

Multi Range RF Marker Generator

A Little Background

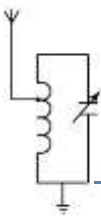
A crystal calibrator is a very useful piece of test equipment that is used to generate audible markers across the RF spectrum at precise intervals. This has the benefit of being able to accurately measure, without other equipment, the calibration accuracy of a radio dial or frequency indication. While of more use with vintage equipment the calibrator still finds a use in checking modern radios or for providing a stable signal source at set frequencies.

This version has a wide range of frequencies selectable by rotary switch. The output signal is a strong square wave that projects into the upper MHz region.

Operation and Usage

While reading through this document, use this photo to assist in identifying the main components of the calibrator, it illustrates the key points.





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Before applying power to the unit, please rotate the range selector switch to any position other than 'Off'.

The unit requires a DC voltage of around 13 – 20 volts to be applied to the power jack. This is a center positive jack of 2.1 x 5.5 mm size. Please ensure that the power supply jack is center positive before connecting to the Marker, else irrevocable damage will occur.

The marker output is continuously available at the RCA jack. As the frequencies in use are all derived from a stable 8 MHz crystal oscillator the output frequencies are all accurate, however, warm up and environmental drift can cause small changes in the output frequency. If the accuracy of the output is found to be drifting a fine tune trimmer capacitor is accessible on the PCB. Adjusting this with a non-metallic trimming tool will allow the frequency of the master clock to be adjusted.

Basics of use

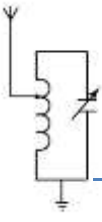
To use with a radio for actual calibration, the signal from the calibrator RCA jack needs to be coupled to the radio under test, this can be directly to the antenna jack or a looser coupling can be achieved with placing the output lead near the radio LO. Some experimentation may be required, but remember:-



If working on a tube (Valve) based receiver or equipment that is tube based, be aware that high voltages are present and take due caution to avoid contact with these voltages to protect yourself, the radio and calibrator.

Classically, to use a calibrator, the receiver is first tuned to 10.005 MHz, and with the calibrator powered on and set to 100KHz and connected to the receiver, the receiver is slowly tuned until the dial (analog or digital) reads 10.000 MHz, the beat of the calibrator should be heard as the radio is tuned until it nulls at the 10.000 MHz point, tuning up or down, past the null at 10.00 MHz, will produce a new signal and null every 100 KHz, in this way the accuracy of the radio dial can be determined.

As this calibrator has a much wider range than just 1 KHz more in depth analysis of actual dial calibration can be achieved by using the other frequencies available from the unit.



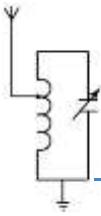
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Troubleshooting

We have designed and manufactured the calibrator to be a robust unit that should give a long service life, however problems can occur and the following quick notes are designed to assist with simple troubleshooting. Please also refer to the schematic in the appendix. If these fail to produce a positive result please reach out to us at the email below.

1. No signal – Check that the unit is receiving power is the DC input voltage above 12 VDC
2. No signal – Check the range switch is not set to the off position – move the switch to a valid output range.
3. No signal with the range switch set to say 1MHz, can the signal be seen on an oscilloscope or frequency counter. If yes, try the next step(4), if No and power input is correct contact us.
4. No signal – Check your output cable is in good condition, replace or substitute if needed.
5. We have included the schematic for this device in Appendix A for your perusal.

Contact details: steve@electroresales.com



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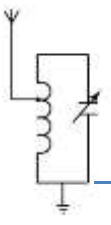
The small Print

DISCLAIMER

Any person who constructs or works on electronic equipment may be exposed to hazards, including physical injury, the risk of electric shock or electrocution.. These hazards can result in health problems, injury, or death. Only qualified persons who understand and are willing to bear these risks themselves should attempt the construction of electronic equipment. By purchasing this item, the buyer acknowledges these risks.

There is a risk of electric shock, electrocution, burns, or fires that is inherent in the construction and use of electronic equipment. By purchasing this item, the buyer acknowledges these risks.

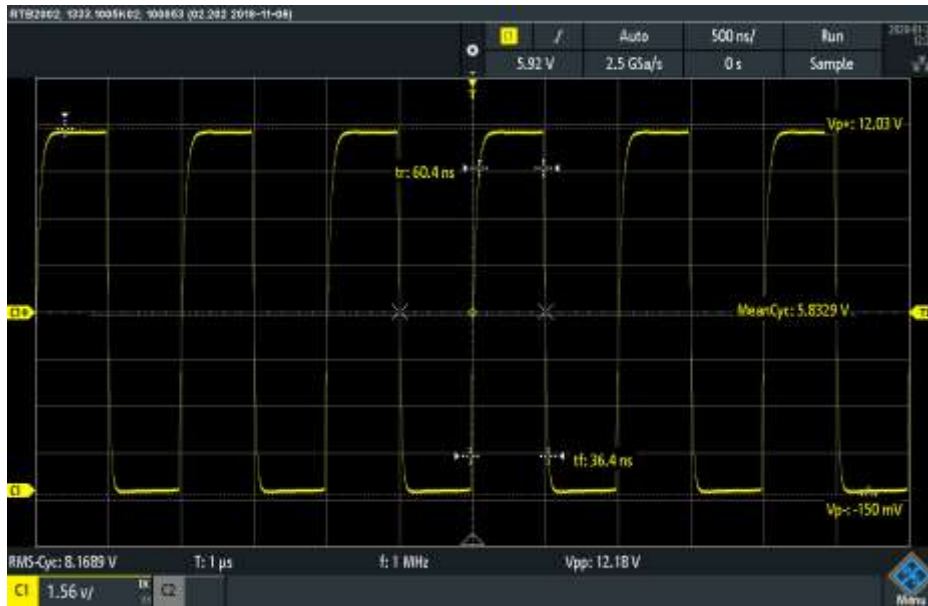
IN NO EVENT SHALL THE SELLER BE LIABLE FOR ANY SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES OF ANY NATURE including, but not limited to, property damage, personal injury, death or legal expenses. Buyer's recovery from Seller for any claim shall not exceed the purchase price paid by Buyer for the goods, irrespective of the nature of the claim, whether in warrant, contract or otherwise. By purchasing this item, BUYER AGREES TO INDEMNIFY, DEFEND AND HOLD SELLER HARMLESS FROM ANY CLAIMS BROUGHT BY ANY PARTY REGARDING ITEMS SUPPLIED BY SELLER AND INCORPORATED INTO THE BUYER'S PRODUCT.



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Appendix B – Sample Output waveforms

1MHz Waveform



100KHz Waveform

