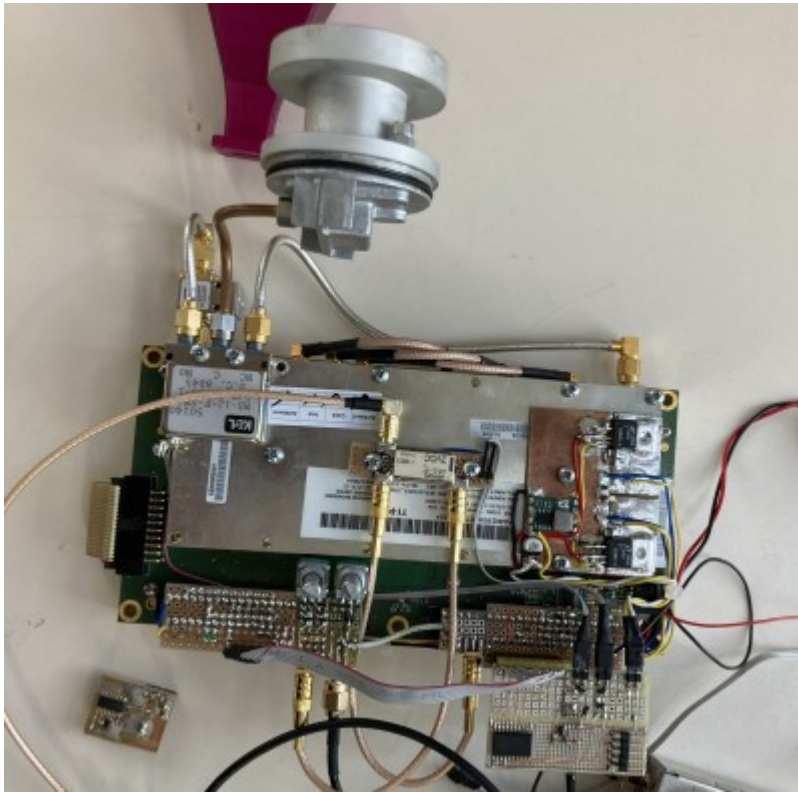


Compact 10 GHz transverter

There are 10 GHz transceiver modules from Cambridge Broadband Networks available at eBay. Based on these modules a compact transverter(in contrast to former [modular approaches](#)) for the 3 cm amateur radio band was built.



First all the details of the modules were reverse engineered(documented [here](#) in german) and a concept for the usage as a 3cm transverter was worked out. A first prototype was tinkered together and performed very well:



Concept

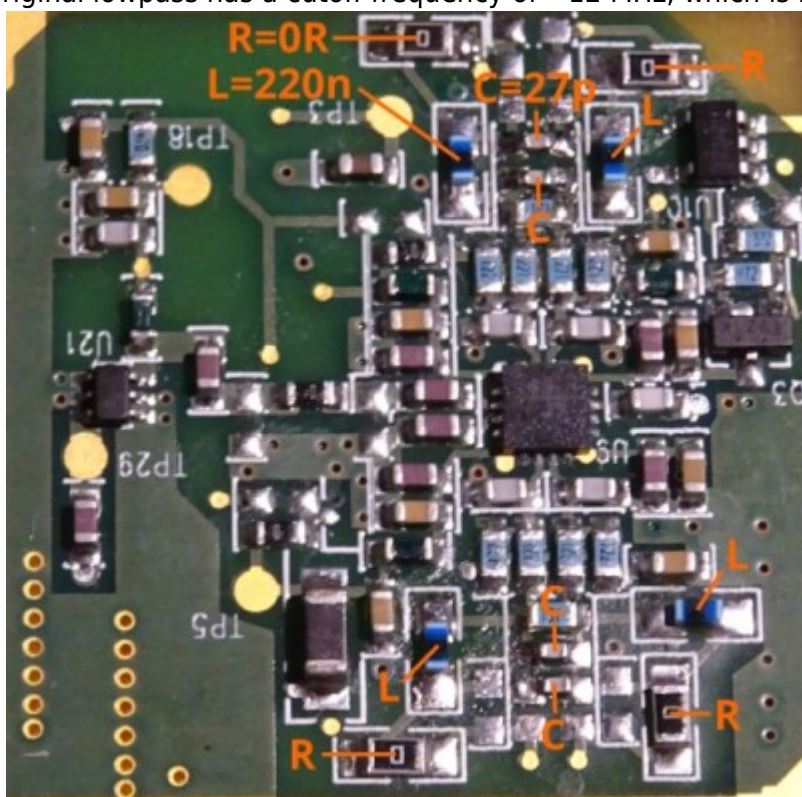
The idea is to use as much as possible parts from the original design and adapt them to a simplex transverter with the same IF for receiving and transmitting.

translations from 10 GHz to 2886 MHz to 320 MHz to 50 MHz. There is very much gain involved and can be adjusted by several step attenuators. On the first built the noise was adjusted to be 10 dB higher than the noise of the transceiver to maintain a good noise figure. Switching between receiving and transmitting needs reprogramming of the synthesizers and switching of RF and IF, which is handled by the MCU. An integrated 10 MHz OCXO delivers reference signals for all the PLL synthesizers.

Modifications

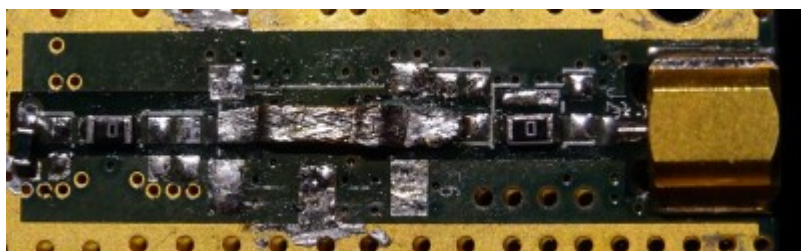
TX Baseband Filters

The original lowpass has a cutoff frequency of ~12 MHz, which is replaced by a 3rd order 60 MHz

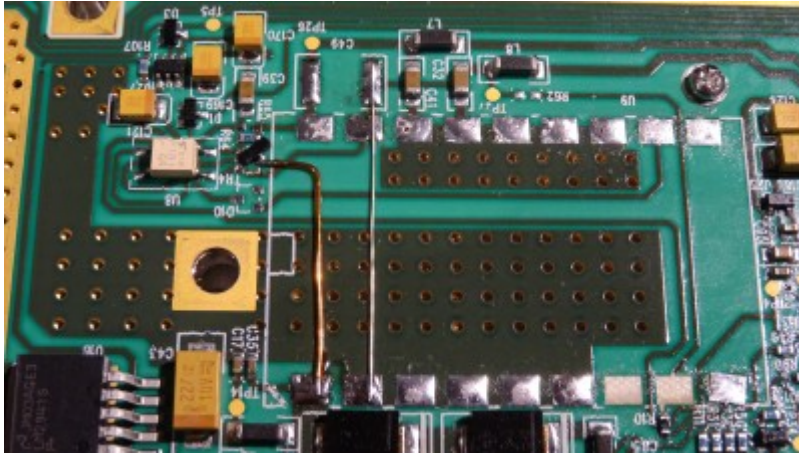


filter.

TX IF Filter



PA Power Supply



RX IF Filter



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