

# TUNIPOLE™

## FOLDED UNIPOLE ANTENNAS

- ✓ **High Efficiency**
- ✓ **Better Bandwidth**
- ✓ **Lightning Protection**

Folded unipole systems improve the efficiency and bandwidth of most medium-wave broadcast antenna installations. LBA Technology, Inc. Tunipole™ folded unipole antenna systems are engineered to operate with virtually any tower height and power level within the medium frequency (530–1700 kHz) broadcast band.

Electrically, Tunipole folded unipole antenna systems consist of highly conductive vertical cables - referred to as foldwires - installed parallel to the face of the supporting tower. RF energy is carried upward along these foldwires and coupled into the tower structure, which serves as the radiating element. Impedance adjustment devices are incorporated into each system, allowing field adjustment of impedance matching and broadband frequency response. The number of foldwires, their length, and their spacing from the tower are carefully engineered to achieve optimum efficiency and bandwidth.

Mechanically, Tunipole systems are constructed using heavy-duty, corrosion-resistant materials designed for long service life in all environments. Standard construction includes hot-dipped galvanized support beams, stainless steel hardware, and RF-grade fiberglass insulators specially treated to resist ultraviolet degradation. Uniform foldwire tension is maintained under varying environmental conditions through the use of LBA Technology, Inc.'s proprietary Delta Tension Units, installed on every foldwire. This design has been proven in installations ranging from Arctic to tropical climates, and from sea level to high-elevation sites.

Tunipole systems are designed for straightforward installation on a wide range of common broadcast tower types using standard hand tools.



Unlike base-insulated series-fed towers, Tunipole folded unipole antenna systems allow the tower structure to be bonded directly to the ground system. No base insulator or specialized lightning isolation hardware is required. This direct ground connection provides a high level of protection against lightning-related damage while maintaining excellent RF performance.

Tunipole systems are supplied with complete installation and adjustment manuals, and contract field engineering services are available when required. All standard Tunipole models are also available in custom configurations to accommodate specialized applications.

### Tunipole™ Folded Unipole Antenna Systems Descriptions

**UP651 SERIES:** A high-power, broadband folded unipole system rated for 50,000 watts. Super heavy-duty construction includes six foldwires with anti-corona hardware, ceramic insulators, base insulator rain shields, and vibration dampers. Both feedpoint impedance and broadband frequency response are adjustable directly on the tower. The tower is grounded directly for effective lightning protection. Optional configurations permit power-handling capability to be increased up to 500,000 watts. This series offers the highest power-handling capability and widest frequency response of the LBA Tunipole product line.

**UP351 SERIES:** Similar in construction to the UP651 Series, the UP351 utilizes three foldwires. As a result, it provides slightly reduced bandwidth and is rated for a maximum power of 25,000 watts, 125% modulated. Due to lower weight and wind loading, this system is well suited for lighter-duty towers and power levels between 10,000 and 25,000 watts. For electrically short towers or installations requiring maximum bandwidth and voltage-handling capability, the UP651 Series is recommended.

**UP611 SERIES:** A wide-bandwidth, medium-power folded unipole system rated for a maximum power of 10,000 watts, 125% modulated. The UP611 Series features heavy-duty construction with field-adjustable feedpoint impedance and broadband frequency response.

**UP311 SERIES:** Comparable in basic design to the UP611 Series, the UP311 provides reduced bandwidth capability and is rated for a maximum power of 5,000 watts, 125% modulated. This system is recommended for lower-power applications and installations on light-duty towers where wind loading and overall system weight are critical considerations. For low- to medium-power installations requiring maximum bandwidth, or for electrically short towers, the UP611 Series is recommended.

# LBATECHNOLOGY

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