SDR Receiver – Part 2

Guidance on selecting a potentiometer

I published a construction article in the February 2022 publication of Practical Wireless Magazine.

Electronic viewing of the magazine, as part of a subscription, is here: https://pocketmags.com/eu/practical-wireless-magazine

Here is some guidance on selecting a potentiometer.

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The schematic of the VCO contains a potentiometer called RV1 for which I used a high quality, linear, ten-turn, 50K potentiometer.

I used a Bourns device model number 3590S-2-503L. These are available from RS Components (aka Radionics) as part number 107-0808P or from Mouser as part number 652-3590S-2-503L. They cost €15 to €19.

Using a 10-turn device gives you an order of magnitude greater resolution than for example, using a single turn potentiometer.

This high quality device has:

- a resistor tolerance of ±5% (not so important);
- good resistance to both shock and vibration (important);
- a maximum backlash of 1% (very useful); and
- a temperature coefficient of ± 50 ppm/^{o}C (see below).

This last bullet is significant as assuming a stable voltage supply, the frequency stability of the VCO is limited primarily by the temperature coefficients of RV1, RX and the capacitors between pins 3 & 4 of IC U2.

If you wanted a potentiometer with a reduced temperature coefficient then you will need to double the amount you need to pay. There are ± 20 ppm/^{o}C devices available at RS Components (e.g. 460-7598) but they cost €25.