

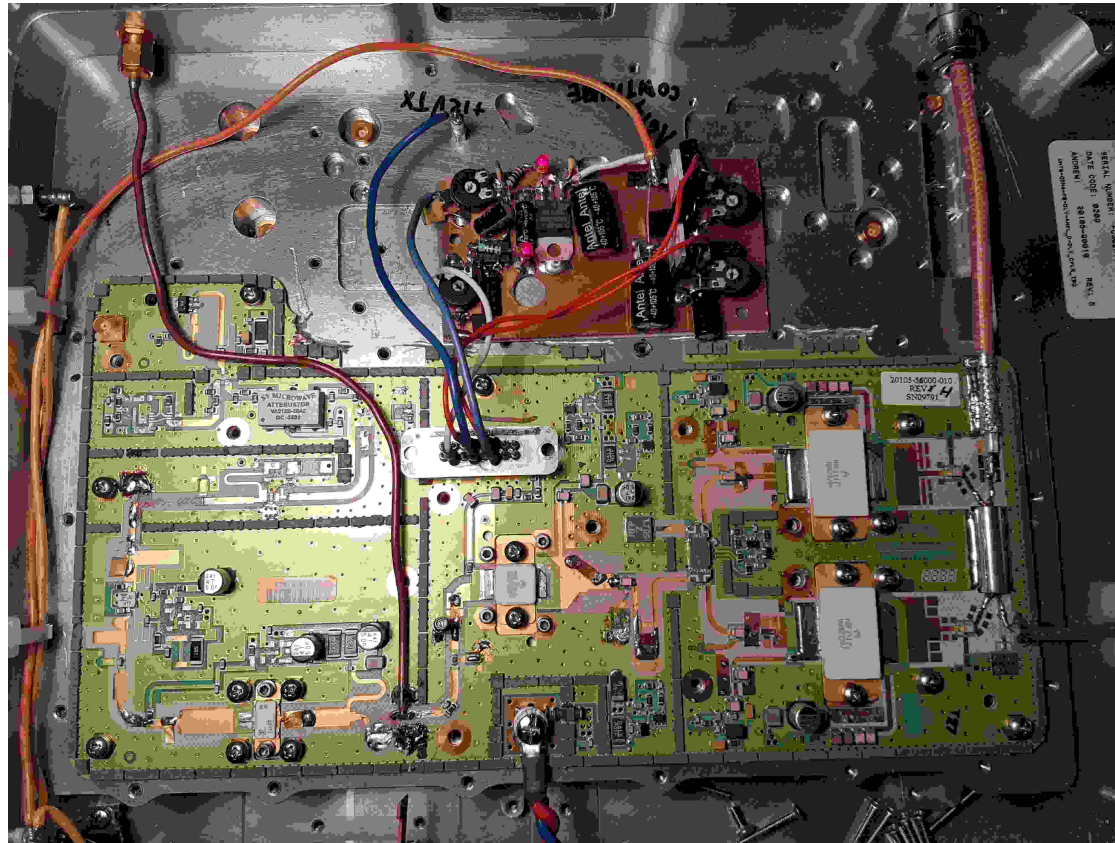
ANDREWS ex-UMTS SSPA

In this section I describe the modification of an ANDREWS UMTS unit to be used for 2320Mhz.

There are several Radio Amateurs who already did modify this type of SSPA.

[DL4MEA, OK3RM, SP6JLW, OE3EFS]

The main PCB contains two independent sections, which will be worth to modify for use on 2320MHz.



←----- Driversection-----→ ←----- Finalsection-----→

Driver section.

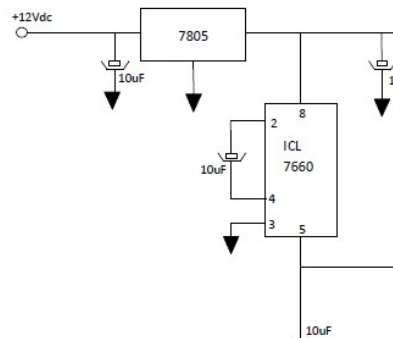
The smaller PCB contains following components:

Component	Vds	Vgs	Gain	Pout
U17	15Vdc	-5Vdc	12.5dB	32dBm
FLL57	15Vdc	-5Vdc	11.5dB	36dBm
MRF 21045	28Vdc	+5Vdc	15dB	45Watt

Using the multipole connector the various connections are as follows:

Ground *	0	0	Ground *
	0	0	
Ground	0	0	
	0	0	
	0	0	Gate MRF2104
	0	0	Gate U17, FLL
	0	0	Drain U17, FLL
	0	0	Drain MFR2104
	0	0	Drain MFR2104
Ground*	0	0	Ground *

Note: Ground connections are available on the PCB*

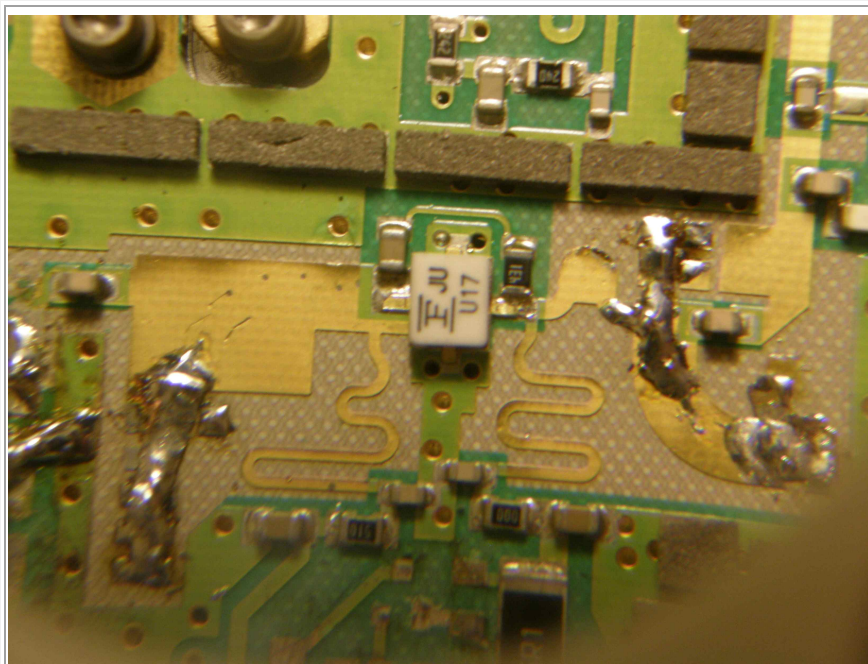


First test of this section of the board was on the DC levels and currents. Following settings were found to be more or less optimum for the time being:

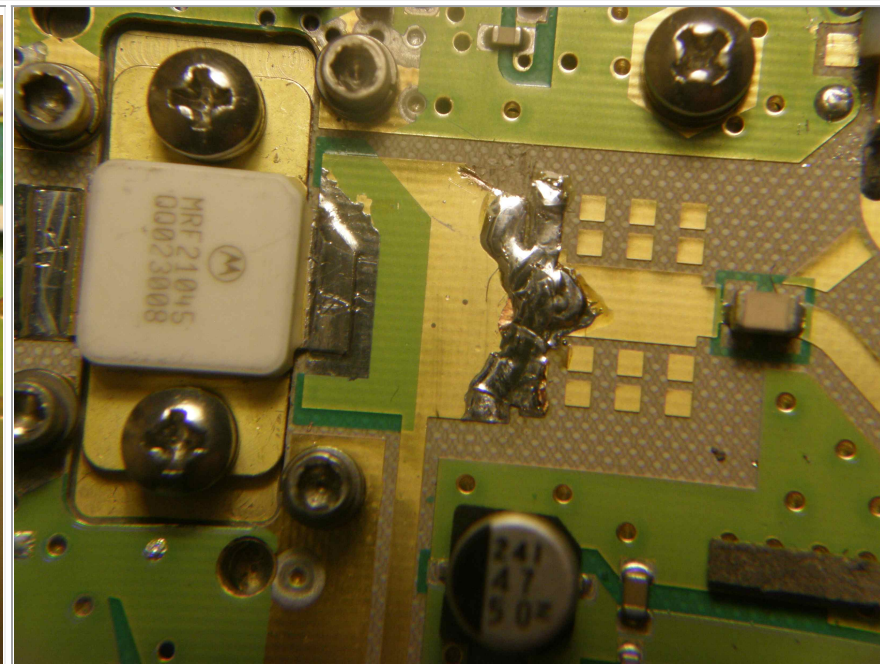
$I_r = 400\text{mA}$ (U17 & FLL57) (*this value is heavily influencing total gain!!*)

$I_r = 280\text{mA}$ (MRF21045)

After some modifications I have wind up with: 10mW input => more than 10Watts output **Gain: 30dB**



Modification on the U17 -input & output section



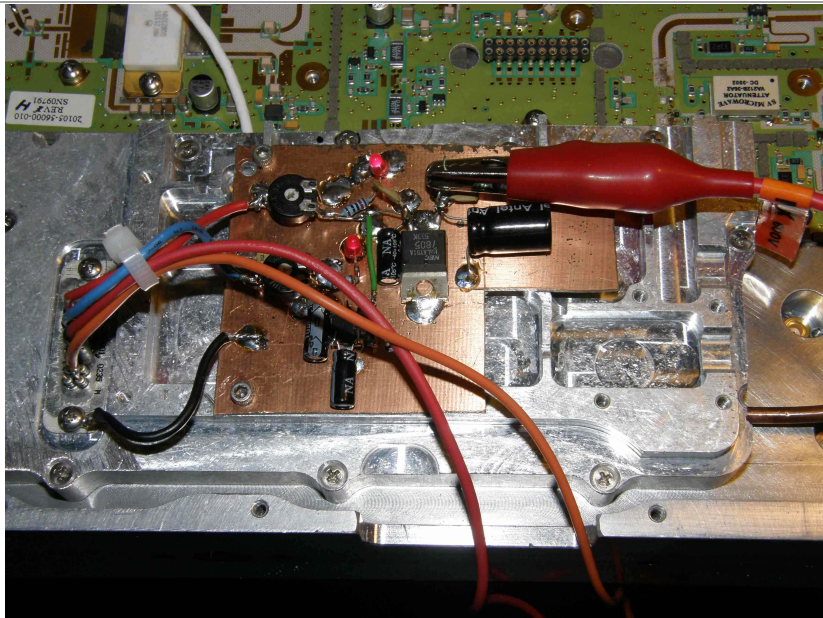
Modification on the MRF 21045 -output section

Removed the driver section from the original unit and installed on separate ALU cooling block.

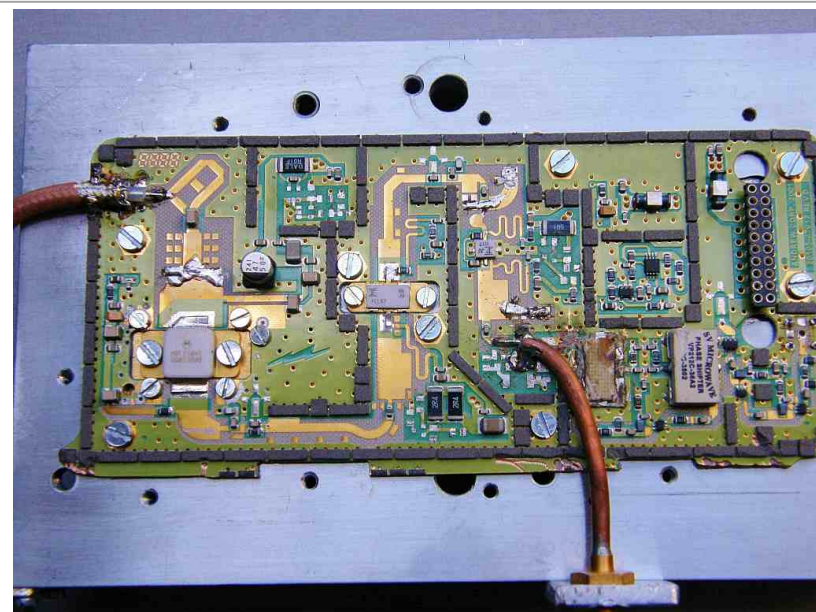
Be sure you copy all the holes in the new cooling block, otherwise you will be faced to various shorts on the underside of the PCB.

Re tested total driver section with supply voltage for MRF to 24Volt.

Results: *13dBm input => 20Watt (2320MHz)*

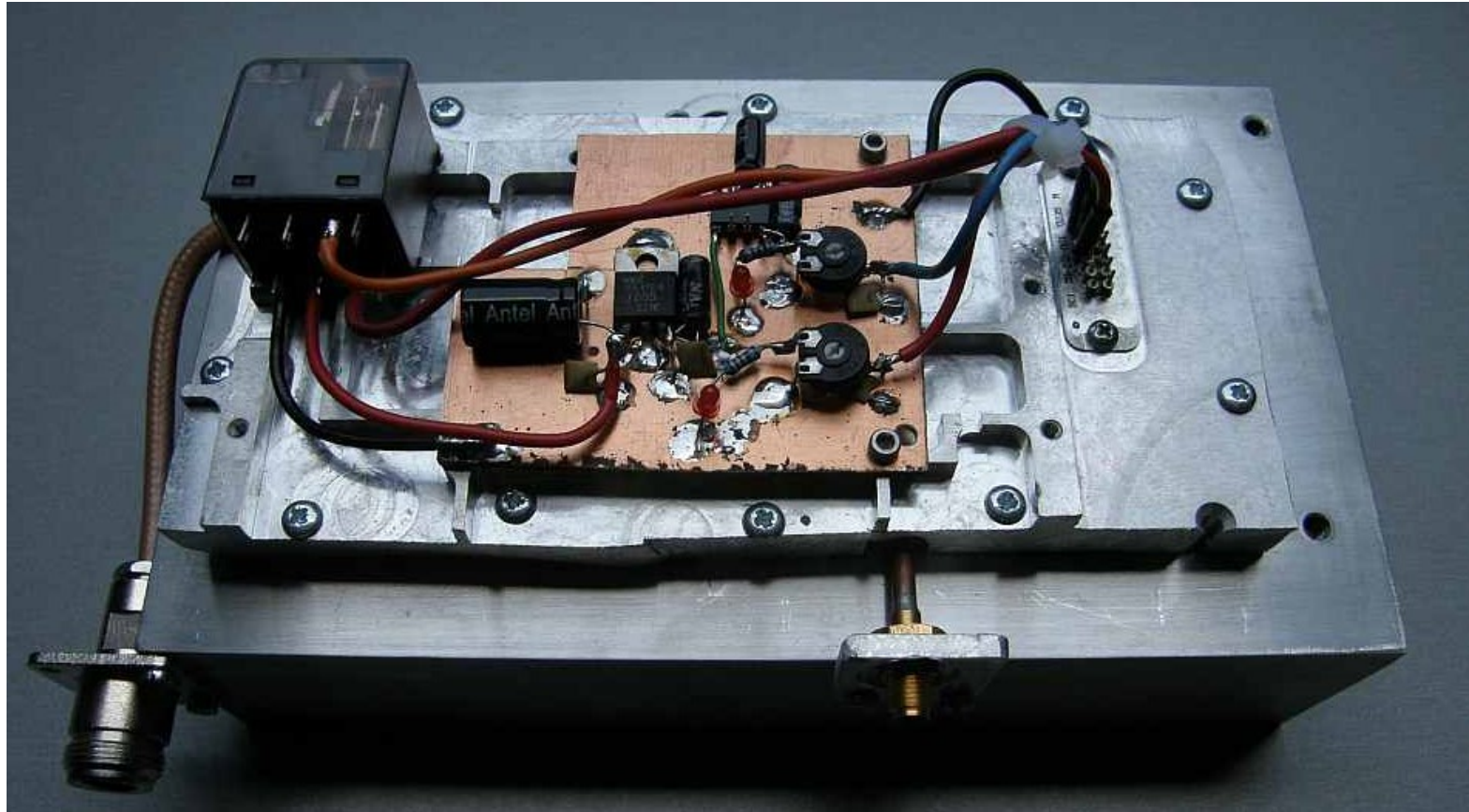


DC adjustment section on top of the cover



Completed driver section installed on coolingblock

Retested the driver and found both U17 and FLL17 died for unknown reason. Modified the input to arrive directly at MRF21045



Complete driver SSPA with cover installed

Final section.

In this section I describe the modification of the HPA, High Power Section of an ANDREWS UMTS unit to be used for 2320Mhz. This section contains following components:

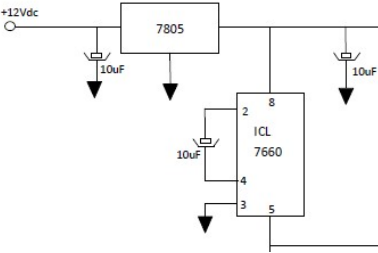
Component	Vds	Vgs	Gain	Pout
U17	15Vdc	-5Vdc	12.5dB	32dBm
FLL57	15Vdc	-5Vdc	11.5dB	36dBm
MRF 21045	28Vdc	+5Vdc	15dB	45Watt
MRF 21125 (2x par)	28Vdc	+5Vdc	13dB	125Watt (2x)

Using the multipole connector the various connections are as follows:

Connections for HPA PCB –

Ground *	0	0
	0	0
	0	0
+5Vdc Adj	Gate MRF21125	0
		0
+5Vdc Adj	Gate MRF21125	0
		0
		0
		0
Ground *	0	0

- Notes: 1) Ground* connections are available on the PCI
 2) Drains for MRF fets are to be connected direc



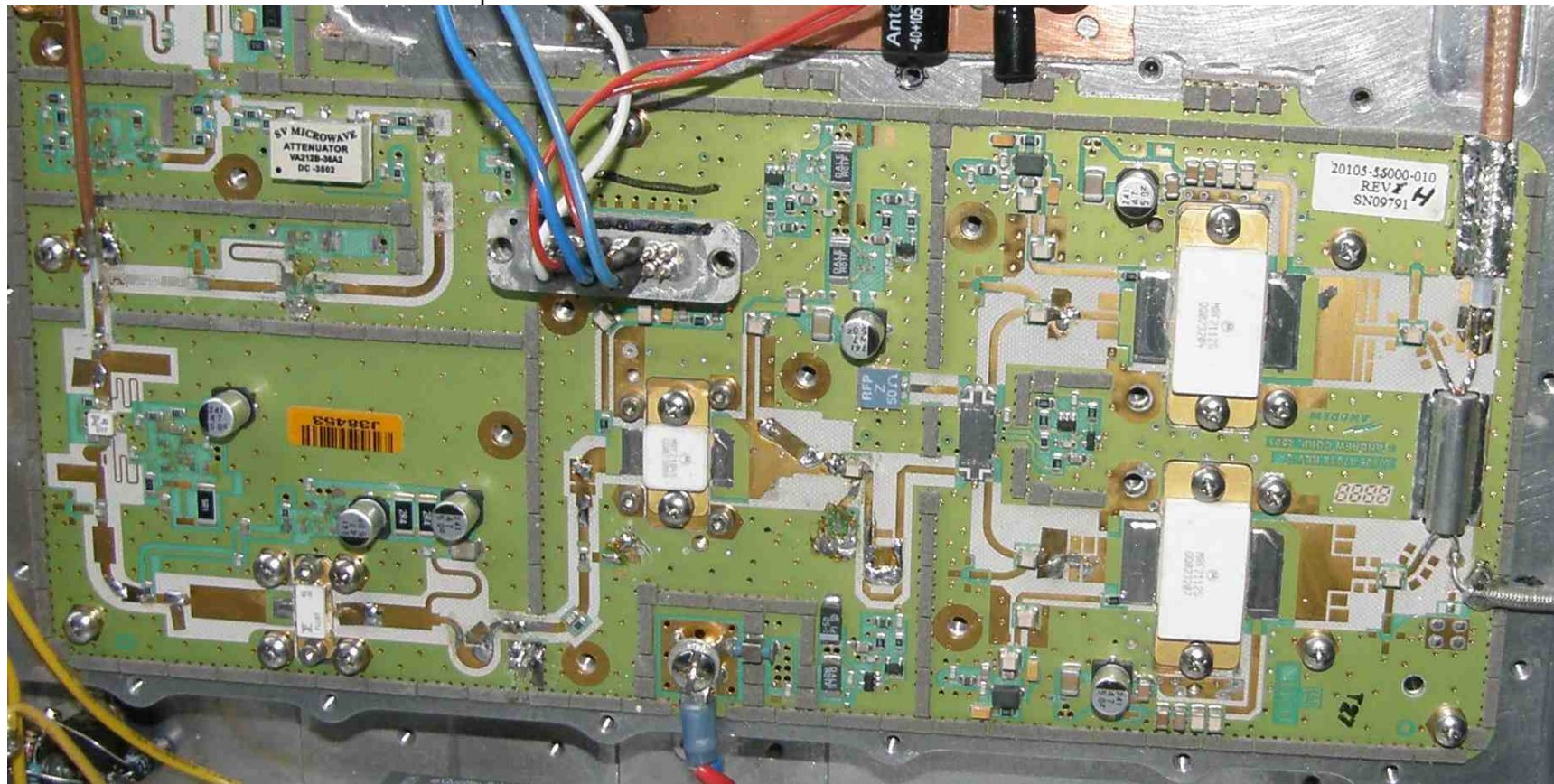
First test of this section of the board was on the DC levels and currents.
Following settings were found to be more or less optimum for the time being:

Ir = 400mA (U17 & FLL57)

Ir= 500mA (MRF21045)

Ir= 500mA (MRF21125)

I first modified the input section: U17-FLL57 and got 1.5Watt out with 7mWatt drive.
After this I used the entire set-up and applied 24Vdc on the MRF's
The final modifications are shown in below picture.

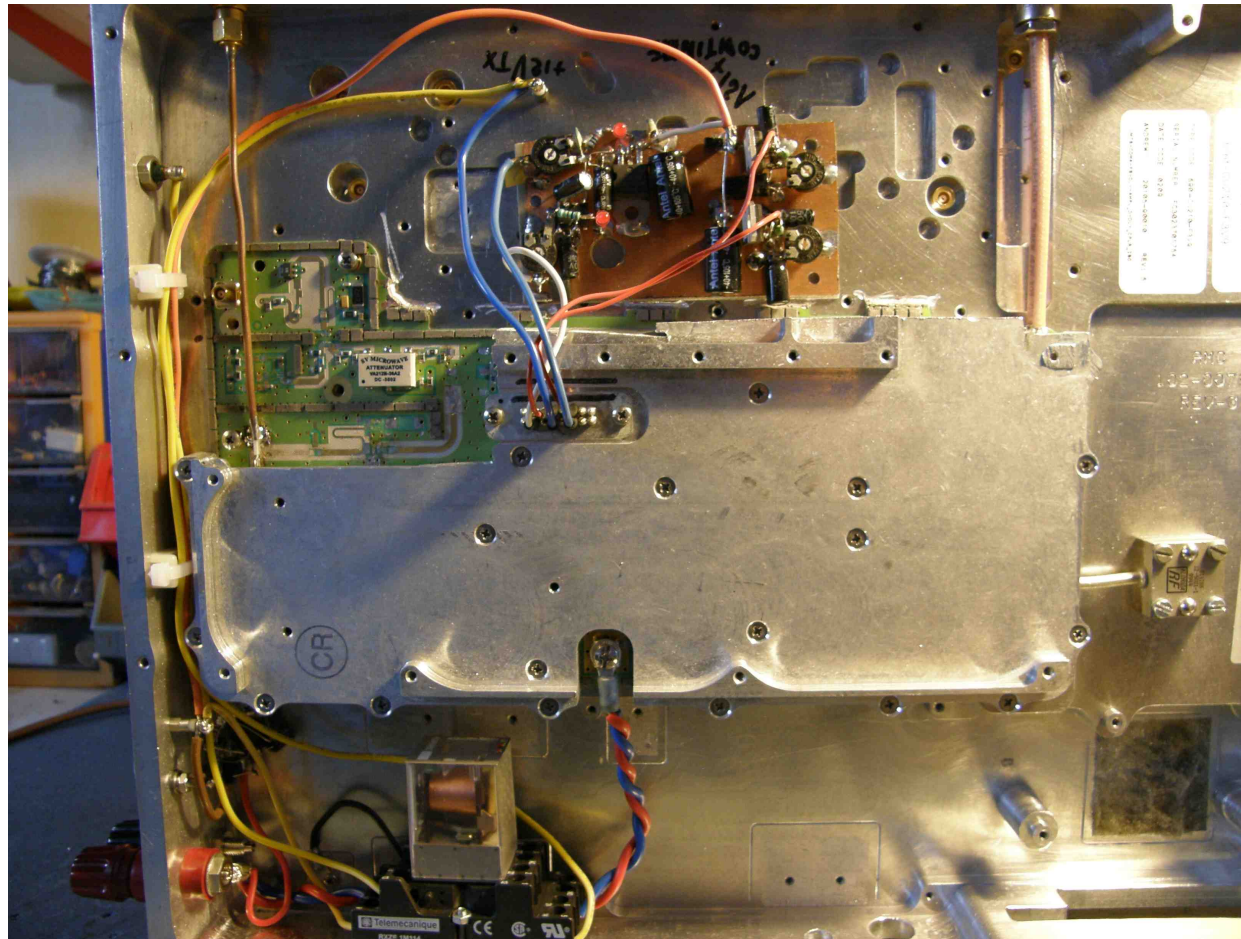


Note: I consider to further optimize the final stage as not much was done on this.

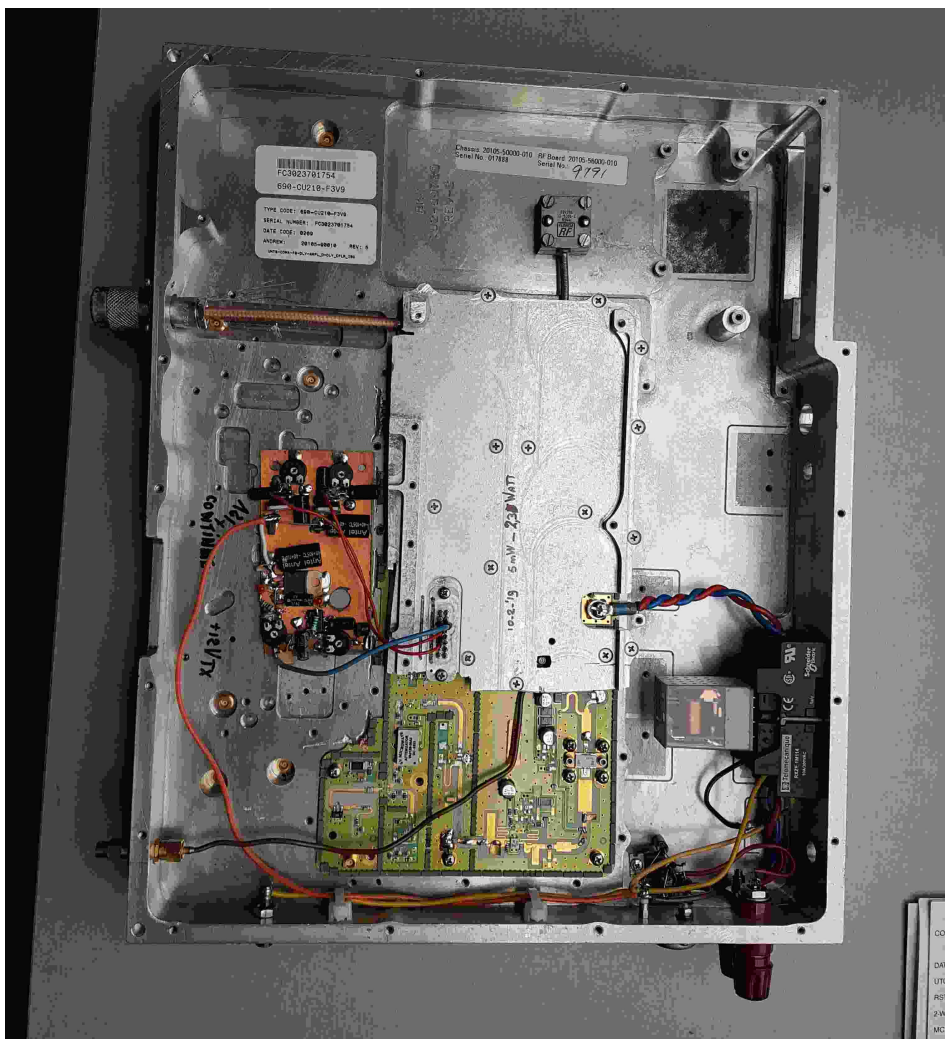
Currently 28Vdc applied with the over on: >150watt out.

Retested the unit and found both U17 and FLL17 died for unknown reasons.

Checked the MRF 21045 and MRF21125 section and have 23dB gain.



The final HPA modified PCB: Good for >150Watt RF output.



CC
DA
UT
RE
2W
MC