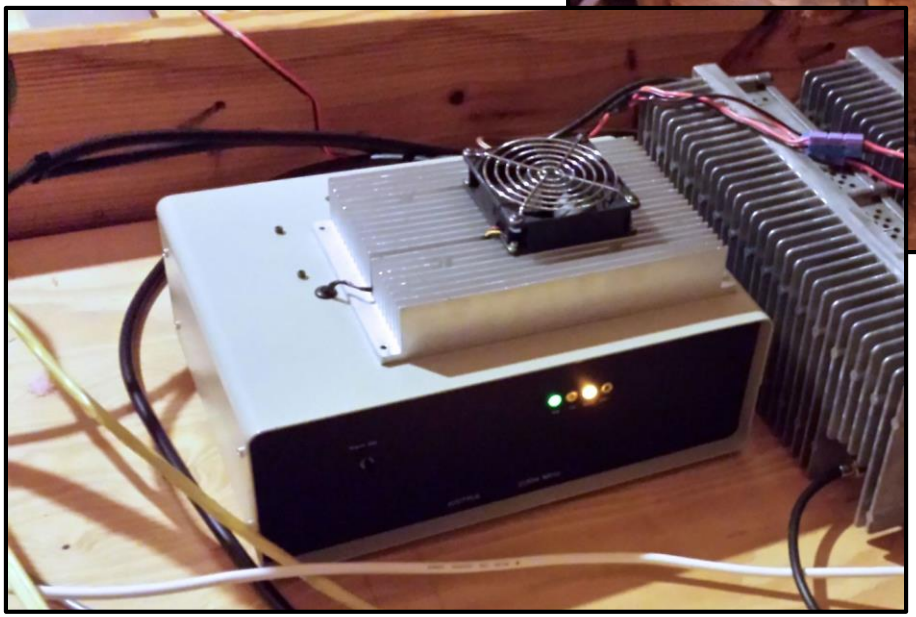
2304 MHz Fixed Station

DESIGN AND CONSTRUCTION DETAILS

Transverter & Loop Yagi in Attic



LO - in Kuhne MKU23G2

- IF frequency = 144 MHz
- LO frequency = 2160 MHz (for RF= 2304.0 MHz)
- Temperature stabilized 120 MHz crystal oscillator
- Multiplier is x18

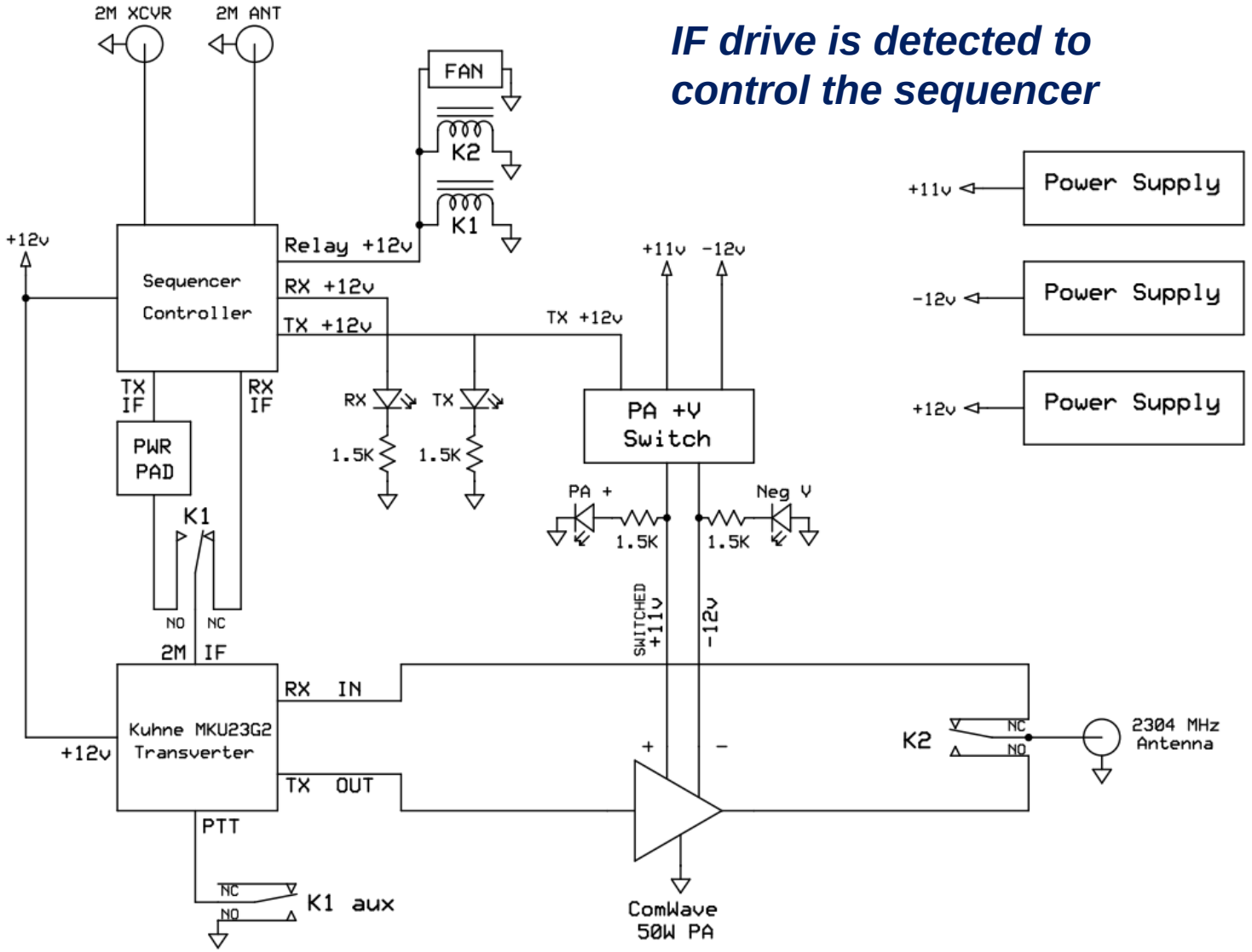
Receiver

- LNA is pHEMT: NE32584 with Fmin=0.3 dB @ 2 GHz
- Second stage is Avago MGA86563 (Fmin=1.6 dB)
- ADE-3G mixer: 5.6 dB conversion loss, +7 dBm LO
- Sirenza SGA6486 IF amplifier followed by a π pad
- π pad also has PIN diode to step loss during transmit
- Overall RX NF $\approx$ 0.5 dB

Transmitter

- PA is 50 W unit from ComWave
- Finals: Fujitsu FLL120MK (x5)
- Mitsubishi MGF0904 1 W driver (MKU23G2)
- Transmit IF drive is 33 dBm
- IF power pad is -10 dB

Block Diagram



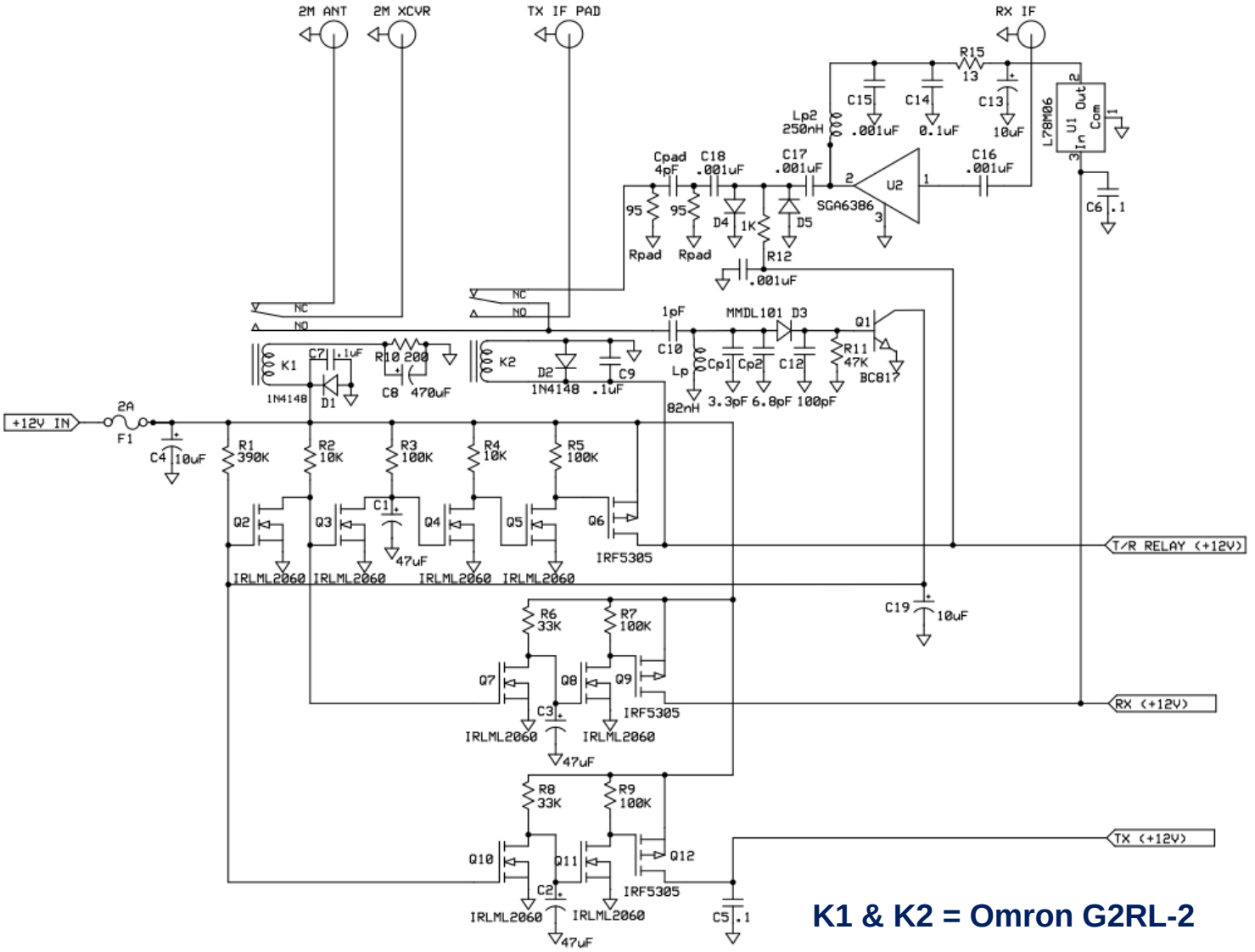
IF drive is detected to control the sequencer

Gain & Power Budget

TRANSMIT	Gain	Output Level
Relay	-0.1	46.9
PA	18.0	47.0
Relay	-0.1	29.0
MKU23G2	-4.0	29.1
TX IF pad	-10.0	33.1
IF XCVR		43.1
Total Gain =	3.8	

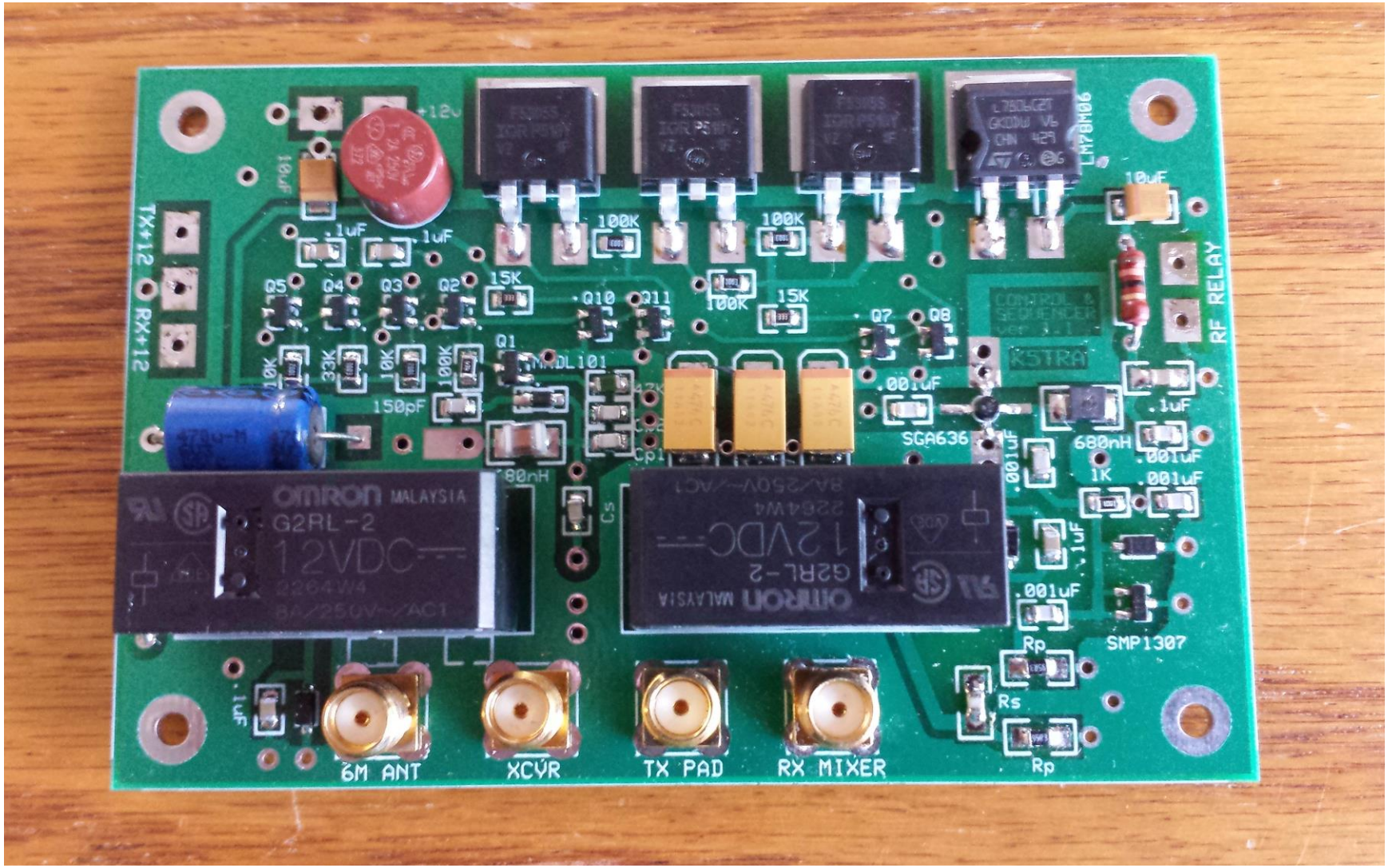
RECEIVE	Gain	Input Level
Relay	-0.1	-140.0
MKU23G2	10.0	-140.1
Relay	-0.1	-130.1
Sequencer IF Gain	3.0	-130.2
IF XCVR		-127.2
Total Gain =	12.8	

Sequencer / Controller – Schematic

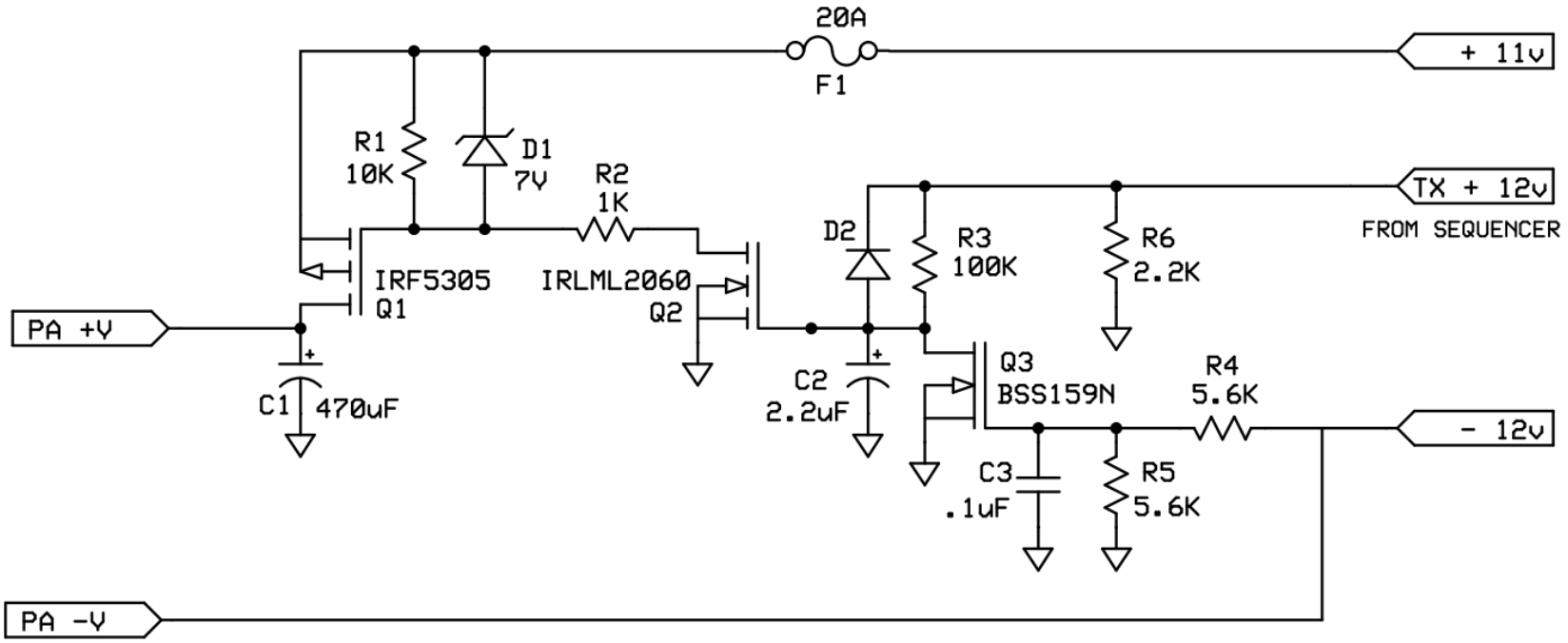


K1 & K2 = Omron G2RL-2

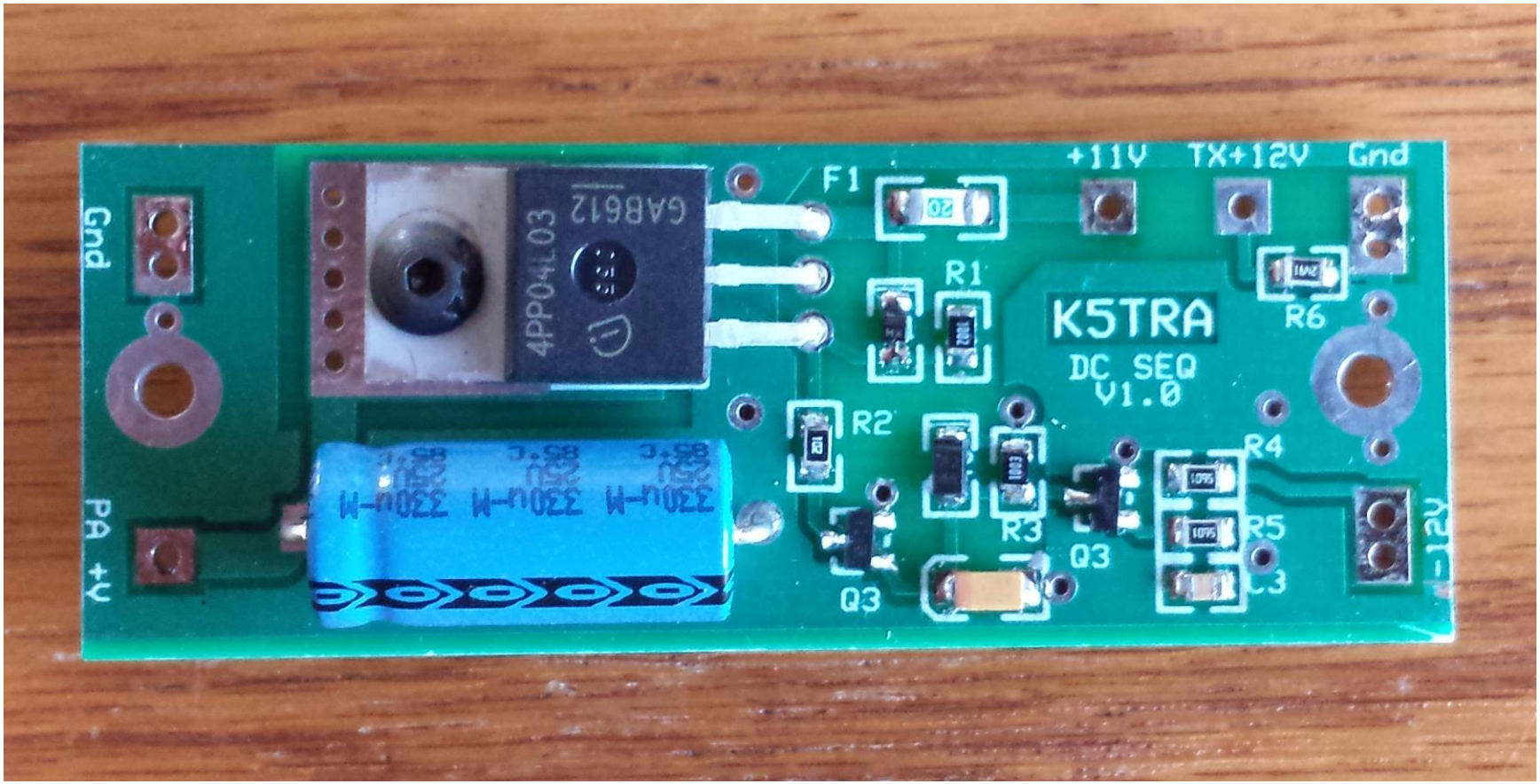
Sequencer / Controller



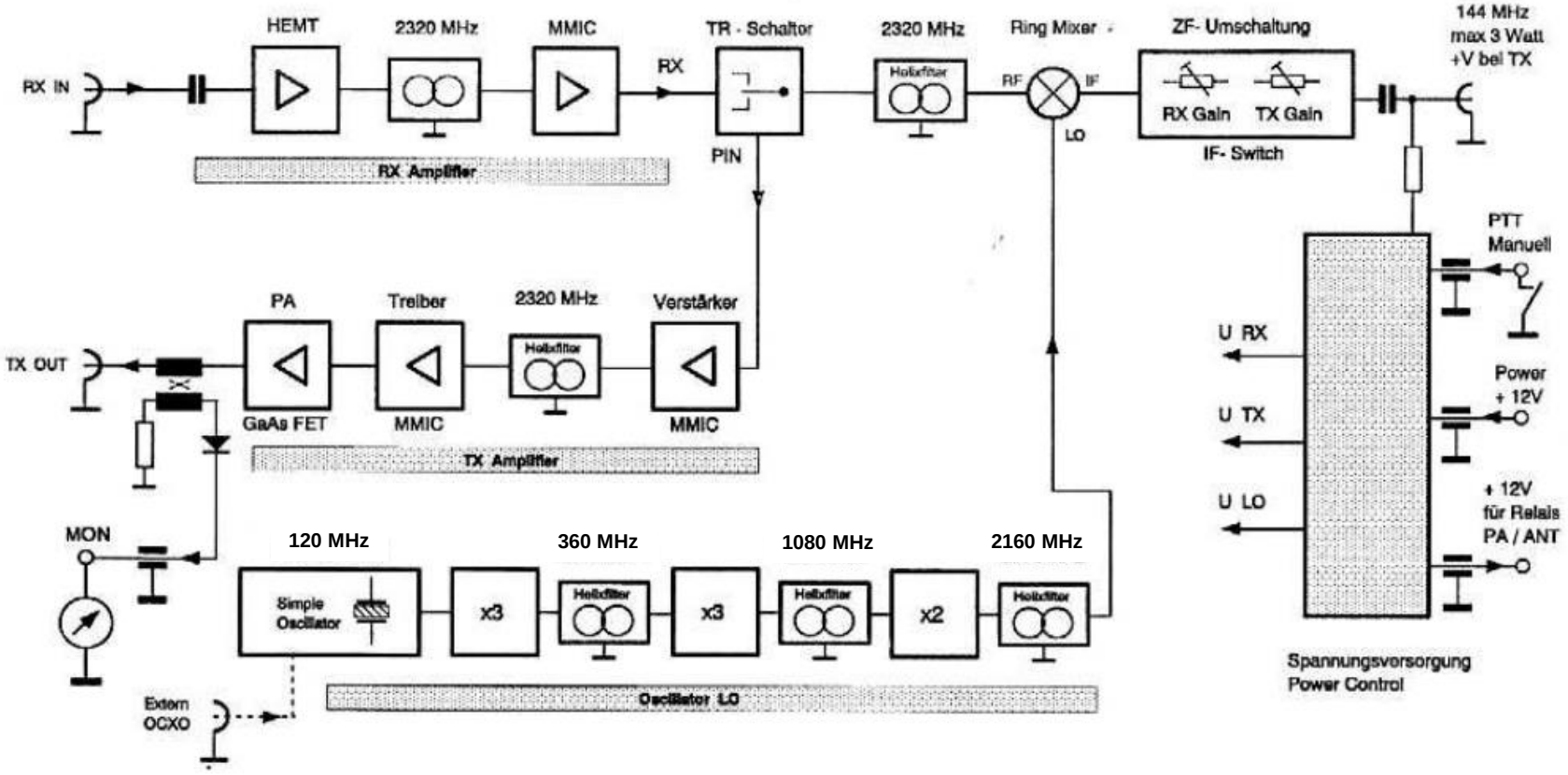
PA DC Sequencer – Schematic



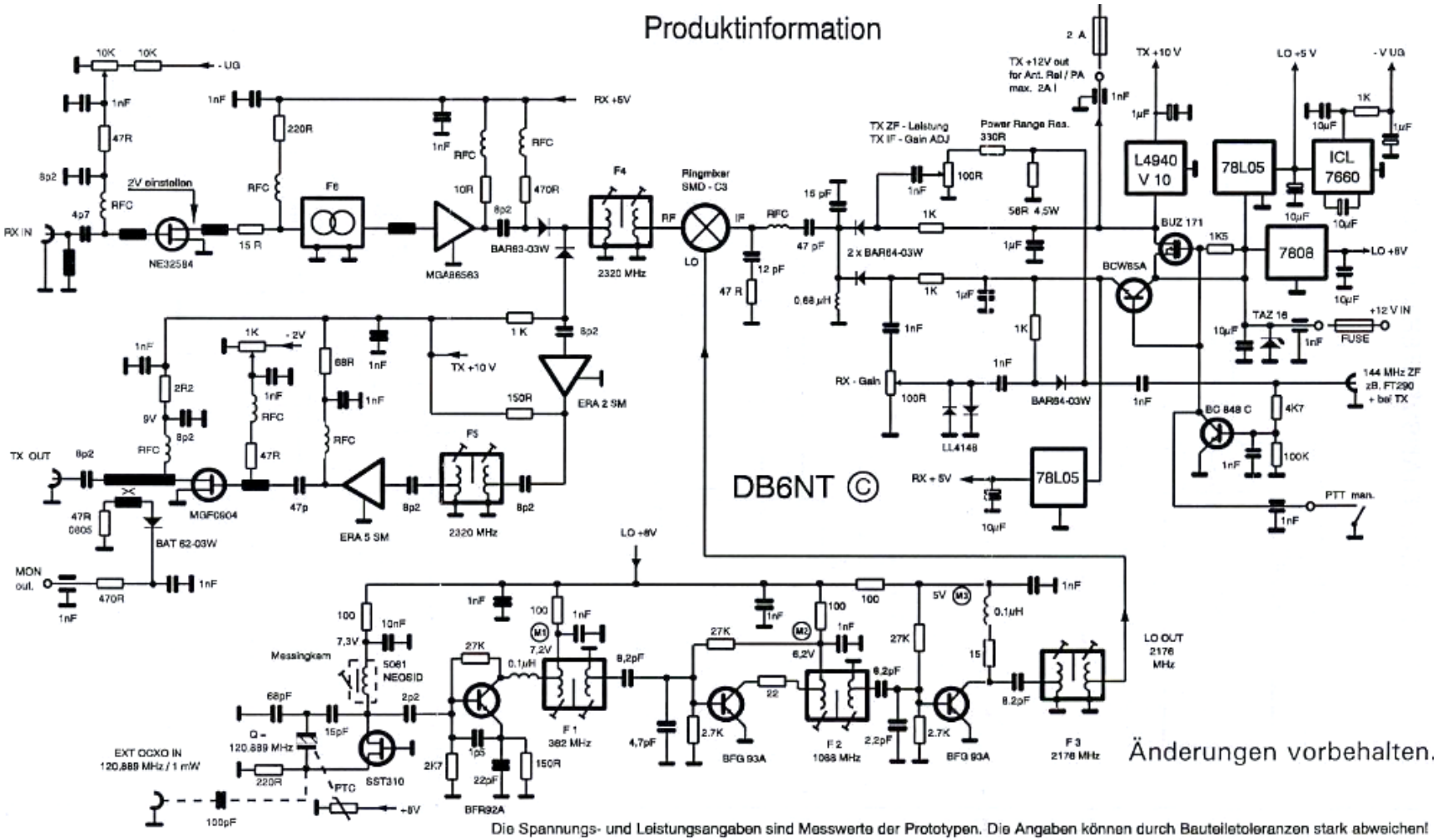
PA DC Sequencer



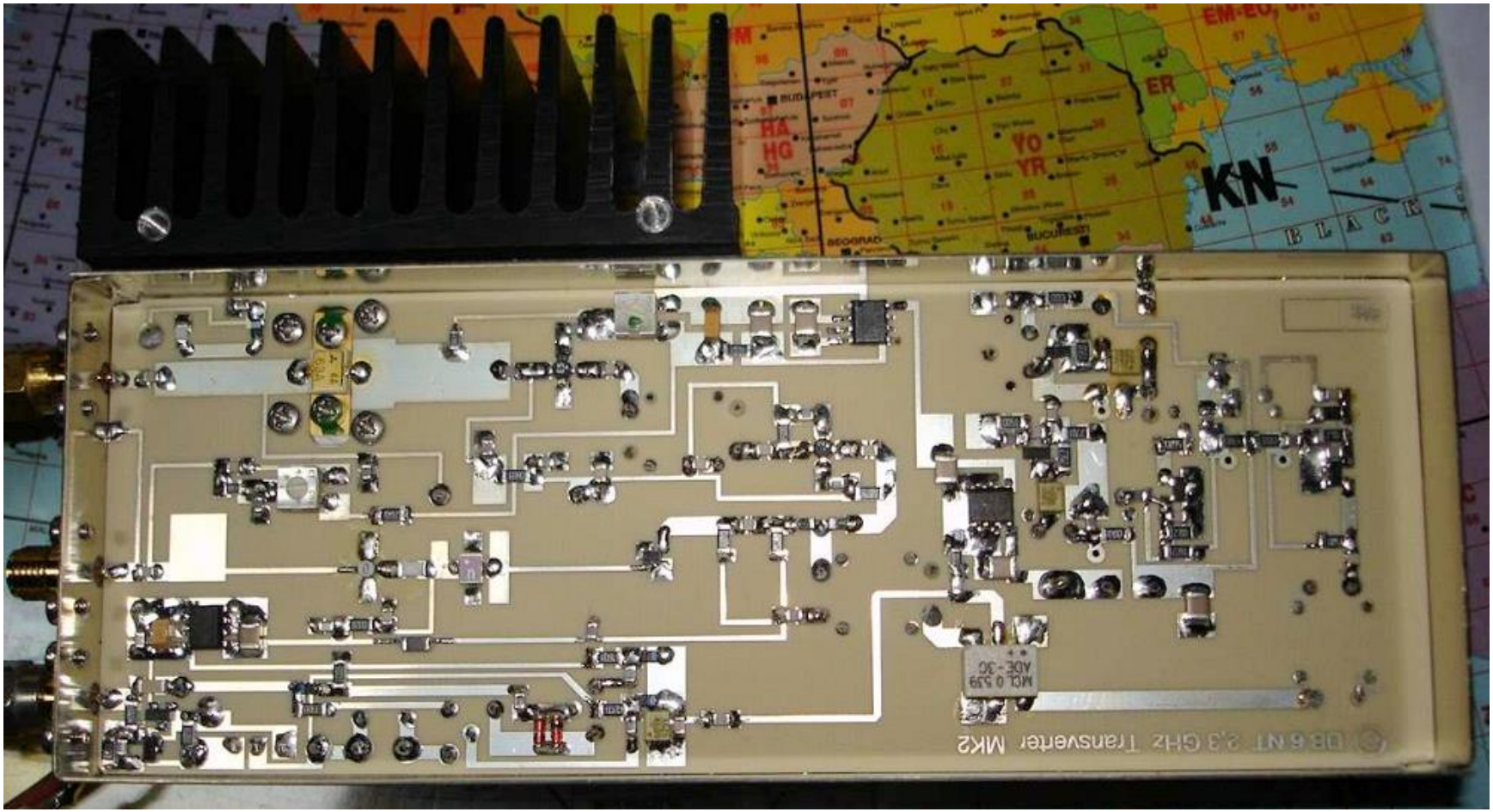
Kuhne MKU23G2 - Block Diagram



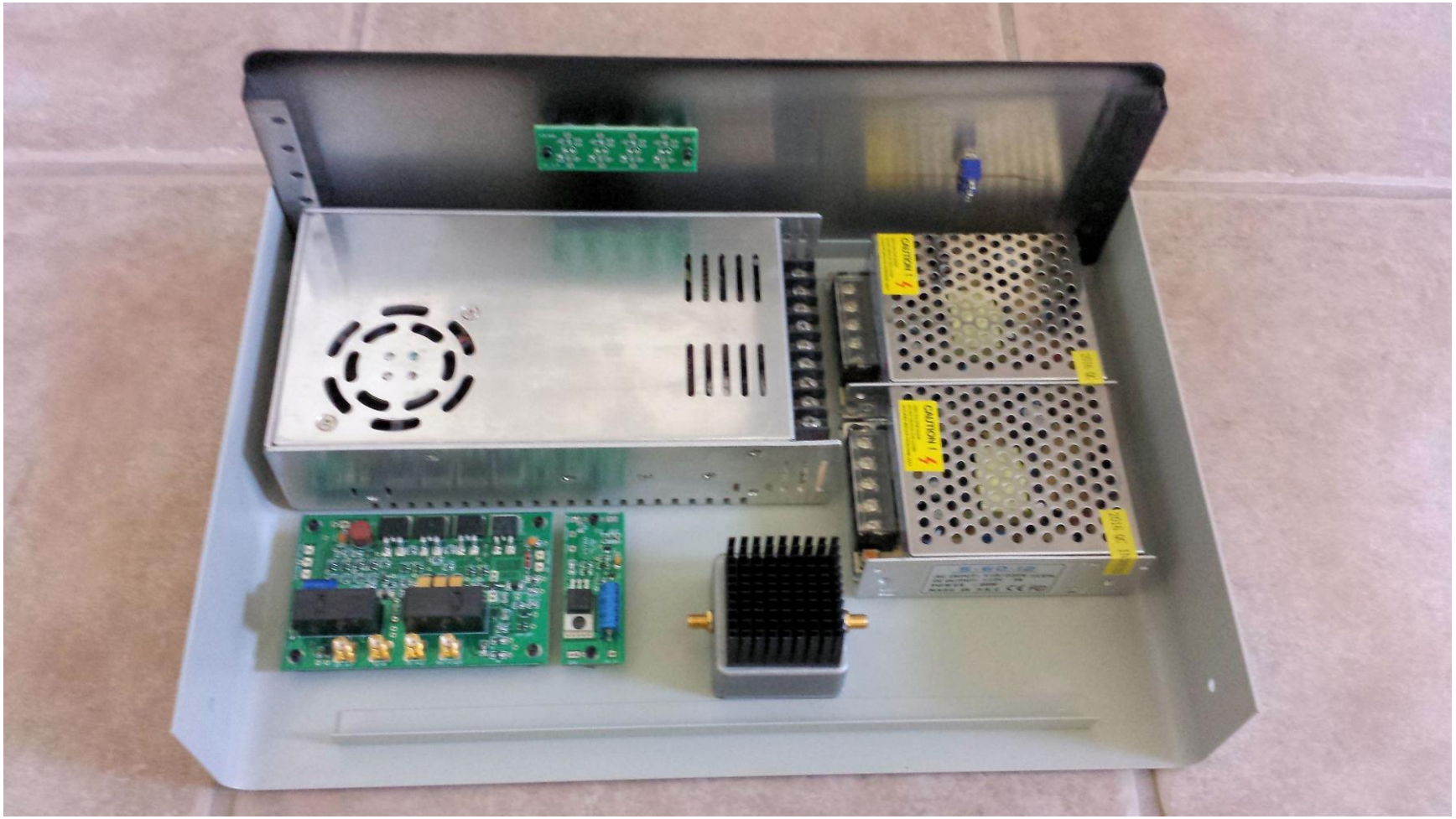
Kuhne MKU23G2 - Schematic



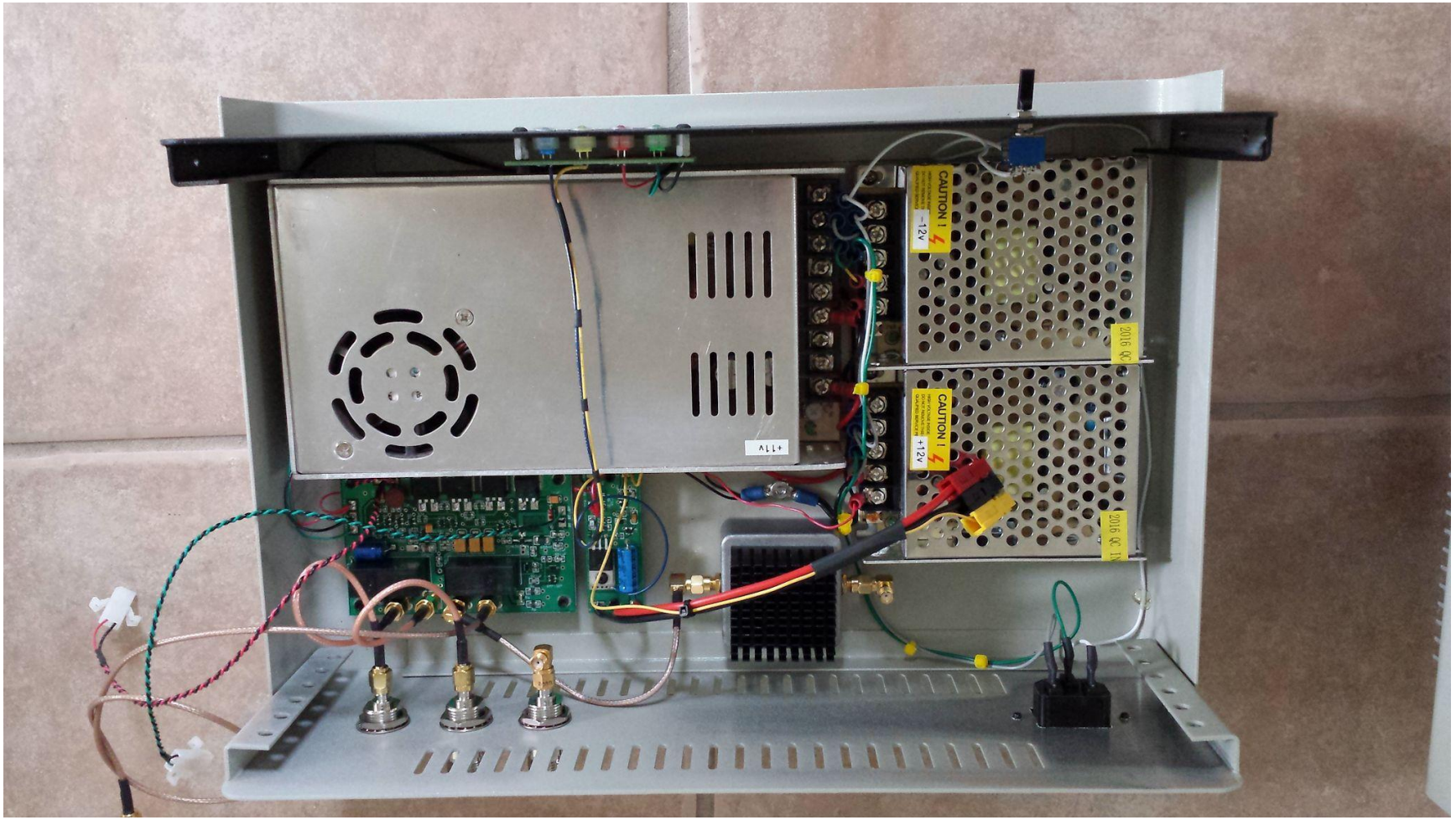
Kuhne MKU23G2 - Interior



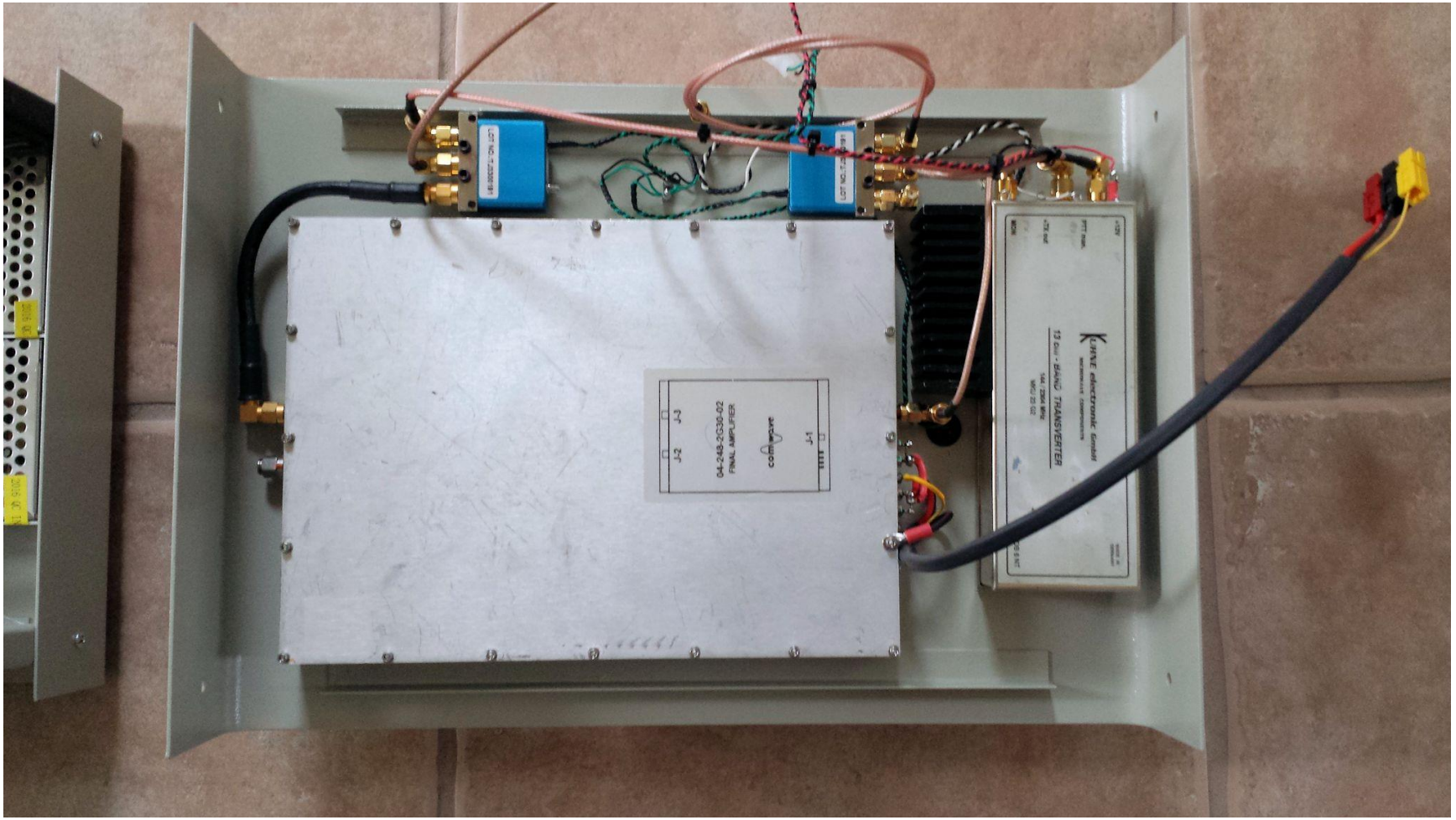
Power Supplies, Sequencers, IF Pad



Wired – DC and Control



PA, Transverter, Coaxial Relays



Transverter - Front

Transverter - Rear

Summary

- 2304 MHz station operational - November 12
- K5RMG beacon is S9
- Worked K5LLL with good signal levels
- Thanks to K5GJ and K5LLL for helping me scrounge parts for this project

Questo è Tutto