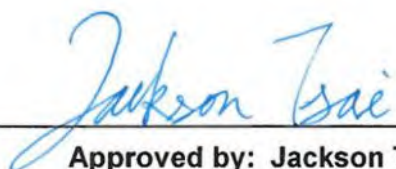


# Antenna Composite Gain Test Report

|                 |                                                                      |
|-----------------|----------------------------------------------------------------------|
| Equipment       | Cisco Wireless 9171I Series Wi-Fi 7 Access Point                     |
| Brand Name      | CISCO                                                                |
| Model Name      | CW9171I                                                              |
| Applicant       | Cisco Systems, Inc.<br>170 West Tasman Drive, San Jose, CA 95134 USA |
| Manufacturer    | Cisco Systems, Inc.<br>170 West Tasman Drive, San Jose, CA 95134 USA |
| Standard        | KDB 662911 D03 v02                                                   |
| Sample Received | Apr. 21, 2025                                                        |
| Start Test Date | Apr. 25, 2025                                                        |
| Final Test Date | Apr. 25, 2025                                                        |

  
Approved by: Jackson Tsai**SPORTON INTERNATIONAL INC. Hsinhua Laboratory**

No.52, Huaya 1st Rd., Guishan Dist., Taoyuan City 333411, Taiwan (R.O.C.)



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## History of this test report

[illegible]



## 1. Operation Mode and Antenna Information

| Antenna Position | RF Port | Brand Name | Model Name | Ant. Type | Connector | Modes of Operation |
|------------------|---------|------------|------------|-----------|-----------|--------------------|
| 2G 5G 6G Ant1    | 2       | Fii        | 363.00009  | PIFA      | I-Pex     | 2.4GHz, 5GHz, 6GHz |
| 2G 5G 6G Ant2    | 1       | Fii        | 363.00009  | PIFA      | I-Pex     | 2.4GHz, 5GHz, 6GHz |
| SC Ant1          | 1       | Fii        | 363.00009  | PIFA      | I-Pex     | 2.4GHz, 5GHz, 6GHz |
| BT Ant2          | 1       | Fii        | 363.00009  | PIFA      | I-Pex     | BLE                |

Note:

### 2.4GHz, 5GHz and 6GHz Operation Mode (2TX/2RX)

2G5G6G Ant1~ 2G5G6G Ant2 could transmit/receive simultaneously.

### 2.4GHz, 5GHz and 6GHz Operation Mode (1TX/1RX)

SC Ant1 could transmit/receive.

### BT Operation Mode (1TX/1RX)

BLE Ant2 could transmit/receive.

## 2. Test Frequency

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

| Band [MHz]  | Test Frequency [MHz] |
|-------------|----------------------|
| 2400-2483.5 | 2450                 |
| 5150-5250   | 5200                 |
| 5250-5350   | 5300                 |
| 5470-5725   | 5600                 |
| 5725-5850   | 5785                 |
| 5850-5895   | 5885                 |
| 5925-6425   | 6175                 |
| 6425-6525   | 6475                 |
| 6525-6875   | 6695                 |
| 6875-7125   | 6995                 |

## 3. Testing Location

| Test Lab. : Sporton International Inc. Hsinhua Laboratory |               |                                                                                    |                           |                |
|-----------------------------------------------------------|---------------|------------------------------------------------------------------------------------|---------------------------|----------------|
| <input checked="" type="checkbox"/> Wen 33rd.St.          | ADD:          | No.14-1, Ln. 19, Wen 33rd St., Guishan Dist., Taoyuan City 333010, Taiwan (R.O.C.) |                           |                |
|                                                           | TEL:          | 886-3-318-0787                                                                     | FAX:                      | 886-3-318-0287 |
| Test Condition                                            | Test Site No. | Test Engineer                                                                      | Test Environment (°C / %) | Test Date      |
| Radiated                                                  | 05CH03-HY     | Rofy Chen                                                                          | 23.5-24.5°C / 45-55%      | 25/Apr/2025    |

Note:

Testing Site Information

Brand Name: TDK

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

Characteristic: Fully Anechoic Chamber

## 4. Test Facility and Configuration

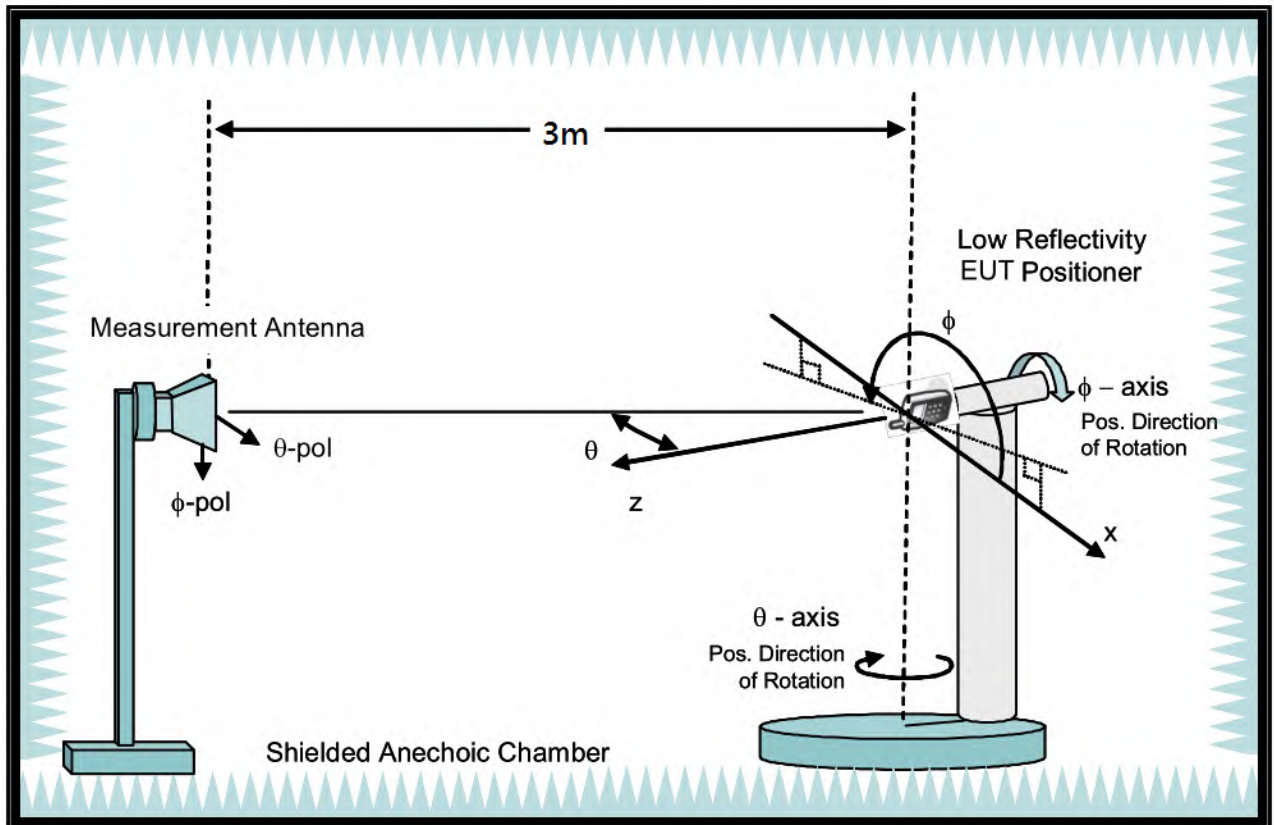
Test configuration: Reference to CITA OTA distributed-axes system configuration.

Chamber: Fully Anechoic Chamber.

Measurement antenna: Dual Polarization Horn antenna

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

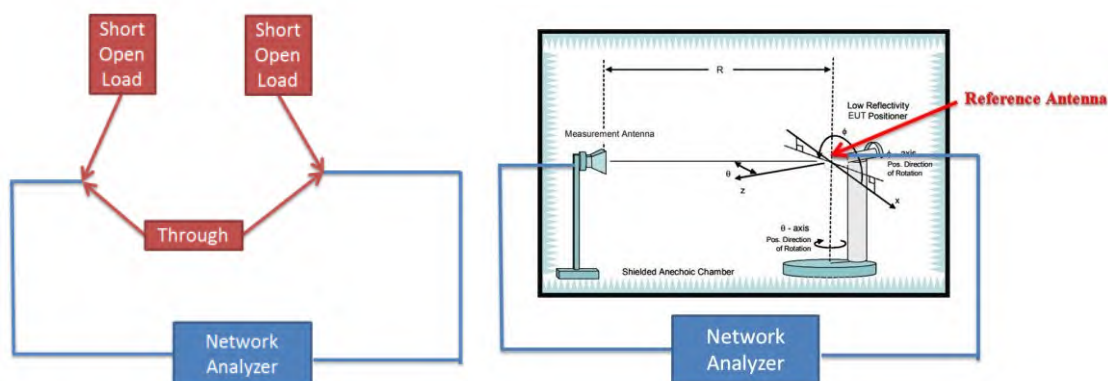
#Reference to CTIA "ctia-test-plan-for-wireless-device-over-the-air-performance-ver-3-7-1"



## 5. Reference Calibration

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

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



| Frequency             | 2400   | 2450   | 2500   | 5150   | 5200   | 5300   | 5600   | 5750   | 5800   | 5900   | 6000   | 6500   | 7000   | 7200   |
|-----------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| G(theta) reading (dB) | -33.48 | -33.18 | -32.45 | -32.78 | -32.43 | -32.85 | -32.74 | -32.13 | -32.46 | -33.46 | -32.73 | -33.41 | -34.78 | -35.31 |
| G(phi) reading (dB)   | -33.45 | -32.13 | -32.74 | -32.43 | -32.87 | -31.78 | -32.46 | -32.37 | -32.73 | -32.87 | -32.46 | -33.68 | -34.74 | -35.08 |
| Reference gain (dBi)  | 10.4   | 10.5   | 10.2   | 11.4   | 11.5   | 11.9   | 12.5   | 11.8   | 11.7   | 11.6   | 11.8   | 11.5   | 11.4   | 10.8   |
| Factor(theta) (dB)    | 43.88  | 43.68  | 42.65  | 44.18  | 43.93  | 44.75  | 45.24  | 43.93  | 44.16  | 45.06  | 44.53  | 44.91  | 46.18  | 46.11  |
| Factor(phi) (dB)      | 43.85  | 42.63  | 42.94  | 43.83  | 44.37  | 43.68  | 44.96  | 44.17  | 44.43  | 44.47  | 44.26  | 45.18  | 46.14  | 45.88  |

Note:

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

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

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

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



### 6. Test Method

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

DG steps:

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

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

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

<2G5G6G Ant1, 2G5G6G Ant2>

DG\_1SS max value position

| Frequency (Hz)     | 2.45G | 5.2G  | 5.3G  | 5.6G  | 5.785G | 5.885G | 6.175G | 6.475G | 6.695G | 6.995G |
|--------------------|-------|-------|-------|-------|--------|--------|--------|--------|--------|--------|
| Ant. 1 (dBi)       | 3.89  | 2.45  | 3.28  | 4.65  | 3.09   | 2.67   | 4.11   | 2.24   | 2.87   | 0.66   |
| Ant. 2 (dBi)       | 4.02  | 3     | 2.59  | 3.03  | 3.99   | 4.46   | 3.14   | 3.44   | 2.65   | 4.29   |
| DG [1SS] (dBi)     | 6.97  | 5.74  | 5.95  | 6.89  | 6.56   | 6.62   | 6.65   | 5.87   | 5.77   | 5.67   |
| Polarization       | Theta | Theta | Theta | Theta | Theta  | Theta  | Theta  | Theta  | Theta  | Theta  |
| $\Theta(^{\circ})$ | 52.5  | 52.5  | 75    | 67.5  | 52.5   | 82.5   | 67.5   | 67.5   | 60     | 60     |
| $\Phi(^{\circ})$   | 315   | 330   | 232.5 | 142.5 | 322.5  | 232.5  | 127.5  | 127.5  | 135    | 135    |

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

DG\_1SS max value position calculation

| Frequency (Hz)                            | 2.45G            | 5.2G             | 5.3G             | 5.6G             | 5.785G           |
|-------------------------------------------|------------------|------------------|------------------|------------------|------------------|
| Ant. 1 [ $10^{(G/20)}$ ]                  | $10^{(3.89/20)}$ | $10^{(2.45/20)}$ | $10^{(3.28/20)}$ | $10^{(4.65/20)}$ | $10^{(3.09/20)}$ |
| Ant. 2 [ $10^{(G/20)}$ ]                  | $10^{(4.02/20)}$ | $10^{(3/20)}$    | $10^{(2.59/20)}$ | $10^{(3.03/20)}$ | $10^{(3.99/20)}$ |
| Ant. 1 [ $10^{(G/20)}$ ] value            | 1.565            | 1.326            | 1.459            | 1.708            | 1.427            |
| Ant. 2 [ $10^{(G/20)}$ ] value            | 1.589            | 1.413            | 1.347            | 1.417            | 1.583            |
| Sum All Antenna [Amax]                    | 3.153            | 2.738            | 2.806            | 3.125            | 3.01             |
| DG [ $10 \cdot \log(A_{max}^2/N_{ant})$ ] | 6.97             | 5.74             | 5.95             | 6.89             | 6.56             |

| Frequency (Hz)                            | 5.885G           | 6.175G           | 6.475G           | 6.695G           | 6.995G           |
|-------------------------------------------|------------------|------------------|------------------|------------------|------------------|
| Ant. 1 [ $10^{(G/20)}$ ]                  | $10^{(2.67/20)}$ | $10^{(4.11/20)}$ | $10^{(2.24/20)}$ | $10^{(2.87/20)}$ | $10^{(0.66/20)}$ |
| Ant. 2 [ $10^{(G/20)}$ ]                  | $10^{(4.46/20)}$ | $10^{(3.14/20)}$ | $10^{(3.44/20)}$ | $10^{(2.65/20)}$ | $10^{(4.29/20)}$ |
| Ant. 1 [ $10^{(G/20)}$ ] value            | 1.36             | 1.605            | 1.294            | 1.392            | 1.079            |
| Ant. 2 [ $10^{(G/20)}$ ] value            | 1.671            | 1.435            | 1.486            | 1.357            | 1.639            |
| Sum All Antenna [Amax]                    | 3.031            | 3.041            | 2.78             | 2.748            | 2.718            |
| DG [ $10 \cdot \log(A_{max}^2/N_{ant})$ ] | 6.62             | 6.65             | 5.87             | 5.77             | 5.67             |

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

## 8. Summary of Test Result

### <2G5G6G Ant1, 2G5G6G Ant2>

| Freq(Hz)                                               | 2.45G            | 5.2G           | 5.3G           | 5.6G             | 5.785G         |
|--------------------------------------------------------|------------------|----------------|----------------|------------------|----------------|
| Ant. 1 Max Gain (dBi)                                  | 4.75             | 3.63           | 3.82           | 4.65             | 4.31           |
| Ant. 2 Max Gain (dBi)                                  | 4.56             | 4.4            | 4.37           | 5.26             | 4.52           |
| Ant. 1 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$ | Theta/52.5/187.5 | Theta/60/105   | Theta/75/240   | Theta/67.5/142.5 | Theta/67.5/135 |
| Ant. 2 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$ | Theta/60/285     | Theta/67.5/210 | Theta/67.5/210 | Theta/67.5/210   | Theta/75/232.5 |
| Max Gain (dBi)                                         | 4.75             | 4.4            | 4.37           | 5.26             | 4.52           |
| DG [1SS] (dBi)                                         | 6.97             | 5.74           | 5.95           | 6.89             | 6.56           |
| DG [2SS] (dBi)                                         | 4.75             | 4.4            | 4.37           | 5.26             | 4.52           |

| Freq(Hz)                                               | 5.885G           | 6.175G         | 6.475G           | 6.695G           | 6.995G         |
|--------------------------------------------------------|------------------|----------------|------------------|------------------|----------------|
| Ant. 1 Max Gain (dBi)                                  | 4.64             | 4.62           | 3.78             | 4.04             | 3.58           |
| Ant. 2 Max Gain (dBi)                                  | 4.46             | 3.88           | 3.44             | 3.56             | 4.8            |
| Ant. 1 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$ | Theta/67.5/135   | Theta/52.5/330 | Theta/37.5/232.5 | Theta/37.5/225   | Theta/45/217.5 |
| Ant. 2 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$ | Theta/82.5/232.5 | Theta/45/67.5  | Theta/67.5/127.5 | Theta/82.5/232.5 | Theta/82.5/240 |
| Max Gain (dBi)                                         | 4.64             | 4.62           | 3.78             | 4.04             | 4.8            |
| DG [1SS] (dBi)                                         | 6.62             | 6.65           | 5.87             | 5.77             | 5.67           |
| DG [2SS] (dBi)                                         | 4.64             | 4.62           | 3.78             | 4.04             | 4.8            |

### < SC Ant1, BLE Ant2>

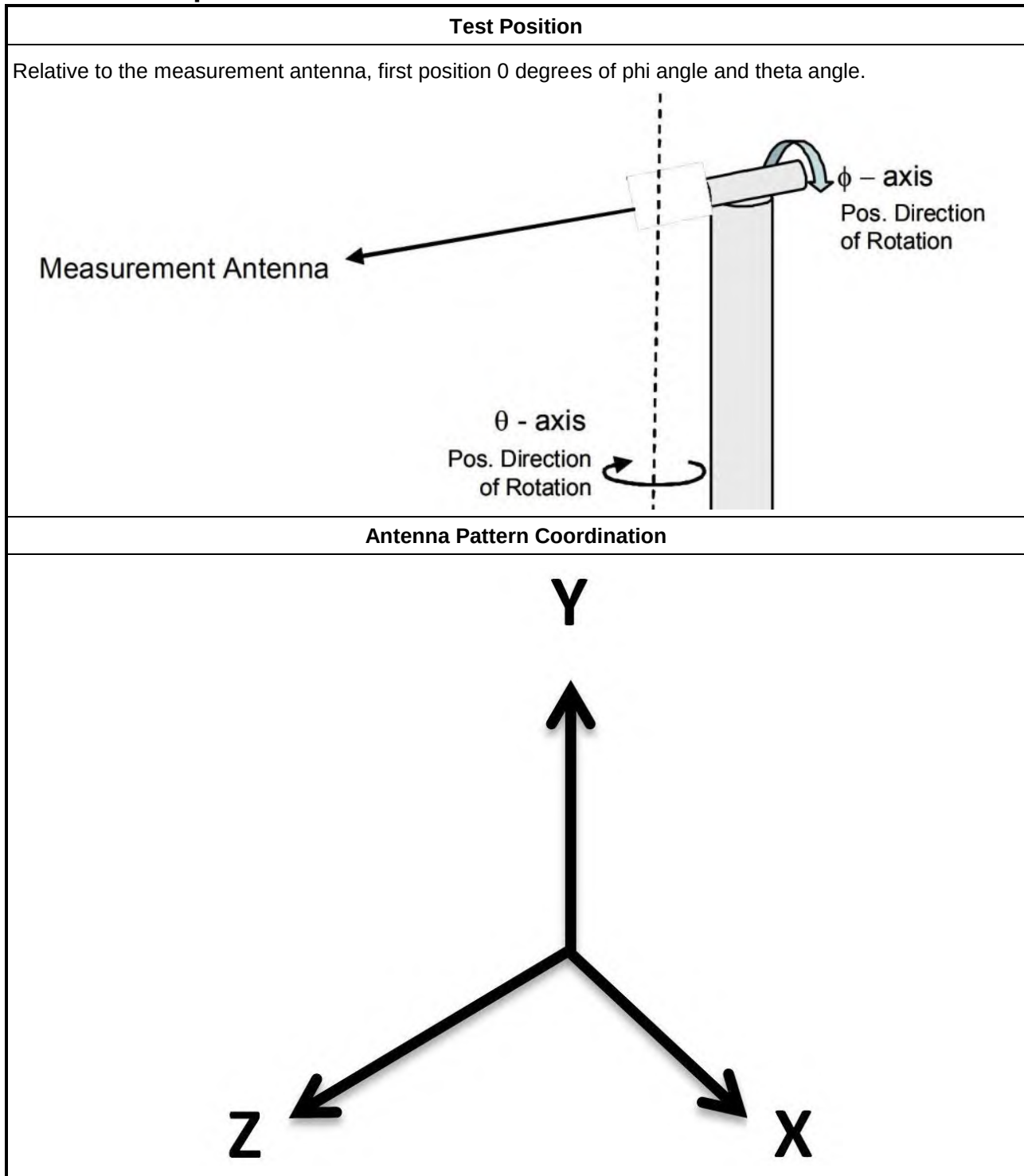
| Freq(Hz)                                               | 2.45G        | 5.2G          | 5.3G          | 5.6G             | 5.785G          |
|--------------------------------------------------------|--------------|---------------|---------------|------------------|-----------------|
| Ant. 1 Max Gain (dBi)                                  | 3.75         | 4.18          | 4.12          | 4.81             | 4.57            |
| Ant. 2 Max Gain (dBi)                                  | 3.66         | -             | -             | -                | -               |
| Ant. 1 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$ | Theta/52.5/0 | Theta/67.5/75 | Theta/67.5/75 | Theta/37.5/322.5 | Theta/67.5/52.5 |
| Ant. 2 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$ | Theta/60/255 | -             | -             | -                | -               |

| Freq(Hz)                                               | 5.885G          | 6.175G         | 6.475G           | 6.695G         | 6.995G         |
|--------------------------------------------------------|-----------------|----------------|------------------|----------------|----------------|
| Ant. 1 Max Gain (dBi)                                  | 5.08            | 4.66           | 4.38             | 4.02           | 3.61           |
| Ant. 2 Max Gain (dBi)                                  | -               | -              | -                | -              | -              |
| Ant. 1 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$ | Theta/67.5/52.5 | Theta/30/292.5 | Theta/37.5/307.5 | Theta/30/247.5 | Theta/37.5/255 |
| Ant. 2 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$ | -               | -              | -                | -              | -              |

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

## 9. Test Setup



Note:

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

**10. Test Equipment and Calibration Data**

| Instrument                     | Brand       | Model No.  | Serial No.      | Characteristics  | Calibration Date | Calibration Due Date |
|--------------------------------|-------------|------------|-----------------|------------------|------------------|----------------------|
| Horn Antenna                   | SCHWARZBECK | BBHA9120D  | BBHA 9120D-1531 | 1GHz~18GHz       | Dec. 20, 2024    | Dec. 19, 2025        |
| Dual Polarization Horn Antenna | Sporton     | S0209DP    | S0209DP-001     | 2GHz~9GHz        | N.C.R.           | N.C.R.               |
| ENA Series Network Analyzer    | AGILENT     | E5071C     | MY46419477      | 100kHz~8.5GHz    | Jul. 30, 2024    | Jul. 29, 2025        |
| VNA Calibration Kit            | TS RF       | TS85033E-F | -               | DC~9GHz          | N.C.R.           | N.C.R.               |
| Multi-axis positioner          | Sporton     | MAPS01     | MAPS01-001      | Theta / Phi axis | N.C.R.           | N.C.R.               |
| Test Software                  | SPORTON     | SENSE-RDG  | V1.0.8          | -                | N.C.R.           | N.C.R.               |

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

NCR means Non-Calibration required.



## **11. Test Results**

Please refer to the appendix.

|                                                               |         |
|---------------------------------------------------------------|---------|
| Appendix A – Radiated Composite Gain of 2.4GHz/5GHz/6GHz..... | Page 13 |
| Appendix B – Radiated Composite of Scan Radio and BLE.....    | Page 29 |
| Appendix C – Antenna Pattern of 2.4GHz/5GHz/6GHz.....         | Page 36 |
| Appendix D – Antenna Pattern of Scan Radio and BLE.....       | Page 42 |
| Appendix E – Test Photos.....                                 | Page 46 |



|                               |                  |                |                |                  |                |                  |                |                  |                  |                |
|-------------------------------|------------------|----------------|----------------|------------------|----------------|------------------|----------------|------------------|------------------|----------------|
| Freq(Hz)                      | 2.45G            | 5.2G           | 5.3G           | 5.6G             | 5.785G         | 5.885G           | 6.175G         | 6.475G           | 6.695G           | 6.995G         |
| Ant. 1 Max Gain (dBi)         | 4.75             | 3.63           | 3.82           | 4.65             | 4.31           | 4.64             | 4.62           | 3.78             | 4.04             | 3.58           |
| Ant. 2 Max Gain (dBi)         | 4.56             | 4.4            | 4.37           | 5.26             | 4.52           | 4.46             | 3.88           | 3.44             | 3.56             | 4.8            |
| Ant. 1 Polarization/Θ(°)/Φ(°) | Theta/52.5/187.5 | Theta/60/105   | Theta/75/240   | Theta/67.5/142.5 | Theta/67.5/135 | Theta/67.5/135   | Theta/52.5/330 | Theta/37.5/232.5 | Theta/37.5/225   | Theta/45/217.5 |
| Ant. 2 Polarization/Θ(°)/Φ(°) | Theta/60/285     | Theta/67.5/210 | Theta/67.5/210 | Theta/67.5/210   | Theta/75/232.5 | Theta/82.5/232.5 | Theta/45/67.5  | Theta/67.5/127.5 | Theta/82.5/232.5 | Theta/82.5/240 |
| Max Gain (dBi)                | 4.75             | 4.4            | 4.37           | 5.26             | 4.52           | 4.64             | 4.62           | 3.78             | 4.04             | 4.8            |
| DG [1SS] (dBi)                | 6.97             | 5.74           | 5.95           | 6.89             | 6.56           | 6.62             | 6.65           | 5.87             | 5.77             | 5.67           |
| DG [2SS] (dBi)                | 3.96             | 2.73           | 2.95           | 3.99             | 3.56           | 3.66             | 3.65           | 2.88             | 2.76             | 2.96           |



# Radiated Composite Gain Data of 2.4GHz/5GHz/6GHz

# 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°)     | -5.96/6.58    | -7.44/8.42      | -9.71/11.52     | -13.37/15.01    | -15.61/15.09    | -15.66/15.29    | -15.13/93.      | -12.78/12.01      | -10.71/9.55       | -8.28/1.79        | -6.57/1.19        | -6.04/5.99        | -6.08/6.3         | -6.72/1.36        | -8.27/9.19        | -10.10/99.        | -11.69/11.71      | -11.62/12.05      | -11.48/11.03      | -10.14/8.83       | -7.64/6.82        | -6.34/6.03        | -5.78/5.66        | -5.57/6.6         |
| Θ(7.5°)   | -5.08/5.87    | -7.03/8.41      | -10.26/12.44    | -13.07/13.82    | -13.47/13.22    | -12.92/12.82    | -12.69/12.38    | -11.83/11.38      | -10.93/10.17      | -9.04/7.95        | -7.15/6.8         | -6.71/6.64        | -6.65/6.72        | -6.95/7.33        | -7.96/8.88        | -9.93/11.69       | -12.02/12.31      | -13.36/13.18      | -12.32/11.09      | -9.98/8.55        | -5.42/4.94        | -4.63/4.49        | -4.63/4.49        | -4.46/4.63        |
| Θ(15°)    | -4.39/5.22    | -6.45/7.93      | -9.97/10.81     | -11.41/11.44    | -11.48/10.71    | -9.95/9.47      | -9.35/9.4       | -9.59/9.66        | -9.21/8.4         | -7.39/6.47        | -5.74/5.35        | -5.32/5.54        | -5.98/6.46        | -6.93/7.43        | -7.83/8.17        | -8.62/9.33        | -10.2/10.42       | -10.19/9.89       | -9.73/8.9         | -8.54/7.36        | -6.2/5.31         | -4.7/4.24         | -3.89/3.72        | -3.73/3.93        |
| Θ(22.5°)  | -4.23/4.9     | -5.82/6.95      | -8.59/9.46      | -9.96/10.08     | -10.14/9.12     | -8.16/7.74      | -7.76/8.05      | -8.55/8.75        | -8.13/7.04        | -5.82/4.69        | -3.79/3.24        | -3.2/3.72         | -4.63/5.65        | -6.58/7.41        | -7.73/7.2         | -8.74/6.82        | -7.17/7.47        | -7.88/7.95        | -7.16/6.59        | -5.7/4.99         | -4.47/4.1         | -3.79/3.62        | -3.64/3.81        |                   |
| Θ(30°)    | 4.86/5.09     | -5.35/5.93      | -6.87/7.96      | -8.56/9.16      | -9.03/7.67      | -6.84/6.66      | -6.82/7         | -7.26/7.5         | -6.96/5.9         | -4.76/3.63        | -2.6/1.88         | -1.69/2.18        | -3.34/4.71        | -5.82/6.81        | -7.84/6.97        | -6.14/6.03        | -6.34/6.9         | -7.53/7.97        | -7.38/6.63        | -6.34/5.99        | -5.63/5.31        | -5.04/4.82        | -4.67/4.71        |                   |
| Θ(37.5°)  | -5.75/5.45    | -5.27/5.47      | -5.96/6.62      | -7.52/8.27      | -8.15/7.31      | -6.94/7.28      | -7.53/7.34      | -7.12/6.83        | -5.98/5.04        | -4.23/3.42        | -2.52/1.74        | -1.46/-1.94       | -3.31/5.15        | -6.44/7.21        | -7.52/7.64        | -6.97/7.01        | -7.51/7.91        | -7.75/8.08        | -8.78/9.37        | -8.41/7.67        | -7.31/7.16        | -7.39/8.04        | -7.91/7.42        | -6.76/6.18        |
| Θ(45°)    | -6.27/5.72    | -5.63/5.74      | -5.84/6.09      | -6.85/7.92      | -8.39/7.98      | -7.87/8.31      | -9.59/9.02      | -7.93/6.68        | -5.58/4.96        | -4.68/4.47        | -3.92/3.04        | -3.9/6.17         | -7.85/8.01        | -7.99/8.43        | -8.62/9.2         | -8.62/8.02        | -7.21/7.14        | -8.29/9.94        | -10.1/8.96        | -8.8/8.93         | -9.82/11.2        | -12.33/11.05      | -9.09/7.39        |                   |
| Θ(52.5°)  | -5.64/5.49    | -6.01/6.33      | -6.13/6.31      | -7.4/9.42       | -10.6/9.91      | -9.16/9.76      | -11.39/11.94    | -9.69/7.31        | -6.38/6.3         | -6.5/6.91         | -6.57/5.1         | -3.94/3.94        | -5.51/8.02        | -8.13/6.8         | -6.97/7.33        | -8.3/9.51         | -10.05/8.73       | -7.17/6.23        | -7.05/9.31        | -10.45/9.18       | -8.51/9.31        | -11.4/13.06       | -14.44/11.88      | -9.02/6.86        |
| Θ(60°)    | -5.29/5.7     | -6.76/7.09      | -6.58/6.8       | -8.58/12.08     | -14.6/12.73     | -10.04/9.04     | -9.97/11.71     | -11.04/9.09       | -8.67/9.49        | -9.58/9.78        | -9.17/7.01        | -8.43/4.15        | -5.47/8.25        | -8.47/5.96        | -5.17/6.66        | -8.35/9.18        | -10.86/9.84       | -8.02/6.48        | -6.2/7.91         | -9.42/8.46        | -8.02/9.14        | -11.54/13.94      | -13.56/10.34      | -8.07/6.11        |
| Θ(67.5°)  | -6.28/7.21    | -8.6/8.44       | -7.4/7.69       | -10.21/15.3     | -15.05/13.21    | -9.55/7.67      | -8.19/11.18     | -12.64/10.45      | -10.77/12         | -12.38/10.63      | -10.63/8.39       | -5.1/3.77         | -4.91/8.12        | -8.82/5.93        | -5.08/7.14        | -8.52/8.36        | -9.27/11.19       | -9.1/6.95         | -6.18/7.67        | -9.01/8.58        | -8.74/10.13       | -12.48/12.48      | -11.45/10.62      | -8.77/6.84        |
| Θ(75°)    | -6.74/7.99    | -10.03/9.52     | -7.82/7.79      | -10.1/14.73     | -12.99/11.33    | -9.45/7.39      | -7.78/11.89     | -13.57/9.42       | -9.07/11.4        | -11.73/9.7        | -10.66/11.68      | -7.37/4.92        | -5.78/9.77        | -9.3/5.22         | -4.13/5.92        | -6.9/6.94         | -7.7/9.57         | -9.35/7.25        | -7.1/8.48         | -8.46/7.46        | -7.39/9.26        | -11.45/11.55      | -11.15/12.24      | -10.75/7.61       |
| Θ(82.5°)  | -7.42/8.84    | -11.65/11.34    | -9.35/9.15      | -10.95/13.4     | -12.86/12.59    | -12.82/8.97     | -8.09/11.07     | -11.73/8.06       | -7.52/10.25       | -11.1/9.7         | -10.74/12.69      | -8.08/5.72        | -7.26/11.23       | -9.99/5.12        | -4.09/6.02        | -6.83/6.44        | -6.9/7.64         | -7.14/6.76        | -7.87/9.78        | -8.39/6.65        | -6.8/8.48         | -10.24/11         | -11.91/12.63      | -11.82/8.59       |
| Θ(90°)    | -9.05/10.98   | -14.48/13.84    | -10.92/10.91    | -13.25/14.43    | -14.88/14.67    | -10.88/6.65     | -6.09/9.1       | -13.42/9.56       | -8.01/10.66       | -12.86/10.23      | -11.54/14.09      | -8.66/5.23        | -6.16/9.59        | -10.59/5.87       | -4.6/6.58         | -7.73/7.12        | -7.82/10.13       | -8.92/6.31        | -7.09/15.92       | -9.38/6.88        | -6.94/8.91        | -9.99/9.72        | -10.78/12.92      | -12.2/9.84        |
| Θ(97.5°)  | -7.82/9.62    | -13.12/11.8     | -9.35/9.78      | -12.71/15.01    | -13.9/12.41     | -9.32/6.15      | -6.11/9.98      | -12.86/18.14      | -6.78/9.43        | -11.01/9.2        | -11.08/15.15      | -8.85/5.68        | -7.33/11.34       | -10.08/5.1        | -3.81/5.53        | -6.93/5.63        | -7.72/11.43       | -9.6/6.58         | -6.76/9.82        | -9.91/8.15        | -8.12/9.68        | -9.88/8.56        | -9.18/11.52       | -10.79/8.41       |
| Θ(105°)   | -7.57/9.49    | -13.24/11.56    | -9.46/9.88      | -13.06/13.45    | -12.71/11.86    | -10.48/7.68     | -7.41/9.48      | -10.55/8.2        | -7.65/11.24       | -12.53/9.77       | -9.77/13.74       | -10.03/6.62       | -7.87/13.1        | -13.13/6.4        | -11.32/7.65       | -6.57/6.56        | -7.54/10.69       | -11.32/7.65       | -6.79/8.56        | -6.88/7.44        | -7.98/10.31       | -11.43/10         | -9.84/11.59       | -11.36/8.61       |
| Θ(112.5°) | -7.52/8.33    | -9.87/8.77      | -7.58/7.58      | -8.81/12.03     | -15.22/13.06    | -8.73/6.63      | -7.25/10.83     | -10.89/6.82       | -6.09/8.98        | -11.56/10.07      | -9.77/9.1         | -6.94/5.97        | -7.55/12.88       | -13.34/6.99       | -5.42/6.98        | -6.39/5.89        | -6.32/6.96        | -6.29/5.17        | -6.08/9.47        | -10.21/7.89       | -7.96/9.11        | -9.93/10.7        | -11.71/12.01      | -11.93/8.93       |
| Θ(120°)   | -6.55/6.61    | -9.17/10.45     | -10.19/10.88    | -11.28/11.46    | -13.22/13.71    | -10.63/8.18     | -8.02/6.96      | -8.99/8.61        | -6.63/8.95        | -10.99/10.19      | -10.82/12.12      | -9.21/6.68        | -6.27/7.51        | -7.28/17.3        | -7.96/10.73       | -10.25/9.67       | -9.71/9.79        | -7.8/5.54         | -5.2/6.88         | -8.79/9.05        | -9.82/11.63       | -11.69/11.24      | -11.95/12.72      | -11.82/8.57       |
| Θ(127.5°) | -8.24/7.89    | -10.09/11.14    | -10.36/11.77    | -13.62/14.29    | -14.69/12.69    | -10.97/9.27     | -9.61/11.26     | -12.41/11.25      | -11.56/11.47      | -8.76/7.17        | -7.24/8.16        | -4.84/7.9         | -8.24/7.28        | -5.44/4.85        | -5.99/6.22        | -5.22/6.07        | -8.29/9.97        | -10.57/8.17       | -6.56/6.33        | -6.06/5.57        | -6.98/7.64        | -9.9/11.2         | -13.38/15.09      | -11.82/8.59       |
| Θ(135°)   | -8.95/7.85    | -7.43/7.2       | -6.67/7.42      | -10.29/15.72    | -15.44/12.38    | -9.78/9.23      | -10.22/10.26    | -7.69/8.58        | -5.59/6.37        | -4.93/4.15        | -4.3/4.41         | -5.2/7.49         | -10.89/10.01      | -8.29/6.76        | -7.16/6.13        | -4.27/4.1         | -4.99/6.38        | -7.47/8.31        | -9.64/11.38       | -10.85/8.89       | -8.43/9.6         | -11.78/13.91      | -14.56/14.59      | -12.1/10.36       |
| Θ(142.5°) | -11.15/8.97   | -9.15/8.54      | -7.81/8.41      | -10.85/12.94    | -12.88/9.91     | -8.14/7.26      | -6.61/5.45      | -4.19/5.38        | -4.14/6.5         | -5.39/5.17        | -5.34/5.07        | -5.19/5.99        | -6.17/6.93        | -7.82/9.22        | -11.03/10.38      | -8.88/8.37        | -7.57/10.5        | -8.82/7.13        | -7.82/10.05       | -12.57/13.82      | -13.69/13.89      | -15.47/14.71      | -15.2/13.94       | -12.47/11.96      |
| Θ(150°)   | -8.45/8.14    | -7.93/7.3       | -6.92/7.11      | -8.71/10.81     | -12.65/11.86    | -9.55/9.08      | -7.45/9.73      | -4.84/4.73        | -6.83/6.27        | -5.66/5.91        | -7.06/7.03        | -6.92/6.91        | -7.53/5.97        | -10.43/11.15      | -9.99/7.67        | -5.72/4.84        | -7.36/4.84        | -7.42/5.02        | -5.53/6.16        | -6.97/7.12        | -9.56/10.15       | -9.56/10.15       | -12.88/9.23       |                   |
| Θ(157.5°) | -5.29/5.32    | -5.48/5.77      | -6.5/8.19       | -10.76/12.98    | -13.07/11       | -8.86/6.83      | -5.59/4.94      | -4.96/5.72        | -7.34/8.03        | -7.96/8.54        | -8.6/7.43         | -7.02/7.49        | -8.62/9.47        | -9.83/10.92       | -10.59/9.94       | -7.36/5.52        | -4.48/4.2         | -4.58/5.36        | -6.08/6.15        | -5.78/5.4         | -5.24/5.34        | -5.75/6.01        | -6.44/6.39        | -5.95/5.51        |
| Θ(165°)   | -6.36/6.89    | -7.74/8.98      | -11.11/14.59    | -14.34/13.71    | -8.38/6.22      | -4.96/3.41      | -4.2/4.65       | -5.71/7.42        | -10.24/13.55      | -12.64/10.98      | -8.41/6.83        | -6.37/8.65        | -8.32/9.36        | -11.14/13.36      | -14.17/12.29      | -10.14/7.94       | -6.84/6.6         | -7.1/8.26         | -9.3/8.78         | -7.86/7.15        | -6.76/6.6         | -6.57/6.46        | -6.19/6.21        | -6.02/6.01        |
| Θ(172.5°) | -6.68/10.58   | -12.31/13.73    | -13.78/11.32    | -9.39/7.29      | -6.05/5.33      | -5.52/5.94      | -6.83/8.24      | -9.54/11.75       | -6.52/5.94        | -12.77/10.92      | -8.74/7.65        | -7.47/9.84        | -9.12/11.06       | -12.89/15.06      | -15.28/15.23      | -14.94/14.14      | -12.95/12.78      | -12.66/13.1       | -13.87/14.6       | -12.77/11.46      | -10.06/9.45       | -9.24/8.71        | -8.81/8.96        | -8.89/8.16        |
| Θ(180°)   | -11.79/11.41  | -11.01/10.85    | -10.24/9.3      | -8.49/7.89      | -7.94/8.12      | -8.5/9.12       | -10.16/11.47    | -13.03/12.76      | -12.42/12.18      | -11.55/10.68      | -10.34/10.58      | -11.44/13.23      | -14.66/14.46      | -15.04/15.07      | -15.53/15.04      | -14.38/14.17      | -14.49/15.49      | -15.53/15.41      | -15.57/15.91      | -14.63/14.41      | -13.48/13.4       | -13.39/13.24      | -13.36/13.78      | -12.83/12.14      |
| 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°)     | -14.15/13.49  | -11.8/9.95      | -8.4/7.19       | -6.16/5.42      | -5.07/5.04      | -5.14/5.21      | -5.48/5.95      | -6.44/6.93        | -7.83/9.27        | -10.89/12.29      | -12.97/12.86      | -12.65/12.29      | -11.73/10.98      | -9.91/8.8         | -7.65/6.73        | -6.2/6.03         | -6.03/6.13        | -6.27/6.62        | -6.9/7.11         | -7.42/7.95        | -8.51/9.21        | -9.87/10.5        | -11.26/12.32      | -13.51/14         |
| Θ(7.5°)   | -7.04/7.6     | -8/7.96         | -7.59/6.96      | -6.25/5.53      | -5.01/4.75      | -4.69/4.78      | -5.12/5.75      | -6.35/6.96        | -7.85/9.3         | -11.34/14         | -15.36/15.1       | -15.22/14.53      | -12.82/11.21      | -9.74/8.4         | -7.32/6.49        | -5.93/5.63        | -5.51/5.34        | -5.25/5.49        | -5.47/5.7         | -6.06/6.58        | -7.01/6.98        | -6.67/6.37        | -6.18/6.14        | -6.25/6.53        |
| Θ(15°)    | -1.87/2.26    | -2.64/3.04      | -3.52/4.18      | -4.45/4.22      | -3.91/3.74      | -3.74/3.93      | -4.2/4.65       | -5.44/6.58        | -8.21/9.99        | -11.36/11.9       | -11.34/10.2       | -8.61/7.97        | -2.77/3.08        | -6.34/5.67        | -4.71/4.61        | -4.63/4.7         | -4.78/4.86        | -4.93/4.92        | -4.69/4.17        | -5.28/4.77        | -2.18/1.79        | -1.55/1.43        | -1.41/1.54        |                   |
| Θ(22.5°)  | 1.47/1.11     | 0.77/0.41       | -0.05/0.63      | -1.32/2.06      | -2.55/2.62      | -2.75/2.77      | -3.02/2.99      | -3.26/3.78        | -4.68/5.83        | -7.12/7.87        | -7.85/6.87        | -6.11/5.45        | -4.79/4.14        | -3.76/3.7         | -3.78/3.9         | -3.98/4.04        | -3.99/3.81        | -3.54/3.07        | -2.46/1.77        | -1.01/0.22        | 0.53/1.11         | 1.55/1.86         | 2.03/2.04         | 1.94/1.77         |
| Θ(30°)    | 3.36/3.07     | 2.62/2.62       | 2.31/1.96       | 1.65/1.35       | 1.09/0.8        | 0.37/0.26       | -0.97/1.74      | -2.63/3.52        | -4.47/5.1         | -5.25/4.5         | -3.19/1.9         | -1.01/0.66        | -0.75/1.13        | -1.68/2.24        | -2.68/2.91        | -2.84/2.47        | -1.89/1.33        | -0.87/0.43        | 0.17/0.88         | 1.68/2.48         | 3.22/3.8          | 4.21/4.46         | 4.55/4.4          | 4.09/3.73         |
| Θ(37.5°)  | 4.08/4.94     | 3.96/3.99       | 3.94/3.92       | 3.99/4.05       | 3.96/3.65       | 3.14/2.41       | 1.51/0.49       | -0.59/1.64        | -2.46/2.64        | -2.1/0.84         | 0.67/1.97         | 2.77/3.08         | 3.03/2.69         | 2.06/1.18         | 0.24/0.45         | -0.89/0.45        | 0.                |                   |                   |                   |                   |                   |                   |                   |



# Radiated Composite Gain Data of 2.4GHz/5GHz/6GHz

# Appendix A

|           |               |                 |                 |                 |                 |                 |                 |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |
|-----------|---------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| Θ(22.5°)  | -3.01/4.74    | -6.44/-6.76     | -5.75/-5.52     | -5.81/-6.31     | -6.65/-8.42     | -8.37/-8.07     | -5.65/-5.12     | -5.21/-5.34       | -5.59/-5.39       | -4.56/-4.14       | -4.3/-5.04        | -5.5/-5.18        | -4.27/-4.27       | -5.1/-6.19        | -7.37/-6.61       | -5.5/-5.09        | -6.47/-10.08      | -12.28/-8.06      | -6.57/-6.15       | -5.65/-5.23       | -4.97/-4.35       | -3.71/-2.82       | -1.95/-1.54       | -1.84/-2.18       |
| Θ(30°)    | -3.59/-3.84   | -4.08/-4.39     | -4.68/-5.07     | -4.79/-5.78     | -7.51/-9.39     | -8/-6.66        | -5.5/-4.89      | -5.02/-4.86       | -3.84/-3.26       | -3.14/-3.23       | -3.67/-4.38       | -5.2/-5.46        | -5.61/-5.08       | -4.44/-5.42       | -7.19/-6.18       | -5.03/-4.92       | -7.03/-9.65       | -10.68/-9.07      | -8.16/-6.56       | -5.35/-4.89       | -3.38/-1.92       | -1.9/-2.1         | -2.01/-1.57       | -1.7/-2.63        |
| Θ(142.5°) | -2.96/-3.31   | -3.81/-4.43     | -5.48/-5.89     | -5.63/-7.37     | -11.43/-11.71   | -12.34/-5.99    | -5.27/-3.81     | -3.61/-4.19       | -3.61/-3.27       | -3.81/-3.95       | -3.85/-3.79       | -4.36/-4.55       | -5.22/-6.24       | -7.99/-7.85       | -7.97/-9.27       | -7.98/-7.27       | -9.58/-10.77      | -9.58/-7.25       | -6.83/-6.75       | -5.7/-5.2         | -4.54/-2.82       | -2.64/-2.97       | -3.64/-3.66       | -3.36/-3.1        |
| Θ(45°)    | -4.65/-4.78   | -3.42/-3.68     | -4.61/-5.24     | -5.81/-6.43     | -8.67/-8.42     | -6.34/-5.79     | -3.78/-1.91     | -2.09/-4.28       | -4.39/-3.79       | -5.32/-6.58       | -5.16/-4.43       | -4.19/-3.23       | -2.62/-3.62       | -4.53/-4.96       | -7.1/-9.29        | -8.15/-9.43       | -11.86/-10.88     | -8.3/-6.99        | -4.89/-3.95       | -3.76/-4.37       | -5.29/-4.24       | -2.93/-2.19       | -3.28/-4.48       | -4.63/-4.22       |
| Θ(52.5°)  | -4/-4.19      | -3.78/-4.28     | -4.77/-5.01     | -5.68/-5.58     | -5.39/-6.08     | -4.77/-5.39     | -5.19/-2.94     | -1.46/-4.09       | -6.65/-6.6        | -6.6/-5.07        | -2.21/-1.28       | -3.31/-0.66       | -1.32/-2.88       | -4.28/-5.09       | -8.46/-10.86      | -7.62/-8.43       | -10.73/-9.25      | -8.63/-7.27       | -5.45/-5.26       | -4.86/-5.3        | -6.13/-5.38       | -4.73/-3.61       | -4.5/-5.51        | -4.85/-3.51       |
| Θ(60°)    | -6.62/-6.38   | -5.72/-5.66     | -4.96/-5.48     | -6.38/-4.9      | -5.38/-6.35     | -5.11/-4.51     | -4.88/-4.61     | -3.18/-4.94       | -6.96/-3.82       | -3.53/-3.87       | -1.89/-0.89       | -0.63/-0.08       | <b>0.31/-1.17</b> | -3.91/-5.69       | -6.83/-10.79      | -8.81/-1.75       | -13.65/-9.13      | -8.37/-6.71       | -5.41/-4.64       | -4.35/-4.26       | -4.87/-5.22       | -5.34/-4.87       | -5.51/-6.35       | -5.3/-4.1         |
| Θ(67.5°)  | -6.67/-6.89   | -7.08/-7.44     | -5.59/-4.61     | -5.29/-5.47     | -7.02/-7.75     | -6.42/-5.62     | -5.93/-5.41     | -3.35/-4.82       | -9.22/-5.42       | -5.02/-6.14       | -3.34/-1.32       | -0.25/-0.52       | -0.58/-3.08       | -6.23/-7.95       | -9.08/-11.19      | -11.89/-14.71     | -14.03/-6.54      | -7.33/-5.47       | -4.85/-5.61       | -5.24/-5.21       | -6.29/-7.96       | -6.82/-5.58       | -6.99/-7.7        | -7.89/-6.45       |
| Θ(75°)    | -8.47/-8.68   | -9.48/-10.51    | -7.46/-6.05     | -6.45/-7.14     | -8.25/-8.07     | -7.22/-7.98     | -9.19/-9.89     | -6.6/-8.24        | -12.77/-6.95      | -5.64/-8.8        | -6/-3.39          | -1.94/-1.77       | -0.67/-3.32       | -7.09/-8.47       | -9.19/-11.24      | -11.32/-15.02     | -14.25/-7.44      | -7.39/-7.22       | -5.24/-6.99       | -5.6/-6.68        | -7.99/-8.43       | -8.66/-9.29       | -9.81/-9.29       | -10.55/-8.52      |
| Θ(82.5°)  | -9.47/-9.72   | -9.43/-11.09    | -8.82/-8.91     | -10.87/-10.49   | -11.32/-9.63    | -9.55/-8.78     | -9.41/-11.43    | -7.18/-8.56       | -13.06/-8.63      | -9.56/-13.17      | -9.44/-3.92       | -3.12/-2.91       | -2.21/-6.08       | -9.48/-10.63      | -9.17/-11.88      | -10.24/-14.03     | -13.33/-6.58      | -6.86/-8.83       | -5.82/-8.17       | -7.38/-8.92       | -8.75/-10.1       | -10.52/-10.96     | -10.51/-9.94      | -10.84/-9.91      |
| Θ(90°)    | -12.91/-12.7  | -10.4/-12.45    | -10.79/-9.89    | -11.95/-12.04   | -11.97/-9.98    | -10.42/-10.75   | -11.97/-15.09   | -10.28/-11.8      | -15.6/-12.11      | -11.15/-9.28      | -9.32/-7.74       | -5.15/-5.68       | -3.45/-6.93       | -9.44/-10.35      | -9.02/-9.83       | -7.32/-12.74      | -9.67/-10.52      | -8.6/-10.64       | -8.15/-10.78      | -10.68/-10.29     | -10.53/-10.28     | -9.84/-11.22      | -12.17/-11.93     | -15.89/-12.57     |
| Θ(97.5°)  | -12.65/-15.79 | -12.78/-11.17   | -11.27/-12.24   | -12.87/-12.24   | -15.1/-13.13    | -13.12/-10.23   | -10.11/-10.81   | -12.71/-12.36     | -12.29/-15.75     | -15.29/-11.11     | -12.82/-9.64      | -7.66/-6.15       | -5.52/-7          | -6.4/-10.14       | -8.17/-10.86      | -8.03/-12         | -10.51/-11.21     | -12/-13.28        | -10.38/-13.49     | -11.54/-13.3      | -11.19/-9.49      | -9.88/-11.66      | -11.08/-13.24     | -14.12/-11.91     |
| Θ(105°)   | -12.06/-13.71 | -15.35/-13.29   | -10.64/-13.19   | -13.23/-12.82   | -14.61/-13.72   | -12.35/-12.26   | -11.5/-14.16    | -15.12/-14.21     | -14.81/-13.58     | -14.19/-12        | -7.17/-8.93       | -6.55/-11.03      | -7.86/-7.88       | -6.76/-8.05       | -7.61/-8.65       | -6.54/-10.47      | -13.85/-13.34     | -12.06/-15.8      | -10.58/-12.26     | -10.26/-10.44     | -10.56/-12.33     | -10.29/-9.92      | -10.19/-11.33     | -13.37/-12.39     |
| Θ(112.5°) | -15.49/-14.58 | -13.89/-15      | -11.65/-15.81   | -14.93/-11.17   | -10.14/-12.83   | -11.9/-14.54    | -12.7/-14.08    | -14.47/-13.09     | -14.88/-12.26     | -11.93/-8.36      | -8.1/-9.49        | -8.91/-11.45      | -6.82/-7.85       | -6.8/-8.46        | -5.73/-9.78       | -6.88/-9.54       | -10.83/-11.27     | -10.11/-10.91     | -6.59/-11.43      | -9.32/-8.66       | -9.38/-9.38       | -10.25/-12.45     | -9.25/-11.5       | -14.4/-12.94      |
| Θ(120°)   | -15.58/-16.05 | -13.98/-11      | -10.24/-13.48   | -15.1/-13.13    | -9.24/-10.23    | -13.12/-10.23   | -10.11/-10.81   | -15.37/-12.62     | -15.27/-14.24     | -12.87/-13.43     | -9.1/-6.13        | -7.55/-12.05      | -6.85/-5.7        | -5.9/-10.2        | -9.35/-8.16       | -6.88/-10.22      | -7.88/-11.64      | -10.46/-10.96     | -8.12/-8.76       | -8.69/-12.51      | -10.89/-9.05      | -7.78/-11.03      | -11.52/-10.42     | -12.17/-12.28     |
| Θ(127.5°) | -14.71/-12.62 | -15.35/-15.88   | -13.51/-12.74   | -13.42/-13.22   | -13.34/-15.31   | -11.27/-14.04   | -12.65/-12.24   | -11.21/-13.23     | -14.82/-14.84     | -15.67/-14.83     | -12.96/-10.46     | -10.32/-10.71     | -8.77/-6.6        | -10.46/-11.34     | -7.86/-10.81      | -7.62/-7.75       | -8.84/-13.66      | -9.44/-7.34       | -6.38/-7.24       | -7.29/-10.54      | -10.52/-8.41      | -8.85/-9.88       | -10.77/-9.37      | -9.81/-12.28      |
| Θ(135°)   | -16.28/-15.35 | -13/-14.77      | -15.05/-15.88   | -12.25/-10.45   | -12.75/-12.12   | -8.05/-7.59     | -10.83/-9.42    | -10.93/-13.94     | -13.17/-10.69     | -12.51/-11.86     | -8.55/-7.77       | -7.91/-9.41       | -9.58/-6.98       | -6.6/-9.41        | -15.78/-10.69     | -8.3/-12.2        | -14.8/-13.69      | -8.79/-8.9        | -11.45/-7.99      | -7.81/-11.84      | -12.97/-8.7       | -10/-10.03        | -10.54/-11.49     | -12.79/-14.34     |
| Θ(142.5°) | -14.4/-12.48  | -11.86/-12.93   | -15.33/-14.02   | -13.43/-12.83   | -14.29/-14.74   | -13.34/-15.92   | -9.47/-10.34    | -8.5/-10.17       | -8.75/-1.75       | -9.41/-9.44       | -10.87/-9.34      | -8.54/-7.05       | -7.17/-9.23       | -7.99/-9.33       | -8.79/-9.42       | -12.99/-11.2      | -10.11/-12.85     | -14.08/-10.99     | -10.32/-10.64     | -10.73/-12.46     | -13.73/-14.12     | -11.65/-14.01     | -12.78/-14.33     |                   |
| Θ(150°)   | -14.78/-13.25 | -10.84/-10.69   | -10.71/-10.08   | -9.79/-11.71    | -10.11/-6.79    | -5.59/-6.35     | -12.25/-10.58   | -9.42/-10.42      | -10.14/-10.75     | -11.46/-9.17      | -7.71/-8.17       | -1.22/-6.85       | -6.47/-7.74       | -8.95/-10.59      | -13.13/-13.9      | -12.86/-14.31     | -12.36/-12.81     | -15.04/-13.62     | -12.96/-10.73     | -11.16/-12.51     | -11.33/-11.26     | -12.78/-13.78     | -12.25/-10.45     | -11.05/-12.97     |
| Θ(157.5°) | -11.73/-10.91 | -11.14/-9.12    | -7.26/-7.02     | -8.01/-10.09    | -12.82/-10.92   | -9.5/-8.64      | -9.47/-9.73     | -8.88/-8.69       | -8.98/-8.33       | -6.67/-5.65       | -5.74/-7.4        | -12.19/-15.23     | -11.32/-9.33      | -10.35/-12.87     | -15.43/-12.29     | -10.91/-8.93      | -8.31/-10.5       | -14.84/-12.52     | -9/-7.78          | -8.12/-10.52      | -12.2/-11.85      | -13.88/-14.87     | -14.2/-13.58      | -10.98/-11.41     |
| Θ(165°)   | -10.94/-11.94 | -10.34/-8.56    | -7.71/-8.77     | -10.28/-13.19   | -14.59/-10.84   | -7.89/-7        | -8.3/-9.51      | -10.35/-11.34     | -11.23/-9.59      | -8.06/-8.08       | -8.75/-10.79      | -13.98/-11.8      | -9.67/-8.79       | -11.26/-12.41     | -11.68/-9.52      | -8.33/-8.1        | -10.71/-15.04     | -14.74/-10.57     | -8.87/-9.6        | -10.89/-11.41     | -9.98/-8.96       | -9.66/-11.51      | -11.36/-10.06     | -10.46/-10.46     |
| Θ(172.5°) | -13.68/-11.71 | -10.03/-10.06   | -11.23/-11.54   | -10.98/-11.01   | -9.33/-8.12     | -7.65/-8.31     | -10.9/-12.64    | -15.08/-15.3      | -14.8/-13.99      | -13.58/-13.22     | -13.32/-10.13     | -8.33/-7.78       | -8/-8.9           | -8.8/-9.17        | -9.39/-10.09      | -11.69/-12.09     | -12.73/-11.44     | -10.94/-10        | -10.86/-11.66     | -11.94/-11.41     | -11.4/-10.76      | -10.86/-11.71     | -13.14/-14.47     | -14.47/-14.08     |
| Θ(180°)   | -13.87/-14.75 | -13.44/-13.26   | -12.78/-14.2    | -15.44/-15.53   | -14.02/-13.57   | -14.38/-15.43   | -15.56/-13.15   | -10.4/-8.89       | -8.86/-9.24       | -10.38/-10.43     | -10.09/-9.34      | -9.44/-10.44      | -11.45/-12.11     | -13.35/-13.6      | -12.95/-11.56     | -11.31/-10.85     | -10.65/-10.28     | -9.95/-10.78      | -11.06/-10.43     | -9.26/-9.34       | -9.33/-9.52       | -9.25/-9.5        | -10.32/-11.53     | -12.99/-12.71     |
| Freq(Pol) | 5.3GPol       | 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°)     | -10.04/-11.08 | -12.11/-11.01   | -8.39/-6.53     | -6.17/-6.16     | -6.17/-5.37     | -5.45/-5.11     | -4.39/-4.15     | -4.18/-4.6        | -5.37/-5.61       | -6.01/-6          | -6.4/-6.93        | -7.96/-9.53       | -11.12/-10.83     | -9.19/-7.83       | -6.69/-5.94       | -5.6/-5.49        | -5.13/-4.4        | -3.94/-4.29       | -5.07/-5.75       | -5.76/-6.25       | -6.09/-6.62       | -7.33/-8.01       | -8.19/-9.16       | -10.39/-10.33     |
| Θ(7.5°)   | -5.52/-6.49   | -6.63/-7.55     | -6.08/-4.17     | -3.51/-3.75     | -4.25/-4.26     | -4.86/-4.53     | -5.87/-5.99     | -6.76/-6.04       | -9.24/-9.52       | -10.07/-10.34     | -10.92/-11.71     | -12.52/-15.18     | -14.79/-12.67     | -10.78/-10.05     | -8.84/-7.56       | -6.75/-6.76       | -5.76/-4.93       | -4.34/-4.44       | -4.64/-4.11       | -3.45/-2.91       | -2.78/-2.92       | -3.11/-3.51       | -3.86/-4.88       | -5.58/-5.44       |
| Θ(15°)    | -1.68/-2.49   | -3.34/-1.46     | -4.47/-4.52     | -4.14/-0.33     | -4.29/-4.72     | -5.81/-6.34     | -7.25/-7.77     | -8.27/-8.64       | -9.69/-8.65       | -9.55/-11.67      | -13.66/-14.47     | -13.87/-12.24     | -9.38/-10.59      | -5.89/-5.5        | -5.42/-5.26       | -5.52/-6          | -5.07/-4.45       | -3.64/-3.17       | -2.59/-1.81       | -1.39/-0.98       | -0.38/-0.05       | 0.14/-0.28        | 0.14/-0.34        | -0.71/-1.1        |
| Θ(22.5°)  | 0.54/-0.04    | -0.41/-0.69     | -0.79/-0.89     | -1.19/-1.72     | -2.47/-2.87     | -2.81/-2.81     | -3.62/-4.23     | -4.44/-4.68       | -4.63/-4.92       | -5.53/-6.01       | -5.75/-5.25       | -4.8/-4.09        | -3.34/-2.83       | -2.66/-2.36       | -2.04/-2          | -1.55/-1.09       | -0.68/-0.13       | 0.2/-0.08         | -0.34/-0.17       | 0.19/-0.89        | 1.62/-0.8         | 2.422/5.7         | 2.612/3.9         | 1.890/9.7         |
| Θ(30°)    | 2.242/2.5     | 2.251/8.5       | 1.71/-95        | 2.011/75        | 1.420/89        | 0.961/22        | 1.291/37        | 1.41/2            | 0.67/-0.08        | -0.89/-1.81       | -2.08/-1.55       | -0.730/23         | 0.910/96          | 0.630/53          | 1.041/47          | 2.082/53          | 2.231/19          | 1/1.55            | 1.72/0.3          | 1.9/0.2           | 2.853/97          | 4.584/52          | 3.920/35          | 2.522/2           |
| Θ(37.5°)  | 3.513/75      | 3.322/15        | 1.591/99        | 2.252/1         | 1.630/9         | 0.871/61        | 2.463/13        | 3.313/06          | 2.622/16          | 1.851/57          | 0.960/29          | 0.891/89          | 2.422/5           | 2.373/52          | 4.474/66          | 4.513/91          | 2.25/-0.02        | -0.460/75         | 2.122/97          | 2.812/55          | 2.94/12           | 5.25/24           | 4.583/74          | 3.293/36          |
| Θ(45°)    | 3.524/1       | 3.973/09        | 2.42/38         | 3.012/74        | 1.731/27        | 1.922/21        | 2.543/16        | 3.523/29          | 2.942/49          | 2.572/86          | 2.10/49           | 1.371/62          | 1.61/07           | 1.983/8           | 4.85/08           | 4.543/32          | 1.990/96          | 0.761/39          | 1.732/2           | 2.772/67          | 2.543/29          | 4.555/1           | 5.1/05            | 5.14/1            |
| Θ(52.5°)  | 3.384/14      | 4.123/45        | 2.893/09        | 3.743/91        | 3.763/7         | 3.853/68        | 3.493/76        | 4.233/96          | 3.673/23          | 3.693/86          | 2.481/06          | 2.151/44          | 0.431/01          | 2.563/53          | 4.785/37          | 4.753/47          | 2.41/92           | 1.541/1           | 1.262/15          | 2.923/3           | 2.82/82           | 4.324/98          | 5.6/57            | 5.183/78          |
| Θ(60°)    | 3.033/77      | 3.072/34        | 2.762/37        | 3.534/52        | 4.855/06        | 5.044/48        | 4.124/64        | 5.084/4           | 3.473/86          | 4.534/91          | 3.963/21          | 3.952/31          | 0.41/82           | 3.714/54          | 5.575/76          | 5.074/62          | 3.522/71          | 2.31/57           | 0.981/52          | 2.813/59          | 3.292/97          | 4.124/86          | 5.515/38          | 4.642/78          |
| Θ(67.5°)  | 2.683/22      | 1.721/72        | 2.842/66        | 3.584/55        | 4.594/95        | 4.994/62        | 4.324/33        | 4.894/67          | 3.114/11          | 5.185/51          | 4.320/72          | 4.562/87          | 0.93/3            | 4.524/96          | 5.665/48          | 6.262/46          | 2.512/63          | 2.192/01          | 3.414/29          | 3.722/95          | 3.954/1           | 4.874/96          | 4.182/86          |                   |
| Θ(75°)    | 1.962/51      | 0.570/26        | 2.142/37        | 3.43/61         | 3.874/69        | 4.744/12        | 3.563/76        | 4.433/99          | 1.792/92          | 5.295/15          | 4.153/41          | 4.342/99          | 0.82/61           | 3.764/16          | 5.194/95          | <b>5.255/95</b>   | 5/2.79            |                   |                   |                   |                   |                   |                   |                   |



# Radiated Composite Gain Data of 2.4GHz/5GHz/6GHz

# Appendix A

|           |               |                |                |                |                |                |                |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |
|-----------|---------------|----------------|----------------|----------------|----------------|----------------|----------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
| Θ(75°)    | -6.05/4.22    | -5.68/6.37     | -7.67/6.71     | -5.14/-6.24    | -7/8.53        | -7.51/9.61     | -7.19/8.29     | -6.72/7.37       | -6.8/10.12       | -7.9/5.8         | -2.7/2.39        | -0.06/-0.45      | -0.92/-1.83      | -8.14/8.86       | -10.4/-10.71     | -11.79/14.13     | -14.65/-7.92     | -8.79/5.53       | -5.44/-4.75      | -4.7/-5.87       | -8.87/8.14       | -8.93/-11.81     | -11.97/-13.02    | -10.22/-7.84     |                  |
| Θ(82.5°)  | -10.22/-6.51  | -7.71/-8.06    | -8.9/-9.73     | -8.2/-7.36     | -7.31/-9.02    | -8.85/-12.65   | -9.38/-10.82   | -7.94/-11.22     | -10.27/-10.96    | -8.68/-8.86      | -5.36/-4.23      | -1.83/-2.89      | -2.11/-3.75      | -10.85/-11.16    | -11.01/-11.16    | -9.39/-12.6      | -14.47/-8.06     | -7.9/-6.63       | -6.83/-7.47      | -6.75/-8.84      | -11.08/-9.38     | -10.92/-13.77    | -13.77/-12.55    | -11.42/-10.93    |                  |
| Θ(90°)    | -10.51/-8.05  | -9.99/-9.52    | -7.73/-11.77   | -9.28/-11.25   | -9.58/-10.13   | -9.3/-15.22    | -12.18/-15.32  | -9.72/-13.8      | -13.53/-12.41    | -12.7/-12.46     | -8.79/-6.79      | -4.56/-4.53      | -3.99/-4.84      | -10.26/-10.87    | -10.14/-10.44    | -8.75/-12.83     | -15.29/-9.44     | -11.06/-7.47     | -10.04/-9.53     | -10.57/-12.69    | -15.38/-12.45    | -13.9/-14.38     | -15.45/-15.89    | -14.68/-14.62    |                  |
| Θ(97.5°)  | -14.52/-11.97 | -11.1/-9.39    | -12.25/-13.5   | -16.08/-14.56  | -11.85/-12.82  | -12.18/-13.63  | -11.07/-15.66  | -10.77/-14.23    | -14.58/-13.04    | -14.95/-11.57    | -11.22/-6.46     | -5.41/-5.73      | -5.42/-9.05      | -9.02/-9.92      | -8.22/-9.51      | -9.38/-13.83     | -14.77/-10.31    | -14.18/-13.22    | -14.84/-13.16    | -15.09/-16.13    | -13.82/-12.21    | -13.28/-14.59    | -12.06/-14.56    | -15.23/-14.11    |                  |
| Θ(105°)   | -15.65/-12.25 | -12.69/-12.11  | -14.18/-14.45  | -15.28/-15.08  | -12.17/-12.14  | -11.76/-14     | -11.44/-14.71  | -10.69/-13.95    | -15.22/-12.86    | -13.97/-8.13     | -11.56/-9.27     | -9.06/-7.27      | -6.1/-7.58       | -7.87/-9.68      | -7.71/-9.32      | -8.63/-12.57     | -13.56/-13.17    | -15.11/-11.16    | -15.35/-13.53    | -12.82/-15.22    | -13.33/-11.9     | -13.01/-14.81    | -11.63/-13.21    | -13.38/-15.59    |                  |
| Θ(112.5°) | -15.57/-15.17 | -14.66/-14.68  | -13.96/-12.92  | -15.66/-15.28  | -12.97/-11.3   | -10.44/-13.44  | -11.41/-15.26  | -13.82/-12.73    | -14.44/-13.64    | -14.42/-9.38     | -8.39/-5.68      | -10.18/-11.19    | -7.22/-7.48      | -6.36/-8.35      | -6.5/-8.26       | -9.25/-11.43     | -14.72/-11.05    | -12.34/-10.52    | -13.08/-9.79     | -11.76/-13.59    | -10.37/-9.79     | -15.39/-11.1     | -11.45/-10.68    | -14.68/-14.62    |                  |
| Θ(120°)   | -15.08/-13.57 | -14.93/-14.72  | -13.7/-14.86   | -13.9/-15.05   | -12.28/-13.5   | -13.06/-10.74  | -8.81/-12.54   | -15.12/-14.16    | -15.42/-11.73    | -12.31/-13.6     | -12.58/-8.74     | -8.32/-9.29      | -9.01/-7.88      | -5.32/-8.17      | -7.61/-10.49     | -10.54/-12.59    | -8.49/-8.72      | -12.62/-12.91    | -8.47/-11.95     | -11.68/-12.85    | -11.79/-8.21     | -9.69/-13.96     | -10.22/-13.21    | -15.21/-16.31    |                  |
| Θ(127.5°) | -15.5/-11.89  | -10.45/-14.42  | -14.88/-15.12  | -14.01/-15.17  | -13.75/-13.48  | -15.3/-13.34   | -10.66/-11.2   | -15.21/-11.17    | -14.1/-15.32     | -13.5/-14.92     | -13.36/-9.86     | -13.57/-7.61     | -6.5/-6.83       | -7.84/-15.59     | -8.3/-8.78       | -13.19/-9.77     | -7.07/-10.97     | -13.77/-8.02     | -7.28/-8.21      | -8.17/-12.13     | -12.92/-9.88     | -8.93/-11.28     | -7.63/-10.05     | -15.45/-15.13    |                  |
| Θ(135°)   | -12.37/-12.31 | -14.35/-15.71  | -14.86/-15.74  | -14.48/-13.43  | -10.49/-11.85  | -10.98/-11.34  | -9.45/-9.22    | -13.96/-14.22    | -14.07/-15.28    | -12.84/-10.18    | -8.58/-12.85     | -12.66/-10.08    | -8.12/-6.69      | -7.45/-10.72     | -11.16/-12.63    | -9.02/-10.12     | -13.11/-14.96    | -13.79/-15.56    | -10.26/-8.89     | -11.16/-11.48    | -9.4/-10.7       | -10.7/-12.34     | -9.27/-13.16     | -11.25/-12.95    |                  |
| Θ(142.5°) | -12.94/-12.95 | -12.06/-14.06  | -13.23/-14.88  | -16.25/-13.47  | -12.85/-12.71  | -11.78/-10.42  | -11.43/-10.95  | -10.04/-10.71    | -11.17/-12.9     | -12.2/-14.04     | -11.43/-9.95     | -6.73/-5.95      | -8.92/-11.53     | -8.84/-11.67     | -13.72/-11.49    | -12.99/-11.87    | -10.41/-11.31    | -10.12/-13.97    | -13.35/-10.19    | -11.54/-10.96    | -14.01/-11.73    | -16.01/-12.49    | -13.71/-15.44    | -14.44/-13.81    |                  |
| Θ(150°)   | -15.51/-14.39 | -13.57/-13.02  | -15.13/-15.28  | -13.06/-11.89  | -12.96/-11.19  | -9.09/-8.49    | -11.7/-13.47   | -12.28/-13.19    | -12.23/-10.15    | -11.55/-11.7     | -9.64/-8.18      | -8.66/-10.27     | -8.09/-7.02      | -8.16/-12.1      | -14.76/-12.27    | -11.75/-14.45    | -15.31/-15.22    | -15/-15.8        | -11.25/-11.47    | -13.46/-11.26    | -11.73/-12.28    | -15.67/-14       | -12.53/-13.05    | -13.41/-15.09    |                  |
| Θ(157.5°) | -11.43/-10.68 | -9.33/-11.16   | -10.44/-7.86   | -6.76/-6.72    | -8.25/-10.39   | -10.29/-9.49   | -9.73/-10.23   | -10.43/-11.05    | -10.1/-8.13      | -7.39/-7.45      | -6.25/-6.67      | -9.45/-14.08     | -11.81/-8.29     | -11.39/-14.3     | -12.92/-11.35    | -9.41/-8.6       | -15.91/-12.97    | -15.71/-10.26    | -8.76/-9.94      | -12.8/-14.35     | -12.54/-12.78    | -14.54/-13.71    | -13.8/-14.01     | -13.34/-10.98    |                  |
| Θ(165°)   | -10.94/-11.55 | -13.71/-12.63  | -8.63/-7.82    | -8.07/-9.39    | -13.09/-15.48  | -11.08/-8.48   | -7.4/-8.17     | -9.7/-10.27      | -8.83/-7.83      | -9.43/-11.42     | -11.76/-13.81    | -15.01/-14.78    | -12.18/-12.29    | -13.51/-14.99    | -13.06/-10.27    | -8.72/-10.67     | -13.1/-15.41     | -12.4/-9.6       | -9.23/-9.95      | -11.55/-11.74    | -12.11/-11.86    | -11.66/-11.49    | -12.5/-10.24     | -9.35/-10.31     |                  |
| Θ(172.5°) | -15.48/-15.23 | -15.4/-14.77   | -12.93/-13.25  | -12.36/-12.25  | -10.79/-11.1   | -11.37/-10.44  | -8.91/-10.43   | -11.81/-13       | -13.93/-15.23    | -14.75/-15.71    | -12.99/-11.2     | -9.76/-9.43      | -8.87/-8.74      | -8.68/-9.27      | -9.95/-10.69     | -11.92/-13.04    | -11.6/-14.9      | -10.86/-10.67    | -11.57/-12.76    | -14.01/-14.2     | -14.73/-14.41    | -13.25/-13.51    | -13.99/-13.63    | -14.16/-16       |                  |
| Θ(180°)   | -12.83/-14.1  | -14.82/-15.02  | -15.39/-15.16  | -15.11/-14.1   | -13.03/-12.35  | -12.28/-13     | -13.91/-14.05  | -12.19/-9.99     | -8.58/-8.92      | -9.68/-10.77     | -11.22/-12       | -12.19/-12.86    | -14.05/-15.13    | -14.7/-15.13     | -15.7/-15.25     | -14.97/-14.7     | -13.62/-13.23    | -12.09/-9.62     | -8.71/-9.04      | -8.71/-8.73      | -8.9/-9.4        | -10.02/-10.16    | -10.97/-12.2     | -12.62/-12.21    |                  |
| Freq(Hz)  | 5.785GPol.    | ThetaL         | 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°) |
| 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°)     | -11.12/-8.95  | -9.99/-9.52    | -7.88/-6.78    | -5.83/-5.87    | -5.49/-5.08    | -4.74/-4.7     | -5.12/-5.18    | -5.13/-4.76      | -5/-5.31         | -5.69/-5.95      | -6.15/-6.36      | -6.83/-7.62      | -8.79/-8.57      | -9.38/-8.37      | -6.48/-5.86      | -6.25/-6.08      | -4.94/-4.65      | -4.42/-4.54      | -5.11/-5.54      | -6.29/-6.67      | -6.71/-7.18      | -7.44/-7.37      | -7.99/-9.54      |                  |                  |
| Θ(7.5°)   | -5.56/-6.37   | -6.58/-6.98    | -6.95/-6.56    | -5.53/-4.92    | -5.34/-5.99    | -6.09/-5.94    | -5.71/-5.29    | -5.37/-5.63      | -5.76/-6.44      | -7.4/-8.65       | -9.76/-11.32     | -14.04/-15.1     | -14.68/-13.66    | -10.7/-8.72      | -7.45/-6.8       | -6.2/-5.13       | -4.32/-4.01      | -3.66/-3.39      | -3.27/-3.25      | -3.66/-3.8       | -3.83/-3.68      | -3.46/-3.49      | -3.62/-3.44      | -3.88/-4.4       |                  |
| Θ(15°)    | -1.57/-2.52   | -3.91/-2.54    | -4.86/-2.96    | -2.59/-3.02    | -3.63/-4.33    | -5.32/-5.57    | -5.89/-5.89    | -6.19/-3.74      | -8.76/-9.13      | -10.56/-12.29    | -12.15/-11.92    | -12.53/-13.25    | -12.16/-8.95     | -6.31/-4.5       | -3.28/-2.55      | -1.91/-1.18      | -0.44/-0.03      | 0.320/-41        | 0.480/-29        | 0.0/-44          | -0.41/-0.27      | -0.55/-0.83      | -0.87/-0.95      | -1.38/-1.36      |                  |
| Θ(22.5°)  | 0.050/-14     | 0.205/-0.01    | -0.210/-47     | 1.211/-51      | 1.190/-4       | 0.43/-122      | -1.48/-91      | -2.42/-349       | -4.95/-517       | -5.93/-73        | -7.44/-6.33      | -3.6/-2.06       | -1.34/-90.6      | 0.91/-0.1        | 0.950/-95        | 0.930/-67        | 0.590/-82        | 0.891/-32        | 2.142/-5         | 2.21/-58         | 0.910/-17        | -0.28/-0.16      |                  |                  |                  |
| Θ(30°)    | 2.072/-42     | 1.951/-29      | 0.830/-68      | 1.152/-03      | 2.1/-124       | 0.130/-37      | 1.2/-129       | 1.181/-15        | 0.41/-0.05       | -0.53/-1.46      | -1.37/-1.48      | -1.79/-0.57      | 0.74/-1.8        | 0.990/-61        | 0.791/-23        | 1.330/-81        | 0.510/-82        | 1.271/-55        | 2.142/-24        | 2.613/-16        | 3.974/-63        | 4.232/-26        | 2.521/-77        | 1.411/-46        |                  |
| Θ(37.5°)  | 3.663/-98     | 3.252/-56      | 2.21/-75       | 1.52/-08       | 2.552/-35      | 1.44/-61       | 2.613/-29      | 3.12/-66         | 2.232/-68        | 3.22/-48         | 1.93/-01         | 0.571/-27        | 2.553/-07        | 2.542/-89        | 3.112/-63        | 2.331/-68        | 1.081/-8         | 2.262/-01        | 1.621/-82        | 1.561/-79        | 2.864/-07        | 4.685/-08        | 5.203/-9         | 3.412/-87        |                  |
| Θ(45°)    | 4.111/-04     | 3.22/-56       | 3.383/-45      | 2.493/-64      | 5.094/-61      | 3.453/-7       | 4.484/-42      | 3.542/-71        | 2.553/-88        | 4.794/-1         | 3.342/-45        | 0.810/-99        | 1.821/-96        | 2.824/-31        | 4.484/-46        | 4.514/-44        | 3.562/-48        | 1.942/-18        | 2.442/-64        | 1.71/-58         | 2.253/-21        | 5.096/-54        | 5.814/-81        | 4.123/-93        |                  |
| Θ(52.5°)  | 4.324/-49     | 3.492/-7       | 3.844/-48      | 3.834/-05      | 4.935/-06      | 4.584/-24      | 4.334/-84      | 5.024/-18        | 2.453/-3         | 4.584/-4         | 3.772/-25        | 1.781/-9         | 2.172/-13        | 3.444/-02        | 4.244/-74        | 4.644/-05        | 3.382/-8         | 2.422/-28        | 2.372/-3         | 2.041/-85        | 2.372/-23        | 5.116/-56        | 6.015/-49        | 4.544/-2         |                  |
| Θ(60°)    | 4.414/-14     | 4.062/-87      | 3.855/-13      | 4.733/-88      | 4.735/-23      | 4.524/-06      | 4.424/-89      | 5.25/-25         | 3.533/-23        | 5.55/-44         | 4.844/-07        | 2.72/-83         | 2.922/-88        | 3.564/-46        | 5.165/-31        | 4.924/-17        | 3.372/-17        | 1.851/-72        | 1.872/-39        | 2.22/-57         | 3.313/-05        | 5.026/-03        | 5.725/-67        | 5.114/-8         |                  |
| Θ(67.5°)  | 3.813/-65     | 3.92/-89       | 3.34/-77       | 4.553/-62      | 4.384/-54      | 3.523/-45      | 4.34/-4        | 4.524/-92        | 3.942/-95        | 5.545/-81        | 5.324/-17        | 3.943/-05        | 2.993/-35        | 4.055/-1         | 5.555/-31        | 5.225/-15        | 3.472/-15        | 2.611/-89        | 1.352/-79        | 2.453/-21        | 3.812/-92        | 4.854/-85        | 4.655/-13        | 4.744/-23        |                  |
| Θ(75°)    | 3.692/-88     | 2.672/-45      | 2.114/-65      | 4.252/-97      | 3.653/-99      | 3.222/-83      | 3.554/-03      | 3.593/-5         | 3.042/-19        | 4.495/-58        | 4.834/-08        | 3.672/-56        | 1.993/-09        | 3.274/-75        | 5.164/-93        | 5.166/-32        | 4.912/-51        | 2.833/-01        | 1.93/-26         | 3.53/-81         | 4.162/-05        | 3.963/-56        | 4.134/-67        | 4.23/-6          |                  |
| Θ(82.5°)  | 32/-06        | 1.861/-91      | 0.93/-59       | 2.842/-27      | 2.593/-14      | 2.912/-17      | 2.152/-71      | 2.392/-16        | 1.631/-44        | 2.984/-52        | 3.353/-06        | 3.061/-64        | -0.032/-34       | 1.143/-58        | 4.154/-35        | 5.366/-46        | 4.872/-64        | 2.143/-15        | 2.523/-53        | 3.513/-85        | 3.521/-33        | 3.162/-31        | 3.043/-72        | 3.052/-71        |                  |
| Θ(90°)    | 1.540/-97     | 0.461/-69      | 0.671/-5       | 1.081/-4       | 1.711/-68      | 1.841/-5       | 0.470/-43      | 0.481/-56        | 1.21/-0.12       | -0.083/-24       | 2.492/-25        | 1.851/-47        | -1.031/-57       | -0.311/-48       | 1.682/-32        | 3.384/-83        | 3.731/-68        | 0.812/-15        | 1.831/-92        | 2.523/-22        | 21/-01           | 2.021/-27        | 1.882/-48        | 2.151/-4         |                  |
| Θ(97.5°)  | 0.52/-01      | -0.860/-2      | 0.01/-0.17     | -0.23/-0.04    | 0.290/-02      | 1.331/-09      | -0.6/-92       | -0.810/-06       | -0.16/-1.12      | -2.360/-54       | 0.540/-42        | 0.330/-27        | -2.170/-65       | -2.214/-108      | -1.74/-1.09      | 0.751/-38        | 0.281/-135       | -1.590/-13       | -0.45/-0.53      | -0.230/-99       | -0.690/-25       | 0.250/-33        | 1.30/-47         | 1.110/-28        |                  |
| Θ(105°)   | -0.54/-1.27   | -3.16/-1.17    | -0.14/-1.22    | -1.35/-1.79    | -2.39/-2.29    | -1.13/-0.7     | -1.331/-94     | -2.82/-1.56      | -0.6/-2.05       | -5.61/-2.44      | -1.31/-2.49      | -3.26/-1.23      | -1.69/-1.84      | -4.93/-5.7       | -3.97/-5.59      | -3.24/-2.3       | -3.62/-3.82      | -2.93/-1.21      | -2.42/-1.86      | -3.81/-1.39      | -1.95/-0.87      | -0.78/-0.25      | 0.06/-0.74       | -0.090/-16       |                  |
| Θ(112.5°) | -2.3/-2.13    | -3.14/-157     | -1.36/-287     | -1.63/-274     | -4.05/-259     | -2.37/-2.6     | -2.63/-2.88    | -3.45/-256       | -4.86/-4.6       | -4.49/-4.81      | -5.87/-7.13      | -6.05/-4.73      | -5.32/-6.68      | -6.67/-4.78      | -7.04/-7.96      | -5.91/-2.15      | -4.48/-3.26      | -3.51/-0.63      | -4.48/-3.75      | -3.71/-3.31      | -2.48/-0.85      | -2.91/-14.5      | -1.13/-157       | -2.171/-102      |                  |
| Θ(120°)   | -2.34/-2.51   | -3.91/-2.32    | -2.44/-1.3     | -3.15/-3.87    | -2.76/-3.04    | -4.09/-4.1     | -4.51/-5.81    | -5.79/-9.41      | -7.71/-4.61      | -4.41/-4.29      | -8.52/-7.68      | -7.41/-7.46      | -9.35/-7.27      | -6.96/-7.06      | -5.72/-7.17      | -4.17/-9.45      | -6.09/-4.75      | -5.35/-6.27      | -2.76/-2.75      | -3.93/-3.05      | -1.09/-2.57      | -0.87/-0.95      | -3.52/-2.35      |                  |                  |
| Θ(127.5°  |               |                |                |                |                |                |                |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |



# Radiated Composite Gain Data of 2.4GHz/5GHz/6GHz

# Appendix A

|           |               |                 |                 |                 |                 |                 |                 |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |
|-----------|---------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| Θ(127.5°) | -15.76/-15.44 | -11.91/-13.61   | -11.93/-12.28   | -14.91/-15.75   | -13.14/-14.15   | -13.47/-12.94   | -13.06/-14.07   | -14.83/-9.69      | -12.22/-13.67     | -11.11/-12.78     | -13.31/-11.54     | -11.21/-8.39      | -6.84/-8.36       | -5.18/-12.97      | -9.95/-9.8        | -15.41/-13.76     | -7.82/-12.18      | -12.29/-6.94      | -7.77/-8.64       | -8.1/-15.13       | -14.12/-9.23      | -9.38/-10.72      | -9.61/-12.76      | -11.02/-12.94     |
| Θ(135°)   | -11.71/-14.63 | -11.44/-14.37   | -14.27/-15.11   | -13.65/-13.22   | -15/-13.22      | -9.36/-10.48    | -12.15/-9.28    | -12.5/-11.11      | -9.82/-15.04      | -15.16/-9.88      | -10.34/-9.85      | -13.4/-10.64      | -8.19/-10.25      | -8.53/-12.43      | -9.78/-12.61      | -12.9/-11.6       | -10.88/-13.41     | -12.61/-13.38     | -9.64/-10.47      | -10.86/-12.71     | -12.27/-11.23     | -9.6/-10.32       | -8.61/-11.11      | -14.7/-11.32      |
| Θ(142.5°) | -15.74/-15.24 | -14.82/-11.94   | -15.37/-14.75   | -16.16/-15.65   | -13.16/-12.02   | -15.23/-14.31   | -13.04/-11.79   | -11.32/-9.47      | -9.38/-12.41      | -12.05/-10.89     | -15.45/-10.39     | -7.59/-6.85       | -7.37/-7.06       | -8.86/-12.75      | -11.46/-11.74     | -11.46/-9.74      | -8.9/-14.65       | -13.47/-14.02     | -12.24/-11.15     | -12.41/-12.79     | -10.11/-12.36     | -10.4/-10.67      | -12.71/-11.43     | -14.31/-13.47     |
| Θ(150°)   | -13.78/-12.95 | -12.67/-13.27   | -11.52/-14.84   | -14.76/-13.12   | -14.08/-14.05   | -11.25/-10.11   | -11.56/-12.6    | -12.01/-10.13     | -11.37/-12.47     | -9.77/-12.45      | -10.03/-6.27      | -5.61/-9.53       | -11.69/-6.2       | -6.3/-9.04        | -10.29/-12.76     | -15.56/-12.95     | -9.16/-10.89      | -14.35/-12.64     | -10.52/-11.72     | -10.28/-6.72      | -10.81/-12.38     | -12.02/-13.65     | -14.78/-15.12     | -10.95/-9.88      |
| Θ(157.5°) | -13.53/-10.78 | -7.68/-8.6      | -10.69/-12.06   | -9.94/-8.24     | -8.53/-10.09    | -9.79/-9.27     | -8.77/-10.1     | -7.49/-9.61       | -9.39/-6.82       | -6.84/-8.95       | -10.29/-7.72      | -7.64/-8.99       | -8.66/-9.17       | -10.87/-10.1      | -11.74/-11.24     | -14.17/-11.41     | -10.23/-11.01     | -13.46/-11.51     | -10.05/-11.31     | -14.02/-14.34     | -11.17/-11.81     | -12.82/-14.41     |                   |                   |
| Θ(165°)   | -12.56/-12.52 | -13.77/-15.56   | -12.12-8.83     | -6.85/-6.26     | -8.04/-14.05    | -15.54/-9.3     | -7.6/-8.2       | -9.07/-9.31       | -8.25/-7.04       | -5.74/-6.08       | -9.21/-13.18      | -11.14/-10.61     | -10.37/-10.05     | -13.6/-14.66      | -6.9/-9.09        | -12.24/-14.37     | -10.65/-9.12      | -10.32/-13.58     | -13.64/-11.61     | -10.89/-14.42     | -14.71/-14.87     | -15.97/-14.02     | -12.52/-12.18     |                   |
| Θ(172.5°) | -11.87/-14.76 | -12.96/-11.16   | -12.45/-13.16   | -13.13/-13.93   | -13.54/-11.64   | -9.47/-9.08     | -10.44/-10.88   | -11.18/-11.27     | -11.65/-12.29     | -12.69/-12.55     | -11.43/-10.31     | -9.42/-8.84       | -9.03/-9.95       | -10.36/-9.47      | -9.18/-9.15       | -9.7/-11.28       | -12.95/-13.67     | -13.19/-13.6      | -14.48/-14.35     | -13.33/-12.37     | -12.82/-14.05     | -13.86/-13.26     | -12.38/-11.41     | -10.1/-10.19      |
| Θ(180°)   | -14.26/-13.25 | -13.69/-13.75   | -15.37/-15.2    | -15.26/-15.43   | -14.99/-14.57   | -13.92/-13.74   | -13.92/-12.07   | -10.27/-8.79      | -8.01/-7.78       | -8.31/-9.37       | -10.95/-12.7      | -15.45/-15.32     | -14.9/-15.23      | -14.9/-15.61      | -14.99/-14.23     | -14.39/-14.67     | -13.66/-11.84     | -10.74/-10.92     | -10.76/-9.6       | -9.36/-8.7        | -8.54/-9.81       | -11.65/-12.62     | -13.06/-13.05     | -12.45/-13.39     |
| 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°)     | -8.14/-8.39   | -7.43/-6.88     | -5.9/-4.72      | -3.87/-1.84     | -4.31/-3.88     | -3.62/-3.87     | -4.89/-5.9      | -5.66/-5.53       | -5.72/-5.55       | -5.12/-4.89       | -5.09/-5.82       | -6.75/-8.6        | -6.86/-6.43       | -6.04/-5.42       | -5.01/-4.37       | -4.03/-4.22       | -5/-4.98          | -5.35/-6.33       | -6.45/-6.26       | -6.71/-7.22       | -6.69/-6.16       | -6.66/-7.1        | -7.51/-7.81       |                   |
| Θ(7.5°)   | -3.82/-4.08   | -3.89/-3.86     | -4.03/-3.7      | -3.34/-3.86     | -4.58/-4.78     | -4.65/-5.2      | -4.66/-7.82     | -7.93/-7.54       | -7.55/-8.21       | -8.47/-9.08       | -9.36/-10.23      | -11.4/-10.88      | -10.61/-8.3       | -6.41/-5.03       | -4.14/-3.24       | -2.42/-2.01       | -1.68/-1.97       | -2.23/-2.94       | -4.03/-4.6        | -4.95/-5.52       | -5.34/-6.9        | -3.94/-3.25       | -3.01/-2.76       | -2.73/-3.11       |
| Θ(15°)    | -1.75/-2.03   | -2.14/-1.09     | -0.080/-35      | 0.130/-0.3      | 0.2/-1.11       | -2.01/-2.92     | -3.52/-3.8      | -3.91/-4.58       | -5.89/-6.3        | -13.29/-15.03     | -15.23/-14.07     | -12.98/-10.13     | -8.11/-6.27       | -4.52/-3.01       | -1.75/-0.89       | -0.76/-0.76       | -0.10/-21         | -0.22/-0.67       | -0.87/-0.74       | -0.96/-1.39       | -1.88/-2.2        | -2.1/-2.09        | -2.16/-1.81       | -1.53/-1.45       |
| Θ(22.5°)  | 0.380/-32     | 0.570/-81       | 0.940/-92       | 0.710/-64       | 0.29/-0.11      | -0.49/-0.86     | -0.98/-0.91     | -1.24/-1.98       | -3.22/-4.56       | -5.9/-6.78        | -7.3/-7.62        | -7.39/-6.73       | -6.6/-5.39        | -2.99/-1.17       | -0.090/-49        | 0.760/-22         | -0.39/-0.1        | 0.16/-0.16        | -0.61/-0.69       | -0.070/-0.94      | 1.221/-2          | 1.110/-65         | 0.170/-29         | 0.610/-7          |
| Θ(30°)    | 2.932/-18     | 2.272/-53       | 2.131/-68       | 0.820/-58       | 1.411/-94       | 1.871/-34       | 1.080/-9        | 0.310/-36         | -0.62/-1.95       | -2.12/-2.44       | -0.62/-1.95       | -1.080/-208       | 0.150/-54         | 1.059/-154        | 1.992/-26         | 2.092/-9          | 2.572/-35         | 2.482/-56         | 2.332/-6          | 3.114/-96         | 6.246/-47         | 5.764/-92         | 4.714/-73         | 3.973/-6          |
| Θ(37.5°)  | 3.259/-03     | 3.05/-3         | 3.383/-39       | 2.692/-97       | 3.994/-36       | 4.013/-21       | 2.812/-81       | 2.861/-76         | 1.472/-59         | 3.533/-04         | 2.03/-1           | 0.611/-81         | 2.112/-32         | 1.762/-28         | 3.633/-81         | 3.143/-34         | 3.713/-68         | 3.482/-8          | 2.021/-88         | 1.62/-32          | 3.494/-63         | 5.385/-22         | 4.714/-73         | 3.973/-6          |
| Θ(45°)    | 4.513/-86     | 3.093/-12       | 3.944/-41       | 4.333/-4        | 4.784/-5        | 3.724/-23       | 4.820/-48       | 3.62/-98          | 2.853/-58         | 5.6/-33           | 4.522/-87         | 1.052/-35         | 2.82/-55          | 2.53/-89          | 5.064/-55         | 4.13/-89          | 3.433/-02         | 2.572/-35         | 2.482/-56         | 2.332/-6          | 3.114/-96         | 6.246/-47         | 5.764/-92         | 4.714/-73         |
| Θ(52.5°)  | 5.194/-86     | 3.963/-19       | 2.94/-5         | 2.94/-5         | 4.784/-5        | 4.113/-85       | 3.623/-95       | 5.085/-56         | 4.623/-88         | 4.044/-39         | 5.485/-46         | 4.942/-77         | 0.872/-91         | 2.691/-86         | 3.244/-55         | 3.573/-06         | 3.162/-68         | 2.432/-2          | 1.651/-96         | 2.753/-55         | 3.34/-74          | 5.245/-71         | 6.55/-4           | 4.024/-38         |
| Θ(60°)    | 4.744/-07     | 2.893/-02       | 2.44/-52        | 6.055/-37       | 4.513/-89       | 3.623/-56       | 4.35/-22        | 5.064/-34         | 5.536/-18         | 6.095/-47         | 5.03/-3           | 1.973/-87         | 3.652/-45         | 3.65/-12          | 4.774/-56         | 3.092/-27         | 3.253/-7          | 2.821/-28         | 0.420/-22         | 2.544/-62         | 3.995/-06         | 4.695/-07         | 6.535/-72         | 3.493/-76         |
| Θ(67.5°)  | 4.442/-61     | 1.692/-93       | 2.824/-07       | 4.8/-4          | 4.824/-46       | 3.882/-85       | 2.94/-49        | 5.424/-55         | <b>5.766/-65</b>  | 6.036/-11         | 5.513/-24         | 2.943/-83         | 3.783/-38         | 4.285/-28         | 4.514/-06         | 3.43/-15          | 4.014/-28         | 3.51/-84          | 0.820/-55         | 2.24/-43          | 4.215/-02         | 3.563/-51         | 5.745/-32         | 2.22/-94          |
| Θ(75°)    | 4.241/-94     | 0.552/-62       | 2.693/-14       | 3.814/-39       | 4.634/-59       | 3.471/-87       | 1.982/-97       | 4.234/-37         | 5.096/-07         | 4.95/-9           | 5.373/-46         | 3.263/-82         | 3.263/-35         | 3.774/-17         | 3.83/-35          | 4.295/-32         | 4.914/-74         | 4.293/-26         | 3.174/-35         | 2.953/-2          | 3.874/-35         | 2.953/-2          | 4.944/-69         | 1.62/-49          |
| Θ(82.5°)  | 3.261/-3      | -0.042/-29      | 1.981/-67       | 2.643/-78       | 4.524/-29       | 2.781/-25       | 1.241/-27       | 2.92/-98          | 3.784/-43         | 3.865/-13         | 3.682/-22         | 1.792/-93         | 1.852/-74         | 2.632/-87         | 2.962/-44         | 4.466/-05         | 5.574/-93         | 4.173/-83         | 3.132/-08         | 2.923/-71         | 3.353/-85         | 2.270/-63         | 3.993/-44         | 1.191/-27         |
| Θ(90°)    | 1.680/-7      | -0.171/-67      | 0.980/-39       | 1.162/-78       | 3.933/-54       | 2.031/-48       | 0.35/-30.5      | 1.210/-95         | 2.52/-69          | 2.633/-16         | 1.190/-71         | -0.242/-58        | 0.460/-18         | 1.250/-77         | 1.240/-28         | 2.974/-88         | 4.523/-71         | 2.233/-01         | 2.840/-77         | 2.142/-37         | 1.432/-6          | 1.13/-0.66        | 2.712/-14         | 0.71/-0.43        |
| Θ(97.5°)  | 0.890/-03     | -1.310/-7       | -0.673/-36      | 0.112/-04       | 2.972/-22       | 1.151/-23       | -0.361/-97      | 0.09/-0.87        | 1.331/-42         | 0.911/-27         | -1.341/-071       | -0.131/-98        | -0.47/-2.04       | 0.14/-0.94        | -0.95/-3.25       | 0.121/-37         | 0.990/-1          | -1.020/-15        | 0.791/-179        | -1.24/-0.28       | -1.55/-1.2        | -0.58/-2.3        | 1.880/-82         | -0.39/-1.09       |
| Θ(105°)   | 0.21/-0.95    | -2.19/-0.68     | -2.19/-1.22     | -2.10/-22       | 1.13/-0.11      | -0.120/-45      | -0.76/-1.49     | -0.79/-1.12       | 0.16/-0.48        | -1.87/-2.7        | -3.81/-2.5        | -1.980/-16        | -1.44/-3.39       | -2.09/-4.89       | -4.39/-4.86       | -3.75/-3.35       | -4.01/-3.63       | -3.42/-2.61       | -2.08/-3.36       | -4.39/-2.62       | -2.61/-0.62       | -2.18/-2.87       | 1.090/-42         | -2.24/-2.23       |
| Θ(112.5°) | 0.48/-2.48    | -3.65/-3.28     | -2.56/-2.78     | -3.76/-1.72     | -1.63/-2.11     | -0.95/-8.09     | -2.23/-15.3     | -2.75/-2.69       | -3.25/-2.72       | -4.86/-6.37       | -7.31/-6.18       | -4.05/-2.33       | -5.22/-5.27       | -8.36/-9.78       | -6.7/-7.1         | -4.29/-1.1        | -3.64/-3.47       | -1.88/-3.14       | -2.76/-3.72       | -5.16/-3.99       | -2.67/-3.13       | -3.51/-1.93       | -1.63/-0.75       | -2.36/-1.86       |
| Θ(120°)   | -1.31/-2.98   | -3.97/-3.54     | -2.04/-3.1      | -4.29/-1.5      | -4.47/-3.16     | -2.91/-2.68     | -4.48/-6.36     | -5.12/-5.21       | -8.45/-3.87       | -2.47/-4.13       | -8.58/-10.76      | -6.17/-5.97       | -9.85/-8.1        | -10.84/-13.28     | -9.15/-5.94       | -3.96/-2.49       | -3.85/-3.28       | -3.71/-7.16       | -4.32/-3.43       | -8.71/-7.16       | -3.2/-2.56        | -3.14/-1.79       | -2.53/-1.7        | -2.97/-2.16       |
| Θ(127.5°) | -3.66/-3.27   | -4.14/-3.7      | -3.31/-4.66     | -4.45/-4.41     | -3.92/-3.29     | -2.85/-3.27     | -4.43/-5.49     | -4.64/-5.38       | -6.81/-4.44       | -3.23/-6.64       | -10.05/-7.46      | -7.24/-8.45       | -8.38/-8.92       | -10.07/-7.28      | -6.23/-7.15       | -7.83/-7.1        | -6.4/-8.8         | -5.88/-4.3        | -9.91/-8.16       | -12.05/-8.22      | -3.52/-5.26       | -6.51/-4.1        | -2.67/-2.32       | -4.51/-4.25       |
| Θ(135°)   | -4.06/-4.59   | -5.71/-0.6      | -7.56/-3.82     | -3.97/-9.6      | -4.93/-6.66     | -7.99/-9.61     | -8.22/-6.53     | -7.06/-7.47       | -8.67/-9.1        | -10.04/-10        | -7.04/-7.85       | -8.72/-10.7       | -10.35/-9.81      | -11.34/-13.06     | -14.52/-9.45      | -8.8/-10.93       | -13.12/-10.04     | -4.02/-4.88       | -13.53/-11.37     | -7.88/-9.31       | -11.12/-9.01      | -11.31/-9.62      | -8.27/-4.88       | -4.94/-5.97       |
| Θ(142.5°) | -7.65/-5.76   | -6.97/-8.96     | -7.79/-4.66     | -8.86/-8.8      | -7.99/-9.61     | -8.22/-6.53     | -7.06/-7.47     | -8.67/-9.1        | -10.04/-10        | -7.04/-7.85       | -8.72/-10.7       | -10.35/-9.81      | -11.34/-13.06     | -14.52/-9.45      | -8.8/-10.93       | -13.12/-10.04     | -4.02/-4.88       | -13.53/-11.37     | -7.88/-9.31       | -11.12/-9.01      | -11.31/-9.62      | -8.27/-4.88       | -4.94/-5.97       |                   |
| Θ(150°)   | -7.84/-7.92   | -8.39/-9.05     | -7.51/-7.29     | -8.66/-8.8      | -7.19/-7.14     | -8.18/-8.8      | -8.13/-6.64     | -4.79/-4.92       | -8.03/-8.97       | -8.1/-87          | -12.71/-10.68     | -12.14/-11.18     | -14.35/-14.56     | -10.53/-10.27     | -12.8/-12.26      | -14.4/-11.75      | -10.38/-10.65     | -13.71/-15.28     | -14.98/-14.15     | -14.87/-15.65     | -11.77/-9.66      | -8.55/-8.93       | -10.47/-9.99      |                   |
| Θ(157.5°) | -7.88/-8.31   | -10.53/-12.31   | -10.94/-10.36   | -10.02/-9.4     | -7.85/-7.24     | -7.69/-8.12     | -9.08/-10.25    | -11.77/-11.48     | -8.87/-8.82       | -11.63/-14.71     | -13.99/-15.58     | -13.83/-11.22     | -11.44/-12.52     | -14.41/-15.23     | -12.71/-11.55     | -13.29/-15.19     | -11.45/-8.06      | -8.14/-10.72      | -13.67/-12.59     | -12.08/-13.23     | -10.9/-8.86       | -9.87/-7.56       | -8.15/-9.06       | -8.92/-8.2        |
| Θ(165°)   | -11.15/-10.81 | -9.51/-9.78     | -11.12/-11.16   | -12/-12.47      | -12.63/-13      | -10.97/-11.25   | -10.04/-9.39    | -9.29/-11.1       | -13.95/-15.15     | -15.69/-15.16     | -9.98/-8.56       | -11.48/-13.41     | -11.11/-9.78      | -9.71/-11.28      | -13.52/-14.09     | -12.65/-12.33     | -13.72/-15.33     | -15.44/-15.46     | -15.49/-12.88     | -10.23/-9.48      | -11.14/-10.51     | -9.86/-10.03      | -9.93/-10.66      |                   |
| Θ(172.5°) | -8.04/-7.72   | -8.74/-10.2     | -11.71/-12.19   | -10.93/-9.89    | -9.59/-8.98     | -9.49/-7.136    | -12.03/-11.29   | -11.66/-12.42     | -12.08/-11.81     | -11.88/-12.12     | -12.25/-11.6      | -10.38/-11.28     | -12.21/-13.27     | -13.18/-12.53     | -11.81/-10.7      | -8.76/-7.47       | -10.99/-13.35     | -14.66/-15.32     | -15.61/-13.61     | -11.85/-11.67     | -11.85/-11.69     | -11.07/-10.84     | -11.81/-91        |                   |
| Θ(180°)   | -12.84/-12.8  | -10.96/-6.61    | -7.16/-7.5      | -8.41/-8.79     | -9.94/-12.05    | -12.53/-11.85   | -11.22/-11.99   | -13.91/-15.71     | -14.92/-15.23     | -14.52/-13.7      | -12.27/-10.43     | -10.11/-10.74     | -10.68/-9.99      | -8.9/-8.74        | -7.61/-7.64       | -7.47/-7.85       | -9.62/-12.27      | -14.75/-15.25     | -14.78/-14.26     | -15.15/-15.21     | -13.62/-11.84     | -11.49/-11.67     | -11.33/-10.13     | -11.27/-12.51     |
| Freq(Hz)  | 6.475GPol.    | Phi             | -</             |                 |                 |                 |                 |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |



# Radiated Composite Gain Data of 2.4GHz/5GHz/6GHz

# Appendix A

|           |               |                 |                 |                 |                 |                 |                 |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |
|-----------|---------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| Θ(180°)   | -15.57/-15.66 | -14.48/-15.12   | -14.84/-15.74   | -15.19/-15.53   | -14.35/-12.72   | -12.49/-14.97   | -15.34/-15.56   | -15.08/-14.37     | -14.2/-13.64      | -13.61/-14.19     | -14.42/-15.35     | -15.19/-15.87     | -15.9/-15.47      | -15.83/-15.22     | -15.01/-15.52     | -15.45/-14.48     | -14.03/-14.2      | -14.53/-13.91     | -13.55/-14.4      | -14.18/-15.29     | -15.92/-15.53     | -15.11/-14.64     | -15.05/-15.19     | -14.68/-16        |
| Freq(Hz)  | 6.895GPol.    | 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°)     | -6.95/-5.76   | -4.67/-4.42     | -4.39/-3.87     | -3.9/-4.53      | -5.33/-5.66     | -5.85/-6.48     | -7.86/-8.49     | -8.94/-9.15       | -9.33/-9.26       | -8.64/-8.34       | -8.37/-8.44       | -8.05/-7.11       | -6.33/-6.1        | -6.23/-5.77       | -4.84/-4.1        | -4.33/-4.99       | -5.28/-5.77       | -6.74/-7.04       | -7.49/-9.28       | -10.38/-10.29     | -11.61/-11.98     | -11.32/-9.46      | -7.36/-7.04       | -7.54/-7.7        |
| Θ(7.5°)   | -5.47/-4.71   | -4.49/-3.66     | -3.12/-2.78     | -2.98/-2.65     | -2.58/-2.86     | -3.91/-4.38     | -5.05/-5.78     | -7.01/-8.63       | -10.41/-12.86     | -13.45/-13.89     | -12.04/-10.7      | -9.61/-8.53       | -8.09/-7.74       | -6.71/-5.34       | -4.03/-3.19       | -2.81/-2.55       | -2.63/-3.17       | -4.04/-4.56       | -4.71/-7.45       | -4.92/-4.82       | -4.67/-4.99       | -5.55/-5.83       | -5.94/-6.45       | -6.44/-6.17       |
| Θ(15°)    | -1.9/-1.6     | -1.33/-1.39     | -1.77/-1.71     | -1.9/-1.24      | -0.73/-0.46     | -0.58/-0.82     | -1.49/-2.19     | -3.44/-4.95       | -6.56/-8.82       | -11.64/-14.08     | -15.09/-14.14     | -11.44/-9.19      | -7.42/-5.55       | -3.84/-2.52       | -1.7/-1.14        | -0.97/-1.3        | -2.11/-2.88       | -3.48/-4.01       | -4.54/-4.34       | -2.52/-2.1        | -1.61/-1.09       | -0.83/-1.08       | -1.33/-1.78       |                   |
| Θ(22.5°)  | 0.13/-0.77    | -0.94/-1.11     | -0.52/-0.02     | -0.04/-0.68     | -0.240/-0.48    | 0.56/-0.19      | -0.99/-1.88     | -2.64/-3.19       | -4/-4.96          | -6.17/-7.15       | -8.35/-9.85       | -8.13/-5.08       | -3.5/-2.27        | -0.720/-0.18      | 0.670/-0.82       | 0.590/-0.21       | -0/-0.19          | -1.03/-2.44       | -2.42/-2          | -1.83/-1.93       | -2.04/-1.45       | -0.540/-0.33      | 1.23/-1.91        | 2.09/-1.43        |
| Θ(30°)    | 0.69/-0.13    | -0.060/-0.46    | 1.57/-2.22      | 2.08/-1.1       | 1.14/-2.41      | 2.84/-2.16      | 0.970/-0.18     | -0.64/-1.9        | -2.92/-3.04       | -2.06/-1.82       | -2.35/-2.43       | -2.67/-2.9        | -2.45/-0.81       | 1.52/-2.28        | 1.98/-1.86        | 2.13/-2.21        | 2.24/-1.72        | 0.63/-1.11        | -0.99/-0.7        | 1.85/-2.5         | 2.33/-1.43        | 1/-1.73           | 2.31/-2.49        | 2.56/-1.92        |
| Θ(37.5°)  | 2.94/-2.01    | 1.61/-1.76      | 2.09/-2.7       | 3.18/-2.87      | 2.89/-3.55      | 3.69/-3.48      | 3.05/-2.63      | 1.84/-1.29        | 1.96/-1.93        | 1.24/-1.37        | 1.07/-0.79        | 0.570/-0.21       | 1.13/-2.52        | 3.09/-2.63        | 2.75/-3.46        | 3.42/-5.7         | 1.78/-1.16        | 0.13/-0.95        | -0.92/-0.3        | 1.83/-3.65        | 4.68/-4.45        | 3.64/-2.74        | 3.03/-2.87        | 2.93/-3.02        |
| Θ(45°)    | 3.08/-2.16    | 2.18/-3.2       | 2.57/-2.33      | 3.54/-3.63      | 3.24/-3.05      | 2.95/-2.86      | 2.53/-2.68      | 2.77/-1.99        | 3.28/-4.22        | 3.91/-3.25        | 3.15/-2.58        | 2.17/-1.89        | 2.46/-2.92        | 2.73/-0.5         | 3.31/-3.22        | 3.49/-2.73        | 2.42/-2.29        | 0.99/-0.74        | -1.07/-0.36       | 0.49/-2.36        | 4.11/-4.46        | 4.16/-3.24        | 3.83/-3.79        | 3.45/-3.37        |
| Θ(52.5°)  | 3.14/-2.73    | 3.23/-4.33      | 3.79/-2.45      | 2.87/-2.87      | 3.08/-2.58      | 2.43/-3.38      | 3.06/-2.37      | 2.57/-1.84        | 2.98/-3.57        | 5.11/-3.93        | 3.13/-2.74        | 1.59/-0.51        | 1.39/-1.78        | 1.42/-2.6         | 3.21/-3.51        | 3.85/-3.73        | 4.03/-3.31        | 0.57/-0.9         | 0.320/-0.67       | 0.51/-1.24        | 2.75/-3.76        | 4.31/-3.96        | 4.19/-3.79        | 3.91/-3.39        |
| Θ(60°)    | 3.2/-4.3      | 4.57/-4.46      | 3.29/-1.53      | 2.42/-2.33      | 2.89/-3.27      | 3.32/-3.7       | 3.69/-2.92      | 2.87/-3.05        | 3.08/-5.75        | 5.77/-4.32        | 2.79/-2.77        | 0.99/-0.56        | 0.76/-1.55        | 1.56/-1.71        | 2.67/-2.85        | 3.68/-3.15        | 4.27/-3.54        | 1.27/-0.87        | -0.35/-0.74       | 1.49/-2.11        | 3.48/-4.06        | 3.96/-3.66        | 4.73/-3.73        |                   |
| Θ(67.5°)  | 2.66/-5.21    | 4.71/-2.9       | 2.31/-1.53      | 1.68/-2.48      | 3.25/-3.5       | 2.99/-3.34      | 3.54/-1.92      | 2.12/-3.58        | 4.15/-4.6         | 5.65/-3.98        | 3.03/-2.7         | 0.74/-1.73        | 1.43/-2           | 2.16/-1.59        | 1.86/-2.33        | 3.39/-3.54        | 4.96/-3.8         | 1.92/-0.01        | 0.77/-1.93        | 2.71/-2.83        | -0.83/-2.52       | 3.43/-4.59        | 3.83/-3.06        | 5.07/-3.23        |
| Θ(75°)    | 2.13/-4.76    | 4.38/-1.67      | 1.35/-1.1       | 1.78/-2.99      | 2.83/-2.42      | 2.42/-8.5       | 3.11/-2.44      | 3.21/-4.8         | 4.96/-3.14        | 2.83/-1.95        | 1.22/-1.92        | 0.96/-1.39        | 2.61/-0.64        | 0.77/-0.67        | 2.98/-4.2         | 5.57/-3.97        | 2.87/-1.18        | 1.25/-1.92        | -0.69/-2.17       | 2.47/-4.06        | 3.24/-2.85        | 3.24/-2.85        | 4.44/-1.7         |                   |
| Θ(82.5°)  | 1.69/-3.67    | 3.44/-0.51      | 0.99/-0.97      | 0.82/-1.88      | 1.710/-63       | 1.132/-38       | 3.32/-3.7       | 2.63/-9.3         | 1.14/-1.91        | 1.13/-7.8         | 3.34/-1.9         | 2.35/-0.14        | 0.27/-1.26        | -0.39/-0.59       | 1.67/-1.73        | -0.56/-1.83       | 3.27/-5.66        | 5.67/-3.42        | 3.21/-1.9         | 1.92/-1.24        | 3.94/-3.24        | -0.55/-1.34       | 1.85/-2.67        | 3.55/-3.37        |
| Θ(90°)    | 1.37/-2.26    | 2.63/-1.08      | 0.64/-0.03      | -0.320/-0.78    | 0.85/-0.65      | 0.32/-1.41      | 1.182/-0.4      | 0.510/-1          | -0.84/-2.52       | 2.07/-0.22        | 1.27/-1.72        | -0.54/-0.15       | -2.25/-1.67       | 0.59/-3.83        | -1.67/-4.39       | 0.81/-5           | 4.61/-2.03        | 1.95/-1.25        | 1.050/-0.64       | 2.79/-1.47        | -1.02/-0.62       | 0.78/-1.01        | 1.62/-2.14        | 2.5/-1.22         |
| Θ(97.5°)  | 0.530/-0.8    | 1.8/-2.2        | -0.02/-1.34     | -2.21/-0.78     | 0.35/-1.4       | -0.540/-7       | 0.150/-36       | -0.87/-2.14       | -2.150/-8.5       | 1.28/-0.92        | -2.23/-3.48       | -2.22/-1.86       | -3.38/-3.2        | -1.94/-6.14       | -3.73/-7.02       | -2.72/-2.31       | 0.52/-0.65        | -0.23/-2.25       | -0.77/-3.04       | -0.47/-1.63       | -3.88/-2.72       | -5.94/-6.12       | -0.71/-0.12       | 0.66/-2.33        |
| Θ(105°)   | -1.220/-39    | 0.6/-2.86       | -1.6/-2.69      | -3.37/-2.41     | -1.21/-1.58     | -2.98/-1.26     | -1.54/-2.27     | -3.95/-1.94       | -1.61/-1.85       | -1.4/-2.77        | -5.07/-4.61       | -2.66/-2.18       | -3.28/-3.76       | -2.92/-8.24       | -1.73/-6.55       | -5.89/-3.75       | -6.02/-5.31       | -3.03/-5.48       | -2.9/-6.22        | -4.56/-3.38       | -2.95/-3.09       | -2.2/-0.68        | -0.83/-0.74       | 0.08/-2.44        |
| Θ(112.5°) | -3.08/-0.12   | -0.67/-3.03     | -3.96/-3.95     | -5.53/-4.06     | -3.52/-2.81     | -2.96/-2.48     | -4.11/-4.76     | -2.94/-4.53       | -3.12/-4.47       | -3.25/-8.72       | -7.34/-5.88       | -4.93/-5.66       | -5.12/-5.91       | -5.09/-14.92      | -8.91/-9.35       | -5.66/-2.61       | -6.19/-6.94       | -3.34/-4.47       | -3.23/-8.22       | -4.75/-4.24       | -2.2/-2.58        | -3.47/-2.81       | -2.81/-2.33       | -1.95/-4.2        |
| Θ(120°)   | -3.38/-1.39   | -2.87/-3.92     | -4.16/-4.02     | -5.4/-4.37      | -6.36/-6.67     | -4.77/-4.07     | -4.9/-3.58      | -5.44/-10.36      | -6.26/-5.84       | -4.97/-9.95       | -11.75/-9.01      | -8.81/-9.55       | -9.38/-10.93      | -7.15/-14.42      | -10.3/-11.4       | -7.52/-5.01       | -5.58/-9.91       | -3.01/-1.55       | -8.74/-7.79       | -8.61/-4.81       | -3.88/-2.72       | -5.94/-6.42       | -3.14/-3.17       | -2.44/-4.76       |
| Θ(127.5°) | -2.87/-3.53   | -4.57/-4.64     | -5.07/-5.72     | -5.49/-5.54     | -2.79/-6.09     | -5.91/-5.5      | -4.93/-5.56     | -6.84/-4.98       | -7.15/-6.93       | -10.52/-10.83     | -10.62/-11.24     | -15.16/-12.03     | -8.94/-8.39       | -6.88/-10.05      | -7.12/-10.25      | -5.2/-7.88        | -8.88/-12.25      | -14.61/-3.56      | -6.47/-4.32       | -5.47/-3.42       | -3.75/-2.22       | -5.45/-4.3        |                   |                   |
| Θ(135°)   | -4.31/-3.51   | -3.42/-5.13     | -6.93/-8.33     | -6.46/-6.51     | -8.22/-8.15     | -8.59/-5.1      | -4.92/-7.89     | -7.83/-7.65       | -6.26/-6.41       | -10.61/-11.94     | -14.94/-11.08     | -9.45/-10.98      | -11.45/-13.18     | -13.17/-15.27     | -12.75/-8.29      | -7.46/-5.83       | -7.9/-7.67        | -3.42/-4.15       | -9.89/-9.72       | -12.5/-6.79       | -4.77/-10.02      | -5.52/-9.47       | -4.63/-2.15       | -4.44/-7.54       |
| Θ(142.5°) | -6.26/-5.53   | -5.85/-5.92     | -7.31/-8.82     | -7.99/-9.51     | -5.96/-8.96     | -7.46/-6.23     | -9.07/-9.81     | -9.9/-8.36        | -8.88/-11.86      | -13.5/-11.23      | -12.59/-10.79     | -13.65/-10.72     | -11.16/-14.42     | -9.21/-9.39       | -5.21/-9.06       | -12.64/-10.8      | -15.57/-13.17     | -10.71/-11.26     | -8.97/-9.41       | -5.79/-5.1        | -2.93/-2.71       | -7.83/-6.1        | -7.03/-7.51       |                   |
| Θ(150°)   | -9.06/-7.98   | -7.6/-8.42      | -8.68/-8.11     | -9.49/-10.65    | -10.51/-8.22    | -6.91/-6.71     | -7.97/-8.87     | -9.18/-9.04       | -14.59/-15.32     | -14.02/-15.12     | -15.23/-14.2      | -12.62/-13.17     | -13.93/-13.41     | -14.71/-14.48     | -15.3/-14.93      | -9.24/-9.99       | -13.72/-14.8      | -13.71/-11.9      | -13.16/-11.28     | -8.65/-8          | -9.02/-7.82       | -6.77/-8.86       |                   |                   |
| Θ(157.5°) | -13.49/-10.75 | -10.48/-10.25   | -9.56/-9.35     | -9.8/-10.2      | -9.34/-9.91     | -11.24/-11.01   | -10.17/-10.91   | -12.03/-11.08     | -12.46/-12.95     | -14.58/-14.4      | -14.26/-11.08     | -14.49/-15.51     | -13.72/-15.38     | -14.27/-13.67     | -14.71/-15.15     | -15.38/-15.09     | -11.1/-9.89       | -10.61/-13.34     | -15.09/-15.19     | -14.17/-13.43     | -14.54/-15.19     | -14.77/-9.11      | -7.58/-8.66       | -9.97/-14.39      |
| Θ(165°)   | -13.66/-12.02 | -12.96/-12.48   | -11.95/-11.32   | -11.71/-10.6    | -9.38/-9.1      | -10.42/-12.05   | -12.32/-11.47   | -10.81/-11.11     | -12.82/-15.73     | -15.01/-14.9      | -14.23/-13.56     | -15.69/-13.67     | -10.43/-11.28     | -13.08/-14.37     | -15.58/-15.1      | -15.63/-11.2      | -9.51/-10.26      | -12.5/-15.72      | -15.57/-13.92     | -14.44/-13.93     | -13.37/-13.87     | -12.11/-10.68     | -9.37/-9.68       | -12.71/-14        |
| Θ(172.5°) | -11.81/-11.82 | -11.26/-12.41   | -13.44/-14.09   | -14.72/-15.52   | -15.1/-14.38    | -13.11/-12.53   | -12.71/-13.1    | -13.19/-13.55     | -13.75/-13.95     | -13.35/-12.72     | -13.43/-13.44     | -14.09/-14.71     | -16.1/-14.1       | -14.77/-12.81     | -11.03/-9.94      | -9.73/-9.99       | -10.09/-9.62      | -10.92/-12.1      | -14.82/-15.2      | -15.96/-13.93     | -13.82/-13.42     | -14.08/-14.47     | -14.1/-12.14      | -12.65/-12.86     |
| Θ(180°)   | -13.54/-12.29 | -12.65/-11.5    | -10.83/-10.55   | -11.69/-12.64   | -13.57/-14.83   | -15.77/-15.39   | -15.4/-15.39    | -15.66/-15.32     | -13.61/-14.98     | -13.79/-14.65     | -15.09/-14.74     | -13.86/-13.51     | -14.22/-15.35     | -15.06/-13.55     | -13.69/-13.53     | -14.12/-14.87     | -15.36/-15.14     | -15.5/-15.32      | -15.24/-15        | -15.04/-14.72     | -15.14/-14.78     | -15.27/-14.1      |                   |                   |
| Freq(Hz)  | 6.895GPol.    | 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°)     | -4.45/-5.06   | -6.02/-7.43     | -7.47/-6.81     | -6.81/-7.01     | -6.58/-5.54     | -4.47/-4.42     | -4.55/-3.74     | -3.21/-3.1        | -2.78/-2.3        | -2.12/-2.46       | -2.76/-2.59       | -2.36/-2.56       | -3.58/-4.89       | -6.67/-6.75       | -6.44/-6.45       | -6.13/-5.61       | -5.51/-5.25       | -4.43/-3.86       | -4.12/-3.49       | -2.54/-1.81       | -1.54/-1.53       | -1.75/-1.87       | -1.89/-2.06       | -2.55/-3.69       |
| Θ(7.5°)   | -4.18/-5.47   | -6.46/-8.57     | -8.68/-9.23     | -10.07/-9.09    | -7.4/-6.23      | -5.46/-4.36     | -3.45/-3        | -3.02/-3.35       | -3.31/-3.16       | -3.15/-3.09       | -2.99/-2.66       | -2.17/-2.37       | -3.07/-4.23       | -5.87/-6.76       | -6.84/-6.54       | -6.12/-5.6        | -4.87/-4.56       | -4.7/-5.35        | -6.45/-6.59       | -5.12/-4.42       | -3.98/-3.89       | -3.34/-2.71       | -1.96/-2.1        | -2.54/-2.96       |
| Θ(15°)    | -5.36/-7.73   | -7.84/-8.19     | -7.95/-6.31     | -5.01/-6.2      | -5.53/-5.25     | -6.05/-5.98     | -4.79/-4.17     | -4.15/-4.77       | -5.55/-6.24       | -6.47/-6.16       | -5.68/-4.7        | -3.46/-2.83       | -2.84/-2.95       | -3.45/-4.09       | -4.42/-3.53       | -5.94/-8.7        | -3.78/-3.19       | -3.49/-4.17       | -5.33/-6.14       | -6.49/-6.3        | -6.47/-6.2        | -4.83/-3.08       | -2.09/-2.01       | -2.46/-3.45       |
| Θ(22.5°)  | -5.04/-6.97   | -7.24/-7.7      | -7.43/-5.31     | -4.62/-4.54     | -3.91/-3.66     | -4.9/-5.71      | -5.17/-5.08     | -4.8/-4.62        | -4.81/-3.85       | -2.37/-1.99       | -3.17/-4.45       | -4.57/-5.31       | -5.8/-3.34        | -2.62/-3.42       | -3.88/-5.29       | -5.29/-3.94       | -4/-5.29          | -5.14/-4.09       | -4.26/-4.65       | -4/-3.42          | -3.44/-4.32       | -5.04/-3.71       | -2.03/-1.28       | -1.75/-3.13       |
| Θ(30°)    | -3.47/-5.69   | -7.51/-6.66     | -8.5/-3.92      | -9.19/-7.96     | -6.27/-5.28     | -4.69/-4.34     | -5.47/-4.21     | -2.7/-2.22        | -1.73/-1.56       | -2.2/-2.76        | -3.03/-2.92       | -3.63/-6.32       | -4.51/-2.82       | -2.22/-3.28       | -4.54/-3.21       | -1.53/-1.76       | -3.82/-6.88       | -7.48/-7.57       | -9.06/-7.5        | -5.42/-3.77       | -2.44/-1.58       | -2.15/-1.95       | -1.68/-1.42       | -1.71/-1.19       |
| Θ(37.5°)  | -1.11/-2.25   |                 |                 |                 |                 |                 |                 |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |



# Radiated Composite Gain Data of 2.4GHz/5GHz/6GHz

# Appendix A

## Gain Result

| Freq(Hz)  | 2.45GPol.    | PhiAnt. 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°)     | -11.83-12.36 | -12.81-12.99   | -13.41-14.39   | -15.73-18.16   | -18.62-17.49   | -18.25-18.36   | -14.85-18.44   | -18.61-19.38     | -17.49-15.37     | -13.17-11.38     | -10.28-9.54       | -9.19-9.06       | -9.11-9.3        | -9.69-10.24      | -10.88-11.24     | -12.41-11.95     | -12.75-13.45     | -14.61-17.21     | -17.71-18.7      | -17.74-11.21     | -12.81-11.32     | -15.44-10.24     | -10.32-10.57     | -10.94-10.31     |
| Θ(7.5°)   | -9.77-10.35  | -10.95-11.31   | -11.85-12.84   | -14.11-15.66   | -17.02-17.98   | -18.02-18.16   | -18.43-18.44   | -18.18-17.77     | -17.18-15.98     | -14.35-12.71     | -11.56-11.08      | -10.89-10.68     | -10.42-10.26     | -10.27-10.46     | -10.89-11.2      | -11.65-12.27     | -13.02-13.63     | -14.54-16.52     | -18.51-18.21     | -18.44-15.91     | -12.95-10.92     | -9.64-8.9        | -8.58-8.62       | -8.87-9.25       |
| Θ(15°)    | -8.31-8.63   | -9.03-9.39     | -10.01-10.85   | -11.64-12.08   | -12.1-11.85    | -11.36-11.17   | -11.52-12.19   | -13.07-13.43     | -12.71-11.56     | -10.48-9.73      | -9.23-9.14        | -9.47-9.94       | -10.32-10.27     | -9.92-9.67       | -9.61-9.74       | -10-10.47        | -11.16-11.7      | -12.56-14        | -16.37-17.12     | -19.21-16.86     | -13.72-11.38     | -9.83-8.86       | -8.23-8          | -8-8.13          |
| Θ(22.5°)  | -7.56-7.33   | -7.27-7.41     | -8.03-8.98     | -9.78-10.01    | -9.67-8.93     | -8.19-7.94     | -8.42-9.53     | -11.09-12        | -11.04-9.35      | -7.99-7.08       | -6.58-6.55        | -7.05-8.2        | -9.45-9.86       | -9.19-8.31       | -7.83-7.78       | -8.14-8.91       | -8.88-10.86      | -11.95-13.39     | -15.55-18.97     | -18.61-18.63     | -11.53-10.23     | -9.22-8.61       | -8.23-7.88       |                  |
| Θ(30°)    | -7.21-6.3    | -5.63-5.52     | -5.99-6.97     | -8.02-8.69     | -8.48-7.51     | -6.62-6.39     | -7.02-8.34     | -10.25-11.89     | -11.14-8.94      | -7.02-5.72       | -4.98-4.77        | -5.21-6.53       | -8.61-10.14      | -9.37-7.76       | -6.72-6.62       | -7.53-8.98       | -10.73-12.51     | -14.27-15.67     | -17.15-19.12     | -18.65-18.17     | -19.11-17.89     | -15.72-13.59     | -11.83-10.54     | -9.38-8.3        |
| Θ(37.5°)  | -6.82-5.45   | -4.66-4.53     | -4.94-5.78     | -6.94-8.03     | -8.27-7.2      | -6.47-6.52     | -7.5-9.29      | -11.78-13.52     | -12.1-9.32       | -7.01-5.45       | <b>-4.53-4.14</b> | -4.42-6.54       | -7.88-10.16      | -9.64-7.65       | -6.58-7.02       | -8.87-11.7       | -15.59-18.9      | -18.17-17.9      | -17.97-19.12     | -17.55-17.93     | -18.88-18.07     | -17.53-18.16     | -15.76-13.36     | -10.83-8.61      |
| Θ(45°)    | -6.25-5.16   | -4.72-6.64     | -4.87-5.48     | -6.8-8.03      | -8.74-8.1      | -7.43-7.85     | -9.45-11.8     | -14.31-14.7      | -12.8-10.4       | -8.13-6.44       | -5.37-4.74        | -4.55-5.13       | -6.82-9.23       | -9.76-7.97       | -6.97-5.54       | -10.12-15.1      | -17.37-18.67     | -17.92-17.23     | -17.41-17.73     | -18.12-17.89     | -19.42-18.34     | -17.93-18.45     | -15.53-14.55     | -10.87-8.06      |
| Θ(52.5°)  | -5.83-5.68   | -5.9-5.91      | -5.86-6.33     | -7.55-9.69     | -11.06-10.18   | -9.24-9.93     | -12.18-15.83   | -16.67-14.73     | -13.86-12.48     | -9.96-8.02       | -6.89-6.15        | -5.58-5.68       | -7.12-9.47       | -9.24-6.95       | -5.75-6.36       | -8.95-13.99      | -18.71-18.34     | -17.33-15.21     | -14.8-15.7       | -17.04-17.3      | -17.04-17.4      | -18.72-17.71     | -17.12-12.35     | -9-6.97          |
| Θ(60°)    | -5.61-6.42   | -7.37-7.45     | -7.31-7.87     | -9.66-13.23    | -16.65-14.45   | -12.17-11.98   | -14.07-17.2    | -17.32-15.93     | -16.91-17.28     | -12.37-9.64      | -8.72-7.85        | -6.27-5.47       | -18.1-7.6        | -5.42-4.58       | -7.71-11.9       | -18.46-17.44     | -17.72-16.53     | -13.94-13.67     | -14.27-14.92     | -15.73-16.78     | -18.07-18.3      | -14.69-10.47     | -8.71-6.15       |                  |
| Θ(67.5°)  | -6.13-7.36   | -8.95-9.35     | -9-9.57        | -12.32-18.58   | -18.26-19.22   | -14.62-12.48   | -13.65-18.38   | -18.17-14.98     | -17.73-18.06     | -13.25-10.65     | -11.4-10.71       | -5.53-8.6        | -11.12-8.4       | -6.36-6.87       | -9.61-12.96      | -15.1-18.59      | -18.19-17.21     | -14.16-14.5      | -15.99-17.12     | -18.79-18.48     | -18.04-15.74     | -13.52-10.97     | -8.17-6.35       |                  |
| Θ(75°)    | -6.93-7.76   | -9.85-10.34    | -9.26-9.08     | -11.41-18.64   | -18.29-17.98   | -14.86-11.02   | -11.44-18.14   | -18.27-12.67     | -14.41-18.86     | -13.47-9.67      | -10.68-15.12      | -10.44-6.86      | -6.95-9.19       | -9.9-6.81        | -4.97-5.57       | -8.28-11.33      | -12.78-15.06     | -18.37-16.2      | -14.66-15.29     | -17.8-18.7       | -17.3-17.75      | -16.12-14.61     | -14.55-14.93     | -11.55-8.03      |
| Θ(82.5°)  | -8.24-9.07   | -12.1-13.23    | -11.56-10.96   | -13.09-18.14   | -18.94-18.05   | -17.38-11.49   | -11.34-17.84   | -17.18-10.79     | -11.48-17.82     | -15.74-10.41     | -9.86-7.35        | -8.11-11.6       | -11.92-7.04      | -7.41-8.44       | -8.67-10.18      | -14.19-18.14     | -18.02-16.66     | -16.54-16.28     | -16.24-16.11     | -15.62-15.96     | -18.66-18.68     | -15.47-10.27     |                  |                  |
| Θ(90°)    | -10.14-12.15 | -17.09-17.58   | -15.24-15.85   | -19.93-19.13   | -17.88-17.88   | -13.79-8.69    | -8.57-13.44    | -18.47-10.51     | -9.8-15.17       | -18.75-12.38     | -13.12-16.57      | -9.09-5.85       | -6.19-9.38       | -11.91-7.99      | -5.96-6.71       | -8.89-9.9        | -9.96-11.92      | -18.83-18.11     | -18.22-19.79     | -18.87-17.26     | -17.2-18.41      | -16.38-15        | -16.89-18.7      | -13.91-10.61     |
| Θ(97.5°)  | -9.12-11.43  | -15.91-15.6    | -13.42-14.45   | -18.03-17.56   | -17.01-18.38   | -13.88-8.9     | -9.03-15.43    | -18.1-10.3       | -9.7-15.01       | -15.85-11.19     | -12.75-17.88      | -9.44-6.13       | -7.16-11.38      | -12.32-7.72      | -5.76-6.13       | -7.87-9.16       | -10.39-13.59     | -18.47-18.26     | -17.43-18.89     | -18.61-18.91     | -18.41-18.72     | -15.93-13.59     | -14.24-15.22     | -12.06-9.5       |
| Θ(105°)   | -9.05-11.41  | -18.36-14.74   | -12.57-13.48   | -19.41-15.18   | -17.05-17.75   | -18.57-14.36   | -11.34-17.49   | -13.85-9.3       | -9.98-16.71      | -15.45-9.65      | -9.57-16.31       | -14.76-9.4       | -10.12-14.22     | -14.42-8.81      | -8.53-10.92      | -6.23-6.46       | -13.07-15.51     | -19.26-16.1      | -14.77-15.41     | -18.32-18.62     | -18.01-18.46     | -15.44-13.07     | -13.51-15.72     | -14.94-10.31     |
| Θ(112.5°) | -9.04-8.91   | -8.95-8.38     | -8.92-9.23     | -10.62-14.03   | -16.7-15.39    | -11.35-9.49    | -10.61-14.46   | -12.27-9.2       | -10.12-17.24     | -19.32-10.99     | -9.41-11.06       | -10.21-8.68      | -9.49-13.67      | -17.17-10.33     | -6.69-6.07       | -8.74-7.8        | -9.16-11.32      | -13.53-13.53     | -14.77-15.26     | -17.52-17.95     | -18.69-18.1      | -16.55-15.47     | -19.39-19.28     | -18.02-11.53     |
| Θ(120°)   | -7.41-6.92   | -8.61-10.58    | -11.77-12.03   | -11.19-11.69   | -14.38-18.23   | -16.17-13.24   | -13.38-15.97   | -13.55-10.67     | -11.31-16.16     | -17.67-11.82     | -11.15-12.63      | -8.59-5.43       | -4.8-6.22        | -9.79-12.31      | -11.11-10.52     | -11.44-12.52     | -12.56-13.87     | -18.17-19.38     | -18.58-18.68     | -18.51-19.03     | -18.34-16.11     | -13.95-13.53     | -14.62-14.67     | -12.75-9.76      |
| Θ(127.5°) | -12.83-12    | -13.32-12.66   | -12.41-16.01   | -18.8-17.62    | -18.84-17.49   | -17.54-16.19   | -16.54-16.21   | -13.8-12.78      | -16.39-17.1      | -10.84-6.77      | -6.6-9.7          | -12.28-9.43      | -8.02-8.12       | -7.97-6.74       | -5.33-4.91       | -6.33-10.01      | -16.92-17.92     | -18.19-16.92     | -14.97-14.14     | -13.9-13.99      | -14.01-13.27     | -12.08-12.22     | -14.58-14.47     | -18.01-16.82     |
| Θ(135°)   | -13.81-12.21 | -9.94-8.3      | -8.09-9.97     | -13.94-18.72   | -18.67-14.12   | -11.26-10.18   | -10.01-9.86    | -9.34-9.61       | -12.44-17.55     | -10.41-6.1       | -4.87-5.69        | -8.07-11.87      | -17.41-17.87     | -17.41-10.69     | -6.59-4.75       | -4.97-7.09       | -11.25-16.28     | -17.92-17.19     | -16.93-16.99     | -17.13-17.56     | -18.43-18.39     | -17.81-18.48     | -18.25-18.39     | -14.51-13.7      |
| Θ(142.5°) | -11.36-10.32 | -8.98-7.79     | -7.43-8.47     | -10.99-13.94   | -14.55-12.55   | -10.19-8.51    | -7.4-6.83      | -6.94-8.17       | -11.95-18.56     | -12.8-8.07       | -6.61-6.73        | -7.65-8.92       | -10.27-12.11     | -15.02-14.63     | -11.16-9.99      | -11.52-16.14     | -18.57-19.26     | -18.57-18.57     | -17.24-18.34     | -18.12-18.71     | -18.12-18.71     | -18.36-18.19     | -18.26-16.52     | -13.79-12.41     |
| Θ(150°)   | -10.62-8.89  | -7.41-6.27     | -5.76-6.33     | -8.1-10.91     | -13.16-13.2    | -11.68-10.07   | -8.76-8.18     | -8.67-10.98      | -17.25-17.89     | -13.24-9.42      | -8.21-8.37        | -9.16-9.97       | -10.54-10.76     | -10.71-10.33     | -10.21-11.15     | -12.97-12.36     | -9.88-8.49       | -8.13-8.4        | -8.94-9.64       | -10.46-11.34     | -12.47-14.31     | -17.02-18.31     | -18.17-18.33     | -17.5-13.45      |
| Θ(157.5°) | -9.46-8.05   | -7.05-6.48     | -6.54-7.68     | -10.42-14.38   | -14.16-10.89   | -8.5-7.15      | -6.67-7.08     | -6.75-11.73      | -16.97-15.87     | -11.11-8.66      | -7.87-8.22        | -9.72-12.61      | -16.42-17.11     | -14.12-11.81     | -10.67-9.84      | -8.61-7.23       | -6.14-6.59       | -5.51-5.86       | -6.51-7.32       | -8.34-9.55       | -11.08-13.07     | -15.83-17.35     | -18.63-16.63     | -13.69-11.2      |
| Θ(165°)   | -13.32-12.51 | -12.09-12.4    | -13.97-17.03   | -17.01-11.95   | -8.31-6.11     | -4.89-4.36     | -4.48-5.31     | -7.9-5.6         | -13.21-15.59     | -13.62-11.24     | -10.02-9.85       | -10.75-12.93     | -16.95-17.72     | -18.19-17.67     | -16.45-13.25     | -10.78-9.07      | -7.98-7.37       | -7.25-7.6        | -8.4-9.41        | -10.75-12.43     | -14.49-16.78     | -18.87-19.29     | -17.63-17.06     | -15.23-13.61     |
| Θ(172.5°) | -18.09-17.61 | -18.45-17.71   | -14.98-11.94   | -9.23-7.06     | -5.63-4.91     | -4.75-5.06     | -5.85-7.18     | -9.28-12.21      | -16.91-18.08     | -18.08-17.05     | -14.57-13.36      | -13.16-13.81     | -15.13-17.39     | -18.02-18.07     | -18.19-18.09     | -18.46-16.21     | -14.61-13.66     | -13.53-14.37     | -15.74-17.47     | -18.31-19.31     | -18.23-18.45     | -19.06-17.63     | -18.38-18.97     | -17.96-18.15     |
| Θ(180°)   | -12.05-11.58 | -11.25-10.69   | -9.82-8.8      | -7.88-7.21     | -6.99-7.31     | -8.25-9.72     | -11.88-14.7    | -18.67-18.08     | -17.74-18.01     | -17.26-15.81     | -15.57-15.89      | -16.71-18.36     | -18.02-17.57     | -16.68-18.34     | -18.93-18.26     | -18.38-18.17     | -17.95-18.56     | -18.71-18.34     | -18.51-18.63     | -17.79-18.65     | -17.51-18.02     | -18.38-18.02     | -17.95-18.29     | -15.44-13.26     |
| Freq(Hz)  | 2.45GPol.    | 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°)     | -16.16-15.56 | -14.76-13.72   | -12.77-11.95   | -11.04-10.13   | -9.49-9.21     | -9.12-8.99     | -8.27-9.74     | -10-10.12        | -10.58-11.32     | -12.07-12.72     | -13.71-15.25      | -16.94-18.08     | -18.23-17.48     | -16.51-15.22     | -13.86-12.7      | -12.08-11.85     | -11.81-11.84     | -11.91-12.31     | -12.39-12.56     | -11.63-11.47     | -11.28-11.14     | -11.71-12.21     | -13.04-14.37     | -15.77-16.29     |
| Θ(7.5°)   | -12.79-14.21 | -16.07-17.56   | -18.45-18      | -16.49-14.28   | -12.68-11.79   | -11.25-10.8    | -10.86-11.32   | -11.68-11.75     | -12.01-13.09     | -14.71-16.49     | -18.11-16.69      | -18.28-17.51     | -16.45-15.01     | -13.42-11.8      | -10.23-9.02      | -8.23-7.82       | -7.69-7.5        | -7.47-7.6        | -7.59-7.52       | -7.44-7.39       | -7.8-8.25        | -8.92-9.68       | -10.58-11.64     |                  |
| Θ(15°)    | -8.9-7.98    | -9.47-11.32    | -13.91-17.75   | -18.23-19.07   | -18.73-16.29   | -14.28-12.56   | -11.36-10.75   | -10.16-9.75      | -9.79-10.58      | -11.99-13.27     | -13.38-12.43      | -11.38-10.67     | -10.09-9.52      | -8.86-8.17       | -7.35-6.51       | -5.75-5.16       | -4.72-4.41       | -4.16-4          | -3.89-3.82       | -3.73-3.68       | -3.73-3.8        | -3.91-4.17       | -4.61-5.06       | -5.55-6.14       |
| Θ(22.5°)  | -2.31-3.09   | -4.15-5.46     | -7.14-9.24     | -11.95-15.62   | -17.85-18.87   | -19.18-17.7    | -17.24-14.15   | -12.68-11.55     | -11.25-11.61     | -12.32-11.41     | -10.11-7.88       | -6.17-4.97       | -4.26-3.89       | -3.88-4.06       | -4.21-4.14       | -3.91-3.57       | -3.22-3.03       | -2.94-2.81       | -2.63-2.39       | -2.07-1.68       | -1.36-1.17       | -1.06-1.03       | -1.12-1.33       | -1.56-1.83       |
| Θ(30°)    | -0.62-1.01   | -0.64-1.55     | -2.74-4.08     | -5.4-6.73      | -7.79-7.87     | -9.92-11       |                |                  |                  |                  |                   |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |



# Radiated Composite Gain Data of 2.4GHz/5GHz/6GHz

# Appendix A

|           |               |                 |                 |                 |                 |                 |                 |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |
|-----------|---------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| Θ(22.5°)  | -3.09/-3.98   | -5.31/-5.49     | -5.13/-5.46     | -6.11/-7.67     | -10.29/-16.76   | -17.53/-19.12   | -13.62/-14.04   | -14.99/-14.78     | -12.99/-11.1      | -9.76/-9.34       | -8.92/-8.4        | -6.43/-4.49       | -3.49/-3.35       | -3.72/-4.81       | -6.18/-6.49       | -6.53/-6.33       | -7.86/-10.02      | -13.1/-13.31      | -14.02/-15.13     | -14.19/-11.9      | -10.3/-8.86       | -7.6/-6.02        | -4.14/-3.09       | -3.11/-2.93       |
| Θ(30°)    | -1.79/-2.15   | -2.41/-2.85     | -3.18/-3.67     | -4.16/-5.98     | -9.91/-16.91    | -18.07/-18.24   | -18.14/-17.57   | -19.15/-19.23     | -12.33/-8.49      | -7.46/-4.74       | -7.53/-6.71       | -5.89/-5.56       | -5.47/-4.86       | -4.2/-4.89        | -6.06/-6.31       | -6.04/-6.4        | -8.28/-9.56       | -10.44/-11.26     | -13.68/-14.45     | -12.7/-10.41      | -7.85/-6.17       | -5.48/-5.1        | -3.65/-1.8        | -1.21/-1.46       |
| Θ(32.5°)  | -1.12/-1.59   | -2.13/-3.01     | -4.08/-4.62     | -4.38/-6.22     | -13.09/-16.48   | -11.83/-13.43   | -14.37/-12.65   | -14.31/-12.65     | -16.31/-11.65     | -9.95/-9.24       | -9.45/-7.53       | -5.81/-4.97       | -4.66/-4.27       | -4/-5.02          | -6.98/-7.12       | -7.32/-8.64       | -10.77/-10.67     | -10.94/-12.53     | -15.97/-17.85     | -16.48/-12.98     | -9.75/-6.75       | -5.26/-5.24       | -3.75/-4.16       | -2.27/-1.26       |
| Θ(45°)    | -3.03/-3.07   | -1.61/-1.84     | -2.94/-4.31     | -4.26/-5.17     | -8.75/-11.6     | -11.31/-13.15   | -9.33/-6.46     | -7.55/-14.24      | -18.97/-17.3      | -18.38/-14.89     | -10.78/-9.38      | -6.77/-4.77       | -2.85/-2.5        | -2.86/-3.43       | -5.77/-8.93       | -10.42/-12.44     | -12.92/-10.98     | -12.59/-17.77     | -17.55/-19.25     | -19/-19.04        | -14.48/-8.7       | -5.34/-3.95       | -5/-5.21          | -3.16/-2.57       |
| Θ(52.5°)  | -2.39/-2.6    | -1.86/-2.55     | -3.17/-4        | -4.12/-4.11     | -5.29/-6.47     | -7.38/-8.72     | -7.13/-5.52     | -6.88/-12.08      | -19.34/-18.87     | -16.73/-9.13      | -6.72/-6.58       | -5.98/-3.43       | -1.98/-2.96       | -4.72/-5.34       | -7.76/-11.1       | -11.41/-13.31     | -12.59/-11.47     | -12.86/-17.6      | -16.68/-18.6      | -17.91/-18.25     | -16.9/-12.19      | -8.34/-6.44       | -6.51/-6.39       | -4.02/-4.28       |
| Θ(60°)    | -5.26/-4.95   | -4.34/-4.38     | -3.38/-4.18     | -5.01/-3.22     | -3.85/-5.74     | -7.36/-9.61     | -9.28/-4.77     | -7.84/-11.06      | -13.92/-11.56     | -9.76/-7.27       | -5.66/-4.76       | -6.26/-2.68       | -6.65/-2.46       | -5.11/-6.74       | -9.21/-10.71      | -11.17/-14.51     | -15.25/-14.26     | -16.67/-18.43     | -17.68/-17.08     | -18.31/-14.92     | -14.48/-12.65     | -9.97/-6.84       | -7.61/-6.4        | -4.75/-4.84       |
| Θ(67.5°)  | -5.46/-5.57   | -6.67/-6.59     | -3.96/-3.98     | -4.76/-3.89     | -5.9/-7.06      | -8.3/-9.79      | -8.66/-9.27     | -8.16/-11.24      | -14.94/-10.48     | -10.17/-10.7      | -8.73/-5.94       | -4.54/-4.15       | -4.29/-5.47       | -8/-8.49          | -10.13/-11.52     | -12.21/-16.45     | -15.66/-12.95     | -12.39/-14.95     | -17.95/-18.45     | -16.68/-13.49     | -15.56/-16.62     | -11.64/-9.53      | -9.56/-9.34       | -7.98/-5.41       |
| Θ(75°)    | -7.66/-8.14   | -9.36/-10.35    | -6.52/-5.92     | -6.44/-5.75     | -7.53/-7.23     | -8.88/-14.43    | -14.96/-15.56   | -10.97/-15.45     | -18.14/-12.92     | -11.5/-16.22      | -11.13/-6.8       | -5.82/-5.05       | -5.17/-7.04       | -9.44/-7.89       | -10.03/-11.61     | -11.95/-17.72     | -16.39/-15.7      | -15.38/-16.93     | -17.73/-18.2      | -17.28/-15.07     | -18.13/-17.09     | -18.19/-13.27     | -12.59/-10.93     | -10.76/-8.12      |
| Θ(82.5°)  | -9.28/-9.07   | -9.54/-12.35    | -7.98/-8.44     | -11.14/-10.19   | -11.18/-9.16    | -9.63/-11.45    | -10.77/-17.34   | -11.14/-16.23     | -18.46/-10.75     | -12.35/-18.66     | -16.62/-7.73      | -8.6/-6.23        | -7.06/-10.05      | -14.31/-10.75     | -11.86/-12.08     | -12.07/-17.43     | -14.35/-12.85     | -12.56/-18.22     | -17.83/-18.41     | -16.54/-13.93     | -18.28/-17.92     | -18.45/-17.61     | -14.97/-13.59     | -11.67/-9.33      |
| Θ(90°)    | -13.83/-13.22 | -10.34/-14.71   | -10.62/-9.75    | -13.83/-12.72   | -12.41/-10.02   | -12.75/-16.28   | -13.76/-18.75   | -12.12/-18.45     | -19.02/-15.98     | -18.18/-14.9      | -18.49/-8.58      | -9.49/-9.48       | -9.33/-11.97      | -13.25/-10.26     | -11.17/-9.43      | -10.55/-13.71     | -11.84/-14.22     | -14.75/-18.79     | -18.83/-17.97     | -18.71/-17.14     | -18.08/-18.34     | -17.93/-18.08     | -18.09/-19.09     | -18.84/-13.2      |
| Θ(97.5°)  | -13.54/-19.02 | -16.42/-13.91   | -11.51/-13.67   | -18.82/-13.86   | -14.64/-10.9    | -9.39/-14.09    | -13.74/-18.5    | -17.7/-16.13      | -17.22/-14.54     | -17.28/-8.74      | -10.24/-10.53     | -11.58/-10        | -10.11/-10.91     | -11.33/-10.94     | -11.31/-10.73     | -14.55/-15.91     | -18.56/-18.05     | -18.1/-18.27      | -17.21/-17.56     | -17.78/-19.06     | -17.88/-18.46     | -17.69/-18.16     | -16.03/-12.43     |                   |
| Θ(105°)   | -12.35/-16.96 | -17.85/-14.44   | -10.42/-14.14   | -17.8/-13.84    | -16.7/-14.72    | -12.97/-13.15   | -11.75/-18.19   | -17.15/-17.86     | -18.05/-12.03     | -16.32/-14.02     | -11.57/-13.22     | -11.2/-16.3       | -11.29/-10.67     | -8.4/-10.14       | -11.78/-8.2       | -10.25/-12.88     | -15.47/-18.25     | -18.45/-19.04     | -17.92/-18.22     | -17.43/-18.69     | -18.93/-18.51     | -18.04/-17.86     | -17.73/-17.57     | -15.07/-13.79     |
| Θ(112.5°) | -17.84/-17.66 | -15.74/-17.54   | -12.21/-18.71   | -18.95/-12.55   | -10.43/-13.57   | -12.46/-17.06   | -13.98/-18.44   | -16.65/-14.12     | -18.14/-12.59     | -15.6/-12.07      | -14.08/-12.1      | -11.86/-17.88     | -11.33/-8.87      | -8.51/-10.32      | -10.01/-9.48      | -10.24/-11.72     | -15.98/-16.31     | -14.71/-18.5      | -17.55/-18.63     | -18.08/-16.5      | -14.27/-17.71     | -18.24/-17.89     | -17.53/-18.03     | -19/-14.02        |
| Θ(120°)   | -18.94/-19.02 | -15.45/-13.31   | -9.94/-17.68    | -17.32/-15.17   | -12.42/-11.95   | -9.76/-11.4     | -14.08/-15.02   | -18.7/-14.09      | -18.34/-14.62     | -14.03/-18.09     | -15.68/-10.98     | -9.4/-15.57       | -6.75/-12.93      | -15.98/-10.7      | -9.77/-11.24      | -15.59/-17.82     | -17.46/-17.9      | -17.98/-17.84     | -17.64/-18.56     | -17.06/-18.48     | -18.07/-18.32     | -19.26/-13.91     | -12.45/-13.34     |                   |
| Θ(127.5°) | -17.63/-13.4  | -18.64/-18.68   | -15.06/-13.72   | -15.96/-15.02   | -17.47/-17.83   | -11.88/-18.26   | -13.7/-12.87    | -18.87/-18.67     | -17.15/-18.12     | -18.7/-18.72      | -17.99/-10.73     | -16.37/-18.38     | -9.18/-9.05       | -13.48/-15.29     | -10.78/-13.42     | -7.66/-8.74       | -16.51/-15.64     | -11.69/-16.26     | -18.94/-18.53     | -18.93/-16.83     | -13.52/-14.7      | -18.43/-18.66     | -18.04/-10.36     | -9.57/-13.71      |
| Θ(135°)   | -19.14/-18.31 | -15.37/-16.97   | -18.13/-18.61   | -13.13/-14.34   | -15.41/-12.81   | -9.69/-11.15    | -14.04/-11.26   | -15.04/-19.16     | -17.61/-17.44     | -18.24/-17.09     | -11.39/-9.38      | -9.67/-12.32      | -8.29/-9.7        | -9.07/-9.12       | -18.67/-10.85     | -7.55/-13.06      | -17.77/-15.95     | -12.58/-18.5      | -16.76/-18.06     | -18.56/-16.2      | -16.34/-13.82     | -13.66/-17.43     | -14.92/-16.64     | -13.75/-16.5      |
| Θ(142.5°) | -16.45/-13.88 | -12.62/-14.59   | -18.36/-16.67   | -17.32/-16.79   | -19.09/-17      | -14.18/-18.82   | -15.74/-16.03   | -13.25/-18.42     | -14.11/-9.92      | -8.86/-9.58       | -17.05/-16.66     | -16.72/-10.77     | -8.75/-10.94      | -10.17/-10.43     | -8.17/-9.25       | -16.44/-17.17     | -18.04/-12.56     | -11.21/-17.88     | -18.42/-17.7      | -17.73/-18.31     | -18.06/-17.48     | -18.18/-18.49     | -18.74/-18.51     | -13.96/-16.55     |
| Θ(150°)   | -18.34/-14.42 | -11.03/-11.09   | -14.86/-14.42   | -14.73/-16.34   | -10.41/-6.97    | -7.24/-10.83    | -17.41/-16.5    | -13.98/-18.18     | -18.31/-18.42     | -18.18/-18.18     | -17.79/-16.68     | -10.78/-7.73      | -6.77/-7.22       | -8.18/-10.43      | -14.51/-17.59     | -17.69/-17.15     | -13.35/-14.48     | -18.58/-17.48     | -18.18/-18.6      | -18.21/-15.74     | -15.79/-18.85     | -18.97/-17.68     | -12.81/-10.18     | -11.11/-14.27     |
| Θ(157.5°) | -12.62/-11.02 | -11.21/-11.11   | -9.39/-8.19     | -8.63/-12.03    | -19.17/-13.24   | -10.65/-11.33   | -15.14/-15.77   | -13.92/-15.28     | -18.69/-17.17     | -13.56/-11.27     | -10.84/-11.89     | -14.35/-18.6      | -18.47/-14.72     | -13.16/-14.61     | -19/-18.3         | -18.78/-14.24     | -12.47/-14.78     | -17.83/-18.54     | -18.23/-18.34     | -18.02/-18.63     | -18.63/-18.03     | -18.82/-19.06     | -17.71/-14.87     | -11.32/-11.86     |
| Θ(165°)   | -10.99/-12.36 | -11.38/-9.33    | -8.23/-9.22     | -11.87/-17.56   | -17.58/-12.56   | -10.92/-11.56   | -15.66/-17.43   | -15.7/-15.17      | -13.61/-11.52     | -9.94/-10.03      | -11.01/-12.85     | -16.58/-18.66     | -18.59/-13.74     | -11.99/-12.92     | -14.74/-14.35     | -13.14/-12.16     | -13.88/-17.93     | -18.84/-18.83     | -16.76/-18.74     | -16.56/-17.67     | -14.99/-13.74     | -12.94/-13.24     | -11.71/-9.79      | -10.3/-10.7       |
| Θ(172.5°) | -19.09/-16.69 | -12.64/-11.13   | -11.38/-12.02   | -12.5/-11.97    | -11.44/-11.1    | -12.02/-14.14   | -18.5/-18.67    | -18.3/-17.43      | -18.26/-18.37     | -17.83/-17.58     | -19.29/-13.4      | -10.25/-8.66      | -8.37/-8          | -18.5/-8.67       | -10.15/-11.06     | -12.31/-13.02     | -14.1/-15.52      | -18.48/-17.28     | -18.8/-18.77      | -18.67/-17.99     | -18.38/-16.69     | -15.19/-14.05     | -14.27/-17.4      | -17.71/-18.62     |
| Θ(180°)   | -17.92/-17.8  | -14.76/-14.16   | -13.78/-15.68   | -17.94/-18.98   | -18.43/-18.57   | -18.14/-18.13   | -18.38/-14.95   | -12.95/-11.67     | -11.91/-11.78     | -12.36/-11.85     | -11.87/-11.39     | -11.42/-11.48     | -12.19/-12.99     | -14.68/-15.95     | -17.84/-17.34     | -18.39/-17.74     | -18.05/-18.43     | -15.48/-18.19     | -16.62/-14.56     | -13.07/-13.3      | -13.28/-13.96     | -13.57/-13.07     | -13.81/-16.9      | -18.52/-18.01     |
| 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°)     | -16.67/-17.98 | -16.98/-13.62   | -10.23/-7.61    | -6.59/-5.68     | -5.23/-4.27     | -4.02/-3.47     | -2.82/-2.46     | -2.47/-3.05       | -3.79/-4.51       | -6.56/-6.28       | -7.28/-8.4        | -10.38/-13.92     | -16.22/-17.98     | -14.33/-12.21     | -10.26/-8.34      | -6.83/-5.93       | -5.02/-4.23       | -3.86/-3.94       | -4.02/-4.23       | -4.31/-4.75       | -4.86/-5.38       | -6.26/-7.53       | -8.48/-10.16      | -12.83/-15.05     |
| Θ(7.5°)   | -13.33/-18.71 | -17.69/-18.21   | -13.49/-10.84   | -10.13/-9.59    | -9.16/-8.42     | -8.96/-8.37     | -7.98/-7.31     | -7.44/-7.86       | -8.45/-9.13       | -9.75/-10.27      | -11.11/-12.05     | -13.54/-17.43     | -16.95/-12.97     | -10.88/-9.78      | -8.19/-6.95       | -5.91/-5.58       | -4.44/-3.43       | -2.79/-2.73       | -2.95/-2.88       | -2.54/-2.11       | -2.16/-2.55       | -3.16/-2.45       | -5.27/-6.67       | -8.36/-10.43      |
| Θ(15°)    | -9.21/-12.73  | -16.46/-19.34   | -18.21/-18.37   | -16.69/-14.97   | -13.51/-13.2    | -14.42/-16.11   | -17.33/-18.59   | -18.49/-18.63     | -17.32/-15.99     | -16.01/-17.43     | -17.73/-16.51     | -15.23/-13.63     | -11.70/-8.14      | -6.88/-6.32       | -5.85/-5.42       | -5.3/-4.86        | -3.55/-2.71       | -1.86/-1.36       | -0.98/-1          | -0.93/-0.88       | -0.91/-1.34       | -1.73/-2.33       | -3.01/-3.89       | -5.23/-7.1        |
| Θ(22.5°)  | -5.79/-8.36   | -10.42/-11.46   | -12.05/-14.37   | -14.68/-18.02   | -18.46/-18.81   | -16.42/-13.1    | -11.61/-11.88   | -13.14/-14.1      | -14.2/-14.11      | -14.2/-14.23      | -7.12/-6.35       | -5.63/-5.1        | -4.79/-4.21       | -3.48/-2.94       | -1.69/-0.25       | 1.02/1.8          | 1.93/1.6          | 1.21/1.05         | 1.25/1.26         | 1.17/-1.76        | -1.96/-2.37       | -3.11/-4.53       |                   |                   |
| Θ(30°)    | -1.49/-2.66   | -4.5/-4.94      | -8.27/-7.48     | -6.86/-7.55     | -9.11/-15.6     | -9.67/-6.64     | -4.9/-4.24      | -4.05/-4.03       | -4.48/-4.54       | -4.39/-5.14       | -5.68/-3.47       | -2.66/-1.74       | -1.5/-1.41        | -1.28/-0.6        | 0.55/-1.28        | 2.12/2.8          | 2.88/2.39         | 1.68/1.42         | 1.27/1.47         | 1.53/2.17         | 2.49/2.13         | 1.30/6.6          | 0.27/-0.34        | -0.93/-1.39       |
| Θ(37.5°)  | 0.80/-22      | -1.54/-4.45     | -6.63/-5.2      | -3.7/-4.32      | -6.95/-10.78    | -9.25/-5.39     | -3.22/-0.22     | -1.39/-1.39       | -1.76/-1.58       | -1.07/-1.06       | -1.86/-2.69       | -2.18/-1.43       | -1.21/-1.1        | -0.36/-1.21       | 2.42/2.97         | 3.37/3.11         | 1.940/5.4         | -0.20/-14         | 0.98/1.49         | 1.33/1.61         | 2.31/2.92         | 2.94/2.8          | 2.22/1.29         | 0.67/0.65         |
| Θ(45°)    | 0.75/0.57     | 0.26/-1.1       | -2.27/-1.85     | -1.01/-1.2      | -4.77/-6.78     | -5.02/-3.69     | -2.45/-1.26     | -0.67/-0.87       | -1.91/-2.65       | -1.51/0.07        | -0.34/-1.93       | -1.95/-1.85       | -2.27/-1.5        | 0.17/1.47         | 2.41/2.29         | 1.36/0.27         | 0.06/0.85         | 1.240/6.7         | -0.57/-1.03       | -0.71/0.24        | 1.25/2.27         | 3.0/2.1           | 2.73/2.59         | 2.56/-1.6         |
| Θ(52.5°)  | 0.28/0.96     | 0.62/-0.28      | -0.29/0.04      | 0.40/-0.16      | -1.4/-1.8       | -1.33/-1.15     | -0.67/0.5       | 1.72/1.8          | 0.45/-0.91        | -0.32/0.96        | 0.28/-1.26        | -1.92/-3.22       | -2.46/0.32        | 0.86/0.42         | 1.05/-1.1         | 0.27/0.21         | 1.29/1.92         | 1.61/0.39         | -0.79/-0.67       | -0.33/0.57        | 1.59/1.94         | 2.76/2.99         | 2.13/2.61         | 2.91/1.4          |
| Θ(60°)    | -0.23/0.49    | -1.13/-1.55     | -0.24/-0.38     | 0.59/1.7        | 1.31/0.81       | 0.19/-0.31      | -0.14/-1.32     | 2.83/2.9          | 1.84/1.23         | 1.46/2.15         | 2.06/0.69         | -0.45/-2.78       | -2.41/0.96        | 1.77/0.43         | 0.87/0.98         | 0.58/1.68         | 2.88/0.05         | 2.29/0.71         | -1.14/-0.71       | 0.06/0.94         | 1.67/1.55         | 2.52/8.6          | 1.84/2.19         | 1.85/-0.27        |
| Θ(67.5°)  | -1.36/-1.01   | -3.22/-2.03     | 0.75/0.07       | 0.99/2.03       | 1.79/1.55       | 0.48/-0.29      |                 |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |



# Radiated Composite Gain Data of 2.4GHz/5GHz/6GHz

# Appendix A

|           |               |                |                |                |                |                |                |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |
|-----------|---------------|----------------|----------------|----------------|----------------|----------------|----------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
| Θ(67.5°)  | -6.63/-5.44   | -5.09/-3.98    | -4.48/-3.17    | -2.35/-4.75    | -6.09/-6.78    | -7.98/-12.68   | -10.74/-11.57  | -10.05/-9.13     | -9.68/-13.11     | -9.5/-8.25       | -4.49/-2.91      | -2.36/-4.05      | -2.04/-3.49      | -5.69/-7.32      | -10.15/-11.13    | -18.53/-18.01    | -18.87/-15.9     | -14/-17.87       | -18.51/-18.51    | -11.74/-12.81    | -18.32/-18.41    | -15.15/-13.23    | -10.48/-9.09     | -6.2/-6.8        |
| Θ(75°)    | -6.33/-4.57   | -5.7/-5.22     | -6.74/-5.43    | -3.65/-5.28    | -5.99/-7.92    | -8.69/-14.17   | -10.26/-12.25  | -10.72/-10.21    | -10.35/-12.77    | -11.12/-12.22    | -7.74/-7.59      | -3.98/-6.04      | -3.26/-4.95      | -8.58/-8.08      | -10.55/-10.96    | -15.84/-17.21    | -17.98/-14.23    | -15.02/-17.64    | -19.13/-18.04    | -11.88/-11.48    | -17.93/-17.88    | -18.91/-16.37    | -13.49/-14.48    | -10.35/-7.46     |
| Θ(82.5°)  | -10.29/-7.35  | -8.39/-7.22    | -9.72/-9.94    | -7.61/-7.43    | -6.63/-8.43    | -9.56/-17.34   | -13.01/-16.84  | -10.51/-11.94    | -13.95/-13.07    | -13.11/-18.3     | -10.76/-8.88     | -4.7/-8.33       | -5.51/-7.52      | -10.85/-11.45    | -11.64/-11.63    | -12.77/-13.6     | -17.58/-16.15    | -17.58/-18.58    | -17.95/-16.93    | -12.07/-13.3     | -18.22/-18.99    | -18.64/-18.66    | -15.71/-13.55    | -11.47/-10.86    |
| Θ(90°)    | -11.51/-10.14 | -11.47/-9.05   | -11.44/-12.87  | -12.57/-12.06  | -9.14/-11.42   | -10.66/-18.57  | -15.1/-19.45   | -11.31/-16.07    | -19.31/-12.78    | -15.21/-18.07    | -15.75/-9.5      | -7.11/-10.4      | -8.63/-9.23      | -10.95/-13.04    | -10.13/-10.79    | -11.4/-14.08     | -17.58/-18.82    | -19/-17.91       | -18.92/-17.26    | -13.86/-15.82    | -19.01/-17.95    | -18.35/-18.77    | -18.91/-19.06    | -15.06/-11.25    |
| Θ(97.5°)  | -16.72/-12.1  | -11.06/-8.64   | -14.42/-18.1   | -18.81/-18.77  | -12.88/-13.81  | -12.83/-16.86  | -12.26/-18.51  | -11.49/-16.47    | -17.58/-16.47    | -19.19/-16.57    | -18.1/-9.08      | -9.33/-10.62     | -9.86/-13.78     | -9.74/-10.96     | -9.24/-9.1       | -12.74/-14.98    | -17.8/-19.18     | -17.27/-17.36    | -17.88/-17.21    | -16.66/-19.06    | -18.59/-18.35    | -17.94/-17.67    | -18.17/-18.55    | -18.24/-15.59    |
| Θ(105°)   | -18.83/-13.67 | -13.68/-13.06  | -18.59/-17.43  | -17.94/-18.99  | -13.29/-13.01  | -12.55/-17.5   | -15.47/-17.64  | -11.71/-16.07    | -18.36/-13.52    | -18.19/-11.59    | -18.85/-11.9     | -12.72/-12.83    | -11.35/-12.75    | -8.95/-11.66     | -9.07/-8.98      | -11.57/-13.35    | -18.57/-18.16    | -18.65/-19.15    | -17.38/-18.85    | -18.16/-19.12    | -17.78/-17.18    | -18.18/-18.5     | -19.07/-16.85    | -15.4/-19.13     |
| Θ(112.5°) | -18.12/-18.82 | -17.94/-16.32  | -18.2/-16.51   | -18.59/-18.74  | -13.96/-12.48  | -10.38/-15.88  | -16.32/-17.82  | -15.97/-14.09    | -16.32/-15.1     | -15.97/-13.28    | -15.27/-9.53     | -14.94/-14.41    | -11.35/-9.73     | -7.81/-11.17     | -9.62/-7.35      | -12.54/-13.69    | -19/-18.43       | -17.52/-18       | -18.85/-17.85    | -19.28/-18.53    | -18.28/-18.02    | -19.14/-17.63    | -17.26/-18.65    | -17.64/-17.38    |
| Θ(120°)   | -18.37/-15.34 | -18.56/-18.37  | -14.78/-17.78  | -15.78/-17.49  | -13.31/-17.13  | -15.11/-11.92  | -9.92/-13.25   | -18.12/-15.66    | -19.25/-12.62    | -13.26/-15.3     | -17.9/-13.39     | -15.32/-14.63    | -10.59/-7.69     | -6.57/-9.74      | -11.37/-10.99    | -12.33/-15.5     | -15.02/-14.46    | -17.13/-18.15    | -16.26/-19.09    | -16.52/-17.84    | -19.09/-16.84    | -18.05/-18.76    | -15.93/-16.41    | -18.37/-19.37    |
| Θ(127.5°) | -18.49/-12.02 | -10.37/-15.98  | -17.73/-17.66  | -17.89/-18.49  | -15.38/-14.92  | -17.84/-18.71  | -17.51/-13.05  | -18.51/-11.9     | -15.71/-18.81    | -14.62/-18.31    | -18.49/-12.21    | -15.72/-11.5     | -8.41/-8.06      | -7.58/-18.66     | -11.99/-8.32     | -12.13/-16.09    | -17.09/-19.08    | -16.63/-19.22    | -16.15/-17.4     | -15.48/-18.29    | -18.98/-18.55    | -12.12/-12.61    | -17.99/-17.83    |                  |
| Θ(135°)   | -13.59/-12.92 | -16.15/-18.73  | -17.14/-19.1   | -17.8/-16.41   | -13.67/-14.1   | -11.33/-12.12  | -12.33/-11.29  | -17/-17.92       | -16.09/-18.36    | -18.05/-13.64    | -11.83/-13.85    | -18.11/-14.49    | -7.19/-8.03      | -12.69/-10.53    | -11.56/-13.56    | -8.26/-10.07     | -14.22/-18.18    | -17.82/-18.32    | -17/-18.47       | -16.09/-16.13    | -14.58/-18.13    | -17.47/-17.96    | -17.51/-16.37    | -11.82/-13.8     |
| Θ(142.5°) | -14.71/-14.2  | -14.51/-16.74  | -16.03/-17.66  | -19.31/-17.66  | -19/-18.94     | -18.44/-18.28  | -18.52/-11.5   | -12.81/-18.48    | -18.17/-18.58    | -15.18/-16.22    | -16.05/-12.97    | -9.36/-8.68      | -10.41/-11.95    | -15.5/-11.75     | -14.05/-12.22    | -13.94/-11.6     | -13.69/-17.72    | -16.18/-17.39    | -17.47/-15.63    | -17.68/-16.61    | -18.69/-18.19    | -19.09/-18.26    | -17/-15.01       |                  |
| Θ(150°)   | -18.36/-17.6  | -16.95/-14.34  | -17.82/-19.07  | -14.13/-12.48  | -13.29/-11.3   | -8.79/-10.2    | -16.51/-18.71  | -18.11/-17.13    | -18.48/-18.43    | -18.98/-17.51    | -19.23/-18.66    | -14/-10.89       | -10.08/-9.97     | -8.17/-13.4      | -16.74/-13.73    | -15.72/-18.86    | -17.95/-18.56    | -18.12/-19.3     | -17.25/-18.45    | -18.58/-17.7     | -18.98/-18.1     | -19.15/-18.05    | -14.44/-14.31    | -15.26/-17.81    |
| Θ(157.5°) | -12.05/-10.67 | -9.22/-12.08   | -14.43/-11.11  | -8.99/-9.42    | -11.89/-14.46  | -11.81/-11.05  | -13.77/-16     | -14.64/-16.25    | -18.13/-15.48    | -13.68/-15.2     | -14.31/-15.49    | -19.11/-18.12    | -11.55/-10.13    | -15.75/-18.93    | -17.29/-15.81    | -13.12/-12.67    | -13.61/-16.14    | -18.82/-17.97    | -17.75/-18.33    | -18.41/-18.03    | -16.31/-16.91    | -16.96/-16.94    | -15.72/-15.95    | -14.52/-11.08    |
| Θ(165°)   | -10.87/-11.94 | -15.72/-10.47  | -9.41/-8.45    | -9.45/-12.63   | -18.69/-17.8   | -14.04/-13.17  | -13.85/-16.3   | -18.11/-18.75    | -16.08/-12.27    | -11.34/-12.19    | -14.49/-18.76    | -18.14/-17.22    | -14.33/-14.24    | -16.65/-16.96    | -14.33/-11.49    | -10.37/-11.44    | -14.71/-18.6     | -18.86/-13.17    | -12.08/-12.58    | -16.03/-17.75    | -18.45/-17.68    | -17.57/-14.19    | -13.25/-10.43    | -9.04/-9.98      |
| Θ(172.5°) | -18.12/-19.15 | -18.35/-17.96  | -15.59/-14.45  | -16.16/-12.67  | -13.41/-18.87  | -16.16/-17.82  | -18.69/-18.92  | -18.96/-17.86    | -17.77/-18.61    | -14.91/-18.16    | -9.47/-8.65      | -8.22/-8.07      | -18.46/-18.36    | -9.56/-10.82     | -13.22/-18.09    | -18.46/-18.36    | -17.76/-15.96    | -15.49/-15.86    | -18.49/-18.64    | -19.04/-17.3     | -16.88/-14.47    | -15.36/-15.27    | -17/-18.98       |                  |
| Θ(180°)   | -18.8/-18.27  | -17.53/-17.75  | -18.87/-17.74  | -18.2/-18.35   | -18.19/-18.62  | -18.87/-18.37  | -18.25/-17.73  | -15.31/-12.68    | -10.65/-10.12    | -10.28/-10.65    | -11.36/-12.16    | -12.91/-13.9     | -15.74/-18.59    | -17.32/-18.52    | -18.96/-18.71    | -17.74/-18.16    | -18.32/-17.84    | -17.3/-13.63     | -12.51/-12.89    | -12.42/-12.69    | -13.73/-13.94    | -13.4/-11.91     | -12.49/-16.14    | -19.04/-19.25    |
| Freq(GPz) | 5.785GPz      | 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°)     | -19.03/-17.79 | -17.68/-15.28  | -11.81/-9.99   | -7.89/-6.79    | -5.7/-5.12     | -4.43/-4.02    | -4.1/-3.94     | -3.47/-3.17      | -3.44/-4.1       | -4.89/-6.02      | -7.21/-8.15      | -9.34/-11.35     | -14.93/-19.23    | -18.61/-16.41    | -12.5/-10.35     | -8.69/-7.11      | -5.98/-5.01      | -4.42/-4.08      | -3.99/-3.8       | -3.62/-4.05      | -4.95/-5.57      | -6.56/-7.29      | -8.1/-9.16       | -10.89/-14.88    |
| Θ(7.5°)   | -12.65/-16.59 | -17.97/-18.37  | -16.12/-93     | -10.3/-9.19    | -8.47/-8.05    | -7.17/-6.54    | -5.98/-5.29    | -5.14/-5.22      | -5.75/-6.55      | -7.48/-8.96      | -10.76/-12.96    | -15.58/-17.05    | -17.65/-19.3     | -14.11/-10.52    | -8.46/-7.38      | -6.16/-4.59      | -3.4/-2.73       | -2.31/-1.86      | -1.49/-1.55      | -1.83/-1.97      | -2.08/-2.09      | -2.7/-3.51       | -4.58/-7.3       | -7.57/-9.58      |
| Θ(15°)    | -10.87/-15.64 | -17.33/-18.16  | -16.86/-17.82  | -18.33/-19.11  | -16.84/-17.86  | -18.53/-13.97  | -11.33/-9.41   | -8.6/-9.11       | -10.49/-12.05    | -18.62/-18.43    | -18.07/-15.55    | -13.85/-12.19    | -9.42/-6.69      | -4.77/-3.4       | -1.93/-0.58      | 0.41/1           | 1.31/1.32        | 1.71/0.79        | 0.62/0.19        | -0.18/-0.81      | -1.69/-2.54      | -3.32/-4.28      | -5.98/-7.65      |                  |
| Θ(22.5°)  | -7.57/-9.88   | -11.41/-12.88  | -14.94/-13.1   | -11.69/-10.36  | -10.08/-10.66  | -13.45/-16.61  | -13/-9.98      | -9.56/-10.85     | -11.71/-11.14    | -11.17/-12.14    | -11.22/-8.4      | -6.4/-5.07       | -4.24/-4.29      | -4.38/-3.73      | -2.79/-1.58      | -0.17/0.96       | 1.632/0.5        | 2.171/1.91       | 1.44/1.06        | 1.09/1.56        | 1.69/1.35        | 0.5/-0.99        | -2.44/-3.83      | -4.82/-5.75      |
| Θ(30°)    | -3.34/-3.59   | -4.94/-6.43    | -8.16/-9.74    | -9.59/-7.56    | -6.34/-7.54    | -6.4/-4.4      | -4.65/-5.11    | -5.45/-5.22      | -5.18/-5.04      | -4.86/-4.68      | -3.17/-1.24      | -0.81/-1.73      | -2.14/-1.59      | -0.65/0.2        | 1/1.3            | 1.14/1.01        | 1.632/0.27       | 2.462/4.3        | 2.442/4.6        | 2.743/0.9        | 2.85/1.89        | 0.66/-0.91       | -2.26/-3.02      |                  |
| Θ(37.5°)  | -1.3/-0.1     | -0.56/-1.37    | -2.5/-3.6      | -9.17/-7.38    | -5.13/-5.79    | -7.33/-4.49    | -1.73/-1.15    | -2.05/-3.17      | -2.75/-0.79      | 0.47/0.27        | -0.94/-1.82      | -1.2/-0.09       | 0.21/0.42        | -0.41/0.4        | 0.83/1.4         | 1.76/1.45        | 1.192/0.3        | 2.772/83         | 2.32/12          | 2.03/1.92        | 2.662/96         | 2.451/23         | -0.47/-1.95      |                  |
| Θ(45°)    | 0.67/1.52     | 0.29/-1.88     | -1.71/-1.92    | -4.55/-3.5     | -1.18/-1.56    | -2.37/-0.63    | 0.77/0.6       | -0.83/-2.68      | -2.62/0.29       | 1.48/0.86        | 0.12/-0.87       | -0.99/-0.45      | -1.17/-1.96      | -0.21/0.9        | 2.672/61         | 2.39/2.2         | 2.372/22         | 1.421/39         | 1.83/2.07        | 1.45/1.17        | 0.89/1.3         | 3.15/3.95        | 3.342/33         | 0.7/-0.36        |
| Θ(52.5°)  | 0.54/1.81     | 0.51/-2        | -0.72/0.37     | -1.33/-0.84    | 0.51/-0.09     | -1.1/-0.65     | 0.55/-1.45     | 1.46/-0.33       | -2.49/0.25       | 2.15/-1.52       | 0.72/-1.29       | -1.07/-0.5       | -0.95/-0.1       | 2.3/12           | 2.28/1.62        | 1.52/1.31        | 0.42/-0.19       | 0.05/0.56        | 0.84/1.11        | 1.07/1.18        | 0.43/0.38        | 2.113/0.99       | 3.693/36         | 1.571/-1.09      |
| Θ(60°)    | 1.131/68      | 1.02/-2.06     | -1.15/1.88     | 1.74/1.03      | 1.92/1.14      | 0.07/-0.75     | 0.352/1        | 2.822/31         | -0.031/34        | 3.863/12         | 2.06/-0.65       | -1.22/-0.13      | 0.21/0.5         | 2.022/97         | 2.181/98         | 1.23/0.64        | 0.34/-0.66       | -0.45/0.24       | 0.17/0.36        | 0.45/1.65        | 1.38/0.38        | 2.012/41         | 3.473/33         | 1.04/0.54        |
| Θ(67.5°)  | 0.87/1.02     | 0.42/-1.91     | -1.722/47      | 2.64/1.01      | 0.90/94        | -0.15/-0.74    | 0.41/1.79      | 2.852/36         | 0.41/38          | 4.313/67         | 2.390/31         | -0.96/-0.49      | 0.63/1.72        | 2.892/72         | 1.71/85          | 1.31/99          | -0.07/-0.73      | 0.66/0.32        | -0.89/-0.57      | -0.08/-1.59      | 1.680/69         | 1.450/73         | 2.082/37         | 1.27/0.51        |
| Θ(75°)    | 1.51/0.4      | -0.61/-1.9     | -2.992/33      | 2.2/0.7        | 0.77/0.55      | -0.45/-1.42    | -0.73/0.76     | 1.84/1.57        | -0.64/0.09       | 3.3/3.59         | 1.29/0.15        | -1.65/-1.79      | -0.62/-0.95      | 2.672/0.08       | 1.272/52         | 1.68/1.9         | 1.19/-0.38       | 0.67/0.75        | -1.47/-1.75      | 0.2/1.6          | 2.25/0.38        | 0.17/-0.95       | 1.18/1.71        | 0.86/0.03        |
| Θ(82.5°)  | 0.71/-0.4     | -1.71/-2.33    | -4.9/0.95      | 0.54/0.14      | 0.11/-0.3      | -0.79/-1.54    | -2.13/-1.29    | 0.22/0.42        | -2.61/-1.18      | 1.56/2.4         | -0.67/-1.47      | -2.49/-2.42      | -2.452/1.1       | 1.19/0.13        | 0.58/1.92        | 1.72/29          | 1.01/-0.48       | 0.12/0           | -2.18/-1.24      | -0.07/0.81       | 1.32/0.39        | -0.88/-2.15      | -0.5/0.92        | -0.25/-0.82      |
| Θ(90°)    | -1.06/-1.19   | -3.41/-2.65    | -4.98/-1.57    | -1.65/-1.29    | -1.69/-2.47    | -1.83/-2.52    | -4.9/-4.43     | -2.36/-0.9       | -3.31/-2.84      | -1.081/33        | -1.96/-2.64      | -4.51/-2.53      | -5.93/1.1        | 0.16/-2.2        | -2.5/-0.61       | -0.14/1.03       | 0.24/-1.58       | -1.31/-1.72      | -4.02/-3.6       | -1.44/0.13       | -0.21/-0.18      | -2.57/-3.4       | -2.57/-0.3       | -0.75/-0.98      |
| Θ(97.5°)  | -2.71/-1.92   | -4.65/-0.54    | -6.68/-4.35    | -3.66/-3.17    | -3.67/-4.52    | -2.42/-2.63    | -6.17/-5.65    | -3.58/-2.58      | -3.54/-3.16      | -3.75/-1.63      | -3.67/-1.52      | -6.28/-3.4       | -7.72/-0.17      | -1.28/-4.6       | -6.94/-4.26      | -2.32/-4.29      | -2.29/-4.62      | -3.41/-3         | -5.29/-6.94      | -4.69/-1.38      | -2.91/-1.73      | -4.51/-4.33      | -2.62/-1.84      | -2.27/-1.97      |
| Θ(105°)   | -3.54/-2.99   | -7.82/-7.13    | -5.06/-5.97    | -4.33/-5.11    | -8.69/-7.48    | -5.22/-5.68    | -7.96/-6.86    | -5.87/-4         | -3.91/-3.75      | -7.29/-5.1       | -5.16/-7.1       | -10.78/-5.07     | -7.71/-3.55      | -4.59/-7.73      | -9.87/-10.29     | -5.7/-5.29       | -5.6/5           | -3.92/-2.91      | -4.55/-6.72      | -8.46/-3.14      | -3.49/-3.47      | -5.55/-4.11      | -3.38/-2.71      | -3.28/-2.36      |
| Θ(112.5°) | -4.78/-4.4    | -7.19/-5.88    | -5.82/-9.38    | -6.54/-8.15    | -10.77/-6.79   | -6.53/-8.71    | -7.97/-7.88    | -8.33/-8.14      | -8.02/-7.78      | -7.68/-8.47      | -9.71/-11.75     | -11.99/-7.79     | -10.39/-6.21     | -5.67/-7.71      | -9.54/-7.86      | -6.56/-5.31      | -6.59/-12.23     | -3.39/-2.67      | -6.02/-7.29      | -7.42/-3.57      | -3.11/-4.1</     |                  |                  |                  |



# Radiated Composite Gain Data of 2.4GHz/5GHz/6GHz

# Appendix A

|           |               |                |                |                |                |                |                |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |
|-----------|---------------|----------------|----------------|----------------|----------------|----------------|----------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
| Θ(120°)   | -18.89/-17.94 | -17.91/-19.18  | -17.72/-14.32  | -17.24/-16.16  | -15.74/-12.93  | -14.34/-13.94  | -12.02/-16.06  | -17.55/-14.9     | -13.71/-18.7     | -16.06/-13.43    | -15.73/-13.24    | -13.42/-14.36    | -10.56/-7.08     | -4.81/-10.26     | -8.66/-13.19     | -15.26/-14.52    | -18.57/-17.98    | -17.55/-17.55    | -14.57/-18.54    | -15.35/-19.24    | -17.28/-19.03    | -17.58/-18.18    | -17.68/-18.11    | -18.84/-19.01    |
| Θ(127.5°) | -19.05/-19.01 | -14.88/-16.01  | -17.87/-15.31  | -17.72/-17.96  | -14.83/-16.18  | -17.84/-14.51  | -17.75/-18.47  | -18.14/-9.47     | -12.72/-14.88    | -12.94/-17.73    | -17.99/-18.21    | -14.47/-12.32    | -8.9/-7.68       | -7.89/-14.58     | -17.04/-10.96    | -18.66/-17.85    | -16.92/-14.72    | -16.08/-14.39    | -13.86/-17.49    | -16.03/-18.24    | -18.77/-18.03    | -18.4/-17.7      | -18.04/-13.76    | -12.02/-16.66    |
| Θ(135°)   | -12.27/-16.69 | -17.22/-18.6   | -18.63/-18.34  | -17.73/-17.96  | -18.93/-8.54   | -17.13/-17.76  | -14.39/-10.72  | -15.44/-18.37    | -17.08/-18.54    | -18.83/-11.7     | -11.72/-12.87    | -15.26/-18.81    | -11.28/-10.17    | -12.91/-15.44    | -10.31/-13.86    | -13.88/-11.88    | -11.64/-15.72    | -14.13/-14.77    | -18.67/-17.49    | -18.67/-18.15    | -16.08/-18.52    | -18.43/-17.3     | -16.52/-14.33    | -16.96/-12.27    |
| Θ(142.5°) | -19/-19.05    | -17.63/-16.65  | -17.75/-19.65  | -17.81/-18.24  | -14.71/-14.41  | -18.05/-18.24  | -18.82/-13.62  | -11.32/-19.28    | -17.97/-18.8     | -15.12/-15.22    | -19.28/-12.23    | -9.31/-11.27     | -10.45/-7.9      | -10.83/-15.96    | -18.62/-18.32    | -12.13/-10.3     | -17.1/-18.7      | -18.32/-16.91    | -18.07/-18.24    | -17.99/-17.83    | -14.31/-16.39    | -18.93/-17.61    | -17.84/-15.49    | -18.38/-16.26    |
| Θ(150°)   | -16.1/-18.29  | -18.75/-18.53  | -14.66/-17.48  | -17.14/-10.2   | -18.1/-18.94   | -11.72/-11.65  | -17.61/-18.57  | -17.62/-17.59    | -18.93/-18       | -18.27/-13.7     | -16.82/-12.18    | -9/-11.54        | -18.12/-9.03     | -10.34/-13.77    | -18.12/-15.38    | -13.21/-14.95    | -19.14/-18       | -18.8/-18.07     | -19.08/-15.7     | -14.86/-15.93    | -16.08/-17.96    | -17.29/-18.37    | -11.23/-9.53     |                  |
| Θ(157.5°) | -15.03/-13.23 | -8.49/-7.63    | -10.58/-12.76  | -9.7/-7.98     | -10.05/-16.55  | -15.04/-10.39  | -10.07/-11.38  | -15.25/-19.31    | -17.94/-14.3     | -12.03/-13.7     | -16.83/-12.66    | -8.02/-9.38      | -16.83/-13.53    | -13.46/-15.4     | -13.54/-14.38    | -17.67/-18.51    | -18.63/-18.75    | -17.87/-14.97    | -17.47/-17.59    | -14.32/-13.56    | -17.23/-16.92    | -12.63/-11.84    | -13.85/-16.35    |                  |
| Θ(165°)   | -13.58/-13.21 | -15.45/-18.12  | -13.22/-9.37   | -7.82/-7.62    | -10.18/-17.92  | -18.28/-12.83  | -12.13/-15.62  | -17.73/-17.24    | -13.59/-11.99    | -10.08/-9.6      | -11.06/-15.64    | -15.17/-11.16    | -9.96/-12.06     | -16.99/-16.57    | -12/-9.35        | -8.64/-9.64      | -12.88/-16.87    | -14.52/-12.33    | -12.34/-15.39    | -17.62/-18.48    | -16.19/-17.85    | -17.52/-17.51    | -18.56/-16.22    | -12.96/-13.25    |
| Θ(172.5°) | -14.35/-17.28 | -17.93/-17.43  | -18.87/-18.28  | -18.39/-18.22  | -14.63/-13.34  | -13.56/-14.5   | -19.07/-18.75  | -18.23/-16.09    | -15.46/-16.04    | -15.9/-14.83     | -12.77/-10.86    | -8.92/-8.16      | -8.59/-9.81      | -10.72/-10.55    | -10.3/-10.28     | -11.35/-13.99    | -17.42/-18.54    | -15.63/-15.18    | -16.91/-18.1     | -18.15/-17.83    | -18.21/-17.97    | -16.94/-16.62    | -15.35/-13.46    | -11.81/-12.32    |
| Θ(180°)   | -18.61/-18.09 | -19.29/-16.67  | -17.97/-18.36  | -18.59/-18.77  | -17.88/-17.04  | -17.28/-17.61  | -16.96/-14.74  | -13.63/-12.47    | -11.76/-11.06    | -13.6/-15.65     | -18.45/-18.58    | -18/-18.67       | -17.99/-16.71    | -16.37/-16.3     | -15.45/-15.22    | -14.55/-15.52    | -16.45/-14.84    | -14.26/-13.56    | -12.64/-13.73    | -15.57/-17.65    | -17.86/-18.39    | -18.09/-17.82    |                  |                  |
| Freq(Hz)  | 6.175GPol.    | 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°)     | -17.49/-18.92 | -16.12/-14.16  | -11.66/-9.13   | -7.01/-5.96    | -5.19/-4.68    | -4.52/-4.45    | -4.46/-4.53    | -4.24/-0.8       | -4.46/-4.89      | -5.76/-6.85      | -7.53/-8.61      | -12.12/-15.58    | -19.1/-18.7      | -16.31/-13.93    | -11.38/-9.28     | -7.57/-6.4       | -5.99/-5.36      | -5.22/-5.37      | -5.24/-5.19      | -5.66/-6.5       | -7.26/-7.64      | -8.48/-9.48      | -12.33/-16.32    |                  |
| Θ(7.5°)   | -13.54/-17.31 | -18.66/-17.7   | -19.02/-17.37  | -15.26/-14.01  | -12.77/-11.9   | -10.96/-10.47  | -9.53/-8.41    | -6.85/-6.61      | -6.67/-7.12      | -8.06/-9.7       | -11.26/-14.26    | -18.4/-17.92     | -16.51/-11.93    | -9.54/-7.76      | -6.33/-4.92      | -3.69/-3.01      | -2.18/-1.88      | -1.83/-2.32      | -2.81/-2.96      | -3.36/-3.93      | -4.9/-5.73       | -6.43/-6.49      | -6.34/-6.52      | -8.48/-10.58     |
| Θ(15°)    | -12.15/-15.18 | -18.86/-17.76  | -16.29/-14     | -13.38/-11.29  | -11.39/-14.09  | -15.98/-16.55  | -14.65/-11.69  | -9.38/-8.31      | -8.29/-10.03     | -14.95/-18.01    | -18.24/-18.69    | -18.96/-12.89    | -9.23/-6.94      | -5.44/-4.15      | -2.91/-1.67      | -0.88/-0.25      | 0.4/0.6          | 0.50/0.61        | 0.70/0.71        | 0.13/-0.93       | -1.91/-2.79      | -3.57/-4.18      | -4.67/-5.62      | -7.3/-9.71       |
| Θ(22.5°)  | -6.87/-8.42   | -9.57/-9.88    | -9.25/-9.39    | -10.73/-11.13  | -11.89/-12.94  | -14.36/-13.99  | -10.79/-8.07   | -7.19/-7.64      | -9.14/-10.56     | -11.43/-10.39    | -8.76/-8.36      | -8.57/-7.31      | -6.04/-5.26      | -4.33/-2.92      | -1.31/-0.13      | 0.41/0.34        | 0.45/0.59        | 0.71/0.3         | 1.12/1.18        | 0.99/0.89        | 0.37/0.16        | -0.03/-0.45      | -0.86/-1.47      | -2.52/-4.74      |
| Θ(30°)    | -1.96/-3.02   | -3.28/-3.44    | -3.99/-5.77    | -10.46/-11.92  | -7.12/-4.77    | -4.84/-5.8     | -5.18/-4.48    | -4.85/-5.25      | -5.06/-4.79      | -5.32/-5.49      | -3.88/-3.01      | -2.81/-1.77      | -0.92/-1.18      | -1.66/-1.05      | 0.38/1.42        | 1.63/1.85        | 2.61/3.32        | 3.43/2.95        | 2.01/1.42        | 1.04/0.69        | 0.37/0.7         | 1.56/1.56        | 1.01/0.5         | -0.23/-1.2       |
| Θ(37.5°)  | -0.27/-0.35   | -1.02/-1.27    | -0.92/-2.11    | -4.93/-4.84    | -3.17/-1.84    | -2.73/-3.99    | -2.79/-1.86    | -2.49/-3.8       | -2.29/-10.03     | 1.59/1.37        | 0.08/-1.15       | -0.70/-0.67      | 1.07/0.29        | -0.38/0.57       | 2.53/3.44        | 3.52/3.97        | 4.33/3.87        | 3.22/2.89        | 2.57/2.19        | 1.99/2.3         | 2.22/2.78        | 3.11/3.01        | 2.77/2.4         | 1.21/-0.07       |
| Θ(45°)    | 1.54/0.66     | -0.24/-1.07    | -1.04/-0.24    | -0.23/-0.96    | -0.89/0.64     | 2.31/-1.97     | 1.88/-1.29     | 1.07/-0.7        | -1.11/-1.26      | 2.44/-2.19       | 2.61/-1.11       | 4.53/2.82        | 1.863/-2.69      | 0.93/0.27        | 1.061/-0.59      | 1.13/0.5         | 1.08/1.67        | 1.26/-0.01       | -1.89/-2.41      | -1.63/-1.68      | 2.08/2.77        | 1.531/0.9        | 3.28/2.67        | -0.91/0.09       |
| Θ(52.5°)  | 2.14/1.84     | 0.76/-0.34     | -2.08/0.39     | 2.39/1.61      | 0.19/-1.31     | -1.46/-0.61    | 0.56/1.28      | 0.77/-0.52       | -0.29/-1.67      | 2.85/2.59        | 2/-0.35          | -2.08/-0.1       | -0.58/-1.4       | 1.422/61         | 2.31/1.88        | 1.3/0.76         | -0.59/-1.13      | -0.28/0.47       | 0.72/0.66        | 0.79/1.19        | 0.65/2           | 2.98/3.48        | <b>4.62/2.54</b> | -0.49/0.79       |
| Θ(60°)    | 2.08/1.66     | 0.46/0.14      | -1.91/0.67     | 3.16/2.29      | 1.19/-0.16     | -0.09/0.09     | 0.1/1.15       | 1.71/-1.1        | 1.54/3.41        | 4.31/3.42        | 1.85/-0.39       | -1.31/0.83       | 1.08/0/-17       | 1.54/3.07        | 1.76/1.33        | 1.09/0.51        | -0.91/-0.26      | 0.16/-0.3        | -1.04/-1.05      | 0.13/2.01        | 1.96/2.63        | 3.01/2.87        | 4.29/2.64        | -0.91/0.09       |
| Θ(67.5°)  | 1.97/0.93     | -0.35/0.69     | -0.89/0.64     | 2.31/-1.97     | 1.88/-1.29     | 1.07/-0.7      | -1.11/-1.26    | 2.44/-2.19       | 2.61/-1.11       | 4.53/2.82        | 1.863/-2.69      | 0.93/0.27        | 1.061/-0.59      | 1.13/0.5         | 1.08/1.67        | 1.26/-0.01       | -1.89/-2.41      | -1.63/-1.68      | 2.08/2.77        | 1.531/0.9        | 3.28/2.67        | -0.91/0.09       |                  |                  |
| Θ(75°)    | 1.73/-0.16    | -1.83/0        | -0.52/0.01     | 0.85/1.4       | 2.03/-1.6      | 0.66/-2.13     | -3.04/-0.87    | 1.55/2.19        | 2.42/3.21        | 3.5/3.46         | 1.46/-0.51       | -2.09/0.67       | 0.19/1.52        | 1.32/2.16        | 0.44/1.76        | 2/2.29           | 1.74/2.24        | 1.63/0.64        | -0.87/-2.6       | -2.83/0.65       | 2.29/2.57        | 1.26/-0.09       | 2.19/2.29        | -2.43/-1.1       |
| Θ(82.5°)  | 1.29/-1.14    | -2.97/-0.81    | -1.22/-1.7     | -0.84/0.81     | 2.02/1.81      | -0.43/-4.83    | -5.11/-3.67    | -0.80/0.95       | 1.02/0.92        | 1.76/2.15        | -0.57/-1.58      | -3.04/0.31       | -1.63/-1.67      | 0.78/0.82        | 0.47/1.42        | 2.29/2.7         | 1.21/2.18        | -0.26/0.47       | -1.14/-24        | 2.26/2.66        | -0.2/-2.07       | 0.79/1.42        | -2.65/-2.88      |                  |
| Θ(90°)    | 0.15/-1.35    | -4/-1.47       | 2.44/-2.57     | 2.4/-0.07      | 1.36/-1.57     | -1.28/-4.66    | -5.66/-7       | -0.04/-0.95      | -0.15/-1.51      | -0.16/-0.16      | -3.5/-2.98       | -6.27/-0.4       | -3.64/-0.17      | 0.03/-0.88       | 0.68/0.31        | -0.99/-0.94      | -1.81/-6.77      | -4.43/-2.73      | 1/1.75           | -2.26/-5.55      | -1.12/0.43       | -2.39/-5.41      |                  |                  |
| Θ(97.5°)  | -0.51/-1.55   | -6.34/-2.81    | -4.92/-4.2     | -4.55/-1.2     | -0.09/0.06     | -2.87/-4.72    | -5.97/-10.92   | -5.79/-1.8       | -1.77/-1.96      | -5.63/-4.34      | -7.13/-1.45      | -7.68/-2.2       | -4.06/-2.51      | -3.62/-5.12      | -1.86/-1.52      | -3.34/-4.18      | -4.75/-3.25      | -3.28/-8.57      | -7.87/-5.07      | -1.34/-0.47      | -7.47/-4.66      | -1.86/-1.12      | -3.82/-6.83      |                  |
| Θ(105°)   | -1.57/-2.25   | -6.39/-4.94    | -7.64/-5.06    | -7.47/-4.06    | -2.82/-3.36    | -3.46/-4.18    | -6.08/-7.87    | -4.85/-2.5       | -2.54/-5.14      | -5.22/-5.16      | -6.36/-6.3       | -7.16/-4.24      | -5.2/-5.48       | -2.8/-5.36       | -6.67/-7.24      | -5.13/-4.44      | -6.33/-6.76      | -5.27/-3.44      | -4.38/-7.82      | -10.64/-7.13     | -2.83/-2.69      | -5.49/-6.66      | -2.15/-2.62      | -7.96/-7.6       |
| Θ(112.5°) | -2.74/-4.25   | -8.29/-7.3     | -6.48/-7.78    | -9.02/-5.57    | -5.47/-7.1     | -4.85/-4.9     | -7.69/-7.36    | -6.84/-6.16      | -6.01/-6.49      | -9.88/-11.65     | -8.43/-9.73      | -8.56/-7.21      | -6.2/-8.06       | -7.76/-9.39      | -7.32/-7.37      | -6.13/-4.12      | -5.65/-6.2       | -2.63/-1.75      | -4.92/-7.74      | -10.65/-6.45     | -2.59/-4.63      | -6.9/-7.35       | -4.89/-2.93      | -7.42/-7.36      |
| Θ(120°)   | -4.49/-4.73   | -7.34/-7.99    | -5.86/-9.39    | -9.88/-11.78   | -11.63/-7.96   | -8.39/-10.28   | -11.17/-13.91  | -11.35/-9.86     | -11.03/-8.82     | -5.87/-5.15      | -7.65/-15.46     | -10.58/-8.52     | -9.3/-7.22       | -10.9/-8.13      | -12.81/-9.5      | -9.19/-4.64      | -6.13/-14.04     | -4.78/-2.49      | -7.23/-9.86      | -13.14/-6.04     | -3.9/-6.68       | -6.59/-5.91      | -4.19/-3.11      | -6.89/-6.68      |
| Θ(127.5°) | -5.3/-5.47    | -7.71/-6.92    | -7.57/-9.81    | -10.99/-12.85  | -9.38/-4.72    | -6.23/-7.64    | -8.76/-11.1    | -10.47/-17.7     | -7.14/-8.29      | -7.04/-7.89      | -8.85/-14.49     | -12.39/-11.22    | -11.85/-9.5      | -11.51/-18.88    | -13.58/-9.52     | -15.03/-5.92     | -9.54/-16.85     | -4.55/-4.67      | -11.38/-9.41     | -12.42/-7.58     | -4.1/-10.75      | -6.54/-9.02      | -3.39/-3.05      | -4.9/-8.41       |
| Θ(135°)   | -5.23/-5.83   | -7.2/-9.42     | -13.39/-7.05   | -7.13/-18.85   | -16.31/-18.18  | -11.72/-10.04  | -15.38/-16.5   | -12.35/-9.33     | -6.88/-7.47      | -15.09/-17.29    | -12.67/-13.08    | -14.01/-13.01    | -10.28/-15.66    | -18.77/-17.69    | -13.54/-13.01    | -7.28/-2.59      | -10.44/-14.98    | -2.56/-2.3       | -15.02/-11.86    | -11.49/-18.27    | -3.95/-6.68      | -8.1/-8.4        | -7.44/-5.1       | -9.2/-7.71       |
| Θ(142.5°) | -11.04/-6.88  | -8.99/-16.55   | -16.48/-8.85   | -9.99/-12.52   | -13.88/-18.05  | -18.09/-17.09  | -16.57/-13.36  | -13.32/-14.41    | -11.13/-9.82     | -9.43/-10.58     | -14.77/-17.76    | -12.73/-11.3     | -18.05/-19.07    | -17.98/-15.46    | -17.09/-17.37    | -10.24/-14.58    | -14.46/-18.37    | -4.84/-4.91      | -16.32/-18.25    | -10.86/-8.97     | -13.8/-37        | -13.59/-10.52    | -9.33/-8.55      | -8.43/-10.98     |
| Θ(150°)   | -10.03/-10.41 | -11.96/-15.01  | -15.18/-15.8   | -19.14/-16.4   | -13.83/-14.13  | -15.59/-16.04  | -15.38/-13.67  | -9.96/-7.78      | -7.68/-8.88      | -10.77/-13.9     | -13.9/-11.94     | -11.17/-10.97    | -15.82/-18.47    | -18.19/-7.06     | -14.05/-13.3     | -18.79/-18.34    | -17.55/-12.33    | -10.22/-10.77    | -16.38/-17.98    | -17.74/-15.82    | -17.89/-18.59    | -12.87/-10.07    | -10.77/-11.53    | -13.15/-10.9     |
| Θ(157.5°) | -10.14/-10.2  | -13.12/-17.44  | -17.37/-18.4   | -16.67/-18.19  | -18.11/-16.27  | -17.45/-18.23  | -18.3/-18.5    | -18.6/-18.05     | -10.89/-10.33    | -14.42/-17.71    | -16.18/-10.77    | -18.86/-15.48    | -12.74/-13.51    | -16.56/-17.93    | -17.88/-14.91    | -14.95/-17.91    | -12.85/-9.26     | -10.19/-14.23    | -15.94/-18.03    | -18.57/-17.68    | -13.23/-10.01    | -9.84/-10.7      | -11.48/-15.89    | -17.17/-12.93    |
| Θ(165°)   | -15.23/-13.63 | -12.73/-14.39  | -18.4/-17.12   | -17.51/-18.13  | -17.99/-18.48  | -18.33/-19.17  | -18.01/-17.43  | -12.19/-10.6     | -12.08/-16.78    | -18.87/-18.28    | -13.61/-16.84    | -18.53/-16.03    | -14.53/-13.62    | -15.67/-17.92    | -17.93/-18.65    | -16.6/-18.61     | -16.56/-14.36    | -14.48/-15.21    | -15.39/-15.5     | -16.48/-17.13    |                  |                  |                  |                  |
| Θ(172.5°) | -11.25/-10.86 | -11.36/-12.63  | -15.12/-18.8   |                |                |                |                |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |



# Radiated Composite Gain Data of 2.4GHz/5GHz/6GHz

# Appendix A

|           |               |                 |                 |                 |                 |                 |                 |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |
|-----------|---------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| Θ(157.5°) | -10.52/-13.78 | -18.44/-14.33   | -11.51/-10.96   | -10.27/-8.98    | -8.09/-10.37    | -15.28/-15.5    | -12.14/-10.75   | -11.06/-17.21     | -17.8/-15.42      | -14.2/-14.85      | -18.01/-15.93     | -14.82/-12.15     | -9.6/-13.42       | -10.3/-6.7        | -9.35/-16.37      | -17.77/-18.23     | -16.99/-18.35     | -18.19/-17.78     | -18.79/-18.04     | -18.34/-17.6      | -18.34/-19.02     | -18.56/-16.96     | -18.27/-18.5      | -14.15/-10.76     |
| Θ(165°)   | -17.96/-19.27 | -17.58/-18.17   | -17.8/-13.24    | -10.46/-9.02    | -9.04/-11.05    | -16.25/-17.91   | -16.33/-18.26   | -18.54/-19.31     | -18.98/-18.45     | -14.31/-13.76     | -14.97/-15.42     | -14.8/-15.33      | -15.31/-13.76     | -17.83/-15.76     | -13.62/-14.26     | -16.29/-16.25     | -15.99/-17.34     | -15.86/-14.61     | -15.37/-18.31     | -18.54/-15.59     | -14.63/-13.92     | -13.36/-11.8      | -12.11/-13.65     | -15.95/-16.18     |
| Θ(172.5°) | -18.72/-17.63 | -18.49/-18.81   | -17.56/-18.27   | -17.92/-17.67   | -16.74/-14.73   | -14.89/-15.03   | -16.42/-18.12   | -17.25/-15.34     | -15.16/-14.98     | -15.08/-14        | -13.45/-15.75     | -16.34/-14.99     | -12.43/-14.99     | -12.43/-10.97     | -10.87/-11.44     | -12.91/-13.96     | -15.35/-17.29     | -18.52/-19.7      | -18.22/-18.4      | -18.32/-18.71     | -17.44/-17.66     | -19.18/-81        | -18.66/-17.21     | -18.13/-18.44     |
| Θ(180°)   | -19.13/-18.31 | -16.75/-17.02   | -17.72/-19.09   | -18.5/-18.33    | -15.89/-14.08   | -14.88/-18.54   | -18.13/-19.05   | -17.65/-16.63     | -18.13/-18.23     | -17.85/-18.64     | -18.63/-18.84     | -17.91/-18.86     | -19.2/-18.2       | -18.75/-17.98     | -18/-18.91        | -19.23/-17.87     | -16.2/-15.59      | -17.08/-17.91     | -18.18/-18.32     | -17.31/-19.02     | -18.65/-18.81     | -17.75/-17.2      | -18.01/-18.84     | -17.5/-19.21      |
| Freq(GHz) | 6.695GPol.    | 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°)     | -16.3/-14.25  | -12.11/-10.12   | -9.33/-8.25     | -7.85/-7.5      | -7.68/-7.3      | -7.11/-7.05     | -7.35/-7.68     | -8.05/-8.59       | -9.04/-9.95       | -11.14/-12.76     | -14.97/-17.22     | -18.14/-18.01     | -17.49/-15.54     | -14.51/-13.61     | -12.39/-10.75     | -9.66/-9.23       | -8.88/-9.26       | -9.67/-9.77       | -9.83/-10.32      | -10.19/-10.5      | -12.09/-15.05     | -17.38/-16.48     | -13.81/-14.28     | -16.82/-18.36     |
| Θ(7.5°)   | -19/-17.27    | -18.9/-18.33    | -18.8/-15.95    | -15.16/-13.26   | -12.74/-11.55   | -12.25/-12.04   | -13.07/-12.83   | -12.45/-12.58     | -12.65/-14.46     | -15.69/-15.69     | -15.42/-15.39     | -15.61/-15.93     | -14.7/-12.6       | -10.62/-8.88      | -7.02/-5.65       | -4.72/-4.04       | -3.77/-3.71       | -3.55/-3.46       | -3.17/-3.16       | -3.42/-4.42       | -5.34/-6.72       | -8.15/-9.8        | -11.7/-13.97      | -15.65/-17.59     |
| Θ(15°)    | -9.22/-10.42  | -12.39/-14.27   | -19.04/-18.42   | -18.98/-13.88   | -11.04/-9.18    | -8.65/-8.45     | -9.43/-9.63     | -9.81/-10.16      | -11.07/-13.74     | -17.52/-17.73     | -17.47/-15.41     | -13.51/-12.25     | -10.57/-8.13      | -5.86/-4.29       | -3.61/-3.53       | -3.79/-4.27       | -4.41/-4.51       | -4.26/-3.62       | -3.15/-2.55       | -1.99/-1.83       | -1.87/-2.06       | -2.23/-2.71       | -3.53/-4.99       | -6.34/-7.99       |
| Θ(22.5°)  | -5.68/-7.99   | -9.69/-10.05    | -9.65/-10.12    | -11.44/-14.19   | -11.47/-8.09    | -6.41/-7.11     | -8.03/-9.38     | -9.99/-10.22      | -11.35/-13.23     | -14.78/-13.19     | -11.68/-10.88     | -9.72/-7.62       | -5.45/-3.34       | -2.01/-1.7        | -1.82/-1.95       | -1.87/-1.36       | -0.71/-0.22       | -0.18/-0.64       | -1.23/-1.56       | -1.46/-1.46       | -1.44/-1.45       | -1.84/-2.06       | -1.83/-1.96       | -2.21/-3.39       |
| Θ(30°)    | -4.36/-4.44   | -9.07/-6.97     | -5.02/-5.14     | -7.05/-11.41    | -10.25/-5.72    | -4.7/-5.58      | -7.18/-7.87     | -8.82/-10.47      | -10.4/-9.09       | -7.41/-5.71       | -4.67/-3.46       | -4.27/-3.36       | -1.96/-0.66       | 0.10/-2           | 0.38/-0.02        | 2.03/-2.1         | 2.83/-2.1         | 1.27/-0.4         | 0.29/-0.95        | 1.88/-2.7         | 2.04/-3.1         | -0.09/-0.9        | -0.9/-0.81        | -1.17/-2.15       |
| Θ(37.5°)  | -2.83/-5.37   | -6.76/-6.43     | -5.26/-4.05     | -7.31/-4.61     | -4.07/-2.52     | -2.67/-3.52     | -4.88/-5.41     | -6.3/-5.89        | -3.77/-2.13       | -1.56/-1.24       | -1.28/-1.45       | -0.73/-0.58       | 0.94/-0.47        | 0.74/-1.68        | 2.48/-4.7         | 4.04/-3.49        | 2.27/-0.3         | -0.02/-0.69       | -0.39/-0.4        | 1.07/-1.74        | 2.53/-2.6         | 1.91/-0.66        | -0.34/-1.62       | -2.35/-2.06       |
| Θ(45°)    | -1.81/-2.87   | -3.24/-2.38     | -4.61/-5.29     | -2.01/-2.01     | -2.55/-2.57     | -3.52/-4.46     | -5.38/-5.76     | -6.77/-7.33       | -2.57/-0.59       | 1.56/-1.4         | 0.6/-0.56         | -0.05/-1.18       | 0.8/-0.62         | 0.12/-21          | 2.95/-6.4         | 4/2.87            | 1.78/-1.48        | 0.22/-1.49        | -2.34/-1.6        | -0.25/-0.3        | 1.37/-2.33        | 1.12/-0.31        | 0.57/-0.15        | -1.34/-1.87       |
| Θ(52.5°)  | 0.06/-0.43    | -0.81/-0.2      | -1.3/-4.78      | -2.8/-3.18      | -2.75/-2.58     | -2.86/-1.88     | -2.01/-3.52     | -5.77/-8.77       | -3.18/-1.47       | 2.38/-1.69        | 0.26/-0.65        | -0.86/-0.91       | -1.56/-1.95       | -0.81/-1.57       | 1.71/-2.2         | 2.81/-1.51        | 1.3/-0.42         | -2.78/-4.04       | -2.41/-2.7        | -2.12/-1.91       | -0.62/-1.56       | 0.81/-0.83        | 0.91/-1.4         | 0.53/-0.68        |
| Θ(60°)    | 1.47/-1.74    | 1.23/-0.99      | 0.05/-3.5       | -3.29/-3.52     | -1.07/-0.12     | -0.16/-0.09     | -0.63/-1.13     | -2.06/-3.38       | -1.03/-2.21       | 2.87/-0.24        | 0.12/-0.63        | -1.45/-1.33       | -3.65/-2.3        | -0.58/-0.53       | -0.17/-0.18       | 1.46/-0.51        | 0.91/-0.17        | -2.43/-2.79       | -2.36/-2.98       | -1.51/-0.74       | -2.05/-7          | -0.35/-0.59       | 1.13/-2.44        | 1.36/-0.46        |
| Θ(67.5°)  | 1.52/-0.6     | 1.76/-0.36      | 0.53/-1.84      | -2.61/-1.82     | 0.80/89         | -0.44/-0.21     | -0.55/-2.29     | -2.31/-0.69       | 1.53/-2.7         | 2.32/-1.78        | -0.2/-1.35        | -2.14/-1.44       | -4.22/-2.16       | -0.16/-0.06       | -1.23/-1.28       | 0.86/-0.59        | 1.28/-0.14        | -0.72/-1.07       | -0.7/-1.4         | -0.88/-0.13       | -3.46/-0.17       | 0.28/-1.39        | 1.23/-1.79        | 1.52/-0.45        |
| Θ(75°)    | 1.07/-2.92    | 1.79/-0.52      | -0.22/-2.28     | -2.19/-0.62     | -0.74/-0.67     | -0.95/-0.69     | 0.19/-0.66      | -1.75/-1.65       | 0.72/-2.5         | 1.10/-1.57        | -0.52/-2.96       | -2.71/-1.62       | -3.72/-2.5        | 0.67/-1.53        | -2.82/-1.58       | 0.33/-0.64        | 1.67/-0.15        | 0.18/-0.87        | -0.78/-1.63       | -0.70/-0.96       | -2.07/-1.02       | -0.68/-0.18       | 1.03/-1.63        | 1.1/-0.69         |
| Θ(82.5°)  | 0.41/-2       | 1.39/-1.88      | -1.03/-2.88     | -3.91/-1.06     | -1.08/-2.79     | -0.68/-1.1      | -0.53/-0.62     | -0.71/-1.66       | -1.58/-1.17       | -1.23/-1.66       | -1.65/-0.66       | -5.4/-2.94        | -4.72/-1.95       | -0.12/-5.36       | -2.86/-1.84       | 0.51/-63          | 1.7/-0.19         | 0.52/-1.37        | -1.12/-2.46       | -0.69/-0.91       | -1.35/-1.32       | -1.21/-1.62       | 0.06/-1.2         | 0.46/-1.78        |
| Θ(90°)    | 0.14/-0.34    | 0.57/-4.3       | -1.72/-4.01     | -4.14/-2.25     | -2.39/-3.98     | -1.21/-1.57     | -2.29/-1.96     | -1.56/-2.93       | -5.77/-0.21       | -2.81/-3.98       | -2.62/-10.5       | -7.57/-4.64       | -5.59/-3.13       | -0.58/-7.86       | -5.15/-3.85       | -1.58/-0.99       | -0.19/-2.21       | -0.76/-4.1        | -2.78/-5.12       | -1.69/-1.34       | -1.67/-3.22       | -2.61/-3.56       | -1.62/-0.48       | -0.47/-3.67       |
| Θ(97.5°)  | -1.13/-23.9   | -0.11/-5.49     | -2.82/-6.66     | -6.16/-3.77     | -2.81/-4.57     | -2.3/-2.36      | -3.76/-3.66     | -3.83/-6.69       | -6.19/-2.14       | -3.2/-4.84        | -6.61/-11.27      | -10.06/-6.52      | -7.86/-3.83       | -2.51/-11.53      | -7.12/-8.02       | -5.53/-1.79       | -6.42/-5.41       | -3.78/-10.09      | -4.55/-9.07       | -4.94/-5.08       | -3.55/-5.35       | -4.6/-4.36        | -2.36/-0.82       | -1.88/-4.36       |
| Θ(105°)   | -3.56/-2.57   | -1.83/-6.43     | -4.73/-7.45     | -8.55/-6.35     | -4.42/-5.84     | -6.21/-4.06     | -6.59/-7.86     | -8.87/-4.68       | -2.65/-5.21       | -2.74/-5.91       | -8.16/-12.18      | -9.88/-8.78       | -9.27/-6.02       | -7.44/-5.64       | -11.36/-8.76      | -8.09/-4.94       | -9.47/-5.68       | -4.6/-4.65        | -5.76/-4.67       | -7.45/-4.68       | -4.01/-4.46       | -6.97/-4.24       | -3.67/-3.34       | -3/-5.26          |
| Θ(112.5°) | -5.21/-2.58   | -3.57/-5.88     | -8.72/-9.02     | -11.59/-11.2    | -8.3/-6.21      | -6.98/-5.68     | -7.07/-9.38     | -6.85/-6.13       | -4.5/-7           | -10.15/-12.86     | -10.31/-12.29     | -8.57/-9.46       | -11.43/-9.98      | -7.21/-18.07      | -10.06/-8.93      | -8.78/-6.13       | -7.89/-6.5        | -5.78/-5.45       | -5.3/-9.72        | -8.62/-4.04       | -3.2/-6.79        | -8.11/-7.75       | -4.92/-4.54       | -4.79/-6.63       |
| Θ(120°)   | -5.64/-4.3    | -5.25/-6.75     | -8.47/-9.14     | -13.38/-9.73    | -15.5/-13.22    | -8.14/-8.14     | -8.87/-8.65     | -9.88/-12.88      | -12.78/-7.24      | -8.06/-14.14      | -16.55/-13.2      | -10.73/-10.52     | -12.34/-11.67     | -9.88/-17.71      | -18.46/-13.99     | -8.44/-12.92      | -6.97/-4.28       | -11.86/-11.02     | -13.68/-4.49      | -6.63/-6.32       | -9.92/-10.71      | -1.64/-6.04       | -5.82/-6.2        |                   |
| Θ(127.5°) | -6.27/-7.13   | -5.31/-9.5      | -8.02/-9.87     | -11.2/-10.01    | -13.62/-11      | -9.99/-8.64     | -10.96/-10.32   | -9.61/-7.3        | -7.73/-9.26       | -8.79/-11.16      | -18.71/-17.95     | -16.15/-14        | -12.03/-14.89     | -18.68/-18.8      | -18.31/-8.06      | -10.01/-9.89      | -8.32/-11.43      | -5.63/-8.89       | -8.54/-13.05      | -18.26/-4.54      | -9.03/-6.21       | -12.32/-6.25      | -4.89/-4.07       | -9.85/-6.43       |
| Θ(135°)   | -7.82/-6.59   | -6.19/-6.98     | -9.34/-13.51    | -10.93/-12.41   | -18.85/-14.84   | -15.08/-9.07    | -9.09/-15.23    | -13.45/-9.35      | -6.87/-8.42       | -14.47/-18.87     | -17.9/-18.14      | -12.41/-11.16     | -14.74/-17.43     | -16.48/-18.94     | -15.78/-9.66      | -17.71/-7.06      | -9.16/-13.45      | -5.72/-4.91       | -9.32/-9.81       | -13.59/-9.68      | -5.3/-12.96       | -9.44/-12.71      | -5.6/-4.06        | -5.43/-9.95       |
| Θ(142.5°) | -8.24/-9.16   | -9.87/-9.01     | -12.24/-15.23   | -13.71/-14.74   | -14.12/-18.68   | -18.09/-14.24   | -14.3/-18.4     | -15.96/-13.65     | -14.42/-10.57     | -10.65/-12.73     | -16.43/-18.45     | -16.52/-14.21     | -16.4/-18.35      | -18.66/-18.5      | -12.41/-17.4      | -14.54/-19.16     | -9.1/-16.89       | -6.34/-8.54       | -13.82/-14.22     | -19.25/-18.88     | -10.88/-12.7      | -12.33/-11.16     | -8.34/-7.46       | -10.22/-9.96      |
| Θ(150°)   | -14.67/-12.77 | -12.18/-14.34   | -14.71/-13.79   | -16.52/-18.23   | -17.34/-13.08   | -10.99/-10.63   | -11.54/-12.59   | -11.42/-10.16     | -16.71/-18.7      | -17.71/-18.7      | -12.55/-15.84     | -15.65/-18.6      | -18.11/-18.34     | -13.99/-14.52     | -17.71/-17.9      | -18.79/-18.06     | -18.34/-17.58     | -8.86/-9.85       | -15.52/-17.54     | -15.58/-12.58     | -14.07/-11.73     | -9.53/-10.64      | -11.14/-9.69      | -9.54/-12.4       |
| Θ(157.5°) | -17.94/-18.11 | -18.37/-18.25   | -18.85/-18.04   | -18.24/-18.88   | -17.43/-17.65   | -18.18/-19.5    | -17.72/-17.96   | -18.2/-13.88      | -13.15/-14.74     | -17.82/-17.55     | -18.89/-16.14     | -18.21/-18.61     | -17.21/-18        | -17.28/-17.37     | -18.03/-18.09     | -18.35/-18.17     | -11.59/-11.32     | -13.66/-16.43     | -19.05/-18.14     | -16.61/-14.85     | -17.52/-18.58     | -18.93/-11.88     | -9.55/-9.01       | -11.45/-17.03     |
| Θ(165°)   | -16.27/-14.57 | -14.19/-13.78   | -13.73/-14.87   | -17.75/-17.83   | -16.72/-14.81   | -15.49/-18.35   | -18.5/-15.25    | -12.8/-14.92      | -14.55/-18.63     | -17.76/-18.88     | -18.71/-18.15     | -18.15/-18.13     | -17.71/-19.03     | -18.05/-18.08     | -18.82/-17.22     | -18.68/-15.17     | -13.1/-10.57      | -13.43/-18.48     | -18.23/-15.78     | -16.96/-18.23     | -17.93/-19.26     | -15.21/-13.57     | -13.47/-13.22     | -15.09/-16.47     |
| Θ(172.5°) | -14.37/-14.09 | -13.05/-13.71   | -14.52/-16.17   | -16.97/-17.96   | -18.38/-19.14   | -18.06/-16.53   | -15.87/-16.87   | -16.78/-15.92     | -15.31/-15.37     | -14.81/-14.23     | -14.75/-18.1      | -16.31/-18.13     | -19.2/-19.16      | -18.2/-15.66      | -13.13/-13.88     | -10.24/-9.89      | -9.74/-9.83       | -10.97/-12.56     | -16.76/-18.18     | -19.28/-18        | -18.92/-18.43     | -18.96/-18.57     | -18.43/-17.49     | -18.39/-17.61     |
| Θ(180°)   | -16.63/-15.46 | -15.25/-13.48   | -12.73/-12.21   | -12.67/-14.43   | -16.25/-17.88   | -18.71/-19.12   | -18.72/-18.53   | -18.93/-18.21     | -18.27/-18.21     | -18.41/-16.06     | -14.88/-14.58     | -15.01/-15.66     | -17.38/-18.47     | -18.49/-17.46     | -17.38/-18.36     | -16.28/-18.24     | -18.72/-17.66     | -18.41/-18.64     | -18.54/-17.68     | -18.51/-18.01     | -17.53/-17.61     | -16.1/-17.29      | -18.81/-17.79     | -18.93/-16.7      |
| Freq(Hz)  | 6.695GPol.    | PhiAnt. 5       | -               | -               | -               | -               | -               | -                 | -                 | -                 | -                 | -                 | -                 | -                 | -                 | -                 | -                 | -                 | -                 | -                 | -                 | -                 | -                 | -                 |
| Gain      | Φ(0°)/Φ(7.5°) | Φ(15°)/Φ(22.5°) | Φ(30°)/Φ(37.5°) | Φ(45°)/Φ(52.5°) | Φ(60°)/Φ(67.5°) | Φ(75°)/Φ(82.5°) | Φ(90°)/Φ(97.5°) | Φ(105°)/Φ(112.5°) | Φ(120°)/Φ(127.5°) | Φ(135°)/Φ(142.5°) | Φ(150°)/Φ(157.5°) | Φ(165°)/Φ(172.5°) | Φ(180°)/Φ(187.5°) | Φ(195°)/Φ(202.5°) | Φ(210°)/Φ(217.5°) | Φ(225°)/Φ(232.5°) | Φ(240°)/Φ(247.5°) | Φ(255°)/Φ(262.5°) | Φ(270°)/Φ(277.5°) | Φ(285°)/Φ(292.5°) | Φ(300°)/Φ(307.5°) | Φ(315°)/Φ(322.5°) | Φ(330°)/Φ(337.5°) | Φ(345°)/Φ(352.5°) |
| Θ(0°)     | -6.7/-7.11    | -7.08/-8.2      | -8.46/-9.08     | -10.38/-11.72   | -12.68/-14.92   | -16.59/-19.11   | -18.44/-11.85   | -12.38/-11.79     | -9.81/-7.81       | -6.63/-6.16       | -5.84/-5.17       | -4.74/-4.9        | -5.25/-5.47       | -5.91/-6.65       | -7.95/-9.23       | -10.58/-11.77     | -13.87/-16.72     | -18.86/-18.76     | -19.06/-15.47     | -12.41/-10.27     | -9.16/-9.3        | -8.91/-8.23       | -7.11/-5.98       | -6.05/-6.36       |



# Radiated Composite Gain Data of 2.4GHz/5GHz/6GHz

# Appendix A

|           |               |                 |                 |                 |                 |                 |                 |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |
|-----------|---------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| Θ(0°)     | -18.3/-17.55  | -14.86/-12.27   | -10.24/-8.75    | -7.64/-7.01     | -6.86/-7.03     | -7.28/-7.52     | -7.78/-8.25     | -8.93/-9.76       | -11.1/-13.35      | -16.21/-18.98     | -19.07/-16.53     | -14.55/-13.19     | -12.26/-11.43     | -10.39/-9.37      | -8.33/-7.54       | -7.05/-6.92       | -6.95/-7.08       | -7.27/-7.58       | -7.98/-8.54       | -9.37/-10.48      | -11.76/-13.12     | -14.23/-15.03     | -15.7/-16.42      | -17.34/-17.8      |
| Θ(7.5°)   | -7.97/-8.07   | -7.84/-7.27     | -6.54/-5.87     | -5.37/-5.12     | -5/-5.02        | -5.19/-5.56     | -6.06/-6.79     | -7.53/-8.5        | -9.85/-11.6       | -14.01/-17.57     | -18.63/-17.57     | -18.19/-17.57     | -15.26/-13.5      | -12.13/-11.04     | -10.43/-10.01     | -9.72/-9.55       | -9.42/-9.29       | -9.22/-9.24       | -9.47/-10.03      | -11.09/-12.54     | -13.6/-13.35      | -12.08/-10.69     | -9.46/-8.66       | -4.12/-7.85       |
| Θ(15°)    | -3.25/-3.21   | -3.01/-2.8      | -2.6/-2.56      | -2.61/-2.21     | -2.83/-2.89     | -2.99/-3.3      | -3.75/-4.3      | -5.01/-5.97       | -7.39/-8.71       | -10.52/-12.73     | -15.49/-18.39     | -13.48/-11.3      | -9.86/-9.22       | -9.21/-8.59       | -10.27/-11.07     | -12.08/-13.1      | -14.16/-15.03     | -15.21/-15.03     | -15.78/-15.98     | -15.21/-13.13     | -10.56/-8.36      | -6.69/-5.48       | -4.53/-3.86       | -3.42/-3.21       |
| Θ(22.5°)  | -0.85/-0.86   | -0.68/-0.45     | -0.29/-0.27     | -0.34/-0.44     | -0.54/-0.61     | -0.72/-0.94     | -1.29/-1.79     | -2.62/-3.73       | -5.17/-6.75       | -8.39/-9.94       | -11.26/-12.48     | -13.63/-14.39     | -13.87/-12.42     | -11.14/-10.55     | -10.51/-11        | -11.83/-12.95     | -13.86/-13.72     | -12.85/-11.39     | -9.71/-8.1        | -6.55/-5.11       | -3.77/-2.7        | -1.87/-1.27       | -0.84/-0.63       | -0.61/-0.69       |
| Θ(30°)    | 0.070         | 0.240/63        | 0.95/-1.19      | 1.38/-1.52      | 1.55/-1.46      | 1.26/-0.94      | 0.52/-0.1       | -1.02/-2.21       | -3.77/-5.36       | -6.52/-8.63       | -8.56/-6.48       | -6.94/-6.28       | -4.35/-12.7       | -14.3/-14.09      | -12.92/-11.52     | -10.29/-9.12      | -7.76/-6.39       | -5.18/-4.15       | -3.11/-2.16       | -1.25/-0.43       | 0.26/-0.79        | 1.17/-1.43        | 1.53/-1.37        | 0.96/-0.46        |
| Θ(37.5°)  | -0.11/-0.04   | 0.451/03        | 1.62/-15        | 2.66/0.03       | 3.08/0.85       | 2.41/-82        | 1.10/-27        | -0.67/-1.75       | -3.4/-0.33        | -4.31/-3.49       | -2.42/-1.82       | -2.01/-2.97       | -4.3/-5.54        | -6.51/-7.07       | -5.34/-4.24       | -2.96/-1.77       | -0.73/0.07        | 0.72/-25          | 1.74/2.2          | 2.61/2.86         | 2.95/2.9          | 2.68/2.15         | 1.29/0.41         |                   |
| Θ(45°)    | -0.73/-0.23   | 0.531/22        | 1.89/-2.64      | 3.33/-3.75      | 3.73/-3.31      | 2.66/-1.85      | 0.88/-0.12      | -1.07/-1.82       | -2.27/-2.46       | -2.3/-1.38        | -0.06/-0.78       | 0.76/0.04         | -0.72/-1.08       | -1.33/-1.87       | -2.48/-2.78       | -2.63/-2.08       | -1.15/-0.12       | 0.96/-1.97        | 2.82/3.33         | 3.55/3.7          | 3.92/4.07         | 3.94/3.54         | 2.93/2.01         | 0.73/-0.43        |
| Θ(52.5°)  | -1.62/-0.53   | 0.33/0.87       | 1.56/2.52       | 3.36/3.77       | 3.69/-3.29      | 2.69/-1.97      | 1.13/0.3        | -0.56/-1.26       | -1.34/-1.16       | -1.03/-0.42       | 0.81/-59          | 1.45/0.87         | 0.71/0.92         | 0.82/-2.09        | -0.44/-0.91       | -0.9/-0.49        | 0.05/0.61         | 1.34/2.31         | 3.37/4.08         | 4.26/4.12         | 4.14/-2           | 4.02/3.41         | 2.45/-1.16        | -0.55/-1.84       |
| Θ(60°)    | -2.39/-1.02   | -0.15/-0.28     | 1.04/-2.25      | 3.23/3.67       | 3.66/-3.42      | 3.05/2.51       | 1.88/-1.25      | 0.41/-0.63        | -1.21/-0.97       | -0.83/-0.56       | 0.44/-1.18        | 1.06/-2           | 0.88/1.24         | 1.24/0.86         | 0.31/-0.01        | 0.19/0.69         | 1.25/-1.72        | 2.15/2.7          | 3.52/4.28         | 4.56/4.3          | 3.99/3.92         | 3.73/3.04         | 1.86/0.34         | -1.65/-3.02       |
| Θ(67.5°)  | -2.7/-1.2     | -0.24/-0.31     | 1.14/-2.36      | 3.21/3.54       | 3.57/3.47       | 3.19/2.62       | 1.91/-1.36      | 0.69/-0.48        | -1.46/-1.06       | -0.59/-0.4        | 0.29/0.65         | 0.24/0.19         | 0.69/0.88         | 0.58/-0.02        | -0.7/-0.99        | -0.65/0.16        | 1.15/2.02         | 2.65/3.14         | 3.69/4.18         | 4.35/4.13         | 3.79/3.52         | 3.21/2.55         | 1.24/-0.52        | -2.51/-3.62       |
| Θ(75°)    | -1.96/-0.76   | -0.17/-0.21     | 0.99/-1.91      | 2.44/2.67       | 2.89/2.94       | 2.62/-1.9       | 1.11/0.81       | 0.62/-0.34        | -1.81/-1.72       | -0.92/-0.84       | -0.59/-0.29       | -0.51/-0.21       | 0.48/0.6          | 0.05/-0.85        | -2.07/-3.1        | -3.07/-1.74       | -0.01/-1.25       | 2.06/2.63         | 3.13/4.3          | 2.81/2.63         | 2.26/-1.73        | 0.61/-1.13        | -2.83/-3.16       |                   |
| Θ(82.5°)  | -2.68/-1.57   | -1.38/-1.02     | 0.18/-1.21      | 1.66/2          | 2.45/2.55       | 2.06/-1.12      | 0.25/0.15       | 0.27/-0.59        | -2.29/-2.08       | -1.04/-1.22       | -1.24/-0.84       | -0.86/-0.38       | 0.21/-0.18        | -1.1/-2.09        | -3.59/-5          | -4.48/-2.38       | -0.71/0.36        | 1.151/67          | 3.06/2.37         | 2.17/-157         | 1.36/-132         | 0.88/2.05         | -0.63/-2.28       | -3.96/-4.17       |
| Θ(90°)    | -3.88/-2.43   | -2.09/-1.7      | -0.26/0.89      | 0.99/0.97       | 1.25/-1.22      | 0.59/-0.34      | -0.87/-0.56     | -0.1/-0.63        | -2.18/-2.33       | -1.66/-2.36       | -2.98/-2.45       | -2.43/-2.21       | -1.93/-2.78       | -4.12/-5.39       | -7.27/-8.6        | -6.9/-4.33        | -2.68/-1.54       | -0.40/-2.4        | 0.49/0.74         | 0.66/0.02         | -0.23/0.01        | -0.19/-0.86       | -1.65/-2.77       | -4.03/-4.87       |
| Θ(97.5°)  | -2.7/-1.6     | -1.18/-1.03     | -0.19/0.38      | 0.07/-0.41      | -0.36/-0.43     | -0.81/-1.14     | -0.97/-0.38     | -0.02/-0.74       | -2.94/-4.3        | -4.24/-5.07       | -4.88/-3.27       | -2.85/-2.9        | -3.17/-3.7        | -5.78/-6.89       | -8.29/-8.59       | -7.21/-5.65       | -4.62/-3.53       | -2.51/-9.8        | -1.74/-1.4        | -1.26/-1.57       | -1.61/-1.33       | -1.2/-1.31        | -1.95/-2.92       | -3.19/-3.1        |
| Θ(105°)   | -2.01/-1.93   | -1.84/-1.36     | -0.63/-0.59     | -1.36/-2.31     | -2.44/-1.99     | -1.39/-0.86     | -0.59/-0.54     | -0.83/-2.2        | -5.81/-8.54       | -6.17/-5.77       | -4.97/-2.9        | -2.79/-3.93       | -4.59/-5.73       | -9.31/-10.33      | -8.82/-6.38       | -4.44/-3.12       | -2.19/-2.07       | -2.76/-3.72       | -4.61/-4.89       | -3.87/-2.94       | -2.55/-1.76       | -1.63/-2.76       | -3.32/-2.55       |                   |
| Θ(112.5°) | -1.56/-1.8    | -2.79/-2.5      | -1.6/-1.78      | -2.82/-3.66     | -3.11/-1.64     | -0.51/-0.23     | -0.67/-1.5      | -2.88/-5.79       | -12.32/-9.17      | -5.64/-5.87       | -4.08/-1.87       | -2.17/-3.16       | -3.09/-3.42       | -3.7/-4.1         | -5.58/-6.91       | -6.7/-5.96        | -5.18/-4.14       | -2.63/-1.46       | -1.21/-1.87       | -3.54/-6.17       | -6.69/-5.71       | -5.75/-4          | -2.34/-2.78       | -3.66/-2.55       |
| Θ(120°)   | -2.09/-2.07   | -3.82/-4.74     | -3.75/-2.99     | -3.01/-3.26     | -3.03/-2.16     | -1.46/-1.53     | -2.29/-3.62     | -6/-11.06         | -13.35/-17.3      | -5.63/-6.15       | -3.54/-1.36       | -1.75/-3.21       | -3.58/-3.48       | -3.27/-3.5        | -4.5/-5.05        | -4.87/-5.38       | -6.77/-1.78       | -5.96/-4.35       | -3.15/-2.7        | -3.3/-5.16        | -6.17/-5.5        | -6.65/-4.77       | -5.1/-4.62        | -5.44/-3.89       |
| Θ(127.5°) | -4.67/-3.91   | -5.37/-7.44     | -4.74/-5.68     | -4.07/-3.26     | -3.05/-2.89     | -2.69/-2.91     | -3.85/-5.93     | -9.88/-14.92      | -10.44/-17.97     | -11.02/-9.46      | -4.25/-3.07       | -4.5/-6.84        | -6.66/-5.26       | -4.55/-4.93       | -5.62/-5.51       | -1.22/-5.55       | -6.11/-5.52       | -4.83/-4.78       | -4.64/-4.31       | -4.64/-6.29       | -7.19/-5.73       | -5.71/-7.38       | -7.56/-7.16       | -8.23/-7.28       |
| Θ(135°)   | -7.44/-6.01   | -6.26/-7.2      | -7.18/-5.35     | -2.9/-1.16      | -0.54/-0.8      | -1.69/-3.15     | -5.6/-9.48      | -14.71/-13.83     | -10.7/-10.24      | -11.05/-9.46      | -7.39/-7.5        | -10.36/-13.05     | -10.19/-8.01      | -7.64/-8.35       | -8.85/-8.33       | -7.63/-7.58       | -7.42/-6.37       | -5.57/-5.54       | -5.56/-5.17       | -5.13/-6.18       | -7.58/-7.09       | -6.38/-6.91       | -7.55/-7.7        | -8.48/-8.98       |
| Θ(142.5°) | -12.19/-10.68 | -9.45/-7.74     | -5.71/-3.94     | -2.39/-1.26     | -0.97/-1.65     | -3.25/-5.86     | -9.67/-13.05    | -12.1/-10.38      | -10.07/-10.98     | -12.01/-12.38     | -13.2/-16.25      | -18.07/-15.2      | -12.73/-12.71     | -14.37/-16.3      | -16.3/-14.51      | -13.08/-12.35     | -11.04/-9.43      | -8.78/-9.25       | -9.72/-9.14       | -8.43/-8.37       | -8.54/-8.1        | -7.58/-7.71       | -8.58/-8.85       | -11.62/-13.23     |
| Θ(150°)   | -17.96/-16.8  | -14.17/-10      | -7.37/-5.87     | -5.19/-4.96     | -5.12/-5.84     | -6.93/-7.66     | -7.42/-6.65     | -6.15/-6.3        | -7.22/-9.13       | -12.04/-16.17     | -18.67/-18.59     | -18.03/-18.92     | -18.87/-18.17     | -18.88/-17.52     | -18.57/-18.17     | -18.87/-18.28     | -15.07/-12.53     | -11.79/-13.19     | -17.36/-17.79     | -17.32/-15.6      | -11.84/-9.24      | -7.72/-7.23       | -7.58/-8.92       | -11.58/-15.41     |
| Θ(157.5°) | -8.05/-8.36   | -7.83/-6.87     | -5.82/-4.98     | -4.49/-4.38     | -4.38/-4.3      | -3.97/-3.5      | -3.13/-3.11     | -3.59/-4.52       | -6.03/-8.14       | -10.73/-12.71     | -13.45/-13.71     | -13.57/-11.93     | -9.64/-7.54       | -6.35/-6.06       | -6.62/-7.79       | -9.4/-10.89       | -11.62/-11.17     | -10.42/-10.3      | -10.93/-12.05     | -12.84/-12.57     | -10.86/-8.88      | -7.29/-6.26       | -5.65/-5.61       | -6.27/-7.2        |
| Θ(165°)   | -5.59/-4.59   | -5.02/-4.42     | -3.9/-3.5       | -3.26/-3.21     | -3.29/-3.45     | -3.55/-3.66     | -3.86/-4.35     | -5.22/-6.39       | -7.79/-9.43       | -11/-11.86        | -12.03/-11.51     | -10.04/-8.05      | -6.13/-4.73       | -3.85/-3.58       | -3.83/-4.61       | -5.87/-7.34       | -8.93/-10.04      | -10.32/-9.95      | -9.62/-9.57       | -9.9/-10.25       | -10.02/-9.3       | -8.16/-7.04       | -6.07/-5.44       | -5.3/-5.5         |
| Θ(172.5°) | -8.95/-8.78   | -8.25/-7.65     | -7.23/-7.03     | -7.13/-7.49     | -8.09/-8.87     | -9.58/-10.25    | -10.96/-11.71   | -12.67/-13.58     | -14.67/-15.87     | -17.01/-17.18     | -16.08/-13.88     | -11.51/-9.31      | -7.67/-6.52       | -5.91/-6.76       | -6.06/-6.75       | -7.88/-9.27       | -10.91/-12.24     | -12.65/-12.26     | -11.68/-11.4      | -11.61/-12.4      | -12.54/-12.55     | -12.13/-11.34     | -10.38/-9.49      | -9.04/-9          |
| Θ(180°)   | -18.99/-19.13 | -18.18/-18.88   | -19.01/-18.33   | -19.17/-18.64   | -17.94/-18.07   | -18.24/-18.67   | -18.11/-17.74   | -18.31/-17.88     | -18.48/-18.16     | -18.62/-18.61     | -18.91/-18.31     | -18.34/-17.26     | -19.18/-18        | -19.19/-19.25     | -17.65/-18.61     | -18.13/-17.26     | -16.68/-16.31     | -16.42/-17.14     | -18.89/-18.1      | -18.88/-18.65     | -18.25/-18.59     | -18.62/-17.29     |                   |                   |
| Freq(Hz)  | 5.2GPol       | Phi/Ant. 2      | -               | -               | -               | -               | -               | -                 | -                 | -                 | -                 | -                 | -                 | -                 | -                 | -                 | -                 | -                 | -                 | -                 | -                 | -                 | -                 | -                 |
| Gain      | Φ(0°)/Φ(7.5°) | Φ(15°)/Φ(22.5°) | Φ(30°)/Φ(37.5°) | Φ(45°)/Φ(52.5°) | Φ(60°)/Φ(67.5°) | Φ(75°)/Φ(82.5°) | Φ(90°)/Φ(97.5°) | Φ(105°)/Φ(112.5°) | Φ(120°)/Φ(127.5°) | Φ(135°)/Φ(142.5°) | Φ(150°)/Φ(157.5°) | Φ(165°)/Φ(172.5°) | Φ(180°)/Φ(187.5°) | Φ(195°)/Φ(202.5°) | Φ(210°)/Φ(217.5°) | Φ(225°)/Φ(232.5°) | Φ(240°)/Φ(247.5°) | Φ(255°)/Φ(262.5°) | Φ(270°)/Φ(277.5°) | Φ(285°)/Φ(292.5°) | Φ(300°)/Φ(307.5°) | Φ(315°)/Φ(322.5°) | Φ(330°)/Φ(337.5°) | Φ(345°)/Φ(352.5°) |
| Θ(0°)     | -17.03/-16.68 | -16.3/-17.58    | -17.58/-16.5    | -16.23/-13.13   | -10.95/-10.4    | -10.06/-10.75   | -10.79/-10.55   | -10.29/-10.61     | -9.71/-9.82       | -10.48/-11.47     | -12.6/-15.03      | -17.97/-18.34     | -18.52/-18.77     | -18.36/-17.57     | -14.34/-13.12     | -12.63/-11.24     | -9.45/-8.37       | -8.17/-9.03       | -10.3/-11.4       | -11.42/-10.69     | -10.27/-10.38     | -11.44/-13.29     | -14.74/-15.37     | -16.23/-17.15     |
| Θ(7.5°)   | -17.2/-18.25  | -18.2/-18.45    | -17.55/-18.8    | -16.36/-12.02   | -10.77/-11.03   | -10.47/-9.54    | -8.73/-8.33     | -8.58/-9.34       | -9.72/-9.84       | -9.84/-10.2       | -10.35/-11.38     | -13.5/-15.68      | -18.53/-17.81     | -18.91/-18.32     | -17.33/-14.61     | -12.77/-12.5      | -12.02/-10.96     | -8.94/-8.51       | -8.83/-9.3        | -8.51/-8.18       | -8.63/-9.43       | -12.78/-11.83     | -12.78/-13.28     | -13.91/-14.4      |
| Θ(15°)    | -10.25/-12.98 | -14.7/-14.31    | -14.97/-17.33   | -17.16/-14.24   | -12.68/-11.2    | -9.64/-8.45     | -7.64/-7.15     | -6.78/-7.05       | -6.88/-6.34       | -6.02/-6.5        | -7.55/-9.55       | -12.81/-15.47     | -15.06/-15.46     | -18.31/-17.62     | -17.71/-18.13     | -18.61/-18.29     | -18.04/-17.27     | -14.11/-11.91     | -9.87/-8.38       | -6.91/-6.21       | -6.06/-6.58       | -7.55/-7.73       | -7.52/-7.63       | -8.01/-8.45       |
| Θ(22.5°)  | -10.73/-12.62 | -14.08/-13.33   | -13.6/-13.47    | -12.11/-10.75   | -10.73/-10.04   | -8.27/-6.01     | -4.99/-5.61     | -5.6/-5.91        | -5.97/-5.44       | -4.6/-4.54        | -5.67/-6.82       | -13.52/-16.53     | -17.07/-18.36     | -17.78/-18.06     | -18.09/-13.31     | -10.27/-9.16      | -11.25/-15.88     | -18.16/-11.78     | -7.38/-5.6        | -5.1/-4.89        | -4.89/-5.01       | -5.25/-4.91       | -4.88/-5.85       | -7.28/-8.91       |
| Θ(30°)    | -10.88/-11.85 | -14.71/-18.95   | -18.26/-17.66   | -16.76/-15.48   | -11.38/-8.84    | -7.7/-5.81      | -4.12/-3.46     | -3.8/-3.97        | -4.14/-4.73       | -4.54/-4.69       | -5.59/-7.65       | -11.51/-11.52     | -11.61/-12.04     | -14.33/-15.63     | -14.46/-13.66     | -12.53/-10.82     | -11.22/-12.9      | -16.96/-18.87     | -9.43/-6.08       | -5.28/-5.34       | -5.27/-4.62       | -4.05/-4.19       | -5.21/-6.75       | -8.37/-9.59       |
| Θ(37.5°)  | -11.89/-10.89 | -12.71/-14.34   | -18.01/-18.49   | -17.58/-17.21   | -13.78/-9.44    | -7.63/-6.66     | -4.79/-3.45     | -3.65/-4.35       | -4.53/-5.07       | -5.36/-5.08       | -5.28/-7.33       | -9.89/-12.72      | -15/-16.29        | -13.02/-12.41     | -16.19/-18.1      | -17.65/-17.63     | -19/-16.32        | -16.53/-12.4      | -7.21/-4.94       | -4.6/-5.23        | -6.09/-5.42       | -4.78/-5.85       | -7.68/-6.99       | -10.41/-11.7      |
| Θ(45°)    | -16.63/-12.47 | -10.82/-10.28   | -12.41/-15.17   | -16.99/-16.16   | -16.28/-12.14   | -7.4/-6.32      | -6.74/-6.15     | -3.91/-3.72       | -3.45/-3.64       | -6.06/-8.28       | -7.83/-8.1        | -7.88/-8.23       | -10.83/-13.61     | -15.63/-15.01     | -18.87/-18.36     | -10.21/-10.73     | -15.41/-15.21     | -8.71/-6.16       | -3.58/-3.18       | -2.5/-5.2         | -3.98/-5.75       | -7.64/-6.82       | -11.06/-13.41     | -14.68/-12.77     |
| Θ(52.5°)  | -18.15/-17.58 | -14.74/-13.28   | -12.54/-12.04   | -15.25/-15.87   | -13.84/-12.88   | -10.24/-8.77    | -8.43/-6.66     | -4.56/-5.25       | -8.46/-7.43       | -4.25/-3.18       | -4.19/-3.5        | -4.32             |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |



# Radiated Composite Gain Data of 2.4GHz/5GHz/6GHz

# Appendix A

|           |               |                 |                 |                 |                 |                 |                 |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |
|-----------|---------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| Θ(37.5°)  | 0.181/23      | 1.831/67        | 1.821/79        | 1.431/53        | 1.992/14        | 1.721/33        | 1.491/84        | 1.711/29          | 0.791/0.18        | -1.261/-184       | -2.25/-2.75       | -2.06/-0.82       | -0.04/-0.44       | -0.94/-0.26       | 0.411/0.1         | -0.91/-2.07       | -4.71/-9.2        | -8.78/-5.6        | -3.29/-1.9        | -2.07/-3.19       | -3.47/-1.19       | 1.361/63          | 0.870/14          | -0.130/0.03       |
| Θ(45°)    | 0.271/58      | 1.611/12        | 0.790/44        | 0.931/26        | 1.21/43         | 1.611/36        | 1.141/37        | 1.551/33          | 1.451/19          | 0.51/-0.37        | -1.53/-3.15       | -1.34/-0.95       | -0.63/-2.41       | -2.420/0.6        | 1.131/85          | 1.730/35          | -2.26/-6.44       | -8.18/-4.73       | -2.05/-0.6        | 0.21/-0.97        | -2.62/-2.32       | -0.210/8          | 1.391/46          | 1.590/54          |
| Θ(52.5°)  | 0.451/29      | 1.581/11        | 0.050/11        | 1.041/85        | 2.872/63        | 2.582/18        | 1.490/99        | 0.690/0           | 0.871/22          | 1.570/74          | -1.39/-2.7        | 0.080/-19         | -2.7/-5.18        | -20/62            | 2.443/46          | 2.990/71          | -3.04/-5.72       | -6.28/-5.06       | -2.84/-1.06       | 0.140/0.1         | -2.49/-3.01       | -0.440/81         | 3.022/5           | 1.370/1           |
| Θ(60°)    | 0.271/0.3     | 1.110/13        | -0.280/28       | 0.451/44        | 2.343/14        | 3.552/94        | 2.21/92         | 1.24/-0.43        | -1.190/46         | 1.571/64          | -0.32/-0.31       | 2.130/97          | -2.81/-4.05       | -0.52/2.5         | 3.972/42          | 3.331/53          | -2.75/-5.84       | -5.32/-4.3        | -3.03/-2.35       | -0.460/2          | -1.37/-2          | -0.550/7          | 3.112/54          | 1.4/-0.2          |
| Θ(67.5°)  | 0.591/28      | 0.29/-0.61      | -1.2/-0.79      | 0.131/0.2       | 1.362/32        | 3.253/16        | 2.491/61        | 0.87/-0.28        | -2.280/33         | 1.42/1            | -0.121/-26        | 3.261/58          | -1.95/-2.47       | 0.633/59          | <b>4.373/71</b>   | 3.352/66          | -1.76/-5.81       | -3.66/-1.93       | -0.91/-1.87       | -0.520/45         | -1.55/-1.82       | 0.060/98          | 3.282/37          | 1.350/59          |
| Θ(75°)    | 0.320/59      | -0.64/-1.53     | -1.08/-0.4      | 0.27/-0.68      | -0.031/78       | 2.892/28        | 1.681/51        | 0.98/-0.74        | -3.91/-0.96       | 1.212/35          | 0.61/4            | 2.941/31          | -1.78/-2.4        | 0.012/89          | 3.782/81          | 2.552/59          | -0.32/-3.94       | -3.07/-0.28       | 0.44/-0.3         | -0.820/53         | -0.841/-143       | -0.170/35         | 2.262/24          | 1.120/35          |
| Θ(82.5°)  | 0.03/-0.5     | -1.15/-1.63     | -0.140/16       | -0.06/-1.73     | -0.781/1        | 1.941/07        | 0.130/14        | 0.09/-0.88        | -4.17/-3.52       | 0.241/95          | 0.190/7           | 2.110/47          | -3.83/-2.79       | -21/78            | 1.881/23          | 0.951/7           | -0.15/-3.1        | -3.570/0.4        | 1.770/43          | -0.960/13         | -1.4/-1.65        | -0.840/18         | 1.141/48          | 0.410/19          |
| Θ(90°)    | -0.49/-0.78   | -1.1/-2.72      | -1.01/-0.73     | -0.88/-2.67     | -2.7/-0.35      | 0.8/-0.17       | -0.83/-1.47     | -1.57/-2.19       | -5.07/-0.54       | -0.58/-0.18       | -2.54/-1.42       | 1.380/26          | -4.42/-2.71       | -4.24/-1.16       | -0.58/-0.29       | 0.12/-0.36        | -1.93/-2.67       | -4/-0.9           | 0.47/-0.15        | -1.15/-1.82       | -2.19/-1.63       | -1.34/-0.48       | -0.30/87          | -1.19/-0.69       |
| Θ(97.5°)  | -1.82/-2.12   | -2.92/-3.82     | -2.01/-1.97     | -2.07/-3.73     | -3.35/-1.44     | -0.57/-1.67     | -2.15/-2.08     | -3.45/-4.07       | -5.23/-6.33       | -2.92/-2.18       | -4.78/-3.78       | -1.01/-1.36       | -6.14/-3.16       | -5.18/-2.61       | -2.85/-2.96       | -2.54/-2.59       | -4.11/-4.29       | -5.18/-2.34       | -1.84/-1.14       | -3.94/-5.49       | -4.18/-2.01       | -1.76/-1.73       | -1.39/-0.48       | -2.77/-1.69       |
| Θ(105°)   | -2.88/-2.77   | -4.15/-5.39     | -3.05/-2.49     | -3.49/-4.72     | -3.34/-1.8      | -2.01/-3.14     | -2.74/-3.04     | -5.64/-5.67       | -6.14/-8.15       | -4.46/-4.47       | -8.01/-6.2        | -2.82/-3.56       | -8.32/-6.39       | -9.29/-7.3        | -5.38/-5.33       | -6.48/-2.57       | -4.53/-5.89       | -10.01/-4.8       | -4.73/-4.59       | -6.94/-8.98       | -5.71/-2.32       | -3.16/-2.66       | -1.68/-2.12       | -4.11/-2.99       |
| Θ(112.5°) | -2.72/-1.93   | -4.66/-4.58     | -4.36/-4.72     | -3.9/-4.75      | -4.38/-2.32     | -1.52/-3.01     | -4.39/-5.58     | -6.03/-5.43       | -5.27/-8.74       | -8.2/-7.24        | -5.77/-7.55       | -12.78/-9.96      | -10/-5.06         | -9.23/-15.14      | -8.49/-7.05       | -6.59/-10.17      | -11.7/-5.8        | -5.13/-5.03       | -13.76/-7.68      | -7.77/-5.82       | -4.09/-4.78       | -1.98/-1.99       | -2.53/-3.26       | -1.19/-0.61       |
| Θ(120°)   | -3.48/-3.68   | -3.91/-4.53     | -5.42/-5.29     | -6.64/-3.35     | -4.33/-4.11     | -3.26/-3.07     | -4.63/-7.18     | -6.28/-4.36       | -6.5/-9.82        | -9.13/-8.45       | -6.28/-6.92       | -14/-9.43         | -9.56/-63         | -7.12/-8.7        | -6.39/-8.41       | -11.08/-16.03     | -18.3/-9.2        | -5.96/-7.78       | -12.66/-11.46     | -15.6/-6.61       | -4.61/-7.71       | -3.57/-2.89       | -3.52/-6.55       |                   |
| Θ(127.5°) | -6.18/-6.66   | -5.89/-6.64     | -5.54/-6.54     | -6.97/-7.99     | -6.12/-5.07     | -5.23/-6.21     | -6.73/-6.9      | -6.83/-8.64       | -9.35/-10.43      | -8.79/-10.03      | -10.94/-10.01     | -8.43/-6.93       | -13.83/-10.3      | -10.78/-7.3       | -7.75/-7.24       | -9.85/-13.22      | -8.65/-11.44      | -13.06/-10.14     | -11.11/-10.99     | -17.59/-15.24     | -10.13/-9.03      | -7.19/-7.39       | -5.43/-7.16       | -7.05/-7.79       |
| Θ(135°)   | -7.02/-6.77   | -8.56/-7.82     | -8.06/-8.94     | -8.95/-7.89     | -6.82/-6.23     | -6.51/-7.67     | -8.52/-8.94     | -11.94/-12.15     | -9.59/-7.67       | -8.75/-11.55      | -14.14/-18.32     | -14.9/-10.59      | -16.02/-13.23     | -17.87/-15.07     | -8.24/-8.75       | -9.34/-6.31       | -8.67/-17.47      | -13.14/-8.71      | -12.7/-18.19      | -16.23/-14.48     | -11.46/-8.71      | -9.72/-16.19      | -5.18/-7.35       | -7.14/-9.57       |
| Θ(142.5°) | -8.46/-6.32   | -6.77/-7.72     | -8.45/-8.71     | -7.62/-6.76     | -5.75/-4.85     | -5.57/-4.27     | -9.68/-9.97     | -10.68/-12.56     | -10.56/-10.05     | -11.55/-12.02     | -9.03/-10.8       | -12.74/-14.21     | -13.88/-16.11     | -10.48/-8.72      | -9.12/-12.56      | -11.41/-13.69     | -17.62/-13.99     | -9.38/-8.29       | -13.81/-19.1      | -17.48/-17.82     | -16.62/-10.18     | -10.6/-9.08       | -7.47/-5.57       | -6.37/-8.79       |
| Θ(150°)   | -7.93/-7.56   | -8.83/-9.23     | -10.31/-11.68   | -9.83/-7.83     | -6.99/-6.71     | -6.8/-7.57      | -9.23/-12.43    | -12.97/-10.3      | -10.49/-14.12     | -19.41/-18.65     | -13.78/-14.92     | -16.86/-15.1      | -17.38/-18.86     | -12.24/-9.53      | -10.16/-12.95     | -14.4/-15.1       | -18.59/-18.24     | -17.94/-17.97     | -17.55/-15.72     | -12.94/-13.87     | -18.71/-13.46     | -11.34/-11.31     | -16.95/-11.77     | -9.83/-9.36       |
| Θ(157.5°) | -11.22/-10.57 | -10.6/-13.9     | -10.95/-6.95    | -8.81/-8.63     | -8.87/-9.01     | -9.13/-9.25     | -10.11/-11.06   | -11.93/-14.86     | -18.69/-18.45     | -15.01/-13        | -13.11/-16        | -18.77/-18.2      | -15.18/-17.28     | -18.49/-19.15     | -16.23/-17.27     | -17.96/-17.88     | -18.1/-17.6       | -18.26/-17.15     | -16.09/-14.34     | -12.47/-14.47     | -15.44/-13.73     | -10.26/-11.35     | -13.8/-15.28      | -11.11/-10.41     |
| Θ(165°)   | -11.63/-12.19 | -12.02/-12.08   | -12.11/-11.49   | -10.93/-11.3    | -11.57/-10.71   | -10.29/-10.09   | -10.15/-10.32   | -11.25/-12.61     | -14.55/-18.06     | -17.87/-19.09     | -18.5/-17.48      | -15.09/-16.06     | -18.61/-14.07     | -10.64/-9.92      | -10.28/-12.4      | -16.59/-17.18     | -17.44/-18.62     | -17.76/-19.97     | -16.8/-17.56      | -17.98/-17.95     | -18.43/-12.89     | -9.54/-8.64       | -9.11/-10.25      | -12.99/-12.28     |
| Θ(172.5°) | -10.41/-9.26  | -9.77/-9.69     | -8.57/-7.14     | -6.92/-7.43     | -7.65/-7.44     | -7.41/-7.93     | -8.38/-8.74     | -10.02/-11.82     | -13.67/-14.94     | -15.79/-15.5      | -14.7/-13.9       | -14.13/-15.65     | -18.33/-18.19     | -17.47/-18.21     | -16.97/-14.07     | -11.47/-9.92      | -9.88/-10.67      | -11.72/-13.47     | -16.17/-17.36     | -15.96/-14.34     | -13.28/-12.49     | -11.04/-10.8      | -10.72/-10.63     | -10.95/-11.39     |
| Θ(180°)   | -11.88/-10.77 | -10.79/-11.73   | -12.45/-11.97   | -12.45/-14.85   | -18.04/-18.36   | -18.29/-17.71   | -17.76/-18.78   | -18.42/-18.21     | -16.81/-14.61     | -13.49/-13.46     | -13.38/-14.35     | -14.65/-14.78     | -14.13/-13.39     | -12.46/-11.51     | -10.72/-10.03     | -9.8/-10.86       | -13.07/-15.08     | -16.85/-18.01     | -18.85/-18.19     | -17.76/-16.65     | -15.75/-14.82     | -14.62/-13.69     | -12.21/-11.83     | -12.71/-13.36     |
| Freq(Hz)  | 5.60GPol      | PhiAnt.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°)     | -12.17/-13.38 | -17.51/-17.93   | -17.23/-18.7    | -17.81/-17.99   | -16.94/-18.77   | -18.61/-14.11   | -10.99/-9.14    | -8.24/-7.97       | -7.66/-7.96       | -8.14/-7.87       | -7.47/-7.61       | -9.14/-12.09      | -14.94/-16.69     | -17.15/-18.4      | -18.47/-18.22     | -18.98/-18.95     | -14.88/-11.02     | -9.09/-8.88       | -9.08/-9.04       | -9.43/-9.41       | -9.6/-9.11        | -9.33/-9.66       | -10.53/-11.26     | -11.38/-12.1      |
| Θ(7.5°)   | -12.4/-14.55  | -14.1/-15.29    | -17.6/-17.67    | -13.65/-12.53   | -14.32/-15.75   | -11.75/-9.31    | -9.48/-9.57     | -10.05/-9.77      | -9.43/-9.43       | -9.62/-9.18       | -9.25/-10.5       | -12.47/-15.34     | -18.36/-17.89     | -16.65/-17.58     | -18.85/-17.86     | -18.1/-18.93      | -16.96/-16.01     | -12.26/-11.25     | -11.96/-11.77     | -10.75/-9.02      | -7.71/-6.85       | -6.38/-6.49       | -6.8/-7.31        | -8.57/-10.6       |
| Θ(15°)    | -11.2/-15.68  | -18.14/-18.36   | -18.72/-18.86   | -11.67/-9.32    | -8.81/-9.03     | -8.86/-7.09     | -5.5/-5.46      | -6.61/-7.98       | -8.86/-9.67       | -9.84/-8.71       | -8.62/-10.58      | -13.91/-18.14     | -18.27/-17.45     | -18.4/-18.05      | -17.76/-17.84     | -17.99/-18.98     | -13.29/-10.5      | -10.07/-10.23     | -10.7/-10.42      | -9.35/-6.45       | -4.59/-3.58       | -3.16/-3.43       | -3.75/-4.33       | -5.96/-8.31       |
| Θ(22.5°)  | -12.55/-15.69 | -17.89/-18.01   | -17.94/-18.8    | -14.53/-11.73   | -9.96/-8.13     | -7.02/-6.94     | -6.16/-5.23     | -4.55/-5.1        | -5.98/-7          | -7.04/-5.81       | -5.2/-6.94        | -11.08/-18.32     | -17.17/-18.95     | -19.11/-18.36     | -18.42/-14.98     | -12.41/-13.36     | -16.95/-17.12     | -12.3/-3.19       | -7.6/-7.14        | -7.95/-6.56       | -4.66/-3.8        | -3.49/-3.87       | -4.72/-6.09       | -7.98/-8.78       |
| Θ(30°)    | -15.71/-14.79 | -13.49/-11.74   | -13.23/-16.06   | -17.94/-18.75   | -13.24/-8.36    | -6.37/-5.24     | -4.75/-3.87     | -2.04/-1.31       | -1.861/-3.59      | -5.27/-5.28       | -4.74/-5.85       | -9.47/-14.13      | -13.76/-14.37     | -19.05/-17.23     | -18.71/-13.27     | -12.45/-16.76     | -17.91/-17.72     | -12.04/-8.63      | -6.79/-6.6        | -5.77/-3.45       | -3.85/-3.69       | -4.75/-6.23       | -7.34/-9.61       | -11.71/-14.07     |
| Θ(37.5°)  | -19.19/-18.36 | -14.19/-14.31   | -11.24/-11.85   | -16.9/-8.15     | -14.6/-11.12    | -8.44/-6.45     | -5.5/-4.96      | -3.46/-2.12       | -1.81/-2.49       | -3.91/-5.05       | -5.73/-6.75       | -11.16/-12.93     | -16.57/-17.72     | -15.57/-14.32     | -18.55/-19.17     | -18.26/-18.58     | -18.48/-17.32     | -17.87/-11.44     | -6.45/-4.61       | -5.66/-5.53       | -4.83/-4.9        | -5.15/-5.99       | -7.99/-10.07      | -12.69/-18.02     |
| Θ(45°)    | -18.25/-18.36 | -16.22/-15.44   | -13.53/-14.08   | -17.52/-18.14   | -12.02/-11.57   | -9.46/-7.1      | -6.39/-6.3      | -3.86/-1.99       | -1.99/-2.72       | -3.83/-5.13       | -5.83/-4.96       | -4.95/-6.62       | -10.57/-17.85     | -13.83/-12.79     | -18.74/-12.89     | -8.8/-10.32       | -17.82/-17.4      | -11.13/-5.7       | -4.28/-3.91       | -3.16/-4.16       | -4.21/-5.23       | -6.93/-7.2        | -8.14/-10.59      | -14.15/-17.4      |
| Θ(52.5°)  | -15.33/-15.52 | -14.24/-15.38   | -17.26/-16.87   | -16.74/-18.24   | -18.29/-16.17   | -12.71/-7.73    | -5.18/-5.19     | -5.16/-3.69       | -4.09/-4.19       | -2.98/-3.35       | -4.08/-3.96       | -2.98/-4.76       | -7.5/-9.2         | -10.12/-10.32     | -17.89/-13.16     | -10.47/-12.82     | -17.74/-17.71     | -8.02/-4.09       | -3.99/-2.94       | -2.36/-3.43       | -4.39/-4.94       | -5.51/-5.71       | -6.04/-8.03       | -11.16/-14.45     |
| Θ(60°)    | -15.02/-15.06 | -12.54/-14.37   | -18.69/-18.88   | -14.18/-18.11   | -18.23/-14.25   | -11.71/-8.72    | -6.5/-6.29      | -6.5/-5.63        | -5.97/-5.67       | -3.9/-4.06        | -4.37/-3.14       | <b>-1.14/-2.6</b> | -6.21/-5.7        | -10.45/-13.42     | -17.93/-19.09     | -11.49/-13.7      | -18.09/-11.72     | -8.52/-3.7        | -3.12/-2.75       | -1.89/-3.41       | -5.07/-4.26       | -5.46/-7.07       | -7.54/-9.03       | -12.63/-15.38     |
| Θ(67.5°)  | -15.79/-14.48 | -10.53/-13.78   | -18.54/-18.11   | -17.99/-18.32   | -18.68/-18.47   | -18.63/-9.82    | -1.77/-8.33     | -8.09/-7.49       | -7.62/-7.52       | -5.01/-4.61       | -4.48/-3.88       | <b>-1.24/-2</b>   | -3.54/-4.59       | -11.45/-18.18     | -18.51/-19.59     | -15.54/-18.8      | -18.31/-8.93      | -7.23/-3.84       | -3.69/-3.25       | -3.74/-4.86       | -6.36/-6.15       | -6.5/-5.17        | -8.95/-11.4       | -13.99/-12.78     |
| Θ(75°)    | -18.95/-13.43 | -11.21/-11.34   | -17.02/-18.61   | -18.05/-18.3    | -17.4/-15.66    | -17.92/-15.26   | -12.88/-10.17   | -9.97/-10.06      | -10.38/-12.68     | -9.44/-6.73       | -4.86/-5.99       | -2.33/-2.66       | -3.83/-4.79       | -14.78/-17.47     | -17.36/-18.54     | -17.25/-18.99     | -17.83/-6.48      | -7.35/-3.85       | -3.67/-3.45       | -4.52/-5.7        | -7.75/-8.18       | -7.8/-9.47        | -12.08/-17.3      | -18.86/-17.87     |
| Θ(82.5°)  | -18.37/-18.87 | -14.39/-13.87   | -18.27/-18.74   | -18.53/-18.62   | -17.28/-18.71   | -11.53/-12.63   | -11.33/-12.35   | -10.66/-18.53     | -16.77/-16.64     | -10.88/-9.74      | -5.88/-8.17       | -4.3/-5.45        | -4.04/-6.25       | -18.79/-18.73     | -18.34/-18.39     | -15.68/-19.09     | -17.06/-7.42      | -7.72/-8.62       | -6.51/-5.32       | -7.05/-11.78      | -12.18/-8.42      | -7.88/-12.45      | -18.9/-18.05      | -17.34/-18.13     |
| Θ(90°)    | -18.95/-17.51 | -11.89/-13.07   | -18.33/-18.1    | -18.81/-        |                 |                 |                 |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |



# Radiated Composite Gain Data of 2.4GHz/5GHz/6GHz

# Appendix A

|           |               |                 |                 |                 |                 |                 |                 |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |
|-----------|---------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| Θ(82.5°)  | -0.79/-1.53   | -0.62/-0.03     | 0/0.2           | -0.95/-1.71     | -0.98/0.53      | 0.54/-0.2       | 0.25/0.59       | -1.55/-2.35       | -0.3/-1.97        | -1.98/0.51        | 1.24/1.34         | 2.01/-0.44        | -3.67/-4.75       | -6.63/0.96        | 1.67/0.72         | 2.95/4.48         | 2.63/-0.26        | -1.99/0.28        | 0.92/1.96         | 1.04/0.87         | -0.38/-4.41       | 1.07/0.55         | 0.53/0.5          | 0.32/0.19         |
| Θ(90°)    | -1.9/-2.99    | -1.77/-0.16     | -0.32/-1.46     | -2.23/-1.95     | -0.93/-0.32     | -0.55/-0.6      | -0.68/-1.06     | -2.71/-2.04       | -0.51/-3.43       | -5.72/-1.04       | 0.72/0.78         | 1.25/-0.66        | -2.49/-5.06       | -9.22/-0.91       | -0.3/-0.78        | 0.86/2.54         | 1.17/-1.08        | -3.2/-0.07        | 0.96/0.85         | 0.37/0.29         | -1.89/-4.3        | 0.34/-0.35        | 0.1/-0.76         | -0.98/-2.28       |
| Θ(97.5°)  | -2.33/-3.77   | -1.35/-1.03     | -0.96/-2.15     | -2.86/-2.93     | -1.87/-1.69     | -0.99/-1.26     | -1.64/-2.49     | -4.07/-3.34       | -2.22/-5.23       | -7.37/-3.41       | -1.41/-0.63       | -0.14/-2.13       | -3.22/-5.29       | -12.76/-3.61      | -3.01/-3.95       | -2.2/-0.85        | -3.2/-4.11        | -5.98/-2.76       | -1.95/-1.1        | -1.99/-2.71       | -4.59/-3.94       | -1.31/-1.29       | -0.88/-3.3        | -1.54/-3.57       |
| Θ(105°)   | -3.57/-5.8    | -4.78/-1.99     | -1.59/-2.79     | -4.39/-4.51     | -3.02/-3.56     | -3.18/-2.11     | -1.8/-3.38      | -5.79/-5.19       | -3.33/-6.6        | -10.19/-5.82      | -3.61/-4.44       | -3.31/-3.48       | -2.47/-6.37       | -13.48/-9.81      | -4.81/-7.18       | -6.84/-5.34       | -8.63/-7.17       | -8.58/-4.77       | -6.4/-3.34        | -5.44/-5.87       | -6.73/-4.31       | -2.32/-2.49       | -2.54/-4.94       | -2.93/-3.36       |
| Θ(112.5°) | -5.88/-5.94   | -5.23/-4.35     | -3.12/-3.4      | -3.09/-3.86     | -4.47/-4.49     | -4.36/-3.33     | -3.81/-4.28     | -4.92/-8.41       | -7.72/-7.44       | -7.33/-7.21       | -8.13/-8.79       | -6.88/-7.7        | -6.67/-15.6       | -17.37/-7.88      | -10.59/-15.87     | -12.17/-5.02      | -7.64/-8.21       | -7.83/-4.73       | -9.27/-5.35       | -6.07/-10.37      | -8.77/-3.62       | -3.64/-3.25       | -3.4/-6.51        | -7.44/-4.5        |
| Θ(120°)   | -7.01/-5.62   | -5.94/-4.96     | -4.61/-5.16     | -3.98/-4.59     | -4.64/-4.7      | -4.67/-4.47     | -3.51/-7.31     | -6.64/-10.71      | -6.55/-7.88       | -10.33/-10.21     | -11.52/-9.42      | -8.74/-10.12      | -10.23/-17.42     | -18.01/-9.31      | -9.83/-8.67       | -8.93/-6.02       | -6.67/-10.01      | -10.87/-5.33      | -7.85/-5.66       | -12.83/-12.77     | -10.99/-5.35      | -5.77/-5.16       | -3.74/-8.16       | -10.54/-5.52      |
| Θ(127.5°) | -6.4/-6.58    | -6.81/-4.77     | -5.59/-5.27     | -7.72/-7.81     | -6.61/-4.53     | -4.55/-4.76     | -4.4/-4.6       | -8.48/-10.15      | -7.28/-7.35       | -11.06/-15.67     | -16.05/-11.42     | -7.5/-7.91        | -11.19/-10.3      | -18.22/-7.61      | -6.94/-12.22      | -8.7/-18.01       | -9.99/-12.58      | -19.42/-11.84     | -12.34/-10.03     | -18.8/-18.79      | -9.86/-7.96       | -8.29/-5.97       | -5.97/-7.96       | -6.5/-7.94        |
| Θ(135°)   | -8.68/-8.53   | -7.5/-5.95      | -4.96/-5.86     | -6.38/-7.35     | -6.7/-7.21      | -7.15/-6.37     | -6.5/-7.35      | -8.34/-9.39       | -11.47/-11.73     | -9.55/-10.7       | -18.25/-17.32     | -17.23/-13.58     | -12.35/-13.91     | -18.99/-18.71     | -8.15/-8.85       | -7.27/-8.56       | -8.78/-10.91      | -11.13/-10.28     | -16.47/-14.98     | -14.05/-10.67     | -9.48/-15.98      | -9.18/-8.17       | -9.4/-8.35        | -6.39/-7.7        |
| Θ(142.5°) | -7.31/-7.89   | -7.1/-7.34      | -6.76/-7.14     | -8.29/-9.16     | -8.86/-1.74     | -7.58/-7.6      | -8.32/-8.76     | -9.55/-10.7       | -15.91/-11.57     | -9.32/-9.67       | -12.61/-13.72     | -14.38/-14.45     | -16.95/-17.9      | -9.29/-7.59       | -7.14/-8.36       | -14.26/-13.26     | -18.33/-8.87      | -7.93/-9.45       | -17.91/-16.99     | -13.99/-15.52     | -17.91/-15.61     | -12.23/-10.17     | -12.46/-13.43     | -7.73/-7.32       |
| Θ(150°)   | -9.56/-9.97   | -10.07/-10.08   | -8.65/-7.3      | -7.39/-7.41     | -6.7/-6.62      | -6.97/-7.58     | -8.28/-8.69     | -10.67/-17.29     | -15.86/-11.83     | -13.43/-16.4      | -18.44/-18.38     | -15.28/-16.05     | -13.8/-18.91      | -17.24/-12.24     | -11.42/-16.07     | -16.97/-18.75     | -19.03/-18.32     | -18.55/-18.14     | -15.73/-16.64     | -18.51/-18.33     | -15.38/-16.21     | -18.44/-16.67     | -9.49/-8.5        | -8.13/-8.63       |
| Θ(157.5°) | -12.5/-16.12  | -18.14/-16.35   | -14.78/-11.58   | -9.15/-8.52     | -8.13/-7.48     | -8.22/-10.08    | -11.24/-10.59   | -10.32/-11.64     | -17.38/-16.1      | -14.57/-13.98     | -17.08/-16.77     | -17.75/-15.61     | -19.01/-14.43     | -12.79/-17.17     | -17.93/-17.72     | -18.22/-18.62     | -18.1/-16.68      | -17.43/-19.36     | -14.9/-12.46      | -12.17/-13.46     | -16.26/-18.35     | -14.56/-13.74     | -16.11/-13.08     |                   |
| Θ(165°)   | -10.26/-11.69 | -15/-15.96      | -13.55/-13.8    | -15.89/-15.11   | -13.64/-13.04   | -12.28/-11.47   | -10.25/-13.15   | -12.68/-11.85     | -13.56/-17.03     | -14.57/-17.66     | -18.73/-16.1      | -15.69/-18.96     | -16.76/-11.7      | -9.99/-10.73      | -14.03/-17.32     | -18.2/-18.33      | -17.97/-16.83     | -16.05/-17.54     | -18.43/-17.74     | -19.12/-18.87     | -18.53/-13.98     | -10.39/-12.19     | -13.54/-11.59     | -10.19/-9.96      |
| Θ(172.5°) | -12.42/-13.26 | -13.03/-12.23   | -11.65/-10.99   | -10.35/-10.99   | -11.28/-10.99   | -11.31/-11.72   | -11.49/-10.91   | -10.03/-9.53      | -9.51/-9.89       | -11.69/-15.66     | -18.16/-18.72     | -17.23/-17.21     | -16.8/-15.97      | -16.51/-18.02     | -17.05/-14.64     | -13.67/-12.5      | -11.36/-10.68     | -11.64/-13.3      | -15.85/-18.36     | -19.03/-18.54     | -17.62/-15.97     | -12.51/-11.6      | -11.61/-11.33     | -11.62/-12.38     |
| Θ(180°)   | -10.21/-9.45  | -9.15/-9.69     | -10.41/-10.82   | -10.11/-10.06   | -10.87/-11.07   | -10.49/-10.47   | -11.82/-14.89   | -18.62/-18.39     | -18.32/-19.22     | -18.97/-17.21     | -14.24/-14.06     | -16.58/-18.42     | -16.17/-14.48     | -13.17/-12.2      | -11.28/-11.15     | -11.73/-13.55     | -16.27/-19.19     | -17.43/-17.55     | -17.51/-18.19     | -18.91/-17.93     | -18.81/-15.23     | -12.68/-12.61     | -14.38/-15.92     | -13.92/-11.41     |
| Freq(Hz)  | 5.885GPol.    | PhiAnt.2        | -               | -               | -               | -               | -               | -                 | -                 | -                 | -                 | -                 | -                 | -                 | -                 | -                 | -                 | -                 | -                 | -                 | -                 | -                 | -                 | -                 |
| Gain      | Φ(0°)/Φ(7.5°) | Φ(15°)/Φ(22.5°) | Φ(30°)/Φ(37.5°) | Φ(45°)/Φ(52.5°) | Φ(60°)/Φ(67.5°) | Φ(75°)/Φ(82.5°) | Φ(90°)/Φ(97.5°) | Φ(105°)/Φ(112.5°) | Φ(120°)/Φ(127.5°) | Φ(135°)/Φ(142.5°) | Φ(150°)/Φ(157.5°) | Φ(165°)/Φ(172.5°) | Φ(180°)/Φ(187.5°) | Φ(195°)/Φ(202.5°) | Φ(210°)/Φ(217.5°) | Φ(225°)/Φ(232.5°) | Φ(240°)/Φ(247.5°) | Φ(255°)/Φ(262.5°) | Φ(270°)/Φ(277.5°) | Φ(285°)/Φ(292.5°) | Φ(300°)/Φ(307.5°) | Φ(315°)/Φ(322.5°) | Φ(330°)/Φ(337.5°) | Φ(345°)/Φ(352.5°) |
| Θ(0°)     | -18.24/-18.54 | -18.08/-18.1    | -17.56/-18.2    | -16.86/-11.85   | -12.8/-13.94    | -11.41/-10.7    | -10.91/-11.57   | -11.47/-10.89     | -10.68/-11.46     | -10.68/-11.57     | -13.05/-14.55     | -16.56/-18.81     | -18.31/-18.7      | -18.97/-18.31     | -17.44/-18.3      | -17.14/-11.37     | -10.78/-11.12     | -11.3/-11         | -10.53/-10.04     | -9.65/-9.67       | -9.68/-10.08      | -10.64/-10.94     | -11.22/-12.72     | -15.2/-15.37      |
| Θ(7.5°)   | -15.71/-18.43 | -17.31/-17      | -15.71/-15.47   | -11.74/-9.58    | -9.22/-9.99     | -10.8/-10.26    | -9.94/-10.5     | -11.99/-12.89     | -13.7/-11.41      | -14.46/-13.89     | -11.55/-18.29     | -19.35/-18.86     | -18.26/-18.88     | -18.52/-18.33     | -17.13/-13.44     | -15.83/-13.73     | -13.09/-14.14     | -15.83/-13.73     | -10.97/-9.38      | -8.37/-6.7        | -7.6/-8.14        | -8.66/-8.78       | -9.78/-10.6       | -12.02/-13.22     |
| Θ(15°)    | -18.8/-18.06  | -18.22/-18.84   | -18.63/-15.04   | -11.93/-10.31   | -8.47/-7.46     | -7.79/-8.81     | -9.2/-8.42      | -7.84/-7.9        | -8.57/-10.04      | -12.34/-12.98     | -11.61/-11.22     | -12.49/-14.95     | -17.21/-18.34     | -18.7/-18.18      | -17.65/-18.69     | -16.66/-14.71     | -13.49/-11.9      | -11.46/-11.78     | -10.99/-8.96      | -6.75/-4.96       | -4.36/-4.36       | -4.58/-5.32       | -7.16/-9.08       | -11.36/-13.94     |
| Θ(22.5°)  | -14.85/-17.01 | -18.2/-14.09    | -17.06/-17.29   | -19.06/-14.28   | -11.86/-8.99    | -6.39/-5.8      | -6.12/-5.89     | -4.99/-4.45       | -4.29/-5.2        | -7.68/-10.7       | -9.49/-25.5       | -11.83/-8.71      | -18.48/-10.55     | -17.08/-16.6      | -14.14/-11.97     | -10.81/-11.69     | -15.29/-16.55     | -13.49/-11.64     | -11.43/-10.24     | -7.13/-5.07       | -3.77/-3.4        | -3.5/-4.43        | -8.66/-9.71       | -12.14/-11.41     |
| Θ(30°)    | -14.21/-15.23 | -16.68/-13.62   | -14.97/-16.79   | -15.93/-15.43   | -15.09/-12.23   | -9.69/-7.6      | -6.23/-5.43     | -4.33/-4.31       | -2.81/-2.95       | -4.57/-7.19       | -6.84/-6.26       | -9.31/-8.52       | -16.22/-17.21     | -18.54/-16.94     | -11.27/-10.44     | -19.15/-15.25     | -9.75/-7.97       | -8.29/-8.1        | -6.65/-4.97       | -3.49/-3.05       | -3.28/-4.54       | -7.17/-10.21      | -15.07/-10.95     |                   |
| Θ(37.5°)  | -13.28/-15.55 | -16.73/-17.18   | -17.03/-16.15   | -16.46/-18.29   | -17.85/-14.27   | -9.29/-6.46     | -5.4/-5.08      | -4.19/-2.65       | -1.84/-1.92       | -3.4/-9.7         | -5.03/-5.37       | -9.28/-12.69      | -12.55/-17.43     | -13.81/-10.03     | -13.12/-17.23     | -16.24/-14.73     | -13.72/-12.41     | -13.38/-15.77     | -12.65/-10.28     | -6.94/-5.88       | -4.98/-4.43       | -3.67/-5.04       | -7.52/-11.81      | -14.61/-12.25     |
| Θ(45°)    | -10.59/-11.67 | -15.9/-18.51    | -17.23/-15.2    | -17.94/-18.4    | -12.71/-14.83   | -11.28/-7.35    | -4.96/-4.7      | -4.33/-3          | -2.53/-2.06       | -1.85/-3.72       | -4.67/-5.44       | -8.25/-8.3        | -11.88/-14.89     | -8.66/-9.29       | -18.73/-16.43     | -15.47/-12.05     | -12.76/-18.28     | -10.61/-7.81      | -7.79/-5.21       | -5.28/-5.69       | -6.08/-5.55       | -6.26/-6.13       | -6.61/-11.33      | -13.82/-13.23     |
| Θ(52.5°)  | -11.47/-10.93 | -11.75/-15.25   | -18.41/-19.29   | -16.01/-17.46   | -18.36/-16.81   | -10.23/-7.14    | -5.07/-4.49     | -4.41/-3.77       | -3.75/-3.71       | -2.52/-3.16       | -3.95/-3.92       | -4.13/-3.66       | -8.36/-14.8       | -10/-11.98        | -19.01/-9.62      | -9.27/-16.49      | -19.01/-17.73     | -12.56/-7.1       | -5.14/-3.19       | -2.68/-4.02       | -4.11/-5.29       | -5.69/-5.8        | -8.43/-10.96      | -13.84/-13.63     |
| Θ(60°)    | -12.83/-10.47 | -13.9/-16.71    | -16.66/-18.93   | -18.36/-15.03   | -15.76/-17.49   | -11.07/-7.71    | -7.03/-6.78     | -4.72/-4.56       | -5.49/-7.3        | -6.23/-8.83       | -2.63/-3.06       | -2.52/-1.26       | -4.76/-7.28       | -11.74/-14.95     | -17.85/-12.49     | -13.66/-18.57     | -17.81/-15.27     | -11.15/-6.63      | -5.21/-4.07       | -3.48/-5.25       | -6.11/-5.91       | -7.87/-8.14       | -9.41/-12.41      | -14.64/-14.34     |
| Θ(67.5°)  | -16.45/-11.74 | -14.79/-14.06   | -13.93/-18.63   | -18.49/-16.62   | -15.63/-17.56   | -12.87/-10.12   | -9.88/-9.48     | -7.03/-6.86       | -9.48/-10.73      | -6.29/-3.72       | -3.18/-5.31       | -2.6/-2.37        | -5.8/-6.89        | -16.81/-17.42     | -18.13/-16.21     | -18.43/-15.92     | -15.59/-11.4      | -8.37/-5.19       | -3.37/-2.98       | -4.63/-6.72       | -5.54/-5.33       | -7.55/-10.6       | -13.21/-18.4      | -19.08/-18.94     |
| Θ(75°)    | -15.74/-12.06 | -13.52/-14.74   | -12.88/-17.4    | -17.52/-14.68   | -16.01/-18.06   | -13.65/-10.75   | -11.39/-12.83   | -8.83/-13.15      | -11.69/-13.21     | -11.26/-7.66      | -5.46/-5.31       | -3.46/-1.86       | -5.48/-6.07       | -18.12/-18.79     | -17.99/-13.37     | -15.74/-13.27     | -14.87/-10.56     | -8.74/-4.64       | -3.75/-3.48       | -6.02/-7.87       | -8.03/-8.23       | -9.81/-15.06      | -17.21/-19.37     | -18.07/-17.77     |
| Θ(82.5°)  | -16.18/-11.93 | -13.78/-14.06   | -11.34/-15.34   | -18.12/-16.6    | -16.2/-16.75    | -17.72/-15.13   | -18.35/-18.84   | -13.27/-16.13     | -17.2/-18.72      | -10.42/-6.43      | -8.43/-7.47       | -4.95/-3.55       | -4.92/-6.09       | -18.36/-18.02     | -18.81/-14.34     | -15.11/-11.25     | -14.7/-2          | -8.53/-4.48       | -5.34/-6.07       | -9.53/-10.7       | -11.06/-12.67     | -13.49/-14.95     | -18.32/-18.78     | -18.53/-17.5      |
| Θ(90°)    | -18.21/-14.9  | -17.22/-16.51   | -12.83/-14.28   | -18/-17.92      | -15.31/-17.57   | -16.37/-18.81   | -16.9/-17.71    | -14.38/-17.85     | -17.97/-18.59     | -18.42/-13.81     | -10.63/-9.21      | -8.19/-6.51       | -7.59/-7.65       | -18.16/-15.56     | -16.13/-15.41     | -12.28/-17.42     | -17.55/-8.28      | -10.29/-7.33      | -9.08/-10.22      | -15.14/-17.49     | -16.75/-16.89     | -15.91/-17.04     | -15.95/-16.79     | -18.37/-17.81     |
| Θ(97.5°)  | -17.04/-18.18 | -17.1/-17.87    | -12.84/-18.18   | -18.48/-17.24   | -17.32/-18.3    | -18.3/-18.48    | -19.05/-17.88   | -18.75/-18.9      | -18.23/-18.98     | -18.06/-13.33     | -14.6/-11.7       | -8.28/-6.94       | -6.83/-10.22      | -14.35/-16.6      | -14.7/-17.84      | -11.57/-18.86     | -17.87/-8.96      | -18.52/-13.07     | -15.61/-17.45     | -19.33/-19.19     | -15.74/-12.61     | -12.72/-18.45     | -16.28/-16.39     | -18.55/-15.22     |
| Θ(105°)   | -17.23/-18.43 | -17.21/-18.51   | -13.06/-14.02   | -17.68/-17.94   | -15.2/-18.64    | -18.47/-18.64   | -16.35/-18.27   | -17.68/-19.13     | -18.49/-18.75     | -16.59/-11.84     | -14.08/-12.64     | -11.75/-8.63      | -8.24/-8.51       | -12.64/-17.32     | -14.75/-18.74     | -11.42/-18.3      | -13.82/-14.71     | -18.38/-15.62     | -15.68/-16.95     | -13.66/-18.03     | -13.66/-15.6      | -13.83/-17.16     | -13.96/-15.1      | -18.51/-16.44     |
| Θ(112.5°) | -18.7/-18.92  | -16.67/-16.64   | -13.91/-16.64   | -18.67/-18.35   | -17.97/-17.49   | -18.17/-19.62   | -16.06/-18.86   | -19.13/-17.72     | -17.91/-19.22     | -18.45/-11.36     | -10.44/-9.19      | -14.29/-14.06     | -8.85/-12.52      | -11.6/-12.52      | -11.21/-18.26     | -12.39/-15.33     | -16.77/-12.08     | -14.5/-10.66      | -13.52/-9.98      | -13.92/-14.77     | -12.16/-12.94     | -14.89/-16.24     | -13.42/-13.78     | -19.15/-14.34     |
| Θ(120°)   | -16.7/-17.26  | -13.99/-16.12   | -13.28/-16.19   | -18.52/-17.49   | -18.05/-18.67   | -18.67/-18.18   | -14.88/-18.91   | -17.68/-18.5      | -18.55/-16.75     | -19.17/-16.11     | -17.8/-12.24      | -9.49/-12.21      | -14.75/-18.4      | -10.72/-14.45     | -11.85/-18.84     | -14.24/-15.82     | -8.62/-11.47      | -16.69/-13.08     | -10.86/-12.13     | -12.47/-13.89     | -13.54/-8.29      | -9.68/-18.78      | -13.18/-17.67     | -16.94/-15.92     |
| Θ(127.5°) | -16.08/-18.11 | -14.1/-15.29    | -1              |                 |                 |                 |                 |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |



# Radiated Composite Gain Data of 2.4GHz/5GHz/6GHz

# Appendix A

|           |               |                 |                 |                 |                 |                 |                 |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |               |               |
|-----------|---------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|---------------|---------------|
| Θ(135°)   | -9.4/-9.82    | -10.53/-8.74    | -8.44/-6.62     | -6.84/-6.94     | -7.91/-7.04     | -5.8/-5.5       | -5.12/-6.5      | -8.34/-9.78       | -12.02/-9.83      | -8.61/-12.49      | -15.75/-14.81     | -17.6/-14.95      | -13.55/-13.95     | -18.89/-17.06     | -8.65/-10.11      | -4.52/-8.45       | -7.51/-7.53       | -8.12/-13.12      | -17.54/-14.72     | -12.07/-14.63     | -14.6/-8.82       | -14.84/-6.69      | -10.04/-6.59      | -8.05/-7          |               |               |
| Θ(142.5°) | -10.3/-11.19  | -11.1/-8.99     | -7.39/-6.64     | -6.28/-7.84     | -8.84/-9.3      | -7.45/-5.56     | -6.4/-8.32      | -10.3/-10.3       | -15.52/-18.11     | -10.72/-11.15     | -9.48/-10.96      | -14.03/-14.66     | -11.77/-13.84     | -17.1/-10.24      | -10.98/-8.17      | -13.74/-13.75     | -18.19/-9.78      | -9.98/-12.45      | -17.95/-11.72     | -10.93/-17.84     | -15.44/-18.44     | -15.11/-15.42     | -13.81/-7.28      | -7.49/-7.36       |               |               |
| Θ(150°)   | -11.76/-11.48 | -10.88/-9.86    | -7.51/-6.96     | -7.97/-8.82     | -7.65/-7.43     | -8.28/-8.98     | -6.31/-6.92     | -6.68/-8.08       | -16.6/-16.84      | -11.26/-16.21     | -17.46/-10.98     | -19.17/-17.68     | -14.53/-11.33     | -16.61/-18.12     | -13.06/-13.27     | -13.6/-13         | -17.28/-18.16     | -14.83/-18.01     | -17.08/-18.61     | -18.24/-18.74     | -17.88/-18.73     | -17.22/-15.22     | -12.42/-12.38     | -11.39/-11.1      |               |               |
| Θ(157.5°) | -11.72/-12.6  | -13.98/-13.61   | -11.51/-10.2    | -10.48/-9.97    | -6.96/-6.73     | -6.95/-7.28     | -8.51/-10.02    | -12.13/-13.92     | -13/-13.65        | -14.87/-17.73     | -17.9/-19.14      | -15.21/-13.14     | -16.57/-18.17     | -18.37/-18.57     | -13.99/-14.23     | -17.89/-18.5      | -16.45/-13.35     | -12.22/-15.27     | -17.5/-13.71      | -12.62/-14.28     | -14.84/-17.17     | -17.61/-11.1      | -10.85/-9.42      | -8.68/-9.81       |               |               |
| Θ(165°)   | -13.21/-14.01 | -12.31/-11.44   | -11.28/-11.98   | -13.07/-13.45   | -13.8/-14.09    | -13.11/-11.99   | -11.24/-11.91   | -14.1/-14.68      | -12.53/-12.23     | -16.09/-18.06     | -18.54/-18.06     | -12.98/-10.3      | -15.43/-17.82     | -11.21/-9.19      | -9.89/-13.33      | -18.3/-18.31      | -16.97/-17.48     | -17.93/-18.78     | -18.01/-18.61     | -17.64/-13.62     | -18.08/-16.36     | -17.27/-18.29     | -18.05/-14.93     | -12.91/-12.65     | -10.92/-11.2  | -10.43/-11.21 |
| Θ(172.5°) | -10.86/-10.6  | -12.16/-13.83   | -14.33/-12.62   | -10.81/-9.55    | -8.96/-8.74     | -10.21/-13.36   | -14.71/-13.31   | -12.96/-13.3      | -13.75/-15.28     | -16.71/-17.05     | -17.95/-18.06     | -17.38/-18.68     | -17.87/-18.79     | -18.02/-18.61     | -16.33/-17.15     | -17.27/-18.87     | -16.33/-17.15     | -17.27/-18.87     | -16.33/-17.15     | -17.27/-18.87     | -16.33/-17.15     | -17.27/-18.87     | -16.33/-17.15     | -17.27/-18.87     | -16.33/-17.15 | -17.27/-18.87 |
| Θ(180°)   | -16.72/-17.94 | -15.16/-11.75   | -9.99/-10.43    | -10.99/-11.24   | -12.38/-14.15   | -14/-12.9       | -12.37/-12.89   | -15.62/-19.1      | -18.64/-17.64     | -17.28/-15.58     | -14.08/-12.79     | -12.99/-14.42     | -14.34/-12.68     | -10.68/-9.27      | -9.17/-9.53       | -9.61/-9.96       | -11.52/-14.31     | -17.4/-18.03      | -16.62/-16.27     | -17.58/-18.33     | -19.03/-18.83     | -19.01/-18.39     | -17.89/-14.96     | -15.47/-16.05     |               |               |
| Freq(Hz)  | 6.475GPol.    | PhiAnt. 2       | -               | -               | -               | -               | -               | -                 | -                 | -                 | -                 | -                 | -                 | -                 | -                 | -                 | -                 | -                 | -                 | -                 | -                 | -                 | -                 | -                 |               |               |
| Gain      | Φ(0°)/Φ(7.5°) | Φ(15°)/Φ(22.5°) | Φ(30°)/Φ(37.5°) | Φ(45°)/Φ(52.5°) | Φ(60°)/Φ(67.5°) | Φ(75°)/Φ(82.5°) | Φ(90°)/Φ(97.5°) | Φ(105°)/Φ(112.5°) | Φ(120°)/Φ(127.5°) | Φ(135°)/Φ(142.5°) | Φ(150°)/Φ(157.5°) | Φ(165°)/Φ(172.5°) | Φ(180°)/Φ(187.5°) | Φ(195°)/Φ(202.5°) | Φ(210°)/Φ(217.5°) | Φ(225°)/Φ(232.5°) | Φ(240°)/Φ(247.5°) | Φ(255°)/Φ(262.5°) | Φ(270°)/Φ(277.5°) | Φ(285°)/Φ(292.5°) | Φ(300°)/Φ(307.5°) | Φ(315°)/Φ(322.5°) | Φ(330°)/Φ(337.5°) | Φ(345°)/Φ(352.5°) |               |               |
| Θ(0°)     | -18.38/-18.01 | -18.15/-18.37   | -18.69/-16.58   | -15.29/-13.13   | -11.32/-9.81    | -7.88/-6.82     | -6.66/-7.11     | -8.34/-8.94       | -8.87/-9.91       | -9.57/-10.11      | -10.79/-11.97     | -11.88/-12.51     | -14.71/-17.69     | -18.21/-19.19     | -16.85/-12.28     | -10.05/-10.29     | -9.32/-7.01       | -5.46/-5.24       | -5.21/-5.59       | -5.93/-6.13       | -6.15/-6.7        | -7.56/-8.39       | -9.85/-11.9       | -14.05/-17.71     |               |               |
| Θ(7.5°)   | -14.35/-18.33 | -17.54/-17.75   | -17.73/-14.94   | -12.01/-9.29    | -7.84/-6.61     | -5.84/-4.78     | -5.02/-4.58     | -6.72/-8.36       | -9.47/-10.74      | -12.19/-13.32     | -15.04/-15.17     | -14.14/-13.43     | -14.13/-16.51     | -15.86/-18.86     | -17.21/-17.72     | -16.74/-14.58     | -11.2/-7.54       | -5.56/-4.83       | -3.98/-3.49       | -3.95/-4.2        | -4.26/-5.11       | -6.32/-7.41       | -8.59/-10.03      | -11.53/-13.33     |               |               |
| Θ(15°)    | -11.1/-13.31  | -13.96/-14.85   | -17.57/-17.44   | -12.05/-15.19   | -9.66/-8.61     | -5.39/-5.1      | -5.13/-5.22     | -6.14/-7.99       | -9.44/-10.95      | -13.34/-17.75     | -19.14/-17.41     | -17.67/-18.65     | -18.08/-18.21     | -18.7/-17.99      | -18.12/-18.84     | -18.38/-18.12     | -17.71/-15.02     | -10.35/-8.18      | -6.29/-4.64       | -4.14/-4.02       | -4.25/-4.81       | -5.83/-7.55       | -9.75/-12.45      | -12.31/-11.7      |               |               |
| Θ(22.5°)  | -9.76/-12.73  | -14.48/-12.6    | -14.28/-19.06   | -18.93/-18.36   | -13.92/-9.02    | -7.15/-7.87     | -8.57/-6.32     | -4.27/-4.54       | -5.48/-5.71       | -6.35/-8.59       | -14.24/-18.52     | -17.45/-18.11     | -11.92/-10.48     | -12.57/-18.25     | -17.66/-13.85     | -9.84/-9.66       | -10.78/-12.26     | -11.04/-10.52     | -9.31/-7.14       | -6.18/-5.52       | -4.91/-4.86       | -5.46/-7.18       | -10.05/-12.47     | -11.07/-9.7       |               |               |
| Θ(30°)    | -9.58/-10.87  | -14.13/-17.67   | -15.48/-14.4    | -19.09/-17.56   | -16.97/-9.77    | -7.08/-5.46     | -5.03/-4.69     | -2.95/-2.43       | -3.4/-3.43        | -2.72/-3.93       | -9.26/-18.27      | -10.62/-13.9      | -12.59/-10.18     | -11.81/-18.84     | -17.15/-10.56     | -8.58/-11.66      | -15.6/-13.67      | -9.8/-7.59        | -6.02/-4.65       | -5.08/-5.02       | -4.66/-4.55       | -4.99/-6.17       | -8.69/-10.36      | -9.15/-9.3        |               |               |
| Θ(37.5°)  | -7.39/-14.04  | -12.27/-16.28   | -18.99/-19.25   | -16.45/-16.05   | -16.27/-11.21   | -7.57/-4.31     | -2.54/-2.72     | -3.47/-7.72       | -2.72/-2.67       | -0.73/-0.67       | -4.33/-10.65      | -8.43/-9.71       | -12.54/-15.83     | -15.5/-10.42      | -11.88/-14.28     | -18.43/-13.3      | -10.09/-10.63     | -10.27/-9.08      | -7.87/-8.16       | -6.67/-5.04       | -3.61/-1.63       | -1.99/-3.66       | -6.61/-6.63       | -6.34/-6.29       |               |               |
| Θ(45°)    | -6.81/-6.82   | -8.48/-13.31    | -18.36/-19.29   | -17.88/-16.42   | -15.83/-17.06   | -6.95/-4.91     | -4.68/-3.51     | -3.29/-2.08       | -1.91/-2.97       | -1.84/-0.63       | -3.53/-8.01       | -8.86/-16.98      | -18.11/-13.67     | -7.98/-6.5        | -14.02/-12.69     | -8.25/-9.47       | -11.48/-14.76     | -17.59/-12.02     | -6.39/-5.11       | -5.38/-4.44       | -4.37/-3.28       | -1.56/-2.78       | -3.71/-5.69       | -6.32/-6.88       |               |               |
| Θ(52.5°)  | -10.07/-6.89  | -7.35/-12.71    | -17.16/-18.98   | -13.71/-14.06   | -13.21/-16.75   | -9.02/-9.86     | -6.84/-4.4      | -6.56/-6.14       | -2.14/-2.97       | -3.27/-1.17       | -2.65/-3.67       | -4.96/-10.23      | -6.05/-14.39      | -8.05/-9.77       | -18.92/-10.28     | -11.22/-19.29     | -12.3/-17.54      | -7.84/-6.02       | -3.95/-3.79       | -4.66/-3.12       | -3.88/-4.52       | -4.27/-4.52       | -6.79/-9.46       | -10.22/-12.72     |               |               |
| Θ(60°)    | -12.46/-7.85  | -8.02/-13.23    | -14.47/-12.94   | -16.75/-15.84   | -14.77/-16.08   | -9.89/-8.92     | -11.82/-8.28    | -7.17/-7.29       | -5.31/-4.21       | -4.96/-6.29       | -1.65/-1.87       | -2.34/-2.6        | -15.03/-12.35     | -16.17/-18.32     | -14.55/-11.26     | -11.33/-18.52     | -18.1/-13.92      | -7.37/-5.31       | -2.49/-2.07       | -3.1/-2.74        | -3.96/-4.53       | -6.62/-8.86       | -14.73/-12.46     | -13.62/-17.84     |               |               |
| Θ(67.5°)  | -14.94/-9.87  | -11.67/-17.05   | -10.74/-10.12   | -14.7/-18.74    | -14.19/-18.77   | -18.48/-13.26   | -12.24/-12.67   | -12.22/-7.38      | -7.05/-6.39       | -6.14/-3.58       | -1.77/-1.57       | -2.85/-1.14       | -3.29/-8.02       | -13.86/-16.48     | -14.42/-11.18     | -17.1/-11.96      | -10.94/-11.97     | -5.19/-4.11       | -1.84/-2.84       | -3.42/-3.88       | -6.75/-6.63       | -14.21/-16.24     | -17.28/-14.61     | -16.77/-17.88     |               |               |
| Θ(75°)    | -14.47/-14.08 | -18.17/-18.24   | -10.76/-10.04   | -13.96/-13.34   | -19.02/-18.23   | -16.88/-12.15   | -15.4/-13.34    | -10.63/-11.29     | -10.49/-6.82      | -7.71/-4.82       | -3.16/-2.13       | -2.72/-2.61       | -1.62/-1.41       | -19.16/-0.27      | -17.52/-9.29      | -8.78/-3.97       | -4.02/-2.68       | -1.15/-1.91       | -4.32/-5.94       | -9.92/-11.66      | -14.34/-16.17     | -16.04/-13.7      | -17.42/-18.36     | -17.42/-18.36     |               |               |
| Θ(82.5°)  | -12.67/-15.1  | -18.96/-16.94   | -11.72/-12.68   | -16.22/-17.85   | -17.88/-18.21   | -18.09/-16.08   | -18.22/-18.48   | -15.32/-13.52     | -10.19/-13.13     | -5.97/-3.66       | -3.83/-2.61       | -19.73/-4.99      | -16.13/-13.38     | -18.25/-18.79     | -12.22/-11.09     | -8.77/-7.23       | -4.07/-2.43       | -6.92/-8.22       | -6.98/-8.96       | -15.91/-17.22     | -17.17/-15.5      | -16.14/-12.67     | -18.67/-18.21     | -18.67/-18.21     |               |               |
| Θ(90°)    | -19.26/-18.28 | -18.62/-18.27   | -13.23/-14.23   | -18.79/-18.15   | -19.14/-18.23   | -18.18/-18.14   | -18.27/-18.82   | -18.02/-12.22     | -18.11/-17.8      | -11.96/-9.88      | -11.37/-6.68      | -7.01/-4.49       | -4.78/-4.67       | -15.9/-15.57      | -18.55/-18.5      | -12.02/-16.46     | -14.01/-6.68      | -8.37/-5.4        | -5.11/-10.05      | -11.64/-17.85     | -19.22/-18.99     | -14.94/-19.35     | -16.78/-15.83     | -19.1/-18.04      |               |               |
| Θ(97.5°)  | -17.18/-17.72 | -18.21/-17.4    | -15.56/-15.74   | -15.58/-18      | -17.79/-18.39   | -17.49/-17.74   | -16.63/-17.66   | -18.44/-18.09     | -18.41/-17.1      | -14.27/-11.73     | -11.79/-10.24     | -12.55/-7.75      | -7.6/-5.47        | -15.9/-14.52      | -18.2/-12.72      | -15.53/-18.08     | -15.95/-7.41      | -10.22/-12.35     | -13.48/-18.52     | -16.89/-17.85     | -18.11/-18.45     | -17.23/-18.14     | -14.85/-18.17     | -18.89/-17.59     |               |               |
| Θ(105°)   | -18.02/-18.59 | -18.66/-16.58   | -16.33/-18.41   | -16.02/-18.85   | -18.51/-18.84   | -17.64/-18.94   | -17.86/-18.61   | -19.3/-18.52      | -17.62/-19.3      | -17.74/-10.67     | -11.56/-9.63      | -11.7/-9.01       | -9.89/-6.38       | -14.86/-13.64     | -13.81/-17.58     | -9.78/-17.48      | -14.86/-12.07     | -19.4/-15.11      | -12.54/-13.43     | -14.98/-17.79     | -16.06/-12.47     | -16.26/-17.56     | -17.58/-17.63     | -18.09/-17.81     |               |               |
| Θ(112.5°) | -18.26/-18.34 | -18.96/-15.33   | -14.86/-18.48   | -15.69/-17.3    | -16.56/-17.28   | -18.25/-17.43   | -18.73/-14.73   | -16.72/-17.87     | -17.91/-18.11     | -18.48/-12.01     | -12.09/-9.73      | -10.53/-8.77      | -16.14/-10.33     | -12.85/-13.68     | -17.15/-18.3      | -11.61/-17.99     | -13.98/-12.15     | -15.36/-11.83     | -19.39/-16.73     | -16.28/-15.39     | -18.35/-13.7      | -14.75/-15.96     | -14.45/-16.38     | -17.66/-14.53     |               |               |
| Θ(120°)   | -19.01/-18.37 | -18.49/-18.6    | -13.83/-17.62   | -17.81/-17.52   | -18.74/-18.71   | -18.88/-10.97   | -17.76/-15.94   | -18.82/-15.85     | -18.58/-19.14     | -16.27/-13.56     | -11.8/-12.79      | -10.23/-8.86      | -12.78/-13.55     | -9.21/-18.24      | -17.89/-19.02     | -18.13/-14.73     | -10.31/-12.67     | -18.74/-11.27     | -14.04/-8.95      | -12.18/-13.44     | -11.26/-15.05     | -16.86/-19        | -14.71/-13.6      | -18.49/-13.79     |               |               |
| Θ(127.5°) | -19.17/-18.88 | -17.2/-15.67    | -13.95/-15.37   | -17.99/-18.06   | -17.7/-10.99    | -13.86/-18.89   | -16.01/-14.23   | -18.28/-17.36     | -18.34/-18.77     | -18.88/-12.31     | -13.35/-10.1      | -12.06/-12.43     | -11.51/-18.86     | -8.29/-18.57      | -11.97/-17.25     | -17.8/-17.37      | -9.29/-11.84      | -15.86/-10.58     | -9.13/-9.46       | -13.35/-18.31     | -14.77/-9.76      | -10.51/-13.93     | -11.62/-18.51     | -18.36/-14.78     |               |               |
| Θ(135°)   | -18.24/-18.49 | -13.26/-17.07   | -13.97/-14.78   | -14.77/-17.71   | -13.57/-18.5    | -12.61/-13.62   | -18.41/-16.39   | -14.18/-14.59     | -16.89/-14.47     | -15.84/-17.96     | -16.19/-10.46     | -15.44/-8.93      | -16.96/-16.59     | -10.44/-11.03     | -18.73/-18.67     | -19.06/-17.63     | -18.51/-18.01     | -13.33/-9.91      | -13.49/-11.69     | -17.89/-10.81     | -11.9/-7.51       | -9.56/-15.98      | -18.46/-13.56     | -18.46/-13.56     |               |               |
| Θ(142.5°) | -18.3/-17.27  | -15.49/-18.97   | -19.71/-17.72   | -18.47/-18.83   | -19.13/-15.55   | -11.14/-12.95   | -16.05/-13.61   | -12.17/-17.48     | -11.73/-15.42     | -11.87/-12.59     | -17.85/-14.98     | -12.33/-11.08     | -8.85/-14.75      | -12.77/-12.61     | -15.78/-18.65     | -17.85/-14.59     | -10.73/-15.81     | -17.73/-18.34     | -15.42/-18.33     | -11.94/-11.98     | -16.41/-12.98     | -9.14/-11.23      | -12.59/-11.63     | -18.56/-14.65     |               |               |
| Θ(150°)   | -19.01/-18.82 | -17.42/-16.06   | -15.37/-16.35   | -17.36/-18.58   | -13.14/-10.12   | -13.12/-19.09   | -13.86/-11.22   | -13.35/-13.43     | -15.89/-16.06     | -8.81/-8.58       | -13.48/-8.43      | -7.8/-13.12       | -17.81/-10.1      | -13.19/-17.73     | -17.73/-18.87     | -17.65/-19.35     | -13.44/-12.13     | -17.24/-13.09     | -9.55/-12.36      | -10.44/-12.68     | -16.09/-16.45     | -15.58/-15.22     | -16.79/-11.91     | -16.85/-16.21     |               |               |
| Θ(157.5°) | -18.14/-17.12 | -14.88/-11.86   | -12.29/-15.73   | -17.84/-18.59   | -18.26/-14.21   | -13.76/-18.22   | -13.65/-10.11   | -9.24/-10.05      | -13.63/-10.27     | -6.86/-8.04       | -10.05/-13.34     | -9.42/-11.07      | -18.16/-16.86     | -15.94/-16.41     | -17.68/-16.7      | -12.25/-13.47     | -18.06/-17        | -13.11/-9.85      | -10.37/-12.33     | -9.76/-8.57       | -13.63/-16.15     | -16.48/-17.4      | -18.15/-19.08     | -17.35/-18.94     |               |               |
| Θ(165°)   | -18.11/-17.44 | -16.44/-18.81   | -16.43/-11.95   | -10.43/-9.59    | -9.12/-10.38    | -14.65/-16      | -10.47/-7.16    | -6.72/-8.76       | -11.38/-10.22     | -11.25/-10.61     | -12.62/-18.52     | -17.96/-18.27     | -17.81/-15.46     | -15.67/-18        | -14.89/-13.16     | -14.94/-19.11     | -19.3/-14.5       | -14.52/-17.02     | -18.33/-12.86     | -9.35/-10.7       | -14.81/-14.58     | -13.5/-17         | -17.35/-18.97     | -18.41/-18.89     |               |               |
| Θ(172.5°) | -14.89/-14.45 | -14.47/-12.45   | -11.56/-13.27   | -13.38/-13.8    | -15.13/-17.43   | -17.14/-13.98   | -               |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |               |               |



Radiated Composite Gain Data of 2.4GHz/5GHz/6GHz

Appendix A

| Freq(Hz)  | 6.995GPol.    | PhiAnt. 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°)     | -8.3/-9.15    | -11.55/-13.46   | -13.13/-10.64   | -9.29/-8.6      | -7.32/-4.92     | -3.13/-2.62     | -2.88/-2.9      | -2.65/-2.71       | -3.06/-3.37       | -3.86/-4.83       | -5.71/-6.05       | -6.05/-6.3        | -8.17/-11.29      | -16.5/-14.64      | -11.26/-9.7       | -7.91/-6.32       | -5.24/-4.06       | -2.67/-2.03       | -2.29/-2.18       | -1.76/-1.5        | -1.56/-1.49       | -1.97/-2.47       | -3.14/-4.24       | -5.1/-7.06        |
| Θ(7.5°)   | -8.91/-11.08  | -12.61/-14.63   | -15.11/-13.91   | -13.38/-10.69   | -7.21/-5.1      | -3.91/-3.14     | -2.88/-2.85     | -2.91/-3.19       | -3.45/-3.73       | -3.99/-4.17       | -4.27/-4.39       | -4.13/-4.48       | -6.63/-9.82       | -15.17/-18.35     | -16.94/-14.08     | -11.35/-9.22      | -7.05/-5.74       | -4.75/-4.44       | -4.95/-5.51       | -5.37/-5.39       | -5.88/-6.06       | -6.14/-6.17       | -6.11/-6.08       | -6.28/-7.36       |
| Θ(15°)    | -9.84/-13.29  | -13.59/-15.45   | -17.76/-14.96   | -12.19/-15.49   | -11.39/-7.87    | -6.65/-5.45     | -4.1/-3.97      | -4.5/-5.98        | -7.89/-9.66       | -10.99/-11.2      | -10.11/-8.08      | -5.95/-5.67       | -7.54/-10.67      | -14.69/-18.37     | -18.54/-18.03     | -16.58/-10.83     | -7.17/-4.93       | -4.02/-3.75       | -4.4/4.87         | -5.94/-7.17       | -8.57/-9.06       | -9.04/-8.17       | -7.56/-7.11       | -7.17/-7.41       |
| Θ(22.5°)  | -9.96/-13.64  | -13.48/-16.93   | -18.48/-13.81   | -13.31/-14.4    | -11.39/-8       | -7.07/-6.65     | -4.98/-4.09     | -4.89/-6.85       | -8.82/-8.57       | -7.33/-7.18       | -8.78/-9.88       | -8.55/-10.41      | -16.82/-13.98     | -14.59/-17.9      | -14.72/-17.8      | -17.59/-11.16     | -8.89/-8.53       | -6.01/-4.03       | -3.08/-2.96       | -3.55/-4.14       | -5.23/-7.01       | -9.15/-8.09       | -5.96/-5.65       | -6.26/-7.42       |
| Θ(30°)    | -10.91/-13.16 | -14.48/-15.41   | -16.34/-17.16   | -18.9/-16.16    | -11.47/-8.25    | -5.89/-4.15     | -3.95/-3.29     | -3.4/-4.15        | -4.6/-4.74        | -5.25/-5.63       | -6.95/-8.69       | -10.18/-18.38     | -10.67/-8.01      | -9.43/-14.66      | -18.31/-10.84     | -7.22/-7.39       | -9.14/-11.77      | -11.44/-10.81     | -10.16/-6.44      | -4.21/-3.57       | -2.93/-2.98       | -4.94/-4.89       | -4.37/-4.22       | -5.96/-8.35       |
| Θ(37.5°)  | -6.89/-8.38   | -10.47/-11.71   | -13.89/-17.99   | -13.87/-11.26   | -13.13/-12.76   | -8.27/-4.43     | -2.44/-1.8      | -1.92/-3.22       | -2.52/-2.82       | -5.36/-2.94       | -2.79/-6.43       | -17.93/-15.54     | -10.99/-10.22     | -14.24/-11.11     | -10/-13.62        | -17.92/-16.32     | -9.32/-6.58       | -5.05/-5.44       | -6.35/-6.35       | -5.24/-2.65       | -1.05/-0.11       | -1.94/-2.84       | -3.56/-4.99       | -6.18/-6.82       |
| Θ(45°)    | -7.66/-7.65   | -7.71/-8.92     | -10.68/-16.52   | -18.26/-13.71   | -10.68/-11.91   | -8.44/-5.85     | -4.39/-4.63     | -3.87/-3.75       | -3.79/-1.78       | -4.28/-4.23       | -1.89/-5.86       | -15/-19.3         | -13/-7.83         | -4.11/-4.26       | -11.31/-12.78     | -8.68/-5.35       | -5.48/-8.08       | -10.85/-13.46     | -7.53/-6.54       | -4.99/-5.39       | -2.51/-0.04       | -1.17/-3.53       | -5.29/-8.38       | -10.02/-8.24      |
| Θ(52.5°)  | -11.64/-11.19 | -12.23/-9.98    | -10.13/-11.83   | -17.6/-18.82    | -15.99/-12.38   | -9.28/-9.83     | -6.91/-8.36     | -7.39/-5.81       | -7.13/-3.23       | -4.16/-3.33       | -1.32/-4.41       | -9.05/-14.72      | -18.18/-10.65     | -5.58/-6.96       | -18.12/-9.42      | -9.52/-8.2        | -8.67/-15.86      | -18.68/-8.05      | -4.95/-4.69       | -3.67/-3.94       | -2/-2.92          | -4.76/-6.7        | -9.32/-16.42      | -16.51/-12.78     |
| Θ(60°)    | -11.79/-16.71 | -15.36/-12.11   | -10.3/-13.28    | -18.76/-17.69   | -18.69/-17.41   | -12.42/-9.04    | -8.77/-9.41     | -12.18/-7.09      | -7.24/-4.83       | -4.22/-4.19       | -1.17/-0.68       | -1.82/-4.94       | -5.57/-15.44      | -14.91/-11.78     | -10.93/-8.51      | -13.52/-16.28     | -14.78/-16.58     | -10.1/-6.75       | -4.5/-3.76        | -2.65/-4.37       | -4.32/-5.97       | -9.13/-10.31      | -12.63/-15.21     | -18.73/-12.23     |
| Θ(67.5°)  | -13.66/-18.03 | -16.23/-14.76   | -14.27/-15.87   | -17.17/-18.73   | -18.79/-17.04   | -13.61/-16.79   | -19.15/-15.01   | -18.21/-8.2       | -10.66/-6.33      | -3.84/-3.93       | -2.53/-0.71       | -0.29/-2.55       | -1.59/-7.03       | -14.38/-11.91     | -9.67/-11.5       | -17.87/-12.16     | -14.87/-11.28     | -5/-2.8           | -1.87/-2.96       | -3.3/-5.44        | -7.99/-8.7        | -8.81/-10.83      | -10.74/-17.94     | -18.5/-14.23      |
| Θ(75°)    | -14.14/-18.38 | -13.78/-15.44   | -18.71/-18.34   | -17.23/-14.82   | -18.09/-18.22   | -12.61/-17.99   | -14.5/-7.39     | -14.65/-14.69     | -10.67/-10.18     | -7.59/-5.06       | -3.67/-1.91       | -0.97/-1.87       | -0.48/-4.01       | -12.72/-14.55     | -13.84/-14.9      | -18.51/-7.57      | -12.46/-8.93      | -2.7/-0.62        | -1.13/-2.29       | -3.67/-7.54       | -13.31/-10.84     | -10.44/-18.88     | -13.39/-18.27     | -18.31/-16.64     |
| Θ(82.5°)  | -14.01/-18.73 | -14.72/-18.87   | -17.63/-17.87   | -19.32/-16.32   | -17.5/-18.54    | -16.67/-16.49   | -17.87/-17.64   | -18.08/-18.51     | -16.58/-17.04     | -9.86/-6.69       | -6.7/-4.48        | -3.09/-3.89       | -1.26/-5.37       | -13.85/-12.96     | -18.85/-12.77     | -10.81/-8.19      | -12.38/-5.53      | -2.8/-1.46        | -2.95/-3.25       | -7.56/-13.43      | -17.96/-17.56     | -12.52/-18.61     | -12.44/-17.52     | -18.92/-16.93     |
| Θ(90°)    | -14.78/-17.61 | -17.42/-17.94   | -17.73/-16.66   | -19.01/-15.79   | -13.89/-18.95   | -17.81/-18.61   | -18.38/-16.33   | -18.08/-14.66     | -14.27/-9.87      | -9.46/-8.32       | -3.66/-4.68       | -2.68/-7.11       | -13.78/-16.71     | -18.65/-14.82     | -10.69/-10.18     | -11.48/-6.21      | -2.59/-5.62       | -6.15/-9.56       | -14.45/-18.57     | -14.86/-17.9      | -16.19/-18.57     | -14.86/-17.9      | -19.04/-18.34     | -14.86/-17.24     |
| Θ(97.5°)  | -12.17/-19    | -18.54/-17.79   | -17.69/-17.74   | -19/-16.35      | -14.52/-17.32   | -18.25/-17.84   | -17.44/-12.85   | -17.32/-17.33     | -17.93/-18.36     | -18.4/-13.52      | -13.23/-9.97      | -6.13/-6.48       | -5.43/-5.74       | -18.37/-16.24     | -18.22/-18.62     | -10.53/-18.4      | -9.12/-8.97       | -6.68/-12.03      | -17.81/-17.95     | -18.14/-12.69     | -16.87/-18.22     | -18.04/-17.36     | -14.17/-18.43     | -12.86/-15.48     |
| Θ(105°)   | -14.35/-18.94 | -17.53/-17.57   | -18.33/-14.27   | -17.04/-17.49   | -14.18/-17.88   | -18.52/-18.74   | -18.82/-12.1    | -18.42/-17.84     | -16.97/-17.54     | -16.86/-14.46     | -13.18/-15.9      | -11.12/-10.98     | -9.2/-6.3         | -12.83/-13.13     | -17.51/-13.6      | -12.55/-17.4      | -10.9/-13.27      | -15.57/-18.3      | -13.57/-11.54     | -17.55/-14.39     | -15.21/-14.4      | -18.9/-18.54      | -11.61/-6.89      | -13.29/-19        |
| Θ(112.5°) | -17.15/-18.73 | -18.8/-18.3     | -18.43/-16.52   | -18.35/-13.55   | -16.13/-14.54   | -18.65/-18      | -17.87/-13.25   | -16.82/-18.01     | -18.14/-18.65     | -15.46/-12.59     | -12.14/-14.46     | -14.94/-9.97      | -13.76/-5.64      | -11.28/-11.2      | -17.39/-12.71     | -16.78/-14.3      | -9.45/-10.89      | -15.34/-11.09     | -13.93/-11.71     | -15.44/-15.19     | -15.29/-18.63     | -17.79/-13.9      | -13.95/-16.61     | -10.94/-18.43     |
| Θ(120°)   | -17.12/-16.73 | -17.52/-16.02   | -18.24/-17.84   | -15.07/-19.21   | -18.5/-19.11    | -15.41/-11.8    | -18.24/-14.38   | -18.5/-19.16      | -18.6/-19.24      | -17.28/-14.14     | -10.57/-9.98      | -14.04/-13.55     | -17.76/-10.19     | -10.55/-12.3      | -17.45/-10.69     | -18.89/-16.86     | -12.78/-13.52     | -18.73/-12.93     | -8.26/-6.41       | -12.91/-14.53     | -12.28/-9.94      | -17.19/-10.45     | -12.36/-13.34     | -11.5/-19.07      |
| Θ(127.5°) | -17.11/-18.35 | -17.48/-17.64   | -18/-18.68      | -16.34/-13.03   | -18.62/-18.29   | -12.32/-12.1    | -17.97/-15.03   | -14.31/-16.33     | -17.4/-18.87      | -17.07/-17.83     | -12.92/-10.15     | -9.81/-13.66      | -17.89/-14.04     | -12.72/-15.35     | -13.77/-14.75     | -18.11/-17.52     | -8.93/-16.29      | -15.43/-10.6      | -12.71/-11.74     | -17.89/-18.75     | -9.71/-9.32       | -17.06/-9.53      | -17.82/-12.74     | -11.21/-14.73     |
| Θ(135°)   | -17.04/-18.18 | -15.26/-14.95   | -16.49/-19      | -12.84/-17.13   | -18.31/-18.18   | -13.57/-13.21   | -18.76/-13.71   | -16.7/-17.68      | -14.93/-14.34     | -16.22/-18.8      | -17.94/-10.34     | -9.85/-13.08      | -11.16/-16.3      | -17.2/-17.98      | -17.18/-16.51     | -18.57/-16.52     | -14.12/-17.34     | -12.23/-10.47     | -8.7/-11.08       | -8.72/-17.21      | -14.52/-9.47      | -10.47/-8.14      | -15.1/-10.81      | -13.52/-17.69     |
| Θ(142.5°) | -19.05/-18.23 | -17.97/-16.26   | -13.35/-11.55   | -16.1/-15.24    | -18.43/-17.81   | -15.86/-15.24   | -14.14/-13.03   | -14.79/-18.29     | -11.48/-9.31      | -15.05/-17.4      | -18.45/-13.81     | -12.31/-10.57     | -11.78/-11.7      | -12.76/-9.82      | -16.21/-17.63     | -18.18/-15.32     | -11.74/-14.78     | -16.15/-15.47     | -13.63/-15.92     | -10.06/-13.13     | -17.77/-11.48     | -14.73/-11.34     | -12.91/-14.51     | -15.47/-17.79     |
| Θ(150°)   | -18.37/-18.63 | -17.27/-18.48   | -15/-16.34      | -15.07/-14.71   | -14.69/-14.93   | -15.44/-18.89   | -19.05/-12.21   | -11.43/-14.25     | -16.77/-12.14     | -12.87/-8.4       | -8.54/-12.59      | -8.06/-8.31       | -17.87/-15.97     | -12.57/-15.15     | -18.67/-17.64     | -18.53/-19.2      | -18.12/-16.73     | -17.94/-15.25     | -14.22/-18.02     | -12.98/-10.82     | -11.49/-16.45     | -13.9/-18.32      | -16.84/-17.83     | -14.55/-18.32     |
| Θ(157.5°) | -18.14/-18.2  | -17.31/-15.81   | -14.38/-12.75   | -12.18/-13.35   | -14.63/-12.66   | -11.07/-11.07   | -9.83/-10.56    | -11.05/-8.22      | -7.33/-8.14       | -9.07/-5.91       | -12.31/-11.62     | -11.33/-18.69     | -15.33/-16.69     | -19.12/-16.57     | -12.01/-14.34     | -13.91/-16.98     | -12.25/-9.22      | -13.31/-15.92     | -10.78/-12.24     | -11.19/-13.42     | -16.86/-18.16     | -12.73/-10.49     | -18.95/-18.3      |                   |
| Θ(165°)   | -13.27/-15.36 | -14.84/-14.32   | -14.91/-15.12   | -14.69/-13.59   | -12.96/-10.31   | -9.54/-10.62    | -11.76/-12.79   | -12.31/-8.86      | -6.22/-7.48       | -10.97/-10.97     | -12.05/-12.61     | -13.53/-18.82     | -17.43/-17.93     | -18.15/-18.1      | -18.33/-14.4      | -13.65/-16.5      | -13.55/-11.25     | -11.45/-12.96     | -11.32/-9.63      | -9.84/-9.47       | -11.25/-15.05     | -18.65/-18.69     | -17.93/-17.75     | -16.34/-13.03     |
| Θ(172.5°) | -17.81/-18.14 | -19.13/-18.7    | -18.87/-16.98   | -14.6/-14.71    | -15.25/-14.39   | -13.65/-14.76   | -15.19/-12.91   | -12.03/-13.57     | -15.94/-18.45     | -18.42/-17.77     | -14.75/-12.55     | -11.27/-12.66     | -16.48/-18.22     | -18.73/-18.13     | -14.92/-12.5      | -11.79/-13.77     | -16.43/-17.25     | -17.55/-15.48     | -12.57/-10.89     | -9.8/-10.11       | -11.52/-12.14     | -12.06/-12.34     | -12.36/-12.53     | -14.38/-17.06     |
| Θ(180°)   | -16.19/-18.95 | -17.35/-18.87   | -18.48/-18.09   | -18.82/-18.49   | -17.93/-18.17   | -17.93/-18.14   | -17.5/-18.9     | -18.76/-18.44     | -16.83/-17.43     | -18.84/-18.88     | -17.98/-18.92     | -18.69/-18.65     | -18.07/-17.88     | -17.48/-18.63     | -18.71/-19.3      | -17.68/-15.83     | -13.89/-14.74     | -15.19/-15.1      | -16.33/-18.4      | -16.84/-16.08     | -15.16/-14.37     | -13.93/-13.23     | -11.77/-12.83     | -13.55/-13.97     |
| Freq(Hz)  | 6.995GPol.    | 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°)     | -3.25/-3.11   | -2.9/-2.61      | -2.96/-3.21     | -3.03/-3.61     | -5.13/-6.65     | -6.82/-7.72     | -9.94/-13.85    | -16.2/-15.75      | -14.63/-12.36     | -9.52/-7.33       | -6.03/-5.14       | -4.3/-3.4         | -2.9/-3.18        | -2.61/-2.09       | -2.06/-2.81       | -3.22/-3.32       | -4.21/-5.26       | -5.61/-7.06       | -9.97/-11.06      | -12.92/-14.88     | -14.18/-12.22     | -10.21/-8.46      | -6.76/-5.48       | -4.67/-3.75       |
| Θ(7.5°)   | -2.16/-1.35   | -0.98/-1.15     | -1/-0.48        | -0.5/-0.86      | -1.36/-1.78     | -2.45/-3.38     | -4.78/-6.15     | -7.07/-8.42       | -11.18/-14.38     | -17.35/-16.46     | -13.51/-11.15     | -9.13/-7.36       | -5.91/-4.84       | -3.97/-4.11       | -4.63/-5.22       | -5.59/-6.55       | -8.43/-10.67      | -11.74/-14.86     | -17.74/-17.94     | -16.52/-13.98     | -12.52/-10.44     | -8.88/-7.84       | -6.84/-5.78       | -4.73/-3.41       |
| Θ(15°)    | -0.81/-0.21   | -0.18/-0.23     | -0.51/-0.71     | -0.54/-0.48     | -0.78/-1.25     | -1.49/-1.6      | -2.56/-3.66     | -4.44/-4.53       | -7.05/-8.69       | -10.08/-12.02     | -12.63/-15.24     | -19.07/-15.54     | -8.98/-7.06       | -6.77/-6.41       | -5.34/-4.46       | -4.18/-4.56       | -4.68/-6.09       | -9.26/-12.28      | -14.16/-18.61     | -19.1/-18.67      | -13.25/-9.12      | -5.94/-4.36       | -3.67/-3.41       | -3.24/-1.77       |
| Θ(22.5°)  | -1.12/-0.38   | -0.28/-0.15     | 0.320/0.6       | 0.84/-1.1       | 10.48           | 0.150/0.1       | 0.72/-2.13      | -3.27/-3.92       | -4.68/-4.97       | -5.22/-5.57       | -6.97/-9.8        | -11.6/-9.12       | -6.78/-7.07       | -8.54/-5.4        | -3.37/-3          | -3.56/-4.27       | -5.5/-8.67        | -13.47/-16.51     | -16.92/-16.73     | -18.78/-15.85     | -8.34/-4.78       | -3.04/-2.04       | -1.68/-1.53       | -1.75/-2          |
| Θ(30°)    | 1.25/-1.64    | 1.95/-2.32      | 2.21/-1.75      | 1.9/-2.48       | 2.84/-2.88      | 2.87/-2.8       | 2.21/-0.99      |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |



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| Freq(Hz)                                               | 2.45G        | 5.2G          | 5.3G          | 5.6G             | 5.785G          | 5.885G          | 6.175G         | 6.475G           | 6.695G         | 6.995G         |
|--------------------------------------------------------|--------------|---------------|---------------|------------------|-----------------|-----------------|----------------|------------------|----------------|----------------|
| Ant. 1 Max Gain (dBi)                                  | 3.75         | 4.18          | 4.12          | 4.81             | 4.57            | 5.08            | 4.66           | 4.38             | 4.02           | 3.61           |
| Ant. 2 Max Gain (dBi)                                  | 3.66         |               |               |                  |                 |                 |                |                  |                |                |
| Ant. 1 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$ | Theta/52.5/0 | Theta/67.5/75 | Theta/67.5/75 | Theta/37.5/322.5 | Theta/67.5/52.5 | Theta/67.5/52.5 | Theta/30/292.5 | Theta/37.5/307.5 | Theta/30/247.5 | Theta/37.5/255 |
| Ant. 2 Polarization/ $\Theta(^{\circ})/\Phi(^{\circ})$ | Theta/60/255 |               |               |                  |                 |                 |                |                  |                |                |

## Gain Result

| Freq(Hz)  | 2.45GPol.     | PhiAnt.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°)     | -13.67/-13.07 | -12.42/-12.76  | -11.15/-10.91  | -11.01/-11.16  | -12.55/-13.8   | -14.36/-16.05  | -16.91/-16.14  | -14.43/-13.49    | -12.71/-11.84    | -11.03/-10.62    | -10.48/-10.4     | -10.32/-10.24    | -10.25/-10.31    | -10.61/-10.91    | -11.21/-11.64    | -12.74/-14.32    | -15.61/-15.57    | -14.88/-14.45    | -14.51/-14.69    | -14.33/-13.43    | -12.62/-12.38    | -12.39/-12.38    | -12.38/-12.76    | -13.61/-13.88    |   |   |
| Θ(7.5°)   | -14.11/-13.68 | -13.18/-12.74  | -12.65/-13.06  | -13.85/-14.76  | -15.4/-15.44   | -14.85/-14.34  | -13.61/-12.2   | -10.6/-55        | -8.87/-8.36      | -8.07/-8.29      | -8.94/-9.71      | -10.12/-10.11    | -9.78/-9.52      | -9.49/-9.55      | -9.61/-9.76      | -10.24/-11.07    | -12.05/-13.17    | -14.45/-16.19    | -17.64/-18.49    | -18.71/-17.4     | -16.21/-15.62    | -14.83/-14.47    | -13.95/-13.96    | -14.25/-14.25    |   |   |
| Θ(15°)    | -13.57/-11.73 | -9.83/-8.78    | -8.66/-9.4     | -10.98/-13.51  | -16.27/-16.74  | -14.78/-12.67  | -10.88/-9.18   | -7.58/-6.63      | -6.11/-5.8       | -5.74/-6.15      | -7.06/-8.22      | -9.07/-9.2       | -8.78/-8.45      | -8.21/-8.6       | -8.23/-8.45      | -8.87/-9.78      | -11.15/-13.1     | -15.73/-18       | -17.46/-15.56    | -14.24/-13.19    | -12.12/-11.46    | -11.54/-12.03    | -12.79/-13.98    | -15.08/-14.66    |   |   |
| Θ(22.5°)  | -11.6/-8.68   | -6.84/-5.44    | -5.36/-6.02    | -17.97/-9.88   | -13.16/-15.92  | -14.71/-11.49  | -8.99/-7.27    | -6.53/-          | -5.07/-4.98      | -4.91/-5.17      | -5.92/-6.48      | -7.82/-8.05      | -7.84/-7.64      | -7.53/-7.62      | -7.88/-8.38      | -9.11/-10.37     | -12.39/-15.06    | -18.03/-18.01    | -16.83/-13.76    | -12.67/-11.74    | -10.87/-10.38    | -10.24/-10.51    | -11.38/-12.22    | -15.07/-14.33    |   |   |
| Θ(30°)    | -9.14/-6.47   | -4.46/-3.7     | -3.67/-4.19    | -5.4/-7.54     | -10.63/-14.85  | -16.32/-11.48  | -7.93/-6.11    | -5.11/-4.81      | -5.08/-5.36      | -5.33/-5.33      | -5.71/-6.57      | -7.5/-8.03       | -8.1/-8.06       | -6.04/-8.21      | -8.62/-9.48      | -10.79/-12.57    | -15.04/-18.17    | -17.97/-17.72    | -15.59/-14.43    | -13.71/-12.92    | -12.11/-13       | -10.35/-9.77     | -9.83/-10.86     | -12.07/-11.52    |   |   |
| Θ(37.5°)  | -7.77/-5.69   | -4.36/-3.94    | -4.4/-3.6      | -5.24/-6.98    | -9.73/-14.71   | -18.47/-12.57  | -7.92/-5.79    | -4.92/-5.04      | -5.84/-6.53      | -6.52/-6.19      | -6.23/-6.97      | -8.09/-9.14      | -9.8/-9.72       | -9.66/-9.77      | -10.38/-11.72    | -13.81/-16.22    | -18.95/-18.44    | -19.69/-18.14    | -17.49/-17.65    | -17.78/-17.15    | -15.48/-13.12    | -10.73/-9.05     | -8.31/-5.58      | -9.28/-9.14      |   |   |
| Θ(45°)    | -7.47/-6.23   | -5.58/-5.54    | -5.68/-5.95    | -6.45/-7.57    | -9.83/-14.45   | -16.62/-16.37  | -7.25/-7.36    | -6.13/-6.35      | -7.57/-8.57      | -8.36/-7.43      | -7.02/-7.52      | -9.02/-10.98     | -12.68/-12.09    | -11.84/-12.03    | -13.14/-14.85    | -17.24/-18.87    | -18.42/-17.66    | -19.31/-18.66    | -17.72/-18.69    | -18.68/-18.59    | -18.57/-13.59    | -10.06/-7.94     | -6.95/-7.11      | -7.96/-8.24      |   |   |
| Θ(52.5°)  | -8.03/-6.74   | -6.29/-6.59    | -7.25/-8.11    | -8.82/-9.74    | -11.39/-14.86  | -18.13/-18.11  | -16.31/-11.68  | -9.75/-9.71      | -11.18/-12.14    | -10.45/-8.32     | -7.42/-9.74      | -9.73/-11.89     | -12.64/-12.05    | -11.86/-12.49    | -14.11/-16.31    | -19.08/-18.47    | -17.95/-17.71    | -18.56/-18.65    | -18.57/-19.15    | -18.65/-17.85    | -15.64/-11.27    | -8.18/-6.56      | -6.14/-6.93      | -8.57/-9.22      |   |   |
| Θ(60°)    | -8.36/-6.3    | -5.92/-7.18    | -9.29/-11.56   | -14.07/-16.37  | -16.52/-15.63  | -17.52/-17.69  | -19.27/-17.24  | -15.18/-14.51    | -15.38/-16.64    | -12.82/-9.27     | -7.98/-8.69      | -11.03/-13.26    | -12.46/-12.72    | -9.91/-10.3      | -11.82/-14.16    | -16.34/-17.22    | -16.26/-14.27    | -12.47/-11.94    | -12.75/-14.49    | -14.69/-12.31    | -10.31/-8.49     | -6.75/-5.86      | -6.11/-6.66      | -10.35/-10.72    |   |   |
| Θ(67.5°)  | -8.57/-6.56   | -6.97/-9.96    | -13.65/-14.98  | -16.83/-18.79  | -16.62/-14.98  | -16.09/-18.07  | -19.27/-17.84  | -15.82/-17.9     | -18.88/-17.4     | -13.03/-8.73     | -7.55/-8.7       | -11.81/-14.9     | -13.01/-10.41    | -9.38/-9.53      | -11.89/-14.66    | -16.88/-17.26    | -16.56/-13.33    | -11.51/-10.77    | -11.55/-12.43    | -14.67/-13.67    | -9.71/-7.82      | -7.51/-7.07      | -7.46/-7.48      | -12.58/-11.79    |   |   |
| Θ(75°)    | -8.47/-7.64   | -9.3/-13.83    | -14.69/-12.68  | -12.86/-16.31  | -19.49/-16.87  | -18.99/-18.01  | -16.59/-15.16  | -18.95/-18.19    | -18.93/-18.26    | -16.1/-9.75      | -7.92/-8.55      | -10.61/-12.25    | -10.98/-9.58     | -9.55/-11.02     | -13.56/-15.76    | -16.16/-15.83    | -15.11/-13.59    | -11.84/-11.41    | -13.4/-15.31     | -12.09/-9.61     | -9.42/-10.38     | -10.13/-8.17     | -7.42/-8.9       | -11.54/-10.99    |   |   |
| Θ(82.5°)  | -8.57/-8.11   | -9.88/-12.79   | -12.26/-11.56  | -14.07/-16.37  | -16.52/-15.63  | -17.52/-17.69  | -19.27/-17.24  | -15.18/-14.51    | -15.38/-16.64    | -12.82/-9.27     | -7.98/-8.69      | -11.03/-13.26    | -12.46/-12.72    | -9.91/-10.3      | -11.82/-14.16    | -16.34/-17.22    | -16.26/-14.27    | -12.47/-11.94    | -12.75/-14.49    | -14.69/-12.31    | -10.31/-8.49     | -6.75/-5.86      | -6.11/-6.66      | -10.35/-10.72    |   |   |
| Θ(90°)    | -8.57/-8.11   | -9.88/-12.79   | -12.26/-11.56  | -14.07/-16.37  | -16.52/-15.63  | -17.52/-17.69  | -19.27/-17.24  | -15.18/-14.51    | -15.38/-16.64    | -12.82/-9.27     | -7.98/-8.69      | -11.03/-13.26    | -12.46/-12.72    | -9.91/-10.3      | -11.82/-14.16    | -16.34/-17.22    | -16.26/-14.27    | -12.47/-11.94    | -12.75/-14.49    | -14.69/-12.31    | -10.31/-8.49     | -6.75/-5.86      | -6.11/-6.66      | -10.35/-10.72    |   |   |
| Θ(97.5°)  | -8.68/-6.78   | -8.27/-12.92   | -12.9/-10      | -9.75/-10.79   | -10.43/-10.57  | -15.33/-18.93  | -12.62/-10.91  | -14.34/-17.84    | -17.24/-16.08    | -17.91/-14.75    | -11.79/-13.39    | -18.04/-17.39    | -12.63/-10.23    | -9.74/-10.3      | -11.41/-12.76    | -14.64/-16.57    | -16.87/-15.25    | -13.73/-13.95    | -17.27/-18.7     | -13.26/-9.45     | -8.35/-8.54      | -7.87/-6.72      | -6.76/-6.65      | -12.13/-12.44    |   |   |
| Θ(105°)   | -8.67/-6.74   | -7.39/-10.42   | -11.37/-9.89   | -10.12/-11.61  | -12.72/-12.9   | -16.79/-18.9   | -16.61/-12.62  | -18.4/-18.11     | -14.18/-14.65    | -18.64/-13.04    | -10.17/-10.19    | -11.37/-11.9     | -9.81/-8.34      | -8.81/-10.5      | -12.52/-14.5     | -15.77/-18.09    | -13.88/-15.22    | -13.22/-13.01    | -15.68/-18.24    | -12.07/-8.57     | -7.62/-7.69      | -7.75/-7.78      | -8.95/-12.17     | -14.61/-11.31    |   |   |
| Θ(112.5°) | -7.27/-6.42   | -7.18/-10.46   | -13.11/-11.84  | -10.12/-11.61  | -18.45/-16.25  | -18.07/-18.17  | -17.18/-18.28  | -18.41/-17.32    | -13.58/-16       | -18.64/-16.02    | -12.97/-11.66    | -11.23/-9.16     | -6.69/-6.48      | -8.76/-12.52     | -15.04/-14.45    | -15.08/-14.76    | -11.31/-11.97    | -11.52/-12.45    | -10.87/-10.71    | -13.83/-10.67    | -10.09/-7.19     | -9.93/-8         | -9.95/-9.29      | -8.08/-29        |   |   |
| Θ(120°)   | -11.93/-10.76 | -10.72/-11.39  | -10.69/-10.59  | -13.61/-18.81  | -17.78/-13.93  | -14.42/-16.66  | -19.01/-19.18  | -17.78/-17.7     | -17.45/-19.09    | -15.81/-11.7     | -8.89/-6.09      | -10.87/-15.38    | -10.95/-10.13    | -13.59/-17.62    | -16.51/-5.78     | -16.51/-7.32     | -16.04/-14.39    | -13.96/-15.43    | -18.73/-18.88    | -13.6/-9.84      | -8.24/-7.39      | -6.47/-5.94      | -6.17/-7.69      | -10.82/-12.99    |   |   |
| Θ(127.5°) | -8.68/-3.1    | -6.92/-12      | -7.68/-9.14    | -13.16/-12.97  | -15.52/-11.61  | -11.01/-12.07  | -10.71/-11.46  | -18.91/-18.01    | -18.11/-17.63    | -12.29/-9.84     | -6.31/-5.7       | -8.01/-13.65     | -15.12/-12.6     | -13.79/-10.73    | -17.7/-16        | -16.98/-17.5     | -12.4/-13.07     | -16.98/-17.5     | -15.23/-10.7     | -8.76/-7.81      | -7.45/-7.94      | -9.43/-11.61     | -12.48/-10.72    | -9.79/-7.3       |   |   |
| Θ(135°)   | -8.16/-6.94   | -6.32/-6.34    | -6.57/-7.62    | -10.18/-18.16  | -19.18/-12.99  | -14.16/-10.76  | -10.21/-11.14  | -13.15/-28       | -18.71/-18.16    | -18.61/-13.86    | -9.3/-8.43       | -10.34/-14.41    | -18.42/-12.36    | -9.97/-9.31      | -10.19/-11.3     | -11.05/-10.93    | -10.67/-10.55    | -10.34/-11.2     | -13.07/-16.16    | -16.53/-13.03    | -10.16/-7.88     | -6.17/-5.79      | -6.94/-6.81      | -9.79/-7.3       |   |   |
| Θ(142.5°) | -11.51/-10.64 | -9.34/-7.82    | -6.62/-6.72    | -8.78/-14.37   | -18.67/-17.42  | -12.75/-10.8   | -9.62/-8.82    | -8.6/-8.76       | -9.24/-10.06     | -10.29/-8.64     | -7.28/-7.93      | -11.11/-18.06    | -19.07/-17.06    | -15.33/-15.88    | -15.84/-14.39    | -13.88/-14.92    | -16.71/-17.87    | -18.57/-17.56    | -18.67/-18.56    | -18.49/-16.9     | -12.92/-9.28     | -6.73/-5.79      | -6.21/-7.87      | -10.25/-11.82    |   |   |
| Θ(150°)   | -17.08/-16.32 | -12.04/-6.62   | -6.51/-5.84    | -6.82/-8.99    | -16.02/-18.44  | -16.39/-12.07  | -9.66/-8.01    | -6.63/-8.54      | -5.6/-5.77       | -5.76/-5.39      | -5.16/-5.84      | -7.82/-11.25     | -15.61/-8.16     | -17.9/-14.48     | -11.66/-10.21    | -8.87/-10.38     | -11.46/-12.72    | -13.87/-14.75    | -15.21/-15.51    | -16.04/-16.07    | -13.46/-6.95     | -6.97/-6.5       | -5.53/-6.9       | -9.61/-13.23     |   |   |
| Θ(157.5°) | -16.74/-10.73 | -7.29/-6.4     | -4.26/-3.98    | -4.7/-6.81     | -10.62/-18.44  | -17.68/-11.57  | -8.34/-6.5     | -5.52/-5.05      | -5.08/-5.46      | -5.09/-6.77      | -7.9/-9.21       | -10.11/-10.1     | -9.37/-8.25      | -7.25/-6.72      | -6.47/-7.31      | -8.46/-9.56      | -10.16/-10.23    | -9.22/-8.74      | -12.7/-24        | -6.66/-14.1      | -8.8/-8.67       | -1.38/-18.41     |                  |                  |   |   |
| Θ(165°)   | -9.28/-6.64   | -5.04/-4.21    | -3.95/-4.2     | -5.08/-7.11    | -10.68/-16.24  | -15.39/-10.6   | -7.75/-6.26    | -5.63/-5.6       | -6.01/-6.83      | -7.77/-8.47      | -9.06/-7.98      | -10.17/-10.03    | -9.5/-8.84       | -8.18/-7.67      | -7.25/-7.1       | -7.45/-8.44      | -10/-11.28       | -11.6/-11.5      | -10.49/-10.05    | -9.91/-9.93      | -10.12/-10.36    | -10.75/-11.63    | -13.72/-19.21    | -18.63/-14.56    |   |   |
| Θ(172.5°) | -6.85/-5.75   | -5.97/-6.86    | -6.69/-7.78    | -9.34/-12.11   | -16.35/-18.81  | -15.05/-11.49  | -9.62/-8.74    | -8.47/-8.46      | -8.68/-9.88      | -11.1/-11.21     | -13.28/-14.67    | -15.29/-14.54    | -13.23/-12.03    | -11.64/-10.59    | -10.35/-10.55    | -11.55/-13.24    | -15.15/-16.14    | -15.74/-14.92    | -14.5/-14.75     | -13.53/-16.88    | -18.86/-18       | -18.35/-16.65    | -10.89/-16.17    | -12.18/-9.74     |   |   |
| Θ(180°)   | -8.01/-8.09   | -9.05/-10.98   | -13.53/-15.65  | -18.65/-17.77  | -18.76/-17.49  | -17.99/-15.49  | -14.59/-15.34  | -16.89/-17.74    | -18.31/-18.89    | -17.69/-17.17    | -17.95/-18.91    | -19.27/-18.14    | -18.99/-17.83    | -11.34/-10.61    | -11.40/-18.44    | -15.85/-18.82    | -17.84/-18.17    | -18.07/-15.69    | -13.18/-11.68    | -11.01/-11.68    | -10.95/-10.67    | -10.89/-16.17    | -9.73/-8.76      |                  |   |   |
| Freq(Hz)  | 2.45GPol.     | 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°)     | -10.18/-8.88  | -9.67/-9.45    | -9.52/-9.97    | -10.43/-10.65  | -10.37/-9.83   | -9.5/-9.7      | -9.7/-9.41     | -9.61/-10.6      | -11.59/-12.3     | -13.97/-13.65    | -14.38/-14.83    | -15.2/-15.72     | -16.04/-16.01    | -15.52/-14.99    | -14.36/-13.4     | -12.17/-11.14    | -10.62/-10.58    | -10.76/-11.1     | -11.8/-12.6      | -12.17/-11.4     | -14.14/-14.24    | -13.92/-13.37    | -12.8/-12.09     | -11.28/-10.56    |   |   |
| Θ(7.5°)   | -12.69/-12.61 | -11.84/-10.9   | -10.12/-9.8    | -9.62/-9.63    | -9.87/-9.94    | -10.01/-10.77  | -12.23/-13.41  | -15.04/-18.58    | -17.98/-17.92    | -18.66/-15.2     | -13.08/-11.96    | -11.46/-11.37    | -11.26/-11.18    | -11.02/-10.99    | -11.04/-10.84    | -10.04/-8.8      | -7.45/-6.46      | -5.83/-5.44      | -5.29/-5.43      | -5.8/-6.23       | -6.59/-6.96      | -7.58/-8.48      | -9.45/-10.36     | -11.28/-12.09    |   |   |
| Θ(15°)    | -9.14/-9.87   | -10.39/-10.51  | -10.02/-9.09   | -8.93/-9.44    | -9.14/-9.69    | -9.97/-15.3    | -9.89/-10.79   | -12.71/-14.85    | -15.33/-13.09    | -10.56/-5.89     | -7.27/-6.43      | -6.04/-5.88      | -5.84/-5.83      | -5.85/-5.92      | -5.91/-6.5       | -5.14/-4.5       | -3.75/-3.99      | -2.52/-2.12      | -2.12            | -2.46/-2.82      | -3.12/-3.49      | -4.1/-4.82       | -5.65/-6.45      | -7.28/-8.24      |   |   |
| Θ(22.5°)  | -3.86/-4.54   | -5.68/-7.28    | -8.8/-9.37     | -8.18/-8.91    | -8.1/-8.01     | -8.31/-8.81    | -10.28/-11.78  | -12.36/-11.25    | -9.60/-7.1       | -5.46/-4.14      | -3.24/-2.62      | -2.81/-2.54      | -2.84/-3.24      | -3.36/-3.24      | -2.84/-2.32      | -1.82/-1.09      | -1.12/-0.84      | -0.74/-0.42      | -1.1/-1.2        | -1.37/-1.64      | -2.06/-2.55      | -2.99/-3.3       | -3.46/-3.61      |                  |   |   |
| Θ(30°)    | -0.14/-0.55   | -1.53/-2.99    | -4.83/-6.48    | -7.53/-8.42    | -9.32/-10.21   | -10.62/-10.6   | -10.24/-9.25   | -7.69/-5.99      | -4.38/-3.17      | -2.24/-1.45      | -0.74/-0.16      | 0.220/32         | 0.14/-0.38       | -1.12/-1.7       | -1.96/-1.95      | -1.71/-1.31      | -0.91/-0.68      | -0.48/-0.31      | -0.2/-0.21       | -0.35/-0.52      | -0.              |                  |                  |                  |   |   |



# Radiated Composite Gain Data of SC Ant1, BLE Ant2

# Appendix B

|           |               |                 |                 |                 |                 |                 |                 |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |              |
|-----------|---------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|--------------|
| Θ(22.5°)  | -1.89/-2.39   | -3.44/-4.88     | -6.58/-7.43     | -7.26/-8.59     | -12.11/-17.79   | -17.26/-18.34   | -16/-17.44      | -16.86/-15.52     | -12.38/-11.03     | -8.7/-7.5         | -6.14/-5.09       | -4.87/-5.23       | -5.9/-6.51        | -6.72/-7.55       | -9.09/-11.23      | -13.5/-15.64      | -18.73/-18.27     | -18.4/-18.46      | -12.48/-7.81      | -5.08/-3.43       | -2.58/-2.64       | -3.17/-3.69       | -3.98/-3.69       | -2.93/-1.95       |              |
| Θ(30°)    | -4.21/-4.59   | -5.15/-5.65     | -5.36/-4.87     | -4.18/-4.76     | -7.76/-17.21    | -17.86/-13.34   | -14.3/-18.47    | -17.38/-17.28     | -13.87/-11.2      | -9.21/-8.14       | -6.14/-6.06       | -3.6/-3.84        | -3.93/-3.64       | -3.32/-3.7        | -4.89/-6.73       | -9.1/-13.53       | -18.26/-18.24     | -18.62/-17.04     | -13.55/-9.55      | -6.06/-3.79       | -3.01/-2.83       | -3.06/-3.58       | -3.97/-4.24       | -4.41/-4.25       |              |
| Θ(142.5°) | -6.33/-5.49   | -6.5/-6.36      | -9.51/-8.75     | -5.98/-11.98    | -6.89/-17.42    | -15.71/-9.47    | -10.38/-18.47   | -18.39/-17        | -18.92/-10.91     | -7.28/-6.37       | -4.65/-2.94       | -3.74/-3.7        | -3.06/-2.34       | -2.74/-3.8        | -4.88/-5.86       | -7.25/-9.82       | -12.34/-19.39     | -17.62/-13.07     | -11.95/-10.05     | -6.94/-5.27       | -5.27/-5.26       | -5.49/-5.94       | -6.91/-6.03       | -6.91/-6.99       |              |
| Θ(45°)    | -4.05/-5.45   | -7.49/-10.53    | -13.98/-17.52   | -18.66/-11.46   | -9.01/-12.53    | -15.15/-9.98    | -11.62/-16.74   | -12.39/-12.48     | -14.75/-9.14      | -6.5/-5.44        | -3.08/-1.51       | -2.43/-3.41       | -3.78/-2.69       | -3.7/-5.18        | -6.03/-7.03       | -8.97/-11.22      | -14.26/-16.71     | -16.67/-12.95     | -9.81/-8.4        | -8.58/-8.64       | -8.69/-7.99       | -7.36/-6.28       | -4.6/-3.63        | -3.94/-3.81       |              |
| Θ(52.5°)  | -2.05/-2.33   | -3.32/-4.6      | -6.64/-6.64     | -10.69/-17.55   | -11.8/-13.29    | -13.72/-8.85    | -13.61/-14.12   | -9.4/-10.28       | -8.46/-5.15       | -4.91/-5.28       | -3.16/-1.58       | -1.63/-2.52       | -2.15/-2.22       | -5.25/-8.13       | -8.36/-9.06       | -11.02/-10.33     | -14.1/-17.08      | -18.59/-19.17     | -12.89/-9.74      | -8.65/-8.18       | -8.27/-8.99       | -8.96/-8.11       | -6.68/-4.33       | -4.51/-3.28       |              |
| Θ(60°)    | -1.65/-2.47   | -2.61/-3.69     | -4.56/-4.21     | -6.33/-13.43    | -19.36/-18.05   | -15.96/-10.68   | -14.44/-13.14   | -10.04/-10.05     | -9.73/-6.34       | -5.19/-3.82       | -2.28/-2.4        | -3.19/-5.25       | -5.56/-5.28       | -7.52/-9.08       | -10.14/-11.13     | -12.02/-12.58     | -12.7/-15.91      | -19.39/-16.85     | -12.12/-10.05     | -9.77/-9.87       | -9.68/-9.84       | -8.83/-9.82       | -6.91/-3.69       | -2.98/-2.05       |              |
| Θ(67.5°)  | -2.66/-1.96   | -1.23/-2.23     | -3.96/-4.92     | -6.51/-9.53     | -18.88/-19.02   | -17.15/-12.2    | -17.67/-13.49   | -11.27/-10.66     | -9.79/-6.44       | -6.49/-5.47       | -4.23/-5.02       | -3.79/-4.54       | -4.75/-5.96       | -9.18/-10.67      | -15.19/-15.21     | -14.1/-11.55      | -11.93/-16.64     | -18.59/-18.34     | -12.32/-9.54      | -12.06/-13.44     | -11.52/-9.83      | -7.12/-8.21       | -9.37/-6.72       | -5.69/-3.75       |              |
| Θ(75°)    | -3.99/-3.29   | -3.74/-5.94     | -8.13/-9.51     | -10.29/-9.37    | -19.18/-18.97   | -17.6/-13.15    | -18.89/-15.51   | -19.55/-9.52      | -11.17/-11.37     | -9.43/-6.64       | -4.69/-6.94       | -5.92/-8.19       | -9.98/-11.15      | -14.35/-13.04     | -16.21/-14.05     | -12.56/-10.84     | -10.58/-13.6      | -17.85/-18.05     | -13.82/-12.36     | -16.09/-15.65     | -11.51/-10.46     | -7.62/-9.74       | -9.66/-6.15       | -6.22/-6.06       |              |
| Θ(82.5°)  | -6.55/-4.81   | -4.45/-6.25     | -10.2/-12.18    | -10.31/-7.64    | -16.49/-18.87   | -15.4/-11.43    | -17.98/-15.59   | -15.98/-11.03     | -14.65/-14.2      | -15.39/-11.99     | -7.57/-8.63       | -6.31/-10.25      | -9.68/-10.61      | -11.29/-11.17     | -12.64/-15.92     | -13.51/-10.52     | -9.82/-14.53      | -18.03/-17.61     | -14.01/-12.25     | -17.58/-17.18     | -11.92/-10.07     | -9.4/-11.42       | -18.33/-10.62     | -10.46/-7.94      |              |
| Θ(90°)    | -8.19/-7.05   | -6.76/-5.98     | -11.69/-15.86   | -15.76/-11.1    | -18.72/-13.15   | -17.83/-14.69   | -18.82/-15.34   | -17.69/-11.67     | -14.08/-18.54     | -18.38/-13.2      | -9.4/-11.77       | -8.32/-12.72      | -15.09/-14.44     | -11.85/-11.48     | -12.1/-13.9       | -12.82/-12.84     | -11.51/-16.34     | -18.3/-18.71      | -15.13/-16.25     | -17.3/-18.38      | -13.47/-10.79     | -8.68/-9.08       | -15.55/-12.54     | -12.08/-9.81      |              |
| Θ(97.5°)  | -12.1/-11.26  | -11.92/-10.83   | -12.22/-11.97   | -17.13/-12.94   | -17.13/-12.94   | -17.8/-17.89    | -17.45/-14.16   | -17.39/-13.59     | -18.76/-14.01     | -18.23/-14.75     | -10.27/-12.99     | -11.68/-18.63     | -13.11/-12.34     | -9.97/-10.93      | -14.1/-12.8       | -14.36/-12.27     | -11.48/-15.72     | -17.38/-18.16     | -18.21/-15.7      | -19.07/-17.82     | -16.92/-13.02     | -11.51/-11.26     | -19.04/-17.32     | -12.02/-8.44      |              |
| Θ(105°)   | -8.39/-11.64  | -8.39/-11.14    | -16.41/-10.41   | -19.1/-10.27    | -16.12/-12.68   | -16.96/-18.24   | -18.42/-16.01   | -14.3/-13.22      | -17.16/-18.89     | -18.56/-18.93     | -11.52/-15.68     | -12.95/-14.34     | -10.94/-10.81     | -10.86/-10.21     | -11.05/-14.02     | -12.43/-13.22     | -11.09/-17.8      | -18.75/-18.18     | -18.25/-18.04     | -19.05/-17.86     | -12.88/-8.95      | -8.95/-8.59       | -18.08/-18.66     | -13.91/-8.75      |              |
| Θ(112.5°) | -7.87/-11.22  | -11.16/-8.74    | -16.01/-11.13   | -19.31/-13.69   | -18.2/-11.8     | -14.06/-19.12   | -18.31/-15.15   | -14.67/-12.37     | -16.77/-17.09     | -18.73/-17.27     | -11.49/-15.06     | -10.95/-16.66     | -15.74/-11.76     | -10.55/-10.83     | -16.11/-12.49     | -11.36/-8.47      | -12.71/-18.85     | -18.07/-18.54     | -18.58/-18.91     | -18.22/-18.62     | -13.39/-9.88      | -8.58/-6.87       | -11.41/-12.83     | -10.38/-10.19     |              |
| Θ(120°)   | -5.76/-11.99  | -13.91/-10.69   | -15.37/-10.63   | -16.36/-15.12   | -18.51/-14.23   | -14.69/-12.05   | -10.7/-18.66    | -13.56/-13.42     | -17.2/-18.99      | -19.22/-16.05     | -10.56/-14.74     | -15.94/-17.77     | -16.34/-11.35     | -9.04/-6.97       | -13.24/-14.15     | -12.01/-10.37     | -13.6/-15.25      | -18.23/-17.98     | -17.14/-19.05     | -19.08/-17.54     | -16.95/-12.38     | -9.48/-9.36       | -15.91/-15.21     | -8.19/-4.76       |              |
| Θ(127.5°) | -4.91/-10.9   | -13.36/-7.3     | -15.26/-19.24   | -18.73/-13.84   | -18.07/-14.5    | -17.96/-17.92   | -13.74/-18.84   | -18.37/-16.55     | -15.66/-17.6      | -12.72/-11.87     | -12.59/-11.35     | -9.18/-10.31      | -9.51/-5.12       | -5.74/-10.09      | -13.74/-13.42     | -13.9/-10.42      | -17.73/-12.29     | -14.87/-18.11     | -17.71/-17.79     | -19.4/-18.2       | -18.67/-18.3      | -9.94/-8.39       | -8.06/-12.98      | -14.69/-9.62      |              |
| Θ(135°)   | -5.96/-9.56   | -14.4/-12.76    | -11.94/-12.25   | -15.19/-19.12   | -18.11/-14.18   | -18.5/-10.49    | -9.17/-15.01    | -11.68/-9.43      | -13.24/-18.9      | -9.89/-9.8        | -12.78/-12.18     | -16.72/-18.46     | -10.87/-6.58      | -8.81/-9.08       | -9.34/-18.31      | -9.87/-13.06      | -11.35/-10.58     | -14.93/-15.18     | -19.11/-18.78     | -18.33/-19.19     | -17.88/-17.58     | -10.5/-14.62      | -13.43/-8.29      | -11.11/-10.02     |              |
| Θ(142.5°) | -7.36/-9.88   | -12.37/-10.34   | -9.77/-12.13    | -13.58/-11.46   | -10.92/-13.23   | -15.61/-11.73   | -9.2/-13.9      | -14.99/-10.32     | -11.18/-13.28     | -9.94/-10.54      | -16.37/-14.3      | -7.75/-12.75      | -12.72/-10.07     | -10.48/-13.67     | -15.69/-11.65     | -16.8/-18.73      | -12.1/-14.31      | -16.42/-18.01     | -18.54/-13.46     | -12/-16.83        | -18.32/-19.35     | -14.12/-11.27     | -12.3/-12.41      | -11.79/-6.76      |              |
| Θ(150°)   | -5.84/-6.12   | -8.27/-10.06    | -18.31/-18.67   | -15.87/-13.63   | -10.76/-12.67   | -8.82/-6.17     | -17.61/-15.42   | -14.35/-7.66      | -7.55/-12.82      | -12.71/-9.85      | -9.95/-10.66      | -10.46/-11.67     | -12.96/-10.7      | -7.22/-8.08       | -9.85/-13         | -14.71/-12.29     | -13.71/-16.16     | -16.64/-17.56     | -18.45/-18.75     | -17.26/-18.1      | -16.26/-16.09     | -17.18/-11.39     | -8.05/-8.47       | -8.66/-7.08       |              |
| Θ(157.5°) | -14.14/-19.31 | -18.54/-17.7    | -18.73/-18.89   | -14.65/-13.29   | -14.47/-15.66   | -12.13/-10.94   | -13.39/-18.95   | -13.86/-11        | -12.12/-15.63     | -14.31/-11.84     | -11.09/-11.04     | -10.34/-10.06     | -10.09/-10.19     | -10.65/-11.2      | -11.36/-10.47     | -9.83/-11.51      | -15.17/-17.99     | -19.04/-18.05     | -18.42/-13.66     | -9.98/-8.54       | -9.77/-13.3       | -18.45/-17.41     | -12.79/-10.32     | -8.69/-9.49       |              |
| Θ(165°)   | -17.89/-19.44 | -18.13/-16.64   | -14.56/-12.24   | -10.71/-9.34    | -9.14/-10.34    | -11.85/-18.15   | -18.65/-14.3    | -10.54/-9.46      | -9.95/-11.64      | -13.61/-13.63     | -13.77/-12.86     | -10.62/-8.74      | -7.23/-6.55       | -6.65/-7.32       | -8.99/-10.51      | -11.8/-14.74      | -17.1/-17.95      | -15.81/-15.47     | -15.82/-13.14     | -10.89/-9.25      | -8.8/-10.32       | -11.77/-14.14     | -15.22/-12.19     | -11.05/-14.42     |              |
| Θ(172.5°) | -8.49/-9.34   | -11.14/-12.79   | -14.36/-16.59   | -15.77/-14.01   | -12.8/-14.18    | -17.45/-17.84   | -16.02/-12.18   | -11.42/-12.07     | -12.52/-13.1      | -15.16/-16.58     | -18.65/-18.3      | -18.96/-18.14     | -18.51/-16.18     | -14.83/-13.78     | -14.44/-16.56     | -18.72/-16.93     | -17.77/-17.93     | -18.51/-17.91     | -19.34/-18.45     | -17.04/-14.97     | -13.84/-12.63     | -11.94/-11.86     | -11.19/-9.11      | -7.88/-8.08       |              |
| Θ(180°)   | -9.62/-10.87  | -12.55/-13.19   | -12.5/-13.26    | -15.1/-16.27    | -16.85/-17.97   | -17.62/-18.79   | -18.87/-18.01   | -17.9/-16.83      | -15.23/-14.53     | -12.6/-11.79      | -11.23/-11.22     | -11.5/-12.16      | -10.11/-10.54     | -10.19/-9.99      | -10.34/-10.77     | -11.5/-12.16      | -12.32/-12.46     | -14.86/-18.76     | -18.18/-18.5      | -15.81/-12.81     | -10.9/-9.63       | -8.85/-9.93       | -7.75/-8.16       | -8.83/-9.51       | -10.07/-9.51 |
| 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°)     | -19.16/-14.52 | -11.17/-8.94    | -6.81/-5.54     | -4.07/-3.24     | -2.74/-2.5      | -2.2/-2.51      | -2.41/-2.43     | -2.22/-2.57       | -3.47/-4.71       | -5.69/-6.92       | -8.77/-11.39      | -14.16/-17.39     | -18.45/-17.02     | -11.31/-8.76      | -7.11/-6.05       | -5.18/-4.3        | -3.21/-2.25       | -1.77/-1.89       | -2.04/-2.54       | -2.96/-3.47       | -4.13/-4.87       | -5.63/-6.85       | -9.33/-12.94      | -18.46/-17.57     |              |
| Θ(7.5°)   | -18.02/-18.9  | -15.62/-11.57   | -9.05/-7.77     | -6.79/-6.1      | -5.47/-5.02     | -4.48/-5.05     | -5.31/-3.58     | -5.06/-5.25       | -6.38/-8.25       | -13.9/-19.42      | -17.71/-19.11     | -15.41/-10.62     | -7.52/-5.84       | -5.22/-6.43       | -4.23/-3.79       | -3.06/-1.98       | -2.42/-1.66       | -2.1/-2.6         | -2.6/-2.91        | -3.25/-3.57       | -3.96/-4.79       | -6.38/-8.6        | -11.43/-15.78     |                   |              |
| Θ(15°)    | -8.59/-12.36  | -7.51/-11.22    | -16.73/-15.47   | -16.88/-16.01   | -19.01/-17.97   | -17.69/-15.53   | -14.71/-14.09   | -13.19/-12.15     | -11.88/-13.51     | -15.31/-17.98     | -18.74/-16.76     | -13.82/-11.11     | -9.27/-7.64       | -6.05/-4.79       | -3.84/-3.04       | -2.62/-2.04       | -1.22/-0.1        | 0.590.89          | 0.890.62          | 0.110.62          | -1.36/-2.03       | -2.56/-3.09       | -3.69/-4.52       | -5.41/-7          |              |
| Θ(22.5°)  | -3.35/-4.12   | -5.52/-7.55     | -10.04/-12.86   | -14.12/-16.17   | -18.67/-17.72   | -17.29/-15.9    | -15.24/-18.04   | -19.35/-17.93     | -16.14/-15.53     | -15.41/-14.79     | -12.83/-11.08     | -9.39/-8.49       | -7.89/-6.66       | -5/-3.76          | -2.75/-1.91       | -1.04/-0.22       | 0.260.38          | 0.591.34          | 2.38/3.2          | 3.46/3.12         | 2.110.71          | -0.84/-1.98       | -2.75/-2.98       | -3.31/-3.12       |              |
| Θ(30°)    | -1.17/-1.27   | -2.2/-3.35      | -4.34/-5.15     | -6.17/-6.67     | -8.04/-7.68     | -5.86/-4.64     | -4.94/-6.28     | -10.39/-17.58     | -12.22/-8.54      | -7.81/-6.84       | -8.82/-8.43       | -7.62/-6.92       | -6.49/-4.66       | -2.34/-0.59       | 0.40/0.76         | 1.070.98          | 0.54/0.34         | -0.150.76         | 1.391.73          | 2.092.68          | 3.12/3.01         | 2.251.17          | -0.12/-1.07       | -1.68/-1.66       |              |
| Θ(37.5°)  | -2.58/-2.48   | -3.19/-3.86     | -2.91/-1.34     | -0.7/-0.74      | -1.81/-2.24     | -2.11/-1.57     | -1.66/-2.73     | -5.83/-10.46      | -9.76/-7.08       | -5.8/-6.16        | -6.59/-5.81       | -4.27/-3.52       | -2.18/-3.7        | 0.771.63          | 2.031.83          | 1.611.19          | 0.40/4.3          | 1.462.13          | 2.262.06          | 1.771.89          | 2.68/3.34         | 3.132.28          | 0.86/-0.89        | -2.6/-3.1         |              |
| Θ(45°)    | -4.44/-3.4    | -3.17/-4.22     | -2.69/-0.73     | -0.24/-0.43     | -1.33/-1.91     | -1.33/-0.33     | -0.53/-1.8      | -4.6/-7.21        | -6.33/-4.14       | -2.36/-2.5        | -3.13/-2.61       | -1.55/-1.3        | -1.011.81         | 2.532.16          | 2.192.16          | 1.360.51          | -0.24/-0.78       | -0.680.34         | 2.14/3.24         | 3.152.38          | 2.121.96          | 1.220.34          | -1.12/-2.38       |                   |              |
| Θ(52.5°)  | -3.85/-3.6    | -2.62/-4.3      | -4.5/-1.53      | -0.45/-0.44     | -0.69/-0.29     | 1.231.83        | 1.28/0.06       | -2.36/-3.97       | -2.18/-0.88       | -0.4/-0.18        | 0.020.29          | 0.790.55          | 1.35/3.6          | 3.792.15          | 2.262.92          | 1.841.32          | 0.64/-0.87        | -1.17/-1          | 0.022.01          | 3.152.93          | 1.891.24          | 0.91/0.27         | 0.020.39          | 0.38/-1.29        |              |
| Θ(60°)    | -2.11/-1.76   | -1.2/-3.27      | 2.880.04        | 1.351.27        | 0.511.41        | 3.473.88        | 2.991.35        | -0.77/-1.88       | 0.131.51          | 0.760.74          | 1.821.53          | 1.811.16          | 0.972.73          | 3.822.54          | 2.934.03          | 3.082.48          | 1.431.073         | -2.1/-2.23        | -0.770.98         | 2.152.81          | 2.541.65          | 0.65/-0.53        | -0.180.92         | 1.760.36          |              |
| Θ(67.5°)  | -1.21/-0.53   | -0.37/-3.7      | -1.21/-2.71     | 2.872.42        | 0.922.3         | 4.124.1         | 3.1/66          | -0.5/-1.48        | 1.12/64           | 1.471.18          | 3.061.59          | 0.711.21          | 0.7               |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |              |



# Radiated Composite Gain Data of SC Ant1, BLE Ant2

# Appendix B

|            |               |                 |                 |                 |                 |                 |                 |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |
|------------|---------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| Θ (60°)    | -3.9/-2.22    | -1.14/-2.56     | -3.77/-5.11     | -7.7/-10.9      | -17.66/-14.77   | -19.22/-15.44   | -13.69/-15.07   | -13.5/-10.29      | -6.13/-4.3        | -3.55/-1.07       | -1.69/-3.44       | -2.95/-3.31       | -3.98/-4.82       | -7.27/-8.16       | -12.56/-18.22     | -16.75/-14.24     | -11.77/-13.51     | -16.94/-17.45     | -16.72/-12.99     | -11.8/-12.67      | -12.83/-10.82     | -7.99/-6.16       | -7.61/-5.89       | -2.69/-3.36       |
| Θ (67.5°)  | -3.24/-3.5    | -1.91/-3.6      | -4.45/-6.97     | -7.9/-9.31      | -17.36/-16.38   | -17.65/-17.15   | -15.23/-13.53   | -12.64/-9.62      | -6.2/-5.54        | -5/-2.85          | -3.52/-4.5        | -4.61/-5.49       | -7.83/-7.46       | -9.4/-11.54       | -16.77/-18.24     | -17.93/-13.22     | -12.49/-12.96     | -18.39/-18.94     | -19/-13.1         | -11.44/-12.37     | -13.04/-9.84      | -9.19/-6.6        | -8.1/-7.45        | -3.6/-2.82        |
| Θ (75°)    | -3.47/-5.53   | -3.2/-5.22      | -5.68/-8.7      | -9.54/-10.55    | -14.89/-16.38   | -16.21/-14.98   | -18.35/-14.13   | -13.31/-9.68      | -7.59/-6.9        | -6.51/-4.51       | -5.67/-5.45       | -5.24/-5.76       | -8.89/-8.8        | -12.15/-13.36     | -15.65/-14.27     | -15.86/-17.7      | -14.93/-12.91     | -19.16/-18.42     | -18.05/-14.67     | -12.89/-12.23     | -11.81/-7.48      | -7.82/-7.33       | -6.59/-9.2        | -7.6/-6.4         |
| Θ (82.5°)  | -6.84/-8.33   | -3.56/-6.68     | -8.24/-12.48    | -11.32/-9.81    | -19.33/-18.32   | -17.02/-13.68   | -18.37/-14.08   | -13.88/-10.25     | -10.27/-10.81     | -9.39/-6.24       | -7.85/-7.69       | -7.73/-9.71       | -12.38/-9.64      | -13.38/-13.14     | -15.58/-12.14     | -15.55/-17.27     | -18.7/-14.2       | -17.35/-17.62     | -19.85/-19.19     | -17.61/-14.74     | -13.84/-8.33      | -9.03/-9.56       | -12.64/-15.54     | -14.15/-8.22      |
| Θ (90°)    | -11.21/-13.12 | -5.52/-9.31     | -11.13/-18.65   | -19.01/-10.09   | -16.76/-19.01   | -19.51/-17.15   | -18.39/-15.06   | -14.33/-12.14     | -15.46/-16.47     | -15.87/-9.39      | -10.58/-9.55      | -10.08/-11.06     | -14.89/-18.07     | -16.89/-13.87     | -18.19/-12.72     | -15.87/-19.06     | -16.82/-15.78     | -16.25/-17.96     | -17.46/-18.23     | -18.39/-18.23     | -17.81/-9.09      | -9.73/-15.31      | -18.37/-17.36     | -14.43/-10.9      |
| Θ (97.5°)  | -15.21/-11.59 | -6.87/-10.21    | -14.07/-16.93   | -19.21/-14.73   | -18.61/-15.18   | -18.11/-14.98   | -17.52/-13.82   | -19.21/-14.02     | -13.57/-18.35     | -17.4/-10.46      | -12.54/-9.39      | -11.17/-16.23     | -17.31/-13.43     | -18.35/-17.93     | -17.19/-15.87     | -18.29/-18.03     | -15.24/-17.97     | -18.39/-18.55     | -18.85/-17.9      | -17.75/-18.21     | -18.02/-11.47     | -11.51/-14.97     | -11.37/-15.95     | -15.91/-12.62     |
| Θ (105°)   | -18.83/-13.22 | -9.92/-11.58    | -13.38/-14.21   | -13.18/-10.97   | -15.97/-16.51   | -18.9/-17.84    | -18.02/-16.84   | -14.96/-13.53     | -17.86/-18.53     | -17.64/-11.37     | -13.93/-14.27     | -13.01/-15.48     | -18.08/-17.08     | -13.35/-11.47     | -18.19/-15.13     | -18.57/-17.86     | -13.88/-17.88     | -18.16/-18.01     | -18.21/-17.69     | -17.71/-18.66     | -19.22/-11.75     | -9.41/-8.64       | -11.37/-16.75     | -16.36/-18.62     |
| Θ (112.5°) | -18.31/-17.85 | -13.3/-10.28    | -11.14/-10.71   | -13.01/-12.98   | -19.19/-16.39   | -17.29/-17.75   | -18.92/-19      | -14.22/-14.91     | -15.91/-19.31     | -18.19/-11.74     | -16.23/-12.69     | -15.1/-16.45      | -16.63/-12.41     | -13.5/-14.25      | -14.53/-18.41     | -15.49/-15.53     | -12.43/-17.94     | -18.25/-17.26     | -17.75/-17.51     | -18.94/-18.22     | -18.96/-12.22     | -13.45/-9.1       | -13.9/-14.07      | -10.51/-11.14     |
| Θ (120°)   | -8.58/-12.76  | -12.39/-11.33   | -16.76/-12.81   | -16.56/-12.27   | -12.23/-15.64   | -17.66/-18.16   | -16.64/-14.52   | -11.51/-18.25     | -17.18/-81        | -17.53/-14.85     | -15.46/-18.08     | -14.29/-13.71     | -17.87/-12.92     | -12.36/-11.02     | -11.75/-14.06     | -15.41/-13.13     | -13.22/-16.72     | -18.98/-18.49     | -18.76/-18.48     | -17.94/-17.9      | -18.21/-9.87      | -10.41/-10.37     | -12.29/-13.76     | -9.25/-8.03       |
| Θ (127.5°) | -12.12/-14.68 | -17.93/-6.86    | -9.84/-18.04    | -18.19/-13.78   | -18.24/-13.92   | -11.21/-18.43   | -16.75/-18.7    | -18.28/-18.18     | -17.89/-15.49     | -12.87/-16.84     | -12.04/-10.37     | -11.37/-14.93     | -17.14/-15.19     | -9.88/-5.67       | -10.42/-18.32     | -18.35/-13.6      | -17.94/-17.28     | -18.31/-18.1      | -17.37/-18.83     | -17.41/-18.5      | -18.81/-10.75     | -10.07/-6.13      | -9.84/-12.02      | -6.69/-10.22      |
| Θ (135°)   | -7.37/-11.59  | -18.29/-14.08   | -11.57/-11.93   | -14.59/-18.74   | -17.72/-13.01   | -16.66/-13.4    | -10.73/-14.68   | -15.56/-12.11     | -18.58/-11.56     | -10.76/-14.72     | -12.38/-12.67     | -11.32/-8.87      | -10.45/-12.33     | -9.63/-12.47      | -16.13/-15.76     | -16.52/-11.07     | -18.91/-18.69     | -18.98/-17.54     | -18.52/-17.64     | -16.13/-17.76     | -18.1/-15.94      | -11.76/-12.54     | -11.11/-12.33     | -9.56/-7.07       |
| Θ (142.5°) | -10.67/-9.98  | -11.99/-9.73    | -9.24/-12.25    | -17.04/-16.59   | -13.25/-11.8    | -18.64/-12.29   | -10.67/-15.96   | -14.37/-12.93     | -18.75/-13.08     | -10.46/-16.55     | -10.31/-11.62     | -17.57/-16.07     | -10.31/-8.88      | -10.76/-12.33     | -16.16/-19.29     | -12.17/-14.7      | -14.69/-13.63     | -17.81/-18.88     | -18.49/-16.72     | -13.84/-13.48     | -15.03/-12.48     | -11.41/-16.65     | -16.9/-10.26      | -9.83/-13.21      |
| Θ (150°)   | -12.97/-10.53 | -8.57/-10.08    | -16.35/-18.32   | -17.33/-17.1    | -17.81/-18.41   | -13.33/-11.29   | -12.06/-19.39   | -12.6/-10.32      | -16.57/-12.55     | -8.45/-9.18       | -9.38/-9.3        | -14.48/-18.92     | -13.86/-11.61     | -10.14/-8.88      | -8.45/-10.87      | -16.6/-18.19      | -16.51/-18.3      | -18.73/-18.99     | -18.71/-15.89     | -16.11/-18.86     | -18.05/-17.65     | -18.02/-14.5      | -13.05/-11.74     | -9.44/-12.15      |
| Θ (157.5°) | -14.33/-14.24 | -18.85/-17.71   | -15.98/-19.29   | -18.76/-14.08   | -12.85/-12.49   | -12.41/-15.01   | -18.43/-18.46   | -12.79/-12.02     | -13.56/-11.95     | -9.21/-9.09       | -10.44/-11.73     | -13.56/-14.52     | -11.73/-11.37     | -13.66/-17.37     | -18.21/-13.26     | -10.79/-10.92     | -12.09/-16.26     | -19.07/-19.07     | -18.36/-18.31     | -18.51/-15.12     | -13.14/-12.21     | -11.68/-13.65     | -15.25/-13.5      | -12.26/-12.03     |
| Θ (165°)   | -18.61/-18.26 | -17.9/-15.71    | -16.66/-13.6    | -10.68/-9.3     | -9.11/-10.6     | -14.09/-14.77   | -12.54/-9.9     | -8.6/-8.74        | -9.69/-11.16      | -12.09/-13.48     | -13.98/-12.77     | -11.15/-9.53      | -8.51/-7.95       | -7.61/-7.39       | -7.86/-9.45       | -12.42/-15.47     | -18.22/-19.19     | -18.97/-18.2      | -18.35/-15.75     | -11.82/-8.97      | -8.01/-7.5        | -12.67/-14.94     | -12.74/-17.35     | -18.05/-17.96     |
| Θ (172.5°) | -9.24/-7.55   | -7.26/-8.96     | -11.96/-16.55   | -17.76/-17.12   | -17.46/-17.98   | -18.83/-16.82   | -15.39/-14.75   | -14.42/-14.05     | -13.18/-12.79     | -14.18/-15.47     | -17.7/-16.81      | -14.36/-14.16     | -15.11/-16.08     | -16.49/-15.93     | -17.18/-18.36     | -19.16/-17.73     | -17.13/-18.14     | -18.66/-19.11     | -19.21/-17.28     | -18.43/-19.56     | -15.62/-13.31     | -14.22/-14.08     | -16.61/-17.8      | -14.47/-11.77     |
| Θ (180°)   | -14.62/-13.26 | -13.29/-14.32   | -12.38/-12.6    | -14.58/-14.77   | -14.22/-14.06   | -12.62/-13.31   | -13.38/-14.08   | -14.06/-14.9      | -17.04/-17.45     | -17.91/-18.73     | -18.5/-18.52      | -18.45/-17.67     | -17.65/-19.16     | -18.1/-18.99      | -17.95/-18.85     | -18.79/-15.89     | -13.55/-13.7      | -15.59/-18.25     | -18.93/-19.04     | -18.34/-17.96     | -15.68/-13.74     | -12.9/-12.54      | -12.11/-11.25     | -12.15/-14.36     |
| 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°)     | -17.33/-12.48 | -10.05/-2.67    | -7.24/-6.64     | -6.5/-4.86      | -4.22/-3.42     | -3.36/-3.58     | -3.73/-3.77     | -3.91/-4.51       | -5.5/-6.37        | -8.02/-10.28      | -13.36/-16.29     | -17.73/-18.39     | -18.03/-15.66     | -11.92/-9.76      | -8.44/-10.4       | -5.72/-9.44       | -4.53/-3.98       | -3.82/-3.9        | -3.74/-3.7        | -4.1/-4.64        | -5.56/-6.82       | -8.23/-10.49      | -12.73/-15.49     | -19.13/-18.49     |
| Θ (7.5°)   | -19.07/-19.21 | -16.84/-13.81   | -10.75/-8.62    | -7.87/-6.69     | -6.02/-5        | -4.44/-4.1      | -4.54/-4.82     | -5.23/-5.37       | -6.04/-7.09       | -10.44/-12.41     | -17.34/-18.68     | -19.07/-16.06     | -11.43/-8.51      | -5.67/-5.09       | -3.88/-3.07       | -2.51/-1.95       | -1.65/-1.44       | -1.15/-1.13       | -1.37/-2.02       | -2.83/-4.58       | -6.26/-8.03       | -9.39/-10.7       | -12.37/-16.32     |                   |
| Θ (15°)    | -12.25/-14.97 | -17.73/-18.61   | -17.13/-13.95   | -15.38/-17.1    | -18.63/-15.75   | -15.68/-15.12   | -15.54/-16.9    | -18.64/-17.93     | -18.63/-18.45     | -18.67/-18.31     | -17.69/-18.11     | -14.46/-11.3      | -8.02/-5.88       | -4.36/-3.22       | -2.36/-1.5        | -0.670/0.1        | 0.550/85          | 0.961/0.3         | 1.181/23          | 1.060/6           | 0.05/-0.66        | -1.88/-3.6        | -5.27/-6.57       | -7.8/-10.17       |
| Θ (22.5°)  | -4.65/-5.8    | -7.06/-8.59     | -11.14/-13.22   | -17.16/-18.27   | -18.64/-18.06   | -18.48/-19.12   | -17.94/-17.16   | -14.87/-11.95     | -10.3/-9.93       | -11.79/-12.54     | -11.94/-10.81     | -9.54/-7.32       | -5.11/-3.9        | -2.03/-0.86       | 0.070/85          | 1.231/23          | 1.341/71          | 1.91/53           | 1.020/68          | 0.480/45          | 0.470/38          | -0.09/-1          | -1.8/-2.35        | -2.82/-4.3        |
| Θ (30°)    | -0.87/-0.92   | -1.29/-2.39     | -2.73/-2.72     | -3.76/-6.01     | -8.96/-8.01     | -6.4/-5.13      | -5.21/-3.78     | -12.47/-9.52      | -6.35/-6.31       | -8.91/-7.48       | -5.98/-3.7        | -1.75/-0.62       | -0.10/53          | 1.572/43          | 2.922/93          | 3.120/64          | 4.113/97          | 3.392/61          | 1.891/04          | 0.721/12          | 1.6771/56         | 1.080/42          | -0.12/-0.89       |                   |
| Θ (37.5°)  | 0.621/0.4     | 0.650/2.2       | 0.130/2.2       | -0.03/-0.95     | -2.06/-3.4      | -2.15/-1.08     | -0.31/-0.88     | -3.32/-3.99       | -1.96/-2.05       | -3.91/-5.76       | -5.36/-4.33       | -3.22/-1.12       | 0.150/79          | 0.870/81          | 1.682/99          | 3.54/35           | 3.673/64          | 2.9/23            | 2.46/3            | 2.812/25          | 3.574/08          | 3.57/2.24         | 0.830/0.1         |                   |
| Θ (45°)    | -0.450/-3.6   | -0.31/-1.16     | -0.450/-2.6     | 0.941/0.9       | -0.22/-1.91     | -2.4/-1.53      | -0.34/-0.1      | -1.55/-2.17       | -0.68/-0.6        | -2.28/-2.37       | -1.14/-1.08       | -0.930/29         | 0.751/38          | 1.951/82          | 2.4/63            | 3.382/72          | 2.732/27          | 1.761/53          | -0.36/-2.42       | -0.42/0.2         | 2.7/3.1           | 3.934/38          | 3.752/21          | 0.45/-0.88        |
| Θ (52.5°)  | -1.41/-0.81   | -2.23/-3.69     | -2.09/-0.6      | 1.232/45        | 1.110/29        | 0.910/81        | 0.04/-0.38      | -0.130/0.3        | 0.660/0.2         | -0.820/11         | 1.070/-41         | -1.20/-1.6        | 0.590/64          | 1.341/51          | 1.392/43          | 1.820/68          | 1.341/21          | 0.670/41          | 0.35/-0.45        | -1.68/-1          | 1.862/13          | 3.043/63          | 2.781/88          | 1.04/-0.69        |
| Θ (60°)    | -1.48/-1.16   | -2.37/-2.86     | -0.720/-3.9     | 2.974/37        | 2.992/68        | 3.493/32        | 2.020/54        | 1.122/41          | 2.541/93          | 0.810/9           | 1.09/-0.59        | -1.21/-0.01       | 0.230/4           | 0.762/09          | 1.631/79          | 1.18/-0.14        | 1.571/35          | 0.781/14          | 1.320/94          | 0.020/97          | 2.753/09          | 1.281/24          | 1.68/-0.29        |                   |
| Θ (67.5°)  | -1.37/-0.87   | -1.17/-0.79     | -0.220/43       | 4.054/57        | 2.932/75        | 4.043/82        | 2.30/55         | 1.012/88          | 3.212/26          | 1.741/32          | -0.13/-1.54       | -1.10/0.5         | 0.460/86          | 1.281/83          | 1.230/98          | 0.5/-0.39         | 1.451/42          | 1.2/21            | 1.041/67          | 1.512/18          | 3.222/43          | 2.522/53          | -0.130/91         | 2.280/23          |
| Θ (75°)    | -2.21/-1.1    | -1.27/-0.82     | -1.15/-0.34     | 3.783/07        | 1.251/56        | 3.532/87        | 1.1/-0.91       | 0.042/78          | 3.141/45          | 1.3771/56         | -1.21/-2.76       | -1.970/13         | 0.451/-0.41       | 1.031/55          | 0.7/-0.43         | 0.660/42          | 2.231/87          | 1.330/38          | 0.141/67          | 1.122/16          | 3.863/59          | 3.012/72          | -1.19/-0.64       | 1.160/21          |
| Θ (82.5°)  | -3.92/-1.87   | -1.6/-2.04      | -2.28/-1.88     | 2.531/26        | -0.37/-0.23     | 2.241/59        | 0.15/-1.57      | -0.631/74         | 2.03/-0.25        | -0.120/09         | -3.56/-2.51       | -1.5/-0.41        | -0.781/1.11       | 0.620/68          | -0.62/-0.82       | 0.740/84          | 1.732/4           | 1.18/-0.04        | -0.660/38         | 0.282/05          | 2.372/17          | -1.9/-2.72        | 0.110/37          |                   |
| Θ (90°)    | -6.67/-3.51   | -2.86/-4.99     | -5.2/-3.79      | 1.19/-0.37      | -1.71/-0.94     | 0.61/-0.62      | -1.92/-2.56     | -1.490/15         | -0.23/-2.41       | -2.03/-1.34       | -4.22/-4.47       | -3.03/-1.31       | -2.01/-0.74       | 0.20/62           | -1.59/-1.92       | -0.86/-0.59       | -0.492/06         | 0.65/-0.98        | -3.8/-1.37        | -1.160/44         | 1.962/05          | 0.550/25          | -2.65/-3.69       | -0.93/-0.86       |
| Θ (97.5°)  | -9.5/-3.32    | -2.95/-6.85     | -5.93/-5.95     | -1.84/-2.64     | -2.9/-2.81      | -1.8/-2.6       | -2.77/-3.3      | -2.8/-1.79        | -3.04/-6.08       | -4.44/-4.23       | -6.06/-6.72       | -3.63/-2.44       | -3.69/-1.05       | -1.57/-0.99       | -2.4/-3.74        | -2.96/-2.56       | -3.13/-0.56       | -2.94/-3.82       | -6.66/-3.55       | -5.21/-3.41       | -1.27/-1.02       | -1.78/-3.3        | -6.8/-5.44        | -1.02/-1.2        |
| Θ (105°)   | -8.5/-4.26    | -3.57/-6.87     | -7.29/-8.32     | -4.77/-5.26     | -4.74/-5.64     | -6.03/-7.18     | -5.23/-4.45     | -7.09/-5.68       | -4.78/-7.7        | -5.57/-7.48       | -8.41/-6.86       | -4.29/-4.95       | -4.42/-1.86       | -2.51/-1.61       | -3.88/-4          | -5.26/-2.85       | -4.78/-3.57       | -4.5/-3.53        | -6.16/-4.12       | -7.37/-6.74       | -3.93/-3.7        | -4.65/-6.77       | -1.81/-6          |                   |



# Radiated Composite Gain Data of SC Ant1, BLE Ant2

# Appendix B

|            |               |                 |                 |                 |                 |                 |                 |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |
|------------|---------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| Θ (112.5°) | -10.33/-14.45 | -11.72/-13.02   | -13.98/-12.43   | -9.09/-14.92    | -18.27/-15.01   | -17.52/-17.28   | -18.84/-17.83   | -12.49/-15.58     | -16.45/-17.84     | -18.39/-10.11     | -15.17/-17.9      | -14.46/-14.75     | -16.53/-14.77     | -11.51/-10.54     | -18.79/-17.6      | -18.54/-13.39     | -13.33/-18.82     | -18.19/-18.33     | -17.54/-18.33     | -18.44/-17.54     | -19.15/-12.13     | -6.29/-12.23      | -13.01/-15.71     | -14.33/-13.84     |
| Θ (120°)   | -11.81/-13.32 | -11.18/-10.84   | -10.75/-13.9    | -12.06/-15.78   | -18/-16.04      | -18.62/-17.97   | -18.35/-15.42   | -14.66/-15.9      | -13.13/-19.82     | -17.66/-9.65      | -18.71/-14.73     | -17.37/-18        | -15.47/-15.42     | -14/-14.1         | -14.27/-15.44     | -14.81/-12.8      | -11.58/-16.98     | -17.65/-17.9      | -19.23/-18.09     | -17.63/-17.72     | -18.34/-11.64     | -8.51/-9.55       | -9.51/-8.25       | -7.57/-12.67      |
| Θ (127.5°) | -12.42/-12.2  | -14.04/-18.04   | -13.83/-18.95   | -16.34/-11.28   | -12.71/-12.66   | -10.19/-14      | -13.86/-17.63   | -16.71/-18.5      | -18.45/-18.84     | -15.82/-12.08     | -12.86/-15.64     | -15.97/-9.97      | -10.45/-10.97     | -8.37/-10.46      | -12.57/-19.01     | -17.32/-19.04     | -13.29/-18.36     | -17.91/-18.15     | -15.16/-18.58     | -17.86/-17.89     | -13.61/-13.61     | -12.57/-9.09      | -11.34/-12.87     | -7.09/-7.66       |
| Θ (135°)   | -7.47/-9.35   | -9.37/-10.87    | -11.31/-14.63   | -17.73/-18.22   | -19.18/-16.36   | -17.15/-15.79   | -12.27/-18.02   | -11.36/-15.45     | -17.47/-10.22     | -13.53/-14.88     | -15.89/-12.43     | -10.42/-9.07      | -9.96/-11.42      | -8.87/-6.77       | -13.54/-15.16     | -17.82/-12.04     | -15.82/-18.25     | -19.14/-17.87     | -18.11/-18.75     | -12.68/-15.45     | -14.17/-11.9      | -17.77/-16.68     | -11.99/-17.98     | -7.63/-5.19       |
| Θ (142.5°) | -11.02/-9.22  | -10.62/-12.29   | -11.11/-9.69    | -10.54/-15.62   | -14.17/-13.81   | -19.27/-11.66   | -11.21/-17.94   | -13.87/-14.22     | -18.88/-11.75     | -14.03/-12.12     | -8.65/-11.94      | -16.31/-14.98     | -15.78/-11.91     | -9.66/-13.01      | -12.92/-15.23     | -12.61/-13.08     | -19.23/-18.37     | -17.56/-17.57     | -18.36/-18.05     | -16.62/-18.81     | -17.59/-16.19     | -14.12/-13.35     | -11.38/-11.56     | -10.53/-9.4       |
| Θ (150°)   | -10.31/-11.54 | -8/-8.19        | -11.27/-14.88   | -18.35/-16.04   | -18.84/-15.58   | -17.21/-12.38   | -15.21/-18.57   | -11.92/-11.78     | -18.73/-9.26      | -8.47/-13.81      | -15.29/-16.98     | -19.21/-3.7       | -8.62/-10.72      | -15.1/-12.27      | -12.92/-12.05     | -10.73/-16.69     | -17.87/-18.98     | -19.15/-18.96     | -18.07/-19.31     | -19.91/-15.45     | -18.49/-17.61     | -18.49/-19.31     | -17.91/-14.27     | -9.04/-7.9        |
| Θ (157.5°) | -9.1/-11.91   | -17.93/-19.12   | -16.87/-17.85   | -19.31/-15.2    | -12.16/-10.79   | -10.89/-13.28   | -17.95/-13.76   | -8.79/-9.21       | -11.79/-10.44     | -10.69/-10.2      | -8.82/-8.16       | -10.4/-14.04      | -12.51/-12.38     | -11.59/-9.67      | -11.04/-12.71     | -10.9/-12.07      | -14.52/-13.84     | -15.94/-17.98     | -18.25/-16.94     | -15.36/-16.12     | -19.26/-18.73     | -15.97/-12.55     | -12.13/-13.42     | -12.19/-9.88      |
| Θ (165°)   | -18.81/-18.5  | -18.69/-15.18   | -13.88/-17.17   | -16.23/-11.4    | -9.06/-8.43     | -10.93/-18.36   | -12.04/-8.72    | -8.59/-10.53      | -12.57/-14.38     | -16.45/-16.47     | -13.37/-10.71     | -9.7/-9.46        | -9.6/-10.18       | -11.94/-13.36     | -13.21/-11.76     | -12.71/-17.42     | -18.51/-19        | -19.2/-18.31      | -18.33/-17.02     | -15.23/-12.77     | -10.58/-9.49      | -8.3/-7.91        | -7.7/-9.2         | -15.11/-17.31     |
| Θ (172.5°) | -9.49/-8.42   | -8.56/-9.23     | -11.16/-13.66   | -18.13/-18.62   | -19.03/-17.45   | -17.48/-19.39   | -14.49/-12.05   | -11.19/-12.05     | -13.66/-15.63     | -18.65/-18.42     | -17.35/-14.12     | -13.44/-14.06     | -14.4/-15.01      | -16.47/-18.04     | -17.84/-18.74     | -18.8/-17.79      | -19.06/-18.49     | -14.83/-13.32     | -13.61/-15.12     | -13.41/-11.01     | -10.09/-9.22      | -9.2/-10.4        | -11.78/-14.41     | -18.28/-13.8      |
| Θ (180°)   | -14.75/-14.75 | -17.71/-19.14   | -17.04/-17.9    | -18.96/-16.64   | -15.73/-16.34   | -16.92/-16.47   | -15.35/-16.87   | -18.24/-18.52     | -19.18/-18.9      | -17.82/-19.07     | -19.21/-18.29     | -17.72/-18.67     | -17.67/-18.04     | -18.44/-19.15     | -18.05/-18.19     | -18.64/-18.32     | -18.67/-18.68     | -18.19/-17.68     | -18.45/-18.33     | -19.25/-18.86     | -15.8/-15.34      | -15.59/-15.57     | -15.88/-17        | -17.45/-16.03     |
| Freq(GHz)  | 6.175GPol.    | 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°)     | -14.18/-10.73 | -9.09/-7.4      | -6.62/-5.81     | -4.81/-4.16     | -3.66/-3.36     | -3.3/-2.92      | -2.8/-2.87      | -3.46/-4.17       | -4.82/-6.07       | -7.56/-9.51       | -12.07/-15.17     | -18.53/-19.13     | -18.13/-15.54     | -11.25/-8.83      | -7.69/-7.08       | -5.93/-4.62       | -4.03/-4.04       | -4.16/-4.47       | -4.33/-4.19       | -4.22/-4.87       | -5.78/-7.22       | -8.87/-11.01      | -14.05/-18.02     | -19.04/-18.11     |
| Θ (7.5°)   | -15.64/-18.24 | -18.87/-17.77   | -14.58/-12.09   | -9.36/-7.72     | -6.86/-6.31     | -5.93/-5.47     | -5.66/-7.18     | -6.23/-7.43       | -8.69/-11.26      | -14.2/-18.19      | -18.76/-17.86     | -18.41/-14.56     | -11.12/-8.49      | -6.54/-5.62       | -5.01/-4.36       | -3.28/-2.11       | -1.16/-0.7        | -0.68/-0.85       | -0.51/-0.05       | -0.13/-0.67       | -1.53/-2.62       | -3.52/-4.96       | -6.36/-7.86       | -8.55/-12.84      |
| Θ (15°)    | -7.93/-10.77  | -12.72/-13.3    | -12.44/-13.69   | -15.1/-13.27    | -11.24/-13.69   | -9.85/-12.13    | -14.01/-13.08   | -12.73/-13.49     | -15.76/-19.51     | -18.25/-18.71     | -17.34/-19.35     | -17.43/-13.99     | -10.68/-7.92      | -5.89/-4.63       | -3.21/-1.93       | -1.01/-0.21       | 0.26/0.08         | 0.29/0.78         | 1.00/0.95         | 0.62/0.3          | 0.07/-0.16        | -0.47/-0.97       | -1.79/-2.86       | -3.97/-5.84       |
| Θ (22.5°)  | -6.64/-9.1    | -10.42/-10.05   | -10.81/-12.74   | -13.71/-13.69   | -13.86/-13.66   | -14.03/-16.31   | -18.05/-18.78   | -18.88/-14.84     | -11.77/-11.04     | -12.73/-15.23     | -16.49/-13.96     | -10.4/-6.82       | -4/-2.42          | -1.6/-0.83        | -0.31/0.04        | 0.53/1.15         | 1.77/2.12         | 2.12/2.26         | 2.49/2.75         | 2.45/1.66         | 1.05/0.88         | 0.94/1.06         | 0.77/-0.28        | -1.97/-3.98       |
| Θ (30°)    | -1.07/-1.68   | -1.92/-1.29     | -2.88/-4.28     | -5.38/-4.65     | -4.83/-4.98     | -5.72/-5.84     | -7.32/-9.07     | -7.96/-6.56       | -7.29/-9.33       | -10.44/-9.37      | -9.96/-7.84       | -5.61/-2.99       | -1.42/-0.86       | -0.87/-0.54       | 0.22/-1.27        | 1.93/2.52         | 3.38/3.85         | 3.74/3.37         | 3.45/4.06         | 3.86/5.28         | 2.08/2.14         | 1.47/0.13         | -1.32/-1.25       |                   |
| Θ (37.5°)  | 0.93/0.79     | -0.47/-0.91     | -0.63/-0.65     | -0.34/-0.16     | -0.54/-1.88     | -2.57/-1.99     | -1.85/-2.77     | -2.66/-1.74       | -2.77/-5.04       | -6.39/-5.62       | -5.47/-3.88       | -1.26/0.23        | -0.05/-0.58       | 0.64/0.08         | 2.65/2.9          | 2.98/3.09         | 3.57/3.75         | 3.32/2.7          | 1.15/1.18         | 2.45/4.66         | 3.85/5.6          | 3.45/3.88         | 3.38/0.77         | -1.16/-0.34       |
| Θ (45°)    | 0.83/0.36     | -1.28/-1.73     | -0.47/0.64      | 1.75/2.32       | 1.48/-0.93      | -2.34/-1.39     | -0.54/-1.03     | -1.66/-1.34       | -1.51/-2.22       | -1.81/-8.2        | -2.4/-1.97        | -0.43/0.63        | 0.37/0.43         | 2.03/3.63         | 3.75/3.47         | 3.35/2.11         | 0.96/1.46         | 2.33/2.2          | 2.85/1.36         | 0.41/2.23         | 3.58/3.48         | 3.11/3.71         | 3.64/1.24         | -1.17/-0.51       |
| Θ (52.5°)  | 0.61/0.08     | -2.21/-1.21     | 0.40/2.1        | 1.48/2.5        | 2.18/0.37       | 0.33/-1.4       | 1.14/0.03       | -0.53/-0.35       | -1.02/-1.02       | 0.8/-0.18         | 1.08/0.15         | 0.38/0.67         | 1.38/2.3          | 3.05/3.49         | 2.51/8            | 2.40/-7.7         | 0.41/-19          | 1.02/1.72         | 2.48/2.17         | 0.95/0.91         | 2.04/2.02         | 1.27/1.4          | 1.77/1.08         | 0.4/-0.1          |
| Θ (60°)    | 1.51/0.67     | -0.74/0.12      | 0.74/0.6        | 2.31/3.89       | 3.37/-1.14      | 1.49/2.62       | 2.28/0.72       | 0.44/-3.36        | 1.15/0.51         | 2.76/1.35         | -0.87/1.21        | 0.74/-11          | 1.65/-1.86        | 2.04/2.62         | 2.73/2.56         | 3.53/1.66         | 0.96/1.19         | 0.25/0.01         | 0.48/1.55         | 1.02/0.99         | 2.16/2            | 0.74/0.66         | 1.19/1.76         | 1.7/-1.4          |
| Θ (67.5°)  | 1.89/0.87     | 1.11/24         | 0.69/0.36       | 3.35/4.05       | 2.96/1.05       | 2.09/3.29       | 2.98/1.18       | 1.14/2.62         | 20.83             | 3.16/1.47         | -1.25/1.55        | -0.06/1.24        | 1.67/1.02         | 1.74/2.76         | 2.64/2.35         | 3.39/1.06         | 1.45/1.11         | 0.16/-0.56        | -0.78/1.42        | 1.06/1.07         | 1.69/1.51         | 1.53/1.26         | 1.14/2.45         | 2.21/2.17         |
| Θ (75°)    | 0.94/0.82     | 1.25/1.22       | 0.42/0.23       | 2.69/3.6        | 1.6/0.39        | 1.98/0.05       | 2.48/0.76       | 0.04/2.15         | 2.17/0.51         | 1.94/1.2          | -1.46/-1.78       | -0.22/0.74        | 1.26/-0.59        | 1.08/3.04         | 1.71/-77          | 3.11/65           | 2.19/0.44         | -0.61/-0.31       | -0.28/-1.29       | 0.90/82           | 2.33/2.28         | 1.42/1.91         | 0.52/1.66         | 2.41/2.68         |
| Θ (82.5°)  | -0.71/25      | 0.90/73         | -1.33/-0.27     | 1.71/-77        | -1.69/-0.74     | 0.72/0.74       | -0.35/-2.32     | -2.54/1.53        | 1.84/-0.02        | 0.46/0.14         | -2.36/0.73        | -18.70/59         | -0.16/-1.68       | 1.47/2.64         | 0.12/0.84         | 1.88/1.74         | 2.09/0.84         | -0.45/-0.55       | 0.14/1.74         | 2.04/2.95         | 1.98/1.66         | -0.12/-0.16       | 1.92/31           |                   |
| Θ (90°)    | -2.17/0.65    | -0.68/-0.52     | -3.26/-2.19     | -0.21/0.55      | -3.67/-1.92     | -1.07/-2.25     | -3.6/-5.23      | -4.71/0.4         | 0.98/-1.23        | -2.26/-1.42       | -3.97/-0.55       | -3.39/-0.39       | -1.21/-3.21       | 1.07/1.9          | -1.47/-1.49       | 0.01/0.35         | 0.78/0.7          | -1.92/-1.29       | -0.37/0.56        | 0.16/-2.04        | 1.11/2.69         | 0.71/-0.54        | -1.64/-2.62       | 0.67/0.99         |
| Θ (97.5°)  | -4.01/-0.11   | -2.44/-2.49     | -5.57/-4.49     | -2.31/-1.69     | -4.41/-2.04     | -1.99/-3.5      | -4.78/-5.47     | -5.34/-1.35       | -1.17/-2.81       | -4.5/-3.43        | -5.26/-1.58       | -5.03/-0.63       | -4.28/-3.1        | 0.14/-0.16        | -2.23/-3.5        | -3.07/-1.63       | -1.92/-1.74       | -6.43/-2.83       | -1.95/-1.39       | -2.04/-6.95       | -2.04/0.76        | -1.6/-4.74        | -4.43/-4.27       | -0.31/-3.16       |
| Θ (105°)   | -3.79/-2.82   | -3.05/-3.44     | -4.82/-6.04     | -4.55/-4.13     | -5.77/-4.46     | -6.01/-4.41     | -3.79/-4.52     | -6.09/-4.25       | -5.04/-9.95       | -7.88/-7.79       | -6.45/-3.86       | -5.12/-2.26       | -4.86/-5.67       | -2.55/-0.64       | -1.94/-4.53       | -5.29/-4.65       | -4.14/0.8         | -8.07/-3.87       | -3.05/-3.55       | -2.91/-8.02       | -5.03/-2.04       | -4.95/-4.66       | -6.94/-4.9        | -1.05/-2.41       |
| Θ (112.5°) | -3.39/-4.9    | -3.55/-2.09     | -3.6/-5.86      | -7.83/-6.81     | -8.02/-9.15     | -10.46/-8.42    | -5.44/-5.97     | -11.08/-8.73      | -5.78/-6.96       | -11.28/-12.51     | -6.89/-6.66       | -6.07/-3.14       | -5.34/-5.32       | -4.82/-2.24       | -5.44/-4.83       | -5.08/-3.78       | -3.19/-6.32       | -5.48/-5.4        | -5.32/-2.56       | -6.44/-7.22       | -4.8/-3.14        | -3.89/-4.27       | -6.08/-10.28      | -3.97/-3.44       |
| Θ (120°)   | -6.35/-8.42   | -4.63/-5.25     | -5.35/-8.55     | -6.05/-4.21     | -6.45/-1.77     | -7.11/-8.87     | -7.86/-6.73     | -9.97/-9.1        | -4.97/-5.82       | -8.05/-10.84      | -9.34/-6.82       | -7.85/-4.78       | -3.77/-6.35       | -4.64/-3.42       | -6.95/-9.98       | -5.39/-4.63       | -3.73/-8.54       | -7.8/-9.76        | -6.45/-1.63       | -11.61/-16.76     | -5.94/-8.01       | -8.24/-7.98       | -12.99/-17.46     | -6.2/-3.43        |
| Θ (127.5°) | -12.07/-11.45 | -10.4/-11.56    | -12.38/-10.53   | -5.51/-5.33     | -5.86/-4.89     | -5.71/-8.47     | -9.69/-8.49     | -9.11/-9.41       | -9.06/-11.36      | -9.36/-8.59       | -14.66/-10.74     | -9.84/-5.06       | -5.84/-7.64       | -4.1/-6.28        | -10.8/-14.32      | -7.19/-6.75       | -4.85/-15.1       | -7.8/-9.56        | -8.75/-12.9       | -11.03/-18.56     | -7.59/-9.36       | -12.89/-10.15     | -18.71/-18.3      | -13.11/-10.64     |
| Θ (135°)   | -15.5/-15.83  | -9.38/-9.89     | -13.07/-16.66   | -13.49/-10.73   | -7.97/-6.02     | -19.77/-12.74   | -15.15/-13.93   | -12.4/-16.06      | -13.63/-12.24     | -13.33/-9.03      | -8.68/-13.99      | -12.36/-7.59      | -7.65/-8.25       | -5.58/-6.22       | -12.71/-7.91      | -12.84/-5.1       | -7.5/-10.49       | -10.17/-10.82     | -8.04/-1.29       | -6.6/-19.44       | -6.84/-5.9        | -15.15/-17.74     | -11.79/-12.94     | -17.89/-12.65     |
| Θ (142.5°) | -9.46/-12.13  | -10.92/-9.69    | -13.22/-18.72   | -11.79/-9.06    | -7.02/-7.88     | -9.56/-12.59    | -17.53/-15.23   | -19.15/-18.1      | -18.09/-17.44     | -16.49/-17.87     | -16.22/-12.5      | -8.69/-8.43       | -8.66/-7.15       | -7.99/-9.84       | -13.41/-19.33     | -14.98/-13.63     | -15.75/-12.09     | -13.47/-11.82     | -6.37/-2.6        | -7.3/-17.84       | -18.77/-23.2      | -10.53/-18.17     | -18.89/-15.66     | -18.54/-10.76     |
| Θ (150°)   | -18.14/-18.48 | -17.97/-14.91   | -11.56/-11.38   | -15.63/-14.05   | -9.89/-8.55     | -10.92/-15.65   | -17.82/-17.39   | -18.01/-18.24     | -18.11/-18.04     | -18.02/-12.85     | -14.21/-17.63     | -15.88/-12.39     | -10.49/-11.14     | -17.99/-18.9      | -15.15/-13.4      | -19.01/-19.1      | -17.07/-13.82     | -17.95/-19.18     | -10.64/-8.67      | -15.18/-18.3      | -16.59/-12.96     | -11.21/-10.53     | -12.03/-15.22     | -18.53/-15.41     |
| Θ (157.5°) | -19.19/-18.38 | -18.78/-15.87   | -13.82/-19.06   | -16.88/-14.05   | -14.53/-18.57   | -17.96/-19.07   | -13.42/-9.66    | -11.91/-19.38     | -16.47/-12.81     | -11.77/-13.98     | -16.76/-18.61     | -18.92/-17.41     | -11.62/-9.82      | -11.61/-14.2      | -13.8/-15.26      | -18.87/-18.89     | -19.11/-13.25</   |                   |                   |                   |                   |                   |                   |                   |



# Radiated Composite Gain Data of SC Ant1, BLE Ant2

# Appendix B

|           |               |                 |                 |                 |                 |                 |                 |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |
|-----------|---------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| Θ(157.5°) | -13.29/-15.15 | -19.44/-18.26   | -18.73/-17.79   | -17.23/-14.06   | -11.77/-12.45   | -14.68/-19.15   | -18.65/-11.68   | -9.76/-11.97      | -13.49/-11.08     | -11.18/-13.93     | -17.96/-19.26     | -16.06/-11.03     | -9.92/-9.81       | -8.29/-8.03       | -10.11/-17.02     | -17.85/-18.07     | -16.44/-18.58     | -18.21/-18.15     | -17.96/-19.03     | -16.86/-15.59     | -14.81/-18        | -18.35/-18.69     | -14.98/-11.54     | -11.64/-13.77     |
| Θ(165°)   | -16.14/-15.56 | -17.35/-17.51   | -18.77/-19.14   | -15.55/-13.48   | -11.34/-14.47   | -12.08/-18.08   | -13.61/-10.5    | -11.07/-13.59     | -16.98/-17.16     | -17.21/-18.29     | -18.34/-18.43     | -19/-16.49        | -16.75/-17.42     | -18.54/-14.8      | -12.85/-13.94     | -14.52/-15.53     | -18.22/-17.37     | -18.79/-18.64     | -18.26/-17.97     | -15.13/-13.52     | -12.4/-13.57      | -13.91/-12.56     | -11.82/-12.24     | -15.21/-18.34     |
| Θ(172.5°) | -16.88/-19.41 | -18.37/-19.13   | -18.76/-18.23   | -19.31/-18.06   | -18.32/-10.81   | -15.92/-15.17   | -13.34/-13.57   | -14.71/-16.53     | -17.43/-18.13     | -18.39/-18.29     | -18.47/-18.83     | -19.18/-39        | -17.58/-17.43     | -17.41/-17.42     | -17.76/-18.13     | -18.82/-17.98     | -17.92/-18.63     | -17.64/-19.06     | -18.09/-16.18     | -15.12/-14.38     | -14.84/-12.8      | -10.37/-8.89      | -8.94/-9.09       | -10.71/-16.39     |
| Θ(180°)   | -16.16/-13.58 | -16.33/-18.44   | -17.98/-18.12   | -16.48/-15.22   | -15.23/-14.92   | -14.68/-14.18   | -15.51/-18.9    | -19.14/-17.49     | -15.62/-16.24     | -16.55/-17.21     | -18.3/-18.8       | -18.34/-19.02     | -19.06/-18.03     | -18.89/-18.8      | -18.11/-18.36     | -17.75/-19.09     | -18.18/-18.01     | -17.52/-17.15     | -19.14/-19.2      | -17.21/-17.79     | -17.99/-18.55     | -19.44/-19.14     | -18.71/-17.83     | -17.06/-16.62     |
| Freq(GHz) | 6.695GPol.    | 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°)     | -15.14/-13.8  | -12.26/-9.69    | -8.08/-8.34     | -7.92/-7.51     | -6.98/-5.43     | -4.67/-4.6      | -4.88/-5.16     | -6.12/-6.77       | -6.8/-7.71        | -9/-10.03         | -11.24/-12.81     | -15.75/-17.52     | -16.21/-13.75     | -12.03/-10.23     | -8.92/-8.28       | -7.66/-7.3        | -6.98/-6.84       | -7.37/-8.07       | -7.76/-7.07       | -7.66/-9.18       | -11.46/-13.27     | -14.86/-15.78     | -17.76/-19.87     | -18.06/-16.61     |
| Θ(7.5°)   | -19.1/-18.41  | -18.84/-18.87   | -17.26/-16.32   | -14.37/-13.31   | -12.92/-12.15   | -11.57/-11.66   | -11.09/-12.02   | -14.93/-16.34     | -15.97/-16.72     | -17.09/-16.37     | -17.5/-18.16      | -19.1/-18.33      | -16.18/-13.05     | -10.09/-7.56      | -5.73/-4.08       | -2.92/-2.36       | -2.35/-2.41       | -2.52/-2.38       | -2.61/-2.89       | -3.23/-3.85       | -4.27/-4.98       | -5.93/-6.86       | -8.76/-10.68      | -13.97/-17.37     |
| Θ(15°)    | -7.65/-9.29   | -10.92/-12.74   | -14.16/-13.72   | -14.71/-15.29   | -14.91/-13.8    | -12.96/-12.28   | -12.83/-12.88   | -11.95/-11.79     | -12.8/-14.85      | -18.53/-18.11     | -17.89/-17.13     | -15.93/-10.98     | -7.76/-5.41       | -3.37/-1.98       | -1.09/-0.48       | -0.10/-3          | 0.490.36          | 0.09/-0.04        | -0.2/-0.56        | -1.26/-2.13       | -3.01/-3.22       | -3.09/-2.88       | -2.86/-3.41       | -4.78/-6.13       |
| Θ(22.5°)  | -5/-3.7       | -9.47/-12.11    | -15.81/-19.39   | -17.81/-15.46   | -13.74/-14.11   | -15.34/-14.31   | -10.07/-4.54    | -7.45/-5.97       | -12.95/-15.12     | -12.46/-13.15     | -15.13/-12.45     | -7.9/-4.64        | -2.75/-2.01       | -1.83/-1.97       | -1.62/-0.78       | 0.56/-1.82        | 2.542.71          | 2.452.09          | 1.65/-1.45        | 1.91/-1.73        | 1.25/-0.4         | -0.39/-0.72       | -0.62/-0.95       | -1.89/-3.24       |
| Θ(30°)    | -2.15/-3.6    | -4.7/-4.74      | -4.94/-5.82     | -6.79/-7.75     | -8.86/-9.24     | -11.45/-15.24   | -14.73/-8.89    | -5.67/-6.32       | -11.35/-11.28     | -7.2/-6.14        | -7.56/-7.28       | -5.06/-3.09       | -2.52/-2.61       | -1.98/-1.2        | -0.37/-0.64       | 2.05/-2.22        | 4.01/-4.02        | 3.212.09          | 1.340.74          | 0.45/-1.26        | 2.492.71          | 2.11/-6.1         | 1.2205.66         | -0.1/-0.84        |
| Θ(37.5°)  | -0.16/-0.21   | -0.49/-0.69     | -1.49/-2.4      | -2.88/-2.33     | -1.81/-2.32     | -4.38/-5.92     | -5.9/-3.66      | -1.36/-1.25       | -3.93/-4.96       | -4.18/-5.91       | -7.54/-5.86       | -4.19/-3.67       | -2.54/-1.16       | -0.06/-1.08       | 1.27/-1.41        | 2.242.92          | 3.433.92          | 2.923.48          | 1.71/-1.61        | 2.753.59          | 3.83/-41          | 2.61/-3.3         | 0.08/-0.47        |                   |
| Θ(45°)    | -1.1/-0.07    | 0.44/-0.92      | 0.74/-0.56      | 0.67/-1.21      | 1.05/-0.9       | -4.57/-5.13     | -3.76/-2.85     | -0.820.33         | -0.51/-0.43       | -0.48/-4.86       | -7.58/-3.39       | -2.49/-2.53       | -0.750.44         | 0.83/-1.09        | 0.810.27          | 0.55/-1.45        | 1.83/-1.34        | 3.04/-1.39        | 0.550.87          | 1.33/-1.33        | 1.89/-0.88        | 3.63/-33          | 3.01/-86          | -0.85/-1.97       |
| Θ(52.5°)  | -1.8/-1.39    | -0.58/-0.22     | 0.54/-1.07      | 0.86/-1.92      | 1.82/-1.28      | -4.67/-1.44     | -2.06/-0.67     | -0.89/-0.71       | -1.33/-0.13       | 0.55/-4.17        | -3.72/-0.82       | -1.07/-0.41       | 1.17/-0.65        | 1.962.1           | 2.04/-1.04        | 0.65/-0.01        | -1.15/-0.55       | 0.40/-7.3         | -0.94/-2.88       | -1.94/-0.59       | 0.01/-1.29        | 2.252.05          | 2.67/-87          | -1.15/-1.27       |
| Θ(60°)    | -2.35/-1.76   | -2.04/-0.34     | 0.34/-0.86      | 0.61/-2.5       | 2.88/-1.25      | -0.09/-0.33     | -0.360.73       | 1.54/-1.34        | -0.32/-0.8        | 0.15/-2.94        | -0.930.43         | -0.11/-1.14       | 1.75/-1.17        | 3.21/-63          | 2.61/-13          | -0.02/-0.22       | -0.850.58         | -0.650.18         | 0.28/-1.6         | -2.51/-1.98       | -0.11/-1.9        | 1.780.12          | 1.43/-23          | -0.05/-0.83       |
| Θ(67.5°)  | -1.79/-1.77   | -3.13/-0.38     | 0.68/-1.05      | 0.74/-2.54      | 3.93/-1.6       | 1.08/-0.71      | -2.13/-0.46     | 1.27/-2.49        | 2.5/-0.02         | 0.07/-1.59        | 0.810.51          | 0.01/-1.05        | 1.18/-1.75        | 3.27/-3.42        | 2.58/-1.1         | -1.07/-0.86       | -0.38/-1.08       | -0.11/-1.3        | 0.62/-0.97        | -0.7/-0.94        | 0.872.18          | 2.19/-0.82        | 0.91/-14          | 1.46/-1.1         |
| Θ(75°)    | -0.69/-0.8    | -3.130.31       | 0.54/-1.1       | 0.59/-1.39      | 3.8/-1.48       | -0.52/-2.38     | -3.4/-2.34      | -0.63/-1.53       | 3.490.72          | -0.78/-1.35       | 1.23/-0.23        | -1.07/-0.35       | 0.76/-1.44        | 2.823.02          | 1.930.18          | -2.58/-2.1        | 0.21/-1.84        | -0.250.41         | 0.4/-0.45         | -0.06/-0.54       | 1.81/-26          | 3.04/-0.8         | -0.380.59         | 2.652.11          |
| Θ(82.5°)  | -1.25/-1.13   | -3.55/-0.22     | -0.55/-0.21     | -1.1/-0.62      | 1.56/-2.22      | -11.2/-2.09     | -3.35/-1.59     | -1.24/-0.74       | 2.5/-0.86         | -1.95/-1.92       | 1.03/-1.25        | -1.52/-0.73       | 0.46/-0.2         | 2.0/-1.83         | 0.93/-1.8         | -2.46/-1.76       | -0.16/-1.31       | 0.52/-0.37        | -0.31/-1.49       | 0.39/-0.72        | 2.23/-0.7         | 1.8/-1.04         | -1.29/-1.43       | 2.44/-89          |
| Θ(90°)    | -2.47/-1.79   | -3.74/-1.66     | -3.44/-1.98     | -2.68/-2.81     | -1.22/-5.63     | -2.53/-1.64     | -3.96/-2.47     | -2.19/-3.07       | 0.62/-2.75        | -4.04/-4.04       | -0.41/-1.96       | -2.1/-2.7         | 0.25/-2.49        | 1.490.61          | -0.33/-3.75       | -2.98/-3.72       | -3.03/-0.65       | -0.87/-3.25       | -2.02/-4.83       | -0.46/-2.48       | 0.872.08          | 1/-1.56           | -3.2/-4.11        | 0.960.94          |
| Θ(97.5°)  | -3.5/-2.93    | -3.84/-3.42     | -6.8/-4.6       | -3.36/-5.24     | -3/-6.22        | -3.86/-3.53     | -7.99/-4.6      | -3.77/-3.56       | -1.14/-6.5        | -7.39/-6.43       | -3.19/-2.79       | -3.1/-3.58        | -0.73/-3.45       | 0.51/-0.24        | -0.68/-4.87       | -4.71/-5.53       | -6.14/-3.57       | -4.98/-6.26       | -3.93/-8.57       | -1.65/-0.62       | -0.43/-0.04       | -2.35/-4.69       | -7.6/-17          | -0.860.04         |
| Θ(105°)   | -5.19/-5.62   | -8.99/-6.76     | -9.03/-5.26     | -4.25/-8.03     | -3.91/-3.16     | -4.97/-4.34     | -9.08/-8.08     | -6.67/-6.83       | -2.53/-7.71       | -6.37/-6.86       | -6.32/-4.05       | -3.94/-4.22       | -3.47/-3.57       | -2.33/-1.05       | -1.16/-5.27       | -5.5/-6.89        | -3.99/-4.97       | -6.24/-4.85       | -3.96/-5.84       | -2.62/-4.88       | -6/-3.13          | -3.76/-4.91       | -1.15/-8.47       | -3.07/-1.92       |
| Θ(112.5°) | -6.97/-7.29   | -4.68/-7.27     | -5.82/-5.19     | -7.4/-9.97      | -9.03/-6.24     | -6.17/-6.44     | -6.5/-7.92      | -5.83/-7.62       | -8.74/-9.31       | -9.69/-7.11       | -7.04/-6.46       | -4.98/-5.2        | -5.95/-4.06       | -2.73/-8.27       | -3.46/-8.43       | -6.97/-7.05       | -2.85/-3.55       | -7.92/-3.91       | -3.42/-2.98       | -2.96/-0.65       | -4.83/-2.36       | -3.47/-6.36       | -14.28/-12.04     | -4.91/-2.97       |
| Θ(120°)   | -8.56/-9.19   | -6.66/-6.5      | -7.09/-8.81     | -10.13/-10.59   | -9.36/-14.54    | -14.82/-13.25   | -10.83/-10.34   | -9.26/-7.99       | -5.29/-8.49       | -6.47/-9.5        | -5.28/-6.88       | -9.14/-69         | -4.88/-4.66       | -4.7/-9.08        | -14.16/-10.41     | -5.42/-0.58       | -8.55/-6.94       | -8.44/-5.29       | -9.74/-12.3       | -5.91/-5.77       | -17.79/-12.88     | -17.93/-18.88     | -6.61/-9.96       |                   |
| Θ(127.5°) | -9.75/-14.22  | -10.54/-10.04   | -12.78/-13.56   | -7.87/-9.7      | -10.27/-7.89    | -6.77/-8.9      | -10.87/-8.89    | -6.78/-7.53       | -8.19/-13.6       | -11.27/-9.72      | -6.77/-9.62       | -7.47/-8.44       | -5.98/-4.07       | -8.15/-9.27       | -8.25/-14.79      | -3.92/-7.94       | -7.84/-5.95       | -7.91/-17         | -9.33/-9.74       | -7.47/-11.95      | -6.18/-11.73      | -18.01/-14.85     | -12.66/-7.9       |                   |
| Θ(135°)   | -14.45/-12.72 | -12.87/-12.07   | -13.61/-16.29   | -16.51/-16.86   | -11.16/-10.55   | -12.72/-14.24   | -15.09/-14.59   | -13.53/-15.11     | -13.83/-19.54     | -13.03/-10.37     | -15.54/-13.77     | -9.27/-7.63       | -11.61/-10.53     | -6.68/-7.89       | -10.73/-14.87     | -8.96/-9.7        | -5.01/-12.5       | -6.27/-6.05       | -7.46/-2.13       | -13.23/-12.4      | -8.83/-8.06       | -14.87/-14.2      | -13.74/-10.48     | -18.03/-16.21     |
| Θ(142.5°) | -9.24/-12.31  | -11.89/-9.61    | -11.32/-16.18   | -18.52/-10.37   | -10.63/-12.31   | -11.93/-14.2    | -13.11/-11.5    | -14.02/-12.92     | -18.47/-17.13     | -17.16/-13.93     | -18.29/-17.37     | -8.88/-7.71       | -13.58/-12.5      | -7.36/-8.4        | -13.65/-14.6      | -17.97/-14.34     | -18.91/-14.36     | -12.35/-11.76     | -13.91/-6.91      | -10.23/-16.87     | -14.62/-11.91     | -18.9/-19.1       | -17.93/-18.8      | -18.4/-12.15      |
| Θ(150°)   | -16.61/-17.17 | -14.42/-11.5    | -11.93/-16.09   | -18.15/-16.82   | -10.9/-9.26     | -11.2/-12.68    | -13.78/-15.05   | -18.38/-18.86     | -17.94/-17.32     | -13.12/-17.52     | -18.87/-15.59     | -12.93/-13.98     | -15.67/-11.75     | -13.33/-16.34     | -18.13/-18.69     | -16.16/-18.34     | -15.91/-14.21     | -13.17/-10.87     | -11.36/-7.86      | -10.69/-18.52     | -18.13/-13.85     | -14.12/-16.6      | -15.18/-13.45     | -12.96/-13.41     |
| Θ(157.5°) | -18.47/-18.28 | -17.27/-13.69   | -11.62/-14.1    | -17.85/-17.7    | -17.81/-14.91   | -13.72/-17.3    | -18.95/-18.87   | -17.26/-13.63     | -13.85/-12.96     | -11.84/-14.3      | -19.33/-18.36     | -14.37/-16.2      | -15.15/-15.98     | -19.04/-17.81     | -19.17/-18.89     | -18.12/-18.5      | -13.05/-11.88     | -18.68/-19.07     | -15.88/-12.38     | -15.08/-14.74     | -17.07/-18.02     | -18.78/-13.9      | -8.31/-8.99       | -11.34/-17.65     |
| Θ(165°)   | -18.27/-17.43 | -14.66/-15.38   | -18.1/-18.24    | -19.02/-18.61   | -18.91/-19.04   | -17.94/-14.69   | -14.13/-15.71   | -16.85/-16.86     | -19.38/-17.74     | -17.71/-16.71     | -17.45/-17.21     | -17.85/-18.21     | -18/-17.69        | -17.59/-16.86     | -16.35/-17.62     | -19.16/-16.29     | -12.93/-11.5      | -12.16/-14.29     | -12.19/-8.86      | -7.83/-7.98       | -9.92/-13.6       | -15.7/-16.67      | -16.17/-18.17     | -19.25/-17.71     |
| Θ(172.5°) | -18.66/-14.71 | -14.33/-12.66   | -11.83/-12.4    | -13.03/-14.24   | -14.38/-13.69   | -14.72/-17.39   | -18.02/-17.52   | -18.39/-19.45     | -18.02/-18.71     | -15.71/-14.78     | -15.37/-17.89     | -17.11/-19.07     | -18.41/-18.85     | -18.38/-17.12     | -15.71/-14.57     | -14.19/-14.87     | -15.79/-17.32     | -18/-17.35        | -16.55/-13.58     | -11.01/-9.96      | -9.62/-9.12       | -10.24/-12.66     | -15.13/-16.84     | -17.64/-17.96     |
| Θ(180°)   | -19.37/-18.86 | -18.25/-18.63   | -16.77/-14.75   | -13.73/-14.65   | -14.96/-15.81   | -16.73/-19.39   | -18.09/-16.05   | -14.28/-13.42     | -13.52/-15.38     | -16.04/-16.85     | -17.39/-17.37     | -17.72/-17.79     | -17.72/-18.09     | -17.43/-16.19     | -14.86/-14.41     | -17.14/-13.86     | -13.93/-14.6      | -16.42/-17.87     | -19.08/-16.66     | -14.82/-15.32     | -17.18/-18.41     | -18.41/-18.54     | -17.89/-18.04     |                   |
| Freq(Hz)  | 6.695GPol.    | PhiAnt. 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°)     | -4.7/-4.69    | -4.55/-4.88     | -5.37/-6.11     | -6.39/-7.69     | -9.44/-10.77    | -11.87/-13.22   | -14.87/-18.09   | -18.85/-13.32     | -10.05/-8.5       | -7.48/-7          | -6.7/-6.35        | -5.73/-5.19       | -4.94/-5.02       | -5.16/-5.69       | -6.01/-6.6        | -10.21/-11.33     | -12.95/-13.77     | -14.11/-12.66     | -11.57/-11.07     | -10.47/-9.5       | -8.66/-8.46       | -7.75/-7.19       | -5.63/-5.69       |                   |
| Θ(7.5°)   | -5.26/-5.93   | -6.63/-7.09     | -7.53/-8.52     | -8.93/-11.74    | -10.55/-12.9    | -14.05/-14.47   | -16.22/-18.38   | -                 |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |



Radiated Composite Gain Data of SC Ant1, BLE Ant2

Appendix B

|           |               |               |               |               |               |               |               |               |              |               |               |               |               |               |               |               |               |               |               |               |               |               |               |               |
|-----------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|--------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| Θ(0°)     | -13.08/-13.58 | -14.15/-15.07 | -16.39/-17.95 | -18.86/-17.95 | -19.01/-16.04 | -13.47/-11.56 | -10.14/-9.19  | -8.71/-8.68   | -8.88/-9.22  | -9.66/-10.35  | -11.19/-12.15 | -13.22/-14.43 | -15.58/-16.52 | -17.1/-16.74  | -15.46/-14.11 | -13.16/-12.63 | -11.95/-11.49 | -11.13/-10.84 | -10.41/-10.2  | -10.19/-10.19 | -10.19/-10.24 | -10.46/-10.92 | -11.4/-11.76  | -12.03/-12.49 |
| Θ(7.5°)   | -16.25/-15.18 | -14.12/-13.38 | -12.62/-11.88 | -11.29/-11    | -11.35/-11.98 | -12.35/-12.14 | -11.46/-10.53 | -9.57/-8.78   | -8.16/-7.77  | -7.59/-7.62   | -7.77/-8.12   | -8.69/-9.66   | -11.03/-12.91 | -15.62/-17.91 | -18.15/-18.66 | -18.72/-15.88 | -13.44/-11.44 | -10.04/-9.04  | -8.47/-8.37   | -8.57/-8.98   | -9.61/-10.5   | -11.84/-13.41 | -15.03/-16.12 | -16.79/-16.89 |
| Θ(15°)    | -11.66/-10.99 | -10.37/-9.86  | -9.17/-8.24   | -7.26/-6.44   | -5.95/-5.63   | -5.32/-5.05   | -4.98/-5.06   | -5.14/-5.19   | -5.26/-5.29  | -5.32/-5.24   | -5.06/-4.97   | -5.18/-5.81   | -6.8/-8.06    | -9.84/-12.08  | -15.18/-19.49 | -18.73/-18.62 | -17.68/-15.13 | -12.25/-10.38 | -9.34/-9.05   | -9.26/-9.99   | -11.19/-13.01 | -15.16/-16.44 | -15.74/-14.28 | -13.12/-12.38 |
| Θ(22.5°)  | -5.73/-5.78   | -6.06/-6.41   | -6.53/-5.93   | -5.02/-4.04   | -3.21/-2.55   | -2/-1.62      | -1.45/-1.36   | -1.38/-1.52   | -1.83/-2.29  | -2.73/-2.9    | -2.71/-2.44   | -2.4/-2.74    | -3.47/-4.54   | -5.83/-7.24   | -8.64/-9.86   | -11.02/-12.28 | -13.54/-14.58 | -14.86/-14.43 | -13.89/-13.8  | -14.05/-14.78 | -15.6/-15.14  | -13/-10.6     | -8.65/-7.25   | -6.44/-5.95   |
| Θ(30°)    | -1.91/-2.16   | -2.87/-3.89   | -4.65/-4.38   | -3.46/-2.45   | -1.59/-0.92   | -0.48/-0.22   | 0/0.25        | 0.49/0.62     | 0.54/0.18    | -0.34/-0.73   | -0.72/-0.39   | -0.12/-0.14   | -0.58/-1.46   | -2.63/-3.81   | -4.65/-4.91   | -4.8/-4.66    | -4.66/-4.9    | -5.39/-6.1    | -6.89/-7.57   | -7.88/-7.82   | -7.4/-6.56    | -5.41/-4.31   | -3.44/-2.77   | -2.29/-1.98   |
| Θ(37.5°)  | 0.63/0.29     | -0.64/-2.11   | -3.36/-3.26   | -2.23/-1.26   | -0.57/-0.12   | 0.16/0.31     | 0.48/0.77     | 1.08/1.4      | 1.6/1.53     | 1.23/0.83     | 0.71/1.02     | 1.47/1.65     | 1.33/0.57     | -0.47/-1.51   | -2.08/-1.78   | -1.07/-0.5    | -0.28/-0.4    | -0.81/-1.5    | -2.19/-2.69   | -2.9/-2.8     | -2.49/-1.87   | -1.16/-0.58   | -0.18/0.05    | 0.31/0.55     |
| Θ(45°)    | 2.18/1.9      | 0.88/-0.77    | -2.17/-1.96   | -1.02/-0.35   | 0.12/0.53     | 0.88/1.11     | 1.25/1.31     | 1.31/1.37     | 1.59/1.82    | 1.82/1.58     | 1.4/1.72      | 2.35/2.7      | 2.49/1.87     | 0.96/-0.05    | -0.58/0.03    | 1.01/1.68     | 2.02/2.02     | 1.69/1.07     | 0.39/-0.17    | -0.55/-0.71   | -0.65/-0.35   | 0.17/0.7      | 1.05/1.25     | 1.56/1.97     |
| Θ(52.5°)  | 2.64/2.47     | 1.49/-0.22    | -1.51/-1.06   | -0.35/-0.03   | 0.44/1.07     | 1.6/1.93      | 2.07/1.96     | 1.64/1.29     | 1.21/1.49    | 1.81/1.78     | 1.67/2.1      | 2.89/3.25     | 3.02/2.54     | 1.79/0.81     | 0.43/1.16     | 2.1/2.74      | 3.15/3.31     | 3.14/2.67     | 2.11/1.54     | 0.97/0.49     | 0.05/-0.21    | -0.13/0.23    | 0.57/0.87     | 1.51/2.25     |
| Θ(60°)    | 2.65/2.54     | 1.69/0.13     | -1/-0.51      | -0.1/-0.14    | 0.43/1.23     | 1.64/1.81     | 1.98/1.99     | 1.87/1.55     | 1.15/1.01    | 1.21/1.25     | 1.06/1.55     | 2.65/3.25     | 3.15/2.8      | 2.07/0.97     | 0.32/0.85     | 1.75/2.54     | 3.24/3.64     | 3.66/3.41     | 3.06/2.65     | 2.23/1.77     | 1.27/0.74     | 0.31/0.11     | 0.16/0.39     | 1.23/2.22     |
| Θ(67.5°)  | 2.48/2.38     | 1.54/0.05     | -0.78/-0.17   | 0.13/0.09     | 0.73/1.33     | 1.36/1.24     | 1.38/1.62     | 1.82/1.71     | 1.05/0.17    | -0.17/-0.06   | 0.03/0.96     | 2.39/3.05     | 2.89/2.29     | 1.38/0.15     | -0.55/-0.01   | 1.06/2.12     | 2.97/3.37     | 3.42/3.18     | 2.77/2.32     | 1.87/1.49     | 1.08/0.63     | 0.25/-0.03    | -0.06/0.3     | 1.19/2.14     |
| Θ(75°)    | 2.08/1.98     | 1.18/-0.49    | -1.27/-0.56   | -0.21/0.19    | 1.07/1.46     | 1.13/0.75     | 0.76/0.94     | 1.21/1.3      | 0.7/-0.52    | -1.17/-0.6    | -0.19/0.53    | 1.85/2.58     | 2.19/1.23     | 0.31/-0.77    | -1.54/-0.92   | 0.48/1.65     | 2.36/2.75     | 2.78/2.45     | 1.95/1.38     | 0.72/0.09     | -0.57/-1.04   | -1.08/-1.08   | -0.96/-0.17   | 0.95/1.84     |
| Θ(82.5°)  | 1.64/1.33     | 0.64/-1.07    | -2/-1.65      | -1.59/-0.91   | 0.14/0.28     | -0.46/-1.04   | -0.94/-0.59   | 0.11/0.77     | 0.7/-0.43    | -1.4/-1.1     | -1.08/-0.71   | 0.77/1.51     | 0.84/-0.02    | -0.4/-1.38    | -2.14/-1.34   | 0.07/0.92     | 1.55/2.03     | 2.03/1.7      | 1.33/0.87     | 0.26/-0.4     | -1.11/-1.87   | -2.14/-2.17   | -2.01/-0.68   | 0.84/1.64     |
| Θ(90°)    | 1.22/0.71     | -0.19/-1.58   | -1.95/-1.46   | -1.59/-0.95   | -0.04/-0.05   | -1.05/-2.14   | -2.26/-1.68   | -0.67/0.25    | 0.23/-1.27   | -3.26/-3.46   | -3.08/-2.14   | -0.3/0.5      | -0.16/-0.63   | -1.12/-2.41   | -3.47/-2.92   | -1.55/-0.62   | 0.13/0.48     | 0.19/-0.42    | -0.99/-1.44   | -1.53/-1.43   | -1.66/-2.45   | -3.12/-3.44   | -3.21/-1.48   | 0.24/1.12     |
| Θ(97.5°)  | 0.87/0.68     | -0.73/-2.78   | -3.31/-2.71   | -2.47/-1.05   | 0.26/0.54     | 0.06/-0.66    | -0.98/-0.92   | -0.58/-0.33   | -0.96/-3.05  | -5.11/-3.73   | -2.31/-1.44   | -0.48/-0.1    | -0.49/-1.21   | -2.66/-3.88   | -4.91/-4.33   | -2.34/-1.1    | -0.52/-0.45   | -1.04/-2.16   | -3.26/-3.39   | -2.56/-1.96   | -2.34/-3.57   | -4.46/-5.15   | -4.83/-2.31   | -0.58/0.21    |
| Θ(105°)   | -0.97/-0.07   | -1/-2.78      | -3.22/-3.4    | -3.93/-2.36   | -0.6/-0.16    | -0.47/-0.93   | -1.33/-1.62   | -1.67/-1.7    | -2.33/-3.98  | -4.61/-2.51   | -1.4/-1.82    | -1.65/-0.74   | -1.01/-3.04   | -5.56/-5.75   | -7.63/-7.26   | -4.17/-3.18   | -2.86/-2.5    | -3.34/-5.4    | -6.72/-5.78   | -3.93/-2.47   | -2.49/-4.03   | -5.36/-6.35   | -7.47/-4.48   | -2.49/-2.19   |
| Θ(112.5°) | -4.67/-3.25   | -3.86/-5.81   | -4.96/-4.54   | -5.39/-3.62   | -1.43/-0.81   | -1.18/-1.75   | -2.1/-2.2     | -2.06/-2.04   | -2.89/-4.74  | -4.67/-2.71   | -2.65/-4.03   | -2.86/-1.73   | -3.56/-8.65   | -8.2/-7.48    | -9.43/-5.82   | -3.63/-3.01   | -1.73/-1.19   | -2.37/-4.26   | -4.62/-4.35   | -3.71/-2.44   | -2.47/-5.04   | -7.7/-6.82    | -6.56/-4.66   | -3.17/-4.17   |
| Θ(120°)   | -4.95/-4.81   | -5.32/-7.95   | -8.57/-7.54   | -9.89/-8.87   | -4.3/-2.17    | -1.62/-1.65   | -1.78/-1.89   | -2.17/-2.9    | -4.69/-6.38  | -4.82/-3.21   | -3.92/-4.72   | -2.91/-2.67   | -5.82/-8.22   | -5.1/-5.16    | -6.32/-4.55   | -3.5/-2.85    | -1.34/-0.9    | -2.34/-4.05   | -3.54/-3.02   | -3.09/-2.51   | -2.65/-5.52   | -13.25/-12.48 | -8.41/-5.63   | -3.69/-3.86   |
| Θ(127.5°) | -8.39/-7.84   | -7.94/-9.5    | -9.22/-7.13   | -7.85/-12.3   | -10.13/-5.63  | -3.66/-3.01   | -3.06/-3.53   | -4.56/-6.15   | -7.28/-5.65  | -3.49/-3.02   | -3.91/-3.73   | -2.78/-3.7    | -6.04/-6.02   | -5.28/-6.58   | -7.67/-7.05   | -6.79/-5.33   | -3.28/-2.98   | -4.13/-4      | -2.72/-2.6    | -3.32/-3.31   | -3.23/-4.9    | -9.91/-18.09  | -18.4/-14.6   | -10.81/-8.97  |
| Θ(135°)   | -12.55/-10.93 | -10.57/-13    | -16.94/-11.74 | -8.94/-9.73   | -12.96/-11.32 | -8.22/-6.68   | -6.27/-6.58   | -7.22/-7.13   | -5.66/-3.99  | -3.15/-3.47   | -4.39/-4.63   | -4.55/-5.57   | -7.18/-7.89   | -8.5/-9.67    | -10.36/-10.87 | -10.35/-7.39  | -5.13/-4.67   | -4.93/-4.38   | -3.76/-4.34   | -5.68/-6.37   | -6.54/-7.74   | -11.26/-16.22 | -15.81/-14.12 | -13.91/-13.83 |
| Θ(142.5°) | -11.89/-10.09 | -8.5/-8.46    | -10.5/-12.81  | -11.36/-10.05 | -10.81/-12.97 | -13.71/-12.15 | -10.48/-8.77  | -6.98/-5.18   | -3.74/-3.17  | -3.58/-4.85   | -6.34/-7.04   | -7.34/-8.15   | -9.17/-9.87   | -10.37/-11.21 | -13.5/-16.93  | -13.95/-9.75  | -7.65/-7.01   | -6.91/-6.81   | -7.08/-8.24   | -9.99/-11.17  | -11.41/-11.88 | -13.68/-18.37 | -18.51/-17.59 | -13.38/-12.45 |
| Θ(150°)   | -14.65/-15.57 | -12.88/-10.45 | -9.46/-9.2    | -8.5/-7.74    | -7.53/-7.95   | -8.76/-9.37   | -9.2/-8.06    | -6.57/-5.43   | -4.86/-5.09  | -6.17/-7.84   | -9.07/-9.28   | -9.34/-9.88   | -10.67/-11.32 | -12.12/-13.85 | -18.48/-17.43 | -18.72/-15.07 | -13.36/-13.19 | -13.85/-15.05 | -15.91/-15.87 | -14.5/-12.17  | -9.91/-8.35   | -7.81/-8.61   | -10.92/-13.41 | -13.65/-13.43 |
| Θ(157.5°) | -9.49/-12.76  | -19.12/-19.18 | -14.08/-10.36 | -7.91/-6.13   | -5.04/-4.3    | -3.84/-3.7    | -3.84/-4.09   | -4.27/-4.66   | -5.35/-6.38  | -7.52/-8.54   | -9.26/-10.07  | -11.31/-13.34 | -15.86/-19.09 | -18.12/-17.49 | -18.68/-15.17 | -13.87/-14.12 | -15.18/-15.55 | -14.89/-13.75 | -13.18/-13.58 | -14.35/-13.71 | -11.27/-9.05  | -7.69/-7.15   | -7.16/-7.29   | -7.48/-7.97   |
| Θ(165°)   | -8.23/-10.17  | -14.02/-18.91 | -18.83/-14.41 | -10.02/-7.28  | -5.51/-4.23   | -3.33/-2.88   | -2.88/-3.27   | -3.89/-4.72   | -5.83/-7.16  | -8.7/-10.41   | -12.38/-14.86 | -18.43/-17.77 | -18.42/-18.56 | -18.18/-16.11 | -14.39/-12.89 | -12.15/-11.87 | -11.17/-10.14 | -9.13/-8.47   | -8.4/-9.19    | -10.92/-13.57 | -15.53/-14.24 | -11.6/-9.55   | -8.12/-7.32   | -7.03/-7.32   |
| Θ(172.5°) | -12.58/-13.99 | -16.43/-17.78 | -17.53/-18.58 | -15.38/-12.46 | -10.48/-9.02  | -8/-7.51      | -7.57/-8.15   | -9.25/-10.79  | -12.95/-15.9 | -18.58/-18.08 | -18.11/-18.75 | -18.56/-16.5  | -15.24/-14.19 | -13.56/-13.54 | -13.72/-13.73 | -13.36/-12.89 | -12.07/-11.22 | -10.41/-9.99  | -10.07/-10.8  | -12.32/-14.44 | -17.07/-18.9  | -17.18/-14.84 | -13.15/-12.1  | -11.9/-12.02  |
| Θ(180°)   | -18.92/-19.37 | -18.19/-18.97 | -17.3/-17.66  | -19.44/-17.72 | -17.33/-17.22 | -17.58/-18.65 | -19.13/-18.73 | -17.84/-19.33 | -17.83/-16   | -15.08/-14.89 | -15.24/-16.05 | -17.21/-18.65 | -18.57/-17.52 | -17.74/-17.86 | -17.77/-17.74 | -19.05/-18.55 | -18.62/-19.18 | -18.6/-17.98  | -18.59/-19.12 | -18.8/-19     | -17.22/-19.07 | -19.07/-18.07 | -18.3/-18.73  | -17.65/-17.96 |

## Total Gain Data

[illegible]



# Antenna Pattern of 2.4GHz/5GHz/6GHz

# Appendix C

|           |               |                |                |                |                |                |                |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |
|-----------|---------------|----------------|----------------|----------------|----------------|----------------|----------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
| Θ(22.5°)  | -1.91/-3.42   | -5.40/-7.57    | -11.07/-11.57  | -10.20/-9.12   | -8.94/-10.05   | -12.44/-14.00  | -11.73/-8.71   | -8.10/-9.15      | -10.45/-10.27    | -9.86/-9.39      | -7.83/-5.69      | -4.02/-2.88      | -2.13/-2.12      | -2.26/-1.70      | -0.92/0.04       | 1.10/1.88        | 2.33/2.56        | 2.49/2.02        | 1.49/1.16        | 1.26/1.80        | 2.07/1.82        | 1.15/0.12        | -0.83/-1.37      | -1.54/-1.50      |
| Θ(30°)    | 0.11/-0.78    | -2.21/-3.32    | -5.12/-6.66    | -7.01/-6.17    | -5.69/-6.94    | -9.92/-10.05   | -6.12/-0.44    | -4.13/-4.81      | -5.08/-4.43      | -3.96/-3.40      | -3.19/-3.27      | -2.06/-0.31      | 0.18/-0.53       | -0.78/-0.16      | 0.65/1.29        | 1.88/1.98        | 1.85/1.64        | 2.00/2.23        | 2.51/2.48        | 2.54/2.62        | 2.98/3.44        | 3.36/2.59        | 1.53/0.45        | -0.08/0.25       |
| Θ(37.5°)  | 1.15/1.80     | 1.15/0.49      | -0.36/-2.71    | -6.24/-6.19    | -4.90/-5.54    | -6.20/-3.89    | -1.64/-1.08    | -1.95/-3.01      | -1.90/0.21       | 1.26/0.96        | -0.32/-1.46      | -0.57/0.73       | 1.04/0.64        | 0.93/1.59        | 1.67/1.98        | 2.08/1.76        | 1.66/2.45        | 2.93/2.87        | 2.35/2.16        | 2.07/1.96        | 1.82/0.46        | 3.26/2.63        | 3.14/2.10        | 1.13/0.66        |
| Θ(45°)    | 2.52/3.24     | 2.55/1.30      | 0.98/0.38      | -2.27/-2.56    | -0.71/-1.27    | -1.89/-0.12    | 1.11/0.91      | -0.46/-2.43      | -2.08/0.86       | 1.79/0.94        | 0.19/-0.58       | -0.08/1.10       | 0.89/0.25        | 1.30/2.70        | 3.00/2.83        | 2.56/2.42        | 2.65/2.41        | 1.51/1.43        | 1.87/2.11        | 1.50/1.23        | 1.09/1.64        | 3.43/4.24        | 3.84/3.21        | 2.18/1.71        |
| Θ(52.5°)  | 2.00/3.25     | 2.35/0.57      | 1.38/2.25      | 0.73/0.37      | 1.30/0.38      | -0.62/-0.10    | 0.98/1.80      | 1.91/0.50        | -1.88/0.38       | 2.19/1.64        | 1.36/0.35        | 0.94/1.85        | 1.99/2.14        | 3.18/3.62        | 2.59/1.97        | 1.63/1.40        | 0.65/0.01        | 0.14/0.62        | 0.88/1.15        | 1.12/1.24        | 0.51/0.58        | 2.36/3.31        | 4.04/3.93        | 1.73/0.62        |
| Θ(60°)    | 2.56/2.02     | 2.60/0.64      | 0.92/3.31      | 3.33/2.38      | 2.24/1.63      | 0.45/-0.47     | 0.75/2.46      | 3.17/2.73        | 3.96/3.35        | 2.85/1.58        | 1.63/1.66        | 2.04/2.41        | 3.06/3.49        | 2.45/2.17        | 1.28/0.70        | 0.44/-0.61       | -0.20/0.29       | 0.24/0.43        | 0.67/1.68        | 1.42/0.43        | 2.15/2.58        | 3.70/3.70        | 2.28/1.85        |                  |
| Θ(67.5°)  | 1.58/1.90     | 1.50/0.19      | 0.13/3.52      | 3.84/2.03      | 1.69/1.62      | 0.51/-0.47     | 0.72/1.99      | 3.07/2.66        | 0.81/1.53        | 4.49/3.94        | 3.20/2.00        | 1.41/1.10        | 2.51/2.86        | 3.45/3.13        | 1.97/2.06        | 1.34/1.04        | -0.01/-0.80      | 0.81/0.39        | -0.82/-0.50      | 0.21/1.74        | 1.72/0.74        | 1.54/0.90        | 2.31/2.67        | 1.99/1.25        |
| Θ(75°)    | 2.17/1.60     | 0.56/-0.24     | -1.46/3.00     | 3.20/1.68      | 1.60/1.13      | 0.16/-1.20     | -0.27/0.97     | 2.07/1.85        | -0.20/0.31       | 3.45/3.70        | 1.80/1.14        | 0.35/-0.40       | 1.27/2.76        | 2.98/2.48        | 1.55/2.71        | 1.76/1.95        | 1.24/-0.20       | 0.79/0.81        | -1.40/-0.67      | 0.46/1.81        | 2.29/0.44        | 0.22/-0.83       | 1.33/1.81        | 1.18/0.74        |
| Θ(82.5°)  | 1.04/0.40     | -0.87/-1.11    | -3.66/1.29     | 1.16/0.84      | 0.94/0.32      | -0.25/-1.43    | -1.79/-1.17    | 0.57/0.67        | -0.23/-0.91      | 1.71/2.44        | -0.26/-0.37      | -0.45/-1.43      | -0.71/2.55       | 1.45/0.42        | 0.83/2.11        | 1.85/2.40        | 1.07/-0.36       | 0.19/0.06        | -2.07/-1.12      | 0.20/0.98        | 1.37/0.44        | -0.81/-2.05      | -0.37/1.07       | 0.07/-0.41       |
| Θ(90°)    | -0.69/-0.67   | -2.78/-1.75    | -4.10/-1.26    | -1.31/-0.94    | -0.97/-1.95    | -1.30/-2.41    | -4.50/-4.30    | -1.84/-0.77      | -3.20/-2.42      | -0.92/1.38       | -1.78/-1.83      | -2.61/-1.87      | -4.06/-1.49      | 0.48/-1.86       | -1.81/-0.21      | 0.17/1.16        | -1.23/-1.62      | -3.88/-3.42      | -1.20/0.24       | -0.15/-0.11      | -2.46/-3.28      | -2.47/-0.24      | -0.59/-0.59      |                  |
| Θ(97.5°)  | -2.53/-1.52   | -3.76/-3.47    | -5.14/-4.17    | -3.53/-3.05    | -3.18/-0.44    | -2.04/-2.47    | -5.21/-5.43    | -2.93/-2.41      | -3.37/-2.86      | -3.63/-1.49      | -3.52/-3.65      | -4.53/-2.65      | -5.65/0.02       | -0.70/-0.37      | -4.93/-3.03      | -1.94/-2.25      | -2.17/-4.47      | -3.24/-2.84      | -5.06/-5.55      | -4.52/-1.31      | -2.78/-1.64      | -4.32/-4.13      | -2.50/-1.75      | -2.16/-1.79      |
| Θ(105°)   | -3.41/-2.63   | -6.82/-6.14    | -4.87/-5.67    | -4.14/-4.94    | -7.40/-6.41    | -4.48/-5.40    | -7.25/-6.51    | -4.86/-3.74      | -3.76/-3.31      | -6.95/-4.22      | -4.92/-5.56      | -6.15/-3.06      | -3.46/-6.25      | -6.44/-6.58      | -4.70/-4.66      | -4.81/-6.21      | -3.78/-2.81      | -4.33/-6.46      | -8.02/-3.03      | -3.33/-3.29      | -5.52/-3.95      | -3.26/-2.55      | -3.02/-2.27      |                  |
| Θ(112.5°) | -4.58/-4.25   | -6.84/-5.50    | -5.58/-8.61    | -6.28/-7.79    | -9.07/-5.75    | -5.03/-7.95    | -7.38/-7.46    | -7.64/-7.16      | -7.42/-7.04      | -7.08/-7.23      | -8.64/-7.49      | -10.21/-6.93     | -7.83/-4.61      | -3.80/-6.09      | -6.57/-4.59      | -5.58/-4.72      | -6.35/-11.30     | -5.13/-2.54      | -5.80/-6.92      | -7.15/-3.43      | -2.98/-3.93      | -8.63/-5.58      | -4.70/-2.88      | -3.23/-3.40      |
| Θ(120°)   | -3.86/-5.00   | -7.65/-5.49    | -5.79/-0.98    | -8.24/-9.30    | -6.14/-7.19    | -9.19/-8.39    | -7.01/-8.75    | -10.87/-12.06    | -11.07/-6.24     | -4.61/-4.72      | -10.64/-9.73     | -10.67/-9.32     | -7.34/-4.28      | -4.60/-4.77      | -7.68/-6.71      | -5.43/-4.09      | -6.99/-12.10     | -6.62/-3.80      | -9.53/-9.97      | -5.10/-6.47      | -2.44/-5.84      | -7.86/-6.78      | -4.17/-3.37      | -3.65/-5.05      |
| Θ(127.5°) | -4.60/-5.41   | -5.78/-8.13    | -11.23/-6.90   | -7.23/-8.97    | -8.00/-8.39    | -9.71/-7.62    | -8.25/-10.44   | -10.46/-9.51     | -5.47/-7.99      | -8.46/-7.93      | -11.53/-9.97     | -10.12/-9.48     | -6.37/-4.55      | -6.02/-15.50     | -7.80/-6.46      | -8.16/-5.03      | -9.69/-13.96     | -6.00/-3.47      | -11.72/-12.52    | -7.61/-12.43     | -3.78/-8.17      | -7.52/-6.29      | -2.68/-3.04      | -6.46/-5.90      |
| Θ(135°)   | -5.37/-5.33   | -9.60/-13.13   | -10.38/-8.16   | -8.88/-9.79    | -9.47/-12.16   | -9.54/-9.27    | -9.79/-9.97    | -12.79/-9.98     | -7.90/-9.79      | -14.46/-12.44    | -10.84/-12.25    | -13.76/-10.70    | -4.73/-6.50      | -11.53/-9.81     | -10.24/-12.10    | -4.55/-4.39      | -12.67/-15.32    | -5.21/-3.79      | -14.64/-13.80    | -7.60/-6.90      | -7.80/-4.15      | -10.64/-4.83     | -6.40/-5.46      | -5.13/-7.74      |
| Θ(142.5°) | -8.03/-6.59   | -7.66/-10.47   | -10.75/-13.10  | -14.50/-10.96  | -12.15/-15.45  | -15.10/-15.28  | -15.28/-10.72  | -11.35/-14.40    | -13.31/-9.37     | -6.76/-8.85      | -12.08/-11.77    | -8.78/-7.32      | -9.12/-11.07     | -9.54/-9.87      | -13.80/-9.95     | -9.11/-10.67     | -4.61/-6.52      | -13.94/-10.20    | -10.94/-6.09     | -8.54/-8.17      | -16.54/-17.77    | -7.25/-7.07      | -7.18/-7.29      |                  |
| Θ(150°)   | -11.43/-12.40 | -12.04/-10.92  | -13.48/-16.16  | -12.61/-11.25  | -11.14/-9.64   | -8.05/-9.57    | -10.14/-10.93  | -11.83/-8.27     | -10.77/-8.85     | -12.44/-15.16    | -15.27/-11.73    | -9.25/-7.59      | -7.83/-12.28     | -14.76/-11.45    | -12.95/-15.63    | -14.96/-12.24    | -7.60/-8.20      | -11.16/-14.86    | -13.07/-12.33    | -14.31/-15.36    | -16.37/-11.31    | -9.88/-9.62      | -9.93/-10.83     |                  |
| Θ(157.5°) | -9.38/-8.95   | -8.45/-10.94   | -13.08/-10.29  | -8.60/-8.85    | -10.78/-13.00  | -10.64/-10.22  | -12.86/-14.12  | -12.52/-11.69    | -10.77/-9.90     | -11.41/-13.49    | -12.76/-13.36    | -15.90/-15.45    | -10.23/-9.59     | -13.54/-14.14    | -12.66/-12.33    | -10.89/-11.06    | -12.29/-14.19    | -11.73/-11.72    | -15.09/-15.69    | -14.90/-15.18    | -11.21/-8.53     | -8.51/-9.35      | -8.88/-8.52      | -4.79/-7.98      |
| Θ(165°)   | -8.80/-8.92   | -9.84/-5.98    | -6.95/-7.54    | -8.85/-11.73   | -15.32/-15.64  | -12.63/-11.81  | -12.62/-13.46  | -12.82/-11.54    | -11.12/-10.41    | -10.63/-11.32    | -13.20/-15.30    | -12.77/-12.26    | -12.21/-12.89    | -13.87/-14.59    | -13.09/-10.43    | -8.43/-5.77      | -7.74/-8.40      | -8.61/-10.35     | -11.06/-11.48    | -14.13/-14.49    | -15.37/-14.11    | -11.68/-11.21    | -11.28/-9.54     | -7.95/-8.38      |
| Θ(172.5°) | -13.72/-13.29 | -13.55/-13.97  | -13.56/-12.95  | -11.98/-11.70  | -12.27/-13.29  | -14.46/-14.29  | -14.19/-14.90  | -15.81/-14.99    | -14.56/-15.08    | -12.86/-14.76    | -8.67/-6.46      | -6.58/-6.33      | -6.86/-7.44      | -7.81/-8.28      | -9.10/-9.33      | -9.55/-9.85      | -9.76/-10.64     | -12.83/-14.05    | -13.98/-13.44    | -14.89/-15.75    | -16.21/-14.82    | -13.16/-12.87    | -13.54/-13.15    | -14.34/-14.62    |
| Θ(180°)   | -10.99/-10.55 | -10.70/-11.78  | -13.23/-11.91  | -11.38/-11.17  | -11.38/-12.11  | -13.24/-14.05  | -14.12/-14.29  | -13.55/-11.60    | -10.06/-9.56     | -9.59/-9.98      | -10.25/-10.81    | -11.24/-11.78    | -12.07/-11.41    | -9.78/-9.41      | -9.54/-9.99      | -11.51/-13.30    | -14.09/-13.60    | -13.42/-11.55    | -11.18/-11.71    | -11.51/-11.77    | -12.34/-11.32    | -10.17/-9.72     | -10.14/-10.68    | -10.80/-11.83    |
| Freq(Hz)  | 5.885GPol.    | TotalAnt.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/-3.62   | -4.10/-4.07    | -4.11/-4.05    | -4.08/-4.07    | -3.84/-3.53    | -3.38/-2.94    | -2.52/-2.27    | -2.68/-3.25      | -3.40/-3.24      | -2.95/-2.58      | -2.61/-3.06      | -3.40/-3.62      | -3.92/-4.00      | -4.07/-4.04      | -4.20/-4.30      | -4.36/-4.46      | -4.28/-3.86      | -3.69/-3.70      | -3.42/-3.41      | -3.72/-3.90      | -3.30/-3.58      | -4.02/-4.70      | -4.94/-4.80      | -4.36/-3.99      |
| Θ(7.5°)   | -3.13/-3.55   | -4.53/-5.05    | -5.95/-6.28    | -6.87/-7.37    | -7.10/-6.97    | -6.72/-6.65    | -5.83/-5.37    | -5.73/-5.89      | -6.01/-5.74      | -5.12/-5.42      | -4.31/-4.70      | -5.19/-5.13      | -4.71/-4.40      | -3.84/-3.28      | -3.11/-2.83      | -2.36/-1.99      | -1.68/-1.25      | -0.81/-5.62      | -0.52/-0.57      | -0.46/-5.05      | -0.53/-0.51      | -0.79/-1.27      | -1.91/-2.66      | -2.56/-2.70      |
| Θ(15°)    | -2.73/-3.49   | -6.63/-9.30    | -11.87/-13.24  | -13.58/-14.15  | -14.01/-13.80  | -12.65/-10.39  | -8.55/-7.30    | -6.83/-6.81      | -6.07/-6.73      | -6.49/-6.44      | -5.93/-5.71      | -5.25/-6.40      | -4.15/-3.74      | -3.04/-2.37      | -1.57/-0.92      | -0.10/-0.38      | 0.82/0.12        | 1.13/1.19        | 1.20/0.96        | 0.40/-0.27       | -0.82/-1.16      | -1.49/-1.77      | -1.71/-1.65      | -1.58/-1.91      |
| Θ(22.5°)  | -2.03/-3.21   | -5.83/-8.87    | -13.08/-13.95  | -11.81/-10.72  | -10.81/-10.76  | -11.16/-9.08   | -7.32/-6.51    | -6.60/-6.98      | -7.58/-8.43      | -8.97/-8.25      | -7.13/-5.96      | -4.68/-3.57      | -2.93/-2.81      | -2.58/-1.99      | -0.89/0.10       | 0.84/1.51        | 1.84/1.98        | 2.13/2.30        | 2.60/2.74        | 2.60/2.06        | 1.47/0.97        | 0.26/-0.45       | -0.97/-1.46      | -1.48/-1.54      |
| Θ(30°)    | -0.24/-0.55   | -1.70/-3.06    | -4.99/-7.22    | -6.66/-7.19    | -5.45/-4.64    | -5.52/-6.35    | -5.64/-4.14    | -3.92/-4.71      | -6.21/-5.54      | -3.68/-3.25      | -3.59/-3.21      | -2.31/-1.12      | -0.26/-0.16      | -0.51/-0.53      | -0.04/0.60       | 1.11/1.10        | 1.19/1.80        | 2.58/3.10        | 3.18/3.04        | 2.77/2.59        | 2.64/2.83        | 2.02/1.23        | 0.42/-0.17       |                  |
| Θ(37.5°)  | 1.20/1.53     | 0.94/-0.13     | -1.01/-3.19    | -6.53/-5.13    | -2.98/-3.73    | -5.95/-4.49    | -2.30/-0.99    | -1.38/-1.96      | -1.16/0.14       | 0.88/1.00        | 0.63/-0.60       | -1.12/-0.26      | 0.30/0.50        | 1.11/1.60        | 1.88/2.14        | 2.06/1.99        | 2.55/3.36        | 3.79/3.56        | 3.01/2.41        | 1.93/1.32        | 1.10/1.84        | 2.99/3.27        | 2.75/2.10        | 1.40/1.01        |
| Θ(45°)    | 1.94/3.14     | 2.12/3.35      | 1.57/0.84      | -1.69/-3.05    | -2.40/-3.80    | -3.77/-1.36    | 0.56/1.16      | 0.20/-1.45       | -1.12/0.11       | 1.89/1.59        | 1.51/0.52        | -0.19/0.54       | 0.84/0.68        | 1.99/2.58        | 1.93/1.70        | 1.65/1.88        | 2.37/1.83        | 0.81/0.65        | 1.36/1.38        | 1.77/2.39        | 2.01/1.96        | 2.64/3.00        | 3.57/4.17        | 3.31/4.45        |
| Θ(52.5°)  | 1.97/2.67     | 2.61/1.19      | 1.13/2.13      | 1.44/-0.12     | -0.34/-0.94    | -0.69/0.40     | 1.30/1.63      | 1.20/-0.29       | -0.77/-1.26      | 2.35/1.52        | 1.67/0.69        | 0.65/2.20        | 2.10/1.59        | 2.72/2.94        | 1.95/1.87        | 1.70/1.43        | 0.70/-0.63       | -0.35/0.60       | 1.24/0.90        | 0.18/0.88        | 1.25/2.38        | 3.44/2.65        | 2.94/3.42        | 2.99/2.12        |
| Θ(60°)    | 1.99/2.54     | 2.90/2.16      | 0.80/2.97      | 3.83/2.08      | 1.07/0.78      | 0.58/-0.24     | 0.46/1.84      | 2.40/1.65        | 0.47/1.95        | 4.16/3.50        | 3.24/1.82        | 0.90/2.26        | 2.78/2.05        | 2.82/3.27        | 1.65/1.74        | 1.72/1.39        | 0.65/-1.16       | -0.25/0.72       | 0.17/0.12        | 0.15/1.65        | 1.71/2.07        | 3.20/1.88        | 2.66/2.94        | 3.05/2.70        |
| Θ(67.5°)  | 1.85/1.54     | 1.94/1.90      | -1.16/2.71     | 4.27/2.75      | 1.81/1.50      | 1.01/-0.26     | 0.97/2.04      | 2.76/2.41        | 0.94/1.99        | 4.76/4.52        | 3.77/2.38        | 0.90/1.85        | 3.34/2.74        | 3.35/3.21        | 1.68/2.35        | 1.89/1.80        | -0.29/-0.98      | 0.90/0.01        | 0.77/0.07        | 0.55/1.73        | 1.69/1.40        | 2.73/1.59        | 2.32/1.39        | 1.66/1.49        |
| Θ(75°)    | 1.94/1.30     | 1.10/-1.57     | -2.26/2.53     | 3.70/2.48      | 1.79/0.76      | 0.10/-1.99     | -0.56/-1.24    | 2.44/2.22        | -0.36/0.26       | 3.30/4.53        | 2.72/1.61        | 0.06/0.67        |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |



# Antenna Pattern of 2.4GHz/5GHz/6GHz

# Appendix C

|            |               |                  |                |                |                |                |                |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |
|------------|---------------|------------------|----------------|----------------|----------------|----------------|----------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
| Θ (75°)    | 1.29/3.00     | 2.64/1.19        | 1.12/1.00      | 0.07/0.82      | 1.91/0.88      | 0.00/0.88      | 0.34/-0.15     | -1.20/-0.46      | 1.73/3.06        | 1.44/0.82        | 0.04/-1.33       | -0.28/0.38       | -1.21/-1.54      | 1.07/-1.42       | -2.40/-1.14      | 0.42/0.73        | 1.71/0.21        | 0.24/-0.79       | -0.61/-1.24      | -0.57/1.01       | -1.96/-0.94      | -0.61/0.23       | 1.09/1.82        | 1.35/-0.50       |
| Θ (82.5°)  | 0.571/1.92    | 1.88/-0.38       | 0.09/-1.03     | -1.37/-0.26    | 0.07/-1.07     | -0.06/0.18     | -0.45/-0.49    | -0.45/-0.57      | -0.22/-1.55      | -0.98/-1.44      | -1.19/-3.45      | -2.23/-1.60      | -2.61/-1.48      | 0.01/-5.14       | -2.33/-1.45      | 0.59/1.71        | 1.74/-0.12       | 0.58/-1.28       | -0.97/-2.04      | -0.60/0.96       | -1.25/-1.25      | -1.14/-1.53      | 0.12/-1.25       | 0.56/-1.67       |
| Θ (90°)    | 0.21/-0.06    | 0.80/-3.04       | -0.70/-2.61    | -3.23/-1.65    | -1.75/-2.88    | -0.66/-1.49    | -2.18/-1.79    | -1.32/-2.14      | -0.64/0.09       | -3.84/-3.75      | -2.33/-7.56      | -4.59/-3.81      | -5.26/-3.01      | -0.50/-7.52      | -4.84/-3.24      | -1.37/1.10       | -0.14/-2.11      | -0.67/-3.92      | -2.62/-4.56      | -1.60/-1.25      | -1.57/-3.07      | -2.47/-3.43      | -1.53/0.54       | -0.37/-3.52      |
| Θ (97.5°)  | -1.05/-2.21   | 0.03/-5.12       | -2.15/-4.63    | -6.83/-3.39    | -2.44/-3.78    | -1.79/-2.23    | -3.59/-5.50    | -3.53/-5.09      | -5.57/-1.70      | -3.09/-4.67      | -5.78/-8.87      | -6.14/-6.02      | -6.89/-3.69      | -2.37/-8.50      | -6.64/-6.78      | -5.14/-1.69      | -6.12/-4.36      | -3.63/-9.52      | -4.34/-8.48      | -4.71/-4.89      | -3.40/-5.14      | -4.41/-4.21      | -2.26/-0.75      | -1.79/-4.12      |
| Θ (105°)   | -3.43/-2.46   | -1.62/-5.85      | -3.67/-6.17    | -7.79/-6.07    | -4.27/-5.57    | -5.15/-3.70    | -6.35/-7.50    | -8.06/-4.26      | -3.13/-4.52      | -6.89/-5.50      | -6.85/-9.39      | -6.94/-6.46      | -8.61/-5.70      | -3.26/-4.78      | -10.03/-7.23     | -6.72/-4.74      | -7.09/-5.37      | -3.83/-6.20      | -4.97/-7.86      | -7.08/-4.51      | -3.84/-6.21      | -6.65/-4.10      | -3.51/-3.21      | -2.89/-5.02      |
| Θ (112.5°) | -4.96/-2.49   | -3.33/-6.63      | -7.30/-7.45    | -9.54/-10.44   | -7.83/-5.95    | -6.66/-5.48    | -6.66/-8.85    | -6.32/-5.58      | -4.05/-6.72      | -9.53/-9.12      | -8.71/-9.74      | -7.87/-8.97      | -10.41/-7.42     | -5.50/-10.39     | -7.32/-6.93      | -6.89/-6.83      | -7.45/-6.25      | -5.55/-5.11      | -5.03/-9.23      | -8.21/-3.89      | -6.50/-6.51      | -7.62/-7.34      | -4.73/-4.47      | -4.62/-6.39      |
| Θ (120°)   | -5.36/-4.11   | -5.07/-6.38      | -8.00/-7.85    | -12.10/-8.77   | -11.52/-10.69  | -7.70/-7.72    | -9.21/-8.17    | -9.17/-10.51     | -10.91/-6.92     | -7.31/-12.00     | -13.98/-12.05    | -9.95/-9.85      | -9.30/-7.21      | -5.91/-9.81      | -10.69/-9.09     | -10.14/-9.83     | -8.04/-11.14     | -6.64/-4.06      | -10.97/-10.32    | -12.43/-4.24     | -6.09/-6.04      | -9.25/-9.86      | -4.50/-5.78      | -5.59/-5.98      |
| Θ (127.5°) | -5.81/-6.84   | -5.06/-9.06      | -7.55/-9.16    | -10.19/-9.43   | -12.51/-9.06   | -8.75/-8.13    | -8.23/-9.54    | -9.06/-8.61      | -6.37/-8.54      | -7.82/-10.45     | -14.82/-15.38    | -12.90/-10.26    | -9.45/-8.67      | -10.78/-11.84    | -12.67/-7.29     | -8.22/-9.38      | -7.60/-10.01     | -5.32/-3.64      | -8.16/-11.99     | -15.19/-4.22     | -8.31/-5.91      | -9.56/-5.97      | -4.37/-3.77      | -8.94/-6.12      |
| Θ (135°)   | -6.56/-5.53   | -5.36/-6.28      | -8.84/-12.37   | -10.21/-11.60  | -14.39/-11.59  | -13.35/-8.19   | -8.04/-10.06   | -11.15/-8.87     | -6.57/-7.99      | -13.08/-15.18    | -14.82/-15.34    | -10.25/-9.09     | -11.81/-11.57    | -11.22/-15.74    | -11.08/-8.76     | -15.04/-5.84     | -8.28/-12.08     | -5.54/-4.48      | -8.61/-9.27      | -11.65/-8.82     | -4.92/-12.05     | -8.82/-11.11     | -5.20/-3.72      | -4.83/-9.30      |
| Θ (142.5°) | -7.63/-8.47   | -8.75/-7.61      | -11.23/-13.31  | -12.33/-13.13  | -12.49/-12.80  | -13.97/-11.61  | -12.84/-15.07  | -10.74/-11.25    | -12.70/-9.95     | -9.69/-9.41      | -12.36/-11.96    | -12.24/-12.52    | -10.65/-7.95     | -13.82/-13.40    | -9.49/-14.80     | -10.80/-15.35    | -8.36/-14.27     | -6.10/-8.10      | -12.67/-12.98    | -16.09/-15.68    | -9.66/-11.57     | -11.32/-10.27    | -7.96/-6.83      | -9.68/-9.30      |
| Θ (150°)   | -13.38/-11.66 | -11.34/-13.08    | -11.38/-11.40  | -14.66/-15.18  | -12.72/-11.66  | -9.72/-8.32    | -10.03/-11.51  | -10.63/-9.55     | -8.55/-10.18     | -11.47/-10.34    | -11.60/-15.98    | -13.17/-12.69    | -12.79/-11.66    | -12.39/-15.27    | -12.80/-12.75    | -15.33/-15.38    | -7.97/-8.38      | -12.99/-14.64    | -13.55/-11.37    | -12.81/-10.74    | -8.85/-9.83      | -10.28/-9.14     | -8.72/-10.46     |                  |
| Θ (157.5°) | -9.80/-12.52  | -16.59/-12.85    | -10.77/-10.18  | -8.63/-8.56    | -7.61/-9.63    | -13.84/-14.04  | -11.08/-9.99   | -10.29/-12.22    | -11.87/-12.06    | -12.63/-12.98    | -15.42/-13.02    | -13.18/-11.27    | -8.91/-12.12     | -9.51/-6.34      | -8.80/-14.14     | -10.49/-10.53    | -12.35/-14.04    | -15.91/-15.08    | -14.37/-13.00    | -14.90/-15.78    | -15.73/-10.71    | -9.00/-8.55      | -9.58/-9.84      |                  |
| Θ (165°)   | -14.02/-13.30 | -12.55/-12.43    | -12.29/-10.97  | -8.72/-8.48    | -8.36/-9.52    | -12.84/-15.11  | -14.27/-13.49  | -11.77/-11.67    | -13.21/-15.53    | -12.69/-12.60    | -13.44/-13.56    | -13.15/-13.50    | -13.33/-15.66    | -14.93/-13.76    | -12.47/-12.48    | -14.31/-12.67    | -10.03/-9.74     | -11.47/-13.12    | -13.56/-13.85    | -14.67/-13.70    | -12.96/-12.85    | -11.18/-9.59     | -9.73/-10.42     | -12.49/-13.31    |
| Θ (172.5°) | -13.01/-12.50 | -11.96/-12.54    | -12.77/-14.12  | -14.41/-14.80  | -14.47/-13.39  | -13.18/-12.71  | -13.13/-14.44  | -13.97/-12.61    | -12.22/-12.16    | -11.93/-11.10    | -11.04/-11.22    | -12.34/-13.77    | -14.53/-13.58    | -11.41/-9.70     | -8.72/-8.40      | -8.36/-8.45      | -6.69/-9.11      | -10.27/-11.79    | -14.81/-15.28    | -15.76/-15.33    | -15.11/-15.02    | -15.97/-15.68    | -15.53/-14.34    | -15.25/-14.99    |
| Θ (180°)   | -14.69/-12.64 | -12.93/-11.89    | -11.53/-11.40  | -11.66/-12.95  | -13.06/-12.57  | -13.38/-15.81  | -15.40/-15.77  | -15.23/-14.34    | -15.19/-15.21    | -14.93/-14.15    | -13.14/-13.36    | -13.21/-14.55    | -15.36/-15.32    | -15.61/-14.70    | -14.67/-15.62    | -16.23/-15.04    | -14.27/-13.49    | -14.68/-15.25    | -15.35/-14.98    | -14.86/-15.48    | -15.04/-15.16    | -13.84/-14.22    | -15.38/-15.27    | -15.15/-14.77    |
| Freq(Hz)   | 6.995GPdL     | TotalAnt.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°)     | -6.43/-6.52   | -6.12/-6.75      | -6.38/-6.00    | -6.44/-6.15    | -5.42/-5.41    | -5.77/-5.51    | -4.84/-5.05    | -5.05/-4.76      | -5.74/-5.70      | -5.06/-5.70      | -4.57/-4.78      | -4.53/-4.70      | -5.06/-5.15      | -5.42/-5.62      | -6.03/-6.20      | -6.16/-6.08      | -6.52/-6.52      | -6.78/-7.31      | -7.40/-7.14      | -7.49/-7.22      | -6.81/-6.95      | -7.15/-7.52      | -6.82/-6.73      |                  |
| Θ (7.5°)   | -5.53/-6.22   | -6.80/-8.85      | -8.51/-9.31    | -10.59/-10.40  | -10.58/-10.82  | -10.90/-10.75  | -9.34/-8.58    | -9.09/-9.75      | -9.79/-8.82      | -8.30/-8.00      | -7.82/-6.84      | -6.15/-5.77      | -5.17/-4.65      | -4.25/-4.03      | -3.70/-3.68      | -3.53/-3.34      | -2.96/-2.88      | -3.15/-3.52      | -3.46/-3.07      | -2.35/-1.81      | -1.86/-2.13      | -2.53/-2.70      | -2.35/-3.14      | -4.09/-4.42      |
| Θ (15°)    | -4.86/-6.83   | -7.25/-7.62      | -6.85/-6.68    | -4.93/-4.79    | -4.54/-6.86    | -5.14/-5.66    | -6.07/-6.82    | -7.25/-7.79      | -8.22/-8.33      | -7.79/-7.12      | -7.00/-6.31      | -5.74/-4.75      | -3.38/-1.90      | -1.11/-1.02      | -1.12/-2.81      | -2.40/-2.51      | -2.35/-2.26      | -2.58/-2.94      | -2.99/-2.71      | -2.58/-2.32      | -1.88/-1.72      | -1.28/-0.68      | -0.52/-0.95      | -1.62/-3.18      |
| Θ (22.5°)  | -3.61/-5.22   | -16.59/-6.50     | -5.40/-3.54    | -2.60/-2.18    | -2.27/-3.06    | -5.31/-5.65    | -6.78/-6.42    | -5.83/-4.78      | -3.24/-2.98      | -4.74/-4.28      | -4.04/-3.15      | -1.70/0.02       | 0.98/0.91        | 0.52/0.60        | 0.78/0.25        | 0.00/0.33        | 0.50/0.69        | 0.60/0.33        | 0.13/-0.26       | -0.86/-0.75      | -0.53/-0.02      | -0.35/-1.86      |                  |                  |
| Θ (30°)    | -1.47/-4.24   | -6.59/-6.09      | -5.16/-3.52    | -2.47/-3.48    | -5.74/-6.46    | -5.21/-5.42    | -7.24/-8.04    | -6.51/-5.37      | -4.11/-3.44      | -3.55/-3.72      | -2.77/-1.27      | -1.24/-1.50      | -0.61/-1.10      | 2.38/2.52        | 2.07/2.14        | 3.06/3.06        | 2.04/0.63        | 0.25/0.58        | 0.89/1.19        | 1.17/1.47        | 1.95/2.00        | 1.25/0.32        | -0.71/-1.04      | -0.53/-0.33      |
| Θ (37.5°)  | -0.29/-1.75   | -3.45/-3.67      | -5.13/-7.07    | -6.38/-7.15    | -4.82/-2.23    | -10.73/-8.12   | -4.98/-4.67    | -3.64/-2.22      | -1.58/-2.03      | -1.36/0.46       | 0.42/0.44        | 1.10/1.66        | 2.41/2.79        | 1.81/0.62        | 0.29/-0.04       | 0.24/-1.23       | 2.04/2.12        | 0.24/1.23        | 2.04/2.12        | 0.81/0.77        | 0.97/0.46        | -0.31/-0.41      |                  |                  |
| Θ (45°)    | 1.59/1.61     | 0.60/-1.60       | -1.87/-5.97    | -5.23/-2.60    | -1.41/-1.47    | -1.64/-1.59    | -2.89/-5.61    | -7.82/-4.75      | -1.20/0.65       | 1.45/0.89        | -0.39/0.36       | 0.79/0.82        | 1.29/1.21        | 1.46/2.11        | 2.64/3.90        | 3.81/2.12        | 1.50/0.57        | -1.93/-3.31      | -2.63/-2.01      | -1.40/-0.69      | 0.29/1.17        | 0.39/0.45        | 1.06/2.26        | 1.61/0.71        |
| Θ (52.5°)  | 2.23/0.09     | 3.29/2.27        | 0.95/-1.48     | -2.79/-1.95    | -2.47/-3.63    | -3.18/-1.64    | -1.82/-3.41    | -5.73/-5.01      | -3.01/-0.44      | 0.81/0.57        | -1.11/-0.17      | 0.49/0.24        | -0.97/-0.40      | 0.59/1.00        | 1.81/1.92        | 1.50/0.91        | 0.66/-0.75       | -3.80/-4.35      | -2.83/-2.93      | -2.71/-4.79      | -2.43/0.24       | 1.00/1.32        | 1.41/3.18        | 3.04/1.49        |
| Θ (60°)    | 2.02/0.08     | <b>4.23/2.88</b> | 2.52/1.53      | -0.28/-0.38    | -1.18/-1.34    | -1.62/-1.02    | -0.54/-2.22    | -4.48/-4.29      | -0.49/1.17       | 1.05/0.72        | -0.45/-1.11      | 1.12/0.45        | -1.74/-1.15      | 0.06/-1.52       | -0.07/-0.59      | 0.31/0.88        | 0.16/-1.20       | -1.79/-2.06      | -1.11/-1.37      | -0.53/-2.65      | -3.72/-0.57      | 0.67/1.25        | 1.14/2.82        | 3.15/1.98        |
| Θ (67.5°)  | 1.18/3.78     | 3.88/2.35        | 2.60/2.00      | 0.52/0.60      | -0.52/-0.53    | 0.33/-1.00     | 0.84/0.73      | -1.37/-1.79      | 1.70/2.92        | 1.22/1.25        | -0.02/0.21       | 0.97/0.97        | -2.37/-0.59      | -0.39/-3.33      | -1.22/-1.82      | 0.43/0.89        | 0.10/-0.37       | -0.89/-2.20      | -0.60/-0.74      | 0.79/-1.07       | -3.69/-1.25      | -0.04/0.81       | 0.72/0.05        | 2.82/1.45        |
| Θ (75°)    | 0.37/2.62     | 2.73/1.82        | 2.17/1.59      | 0.07/0.77      | -0.98/-0.44    | 1.27/0.56      | 0.22/-0.04     | 0.17/0.08        | 0.96/2.94        | -0.31/0.10       | -0.21/0.66       | 0.38/-0.35       | -1.93/-1.91      | -0.20/-5.69      | -2.48/-1.86      | 0.76/0.89        | 0.39/-0.78       | -0.83/-1.73      | -1.61/-1.46      | -0.65/-0.82      | -3.87/-2.28      | -0.40/0.72       | 0.39/1.50        | 1.95/0.95        |
| Θ (82.5°)  | -0.07/0.68    | 1.17/0.44        | 1.37/0.34      | -1.29/-0.64    | -2.23/-0.09    | 0.03/-2.31     | -2.65/-2.78    | -0.38/0.70       | -1.00/0.26       | -2.66/-1.13      | -1.47/-1.89      | -1.39/-2.51      | -3.23/-2.31      | -0.84/-7.18      | -4.27/-0.59      | 0.35/1.07        | -0.21/-1.61      | -1.96/-2.69      | -2.49/-2.67      | -0.70/-1.07      | -2.93/-2.75      | -1.79/0.13       | 0.04/0.94        | 0.61/-0.06       |
| Θ (90°)    | -1.10/-1.39   | -0.67/-1.57      | -0.38/-2.09    | -3.60/-2.42    | -3.97/-0.92    | -1.53/-6.75    | -7.23/-6.31    | -2.73/-0.58      | -2.27/-2.65      | -5.28/-3.51      | -2.57/-5.75      | -3.00/-5.69      | -4.46/-5.06      | -1.67/-7.62      | -7.71/-1.88      | -1.17/0.05       | -2.54/-3.55      | -3.78/-6.23      | -4.25/-6.84      | -2.34/-2.85      | -2.97/-4.35      | -2.02/-0.85      | -1.28/0.30       | -1.46/-1.10      |
| Θ (97.5°)  | -2.41/-2.25   | -2.19/-3.73      | -2.17/-4.11    | -5.83/-4.66    | -5.31/-2.19    | -5.21/-2.08    | -6.98/-9.89    | -6.22/-2.58      | -4.86/-2.81      | -8.34/-5.48      | -4.27/-10.54     | -6.47/-7.47      | -7.01/-5.32      | -3.30/-7.87      | -6.69/-4.55      | -1.15/-3.08      | -8.78/-5.61      | -6.60/-8.52      | -5.17/-8.52      | -5.49/-6.67      | -5.92/-6.87      | -5.02/-1.67      | -2.49/-1.43      | -1.67/-2.60      |
| Θ (105°)   | -2.99/-2.65   | -3.82/-5.69      | -3.52/-4.79    | -6.14/-4.79    | -6.79/-6.09    | -3.69/-6.58    | -5.01/-7.03    | -6.24/-9.41      | -4.47/-3.25      | -7.26/-5.48      | -6.52/-10.85     | -8.30/-10.58     | -9.12/-6.42      | -3.58/-5.62      | -12.45/-5.55     | -5.95/-4.56      | -9.79/-4.26      | -5.04/-8.54      | -5.26/-7.53      | -7.17/-4.87      | -5.68/-6.12      | -6.97/-3.39      | -3.50/-2.07      | -3.26/-5.09      |
| Θ (112.5°) | -5.98/-3.33   | -5.05/-6.87      | -5.38/-6.90    | -10.27/-11.61  | -5.43/-7.04    | -8.37/-7.03    | -7.39/-10.07   | -9.09/-5.38      | -3.74/-7.54      | -9.93/-6.41      | -5.48/-9.44      | -8.43/-10.42     | -13.57/-5.51     | -8.19/-8.62      | -13.38/-4.32     | -6.94/-4.47      | -9.23/-4.93      | -4.54/-6.09      | -5.75/-7.60      | -8.70/-4.16      | -6.08/-7.89      | -8.81/-9.42      | -5.41/-4.07      | -4.88/-5.05      |
| Θ (120°)   | -6.80/-3.66   | -7.13/-6.64      | -8.23/-7.42    | -10.48/-9.39   | -11.93/-11.44  | -7.81/-8.22    | -10.73/-8.12   | -8.74/-9.11      | -10.73/-8.47     | -9.84/-7.92      | -8.17/-10.31     | -8.76/-8.62      | -11.85/-6.73     | -6.24/-8.18      | -13.98/-10.29    | -8.05/-12.71     | -7.95/-12.37     | -11.23/-2.75     | -6.45/-14.02     | -11.98/-7.29     | -8.56/-6.62      | -8.91/-8.55      | -6.23/-5.88      | -6.14/-6.47      |
| Θ (127.5°) | -7.00/-5.85   | -5.81/-7.77      | -7.91/-7.97    | -8.47/-9.95    | -11.49/-7.70   | -8.84/-9.33    | -9.87/-10.99   | -11.55/-7.17     |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |



# Antenna Pattern of 2.4GHz/5GHz/6GHz

# Appendix C

|           |               |                |                |                |                |                |                |                  |                  |                  |                  |                  |                  |                  |                   |                  |                  |                  |                  |                  |                  |                  |                  |                  |
|-----------|---------------|----------------|----------------|----------------|----------------|----------------|----------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|-------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
| Θ(120°)   | -3.34/3.56    | -3.77/4.33     | -5.22/-4.89    | -6.36/-4.13    | -3.66/-3.75    | -3.15/-2.81    | -3.94/-6.12    | -6.00/-4.15      | -6.22/-9.24      | -9.57/-8.21      | -6.34/-5.00      | -5.23/-6.23      | -9.58/-7.24      | -7.49/-5.99      | -5.25/-7.12       | -4.83/-7.68      | -6.17/-10.79     | -10.05/-7.10     | -3.59/-4.99      | -6.88/-9.26      | -10.14/-4.41     | -2.59/-6.10      | -2.92/-2.48      | -3.40/-6.24      |
| Θ(127.5°) | -5.89/-6.39   | -5.64/-6.40    | -5.31/-6.27    | -6.55/-7.48    | -5.63/-4.89    | -4.99/-5.78    | -6.43/-6.61    | -5.47/-7.61      | -8.86/-9.66      | -8.37/-9.24      | -9.30/-9.30      | -6.55/-5.41      | -11.57/-7.24     | -8.91/-6.30      | -6.06/-6.45       | -8.74/-10.29     | -6.22/-10.54     | -10.16/-5.19     | -4.01/-4.87      | -5.76/-9.14      | -8.50/-6.02      | -4.59/-5.55      | -4.35/-6.50      | -6.72/-7.32      |
| Θ(135°)   | -6.78/-6.48   | -6.51/-7.48    | -6.54/-8.55    | -6.45/-6.64    | -6.34/-5.97    | -5.57/-5.70    | -7.36/-7.71    | -9.41/-10.40     | -10.46/-8.44     | -7.86/-8.51      | -9.51/-12.22     | -7.86/-8.51      | -9.51/-12.22     | -7.86/-8.51      | -9.51/-12.22      | -7.86/-8.51      | -9.51/-12.22     | -7.86/-8.51      | -9.51/-12.22     | -7.86/-8.51      | -9.51/-12.22     | -7.86/-8.51      | -9.51/-12.22     | -7.86/-8.51      |
| Θ(142.5°) | -8.05/-6.00   | -6.48/-7.29    | -8.92/-8.16    | -6.66/-6.15    | -5.34/-4.60    | -5.39/-7.13    | -8.72/-8.28    | -7.35/-8.05      | -7.22/-7.21      | -10.76/-10.77    | -7.10/-6.64      | -6.99/-8.16      | -9.77/-12.04     | -8.13/-7.59      | -8.61/-11.35      | -11.44/-12.60    | -12.67/-11.96    | -8.45/-7.30      | -11.73/-10.73    | -9.64/-9.88      | -9.44/-8.57      | -9.38/-8.27      | -6.13/-5.17      | -6.09/-8.32      |
| Θ(150°)   | -7.45/-7.23   | -8.34/-6.82    | -8.34/-8.79    | -7.46/-6.76    | -6.58/-5.97    | -5.39/-6.21    | -7.84/-8.89    | -8.94/-7.78      | -7.20/-9.10      | -10.93/-8.75     | -6.07/-7.06      | -10.39/-10.72    | -11.97/-14.69    | -11.37/-9.03     | -9.52/-11.29      | -11.37/-12.90    | -15.28/-14.79    | -14.73/-13.77    | -11.91/-9.47     | -9.10/-15.12     | -12.04/-9.23     | -8.52/-10.04     | -14.72/-10.98    | -9.29/-8.82      |
| Θ(157.5°) | -10.31/-9.89  | -9.97/-9.23    | -8.11/-7.79    | -7.73/-7.59    | -7.57/-7.97    | -8.11/-7.39    | -7.27/-7.76    | -7.99/-8.14      | -7.87/-7.51      | -6.37/-5.75      | -6.10/-8.33      | -14.26/-15.32    | -9.98/-9.65      | -12.35/-15.16    | -13.98/-11.67     | -10.61/-11.80    | -7.73/-6.10      | -6.18/-8.92      | -10.89/-8.54     | -9.08/-10.27     | -12.01/-13.66    | -12.01/-9.72     |                  |                  |
| Θ(165°)   | -10.81/-11.31 | -10.53/-10.15  | -10.03/-10.01  | -9.49/-9.76    | -10.27/-9.43   | -7.57/-6.33    | -6.19/-6.83    | -8.37/-10.07     | -11.72/-12.44    | -11.28/-11.47    | -11.59/-12.97    | -13.09/-10.67    | -8.72/-8.72      | -9.81/-9.41      | -8.93/-8.65       | -9.02/-9.39      | -12.08/-15.38    | -14.24/-9.64     | -8.14/-8.48      | -10.11/-11.38    | -10.58/-8.52     | -7.73/-7.91      | -8.61/-9.63      | -11.36/-11.15    |
| Θ(172.5°) | -8.97/-7.76   | -8.22/-6.69    | -8.15/-6.80    | -6.39/-6.64    | -6.61/-5.91    | -5.32/-5.51    | -6.46/-7.47    | -9.36/-11.10     | -12.13/-12.35    | -12.63/-12.27    | -11.32/-10.36    | -10.28/-11.29    | -13.22/-15.65    | -14.83/-14.88    | -13.13/-11.83     | -10.60/-9.27     | -9.22/-8.85      | -8.33/-8.50      | -9.76/-11.14     | -10.79/-9.94     | -9.40/-9.01      | -8.79/-9.52      | -10.06/-9.82     | -10.04/-10.04    |
| Θ(180°)   | -10.45/-9.97  | -10.12/-10.69  | -11.47/-11.20  | -11.58/-13.17  | -13.79/-13.33  | -11.47/-15.19  | -15.22/-15.12  | -12.59/-11.18    | -10.65/-10.56    | -10.98/-11.21    | -10.91/-10.85    | -11.10/-12.34    | -12.50/-12.08    | -11.48/-10.50    | -9.17/-8.07       | -7.58/-8.01      | -8.75/-8.89      | -9.20/-10.12     | -11.27/-11.42    | -10.61/-10.34    | -10.11/-9.70     | -9.52/-9.74      | -9.52/-9.23      | -9.67/-10.62     |
| Freq(Hz)  | 5.6GPol.      | 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°)     | -9.27/-8.92   | -9.47/-9.45    | -9.18/-9.34    | -9.15/-9.33    | -10.01/-11.72  | -12.46/-11.12  | -9.69/-8.44    | -7.85/-7.58      | -7.26/-7.61      | -7.39/-7.98      | -6.92/-6.75      | -7.45/-8.10      | -7.05/-7.04      | -7.45/-8.10      | -7.05/-7.04       | -7.45/-8.10      | -7.46/-7.87      | -8.47/-8.91      | -9.07/-8.68      | -8.91/-9.12      | -8.78/-9.93      | -8.89/-9.60      |                  |                  |
| Θ(7.5°)   | -5.09/-4.44   | -3.36/-3.40    | -4.18/-5.12    | -4.74/-4.61    | -5.57/-7.00    | -6.77/-6.01    | -6.31/-6.62    | -7.28/-7.56      | -8.04/-8.62      | -9.08/-9.67      | -8.64/-9.97      | -11.39/-13.76    | -15.74/-15.03    | -15.17/-14.78    | -15.91/-14.58     | -15.15/-15.76    | -15.71/-13.70    | -11.30/-10.33    | -10.30/-9.71     | -9.52/-8.41      | -7.19/-6.19      | -5.71/-5.40      | -5.20/-4.97      | -5.04/-5.36      |
| Θ(15°)    | -1.54/-0.99   | -0.57/-0.75    | -1.27/-1.78    | -2.08/-2.03    | -2.12/-2.33    | -3.07/-3.43    | -3.23/-3.43    | -4.13/-3.57      | -6.32/-7.04      | -7.46/-7.07      | -7.35/-9.20      | -12.19/-15.51    | -13.73/-13.31    | -10.83/-11.05    | -11.06/-11.24     | -11.11/-11.78    | -10.47/-8.49     | -7.58/-6.74      | -6.10/-5.70      | -5.41/-4.07      | -2.38/-1.28      | -0.88/-0.79      | -0.55/-0.70      | -1.45/-1.86      |
| Θ(22.5°)  | -0.63/-0.71   | 1.68/-1.78     | 1.51/-1.64     | 2.09/-2.32     | 1.91/-1.28     | 0.84/-0.49     | 0.16/-0.29     | -0.75/-1.63      | -2.99/-4.04      | -4.50/-3.86      | -3.76/-5.60      | -8.97/-11.83     | -9.54/-7.29      | -5.80/-5.65      | -5.88/-5.62       | -5.82/-7.42      | -10.26/-11.16    | -9.39/-7.20      | -3.91/-2.78      | -1.00/-1.03      | 0.49/-0.64       | 0.52/-0.21       | -1.48/-1.55      |                  |
| Θ(30°)    | 1.14/-2.00    | 2.61/-2.61     | 2.53/-2.59     | 2.43/-1.99     | 1.98/-2.22     | 2.61/-2.80     | 2.48/-2.12     | 2.26/-2.12       | 1.38/-2.10       | -0.92/-1.20      | -1.64/-2.89      | -4.28/-4.58      | -2.90/-1.99      | -2.99/-4.55      | -5.89/-5.89       | -5.97/-7.95      | -7.15/-5.91      | -5.38/-4.27      | -3.10/-3.59      | -2.95/-1.17      | 0.37/-1.68       | 1.63/-0.78       | 0.18/-0.64       | -0.66/-0.27      |
| Θ(37.5°)  | 2.24/-2.68    | 2.53/-2.55     | 2.45/-2.42     | 2.27/-1.70     | 1.34/-1.37     | 2.10/-2.82     | 2.86/-2.55     | 2.73/-2.03       | 2.69/-2.28       | 1.31/-0.81       | 0.16/-1.16       | -0.27/-1.40      | 0.19/-0.34       | -0.65/-0.46      | -0.76/-1.21       | -2.76/-6.69      | -7.60/-5.87      | -4.60/-3.32      | -3.53/-3.31      | -0.91/-3.99      | 2.13/-2.36       | 2.03/-1.10       | 1.50/-1.61       |                  |
| Θ(45°)    | 2.42/-2.38    | 1.95/-1.84     | 1.62/-2.45     | 2.77/-2.80     | 2.81/-2.53     | 2.77/-2.33     | 3.59/-2.55     | 2.73/-2.91       | 2.81/-2.74       | 2.60/-2.08       | 1.82/-0.35       | -0.32/-0.67      | 0.79/-0.72       | 0.14/-0.50       | 0.96/-0.41        | -1.98/-3.50      | -2.05/-2.70      | 0.54/-0.08       | -0.39/-1.82      | -0.47/-0.99      | 1.85/-0.30       | 3.77/-2.06       | 1.38/-1.49       |                  |
| Θ(52.5°)  | 2.30/-2.11    | 0.97/-0.49     | 1.63/-2.82     | 3.13/-3.36     | 2.57/-2.62     | 3.63/-4.08     | 4.07/-3.77     | 3.02/-2.40       | 1.43/-1.96       | 3.24/-3.75       | 2.92/-0.82       | 1.19/-1.47       | 1.07/-0.49       | 0.48/-1.68       | 2.70/-2.32        | 2.49/-0.79       | -0.70/-1.31      | -0.40/-0.61      | 0.13/-0.48       | 0.61/-0.17       | 0.07/-0.59       | 2.57/-4.58       | 4.83/-2.89       | 1.39/-2.18       |
| Θ(60°)    | 2.19/-1.90    | 0.26/-0.95     | 2.09/-2.79     | 2.96/-2.72     | 1.74/-1.78     | 3.22/-2.03     | 3.76/-3.17     | 2.73/-2.19       | 1.00/-1.23       | 2.23/-2.81       | 3.30/-1.66       | 3.07/-2.59       | 1.24/-0.64       | 0.23/-2.77       | 4.48/-4.39        | 3.09/-0.85       | -1.78/-0.76      | 0.01/-0.37       | 0.01/-0.41       | 1.62/-0.91       | 0.65/-1.31       | 3.20/-2.42       | 4.13/-2.69       | 1.25/-2.27       |
| Θ(67.5°)  | 1.35/-0.41    | -0.20/-0.94    | 2.63/-2.68     | 1.88/-0.93     | 0.86/-1.05     | 2.25/-3.39     | 3.06/-2.04     | 1.36/-1.58       | 0.71/-0.22       | 1.93/-2.72       | 3.25/-1.93       | 3.07/-2.59       | 0.87/-0.09       | -0.05/-0.84      | <b>5.28/-3.35</b> | 3.24/-2.81       | -1.10/-0.15      | 0.85/-1.13       | -0.10/-0.45      | 1.37/-0.76       | 1.44/-1.07       | 3.00/-5.53       | 2.85/-2.20       | 1.19/-1.57       |
| Θ(75°)    | 0.59/-0.69    | -0.84/-0.41    | 2.04/-1.96     | 0.89/-0.42     | -0.41/-0.05    | 0.89/-2.35     | 2.23/-0.77     | -0.60/-1.07      | 0.89/-1.46       | 0.77/-2.48       | 2.87/-2.20       | 3.55/-2.62       | 0.93/-0.58       | -2.22/-0.32      | 4.12/-2.84        | 2.76/-3.39       | 0.15/-0.22       | 1.43/-2.54       | 1.09/-0.59       | 2.09/-1.79       | 1.24/-0.14       | 2.89/-2.30       | 1.40/-1.67       | 0.90/-0.38       |
| Θ(82.5°)  | -0.38/-2.43   | -2.55/-0.45    | 1.02/-1.52     | 0.27/-1.38     | -1.18/-0.75    | 0.71/-1.42     | 1.70/-0.05     | -1.78/-0.41      | -0.06/-2.18      | -0.15/-1.25      | 2.03/-1.70       | 2.48/-1.38       | -0.20/-2.20      | -3.88/-1.78      | 2.18/-2.22        | 2.25/-0.34       | 0.16/-0.32       | 0.75/-2.72       | 1.29/-0.55       | 1.69/-1.53       | 1.87/-1.07       | 0.27/-1.29       | 0.05/-0.79       |                  |
| Θ(90°)    | -1.48/-4.69   | -3.21/-0.63    | 0.44/-0.01     | -1.33/-2.49    | -1.63/-1.95    | -1.05/-0.63    | 0.98/-0.92     | -3.35/-1.16      | -0.46/-3.52      | -2.82/-1.10      | 0.62/-0.33       | 1.15/-0.17       | -0.61/-2.55      | -6.25/-0.19      | 1.00/-0.19        | 7.08/-0.66       | -0.75/-1.01      | -0.83/-1.58      | 1.01/-0.27       | 0.13/-0.60       | -0.07/-1.83      | 0.37/-0.21       | -1.08/-0.14      | -1.28/-0.29      |
| Θ(97.5°)  | -1.96/-6.24   | -3.63/-1.16    | -0.32/-0.63    | -1.99/-2.75    | -2.74/-2.48    | -1.82/-0.05    | -0.32/-2.84    | -4.46/-2.64      | -2.47/-4.18      | -3.84/-2.79      | -1.35/-1.31      | 0.34/-2.00       | -3.19/-4.02      | -6.72/-2.06      | -1.30/-2.08       | -2.61/-2.00      | -4.50/-3.00      | -4.17/-1.10      | -1.15/-2.50      | -2.18/-1.46      | -1.21/-2.46      | -0.85/-1.05      | -1.38/-1.20      | -2.19/-3.34      |
| Θ(105°)   | -3.01/-6.24   | -4.53/-2.42    | -1.04/-0.42    | -2.26/-4.37    | -3.95/-2.41    | -2.86/-2.02    | -1.73/-3.19    | -6.03/-5.59      | -3.52/-4.50      | -5.21/-4.94      | -4.11/-5.36      | -2.26/-3.23      | -3.16/-6.58      | -10.12/-7.74     | -2.78/-3.34       | -4.34/-4.76      | -8.15/-5.87      | -6.92/-3.72      | -5.01/-3.08      | -5.01/-4.59      | -3.26/-1.69      | -2.69/-3.24      | -2.67/-3.70      | -4.87/-6.39      |
| Θ(112.5°) | -4.68/-5.74   | -4.02/-3.32    | -2.24/-2.82    | -3.37/-4.15    | -4.49/-4.62    | -3.90/-2.64    | -5.47/-6.53    | -4.59/-5.68      | -6.09/-9.97      | -10.60/-5.31     | -6.50/-12.47     | -8.63/-6.38      | -4.02/-2.12      | -4.39/-5.94      | -4.73/-7.34       | -1.06/-1.44      | -1.86/-5.15      | -1.41/-3.60      | -1.86/-5.15      | -7.28/-5.89      |                  |                  |                  |                  |
| Θ(120°)   | -5.21/-4.33   | -5.65/-3.34    | -3.63/-3.67    | -5.07/-6.06    | -5.44/-4.23    | -3.78/-3.28    | -4.25/-5.58    | -9.48/-6.54      | -4.44/-5.57      | -8.86/-10.10     | -7.06/-5.21      | -4.62/-7.16      | -8.97/-12.51     | -10.22/-7.99     | -6.18/-7.38       | -4.47/-5.58      | -5.81/-6.81      | -8.76/-4.82      | -4.62/-5.17      | -9.05/-9.36      | -7.25/-3.17      | -3.71/-6.71      | -2.87/-7.44      | -6.76/-5.90      |
| Θ(127.5°) | -4.82/-6.00   | -6.29/-5.39    | -4.91/-4.10    | -4.63/-5.90    | -6.00/-4.84    | -2.89/-2.68    | -3.96/-6.81    | -8.49/-6.54      | -8.72/-8.33      | -8.61/-9.80      | -8.60/-9.92      | -6.52/-5.62      | -9.87/-8.62      | -13.00/-7.09     | -5.06/-6.55       | -7.44/-14.72     | -5.32/-11.63     | -13.94/-5.58     | -4.66/-6.54      | -7.57/-9.15      | -12.07/-4.74     | -3.45/-5.65      | -3.38/-6.03      | -4.64/-7.13      |
| Θ(135°)   | -7.36/-9.14   | -8.21/-7.08    | -4.36/-4.48    | -5.07/-5.84    | -6.96/-6.39    | -5.42/-5.05    | -5.55/-6.82    | -8.09/-11.83     | -11.93/-7.26     | -5.85/-8.14      | -9.29/-12.50     | -9.78/-7.78      | -11.70/-9.31     | -7.62/-14.22     | -6.72/-8.57       | -10.20/-11.42    | -10.80/-7.46     | -10.16/-7.74     | -10.82/-14.75    | -7.01/-8.78      | -7.17/-6.56      | -5.13/-8.48      | -6.49/-6.69      |                  |
| Θ(142.5°) | -6.41/-7.32   | -6.91/-7.36    | -7.10/-6.92    | -7.44/-7.45    | -6.21/-5.46    | -5.60/-5.81    | -6.39/-7.31    | -7.52/-8.46      | -10.37/-7.80     | -8.64/-9.10      | -8.21/-8.61      | -7.73/-8.09      | -9.00/-12.97     | -6.68/-7.19      | -7.73/-8.27       | -9.56/-9.54      | -13.01/-9.03     | -7.12/-7.18      | -13.85/-10.03    | -10.87/-11.17    | -9.66/-10.05     | -12.06/-7.75     | -7.07/-11.54     | -9.74/-7.89      |
| Θ(150°)   | -8.36/-8.75   | -7.38/-1.76    | -7.34/-7.02    | -7.35/-8.44    | -7.92/-6.24    | -5.57/-0.33    | -4.85/-6.83    | -8.86/-11.41     | -8.12/-2.70      | -10.83/-9.71     | -6.72/-6.38      | -9.51/-10.86     | -9.60/-14.75     | -12.86/-10.37    | -10.38/-13.70     | -14.14/-15.61    | -15.51/-14.49    | -14.24/-14.92    | -11.23/-9.31     | -13.13/-13.89    | -10.61/-10.66    | -12.65/-16.00    | -10.91/-8.29     | -7.07/-7.13      |
| Θ(157.5°) | -12.66/-12.93 | -13.78/-12.84  | -11.60/-10.62  | -8.57/-7.14    | -6.95/-7.66    | -7.44/-7.69    | -8.01/-7.31    | -7.20/-7.46      | -7.40/-7.45      | -8.37/-7.73      | -12.12/-15.28    | -12.64/-12.35    | -13.51/-14.19    | -13.59/-12.70    | -11.02/-9.72      | -9.37/-10.89     | -12.59/-9.75     | -7.35/-7.07      | -10.08/-12.41    | -9.81/-10.13     | -11.12/-12.69    | -14.84/-13.94    | -12.73/-12.19    |                  |
| Θ(165°)   | -8.23/-7.09   | -8.58/-12.10   | -13.20/-10.61  | -9.35/-10.17   | -9.95/-8.02    | -7.17/-6.95    | -6.60/-6.31    | -6.17/-6.55      | -8.21/-11.44     | -15.56/-15.53    | -15.51/-14.02    | -11.63/-13.45    | -11.05/-10.11    | -10.96/-12.52    | -13.75/-11.90     | -11.02/-12.30    | -15.03/-12.26    | -10.89/-8.65     | -8.86/-10.31     | -12.49/-12.00    | -11.87/-11.63    | -9.98/-9.27      | -9.41/-10.67     | -10.61/-9.38     |
| Θ(172.5°) | -12.69/-12.86 | -11.62/-11.54  | -10.32/-9.39   | -9.14/-9.55    | -9.00/-8.00    | -8.16/-8.54    | -7.59/-6.54    | -6.34/-7.27      | -8.95/-10.91     | -12.63/-14.14    | -13.97/-12.65    | -12.28/-13.38    | -13.95/-13.91    | -14.24/-14.61    | -13.04            |                  |                  |                  |                  |                  |                  |                  |                  |                  |



# Antenna Pattern of 2.4GHz/5GHz/6GHz

# Appendix C

|           |               |                 |                 |                 |                 |                 |                 |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |
|-----------|---------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| Θ(165°)   | -12.00/-12.75 | -11.35/-10.74   | -10.30/-10.32   | -9.79/-9.25     | -9.80/-12.04    | -12.08/-9.48    | -7.16/-6.73     | -7.57/-8.12       | -7.70/-6.94       | -7.02/-8.13       | -12.36/-14.36     | -10.09/-9.99      | -13.88/-12.82     | -10.02/-8.75      | -8.65/-10.66      | -14.10/-13.71     | -14.67/-14.69     | -11.69/-11.11     | -13.14/-15.12     | -13.88/-9.81      | -8.42/-9.99       | -12.41/-11.20     | -10.35/-10.30     | -9.89/-10.33      |
| Θ(172.5°) | -9.56/-9.92   | -10.12/-9.69    | -10.62/-10.44   | -9.22/-8.63     | -8.55/-8.02     | -7.81/-8.49     | -8.78/-8.86     | -9.12/-10.02      | -10.83/-11.93     | -13.05/-13.68     | -14.15/-14.53     | -14.85/-15.53     | -14.84/-15.34     | -14.92/-13.40     | -13.28/-13.07     | -11.19/-10.09     | -9.90/-11.31      | -13.55/-14.69     | -14.66/-14.62     | -13.15/-11.13     | -10.40/-11.07     | -10.98/-10.36     | -9.71/-9.74       | -9.71/-9.49       |
| Θ(180°)   | -13.39/-13.05 | -11.92/-10.58   | -9.46/-9.74     | -10.20/-10.43   | -11.35/-12.70   | -12.09/-11.16   | -11.06/-10.97   | -11.07/-10.52     | -9.74/-9.76       | -10.70/-11.10     | -11.20/-11.02     | -11.91/-12.87     | -12.59/-11.48     | -9.91/-8.79       | -8.64/-8.93       | -9.09/-9.48       | -10.66/-11.43     | -11.67/-11.49     | -10.50/-9.75      | -9.99/-9.56       | -10.01/-11.17     | -12.69/-12.64     | -12.92/-11.56     | -11.33/-12.58     |
| Freq(Hz)  | 6.475GPol.    | 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°)     | -7.47/-7.30   | -8.56/-8.93     | -8.67/-8.38     | -9.04/-9.06     | -8.50/-7.92     | -6.92/-6.41     | -6.32/-6.79     | -7.97/-8.52       | -8.44/-8.37       | -8.37/-8.18       | -7.58/-6.89       | -6.35/-6.23       | -6.31/-6.14       | -5.89/-6.56       | -6.88/-5.99       | -5.43/-6.42       | -6.57/-5.46       | -4.68/-4.78       | -5.02/-5.33       | -5.68/-5.92       | -5.89/-6.24       | -6.41/-6.49       | -7.48/-8.26       | -8.44/-7.95       |
| Θ(7.5°)   | -3.86/-3.86   | -3.48/-2.55     | -2.23/-2.48     | -2.39/-1.99     | -2.12/-2.65     | -3.03/-2.89     | -3.51/-4.40     | -6.03/-8.00       | -8.98/-10.09      | -11.15/-12.08     | -13.40/-12.18     | -10.79/-10.42     | -11.01/-11.92     | -11.77/-10.15     | -8.77/-8.81       | -9.37/-9.19       | -7.22/-5.99       | -4.91/-4.62       | -3.82/-3.35       | -3.80/-3.99       | -3.70/-3.85       | -4.01/-4.13       | -4.22/-4.31       | -4.33/-3.88       |
| Θ(15°)    | -1.66/-1.05   | -0.20/-0.43     | 0.71/0.93       | 0.97/0.68       | 0.54/0.45       | 0.32/-0.34      | -0.83/-1.60     | -2.87/-4.78       | -6.56/-8.05       | -10.55/-14.68     | -15.62/-15.40     | -14.83/-14.11     | -12.72/-11.70     | -10.84/-9.71      | -8.49/-7.37       | -6.47/-6.73       | -7.31/-6.99       | -6.18/-6.08       | -5.58/-4.41       | -3.92/-3.61       | -3.71/-3.97       | -4.33/-5.00       | -5.01/-4.22       | -3.21/-2.22       |
| Θ(22.5°)  | 0.89/0.94     | 0.73/0.52       | 0.49/0.66       | 0.65/0.46       | 0.78/1.21       | 1.02/0.15       | -0.20/0.10      | 0.26/-0.59        | -1.67/-2.29       | -3.36/-5.60       | -8.83/-9.78       | -8.12/-8.12       | -8.21/-7.49       | -5.86/-4.02       | -3.07/-3.24       | -4.04/-4.71       | -5.77/-6.86       | -7.39/-8.81       | -8.00/-5.35       | -3.87/-2.94       | -2.87/-3.27       | -3.45/-3.85       | -3.08/-1.47       | -0.02/0.76        |
| Θ(30°)    | 0.59/0.76     | 0.82/0.65       | 0.85/1.75       | 1.88/1.56       | 1.822/2.78      | 2.872/1.11      | 1.36/1.31       | 1.72/1.15         | 0.09/0.18         | 0.42/-0.66        | -3.64/-5.91       | -5.37/-7.93       | -8.86/-5.51       | -2.99/-2.93       | -3.92/-4.05       | -4.17/-5.26       | -5.78/-6.16       | -5.69/-5.25       | -5.19/-3.52       | -2.51/-1.18       | -0.63/-1.31       | -1.25/-1.02       | -0.34/-0.06       | 0.33/0.78         |
| Θ(37.5°)  | 1.62/1.77     | 2.072/0.00      | 1.972/4.11      | 2.832/4.46      | 2.072/3.30      | 2.813/3.36      | 3.472/6.34      | 1.842/0.99        | 1.65/0.99         | 1.722/-1.11       | -0.01/-2.11       | -2.41/-3.03       | -2.42/-4.07       | -0.45/-1.80       | -2.23/-3.88       | -5.82/-6.29       | -5.38/-4.70       | -4.74/-5.14       | -5.16/-6.52       | -4.27/-1.04       | 1.342/6.66        | 2.64/1.12         | 1.21/1.34         | 1.77/1.85         |
| Θ(45°)    | 2.00/1.84     | 2.132/0.04      | 2.10/1.93       | 2.442/4.11      | 1.54/1.18       | 2.492/9.00      | 3.093/5.88      | 3.233/4.40        | 2.912/1.6         | 1.582/6.5         | 2.130/1.2         | -0.94/-1.11       | -0.00/0.85        | 0.34/0.57         | -0.66/-1.83       | -2.58/-4.09       | -3.47/-3.38       | -4.38/-4.72       | -2.74/-2.02       | -2.91/-1.09       | 1.272/7.5         | 3.68/1.83         | 1.982/0.3         | 2.36/1.89         |
| Θ(52.5°)  | 0.70/-0.09    | 0.60/1.51       | 2.002/2.29      | 2.11/1.96       | 1.360/0.94      | 1.81/1.96       | 2.233/0.08      | 3.002/6.33        | 3.673/6.64        | 2.022/2.27        | 2.560/8.3         | -1.23/-1.31       | -0.31/-0.57       | -0.52/0.24        | 0.49/0.22         | -1.02/-0.64       | 0.33/-0.90        | -1.35/-2.08       | -1.00/-0.00       | -0.160/59         | 0.842/3.1         | 2.44/1.57         | 2.16/1.21         | 1.07/0.74         |
| Θ(60°)    | 0.01/-0.71    | 0.50/0.80       | 0.88/1.37       | 1.812/1.10      | 1.370/0.56      | 1.05/1.42       | 0.70/1.31       | 2.632/2.22        | 2.184/1.10        | 2.46/1.69         | 3.01/1.64         | -0.27/0.82        | 0.59/-1.52        | -1.60/-4.06       | 1.50/1.20         | 0.09/-1.69        | 0.33/0.01         | -0.52/-1.72       | -1.30/0.27        | 0.85/1.35         | 0.02/1.84         | 0.81/0.73         | 1.36/-0.93        | -0.55/0.13        |
| Θ(67.5°)  | -0.82/-0.08   | 0.48/0.46       | -0.44/-0.36     | 0.94/0.90       | 0.68/-0.43      | -0.20/1.15      | 1.00/-0.19      | 0.45/1.70         | 1.383/8.37        | 1.83/1.12         | 3.07/1.85         | 0.272/3.1         | 1.51/-1.32        | -2.50/-0.65       | 0.81/0.90         | 0.41/-0.63        | 1.21/0.70         | -0.02/-1.16       | -0.51/-0.32       | 1.81/1.60         | -1.65/0.80        | -2.09/0.02        | 0.75/-2.55        | 0.91/0.50         |
| Θ(75°)    | -2.73/-0.28   | 0.54/-0.88      | -2.27/-2.23     | -0.53/0.10      | -0.54/-1.78     | -0.13/0.71      | -0.18/-1.40     | -0.66/-0.19       | -0.122/3.3        | 2.26/0.22         | 2.12/1.80         | 0.78/1.75         | 0.81/-1.51        | -2.51/-1.87       | 0.13/-1.18        | -0.15/1.56        | 1.70/1.11         | 1.13/0.64         | 0.81/0.97         | 2.39/1.13         | -2.62/-0.68       | -2.25/-0.12       | 0.09/-3.47        | 0.66/-0.44        |
| Θ(82.5°)  | -3.78/-0.94   | 0.10/-2.04      | -3.59/-3.80     | -2.02/-0.51     | -1.88/-2.26     | -0.75/-0.61     | -1.53/-3.50     | -2.69/-0.50       | -0.91/0.18        | 1.04/-0.88        | 0.80/0.96         | 0.53/1.67         | 0.10/-3.33        | -5.45/-3.13       | -1.88/-4.92       | 0.393/0.00        | 1.82/0.90         | 1.36/1.69         | 1.45/1.15         | 2.57/0.72         | -4.21/-1.97       | -3.20/-0.91       | -0.81/-3.28       | 0.39/-0.96        |
| Θ(90°)    | -4.83/-1.64   | -1.08/-2.48     | -4.41/-4.86     | -2.68/-0.92     | -2.92/-3.16     | -2.14/-2.27     | -1.68/-3.88     | -5.26/-0.86       | -3.81/-2.11       | 0.55/-2.13        | -1.76/-0.23       | -3.98/-8.00       | -1.22/-3.38       | -6.45/-5.72       | -3.98/-8.00       | -0.692/28         | 1.51/-0.08        | -0.24/0.91        | 0.33/-0.79        | 1.28/-0.64        | -6.01/-4.13       | -3.37/-1.96       | -1.06/-3.64       | -0.60/-1.89       |
| Θ(97.5°)  | -5.27/-2.75   | -2.33/-2.97     | -5.27/-5.87     | -4.11/-1.78     | -3.72/-4.38     | -3.54/-2.65     | -2.51/-5.28     | -6.31/-1.50       | -5.63/-3.91       | -0.71/-3.86       | -3.60/-1.64       | -2.14/-2.28       | -3.63/-4.19       | -8.92/-7.31       | -5.85/-7.65       | -2.47/-1.18       | -1.17/-2.88       | -2.79/-1.88       | -3.01/-4.22       | -1.80/-3.98       | -8.55/-5.09       | -4.26/-3.05       | -3.00/-4.14       | -1.55/-2.87       |
| Θ(105°)   | -6.51/-3.94   | -3.15/-3.83     | -6.01/-6.95     | -4.48/-3.32     | -4.97/-5.15     | -3.62/-3.25     | -4.89/-2.02     | -7.02/-0.59       | -7.22/-4.81       | -2.24/-5.14       | -6.39/-2.98       | -3.99/-4.12       | -4.48/-4.42       | -8.59/-11.07      | -8.32/-7.47       | -5.25/-8.20       | -8.09/-8.87       | -7.95/-8.71       | -5.77/-9.38       | -6.39/-7.66       | -8.64/-4.87       | -5.03/-2.88       | -5.09/-6.26       | -2.84/-4.57       |
| Θ(112.5°) | -7.26/-4.56   | -4.64/-4.56     | -5.68/-6.57     | -4.38/-4.28     | -5.10/-7.14     | -5.28/-3.74     | -3.96/-4.50     | -9.34/-7.72       | -6.03/-5.56       | -5.88/-4.94       | -6.48/-4.79       | -7.14/-6.22       | -8.59/-12.44      | -13.59/-13.90     | -5.72/-4.38       | -8.83/-10.78      | -6.06/-7.60       | -6.81/-9.96       | -7.34/-9.09       | -9.31/-5.79       | -7.71/-3.30       | -6.94/-5.81       | -2.55/-6.32       |                   |
| Θ(120°)   | -5.83/-5.85   | -5.14/-5.75     | -7.32/-7.28     | -5.46/-5.25     | -7.25/-6.89     | -6.21/-6.05     | -4.19/-4.65     | -11.43/-6.45      | -9.00/-8.98       | -7.58/-7.62       | -8.54/-9.82       | -8.94/-7.08       | -10.41/-12.19     | -8.67/-12.81      | -10.72/-12.46     | -7.83/-4.88       | -6.74/-8.28       | -5.77/-4.54       | -8.56/-5.29       | -8.21/-12.30      | -7.74/-4.61       | -8.98/-4.53       | -8.04/-5.43       | -4.49/-5.94       |
| Θ(127.5°) | -6.26/-6.68   | -5.62/-7.38     | -8.13/-7.37     | -7.22/-6.40     | -6.57/-6.40     | -6.69/-5.25     | -6.24/-7.81     | -10.31/-9.01      | -12.31/-9.45      | -10.30/-14.31     | -8.36/-8.14       | -12.30/-8.04      | -7.45/-11.90      | -14.40/-9.61      | -11.73/-14.88     | -13.06/-12.66     | -14.31/-16.22     | -11.92/-10.88     | -14.68/-11.97     | -9.12/-15.51      | -9.70/-11.61      | -13.84/-14.31     | -13.80/-11.73     | -10.57/-10.59     |
| Θ(135°)   | -11.43/-7.78  | -6.42/-6.96     | -7.07/-7.90     | -7.34/-6.51     | -6.37/-5.70     | -6.65/-5.85     | -5.23/-7.11     | -9.35/-10.31      | -11.04/-11.48     | -11.03/-8.91      | -12.10/-8.03      | -13.35/-8.49      | -7.70/-10.99      | -9.83/-10.34      | -11.96/-10.76     | -4.69/-14.22      | -14.21/-12.34     | -14.23/-12.44     | -9.93/-8.76       | -9.76/-11.28      | -8.77/-8.14       | -10.91/-14.18     | -12.22/-11.63     | -9.62/-10.48      |
| Θ(142.5°) | -9.59/-8.79   | -7.39/-7.70     | -7.74/-8.77     | -9.41/-9.81     | -9.70/-9.58     | -7.47/-6.08     | -5.55/-6.71     | -8.46/-12.19      | -9.14/-14.02      | -10.97/-9.67      | -10.03/-7.50      | -8.01/-8.69       | -6.64/-9.56       | -11.47/-7.57      | -11.78/-11.52     | -15.08/-12.66     | -10.12/-8.41      | -9.38/-14.17      | -13.35/-10.40     | -9.76/-10.99      | -14.20/-11.12     | -8.33/-9.73       | -7.90/-6.30       | -6.95/-8.76       |
| Θ(150°)   | -12.14/-9.89  | -9.12/-7.33     | -7.06/-7.40     | -8.27/-9.45     | -8.71/-7.76     | -8.24/-9.41     | -8.69/-9.23     | -10.82/-8.69      | -10.30/-14.31     | -8.36/-8.14       | -12.30/-8.04      | -7.45/-11.90      | -14.40/-9.61      | -11.73/-14.88     | -13.06/-12.66     | -14.31/-16.22     | -11.92/-10.88     | -14.68/-11.97     | -9.12/-15.51      | -9.70/-11.61      | -13.84/-14.31     | -13.80/-11.73     | -10.57/-10.59     |                   |
| Θ(157.5°) | -13.08/-12.74 | -9.32/-7.72     | -7.55/-8.34     | -9.19/-10.07    | -10.02/-8.49    | -7.47/-8.00     | -7.52/-6.90     | -7.08/-9.11       | -12.45/-9.47      | -6.55/-7.73       | -9.22/-12.16      | -8.93/-10.04      | -15.42/-9.64      | -13.74/-14.22     | -15.17/-14.57     | -14.21/-12.34     | -14.23/-12.44     | -9.93/-8.76       | -9.76/-11.28      | -8.77/-8.14       | -10.91/-14.18     | -12.22/-11.63     | -9.62/-10.48      | -12.31/-12.72     |
| Θ(165°)   | -14.88/-14.63 | -14.26/-15.81   | -13.90/-9.58    | -8.08/-7.72     | -7.75/-8.89     | -11.30/-11.18   | -7.92/-6.88     | -5.92/-8.18       | -10.54/-10.55     | -9.58/-9.24       | -11.14/-15.96     | -15.65/-11.54     | -11.54/-13.12     | -13.96/-13.39     | -11.83/-11.94     | -13.52/-12.59     | -13.60/-12.58     | -13.10/-15.22     | -15.09/-11.71     | -8.91/-9.82       | -11.58/-11.20     | -10.10/-11.48     | -11.94/-11.00     | -12.08/-15.90     |
| Θ(172.5°) | -11.98/-12.13 | -11.79/-11.28   | -10.61/-11.86   | -12.05/-11.70   | -11.09/-10.53   | -10.63/-10.45   | -9.59/-10.24    | -11.87/-12.32     | -12.00/-11.84     | -10.87/-11.26     | -12.59/-14.81     | -15.61/-15.91     | -15.55/-15.71     | -15.54/-13.74     | -11.70/-11.50     | -11.32/-10.24     | -11.28/-13.15     | -13.40/-11.65     | -11.29/-10.57     | -10.42/-11.36     | -10.92/-10.16     | -10.33/-10.94     | -12.39/-13.45     | -12.38/-12.01     |
| Θ(180°)   | -14.34/-13.39 | -12.59/-13.18   | -13.45/-14.28   | -14.20/-13.04   | -12.63/-12.89   | -12.54/-12.44   | -12.91/-12.92   | -13.24/-11.98     | -11.20/-10.07     | -9.39/-9.56       | -11.18/-13.76     | -14.57/-15.50     | -15.29/-13.50     | -13.39/-13.21     | -13.33/-12.71     | -13.02/-13.10     | -13.76/-14.08     | -13.21/-13.53     | -13.37/-12.94     | -12.69/-13.76     | -14.98/-14.72     | -15.36/-14.98     | -15.24/-14.88     | -15.65/-14.53     |
| Freq(Hz)  | 6.695GPol.    | 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°)     | -5.24/-5.01   | -4.53/-5.17     | -5.63/-5.17     | -5.31/-6.47     | -6.65/-6.13     | -5.45/-5.65     | -6.07/-6.46     | -6.58/-6.50       | -5.97/-6.40       | -6.00/-6.89       | -5.97/-6.40       | -5.37/-5.58       | -4.84/-5.09       | -5.74/-5.44       | -4.49/-3.90       | -4.56/-5.17       | -5.00/-4.73       | -4.85/-4.54       | -3.82/-3.80       | -3.99/-4.61       | -4.85/-4.54       | -4.82/-5.13       | -4.82/-4.70       | -4.91/-5.13       |
| Θ(7.5°)   | -3.18/-3.01   | -2.63/-1.76     | -1.11/-1.10     | -1.31/-1.25     | -1.04/-1.25     | -1.79/-2.16     | -2.35/-3.09     | -3.95/-4.70       | -5.13/-5.36       | -5.75/-6.52       | -6.92/-7.77       | -7.72/-7.20       | -7.40/-8.10       | -8.24/-7.42       | -6.70/-6.46       | -6.74/-6.72       | -6.20/-6.06       | -6.18/-5.52       | -5.00/-4.75       | -4.77/-4.93       | -5.07/-5.23       | -6.07/-6.04       | -5.40/-5.11       | -4.57/-3.87       |
| Θ(15°)    | -1.55/-0.82   | -0.12/0.20      | 0.44/0.40       | 0.27/0.29       | 0.37/0.39       | 0.34/0.30       |                 |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |

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

