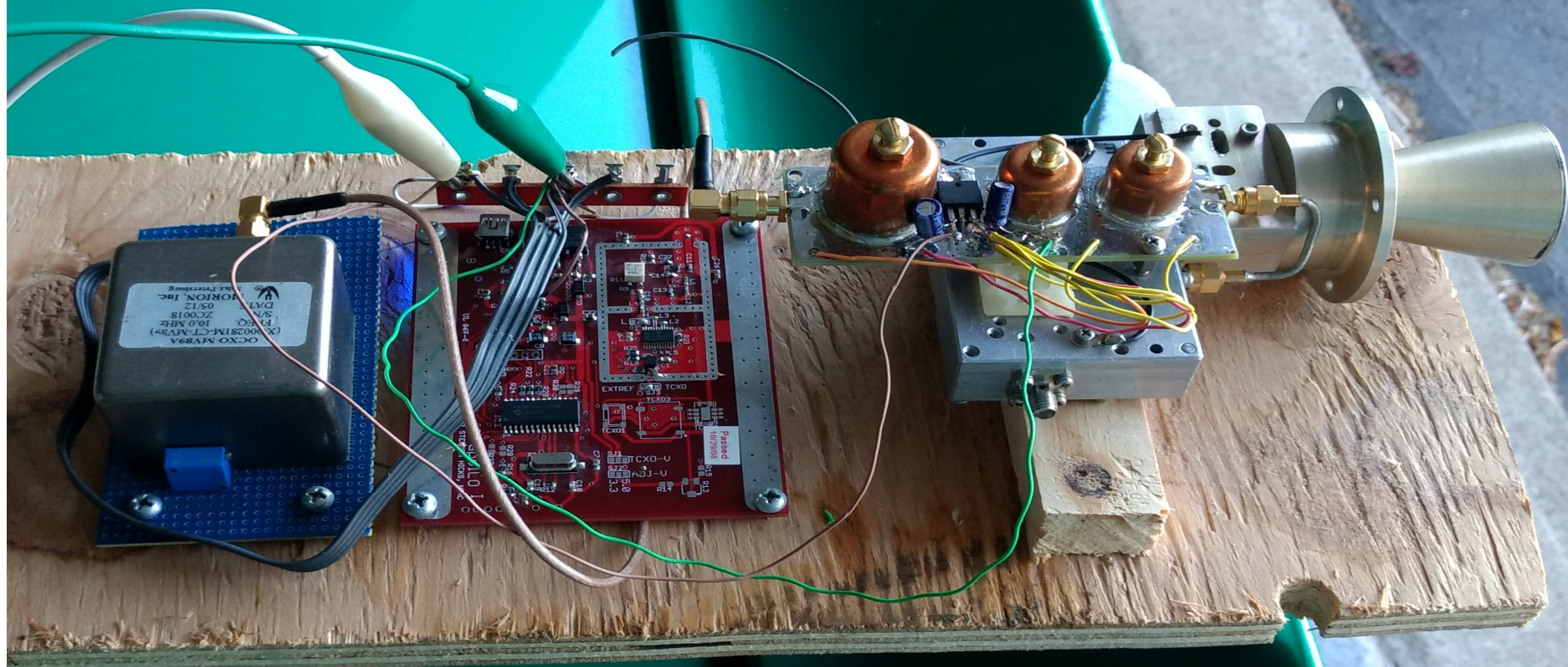


PCOM RX Mixer Hacks



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VE2UG. 2018

How it started

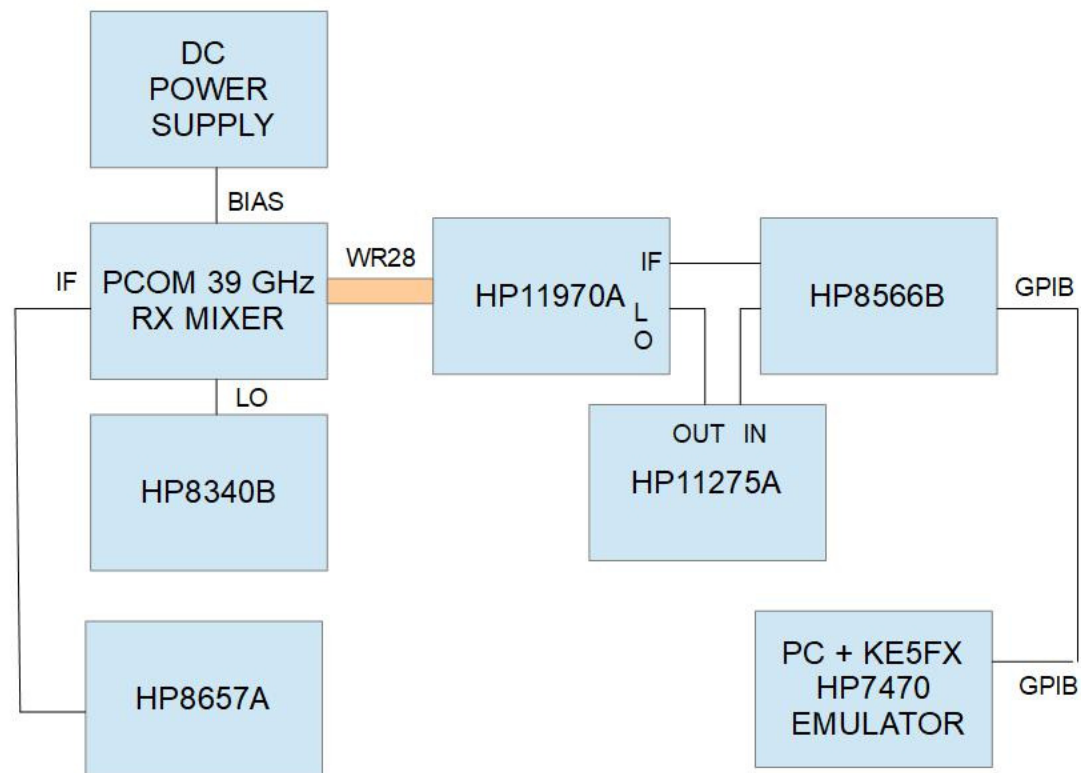
- ◆ Needed a test source at 78 GHz!
- ◆ Found that a PCOM RX mixer have output as is. Bias port not used
- ◆ Work at 78 GHz. Other frequencies?
- ◆ And what about using it as a transverter?
- ◆ Let's try!

PCOM RX Mixer Mods

- ◆ 3 ports, WR28, SMA for LO and RX IF
- ◆ 3 DC lines. Bias (0 to 10V), supplies to RX IF amp (+12V and -5V)
- ◆ Remove RX IF amp to make bi-directional port
- ◆ 2 tests, source and transverter
- ◆ Tests at 24, 47, 78, 122 and 134 GHz
- ◆ Be bold, try 241 GHz too! Lets see if we have something

Test Bench

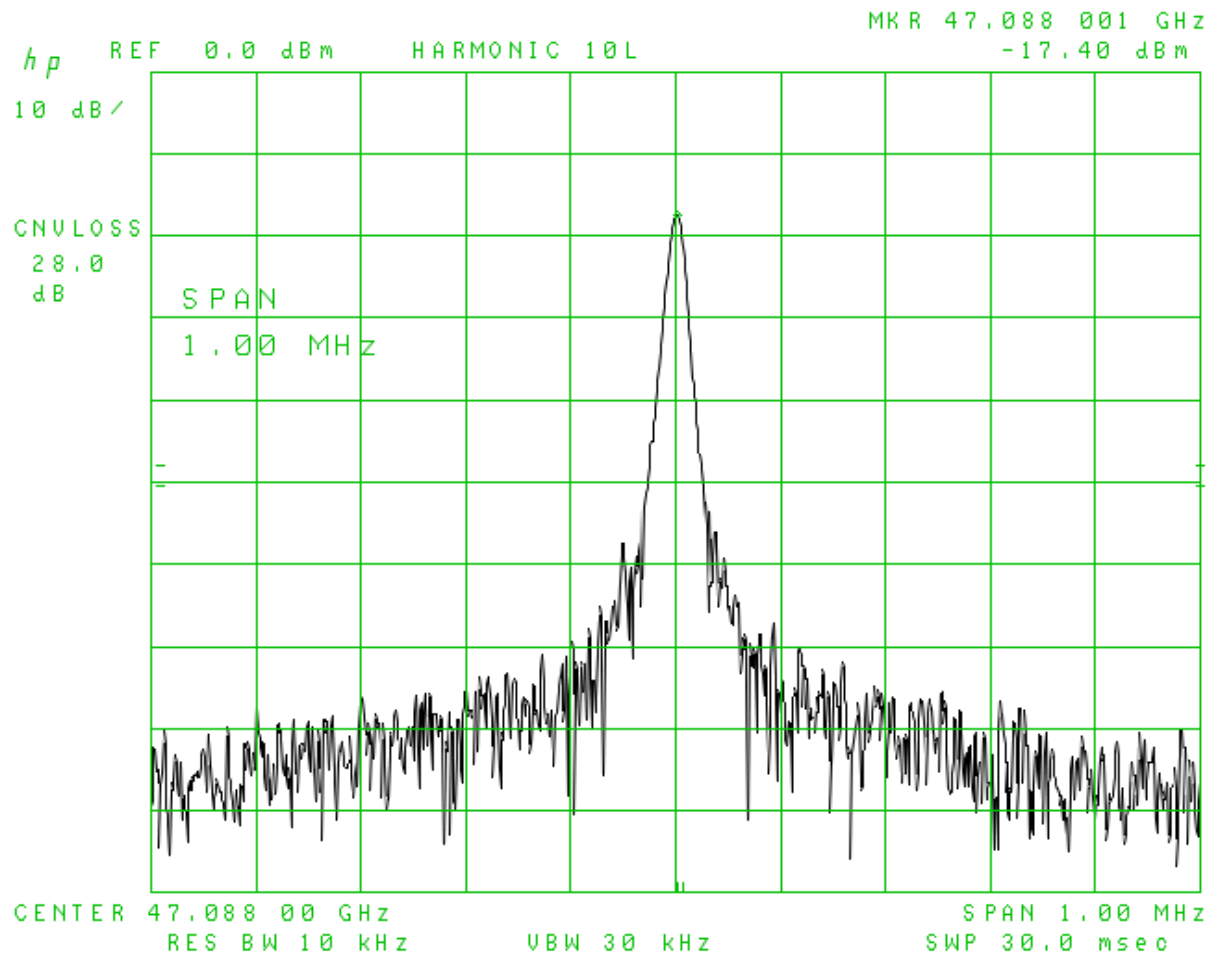
PCOM 39 GHZ RX MIXER TEST BENCH



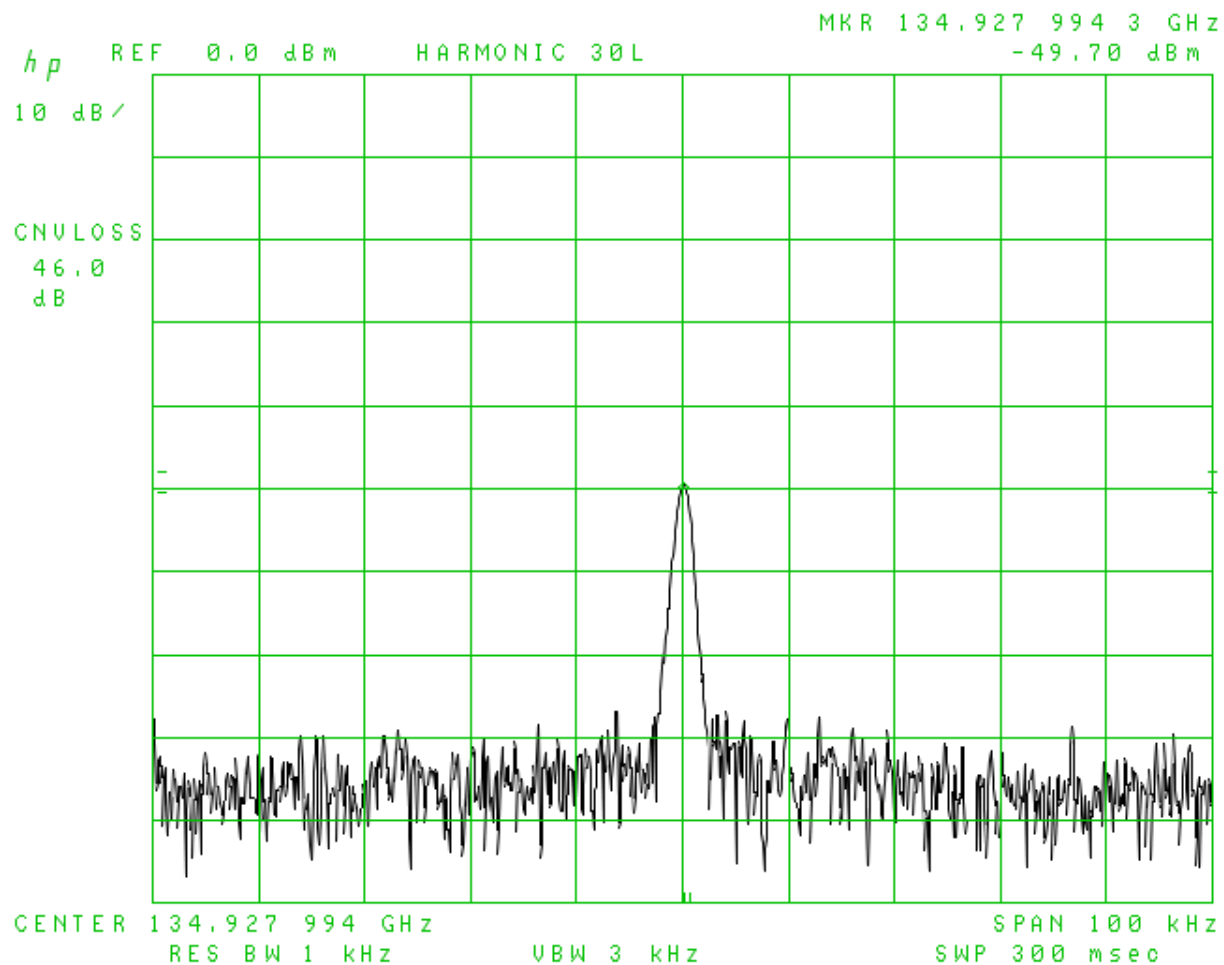
As a source

- ◆ See output up to 134 GHz. 241 don't pass Manual Signal ID Test.
- ◆ Adjust bias for max output
- ◆ Bias setting could change with load presented to WR28 port
- ◆ Look in the Proceedings for all the traces

As a source, best at 47 GHz



Some output at 134 GHz



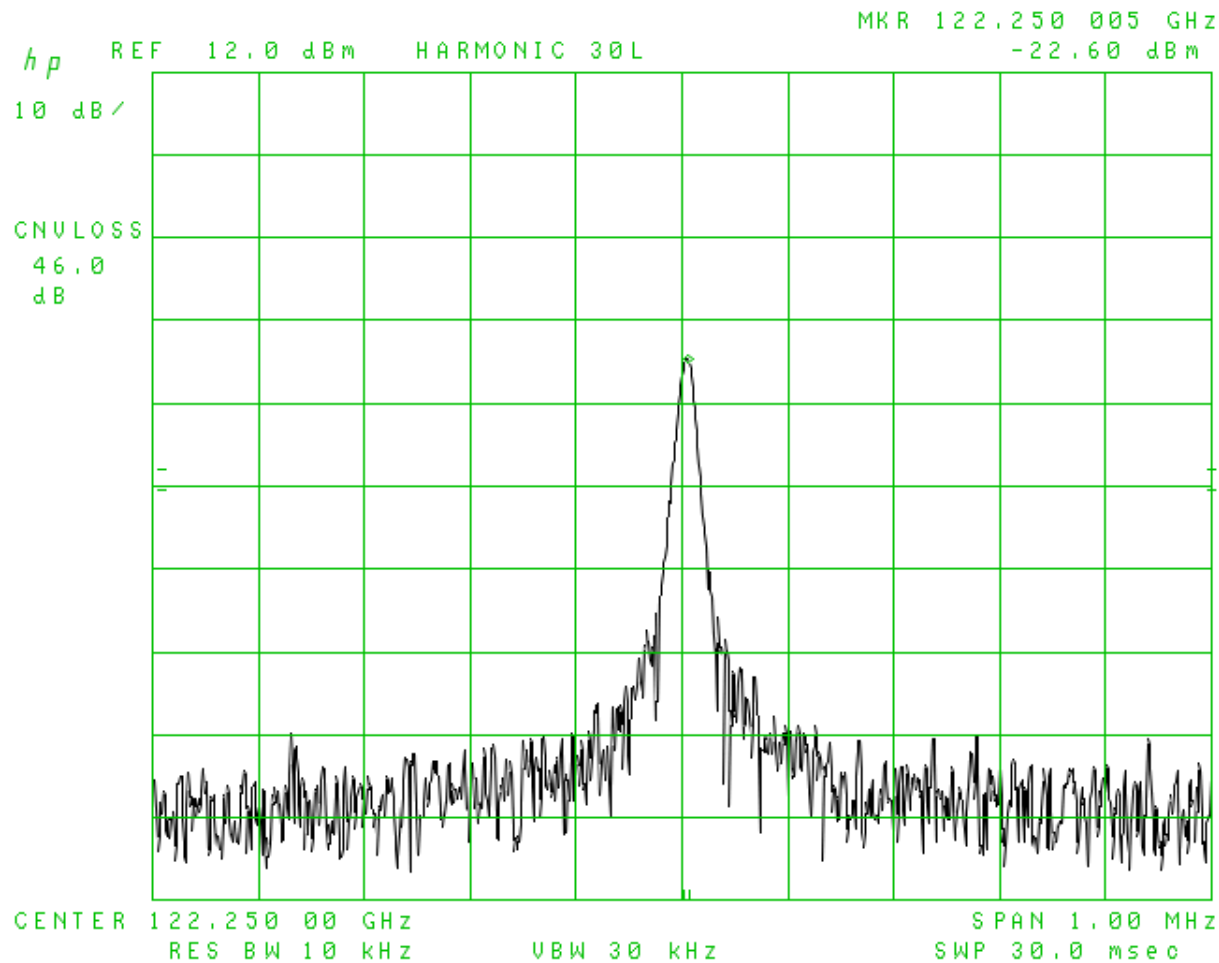
As a transverter

- ◆ It works! Confirmed TX and RX at 78 GHz. See output at 24, 47, 122, 134 and even 241 GHz
- ◆ 122 GHz and above need output confirmation with on-the-air tests
- ◆ Adjust bias for max output
- ◆ Bias setting could change with load presented to WR28 port

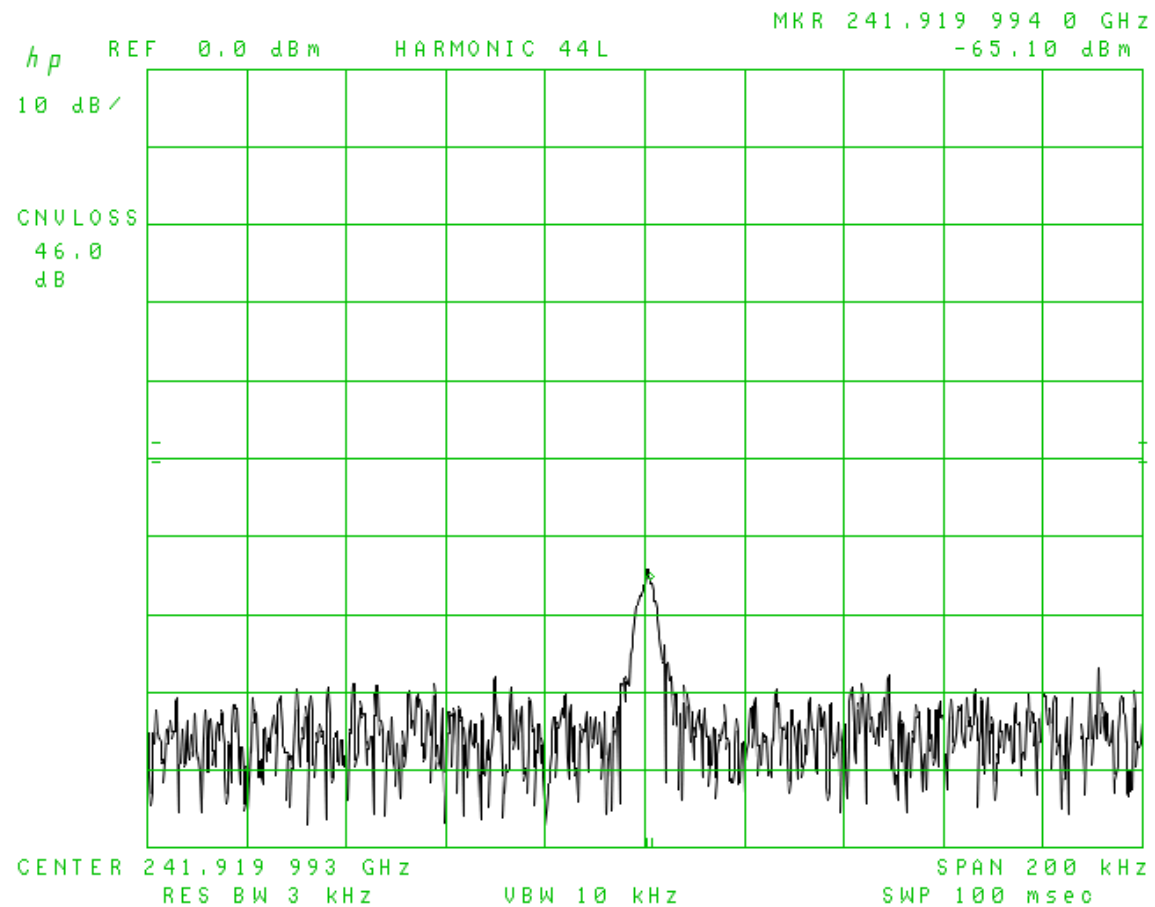
As a transverter

- ◆ Like similar designs, need a RX preamp
- ◆ Output at 122 GHz is surprising
- ◆ Look in the Proceedings for all the traces

122 GHz transverter output



241 GHz transverter output



PCOM vs DB6NT MKU 47 G

- ◆ 20 dB less compared with DB6NT
- ◆ As a source PCOM has similar output
- ◆ Pair the PCOM with a ZLPLL 14G and you have a basic multiband rig
- ◆ Can be used as a bench signal source
- ◆ Also good for minimum >1 km QSO with simple antenna
- ◆ Can hike your total in contests!

◆ Questions?

