

095007-000 Revision G, May 2016

Broadband Antennas
DB222 Series

GENERAL INFORMATION

DB222 broadband antennas are lightweight and equipped with two dipoles for transmit and receive applications.

ELECTRICAL DESIGN

Either an offset or circular (omni) pattern can be achieved, depending on the direction in which the two dipoles are arranged. For a circular (omni) pattern, the two dipoles are staggered on opposite sides of the mast to provide a gain of 3 dB over a vertical half-wave dipole. For a collinear pattern (offset), the two dipoles are positioned in line to provide a forward gain of 6 dB, with 3 dB on the sides and -1.5 dB on the back. The dipoles can be easily changed in the field. See Figure 1.

LIGHTNING PROTECTION

The radiators operate at dc ground, and the aluminum mast, with its pointed cap, provides a low resistance discharge path to the tower or ground system.

BANDWIDTH

The bandwidth permits the antenna to perform efficiently on both transmit and receive frequencies. Through the use of a suitable duplexer, a single DB222 and transmission line can be used for simultaneous transmission and reception when used in DUPLEX or MOBILE REPEATER operations. This arrangement avoids the differing coverage patterns that occur when one antenna is mounted on top of another on the side of a tower, and it gives maximum gain for transmit and receive.

MOUNTING

The DB222 is mounted using DB365-OS mounting clamps, which are included. The DB365-OS mounting clamps are designed for top mounting to the tower. For side mounting, the DB5001 mounting hardware must be ordered separately.

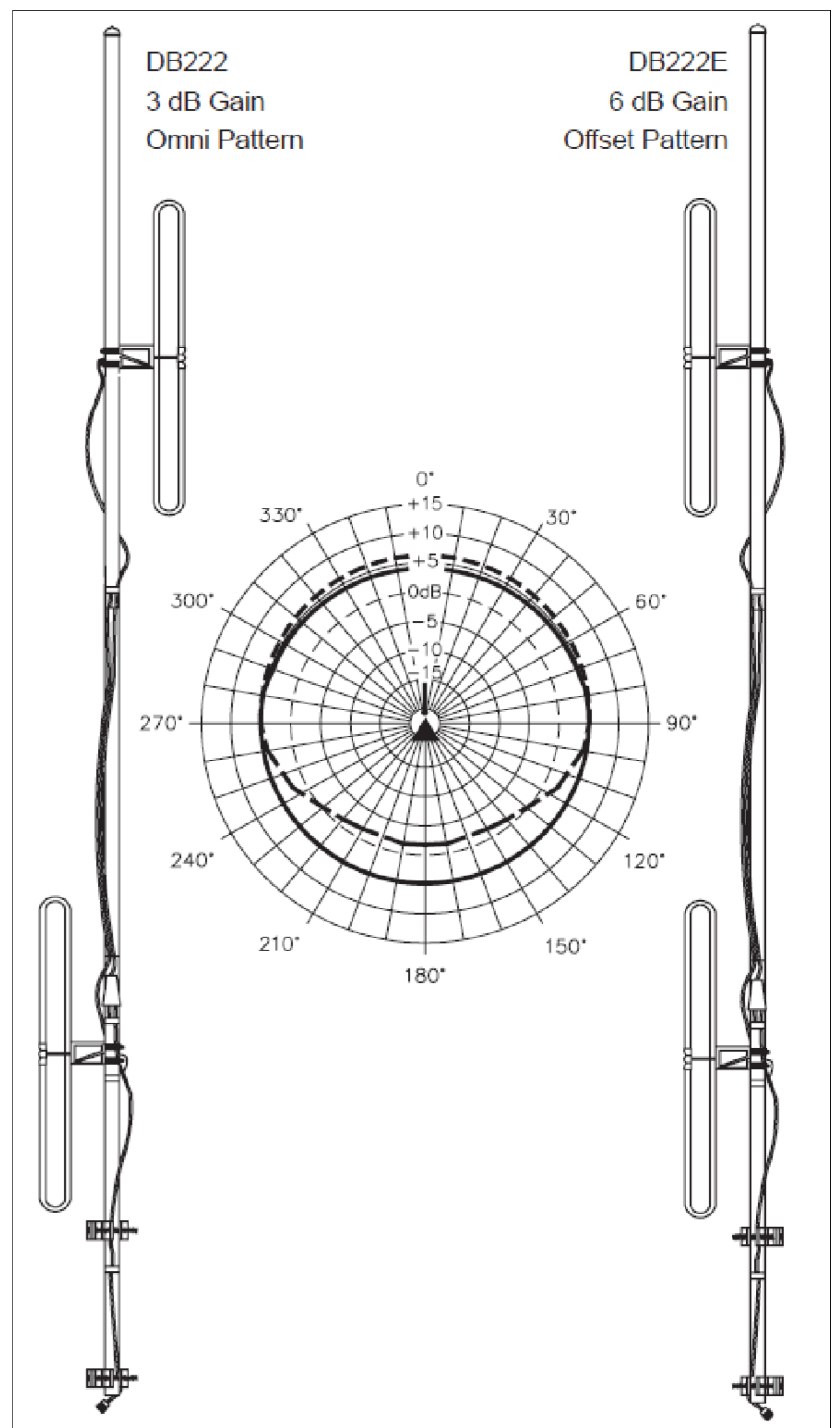


Figure 1. Dipole Arrangement for Achieving Pattern Shaping. (continued on page 2)

SAFETY NOTICE

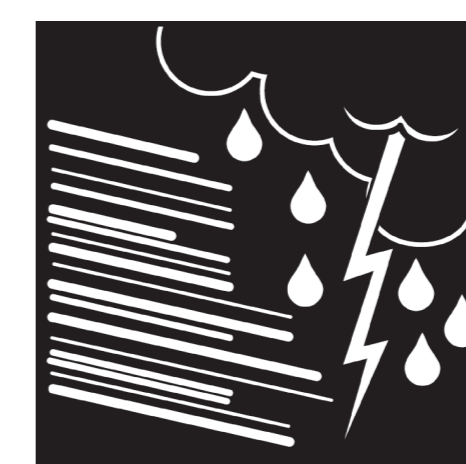
The installation, maintenance, or removal of an antenna requires qualified, experienced personnel. CommScope installation instructions are written for such installation personnel. Antenna systems should be inspected once a year by qualified personnel to verify proper installation, maintenance, and condition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

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

It is recommended that transmit power be turned off when the field installation is performed. Follow all applicable safety precautions as shown on this page.



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.

(Continued from page 1)

INSTALLATION INSTRUCTIONS

1. After removing the antenna from the shipping box, inspect it to be sure all parts are included and 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 as they are all 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-OS mounting clamps to the bottom of the antenna mast at the designated locations.
5. Mount the antenna on the tower with the bottom dipole above and facing away from the tower.
6. A check of the VSWR as measured at the antenna is recommended at this point. Note this measurement for future reference.
7. After checking the VSWR at the antenna, connect the station transmission line to the antenna. Make connections snug but do not apply heavy force with pliers. Carefully wrap the connection with VAPOR-WRAP® (part number 11317 or 11316.) Work the compound into all cracks and smooth over outer jackets to avoid moisture problems. Failure to waterproof the cable connection may result in improper operation of your antenna.
8. To avoid physical damage to the cable, secure the feeder cable and the antenna transmission line to the tower in the best possible position.
9. After the antenna and transmission line installation has been completed, a careful visual check should be made to ensure that:
 - All mechanical connections are secure.
 - 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.

MECHANICAL DATA

Maximum Exposed Area.....	1.6 ft ²
Wind Load (at 100 m.p.h.).....	64 lbf
Bending Moment (at top clamp).....	290 ft. lbs.
Net Weight (with mounting clamps).....	12 lbs.
Shipping Weight.....	16 lbs.
VSWR (at 50 ohms).....	<1.5:1
Rated Power Input.....	500 W

Duraluminum Mast: 6061-T6 Aluminum 1-3/4" OD with bottom wall thickness of 0.12 inches and top wall thickness of 0.062 inches. Total length is 10 feet, 8 inches.

Mounting: Complete with clamps that will fit round or angle members up to 3-1/2 inches.

Standard Termination: Captive Type-N male attached to end of flexible lead.

SIDE MOUNTING

When antennas are side-mounted, their normal horizontal patterns are distorted. Often this distortion can be used to an advantage, but only if the pattern shape is known. Table 1 lists the approximate gains of the DB222 and DB222E antennas when they are side-mounted on triangular towers that measure 18 to 24 inches between legs.

The DB5001 side mount kit is required for side mounting. Note that the side mount arm should extend from the tower at zero degrees azimuth.

Antenna	Azimuth			
	0°	90°	180°	270°
DB222	4.0 dB	5.5 dB	-3.0 dB	5.5 dB
DB222E Elements facing away from tower	6.3 dB	4.5 dB	-7.0 dB	4.5 dB
DB222E Elements facing toward tower	3.0 dB	5.0 dB	-1.0 dB	5.0 dB

Table 1. Approximate Side Mounting Gains.