

# Bench Test Procedure for the SSQ-2F (all versions)

V1.00 – 17 May 2014

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**Use this document with diagram SSQ-TEST1.PDF**

**WARNING - You must have a cooling fan set up to blow plenty of cooling air over the heat sink of the IRF730 or the transistor will burn out.**

Notice – Do not use DC voltages greater than +56 volts on the amplifier. Lower voltages may be used. – Use only specified 60 watt, 120 volt lamp while testing. Lower wattage lamps will cause excessive voltage across the IRF730 and overheating. Higher wattage lamps will cause excess current through the IRF730 and overheating.

**TEST SETUP** - Before turning on the power supply, do the following:

- 1) Connect a 60 watt, 120 volt incandescent lamp to the output of the amplifier with a length of coaxial cable as shown in the diagram. The lamp will function as a dummy load for the amplifier section of the SSQ-2F. The coaxial cable may be replaced by a pair of insulated tightly twisted wires no longer than 24 inches.
- 2) Turn OFF the Amplifier Test Switch so there is no +56 volts going to the amplifier.
- 3) Set switch SW1 off / open. This sets the SSQ-2F to the X2 mode.
- 4) Set switch SW2 to the 50% - 100% position.
- 5) Set the signal generator for a sine wave signal, with the frequency between 1000 to 8000 Hz.
- 6) Using a shielded wire or coaxial cable, connect the output of the signal generator to the AUDIO input of the SSQ-2F.
- 7) Adjust the output level of the signal generator to zero.
- 8) Adjust potentiometer R2 for about 10,000 ohms resistance. If desired, R2 may be replaced with a fixed resistor for these tests.

## Begin system test here

- 9) Turn on the +19 volt power supply. This will power-up the logic circuits of the SSQ-2F.
- 10) The duty cycle meter should read zero.
- 11) Slowly increase the output level of the signal generator. At some point, the duty cycle meter will jump from zero to roughly 40%.
- 12) Continue to increase the output level of the signal generator. The duty cycle reading should increase as the signal level is increased to a maximum of 100%.
- 13) If the duty cycle reading does not reach 100% at the maximum output level of the signal generator, it may be necessary to increase the resistance of R2 to increase the gain of the SSQ-2F.
- 14) Lower the output level of the signal generator until the duty cycle reading is 50%.
- 15) Change the position of SW2 to the 0% - 50% setting. The duty cycle reading should remain close to 50%.
- 16) Increase the output level of the signal generator and observe that the duty cycle reading decreases. You should be able to decrease the duty cycle to near zero by increasing the signal generator output level.
- 17) Set SW2 to the 50% - 100% setting.
- 18) Adjust the signal generator output level to obtain a reading 50% on the duty cycle meter.
- 19) Slowly adjust the frequency of the signal generator through the range of 100 Hz to 40,000 Hz. The duty cycle reading should read 50% +/- 4%.
- 20) WITH THE LAMP CONNECTED TO THE AMPLIFIER, turn ON the Amplifier Test Switch.
- 21) The light bulb should light with a moderate brightness. If you have a DC ammeter in the +56 volt wire, the meter should indicate about 0.6 amperes.
- 22) As you vary the signal generator output level, both the duty cycle reading and the brightness of the lamp should follow.

**CAUTION:** Do NOT operate the SSQ-2F at duty cycle readings above 80% without lots of cooling air blown over the IRF730 heat sink or the transistor may fail.

**If the SSQ-2F passes the above test procedure, then it is working correctly.**

\*\* The following test is optional:

23) Using an oscilloscope connected across the RF output terminals of the amplifier, you should observe waveforms as shown in the instruction manual.

24) With +56 volts on the RF amplifier, and a 60 watt, 120 volt lamp as a dummy load, the peak-to-peak voltage at the output of the amplifier will be about 156 volts.