

August 2012 Edition - Vol 1 Issue 2

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www.4sgrp.com

Ozark QRP BANNER



Index

The Small Loop – page 2 Ladderline Quick Splice – page 6
Build It – page 7 Simple Simon VXO – page 9 News – page 12

Feature Article....by: Dr. Jonathan Hare - G1EXG

SMALL LOOP ANTENNA

This design is for a loop antenna suitable for TX and Rx on 80m and 160m. This is simply a copy of a design by Harry Lythall (SM0VPO) at the following link:
[80 METER FRAME ANTENNA.](#)

Below are some close up pictures of my version. I found I had to remove one of the turns to get it to resonate on the top end of 80m for SSB DX work. Its a great Rx antenna and its sharp null provides a wonderful drop in noise to bring the DX in! - Thank you Harry!

Note: Although the antenna has been varnished a similar antenna did not fare well outside so use this indoors for RX, see end of page for an outside version.

Note: as this antenna is made of relatively copper wire its fairly lossy for Tx but I have had good feedback from people using it for Tx on data modes or where there is simply no space to put up anything else."

I am sorry but I don't have the exact length of wire I used but it's about 20m or so.



The complete small 80m loop antenna. It sits on a weighted tripod and can easily be rotated for null.



Showing a corner of the loop and also part of the coupling coil positioned using nylon cord. The wires are feed through holes drilled in the four spreader arms. The wood structure was varnished after assembly which also helped to secure the windings.



**Showing the high voltage capacitor with reduction drive and waterproof enclosure.
The loop connections go in at the bottom of the box through long sleeve rubber grommets.**



Connection of the 50 ohm coax to the triangular coupling coil.



The central support showing the butterfly nut fixing to the tripod mast.



Another version of the LF loop made from plastic water pipes and connections. You can just make out the motorized capacitor through the window of the waterproof box.

I made a wooden version of the outside loop but although it was varnished a couple of times its performance degraded over the months which I put down to water absorption in the wooden framework (the Q reduced and it became 'deaf'). I am hoping this plastic version will last longer. I use this only for Rx as the current capacitor is quite closed spaced. I have since made the wires to the capacitor much more tidy - which I hope will improve the null.

In March 2010 I changed the household type wiring for solid 12 SWG enameled copper wire, changed the capacitor for a more wide-spaced device and also changed the coupling coil for a coaxial faraday screen type (at center, ca. 140 cm circumference - gave very good SWR on 80m band).



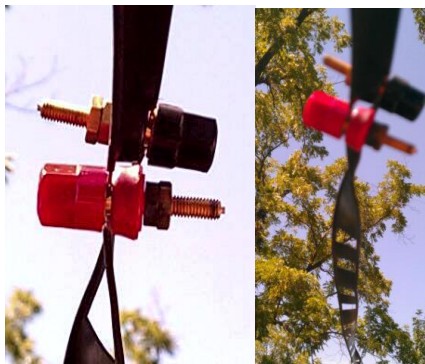
In the summer of 2010 I changed the faraday coupling coil for heavier RG8 cable and also changed the capacitor for a home-brew wide-spaced (8mm spacing) double gang design. The capacitor is now effectively two variable capacitors in series, which means that the moving vanes don't need to be connected to any wires. The antenna now covers ca. 3.6 - 4.0 MHz and seems to cope with 100 Watts all ok.

<http://www.creative-science.org.uk/main.html>

editor's note: If you are cramped for antenna space, this small loop may be of use, especially for receiving and nulling signals. It is worth a try for transmitting, too!



A temporary quick splice add-on for ladderline
....it works! de....K5EST





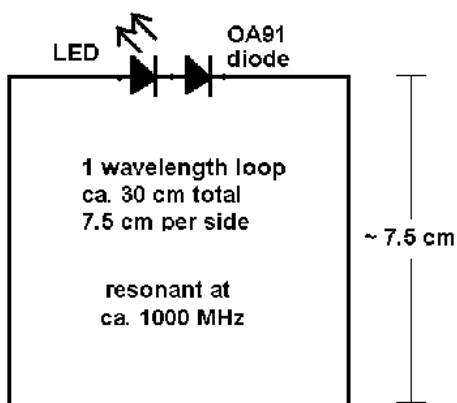
Build It !!!

Teaching a Ham Radio class, demonstrate radio transmissions, trouble shoot a transmitter, test your cell phone transmitter
.....Dr. Jonathan Hare – G1EXG has the answer!
http://www.creative-science.org.uk/mobile_LED_simple.html

Simple demonstration to show mobile phones emit radio waves

Dr Jonathan Hare, Sussex University, Department of Physics, Falmer, Brighton. BN1 9QH
Note: this article is in press: Elektor Magazine, July-August 2010, p. 56-57

For other experiments with this device please see my full article at: [mobile phone detector](#)



left: mobile phone radio wave detector and right: the simple schematic.
Below: detail of the LED and germanium diode.



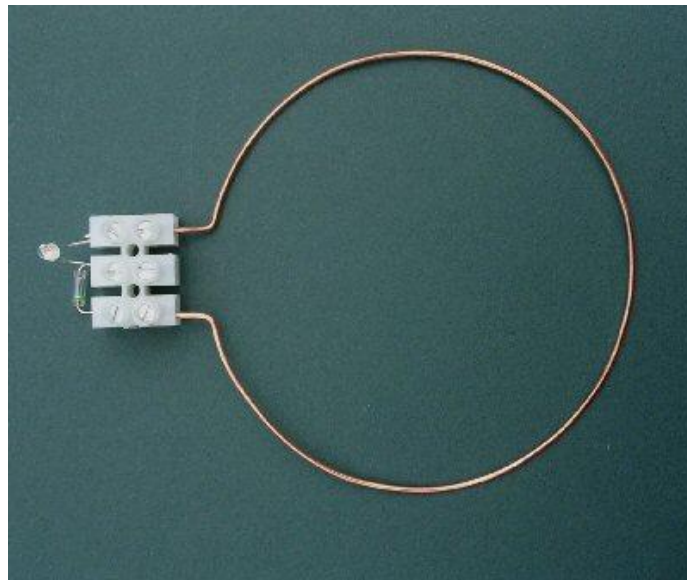
This is a very simple and cheap device that demonstrates mobile phones ('cell phones' or 'handies') generate radio waves. We have a 30 cm (7.5 cm per side) full-wavelength loop antenna (a 'Quad' to radio amateurs) connected to a germanium diode and a hyper-bright LED. The loop can be made of copper wire, thin sheet metal or a track on a pcb. The diodes need to be wired correctly. I think the germanium diode is needed as the LED probably has too great a self-capacitance to perform at the very high AC frequencies generated by the phone (ca. 900 or 1800 Hz) but will work well with the DC pulses from the germanium diode (which has a very small capacitance).

To show the mobile generates radio waves put the mobile near to the loop and dial a number (use a free phone number, e.g. your voice mail) or text. The radio waves will induce a voltage into the loop, large enough to light the LED. The LED will flash indicating the digital data being sent by the mobile phone transmitter. You may need to set your phone to 'GSM 900/1800' rather than the '3G' network in the settings menu.

parts:

germanium diode: Maplin Electronics: QH71N or Rapid Electronics: 47-3114

LED: Maplin Electronics: UF72P or Rapid Electronics: 55-0085



A very simple connector block version and a circular 1 wavelength loop

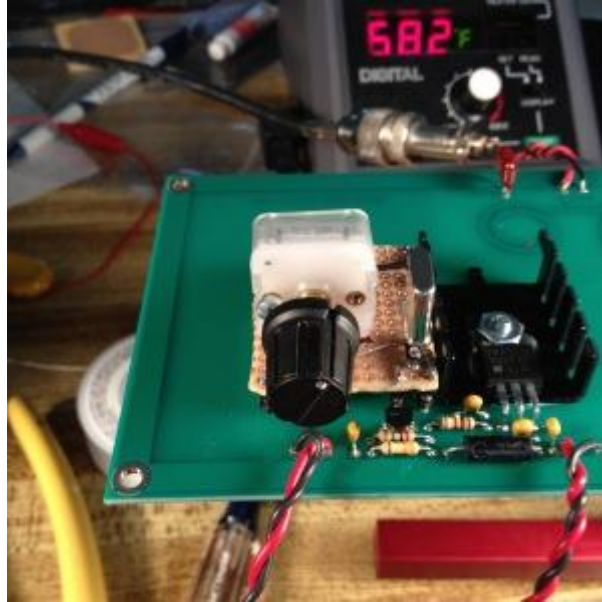


Simple Simon VXO for the NS-40

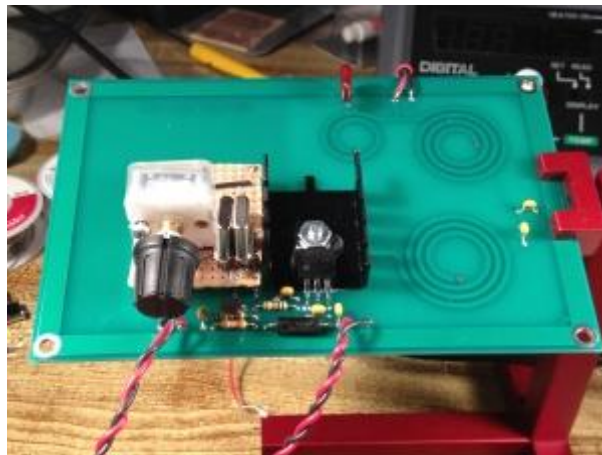
By: Dick – N4UN

<http://n4un.wordpress.com/2012/07/18/simple-simon-vxo/>

This is a very basic VXO for the NS-40 from the Four State QRP Group.



Simple Simon VXO



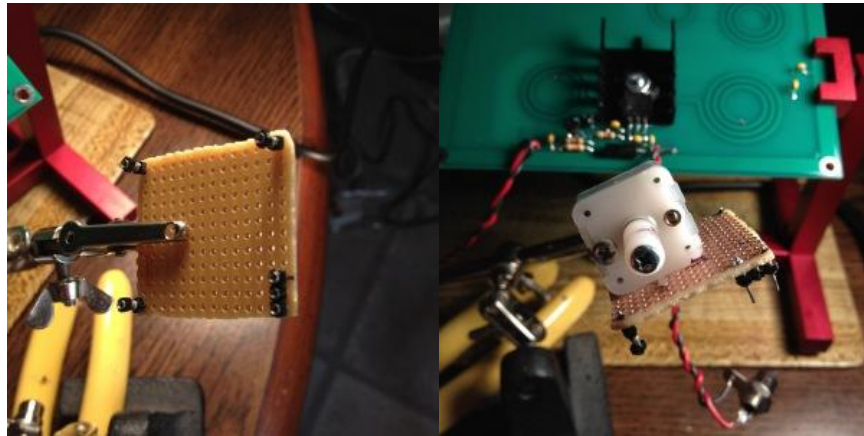
or 2 Crystals for More Range

The range is approximately 2 to 3.5 khz around the crystal frequency.

A brief video of the [Simple Simon VXO](#)

Click here for schematic pdf : [Simple Simon](#)

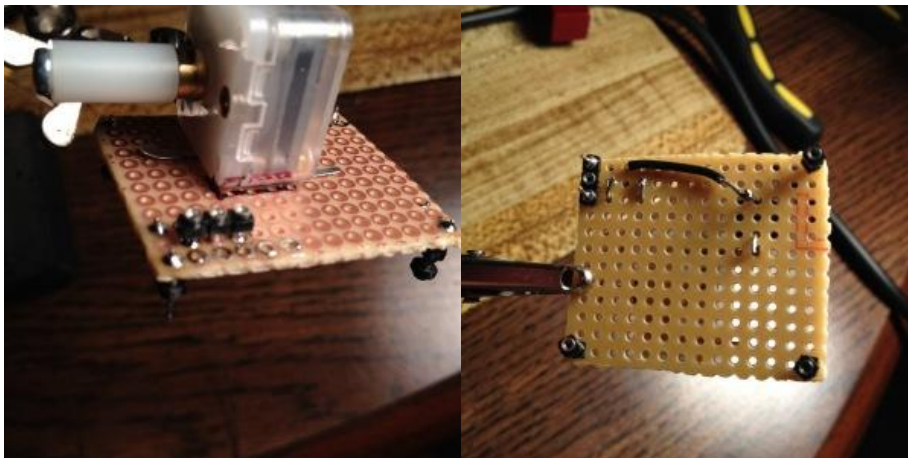
A few Build Photos : **2 stacked SIP pins installed at each corner**

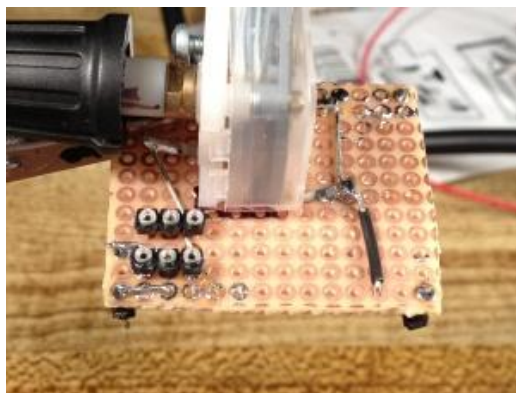


Polyvaricon super glued to perf board

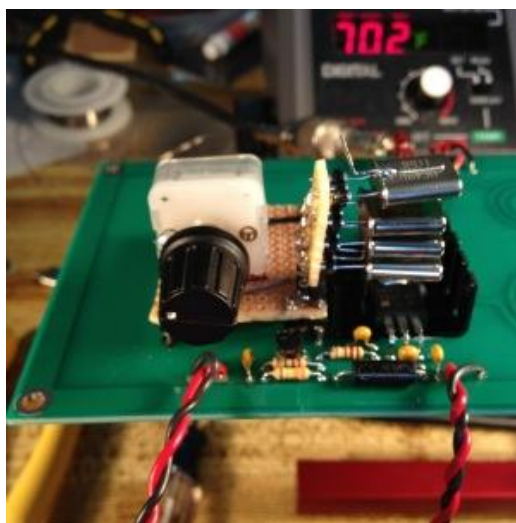
Polyvaricons are available from [QRPme](#) also from [QRPkits](#) This particular one is from QRPkits .SIP sockets are available here : [Electronix Express](#) Also from : [Dan's Small Parts](#) (use ctrl-F search for SIP)

The mini perfboard is from [Radio Shack](#) . SIP pins used as a socket





Polyvaricon – 2 Sections together for 220 pf. The center pin of the Polyvaricon is forward on the perf board and connects to the crystal sockets. The two outward pins are rearward and are connected together.



Simple Simon with Sudden Stacker. This is a temporary solution that adds crystals to provide more range.

The excellent [SAVXO](#) from 4SQRP provides a more permanent solution.

Inexpensive crystals are available : QRPme.com : <http://www.qrpme.com/?p=parts>

N4ESS : <http://www.expandedspectrumsystems.com/prod4.html>



QRP mobile operations? Missouri Bill #SB843 has passed..... Allows motorists to purchase an additional third license plate to serve as a visible plate when a bicycle rack or other item obstructs the view of the mounted plate. You will be able to purchase the 3rd license plate August 28th. This allows trailer hitch antenna mounts to be used without the do-right boys (police/troopers) from giving you a ticket! See more at: http://www.senate.mo.gov/12info/BTS_Web/Bill.aspx?SessionType=R&BillID=2932186



Plan on being at the BIG BRUTUS Ham-Out Sept 8th & 9th.

More information is at the club website
<http://www.4sgrp.com/index.php>



ATTENTION QRP'ers

The Cenois Amateur Radio Club in Decatur, Illinois is holding a Tailgate Party on September 8, 2012 in Mt. Zion, Illinois. Parking lot of the Four Star Family Restaurant. 1100 N. State Highway 121 Mt. Zion, IL 62549 Noon to 4 p.m. Free Admission and there is no charge for selling but you have to bring your own tailgate.

QRP'ers - 1st Annual Central IL Branch of the 4 States QRP Club Meeting. Any and all interested QRP'ers and kitbuilders should plan to attend. We're planning on having at least one operating QRP station and there will be kits for sale from the 4SQRP Club.

<https://sites.google.com/site/cenoisarc/>



Share the knowledge and help promote QRP by sending your Articles, help hints, radio mods, antennas, portable operations, mobile installations, pedestrian mobile, radio reviews, and any non-commercial QRP interest? You do not have to have a complete article, just give me an idea, pictures, etc, and you get published! Email the “Banner” at ozarkqrpbanner@gmail.com

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- Deadline for publications copy is the end of each month -

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