



OTA Antenna Performance Data Summary

APPLICANT : ESPRESSIF SYSTEMS (SHANGHAI) CO., LTD
EQUIPMENT : ESP8684-WROOM-06C
BRAND NAME : ESPRESSIF
MODEL NAME : ESP-ANT E
DEVICE RECEIVING DATE : Aug. 11, 2023
TEST DATE(S) : Aug. 11, 2023

Reviewed by:

Feynman Liu / Vice Manager

Approved by:

Kevin Chu / Manager

Sporton International Inc. (Kunshan)

**No. 1098, Pengxi North Road, Kunshan Economic Development Zone Jiangsu Province 215300
People's Republic of China**



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1. Administration Data

1.1 Testing Laboratory

| | |
|--------------------|--|
| Test Site | Sporton International Inc. (Kunshan) |
| Test Site Location | No. 1098, Pengxi North Road, Kunshan Economic Development Zone Jiangsu Province 215300 People's Republic of China TEL: +86-0512-5790-0158 |
| Chamber | <input type="checkbox"/> OTA01-KS <input type="checkbox"/> OTA02-KS <input type="checkbox"/> OTA03-KS <input checked="" type="checkbox"/> OTA04-KS <input type="checkbox"/> OTA05-KS |
| Test Engineer | Emma Zhou |

1.2 Applicant

| | |
|--------------|--|
| Company Name | ESPRESSIF SYSTEMS (SHANGHAI) CO., LTD |
| Address | Suite 204, Block 2, 690 Bibo Road, Zhang Jiang Hi-Tech Park, Shanghai, China |



2. General Information

2.1 Description of Device Under Test (DUT)

| Product Feature & Specification | | | |
|---------------------------------|-------------------|---------|---------|
| Equipment | ESP8684-WROOM-06C | | |
| Brand Name | ESPRESSIF | | |
| Model Name | ESP-ANT E | | |
| DUT Dimension (mm) | L: 15.80 | W: 5.57 | H: 1.00 |
| Antenna Type | PCB Antenna | | |
| HW Version | v1.0 | | |
| SW Version | v1.0 | | |



3. Measurement Environment

3.1 Ambient Condition

| | | | |
|-------------------|--------|---------------|------|
| Temperature (°C): | 25±5°C | Humidity (%): | <60% |
|-------------------|--------|---------------|------|

3.2 Test Equipment List

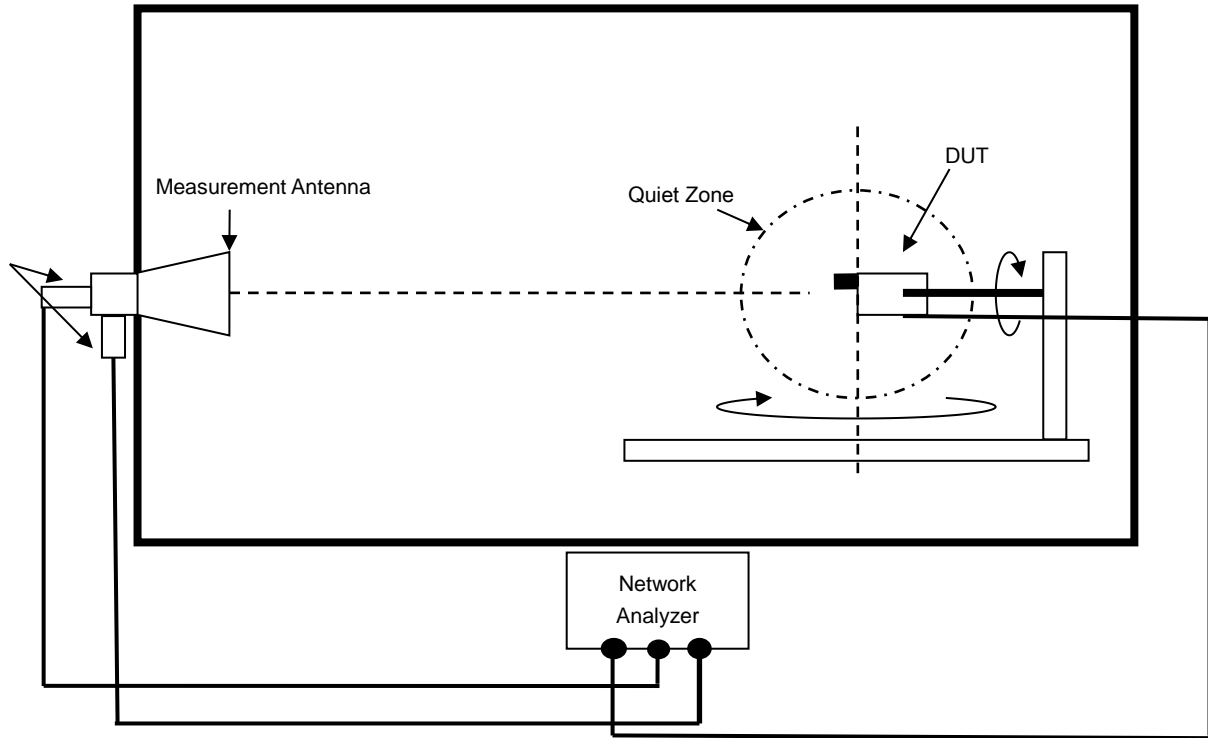
| Name | Manufacturer | Type/Model | Serial Number | Calibration | |
|------------------------------|--------------|----------------|---------------|-------------|------------|
| | | | | Last Cal. | Due Date |
| Network Analyzer | Agilent | E5071C | MY46317418 | 2023/01/05 | 2024/01/04 |
| Switch Control | ETS-Lindgren | EMCenter | 00160100 | NCR | NCR |
| Diagonal Dual Polarized Horn | ETS-Lindgren | 3164-08 | 00099205 | NCR | NCR |
| Multi-Devices Controller | ETS-Lindgren | 2090-OPT1 | 00066604 | NCR | NCR |
| Medium Duty Holder | ETS-Lindgren | 2015 | N/A | NCR | NCR |
| Sleeve Dipole Antenna | ETS-Lindgren | EMCO 3126-2500 | 00203963 | 2022/10/7 | 2024/10/6 |

Note: Antenna gain was measured in the anechoic chamber (Measurement System: ETS-Lindgren AMS-8500, SW Version: EMQuest 100 V1.08).

4. Test procedure

1. Setup for testing facility:

Connect all the equipments according to the figure below :



2. Run ETS-Lindgren EMQuestTest software script , Hit Run button to execute measurement.
3. Save Measurement result



5. Summary of Test Results

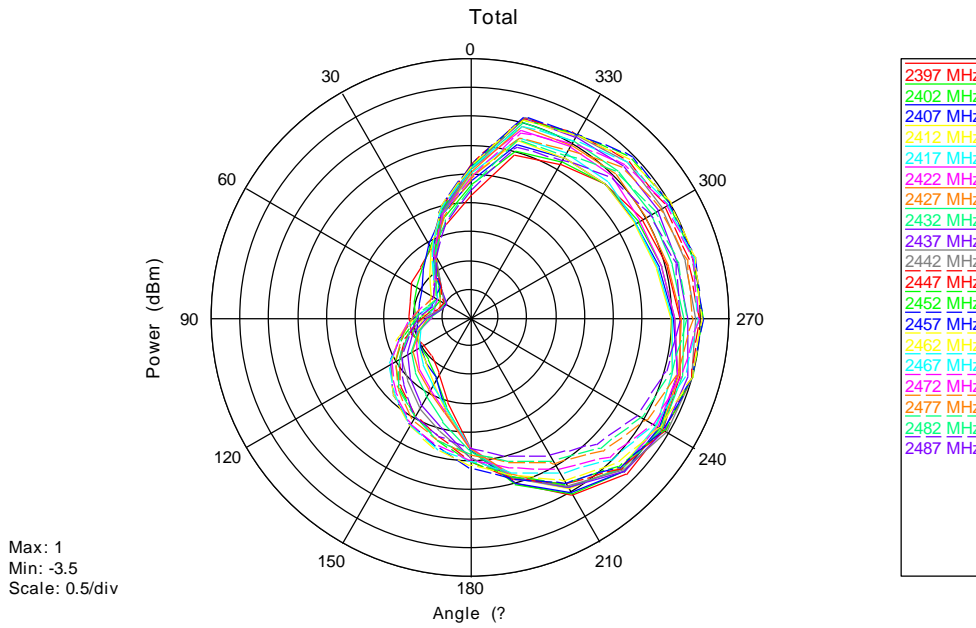
| Test / Position | Gain / Free Space | | | | | | | | | | | | | | | | | | |
|-----------------|-------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Frequency (MHz) | 2397 | 2402 | 2407 | 2412 | 2417 | 2422 | 2427 | 2432 | 2437 | 2442 | 2447 | 2452 | 2457 | 2462 | 2467 | 2472 | 2477 | 2482 | 2487 |
| Avg Gain | -1.7 | -1.7 | -1.6 | -1.7 | -1.6 | -1.6 | -1.5 | -1.5 | -1.4 | -1.4 | -1.3 | -1.3 | -1.2 | -1.2 | -1.3 | -1.3 | -1.4 | -1.4 | -1.5 |
| Peak Gain | 1.4 | 1.5 | 1.5 | 1.5 | 1.6 | 1.7 | 1.8 | 1.9 | 2.1 | 2.2 | 2.3 | 2.4 | 2.5 | 2.6 | 2.6 | 2.6 | 2.7 | 2.7 | 2.7 |
| Directivity | 3.1 | 3.1 | 3.1 | 3.2 | 3.2 | 3.3 | 3.4 | 3.4 | 3.5 | 3.5 | 3.6 | 3.7 | 3.7 | 3.8 | 3.9 | 4.0 | 4.1 | 4.1 | 4.2 |
| Efficiency | -1.7 | -1.7 | -1.6 | -1.7 | -1.6 | -1.6 | -1.5 | -1.5 | -1.4 | -1.4 | -1.3 | -1.3 | -1.2 | -1.2 | -1.3 | -1.3 | -1.4 | -1.4 | -1.5 |
| Efficiency (%) | 67.3 | 68.0 | 68.5 | 68.3 | 68.5 | 69.5 | 70.1 | 71.0 | 72.4 | 73.1 | 73.9 | 74.4 | 75.3 | 75.1 | 74.2 | 73.7 | 72.3 | 71.6 | 70.6 |



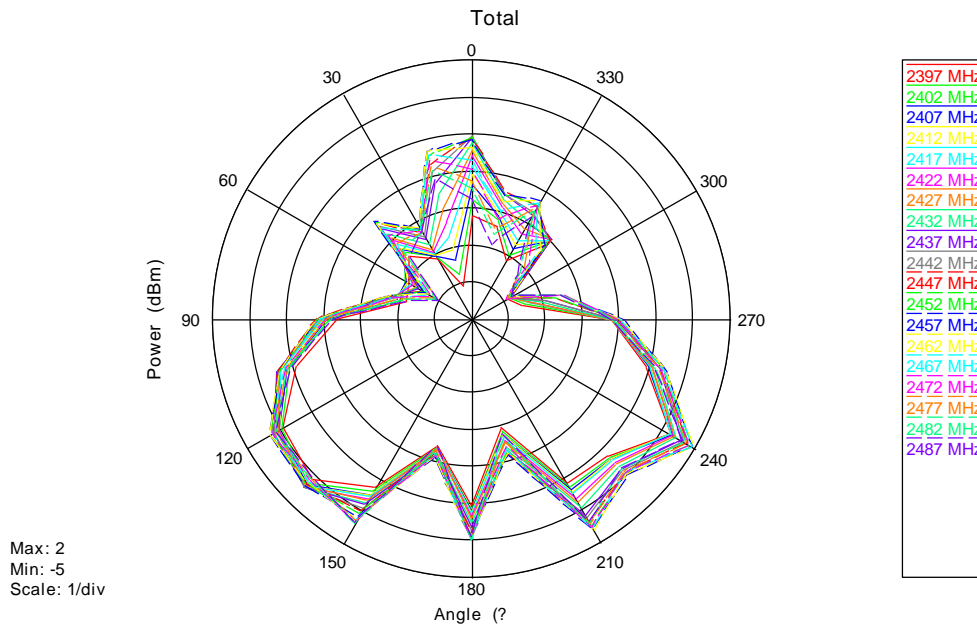
6. 2D/3D Free Space Pattern Plots

Please refer to as below.

Cut1

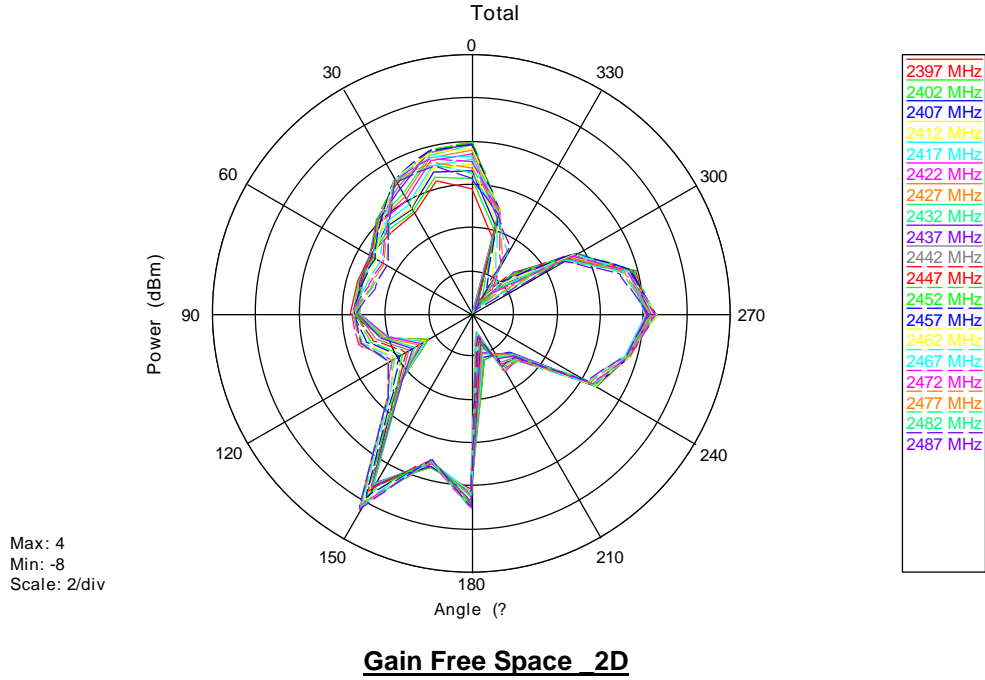


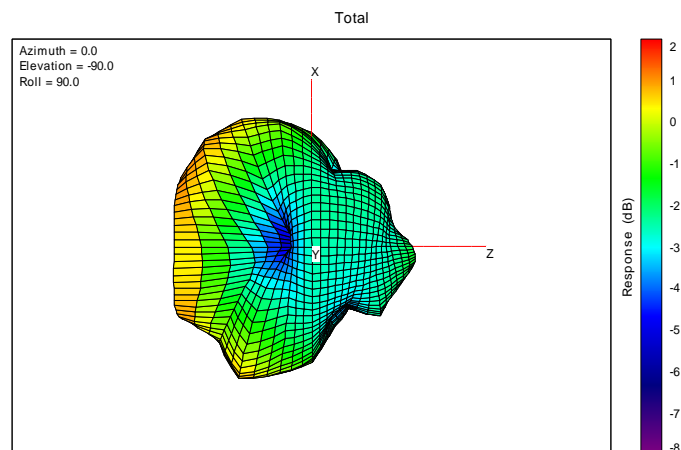
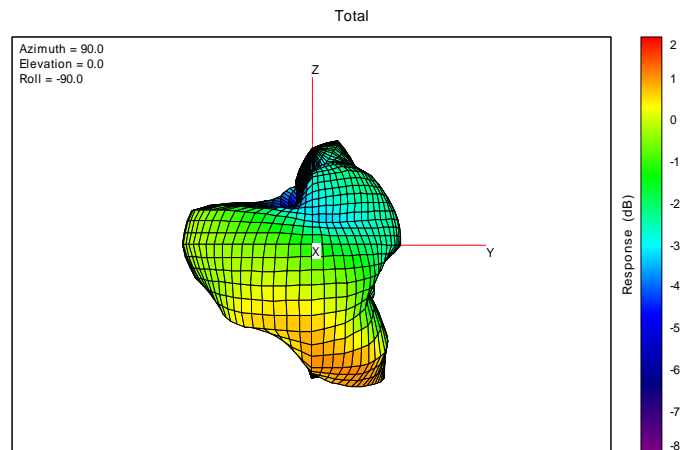
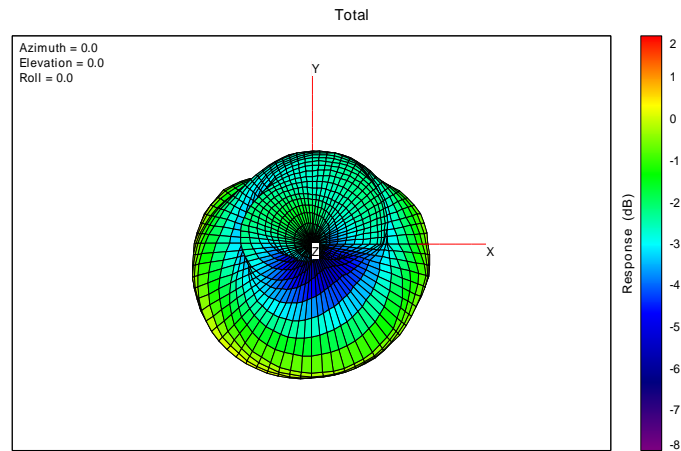
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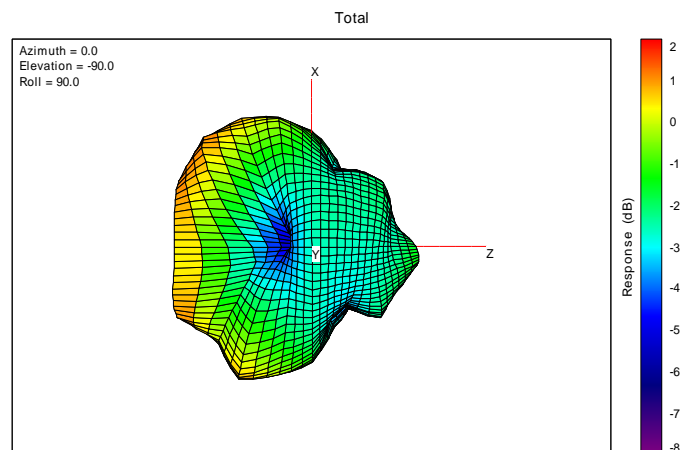
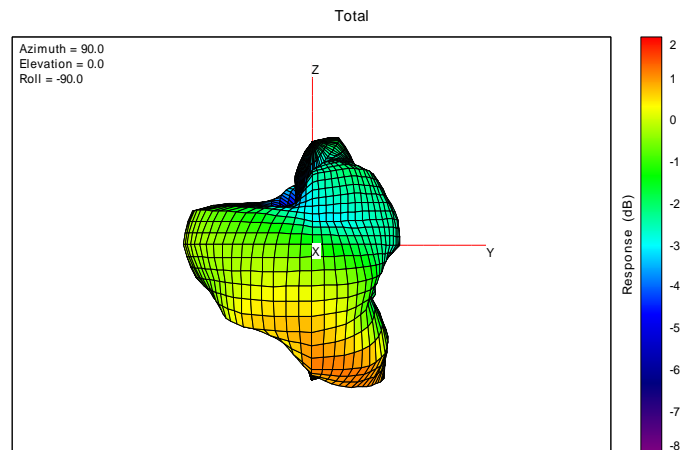
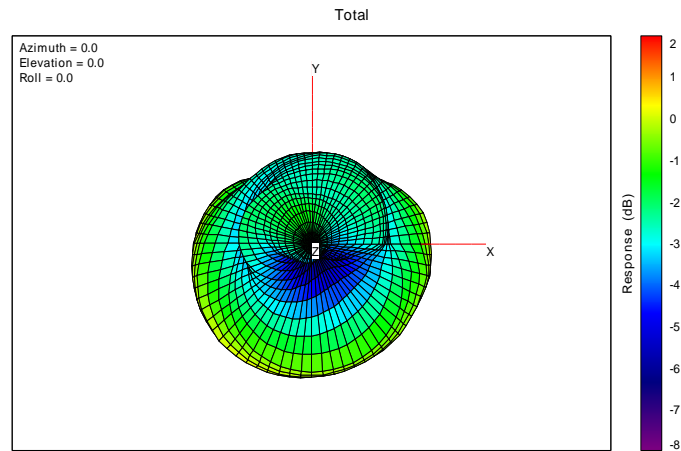


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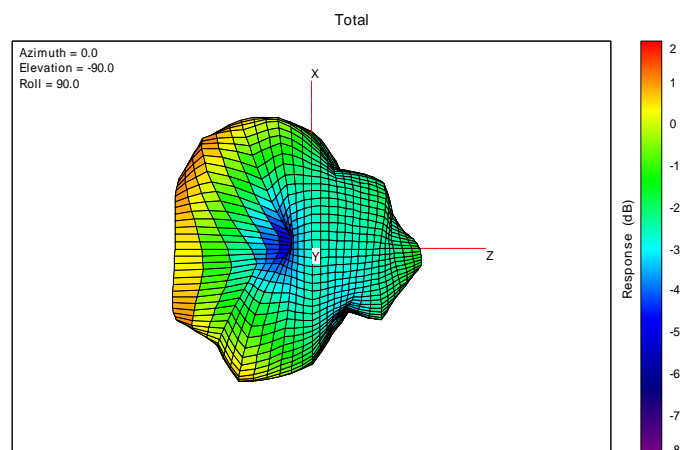
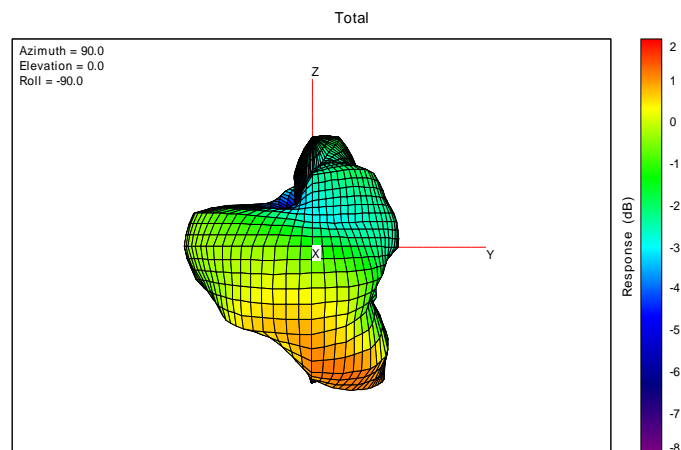
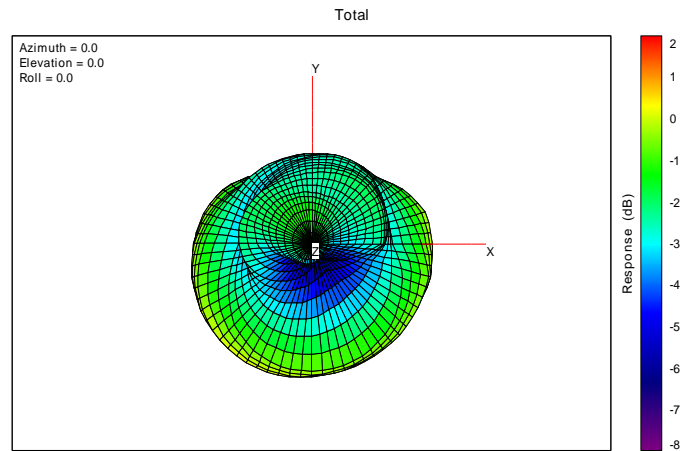




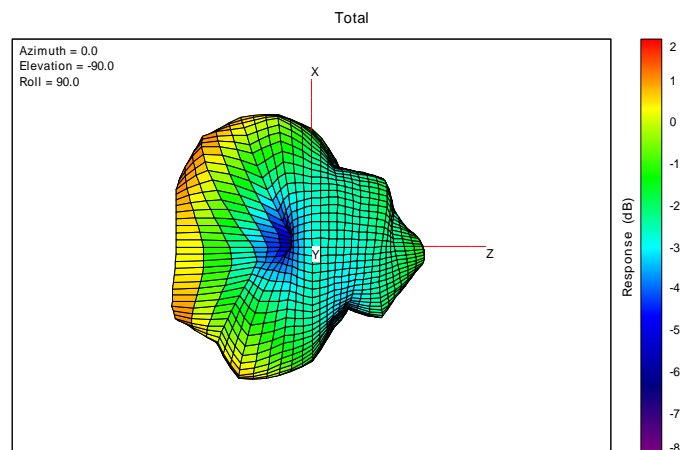
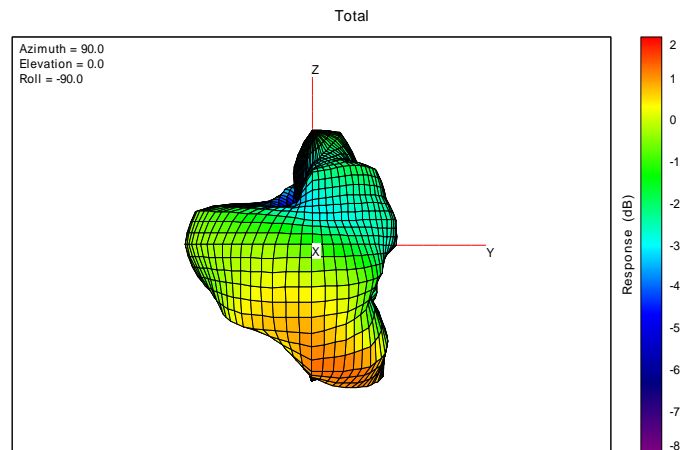
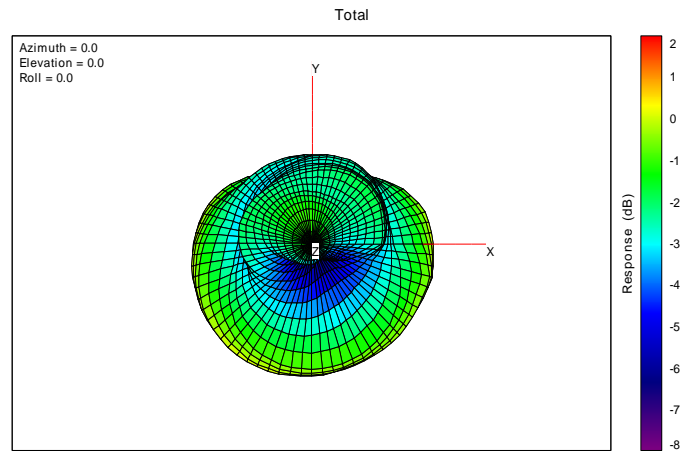
Gain Free Space 2397



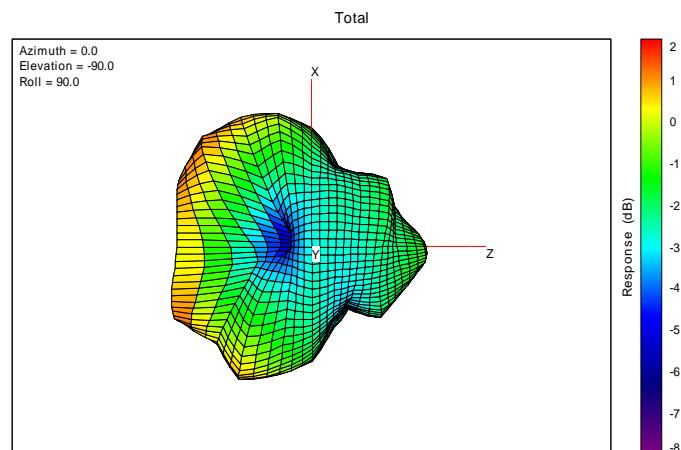
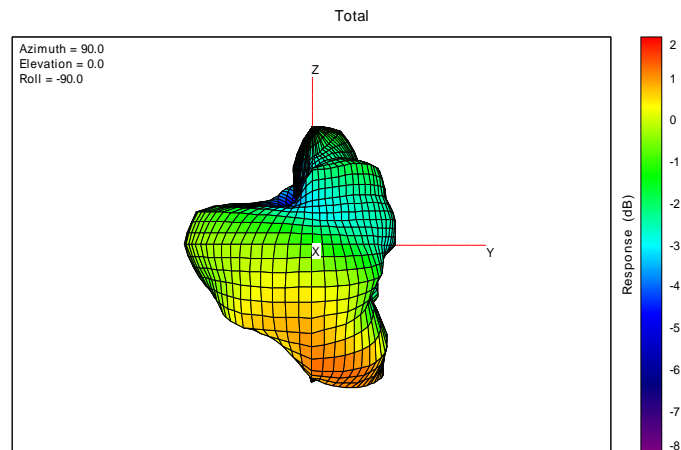
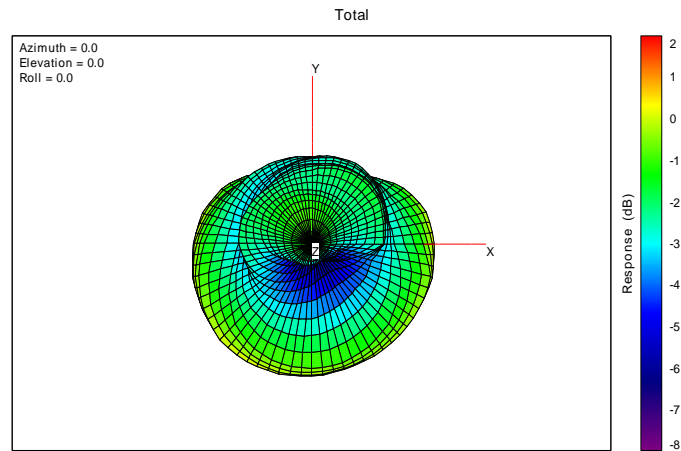
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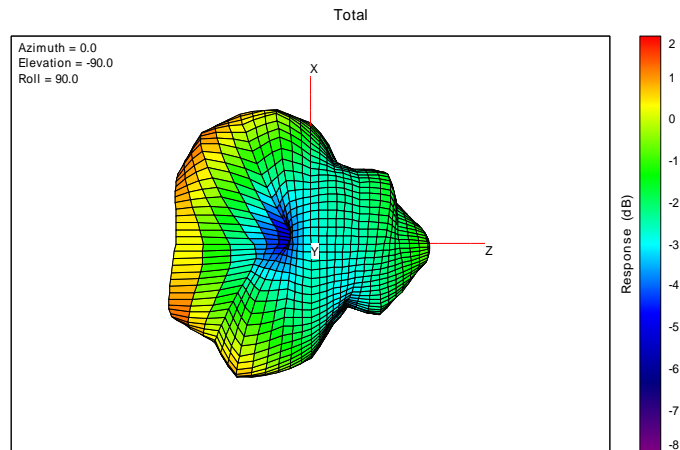
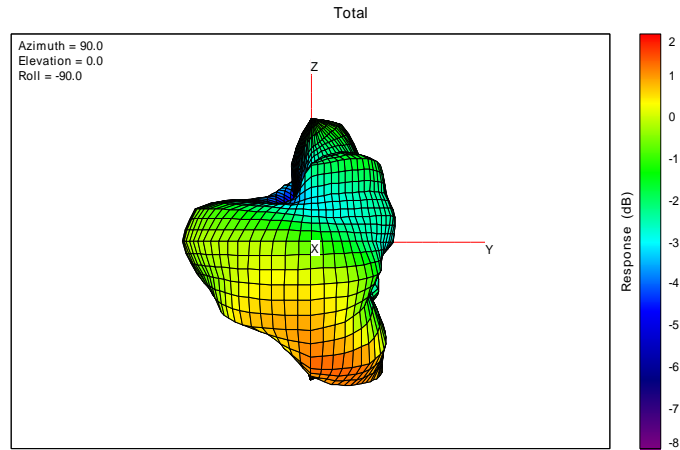
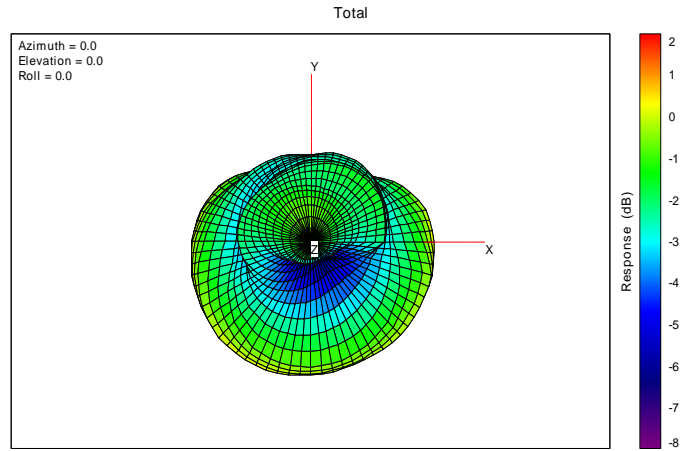
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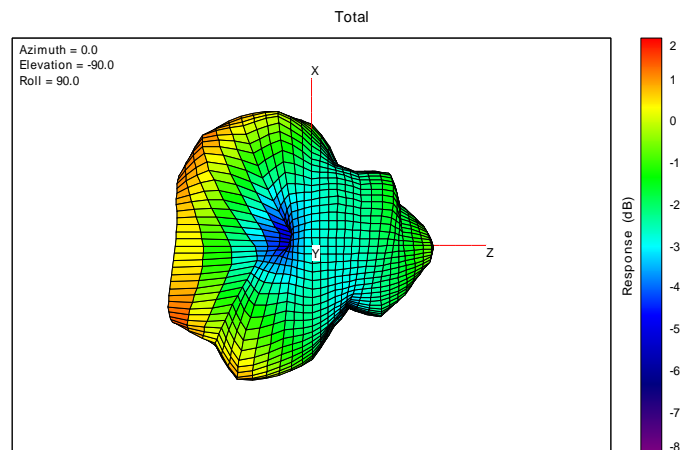
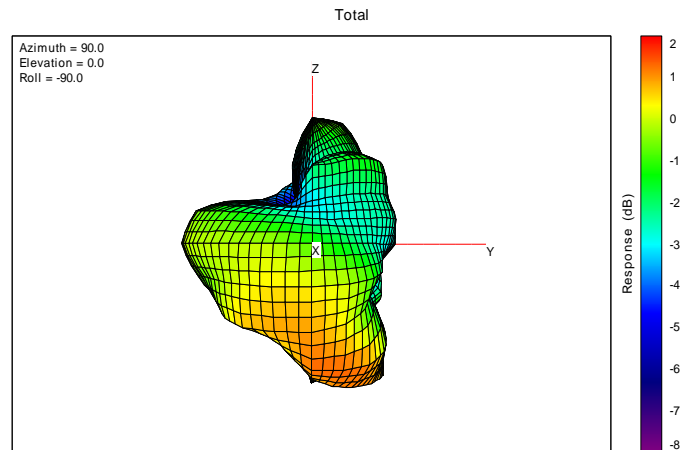
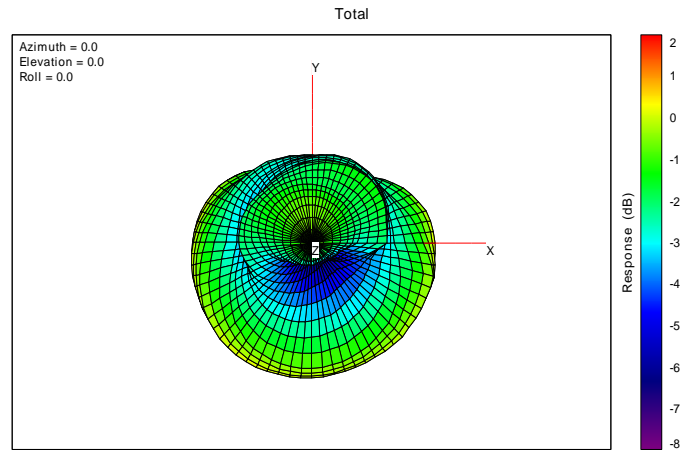
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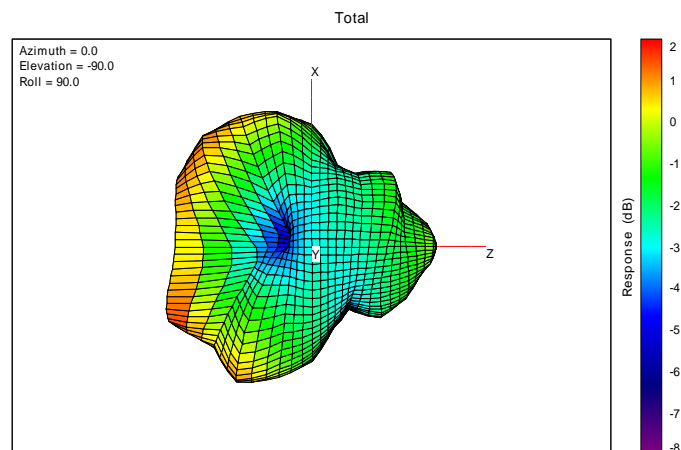
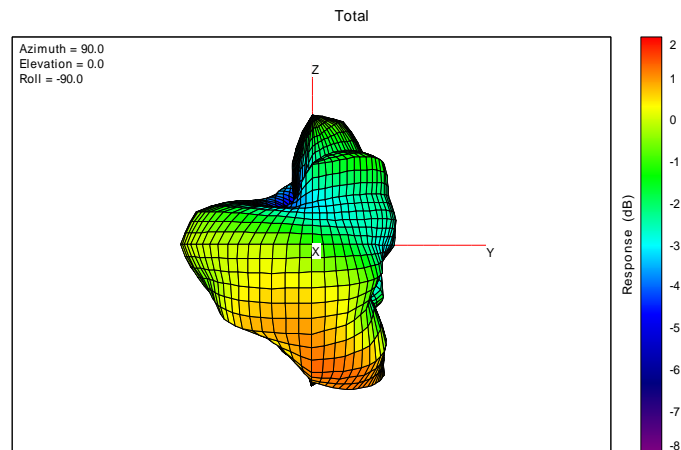
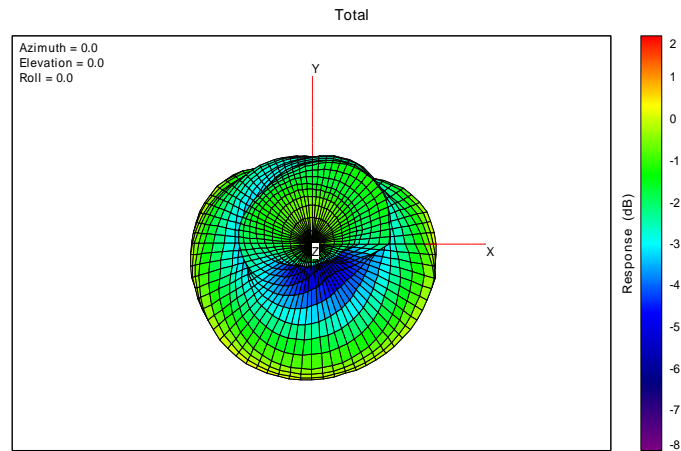
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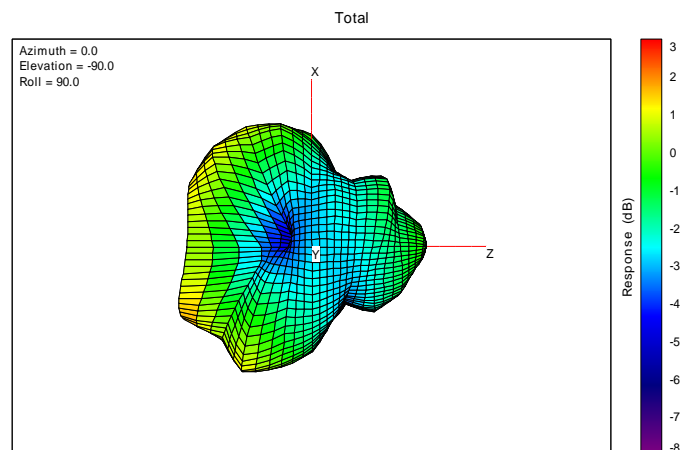
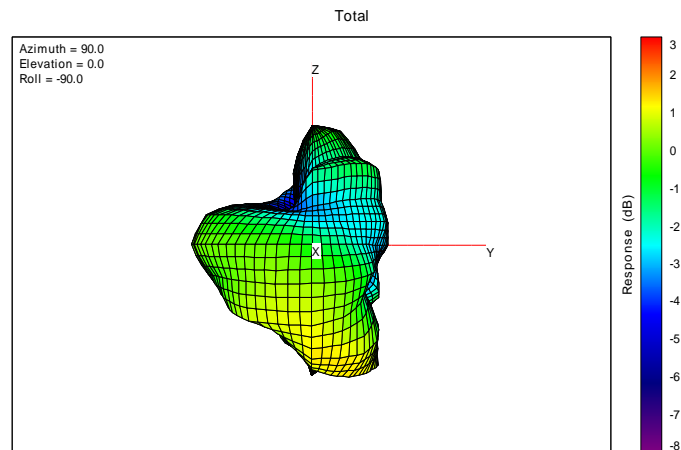
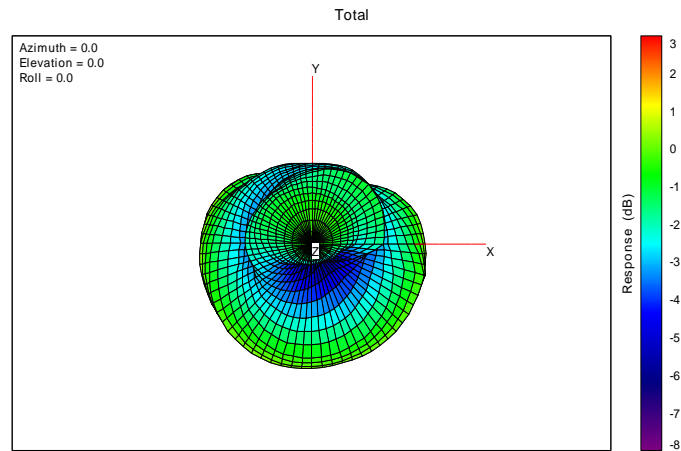
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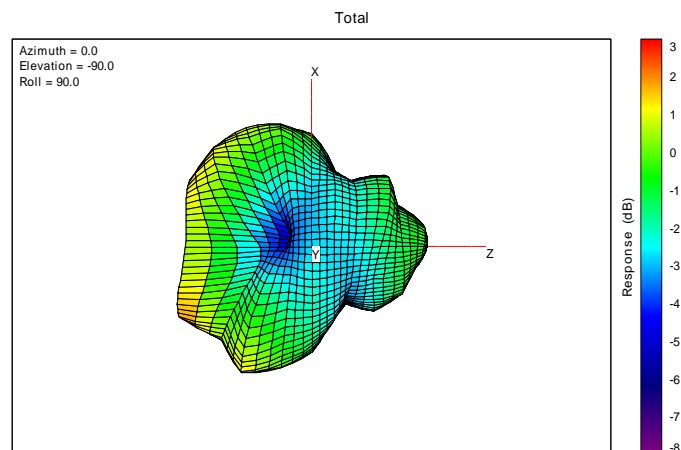
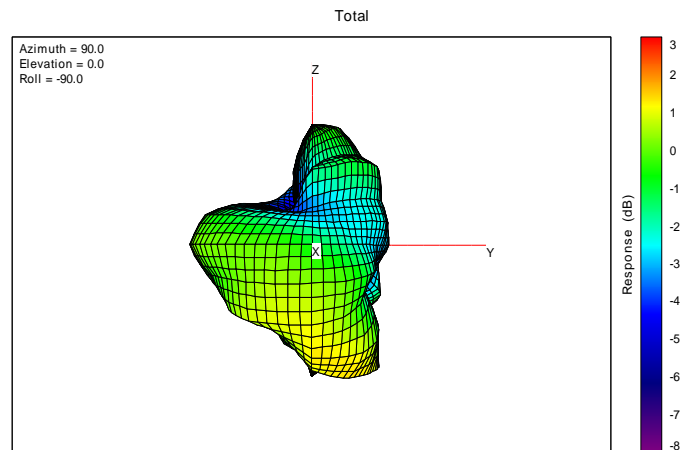
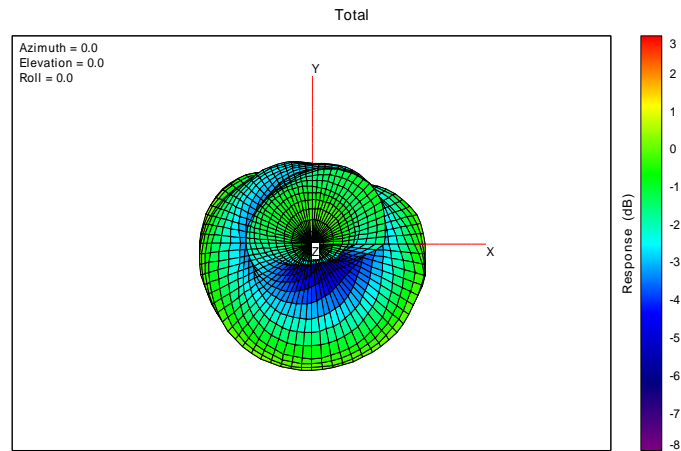
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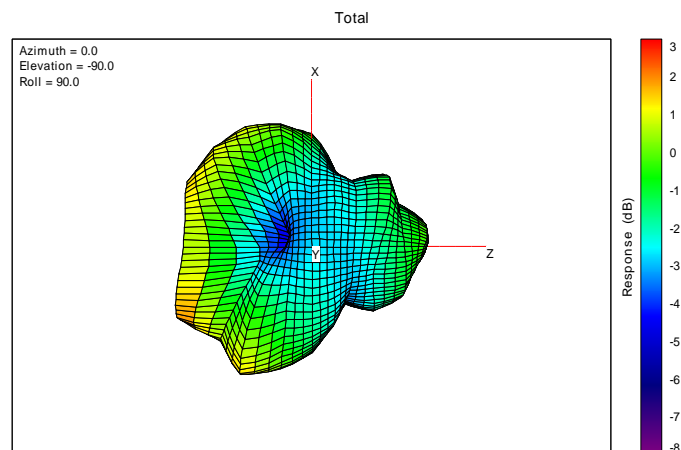
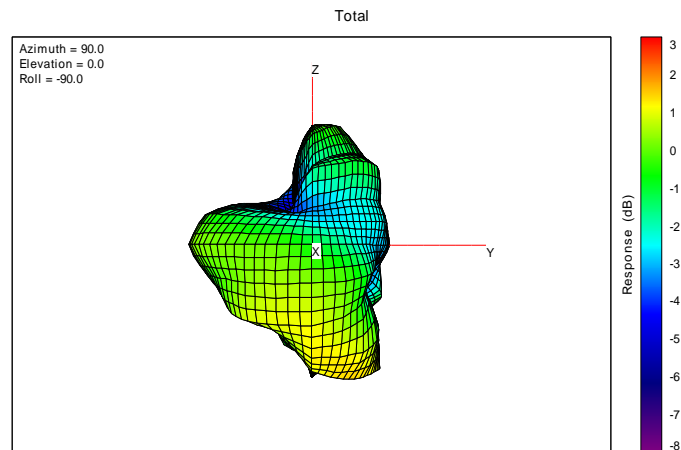
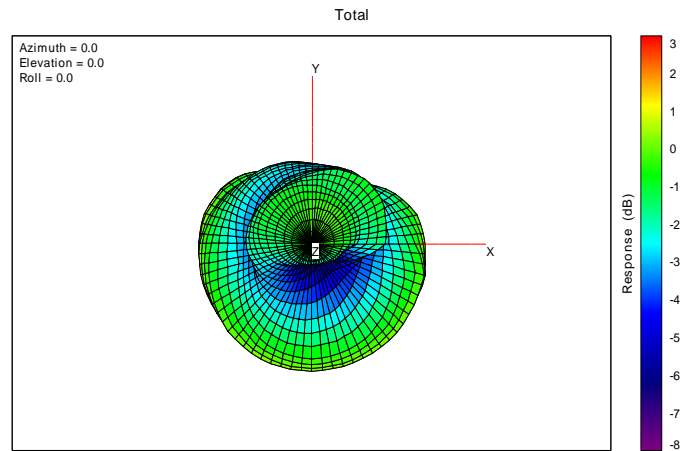
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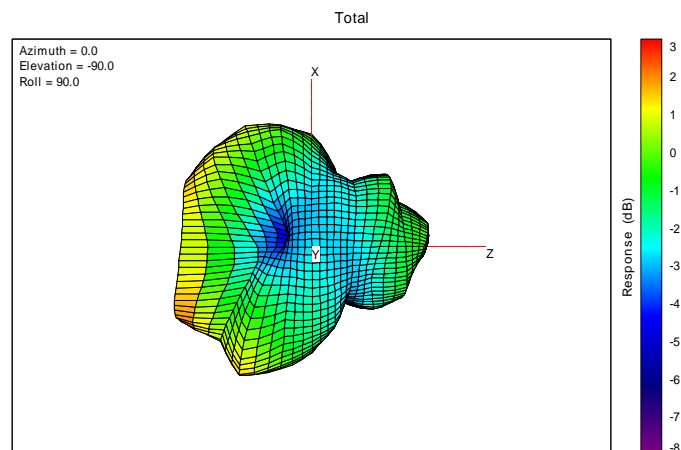
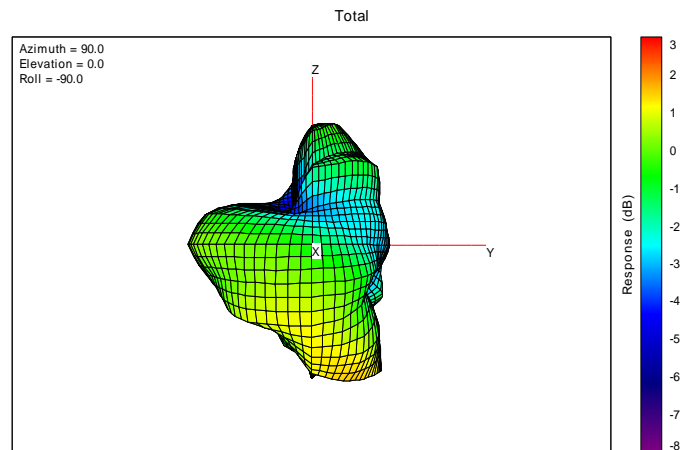
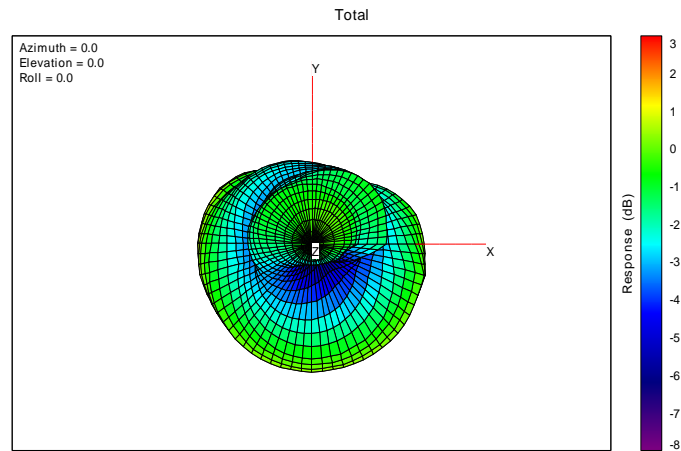
T Gain Free Space 2437



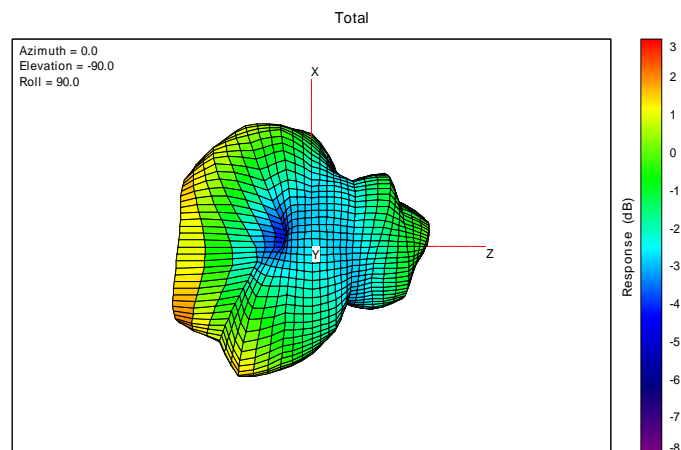
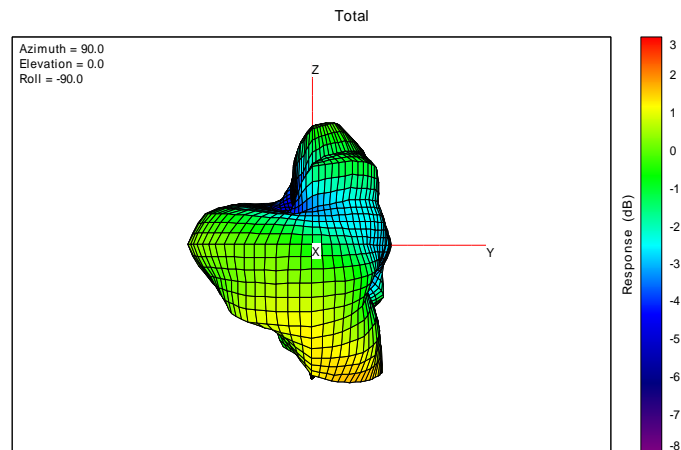
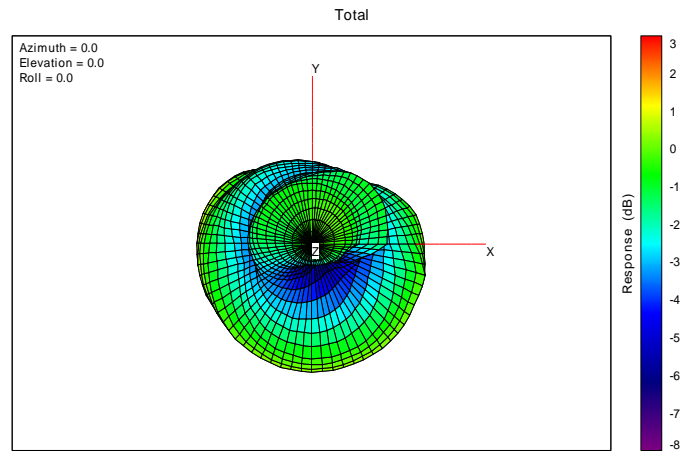
Gain Free Space 2442



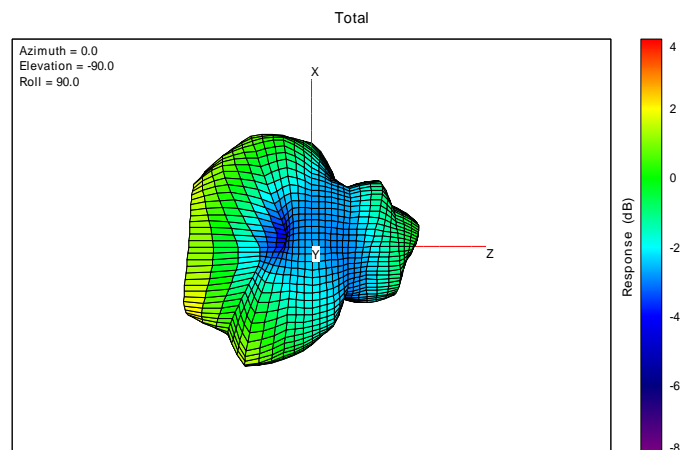
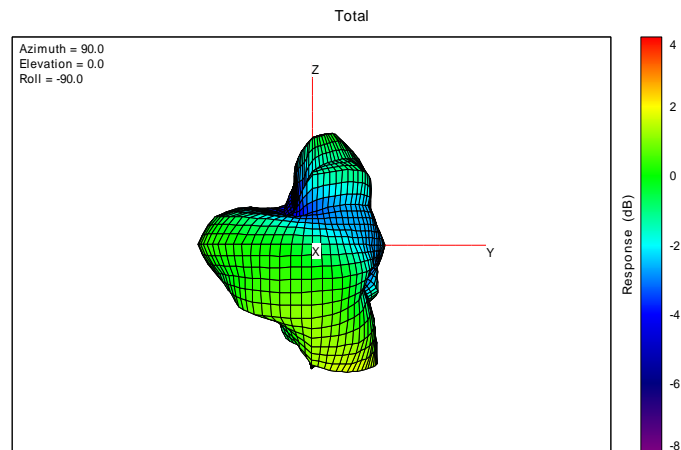
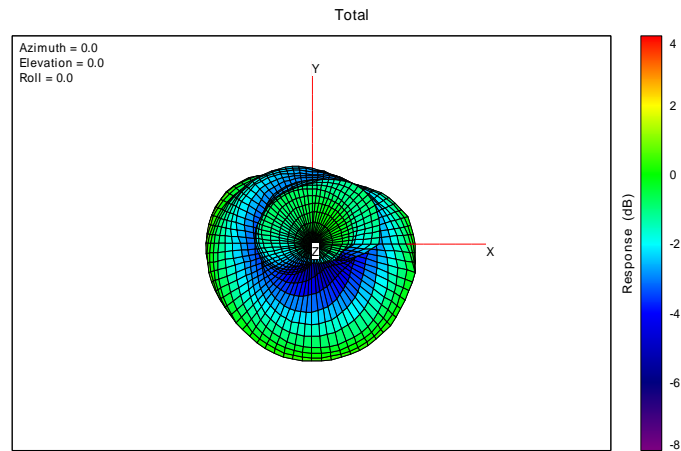
Gain Free Space 2447



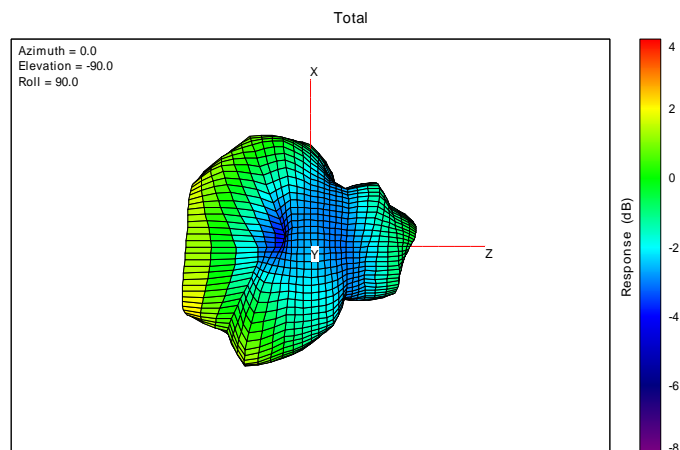
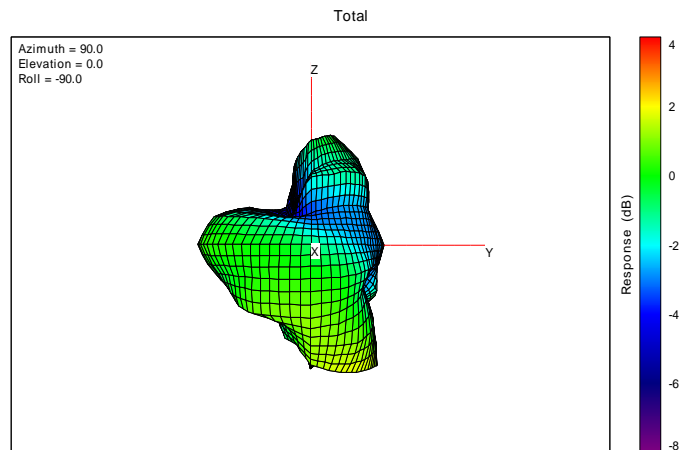
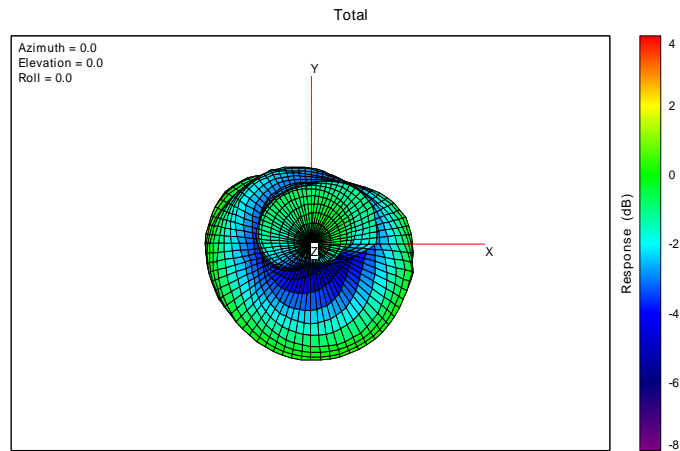
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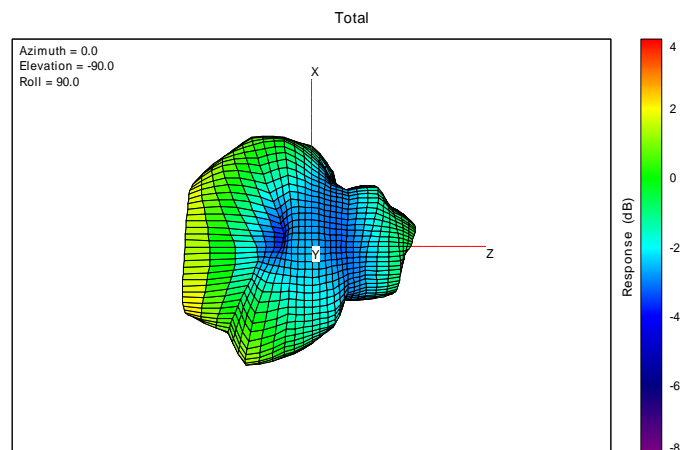
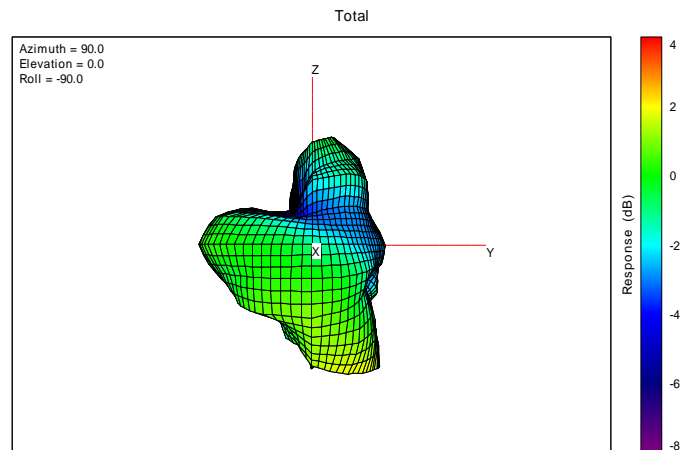
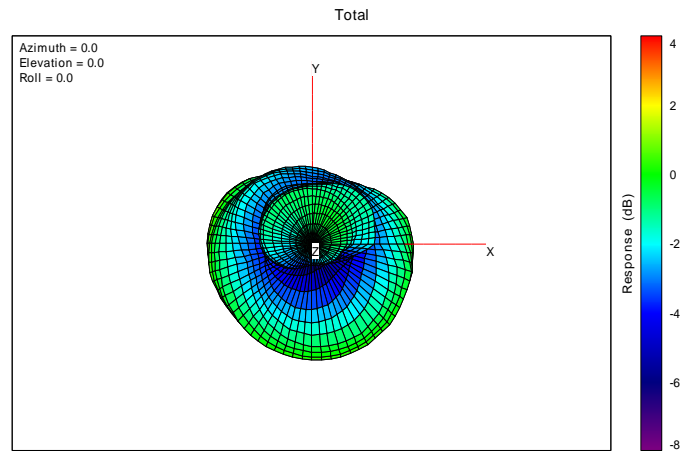
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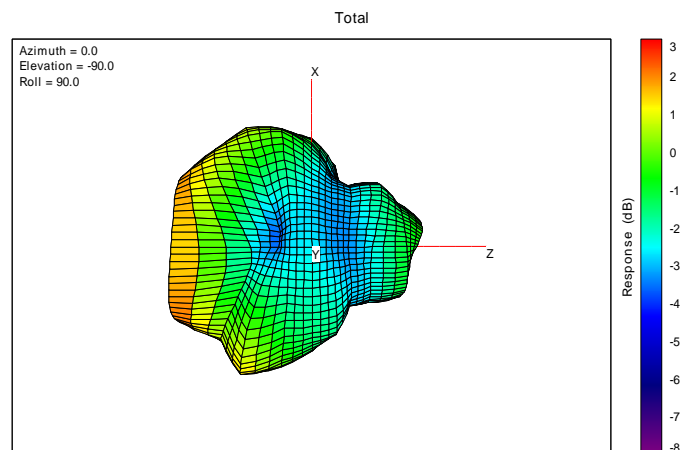
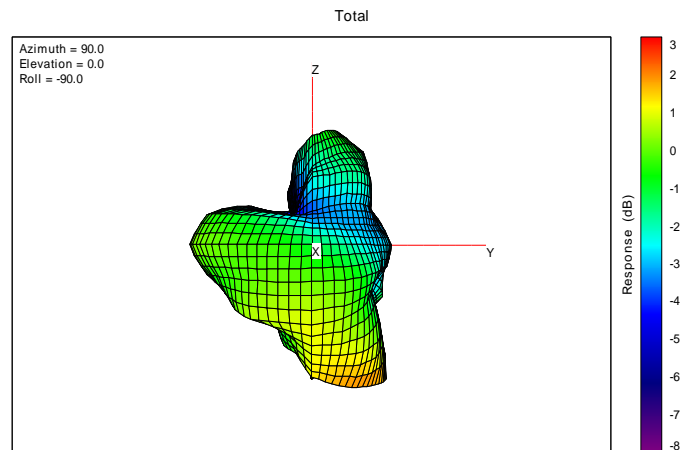
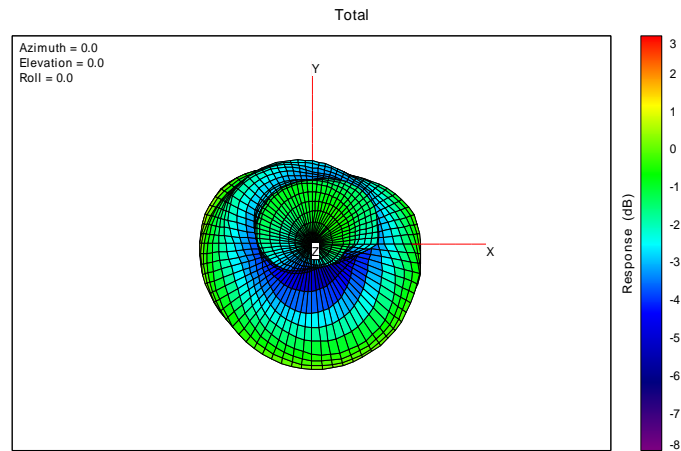
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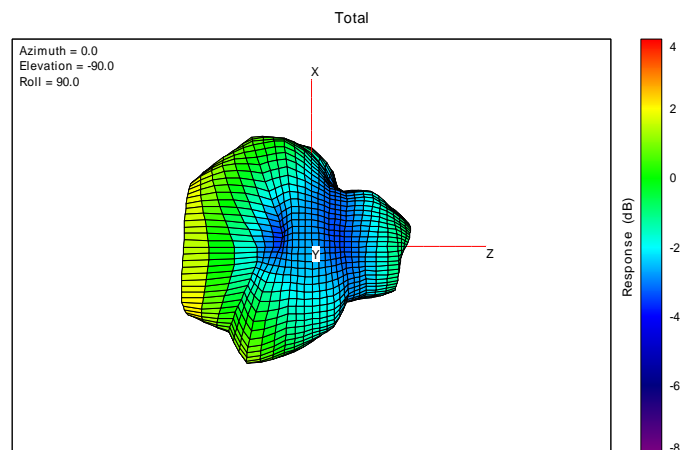
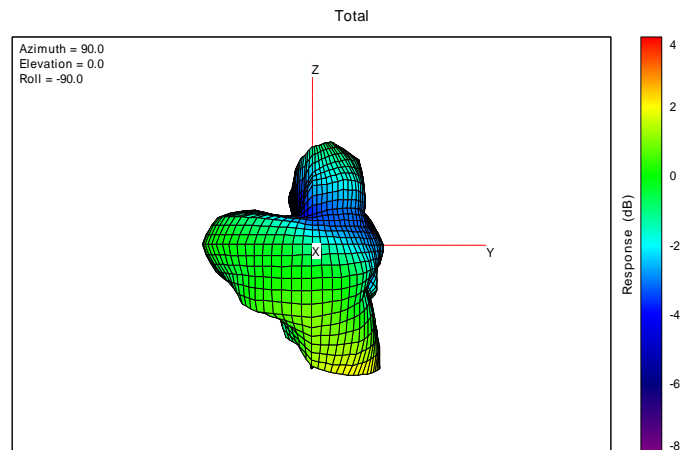
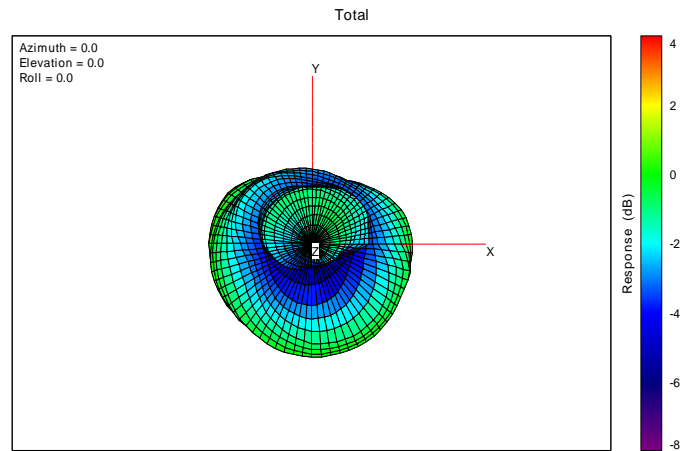
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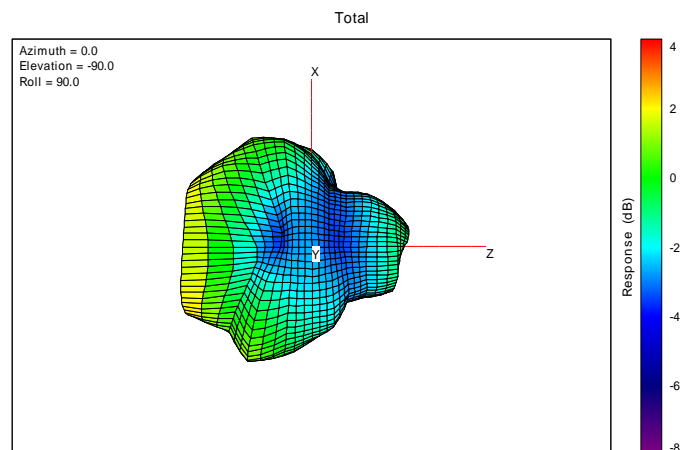
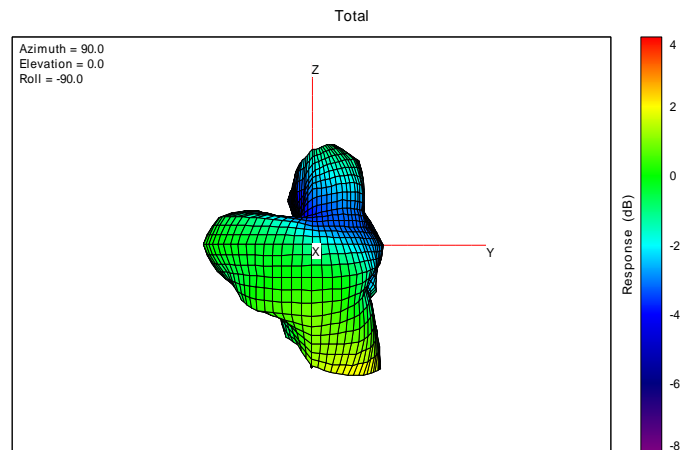
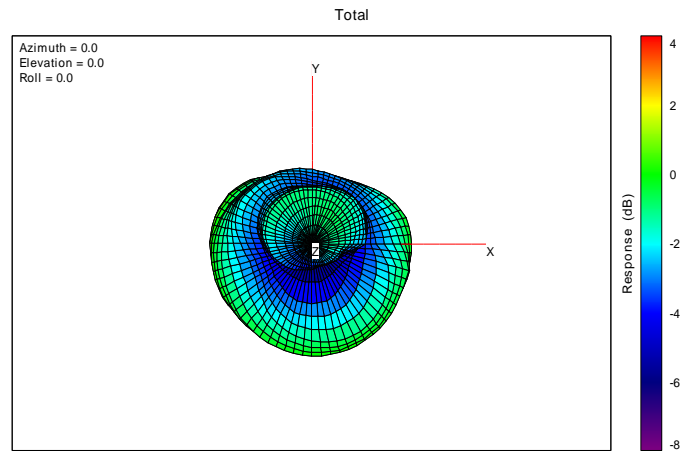
Gain Free Space 2472



Gain Free Space 2477



Gain Free Space 2482



Gain Free Space 2487

--THE END--