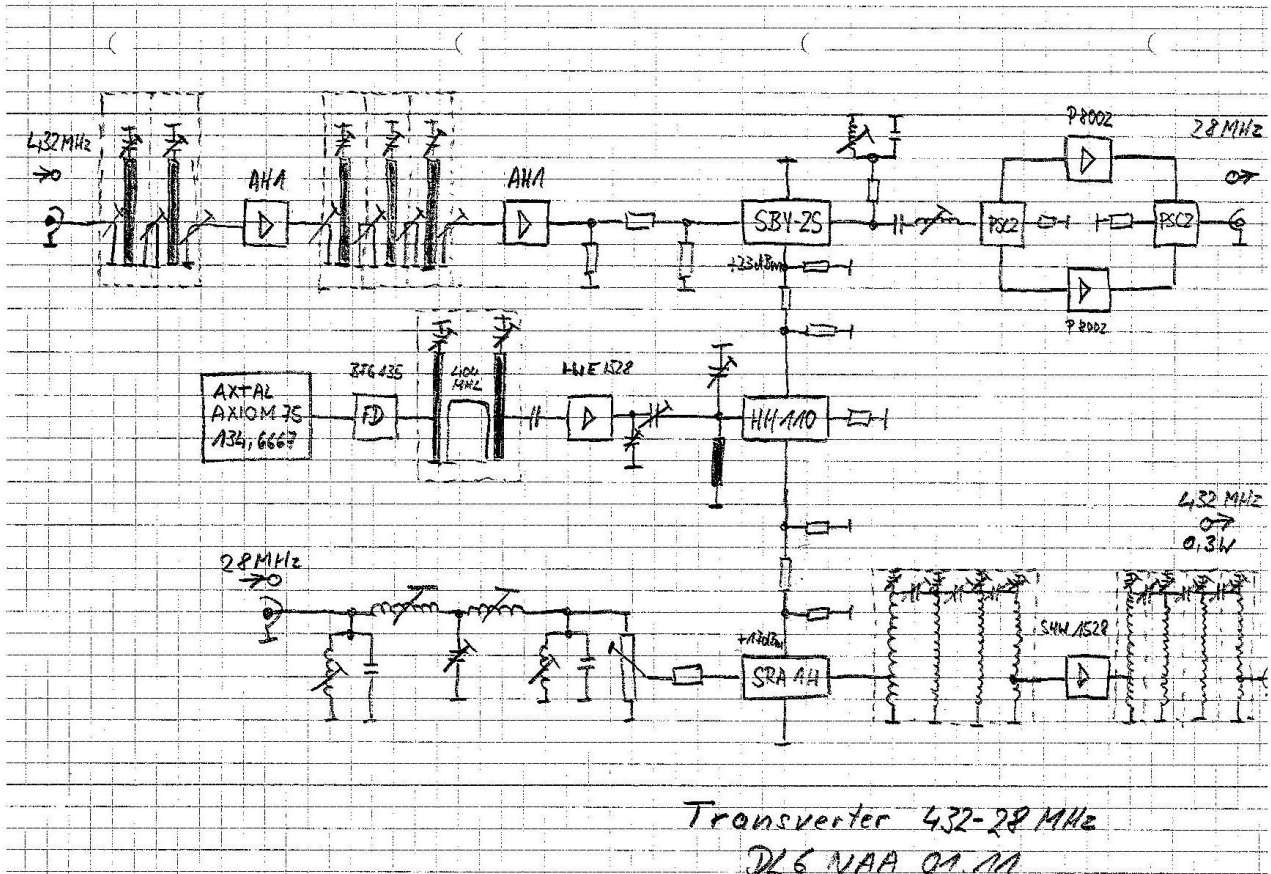


## Low cost Transverter 432 – 28MHz

Winter is the best season to spend in the shack and to use for some new projects. I realized a while ago that the transverter I'm using for 432MHz is more than 10 years old, so I decided to build a new one. As I tried to keep the costs as low as possible, I checked my stock of components that I had built up over time from dismantled commercial equipment. Admittedly, there are transverters that were way smaller than mine, but in my 19 inch rack there's enough space to accommodate larger components.

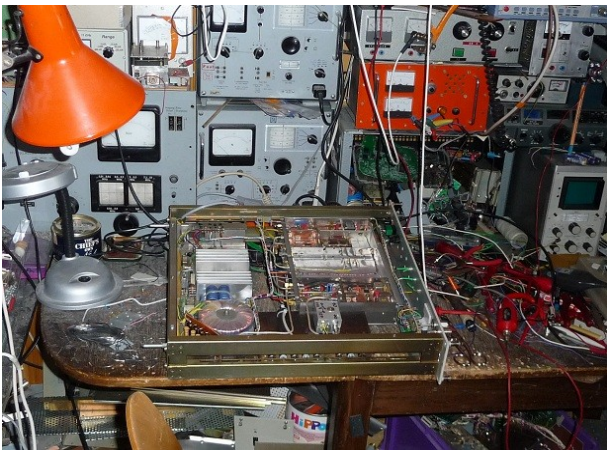


The transverter consists of a commercial crystal oscillator by AXTAL (actually, the only part I paid for), which generates a 134,6667MHz signal, followed by a frequency tripler that uses a BFG135 transistor. The following band pass filter is tuned to 404MHz, followed by a hybrid amplifier which delivers the required output level to the mixer. A power divider is used to separate the 404MHz signal into the transmitting and the receiving side of the transmitter

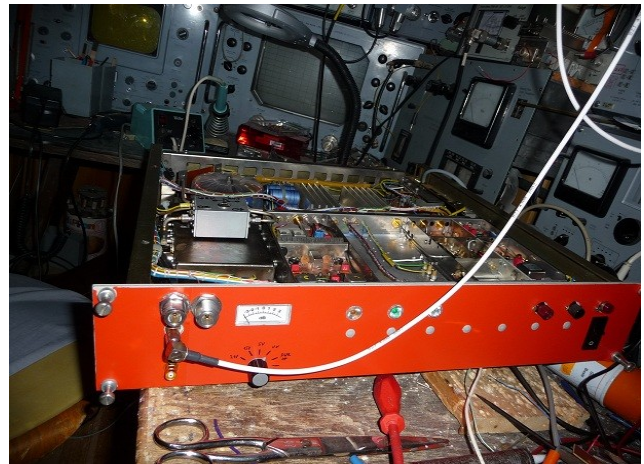
The receiver front end starts with a filter by Plisch, followed by a MMIC amplifier. I first experimented with only one amplifier stage but wasn't much satisfied, so I decided to add a second stage for better results. A small attenuator improves the input matching to the +23dBm mixer, which consists of a SBY-2S. A diplexer at the 28MHz gate is followed by an amplifier using 2 x P8002, which deliver the IF- signal to the short wave transceiver.

The mixer used at the transmitting side is an SRA1H that receives a 28MHz signal from a band pass filter and a potentiometer used to set input power to the required level. Behind the mixer, I use a commercial helical filter tuned to 432MHz, followed by a hybrid amplifier. A second helical filter is used to eliminate harmonics. The helical filters I use show an excellent performance, and I was unable to detect any spurious signal from the mixer or any harmonics with my spectrum analyzer.

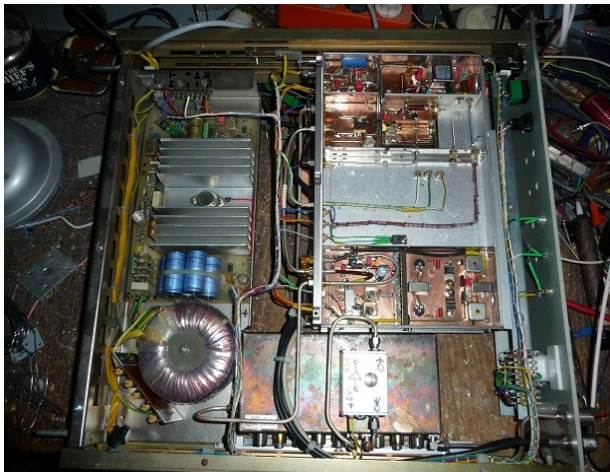
The transverter delivers an output power of +26dBm.



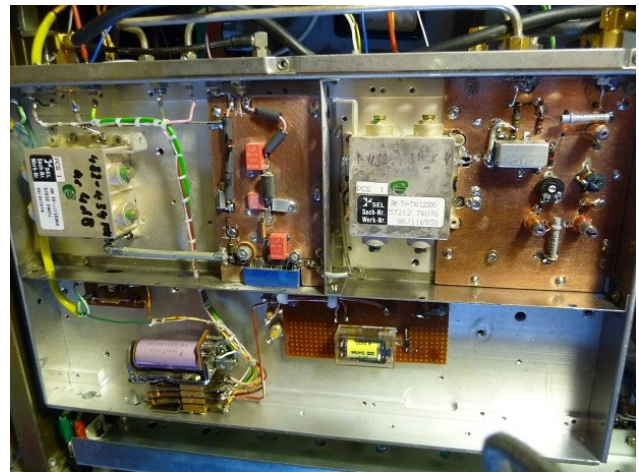
*Abbildung 2: trv on my workbench*



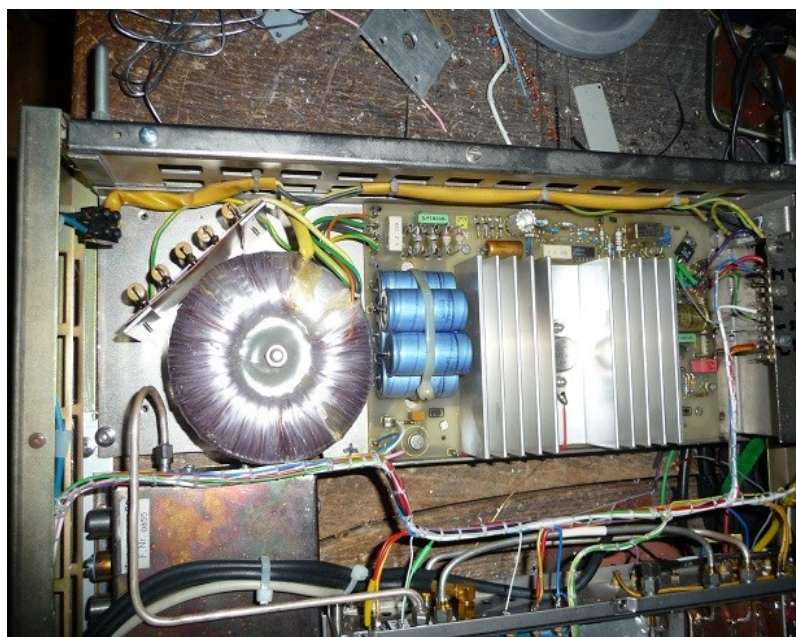
*Abbildung 1: frontview*



*Abbildung 3: topview*



*Abbildung 4: transmitting part*



*Abbildung 5: power supply*

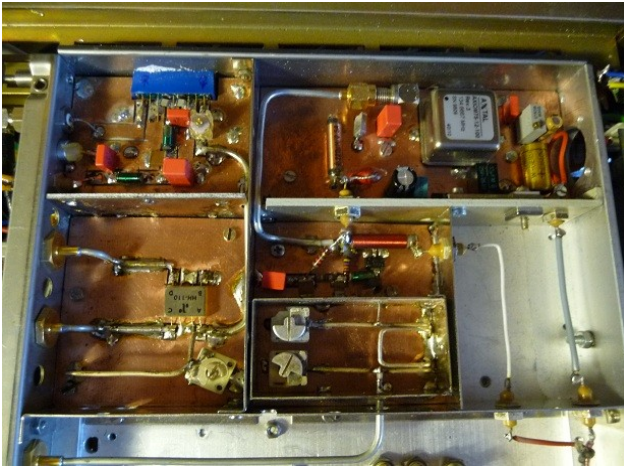


Abbildung 6: oscillator- chain



Abbildung 7: in front the RX- amplifier

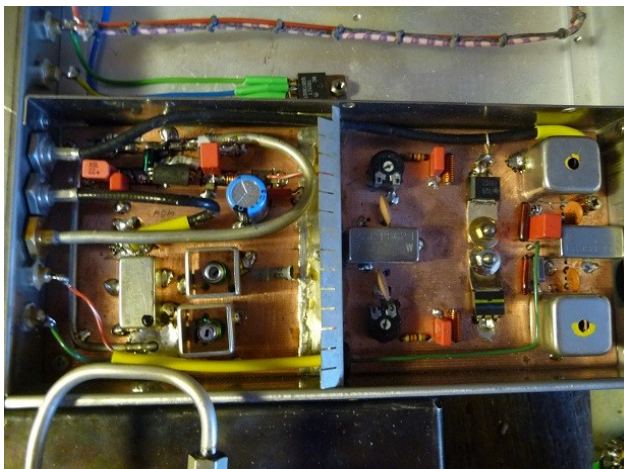


Abbildung 8: left:RX- mixer and diplexer, right: IF- amplifier

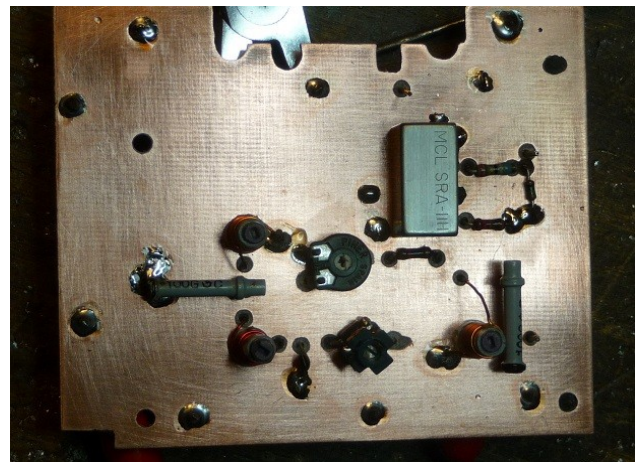


Abbildung 9: TX- mixer with IF- bandpass



Abbildung 10: TX- mixer and 1st 432MHz filter

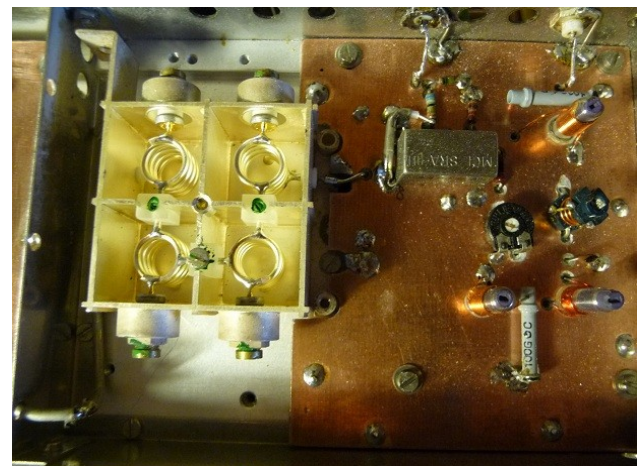


Abbildung 11: ...uncovered filter

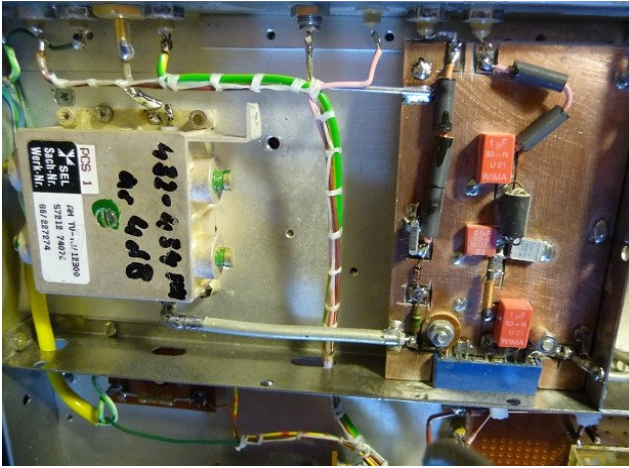


Abbildung 12: 432MHz amplifier and output-filter

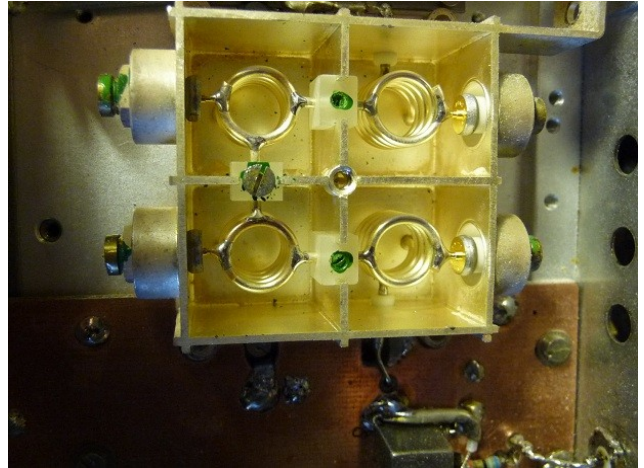


Abbildung 13: detail- view of the filter



Abbildung 14: complete unit with the driver for the big P.A.



Abbildung 15: my untidy shak.....