

W7IUV PREAMPLIFIER

Flags and Pennants have about 35 dB or so of signal loss compared to your TX antenna, so some installations may need a "preamplifier". Here is a [schematic](#) of an amplifier that I have used for a number of years. It's based on a CATV transistor and gives pretty good IMD performance and a gain of about 20 dB. This circuit provides good performance from 100 KHz to at least 30 MHz.

Through the years I have modified the basic schematic for specialized applications. Recently I made a change to the bias and increased the idle current to around 75 mA. This causes the transistor to run a bit warmer, but also increased the third order intercept point. The "new" design measures 18 dB gain and +20 dBm power output for 1 dB compression. I was also able to run a third order intercept for this circuit and the IP3 is reasonably good at +39 dBm. While the "old" circuit was good, I could just detect AM broadcast IMD products on a quite band. With the "new" circuit, I can detect no IMD products any place on topband when using any RX antenna I have. Remember the transistor will dissipate a little more power and really needs a small heat sink.

The 2N5109 transistor is the device recommended for this application. However, the 2N3866 is useable if the 5109 is not available. I also recommend that you shield the pre-amp very well and provide adequate de-coupling on the power supply leads. Noise from switching power supplies in local computers, as well as AM broadcast signals, can cause problems in overall performance if they get into the pre-amp power supply.

I have had a number of requests for vendors who could supply the 2N5109. Since I made my buy years ago, the vendor I used no longer stocks that part. However, Mouser Electronics (<http://www.mouser.com>) does carry it now.

