A Success Story with a Noise Nuller

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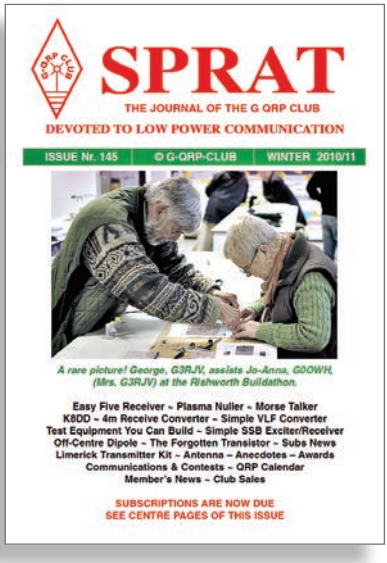
In a 2010 Sprat magazine, there was a circuit of a noise nuller which **Brian ZL2AJA** decided to build as he had a high noise level at his place. In fact he built two, because the first one didn't seem to work. Unfortunately neither did the second, and they eventually came to me, both of which were beautifully built.

I tried both of them at various times over some years - but as Brian had found, they really didn't seem to do much to the kind of background noise I had at my place.


SPRAT

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A rare picture! George, G3RJV, assists Jo-Anna, G0OWH, (Mrs. G3RJV) at the Rishworth Buildathon.

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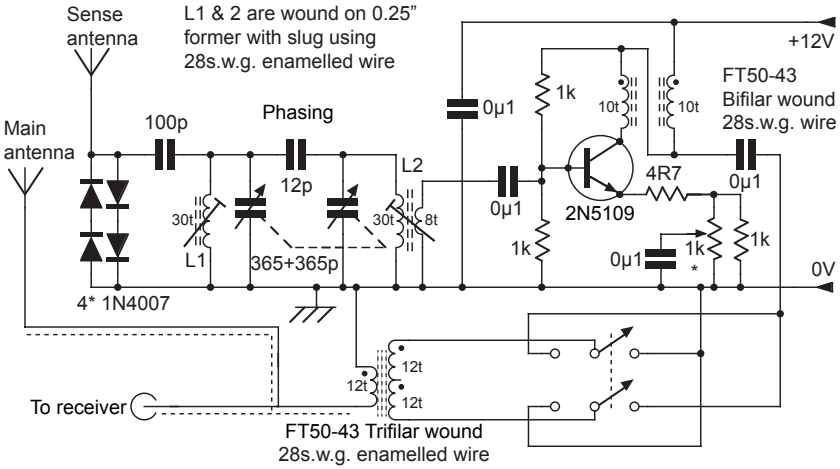
Horrendous Noise

Then about 2–3 years ago, when fibre cable came into the area, a new horrendous noise appeared at my place. It cut in very sharply at about 3790kHz over the space of 2–3kHz, and went well beyond the top of the band (3900kHz here in NZ). So, I took a look at the frequencies available for restricted radiation devices in NZ, and noticed that a band from about 3640kHz and up is allowed for these screeches. With a level to be -70dBW. But -70dBW is a huge signal if you are close (crazy!).

Anyhow, to me the racket sounded like some sort of modem, as it was not like a switched mode supply. That was because of the way it cut in so discretely on the band. So from a base level of S5 for frequencies of up to 3790, it rose to more than S9 over the rest of the band - which happens to include our club frequency of 3890kHz. Even stations that were normally S9+10dB were difficult to copy.



So recently, after playing with some passive (and very simple) nullers, which seemed to have some effect either, I decided to re-visit the ones made by Brian ZL2AJA. I did find that Brian had added a toroid core to one of them - subsequently I removed it and that got it working along with the other.

But the main issue was getting enough signal on the noise aerial to get a null - the circuit has only a single transistor for the noise amplification.

Rather than try to re-design the circuit I did something simpler - I put a pot in the main aerial lead to reduce the signal - of course along with the noise. This had an amazing effect - and I then proceeded to add a relay which when switched off (with the power to the nuller) simply connects the aerial and radio directly.

Listening tonight to the Branch 22 net on 3876 was mindblowing. Signals about S9+10dB, which were difficult to copy without the nuller were completely noise free with the nuller. S8 to 9 signals which were discernible as present (but not copiable) were also almost noise free. Signals probably about S6 - 7, not discernible at all without the nuller, were slightly noisy, but R5 with the nuller. The tuning is extremely sharp and I am grateful that Brian used reduction drives on the tuning capacitors.

The added pot. does affect the S-meter readings so comparative readings are hard to make, but the effect has to be heard to be believed.

So what? Well I guess you don't really know what sort of noise you have until you try a nuller. Basically for background "white" noise it won't do anything. And of course you can only null one noise at a time. But even a reduction of two S-points of noise would make a difference in some situations. I think I am getting a null of 4–5S points in the noise compared with the signal.

G3RJV Memorial Trophy

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Plans to host the first construction competition for the **G3RJV Memorial Trophy** had to be put on the back burner as a result of the Convention becoming a virtual event.

However, I am pleased to announce that there will still be an award this year. Any member wishing to enter must e-mail details of their project to Dick our Secretary at: *g0bps@gqrp.co.uk* by the end of October. If you're short-listed you need to be available to demonstrate your work via video conferencing during the first two weeks of November.

The winner will be announced in the Winter SPRAT.

Members who are unable to communicate via e-mail can send project details by post and, if short listed, will then need to post their project to one of the judges who will carry out the demonstration.

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