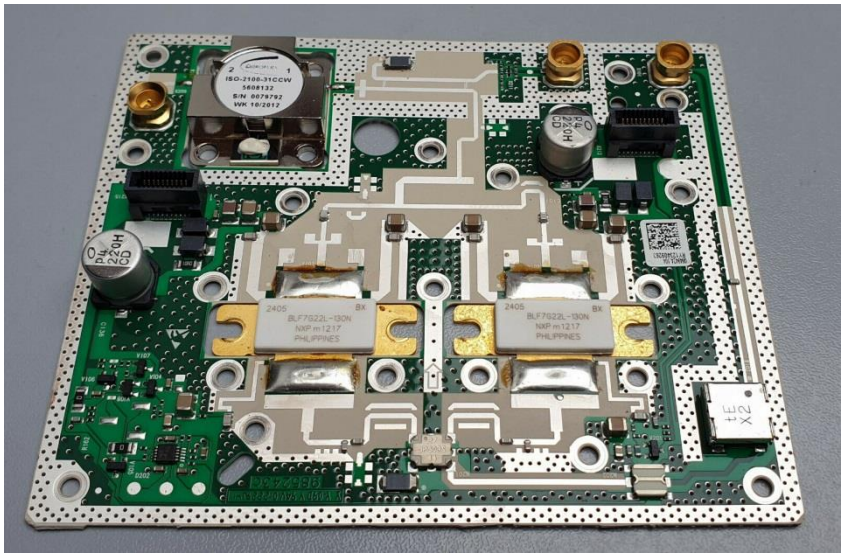
Modifications to Nokia PA PCB with 2 x BLF7G22L-130N for 2.4GHz

by

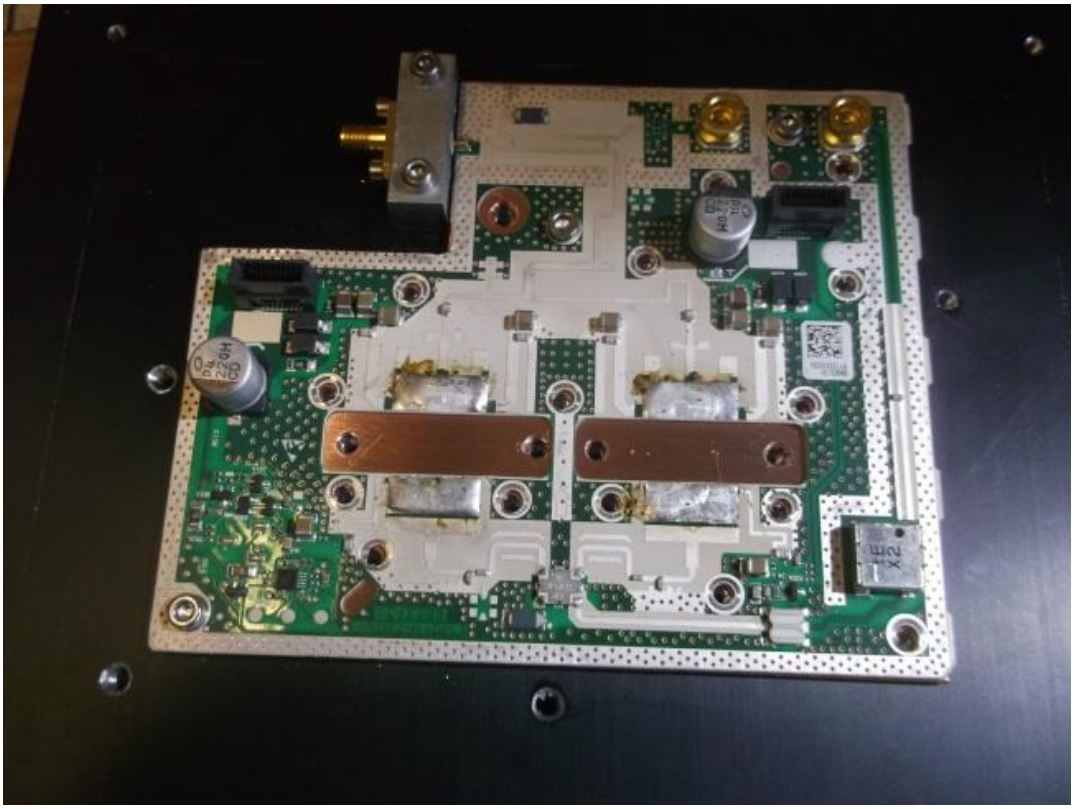
Jim Smith G7NTG

PLEASE NOTE THAT TESTING THIS AMPLIFIER WITHOUT THE SCREENING COVER IS VERY DANGEROUS FOR YOUR EYES. FIT THE SCREEN EVERY TIME WHEN TUNING AND TESTING!

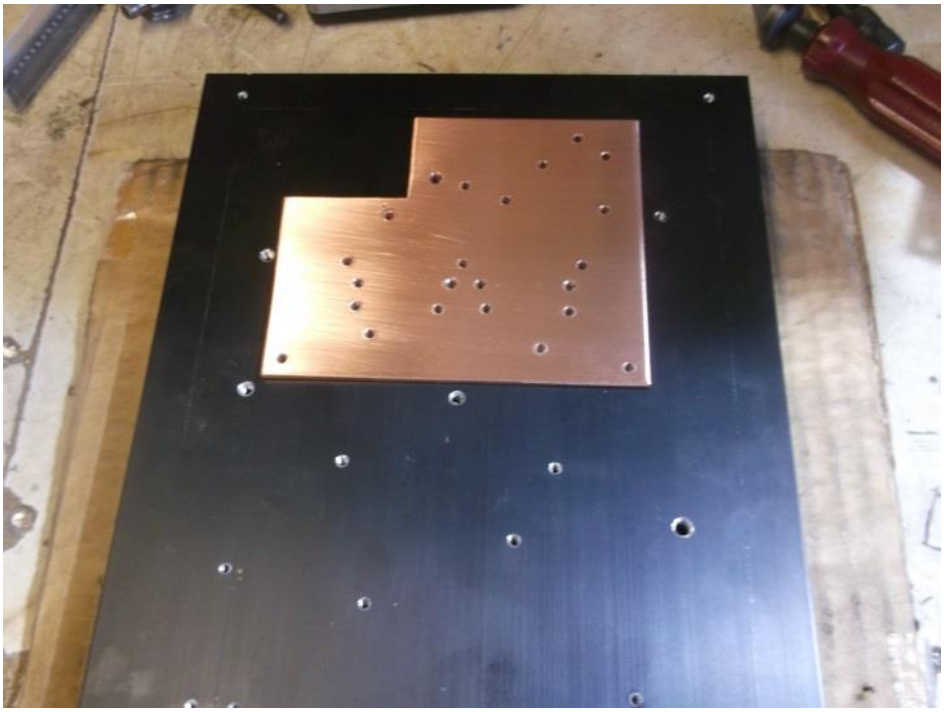


First thing remove the two transistors and output circulator from the PCB. Remove the transistors on an earthed metal sheet with an earthed soldering iron by melting the solder on the transistor tab and carefully lifting it with a jewellers screwdriver. The transistors should be tested with a meter such as a fluke 75 on the continuity range with the black wire on the source and the red wire on the gate and drain. Both should read open circuit look for solder shorts between source and tabs and clear them if necessary.

Cut off the corner of the PCB where the circulator was to allow the fitting of a connector block.

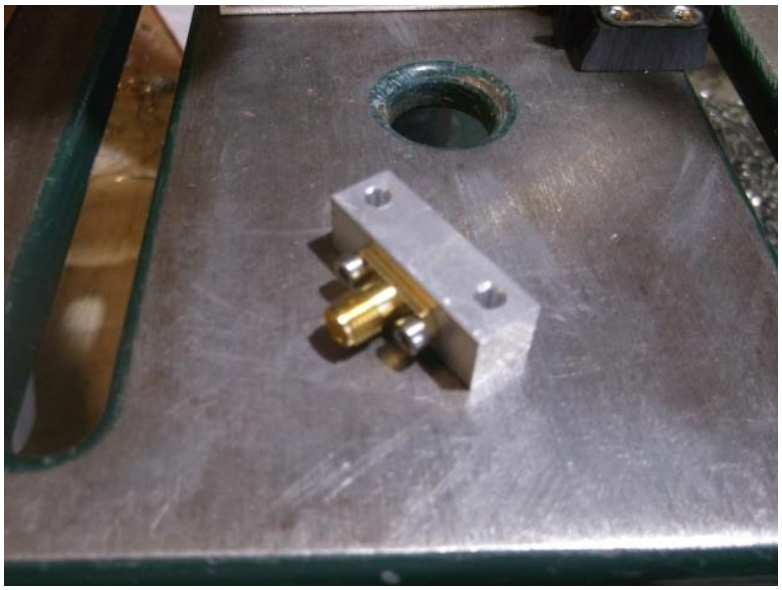


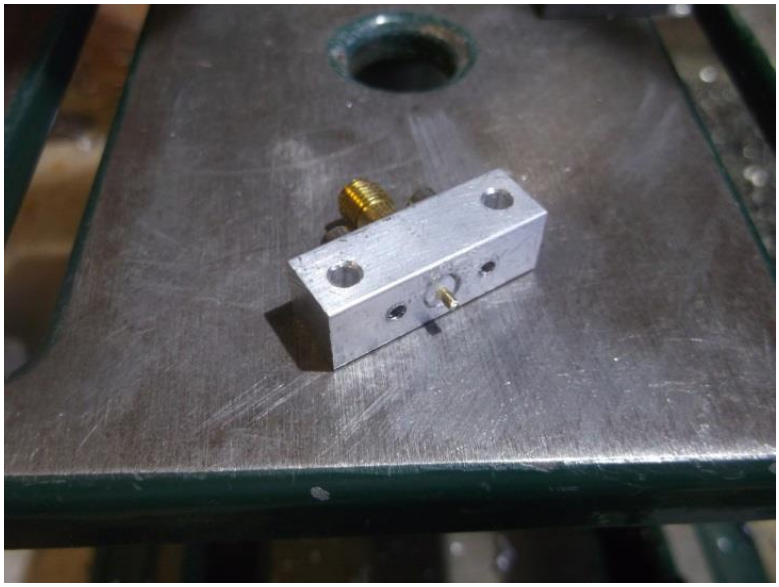
Cut a piece of copper 3mm thick the same size as the PCB to act as the heat spreader.



Drill the heat spreader and heatsink to take the PCB and mark the positions of the transistor fixing holes and drill them as well.

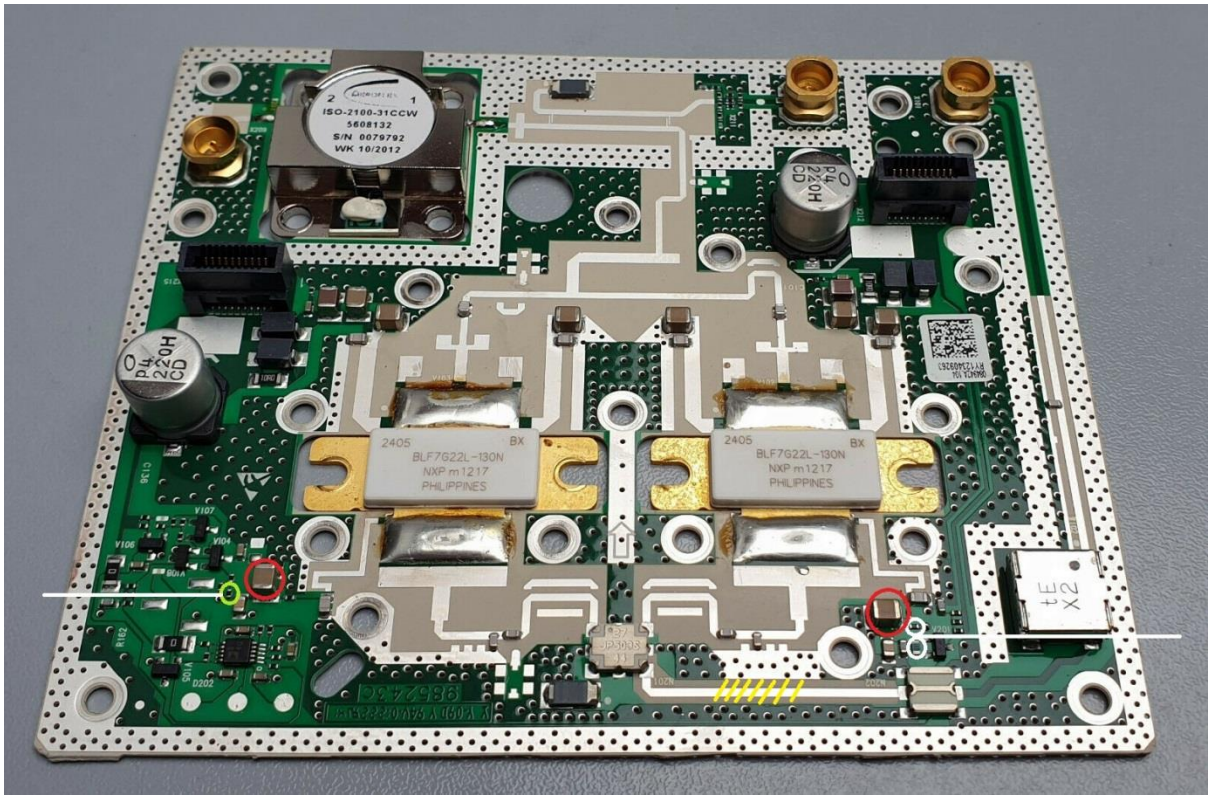
Make an output connector block so that the SMA pin is the correct height above the heatsink.





Remove 3 capacitors from PCB circled

Cut the PCB track at the input to the Xinger hybrid coupler marked yellow to allow input connection.



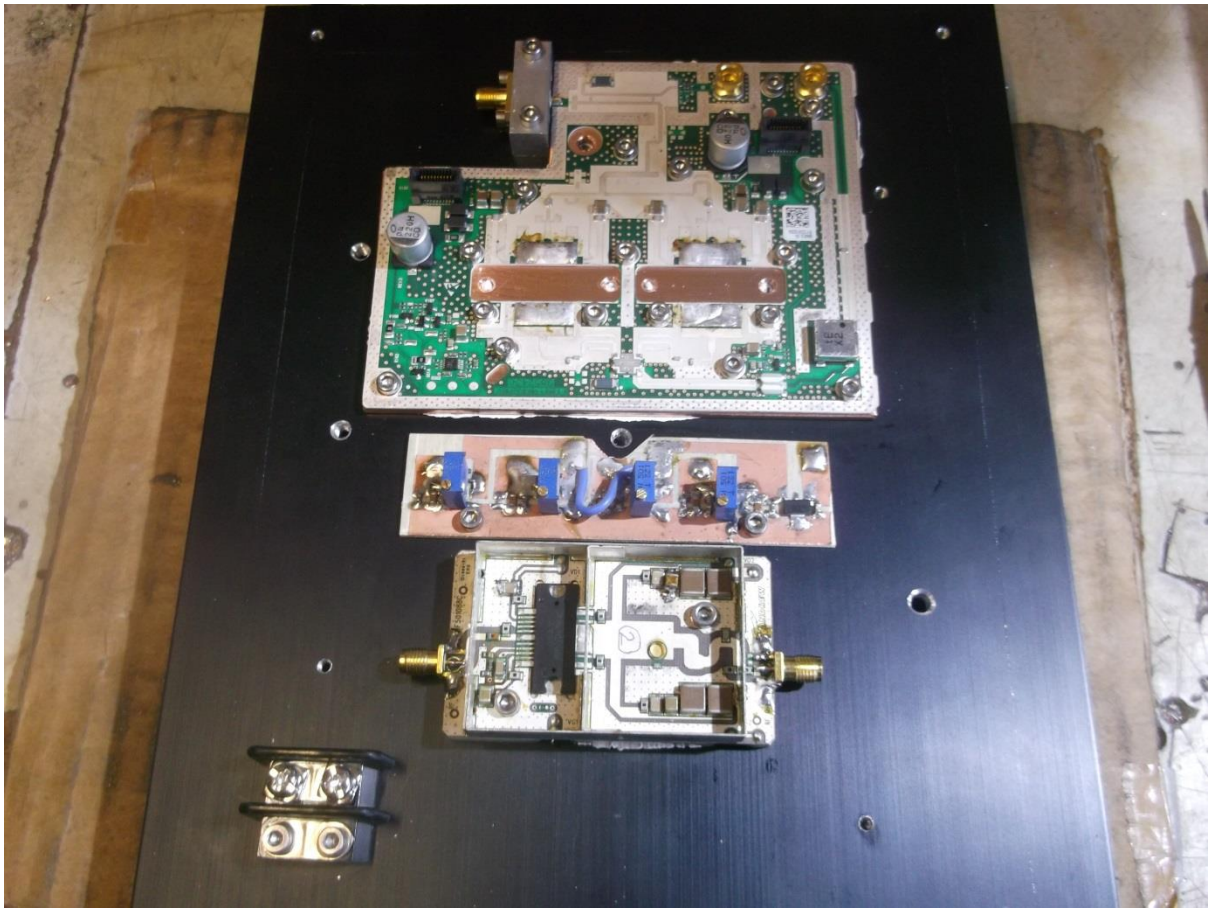
Make bias input connections to high ends of capacitors circled in red to connect to bias PCB.

Bias PCB consists of a 5 volt regulator to drive 10k , 10 turn preset potentiometers with plenty of decoupling.

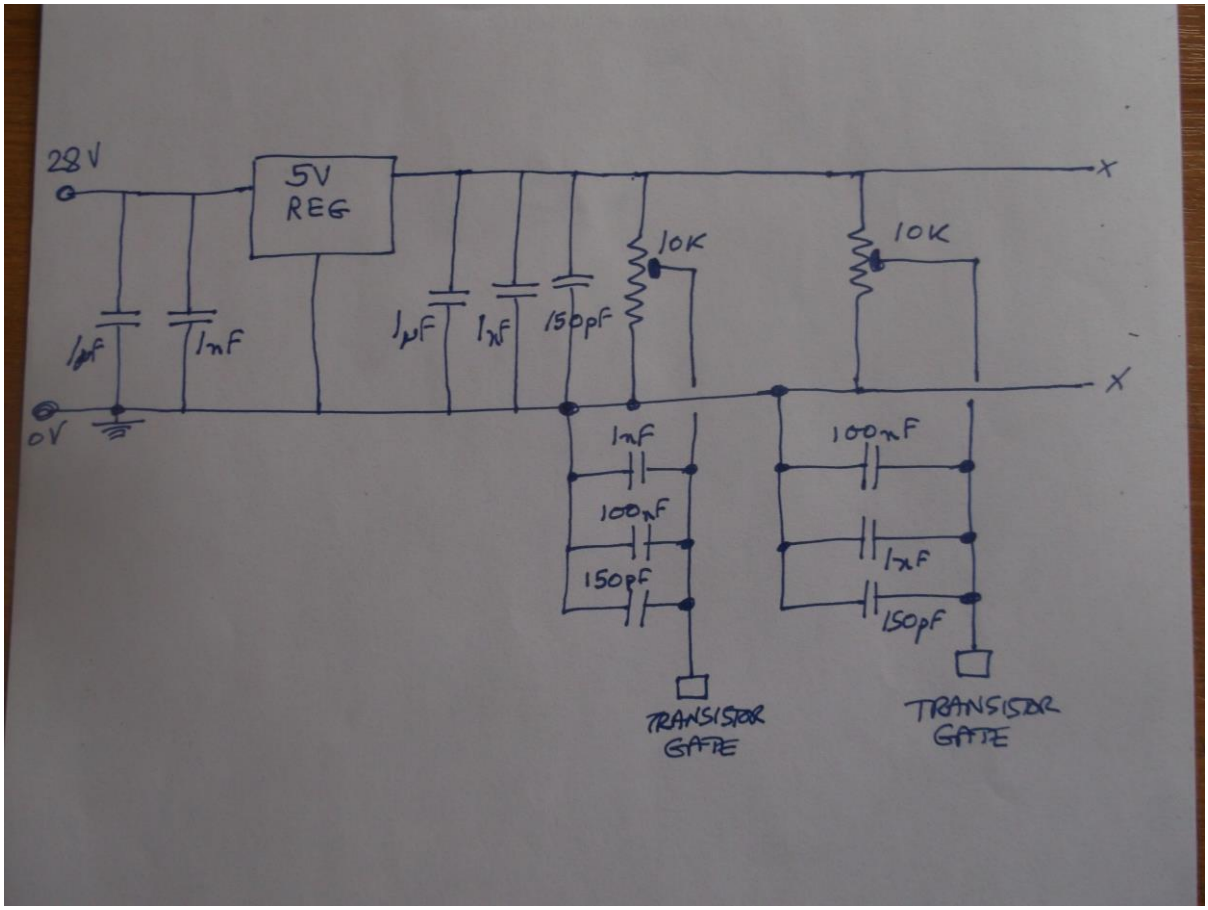
Screw everything down to the heatsink.

Screw down and solder in the two power transistors.

Set the bias to 1 amp per device – 2 amps total

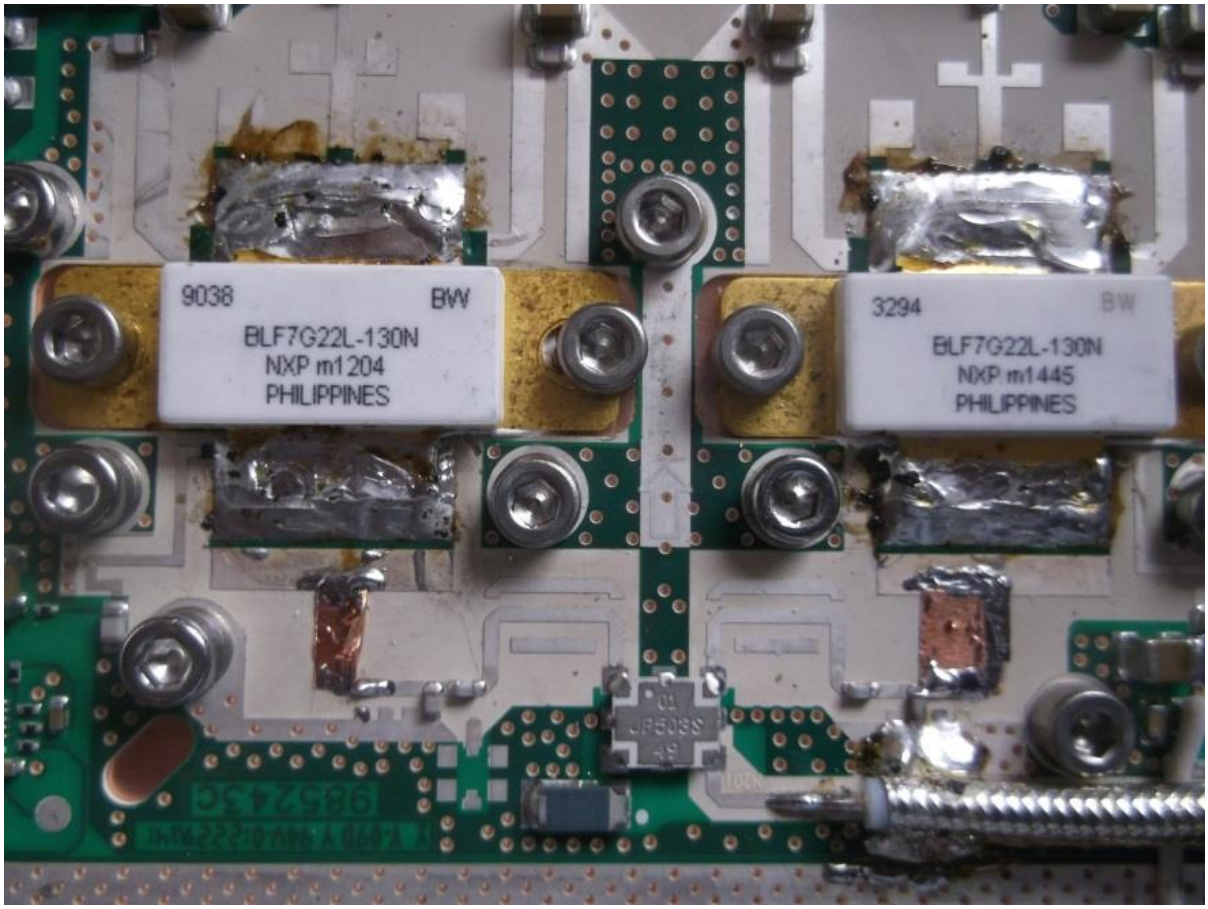


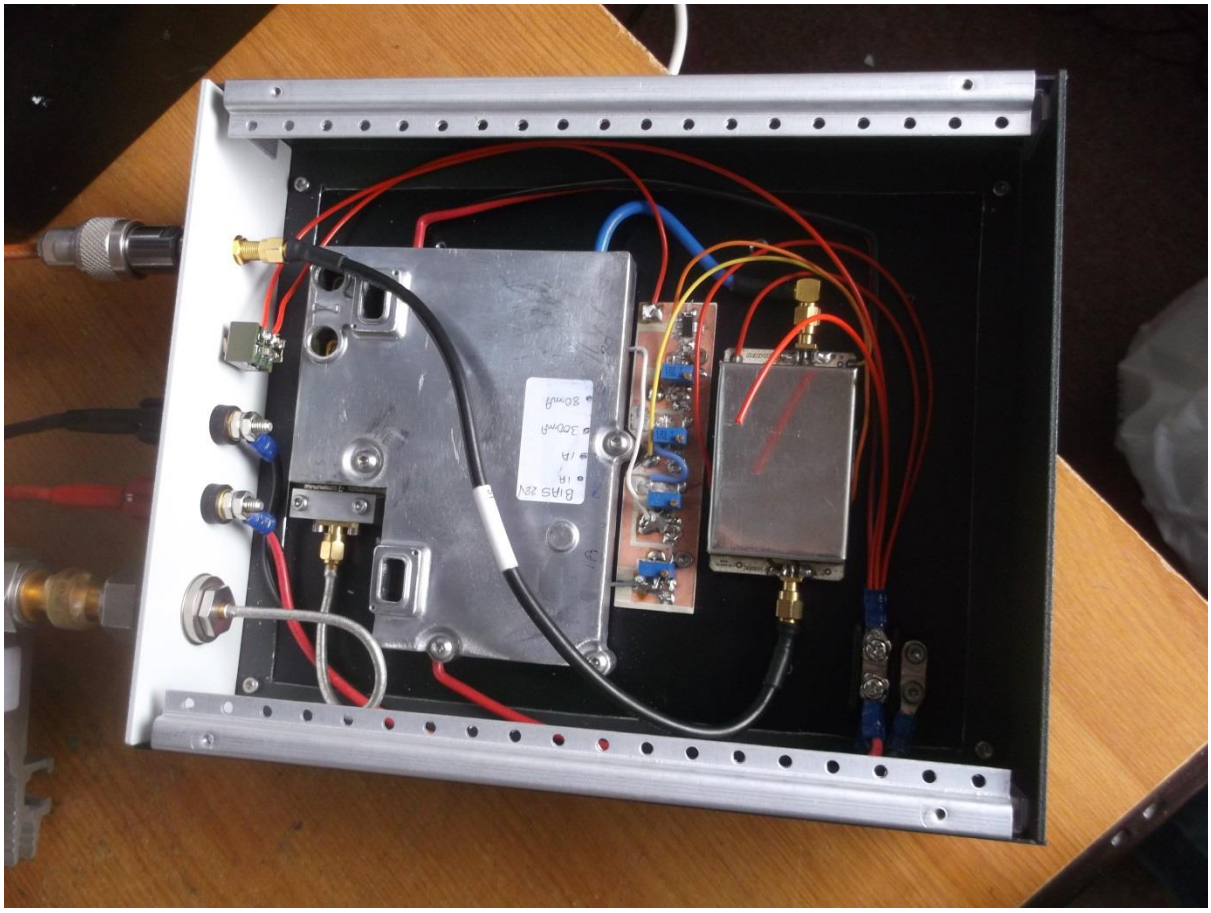
The bias PCB I used also provides bias for both stages of the Andrew driver amp I used.



Circuit of bias PCB

Snowflake tuning of gate circuit.

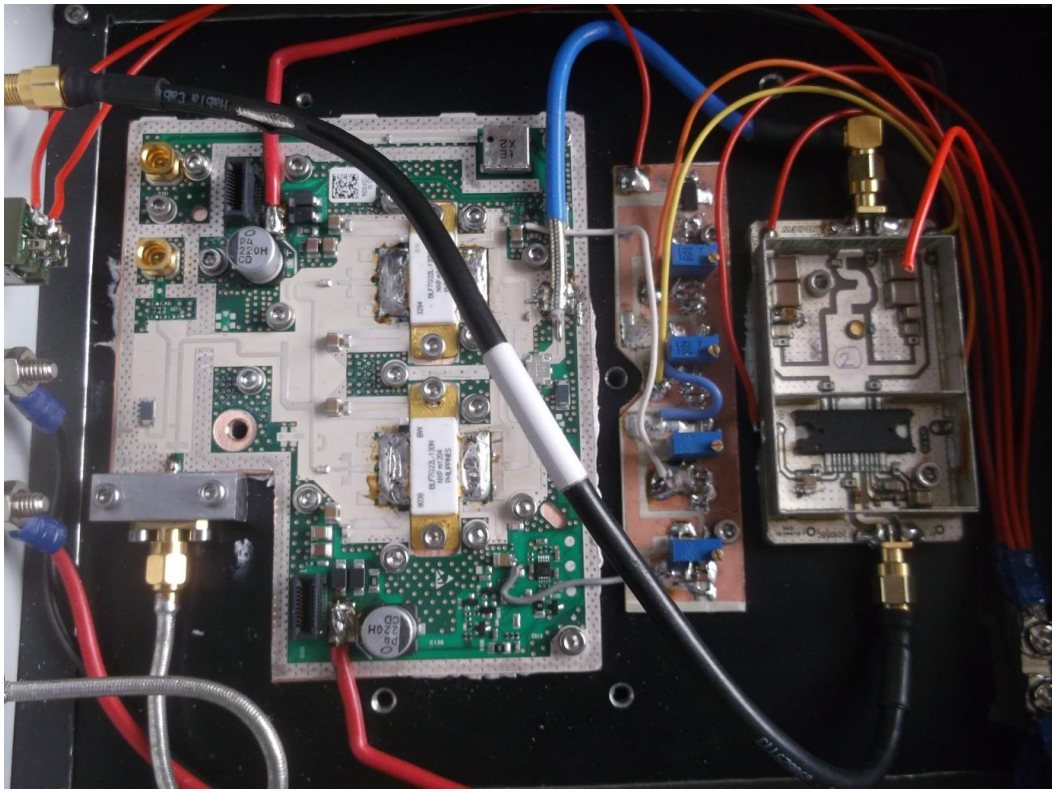

9038
BW
BLF7G22L-130N
NXP m1204
PHILIPPINES
3294
BW
BLF7G22L-130N
NXP m1445
PHILIPPINES



If you have the screening cover than this needs cutting and fitting and needs slots cut to allow entry for the cables – bias, power and rf input.

I got 170 watts at 28 volts 12 amps saturated power for 30 watts drive

P1dB is about 100 watts for about 7 watts drive at about 8 amps supply



Put in this case ignore the 100W! ☺