

MRF-101 HF Amp 1.8-54 MHz

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Purpose of this project is to evaluate and generally dork around with some LDMOS MOSFET Amplifiers as a learning exercise. Looking around at possible devices I came across the MRF-101A transistor.

After a little googling I found a NXP Homebrew entry from Jim Veatch (WA2EIJ) where he made this device work as a broadband 100W Amp. So, to start of I decided to start with his design, build it, and see what it is capable of.

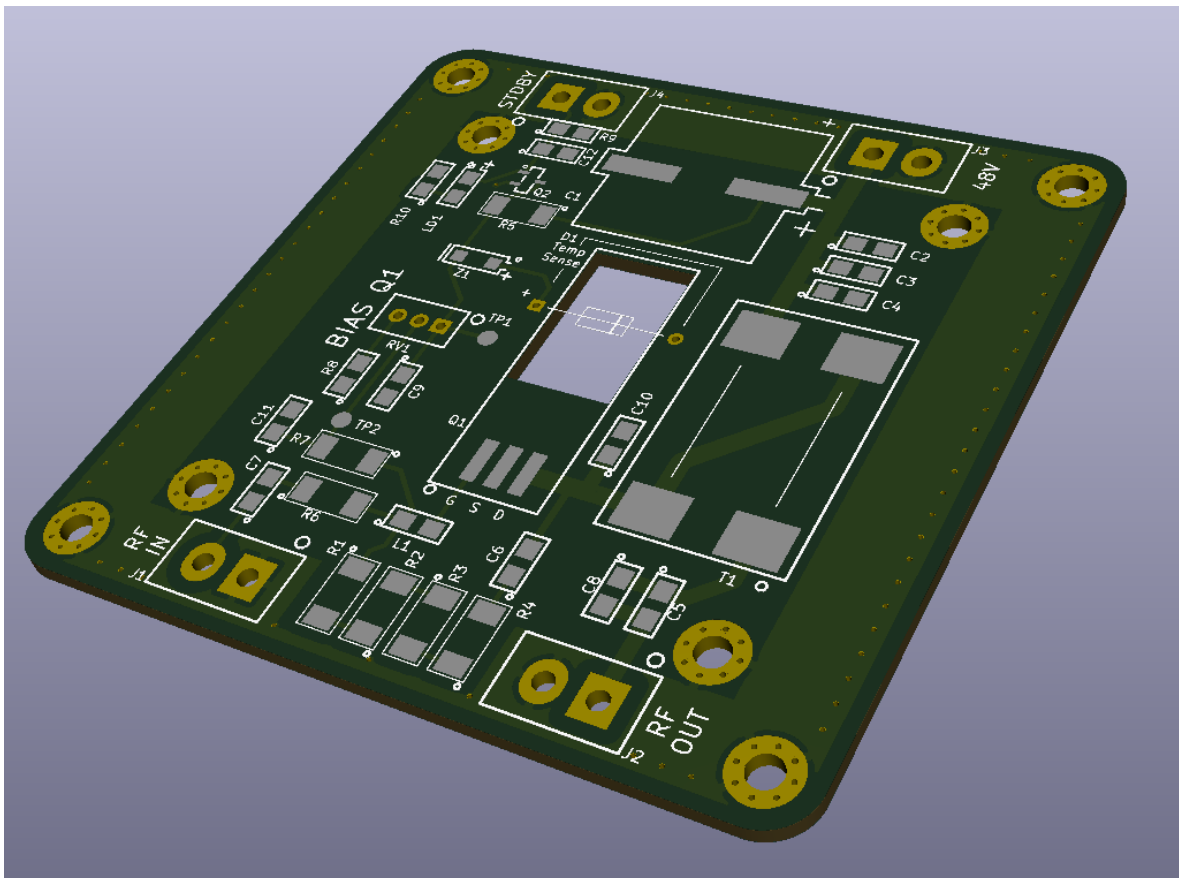
This is some documentation of some beginning test and evaluations of this Amplifier design.

The design files for this Amp are available on my Github located at the following URL:

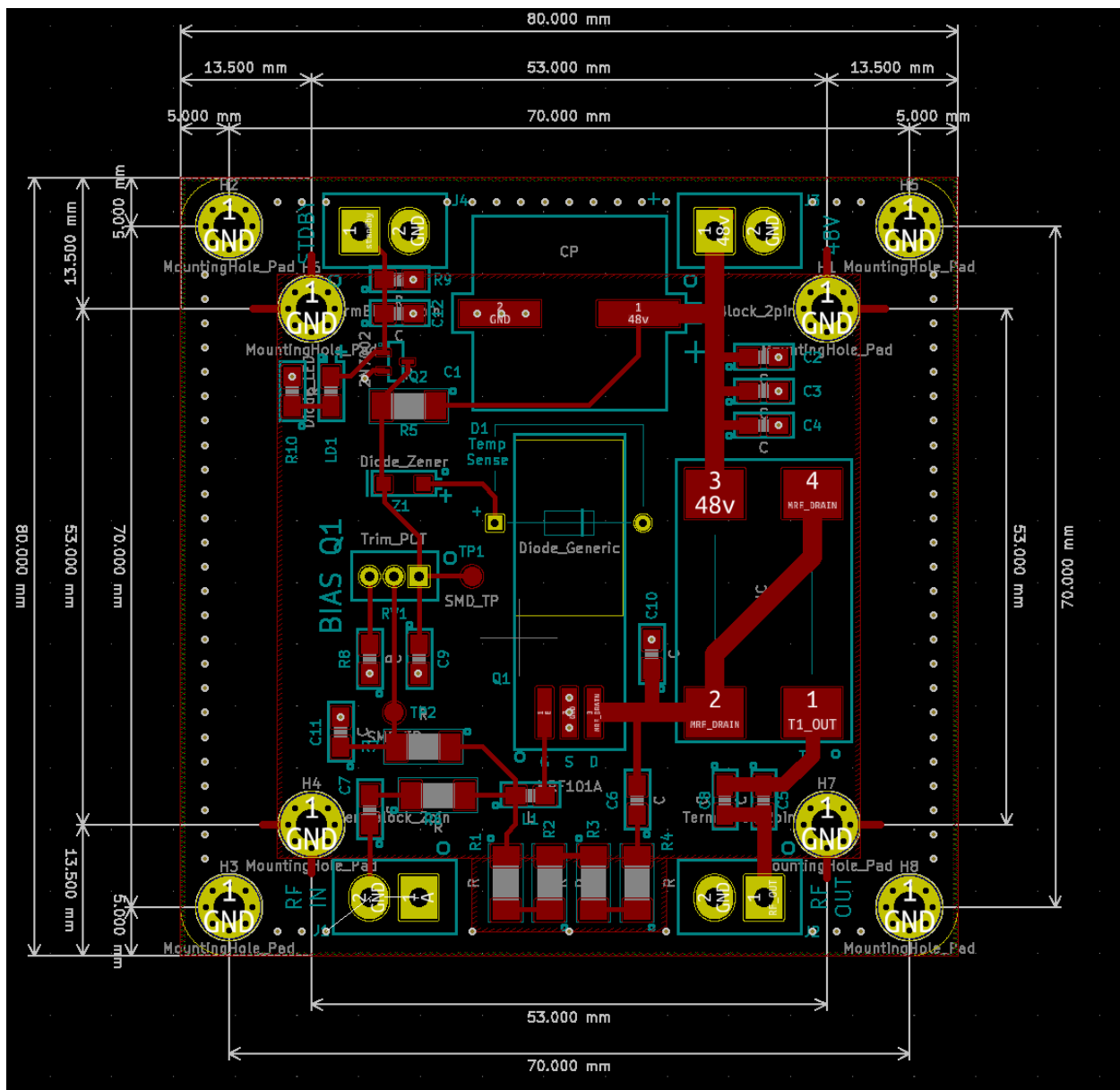
https://github.com/kb3gtn/mrf101_hf_amp

Schematic is available as a PDF in the repository.

3D render of the PCB created:

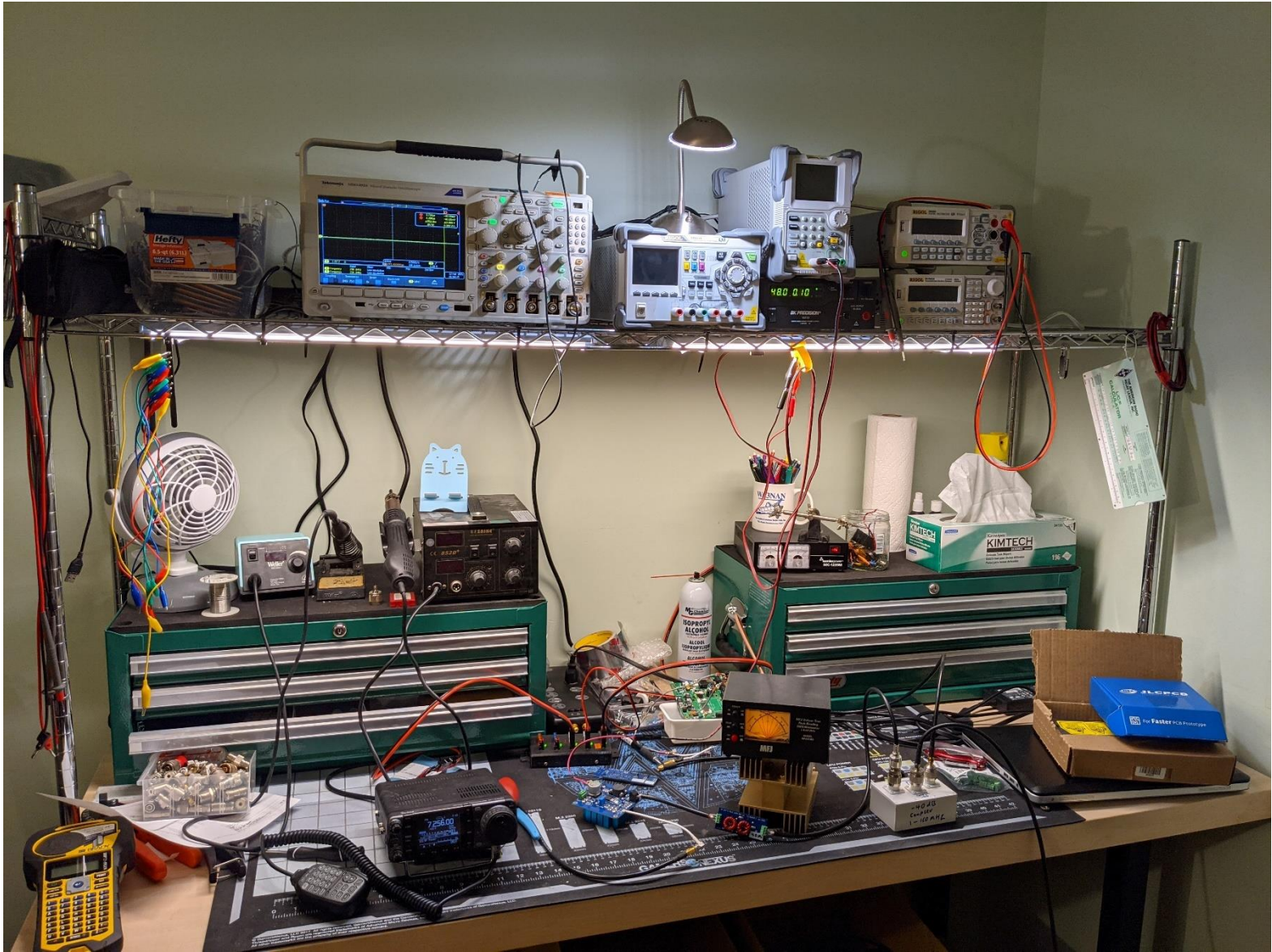


PCB dimensions:

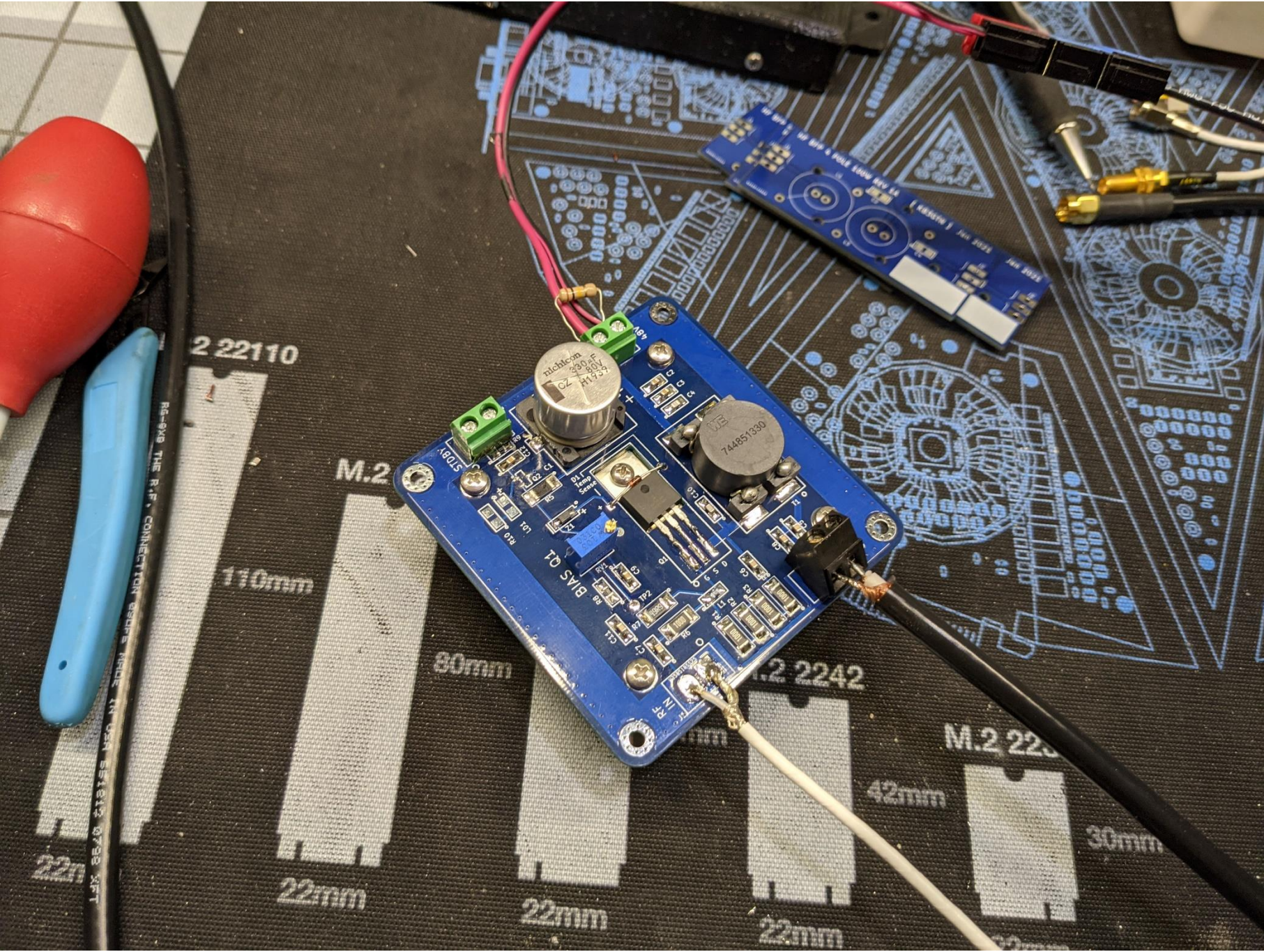


Heatsink mounts to inner hole pattern. Transistor mounts directly to heatsink.

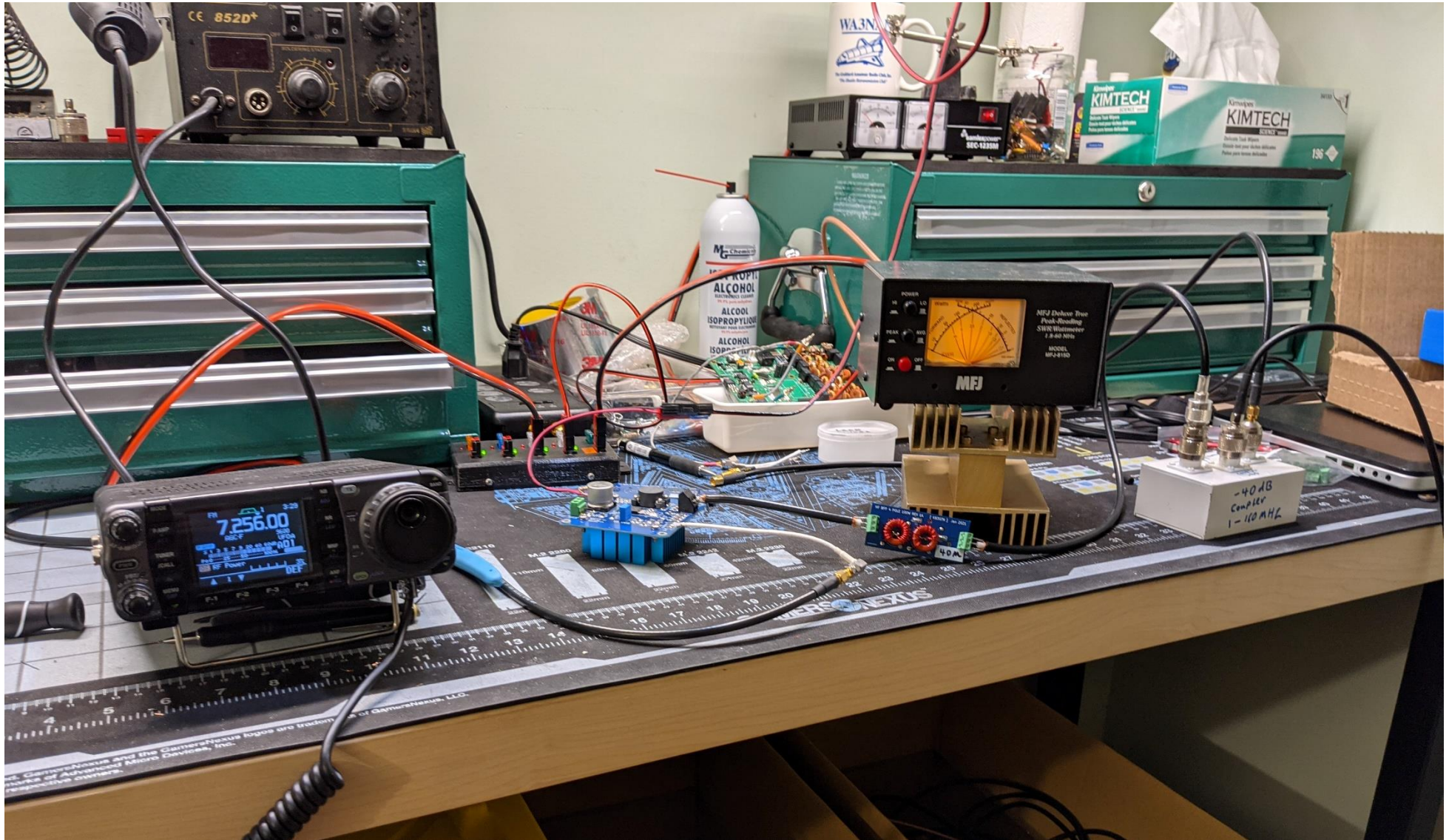
The workbench for this project:



HF Amplifier Deck close look.



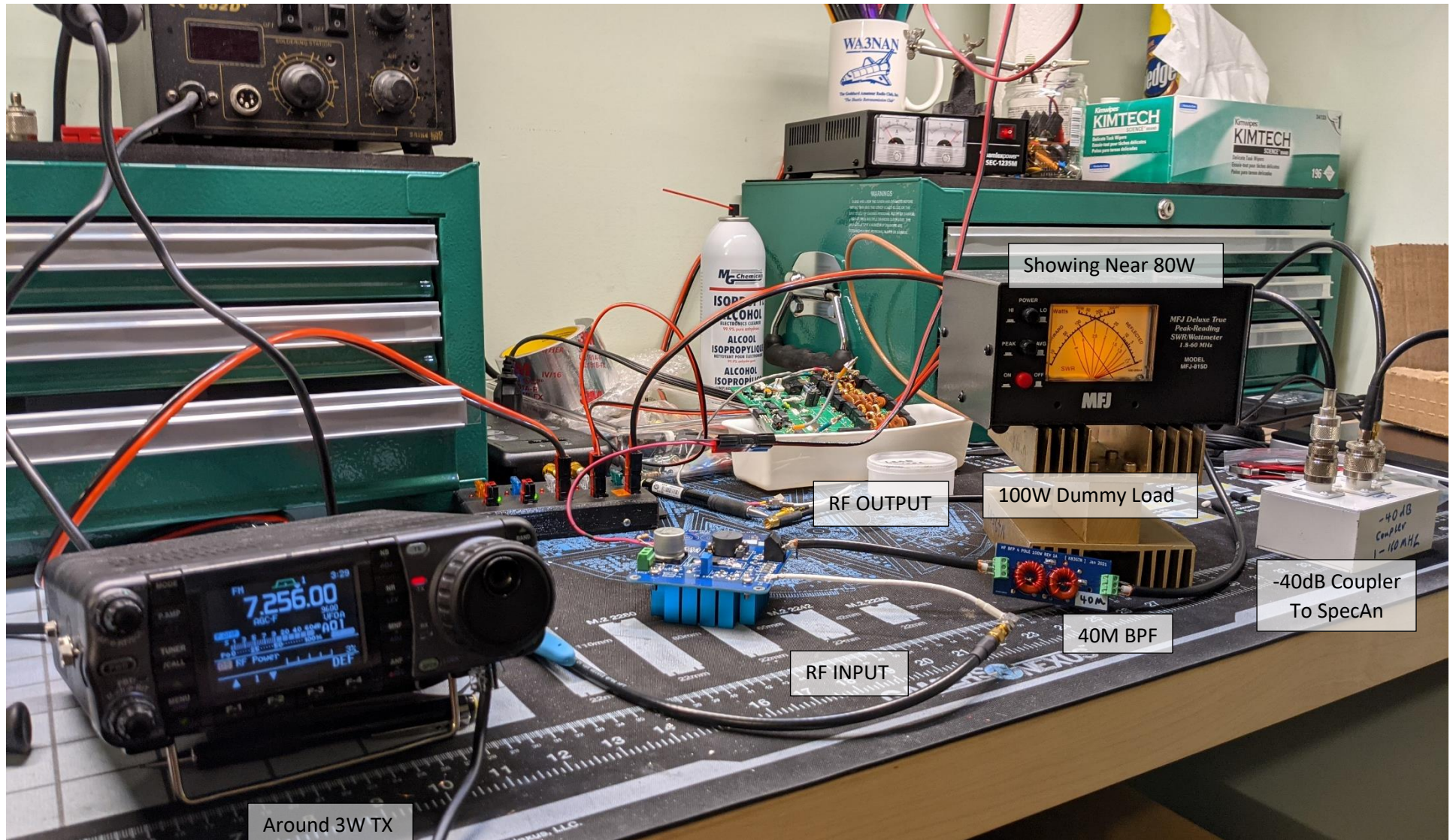
Shows Amplifier Deck and Heatsink and a 40M BPF in test Configuration.



Homebrew -40 dB coupler for looking at High Power signal on Spectrum Analyzer.

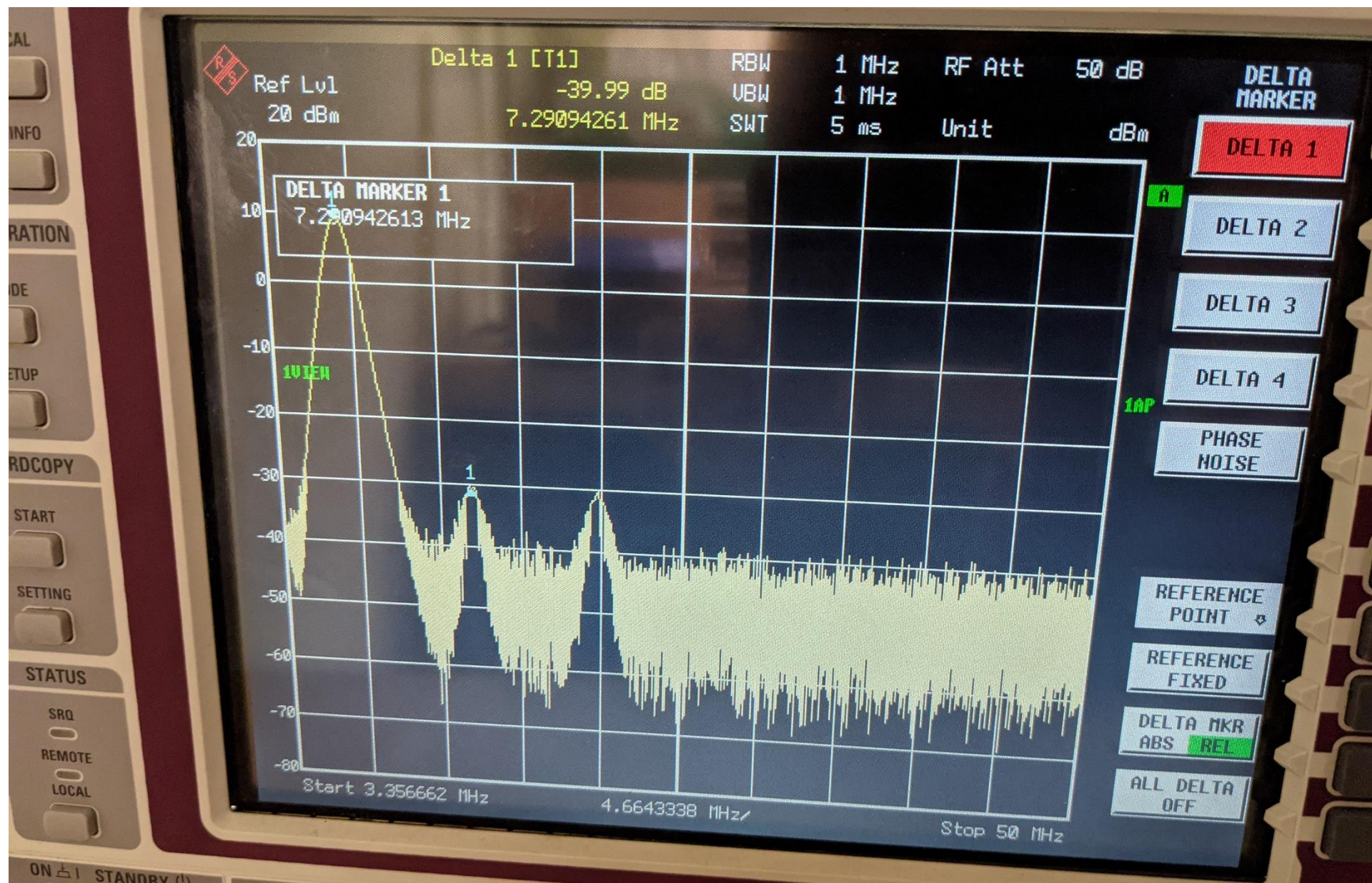


Amp performance seems to depend on Supply Voltage and Biasing. Still messing with these. High voltages seem to give better gain.



I have gotten to 80W output with 1W input at 50V and adjusting the bias a bit higher. (Better Gain performance)

Band Pass Filter Harmonic Suppression. Appears this configuration is providing about -40 dBc attenuation to 2nd and 3rd harmonics for 40M.



Conclusion:

Initial dorking around with the design seems to suggest it will do ok for project I want to use this for going forward. May rework this board to be Pre-Driver, MRF101 Amp, and Filter bank on a single board going for a small compact footprint that can run off an external 2 6S LiPo RC battery packs in series.

More to come, maybe..