

Model 6510 Vertically-Polarized FM Antenna

Half-Wave Spaced

Vertical Polarization

10 kW Power Rating per Bay

Radomes & Deicers Not Required

Shively Standard Features:

- Low Weight and Windload
- Adjustable Transformer Standard Equipment
- Rugged Corrosion-Resistant Mounts
- Easy to Install - Minimum Maintenance
- Pressure Relief Valve for Easy Purging
- Pattern Studies and Directional Patterns Available

Performance Specifications:

Polarization: Vertical only.
 VSWR: 1.04 : 1 \pm 100 kHz
 1.08 : 1 \pm 200 kHz.
 Input Connection: Female 3-1/8" EIA.
 Feedline: 3-1/8" rigid



Electrical Specifications:

| No. of Bays | Gain | | Power Rating | No. of Bays | Gain | | Power Rating |
|-------------|-------|------|--------------|-------------|-------|------|--------------|
| | Power | dB | kW | | Power | dB | kW |
| 2 | 1.40 | 1.46 | 20 | 8 | 5.06 | 7.03 | 40 |
| 3 | 2.02 | 4.05 | 30 | 10 | 6.28 | 7.96 | 40 |
| 4 | 2.62 | 4.17 | 40 | 12 | 7.50 | 8.74 | 40 |
| 5 | 3.24 | 5.08 | 40 | 14 | 8.72 | 9.39 | 40 |
| 6 | 3.84 | 5.83 | 40 | 16 | 9.92 | 9.96 | 40 |

Notes:

1. Our gain figures are derived from the computed directivity and include the losses in the antenna feed system. Gain is provided for vertical polarization only. Gain will be reduced if null fill, beam tilt, or special wavelength spacing is provided. Gain will increase in a directional array by the directivity of the azimuth pattern.

Document No. ds-6510-hw (0702)

Model 6510 Size and Weight (Half-Wave-Spaced):

| No. of Bays | Vertical Tower Space | | | | | | Weight | | | |
|-------------|----------------------------|------|---------------------|------|-------------------------------|------|-------------|------|-------------------------------|-------|
| | Antenna Radiation Aperture | | Physical Space Used | | Total Tower Space Recommended | | Without ice | | With 1/2" (1.2 cm) radial ice | |
| | ft | m | ft | m | ft | m | lb | N | lb | N |
| 2 | 5 | 1.6 | 14 | 4.6 | 25 | 8.2 | 115 | 513 | 326 | 1454 |
| 3 | 10 | 3.3 | 19 | 6.2 | 30 | 9.8 | 173 | 772 | 513 | 2288 |
| 4 | 15 | 4.9 | 24 | 7.9 | 35 | 11.5 | 231 | 1030 | 700 | 3122 |
| 5 | 20 | 6.6 | 29 | 9.5 | 40 | 13.1 | 289 | 1289 | 886 | 3952 |
| 6 | 25 | 8.2 | 34 | 11.2 | 45 | 14.8 | 347 | 1548 | 1073 | 4786 |
| 7 | 30 | 9.8 | 39 | 12.8 | 50 | 16.4 | 406 | 1811 | 1260 | 5620 |
| 8 | 35 | 11.5 | 38 | 12.5 | 55 | 18.0 | 458 | 2043 | 1423 | 6347 |
| 10 | 45 | 14.8 | 48 | 15.7 | 65 | 21.3 | 535 | 2386 | 1771 | 7899 |
| 12 | 55 | 18.0 | 58 | 19.0 | 75 | 24.6 | 652 | 2908 | 2145 | 9567 |
| 14 | 65 | 21.3 | 68 | 22.3 | 85 | 27.9 | 768 | 3425 | 2518 | 11230 |
| 16 | 75 | 24.6 | 78 | 25.6 | 95 | 31.2 | 884 | 3943 | 2892 | 12898 |

Windload (Half-Wave-Spaced):

| No. of Bays | Revision 'C' | | | | Revision 'F' | | | |
|-------------|--------------|-------|-------------------------------|-------|--------------------|----------------|-------------------------------|----------------|
| | Without ice | | With 1/2" (1.2 cm) radial ice | | Without ice | | With 1/2" (1.2 cm) radial ice | |
| | lb | N | lb | N | (ft ²) | m ² | (ft ²) | m ² |
| 2 | 265 | 1182 | 376 | 1677 | 8.9 | 0.83 | 11.8 | 1.10 |
| 3 | 416 | 1855 | 588 | 2622 | 14.0 | 1.30 | 18.6 | 1.73 |
| 4 | 566 | 2524 | 801 | 3572 | 19.0 | 1.77 | 25.4 | 2.36 |
| 5 | 717 | 3198 | 1013 | 4518 | 24.2 | 2.25 | 32.2 | 2.99 |
| 6 | 868 | 3871 | 1225 | 5464 | 29.3 | 2.72 | 39.0 | 3.62 |
| 7 | 1018 | 4540 | 1437 | 6409 | 34.4 | 3.20 | 45.8 | 4.25 |
| 8 | 1151 | 5133 | 1625 | 7248 | 38.8 | 3.60 | 51.7 | 4.80 |
| 10 | 1409 | 6284 | 1992 | 8884 | 47.9 | 4.45 | 63.9 | 5.94 |
| 12 | 1710 | 7627 | 2416 | 10775 | 58.1 | 5.40 | 77.5 | 7.20 |
| 14 | 2011 | 8969 | 2840 | 12666 | 68.3 | 6.35 | 91.1 | 8.46 |
| 16 | 2312 | 10312 | 3264 | 14557 | 78.5 | 7.29 | 104.7 | 9.73 |

Notes:

- The mounting structure must not flex more than $\pm 1/2$ in (± 1.2 cm) in any 10-ft (3-meter) section. 5 feet (1.5 m) of mounting structure is required above and below the antenna bays for proper pattern formation.
- Antenna radiation aperture is the distance from the center of the top bay to the center of the bottom bay. Physical space used is from the top of the top bay to the input flange at the bottom of the array, or the bottom of the bottom bay in a center-fed array. Total tower space recommended allows ten feet (3 m) of clear tower space above and below the antenna to protect from pattern interference by other antennas. At frequencies lower than 98 MHz, each of these dimensions will increase by up to 1 ft (0.3 m) per bay.
- Seven bays or less are normally end-fed. All antennas supplied with beam tilt will be center-fed. Antennas with an odd number of bays are normally not available with center feed.
- Windload and weight tabulations are estimates and assume 98 MHz. They include the bay, interbay feedline, input connection, and a fine-matching transformer. No values have been included in these tabulations for mounts. Actual values vary with the specific installation. Contact us with details of your installation if more precise values are needed.
- Antenna windloads are calculated for 112 mph (180 kph), using 50 psf (2400 N/m²) for flats and 33 psf (1600 N/m²) for rounds, per EIA standard RS-222-C and CSA standard S37-94. The surface area is calculated per EIA standard RS-222-F (C_{FA}).
- Ask for technical assistance at Shively if you are planning to mount antennas on AM towers or install them at altitudes over 3,000 ft (915 m) above mean sea level.