# TAOGLAS®

**Part No:**
TU.63.2111

**Description**

Terminal Mount 6-8.5GHz 2.5dBi Ultra-Wideband Antenna with SMA(M)

**Features:**

Compact, Low-profile Screw Mount UWB Antenna
Covering Worldwide UWB Bands from 6GHz – 8.5GHz
Dimensions: Ø8.2 x 35.8mm
Connector: SMA(M)
RoHS & Reach Compliant

Ireland
ISO 9001: 2015
Certified

ISO 9001 CERTIFICATION EUROPE

Taiwan
ISO 9001: 2015
Certified

QA RNATIONAL

UKAS QUALITY MANAGEMENT 046

QUALITY MANAGEMENT SYSTEM IATF16949

SPE-24-8-135-B

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# 1. Introduction

**Super Small, UWB Antenna for High-performance Indoor Positioning, Asset and Access Applications**

The Taoglas TU.63 is a unique, super compact, terminal mount ultra-wideband (UWB) antenna. It is engineered to cover all worldwide UWB frequencies between 6 and 8.5 GHz. With excellent efficiency and an omnidirectional radiation pattern with up to 6 dBi gain, it provides strong, homogeneous coverage in all directions from the UWB sensor. The TU.63 is ground plane independent and exhibits exceptional efficiencies of up to 91% on specific bands. The product is mounted with a standard SMA(M) connector, and the enclosure is manufactured from robust ABS material making it suitable for use in harsh environments.

The potential of UWB is enabling a wave of applications that use highly accurate, ultra-reliable location, and distance sensing to deliver new experiences and capabilities. It operates with low power for transmitting large amounts of digital data over a wide spectrum of frequency bands typically spanning more than 500MHz with very low power for short distances up to 250m with latency speeds as low as 1ms. The low power requirements of UWB results in the increased battery life of sensors and tags which in turn reduces overall operational costs.

Typical Applications Include:
• Indoor position location and asset tracking applications
• Smart home device control and entertainment systems
• Keyless entry and access control systems

The TU.63 is a powerful antenna and one of several Taoglas-developed antennas designed for seamless integration and compatibility with any UWB sensor module on the market. Contact your regional Taoglas customer support team for further information.

# 2. Enclosure isSpecification

| LTE Electrical | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Band | Frequency (MHz) | Measurement | Efficiency (%) | Average Gain (dB) | Peak Gain (dBi) | Impedance | Polarization | Radiation Pattern | Power Consumption |
| LRP CH0 | 6200-6800 | Eval Board 150x90mm | 78.9 | -1.03 | 5.84 | 50 Ω | Linear | Omni | 2-5W |
| | | Eval Board 90x150mm | 75.1 | -1.25 | 6.07 | | | | |
| | | Free Space | 79.7 | -0.99 | 3.44 | | | | |
| LRP CH 4 | 6400-7000 | Eval Board 150x90mm | 75.8 | -1.20 | 5.76 | | | | |
| | | Eval Board 90x150mm | 72.0 | -1.42 | 5.95 | | | | |
| | | Free Space | 76.1 | -1.18 | 3.53 | | | | |
| HRP CH6/LRP CH 1 | 6700-7300 | Eval Board 150x90mm | 67.3 | -1.72 | 5.07 | | | | |
| | | Eval Board 90x150mm | 63.9 | -1.95 | 4.81 | | | | |
| | | Free Space | 67.4 | -1.72 | 3.53 | | | | |
| LRP CH 5 | 7000-7600 | Eval Board 150x90mm | 64.7 | -1.89 | 5.49 | | | | |
| | | Eval Board 90x150mm | 61.6 | -2.10 | 4.31 | | | | |
| | | Free Space | 66.5 | -1.77 | 3.38 | | | | |
| HRP CH 8 | 7200-7800 | Eval Board 150x90mm | 65.8 | -1.82 | 5.49 | | | | |
| | | Eval Board 90x150mm | 62.0 | -2.08 | 4.31 | | | | |
| | | Free Space | 69.1 | -1.61 | 4.02 | | | | |
| HRP CH 9/LRP CH 6 | 7700-8300 | Eval Board 150x90mm | 58.2 | -2.35 | 5.30 | | | | |
| | | Eval Board 90x150mm | 53.7 | -2.70 | 4.18 | | | | |
| | | Free Space | 72.7 | -1.38 | 4.45 | | | | |

| Mechanical | |
|---|---|
| Dimensions | Ø8.2 x 35.8mm |
| Weight | 6g |
| Material | Silicon |
| Connector | SMA(M) |

| Environmental | |
|---|---|
| Temperature Range | -40°C to 85°C |
| Humidity | Non-condensing 65°C 95% RH |
| IP Rating | IP67 |
| RoHS Compliant | Yes |
| REACH Compliant | Yes |

# 3. Mechanical Drawing



1/4-36UNS-2B

Ø8.5 ±0.1

0.8

Ø8.2±0.3

10.8

25.0±0.5

35.8±1.0
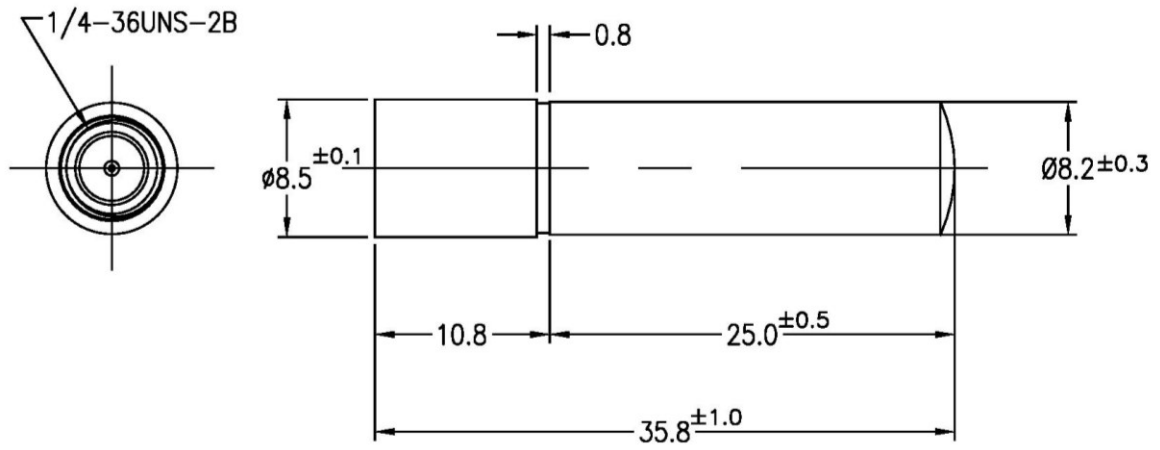
# 4.   Packaging

60pcs TU.63 per tray
Tray dimensions: 298x240x17.4mm
Weight: 377g



Label

1200pcs TU.63 per carton
Carton dimensions: 328x296x282mm
Weight: 8.3Kg



Label
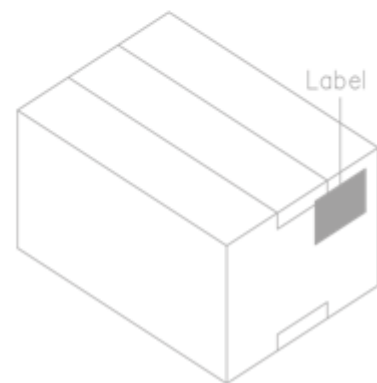
# 4. Antenna Characteristics

## 4.1 Test Setup



AUT

Vector Network Analyzer



In Free Space

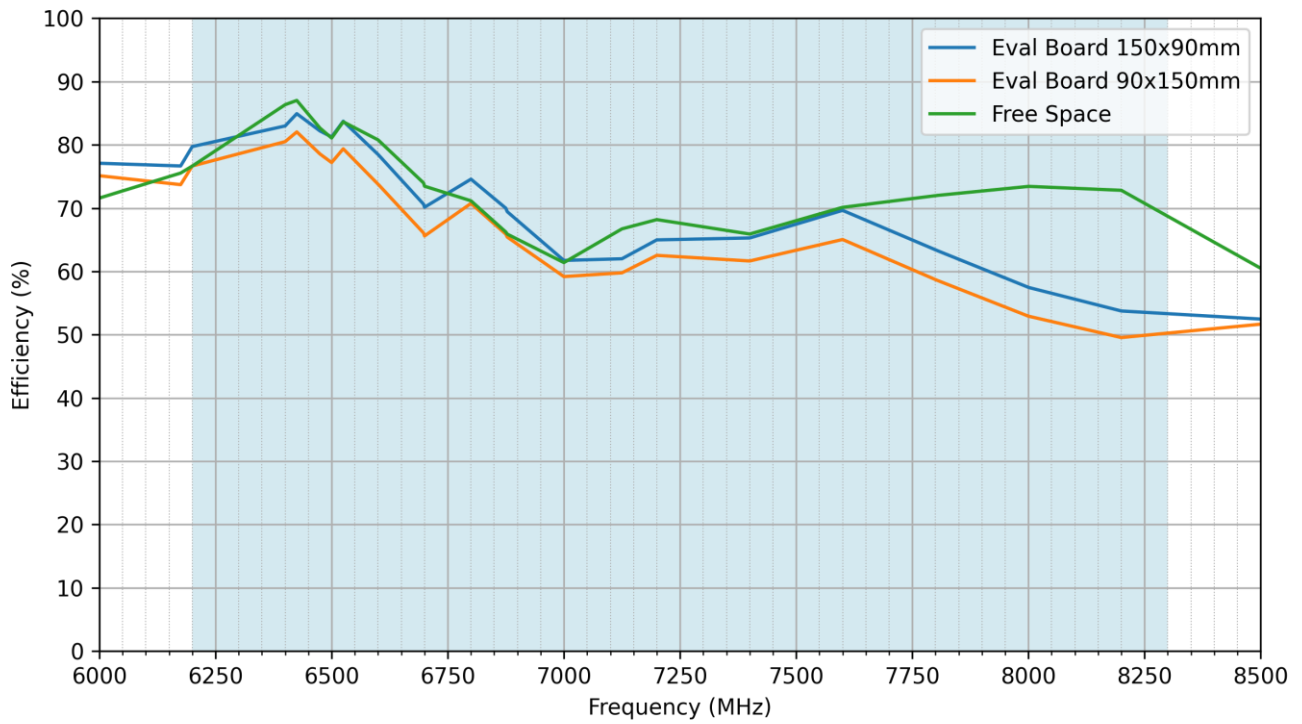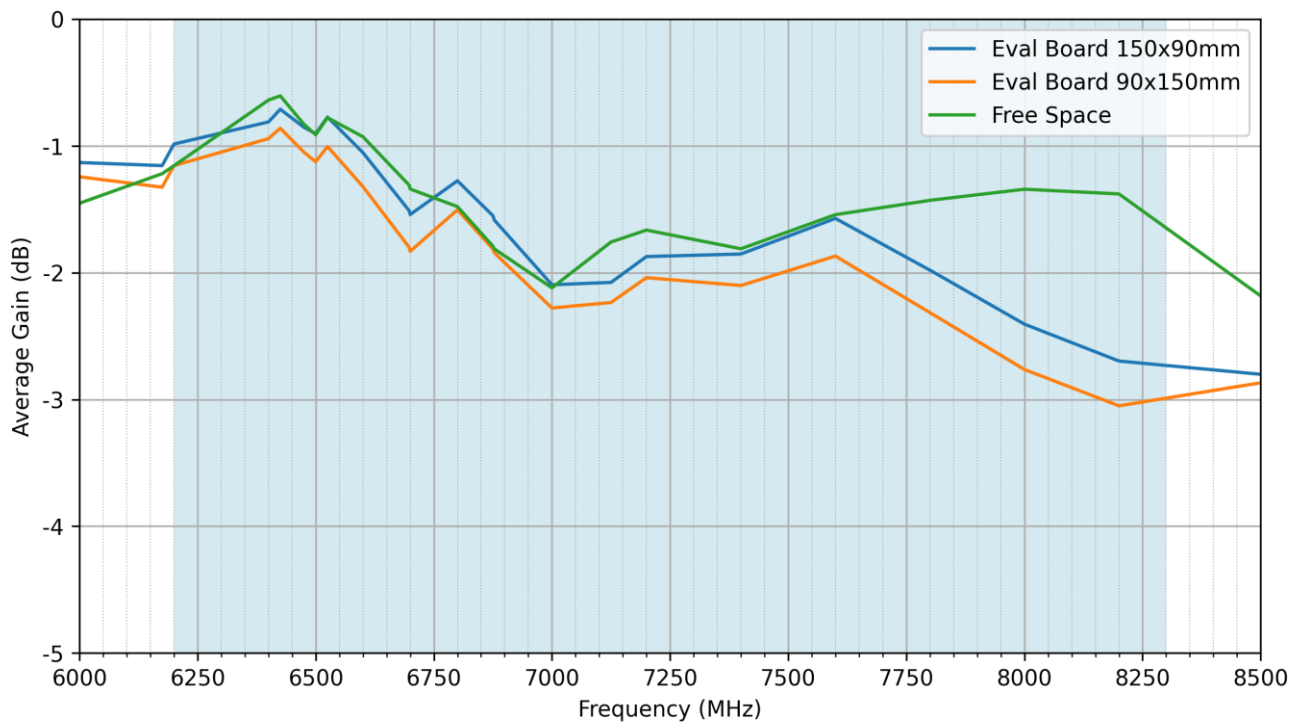On 150x90mm Eval Board
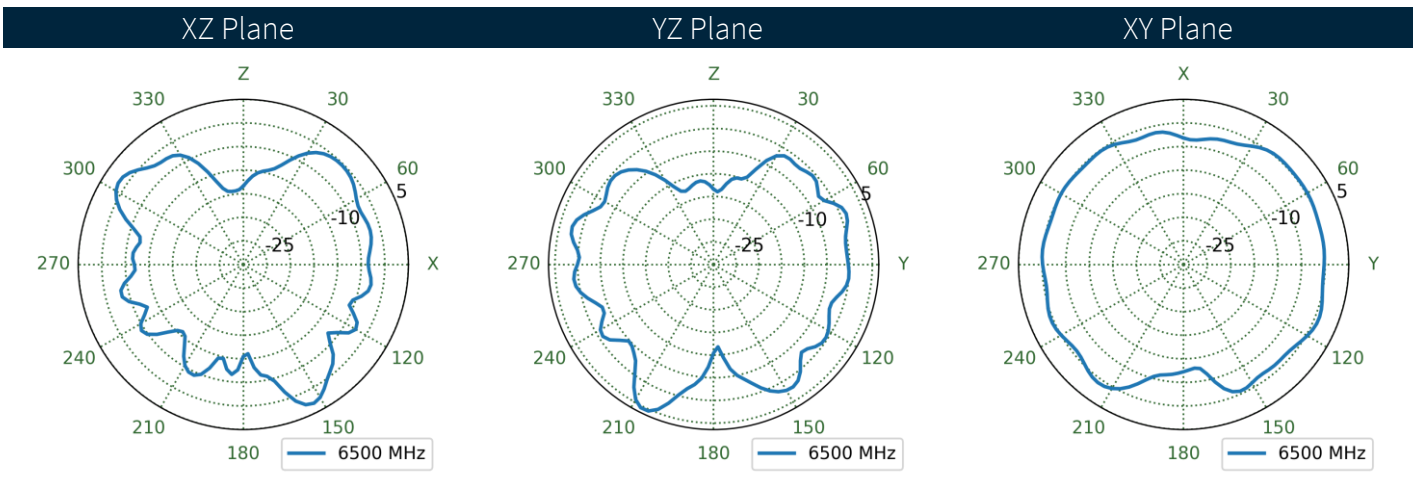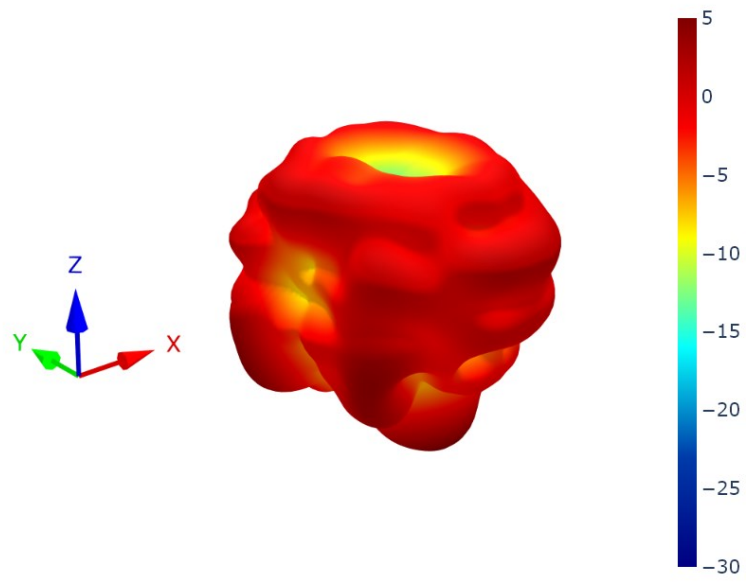
On 90x150mm Eval Board

SPE-24-8-135-B

## 4.2 Return Loss
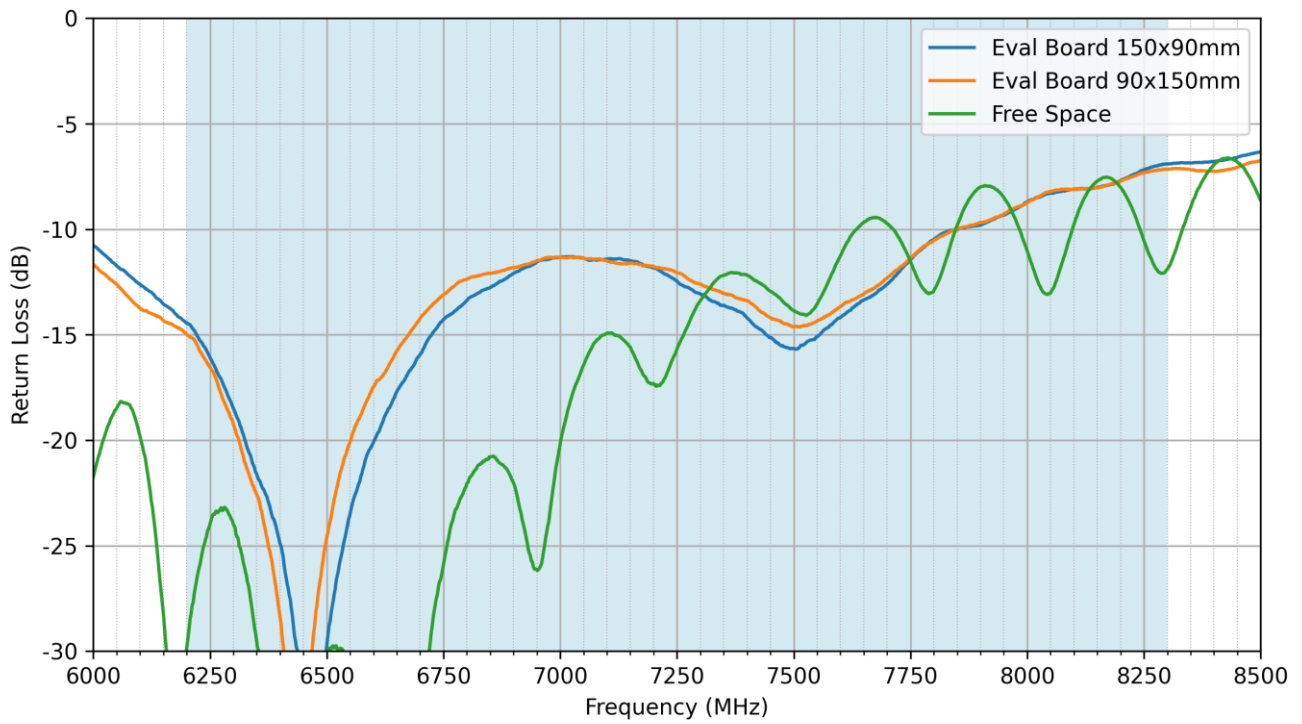


## 4.3 VSWR
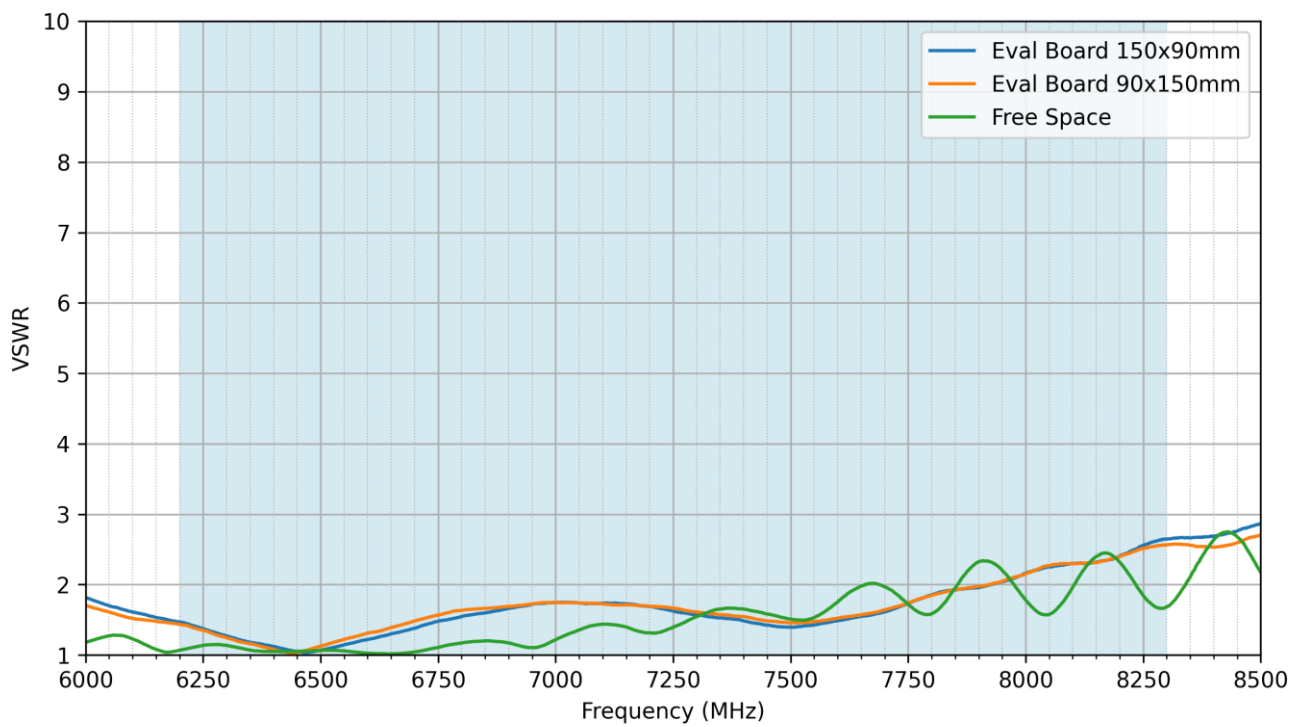
## 4.4 Efficiency



## 4.5 Average Gain

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## 4.6 Peak Gain



## 4.7 Group Delay

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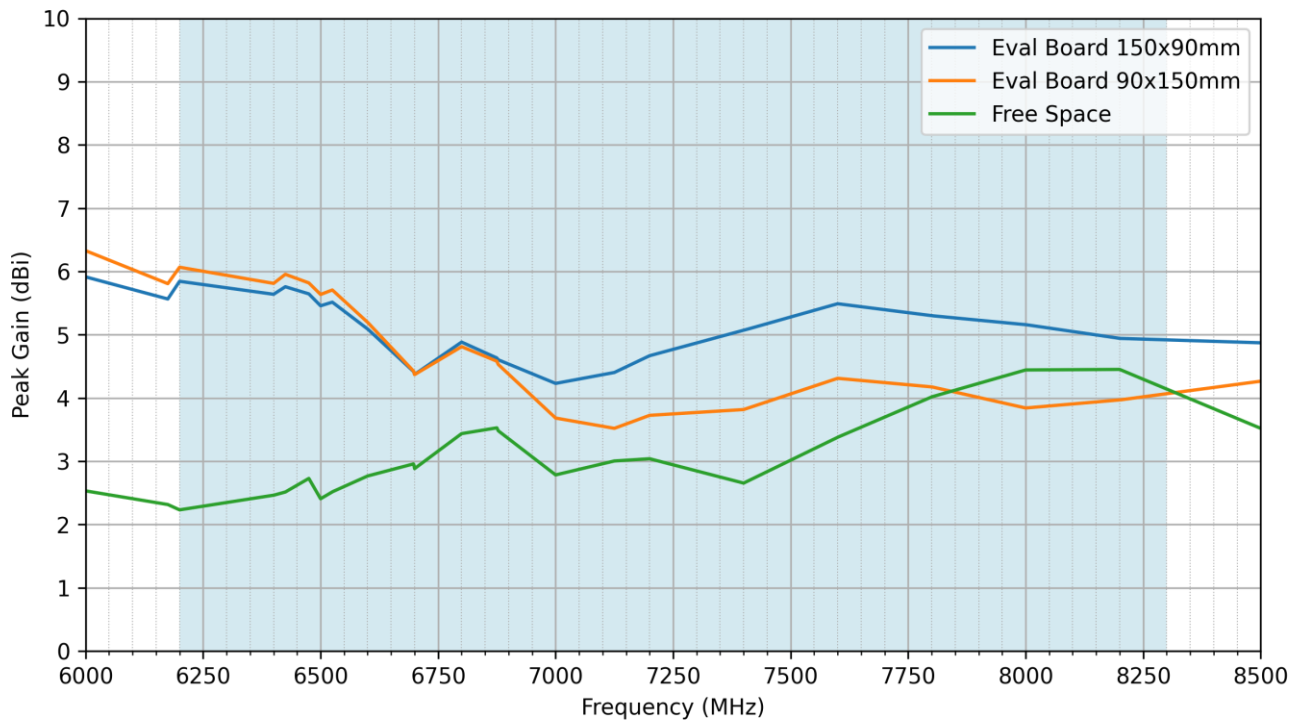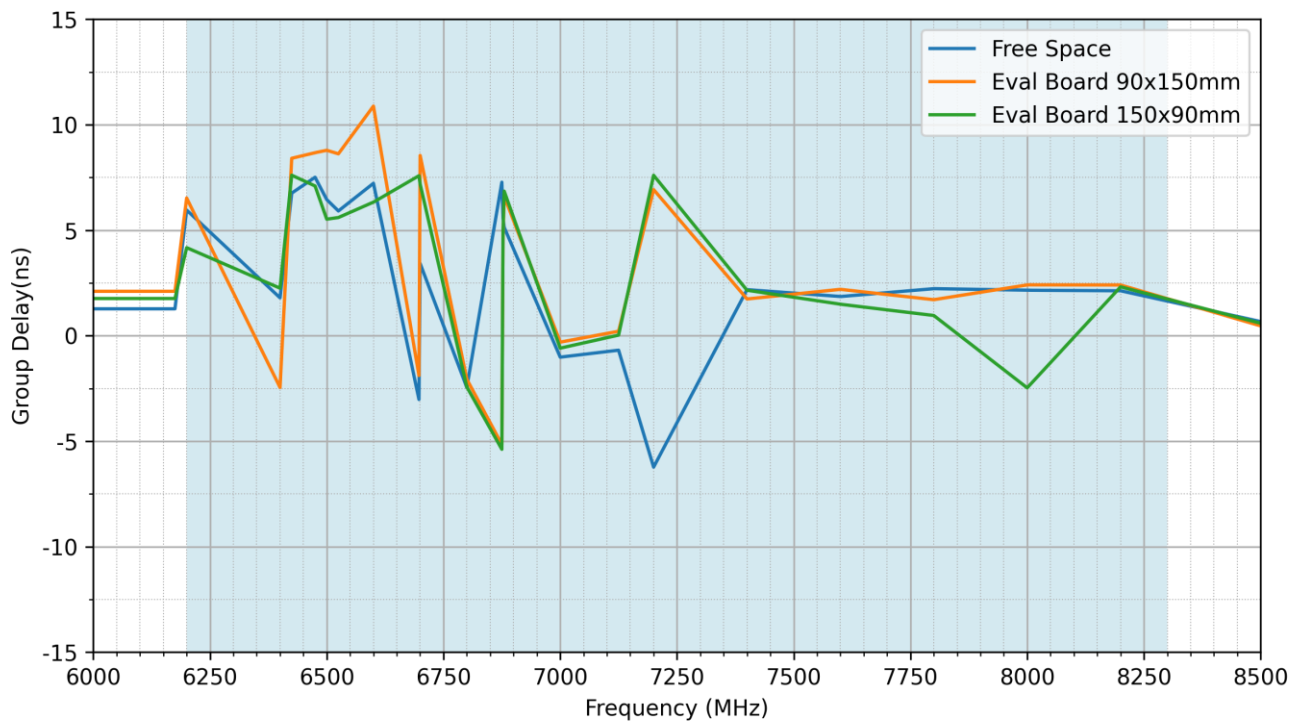
# 5. Radiation Patterns

## 5.1 Test Setup



Anechoic Chamber

Rx Ant.

AUT

Vector Network Analyzer
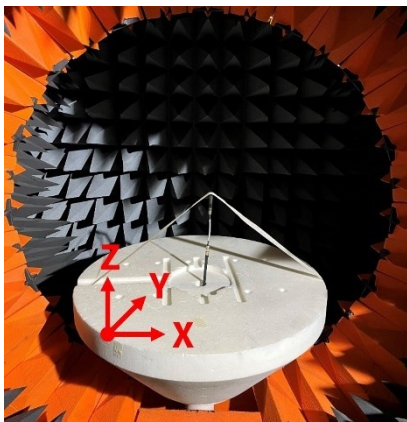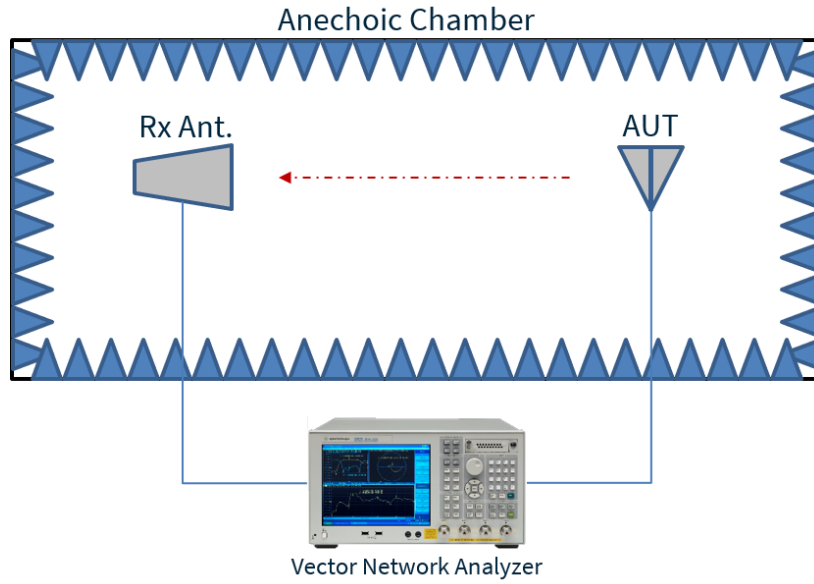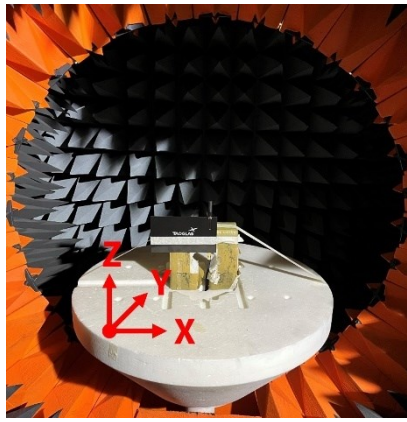


Free Space



On 150x90mm Eval Board
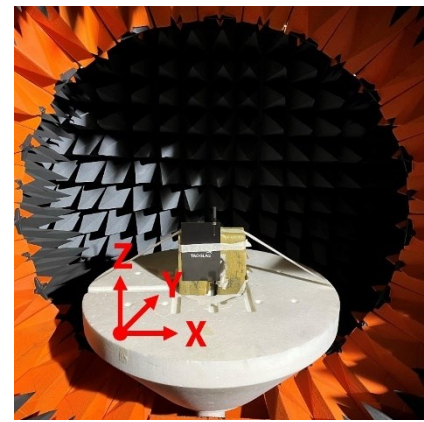


On 90x150mm Eval Board

## 5.2  Eval Board 150x90mm Patterns at 6500 MHz



| XZ Plane | YZ Plane | XY Plane |
|----------|----------|----------|

## 5.3 Eval Board 90x150mm Patterns at 6500 MHz



### XZ Plane



6500 MHz

### YZ Plane



6500 MHz

### XY Plane
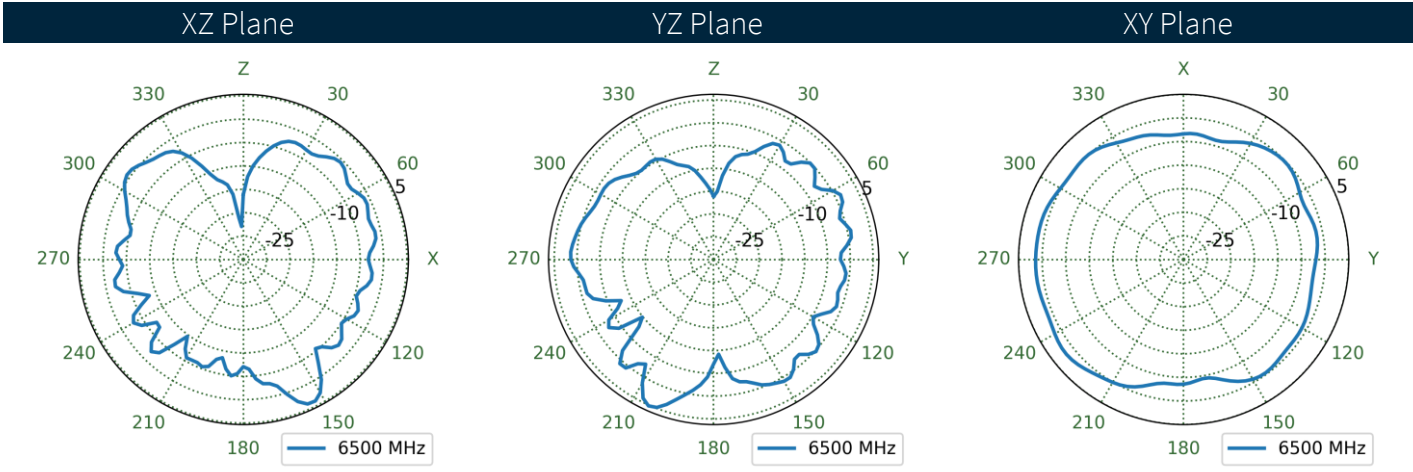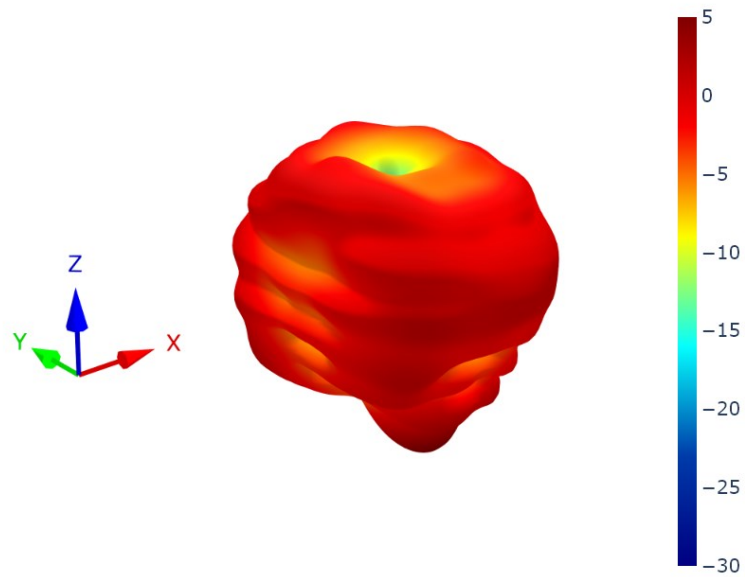


6500 MHz

## 5.4 Free Space Patterns at 6500 MHz



### XZ Plane

6500 MHz

### YZ Plane

6500 MHz

### XY Plane

6500 MHz

| XZ Plane | YZ Plane | XY Plane |
| --- | --- | --- |
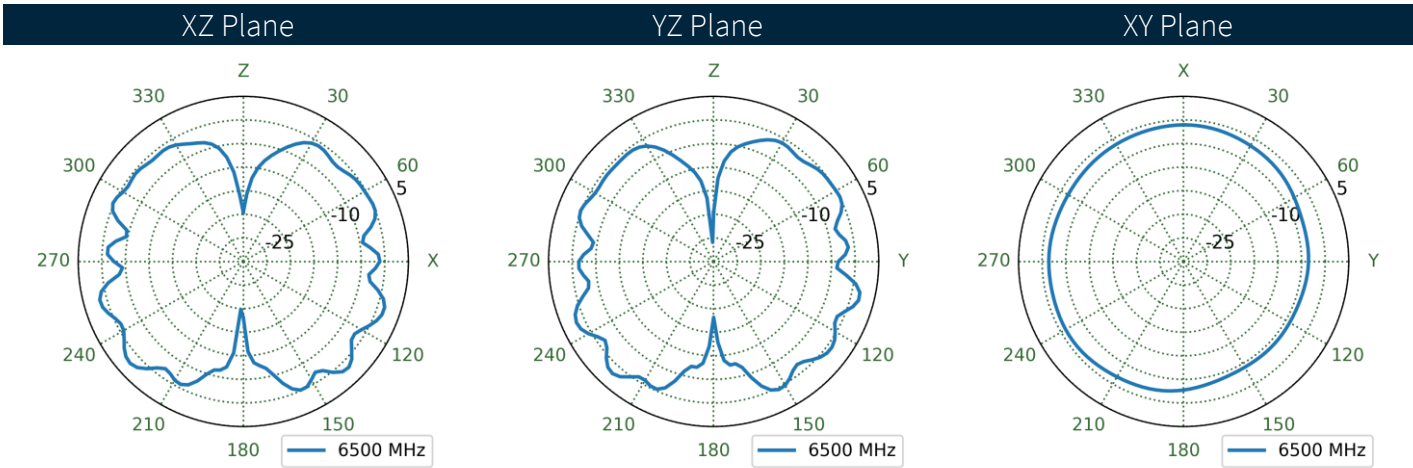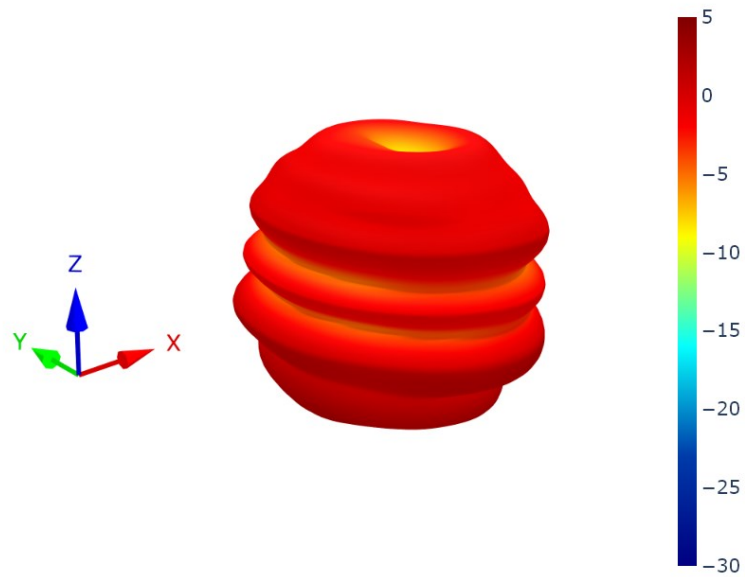
## 5.6　Eval Board 90x150mm Patterns at 6700 MHz



| XZ Plane | YZ Plane | XY Plane |
|---|---|---|
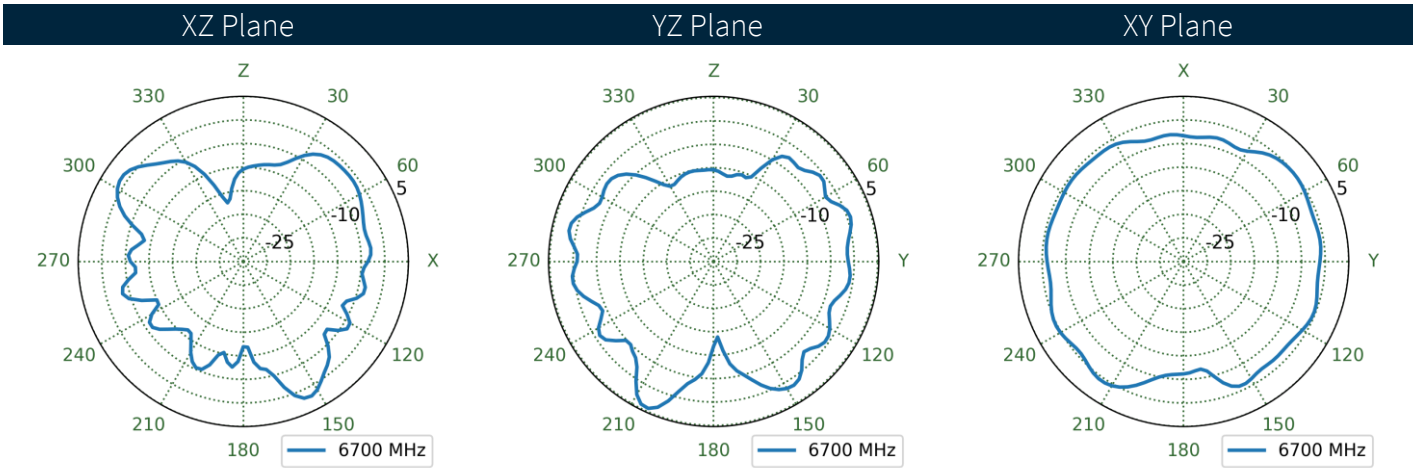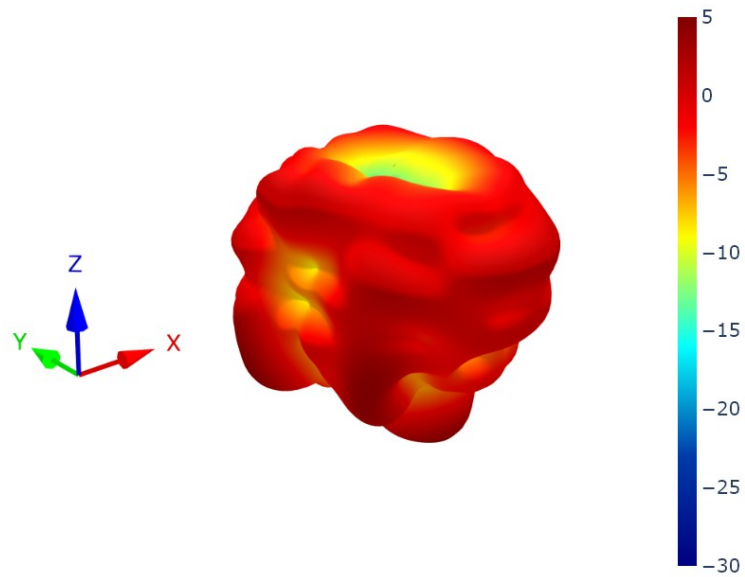

6700 MHz
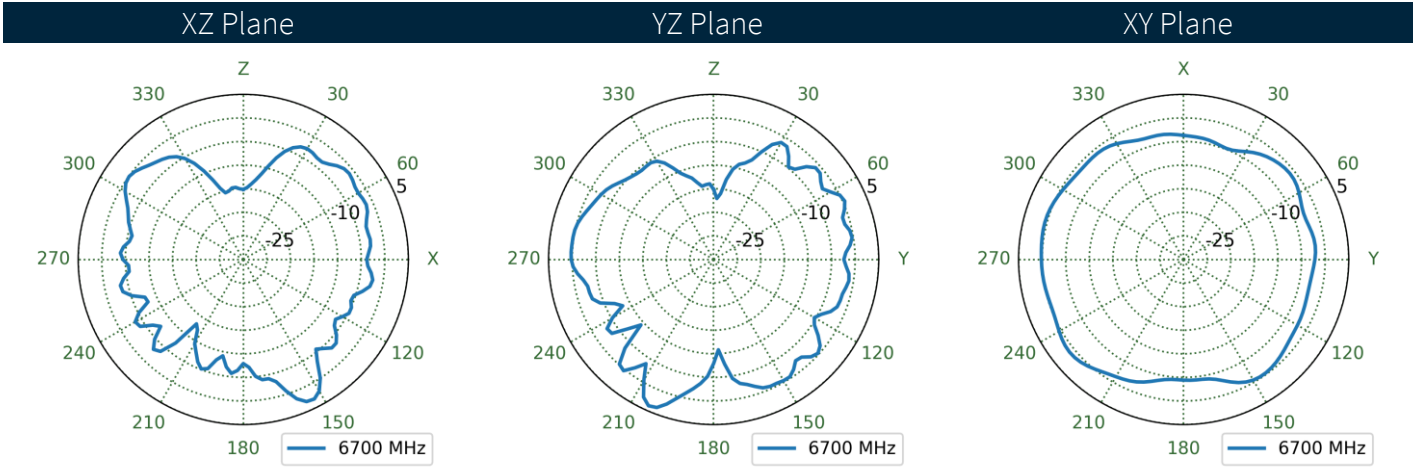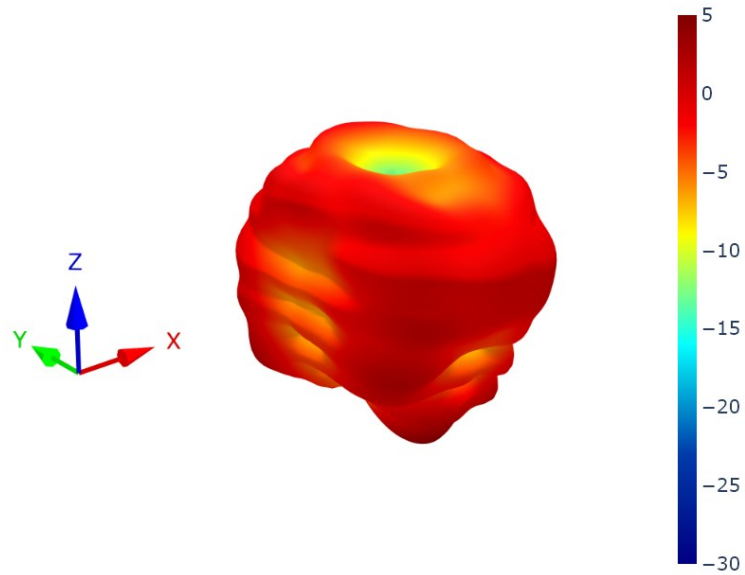

6700 MHz


6700 MHz

## 5.7 Free Space Patterns at 6700 MHz



| XZ Plane | YZ Plane | XY Plane |
|---|---|---|

| XZ Plane | YZ Plane | XY Plane |
|----------|----------|----------|



7000 MHz

### XZ Plane



7000 MHz

### YZ Plane



7000 MHz

### XY Plane
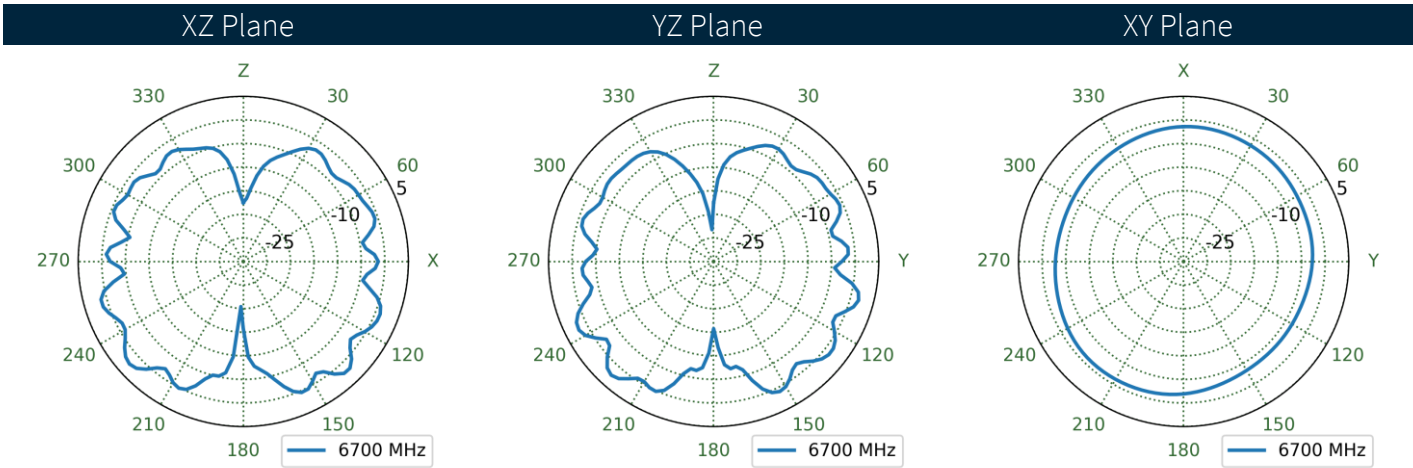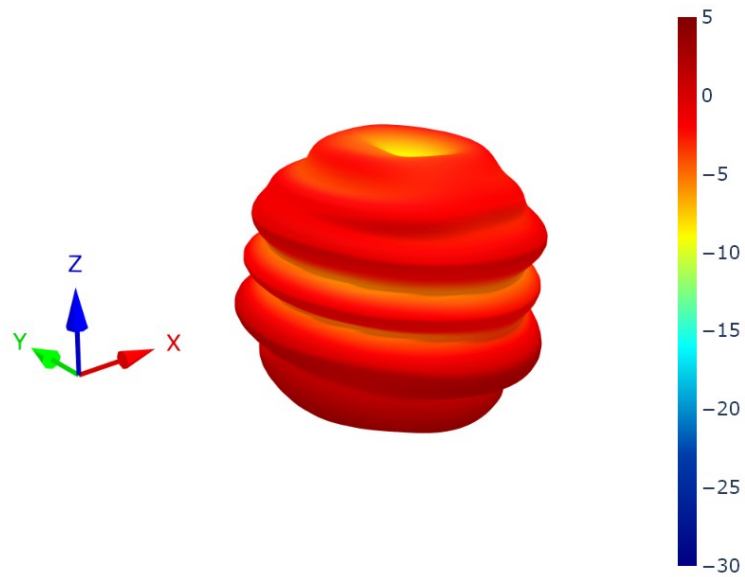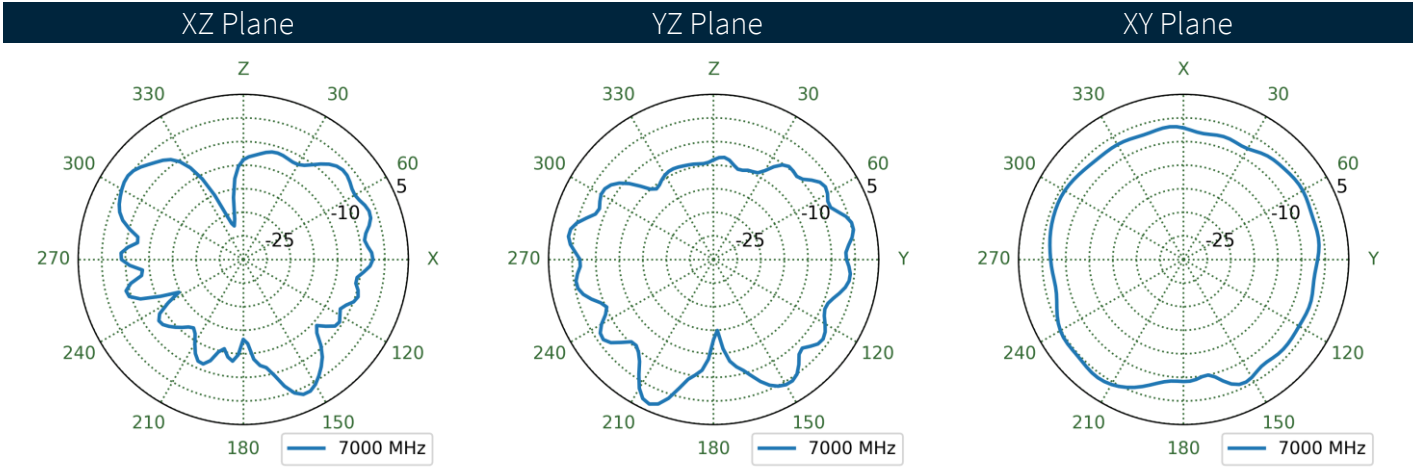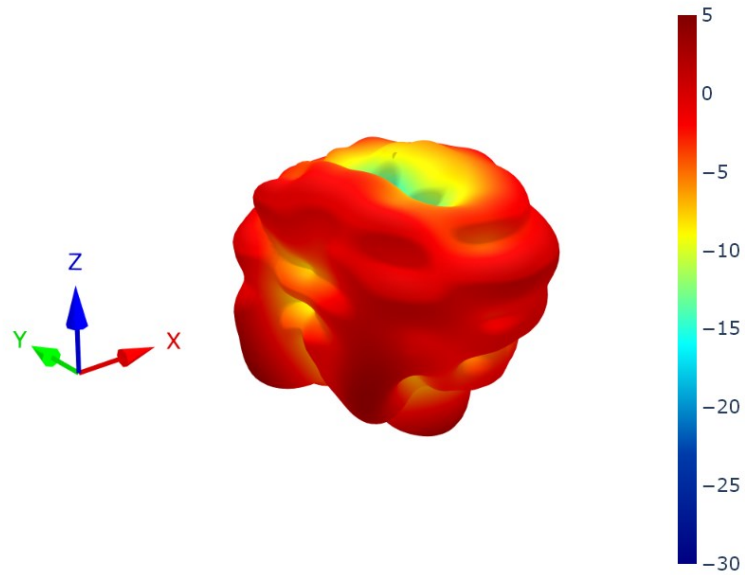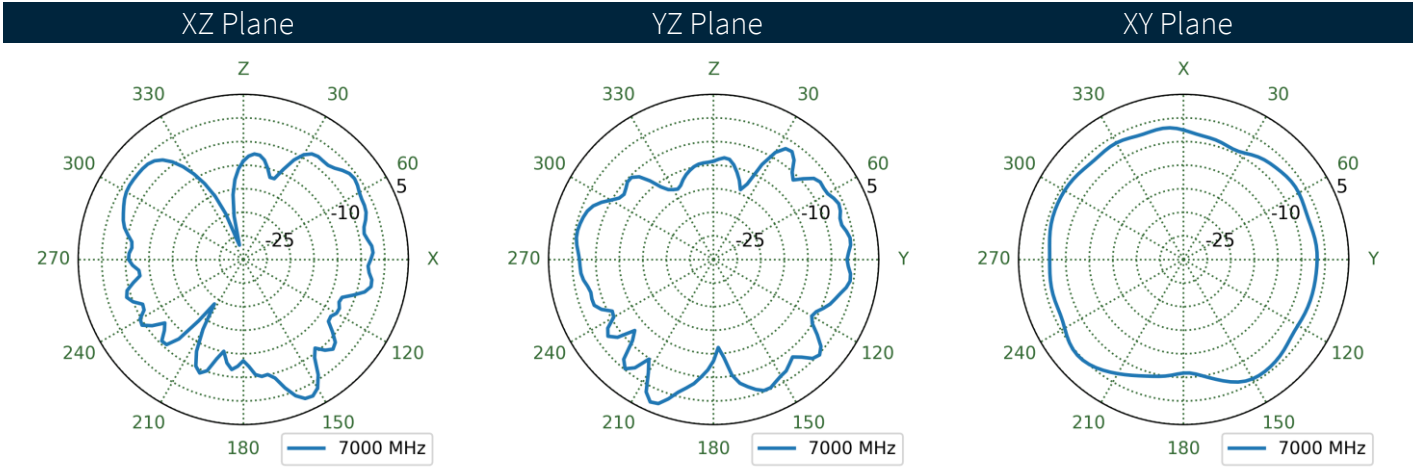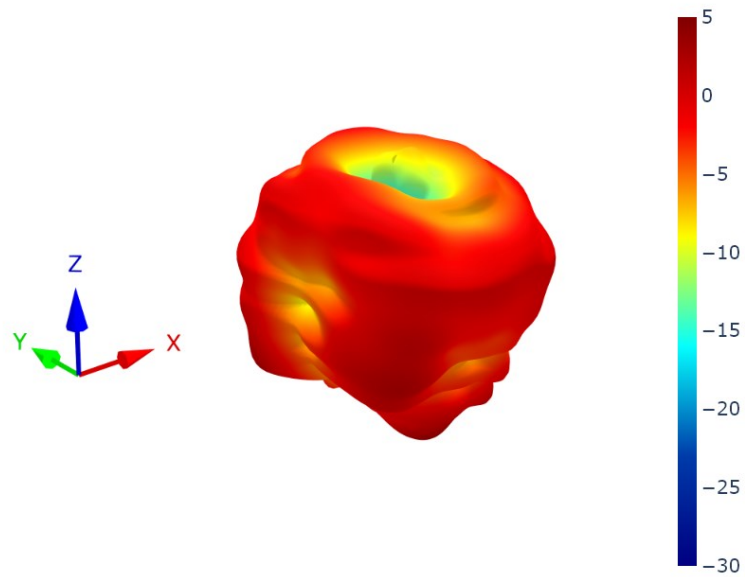


7000 MHz

## 5.10 Free Space Patterns at 7000 MHz



| XZ Plane | YZ Plane | XY Plane |
|---|---|---|



7000 MHz

| XZ Plane | YZ Plane | XY Plane |
|----------|----------|----------|



7200 MHz
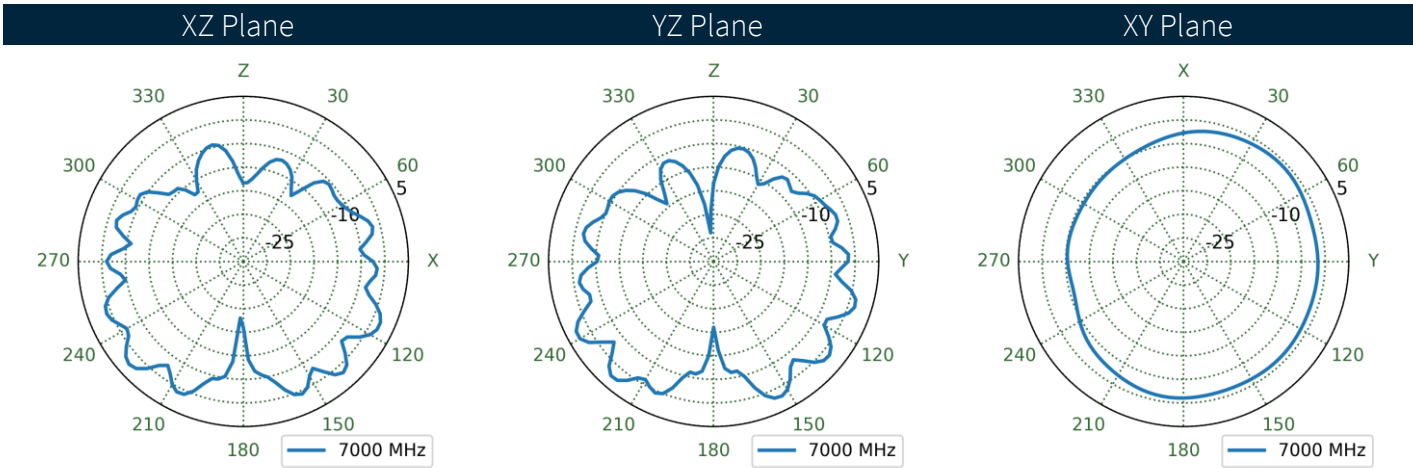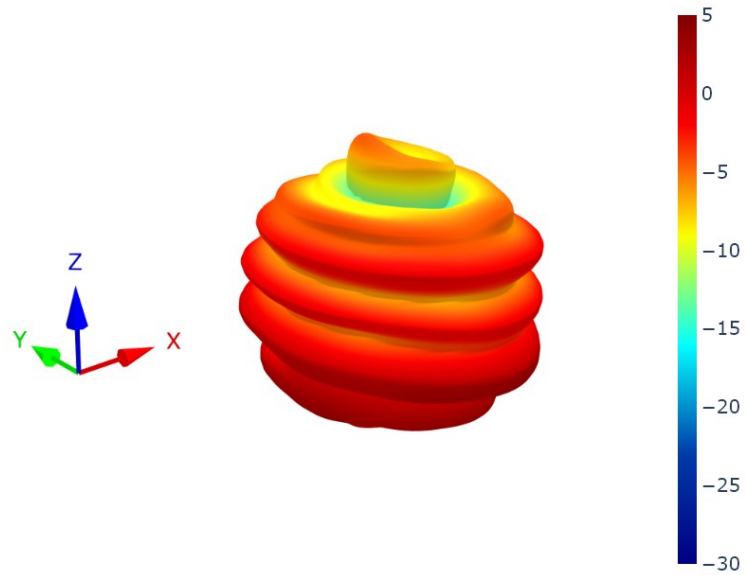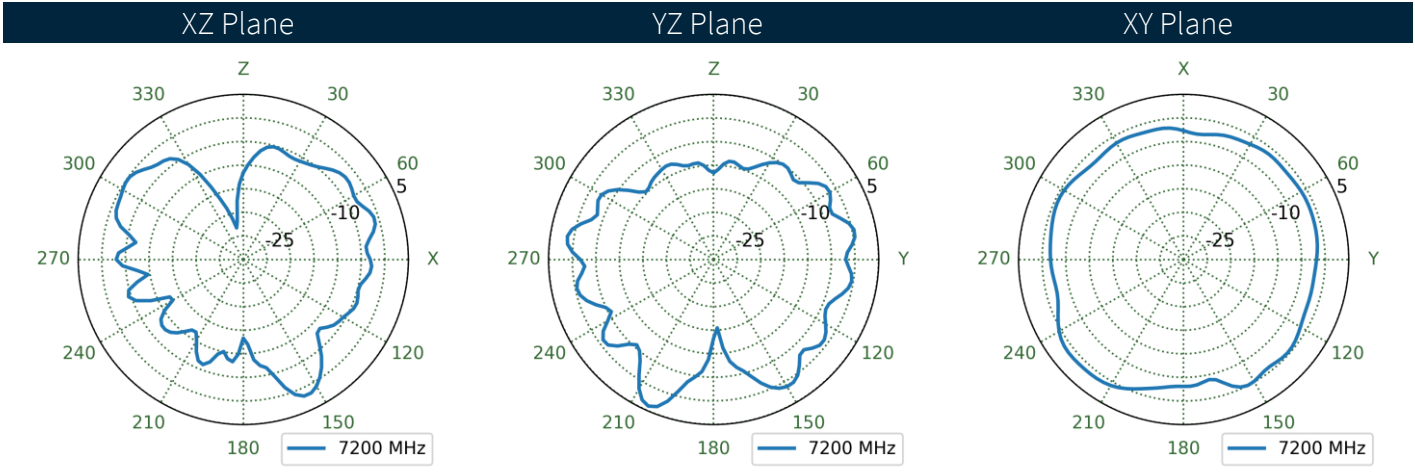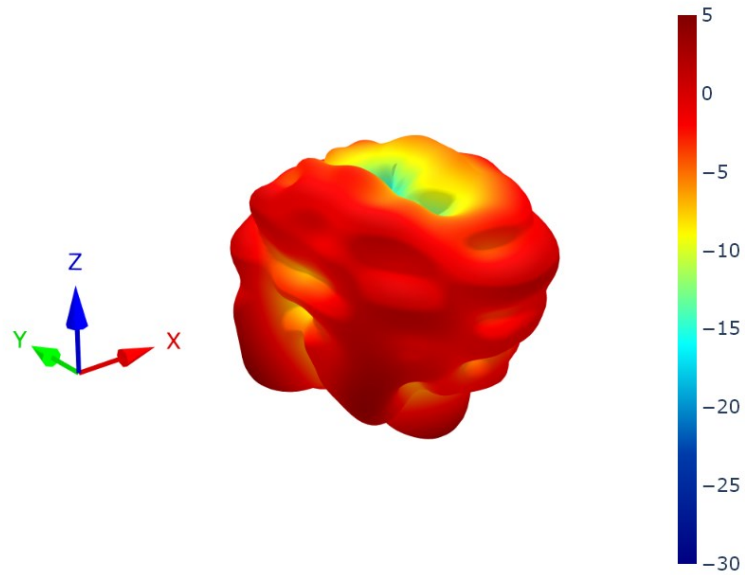
## 5.12 Eval Board 90x150mm Patterns at 7300 MHz



| XZ Plane | YZ Plane | XY Plane |
| --- | --- | --- |
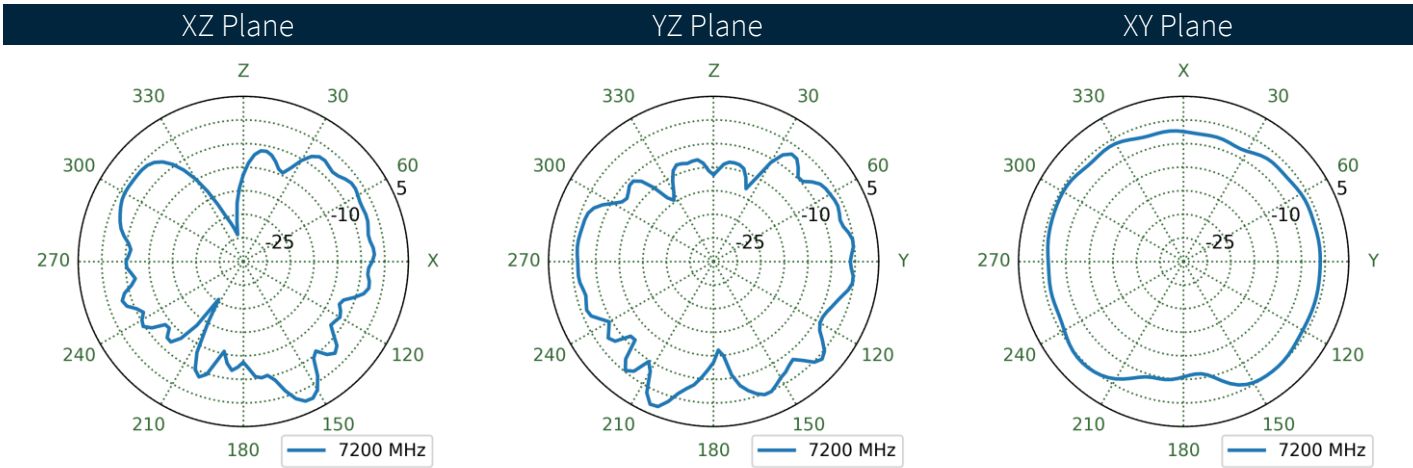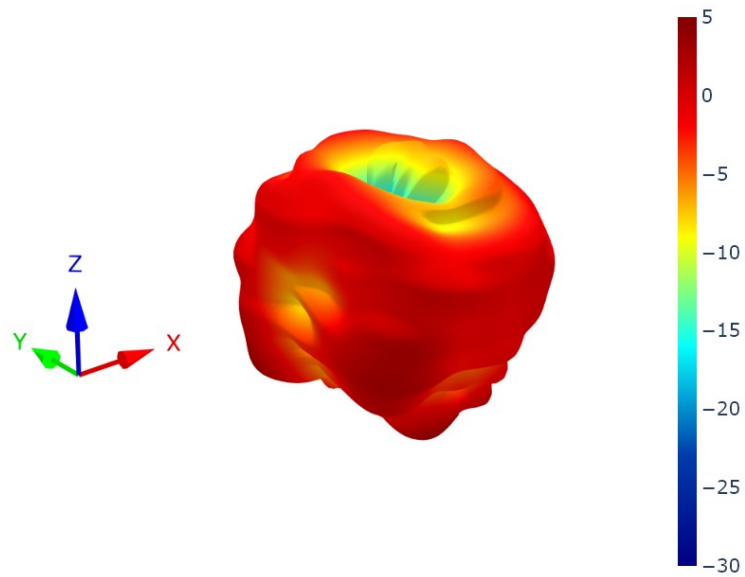
## 5.13 Free Space Patterns at 7300 MHz



| | XZ Plane | YZ Plane | XY Plane |
|---|---|---|---|

| XZ Plane | YZ Plane | XY Plane |
|---|---|---|



7400 MHz



7400 MHz



7400 MHz
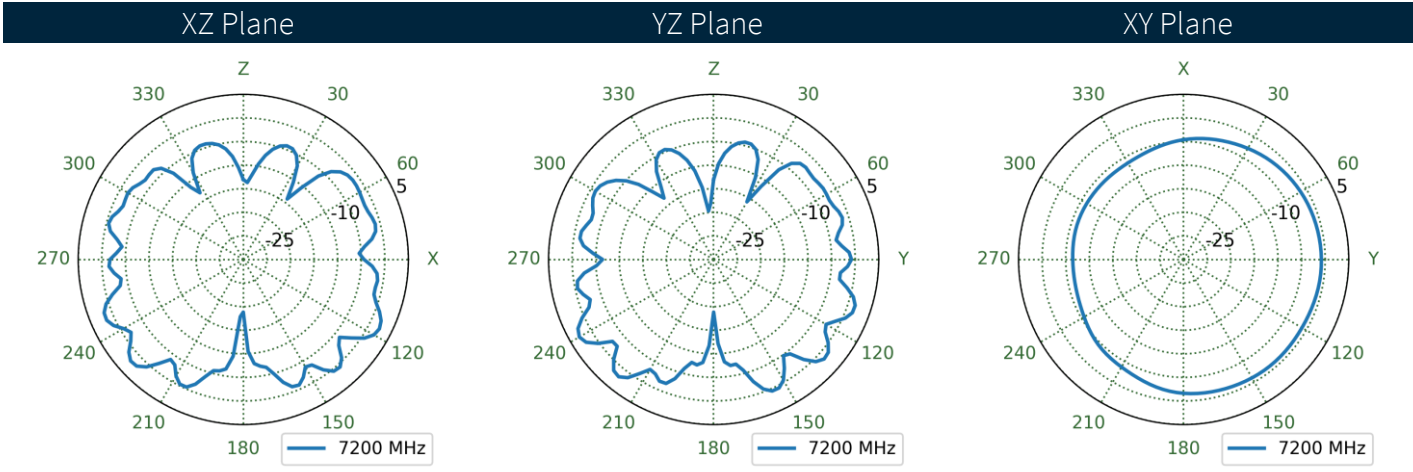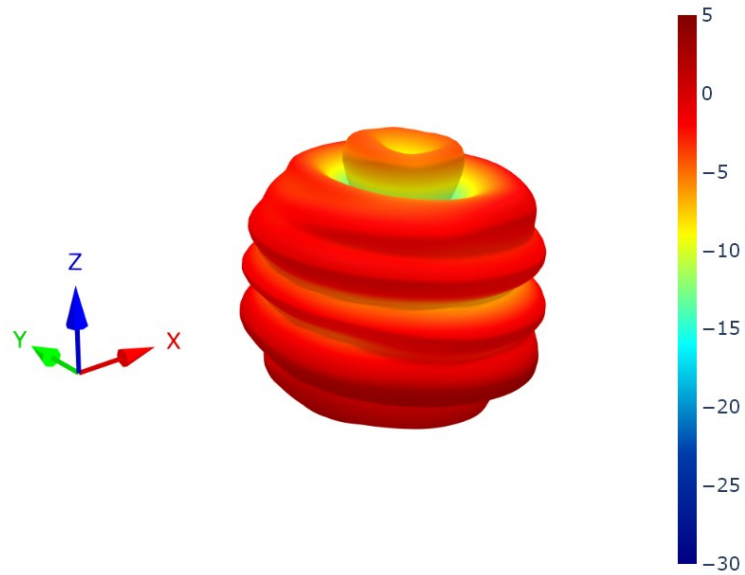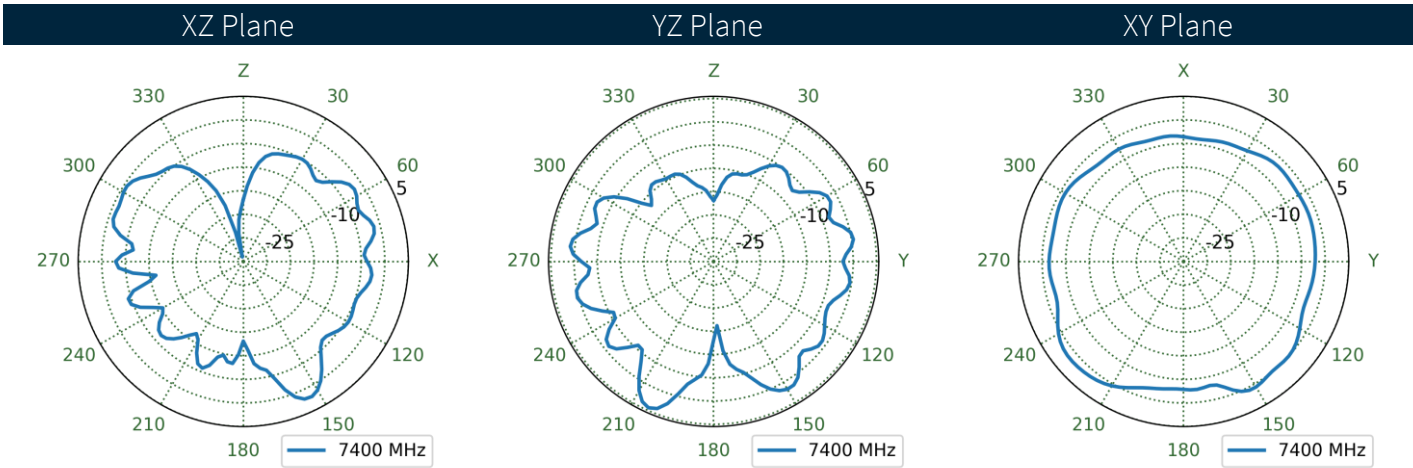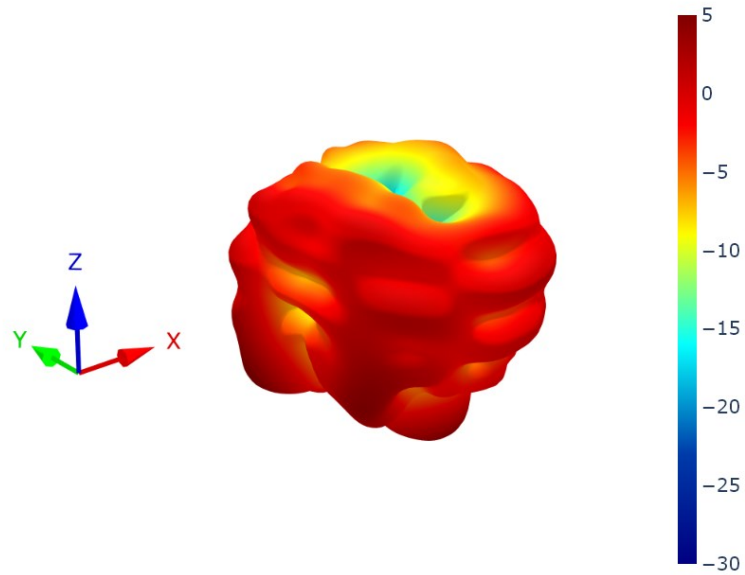
## 5.15 Eval Board 90x150mm Patterns at 7500 MHz



| XZ Plane | YZ Plane | XY Plane |
| --- | --- | --- |


7400 MHz


7400 MHz


7400 MHz
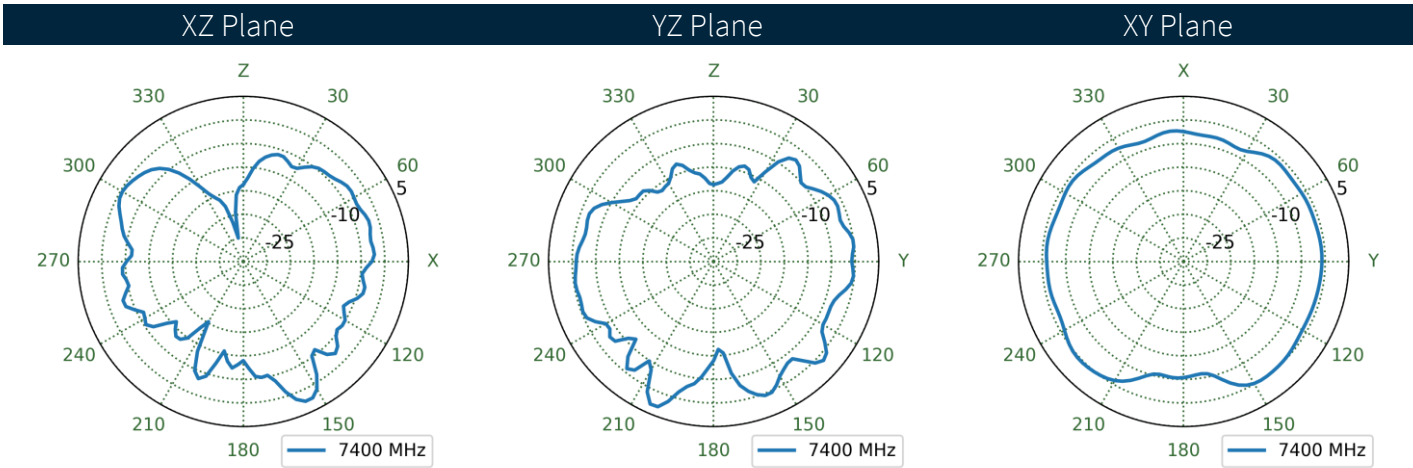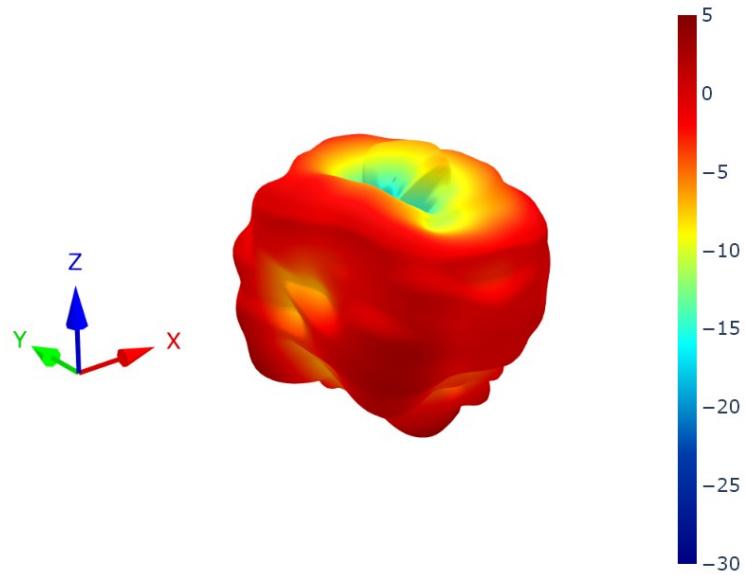
## 5.16 Free Space Patterns at 7500 MHz



| XZ Plane | YZ Plane | XY Plane |
|:---:|:---:|:---:|

## 5.17 Eval Board 150x90mm Patterns at 8000 MHz



| XZ Plane | YZ Plane | XY Plane |
|----------|----------|----------|
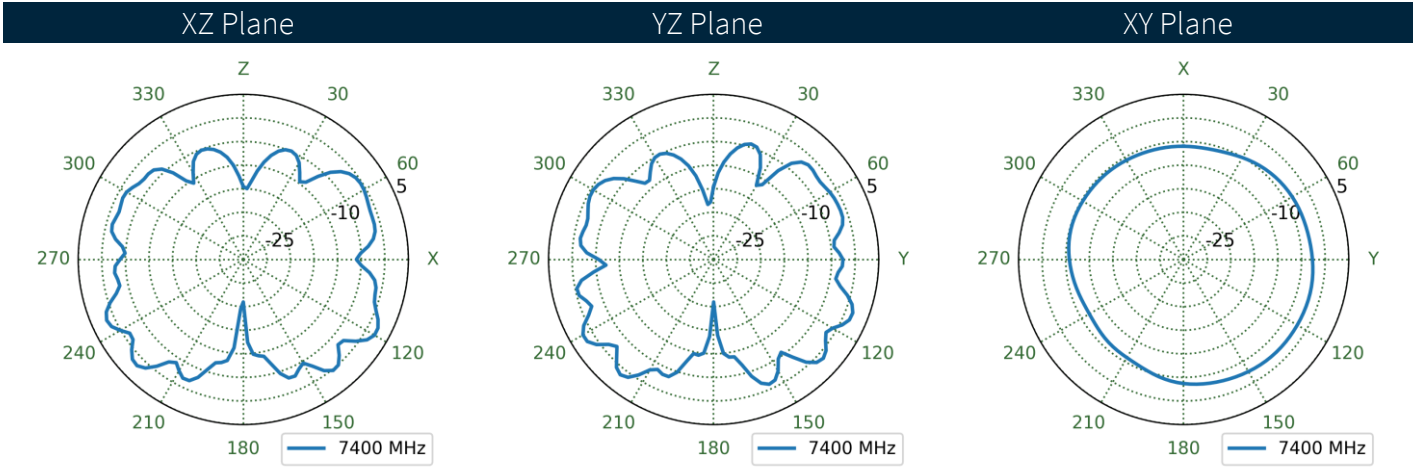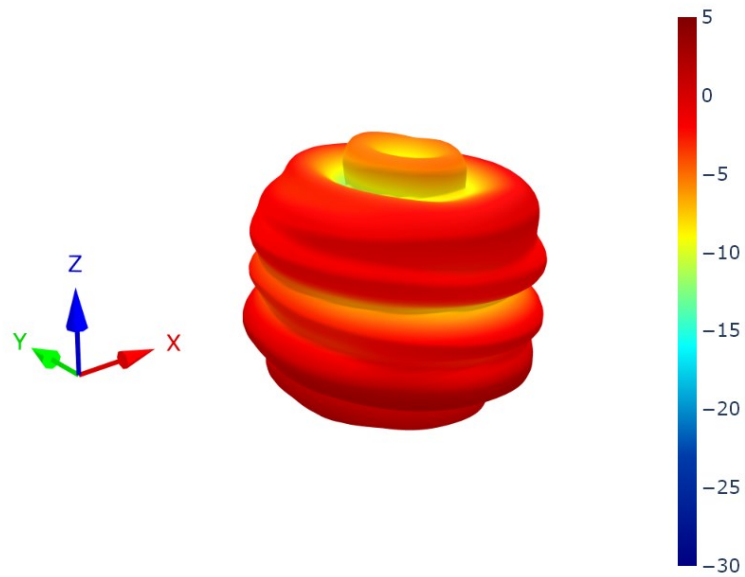


8000 MHz

## 5.18 Eval Board 90x150mm Patterns at 8000 MHz

| XZ Plane | YZ Plane | XY Plane |
|----------|----------|----------|
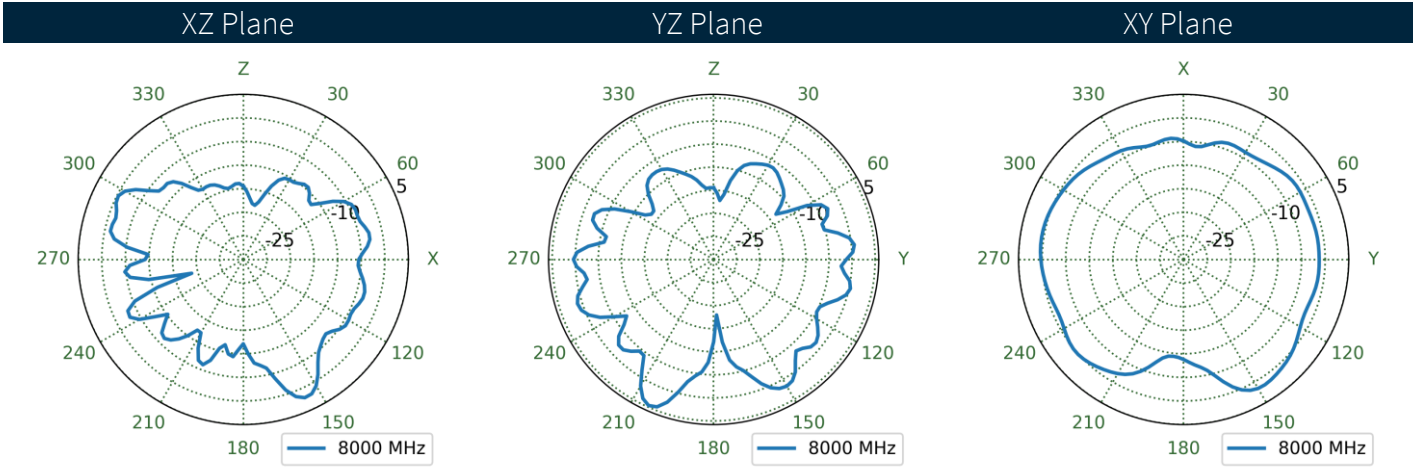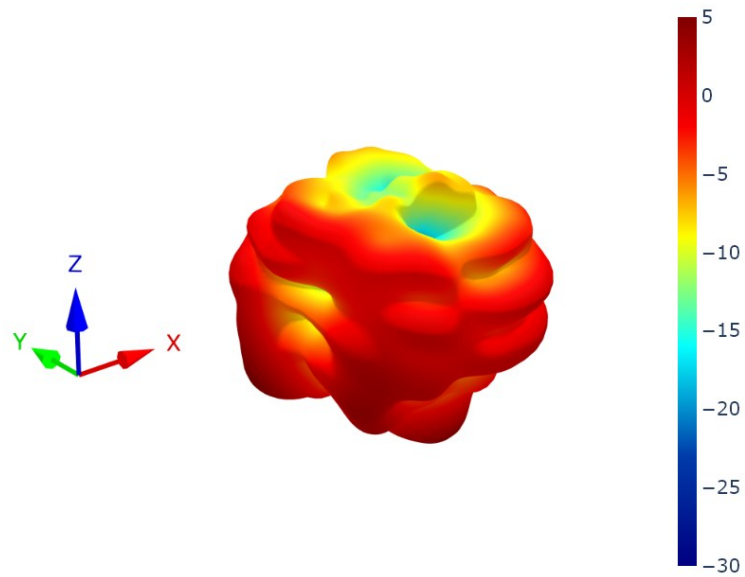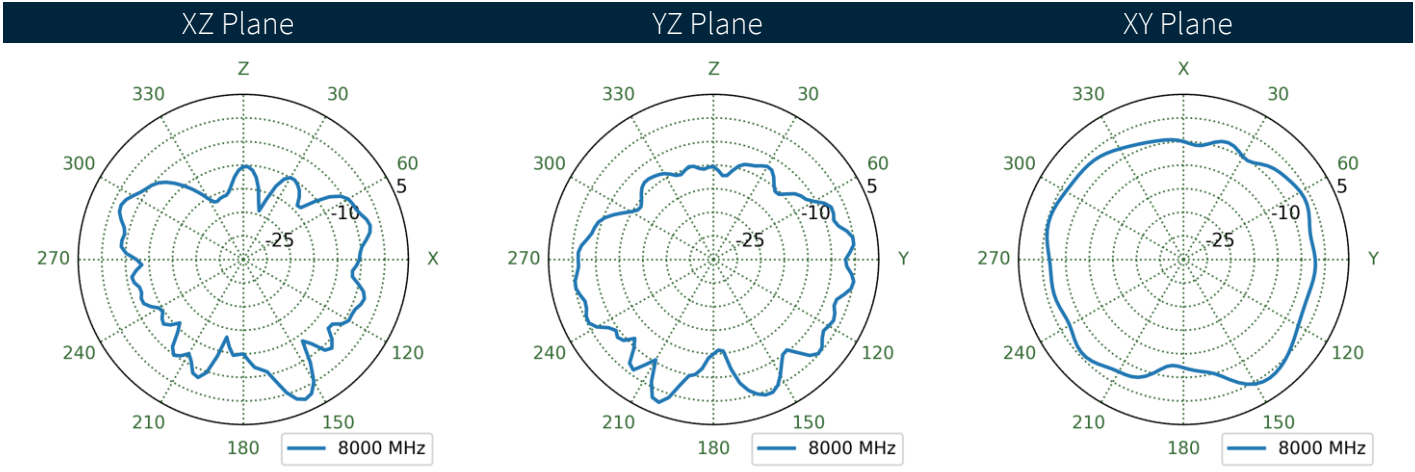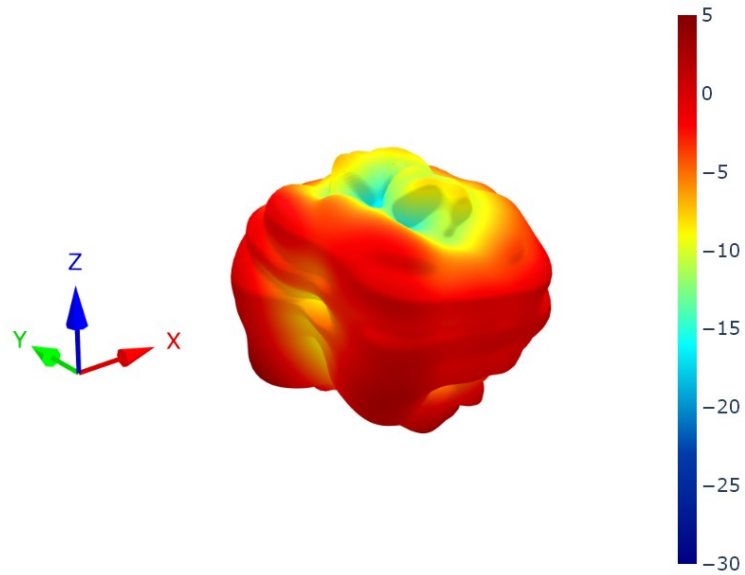
8000 MHz

## 5.19 Free Space Patterns at 8000 MHz



| XZ Plane | YZ Plane | XY Plane |
|----------|----------|----------|
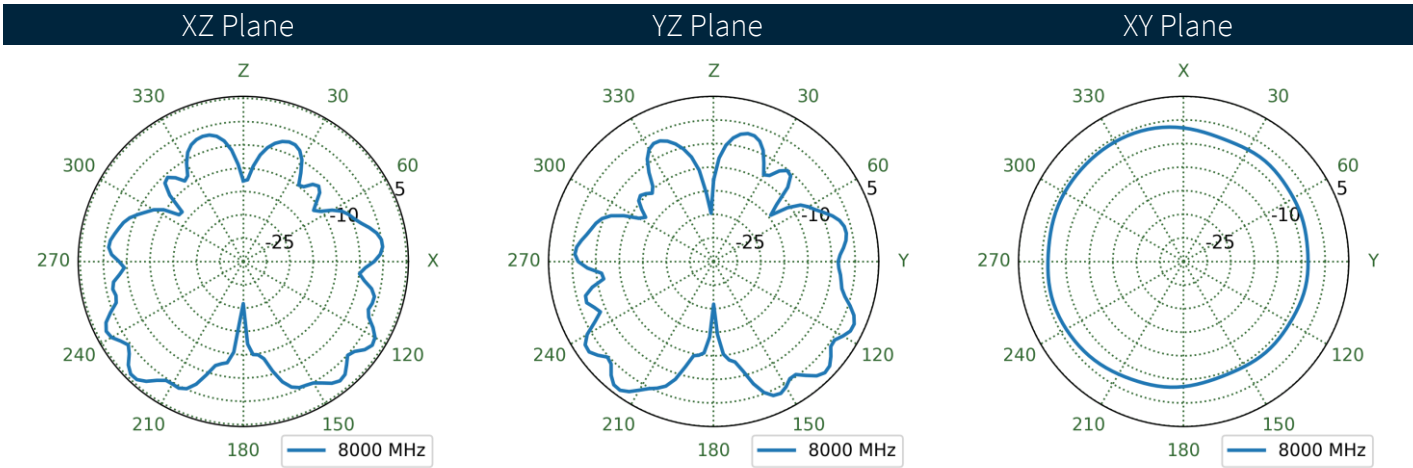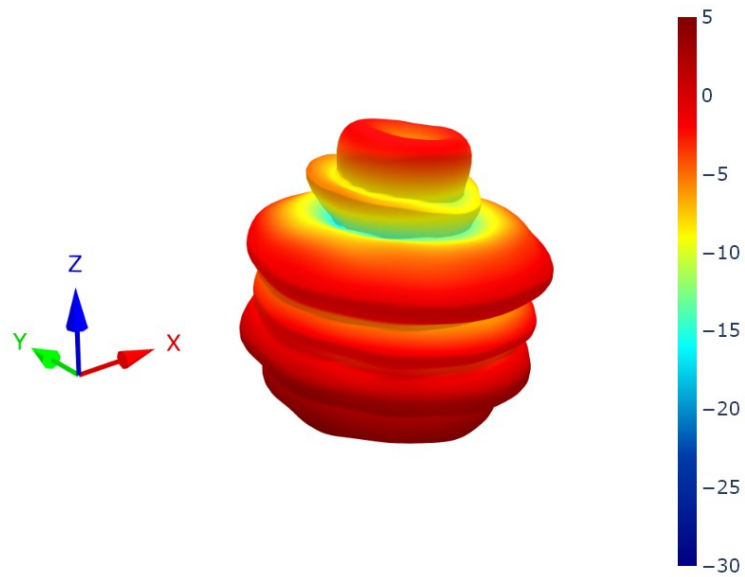
## Changelog for the datasheet

### SPE-24-8-135 - TU.63.2111

| Revision: B (Current Version) | |
|---|---|
| Date: | 2024-07-19 |
| Notes: | Power consumption, Enclosure material updated, IP Rating and group delay graph added. |
| Author: | Gary West |

**Previous Revisions**

| Revision: A (Original First Release) | |
|---|---|
| Date: | 2024-07-19 |
| Notes: | Initial Release |
| Author: | Gary West |

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