

**ANTENNA GAIN AND PATTERN MEASUREMENT REPORT**  
*For Gain value reference*

**FOR**

**ACTUATOR**

**PART/MODEL NUMBER: SIXPIRA**

**DATE ISSUED: February 28, 2023**

**REPORT NUMBER: 14662781-O1V1**

Prepared for  
**Ademco Inc.**  
**251 Little Falls Drive**  
**Wilmington, Delaware, 19808-1674**  
**U.S.A.**

*Prepared by*  
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Revision History

<u>Rev.</u>	<u>Issue Date</u>	<u>Revisions</u>	<u>Revised By</u>
V1	02/28/2023	Initial Issue	

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# 1 ATTESTATION OF TEST RESULTS

Company Name and Address	Ademco Inc.
	251 Little Falls Drive
	Wilmington, Delaware, 19808-1674
	U.S.A.
EUT Description	Actuator
Part/Model	SIXPIRA
Date Tested	02/21/2023

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
Non-standard Test Method*	Information Only
*Reference Section 2 Test Methodology	

UL Verification Services Inc. tested the above equipment in accordance with the requirements set forth in the above standards. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. It is the manufacturer's responsibility to assure that additional production units of this model are manufactured with identical electrical and mechanical components. All samples tested were in good operating condition throughout the entire test program. Measurement Uncertainties are published for informational purposes only and were not taken into account unless noted otherwise.

This document may not be altered or revised in any way unless done so by UL Verification Services Inc. and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL Verification Services Inc. will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP/A2LA, NIST, or any agency of the U.S. Government.

This report contains data provided by the customer which can impact the validity of results. UL Verification Services Inc. is only responsible for the validity of results after the integration of the data provided by the customer.

Approved & Released For  
 UL Verification Services Inc. By:

*E.B.*

Tested and Prepared By:

*Casey Dial*

Ekta Budhbhatti  
 OTA SUPERVISOR  
 UL Verification Services Inc.

Casey Dial  
 TEST ENGINEER  
 UL Verification Services Inc.

## 2 TEST METHODOLOGY

The 3D Passive Antenna Pattern tests documented in this report were performed using a dual polarized quad-ridged horn antenna mounted on the theta scanning arm with a resolution (increment) of 15° for both elevation and azimuth utilizing ETS-Lindgren EMQuest Data Acquisition and Analysis Software.

The 2D Passive Antenna Pattern tests documented in this report were performed using a dual polarized quad-ridged horn antenna mounted on the theta scanning arm with a fixed elevation and a resolution (increment) of 2° for azimuth utilizing ETS-Lindgren EMQuest Data Acquisition and Analysis Software.

## 3 TEST FACILITY

The test sites and measurement facilities used to collect data are located at 47173 Benicia Street, Fremont, California, USA. The test was performed in OTA A.

Test Site used for testing	
OTA Lab A (Theta Arm Chamber)	<input checked="" type="checkbox"/>
OTA Lab B (MAPS Chamber)	<input type="checkbox"/>

- Test operator and Report writer: Casey Dial
- Report reviewed by: Ekta Budhbhatti

## 4 TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment was utilized for the tests documented in this report:

TEST EQUIPMENT LIST					
Description	Manufacturer	Model	Asset	Cal Date	Cal Due
PNA-L Network Analyzer	Agilent	N5230C	MY49001404	27 January 2023	27 January 2024
OTA Test Software	ETS-Lindgren	EMQuest;V1.15 build 27347	231770	-	-

## 5 DEVICE UNDER TEST INFORMATION

Antenna	
Manufacturer	Ademco Inc.
Part/Model Number	Sixpira
Frequency range (MHz)	2405,2440,2475
Device/Antenna type	Printed on PC board internal antenna 1, Printed on PC board internal Antenna 2

## 6 RESULT SUMMARY

### 6.1 Passive Antenna 1 Pattern

Measurement	Frequency (MHz)		
	2405	2440	2475
3D Gain (dBi)	-8.10	-7.36	-7.22
2D/Peak Gain (dBi)	-7.79	-7.02	-6.76

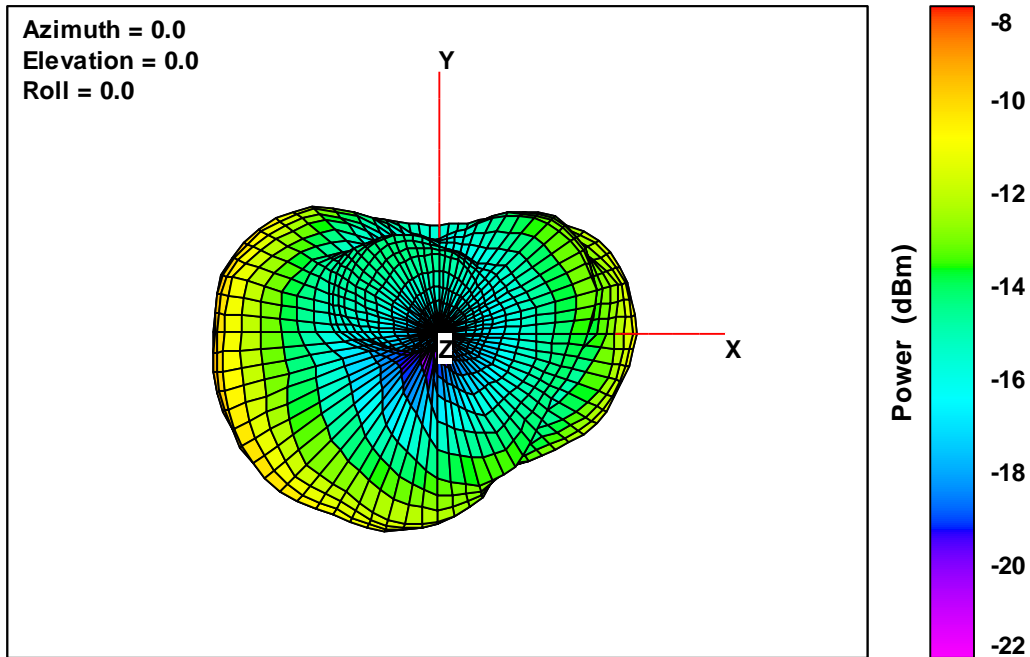
### 6.2 Passive Antenna 2 Pattern

Measurement	Frequency (MHz)		
	2405	2440	2475
3D Gain (dBi)	-24.04	-23.43	-23.72
2D/Peak Gain (dBi)	-23.53	-23.33	-23.22

## 7 PLOTS

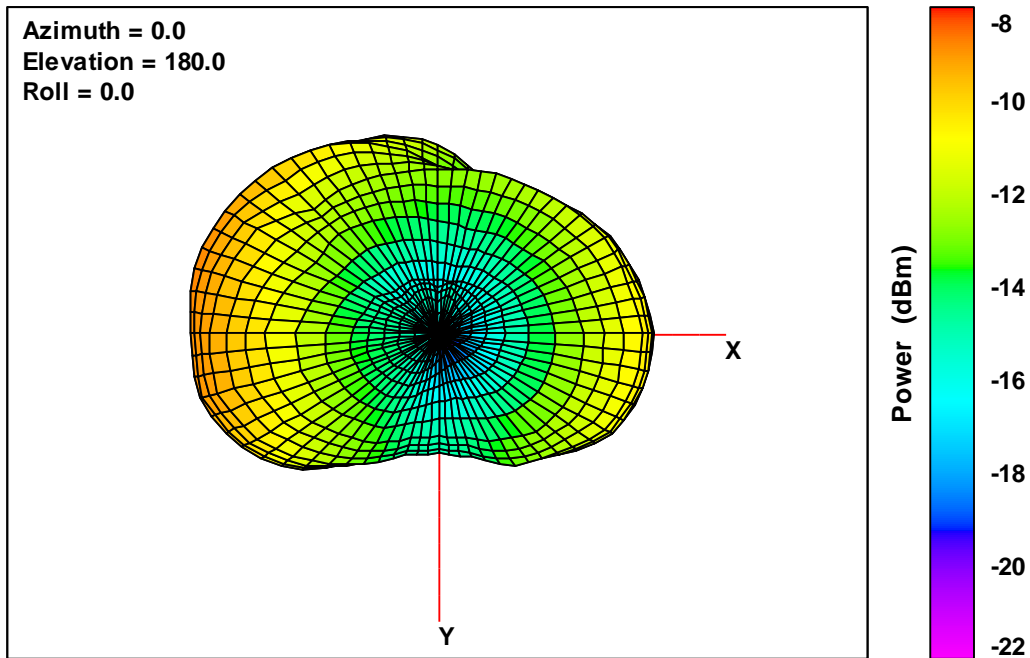
### 7.1 Antenna 1 3D PASSIVE- 2405 MHz

Total EIRP, Top View



ANTENNA ONE Free-Space Total EIRP, Top View, 2405 MHz

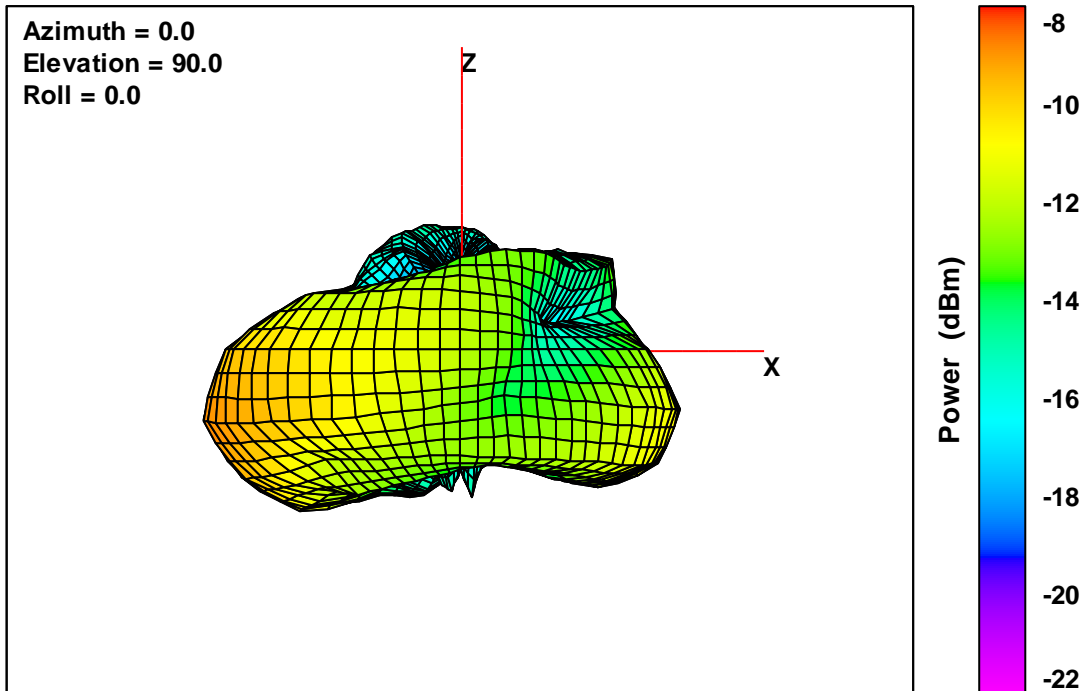
Total EIRP, Bottom View



ANTENNA ONE Free-Space Total EIRP, Bottom View, 2405 MHz

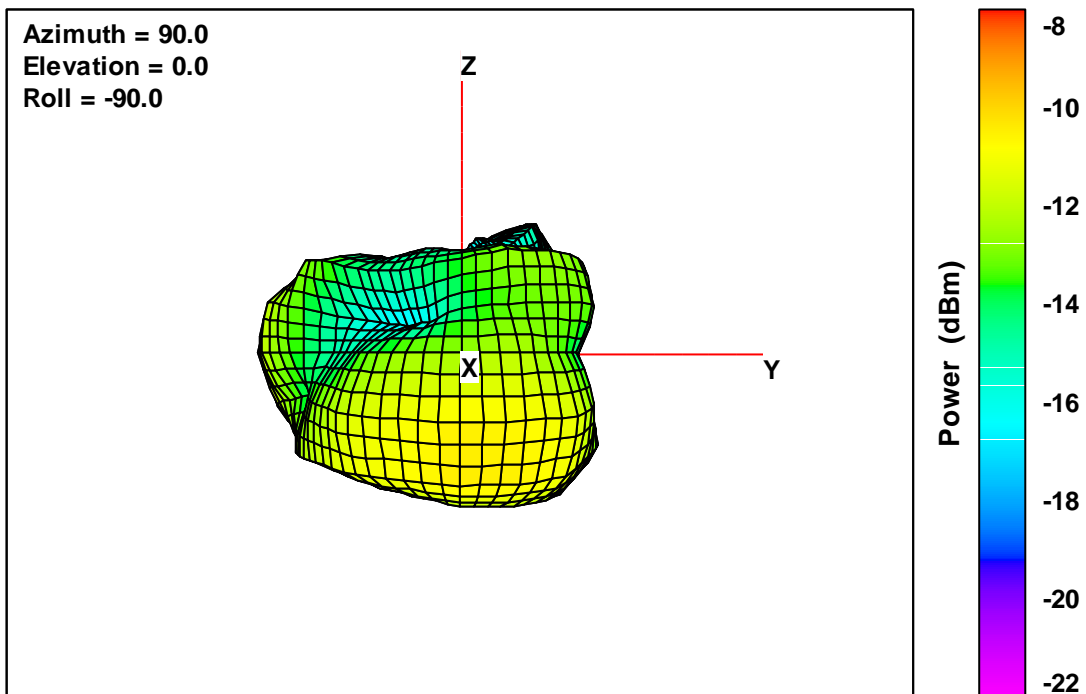


### Total EIRP, Left Side View



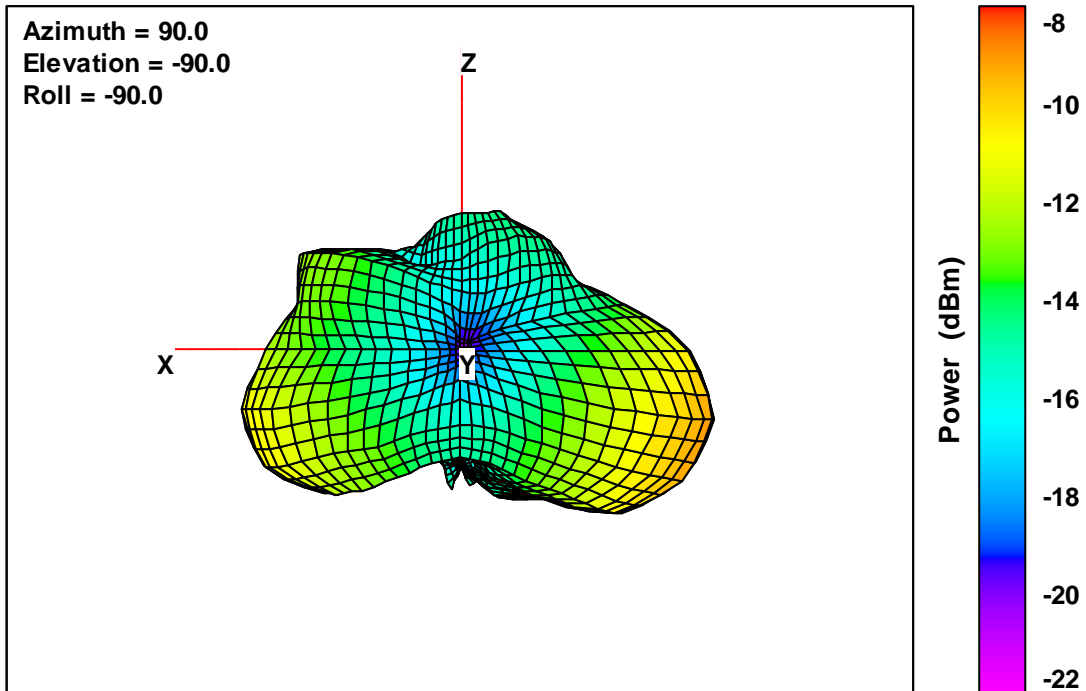
ANTENNA ONE Free-Space Total EIRP, Left Side View, 2405 MHz

### Total EIRP, Front Face View



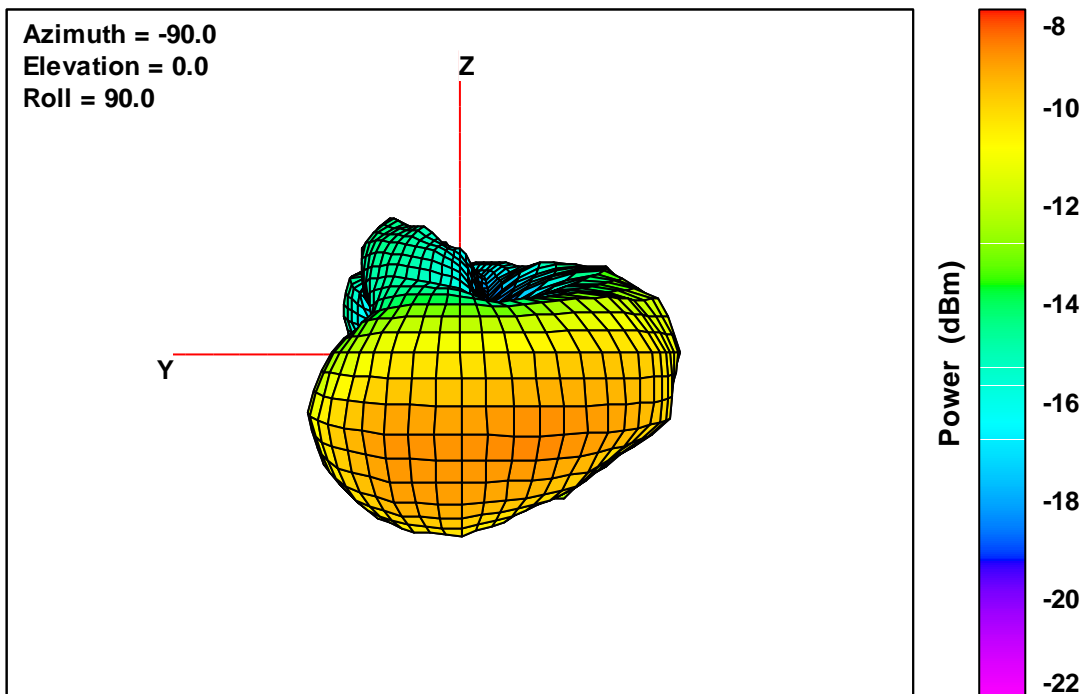
ANTENNA ONE Free-Space Total EIRP, Front Face View, 2405 MHz

### Total EIRP, Right Side View



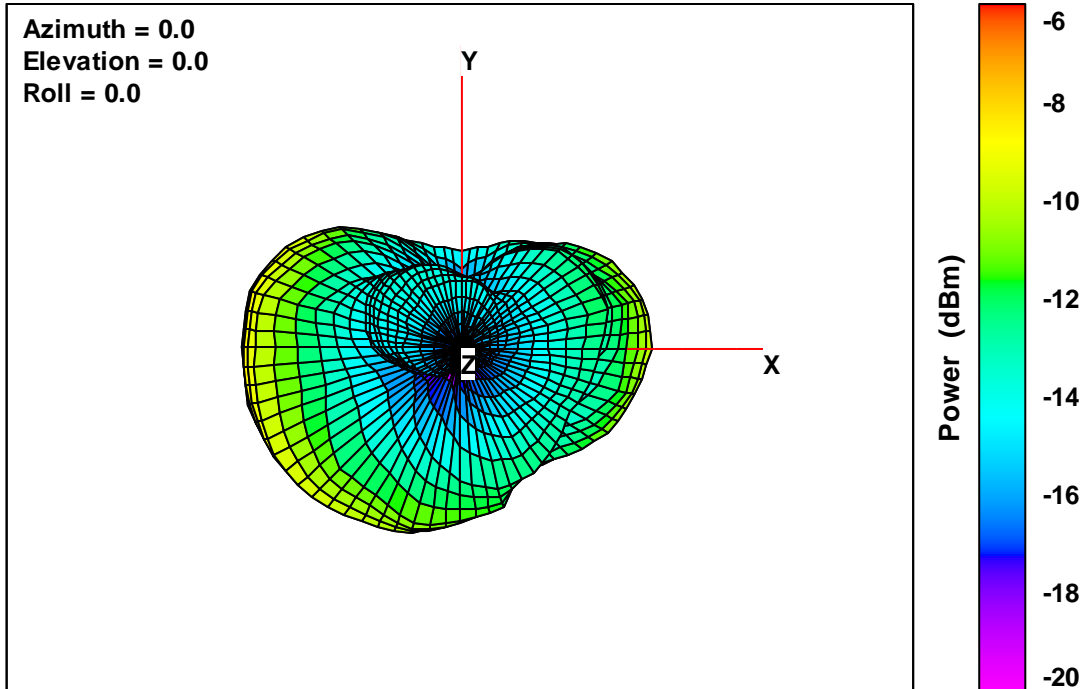
ANTENNA ONE Free-Space Total EIRP, Right Side View, 2405 MHz

### Total EIRP, Back Face View



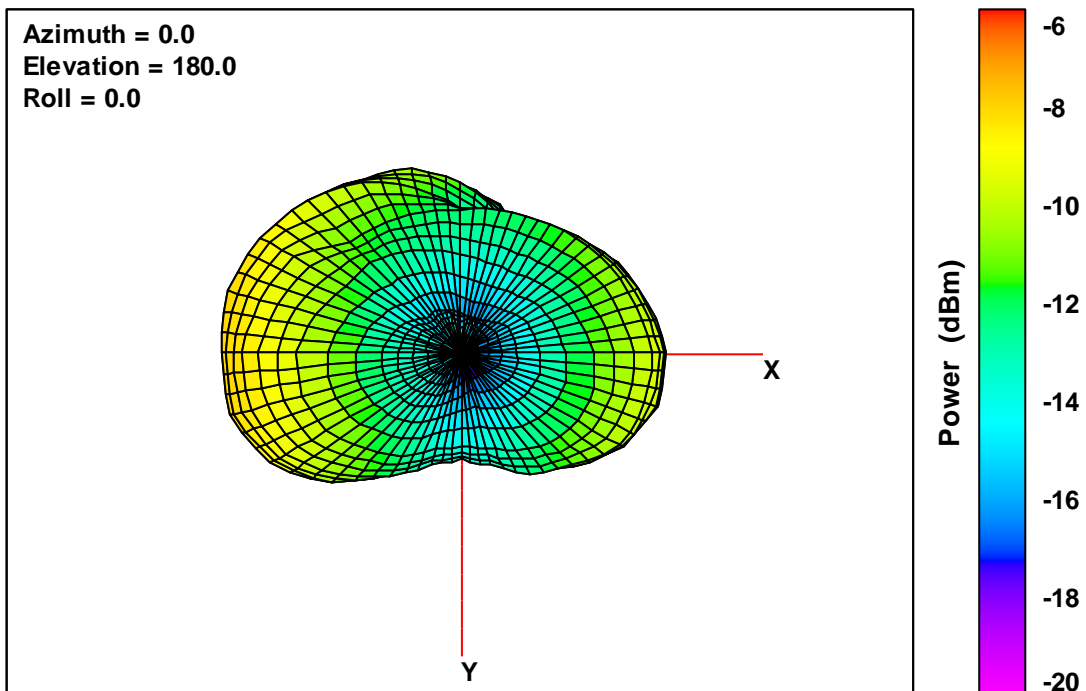
ANTENNA ONE Free-Space Total EIRP, Back Face View, 2405 MHz

### 7.2 Antenna 1 3D PASSIVE- 2440 MHz Total EIRP, Top View



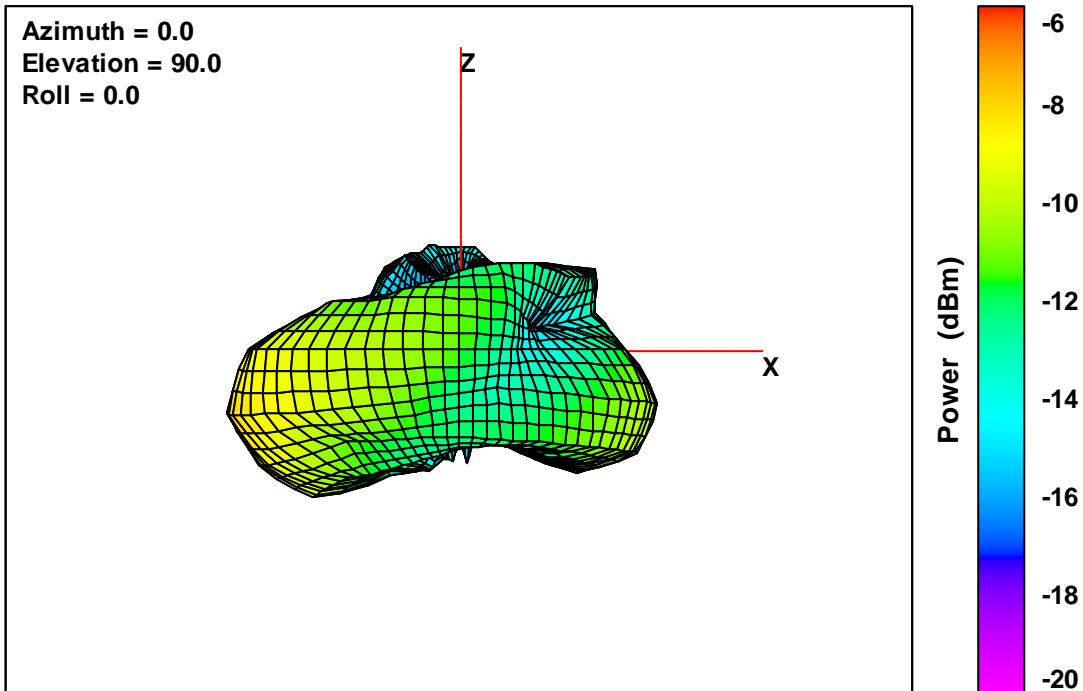
ANTENNA ONE Free-Space Total EIRP, Top View, 2440 MHz

### Total EIRP, Bottom View



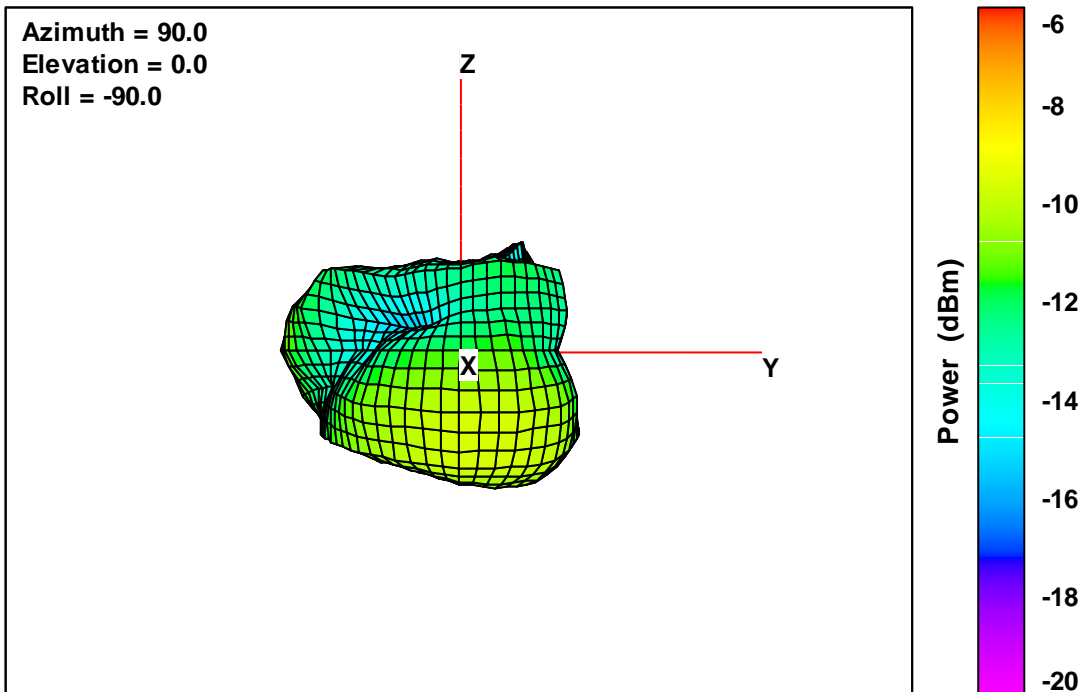
ANTENNA ONE Free-Space Total EIRP, Bottom View, 2440 MHz

### Total EIRP, Left Side View



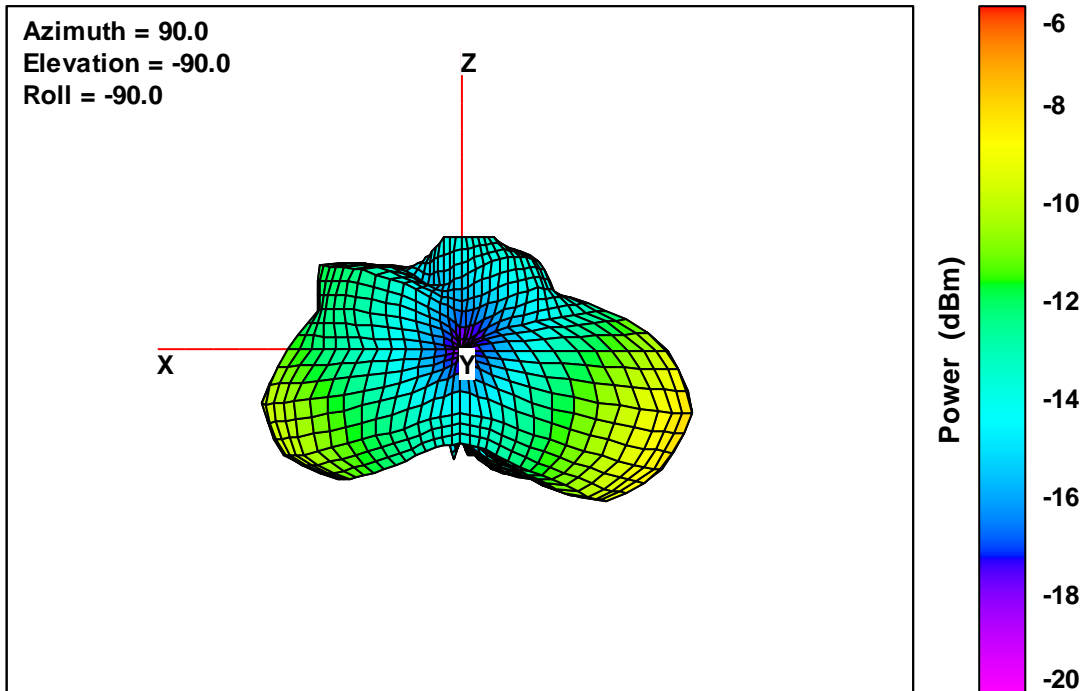
ANTENNA ONE Free-Space Total EIRP, Left Side View, 2440 MHz

### Total EIRP, Front Face View



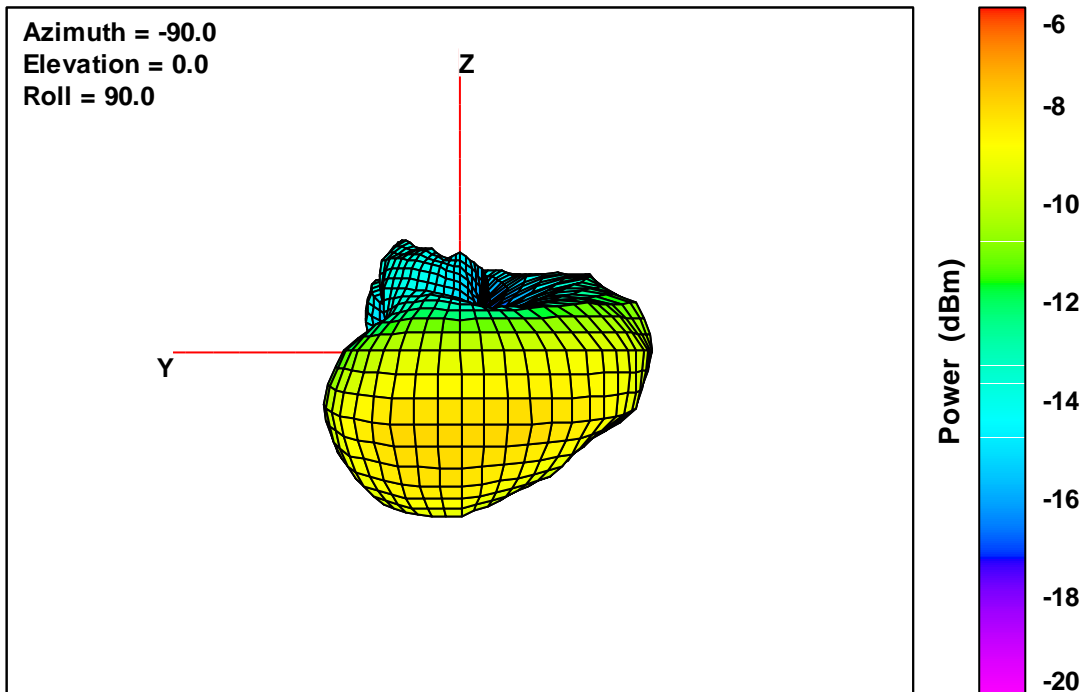
ANTENNA ONE Free-Space Total EIRP, Front Face View, 2440 MHz

### Total EIRP, Right Side View



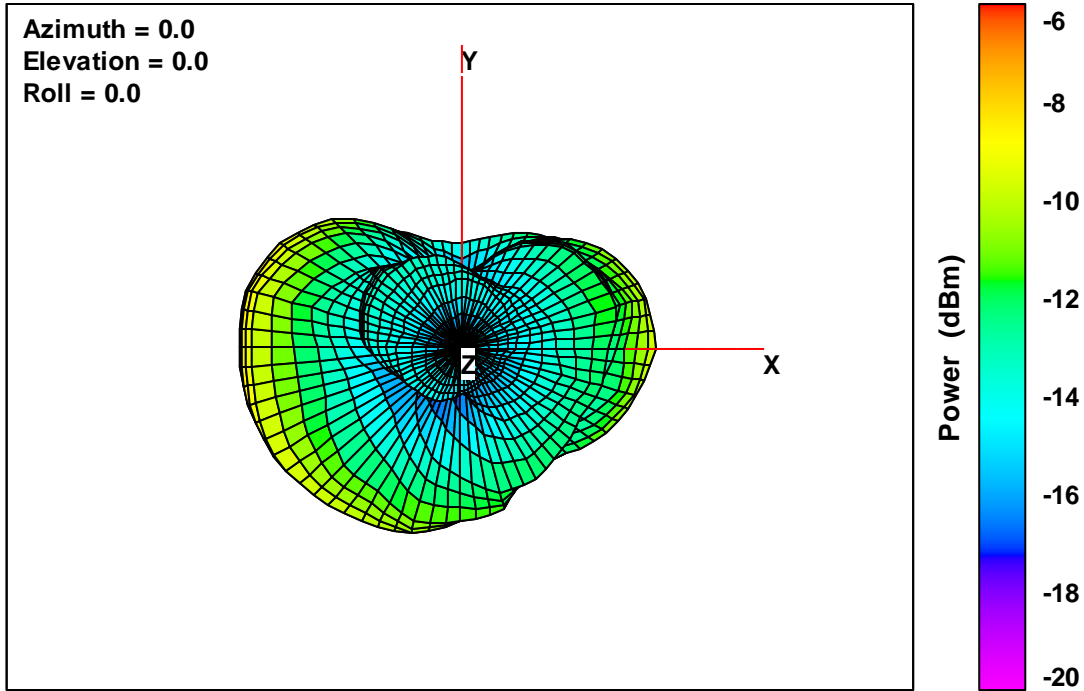
ANTENNA ONE Free-Space Total EIRP, Right Side View, 2440 MHz

### Total EIRP, Back Face View



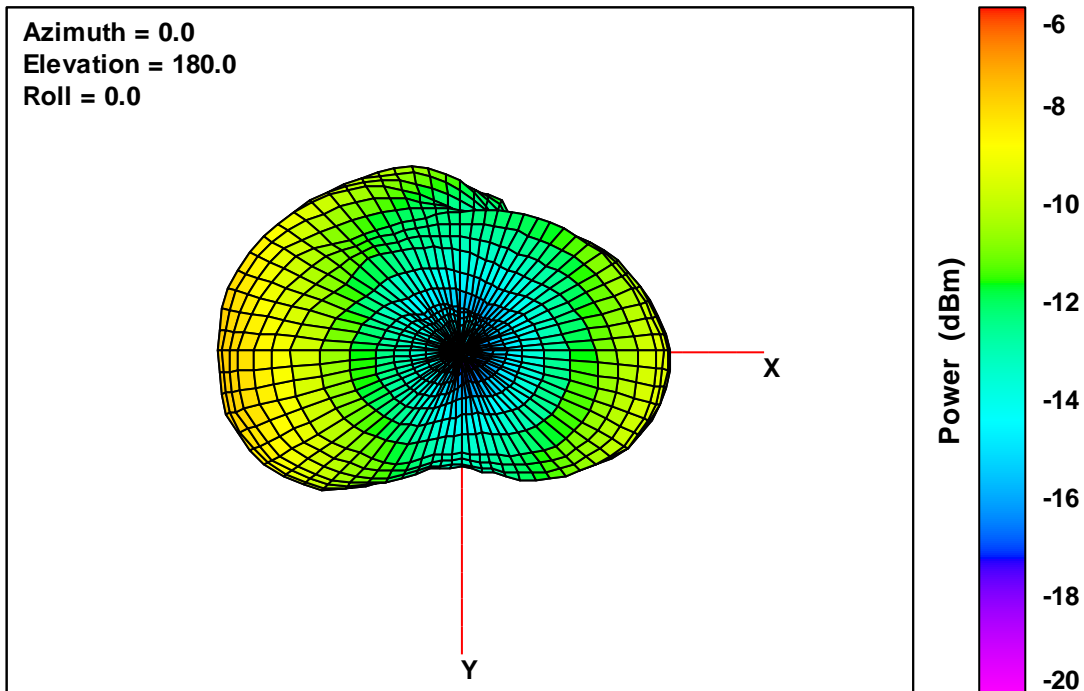
ANTENNA ONE Free-Space Total EIRP, Back Face View, 2440 MHz

### 7.3 Antenna 1 3D PASSIVE- 2475 MHz Total EIRP, Top View



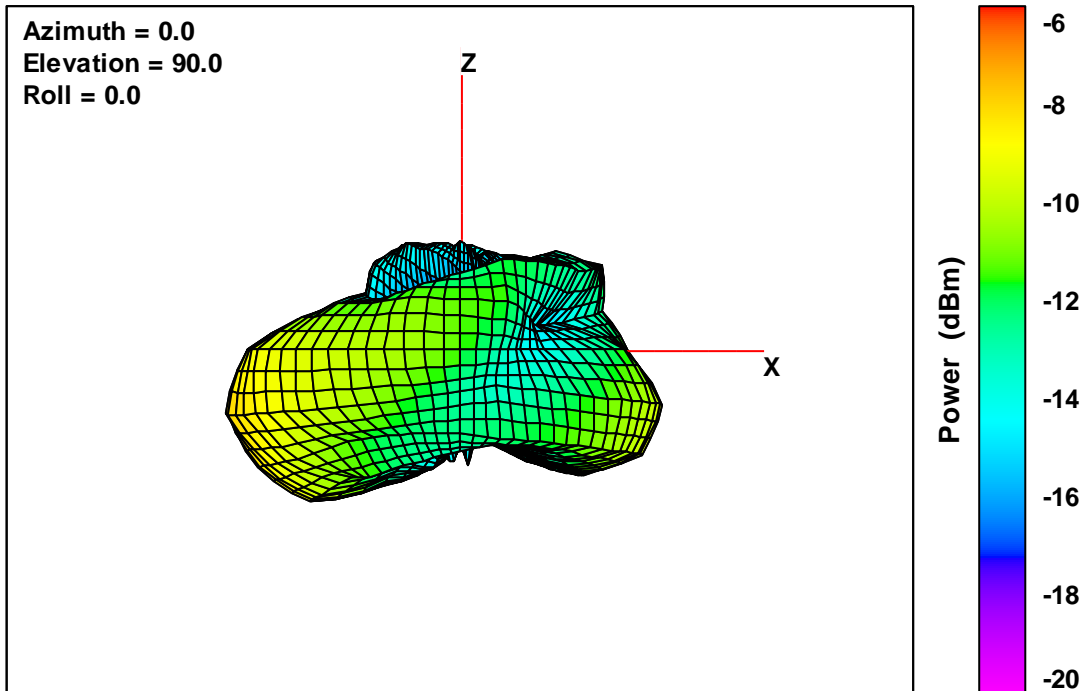
ANTENNA ONE Free-Space Total EIRP, Top View, 2475 MHz

### Total EIRP, Bottom View



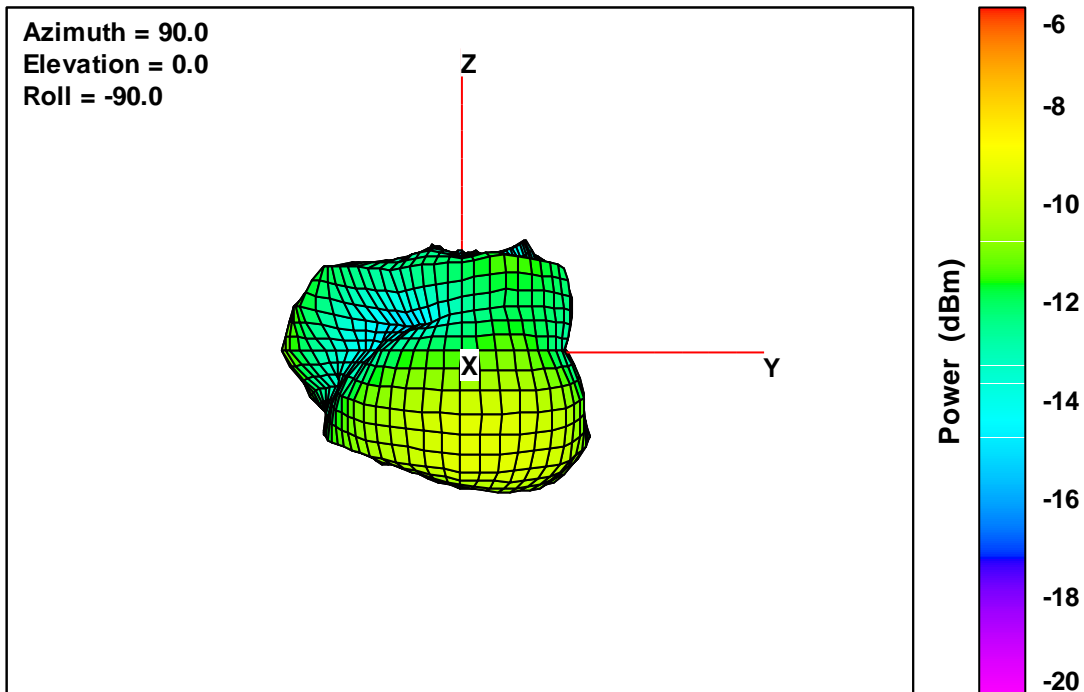
ANTENNA ONE Free-Space Total EIRP, Bottom View, 2475 MHz

### Total EIRP, Left Side View



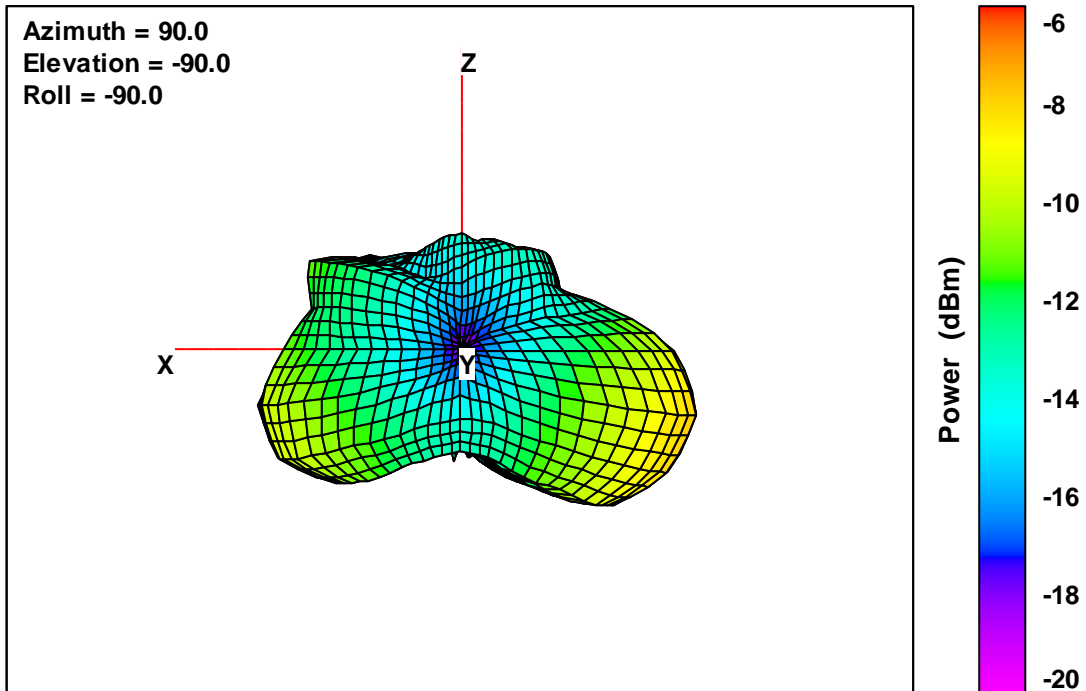
ANTENNA ONE Free-Space Total EIRP, Left Side View, 2475 MHz

### Total EIRP, Front Face View



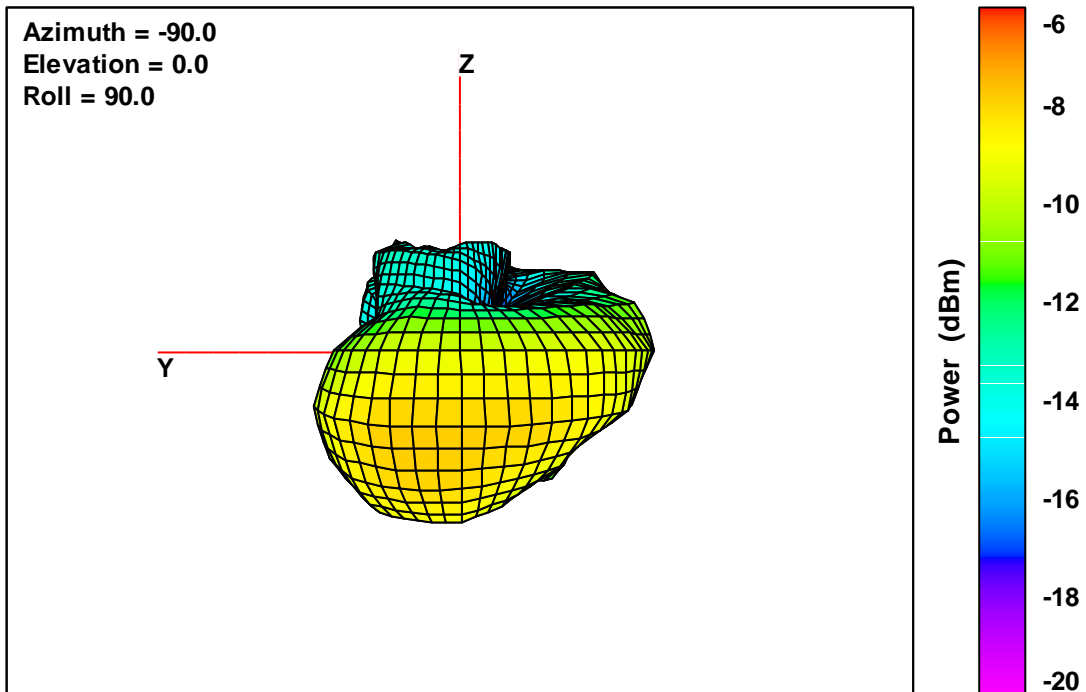
ANTENNA ONE Free-Space Total EIRP, Front Face View, 2475 MHz

### Total EIRP, Right Side View



ANTENNA ONE Free-Space Total EIRP, Right Side View, 2475 MHz

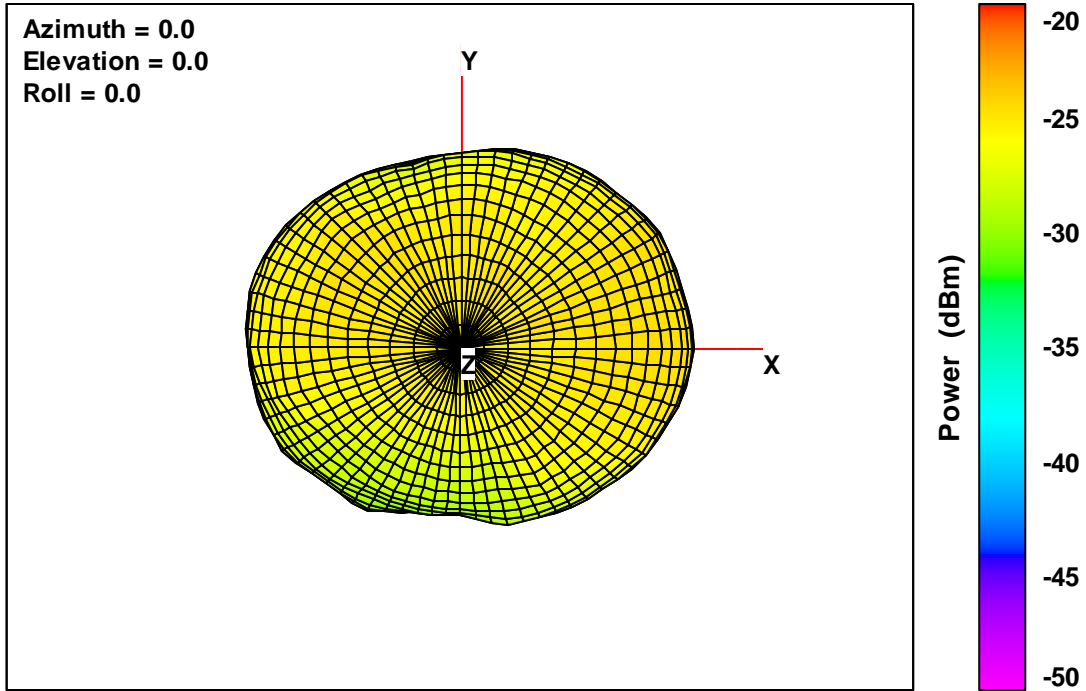
### Total EIRP, Back Face View



ANTENNA ONE Free-Space Total EIRP, Back Face View, 2475 MHz

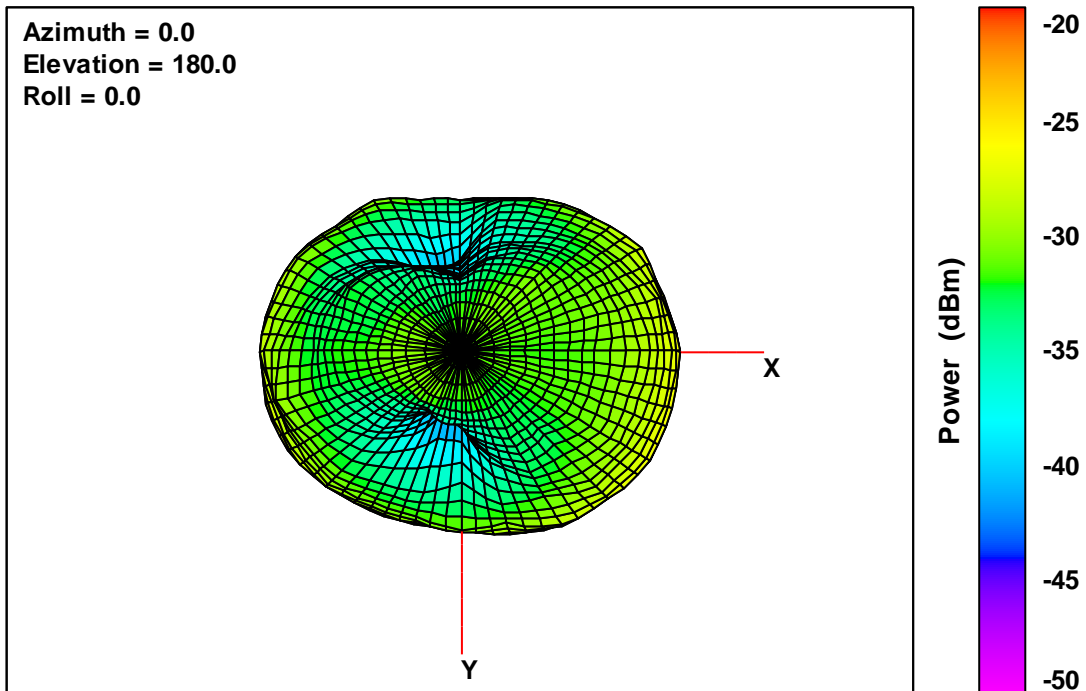


### 7.4 Antenna 2 3D PASSIVE- 2405 MHz Total EIRP, Top View



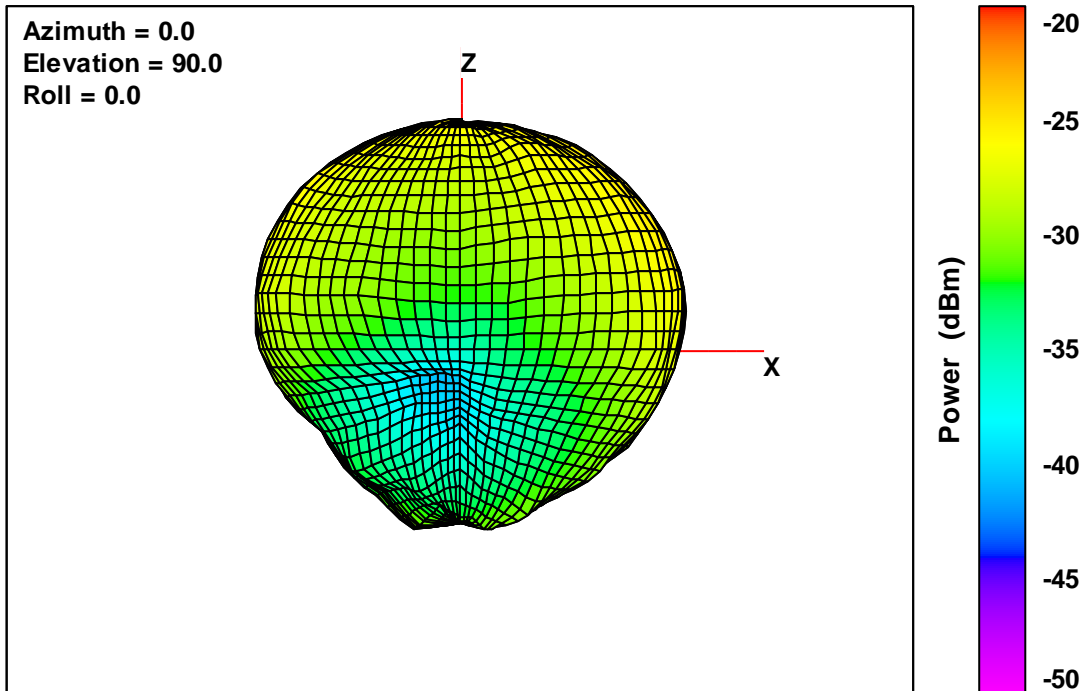
ANTENNA TWO Free-Space Total EIRP, Top View, 2405 MHz

### Total EIRP, Bottom View



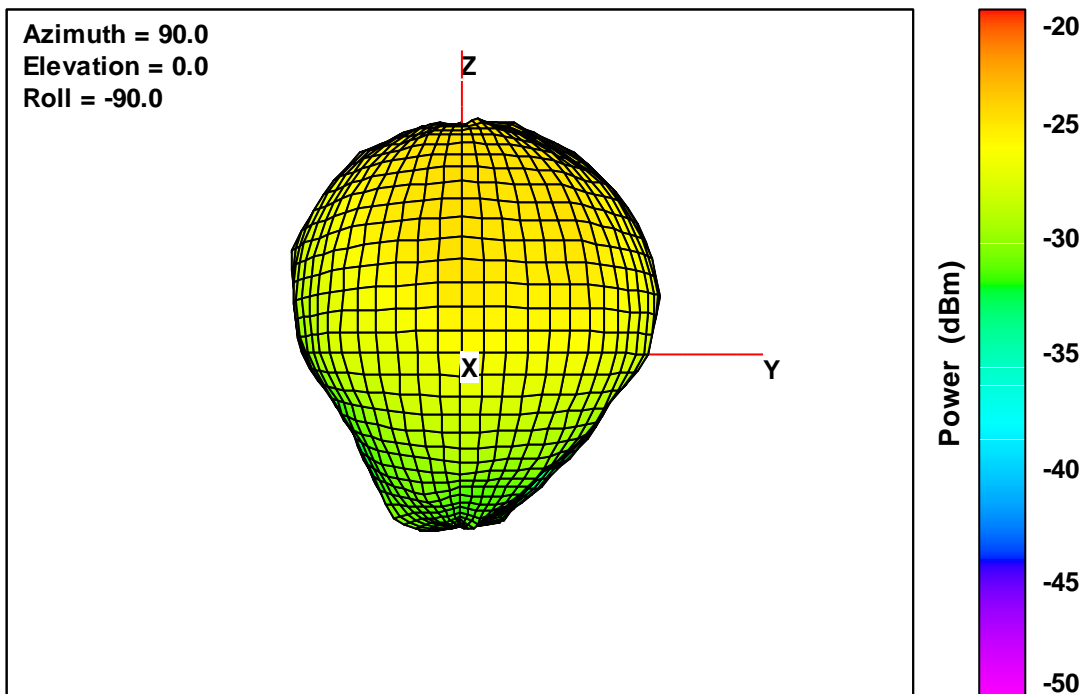
ANTENNA TWO Free-Space Total EIRP, Bottom View, 2405 MHz

### Total EIRP, Left Side View



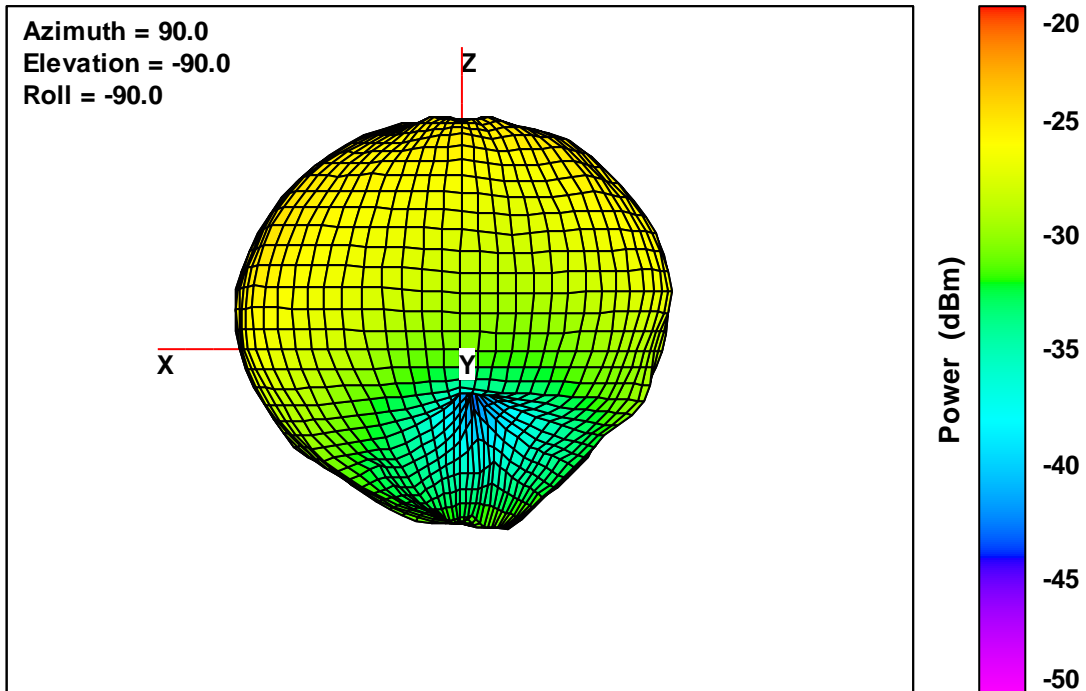
ANTENNA TWO Free-Space Total EIRP, Left Side View, 2405 MHz

### Total EIRP, Front Face View



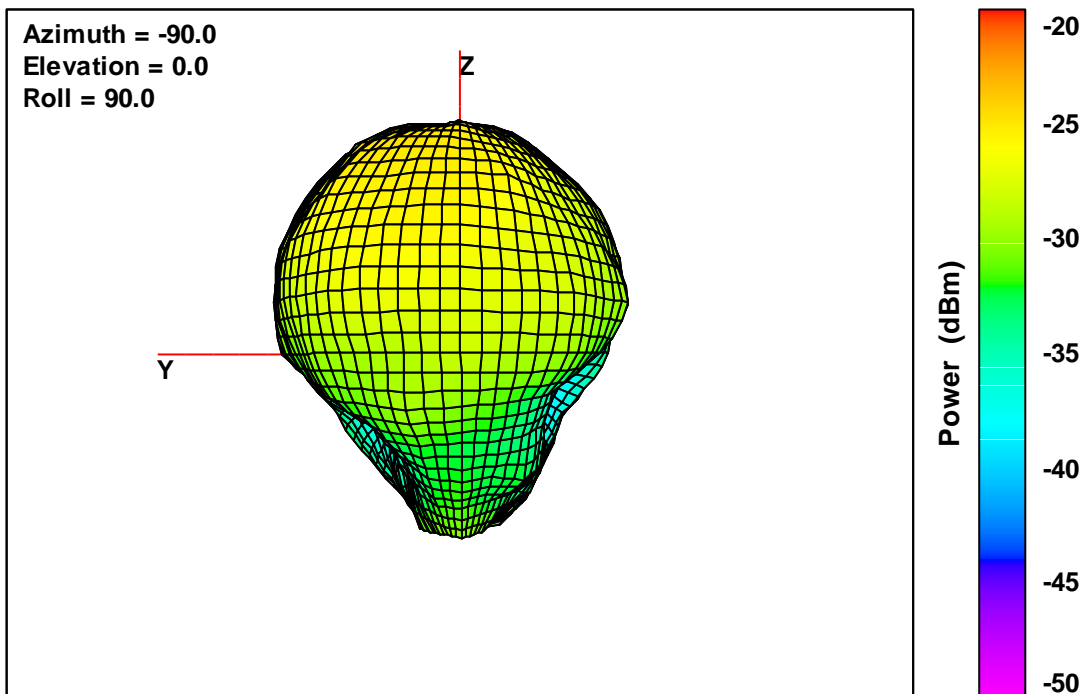
ANTENNA TWO Free-Space Total EIRP, Front Face View, 2405 MHz

### Total EIRP, Right Side View



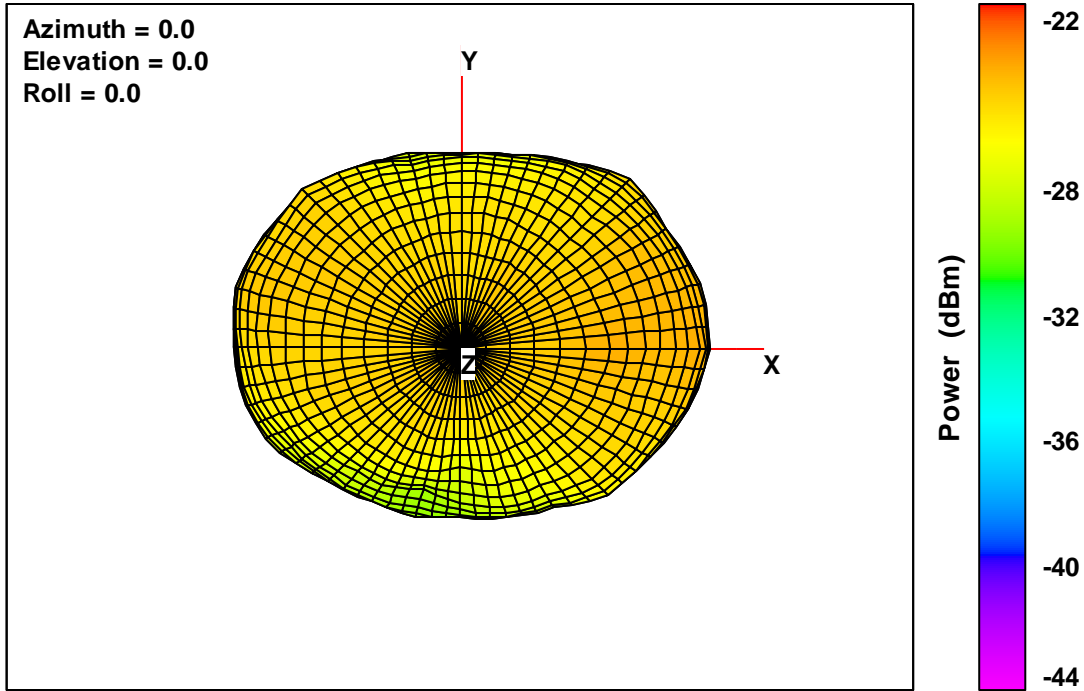
ANTENNA TWO Free-Space Total EIRP, Right Side View, 2405 MHz

### Total EIRP, Back Face View



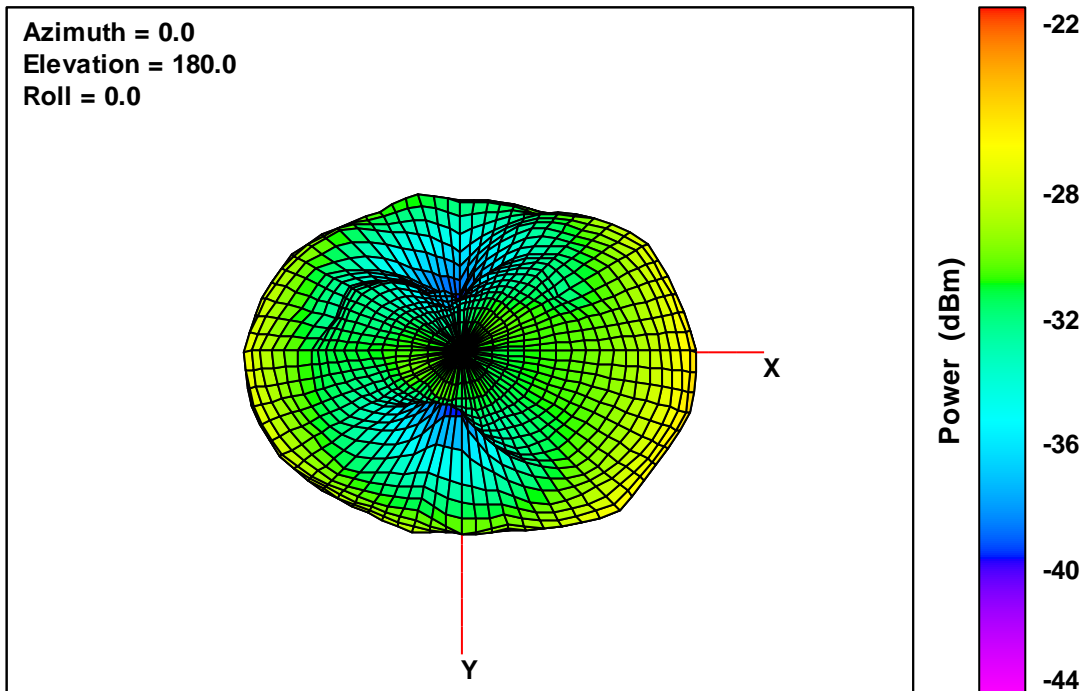
ANTENNA TWO Free-Space Total EIRP, Back Face View, 2405 MHz

### 7.5 Antenna 2 3D PASSIVE- 2440 MHz Total EIRP, Top View



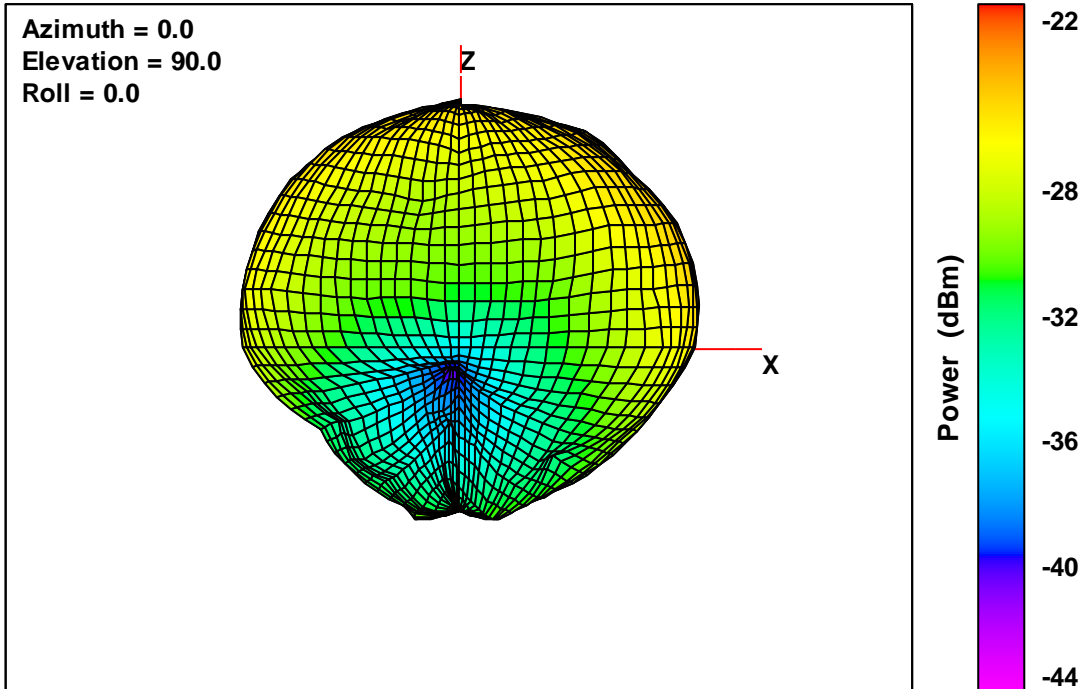
ANTENNA TWO Free-Space Total EIRP, Top View, 2440 MHz

### Total EIRP, Bottom View



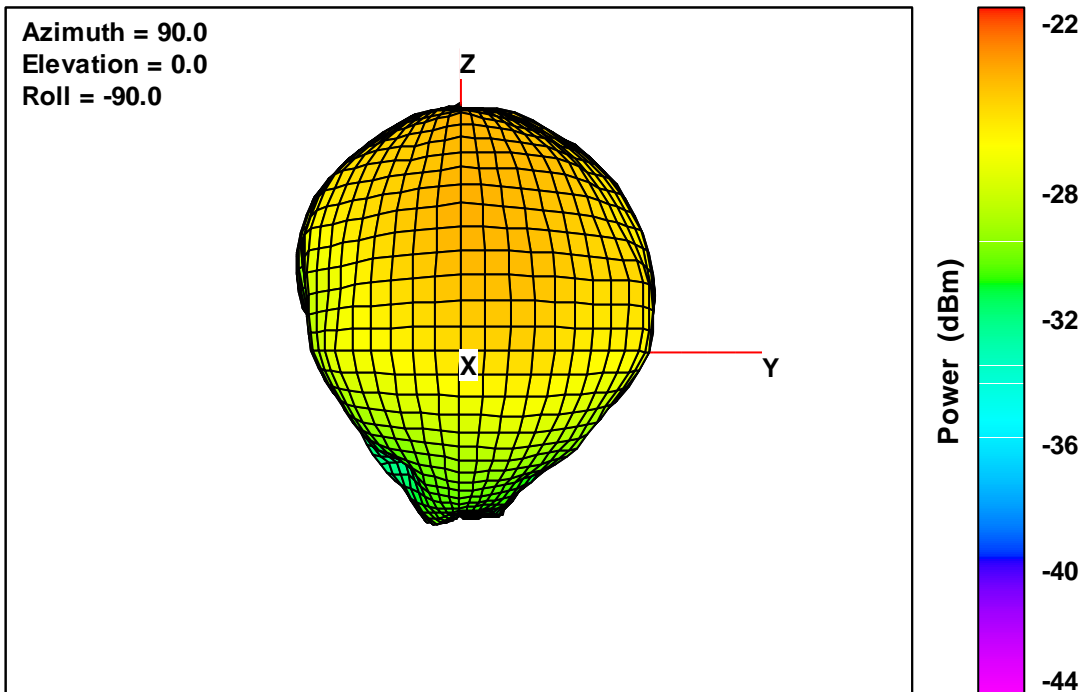
ANTENNA TWO Free-Space Total EIRP, Bottom View, 2440 MHz

### Total EIRP, Left Side View



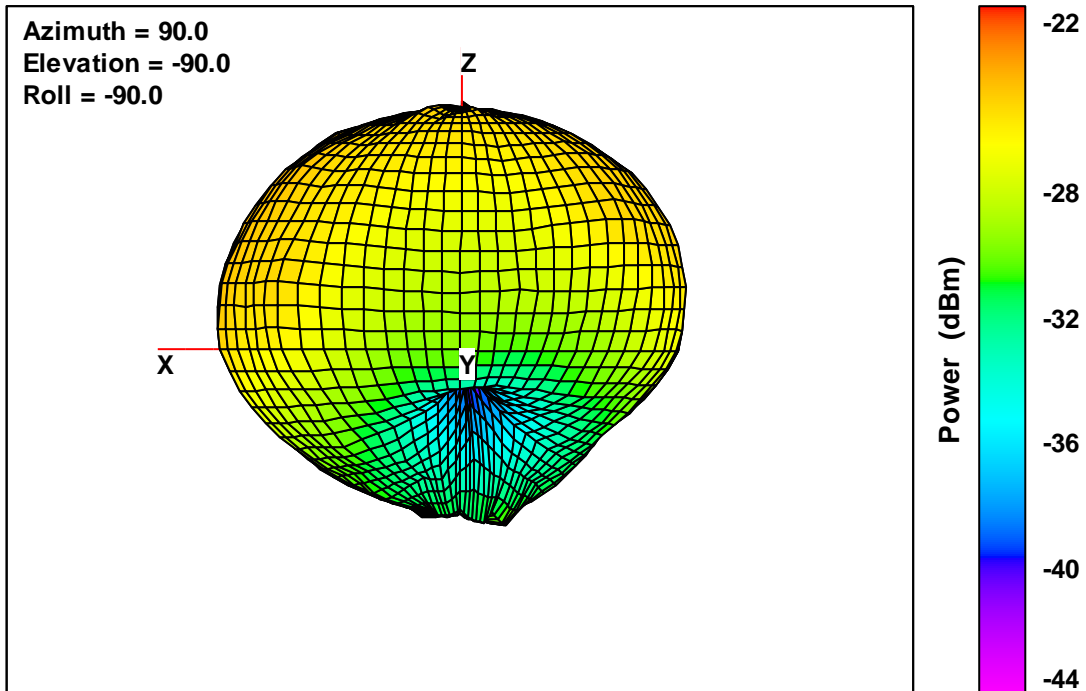
ANTENNA TWO Free-Space Total EIRP, Left Side View, 2440 MHz

### Total EIRP, Front Face View



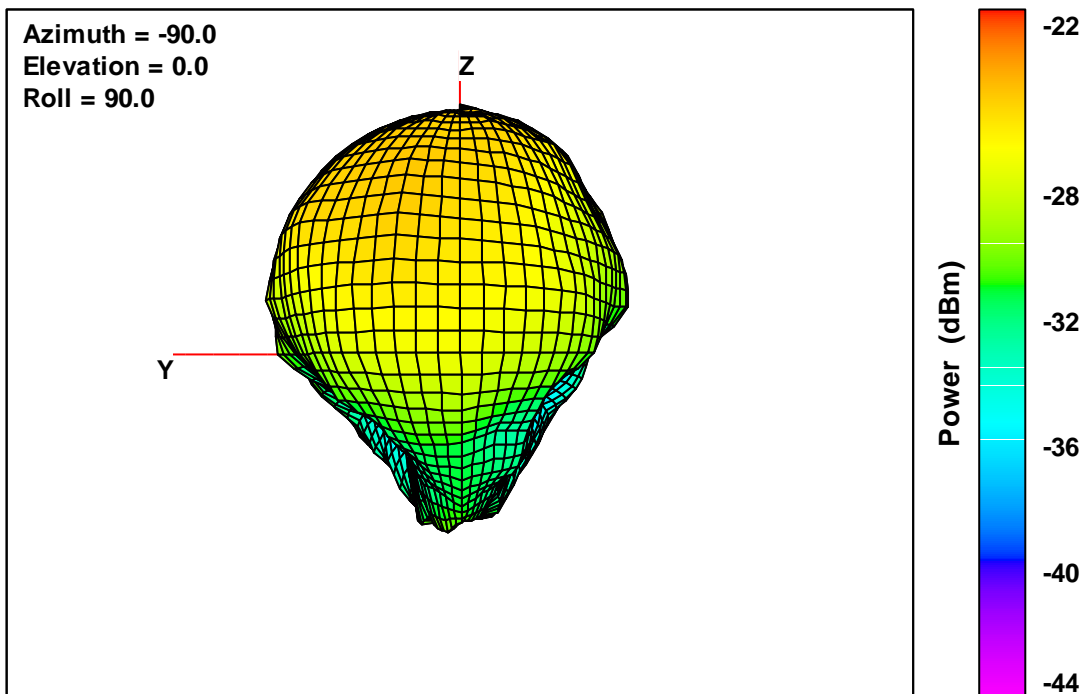
ANTENNA TWO Free-Space Total EIRP, Front Face View, 2440 MHz

### Total EIRP, Right Side View



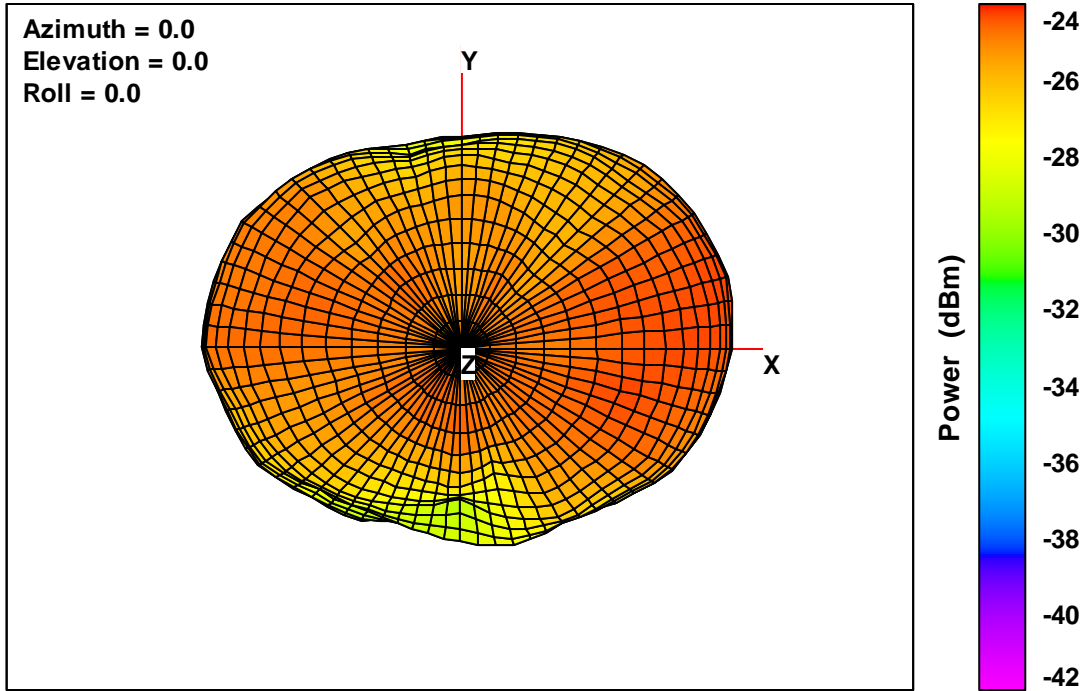
ANTENNA TWO Free-Space Total EIRP, Right Side View, 2440 MHz

### Total EIRP, Back Face View



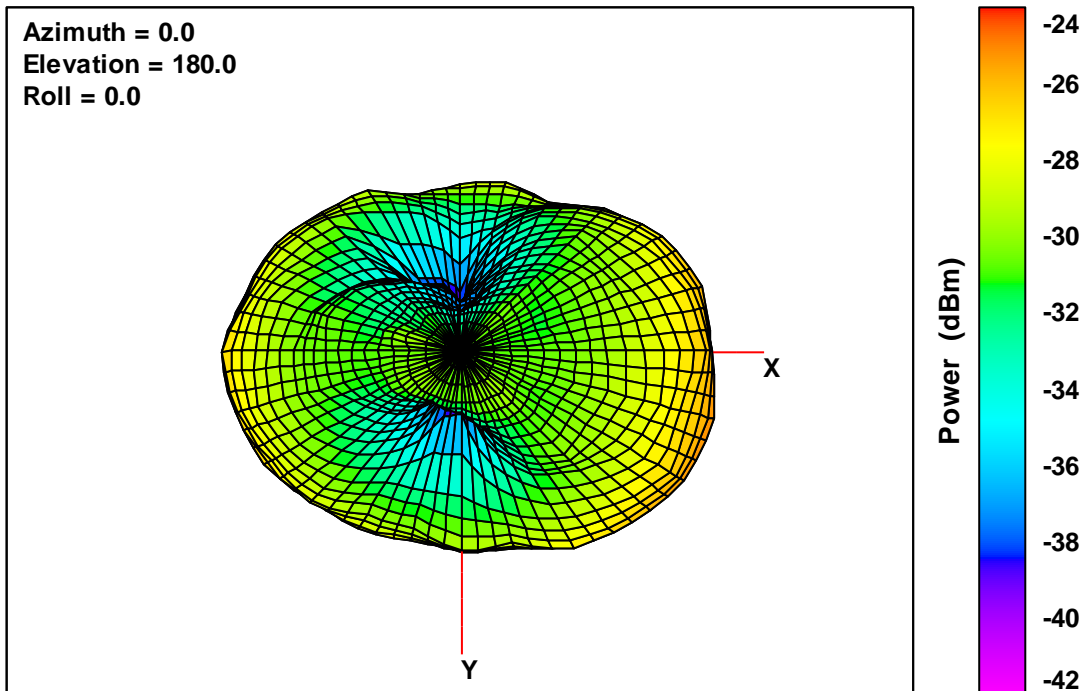
ANTENNA TWO Free-Space Total EIRP, Back Face View, 2440 MHz

### 7.6 Antenna 2 3D PASSIVE- 2475 MHz Total EIRP, Top View



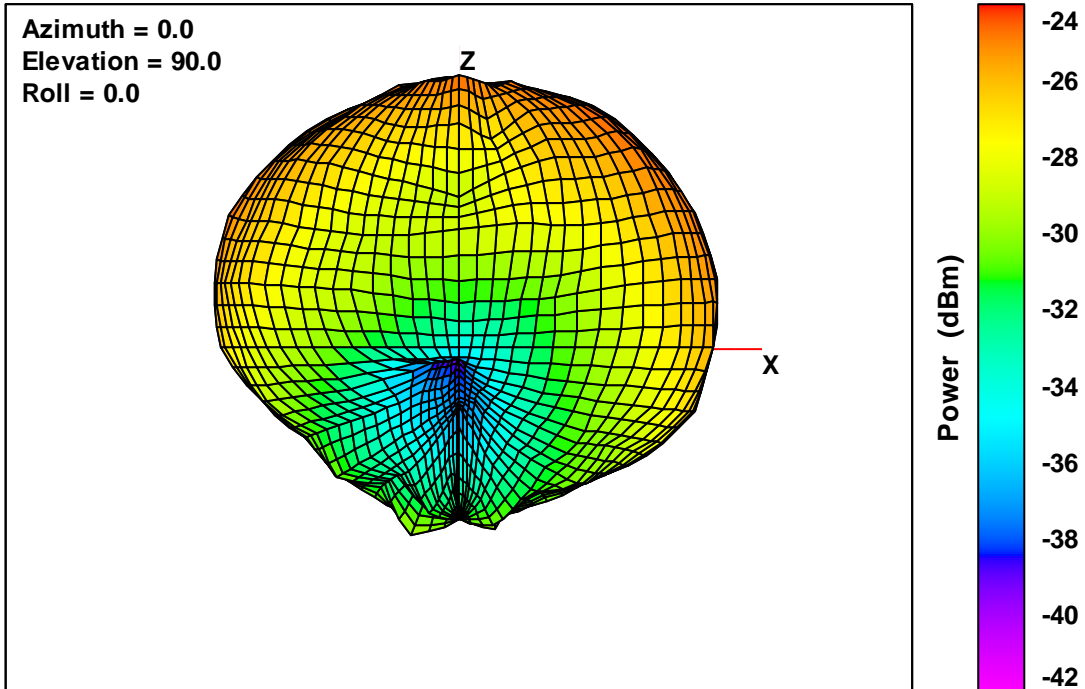
ANTENNA TWO Free-Space Total EIRP, Top View, 2475 MHz

### Total EIRP, Bottom View



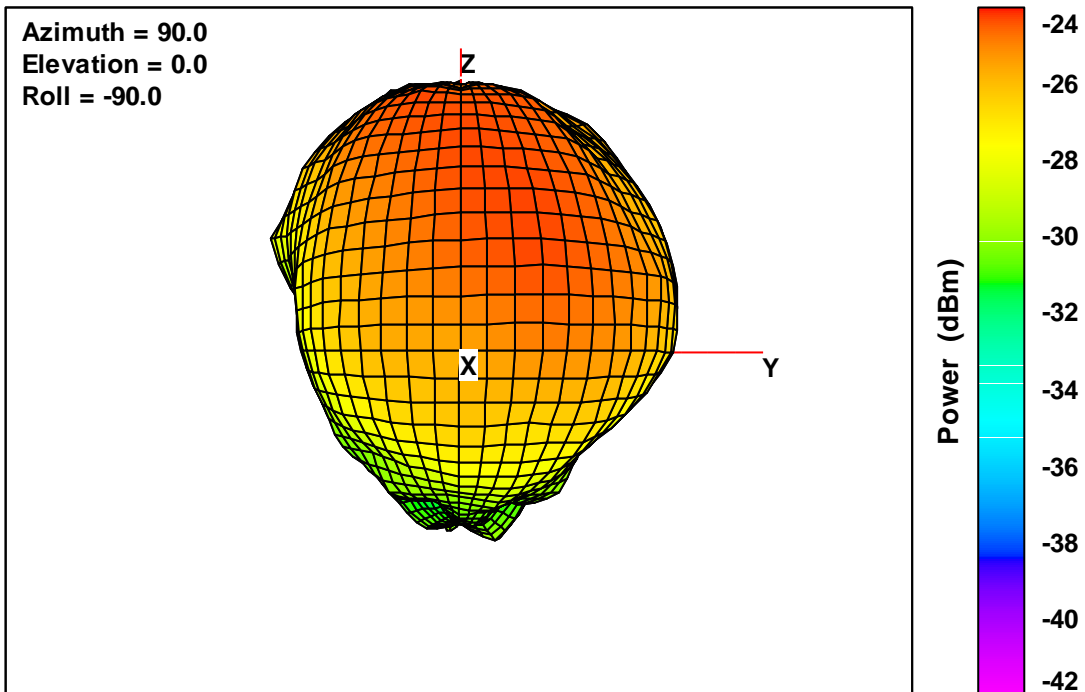
ANTENNA TWO Free-Space Total EIRP, Bottom View, 2475 MHz

### Total EIRP, Left Side View



ANTENNA TWO Free-Space Total EIRP, Left Side View, 2475 MHz

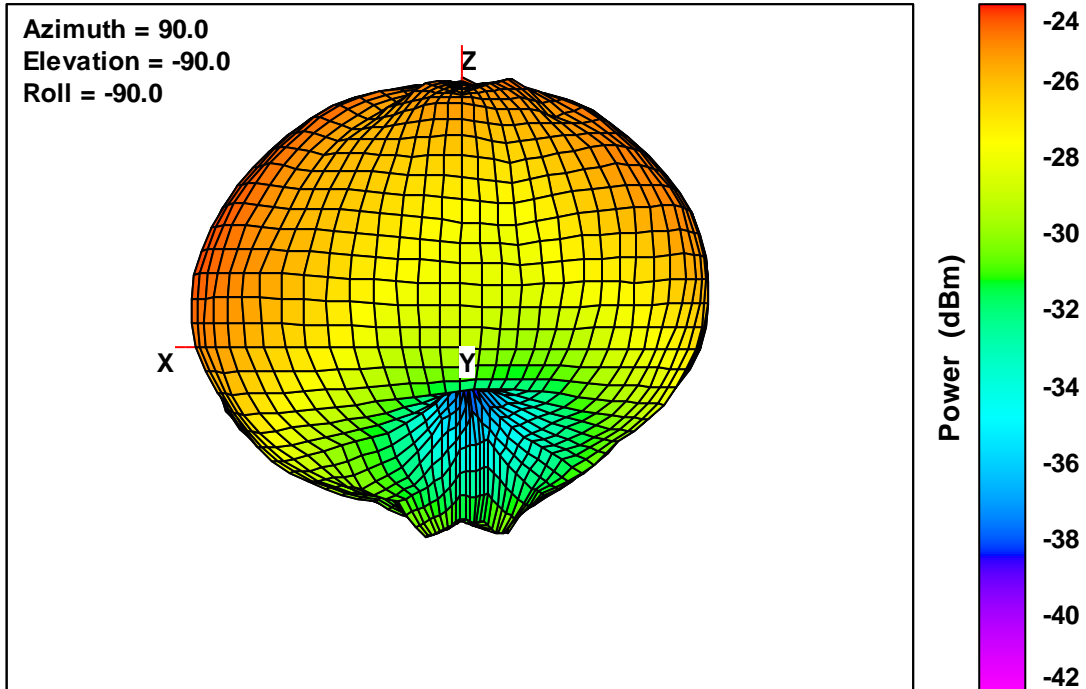
### Total EIRP, Front Face View



ANTENNA TWO Free-Space Total EIRP, Front Face View, 2475 MHz

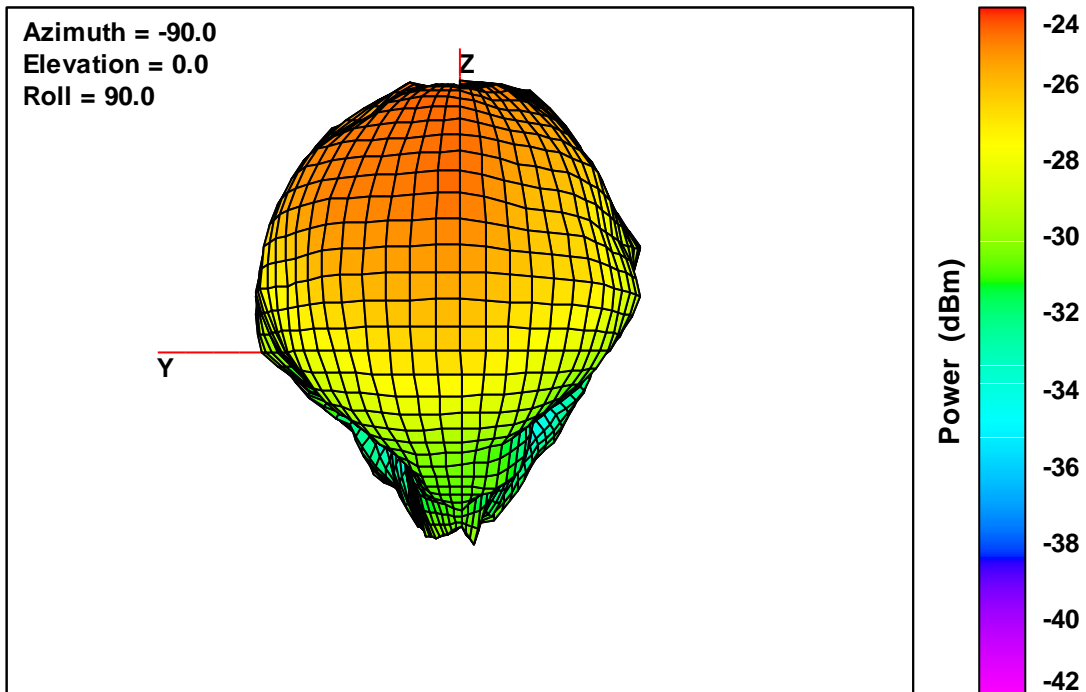


### Total EIRP, Right Side View



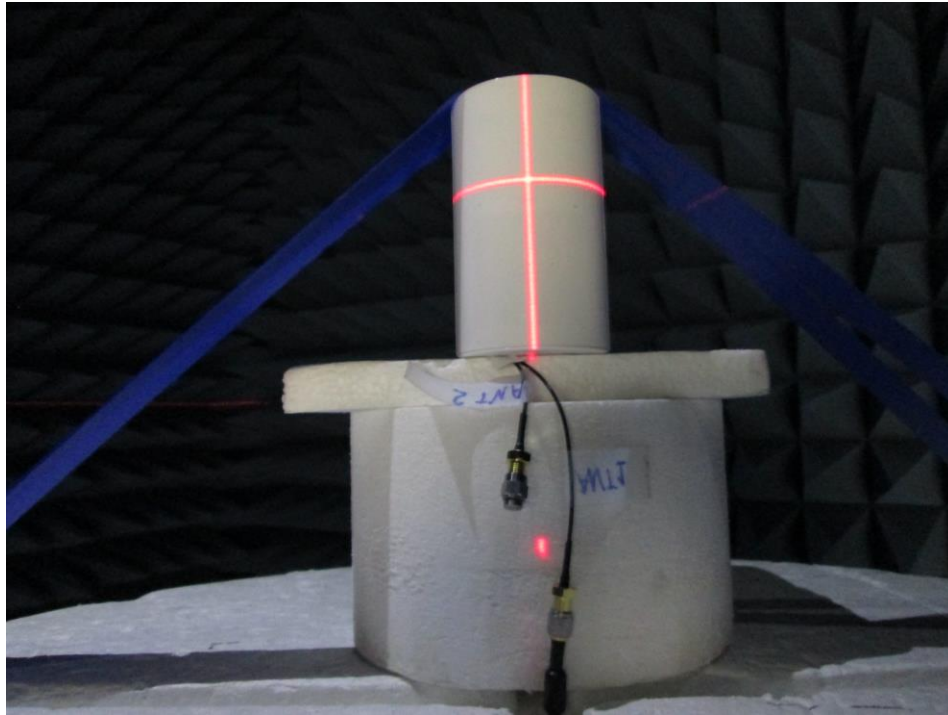
ANTENNA TWO Free-Space Total EIRP, Right Side View, 2475 MHz

### Total EIRP, Back Face View



ANTENNA TWO Free-Space Total EIRP, Back Face View, 2475 MHz

## 8 TEST SETUP



**END OF REPORT**