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501 Short-Range Antenna

Most communicators are well aware of the problems associated with “close-in” HF communications. It is often easier to raise a station 2,000 km away than one’s base of operations 100 miles distant. To a large extent, the problems of short-range communications are related to inadequate antenna performance. Traditional antenna performance suffers from one or more of the following limitations:

- Inadequate bandwidth and efficiency. No short-range broadband antenna before the 501 covered the most important lower frequencies down to 2 MHz with adequate efficiency.
- Improper pattern. Vertically polarized radiators do not support the skywave.

The performance of the Model 501 is tailored for the short-range and close-in sectoral coverage applications. The 501 radiates a broad, upwardly directed beam, slightly biased in one direction. Thus, it serves well for broad sectoral coverage and for short-range point-to-point.

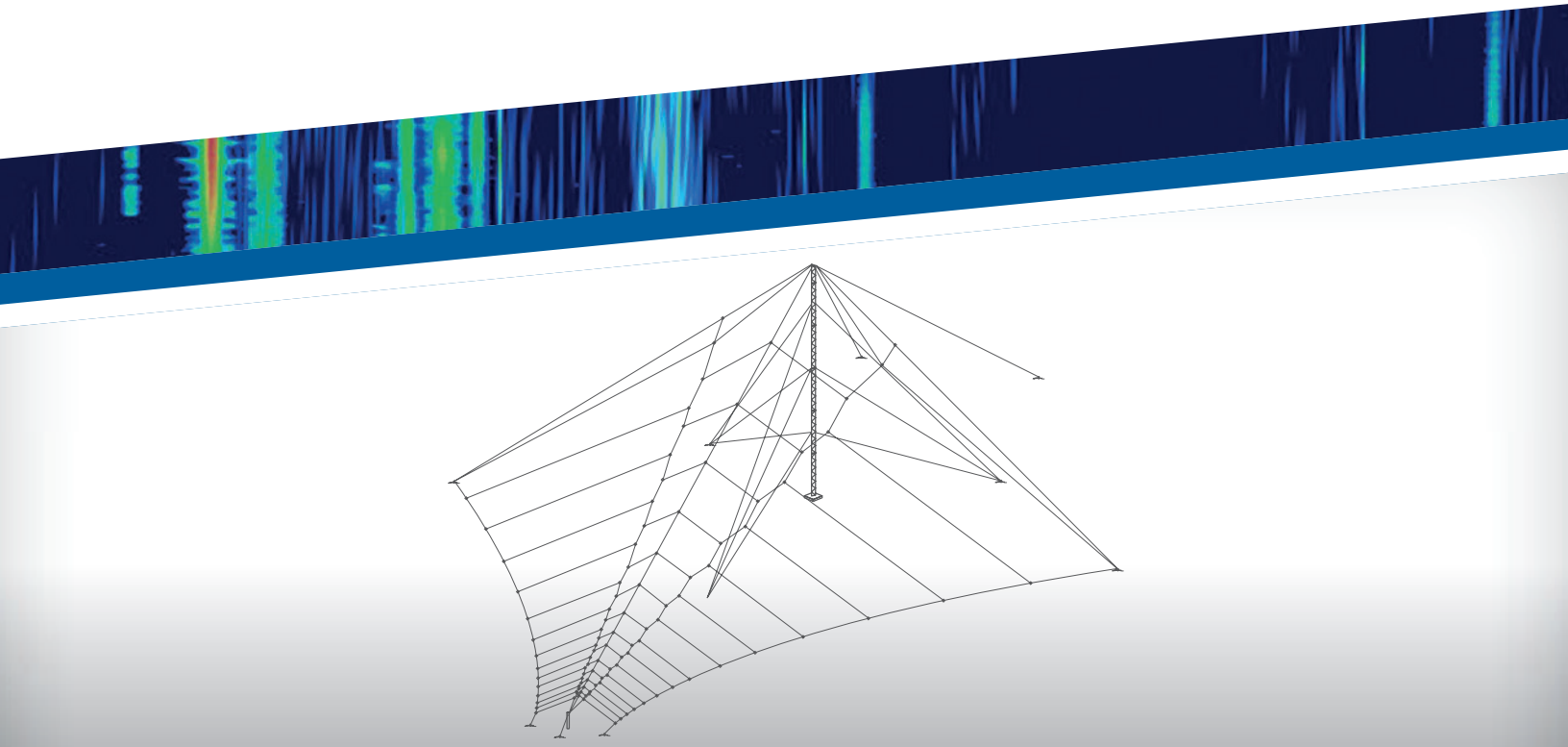
Conquer the challenges of close-in HF communications.

The 501 is essentially 100 percent efficient from 2 to 30 MHz. Although efficiency is not important for receiving applications at the lower frequencies, it is vital to transmitting applications because the signal-to-noise ratio at the terminal end of the link is directly related to the transmitting antenna’s efficiency.

Models of the 501 that can accommodate up to 10 kW average, 50 kW peak, are available. The 501 is truly broadband, covering the 2- to 30-MHz range with essentially constant patterns and a low VSWR. TCI’s novel one-tower concept minimizes shipping and installation costs. As in all TCI designs, only the most reliable materials are employed. Alumoweld catenary sections, broken up by fail-safe insulators, are utilized throughout, instead of the more traditional fiberglass. No organic or hydrocarbon material is used in the entire structure. The balun transformer employs 30 percent fewer parts than alternative designs, thus setting a new standard for simplicity and reliability.

KEY FEATURES

- **Short-range communications**
- **Full 2 to 30 MHz coverage**
- **High efficiency**



501 Short-Range Antenna Specifications

Model 501 Specifications	
Polarization	Horizontal
Directive Gain Relative to Isotropic	10 dB
Azimuth Beamwidth	64° nominal between half-power points
Elevation Radiation Pattern	· Lower Half-Power Point: 28° · Nominal Take-off Angle: 50° · Upper Half-Power Point: 100°
VSWR	· 2.5:1 (f_0–1.25 f_0) · 2.0:1 (1.25 f_0–30 MHz)
Environmental Performance	Designed in accordance with EIA Specification RS-222C for loading of 225 km/h (140 mi/h) wind, no ice or 145 km/h (90 mi/h) wind, 12 mm (1/2") radial ice Optional: 160 km/h (100 mi/h) wind, no ice or 96 km/h (60 mi/h) wind, 12mm (1/2") radial ice for Model 501-1
Front Support Pole	Customer supplied, 3.66 m (12 ft.), Class 3 Douglas Fir

Size							
Model Number	**Frequency Range**	**Height**		**Length***		**Width***	
		ft	**m**	**ft**	**m**	**ft**	**m**
501-1-N	2–30 MHz	141	43	312	95	400	123
501-2-N	3.8–30 MHz	75	26	168	51	230	70
501-3-N	5.75–30 MHz	50	15	140	43	140	43

* Measured from extreme guy points

Power and Impedance Data			
Model Number	**Input Impedance**	**Power**	**Connector**
501-N-02	50 Ω coaxial	Receive	Type N Female
501-N-06	50 Ω coaxial	1 kW Avg./ 2 kW PEP	Type N Female
501-N-28	50 Ω coaxial	5 kW Avg./ 10 kW PEP	7/8" EIA Female
501-N-03	50 Ω coaxial	10 kW Avg./ 50 kW PEP	1-5/8" EIA Female

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