



Product Support Bulletin



Antenna Maintenance

When our Product Support Group receives calls from Radio Alarm System customers who have difficulty establishing reliable communication between the Central and a transceiver installed in the field, the solution is most often found by inspecting the antenna installation. The following test of the installed system can help identify the source of the communication problem.

TOOLS REQUIRED

Digital Multimeter
Rf Power Meter with 50 Ohm Load

- 1) Ensure that the antenna mast and lightning arrestor are properly grounded. See attached drawing for illustration of correct grounding procedures.
- 2) Perform two forward and reflected power measurements:
 - a) First, using the 50 ohm "Dummy Load."
 - b) Second, using the installed antenna system as a load.
- 3) Results of these measurements should be as follows.

The reflected power should never be greater than 1/10 of the measured forward power. Example: For a measured forward power of 5 watts the reflected power should be absolutely no greater than 0.5 watts. Typically the reflected power should be no greater than 0.2 watts.

- 4) If your antenna system is marginal or bad, as determined by the forward and reflected power measurement, perform the following.
 - a) Ensure that all antenna cable connections are clean, tight and free of any corrosion.

- b) Ensure that the coaxial cable connection at the base of the antenna is properly weather sealed.
- c) Check that all of the antenna elements are installed and the set screws securing the elements are tight.
- d) Ensure that the center whip element is "cut" to the correct length for your operating frequency. Every antenna shipped from Monaco Enterprises Inc. is uncut and includes antenna cutting instructions. Contact Monaco Enterprises Inc., if you need to cut the antenna and do not have the cutting instructions.
- e) Perform forward and reflected power measurements outlined in step #2.

An open or shorted coaxial cable can also cause communication problems. The following steps describe how to measure the continuity of the antenna cable and connections.

- 1) Remove power from the transceiver that is being tested. AC power first, then battery power.
- 2) Disconnect the antenna coaxial cable from the transceiver.
- 3) Use the Digital Multimeter to measure the resistance from the center conductor to the shield of the coaxial connector.
- 4) The reading in step 3 should be less than 10 ohms of resistance with the antenna properly connected.
- 5) Disconnect the cable from the base of the antenna and repeat step 3.
- 6) This measurement should be an infinite resistance (open).
- 7) If any of the readings are not as indicated, then inspect the coaxial cable for a broken (open) or shorted (center conductor to shield or ground) center conductor.

Example: If your readings indicate an open conductor, inspect your lightning arrestor. The lightning arrestor is designed to "open" in the event of a lightning strike or a high power electric discharge to the antenna system. If the readings indicate a short, inspect the coaxial connectors where the cable is attached.

- 8) When the above procedure is completed, re-connect the antenna system, both at the transceiver and the antenna.
- 9) Re-apply power to the transceiver. Verify proper communication by having the BT2 interrogated by the D-500 Plus/D-700 Central Station Receiving System.

Incorporating the above steps in a regular preventive maintenance or inspection program will go a long way towards preventing communication problems.