

ANTENNA INFORMATION

| | | |
|---|------------|------------------------------|
| OEM | | |
| ODM | | Samsung |
| Platform model name | | NP940XHA, NP940XHZ, NP944XHA |
| Intel platform (ex: Yes, No or NA) | | Yes |
| Platform type (ex: regular NB, convertible PC, AIO...etc) | | NB |
| SAR minimum separation (mm) | FCC (1g) | 5.75 |
| | ISED (1g) | |
| | ISED (10g) | |

| | | |
|----------------------|-----------------|---|
| Antenna manufacturer | Company name | WNC |
| | Address | Du Juan Road NO.121 Precision Machinery Industrial Park, Kunshan city, Jiangsu, China |
| Test location | Company name | WNC |
| | Address | Du Juan Road NO.121 Precision Machinery Industrial Park, Kunshan city, Jiangsu, China |
| Test Personnel | Name(Full name) | Dongxiu.Ma |
| | E-mail | Dongxiu.Ma@wnc.com.tw |
| | Tel/Mobile | 0512-57722688 |
| Testing date | | 2024.09 |

| | | |
|---------------------------------------|------|-------------|
| Antenna Part number | Main | BA42-00797A |
| | Aux | BA42-00797A |
| Antenna type (ex: PIFA, Dipole...etc) | | PIFA |

| Antenna Peak gain w/ cable loss (dBi)* | | | | | | | | | | |
|--|---------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|-------------------------|
| | 2.4GHz 2400-2483.5 MHz | 5.2GHz 5150-5250MHz | 5.3GHz 5250-5350MHz | 5.6GHz 5470-5725MHz | 5.8GHz 5725-5850MHz | 5.9GHz 5850-5895MHz | 6.2GHz 5925-6425MHz | 6.5GHz 6425-6525MHz | 6.7GHz 6525-6875MHz | 7.0 GHz 6875-7125MHz |
| Main | 2.75 | 2.86 | 2 | 2.95 | 3.86 | 3.81 | 1.73 | 2.66 | -0.45 | -0.08 |
| Aux | 2.71 | 2.57 | 3.06 | 3.33 | 3.53 | 3.66 | 1.88 | 1.99 | 1.44 | 1.6 |

| Cable Assembly Part Number and Information | | | | | |
|--|--------------|------------------|--------------------|----------------|----------------|
| | Cable PN | Cable length(mm) | Cable diameter(mm) | Impedance(ohm) | Connector type |
| Main | 81XBLD15.G14 | 27.75 | 1.13 | 50 ohm Coaxial | MHF4L(IPEX) |
| Aux | 81XBLD15.G14 | 21.75 | 1.13 | 50 ohm Coaxial | MHF4L(IPEX) |

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

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1. Intel Reference Gain and Type

| Antenna Peak gain w/ cable loss (dBi) | | | | | | | | | | | |
|---------------------------------------|-------------------------|---------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|-------------------------|
| Band/Frequency | | 2.4GHz 2400-2483.5 MHz | 5.2GHz 5150-5250MHz | 5.3GHz 5250-5350MHz | 5.6GHz 5470-5725MHz | 5.8GHz 5725-5850MHz | 5.9GHz 5850-5895MHz | 6.2GHz 5925-6425MHz | 6.5GHz 6425-6525MHz | 6.7GHz 6525-6875MHz | 7.0 GHz 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

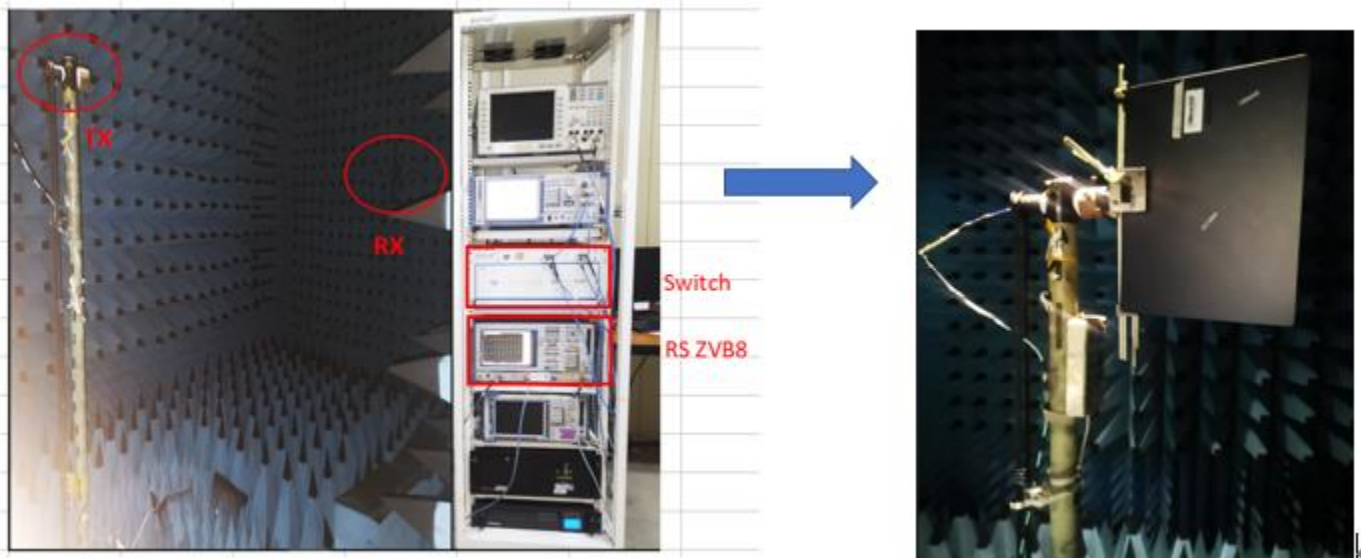
If a host integrator plans to use a lower gain antenna of the same type, additional CBP(FCC)/EDT(EU) testing need to be performed while the module is installed in the host.

2. Document Revision History

| Revision # | Revision Details | Issued Date |
|------------|------------------|-------------|
| Rev.A00 | First Issue | 2024.09 |

3. Test & System Description

3.1 Measurement Method and System



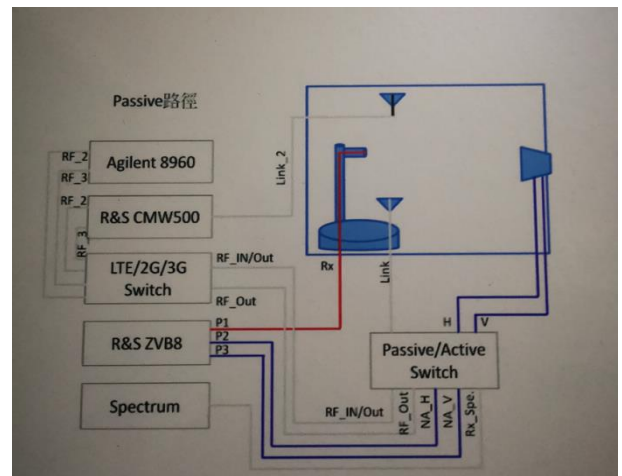
As right picture, make DUT to be 110 degree, lay it on chamber transmitting terminal, RX antenna receive the signal and feedback to Network analyzer, then test result come out by software calculating

3.2 Test setup

Test Environment




Test philosophy



3.3 Equipment list



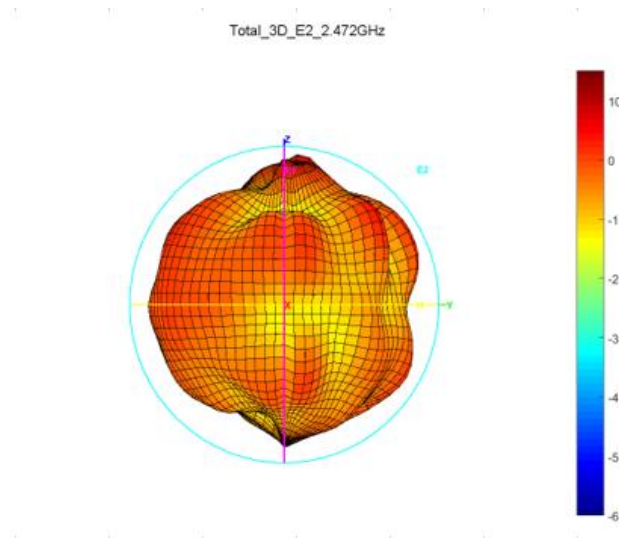
| Equipment list | | | | | | |
|---|-----------------------|---|--------------|--------------|------------|-------------|
| NO. | Device | Type/Model | Serial# | Manufacturer | Cal-Date | Cal.DueDate |
| 1 | Chamber | \ | \ | ATEN LAB | 2024.04.24 | 2024.10.24 |
| 2 | Software | Maxwell3.3.0  | | ATEN LAB | \ | \ |
| 3 | Active/passive switch | \ | \ | ATEN LAB | \ | \ |
| 4 | Network analyzer | ZVB8 | 1145.1010.10 | R&S | 2024.1.18 | 2025.1.17 |
| 5 | Horn antenna | BBHX9120E | \ | SCHWARZBECK | 2024.04.24 | 2024.10.24 |
| Tester: Dongxiu.Ma Sign: <i>Dongxiu.Ma</i> Test Date: 2024.09 | | | | | | |

4. Radiation characteristics of antenna loaded in Host Platform

Main Antenna

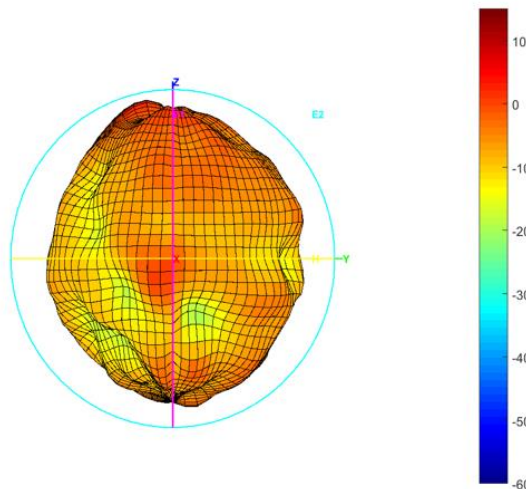
Max Antenna 3D Radiation Pattern 2400 – 2483.5 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 2400-2483.5 | 2.75 |



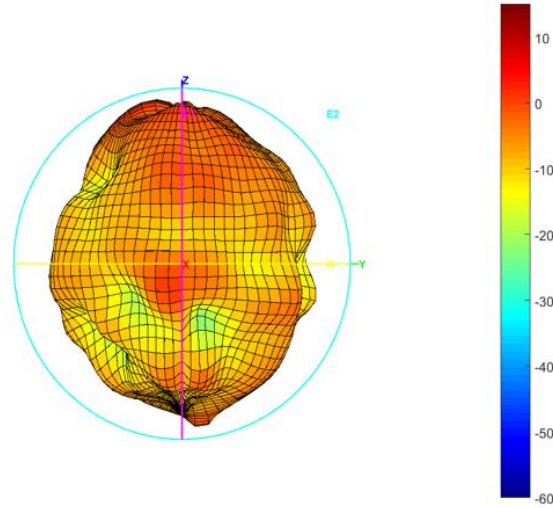
Max Antenna 3D Radiation Pattern 5150-5250 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 5150-5250 | 2.86 |



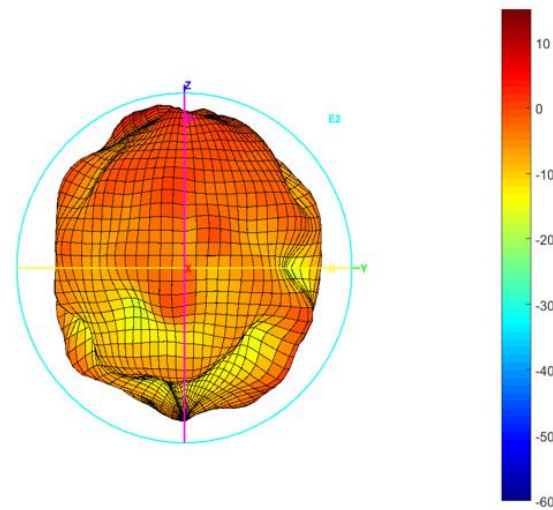
Max Antenna 3D Radiation Pattern 5250-5350 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 5250-5350 | 2 |



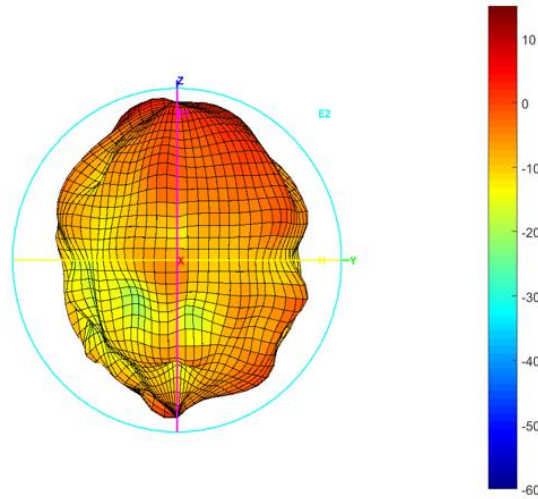
Max Antenna 3D Radiation Pattern 5470-5725 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 5470-5725 | 2.95 |



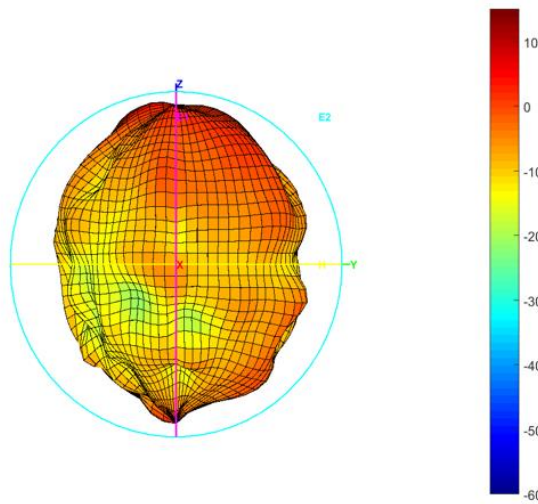
Max Antenna 3D Radiation Pattern 5725-5850 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 5725-5850 | 3.86 |



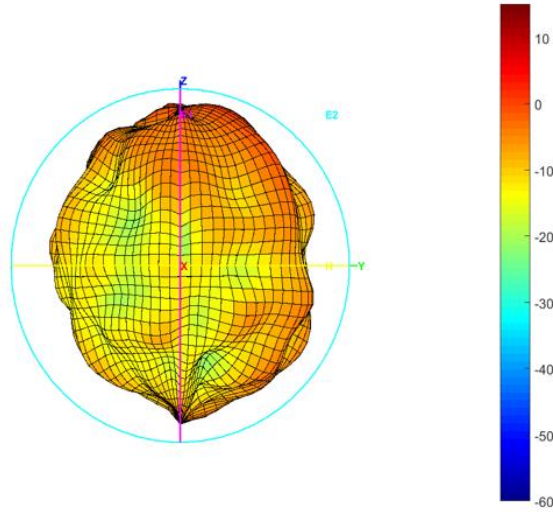
Max Antenna 3D Radiation Pattern 5850-5895 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 5850-5895 | 3.81 |



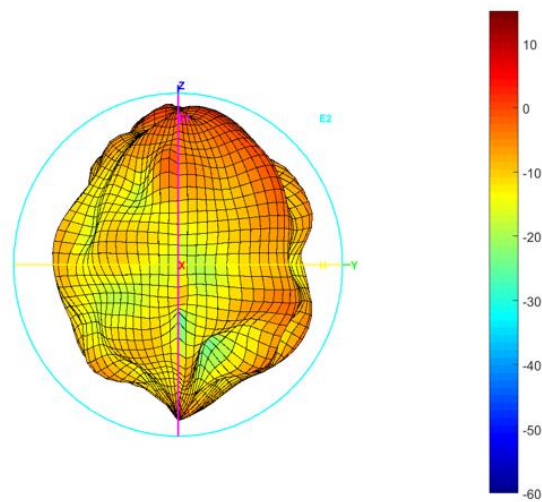
Max Antenna 3D Radiation Pattern 5925-6425 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 5925-6425 | 1.73 |



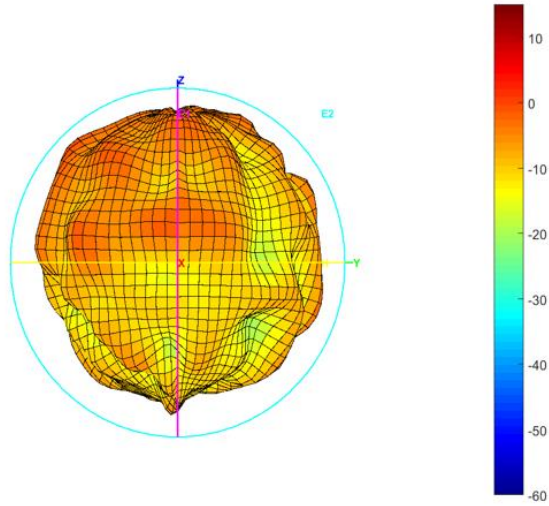
Max Antenna 3D Radiation Pattern 6425-6525 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 6425-6525 | 2.66 |



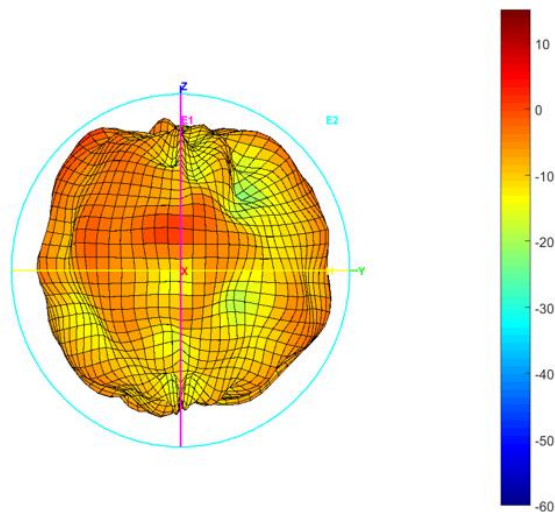
Max Antenna 3D Radiation Pattern 6525-6875 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 6525-6875 | -0.45 |



Max Antenna 3D Radiation Pattern 6875-7125 MHz

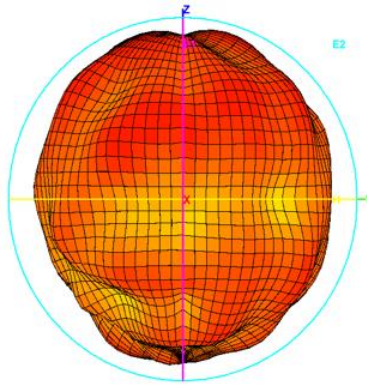
| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 6875-7125 | -0.08 |



Auxiliary Antenna

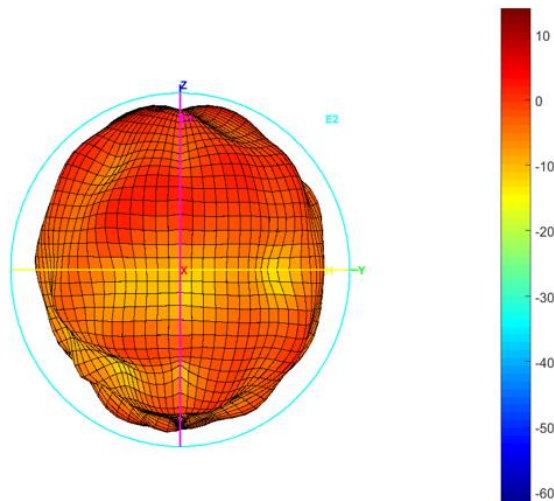
Max Antenna 3D Radiation Pattern 2400 – 2483.5 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 2400-2483.5 | 2.71 |



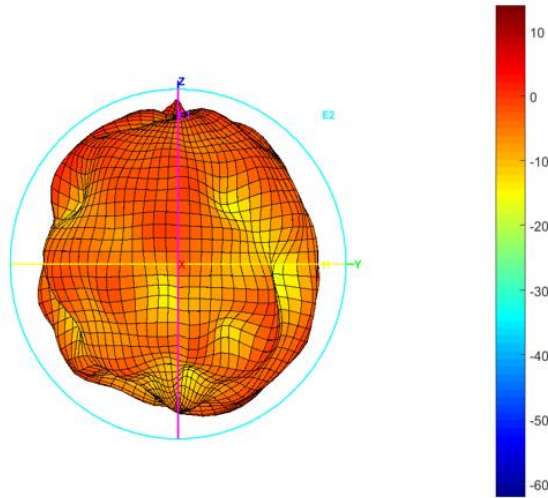
Max Antenna 3D Radiation Pattern 5150-5250 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 5150-5250 | 2.57 |



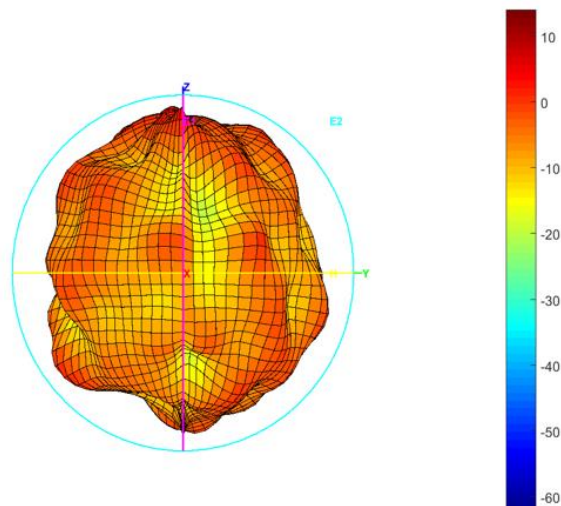
Max Antenna 3D Radiation Pattern 5250-5350 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 5250-5350 | 3.06 |



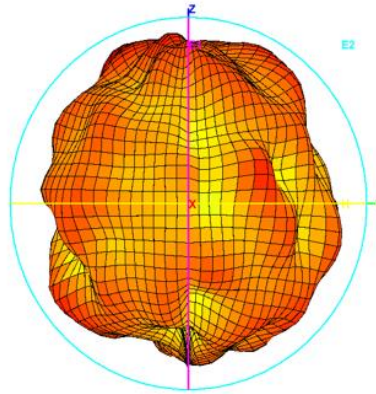
Max Antenna 3D Radiation Pattern 5470-5725 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 5470-5725 | 3.33 |



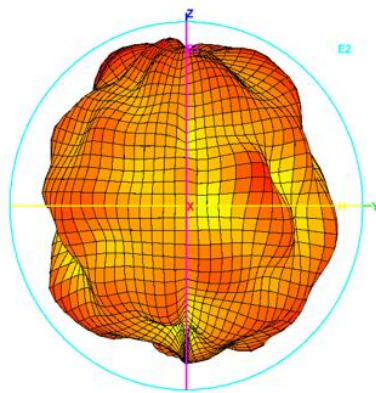
Max Antenna 3D Radiation Pattern 5725-5850 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 5725-5850 | 3.53 |



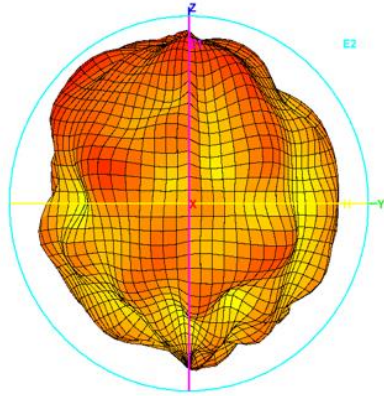
Max Antenna 3D Radiation Pattern 5850-5895 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 5850-5895 | 3.66 |



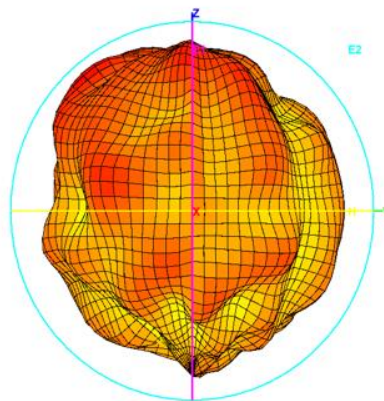
Max Antenna 3D Radiation Pattern 5925-6425 MHz

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



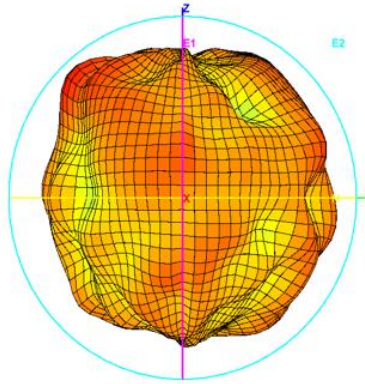
Max Antenna 3D Radiation Pattern 6425-6525 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 6425-6525 | 1.99 |



Max Antenna 3D Radiation Pattern 6525-6875 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 6525-6875 | 1.44 |



Max Antenna 3D Radiation Pattern 6875-7125 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 6875-7125 | 1.6 |

