

## **RFX150 Troubleshooting Guide**

This troubleshooting guide is intended to help determine if a problem that is encountered while installing the RFX150 is an issue with the RFX150, or an issue with the radio. Below are some potential issues that might be encountered and what the potential fixes are.

- 1) Low RX Audio. Once installed, the unit puts out the proper amount of power, but the receive is a lot lower than normal.
  - a. Possible Cause #1. The relay is staying energized in the RFX150 in the receive mode. To determine if this is the reason do the following: While in receive, measure the voltage at R9. There should not be any voltage at this resistor in the receive mode. If voltage is present, then disconnect the blue wire from the 8 volt transmit spot in the radio and measure R9 again. If there is now no voltage present at R9, then double check where you are attaching the blue wire and confirm that it only has a voltage present in transmit. If there is a voltage present at R9 even when the blue wire is disconnected, then that indicates there is a problem in the RFX150. Repair as needed.
  - b. Possible Cause # 2. The relay or a connection going to the relay may be defective. Disconnect the main power going to the RFX150. While there is no power connected to the RFX150, transmit on the radio and see if it transmits through the RFX150 at a normal amount of power. If it does, then refer to Possible Cause #1. If the radio still does not transmit the same amount of power that it did before you installed the RFX150, then it is possible that the RFX150's relay is either defective, or has a bad solder connection to the board. Repair as needed.
- 2) No Amplification. Once installed, the radio receives fine, but only puts out the same amount of power that it did before installing the RFX150.
  - a. Possible Cause #1. The RFX150 is not getting DC voltage. Test the center pins of the finals in the RFX150 while in the transmit mode and make sure that they have 12 volts on them. If they do not, Repair as needed.
  - b. Possible Cause #2. The relay in the RFX150 is not energizing in the transmit mode. Measure R9 in the RFX150 while in the transmit mode and confirm that there is voltage present. If there is no voltage present, then double check where the blue wire is connected in the radio. If there is voltage present at R9, then measure the anode side of D2. The anode side of D2 should have 12 volts in receive, and close to 0 volts in transmit. If the voltage does not go low in transmit, then Q6 might be bad. Repair as needed.

3) No Transmit. Once the RFX150 is installed, the radio does not transmit any power, and the receive is low on the radio.

- a. Possible Cause #1. The coax going to the RFX150 is not installed properly to the radio, or the coax is broken at the RFX150. Determine that the Coax is not shorted and that it is still connected to the RFX150. If the coax tests good, then bypass the RFX150 and determine that the radio is actually working. If the radio works properly while the RFX150 is not installed, then the relay or the connections going to it, in the RFX150 might have a problem. Repair the RFX150 as needed.
- b. Possible Cause #2. If all of the above are determined to be okay, then it is possible that the finals might be blown in the RFX150. Follow the test procedure below to determine if this is the case.

With the RFX150 connected to 12 volts, connect a voltmeter to the rear of T2. This is the input wideband transformer. There should be NO Voltage present at T2 while in the receive mode. If there is 12 volts at T2 in the receive mode, then the finals are blown. There should be 2 to 5 volts at T2 while in the transmit mode. If there is no voltage present at T2 while in the transmit mode, then there is a possibility that the finals are blown. You will need to further test the circuit to determine if this is the case by doing the following. Remove the finals from the RFX150 and with the finals removed, confirm that there is no voltage at T2 in receive, and 2-5 volts while in the transmit mode. If this voltage is now present, then the finals were bad. If there is still no voltage at T2, then you will need to trouble shoot the problem causing this issue in the RFX150 and re-install the finals once you have the correct voltage at T2 and determine that the unit now works.

- c. Possible Cause #3. If the finals are determined to be good, and the voltage is present at T2, and is correct, then test the following. With an oscilloscope, look at the gates of the finals and determine that there is RF present. Then look at the center pins of the finals and determine that there is a larger amount of RF present. If this is the case, then C7 might be bad. Test both sides of C7 with a scope and determine that the amount of RF is about the same. If there is a large drop in the amount of RF measured at C7 then this part might be bad. If the amount or RF is the same on both sides of C7, then test the rest of the low pass filter and the relay to determine where the issue is.