

**ANTENNA GAIN AND PATTERN MEASUREMENT REPORT***For Gain value reference***FOR****SMOKE AND CARBON MONOXIDE ALARM****PART/MODEL NUMBER: SC5-AC****DATE ISSUED: January 08, 2025****REPORT NUMBER: 15574757-O1V2***Prepared for***Resideo****2 Corporate Center Drive****Melville, NY 11749-3265 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	12/20/2024	Initial Issue	
V2	0108/2025	Removed 2D Data and Plots	Casey Dial

## TABLE OF CONTENTS

<b>1</b>	<b>ATTESTATION OF TEST RESULTS .....</b>	<b>5</b>
<b>2</b>	<b>TEST METHODOLOGY .....</b>	<b>6</b>
<b>3</b>	<b>TEST FACILITY .....</b>	<b>7</b>
3.1	<i>AMBIENT CONDITION .....</i>	<i>7</i>
<b>4</b>	<b>TEST AND MEASUREMENT EQUIPMENT .....</b>	<b>7</b>
<b>5</b>	<b>DEVICE UNDER TEST INFORMATION.....</b>	<b>8</b>
<b>6</b>	<b>RESULT SUMMARY .....</b>	<b>8</b>
<b>7</b>	<b>3D PLOTS .....</b>	<b>9</b>
7.1	<i>Antenna 1 3D Plots .....</i>	<i>9</i>
7.1.1	Antenna 1 2412 MHz .....	9
7.1.2	Antenna 1 2437 MHz .....	12
7.1.3	Antenna 1 2462 MHz .....	15
7.1.4	Antenna 1 5180 MHz .....	18
7.1.5	Antenna 1 5240 MHz .....	21
7.1.6	Antenna 1 5260 MHz .....	24
7.1.7	Antenna 1 5320 MHz .....	27
7.1.8	Antenna 1 5500 MHz .....	30
7.1.9	Antenna 1 5600 MHz .....	33
7.1.10	Antenna 1 5700 MHz .....	36
7.1.11	Antenna 1 5745 MHz .....	39
7.1.12	Antenna 1 5785 MHz .....	42
7.1.13	Antenna 1 5825 MHz .....	45
7.2	<i>Antenna 2 3D Plots .....</i>	<i>48</i>
7.2.1	Antenna 2 2412 MHz .....	48
7.2.2	Antenna 2 2437 MHz .....	51
7.2.3	Antenna 2 2462 MHz .....	54
7.2.4	Antenna 2 5180 MHz .....	57
7.2.5	Antenna 2 5240 MHz .....	60
7.2.6	Antenna 2 5260 MHz .....	63
7.2.7	Antenna 2 5320 MHz .....	66
7.2.8	Antenna 2 5500 MHz .....	69
7.2.9	Antenna 2 5600 MHz .....	72
7.2.10	Antenna 2 5700 MHz .....	75
7.2.11	Antenna 2 5745 MHz .....	78
7.2.12	Antenna 2 5785 MHz .....	81
7.2.13	Antenna 2 5825 MHz .....	84
7.3	<i>Antenna 3 3D Plots .....</i>	<i>87</i>
7.3.1	Antenna 3 2402 MHz .....	87
7.3.2	Antenna 3 2405 MHz .....	90
7.3.3	Antenna 3 2442 MHz .....	93

7.3.4	Antenna 3 2445 MHz.....	96
7.3.5	Antenna 3 2475 MHz.....	99
7.3.6	Antenna 3 2480 MHz.....	102
7.4	<i>Antenna 4 3D Plots</i> .....	105
7.4.1	Antenna 4 2402 MHz.....	105
7.4.2	Antenna 4 2405 MHz.....	108
7.4.3	Antenna 4 2442 MHz.....	111
7.4.4	Antenna 4 2445 MHz.....	114
7.4.5	Antenna 4 2475 MHz.....	117
7.4.6	Antenna 4 2480 MHz.....	120
8	<b>TEST SETUP</b> .....	<b>123</b>

## 1 ATTESTATION OF TEST RESULTS

Company Name and Address	Resideo
	2 Corporate Center Drive
	Melville, New York, 11749-3265
	U.S.A.
EUT Description	Smoke and Carbon Monoxide Alarm
Part/Model	SC5-AC
Date Tested	12/05/2024-12/10/2024

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:

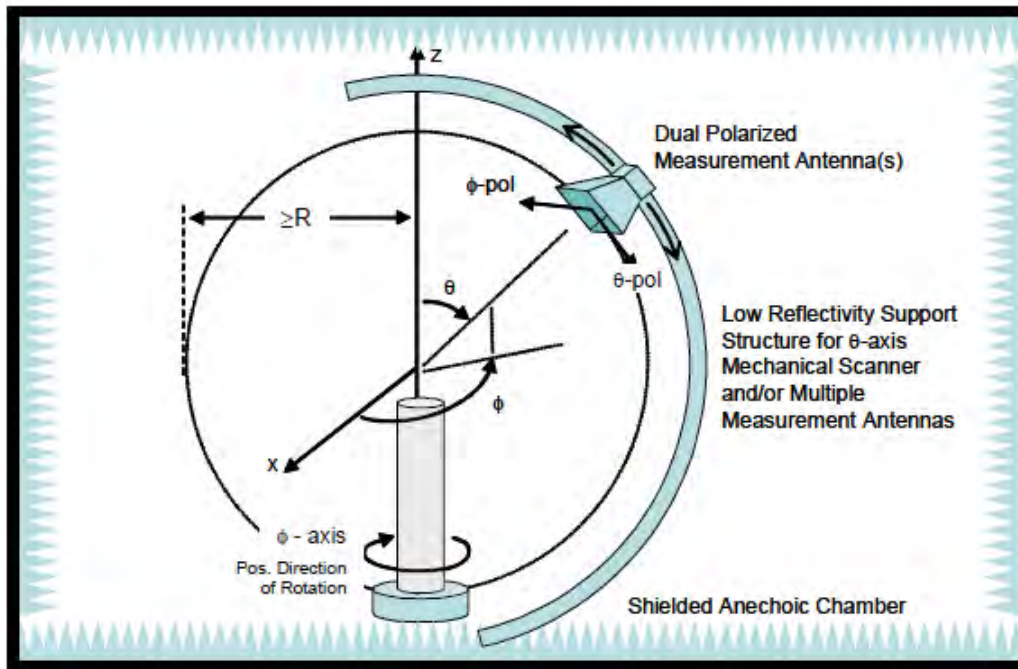


Casey Dial  
TEST ENGINEER  
UL Verification Services Inc.

## 2 TEST METHODOLOGY

The 2D Passive Antenna Pattern tests documented in this report were performed using a fixed elevation and a resolution (increment) of  $2^\circ$  for azimuth.

The 3D Passive Antenna Pattern tests documented in this report were performed using a resolution (increment) of  $15^\circ$  for both elevation and azimuth.



OTA TEST SYSTEM DIAGRAM

### 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

#### 3.1 AMBIENT CONDITION

Temperature:  $\pm 25$  Dec C

### 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
Anechoic Chamber	ETS-Lindgren	AMS-8815	1000031	12/05/2024 [2.4GHz]	N/A
Anechoic Chamber	ETS-Lindgren	AMS-8815	1000031	12/10/2024 [5GHz]	N/A
PNA-L Network Analyzer	Agilent	N5230C	81979	02 February 2024	28 February 2025

## 5 DEVICE UNDER TEST INFORMATION

Antenna	
Manufacturer	Resideo
Part/Model Number	SC5-AC
Frequency range (MHz)	2402,2405,2412,2437,2442,2445,2462,2480,5180,5240,5260,5320,5500,5600,5700,5745,5785,5825
Device/Antenna type	PCB

## 6 RESULT SUMMARY

Antenna #1 - RTL8721DM													
Measurement	Frequency (MHz)												
	2412	2437	2462	5180	5240	5260	5320	5500	5600	5700	5745	5785	5825
3D Peak Gain (dBi)	2.54	2.14	2.03	5.99	6.32	6.16	5.89	5.10	5.24	5.36	5.45	5.32	5.14

Antenna #2 - RTL8721DM													
Measurement	Frequency (MHz)												
	2412	2437	2462	5180	5240	5260	5320	5500	5600	5700	5745	5785	5825
3D Peak Gain (dBi)	2.34	1.91	2.11	4.20	3.80	3.94	3.45	4.20	4.50	4.33	4.47	4.48	4.15

Antenna #3 - CC2674R10						
Measurement	Frequency (MHz)					
	2402	2405	2442	2445	2475	2480
3D Peak Gain (dBi)	2.85	2.87	2.84	2.81	2.60	2.61

Antenna #4 - CC2674R10						
Measurement	Frequency (MHz)					
	2402	2405	2442	2445	2475	2480
3D Peak Gain (dBi)	2.89	2.95	2.41	2.25	2.22	2.14

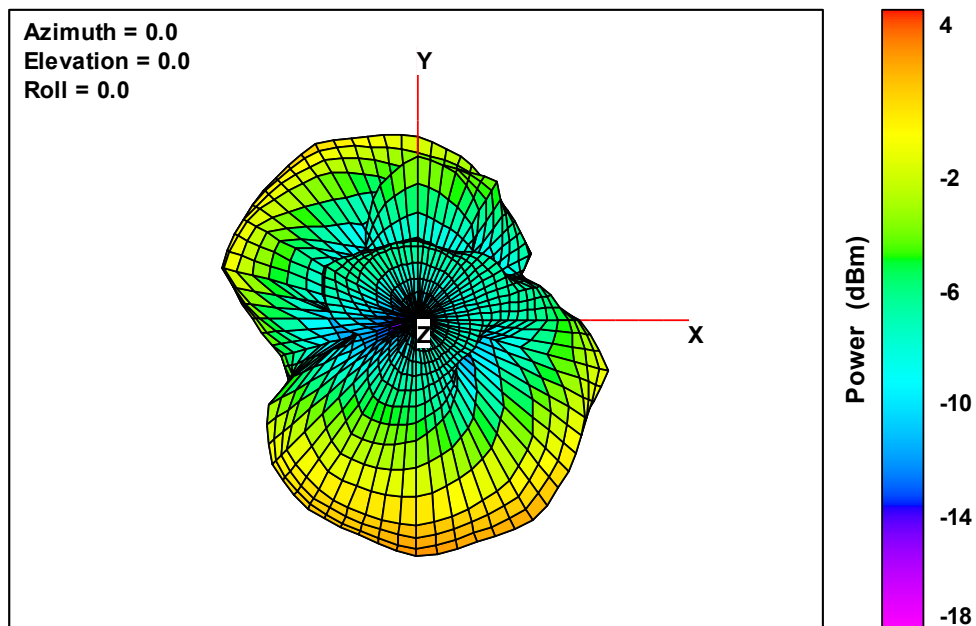


## 7 3D PLOTS

### 7.1 Antenna 1 3D Plots

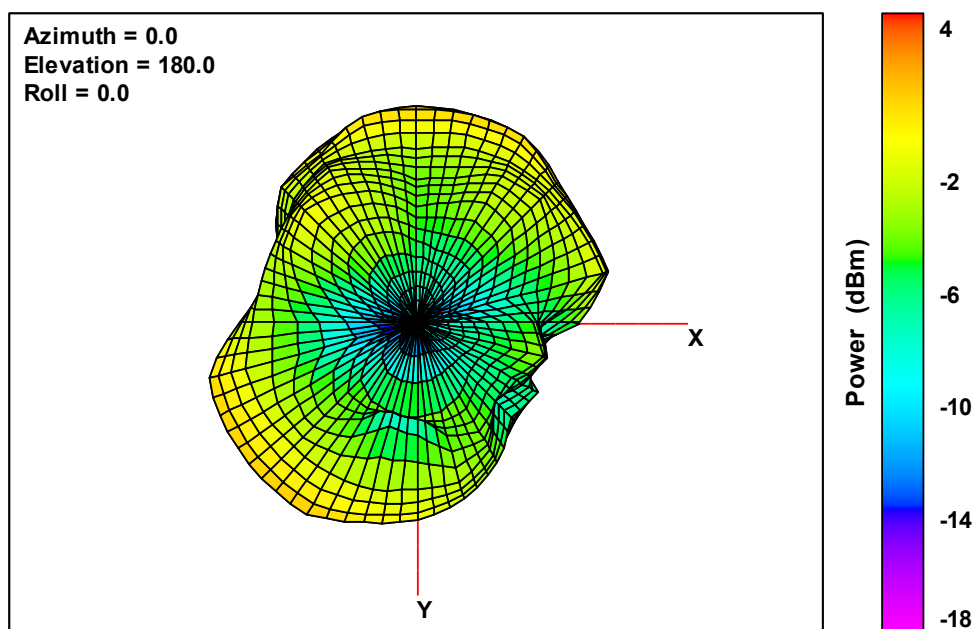
#### 7.1.1 Antenna 1 2412 MHz

Total EIRP, Top View



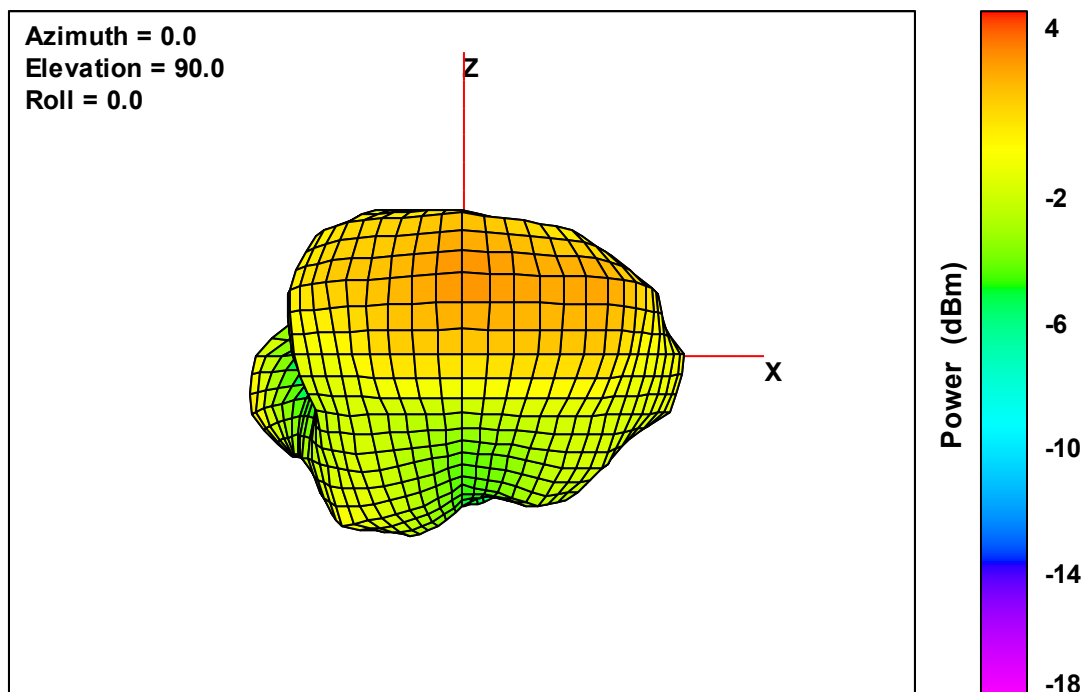
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Total EIRP, Bottom View



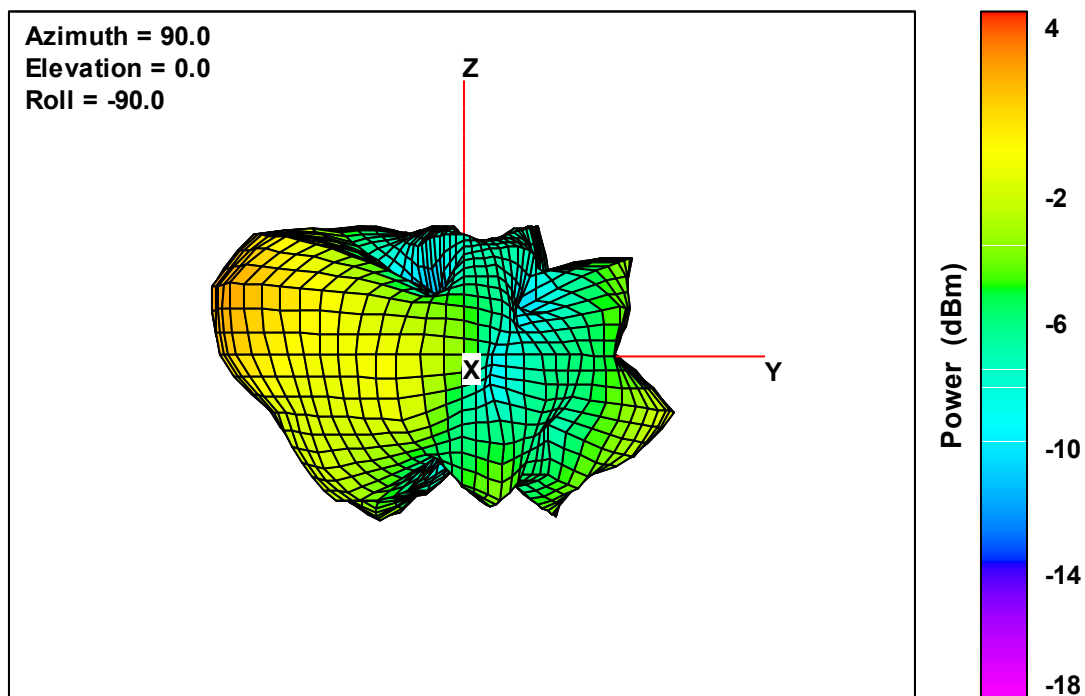
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### Total EIRP, Left Side View



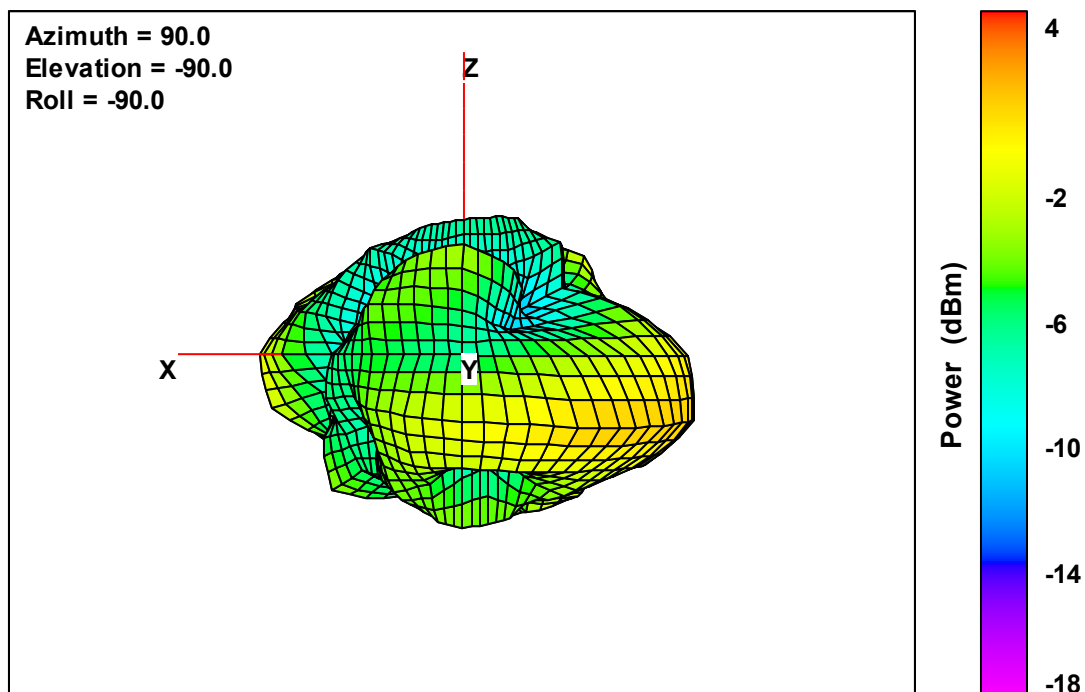
Ant. 1 Free-Space Total EIRP, Left Side View, 2412 MHz

### Total EIRP, Front Face View



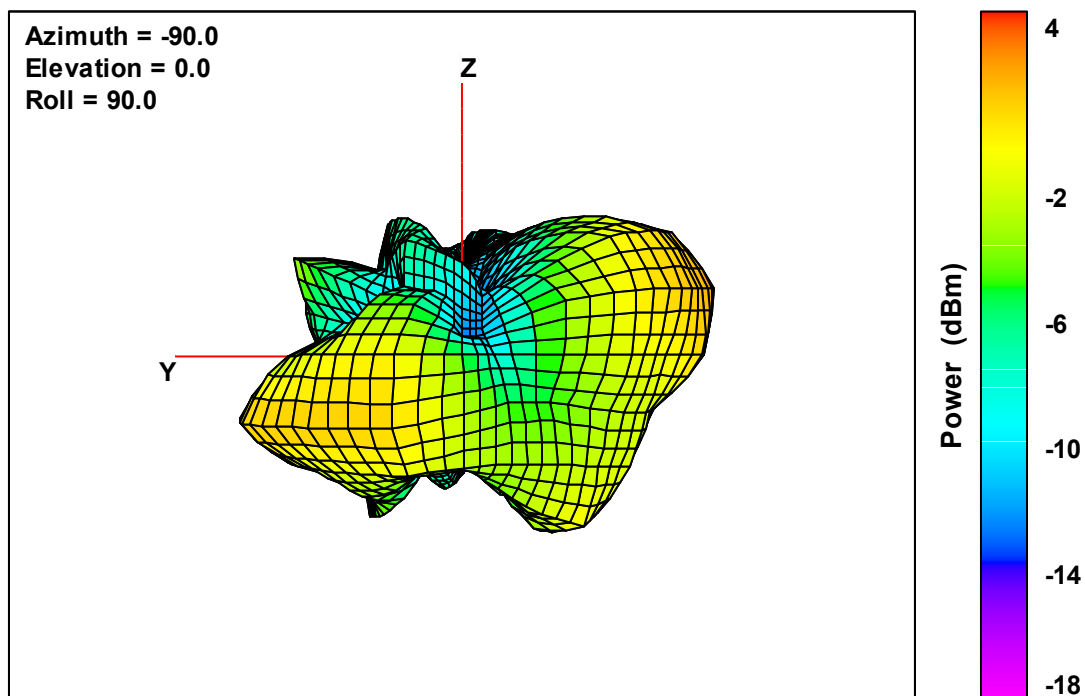
Ant. 1 Free-Space Total EIRP, Front Face View, 2412 MHz

### Total EIRP, Right Side View



Ant. 1 Free-Space Total EIRP, Right Side View, 2412 MHz

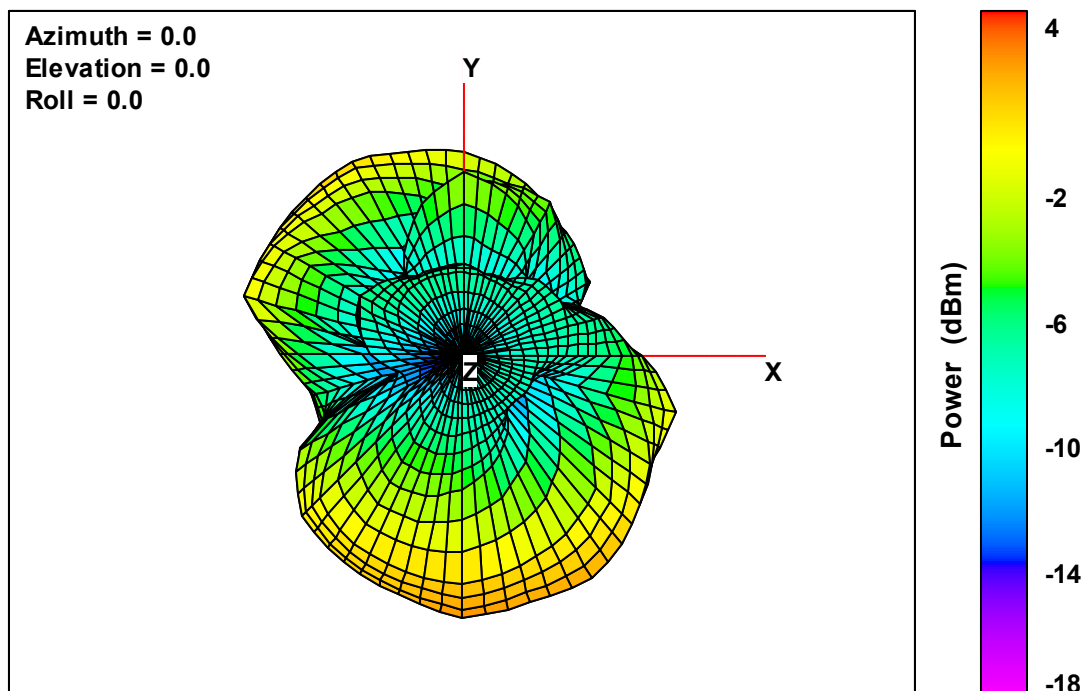
### Total EIRP, Back Face View



Ant. 1 Free-Space Total EIRP, Back Face View, 2412 MHz

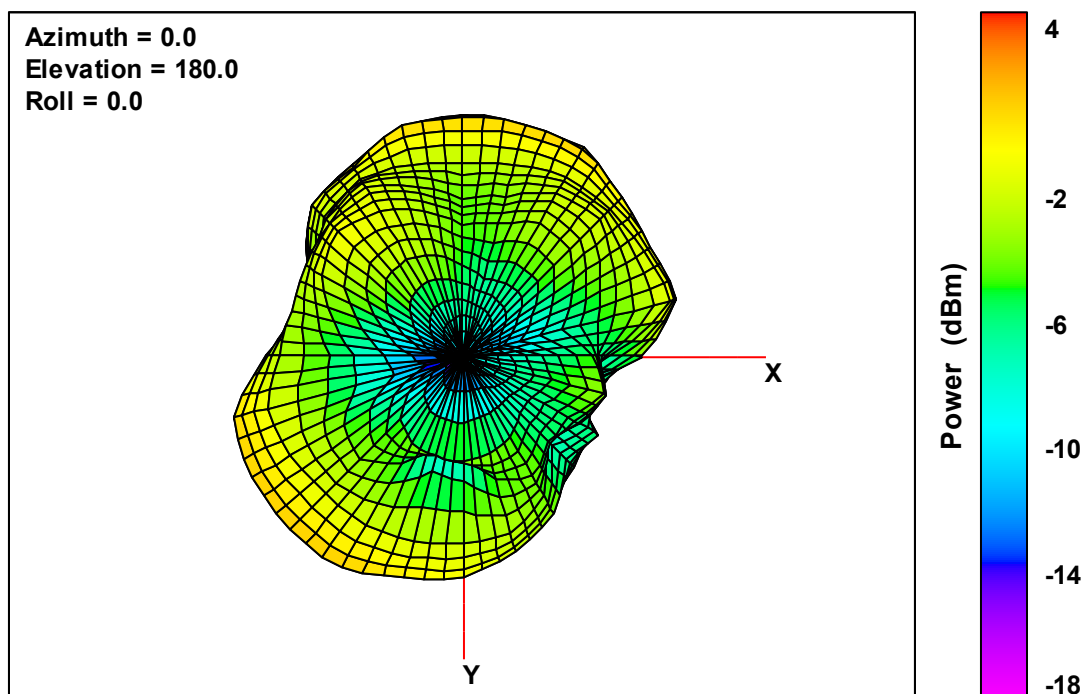
### 7.1.2 Antenna 1 2437 MHz

**Total EIRP, Top View**



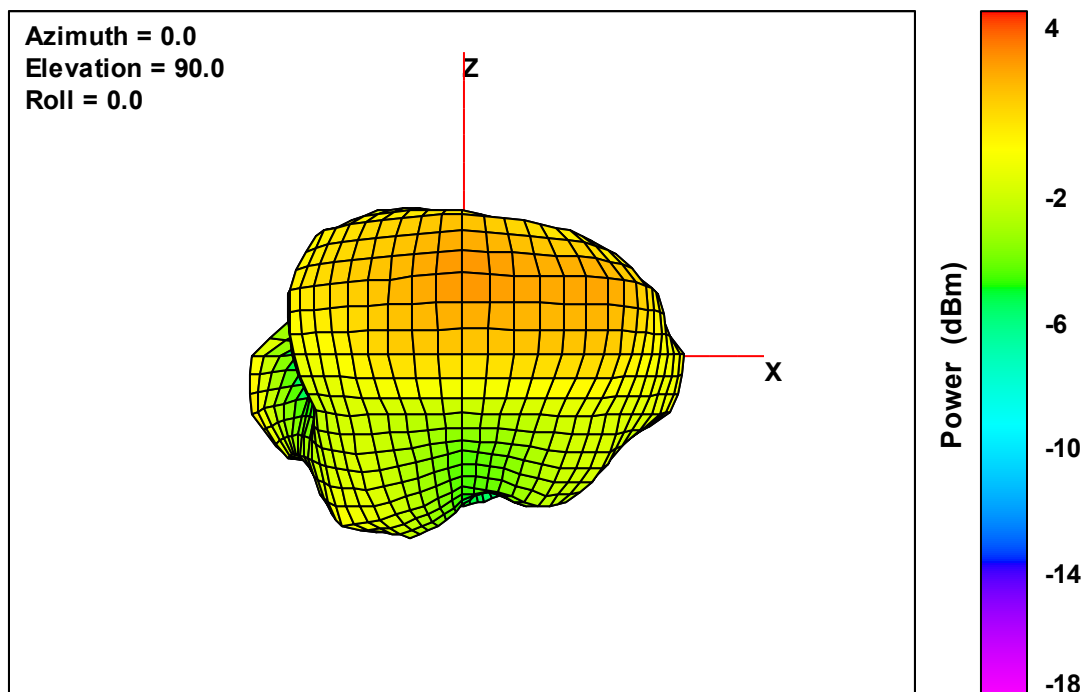
**Ant. 1 Free-Space Total EIRP, Top View, 2437 MHz**

**Total EIRP, Bottom View**



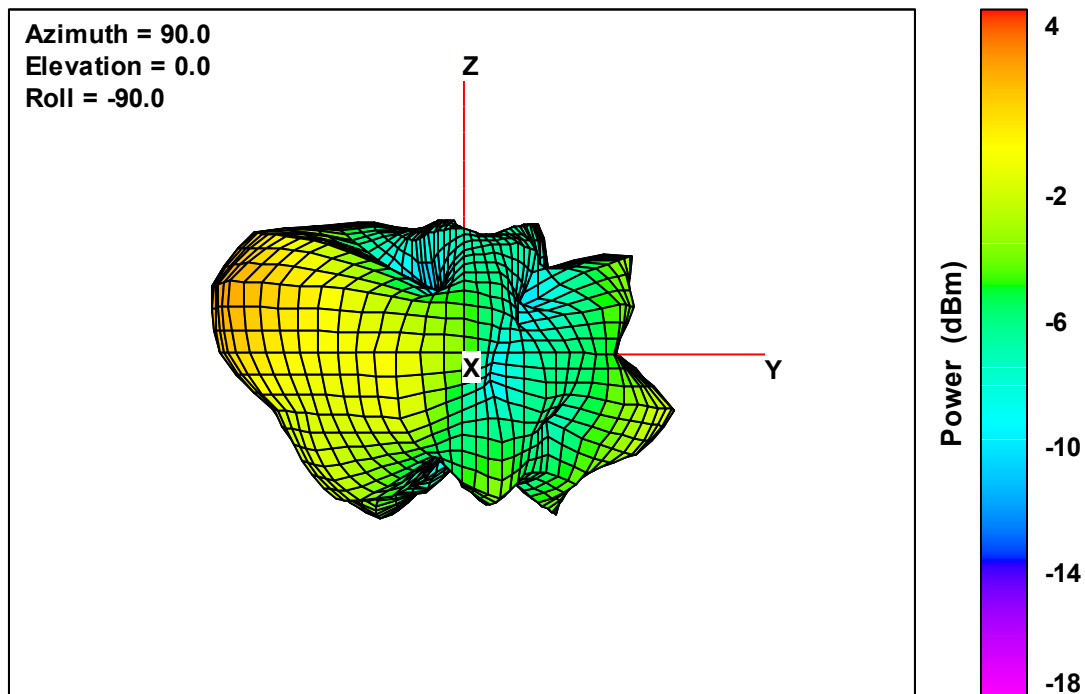
**Ant. 1 Free-Space Total EIRP, Bottom View, 2437 MHz**

### Total EIRP, Left Side View



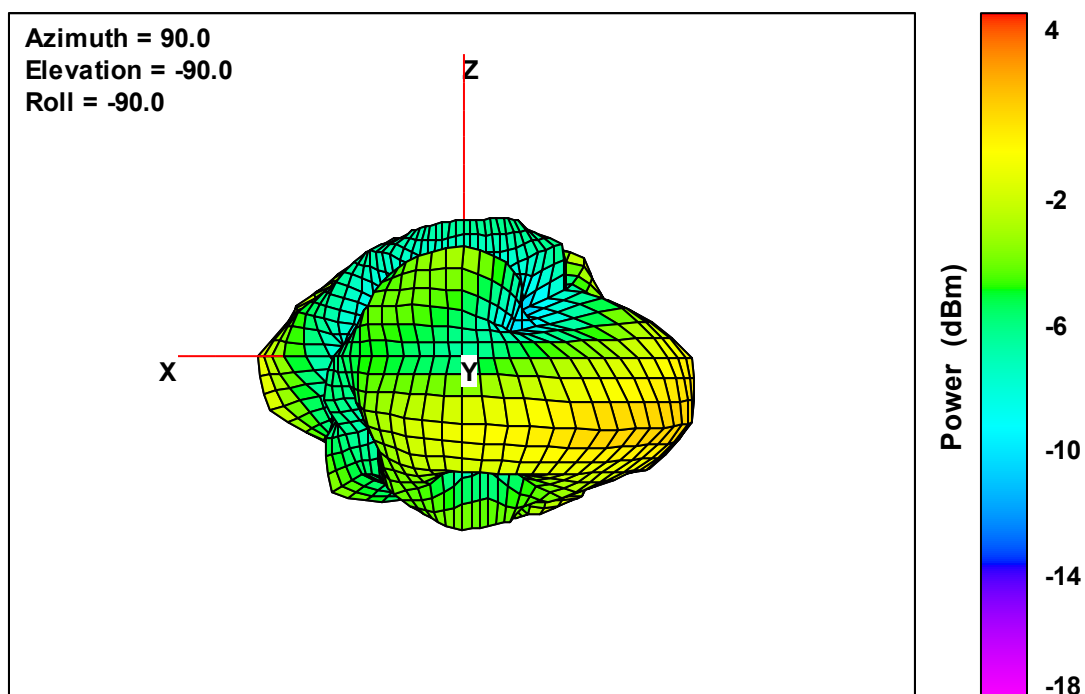
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### Total EIRP, Front Face View



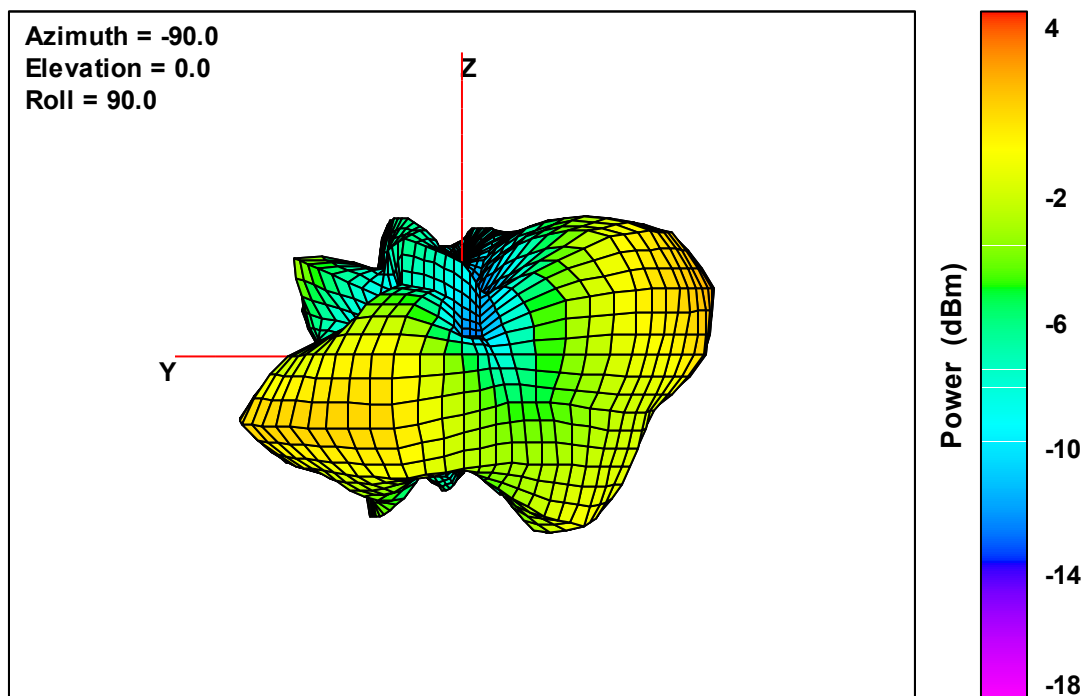
Ant. 1 Free-Space Total EIRP, Front Face View, 2437 MHz

### Total EIRP, Right Side View



Ant. 1 Free-Space Total EIRP, Right Side View, 2437 MHz

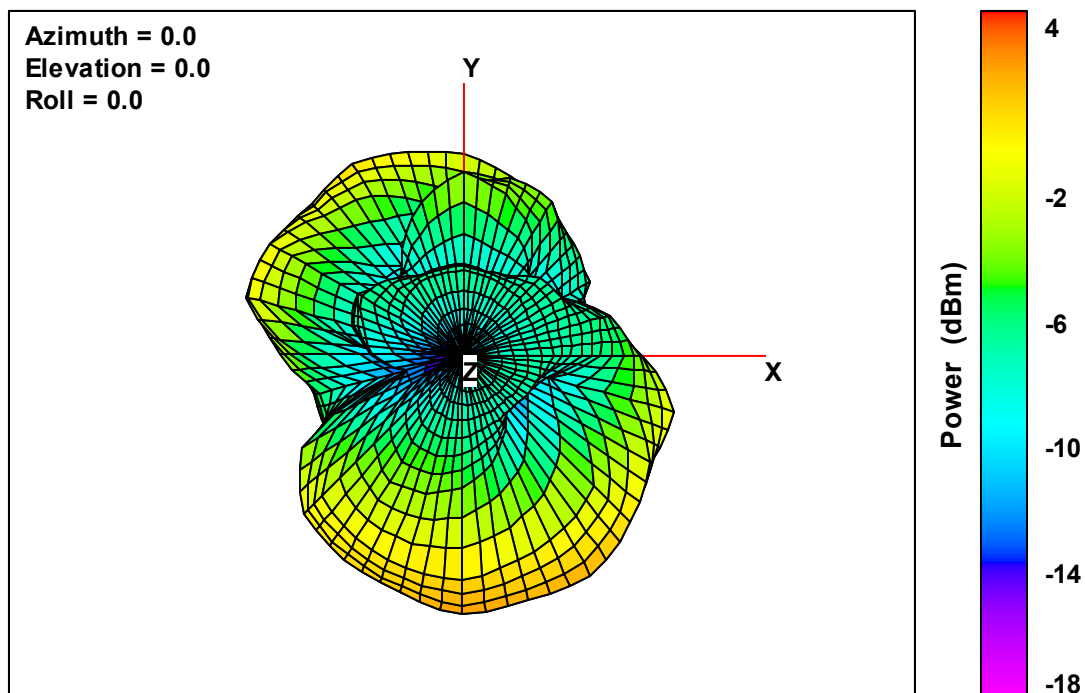
### Total EIRP, Back Face View



Ant. 1 Free-Space Total EIRP, Back Face View, 2437 MHz

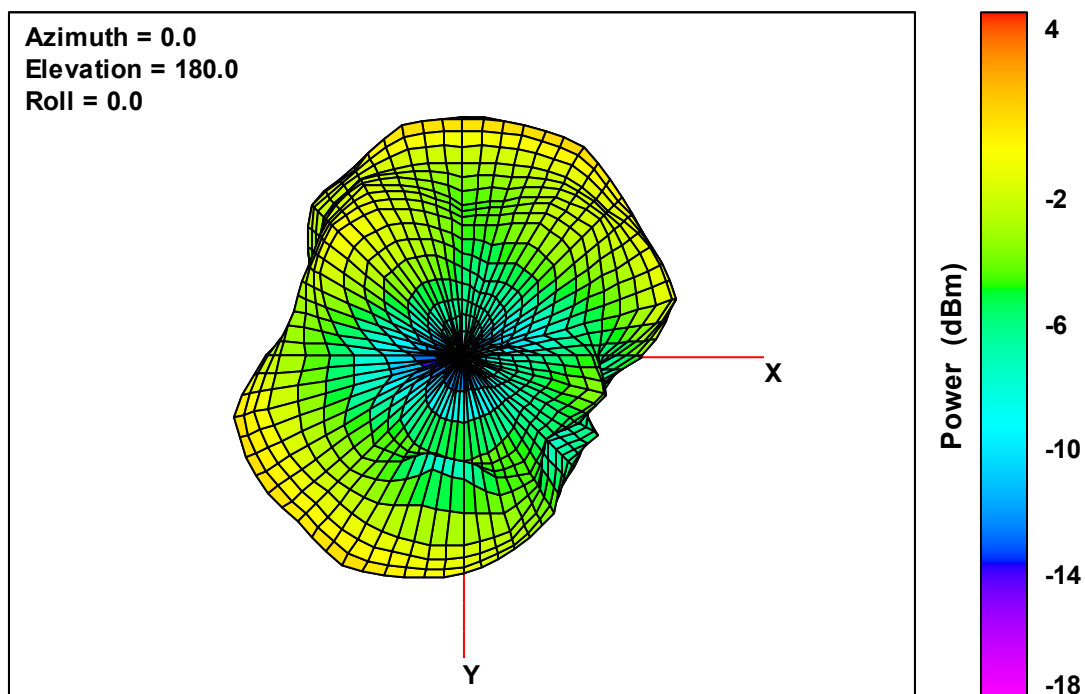
### 7.1.3 Antenna 1 2462 MHz

**Total EIRP, Top View**



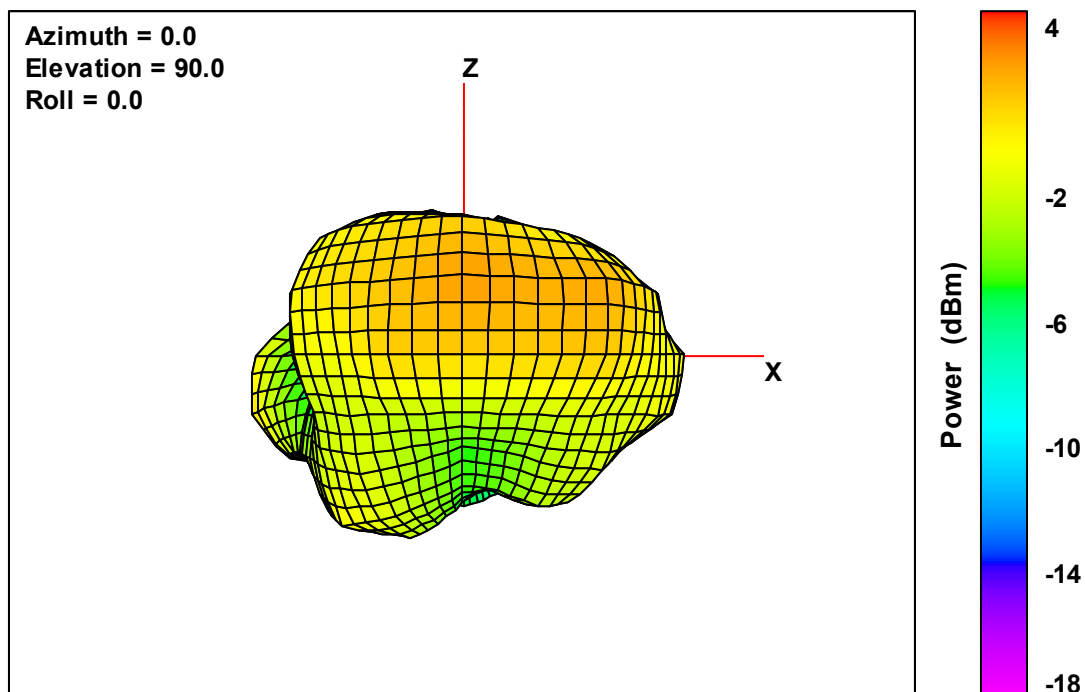
**Ant. 1 Free-Space Total EIRP, Top View, 2462 MHz**

**Total EIRP, Bottom View**



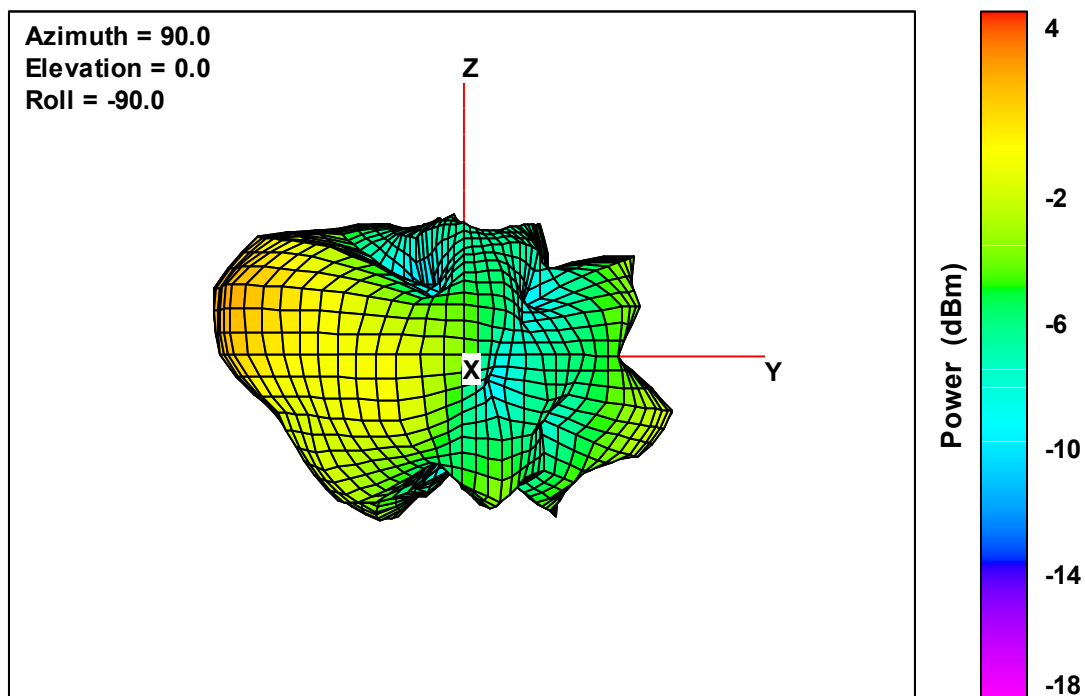
**Ant. 1 Free-Space Total EIRP, Bottom View, 2462 MHz**

### Total EIRP, Left Side View



Ant. 1 Free-Space Total EIRP, Left Side View, 2462 MHz

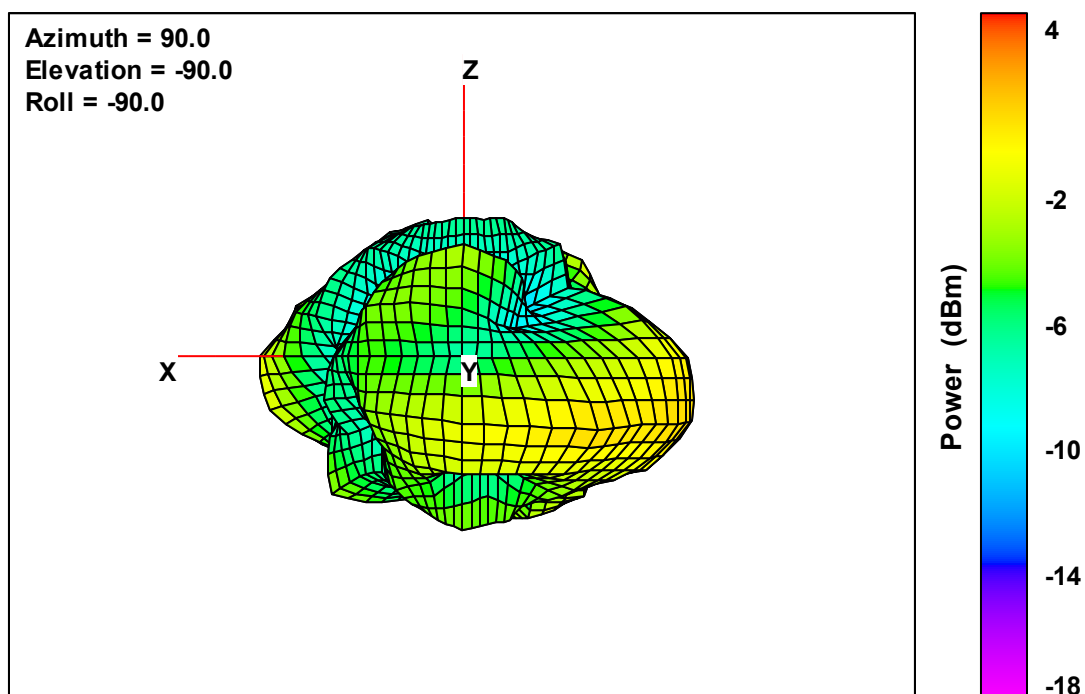
### Total EIRP, Front Face View



Ant. 1 Free-Space Total EIRP, Front Face View, 2462 MHz

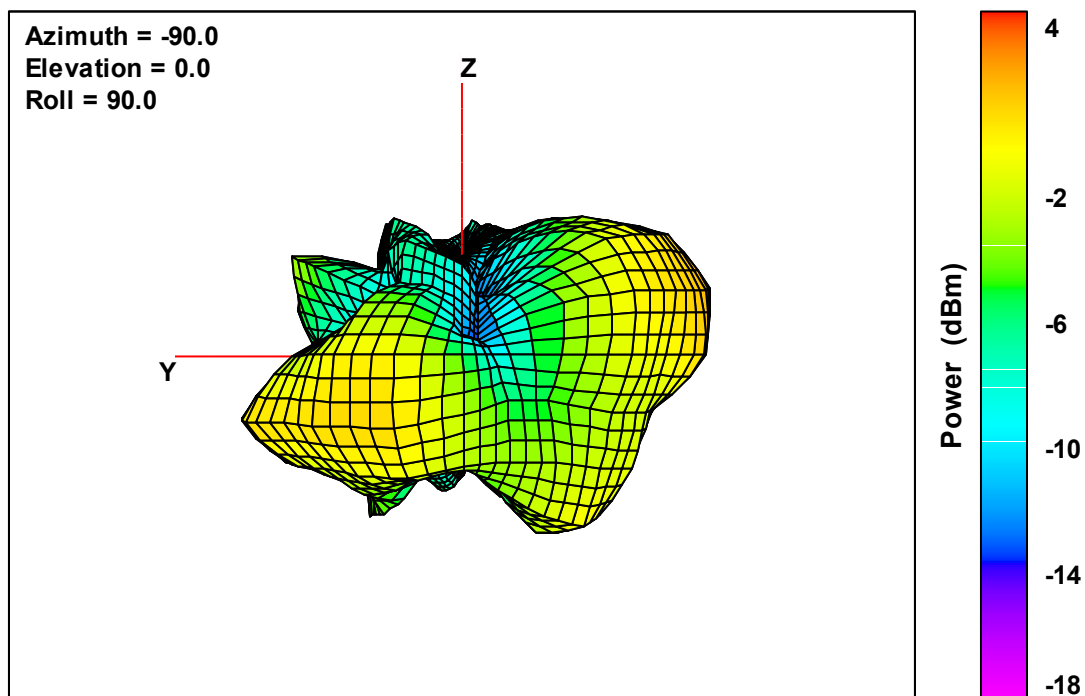


### Total EIRP, Right Side View



Ant. 1 Free-Space Total EIRP, Right Side View, 2462 MHz

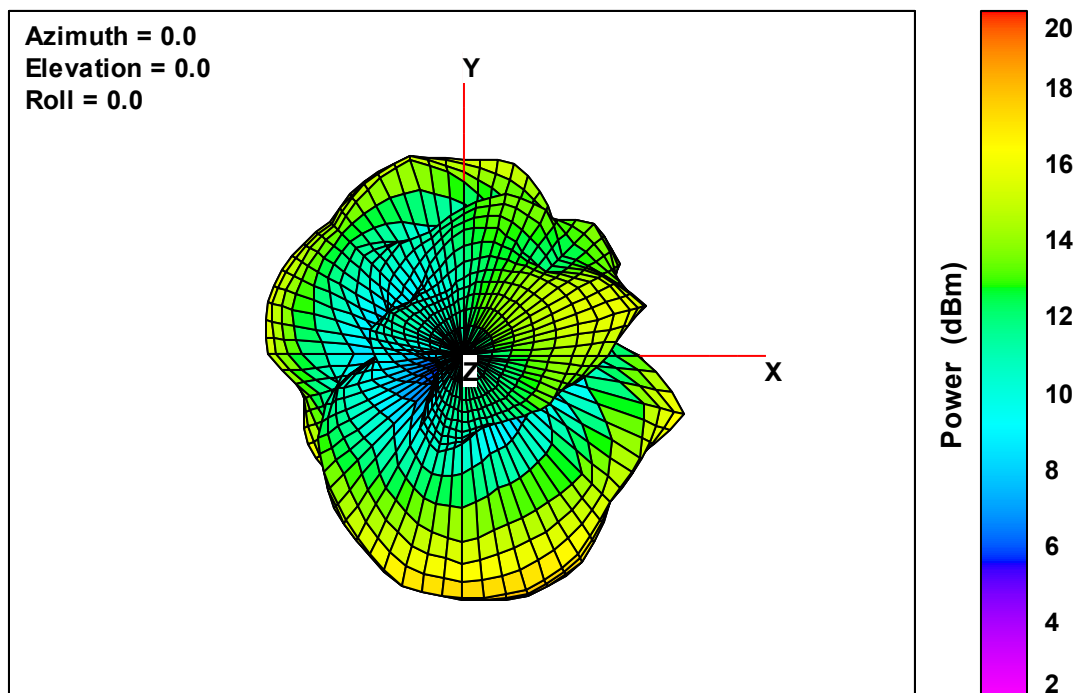
### Total EIRP, Back Face View



Ant. 1 Free-Space Total EIRP, Back Face View, 2462 MHz

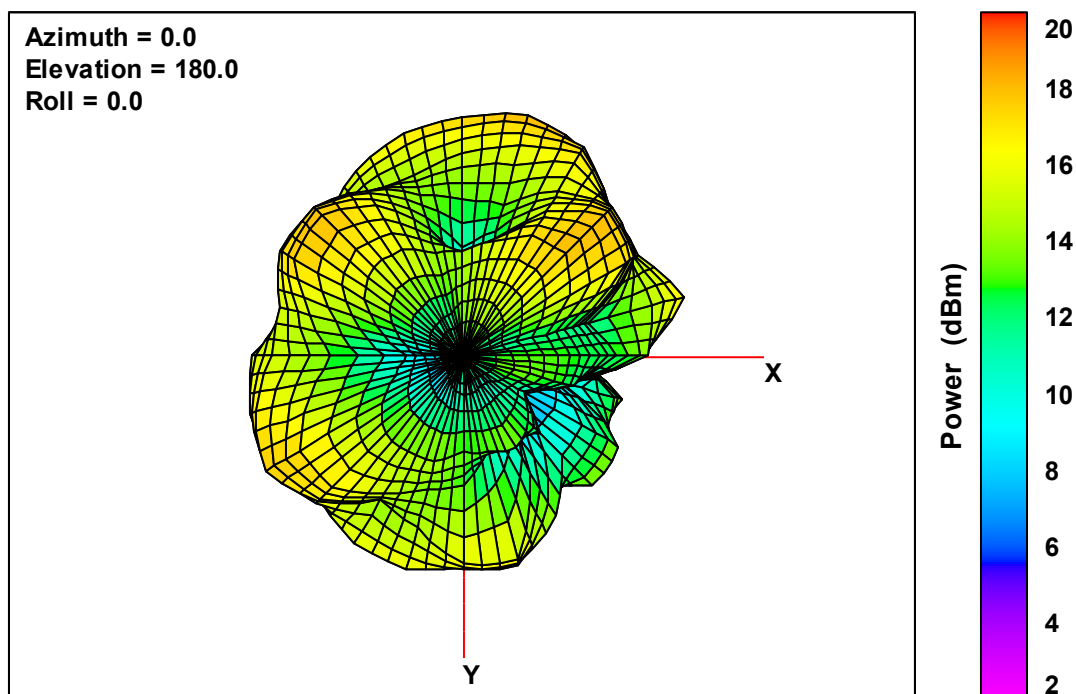
#### 7.1.4 Antenna 1 5180 MHz

**Total EIRP, Top View**



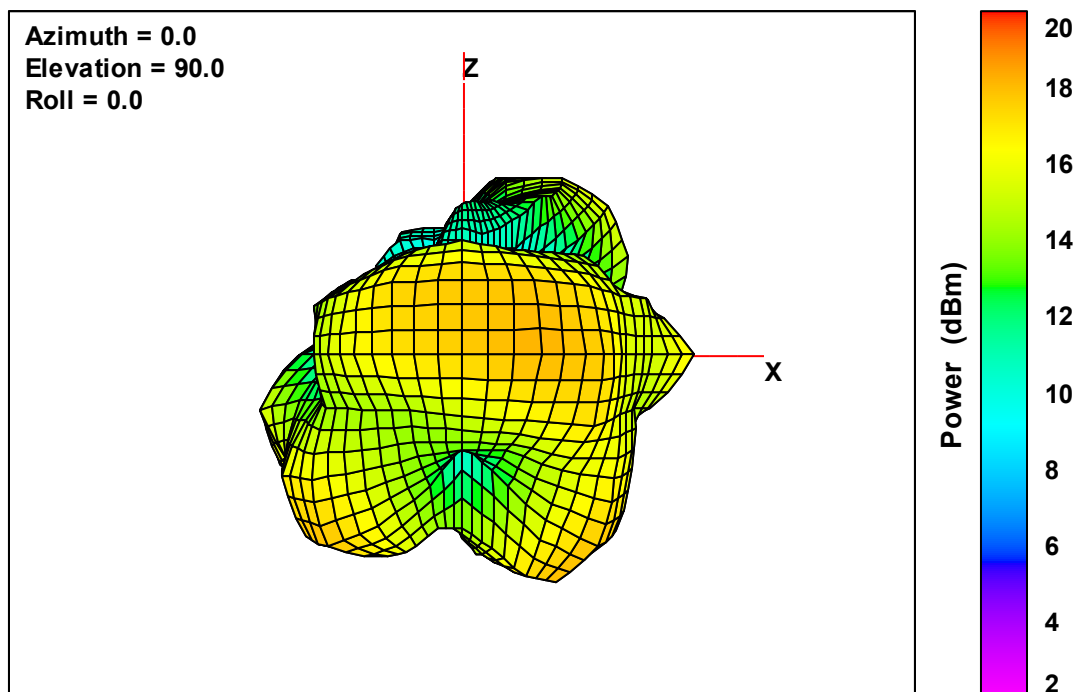
**Ant. 1 Free-Space Total EIRP, Top View, 5180 MHz**

**Total EIRP, Bottom View**



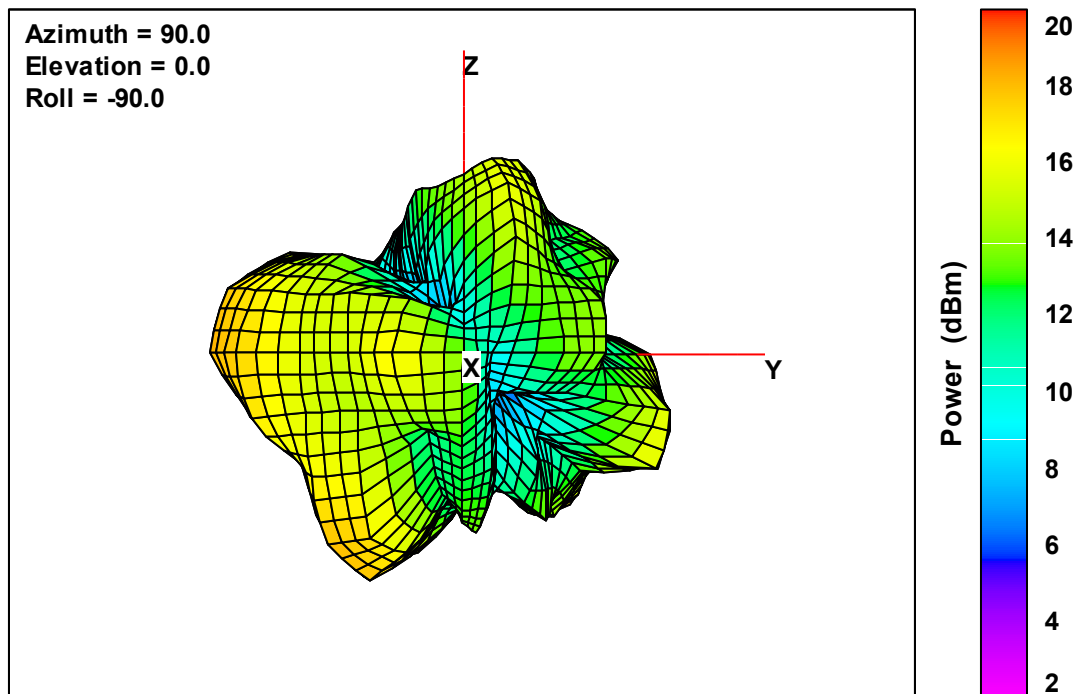
**Ant. 1 Free-Space Total EIRP, Bottom View, 5180 MHz**

### Total EIRP, Left Side View



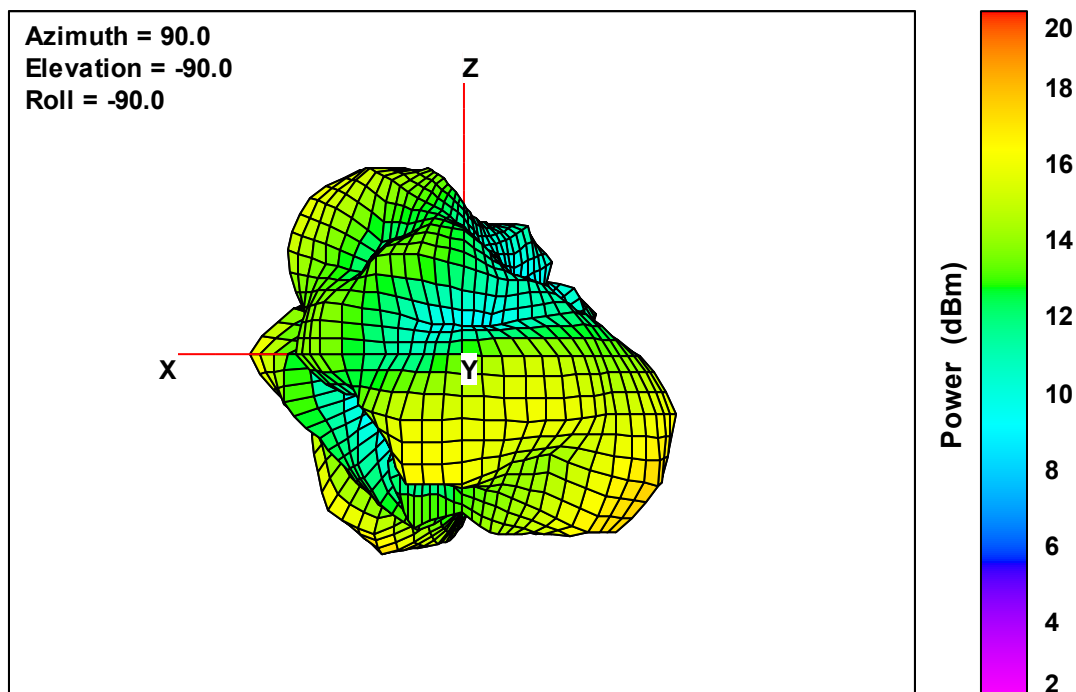
Ant. 1 Free-Space Total EIRP, Left Side View, 5180 MHz

### Total EIRP, Front Face View



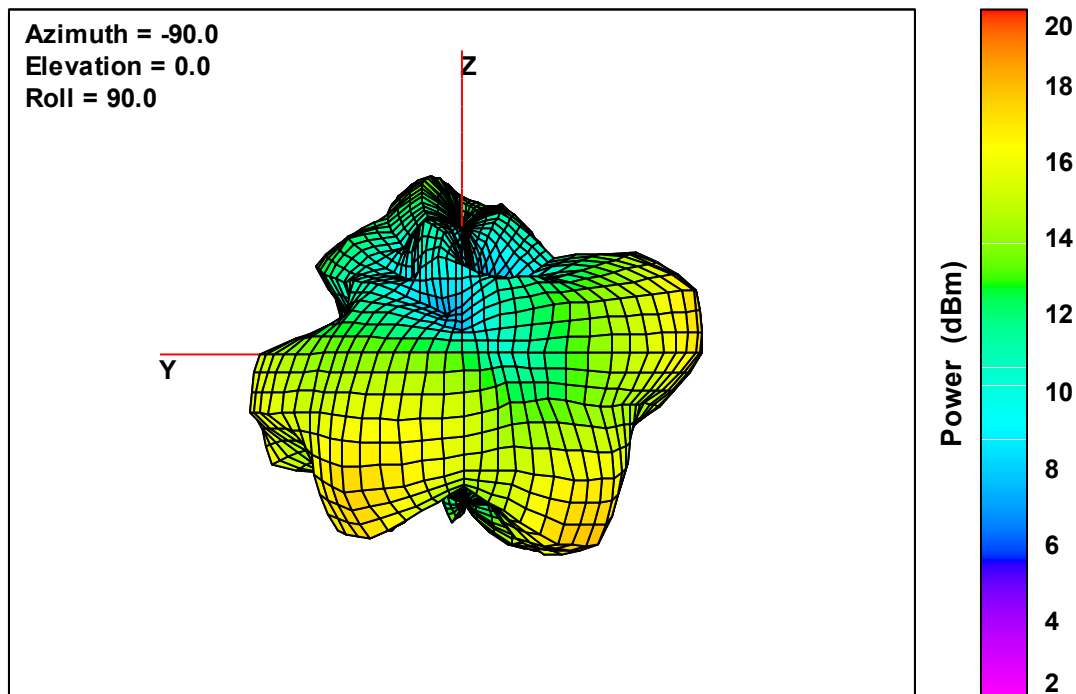
Ant. 1 Free-Space Total EIRP, Front Face View, 5180 MHz

### Total EIRP, Right Side View



Ant. 1 Free-Space Total EIRP, Right Side View, 5180 MHz

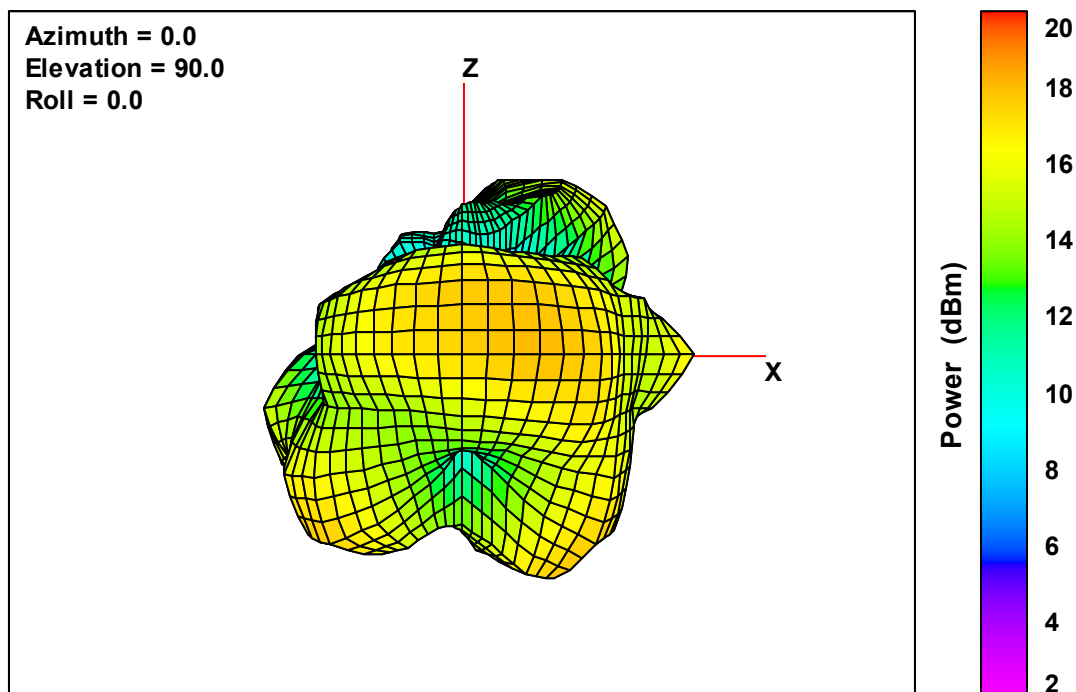
### Total EIRP, Back Face View



Ant. 1 Free-Space Total EIRP, Back Face View, 5180 MHz

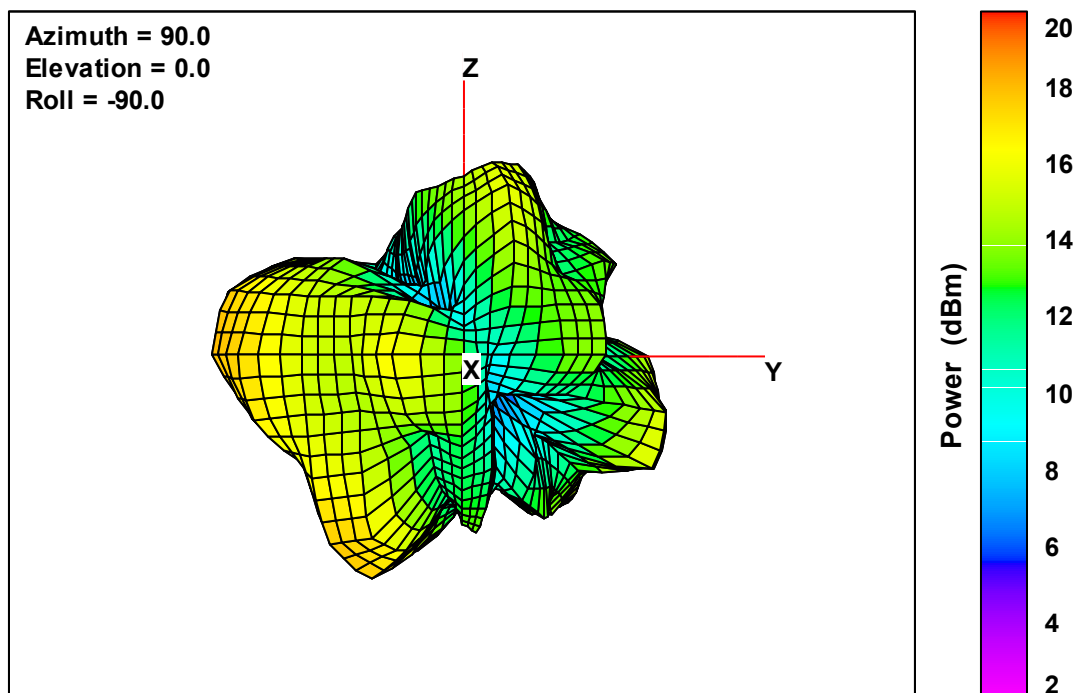


### Total EIRP, Left Side View



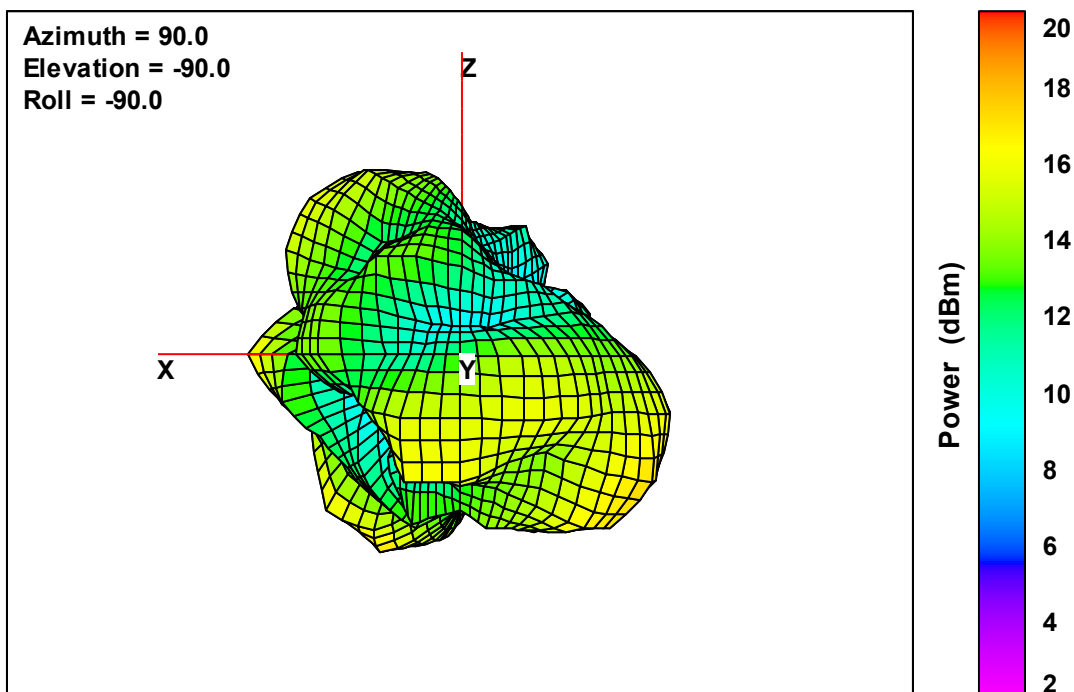
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### Total EIRP, Front Face View



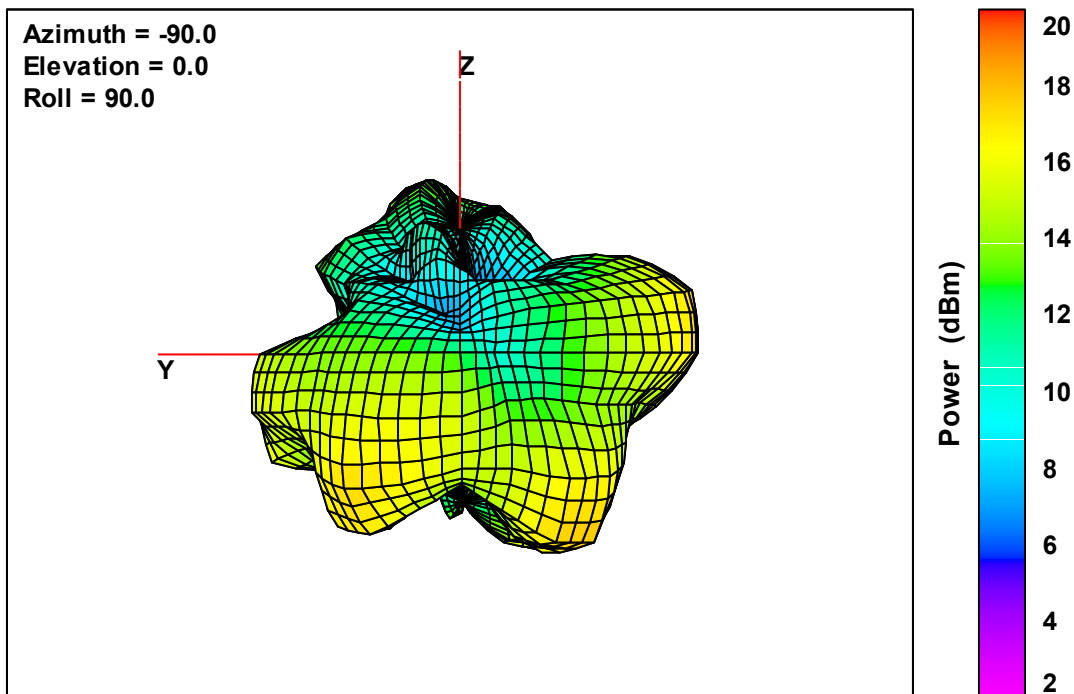
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### Total EIRP, Right Side View



Ant. 1 Free-Space Total EIRP, Right Side View, 5240 MHz

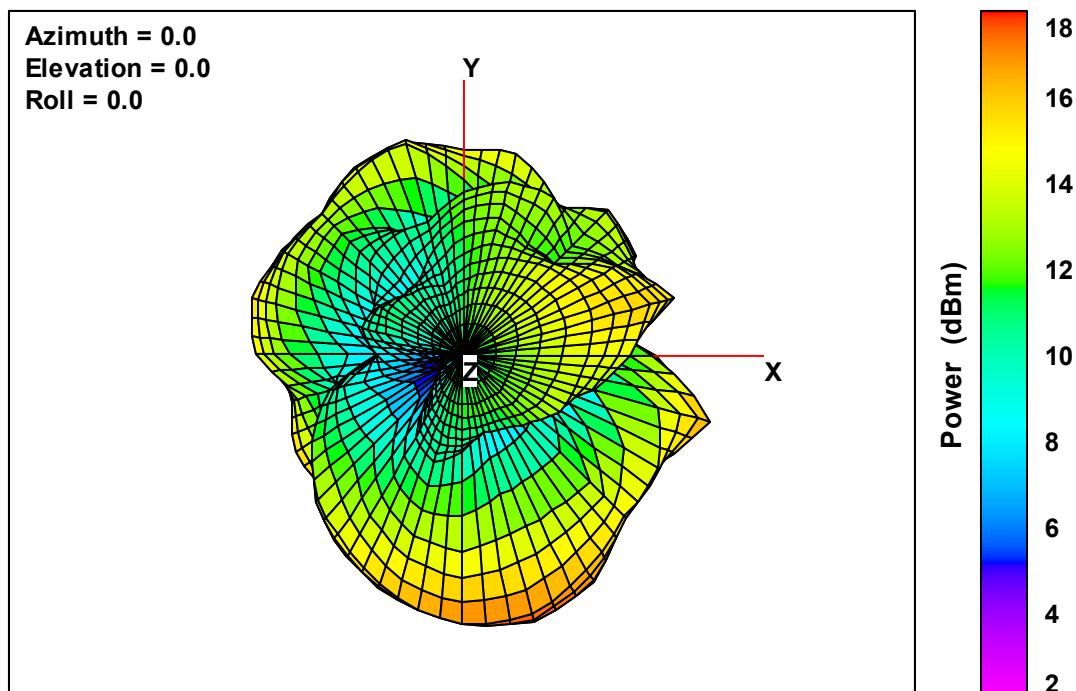
### Total EIRP, Back Face View



Ant. 1 Free-Space Total EIRP, Back Face View, 5240 MHz

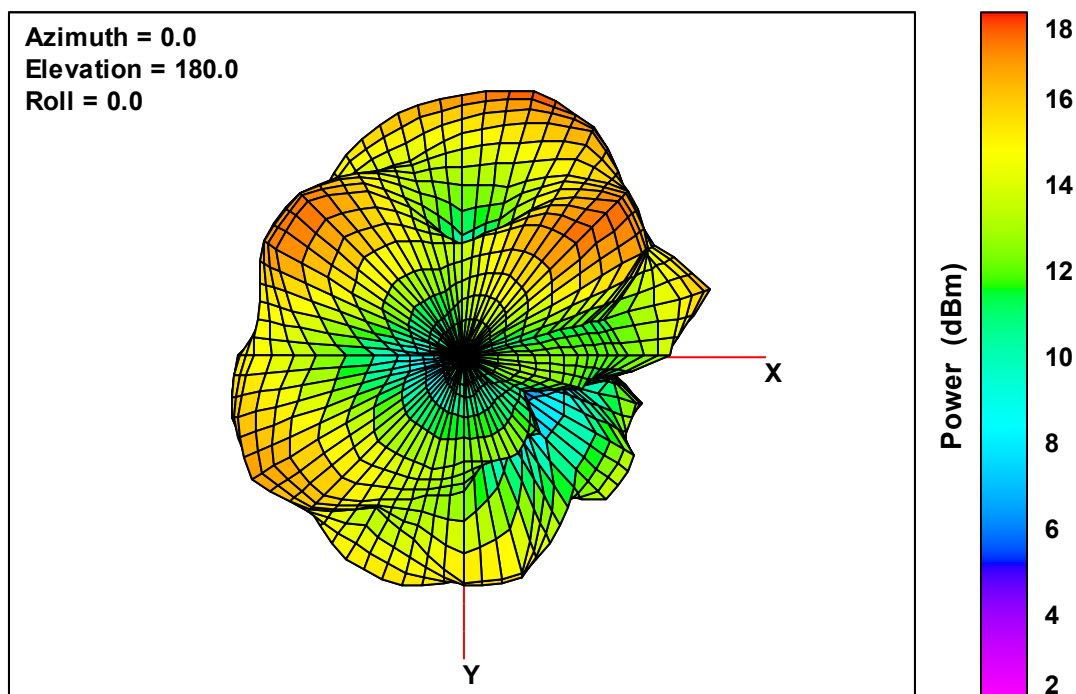
### 7.1.6 Antenna 1 5260 MHz

**Total EIRP, Top View**



**Ant. 1 Free-Space Total EIRP, Top View, 5260 MHz**

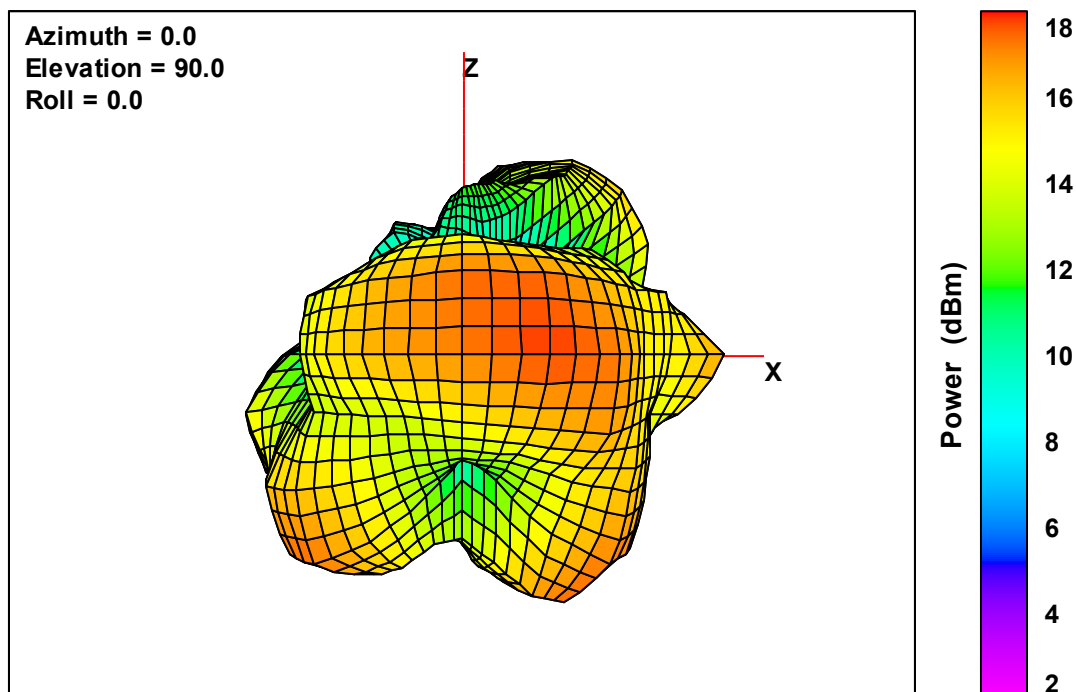
**Total EIRP, Bottom View**



**Ant. 1 Free-Space Total EIRP, Bottom View, 5260 MHz**

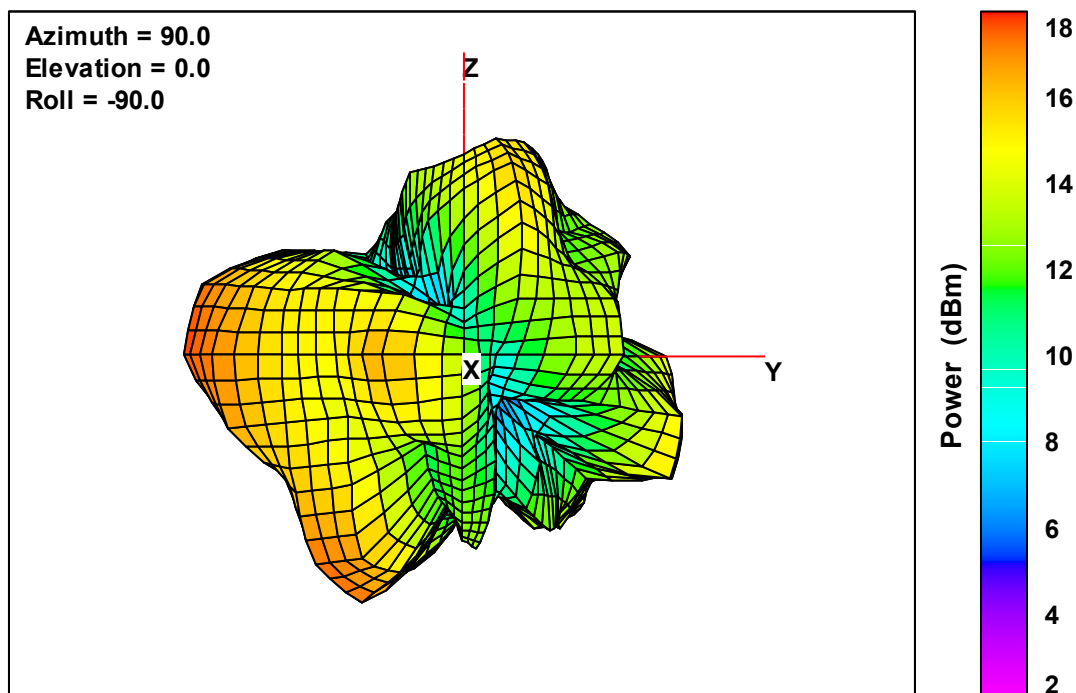


### Total EIRP, Left Side View



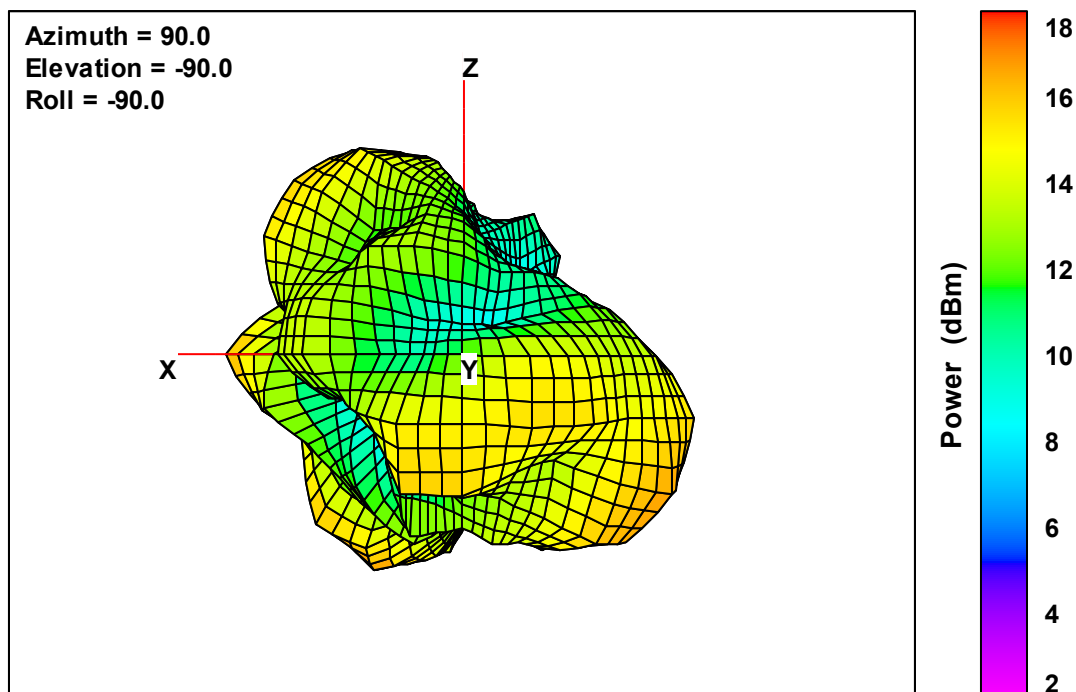
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### Total EIRP, Front Face View



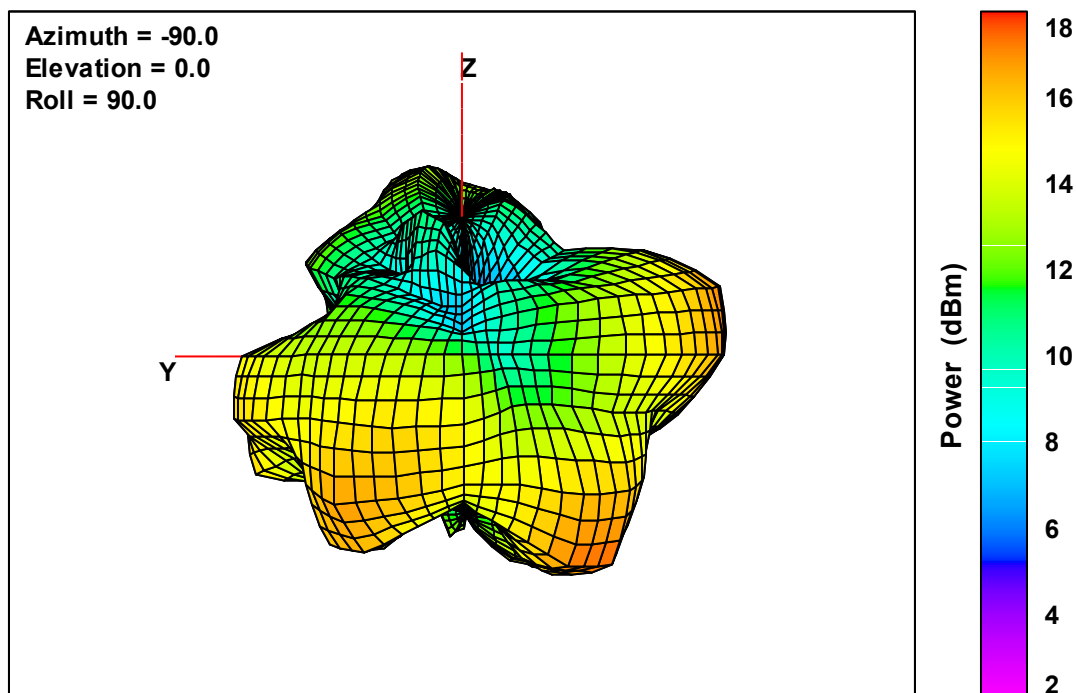
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### Total EIRP, Right Side View



Ant. 1 Free-Space Total EIRP, Right Side View, 5260 MHz

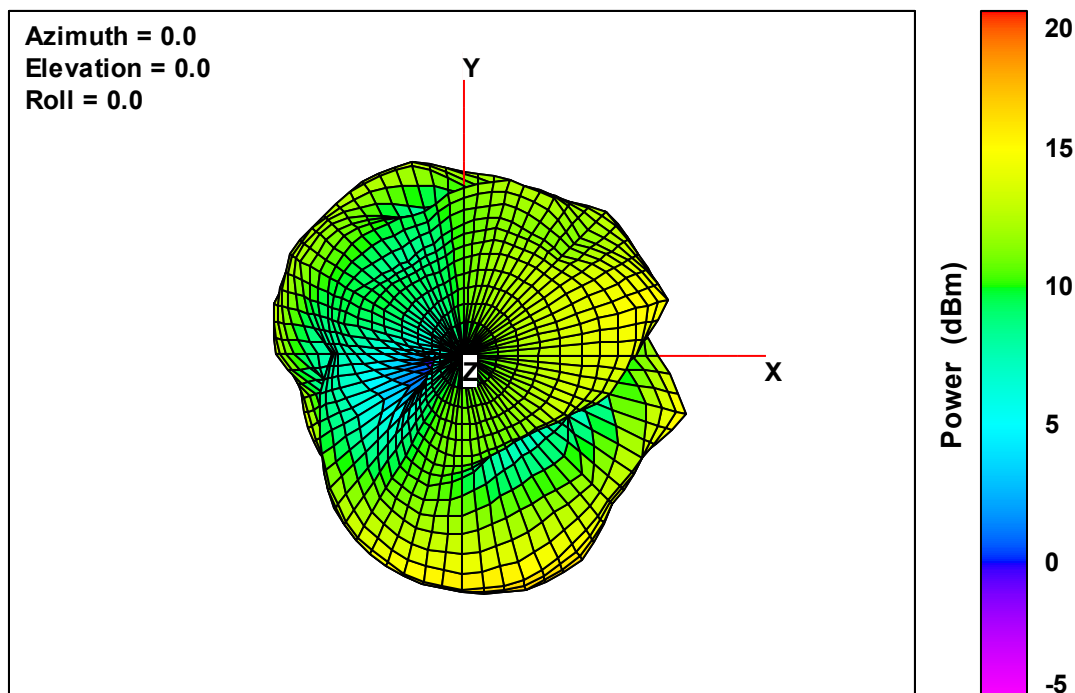
### Total EIRP, Back Face View



Ant. 1 Free-Space Total EIRP, Back Face View, 5260 MHz

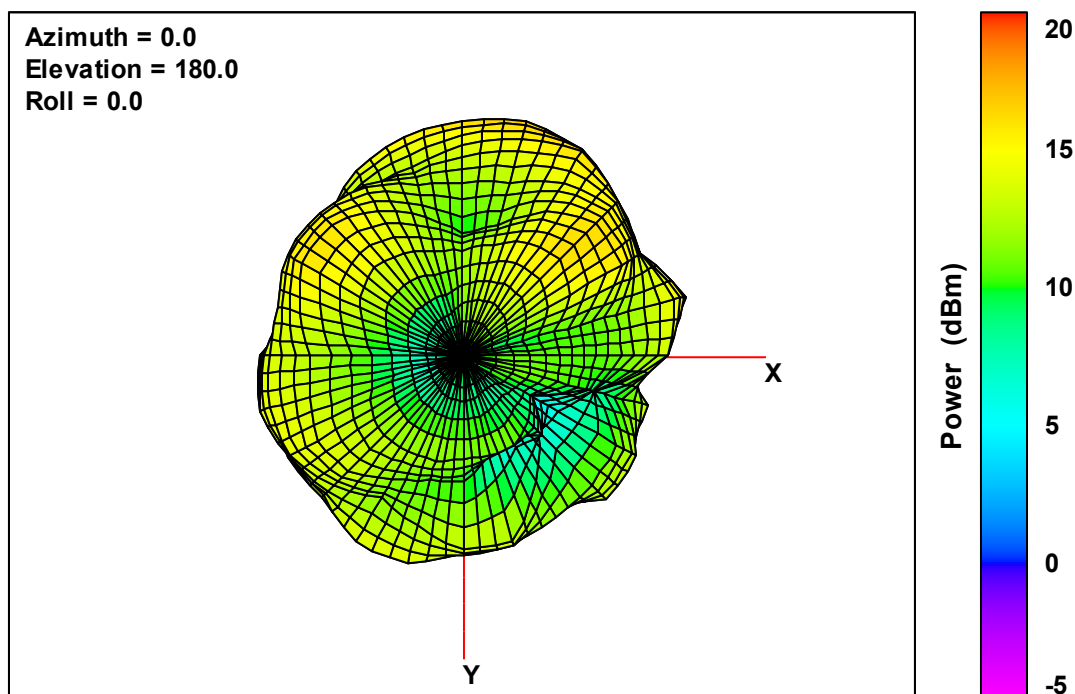
### 7.1.7 Antenna 1 5320 MHz

**Total EIRP, Top View**



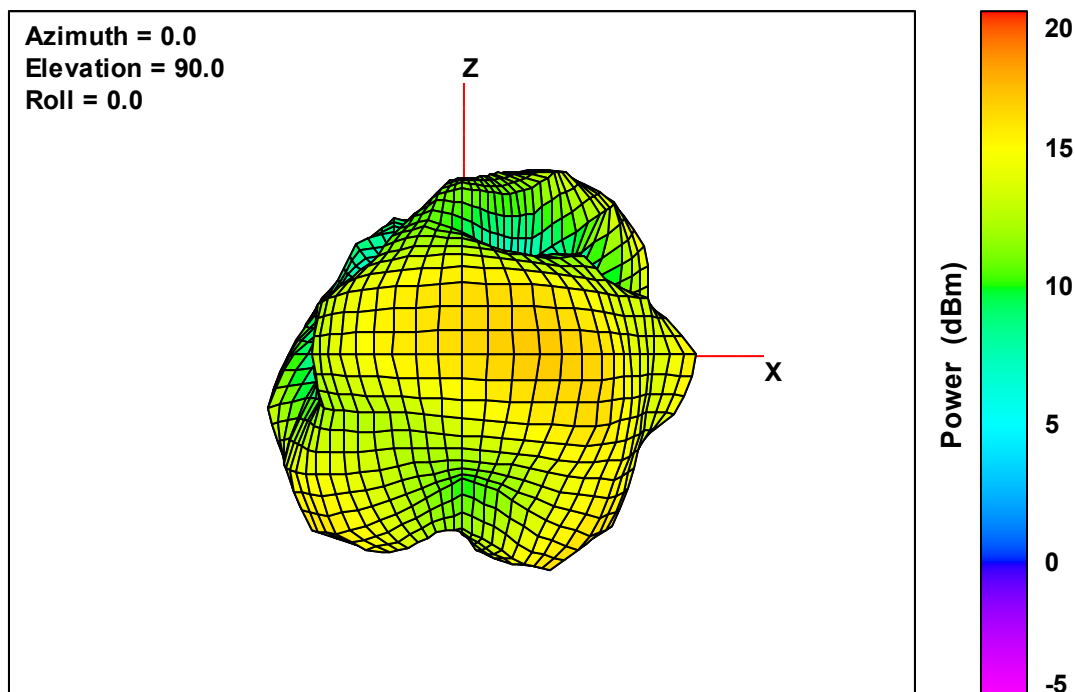
**Ant. 1 Free-Space Total EIRP, Top View, 5320 MHz**

**Total EIRP, Bottom View**



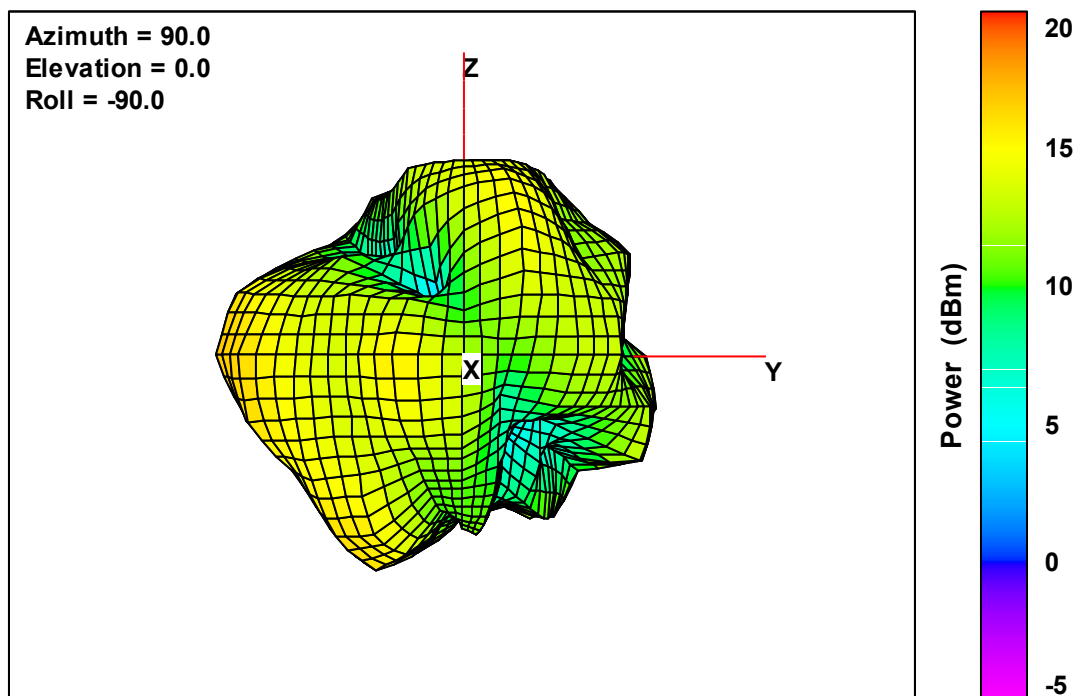
**Ant. 1 Free-Space Total EIRP, Bottom View, 5320 MHz**

### Total EIRP, Left Side View



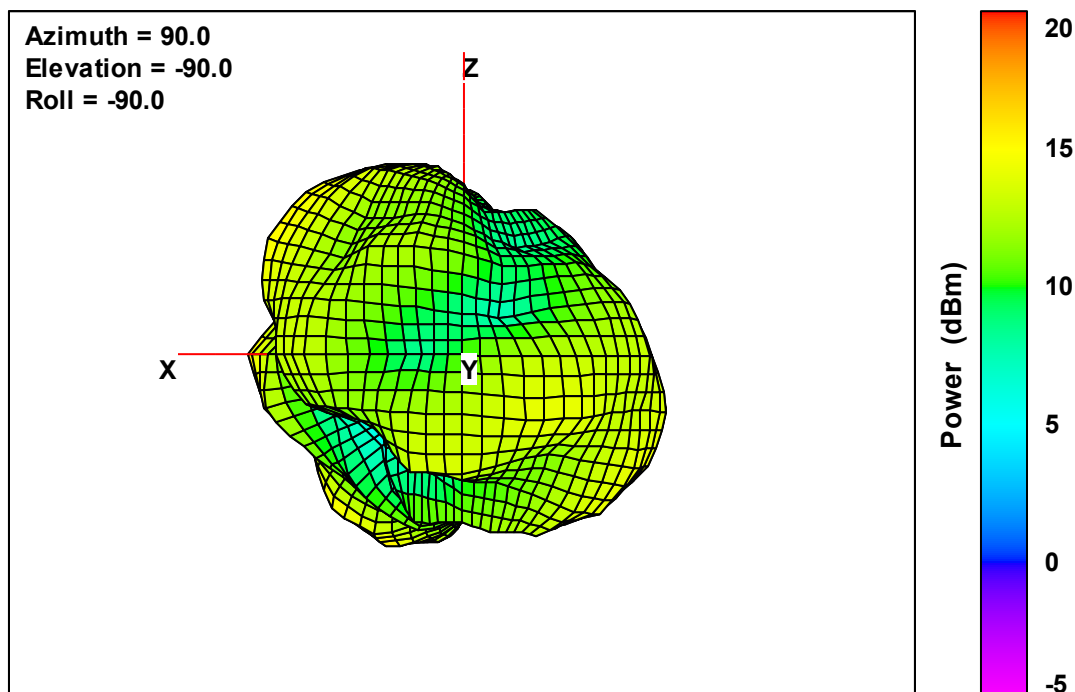
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### Total EIRP, Front Face View



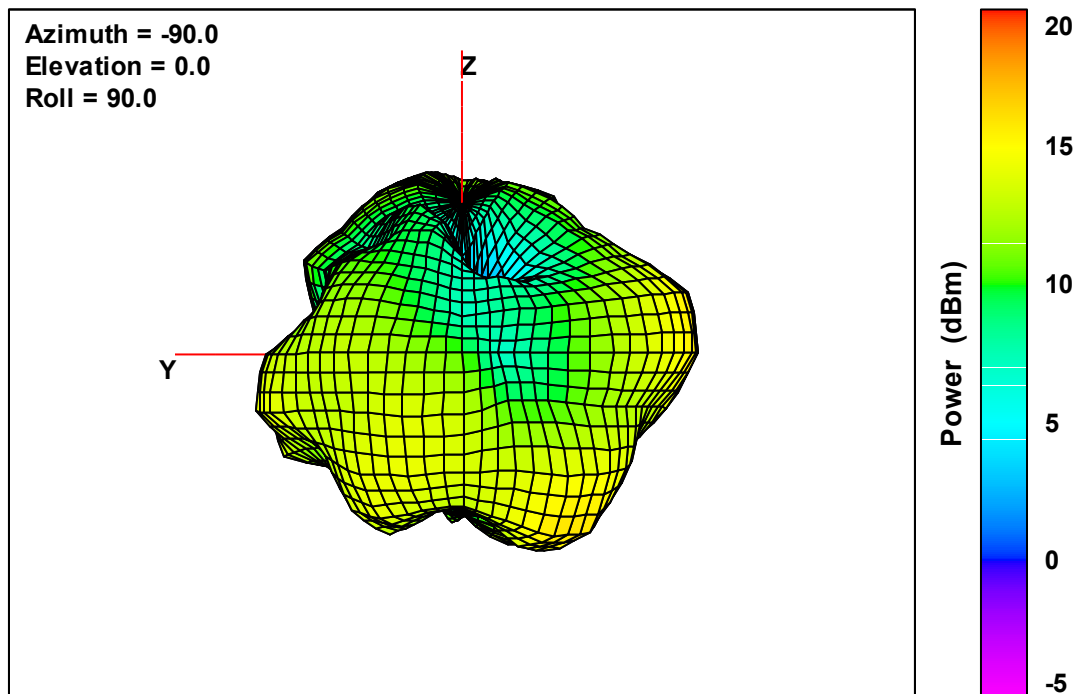
Ant. 1 Free-Space Total EIRP, Front Face View, 5320 MHz

### Total EIRP, Right Side View



Ant. 1 Free-Space Total EIRP, Right Side View, 5320 MHz

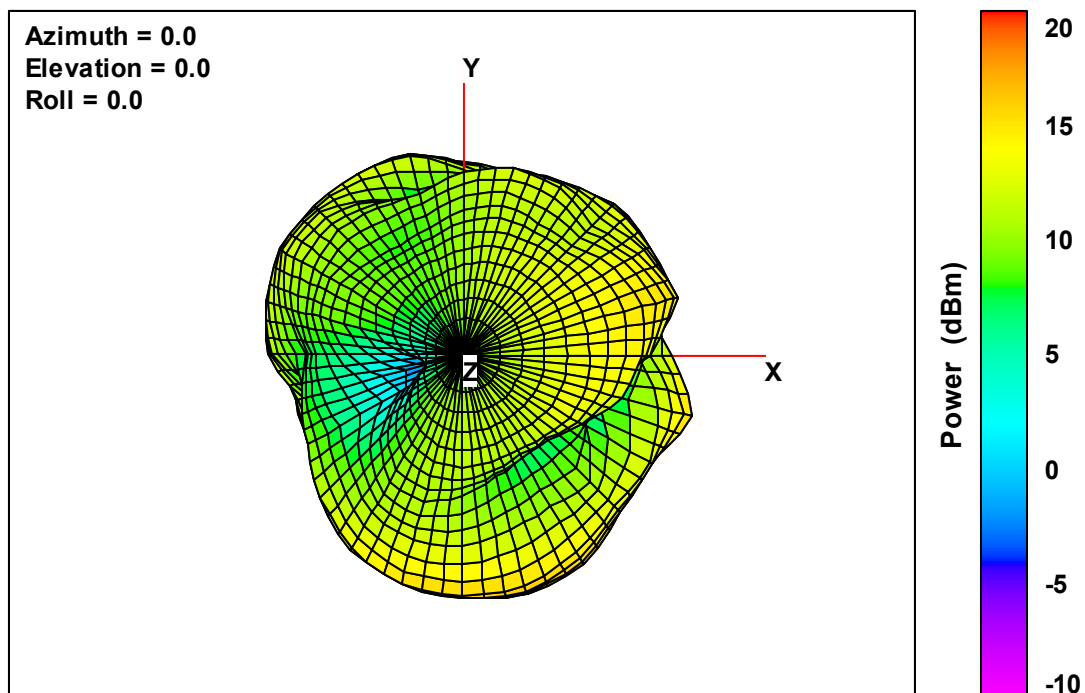
### Total EIRP, Back Face View



Ant. 1 Free-Space Total EIRP, Back Face View, 5320 MHz

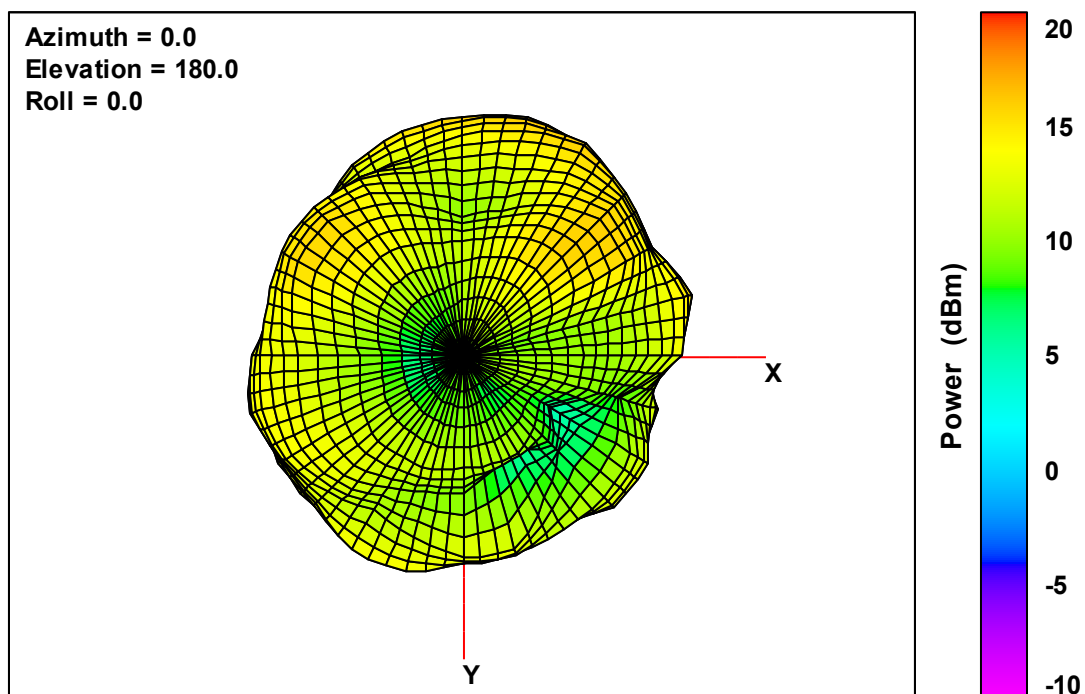
### 7.1.8 Antenna 1 5500 MHz

Total EIRP, Top View



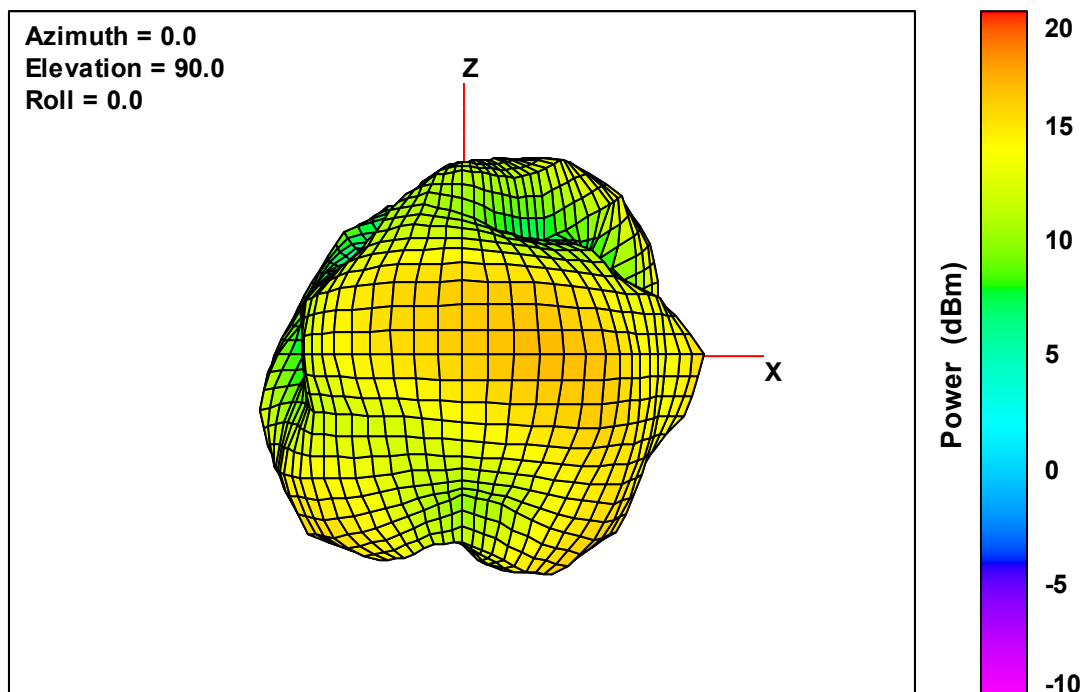
Ant. 1 Free-Space Total EIRP, Top View, 5500 MHz

Total EIRP, Bottom View



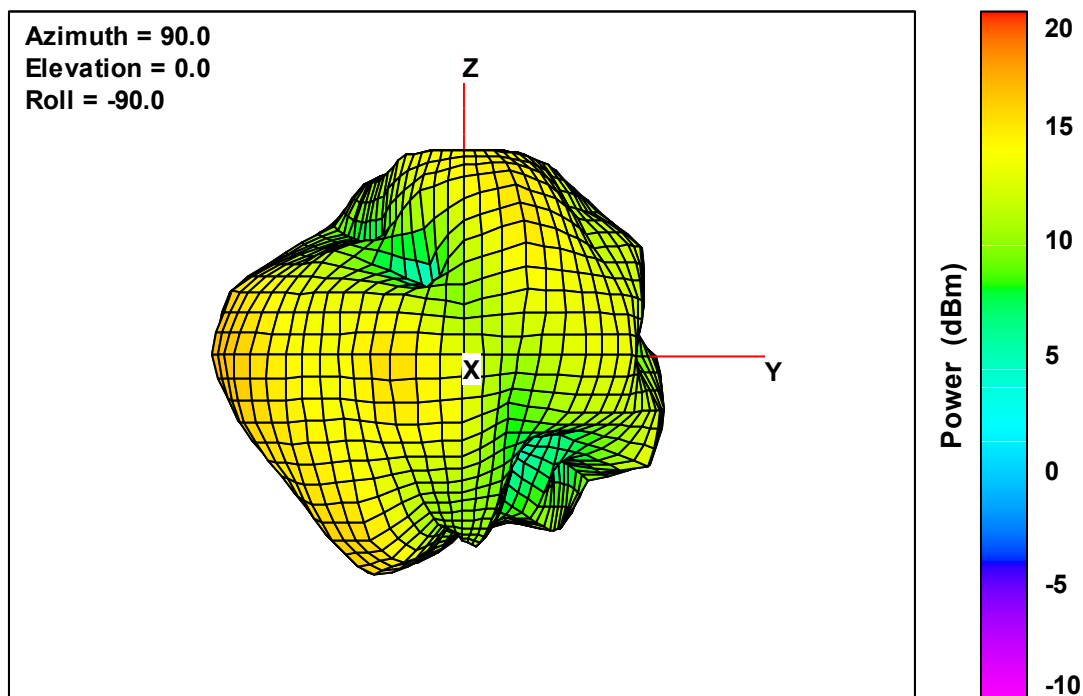
Ant. 1 Free-Space Total EIRP, Bottom View, 5500 MHz

### Total EIRP, Left Side View



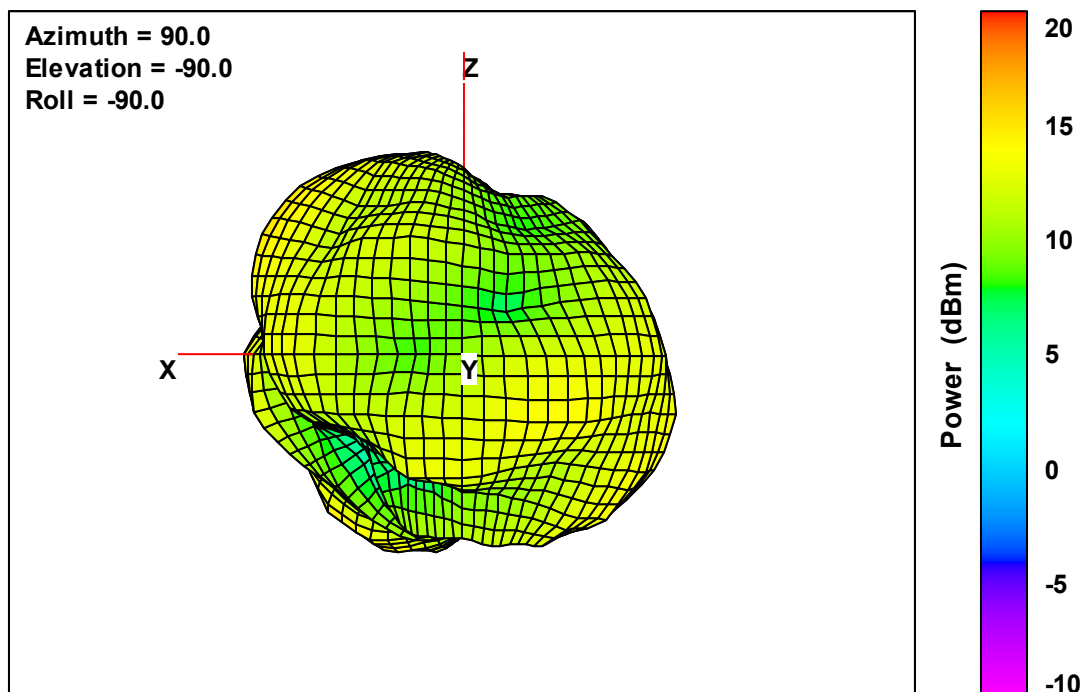
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### Total EIRP, Front Face View



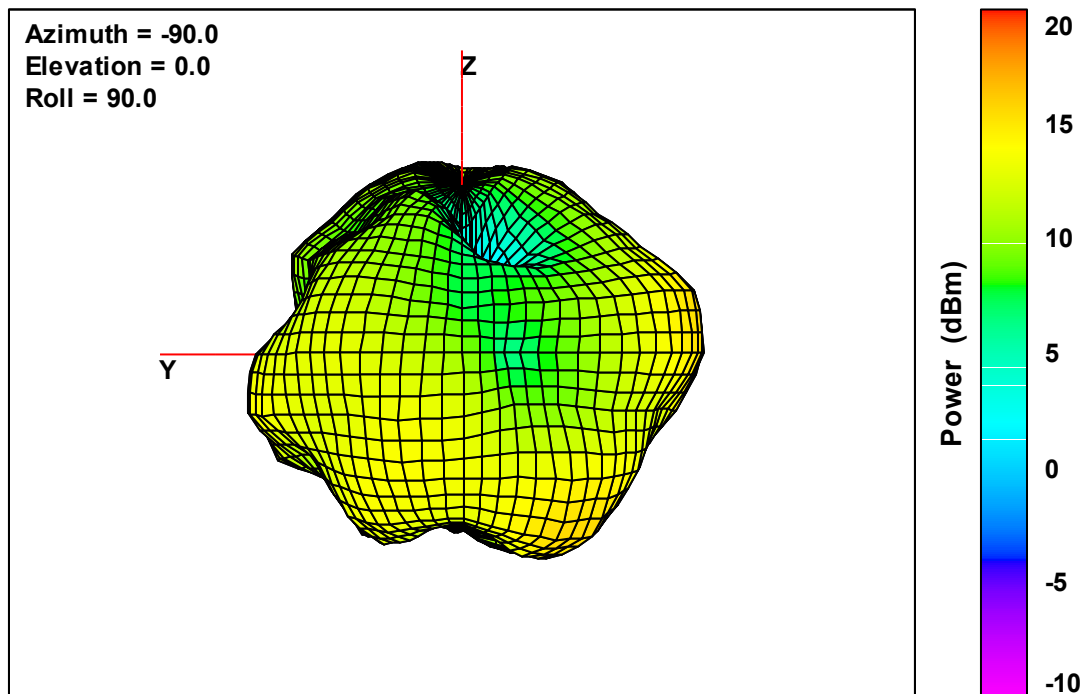
Ant. 1 Free-Space Total EIRP, Front Face View, 5500 MHz

### Total EIRP, Right Side View



Ant. 1 Free-Space Total EIRP, Right Side View, 5500 MHz

### Total EIRP, Back Face View

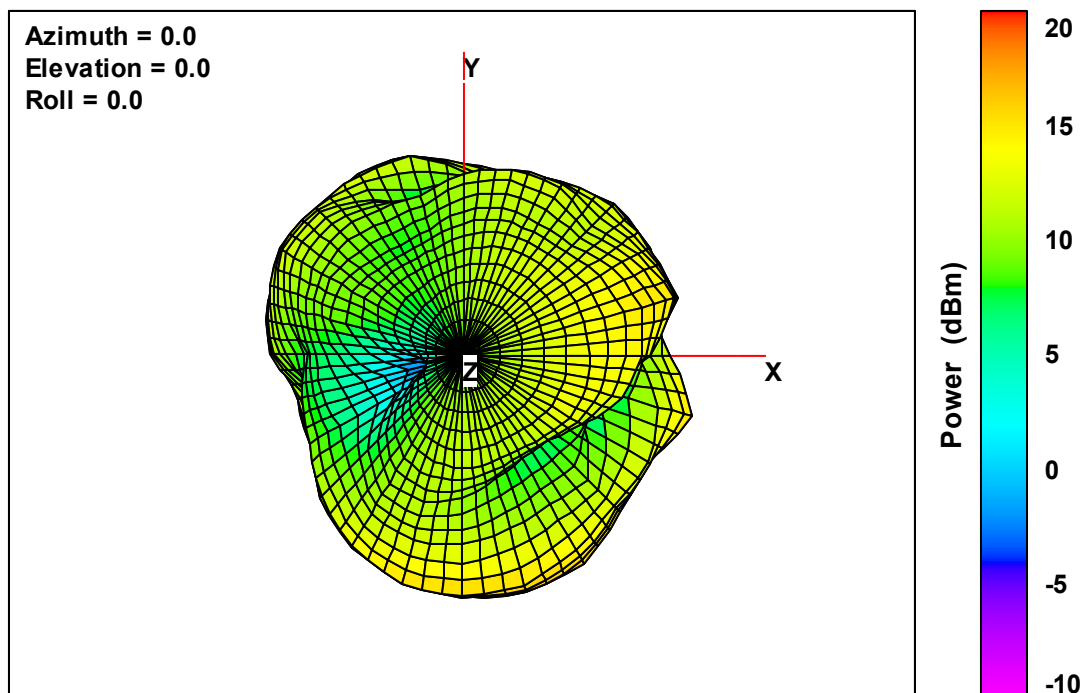


Ant. 1 Free-Space Total EIRP, Back Face View, 5500 MHz



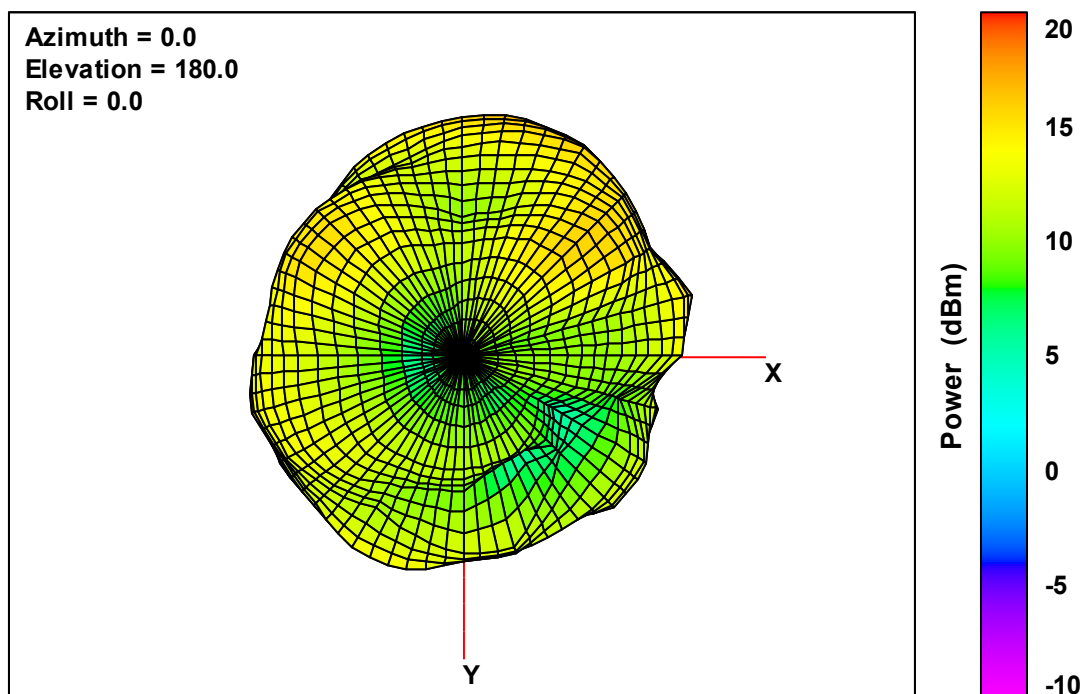
### 7.1.9 Antenna 1 5600 MHz

**Total EIRP, Top View**



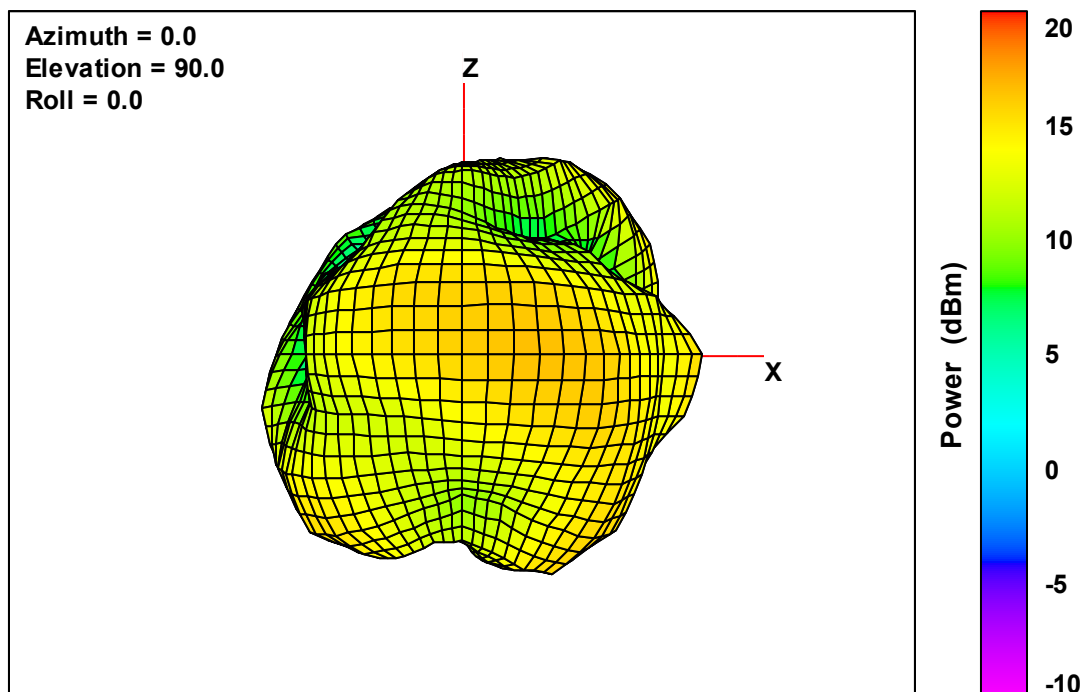
**Ant. 1 Free-Space Total EIRP, Top View, 5600 MHz**

**Total EIRP, Bottom View**



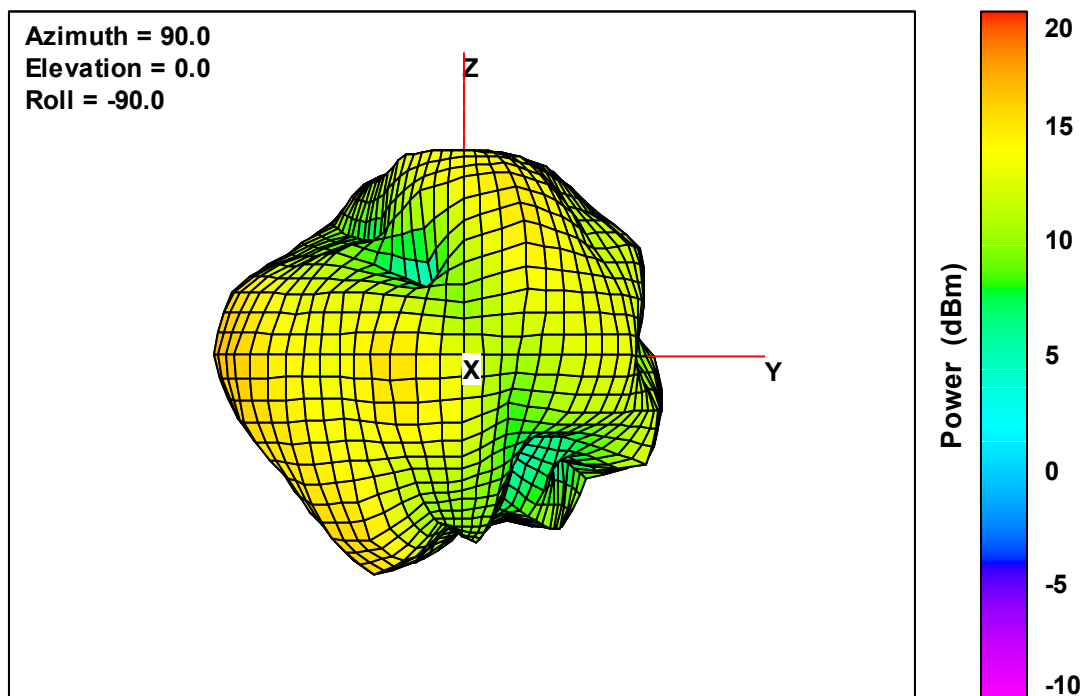
**Ant. 1 Free-Space Total EIRP, Bottom View, 5600 MHz**

### Total EIRP, Left Side View



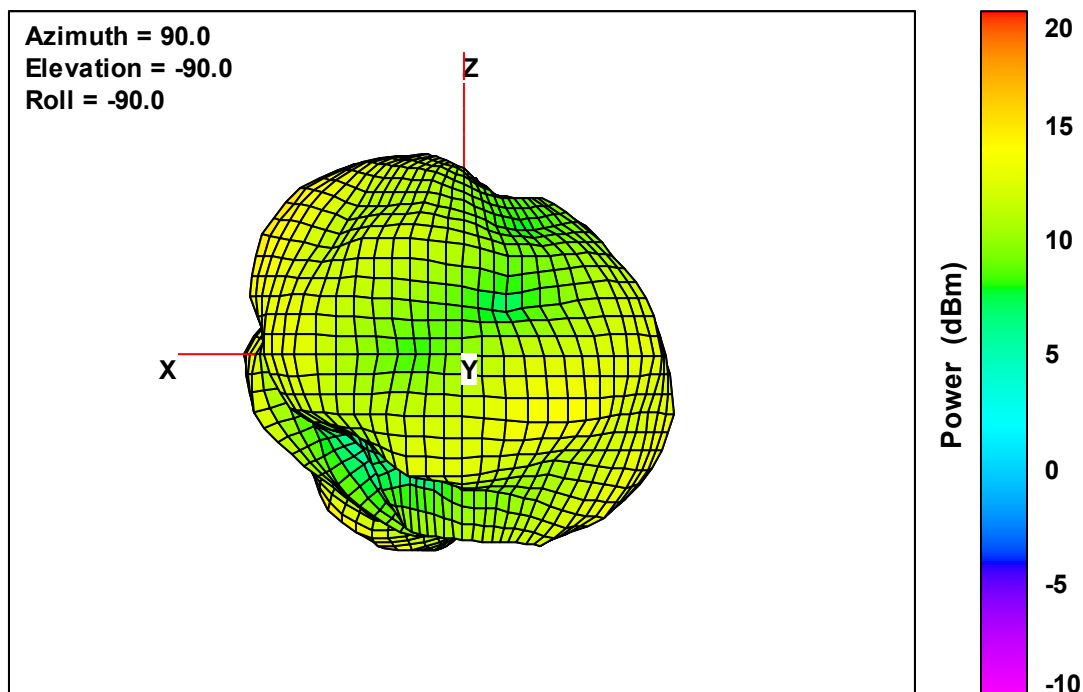
Ant. 1 Free-Space Total EIRP, Left Side View, 5600 MHz

### Total EIRP, Front Face View



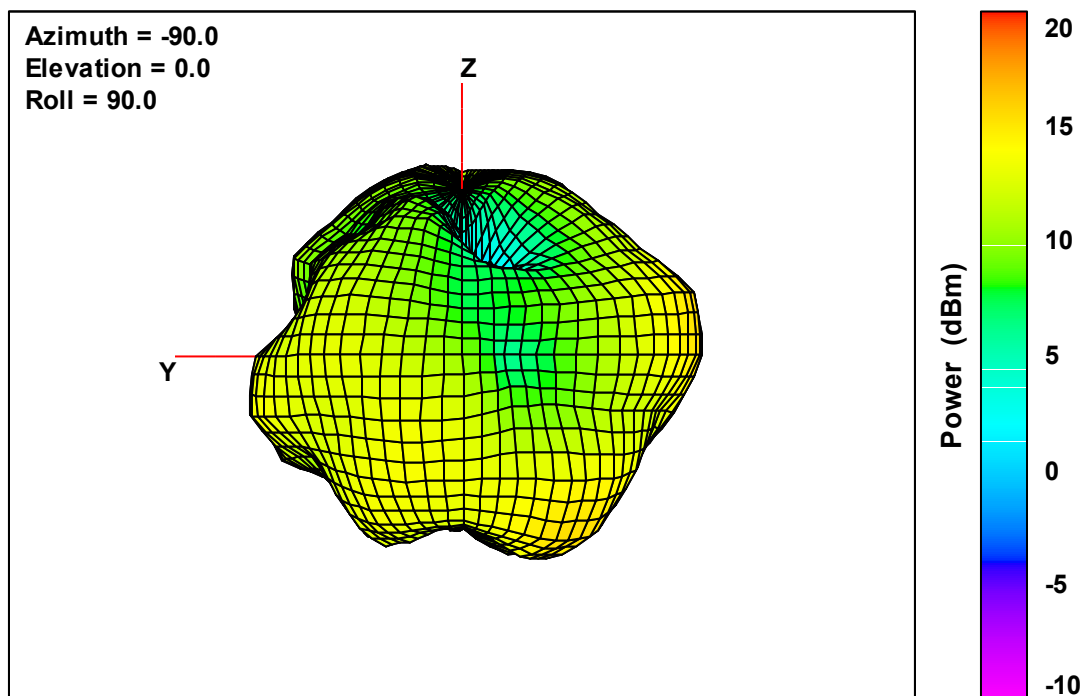
Ant. 1 Free-Space Total EIRP, Front Face View, 5600 MHz

### Total EIRP, Right Side View



Ant. 1 Free-Space Total EIRP, Right Side View, 5600 MHz

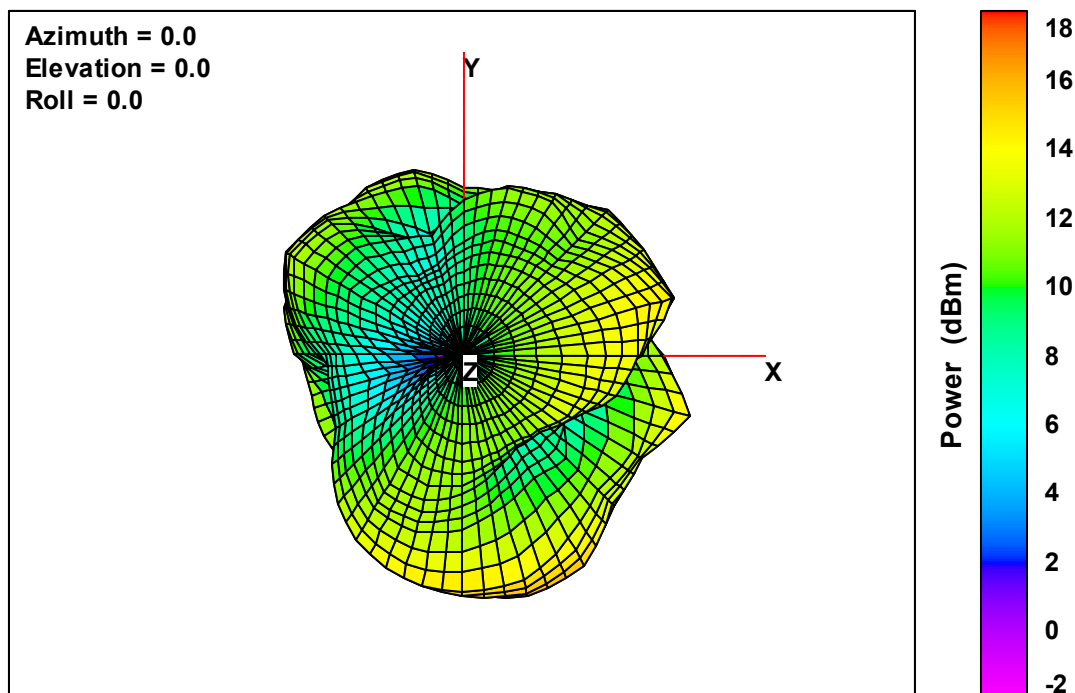
### Total EIRP, Back Face View



Ant. 1 Free-Space Total EIRP, Back Face View, 5600 MHz

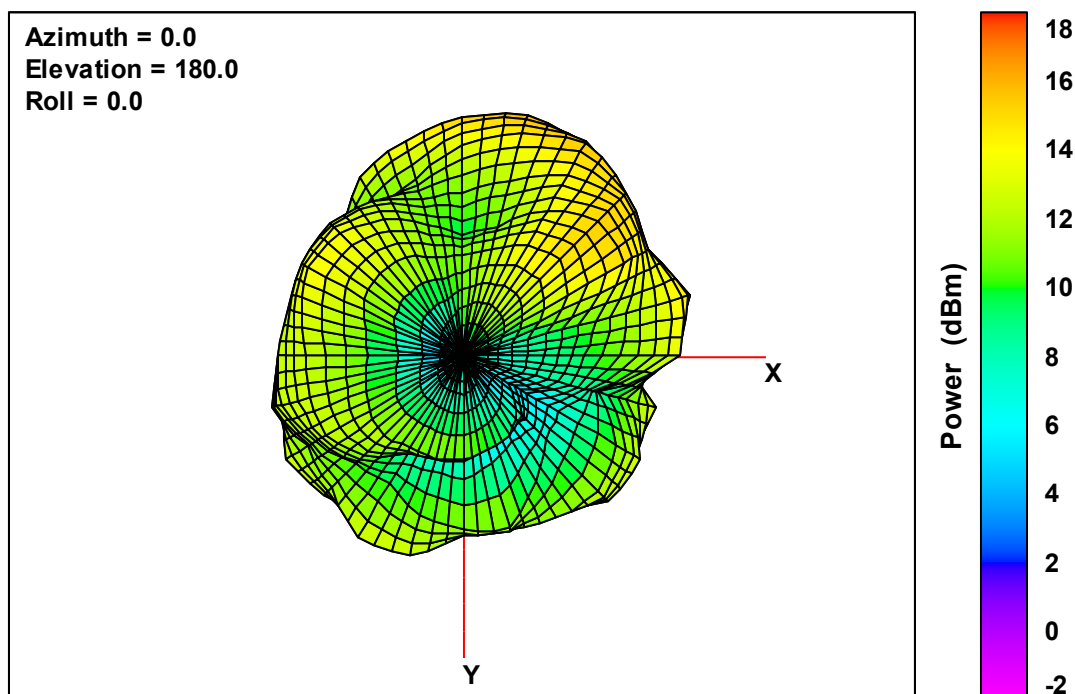
### 7.1.10 Antenna 1 5700 MHz

**Total EIRP, Top View**



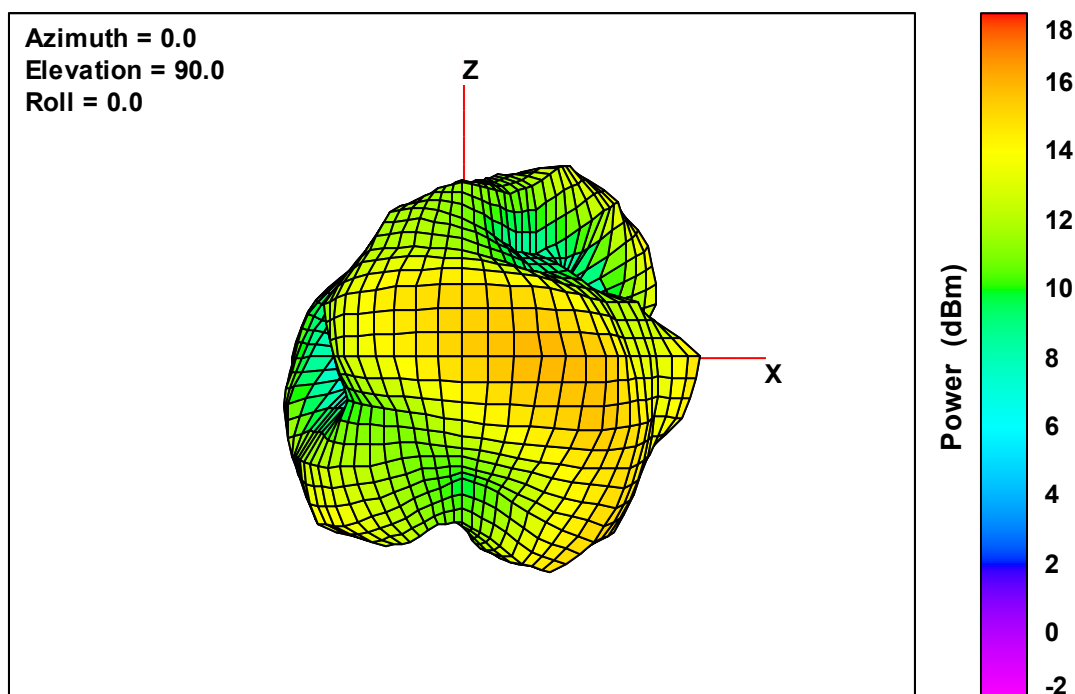
**Ant. 1 Free-Space Total EIRP, Top View, 5700 MHz**

**Total EIRP, Bottom View**



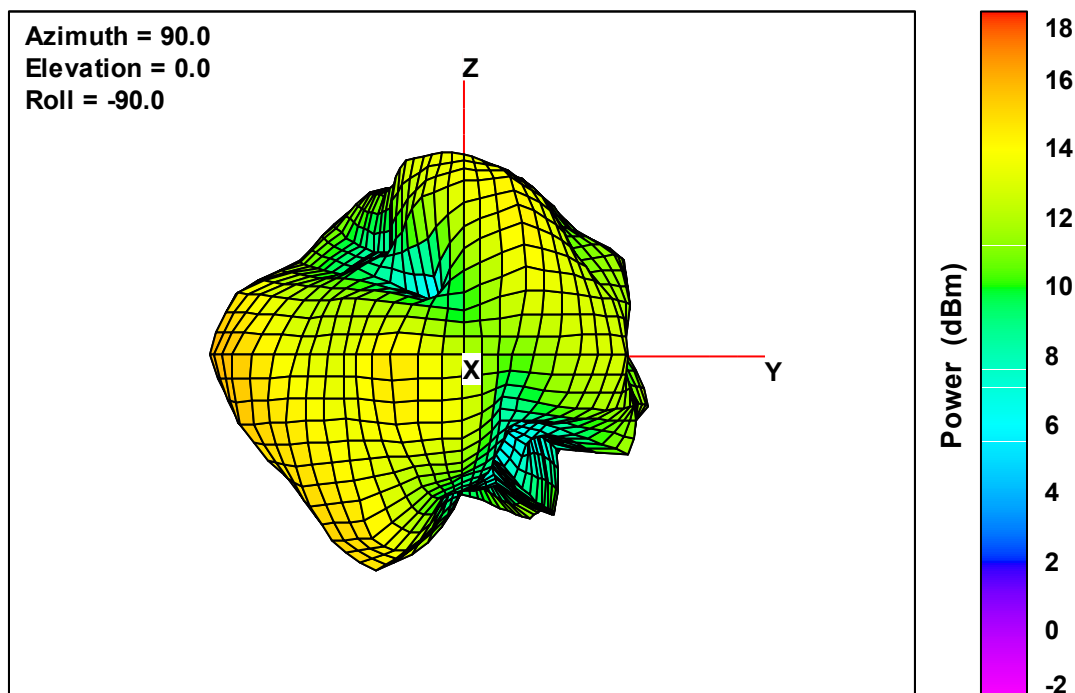
**Ant. 1 Free-Space Total EIRP, Bottom View, 5700 MHz**

### Total EIRP, Left Side View



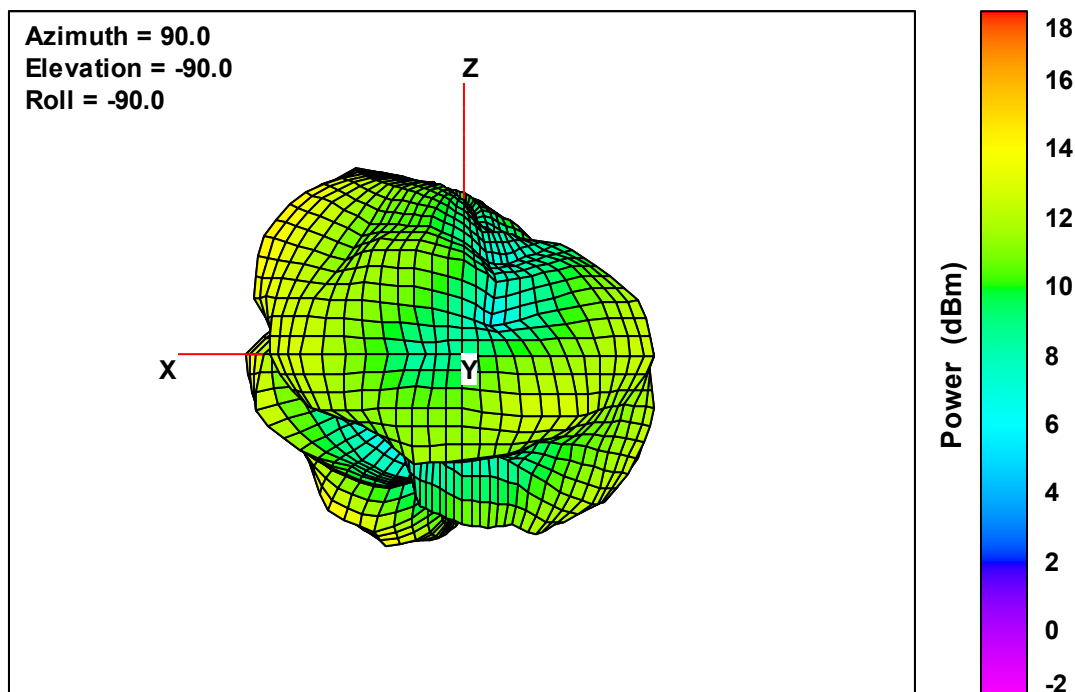
Ant. 1 Free-Space Total EIRP, Left Side View, 5700 MHz

### Total EIRP, Front Face View



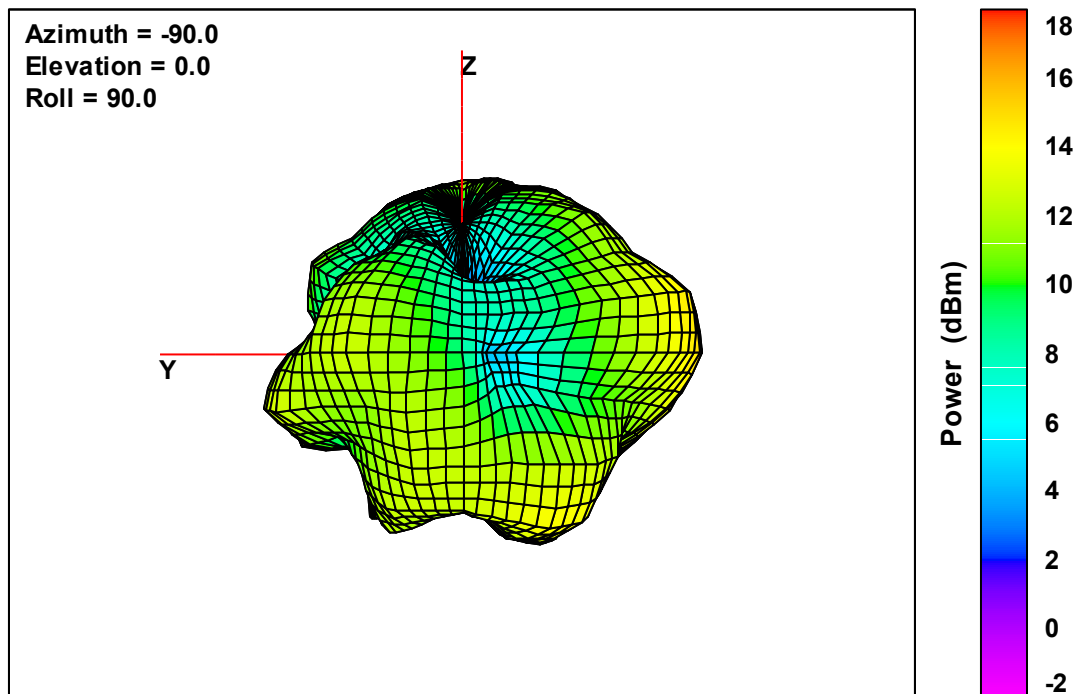
Ant. 1 Free-Space Total EIRP, Front Face View, 5700 MHz

### Total EIRP, Right Side View



Ant. 1 Free-Space Total EIRP, Right Side View, 5700 MHz

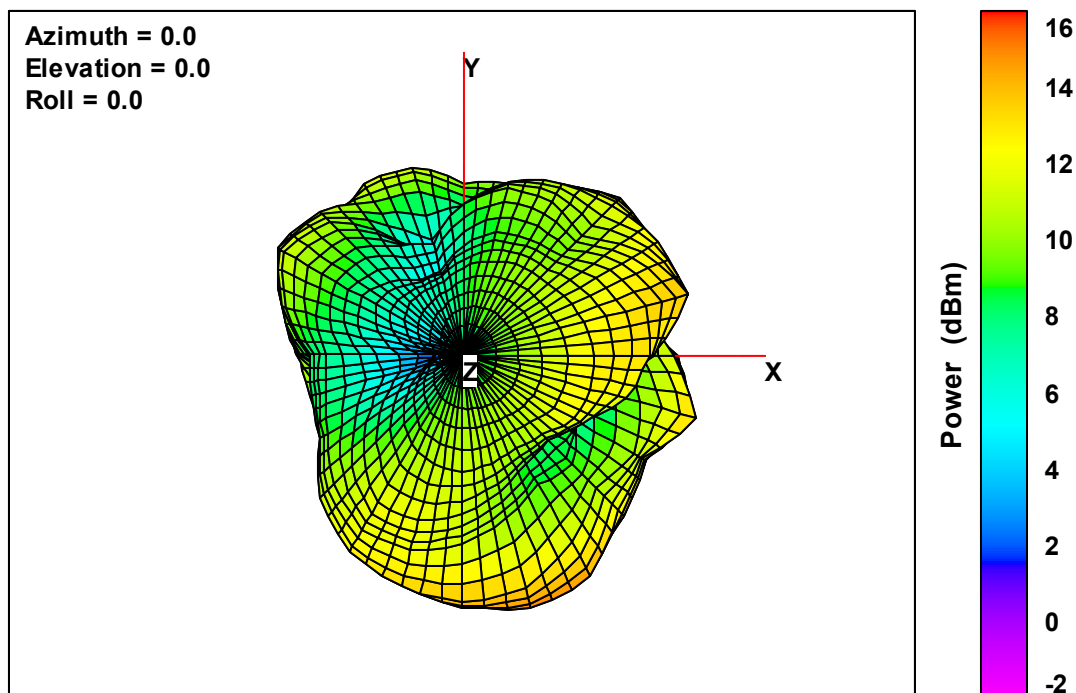
### Total EIRP, Back Face View



Ant. 1 Free-Space Total EIRP, Back Face View, 5700 MHz

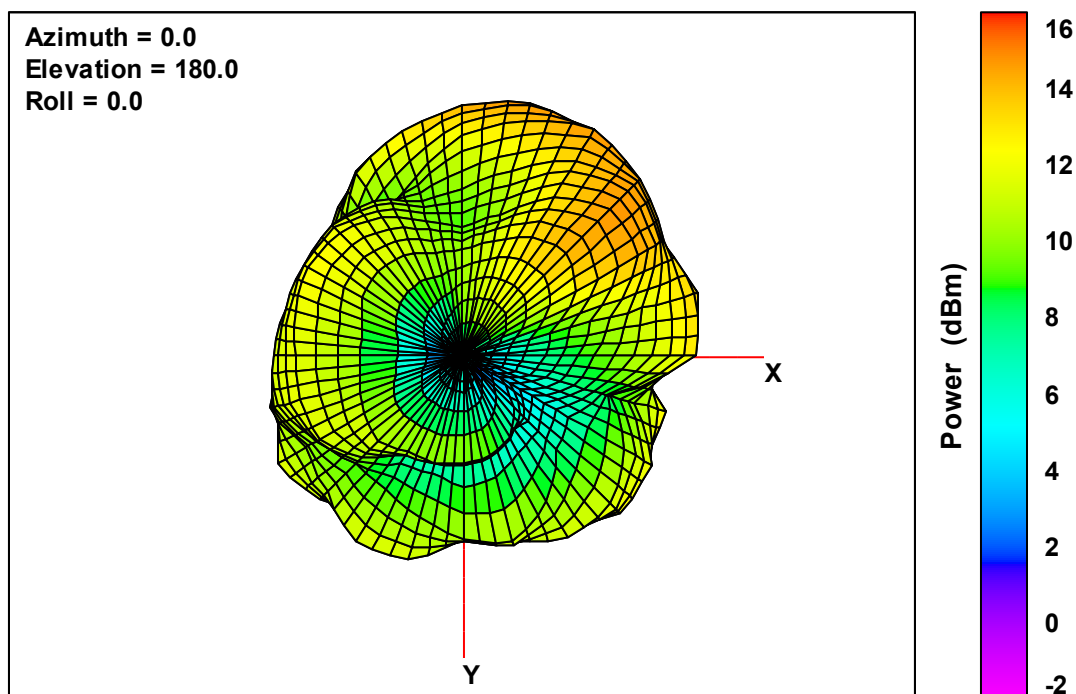
### 7.1.11 Antenna 1 5745 MHz

**Total EIRP, Top View**



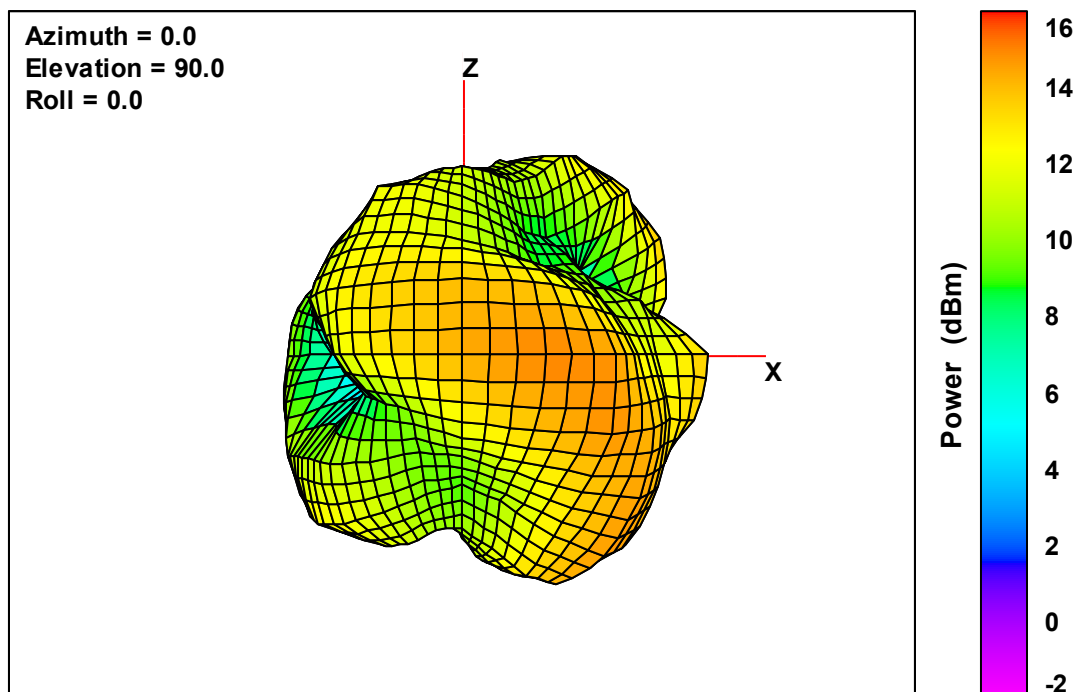
**Ant. 1 Free-Space Total EIRP, Top View, 5745 MHz**

**Total EIRP, Bottom View**



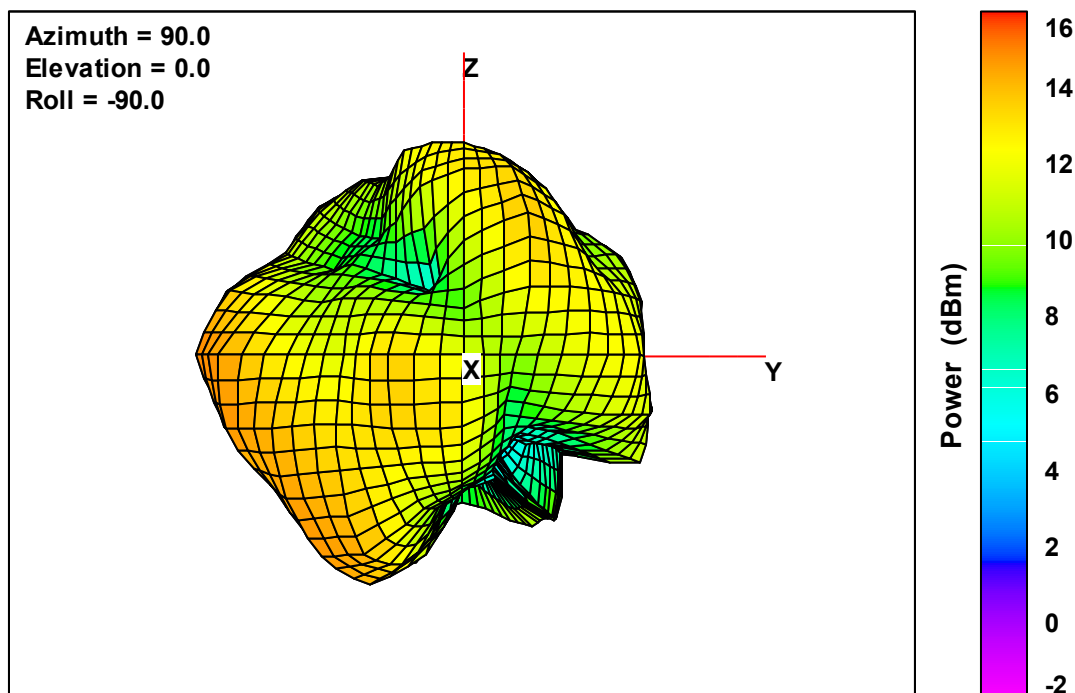
**Ant. 1 Free-Space Total EIRP, Bottom View, 5745 MHz**

### Total EIRP, Left Side View



Ant. 1 Free-Space Total EIRP, Left Side View, 5745 MHz

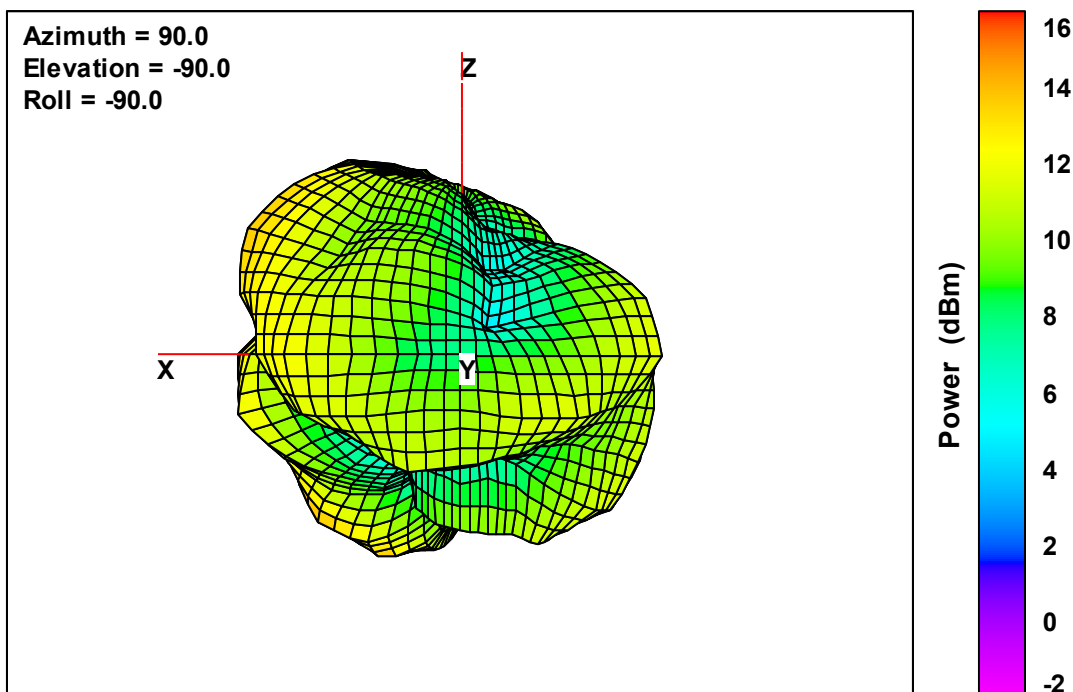
### Total EIRP, Front Face View



Ant. 1 Free-Space Total EIRP, Front Face View, 5745 MHz

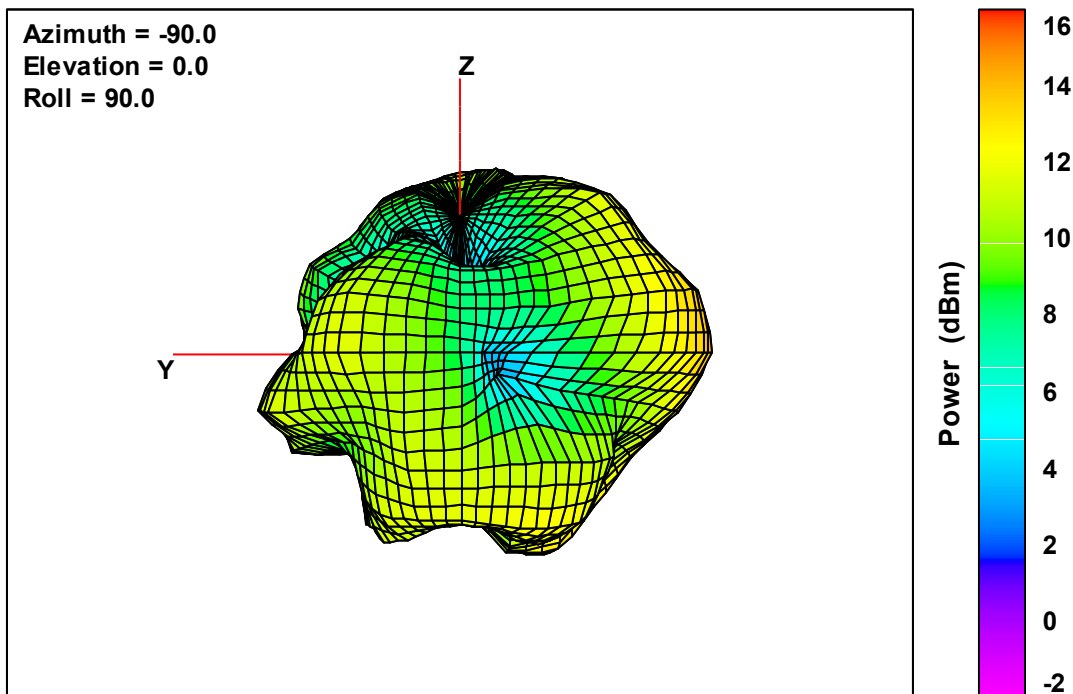


### Total EIRP, Right Side View



Ant. 1 Free-Space Total EIRP, Right Side View, 5745 MHz

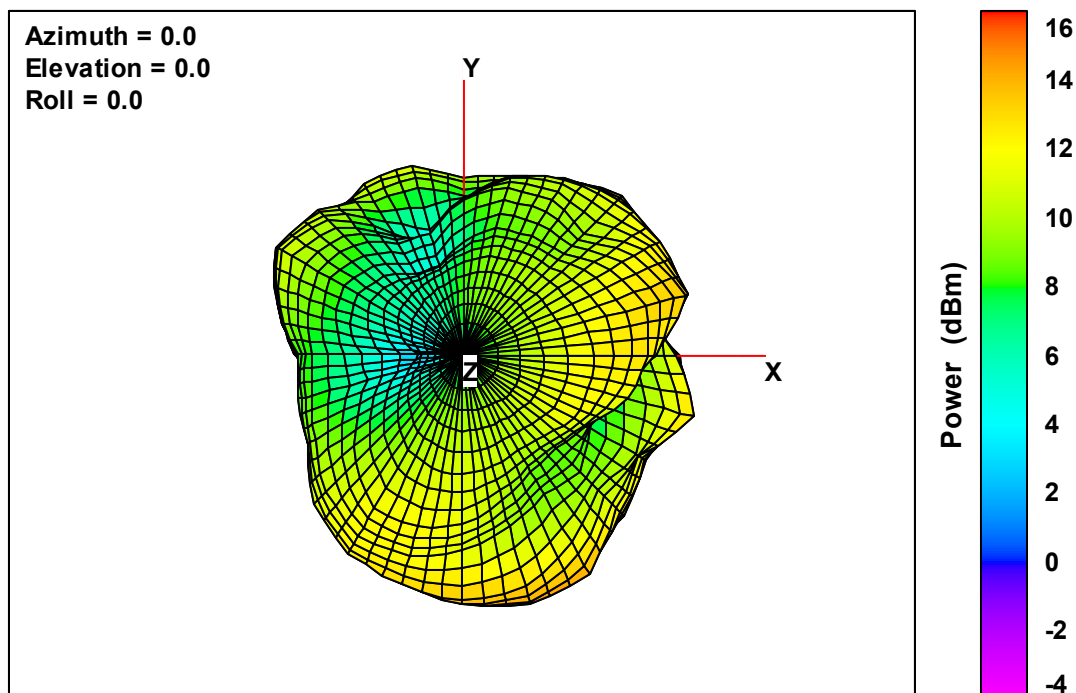
### Total EIRP, Back Face View



Ant. 1 Free-Space Total EIRP, Back Face View, 5745 MHz

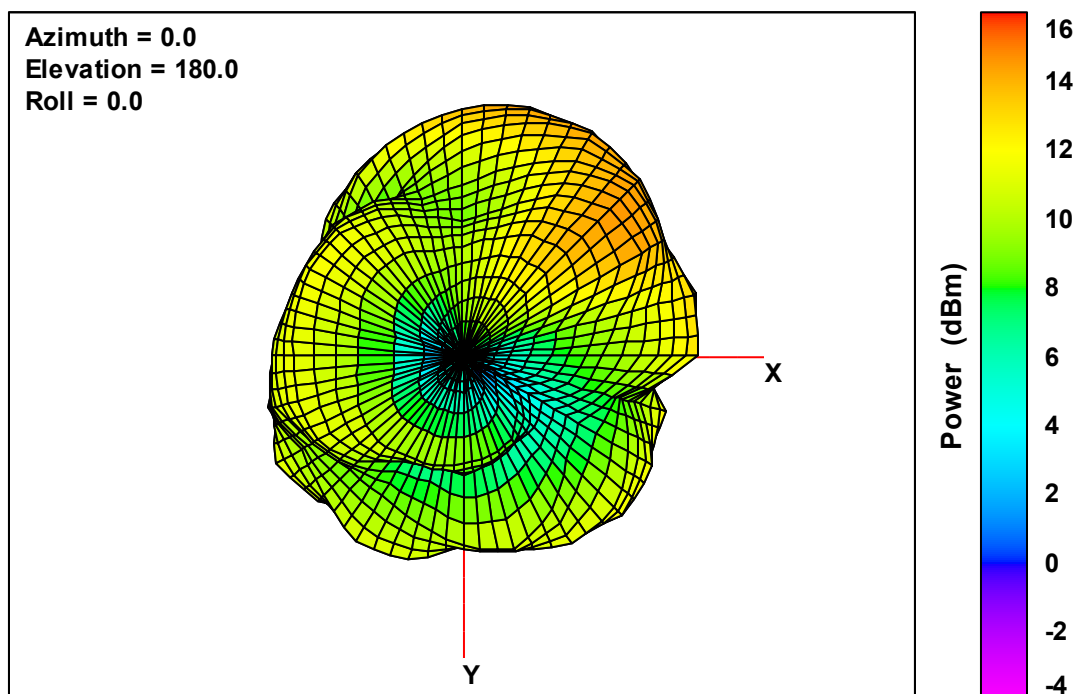
### 7.1.12 Antenna 1 5785 MHz

**Total EIRP, Top View**



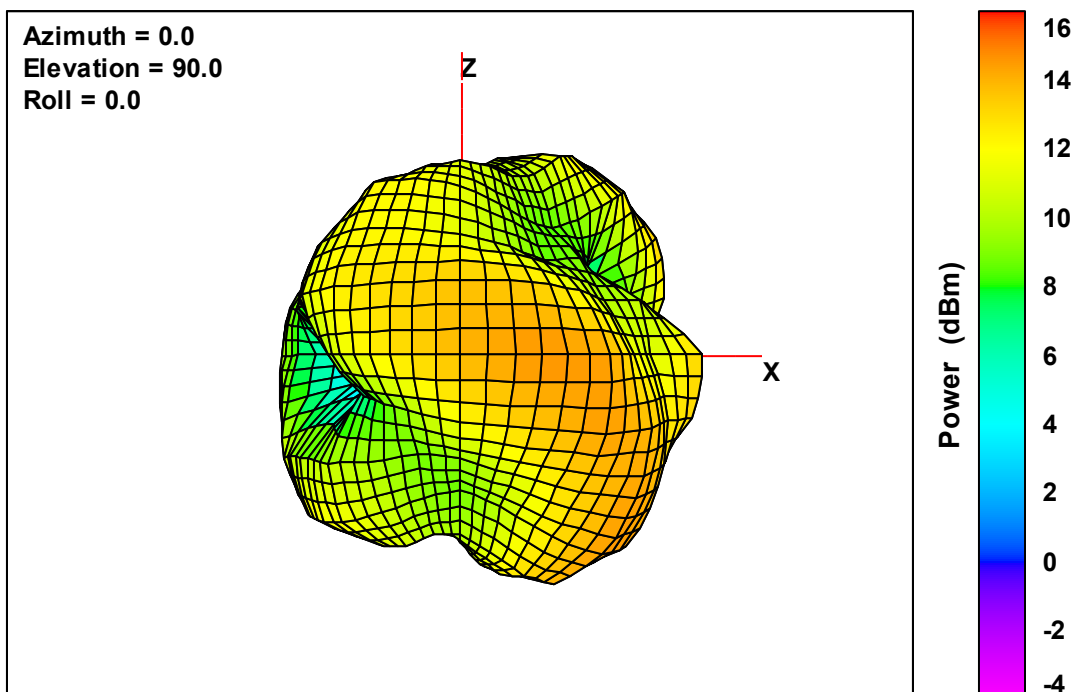
**Ant. 1 Free-Space Total EIRP, Top View, 5785 MHz**

**Total EIRP, Bottom View**



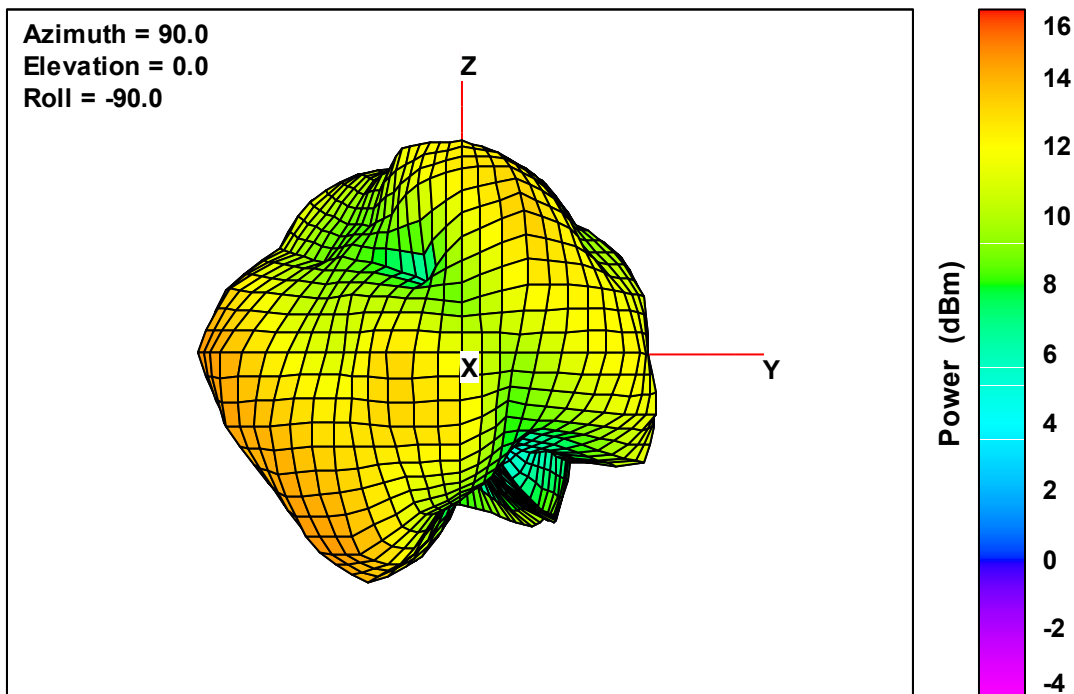
**Ant. 1 Free-Space Total EIRP, Bottom View, 5785 MHz**

### Total EIRP, Left Side View



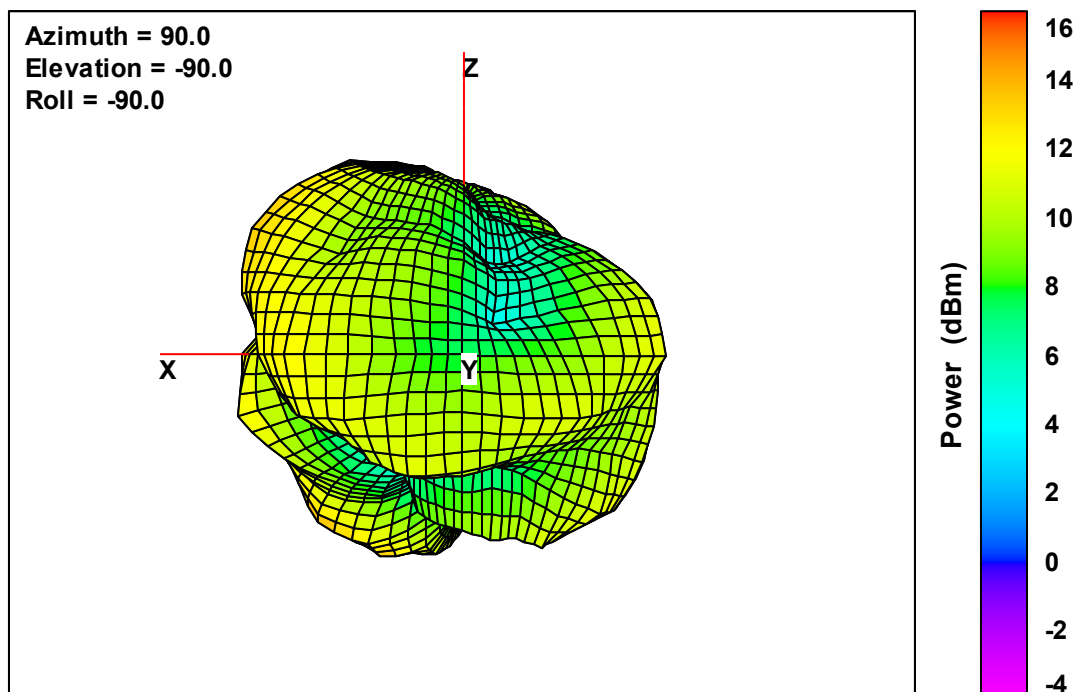
Ant. 1 Free-Space Total EIRP, Left Side View, 5785 MHz

### Total EIRP, Front Face View



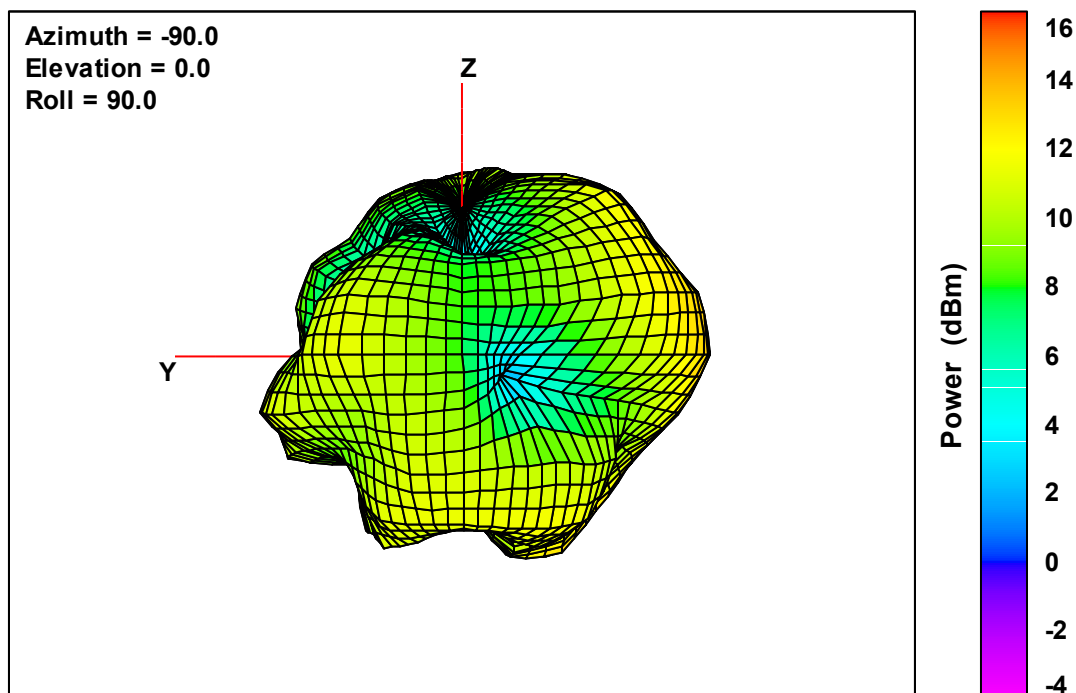
Ant. 1 Free-Space Total EIRP, Front Face View, 5785 MHz

### Total EIRP, Right Side View



Ant. 1 Free-Space Total EIRP, Right Side View, 5785 MHz

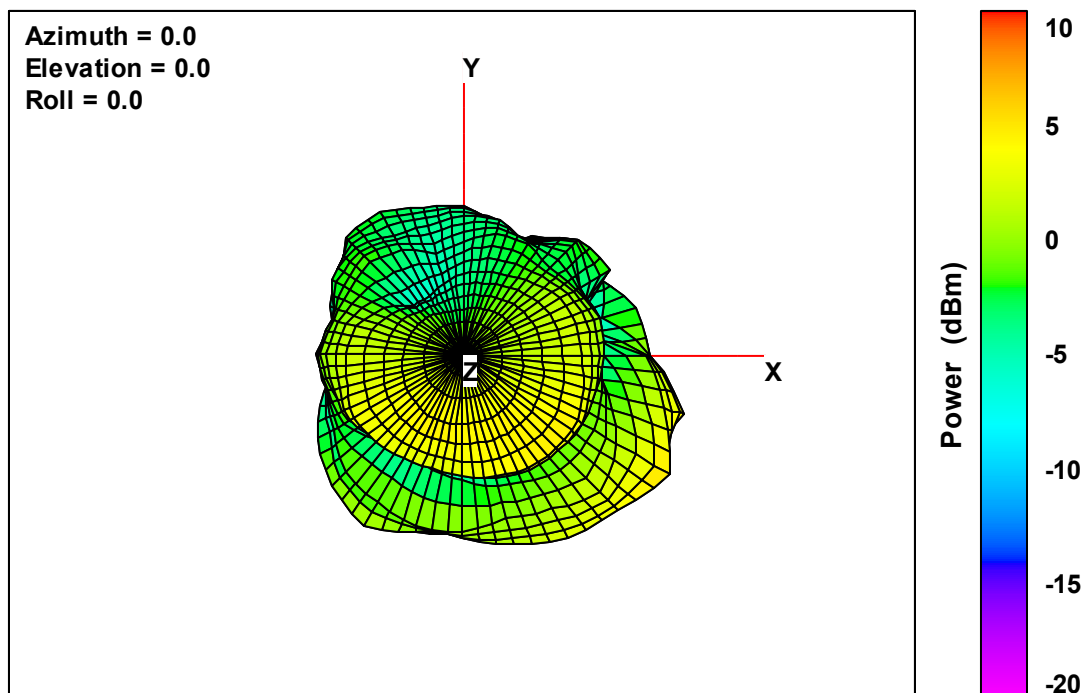
### Total EIRP, Back Face View



Ant. 1 Free-Space Total EIRP, Back Face View, 5785 MHz

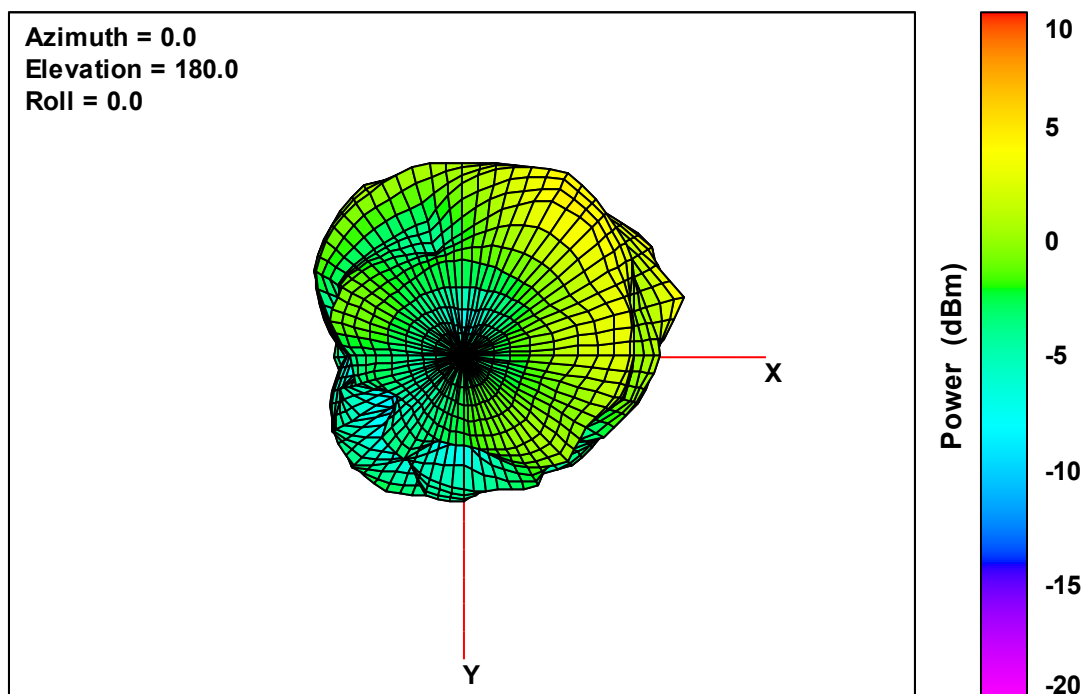
### 7.1.13 Antenna 1 5825 MHz

**Total EIRP, Top View**



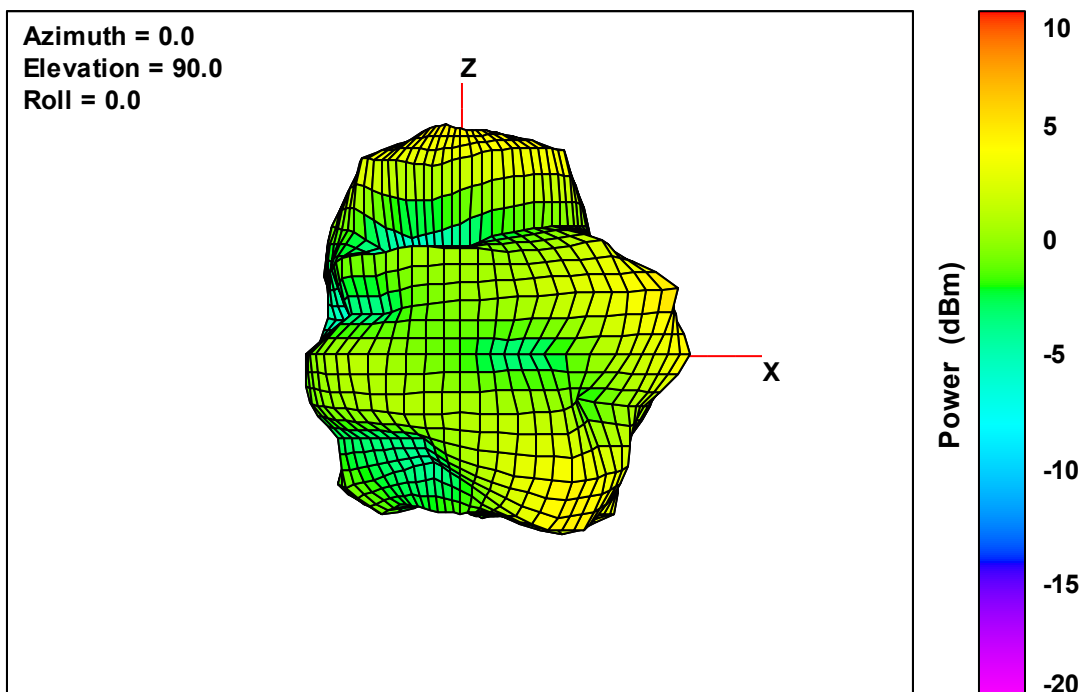
**Ant. 1 Free-Space Total EIRP, Top View, 5825 MHz**

**Total EIRP, Bottom View**



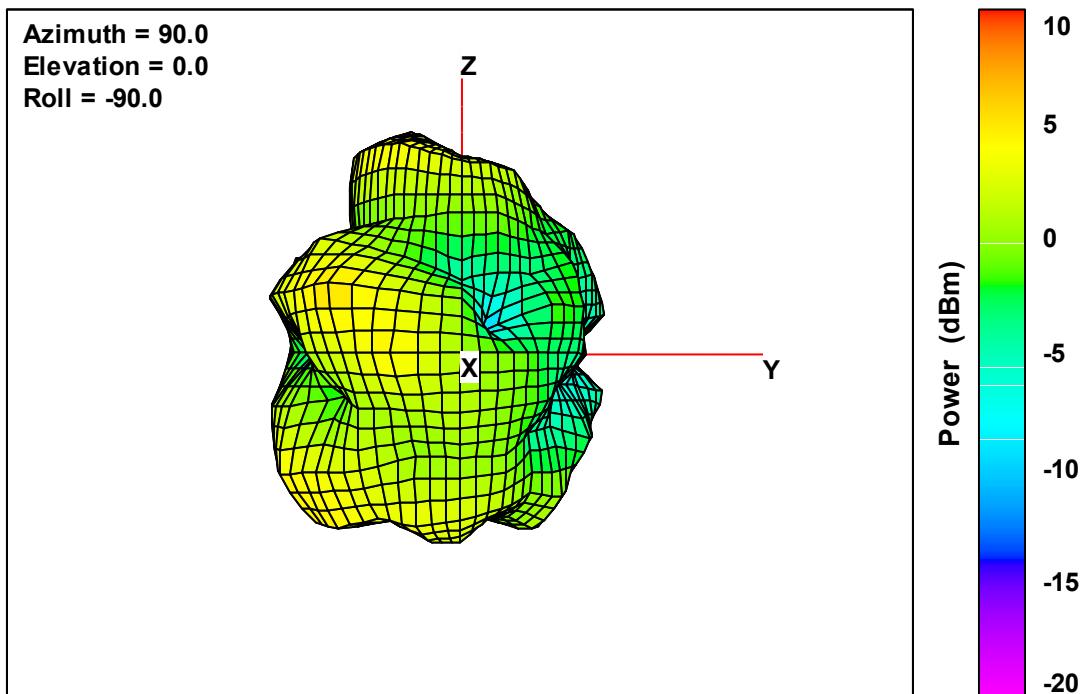
**Ant. 1 Free-Space Total EIRP, Bottom View, 5825 MHz**

### Total EIRP, Left Side View



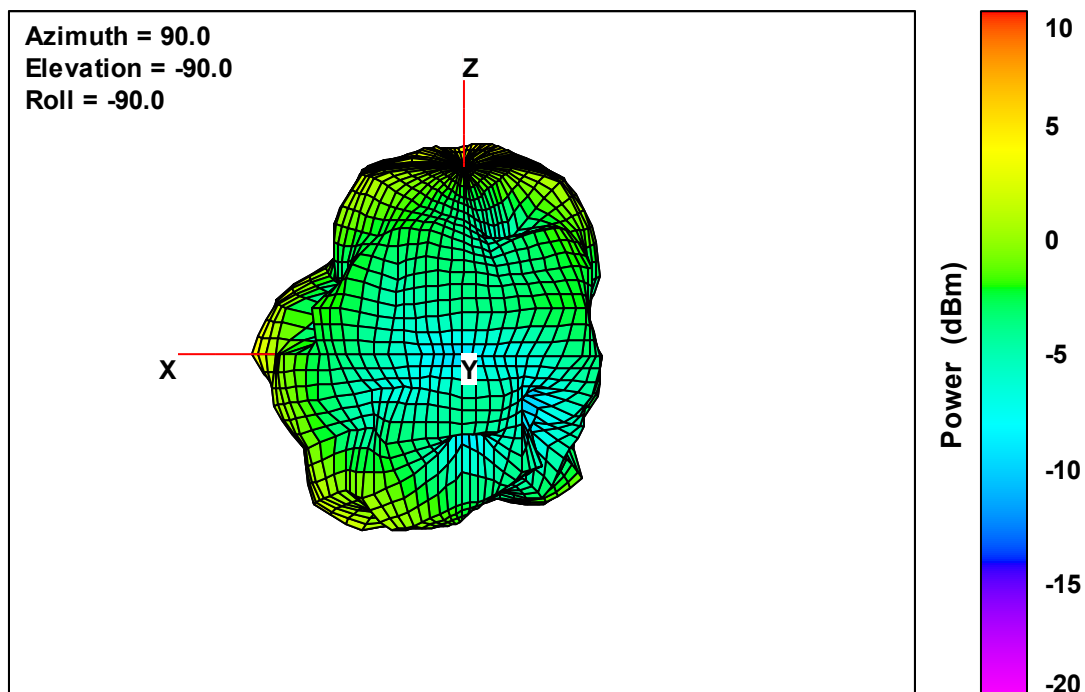
Ant. 1 Free-Space Total EIRP, Left Side View, 5825 MHz

### Total EIRP, Front Face View



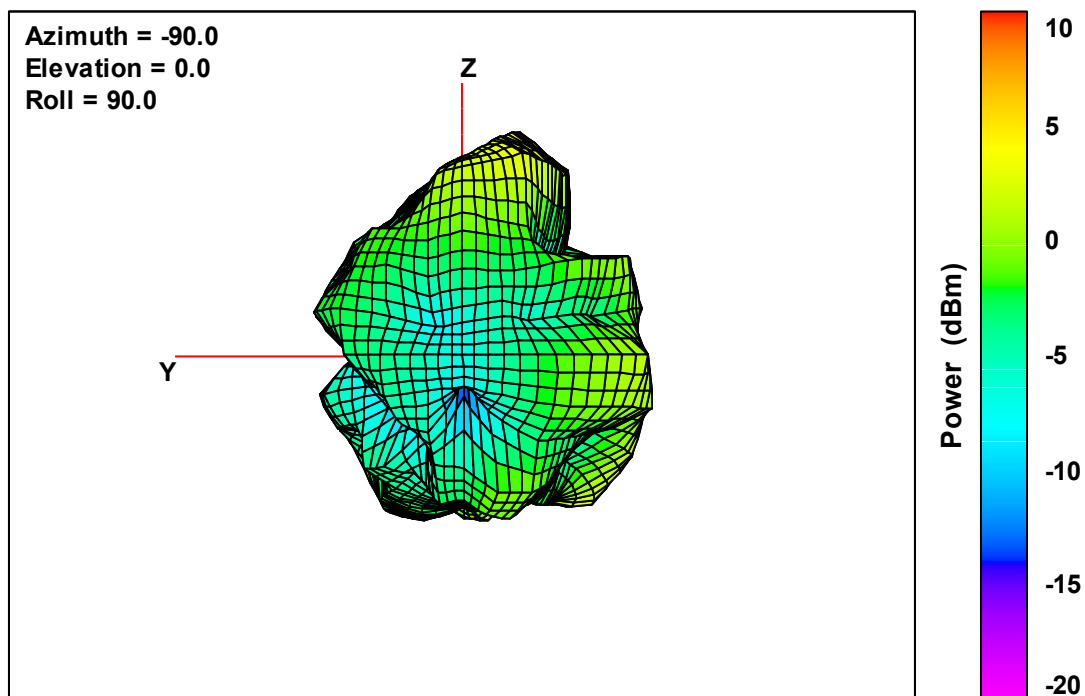
Ant. 1 Free-Space Total EIRP, Front Face View, 5825 MHz

### Total EIRP, Right Side View



Ant. 1 Free-Space Total EIRP, Right Side View, 5825 MHz

### Total EIRP, Back Face View

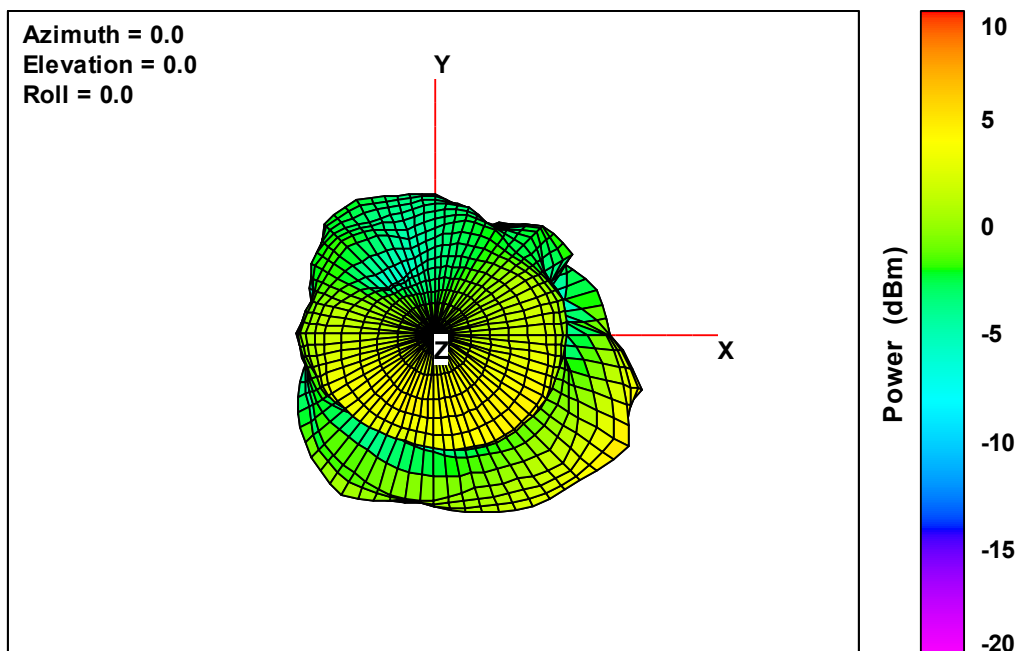


Ant. 1 Free-Space Total EIRP, Back Face View, 5825 MHz

## 7.2 Antenna 2 3D Plots

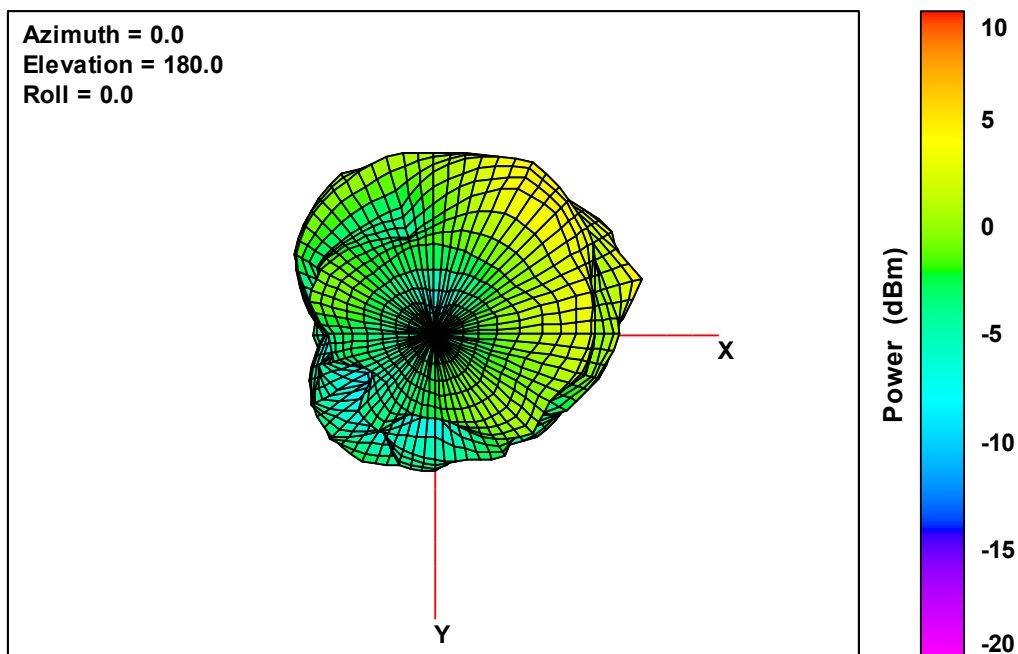
### 7.2.1 Antenna 2 2412 MHz

Total EIRP, Top View



Ant. 1 Free-Space Total EIRP, Top View, 5825 MHz

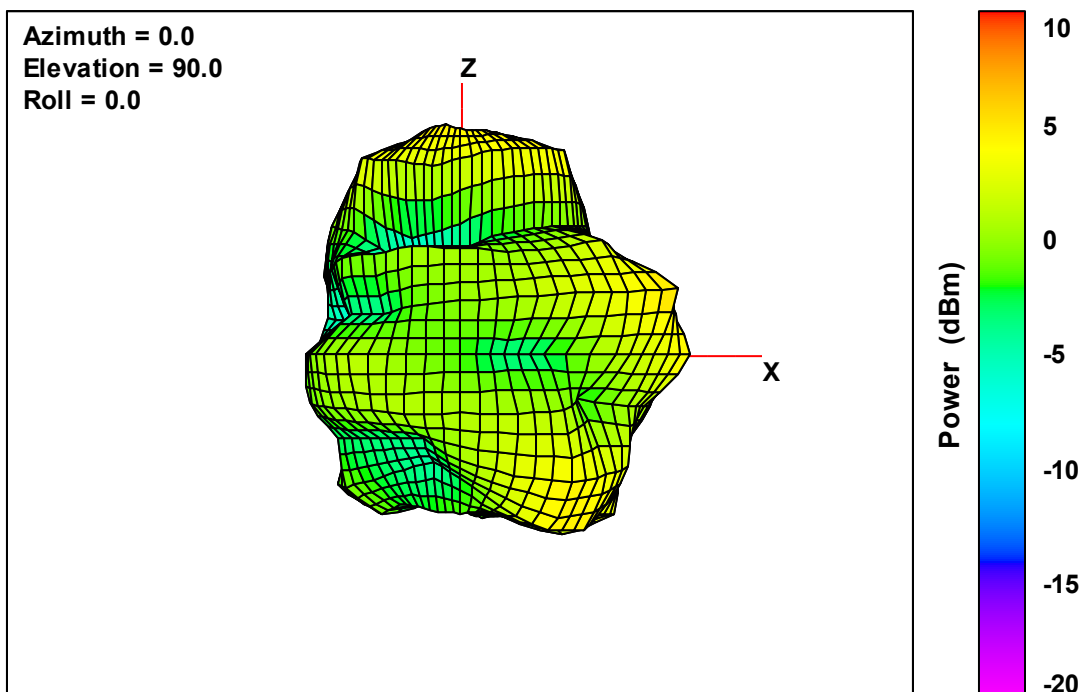
Total EIRP, Bottom View



Ant. 1 Free-Space Total EIRP, Bottom View, 5825 MHz

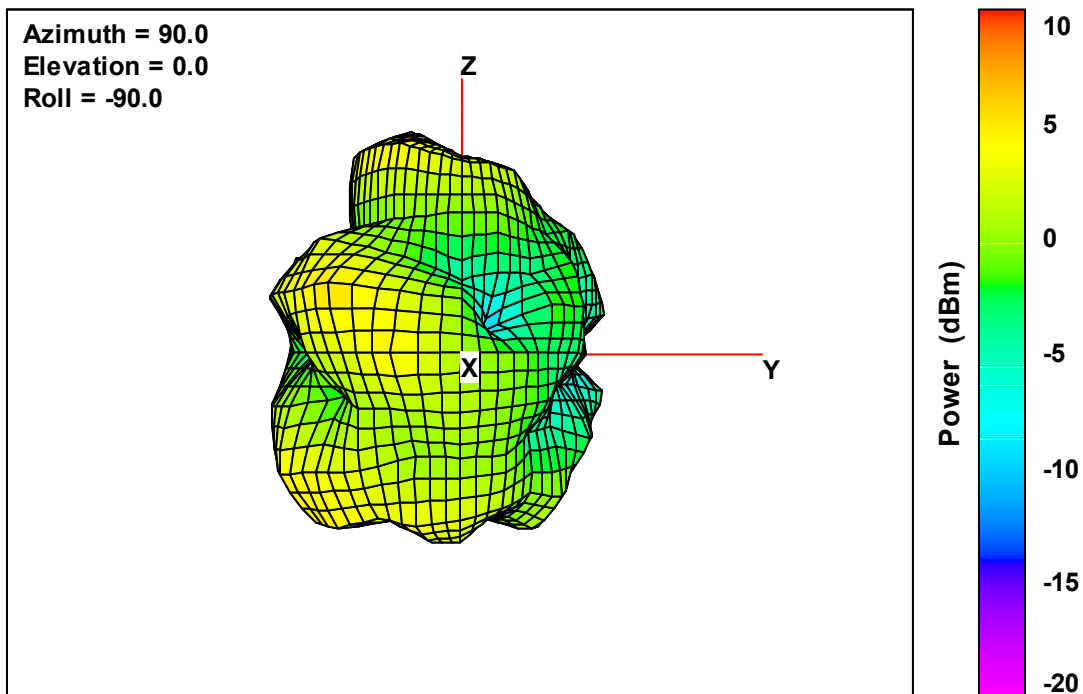


### Total EIRP, Left Side View



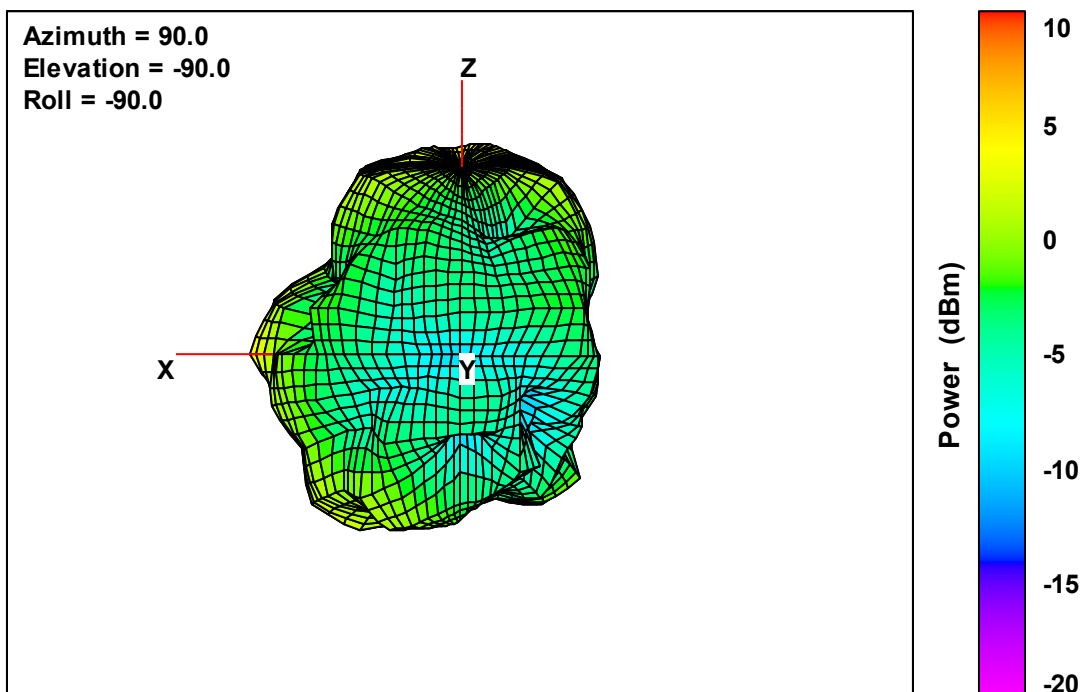
Ant. 1 Free-Space Total EIRP, Left Side View, 5825 MHz

### Total EIRP, Front Face View



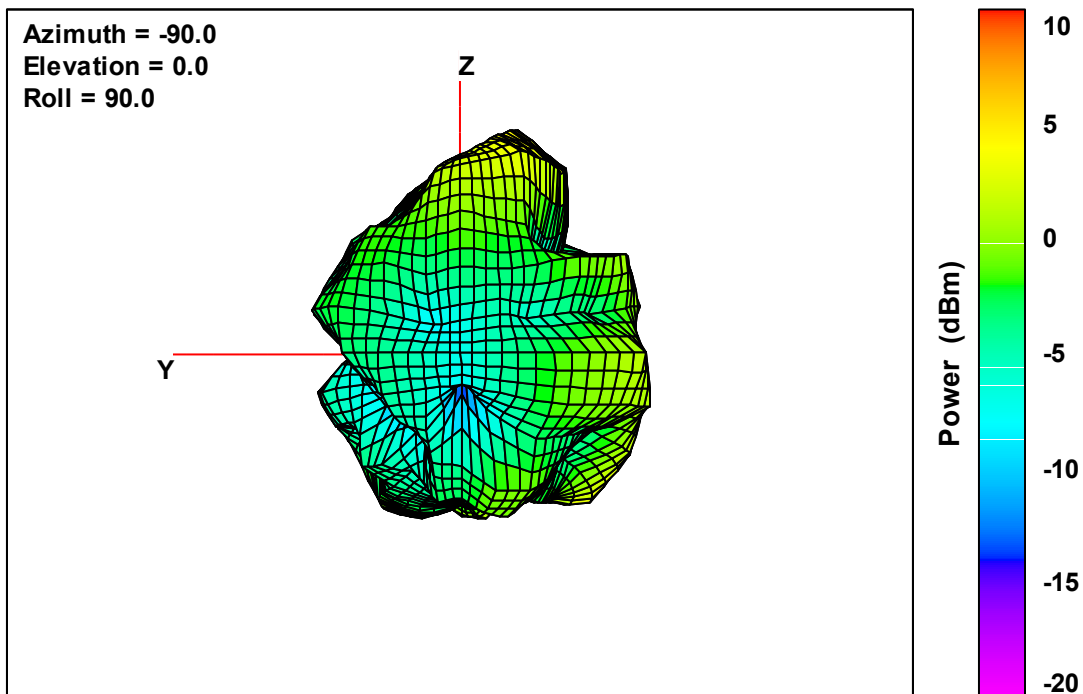
Ant. 1 Free-Space Total EIRP, Front Face View, 5825 MHz

### Total EIRP, Right Side View



Ant. 1 Free-Space Total EIRP, Right Side View, 5825 MHz

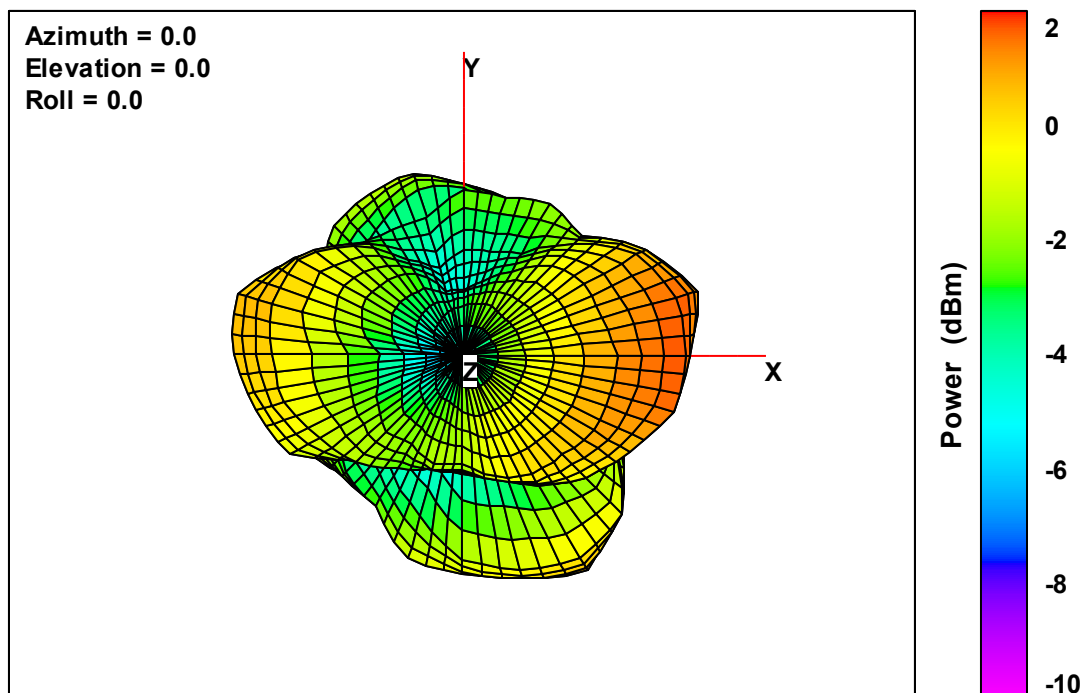
### Total EIRP, Back Face View



Ant. 1 Free-Space Total EIRP, Back Face View, 5825 MHz

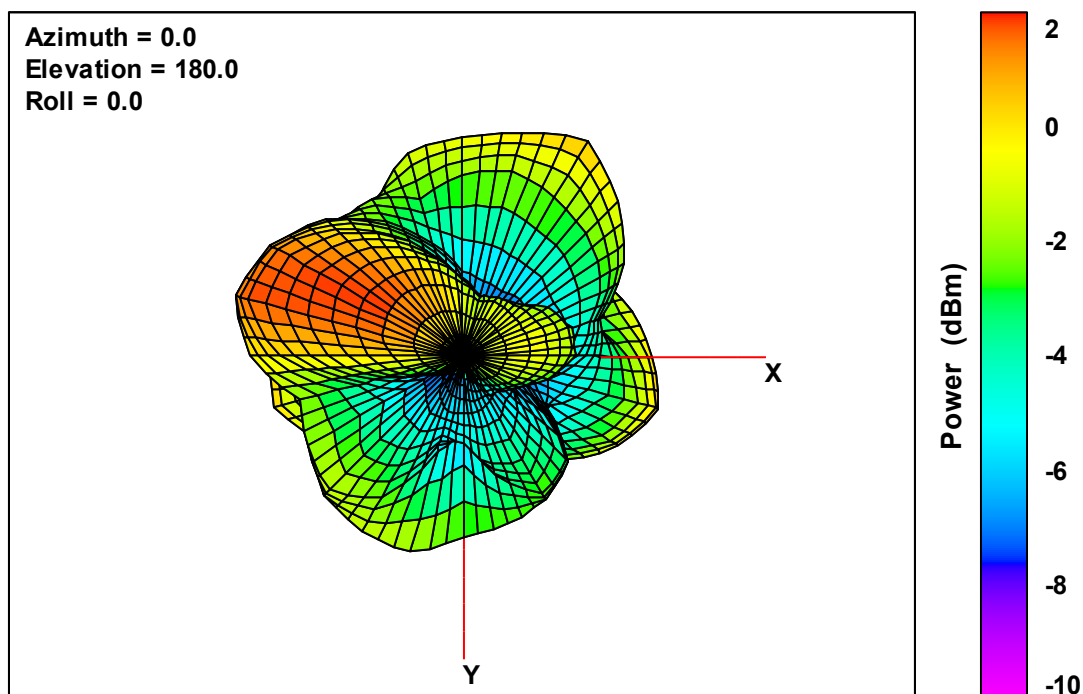
## 7.2.2 Antenna 2 2437 MHz

Total EIRP, Top View



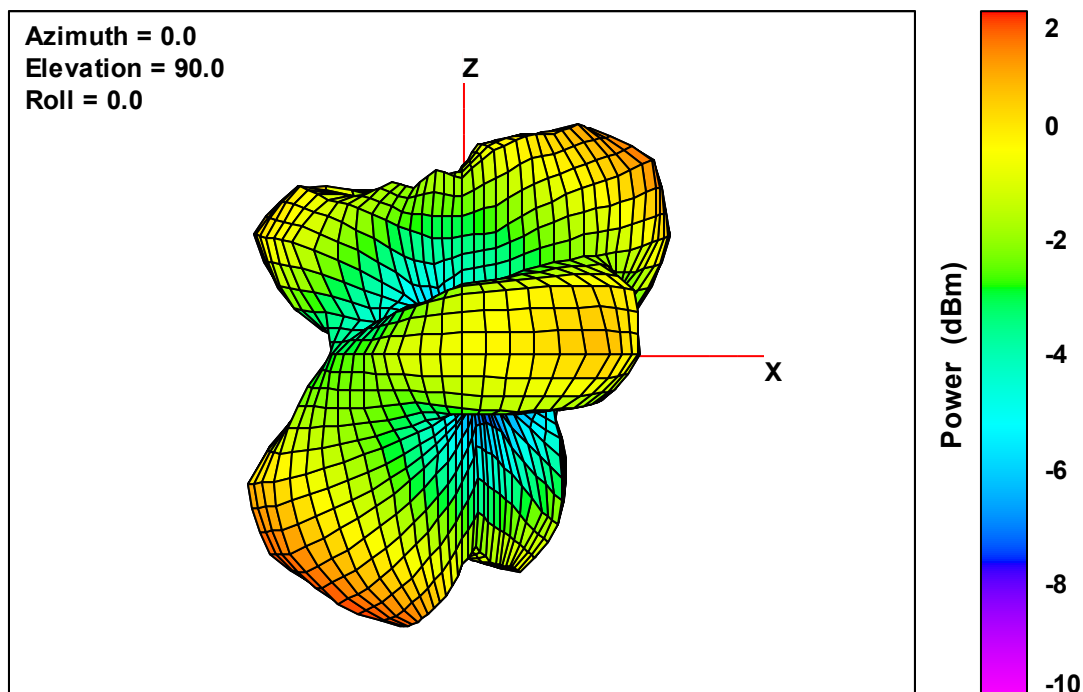
Ant. 2 Free-Space Total EIRP, Top View, 2437 MHz

Total EIRP, Bottom View



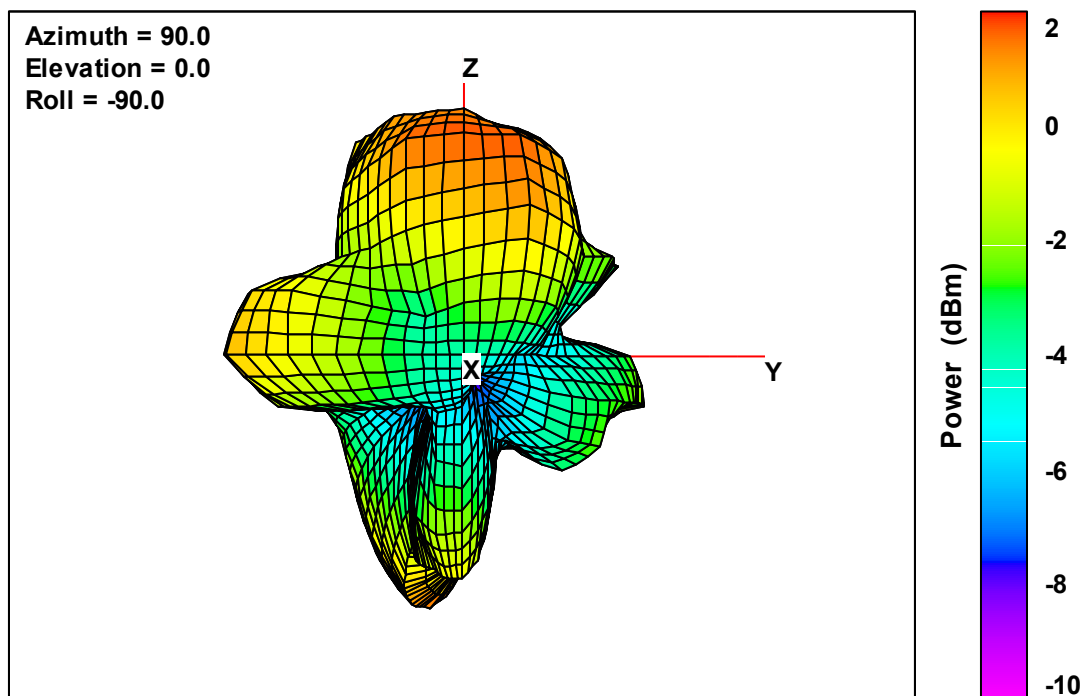
Ant. 2 Free-Space Total EIRP, Bottom View, 2437 MHz

### Total EIRP, Left Side View



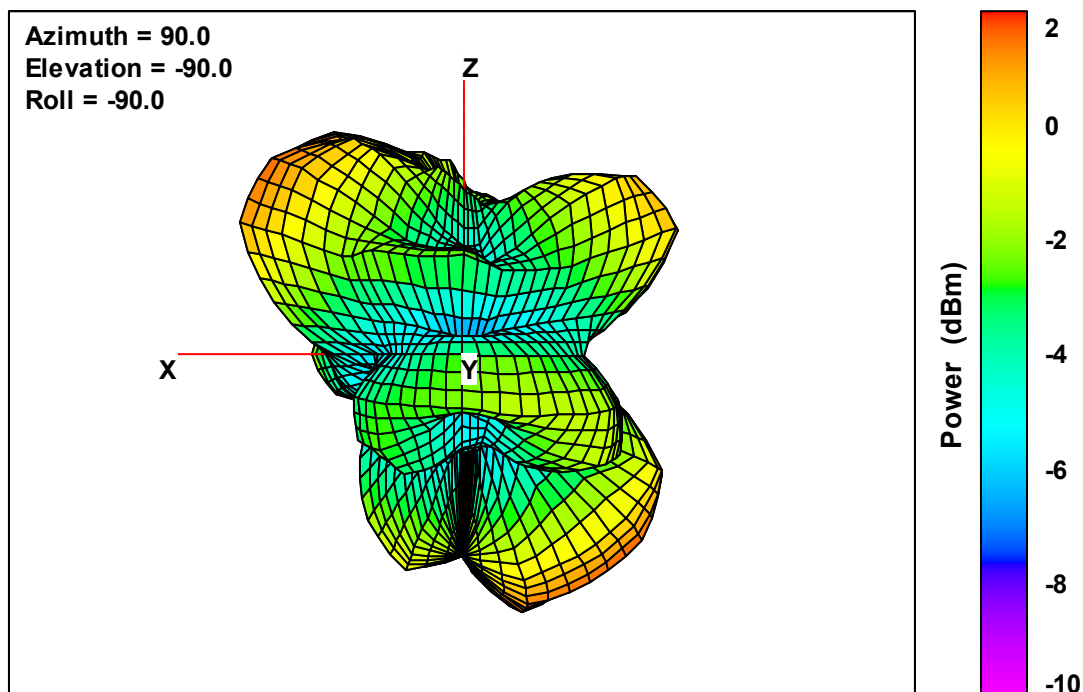
Ant. 2 Free-Space Total EIRP, Left Side View, 2437 MHz

### Total EIRP, Front Face View



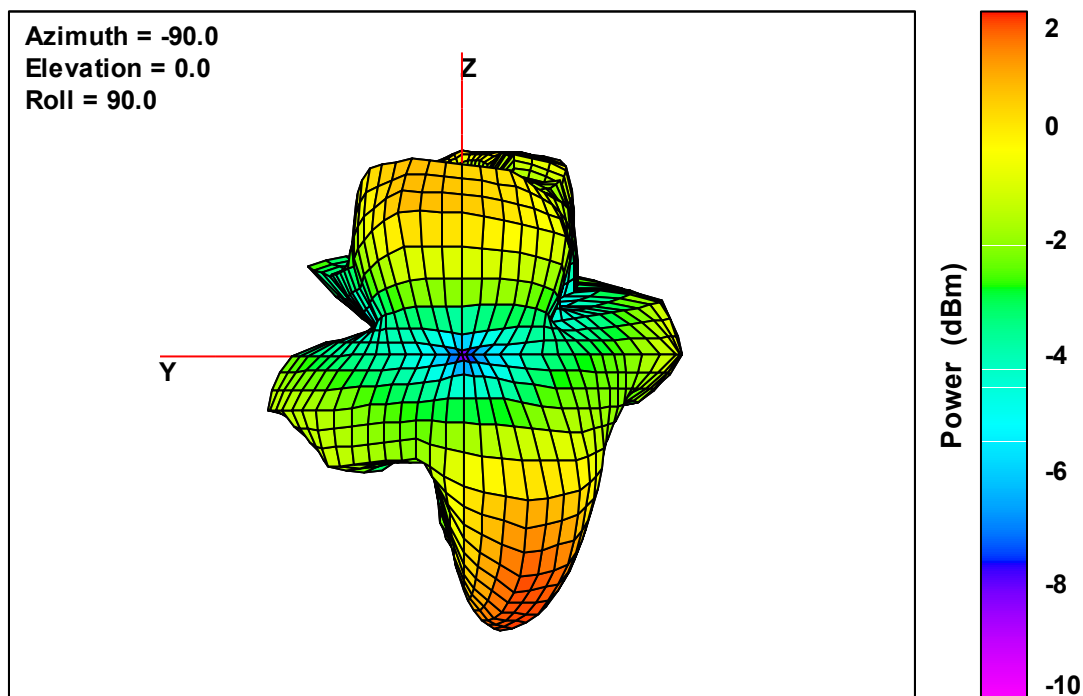
Ant. 2 Free-Space Total EIRP, Front Face View, 2437 MHz

### Total EIRP, Right Side View



Ant. 2 Free-Space Total EIRP, Right Side View, 2437 MHz

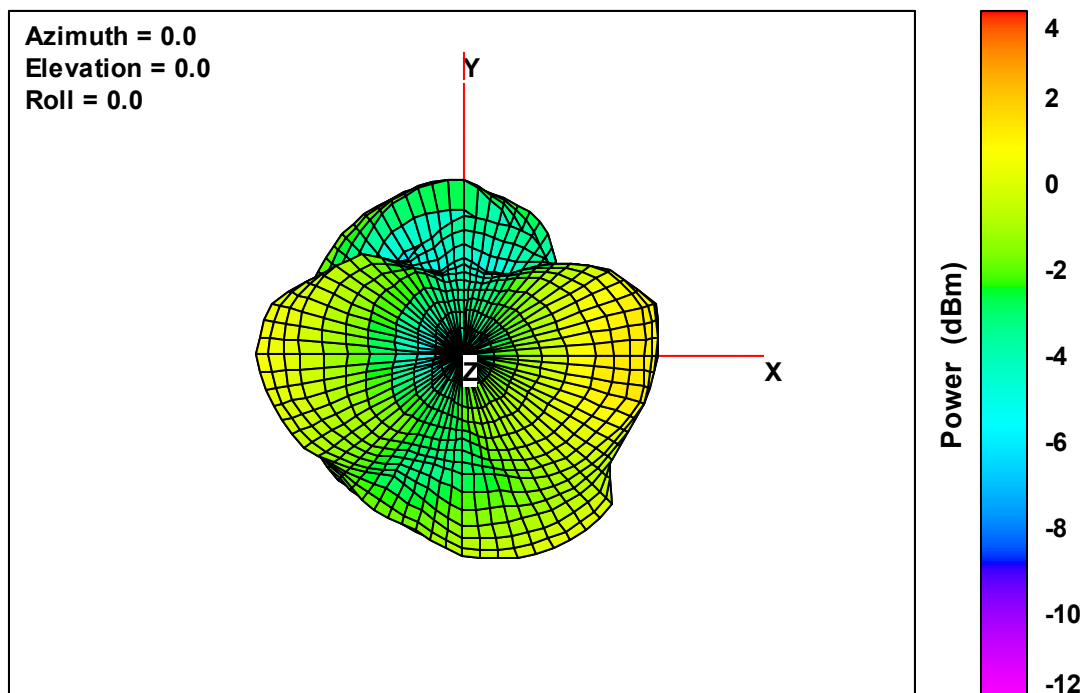
### Total EIRP, Back Face View



Ant. 2 Free-Space Total EIRP, Back Face View, 2437 MHz

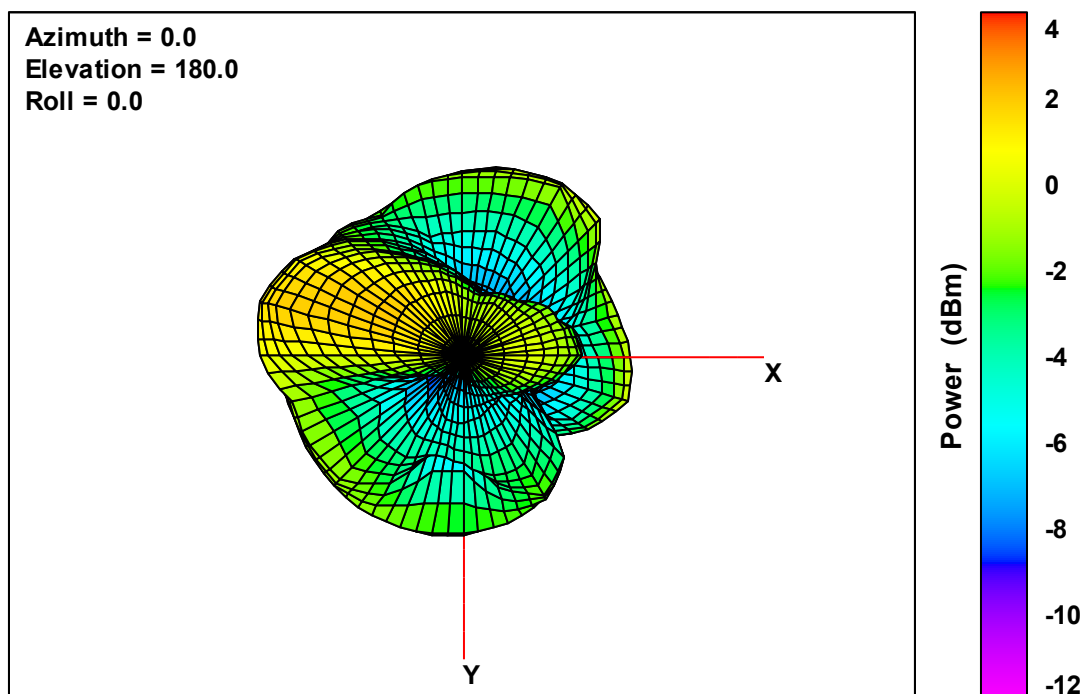
### 7.2.3 Antenna 2 2462 MHz

Total EIRP, Top View



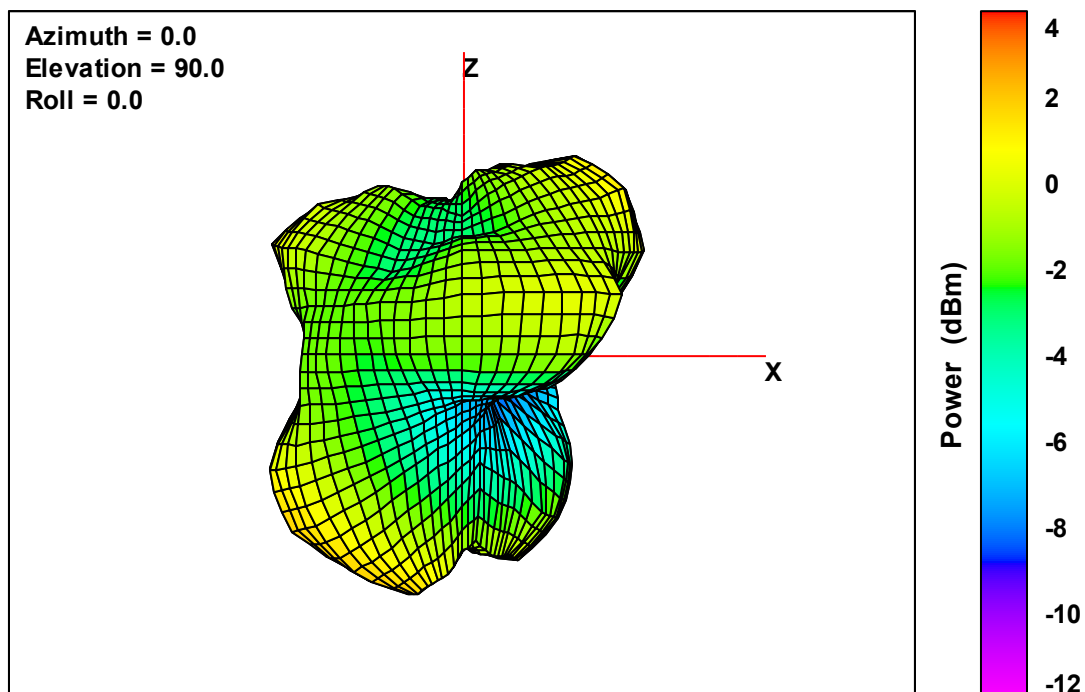
Ant. 2 Free-Space Total EIRP, Top View, 2462 MHz

Total EIRP, Bottom View



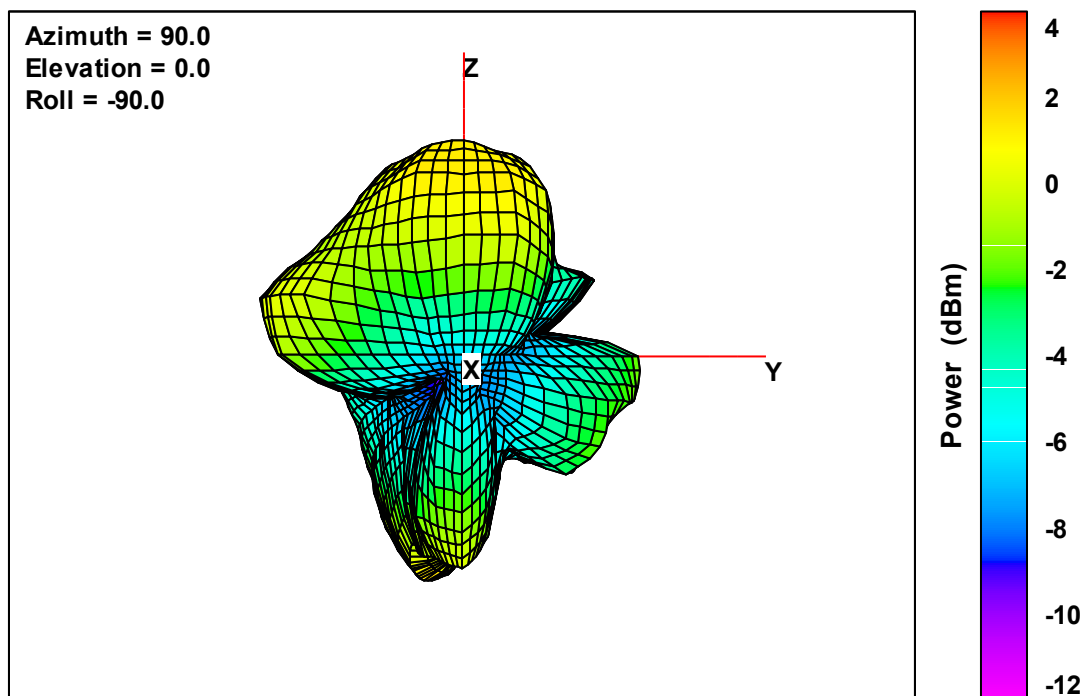
Ant. 2 Free-Space Total EIRP, Bottom View, 2462 MHz

### Total EIRP, Left Side View



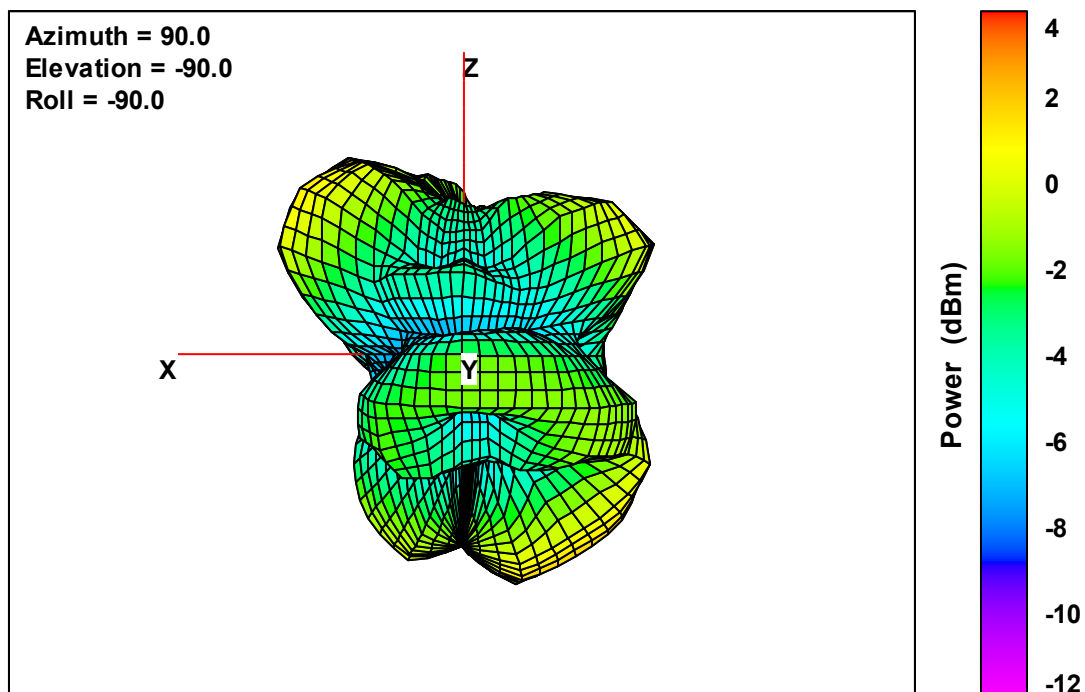
Ant. 2 Free-Space Total EIRP, Left Side View, 2462 MHz

### Total EIRP, Front Face View



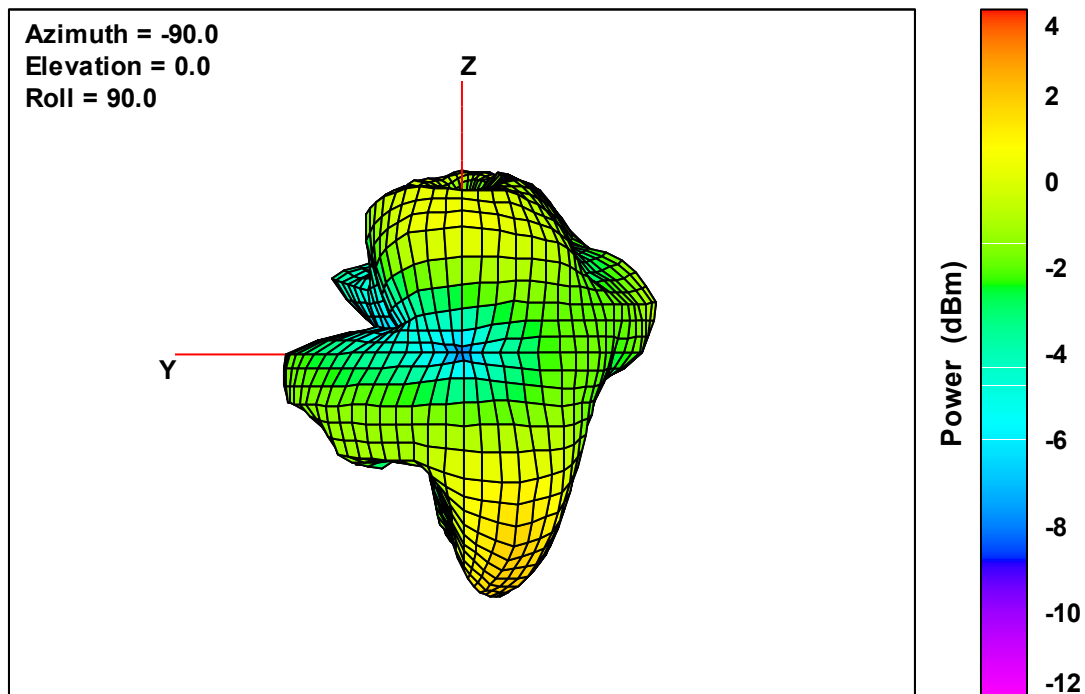
Ant. 2 Free-Space Total EIRP, Front Face View, 2462 MHz

### Total EIRP, Right Side View



Ant. 2 Free-Space Total EIRP, Right Side View, 2462 MHz

### Total EIRP, Back Face View



Ant. 2 Free-Space Total EIRP, Back Face View, 2462 MHz