

Features

- 100 MHz to 1 GHz frequency range
- Moderate gain for maximum illumination area
- Low VSWR of less than 2:1 minimizes mismatch losses between amplifier and antenna
- 2 kW continuous RF input power (Maximum)
- Tough powder coat finish



ETS-Lindgren's Model 3150 is a broadband, linearly-polarized log periodic dipole array antenna (LPDA) with a 100 MHz to 1 GHz frequency range. The antenna has moderate gain to provide an ideal illumination area. It exhibits low VSWR of less than 2:1, which minimizes mismatch losses between the amplifier and antenna. The Model 3150 handles high power requirements of up to 2 kW for generating high electric field strength.

The 3150 is constructed of lightweight, corrosion-resistant aluminum, providing years of trouble-free service. It receives a tough powder coat finish, which protects against scratching and abrasion better than painted or bare surfaces.

An optional wheeled pedestal is available which permits horizontal and vertical antenna polarization, height, and tilt-angle adjustments. A pneumatic cylinder is used to change polarization, and can be remotely controlled using an optional ETS-Lindgren Model 2090 Controller. The Model 2090 is IEEE-488 compatible, and uses fiber optic I/O for communication with the pedestal.

Electrical Field Distribution*

The Model 3150 can be used in both horizontal and vertical polarizations. The antenna provides a half-power beamwidth greater than 50° across the whole operating frequency range. The final design is thoroughly optimized numerically and experimentally for efficient radiation and illumination of a large uniform area.

In the graphs that follow, a full numerical model is used to analyze the Model 3150, and no assumption was made about the input impedance and radiation pattern of the LPDA antenna. The LPDA antenna design, combined with the setup of the antenna with respect to the equipment under test (EUT), is specially optimized to yield the best uniformity and field strength in a large uniform area, such as 5(w) x 2.4(h) m². The input power to the antenna is 1.8 kW (maximum RF output from the amplifier provided).

Field measurement is based on 100 V/m being the strongest field point in the uniform area with the given input power.

For both horizontal and vertical polarizations, 100 V/m with 0 dB to -3 dB

uniformity can be achieved up to 500 MHz across the whole 5 x 2.4m² area. Above 500 MHz:

- For vertical polarization, from 500 MHz - 1 GHz, field uniformity (0 dB to -3 dB) can be achieved in the horizontal direction. In the vertical direction, field uniformity is achieved 0.6 m above the floor in a 5(w) x 1.9(h) m² area.
- For horizontal polarization, from 500 MHz - 1 GHz, field uniformity (0 dB to -3 dB) can be achieved in the vertical direction. In the horizontal direction, field uniformity is achieved up to a width of 2.5 m (i.e., 0.6 m above the floor, 2.5 (w) x 2.4(h) m²).
- The field distribution in the required area (0.6 m above the floor, 5 x 2.4 m²) for the setup in Figure 2 (pg. 2) is simulated. Note that the antenna is tilted with respect to the test area. Typical frequencies are shown in Figures 3-14 (pgs. 2-8). Field distribution data at additional frequencies are available upon request.

Standard Configuration

- LPDA antenna (100 MHz - 1 GHz) 7/8" EIA Flange Connector

Options

- Custom pedestal with angle tilt control (0-21°), and polarization control (horizontal and vertical)
- Mounting bracket
- Model 2090 Controller

* Field distribution data are based on free-space condition.
Performance may vary with different ground treatments.

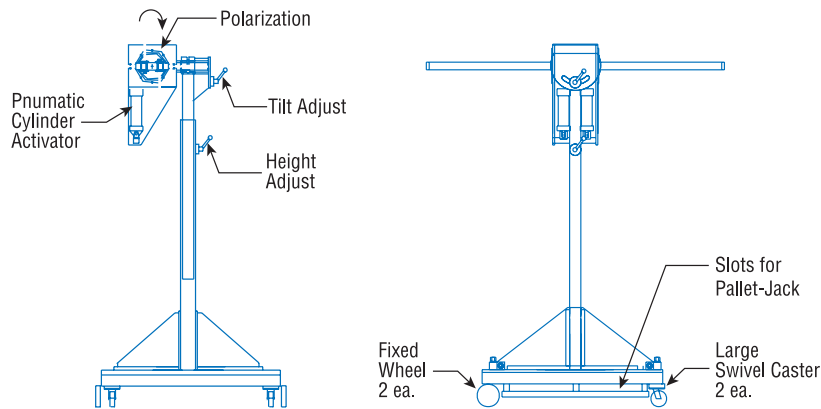
Electrical Specifications

MODEL	FREQUENCY RANGE	VSWR RATIO (AVG)	VSWR RATIO (MAX)	CROSS-POLARIZATION	MAXIMUM CONTINUOUS	IMPEDANCE	CONNECTORS
3150	100 MHz - 1 GHz	<1.2:1	2:1	> 20 dB	2 kW	50 Ω	7/8" EIA Flange (others available)

Physical Specifications

MODEL	WIDTH ¹	LENGTH	HEIGHT	WEIGHT
3150	210.8 cm 83.0 in	170.2 cm 67.0 in	9.5 cm (vertical position) 3.7 in	4.5 kg 10.0 lb
Custom Pedestal	1.2 m 3.9 ft	1.2 m 3.9 ft	1.6 - 2.0 m (adjustable) 5.2 - 6.5 ft (adjustable)	

¹At aperture



ETS-Lindgren's custom pedestal allows antenna height, tilt-angle and polarization to be easily adjusted.

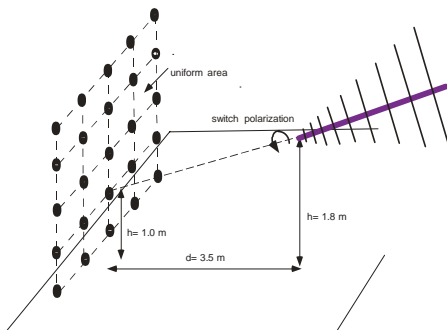


Figure 1. ETS-Lindgren 3150 vertical polarization setup schematic (can be switched

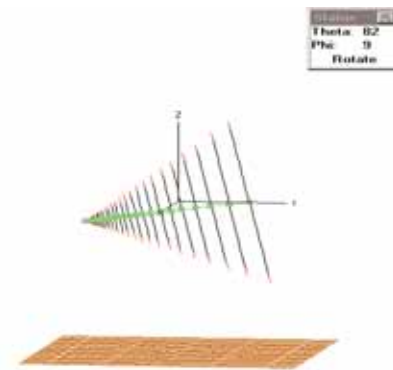


Figure 2. ETS-Lindgren 3150 LPDA antenna modeled geometry.

USA: Tel +1.512.531.6400 Fax +1.512.531.6500
FINLAND: Tel +358.2.8383.300 Fax +358.2.8651.233
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Horizontal Polarization:

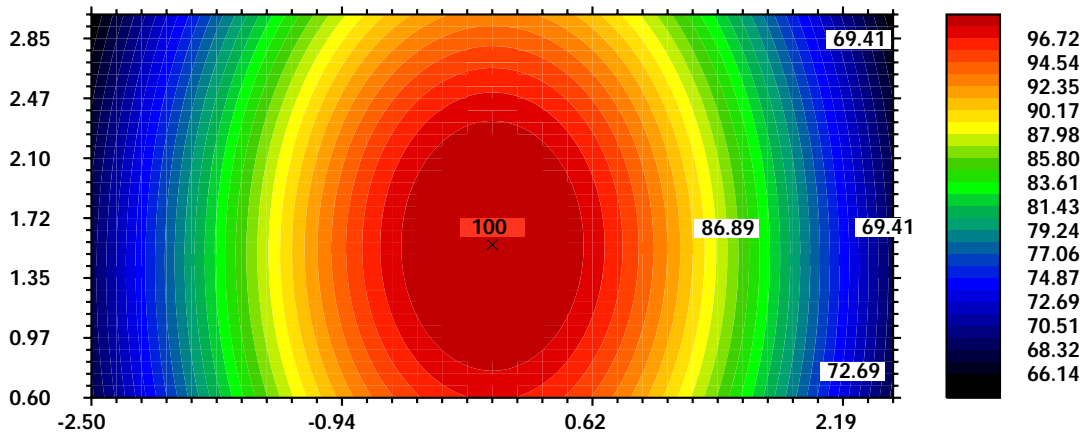


Figure 3. E-field (V/m) in the uniform field area for ETS-Lindgren 3150 horizontally polarized $d=3.5$ m (setup shown in figure 2), $f=100$ MHz
filename: r44hd35f100.ps

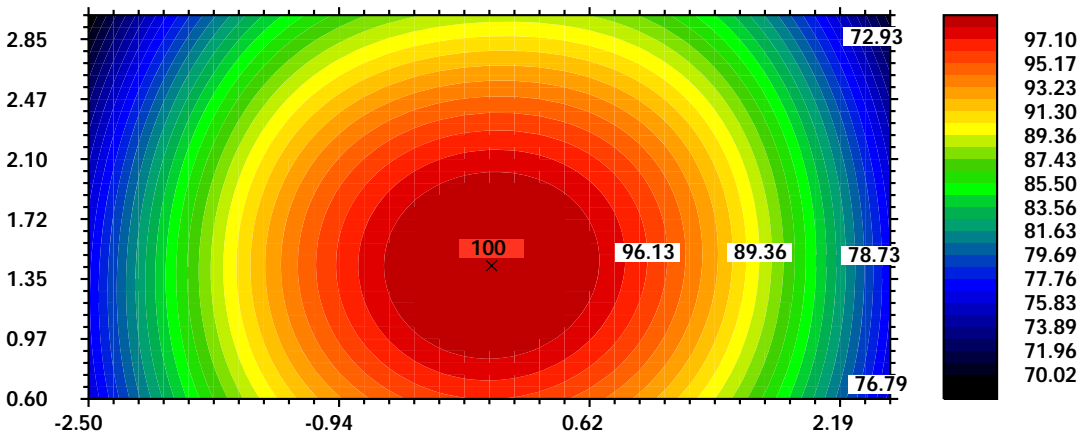


Figure 4. E-field (V/m) in the uniform field area for ETS-Lindgren 3150 horizontally polarized $d=3.5$ m (setup shown in figure 2), $f=300$ MHz
filename: r44hd35f300.ps

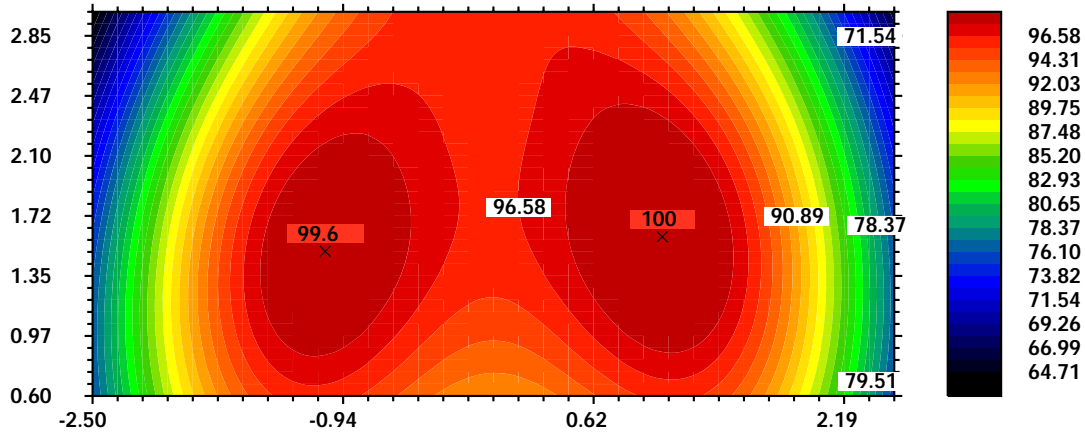


Figure 5. E-field (V/m) in the uniform field area for ETS-Lindgren 3150 horizontally polarized $d=3.5$ m (setup shown in figure 2), $f=500$ MHz
filename: r44hd35f500.ps

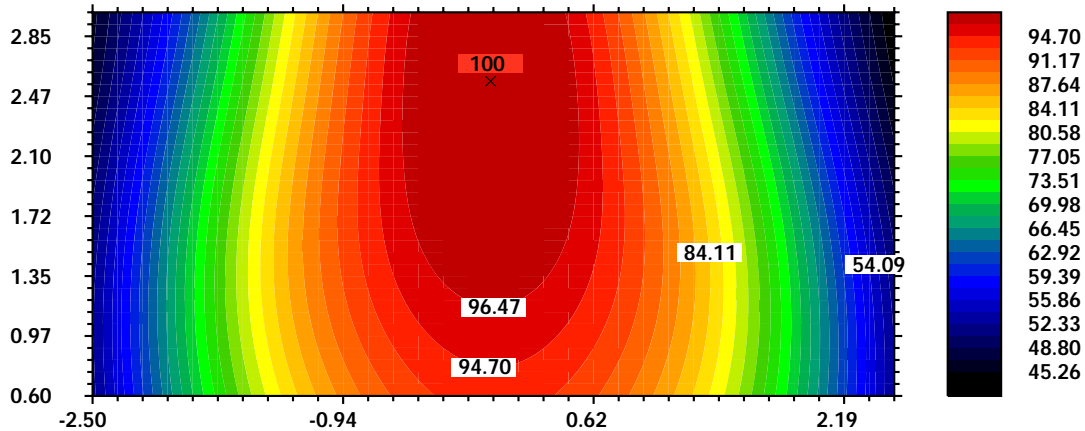


Figure 6. E-field (V/m) in the uniform field area for ETS-Lindgren 3150 horizontally polarized $d=3.5$ m (setup shown in figure 2), $f=700$ MHz
filename: r44hd35f700.ps

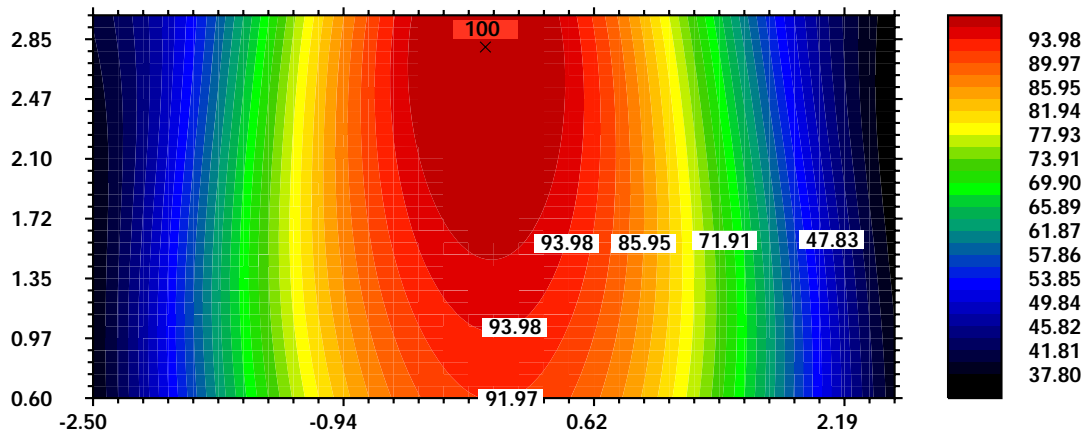


Figure 7. E-field (V/m) in the uniform field area for ETS-Lindgren 3150 horizontally polarized $d=3.5$ m (setup shown in figure 2), $f=900$ MHz
filename: r44hd35f900.ps

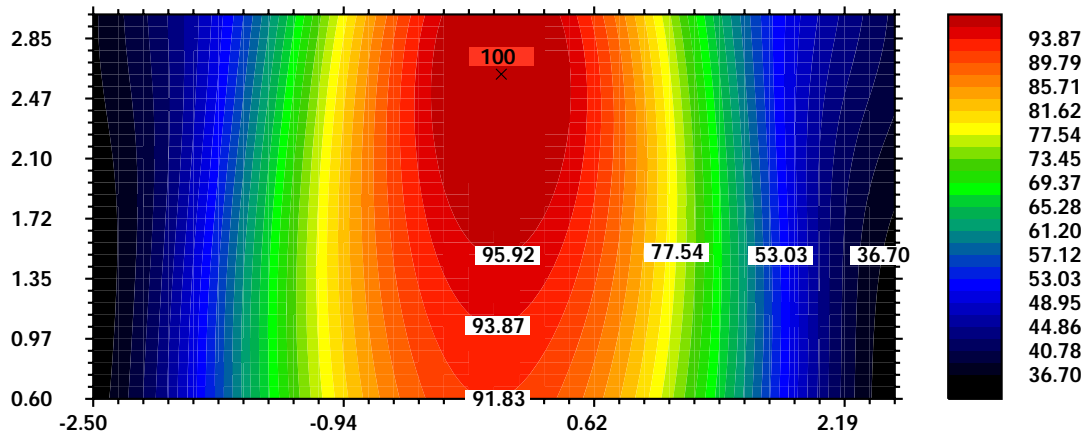


Figure 8. E-field (V/m) in the uniform field area for ETS-Lindgren 3150 horizontally polarized $d=3.5$ m (setup shown in figure 2), $f=1000$ MHz
filename: r44f1000h.ps

Vertical Polarization:

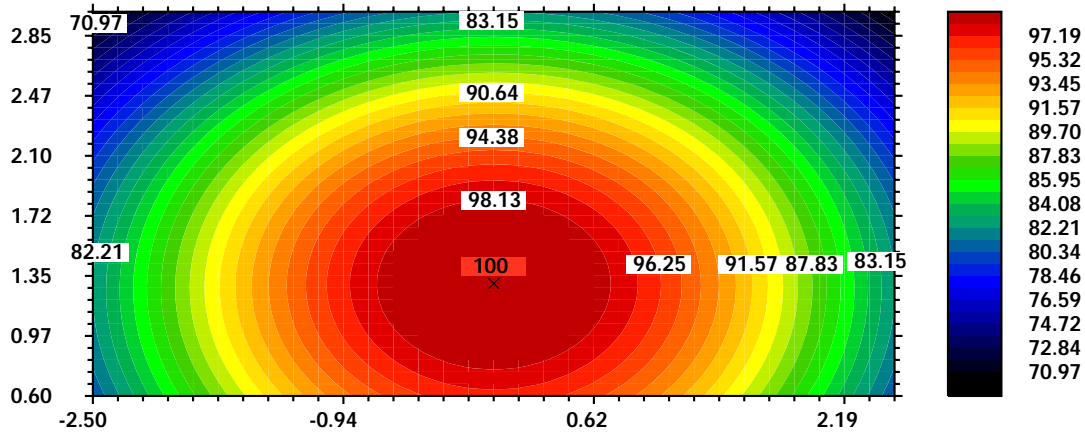


Figure 9. E-field (V/m) in the uniform field area for ETS-Lindgren 3150 vertically polarized $d=3.5$ m (setup shown in figure 2), $f=100$ MHz
filename: v44d35f100.ps

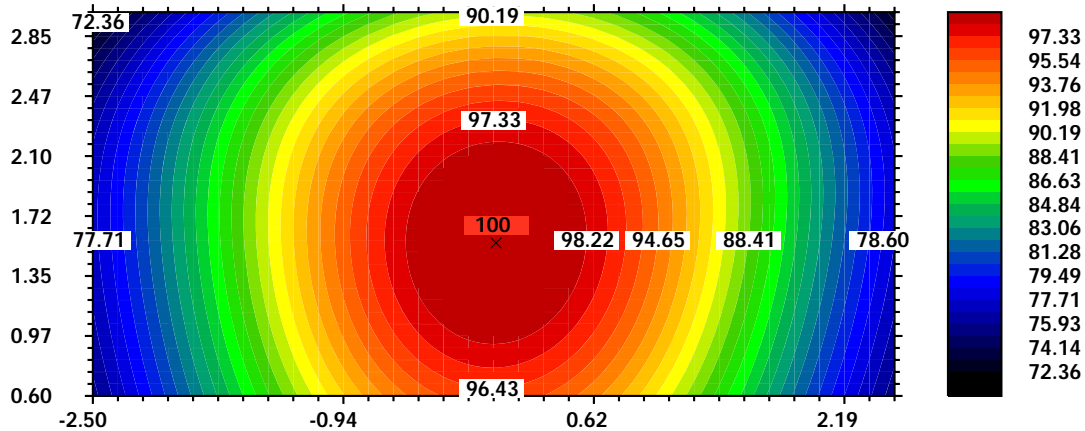


Figure 10. E-field (V/m) in the uniform field area for ETS-Lindgren 3150 vertically polarized $d=3.5$ m (setup shown in figure 2), $f=300$ MHz
filename: v44d35f300.ps

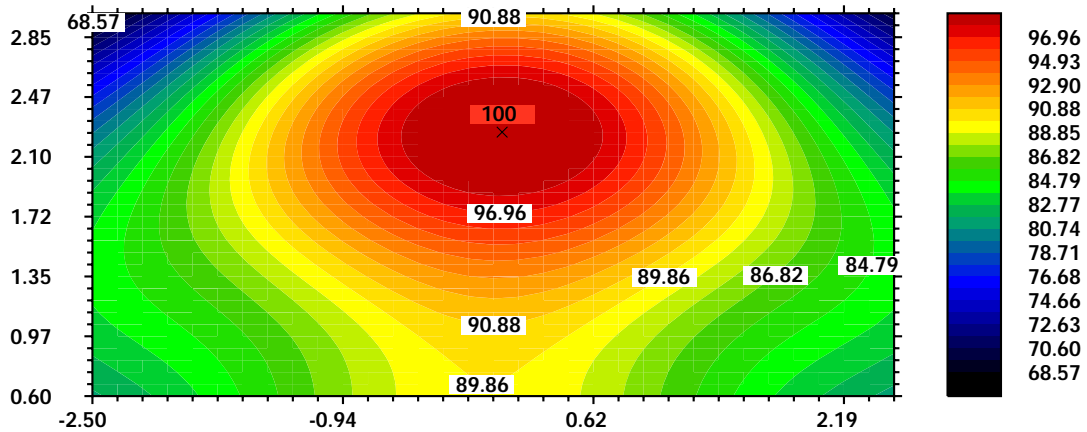


Figure 11. E-field (V/m) in the uniform field area for ETS-Lindgren 3150 vertically polarized $d=3.5$ m (setup shown in figure 2), $f=500$ MHz
filename: v44d35f500.ps

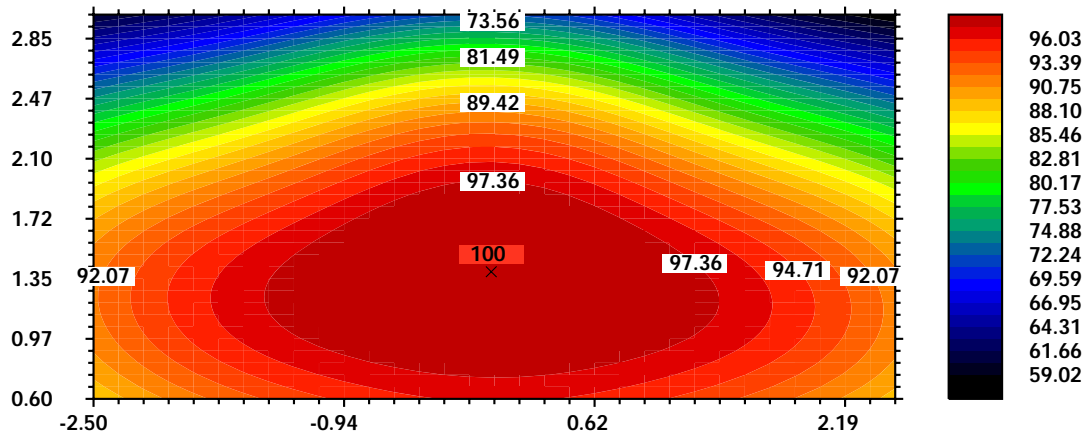


Figure 12. E-field (V/m) in the uniform field area for ETS-Lindgren 3150 vertically polarized $d=3.5$ m (setup shown in figure 2), $f=700$ MHz
filename: v44d35f700.ps

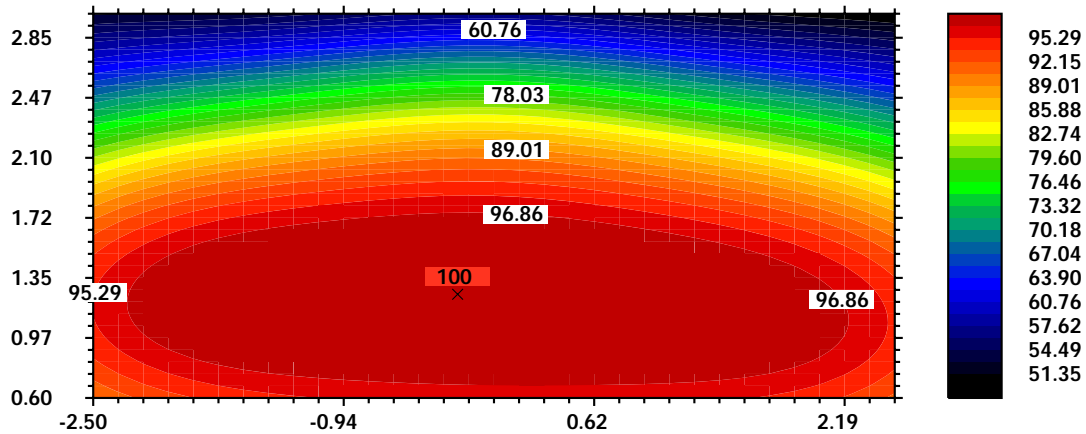


Figure 13. E-field (V/m) in the uniform field area for ETS-Lindgren 3150 vertically polarized $d=3.5$ m (setup shown in figure 2), $f=900$ MHz
filename: v44d35f900.ps

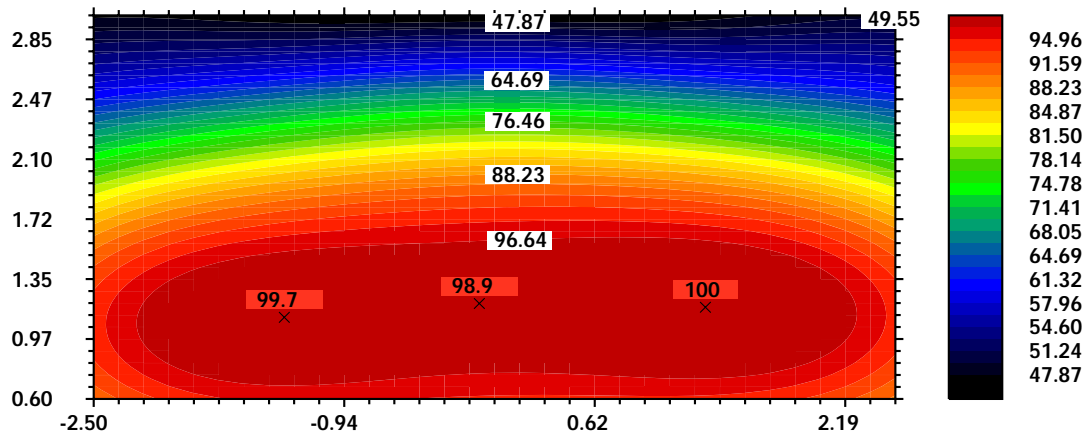


Figure 14. E-field (V/m) in the uniform field area for ETS-Lindgren 3150 vertically polarized $d=3.5$ m (setup shown in figure 2), $f=1000$ MHz
filename: v44d35f1000.ps