Ham Radio Experiments by IU3IDF

A small power amplifier (part 2)

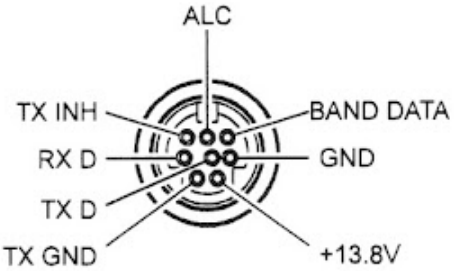
17:39

After building the amplifier we get to two critical point:

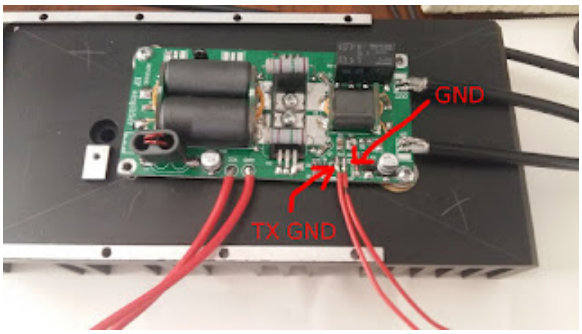
1. interfacing the amplifier to the radio
2. setting the bias correctly

Step 1

In my case the first one was not a big deal. I took a look at the FT 817 Operating Manual, it showed that the pin labeled "TX GND" is put to ground every time you key the PTT.



Now all I had to do was to buy a 8-pin mini-DIN jack and solder two wires, one to "TX GND" and the other to "GND", and then connect them as shown in the following picture.



Remember to use a decent length of wire, in my case I used ~ 1 m, to move the amp at the wanted distance from the rig.

Step 2

For this step it is better to have a dummy load capable of sustaining about ~ 80 W of power. If you do not own one probably you can find another ham at the local club who will borrow his own. Remember

that it is not considered good ham radio practice tuning your amplifier on the air (HI). Then you will need a power supply, in my case I used a switching one rated for 20 A @ 13.8 V, a voltmeter (about 5 V fullscale) and an ammeter (about 200 mA full scale). Remember to power radio and amplifier from the same power supply in order to avoid ground loops.
Now connect the voltmeter to the pad marked with the red arrow in the following picture and to ground. Connect the amp to the radio only with the ACC connector, do not connect the radio to the input, and then connect the dummy load to the output of the amplifier.

Turn on the power supply, you should see no voltage applied. Now when you key the PTT you should see a voltage applied. Rotate the potentiometer to the minimum voltage. At this point connect the ammeter in series with the VCC connection to the power supply. When you key the PTT you should see a current of about 50 mA due to the relay coil. Slowly increase the voltage by rotating the potentiometer. This current should be stable until you reach a point, the FETs turn-on voltage, were more current starts to flow. I decided to use a quiescent current of about 50 mA trough the FETs, so you should I read about 100 mA on the ammeter. In this way the amplifier is now operating in class AB mode.

Step 3

Now you can try to see how much power the amplifier outputs. Deliver minimum power from the radio to the amp and measure the power flowing into the dummy load. I found useful to write a small table of the power needed to reach the full power output on the various HF bands. Remember that the gain of the MOSFETs is uneven among various frequencies. Try not to exceed the 70 W declared maximum power.

So now you end up with your working amplifier. I hope you found this post useful. If I find someone with a spectrum analyzer I will post some spectral purity analysis to determine if a filter is needed (the answer is probably yes).

73s de IU3IDF

BeppeSera *23 aprile 2021 18:40*

RISPONDI

Mi era arrivato cavetto che aveva il Rosso collegato al + 13 e il nero collegato ad ALC ,

trasmette ma attenua in ricezione. Ho spostato il nero su Ground ed il rosso su TX Ground come mi sembrava logico e anche tu consigli ma non funziona, non va in trasmissione. Su TX Ground misuro 0,6 volt che vanno a zero in trasmissione. Riportando il rosso sul pin 13v funziona in trasmissione, ma attenua almeno 6 db in ricezione. Perché? Se il relè funziona non dovrebbero esserci componenti che giustifichino tale perdita.

BeppeSera *23 aprile 2021 18:41*

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RISPONDI

Unknown *14 gennaio 2022 22:17*

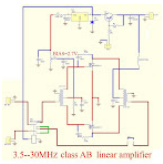
Is it works on cw mode?

RISPONDI

Post popolari in questo blog

A small power amplifier

17:48



I want to make clear that I am not a big power fan boy, but sometimes to make a QSO the 5 W of the 817 are not sufficient. I did not want to buy one, so I went for one of those Chinese kit you can find on various sites and that are really cheap. I bought

CONTINUA A LEGGERE

My poor man CW interface

19:23

When I got involved in ham radio I was soon fascinated by CW, so I learnt Morse code and started making contacts. A few days ago I participated as a station in an award and decided to try out working some station in CW instead of my usual SSB operation. I soon got tired of sending CQ and reports by

CONTINUA A LEGGERE