

ANTENNA GAIN AND PATTERN MEASUREMENT REPORT
For Gain value reference

FOR

AUTO-TRACKING STAND PRO WITH DOCKKIT

PART/MODEL NUMBER: MMA008

DATE ISSUED: February 9, 2024

REPORT NUMBER: 14890696-O1V1

Prepared for
Belkin International, Inc.
555 S. Aviation Blvd., Ste 180
El Segundo, California, 90245
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

| <u>Rev.</u> | <u>Issue Date</u> | <u>Revisions</u> | <u>Revised By</u> |
|-------------|-------------------|------------------|-------------------|
| V1 | | Initial Issue | Ekta Budhbhatti |
| | | | |
| | | | |
| | | | |

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 | Belkin International, Inc. |
| | 555 S. Aviation Blvd., Ste 180 |
| | El Segundo, CA 90245 |
| | U.S.A. |
| EUT Description | Auto Tracking Stand Pro with DockKit |
| Part/Model | MMA008 |
| Date Tested | 02/07/2024-02/08/2024 |

| 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:



Ekta Budhbhatti
 OPERATIONS LEADER
 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: 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 |
| PSA Series Spectrum Analyzer | Agilent | E4446A | 80812 | 26 January 2024 | 31 January 2025 |
| Fully Anechoic Chamber | ETS-Lindgren | AMS-8800 Series | 1100181 | 08 February 2024 | 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 | Belkin International, Inc. |
| Part/Model Number | MMA008 |
| Frequency range (MHz) | 2402,2440,2480 |
| Device/Antenna type | PCB Antenna |

6 RESULT SUMMARY

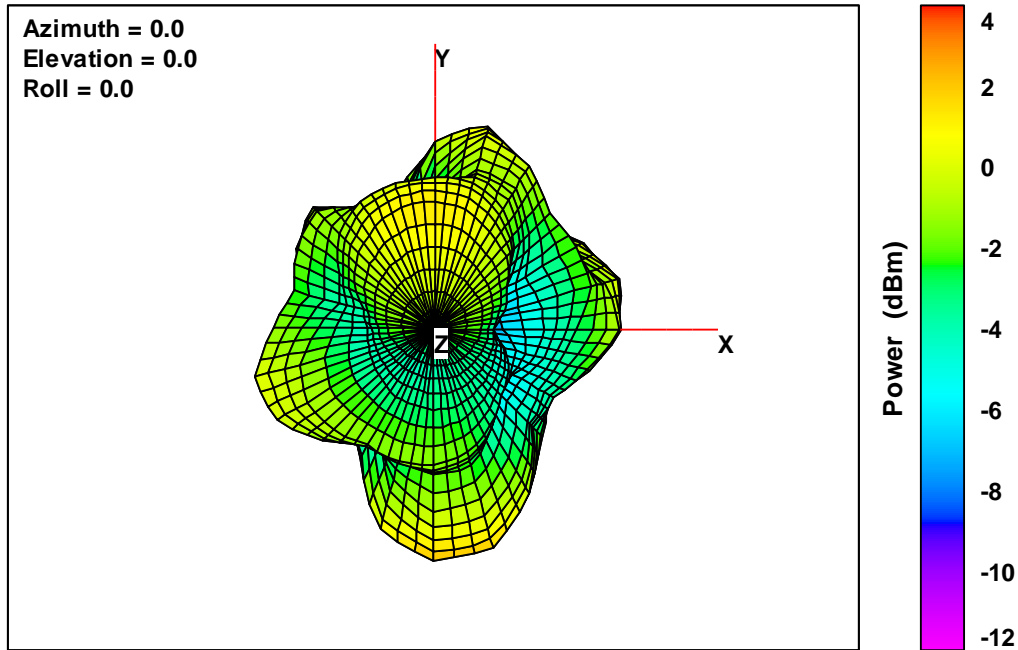
6.1 Active Antenna Pattern

| Measurement | Frequency (MHz) | | |
|--------------------|-----------------|------|------|
| | 2402 | 2440 | 2480 |
| 3D Peak Gain (dBi) | 1.83 | 1.48 | 0.75 |

7 PLOTS

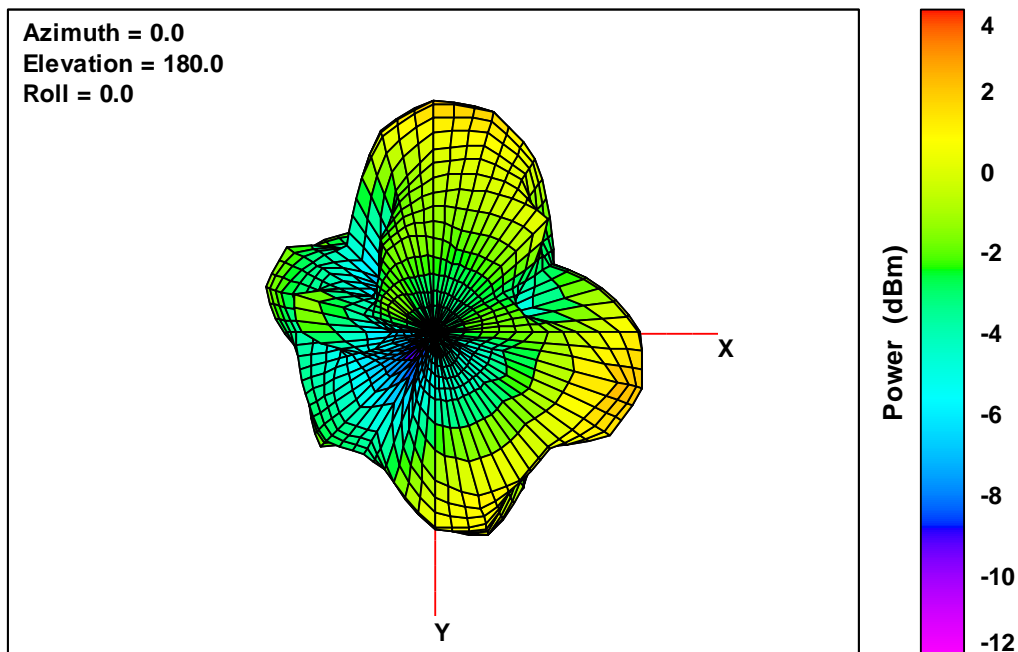
7.1 3D ACTIVE- 2402 MHz

Total EIRP, Top View



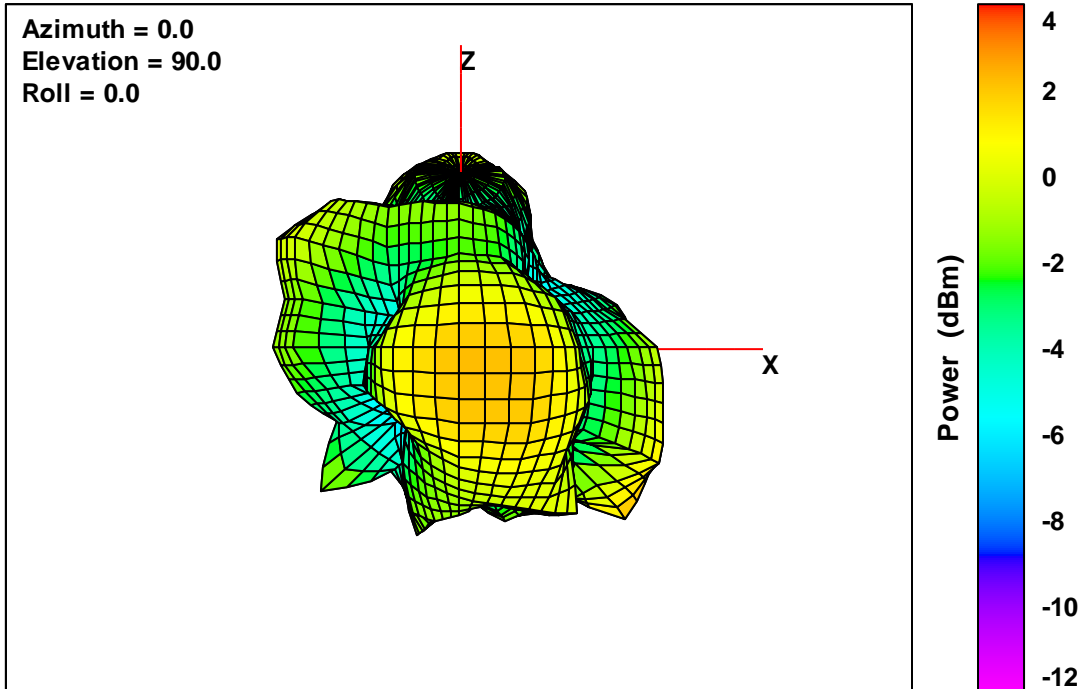
Free-Space Total EIRP, Top View, 2402 MHz

Total EIRP, Bottom View



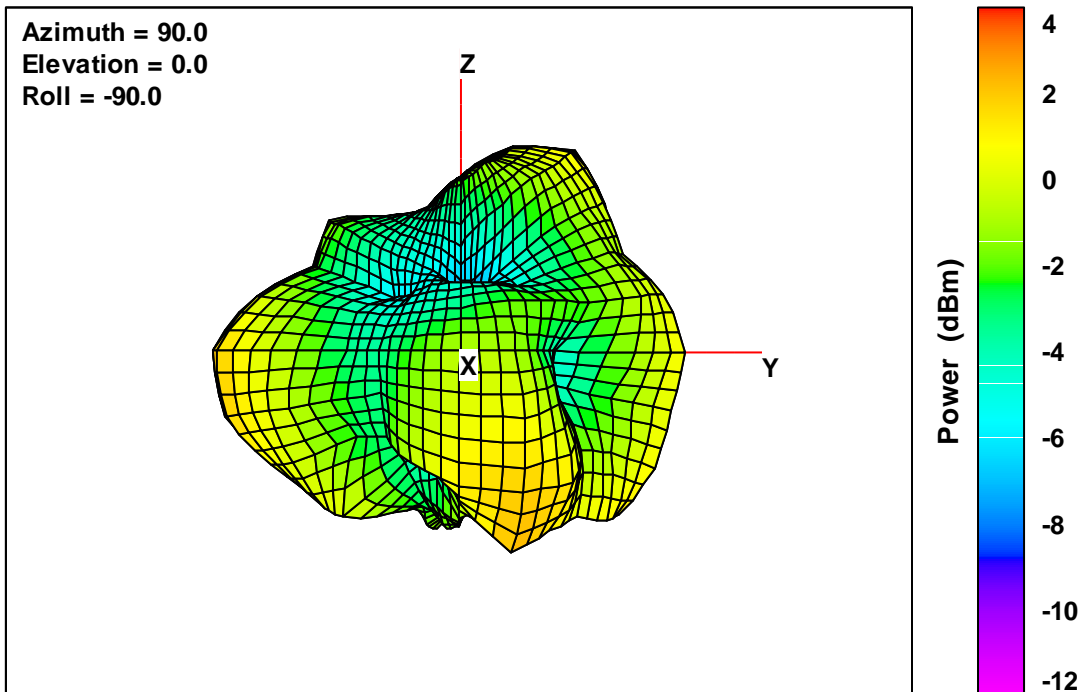
Free-Space Total EIRP, Bottom View, 2402 MHz

Total EIRP, Left Side View



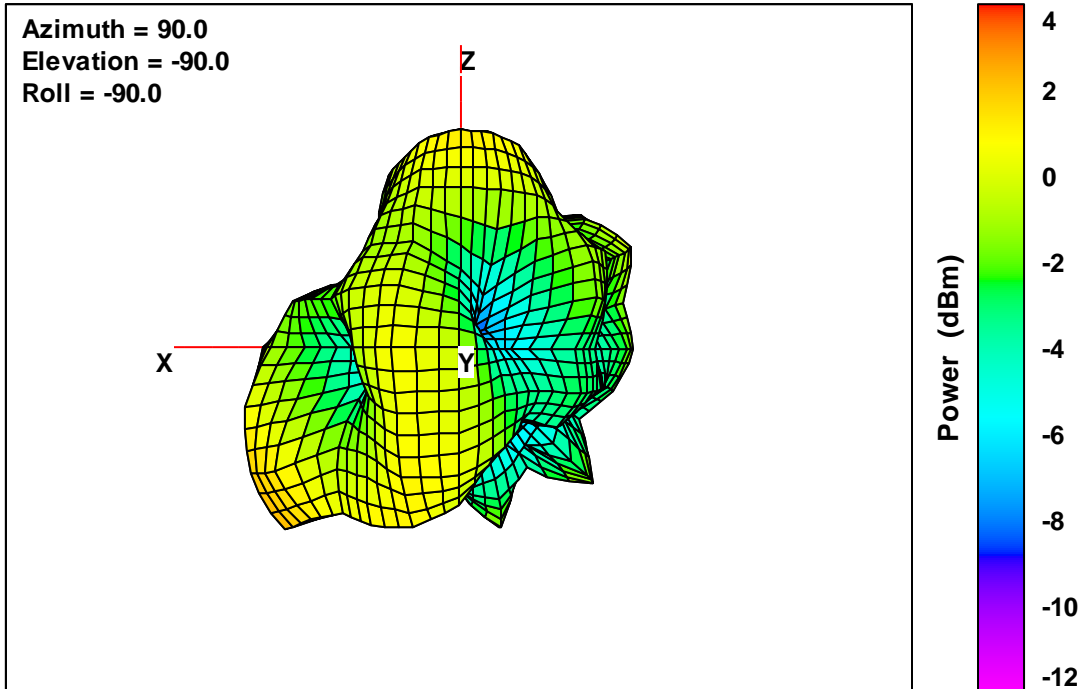
Free-Space Total EIRP, Left Side View, 2402 MHz

Total EIRP, Front Face View



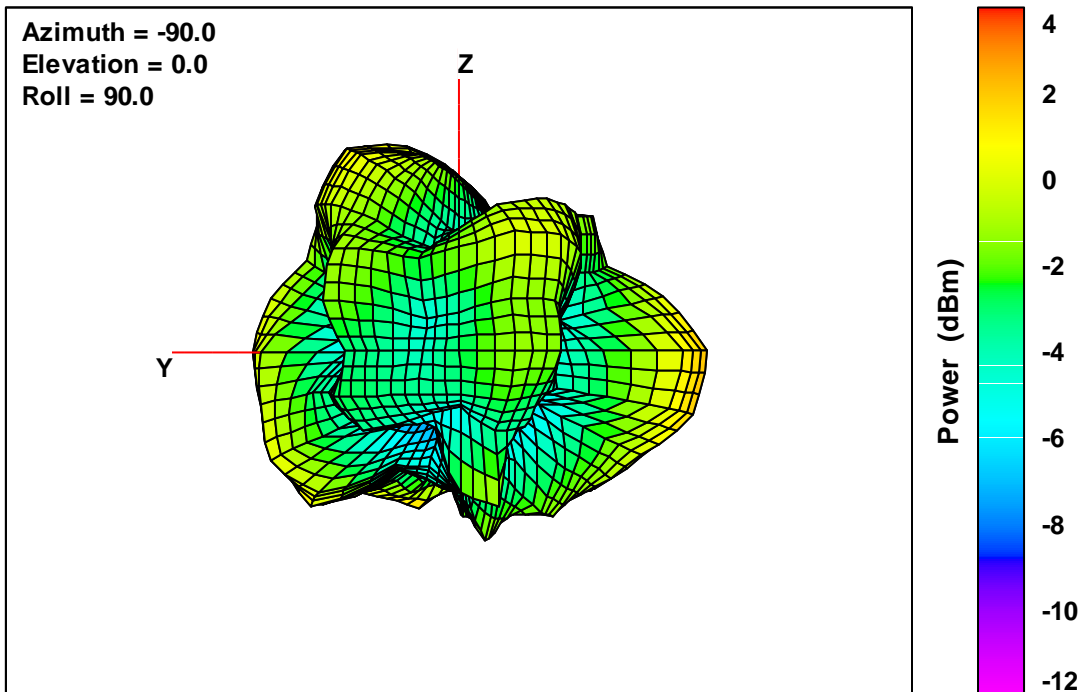
Free-Space Total EIRP, Front Face View, 2402 MHz

Total EIRP, Right Side View



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

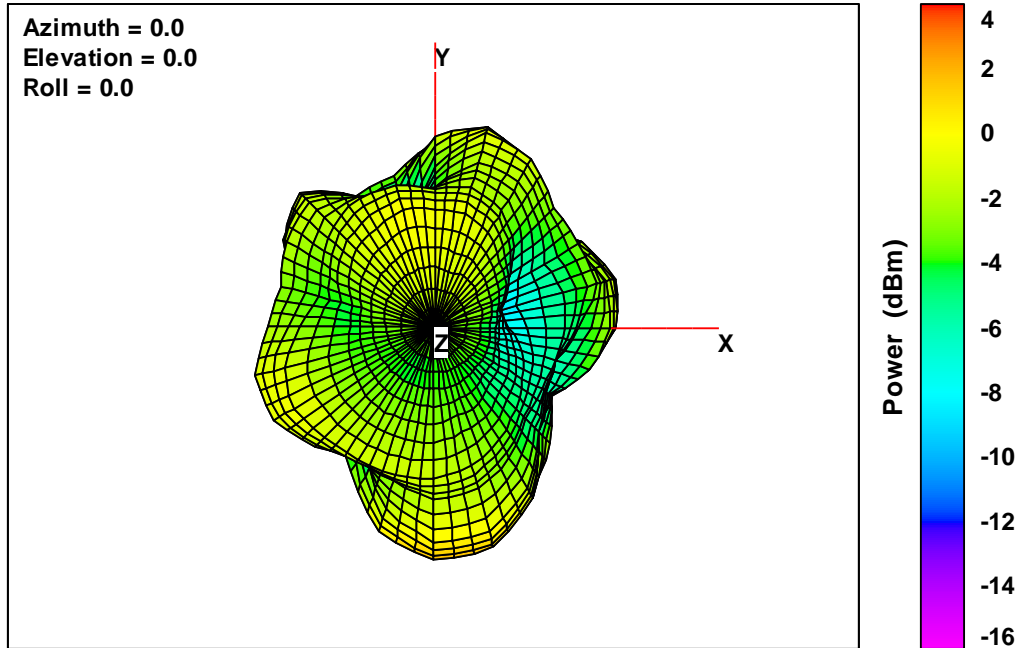
Total EIRP, Back Face View



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

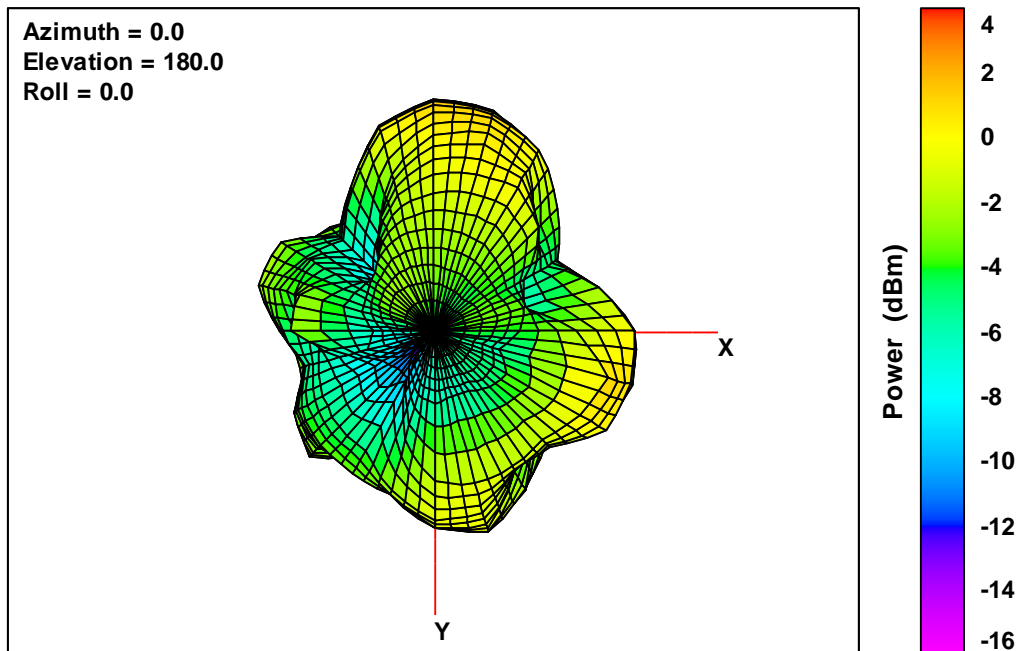
7.2 3D ACTIVE- 2440 MHz

Total EIRP, Top View



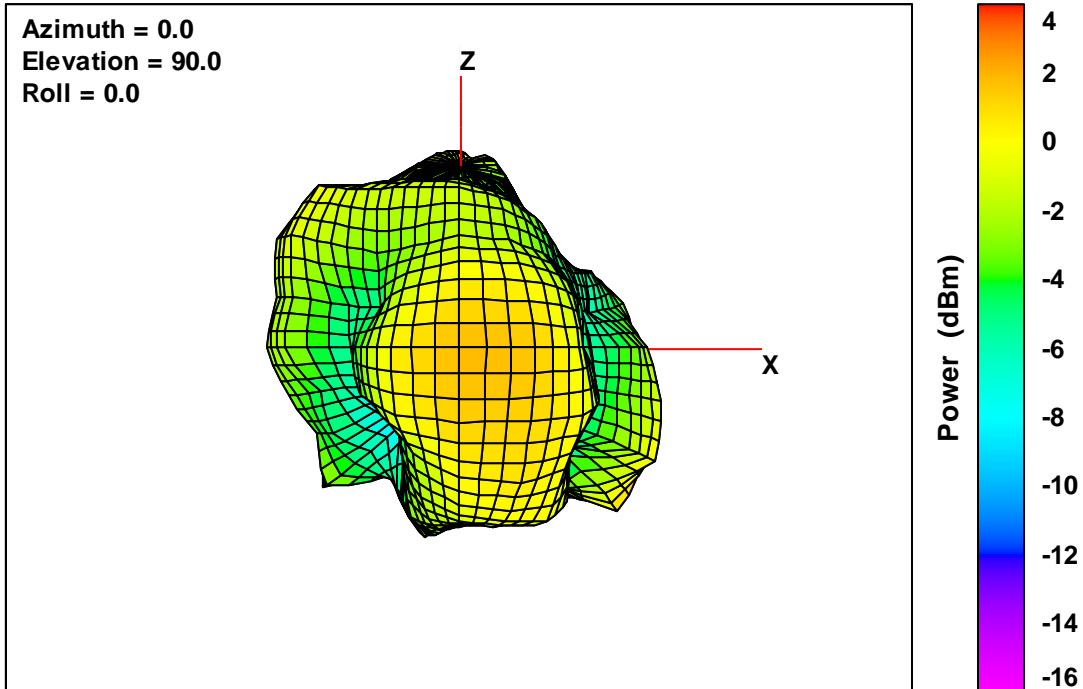
Free-Space Total EIRP, Top View, 2440 MHz

Total EIRP, Bottom View



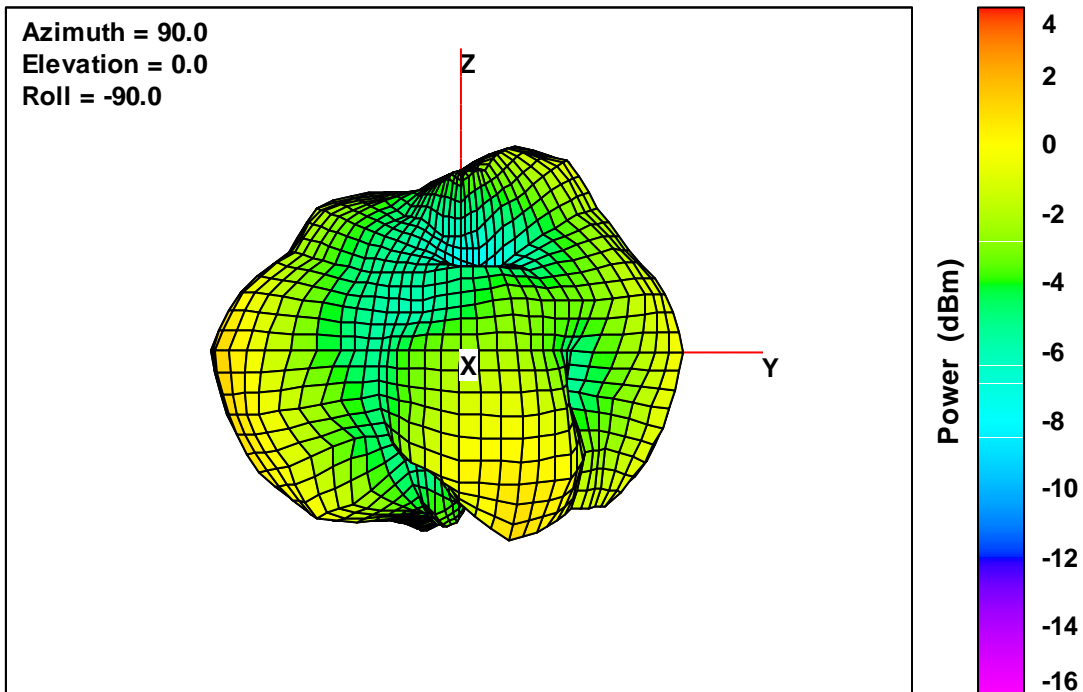
Free-Space Total EIRP, Bottom View, 2440 MHz

Total EIRP, Left Side View



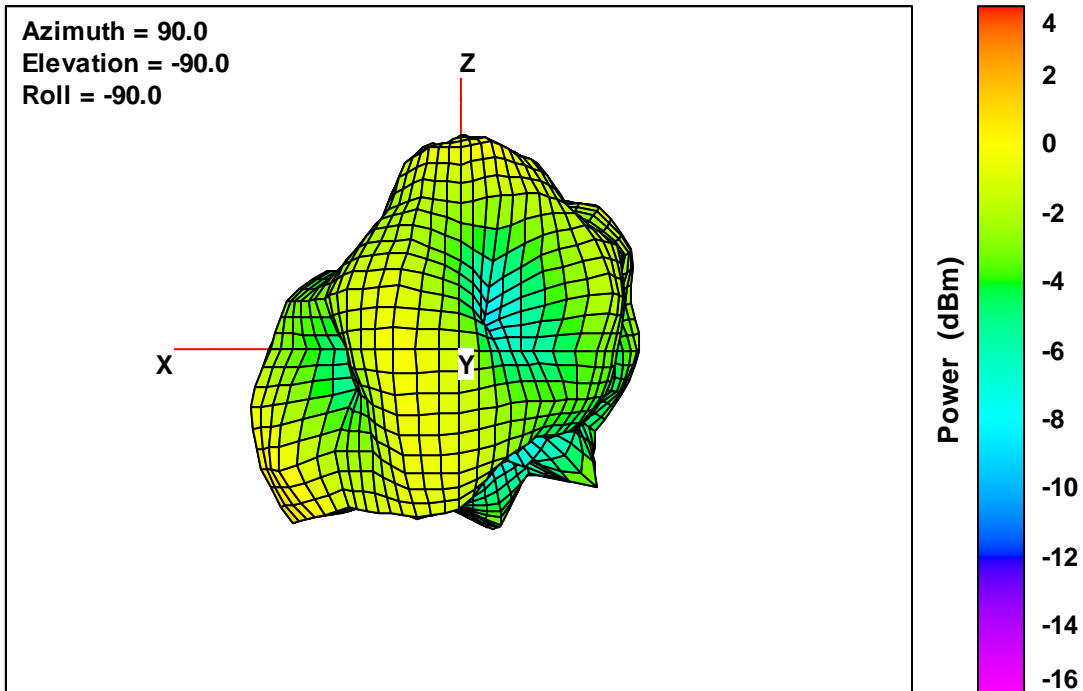
Free-Space Total EIRP, Left Side View, 2440 MHz

Total EIRP, Front Face View



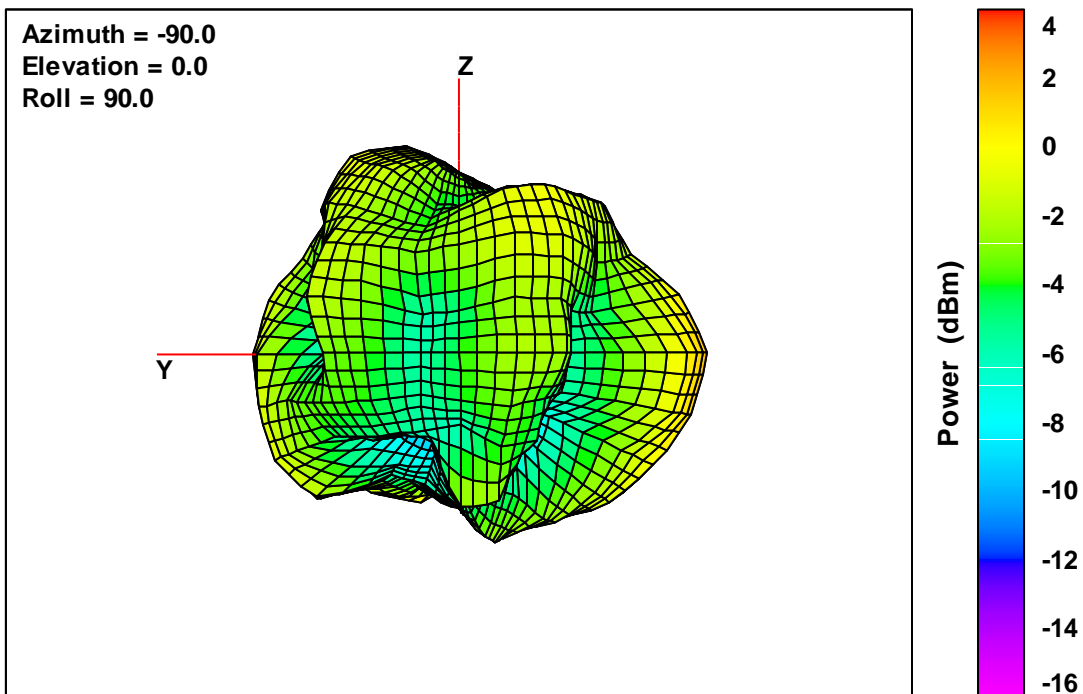
Free-Space Total EIRP, Front Face View, 2440 MHz

Total EIRP, Right Side View



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

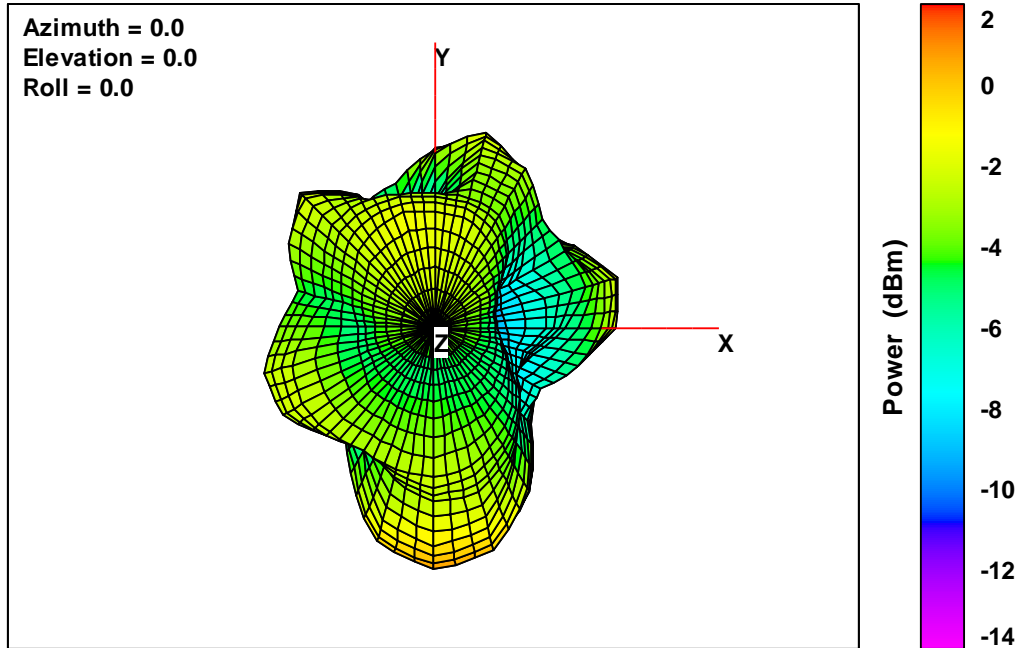
Total EIRP, Back Face View



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

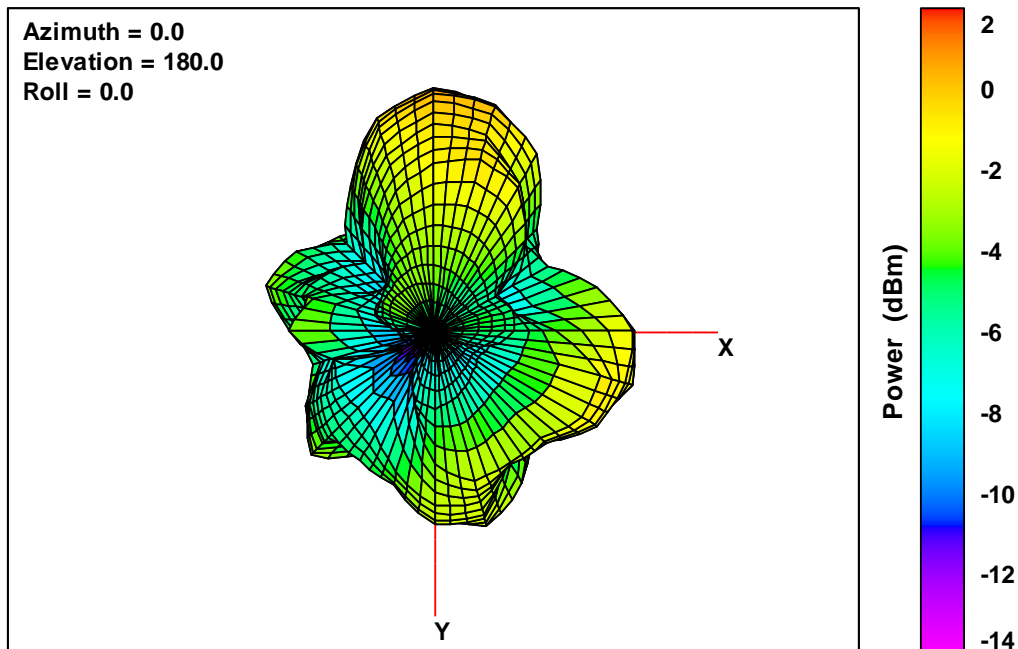
7.3 3D ACTIVE- 2480 MHz

Total EIRP, Top View



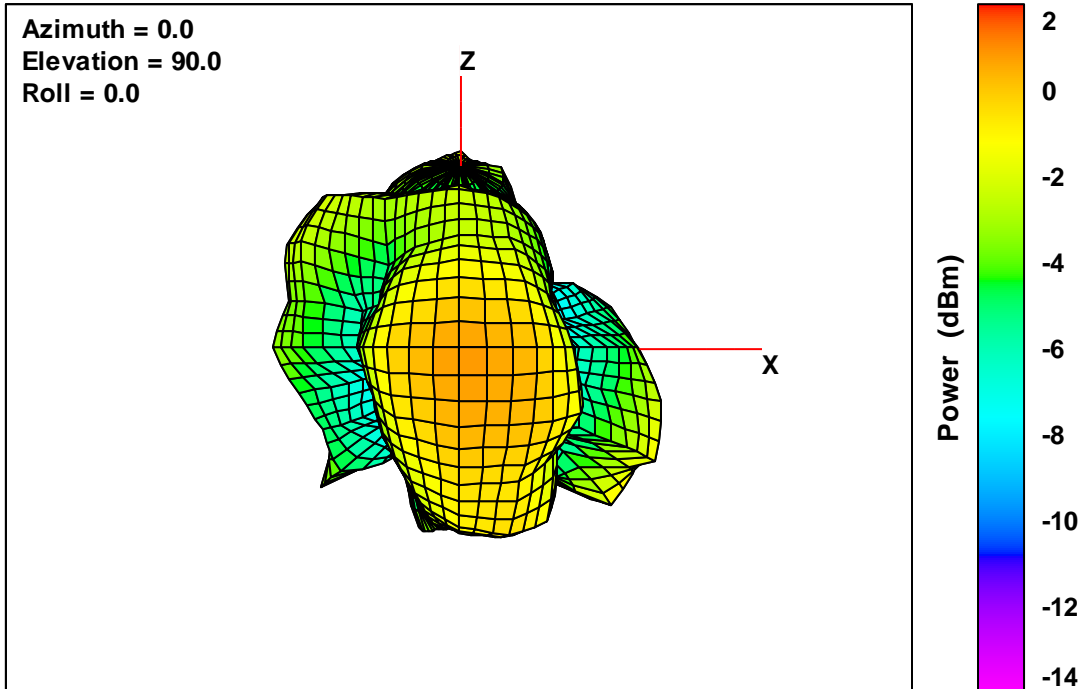
Free-Space Total EIRP, Top View, 2480 MHz

Total EIRP, Bottom View



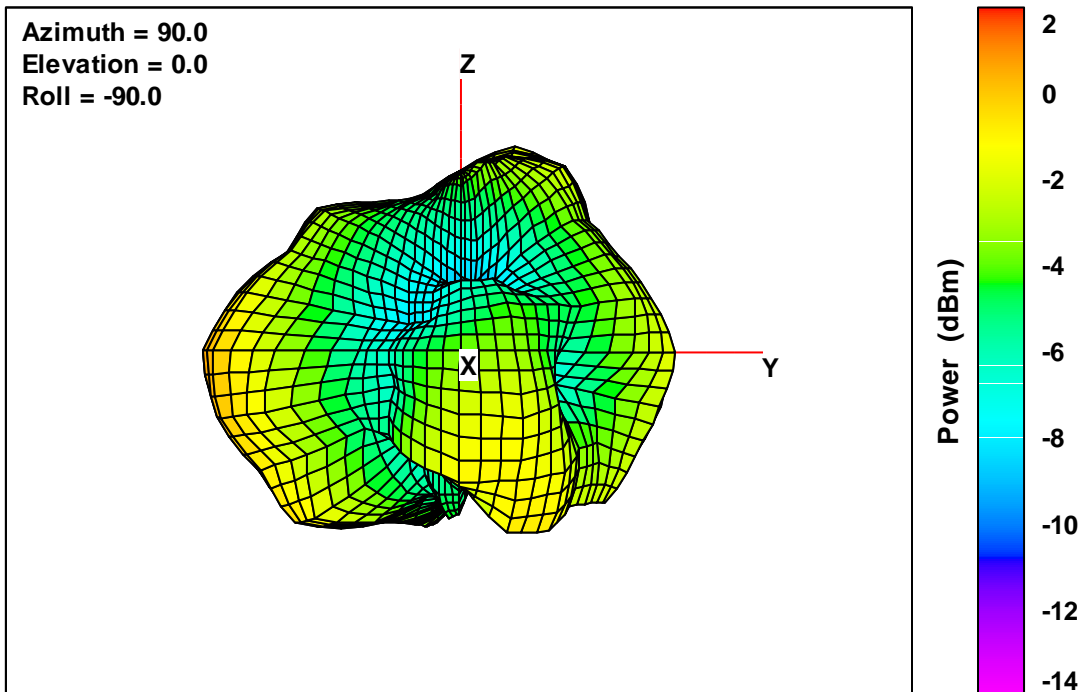
Free-Space Total EIRP, Bottom View, 2480 MHz

Total EIRP, Left Side View



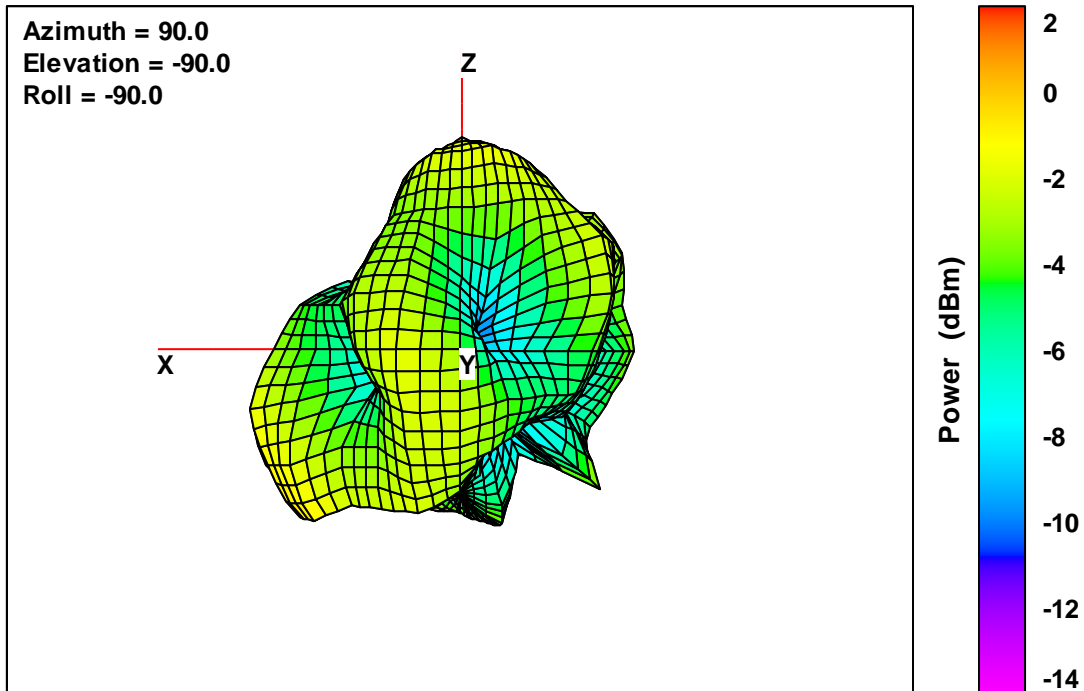
Free-Space Total EIRP, Left Side View, 2480 MHz

Total EIRP, Front Face View



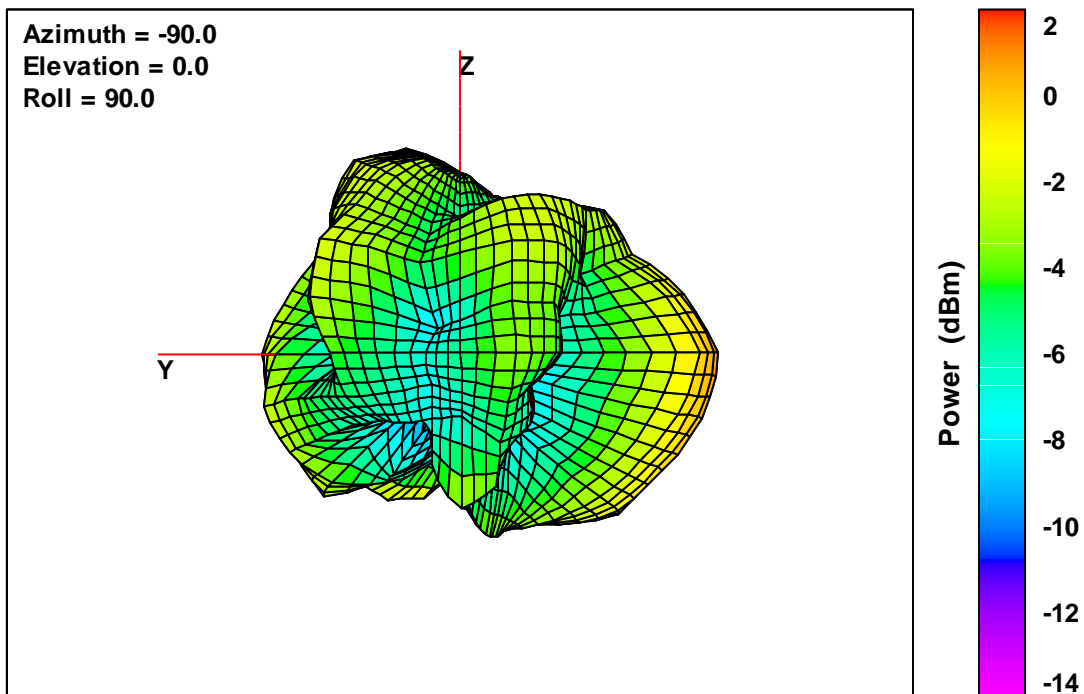
Free-Space Total EIRP, Front Face View, 2480 MHz

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