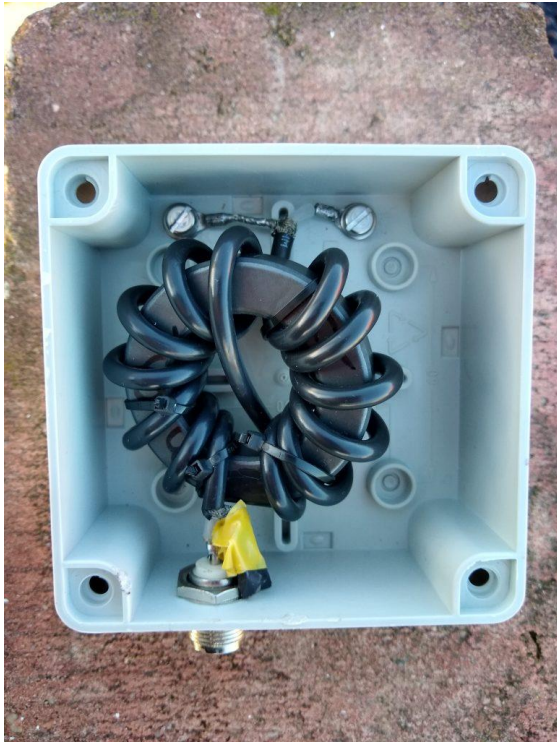


Using the PA0DRT Miniwhip antenna

This antenna is a broad-bandwidth receiving antenna with an active amplifier element. It is widely used on Web SDR receivers such as that at Twente and on the Kiwi SDR based in Tignabruaich in Argyll. If you are interested in general coverage that can extend down to VLF this is a great way of providing a useful antenna.

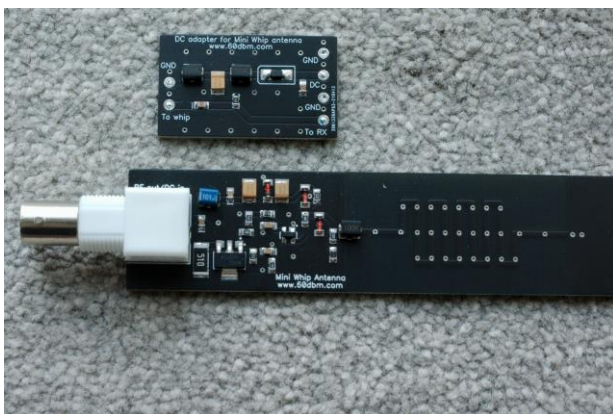
The PA0DRT design is widely published on the web, as are explanations on its function, however, when I first built one I was very disappointed because, it turns out, I had not appreciated an important feature. "Antenna" is a misnomer, it is in fact an electric field probe and it senses and buffers the local electric field which is essentially at extremely high impedance. To use this sensed field requires a rock steady electric anchor point for the probe in the form of a counterpoise. Because the probe itself is small (about 50mm x 20mm) it requires only a 3m or so counterpoise to function, but without it, it is useless. Also to minimise interference- particularly that which might be conducted out from your house on a coax outer sheath, an RF choke is required on the cable outer. Both of these can easily be achieved by winding a common mode choke using the coax on a ferrite ring.





I put my homebuilt probe on the top of a four section fibreglass pole (SOTA beam) with the choke at the bottom. I have no actual earth (ground) connection, I do not want one as my house has PME supply (see Radcom this month) and it could be an electrical hazard. I made a small 12volt interface that provides power down the coax to the amplifier but is isolated from the receiver input. I have actually used a small sealed lead acid battery but a simple analogue PSU would be fine (avoid switched mode unless you have an unusually quiet one).

I have also bought a complete circuit board from Ukraine (liberated just in time) which I have not yet tried out, but other ones are probably available. My amplifier/probe is mounted in a Boots Chemist tablet container but also waste pipe plumbing tube and end caps can be used to waterproof it.



The signal output is very adequate but not as strong as a large wire antenna or beam. However noise levels are very low and the signal to noise ratio is such that natural band noise is clearly heard which indicates that it is very adequate. Receiver inputs are very unlikely to be overloaded so it is perfect for RSP1A sdr modules and receivers like my Lowe HF-150 which has no pre-selection. I use it all the time to monitor band activity and simply switch to my main wire antenna if I want to operate in transmit. Not having the requirement to tune and not being resonant makes it perfect for monitoring the bands and listening to other short wave activity.

Ken Maxted, GM4JMU, 26 March 2022

References

Web SDR receivers:

<https://rsgb.org/main/operating/web-sdr-receiver/>

0-30 MHZ SDR, GM8XBZ IN W SCOTLAND

<http://argyllsdr.ddns.net:8073>

PA0DRT miniwhip information:

http://www.kiwisdr.com/docs/pa0rdt_whip.pdf

<https://www.merseyradar.co.uk/uncategorized/hf-receiving-antenna-pa0rdt-mini-whip/>

<http://dl1dbc.net/SAQ/miniwhip.html>

Common mode choke:

<https://www.pa9x.com/the-broadband-common-mode-choke/>