

Stopping HF Tx/Rx SMPSU QRM

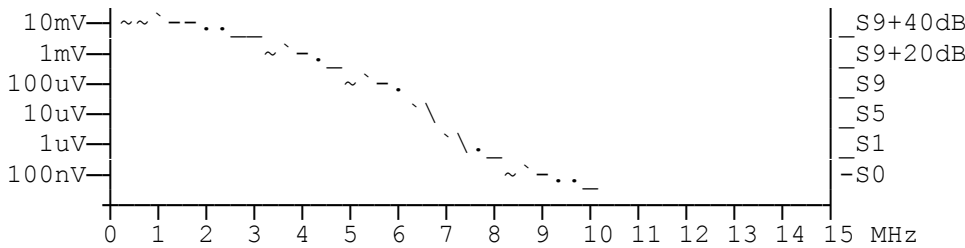
By G8MNY

(Updated Jul 06)

(8 Bit ASCII Graphics use code page 437 or 850)

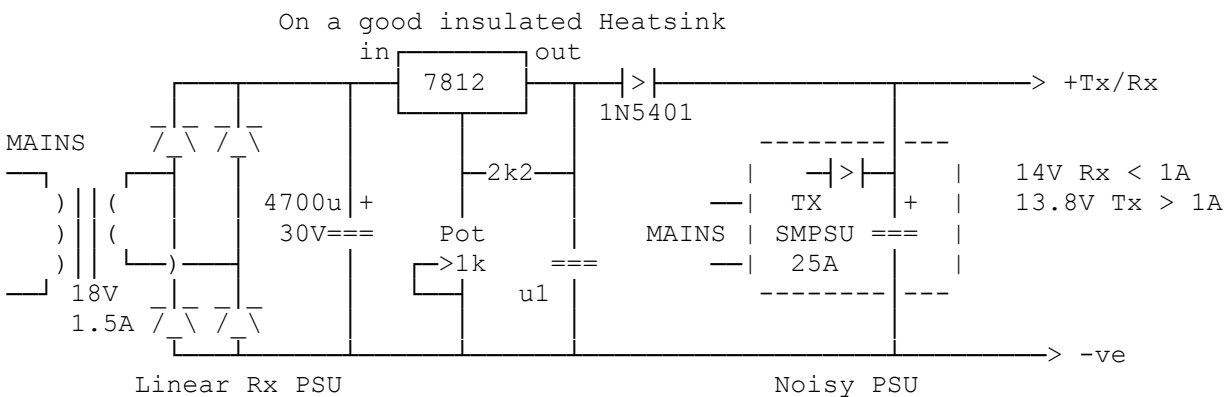
Where a 13.8V SMPSU is used directly to power an HF Tx/Rx the normal mains & DC filtering is often inadequate to remove all the switch mode sprogies that a sensitive Rx & nearby aerial can pick up.

Typical QRM as measured on a commercial "RADIO HAM SMPSU" using a 50KHz wide spectrum analyser. The 'S' meter readings depends on your Rig's QRM immunity to power rail QRM as well as the SMPSU radiation & pickup to your aerial.



SMPSU often pulse on & off on no load, this is good indication that the following Rx QRM elimination method will work 100%.

The strategy is to stop the SMPSU from running while on Rx, by using a small linear PSU for Rx instead. Stopping the SMPSU running is normally possible on all SMPSU if the O/P goes slightly higher than the nominal 13.8V by only a few 100mV. Note that too much overvoltage may trigger a crowbar overvoltage circuit if that sort of protection is built in (I recommend U add one if not).



diodes 1N4001 or better.

The rating of the current limiting linear PSU needs to be just enough to run the Rx at normal volume etc. Normally 1A will do, but 2 x 1A regs could be used in parallel (with 0.22Ω R's in each O/P) if 1A is not enough, or use some other regulator.

Before under taking a SMPSU modification, test the principle works OK with a variable bench PSU first. If the test is OK & not too high a voltage is needed (watch those dial lamps if over 15V!), then look for room inside the SMPSU or add a bolt on box to the SMPSU unit if you like (case as heatsink).

Other than eliminating the SMPSU QRM there is 1A more current available on Tx.

The regulator(s) must be the current limiting type & well heatsinked, as it will be working very hard all the time!

Why don't U send an interesting bul?

73 De John, G8MNY @ GB7CIP