

## Broad Band Antennas – Omni/Elliptical DB404



### GENERAL INFORMATION

The DB404 series is a heavy duty, light weight antenna for use where an omni-directional or an elliptical radiation pattern is desired.

### OPTIONAL RADIATION PATTERN

One important feature of the DB404 series antenna is that it permits the user to adapt the antenna to changing coverage requirements. When the dipole element pairs are spaced at 90° to each other, an omni-directional or circular pattern results. When both sets of dipoles are in line (collinear - see the DB404L illustration in Figure 1), the antenna has a directional characteristic, giving an elliptical pattern as shown in Figure 2. Also, see Figure 3 for gain variation with frequency for DB404 and DB404L antennas. The change from one radiation pattern to the other is easily accomplished. The banding clamps that hold the dipole elements against the mast and the tape securing the antenna harness to the mast are loosened. The top elements are rotated around the mast as indicated in Figure 1, then the clamps again securely tightened. Retape the antenna harness to the mast - covering the tape that secures the cabling harness to the mast with an aluminum backed tape such as Scotch #425. (Part # DB11901)

### GENERAL MOUNTING INFORMATION

The DB404 series antenna is designed for mounting on the top of a tower or wooden pole. For best operation, it is recommended that the bottom dipole be above the tower. Side mounting of the antenna requires the use of a DB5007 side mount kit. Radiation patterns obtained with the antennas side mounted on a 18" tower are shown in Figure 4.

#### NOTICE

The installation, maintenance, or removal of an antenna requires qualified, experienced personnel. Andrew installation instructions are written for such installation personnel. Antenna systems should be inspected once a year by qualified personnel to verify proper installation, maintenance, and condition of equipment.

Andrew disclaims any liability or responsibility for the results of improper or unsafe installation practices.

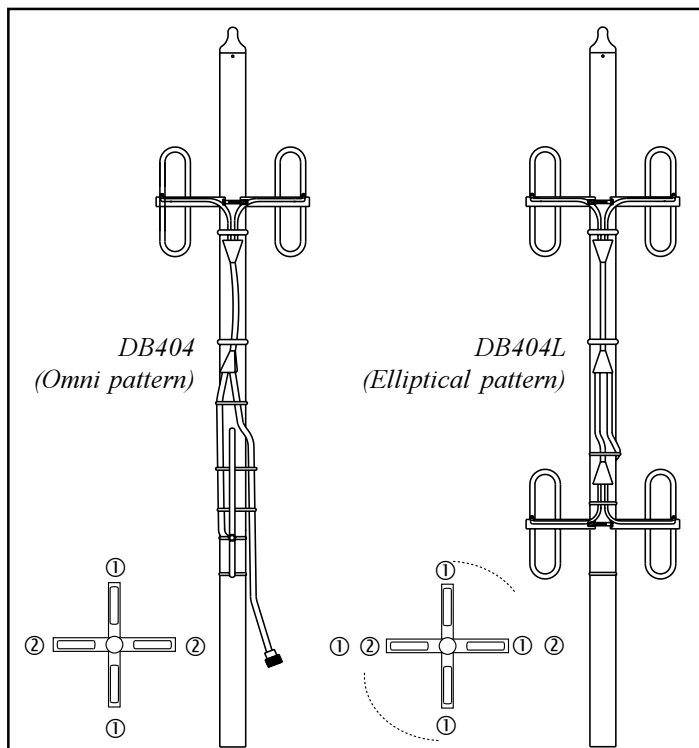


Figure 1. Dipole Arrangement For Pattern Performance

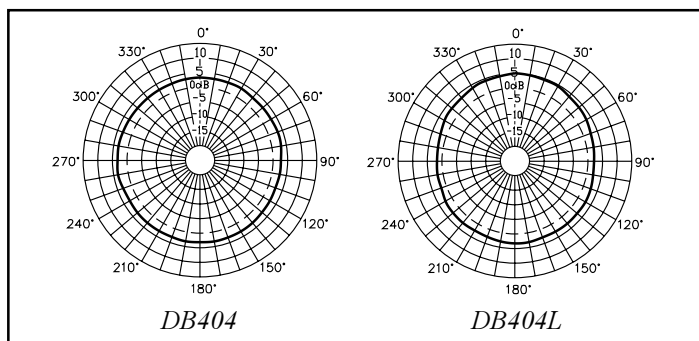
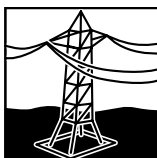


Figure 2. Azimuth Pattern with Respect to Half Wave Dipole

(continued on page 2)



Do not install near power lines. Power lines, telephone lines, and guy wires look the same. Assume any wire or line can electrocute you.



Do not install on a wet or windy day or when lightning or thunder is in the area. Do not use metal ladder.



Wear shoes with rubber soles and heels. Wear protective clothing including a long-sleeved shirt and rubber gloves.

**DB404 SERIES INSTALLATION INSTRUCTIONS**

1. Remove the antenna from the shipping box and ensure that all parts are on hand and that there is no physical damage.
2. Inspect the antenna feed assembly output connector to determine that it mates with the end of your station transmission line. Do not remove any connector or cable from the antenna feed assembly; these are all a part of your antenna.
3. Verify that the frequency to which the antenna has been tuned is the frequency on which your radio system is to operate.
4. Attach the furnished DB365 mounting clamps to the bottom of the antenna mast at the designated locations. Mount the antenna on the tower with the bottom dipole above the tower.
5. A check of the antenna VSWR as measured at the antenna is recommended at this point. Note this measurement carefully and record it for future reference.
6. After checking the VSWR at the antenna, connect the station transmission line to the antenna. (Make the connection snug but do not apply heavy force from pliers.) To avoid moisture problems, carefully wrap Vapor-Wrap™ (Part # 11317 or 11316) around the connection, working the compound into all cracks and smoothing it over the outer jackets of the transmission line. Failure to tape and waterproof the cable connection will result in improper operation of your antenna. Properly secure the feeder cable and antenna transmission line to the tower in the best position to avoid physical damage.

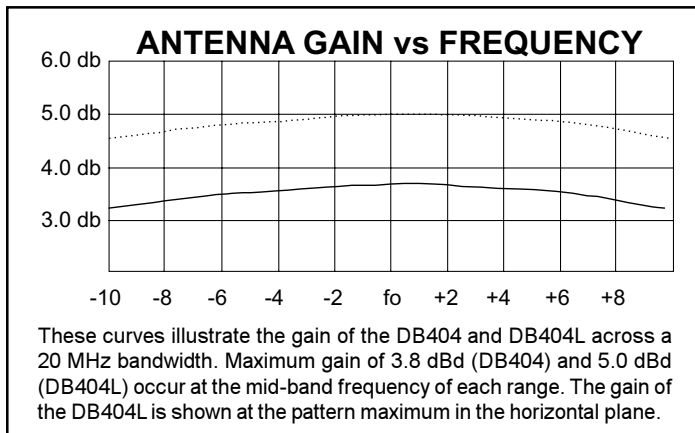
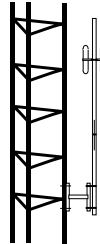
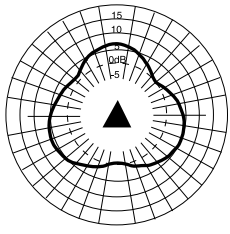


Figure 3. Antenna Gain Curves

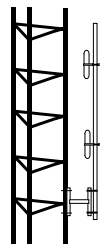
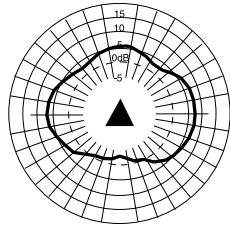
7. After the antenna and transmission line installation is complete, a careful visual check should be made to ensure that:
  - All mechanical connections have been securely made.
  - The antenna is mounted on the proper leg of the tower with sufficient physical clearance.
  - All connections have been carefully wrapped with Vapor-Wrap™ to prevent moisture problems.

**Side Mounting**

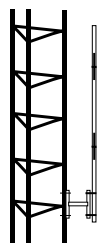
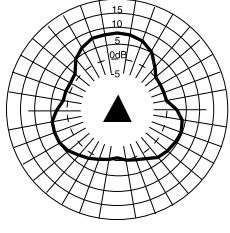
When the DB404 and DB404L antennas are mounted to the side of a tower, the horizontal radiation pattern necessarily becomes distorted. The following indicates the typical pattern shape for an antenna that is side mounted on a tower with an 18" face using the DB5007 Side Mount Kit. The pattern for 12" and 24" towers will be similar.

*DB404 (Omni) mounted on side of tower*

*DB404L, elements pointed toward tower*

*DB404L, elements broadside to tower*

The DB5007 Side Mount Kit positions the antenna approximately 16" from the tower and consists of a galvanized bracket and the necessary hardware for attaching the bracket to round tower members up to 3" OD, or angular members up to 2-1/2" on a side. Other size clamps can be supplied on special order.

Figure 4. Typical Pattern Shape When Side Mounting

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