

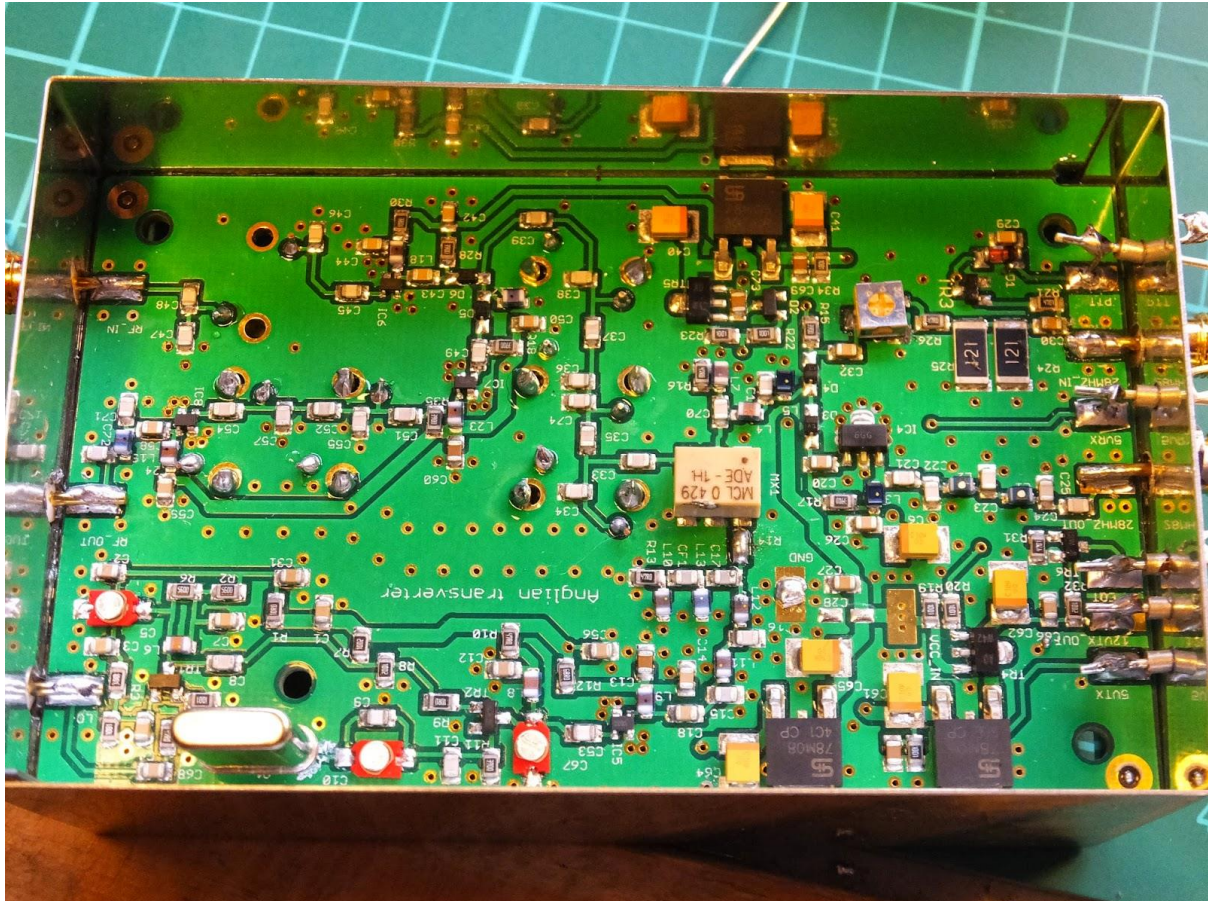
TS-990 with Transverters – Example 144MHz

The Transverter

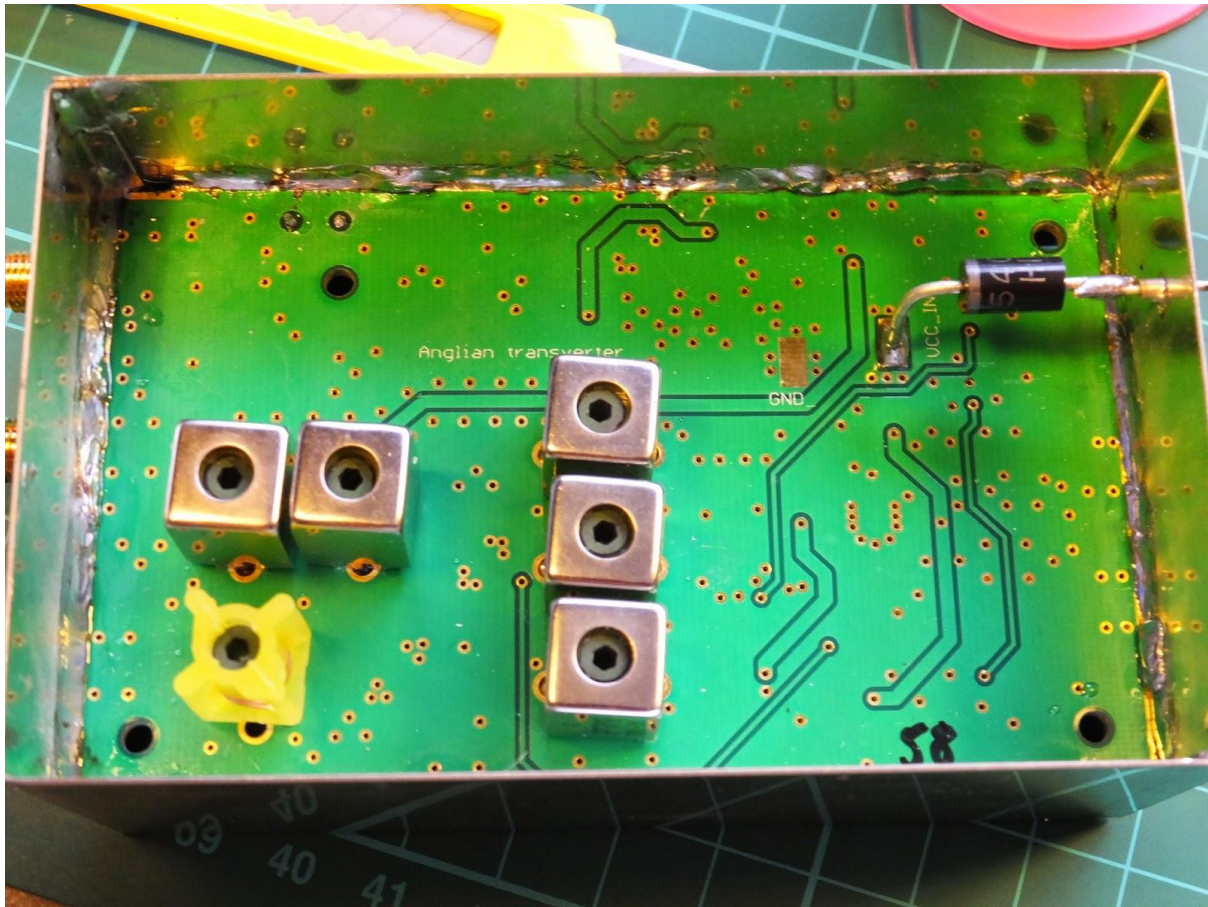
My Transverter for 2M is the Anglian from G4DDK:

www.g4ddk.com

The transverter was in kit format and looks like this:

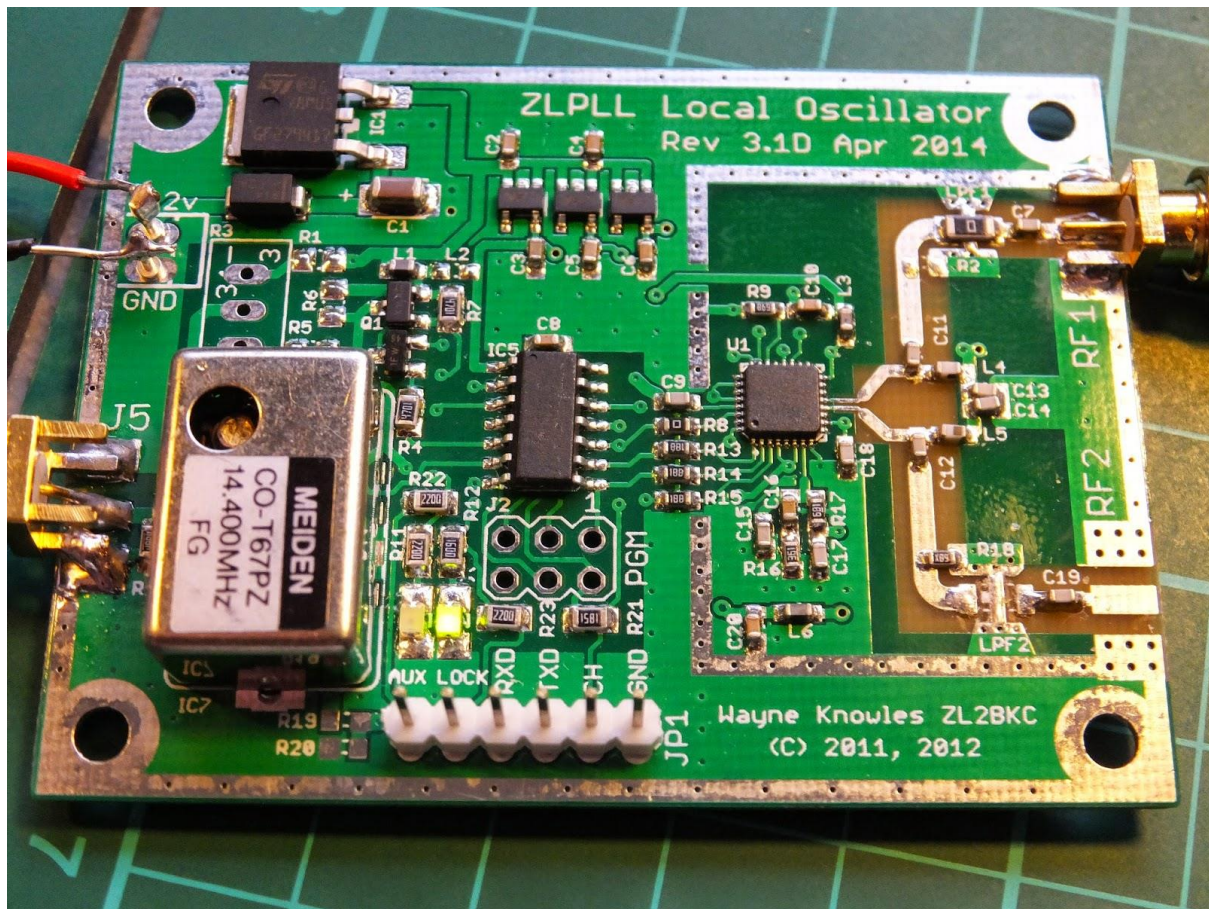


The underside:



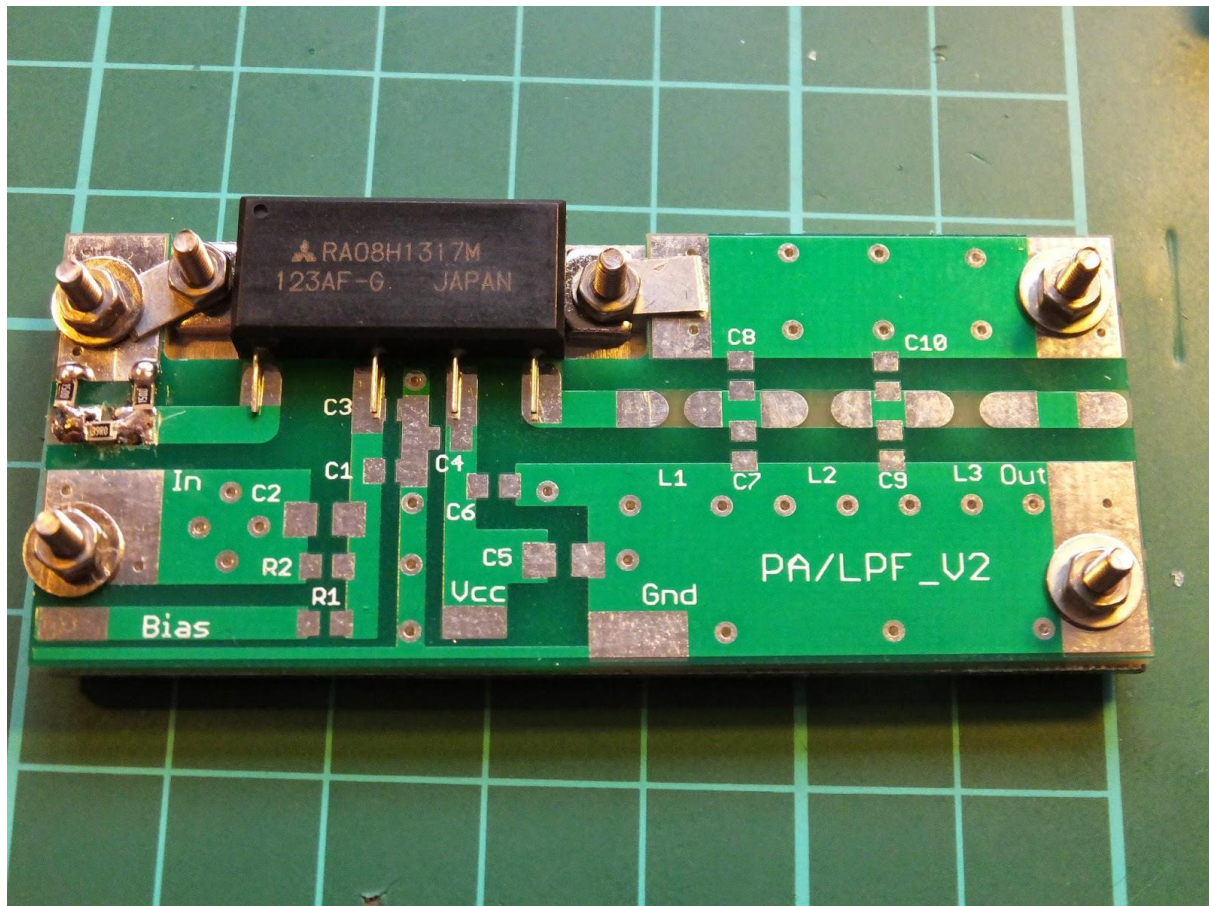
Frequency Stabilisation

The on-board 116MHz oscillator is stabilised by an external device from ZL2BKC which uses an Analogue Devices ADF4351:



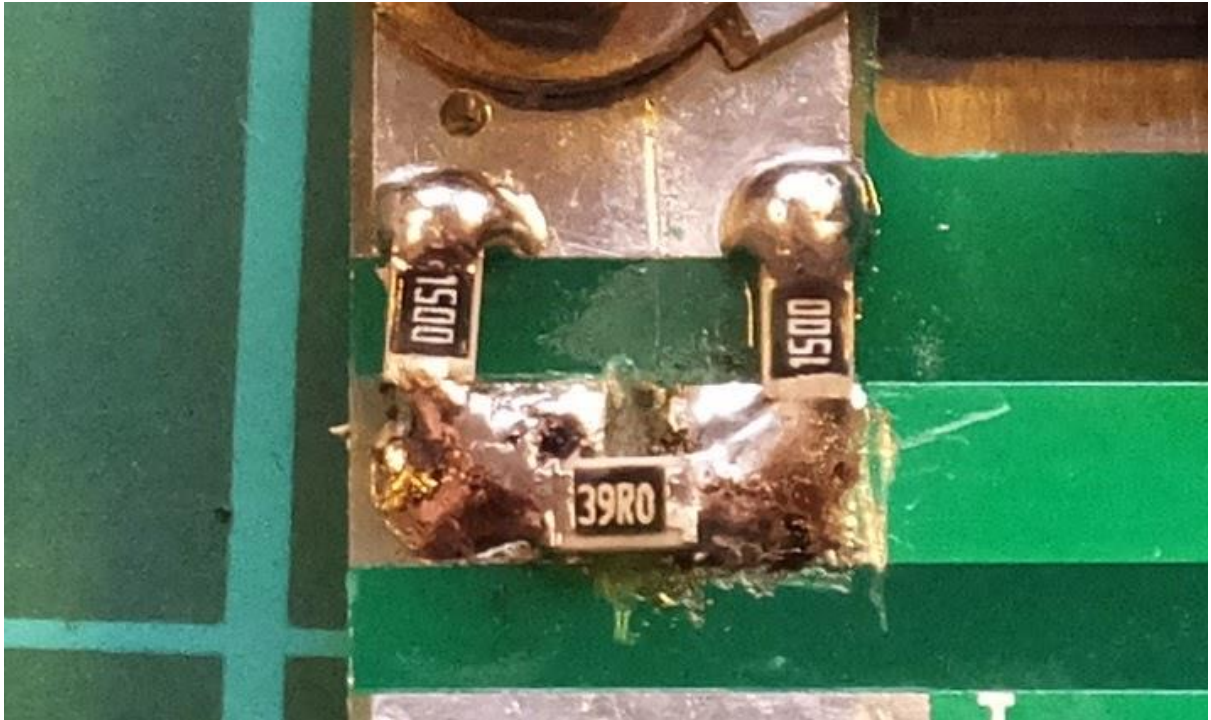
PA Module

The output of the Anglian is then amplified by an 8W power module:



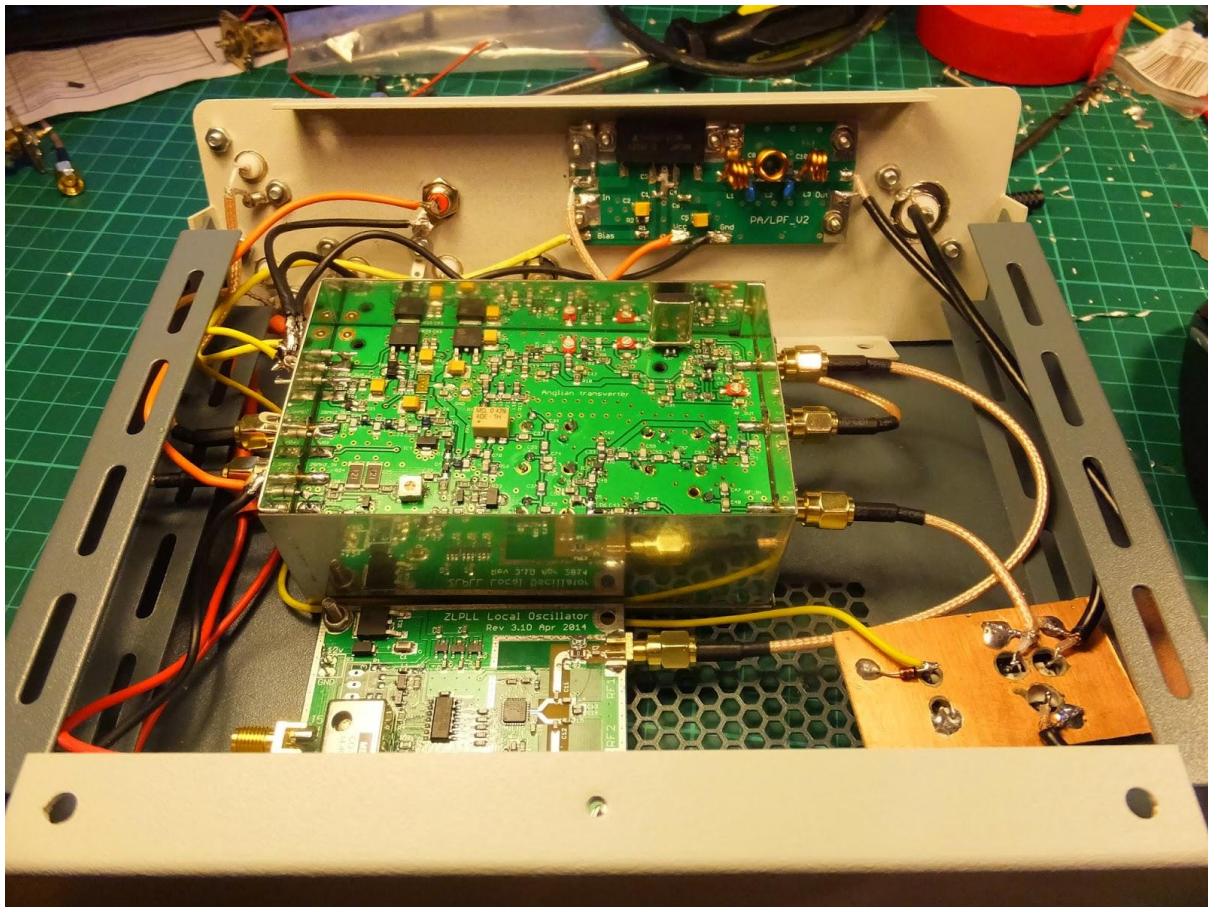
The module is sold in “short kit” form by G4DDK – you have to source the module from elsewhere.

I modified my board slightly by adding a 6dB pad on the input:



Boxing

The whole thing is then boxed together – the mess on the copper board in the bottom right has been replaced by an SMA relay – there is a relay on the underside of the board you can see:



Radio Connections

There are two cables from the TS-990 to the transverter – both RCA (Phono) connectors on the radio end of the cables:

DRV -> Transverter RF in

RX Ant -> Transverter RF Out

Then the output from the changeover relay connects to the Antenna – or in my case a Beko linear amplifier which also powers the masthead pre-amplifier.

Radio Configuration

The Radio is configured using a Macro from within Logger32 to give single click radio configuration, here for a USB-Data mode. Note the macro command is wrapped in \$COMMAND xxxx \$ for Logger32 interpretation, so the first command in the list is “OM0D;”

\$COMMAND OM0D;\$ Mode USB-D

\$COMMAND FA00028370000;\$ 28MHz VFO Frequency

\$COMMAND FB00028375000;\$ 28MHz VFO Frequency

\$COMMAND XO000116000000;\$ offset 116MHz +ve

\$COMMAND XV1;\$ transvert on

\$COMMAND AN00911;\$ DRV on and RX ANT On

\$COMMAND PA00;\$ main preamp off

\$COMMAND PA10;\$ sub preamp off

\$COMMAND EQT00;\$ TX Equaliser off

\$COMMAND EQR000;\$ RX Equaliser off

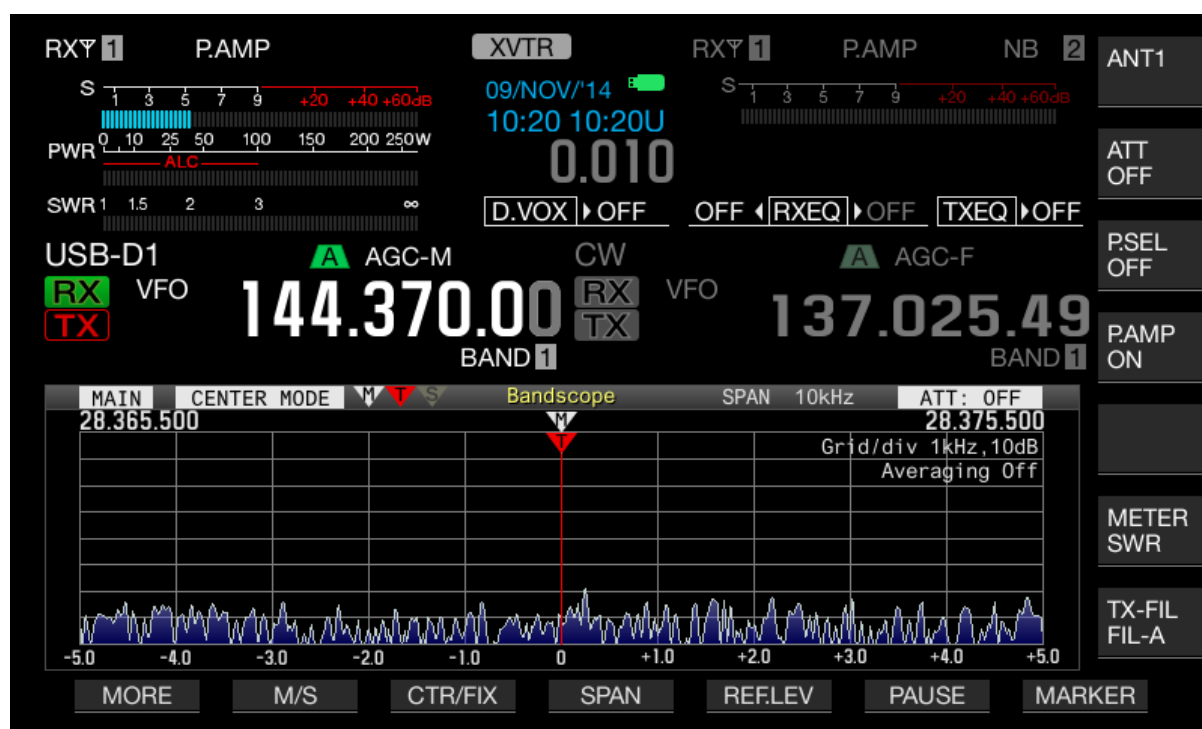
\$COMMAND BS01;\$ Scope on

\$COMMAND PC200;\$ Power control to 10 (70W in non transvert mode)

\$COMMAND BSC020;\$ Scope Ref -10dB

I have a similar Macro to “turn off” transverting on the radio.

The Radio then looks something like this – note “XVRT” in top centre and “RX” in top left:



Disappointments/Issues:

1. The bandscope shows the IF frequency rather than the offset.
2. The response by the radio to the "IF" CAT command is, in the above example, 28.370MHz – so my logging software also has to be configured with a 116MHz offset to log the correct frequency.

All of this is documented on my blog:

<http://g0mgx.blogspot.com/>

This is the detail behind how I actually control PTT switching and use the TS-990 ALC line to keep RF at bay until the sequencing is complete:

<http://g0mgx.blogspot.com/2018/05/ptt-revisited.html>