

ATEVK-900-ANT-FM ANTENNA TEST REPORT

May 2014

**HCL Technologies,
Chennai**

Revision History

Version No	Date	Prepared by	Reviewed by	Significant Changes
1.0	20/05/2014	S. Mahammad Hussain		Initial Release.

Glossary

Abbreviation	Description
RL	Return Loss
dB	Decibel

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1 SCOPE

The document describes about measured test results of ATEVK-900-ANT-FM Antenna parameters like S-parameter, Radiation patterns, Gain, Efficiency and radiation 3D plots.

2 INSTRUMENTATION

Following instruments were used for the measurements

No	Description	Model	Manufacturer	Place
1	PNA-X Network Analyzer(10MHz-43.5 GHz)	N5244A	Agilent Technologies	HCL,Chennai
2	ENA Series (9KHz to 8.5GHz)	E5071C	Agilent Technologies	HCL,Chennai
3	Satimo NF Chamber (0.8GHz to 6GHz)	Star Lab	Satimo	HCL,Chennai

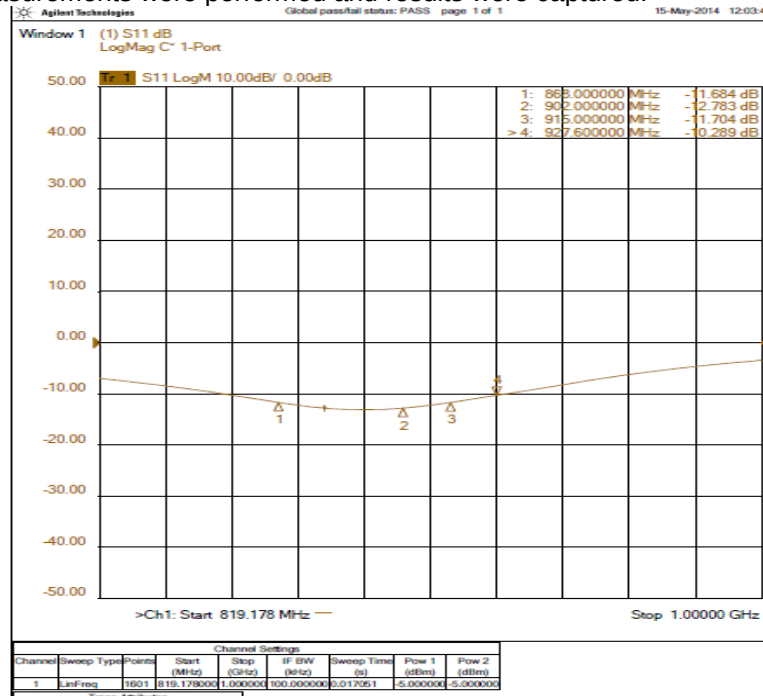
3 S-PARAMETER MEASUREMENT

3.1 S-Parameter Setup



3.2 S-Parameter measurement - Return Loss

The S-Parameter measurements were performed and results were captured.

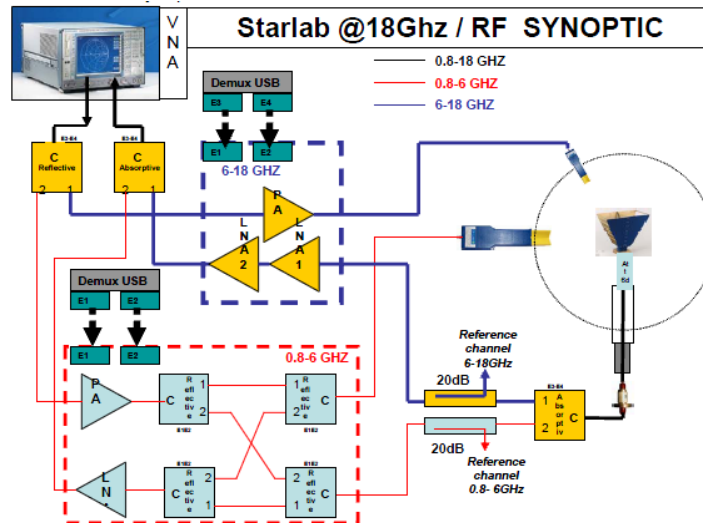


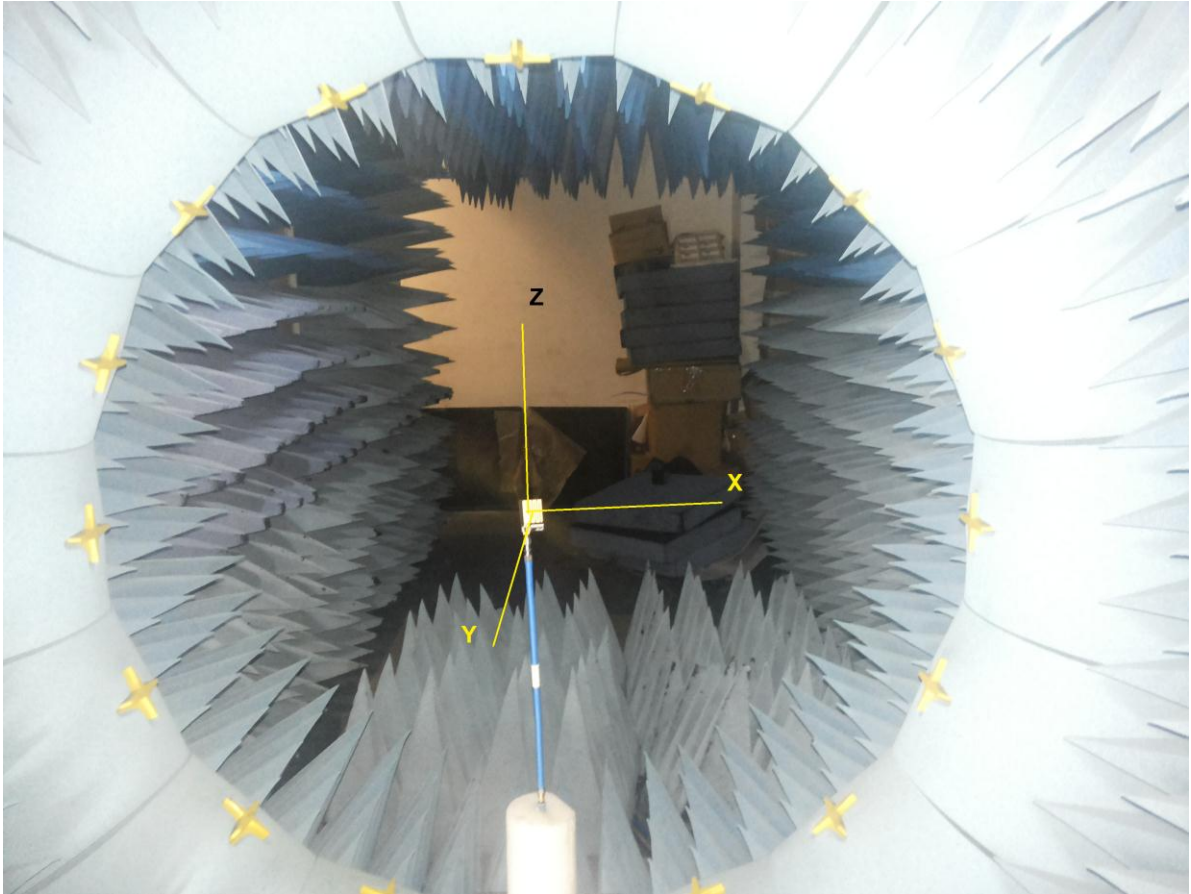
4 RADIATION PATTERN MEASUREMENT

4.1 Radiation Pattern Measurement setup

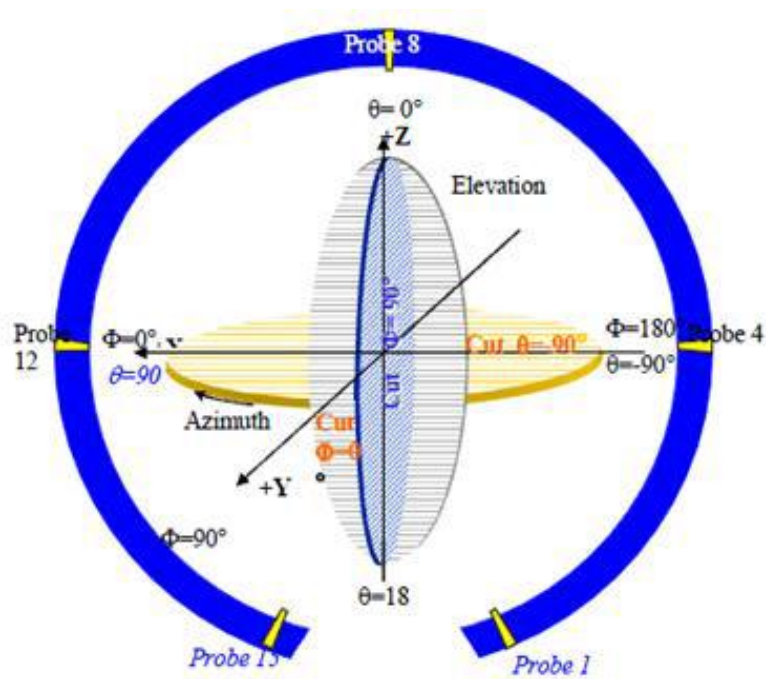
The radiation pattern of antenna is measured in the Satimo near field Chamber spherical system. The measurement setup and coordinates shown in the figure. The measurement performed for the following parameters:

- Azimuth & elevation pattern @ XY, YZ and ZX planes
- Antenna gain & efficiency, 3D-Radiation pattern

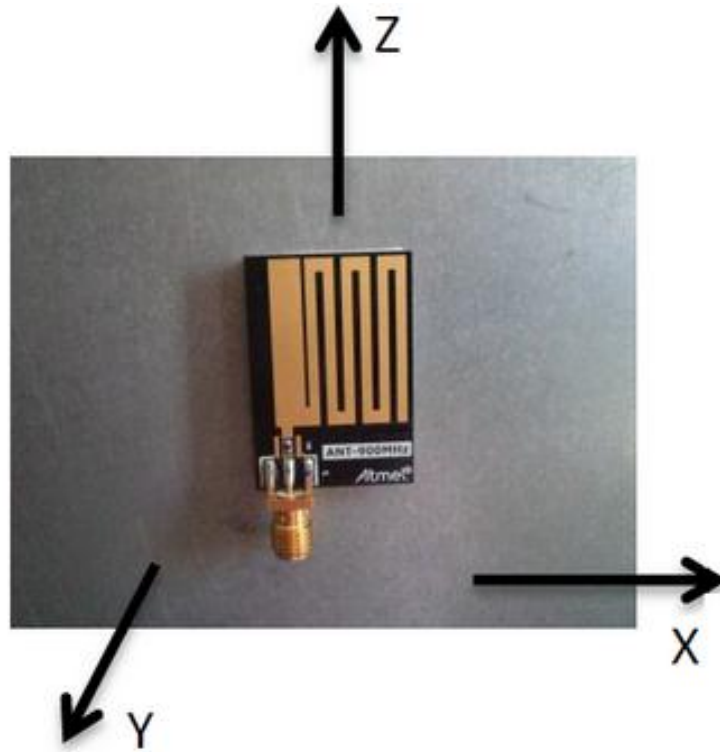




4.2 Satimo NF Spherical-Coordinate system

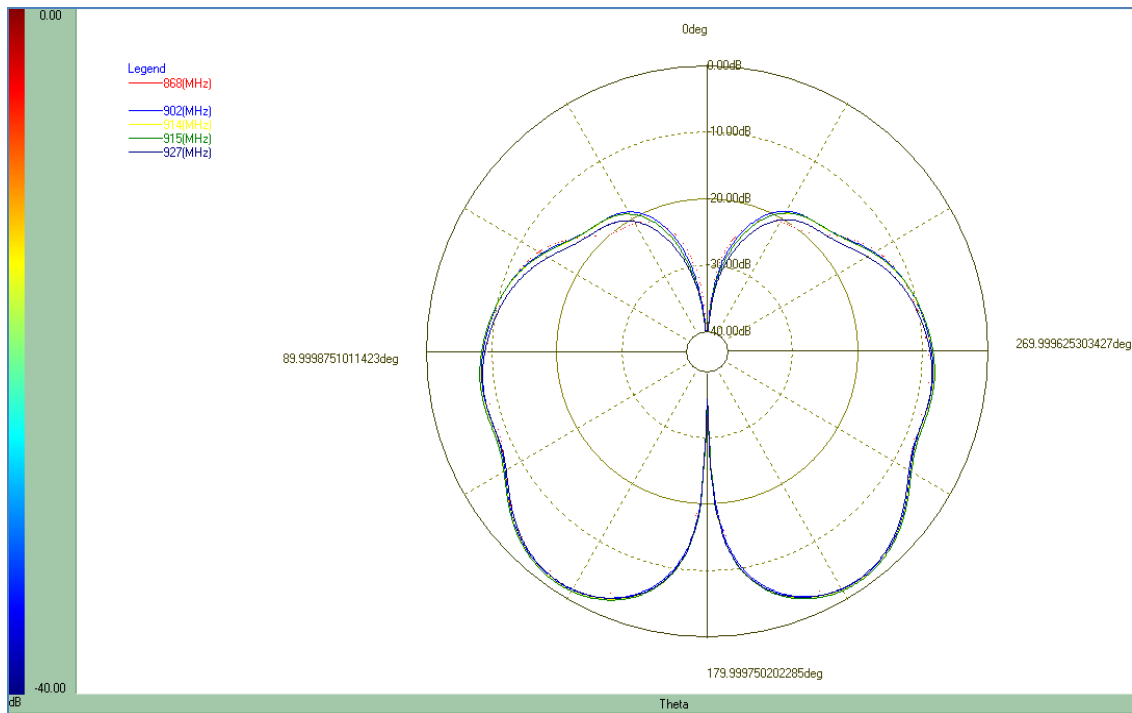


4.3 Co-ordinate system of DUT in Test Setup

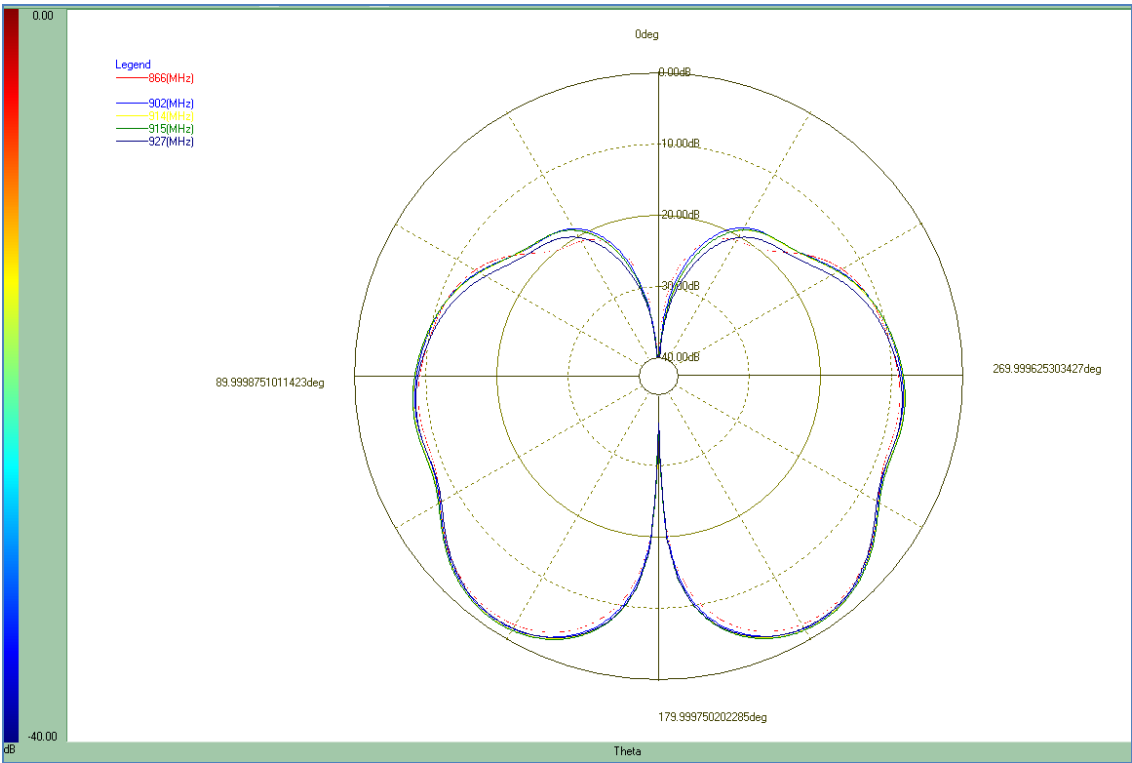


4.4 Measured Radiation Pattern of ATEVK-900-ANT-FM Antenna

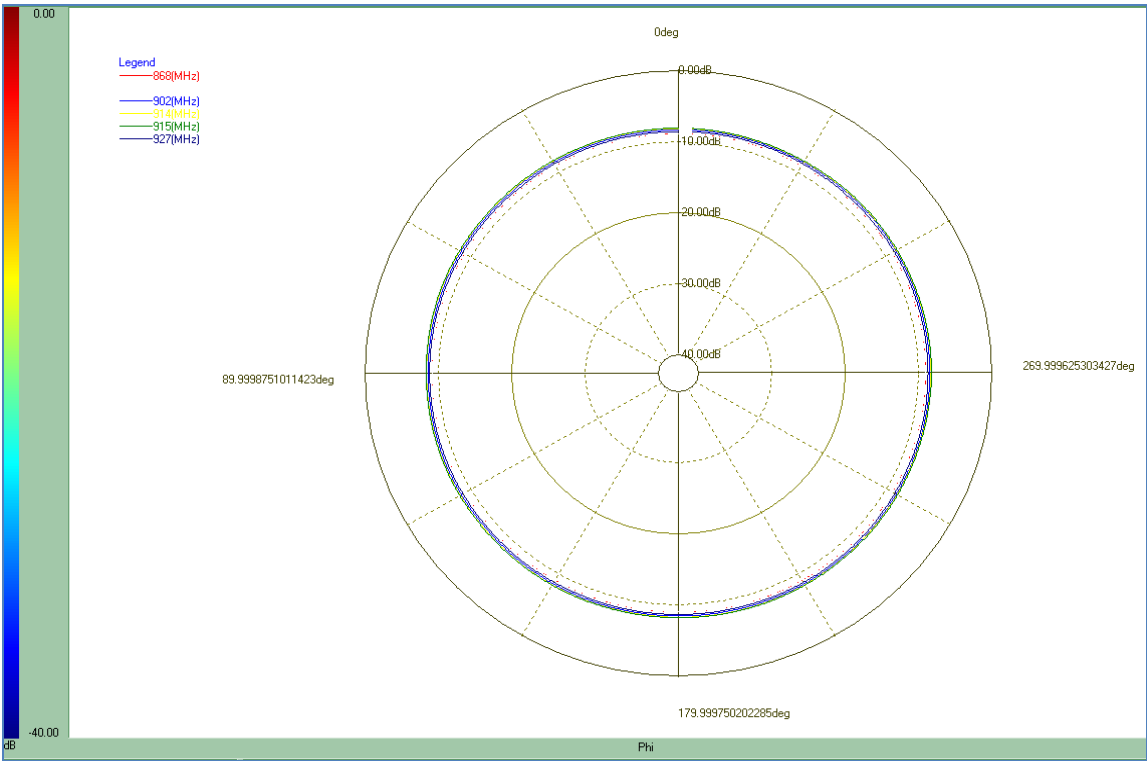
4.4.1 Elevation pattern $\Phi=0^\circ$



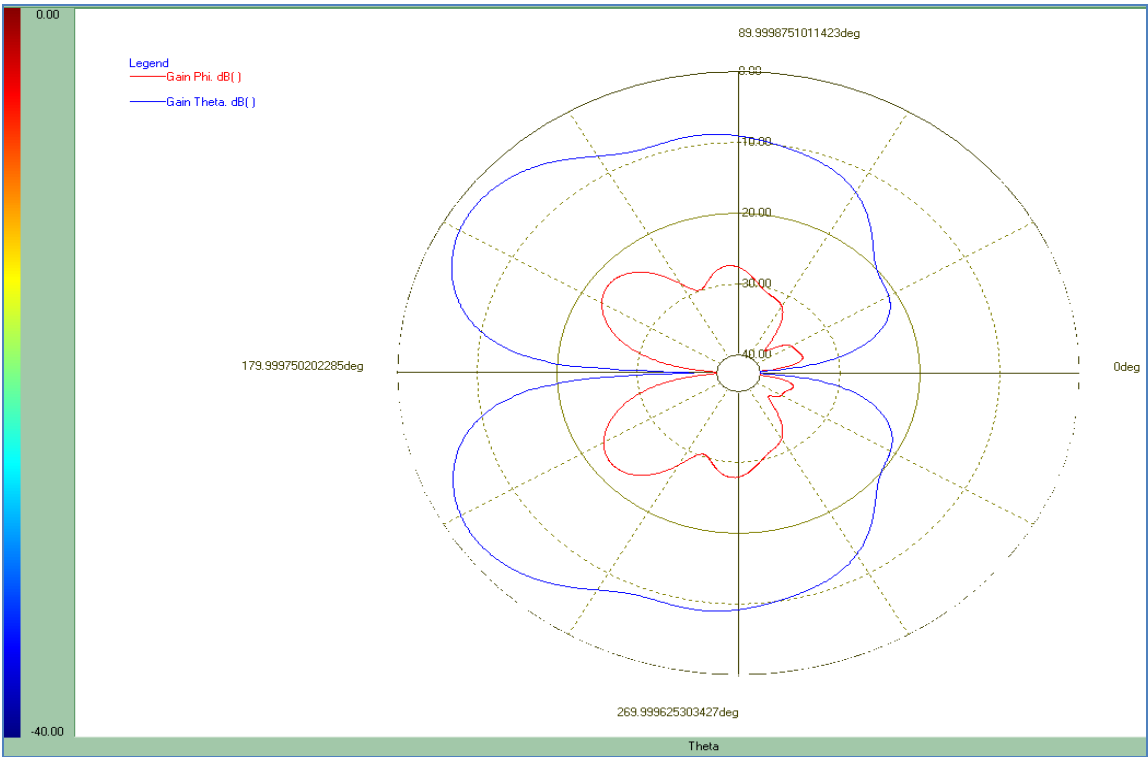
4.4.2 Elevation pattern $\Phi=90^\circ$



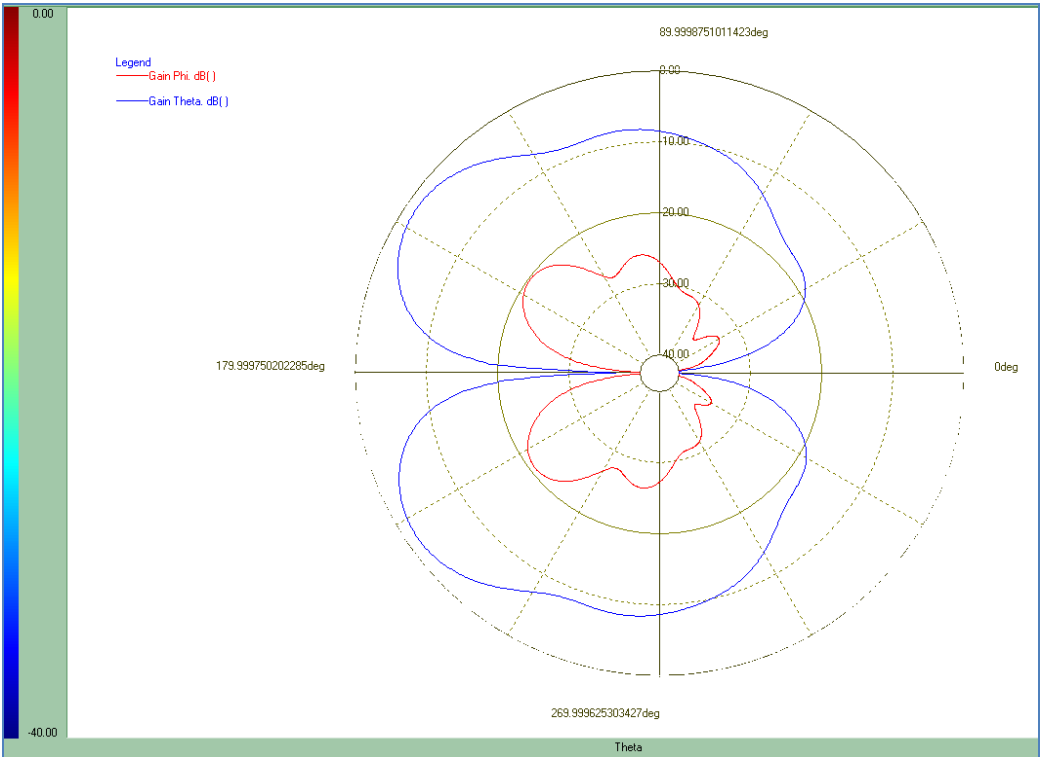
4.4.3 Azimuth pattern $\Theta=90^\circ$



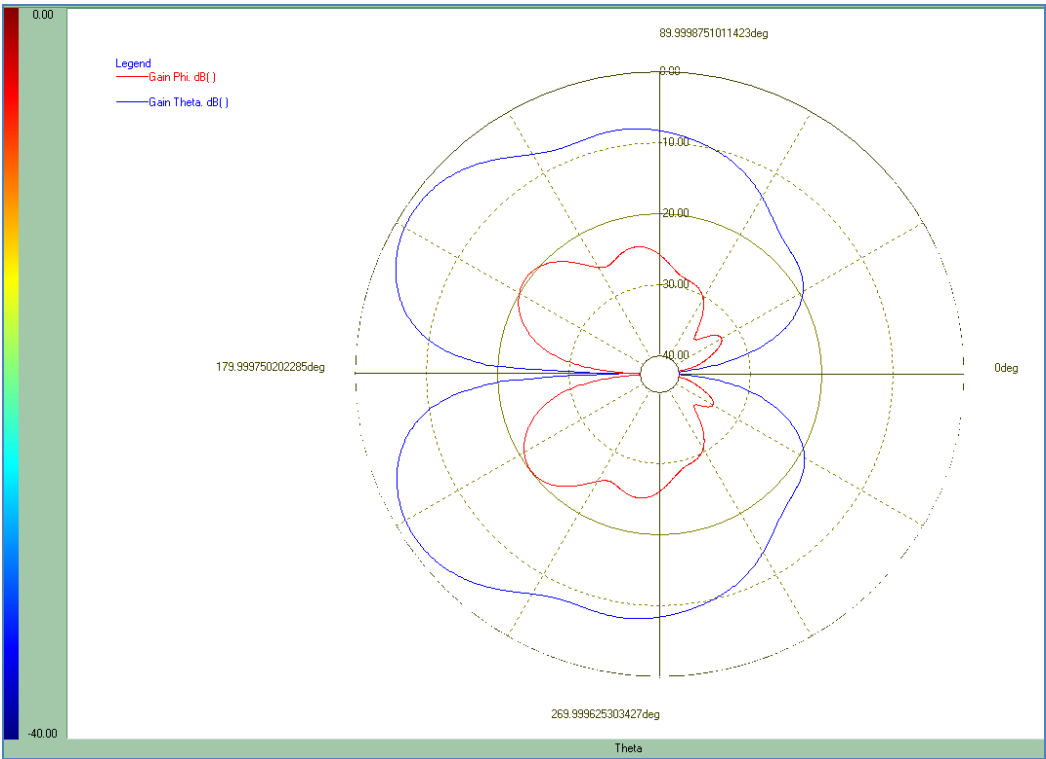
4.4.4 Cross-Pol @868 MHz



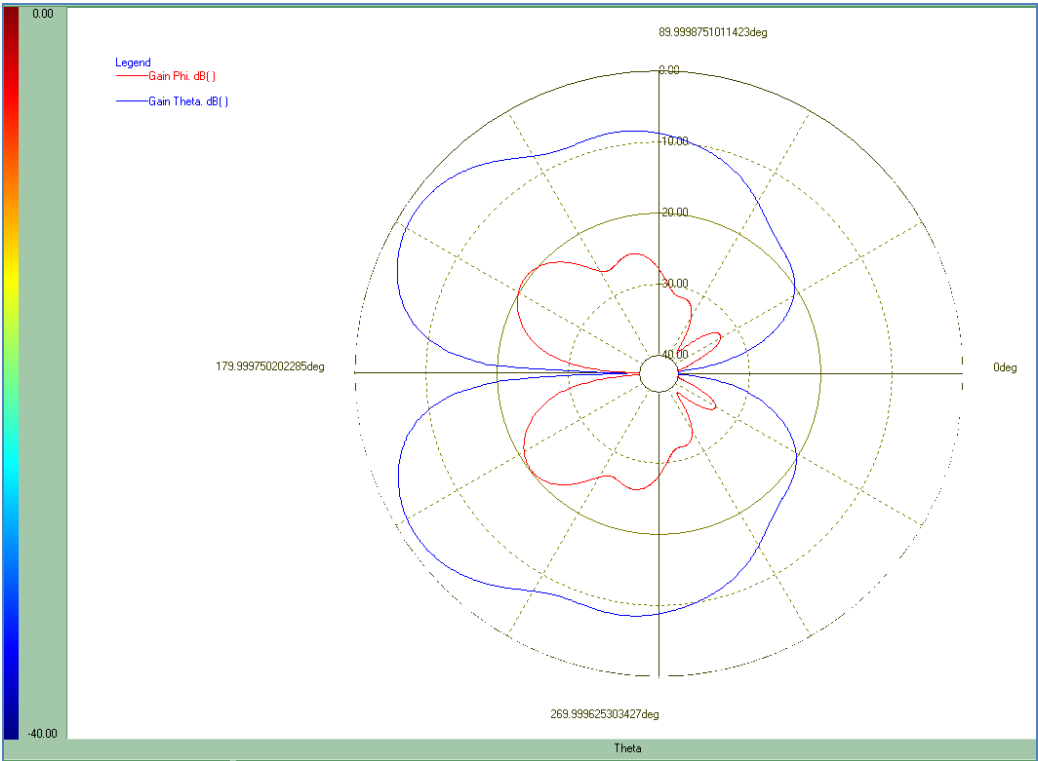
4.4.5 Cross-Pol @902 MHz



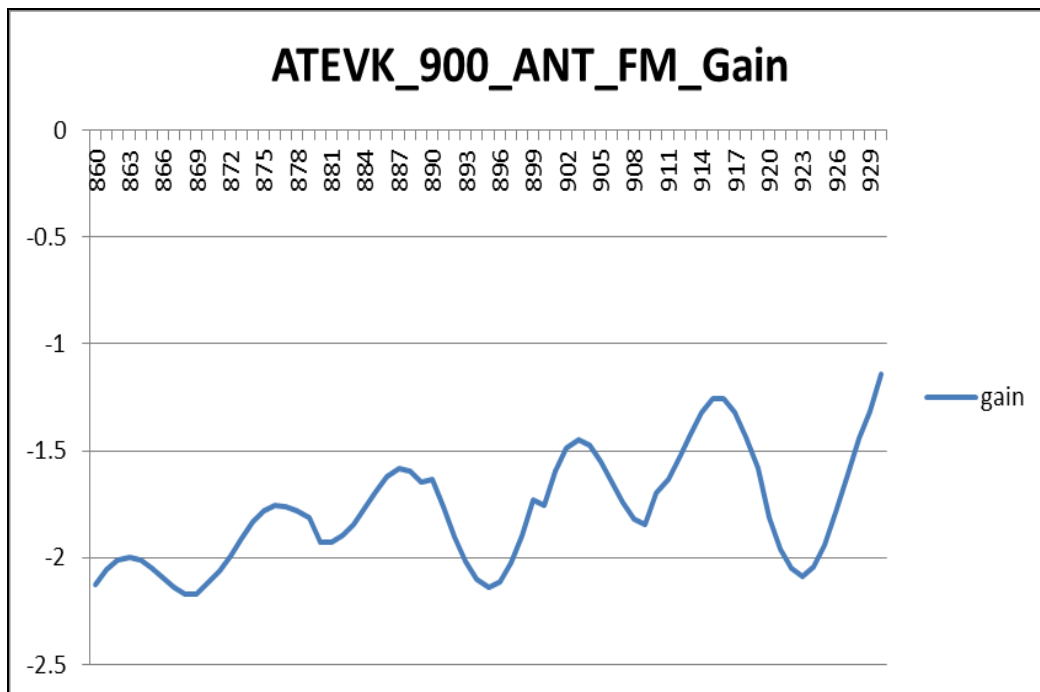
4.4.6 Cross-Pol @915 MHz



4.4.7 Cross-Pol @927 MHz

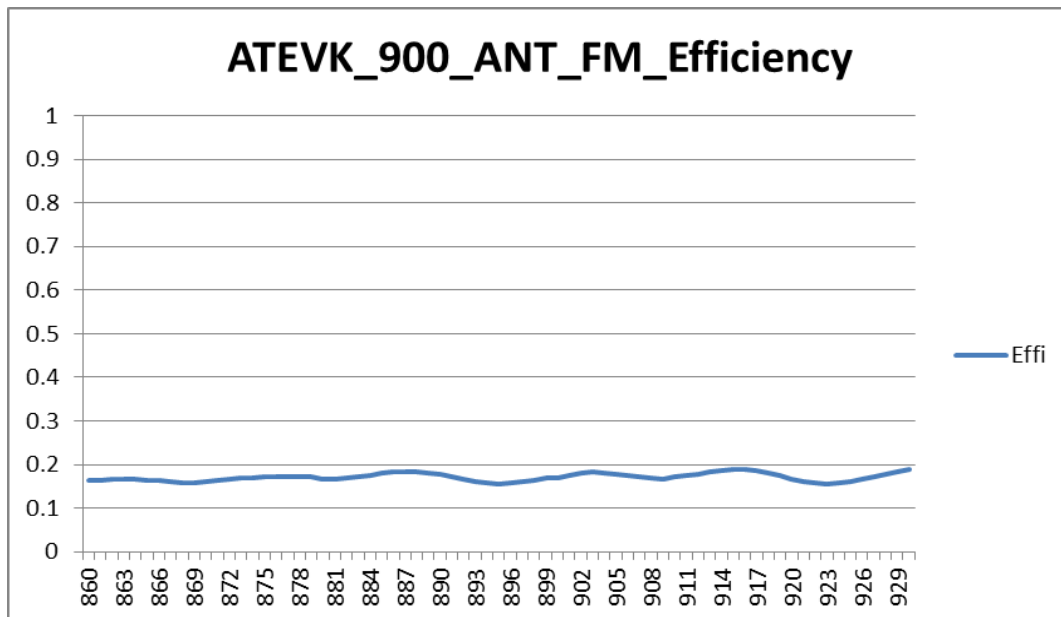


4.5 Antenna Gain



Note: Gain values observed from Satimo and plotted using Excel

4.6 Antenna Efficiency



Note: Efficiency values observed from Satimo and plotted using Excel

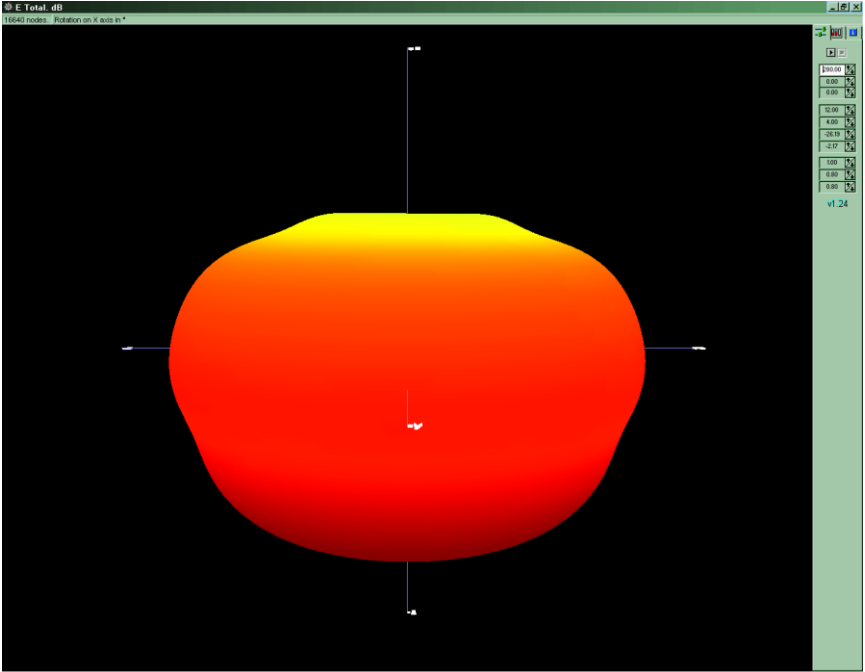


Gain_Efficiency_Tables

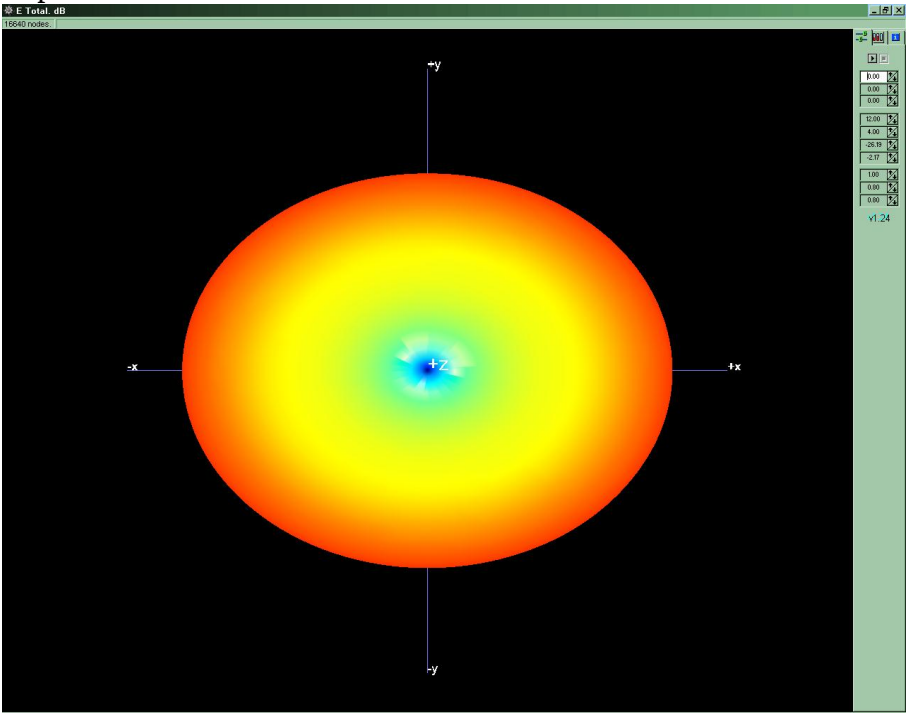
4.7 Antenna 3D Radiation Pattern

4.7.1 3D Plot @868 MHz

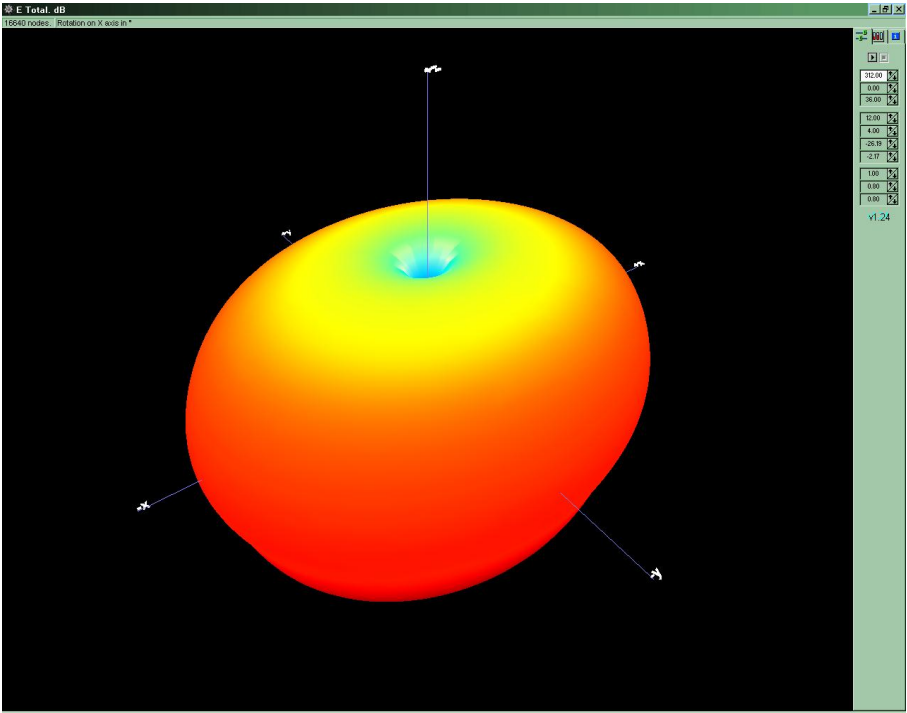
Front View



Top View

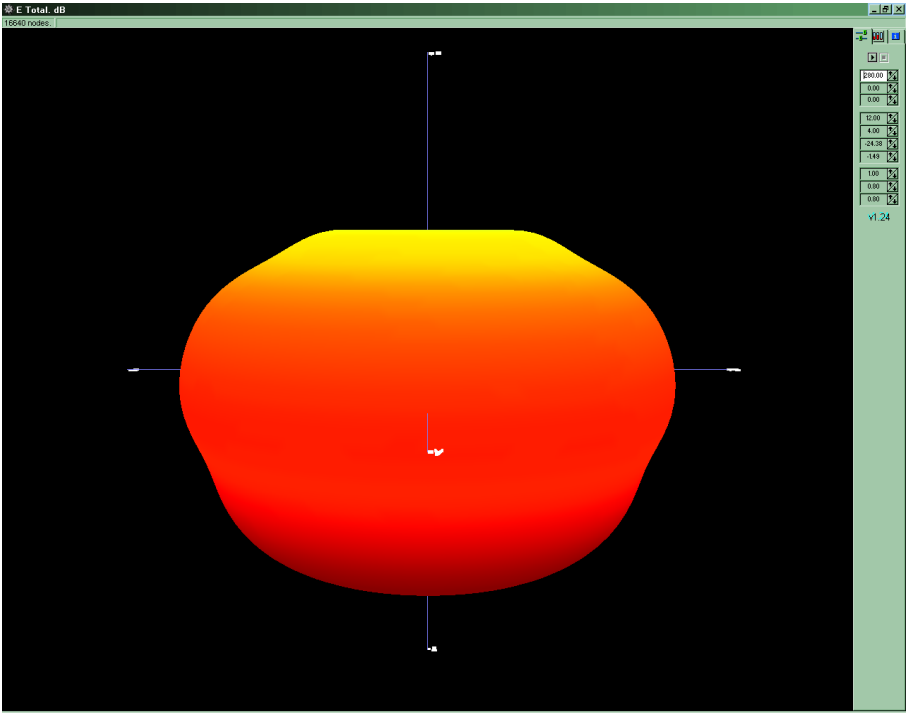


Side View

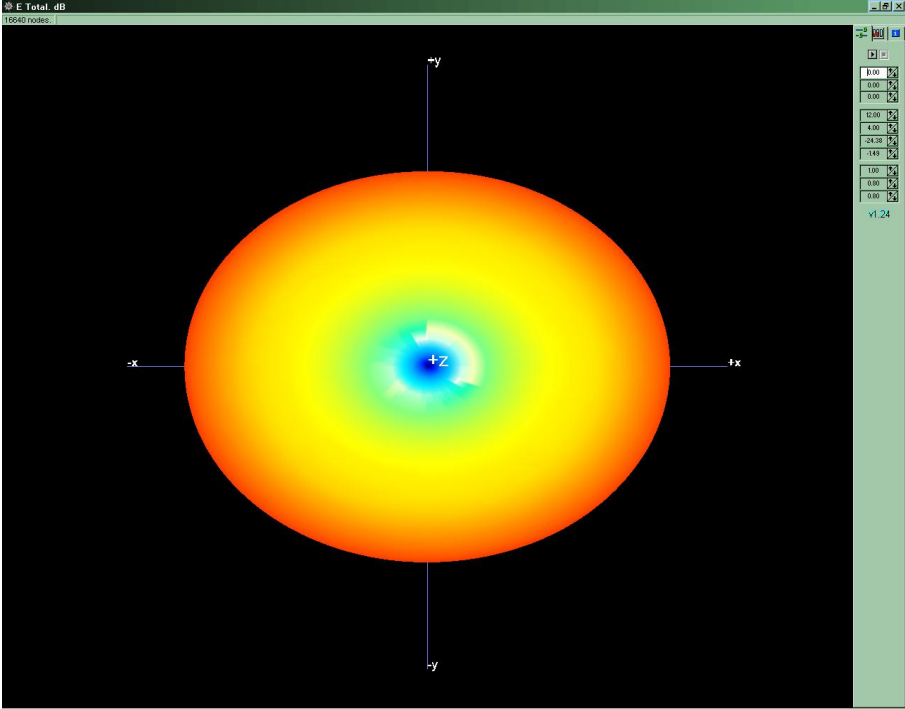


4.7.2 3D Plot @902 MHz

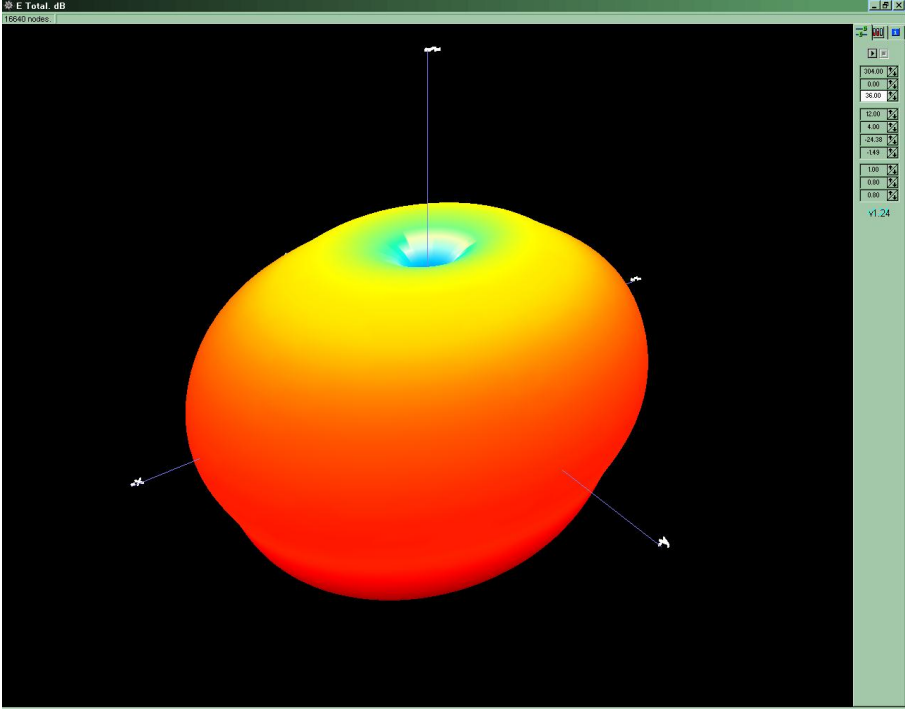
Front View



Top View

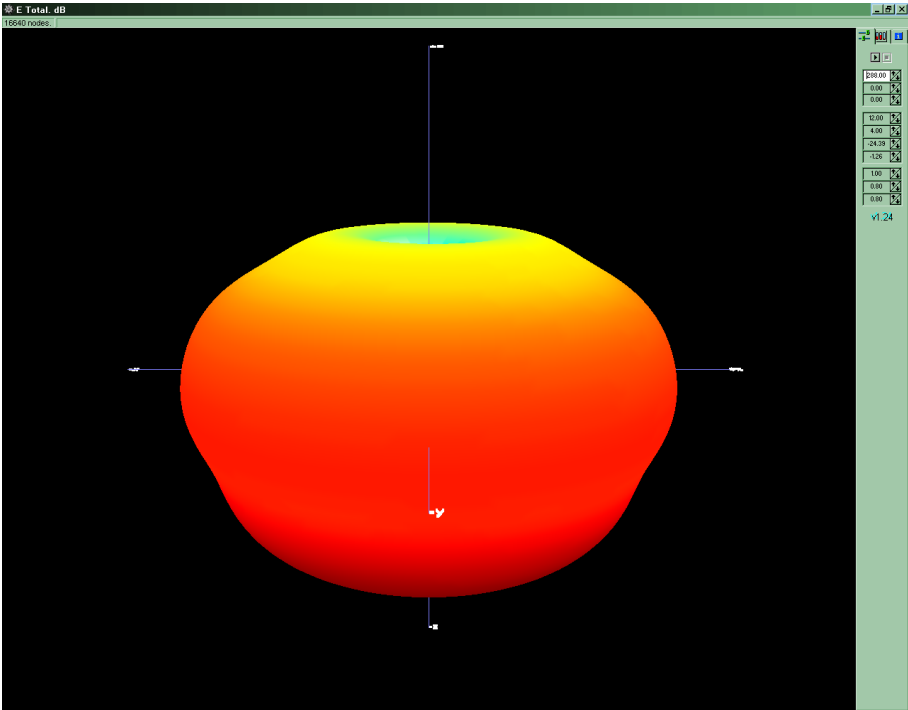


Side View

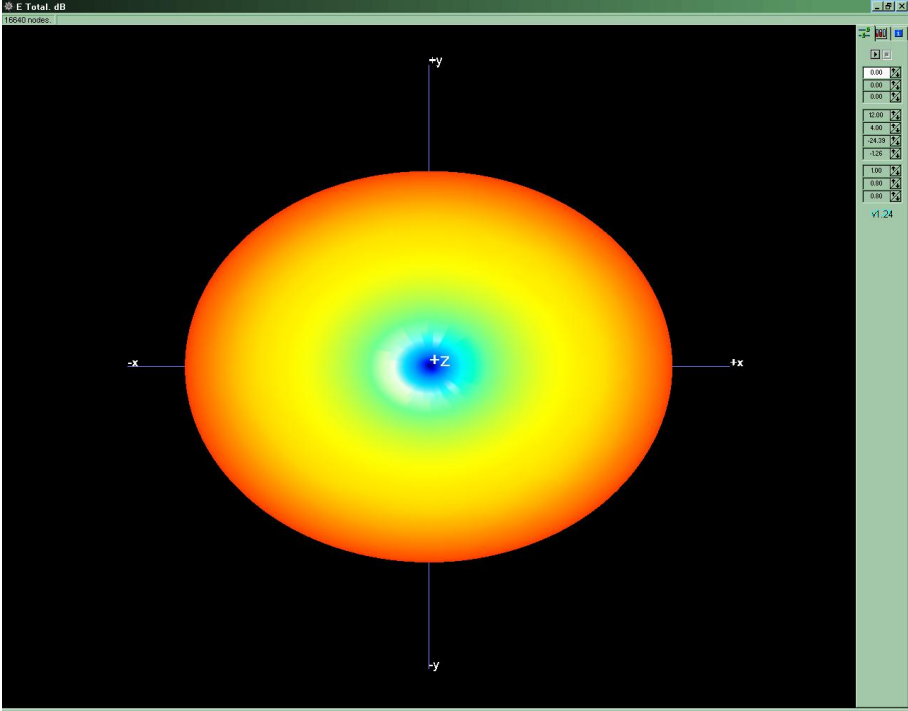


4.7.3 3D Plot @915 MHz

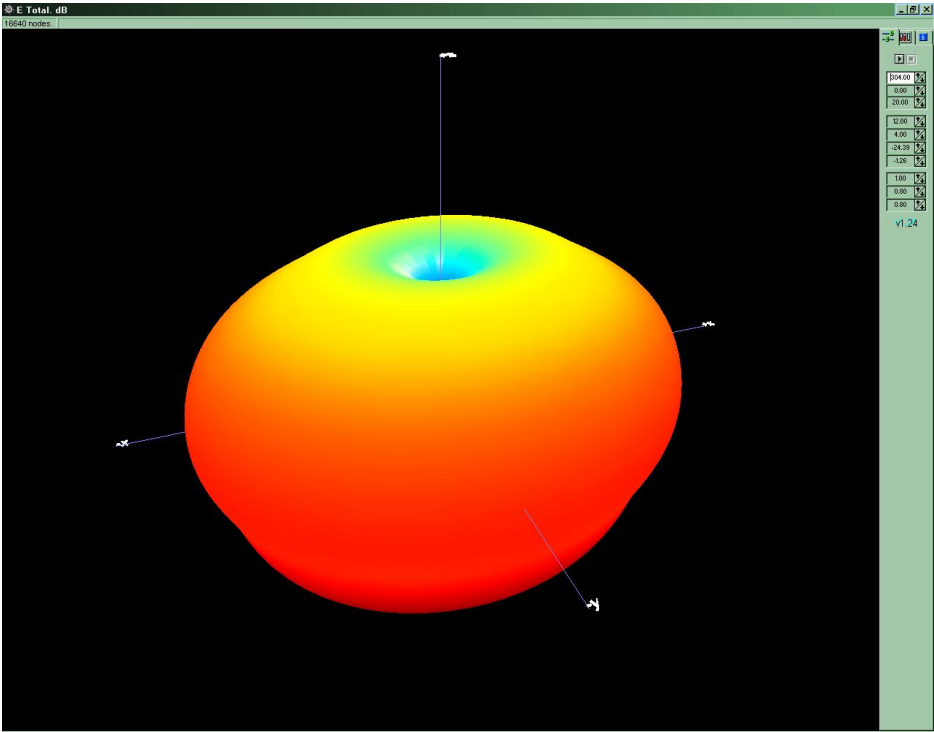
Front View



Top View

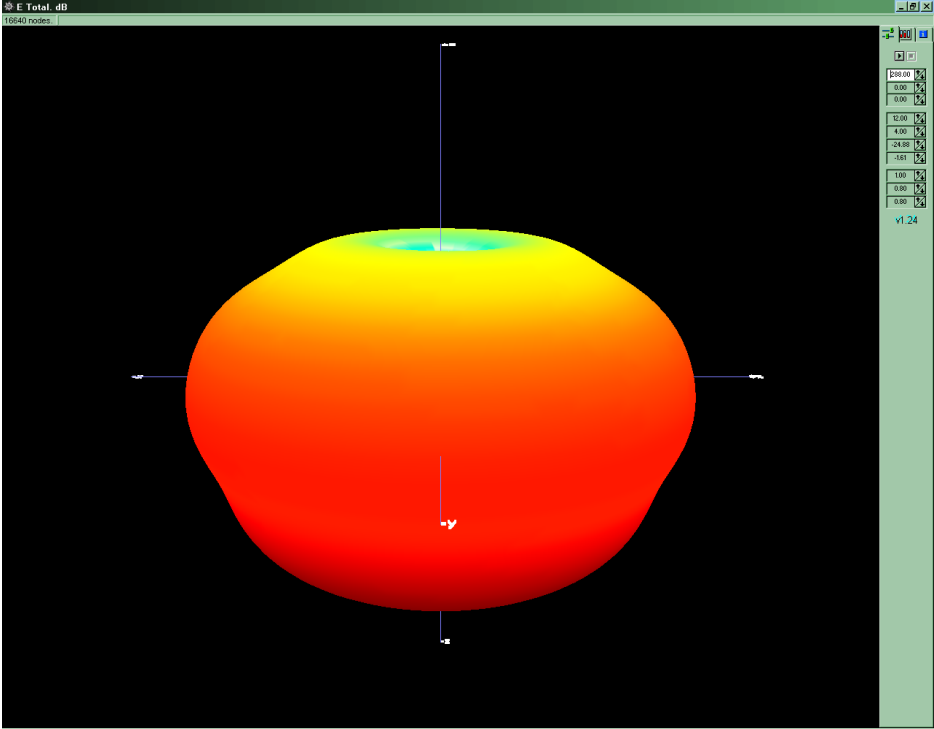


Side View

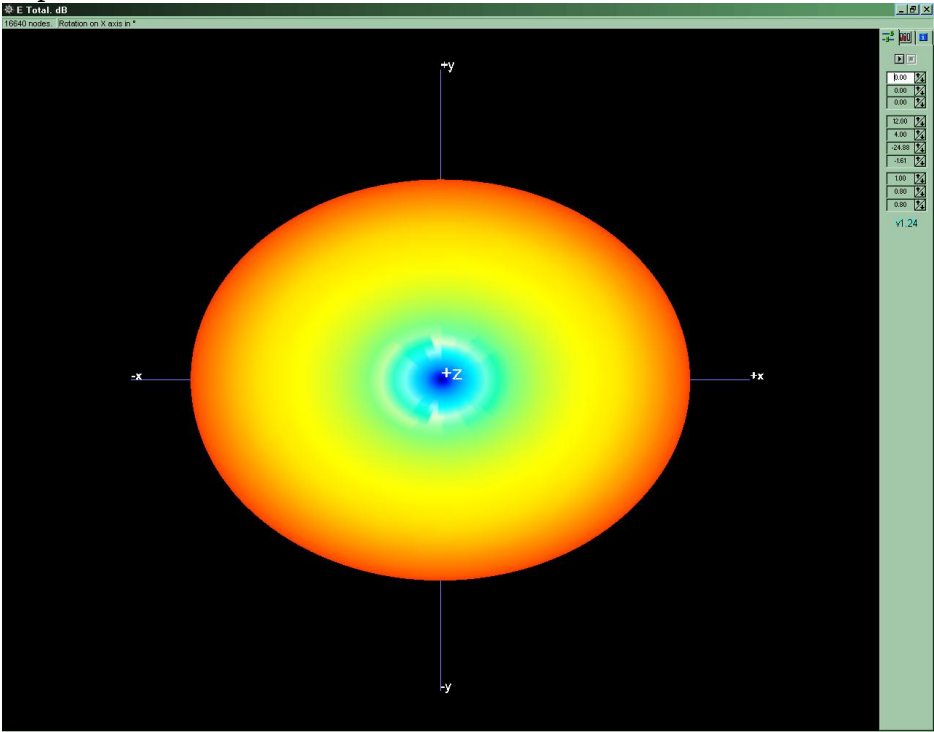


4.7.4 3D Plot @927 MHz

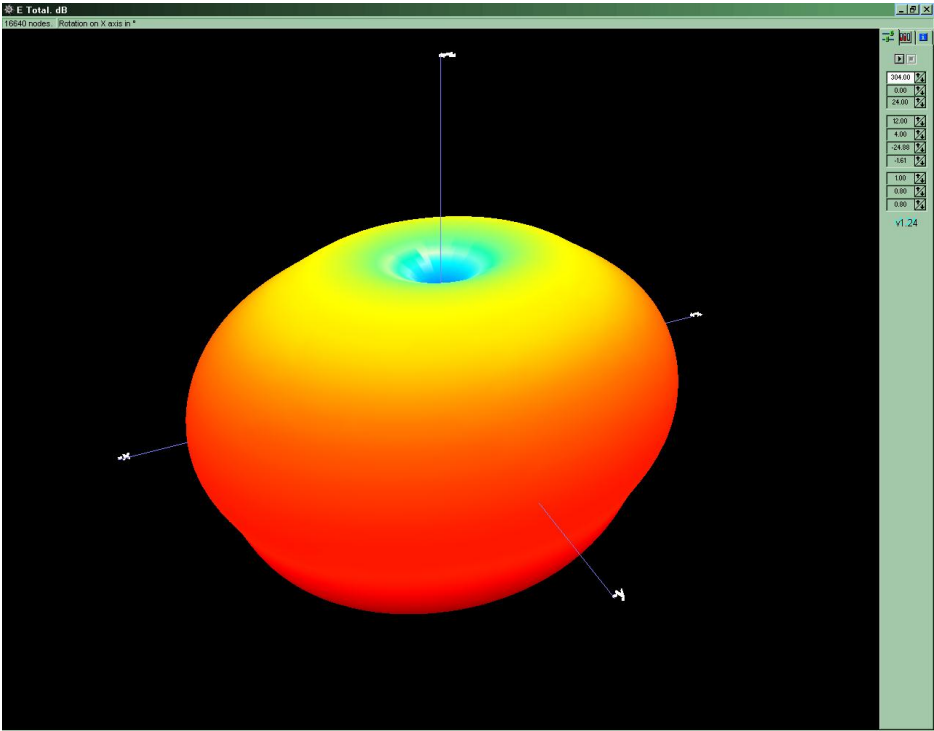
Front View



Top View



Side View



5 SUMMARY

The ATVEK-900-ANT-FM antenna has undergone all the identified tests. RL, Gain, Efficiency of antenna are tabulated.

No	Freq (MHz)	RL(dB)	Efficiency	Gain (dB)
1	868	-11.864	15.89%	-2.169928
2	902	-12.783	18%	-1.489557
3	915	-11.704	18.89%	-1.258132
4	927	-10.289	17.18%	-1.60845