

Central Goldfields Amateur Radio Club

A Dead Easy 50 mhz Preamp

By VK3CJS

Here's a nice little kludge that works very well for me -

I modified an old Realistic SSB CB radio for 6 metres. With a bigger PA it got out fine, with reports of good Tx audio. On receive though, it was deaf on account of it's simple grounded-base RF amplifier. I tried replacing the RF and mixer transistors with surface-mount types from old TV tuners and that livened things up a bit, but there was still an image problem because there was only one tuned circuit before the RF amp.

Internally, the old TRC-47 had been a bit of a brothel from the start and was now even worse on account of my mods..... what to do ??

The Realistic TRC-47 is an old fashioned 23 ch CB using 6 + 4 crystals and an 11 mhz IF filter.... just the thing for the experimenter. Here one crystal bank is replaced by a Super VXO with a sweep of 150 khz.... all ADDING to around 50.1 mhz. The PA straddling the back is a set of finals from a Philips FM-828 70 mhz carphone, here biased to Class AB. The stout finals are virtually immune to the abuses of the clumsiest fiddler. The coils in the PA are rewound to bring them down to 50 mhz.

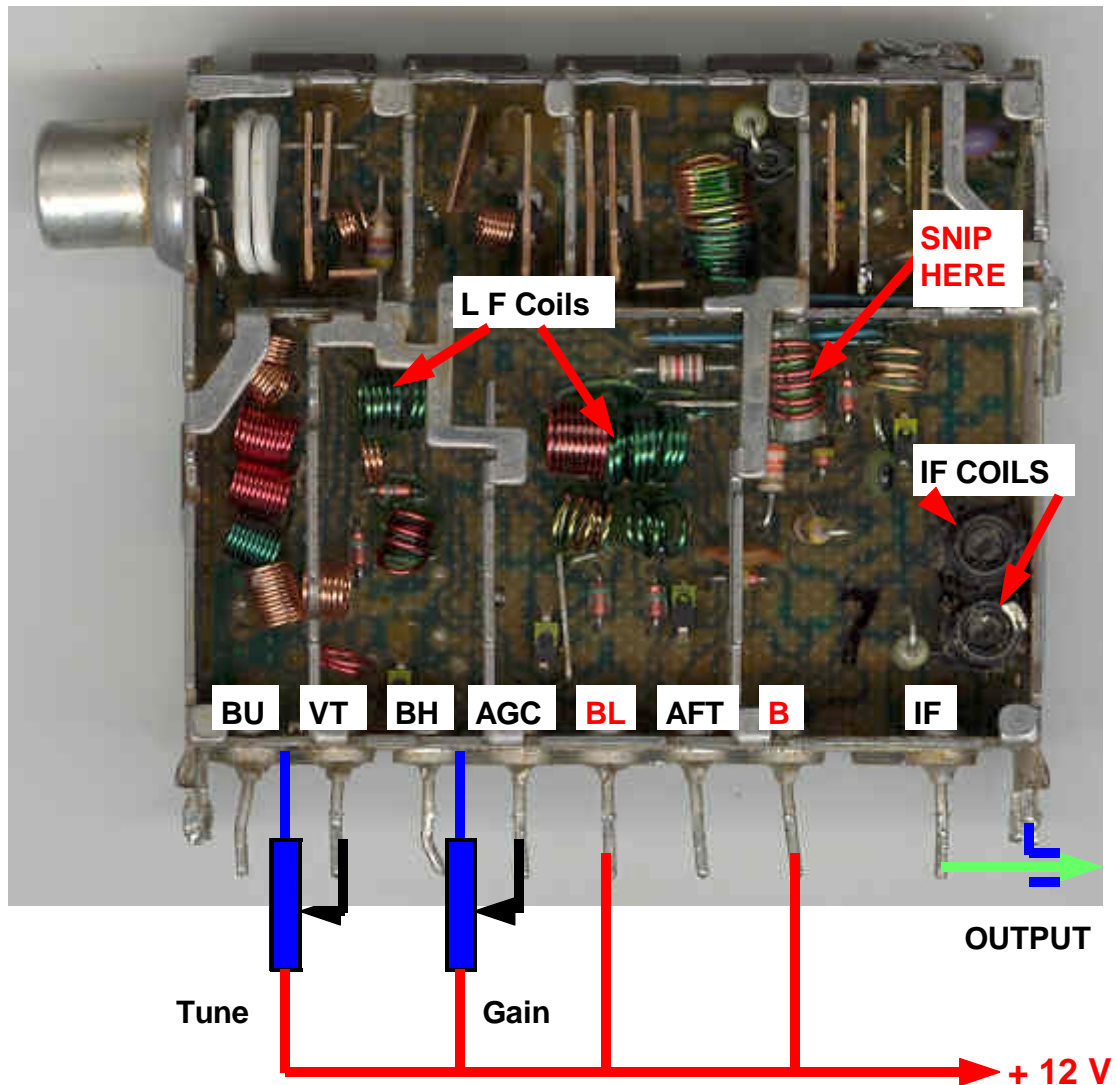


I decided to build an external RF amp with a bit of added selectivity. This meant bypassing the antenna relay in the old CB and bringing the Tx and Rx RF connections out via separate sockets. The T/R relay in the PA would do the switching for me.

But hell, I needed a preamp TODAY! The JA's were drifting in and out and you never know where the propagation might take you on a summer day.

I had a TV tuner on the bench. It had been extracted from a video recorder found on the tip. The very thing here's how I used it.....

The TV tuner will cover 50 mhz on Lowband VHF. If the local oscillator is disabled and the mixer/IF output transformer peaked to 50 mhz, the mixer itself will be an amplifier. Add the dual-gate mosfet front end with variable gain and varactor tuning and we have a beautiful two-stage preamp.



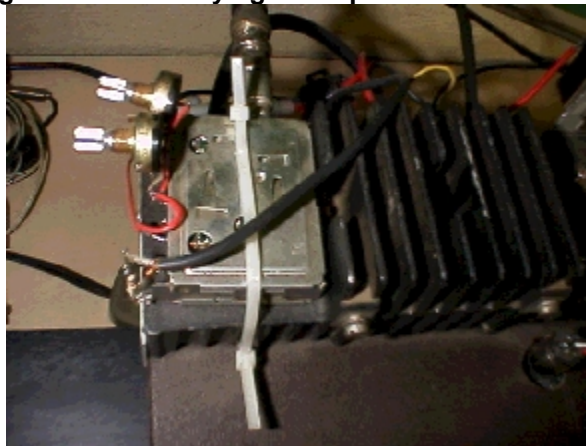
The Tune and Gain pots can be anything from 4.7k to 20k. In a TV set, 0 - 40 volts is applied to VT to span the whole range of channels, but 50 mhz can easily be reached on Low VHF with less than 12 volts. BU, BH and AFT are no connection. The metal case is negative 12 volts and EARTH of course.

Reach in with a pair of fine sidecutters and snip the VHF Low oscillator tank coil as shown. Your tuner may not be exactly the same as this Sharp model, but you'll get the drift of it if you study it under the old maggie light.

Just hitch the thing between the antenna and your 50 mhz Rx and apply power. Turn the Gain pot to maximum (+ 12 v) and tune around with the other for maximum noise. Then start winding out the slug(s) on the IF transformer(s) for max noise. You may have to take the slugs right out.... that's OK. Just where you leave the gain setting depends on the sensitivity of your set and your locality with respect to strong signals. I live in the quiet countryside, so mine is set near max.

Now my image problem is completely cured.... the preamp tuning is quite sharp. Signal to noise is light years better than the crappy old CB front end by itself. In the end I installed a simple resistive pad between the preamp and the Rx to tame excess gain. About 10 db attenuation in my case.

Here is the preamp in all it's glory, strapped down on one end of the PA with a cable-tie (never mind the expense). You can see the pots hanging by their tags and the attenuator resistors hanging in space. One day I'll get around to tidying it all up.



But why stop there. I got carried away and added a Jackson Planetary Drive to the VXO. Now I can tune 'em in after a night on the red wine. The circular dial is the end sawn from an empty solder spool, marked with a fineliner. The box has the obligatory S-meter (wow!.. now I can give signal reports) and an MCW audio oscillator with break-in and delay. It is tons easier to plug one of these in than to unbalance the balanced modulator for CW. The little black disc is for sidetone. It is one of those tiny piezoelectric squawky things from a computer motherboard.

