

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

**FOR**

**BLUETOOTH REMOTE CONTROL**

**PART/MODEL NUMBER: 10.000186**

**DATE ISSUED: DECEMBER 21, 2023**

**REPORT NUMBER: 15080376-O1V1**

Prepared for  
**SMK Electronics Corporation US**  
**1055 Tierra Del Rey**  
**Chula Vista, California, 91910-7875**  
**U.S.A.**

*Prepared by*  
**UL VERIFICATION SERVICES INC.**  
**47173 BENICIA STREET**  
**FREMONT, CA 94538, U.S.A.**  
**TEL: (510) 319-4000**  
**FAX: (510) 661-0888**

Revision History

Rev.	Issue Date	Revisions	Revised By
V1	12/21/2023	Initial Issue	Michael Heckrotte

TABLE OF CONTENTS

1 ATTESTATION OF TEST RESULTS ..... 4

2 TEST METHODOLOGY ..... 5

3 TEST FACILITY ..... 5

4 TEST AND MEASUREMENT EQUIPMENT ..... 5

5 DEVICE UNDER TEST INFORMATION..... 6

6 RESULT SUMMARY ..... 6

6.1 Active Antenna Pattern ..... 6

7 PLOTS ..... 7

7.1 3D ACTIVE- 2402 MHz..... 7

7.2 3D ACTIVE- 2440 MHz..... 10

7.3 3D ACTIVE- 2480 MHz..... 13

8 TEST SETUP ..... 16

## 1 ATTESTATION OF TEST RESULTS

Company Name and Address	SMK Electronics Corporation US
	1055 Tierra Del Rey
	Chula Vista, CA, 9190-7875
	U.S.A.
EUT Description	Remote Control for Chair
Part/Model	10.000186
Date Tested	12/12/2023-12/13/2023

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
Non-standard Test Method:	Information Only

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 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:



Michael Heckrotte  
PRINCIPAL ENGINEER  
UL Verification Services Inc.

Tested and Prepared By:



Casey Dial  
TEST ENGINEER  
UL Verification Services Inc.

## 2 TEST METHODOLOGY

The 3D Active Antenna Pattern tests documented in this report were performed using a dual polarized quad-ridged horn antenna mounted on the theta scanning arm. Measurements were taken at 15° increments in both elevation and 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: Michael Heckrotte

## 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
PSA Series Spectrum Analyzer	Agilent	E4446A	80812	26 January 2023	31 January 2024
Fully Anechoic Chamber	ETS-Lindgren	AMS-8800 Series	1100181	11 January 2023	N/A
Dual Polarized Quad-Ridged Horn Antenna	ETS-Lindgren	N/A	N/A	N/A	N/A

Note: Dual Polarized Quad-Ridged Horn Antenna is a permanent fixture of the fully anechoic chamber and therefore does not have an assigned model number, asset number, nor is the antenna calibrated as a standalone component.

## 5 DEVICE UNDER TEST INFORMATION

Antenna	
Manufacturer	SMK Electronics Corporation US
Part/Model Number	10.000186
Frequency range (MHz)	2402,2440,2480
Device/Antenna type	PCB Antenna

## 6 RESULT SUMMARY

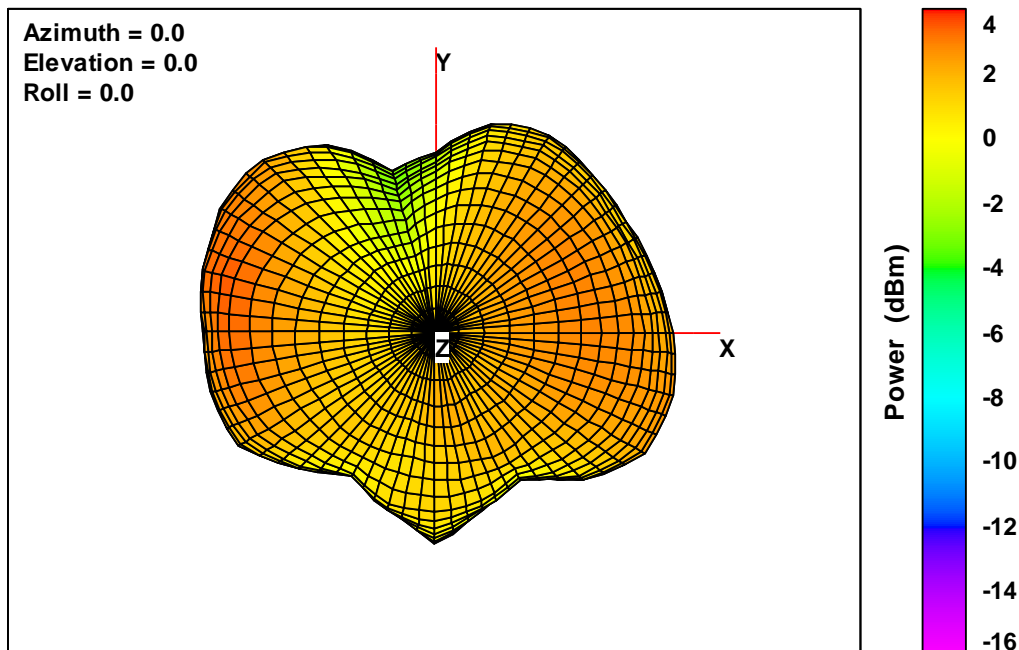
### 6.1 Active Antenna Pattern

Measurement	Frequency (MHz)		
	2402	2440	2480
3D Peak Gain (dBi)	-0.15	-0.25	-1.31

## 7 PLOTS

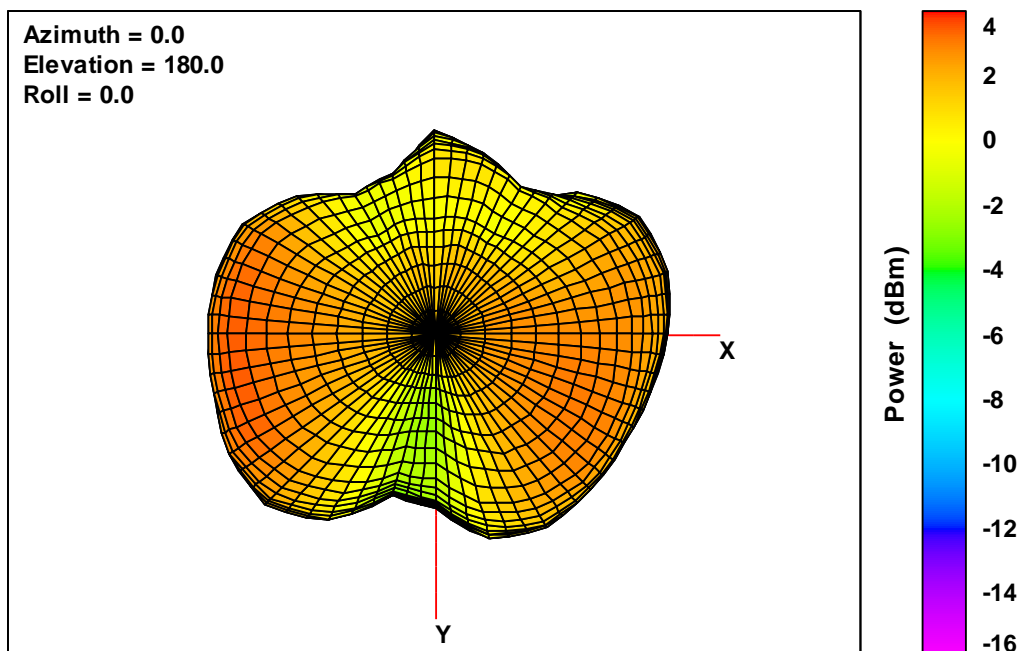
### 7.1 3D ACTIVE- 2402 MHz

Total EIRP, Top View



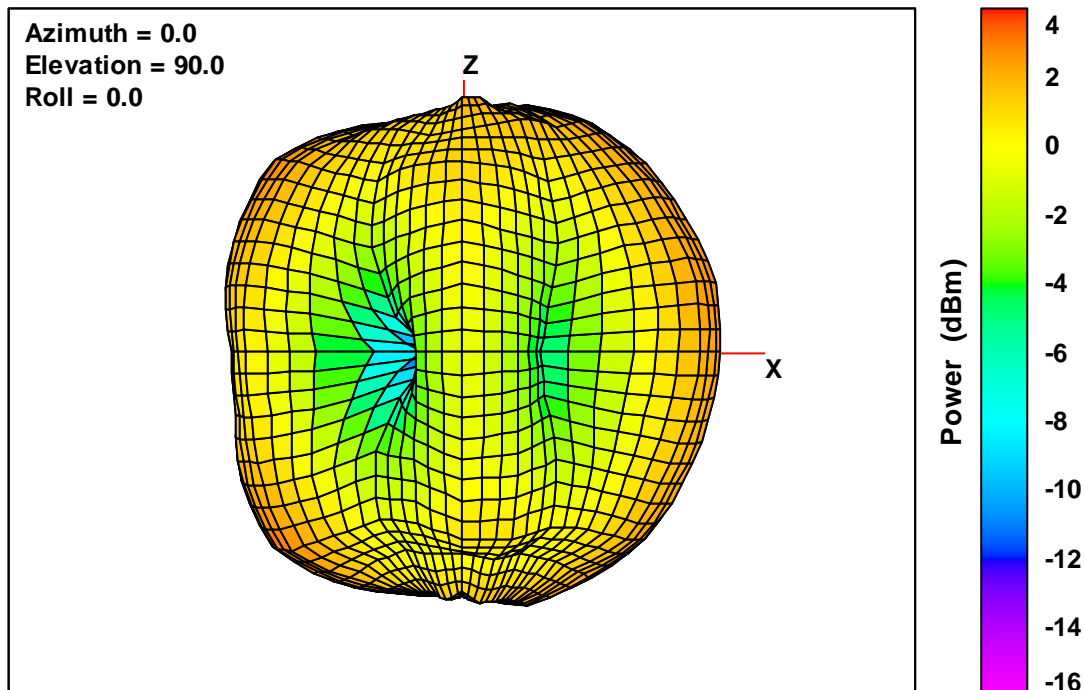
Free-Space Total EIRP, Top View, 2402 MHz

Total EIRP, Bottom View



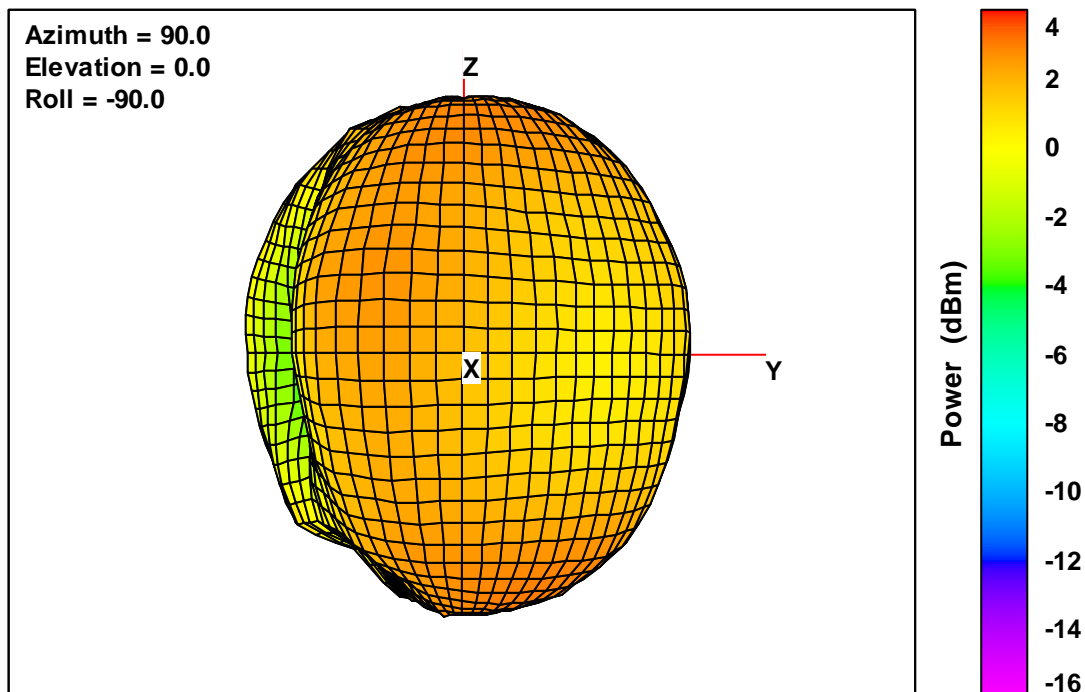
Free-Space Total EIRP, Bottom View, 2402 MHz

### Total EIRP, Left Side View



Free-Space Total EIRP, Left Side View, 2402 MHz

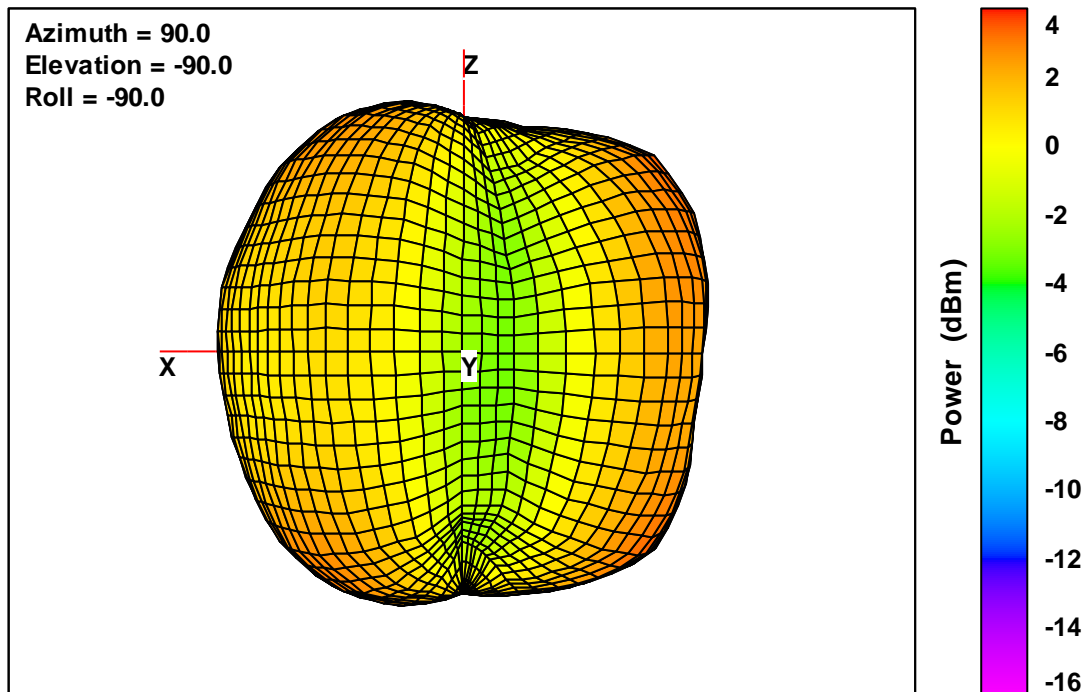
### Total EIRP, Front Face View



Free-Space Total EIRP, Front Face View, 2402 MHz

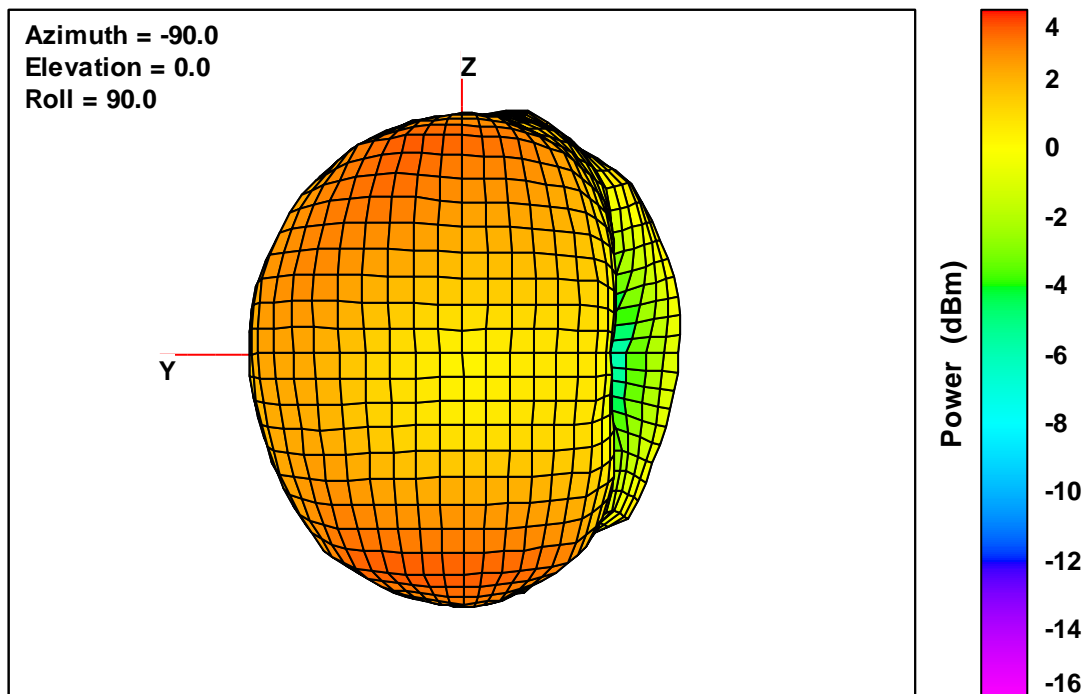


### Total EIRP, Right Side View



Free-Space Total EIRP, Right Side View, 2402 MHz

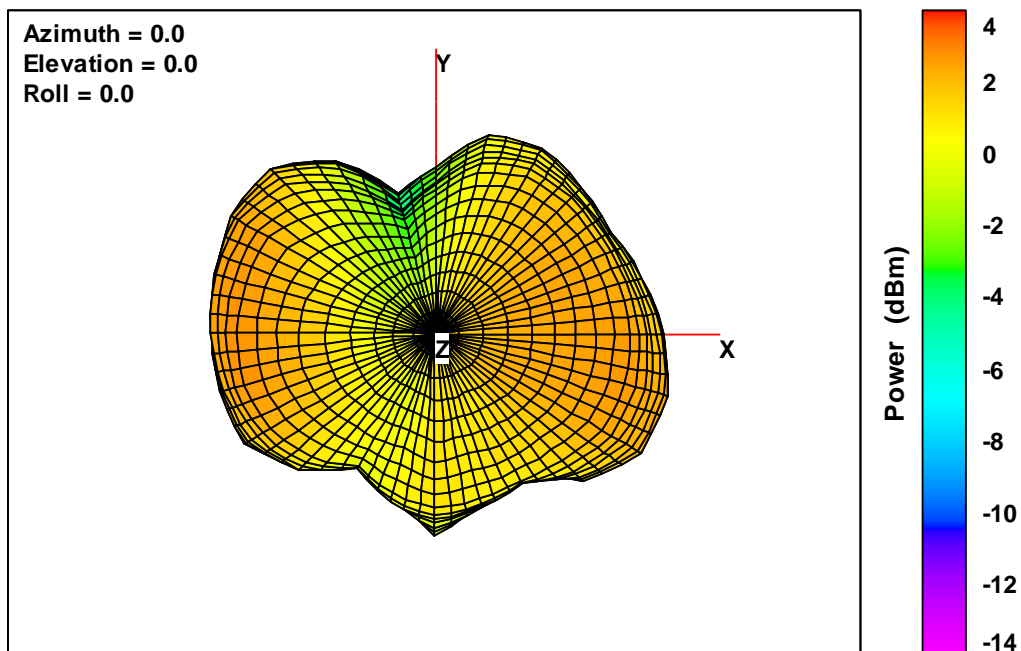
### Total EIRP, Back Face View



Free-Space Total EIRP, Back Face View, 2402 MHz

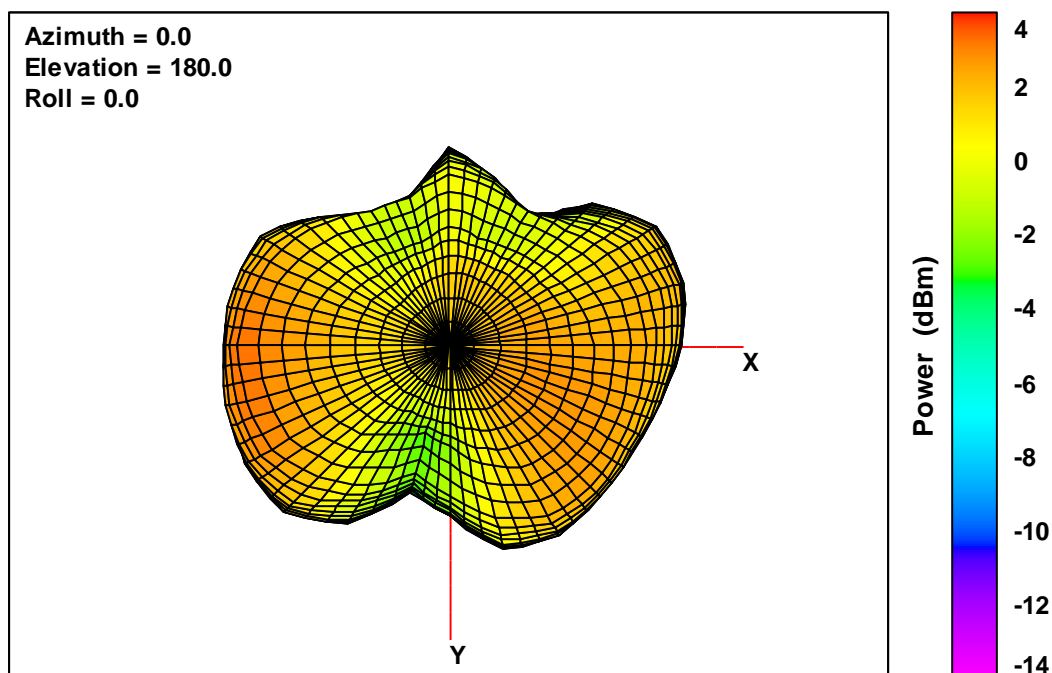
## 7.2 3D ACTIVE- 2440 MHz

**Total EIRP, Top View**



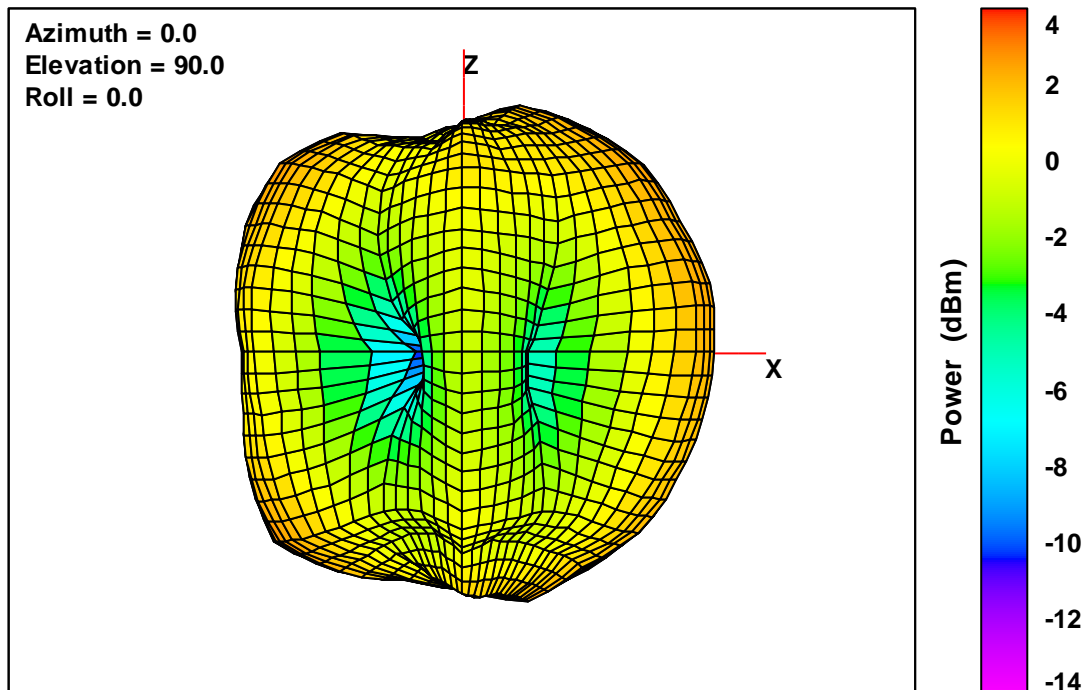
**Free-Space Total EIRP, Top View, 2440 MHz**

**Total EIRP, Bottom View**



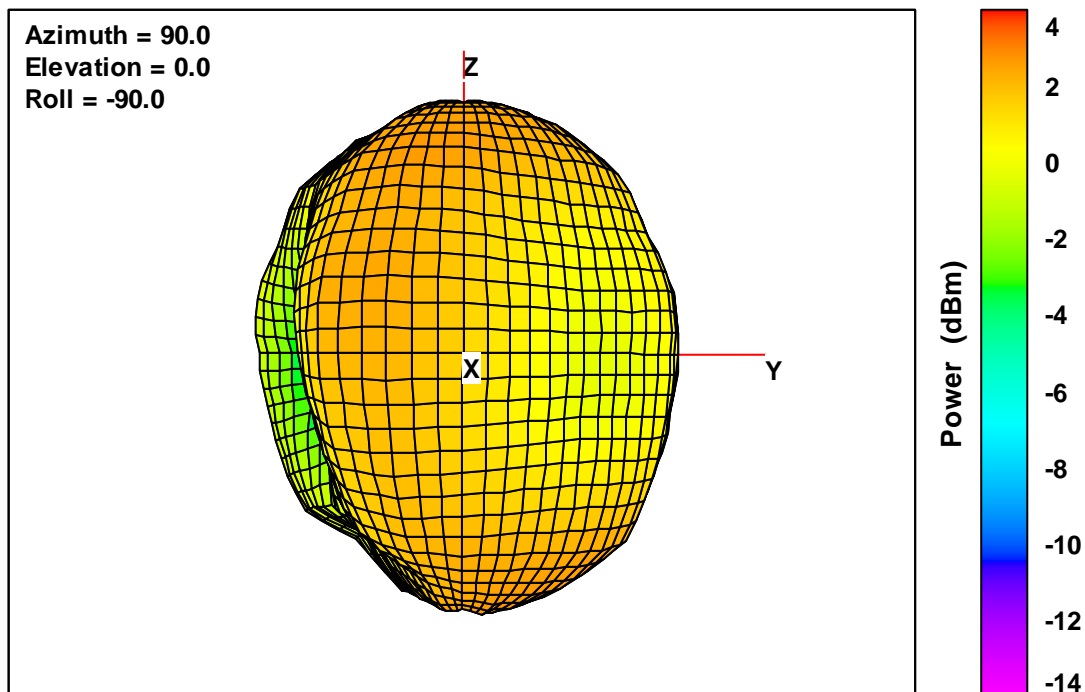
**Free-Space Total EIRP, Bottom View, 2440 MHz**

### Total EIRP, Left Side View



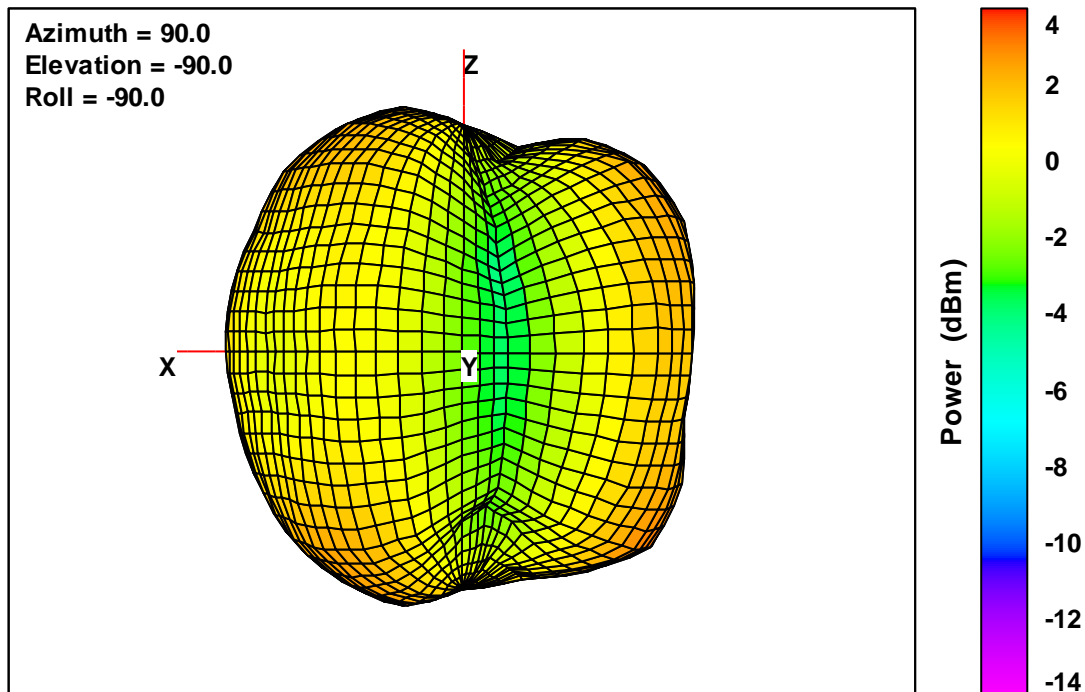
Free-Space Total EIRP, Left Side View, 2440 MHz

### Total EIRP, Front Face View



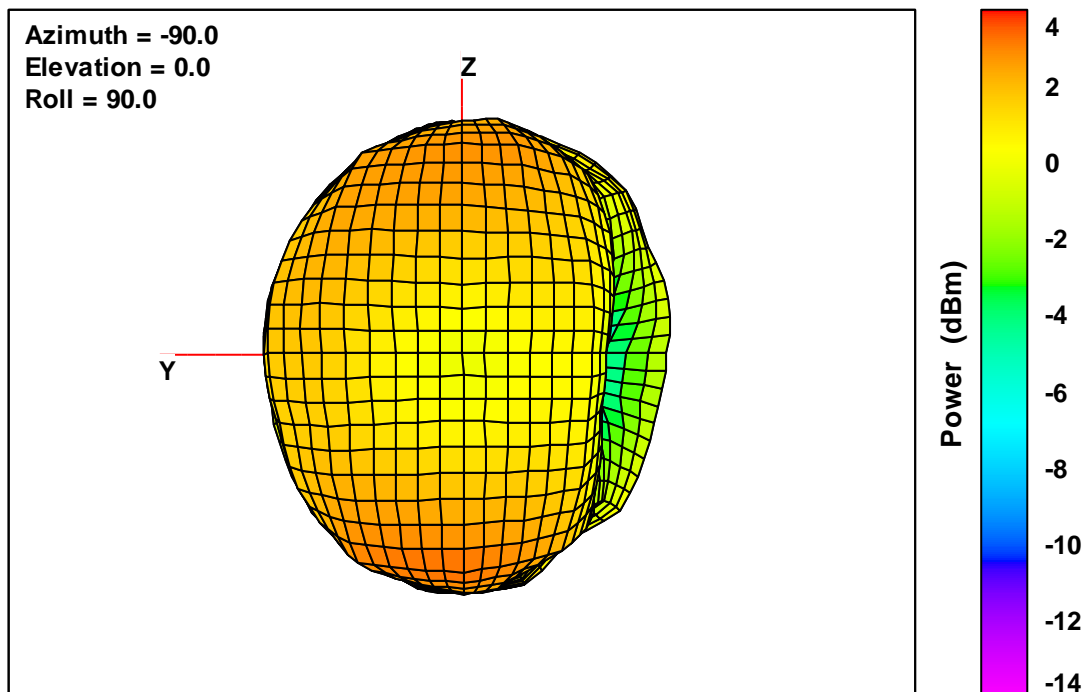
Free-Space Total EIRP, Front Face View, 2440 MHz

### Total EIRP, Right Side View



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

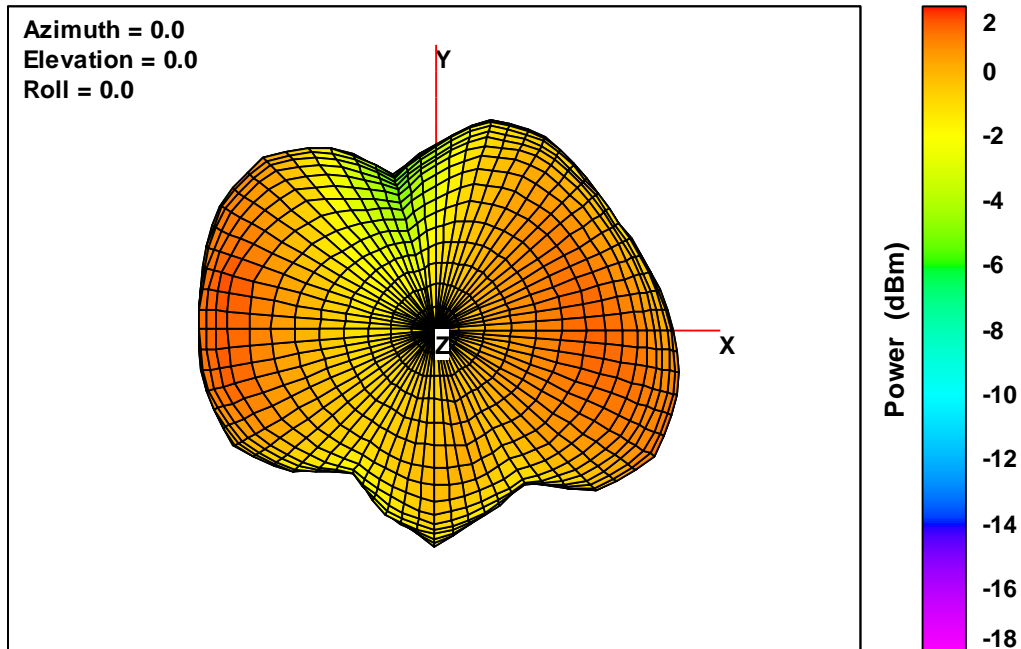
### Total EIRP, Back Face View



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

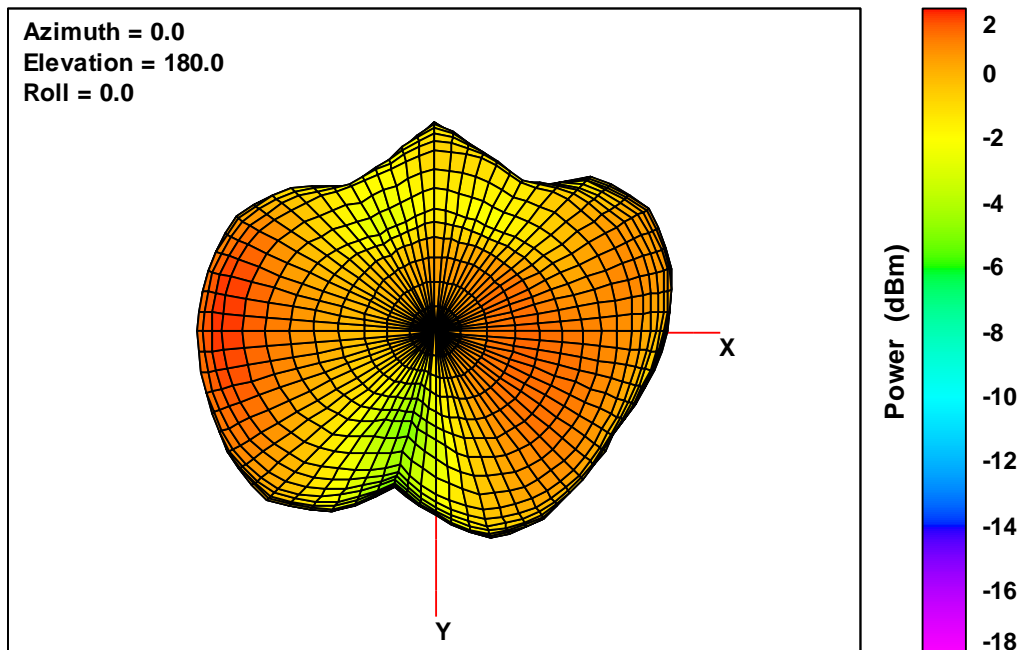
### 7.3 3D ACTIVE- 2480 MHz

**Total EIRP, Top View**



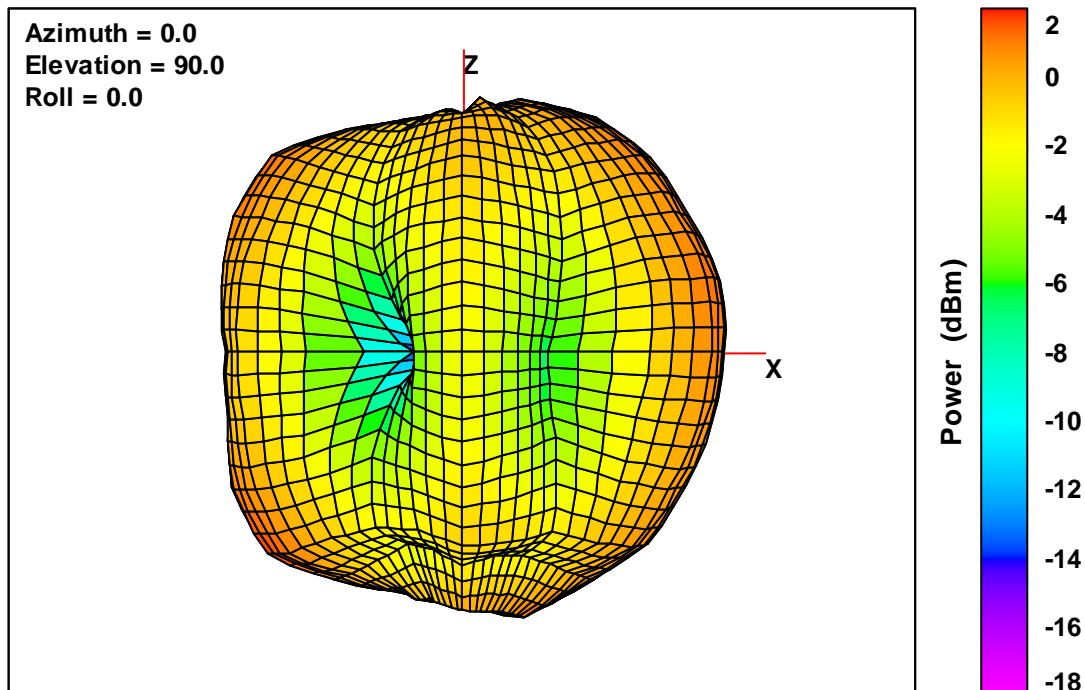
**Free-Space Total EIRP, Top View, 2480 MHz**

**Total EIRP, Bottom View**



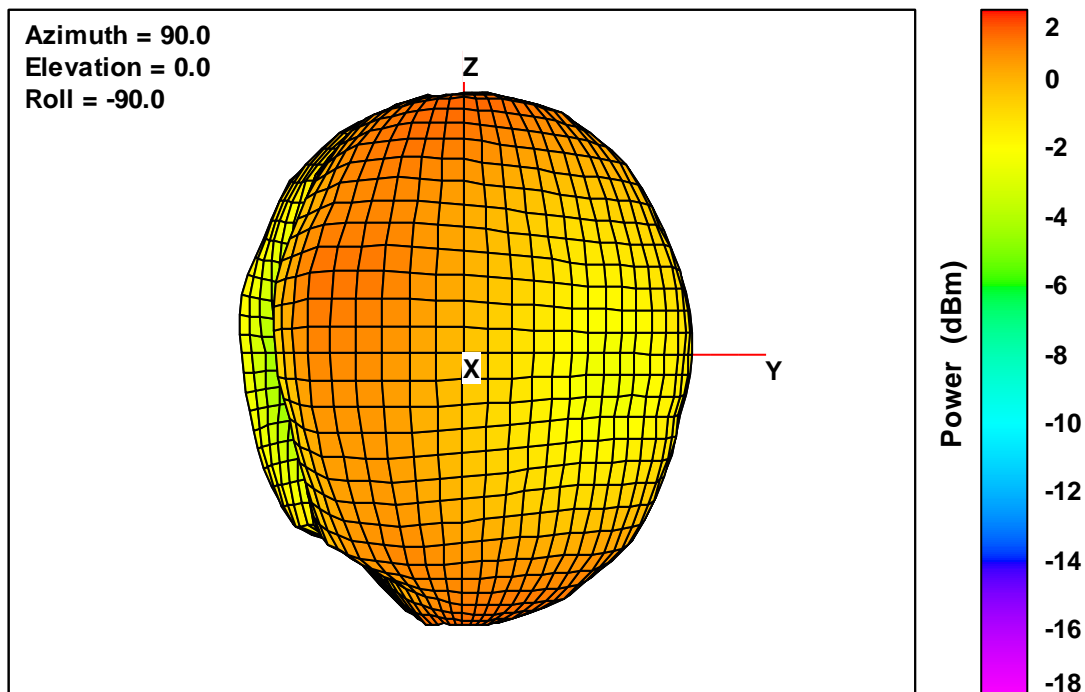
**Free-Space Total EIRP, Bottom View, 2480 MHz**

### Total EIRP, Left Side View



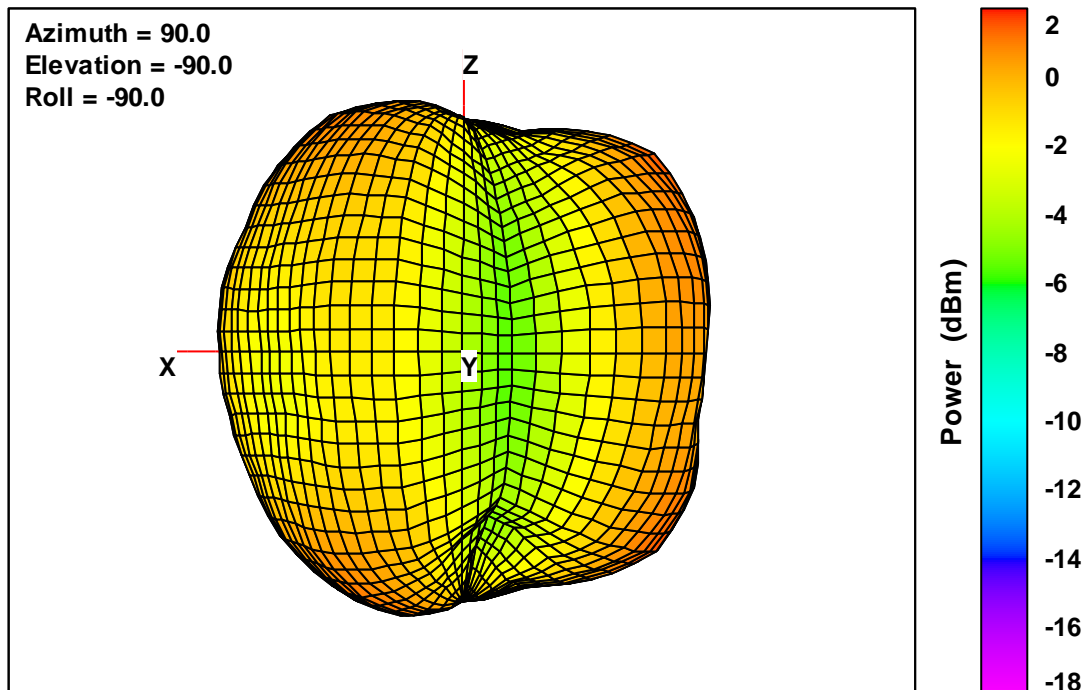
Free-Space Total EIRP, Left Side View, 2480 MHz

### Total EIRP, Front Face View



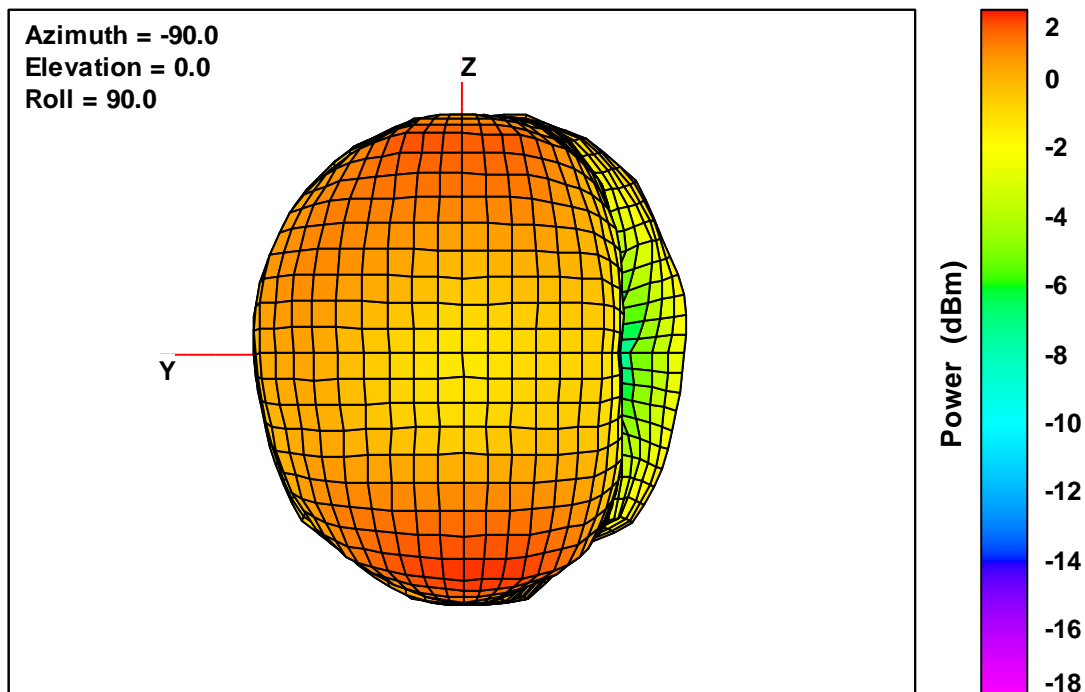
Free-Space Total EIRP, Front Face View, 2480 MHz

### Total EIRP, Right Side View



Free-Space Total EIRP, Right Side View, 2480 MHz

### Total EIRP, Back Face View



Free-Space Total EIRP, Back Face View, 2480 MHz