

DB411 Offset Pattern Station Antenna

406-512 MHz

Assembly and Mounting Instructions

PRODUCT DESCRIPTION

The DB411 is a heavy duty, light weight, high gain antenna designed to provide gain over a broad horizontal pattern. It is suitable for mounting to the top or on the side of a tower. Clamps for top mounting are supplied with the antenna; an additional side mount kit (model DB5012) must be ordered for side mounting.

The DB411 is ideally suited for use in mobile systems requiring additional gain over a sector of a circle, or along the coast or geographical boundaries.

ELECTRICAL DESIGN

The antenna is a four stack collinear array with all radiating elements permanently attached along one side of the mast. A binary cable harness is used to assure equal in-phase power distribution to all radiating elements. As such, the antenna provides an offset pattern with exceptionally high gain over a broad area.

BANDWIDTH

Four models, each with a bandwidth of approximately 20 MHz, cover the 406-420 and 450-512 MHz bands. Performance characteristics (gain and VSWR) are essentially constant across the bandwidth of the antenna. This feature permits the DB411 to provide optimum performance when used in either single- or multifrequency systems.

CONSTRUCTION

The mast and radiation elements are fabricated of high strength aluminum alloys. Superior protection against lightning damage is provided by the heavy-walled mast since the mast offers a positive low resistance discharge path to the tower and ground systems.

A dual antenna, consisting of two DB411 antennas on a common mast, each with a separate feed line, is available. (Refer to the specifications for Decibel's DB413 for more information on this dual, higher gain, antenna arrangement.)

INSTALLATION PROCEDURE

1. Remove the antenna from its shipping box and inspect it to be sure all parts are on hand and that there is no physical damage.

Warning!

Installation of this product near power lines is *dangerous*.
For your safety, follow the installation procedures.

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 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.

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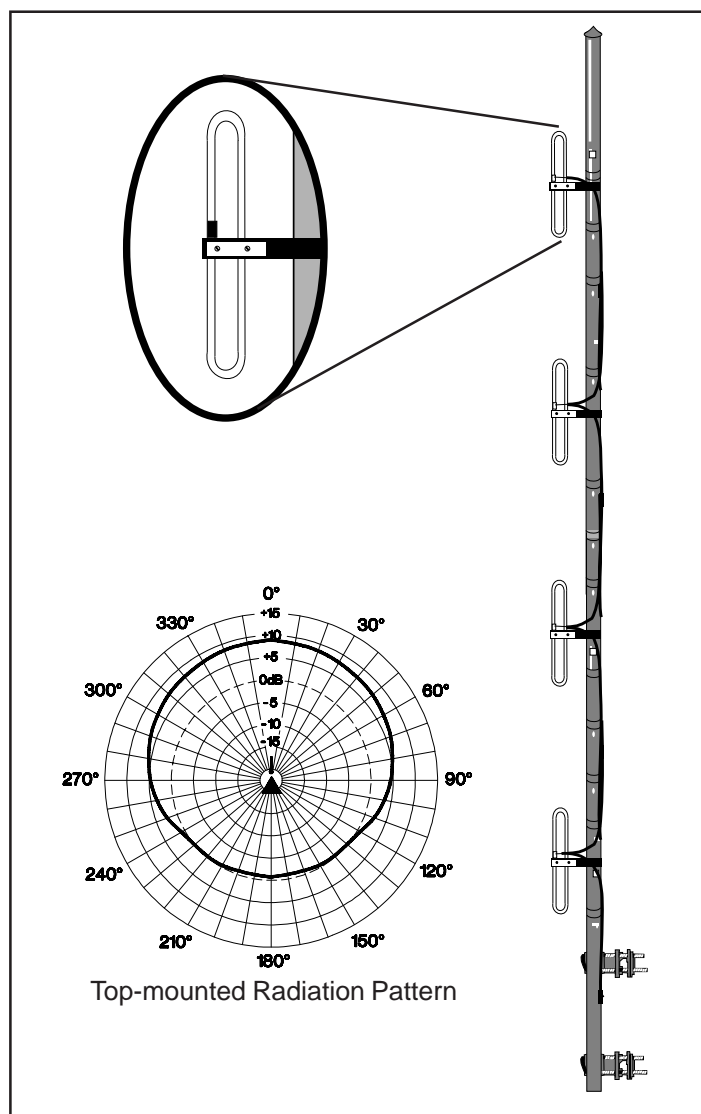


Figure 1 - DB411 Antenna



DECIBEL PRODUCTS

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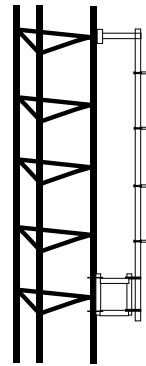
4. Attach the supplied DB365 mounting clamps to the bottom of the antenna mast at designated locations. Mount the antenna on the tower; the bottom dipole should be above the top of the tower.
5. A check of the antenna VSWR as measured at the antenna is recommended at this point. Note this measurement carefully and record it for future reference.
6. After checking the VSWR at the antenna, connect the station transmission line into the antenna. Make the connections snug but do not apply heavy force with pliers. To avoid moisture problems, carefully wrap the connection with Vapor-Wrap (part no. 11317 or 11316), working the compound into all cracks and smoothing it over the outer jackets. Failure to waterproof the cable connection will result in improper operation of the antenna.
7. Properly secure the feeder cable and antenna transmission line to the tower in the best position to avoid physical damage to the cable.
8. Once installation is complete, a careful 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.

ORDERING INFORMATION

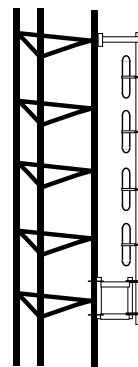
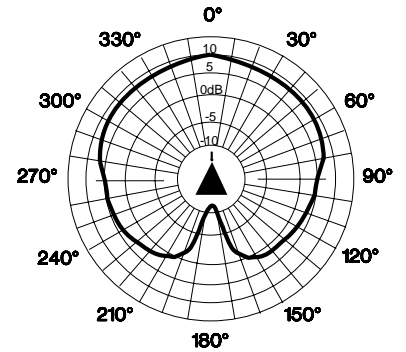
- DB411 Antenna, offset pattern – specify exact frequency or frequency range and termination if non-standard.
- DB5012 Side Mount Kit – for side mounting the antenna.

SIDE MOUNTING

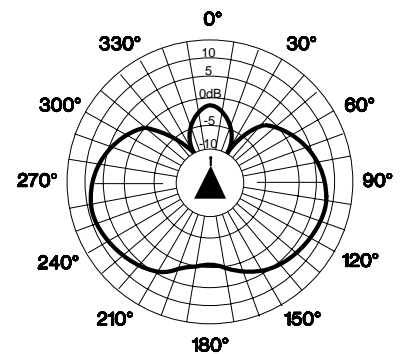
When the DB411 antenna is mounted to the side of a tower, the horizontal radiation pattern necessarily becomes distorted. The patterns shown below indicate the typical pattern shape of an antenna that is side mounted – using the DB5012 side mount kit – onto a tower with an 18" face. The patterns for 12" and 24" towers will be similar.



DB411: Elements pointed away from tower



DB411: Elements pointed toward tower



The DB5012 Side Mount Kit positions the antenna approximately 16" from the tower. It consists of an upper sway brace, a lower bracket (both galvanized) and the necessary hardware for attaching the bracket to round tower members measuring up to 3" OD, or angular members measuring up to 2" on a side. Other size clamps can be supplied on special order.

