



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 sea-water 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 is available in either of two azimuthal beamwidths: 180°, generally used for broadest sectoral coverage; and 120°, where a more directive pattern is desired. At the higher frequencies, most frequently used on long paths, the phase center of the structure is elevated, giving 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), reducing 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, greatly reducing 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



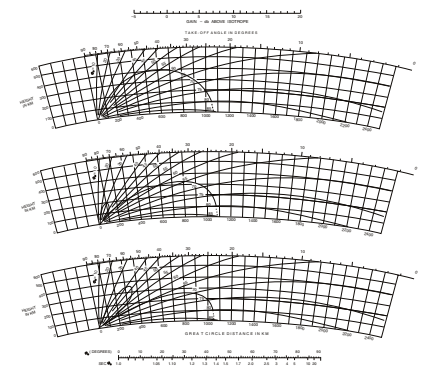
Model 503 Specifications

| | |
|--|--|
| Polarization | Vertical |
| Directive Gain Relative to Isotropic | Greater than 12 dB |
| Azimuth Plane Beam | <ul style="list-style-type: none"> • Width between: 120° • Half Power Points: (180° available on special order) • Nominal Take-off Angle: 15° over average ground • Angle of Half-Power: UHPP 26° • Points: LHPP 5° (over average soil) |
| Level of Side Lobes Relative to Main Lobes | -14 dB |
| Front to Back Ratio | <ul style="list-style-type: none"> • 14 dB at low freq. limit • 19 dB 20% above lowest rated frequency |
| Cross Polarization | N/A |
| 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 |

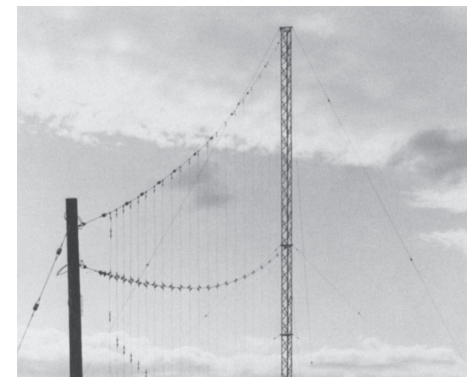
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✓ **ELEVATION PLANE PATTERN** over perfect earth Origin of pattern plot is -5 dB relative to an Isotrope TCI Model 503 (top) at 2.5 MHz (center) at 15 MHz (bottom) at 27 MHz



✓ **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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Size

| Model Number | Frequency Range | Height | | Length* | | Width* | |
|--------------|-----------------|--------|------|---------|------|--------|------|
| | | ft. | mtr. | ft. | mtr. | ft. | mtr. |
| 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 |
| 503-3H-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 |

* Measured from extreme guy points

Power and Impedance Data

| Model Number | Input Impedance | Power | Connector |
|--------------|-----------------|-----------------------|-------------------|
| 503-N-02 | 50 Ω coaxial | Receiving | Type N Female |
| 503-N-03 | 50 Ω coaxial | 10 kW Avg./ 50 kW PEP | 1-5/8" EIA Female |
| 503-N-06 | 50 Ω coaxial | 1 kW Avg./ 2 kW PEP | Type N Female |
| 503-N-06 | 50 Ω coaxial | 5 kW Avg./10kW PEP | 7/8" EIA Female |

