

Antenna Gain and Pattern Measurement Report

Model Name: EIM4010

DATE ISSUED: Oct 6, 2025.

Prepared By
RESIDEO TECHNOLOGIES INC.
2 CORPORATE CENTER DRIVE
MELVILLE, NY 11753, U.S.A.

Test Report Revision History				
Revision	Prepared By	Reviewed and Approved By	Revision Detail	Release Date
A	Kuang Peng	Daisy Zheng	Original Release	Oct 6, 2025

Approved and Released By:

Daisy Zheng

Daisy Zheng

Sr Hardware Engineering Supervisor
RESIDEO TECHNOLOGIES INC.

Tested and Prepared By:

Kuang Peng

Kuang Peng

RF ENGINEER III
RESIDEO TECHNOLOGIES INC.

Table of Contents

1. Test Methodology	5
2. Test and Measurement Equipment	5
3. Device Under Test Information.....	5
4. Result Summary	6
5. Plots	7
5.1 Antenna A (short edge of PCB) – 903.0 MHz 3D Passive	7
5.2 Antenna A (short edge of PCB) – 914.6 MHz 3D Passive	10
5.3 Antenna A (short edge of PCB) – 926.4 MHz 3D Passive	13
5.4 Antenna B (long edge of PCB) – 903.0 MHz 3D Passive.....	16
5.5 Antenna B (long edge of PCB) – 914.6.0 MHz 3D Passive.....	19
5.6 Antenna B (long edge of PCB) – 926.4 MHz 3D Passive.....	22
6. Test Setup	25

Figure 1. EIM4010 Antenna A 903.0 MHz Front View	7
Figure 2. EIM4010 Antenna A 903.0 MHz Back View	7
Figure 3. EIM4010 Antenna A 903.0 MHz Top View.....	8
Figure 4. EIM4010 Antenna A 903.0 MHz Bottom View.....	8
Figure 5. EIM4010 Antenna A 903.0 MHz Left Side View	9
Figure 6. EIM4010 Antenna A 903.0 MHz Right Side View	9
Figure 7. EIM4010 Antenna A 914.6 MHz Front View	10
Figure 8. EIM4010 Antenna A 914.6 MHz Back View	10
Figure 9. EIM4010 Antenna A 914.6 MHz Top View.....	11
Figure 10. EIM4010 Antenna A 914.6 MHz Bottom View.....	11
Figure 11. EIM4010 Antenna A 914.6 MHz Left Side View	12
Figure 12. EIM4010 Antenna A 914.6 MHz Right Side View	12
Figure 13. EIM4010 Antenna A 926.4 MHz Front View	13
Figure 14. EIM4010 Antenna A 926.4 MHz Back View	13
Figure 15. EIM4010 Antenna A 926.4 MHz Top View.....	14
Figure 16. EIM4010 Antenna A 926.4 MHz Bottom View.....	14
Figure 17. EIM4010 Antenna A 926.4 MHz Left Side View	15
Figure 18. EIM4010 Antenna A 926.4 MHz Right Side View	15
Figure 19. EIM4010 Antenna B 903.0 MHz Front View	16
Figure 20. EIM4010 Antenna B 903.0 MHz Back View.....	16
Figure 21. EIM4010 Antenna B 903.0 MHz Top View.....	17
Figure 22. EIM4010 Antenna B 903.0 MHz Bottom View	17
Figure 23. EIM4010 Antenna B 903.0 MHz Left Side View	18
Figure 24. EIM4010 Antenna B 903.0 MHz Right Side View	18
Figure 25. EIM4010 Antenna B 914.6 MHz Front View	19
Figure 26. EIM4010 Antenna B 914.6 MHz Back View.....	19
Figure 27. EIM4010 Antenna B 914.6 MHz Top View.....	20
Figure 28. EIM4010 Antenna B 914.6 MHz Bottom View	20
Figure 29. EIM4010 Antenna B 914.6 MHz Left Side View	21
Figure 30. EIM4010 Antenna B 914.6 MHz Right Side View	21
Figure 31. EIM4010 Antenna B 926.4 MHz Front View	22
Figure 32. EIM4010 Antenna B 926.4 MHz Back View.....	22
Figure 33. EIM4010 Antenna B 926.4 MHz Top View.....	23
Figure 34. EIM4010 Antenna B 926.4 MHz Bottom View	23
Figure 35. EIM4010 Antenna B 926.4 MHz Left Side View	24
Figure 36. EIM4010 Antenna B 926.4 MHz Right Side View	24

1. Test Methodology

The 3D passive antenna pattern is measured using a two-axis dual-polarization pattern measurement setup, with the step size for both axes set to 15° and the axis measurement mode set to “stepped.”

2. Test and Measurement Equipment

Description	Manufacturer	Model	Serial No.	Calibration Date
Vector Network Analyzer	Anritsu	MS46522B	1903101	2/27/2025
OTA Test Chamber	ETS-Lindgren	AMS8050		4/12/2025
OTA Test Software	ETS-Lindgren	EMQuest V1.16 Build 24230		

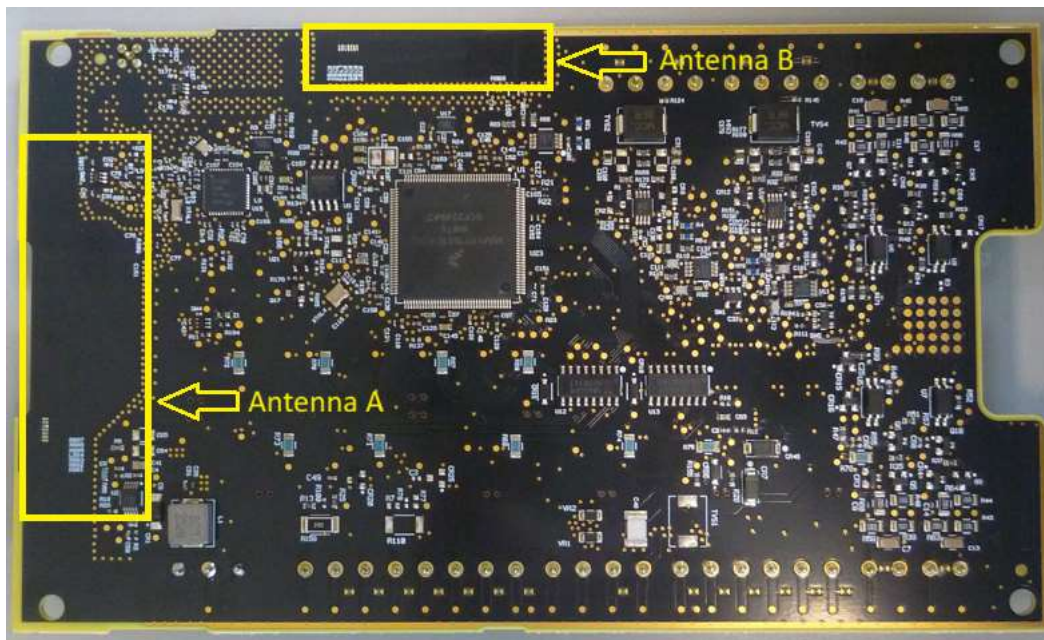
3. Device Under Test Information

- Model name: EIM4010
- Test Frequency (MHz): 903, 914.6, 926.4
- Antenna type: Printed PCB antenna.

4. Result Summary

EIM4010 PCB Antenna A (short edge)	Frequency (MHz)		
	903.0	914.6	926.4
TRP (dBm)	-2.55	-2.94	-3.35
EIRP (dBm)	0.71	0.032	-0.30
Efficiency (dB)	-2.55	-2.94	-3.35
Efficiency (%)	55.56	50.78	46.21
Gain (dBi)	0.71	0.032	-0.30

EIM4010 PCB Antenna B (long edge)	Frequency (MHz)		
	903.0	914.6	926.4
TRP (dBm)	-2.08	-2.00	-2.52
EIRP (dBm)	0.80	0.61	0.33
Efficiency (dB)	-2.08	-2.00	-2.52
Efficiency (%)	61.88	63.09	55.86
Gain (dBi)	0.80	0.61	0.33



5. Plots

5.1 Antenna A (short edge of PCB) – 903.0 MHz 3D Passive

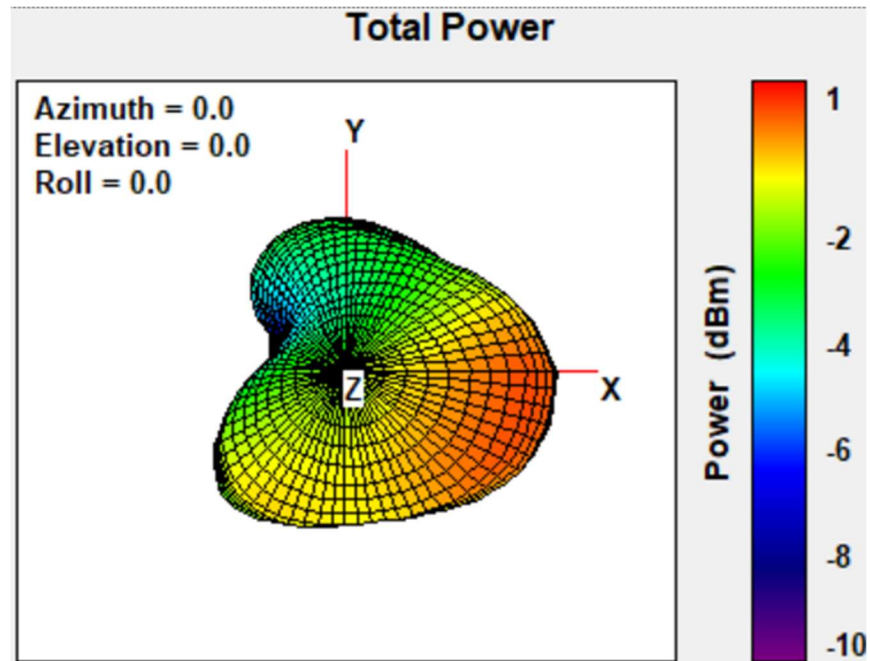


Figure 1. EIM4010 Antenna A 903.0 MHz Front View

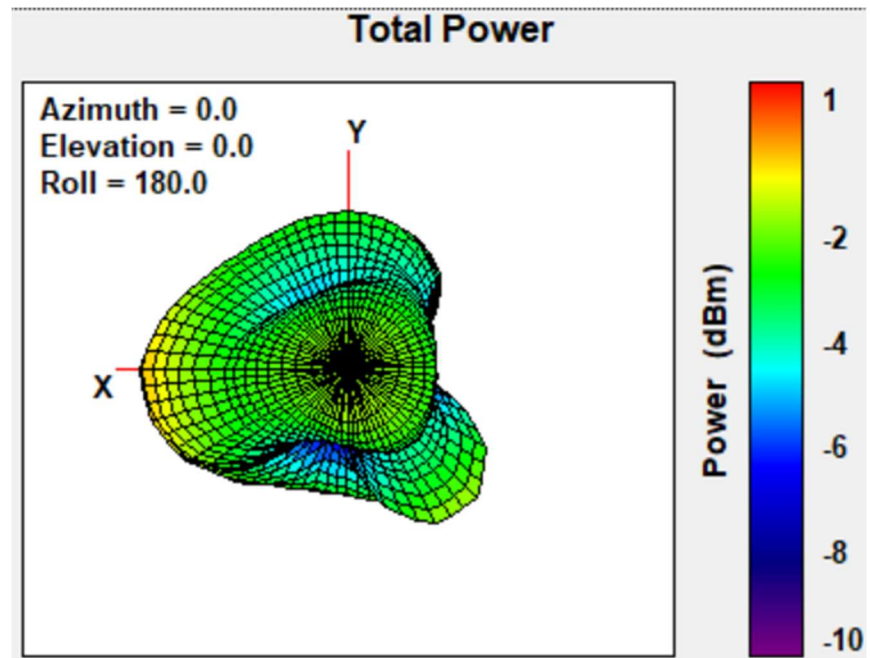


Figure 2. EIM4010 Antenna A 903.0 MHz Back View

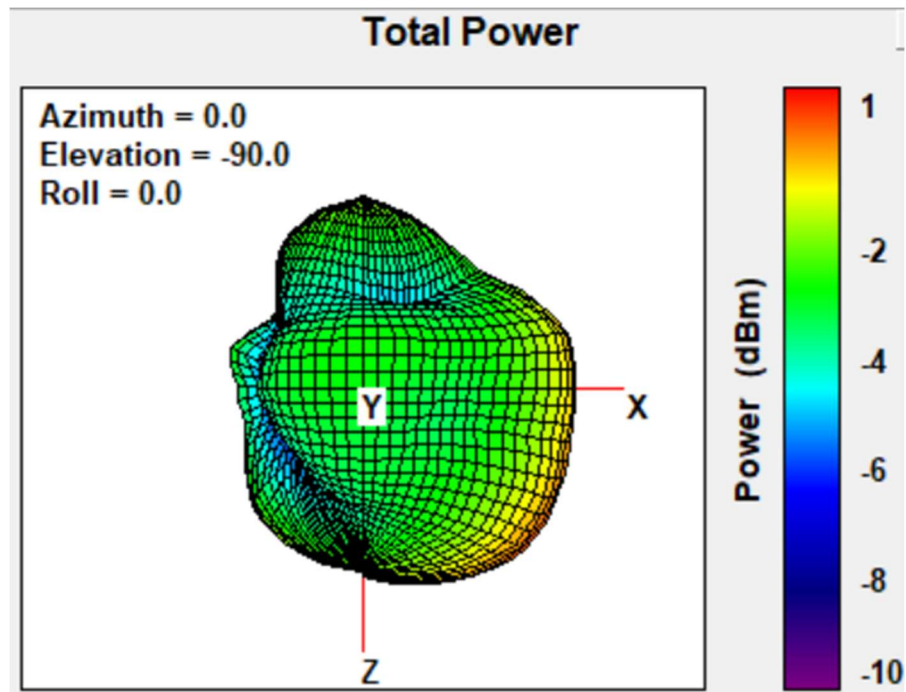


Figure 3. EIM4010 Antenna A 903.0 MHz Top View

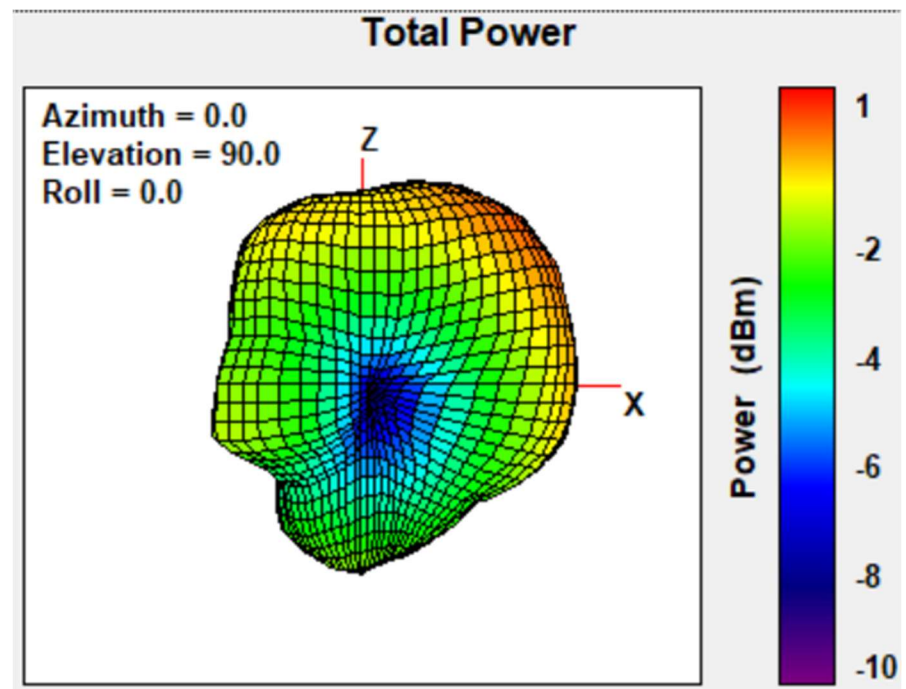


Figure 4. EIM4010 Antenna A 903.0 MHz Bottom View

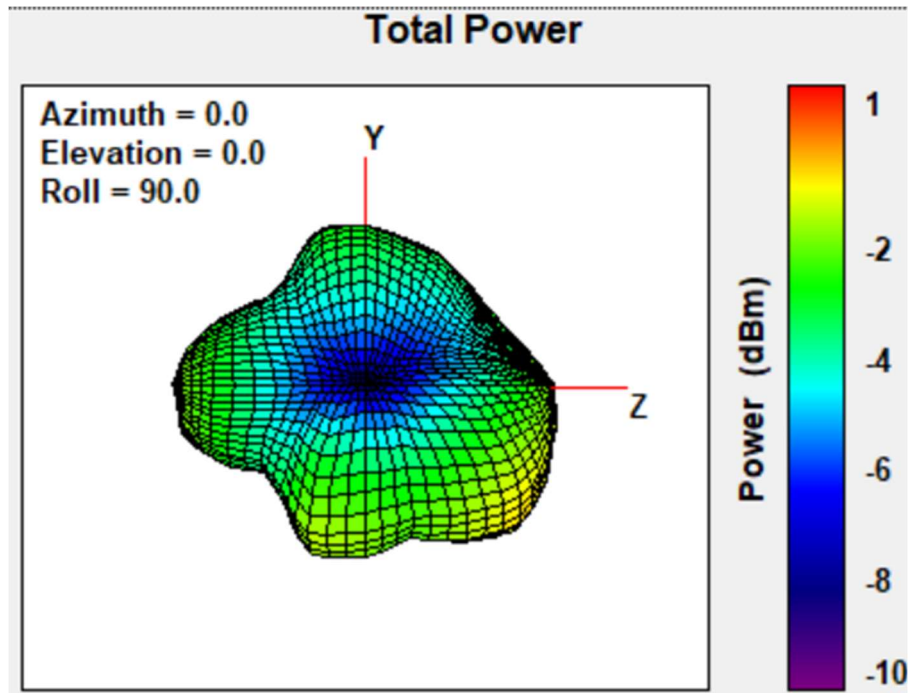


Figure 5. EIM4010 Antenna A 903.0 MHz Left Side View

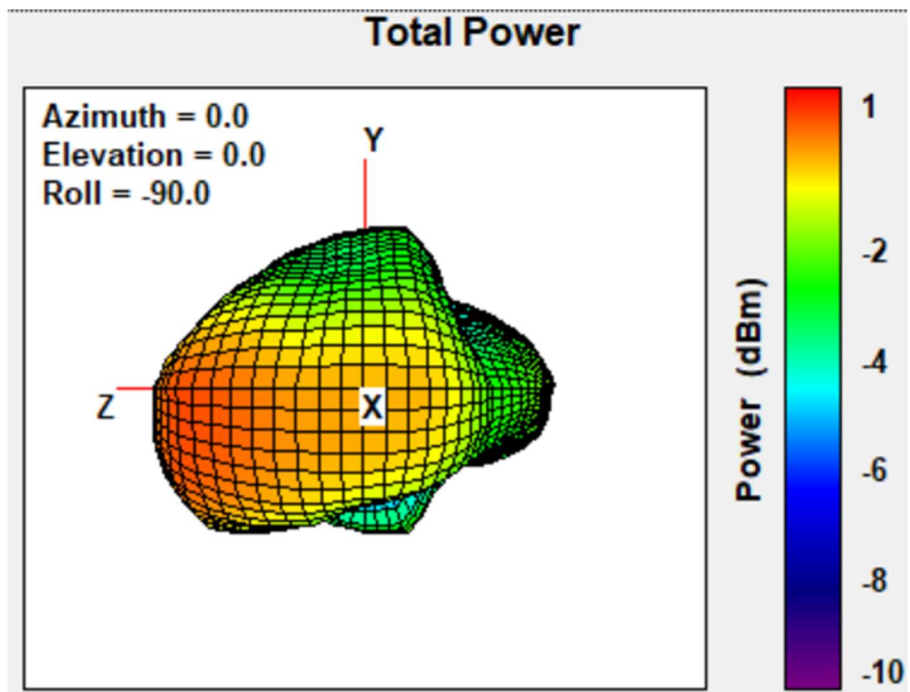


Figure 6. EIM4010 Antenna A 903.0 MHz Right Side View

5.2 Antenna A (short edge of PCB) – 914.6 MHz 3D Passive

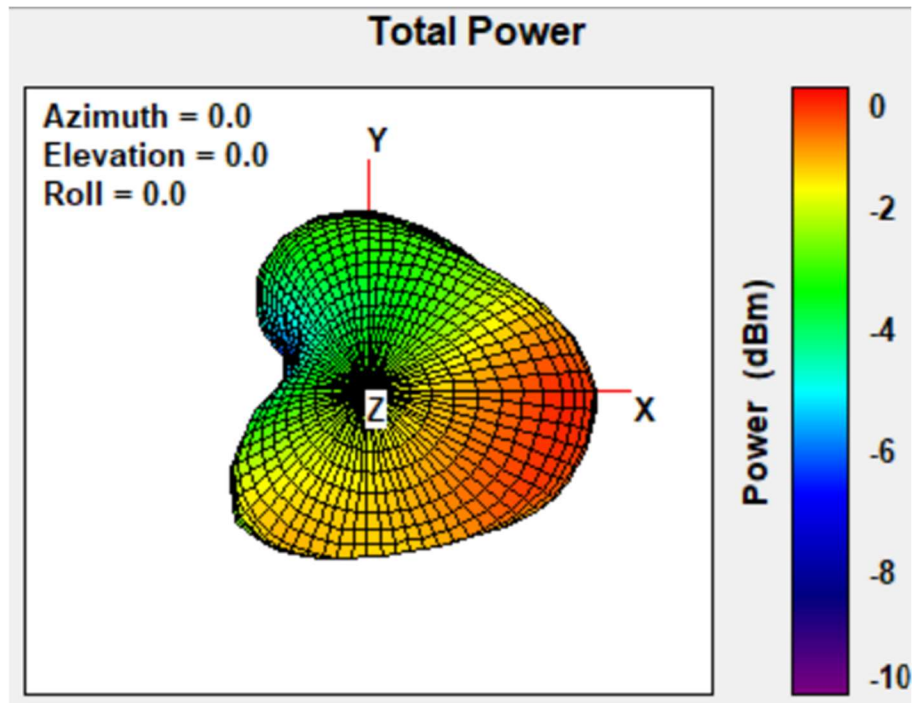


Figure 7. EIM4010 Antenna A 914.6 MHz Front View

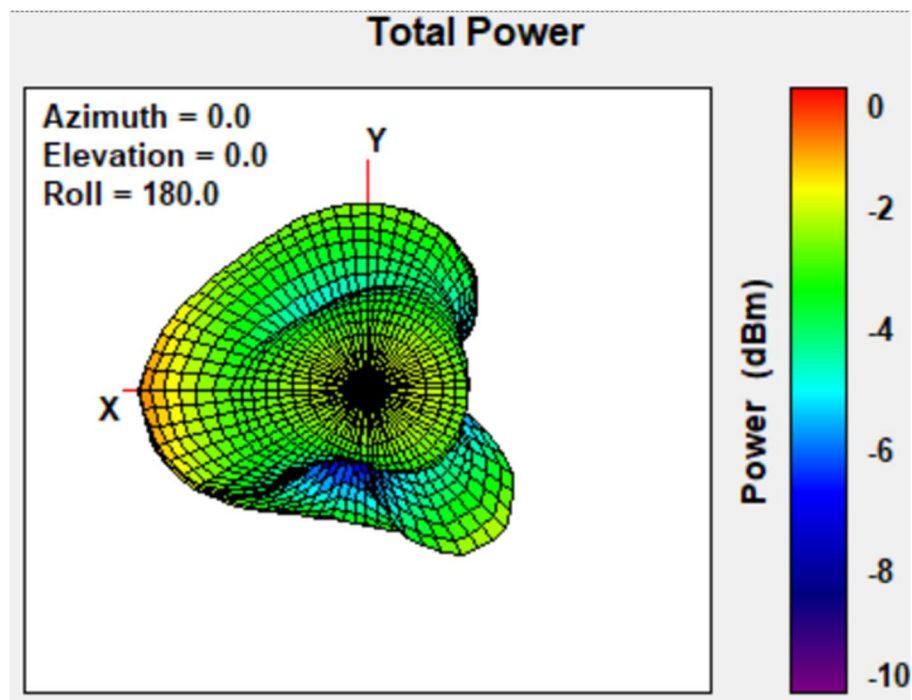


Figure 8. EIM4010 Antenna A 914.6 MHz Back View

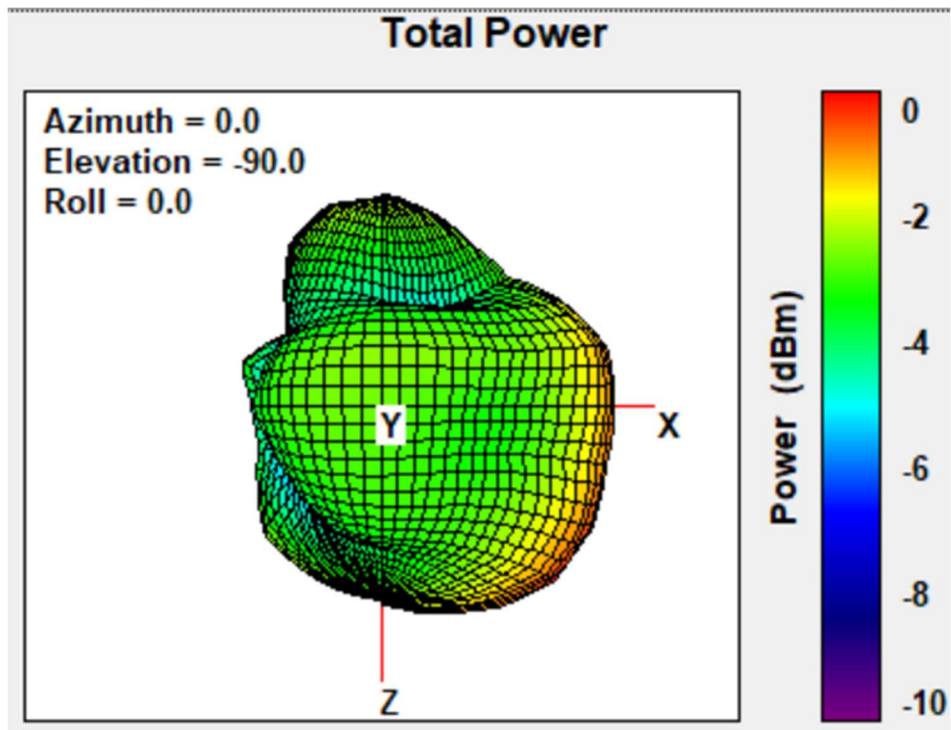


Figure 9. EIM4010 Antenna A 914.6 MHz Top View

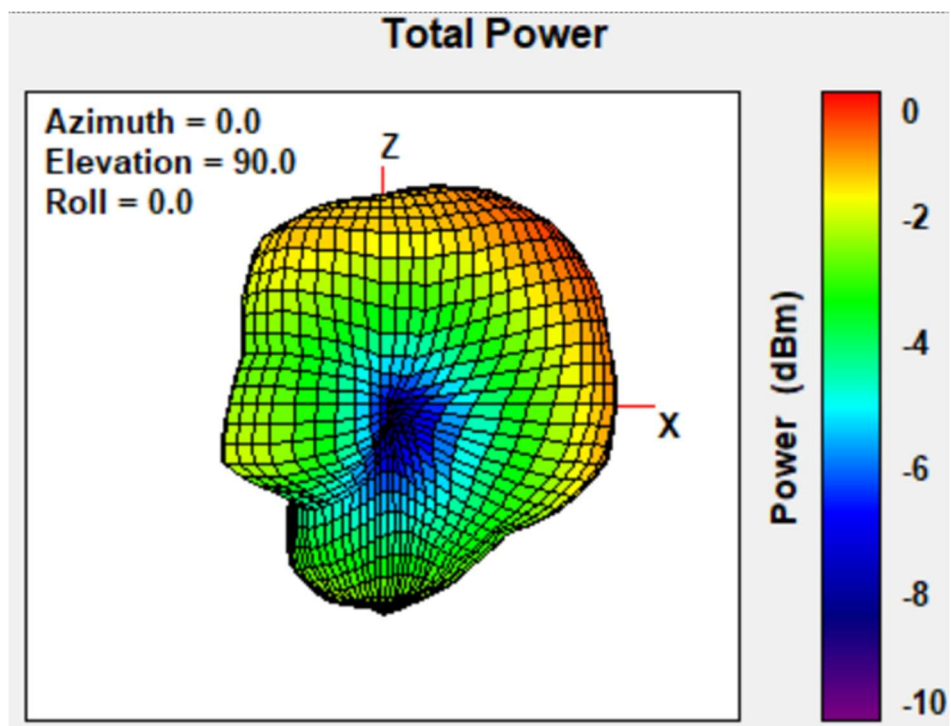


Figure 10. EIM4010 Antenna A 914.6 MHz Bottom View

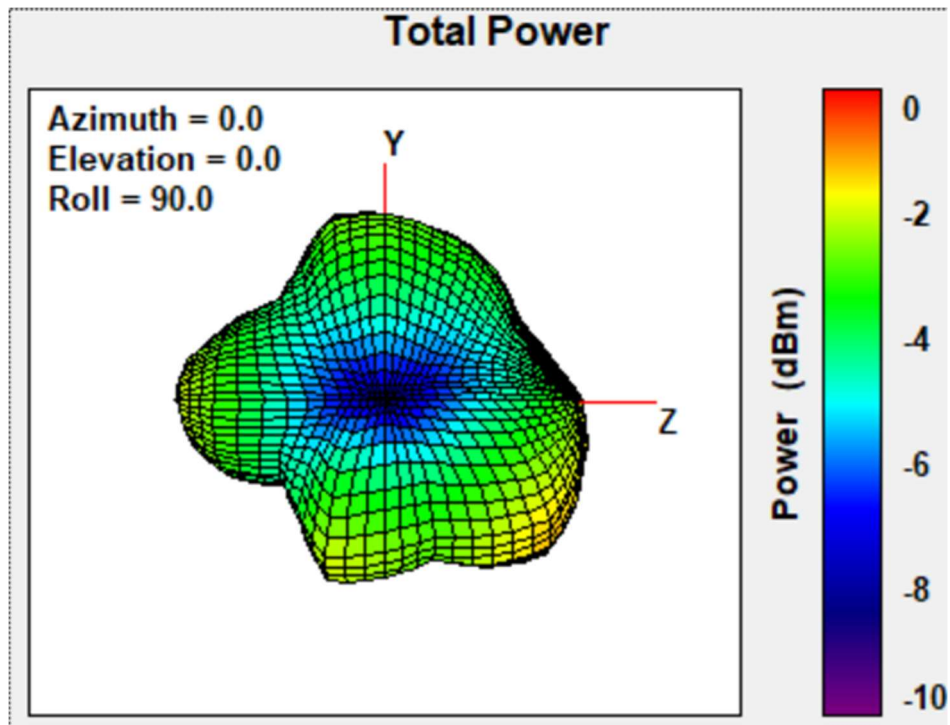


Figure 11. EIM4010 Antenna A 914.6 MHz Left Side View

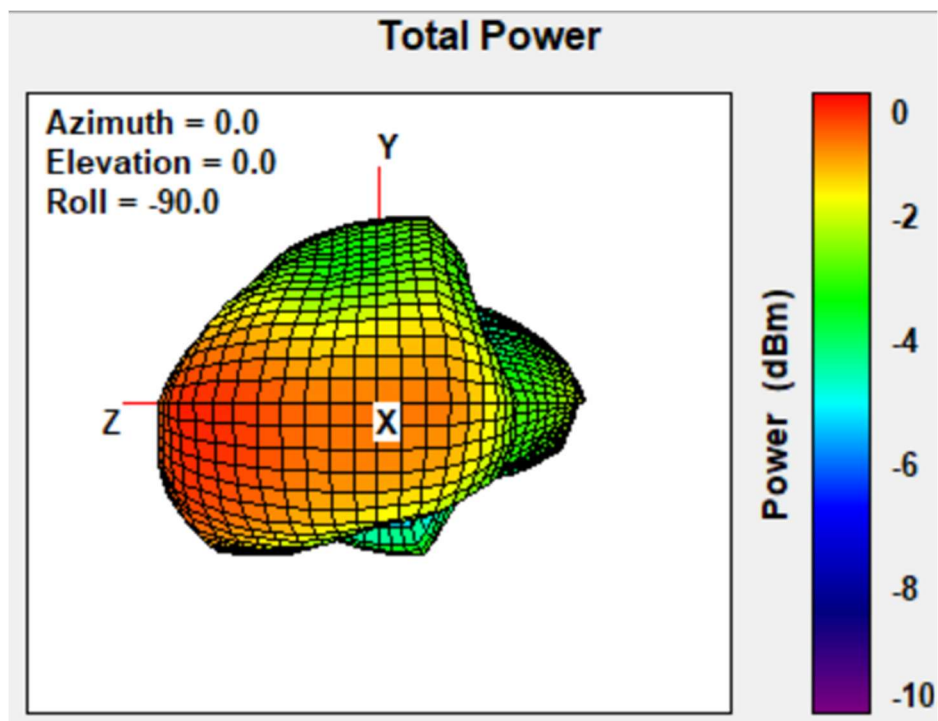


Figure 12. EIM4010 Antenna A 914.6 MHz Right Side View

5.3 Antenna A (short edge of PCB) – 926.4 MHz 3D Passive

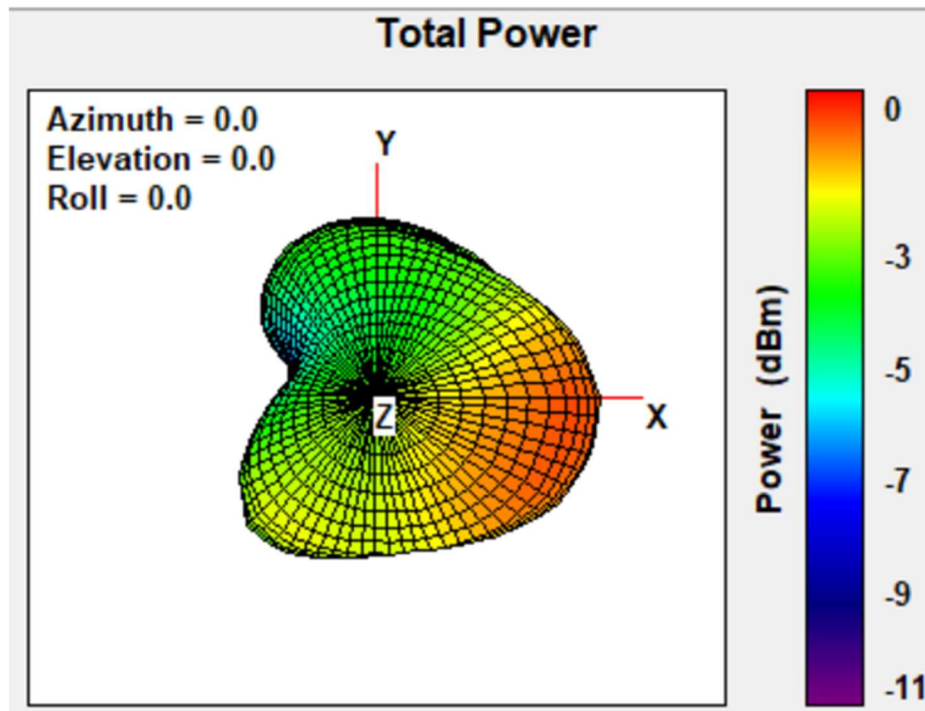


Figure 13. EIM4010 Antenna A 926.4 MHz Front View

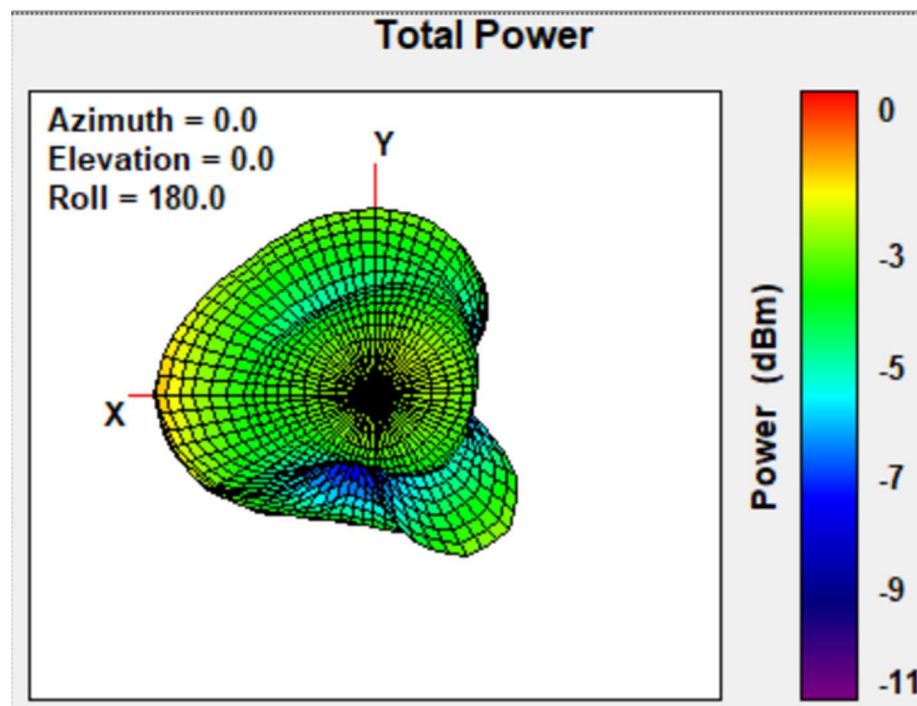


Figure 14. EIM4010 Antenna A 926.4 MHz Back View

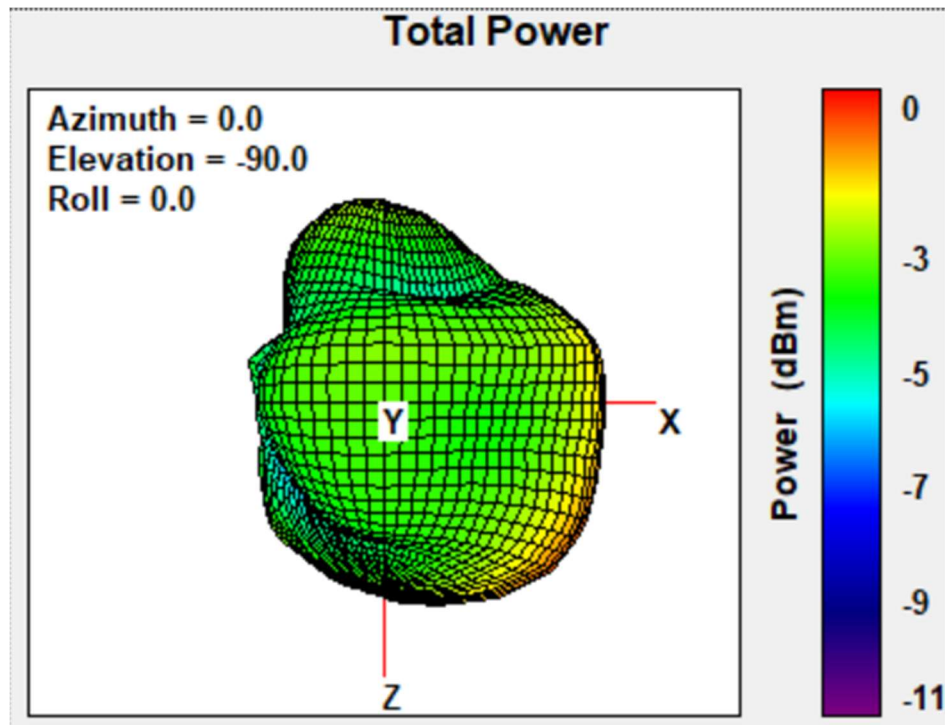


Figure 15. EIM4010 Antenna A 926.4 MHz Top View

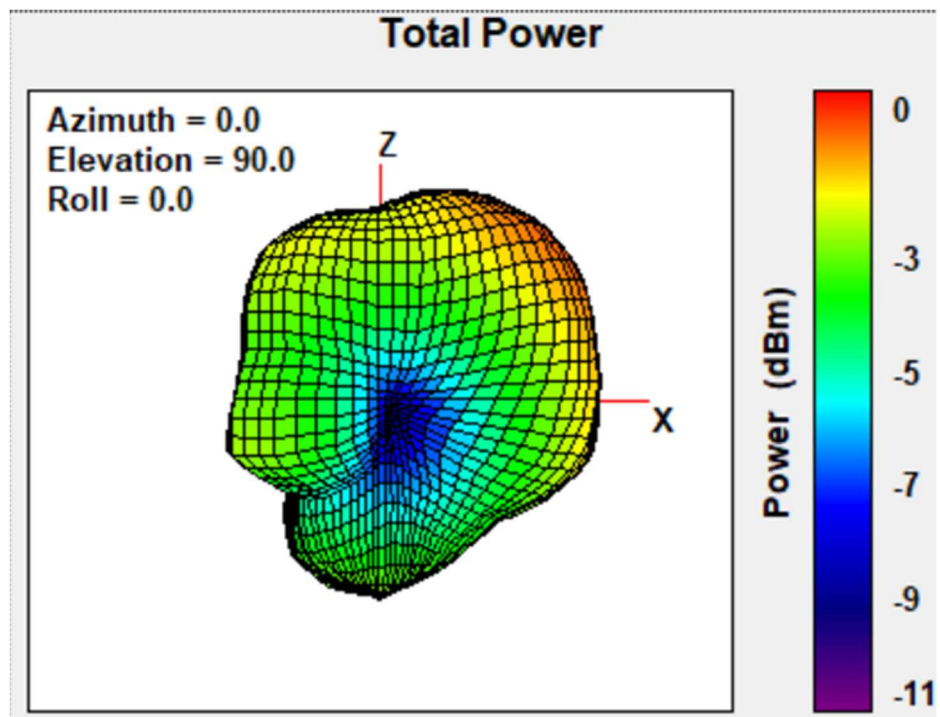


Figure 16. EIM4010 Antenna A 926.4 MHz Bottom View

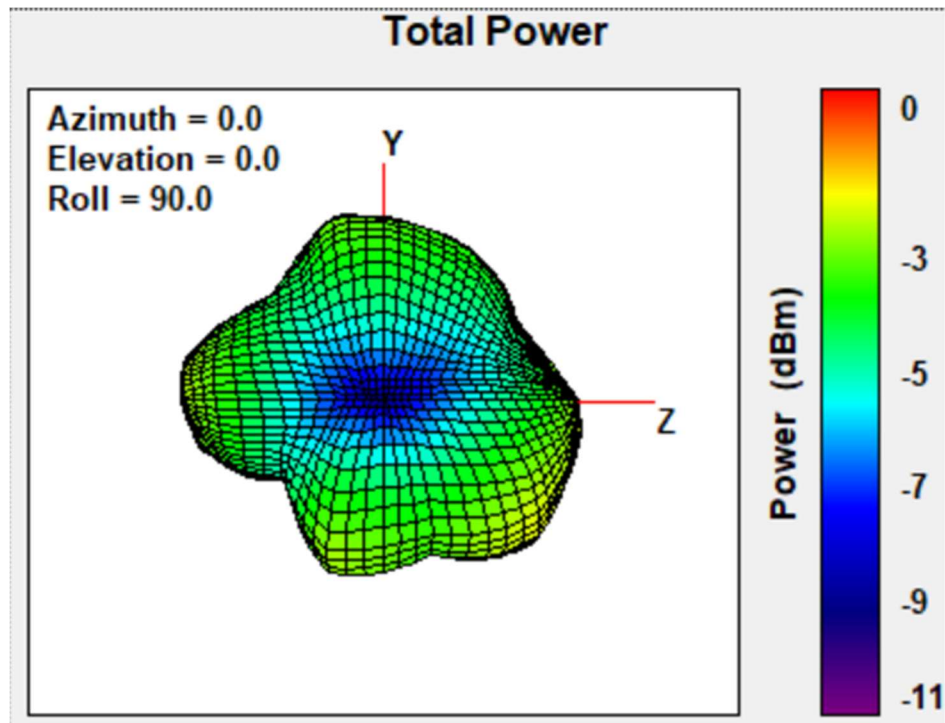


Figure 17. EIM4010 Antenna A 926.4 MHz Left Side View

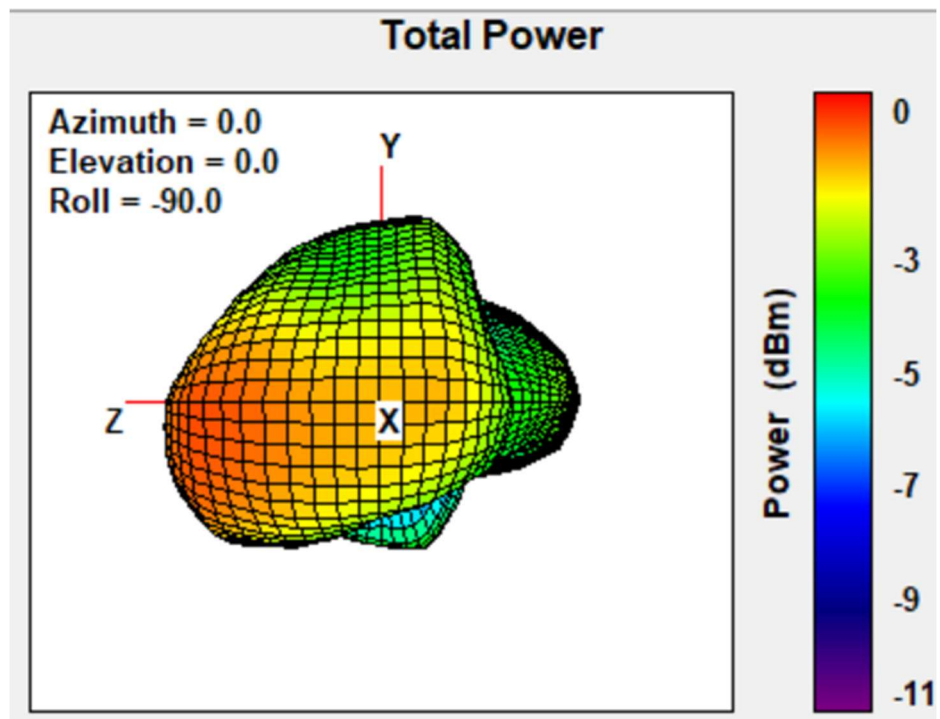


Figure 18. EIM4010 Antenna A 926.4 MHz Right Side View

5.4 Antenna B (long edge of PCB) – 903.0 MHz 3D Passive

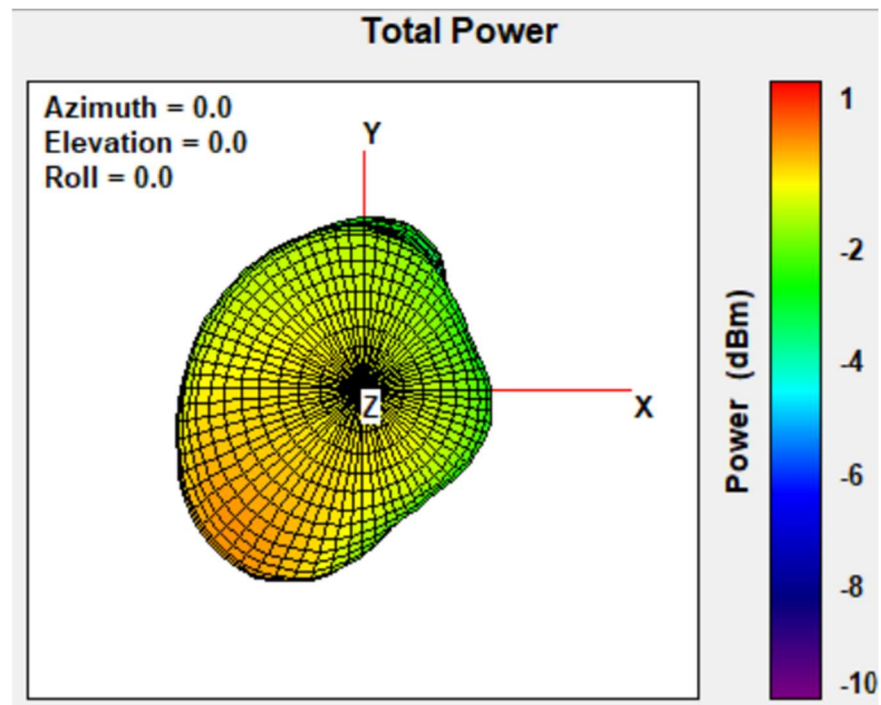


Figure 19. EIM4010 Antenna B 903.0 MHz Front View

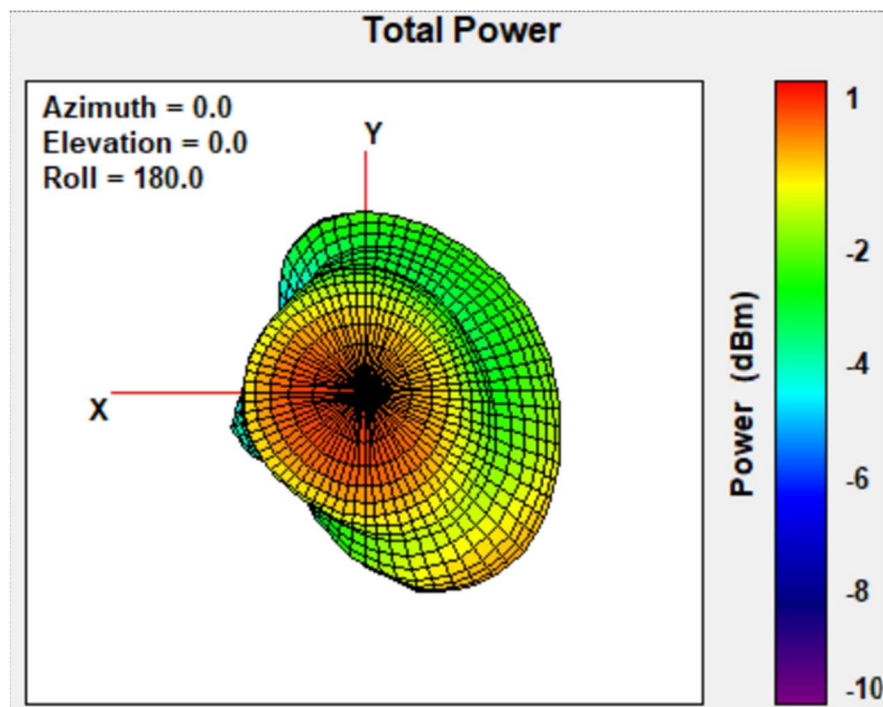


Figure 20. EIM4010 Antenna B 903.0 MHz Back View

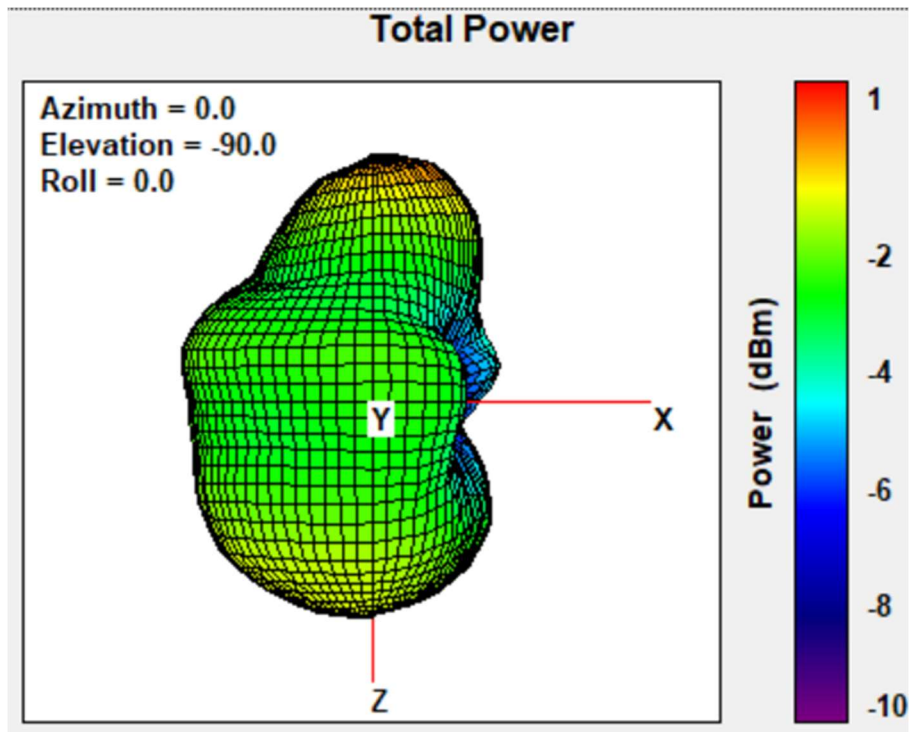


Figure 21. EIM4010 Antenna B 903.0 MHz Top View

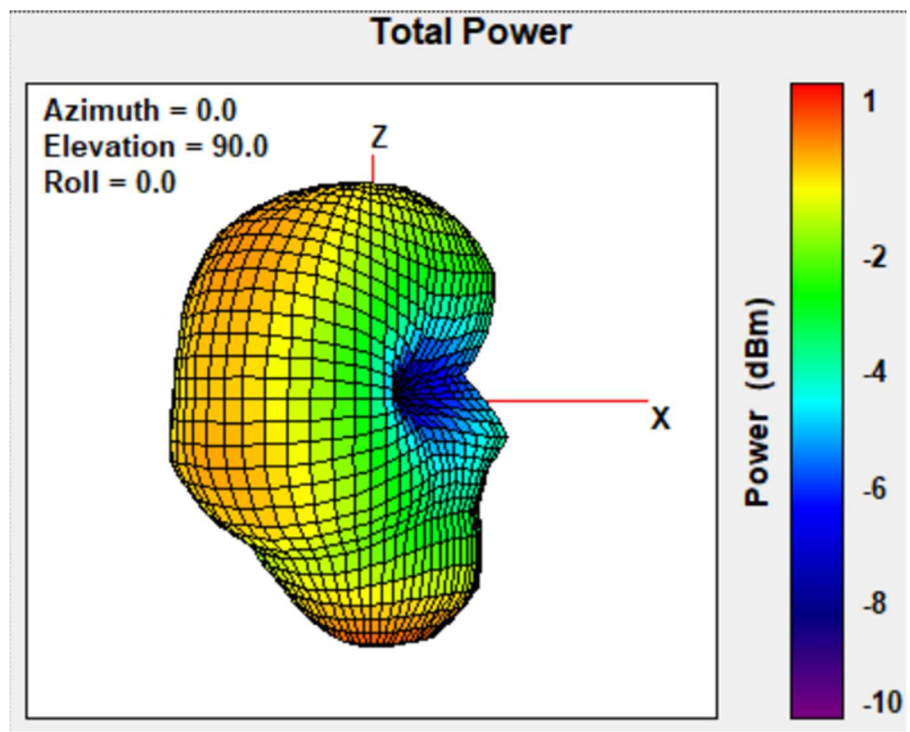


Figure 22. EIM4010 Antenna B 903.0 MHz Bottom View

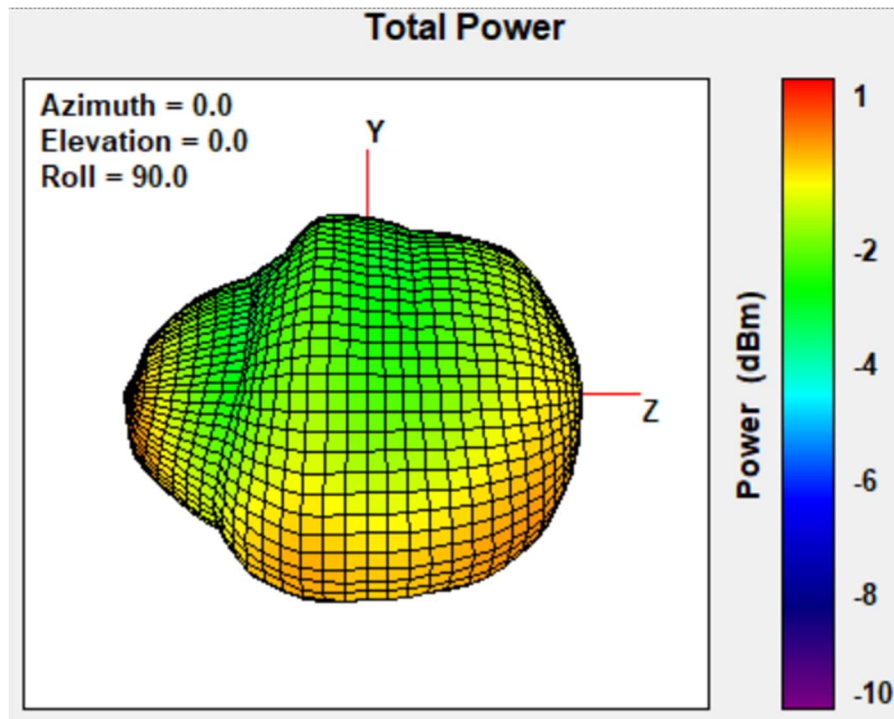


Figure 23. EIM4010 Antenna B 903.0 MHz Left Side View

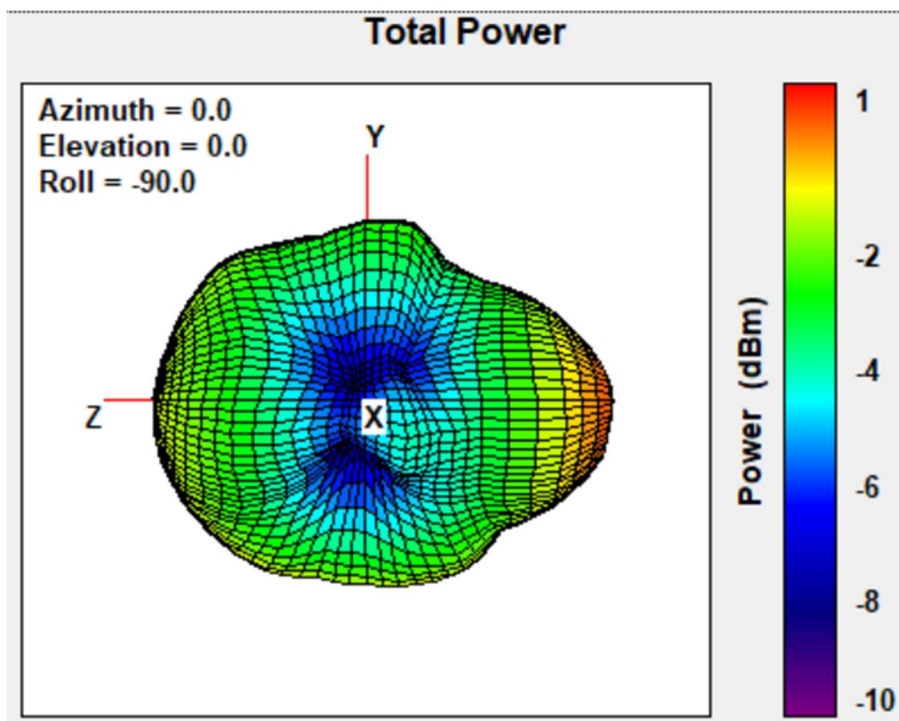


Figure 24. EIM4010 Antenna B 903.0 MHz Right Side View

5.5 Antenna B (long edge of PCB) – 914.6.0 MHz 3D Passive

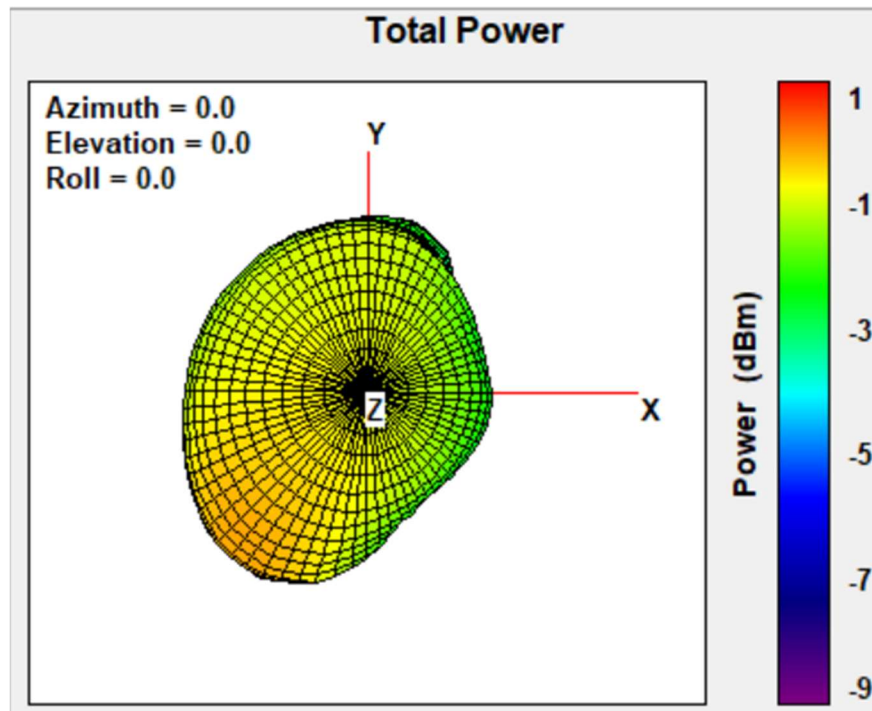


Figure 25. EIM4010 Antenna B 914.6 MHz Front View

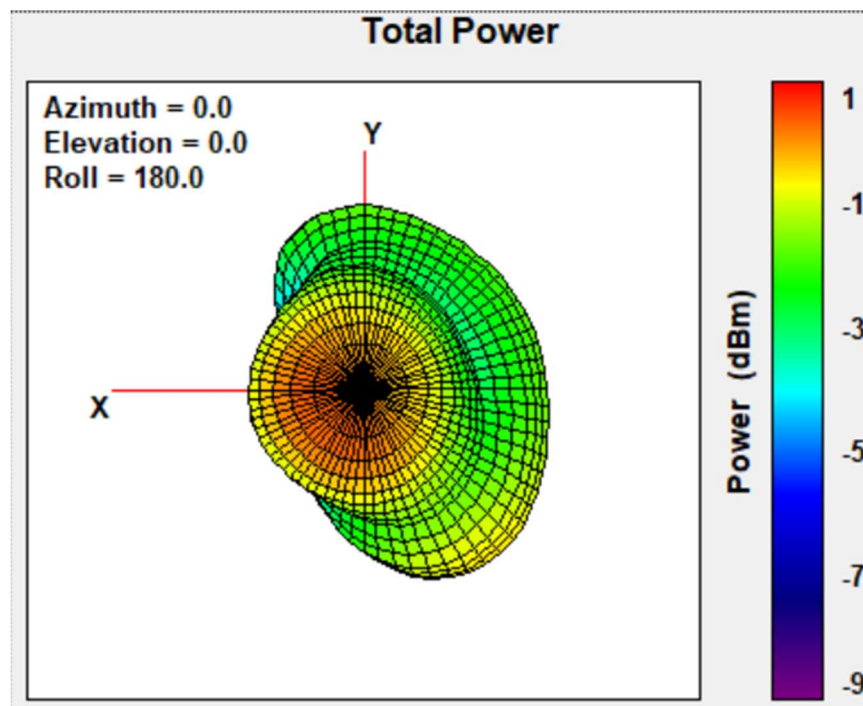


Figure 26. EIM4010 Antenna B 914.6 MHz Back View

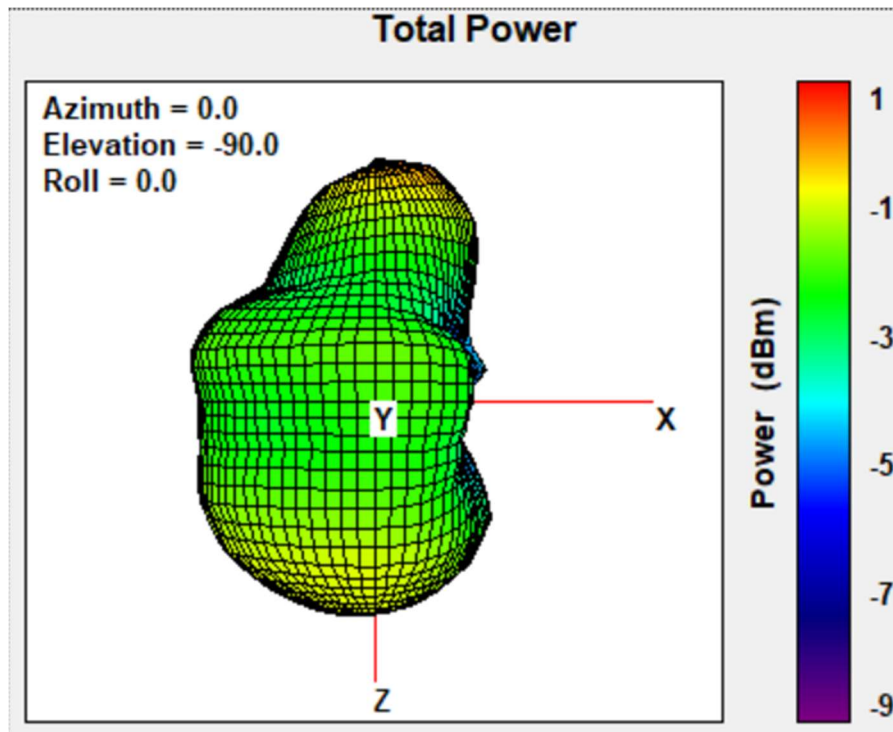


Figure 27. EIM4010 Antenna B 914.6 MHz Top View

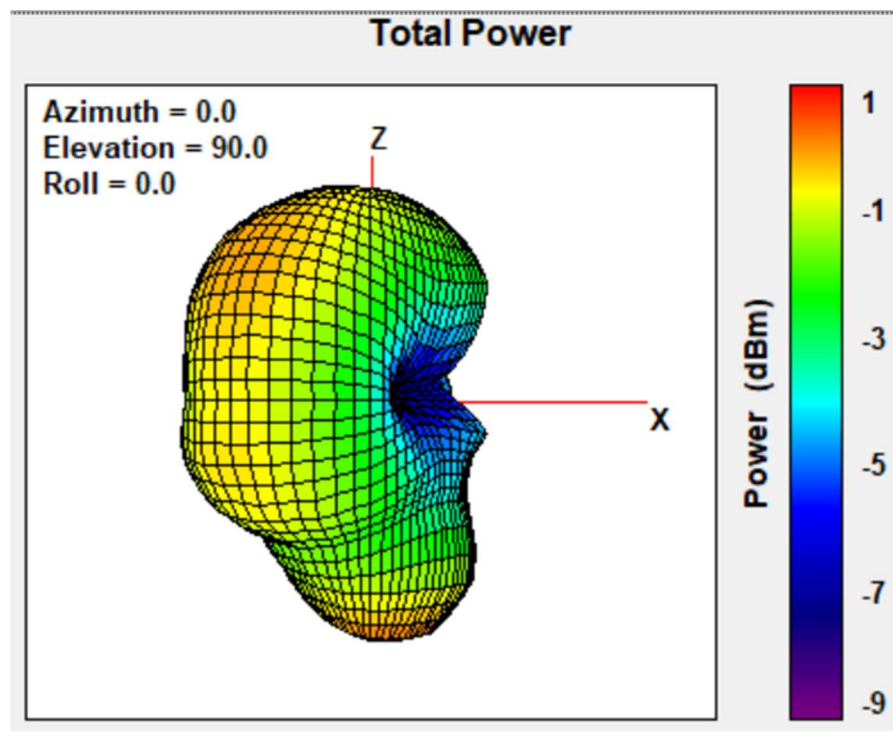


Figure 28. EIM4010 Antenna B 914.6 MHz Bottom View

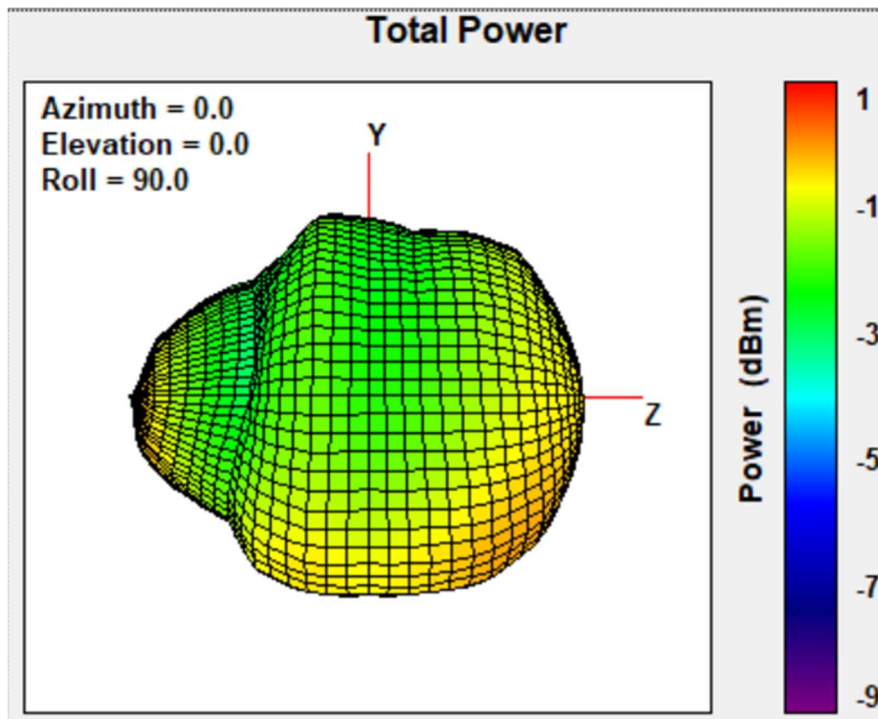


Figure 29. EIM4010 Antenna B 914.6 MHz Left Side View

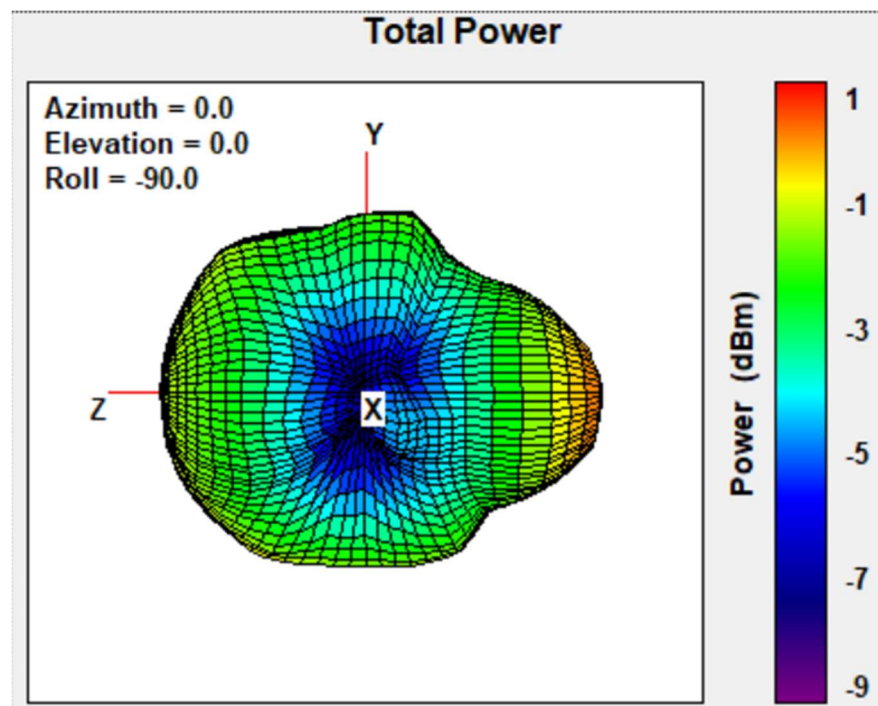


Figure 30. EIM4010 Antenna B 914.6 MHz Right Side View

5.6 Antenna B (long edge of PCB) – 926.4 MHz 3D Passive

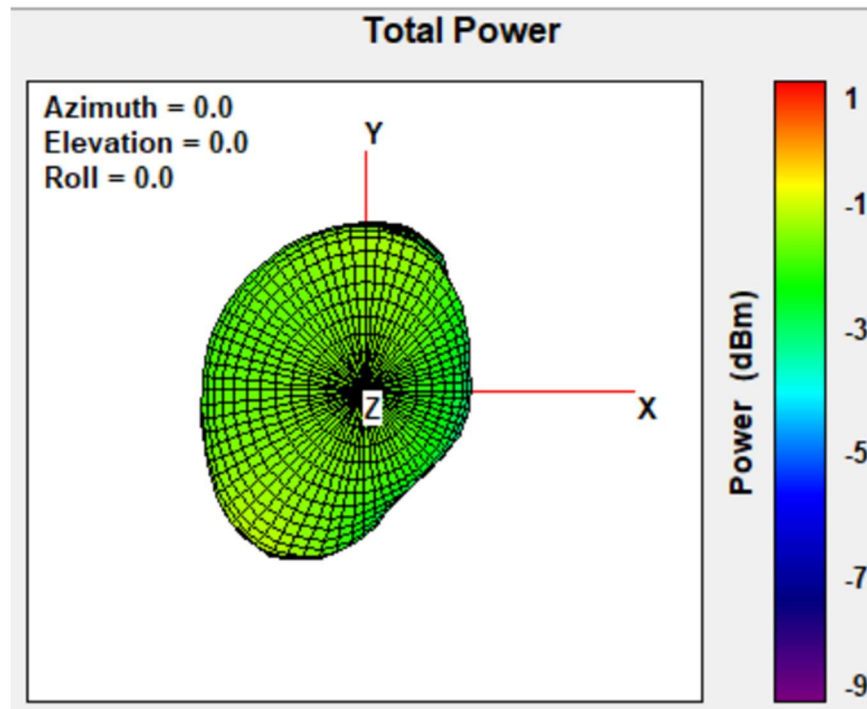


Figure 31. EIM4010 Antenna B 926.4 MHz Front View

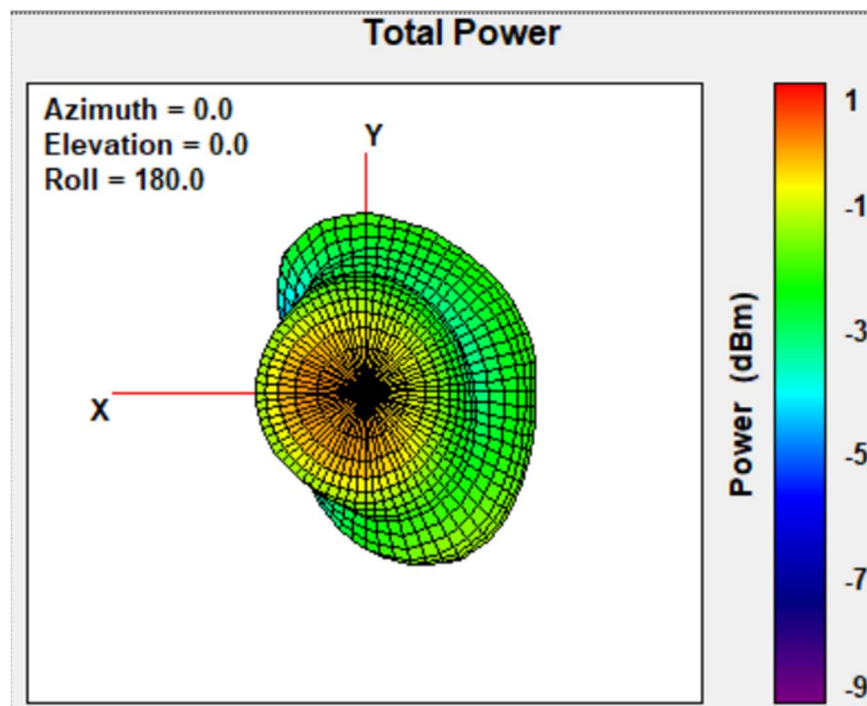


Figure 32. EIM4010 Antenna B 926.4 MHz Back View

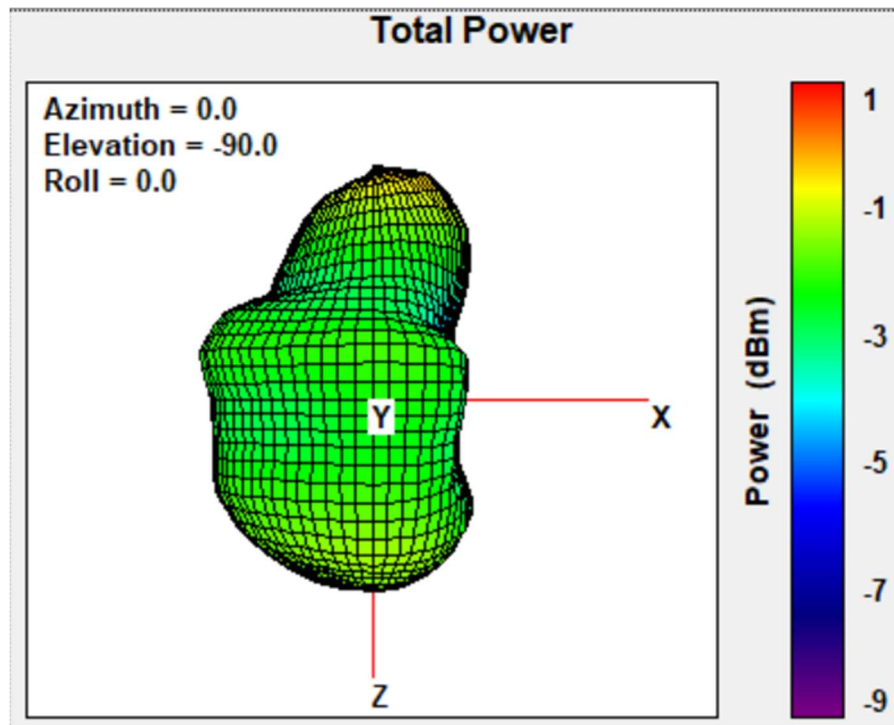


Figure 33. EIM4010 Antenna B 926.4 MHz Top View

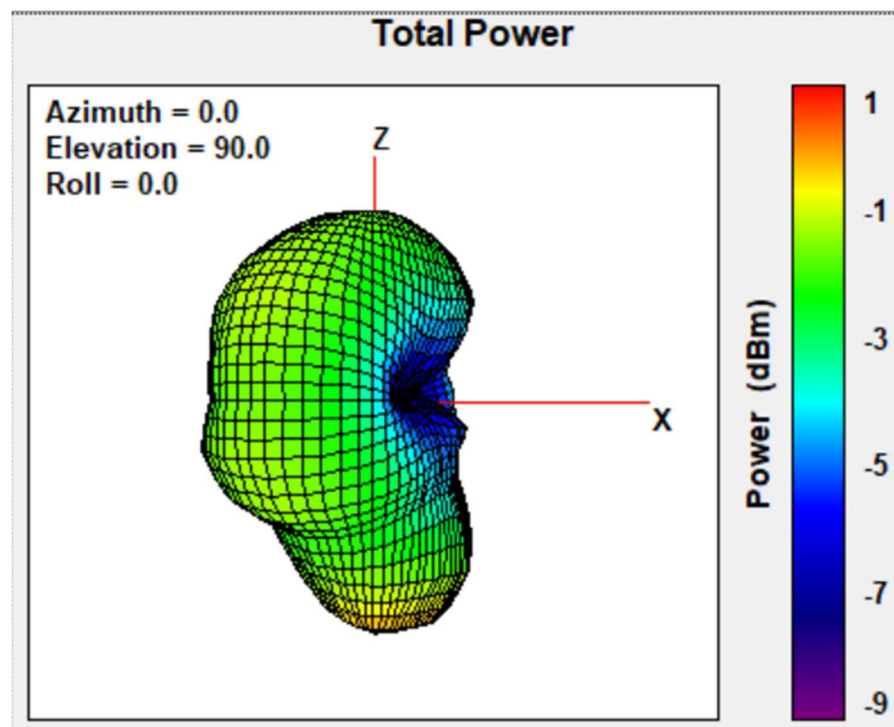


Figure 34. EIM4010 Antenna B 926.4 MHz Bottom View

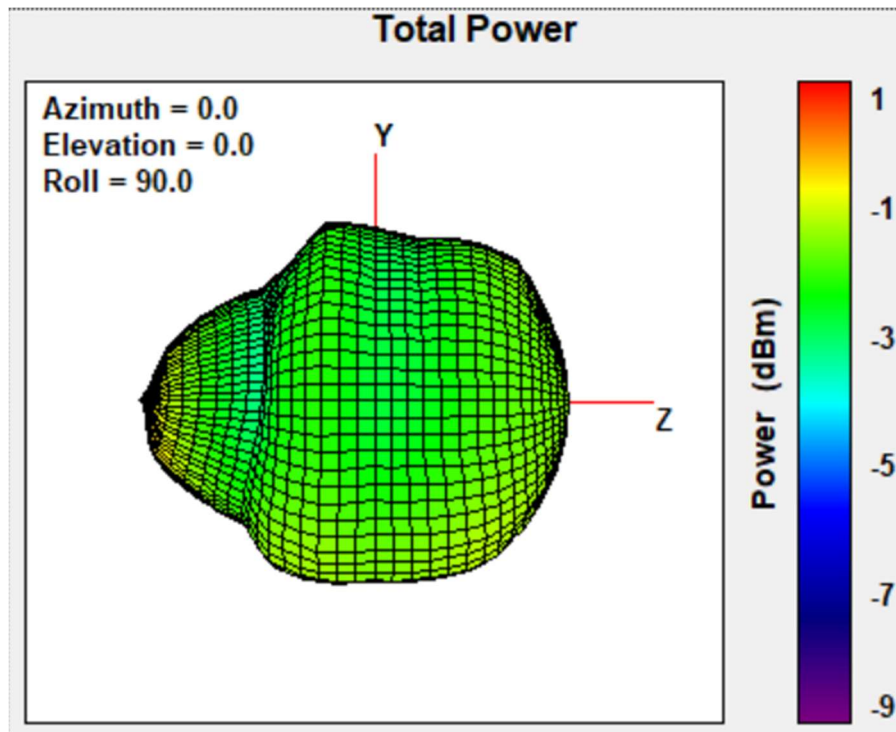


Figure 35. EIM4010 Antenna B 926.4 MHz Left Side View

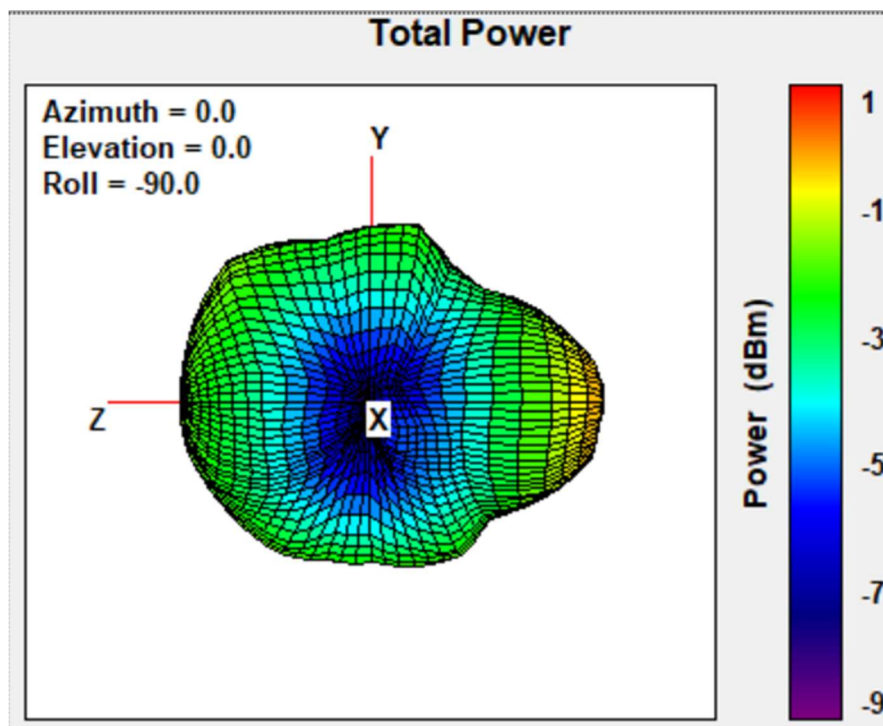


Figure 36. EIM4010 Antenna B 926.4 MHz Right Side View

6. Test Setup

