

# ANTENNA INFORMATION

|                                                           |                         |                                                                       |
|-----------------------------------------------------------|-------------------------|-----------------------------------------------------------------------|
| OEM                                                       | acer                    |                                                                       |
| ODM                                                       | Compal Electronics Inc. |                                                                       |
| Platform model name                                       | N24C13                  |                                                                       |
| Intel platform (ex: Yes, No or NA)                        | YES                     |                                                                       |
| Platform type (ex: regular NB, convertible PC, AIO...etc) | Convertible NB          |                                                                       |
| SAR minimum separation (mm)                               | FCC (1g)                | 138.6 (w/bumper)<br>137.5 (w/o bumper)<br>2 (TB mode Left/Right side) |
|                                                           | ISED (1g)               | 138.6 (w/bumper)<br>137.5 (w/o bumper)<br>2 (TB mode Left/Right side) |
|                                                           | ISED (10g)              | N/A                                                                   |

|                      |                 |                                                          |
|----------------------|-----------------|----------------------------------------------------------|
| Antenna manufacturer | Company name    | Wistron Neweb Corporation                                |
|                      | Address         | 20 Park Ave.II , Hsinchu Science Park,Hsinchu 308,Taiwan |
| Test location        | Company name    | Wistron Neweb Corporation                                |
|                      | Address         | 20 Park Ave.II , Hsinchu Science Park,Hsinchu 308,Taiwan |
| Test Personnel       | Name(Full name) | William Yao                                              |
|                      | E-mail          | William.Yao@wnc.com.tw                                   |
|                      | Tel/Mobile      | 03-6667799                                               |
| Testing date         | 2024/09/26      |                                                          |

|                                       |      |                            |
|---------------------------------------|------|----------------------------|
| Antenna Part number                   | Main | 81EACB15.G13 (DC33002ZM00) |
|                                       | Aux  | 81EACB15.G14 (DC33002ZM10) |
| Antenna type (ex: PIFA, Dipole...etc) | PIFA |                            |

| Antenna Peak gain w/ cable loss (dBi)* NB mode |                           |                        |                        |                        |                        |                        |                        |                        |                        |                         |
|------------------------------------------------|---------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|-------------------------|
|                                                | 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                                           | 2.63                      | 2.44                   | 2.54                   | 2.71                   | 2.60                   | 2.60                   | 2.88                   | 2.88                   | 2.87                   | 2.78                    |
| Aux                                            | 1.25                      | 2.63                   | 2.82                   | 2.81                   | 2.77                   | 2.11                   | 2.61                   | 2.85                   | 2.85                   | 2.52                    |

| Antenna Peak gain w/ cable loss (dBi)* TB mode |                           |                        |                        |                        |                        |                        |                        |                        |                        |                         |
|------------------------------------------------|---------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|-------------------------|
|                                                | 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                                           | 1.23                      | 2.80                   | 2.80                   | 2.57                   | 2.90                   | 2.64                   | 2.79                   | 2.79                   | 2.59                   | 1.20                    |
| Aux                                            | 1.67                      | 2.27                   | 2.27                   | 1.72                   | 1.58                   | 1.58                   | 2.71                   | 1.86                   | 2.03                   | 1.74                    |

## Cable Assembly Part Number and Information

|      | Cable PN     | Cable length(mm) | Cable diameter(mm) | Impedance(ohm) | Connector type |
|------|--------------|------------------|--------------------|----------------|----------------|
| Main | 50.2EL8U.009 | 429              | 1.13               | 50             | I-pex          |
| Aux  | 50.2EL8U.011 | 295              | 1.13               | 50             | I-pex          |

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

## Cable loss (dBi)

|      | <b>2.4GHz</b><br>2400-2483.5 MHz | <b>5.2GHz</b><br>5150-5250MHz | <b>5.3GHz</b><br>5250-5350MHz | <b>5.6GHz</b><br>5470-5725MHz | <b>5.8GHz</b><br>5725-5850MHz | <b>5.9GHz</b><br>5850-5895MHz | <b>6.2GHz</b><br>5925-6425MHz | <b>6.5GHz</b><br>6425-6525MHz | <b>6.7GHz</b><br>6525-6875MHz | <b>7.0 GHz</b><br>6875-7125MHz |
|------|----------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|--------------------------------|
| Main | 1.19                             | 1.77                          | 1.78                          | 1.83                          | 1.86                          | 1.87                          | 1.92                          | 1.99                          | 2.03                          | 2.09                           |
| Aux  | 0.82                             | 1.22                          | 1.23                          | 1.26                          | 1.28                          | 1.29                          | 1.32                          | 1.37                          | 1.40                          | 1.44                           |

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1. Intel Reference Gain and Type

| Antenna Peak gain w/ cable loss (dBi) |                         |                           |                        |                        |                        |                        |                        |                        |                        |                        |                         |
|---------------------------------------|-------------------------|---------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|-------------------------|
| Band/Frequency                        |                         | 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 |
| Design                                | EU/UK                   | 3.00                      | 5.00                   | 5.00                   | 5.00                   | 5.00                   | 5.00                   | 5.00                   | 5.00                   | 5.00                   | 5.00                    |
| PIFA                                  | For WiFi 6E and earlier | 3.24                      | 3.64                   | 3.73                   | 4.77                   | 4.97                   | 4.72                   | 4.83                   | 4.30                   | 5.37                   | 5.59                    |
|                                       | From WiFi 7             | 2.95                      | 5.11                   | 4.55                   | 5.15                   | 5.13                   | 4.45                   | 5.02                   | 5.02                   | 4.96                   | 4.96                    |
| Dipole                                | For WiFi 6E and earlier | 2.89                      | 2.92                   | 3.19                   | 4.41                   | 4.22                   | 4.22                   | 4.83                   | 4.30                   | 4.49                   | 5.34                    |
|                                       | From WiFi 7             | 2.95                      | 4.03                   | 4.11                   | 5.15                   | 5.13                   | 4.45                   | 5.02                   | 4.71                   | 4.49                   | 4.96                    |
| Monopole                              | From WiFi 7             | 2.83                      | 4.57                   | 4.44                   | 4.95                   | 4.95                   | 4.43                   | 4.87                   | 4.91                   | 4.91                   | 4.79                    |

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.

2. Document Revision History

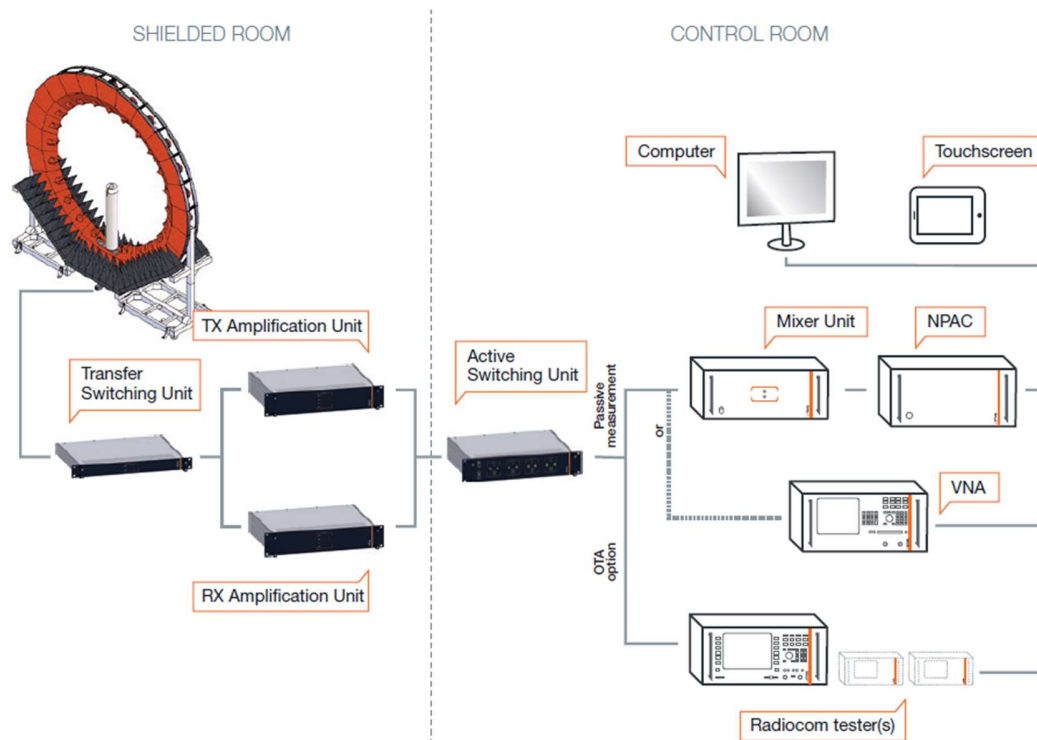
| Revision # | Revision Details | Issued Date |
|------------|------------------|-------------|
| Rev. 00    | First Issue      | 2024/09/26  |

### 3. Test & System Description

#### 3.1 Measurement Method and System

This B312.2" Celesta test report is prepared for host antenna testing under a Full Anechoic Chamber(WNC's SG24L).

#### 3.2 Test setup



### 3.3 Equipment list

| Device                       | Type / Model            | Serial #   | Manufacture | Cal. Date  | Cal. Du Date |
|------------------------------|-------------------------|------------|-------------|------------|--------------|
| Anechoic Chamber             | 555-FAC                 |            | ChamPro     | 2024-07-10 | 2025-07      |
| Antenna Measurement System   | SG24-L                  |            | MVG-SATIMO  | 2024-07-10 | 2025-07      |
| Network Analyzer             | VNA / E5080B            | MY59203136 | Keysight    | 2024-07-10 | 2025-07      |
| Tx Amplifier Unit            | SG24 Series Accessories |            | MVG-SATIMO  | 2024-07-10 | 2025-07      |
| Rx Amplifier Unit            | SG24 Series Accessories |            | MVG-SATIMO  | 2024-07-10 | 2025-07      |
| Probe Select Unit            | SG24 Series Accessories |            | MVG-SATIMO  | 2024-07-10 | 2025-07      |
| Motion Control Unit          | SG24 Series Accessories |            | MVG-SATIMO  | 2024-07-10 | 2025-07      |
| Power and Control Unit       | SG24 Series Accessories |            | MVG-SATIMO  | 2024-07-10 | 2025-07      |
| Array Control Unit           | SG24 Series Accessories |            | MVG-SATIMO  | 2024-07-10 | 2025-07      |
| Turn Table                   | SG24 Series Accessories |            | MVG-SATIMO  | 2024-07-10 | 2025-07      |
| Goniometer                   | SG24 Series Accessories |            | MVG-SATIMO  | 2024-07-10 | 2025-07      |
| Control Software             | WaveStudio              |            | MVG-SATIMO  | N/A        | N/A          |
| Uninterruptible Power Supply | FT-130H-U               |            | FTUPS       | N/A        | N/A          |
| Wide Band Dipole             | WD6000                  |            | MVG-SATIMO  | 2024-07-10 | 2025-07      |

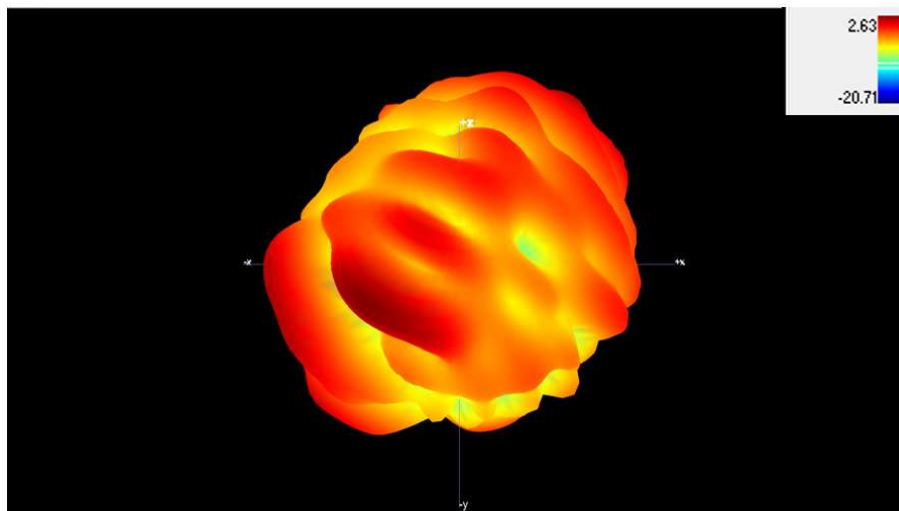
#### 4. Radiation characteristics of antenna loaded in Host Platform

##### 4.1 NB Mode

###### Main Antenna

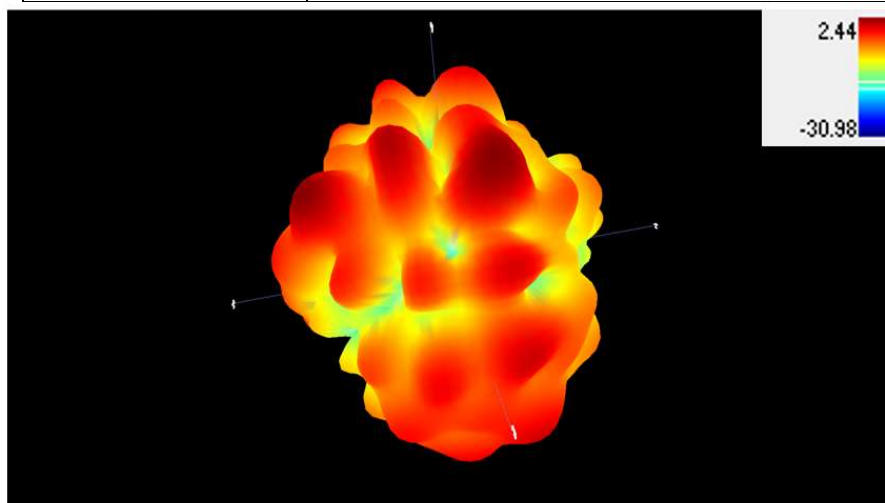
Max Antenna 3D Radiation Pattern 2400 – 2483.5 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 2400-2483.5     | 2.63                          |



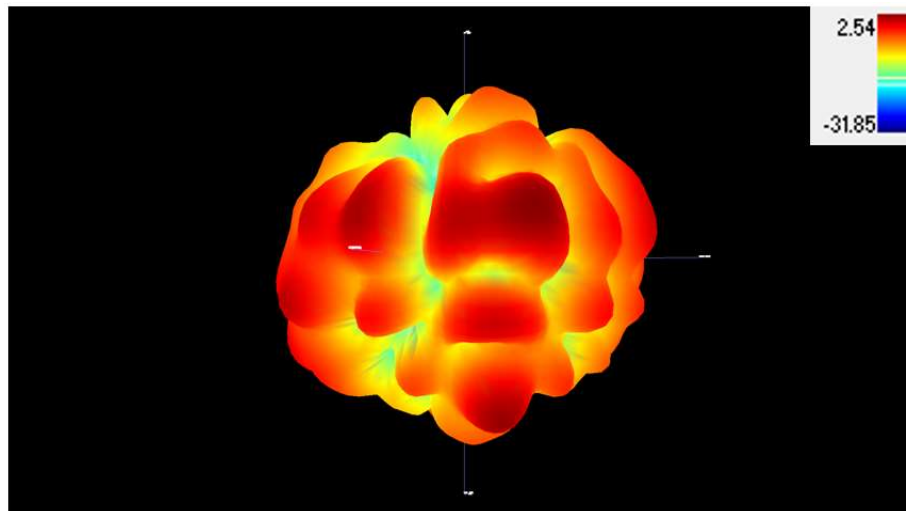
Max Antenna 3D Radiation Pattern 5150-5250 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 5150-5250       | 2.44                          |



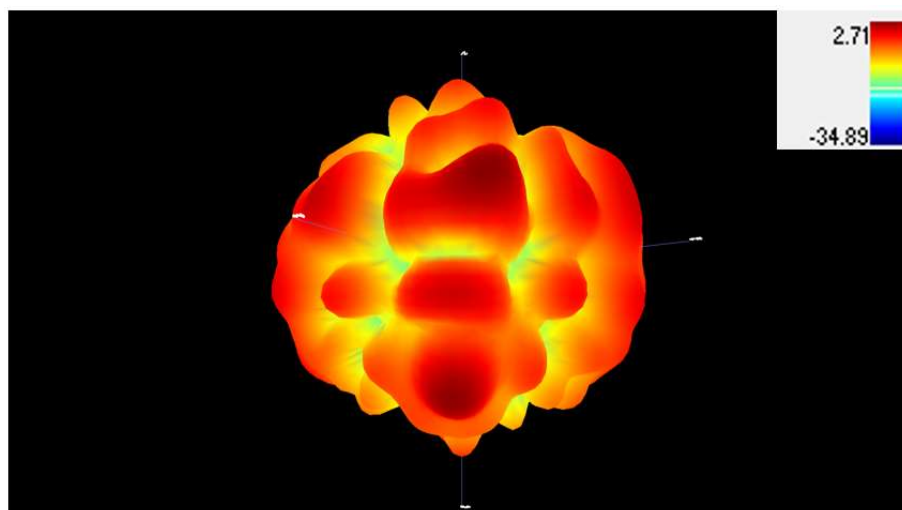
## Max Antenna 3D Radiation Pattern 5250-5350 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 5250-5350       | 2.54                          |



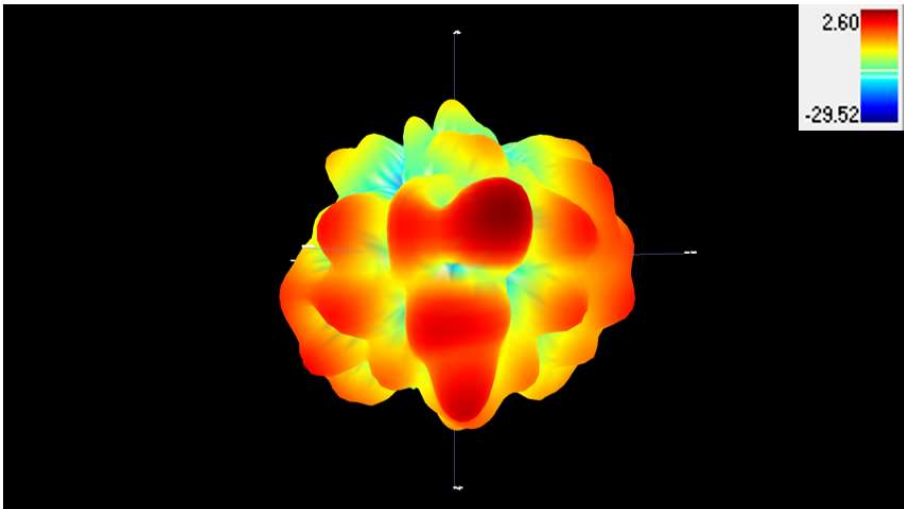
## Max Antenna 3D Radiation Pattern 5470-5725 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 5470-5725       | 2.71                          |



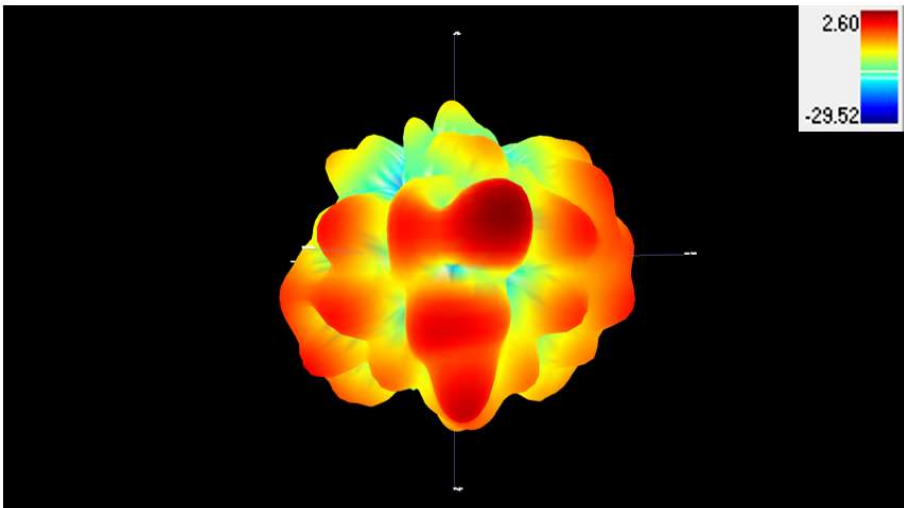
Max Antenna 3D Radiation Pattern 5725-5850 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 5725-5850       | 2.60                          |



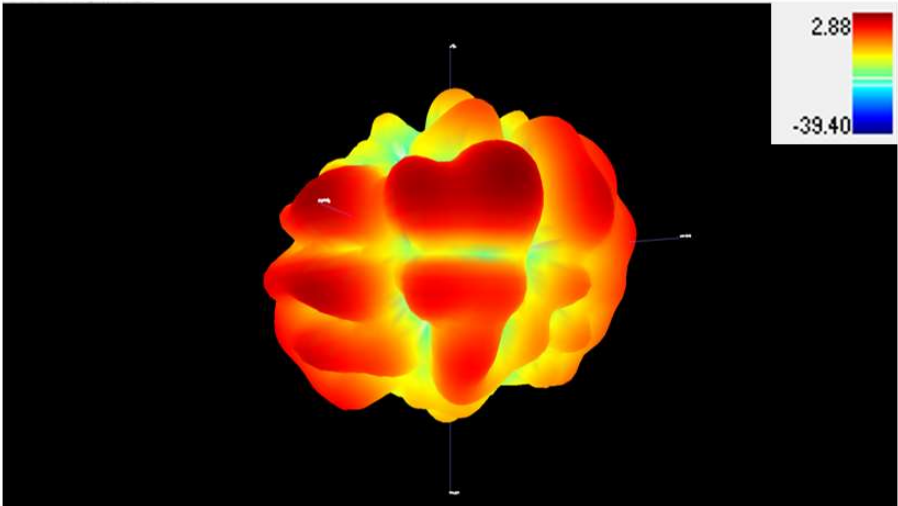
Max Antenna 3D Radiation Pattern 5850-5895 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 5850-5895       | 2.60                          |



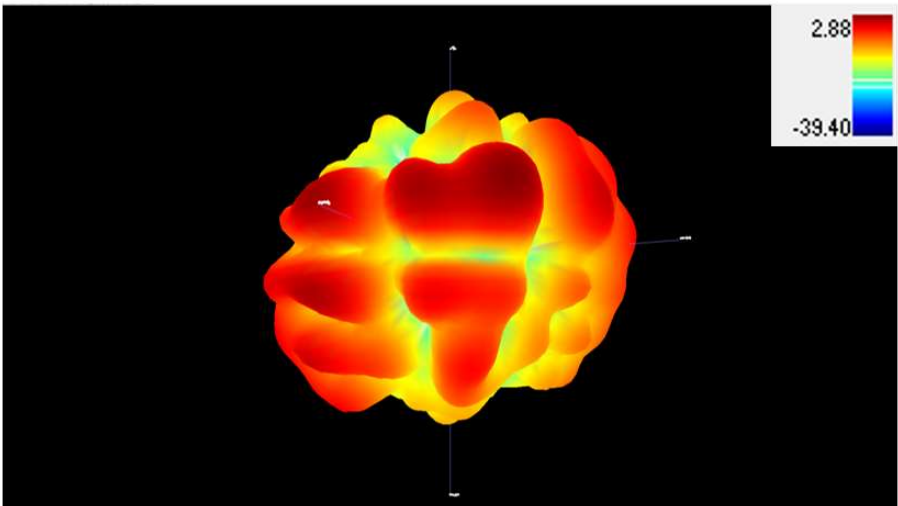
Max Antenna 3D Radiation Pattern 5925-6425 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 5925-6425       | 2.88                          |



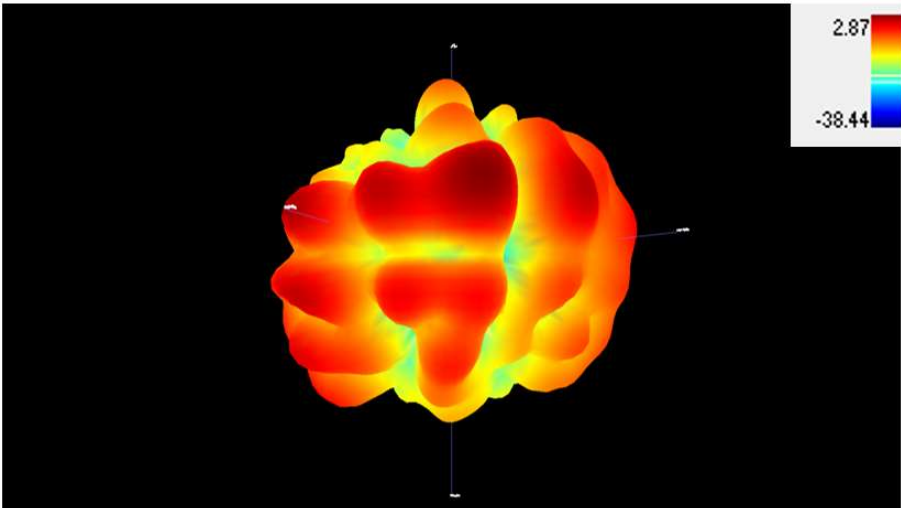
Max Antenna 3D Radiation Pattern 6425-6525 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 6425-6525       | 2.88                          |



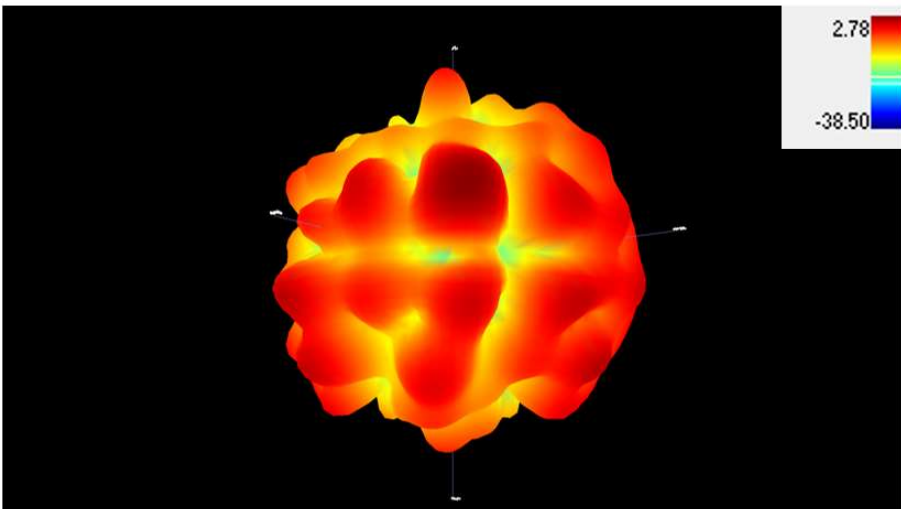
Max Antenna 3D Radiation Pattern 6525-6875 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 6525-6875       | 2.87                          |



Max Antenna 3D Radiation Pattern 6875-7125 MHz

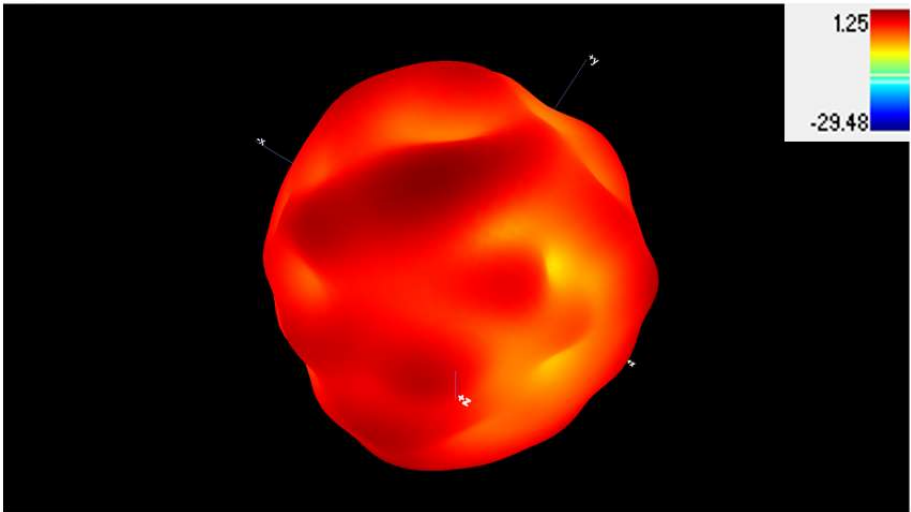
| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 6875-7125       | 2.78                          |



Auxiliary Antenna

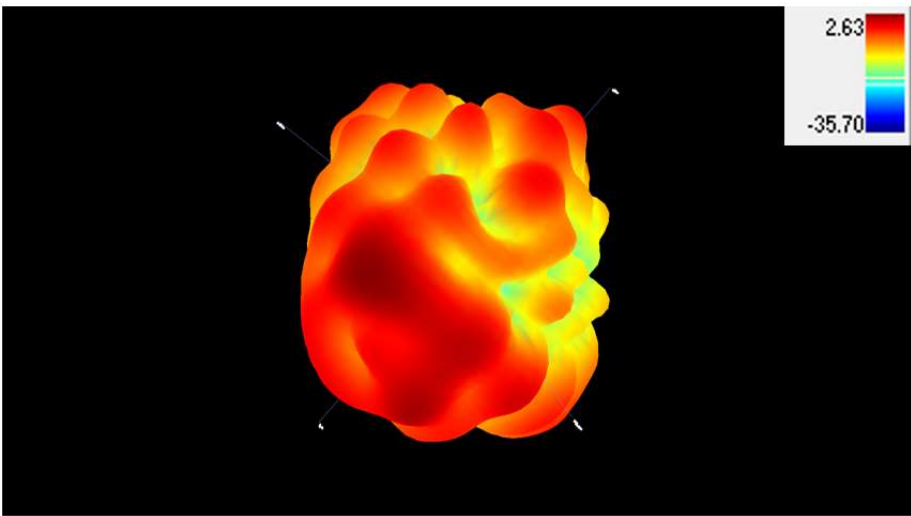
Max Antenna 3D Radiation Pattern 2400 – 2483.5 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 2400-2483.5     | 1.25                          |



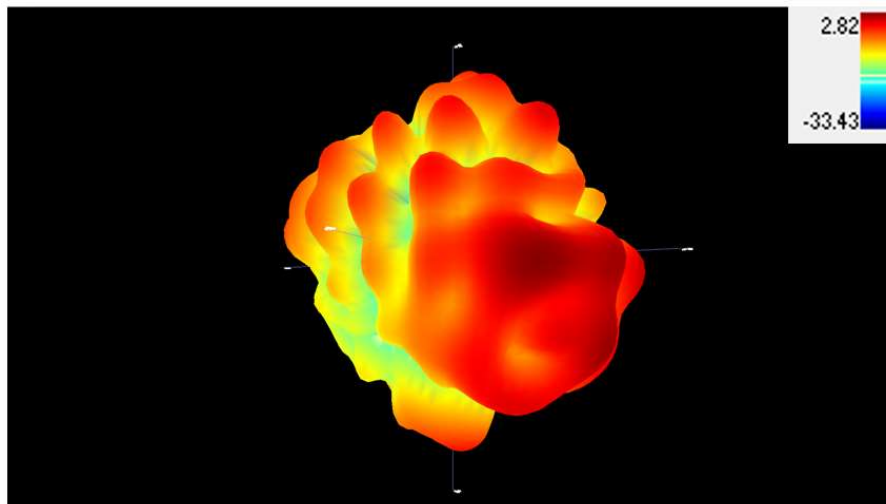
Max Antenna 3D Radiation Pattern 5150-5250 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 5150-5250       | 2.63                          |



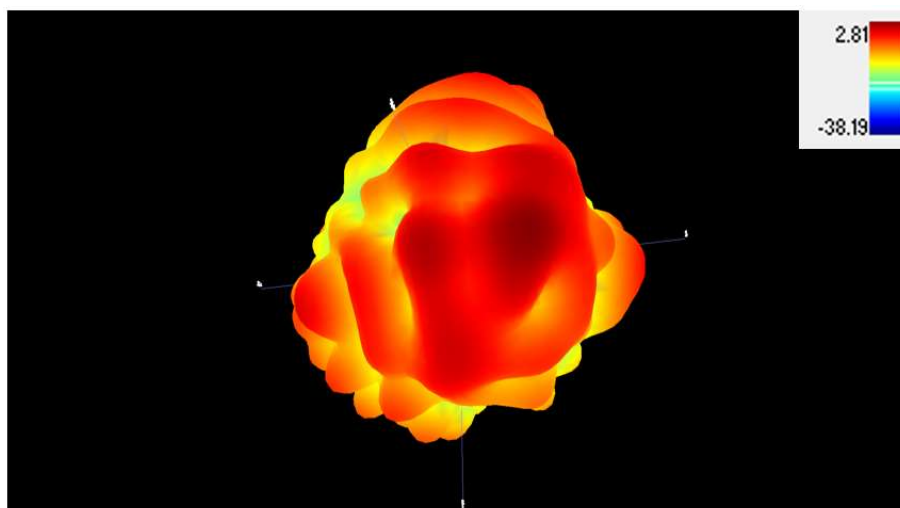
## Max Antenna 3D Radiation Pattern 5250-5350 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 5250-5350       | 2.82                          |



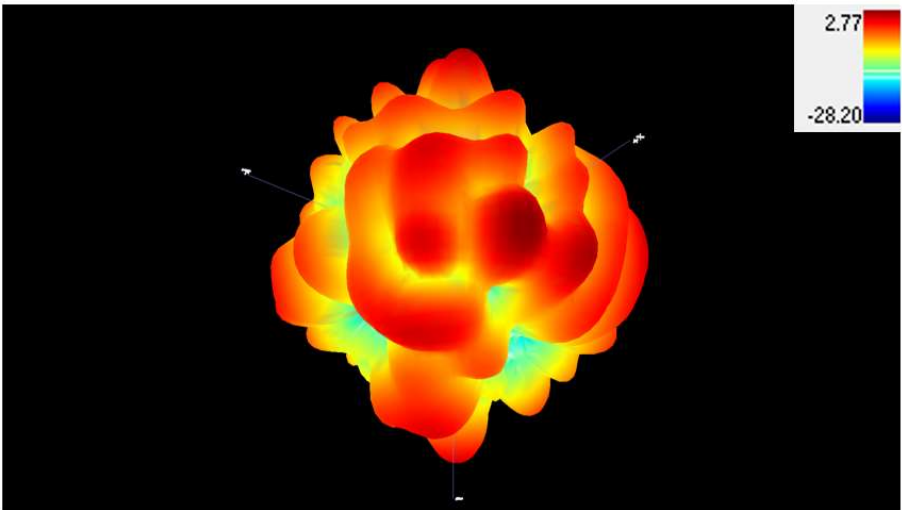
## Max Antenna 3D Radiation Pattern 5470-5725 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 5470-5725       | 2.81                          |



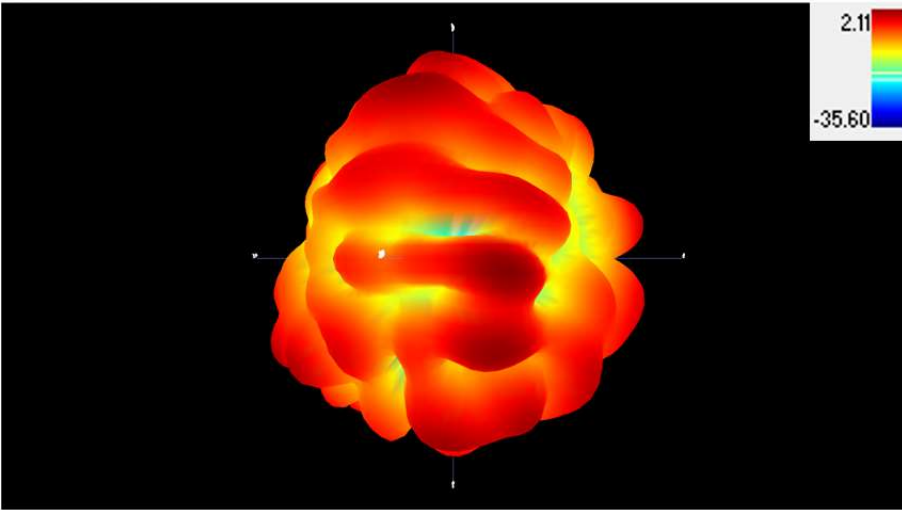
Max Antenna 3D Radiation Pattern 5725-5850 MHz

| Frequency<br>(MHz) | Peak Gain w/ Cable Loss<br>(dBi) |
|--------------------|----------------------------------|
| 5725-5850          | 2.77                             |



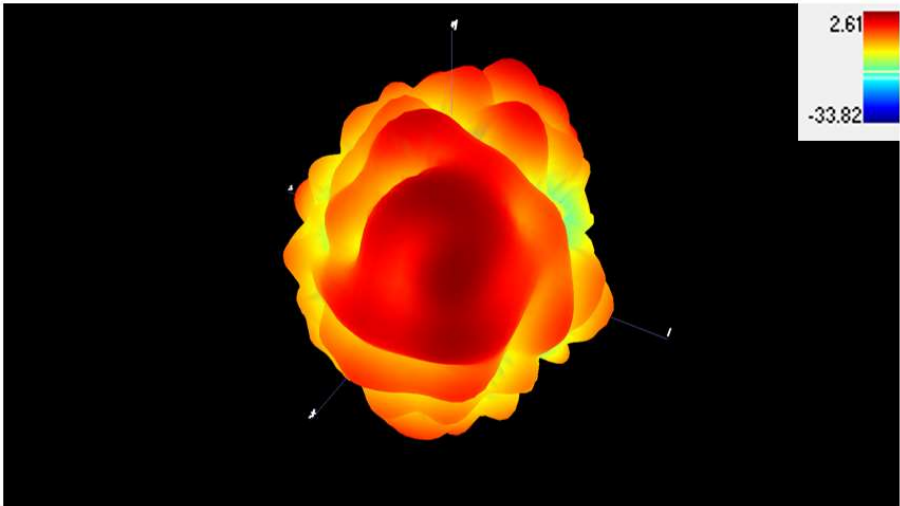
Max Antenna 3D Radiation Pattern 5850-5895 MHz

| Frequency<br>(MHz) | Peak Gain w/ Cable Loss<br>(dBi) |
|--------------------|----------------------------------|
| 5850-5895          | 2.11                             |



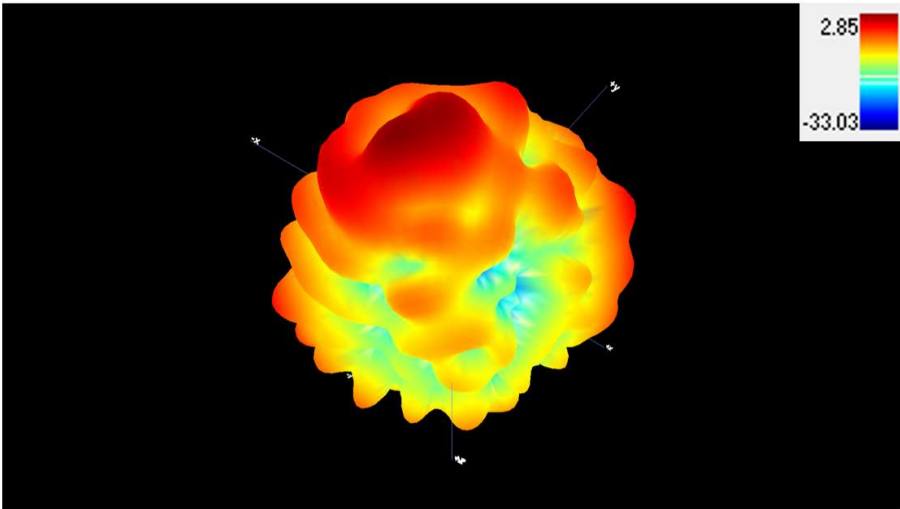
Max Antenna 3D Radiation Pattern 5925-6425 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 5925-6425       | 2.61                          |



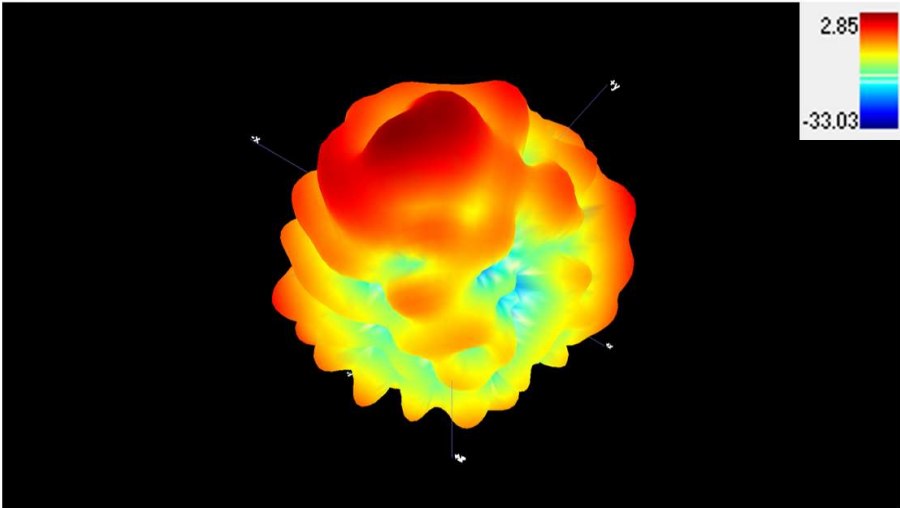
Max Antenna 3D Radiation Pattern 6425-6525 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 6425-6525       | 2.85                          |



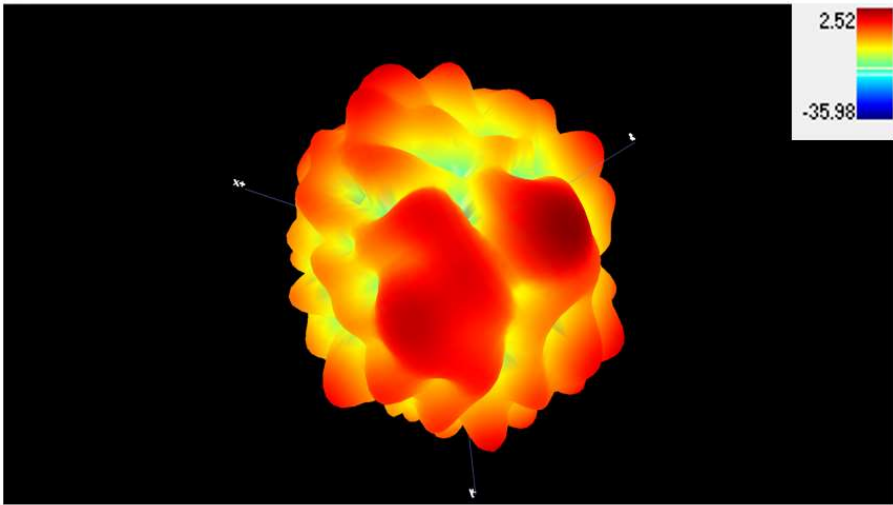
Max Antenna 3D Radiation Pattern 6525-6875 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 6525-6875       | 2.85                          |



Max Antenna 3D Radiation Pattern 6875-7125 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 6875-7125       | 2.52                          |

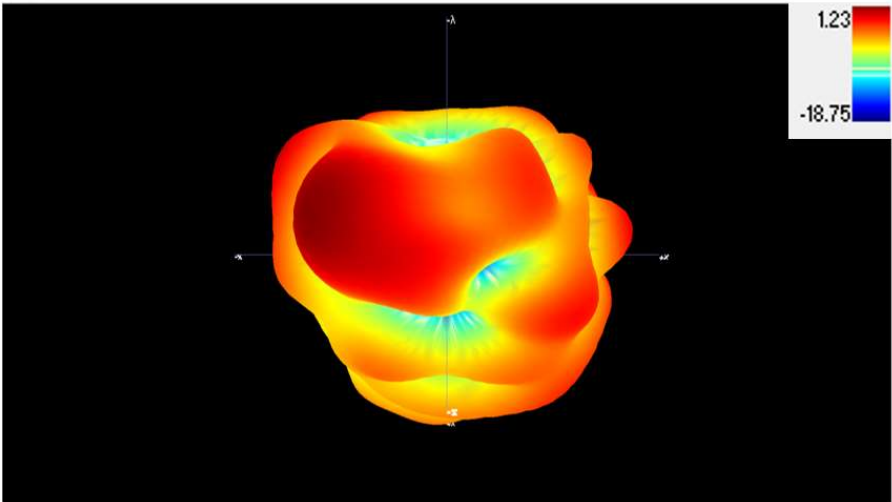


4.2 TB Mode

Main Antenna

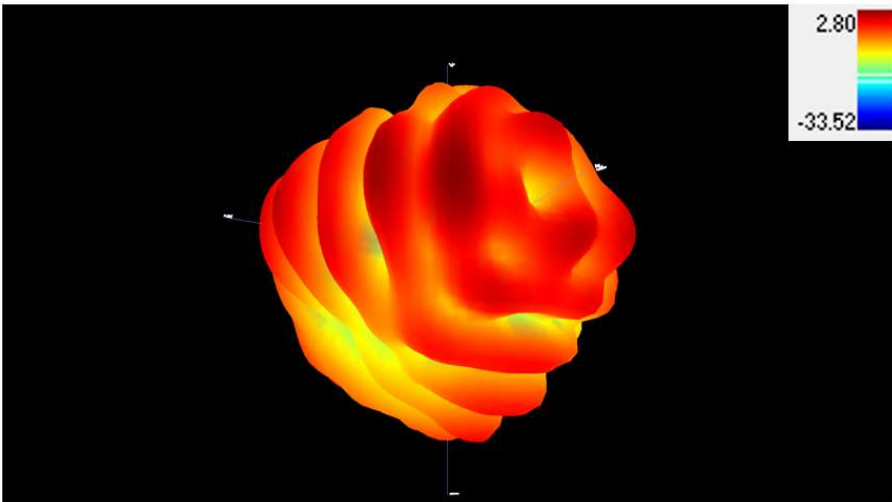
Max Antenna 3D Radiation Pattern 2400 – 2483.5 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 2400-2483.5     | 1.23                          |



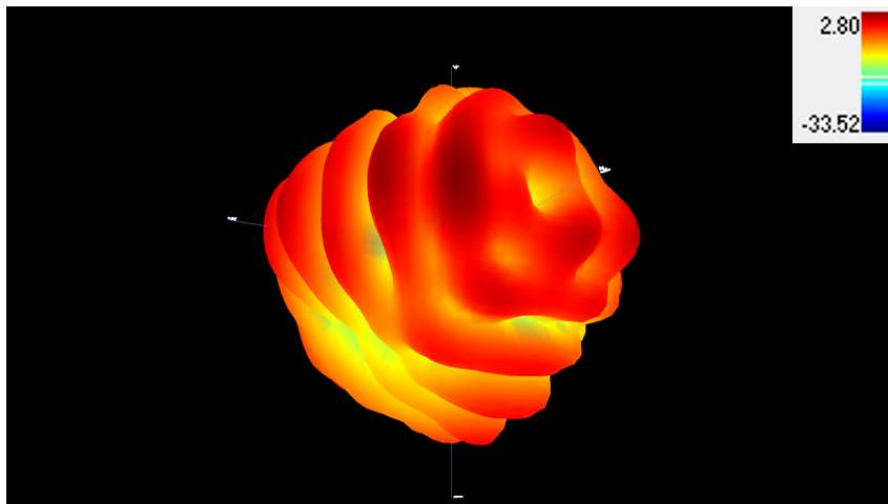
Max Antenna 3D Radiation Pattern 5150-5250 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 5150-5250       | 2.80                          |



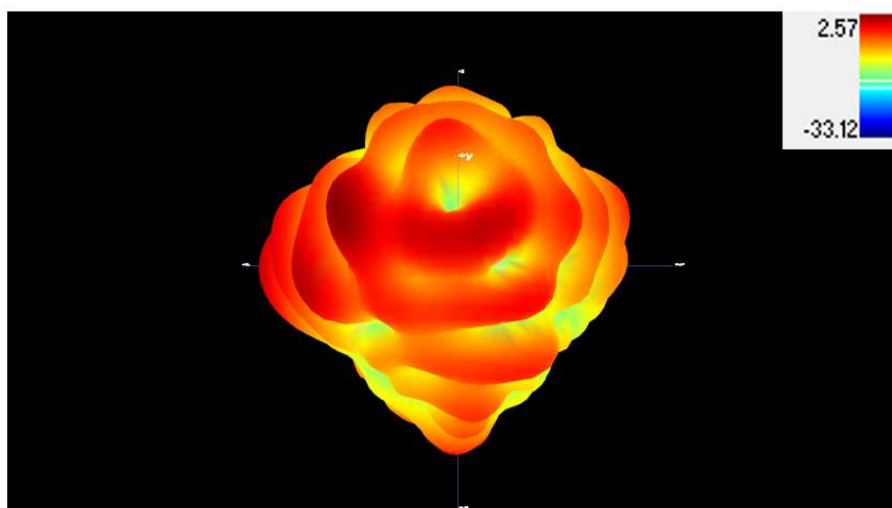
## Max Antenna 3D Radiation Pattern 5250-5350 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 5250-5350       | 2.80                          |



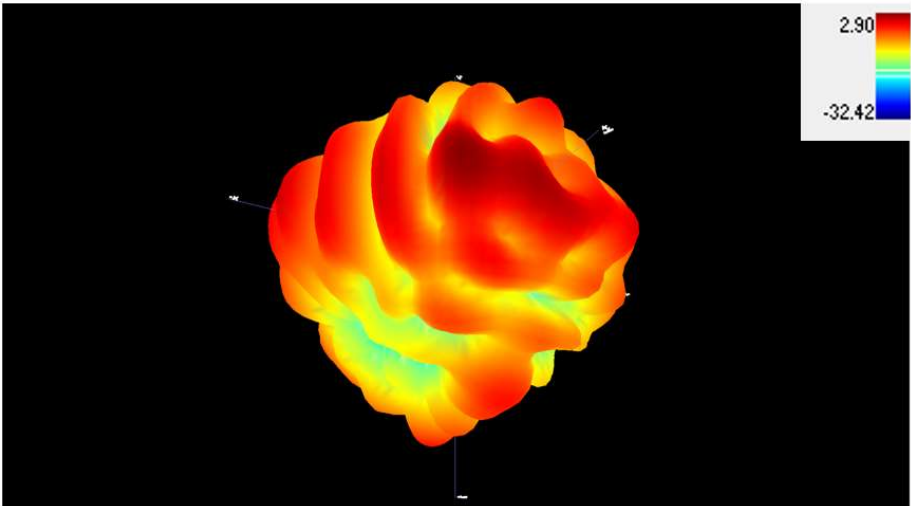
## Max Antenna 3D Radiation Pattern 5470-5725 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 5470-5725       | 2.57                          |



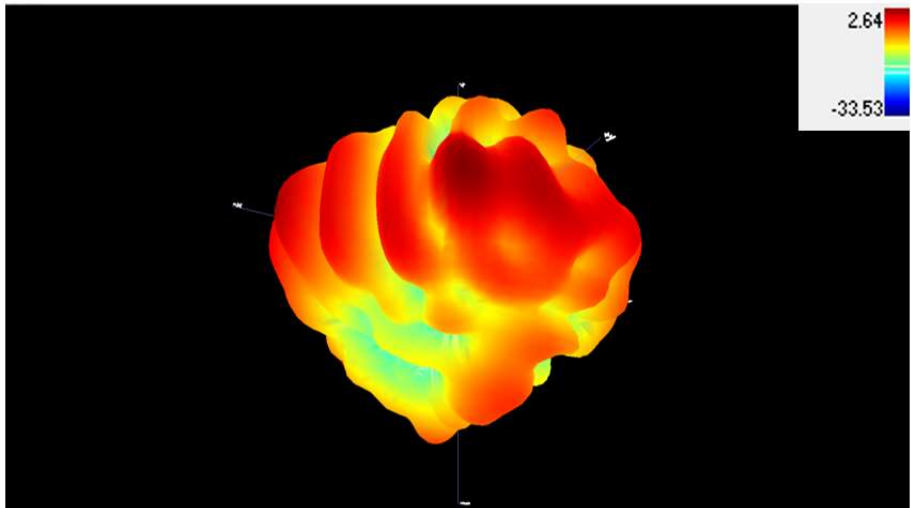
Max Antenna 3D Radiation Pattern 5725-5850 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 5725-5850       | 2.90                          |



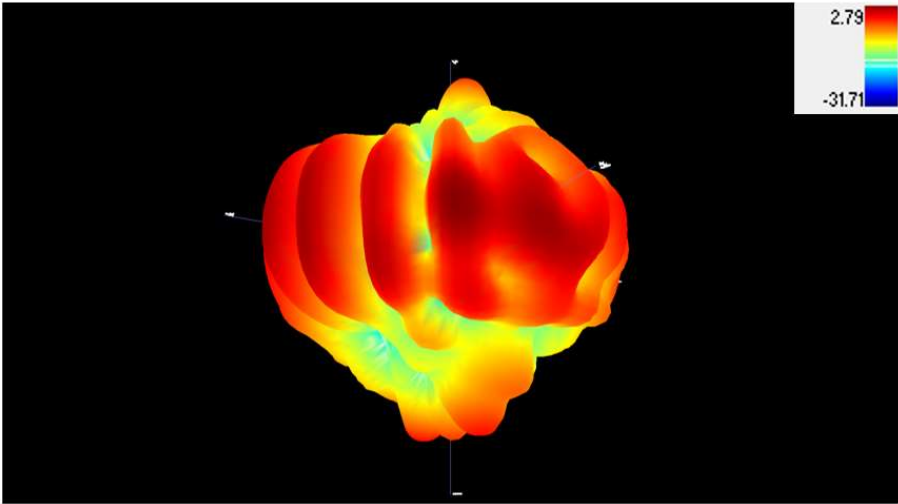
Max Antenna 3D Radiation Pattern 5850-5895 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 5850-5895       | 2.64                          |



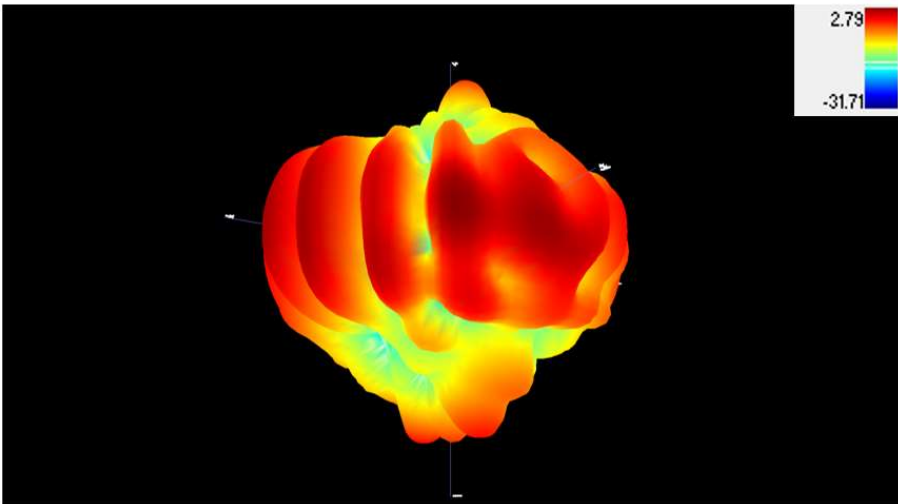
Max Antenna 3D Radiation Pattern 5925-6425 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 5925-6425       | 2.79                          |



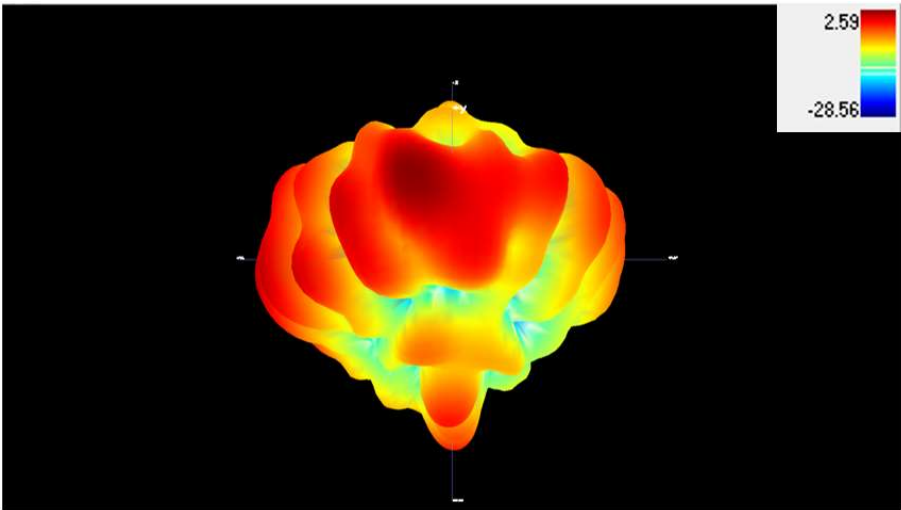
Max Antenna 3D Radiation Pattern 6425-6525 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 6425-6525       | 2.79                          |



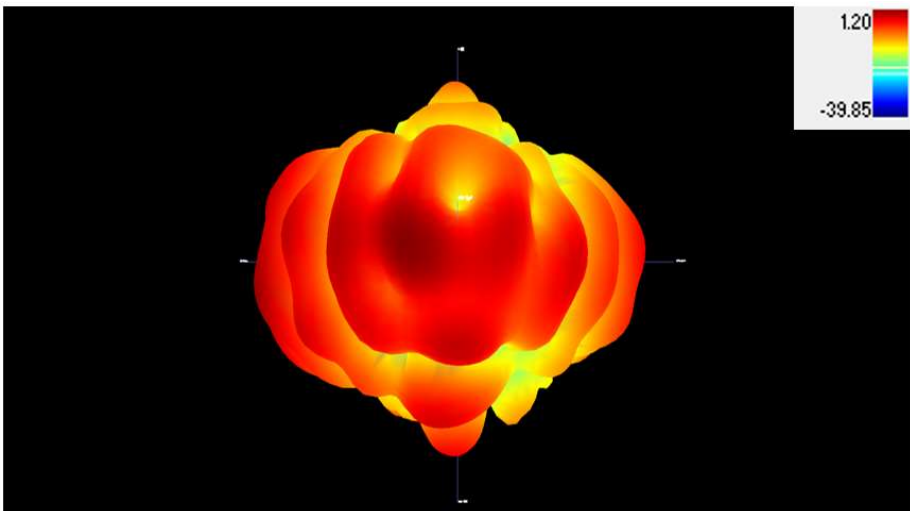
Max Antenna 3D Radiation Pattern 6525-6875 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 6525-6875       | 2.59                          |



Max Antenna 3D Radiation Pattern 6875-7125 MHz

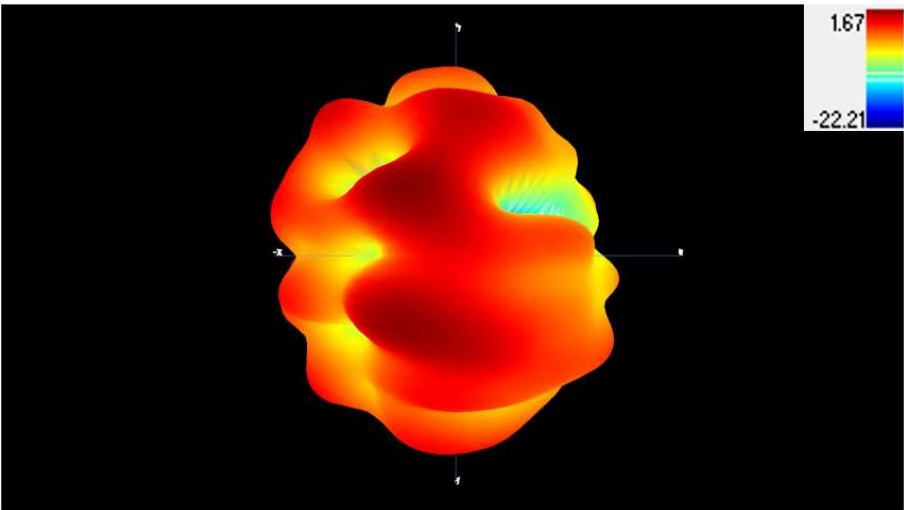
| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 6875-7125       | 1.20                          |



Auxiliary Antenna

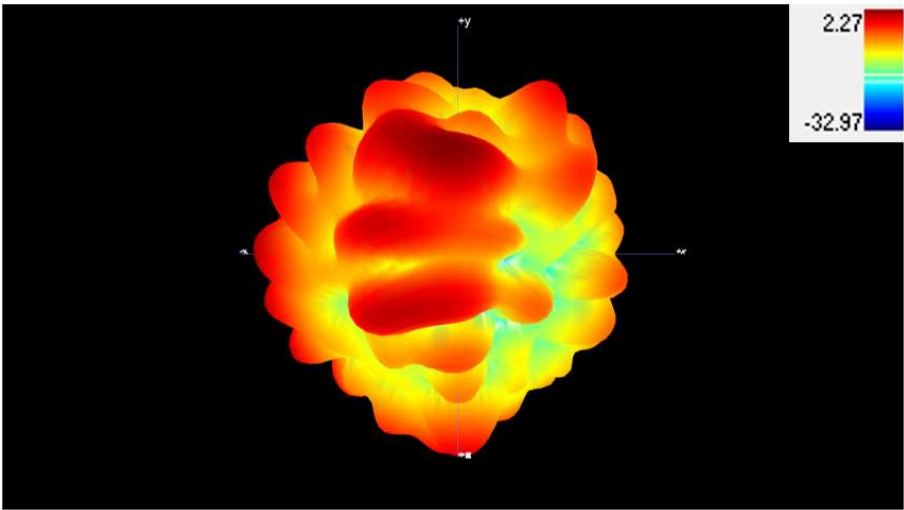
Max Antenna 3D Radiation Pattern 2400 – 2483.5 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 2400-2483.5     | 1.67                          |



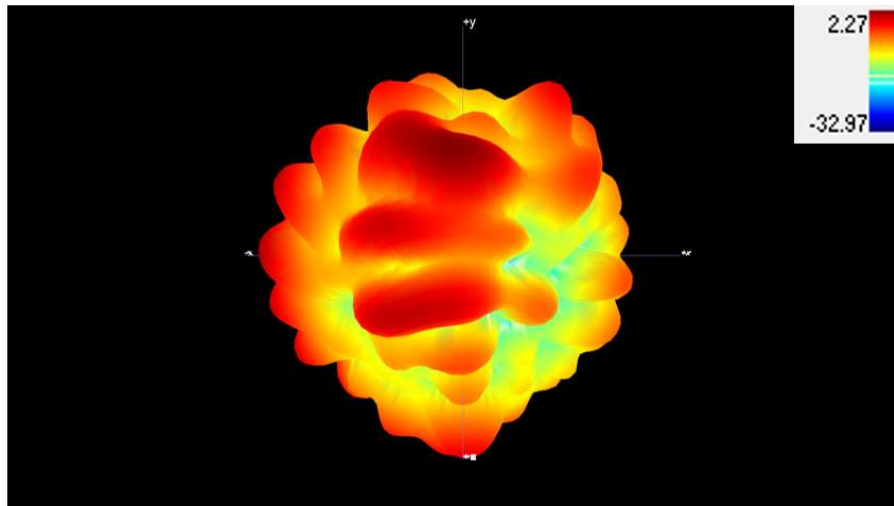
Max Antenna 3D Radiation Pattern 5150-5250 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 5150-5250       | 2.27                          |



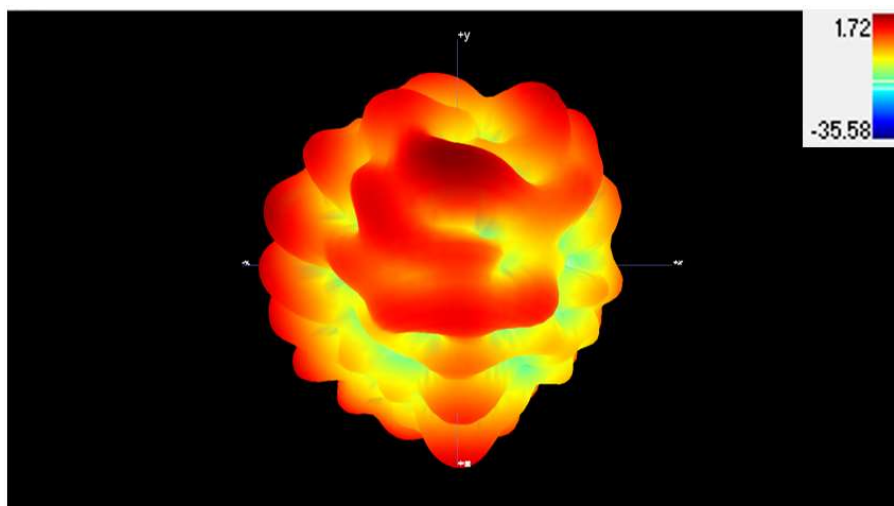
## Max Antenna 3D Radiation Pattern 5250-5350 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 5250-5350       | 2.27                          |



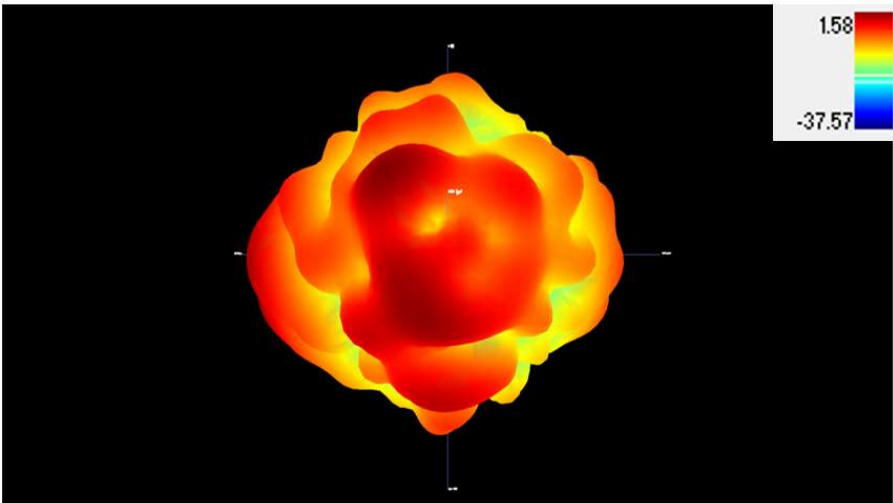
## Max Antenna 3D Radiation Pattern 5470-5725 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 5470-5725       | 1.72                          |



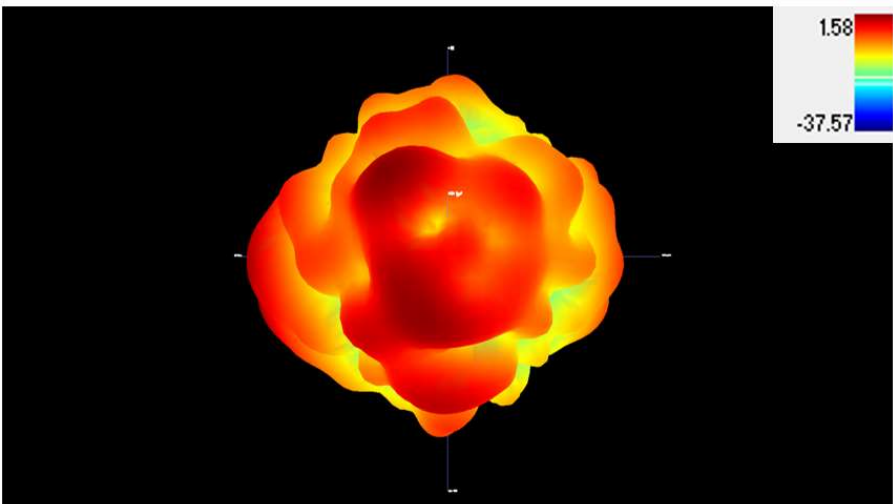
Max Antenna 3D Radiation Pattern 5725-5850 MHz

| Frequency<br>(MHz) | Peak Gain w/ Cable Loss<br>(dBi) |
|--------------------|----------------------------------|
| 5725-5850          | 1.58                             |



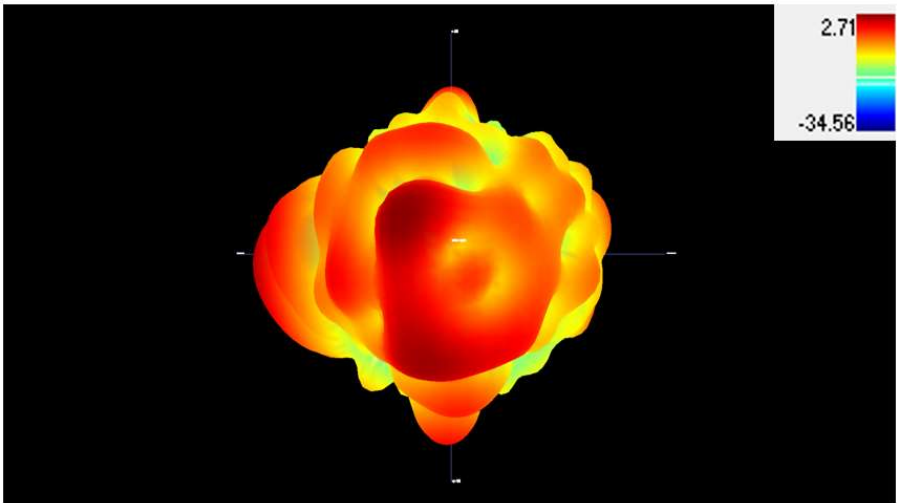
Max Antenna 3D Radiation Pattern 5850-5895 MHz

| Frequency<br>(MHz) | Peak Gain w/ Cable Loss<br>(dBi) |
|--------------------|----------------------------------|
| 5850-5895          | 1.58                             |



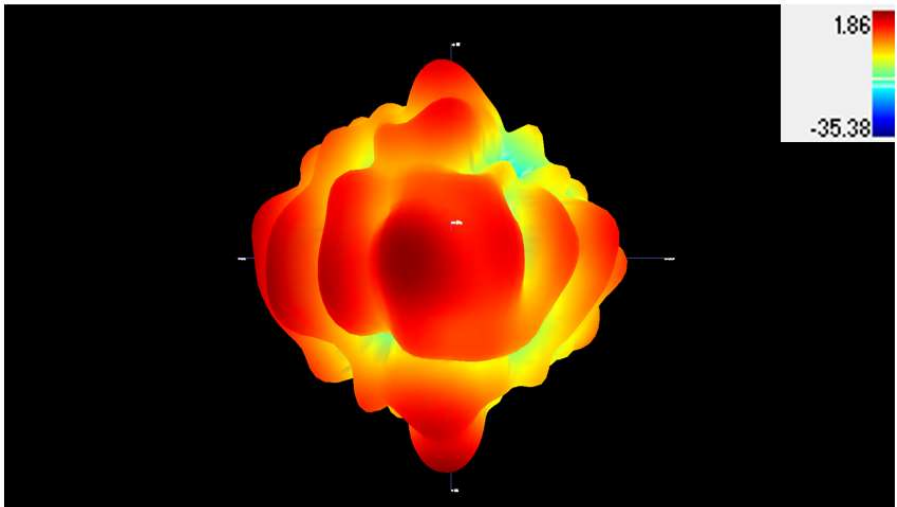
Max Antenna 3D Radiation Pattern 5925-6425 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 5925-6425       | 2.71                          |



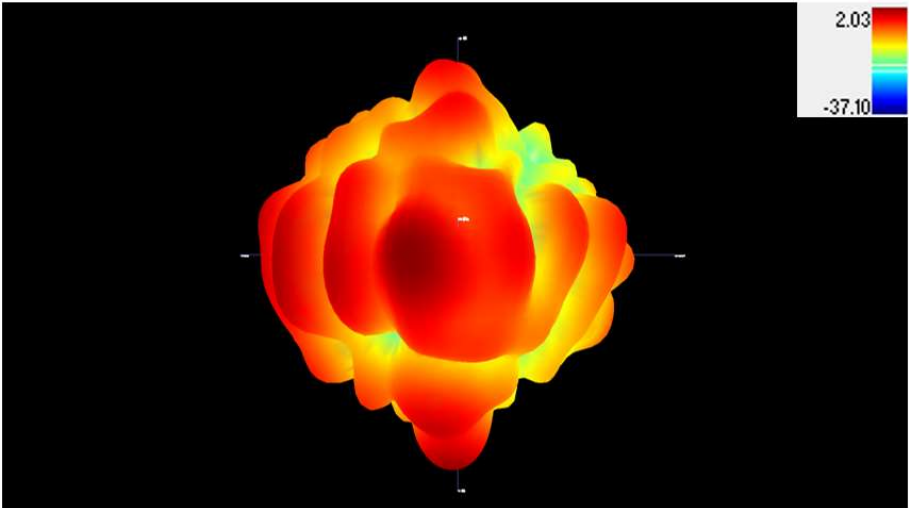
Max Antenna 3D Radiation Pattern 6425-6525 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 6425-6525       | 1.86                          |



Max Antenna 3D Radiation Pattern 6525-6875 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 6525-6875       | 2.03                          |



Max Antenna 3D Radiation Pattern 6875-7125 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 6875-7125       | 1.74                          |

