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503 Vertical Curtain Antenna

The Model 503 family of antennas provides efficient long-haul or sectoral coverage service. A vertically polarized log-periodic dipole antenna with a narrow, low-angle elevation plane pattern, the 503 is suitable for medium- or long-distance coverage. Installation near seawater or use of an optional ground-screen kit improves low-angle coverage. Over average soil, the nominal take-off angle is 15° and the pattern provides excellent service from 1100 to 2400 km. Use of an optional ground-screen kit extends service range to approximately 3200 km.

Communicate over long distances with a compact, economical structure.

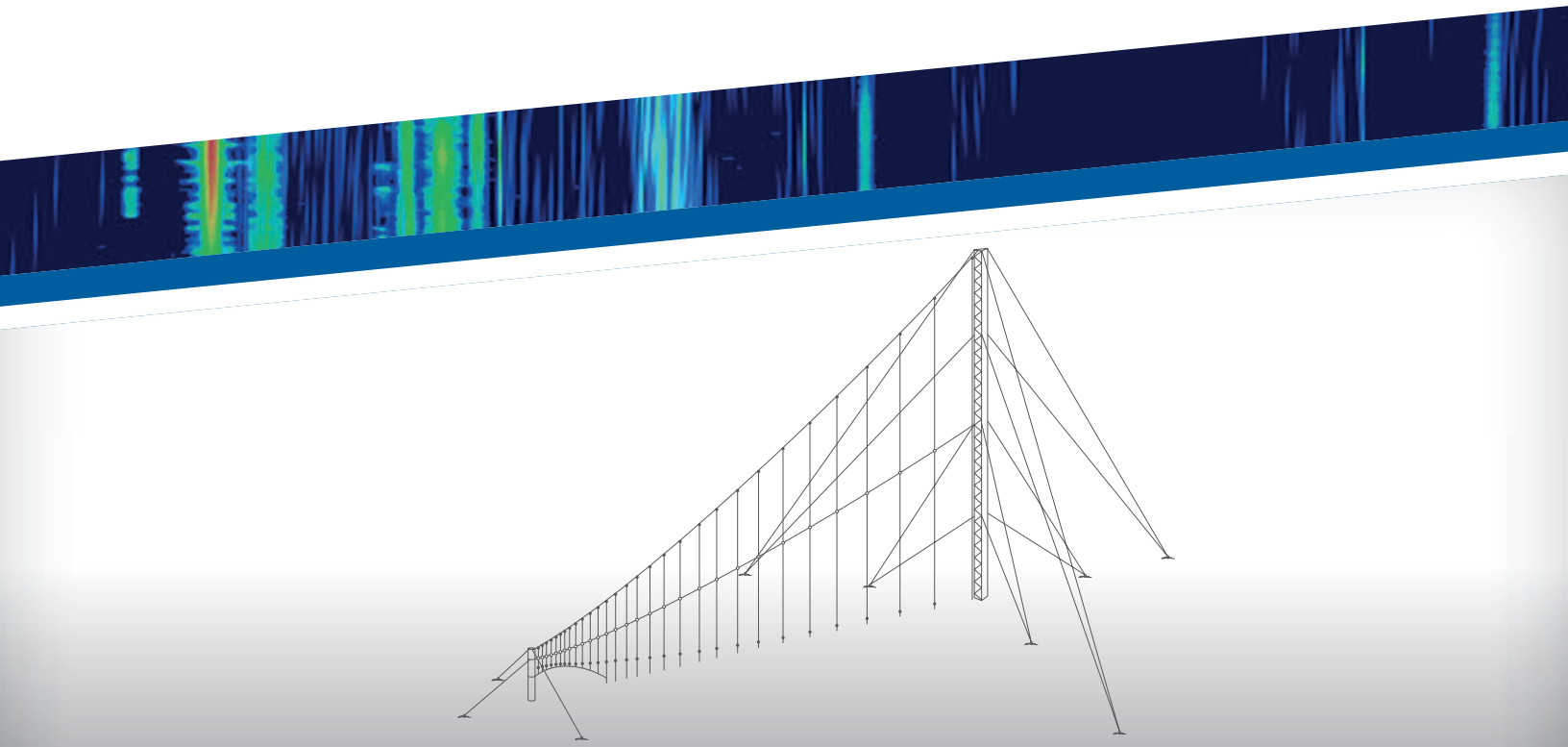
The 503 provides directional coverage over a 120° azimuthal sector. At the higher frequencies, most frequently used on long paths, the phase center of the structure is elevated, which gives increased gain and lower take-off angles. This results in increased signal strength on long paths.

Front-to-back ratio of the 503 is especially good (14 dB at 2.5 MHz, 19 dB above 4 MHz on 503¬1), which reduces the susceptibility of the communications system to interference. VSWR is under 2.0:1.

The 503's novel structural design results in the smallest and shortest dipole log-periodic for a given bandwidth. The feedline is used as a catenary element, which greatly reduces the loads transferred by the radiators in severe environments. This permits the use of a flatter top catenary, elimination of "drop rod" material, and a shorter tower. The result is a much more compact, economical structure. As in other 500 series antennas, no fiberglass is used in the catenary and support structures. A precisely manufactured, electrically transparent Alumoweld structure is used instead.

KEY FEATURES

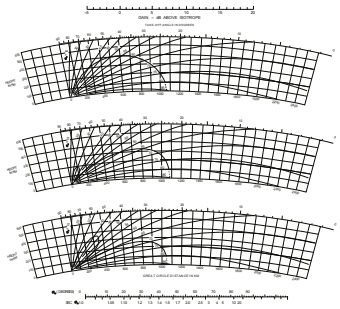
- For sectoral coverage or long-distance communications
- Greatest gain and bandwidth with given-size land area and tower height
- Higher gain and lower take-off angle at higher frequencies
- Broad (180°) or narrower (120°) azimuthal variations available
- No ground screen needed for impedance match



503 Vertical Curtain Antenna Specifications

Model 503 Specifications	
Polarization	Vertical
Directive Gain Relative to Isotropic	Greater than 12 dB
Radiation Pattern	Azimuthal Beamwidth: 120° between half-power points Elevation Pattern Over Average Ground: Lower Half-Power Point: 5° Nominal Take-off Angle: 15° Upper Half-Power Point: 26°
Level of Side Lobes Relative to Main Lobe	–14 dB
Front to Back Ratio	· 14 dB at low freq. limit · 19 dB 20% above lowest rated frequency
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 145 km/h (90 mi/h) wind, 12mm (1/2") radial ice Optional: 160 km/h (100 mi/h), no ice for 503-6

ELEVATION PLANE PATTERN over perfect earth Origin of pattern plot is –5 dB relative to an Isotrope TCI Model 503 (top) at 2.5 MHz (center) at 15 MHz (bottom) at 27 MHz

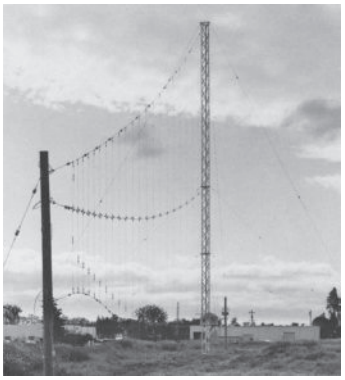


Size

Model Number	Frequency Range	Height		Length*		Width*	
		ft	m	ft	m	ft	m
503-1-N	2.5–30 MHz	205	62	470	143	286	87
503-3-N	5.2–30 MHz	102	31	242	74	140	43
503-4-N	3.0–30 MHz	182	55	413	126	260	79
503-5-N	3.6–30 MHz	144	44	332	101	200	61
503-6-N	6.2–30 MHz	90	27	242	74	125	38
503-7-N	2.0–30 MHz	267	81	575	175	381	116
503-10-N	4.0–30 MHz	130	40	327	100	226	69
503-46-N**	5.0 – 16 MHz	126	38	280	85	175	53
503-47-N**	10.5 – 32 MHz	72	22	133	41	88	27
503-48-N***	5.0 – 28 MHz	126	38	300	91	341	104

* Measured from extreme guy points
** Includes common-mode damper for use in array
*** Array of 2 antennas including common-mode dampers

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.



Power and Impedance Data

Model Number	Input Impedance	Power	Connector
503-N-02	50 Ω coaxial	Receive	Type N Female
503-N-06	50 Ω coaxial	1 kW Avg./ 2 kW PEP	Type N Female
503-N-28	50 Ω coaxial	5 kW Avg./10kW PEP	7/8" EIA Female
503-N-03	50 Ω coaxial	10 kW Avg./ 50 kW PEP	1-5/8" EIA Female
503-46-04	50 Ω coaxial	≤40 kW avg/40 kW PEP	3-1/8" EIA Female
503-47-04	50 Ω coaxial	≤40 kW avg/40 kW PEP	3-1/8" EIA Female
503-48-04	50 Ω coaxial	≤40 kW avg/40 kW PEP	3-1/8" EIA Female

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SPX COMMUNICATION TECHNOLOGIES

TCI INTERNATIONAL, INC., 3541 Gateway Blvd., Fremont, CA 94538-6585 USA
| Tel: 1-510-687-6100 | tcibr.com |

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