

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

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

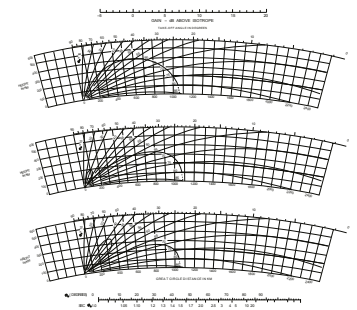
** Includes common-mode damper for use in array

*** Array of 2 antennas including common-mode dampers

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

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



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.



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AN SPX TECHNOLOGIES PLATFORM

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