

# Regulatory WLAN Antenna Information

English Language Required for Intel Regulatory Review / Approval

(OEM/ODM or antenna vendor is required to complete this document with platform antenna information.

Remove Intel references and make this your own document)

| Platform information                                                                                                                                                           |                             |                            |                        |                        |                                       |                                                              |                        |                               |                                                  |                         |                                                                                            |      |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|----------------------------|------------------------|------------------------|---------------------------------------|--------------------------------------------------------------|------------------------|-------------------------------|--------------------------------------------------|-------------------------|--------------------------------------------------------------------------------------------|------|
| Brand                                                                                                                                                                          | ODM                         | ****End product model name |                        |                        | Intel platform<br>(ex: Yes, No or NA) | Platform type<br>(ex: regular NB, convertible PC, AIO...etc) |                        |                               | *SAR minimum separation (mm)                     |                         |                                                                                            |      |
| DELL                                                                                                                                                                           | Compal                      | P122F                      |                        |                        | Yes                                   | Regular NB                                                   |                        |                               | 17.35 mm<br>(w/ Bumper)<br>15 mm<br>(w/o Bumper) |                         |                                                                                            |      |
| *****Please fill in exact product model name and make sure the model name is visible on product cover or any parts for end users recognize for authority inspection.           |                             |                            |                        |                        |                                       |                                                              |                        |                               |                                                  |                         |                                                                                            |      |
| Antenna information                                                                                                                                                            |                             |                            |                        |                        |                                       |                                                              |                        |                               |                                                  |                         |                                                                                            |      |
| Vendor                                                                                                                                                                         |                             | Type                       |                        |                        | Antenna Part number (Main)            |                                                              |                        | Antenna Part number (Aux)     |                                                  |                         |                                                                                            |      |
| ADVANCED WIRELESS & ANTENNA INC                                                                                                                                                |                             | PIFA                       |                        |                        | AYP6Y-100353<br>(DC33002RD0L)         |                                                              |                        | AYP6Y-100354<br>(DC33002RD1L) |                                                  |                         |                                                                                            |      |
| Peak gain w/ cable loss (dBi)*                                                                                                                                                 |                             |                            |                        |                        |                                       |                                                              |                        |                               |                                                  |                         |                                                                                            |      |
|                                                                                                                                                                                | 2.4GHz<br>2400-2483.5 MHz   | 5.2GHz<br>5150-5250MHz     | 5.3GHz<br>5250-5350MHz | 5.6GHz<br>5470-5725MHz | 5.8GHz<br>5725-5850MHz                | 5.9GHz<br>5850-5895MHz                                       | 6.2GHz<br>5925-6425MHz | 6.5GHz<br>6425-6525MHz        | 6.7GHz<br>6525-6875MHz                           | 7.0 GHz<br>6875-7125MHz |                                                                                            |      |
| Main                                                                                                                                                                           | 2.93                        | 2.88                       | 2.93                   | 2.97                   | 2.97                                  | 2.92                                                         | 3.05                   | 1.21                          | 2.95                                             | 2.44                    |                                                                                            |      |
| Aux                                                                                                                                                                            | 2.98                        | 2.00                       | 2.03                   | 2.48                   | 2.48                                  | 2.16                                                         | 1.88                   | 0.96                          | 1.23                                             | 1.87                    |                                                                                            |      |
| Intel Reference Gain/Type/ Separation distance                                                                                                                                 |                             |                            |                        |                        |                                       |                                                              |                        |                               |                                                  |                         |                                                                                            |      |
| Antenna Type                                                                                                                                                                   | Antenna Peak gain (In dBi)* |                            |                        |                        |                                       |                                                              |                        |                               |                                                  |                         | Distance to the end user (mm)                                                              |      |
|                                                                                                                                                                                | 2.4GHz<br>2400-2483.5 MHz   | 5.2GHz<br>5150-5250MHz     | 5.3GHz<br>5250-5350MHz | 5.6GHz<br>5470-5725MHz | 5.8GHz<br>5725-5850MHz                | 5.9GHz<br>5850-5895MHz                                       | 6.2GHz<br>5925-6425MHz | 6.5GHz<br>6425-6525MHz        | 6.7GHz<br>6525-6875MHz                           | 7.0GHz<br>6875-7125MHz  | Generic: refer to modular FCC SAR report<br><br>Mid-power: ≥ 8 mm<br><br>Low power: ≥ 5 mm |      |
|                                                                                                                                                                                | Design                      | 3.00                       | 5.00                   | 5.00                   | 5.00                                  | 5.00                                                         | 5.00                   | 5.00                          | 5.00                                             | 5.00                    |                                                                                            |      |
|                                                                                                                                                                                | PIFA                        | 3.24                       | 3.64                   | 3.73                   | 4.77                                  | 4.97                                                         | 4.72                   | 4.83                          | 4.30                                             | 5.37                    |                                                                                            | 5.59 |
|                                                                                                                                                                                | Dipole                      | 2.89                       | 2.92                   | 3.19                   | 4.41                                  | 4.22                                                         | 4.22                   | 4.83                          | 4.30                                             | 4.49                    |                                                                                            | 5.34 |
| Notes (marked with *)                                                                                                                                                          |                             |                            |                        |                        |                                       |                                                              |                        |                               |                                                  |                         |                                                                                            |      |
| * SAR minimum separation (mm)                                                                                                                                                  |                             |                            |                        |                        |                                       |                                                              |                        |                               |                                                  |                         |                                                                                            |      |
| - Regular NB: Minimum antenna-to-body (from antenna bottom to the bottom of the device)                                                                                        |                             |                            |                        |                        |                                       |                                                              |                        |                               |                                                  |                         |                                                                                            |      |
| - Tablet / Convertible PC: Minimum antenna-to-edge (5 sides of the device)                                                                                                     |                             |                            |                        |                        |                                       |                                                              |                        |                               |                                                  |                         |                                                                                            |      |
| - Mini-tablet: Minimum antenna-to-edge (6 sides of the device)                                                                                                                 |                             |                            |                        |                        |                                       |                                                              |                        |                               |                                                  |                         |                                                                                            |      |
| * 3D Peak Antenna gain should be equal or greater than -2 dBi                                                                                                                  |                             |                            |                        |                        |                                       |                                                              |                        |                               |                                                  |                         |                                                                                            |      |
| - If a host integrator plans to use a lower gain antenna of the same type, additional CBP(FCC)/EDT(EU) testing need to be performed while the module is installed in the host. |                             |                            |                        |                        |                                       |                                                              |                        |                               |                                                  |                         |                                                                                            |      |

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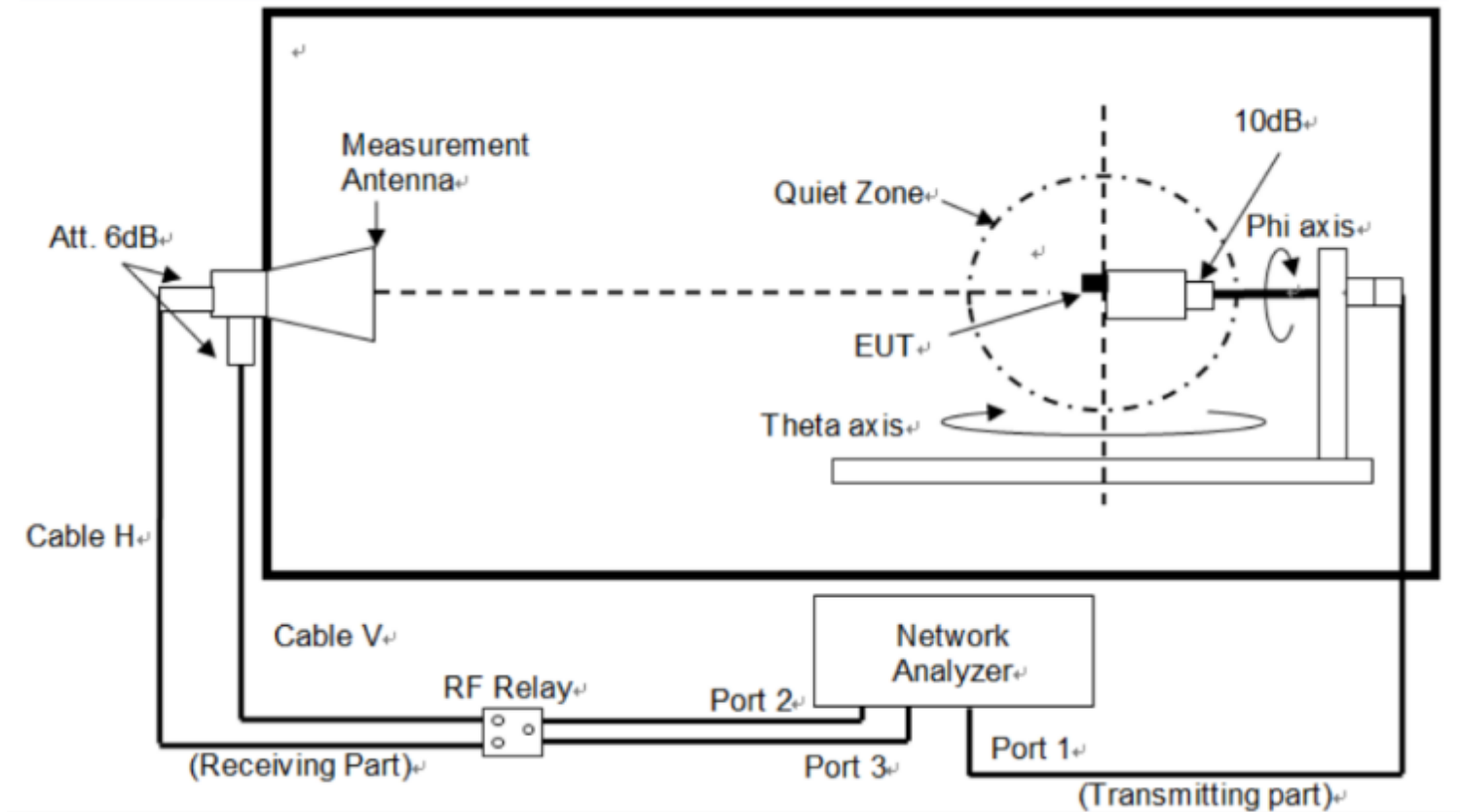
[Section 6. Diagram Example of Co-Location Antenna Separation](#)

## 1. Applicable test methods

This test report is prepared for host antenna testing under a Full Anechoic Chamber.

## 2. Test & System Description

### a. Test setup



## b. Equipment list

| OTA03-HY                                                    |                       |            |               |             |           |
|-------------------------------------------------------------|-----------------------|------------|---------------|-------------|-----------|
| Name                                                        | Manufacturer          | Type/Model | Serial Number | Calibration |           |
|                                                             |                       |            |               | Last Cal.   | Due Date  |
| Anechoic chamber                                            | ETS-Lindgren          | AMS-8500   | N/A           | 2022/1/6    | 2023/1/5  |
| ENA Series Network Analyzer                                 | Keysight              | E5080B     | MY59101211    | 2022/5/23   | 2023/5/22 |
| RF Switch                                                   | Keysight              | 3499A      | N/A           | N/A         | N/A       |
| Multi-Axis Positioner Controller                            | ETS-Lindgren          | 2090       | N/A           | N/A         | N/A       |
| Medium-Duty Positioner                                      | ETS-Lindgren          | 2015       | N/A           | N/A         | N/A       |
| Measurement Horn Antenna                                    | EMCO                  | Aug-64     | 86722         | 2022/1/6    | 2023/1/6  |
| 12GHz SMA(M)-SMA(M)+20core for 60cm RG316DS Cable Assembly  | Woken Technology Inc. | RG316DS    | N/A           | 2022/1/6    | 2023/1/6  |
| 12GHz SMA(M)-SMA(M)+30core for 300cm RG316DS Cable Assembly | Woken Technology Inc. | RG316DS    | N/A           | 2022/1/6    | 2023/1/6  |

# Antenna Information

## Section 1. Antenna Assembly Specifications

| 1A                                            | 1B                              | 1C           | 1D                                                                                                                                             |                | 1E                              | 1F                             | 1G       | 1H              |
|-----------------------------------------------|---------------------------------|--------------|------------------------------------------------------------------------------------------------------------------------------------------------|----------------|---------------------------------|--------------------------------|----------|-----------------|
| Antenna Part Number                           | Manufacturer                    | Antenna Type | Cable Assembly Part Number and Information                                                                                                     | Freq Range MHz | * Peak Gain W/ Cable loss (dBi) | Peak Gain w/o Cable Loss (dBi) | Max VSWR | Cable Loss (dB) |
| Main Antenna<br>AYP6Y-100353<br>(DC33002RD0L) | ADVANCED WIRELESS & ANTENNA INC | PIFA         | 1)Shen-Yu/KAIBO<br>2)50ohmCoaxial<br>3)length:130 mm<br>4)diameter: 1.13mm<br>5)Connector P/N:<br>I-pex:20565-001R-13<br>KangShuo:MHF-B13-N-01 | 2400-2483.5    | 2.93                            | 3.23                           | 3.0      | 0.30            |
|                                               |                                 |              |                                                                                                                                                | 5150-5250      | 2.88                            | 3.33                           | 3.0      | 0.45            |
|                                               |                                 |              |                                                                                                                                                | 5250-5350      | 2.93                            | 3.38                           | 3.0      | 0.45            |
|                                               |                                 |              |                                                                                                                                                | 5470-5725      | 2.97                            | 3.45                           | 3.0      | 0.48            |
|                                               |                                 |              |                                                                                                                                                | 5725-5850      | 2.97                            | 3.46                           | 3.0      | 0.49            |
|                                               |                                 |              |                                                                                                                                                | 5850-5895      | 2.92                            | 3.41                           | 3.0      | 0.49            |
|                                               |                                 |              |                                                                                                                                                | 5925-6425      | 3.05                            | 3.56                           | 3.0      | 0.51            |
|                                               |                                 |              |                                                                                                                                                | 6425-6525      | 1.21                            | 1.72                           | 3.0      | 0.51            |
|                                               |                                 |              |                                                                                                                                                | 6525-6875      | 2.95                            | 3.49                           | 3.0      | 0.54            |
|                                               |                                 |              |                                                                                                                                                | 6875-7125      | 2.44                            | 2.99                           | 4.0      | 0.55            |
| Aux Antenna<br>AYP6Y-100354<br>(DC33002RD1L)  | ADVANCED WIRELESS & ANTENNA INC | PIFA         | 1)Shen-Yu/KAIBO<br>2)50ohmCoaxial<br>3)length:478 mm<br>4)diameter: 1.13mm<br>5)Connector P/N:<br>I-pex:20565-001R-13<br>KangShuo:MHF-B13-N-01 | 2400-2483.5    | 2.98                            | 4.07                           | 3.0      | 1.09            |
|                                               |                                 |              |                                                                                                                                                | 5150-5250      | 2.00                            | 3.66                           | 3.0      | 1.66            |
|                                               |                                 |              |                                                                                                                                                | 5250-5350      | 2.03                            | 3.70                           | 3.0      | 1.67            |
|                                               |                                 |              |                                                                                                                                                | 5470-5725      | 2.48                            | 4.28                           | 3.0      | 1.80            |
|                                               |                                 |              |                                                                                                                                                | 5725-5850      | 2.48                            | 4.30                           | 3.0      | 1.82            |
|                                               |                                 |              |                                                                                                                                                | 5850-5895      | 2.16                            | 4.03                           | 3.0      | 1.87            |
|                                               |                                 |              |                                                                                                                                                | 5925-6425      | 1.88                            | 3.76                           | 3.0      | 1.88            |
|                                               |                                 |              |                                                                                                                                                | 6425-6525      | 0.96                            | 2.85                           | 3.0      | 1.89            |
|                                               |                                 |              |                                                                                                                                                | 6525-6875      | 1.23                            | 3.21                           | 3.0      | 1.98            |
|                                               |                                 |              |                                                                                                                                                | 6875-7125      | 1.87                            | 3.88                           | 3.0      | 2.01            |

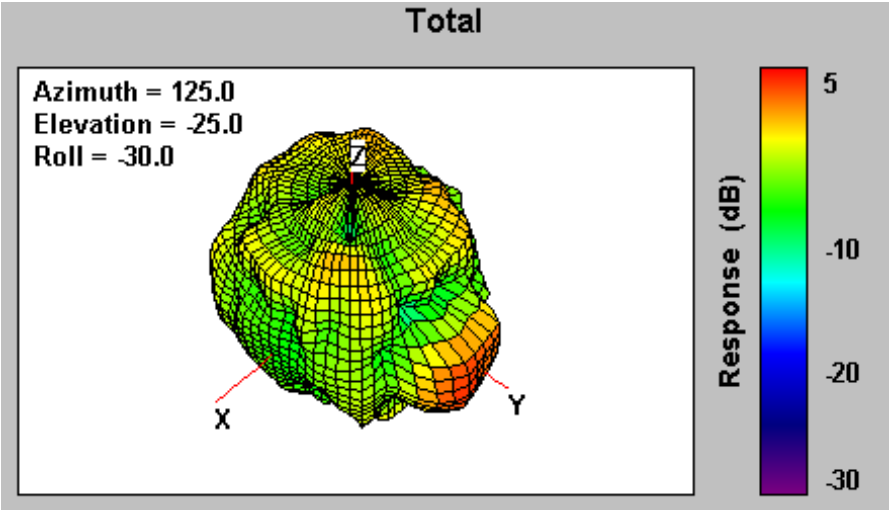
- 3D Antenna Peak Gain required being test in system basis.

Section 3. Radiation characteristics of antenna loaded in Host Platform

Main Antenna

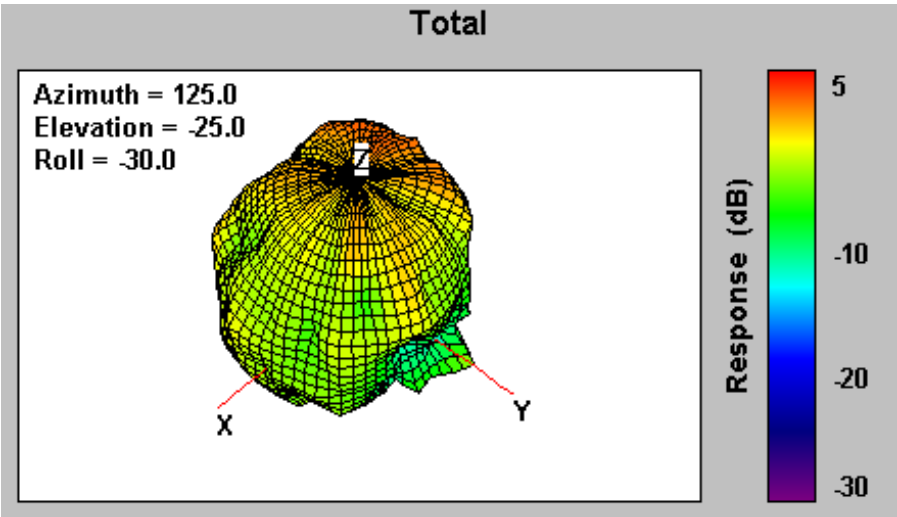
Max Antenna 3D Radiation Pattern 2400 – 2483.5 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 2400-2483.5     | 2.93                          |



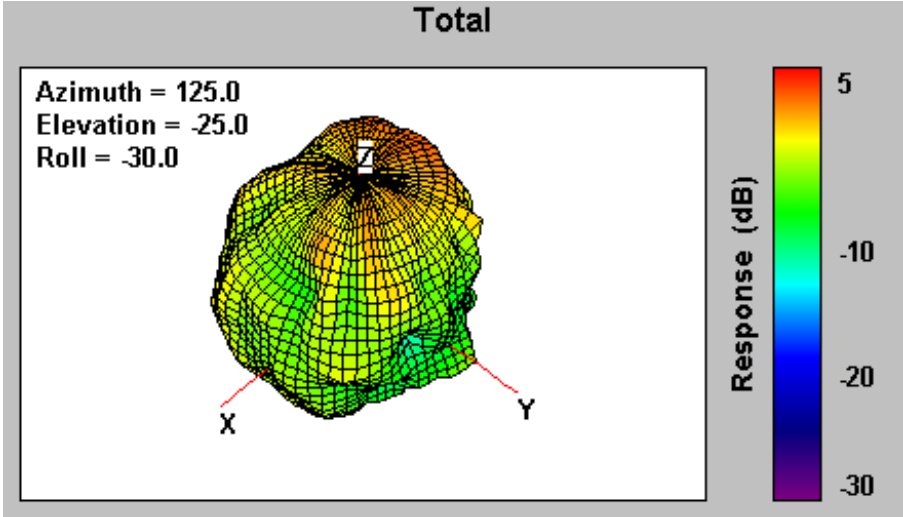
Max Antenna 3D Radiation Pattern 5150-5250 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 5150-5250       | 2.88                          |



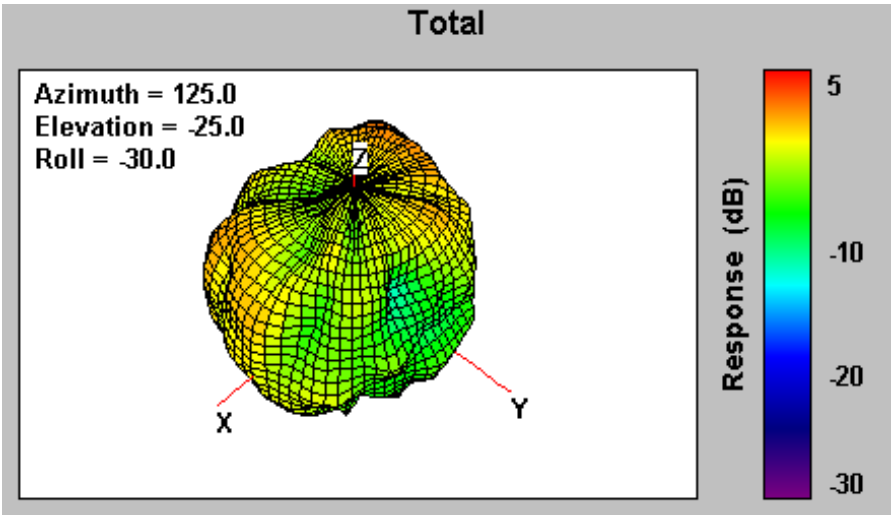
Max Antenna 3D Radiation Pattern 5250-5350 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 5250-5350       | 2.93                          |



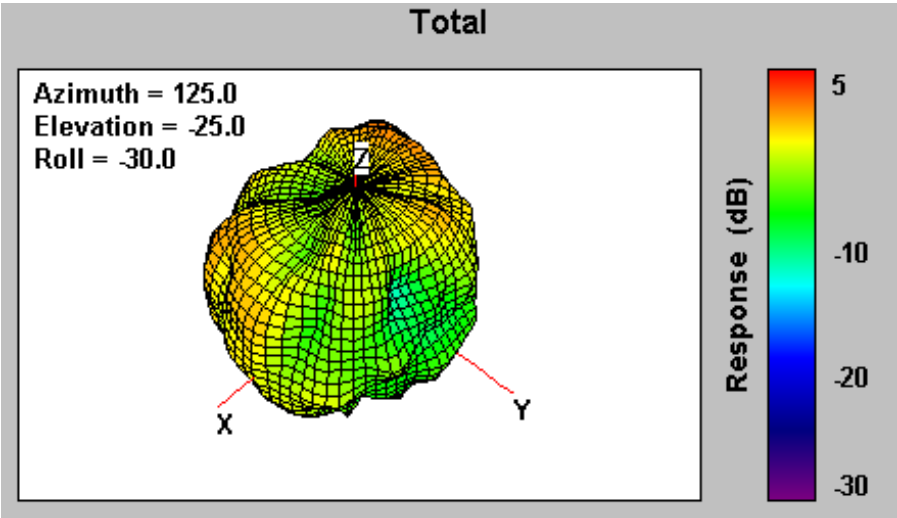
Max Antenna 3D Radiation Pattern 5470-5725 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 5470-5725       | 2.97                          |



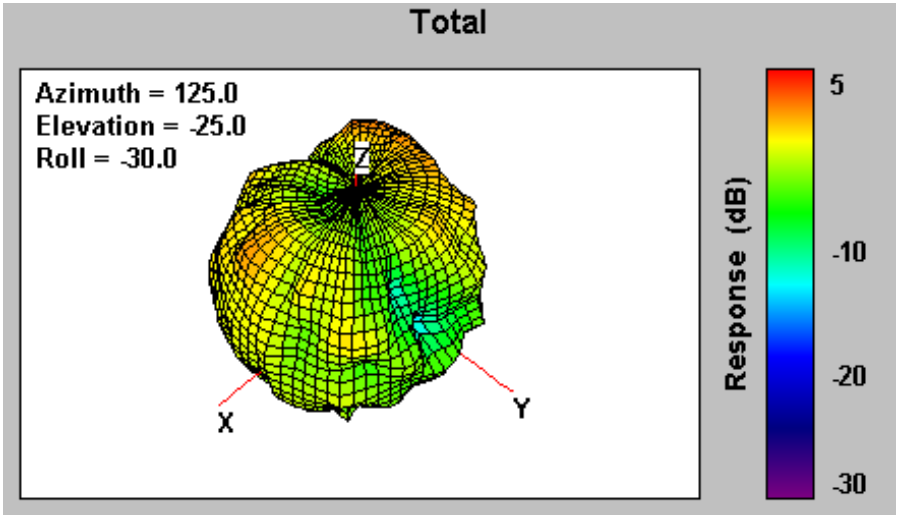
Max Antenna 3D Radiation Pattern 5725-5850 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 5725-5850       | 2.97                          |



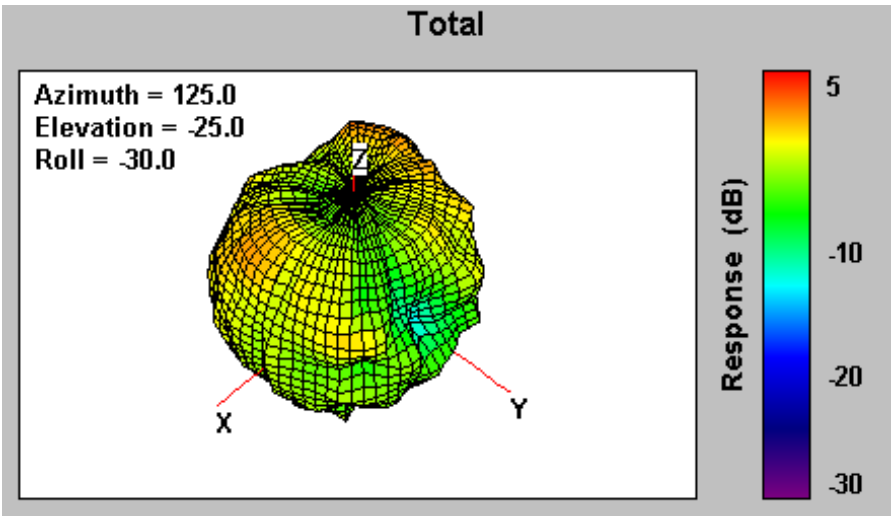
Max Antenna 3D Radiation Pattern 5850-5895 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 5850-5895       | 2.92                          |



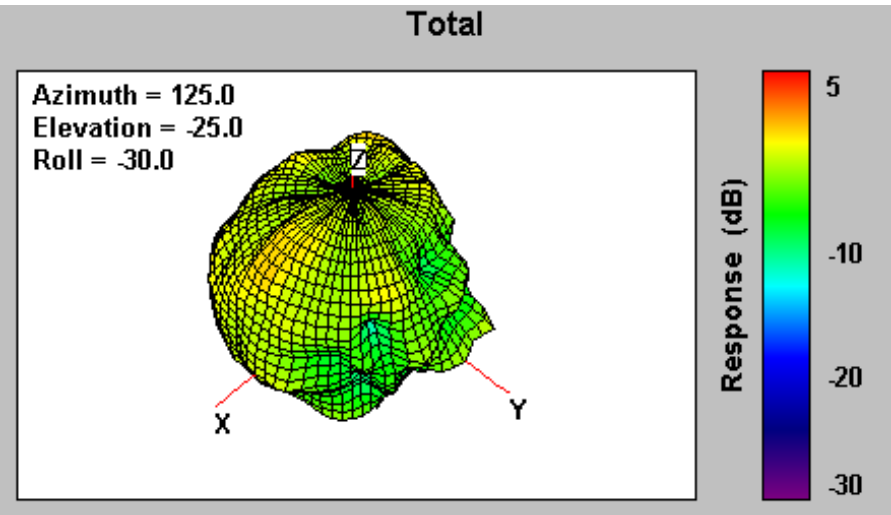
Max Antenna 3D Radiation Pattern 5925-6425 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 5925-6425       | 3.05                          |



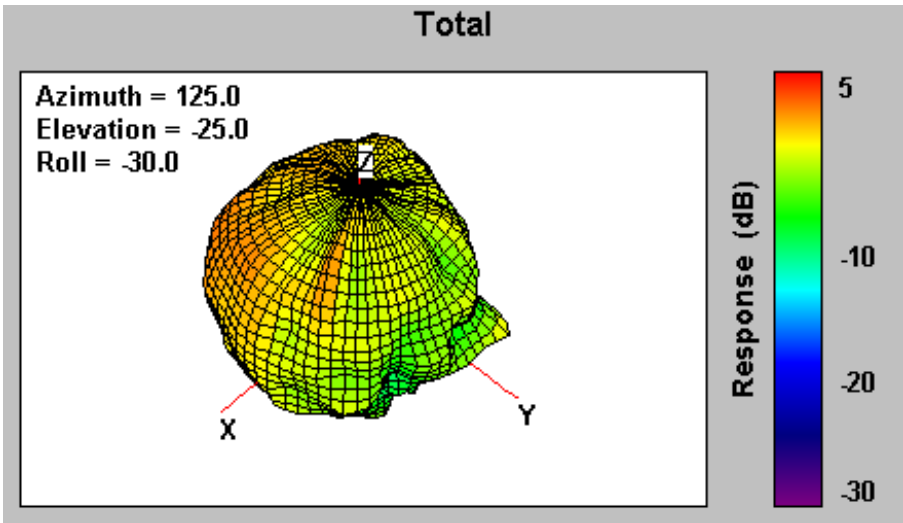
Max Antenna 3D Radiation Pattern 6425-6525 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 6425-6525       | 1.21                          |



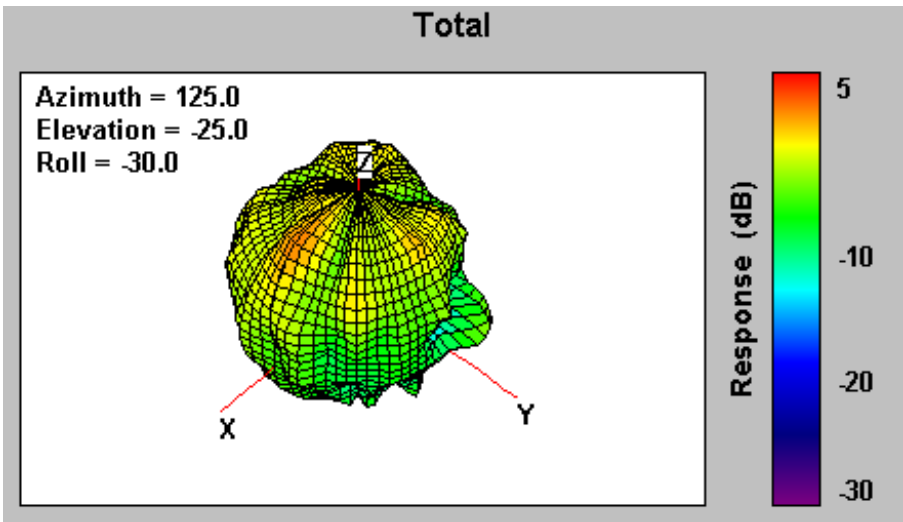
Max Antenna 3D Radiation Pattern 6525-6875 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 6525-6875       | 2.95                          |



Max Antenna 3D Radiation Pattern 6875-7125 MHz

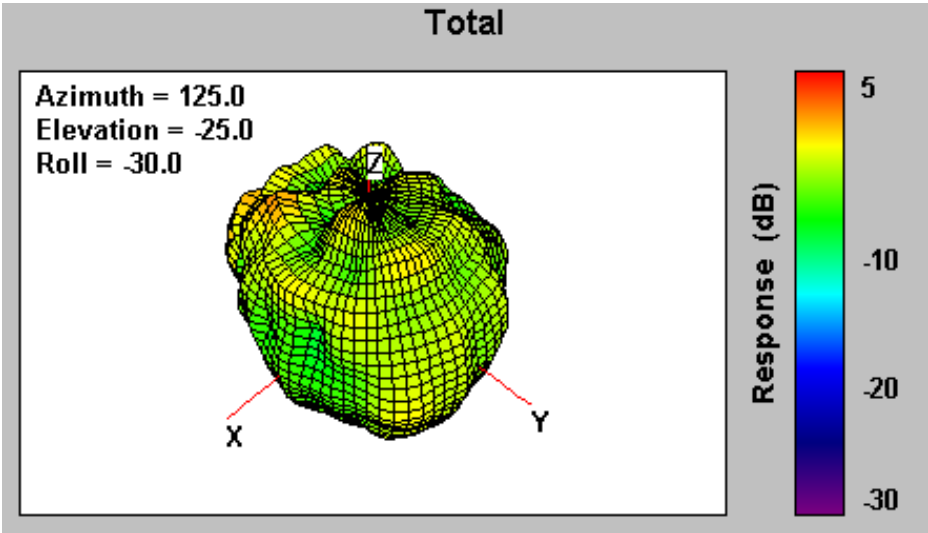
| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 6875-7125       | 2.44                          |



Auxiliary Antenna

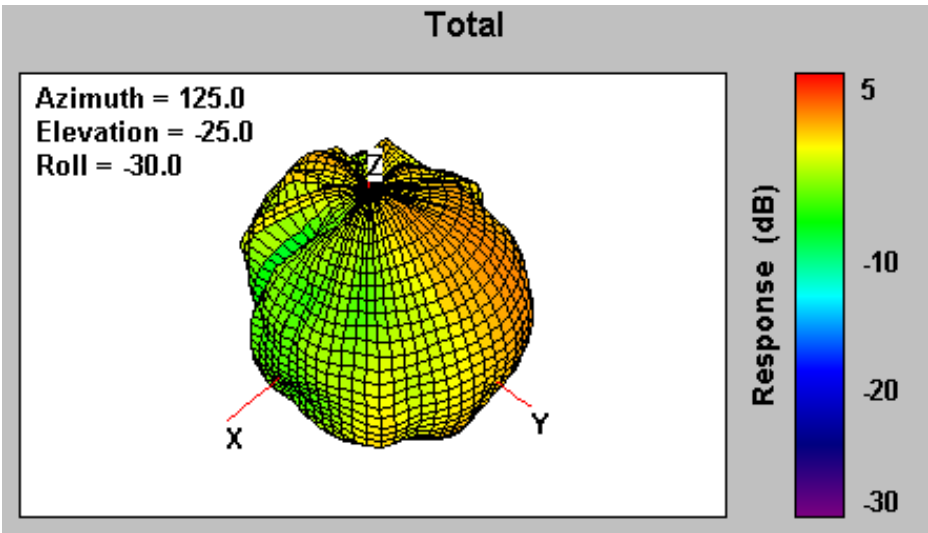
Max Antenna 3D Radiation Pattern 2400 – 2483.5 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 2400-2483.5     | 2.98                          |



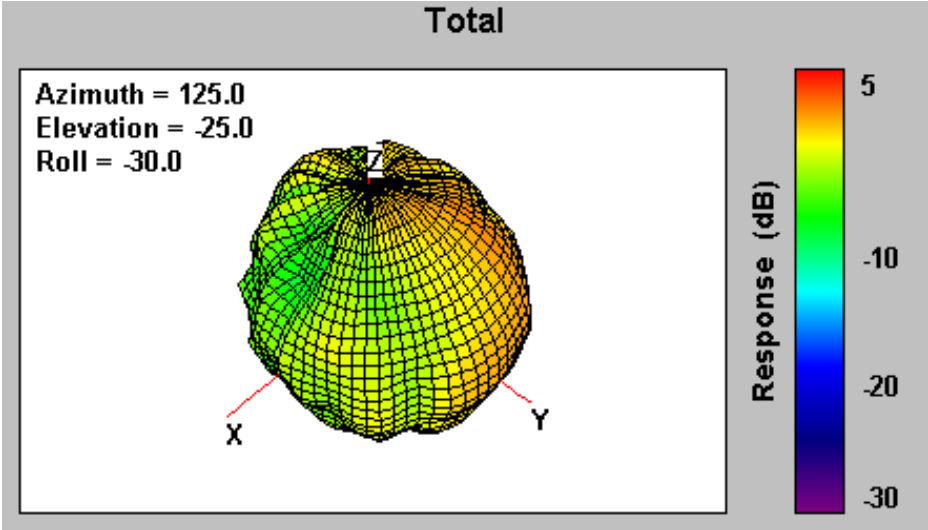
Max Antenna 3D Radiation Pattern 5150-5250 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 5150-5250       | 2.00                          |



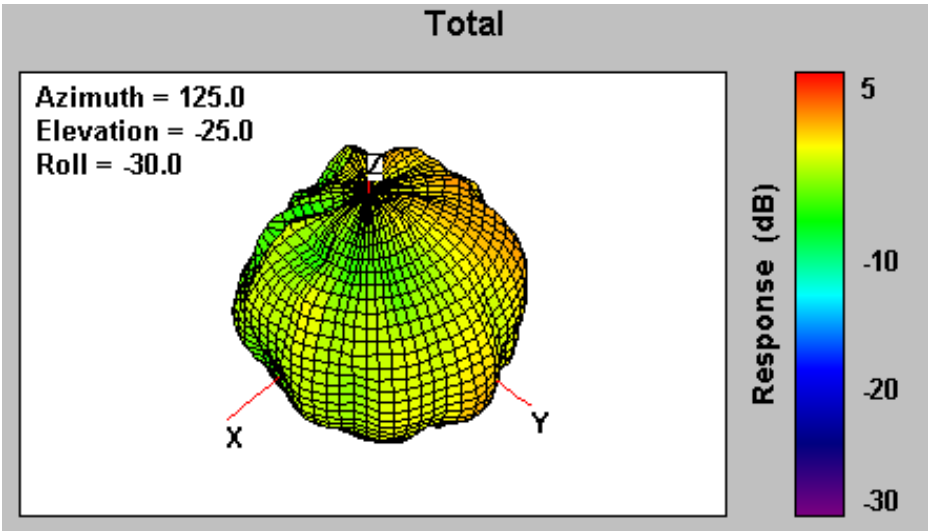
Max Antenna 3D Radiation Pattern 5250-5350 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 5250-5350       | 2.03                          |



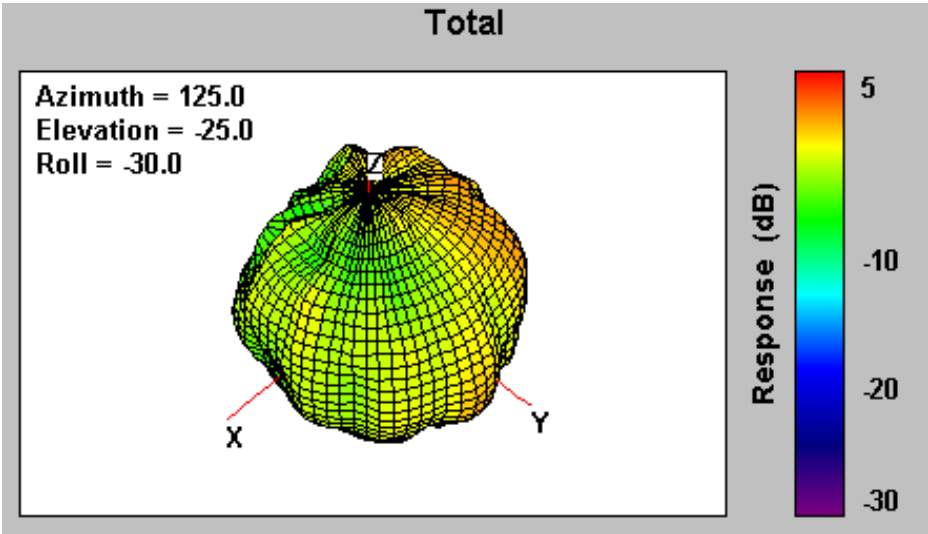
Max Antenna 3D Radiation Pattern 5470-5725 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 5470-5725       | 2.48                          |



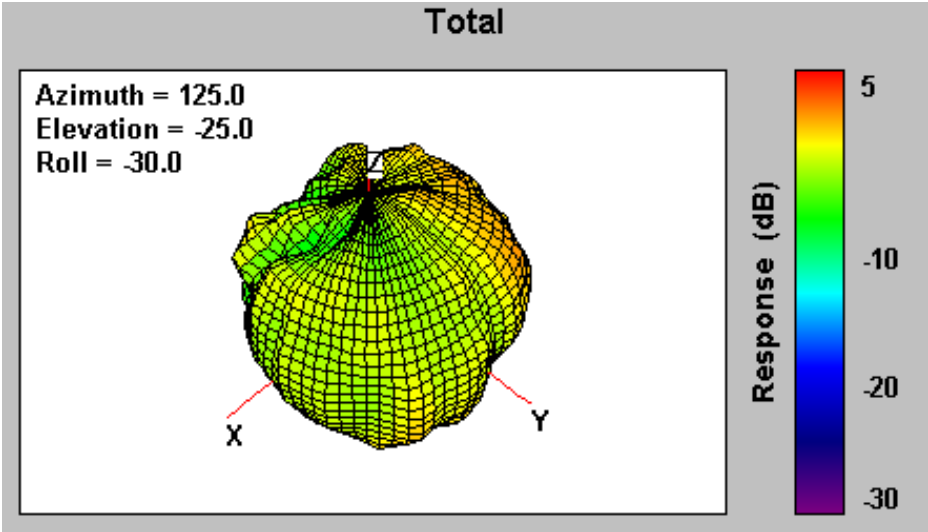
Max Antenna 3D Radiation Pattern 5725-5850 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 5725-5850       | 2.48                          |



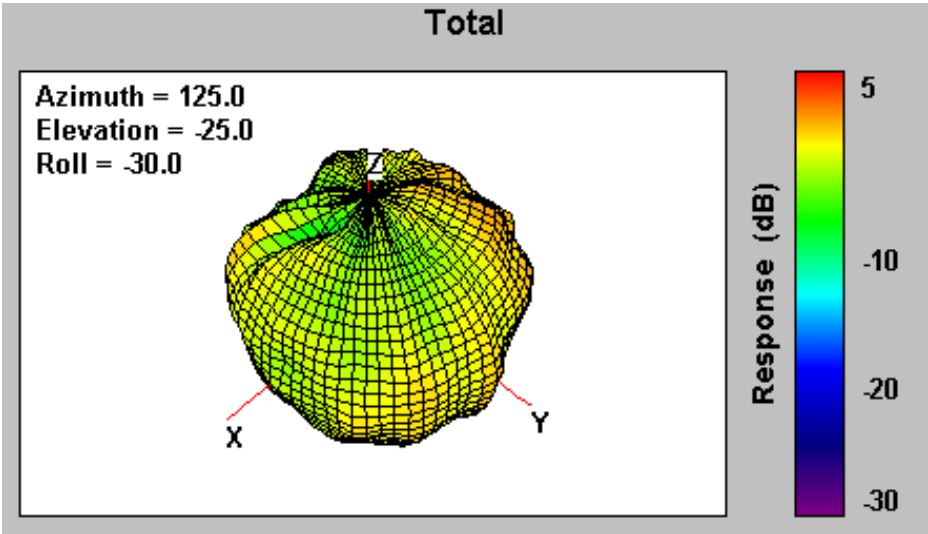
Max Antenna 3D Radiation Pattern 5850-5895 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 5850-5895       | 2.16                          |



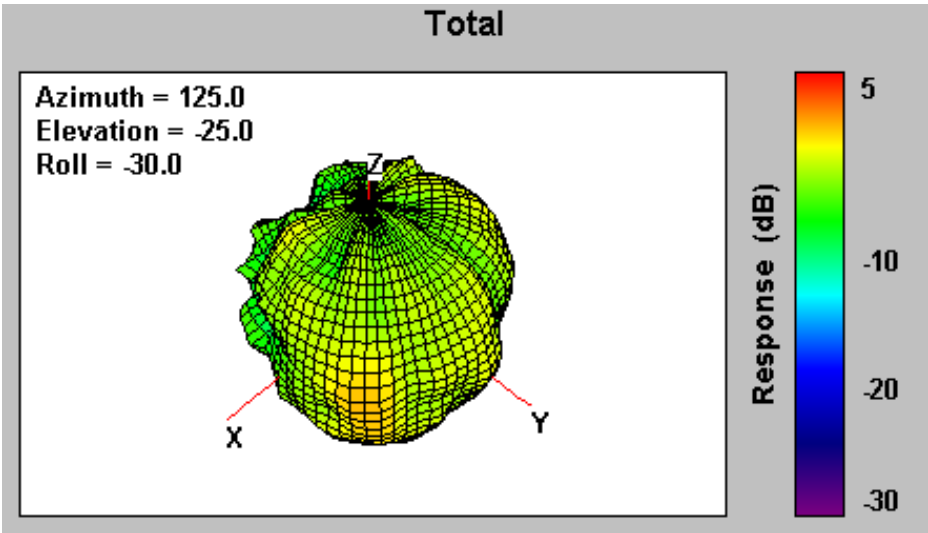
Max Antenna 3D Radiation Pattern 5925-6425 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 5925-6425       | 1.88                          |



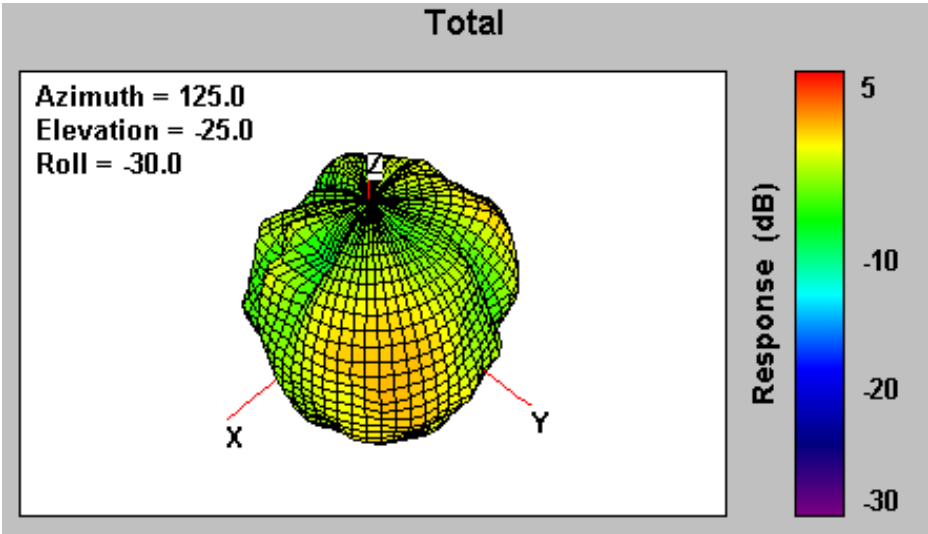
Max Antenna 3D Radiation Pattern 6425-6525 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 6425-6525       | 0.96                          |



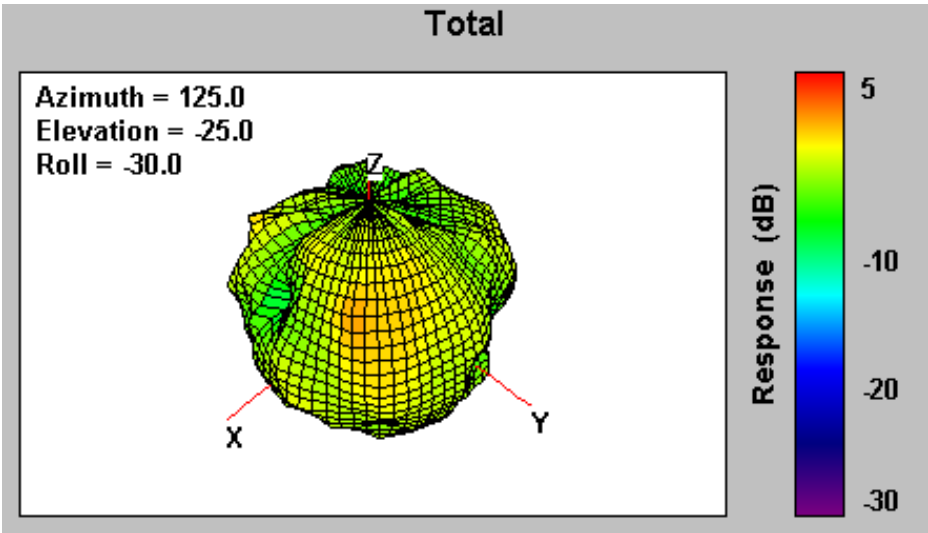
Max Antenna 3D Radiation Pattern 6525-6875 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 6525-6875       | 1.23                          |



Max Antenna 3D Radiation Pattern 6875-7125 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 6875-7125       | 1.87                          |



## Revision History

| Revision | Description                                                                                                                                | Date               |
|----------|--------------------------------------------------------------------------------------------------------------------------------------------|--------------------|
| 10.3     | <u>Page2-5</u><br>Add Applicable test method, Test & System Description and Setup photo                                                    | July 24, 2022      |
| 10.4     | <u>Cover page</u><br>Add Intel 5.9GHz reference antenna gain<br><u>Cover page/Section1/Section3</u><br>Add 5.9GHz antenna gain information | September 15, 2022 |