

# ANTENNA INFORMATION

|                      |                                                                                                               |
|----------------------|---------------------------------------------------------------------------------------------------------------|
| Antenna manufacturer | Changshu HongBo Telecommunication Technology Co., Ltd.                                                        |
| Address              | No. 8, Liuzhou Road, Lushan Industrial Park, Xinxing Development Zone, Changshu City, Jiangsu Province, China |
| Antenna Part number  | Main/ Aux: 260-25096                                                                                          |
| Antenna type         | Monopole                                                                                                      |

|                |                                                                   |
|----------------|-------------------------------------------------------------------|
| Test Location  | HongBo Wireless Communication Technology Co., Ltd.                |
| Address        | 4F., No.143, SinHu 1st Rd., Neihu Dist, Taipei City 11494, Taiwan |
| Test Personnel | Jacky Hu                                                          |
| Testing date   | 2024/02/01                                                        |

| Antenna Peak gain w/ 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/<br>Aux                           | 3.11                             | 4.88                          | 4.91                          | 4.90                          | 4.90                          | 4.87                          | 4.73                          | 4.29                          | 4.58                          | 4.09                           |

| Cable Assembly Part Number and Information |                 |                         |                           |                       |                       |
|--------------------------------------------|-----------------|-------------------------|---------------------------|-----------------------|-----------------------|
|                                            | <b>Cable PN</b> | <b>Cable length(cm)</b> | <b>Cable diameter(mm)</b> | <b>Impedance(ohm)</b> | <b>Connector type</b> |
| Main/<br>Aux                               | SY113L/50       | 300                     | 1.13                      | 50                    | MHF4L                 |

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**1. Document Revision History**

| Revision # | Revision Details | Issued Date |
|------------|------------------|-------------|
| Rev.00     | First version    | 2024/02/1   |
|            |                  |             |

## 2. Test & System Description

### 2.1 Measurement Method and System

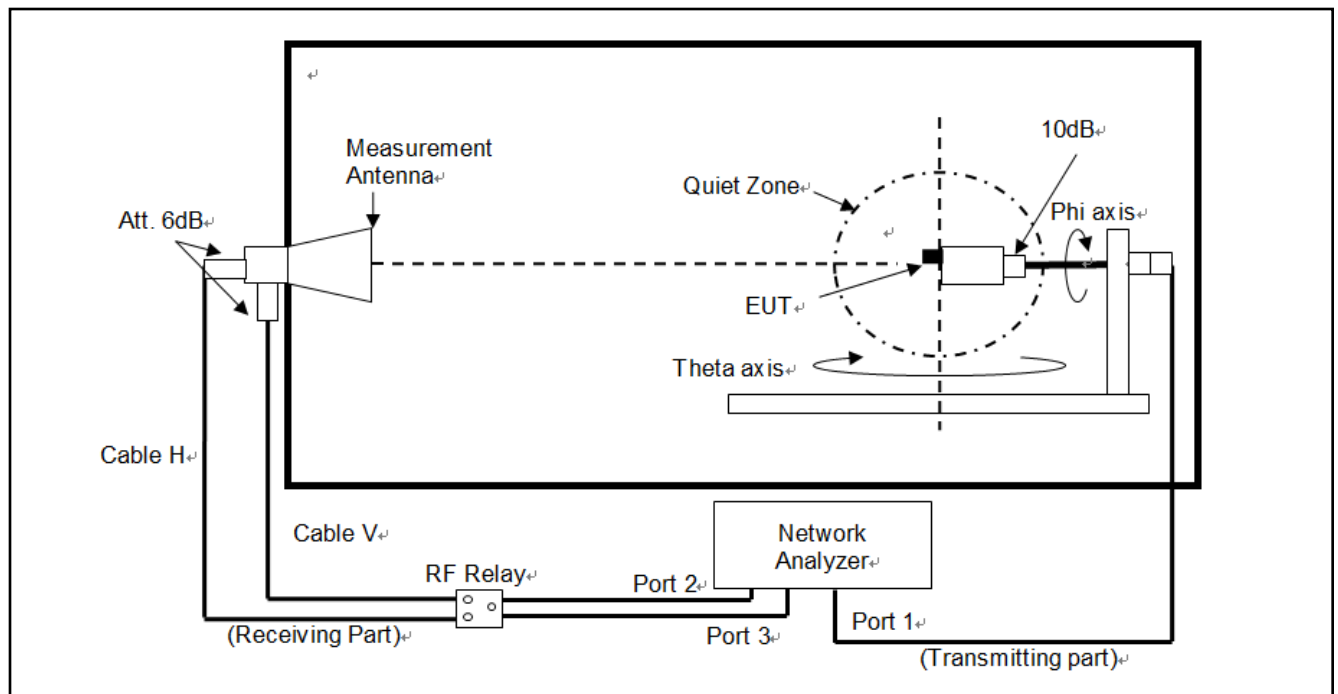
This test report is prepared for Monopole antenna testing under a AMS-8500 Full Anechoic Chamber. ETS-Lindgren AMS-8500 system is 3D fully anechoic chamber, it is applied to the "Conical Cut test method" the detail description is described as below,

The Conical Cut method requires the ability of the Measurement Antenna to be physically rotated in the theta plane (overhead) of the EUT for implementations using a single Measurement Antenna, Eleven conical cuts are required to capture data at every 15 degrees from the EUT, with the top (0 degrees) and bottom (180 degrees) cuts not being measured. Typically, the EUT will remain affixed to a turntable during the entire measurement process. The Measurement antenna will be positioned at a starting theta angle.

|         |                | $\theta$ -Axis     | $\Phi$ -Axis      |
|---------|----------------|--------------------|-------------------|
| Passive | Step size      | 15°~165° step: 15° | 0°~345° step: 15° |
|         | N / M (Points) | 12                 | 24                |

The EUT will then be rotated around the full 360 degrees of phi rotation, The Measurement Antenna will then be positioned at the next theta angle, and the process repeated.

### 2.2 Test setup



## 2.3 Equipment list

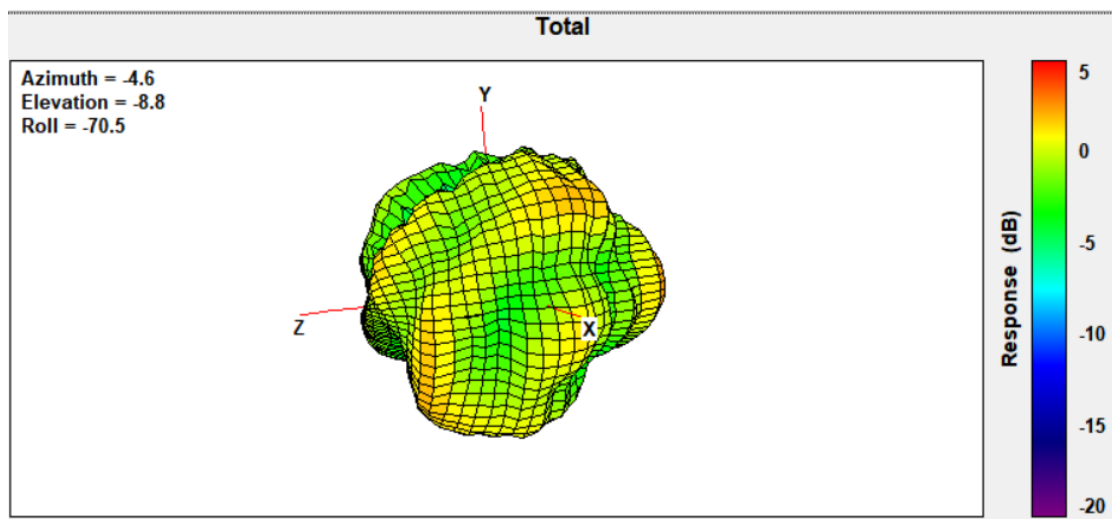
| Name                                | Manufacture  | Type/Model | Serial Number | Cal. Date | Cal. Due Date |
|-------------------------------------|--------------|------------|---------------|-----------|---------------|
| ENA Series<br>Network Analyze       | Keysight     | E5071C     | MY46108594    | 2023/8/3  | 2025/8/3      |
| RF Switch                           | Keysight     | 3499A      | MY4200955     | NCR       | NCR           |
| Multi-Axis Positioner<br>Controller | ETS-Lindgren | 2090       | N/A           | NCR       | NCR           |
| Medium-Duty<br>Positioner           | ETS-Lindgren | 2015       | N/A           | NCR       | NCR           |
| Measurement Horn<br>Antenna         | EMCO         | Aug-64     | 86722         | NCR       | NCR           |

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

#### Main Antenna

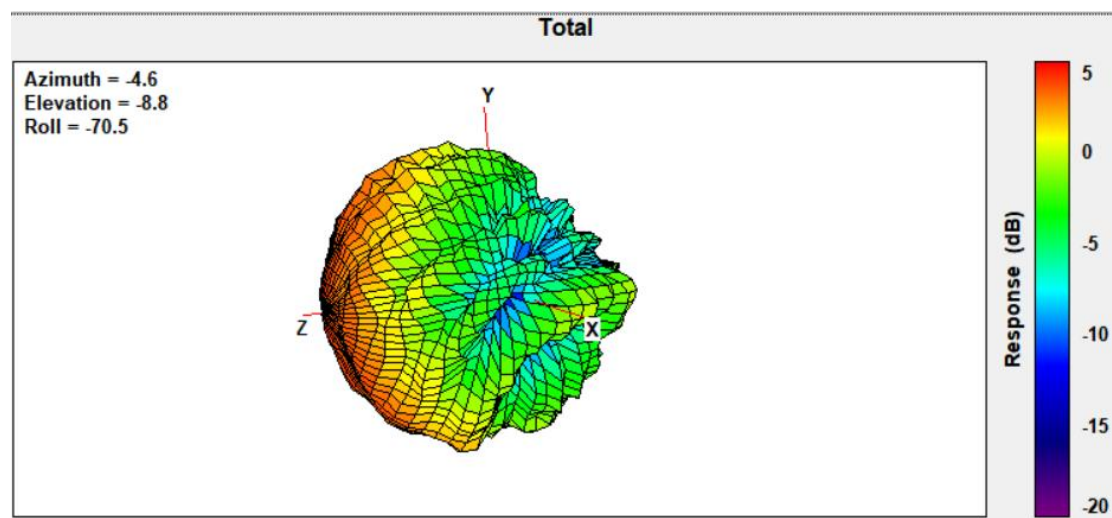
Max Antenna 3D Radiation Pattern 2400 – 2483.5 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 2400-2483.5     | 3.11                          |



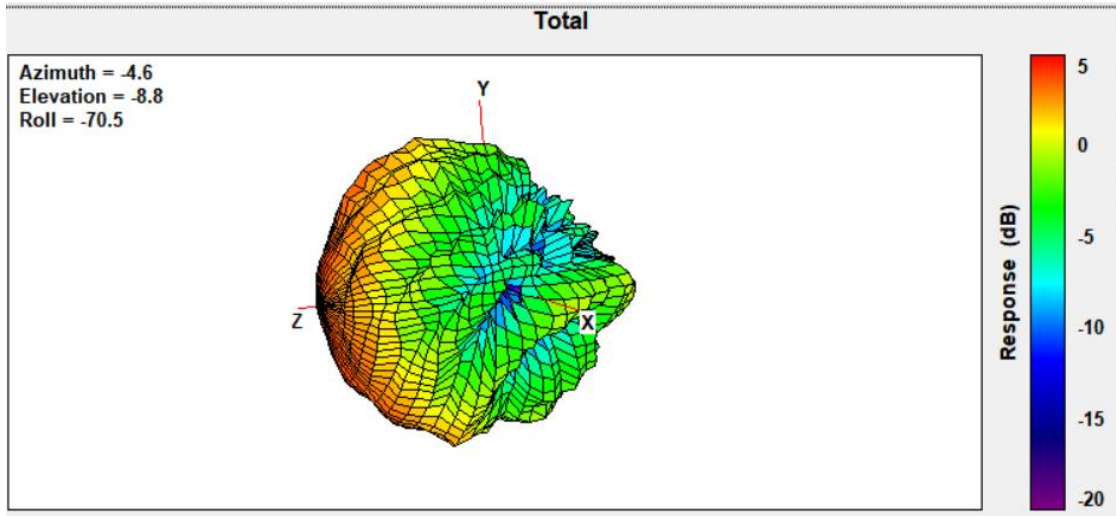
Max Antenna 3D Radiation Pattern 5150-5250 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 5150-5250       | 4.88                          |



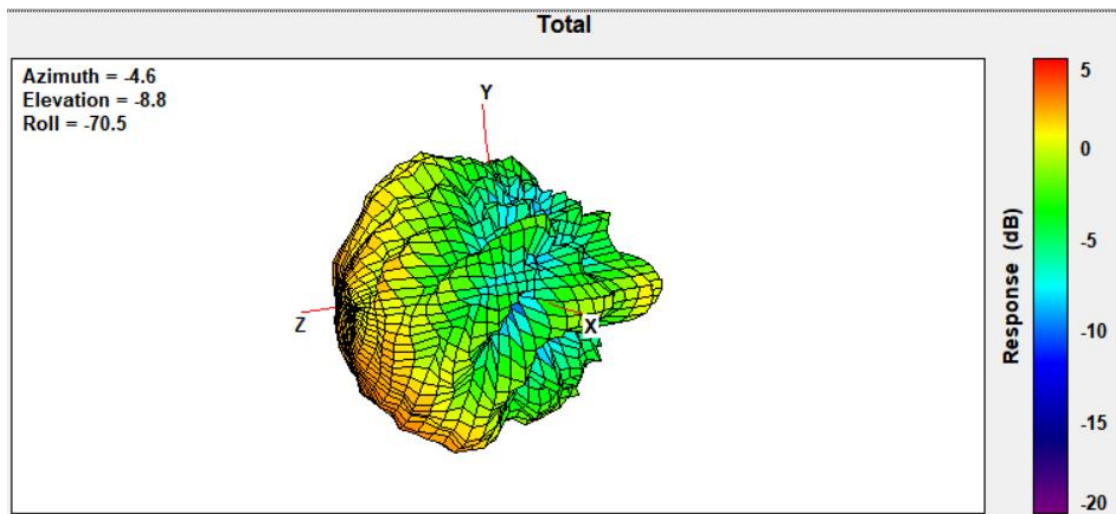
# Max Antenna 3D Radiation Pattern 5250-5350 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 5250-5350       | 4.91                          |



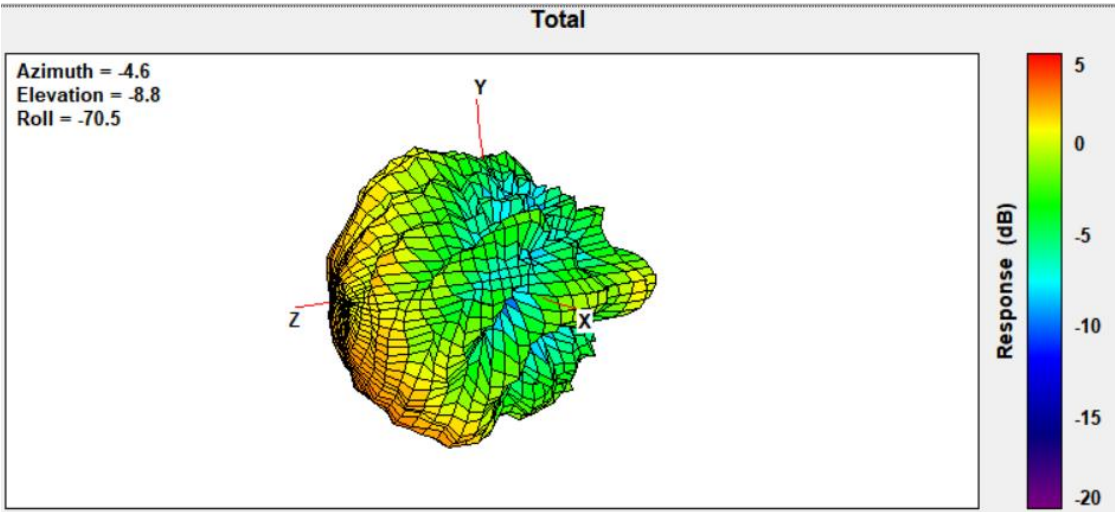
# Max Antenna 3D Radiation Pattern 5470-5725 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 5470-5725       | 4.90                          |



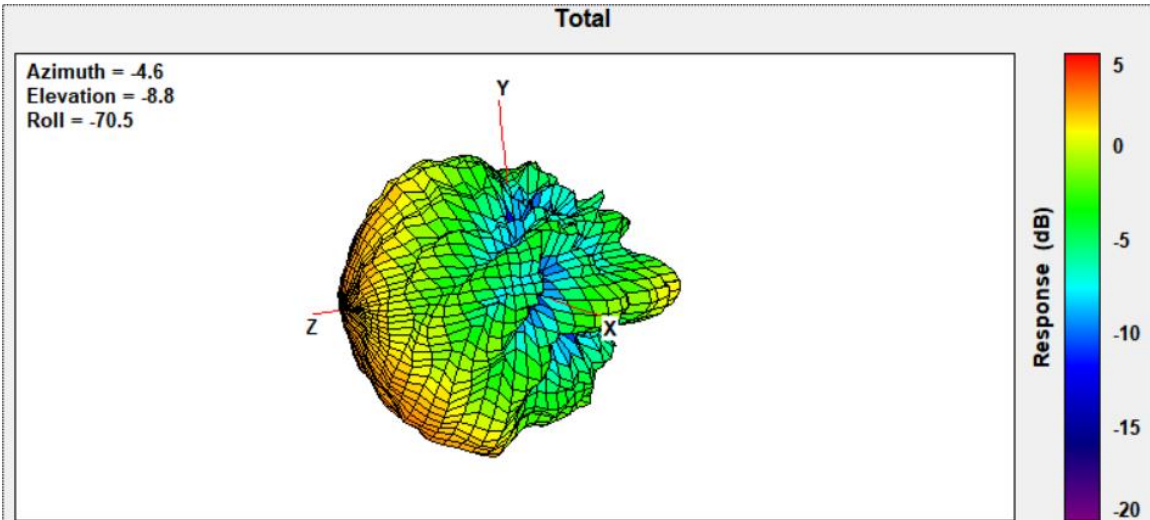
Max Antenna 3D Radiation Pattern 5725-5850 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 5725-5850       | 4.90                          |



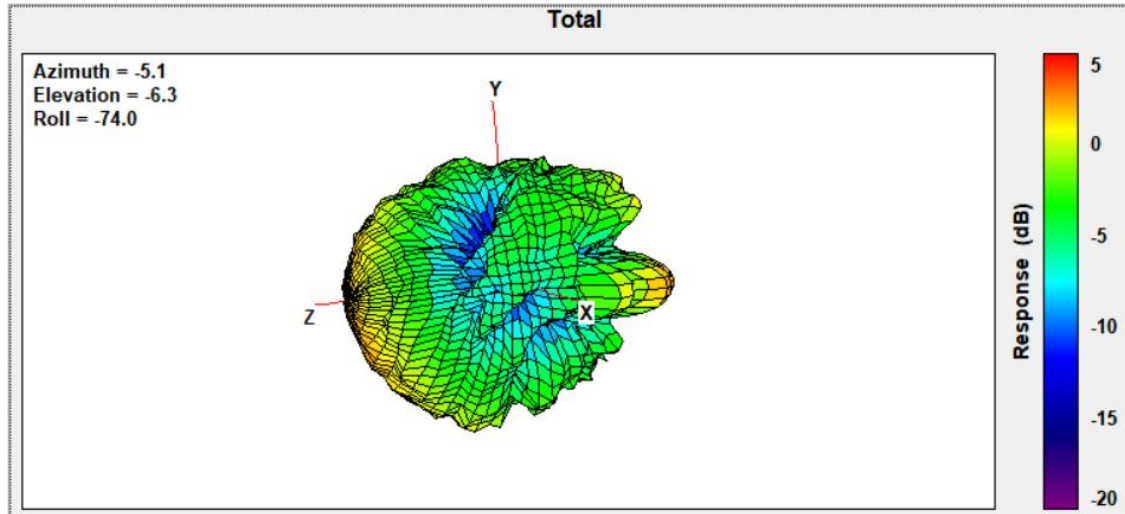
Max Antenna 3D Radiation Pattern 5850-5895 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 5850-5895       | 4.87                          |



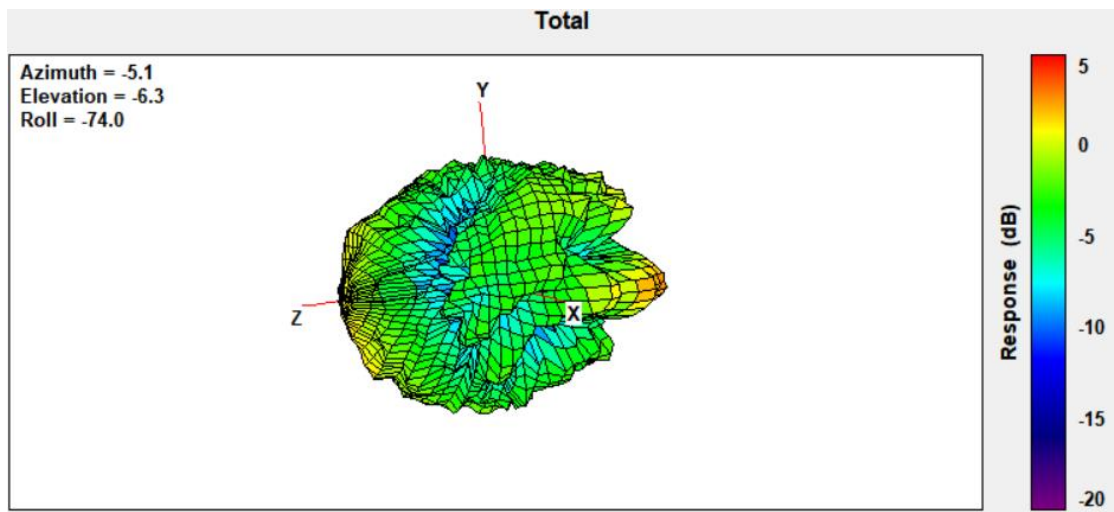
# Max Antenna 3D Radiation Pattern 5925-6425 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 5925-6425       | 4.73                          |



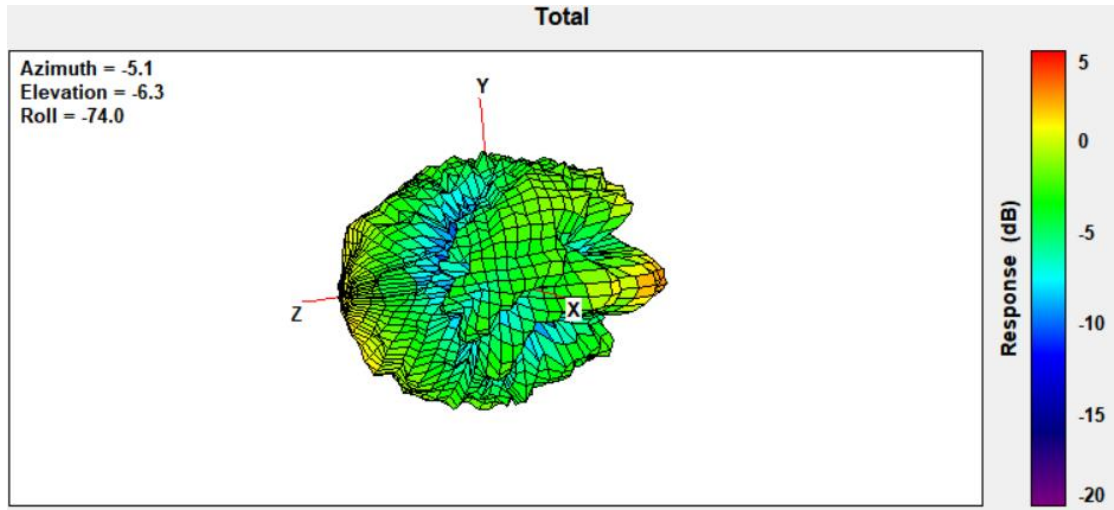
# Max Antenna 3D Radiation Pattern 6425-6525 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 6425-6525       | 4.29                          |



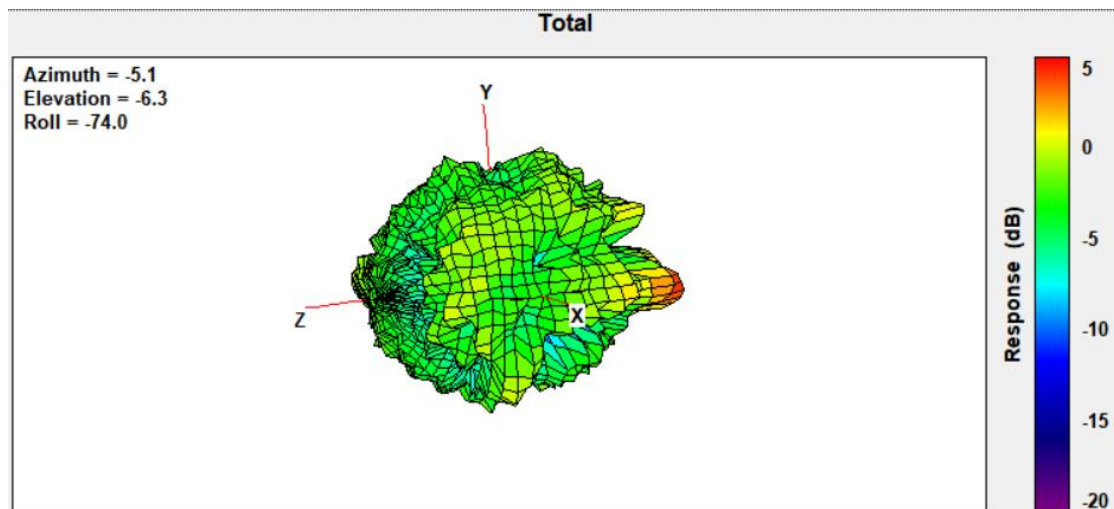
## Max Antenna 3D Radiation Pattern 6525-6875 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 6525-6875       | 4.58                          |



## Max Antenna 3D Radiation Pattern 6875-7125 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 6875-7125       | 4.09                          |



# Annex A. Photographs

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## A.1 Setup Photo

