

# Communication Concepts, Inc.

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Enclosed is additional information that will aid you in the checkout of the 420-450 MHz amplifier as described in Motorola's Bulletin EB-67.

Prior to applying RF to the amplifier, the bias circuit should be checked out as stated in the bulletin. In the bias circuit, the value of R6 (2.7 $\Omega$ ) is incorrect. The proper value of R6 should be around 27 ohm. The exact value will depend on the characteristics of the MRF-309. The value of R6 should be selected so that the collector quiescent current of each MRF309 is around 5 mA with no RF applied. You can bias the MRF309 a little more but not much more than 10 mA.

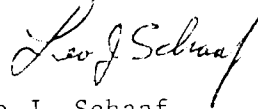
The bias voltage should be about 0.8 volt (R6  $\approx$  27 $\Omega$ ). When the bias supply is connected, the 10 $\Omega$  resistors R2, R3 load the bias supply and drop the bias voltage to 0.7 volts. The voltage on the base of Q1 (2N5192) is about 1.3 volts.

If the bias supply checks out, apply RF as described in the bulletin. One thing that you might want to monitor is the bias voltage. As you apply more drive, the bias supply should remain constant. If the bias voltage drops, there is a problem in the bias supply. Additional decoupling might be needed in the bias circuit. Most of the amplifiers built to date function properly the first time power and RF are applied.

Harry Swanson at Motorola supplied the majority of this information to me after talking with him on the phone. Harry is one of the authors of the bulletin EB-67 and welcomes any feedback - whether good or bad - pertaining to this amplifier. I have asked if Motorola could incorporate a T/R circuit on the board so that the amplifier could be used with transceivers easily.

Currently, I am using a Potter and Brumfield HPS11D relay. This relay is a "half crystal case size" with a contact rating of 2 amps. In my application, I am operating SSB so the relay isn't working too hard. I would suggest that if you are going to operate FM or ATV that a heftier relay be used. The insertion loss of the HPS11D relay is  $\approx$ 0.5 dB at 432 MHz in the receive mode.

Sincerely,



Leo J. Schaaf  
WA8ZHE

## Reference:

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