

Logitech

Antenna Under Test (AUT)

Report

Model Name: S00176

Equipment Type: Bluetooth speakers

Manufacturer: Logitech Far East LTD.

Test Location: Area B, West Side of Floor 1, Building 1, Tingwei Industrial Park, No. 6 Liufang Road, Bao'an District, Shenzhen City

Tested Personnel: B&T

Test Date: 2024.3.21

Report Date: 2024.3.21

Report Release History

Report version	Description	Date Issued
S00176 AUT Report	Original release	2024/3/21

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1. EUT Antenna Information

- 1) Antenna Material : PCB on board
- 2) Antenna Type : PIFA
- 3) Antenna Dimension: 14 x 11 mm
- 4) Operating Frequency : 2.4 GHz - 2.4835 GHz
- 5) Input Impedance : 50 Ω
- 6) Standing-Wave Ratio : ~2:1

2. S-parameter Measured and Calculation of Antenna Gain



Frequency (MHz)	Efficiency (dBi)	Gain (dBi)	Efficiency (%)
2400.0	-5.60	1.42	27.5
2410.0	-5.36	1.61	29.1
2420.0	-5.37	1.47	29.0
2430.0	-5.27	1.60	29.7
2440.0	-5.25	1.64	29.9
2450.0	-5.31	1.67	29.4
2460.0	-5.27	1.72	29.7
2470.0	-5.21	1.66	30.1
2480.0	-5.12	1.72	30.7
2490.0	-5.23	1.53	30.0
2500.0	-5.21	1.46	30.1

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3. 2D&3D Radiation Pattern Measurement

3.1 Description of the anechoic chamber

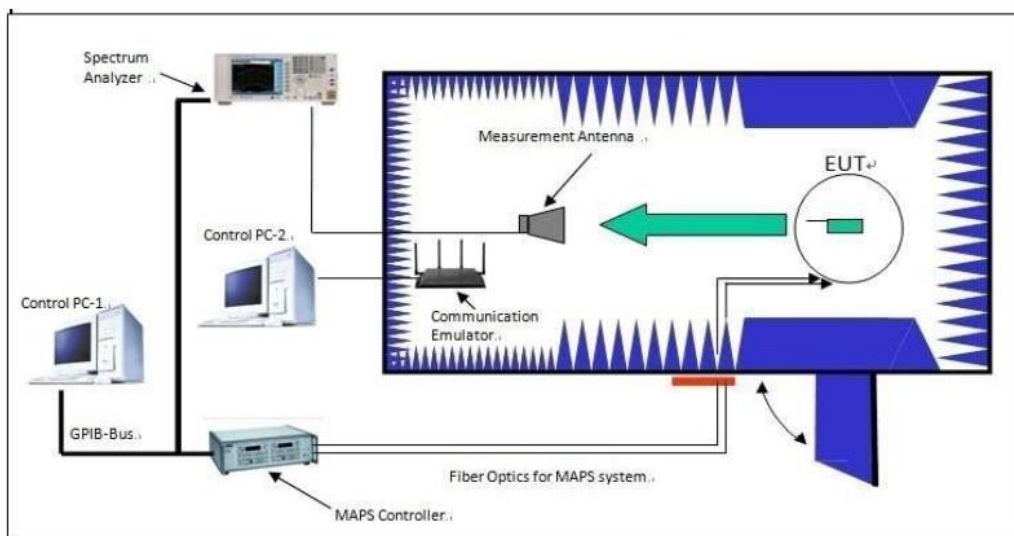
Length: 7m

Width: 4m

Height: 3m

Turntable height: 1.5m

Measurement antenna height: 1.5m

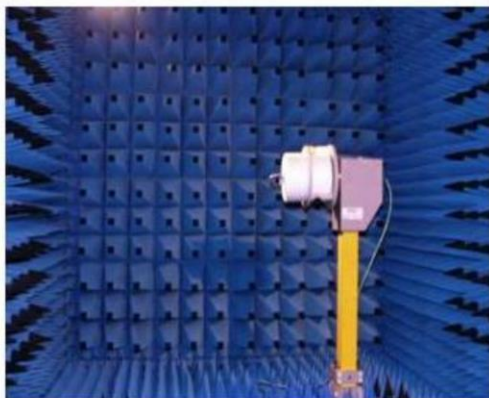


Microwave anechoic chamber model: ETS-743

TD-SCDMA test equipment: StarPoint SP6010/Agilent 8960

WCDMA/GSM/CDMA test equipment: Agilent 8960

Antenna passive testing equipment: Agilent Technologies E5071B



3.2 Test Instruments

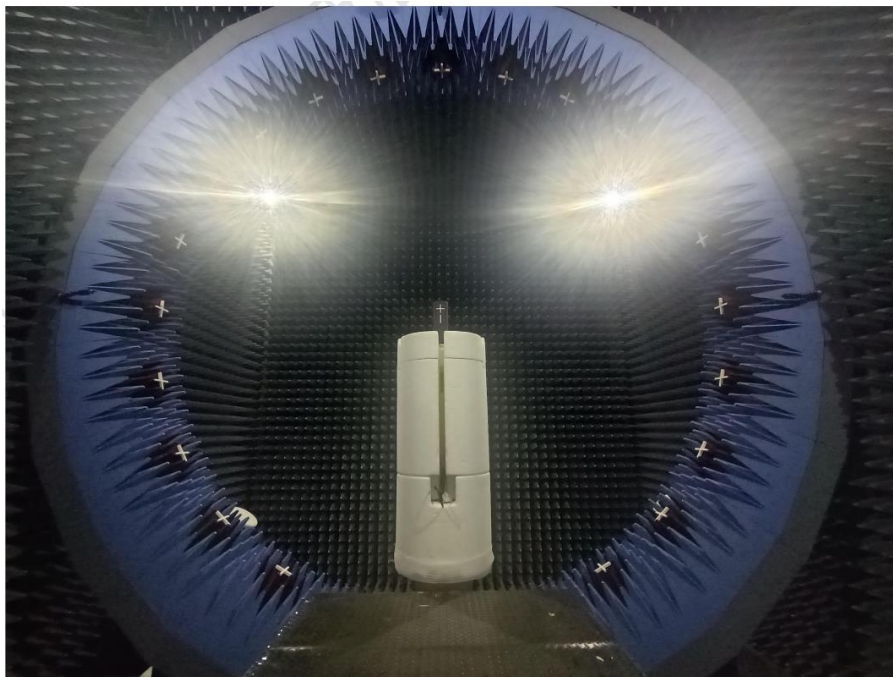
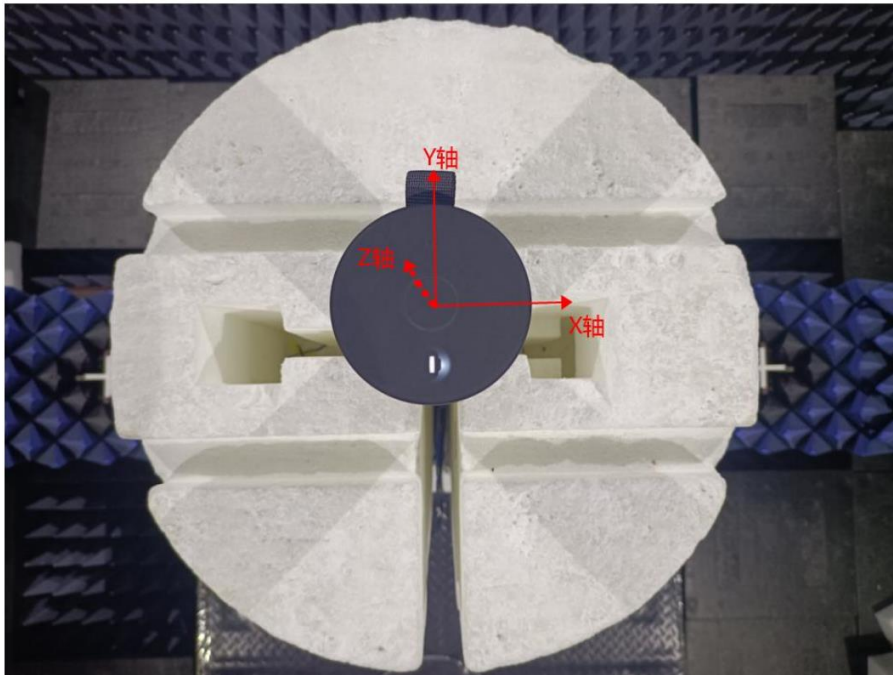
Description	Model No.	Serial No.	Last Calibration
Network Analyzer Keysight	E5071B	NDX-WJ294	2023-06-12
Communications test Seta	CMW500	NDX-WJ295	2023-06-12
3D Chamber Test System	ETS-743	NDX-03	2023-06-13
Software	SAM	SAM2.9.10190809	NA

Note: The calibration interval of the above test instruments is 12 months

3.3 Test Procedure

1. Connect the antenna: Place the device to be tested on the test transfer stand, the antenna is connected to the port of the network analyzer via the RF Cable, and confirmed that the connection is reliable.
2. Set test conditions: Enter the measurement frequency band in the test software according to the antenna working frequency band, and the measurement frequency point.
3. Measure antenna gain: The gain of the antenna to be tested is compared with the standard gain of the known antenna, so as to obtain the gain of DUT antenna.
4. Calculate antenna passive efficiency: Dividing the measured gain value by the antenna's directivity factor gives the antenna efficiency
5. Generate test report: Target the test results and analysis conclusions into test reports, and file and save.

3.4 Test Setup photos



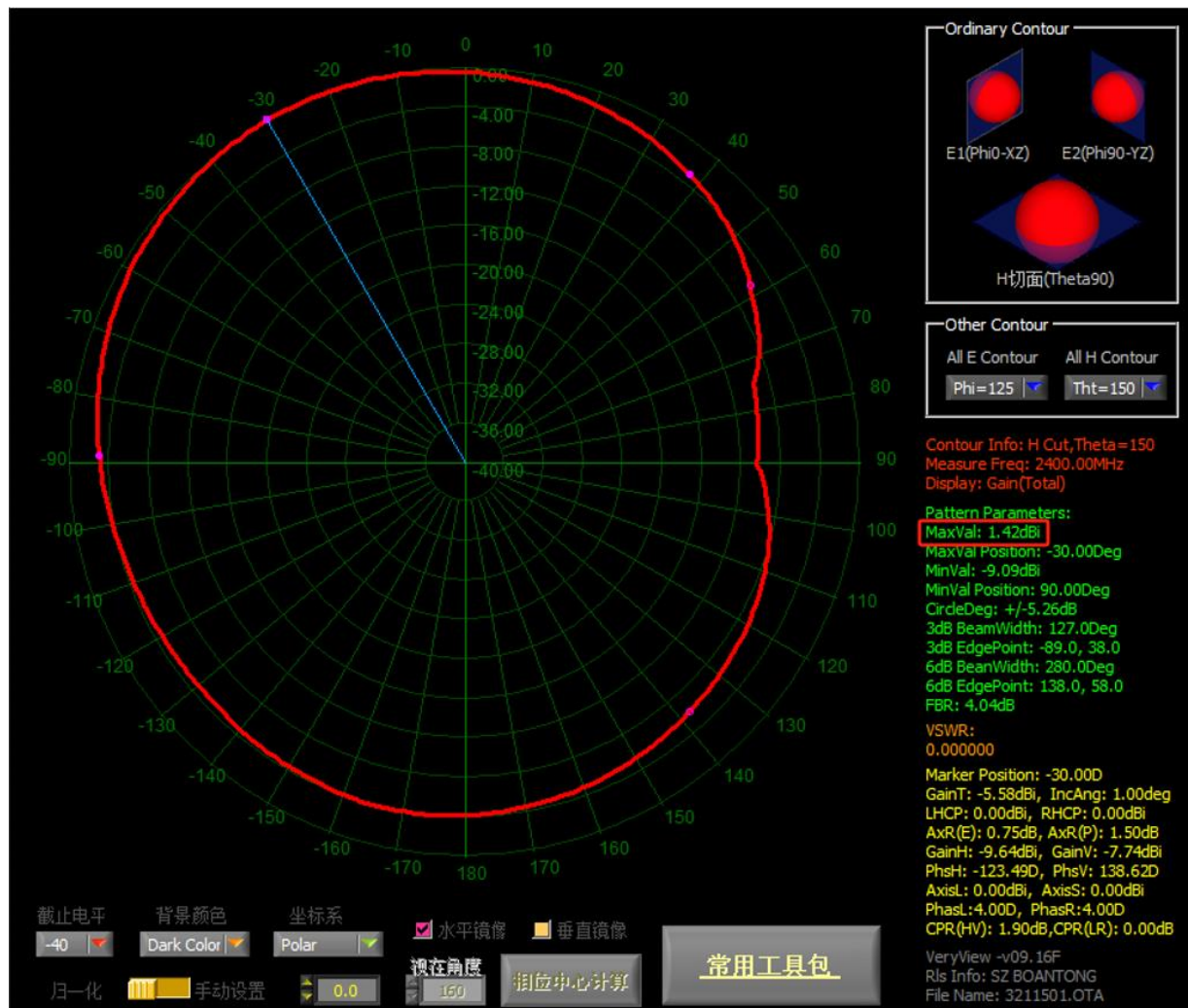
H: XY

E1: XZ

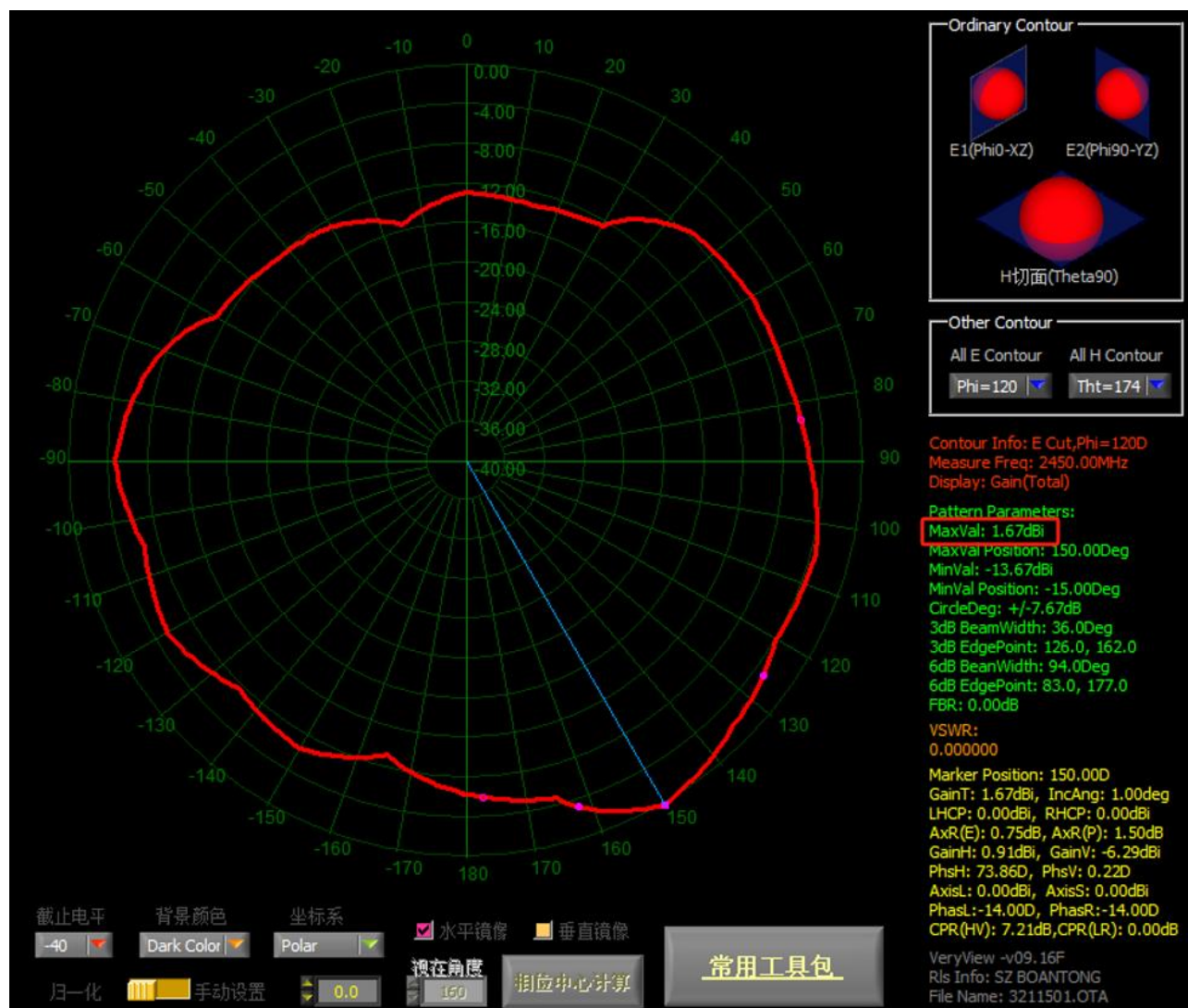
E2: YZ

3.5 2D Pattern Test Plot

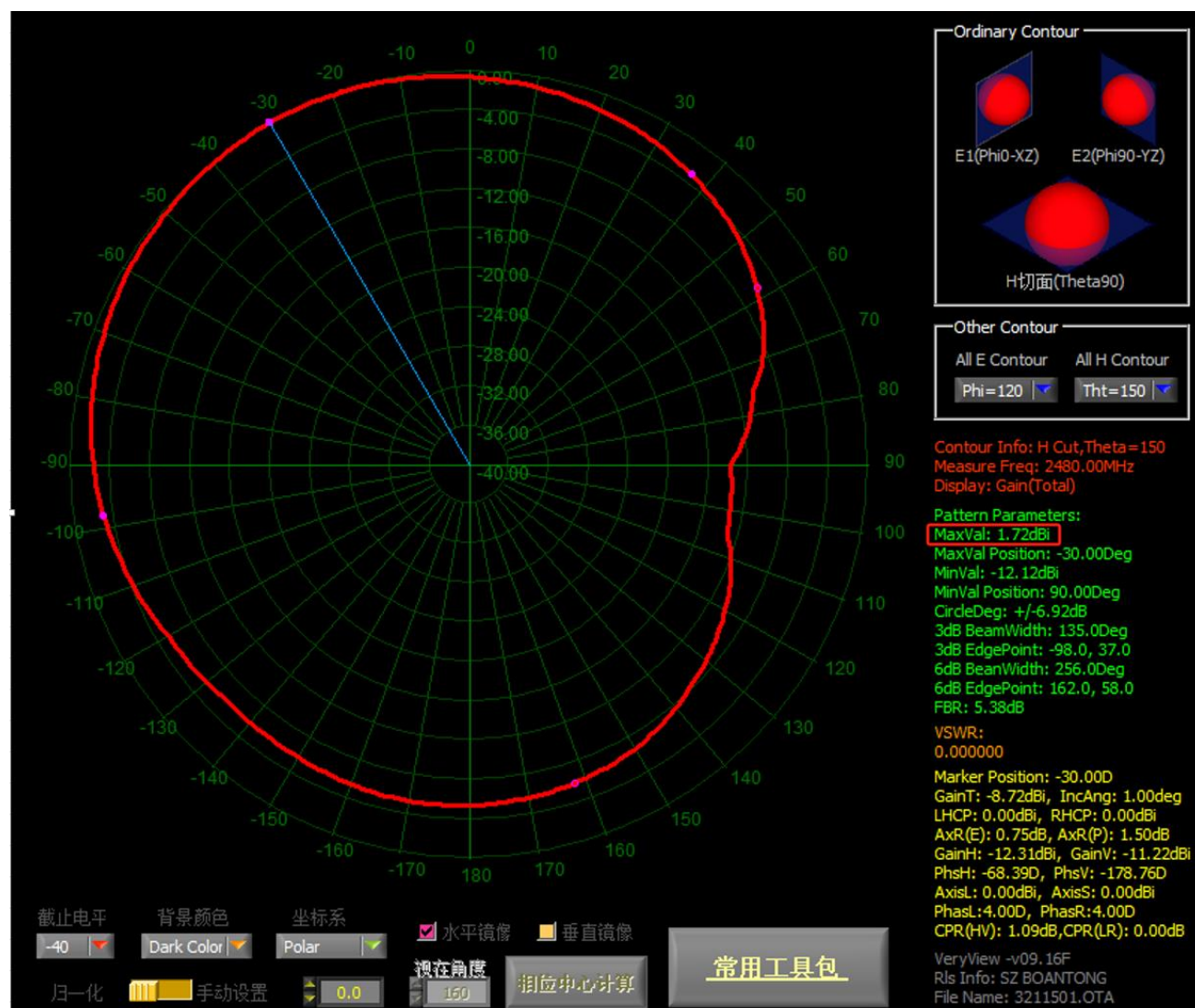
2400MHz



2450MHz



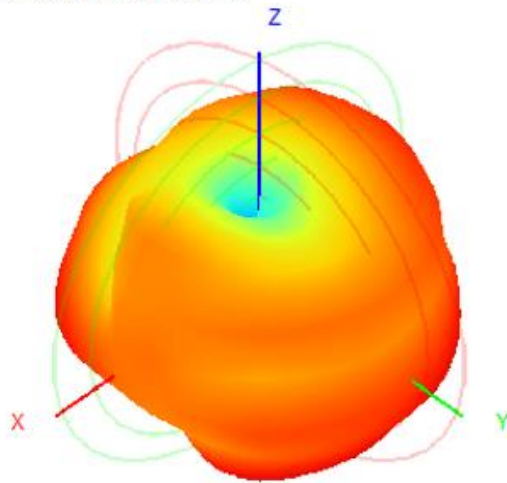
2480MHz



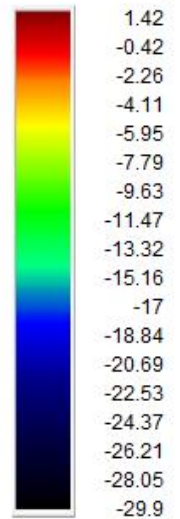
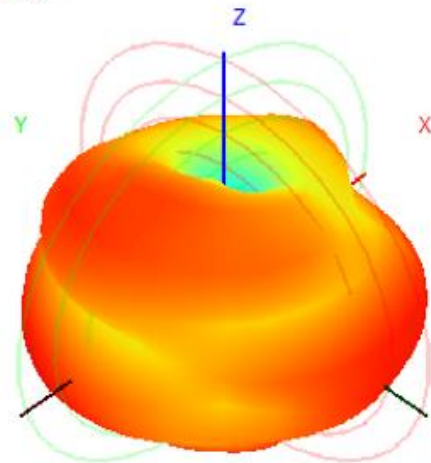
3.6 3D Pattern Test Plot

3D radiation pattern measurement in the anechoic chamber

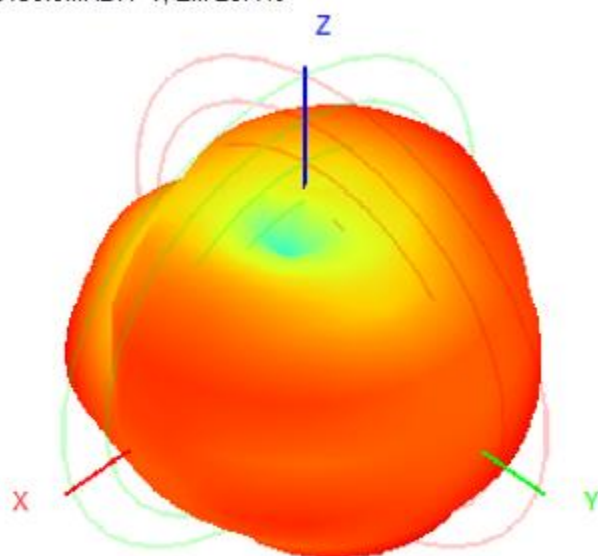
2400.0MHz H+V, Eff: 27.5%



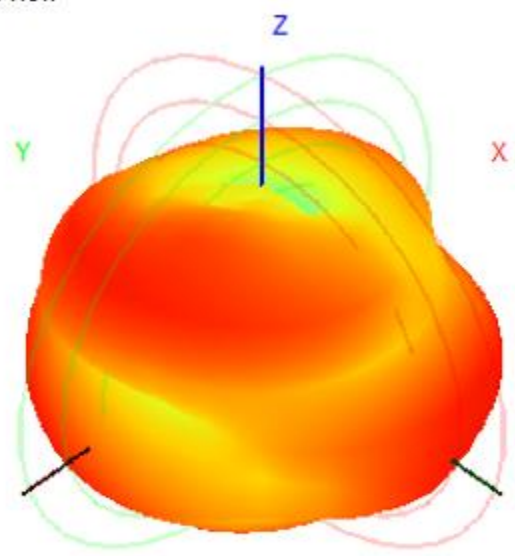
Back View



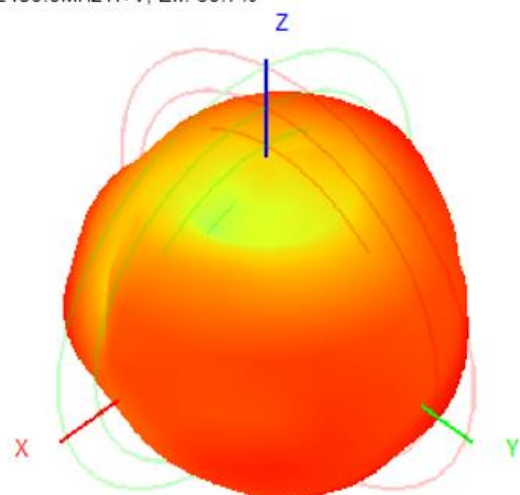
2450.0MHz H+V, Eff: 29.4%



Back View



2480.0MHz H+V, Eff: 30.7%



Back View

