/-1.34        | -1.23/-1.17       | -1.12/-1.07       | -0.98/-0.7        | -0.41/-0.21       | -0.22/-0.45       | -0.97/-1.18       | -1.18/-0.64       | -1.11/-1.02       |
| Θ(45°)    | -0.11/-0.37   | 0.53/-0.43      | 0.19/-0.04      | -0.09/-0.02     | -0.28/-0.52     | -0.79/-0.73     | -0.62/-0.5      | -0.53/-0.95       | -1.31/-1.81       | -1.7/-1.83        | -2.01/-2.18       | -1.69/-0.6        | 0.74/1.75         | 2.06/2.23         | 2.05/1.84         | 1.40/59           | 0.02/-0.62        | -1.17/-2          | -2.13/-1.83       | -1.2/-0.47        | 0.08/0.52         | 0.80/47           | -0.01/-0.37       | -0.24/-0.59       |
| Θ(52.5°)  | 0.32/0.65     | 0.49/0.08       | -0.28/-0.39     | 0.00/45         | 0.48/0.21       | -0.26/-0.59     | -0.70/-0.61     | -0.34/-0.42       | -0.85/-1.28       | -1.56/-1.66       | -1.89/-1.71       | -1.28/0.02        | 1.68/2.66         | 2.793/0.8         | 3.272/7.5         | 1.99/1.13         | 0.17/-0.35        | -1.11/-1.79       | -2.22/-2.5        | -2/0.72           | 0.34/1.08         | 1.28/1.02         | 0.89/0.2          | -0/0.19           |
| Θ(60°)    | 1.21/81       | 1.42/1          | 0.50/54         | 1.53/2.17       | 2.07/1.53       | 0.83/0.58       | 0.70/77         | 0.55/0.26         | -0.18/-0.73       | -1.02/-1.1        | -1.21/-1.29       | -1.5/-0.63        | 1.05/2.26         | 3.37/3.91         | 4.11/3.69         | 2.83/1.68         | 0.1/-0.66         | -1.09/-1.48       | -2.12/-2.17       | -1.44/-0.34       | 1.04/1.86         | 2.58/2.49         | 2.24/1.15         | 0.68/0.35         |
| Θ(67.5°)  | 1.03/1.62     | 1.69/1.45       | 1.34/1.76       | 2.93/3.29       | 2.97/2.27       | 1.85/1.88       | 1.88/1.56       | 1.15/0.62         | 0.16/-0.32        | -0.48/-0.46       | -0.57/-0.69       | -0.61/-0.1        | 1.08/2.08         | 2.8/3.14          | 2.91/2.43         | 1.91/02           | 0.04/-0.55        | -0.62/-0.75       | -0.69/-0.37       | -0.14/0.31        | 0.82/1.57         | 1.88/2.04         | 2.17/1.32         | 0.64/0.28         |
| Θ(75°)    | 0.78/1.02     | 1.14/0.99       | 0.87/1.38       | 2.03/2.46       | 2.36/2.01       | 1.82/1.52       | 1.48/1.37       | 1.17/0.87         | 0.23/-0.51        | -1.16/-1.62       | -1.54/-1.6        | -0.92/0.26        | 1.47/1.88         | 2.24/1.94         | 1.87/1.9          | 1.55/0.85         | 0.34/0.11         | 0.15/0.5          | 1.42/43           | 3.28/3.67         | 3.93/3.8          | 3.42/2.77         | 2.15/1.91         | 1.44/1            |
| Θ(82.5°)  | -0.26/-0.72   | -0.77/-0.03     | 0.71/1.49       | 1.97/2.05       | 1.86/1.65       | 1.89/2.15       | 2.13/1.63       | 0.78/0.33         | -0.18/-1.02       | -2.03/-2.68       | -2.64/-1.8        | -0.48/0.18        | 0.68/0.5          | 0.68/1.3          | 1.79/1.68         | 0.69/0.06         | 0.03/0.22         | 0.26/0.62         | 2.17/3.58         | 4.63/5.2          | 5.3/5             | 4.27/3.44         | 2.53/1.69         | 1.42/0.85         |
| Θ(90°)    | -0.74/-1.7    | -0.44/-0.79     | 1.41/1.74       | 1.85/1.58       | 1.03/1.11       | 1.39/1.8        | 1.91/1.51       | 0.75/-0.2         | -1.04/-1.71       | -2.23/-2.22       | -1.49/-2.02       | 0.58/0.58         | 0.29/-0.16        | -0.74/0.74        | 1.44/1.27         | 0.68/0.72         | 1.19/1.55         | 2.17/2.93         | 3.92/5            | 5.77/6.12         | 6.17/5.88         | 5.44/6.77         | 3.74/2.77         | 1.85/0.75         |
| Θ(97.5°)  | -2.14/-3.84   | -2.53/-0.78     | 0.17/0.64       | 0.78/1.05       | 1.21/01         | 0.95/1.21       | 1.45/1.59       | 1.47/1.47         | 1.32/1.04         | 0.48/-0.66        | -1.4/-1.51        | -1.09/-1.05       | -1.68/-2.22       | -0.21/0.92        | 0.95/0.74         | 0.86/0.77         | 1.04/1.08         | 1.59/2.5          | 3.82/4.79         | 5.43/5.71         | 5.64/5.36         | 5.06/4.65         | 3.72/3.8          | 1.22/-0.31        |
| Θ(105°)   | -0.09/-1.78   | -2.87/-2.71     | -2.48/-1.86     | -0.47/0.93      | 1.78/1.72       | 1.48/1.45       | 2.07/2.71       | 1.31/2.12         | 2.83/2.23         | 1.18/-0.58        | -2.2/-2.72        | -2.67/-2.66       | -3.42/-2.7        | -1.13/-0.05       | 0.63/1.02         | 1.19/1.4          | 1.52/1.47         | 1.68/2.78         | 4.18/5.26         | 5.86/5.88         | 5.35/4.44         | 4.39/4.06         | 3.59/3.11         | 2.42/1.37         |
| Θ(112.5°) | 0.28/1.58     | -4.05/-5.84     | -5.48/-3.49     | -0.53/1.8       | 3.12/3.42       | 2.84/2.3        | 2.03/2.3        | 2.89/0.01         | 2.84/1.83         | -0.33/-2.62       | -3.56/-3.27       | -2.9/-3.31        | -3.98/-3.64       | -2.94/-1.84       | -0.6/-0.11        | 0.64/1.41         | 1.68/1.52         | 1.64/2.16         | 3.54/62           | 5.29/6.32         | 4.52/3.15         | 2.55/0.31         | 2.74/2.29         | 21/44             |
| Θ(120°)   | -0.27/-2.7    | -5.62/-7.36     | -6.45/-2.97     | -0.42/0.24      | 3.71/4.29       | 4/2.84          | 1.68/1.28       | 1.5/22            | 1.92/0.71         | -0.92/-1.15       | -1.14/-1.47       | -2.1/-2.84        | -3.72/-4.75       | -4.68/-3.49       | -2.29/-1.69       | -0.42/0.58        | 1.46/2.3          | 2.69/3.15         | 3.67/4.25         | 4.91/4.85         | 4.21/3.13         | 2.1/85            | 1.67/1.22         | 1.14/0.97         |
| Θ(127.5°) | -0.28/-2.37   | -3.26/-3.46     | -4.22/-5.04     | -3.84/-1.89     | 0.37/1.73       | 1.84/1.83       | 1.61/1.85       | 2.5/2.79          | 2.17/0.33         | -0.53/-0.5        | -0.93/-1.84       | -3.31/-5.6        | -7.82/-6.11       | -4.19/-2.93       | -2.18/-1.14       | -0.55/-0.5        | -0.73/-0.44       | -0.00.53          | 1.53/2.43         | 3.25/3.71         | 3.65/2.98         | 2.08/1.94         | 1.91/1.27         | 0.92/0.63         |
| Θ(135°)   | -1.98/-2.83   | -3.6/-3.77      | -4.67/-4.99     | -4.51/-3.31     | -1.89/-0.12     | 1.49/2.28       | 2.82/2.96       | 2.59/1.44         | -0.86/-2.67       | -2.34/-1.41       | -0.88/-1.33       | -2.59/-4.27       | -6.24/-7.33       | -6.6/-5.87        | -3.97/-2.61       | -1.42/-0.68       | -0.5/-0.48        | -0.48/-0.17       | 0.39/0.8          | 1.382/0.9         | 2.56/2.36         | 1.47/0.3          | -0.4/-0.85        | -1.81/-2.05       |
| Θ(142.5°) | -2.33/-1.71   | -0.39/-1.29     | -1.73/-2.02     | -1.64/-1.5      | -0.91/-0.23     | 0.78/1.38       | 1.78/1.24       | -0.22/-2.35       | -3.23/-1.84       | -0.26/0.65        | 0.73/-0.1         | -1.33/-2.44       | -3.63/-5.54       | -7.62/-9.4        | -6.66/-5.14       | -4.17/-3.67       | -3.3/-3.05        | -2.78/-2.43       | -2.04/-1.55       | -0.88/0           | 0.55/0.39         | -0.46/-1.26       | -2.29/-3.06       | -3.19/-3.42       |
| Θ(150°)   | -0.95/-0.76   | -0.28/-0.83     | -1.13/-1.28     | -1.35/-1.06     | -1.14/-1.27     | -1.44/-1.55     | -1.55/-2.4      | -2.72/-2.05       | -0.96/0.1         | 0.74/0.88         | 0.54/-0.28        | -1.43/-2.45       | -3.52/-5.25       | -6.82/-6.44       | -5.6/-5.15        | -5.07/-5.55       | -6.2/-6.53        | -6.23/-6.47       | -4.45/-3.11       | -2.13/-1.87       | -2.13/-2.83       | -2.7/-3.12        | -2.7/-3.12        |                   |
| Θ(157.5°) | -2.25/-2.03   | -1.97/-1.75     | -1.75/-1.81     | -2.11/-2.41     | -2.78/-3.19     | -3.58/-3.92     | -3.88/-2.94     | -1.87/-0.96       | -0.17/0.14        | 0.04/-0.41        | -1.1/-2.08        | -3.29/-4.74       | -6.36/-7.52       | -7.68/-7.02       | -6/-5.44          | -5.32/-5.58       | -5.74/-5.47       | -5.21/-5.03       | -4.58/-4.27       | -3.81/-3.37       | -3.06/-3.18       | -4.02/-4.4        | -4.28/-4.25       | -3.08/-2.85       |
| Θ(165°)   | -4.14/-4.02   | -4.2/-3.91      | -4.03/-4.27     | -4.74/-4.88     | -4.64/-3.95     | -3.6/-3.38      | -3.09/-2.59     | -2.05/-1.56       | -1.29/-1.32       | -1.68/-2.34       | -3.3/-4.49        | -6.08/-7.19       | -8.04/-8.63       | -8.3/-1.37        | -7.24/-6.45       | -6.15/-6.25       | -5.4/-4.93        | -4.58/-4.14       | -3.57/-3.01       | -2.8/-2.74        | -3/-3.5           | -4.21/-4.81       | -5.25/-5.17       | -4.65/-4.49       |
| Θ(172.5°) | -6.54/-6.39   | -6.13/-6.13     | -6.05/-5.94     | -5.86/-5.93     | -4.38/-3.95     | -3.92/-4.35     | -5.18/-5.61     | -6.03/-6.02       | -5.83/-5.82       | -5.9/-6.16        | -6.41/-6.85       | -6.89/-7.04       | -7.01/-7.04       | -7.3/-7.74        | -8.34/-8.9        | -7.56/-6.96       | -7.56/-6.93       | -5.91/-5.36       | -4.32/-4.35       | -4.68/-5.06       | -5.43/-5.67       | -5.75/-6.09       | -5.87/-6.01       |                   |
| Θ(180°)   | -8.16/-7.97   | -8.01/-7.96     | -8.37/-7.9      | -6.89/-6.48     | -5.85/-6.08     | -5.99/-6.27     | -6.92/-7.5      | -8.08/-7.74       | -7.35/-6.71       | -6.51/-6.21       | -6.39/-6.47       | -6.71/-6.93       | -7.33/-7.75       | -8.19/-8.38       | -9.38/-9.9        | -10.18/-10.46     | -9.64/-8.88       | -7.98/-7.31       | -6.8/-7.01        | -6.59/-6.59       | -6.6/-6.53        | -6.79/-6.62       | -6.79/-6.5        | -6.95/-7.19       |
| Freq(Hz)  | 2.45G/Pol.    | Theta-          | +               | +               | +               | +               | +               | +                 | +                 | +                 | +                 | +                 | +                 | +                 | +                 | +                 | +                 | +                 | +                 | +                 | +                 | +                 | +                 | +                 |
| DG(dB)    | Φ(0°)/Φ(7.5°) | Φ(15°)/Φ(22.5°) | Φ(30°)/Φ(37.5°) | Φ(45°)/Φ(52.5°) | Φ(60°)/Φ(67.5°) | Φ(75°)/Φ(82.5°) | Φ(90°)/Φ(97.5°) | Φ(105°)/Φ(112.5°) | Φ(120°)/Φ(127.5°) | Φ(135°)/Φ(142.5°) | Φ(150°)/Φ(157.5°) | Φ(165°)/Φ(172.5°) | Φ(180°)/Φ(187.5°) | Φ(195°)/Φ(202.5°) | Φ(210°)/Φ(217.5°) | Φ(225°)/Φ(232.5°) | Φ(240°)/Φ(247.5°) | Φ(255°)/Φ(262.5°) | Φ(270°)/Φ(277.5°) | Φ(285°)/Φ(292.5°) | Φ(300°)/Φ(307.5°) | Φ(315°)/Φ(322.5°) | Φ(330°)/Φ(337.5°) | Φ(345°)/Φ(352.5°) |
| Θ(0°)     | -1.49/-1.56   | -1.65/-1.6      | -1.35/-1.45     | -1.56/-1.69     | -1.8/-2.02      | -2.4/-2.92      | -3.54/-4.06     | -4.61/-4.95       | -4.97/-4.87       | -4.8/-4.66        | -4.09/-3.57       | -2.96/-2.25       | -1.64/-1.16       | -0.66/-0.38       | -0.34/-0.34       | -0.46/-0.58       | -0.8/-1           | -1.13/-1.19       | -1.19/-1.22       | -0.71/-0.39       | -0.32/-0.08       | -0.86/-0.93       | -0.99/-1.04       | -1.11/-1.13       |
| Θ(7.5°)   | -1.78/-1.61   | -1.02/-0.75     | -0.35/-1.07     | -0.16/-0.24     | -0.09/-0.54     | -1.07/-1.46     | -2.3/-2.71      | -2.88/-2.9        | -2.7/-2.6         | -2.87/-2.58       | -2.27/-2.21       | -1.7/-1.44        | -0.62/-0.33       | -0.13/-0.1        | -0.47/-0.79       | -1.4/-2.5         | -3.91/-4.19       | -4.49/-4.09       | -4.46/-4.99       | -4.53/-3.98       | -3.59/-3.15       | -3/-2.87          | -2.72/-2.58       | -2.61/-2.46       |
| Θ(15°)    | -2/-1.55      | -0.9/-0.33      | 0.11/0.48       | 0.68/0.94       | 0.83/0.76       | 0.39/-0.23      | -0.61/-1.01     | -0.96/-0.95       | -0.87/-1.29       | -1.44/-1.5        | -1.49/-1.6        | -1.36/-1.06       | -0.71/-0.46       | -0.21/0.14        | -0.06/-0.78       | -1.61/-2.62       | -3.82/-5.02       | -5.9/-6.69        | -7.62/-8.67       | -8.38/-7.49       | -6.27/-5.4        | -4.88/-4.35       | -3.92/-3.38       | -2.92/-2.69       |
| Θ(22.5°)  | -1.69/-1.05   | -0.43/0.22      | 0.78/1.09       | 1.33/1.3        | 1.35/1.28       | 1.07/0.88       | 0.76/0.94       | 0.87/0.75         | 0.38/0.15         | 0.05/-0.22        | -0.26/0.51        | -0.7/-0.46        | -0.28/0.16        | 0.69/0.62         | 0.22/-0.44        | -1.21/-2.33       | -3.18/-4.05       | -5.22/-67         | -8.1/-9.89        | -10.21/-9.19      | -8.61/-7.25       | -6.13/-5.06       | -4.12/-3.19       | -2.81/-2.2        |
| Θ(30°)    | -0.56/-0.2    | 0.34/0.51       | 0.87/0.95       | 1.03/1.14       | 1.41/1.62       | 1.8/2.02        | 2.01/1.95       | 1.75/1.54         | 1.25/1.33         | 1.03/1.17         | 0.9/0.7           | 0.29/-0.05        | 0.01/0.05         | 0.22/0.3          | 0.31/-0.13        | -0.79/-1.79       | -3.06/-4.67       | -6.39/-8.52       | -10.18/-10.93     | -10.69/-8.93      | -7.26/-5.36       | -4.02/-3.08       | -2.54/-2          | -1.47/-1.01       |
| Θ(37.5°)  | 0.56/1.04     | 1.19/1.06       | 0.89/0.78       | 0.92/1.31       | 1.86/2.28       | 2.4/2.52        | 2.12/3.32       | 2.06/2.02         | 1.62/1.57         | 1.57/1.31         | 1.38/1.44         | 1.16/0.69         | 0.52/0.42         | 0.57/0.4          | -0.04/-0.54       | -1.53/-2.3        | -3.57/-4.31       | -5.26/-6.21       | -7.1/-7.19        | -6.52/-5.39       | -2.67/-1.67       | -1.74/-1.07       | -0.69/-0.53       | -0.26/0.14        |
| Θ(45°)    | 1.2/1.6       | 1.75/1.84       | 1.71/1.75       | 1.88/2.2        | 2.67/2.86       | 2.99/2.88       | 2.71/2.56       | 2.33/2.37         | 2.12/2.22         | 1.82/0.5          | 2.29/2.31         | 2.19/1.75         | 1.54/0.96         | 0.58/0.01         | -0.46/-1.29       | -2.14/-3.41       | -5.6/-6.92        | -8.22/-8.96       | -9.23/-8.74       | -7.18/-5.18       | -3.44/-1.93       | -0.9/-0.24        | -0.13/0.04        | 0.24/0.6          |



# Radiated Composite Gain Data\_2.4GHz, 5GHz

# Appendix A

|           |               |                 |                 |                 |                 |                 |                 |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |
|-----------|---------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| Θ(15°)    | -2.71/-3.14   | -3.14/-3.33     | -3.24/-3.18     | -2.74/-2.31     | -1.82/-1.15     | -0.82/-0.36     | -0.21/-0.01     | 0.24/0.55         | 0.85/0.46         | -0.31/-1.42       | -2.16/-2.02       | -1.62/-1.48       | -1.53/-1.81       | -2.43/-3.49       | -3.68/-3.31       | -2.45/-1.53       | -0.93/-0.66       | -0.67/-0.9        | -1.33/-1.32       | -1.11/-1.07       | -1.26/-1.48       | -1.57/-2.37       | -2.72/-2.52       | -2.13/-1.96       |
| Θ(22.5°)  | -2.85/-3.29   | -2.93/-2.5      | -2.15/-2.15     | -1.97/-1.55     | -1.05/-0.61     | -0.5/-0.36      | -0.64/-0.56     | -0.29/0.22        | 1.02/1.52         | 0.92/0.03         | -0.16/-0.19       | 0.24/0.18         | -0.59/-1.25       | -1.8/-2.41        | -2.64/-2.44       | -1.96/-1.22       | -0.62/-0.34       | -0.28/-0.4        | -0.57/-0.6        | -0.23/-0.46       | 0.74/0.85         | 0.16/-0.46        | -0.91/-1.85       | -1.61/-1.64       |
| Θ(30°)    | -1.74/-1.83   | -1.32/-1.52     | -1.52/-1.23     | -0.82/-0.96     | -1.06/-0.82     | -0.67/-0.64     | -0.52/-0.48     | -0.77/-1.14       | -0.94/-0.16       | 0.39/0.86         | 1.11/-1.27        | 1.09/0.43         | -1.13/-2.36       | -2.68/-3.53       | -4.23/-3.25       | -1.84/-1.07       | -0.88/-0.68       | -0.18/0.92        | 1.53/-1.46        | 1.32/-1.34        | 1.31/0.59         | 1.83/-1.2         | 0.35/-0.19        | -0.76/-1.13       |
| Θ(37.5°)  | 0.35/-0.05    | 0.25/0.5        | -0.02/-0.17     | 0.22/0.41       | 0.6/0.55        | 0.26/-0.99      | -1.61/-1.94     | -2.1/-1.75        | -0.6/-0.02        | -0.1/-0.11        | 1.23/2.46         | 2.82/-12          | 0.08/-1.66        | -2.42/-2.47       | -1.79/-0.46       | 0.36/0.41         | 0.2/0.42          | 0.86/0.79         | 0.68/0.98         | 22/83             | 3.15/2.88         | 2.61/-1.61        | -0.21/-1.33       | -0.54/0.74        |
| Θ(45°)    | 1.39/2.05     | 2.02/-1.22      | -0.16/-0.04     | 0.99/-1.93      | 2.18/0.92       | -0.19/-0.84     | -0.88/-0.68     | -0.66/-0.44       | 0.19/0.78         | 0.32/-0.16        | 0.25/0.92         | 1.91/-1.89        | 0.74/-0.69        | -3.01/-2.71       | -1.4/-0.02        | 0.13/-0.04        | 0.0/0.7           | -0.47/-0.22       | 0.34/0.55         | 0.93/-1.26        | 2.45/3.93         | 4.15/-11          | 2.43/-1.51        | 0.74/-1.28        |
| Θ(52.5°)  | 1.03/-1.12    | 0.92/0.97       | 0.37/0.54       | 0.63/-1.28      | 1.26/0.06       | -0.87/-0.16     | -0.16/-0.53     | -0.74/-0.45       | 0.27/0.79         | 0.34/-0.42        | -0.51/0.63        | 1.14/0.41         | -0.91/-3.28       | -1.62/0           | 0.82/0.36         | -0.41/-1.5        | -1.81/-0.06       | -0.29/0.22        | 1.07/2.51         | 3.14/-21          | 5.14/-71          | 3.11/-15          | 0.16/-0.48        |                   |
| Θ(60°)    | -1.22/-1.01   | 0.26/0.87       | 1.11/-1.25      | 1.61/-1.81      | 0.84/0.25       | 0.85/-1         | 0.89/0.47       | -0.0/-11          | 0.77/-1.13        | 1.51/-23          | 0.63/0.43         | 0.17/-0.43        | -0.55/-1.85       | 0.11/-1.66        | 1.37/0.58         | 0.6/-0.85         | -1.44/-0.62       | 0.53/-1.02        | 0.88/-1.17        | 1.35/-1.62        | 2.45/3.22         | 3.4/-12.7         | 1.82/-1           | -0.4/-1.46        |
| Θ(67.5°)  | -0.38/0.76    | 0.21/-0.31      | 0.64/-1.89      | 2.8/-2.43       | 0.68/-0.32      | 0.23/0.06       | 0.20/0.56       | 1.19/-1.59        | 1.77/-1.91        | 1.63/0.73         | 0.12/0.3          | -0.55/-0.02       | 0.07/-1.11        | -0.97/0.01        | -0.19/-0.01       | -1.5/-0.74        | -0.64/-0.29       | 0.88/-1.21        | 1.1/-1.02         | 1.73/2.28         | 1.78/-1.11        | 1.68/-1.63        | 1.52/0.37         | -1.15/-2.19       |
| Θ(75°)    | -0.32/-1.11   | 1.24/0.67       | 1.15/0.02       | 4.15/3.36       | 1.36/0.58       | 1.46/2.16       | 1.81/-1.62      | 1.91/-1.94        | 1.66/-1.57        | 2.01/2.16         | 1.93/-1.88        | 0.28/-0.66        | -1.36/-1.14       | 0.04/0.23         | -1.19/-0.2        | 0.58/-0.68        | -1.06/-0.3        | 1.07/-1.84        | -0.36/-1.57       | 0.21/-1.23        | 1.12/-1.27        | 1.38/0.3          | -1.1/-1.53        |                   |
| Θ(82.5°)  | -0.42/0.75    | 1.04/0.15       | 0.34/2.31       | 3.11/-1.56      | -0.72/0.19      | 1.45/-1.16      | 1.17/-1.09      | 0.73/0.93         | 1.25/-1.35        | 0.43/-1.65        | 2.86/-1.57        | -0.57/0.12        | -0.14/-0.49       | -0.92/-0.44       | -1.24/0.43        | -0.3/-0.46        | 0.81/-1.44        | 1.79/-1.82        | 1.93/2.01         | 1.18/-1.11        | 1.75/-1.89        | 1.93/-0.27        | -1.06/-1.44       | -1.51/-0.77       |
| Θ(90°)    | -0.7/0.22     | 0.48/0.3        | 0.59/-1.42      | 1.97/-1.39      | 0.98/-1.62      | 1.98/2.01       | 1.3/0.95        | 1.78/2.14         | 1.71/0.67         | 0.51/-1.39        | 2.13/-2.46        | 1.48/-0.48        | 0.74/-1.24        | -1.23/-1.02       | 0.33/-1.42        | 1.72/2.12         | 2.47/3.47         | 3.62/-4.1         | 4.93/-3.79        | 2.28/-3.16        | 2.97/-1.9         | 1.63/-1.65        | 0.46/-0.16        | 0.45/0.05         |
| Θ(97.5°)  | -2.11/-1.17   | -0.32/-0.34     | -0.69/-0.05     | -0.3/-0.18      | 1.43/2.86       | 3.34/2.71       | 1.96/0.64       | 0.47/0.85         | 1.75/-1.96        | 0.64/0.05         | 1.21/-41          | 0.01/-0.05        | 1.64/-0.02        | -0.3/-0.12        | 0.51/-34          | 2.19/-2.52        | 2.48/-2.16        | 3.62/3.74         | 3.53/3.63         | 2.73/3.35         | 3.38/3.33         | 2.29/-4.2         | 0.63/-1.18        | -0.09/-0.32       |
| Θ(105°)   | -2.51/-2.36   | -1.87/-1.66     | -0.91/-0.83     | -0.6/0.53       | 2.45/3.91       | 4.63/7.77       | 1.83/0.14       | 0.34/0.99         | 1.14/0.7          | 0.44/-0.7         | 0.54/0.92         | 0.18/-1.4         | 0.02/-0.62        | -0.32/-1.91       | -1.21/0.04        | 0.89/-0.05        | 0.53/0.52         | 0.48/-1.54        | 2.65/3.97         | 3.33/2.8          | 1.56/-1.15        | 1.19/-1.3         | 0.85/-0.55        | -1.77/-1.08       |
| Θ(112.5°) | -1.67/-3.56   | -1.36/-1.68     | -1.13/-0.77     | -0.21/0.43      | 0.752/6.21      | 3.3/3.24        | 2.2/0.88        | -0.01/0.27        | 0.36/-1.76        | -2.9/-2.28        | -0.89/-0.02       | -1.19/-1.09       | 0.22/-0.59        | -2.29/-1.18       | -0.89/-3.3        | -1.89/-0.13       | 0.66/-0.01        | 0.94/-13          | 2.21/3.39         | 2.91/2.35         | 1.12/0.59         | -0.10/-46         | 0.87/0.01         | -1.04/-0.92       |
| Θ(120°)   | -1.43/-0.77   | -1.89/-0.77     | 0.46/-1.39      | 1.24/0.44       | -0.86/-0.14     | 1.72/2.7        | 2.15/0.94       | 0.21/-0.73        | -2.49/-2.09       | -2.61/2.67        | -1.13/0.52        | 0.07/-2.1         | -0.03/-1.24       | -1.92/-2.45       | -0.12/0.22        | -2.63/0.13        | -0.15/-0.49       | 0.21/0.05         | 1.24/-1.99        | 3.46/3.9          | 3.33/2.28         | -1.1/-1.13        | -2.04/-2.02       | -5.29/-1.15       |
| Θ(127.5°) | 0.78/-0.23    | 0.72/-1         | 1.68/2.8        | 3.18/-1.92      | 0.06/-1.13      | -0.07/0.77      | 0.65/0.17       | 0.37/0.67         | 0.72/-0.62        | -1.73/-2.43       | -0.61/-1.43       | -1.1/-0.44        | 0.89/-0.27        | -2.14/-2.69       | -1.92/-5.71       | -1.74/0.66        | 2.53/2.81         | 2.79/-1.9         | -0.49/-1.66       | 3.36/3.99         | 3.39/2.22         | 1.33/-2.94        | 1.49/-1.18        | -2.4/-0.04        |
| Θ(135°)   | -0.48/-0.29   | 0.66/-0.42      | 1.07/-1.58      | 0.23/-2.5       | -3.63/-2.49     | -1.33/-0.42     | 0.67/0.34       | -0.01/0.14        | 0.74/0.79         | -1.99/-3.42       | -1.96/-0.95       | -0.91/-16         | 2.05/0.59         | 0.23/-2.17        | -5.82/-5.46       | -2.49/-0.37       | 1.07/2.83         | 3.17/2.04         | -1.85/-0.98       | 1.91/3.43         | 2.82/-1.52        | -3.76/-4.94       | -3.9/-1.4         | -1.77/-0.11       |
| Θ(142.5°) | -2.08/-2.72   | -1.95/-1.22     | -0.98/-1.11     | 1.32/2.66       | -1.4/-1.43      | -1.48/-1.32     | -1.48/-1.26     | -1.18/-1.96       | -2.98/-3.92       | -2.88/-2.88       | -1.96/-0.56       | -1.17/-2.22       | -2.12/-0.78       | -2.38/-3.1        | -5.51/-5.27       | -4.92/-3.33       | -1.21/-0.46       | -1.18/-1.22       | -3.69/-1.65       | 0.42/-1.94        | -0.26/-1.39       | -1.97/-2.73       | -2.06/-2.58       | -1.46/-0.64       |
| Θ(150°)   | 4.69/-2.21    | -0.18/0.8       | -0.4/-0.63      | -1.54/-2.74     | -2.95/-2.65     | -3.78/-3.58     | -3.37/-2.98     | -1.48/-0.17       | -0.49/-1.75       | -3.55/-5.83       | -5.03/-5.29       | -6.74/-5.5        | -3.86/-4.73       | -8.56/-6.39       | -3.49/-1.74       | -2.34/-2.91       | -1.68/-1.26       | -1.71/-2.63       | -2.78/-1.69       | -1.18/-1.75       | -1.25/-1.11       | -0.35/-1.23       | -2.72/-4.5        | -1.61/-6.04       |
| Θ(157.5°) | -2.61/-1.94   | -1.69/-1.79     | -1.5/-2.05      | -1.91/-2.58     | -2.97/-3.72     | -4.83/-6.41     | -5.94/-4.1      | -3.07/-2.63       | -2.61/-2.48       | -1.36/-0.77       | -1.14/-2.22       | -3.92/-5.79       | -7.7/-8.79        | -7.9/-6.36        | -3.64/-2.8        | -4.49/-4.61       | -5.04/-5.45       | -6.65/-6.47       | -7.35/-4.94       | -6.07/-3.47       | -2.33/-3.24       | -5.3/-6.02        | -6.12/-3.41       | -2.59/-2.41       |
| Θ(165°)   | -2.59/-3.28   | -4.72/-5.43     | -5.24/-5.8      | -4.27/-4.6      | -5.11/-6.01     | -6.02/-5.32     | -4.42/-3.3      | -2.71/-1.22       | -0.64/-0.34       | -0.09/-0.29       | -0.83/-1.91       | -3.16/-4.22       | -5.24/-5.29       | -4.24/-2.69       | -2.13/-3.13       | -5.09/-4.44       | -4.09/-4.28       | -3.97/-3.55       | -3.56/-3.28       | -3.23/-3.21       | -3.28/-3.83       | -4.32/-3.42       | -2.16/-0.69       | -0.6/-1.47        |
| Θ(172.5°) | -7.11/-7.81   | -7.51/-7.38     | -6.66/-7.04     | -6.84/-6.21     | -5.78/-5.16     | -4.77/-4.56     | -4.02/-3.45     | -3/-2.37          | -1.83/-1.32       | -1.33/-1.38       | -1.88/-2.76       | -4.16/-4.35       | -4.2/-4           | -4.48/-5.19       | -6.63/-6.83       | -10.31/-12.28     | -12.38/-11.27     | -9.57/-8.03       | -7.28/-6.66       | -6.74/-6.25       | -4.6/-3.21        | -2.96/-3.14       | -4.65/-6.06       |                   |
| Θ(180°)   | -4.43/-5.33   | -6.14/-6.02     | -5.82/-4.87     | -4.57/-5.25     | -5.47/-6.05     | -4.54/-3.52     | -2.96/-2.92     | -2.32/-2.06       | -1.73/-1.84       | -2.67/-3.78       | -5.28/-6.48       | -7.14/-7.5        | -8.05/-7.82       | -7.51/-7.43       | -7.37/-7.27       | -6.81/-6.1        | -5.48/-4.73       | -4.44/-4.3        | -4.22/-3.95       | -4/-3.65          | -3.58/-3.46       | -3.7/-3.92        | -4.15/-4.15       | -4.14/-4.1        |
| Freq(Hz)  | 5.3GPol.      | 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°)     | -4.06/-3.64   | -4.13/-4.25     | -4.32/-4.45     | -4.54/-63       | -5.33/-4.9      | -4.21/-3.2      | -2.57/-2.17     | -2.26/-2.45       | -2.59/-2.81       | -2.86/-3          | -3.48/-3.49       | -3.25/-2.85       | -2.99/-3.05       | -2.46/-1.77       | -1.41/-1.48       | -2.16/-2.92       | -3.88/-4.36       | -4.32/-4.31       | -4.52/-4.19       | -3.44/-2.9        | -2.91/-3.26       | -3.49/-3.31       | -3.07/-3.22       | -3.35/-3.71       |
| Θ(7.5°)   | -2.85/-2.51   | -1.99/-2.15     | -2.18/-2.29     | -2.49/-2.85     | -3.48/-3.82     | -4.35/-4.18     | -3.74/-3.39     | -3.29/-3.11       | -3.27/-3.4        | -3.54/-3.67       | -3.63/-2.87       | -2.36/-1.96       | -2.34/-2.5        | -1.96/-1.58       | -1.46/-0.22       | -2.72/-3.54       | -3.94/-3.62       | -3.36/-3.26       | -3.11/-3.1        | -2.67/-2.35       | -2.72/-2.65       | -2.27/-2.69       | -2.45/-2.44       | -2.78/-3.44       |
| Θ(15°)    | -1.45/-1.17   | -0.93/-1.15     | -1.54/-2.02     | -2.53/-3.29     | -4.2/-5.59      | -6.2/-5.84      | -5.38/-4.28     | -3.38/-2.54       | -2.09/-2.38       | -3.15/-3.22       | -2.64/-1.99       | -1.66/-1.48       | -1.83/-2.58       | -3.28/-2.5        | -1.59/-0.8        | -0.55/-0.55       | -0.81/-0.98       | -1.12/-1.29       | -1.29/-1.34       | -1.63/-1.59       | -1.77/-2.21       | -2.58/-2.4        | -2.03/-1.65       | -1.58/-1.5        |
| Θ(22.5°)  | -1.23/-0.68   | -0.34/-0.24     | -0.77/-0.86     | -1.46/-2.19     | -2.74/-3.6      | -3.94/-4.06     | -3.74/-3.73     | -3.41/-2.76       | -2.1/-1.88        | -1.75/-1.85       | -1.85/-1.71       | -0.91/-0.5        | -1.01/-1.21       | -0.66/0.05        | 0.35/0.16         | -0.3/-0.67        | -0.74/-0.76       | -1.56/-2.01       | -2.67/-2.68       | -2.13/-1.59       | -1.37/-1.31       | -1.93/-2.25       | -2.16/-2.38       | -1.9/-1.15        |
| Θ(30°)    | -0.21/-45     | 2.28/-1.65      | 0.58/-0.58      | -1.66/-2.81     | -2.88/-3.3      | -3.07/-3.1      | -2.98/-2.68     | -2.59/-2.93       | -2.66/-2.81       | -2.53/-1.33       | -0.63/-0.63       | -0.67/-0.69       | -0.56/0.46        | 0.83/0.71         | 1.09/-1.4         | 0.31/-0.68        | -1.32/-1.37       | -1.23/-1.37       | -2.13/-1.97       | -0.88/-0.4        | -0.52/-0.64       | -0.97/-1.89       | -2.37/-1.91       |                   |
| Θ(37.5°)  | 0.73/2.11     | 2.08/-1.44      | -0.16/-0.71     | -1.91/-3.81     | -5/-5.31        | -5.47/-4.5      | -3.61/-2.06     | -1.32/-1.17       | -1.21/-1.27       | -0.89/-0.23       | -0.49/-0.79       | -1.02/-0.91       | 0.09/-0.01        | -0.69/0.23        | 1.09/-1.3         | 0.97/0.59         | 0.91/-1.15        | 1.2/0.71          | 0.09/-0.66        | -0.65/-0.66       | -1.21/-1.76       | -1.21/-1.01       | -0.57/0.05        | -0.15/-0.19       |
| Θ(45°)    | 1.27/2.25     | 2.59/-1.19      | 0.27/0.81       | -2.94/-2.41     | -4.69/-3.26     | -1.99/-1.16     | -0.9/-0.72      | -0.67/-0.7        | -0.49/-0.72       | -0.81/-0.58       | -0.33/-0.17       | 0.24/0.07         | 0.59/0.85         | 1.91/-8.7         | 2.06/2.13         | 1.41/-1.18        | 1.39/-1.93        | 1.61/0.18         | -1.24/-1.31       | -2.32/-3.6        | -1.51/-0.1        | -0.52/-0.44       | -1.16/-1.93       | -1.8/-0.99        |
| Θ(52.5°)  | 1.54/3.38     | 3.55/-1.47      | -1.01/-2.06     | -1.53/-1.74     | -1.31/0.33      | 0.64/0.7        | 0.77/0.48       | 1.04/0.09         | 0.52/0.78         | 0.5/-0.1          | -0.2/0.45         | 0.19/-0.4         | 0.31/-1.8         | 1.29/0.6          | -0.23/0.07        | 0.16/0.09         | 0.51/-1.18        | 1.61/-1.32        | 1.12/-0.16        | -2.62/-3.1        | -3.12/-2.58       | -0.45/-0.09       | -0.17/-1.27       | -2.97/-2.92       |
| Θ(60°)    | 1.11/-62      | 2.54/-1.27      | 0.59/0.77       | 0.89/0.21       | 0.67/-1.8       | 2.04/-1.61      | 1.13/0.82       | 0.65/0.44         | 0.33/0.46         | 0.23/-0.15        | 0.49/0.79         | 0.58/0.76         | 1.25/-1.79        | 0.75/0.04         | 0.34/0.72         | 0.85/-1.26        | 1.97/-1.73        | 2.29/2.86         | 2.63/-1.68        | 0.92/0.05         | -2.01/-4.07       | -3.53/-1.71       | 0.41/-1.31        | 1.41/-47          |
| Θ(67.5°)  | 2.81/3.36     | 3.57/-1.24      | -0.26/0.68      | 2.26/-2.19      | 2.92/2.95       | 2.34/-1.84      | 1.59/-1.96      | 2.32/2.64         | 2.13/-1.1         | -0.41/-1.38       | -0.76/0.3         | 0.89/-1.13        | 0.9/0.77          | -0.92/-0.39       | 0.91/-74          | 1.01/-1.47        | 1.35/-1.9         | 1.69/-1.62        | 1.19/-1.02        | 0.69/0.4          | -1.11/-3.95       | -0.77/-1.42       | 1.97/2.01         |                   |
| Θ(75°)    | 1.62/3.38     | 3.41/-5         | 0.76/-1.94      | 2.35/2.89       | 3.94/4.06       | 3.11/-1.97      | 1.92/2.7        | 3.16/3.29         | 2.08/-1.28        | 0.15/-0.67        | -0.80/-1.3        | 0.37/-0.11        | -0.06/-0.8        | 1.97/2.48         | 1.77/-1.48        | 0.09/-0.33        | -0.58/-1.26       | -0.91/-0.44       | 0.08/0.91         | 0.57/-3.13        | -                 |                   |                   |                   |



Radiated Composite Gain Data\_2.4GHz, 5GHz

Appendix A

|           |               |                 |                 |                 |                 |                 |                 |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |
|-----------|---------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| Θ(67.5°)  | -2.19/-2.4    | -2.61/0.42      | 1.93/1.99       | 1.71/0.01       | -0.43/1.24      | 2.14/2.59       | 2.61/1.51       | 0.1/-0.37         | 0.23/0.81         | 1.72/2.26         | 2.32/2.28         | 2.21/1.03         | -1.43/-0.63       | 0.19/0.32         | -0.33/-0.29       | -1.28/-2.4        | -2.55/-2.29       | -2.36/-2.68       | -1.76/-0.86       | -0.28/1.02        | 1.92/2.05         | 1.29/+0.22        | -1.08/0.86        | 0.33/-0.38        |
| Θ(75°)    | -2.11/-0.68   | 0.24/+1.55      | 1.93/0.34       | -0.72/-1.02     | -0.25/0.34      | 1.36/2.25       | 2.95/2.7        | 1.48/+1.1         | 0.89/1.02         | 1.97/2.56         | 1.97/1.1          | 1.29/0.89         | -0.4/0.09         | 1.35/+1.54        | -0.02/-1.49       | -2.17/-2.84       | -3.91/-3.88       | -4.46/-4.14       | -2.95/-1.69       | -0.09/0.9         | 1.12/1.22         | -0.32/-0.63       | -0.36/0.83        | 0.07/-2.37        |
| Θ(82.5°)  | -2.01/+0.03   | -1.01/1.67      | 2.78/1.84       | 0.52/0.19       | 0.45/1.47       | 2.25/1.86       | 1.05/0.08       | -1.01/-1.82       | -1.07/-0.53       | 0.89/2.52         | 2.82/1.45         | 1.28/0.19         | -0.54/0.22        | 1.52/0.75         | -2.16/-2.3        | -3.06/-5.51       | -5.28/-4.57       | -3.13/-1.51       | -1.6/-1.35        | 0.56/1.02         | 1.16/0.89         | -0.21/-2.67       | -0.96/0.15        | 0.22/-3.39        |
| Θ(90°)    | -1.98/-0.19   | 0.15/2.14       | 2.69/1.24       | 0.24/0.74       | 2.21/2.83       | 2.91/2.66       | 1.39/0.04       | -0.51/+1.55       | -1.38/-1.25       | -1.49/0.6         | 2.33/1.19         | -0.6/-0.1         | -0.56/0.97        | 2.01/1.19         | -1.89/-2.68       | -1.88/-3.01       | -3.95/-2.59       | -1.08/-0.61       | 1.56/2.39         | 1.34/1.92         | 1.61/1.16         | 0.64/-2.13        | 0.09/0.16         | -0.4/-2.16        |
| Θ(97.5°)  | -0.9/-0.29    | -1.03/0.44      | -0.3/-0.73      | -1.01/-0.9      | -0.24/1.02      | 2.56/2.35       | 1.07/-0.63      | -2.97/-3.87       | -2.82/-3.06       | -0.9/0.45         | 0.4/0.18          | -0.58/-1.11       | -0.64/-0.19       | 1.01/+0.24        | -3.63/-2.3        | -1.74/-1.18       | -2.33/-1.16       | -0.21/1.51        | 3.17/3.21         | 3.65/3.3          | 3.04/2.61         | 2.29/0.73         | -0.68/-0.81       | -0.94/0.91        |
| Θ(105°)   | -2.91/-2.27   | -0.45/-0.09     | -0.94/-0.73     | -0.71/-1.25     | -0.82/1.39      | 2.72/3.74       | 3.62/1.51       | 0.47/-1.86        | -2.95/-3.21       | -1.12/0.34        | -0.14/-0.44       | -1.47/-0.42       | 0.68/0.61         | 1.16/0.28         | -3.59/-2.19       | -1.88/-1.61       | -2.16/-2.79       | -0.28/0.99        | 2.31/1.63         | 3.54/3.76         | 2.74/1.91         | 1.23/+0.44        | -0.45/-1.09       | 0/0.59            |
| Θ(112.5°) | -1.22/-3.34   | -1.7/0.39       | -2.03/-2.13     | -1.5/-1.01      | 0.03/0.95       | 2.33/3.07       | 2.78/1.93       | 0.14/-1.11        | -1.92/-1.31       | -2.66/-3.27       | -1.35/-2.06       | -2.84/-1.97       | -1.35/-0.4        | -0.87/-1.84       | -2.37/-4.14       | -3.65/-2.09       | -3.3/-2.28        | -3.23/-0.01       | 2.51/2.48         | 3.16/2.83         | 1.83/0.44         | 1/0.95            | 1.22/0.12         | 1.28/0.87         |
| Θ(120°)   | -0.62/-3.56   | -1.05/-0.27     | -0.33/-0.05     | 0.24/0.69       | 2.09/3.26       | 2.93/2.68       | 2.45/1.84       | 1.53/0.85         | 0.47/-1.72        | -3.88/-4.73       | -3.93/-3.17       | -3.17/-1.52       | 0.52/0.24         | -1.04/-2.34       | -2.91/-4.11       | -5.01/-3.37       | -3.07/-2.22       | -1.03/0.36        | 1.16/2.06         | 2.16/2.42         | 2.47/1.37         | 0.91/1.62         | 0.83/-0.65        | -0.16/-0.05       |
| Θ(127.5°) | 1.07/0.1      | -1.6/0.1        | 0.71/0.83       | 2.01/2.59       | 2.26/1.82       | 1.35/0.31       | -0.4/-1.33      | -2.17/-3.51       | -4.12/-3.86       | -4.35/-4.24       | -5.14/-5.62       | -4.67/-1.44       | -0.29/-1.64       | -2.54/-4.77       | -1.62/-2.56       | -6.74/-3.18       | -4.28/-4.02       | 0.46/0.73         | -0.03/0.03        | 0.59/1.61         | 2.52/1.01         | 0.28/+0.54        | -2.49/-0.24       | 1.79/1.66         |
| Θ(135°)   | 0.33/-0.73    | -0.86/-0.45     | 1.68/3.61       | 4.19/3.21       | 1.29/0.01       | 0.43/0.18       | -0.69/-0.37     | -0.75/-1.71       | -4.49/-5.67       | -4.43/-3.89       | -3.66/-4.79       | -3.43/-0.28       | -0.04/-1.1        | -1.41/-2.07       | -2.86/-5.54       | -1.15/-3.53       | -2.93/-1.47       | 1.12/-0.83        | -3.94/-2.16       | 1.62/2.05         | 2.24/-0.86        | -2.03/-3.81       | -3.78/-1.36       | 1.72/2.29         |
| Θ(142.5°) | -2.21/-3.27   | -1.32/-1.35     | -1.01/-0.6      | 0.87/1.59       | 0.5/-0.6        | -1.46/-1.24     | -0.73/0.11      | 0.42/0.02         | -0.81/-4.27       | -5.95/-5.83       | -5.69/-7.36       | -5.65/-4.73       | -2.12/-2.41       | -2.5/-3.11        | -5.97/-6.25       | -8.12/-4.36       | -6.82/-3.89       | 0.62/-0.81        | -4.9/-4.61        | -0.25/1.12        | 1.65/-0.09        | -2.54/-3.48       | -6/-4             | -1.76/-0.69       |
| Θ(150°)   | -4.85/-5.87   | -4.08/-2.33     | -2.22/-2.1      | -0.23/0.92      | 1.05/0.56       | -0.87/2.67      | -3.08/-1.98     | -0.96/-1.01       | -2.23/-3.23       | -5.51/-8.11       | -9.68/-6.99       | -6.18/-5.85       | -3.78/-2.95       | -4.2/-5.95        | -5.44/-3.22       | -1.35/-0.67       | -2.88/-2.49       | -2.58/-2.26       | -2.58/-1.95       | -1.13/-2.17       | -2.69/-3.86       | -4.39/-2.65       | -0.83/-0.96       | -1.42/-2.63       |
| Θ(157.5°) | -4.61/-3.33   | -0.5/0.27       | -0.31/-1.73     | -1.36/-1.42     | -2.16/-2.69     | -2.81/-2.73     | -2.26/-2.53     | -2.76/-3.16       | -3.87/-4.66       | -3.83/-4.08       | -4.62/-5.37       | -7.6/-10.48       | -12.93/-9.76      | -7.74/-5.9        | -3.52/-1.77       | -1.36/-2.61       | -4.38/-5.53       | -6.44/-6.76       | -7.76/-9.16       | -7.13/-3.8        | -2.35/-2.84       | -4.03/-4.72       | -3.39/-3.15       | -4.04/-4.2        |
| Θ(165°)   | -3.72/-2.24   | -1.66/-1.26     | -1.31/-1.8      | -2.29/-2.66     | -2.54/-2.87     | -4.74/-7.21     | -8.15/-6.02     | -4.64/-3.65       | -2.94/-2.78       | -3.47/-4.98       | -5.55/-5.42       | -6.02/-6.61       | -6.64/-5.5        | -4.09/-3.34       | -3.08/-2.55       | -2.46/-3.13       | -3.39/-3.35       | -3.62/-4.01       | -5.12/-6.56       | -5.09/-3.33       | -2.94/-3.37       | -4.48/-5.31       | -5.37/-5.35       | -5.37/-4.92       |
| Θ(172.5°) | -7.15/-7.02   | -7.43/-6.76     | -5.92/-5.27     | -4.36/-3.71     | -3.69/-3.72     | -3.94/-4.59     | -5.01/-5.08     | -4.9/-4.84        | -5.18/-5.04       | -5/-5.36          | -5.75/-6.52       | -8.02/-8.6        | -7.12/-5.32       | -4.48/-4.52       | -4.69/-5.08       | -5.09/-5.37       | -5.65/-5.59       | -6.09/-6.27       | -5.99/-4.53       | -3.69/-2.83       | -2.81/-4.02       | -5.91/-7.15       | -8.06/-8.33       | -8.98/-8.86       |
| Θ(180°)   | -13.83/-13.24 | -13.23/-13.47   | -13.39/-11.77   | -10.15/-8.72    | -7.61/-7.02     | -6.78/-5.61     | -4.53/-4.57     | -4.82/-5.01       | -4.76/-4.69       | -5.46/-6.66       | -7.39/-7.79       | -7.98/-7.31       | -6.56/-6.04       | -6.29/-7.18       | -7.56/-6.9        | -6.16/-5.36       | -4.33/-3.29       | -2.59/-2.44       | -2.74/-3.65       | -4.21/-5.21       | -6.39/-7.45       | -8.2/-8.83        | -8.96/-11.1       | -10.97/-11.79     |
| Freq(Hz)  | 5.785/Pol.    | Theta/-         | -/-             | -/-             | -/-             | -/-             | -/-             | -/-               | -/-               | -/-               | -/-               | -/-               | -/-               | -/-               | -/-               | -/-               | -/-               | -/-               | -/-               | -/-               | -/-               | -/-               | -/-               | -/-               |
| DG(dB)    | Φ(0°)/Φ(7.5°) | Φ(15°)/Φ(22.5°) | Φ(30°)/Φ(37.5°) | Φ(45°)/Φ(52.5°) | Φ(60°)/Φ(67.5°) | Φ(75°)/Φ(82.5°) | Φ(90°)/Φ(97.5°) | Φ(105°)/Φ(112.5°) | Φ(120°)/Φ(127.5°) | Φ(135°)/Φ(142.5°) | Φ(150°)/Φ(157.5°) | Φ(165°)/Φ(172.5°) | Φ(180°)/Φ(187.5°) | Φ(195°)/Φ(202.5°) | Φ(210°)/Φ(217.5°) | Φ(225°)/Φ(232.5°) | Φ(240°)/Φ(247.5°) | Φ(255°)/Φ(262.5°) | Φ(270°)/Φ(277.5°) | Φ(285°)/Φ(292.5°) | Φ(300°)/Φ(307.5°) | Φ(315°)/Φ(322.5°) | Φ(330°)/Φ(337.5°) | Φ(345°)/Φ(352.5°) |
| Θ(0°)     | -1.24/-0.64   | -0.84/-0.73     | -0.98/-1.5      | -2.04/-2.02     | -2.42/-3.06     | -3.99/-5.33     | -6.71/-6.99     | -6.38/-5.97       | -5.61/-4.82       | -3.71/-2.89       | -1.98/-1.66       | -1.34/-1.01       | -1.11/-1.24       | -1.83/-2          | -2.09/-2.24       | -2.55/-2.51       | -2.52/-2.56       | -2.89/-3.53       | -3.71/-4.09       | -3.8/-3.72        | -3.08/-2.35       | -2.17/-2.18       | -1.9/-1.87        | -1.55/-1.12       |
| Θ(7.5°)   | 0.55/0.82     | 0.66/0.08       | -0.51/-0.95     | -1.59/-1.65     | -1.81/-2.16     | -2.59/-2.83     | -2.89/-2.78     | -2.96/-2.93       | -2.54/-1.86       | -1.31/-1.08       | -0.44/-0.34       | -0.57/-0.49       | -0.43/-0.62       | -1.06/-1.44       | -1.58/-2.03       | -2.2/-2.12        | -2.5/-3.09        | -4.27/-5.56       | -6.59/-6.56       | -6.34/-6          | -5.66/-5.27       | -4.46/-3.51       | -2.7/-2.11        | -1.46/-0.52       |
| Θ(15°)    | 0.53/0.12     | -0.61/-1.27     | -1.53/-0.87     | -1.07/-1.26     | -1.29/-1.05     | -0.79/-0.92     | -1.13/-0.86     | -0.7/-0.69        | -0.87/-1.25       | -1.17/-1.1        | -1.24/-0.85       | -0.36/-0.12       | -0.02/-0.4        | -1.16/-1.55       | -2.07/-2.49       | -2.82/-2.83       | -2.77/-3.02       | -2.9/-3.12        | -3.33/-3.88       | -4.64/-4.82       | -4.58/-4.44       | -3.78/-2.72       | -1.6/-0.82        | -0.05/0.71        |
| Θ(22.5°)  | 1.13/0.21     | -0.45/0.04      | 1.03/1.3        | 0.31/0.2        | 0.25/0.27       | -0.28/-0.74     | -1.87/-2.68     | -2.79/-2.77       | -2.68/-2.07       | -2.41/-2.87       | -1.82/-0.7        | -0.11/0.02        | -0.05/-0.7        | -1.13/-1.5        | -1.82/-1.95       | -1.87/-1.36       | -1.31/-1.36       | -1.4/-1.44        | -1.27/-1.47       | -1.57/-1.98       | -2.49/-3.05       | -3.3/-2.49        | -1.77/-0.7        | 0.08/1.36         |
| Θ(30°)    | 1.66/0.43     | 0.71/1.8        | 2.43/2.24       | 1.79/1.84       | 1.41/0.55       | -0.19/-0.46     | -1.01/-2.02     | -2.51/-2.7        | -3.45/-3.48       | -2.65/-2.54       | -2.2/-1.36        | -0.87/-0.37       | -0.41/-0.15       | 0.62/0.6          | -0.35/-1.08       | -1.14/-0.37       | 0.09/0.06         | -0.43/-0.99       | -1.06/-0.57       | -0.18/-0.5        | -1.01/-2.1        | -3.4/-3.02        | -0.58/1.65        | 2.62/6.8          |
| Θ(37.5°)  | 2.16/1.1      | 1.47/2.26       | 2.58/2.82       | 2.19/0.86       | 0.3/-0.02       | -0.59/-1.28     | -1.57/-1.94     | -1.96/-1.84       | -2.44/-2.49       | -1.98/-2.24       | -1.39/0.06        | 0.72/0.72         | 0.33/0.41         | 0.45/-0.22        | -1.09/-1.27       | -0.82/-1.13       | -2.16/-3.25       | -2.87/-2.63       | -2.36/-3.64       | -3.24/-1.83       | -0.28/-0.07       | -0.52/-1.38       | -1.48/0.38        | 1.59/2.05         |
| Θ(45°)    | 1.64/2.4      | 3.13/3.3        | 3.06/2.86       | 1.86/0.76       | 0.04/-0.15      | -0.39/-1.03     | -2.04/-3.07     | -3.02/-2.03       | -1.36/-1.15       | -1.13/-1.09       | -0.81/-0.88       | -0.69/0.6         | 2.05/2.14         | 0.88/0.68         | 1.9/2.58          | 1.84/0.76         | -0.16/-1.4        | -2.08/-1.18       | 0.28/0.24         | -1.02/-1.74       | -1.3/-0.19        | -0.64/-0.58       | 1.05/2.37         | 3.37/2.27         |
| Θ(52.5°)  | 2.82/3.57     | 3.27/2.27       | 2.76/2.64       | 1.58/1.6        | 0.82/-0.16      | -1.47/-2.6      | -3.21/-3.62     | -2.77/-1.3        | -0.58/-0.21       | 0.45/0.71         | 0.65/0.34         | 0.23/1.4          | 2.3/0.79          | -0.13/0.29        | 1.32/1.24         | 0.62/-1.11        | -3.02/-1.56       | -0.22/-0.15       | 0.29/0.17         | 1.2/-0.23         | -1.84/-0.44       | 1.24/0.87         | 0.68/2.02         | 2.49/1.81         |
| Θ(60°)    | 2.3/0.4       | 3.07/3.34       | 2.89/1.61       | 0.28/0.04       | 0.6/0.15        | -0.93/-2.07     | -2.6/-1.79      | -0.6/0.13         | -0.23/-0.73       | -0.37/0.47        | 0.96/0.6          | 0.51/1.8          | 2.22/1.15         | 0.22/1.95         | 1.47/1.04         | 0.62/-0.26        | 0.1/0.88          | 1.78/1.95         | 1.96/1.99         | 1.68/0.2          | -2.46/-1.7        | 0.65/1.09         | 1.16/1.43         | 1.47/1.92         |
| Θ(67.5°)  | 32/91         | 1.13/2.64       | 3.06/1.09       | 0.44/-0.27      | 1.14/1.51       | 0.7/-1.08       | -1.8/-1.7       | -2.19/-2.38       | -1.66/-0.35       | 0.1/0.42          | 0.46/-0.25        | 0.1/-0.08         | 0.89/0.53         | 0.71/1.63         | 1.43/1.26         | 1.43/-1.48        | -0.91/0           | 1.26/1.65         | 1.81/1.68         | 1.93/1.04         | -1.82/-1.72       | 0.79/2.4          | 2.83/1.36         | 0.22/1.24         |
| Θ(75°)    | 3.82/3.05     | 2.4/3.38        | 3.15/0.87       | -0.52/-0.26     | 0.81/1.77       | 2.09/1.76       | 1.19/0.7        | 0.2/-0.85         | -0.42/-1.49       | 1.52/0.47         | 0.91/1.39         | 1.22/-0.15        | -0.35/0.95        | 1.24/1.73         | 1.4/2.19          | 2.56/1.52         | -0.02/0.54        | 1.36/1.73         | 2.18/2.84         | 2.44/2.3          | -1.28/-4.66       | -0.58/1.08        | 1.14/0.04         | 0.72/1.7          |
| Θ(82.5°)  | 3.44/2.35     | 1.44/2.21       | 1.87/0.71       | 0.63/0.94       | 1.73/2.81       | 3.39/2.54       | 1.12/0.81       | 0.68/-0.66        | -1.09/0.41        | 0.82/0            | 0.49/0.62         | -0.09/-1.41       | -1.02/0.09        | 1.82/2.56         | 1.78/2.75         | 1.76/0.67         | -2.18/-0.95       | 0.25/1.7          | 2.33/2.51         | 2.16/0.64         | -1.46/-2.3        | -0.91/-2.33       | -2.12/-0.66       | -0.17/0.69        |
| Θ(90°)    | 0.62/-0.44    | 2.36/4.02       | 3.04/0.29       | 0.71/1.47       | 2.98/3.64       | 4.05/3.7        | 2.5/1.28        | 0.67/-0.4         | 0.65/1.61         | -0/-2.24          | -0.06/1.76        | 0.26/-1.07        | 0.29/0.77         | 2.26/2.64         | 1.91/84           | 1.23/1.8          | 0.66/2.22         | 4/4.47            | 3.48/1.73         | 2.95/2.08         | -0.42/-2.81       | -3.81/-4.75       | -3.94/-2.16       | -1.46/-0.53       |
| Θ(97.5°)  | 1.67/-0.85    | 0.35/4.54       | 3.54/1.44       | 0.91/1.09       | 2.73/7.7        | 3.87/3.6        | 2.67/1.75       | 0.81/-0.06        | 0.47/2.35         | 1.75/-0.45        | 0.68/1.32         | 0.15/-1.27        | 0.55/0.45         | 2.41/1.24         | 0.44/-0.95        | 0.76/1.41         | 0.86/2.79         | 4.15/4.39         | 3.84/3.41         | 3.58/2.86         | 0.05/0.22         | -0.55/-2.33       | -0.41/-1.11       | -0.85/0.06        |
| Θ(105°)   | 1.65/-1.17    | 0.81/4.84       | 4.66/1.07       | -0.27/0.52      | 0.93/2.35       | 3.36/3.64       | 3.13/2.18       | 1.63/0.64         | 1.49/3.59         | 3.61/7.6          | 2.09/2.02         | 1.24/1.87         | 1.3/0.28          | 1.64/0.48         | -0.27/-1.6        | -0.67/1.06        | -0.41/4.4         | 3.21/2.03         | 1.14/-0.34        | 0.36/0.76         | -1.06/-2.88       | -1.1/-2.34        | -2.41/0.09        | 0.21/-0.83        |
| Θ(112.5°) | 2.31/2.4      | 0.98/4.38       | 3.94/0.57       | -1.97/-0.33     | -0.17/0.85      | 0.86/1.03       | 0.61/0.32       | 0.28/1.52         | 1.68/2.66         | 2.18/1.8          | 2.51/2.04         | 0.69/0.61         | -0.16/-0.25       | 1.89/0.05         | 0.15/-2.35        | -6.43/-1.57       | -0.37/0.63        | 0.63/-1.86        | -1.89/-6.54       | -3.7/-6.04        | -6.33/-2.15       | -2.63/-1.88       | -0.28/0.93        | 1.72/2.4          |
| Θ(120°)   | 0.08/-0.14    | 2.34/3.4        | 2.13/-0.87      | -2.72/1.16      | 1.93/1.6        | 1.33/0.75       | 0.61/-0.16      | 1.12/0.7          | 2.81/2.84         | 1.44/0.83         | 0.18/0.75         | 0.27/0.26         | 0.3/0.27          | 1.64/1.16         | -0.16/0.36        | -1.04/-5.18       | -0.51/-1.81       | -1.91/-3.15       | -2.93/-1.27       | -2.15/-4.16       | -5.39/-1.3        | -2.22/-2.82       | -0.56/2.12        | 1.51/0.27         |
| Θ(127.5°) | -0.59/1.6     | 2.92/2.89       | 1.86/-0.01      | -0.71/-0.06     | 0.5/-0.62       | -1/0.03         | 0.19/0.55       | -0.77/-1.18       | 0.17/0.04         | -0.02/-0.79       | -0.21/1           | 0.53/-0.          |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |





# Radiated Composite Gain Data\_2.4GHz, 5GHz

# Appendix A

|           |               |                 |                 |                 |                 |                 |                 |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |
|-----------|---------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| Θ(22.5°)  | -9.12/-15.62  | -19.79/-19.31   | -17.53/-16.97   | -16.15/-14.74   | -10.68/-8.92    | -7.3/-5.4       | -5.61/-5.54     | -4.39/-3.3        | -2.61/-2.36       | -2.35/-2.49       | -2.56/-2.76       | -3.34/-4.99       | -7.76/-10.43      | -13.23/-19.55     | -20/-14.64        | -10.7/-7.73       | -6.06/-4.87       | -4.34/-3.45       | -2.91/-2.29       | -2.09/-1.59       | -1.67/-1.4        | -1.95/-2.49       | -3.33/-4.07       | -4.39/-5.39       |
| Θ(30°)    | -5.33/-7.57   | -12.21/-13.02   | -16.2/-14.46    | -12.53/-11.72   | -11.56/-10.07   | -8.2/-7.8       | -6.91/-6.45     | -6.85/-7.73       | -7.72/-6.43       | -4.92/-3.4        | -2.75/-2.84       | -3.43/-5.55       | -11.15/-16.85     | -16.12/-20.24     | -20.07/-12.18     | -8.05/-5.71       | -4.39/-2.97       | -1.95/-1.08       | -0.55/-0.2        | -0.11/-0.24       | 0.22/0.09         | -0.34/-1.31       | -2.65/-3.67       | -3.81/-3.95       |
| Θ(37.5°)  | -5.72/-9.97   | -9.2/-10.42     | -14.69/-16.37   | -13.56/-10.87   | -9.18/-8.9      | -10.25/-16.1    | -19.23/-20.09   | -18.67/-15.48     | -13.83/-13.9      | -14.11/-10.75     | -6.7/-3.4         | -2.21/-3.51       | -9.26/-19.97      | -19.46/-19.79     | -19.18/-11.81     | -7.74/-4.93       | -2.92/-1.67       | -1.13/-0.96       | -0.67/-0.21       | 0.35/0.57         | 1.08/1.41         | 1.53/0.63         | -1.73/-3.2        | -4.03/-4.66       |
| Θ(45°)    | -4.87/-5.51   | -6.29/-9.69     | -20.12/-14.5    | -9.41/-8.46     | -8.98/-15.61    | -18.2/-13.2     | -8.26/-6.15     | -6.35/-7.17       | -8.33/-10.31      | -11.9/-11.57      | -11.41/-8.89      | -5.37/-1.95       | -9.32/-15.97      | -19.73/-19.36     | -14.9/-6.9        | -3.88/-3.23       | -3.16/-3.21       | -3.12/-6.65       | -2.28/-1.81       | -0.73/0.15        | 1.22/2.18         | 2.58/2.3          | 1.58/-0.18        | -1.99/-3.2        |
| Θ(52.5°)  | -5.6/-7.67    | -11.05/-13.97   | -16.39/-9.98    | -6.66/-5.83     | -7.2/-12.57     | -17.99/-10.97   | -8.69/-8.65     | -10.38/-10.61     | -8.96/-8.39       | -9.18/-12.03      | -10.15/-6.12      | -4.11/-5.21       | -10.1/-16.1       | -15.45/-10.45     | -6.83/-4.89       | -4.4/-4.46        | -5.02/-6.01       | -6.91/-6.36       | -4.75/-3.71       | -2.58/-0.78       | 0.46/-1.7         | <b>2.742.73</b>   | 1.86/-0.26        | -2.65/-4.31       |
| Θ(60°)    | -4.7/-7.73    | -11.16/-12.16   | -8.66/-6.47     | -6.58/-8.6      | -15.14/-18.72   | -14.93/-10.97   | -11.62/-13.31   | -13.51/-10.66     | -8.28/-6.54       | -5.58/-6.73       | -5.41/-7.82       | -11.22/-18.79     | -11.86/-9.09      | -6.55/-3.15       | -2.66/-5.65       | -8.71/-8.44       | -6.63/-5.31       | -3.81/-2.31       | -2.37/-2.02       | -0.97/-0.59       | -0.56/-1.52       | -1.84/-1.86       | -1.96/-3.24       |                   |
| Θ(67.5°)  | -4.79/-6.84   | -17.6/-17.66    | -9.65/-7.11     | -6.86/-8.16     | -15.03/-19.97   | -11.7/-9.6      | -7.74/-6.55     | -7.21/-7.24       | -7.19/-6.97       | -7.2/-8.53        | -9.8/-8.89        | -6.95/-6.61       | -10.58/-19.48     | -15.36/-9.11      | -5.7/-3.95        | -5.39/-8.26       | -11.41/-10.26     | -8.07/-5.89       | -5.08/-4.6        | -3.27/-3.1        | -3.67/-4.13       | -4.13/-2.68       | -1.42/-2.42       | -6.09/-5.49       |
| Θ(75°)    | -2.39/-4.56   | -12.49/-16.39   | -11.62/-8.43    | -6.76/-8.7      | -14.91/-14.08   | -8.65/-5.38     | -4.67/-4.09     | -3.67/-3.71       | -4.74/-6.04       | -7/-7.9           | -7.61/-5.16       | -3.85/-6.38       | -11.87/-18.82     | -14.46/-9.29      | -6.59/-4.57       | -6.37/-9.43       | -9.62/-10.29      | -12.35/-11.57     | -7.35/-5.54       | -5.26/-6.1        | -6.04/-4.32       | -2.8/-1.67        | -0.52/-1.18       | -3.65/-3.03       |
| Θ(82.5°)  | -1.87/-3.47   | -11.14/-19.54   | -18.77/-12.06   | -8.82/-11.95    | -18.48/-11      | -8.63/-9.98     | -9.53/-7.14     | -4.67/-3.19       | -5.3/-5.43        | -9.5/-6.46        | -4.56/-5.58       | -6.59/-7.56       | -8.72/-14.55      | -16.88/-11.52     | -6.74/-4.18       | -5.34/-6.28       | -10.05/-9.54      | -6.48/-6.53       | -9.85/-8.59       | -5.91/-3.96       | -3.43/-4.37       | -2.75/-2.83       | -4.31/-7          | -4.22/-1.4        |
| Θ(90°)    | -3.2/-4.86    | -7.56/-12.58    | -19.14/-13.45   | -8.79/-7.31     | -6.71/-7.07     | -10.37/-12.83   | -11.48/-5.94    | -2.81/-1.44       | -2.18/-4.67       | -7.33/-7.64       | -7.59/-4.7        | -5.07/-9.24       | -8.64/-9.31       | -19.17/-18.4      | -7.77/-5.73       | -4.9/-7.79        | -10.56/-7.5       | -7.39/-6.72       | -6.6/-7.03        | -6.48/-3.1        | -0.54/-0.37       | -1.42/-3.01       | -4.23/-4.39       | -2.61/-1.35       |
| Θ(97.5°)  | -7.68/-12.16  | -11.31/-12.89   | -19.88/-17.61   | -15.11/-13.09   | -10.87/-9.37    | -11.18/-16.46   | -18.62/-11.12   | -5.39/-3.61       | -4.02/-5.39       | -8.04/-10.2       | -9.15/-6.34       | -9.23/-7.95       | -6.62/-12.16      | -13.46/-13.3      | -10.78/-7.57      | -7.28/-7.76       | -8.6/-11.42       | -8.06/-8.43       | -11.69/-9.58      | -3.64/-0.98       | 0/-0.17           | -1.55/-2.43       | -3.12/-1.64       | -2.21/-4          |
| Θ(105°)   | -9.73/-18.96  | -13.63/-14.65   | -12.66/-12.03   | -11.22/-14.6    | -4.31/-3.45     | -3.62/-6.07     | -12.43/-19.2    | -14.64/-10.24     | -13.86/-14.73     | -9.8/-13.98       | -11.38/-6.74      | -7.95/-10.3       | -8.85/-8.81       | -11.98/-15.99     | -18.82/-12.49     | -8.51/-8.26       | -6.68/-7.24       | -8.69/-10.51      | -13.18/-8.83      | -6.01/-2.95       | -2.99/-1.94       | -1.35/-1.81       | -2.31/-2.77       | -2.51/-3.81       |
| Θ(112.5°) | -17.28/-16.95 | -11.23/-9.86    | -9.4/-9.09      | -6.59/-5.14     | -5.9/-3.93      | -2.63/-2.31     | -4/-7.75        | -16.3/-13.56      | -12.24/-16.85     | -17.41/-13.84     | -11.49/-9.92      | -11.54/-10.75     | -9.2/-13.94       | -15.25/-10.34     | -13.17/-17.37     | -13.88/-7.09      | -7.61/-13.12      | -8.69/-7.81       | -11.01/-10.41     | -8.64/-6.23       | -5.01/-3.34       | -2.92/-2.34       | -2.96/-1.82       | -0.73/-4.98       |
| Θ(120°)   | -12.54/-6.84  | -6.65/-7.57     | -6.67/-14.35    | -3.99/-5.15     | -2.49/-5.45     | -3.25/-2.37     | -3.5/-5.44      | -9.54/-12.47      | -16.23/-14.83     | -19.71/-19.61     | -12.2/-7.96       | -7.97/-14.15      | -12.46/-9.34      | -17.74/-17.88     | -12.33/-18.24     | -13.89/-8.18      | -12.42/-18.77     | -10.87/-10.78     | -13.37/-14.94     | -8.24/-5.17       | -2.88/-4.7        | -5.47/-10.09      | -7.77/-7.48       | -16.14/-18.43     |
| Θ(127.5°) | -4.78/-3.36   | -1.31/-3.74     | -8.93/-4.14     | -1.23/-2.49     | -7.09/-10.62    | -7.55/-6.4      | -7.52/-7.93     | -7.85/-8.11       | -7.39/-11.91      | -17.72/-15.99     | -10.95/-13.02     | -14.31/-13.48     | -8.04/-8.44       | -19.75/-19.12     | -8.18/-2.4        | -7.41/-6.79       | -6.47/-3.58       | -9.95/-7.67       | -0.58/-0.6        | -0.94/-0.86       | -0.28/-3.92       | -1.46/-1.46       | -3.46/-3.06       |                   |
| Θ(135°)   | -1.85/-1.73   | -2.95/-5.18     | -3.31/-1.85     | -4.55/-12.35    | -15.31/-9.09    | -7.57/-8.62     | -11.21/-14.35   | -12.5/-10.03      | -8/-6.1           | -10.91/-17.55     | -9.78/-9.96       | -18.79/-11.98     | -10.06/-11.48     | -14.27/-12.89     | -14.87/-8.55      | -3.17/-5.28       | -5.44/-1.9        | -4.7/-2.6         | -7.05/-7.75       | -2.3/-1           | 1.27/1.38         | -1.12/-6.44       | -10.4/-3.02       | 1.08/0.08         |
| Θ(142.5°) | -7.27/-5.85   | -8.95/-4.28     | -6.68/-5.97     | -6.32/-10.78    | -10.77/-17.83   | -10.4/-14.95    | -17.07/-17.27   | -11.99/-9.84      | -9.59/-19.05      | -11.23/-7.3       | -5.44/-6.34       | -7.77/-12.57      | -9.14/-9.16       | -18.82/-14.73     | -14.73/-6.4       | -5.76/-5.23       | -3.39/-4.39       | -9.74/-6.11       | -2.24/-0.28       | -0.68/-2.06       | 2.03/-1.95        | -4.36/-3.6        | -4.05/-4.6        |                   |
| Θ(150°)   | -6.16/-5.97   | -5.2/-9.52      | -6.76/-8.55     | -10.4/-10.78    | -15.48/-12.67   | -11.6/-13.1     | -19.68/-20.05   | -14.13/-10.49     | -9.31/-10.04      | -9.67/-16.02      | -19.12/-16.66     | -12.73/-17.45     | -19.77/-14.74     | -17.91/-15.94     | -19.34/-13.84     | -7.21/-5.35       | -5.47/-5.68       | -10.21/-9.22      | -6.24/-3.55       | -1.86/-0.49       | 0.38/-3.92        | -2.76/-3.44       | -5.8/-5.65        |                   |
| Θ(157.5°) | -2.48/-3.14   | -3.97/-5.07     | -7.89/-12.55    | -15.47/-20.33   | -19.77/-18.64   | -16.45/-19.35   | -19.45/-19.82   | -19.77/-19.52     | -16.91/-12.21     | -9.67/-10.93      | -12.39/-11.05     | -9.88/-12.43      | -17.02/-16.96     | -14.15/-11.71     | -10.13/-11.55     | -18.74/-19.84     | -18.89/-12.3      | -10.32/-12.19     | -14.73/-13.28     | -7.84/-4.48       | -3.48/-3.49       | -3.52/-3.67       | -4.89/-4.72       | -2.31/-1.12       |
| Θ(165°)   | -2.12/-3.55   | -5.88/-8.41     | -9.5/-10.8      | -12.55/-14.19   | -15.1/-15.53    | -19.66/-18.7    | -19.54/-13.97   | -19.93/-18.66     | -19.21/-19.71     | -20.44/-17.4      | -15.24/-12.8      | -10.75/-9.99      | -10.14/-9.66      | -8.67/-7.84       | -8.7/-11.27       | -16.83/-18.77     | -19.87/-19.1      | -14.26/-10.45     | -8.76/-7.28       | -6.65/-5.35       | -5.47/-5.32       | -5.48/-4.65       | -2.54/-0.86       | -0.82/-1.18       |
| Θ(172.5°) | -9.45/-11.54  | -12.14/-11.55   | -10.17/-10.1    | -10.45/-12.93   | -15.4/-15.09    | -15/-12.41      | -11.83/-12.57   | -12.29/-12.56     | -12.65/-12.37     | -13.35/-13.59     | -15.94/-19.95     | -16.99/-15.57     | -18.86/-18.99     | -20.01/-19.79     | -20.06/-19.58     | -19.24/-18.77     | -19.24/-19.41     | -20.09/-16.81     | -12.76/-10.49     | -9.16/-7.99       | -7.77/-7.36       | -6.42/-5.22       | -5.34/-5.61       | -7.35/-8.47       |
| Θ(180°)   | -8.06/-9.33   | -11.52/-13.64   | -14.58/-13.52   | -10.39/-18.23   | -19.6/-19.98    | -15.69/-12.79   | -11.1/-10.74    | -9.54/-9.65       | -8.76/-7.67       | -8.1/-9.04        | -11.65/-13.64     | -15.24/-15.54     | -19.77/-19.37     | -18.84/-19.41     | -17.92/-17.26     | -16.1/-14.44      | -13.48/-13.77     | -14.6/-14.59      | -13.36/-12.33     | -12.47/-12.04     | -11.89/-12        | -13.03/-12.58     | -10.73/-9.47      |                   |
| Freq(Hz)  | 5.3GPol       | ThetaAnt. 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°)     | -10.65/-7.99  | -6.85/-6.37     | -6.4/-6.37      | -6.06/-6.73     | -7.49/-6.6      | -5.5/-4.92      | -4.72/-5.39     | -7.18/-9.44       | -10.96/-12.12     | -12.59/-14.46     | -19.09/-18.36     | -16.55/-14.7      | -14.13/-13.28     | -10.37/-8.43      | -7.57/-7.25       | -7.52/-7.72       | -7.56/-6.78       | -6.29/-6.53       | -6.95/-7.69       | -8.3/-8.43        | -10.27/-13.13     | -16.69/-19.13     | -19.61/-19.07     | -15.84/-12.52     |
| Θ(7.5°)   | -9.3/-4.88    | -6.93/-7.39     | -8.66/-5.85     | -8.19/-8.94     | -9.15/-7.8      | -6.87/-5.15     | -5.63/-5.94     | -7.12/-9.06       | -12.4/-16.88      | -19.52/-18.64     | -20.35/-12.82     | -9.63/-7.63       | -7.05/-4.54       | -3.59/-2.5        | -1.98/-2.1        | -2.62/-3          | -3.96/-3.9        | -4.48/-4.92       | -5.48/-6.84       | -7.71/-8.97       | -11.77/-12.16     | -14.7/-18.91      | -19.74/-17.81     | -19.61/-7.89      |
| Θ(15°)    | -8.95/-8.89   | -9.2/-9.52      | -11.22/-10.76   | -9.02/-8.88     | -6.73/-7.27     | -6.51/-6.85     | -6.08/-6.54     | -8.04/-9.64       | -10.71/-12.25     | -15.18/-8.68      | -6.1/-18          | -3.3/-2.26        | -1.24/-0.03       | 0.74/0.68         | 0.2/-0.53         | -1.41/-2.21       | -3.15/-4.04       | -5.39/-6.96       | -9.15/-10.94      | -14.88/-19.7      | -18.2/-13.9       | -10.8/-19         | -19.15/-17.9      |                   |
| Θ(22.5°)  | -6.31/-4.72   | -4.68/-5.08     | -6.65/-7.32     | -6.01/-4.72     | -3.19/-3.49     | -4.55/-6.71     | -9.16/-12.32    | -15.8/-20.48      | -19.08/-15.4      | -10.95/-8.74      | -7.78/-6.46       | -3.7/-1.91        | -1.07/-0.8        | -0.19/0.7         | 1.28/1.26         | 0.68/0.01         | -1.17/-2.38       | -4.09/-6.12       | -8.64/-11.19      | -13.44/-16.48     | -19.52/-17.71     | -14.07/-10.82     | -9.34/-8.51       | -7.98/-7.47       |
| Θ(30°)    | -5.6/-3.22    | -2.54/-3.63     | -5.58/-6.31     | -4.78/-4.14     | -3.35/-4.07     | -4.62/-6.18     | -7.82/-8.42     | -10.24/-12.46     | -13.14/-14.33     | -13.51/-9.51      | -5.46/-3.71       | -2.71/-1.15       | 0.34/0.09         | 1.46/1.63         | 1.92/1.71         | 0.68/0.37         | -1.16/-1.7        | -2.5/-3.48        | -4.92/-2.67       | -6.9/-6.98        | -7.38/-8.22       | -8.15/-7.47       | -7.16/-7.62       | -7.86/-8.9        |
| Θ(37.5°)  | -3.16/-2.17   | -2.9/-3.74      | -5.61/-5.66     | -6.24/-9.45     | -13.1/-15.8     | -15.56/-10.9    | -8.82/-7.15     | -6.59/-6.6        | -6.73/-7.37       | -7.78/-6.27       | -5.11/-4.67       | -3.78/-1.2        | 0.75/0.91         | 0.64/0.63         | 0.76/0.35         | -0.83/-1.78       | -1.85/-1.86       | -1.46/-1.29       | -1.06/-1.6        | -2.51/-3.32       | -4.07/-4.86       | -5.76/-6.3        | -5.94/-7.17       | -4.34/-5.64       |
| Θ(45°)    | -5.17/-3.91   | -4.15/-6.81     | -8.87/-11.57    | -14.92/-16.22   | -13.49/-10.65   | -9.73/-8.77     | -9.35/-8.44     | -6.65/-5.37       | -5.44/-6.52       | -7.99/-5.71       | -3.03/-1.91       | -0.78/0.07        | 0.97/1.3          | 1.16/0.62         | 0.59/0.47         | -0.58/-1.58       | -1.09/-0.07       | -0.15/-0.71       | -1.72/-2.68       | -4.09/-5.79       | -6.14/-4.37       | -4.38/-5.9        | -6.21/-6.22       | -6.86/-7.68       |
| Θ(52.5°)  | -5.28/-3.21   | -4.68/-8.86     | -16.35/-19.63   | -11.15/-6.38    | -4.4/-3.09      | -2.91/-3.37     | -2.99/-3.1      | -3.08/-3.34       | -3.66/-4.5        | -6.5/-6.8         | -3.89/-1.99       | -0.67/-0.17       | 0.98/1.72         | 1.89/1.3          | 0.78/-0.16        | -2/-2.92          | -1.69/-1.05       | -1.2/-0.97        | -0.14/-0.79       | -2.53/-3.78       | -5/-5.31          | -3.9/-5.08        | -6.43/-8.63       | -11.91/-9.97      |
| Θ(60°)    | -1.95/-3.11   | -4.55/-8.33     | -10.84/-7.65    | -4.44/-2.05     | -1.13/-1.59     | -2.31/-4.3      | -5.27/-4.13     | -3.08/-3.04       | -4.42/-6.1        | -8.11/-8.33       | -5.24/-2.97       | -0.79/0.36        | 0.43/1.06         | 1.74/1.44         | -0.14/-1.68       | -2.43/-2.53       | -2.46/-2.19       | -1.03/-0.38       | -0.42/-0.44       | -0.52/-2.1        | -4.15/-7.06       | -8.02/-7.54       | -5.8/-2.48        | -1.93/-1.67       |
| Θ(67.5°)  | 0.63/0.82     | -0.02/-3.96     | -8.84/-7.02     | -3.04/-1.28     | 0.01/-1.27      | -3.32/-5.28     | -4.67/-2.87     | -1.35/-0.84       | -1.69/-2.37       | -3.76/-7.63       | -8.01/-5.58       | -3.22/-1.61       | -1.56/-1.05       | -0.42/-1.43       | -2.27/-2.72       | -3.84/-3.9        | -2.61/-2.23       | -2.81/-2.45       | -1.36/-1.34       | -1.51/-1.82       | -3.68/-6.94       | -9.04/-8.81       | -5.02/-0.7        | -0.5/-0.88        |
| Θ(75°)    | -0.5/0        | -0.16/-4.17     | -10.61/-7.25    | -3.75/-1.04     | 0.32/0.75       | -3.55/-5.35     | -2.68/-5.05     | -0.57/-1.19       | -2.67/-3.3        | -4.79/-10.58      | -10.71/-7.11      | -3.92/-1.95       | -3.9              |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |



# Radiated Composite Gain Data\_2.4GHz, 5GHz

# Appendix A

|           |               |                 |                 |                 |                 |                 |                 |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |
|-----------|---------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| Θ(75°)    | -4.39/-2.39   | -4.11/-6.28     | -8.86/-20.36    | -19.99/-19.14   | -11.31/-10.49   | -9.77/-7.29     | -4.32/-3.82     | -5.33/-7.93       | -11.39/-8.56      | -5.58/-3.69       | -3.83/-4          | -2.03/-3.41       | -14.36/-11.22     | -4.73/-4.7        | -7.25/-10.13      | -15.16/-14.94     | -10.87/-9.48      | -13.21/-16.49     | -10.43/-7.85      | -6.34/-5.11       | -4.38/-6.34       | -10.33/-8.26      | -4.98/-2.91       | -3.65/-7.76       |
| Θ(82.5°)  | -1.11/-1.03   | -6/-4.62        | -4.55/-9.83     | -13.61/-15.89   | -12.49/-8.88    | -8.59/-8.36     | -6.93/-5.45     | -4.77/-5.05       | -6.69/-9.5        | -8.54/-4.66       | -1.37/-2.35       | -3.98/-7.22       | -15.33/-8.21      | -4.17/-3.77       | -11.59/-8.55      | -14.45/-15.92     | -12.42/-13.92     | -17.12/-13.92     | -12.3/-8.23       | -4.8/-7.34        | -5.12/-6.03       | -5.29/-3.83       | -2.15/-0.04       | -1.4/-5.1         |
| Θ(90°)    | -3/-1.3       | -6.41/-4.29     | -6.08/-16.61    | -18.37/-15.98   | -6.84/-5.41     | -6.09/-9.38     | -14.77/-13.21   | -7.95/-7.65       | -8.28/-8.39       | -13.96/-6.41      | -1.76/-2.83       | -5.18/-6.36       | -13.07/-7.55      | -2.98/-5.2        | -7.3/-10.83       | -11.18/-8.89      | -14.02/-19.76     | -19.78/-16.55     | -5.75/-4.14       | -4.95/-2.44       | -4.81/-6.37       | -2.62/-1.86       | -3/-6.53          |                   |
| Θ(97.5°)  | -1.65/-2.63   | -11.99/-10.18   | -12.63/-19.84   | -17.72/-13.27   | -7.14/-6.84     | -6.82/-8.95     | -16.07/-14.16   | -11.49/-10.41     | -10.94/-14.29     | -13.49/-9.23      | -4.16/-3.45       | -6.82/-11.59      | -9.51/-6.78       | -5.27/-7          | -12.58/-11.65     | -7.97/-12.86      | -14.76/-17.59     | -18.37/-7.19      | -2.9/-2.51        | -1.88/-1.7        | -0.56/-1.57       | -1.6/-0.88        | 2.7/-4.46         | -6.61/-2.04       |
| Θ(105°)   | -6.67/-8.23   | -9.98/-11.91    | -17.96/-8.96    | -8.54/-8.77     | -8.21/-6.19     | -4.44/-3.34     | -4.12/-9.22     | -16.77/-14.66     | -12.43/-19.79     | -16.61/-12.12     | -8.04/-6.83       | -11.49/-13.03     | -9.24/-7.44       | -6.53/-9.16       | -17.96/-10.19     | -8.27/-11.16      | -12.93/-19.74     | -16/-7.29         | -2.7/-3.63        | -1.41/-0.05       | 0.30/-44          | -0.47/-2.1        | -5.65/-13.44      | -9.4/-3.82        |
| Θ(112.5°) | -3.34/-14.52  | -8.61/-8.1      | -14.48/-6.07    | -6.38/-8.87     | -8.19/-8.2      | -7.19/-4.45     | -4.76/-6        | -9.95/-12.41      | -15.34/-16.72     | -16.21/-16.16     | -10.37/-10.08     | -11.22/-10.45     | -8.9/-11.54       | -8.78/-15.56      | -20.17/-14.88     | -13.68/-11.85     | -18.72/-12.65     | -16.06/-6.71      | -2.62/-3.26       | -1.56/-0.4        | 0.25/-1.84        | -3.11/-4.98       | -4.81/-6.5        | -2.76/-0.82       |
| Θ(120°)   | -10.22/-14.17 | -6.2/-6.63      | -9.37/-6.08     | -3.53/-3.15     | -3.71/-4.65     | -6.35/-5.78     | -6.47/-7.79     | -8.87/-11.99      | -11.76/-15.06     | -17.22/-13.58     | -11.43/-15.69     | -20.1/-8.08       | -6.33/-11.94      | -10.94/-8.97      | -18.87/-15.05     | -10.83/-11.01     | -18.67/-14.08     | -10.82/-4.88      | -3.71/-7.02       | -4.29/-1.26       | -0.67/-0.06       | -0.74/-1.73       | -5.71/-6.7        | -3.82/-3.94       |
| Θ(127.5°) | -13.15/-6.53  | -4.69/-3.5      | -4.61/-5.16     | -2.54/-1.03     | -2.04/-3.92     | -7.42/-12.72    | -10.19/-8.22    | -7.44/-9.92       | -10.27/-10.59     | -12.15/-13.5      | -11.09/-13.87     | -11.51/-8.79      | -10.57/-18.46     | -18.74/-20.24     | -16.17/-12.16     | -13.24/-6.75      | -18.75/-19.3      | -4.18/-2.3        | -8.19/-8.81       | -2.4/-0.22        | 1.62/-0.84        | -3.58/-12.32      | -6.65/-0.57       | -2.14/-16.12      |
| Θ(135°)   | -5.36/-2.76   | -2.36/-3.58     | -4.51/-3.29     | -2.26/-3.63     | -6.5/-6.74      | -6.18/-8.8      | -14.3/-9.88     | -8.6/-8.09        | -11.81/-12.76     | -11.66/-10.9      | -12.71/-18.65     | -11.23/-5.86      | -9.98/-19.15      | -17.74/-14.68     | -14.45/-18.42     | -6.35/-8.15       | -20.18/-10.53     | -1.11/-0.35       | -6.59/-5.22       | 1.28/-169         | <b>1492.5</b>     | -1.22/-6.34       | -9.44/-3.83       | -2.71/-3.7        |
| Θ(142.5°) | -10.16/-10.07 | -8.39/-7.95     | -8.47/-8.96     | -7/-6           | -7.59/-10.68    | -13.34/-14.2    | -16.61/-12.4    | -8.39/-6.92       | -8.02/-14.84      | -10.29/-7.28      | -8.27/-11.86      | -19.22/-19.76     | -13.41/-13.81     | -19.06/-14.94     | -15.22/-15.87     | -11.58/-15.38     | -14.14/-7.87      | -0.5/-0.93        | -6.5/-5.82        | -0.392/45         | 2.36/0.82         | -3.69/-12.49      | -14.35/-7.52      | -5.08/-5.56       |
| Θ(150°)   | -12.24/-9.16  | -5.45/-4.7      | -7.69/-11.06    | -12.17/-17.55   | -18.95/-11.14   | -10.18/-12.58   | -17.73/-18.87   | -16.81/-16.1      | -19.41/-17.09     | -12.56/-13.43     | -19.31/-15.37     | -12.35/-16.43     | -18.94/-20.05     | -16.27/-14.2      | -17.21/-16.21     | -19.04/-14.31     | -16.17/-6.96      | -4.06/-4.41       | -7.71/-8          | -5.88/-4.36       | -3.53/-1.83       | -1.3/-0.73        | -0.4/-1.07        | -4.05/-9.35       |
| Θ(157.5°) | -2.31/-1.74   | -1.46/-2.4      | -6.77/-18.7     | -14.95/-14.12   | -17.69/-13.64   | -10.26/-9.46    | -9.49/-11.26    | -14.09/-18.33     | -13.68/-10.5      | -9.12/-11.09      | -12.94/-13.67     | -16.71/-19.65     | -16.87/-16.88     | -17.73/-19.46     | -15.71/-12.34     | -13.01/-14.02     | -12.07/-9.65      | -8.72/-9.06       | -11.16/-13.9      | -13.53/-10.37     | -12.84/-5.78      | -7.38/-4.24       | -5.75/-10.72      | -10.21/-4.16      |
| Θ(165°)   | -3.87/-3.44   | -4.02/-6.82     | -10.75/-12.06   | -10.95/-11.14   | -10.8/-11.02    | -14.79/-19.05   | -18.04/-14.74   | -15.33/-16.58     | -16.19/-17.09     | -17.24/-17.13     | -14.33/-10.21     | -8.98/-9.42       | -10.29/-10.25     | -10.81/-12.2      | -13.82/-13.68     | -13.41/-12.75     | -11.4/-11.35      | -11.16/-9.46      | -7.73/-6.56       | -5.86/-5.01       | -4.63/-4.16       | -4.47/-5.94       | -6.74/-5.97       | -5.02/-4.47       |
| Θ(172.5°) | -10.49/-13.55 | -17.22/-17.61   | -14.64/-13.26   | -11.57/-12.38   | -14.33/-14.22   | -13.83/-16.23   | -18.32/-19.84   | -18.64/-19.37     | -18.86/-17.14     | -17.87/-18.59     | -15.72/-12.93     | -18.8/-19.49      | -15.22/-12.93     | -13.74/-16.8      | -19.23/-20.37     | -15.57/-11.92     | -9.55/-7.15       | -6.47/-6.31       | -6.62/-6.63       | -6.53/-5.22       | -4.8/-6.07        | -7.62/-7.91       | -7.52/-5.75       | -9.9/-11.08       |
| Θ(180°)   | -20.01/-19.66 | -19.16/-19.37   | -19.03/-16.37   | -13.83/-12.18   | -11.35/-11.91   | -13.91/-12.38   | -11.46/-12.37   | -13.37/-14.61     | -13.89/-12.48     | -13.34/-16.88     | -19.49/-16.98     | -14.08/-12.98     | -11.6/-10.5       | -9.94/-10.27      | -10.97/-11.56     | -11.49/-11.34     | -11.25/-12.52     | -13.02/-13.03     | -13.19/-14.28     | -12.73/-12.15     | -13.16/-15.69     | -18.47/-18.04     | -18.37/-19.07     | -19.58/-20.04     |
| Freq(Hz)  | 5.785GPol.    | ThetaAnt. 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°)     | -6.26/-5.73   | -5.21/-6.4      | -4.27/-3.83     | -4.21/-3.89     | -4.15/-4.69     | -5.66/-7.3      | -9.22/-11.81    | -14.24/-16.07     | -19.23/-17.55     | -13.61/-12.55     | -11.51/-9.91      | -8.17/-7.55       | -7.34/-6.86       | -6.81/-6.36       | -6.57/-6.55       | -6.79/-7.13       | -17.11/-13.64     | -12.78/-12.81     | -4.71/-13.34      | -12.78/-12.81     | -12.06/-10.05     | -8.11/-6.74       |                   |                   |
| Θ(7.5°)   | -3.96/-3.81   | -4.31/-5.07     | -5.91/-5.64     | -5.95/-5.55     | -5.95/-7.06     | -7.41/-7.3      | -7.39/-8.19     | -9.91/-11.8       | -11.77/-11.48     | -10.58/-10.87     | -8.45/-7.37       | -6.65/-5.27       | -4.69/-3.82       | -3.43/-3.36       | -3.43/-3.37       | -3.39/-3.29       | -3.27/-3.6        | -4.89/-6.67       | -8.14/-9          | -10.44/-11.9      | -15.43/-19.03     | -19.51/-18.76     | -16.44/-13.16     | -10.84/-8.07      |
| Θ(15°)    | -5.09/-5.9    | -8.85/-10.02    | -8.73/-6.57     | -5.74/-5.06     | -4.86/-4.13     | -3.23/-3.01     | -4.04/-4.99     | -6.46/-7.92       | -8.76/-9.8        | -9.07/-4.71       | -5.47/-3.83       | -2.86/-1.95       | -1.69/-1.48       | -1.72/-2.05       | -2.38/-2.53       | -2.77/-3.7        | -4.96/-6.21       | -7.66/-9.04       | -10.2/-9.53       | -10.22/-12.27     | -13.28/-12.58     | -11.31/-10.06     | -7.91/-5.78       |                   |
| Θ(22.5°)  | -7.95/-9.01   | -8.98/-6.7      | -3.62/-2.23     | -2.69/-2.26     | -2.31/-2.09     | -2.52/-2.95     | -4.07/-5.45     | -6.27/-7.63       | -9.14/-11.41      | -10.43/-19.4      | -15.06/-9.59      | -6.26/-3.88       | -2.03/-0.93       | -0.64/-0.89       | -1.45/-2.38       | -3.85/-4.73       | -5.46/-5.6        | -5.79/-6.51       | -7.56/-9.58       | -11.56/-12.32     | -14.58/-18.5      | -20.34/-15.05     | -10.33/-7.48      |                   |
| Θ(30°)    | -5.19/-6.95   | -6.11/-2.77     | -1.33/-1.06     | -1.58/-1.45     | -1.81/-2.13     | -3.04/-4.16     | -5.77/-6.81     | -7.3/-7.82        | -10.1/-16.45      | -18.5/-15.42      | -15.58/-10.52     | -4.19/-1.17       | -0.050/5          | 0.630/12          | -0.69/-1.2        | -1.53/-1.8        | -2.17/-2.15       | -1.88/-1.48       | -1.41/-1.86       | -3.38/-4.57       | -6.22/-9.11       | -12.4/-15.25      | -14.44/-10.42     | -6.09/-4.92       |
| Θ(37.5°)  | -4.11/-4.62   | -2.72/-0.87     | 0.020/68        | -0.58/-2.18     | -4.13/-4.13     | -8.05/-8.15     | -10.28/-12.66   | -13.83/-13.93     | -14.71/-19.48     | -8.34/-5.44       | -2.43/-0.3        | 0.090/54          | 0.791/95          | 0.920/53          | 0.260/-0.8        | -0.56/-0.89       | -0.43/-0.46       | -0.85/-1.87       | -2.93/-3.9        | -3.75/-3.13       | -6.73/-2.6        | -9.88/-9.73       | -2.94/-1.73       | -2.63/-9.14       |
| Θ(45°)    | -4.68/-3.04   | -0.71/-34       | 1.920/34        | -2.44/-7.7      | -4.86/-4.31     | -4.06/-4.42     | -5.31/-5.85     | -5.61/-5.68       | -6.56/-6.84       | -6.72/-6.18       | -5.21/-5.55       | -3.83/-9.07       | 0.890/74          | 0.790/77          | 2.462/45          | 1.290/12          | -0.51/-0.38       | 0.010/62          | 0.910/69          | -0.64/-2.64       | -4.05/-4.82       | -6.59/-6.61       | -4.78/-3          | -2/-3.32          |
| Θ(52.5°)  | -3.48/-1.09   | 0.730/7         | 0.17/-2.84      | -7.27/-7.92     | -5.72/-4.73     | -5.04/-5.64     | -6.41/-6.58     | -5.32/-4.22       | -4/-4.49          | -5.11/-5.41       | -4.34/-4.42       | -3.99/-0.02       | 1.91/-0.15        | -0.96/-1.4        | 2.10/97           | -0.01/-1.22       | -1.090/-26        | 1.38/154          | 1.750/81          | -0.31/-1.93       | -3.89/-5.55       | -6.5/-5.67        | -3.17/-2.25       | -2.9/-3.77        |
| Θ(60°)    | -7.37/-3.64   | -2.65/-2.86     | -4.36/-2.73     | -16.67/-12.51   | -6.17/-5.71     | -7.86/-6.98     | -9.71/-6.83     | -3.65/-1.76       | -1.28/-3.01       | -6.26/-6.81       | -5.16/-3.78       | -2.710/11         | 1.550/06          | -0.482/-26        | 2.050/98          | -0.16/-1.43       | -0.240/-76        | 1.061/45          | 1.581/-19         | -0.25/-2.16       | -4.37/-6.38       | -9.46/-9.63       | -2.94/-1.73       | -2.63/-9.14       |
| Θ(67.5°)  | -3.14/-2.35   | -1.94/-1.09     | -6.04/-6.82     | -6.58/-5.85     | -3.76/-3.68     | -6.33/-10.68    | -12.71/-9.87    | -8.43/-7.2        | -4.24/-0.09       | -6.82/-9.14       | -7.08/-4.62       | -3.5/-2.99        | -0.061/-4.4       | -1.791/-44        | 1.39/-0.06        | -1.66/-3.4        | -3.29/-1.61       | -1.18/-0.46       | 0.420/33          | 1.03/-0.83        | -3.86/-7.36       | -4.72/-5.61       | -3.7/-5.83        | -11.91/-8.72      |
| Θ(75°)    | -3.95/-2.64   | -5.34/-6.32     | -5.43/-8.39     | -6.97/-3.4      | -2.9/-2.94      | -3.15/-2.93     | -2.74/-2.84     | -3.23/-5.05       | -4.62/-1.82       | -2.3/-6.37        | -7.89/-5.54       | -4.92/-4.64       | -4.170/-15        | -0.86/-2.06       | -1.17/-2.82       | -5.03/-3.17       | -1.72/-0.71       | -0.110/-36        | -0.75/-1.1        | -4.82/-6.65       | -4.85/-4.37       | -5.03/-5.89       | -6.78/-5.62       |                   |
| Θ(82.5°)  | -4.76/-4.38   | -9.13/-7.88     | -4.72/-0.48     | -2.83/-3.1      | -2.75/-1.79     | -2.01/-4.18     | -5.58/-3.9      | -3.18/-4.26       | -5.44/-3.95       | -5.57/-10.24      | -8.91/-6.36       | -6.63/-6.71       | -4.75/-6.06       | -3.61/-8.9        | -2.92/-1.6        | -3.39/-6.5        | -7.21/-4.8        | -2.01/-8.04       | -0.08/-0.47       | -1.51/-3          | -4.88/-8.68       | -6.12/-6.63       | -1.61/-5.71       | -5.36/-7.9        |
| Θ(90°)    | -10.05/-5.52  | -6.39/-6.11     | -1.41/-1.22     | -1.91/-1.49     | -3.95/-1.95     | -1.17/-2.05     | -2.99/-2.74     | -3.77/-8.74       | -8.74/-2.92       | -5.04/-14.34      | -10.76/-6.93      | -8.39/-13.33      | -8.98/-12.09      | -7.11/-4.06       | -5.02/-3.66       | -4.06/-4.39       | -6.13/-3.99       | -0.021/-75        | 1.35/-0.06        | -1.71/-3.33       | -4.72/-9.21       | -14.66/-14.57     | -13.56/-6.99      | -7.77/-16.98      |
| Θ(97.5°)  | -2.13/-3.29   | -5.41/-0.37     | 1.590/75        | -1.62/-6.14     | -2.59/-0.06     | -0.95/-1.72     | -2.64/-3.05     | -3.27/-6.33       | -13.25/-0.52      | -4.73/-20.04      | -11.12/-8.41      | -13.57/-12.22     | -11.62/-18.8      | -11.67/-10.3      | -10.77/-8.89      | -7.8/-9.71        | -15/-4.36         | -0.321/-81        | 1.340/-47         | -1.57/-2.77       | -4.4/-7.47        | -8.33/-9.28       | -5.9/-4.05        | -6.18/-6.06       |
| Θ(105°)   | -1.03/-0.23   | -0.68/-1.49     | 2.891/3         | -0.13/-4.3      | -7.62/-2.72     | -0.97/-2.74     | -5.3/-5.89      | -3.01/-6.27       | -17.19/-4.75      | -3.42/-15.15      | -10.23/-7.2       | -13.82/-9.39      | -16.45/-14.78     | -10.53/-19.16     | -18.88/-13.41     | -11.84/-17.35     | -13.83/-5.73      | -1.190/-84        | -1.07/-2.29       | -4.41/-4.49       | -8.14/-10.27      | -8.67/-5.77       | -4.55/-1.89       | -1.84/-2.71       |
| Θ(112.5°) | 0.83/-0.59    | -2.60/-7        | 1.73/-0.54      | -1.43/-3.57     | -1.04/-2.23     | -2.78/-3.03     | -6.84/-5.52     | -5.62/-9.84       | -14.98/-5.73      | -4.6/-11.51       | -11.17/-10.7      | -18.84/-12.23     | -19.87/-12.12     | -9.94/-12.76      | -10.13/-10.38     | -13.06/-13.75     | -15.27/-8.25      | -6.74/-6.07       | -6.02/-8.25       | -15.86/-13.47     | -8.35/-7.43       | -7.28/-4.85       | -2.580/-4         | 1.19/-28          |
| Θ(120°)   | -1.29/-0.47   | -0.56/-2.16     | -0.58/-0.97     | -1.17/-0.11     | -2.24/-4.34     | -2.68/-3.01     | -5.17/-10.35    | -12.65/-13.84     | -10.39/-6.53      | -5.78/-8.4        | -10.94/-5.62      | -11.25/-10.23     | -9.74/-11.42      | -4.54/-9.02       | -12.44/-10.47     | -7.38/-6.57       | -9.42/-7.15       | -6.51/-4.43       | -4.22/-6.3        | -6.69/-6.67       | -2.67/-3.24       | -0.322/05         | 2.390/-1          |                   |
| Θ(127.5°) | -0.112/4      | 1.350/79        | 2.383/61        | 2.150/-16       | -2.11/-6.05     | -6.96/-4.05     | -4.25/-5.87     | -11.97/-19.55     | -16.86/-13.06     | -9.61/-1.58       | -11.18/-9.28      | -11.68/-10.43     | -7.88/-1.34       | -6.91/-9.11</     |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |



# Radiated Composite Gain Data\_2.4GHz, 5GHz

# Appendix A

|           |               |                |                |                |                |                |                |                  |                  |                  |                  |                  |                  |                  |                  |                  |                    |                  |                  |                  |                  |                  |                  |                  |
|-----------|---------------|----------------|----------------|----------------|----------------|----------------|----------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|--------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
| Θ(120°)   | -4.3/-5.33    | -4.4/-4.42     | -4.22/-3.23    | -2.76/-3.33    | -2.61/-1.7     | -1.49/-1.01    | 0.18/-0.52     | -2.84/-5.73      | -6.86/-7.34      | -6.61/-7.27      | -7.4/-5.61       | -2.62/-1.22      | -1.14/-1.19      | -2.61/-3.6       | -4.33/-5.77      | -6.96/-3.46      | -1.24/-0.52        | 1.12/2.42        | 1.99/2.66        | 3.39/3.46        | 1.55/-1.36       | -10.04/-7.87     | -4.76/-2.46      | -2.69/-1.65      |
| Θ(127.5°) | -6.44/-7.04   | -8.41/-7.32    | -4.22/-8       | -2.15/-3.08    | -5.71/-6.22    | -3.61/-1.77    | -1.59/-2.63    | -3.65/-5.11      | -6.07/-5.55      | -5.13/-7.23      | -10.43/-8.48     | -3.78/-2.13      | -0.95/-1.96      | -4.2/-1.84       | -2.32/-7.92      | -7.37/-3.67      | -1.64/-1.79        | 0.75/-0.28       | -1.06/-1.45      | 0.34/-0.94       | -1.64/-5.97      | -6.79/-12.02     | -4.09/-2.29      | -5.49/-6.85      |
| Θ(135°)   | -7.98/-11.95  | -10.88/-8.87   | -7.75/-5.31    | -5.2/-6.84     | -9.04/-8.8     | -3.69/-3.89    | -1.4/-2.24     | -7.14/-5.7       | -4.7/-7.26       | -7.14/-5.17      | -4.33/-4.8       | -8.52/-11.58     | -1.2/-2.1        | -3.07/-3.06      | -1.08/-2.98      | -5.45/-5.13      | -5.46/-4.74        | -1.04/-2.98      | -1.68/-1.73      | -0.33/-2.47      | -10.97/-8.67     | -10.87/-8.67     | -5.08/-3.06      | -5.06/-7.59      |
| Θ(142.5°) | -9.95/-11.09  | -9.18/-6.51    | -5.41/-4.46    | -3.13/-3.94    | -6.51/-10.7    | -18.73/-16.2   | -10.96/-8.95   | -8.9/-11.25      | -13.68/-11.74    | -8.03/-6.26      | -4.41/-5.36      | -9.68/-8.85      | -6.34/-7.55      | -8.86/-7.51      | -12.14/-15.09    | -8.37/-7.29      | -6.26/-3.12        | -2.84/-4.74      | -5.66/-3.22      | -2.09/-3.57      | -6.17/-7.16      | -10.49/-12.83    | -5.16/-4.66      | -7.71/-10.17     |
| Θ(150°)   | -10.55/-6.09  | -6.11/-7.16    | -6.87/-7.72    | -8.25/-9.6     | -14.86/-15.48  | -19.75/-16.84  | -11.36/-9.84   | -6.5/-4.41       | -3.58/-5.44      | -6.07/-6.44      | -7.49/-10.76     | -11.9/-8.7       | -8.54/-14.77     | -17.65/-10.67    | -9.07/-11.4      | -16.12/-14.45    | -12.53/-12.18      | -13.57/-15.06    | -16.78/-14.36    | -10.81/-11       | -12.29/-17.21    | -14.4/-10.14     | -10.75/-19.75    | -19.15/-19.28    |
| Θ(157.5°) | -7.14/-5.39   | -5.42/-7.67    | -8.59/-9.83    | -11.46/-10.83  | -11.73/-14.58  | -18.65/-19.67  | -13.35/-8.49   | -6.37/-5.6       | -5.28/-5.05      | -4.93/-5.88      | -8.46/-11.46     | -14.71/-7.19     | -17.17/-12.65    | -8.23/-5.96      | -4.9/-4.6        | -4.94/-6.92      | -11.57/-15.85      | -13.73/-13.54    | -14.51/-15.27    | -18.03/-19.05    | -19.34/-19.56    | -16.22/-12.32    | -9.33/-8.21      | -7.55/-7.25      |
| Θ(165°)   | -11.03/-9.64  | -9.31/-11.22   | -13.8/-14.01   | -14.98/-15.19  | -14.57/-16.18  | -10.98/-8.17   | -6.75/-5.98    | -5.53/-5.21      | -5.22/-6.11      | -5.97/-5.4       | -5.1/-5.59       | -6.74/-7.75      | -8.1/-7.12       | -5.82/-4.98      | -4.61/-4.54      | -5.11/-6.53      | -8.66/-10.3        | -10.56/-9.99     | -9.83/-10.88     | -10.94/-12.45    | -12.1/-10.85     | -10.73/-10.99    | -10.76/-9.69     | -9.71/-10.15     |
| Θ(172.5°) | -11.85/-13.54 | -14.88/-16.41  | -17.89/-17.63  | -16.28/-14.93  | -13.6/-12.63   | -12.27/-11.15  | -10.55/-9.53   | -8.53/-7.35      | -6.2/-5.31       | -4.86/-4.72      | -5.17/-5.99      | -6.99/-7.85      | -8.19/-7.8       | -7.01/-6.61      | -6.91/-7.67      | -8.53/-9.82      | -12.05/-15.42      | -19.09/-19.5     | -19.55/-19.35    | -19.84/-19.3     | -17.28/-15       | -12.26/-9.22     | -8.1/-9.87       | -10.03/-10.07    |
| Θ(180°)   | -12.33/-16.81 | -19.91/-19.41  | -16.22/-13.06  | -11.78/-11.7   | -11.75/-15.21  | -16.86/-18.19  | -16.32/-13.29  | -11.7/-10.29     | -9.67/-9.83      | -10.41/-11.35    | -12.69/-14.11    | -18.99/-17.57    | -15.22/-13.36    | -12.25/-11.73    | -10.16/-10.11    | -10.06/-10.08    | -10.16/-10.11      | -9.44/-8.91      | -8.61/-7.61      | -6.98/-6.19      | -5.85/-5.61      | -5.6/-6.98       | -8.56/-9.86      |                  |
| Freq(Hz)  | 5.2GPol       | ThetaAnt.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°)     | -11.62/-13.78 | -15.2/-16.9    | -20.02/-19.6   | -18.49/-19.23  | -18.3/-14.75   | -12.76/-11.02  | -10.40/-9.89   | -9.82/-9.49      | -9.02/-8.74      | -8.27/-8.66      | -8.95/-9.36      | -9.99/-10.64     | -11.80/-12.28    | -13.41/-14.3     | -15.24/-17.49    | -19.62/-18.9     | -19.19/-17.86      | -16.36/-14.8     | -13.59/-11.61    | -8.79/-8.58      | -8.5/-9.2        | -9.2/-8.3        | -8.29/-9.18      | -10.41/-11.16    |
| Θ(7.5°)   | -10.63/-11.28 | -9.5/-10.65    | -12/-14.46     | -18.68/-19.08  | -19.18/-18.46  | -17.45/-14.54  | -13.15/-12.2   | -11.84/-11.35    | -10.63/-9.32     | -8.56/-8.71      | -8.55/-8.93      | -9.31/-9.6       | -10.95/-13.14    | -15.38/-17.54    | -18.77/-18.95    | -19.23/-18.82    | -15.47/-13.63      | -12.29/-11.17    | -10.06/-9.02     | -8.63/-8.01      | -8.36/-8.92      | -9.16/-8.96      | -10/-10.96       | -11.13/-10.32    |
| Θ(15°)    | -12.81/-13.47 | -14.46/-17.67  | -20.2/-19.07   | -17.1/-16.07   | -15.18/-14.22  | -13.67/-13.85  | -13.85/-13.05  | -11.9/-10.86     | -9.97/-8.54      | -8.42/-8.97      | -10.07/-11.46    | -13.53/-16.16    | -19.67/-19.58    | -14.58/-11.51    | -9.62/-8.4       | -6.89/-6.8       | -6.81/-7.09        | -6.93/-7.17      | -7.44/-8.17      | -8.69/-9.26      | -11.71/-12.77    | -13.43/-15.68    | -14.83/-13.64    |                  |
| Θ(22.5°)  | -17.24/-17.21 | -16.28/-19.27  | -17.21/-16.58  | -14.5/-13.17   | -12.68/-12.27  | -12.88/-13.4   | -13.34/-13.93  | -13.39/-11.51    | -9.8/-8.19       | -7.37/-7.47      | -7.87/-9.09      | -11.15/-15.41    | -16.64/-14.37    | -11.27/-11.04    | -11.38/-11.61    | -11.21/-10.64    | -9.33/-8.37        | -7.88/-7.83      | -6.36/-9.22      | -10.46/-12.19    | -13.69/-14.72    | -16.09/-18.85    | -18.96/-20       |                  |
| Θ(30°)    | -14.77/-12.34 | -13.12/-14.92  | -15.43/-18.52  | -19.87/-18.78  | -18.98/-19.77  | -19.48/-19.17  | -19.91/-18.95  | -16.78/-16.48    | -17.27/-17.76    | -15.62/-12.89    | -13.62/-14.69    | -14.84/-17.75    | -19.51/-15.87    | -14.84/-18.03    | -17.49/-14.93    | -12.77/-11.66    | -11.01/-12.13      | -14.79/-18.11    | -15.26/-11.01    | -12.03/-12.97    | -10.84/-12.88    | -14.28/-13.39    | -11.36/-11       | -12.8/-17.94     |
| Θ(37.5°)  | -12.28/-10.71 | -15.06/-17.41  | -16.24/-20.08  | -16.37/-20.03  | -19.67/-17.42  | -11.84/-10.4   | -9.99/-9.85    | -9.36/-9.14      | -9.03/-9.79      | -12.89/-19.17    | -18.65/-14.93    | -12.14/-15.02    | -19.61/-20.13    | -19.46/-14.4     | -12.68/-12.75    | -14.59/-16.66    | -16.58/-14.41      | -13.41/-13.62    | -13.59/-17.04    | -14.48/-10.75    | -11.16/-19.57    | -19.66/-19.07    | -15.73/-14.6     | -14.68/-19.47    |
| Θ(45°)    | -18.76/-17.26 | -16.11/-19.45  | -20.22/-15.98  | -18.56/-19.37  | -20.12/-17.85  | -10.41/-8.36   | -7.59/-7.13    | -7.55/-8.67      | -9.8/-9.4        | -10.48/-16.61    | -19.86/-18.66    | -18.28/-12.63    | -8.46/-10.92     | -11.1/-9.89      | -9.33/-8.43      | -7.79/-8.4       | -10.1/-12.39       | -15.83/-11.96    | -10.79/-13.69    | -12.32/-11.41    | -16.26/-20.01    | -15.76/-14.78    | -17.31/-16.51    |                  |
| Θ(52.5°)  | -18.57/-19.25 | -18.71/-16.54  | -16.25/-15.32  | -19.77/-18.53  | -18.52/-19.88  | -18.94/-15.2   | -12.36/-11.16  | -10.82/-10.05    | -9.16/-8         | -7.72/-10.74     | -16.07/-19.1     | -19.13/-15.16    | -11.94/-12.61    | -19.41/-17.11    | -11.28/-10.06    | -10.08/-9.99     | -10.51/-11.44      | -13.52/-15.79    | -16.81/-17.13    | -16.4/-13.16     | -11.75/-14.95    | -16.96/-16.46    | -13.42/-12.64    | -14.32/-16.65    |
| Θ(60°)    | -13.74/-17.41 | -16.54/-11.57  | -10.42/-17.01  | -14.91/-15.05  | -16.08/-18.45  | -19.29/-19.28  | -15.84/-13.82  | -12.91/-13.84    | -17.17/-11.15    | -13.73/-13.18    | -15.66/-18.15    | -19.47/-14.83    | -9.41/-9.85      | -14.35/-12.74    | -8.25/-9.97      | -10.28/-7.61     | -6.88/-8.27        | -13.23/-17.99    | -18.92/-19.41    | -18.8/-16.74     | -14.26/-12.32    | -18.73/-19.23    | -16.19/-19.23    | -17.31/-16.51    |
| Θ(67.5°)  | -19.69/-19.61 | -16.63/-19.27  | -20.2/-20.12   | -19.69/-16.69  | -15.57/-14.45  | -16.54/-17.82  | -14.28/-11.95  | -12.03/-13.18    | -17.02/-18.21    | -19.02/-18.84    | -15.91/-15.87    | -13.57/-13.35    | -19/-13.56       | -9.05/-9.2       | -10.15/-8.7      | -7.37/-7.9       | -11.7/-15.18       | -20.02/-19.84    | -20.19/-14.44    | -11.59/-12.86    | -19.39/-19.19    | -12.2/-15        | -20.01/-19.9     |                  |
| Θ(75°)    | -16.83/-19.18 | -17.92/-16.14  | -10.74/-9.71   | -12.96/-11.55  | -9.85/-10.19   | -19.4/-19.03   | -17.28/-15.36  | -14.98/-20.02    | -18.72/-18.59    | -20.15/-19.31    | -20.23/-19.17    | -20.01/-20.06    | -16.23/-19.23    | -13.6/-11.02     | -10.47/-13.12    | -10.57/-8.45     | -8.31/-8.85        | -9.49/-13.11     | -17.16/-13.15    | -14.37/-13.66    | -13.4/-16.79     | -16.57/-19.83    | -17.9/-12.71     | -15.44/-20.03    |
| Θ(82.5°)  | -19.72/-19.35 | -20.03/-19.43  | -16.96/-18.02  | -18.95/-18.41  | -17.46/-20.16  | -19.59/-19.88  | -14.26/-11.68  | -13.23/-18.4     | -14.75/-16.16    | -16.11/-20.14    | -19.8/-18.7      | -13.86/-13.21    | -19.29/-16.5     | -13.86/-15.91    | -9.36/-9.4       | -13.63/-19.4     | -13.68/-9.55       | -9.74/-12.56     | -14.1/-14.07     | -16.81/-15.86    | -11.18/-7.97     | -13.96/-14.31    | -11.61/-10.74    | -19.77/-15.13    |
| Θ(90°)    | -15.64/-14.35 | -20.42/-19.88  | -15.54/-14.46  | -18.78/-18     | -14.55/-16.16  | -18.18/-19.68  | -13.13/-15.29  | -15.82/-19.83    | -19.09/-16.43    | -13.93/-18.88    | -20.16/-18.74    | -19.84/-18.3     | -18.79/-15.71    | -18.33/-19.44    | -15.62/-14.77    | -10.89/-8.63     | -7.1/-11.67        | -19.69/-18.7     | -13.12/-10.4     | -12.75/-16.99    | -13.55/-13       | -20.1/-13.96     | -7.66/-8.1       | -13.14/-12.14    |
| Θ(97.5°)  | -13.31/-17.49 | -20.1/-12.85   | -11.5/-12.37   | -18.88/-19.61  | -20.12/-19.17  | -19.92/-18.55  | -17.91/-14.69  | -13.99/-14.71    | -19.08/-20.24    | -15.28/-13.42    | -13.14/-19.16    | -19.81/-20.04    | -19.36/-16.94    | -20.07/-17.52    | -19.92/-16.46    | -10.51/-6.88     | <b>-5.58/-7.28</b> | -15.3/-17.81     | -13.82/-9.42     | -10.24/-12.34    | -19.91/-13.76    | -12.5/-12.56     | -10.78/-10.46    | -19.4/-12.28     |
| Θ(105°)   | -12.84/-13.73 | -14.66/-16.22  | -15.51/-13.94  | -19.74/-14     | -11.16/-10.32  | -11.89/-10.58  | -19.39/-18.97  | -12.69/-9.52     | -10.02/-12.58    | -16.92/-18.26    | -16.28/-14.63    | -19.94/-18.93    | -15.6/-16.71     | -18.74/-19.33    | -18.45/-19.55    | -13.75/-8.85     | -6.25/-7.44        | -12.74/-20.01    | -12.54/-9.28     | -9.27/-17.19     | -16.04/-13.52    | -14.24/-18.71    | -14.16/-11.04    | -19.77/-15.13    |
| Θ(112.5°) | -11.81/-19.25 | -11.51/-9.94   | -12.19/-15.7   | -20.81/-14.29  | -12.46/-11.35  | -15.3/-18.6    | -19.48/-12.12  | -10.17/-10.29    | -19.17/-12.94    | -12.02/-12.57    | -13.65/-14.63    | -16.56/-16       | -20.14/-16.71    | -19.65/-19.95    | -19.71/-12.32    | -18.12/-13.59    | -9.9/-12.78        | -18.91/-18.04    | -12.83/-7.39     | -7.59/-17.39     | -16.69/-14.14    | -18.64/-12.75    | -7.34/-17.17     | -19.18/-10.74    |
| Θ(120°)   | -16.31/-15.37 | -15.66/-11.77  | -9.59/-12.02   | -15.68/-18.67  | -15.19/-13.35  | -11.21/-19.43  | -16.95/-10.83  | -8.86/-7.65      | -10.26/-17.42    | -16.53/-17.58    | -18.3/-10.59     | -12.28/-15.67    | -19.75/-19.66    | -16.51/-18.29    | -19.92/-18.58    | -18.07/-13.12    | -20.18/-19.53      | -18.68/-11.97    | -14.79/-15       | -13.29/-15.53    | -19.87/-20.04    | -19.17/-19.42    | -18.95/-16.1     | -15.19/-11.8     |
| Θ(127.5°) | -10.94/-10.88 | -10.03/-10.38  | -9.08/-10.36   | -16.22/-18.94  | -15.33/-18.88  | -19.68/-18.29  | -13.1/-3.96    | -7.63/-11        | -11.63/-7.08     | -19.8/-13.4      | -10.23/-8.52     | -10.4/-13.53     | -19.85/-18.46    | -18.67/-17.11    | -17.13/-20.05    | -18.57/-17.25    | -17.56/-19.11      | -14.55/-12.18    | -17.95/-14.88    | -12.2/-18.92     | -18.69/-18.04    | -16.64/-16.69    | -18.78/-15.1     | -19.64/-15.4     |
| Θ(135°)   | -19.07/-19.56 | -19.85/-11.63  | -7.17/-7.06    | -6.99/-9.94    | -13.42/-15.42  | -13.78/-11.25  | -9.82/-11.06   | -12.7/-10.14     | -12.9/-19.13     | -14.86/-13.33    | -12.7/-11.87     | -7.41/-11.01     | -9.83/-19.48     | -15.74/-15.58    | -13.3/-14.2      | -9.91/-9.08      | -13.43/-8.95       | -14.38/-13.84    | -8.89/-9.92      | -16.13/-17.64    | -10.29/-19.28    | -15.79/-19.96    | -19.22/-19.17    |                  |
| Θ(142.5°) | -13.76/-17.58 | -20.03/-20.52  | -12.37/-10.59  | -10.42/-10.46  | -13.01/-15.24  | -17.06/-15.98  | -9.56/-13.98   | -14.75/-20.59    | -19.8/-18.69     | -19.98/-12.86    | -12.77/-10.4     | -9.47/-9.48      | -14.26/-20.13    | -19.35/-20.19    | -19.36/-13.97    | -13.08/-12.84    | -7.76/-11.06       | -20.02/-15.08    | -18.29/-12.56    | -14.54/-9.07     | -7.68/-19.69     | -12.99/-15.89    | -18.95/-12.36    | -19.32/-14.17    |
| Θ(150°)   | -10.45/-8.85  | -10.08/-17.02  | -18.09/-11.27  | -9.97/-11.97   | -16.35/-19.63  | -18.52/-19.72  | -18.21/-19.75  | -17.58/-18.05    | -14.36/-12.61    | -13.95/-15.66    | -11.33/-12.24    | -16.39/-12.7     | -12.24/-14.93    | -14.88/-11.99    | -12.92/-16.61    | -19.36/-14.7     | -8.99/-10.3        | -15.44/-14.68    | -13.54/-10.75    | -18.19/-12.77    | -7.72/-9.64      | -14.19/-8.82     | -10.98/-16.44    | -14.7/-9.55      |
| Θ(157.5°) | -13.38/-18.48 | -19.39/-13.53  | -11.3/-9.2     | -7.09/-6.01    | -6.36/-7.72    | -10.32/-12.94  | -15.11/-17.27  | -19.85/-18.53    | -16.65/-13.76    | -11.41/-13.11    | -11.42/-13.21    | -11.83/-13.05    | -18.57/-19.63    | -11.78/-15.4     | -16.86/-19.86    | -19.53/-17.98    | -13.1/-12.74       | -14.44/-15.14    | -18.48/-20.06    | -13.24/-9.22     | -7.34/-7.35      | -7.77/-8.46      |                  |                  |



# Radiated Composite Gain Data\_2.4GHz, 5GHz

# Appendix A

|           |               |                 |                 |                 |                 |                 |                 |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                    |                   |                   |
|-----------|---------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|--------------------|-------------------|-------------------|
| Θ(165°)   | -11.08/-10.54 | -11.29/-10.68   | -9.04/-7.68     | -7.12/-6.54     | -6.54/-7.01     | -7.51/9.01      | -10.68/-11.1    | -10.42/-8.96      | -7.84/-7.87       | -9.11/-11.13      | -12.65/-13.59     | -14.45/-13.25     | -10.73/-8.11      | -6.27/-5.37       | -4.77/-4.33       | -4.17/-5.34       | -7.88/-12.06      | -15.85/-15.81     | -15.09/-16.43     | -17.34/-11.97     | -8.68/-8.05       | -9.76/-11.89       | -12.21/-13.54     | -14.09/-13.52     |
| Θ(172.5°) | -13.68/-12.97 | -12.77/-12.48   | -11.41/-11.31   | -10.82/-10.35   | -11.84/-11.09   | -12.93/-13.81   | -13.62/-14.1    | -14.2/-14.7       | -13.83/-11.73     | -9.53/-11.93      | -7.53/-7.74       | -8.29/-8.95       | -8.84/-8.15       | -7.19/-6.36       | -6.22/-6.46       | -7.16/-8.24       | -10.07/-12.34     | -15.14/-14.73     | -16.98/-15.46     | -14.54/-13.86     | -12.24/-11.93     | -14.51/-16.78      | -13.89/-15.11     | -15.91/-15.84     |
| Θ(180°)   | -16.45/-19.52 | -19.26/-19.48   | -19.2/-19.73    | -18.73/-19.11   | -19.85/-19.19   | -17.77/-16.28   | -15.87/-14.71   | -13.15/-12.02     | -11.16/-10.83     | -11.06/-11.55     | -11.81/-11.65     | -10.34/-9.95      | -9.48/-9.17       | -9.22/-9.32       | -9.81/-9.94       | -10.15/-10.37     | -10.79/-11.92     | -12.55/-13.64     | -14.26/-17.31     | -19.08/-19.13     | -14.54/-15.78     | -14.54/-15.78      | -13.92/-13.56     |                   |
| Freq(Hz)  | 5.6GPol.      | ThetaAnt. 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°)     | -8.74/-8.81   | -12.26/-14.71   | -16.61/-18.34   | -18.42/-17.35   | -14.56/-13.53   | -12.28/-10.4    | -9.8/-9.8       | -8.98/-8.74       | -9.01/-8.82       | -8.76/-8.76       | -9.41/-9.49       | -9.76/-9.81       | -11.22/-12.81     | -14.66/-16.74     | -17.23/-15.71     | -13.97/-12.76     | -11.97/-11.65     | -10.97/-10.17     | -9.48/-9.26       | -7.68/-7.33       | -7.11/-7.26       | -6.68/-6.31        | -6.03/-5.95       | -6.24/-7.12       |
| Θ(7.5°)   | -11.59/-14.6  | -19.65/-19.3    | -17.51/-14.11   | -13.09/-11.9    | -11.15/-10.46   | -9.46/-8.93     | -8.36/-8.25     | -8.34/-8.39       | -8.51/-8.4        | -7.81/-7.6        | -7.82/-7.8        | -7.88/-7.76       | -8.93/-10.84      | -12.3/-13.89      | -15.51/-15.89     | -15.46/-15.27     | -14.39/-13.85     | -13.18/-11.9      | -10.93/-9.88      | -9.35/-8.65       | -8.54/-8.24       | -7.78/-7.63        | -8.04/-8.34       | -9.15/-10.96      |
| Θ(15°)    | -14.65/-17.58 | -18.54/-19.04   | -14.48/-11.01   | -9.88/-10.32    | -10.07/-10.41   | -10.43/-10      | -9.3/-8.86      | -8.29/-7.62       | -7.62/-8.07       | -8/-7.9           | -8.26/-8.45       | -8.58/-8.85       | -9.83/-11.8       | -14.24/-17        | -18.59/-17.19     | -15.34/-13.52     | -11.88/-10.62     | -9.58/-8.82       | -7.81/-7.7        | -8.88/-9.69       | -10.12/-10.78     | -9.74/-11.29       | -13.13/-13.66     | -14.74/-15.47     |
| Θ(22.5°)  | -14.28/-14.91 | -14.34/-12.88   | -13.37/-14.71   | -15.3/-17.73    | -18.67/-18.57   | -19.19/-19.89   | -19.08/-20.65   | -18.35/-15.62     | -13/-10.67        | -9.59/-9.84       | -11.2/-12.17      | -12.17/-11.74     | -13.85/-19.36     | -20.22/-20.39     | -18.39/-17.23     | -16.64/-14.78     | -12.73/-11.05     | -9.67/-8.76       | -7.79/-6.4        | -5.54/-4.98       | -5.38/-5.99       | -6.91/-9.39        | -13.25/-18.39     | -14.03/-13.69     |
| Θ(30°)    | -15.27/-16    | -13.45/-12.17   | -11.96/-12.06   | -14.55/-19.16   | -19.14/-19.77   | -19.47/-15.53   | -12.93/-11      | -9.29/-8.25       | -7.96/-8.07       | -8.57/-11.07      | -13.52/-16.99     | -17.58/-19.14     | -19/-19.51        | -18.96/-19.78     | -18.87/-18.95     | -19.12/-17.53     | -16.92/-14.3      | -11.05/-8.96      | -8.3/-9.79        | -8.84/-7.23       | -6.35/-6.4        | -6.9/-8.24         | -11.95/-19.78     | -17.46/-13.23     |
| Θ(37.5°)  | -13.13/-10.11 | -13.39/-16.75   | -15.45/-17.87   | -19.11/-19.1    | -13.31/-14.62   | -11.11/-10.38   | -10.83/-10.71   | -9.94/-9.75       | -8.68/-10.16      | -10.19/-10.25     | -11.06/-12.92     | -17.01/-17.11     | -18.05/-19.78     | -19.82/-19.17     | -19.47/-17.13     | -14.67/-16.42     | -20.07/-16.32     | -10.98/-8.96      | -9.05/-9.91       | -9.47/-10.3       | -13.47/-19.75     | -19.63/-14.98      | -14.3/-12.31      | -14.74/-15.47     |
| Θ(45°)    | -16.01/-11.81 | -7.53/-8.32     | -10.26/-12.71   | -15.36/-20.03   | -18.5/-17.07    | -14.06/-12.77   | -10.63/-15.2    | -9.59/-7.08       | -4.67/-4.6        | -5.56/-8.16       | -12.75/-15.42     | -17.78/-16.68     | -16.79/-17.74     | -19.45/-17.68     | -15.25/-12.03     | -10.33/-9.6       | -10.33/-12.06     | -14.43/-18.77     | -12.82/-10.02     | -13.71/-15.23     | -12.67/-9.73      | -10.24/-13.82      | -19.20/-19.78     |                   |
| Θ(52.5°)  | -11.84/-10.05 | -11.01/-9.2     | -8.37/-8.68     | -8.94/-10.11    | -17.96/-19.18   | -15.88/-12.26   | -12.75/-15.73   | -14.38/-9.14      | -5.42/-4.04       | -4.24/-6.41       | -11.74/-18.12     | -18.22/-19.24     | -19.71/-14.51     | -16.01/-15.82     | -13.71/-14.48     | -15.46/-11.6      | -9.09/-9.98       | -12.15/-16.25     | -19.71/-20.53     | -19.16/-20.5      | -17.16/-13.81     | -15.15/-13.92      | -19.55/-19.32     | -16.8/-13.68      |
| Θ(60°)    | -12.05/-9.18  | -8.37/-9.59     | -10.47/-12.36   | -12.27/-14.34   | -18.95/-19.24   | -17.75/-13.47   | -13.06/-15.72   | -20.46/-15.91     | -9.36/-6.5        | -6.21/-6.54       | -9.07/-11.46      | -17.62/-18.38     | -18.68/-18.48     | -19.43/-17.18     | -16.62/-13.78     | -14.09/-13.26     | -11.98/-9.96      | -10.07/-13.79     | -19.67/-19.74     | -16.6/-12.67      | -11.65/-11.7      | -15.52/-19.15      | -16.5/-17.8       | -19.94/-19.52     |
| Θ(67.5°)  | -9.42/-8.02   | -7.16/-7.31     | -6.84/-8.13     | -9.05/-13.56    | -19.39/-19.55   | -15.15/-9.04    | -9.57/-10.53    | -11.79/-11.58     | -9.6/-7.41        | -6.64/-8.09       | -11.97/-18.03     | -20.71/-17.26     | -19.68/-14.8      | -12.21/-10.25     | -10.25/-11.37     | -15.12/-13.79     | -12.01/-11.95     | -13.92/-20.17     | -20.25/-17.54     | -15.5/-13.02      | -16.12/-18.42     | -15.21/-16.04      | -16.6/-19.26      | -13.11/-10.97     |
| Θ(75°)    | -10.5/-9.09   | -8.34/-11.19    | -20.02/-18.69   | -16.22/-15.67   | -18.46/-20.08   | -12.54/-10.37   | -9.77/-10.31    | -9.98/-8.33       | -7.15/-7.9        | -9.86/-10.2       | -9.35/-9.76       | -15.44/-19.8      | -20.31/-18.54     | -16.57/-11.94     | -12.43/-11.71     | -14.81/-11.53     | -11.78/-9.91      | -11.03/-15.44     | -17.39/-19.49     | -19.91/-19.99     | -20.66/-17.48     | -19.17/-15.36      | -10.31/-9.7       | -9.92/-11.29      |
| Θ(82.5°)  | -18.9/-19.93  | -19.07/-12.32   | -10.88/-10.12   | -13.13/-19.01   | -15.95/-9.02    | -6.85/-6.71     | -10.51/-13.68   | -13.29/-10.75     | -9.2/-8.72        | -9.94/-13.22      | -13.64/-13.19     | -16.88/-14.49     | -16.34/-13.22     | -10.76/-11.62     | -11.46/-15.42     | -16.72/-10.41     | -11.33/-11.1      | -12.31/-13.81     | -17.55/-14.34     | -13.04/-12.67     | -15.28/-17.89     | -11.08/-10.28      | -14.64/-10.67     | -18.01/-17.62     |
| Θ(90°)    | -19.6/-14.99  | -10.17/-9.97    | -17.39/-17.09   | -15.36/-12.57   | -12.79/-9       | -6.83/-6.29     | -8.38/-13.33    | -13.83/-11.54     | -10.17/-11.22     | -12.93/-16.69     | -11.98/-13.42     | -19.24/-19.36     | -19.31/-12.61     | -14.85/-13.62     | -19.82/-19.71     | -16.56/-10.41     | -8.32/-7.44       | -7.61/-8.84       | -10.84/-13.33     | -14.21/-17.57     | -11.93/-11.09     | -14.14/-18.46      | -11.73/-9.52      | -12.2/-18.56      |
| Θ(97.5°)  | -12.01/-14.72 | -19.18/-19.94   | -20.1/-13.29    | -14.37/-12.27   | -12.83/-12.29   | -10.19/-11.94   | -15.97/-19.35   | -18.53/-14.08     | -9.88/-9.38       | -12.17/-16.94     | -20.03/-18.61     | -18.38/-18.58     | -19.76/-13.03     | -16.28/-19.09     | -18.8/-18.49      | -19.81/-11.83     | -10.43/-9.42      | -10.67/-13.41     | -12.47/-10.02     | -10.01/-7.12      | -9.65/-13.87      | -19.97/-15.36      | -14.5/-17.79      | -20.05/-19.93     |
| Θ(105°)   | -13.1/-14.69  | -19.74/-12.81   | -12.08/-16.57   | -19.99/-19.09   | -19.63/-14.83   | -10.32/-8.43    | -9.02/-10.14    | -13.87/-15.41     | -11.09/-11.14     | -13.45/-14.97     | -14.99/-12.74     | -17.74/-20.14     | -18.49/-18.77     | -19.73/-19.8      | -20.02/-15.97     | -18.26/-14.95     | -9.7/-9.49        | -12.35/-12.57     | -9.2/-9.95        | -8.92/-9.59       | -10.77/-10.71     | -14.7/-18.42       | -15.06/-13.91     | -16.49/-18.27     |
| Θ(112.5°) | -8.24/-11.58  | -18.81/-19.38   | -13.82/-13.5    | -11.08/-14.16   | -13.32/-15.21   | -11.08/-14.16   | -17.75/-19.85   | -19.82/-18.8      | -19.82/-17.05     | -16.52/-16.86     | -19.45/-19.36     | -20.35/-18.52     | -17.92/-15.29     | -18.29/-13.39     | -11.13/-14.13     | -19.94/-18.46     | -19.32/-10.45     | -14.74/-17.07     | -9.11/-13.17      | -18.01/-13.14     | -8.47/-19.38      | -16.6/-10.13       | -16.6/-10.13      |                   |
| Θ(120°)   | -10.38/-12.32 | -18.61/-20.03   | -14.96/-13.06   | -12.48/-13.12   | -18.07/-17.42   | -19.6/-19.82    | -18.88/-19.56   | -14.84/-12.62     | -12.68/-12.83     | -19.52/-14.15     | -19.15/-20.07     | -19.79/-19.12     | -15.77/-19.99     | -19.32/-19.91     | -20.06/-19.35     | -19.09/-11.95     | -11.48/-11.5      | -13.57/-13.72     | -18.66/-16.48     | -18.56/-19.87     | -18.92/-18.81     | -20.17/-17.88      | -19.93/-18.9      | -15.89/-8.91      |
| Θ(127.5°) | -9.84/-14.19  | -20.11/-19.26   | -20.12/-16.76   | -12.56/-10.81   | -12.32/-16.46   | -20.15/-20.23   | -17.42/-14.17   | -15.43/-14.15     | -15.18/-17.1      | -19.06/-19.8      | -12.51/-9.5       | -12.45/-19.49     | -19.69/-20.05     | -19.29/-17.04     | -14.71/-18.41     | -19.48/-14.34     | -17.61/-17.4      | -19.04/-13.94     | -16.43/-12.93     | -16.2/-15.43      | -20.19/-16.68     | -17.34/-19.03      | -11.5/-8.2        | -11.04/-9.51      |
| Θ(135°)   | -17.97/-10.19 | -7.54/-8.86     | -11.3/-13.26    | -13/-13.41      | -13.71/-13.03   | -13/-13.4       | -13.5/-15.6     | -16.39/-14.13     | -12.39/-13.68     | -13.45/-9.94      | -10.98/-14.79     | -16.6/-20.18      | -16.18/-16.55     | -18.91/-17.85     | -13.17/-19.07     | -11.38/-7.62      | -6.86/-8.96       | -11.76/-13.36     | -19.71/-14.6      | -12.93/-9.19      | -7.81/-7.58       | -4.99/-19.64       | -12.74/-10.14     | -10.83/-11.66     |
| Θ(142.5°) | -9.2/-8.73    | -9.7/-12.36     | -11.27/-11.6    | -12.29/-13.81   | -15.03/-15.25   | -12.94/-12.79   | -15.56/-18.64   | -19.39/-18.74     | -15.51/-12.43     | -11.84/-11.84     | -12.4/-13.91      | -14.6/-18.81      | -19.47/-19.8      | -18.67/-15.96     | -12.65/-11.65     | -8.45/-6.59       | -5.78/-7.17       | -13.23/-16.42     | -12.56/-8.76      | -14.47/-8.14      | -4.7/-19.35       | -9.67/-18.15       | -12.56/-8.68      | -10.19/-8.48      |
| Θ(150°)   | -11.51/-16.41 | -10.02/-9.16    | -9.6/-7.62      | -6.93/-7.23     | -7.56/-8.44     | -10.41/-12.49   | -13.57/-13.16   | -14.83/-15.73     | -16.63/-14.51     | -13.46/-16.96     | -16.66/-13.4      | -14.95/-17.5      | -17.58/-11.84     | -13.19/-14.91     | -17.22/-8.21      | -5.16/-5.1        | -6.15/-7.94       | -17.52/-19.34     | -18.24/-12.59     | -10.3/-8.51       | -8.03/-9.78       | -4.01/-8.67        | -7.82/-12.52      | -20.01/-15.07     |
| Θ(157.5°) | -4.34/-12.55  | -9.28/-8.38     | -10.4/-13.36    | -11.71/-9.82    | -9.85/-12.37    | -17.47/-20.0    | -20.18/-16.61   | -17.68/-15.98     | -14.11/-14.45     | -16.02/-18.5      | -19.72/-19.86     | -18.91/-20.02     | -17.07/-13.38     | -14.61/-15.76     | -13.78/-12.17     | -10.81/-11.08     | -8.63/-7.76       | -10.27/-13.04     | -13.82/-18.54     | -19.48/-12.9      | -8.52/-5.85       | <b>-14.91/3.07</b> | -4.24/-6.46       | -7/-8.07          |
| Θ(165°)   | -9.93/-8.65   | -8.95/-12.55    | -15.25/-15.64   | -15.62/-16.95   | -18.35/-18.93   | -19.96/-20.39   | -18.76/-15.66   | -13.56/-10.49     | -8.49/-7.6        | -8.03/-10.86      | -17.19/-19.66     | -19.16/-19.59     | -18.64/-19.74     | -20.29/-14.02     | -12.69/-13.77     | -12.98/-12.54     | -13.54/-15.82     | -18.1/-18.57      | -15.67/-12.6      | -10.56/-9.37      | -9.64/-10.34      | -10.29/-9.7        | -9.12/-11.48      | -13.22/-11.16     |
| Θ(172.5°) | -16.13/-19.8  | -19.38/-19.74   | -19.7/-18.23    | -16.29/-16.26   | -16.66/-15.3    | -15.38/-15.45   | -15.19/-15.38   | -14.8/-14.13      | -13.54/-13.85     | -16.45/-19.5      | -19.67/-19.73     | -16.82/-19.52     | -19.65/-18.18     | -14.8/-13.53      | -13.8/-13.75      | -13.07/-11.99     | -11.57/-11.61     | -11.49/-10.24     | -8.95/-8.38       | -8.44/-8.47       | -9.33/-11.33      | -15.94/-19.39      | -17.9/-16.33      | -17.13/-17.22     |
| Θ(180°)   | -19.94/-18.62 | -19.78/-19.87   | -19.51/-14.75   | -12.93/-11.53   | -10.41/-10.73   | -10.69/-11.8    | -13.17/-14.11   | -16.25/-17.36     | -19.3/-18.34      | -18.55/-19.27     | -19.28/-17.8      | -17.82/-17.64     | -18.1/-18.15      | -19.14/-18.79     | -19.91/-19.54     | -19.27/-19.37     | -19.53/-19.54     | -20.08/-19.68     | -16.9/-15.33      | -20.33/-18.02     | -20.14/-19.18     | -20.34/-19.51      | -19.53/-19.87     | -20.13/-19.07     |
| Freq(Hz)  | 5.785GPol.    | 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°)     | -10.63/-10    | -10.16/-9.51    | -9.65/-9.61     | -9.53/-9.61     | -10.38/-11.75   | -13.39/-14.83   | -16.79/-18.44   | -19.25/-19.04     | -18.46/-17.45     | -16.41/-16.17     | -16.46/-17.25     | -17.35/-16.21     | -15.7/-15.88      | -16.8/-18.2       | -20/-18.18        | -19.48/-18.85     | -19.62/-19.66     | -19.07/-20.02     | -20.              |                   |                   |                    |                   |                   |



# Radiated Composite Gain Data\_2.4GHz, 5GHz

# Appendix A

|           |               |                |                |                |                |                |                |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |
|-----------|---------------|----------------|----------------|----------------|----------------|----------------|----------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
| Θ(7.5°)   | -19.62/-19.93 | -19.79/-19.28  | -15.34/-13     | -11.11/9.71    | -8.3/-7.3      | -6.47/-6.11    | -5.97/-6.17    | -6.46/-6.85      | -7.19/-7.78      | -9.19/-10.21     | -10.95/-11.81    | -12.8/-14.62     | -13.33/-14.54    | -15.49/-16.39    | -17.29/-17.86    | -17.8/-18.6      | -18.22/-15.36    | -13.34/-11.85    | -10.72/-10.25    | -10.2/-10.48     | -11.07/-12.02    | -12.93/-14.08    | -15.12/-17.03    | -19.04/-19.32    |
| Θ(15°)    | -18.43/-16.45 | -14.01/-11.79  | -9.85/-7.86    | -6.62/-5.39    | -4.44/-3.74    | -3.21/-3.06    | -3.32/-3.57    | -3.91/-4.37      | -4.59/-5.29      | -6.05/-7         | -7.66/-8.29      | -9.06/-9.82      | -10.51/-10.76    | -10.72/-9.1      | -9.48/-10.32     | -11.51/-13.5     | -15.58/-17.22    | -17.6/-17.15     | -16.39/-15.82    | -15.3/-15.05     | -14.78/-15.1     | -15.59/-16.68    | -17.17/-17.6     | -17.7/-19.98     |
| Θ(22.5°)  | -11.59/-10.76 | -9.82/-8.14    | -6.6/-5.25     | -4.07/-3.36    | -2.93/-2.03    | -1.88/-1.96    | -2.4/-2.18     | -2.64/-3.25      | -3.93/-4.52      | -5/-5.4          | -5.73/-5.79      | -5.81/-5.82      | -5.55/-5.27      | -4.04/-4.04      | -4.3/-4.95       | -5.95/-3.17      | -6.87/-7.82      | -9.13/-10.56     | -11.88/-13.29    | -14.51/-16.04    | -16.95/-16.55    | -15.69/-15.72    | -14.96/-12.83    | -14.96/-12.54    |
| Θ(30°)    | -8.19/-7.66   | -6.97/-6.5     | -5.58/-4.63    | -3.99/-3.38    | -2.64/-2.23    | -2.12/-1.87    | -2.39/-2.92    | -3.69/-4.33      | -4.91/-5.3       | -5.35/-5.12      | -4.7/-4.19       | -3.6/-3.12       | -2.69/-2.31      | -1.97/-1.83      | -1.53/-2.17      | -3/-4            | -5.2/-6.9        | -9.13/-11.62     | -13.66/-14.92    | -14.74/-13.19    | -11.26/-9.69     | -8.72/-8.18      | -8.17/-8.15      | -8.32/-8.55      |
| Θ(37.5°)  | -7.15/-7.26   | -6.82/-6.45    | -6.01/-5.09    | -4.03/-2.92    | -2.17/-1.8     | -1.94/-2.54    | -3.41/-4.35    | -6.08/-6.04      | -6.61/-6.57      | -6.06/-5.15      | -4.09/-3.14      | -2.36/-1.91      | -1.42/-0.99      | -0.12/-0.26      | -0.83/-1.63      | -2.61/-3.77      | -4.46/-5.74      | -6.99/-7.91      | -8.54/-8.79      | -6.83/-6.07      | -7.16/-6.31      | -5.67/-5.43      | -5.57/-5.89      | -6.6/-7.03       |
| Θ(45°)    | -8.99/-8.89   | -8.9/-8.44     | -8.7/-3.4      | -4.6/-4.07     | -2.95/-2.52    | -2.63/-2.23    | -4.25/-5.15    | -6/-6.4          | -6.74/-6.65      | -6.33/-5.65      | -4.54/-3.32      | -2.46/-2.05      | -1.65/-1.06      | -0.59/-0.61      | -0.82/-1.82      | -3.12/-4.98      | -7.29/-9.99      | -12.96/-15.92    | -17.58/-16.66    | -14.25/-11.52    | -9.67/-8.33      | -6.71/-5.42      | -6.52/-6.1       | -8.33/-8.76      |
| Θ(52.5°)  | -11.82/-12.87 | -13.2/-12.06   | -10.91/-9.41   | -6.91/-4.55    | -3.23/-2.67    | -2.61/-2.84    | -3.26/-3.85    | -4.33/-4.89      | -5.22/-5.55      | -5.88/-5.77      | -4.89/-3.65      | -2.83/-2.34      | -1.340/-47       | 0.830/-62        | -0.1/-1.2        | -2.75/-4.91      | -7.58/-11.51     | -14.7/-16.38     | -15.77/-14.14    | -12.07/-10.29    | -9.06/-8.15      | -6.97/-6.32      | -5.74/-6.24      | -7.3/-10.18      |
| Θ(60°)    | -4.43/-5.41   | -6.58/-7.57    | -8.64/-8.89    | -6.21/-3.3     | -1.88/-1.35    | -1.11/-1.18    | -1.46/-1.96    | -2.51/-3.08      | -3.67/-4.31      | -4.94/-5.16      | -4.15/-2.65      | -1.75/-1.01      | 0.077/-1         | 1.38/-11         | 0.075/-0.4       | -2.08/-1.47      | -6.5/-8.95       | -11.63/-13.29    | -12.22/-10.03    | -8.09/-6.59      | -5.24/-4.36      | -3.87/-3.38      | -2.86/-2.68      | -2.92/-3.65      |
| Θ(67.5°)  | -1.34/-2.72   | -4/-5.95       | -8.07/-10.36   | -6.5/-2.61     | -0.740/-0.08   | 0.640/-93      | 0.780/-34      | -0.31/-0.96      | -1.35/-1.95      | -2.71/-3.08      | -2.3/-1.18       | -0.470/-2        | 1.172/-47        | 2.481/-99        | 1.03/-0.38       | -2.23/-4.48      | -7.25/-10.89     | -18.14/-14.82    | -11.15/-8.85     | -7.02/-5.13      | -3.14/-1.67      | -0.83/-0.26      | -1.36/-0.1       | -0.24/-0.39      |
| Θ(75°)    | -0.57/-2.41   | -4.23/-5.67    | -8.37/-15.71   | -12.17/-5.17   | -2.09/-0.7     | 0.551/-34      | 1.5/-1.7       | 0.53/-0.06       | -0.53/-0.88      | -1.38/-1.88      | -1.42/-0.33      | 0.561/-4         | 2.383/-26        | 3.483/-28        | 2.290/-87        | -0.74/-3.05      | -6.11/-10.08     | -11.75/-9.5      | -7.46/-6.09      | -5.12/-4.59      | -4.1/-2.65       | -1/-0.13         | 0.20/-0.57       | 0.670/-42        |
| Θ(82.5°)  | -0.32/-1.36   | -2.57/-3.82    | -5.74/-11.12   | -19.51/-8.42   | -3.67/-1.56    | 0.1/-1.16      | 1.310/-42      | 0.12/-0.52       | -0.7/-0.68       | -0.98/-1.44      | -0.90/-12        | 0.81/-45         | 2.643/-86        | 3.863/-35        | 2.391/-2         | -0.38/-2.73      | -5.42/-8.29      | -8.45/-7.42      | -5.78/-4.84      | -4.25/-3.89      | -4.17/-3.61      | -1.57/-1.12      | -0.57/-0.48      | 0.010/-05        |
| Θ(90°)    | -1.09/-1.85   | -2.66/-3.36    | -4.46/-7.06    | -13.53/-19.78  | -10.55/-6.02   | -3.08/-0.9     | 0.040/-16      | -0.19/-0.46      | -0.55/-0.72      | -1.42/-2.61      | -2.68/-1.72      | -0.990/-3        | 2.963/-16        | 2.631/-65        | 0.271/-46        | -3.62/-5.93      | -8.81/-9.1       | -6.19/-5.33      | -3.67/-2.82      | -2.59/-2.68      | -3.2/-4.29       | -3.99/-2.11      | -1.02/-0.68      | -0.65/-0.88      |
| Θ(97.5°)  | -3.65/-4.43   | -3.44/-2.36    | -2.37/-3.75    | -7.26/-12.16   | -14.08/-8.43   | -4.31/-1.67    | -0.340/-07     | 0.080/-01        | -0.16/-0.8       | -2.21/-3.42      | -2.15/-0.39      | 0.932/-4         | 3.44/-04         | 4.143/-85        | 3.041/-91        | 0.777/-0.73      | -3.32/-5.47      | -5.73/-4.56      | -2.39/-1.19      | -1.08/-1.58      | -2.12/-2.57      | -2.27/-2.97      | -2.11/-1.78      | -1.6/-2.29       |
| Θ(105°)   | -3.39/-2.29   | -0.530/-87     | 1.170/-11      | -2.81/-5.67    | -9.29/-13      | -7.96/-6.42    | -2.95/-2.48    | -2.51/-2.5       | -2.45/-2.99      | -3.86/-3.13      | -0.381/-72       | 2.893/-64        | 4.344/-95        | 54/-14           | 2.771/-46        | 0.14/-2.15       | -5.74/-7.85      | -8.27/-6.95      | -4.96/-3.95      | -3.89/-4.21      | -4.65/-5.15      | -3.9/-1.95       | -1.27/-1.43      | -1.74/-2.43      |
| Θ(112.5°) | -3.47/-1.76   | -0.060/-44     | 1.980/-73      | -1.61/-3.44    | -5.06/-8.4     | -11.12/-8.93   | -6.63/-5.58    | -4.79/-4.07      | -3.26/-3.02      | -2.66/-1.02      | 1.092/-33        | 2.733/-15        | 4.084/-64        | 4.132/-72        | 1.320/-13        | -2.06/-5.98      | -0.53/-2.26      | -2.92/-3.9       | -4.47/-4.74      | -3.04/-2.29      | -0.86/-1.38      | -5.72/-2.9       | -2.29/-3.41      |                  |
| Θ(120°)   | -7.05/-3.29   | -0.62/-1.02    | 1.78/-1.49     | -1.07/-3.38    | -4.65/-6.72    | -11.02/-14.82  | -12.62/-10.27  | -7.74/-5.58      | -3.78/-2.71      | -1.96/-0.71      | 0.741/-38        | 1.41/-1.87       | 2.963/-44        | 2.661/-22        | 0.42/-0.87       | -3.56/-5.67      | -5.66/-6.61      | -7.3/-5.17       | -3.63/-3.8       | -5.49/-7.96      | -8.85/-9.43      | -9.37/-5.81      | -3.81/-4.44      | -6.9/-9.52       |
| Θ(127.5°) | -4.89/-1.88   | -0.321/-72     | 2.52/-46       | 1.12/-0.73     | -1.93/-3.02    | -4.99/-3.92    | -10.93/-12.14  | -10.11/-7.47     | -5.53/-4.35      | -3.33/-1.88      | -0.50/-04        | 0.140/-65        | 1.291/-22        | 0.590/-09        | -0.6/-2.21       | -3.66/-3.54      | -3.84/-5.85      | -7.75/-6.99      | -6.22/-7.63      | -5.11/-3         | -8.84/-6.88      | -5.11/-3         | -4.72/-5.68      | -7.67/-8.88      |
| Θ(135°)   | -4.58/-2.69   | -1.17/-1.05    | 0.640/-79      | 0.13/-1.25     | -2.31/-2.88    | -3.66/-4.94    | -6.41/-9.5     | -8.86/-6.54      | -8.13/-75        | -6.16/-4.24      | -2.89/-2.53      | -2.65/-2.42      | -1.92/-1.74      | -1.93/-2.89      | -3.95/-5.25      | -2.33/-4.81      | -5.69/-6.82      | -12.03/-12.84    | -13.91/-19.38    | -19.39/-11.32    | -7.16/-5.33      | -5.19/-5.89      | -4.57/-7.29      | -8.7/-8.74       |
| Θ(142.5°) | -5.72/-4.2    | -3.1/-2.47     | -2.08/-2.1     | -2.54/-3.75    | -5.55/-6.84    | -7.84/-8.66    | -9.19/-8.82    | -10.36/-10.51    | -9.71/-8.22      | -5.98/-4.22      | -3.41/-3.24      | -2.86/-1.9       | -1.13/-0.88      | -1.36/-2.39      | -3.5/-3.99       | -4.32/-5.36      | -7.64/-11.22     | -13.93/-13.95    | -14.67/-18.66    | -18.6/-19.8      | -12.47/-8.29     | -6.68/-9.72      | -10.86/-11.83    | -11.65/-9.86     |
| Θ(150°)   | -4.24/-3.48   | -2.7/-2.16     | -1.96/-1.88    | -2.08/-2.74    | -4.11/-5.87    | -7.89/-10.39   | -13.78/-16.69  | -17.3/-15.69     | -12.72/-9.59     | -7.28/-5.87      | -5/-4.19         | -3.15/-1.9       | -0.81/-0.29      | -0.49/-1.83      | -2.72/-3.46      | -4.39/-6.14      | -8.72/-11.71     | -12.75/-11.79    | -11.37/-11.98    | -13.46/-13.94    | -11.79/-9.22     | -7.75/-1.73      | -7.08/-7.49      | -7.64/-7.16      |
| Θ(157.5°) | -4.26/-4.45   | -4.38/-4.33    | -4.12/-3.84    | -3.69/-3.78    | -4.22/-4.94    | -5.6/-6.46     | -7.65/-9.01    | -10.32/-10.71    | -10.26/-9.08     | -8.07/-7.4       | -6.79/-5.98      | -4.94/-3.86      | -4.04/-3.93      | -4.33/-0.57      | -5.88/-6.85      | -8.23/-10.47     | -12.88/-13.97    | -12.75/-11.45    | -10.38/-10.15    | -10.3/-10.65     | -5.88/-6.59      | -6.58/-5.94      | -6.73/-5.84      | -6.16/-6.69      |
| Θ(165°)   | -7.76/-8.9    | -10.06/-11.08  | -11.43/-11.04  | -10.64/-9.15   | -8.48/-7.96    | -7.42/-6.84    | -6.59/-6.67    | -6.92/-7.11      | -6.91/-6.52      | -5.89/-5.35      | -4.92/-4.57      | -4.15/-3.82      | -3.63/-3.73      | -4.24/-6.87      | -7.57/-8.46      | -9.52/-10.73     | -11.45/-11.35    | -10.76/-10.38    | -10.53/-11.1     | -11.75/-11.65    | -10.7/-9.59      | -8.71/-8.13      | -7.78/-7.99      | -8.89/-10.19     |
| Θ(172.5°) | -17.98/-19.06 | -20.41/-19.68  | -18.66/-18.4   | -19.34/-18.77  | -19.79/-17.09  | -14.16/-11.93  | -10.16/-8.8    | -8.07/-7.35      | -6.52/-5.7       | -4.85/-4.17      | -3.66/-3.32      | -3.17/-2.99      | -4.32/-4.58      | -5.07/-5.62      | -6.25/-6.97      | -7.68/-8.46      | -9.06/-9.63      | -9.86/-10.04     | -10.66/-11.54    | -12.61/-13.1     | -13.25/-13.63    | -16.68/-17.29    | -17.45/-17.83    | -18.4/-18.34     |
| Θ(180°)   | -9.61/-9.14   | -8.82/-8.29    | -8.18/-8       | -8.3/-9.27     | -10.37/-11.54  | -12.57/-13.46  | -13.59/-12.98  | -12.27/-11.24    | -10.1/-8.66      | -7.47/-6.62      | -5.75/-5.21      | -4.84/-4.56      | -4.52/-4.79      | -5.16/-5.65      | -6.12/-6.63      | -8.29/-8.94      | -9.33/-9.76      | -10.53/-11.9     | -13.52/-14.7     | -15.1/-15.34     | -15.35/-14.77    | -13.3/-11.53     | -10.14/-9.05     |                  |
| 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°)     | -15.57/-17.45 | -15.94/-16.34  | -15.2/-14.21   | -11.53/-10.22  | -9.28/-8.7     | -8.94/-8.71    | -8.75/-9.88    | -9.69/-10.45     | -10.98/-11.97    | -13.1/-11.77     | -15.88/-15.63    | -13.82/-12.36    | -12.09/-11.6     | -11.81/-11.77    | -12.13/-12.75    | -14.57/-16.45    | -17.99/-17.52    | -15.93/-14.55    | -12.92/-12.17    | -12.35/-13       | -12.7/-11.07     | -11.17/-11.69    | -12.79/-14.8     | -14.34/-14.16    |
| Θ(7.5°)   | -13.13/-12.17 | -11.87/-14.67  | -14.94/-16.42  | -14.66/-14.02  | -12.55/-11.6   | -10.73/-9.93   | -9.34/-8.82    | -8.29/-8.23      | -8.53/-9.32      | -10.01/-11.49    | -12.93/-10.61    | -19.19/-19.26    | -20.04/-19.77    | -18.88/-15.24    | -13.88/-12.73    | -12.05/-11.1     | -9.73/-9.31      | -9.34/-9.15      | -9.98/-12.24     | -13.64/-12.66    | -12.93/-12.37    | -11.98/-11.33    | -10.31/-10.4     |                  |
| Θ(15°)    | -9.17/-8.56   | -8.91/-10.65   | -11.72/-14.21  | -13.26/-11.56  | -9.55/-8.56    | -7.85/-7.27    | -8.39/-9.36    | -10.91/-11.5     | -11.93/-13.8     | -16.01/-15.06    | -13.23/-11.66    | -10.98/-11.72    | -11.94/-9.68     | -8.57/-7.77      | -6.76/-5.45      | -4.37/-3.73      | -3.73/-4.14      | -4.83/-5.67      | -7.69/-9.99      | -12.16/-13.07    | -14.38/-12.5     | -11.03/-9.6      | -8.42/-8.72      |                  |
| Θ(22.5°)  | -10.44/-10.43 | -11.55/-12.94  | -12.65/-10.66  | -8.17/-6.02    | -6.61/-7.18    | -6.86/-6.74    | -8.88/-10.57   | -13.46/-17.06    | -19.34/-19.63    | -15.85/-11.91    | -9.52/-8.87      | -9.22/-10.29     | -11.73/-12.44    | -12.8/-11.82     | -11.37/-10.93    | -10.17/-8.59     | -7/-8.41         | -6.42/-6.75      | -6.62/-7.13      | -8.12/-10.11     | -11.56/-13.44    | -20.04/-19.61    | -13.59/-10.03    | -9.74/-9.13      |
| Θ(30°)    | -7.01/-7.7    | -8.44/-6.91    | -5.47/-4.3     | -4.23/-3.98    | -5.23/-6.25    | -7.43/-8.48    | -9.99/-10.25   | -11.03/-13.3     | -14.62/-13.23    | -12.04/-9.57     | -7.02/-6.18      | -6.57/-7.57      | -9.72/-10.77     | -17.91/-16.74    | -13.42/-10.74    | -9.24/-8.64      | -8.33/-7.52      | -6.16/-5.26      | -5.01/-5.94      | -7.21/-8.65      | -11.32/-17.19    | -18.15/-18.56    | -10.9/-9.17      | -4.65/-4.86      |
| Θ(37.5°)  | -4.23/-4.49   | -4.09/-3.55    | -3.99/-4.88    | -5.75/-5.15    | -6.41/-6.23    | -6.44/-5.63    | -5.83/-5.64    | -6.45/-8.34      | -5.49/-6.51      | -4.48/-4.38      | -5.03/-6.95      | -4.93/-7.81      | -8.63/-7.86      | -7.71/-8.16      | -8.65/-8.28      | -8.34/-8.01      | -6.86/-6.5       | -6.02/-6.56      | -6.86/-8.31      | -10.21/-12.26    | -13.41/-11.25    | -6.76/-3.53      |                  |                  |
| Θ(45°)    | -6.99/-7.84   | -5.8/-4.27     | -4.4/-6.52     | -10.5/-10.76   | -6.84/-4.39    | -3.65/-3.58    | -3.23/-2.77    | -3.04/-4.75      | -6.58/-7.75      | -7.84/-6.09      | -4.33/-3.24      | -3.67/-6.56      | -7.77/-7.82      | -8.66/-7.73      | -7.88/-12.05     | -19.94/-15.52    | -8.29/-5.88      | -6.81/-8.16      | -9.02/-10.05     | -8.35/-5.91      | -4.27/-2.99      | -3.37/-6.56      | -9.4/-10.35      | -8.57/-4.97      |
| Θ(52.5°)  | -11.3/-12.92  | -6.62/-5.51    | -4.56/-5.55    | -7.59/-12.04   | -9.89/-7.42    | -6.49/-6.01    | -5.21/-8.31    | -2.91/-7.62      | -3.74/-5.82      | -7.38/-6.22      | -4.83/-3.85      | -7.24/-13.26     | -14.18/-14.22    | -12.8/-15.53     | -18.91/-20.27    | -15.2/-13.39     | -10.96/-10.37    | -15.13/-18.46    | -18.61/-14.39    | -9.83/-5.6       | -3.92/-2.62      | -2.3/-2.68       | -4.96/-7.29      | -11.74/-12.37    |
| Θ(60°)    | -8.04/-7.03   | -4.88/-3.4     | -4.94/-7.38    | -10.98/-19.18  | -15.41/-12.29  | -13.68/-13.85  | -11.75/-8.9    | -7.16/-6.12      | -8.49/-4.3       | -9.04/-7.86      | -5.49/-4.3       | -8.24/-14.15     | -14.46/-8.96     | -6.62/-5.78      | -8.44/-20.25     | -11.10/-38       | -5.6/-6.18       | -18.11/-11.94    |                  |                  |                  |                  |                  |                  |



# Radiated Composite Gain Data\_2.4GHz, 5GHz

# Appendix A

|           |               |                |                |                |                |                |                |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |
|-----------|---------------|----------------|----------------|----------------|----------------|----------------|----------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
| Θ(52°)    | -7.16/3.15    | -0.68/1.28     | -3.79/-7.29    | -9.29/-17.21   | -13.08/-6      | -3.62/-2.42    | -1.98/-2.28    | -2.5/-2.98       | -3.32/-3.19      | -2.77/-1.68      | -1.39/-1.87      | -3.89/-7.75      | -8.31/-7.99      | -5.87/-5.47      | -7.55/-6.84      | -5.78/-6.51      | -7.16/-4.54      | -3.85/-4.69      | -5.49/-9.26      | -18.85/-20.04    | -17.7/-18.66     | -19.87/-20.09    | -17.1/-11.61     | -11.8/-13.2      |
| Θ(60°)    | -7.42/-5.52   | -1.85/-1.37    | -2.02/-3.93    | -5.09/-8.4     | -7.47/-2.57    | -0.59/0.38     | 0.63/0.34      | -0.06/-1         | -1.88/-1.99      | -1.85/-0.7       | 0.47/-0.22       | -2.72/-4.6       | -5.01/-3.65      | -5.74/-8.28      | -8.49/-3.34      | -3.56/-4.06      | -3.08/-3.03      | -1.93/-1.63      | -3.5/-6.55       | -6.9/-7.6        | -14.04/-19.51    | -12.6/-10.32     | -7.67/-7.32      | -6.57/-6.48      |
| Θ(72.5°)  | -0.99/-1.94   | -3.29/-3.44    | -3.97/-4.7     | -3.79/-5.17    | -1.78/-0.9     | 0.09/0.82      | 0.74/0.52      | 0.16/-0.84       | -2.75/-4.73      | -5.68/-3.02      | -1.11/-2.24      | -5.22/-9.54      | -11.72/-8.37     | -4.29/-2.35      | -3.37/-3.56      | -6.85/-5.1       | -4.5/-4.11       | -5.53/-6.9       | -9.05/-11.19     | -10.26/-16.99    | -10.29/-12.57    | -13.33/-11.81    | -6.73/-2.9       |                  |
| Θ(75°)    | -1.54/0.24    | 0.33/-0.72     | -3/-3.7        | -3.01/-2.85    | -0.38/0.01     | 2.92/2.47      | 1.37/0.92      | 0.71/0.59        | -0.89/-2.51      | -4.53/-3.95      | -2/-0.76         | -1.67/-1.6       | -4.08/-5.05      | -9.83/-6.08      | -2.41/-0.27      | -0.99/-2.18      | -6.26/-10.08     | -8.46/-10.29     | -13.82/-10.98    | -7.69/-6.82      | -5.91/-10.37     | -19.18/-16.85    | -15.86/-17.53    | -10.51/-4.71     |
| Θ(82.5°)  | -2.27/0.06    | 1.19/1.35      | -2.6/-3.8      | -3.89/-4.65    | -0.52/-99      | 4.15/3.74      | 3.01/2.11      | 2.09/2.11        | 0.82/-0.77       | -6.76/-6.3       | -2.34/0.13       | -1.23/-4.09      | -10.62/-18.7     | -4.2/-2.28       | -2.07/-1.02      | -1.54/-3.53      | -18.65/-9.77     | -3.62/-3.23      | -3.39/-4.78      | -4.35/-3.88      | -9.92/-9.75      | -10.58/-11.97    | -10.26/-18.7     |                  |
| Θ(90°)    | -6.35/-6.05   | -0.86/1.71     | -3.13/-2.58    | -0.41/-2.82    | -1.79/2.29     | 4.25/4.19      | 3.21/2.38      | 1.75/1.45        | -0.37/-1.42      | -4.31/-4         | -1.96/-0.94      | -6.01/-4.22      | -1.67/-3.38      | -3.28/-10.52     | -10.74/-1.36     | 0.98/0.93        | -0.33/-1.76      | -1.06/-1.79      | -6.86/-12.23     | -5.84/-3.52      | -10.43/-9.77     | -12.75/-6.26     |                  |                  |
| Θ(97.5°)  | -4.79/-14.64  | -1.65/0.95     | -3/-6.45       | -1.15/-3.09    | -3.71/1.31     | 3.62/3.69      | 2.92/0.5       | 1.61/1.29        | 0.65/-1.66       | -4.38/-5.49      | -3.21/-1.03      | -2.46/-2.31      | -5.73/-2.83      | -7.35/-5.36      | -2.97/-1.01      | -3.35/-7.48      | -6.73/-0.79      | 2.11/0.24        | -2.5/-4.02       | -2.36/-2.43      | -6.29/-19.17     | -5.05/-2.02      | -2.86/-7.62      | -9.27/-6.31      |
| Θ(105°)   | -4.39/-7.06   | -2.31/-1.26    | -0.32/-13.98   | -2.98/-1.91    | -5.65/-1.21    | 2.71/4.05      | 3.6/2.42       | 0.97/0.11        | -0.49/-2.89      | -6.14/-4.69      | -2.41/0          | -0.44/-1.84      | -4.52/-4.2       | -4.99/-2.69      | -2.14/-0.38      | -2.82/-11.87     | -6.05/-0.18      | -0.79/-2.64      | -3.6/-3.88       | -2.38/-4         | -6.8/-16.67      | -12.27/-5.02     | -5.76/-7.38      | -10.8/-8.44      |
| Θ(112.5°) | -6.63/-10.6   | -1.31/-1.5     | 0.1/-10.84     | -3.64/-0.37    | -3.08/-2.1     | 0.45/-1.98     | 1.52/0.09      | -0.61/-0.81      | -1.77/-3.29      | -5.42/-7.41      | -4.3/-1.2        | -1.53/-1.62      | -6.12/-4.95      | -10.58/-6.48     | -3.18/-2.52      | -3.32/-5.07      | -2.21/-1.2       | -3.1/-7.97       | -16.29/-8.17     | -4.89/-20.15     | -15.11/-18.77    | -13.83/-8.05     | -9.88/-9.03      | -13.75/-9.84     |
| Θ(120°)   | -9.16/-10.27  | -3.61/0.25     | 0.52/-5.24     | -6.5/-1.47     | -3.62/-5.57    | -2.32/-0.64    | -0.6/-2.1      | -4.15/-4.25      | -3.51/-4.56      | -7.46/-7.36      | -5.29/-1.99      | -1.08/-3.47      | -3.97/-8.5       | -4.11/-4.18      | -2.03/-0.56      | -4.62/-6.73      | -5.41/-0.08      | -1.95/-1.13      | -6.42/-3.87      | -4.31/-14.73     | -14.48/-6        | -3.37/-4.02      | -6.63/-5.23      | -8.92/-10.73     |
| Θ(125°)   | -10.55/-11.29 | -5.56/-1.87    | -0.99/-8.52    | -5.64/-6.84    | -6.91/-6.51    | -6.41/-3.8     | -2.95/-3.24    | -3.41/-3.95      | -3.57/-3.22      | -4.38/-5.69      | -6.5/-6.57       | -2.52/-2.36      | -3.08/-5.62      | -7.84/-6.48      | -6.15/-0.89      | -8.86/-12.49     | -1.65/-2.07      | 0.37/0.15        | -4.66/0.94       | 1.6/-14.87       | -5.49/-12.11     | -0.91/-5.12      | -10.84/-5.66     | -8.72/-5.89      |
| Θ(135°)   | -13.85/-14.96 | -12.81/-3.3    | -3.21/-3.73    | -8.63/-18.33   | -10.91/-5.35   | -2.89/-4.46    | -6.4/-6.6      | -7.22/-7.54      | -9.21/-1.29      | -2.39/-2.42      | -5.89/-5.83      | -2.25/-5.85      | -6.93/-11.83     | -5.28/-7.3       | -4.75/-19.97     | -3.03/-6.9       | 2.48/0.46        | -8.15/0.25       | 4.13/-20.61      | -5.93/-3.92      | -6.86/-1.97      | -7.67/-6.99      | -7.01/-6.11      |                  |
| Θ(142.5°) | -19.01/-10.62 | -5.85/-4.1     | -5.45/-6.9     | -7.53/-6.94    | -5.18/-3.61    | -3.25/-1.41    | -1.17/-2.72    | -4.38/-5.11      | -5.55/-7.18      | -7.98/-7.13      | -4.25/-1.7       | -1.65/-2.5       | -5.91/-6.72      | -8.15/-9.86      | -9.9/-8.61       | -6.05/-9.48      | -6.58/-17.47     | -3.26/-5.77      | -11.23/-3.49     | 2.46/0.62        | -14.26/-9.48     | -10.34/-3.33     | -2.63/-3.08      | -2.41/-5.72      |
| Θ(150°)   | -8.39/-14.24  | -19.8/-16.44   | -14.94/-19.63  | -17.16/-20.33  | -17.48/-6.94   | -5.88/-4.96    | -4.38/-4.79    | -7.02/-10        | -12.34/-14.33    | -16.74/-17.36    | -12.86/-10.98    | -11.27/-8.26     | -9.36/-14.67     | -11.61/-10.68    | -9.22/-6.53      | -7.49/-6.71      | -6.78/-8.73      | -5.27/-5.38      | -2.01/-0.34      | -3.12/-12.5      | -14.47/-11.87    | -8.53/-6.59      | -5.01/-5.04      |                  |
| Θ(157.5°) | -6.06/-7.61   | -5.48/-6.42    | -9.88/-13.74   | -14.24/-10.91  | -8.25/-7.77    | -7.46/-7.25    | -6.99/-7.47    | -7.53/-8.59      | -10.67/-12.79    | -12.68/-11.98    | -12.3/-10.97     | -7.45/-6.52      | -7.91/-7.95      | -6.03/-6.16      | -5.92/-5.51      | -3.97/-4.11      | -4.92/-6.59      | -8.37/-8.61      | -6.61/-4.66      | -2.95/-2.51      | -4.31/-6.63      | -15.85/-12.01    | -8.79/-9.12      | -6.32/-6.68      |
| Θ(165°)   | -7.81/-7.99   | -8.76/-11.03   | -17.35/-19.11  | -15.69/-13.86  | -13.26/-10.59  | -8.48/-8.33    | -7.79/-7.47    | -8.08/-9.26      | -10.05/-8.56     | -7.6/-8.45       | -9.73/-11.47     | -10.34/-9.66     | -9.28/-8.92      | -8.11/-6.85      | -4.63/-2.7       | -1.93/-2.35      | -3.49/-5.13      | -5.71/-6.04      | -5.77/-6.99      | -9.56/-18.31     | -18.41/-10.87    | -8.64/-8.99      | -10.53/-10.16    | -8.23/-7.9       |
| Θ(172.5°) | -7.47/-7.78   | -8.2/-8.61     | -10.55/-15.6   | -19.76/-19.39  | -19.23/-14.46  | -10.58/-9.27   | -8.88/-7.36    | -6.22/-6.2       | -7.02/-8.79      | -12.05/-18.07    | -20.23/-17.75    | -13.79/-12.82    | -11.49/-9.72     | -8.56/-7.41      | -6.75/-6.68      | -7.22/-8.58      | -10.94/-15.28    | -20.41/-19.36    | -15.56/-13.33    | -11.51/-10.31    | -9.79/-9.75      | -10.88/-11.88    | -12.27/-12.41    | -9.98/-8.47      |
| Θ(180°)   | -13.13/-11.65 | -10.24/-9.88   | -8.96/-8.75    | -8.71/-8.67    | -8.5/-8.07     | -8.88/-9.76    | -10.19/-11.4   | -11.87/-11.92    | -13.1/-15.61     | -17.71/-17.42    | -17.2/-17.56     | -19.85/-18.41    | -16.93/-12.95    | -10.52/-8.65     | -7.91/-7.62      | -7.16/-6.54      | -6.45/-6.2       | -6.04/-5.18      | -4.82/-4.97      | -5.51/-6.08      | -6.73/-7.93      | -9.5/-14.69      | -19.92/-20.43    | -17.43/-16.79    |
| Freq(Hz)  | 5.6GPol.      | 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°)     | -8.26/-8.65   | -10.14/-8.46   | -7.81/-9.42    | -10.72/-12.76  | -13.47/-14.19  | -16.27/-19.68  | -18.97/-18.5   | -14.59/-13.14    | -12.15/-10.42    | -9.65/-9.28      | -8.34/-7.3       | -6.23/-5.81      | -6.28/-7.2       | -7.89/-8.9       | -9.21/-8.88      | -8.47/-18.6      | -8.7/-9.7        | -10.76/-12.98    | -15.56/-16.68    | -17.05/-17.38    | -15.75/-13.46    | -10.22/-8.08     | -6.6/-5.82       | -7.28/-8.99      |
| Θ(7.5°)   | -10.84/-11.53 | -11.69/-9.86   | -8.84/-8.54    | -8.49/-8.9     | -8.17/-8.77    | -10.44/-12.12  | -13.41/-13.54  | -13.79/-15.99    | -15.54/-13.41    | -11.25/-10.46    | -9.01/-8.51      | -8.18/-8.27      | -8.5/-8.36       | -8.42/-8.74      | -9.87/-9.64      | -10.19/-11.2     | -12.51/-15.54    | -19.66/-19.55    | -18.85/-19.3     | -16.99/-14.89    | -13.1/-11.64     | -10.16/-8.64     | -7.91/-8.66      | -8.78/-10.05     |
| Θ(15°)    | -8.2/-9.46    | -9.54/-11.47   | -10.88/-9.99   | -11.33/-11.64  | -11.31/-13.17  | -18.13/-19.27  | -17.77/-19.47  | -10.01/-15.68    | -12.93/-11.93    | -10.43/-9.73     | -9.36/-8.6       | -8.41/-8.29      | -8.12/-8.3       | -8.5/-9.29       | -10.47/-12.05    | -15.15/-18.99    | -19.07/-14.39    | -11.07/-9.04     | -7.63/-7.08      | -6.59/-7.38      | -7.82/-8.43      | -9.27/-7.23      | -6.55/-7.01      | -5.49/-5.71      |
| Θ(22.5°)  | -9.82/-10.84  | -11.54/-13.96  | -17.58/-16.63  | -15.43/-17.91  | -18.66/-20.32  | -18.71/-14.18  | -11.91/-10.64  | -9.39/-8.48      | -8.61/-9.79      | -10.93/-11.1     | -9.92/-8.62      | -7.71/-6.61      | -6.3/-6.66       | -7.58/-9.14      | -10.23/-11.03    | -11.31/-11.21    | -10.1/-9.26      | -8.62/-7.73      | -6.56/-5.71      | -4.93/-4.22      | -4.69/-5.82      | -7.86/-11        | -14.84/-14.45    | -9.42/-9.07      |
| Θ(30°)    | -6.95/-7.16   | -5.17/-6.51    | -8.36/-11.75   | -15.44/-19.84  | -15.53/-13.18  | -13.46/-15.91  | -14.27/-10.72  | -10.34/-8.76     | -8.37/-9.94      | -7.71/-7.2       | -7.46/-5.87      | -8.94/-7.56      | -7.1/-8.88       | -12.81/-14.83    | -14.31/-12.7     | -11.21/-10.3     | -8.84/-8.23      | -8.82/-9.93      | -9.42/-9.5       | -10.16/-9.62     | -6.44/-6         | -3.91/-5.35      | -9.86/-20.22     | -10.8/-6.53      |
| Θ(37.5°)  | -3.04/-0.02   | -6.16/-6.67    | -9.02/-14.65   | -17.48/-19.92  | -18.37/-18.94  | -19.21/-19.19  | -18.66/-13.62  | -8.23/-6.23      | -5.99/-6.95      | -8.75/-8.86      | -8.07/-7.75      | -7.8/-8.10       | -11.41/-11.36    | -14.01/-11.99    | -14.21/-20.31    | -15.68/-10.23    | -8.14/-5.61      | -5.49/-6.8       | -7.78/-11.11     | -13.92/-9        | -6.2/-5.86       | -5.99/-8.66      | -8.37/-3.38      |                  |
| Θ(45°)    | -4.58/-5.29   | -5.85/-10.18   | -19.25/-18.2   | -17.48/-19.88  | -19.69/-13.42  | -11.57/-12.87  | -19.82/-16.82  | -8.51/-6.2       | -4.51/-4.73      | -5.91/-7.05      | -8.37/-8.92      | -12.57/-17.93    | -19.11/-19       | -17.51/-20.33    | -15.59/-12.24    | -11.63/-9.29     | -11.87/-16.59    | -12.68/-10.69    | -9.77/-19.5      | -11.67/-12.39    | -9.38/-9.57      | -9.93/-8.88      | -10.34/-6.67     | -5.07/-2.69      |
| Θ(52.5°)  | 0.22/-0.8     | -4.23/-9.41    | -18.82/-19.94  | -17.28/-13.92  | -14.95/-10.87  | -9.39/-9.45    | -12.68/-7.69   | -5.32/-4.87      | -5.93/-7.23      | -8.06/-7.11      | -9.87/-11.63     | -14.89/-16.69    | -19.28/-10.47    | -10.99/-18.04    | -12.52/-13.23    | -11.79/-12.12    | -12.73/-8.37     | -7.49/-10.41     | -13.88/-17.59    | -11.23/-8.96     | -10.28/-14.98    | -19.03/-8.61     | -4.19/-0.81      |                  |
| Θ(60°)    | -4.98/-5.52   | -11.41/-14.82  | -12.58/-11.11  | -11.86/-12.97  | -13.67/-9.06   | -5.78/-4.08    | -6.42/-6.75    | -11.94/-12.95    | -8.5/-5.95       | -5.35/-4.89      | -6.45/-5.52      | -8.26/-12.64     | -16.49/-14.63    | -13.03/-12.02    | -12.06/-8.8      | -8.4/-7.1        | -8.6/-10.43      | -10.24/-10.81    | -11.42/-12.4     | -14.01/-14.07    | -8.91/-5.01      | -3.94/-5.92      | -14.09/-17.89    | -11.03/-6.46     |
| Θ(67.5°)  | -8.4/-8.6     | -14/-15.3      | -9.62/-11.86   | -12.16/-11.62  | -16.37/-10.81  | -6.53/-5.51    | -6.69/-9.36    | -15.89/-19.32    | -15.89/-9.99     | -6.34/-1.42      | -4.25/-6.34      | -10.36/-12.19    | -16.29/-18.66    | -13.86/-14.43    | -15.59/-10.66    | -8.47/-7.68      | -7.71/-10.23     | -13.26/-12.35    | -11.29/-10.17    | -6.73/-5.08      | -4.22/-3.71      | -4.4/-7.1        | -11.6/-14        | -11.31/-7.48     |
| Θ(75°)    | -11/-11.98    | -13.87/-11.32  | -7.61/-7.76    | -11.18/-17.52  | -19.55/-16.05  | -11.86/-9.61   | -10.17/-13.81  | -13.97/-8.26     | -7.4/-8.99       | -7.47/-8.88      | -4.34/-0.64      | -12.75/-14.65    | -13.51/-12.96    | -10.93/-11.17    | -19.49/-9.58     | -8.96/-7.18      | -11.07/-8.85     | -10.51/-9.62     | -9.68/-8.93      | -7.25/-5.22      | 4.02/-5          | -6.82/-9.59      | -18.62/-7.7      | -7.96/-10.54     |
| Θ(82.5°)  | -14.77/-8.91  | -10.79/-11.63  | -9.43/-7.02    | -6.84/-9.42    | -13.23/-20.03  | -15/-12.77     | -16.17/-20.16  | -19.86/-18.83    | -18.53/-19.17    | -16.41/-10.25    | -4.42/-9.99      | -16.53/-19.17    | -14.64/-12.96    | -11.71/-10.67    | -14.64/-13.22    | -15.93/-14.62    | -12.63/-15.91    | -11.51/-18.67    | -11.85/-9.43     | -8.15/-5.77      | -4.69/-2.72      | -5.62/-13.22     | -19.57/-12.72    | -9.58/-16.1      |
| Θ(90°)    | -13.62/-9.45  | -7.09/-6.65    | -7.79/-6.53    | -8.71/-7.05    | -15.09/-12.36  | -9.38/-10.18   | -12.84/-13.01  | -15.51/-19.81    | -17.35/-12.72    | -6.54/-3.34      | -4.78/-11.69     | -19.88/-19.57    | -19.27/-19.84    | -12.81/-10.27    | -15.11/-19.95    | -10.35/-8.26     | -8.31/-10.96     | -9.65/-7.68      | -5.72/-4.81      | -2.62/-1.79      | -1.48/-4.82      | -11.92/-16.98    | -15.05/-6.88     | -6.34/-7.77      |
| Θ(97.5°)  | -18.42/-6.45  | -3.96/-2.2     | -7.02/-7.29    | -9.18/-10.26   | -19.51/-20.12  | -13.89/-11.11  | -11.69/-18.08  | -17.93/-15.23    | -15.67/-11.75    | -5.62/-4.01      | -4.64/-4.99      | -17.98/-16.09    | -20.24/-19.99    | -7.66/-9.8       | -12.82/-12.27    | -9.07/-6.25      | -7.44/-8.43      | -5.73/-8.31      | -7.08/-4.28      | -4.1/-1.4        | -0.71/-7.6       | -16.54/-12.07    | -12.86/-17.8     |                  |
| Θ(105°)   | -10.95/-9.08  | -6.14/-6.5     | -8.84/-11.49   | -18.81/-18.36  | -20.35/-15.15  | -15.05/-13.38  | -12.14/-12.94  | -16.81/-13.37    | -17.05/-8.61     | -5.56            |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |



# Radiated Composite Gain Data\_2.4GHz, 5GHz

# Appendix A

|           |               |                  |                |                |                   |                |                |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |
|-----------|---------------|------------------|----------------|----------------|-------------------|----------------|----------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
| Θ(97.5°)  | -1.82/-6.54   | 0.27/4.9         | 1.23/-6.81     | -5.48/-1.74    | -0.080-98         | 1.96/2.29      | 1.720-46       | -1.25/-2.86      | -1.51/-0.85      | -0.79/-0.95      | -0.09/-0.64      | -2.24/-5.48      | -1.04/-1.86      | 4/0-36           | -1.46/-0.83      | -0.84/-1.1       | -2.45/0-27       | 1.18/0-66        | -0.90-39         | 1.81/-2.24       | -11.13/-1.5      | 1.21/-1.02       | -3.61/-1.37      | -2.28/-1.15      |
| Θ(105°)   | -1.5/-10.43   | <b>-0.225-32</b> | 3.18/-0.62     | -9.62/-2.51    | 0.06/-0.06        | 1.07/1-92      | 1.7/0-14       | -1.75/-1.86      | 0.92/1.73        | 1.19/0-68        | -1.03/-2.09      | -0.9/-1.95       | 1.68/-14         | 1.91/0-9         | 0.25/0-72        | -0.73/-0.74      | -2.86/-0.71      | 0.04/-2.68       | -6.78/-5.53      | -2.62/-3.59      | -5.38/-3.13      | -0.05/-3.49      | -8.23/-3.9       | -3.07/-2.32      |
| Θ(112.5°) | -2.95/-2.75   | -1.73/8.1        | 1.24/-4.93     | -18.65/-3.96   | -1.92/-1.66       | -2.46/-1.4     | -0.44/-3.41    | -0.08/-1.22      | 0.91/0.11        | -0.17/-0.11      | 0.89/-16         | -0.58/-2.45      | -0.78/0-67       | 2.71/0-93        | -0.96/-1.62      | -6.35/-2.06      | -0.08/-1.54      | 0.34/-13.2       | -8.23/-18.77     | -4.29/-14.98     | -1.45/-4.13      | -6.74/-4.46      | -12.24/-7.52     | -2.96/-0.8       |
| Θ(120°)   | -10.93/-11.7  | -0.25/-2.79      | 1.14/-6.52     | -19.56/-4.56   | -1.39/-0.45       | -0.56/-1.24    | -1.84/-1.38    | 0.07/1.21        | 1.1/0-08         | -1.37/-4.17      | -4.79/-3.6       | -2.21/-1.75      | -1.13/-0.39      | 0.49/1.16        | 0.81/1-92        | -1.44/-11.59     | -2.97/-4.05      | -3.94/-10.76     | -6.02/-6.55      | -11.84/-5.1      | -7.89/-9.79      | -14.09/-7.77     | -7.33/-3.7       | -5.34/-13.03     |
| Θ(127.5°) | -17.07/-4.81  | -0.31/-2.22      | -1.97/-15.41   | -9.94/-4.06    | -2.76/-3.97       | -3.85/-2.35    | -1.76/-1.86    | -3.38/-4.45      | -3.48/-4.05      | -5.45/-5.24      | -3.54/-3.12      | -2.56/-3.48      | -1.45/-0.43      | 2.76/2.53        | 2.47/0.53        | -3.55/-10.03     | -6.38/0.71       | -3.62/-2.35      | -4.2/-0.66       | 1.18/-9.39       | -10.8/-3.34      | -4.97/-1.59      | 0.03/-3.34       | -10.22/-17.43    |
| Θ(135°)   | -11.05/-8.7   | -0.69/-0.93      | -2.75/-10.31   | -8.14/-3.99    | -1.69/-1.51       | -1.49/-1.82    | -0.51/-2.12    | -3.59/-6.63      | -0.37/-3.27      | -1.53/-1.25      | -0.56/-1.77      | -2.03/-2.06      | -2.84/-1.29      | -6.61/-4.29      | -6.47/-5.31      | -8.78/-5.27      | -6.47/-5.31      | 2.65/-4.16       | -3.66/-11.89     | -2.71/-4.34      | -1.14/-5.99      | -10.73/-19.59    |                  |                  |
| Θ(142.5°) | -12.52/-6.93  | -7.65/-8.56      | -12.22/-19.68  | -14.54/-5.68   | -3.99/-2.12       | -1.88/-3.29    | -5.04/-7.93    | -9.29/-11.29     | -16.21/-15.4     | -9.59/-6.26      | -4.7/-2.65       | -2.11/-3.7       | -2.07/-4.39      | -4.28/-2.9       | -3.61/-4.94      | -4.62/-8.25      | -9.94/-19.12     | -4.87/-5.65      | -10.09/-2.92     | 0.29/-6.23       | -8.98/-5.21      | -1.81/-0.08      | -2.11/-2.65      | -4.59/-9.68      |
| Θ(150°)   | -10.65/-5.23  | -4.96/-6.27      | -7.91/-9.55    | -8.25/-4.1     | -2.25/-2.17       | -2.13/-2.2     | -2.95/-4.21    | -5.72/-7.6       | -11.54/-18.96    | -19.22/-13.31    | -7.51/-4         | -4/-4.63         | -5.29/-8.79      | -8.45/-6.65      | -6.19/-8.54      | -12.68/-15.15    | -16.84/-14.81    | -9.02/-10.18     | -11.81/-7.74     | -4.28/-3.93      | -9.33/-12.86     | -7.41/-5.81      | -4.27/-2.3       | -1.92/-7.78      |
| Θ(157.5°) | -8.45/-8.62   | -13.63/-20.25    | -19.05/-15.05  | -9.97/-9.2     | -9.34/-7.18       | -6.51/-7.93    | -8.4/-9.21     | -9.33/-9.56      | -11.74/-19.36    | -18.28/-9.92     | -5.25/-3.97      | -4.17/-5.23      | -7.09/-9.12      | -8.65/-6.8       | -5.42/-3.59      | -1.94/-1.71      | -3.31/-4.11      | -4.1/-4.91       | -6.62/-6.56      | -3.93/-2.43      | -2.86/-6.23      | -16.69/-14.18    | -7.81/-4.94      | -4.97/-6.44      |
| Θ(165°)   | -4.44/-5.39   | -8.67/-14.72     | -19.42/-15.69  | -12.16/-9.43   | -8.7/-9.23        | -8.16/-9.03    | -10.75/-10.78  | -10.87/-11.66    | -12.34/-13.24    | -15.28/-18.26    | -15.3/-12.58     | -11.36/-9.1      | -6.84/-6.28      | -7.11/-7.47      | -4.95/-2.29      | -1.03/-1.15      | -2.35/-3.4       | -3.43/-3.38      | -2.98/-3.59      | -4.73/-5.86      | -6.06/-6.43      | -9.45/-18.77     | -14.66/-7.34     | -4.52/-3.89      |
| Θ(172.5°) | -5.34/-6.8    | -8.41/-11.97     | -15.25/-13.35  | -10.4/-7.94    | -6.64/-6.74       | -7.5/-7.7      | -9.22/-10.31   | -11.48/-13.89    | -19.41/-19.25    | -17.94/-14.54    | -12.4/-10.99     | -10.87/-10.34    | -10.88/-11.99    | -11.66/-9.3      | -7.17/-5.59      | -4.81/-4.66      | -5.19/-6.05      | -6.74/-8.23      | -10.19/-12.52    | -12.3/-12.17     | -13.38/-15.56    | -18.07/-11.66    | -7.81/-5.96      | -5.26/-5.28      |
| Θ(180°)   | -12.86/-13.06 | -14.37/-18.98    | -19.15/-18.22  | -17.3/-16.28   | -16.2/-15.65      | -13.78/-12.53  | -13.31/-15.8   | -16.57/-14.54    | -12.97/-11.34    | -10.43/-10.34    | -10.75/-11.13    | -16.18/-13.5     | -15.91/-19.12    | -20.2/-19.83     | -19.19/-19.62    | -17.92/-15.44    | -12.52/-12.49    | -15.14/-18.96    | -19.56/-18.87    | -22.19/-29.35    | -16.18/-15.33    | -15.26/-13.36    |                  |                  |
| Freq(Hz)  | 2.45GPol.     | PhiAnt. 4        | -              | -              | -                 | -              | -              | -                | -                | -                | -                | -                | -                | -                | -                | -                | -                | -                | -                | -                | -                | -                | -                | -                |
| Gain      | Φ(0°)Φ(7.5°)  | Φ(15°)Φ(22.5°)   | Φ(30°)Φ(37.5°) | Φ(45°)Φ(52.5°) | Φ(60°)Φ(67.5°)    | Φ(75°)Φ(82.5°) | Φ(90°)Φ(97.5°) | Φ(105°)Φ(112.5°) | Φ(120°)Φ(127.5°) | Φ(135°)Φ(142.5°) | Φ(150°)Φ(157.5°) | Φ(165°)Φ(172.5°) | Φ(180°)Φ(187.5°) | Φ(195°)Φ(202.5°) | Φ(210°)Φ(217.5°) | Φ(225°)Φ(232.5°) | Φ(240°)Φ(247.5°) | Φ(255°)Φ(262.5°) | Φ(270°)Φ(277.5°) | Φ(285°)Φ(292.5°) | Φ(300°)Φ(307.5°) | Φ(315°)Φ(322.5°) | Φ(330°)Φ(337.5°) | Φ(345°)Φ(352.5°) |
| Θ(0°)     | -13.83/-11.89 | -9.87/-8.14      | -6.49/-5.25    | -4.32/-3.66    | -3.26/-3.27       | -3.38/-3.73    | -4.17/-4.79    | -5.41/-6.06      | -6.68/-7.22      | -7.88/-8.76      | -9.81/-10.84     | -11.72/-12.07    | -11.71/-10.58    | -9.12/-7.72      | -6.43/-5.2       | -4.4/-3.82       | -3.47/-3.13      | -2.91/-2.84      | -2.84/-2.99      | -3.39/-3.94      | -4.62/-5.62      | -6.66/-8.06      | -9.82/-11.89     | -13.9/-14.9      |
| Θ(7.5°)   | -14.77/-13.51 | -11.65/-9.66     | -7.77/-6.1     | -4.9/-4.03     | -3.39/-2.99       | -2.79/-2.76    | -2.93/-3.4     | -3.81/-4.18      | -4.66/-5.13      | -5.86/-7.02      | -8.44/-9.88      | -11.26/-11.78    | -11.09/-9.55     | -7.87/-6.41      | -5.13/-4.16      | -3.52/-3.17      | -3.03/-3.1       | -3.33/-3.64      | -4.05/-4.64      | -5.41/-6.09      | -6.81/-7.54      | -8.39/-9.57      | -10.88/-12.38    | -13.81/-14.75    |
| Θ(15°)    | -14.83/-14.79 | -13.74/-11.87    | -9.81/-9.71    | -6.54/-5.41    | -4.52/-3.97       | -3.69/-3.65    | -3.73/-3.92    | -4.14/-4.33      | -4.61/-5.26      | -6.17/-7.45      | -9.23/-11.41     | -13.27/-12.75    | -10.75/-8.6      | -6.87/-5.43      | -4.36/-3.58      | -3.07/-2.83      | -2.79/-3.07      | -3.52/-4.19      | -5.12/-6.29      | -7.66/-8.91      | -9.73/-10.32     | -10.69/-11.02    | -11.52/-12.15    | -12.87/-13.9     |
| Θ(22.5°)  | -13.08/-14    | -14.78/-14.57    | -13.2/-11.22   | -9.36/-7.72    | -6.45/-5.63       | -5.33/-5.46    | -5.74/-5.89    | -6.02/-6.15      | -6.27/-6.89      | -8.27/-10.29     | -13.39/-17.47    | -16.25/-11.94    | -8.96/-6.89      | -5.46/-4.49      | -3.81/-3.34      | -3.16/-3.04      | -3.13/-3.38      | -3.84/-4.51      | -5.46/-6.88      | -8.82/-10.97     | -12.77/-13.62    | -13.32/-12.76    | -12.21/-11.77    | -11.63/-12.07    |
| Θ(30°)    | -11.03/-11.75 | -13.46/-16.31    | -19.88/-20.27  | -15.64/-11.93  | -9.51/-8.23       | -7.58/-7.6     | -7.93/-8.25    | -8.46/-8.66      | -9.19/-9.92      | -11.49/-14.39    | -18.46/-20.03    | -15.94/-10.95    | -8.24/-6.61      | -5.46/-4.72      | -4.28/-4.1       | -4.11/-4.18      | -4.34/-4.64      | -4.95/-5.48      | -6.23/-7.45      | -9.18/-11.64     | -14.55/-18.01    | -19.29/-17.12    | -14.43/-12.21    | -10.93/-10.54    |
| Θ(37.5°)  | -9.57/-9.74   | -11.14/-14.25    | -18.74/-10.2   | -14.76/-11.3   | -9.48/-8.63       | -8.4/-8.4      | -8.43/-8.52    | -8.64/-8.95      | -9.54/-10.42     | -11.55/-13.42    | -16.06/-16.13    | -13.45/-10.93    | -8.91/-7.25      | -5.94/-5.01      | -4.26/-3.81      | -3.65/-3.9       | -4.54/-5.54      | -6.51/-7.3       | -7.91/-8.59      | -9.49/-10.55     | -12.27/-15.37    | -20.06/-20.14    | -19.01/-16.47    | -11.58/-10       |
| Θ(45°)    | -8.51/-8.11   | -9.35/-11.08     | -13.19/-13.54  | -11.41/-9.67   | -7.91/-7.32       | -6.87/-6.45    | -6.16/-6.08    | -6.34/-6.99      | -8.22/-9.44      | -10.01/-10.93    | -12.58/-14.45    | -11.83/-11.26    | -10.09/-7.7      | -5.87/-4.49      | -3.22/-2.32      | -2.11/-2.52      | -3.69/-5.49      | -7.79/-10.04     | -11.66/-12.09    | -11.93/-11.44    | -11.31/-11.51    | -12.92/-15.74    | -20.06/-18.64    | -13.52/-10.35    |
| Θ(52.5°)  | -7.5/-6.4     | -6.78/-8.48      | -11.1/-12.67   | -10.6/-7.62    | -5.91/-5.02       | -4.53/-4.22    | -4.12/-4.32    | -4.84/-5.8       | -7.43/-9.52      | -11.46/-13.29    | -15.4/-15        | -12.96/-10.95    | -8.79/-7.29      | -6.09/-4.76      | -3.49/-2.97      | -3.27/-4.3       | -6.03/-8.72      | -12.27/-16.55    | -20.08/-19.72    | -18.05/-13.63    | -10.48/-8.81     | -8.51/-9.84      | -12.91/-17.92    | -15.19/-10.43    |
| Θ(60°)    | -6.4/-5.88    | -6.5/-6.6        | -12.95/-18.94  | -11.26/-6.74   | -4.7/-3.9         | -3.53/-3.46    | -3.63/-4.14    | -5.05/-5.68      | -8.44/-11.24     | -12.65/-11.86    | -11.39/-10.75    | -9.5/-8.44       | -6.64/-6.4       | -3.69/-4.18      | -5.49/-7.41      | -10.19/-10.47    | -11.22/-17.29    | -18.92/-19.11    | -18.1/-14.17     | -9.94/-7.54      | -6.59/-7.17      | -9.59/-15.76     | -18.93/-11.58    |                  |
| Θ(67.5°)  | -8.21/-6.23   | -6.42/-9.25      | -16.42/-19.84  | -8.95/-4.88    | -3.21/-2.78       | -2.73/-2.79    | -2.33/-4.12    | -5.39/-6.63      | -9.75/-8.85      | -8.93/-10.48     | -11.83/-13.44    | -12.99/-11.28    | -9.77/-7.7       | -5.06/-3.65      | -3.74/-4.63      | -5.55/-7.04      | -9.48/-11.14     | -11.22/-13.1     | -12.22/-10.34    | -9.09/-8.1       | -7.61/-6.82      | -11.25/-17.77    | -19.98/-12.92    |                  |
| Θ(75°)    | -7.53/-6.05   | -6.51/-8.74      | -12.21/-12.8   | -8.05/-4.55    | -3.15/-2.9        | -2.9/-2.96     | -3.39/-4.36    | -5.56/-6.37      | -6.79/-7.35      | -8.43/-10.11     | -13.25/-19.3     | -17.08/-13.02    | -10.87/-8.25     | -6.41/-6.13      | -6.36/-6.01      | -6.01/-7.58      | -10.08/-10.59    | -9.28/-7.48      | -5.59/-4.27      | -3.73/-3.97      | -5.04/-6.89      | -9.32/-12.62     | -16.77/-15.48    | -11.9/-9.52      |
| Θ(82.5°)  | -10.51/-9.07  | -8.27/-7.62      | -6.68/-5.9     | -4.88/-3.63    | -3.5/-3.83        | -3.99/-3.95    | -4.04/-4.71    | -5.86/-6.59      | -7.14/-8.39      | -10.48/-13.94    | -20.14/-18.12    | -11.43/-9.02     | -7.09/-6.1       | -5.29/-5.4       | -7.19/-10.92     | -12.51/-9.63     | -6.94/-6.47      | -3.16/-2.29      | -2.12/-2.67      | -4/-5.98         | -8.61/-12.07     | -14.43/-13.47    | -10.33/-10.13    |                  |
| Θ(90°)    | -12.75/-14.98 | -11.23/-7.34     | -4.77/-3.06    | -1.96/-1.3     | -1.29/-1.92       | -2.68/-3.27    | -4.03/-5.47    | -7.56/-9.21      | -9.94/-11.22     | -10.56/-11.22    | -13.19/-10.03    | -8.02/-4.73      | -7.38/-6.88      | -10.28/-7.85     | -6.74/-7.81      | -10.02/-11.79    | -10.41/-7.95     | -6.1/-7.44       | -3.94/-3.67      | -3.77/-4.31      | -5.37/-6.65      | -9.47/-8.27      | -11.19/-9.05     | -8.74/-9.65      |
| Θ(97.5°)  | -11.48/-18.36 | -13.03/-6.41     | -2.97/-0.89    | 0.28/0.86      | 0.8/0.21          | -0.64/-1.58    | -2.8/-4.07     | -4.65/-4.35      | -4.2/-4.75       | -5.78/-7.25      | -9.09/-9.85      | -8.86/-9.61      | -10.99/-11.85    | -7.82/-6.17      | -6.8/-7.56       | -7.84/-8.73      | -9.09/-8.54      | -7.84/-7.07      | -6.35/-6.07      | -6.17/-6.91      | -8.95/-10.66     | -6.59/-6.66      | -5.89/-6.19      | -6.98/-8.27      |
| Θ(105°)   | -8.87/-14.31  | -19.76/-19.81    | -4.66/-1.64    | 0.08/1.07      | <b>1.34/-1.01</b> | 0.36/-0.43     | -1.35/-2.16    | -2.37/-2.04      | -2/-2.6          | -3.68/-5.23      | -7.69/-9.92      | -9.48/-8.88      | -10.6/-6.64      | -6.6/-5.74       | -5.2/-4.21       | -4.3/-6.1        | -9/-10.76        | -10.02/-7.3      | -5.05/-4.38      | -5/-6.76         | -10.75/-19.55    | -10.49/-5.9      | -4/-3.58         | -4.43/-5.97      |
| Θ(112.5°) | -6.94/-9.89   | -18.29/-17.32    | -7.99/-3.47    | -0.87/0.59     | 1.17/1.21         | 0.91/0.56      | 0.23/0.11      | 0.11/-0.05       | -0.73/-2.37      | -8.81/-7.26      | -9.8/-8.47       | -6.27/-6.54      | -10.16/-9.9      | -7.27/-5.81      | -8.12/-8.26      | -12.65/-19.95    | -15.64/-8.06     | -4.6/-3.29       | -3.56/-4.95      | -7.97/-15.51     | -15.5/-7.91      | -4.73/-3.47      | -3.8/-4.73       |                  |
| Θ(120°)   | -6.43/-8.38   | -11.38/-14.35    | -12.16/-7.88   | -4.34/-2.25    | -1.12/-0.64       | -0.38/-0.32    | -0.43/-0.67    | -1/-1.57         | -2.73/-4.33      | -5.24/-5.26      | -4.96/-4.18      | -3.91/-5.34      | -8.9/-14.83      | -19.78/-13.2     | -10.24/-10.81    | -13.12/-16.45    | -17.74/-16.05    | -12.93/-9.45     | -6.69/-5.26      | -4.94/-5.63      | -7.47/-12.38     | -19.65/-11.5     | -6.88/-4.79      | -4.27/-8.81      |
| Θ(127.5°) | -5.64/-6.08   | -6.81/-7.62      | -9.42/-13.18   | -20.45/-16.55  | -10.34/-7.12      | -5.21/-3.94    | -3.05/-2.38    | -1.92/-1.87      | -2.44/-3.48      | -4.44/-5.63      | -6.91/-7.51      | -8.73/-12.6      | -19.36/-14.6     | -9.27/-1.74      | -7.15/-8.31      | -10.25/-14.07    | -18.8/-19.68     | -14.98/-10.42    | -7.7/-8.29       | -5.94/-6.47      | -7.8/-10.88      | -18.43/-15.61    | -9.4/-5.66       | -5.29/-5.02      |
| Θ(135°)   | -9.87/-9.06   | -8.4/-7.92       | -7.99/-8.86    | -10.51/-11.7   | -9.57/-6.62       | -4.49/-3.26    | -2.54/-2.34    | -2.75/-4.04      | -6.37/-9.84      | -13.26/-13.67    | -10.48/-8.77     | -9.21/-19.3      | -15.24/-13.3     | -10.19/-9.23     | -9.41/-9.63      | -9.6/-10.55      | -13.66/-19.23    | -20.01/-15.46    | -10.29/-7.57     | -6.37/-6.11      | -6.53/-8         | -11.3/-13.94     | -19.41/-15.08    | -12.07/-10.59    |
| Θ(142.5°) | -10.42/-9.39  | -8.51/-7.5       | -7.21/-7.12    | -7.69/-8.67    | -9.43/-9.24       | -8.47/-7.72    | -7.79/-8.8     | -10.89/-13.16    | -12.74/-10.02    | -7.58/-5.68      | -4.67/-4.54      | -5.64/-7.94      | -10.87/-13.1     | -14.26/-15.53    | -11.52/-12.68    | -13.63/-12.17    | -14.22/-17.8     | -20.27/-18.88    | -15.37/-11.52    | -9.31/-8.19      | -7.92/-8.52      | -10.21/-13.08    | -14.68/-13.64    | -12.26/-11.7     |
| Θ(150°)   | -8.67/-8.08   | -7.36/-6.69      | -6.08/-5.53    | -5.41/-5.53    | -5.85/-6.15       | -6.46/-6.69    | -6.79/-6.64    | -6.28/-5.71      | -5.06/-4.48      | -3.98/-3.62      | -3.61/-4.27</    |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |



# Radiated Composite Gain Data\_2.4GHz, 5GHz

# Appendix A

|           |               |                 |                 |                 |                 |                 |                 |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |
|-----------|---------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| Θ(142.5°) | -7.91/4.83    | -8.27/-5.74     | 4.22/-3.22      | -3.2/-2.74      | -2.63/-2.1      | -1.83/-2.04     | -2.79/-2.99     | -2.6/-2.04        | -1.43/-2.09       | -4.44/-3.27       | -1.78/-0.21       | -0.34/-1.64       | -1.66/-4.15       | -6.82/-19.02      | -13/-8.57         | -8.91/-5.89       | -9.95/-7.7        | -7.53/-18.58      | -18.69/-17.58     | -11.34/-18.89     | -8.89/-5.51       | -6.15/-8.35       | -18.83/-12.38     | -4.22/-4.8        |
| Θ(150°)   | -6.91/-4.84   | -4.93/-4.89     | -3.59/-3.31     | -3.22/-3.48     | -3.97/-4.26     | -4.37/-3.24     | -2.06/-1.31     | -0.81/-1.26       | -2.1/-1.67        | -1.71/-3.2        | -5.62/-2.71       | -6.37/-4.25       | -3.62/-3.4        | -3.38/-2.77       | -1.97/-1.2        | -1.95/-3.84       | -7.26/-9.59       | -6.98/-10.5       | -17.12/-13.71     | -9.12/-11.8       | -20.3/-4.57       | -3.9/-3.4         | -6.03/-9.6        | -7.28/-5.63       |
| Θ(157.5°) | -5.08/-7.56   | -9.19/-12.85    | -15.39/-14.03   | -11.13/-8.9     | -8.83/-5.59     | -4.83/-5.45     | -5.72/-5.13     | -4.91/-3.65       | -1.53/-2.77       | -3.43/-3.75       | -2.38/-2.4        | -1.53/-0.98       | -1.39/-2.42       | -4.44/-5.78       | -5.55/-12.2       | -6.38/-11.1       | -18.43/-12.07     | -9.27/-9.45       | -17.03/-9.08      | -29/-8.45         | -107/-8.3         | -17.03/-18.72     | -10/-8.3          | -3.81/-7.4        |
| Θ(165°)   | -7.07/-7.14   | -8.02/-8.34     | -9.58/-11.12    | -10.5/-8.56     | -7.24/-6.93     | -7.39/-8.21     | -8.87/-9.11     | -9.87/-9.46       | 8.24/-5.22        | -3.37/-3.53       | -4.09/-4.06       | -3.28/-3.44       | -5.57/-9.88       | -11.27/-8.15      | -5.79/-4.94       | -5.1/-6.27        | -8.53/-11.94      | -15.22/-13.61     | -10.73/-9.41      | -9.16/-9.92       | -13.4/-20.08      | -19.3/-17.29      | -13.29/-11.03     | -8.35/-7.5        |
| Θ(172.5°) | -9.04/-8.61   | -8.76/-10.3     | -10.75/-11.55   | -12.11/-14.88   | -19.15/-18.83   | -19.47/-19.86   | -15.97/-11.79   | -8.77/-6.86       | -5.76/-5.53       | -5.81/-5.77       | -4.92/-4.72       | -5.51/-6.96       | -8.96/-9.83       | -9.94/-9.53       | -8.91/-8.23       | -7.87/-7.84       | -8.78/-10.8       | -13.69/-17.24     | -19.63/-18.85     | -19.01/-19.92     | -19.58/-14.92     | -13.13/-12.59     | -11.91/-11.83     | -11.2/-10.1       |
| Θ(180°)   | -4.2/-3.8     | -3.45/-3.75     | -4.05/-4.07     | -4.5/-4.9       | -7.24/-9.24     | -10.85/-11.24   | -10.33/-9.47    | -8.26/-6.94       | -6.15/-6          | -5.69/-5.2        | -4.83/-4.92       | -5.23/-5.68       | -6.51/-8.25       | -10.37/-12.89     | -16.83/-19        | -18.5/-20.08      | -19.1/-18.67      | -18.01/-15.34     | -13.57/-12.62     | -11.12/-9.58      | -7.47/-6.33       | -5.64/-5.32       | -5.01/-5.96       | -5.97/-5.74       |
| Freq(Hz)  | 5.3GPol.      | Phi/Ant.4       | -               | -               | -               | -               | -               | -                 | -                 | -                 | -                 | -                 | -                 | -                 | -                 | -                 | -                 | -                 | -                 | -                 | -                 | -                 | -                 | -                 |
| 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°)     | -8.23/-6.44   | -5.25/-4.3      | -3.46/-2.81     | -2.34/-1.82     | -1.68/-1.4      | -2.49/-3.21     | -3.86/-4.16     | -4.74/-5.94       | -7.52/-9.77       | -12.75/-18.36     | -19.79/-18.99     | -14.21/-10.99     | -8.73/-7.03       | -5.57/-4.22       | -3.23/-2.53       | -1.98/-1.29       | -1.12/-1.45       | -2.29/-2.92       | -2.86/-2.52       | -3.33/-4.52       | -9.85/-11.43      | -13.29/-13.7      | -12.5/-10.23      | -                 |
| Θ(7.5°)   | -9.16/-7.03   | -5.23/-3.52     | -2.5/-1.86      | -1.2/-0.63      | -0.19/-0.03     | -0.04/-0.49     | -0.97/-1.72     | -3.31/-3.87       | -3.97/-4.43       | -6.63/-10.46      | -16.56/-18.12     | -13.9/-10.92      | -8.42/-6.67       | -5.1/-3.91        | -3.06/-3.23       | -2.99/-2.78       | -2.39/-2.79       | -3.38/-4.42       | -5.29/-5.35       | -5.12/-5.97       | -8.07/-11.09      | -13.82/-16.15     | -15.87/-14.67     | -11.96/-10.38     |
| Θ(15°)    | -8.08/-7.03   | -5.02/-3.7      | -2.62/-1.61     | -0.94/-0.48     | -0.07/-0.17     | 0.12/-0.22      | -0.85/-1.5      | -1.93/-1.69       | -1.85/-2.77       | -4.77/-8.69       | -13.82/-15.37     | -13.66/-10.84     | -8.29/-6.73       | -5.85/-5.4        | -5.06/-4.63       | -4.02/-3.07       | -2.49/-2.72       | -2.41/-2.72       | -3.44/-3.42       | -3.17/-3.48       | -5.13/-7.38       | -9.93/-11.65      | -11.93/-10.86     | -9.65/-8.9        |
| Θ(22.5°)  | -7.69/-6.46   | -5.24/-3.72     | -2.41/-2.1      | -2.39/-2.62     | -2.9/-2.71      | -3.03/-3.44     | -3.85/-4.59     | -5.11/-4.85       | -4.23/-3.83       | -6.66/-10.59      | -11.28/-9.43      | -8.57/-7.86       | -7.96/-6.93       | -5.75/-4.79       | -5.41/-4.81       | -5.17/-5.14       | -4.61/-4.05       | -3.57/-3.25       | -2.38/-2.2        | -1.68/-1.74       | -2.45/-4.04       | -6.24/-8.49       | -8.97/-9.55       | -9.16/-8.16       |
| Θ(30°)    | -8.79/-7.31   | -5.16/-4.43     | -4.61/-4.01     | -3.5/-3.12      | -2.35/-1.77     | -1.73/-1.38     | -1.48/-1.97     | -2.94/-4.58       | -6.61/-8.01       | -8.49/-8.9        | -9.36/-7.55       | -6.72/-5.64       | -5.46/-5.66       | -6.47/-9.04       | -15.22/-16.45     | -11.29/-8.34      | -7.03/-6.13       | -4.88/-3.39       | -2.8/-3.3         | -4.07/-3.8        | -3.27/-4.66       | -6.75/-9.26       | -11.67/-12.16     | -10.51/-9.41      |
| Θ(37.5°)  | -6.27/-5.62   | -4.64/-4.28     | -4.35/-3        | -2.15/-1.76     | -0.92/-0.86     | -0.88/-1.59     | -1.59/-2.15     | -4.02/-5.22       | -4.72/-4.96       | -6.93/-9.97       | -8.21/-5.84       | -4.88/-4.54       | -6.13/-8.5        | -11.61/-11.83     | -8.19/-5.2        | -3.59/-3.21       | -3.99/-4.42       | -4.58/-6.12       | -9.06/-10.65      | -7.96/-5.46       | -5.05/-6.23       | -8.77/-11.4       | -18.95/-20.05     | -12.37/-9.7       |
| Θ(45°)    | -7.55/-5.5    | -4.54/-1.2      | -3.83/-2.84     | -1.58/-0.01     | 0.61/-0.26      | -0.38/-1.39     | -2/-2.44        | -2.69/-2.72       | -1.56/-1.28       | -3.46/-6.57       | -6.73/-6.2        | -5.41/-2.27       | -4.76/-7.26       | -16.14/-13.3      | -8.94/-6.27       | -6.16/-6.22       | -6.64/-8.51       | -12.32/-11.31     | -8.55/-7.32       | -9.18/-14.23      | -19.87/-11.21     | -14.06/-15.93     | -19.04/-12.52     | -                 |
| Θ(52.5°)  | -7.44/-4.98   | -3.99/-5.28     | -7.32/-5.51     | -2.99/-0.58     | 0.06/-0.4       | 0.35/-0.34      | -1.79/-3.18     | -3.05/-1.88       | -0.96/-1.1        | -3.21/-7.81       | -9.85/-7.51       | -6.15/-6.13       | -7.59/-19.89      | -10.17/-5.5       | -2.69/-3.22       | -3.52/-5.09       | -8.5/-12.42       | -15.27/-16.68     | -14.47/-11.22     | -7.43/-6.92       | -8.7/-6.98        | -6.24/-7.5        | -9.26/-9.58       | -14.52/-16.08     |
| Θ(60°)    | -10.93/-8.27  | -7.25/-8.7      | -9.5/-0.7       | -1.53/-0.03     | 0.42/-0.54      | 0.80/-0.48      | -0.21/-1.22     | -2.35/-2.5        | -1.71/-2.06       | -2.02/-3.45       | -6.69/-10.5       | -7.63/-5.67       | -6.97/-18.3       | -12.83/-5.78      | -6.22/-6.15       | -7.73/-11.88      | -14.97/-13.01     | -11.76/-13.43     | -19.48/-11.62     | -10.64/-16.51     | -13.56/-9.53      | -8.03/-9.16       | -11.28/-9.91      | -11.96/-12.7      |
| Θ(67.5°)  | -11.57/-6.06  | -4.27/-6.4      | -7.49/-2.1      | -0.54/-0.05     | -0.81/-1.33     | -1.79/-2.34     | -0.12/-1.73     | -1.03/-1.9        | -2.34/-1.59       | -5.14/-4.48       | -6.87/-6.65       | -9.38/-11.68      | -9.09/-15.97      | -10.62/-5.59      | -5.98/-11.02      | -19.88/-12.34     | -7.76/-5.39       | -5.59/-7.17       | -10.29/-15.49     | -14.6/-10.14      | -13.12/-20.07     | -14.07/-12.37     | -11.01/-7.63      | -9.56/-16.49      |
| Θ(75°)    | -13.46/-5.11  | -3.11/-6.48     | -7.11/-1.64     | 0.54/-0.04      | -0.79/-1.49     | -0.79/-0.19     | -0.38/-0.65     | -0.67/-1.53       | -2.45/-3.03       | -2.52/-4.45       | -7.66/-5.8        | -8.94/-14.75      | -14.68/-13.69     | -5.02/-4.86       | -11.95/-10.33     | -7.21/-9.6        | -10.1/-7.35       | -3.56/-2.95       | -4.15/-7.29       | -12.84/-19.93     | -9.16/-8.17       | -10.21/-10.16     | -13.19/-14.15     | -12.74/-16.41     |
| Θ(82.5°)  | -17.78/-9.42  | -5.65/-7.69     | -8.93/-3.95     | -1.91/-2.82     | -3.76/-3.86     | -2.51/-1.84     | -0.48/-0.4      | -0.08/-1.87       | -3.47/-3.14       | -6.34/-7.38       | -5.04/-7.47       | -17.54/-9.94      | -11.87/-9.65      | -7.71/-9.15       | -8.15/-4          | -6.81/-7.93       | -2.6/-1.16        | -1.47/-3.31       | -4.41/-6.09       | -12.43/-19.36     | -12.26/-6.24      | -4.27/-7.69       | -14.06/-12.25     | -15.01/-19.65     |
| Θ(90°)    | -19.02/-14.57 | -8.14/-15.2     | -10.05/-6.5     | -5.2/-5.33      | -5.63/-5.59     | -3.82/-1.98     | -1.12/-0.66     | -0.06/-1.19       | -1.97/-4.69       | -5.82/-6.68       | -5.13/-3.9        | -18.59/-19.09     | -8.46/-7.95       | -13.45/-13.49     | -6.16/-4.16       | -2.68/-3.1        | -0.88/-0.27       | -0.61/-0.4        | -0.64/-5.65       | -12.33/-8.51      | -9.23/-9.22       | -7.62/-9.9        | -14.38/-11.93     | -9.99/-17.88      |
| Θ(97.5°)  | -20.13/-10.36 | -8.08/-8.32     | -7.15/-6.49     | -7.53/-7.06     | -4.6/-2.69      | -1.76/-1.68     | -1.83/-1.34     | -0.83/-1.95       | -1.12/-1.74       | -7.02/-10.9       | -5.57/-4.66       | -9.51/-16.76      | -7.07/-10.39      | -18.22/-14.99     | -8.37/-6.08       | -2.71/-1.95       | -1.47/-1.44       | -0.82/-2.17       | -4.6/-5.49        | -20.09/-19.03     | -16.04/-11.09     | -8.31/-7.36       | -11.62/-12.29     | -12.52/-14.38     |
| Θ(105°)   | -15.58/-12.29 | -8.41/-6.97     | -7.8/-8.33      | -7.27/-5.98     | -4.13/-2.78     | -1.38/-1.54     | -2.16/-1.03     | 0.11/-0.99        | 0.64/-1.48        | -5.02/-1.24       | -6.89/-5.86       | -11.96/-17.76     | -10.98/-12.39     | -9.85/-17.23      | -9.45/-6.33       | -4.4/-2.53        | -6.67/-10.63      | -19.58/-9.33      | -7.88/-5.34       | -10.67/-19.02     | -19.59/-14.01     | -9.05/-6.33       | -9.04/-14.66      | -19.71/-7.52      |
| Θ(112.5°) | -9.9/-12.85   | -9.9/-9.47      | -8.78/-8.44     | -6.46/-5.81     | -4.64/-3.98     | -4.98/-4.25     | -2.71/-5.1      | -1.52/-1.01       | 1.97/-5.86        | -10.84/-10.9      | -9.39/-5.96       | -1.73/-17.71      | -1.73/-11.49      | -14.27/-10.5      | -5.76/-62         | -5.01/-7.41       | -11.25/-14.1      | -19.31/-18.62     | -11.15/-7.16      | -5.16/-7.24       | -15.74/-8.41      | -6.88/-7.27       | -3.81/-8.2        | -19.04/-11.25     |
| Θ(120°)   | -8.4/-16.44   | -16.41/-6.92    | -7.44/-7.51     | -7.78/-9.93     | -11.86/-11.83   | -9.09/-6.35     | -4.51/-3.43     | -2.91/-4.04       | -7.32/-7.13       | -7.89/-7.52       | -2.67/-2.25       | -6.82/-12.44      | -8.12/-12.17      | -12.72/-10.65     | -6/-2.1           | -3.69/-3.85       | -6.95/-11.13      | -12.82/-18.42     | -9.66/-6.27       | -2.57/-3.74       | -7.69/-3.36       | -3.37/-6.46       | -8.98/-9.52       | -18.33/-16.77     |
| Θ(127.5°) | -4.99/-7.51   | -8.59/-7.47     | -4.26/-4.67     | -3.44/-4.71     | -4.76/-4.97     | -3.55/-2.82     | -2.87/-2.84     | -1.66/-0.99       | -1.18/-2.43       | -6.38/-7.78       | -4.26/-2.94       | -5.85/-8.93       | -8.65/-12.7       | -14.16/-10.36     | -8.81/-6.69       | -9.64/-13.02      | -3.76/-2.25       | -0.81/-4.43       | -5.77/-4.91       | -7.86/-5.13       | -7.67/-3.84       | -5.38/-10.85      | -6.97/-9.1        | -20.05/-15.46     |
| Θ(135°)   | -4.82/-5.28   | -8.75/-16.44    | -9.64/-7.37     | -5.96/-4.99     | -4.25/-3.72     | -3.41/-2.57     | -1.71/-2.56     | -0.97/-0.25       | -0.17/-1.56       | -4.2/-8           | -6.67/-6.17       | -4.66/-0.43       | -6.17/-7.62       | -8.33/-10.85      | -19.65/-9.81      | -10.71/-13.31     | -9.16/-2.21       | -5.35/-7.76       | -12.56/-12.78     | -19.81/-12.69     | -20.29/-19.18     | -20.41/-19        | -9.9/-10.8        | -14.17/-9.13      |
| Θ(142.5°) | -8.82/-6.9    | -7.72/-10.85    | -11.88/-5.83    | -2.92/-0.84     | -0.54/-0.37     | -0.68/-0.37     | -0.5/-0.58      | -1.21/-2.99       | -3.49/-3.18       | -5.25/-8.18       | -11.15/-7.07      | -7.12/-7.37       | -9.95/-6.78       | -5.83/-9.03       | -12.3/-17.16      | -18.58/-16.95     | -13.19/-11.91     | -11.76/-11.37     | -11.12/-12.65     | -15.37/-10.7      | -8.63/-8.65       | -7.96/-7.38       | -10.35/-14.14     | -14.38/-13.62     |
| Θ(150°)   | -7.78/-4.51   | -3.02/-2.82     | -4.25/-7        | -7.67/-5.62     | -3.78/-2.86     | -2.89/-3.18     | -3.95/-4.86     | -4.48/-3.8        | -5.04/-5.78       | -6.41/-7.78       | -5.41/-5.06       | -7.47/-12.27      | -17.57/-11.43     | -14.01/-12.96     | -8.92/-6.56       | -7.91/-7.14       | -9.59/-9.03       | -9.47/-6.39       | -3.73/-3          | -3.42/-2.23       | -4.97/-5.69       | -6.52/-9.75       | -14.23/-19.12     | -19.21/-12.34     |
| Θ(157.5°) | -14.15/-10.46 | -8.07/-6.13     | -4.47/-4.34     | -4.25/-4.82     | -5.13/-5.16     | -5.03/-5.24     | -5.57/-6.26     | -7.04/-6.44       | -6.75/-6.37       | -5.02/-2.82       | -2.95/-4.62       | -7.47/-9.95       | -12.88/-20.55     | -20.24/-11.68     | -9.04/-11.19      | -14.88/-12.68     | -8.13/-7.75       | -6.69/-9.08       | -9.51/-10.31      | -11.26/-14.22     | -14.39/-12.31     | -13.68/-18.47     | -19.33/-18.96     | -19.58/-19.46     |
| Θ(165°)   | -13.53/-13.8  | -12.54/-11.8    | -10.66/-9.68    | -8.66/-8.34     | -8.25/-8.3      | -7.68/-6.03     | -3.99/-2.34     | -1.12/-0.37       | -0.06/-0.22       | 0.05/-1.37        | -3.6/-6.43        | -9.23/-11.99      | -16.36/-19.83     | -18.42/-13.56     | -11.89/-15.47     | -18.09/-7.99      | -4.09/-2.63       | -3.62/-3.17       | -4.18/-5.69       | -8.63/-14.64      | -19.12/-19.61     | -18.68/-17.33     | -16.61/-15.93     | -14.54/-13.48     |
| Θ(172.5°) | -13.72/-13.39 | -13.61/-14.41   | -14.14/-14.51   | -12.74/-10.57   | -8.4/-6.63      | -4.87/-4.21     | -2.91/-2.09     | -1.71/-1.92       | -2.69/-3.92       | -5.47/-6.99       | -8.28/-9.89       | -11.87/-14.06     | -18.01/-18.94     | -13.85/-10.59     | -8.98/-8.84       | -9.78/-11.83      | -14.04/-15.95     | -15.4/-14.52      | -13.4/-11.36      | -10.19/-10.32     | -10.34/-10.38     | -10.33/-10.3      | -10.89/-11.35     | -12.08/-13.43     |
| Θ(180°)   | -16.31/-16.4  | -14.47/-12.21   | -10.23/-8.38    | -6.78/-5.72     | -4.6/-3.75      | -2.77/-2.14     | -2.04/-2.21     | -2.62/-2.73       | -2.75/-3.73       | -5.21/-5.15       | -10.17/-13.36     | -16.18/-19.38     | -20.16/-19.39     | -17.37/-15.88     | -14.22/-12.31     | -10.42/-8.88      | -7.41/-5.63       | -4.46/-4          | -4.17/-4.31       | -4.8/-5.1         | -5.83/-6.98       | -8.92/-10.77      | -11.34/-12.35     | -13.06/-15.3      |
| Freq(Hz)  | 5.3GPol.      | Theta/Ant.4     | -               | -               | -               | -               | -               | -                 | -                 | -                 | -                 | -                 | -                 | -                 | -                 | -                 | -                 | -                 | -                 | -                 | -                 | -                 | -                 | -                 |
| 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°            |                   |                   |                   |                   |                   |



Radiated Composite Gain Data\_2.4GHz, 5GHz

Appendix A

| Gain      | Φ(0°)/Φ(7.5°) | Φ(15°)/Φ(22.5°) | Φ(30°)/Φ(37.5°) | Φ(45°)/Φ(52.5°) | Φ(60°)/Φ(67.5°) | Φ(75°)/Φ(82.5°) | Φ(90°)/Φ(97.5°) | Φ(105°)/Φ(112.5°) | Φ(120°)/Φ(127.5°) | Φ(135°)/Φ(142.5°) | Φ(150°)/Φ(157.5°) | Φ(165°)/Φ(172.5°) | Φ(180°)/Φ(187.5°) | Φ(195°)/Φ(202.5°) | Φ(210°)/Φ(217.5°) | Φ(225°)/Φ(232.5°) | Φ(240°)/Φ(247.5°) | Φ(255°)/Φ(262.5°) | Φ(270°)/Φ(277.5°) | Φ(285°)/Φ(292.5°) | Φ(300°)/Φ(307.5°) | Φ(315°)/Φ(322.5°) | Φ(330°)/Φ(337.5°) | Φ(345°)/Φ(352.5°) |
|-----------|---------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| Θ(0°)     | -12.27/-11.61 | -9.92/-8.18     | -7.74/-6.25     | -5.17/-3.84     | -2.71/-2.17     | -1.88/-1.95     | -1.89/-1.89     | -1.15/-1.35       | -1.71/-2.42       | -2.72/-3.53       | -4.37/-5.34       | -6.91/-8.28       | -9.22/-9.03       | -8.66/-7.65       | -8.81/-5.98       | -4.69/-3.06       | -1.49/-0.6        | -0.27/-0.67       | -1/-1.42          | -1.61/-1.42       | -0.77/-1.82       | -3.23/-4.81       | -6.34/-8.22       | -10.27/-11.48     |
| Θ(7.5°)   | -10.61/-9.34  | -8.16/-6.3      | -5.08/-3.62     | -2.3/-1.36      | -0.5/-0.11      | 0.23/0.22       | -0.02/-0.24     | -0.92/-1          | -1.58/-1.42       | -2.16/-3.22       | -4.67/-6.47       | -8.33/-9.85       | -10.27/-10.1      | -9.93/-9.67       | -8.63/-8.5        | -7.62/-6.58       | -5.38/-4.02       | -3.12/-2.13       | -1.91/-2.03       | -2.08/-1.85       | -1.62/-1.98       | -2.81/-4.1        | -5.28/-6.63       | -7.84/-9.34       |
| Θ(15°)    | -10.84/-9.17  | -6.14/-4.71     | -4.45/-3.58     | -2.74/-2.03     | -1.44/-0.85     | -0.82/-1.27     | -2.24/-2.45     | -2.6/-2.96        | -3.68/-4.18       | -4.37/-5.05       | -6.4/-7.53        | -8.46/-9.05       | -9.47/-10.28      | -10.2/-8.99       | -7.41/-6.16       | -5.42/-5.2        | -7.08/-8.35       | -9.04/-9.04       | -8.75/-9.72       | -10.95/-9.78      | -7.26/-5.17       | -4.42/-4.72       | -5.77/-6.89       | -7.59/-9.13       |
| Θ(22.5°)  | -15.08/-14.2  | -10.47/-7.73    | -6.04/-4.34     | -3.28/-2.31     | -1.06/0.31      | 0.75/0.4        | -1.1/-2.48      | -2.89/-3.17       | -3.92/-4.62       | -6.9/-7.69        | -7.98/-9.59       | -9.04/-7.49       | -7.39/-7.31       | -7.38/-8.05       | -7.85/-5.94       | -4.61/-4.2        | -4.35/-4.59       | -4.63/-4.73       | -4.09/-4.38       | -4.92/-7.22       | -11.81/-13.64     | -8.73/-6.43       | -6/-6.72          | -8.45/-11.46      |
| Θ(30°)    | -19.7/-18.67  | -20.11/-12.77   | -7.98/-4.64     | -2.51/-0.9      | 0.45/1.23       | 1.49/1.23       | 0.73/0.2        | -0.7/-2.07        | -3.4/-4.56        | -6.45/-8.45       | -9.42/-12.33      | -12.39/-8.51      | -6.99/-7.64       | -10.39/-11.69     | -8.9/-7.74        | -9.94/-12.15      | -10.67/-8.15      | -5.8/-3.88        | -3.25/-2.77       | -2.23/-2.3        | -4.49/-7.98       | -13.69/-10.44     | -6.12/-5.66       | -8.67/-17.94      |
| Θ(37.5°)  | -18.25/-19.6  | -20.01/-13.75   | -8.94/-5.46     | -1.97/-0.81     | 0.53/1.47       | 1.4/0.17        | -0.14/0.46      | -1.02/-2.46       | -4.21/-5.39       | -6.24/-9.33       | -12.76/-14.14     | -13.54/-8.17      | -7.44/-7.67       | -8.42/-9.2        | -9.06/-11.89      | -13.14/-11.24     | -7.94/-6.66       | -7.31/-8.47       | -8.45/-8.12       | -8.53/-4.66       | -2.61/-4.59       | -7.92/-10.87      | -8.65/-7.58       | -9.34/-16.49      |
| Θ(45°)    | -13.45/-14.85 | -19.08/-15.12   | -8.77/-4.04     | -2/-0.89        | -0.08/0.32      | 0.51/0.86       | 1.23/0.93       | -0.15/-2.23       | -3.73/-5.28       | -7.2/-9.19        | -10.19/-9.24      | -12.77/-8.74      | -7.19/-7.55       | -12.03/-12.89     | -15.65/-12.12     | -10.76/-7.59      | -8.53/-8.66       | -6.25/-4.76       | -5.15/-6.61       | -7.72/-5.98       | -7.15/-6.21       | -8.96/-11.11      | -10.87/-9.21      | -14.2/-18.4       |
| Θ(52.5°)  | -13.42/-18.9  | -17.49/-11.21   | -6.41/-3.29     | -1.77/-0.14     | -0.29/-0.58     | -0.58/-0.47     | -1.41/-2.29     | -3.36/-4.36       | -5.33/-4.94       | -5.52/-6.59       | -7.2/-8.72        | -11.98/-10.94     | -12.96/-10.94     | -12.51/-6.9       | -14.51/-10.96     | -7.57/-6.29       | -5.49/-6.63       | -6/-5.96          | -5.2/-3.6         | -4.34/-7.11       | -4.85/-5.27       | -4.53/-6.29       | -12.03/-18.74     | -12.64/-13.53     |
| Θ(60°)    | -15.58/-20.24 | -13.95/-6.4     | -3.41/-1.97     | -1.65/-2.02     | -1.91/-1.02     | -0.52/-0.88     | -1.74/-2.86     | -3.39/-2.81       | -2.81/-3.09       | -4.24/-4.77       | -5.91/-8.72       | -8.95/-11.47      | -14.25/-10.41     | -10.4/-7.5        | -3.23/-1.95       | -2.73/-4.22       | -8.47/-9.9        | -8.26/-6.17       | -5.68/-5.16       | -8.2/-9.51        | -6.81/-7.38       | -14.71/-17.42     | -10.58/-15.35     | -18.6/-11.99      |
| Θ(67.5°)  | -19.9/-17.47  | -15.29/-5.71    | -2.64/-2.92     | -3.64/-4.06     | -2.84/-2.13     | -2.08/-2.11     | -2.35/-4.21     | -5.57/-3.49       | -2.54/-3.8        | -4.52/-4.03       | -4.84/-7.19       | -7.85/-14.66      | -18.16/-11.51     | -9.61/-6.16       | -5.38/-4.78       | -6.12/-9.27       | -14.53/-14.31     | -11.14/-8.61      | -5.48/-5.24       | -7.76/-11.65      | -8.93/-5.66       | -6.78/-18.48      | -16.81/-18.99     | -15.15/-12.1      |
| Θ(75°)    | -19.29/-15.84 | -13.48/-6.1     | -3.94/-5.66     | -7.69/-5.81     | -3.96/-2.84     | -1.49/-0.82     | -1.11/-1.77     | -2.43/-1.41       | -1.22/-3.23       | -4.67/-5.27       | -7.74/-9.14       | -7.37/-11.56      | -12.96/-10.94     | -12.51/-6.9       | -7.23/-11.13      | -9.71/-10.08      | -11.88/-8.3       | -9.94/-11.42      | -15.72/-12.41     | -9.48/-9.1        | -13.6/-8.32       | -8.65/-13.52      | -16.4/-14.62      | -19.22/-20.03     |
| Θ(82.5°)  | -15.97/-10.26 | -17.54/-6.63    | -4.45/-6.74     | -10.29/-6.62    | -3.25/-1.26     | -0.16/-0.99     | -1.99/-3.29     | -5.48/-7.14       | -3.95/-3.96       | -5.14/-6.1        | -9.59/-9.53       | -9.38/-14.82      | -9.02/-10.28      | -6.86/-5.86       | -11.71/-6.85      | -5.65/-8.93       | -11.04/-8.2       | -4.72/-4.25       | -7.2/-11.49       | -8.53/-9.64       | -9.96/-10.5       | -10.84/-19.14     | -11.8/-17.27      | -15.13/-17.85     |
| Θ(90°)    | -18.69/-10.25 | -10.56/-7.56    | -6.57/-9.32     | -8.78/-4.15     | -1.97/-0.92     | -0.83/-0.21     | -0.67/-2.3      | -4.27/-6.66       | -5.48/-5.82       | -7.19/-8.1        | -11.96/-20.11     | -18.83/-17.09     | -7.92/-6.24       | -5.93/-8.7        | -11.64/-6.37      | -5.44/-8.64       | -9.23/-4.86       | -2.4/-3.25        | -3.55/-3.06       | -3.08/-7.16       | -16.93/-8.94      | -7.97/-17.77      | -10.91/-10.32     | -19.07/-19.19     |
| Θ(97.5°)  | -20.05/-14.22 | -12.26/-12.15   | -12.9/-10.55    | -7.08/-4.82     | -3.71/-3.93     | -4.3/-3.4       | -4.12/-4.59     | -5.65/-7.83       | -5.62/-8.53       | -7.65/-7.12       | -11.93/-13.08     | -12.25/-19.03     | -11.71/-13.59     | -12.18/-13.98     | -12.82/-5.93      | -4.6/-4.44        | -7.57/-4.77       | -3.4/-13          | -4.55/-5.25       | -2.63/-6.02       | -19.67/-10.54     | -7.69/-18.6       | -17.23/-15.64     | -14.45/-12.12     |
| Θ(105°)   | -18.74/-10.51 | -7.6/-7.93      | -10.83/-9.37    | -7.13/-4.32     | -3.61/-2.32     | -3.12/-2.38     | -1.7/-1.54      | -2.39/-3.97       | -4.38/-4.54       | -5.98/-7.86       | -15.1/-11.22      | -16.11/-13.73     | -7.91/-8.93       | -7.13/-8.5        | -9.49/-6.29       | -4.74/-3.26       | -4.67/-7.56       | -5.24/-7.54       | -10.29/-13.17     | -4.52/-4.66       | -9.62/-12.02      | -10.03/-17.56     | -17.93/-14.46     | -9.74/-11.43      |
| Θ(112.5°) | -18.77/-19.58 | -16.43/-11.31   | -12.86/-15.61   | -8.92/-0.47     | -1.96/-0.42     | 0.08/-0.9       | -1.64/-2.53     | -4.95/-2.82       | -2.28/-3.39       | -8.88/-19.02      | -10.08/-13.42     | -15.36/-15.81     | -13.84/-9.83      | -16.71/-19.77     | -8.87/-11.39      | -6.39/-5.23       | -6.63/-13.73      | -18.26/-13.09     | -18.52/-10.01     | -5.94/-7.12       | -16.93/-8.94      | -6.13/-11.6       | -20.62/-19.31     | -10.98/-13.38     |
| Θ(120°)   | -8.13/-18.66  | -18.57/-15.47   | -15.93/-12.23   | -8.32/-3.97     | -1.56/-0.59     | -1.01/-1.33     | -2.37/-2.97     | -1.68/-1.71       | -2.68/-6.93       | -20.11/-19.86     | -16.2/-6.92       | -8.52/-13.6       | -9.33/-10.44      | -18.88/-19.99     | -16.15/-15.47     | -18.31/-9.84      | -9.31/-9.9        | -12.41/-12.3      | -10.51/-7.73      | -5.69/-12.98      | -13.53/-8.94      | -6.48/-7.87       | -9.71/-14.6       | -12.99/-9.14      |
| Θ(127.5°) | -5.8/-12.97   | -13.86/-11.17   | -15.22/-12.66   | -7.39/-4.94     | -3.47/-3.55     | -3.72/-3.63     | -3.77/-5.01     | -6.86/-9.65       | -9.68/-9.85       | -7.13/-6.17       | -9.93/-17.13      | -18.28/-7.36      | -7.63/-9.24       | -12.22/-13.17     | -9.25/-7.31       | -12.37/-12.71     | -11.36/-8.74      | -8.02/-8.55       | -6.63/-11.21      | -10.78/-13.65     | -10.91/-10.77     | -6.51/-3.88       | -16.35/-13.25     | -7.33/-6.01       |
| Θ(135°)   | -4.55/-10.23  | -8.83/-4.44     | -4.41/-4.08     | -3.71/-2.89     | -1.8/-1.55      | -1.26/-1.76     | -2.3/-2.47      | -2.78/-3.06       | -6.89/-6.85       | -5.83/-4.09       | -4.88/-13.35      | -16.62/-9.08      | -9.49/-8.64       | -7.44/-7.39       | -8/-5.26          | -4.85/-14.36      | -9.49/-5.22       | -4.98/-16.73      | -18.73/-20.33     | -6.46/-5.91       | -7.63/-19.71      | -10.32/-8.16      | -18.31/-9.27      | -4.4/-3.63        |
| Θ(142.5°) | -11.6/-10.25  | -10.9/-11.16    | -11.99/-11.5    | -8.93/-6.72     | -5.01/-3.11     | -2.13/-0.78     | 0.15/0.54       | 0.18/-0.33        | -1.6/-6.17        | -10.83/-13.04     | -10.44/-10.71     | -10.75/-10.17     | -11.77/-10.05     | -8.29/-9.11       | -10.08/-12.68     | -16.32/-13.16     | -11.4/-19.46      | -11.03/-11.1      | -11.94/-18.66     | -13.68/-11.85     | -7.92/-9.89       | -8.85/-10.43      | -14.19/-8.53      | -8.51/-10.28      |
| Θ(150°)   | -10.18/-10.72 | -7.61/-7.2      | -7.11/-6.87     | -4.77/-2.92     | -1.95/-1.72     | -1.79/-2        | -2.36/-2.85     | -3.81/-6.69       | -7.83/-6.35       | -9.49/-15.17      | -20.11/-14.82     | -15.6/-16.36      | -19.78/-18.27     | -8.51/-5.25       | -4.19/-4.12       | -5.15/-9.5        | -16.96/-6.97      | -4.05/-3.53       | -3.92/-4.92       | -6.96/-12.89      | -19.53/-18.33     | -16.01/-18.71     | -11.32/-9.95      |                   |
| Θ(157.5°) | -18.96/-18.38 | -9.97/-6.37     | -4.73/-4.24     | -3.75/-3.43     | -2.9/-2.39      | -1.67/-2.29     | -3.14/-4.98     | -6.96/-8.25       | -11.23/-10.69     | -7.43/-7.56       | -7.92/-8.53       | -13.44/-19.27     | -20/-10.74        | -7.73/-7.23       | -8/-9.31          | -9.58/-8.95       | -10.05/-15.68     | -19.65/-16.43     | -15.91/-16.67     | -10.41/-6.02      | -5.01/-8.5        | -11.87/-18.65     | -16.87/-12.92     | -12.92/-15.77     |
| Θ(165°)   | -16.42/-18.83 | -18.24/-10.4    | -6.69/-5.33     | -4.79/-4.61     | -4.59/-4.82     | -6.15/-7.75     | -7.89/-6.42     | -5.27/-3.78       | -2.51/-1.72       | -1.71/-3.05       | -4.34/-6.92       | -12.3/-18.86      | -19.36/-14.66     | -12.27/-12.87     | -16.57/-18.12     | -15.82/-13.54     | -10.15/-7.45      | -6.6/-7.43        | -9.44/-12.94      | -14.07/-13.84     | -15.94/-17.78     | -15.37/-12.64     | -11.51/-12.3      | -12.95/-13.71     |
| Θ(172.5°) | -20.17/-19.27 | -18.44/-14.87   | -12.09/-10.6    | -9.85/-9.18     | -7.63/-6.37     | -5.48/-5.12     | -4.06/-2.83     | -2.12/-1.94       | -2.13/-2.5        | -2.82/-3.77       | -4.99/-6.92       | -1.06/-17.78      | -19.71/-19.64     | -17.89/-17.21     | -16.28/-15.39     | -15.27/-15.89     | -17.08/-16.07     | -15.03/-13.3      | -11.18/-9.37      | -8.61/-11.44      | -13.02/-14.19     | -17.79/-18.75     | -19.31/-19.35     |                   |
| Θ(180°)   | -19.81/-18.76 | -19.71/-19.83   | -19.1/-17.34    | -14.09/-11.39   | -9.25/-7.87     | -6.93/-5.86     | -5.09/-4.96     | -5.25/-5.53       | -5.45/-6.06       | -7.23/-5.54       | -10.27/-13.24     | -18.51/-19.42     | -19.6/-19.87      | -19.44/-18.8      | -17.77/-13.42     | -11.17/-9.39      | -7.49/-5.02       | -3.4/-2.69        | -2.67/-3.06       | -3.8/-5.05        | -6.26/-7.19       | -8.51/-9.99       | -10.03/-11.98     | -13.69/-15.27     |
| Freq(Hz)  | 5.785GPol.    | ThetaAnt. 4     | -/-             | -/-             | -/-             | -/-             | -/-             | -/-               | -/-               | -/-               | -/-               | -/-               | -/-               | -/-               | -/-               | -/-               | -/-               | -/-               | -/-               | -/-               | -/-               | -/-               | -/-               | -/-               |
| 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°)     | -1.76/-1.15   | -1.1/-1.45      | -2.34/-3.6      | -4.68/-5.1      | -6.02/-7.48     | -10.01/-12.87   | -14.93/-14.43   | -11.68/-9.6       | -7.47/-5.52       | -3.63/-2.37       | -1.67/-1.04       | -0.48/0.13        | 0.27/0.14         | -0.49/-0.73       | -1.01/-1.63       | -2.36/-3.01       | -3.86/-4.86       | -6.17/-8.02       | -9.06/-9.6        | -8.86/-7.41       | -5.33/-4.41       | -3.8/-2.93        | -2.36/-2.06       | -1.86/-1.58       |
| Θ(7.5°)   | 1.12/1.49     | 1.33/0.96       | 0.77/0.01       | -0.9/-1.71      | -2.39/-3.45     | -5.03/-6.9      | -8.23/-8.08     | -8.21/-7.72       | -6.78/-4.52       | -3.03/-2.23       | -1.98/-1.97       | -1.98/-1.88       | -1.88/-2.34       | -2.98/-3.65       | -4.25/-6.65       | -6.29/-7.43       | -9.11/-11.59      | -13.89/-16.29     | -17.08/-15.09     | -11.86/-9.49      | -7.26/-5.21       | -3.44/-1.85       | -0.86/-0.24       | 0.30/0.88         |
| Θ(15°)    | 2.25/2.23     | 2.16/1.5        | 0.79/0.07       | -1.01/-2.33     | -3.93/-4.97     | -6.88/-9.42     | -12.22/-11.77   | -9.68/-8.62       | -8.57/-7.32       | -5.25/-4          | -3.63/-3.53       | -3.88/-4.33       | -4.87/-5.81       | -6.81/-7.37       | -7.75/-8.52       | -9.38/-9.91       | -9.15/-8.63       | -7.92/-8.15       | -6.95/-7.73       | -7.5/-7.48        | -6.96/-5.18       | -3.61/-1.86       | -2.23/0.97        | 1.74/2.5          |
| Θ(22.5°)  | 3.06/2.63     | 1.38/0.94       | 0.6/0.16        | -0.81/-1.66     | -2.76/-3.98     | -6.51/-8.69     | -12.11/-15.65   | -13.62/-12.13     | -10.9/-8.16       | -7.99/-7.65       | -5.1/-3.88        | -3.86/-4.62       | -5.88/-8.16       | -8.87/-7.29       | -5.45/-4.53       | -3.58/-3.02       | -3.16/-3.46       | -3.89/-4.57       | -4.72/-4.99       | -4.69/-4.05       | -3.81/-3.86       | -3.89/-1.92       | -0.13/-1.14       | 1.78/2.99         |
| Θ(30°)    | 2.34/1.89     | 2.02/2          | 1.97/1.36       | 0.38/0.19       | -0.78/-2.67     | -4.97/-7.28     | -10.71/-16.9    | -15.55/-13.1      | -12.17/-8.42      | -6.63/-7.96       | -6.63/-5.81       | -7.64/-8.64       | -8.8/-6.65        | -3.31/-2.32       | -3.22/-4.43       | -4.86/-4.08       | -3.87/-4.72       | -7.07/-10.06      | -12.31/-10.67     | -7.27/-5.06       | -3.33/-2.37       | -3.15/-5.85       | -1.56/2.03        | 3.64/3.52         |
| Θ(37.5°)  | 2.47/2.37     | 1.39/1          | 1.13/0.66       | 1.38/0.26       | -0.56/-1.49     | -2.75/-5.32     | -7.99/-11.22    | -12.47/-11.88     | -11.18/-8.85      | -7.36/-9.13       | -8.41/-6.47       | -5.54/-6.29       | -7.2/-5.92        | -5.49/-7.36       | -9.68/-10.18      | -8.41/-9.22       | -12.48/-19.9      | -18.68/-16.53     | -11.91/-9.97      | -11.35/-8.61      | -3.93/-1.53       | -0.24/-1.38       | -2.64/-0.04       | 2                 |



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| Freq(Hz)                                               | 6.175G            | 6.475G            | 6.695G            | 6.995G            |
|--------------------------------------------------------|-------------------|-------------------|-------------------|-------------------|
| Ant. 1 Max Gain (dBi)                                  | 6.17              | 6.76              | 5.33              | 5.89              |
| Ant. 2 Max Gain (dBi)                                  | 5.3               | 4.57              | 4.78              | 6.56              |
| Ant. 3 Max Gain (dBi)                                  | 4.29              | 4.27              | 4.99              | 4.76              |
| Ant. 4 Max Gain (dBi)                                  | 5.26              | 4.73              | 5.38              | 4.91              |
| Ant. 1 Polarization/ $\theta(^{\circ})/\phi(^{\circ})$ | Theta/97.5/90     | Theta/97.5/90     | Theta/105/67.5    | Theta/97.5/90     |
| Ant. 2 Polarization/ $\theta(^{\circ})/\phi(^{\circ})$ | Theta/105/7.5     | Theta/112.5/7.5   | Theta/142.5/255   | Theta/135/262.5   |
| Ant. 3 Polarization/ $\theta(^{\circ})/\phi(^{\circ})$ | Theta/90/352.5    | Theta/97.5/255    | Theta/97.5/322.5  | Theta/97.5/322.5  |
| Ant. 4 Polarization/ $\theta(^{\circ})/\phi(^{\circ})$ | Theta/112.5/277.5 | Theta/112.5/277.5 | Theta/112.5/277.5 | Theta/112.5/277.5 |
| Max Gain (dBi)                                         | 6.17              | 6.76              | 5.38              | 6.56              |
| DG [1SS] (dBi)                                         | 8.08              | 8.36              | 8.34              | 7.86              |
| DG [2SS] (dBi)                                         | 6.17              | 6.76              | 5.38              | 6.56              |
| DG [4SS] (dBi)                                         | 6.17              | 6.76              | 5.38              | 6.56              |



# Radiated Composite Gain Data\_6GHz

# Appendix B

## DG 1SS Result

| Freq(Hz)  | 6.175GPol.   | Phi-             | +              | +              | +              | +              | +              | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                |                  |
|-----------|--------------|------------------|----------------|----------------|----------------|----------------|----------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
| 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°)     | 1.611/86     | 1.981/61         | 0.89/0.47      | -1.85/-3.45    | -4.8/-5.63     | -5.78/-5.15    | -3.72/-2.47    | -1.15/-0.08      | 0.95/1.72        | 2.53/2.74        | 2.62/16          | 1.28/0.86        | 0.53/2.04        | -0.42/-1.91      | -0.36/-4.4       | -5.63/-5.48      | -5.72/-5.4       | -5.30/-37        | 1.27/2.01        | 2.08/1.88        | 1.64/1.61        |                  |                  |                  |
| Θ(7.5°)   | 1.84/2.28    | 2.53/2.52        | 1.88/1.08      | -0.19/-1.31    | -2.41/-3.97    | -5.59/-6.89    | -7.41/-7.31    | -6.04/-4.13      | -1.76/0.77       | 1.37/1.68        | 1.89/1.99        | 2.38/2.65        | 2.57/2.07        | 1.39/0.96        | 0.31/-0.49       | -1.22/-2.45      | -4.47/-5.56      | -4.42/-2.68      | -1.92/-1.21      | -0.12/1.09       | 2.01/2.52        | 2.64/2.66        | 2.43/2.14        | 1.94/2           |
| Θ(15°)    | 1.37/1.82    | 2.72/2.46        | 2.41/94        | 1.2/0.38       | -0.74/-2.86    | -5.55/-9.32    | -10.48/-9.39   | -7.2/-5.3        | -3.81/-2.44      | -0.28/1.3        | 1.84/1.83        | 1.71/1.34        | 1.19/1.22        | 1.43/1.33        | 0.95/-0.01       | -0.74/-0.99      | -1.83/-2.55      | -3.11/-3.52      | -3.7/-3.58       | -1.96/-0.46      | 0.96/1.93        | 2.46/2.66        | 2.42/1.65        | 1.76/1.78        |
| Θ(22.5°)  | 1.49/2.29    | 2.73/2.6         | 2.32/1.31      | 0.09/-1.36     | -3.48/-5.93    | -6.73/-7.12    | -7.65/-7.7     | -5.79/-2.96      | -1.31/-0.62      | -0.69/0.12       | 1.42/12          | 2.24/1.99        | 1.61/1.54        | 1.74/2.05        | 1.59/0.5         | -1.16/-2.43      | -3.56/-4.08      | -4.22/-4.39      | -4.58/-4.37      | -2.48/-0.18      | 2.51/2.34        | 2.02/1.33        | 1.14/1.12        |                  |
| Θ(30°)    | 0.68/1.41    | 2.31/2.46        | 1.5/-0.04      | -1.55/-2.55    | -3.29/-4.44    | -5.89/-7.03    | -6.58/-4.67    | -3.34/-2.58      | -1.1/-0.01       | 0.48/0.76        | 1.28/1.95        | 2.35/2.19        | 2.04/1.78        | 21/83            | 0.59/-1.4        | -3.54/-5.72      | -8.05/-9.15      | -8.81/-7.03      | -6.09/-6.41      | -6.74/-5.34      | -3.25/-0.36      | 0.96/1.41        | 1.23/1.03        | 0.66/0.97        |
| Θ(37.5°)  | 0.95/1.48    | 2.15/1.89        | 1.26/-0.51     | -1.76/-3.7     | -5.84/-6.96    | -6.74/-5.56    | -4.95/-44      | -2.99/-1.95      | -1.36/-0.99      | -0.38/0.32       | 1.61/1.65        | 2.93/2.33        | 1.61/1.85        | 2.29/2.87        | 2.26/0.95        | -1.23/-3.41      | -5.03/-6.25      | -6.88/-6.81      | -8.25/-7.22      | -7.31/-8.82      | -6.34/-3.54      | -1.91/-1.47      | -0.11/-1.32      | 1.76/1.65        |
| Θ(45°)    | 0.99/2.48    | 3.74/3.13        | 1/-1.03        | -1.44/-3.45    | -5.34/-5.67    | -5.02/-5.42    | -6.64/-6.24    | -4.22/-2.75      | -2.36/-1.66      | -1.11/-0.92      | -0.59/-0.05      | 0.59/-0.03       | 0.57/1.22        | 1.49/1.76        | 1.48/-0.34       | -1.22/-0.67      | -1.11/-2.49      | -4.38/-3.87      | -2.9/-4.17       | -5.65/-5.01      | -3.18/-1.02      | -0.13/-0.14      | -1.67/-0.81      | 0.64/0.9         |
| Θ(52.5°)  | -0.95/0.05   | 2.03/2.64        | 1.45/-0.75     | -1.08/-1.77    | -2.13/-1.24    | -0.64/-1.01    | -1.78/-1.94    | -1.95/-2.67      | -2.16/-1.79      | -1.3/-1.05       | -0.50/-44        | -0.2/-0.36       | 2.09/2.21        | 1.84/1.88        | 0.33/0.48        | 1.14/-0.09       | -1.9/-3.99       | -7.78/-9.2       | -8.95/-8.95      | -8.62/-7.59      | -4.42/-0.76      | 1.35/0.8         | -2.35/-0.82      | 0.94/0.7         |
| Θ(60°)    | -1.35/-0.01  | 2.58/2.08        | 1.53/0.3       | 0.06/0.8       | 1.5/-1.22      | 0.05/-0.29     | -3.96/-3.17    | -1.56/-0.36      | -0.83/-1.63      | -0.95/-3.1       | -1.97/-1.49      | -1.91/-0.76      | 0.27/-0.41       | -2.06/-2.51      | 0.4/0.71         | 0.26/-0.04       | -0.62/-8.5       | -9/-8.33         | -7.81/-9.17      | -9.14/-2.94      | 0.49/1.03        | -0.21/-0.06      | 1.39/1.55        |                  |
| Θ(67.5°)  | -0.98/2.51   | 3.61/2.27        | 0.24/0.22      | 0.24/0.24      | -0.08/-2.26    | -4.03/-5       | -5.01/-3.76    | -2.71/-2.58      | -2.29/-1.74      | -1.81/-1.68      | -2.98/-3.69      | 0/-0.74          | -2.48/0.52       | 1.72/2.15        | 2.15/2.3         | 0.01/-3.19       | -7.58/-10.25     | -11.43/-12.85    | -10.04/-6.42     | -5.24/-4.32      | -2.74/-0.34      | 0.46/0.75        | 0.86/-1.58       |                  |
| Θ(75°)    | -2.31/5.3    | 2.44/0.18        | -1.36/0.68     | 1.44/1.04      | -0.98/-3.77    | -7.49/-9.22    | -6.84/-7.02    | -6.28/-2.71      | -0.97/-1.15      | -0.91/0.28       | -1.54/-3.68      | -2.62/-1.49      | -2.92/-4.14      | -2.44/0.48       | 1.67/0.75        | 1.45/-0.01       | -1.91/-3.56      | -5.61/-6.71      | -6.05/-6.34      | -8.17/-5.95      | -4.17/-3.03      | -4.69/-4.31      | -2.51/-1.4       | -0.22/-0.25      |
| Θ(82.5°)  | -0.25/1.5    | 1.25/0.8         | -0.67/-1.13    | -0.62/-1.63    | -5.5/-6.56     | -6.72/-4.76    | -6.35/-9.9     | -5.76/-2.3       | -1.39/-1.24      | -1.50/-32        | -1.59/-2.88      | -0.41/-1.36      | -2.21/-0.94      | 1.24/2.56        | 2.01/0.33        | -0.35/-0.89      | -1.01/-2.36      | -3.39/-2.72      | -4.11/-6.08      | -4.39/-4.87      | -1.79/-2         | -3.82/-3.44      | -2.66/-0.86      | 0.50/57          |
| Θ(90°)    | -0.64/1.53   | 2.21/2.25        | -0.45/-4.44    | -1.96/-1.04    | -2.93/-3.75    | -6.4/-3.49     | -4.38/-8.53    | -10.28/-4.46     | -1.42/0.58       | -0.32/-0.06      | -0.83/-1.04      | -0.57/-2.26      | -3.81/-0.55      | 0.51/-48         | -0.28/-1.56      | -1.88/-1.45      | -2.04/-3.25      | -4.41/-4.3       | -5.32/-6.64      | -3.16/-1.33      | 0.44/0.7         | 0.24/-1.59       | -1.62/-2.55      | -1.89/-0.59      |
| Θ(97.5°)  | 2.21/3.86    | 2.83/11          | 1.13/-1.95     | -4.21/-4       | -4.33/-5.02    | -5.81/-2.77    | -1.67/-3.04    | -3.32/-1.79      | -0.46/-0.8       | -0.11/-2.07      | -0.56/-1.24      | 0.47/-1.79       | -3.26/-1.65      | 1.46/1.48        | -2.07/-2.26      | -1.16/-1.31      | -3.11/-2.36      | -2.74/-2.74      | -5.12/-5.14      | -3.5/1.64        | 2.73/2.3         | 1.13/0.81        | 0.59/-1.98       | -0.87/-1.42      |
| Θ(105°)   | 4.4/5.2      | <b>5.75</b> /2.8 | 2.33/0.8       | -1.6/-2.46     | -6.9/-12.83    | -4.01/-2.02    | -2.12/-4.68    | -4.53/-3.68      | -2.69/-1.65      | -2.59/-2.32      | -2.48/0.57       | -3.1/-0.88       | -0.6/-0.6        | -2.02/-6.71      | -5.4/-3.1        | -3.9/-3.72       | -2.3/-5.05       | -7.19/-4.82      | -1.34/-1.54      | 1.97/-0.68       | -2.07/0.12       | 1.05/2.29        | 1.34/3.87        |                  |
| Θ(112.5°) | 5.25/5.63    | 4.76/4.03        | 2.79/2.2       | 0.67/-1.39     | -3.4/-6.65     | -5.59/-4.67    | -4.24/-5.29    | -6.62/-4.71      | -3.62/-0.73      | -1.14/-4.87      | -3.83/-1.44      | -0.21/-3.67      | -3.71/-2.69      | -1.85/-0.86      | -4.83/-9.04      | -8.66/-9.59      | -7.6/-7.3        | -6.2/-11.84      | -10.29/-6.05     | -2.62/-3.13      | -2.97/0.64       | 0.67/1.1         | 2.16/2.97        | 2.93/4.31        |
| Θ(120°)   | 3.87/4.34    | 4.98/1.05        | -0.23/-1.87    | 2.1/0.37       | -0.3/-4.47     | -5.56/-2.23    | -1.01/-2.56    | -5.01/-1.81      | 0.98/1.68        | 0.57/-2.39       | -2.05/0          | -2.01/-1.89      | -2.71/-3.15      | -2.72/-2.61      | -5.58/-3.7       | -5.15/-3.87      | -7.98/-6.83      | -8.64/-6.07      | -7.26/-2.35      | -3.74/-5.95      | -4.57/-1.11      | 1.08/3.24        | 2.87/2.05        | 1.18/2.88        |
| Θ(127.5°) | -1.61/1.18   | -0.39/-1.83      | -0.53/2.63     | 1.6/0.59       | -2.43/-3.99    | -4.34/-4.35    | -5.34/-8.19    | -8.09/-2.58      | 0.42/2.22        | 1.01/-0.73       | -3.04/-1.67      | -1.87/-2.53      | -4.7/-4.75       | -2.88/-1.18      | -2.22/-2.32      | -1.17/-3.25      | -6.23/-1.8       | -3.81/-3.61      | -3.66/-3.96      | -4.36/-2.64      | -0.28/0.46       | -0.37/2.34       | 2.74/-1.61       | -2.77/-4.25      |
| Θ(135°)   | -0.02/1.8    | 3.99/3.61        | 2.12/1.4       | 2.55/-0.66     | -2.39/-5.23    | -5.36/-5.37    | -3.03/-4.15    | -3.22/-0.97      | 0.47/-0.24       | 0.19/-0.06       | -1.91/-2.51      | -3.39/-0.4       | 0.98/-0.03       | -3.07/-4.25      | -6.93/-5.78      | -3.26/-3.26      | -7.53/-5.54      | -4.08/-4.21      | -6.74/-2.13      | -2.86/-1.6       | -1.16/-2.09      | -2.77/1.14       | 2.97/-0.95       | -1.60/9.2        |
| Θ(142.5°) | 2.12/2.98    | 4.59/2.34        | 1.65/0.2       | -0.36/-1.89    | -3.18/-4.12    | -6.29/-7.52    | -6.54/-4.8     | -3.13/-2.39      | -1.13/0.74       | 1.28/-1.01       | -3.03/-1.14      | -1.64/-4.27      | -3.14/-1.6       | -3.55/-3.35      | -2.42/-1.15      | -1.32/-0.66      | -2.61/-1.01      | -1.31/-3.19      | -5.59/-4.51      | -4.83/-2.48      | -3.37/-1.7       | -0.84/0.14       | 1.07/0.12        | -1.36/-0.72      |
| Θ(150°)   | 0.99/-2.05   | -1.16/0.44       | 0.65/0.74      | -0.72/-0.62    | -0.01/-1.78    | -5.98/-11.35   | -10.13/-6.14   | -3.87/-2.98      | -4.31/-5.7       | -8.54/-3.12      | 0.23/0.35        | 0.6/0.49         | 1.65/0.01        | -1.14/-2.14      | -3.93/-7.36      | -8.28/-4.5       | -4.27/-5.4       | -3.63/-3.92      | -4.51/-6.84      | -6.62/-7.58      | -3.34/-1.83      | -4.32/-1.85      | -1.65/-0.5       | -0.17/0.59       |
| Θ(157.5°) | 0.43/0.97    | 0.77/1.22        | 1.3/0.08       | -2.34/-1.77    | -5.12/-7.17    | -9.91/-10.92   | -9.87/-7.92    | -6.52/-4.57      | -3.42/-3.07      | -2.73/-3.15      | -2.56/-3.1       | -3.13/-1.66      | -1.59/-2.41      | -3.83/-3.81      | -3.81/-4.23      | -3.99/-1.97      | -1.53/-2.23      | -4.39/-5.27      | -5.79/-7.24      | -6.61/-4.61      | -2.86/-1.91      | -1.12/0.65       | 1.49/1.02        | 0.91/-0.23       |
| Θ(165°)   | -0.19/0.22   | 0.70/0.37        | -0.55/-1.04    | -1.1/-1.23     | -2.13/-3.74    | -5.27/-6.54    | -2.91/-7.3     | -4.76/-5.54      | -3.14/-1.73      | -1.02/-0.42      | -0.97/-2.47      | -2.74/-2.32      | -1.61/-0.52      | -0.27/-0.84      | -2.05/-4.35      | -5.79/-4.5       | -5.26/-7.11      | -3.71/-6.44      | -6.37/-8.82      | -9.19/-5.72      | -3.2/-2.27       | -2.03/-1.58      | -1.24/-1.93      | -1.69/0.88       |
| Θ(172.5°) | -1.31/-2.02  | -2.79/-3.55      | -4.35/-5.32    | -6.27/-6.63    | -7.75/-9.5     | -10.21/-9.65   | -9.22/-7.65    | -6.09/-4.88      | -4.32/-3.99      | -4.48/-4.54      | -4.41/-3.8       | -3.48/-3.46      | -4.43/-2.63      | -8.79/-10.47     | -8.66/-6.86      | -5.75/-5.63      | -7.01/-8.89      | -8.27/-7.03      | -7.09/-7.29      | -6.38/-3.97      | -2.23/-1.08      | -1.8/-2.59       | -2.32/-2.16      | -1.71/-1.57      |
| Θ(180°)   | -2.62/-3.38  | -3/-3.1          | -3.64/-4.14    | -4.4/-5.84     | -6.12/-6.69    | -7.11/-7.95    | -7.49/-6.55    | -5.41/-3.56      | -2.05/-1.19      | -0.94/-1.43      | -2.11/-2.41      | -2.17/-1.87      | -2.24/-3.65      | -5.71/-9.4       | -7.08/-7.06      | -7.06/-7.36      | -8.25/-8.32      | -8.28/-8.71      | -7.19/-5.2       | -4.25/-3.57      | -3.31/-2.96      | -2.78/-3.14      | -3.32/-2.96      | -2.72/-2.88      |
| Freq(Hz)  | 6.175GPol.   | Theta-           | +              | +              | +              | +              | +              | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                |                  |
| DG(dB)    | Φ(0°)Φ(7.5°) | Φ(15°)Φ(22.5°)   | Φ(30°)Φ(37.5°) | Φ(45°)Φ(52.5°) | Φ(60°)Φ(67.5°) | Φ(75°)Φ(82.5°) | Φ(90°)Φ(97.5°) | Φ(105°)Φ(112.5°) | Φ(120°)Φ(127.5°) | Φ(135°)Φ(142.5°) | Φ(150°)Φ(157.5°) | Φ(165°)Φ(172.5°) | Φ(180°)Φ(187.5°) | Φ(195°)Φ(202.5°) | Φ(210°)Φ(217.5°) | Φ(225°)Φ(232.5°) | Φ(240°)Φ(247.5°) | Φ(255°)Φ(262.5°) | Φ(270°)Φ(277.5°) | Φ(285°)Φ(292.5°) | Φ(300°)Φ(307.5°) | Φ(315°)Φ(322.5°) | Φ(330°)Φ(337.5°) | Φ(345°)Φ(352.5°) |
| Θ(0°)     | -4.51/-3.77  | -2.33/-0.59      | 0.71/1.8       | 2.37/2.86      | 2.94/3.15      | 3.12/2.77      | 2.26/1.74      | 1.04/0.69        | 0.38/-0.08       | -0.82/-1.78      | -3.11/-4.4       | -4.83/-4.71      | -4.86/-4.38      | -3.92/-2.84      | -1.75/-0.47      | 0.81/1.7         | 2.18/2.73        | 2.72/2.8         | 2.83/2.84        | 2.73/2.17        | 1.74/-1.29       | 0.77/-0.3        | -2.02/-3.34      | -3.79/-4.13      |
| Θ(7.5°)   | -3.71/-4.02  | -2.96/-1.98      | -0.62/0.35     | 1.01/1.65      | 2.14/2.37      | 2.85/2.85      | 2.65/2.22      | 1.89/0.95        | 0.22/-0.99       | -1.83/-2.79      | -3.63/-4.23      | -4.34/-3.59      | -2.61/-1.43      | 0.02/1.28        | 2.42/95          | 2.82/2.84        | 2.72/2.52        | 2.12/1.68        | 1.27/1.16        | 0.74/0.34        | -0.71/-1.95      | -3.29/-3.71      | -2.78/-3.16      |                  |
| Θ(15°)    | -2.94/-4.09  | -4.86/-5.37      | -3.62/-2.31    | -0.78/-1.24    | 2.59/3.43      | 3.78/4.08      | 4/0.93         | 3.72/5.2         | 2.49/-1.62       | 0.55/-0.91       | -2.15/-3.12      | -3.99/-4.64      | -4.83/-4.7       | -3.22/-2.01      | -1.33/-0.98      | -0.77/-0.37      | -0.36/-0.15      | 0.12/0.72        | 0.94/1.13        | 1.28/0.9         | 0.64/-0.07       | -1.36/-2.67      | -3.54/-3.03      | -1.58/-1.73      |
| Θ(22.5°)  | -1.75/-3.31  | -6.89/-9.37      | -6.65/-2.29    | -0.23/-1.41    | 2.38/3.09      | 3.43/3.68      | 3.73/3.7       | 3.26/2.77        | 1.84/0.93        | 0.12/-0.8        | -1.78/-2.87      | -2.75/-1.71      | -1.3/-1.8        | -2.28/-2.44      | -2.79/-2.74      | -2.84/-2.24      | -2.27/-2.4       | -1.95/-0.91      | 0.47/1.52        | 2.39/2.46        | 1.62/0.82        | -0.31/-1.49      | -1.91/-1.22      | -0.61/-0.73      |
| Θ(30°)    | -1.77/-3.63  | -5.08/-4.67      | -3.91/-1.43    | 0.27/1.37      | 1.55/1.81      | 2.36/3.21      | 3.94/4.21      | 4.23/3.86        | 3.32/5.2         | 1.71/1           | 0.09/-0.43       | -0.61/-1.52      | -2.16/-1.51      | -0.45/-0.25      | -0.82/-2.29      | -2.67/-2.57      | -1.61/-1.24      | -1.34/-0.96      | -0.62/-0.51      | -0.27/0.54       | 1.71/-1.39       | -0.21/-1.39      | -1.72/-0.98      | -0.2/-0.16       |
| Θ(37.5°)  | 1.49/-0.1    | -1.11/-3.32      | -3.31/-0.24    | 1.19/2.4       | 3/3.35         | 3.65/3.99      | 3.87/3.4       | 3.33/4.5         | 3.42/2.95        | 2.24/1.43        | 0.55/1           | 1.45/0.41        | 0.13/1.75        | 2.64/2.43        | 1.7/0.88         | 0.35/-0.21       | -1.09/-2.1       | -2.13/-1.96      | -2.56/-3.32      | -2.79/-4.07      | 1.52/2.39        | 1.05/-2.28       | -2.38/-0.13      | 1.46/2.12        |
| Θ(45°)    | 2.36/2.06    | 1.88/-1.79       | -0.47/2        | 4.29/5.42      | 5.68/5.46      | 4.38/3.22      | 2.89/3.6       | 4.05/3.85        | 3.63/15          | 2.94/2.36        | 2.28/2.99        | 2.77/1.89        | 1.87/2.18        | 2.54/1.7         | 0.04/-0.27       | 0.35/0.79        | 1.15/0.95        | 0.9/0.68         | 0.33/-1.7        | -3.51/-0.96      | 2.47/3.63        | 2.95/1.35        | 0.51/0.79        | 2.43/0.6         |
| Θ(52.5    |              |                  |                |                |                |                |                |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |



# Radiated Composite Gain Data\_6GHz

# Appendix B

|           |                |                 |                 |                 |                 |                 |                 |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |
|-----------|----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| Θ(22.5°)  | 0.711/05       | 1.51/12         | 0.530/07        | -0.28/-1.62     | -3.57/-5.91     | -8.27/-9.18     | -8.83/-7        | -5.51/-4.47       | -4.42/-3.72       | -3.21/-3.02       | -3.04/-2.73       | -2.46/-2.43       | -2.27/-1.78       | -1.51/-1.47       | -1.65/-1.65       | -1.48/-1.29       | -1.11/-0.64       | -0.51/-0.34       | -0.32/-1.12       | -2.73/-2.98       | -2.95/-2.55       | -1.54/-1.36       | -1.19/-0.61       | -0.080/15         |
| Θ(30°)    | 0.07/-0.11     | 1.07/1.4        | 0.98/1.1        | 0.35/-1.33      | -3.38/-6.08     | -7.89/-7.03     | -5.14/-3.67     | -2.26/-1.53       | -1.17/-2.07       | 0.82/-1.57        | 1.49/0.82         | 1.02/1.16         | 1.41/-0.97        | 0.62/0.65         | -0.43/-1.67       | -2.9/-4.25        | -4.67/-4.44       | -4.26/-4.17       | -4.65/-6.12       | -7.32/-6.12       | -4.62/-3.22       | -2.06/-1.11       | -0.03/-0.29       | -0.5/-0.41        |
| Θ(142.5°) | -0.540/-0.05   | -0.45/-1.06     | -0.92/-0.29     | -0.34/0.14      | -1.4/-3.38      | -6.77/-9.04     | -5.58/-3.3      | -2.30/-7.9        | 1.34/2.37         | 2.29/2.06         | 2.04/1.5          | 0.93/1.1          | 0.67/1.03         | 2.01/1.67         | 0.08/-2.66        | -6.38/-10.74      | -10.62/-7.38      | -6.15/-7.54       | -9.23/-8.02       | -9.18/-7.97       | -4.82/-3.78       | -1.61/0.6         | 1.31/-1.77        | 1.06/-0.19        |
| Θ(45°)    | -0.24/-1.32    | -1.32/0.17      | -0.56/-1.02     | -1.27/-2.16     | -4.4/-6.53      | -4.79/-4.14     | -4.03/-5.11     | -4.19/-2.65       | -1.16/0.85        | 2.22/2.75         | 2.27/1.53         | 1.39/1.34         | 0.08/1.39         | 3.02/3.5          | 1.43/-0.89        | -2.99/-3.52       | -3.88/-5.22       | -7.28/-7.12       | -7.61/-5.74       | -4.55/-2.86       | -1.45/-0.63       | -0.74/-1.85       | -0.04/0.05        | 2.06/0.49         |
| Θ(52.5°)  | -0.03/-1.8     | -1.52/-2.29     | -3.02/-4.11     | -4.25/-3.11     | -3.36/-4.82     | -5.89/-6.4      | -5.68/-4.83     | -3.22/-2.42       | -1.25/-0.9        | -0.82/-0.66       | -0.53/-0.99       | -0.99/-1.22       | -1.95/0.65        | 2.65/2.17         | -0.88/-3.73       | -3.59/-4.78       | -4.14/-2.99       | -2.28/-2.85       | -3.74/-1.5        | -0.09/1.55        | 1.41/-0.44        | -0.48/0.34        | 0.9/-1.35         |                   |
| Θ(60°)    | 0.32/-0.4      | -1.87/-2.16     | -4.08/-4.07     | -2.89/-2.97     | -3.88/-4.8      | -4.65/-4.82     | -3.88/-4.0      | -2.07/-0.81       | -0.53/-1.29       | -1.54/-1.63       | -1.42/-3.06       | -3.97/-2.86       | -2.56/-0.63       | 1.24/-0.33        | -0.49/-1.09       | -1.3/-4.47        | -6.77/-9.23       | -5.08/-4.13       | -3.8/-3.07        | -1.45/0.41        | 0.81/-2.44        | -3.29/-1.63       | -0.9/-0.85        |                   |
| Θ(67.5°)  | 1.88/1.12      | 0.93/-0.11      | -2.25/-3.6      | -3.39/-2.59     | -2.51/-3.29     | -2.91/-3.13     | -4.33/-5.21     | -3.38/-1.27       | -0.75/-3.86       | -2.34/-0.33       | 1.22/0.52         | -4.02/-4.12       | -3.72/-1          | 0.39/-1.6         | -0.38/-0.28       | -2.81/-1.75       | -2.86/-3.38       | -4.19/-6.64       | -10.06/-7.17      | -5.03/-5.61       | -4.74/-1.33       | 0.1/-1.81         | -2.68/-0.33       | 1.27/1.11         |
| Θ(75°)    | 3.78/3.31      | 2.77/2.39       | 0.22/0.22       | -0.86/-2.4      | -3.73/-5.04     | -3.89/-3.75     | -4.91/-6.47     | -8.8/-4.63        | -2.58/-5.38       | -1.56/-0.34       | 1.03/0.47         | -3.84/-5.33       | -5.1/-3.26        | -3.35/-0.95       | 0.33/-0.48        | -2.09/-0.27       | -2.2/-3.68        | -6.29/-7.21       | -7.62/-6.18       | -6.65/-5.43       | -7.2/-6.1         | -4.32/-2.8        | -0.75/-1.7        | 0.632/0.44        |
| Θ(82.5°)  | 3.97/3.75      | 3.73/2.94       | 0.19/-2.41      | -1.62/-0.65     | -0.91/-2.11     | -3.09/-3.33     | -1.88/-2.8      | -8.28/-5.51       | -3.61/-4.69       | -2.17/0.63        | 1.33/0.22         | -3.18/-5.88       | -6.44/-6.39       | -5.45/-0.82       | 1.24/0.31         | -3.2/-2.09        | -2.09/-0.58       | -2.98/-4.12       | -6.43/-8.44       | -12.04/-4.91      | -2.45/-3.42       | -3.3/-2.53        | 0.78/3.45         | 2.54/2.66         |
| Θ(90°)    | 1.83/1.5       | 1.78/1.95       | 1/0.51          | -0.4/-0.5       | 0.32/-1.13      | -3.81/-2.35     | -0.27/-2.18     | -9.09/-6.71       | -2.14/-3.02       | -3.21/0.12        | 0.88/-0.94        | -5.16/-5.71       | -7.4/-7.07        | -5.04/-1.08       | -0.39/-3.48       | -4.95/-4.33       | -1.98/-1.41       | -2.28/-3.54       | -3.09/-4.6        | -6.97/-2.3        | 0.99/-1.44        | -1.3/-0.07        | -0.42/1.03        | 2.22/0.58         |
| Θ(97.5°)  | 2.89/1.09      | 2.02/2.36       | 1.26/0.57       | -0.2/0.06       | 0.59/-1.4       | -3.33/-4.88     | -3.95/-5.12     | -9.1/-5.92        | -4.06/-2.32       | -2.71/-0.67       | 1.77/0.56         | -2.69/-2.51       | -4.38/-2.09       | -2.4/-1.27        | -0.81/-1.31       | -2.32/-0.99       | -1.47/-1.06       | -2.75/-3.33       | -4.61/-3.17       | -1.86/1.22        | 2.27/0.05         | -0.83/-0.84       | -2.14/-1.28       | 0.45/1.61         |
| Θ(105°)   | 4.27/3.19      | 2.98/3.28       | 2.34/1.88       | 0.75/-0.86      | -2.15/-2.8      | -4.58/-4.49     | -4.72/4.95      | -3.31/-1.97       | -4.67/-2.55       | -2.11/-1.36       | 0.68/-0.81        | -1.4/-1.6         | -3.88/-2.09       | -1.92/-2.73       | -3.62/-3.4        | -4.94/-5.89       | -1.88/-2.94       | -6.02/-6.2        | -10.3/-4.3        | 1.1/0.83          | 0.33/-2.45        | -2.03/0.38        | 1.02/-1.97        | 0.68/3.93         |
| Θ(112.5°) | 4.31/3.81      | 3.38/4.54       | 4.25/4.09       | 3.9/0.53        | -0.04/-4.23     | -5.85/-4.21     | -4.6/-4.98      | -3.64/-2.28       | -3.07/-2.03       | -1.01/-0.07       | -0.25/-0.34       | 1.05/-0.71        | -1.26/-1.02       | 0/-1.05           | -2.05/-5.65       | -8.24/-6.72       | -3.15/-2.57       | -6.31/-5.18       | -5.44/-4.03       | -1.05/-3.79       | -3.83/-4.9        | -0.76/-0.21       | -3.22/0.13        | 1.42/3.36         |
| Θ(120°)   | <b>5.93/76</b> | 1.34/3.86       | 2.53/3.34       | 2.26/1.09       | -2.23/-1.79     | -1.79/-2.68     | -4.28/-4.02     | -2.79/-3.66       | -4.47/-2.39       | -0.59/-0.02       | -0.87/-0.19       | -0.81/-2.51       | -2.23/-1.98       | -0.41/-1.44       | -4.16/-8.59       | -4.36/-5.18       | -5.62/-8.89       | -9.92/-4.44       | -5.88/-3.53       | -5.62/-5.76       | -2.41/-1.26       | -0.57/0.61        | -2.22/0.99        | 3.44/5.17         |
| Θ(127.5°) | 3.52/1.14      | -0.64/-2.55     | -0.16/1.73      | 1.6/2.63        | -2.03/-4.87     | -4.89/-9.75     | -3.69/-1.86     | -2.07/-3.22       | -3.59/-2.65       | -1.35/-0.5        | -0.17/-0.19       | -1.06/-1.89       | -1.89/-0.3        | -2.07/-3.08       | -1.13/-3.13       | -4.4/-5.46        | -3.93/-5.66       | -5.25/-0.89       | -3.01/-1.2        | -3.77/-2.6        | -1.59/-2.89       | -2.63/0.1         | -1.35/-4.28       | -1.37/1.44        |
| Θ(135°)   | -2.87/-1.53    | -3.97/-2.41     | -1.5/1.35       | -0.38/-3.59     | -5.2/-5.12      | -2.87/-2.52     | -2.58/-4.25     | -5/-3.13          | -1.81/-2.5        | -0.67/-1.4        | 0.69/-0.62        | -2.19/-1.66       | -2.1/0.84         | 0.17/-0.07        | -4.8/-1.62        | -4.01/-1.13       | -6.7/-2.71        | -1.64/-0.69       | -2.57/-2.1        | -5.02/-5.75       | -1.83/-2.44       | -4.3/0.55         | 0.48/-5.67        | -2.45/-1.42       |
| Θ(142.5°) | -4.04/-2.35    | -2.41/-5.06     | -1.51/0.06      | 0.13/-2.67      | -5.07/-6.27     | -1.21/-2.01     | -5.07/-6.01     | -2.6/-1.34        | -3.65/-5.61       | -1.43/-0.67       | -3.47/-5.18       | -3.8/-1.41        | -1.52/-1.23       | -2.07/-4.21       | -7.53/-3.81       | -0.93/-8          | -3.64/-2.74       | 0.13/-3.16        | -3.6/-3.5         | -9.13/-7          | -2.59/-4.84       | -1.63/-2.47       | -1.44/-2.93       | -3.12/-2.79       |
| Θ(150°)   | -2.86/-5.251   | -0.94/-0.34     | -0.22/-2.98     | -5.46/-6.66     | -5.93/-4.77     | -4.97/-5.6      | -4.08/-3.08     | -2.03/-1.45       | -1.41/-0.3        | -2.27/-6.08       | -6.06/-1.21       | -0.83/-3.22       | -0.34/-1.41       | 2.26/0.03         | -1.31/-3.37       | -7.58/-7.06       | -2.91/-0.38       | -1.49/-4.18       | -6.63/-10.01      | -10.73/-8.3       | -6.47/-10.27      | -6.34/-3.84       | -2.68/-4.59       | -5.12/-4.64       |
| Θ(157.5°) | -1.51/-0.96    | -1.77/-1.26     | -0.16/-1.49     | -4.25/-7.19     | -6.63/-6.42     | -6.64/-6.29     | -7.68/-6.2      | -5.77/-6.04       | -5.22/-4.02       | -3.17/-2.53       | -0.11/0.3         | -0.93/-2.62       | -3.95/-4.46       | -5.01/-8.74       | -8.49/-7.21       | -5.63/-3.2        | -0.88/-0.58       | -2.86/-5.97       | -7.9/-7.46        | -5.64/-2.98       | -2.18/-1.6        | -3.54/-5.43       | -4.8/-3.3         | -2.56/-2.51       |
| Θ(165°)   | -1.65/-0.85    | -1.27/-1.64     | -1.36/-1.51     | -2.04/-3.21     | -4.62/-6.95     | -6.66/-12.3     | -11.41/-7.14    | -5.87/-4.75       | -4.28/-3.36       | -2.8/-3.98        | -6.37/-5.88       | -4.41/-4.43       | -4.34/-5.63       | -7.9/-6.38        | -4.82/-4.49       | -2.89/-1.47       | -1.41/-2.84       | -5.04/-6.33       | -7.06/-6.73       | -9.75/-7.74       | -5.74/-4.27       | -2.82/-2.68       | -2.78/-2.31       | -2.66/-2.49       |
| Θ(172.5°) | -5.2/-4.4      | -3.32/-2.87     | -2.57/-1.84     | -2.38/-3.86     | -5.8/-6.68      | -7.12/-7.74     | -9.12/-9.45     | -7.55/-6.05       | -5.06/-4.04       | -3.28/-2.63       | -2.42/-1.91       | -1.52/-1.72       | -4.8/-4.65        | -6.66/-8.08       | -8.84/-8.08       | -6.46/-6.03       | -6.83/-7.73       | -7.29/-6.73       | -5.83/-5.95       | -6.94/-6.64       | -6.45/-6.74       | -6.71/-6.65       | -5.48/-6.28       | -7.34/-7.02       |
| Θ(180°)   | -5.02/-5.16    | -4.62/-4.31     | -5.32/-6.93     | -5.51/-4.49     | -4.14/-5.2      | -6.67/-7.52     | -7.29/-6.17     | -5.5/-5.24        | -4.99/-4.35       | -3.44/-3.49       | -3.92/-4.15       | -4.59/-4.85       | -4.95/-5.09       | -5.01/-5.22       | -5.71/-6.52       | -7.63/-8.93       | -8.9/-8.81        | -8.42/-7.58       | -8.02/-9.28       | -8.41/-7.07       | -5.87/-4.8        | -4.68/-4.88       | -4.73/-5.28       | -5.01/-4.34       |
| Freq(Hz)  | 6.9950Pol.     | 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°)     | -1.48/-1.53    | -1.61/-1.55     | -1.75/-0.97     | -0.32/0.01      | 0.4/0.84        | 1.63/2.1        | 1.74/1.52       | 1.3/0.84          | 0.56/0.32         | -0.29/-0.87       | -1.63/-2.07       | -2.32/-2.82       | -3.52/-4.06       | -4.05/-3.71       | -3.41/-2.92       | -2.57/-1.88       | -1.08/-0.26       | 0.14/0.14         | -0.01/0.06        | 0.78/0.87         | 0.36/0.02         | -0.02/0.49        | 0.43/-0.52        | -1.11/-1.54       |
| Θ(7.5°)   | -2.7/-3.7      | -4.55/-5.11     | -5.06/-4.36     | -3.24/-2.35     | -1.46/-0.65     | -0.38/-0.24     | -0.18/-0.18     | 0.16/0.24         | 0.44/0.44         | 0.2/-0.55         | -0.88/-1.11       | -1.1/-1.8         | -2.05/-2.13       | -1.94/-1.79       | -1.5/-1.2         | -0.78/-0.38       | 0.28/1.18         | 1.84/1.84         | 1.93/2.02         | 2.35/2.38         | 2.22/1.4          | 0.22/-0.03        | -0.07/-0.72       | -1.69/-2.09       |
| Θ(15°)    | -2.86/-4.58    | -5.08/-5.37     | -3.32/-1.98     | -0.53/0.43      | 1.28/1.49       | 1.45/1.72       | 1.81/1.32       | 0.75/0.05         | -0.31/0.51        | -1.08/-1.71       | -2.29/-2.25       | -2.02/-1.85       | -1.58/-1.61       | -1.66/-1.61       | -1.51/-1.01       | -0.3/0.4          | 1.01/1.36         | 1.53/1.87         | 2.39/3.05         | 3.46/3.78         | 3.89/3.62         | 2.67/0.91         | -0.95/-1.97       | -3.03/-2.05       |
| Θ(22.5°)  | -0.43/-1.19    | -2.61/-2.69     | -2.37/-1.27     | -0.38/0.15      | 1.09/1.93       | 2.29/2.19       | 1.5/1.28        | 0.74/0.38         | 0.15/-0.26        | -0.91/-1.49       | -1.39/-1.04       | -0.9/-1.14        | -1.08/-0.53       | -0.5/-0.76        | -0.67/-0.56       | -0.91/-1.37       | -0.94/0.06        | 1.17/1.66         | 1.99/2.56         | 3.27/3.59         | 3.81/3.78         | 3.33/2.22         | 0.57/-0.79        | -1.6/-0.23        |
| Θ(30°)    | 0.26/-0.11     | -0.14/-0.46     | -0.07/0.26      | 1.21/1.69       | 2.16/3.05       | 3.92/4.19       | 4.23/4.03       | 3.75/3.36         | 2.88/2.1          | 1.33/0.56         | -0.2/0.1          | 0.43/0.43         | 0.16/-0.69        | -2.17/-3.2        | -3.14/-3.33       | -4.37/-4.41       | -2.08/-0.95       | 0.21/0.55         | 0.61/0.66         | 0.42/0.08         | -0.07/0.37        | 0.6/0.16          | -0.43/-0.2        |                   |
| Θ(37.5°)  | -0.41/-0.19    | 0.75/-1.25      | 0.35/-1.19      | -0.09/0.05      | 1.94/2.87       | 3.37/3.88       | 3.95/3.59       | 3.21/3.16         | 2.88/2.01         | 1.21/1.22         | 1.87/1.79         | 1.86/0.23         | -0.98/-0.98       | -0.55/-0.26       | -0.57/-0.51       | -1.32/-1.99       | -1.58/-0.78       | -0.48/-0.63       | -1.13/-0.91       | 0.92/2.35         | 2.15/0.73         | -1.78/-1.95       | 0.27/0.32         | -0.03/0.48        |
| Θ(45°)    | 1.16/1.05      | 1.96/1.85       | 0.91/0.04       | 0.07/0.7        | 2.39/3.88       | 4.69/5.12       | 5.09/4.7        | 4.01/3.18         | 2.72/7.28         | 2.28/2.09         | 2.72/2.81         | 2.43/-0.09        | 0.50/39           | 0.25/-0.49        | -0.39/-0.42       | -2.89/-3.26       | -4.41/-4.39       | -2.84/-0.81       | -0.85/-1.32       | 0.01/1.03         | 1.29/-0.09        | -3.5/-3.27        | 0.62/2.6          | 1.82/1.99         |
| Θ(52.5°)  | 4.14/2.43      | 2.46/1.54       | 1.06/1.55       | 1.87/2.61       | 3.84/4.77       | 4.63/4.06       | 4.63/5.01       | 4.62/3.68         | 2.85/2.81         | 2.84/2.14         | 1.31/1.13         | 1.71/1.34         | 2.05/2.78         | 2.98/2.91         | 2.27/0.49         | 0.24/1.05         | 0.16/-1.22        | -0.97/1.07        | 1.85/1.46         | 0.16/1.29         | 3.23/4.1          | 1.49/-1.61        | -2.47/0.04        | 3.02/3.41         |
| Θ(60°)    | 4.43/2.91      | 2.33/2.74       | 1.66/3.03       | 3.94/6.2        | 4.834/7.1       | 3.51/3.26       | 3.93/4.05       | 3.95/3.87         | 3.32/2.25         | 2.46/2.94         | 2.52/2.47         | 2.09/0.95         | 1.41/3.41         | 3.85/3.44         | 0.78/1.03         | 2.56/3.17         | 1.48/-1.69        | -0.71/0.74        | 2.56/3.36         | 1.26/-1.28        | 0.34/2.15         | 3.42/3.1          | 1.96/0.43         | 2.07/3.06         |
| Θ(67.5°)  | 4.81/2.95      | 2.09/2.76       | 2.24/2.32       | 4.02/4.3        | 4.494/0.6       | 3/3.38          | 2.88/2.54       | 3.99/5.11         | 4.23/3.22         | 3.494.13          | 2.28/2.53         | 3.22/3.23         | 4.06/5.53         | 5.984.01          | 2.82/3.42         | 4.36/5.15         | 1.65/2.78         | 2.18/1.98         | 3.08/2.81         | 1.94/-0.95        | 0.28/3.47         | 3.66/3.16         | 2.68/3.16         | 3.64/4.17         |
| Θ(75°)    | 4.83/56        | 2.03/0.89       | -1.71/1.48      | 3.27/5.1        | 6.84/5.72       | 3.33/7.7        | 3.93/3.22       | 3.294.81          | 4.384.25          | 4.194.35          | 2.74/2.61         | 2.24/3.8          | 4.76/6.22         | 6.74/5.64         | 3.95/3.87         | 3.33/2.63         | 0.09/-0.02        | 0.47/0.58         | 1.05/1.14         | 0.71/3.4          | 3.04/3.45         | 3.054.17          | 4.984.39          | 5.274.26          |
| Θ(82.5°)  | 4.45/3.08      | 3.37/2.88       | 0.74/2.48       | 3.476.21        | 6.93/5.13       | 0.793.56        | 5.244.69        | 4.576.23          | 4.994.11          | 3.44/0.1          | 1.97/1.47         | 2.754.08          | 4.916.27          | 7.085.62          | 5.073.22          | 3.24/1.86         | 0.14              |                   |                   |                   |                   |                   |                   |                   |





# Radiated Composite Gain Data\_6GHz

# Appendix B

|           |               |                |                |                |                |                |                |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |
|-----------|---------------|----------------|----------------|----------------|----------------|----------------|----------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
| Θ(22.5°)  | -10.41/-11.52 | -10.9/-13.29   | -18.46/-18.77  | -12.67/-12.36  | -11.42/-11.45  | -14.46/-14.33  | -14.15/-15.07  | -19.43/-19.32    | -17.23/-14.14    | -15.1/-17.53     | -19.19/-19.82    | -19.29/-18.86    | -19.25/-18.62    | -18.18/-18.8     | -14/-9.87        | -7.33/-5.85      | -5.28/-4.68      | -4.6/-4.51       | -4.35/-4.96      | -6.63/-10.94     | -12.72/-11.61    | -11.01/-11.53    | -12.89/-12.23    | -11.81/-10.81    |
| Θ(30°)    | -16.31/-12.07 | -9.3/-8.74     | -7.68/-9.77    | -10.5/-13.43   | -15.75/-19.79  | -19.55/-18.74  | -18.24/-18.46  | -15.31/-14.2     | -15.02/-13.7     | -11.22/-9.8      | -11.09/-16.3     | -18.65/-15.99    | -14.77/-17.24    | -19.62/-18.41    | -17.57/-12.92    | -10.41/-9.3      | -8.72/-8.1       | -7.64/-8.59      | -10.09/-10.66    | -11.22/-13.91    | -19.6/-15.27     | -10.32/-8.5      | -8.43/-10.74     | -14.28/-18.64    |
| Θ(142.5°) | -17.41/-19.03 | -11.48/-6.71   | -10.33/-15.11  | -14.18/-9.46   | -8.73/-8.15    | -9.29/-13.38   | -17.6/-19.68   | -19.5/-19.68     | -13.34/-11.64    | -12.12/-14.09    | -13.59/-16.91    | -18.16/-12.46    | -13.51/-20.27    | -18.61/-14.16    | -15.09/-15.91    | -14.1/-11.91     | -13.1/-19.76     | -9.65/-10.45     | -12.13/-13.66    | -14.71/-18.21    | -19.39/-19.66    | -13.77/-9.32     | -7.09/-8.19      | -9.59/-10.17     |
| Θ(45°)    | -11.67/-19.65 | -11.84/-7.05   | -10.13/-10.96  | -8.55/-8.61    | -7.8/-8.81     | -9.54/-12.18   | -12.82/-14.7   | -18.28/-19.04    | -12.94/-9.26     | -7.14/-7.24      | -8.98/-15.2      | -18.71/-11.5     | -14.12/-18.82    | -13.67/-10.34    | -12.73/-12.44    | -10.26/-9.83     | -9.84/-11.56     | -12.37/-11.23    | -11.82/-12.02    | -14.3/-19.88     | -19.15/-14.96    | -14.41/-19.5     | -18.1/-11.77     | -13.98/-11.65    |
| Θ(52.5°)  | -14.56/-16.66 | -10.79/-10.17  | -10.4/-8.82    | -9.57/-10.78   | -12.04/-14.51  | -13.34/-10.75  | -11.52/-10.69  | -19.14/-18.9     | -15.63/-11.74    | -9.83/-9.23      | -11.24/-19.7     | -19.85/-16.07    | -15.31/-15.37    | -9.96/-8.98      | -9.06/-7.13      | -7.17/-6.73      | -7.62/-8.3       | -9.04/-8.25      | -5.45/-6.49      | -7.71/-9.41      | -19.53/-11.31    | -8.06/-8.72      | -19.36/-19.94    | -18.11/-15.63    |
| Θ(60°)    | -17.51/-14.67 | -10.42/-11.8   | -14.55/-9.95   | -10.44/-11.33  | -10.93/-11.02  | -9.95/-6.94    | -5.09/-5.18    | -6.65/-9.89      | -16.18/-18.27    | -13.23/-10.4     | -8.45/-13.55     | -19.81/-18.33    | -20.34/-8.47     | -6.62/-9.82      | -10.28/-6.85     | -5.98/-7.19      | -7.31/-9.21      | -11.15/-8.28     | -6.75/-6.67      | -14.9/-19.67     | -8.97/-9.13      | -11.12/-19.1     | -12.81/-13.48    |                  |
| Θ(67.5°)  | -14.38/-11.1  | -8.39/-12.93   | -19.89/-18.47  | -11.13/-8.73   | -8.46/-12.75   | -12.45/-10.84  | -10.56/-7.74   | -5.56/-6.01      | -7.71/-19.93     | -18.78/-18.38    | -12.74/-11.75    | -19.01/-13.67    | -18.93/-9.76     | -5.44/-6.38      | -5.2/-4.79       | -7.35/-10.1      | -11.45/-10.87    | -11.7/-14.31     | -14.31/-13.5     | -8.62/-9.49      | -10.79/-16.69    | -10.99/-13.51    | -18.16/-17.45    | -18.16/-18.93    |
| Θ(75°)    | -12.14/-8.27  | -6.56/-11.66   | -14.96/-9.87   | -11.46/-8.88   | -8.18/-16.05   | -13.1/-12.15   | -18.56/-19     | -19.42/-11.81    | -10.66/-14.25    | -11.35/-13.16    | -11.71/-11.13    | -18.37/-14.04    | -19.8/-7.8       | -8.43/-7.1       | -5.18/-6.71      | -10.23/-11.91    | -13.11/-12.34    | -13.23/-9.69     | -8.74/-8.17      | -11.95/-15.38    | -13.18/-13.6     | -12.33/-11.48    | -16.07/-11.89    | -17.97/-19.53    |
| Θ(82.5°)  | -9.81/-7.82   | -5.28/-7.56    | -11.61/-18.2   | -19.33/-15.6   | -10.43/-9.3    | -6.45/-8.53    | -6.41/-6.01    | -10.4/-10.42     | -11.06/-19.58    | -7.97/-4.08      | -6.41/-11.85     | -16.47/-19.62    | -19.84/-14.12    | -9.55/-9.21      | -6.69/-7.7       | -9.28/-12.07     | -12.26/-10.98    | -18.11/-19.54    | -19.32/-20.05    | -19.58/-18.87    | -15.2/-10.36     | -11.26/-19.98    | -11.3/-8.12      | -9.47/-11.79     |
| Θ(90°)    | -8.65/-7.64   | -9.33/-9.75    | -9.06/-11.85   | -15.57/-14.09  | -9.9/-7.13     | -4.85/-3.45    | -3.6/-5.88     | -10.31/-11.93    | -8.91/-17.97     | -13.35/-7.22     | -5.94/-8.8       | -18.6/-16.87     | -19.32/-19.13    | -18.76/-12.63    | -12.2/-12.24     | -15.98/-18.89    | -8.81/-8.62      | -8.66/-8.08      | -8.02/-9.9       | -11.6/-15.85     | -11.1/-9.43      | -10.91/-15.72    | -14.68/-10.82    | -7.86/-10.77     |
| Θ(97.5°)  | -10.94/-14.46 | -16.65/-10.3   | -7.01/-13.34   | -18.99/-19.78  | -10.38/-7.1    | -4.54/-4.41    | -4.37/-7.08    | -10.44/-8.98     | -7.96/-12.72     | -16.73/-11.09    | -17.89/-12.44    | -18.96/-16.74    | -12.05/-16.38    | -11.19/-10.9     | -13.12/-10.46    | -8.28/-10.39     | -8.6/-8.21       | -8.78/-9.1       | -11.59/-11.66    | -12.04/-15.7     | -19.32/-20.05    | -19.58/-18.87    | -11.61/-12.92    | -9.37/-10.39     |
| Θ(105°)   | -10.07/-13.64 | -19.42/-18.94  | -9.03/-8.68    | -14.78/-18.8   | -13.16/-7.38   | -2.96/-3.57    | -6.57/-9.86    | -7.09/-4.12      | -6.72/-12.19     | -19.71/-17.98    | -10.45/-8.8      | -13.63/-12.08    | -17.86/-13.12    | -12.38/-18.43    | -17.74/-11.23    | -15.55/-15.56    | -11.01/-8.59     | -9.8/-11.91      | -13.13/-11.14    | -8.75/-15.85     | -16.98/-19.7     | -20.14/-15.07    | -19.32/-11.59    | -8.41/-6.34      |
| Θ(112.5°) | -7.59/-10.72  | -19.01/-16.06  | -5.67/-2.45    | -3.11/-9.6     | -7.72/-14.38   | -9.69/-9.79    | -14.97/-12.04  | -7.82/-5.07      | -6.83/-8.26      | -15.51/-16.97    | -13.85/-7.15     | -9.5/-13.46      | -11.94/-15.38    | -11.41/-13.22    | -15.14/-18.76    | -15.8/-15.23     | -10.04/-8.06     | -9.08/-6.48      | -3.87/-6.11      | -6.05/-8.87      | -13.45/-18.81    | -14.62/-13.31    | -17.94/-6.32     | -8.94/-7.89      |
| Θ(120°)   | -3.98/-10.43  | -10.05/-7.12   | -12.56/-2.52   | -1.88/-4.73    | -16.16/-14.54  | -13.88/-11.74  | -14.17/-11.79  | -7.58/-5.62      | -5.79/-4.28      | -6.55/-4.19      | -11.11/-8.04     | -10.14/-8.04     | -13.66/-17.92    | -11.17/-18.88    | -19.27/-16.26    | -12.95/-16.92    | -19.81/-13.06    | -12.72/-8.51     | -10.48/-8.92     | -10.31/-10.66    | -11.12/-13.19    | -11.87/-8.42     | -11.41/-6.57     | -5.29/-4.31      |
| Θ(127.5°) | -5.81/-12.88  | -11.85/-15.8   | -15.86/-3.12   | -1.58/-6.02    | -12.01/-13.67  | -12.83/-19.68  | -17.72/-12.59  | -9.81/-9.08      | -7.15/-6.93      | -12.83/-9.07     | -11.99/-14.74    | -11.68/-10.25    | -10.67/-11       | -15.9/-8.88      | -12.84/-10.07    | -7.27/-18.68     | -7.5/-9.88       | -14.71/-7.1      | -12.39/-15.7     | -8.97/-7.34      | -16.76/-18.69    | -16.13/-7.59     | -9/-7.21         |                  |
| Θ(135°)   | -10.29/-18.92 | -12.17/-10.99  | -19.36/-7.03   | -5.83/-8.78    | -10.29/-18.71  | -10.97/-7.88   | -7.13/-10.47   | -13.21/-9.45     | -8.37/-8.66      | -8.92/-7.68      | -19.08/-12.21    | -7.98/-8.67      | -10.18/-9.55     | -5.67/-4.75      | -18.76/-8.59     | -17.68/-7.5      | -5.58/-7.32      | -3.31/-6         | -17.48/-13.62    | -14.72/-9.99     | -8.55/-11.31     | -19.44/-9.71     | -15.79/-14.98    | -9.02/-8.83      |
| Θ(142.5°) | -17.08/-16.63 | -12.97/-20.11  | -12.49/-7.99   | -7.79/-16.57   | -19.66/-15.63  | -18.99/-13.78  | -13.75/-19.54  | -13.64/-8.14     | -13.35/-18.78    | -20.03/-15.82    | -17.59/-16.42    | -13.92/-9.47     | -13.67/-13.33    | -5.7/-14.24      | -19.34/-14.61    | -10.15/-12.28    | -18.25/-11.02    | -8.05/-16.81     | -17.87/-8.08     | -14.77/-15.10    | -9.86/-20.11     | -7.04/-7.54      | -7.08/-7.27      | -9.87/-8.98      |
| Θ(150°)   | -9.1/-11.07   | -19.42/-18.62  | -14.66/-14.7   | -14.85/-11.91  | -9.94/-9.53    | -11.57/-15.79  | -14.53/-17.87  | -13.65/-14.78    | -17.55/-12.53    | -13.21/-18.85    | -16.71/-11.09    | -13.65/-12.55    | -9.2/-12         | -18.44/-19.63    | -17.45/-16.25    | -15.1/-17.75     | -9.65/-20.11     | -19.61/-18.21    | -17.99/-13.6     | -11.87/-11.79    | -11.61/-11.26    | -11.2/-8.3       | -10.27/-11.46    |                  |
| Θ(157.5°) | -13.42/-12.49 | -20.45/-14.85  | -12.49/-19.07  | -18.14/-26     | -10.51/-9.52   | -7.59/-6.98    | -9.67/-8.77    | -9.32/-15.5      | -19.02/-17.64    | -12.08/-19.73    | -13.56/-13.44    | -18.9/-13.39     | -13.65/-12.53    | -10.66/-14.84    | -17.04/-9.03     | -9.02/-10.37     | -12.34/-14.06    | -12.24/-11.51    | -17.3/-19.1      | -19.11/-15.7     | -12.06/-9.45     | -7.35/-10.98     | -19.62/-19.87    | -10.7/-11.58     |
| Θ(165°)   | -10.55/-9.5   | -10.72/-9.42   | -10.57/-12.53  | -11.51/-10.8   | -8.97/-8.1     | -10.48/-15.09  | -18.94/-19.24  | -19.29/-15.02    | -11.01/-8.06     | -6.53/-7.65      | -9.75/-10.41     | -9/-7.6          | -9.21/-15.35     | -17.77/-16.34    | -13.83/-11.64    | -10.81/-9.14     | -13.05/-17.25    | -17.46/-14.98    | -14.2/-14.86     | -15.93/-18.92    | -20.26/-19.44    | -13.29/-12.09    | -9.84/-10.77     | -13.55/-16.93    |
| Θ(172.5°) | -20.06/-16.09 | -12.42/-12.42  | -11.97/-11.52  | -15.86/-19.31  | -18.72/-16.37  | -14.86/-13.64  | -14.84/-14.39  | -13.26/-13.27    | -14.09/-13.15    | -11.17/-9.35     | -5.01/-4.3       | -4.57/-5.92      | -8.41/-12.63     | -19.41/-17.78    | -13.38/-11.89    | -11.86/-12.9     | -12.86/-12.22    | -15.24/-14.17    | -16.55/-12.75    | -10.95/-11.62    | -16.37/-18.67    | -18.76/-18.93    | -18.77/-18.51    |                  |
| Θ(180°)   | -9.89/-8.37   | -8.34/-8.43    | -9.46/-9.72    | -5.74/-6.36    | -5.74/-6.19    | -7.95/-12.14   | -12.2/-11.03   | -11.28/-12.7     | -13.18/-11.94    | -9.96/-9.6       | -11.19/-11.47    | -10.73/-8.55     | -8.18/-9.16      | -10.06/-10.21    | -9.62/-9.98      | -10.27/-11.85    | -11.5/-12.84     | -13.66/-14.18    | -16.29/-18.9     | -18.44/-19.43    | -15.63/-13.8     | -17.77/-19.33    | -19.57/-19.67    | -14.85/-11.1     |
| Freq(Hz)  | 6.995GPol.    | ThetaAnt. 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°)     | -3.63/-3.26   | -3.58/-4.03    | -4.68/-5.59    | -7.32/-9.34    | -9.86/-10.23   | -9.38/-9.84    | -10.14/-10.47  | -11.02/-11.24    | -11.98/-11.41    | -10.81/-10.28    | -8.79/-8.28      | -7.21/-6.93      | -6.84/-6.86      | -6.63/-6.4       | -6.69/-7.14      | -8.08/-8.65      | -9.53/-10.55     | -11.95/-13.76    | -17.2/-17.49     | -12.14/-8.91     | -8.14/-7.37      | -6.84/-5.25      | -4.41/-4.3       | -4.36/-4.12      |
| Θ(7.5°)   | -6.49/-5.38   | -5.69/-5.99    | -6.65/-7.55    | -8.11/-9.92    | -10.06/-10.86  | -11.92/-15.55  | -19.9/-19.52   | -16.93/-12.79    | -8.82/-8.02      | -6.48/-6.81      | -5.35/-4.44      | -3.61/-4.05      | -4.17/-4.17      | -4.73/-5.12      | -5.67/-6.05      | -8.42/-9.48      | -8.67/-9.68      | -9.76/-10.43     | -11.58/-11.77    | -11.23/-10.18    | -10.19/-10.93    | -12.56/-9.96     | -8.12/-7.77      | -8.55/-7.6       |
| Θ(15°)    | -8.43/-7.59   | -6.52/-6.93    | -6.59/-6.83    | -7.45/-9.16    | -10.38/-12.57  | -15.62/-14.7   | -14.79/-16.98  | -17.89/-15.08    | -11.57/-9.68     | -8.27/-8.6       | -6.44/-4.41      | -3.2/-2.83       | -3.08/-3.57      | -3.92/-3.47      | -5.3/-6.25       | -7.87/-9.52      | -11.41/-13.58    | -17.35/-19.67    | -16.26/-13.39    | -10.08/-6.54     | -4.85/-4.5       | -6.35/-9.21      | -11.36/-12.43    | -14.2/-10.16     |
| Θ(22.5°)  | -6.76/-5.37   | -6.06/-6.41    | -6.54/-6.78    | -8.42/-12.15   | -13.85/-15.52  | -14.96/-13.97  | -15.23/-12.91  | -11.08/-8.98     | -8.55/-9.98      | -8.21/-8.02      | -7.29/-5.9       | -3.91/-3.25      | -3.15/-3.39      | -3.58/-4.02      | -4.59/-5.52      | -6.67/-7.4       | -8.37/-10.31     | -13.38/-14.6     | -12.06/-10.07    | -7.21/-5.87      | -5.91/-7.22      | -9.48/-16.24     | -17.51/-8.87     |                  |
| Θ(30°)    | -7.29/-6.8    | -7.98/-8.12    | -6.02/-5.79    | -6.69/-8.85    | -8.27/-11.07   | -12.15/-12.3   | -12.48/-10.41  | -7.94/-5.83      | -5.12/-5.23      | -5.88/-5.54      | -4.95/-4.64      | -4.83/-5.05      | -4.62/-4.75      | -4.74/-4.82      | -3.87/-2.67      | -2.25/-1.9       | -2.53/-4.01      | -5.6/-6.72       | -7.29/-9.43      | -14.31/-17.01    | -19.75/-19.09    | -15.47/-7.99     | -6.34/-8.22      | -12.48/-11.01    |
| Θ(37.5°)  | -8.23/-7.05   | -6.9/-7.1      | -9.03/-14.34   | -15.88/-18.06  | -18.17/-18.49  | -15.32/-12.58  | -10.8/-8.5     | -6.45/-4.53      | -3.87/-3.56      | -3.09/-2.82      | -3.2/-3.94       | -3.27/-3.09      | -2.77/-3.2       | -3.29/-3.1       | -2.25/-0.91      | -0.71/-1.58      | -2.72/-3.95      | -6.31/-11.39     | -19.3/-18.89     | -12.01/-8.1      | -6.86/-8.36      | -14.09/-16.18    | -8.7/-7.5        | -11.69/-11.15    |
| Θ(45°)    | -3.73/-3.46   | -3.39/-6.41    | -8.88/-11.32   | -13.74/-19.45  | -15.23/-9.92   | -6.62/-6.15    | -5.76/-4.06    | -1.93/-9.98      | -1.22/-2.78      | -2.81/-2.25      | -2.31/-3.76      | -3.11/-1.7       | -1.31/-1.73      | -1.59/-0.89      | -1.64/-2.54      | -3.13/-5.26      | -7.51/-8.44      | -12.25/-18.26    | -11.68/-8.08     | -6.09/-8.3       | -12.99/-15.13    | -8.02/-6.73      | -5.93/-5.54      |                  |
| Θ(52.5°)  | -0.09/-1.54   | -3.02/-6.38    | -8.38/-9.78    | -19.04/-13.74  | -8.85/-6.43    | -6.43/-6.64    | -6.16/-5.09    | -4.59/-4.66      | -6.52/-4.11      | -1.06/-1.36      | -3.94/-3.41      | -2.41/-4.53      | -2.65/-0.88      | -0.98/-2.15      | -0.50/-6.88      | 0.29/-2.3        | -1.04/-2.86      | -3.41/-3.7       | -3.88/-5.66      | -0.93/-6.32      | -2.82/-2.07      | -5.21/-7.5       | -5.14/-2.75      | -1.99/-1.58      |
| Θ(60°)    | -1.43/-3.06   | -5.58/-5.59    | -9.03/-11.72   | -10.11/-5.82   | -4.76/-3.9     | -4.85/-6.25    | -6.68/-4.79    | -2.75/-1.58      | -2.4/-1.7        | -4.49/-2.21      | -2.87/-1.72      | -0.52/-5.95      | -4.02/-0.01      | -0.46/-1.53      | -1.11/-0.52      | -0.430/-7.3      | -1.16/-1.44      | -4.33/-3.34      | -2.01/-1.58      | -4.19/-7.12      | -4.28/-1.7       | -1.48/-2.15      | -1.43/-1.94      | -4.42/-4.98      |
| Θ(67.5°)  | -0.04/-1.32   | -3.79/-3.01    | -11.97/-7.96   | -5.29/-8.02    | -4.68/-3.32    | -7.58/-11.04   | -11.38/-13.61  | -6.52/-2.17      | -1.85/-3.26      | -2.              |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |



# Radiated Composite Gain Data\_6GHz

# Appendix B

|           |                  |                |                |                |                |                |                |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |
|-----------|------------------|----------------|----------------|----------------|----------------|----------------|----------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
| Θ(75°)    | -7.81/3.55       | -3.69/4.48     | -7.34/-5.77    | -7.03/-8.28    | -9.26/-12.99   | -17.21/-17.29  | -11.95/-12.29  | -14.51/-10.85    | -9.33/-6.7       | -5.94/-7.91      | -15.27/-15.4     | -16.67/-18.7     | -18.23/-10.15    | -6.32/-2.1       | -2.99/4.5        | -4.2/-5.17       | -6.8/-6.82       | -6.81/-7.6       | -9.23/-12.27     | -19.13/-14.63    | -11.36/-9.11     | -12.08/-8.64     | -5.71/-2.88      | -1.92/-4.27      |
| Θ(82.5°)  | -1.78/-0.96      | -1.11/-1.75    | -3.31/-5.33    | -8.13/-6.86    | -11.94/-19.71  | -15.22/-7.57   | -8.18/-12.14   | -19.18/-16.28    | -10.85/-6.65     | -7.16/-8.03      | -18.22/-19.13    | -19.94/-18.98    | -12.28/-8.36     | -2.84/-1.47      | -1.08/-2.41      | -2.4/-4.2        | -3.49/-4.51      | -5.03/-5.12      | -8.53/-11.36     | -11.08/-9.9      | -6.39/-4.55      | -6.8/-6.16       | -4.58/-1.12      | -0.94/-1.46      |
| Θ(90°)    | -1.44/0.69       | 0.51/-1.38     | -4.62/-6.43    | -5.57/-3.82    | -9.43/-8.06    | -19.82/-8.33   | -8.46/-12.11   | -19.75/-18.9     | -18.48/-7.47     | -6.59/-8.1       | -14.97/-19.79    | -9.12/-13.96     | -10.85/-7.16     | -5.44/-3.45      | -3.25/-2.44      | -2.23/-2.18      | -3.22/-5.35      | -2.95/-5.56      | -11.17/-12.82    | -7.62/-2.83      | -1.25/-1.27      | -3.64/-3.45      | -3.43/-5.37      | -6.23/-6.69      |
| Θ(97.5°)  | 0.33/-1.88       | 0.83/-0.56     | -3.7/-5.88     | -6.18/-5.55    | -7.6/-7.61     | -10.67/-4.49   | -3.83/-5.48    | -7.99/-14.96     | -15.94/-16.75    | -9.85/-13.96     | -15.68/-16.58    | -14.75/-9.08     | -7.71/-7.08      | -5.36/-1.51      | -4.65/-2.68      | -1.15/0.35       | -2.37/-4.74      | -11.76/-9.09     | -12.82/-14.98    | -8.06/-2.27      | -0.81/-0.21      | -1.72/-3.6       | -3.6/-8.81       | -8.38/-1.84      |
| Θ(105°)   | <b>2.77/3.85</b> | 3.3/2.1        | -1.94/-1.11    | -1.57/-3.11    | -17.4/-20.02   | -9.93/-6.11    | 4.65/-5.72     | -7.76/-12.86     | -15.22/-19.52    | -17.96/-18.49    | -18.31/-13.31    | -16.21/-8.29     | -9.14/-6.87      | -8.86/-5.6       | -7.59/-7.23      | -8.07/-6.11      | -7.74/-8.78      | -9.07/-9.84      | -15.56/-11.59    | -5.42/-3.08      | -1.61/-2.48      | -5.59/-7.42      | -4.07/-0.96      | -0.32/-2.6       |
| Θ(112.5°) | 2.83/5.4         | 3.762/0.9      | -0.320/0.9     | -1.06/-3.15    | -8.18/-14.64   | -14.51/-10.38  | -8.16/-11.28   | -19.05/-13.64    | -10.6/-12.64     | -15.35/-19.35    | -15.53/-14.53    | -11.35/-11.71    | -6.31/-9.12      | -7.37/-5.21      | -6.26/-19.29     | -11.43/-15.81    | -9.42/-14.69     | -13.61/-17.86    | -11.98/-12.12    | -9.98/-8.69      | -13.02/-12.19    | -10.27/-5.82     | -3.17/-0.62      | 0.41/-1.89       |
| Θ(120°)   | 0.29/0.18        | 1.72/-1.08     | -1.99/-1.29    | 0.57/-3.61     | -5.38/-11.67   | -12.07/-7.95   | -7.12/-8.01    | -9.66/-9.07      | -8.72/-8.92      | -12.01/-17.62    | -13.52/-8.94     | -9.87/-7.52      | -12.38/-5.49     | -6.72/-9.26      | -9.82/-8.27      | -19.16/-13.26    | -18.65/-14.19    | -17.42/-19.25    | -12.23/-12.92    | -13.22/-9.63     | -8.76/-5.88      | -4.02/-3.77      | -8.58/-1.33      | -1.20/0.2        |
| Θ(127.5°) | -11.09/-4.78     | -4.81/-3.81    | -4.6/-2.17     | -3.99/-3.63    | -11.22/-13     | -9.14/-10.99   | -12.55/-15.91  | -14.94/-18.16    | -11.12/-10.38    | -11.48/-13.41    | -18.67/-12.47    | -16.63/-17.09    | -18.92/-11.41    | -10.32/-2.85     | -3.18/-13.03     | -15.19/-6.97     | -12.46/-11.85    | -19.42/-13.63    | -11.88/-11.33    | -7.59/-5.31      | -6.64/-8.85      | -4.03/-4.15      | -2.2/-5.11       | -4.92/-13.9      |
| Θ(135°)   | -1.04/0.35       | 0.70/96        | 0.84/-1.21     | -1.81/-9.47    | -8.82/-9.03    | -15.35/-17.47  | -8.57/-6.97    | -8.69/-10.74     | -16.53/-15.2     | -12.4/-16.32     | -18.76/-19.93    | -13.14/-14.59    | -5.69/-8.76      | -16.88/-7.82     | -12.84/-10.11    | -3.85/-5         | -10.14/-8.74     | -18.96/-8.71     | -6.49/-7.07      | -3.98/-1.14      | -0.6/-3.3        | -7.40/72         | 1.25/-3.8        | -7.11/-2.07      |
| Θ(142.5°) | -0.73/-0.91      | 0.99/-1.43     | -0.71/-2.33    | 4.88/-4.43     | -5.7/-6.85     | -11.92/-18.94  | -17.71/-12.85  | -12.66/-18.74    | -19.57/-18.03    | -13.32/-15.08    | -20.32/-7.63     | -9.37/-10.75     | -10.17/-12.82    | -10.99/-8.7      | -18.7/-9.39      | -4.7/-16.87      | -6.19/-11.64     | -18.52/-17.65    | -14.45/-12.45    | 7.57/-3.78       | 4.94/-10.14      | -8.04/-3.74      | -1.97/-2.79      | -4.37/-0.23      |
| Θ(150°)   | -1.3/-13.4       | -2.62/-1.24    | -4.09/-6.4     | -8.02/-9.69    | -6.95/-9.24    | -14.56/-19.43  | -17.15/-16.02  | -17.86/-19.16    | -19.67/-19       | -19.48/-13.29    | -12.48/-19.25    | -13.47/-20.07    | -10.83/-19.26    | -7.32/-5.53      | -9.73/-18.66     | -13.78/-8.59     | -11.5/-19.32     | -16.34/-17.89    | -13.44/-13.57    | -15.12/-10.61    | -6.04/-3         | -4.47/-5.55      | -4.6/-0.7        | -7.42/-0.56      |
| Θ(157.5°) | -2.51/-0.34      | -1.33/-2.29    | -3.25/-5.35    | -8.24/-8.78    | -10.95/-11.94  | -12.82/-17.19  | -18.87/-19.03  | -19.09/-19.37    | -18.98/-14.22    | -18.68/-18.95    | -18.49/-19.59    | -14.04/-8.4      | -7.4/-10.37      | -14.81/-17.04    | -12.63/-19.42    | -14.59/-13.89    | -11.83/-14.3     | -14.18/-12.24    | -11.39/-10.85    | -13.28/-12.1     | -10.25/-9.81     | -10.25/-9.81     | -10.25/-9.81     | -6.48/-5.46      |
| Θ(165°)   | -3.63/-3.24      | -2.48/-3.16    | -6.44/-10.63   | -11.51/-10.41  | -11.3/-15.58   | -19.83/-19.91  | -15.99/-12.66  | -11.55/-11.26    | -9.55/-9.27      | -12.48/-19.47    | -16.82/-12.5     | -9.71/-8.36      | -8.06/-8.45      | -12.2/-18.6      | -15.25/-9.72     | -7.38/-7.46      | -9.33/-12.33     | -13.39/-17.13    | -19.13/-18.72    | -15.17/-11.42    | -10.72/-10.24    | -9.08/-5.95      | -3.08/-2.96      | -4.42/-4.35      |
| Θ(172.5°) | -4.63/-5.25      | -6.95/-8.47    | -8.45/-9.52    | -10.8/-11.56   | -13.38/-17.51  | -18.76/-19.36  | -18.81/-19.53  | -19.19/-17.38    | -15.84/-15.45    | -17.88/-18.6     | -19.77/-15.02    | -13/-12.89       | -15.11/-15.55    | -14.32/-13.15    | -11.95/-11.65    | -11.94/-12.74    | -14.58/-14.17    | -13.48/-14.06    | -17.07/-19.23    | -16.36/-11.56    | -8.34/-8.43      | -3.65/-3.23      | -2.97/-3.6       | -3.15/-3.33      |
| Θ(180°)   | -7.41/-9.62      | -9.46/-8.1     | -7.86/-8.42    | -8.03/-10.78   | -12.84/-14.97  | -14.27/-15.59  | -14.73/-13.59  | -16.11/-15.49    | -11.69/-9.38     | -8.55/-9.52      | -11.2/-12.88     | -12.73/-12.57    | -12.89/-13.88    | -17.4/-18.89     | -19.27/-19.33    | -19.88/-19.37    | -18.62/-17.36    | -16.72/-15.91    | -14.62/-12.84    | -13.1/-11.49     | -10.32/-8.91     | -8.17/-9.36      | -8.72/-8.23      | -7.06/-7.65      |
| Freq(Hz)  | 6.175GPdL        | ThetaAnt. 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°)     | -14.37/-17.83    | -19.16/-22.53  | -9.74/-8.06    | -6.57/-9.96    | -7.44/-5.8     | -6.57/-6.84    | -7.07/-7.17    | -7.57/-7.78      | -7.81/-7.75      | -7.94/-8.34      | -9.11/-10.13     | -12.5/-14.03     | -14.11/-13.01    | -10.78/-8.12     | -5.66/-3.87      | -3.13/-2.47      | -1.34/-1.27      | -1.137/-1.44     | -1.34/-1.27      | -2.03/-2.92      | -4.56/-6.92      | -3.70/-5.71      | -2.34/-3.97      | -1.92/-3.08      |
| Θ(7.5°)   | -16.96/-19.12    | -14.03/-8.86   | -6.94/-6.3     | -5.8/-4.9      | -3.25/-2.43    | -2.12/-1.58    | -1.46/-1.16    | -1.02/-0.99      | -1.13/-2.16      | -2.83/-4.15      | -4.39/-5.08      | -6.32/-8.21      | -11.26/-14.89    | -17.16/-16.65    | -13.48/-11.18    | -9.01/-7.79      | -7.74/-8.35      | -8.85/-8.34      | -7.98/-7.61      | -8.01/-7.75      | -7.92/-8.13      | -8.36/-8.96      | -9.75/-10.19     | -9.8/-13.09      |
| Θ(15°)    | -18.11/-19.61    | -13.79/-9.81   | -6.43/-4.31    | -3.81/-1.95    | -0.9/-0.33     | -0.41/-0.15    | -0.18/-0.54    | -1.2/-1.76       | -2.01/-2.28      | -3.03/-4.44      | -6.23/-7.29      | -7.84/-8.43      | -9.75/-13.1      | -16.51/-17.85    | -18.28/-14.69    | -12.56/-11.56    | -11.58/-11.71    | -10.69/-9.14     | -7.84/-7.09      | -6.39/-6.52      | -7.06/-8.74      | -12.07/-15.59    | -18.63/-16.04    | -14/-17.72       |
| Θ(22.5°)  | -15.85/-18.6     | -17.8/-14.22   | -8.43/-4.1     | -1.60/-3.2     | 1.23/-1.43     | 1.53/-1.49     | 1.31/08        | 0.64/0.09        | -1.08/-2.82      | -4.87/-6.87      | -8.22/-9.29      | -8.47/-8.08      | -8.64/-10.82     | -12.63/-13.91    | -14.16/-12.32    | -9.38/-7.52      | -5.66/-4.36      | -3.36/-2.49      | -1.04/-0.53      | -1.18/-2.78      | -5.59/-8.69      | -14.43/-18.64    | -19.13/-17.26    |                  |
| Θ(30°)    | -15.15/-17.18    | -17.97/-12.19  | -7.86/-3.57    | -0.76/0.95     | 1.43/-1.32     | 1.35/-1.96     | 2.55/-2.64     | 2.46/2.08        | 1.48/0.85        | 0.1/-1.17        | -3.36/-4.57      | -6.28/-9.51      | -10.92/-9.3      | -7.09/-7.57      | -11.9/-20.42     | -19.99/-12.85    | -9.26/-8.51      | -9.27/-8.26      | -5.86/-4.15      | -3.66/-2.74      | -1.59/-2.13      | 4.53/-7.72       | -15.55/-18.98    | -12.29/-12.67    |
| Θ(37.5°)  | -6.06/-7.63      | -8.75/-18.95   | -8.11/-3.17    | 1.37/2.71      | 3.22/66        | 2.85/-2.93     | 1.95/0.7       | 0.28/0.34        | 0.17/-0.56       | -1.23/-2.8       | -4.58/-3.73      | -5.11/-8.83      | -6.67/-5.85      | -5.2/-8.82       | -19.62/-19.36    | -16.19/-12.56    | -11.71/-12.3     | -18.38/-12.72    | -18.38/-19.11    | -9.8/-7.7        | -4.8/-0.5        | -6.67/-15.92     | -17.49/-13.21    | -8.95/-5.63      |
| Θ(45°)    | 3.18/-4          | -7.07/-14.82   | -7.7/-0.66     | 2.52/3.48      | 3.132/-92      | 2.47/2.21      | 2.46/1.96      | 1.23/0.3         | 0.34/-1.02       | -1.24/-2.11      | 4.04/-2.84       | 4.28/-5.48       | 6.48/-9.09       | -10.08/-10.45    | -14.14/-13.21    | -11.49/-12.49    | 9.55/-9.28       | -12.05/-11.07    | -11.36/-18.56    | -19.27/-11.8     | -7.88/-4.96      | -3.99/-5.12      | -6.97/-7.07      | -6.07/-5.56      |
| Θ(52.5°)  | 0.11/-0.47       | -3.69/-11.73   | -3.49/0.95     | 3.97/3.31      | 2.37/0.72      | -0.19/0.04     | 1.37/1.71      | 1.24/0.7         | 0.43/-0.56       | -1.2/-0.3        | -3.3/-3.72       | -4.72/-4.07      | -5.55/-8.12      | -8.01/-7.75      | -12.84/-20.06    | -19.63/-20.05    | -19.01/-19.89    | -18.51/-18.4     | -11.56/-11.22    | -12.55/-19.56    | -16.48/-14.47    | -13.31/-12.23    | -9.21/-6.7       | -4.93/-1.63      |
| Θ(60°)    | 0.32/0.47        | -2.39/-8.13    | -2.192/89      | 4.193/31       | 1.62/0.46      | 2.02/2.57      | 2.832/-54      | 2.192/-0.2       | 1.56/-0.01       | -0.94/-0.96      | -2.46/-4.03      | -5.16/-3.81      | -3.5/-3.65       | -7.1/-10         | -9.41/-9.79      | -7.84/-6.78      | -6.75/-5.87      | -8/-14.25        | -14.75/-11.11    | -11.57/-12       | -12.38/-12.78    | -6.49/-7.7       | -11.08/-8.86     | -4.28/-1.47      |
| Θ(67.5°)  | 0.37/-0.27       | -3.5/-2.92     | -1.31/-1.91    | 2.21/1.43      | 0.02/0.24      | 2.49/3.74      | 3.382/-71      | 2.462/-48        | 1.93/0.28        | -1.15/-1.27      | -4.33/-4.64      | -5.23/-3.98      | -1.45/-1.79      | -2.27/-5.81      | -7.77/-3.41      | -3.89/-3.4       | -4.43/-5.93      | -6.49/-17.57     | -12.14/-9.36     | -9.97/-9.06      | -6.84/-3.77      | -2.97/-4.65      | -11.02/-12.86    | -5.05/-1.06      |
| Θ(75°)    | -0.84/0.29       | -2.54/-2.1     | -1.22/1.35     | 2.22/1.43      | 0.75/-1.62     | 3.393/-82      | 1.21/-1.64     | 1.87/2.55        | 1.29/-0.53       | -3.52/-2.99      | -4.22/-8.33      | -8.08/-7.42      | -2.41/-1.06      | 0.46/-1.42       | -3.5/-2.88       | -2.27/-2.62      | -2.22/-5.22      | -6.49/-11.89     | -14.67/-10.04    | -8.39/-8.27      | -4.76/-3.19      | -1.3/-1.11       | -3.44/-7.37      | -14.9/-13.04     |
| Θ(82.5°)  | -0.51/-1.66      | -0.42/0.09     | -2.59/-0.24    | 1.69/2.18      | 2.05/-1.05     | 1.62/-57       | 2.41/-1.52     | 1.48/2.85        | 2.93/-0.33       | -7.89/-6.24      | -7.25/-9.09      | -5.41/-4.29      | -0.22/-1.02      | 2.19/-2.36       | -3/-4.76         | -2.88/-3.7       | -2.53/-2.72      | -4.59/-9.33      | -12.77/-12.21    | -8.77/-8.46      | -2.18/-0.73      | 0.91/0.48        | -2.41/-7.76      | -4.59/-0.49      |
| Θ(90°)    | 1.48/3.33        | 1.61/0.84      | -1.69/-1.83    | 2.84/3.06      | 2.37/0.49      | 0.49/-1.6      | 1.28/0.9       | 0.51/2.18        | 2.9/-1.31        | -8.79/-7.15      | -11.69/-18.17    | -9.65/-5.23      | -2.55/-1.6       | 1.35/0.23        | -7.88/-8.07      | 4.57/-1.71       | -1.59/-3.86      | -4.35/-4.39      | -5.06/-3.81      | -2.2/-2.79       | 0.21/2.4         | 2.38/-1.5        | -0.54/-7.6       | -3.31/0.29       |
| Θ(97.5°)  | 2.48/3.54        | 1.84/-1.54     | -4.43/-1.41    | 1.38/-1.85     | 0.9/-1.76      | -3.48/-1.13    | -0.62/-3.24    | -2.56/0.39       | 0.57/-5.53       | -20.03/-8.18     | -10.95/-18.68    | -9.78/-5.93      | -6.19/-1.59      | 1.83/-0.96       | -14.14/-17.09    | 4.42/-1.46       | -0.44/-0.42      | -6.12/-5.48      | -2.02/0.21       | 1.63/0.44        | 1.62/-1.1        | 1.8/-0.8         | -0.09/-2.17      | -3.34/0.78       |
| Θ(105°)   | <b>3.35/3</b>    | 0.77/-1.81     | -8.67/-3.55    | 0.01/-1.72     | 0.08/-2.13     | -7.75/-8.53    | -6.7/-8.04     | -8.79/-4.89      | -5.14/-9.77      | -19.96/-9.77     | -16.26/-17.74    | -18.4/-8.22      | -2.71/-2.66      | -0.46/-0.96      | -10.95/-19.98    | -7.26/-4.37      | -1.55/-3.36      | -4.55/-3.21      | -0.82/-1.78      | 2.56/-0.62       | 1.66/2.21        | 1.69/-2.35       | -1.49/-0.66      | -2.54/0.91       |
| Θ(112.5°) | 3.64/4.6         | 0.63/-2.58     | -3.9/-1.41     | 1.17/-1.78     | 1.06/-1.61     | -11.43/-18.51  | -16.27/-19.46  | -19.28/-11.88    | -11.68/-9.7      | -18.53/-10.4     | -19.18/-18.75    | -18.71/-8.43     | -6.31/-3.41      | -1.52/-0.46      | -19.81/-8.38     | -8.95/-1.8       | -2.06/-11.2      | -1.44/-0.66      | -0.95/-1.33      | 0.732/89         | 1.34/-0.22       | -0.86/-1.01      | 0.24/-1.69       | -1.48/2.67       |
| Θ(120°)   | 2.68/3.39        | 0.92/-5.65     | -3.68/-2.23    | -1.57/0.6      | 0.53/-0.55     | -10.78/-9.78   | -7.83/-8.61    | -13.7/-18.48     | -11.61/-13.03    | -19.08/-13.22    | -19.66/-13.8     | -9.9/-3.48       | -5.44/-8         | -9.14/-10.66     | -12.02/-9.14     | -6.44/-8.41      | -0.37/-1.89      | -8.67/-0.11      | 1.43/2.7         | 1.44/-1.41       | -0.82/-1.02      | 0.64/0.54        | 0.62/2.43        |                  |
| Θ(127.5°) | 2.28/-0.13       | -1.4/-17.6     | -11.03/-3.18   | -2.74/-2.27    | -3.42/-7.09    |                |                |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |



# Radiated Composite Gain Data\_6GHz

# Appendix B

|           |               |                 |                 |                 |                 |                 |                 |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |
|-----------|---------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| Θ(127.5°) | -8.28/-13.45  | -4.04/-5.05     | -0.65/-2.68     | -0.58/-5.06     | -5.53/-10.27    | -16.55/-18.17   | -9.2/-8.91      | -11.34/-19.58     | -19.89/-13.22     | -9.5/-12.79       | -9.99/-14.09      | -7.47/-8.56       | -12.76/-6.57      | -7.68/-7.47       | -1.06/-7.85       | -9.65/-10.05      | -7.16/-16.78      | -19.85/-11.67     | -10.89/-14.13     | -8.42/-6.79       | -5.33/-7.58       | -7.70/-39         | 1.31/-7.67        | -4.78/-9.16       |
| Θ(135°)   | -6.21/-3.31   | -7.66/-2.61     | -4.44/-3.24     | -8.29/-5.35     | -7.32/-11.51    | -16.29/-19.32   | -15.29/-15.37   | -12.21/-14.49     | -14.07/-18.32     | -11.86/-6.9       | -9.82/-12.39      | -19.82/-7.95      | -13.52/-9.31      | -7.85/-8.21       | -9.4/-6.75        | -8.9/-25.8        | -19.44/-6.74      | -19.17/-16.42     | -10.29/-15.93     | -13.07/-9.43      | -4.57/-5.24       | -6.59/-0.06       | 0.83/-4.48        | -3.26/-3.01       |
| Θ(142.5°) | -9.2/-5.37    | -7.52/-6.65     | -5.28/-7.61     | -5.24/-6.86     | -5.46/-4.69     | -6.83/-10.54    | -19.22/-11.75   | -12.81/-17.35     | -19.01/-14.8      | -14.5/-15.74      | -17.01/-19.58     | -18.86/-10.1      | -3.74/-7.92       | -10.43/-9.56      | -14.66/-9.35      | -5.06/-15.78      | -6.3/-18.22       | -8.42/-14.11      | -10.28/-11.27     | -17.09/-12.22     | -6.46/-7.64       | -5.65/-5.47       | -3.63/-10.37      | -6.57/-6.1        |
| Θ(150°)   | -8.77/-9.11   | -4.85/-6.41     | -7.59/-12.11    | -18.56/-16.71   | -11.89/-8.35    | -10.37/-16.78   | -18.28/-16.01   | -15.85/-16.33     | -18.78/-19.1      | -19.79/-19.75     | -16.36/-11.15     | -11.85/-19.72     | -13.21/-15.7      | -7.51/-3.94       | -3.89/-11.35      | -18.3/-17.71      | -12.09/-8.15      | -8.61/-7.37       | -8.41/-16         | -19.32/-19.63     | -14.77/-17.61     | -14.16/-8.7       | -8.12/-9.48       | -12/-8.79         |
| Θ(157.5°) | -5.68/-5.17   | -4.71/-4.22     | -3.32/-8.22     | -5.05/-10.68    | -14.14/-13.82   | -15.15/-13.32   | -15.31/-15.85   | -19.01/-19.29     | -18.22/-19.81     | -20.22/-13.18     | -13.63/-15.84     | -15.99/-17.21     | -19.35/-19.31     | -20.07/-19.14     | -17.03/-16.67     | -10.47/-7.5       | -3.69/-3.21       | -6.51/-11.33      | -18.76/-19.3      | -15.61/-12.9      | -19.37/-19.32     | -19.91/-18.84     | -9.3/-8.82        | -11.7/-9.26       |
| Θ(165°)   | -5.01/-2.31   | -2.28/-1.98     | -1.39/-2.24     | -4.12/-6.62     | -11.17/-18.43   | -19.06/-19.94   | -18.26/-19.06   | -16.51/-14.41     | -15.13/-14.93     | -15.24/-17.12     | -20.12/-16.68     | -13.61/-13.3      | -12.86/-13.79     | -16.71/-10.97     | -5.82/-5.75       | -3.6/-3.57        | -6.43/-9.18       | -11.64/-12.96     | -11.82/-11.38     | -11.87/-12.06     | -10.04/-9.28      | -8.63/-8.57       | -8.67/-7.89       |                   |
| Θ(172.5°) | -8.74/-6.78   | -5.6/-6.59      | -7.07/-5.29     | -5.52/-8.32     | -10.89/-12.09   | -11/-12.97      | -16.53/-19.63   | -19.86/-19        | -19.8/-18.85      | -19.3/-16.39      | -15.57/-15.46     | -13.88/-12.41     | -12.34/-13.63     | -13.68/-12.03     | -10.41/-9.62      | -9.68/-9.4        | -9.26/-10.17      | -13.45/-19.65     | -19.76/-19.09     | -18.02/-17.9      | -18.71/-16.91     | -13.41/-11.42     | -8.79/-11.52      | -17.07/-14.94     |
| Θ(180°)   | -18.99/-19.75 | -17.88/-19.09   | -18.18/-19.24   | -18.8/-15.21    | -13.52/-15.57   | -16.16/-17.14   | -20.17/-18.26   | -16.91/-16.84     | -18.03/-16.59     | -14.95/-13.61     | -12.06/-12.68     | -15.11/-17.29     | -15.3/-13.9       | -14.1/-15.18      | -15.44/-14.81     | -14.33/-14.54     | -14.11/-13.72     | -13.16/-13        | -15.24/-18.68     | -19.49/-18.69     | -18.63/-14.03     | -10.6/-9.71       | -9.83/-11.97      | -12.28/-14.47     |
| Freq(Hz)  | 6.695GPol.    | 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°)     | -11.06/-12.25 | -14.36/-14.47   | -15/-13.19      | -10.1/-7.1      | -5.98/-4.72     | -3.49/-3.57     | -3.8/-3.59      | -3.16/-2.77       | -2.8/-2.87        | -3.47/-3.99       | -5.33/-6.48       | -8.03/-9.87       | -11.79/-13.5      | -13.97/-13.01     | -11.61/-10        | -8.32/-6.65       | -5.21/-4.01       | -3.31/-3.24       | -3.39/-3.59       | -3.15/-4          | -4.43/-4.26       | -4.49/-4.79       | -5.69/-8.18       | -8.86/-10.45      |
| Θ(7.5°)   | -9.97/-13.89  | -14.69/-14.19   | -12.82/-10.69   | -7.76/-13       | -5.66/-4.47     | -4.37/-4.29     | -4.5/-4.33      | -4.01/-4.56       | -5.41/-6.47       | -7.43/-8.79       | -8.46/-9.33       | -10.4/-12.16      | -13.41/-14.12     | -14.53/-15.2      | -14.23/-12.78     | -11.63/-9.92      | -7.43/-5.38       | -4.01/-3.21       | -2.19/-1.78       | -1.32/-1.27       | -0.9/-0.89        | -1.03/-1.66       | -2.58/-4.07       | -5.36/-7.85       |
| Θ(15°)    | -8.38/-11.89  | -16.88/-19.85   | -15.41/-9.23    | -5.48/-3.33     | -1.98/-0.63     | -0.33/-0.18     | -0.34/-0.89     | -1.63/-3.09       | -4.79/-6.86       | -10.24/-12.91     | -16.08/-17.5      | -19.89/-18.97     | -19.17/-19.05     | -19.98/-18.86     | -18.16/-15.62     | -14.38/-11.27     | -8.51/-6.09       | -4.35/-3.42       | -2.71/-1.73       | -1.15/-0.78       | -0.95/-1.15       | -1.54/-2.27       | -3.98/-5.43       | -6.88/-6.41       |
| Θ(22.5°)  | -4.61/-6.47   | -10.19/-14.82   | -17.96/-9.8     | -5.24/-2.32     | 0.171/14        | 2.152/-33       | 1.160/-28       | -1.5/-3.58        | -5.37/-7.1        | -8.04/-7.52       | -6.78/-7.26       | -9.12/-12.95      | -16.48/-15.35     | -15.29/-17.17     | -18.37/-19.29     | -13.21/-9.36      | -6.15/-3.95       | -1.81/-0.02       | 0.690/-67         | 0.28/-0.29        | -0.88/-2.47       | -4.64/-5.41       | -4.87/-5.38       |                   |
| Θ(30°)    | -3.09/-2.21   | -3.74/-8.92     | -12.73/-9.96    | -3.96/-4.66     | 1.6592/-74      | 2.932/-74       | 2.552/-08       | 1.320/-18         | -0.93/-1.98       | -2.85/-3.76       | -5.33/-5.95       | -5.94/-6.54       | -8.53/-10.17      | -10.51/-11.69     | -15.8/-19.68      | -19.99/-19.66     | -18.34/-12.29     | -6.9/-3.91        | -1.89/-1.32       | -1.27/-1.33       | -1.25/-1.78       | -2.76/-5.95       | -7.95/-7.4        | -6.33/-4.38       |
| Θ(37.5°)  | -2.25/-1.38   | -1.58/-3.42     | -7.36/-7.04     | -3.37/-0.06     | 1.972/-49       | 2.76/-2.89      | 2.43/-89        | 1.30/-81          | -0.02/-1.36       | -2.59/-3.49       | -3.48/-4.53       | -3.86/-5.47       | -8.84/-7.5        | -5.98/-7.47       | -11.59/-17.59     | -18.95/-19.55     | -12.97/-8.52      | -6.35/-5.56       | -5.47/-4.55       | -3.24/-2.99       | -4.37/-7.12       | -12.46/-19.32     | -18.48/-12.32     | -6.87/-3.9        |
| Θ(45°)    | -1.73/-0.16   | -1.02/-2.52     | -3.19/-4.38     | -1.650/-29      | 2.222/-91       | 2.78/-199       | 1.020/-39       | 0.14/-0.28        | -1.58/-2.49       | -3.18/-3.92       | -3.63/-3.6        | -2.91/-5.23       | -5.29/-6          | -8.86/-10.64      | -12.32/-14.16     | -16.99/-13.1      | -16.43/-13.58     | -9.73/-8.88       | -5.1/-3.82        | -3.88/-4.74       | -6.69/-10.76      | -19.17/-13.43     | -8.85/-8.23       | -6.22/-3.11       |
| Θ(52.5°)  | -0.360/-22    | 1.19/-0.55      | -1.87/-2.28     | -0.471/-77      | 2.932/-53       | 1.740/-48       | 0.04/-0.04      | -0.210/-15        | -0.48/-1.46       | -3.06/-3.37       | -4.67/-3.83       | -2.51/-3.35       | -3.94/-6.61       | -7.25/-7.6        | -9.39/-13.2       | -12.22/-14.72     | -16.83/-11.02     | -7.68/-6.25       | -5.34/-6.27       | -8.01/-10.36      | -10.91/-10.73     | -8.27/-7.14       | -5.93/-3.31       |                   |
| Θ(60°)    | 1.310/-0.9    | 0.790/-7.2      | -0.28/-0.37     | 0.51/-8         | 2.652/-46       | 1.740/-99       | 0.48/-0.73      | -1.89/-2.02       | -2.49/-3.27       | -3.24/-3.14       | -3.99/-6.07       | -5.36/-3.61       | -5.67/-6.94       | -6.48/-7.1        | -10.18/-10.69     | -8.37/-7.93       | -8.57/-10.31      | -15.08/-19.8      | -14.32/-8.2       | -7.22/-9.55       | -11.25/-7.71      | -4.62/-4.16       | -6.63/-9.92       | -4.02/-2.7        |
| Θ(67.5°)  | 0.05/-0.47    | -0.6/-0.66      | -1.97/-1.67     | -0.39/-1.25     | 2.472/-11       | 2.383/-1        | 1.92/-0.19      | 0.71/-1.6         | -3.5/-2.27        | -4.61/-5.73       | -5.06/-3.01       | -3.65/-4.07       | -3.87/-6.66       | -6.56/-7.19       | -4.27/-7.31       | -5.41/-7.08       | -16.03/-15.62     | -8.09/-5.91       | -5.22/-4.13       | -4.79/-3.06       | -6.27/-3.13       | -7.05/-10.61      | -4.22/-6.02       |                   |
| Θ(75°)    | -0.38/-0.39   | 0.38/-0.39      | -3.2/-5.86      | -1.78/-1.78     | 2.732/-55       | 2.712/-39       | -1.38/-1.01     | -1.910/-51        | 1.41/-0.16        | -0.43/-0.24       | -4.17/-7.69       | -4.81/-2.12       | -1.59/-3.73       | -6.82/-3.54       | -7.79/-6.7        | -11.69/-14.47     | -20.28/-14.54     | -8.98/-7.33       | -7.77/-5.98       | -6.03/-3.81       | -2.74/-3.8        | -4.48/-4.7        | -0.82/-6.7        |                   |
| Θ(82.5°)  | 0.48/-0.32    | 1.32/-1.76      | -1.18/-7.06     | -3.44/-0.49     | 1.38/-1.22      | 0.61/-1.4       | 0.42/-2.51      | -2.850/-57        | 0.91/-0.8         | -6.23/-3          | -5.09/-13.81      | -9.27/-5.59       | -6.31/-0.56       | 0.64/-2.12        | -1.24/-4.1        | -5.23/-4.98       | -7.35/-9.27       | -14.28/-20.24     | -9.73/-7.89       | -7.17/-6.63       | -4.14/-3.73       | -4.75/-4.89       | -4.13/-1.32       | 0.85/-1.44        |
| Θ(90°)    | 0.31/-66      | 1.77/-1.54      | -0.51/-0.88     | -5.90/-35       | 1.020/-8        | -0.94/-25       | -2.28/-1.93     | -3.45/-3.31       | 0.41/-1.58        | -1.13/-3.43       | -4.45/-12.29      | -11.41/-6.1       | -11.58/-13.9      | 0.05/-3.47        | -2.03/-5.83       | -4.33/-3.39       | -3.17/-5.16       | -4.94/-5.08       | -3.71/-5.02       | -4.07/-6.92       | -4.18/-3.95       | -4.44/-3.49       | -3.59/-8.03       | 0.51/-43          |
| Θ(97.5°)  | -0.051/-5     | 1.11/-44        | -1.33/-8.35     | -9.48/-2.08     | -1.74/-1.79     | -3.75/-7.31     | -4.23/-3.14     | -2.85/-3.86       | -1.66/-5.33       | -8.46/-4.06       | -9.35/-17         | -10.03/-10.74     | -15.25/-2.69      | -0.08/-3.07       | -4.9/-6.5         | -5.91/-6.01       | -1.39/-4.04       | -1.18/-0.53       | -1.860/-31        | 0.6/-7.96         | -1.14/-0.08       | 2.3/-1.28         | 0.57/-2           | 1.090/-82         |
| Θ(105°)   | 1.6/-2        | 3.61/-0.3       | -1.68/-11.35    | -11.1/-5.74     | -3.49/-4.3      | -5.61/-11.5     | -7.07/-6.97     | -6.47/-6.67       | -4.65/-12.82      | -7.87/-5.59       | -8.7/-19.59       | -7.42/-19.68      | -2.46/-5.69       | -1.02/-8.17       | -7.53/-14.16      | -8.2/-5.71        | -2.71/-4.96       | -5.77/-10.28      | 1.05/-0.4         | -0.67/-3.63       | -2.96/-4.87       | -9.58/-5.5        | 1.71/-39          | 2.13/-1           |
| Θ(112.5°) | 2.44/-24      | 2.39/-0.23      | -2.64/-8.41     | -8.5/-8.07      | -8.55/-9.26     | -3.46/-8.37     | -19.19/-13.43   | -18.48/-15.6      | -15.73/-15.18     | -10.84/-7.06      | -11.16/-18.74     | -20.04/-14.26     | -19.79/-3.46      | -2.65/-8.58       | -6.98/-11.8       | -9.02/-13.5       | -3.06/-6.8        | -5.48/-1.2        | 2.18/-0.95        | -0.5/-1.5         | -3.19/-8.12       | -7.68/-3.69       | -3.350/-35        | 0.03/-61          |
| Θ(120°)   | 3.06/-0.06    | 1.51/-147       | -1.68/-3.84     | -2.64/-10.2     | -10.2/-6.6      | -11.44/-6.78    | -19/-15.27      | -17.25/-19.15     | -14.82/-12.45     | -9.49/-12.2       | -18.94/-16.21     | -19.8/-12.08      | -20.14/-6.98      | -5.53/-12.36      | -13.13/-8.95      | -18.36/-11.19     | -6.19/-18.49      | -2.740/-9         | -3.85/-5.7        | -1.04/-3.77       | 1.87/-2.88        | -9.02/-3.3        | -2.45/-1.96       | 1.742/-68         |
| Θ(127.5°) | 2.32/-0.04    | 0.84/-2.35      | -3.05/-3.32     | -5.24/-8.01     | -19.74/-14.57   | -10.49/-14.55   | -13.69/-12.74   | -13.46/-11.21     | -11.85/-8.36      | -7.32/-13.5       | -12.36/-15.78     | -17.41/-11.31     | -18.46/-11.9      | -2.82/-12.64      | -2.89/-10.91      | -7.01/-2.77       | -0.29/-19.98      | 1.663/-4          | -1.83/-1.71       | 1.154/-19         | 2.69/-4.3         | -3.783/-71        | -0.01/-1.28       | 1.510/-44         |
| Θ(135°)   | -0.38/-1.79   | -1.23/-0.84     | -3.28/-1.15     | -1.62/-2.61     | -12.5/-18.78    | -16.82/-18.55   | -17.53/-12.83   | -10.07/-10.92     | -10.64/-11.17     | -14.15/-20.03     | -10.04/-14.5      | -12.14/-19.3      | -15.82/-2.95      | -8.71/-7.1        | -15.51/-5.24      | -5.012/-11        | -4.16/-1.14       | 4.634/-21         | 0.49/-3.93        | -1.793/-98        | 0.07/-1.01        | -3.072/-54        | 1.92/-5.03        | 2.2/-17.7         |
| Θ(142.5°) | -3.1/-0.53    | -3.87/-3.01     | -3.91/-5.03     | -5.75/-10.42    | -11.45/-10.72   | -12.85/-19.85   | -17.33/-19.17   | -11.52/-9.67      | -9.74/-13.36      | -16.48/-13.46     | -19.23/-19.8      | -10.99/-18.74     | -8.5/-13.1        | -7.6/-18.7        | -7.6/-16.85       | 0.02/-3.43        | -7.57/-0.69       | <b>4.783.35</b>   | 1.62/-2.24        | -0.04/-1.4        | 1.05/-5.71        | -5.73/-0.88       | -2.42/-6.02       | -1.18/-2.37       |
| Θ(150°)   | -8.07/-5.46   | -5.8/-5.63      | -2.83/-4.12     | -8.19/-10.16    | -6.59/-10.42    | -12.73/-17.26   | -20.14/-18.95   | -18.46/-14.07     | -13.83/-13.36     | -15.55/-17.94     | -19/-19.28        | -14.95/-11.73     | -10.55/-19.29     | -10.55/-3.56      | -8.83/-15.33      | -9.58/-15.13      | -19.41/-3.05      | 0.22/-0.4         | 0.02/-0.84        | -1.8/-2.45        | 0.96/-1.57        | -0.18/-0.43       | -4.32/-12.78      | -9.96/-9.98       |
| Θ(157.5°) | -7.77/-7.22   | -5.17/-4.61     | -3.87/-4.34     | -5.02/-8        | -10.38/-17.43   | -19.3/-16.66    | -13.05/-12.85   | -14.93/-19.55     | -19.5/-19.05      | -17.04/-14.07     | -12.21/-14.2      | -19.55/-19.37     | -17.13/-11.81     | -7.69/-7.9        | -10.76/-15.63     | -13.68/-7.74      | -3.59/-1.87       | -2.58/-3.03       | -3.93/-4.47       | -2.99/-3.45       | -2.18/-1.29       | -2.18/-2.73       | -3.24/-5.02       | -6.92/-7.64       |
| Θ(165°)   | -4.15/-4.44   | -5.41/-5        | -5.31/-6.62     | -10.09/-14      | -19.09/-19.18   | -15.94/-15.68   | -12.21/-14.13   | -14.16/-14.2      | -14.15/-14.3      | -13.88/-14.05     | -18.1/-20.12      | -20.1/-18.4       | -15.17/-9.81      | -7.41/-7.43       | -11.43/-13        | -8.29/-5.57       | -3.98/-3.55       | -2.91/-2.86       | -3.52/-4.25       | -5.49/-7.88       | -10.6/-8.8        | -6.89/-5.27       | -6.94/-5.55       | -4.58/-3.7        |
| Θ(172.5°) | -6.86/-4.38   | -5.54/-6.27     | -7.73/-9.38     | -9.22/-8.48     | -10.19/-14.35   | -18.92/-19.01   | -19.03/-15.73   | -11.81/-12.28     | -15.46/-15.93     | -12.71/-11.56     | -12.24/-13.58     | -13.66/-10.35     | -8.12/-7.49       | -8.38/-11.98      | -17.94/-20.03     | -12.06/-9.31      | -8.8/-9.11        | -8.85/-7.07       | -6.37/-5.61       | -5.5/-6.63        | -9.32/-8.95       | -8.86/-7.59       | -4.5/-3.88        |                   |
| Θ(180°)   | -13.15/-17    | -14.11/-14.5    | -12.17/-10.49   | -11.64/-15.6    | -12.36/-11.32   | -11.95/-10.81   | -10.28/-13.29   | -16.78/-18.51     | -19.82/-17.99     | -14.46/-14.61     |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |



# Radiated Composite Gain Data\_6GHz

# Appendix B

| Frequency | -14.79/14.89  | -13.91/14.78   | -15.69/-15.85  | -16.41/-18.13  | -19.5/-19.73   | -19.14/-19.82  | -19.61/-19.77  | -19.32/-18.82    | -18.57/-16.81    | -15.76/-14.5     | -13.56/-11.95    | -10.65/-9.5      | -10.19/-12.54    | -17.84/-19.21    | -14.65/-14.19    | -14.52/-16.73    | -18.79/-16.67    | -13.58/-12.4     | -11.91/-11.04    | -11.23/-10.39    | -11.47/-12.42    | -14.24/-13.81    | -12.92/-13.61    | -16.16/-16.51    |
|-----------|---------------|----------------|----------------|----------------|----------------|----------------|----------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
| Freq(Hz)  | 6.175GPol.    | ThetaAnt. 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°)     | -17.42/12.94  | -9.86/-7.48    | -5.01/-3.44    | -2.22/-1.17    | -0.99/-1.22    | -1.27/-1.4     | -1.51/-1.82    | -2.63/-3.57      | -4.53/-5.7       | -6.99/-8.09      | -9.25/-10.06     | -11.6/-12.47     | -13.74/-12.95    | -10.97/-9.08     | -7.93/-6.45      | -4.68/-3.92      | -3.46/-2.87      | -3.12/-3.34      | -3.28/-2.88      | -2.89/-3.75      | -4.74/-5.31      | -6.05/-7.3       | -8.74/-12.14     | -18.64/-19.89    |
| Θ(7.5°)   | -9.4/-9.85    | -10.76/-10.24  | -8.52/-6.78    | -5.64/-4.8     | -4.46/-4.29    | -4.23/-4.27    | -4.07/-4.05    | -4.23/-4.69      | -4.82/-5.78      | -6.32/-7.47      | -8.62/-10.7      | -14.72/-18.74    | -19.15/-18.74    | -10.48/-8.36     | -5.94/-3.64      | -1.92/-9.07      | -0.64/-0.25      | -0.36/-1.06      | -1.45/-1.46      | -1.49/-2.55      | -3.88/-4.91      | -6.22/-6.98      | -7.56/-8.49      | -8.66/-8.99      |
| Θ(15°)    | -5.46/-7.69   | -9.94/-11.83   | -11.61/-10.17  | -7.71/-5.13    | -3.71/-3.56    | -4.47/-5.05    | -6.64/-6.17    | -5.81/-7.02      | -8.22/-9.26      | -8.84/-8.51      | -8.67/-9.87      | -11.55/-15.06    | -19.51/-19.71    | -11.68/-8.04     | -6.4/-5.7        | -5.37/-4.14      | -2.92/-1.74      | -1.67/-1.22      | -1.52/-1.61      | -1.16/-1.08      | -1.84/-3.72      | -5.62/-5.84      | -4.44/-3.23      | -2.59/-3.26      |
| Θ(22.5°)  | -3.8/-8.24    | -15/-13.79     | -10.55/-8.38   | -6.57/-5.44    | -5.88/-6.71    | -7.98/-9.85    | -11.63/-10.97  | -11.47/-13.19    | -18.07/-19.93    | -16.76/-13.41    | -11.76/-12.76    | -15.63/-18.71    | -19.3/-18.05     | -15.57/-13.26    | -10.29/-6.73     | -4.41/-3.54      | -4.12/-4.69      | -4.38/-3.32      | -1.73/-0.46      | 0.66/-1.04       | 0.08/-1.35       | -2.85/-3.43      | -2.5/-1.28       | -0.71/-1.48      |
| Θ(30°)    | -2.41/-5.66   | -10.18/-11.79  | -8.61/-6.88    | -6.59/-8.65    | -14.22/-19.25  | -18.9/-18.72   | -19.96/-20.06  | -19.48/-19.4     | -19.32/-18.97    | -19.75/-20.15    | -19.57/-20.26    | -19.39/-19.3     | -8.74/-5.07      | -3.86/-4.26      | -4.96/-4.7       | -4.49/-4.37      | -4.47/-4.08      | -3.01/-1.77      | -0.44/-0.87      | 1.13/-0.55       | -2.96/-3.59      | -2.08/-0.65      | -0.05/-0.33      |                  |
| Θ(37.5°)  | -3.27/-6.56   | -12.01/-12.76  | -10.88/-8.46   | -7.25/-7.36    | -9.31/-10.73   | -12.76/-12.17  | -12.79/-17.8   | -16.36/-12.89    | -12.05/-12.79    | -16.04/-18.67    | -20.09/-19.5     | -18.96/-20.03    | -17.53/-7.58     | -3.2/-1.16       | -0.03/-0.57      | -1.79/-4.53      | -7.53/-9.14      | -1.85/-1.31      | -0.74/-0.03      | 1.23/-5.5        | 0.11/-2.34       | -2.34/-0.61      | 0.1/-0.77        |                  |
| Θ(45°)    | -2.41/-3.51   | -5.3/-6.58     | -4.97/-4.1     | -3.31/-3.63    | -4.64/-5.41    | -7.36/-10.8    | -17.32/-10.18  | -7.43/-6.71      | -6.37/-7.31      | -7.83/-9.65      | -11.39/-11.98    | -10.76/-8.76     | -7.14/-4.36      | -2.19/-1.82      | -1.97/-2.19      | -2.65/-1.6       | -2.01/-2.32      | -2.07/-2.13      | -1.37/-1.37      | -0.51/-0.38      | 1.120/33         | -0.93/-2.95      | -2.29/-2.4       | -1.98/-1.95      |
| Θ(52.5°)  | -4.4/-5.67    | -5.01/-4.52    | -4.5/-4.18     | -1.85/-0.58    | -0.38/-1.1     | -2.8/-5.08     | -7.74/-10.3    | -15.67/-12.41    | -8.44/-6.93      | -6.66/-7.4       | -9.45/-10.32     | -12.86/-7        | -2.98/-0.74      | 0.890/23         | -0.060/-46       | 0.94/-0.72       | -2.71/-4.56      | -2.990/-42       | 1.46/-1.28       | 0.860/-02        | -0.08/-0.17      | -2.21/-4.3       | -2.88/-2.27      | -3.57/-4.75      |
| Θ(60°)    | -5.12/-8.61   | -7.19/-3.65    | -1.210/14      | 1.850/38       | 1.800/59       | -1.1/-4.21     | -1.07/-9.93    | -6.51/-5.35      | -5.98/-6.47      | -6.48/-7.72      | -11.39/-10.43    | -8.09/-6.22      | -5.01/-3.87      | -3.96/-3.16      | -1.11/-1.14      | 1.520/71         | -0.82/-3.61      | -3.35/-1.18      | 0.530/71         | 1.01/-0.56       | -0.090/-58       | -0.89/-4.24      | -6.99/-7.73      | -4.72/-3.8       |
| Θ(67.5°)  | -2.45/-6.57   | -6.94/-2.72    | -1.740/27      | 2.012/22       | 1.66/-1.15     | -4.64/-10.53   | -14.96/-11.54  | -8.05/-5.12      | -2.02/-0.36      | -1.85/-4.42      | -6.39/-6.54      | -7.03/-3.76      | -2.06/-1.1       | 0.20/91          | 2.183/05         | 2.482/05         | 1.460/92         | -0.560/-44       | 0.85/-187        | 0.17/-2.54       | -0.97/-1.59      | -0.4/-7.86       | -12.53/-12.94    | -5.92/-1.49      |
| Θ(75°)    | 1.5/-2.34     | 4.6/-3.97      | -2.01/-1.76    | 2.66/55        | 0.57/-2.69     | -7.63/-7.4     | -5.12/-3.64    | -2.58/-1.25      | -1.14/-0.14      | -1.27/-1.98      | -3.29/-0.45      | -3.78/-2         | -3.21/-2.46      | -0.01/-1.33      | 1.262/05         | 0.950/-47        | -0.050/-77       | -0.17/-1.72      | -0.91/-1.59      | 0.74/-1.09       | -1.15/-1.77      | 1.03/-3.41       | -7.08/-4.5       | -1.132/0.3       |
| Θ(82.5°)  | 2.06/-0.67    | -2.3/-3.06     | -5.42/-0.15    | 0.750/91       | -0.72/-1.87    | -3.04/-3.39    | -4.14/-4.92    | -2.08/-0.37      | -0.63/-0.51      | -0.88/-0.93      | -2.01/-5.14      | -5.14/-0.69      | -4.17/-2.67      | 2.120/12         | 0.56/-11         | 0.65/-0.76       | 1.282/19         | 3.182/02         | -1.460/97        | 2.09/-1.04       | -3.970/43        | -0.3/-10.3       | -0.43/-3.01      | -0.83/-2.4       |
| Θ(90°)    | 2.310/01      | -2.16/-4.96    | -6.56/-1.8     | -0.270/-49     | -0.340/-27     | -0.97/-2.95    | -3.48/-3.58    | -3.02/-1.68      | -2.19/-0.69      | 0.26/-0.14       | -1.83/-5.04      | -5.89/-1.96      | -2.86/-1.34      | 2.310/25         | 1.09/-0.84       | -3.03/-3.66      | -2.28/-1.1       | 3.21/-11         | -1.37/-1.17      | 3.1/-0.27        | -2.8/-1.42       | -4.76/-9.09      | -0.09/-0.93      | 1.944/29         |
| Θ(97.5°)  | 2.31/-0.83    | -1.6/-2.9      | -3.310/-52     | 0.610/78       | -1.18/-0.31    | -1.47/-4.25    | -3.42/-0.84    | -0.750/-68       | 0.350/-51        | -1.09/-2.27      | -2.9/-6.71       | -8.77/-6.91      | -6.94/-1.78      | -0.11/-1.25      | -0.43/-0.01      | -8.13/-9.06      | -2.88/-1.33      | 3.552/34         | -1.680/73        | 3.762/32         | -1.53/-5.71      | -18.7/-2.31      | 1.160/39         | -0.080/-46       |
| Θ(105°)   | 0.70/33       | 2.130/-46      | -0.03/-63      | 0.460/-0.3     | -1.03/-0.87    | -0.32/-1.71    | -2.51/-2.13    | -0.950/-88       | 0.160/-47        | -2.1/-2.28       | -3.04/-8.06      | -14.4/-13.63     | -9.99/-5.05      | -2.45/-5.02      | -3.93/-2.78      | -1.17/-5.65      | -4.43/-3.23      | 3.060/07         | -2.21/-7.19      | 3.761/41         | -1.54/-4.53      | -12.97/-2.7      | 1.080/39         | -1.42/0.3        |
| Θ(112.5°) | 0.89/1.37     | 2.320/83       | 0.050/06       | 0.41/-1.89     | -0.5/-0.69     | 1.03/2.68      | 0.95/-1.54     | 0.020/-77        | 0.15/-2.04       | -6.79/-4.37      | -5.77/-13.27     | -9.97/-8.43      | -7.8/-9.93       | -5.66/-8.82      | -18.27/-10.7     | -16.75/-5.37     | -7.68/-12.78     | -2.89/-7.13      | -5.48/-17.48     | -1.68/-0.46      | -3.73/-7.38      | -6.52/-11.56     | -2.780/05        | 0.52/3.08        |
| Θ(120°)   | -0.39/-1.43   | -1.52/-0.15    | 0.21/-49       | 1.471/-7       | 1.182/81       | 2.51/-42       | 0.34/-0.34     | -0.570/-39       | -0.59/-3.67      | -5.79/-4.65      | -11.49/-19.45    | -19.05/-7.61     | -9.15/-12.81     | -6.83/-6.57      | -1.48/-8.5       | -9/-12.91        | -4.83/-4.42      | -1.6/-7.44       | -17.13/-18.58    | -0.77/-0.19      | -5.68/-6.33      | -3.52/-18.74     | -2.23/-1.34      | -1.16/-2.34      |
| Θ(127.5°) | -0.6/-3.57    | -1.4/-1.72     | -0.08/-82      | 2.362/51       | 3.01/-31       | 3.112/-17      | 0.48/-0.55     | 0.15/-0.34       | -0.57/-3.52      | -7.19/-5.55      | -6.13/-9.21      | -9.88/-11.2      | -9.21/-9.09      | -6.48/-15.39     | -19.74/-5.5      | -9.6/-2.09       | -1.15/-5.18      | -6.53/-5.87      | -5.43/-3.72      | -5.78/-15.94     | -4.37/-5.64      | -5.45/-5.45      | -0.58/-1.17      |                  |
| Θ(135°)   | -5.74/-3.59   | -2.33/-1.69    | -0.680/41      | 2.273/-1       | 3.463/-42      | 2.75/2.22      | 1.85/-4.9      | 0.920/-02        | -1.26/-3.21      | -4.37/-3.64      | -3.86/-4.89      | -9.67/-18.31     | -12.61/-18.97    | -9.97/-12.79     | -11.75/-8.67     | -18.52/-4.57     | -10.36/-11.79    | -6.89/-9.36      | -17.25/-15.24    | -13.05/-18.34    | -10.63/-6.22     | -4.8/-11.05      | -8.55/-8.13      | -5.9/-2.35       |
| Θ(142.5°) | -5.02/-4.2    | -3.89/-1.28    | -2.37/-2.56    | -2.6/-1.66     | 1.032/-24      | 2.632/-74      | 2.69/-1.4      | -1.28/-2.38      | -1.9/-0.63       | -1.34/-3.5       | -4.72/-6.25      | -10.88/-14.28    | -14.66/-19.91    | -14.44/-10.93    | -13.37/-14.16    | -5.48/-13.83     | -11.25/-16.29    | -8.12/-9.71      | -12.93/-9.86     | -19.55/-18.74    | -18.83/-17.45    | -15.67/-12.04    | -8.69/-8.04      | -9.41/-11.34     |
| Θ(150°)   | -7.08/-4.89   | -5.22/-5.4     | -3.24/-1.92    | -0.810/63      | 1.832/69       | 2.872/-64      | -0.64/-0.65    | 0.360/-42        | -0.33/-0.38      | -1.93/-4.85      | -5.19/-5.65      | -10.13/-19.62    | -15.77/-15.25    | -14.28/-8.19     | -8.79/-3.32      | -13.62/-10.63    | -5.57/-7.76      | -13.92/-19.35    | -16.68/-13.96    | -11.81/-15.15    | -18.27/-18.2     | -9.31/-7.64      | -7.06/-10.08     | -7.81/-7.41      |
| Θ(157.5°) | -13.74/-11.9  | -10.06/-6.99   | -5.27/-4.24    | -3.13/-1.51    | -0.350/-15     | -0.48/-0.59    | -0.49/-0.86    | -1.81/-3.55      | -5.74/-7.2       | -7.5/-4.74       | -4.77/-6.08      | -10.96/-19.61    | -18.06/-18.77    | -12.91/-9.66     | -11.15/-13.97    | -6.91/-2.23      | -3/-12.38        | -13.25/-9.72     | -11.49/-16       | -18.74/-14.43    | -14.92/-17.12    | -11.25/-9.83     | -10.93/-10.7     | -11/-13.25       |
| Θ(165°)   | -12.83/-11.47 | -11.62/-13.08  | -11.34/-10.36  | -8.18/-4.89    | -2.63/-2.26    | -1.61/-1.22    | -0.91/-0.82    | -1.37/-2.75      | -5.62/-11.55     | -10.43/-9.72     | -8.6/-9.9        | -13.71/-19.55    | -16.71/-13.95    | -16.84/-19.42    | -15.41/-11.47    | -9.07/-2.5       | -9.46/-13.79     | -19.52/-19.58    | -19.55/-18.74    | -18.83/-17.45    | -15.67/-12.04    | -8.69/-8.04      | -9.41/-11.34     | -13.55/-15.83    |
| Θ(172.5°) | -11.13/-10.54 | -10.51/-13.08  | -9.13/-5.7     | -6.7/-5.77     | 8.31/-7.27     | -4.37/-2.66    | -2.26/-3.09    | -4.66/-7.17      | -11.17/-11.72    | -19.83/-16.91    | -14.45/-14.14    | -16.79/-20.1     | -10.91/-9.15     | -8.51/-9.11      | -10.21/-11.64    | -12.83/-12.68    | -12.49/-14.49    | -15.41/-13.56    | -12.49/-13.69    | -13.41/-12.09    | -10.98/-10.48    | -10.94/-11.05    | -10.87/-10.97    |                  |
| Θ(180°)   | -20.06/-19.31 | -15.19/-12.25  | -10.1/-10.31   | -11.67/-11.54  | -10.4/-8.45    | -7.87/-10.21   | -12.73/-17.49  | -20.12/-18.78    | -19.51/-16.63    | -13.74/-13.39    | -13.65/-15.82    | -19.87/-19.73    | -18.32/-15.57    | -13.78/-11.39    | -9.24/-8.98      | -9.43/-9.81      | -9.43/-9.32      | -9.81/-11.53     | -14.85/-19.49    | -18.66/-19.36    | -16.13/-17       | -18.44/-17.51    | -17.95/-16.74    | -15.54/-18.36    |
| Freq(Hz)  | 6.475GPol.    | 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°)     | -6.01/-4.87   | -5.28/-4.82    | -4.62/-5.41    | -6.57/-7.38    | -8.02/-7.35    | -6.35/-5.95    | -6.68/-6.68    | -6.8/-6.73       | -7.03/-7.57      | -7.89/-7.74      | -7.63/-7.59      | -7.71/-7.54      | -6.56/-5.86      | -5.72/-6.04      | -6.95/-7.53      | -7.82/-8.77      | -8.62/-9.78      | -9.84/-10.47     | -11.12/-10.61    | -9.27/-9.1       | -8.89/-8.11      | -7.95/-7.07      | -7.1/-7.92       | -7.11/-6.74      |
| Θ(7.5°)   | -4.91/-6.01   | -6.83/-5.51    | -4.14/-3.92    | -4.84/-6.02    | -7.28/-7.71    | -8.29/-8.56    | -8.54/-9.15    | -10.34/-10.3     | -9.76/-9.53      | -9.18/-8.91      | -7.83/-7.26      | -6.83/-6.49      | -6.12/-6.14      | -4.66/-6.12      | -7.13/-6.42      | -8.27/-8.53      | -9.09/-9.42      | -8.27/-9.72      | -6.22/-5.52      | -4.92/-4.95      | -5.55/-5.5       | -5.15/-4.55      | -3.71/-3.86      |                  |
| Θ(15°)    | -3.03/-2.78   | -1.65/-0.84    | -0.25/-0.94    | -1.85/-3.03    | -3.66/-4.48    | -5.1/-6.13     | -8.73/-9.3     | -9.92/-9.96      | -10.14/-9.71     | -8.26/-7.19      | -5.97/-5.38      | -4.57/-3.99      | -1.95/-1.58      | -7.02/-8.14      | -9.09/-12.33     | -15.95/-14.13    | -9.87/-5.4       | -6.65/-5.21      | -3.82/-2         | -1.44/-1.94      | -2.88/-3.87      | -4.84/-4.76      | -4.53/-3.31      |                  |
| Θ(22.5°)  | -2.01/-2.49   | -2.47/-1.23    | -0.97/-1.87    | -3.22/-5.13    | -6.81/-7.93    | -7.98/-8.75    | -12.71/-17.8   | -15.11/-12.81    | -10.94/-9.42     | -8.37/-6.82      | -5.24/-3.24      | -1.67/-1.08      | -1.21/-2         | -4.3/-8.9        | -15.28/-17.71    | -16.29/-14.2     | -12.66/-12.16    | -13.95/-15.91    | -13.98/-11.37    | -7.29/-3.81      | -2.17/-1.82      | -2.45/-4.57      | -6.73/-7.79      | -5.52/-3.23      |
| Θ(30°)    | 0.1/-0.28     | -0.59/-1.6     | -4/-3.91       | -3.12/-3.94    | -5.87/-6.83    | -6.23/-6.56    | -8.67/-6.41    | -11.64/-12.55    | -10.57/-11.53    | -10.96/-10.42    | -9.68/-9.13      | -8.43/-6.12      | -3.73/-3.25      | -2.3/-3.85       | -5.86/-7.28      | -8.8/-10.79      | -14.59/-18.68    | -11.91/-16.78    | -6.19/-6.29      | -8.5/-13.8       | -17.39/-10.68    | -6.33/-3.82      | -3.59/-5.8       | -10.44/-9.47     |
| Θ(37.5°)  | -1.23/-0.99   | -2.54/-4.58    | -4.03/-5.3     | -5.34/-5       |                |                |                |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |



# Radiated Composite Gain Data\_6GHz

# Appendix B

|           |               |                |                |                |                |                |                |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |
|-----------|---------------|----------------|----------------|----------------|----------------|----------------|----------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
| Θ(22.5°)  | -3.71/-5.11   | -6.92/-8.28    | -11.92/-19.04  | -19.12/-18.86  | -14.21/-9.34   | -8.86/-10.78   | -12.21/-10.59  | -11.21/-12.17    | -10.12/-9.01     | -9.35/-11.13     | -11.86/-10.41    | -8.25/-7.57      | -8.39/-8.79      | -8.41/-7.92      | -6.9/-5.36       | -4.93/-4.16      | -3.17/-1.78      | -0.560/0.1       | -0.12/-0.42      | -0.34/-0.03      | 0.10/0.05        | 0.26/0.22        | -0.27/-1.06      | -1.68/-2.34      |
| Θ(30°)    | -3.3/-3.95    | -4.65/-5.54    | -6.18/-8.04    | -8.59/-10.4    | -13.71/-10.94  | -7.56/-6.59    | -6.26/-7.12    | -9.56/-9.42      | -8.66/-8.58      | -9.34/-10.83     | -12.31/-11.94    | -8.89/-7.36      | -8.32/-9.9       | -13.65/-13.92    | -10.9/-11.77     | -15.08/-15.01    | -9.66/-7.65      | -6.48/-4.63      | -3.08/-2.16      | -1.35/-1.01      | -1.06/-1.15      | -0.13/-0.48      | -0.04/-0.44      | -0.97/-2.23      |
| Θ(37.5°)  | -5.47/-5.24   | -4.68/-3.85    | -3.42/-6.43    | -6.29/-10.58   | -11.21/-8.64   | -8.64/-9.94    | -12.56/-6.17   | -18.97/-16.08    | -14.09/-14.72    | -18.94/-19.2     | -17.06/-13.04    | -10.42/-10.07    | -13.12/-15.84    | -11.53/-6.36     | -5.58/-19        | -7.91/-5.12      | -1.91/-5.21      | -1.11/-1.27      | -1.2/-0.58       | -0.39/-0.58      | -0.9/-0.14       | -0.51/-1.6       | -2.95/-2.58      |                  |
| Θ(45°)    | -6.68/-8.93   | -7.48/-5.95    | -6.5/-9.52     | -10.02/-7.63   | -5.2/-5.18     | -5.83/-3.96    | -3/-3.66       | -6.45/-14.05     | -19.21/-11.84    | -11.75/-16.9     | -19.54/-18.05    | -11.21/-9.13     | -10.25/-15.52    | -9.03/-4.46      | -2.59/-3.69      | -8.28/-14.93     | -19.39/-9.25     | -5.04/-3.02      | -2.18/-1.59      | -0.85/-0.68      | -1.42/-1.3       | -2.01/-2.55      | -3.08/-1.86      | -2.88/-3.18      |
| Θ(52.5°)  | -3.72/-7.15   | -7.47/-9.22    | -10.36/-9.29   | -5.53/-3.01    | -1.96/-2.49    | -4.57/-6.52    | -4.14/-3.26    | -4.68/-7.58      | -7.9/-6.9        | -8.15/-12.47     | -13.81/-19.76    | -18.94/-14.28    | -12.81/-8.44     | -2.23/-1.16      | -5.27/-7.58      | -9.88/-9.07      | -6.66/-3.66      | -2.25/-3.34      | -3.5/-2.37       | 0.34/0.46        | -2.02/-5.64      | -7.93/-7.86      | -2.88/-1.87      |                  |
| Θ(60°)    | -1.8/-3.18    | -4.62/-5.86    | -11.81/-7.04   | -3.21/-2.07    | -2.82/-4.61    | -9.55/-9.96    | -7.29/-6.96    | -7.93/-9.82      | -10.21/-10.37    | -6.71/-7.48      | -9.36/-7.95      | -6.66/-2.94      | -1.88/-0.33      | -2.76/-2.68      | -2.73/-5.26      | -6.68/-7.63      | -4.36/-1.16      | 1.08/1.24        | -0.37/-3.16      | -0.1/-0.25       | -1.77/-3.75      | -3.56/-8.26      | -2.49/-0.75      |                  |
| Θ(67.5°)  | -0.07/-2.29   | -6.65/-13.33   | -15.59/-5.84   | -2.73/-2.5     | -5.36/-6.01    | -5.45/-5.98    | -10.37/-9.92   | -5.68/-3.97      | -6.71/-6.72      | -4.83/-4.52      | -5.18/-6.85      | -7.94/-4.04      | -3.1/-2.18       | -0.09/-1.05      | -0.28/0.34       | -1.54/-3.65      | -3.51/-0.81      | -0.58/0.25       | 0.76/1.97        | 0.72/-4.07       | -0.06/-1.69      | -3.85/-6.24      | -1.8/-0.5        | 1.38/1.97        |
| Θ(75°)    | 0.5/0.45      | -5.04/-19.05   | -15.54/-6.88   | -3.74/-2       | -2.04/-2.6     | -4.14/-6.66    | -9.73/-11.16   | -7.65/-4.31      | -6.04/-3.26      | -1.58/-1.41      | -3.42/-4.08      | -7.27/-3.57      | -0.03/0.15       | 1.14/-1.67       | 2.91/0.19        | -3.78/-7.87      | -4.72/-3.48      | 0.64/0.44        | -1.11/-1.29      | -1.21/-1.51      | -7.86/-3.88      | 1.19/-1.07       | 1.69/1           |                  |
| Θ(82.5°)  | 1.44/-0.05    | -3.07/-5.24    | -3.82/-1.93    | -1.17/-0.88    | -4.19/-3.92    | -6.76/-6.09    | -4.25/-2.55    | -1.7/-0.2        | -2.57/-0.56      | -1.2/0.08        | -1.09/-2.74      | -3.69/-1.1       | 1.08/-0.39       | 1.98/3.57        | 2.21/-1.24       | -13.01/-11.35    | -4.11/-0.57      | 0.52/-1.71       | 0.54/1.89        | -0.41/-8.3       | -4.58/-0.29      | 1.21/63          | 2.52/32          |                  |
| Θ(90°)    | 2.81/2.02     | -3.45/-4.43    | -4.75/-4.61    | -3.43/-2.94    | -3.35/-2.47    | -2.11/-2.07    | -1.03/0.16     | -1.02/0.57       | -1.21/-1.96      | -2.86/-2.36      | -2.83/-3.54      | -4.94/-2.31      | 1.1/-2.63        | -0.51/24         | -1.18/-4.52      | -8.47/-13.81     | -2.93/0.49       | 3.75/0.93        | -1.29/1.64       | 2.82/-3.84       | -5.41/-2.23      | -2.84/3.74       | 4.86/2.77        | 3.76/1.99        |
| Θ(97.5°)  | -1.83/-1.68   | -5.37/-6.26    | -7.9/-6.2      | -4.6/-1.71     | -1.97/-0.92    | -1.87/-2.71    | -2.03/-3.05    | -3.98/-0.1       | -1.34/-0.23      | -0.74/-1.06      | -6.3/-6.29       | -8.29/-3.42      | 1.7/-2.76        | 0.98/0.97        | -1.82/-5.34      | -12.09/-13.26    | -4.96/-1.07      | 3.85/4.72        | 0.86/-0.59       | 1.51/-2.47       | -12.47/-17.81    | -1.794.99        | 3.42/0.41        | 4.65/-0.81       |
| Θ(105°)   | 0.68/-0.27    | -3.71/-7.82    | -6.76/-6.49    | -4.92/5.14     | 1.3/-0.06      | 1.94/0.25      | -1.78/-1.76    | -0.6/0.11        | -2.01/-0.32      | -1.85/-3.71      | -8.43/-9.17      | -19.06/-5.61     | -0.77/-7.82      | -0.72/-0.42      | -8.02/-4.73      | -7.46/-11.32     | -1.27/-1.19      | -0.36/0.64       | -2.81/-5.16      | -3.1/-3.22       | -5.94/-16.52     | -0.813.41        | 3.08/-0.2        | -1.22/-1.64      |
| Θ(112.5°) | -0.08/1.05    | -0.54/-2.93    | -2.72/-3.18    | -0.65/-0.3     | 0.91/0.15      | -1.44/0.63     | 0.86/0.65      | -0.18/-3.88      | -0.98/-1.46      | -2.65/-5.76      | -10.09/-7.05     | -17.78/-10.17    | -4.24/-8.73      | -4.25/-8.34      | -10.08/-8.03     | -11.46/-10.54    | -12.68/-5.16     | -7.98/-8.56      | -6.02/-12.03     | -5.05/-2.77      | -7.21/-13.76     | -0.85/0.87       | 0.16/-1.5        | -0.95/-3.52      |
| Θ(120°)   | -1.01/-2.19   | 0.06/-4.34     | -4.66/-6.03    | -3.08/-0.91    | 0.99/1.89      | 1.64/0.4       | 0.92/0.23      | -2.39/-3.21      | -2.68/-4.32      | -1.35/-6.66      | -6.59/-9.22      | -19.4/-9.43      | -4.04/-5.15      | -6.6/-12.5       | -14.57/-16.33    | -4.7/-9.47       | -3.12/-6.25      | -8.76/-4.18      | 0.24/-0.25       | -16.07/-5.49     | -1.06/-0.9       | -0.23/-7.62      | -1.38/-1.7       |                  |
| Θ(127.5°) | -3.48/0.33    | -0.5/-0.55     | -1.26/-0.88    | -1.02/-0.73    | -0.96/-0.3     | -0.26/0.72     | 1.74/-0.22     | -0.77/-0.69      | -1.52/-1.61      | -0.77/-6.04      | -9.42/-9.81      | -19.04/-16.52    | -9.78/-4.9       | -7.75/-8.02      | -5.79/-10.97     | -19.53/-14.03    | -8.13/-3.64      | -0.83/-3.11      | -3.62/-14.84     | -5.68/-3.84      | -15.74/-2.98     | -0.73/-7.63      | -3.7/-2.91       | -0.66/-4.87      |
| Θ(135°)   | 0.06/-0.18    | 0.64/-0.78     | -1.06/0.48     | 0.66/0.55      | -0.38/-0.21    | 0.77/0.81      | -0.3/-0.78     | -1.5/-1.71       | -4.53/-3.37      | -4.9/-7.49       | -8.13/-9.79      | -16.8/-14.42     | -8.04/-3.08      | -11.73/-8.42     | -9.72/-12.23     | -13.91/-8.19     | -10.27/-11.03    | -5.45/-13.06     | -7.36/-14.88     | -5.42/-5.81      | -6.56/-3.96      | -2.78/-5.4       | -4.79/-5.47      | -3.99/-6.51      |
| Θ(142.5°) | -7.86/-1.17   | 1.12/1.4       | 0.17/-1.44     | -0.86/-6.03    | 0.06/-0.57     | -0.33/-0.23    | -0.04/-0.46    | -1.18/-5.58      | -8.5/-7.35       | -5.55/-12.5      | -7.28/-12.7      | -11.43/-12.51    | -10.95/-9.96     | -15.83/-12.06    | -11.73/-0.66     | -10.57/-17.66    | -14.49/-10.17    | -2.61/-8.89      | -9.9/23          | -13.71/-11.6     | -7.25/-8.21      | -5.84/-7.52      | -6.77/-3.92      | -3.95/-6.66      |
| Θ(150°)   | -5.08/-6.19   | -4.31/-4.62    | -3.3/-1.77     | -0.25/0.61     | 1.1/1.2        | 0.04/0.25      | -0.04/-1.83    | -4.08/-4.73      | -6.3/-6.2        | -5.74/-6.68      | -8.68/-16.04     | -19.39/-19.23    | -13.26/-8.66     | -12.3/-5.85      | -5.36/-7.27      | -9.77/-19.91     | -8.27/-9.54      | -16.58/-15.75    | -9.83/-16.11     | -10.13/-5.54     | -8.02/-10.75     | -9.04/-11        | -3.06/-2.92      | -2.73/-4.06      |
| Θ(157.5°) | -6.53/-7.18   | -8.06/-5.81    | -3.22/-2.67    | -2.35/-0.69    | 0.85/1.43      | 0.74/0.29      | 0.63/0.73      | -0.52/-3.81      | -6.15/-7.27      | -7.81/-9.39      | -11.88/-16.48    | -19.37/-19.58    | -13.58/-11.72    | -16.16/-19.35    | -11.68/-12.86    | -14.31/-7.92     | -6.2/-12.69      | -9.29/-6.94      | -10.3/-18.84     | -11.04/-4.88     | -6.05/-12.43     | -11.04/-6.93     | -6.34/-6.62      | -1.67/-6.66      |
| Θ(165°)   | -18.58/-15.48 | -14.91/-12.38  | -8.83/-6.29    | -5.53/-6.02    | -4.66/-2.3     | -0.79/-0.02    | -0.15/-1.45    | -4.06/-7.24      | -12.46/-19.6     | -17.07/-15.92    | -15/-19.09       | -13.66/-10.81    | -15.85/-10.4     | -7.79/-10.66     | -8.78/-9.43      | -14.58/-18.72    | -14.15/-12.81    | -18.9/-18.35     | -16.03/-15.86    | -18.98/-19.6     | -12.04/-9.74     | -12.16/-14.35    | -13.12/-15.51    |                  |
| Θ(172.5°) | -15.44/-13.12 | -14.58/-14.16  | -14.49/-12.81  | -9.6/-6.66     | -5.57/-4.43    | -4.15/-3.64    | -3.55/-4.04    | -6.78/-7.26      | -8.32/-10.2      | -12/-15.01       | -18.91/-18.54    | -19.49/-16.37    | -11.82/-8.25     | -6.74/-7.59      | -10.07/-11.4     | -9.19/-9.26      | -10.57/-11.81    | -12.02/-10.44    | -8.04/-7.5       | -7.11/-6.55      | -7.82/-10.37     | -15.19/-16.73    | -16.14/-17.27    |                  |
| Θ(180°)   | -17.23/-18.65 | -17.31/-16.2   | -13.97/-11.86  | -11.65/-12.23  | -8.93/-5.95    | -5.05/-4.34    | -4.4/-4.57     | -4.58/-4.66      | -6.37/-7.88      | -11.49/-14.17    | -15.98/-18.03    | -17.54/-14.28    | -10.6/-9.48      | -9.87/-10.56     | -12.5/-15.6      | -13.88/-10.93    | -10.01/-9.93     | -11.44/-12.55    | -13.71/-15.98    | -20.01/-18.85    | -19.13/-19.97    | -15.93/-15.49    | -18.99/-19.76    |                  |
| Freq(Hz)  | 6.995GPol.    | 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°)     | -9.22/-8.97   | -8.94/-8.55    | -8.82/-8.23    | -8.25/-7.63    | -7.54/-7.13    | -7.07/-7.13    | -8.6/-9.06     | -10.04/-12.81    | -14.43/-14.59    | -13.51/-11.69    | -9.58/-7.92      | -7.05/-7.57      | -7.51/-7.6       | -6.9/-6.74       | -7.31/-7.42      | -8.21/-7.87      | -8.14/-9.89      | -10.14/-10.05    | -11.35/-13.42    | -13.71/-13.31    | -13.57/-11.91    | -11.09/-10.74    | -1.15/-11.02     | -10.03/-8.6      |
| Θ(7.5°)   | -6.03/-7.09   | -6.1/-6.3      | -6.03/-7.03    | -7.41/-7.94    | -8.18/-8.08    | -8.04/-9.23    | -10.49/-11.03  | -11.69/-12.22    | -13.21/-13.12    | -12.83/-11.45    | -9.49/-8.8       | -8.45/-8.72      | -9.04/-9.58      | -8.97/-9.1       | -9.41/-9.14      | -9.13/-8.65      | -8.65/-8.73      | -9.16/-8.83      | -7.92/-8.64      | -8.86/-9         | -10.21/-11.37    | -11.81/-11.63    | -12.14/-10       | -7.73/-6.72      |
| Θ(15°)    | -4.76/-5.47   | -5.73/-6.09    | -6.75/-8.98    | -10.39/-10.43  | -8.32/-6.83    | -6.31/-8.13    | -10.15/-12.88  | -13.21/-12.71    | -12.72/-12.47    | -11.62/-10.27    | -10.1/-8.3       | -13.27/-13.46    | -13.86/-13.4     | -13.25/-16.65    | -20.15/-18.29    | -14.55/-10.48    | -9.04/-9.13      | -9.51/-9.8       | -7.01/-5.76      | -5.31/-5.61      | -6.27/-7.17      | -9.75/-12.93     | -14.06/-8.93     | -5.59/-4.16      |
| Θ(22.5°)  | -6.14/-7.32   | -9.51/-9.06    | -6.62/-6.37    | -7.78/-7.59    | -6.53/-5.98    | -7.88/-10.92   | -16.63/-13.98  | -17.45/-19.29    | -16.56/-19.93    | -20.01/-16.89    | -13.54/-12.72    | -14.26/-17.13    | -19.51/-18.73    | -16.15/-12.75    | -10.73/-9.05     | -6.76/-6.02      | -5.97/-5.97      | -6.21/-4.76      | -7.36/-6.58      | -5.91/-5.52      | -6.09/-7.88      | -9.48/-12.99     | -16.02/-8.76     | -6.16/-5.58      |
| Θ(30°)    | -7.43/-10.59  | -11.58/-8.83   | -5.09/-3.94    | -3.23/-3.51    | -4.45/-6.29    | -8.31/-12.13   | -17.4/-14.63   | -13.13/-11.2     | -8.54/-7.68      | -6.72/-6.24      | -5.3/-5.03       | -7.22/-10.79     | -10.7/-0.3       | -7.91/-11.98     | -16.71/-12.07    | -9.44/-9.34      | -10.98/-13.85    | -19.31/-15.27    | -12.44/-7.57     | -5.4/-75         | -5.31/-7.44      | -7.61/-6.52      | -7.39/-6.35      | -4.19/-4.92      |
| Θ(37.5°)  | -4.72/-5.98   | -8.65/-6.16    | -3.06/-1.81    | -2.12/-3.52    | -4.81/-5.88    | -7.72/-9.48    | -11.46/-12.08  | -10.08/-8.04     | -6.79/-6.88      | -6.29/-5.1       | -3.22/-3.12      | -3.76/-4.62      | -3.92/-5.59      | -9.52/-12.33     | -10.21/-10.27    | -18.29/-11.38    | -9.99/-13.04     | -17.25/-15.35    | -11.99/-8.72     | -5.31/-2.97      | -1.54/-1.19      | -2.66/-3.22      | -2.09/-0.85      | -0.95/-1.56      |
| Θ(45°)    | -4.68/-7.38   | -8.97/-4.57    | -3.26/-2.66    | -2.4/-1.52     | -1.84/-4.33    | -8.76/-12.38   | -9.95/-8.04    | -7.19/-6.53      | -5.91/-6.7       | -8.03/-7.17      | -6.23/-4.8       | -5.15/-6         | -7.52/-9.2       | -7.32/-4.63      | -4.71/-10.02     | -8.51/-11.93     | -14.03/-15.26    | -9.42/-6.74      | -6.79/-7.02      | -5.89/-3.55      | -1.4/-0.68       | -0.54/-2.14      | -3.5/-3.11       | -0.02/-2.7       |
| Θ(52.5°)  | -6.68/-6.61   | -5.55/-5.24    | -7.24/-8.8     | -8.7/-9.17     | -14.5/-19.54   | -15.65/-13.97  | -10.51/-9.17   | -8.51/-6.07      | -5.99/-5.58      | -10.61/-10.54    | -7.46/-7.46      | -5.15/-5.02      | -7.63/-12.45     | -4.28/-2.06      | -3.29/-2.61      | -3.15/-6.81      | -14.9/-17.55     | -5.46/-4.64      | -4.2/-2.54       | -5.76/-5.41      | -3.63/-2.16      | -1.95/-2.09      | -2.97/-4.89      | -6.2/-6.4        |
| Θ(60°)    | -7.67/-7.49   | -2.93/-4.87    | -11.45/-19.05  | -18.89/-15.81  | -12.5/-9.92    | -10.22/-8.01   | -6.25/-7.59    | -9.22/-7.39      | -5.73/-9.01      | -14.26/-20.18    | -19.67/-14.8     | -13.86/-7.29     | -11.55/-13       | -4.01/-4.42      | -3.91/-1.86      | -4.1/-5.76       | -14.16/-11.27    | -9.08/-6.88      | -5.32/-3.6       | -3.77/-4.74      | -8.67/-7.24      | -3.86/-4.77      | -6.65/-8.69      | -3.92/-3.42      |
| Θ(67.5°)  | -5.88/-6.4    | -3.64/-6.46    | -17.89/-13.4   | -16.61/-18.16  | -8.27/-7.66    | -7.1/-6.72     | -6.96/-6.07    | -7.28/-8.4       | -12.59/-16.77    | -19.34/-13.28    | -13.23/-14.83    | -15.89/-14.27    | -16.83/-10.71    | -6.78/-10.26     | -6.35/-2.05      | -2.03/-3.82      | -5.23/-7.22      | -19.08/-16.76    | -15.27/-14.03    | -14.38/-12.58    | -13.1/-13.44     | -16.09/-8.06     | -3.5/-6.36       | -6.52/-4.23      |
| Θ(75°)    | -4.43/-4.61   | -2.64/-4.92    | -17.69/-17.48  | -18.49/-11.04  | -6.79/-7.86    | -3.95/-1.44    | -0.61/-3.2     | -10.57/-12.17    | -4.19/-6.92      | -14.52/-7.39     | -4.32/-4.39      | -5.94/-9.52      | -12.16/-10.84    | -8.98/-10.3      | -7.09/-9.31      | -3.94/-5.93      | -1.06/-3.46      | -9.31/-19.13     | -17.78/-19.44    |                  |                  |                  |                  |                  |



# Radiated Composite Gain Data\_6GHz

# Appendix B

|           |                 |                |                |                |                |                |                |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |
|-----------|-----------------|----------------|----------------|----------------|----------------|----------------|----------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
| Θ(75°)    | -11.45/-10.36   | -10.32/-7.02   | -1.23/0.31     | -0.44/-0.93    | -0.06/-1.3     | 2.33/3.15      | 3.97/4.06      | 3.86/2.46        | 1.15/-0.04       | -0.33/-0.45      | 0.32/1.3         | 2.1/1.98         | -0.11/-4.51      | -11.75/-4.14     | 1.26/0.3         | 0.68/-3.04       | -9.62/-11.83     | -16.41/-19.04    | -8.73/-5.48      | -6.35/-4.73      | -3.99/-8.43      | -7.13/-4.6       | -6.62/-10.25     | -6.39/-9.75      |
| Θ(82.5°)  | -6.96/-6.14     | -8.63/-10.3    | -2.99/-1.2     | 0.32/-0.3      | 0.27/1.5       | 1.54/-6.2      | 2.65/-3.1      | 3.71/0.8         | 0.72/-2.92       | 0.01/2.5         | 1.9/-0.4         | 1.67/2.29        | 0.26/-4.86       | -10.92/0.03      | 1.06/0.57        | -0.59/-3.25      | -0.57/-0.36      | -3.4/-10.18      | -4.75/-3.85      | -1.98/-4.1       | -5.25/-4.67      | -5.51/-7.18      | -6.19/-14.71     | -12.65/-9.65     |
| Θ(90°)    | -9.13/-6.21     | -5.03/-10.3    | -5.22/0.33     | -1.62/-1.44    | 1.73/2.92      | 2.77/2.4       | 1.68/1.58      | 1.42/-1.42       | -2.1/-1.79       | 0.13/0.66        | 3.35/2.27        | -0.47/-0.53      | -1.81/-7.22      | -3.64/0.9        | 0.06/0.96        | -2.09/-2.02      | 2.08/-0.54       | -6.02/-19.69     | -18.74/-5.57     | -3.76/-1.23      | -5.72/-7.1       | -2.61/-1.29      | -2.9/-3.22       | -7.25/-19.21     |
| Θ(97.5°)  | -6.42/-4.96     | -1.44/-2.92    | -9.04/-7.14    | -1.03/-2.07    | -0.86/0.17     | 1.48/1.73      | 2.57/2.22      | 0.86/-2.19       | -4.2/-3.71       | -1.88/-0.26      | 0.99/0.7         | 0.12/1.3         | -9.8/-2.47       | -0.68/-2.8       | 2.53/2.65        | 1.57/1.54        | -5.56/-15.57     | -13.6/-0.78      | 1.34/0.19        | -4.74/-5.79      | -0.05/-6.63      | -4.48/2          | -1.02/-6.98      | -7.13/-16.81     |
| Θ(105°)   | -6.91/-11.86    | -0.51/-4.36    | -7.24/-6       | -5.37/-4.41    | -1.89/0.02     | 0.8/-1.07      | -0.71/-1.65    | -3.65/-5.18      | -7.61/-2.86      | -0.09/-0.08      | -0.69/-0.9       | -2.92/-3.39      | -4.57/-3.28      | -5.62/0.77       | 2.21/-2.52       | -6.03/-3.62      | -15.09/-9.01     | -2.88/-0.42      | 3.03/2.16        | -1.91/-16.32     | -4.02/-6.38      | -6.1/6.3         | -0.72/-2.24      | -5.23/-0.45      |
| Θ(112.5°) | -16.31/-4.49    | -0.87/-1.51    | -1.52/-3.54    | -7.12/-3.38    | -8.39/-6.77    | -3.75/-3.96    | -5.32/-6.05    | -6.07/-10.24     | -7.67/-6.01      | -2.05/-0.97      | -3.84/-4.48      | -1.02/-3.33      | -6.29/-1.3       | -3.55/-1.01      | 2.58/-4.44       | -6.07/-5.72      | -9.18/-1.74      | -5.43/0.23       | <b>0.715.26</b>  | 3.38/-6.63       | -0.91/-1.36      | -5.22/-2.34      | -0.4/-2.13       | -6.51/-12.59     |
| Θ(120°)   | -17.66/-5.84    | 0.48/0.06      | -2.7/-2.55     | -3.06/-7.16    | -7.34/-10.46   | -11.68/-6.03   | -3.82/-5.88    | -10.05/-7.78     | -6.24/-5.84      | -8.32/-8.09      | -6.71/-4.9       | -4.44/-4.68      | -4.21/-2.67      | -2.13/-0.71      | -2.43/-5.51      | -2.76/-1.11      | -9.4/-5.61       | -7.77/-1.14      | 1.43/0.06        | 0.61/-6.87       | -0.83/-8.24      | -2.36/-1.54      | -6.25/-8.51      | -10.44/-7.86     |
| Θ(127.5°) | -9.08/-2.84     | -0.3/-3.48     | -5.1/-3.05     | -4.56/-7.18    | -10.04/-7.81   | -7.18/-6.37    | -7.51/-12.93   | -8.15/-4.64      | -2.74/-2.75      | -3.05/-5.67      | -6.05/-3.04      | -3.36/-6.51      | -2.17/-2.11      | -4.29/-5.02      | 0.29/-0.18       | 0.46/-5.38       | -8.51/-6.07      | -10.33/-1.21     | -2.49/-1.95      | -2.11/-9.93      | -3.48/-7.51      | -2.69/-1.23      | -5.72/-4.7       | -16.06/-4.59     |
| Θ(135°)   | -8.92/-10.84    | -10.75/-5.69   | -7.22/-10.81   | -6.81/-4.42    | -2.59/-5.29    | -6.22/-6.02    | -7.07/-5.8     | -4.61/-7.01      | -10.59/-1.75     | -5.62/-4.37      | -6.54/-11.24     | -9.74/-3.05      | -1.13/-4.45      | -6.9/-5.59       | -2.29/-4.49      | -0.79/-1.59      | -5.63/-14.82     | -2.52/-0.72      | -6.54/-3.81      | -2.18/-6.51      | -7.54/-8.24      | -6.53/-2.67      | -3.42/-13.69     | -14.62/-4.5      |
| Θ(142.5°) | -5.08/-3.41     | -7/-19.72      | -7.14/-2.94    | -2.83/-3.55    | -6.71/-9.18    | -12.62/-18.38  | -19.59/-16.98  | -10.66/-7.31     | -6.45/-6.6       | -9.29/-15.5      | -10.04/-5.74     | -3.14/-5.08      | -3.05/-1.04      | 0.39/-2.01       | -4.91/-6.72      | -9.38/-10.15     | -12.25/-17.1     | -6.52/-3.04      | -2.32/-0.9       | -1.94/-1.9       | -1.34/-3.31      | -10.21/-11.59    | -3.98/-1.32      | -4.05/-9.93      |
| Θ(150°)   | -16.41/-7.64    | -4.96/-5.31    | -7.39/-6.9     | -3.34/-1.13    | -0.49/-1.22    | -2.56/-3.59    | -6.42/-12.25   | -18.54/-19.46    | -11.53/-6.65     | -4.74/-4.55      | -6/-8.4          | -8.69/-17.86     | -7.94/-4.98      | -1.53/-3.06      | -5.29/-11.49     | -19.61/-10.21    | -4.42/-2.89      | -3.35/-8.43      | -4.77/-4.42      | -3.39/-1.04      | -0.44/-1.25      | -3.86/-7.72      | -19.71/-5.66     | -4.41/-12.43     |
| Θ(157.5°) | -7.15/-6.75     | -8.05/-8.13    | -7.02/-7.09    | -9.42/-11.59   | -7.27/-19.18   | -19.37/-18.74  | -12.96/-12.14  | -11.38/-10.32    | -8.06/-7.23      | -7.65/-10.06     | -15.02/-18.19    | -11.54/-8.55     | -7.64/-6.44      | -6.34/-8.42      | -2.99/-0.99      | 1.55/2.44        | -19.26/-6.82     | 1.95/1.37        | 0.94/0.49        | -0.15/-1.95      | -4.36/-1.89      | -0.04/0          | -2.19/-8.24      | -17.92/-9.37     |
| Θ(165°)   | -5.43/-4.77     | -6.02/-7.97    | -8.8/-9.79     | -11.31/-11.47  | -14.13/-16.85  | -14.4/-12.08   | -10.58/-9.99   | -12.09/-14.22    | -10.59/-9.17     | -9.96/-11.44     | -9.69/-6.34      | -3.79/-2.99      | -3.59/-4.53      | -4.75/-6.71      | -11.02/-16.54    | -18.87/-9.77     | -4.52/-2.53      | -3.2/-4.42       | -3.04/-2.01      | -2.46/-4.39      | -8.55/-13.61     | -6.16/-4.37      | -5.24/-8.02      | -18.23/-9.31     |
| Θ(172.5°) | -9.73/-8.02     | -7.23/-5.71    | -4.85/-4.27    | -4.68/-5.56    | -7.69/-9.71    | -11.79/-11.25  | -9.4/-7.83     | -6.43/-6         | -6.73/-9.52      | -15.57/-19.23    | -16.13/-12.91    | -12.45/-15       | -19.2/-12.55     | -8.56/-6.64      | -4.81/-3.15      | -1.96/-1.06      | -0.74/-1.24      | -2.74/-4.9       | -7.1/-8.47       | -10.02/-11.37    | -13.42/-19.35    | -20.25/-18.47    | -19.32/-19.71    | -18.71/-11.9     |
| Θ(180°)   | -7.44/-6.06     | -5.63/-5.41    | -4.3/-2.95     | -2.12/-0.22    | -2.32/-2.55    | -2.88/-3.24    | -3.94/-5.2     | -6.88/-8.94      | -10.89/-12.01    | -11.61/-11.12    | -11.47/-12.93    | -14.41/-14.37    | -11.83/-9.01     | -7.71/-6.86      | -6.22/-6.02      | -6.21/-6.48      | -6.65/-7.18      | -6.98/-5.78      | -5.07/-5.23      | -6.02/-7.91      | -11.46/-13.69    | -14.81/-6.37     | -16.33/-17.19    | -14.33/-11.03    |
| Freq(Hz)  | 6.475GPdL       | Phi/Ant. 4     | +              | +              | +              | +              | +              | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                |
| Gain      | Φ(0°)Ψ(7.5°)    | Φ(15°)Ψ(22.5°) | Φ(30°)Ψ(37.5°) | Φ(45°)Ψ(52.5°) | Φ(60°)Ψ(67.5°) | Φ(75°)Ψ(82.5°) | Φ(90°)Ψ(97.5°) | Φ(105°)Ψ(112.5°) | Φ(120°)Ψ(127.5°) | Φ(135°)Ψ(142.5°) | Φ(150°)Ψ(157.5°) | Φ(165°)Ψ(172.5°) | Φ(180°)Ψ(187.5°) | Φ(195°)Ψ(202.5°) | Φ(210°)Ψ(217.5°) | Φ(225°)Ψ(232.5°) | Φ(240°)Ψ(247.5°) | Φ(255°)Ψ(262.5°) | Φ(270°)Ψ(277.5°) | Φ(285°)Ψ(292.5°) | Φ(300°)Ψ(307.5°) | Φ(315°)Ψ(322.5°) | Φ(330°)Ψ(337.5°) | Φ(345°)Ψ(352.5°) |
| Θ(0°)     | -6.04/-6.34     | -6.22/-6.28    | -6.78/0.08     | -1.41/-17.86   | -18.68/-18.78  | -19.13/-19.13  | -12.43/-10     | -8.61/-7.59      | -6.27/-6.01      | -5.24/-5.01      | -5.44/-5.37      | -5.13/-4.53      | -4.21/-4.1       | -4.12/-4.88      | -5.93/-7.91      | -11.28/-15.03    | -14.76/-15.31    | -9.21/-6.28      | -5.59/-6.53      | -6.77/-5.24      | -3.01/-1.68      | -1.67/-3.58      | -5.59/-6.51      |                  |
| Θ(7.5°)   | -5.63/-5.62     | -5.65/-5.81    | -7.25/-9.04    | -11.28/-11.5   | -12.13/-12.91  | -13.2/-12.53   | -11.5/-9.14    | -6.65/-4.86      | -3.35/-2.49      | -1.92/-1.61      | -2.26/-2.75      | -3.23/-3.67      | -3.27/-3.62      | -4.62/-5.66      | -6.9/-8.04       | -8.95/-10.81     | -14.11/-19.31    | -20.19/-16.37    | -14.05/-12.45    | -9.96/-7.85      | -7.23/-7.12      | -5.93/-5.05      | -4.5/-5.65       | -7.01/-6.34      |
| Θ(15°)    | -3.34/-3.48     | -3.16/-3.38    | -3.85/-3.65    | -4.21/-5.53    | -7.9/-10.62    | -18.33/-19.23  | -13.14/-8.91   | -7.03/-4.77      | -4.14/-2.74      | -1.46/-0.71      | -1.15/-1.93      | -3.14/-3.23      | -2.94/-3.52      | -4.56/-6.06      | -7.87/-9.07      | -8.85/-7.63      | -6.67/-6.79      | -10.76/-15.34    | -17.21/-16.82    | -19.48/-15.25    | -10.37/-8.21     | -6.94/-6.13      | -5.14/-4.9       | -3.8/-2.66       |
| Θ(22.5°)  | -3.03/-1.68     | -1.71/-1.81    | -2.63/-4.36    | -5.8/-7.1      | -7.33/-8.93    | -12.86/-17.65  | -14.34/-10.63  | -7.43/-4.85      | -2.74/-1.38      | -0.44/-0.15      | -1.03/-2.68      | -3.13/-2.11      | -1.49/-1.64      | -1.57/-1.41      | -0.80/-6.02      | -1.01/-1.98      | -3.93/-6.64      | -9.05/-10.03     | -10.75/-12.03    | -13.31/-19.1     | -9.68/-4.27      | -8.56/-9.44      | -12.23/-16.63    | -10.19/-4.44     |
| Θ(30°)    | -6.58/-2.45     | -2.39/-3.78    | -5.58/-6.97    | -7.24/-7.02    | -6.99/-8.4     | -11.51/-19.69  | -12.84/-7.48   | -5.05/-3.81      | -3.31/-2.68      | -2.75/-2.44      | -2.07/-2.64      | -2.96/-2.47      | -1.65/-0.61      | 0.21/-0.12       | -0.98/-2.14      | -4.06/-7.4       | -12.36/-16.79    | -19.03/-17.47    | -15.59/-16.4     | -18.58/-15.97    | -11.48/-8.26     | -6.29/-5.8       | -6.03/-7.48      | -11.48/-16.22    |
| Θ(37.5°)  | -16.48/-7       | -1.34/-5.72    | -8.2/-7.06     | -6.98/-7.67    | -8.15/-8.71    | -11.68/-18.54  | -13.44/-6.79   | -3.91/-2.44      | -2.09/-1.21      | 0.31/0.77        | 0.87/0.15        | -0.63/-0.91      | 0.41/0.21        | 2.58/2.17        | 0.37/-3.45       | -11.11/-16.4     | -10.27/-10.76    | -15.17/-18.18    | -19.85/-14.78    | -15.04/-12.18    | -9.03/-5.59      | -10.13/-8.29     | -4.64/-7.27      | -3.84/-10.97     |
| Θ(45°)    | -7.4/-2.34      | -3.16/-6.63    | -6.11/-4.52    | -8.14/-9.9     | -4.81/-3.06    | -5/-10.64      | -18.9/-6.46    | -2.32/-0.1       | 0.71/0.74        | 1.01/-6.13       | 1.52/-6.05       | -1.32/0.76       | 1.24/0.17        | -11.39/-14.21    | -11.04/-11.02    | -10.37/-7.82     | -4.89/-7.21      | -5.68/-5.6       | -8.4/-19.72      | -8.43/-3.6       | -1.87/-6.87      |                  |                  |                  |
| Θ(52.5°)  | -3.99/-2.94     | -3.43/-5.05    | -4.22/-3.32    | -6.71/-9.36    | -5.79/-6.34    | -9.19/-11.5    | -8.73/-7.23    | -6.95/-5.7       | -2.79/-1.52      | -0.72/-0.98      | -0.32/0.55       | 1.01/-0.91       | 0.61/2.41        | 2.93/-1.17       | -9.47/-10.89     | -4.45/-1.72      | -2.75/-7.13      | -14.21/-13.71    | -8.91/-5.62      | -3.72/-3.74      | -1.47/-0.19      | -1.35/-5.28      | -17.95/-6.3      | -2.09/-4.83      |
| Θ(60°)    | -7.96/-1.1      | -2.56/-4.27    | -3.47/-3.03    | -6.54/-11.01   | -7.05/-7.77    | -9.53/-16.03   | -14.85/-9.11   | -4.89/-3.3       | -3.18/-3.83      | -4.31/-1.29      | 0.17/0.15        | -0.76/-1.65      | -1.88/-1.52      | 1.72/-3.8        | -13.91/-8.17     | -4.25/-3.15      | -3.31/-9.35      | -19.01/-20.08    | -10.26/-8.24     | -8.2/-12.22      | -12.36/-5.66     | -3.89/-4.87      | -16.52/-9.65     | -2.46/-7.59      |
| Θ(67.5°)  | -8.14/-2.22     | -9.66/-2.82    | -4.7/-3.1      | -4.5/-12.01    | -19.66/-19.46  | -18.28/-19.35  | -13.68/-6.15   | -3.22/-0.3       | -0.31/-4.6       | -4.89/-4.79      | -3.27/-2.38      | -2.92/-2.49      | -0.67/-1.11      | -6.55/-12.16     | -2.95/-3.64      | -5.63/-7.44      | -6.66/-8.86      | -18.82/-7.01     | -6.84/-5.71      | -9.02/-10.24     | -6.84/-5.76      | -7.37/-9.2       | -7.89/-5.99      |                  |
| Θ(75°)    | -2.59/-0.98     | -2.97/0.08     | -0.07/-2.21    | -1.58/-1.9     | -3.86/-5.08    | -6.24/-11.45   | -12.69/-10.09  | -5.78/-3.54      | -4.69/-2.88      | -7.6/-8.4        | -4.49/-2.44      | -1.05/-0.97      | -1.76/-2.64      | -9.29/-9.23      | -4.29/-1.82      | -2.4/-1.02       | -5.03/-9.54      | -16.79/-10.21    | -7.45/-7.48      | -6.9/-10.31      | -11.62/-9.74     | -7.62/-5.07      | -7.76/-5.53      | -7.01/-14.93     |
| Θ(82.5°)  | -5.44/-5.1      | -2.71/-5.4     | -1.88/0.3      | -0.61/-3.7     | -3.56/-6.02    | -12.43/-12.72  | -16.24/-11.52  | -8.9/-4.6        | -7.23/-5.26      | -6.13/-14.08     | -5.16/-2.96      | -3.52/-3.86      | -4.71/-11.87     | -10.5/-2.62      | 0.46/-2.04       | -1.63/-6.71      | -17.56/-4.38     | -3.79/-6.61      | -6.99/-6.77      | -10.03/-3.68     | -10.23/-9.79     | -6.03/-6.27      | -1.47/-7.62      | -6.33/-11.26     |
| Θ(90°)    | -2.41/-1.94     | -5.87/-8.84    | -3.30/95       | 0.81/-3.96     | -6.03/-6.12    | -12.32/-18.3   | -13.52/-10.08  | -11.43/-6.43     | -6.21/-7.74      | -4.33/-2.28      | -2.51/-3.75      | -2.48/-1.1       | -4.51/-6.16      | -2.21/0.86       | 0.375/-63        | -4.58/-8.8       | -15.95/-9.63     | -9.08/-8.84      | -6.56/-5.68      | -14.23/-5.69     | -1.22/-3.98      | -6.04/-0.12      | -4.21/-3.27      | -1.39/-8.14      |
| Θ(97.5°)  | -1.56/-3.93     | -6.19/-6.15    | -13.31/-5.04   | -0.21/-11.02   | -19.45/-11.56  | -16.11/-16.31  | -14.67/-11.96  | -11.54/-20.26    | -12.01/-9.04     | -8.43/-0.26      | -0.89/-4.52      | 0.2/0.57         | -0.75/-3.97      | -3.72/-1.92      | -4.6/4.51        | -2.59/-4.18      | -18.88/-8.38     | -6.69/-6.27      | -8.56/-14.94     | -6.67/0.26       | 0.3/-7.11        | -0.05/2.89       | -0.19/-5.23      | -1.22/-4.86      |
| Θ(105°)   | 0.51/-0.74      | -5.61/-0.44    | -3.3/-4.8      | -1.83/-5.25    | -4.62/-12.09   | -8.02/-11.32   | -14.95/-10.61  | -10.81/-16.73    | -17.72/-18.8     | -8.83/-4.63      | -4.49/-8.01      | -4.01/-1.96      | -2.08/-6.65      | -2.21/1.21       | 0.6/-3.46        | -12.21/-13.74    | -5.84/-3.86      | -4.59/-7.42      | -8.56/-13.6      | -5.35/-0.23      | -0.89/-8.56      | -1.68/-0.27      | -2.55/-4.09      | -3.91/-5.85      |
| Θ(112.5°) | 0.88/-0.46      | -8.53/-3.12    | -2.56/-5.54    | -719.55        | -9.97/-6.66    | -7.56/-5.35    | -8.01/-16.82   | -14.67/-10.06    | -9.12/-4.74      | -3.13/-2.27      | -2.65/-2.06      | 0.02/0.41        | -2.03/-0.67      | -1.95/-0.53      | -2.74/-9.84      | -19.21/-13.8     | -8.56/-9.09      | -13.39/-8.61     | -14.94/-19.05    | -4.73/-4.07      | -5.06/-13.23     | -6.02/-1.35      | -1.73/-3.57      | -10.58/-5.66     |
| Θ(120°)   | <b>1.993.34</b> | -1.34/-8.65    | -0.98/-0.66    | -1.86/-2.69    | -6.03/-3.65    | -4.02/-12      | -12.76/-6.87   | -4.78/-5.76      | -6.13/-5.49      | -4.14/-2.85      | -3.69/-3.01      | -2.57/-6.24      | -1.61/-1.62      | -5.8/-2.58       | -11.68/-11.72    | -8.85/-3.67      | -7.07/-19.03     | -17.71/-15.34    | -7.93/-5.41      | -11.37/-19.41    | -13.23/-8.2      | -5.54/-2.39      | -4.93/-6.25      | -7.87/-5.12      |
| Θ(127.5°) | -0.67/-1.22     | -0.89/-4.01    | -5.14/-3.06    | -3.01/-6.1     | -12.15/-12.9   | -8.83/-7.22    | -6.69/-6.26    | -6.31/-4.95      | -4.21/-3.5       | -1.17/-0.35      | -1.69/-4.52      | -2.41/-2.53      | -6.66/-6.15      | -3.35/-15.45     | -13.33/-4.17     | -1.47/-8.79      | -16.18/-3.26     | -10.28/-3.06     | -7               |                  |                  |                  |                  |                  |



Radiated Composite Gain Data\_6GHz

Appendix B

|           |               |                |                |                |                |                |                |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |
|-----------|---------------|----------------|----------------|----------------|----------------|----------------|----------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
| Θ(127.5°) | -6.86/-10.94  | -14.23/-4.92   | -1.19/-2.66    | -3.25/-5.28    | -8.21/-5.85    | -3.23/-3.18    | -3.17/-2.44    | -4/-11.53        | -12.78/-10.39    | -6.98/-2.86      | -1.05/-1.22      | -2.68/-3.06      | -6.74/-7.83      | -0.71/-1.54      | -3.72/-0.55      | -4.45/-6.51      | -3.8/-8.5        | -18.93/0.6       | -3.49/1.75       | -1.06/-9.65      | -2.04/-7.96      | -0.76/1.3        | -3.76/-3.16      | -10.26/-10.14    |
| Θ(135°)   | -5.72/-10.1   | -5.41/-5.53    | -4.91/-3.12    | -5.93/-15.02   | -15.07/-12.82  | -17.2/-15.97   | -17.34/-18.3   | -12.03/-6.26     | -3.17/-3.09      | -3.88/-2.88      | 0.5/0.03         | -4.57/-8.83      | -10.38/-8.52     | -4.5/-2.5        | -4.02/-6.42      | -6.74/-8.7       | -1.89/-13.55     | -14.35/-2.75     | -6.18/-6.64      | -4.48/-9.27      | -13.89/-18.87    | -3.12/-3.29      | -12.71/-7.6      | -2.9/-1.41       |
| Θ(142.5°) | 0.99/-4.73    | -10.19/-1.01   | 0.42/-3.47     | -7.56/-14.61   | -18.53/-12     | -6.44/-5.9     | -7.44/-9.19    | -11.65/-15.37    | -11.46/-4.13     | -0.150.71        | -1.76/-6.33      | -4.94/-4.28      | -7.92/-18.65     | -11.57/-6.76     | -5.59/-6.42      | -8.57/-14.98     | -12.97/-6.63     | -10.31/-5.17     | -7.88/-5.9       | -0.8/0.6         | -0.43/-5.22      | -16.02/-8.27     | -4.14/-6.29      | -8.97/-0.96      |
| Θ(150°)   | -5.45/-7.07   | -11.77/-12.59  | -8.02/-12.22   | -19.55/-13.17  | -9.82/-9.52    | -10.28/-8.48   | -7.41/-8.53    | -8.51/-8.09      | -7.34/-5.55      | -6.08/-12.23     | -9.6/-4.68       | -3.74/-5.18      | -9.33/-4.08      | -1.42/-0.43      | -1.77/-2.54      | -7.39/-10.84     | -10.63/-10.75    | -6.88/-4.66      | -5.23/-5.99      | -3.3/-1.01       | -0.42/-0.24      | -1.32/-3.96      | -9.75/-5.53      | -5.29/-6.78      |
| Θ(157.5°) | -7.63/-19.69  | -7.61/-2.76    | -1.58/-2.67    | -4.43/-6.77    | -8.51/-11.09   | -13.68/-17.18  | -19.42/-19.31  | -19.58/-13.06    | -10.76/-10.35    | -10.39/-11.08    | -11.74/-10.48    | -8.61/-9.43      | -14.62/-18.63    | -10.07/-5.68     | -4.31/-8.62      | -14.62/-6.68     | -1.25/-1.81      | 2.25/2.14        | 1.98/1.22        | 0.45/-1.08       | -4.67/-3.71      | -1.11/-2.34      | -7.99/-8.47      | -4.87/-4.48      |
| Θ(165°)   | -1.83/-4.3    | -9.42/-12.32   | -8.4/-7.38     | -9.93/-14.56   | -19.84/-18.8   | -18.26/-16.71  | -12.73/-13.59  | -14.23/-16       | -15.72/-14.56    | -16.5/-16.88     | -18.87/-19.6     | -13.43/-10.05    | -10.2/-11.16     | -12.89/-12.94    | -10.53/-14.19    | -10.29/-5.86     | -5.03/-6.19      | -7.28/-6.73      | -7.49/-8.66      | -10.98/-8.6      | -6.07/-5.81      | -7.62/-6.46      | -3.09/-1.45      |                  |
| Θ(172.5°) | -5.4/-4.42    | -3.8/-2.85     | -2.19/-1.75    | -1.67/-2.56    | -4.15/-6.04    | -9.31/-10.34   | -9.48/-7.51    | -7.31/-7.32      | -7.5/-8.52       | -9.06/-10.77     | -12.28/-10.85    | -9.22/-9.13      | -11.65/-15.76    | -16.95/-15.07    | -13.2/-9.97      | -6.65/-3.89      | -2.01/-1.44      | -2.23/-4.08      | -6.97/-8.96      | -10.31/-11.28    | -13/-18.46       | -19.38/-18.88    | -15.33/-9.84     | -7.53/-6.34      |
| Θ(180°)   | -7.71/-6.38   | -4.85/-3.92    | -3.78/-3.38    | -3.45/-4.61    | -6.49/-7.27    | -7.97/-8.5     | -9.18/-8.74    | -8.03/-8.84      | -10.31/-13.23    | -13.62/-12.91    | -12.5/-13.7      | -18.58/-19.17    | -19.42/-13.55    | -9.46/-7.73      | -6.33/-5.68      | -5.53/-6.18      | -7.28/-9.07      | -10.29/-10.08    | -10.18/-10.34    | -10.94/-10.06    | -9.15/-9.48      | -10.07/-12.13    | -14.55/-11.12    | -8.02/-7.52      |
| Freq(Hz)  | 6.995GPdL     | PhiAnt.4       | -              | -              | -              | -              | -              | -                | -                | -                | -                | -                | -                | -                | -                | -                | -                | -                | -                | -                | -                | -                | -                |                  |
| 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°)     | -5.75/-5.5    | -4.66/-4.1     | -3.7/-3.16     | -3.39/-3.71    | -4.55/-5.05    | -6.16/-6.7     | -8.01/-9.24    | -10.79/-15.34    | -20.07/-18.34    | -13.02/-9.36     | -7.03/-5.2       | -3.87/-3.27      | -3.02/-2.88      | -2.42/-2.21      | -2.32/-2.46      | -3.1/-4.42       | -6.03/-8.58      | -10.74/-13.75    | -18.3/-18.18     | -19.34/-12.19    | -9.44/-8.88      | -8.29/-7.3       | -5.49/-3.71      | -3.47/-4.16      |
| Θ(7.5°)   | -2.44/-1.63   | -1.34/-2.27    | -3.09/-3.71    | -3.64/-3.79    | -5.12/-8.44    | -14.15/-17.88  | -19.15/-19.59  | -14.85/-9.24     | -6.62/-5.64      | -5.43/-4.91      | -4.81/-4.11      | -3.38/-3.16      | -3.18/-3.64      | -4.14/-4.03      | -3.49/-3.06      | -3.49/-3.9       | -4.25/-4.62      | -5.15/-6.14      | -7.22/-7.23      | -8.59/-11.92     | -14.59/-15.7     | -16.02/-14.77    | -9.05/-5.04      | -3.52/-3.35      |
| Θ(15°)    | -1.69/-0.78   | -0.95/-1.44    | -1.63/-2.83    | -3.37/-5.19    | -8.27/-12.89   | -16.62/-16.98  | -14.49/-12.2   | -9.36/-6.14      | -4.28/-3.73      | -3.62/-3.56      | -2.84/-1.9       | -1.52/-1.52      | -2.02/-3.3       | -4.93/-6.08      | -7.16/-7.78      | -8.05/-10.26     | -13.14/-16.56    | -16.85/-17.24    | -17.78/-15.76    | -13.47/-11.76    | -12.08/-13.41    | -14.14/-18.05    | -19/-9.54        | -6.8/-4.25       |
| Θ(22.5°)  | -3.79/-1.65   | -1.42/-2.11    | -3.17/-3.33    | -3.63/-5.68    | -9.24/-18.73   | -18.67/-12.83  | -9.42/-7.61    | -6.31/-5.47      | -4.93/-4.78      | -4.8/-4.21       | -3.09/-1.79      | -1.55/-2.08      | -4.27/-6.6       | -7.97/-5.79      | -2.87/-2.17      | -3.2/-4.89       | -7.11/-9.72      | -12.65/-13.91    | -13.1/-13.36     | -15.45/-15.17    | -12.3/-9.59      | -8.6/-8.03       | -8.48/-11.28     | -11.16/-6.06     |
| Θ(30°)    | -7.11/-1.74   | -5.76/-4.88    | -3.32/-1.81    | -2.35/-5.3     | -10.28/-17.7   | -15.52/-11.44  | -9.15/-7       | -4.38/-2.85      | -2.67/-3.47      | -4.94/-5.78      | -4.36/-2.98      | -1.86/-1.55      | -2.89/-5.41      | -6.2/-4.14       | -2.5/-6.32       | -5.95/-10.15     | -16.8/-14.77     | -12.58/-14.72    | -16.45/-16.85    | -13.1/-16.09     | -15.83/-10.35    | -17.43/-9.18     | -12.93/-8.68     |                  |
| Θ(37.5°)  | -6.41/-3.43   | -5.59/-15.24   | -10.45/-7.01   | -6.21/-6.54    | -8.87/-12.75   | -15.42/-12.96  | -10.37/-8.49   | -6.56/-5.88      | -6.46/-7         | -6.27/-5.42      | -3.42/-1.28      | 1.27/1.58        | -0.75/-4.1       | -2.38/1.39       | 1.96/0.59        | -4.17/-12.84     | -11.83/-9.47     | -10.63/-9.82     | -8.1/-6.23       | -7.33/-9.53      | -10.34/-12.48    | -16.41/-6.4      | -3.48/-5.81      | -13.82/-16.4     |
| Θ(45°)    | -6.1/-5.85    | -4.88/-7.91    | -13.39/-7.95   | -3.08/-2.12    | -3.64/-6.61    | -8.24/-8.3     | -7.96/-6.59    | -5.51/-4.52      | -3.47/-8.23      | -4.18/-4.67      | -3.88/-3.03      | -2.74/-3.08      | -3.08/-4.27      | -2.5/-0.69       | -1.6/-7.67       | -15.41/-7.83     | -4.89/-6.66      | -7.21/-18.8      | -8.34/-11.72     | -10.53/-8.77     | -8.13/-10.88     | -18.83/-9.3      | -2.54/-1.27      | -5/-13.53        |
| Θ(52.5°)  | -5.95/-11.59  | -5.56/-2.73    | -8.83/-13.67   | -4.07/-3.5     | -7.5/-10.65    | -9.88/-16.44   | -12.24/-9.57   | -6.13/-3.24      | -1.98/-2.97      | -3.48/-3.91      | -2.5/-1.45       | -1.24/-1.23      | -1.48/-2.38      | -0.11/6.1        | -1.03/-5.15      | -10/-8.59        | -15.13/-15.26    | -16.49/-14.76    | -8.34/-8.53      | -13.15/-5.74     | -3.29/-3.92      | -9.59/-11.47     | -6.51/-5.23      | -11.51/-9.23     |
| Θ(60°)    | -4.77/-6.86   | -5.78/-4.04    | -7.37/-12.98   | -3.9/-1.62     | -3.15/-5.92    | -7.83/-9.39    | -17.52/-16.61  | -8.49/-4.01      | -2.25/-1.61      | -2.28/-4.13      | -5.15/-2.95      | -0.18/-2.41      | -5.1/-3.43       | -0.78/-0.02      | -2.37/-4.71      | -4.3/-13.16      | -9.28/-5.21      | -5.37/-5.28      | -7.92/-7.08      | -9.25/-13.4      | -3.34/0.05       | -1.19/-8.35      | -8.34/-5.35      | -16.8/-10.23     |
| Θ(67.5°)  | -2.61/-5.73   | -4.22/-6.27    | -6.42/-5.58    | -7.02/-3.93    | -4.31/-5.82    | -7/-11.82      | -17.61/-14.47  | -19.22/-9.89     | -4.39/-2.27      | -2.88/-6.54      | -8.76/-3.86      | -6.57/-3.22      | -1.81/-3.05      | -2.72/-3.04      | -6.57/-14.09     | -9.46/-10.38     | -8.15/-10.75     | -10.8/-9.12      | -6.14/-7.19      | -7.89/-8.84      | -2.65/-13.57     | -7.42/-8.22      | -19.14/-5.28     |                  |
| Θ(75°)    | -3.83/-1.57   | -2.96/-8.34    | -3.34/-2.94    | -6.08/-4.63    | -4.19/-9.49    | -14.73/-10.37  | -12.15/-13.05  | -19.08/-7.32     | -7.17/-2.56      | -3.36/-5.74      | -8.37/-3.44      | -0.91/-4.55      | -6.86/-4.23      | -4.91/-5.95      | -6.4/-3.55       | -11.17/-15.52    | -10.24/-14.04    | -19.11/-19.71    | -17.03/-18.57    | -17.48/-9.81     | -6.58/-7.72      | -9.96/-7.4       | -8.11/-8.04      |                  |
| Θ(82.5°)  | -2.520.02     | -0.32/-2.89    | -3.07/-1.53    | -1.9/-5.32     | -7.25/-19      | -8.82/-5.79    | -8.36/-10.76   | -19.55/-8.84     | -10.03/-3.64     | -4.6/-8.61       | -6/-5.35         | -2.97/-3.42      | -4.72/-3.28      | -8.83/-10.34     | -9.68/-5.2       | -9.58/-8.34      | -18.61/-19.4     | -9.09/-9.4       | -6.07/-10.34     | -9.55/-19.18     | -12.4/-10.3      | -5.35/-7.9       | -6.31/-5.75      | -17.14/-5.22     |
| Θ(90°)    | -4.39/-1.8    | -2.59/-1.74    | 0.32/-2.78     | -1.75/-2.7     | -3.67/-11.16   | -6.51/-9.65    | -13.6/-15.96   | -19.61/-7.4      | -7.34/-7.27      | -5.94/-10.34     | -8/-7.5          | -6.4/-9.55       | -5.74/-7.16      | -16.69/-8.04     | -4.36/-5.55      | -11.11/-12.64    | -7.79/-6.8       | -4.79/-8.77      | -6.62/-9.05      | -10.59/-3.26     | -2.72/-19.13     | -3.21/-5.45      | -8.23/-3.56      | -12.36/-3.86     |
| Θ(97.5°)  | -5.08/-2.47   | -5.13/-1.19    | -6.22/-7.87    | -10.5/-7.95    | -5.35/-19.53   | -10.28/-6.68   | -6.81/-7.46    | -19.04/-16.11    | -11.99/-10.4     | -6.72/-7.69      | -7.37/-5.9       | -12.69/-3.74     | -3.3/-13.84      | -6.77/-6.56      | -4.06/-3.84      | -7.29/-12.21     | -10.69/-6.72     | -8.89/-6.93      | -19.06/-18.47    | <b>-1.062.06</b> | -0.09/-9.1       | -1.66/-4.09      | -6.37/-4.46      | -4.9/-4.1        |
| Θ(105°)   | -1.26/-2.75   | -0.65/-4.75    | -4.54/-4.36    | -3.89/-3.05    | -6.24/-6.04    | -14.15/-6.58   | -15.9/-19.29   | -18.75/-19.59    | -13.03/-10.07    | -7.28/-9.11      | -6.62/-4.24      | -7.58/-3.92      | -6.29/-15.01     | -4.21/-2.53      | -8.37/-5.93      | -5.16/-10.17     | -9.87/-7.69      | -13.95/-10.73    | -19.61/-12.96    | -6.5/-0.07       | -2.22/-13.57     | 0.11/0.96        | -1.11/-5.23      | -2.29/-0.47      |
| Θ(112.5°) | -1.48/-1.85   | -2.17/0.03     | -1.62/-3.19    | -2.6/-1.35     | -3.26/-3.96    | -13.81/-19.62  | -18.47/-19.39  | -7.8/-9.6        | -9.01/-10.74     | -13.09/-6.28     | -5.92/-5.61      | -4.35/-4.47      | -7.85/-4.06      | 0.29/-1.01       | -3.48/-13.86     | -8.59/-9.87      | -12.28/-4.61     | -5.92/-19.62     | -11.15/-16.2     | -8.81/-5.64      | -14.11/-5.58     | 0.68/0.87        | -3.26/-6.15      | -4.59/0.5        |
| Θ(120°)   | 0.77/-1.14    | -3.82/1.8      | -0.16/-5.7     | -5.68/-0.38    | -1.39/-4.74    | -18.1/-18.13   | -16.37/-15.3   | -13.95/-5.01     | -2.84/-1.78      | -6.72/-5.07      | -3.66/-9.41      | -2.21/-3.7       | -13.49/-5.63     | -5.26/-6.3       | -8.65/-10.31     | -8.12/-8.52      | -14.18/-14.04    | -9.91/-4.29      | -6.44/-5.11      | -3.61/-5.34      | -4.57/-6.12      | -1.95/-1.62      | -2.01/-3.36      | -4.05/-5.25      |
| Θ(127.5°) | -2.27/-1.6    | -9.5/-5.06     | -0.75/-3.84    | -11.53/-2.95   | 0.51/-2.63     | -6.48/-11.58   | -5.31/-6.36    | -5.77/-6         | -4.4/-3.5        | -2.98/-8.13      | -8/-1.89         | -0.19/-1.66      | -3.61/-5.42      | -3.67/-3.78      | -5.96/-11.37     | -5.28/-3.34      | -19.08/-6.84     | -8.49/0.01       | -7.76/-2.88      | -11.99/-4.6      | -3.74/-9.43      | -7.65/-8.46      | -9.35/-7.99      | -5.01/-6.79      |
| Θ(135°)   | -8.53/-7.07   | -10.12/-3.54   | -2.14/-6.65    | -12.79/-3.95   | -4.45/-3.73    | -17.97/-19.71  | -18.58/-14.16  | -12.8/-12.55     | -7.38/-3.79      | -3.45/-5.97      | -4.79/-1.64      | 0.29/-2.89       | -7.39/-5.59      | -2.13/-1.98      | -2.25/-5.02      | -10.88/-9.44     | -8.61/-11.95     | -9.71/-9.99      | -6.63/-4.26      | -13.03/-10.16    | -6.48/-10.93     | -7.58/-19.7      | -9.73/-8.45      | -12.16/-14.8     |
| Θ(142.5°) | -7.46/-15.05  | -16.95/-17.96  | -12.78/-9.17   | -10.4/-17.88   | -6.68/-6.42    | -5.43/-5.6     | -5.68/-13.9    | -2.42/-3.6       | -5.51/-7.39      | -10.25/-5        | -0.91/-2.31      | -3.67/-1.24      | -1.97/-3.9       | -3.32/-6.22      | -11.59/-13.41    | -5.34/-7.99      | -6.3/-8.99       | -5.76/-6.48      | -10.03/-11.5     | -9.54/-4.87      | -4.85/-11.68     | -14.85/-4.29     | -5.28/-6.54      |                  |
| Θ(150°)   | -12.7/-11.45  | -9.28/-7.95    | -7.89/-12.04   | -14.74/-18.29  | -13.81/-10.3   | -12.89/-15.91  | -13.88/-15.89  | -10.81/-5.49     | -3.22/-1.33      | -2.08/-5.47      | -10.01/-7.43     | -3.69/-6.75      | -12.72/-3.63     | -0.64/-1.82      | -2.36/-0.1       | -5.52/-6.89      | -6.12/-3.88      | -4.05/-7.38      | -17.25/-16.45    | -13.17/-17.24    | -19.71/-13.19    | -5.26/-1.84      | -2.11/-6.65      | -15.49/-18.52    |
| Θ(157.5°) | -5.49/-5.67   | -8.08/-8.9     | -9.43/-13.11   | -17.82/-15.65  | -15.18/-18.55  | -19.25/-17.51  | -15.99/-14.22  | -14.73/-19.17    | -20.21/-18.99    | -15.35/-8.4      | -4.41/-1.5       | -1.38/-3.24      | -2.84/-4.05      | -4.46/-4.95      | -7.18/-8.9       | -10.47/-4.84     | -0.43/-1.28      | -10.31/-9.73     | -5.26/-6.31      | -7/-3.51         | -2.06/-4.05      | -10.77/-5.15     | -2.53/-3.18      | -9.4/-11.93      |
| Θ(165°)   | -14.8/-19.53  | -20.12/-11.89  | -6.8/-6.63     | -10.9/-17.61   | -17.47/-17.28  | -16.89/-15.65  | -12.79/-9.47   | -7.03/-5.83      | -6.71/-9.47      | -17.17/-19.09    | -14.47/-12.2     | -11.57/-13.34    | -13.27/-15.07    | -19.26/-19.45    | -19.81/-19.15    | -10.33/-4.51     | -2.94/-5.84      | -19.82/-9.66     | -7.06/-9.72      | -16.74/-12.34    | -8.1/-8.07       | -10.07/-16.39    | -20.18/-13.47    | -10.91/-11.37    |
| Θ(172.5°) | -4.51/-7.25   | -9.27/-10.15   | -10.03/-11.69  | -13.68/-15.94  | -19.01/-19.06  | -19.88/-19.94  | -17.59/-15.08  | -14.61/-13.25    | -11.56/-8.88     | -6.05/-4.17      | -3/-2.91         | -3.69/-5.47      | -8.57/-13.34     | -18.73/-18.72    | -19/-18.23       | -13/-10.42       | -11.31/-17.74    | -19.83/-12.19    | -9.35/-8.62      | -9.41/-10.29     | -10.22/-9.47     | -9.18/-9.11      | -7.47/-4.76      | -3.39/-3.96      |
| Θ(180°)   | -10.25/-11.67 | -12/-10.38     | -10.1/-12.6    | -17.23/-18.84  | -19.58/-19.42  | -16.9/-17.77   | -14.72/-10.73  | -7.69/-6.37      | -5.44/-5.02      | -4.3/-4.32       | -4.67/-5.06      | -6.95/-9.49      | -14.             |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |

## Total Gain Data

[illegible]



# Antenna Pattern\_2.4GHz, 5GHz

# Appendix C

|           |               |                 |                 |                 |                 |                 |                 |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |
|-----------|---------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| Θ(22.5°)  | -5.39/-6.26   | -6.25/-4.46     | -2.50/-1.60     | -2.22/-2.13     | -2.22/-1.92     | -1.92/-2.22     | -2.04/-1.99     | -1.53/-1.63       | -2.20/-2.75       | -3.02/-3.15       | -3.09/-3.10       | -2.80/-1.85       | -0.92/-0.44       | -0.49/-0.83       | -1.38/-1.93       | -2.11/-1.86       | -1.85/-2.42       | -2.82/-2.76       | -2.53/-2.27       | -1.90/-2.09       | -2.32/-2.26       | -2.35/-1.85       | -1.22/-1.35       | -2.53/-3.53       |
| Θ(30°)    | -3.52/-5.24   | -3.94/-1.59     | -0.66/-0.71     | -1.43/-1.26     | -1.20/-0.77     | -0.65/-0.46     | -1.07/-1.75     | -2.33/-2.56       | -2.90/-3.20       | -3.16/-3.48       | -3.52/-3.25       | -1.21/-0.25       | 0.66/-0.77        | 0.68/-0.17        | -0.33/-0.08       | 0.36/-0.70        | 0.95/-1.26        | 1.38/-1.29        | 1.09/-0.69        | -0.14/-0.31       | -1.40/-3.16       | -4.55/-4.04       | -2.64/-1.87       | -0.80/-1.56       |
| Θ(142.5°) | -2.12/-3.06   | -1.26/-0.53     | 0.79/-0.92      | -2.04/-1.09     | -1.20/-0.99     | -1.76/-2.37     | -3.25/-4.01     | -4.85/-5.83       | -6.63/-9.92       | -6.23/-4.76       | -3.38/-1.30       | 0.02/-0.94        | 0.71/-0.68        | 0.84/-0.09        | 1.34/-1.38        | 1.46/-1.43        | 1.10/-0.46        | 0.34/-0.17        | 1.06/-0.08        | 0.33/-0.29        | 1.06/-0.51        | 0.03/-0.24        | -0.99/-1.34       | -1.77/-1.22       |
| Θ(45°)    | -2.95/-2.24   | 0.00/-1.80      | 2.19/-0.43      | -1.80/-2.48     | -1.91/-1.85     | -2.07/-2.20     | -3.02/-3.47     | -3.65/-4.10       | -4.99/-5.10       | -4.87/-4.53       | -3.25/-2.38       | -0.83/-0.12       | 1.02/-0.80        | 0.89/-1.89        | 2.76/-2.91        | 1.94/-0.58        | 0.07/-0.19        | 0.78/-1.78        | 2.42/-2.66        | 1.82/-1.11        | 0.76/-0.60        | 0.43/-0.60        | 0.46/-0.19        | -0.36/-1.63       |
| Θ(52.5°)  | -2.02/-0.49   | 1.68/-2.18      | 1.59/-1.70      | -3.83/-2.89     | -1.92/-2.20     | -3.26/-3.67     | -3.61/-3.75     | -3.48/-2.94       | -2.84/-3.09       | -3.31/-3.78       | -3.43/-2.38       | -0.47/-1.06       | 1.95/-0.01        | -0.54/-1.58       | 2.35/-1.45        | 0.41/-0.95        | -0.67/-0.14       | 2.37/-2.62        | 3.29/-0.39        | 2.65/-1.18        | -0.65/-1.97       | -2.04/-1.24       | 0.17/-0.37        | -0.70/-1.90       |
| Θ(60°)    | -2.14/-1.19   | -1.12/-0.68     | -2.17/-5.66     | -7.91/-5.42     | -3.85/-4.85     | -7.35/-7.31     | -4.99/-2.57     | -0.78/-0.04       | 0.11/-1.72        | -4.38/-3.81       | -2.82/-2.30       | -0.24/-1.52       | 1.78/-0.30        | 0.45/-0.67        | 2.43/-3.34        | 0.03/-1.14        | 0.37/-1.63        | 2.02/-2.53        | 2.72/-2.46        | 1.10/-0.21        | -1.47/-2.96       | -4.91/-2.79       | 0.68/-1.66        | -0.34/-1.43       |
| Θ(67.5°)  | -1.29/-1.09   | -7.01/-4.48     | -2.81/-3.60     | -3.42/-4.37     | -3.64/-3.19     | -4.83/-6.42     | -5.65/-4.55     | -4.43/-4.31       | -2.56/-1.58       | -2.00/-3.97       | -4.19/-1.12       | 0.30/-0.43        | 0.01/-0.94        | -0.66/-1.84       | 1.58/-0.15        | -1.45/-2.81       | -2.11/-0.51       | -0.37/-0.13       | 0.79/-0.81        | 1.83/-0.46        | -1.94/-4.80       | -4.85/-3.02       | -0.86/-0.32       | -2.53/-4.89       |
| Θ(75°)    | -1.15/-0.50   | -1.67/-3.29     | -3.80/-8.12     | -6.75/-3.29     | -2.31/-2.24     | -2.29/-1.57     | -0.45/-0.29     | -1.14/-3.25       | -3.79/-0.99       | -0.63/-1.82       | -2.39/-1.69       | -0.23/-0.97       | -2.45/-3.21       | -1.43/-1.38       | 0.04/-1.43        | -1.00/-2.56       | -4.02/-2.26       | -1.42/-0.60       | 0.28/-0.97        | 0.31/-0.35        | -1.58/-3.48       | -3.77/-2.88       | -1.99/-1.14       | -1.93/-3.55       |
| Θ(82.5°)  | 0.45/-0.93    | -4.28/-2.94     | -1.62/-3.06     | -2.48/-2.88     | -2.31/-1.01     | -1.15/-2.78     | -3.19/-1.60     | -0.89/-1.64       | -3.01/-2.88       | -3.80/-3.52       | -0.67/-0.90       | -2.10/-3.95       | -4.39/-5.12       | -0.87/-0.81       | -2.37/-0.80       | -3.06/-6.03       | -6.07/-4.30       | -1.88/-0.63       | 0.17/-0.20        | 0.16/-0.34        | -1.99/-4.15       | -2.67/-2.59       | -1.68/-1.00       | 0.07/-3.27        |
| Θ(90°)    | -2.30/-1.07   | -3.39/-2.10     | -0.14/-1.10     | -1.81/-4.19     | -2.15/-0.33     | 0.04/-1.31      | -2.68/-2.37     | -2.37/-5.15       | -5.49/-1.84       | -4.51/-5.76       | -1.25/-1.40       | -3.48/-5.56       | -7.55/-6.24       | -1.56/-1.58       | -3.00/-2.90       | -3.29/-3.07       | -5.48/-3.88       | 0.03/-1.81        | 2.12/-1.37        | -0.02/-0.15       | -0.71/-3.52       | -4.37/-3.05       | -2.28/-0.70       | -1.75/-6.16       |
| Θ(97.5°)  | 1.13/-0.06    | -4.55/-0.06     | 1.75/-0.79      | -1.51/-5.37     | -1.28/-0.77     | -0.36/-0.97     | -2.45/-2.73     | -2.66/-4.90       | -8.93/-4.53       | -4.19/-8.88       | -3.36/-2.25       | -5.99/-8.88       | -7.78/-6.52       | -4.37/-5.33       | -8.57/-7.04       | -4.87/-8.00       | -1.87/-4.16       | -0.26/-2.32       | 2.73/-1.64        | 1.29/-0.81        | 0.94/-0.58        | -0.76/-0.29       | -1.00/-1.24       | -3.38/-0.59       |
| Θ(105°)   | 0.02/-0.41    | -0.20/-1.68     | 2.93/-1.69      | -4.66/-2.97     | -4.92/-1.11     | 0.64/-0.92      | -1.66/-4.23     | -2.83/-5.68       | -11.18/-4.62      | -3.22/-10.37      | -5.99/-4.85       | -9.49/-7.83       | -8.48/-6.70       | -5.07/-8.75       | -15.39/-8.50      | -6.69/-10.22      | -10.35/-5.56      | -1.05/-0.05       | 1.20/-0.10        | 0.35/-1.28        | 0.88/-0.79        | 0.14/-0.55        | -2.05/-1.60       | -1.14/-0.42       |
| Θ(112.5°) | 2.24/-0.42    | -1.63/-0.69     | 1.83/-0.53      | -0.22/-2.45     | -4.55/-2.77     | -1.44/-0.67     | -2.67/-3.24     | -4.26/-7.93       | -12.15/-5.40      | -4.31/-10.23      | -7.74/-7.37       | -16.01/-8.24      | -8.57/-8.81       | -6.31/-10.95      | -9.72/-9.06       | -10.35/-9.69      | -13.65/-6.90      | -6.26/-3.37       | -0.99/-2.06       | -1.40/-0.57       | 0.81/-0.78        | -1.70/-1.90       | -0.54/-1.21       | 2.66/-3.37        |
| Θ(120°)   | -0.77/-0.29   | 0.49/-0.83      | -0.04/-0.20     | 0.49/-1.64      | 0.10/-1.48      | -1.13/-1.17     | -2.76/-5.87     | -7.35/-9.81       | -8.01/-5.86       | -5.40/-7.58       | -8.17/-5.21       | -10.72/-6.01      | -4.70/-8.62       | -3.64/-5.98       | -11.55/-9.17      | -5.76/-6.61       | -8.93/-6.35       | -5.14/-1.64       | -0.95/-3.63       | -3.30/-0.70       | 0.30/-0.80        | 1.41/-0.59        | 0.78/-2.59        | 3.36/-1.48        |
| Θ(127.5°) | 0.10/-0.92    | 2.32/-2.16      | 3.17/-1.34      | 3.42/-2.62      | 0.94/-1.85      | -4.17/-3.50     | -3.26/-3.88     | -6.13/-9.47       | -9.41/-8.64       | -7.68/-9.42       | -8.12/-7.98       | -8.58/-6.52       | -6.01/-7.02       | -6.63/-8.79       | -12.45/-3.63      | -4.03/-2.85       | -4.24/-6.83       | -1.15/-2.50       | -0.08/-2.76       | -0.45/-1.11       | 2.68/-1.63        | -0.18/-1.81       | <b>0.235/-3.7</b> | 5.15/-0.94        |
| Θ(135°)   | 0.67/-3.18    | 3.24/-1.88      | 3.15/-3.54      | 3.22/-2.46      | 1.07/-0.87      | -2.41/-1.50     | -1.45/-2.17     | -3.46/-5.22       | -9.14/-11.36      | -8.77/-7.15       | -7.47/-7.05       | -8.78/-5.53       | -4.15/-3.21       | -7.30/-9.93       | -7.02/-10.46      | -4.00/-1.68       | -4.00/-6.87       | 0.43/-3.32        | 0.33/-3.17        | 1.53/-2.37        | 2.50/-3.79        | 2.21/-2.24        | -3.31/-2.47       | 4.84/-3.39        |
| Θ(142.5°) | -0.33/-0.07   | -1.07/-3.87     | -0.98/-1.82     | 1.38/-0.01      | -1.19/-3.66     | -5.42/-7.46     | -7.26/-5.25     | -4.60/-4.92       | -6.88/-13.73      | -9.74/-7.05       | -7.22/-10.25      | -14.50/-8.75      | -7.12/-12.88      | -15.92/-11.53     | -13.98/-12.00     | -7.53/-6.91       | -11.49/-6.05      | 1.24/-1.95        | -2.01/-5.19       | -0.24/-2.51       | 2.85/-1.86        | -1.12/-3.94       | -2.90/-4.13       | 2.58/-1.71        |
| Θ(150°)   | -2.31/-2.82   | -0.33/-0.56     | -0.26/-1.18     | -2.43/-2.63     | -1.89/-0.65     | -2.65/-4.10     | -12.32/-13.58   | -8.59/-8.12       | -9.22/-11.63      | -11.15/-9.06      | -9.39/-11.74      | -9.88/-10.15      | -5.61/-5.83       | -8.70/-8.71       | -14.72/-14.16     | -14.15/-11.07     | -12.32/-4.60      | -2.16/-2.29       | -4.56/-6.18       | -5.02/-3.45       | -2.94/-1.16       | -0.18/-0.57       | 1.65/-1.89        | 0.00/-0.81        |
| Θ(157.5°) | 1.39/-1.78    | 2.19/-2.33      | 1.53/-0.39      | -1.69/-2.16     | -3.28/-2.66     | -4.00/-7.40     | -8.89/-10.57    | -12.84/-13.23     | -11.32/-9.96      | -8.44/-7.97       | -8.57/-9.13       | -8.15/-8.44       | -11.65/-14.34     | -15.91/-16.45     | -14.25/-11.53     | -11.80/-12.94     | -10.85/-7.22      | -6.42/-7.50       | -10.51/-12.55     | -10.12/-7.07      | -5.09/-3.11       | -2.02/-1.89       | -1.92/-2.35       | -1.64/-0.11       |
| Θ(165°)   | 1.75/-2.02    | 1.85/-0.64      | -0.48/-1.52     | -2.19/-2.68     | -3.69/-0.60     | -9.84/-14.71    | -15.37/-13.62   | -14.13/-14.33     | -14.39/-14.46     | -12.42/-11.48     | -11.51/-9.66      | -7.98/-7.33       | -7.72/-7.94       | -7.97/-7.30       | -5.58/-4.52       | -4.76/-5.68       | -6.49/-6.63       | -6.90/-7.03       | -6.84/-6.23       | -5.66/-4.88       | -4.25/-3.43       | -3.18/-3.73       | -3.25/-1.31       | 0.41/-1.76        |
| Θ(172.5°) | -4.12/-5.04   | -7.44/-9.51     | -7.88/-5.87     | -4.54/-5.31     | -7.38/-6.58     | -9.27/-10.53    | -12.43/-16.11   | -16.15/-16.35     | -16.06/-15.13     | -15.08/-15.41     | -13.82/-10.81     | -9.23/-8.42       | -7.76/-6.44       | -5.37/-4.13       | -1.39/-1.56       | -2.14/-1.88       | -2.41/-2.96       | -3.92/-4.62       | -5.39/-4.59       | -4.04/-4.51       | -4.70/-3.69       | -2.89/-1.99       | -2.23/-3.28       |                   |
| Θ(180°)   | -7.64/-7.46   | -6.28/-4.85     | -4.54/-5.21     | -5.60/-6.41     | -7.51/-9.94     | -12.72/-11.47   | -10.11/-9.52    | -9.29/-9.24       | -8.22/-7.11       | -7.12/-7.30       | -7.39/-6.65       | -6.08/-6.22       | -7.16/-7.64       | -8.01/-8.48       | -8.92/-8.67       | -8.03/-7.44       | -7.19/-8.04       | -8.77/-9.43       | -9.83/-10.17      | -9.83/-9.65       | -11.09/-12.35     | -13.65/-12.61     | -13.16/-13.59     | -12.74/-10.39     |
| Freq(Hz)  | 2.450Pol.     | TotalAnt.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°)     | -5.39/-5.54   | -5.29/-5.93     | -6.01/-6.00     | -5.87/-5.91     | -6.15/-6.35     | -6.46/-6.55     | -6.91/-7.47     | -8.06/-8.59       | -8.73/-8.71       | -8.69/-8.14       | -7.81/-7.43       | -7.13/-6.67       | -6.39/-6.14       | -5.84/-5.67       | -5.50/-5.35       | -5.21/-5.12       | -5.09/-4.92       | -4.65/-4.62       | -4.60/-4.51       | -3.44/-3.28       | -3.26/-2.47       | -4.45/-4.62       | -4.69/-4.85       | -5.02/-5.26       |
| Θ(7.5°)   | -5.73/-5.65   | -6.43/-6.27     | -5.99/-5.58     | -5.20/-5.06     | -5.10/-5.08     | -5.04/-4.92     | -4.96/-5.13     | -5.39/-5.48       | -5.52/-5.66       | -5.85/-5.91       | -5.74/-5.70       | -5.73/-5.87       | -5.90/-5.98       | -6.04/-6.09       | -6.17/-6.31       | -6.54/-6.79       | -6.85/-6.65       | -6.45/-6.52       | -6.70/-6.62       | -6.41/-6.19       | -6.21/-6.31       | -6.45/-6.56       | -6.71/-6.80       | -6.91/-6.88       |
| Θ(15°)    | -6.02/-5.59   | -5.37/-5.09     | -4.63/-4.16     | -3.87/-3.71     | -3.58/-3.40     | -3.24/-3.18     | -3.13/-3.10     | -3.00/-2.93       | -3.03/-3.67       | -3.68/-3.71       | -3.75/-3.94       | -4.09/-4.41       | -4.85/-5.23       | -5.70/-6.15       | -6.70/-7.37       | -8.13/-8.86       | -9.19/-9.21       | -8.96/-9.08       | -9.23/-9.21       | -8.30/-8.01       | -7.81/-7.81       | -6.90/-6.88       | -6.01/-7.98       | -7.70/-7.32       |
| Θ(22.5°)  | -5.28/-4.80   | -4.57/-5.00     | -4.79/-4.49     | -4.31/-4.22     | -4.02/-3.80     | -3.66/-3.65     | -3.65/-3.54     | -3.34/-3.18       | -3.12/-2.98       | -2.81/-2.71       | -2.67/-2.76       | -2.91/-3.22       | -3.81/-4.46       | -5.18/-6.02       | -7.01/-8.27       | -9.27/-10.16      | -10.56/-10.78     | -10.62/-10.37     | -9.91/-9.58       | -9.06/-8.46       | -8.08/-7.84       | -7.77/-7.61       | -7.47/-7.14       | -6.95/-6.35       |
| Θ(30°)    | -3.44/-3.22   | -3.27/-3.28     | -3.27/-3.30     | -3.54/-3.72     | -3.83/-3.78     | -3.79/-3.81     | -3.82/-3.57     | -3.24/-2.89       | -2.57/-2.17       | -1.78/-1.83       | -1.49/-1.38       | -1.44/-1.73       | -2.26/-3.03       | -3.93/-4.88       | -5.95/-6.93       | -7.67/-9.74       | -7.85/-7.62       | -7.32/-7.02       | -6.70/-6.24       | -5.57/-5.09       | -4.77/-4.60       | -4.67/-4.77       | -4.80/-4.64       | -4.30/-3.93       |
| Θ(37.5°)  | -1.82/-1.79   | -2.27/-2.70     | -3.13/-3.64     | -4.10/-4.43     | -4.61/-4.73     | -4.77/-4.80     | -4.71/-4.42     | -3.95/-3.55       | -3.06/-2.55       | -1.95/-1.43       | -0.95/-0.61       | -0.41/-0.53       | -0.85/-1.42       | -2.26/-3.10       | -4.02/-4.65       | -4.93/-4.96       | -4.84/-4.54       | -4.22/-3.94       | -3.55/-3.06       | -2.63/-2.20       | -2.02/-1.98       | -2.07/-2.20       | -2.22/-2.15       | -1.97/-1.87       |
| Θ(45°)    | -1.27/-1.29   | -1.53/-1.87     | -2.32/-2.80     | -3.03/-3.15     | -3.25/-3.55     | -3.91/-4.26     | -4.38/-4.25     | -4.04/-3.72       | -2.97/-2.43       | -1.82/-1.20       | -0.57/-0.04       | 0.34/-0.50        | 0.46/-0.20        | -0.23/-0.70       | -1.15/-1.61       | -1.96/-2.28       | -2.54/-2.69       | -2.67/-2.51       | -2.23/-1.93       | -1.38/-1.28       | -1.42/-1.33       | -1.24/-1.24       | -1.21/-1.23       | -1.19/-1.23       |
| Θ(52.5°)  | -1.49/-1.31   | -1.90/-2.27     | -2.39/-2.16     | -1.75/-1.51     | -1.39/-1.35     | -1.55/-1.75     | -1.91/-1.87     | -1.83/-1.76       | -1.57/-1.41       | -1.31/-1.05       | -0.63/-0.05       | 0.44/-0.81        | 0.98/-1.06        | 1.11/-1.14        | 1.06/-0.84        | 0.51/-0.02        | -0.55/-1.13       | -1.61/-2.09       | -2.53/-2.88       | -2.94/-2.74       | -2.42/-2.00       | -1.60/-1.39       | -1.39/-1.57       | -1.76/-1.76       |
| Θ(60°)    | -0.29/-0.03   | 0.06/-0.06      | 0.10/-0.20      | 0.24/-0.21      | 0.15/-0.49      | 0.82/-1.03      | 1.09/-1.01      | 0.74/-0.43        | 0.25/-0.12        | -0.09/-0.27       | 0.18/-0.16        | 0.57/-0.90        | 1.21/-1.58        | 1.97/-2.18        | 2.11/-1.87        | 0.95/-0.56        | 0.08/-0.55        | -1.24/-1.73       | -1.83/-1.88       | -1.63/-1.32       | -1.03/-0.80       | -0.74/-0.87       | -1.01/-0.92       |                   |
| Θ(67.5°)  | 0.24/-0.79    | 0.56/-0.80      | 0.89/-0.92      | 0.89/-0.96      | 1.11/-1.40      | 1.17/-1.02      | 2.09/-1.82      | 1.31/-0.71        | 0.38/-0.32        | 0.17/-0.08        | -0.09/-0.09       | 0.38/-0.80        | 1.37/-0.21        | 2.31/-2.20        | 1.81/-1.41        | 1.15/-0.98        | 0.74/-0.44        | 0.13/-0.22        | -0.59/-1.05       | -1.60/-2.20       | -2.51/-2.40       | -2.04/-1.57       | -1.10/-0.81       | -0.76/-0.58       |
| Θ(75°)    | -0.43/-0.21   | 0.60/-0.79      | 0.81/-0.88      | 0.99/-1.21      | 1.58/-1.98      | 2.65/-2.76      | 2.64/-2.25      | 1.77/-1.22        | 0.88/-0.68        | 0.47/-0.10        | -0.20/-0.30       | -0.17/-0.36       | 1.15/-1.80        | 2.04/-1.98        | 1.89/-1.95        | 1.84/-1.55        | 1.01/-0.50        | 0.11/-0.37        | -0.91/-1.41       | -1.75/-2.20       | -2.49/-2.39       | -2                |                   |                   |



# Antenna Pattern\_2.4GHz, 5GHz

# Appendix C

|           |               |                 |                 |                 |                 |                  |                 |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |
|-----------|---------------|-----------------|-----------------|-----------------|-----------------|------------------|-----------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| Θ(60°)    | -3.63/-2.76   | -0.93/-0.31     | 0.35/0.59       | 0.45/-0.07      | -1.09/-1.76     | -2.02/-2.04      | -2.56/-3.89     | -5.29/-5.81       | -4.21/-1.95       | -0.35/0.76        | 1.37/1.72         | 1.08/0.62         | 0.44/0.78         | 1.05/0.48         | -0.69/-1.06       | -1.71/-2.41       | -1.74/-1.49       | -0.75/-0.67       | -0.96/-0.73       | 0.06/0.57         | 0.71/-0.10        | -1.59/-3.84       | -5.20/-2.53       | -2.05/-2.02       |
| Θ(67.5°)  | -3.01/-2.09   | 0.12/-1.12      | 1.69/-2.17      | 1.66/0.58       | -0.26/-0.50     | -0.30/-0.02      | -0.83/-2.07     | -3.20/-3.97       | -3.54/-2.03       | -0.35/0.10        | 1.00/-1.37        | 1.55/-1.41        | 1.11/0.87         | 0.90/0.20         | 0.05/-1.31        | -2.06/-2.18       | -2.45/-1.91       | -1.35/-1.22       | -1.06/-0.84       | -0.70/0.40        | 0.34/-0.55        | -1.70/-2.59       | -3.65/-3.22       | -1.88/-2.78       |
| Θ(75°)    | -2.86/-1.63   | -0.62/0.20      | 1.11/-1.52      | 1.33/0.92       | 0.42/0.51       | 0.53/0.08        | -0.89/-2.08     | -2.76/-2.70       | -1.61/-0.50       | 0.40/0.24         | 0.38/0.80         | 1.05/2.00         | 2.07/-1.38        | 0.67/0.03         | -0.41/-1.75       | -2.34/-2.61       | -2.14/-1.53       | -1.03/-1.12       | -0.83/-0.61       | -0.75/-1.08       | -0.96/-1.29       | -2.63/-2.85       | -2.56/-2.30       | -2.20/-2.79       |
| Θ(82.5°)  | -2.75/-2.36   | -0.02/-1.24     | 2.32/2.95       | 2.46/-1.32      | 0.08/0.45       | 0.57/0.15        | -0.78/-2.62     | -4.14/-4.68       | -3.60/-1.75       | -0.14/0.19        | 0.76/0.95         | 0.85/-1.96        | 1.56/-1.14        | -0.60/-0.82       | -2.25/-4.60       | -4.66/-5.30       | -3.84/-1.96       | -1.27/-1.49       | -1.38/-1.40       | -1.79/-1.58       | -1.21/-0.61       | -1.38/-4.14       | -4.36/-5.59       | -4.51/-4.36       |
| Θ(90°)    | -3.00/-2.13   | 0.22/0.91       | 1.27/-1.40      | 1.60/-1.21      | 0.37/1.35       | 2.31/-2.49       | 1.44/-0.20      | -1.86/-2.88       | -3.03/-2.23       | -1.50/-0.95       | 0.37/-1.32        | 1.61/2.68         | 2.17/-2.69        | 1.08/0.61         | -2.80/-3.05       | -4.59/-2.84       | -1.44/-0.23       | -0.27/0.89        | 0.85/-0.87        | -0.38/-0.92       | -1.33/-2.90       | -2.95/-4.84       | -1.79/-1.82       | -2.43/-2.90       |
| Θ(97.5°)  | -2.37/-2.39   | -0.69/-1.42     | 1.91/-2.50      | 0.94/-0.44      | -1.22/-0.01     | 2.21/-2.69       | 1.96/-0.32      | -3.04/-6.32       | -0.56/-2.30       | -0.07/0.40        | -0.23/-0.14       | 0.59/2.30         | 2.91/2.89         | 1.49/0.59         | -2.94/-4.61       | -6.37/-4.66       | -2.89/-1.61       | -0.67/0.21        | 0.49/0.42         | 0.12/-1.30        | 0.09/0.19         | 0.51/-0.04        | -1.66/-1.35       |                   |
| Θ(105°)   | -1.69/-2.72   | -0.86/-0.94     | -1.13/-1.18     | -1.09/-1.06     | -0.29/0.16      | 1.92/3.18        | 2.86/-1.52      | -1.06/-4.85       | -4.78/-2.33       | -0.65/-0.24       | -0.09/0.11        | 1.55/2.89         | 3.11/2.23         | 1.55/0.87         | -1.49/-3.66       | -5.73/-4.80       | -3.17/-0.70       | 0.24/2.13         | 2.74/2.83         | 2.79/2.22         | 1.34/0.57         | -0.64/-1.15       | -1.05/0.04        | -0.24/-2.02       |
| Θ(112.5°) | -1.29/-1.60   | -0.57/-1.77     | -3.18/-3.24     | -1.85/-1.20     | -0.83/0.02      | 0.41/-1.33       | 1.59/0.10       | -2.48/-4.48       | -5.11/-5.84       | -4.27/-2.47       | -0.91/-0.50       | 0.07/0.76         | 1.70/-1.30        | 0.94/-1.06        | -1.15/-2.90       | -6.76/-4.78       | -4.13/-1.16       | 0.17/2.42         | <b>3.60/3.55</b>  | 3.14/2.19         | 0.21/-1.90        | -2.16/-1.89       | 0.44/0.17         | -2.69/-2.29       |
| Θ(120°)   | -1.02/-1.42   | -2.35/-3.22     | -3.41/-2.63     | -2.73/-2.51     | -1.97/-0.31     | 0.59/-0.78       | -2.74/-3.97     | -4.63/-4.73       | -5.12/-4.95       | -5.59/-4.50       | -2.67/-1.48       | 0.25/0.35         | 1.18/-1.02        | 0.19/-0.57        | -3.07/-5.88       | -6.79/-6.12       | -3.44/-2.29       | -0.59/-1.35       | 1.71/2.66         | 2.59/-1.66        | -5.57/-6.80       | -6.50/-5.10       | -2.21/-4.43       | -4.34/-2.77       |
| Θ(127.5°) | -0.17/-1.02   | -2.09/-3.71     | -4.54/-3.68     | -2.23/-2.12     | -2.64/-2.98     | -1.85/-1.28      | -1.84/-3.33     | -4.98/-7.41       | -7.89/-5.94       | -5.82/-6.10       | -5.97/-3.91       | -1.95/-1.00       | -1.31/-2.45       | -4.65/-3.47       | -1.85/-5.73       | -7.90/-8.28       | -5.67/-7.29       | -5.10/-2.56       | -2.30/-1.33       | -0.73/0.07        | -3.40/-6.99       | -12.52/-3.39      | -3.23/-3.12       | -1.96/0.72        |
| Θ(135°)   | -3.88/-4.58   | -3.87/-5.02     | -4.41/-3.44     | -2.93/-3.18     | -5.82/-8.10     | -6.07/-4.11      | -3.36/-3.59     | -6.60/-6.19       | -8.03/-9.47       | -8.97/-7.64       | -8.74/-9.48       | -5.40/-3.61       | -2.27/-2.94       | -6.56/-4.78       | -5.65/-9.97       | -9.54/-4.80       | -2.94/-5.68       | -3.52/-4.82       | -5.83/-2.95       | -2.22/-1.95       | -1.17/-4.02       | -3.22/-4.78       | -4.10/-3.12       | -4.24/-2.80       |
| Θ(142.5°) | -7.02/-6.68   | -6.94/-8.58     | -6.26/-3.76     | -2.18/-1.69     | -6.26/-6.74     | -8.57/-9.56      | -7.79/-6.63     | -6.03/-5.42       | -5.65/-6.54       | -6.27/-6.07       | -9.25/-8.50       | -5.92/-4.80       | -3.22/-4.39       | -5.62/-4.77       | -4.70/-6.69       | -7.23/-4.20       | -4.92/-3.12       | -3.77/-6.55       | -9.27/-9.12       | -11.87/-4.04      | -12.36/-11.10     | -18.11/-13.03     | -11.00/-8.34      | -9.81/-5.75       |
| Θ(150°)   | -10.88/-13.39 | -9.52/-7.49     | -6.28/-4.06     | -2.68/-2.29     | -2.98/-4.92     | -8.62/-11.72     | -8.82/-5.69     | -4.84/-5.87       | -7.60/-8.10       | -9.10/-12.31      | -14.20/-9.99      | -7.52/-5.52       | -4.00/-4.96       | -8.89/-8.82       | -6.82/-5.58       | -4.05/-4.61       | -5.14/-5.43       | -10.07/-15.39     | -16.15/-10.80     | -8.26/-7.30       | -7.36/-9.32       | -9.14/-5.76       | -5.82/-7.09       | -8.16/-7.81       |
| Θ(157.5°) | -10.50/-9.28  | -6.91/-6.90     | -7.81/-7.76     | -5.57/-3.80     | -4.21/-6.88     | -12.20/-16.17    | -16.53/-12.36   | -9.12/-7.25       | -6.71/-6.78       | -7.23/-8.81       | -12.46/-16.89     | -16.27/-11.27     | -16.53/-12.44     | -10.23/-8.61      | -8.04/-7.10       | -5.98/-6.88       | -7.32/-7.51       | -9.64/-12.20      | -12.75/-14.86     | -11.46/-7.16      | -4.76/-4.27       | -3.43/-2.84       | -4.11/-5.98       | -6.12/-7.73       |
| Θ(165°)   | -7.46/-6.48   | -6.95/-8.50     | -8.11/-7.04     | -6.55/-6.16     | -6.26/-6.74     | -7.26/-8.70      | -10.59/-9.80    | -8.70/-6.65       | -5.14/-4.72       | -5.52/-7.98       | -11.34/-12.63     | -13.19/-12.34     | -10.08/-7.82      | -6.10/-4.81       | -4.12/-3.86       | -3.63/-4.58       | -6.84/-10.53      | -13.82/-13.96     | -12.36/-11.10     | -9.73/-4.77       | -6.21/-6.04       | -7.01/-7.65       | -7.38/-9.38       | -10.62/-9.17      |
| Θ(172.5°) | -11.72/-12.15 | -11.91/-11.73   | -10.81/-10.51   | -9.74/-9.36     | -10.60/-10.33   | -10.97/-11.54    | -11.32/-11.63   | -11.48/-11.40     | -10.67/-9.65      | -8.73/-7.62       | -7.27/-7.47       | -7.91/-8.58       | -8.49/-7.74       | -6.50/-5.60       | -5.52/-5.72       | -6.17/-6.71       | -7.75/-8.95       | -9.93/-9.51       | -8.32/-7.63       | -7.49/-7.25       | -7.54/-8.61       | -12.16/-14.88     | -12.44/-12.67     | -13.47/-13.47     |
| Θ(180°)   | -14.84/-16.04 | -16.50/-16.89   | -16.34/-13.55   | -11.92/-10.83   | -9.94/-10.15    | -9.91/-10.48     | -11.30/-11.39   | -11.42/-10.91     | -10.54/-10.12     | -10.35/-10.87     | -11.09/-10.71     | -10.61/-10.16     | -9.84/-9.34       | -8.96/-8.72       | -8.86/-8.93       | -9.34/-9.47       | -6.68/-9.87       | -10.31/-11.25     | -11.19/-11.28     | -13.30/-14.90     | -16.57/-16.14     | -16.80/-14.20     | -13.31/-13.46     | -12.99/-12.48     |
| Freq(Hz)  | 5.785GPol.    | TotalAnt.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°)     | -8.20/-7.37   | -7.58/-1.78     | -7.19/-7.28     | -7.20/-7.16     | -7.46/-8.28     | -9.35/-10.29     | -11.55/-10.29   | -12.24/-12.51     | -12.54/-12.87     | -12.98/-13.51     | -13.96/-14.85     | -15.21/-14.34     | -14.37/-14.28     | -14.87/-15.65     | -16.09/-14.60     | -14.35/-14.21     | -14.52/-14.78     | -14.06/-13.48     | -13.45/-13.19     | -13.72/-13.36     | -13.56/-11.62     | -10.47/-10.14     | -9.55/-6.87       | -8.82/-6.85       |
| Θ(7.5°)   | -13.34/-13.10 | -12.36/-12.15   | -12.54/-13.32   | -13.77/-13.51   | -13.83/-13.41   | -13.79/-14.27    | -13.78/-13.52   | -12.72/-12.54     | -11.94/-11.45     | -10.62/-9.85      | -9.71/-9.46       | -8.99/-9.12       | -8.58/-8.40       | -8.26/-8.10       | -8.09/-9.02       | -9.27/-9.24       | -9.97/-10.31      | -11.13/-11.51     | -12.11/-12.81     | -13.49/-12.55     | -12.97/-12.58     | -13.49/-13.77     | -12.75/-12.55     |                   |
| Θ(15°)    | -16.05/-15.89 | -14.94/-14.80   | -15.66/-14.93   | -14.10/-14.45   | -14.78/-13.60   | -12.82/-12.25    | -11.42/-10.93   | -9.91/-9.02       | -8.81/-7.70       | -7.60/-7.41       | -7.75/-7.44       | -6.84/-6.05       | -5.52/-5.35       | -5.47/-5.96       | -6.55/-6.89       | -7.14/-7.45       | -8.22/-8.75       | -9.02/-9.83       | -10.21/-11.45     | -13.05/-13.17     | -12.91/-12.98     | -13.83/-15.53     | -15.56/-15.86     | -14.41/-15.38     |
| Θ(22.5°)  | -11.33/-11.72 | -13.92/-13.86   | -13.27/-12.87   | -11.18/-9.74    | -8.87/-7.29     | -6.99/-5.60      | -6.69/-6.39     | -6.05/-5.45       | -5.09/-4.74       | -4.51/-4.49       | -4.54/-5.45       | -4.11/-3.36       | -3.18/-3.72       | -4.63/-5.64       | -6.42/-6.72       | -6.83/-7.13       | -7.09/-6.95       | -6.73/-6.93       | -7.07/-7.32       | -7.22/-7.54       | -8.17/-8.58       | -9.74/-11.41      | -13.74/-15.89     | -14.76/-12.89     |
| Θ(30°)    | -8.74/-8.86   | -10.54/-8.73    | -6.30/-4.96     | -3.38/-2.21     | -1.64/-1.83     | -2.38/-2.78      | -3.28/-3.49     | -3.57/-3.31       | -2.94/-2.61       | -2.15/-1.89       | -1.95/-2.18       | -2.01/-1.44       | -1.27/-1.66       | -2.05/-2.42       | -2.86/-3.25       | -3.79/-4.18       | -4.65/-5.04       | -6.35/-7.57       | -7.42/-6.63       | -6.20/-5.95       | -6.01/-5.90       | -6.68/-5.96       | -6.67/-6.05       | -10.41/-10.11     |
| Θ(37.5°)  | -6.53/-6.07   | -4.62/-3.89     | -3.47/-2.38     | -0.75/0.01      | -0.24/-0.83     | -1.71/-3.26      | -4.52/-4.98     | -4.87/-4.29       | -3.60/-2.94       | -1.91/-1.36       | -1.26/-1.17       | -0.43/-0.34       | -0.50/-0.66       | -1.07/-1.60       | -2.46/-3.57       | -5.16/-7.06       | -8.70/-8.27       | -7.18/-8.45       | -5.57/-5.00       | -4.05/-2.99       | -3.14/-4.70       | -6.66/-7.35       | -7.60/-6.66       | -6.52/-6.03       |
| Θ(45°)    | -4.37/-3.94   | -3.43/-3.48     | -2.54/-0.89     | -0.14/-0.09     | -0.55/-1.23     | -2.08/-2.33      | -4.66/-5.51     | -5.11/-3.74       | -2.96/-2.33       | -1.65/-1.07       | -0.59/-0.58       | -0.72/-0.94       | -1.05/-0.53       | -0.33/-0.48       | -0.66/-1.77       | -3.56/-5.28       | -6.77/-6.97       | -5.74/-3.98       | -2.80/-1.96       | -1.08/-1.55       | -2.17/-2.61       | -4.69/-6.93       | -5.74/-5.20       | -4.28/-2.73       |
| Θ(52.5°)  | -1.54/-3.00   | -3.90/-3.47     | -2.93/-1.58     | -0.86/-0.64     | -1.67/-2.44     | -3.86/-4.68      | -6.13/-7.26     | -7.05/-4.76       | -2.43/-0.90       | -0.43/-1.00       | -1.86/-1.16       | -0.29/-0.11       | 0.41/-0.02        | 0.33/0.68         | -0.12/-1.76       | -3.72/-5.46       | -5.42/-4.31       | -3.81/-2.74       | -1.87/-1.52       | -1.21/-1.29       | -1.84/-3.44       | -4.21/-4.00       | -3.19/-1.10       | -0.58/-0.80       |
| Θ(60°)    | -3.95/-5.15   | -3.30/-0.43     | 1.49/-1.77      | 1.41/0.26       | -0.91/-1.39     | -1.83/-1.85      | -1.71/-2.35     | -3.49/-4.66       | -6.62/-2.52       | -0.60/0.83        | 0.82/-1.57        | 1.73/-1.38        | 0.93/0.43         | 0.21/-1.29        | -1.78/-0.42       | -4.15/-3.26       | -1.78/-0.96       | -0.41/0.45        | 0.49/0.60         | -0.18/-1.07       | -2.22/-3.09       | -1.70/-0.99       | -1.67/-2.37       |                   |
| Θ(67.5°)  | -5.09/-5.30   | -2.91/-0.18     | 1.58/-1.94      | 1.01/-0.41      | -0.93/-0.75     | -0.46/-0.36      | -0.27/-0.71     | -1.52/-2.56       | -2.83/-1.88       | -0.74/-0.05       | 0.74/-1.00        | 0.82/0.51         | 0.18/0.19         | 0.82/0.26         | -0.63/-0.27       | -3.75/-3.59       | -4.79/-4.48       | -3.83/-3.92       | -3.17/-1.69       | -0.75/0.66        | 1.02/0.37         | -0.13/-0.20       | -1.11/-0.94       | -1.60/-2.00       |
| Θ(75°)    | -4.17/-3.27   | 0.24/-1.98      | 2.76/-2.29      | 1.14/-0.16      | -0.36/-0.33     | -0.73/-1.08      | -1.40/-1.75     | -2.17/-1.61       | -1.22/-0.65       | 0.47/0.91         | 0.99/0.98         | 0.12/0.56         | 1.34/-1.67        | 1.42/0.62         | 0.15/-2.03        | -3.44/-5.72       | -6.27/-6.17       | -5.00/-4.00       | -3.35/-2.63       | -2.04/-1.60       | -1.78/-2.02       | -2.78/-1.33       | -1.06/-1.24       | -1.54/-2.99       |
| Θ(82.5°)  | -5.13/-4.83   | -1.44/0.32      | 1.91/2.39       | 2.31/2.00       | 0.83/0.25       | -0.15/-1.11      | -3.00/-4.97     | -5.23/-4.88       | -3.98/-2.40       | -0.37/0.65        | 1.28/-1.33        | 0.90/0.45         | 0.10/0.21         | 0.74/-0.95        | -2.34/-6.30       | -5.23/-5.97       | -5.85/-5.27       | -6.06/-3.80       | -2.32/-1.91       | -0.71/-0.77       | -1.13/-2.73       | -4.09/-3.83       | -3.50/-3.85       | -3.06/-4.72       |
| Θ(90°)    | -6.17/-5.12   | -0.58/-1.60     | 2.91/3.45       | 3.04/2.38       | 0.62/0.61       | 1.30/-1.09       | -0.55/-2.84     | -4.27/-3.04       | -2.16/-2.25       | -2.36/-1.87       | 0.53/-1.67        | 0.66/0.82         | 0.58/-1.62        | 0.45/-0.10        | -3.16/-4.34       | -5.24/-7.22       | -5.09/-3.98       | -3.17/-2.80       | -0.89/-1.05       | -0.59/-0.17       | -0.37/-1.71       | -1.60/-3.64       | -1.99/-3.65       | -2.49/-3.82       |
| Θ(97.5°)  | -2.82/-2.10   | -0.91/0.01      | 0.95/-1.51      | 0.68/-0.64      | -1.99/-0.24     | 2.58/2.70        | 1.65/-1.20      | -5.24/-6.23       | -4.34/-2.64       | -1.86/-1.55       | -1.03/0.26        | 0.69/-1.67        | 0.92/-1.37        | 0.96/0.57         | -2.28/-3.32       | -5.87/-3.14       | -1.19/-0.46       | -0.74/-0.29       | 1.20/-1.02        | 1.39/-1.89        | 1.87/0.18         | -1.22/-2.37       | -0.75/-0.36       | -1.85/-1.14       |
| Θ(105°)   | -2.47/-4.13   | -2.81/-1.74     | -0.33/-0.43     | -1.78/-2.67     | -2.42/0.31      | <b>2.81/3.75</b> | 3.23/-1.92      | -0.77/-6.30       | -10.46/-5.92      | -3.18/-1.72       | -0.54/0.79        | -1.08/2.21        | 1.94/-1.21        | 0.95/0.77         | -2.48/-4.60       | -5.56/-2.41       | -1.69/-0.17       | -0.78/0.44        | 1.84/-1.81        | 2.48/-1.80        | -1.09/-0.63       | -1.61/-1.26       | -0.18/-1.02       | -0.13/-0.47       |
| Θ(112.5°) | -2.00/-2.13   | -2.50/-2.62     | -3.21/-2.97     | -2.74/-2.56     | -2.53/-2.64     | -0.14/-1.81      | 1.67/0.27       | -1.70/-7.02       | -9.69/-5.86       | -5.79/-2.77       | -1.31/-0.26       | 0.29/0.30         | 0.25/0.75         |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |



# Antenna Pattern\_2.4GHz, 5GHz

# Appendix C

|           |               |                   |                |                |                |                |                |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                   |                  |                  |                  |                  |
|-----------|---------------|-------------------|----------------|----------------|----------------|----------------|----------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|-------------------|------------------|------------------|------------------|------------------|
| Θ(112.5°) | -2.97/-4.38   | 0.88/2.26         | 1.27/-5.20     | -2.44/-0.23    | -2.92/-1.47    | 1.00/2.26      | 1.58/0.13      | -0.23/0.27       | -0.23/-1.86      | -2.93/-4.43      | -2.46/-0.49      | -1.30/-0.70      | -4.88/-3.61      | -9.92/-6.13      | -2.68/-2.23      | -2.03/-2.45      | 0.34/0.70        | -0.02/-3.94      | -5.94/-1.90      | -2.22/-8.41       | -4.54/-8.83      | -10.42/-6.88     | -8.89/-8.01      | -12.86/-7.90     |
| Θ(120°)   | -3.44/-1.90   | -1.88/-1.08       | 2.13/-0.60     | -1.87/-0.73    | -3.15/-4.92    | -1.50/-0.05    | -0.29/-2.01    | -3.48/-2.87      | -2.44/-2.77      | -4.29/-3.86      | -3.72/-0.86      | -0.19/-2.87      | -2.43/-7.18      | -3.04/-3.34      | -0.05/-1.01      | -3.91/-3.67      | -1.81/-1.94      | 0.31/0.95        | -0.92/-0.07      | -0.89/-2.68       | -0.97/-0.97      | -1.78/-1.06      | 0.11/-4.28       | -7.31/-2.12      |
| Θ(127.5°) | -1.77/-4.23   | -1.66/-1.32       | 2.37/0.62      | -2.71/-4.71    | -5.62/-5.51    | -5.00/-2.80    | -2.71/-4.28    | -1.99/-1.96      | -2.19/-2.52      | -4.27/-4.49      | -2.50/-5.01      | -1.66/-0.90      | -0.95/-2.54      | -3.78/-2.69      | -5.49/-2.11      | -4.11/-2.81      | 1.16/0.92        | 1.11/0.90        | -3.33/-1.68      | 2.99/-1.27        | 0.75/-0.22       | 1.25/-4.21       | 0.97/-1.75       | -5.19/-1.57      |
| Θ(135°)   | -10.20/-8.26  | -2.37/0.90        | 0.97/-0.67     | -4.93/-11.45   | -8.34/-3.88    | -1.73/-2.87    | -4.31/-4.48    | -4.30/-4.22      | -4.68/-5.77      | -8.94/-5.24      | -3.11/0.24       | -0.44/0.05       | 1.30/-1.18       | 0.23/-5.46       | -3.91/-7.06      | -3.68/-5.22      | 0.41/-3.20       | 2.92/-1.01       | -4.69/0.85       | <b>4.94/-2.06</b> | 0.31/-0.46       | -8.10/-1.85      | -6.58/-6.12      | -6.70/-5.34      |
| Θ(142.5°) | -5.40/-6.49   | -3.08/-0.40       | 0.36/-0.24     | -3.15/-4.82    | -5.02/-2.96    | -1.78/-0.12    | -0.01/-1.53    | -3.35/-4.60      | -5.37/-6.33      | -5.84/-5.50      | -2.73/-0.21      | 0.06/-0.83       | -4.19/-2.94      | -3.99/-7.20      | -1.71/-4.94      | -3.18/-2.43      | -2.45/-6.65      | -1.63/-3.86      | -8.70/-2.84      | 2.88/-1.28        | -9.53/-7.56      | -8.28/-3.42      | -2.51/-2.99      | -1.03/-1.11      |
| Θ(150°)   | -8.10/-12.63  | -8.03/-3.58       | -2.55/-2.38    | -3.93/-7.54    | -8.70/-7.71    | -5.40/-3.84    | -2.53/-2.00    | -2.64/-3.28      | -4.91/-8.92      | -15.01/-15.54    | -11.85/-10.08    | -10.48/-6.69     | -5.28/-6.71      | -8.54/-9.21      | -5.49/-2.11      | -1.43/-1.25      | -2.65/-3.98      | -2.96/-2.75      | -3.78/-1.83      | 0.29/0.44         | -2.98/-1.62      | -14.04/-9.80     | -6.86/-5.23      | -4.31/-6.63      |
| Θ(157.5°) | -4.99/-5.51   | -3.67/-4.26       | -4.76/-4.88    | -4.07/-4.75    | -4.65/-5.23    | -6.02/-6.49    | -5.73/-4.92    | -4.21/-5.05      | -7.33/-9.30      | -8.27/-6.88      | -5.41/-4.97      | -4.47/-4.61      | -5.45/-5.28      | -4.80/-5.93      | -4.96/-2.54      | -1.89/-2.35      | -3.33/-4.97      | -6.64/-7.10      | -5.71/-4.27      | -2.62/-1.67       | -2.83/-6.32      | -14.60/-16.37    | -13.32/-6.94     | -4.31/-4.29      |
| Θ(165°)   | -5.21/-5.68   | -6.60/-7.52       | -8.64/-8.12    | -7.97/-8.81    | -10.22/-9.07   | -7.56/-7.83    | -7.51/-7.23    | -7.67/-8.28      | -7.73/-5.43      | -3.70/-3.24      | -3.18/-3.40      | -5.57/-6.40      | -6.88/-6.78      | -5.95/-6.41      | -2.88/-1.58      | -1.34/-2.00      | -3.20/-4.89      | -5.45/-5.84      | -5.56/-6.05      | -6.31/-6.37       | -5.85/-6.34      | -6.06/-5.11      | -4.67/-3.33      | -3.02/-4.15      |
| Θ(172.5°) | -7.18/-7.49   | -7.52/-7.69       | -9.18/-13.18   | -16.68/-14.53  | -13.19/-11.35  | -9.07/-8.48    | -8.49/-7.04    | -6.01/-5.54      | -5.26/-4.89      | -5.03/-5.17      | -4.85/-4.57      | -4.20/-3.87      | -3.62/-3.51      | -4.08/-4.49      | -5.03/-6.53      | -6.69/-8.23      | -10.39/-14.07    | -17.33/-16.46    | -13.97/-12.42    | -10.88/-9.65      | -9.36/-9.15      | -8.51/-7.86      | -7.66/-7.61      | -7.59/-7.71      |
| Θ(180°)   | -6.16/-5.49   | -6.12/-5.28       | -5.46/-5.91    | -6.51/-7.40    | -7.77/-7.79    | -8.44/-8.89    | -8.64/-8.64    | -8.17/-7.64      | -7.98/-8.90      | -9.41/-9.65      | -8.66/-8.15      | -7.86/-7.46      | -7.33/-6.88      | -6.41/-5.78      | -5.95/-6.32      | -6.35/-6.04      | -6.05/-5.84      | -5.76/-5.02      | -4.67/-4.78      | -5.18/-5.30       | -5.38/-5.39      | -5.92/-7.09      | -7.50/-6.85      | -6.29/-6.25      |
| Freq(Hz)  | 5.65/Pol      | TotalAnt. 3       | -              | -              | -              | -              | -              | -                | -                | -                | -                | -                | -                | -                | -                | -                | -                | -                | -                | -                 | -                | -                | -                | -                |
| Gain      | Φ(0°)Φ(7.5°)  | Φ(15°)Φ(22.5°)    | Φ(30°)Φ(37.5°) | Φ(45°)Φ(52.5°) | Φ(60°)Φ(67.5°) | Φ(75°)Φ(82.5°) | Φ(90°)Φ(97.5°) | Φ(105°)Φ(112.5°) | Φ(120°)Φ(127.5°) | Φ(135°)Φ(142.5°) | Φ(150°)Φ(157.5°) | Φ(165°)Φ(172.5°) | Φ(180°)Φ(187.5°) | Φ(195°)Φ(202.5°) | Φ(210°)Φ(217.5°) | Φ(225°)Φ(232.5°) | Φ(240°)Φ(247.5°) | Φ(255°)Φ(262.5°) | Φ(270°)Φ(277.5°) | Φ(285°)Φ(292.5°)  | Φ(300°)Φ(307.5°) | Φ(315°)Φ(322.5°) | Φ(330°)Φ(337.5°) | Φ(345°)Φ(352.5°) |
| Θ(0°)     | -7.74/-8.32   | -9.59/-8.03       | -7.39/-8.84    | -9.77/-10.70   | -9.86/-9.34    | -9.28/-9.70    | -8.50/-8.48    | -7.83/-8.16      | -8.44/-8.34      | -8.05/-7.95      | -7.30/-6.53      | -5.62/-5.24      | -5.62/-6.28      | -6.37/-6.51      | -6.39/-6.17      | -6.41/-5.84      | -5.64/-5.53      | -5.33/-5.15      | -5.03/-5.39      | -5.41/-5.72       | -5.90/-6.25      | -5.09/-4.42      | -3.96/-3.57      | -5.47/-7.57      |
| Θ(7.5°)   | -10.20/-10.95 | -9.99/-7.53       | -6.19/-5.85    | -5.79/-5.61    | -4.85/-0.54    | -5.22/-4.96    | -4.71/-4.48    | -4.51/-4.44      | -4.79/-5.16      | -4.97/-4.62      | -3.66/-3.79      | -4.37/-5.33      | -5.92/-6.54      | -6.95/-7.39      | -8.57/-8.56      | -8.89/-9.57      | -9.91/-10.65     | -11.07/-10.11    | -9.54/-9.36      | -9.37/-10.19      | -10.87/-10.51    | -9.38/-8.01      | -7.20/-7.38      | -8.01/-9.56      |
| Θ(15°)    | -7.84/-8.22   | -7.21/-7.37       | -7.03/-7.34    | -7.57/-6.17    | -5.22/-4.17    | -3.14/-2.56    | -2.11/-1.83    | -2.11/-2.14      | -2.14/-2.12      | -2.00/-1.31      | -1.77/-2.15      | -2.99/-3.85      | -4.89/-6.50      | -8.11/-8.93      | -9.16/-9.16      | -9.49/-9.17      | -8.81/-8.24      | -7.78/-7.14      | -6.84/-6.80      | -6.72/-7.06       | -7.38/-6.74      | -6.39/-6.77      | -5.33/-5.51      |                  |
| Θ(22.5°)  | -8.68/-8.06   | -7.45/-8.23       | -9.75/-10.85   | -10.01/-8.27   | -6.23/-4.30    | -4.06/-3.41    | -3.30/-2.97    | -2.45/-2.54      | -3.25/-3.81      | -3.62/-2.55      | -1.73/-1.59      | -2.01/-2.41      | -3.39/-5.16      | -7.21/-8.44      | -7.87/-7.28      | -6.95/-6.56      | -6.04/-4.78      | -3.45/-2.16      | -1.30/-1.40      | -1.52/-1.77       | -2.47/-3.41      | -4.93/-5.62      | -6.61/-8.18      | -7.48/-7.88      |
| Θ(30°)    | -6.20/-5.45   | -3.16/-1.49       | -6.50/-8.17    | -7.86/-7.01    | -4.80/-2.97    | -2.00/-1.45    | -1.13/-1.27    | -1.79/-1.82      | -1.78/-2.01      | -2.66/-2.12      | -1.52/-1.80      | -2.17/-1.79      | -2.46/-6.08      | -12.09/-11.35    | -9.25/-7.85      | -6.44/-5.46      | -4.31/-3.42      | -3.39/-3.66      | -3.59/-3.52      | -1.89/-2.53       | -3.58/-3.71      | -3.17/-3.46      | -3.64/-5.12      | -6.55/-5.55      |
| Θ(37.5°)  | -3.47/-4.49   | -4.49/-7.43       | -7.90/-9.57    | -10.72/-11.18  | -9.50/-7.06    | -5.59/-3.50    | -2.83/-2.54    | -2.42/-1.92      | -1.82/-2.54      | -2.27/-3.11      | -1.33/-0.74      | -0.21/-0.36      | -0.36/-1.92      | -10.52/-8.75     | -6.77/-6.16      | -5.67/-5.19      | -4.39/-5.28      | -3.59/-3.76      | -3.03/-3.86      | -5.06/-4.16       | -3.65/-5.55      | -5.51/-4.81      | -3.04/-2.94      |                  |
| Θ(45°)    | -2.49/-1.47   | -3.53/-5.72       | -10.39/-8.10   | -7.45/-6.69    | -5.45/-4.64    | -4.20/-2.80    | -1.56/-0.46    | 0.04/-0.49       | -1.11/-1.95      | -2.73/-2.66      | -1.61/-1.07      | -0.59/-1.21      | -4.56/-8.72      | -13.78/-16.02    | -9.43/-6.98      | -6.20/-5.82      | -8.74/-10.65     | -9.62/-9.48      | -8.43/-8.28      | -9.69/-9.33       | -8.85/-9.17      | -8.78/-5.85      | -4.71/-2.69      | -2.19/-2.00      |
| Θ(52.5°)  | 1.852/-1.0    | -0.33/-1.39       | -10.74/-11.16  | -8.51/-4.99    | -1.91/-0.53    | -0.99/-0.53    | -0.57/-0.78    | -0.93/-1.43      | -2.37/-3.37      | -3.72/-6.21      | -0.27/0.89       | 1.29/0.11        | -3.85/-4.72      | -10.22/-6.51     | -3.72/-4.04      | -4.53/-7.26      | -9.56/-7.78      | -5.04/-4.08      | -4.81/-7.23      | -7.85/-10.95      | -9.48/-9.55      | -4.99/-8.41      | -5.36/-3.74      | -1.36/-0.24      |
| Θ(60°)    | -0.18/0.74    | -0.23/-2.27       | -8.44/-10.52   | -11.19/-6.57   | -1.77/0.89     | 1.61/-1.98     | 0.30/-1.18     | -2.64/-5.58      | -2.93/-1.36      | 0.68/-1.62       | 1.12/0.92        | -2.80/-5.02      | -4.89/-4.65      | -3.42/-3.03      | -4.31/-4.90      | -6.74/-6.09      | -4.48/-3.84      | -3.94/-6.48      | -8.17/-4.78      | -2.57/-1.68       | -1.67/-3.85      | -4.35/-3.28      |                  |                  |
| Θ(67.5°)  | -0.74/-0.09   | 0.30/0.02         | -2.14/-4.43    | -8.13/-4.02    | -1.25/-1.14    | 1.71/-1.55     | 0.96/0.31      | -0.24/-1.38      | -2.25/-3.18      | -1.26/0.53       | 1.25/-1.43       | 0.59/-0.49       | -1.31/-2.16      | -2.35/-3.95      | -2.32/0.10       | -0.45/-2.76      | -3.47/-4.16      | -3.14/-2.72      | -3.24/-3.07      | -2.39/-2.61       | -2.91/-3.57      | -2.81/-1.84      | -1.64/-4.68      | -3.99/-2.88      |
| Θ(75°)    | 0.83/0.19     | 1.10/0.30         | -1.29/-4.44    | -7.12/-4.22    | -0.42/0.22     | 2.43/2.90      | 2.88/-2.71     | 1.60/-0.13       | -2.90/-6.92      | -4.58/-1.18      | 1.81/2.12        | 0.46/-0.11       | -0.82/0.01       | -0.76/-0.82      | 0.78/2.64        | 1.62/-0.02       | -2.06/-2.76      | -4.13/-4.18      | -3.64/-4.05      | -3.62/-1.81       | -3.03/-4.87      | -3.91/-3.73      | -4.68/-5.84      | -3.94/-2.89      |
| Θ(82.5°)  | 0.52/2.07     | 3.70/2.96         | -0.34/-3.75    | -2.89/-1.67    | 0.69/2.08      | 2.28/-1.1      | 1.28/0.77      | -0.06/-1.07      | -3.33/-5.21      | -1.72/-0.09      | 0.63/0.08        | -0.41/-0.64      | -0.26/-0.29      | -0.99/-1.20      | 0.61/2.86        | 1.95/0.04        | -4.86/-6.20      | -3.20/-2.07      | -0.58/-0.18      | -0.84/-1.69       | -3.06/-2.58      | -4.64/-7.66      | -8.78/-7.89      | -5.06/-2.83      |
| Θ(90°)    | -0.97/-0.20   | 4.27/5.06         | 1.38/-3.15     | -4.34/-3.08    | 0.66/0.05      | 3.06/3.41      | 2.46/-1.86     | 1.11/-0.34       | -2.47/-4.40      | -2.09/0.07       | 0.65/0.16        | -1.60/-2.98      | -1.67/0.01       | 1.67/-1.74       | 2.45/3.28        | 2.08/-0.55       | -5.04/-0.93      | 2.32/2.53        | 1.87/2.09        | 2.84/-1.72        | -0.62/-4.46      | -7.08/-6.49      | -4.39/-4.60      | -3.17/-0.68      |
| Θ(97.5°)  | -0.45/-0.84   | <b>2.85/-6.44</b> | 1.83/-3.13     | -2.81/-0.04    | 1.42/-1.75     | 2.26/-2.16     | 1.01/-0.10     | -1.79/-2.07      | -3.35/-2.93      | -0.02/-1.49      | 2.23/-0.07       | -2.22/-3.00      | 0.29/-1.52       | 1.54/-1.45       | -0.72/-1.04      | 0.52/-0.07       | -1.86/-2.29      | 2.89/-2.36       | 1.72/3.77        | 4.24/-2.35        | 1.61/-0.45       | -0.53/-0.86      | -2.39/-3.55      | -7.10/-2.80      |
| Θ(105°)   | -1.13/-3.98   | 2.69/5.57         | -2.14/-3.33    | -9.44/-3.81    | -1.04/2.15     | 1.71/-0.94     | 0.67/0.04      | -1.18/-1.92      | -2.99/-1.72      | -0.29/-1.25      | 0.44/-2.56       | -3.46/-6.69      | -1.17/-2.27      | 1.86/0.25        | 2.28/2.84        | 2.09/-0.74       | -1.86/-4.20      | 1.60/-1.25       | -0.17/-1.21      | 2.23/-1.96        | 0.91/-0.70       | -1.00/-2.88      | -4.44/-5.93      | -4.63/-5.00      |
| Θ(112.5°) | -0.90/-1.42   | 1.97/5.04         | 2.28/-5.57     | -8.67/-5.24    | -2.90/-0.78    | -0.39/-1.59    | -3.12/-2.95    | -2.19/-2.41      | -2.10/-1.57      | -0.68/-0.07      | 0.87/-0.61       | -2.34/-0.93      | 0.03/-1.89       | 0.56/-0.27       | -0.69/-1.17      | -1.84/-0.69      | 0.97/0.59        | -2.05/-7.03      | -9.00/-2.62      | -0.19/-6.16       | -4.34/-1.85      | -5.19/-3.63      | -4.00/-4.62      | -4.57/-2.88      |
| Θ(120°)   | -3.37/-3.76   | 1.09/4.14         | 3.31/-2.14     | -8.22/-9.39    | -3.09/-4.04    | -0.32/-0.81    | -1.85/-2.46    | -2.40/-2.84      | -3.15/-2.17      | -0.49/-1.50      | -1.32/-1.94      | -4.11/-1.46      | -2.37/0.57       | 0.52/-1.93       | 2.84/2.09        | 1.55/-6.33       | -0.74/-1.14      | -2.09/-4.91      | -5.52/-3.68      | -3.99/-2.75       | -0.30/0.70       | -3.57/-2.76      | -5.84/-4.34      | -9.25/-4.76      |
| Θ(127.5°) | -9.17/-6.48   | -0.47/-1.81       | 2.07/-2.26     | -6.78/-5.28    | -2.84/-3.16    | -2.33/-2.60    | -3.34/-5.73    | -6.67/-4.71      | -2.99/-2.00      | -2.77/-1.32      | -1.13/-1.88      | -3.50/-4.87      | 0.62/-0.35       | 2.95/0.07        | 0.55/-2.15       | -5.45/-1.01      | -0.61/2.73       | -1.59/-0.70      | -2.93/0.64       | 2.25/-6.66        | -1.70/-1.05      | 1.31/-3.71       | 0.73/-3.77       | -5.90/-15.71     |
| Θ(135°)   | -8.35/-5.69   | -0.20/-1.01       | 0.29/0.72      | 0.16/-0.99     | -1.44/-1.76    | -3.51/-4.00    | -3.35/-4.22    | -5.74/-5.16      | -4.00/-3.73      | -3.64/-4.43      | -5.18/-5.36      | -2.91/-1.88      | 0.66/-1.53       | 1.70/0.54        | -1.25/-0.22      | -1.75/-2.51      | -0.51/-4.21      | -1.55/-3.27      | -8.34/-0.30      | 4.02/-4.11        | -0.17/-5.58      | -1.82/-4.01      | -3.48/-7.29      | -6.91/-7.30      |
| Θ(142.5°) | -4.85/-4.33   | -1.80/-1.49       | -1.29/-2.26    | -1.26/-0.40    | -0.96/-1.83    | -1.79/-3.80    | -5.92/-5.67    | -4.89/-6.77      | -8.11/-9.25      | -8.72/-7.24      | -5.39/-3.05      | -3.61/-3.19      | -1.24/-3.03      | 0.84/-1.42       | -2.59/-3.44      | -1.77/-0.79      | -1.25/-3.41      | 0.56/-0.91       | -3.70/-2.08      | 3.70/-2.36        | -8.03/-4.46      | -2.46/0.48       | -0.72/-0.69      | -1.13/-2.17      |
| Θ(150°)   | -6.33/-9.77   | -5.84/-2.40       | -0.88/-1.39    | -3.55/-2.35    | -1.26/-1.28    | -2.02/-1.90    | -2.94/-2.52    | -3.81/-3.11      | -2.86/-3.45      | -5.86/-7.86      | -6.10/-3.95      | -3.83/-3.80      | -3.27/-0.82      | -1.04/-5.27      | -10.48/-7.65     | -1.96/-1.43      | -4.58/-4.56      | -2.48/-3.67      | -3.92/-0.98      | 1.47/0.79         | -3.74/-12.02     | -7.14/-3.44      | -2.05/-1.65      | -1.46/-2.46      |
| Θ(157.5°) | -5.33/-5.09   | -2.96/-2.57       | -1.81/-1.09    | -1.38/-2.22    | -2.87/-3.67    | -4.18/-6.02    | -5.99/-4.27    | -3.21/-3.57      | -6.07/-10.29     | -14.51/-9.12     | -4.53/-3.78      | -4.48/-5.66      | -4.88/-4.26      | -2.86/-1.35      | -0.01/-1.22      | 1.67/0.45        | -1.17/-1.20      | -1.55/-2.78      | -3.49/-2.74      | -0.02/-1.14       | 0.29/-3.23       | -11.58/-12.24    | -5.93/-3.10      | -2.73/-2.82      |
| Θ(165°)   | -3.28/-2.43   | -2.95/-3.84       | -4.30/-5.14    | -7.67/-10.96   | -10.75/-11.25  | -13.11/-14.16  | -17.01/-14.17  | -10.94/-9.28     | -8.64/-8.68      | -5.15/-4.95      | -5.38/-6.86      | -8.65/-9.14      | -8.22/-7.03      | -4.90/-2.91      | -1.10/0.21       | 0.82/0.46        | -0.44/-1.14      | -1.56/-1.94      | -2.38/-3.23      | -3.76/-3.37       | -4.12/-5.38      | -8.50/-11.08     | -8.81/-5.16      | -3.2             |