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513 Di-Monopole® Hybrid Log Periodic Antennas

Vertical dipole log periodics offer the advantages of gain and substantial power handling capability without the requirement of a complicated ground screen for impedance matching. Unfortunately, to serve lower frequencies, large tower heights are required because the tower must be somewhat larger than a half wavelength at the lowest operating frequency. This is a penalty in severe environments and near airports.

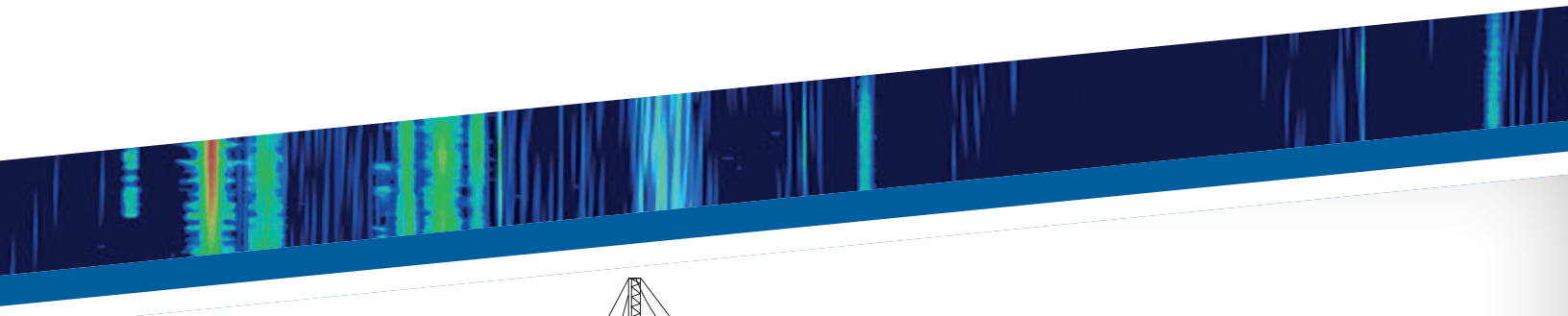
Monopole log-periodic antennas, on the other hand, are smaller in the vertical dimension. This reduced height is a structural advantage and an operational benefit near airports. However, monopole log-periodic antennas provide less gain and require, in general, a complicated and costly process of installing a ground screen.

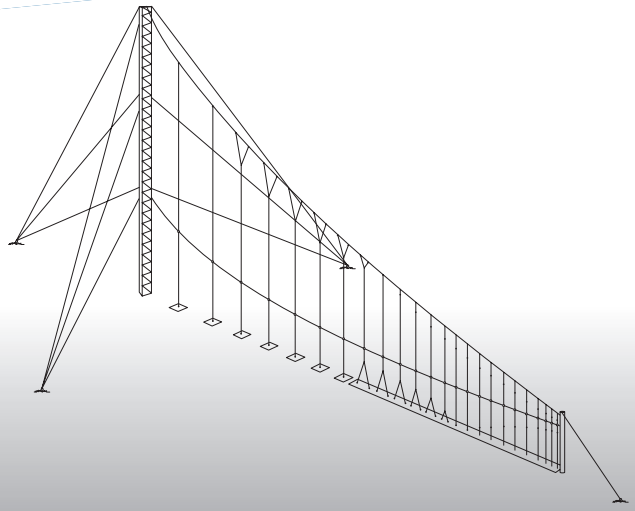
The TCI 513 series of Di-Monopole antennas represent a new class of improved log-periodic antennas that capitalize on the advantages of older classes of verticals while largely circumventing their limitations. The front assembly of the Di-Monopole array is essentially identical to the TCI 503 vertical transposed dipole log-periodic antenna. The center portion of the array gradually transitions toward a series of foreshortened dipoles. At the lowest frequencies, the antenna's performance resembles that of a monopole array, but with a balanced feed. At mid-band and above, the full performance of a dipole array is achieved. Because a ground screen is only required at the lower frequencies, undertaking the complicated and expensive process of installing one is not necessary.

This class of antenna was designed utilizing TCI's unique Linear Wire Antenna Program, which optimized various design parameters to eliminate residual common mode and maximize the performance and bandwidth.

KEY FEATURES

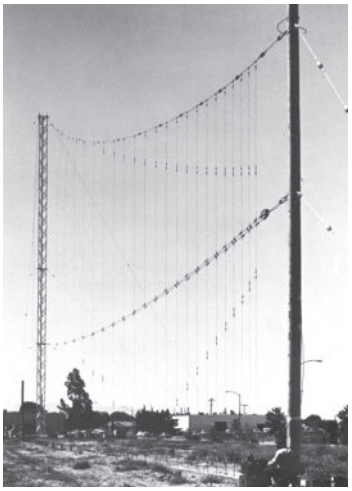
- Highest gain and broadcast bandwidth for a given tower height
- Combines low tower height of a monopole for low frequency operation with the gain of a dipole log-periodic at higher frequencies
- Minimal ground screen requirements
- Full 2–30 MHz coverage





513 Specifications

513	
Polarization	Vertical
Directive Gain Relative to Isotropic	9 dB at f_0 10 dB at 7 MHz 12 dB at 13 MHz and above
Nominal Azimuth Plane Beamwidth between Half Power Points	140° at f_0 120° at 12 MHz and above
Front-to-back Ratio	10 dB at f_0 15 dB at 7 MHz and above
VSWR	2.0:1 maximum
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 12mm (1/2") radial ice.



NOTE: Front support poles, normally class 2, 3, or 4 Douglas Fir are required but not supplied by TCI. Check with TCI for specific requirements.

Size and Frequency Coverage

Model Number	Frequency Range	Height		Length*		Width*	
		ft	m	ft	m	ft	m
513-1-N	2–30 MHz	127	39	390	119	175	53
513-2-N	2.8–30 MHz	100	31	313	96	156	48
513-3-N	4.5–30 MHz	82	25	265	81	140	43

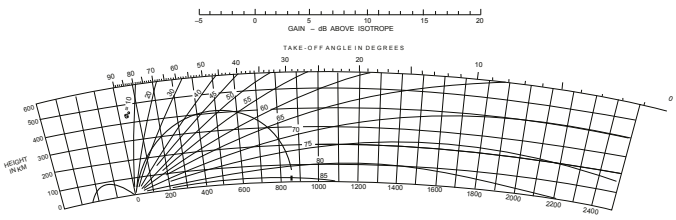
* Measured from extreme guy points

Power and Impedance Data

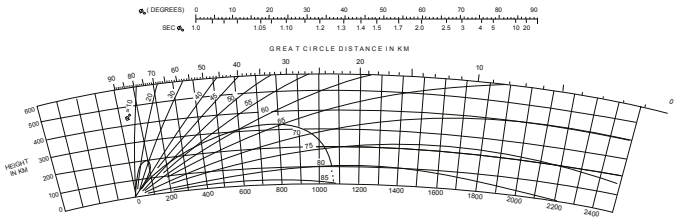
Model Number	**Input Impedance**	**Power**	Connector
513-N-02	50 Ω coaxial	Receive	Type N Female
513-N-28	50 Ω coaxial	5 kW avg/10 kW PEP	7/8" EIA Female
513-N-03	50 Ω coaxial	10 kW avg/50 kW PEP	1-5/8" EIA Female

› ELEVATION PLANE PATTERN Origin of pattern plot is -5dB relative to an isotrope

TCI Model 513 at 2 MHz and 15 MHz



2 MHz



15 MHz

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