

ANTENNA MODEL 3151



MODEL 3151

- 20 MHz to 220 MHz
Frequency Range
- High Power Feed Handles up
to 5 kW RF Input Power
- Space Saving Design
Features Tophat-loaded

ETS-Lindgren's Model 3151 Log-Periodic Dipole Array (LPDA) Antenna features a convenient space saving design with the use of top hat-loaded, low-frequency elements. The reduced-sized design of this log antenna has optimized impedance loading to simulate the moderate gain of a full-size LPDA. Without size reduction, the longest dipole element length would be approximately 7.5 m (24.6 ft). Instead, this antenna's entire width is only 3.5 m (11.5 ft).

To enhance measurement repeatability, the model 3151's longest elements are supported with nylon straps to ensure consistent element positioning. The 3151 antenna features a specially-designed feed to handle high power requirements of up to 5 kW for generating high electric field strength. A hairpin matching stub is used to improve the low-frequency VSWR, which minimizes mismatch loss between the amplifier and antenna.

The antenna is constructed of lightweight, corrosion-resistant aluminum, providing years of trouble-free service. All elements are attached with knurled knobs for easy assembly. The included wheeled pedestal permits horizontal and vertical antenna polarization, and tilt-angle adjustments. A pneumatic cylinder is used to change polarization, and can be remotely controlled using an optional ETS-Lindgren controller.

Electric Field Distribution

The model 3151 is used for both horizontal and vertical polarizations. The phase center /source position of the antenna shifts from the rear to the front end of the boom as frequency increases. To ensure a high field strength at the low frequency range (30 MHz to 45 MHz), the LPDA antenna needs to be placed at a close distance. However, the beam width of the antenna gets narrower at higher frequencies. Therefore, the antenna needs to be placed at a farther distance at higher frequencies to cover a larger uniform area. If the same distance is kept for the high and low frequency ranges, the field uniformity is compromised above 80 MHz.

3151 Log-Periodic Dipole Array (LPDA)
Antenna Field Measured for 5 kW

