Antenna Installation

NOTE: Two (2) antennas are mounted and installed on the roof of the vehicle using specific measurements for distance.

To mount and install the antennas, perform the following steps:

Step 1 Install antennas (see sample drawing DT450-10-0201 and Fig. 11 below).

1 The separation distance between the two (2) antennas is 19". The preferred is 31.25".

2 The minimum distance of the RX2 antenna from the light bar is 3.2".

Observe correct separation between antennas (refer to the Mobile Antenna Distance Matrix for midpoint distance calculations on page 12) and minimum Near Field Exclusion Zone (NFEZ) for proper diversity reception operation.

Step 2 Cut a mounting hole in the roof of the vehicle using an electric drill or hole saw.

NOTE: The antenna-mounting hole provides ground connection to the antenna. Ensure that a metal-to-metal connection between the antenna shields exists.

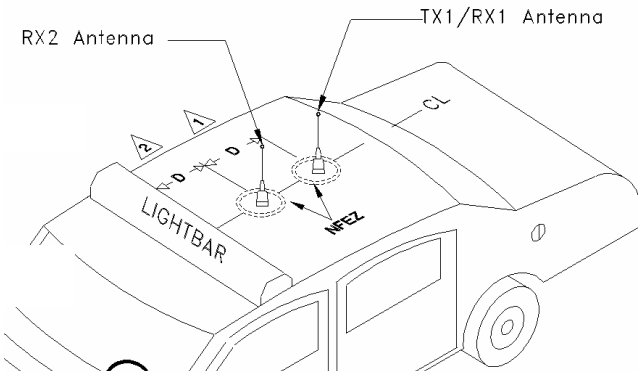

Figure 11

NOTE: Figure 11 represents the recommended front-to-rear antenna installation. The receiver antenna (RX2) should be the antenna nearest to the light bar.

Step 3 All antenna mounts must be environmentally tight. Install or use O-rings to seal the antenna base to the rooftop of the vehicle.

Step 4 Route the coaxial cables to the radio through one of the hollow spaces in the roof supports into the trunk compartment where the radio is mounted.

NOTE: Both antennas should be checked and tested to ensure they are functioning properly.

If these installation guidelines are followed, it is safe for persons to stand at a distance no less than 40 inches from the antennas.

NOTE: The following test is performed without any power, thus can be performed immediately after the installation of the coax and antenna, following the installation of the N-type connector on the coax.

To measure Return Loss, perform the following steps:

Step 1 Select one of the following Antenna Analysts to perform the test:

- 450 to 508 MHz installations, use the 140-525 Analyst
- 806 to 960MHz installations, use the CellMate Analyst

Step 2 Connect the antenna to be tested to the Antenna Analyst.

Step 3 Turn on the Antenna Analyst and the Return Loss (RETL) is displayed in dB to the left of the Voltage Standing Wave Ratio (VSWR) curve.

NOTE: The Return Loss Specification is –14 dBm or greater (with good antennas the typical range will be between –14 and –28).

To measure the Voltage Standing Wave Ratio (VSWR) Reflected Power, perform the following steps:

Step 1 After selecting the appropriate Analyst and connecting the antenna to be tested, press **F1** to access the Analyst Menu.

Step 2 Press **F1** again to access the Display (DSPLY) menu, which lists the modes.

Step 3 Press **F2** to select the VSWR display mode. Plotting will resume and the VSWR value is highlighted.

NOTE: The VSWR Reflected Power Specification is 1.6 watts or less.

To measure Insertion Loss of an unterminated length of coax, perform the following steps:

Step 1 Connect the antenna to be tested to the appropriate Antenna Analyst.

Step 2 Turn on the Antenna Analyst and the Return Loss is displayed in dB to the left of the VSWR curve.

NOTE: To switch from the RETL mode to VSWR mode, refer back to the previous set of instructions.

Step 3 Divide the result by two (2).