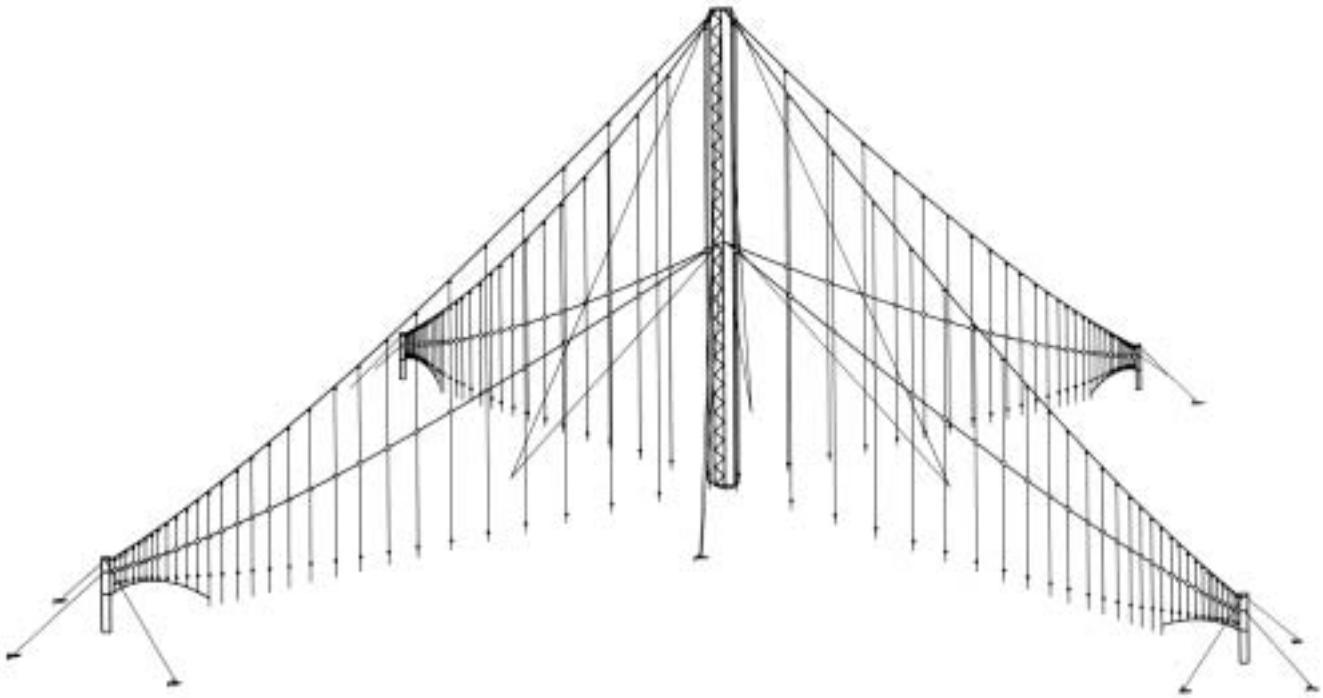
TCI
A Dielectric Company

MODEL

504

Rosette Steerable LPA



TCI's 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 Model 504 acts independently. In effect, this permits the 504 to form four independent beams, 120° wide simultaneously. Further independence and flexibility is 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, permitting matching available land and height restrictions to the maximum bandwidth and performance such a space will support.

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, with 225 km/h wind, and 145 km/h wind with 12mm of radial ice.

- **Most compact high performance steerable LPA Rosette.**
- **2–30 MHz coverage.**
- **No ground screen needed for impedance matching.**
- **Power levels up to 25 kw average, 50 kw peak available.**

Specifications

Polarization ..... Vertical

Directive Gain Relative to Isotropic ..... Greater than 12 dB f_o –30 MHz
Greater than 9 dB .87 f_o –f_o

Azimuth Plane Beam Width between Half Power Points ..... 120° (160° at .87 f_o)

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_o
19 dB at 20% above lowest rated frequency
–6 dB at .93 f_o
–3 dB at .87 f_o

Cross Polarization ..... N/A

VSWR ..... 2.0:1 Maximum .93 f_o –30 MHz
3.0:1 Maximum .87 f_o

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)

Size

Model Number	Frequency Range	Height ft.	Height mtr.	Length or Width ft.	Length or Width mtr.
504-1-N	2.9–30 MHz	205	62	610	186
504-3-N	5.9–30 MHz	102	31	325	99
504-4-N	3.4–30 MHz	182	55	550	168
504-5-N	4.2–30 MHz	150	46	460	140
504-7-N	2.3–30 MHz	267	81	782	238

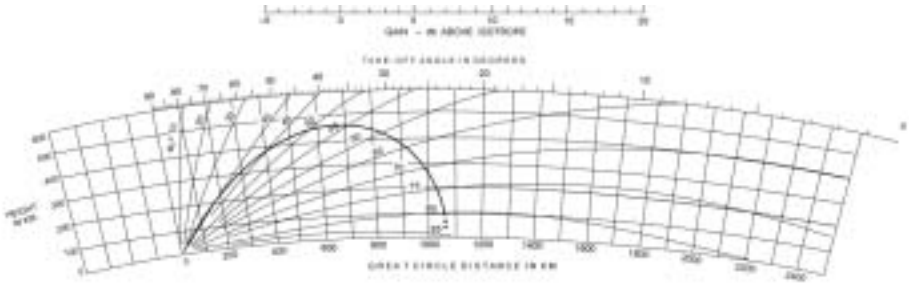
measured from extreme guy points

Power & Impedance Data

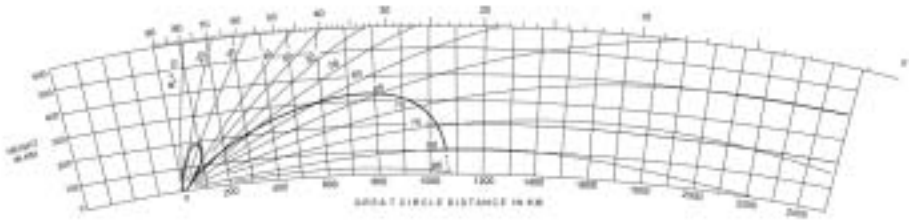
Model Number	Input Impedance	Power Handling Capacity	Connector
504-N-02	50 Ω coaxial	Receiving	Type N Female
504-N-03	50 Ω coaxial	10 kW Avg. 50 kW PEP	1-5/8" EIA Female
504-N-04	50 Ω coaxial	25 kW Avg. 50 kW PEP	1-5/8" EIA Female

ELEVATION PLANE PATTERN over perfect earth Origin of pattern plot is –5 dB relative to an Isotrope

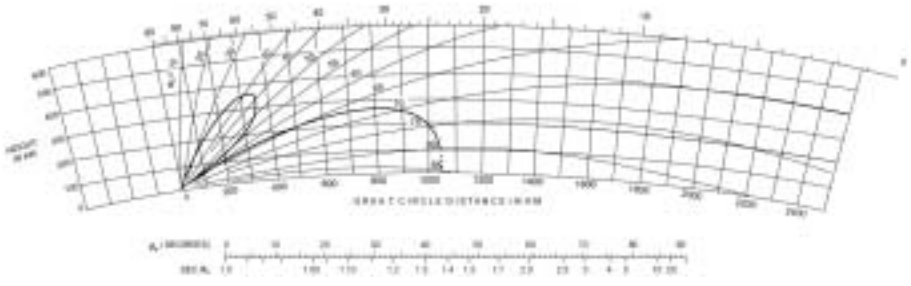
TCI Model 504 at 3 MHz



TCI Model 504 at 27 MHz



TCI Model 504 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.

www.tcibr.com

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