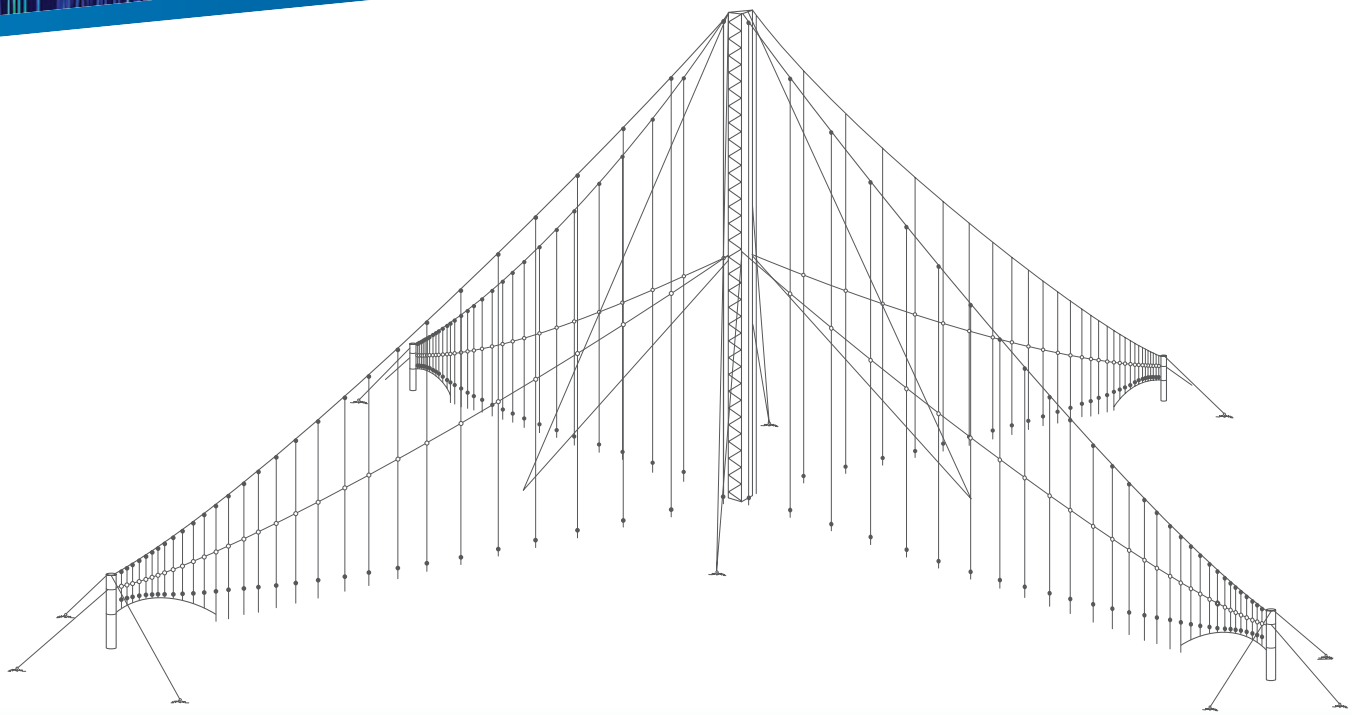
504 Rosette Steerable LPA



The Model 504 family of rosette dipole log-periodic antennas is designed to provide high gain, high front-to-back ratio, steerable performance in a compact area. The 504 finds wide application for ground-air and shore-ship circuits, where the other end of the path is mobile, and good long-distance coverage and gain are needed.

Each curtain of the 504 acts independently—in effect, simultaneously forming four independent beams, 120° wide. Further independence and flexibility are provided by using transmitting or receiving multicouplers, allowing several operators to use any one beam simultaneously.

Depending upon whether or not an optional ground screen is used, and the conductivity of the nearby terrain, the patterns of the 504 family provide good coverage from 1100 km to 2400 km, assuming average soil conductivity, and up to 3200 km, assuming the use of a ground screen or the proximity of sea water. Gain over perfect earth is a minimum of 12 dB above an isotrope. Front-to-back ratio is 14 dB at the lowest rate frequency, 19 dB above 1.2 X the lowest rated frequency.

Several alternative frequency ranges are available to match available land and height restrictions to the maximum bandwidth and performance such a space will support.

Maintain long-distance links with receivers in motion.

Like the related Model 503 family, the 504 series utilizes a novel structural design, which results in a more compact, reliable structure for a given bandwidth. The feedline assembly is used structurally as well as electrically, greatly reducing the loads carried by the top catenary. This, in turn, permits the use of a flatter catenary, lower tower, and less land for a given low-frequency cut-off. High-strength, durable, precisely manufactured Alumoweld assemblies are used for catenary and support structures instead of fiberglass. All assemblies are precisely made in the factory, and field installation is quite straightforward and rapid. All components have been exhaustively tested. The antenna will withstand the most corrosive environments, as well as 225 km/h wind, and 145 km/h wind with 12mm of radial ice.

KEY FEATURES

- Most compact high-performance steerable LPA Rosette
- 2–30 MHz coverage
- No ground screen needed for impedance matching

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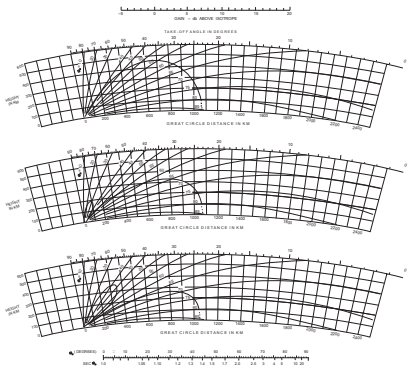
Model 504 Specifications

Polarization	Vertical
Directive Gain Relative to Isotropic	· Greater than 12 dB f_0–30 MHz · Greater than 9 dB .87f_0–f_0
Azimuth Plane Beam Width between Half-Power Points	120° (160° at .87f_0)
Nominal Take-off Angle	15° over average soil
Angle of Half-Power Points	· UHPP 26° · LHPP 5° (over average soil)
Level of Side Lobes Relative to Main Lobes	–14 dB
Front to Back Ratio	· 14 db at f_0 · 19 dB at 20% above lowest rated frequency · 6 dB at .93f_0 · 3 dB at .87f_0
Cross Polarization	N/A
VSWR	· 2.0:1 Maximum .93f_0–30 MHz · 3.0:1 Maximum .87f_0
Environmental Performance	Designed in accordance with EIA Specification RS-222C for loading of 225 km/h (140 mi/h) wind, no ice. Except 504-5, 110km/h (110mi/h)

ELEVATION PLANE PATTERN over perfect earth Origin of pattern plot is –5 dB relative to an Isotrope TCI Model 504 (top) at 3 MHz (center) at 27 MHz (bottom) at 15 MHz



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

Model Number	Frequency Range	Height		Length or Width*	
		ft	m	ft	m
504-1-N	2.9–30 MHz	205	62.5	610	186
504-3-N	5.9–30 MHz	102	31.1	325	99
504-4-N	3.4–30 MHz	182	55.5	550	168
504-5-N	4.2–30 MHz	150	45.7	460	140

* Measured from extreme guy points

Power and Impedance Data

Model Number	Input Impedance	Power	Connector
504-N-02	50 Ω coaxial	Receiving	Type N Female
504-N-28	50 Ω coaxial	5 kW Avg./10kW PEP	7/8" EIA Female
504-N-03	50 Ω coaxial	10 kW Avg./ 50 kW PEP	1-5/8" EIA Female

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