AUGUST 2023 Volume 12 Issue 8

VE3ERC-LUB

President: Ted VE3TRQ
Vice-President: Frank VA3FJM
Secretary: Kirk VA3KXS
Treasurer: Paul VA3PDC
Trustee: Wes VE3ML
QSL Manager: Kirk VA3KXS
Repeater Trustee: Wes VE3ML
Website Admin: Ted VE3TRQ
Lighthouse:
Maple Syrup Display:
Newsletter: Bob VE3IXX
ERC Website: https://ve3erc.ca

ERC REPEATERS

UHF 444.700 + TONE: 131.8
UHF 444.700 + TONE: 123.0
VHF 147.390 + TONE: 123.0
VHF 147.255 + TONE: 131.8
EMERGENCY SIMPLEX: 146.550
UHF–IRLP node 2404,ECHOLINK VE3ERC-L
VHF– IRLP node 2403,ECHOLINK VE3ERC-R

In an emergency, tune Into our repeaters,
UHF 444.700 or
VHF 147.390 or
HF 3.755 LSB or
Simplex 146.550
For coordination and assignments.

Frank's (VA3FJM) trailer set up at the Point Clark lighthouse. See more on page 17.

THE PREZ SEZ!

This club is Radio-ACTIVE

President's Update for August 2023

Well, the Lazy, Hazy Days of Summer are about gone! A couple of days ago the high temperature was 17°C, and the wind was blowing like October. The Lighthouse Weekend is behind us, and we can begin to think about Fall projects. However, now the temperature is back to 29°C - thankfully summer is not yet quite over.

We will begin our new ERC year with hybrid meetings again, with face-to-face at the Firehall in Elmira, and a Zoom channel for those who cannot make it. Come to the first meeting with ideas for Club projects, and topics you'd like to see as presentations.

The Lighthouse weekend was well attended, with three and sometimes four stations operating, even if some briefly. We again welcomed Barry VE3ISX and Judy for part of the day, and the dinner at Boston Pizza. Hopefully we can again make use of the Lighthouse for stringing an antenna some time in future.

This will be my final message in the Newsletter as President - in future I hope to write some technical articles to introduce more digital radio concepts, techniques, and tools.

Enjoy what remains of summer!

Ted VE3TRQ

The Elmira Radio Club September Meeting
7 pm on September 27
At the Elmira Fire Hall

CONTRIBUTIONS TO VE3ERC-CLUB NEWSLETTER

Do you have an article you'd like to submit? Or photos? Do you have any comments you'd like to make?

Perhaps you'd like to share a photo of your shack, a special project you are working on or a special interest!

SEND THEM TO:

Bob bobve3ixx@gmail.com

(519-787-2279)

WEDNESDAY NITE NET CONTROLLERS

JULY 19 - TONY VE3DWI

JULY 26 - BRIAN VA3DXK

AUGUST 2 - TED VE3TRQ

AUGUST 9 - BILL VA3QB

AUGUST 16 - BOB VE3IXX

AUGUST 23 - REG VE3RVH

AUGUST 30 - FRANK VA3FJM

SEPTEMBER 6 - TOM VE3DXQ

SEPTEMBER 13 - FRANK VA3FJM

SEPTEMBER 20 - TOM VE3DXQ

SEPTEMBER 27 - M E E T I N G

OCTOBER 4 - TONY VE3DWI

HomeBrew Antenna project

By Mike Kassay VE3MKX

I finally had some time to play with my home-brew "QRP guys" **knock off antenna**.

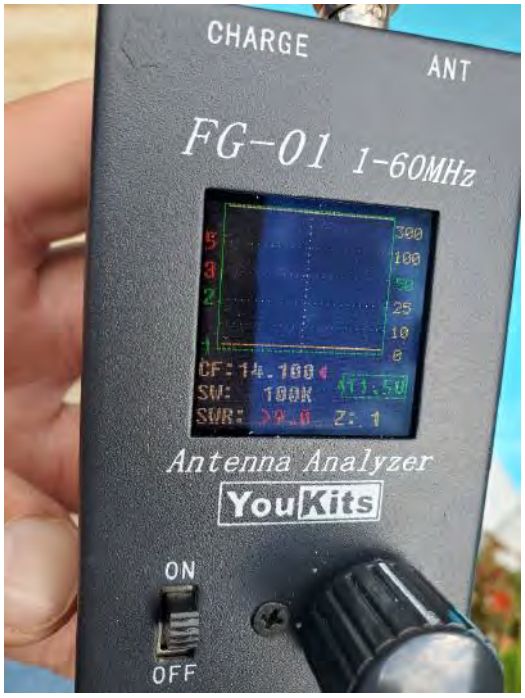
https://qrpguys.com/wp-content/uploads/2022/04/ds1_assy_041722.pdf
https://qrpguys.com/ds1-antenna

the set up
The antenna was on a patio table, mounted on a small tripod --- on a raised deck about 3ft off the ground with a 16ft counterpoise...

Here are my results for 20m and 40m...
see pics for SWR (using both coils at the same time !!). WOW

Funny thing, with the 20m coil only, I really had to shorten the whip... to get a 1:1 match
Changing the flat match frequency was seconds to do, raise or lower the telescopic antenna by inches... the bandwidth was pretty good...
I forgot to check the other bands ... I had it in my mind that it was just a dual band.
I do remember that it did match pretty well on 30m but didn't make any effort to improve that....

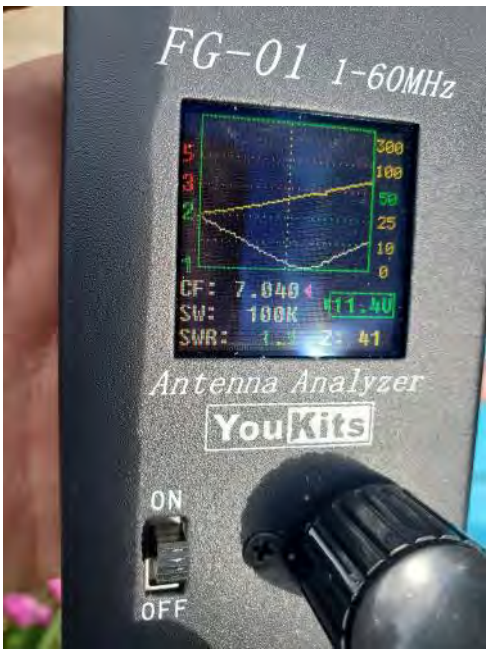
More time is needed to play around with the antenna...



Overall it was very easy to match .. **Very cheap and easy project to build at home.**

Next time I'll try the different bands and get it on the air !

73 Mike VE3MKX



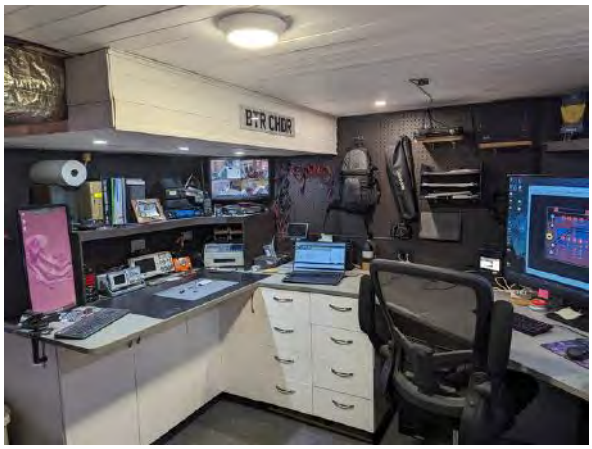
From the PAST

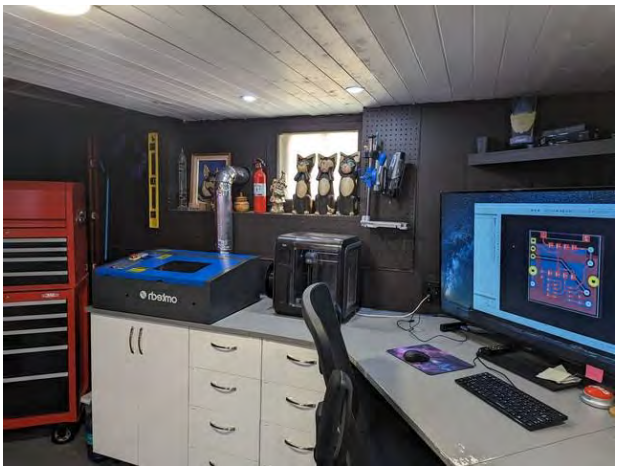
Commemoration of Marconi's first transatlantic communications from the Marconi Museum. Thanks to Dennis VE3UTN for sending this picture. See many more photos on page 10.

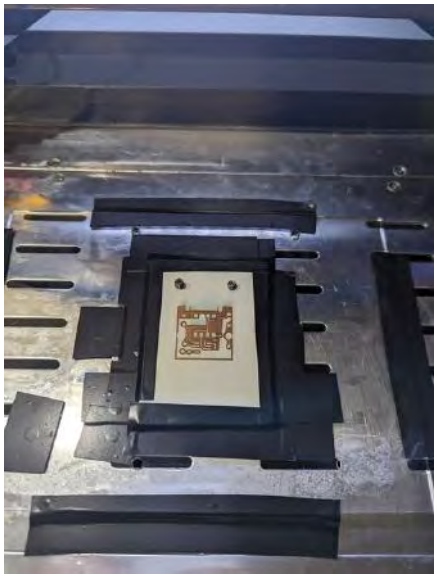
My little lab and making my own Printer Circuit Boards

By Hagen Kaye VE3QVY

I am an electronic enthusiast, so I thought I would post these pics, if anyone is interested. I have carved out a small space in the basement for my electronic lab (and soon Ham shack as well). Its modestly equipped with all the basics to build almost anything (at least almost anything I want to build). My latest venture is to make my own PCBs. The process is to spray paint both sides of a double sided board, use my 40W laser to burn off the paint to expose the copper, drop it in an etchant tank, spray paint it green to make it look nice, laser off the solder pads, tin it and then use a small CNC machine to drill the holes and cut it to size.

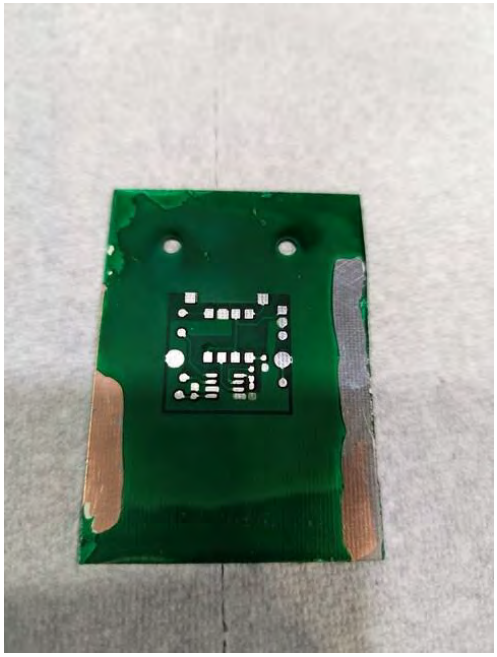




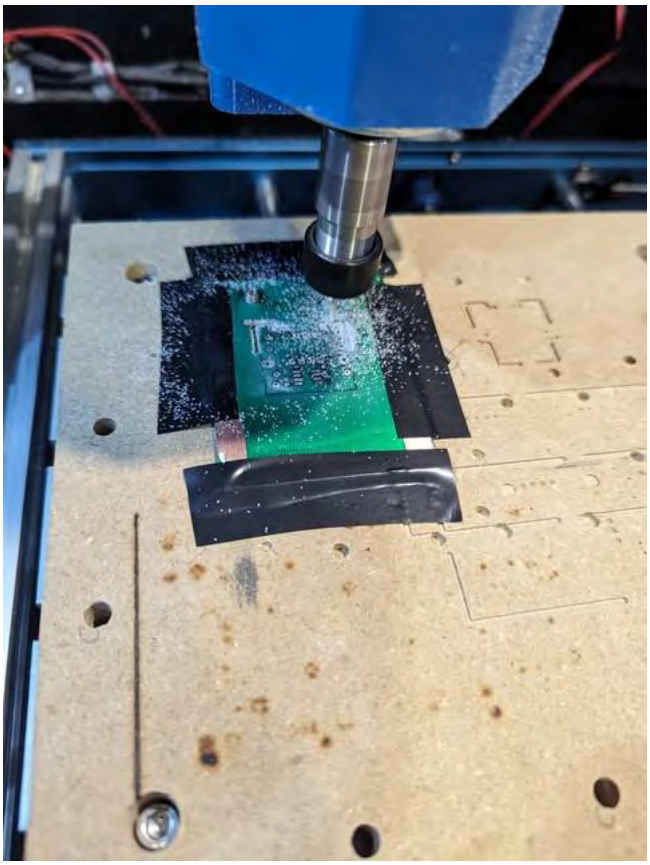


Here is the board on the laser machine, just finished burning the paint away to the expose copper I want to remove.

Etching the board (I use Ammonium Persulfate), this etches away the exposed copper, the remaining paint protects the copper underneath from the etchant.



Then I spray paint the board green, use the laser to etch away the solder areas and then tin the board



Drill the holes and cut out the board on a small CNC machine.

And this is the final product. Which by the way is a very tiny 433Mhz transmitter (I have the programmer hooked up to it in this photo to program the small microcontroller)

Hope your enjoyed this picture show. Its something I have been working on and trying to perfect the technique for the last 6 months.

August 12

HANOVER HAM HAUL 2023

The Hanover Ham Haul this morning was a huge success and a lot of fun!
Congratulations to Dave VE3EBM and his team on a well run event!
[The site] to view all my photos of the event and lunch afterwards is as follows:

https://photos.app.goo.gl/13ZqCCVkfjzr8fJZ7

73,
Kevin VA3RCA

Mike
VE3MKX

As always, Rob VE3PCP provided all the communication needs.

All Keyed Up by

Dan Romanchik, KB6NU

Random thoughts about operating Parks on the Air (POTA)

I have been having a lot of fun with Parks on the Air (POTA) activations this summer. As I've been operating, I've been jotting down some random thoughts. Here are a few of them:

- My operations are encouraging me to finally learn about antenna modeling. The reason for this is that I don't think that I'm doing as well as I should on 20 meters. I'm thinking that's because I'm using a 66-ft., i.e. a full-wave, doublet in an inverted-V configuration and that might have some weird antenna pattern. Perhaps if I modeled the antenna, and could get an idea of the pattern, I could orient it in some way that will give me better result. That, or just come up with some other 20-meter antenna.

It occurred to me after working a few slower-speed ops on my last activation that POTA is encouraging new hams to take up CW. It's a fixed format, so that makes the contact easier to make, most POTA contacts are relatively slow-speed contacts, and it's overall a pretty laid-back kind of thing. I got some confirmation of this feeling this morning in the Long Island CW Club mailing list digest. In his email, Jim, N3JLN, wrote:

> Made my first CW contact today! I was a POTA hunter. Thanks to activator N2VGA for putting up with my mistakes and ridiculously slow speed. With the POTA website I was able to predict what I should be hearing and eventually get to the point I could make out his callsign and the response I should be giving.

- This begs the question of what is the optimal speed for POTA contacts. I have been calling CQ at 17 or 18 wpm, then slowing down if need be. I think that works pretty well. Maybe I'll try calling CQ slower from time to time to see if that gets more people to call me.
- I'm thinking of making up a list of frequently-worked callsigns and names. That way I could personalize the contact a little. Several ops already do this, so I don't think i'm out in left field on this.

I worked my first POTA DX a couple of activations ago. 15 meters was open to Europe, and I had an Italian and a Swede call me. Both had strong signals. I didn't have quite so much luck on 15 meters last time, though.

- *I had some weird RFI when operating 20 meters last Friday. Somehow, something was getting into the little external speaker that I plug into the KX-3. When I unplugged the speaker and plugged in my headphones, the noise went away.*
- This last thought I'm not quite sure about. I'm thinking that one feature that the POTA folks might add to pota.app is messaging. It might be nice to message other folks that are logged into the website. As I say, I'm not 100% sure about this idea, though.

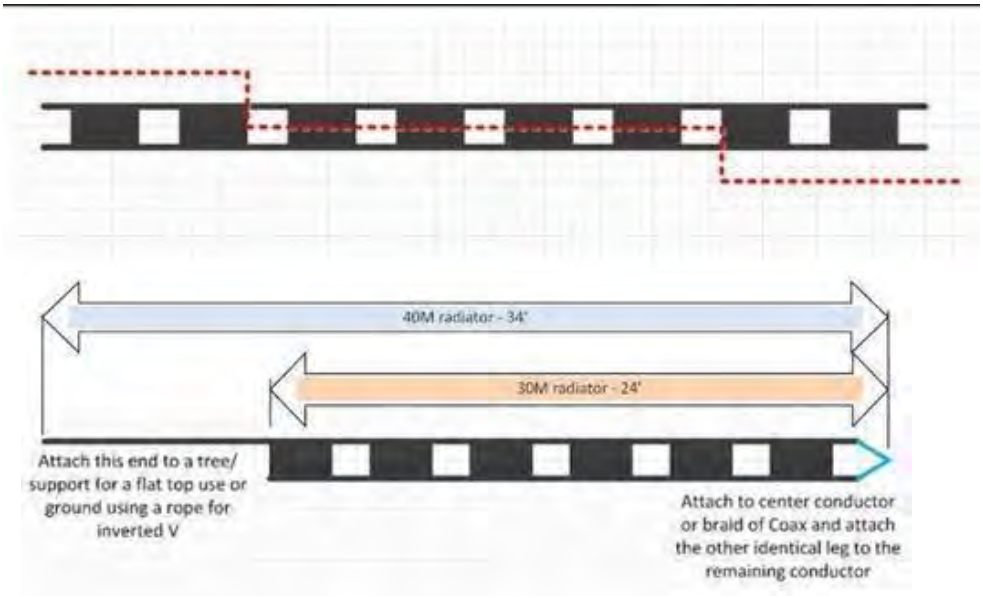
Please let me know what ideas you might have had while activating parks or hunting activators.

CORRESPONDANCE

Mike VE3MKX sent the following:

easy portable antenna project

A dual band HF wire antenna made from ladder line where you have one of the balanced wires for one band and another for a higher band below it. You measure from opposite ends and get the 2 wires of proper length. Similar to the images below. Then plug it right into the back of your open wire terminals of your tuner. try it... it works !



Dennis VE3UTN sent the following:

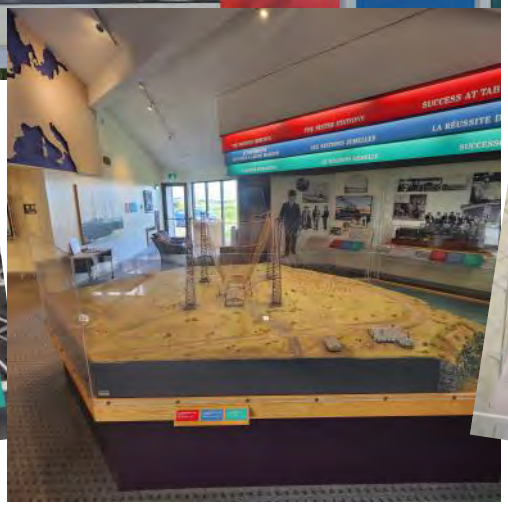
I'm in Nova Scotia right now, I went to the Marconi museum and took some pictures. [I am sending] some pictures your way.

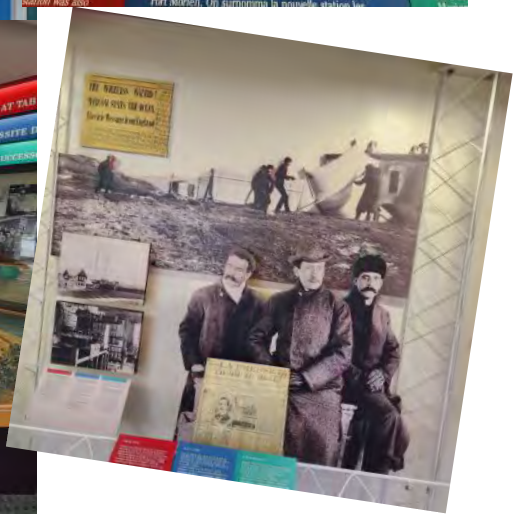

TRANSATLANTIC WIRELESS
T.S.F. TRANSATLANTIQUE
In 1901 Signor Guglielmo Marconi received the first trans-atlantic radio message at Signal Hill in St. John's. On 15 December, 1902, he sent the first West to East message from a new station at Table Head to Poldhu, Cornwall. The station was moved, in 1904, to Port Morien and linked by wireless with Clifden in Ireland. The Port Morien station was officially opened for public use on 17 October, 1907.
En 1901, Guglielmo Marconi recevait à Signal Hill, dans la ville de St-Jean (T.-N.), le premier message radio trans-atlantique. Le 15 décembre 1902, il envoya son premier message en sens inverse à Poldhu, Cornwall, d'un poste installé à Table Head. On transporta en 1904 le poste à Port Morien et le relia par T.S.F. à Clifden, en Irlande. Le poste de Port Morien fut officiellement ouvert au public le 17 octobre 1907.
Historic Sites and Monuments Board of Canada
Commission des lieux et monuments historiques du Canada


THE WIRELESS WIZARD!
MARCONI SPANS THE OCEAN.
Electric Message from England


VE1VAS


LES STATIONS JUMELLES



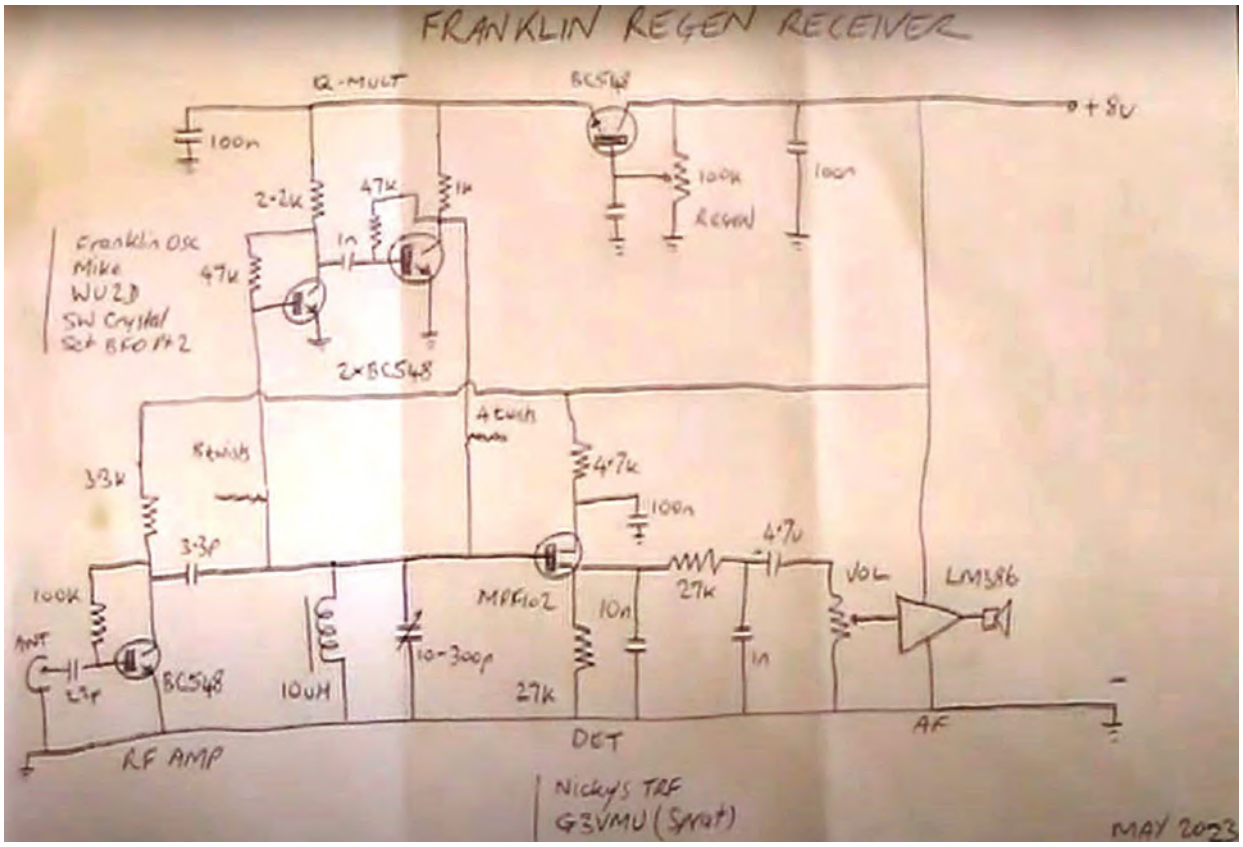


The Franklin oscillator and Multi Q circuits

by Daniel Romila VE7LCG

In this day and age, analog projects are something out of the past, but they are fun. So, I invite the reader to consider this article as an opportunity to recall circuit theory, to simulate your own circuits with only a few components, and to solder or make the breadboard schematics I propose. It is a fun activity.

I am not recommending actually building and soldering Q multiplier circuits for everyday use, but VK3YE did it (May 2023), and based a regenerative receiver on a Q Multiplier simple circuit with a Franklin oscillator. His 32 minutes video is at:
https://www.youtube.com/watch?v=8I0xQOIYcas

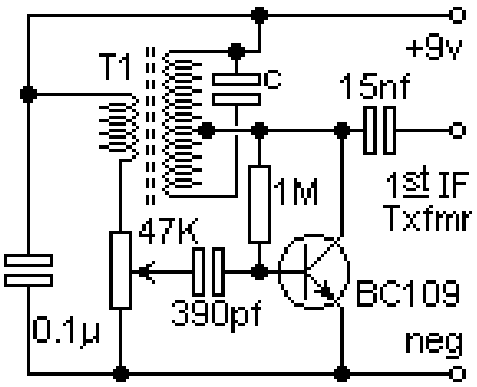


A Youtuber calling himself "Microwave1" also played with the above subject and the results can be seen in a series of three 25 minutes videos at:
https://www.youtube.com/watch?v=fRz9i3HFhAU

I am going to attempt an explanation of the above videos: the positive loop is not in the receiver's path – so one can ask "how is this a regenerative receiver?" – it is indeed a regenerative Rx because the Multi Q "sucks" out all the received frequencies except the wanted frequency.

I decided to design a computer simulation of a totally different Franklin oscillator than what the above two youtube content creators did, to recall some definitions and technicalities I that I knew a long time ago and had almost forgotten. I will give a summary of my re-diving into the Multi Q and Franklin oscillator schematics.

Q refers to the quality factor of a resonant LC circuit. It is possible to increase Q using an external oscillator – and one option for the oscillator is a Franklin type because it is easy to use



with an LC circuit already placed inside a receiver and does not require an external LC circuit. It is also possible to have no electric connection at all with the receiver, but than it is mandatory that the Multi Q contain an LC resonator circuit.

Simply explained, a Q multiplier circuit removes everything except the wanted frequency on which the Multi Q is tuned, and in this way the wanted frequency/signal is improved.

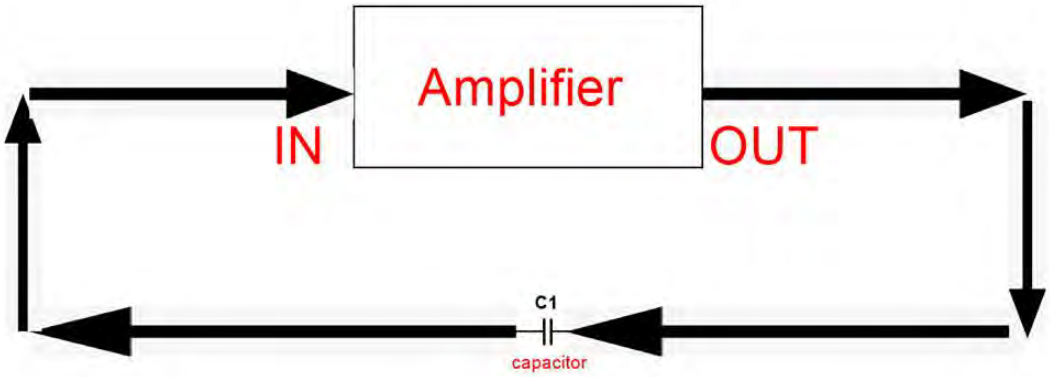
On the left one can see SM0VPO's proposed implementation, an oscillator (which happens to be Franklin type), which is adjustable to be under, on, or above the oscillation point. *"The circuit is basically an oscillator that does not quite oscillate, so when it is connected to the IF HOT end of the first IF transformer it will increase the Q-factor, thereby reducing the IF bandwidth considerably. It does this by cancelling the losses in the 1st IF transformer using gain from an additional transistor circuit* (from http://sm0vpo.altervista.org/use/qmult.htm Harry Lythall, SM0VPO)".

From Wikipedia: *"In electronics, a Q multiplier is a circuit added to a radio receiver to improve its selectivity and sensitivity. It is a regenerative amplifier adjusted to provide positive feedback within the receiver. This has the effect of narrowing the receiver's bandwidth, as if the Q factor of its tuned circuits had been increased. The Q multiplier was a common accessory in shortwave receivers of the vacuum tube era as either a factory installation or an add-on device. In use, the Q multiplier had to be adjusted to a point just short of oscillation to provide maximum sensitivity and rejection of interfering signals.*

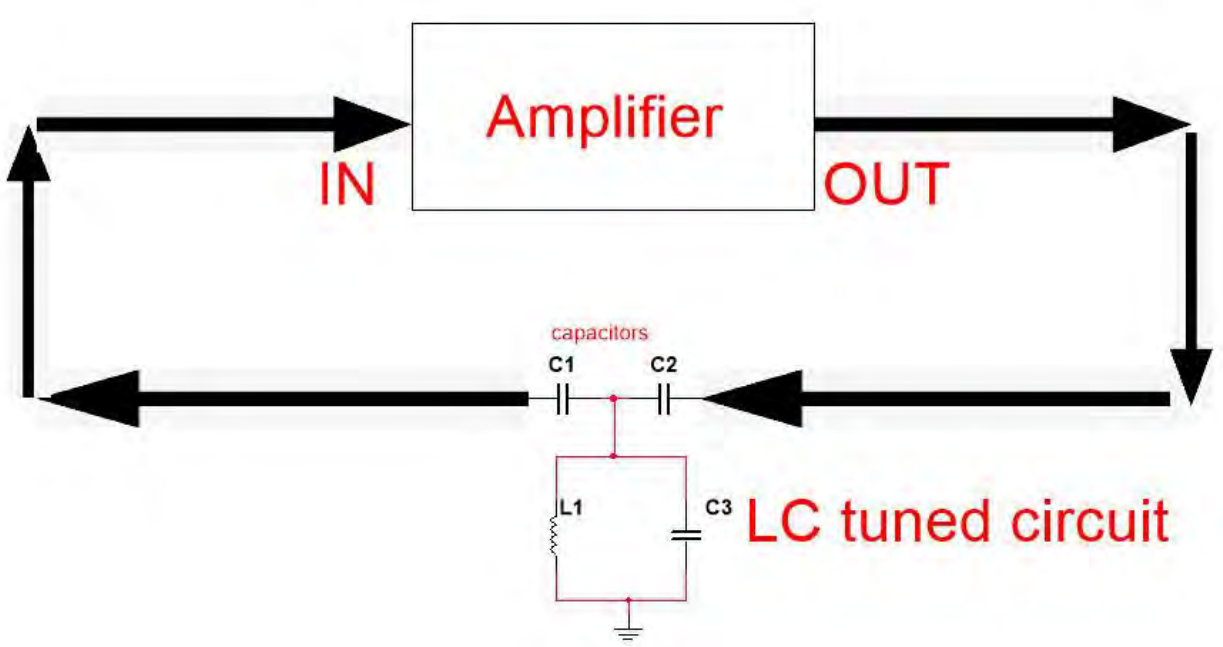
A Q multiplier could also be adjusted to act as a notch filter, useful for reducing the interfering effect of signals on frequencies near to the desired signal. In some receiver designs, the Q multiplier was made to also serve as a beat frequency oscillator by adjusting it to oscillate. This could be used for reception of single sideband or Morse radiotelegraphy, but in that case the circuit no longer provided improved selectivity.

The principle of regeneration applied to radio receivers was developed by Edwin Armstrong, who patented a regenerative receiver in 1914. At least one console-model broadcast superheterodyne receiver used positive feedback to improve selectivity in a 1926 design. Q-multipliers were common on shortwave general-coverage and communications receivers of the 1950s. With the advent of crystal and ceramic intermediate frequency filters, the Q-multiplier was no longer popular."

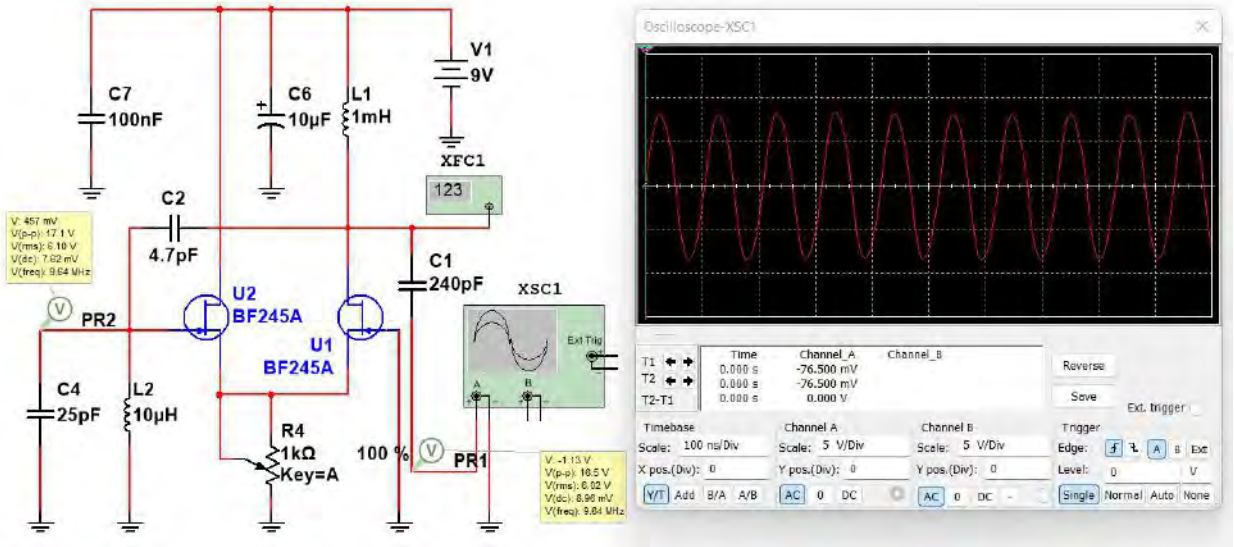
If one has an amplifier and connects a capacitor between the input and the output, one obtains an oscillator, if the IN and OUT are in phase and generate a positive reaction.



On which frequency will it oscillate? Most probably it will oscillate all over, so it is not very useful. The best would be to have a method to "drain all frequencies out of the positive loop IN-OUT except one frequency that we want. The following modified circuit I drew does exactly this:



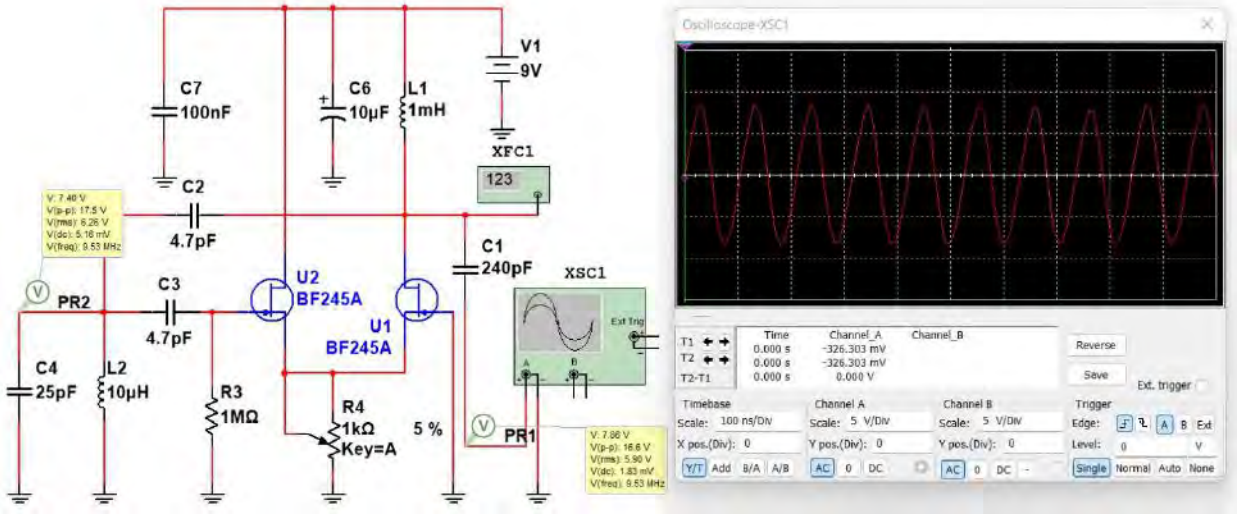
I tried several Franklyn oscillators on computer simulations. All of them worked, all of them are stable and with signal generated in the Volts range. I enjoyed playing with my own Franklin oscillator adaptation:



The grid of the left JFET transistor is connected in a positive loop with the drain of the right JFET through C2. I used a small value capacitor, just 4.7 pF. The frequency of the oscillation is dictated by L2 C4. Only the resonant frequency of L2 C4 is not short-circuited to the ground.

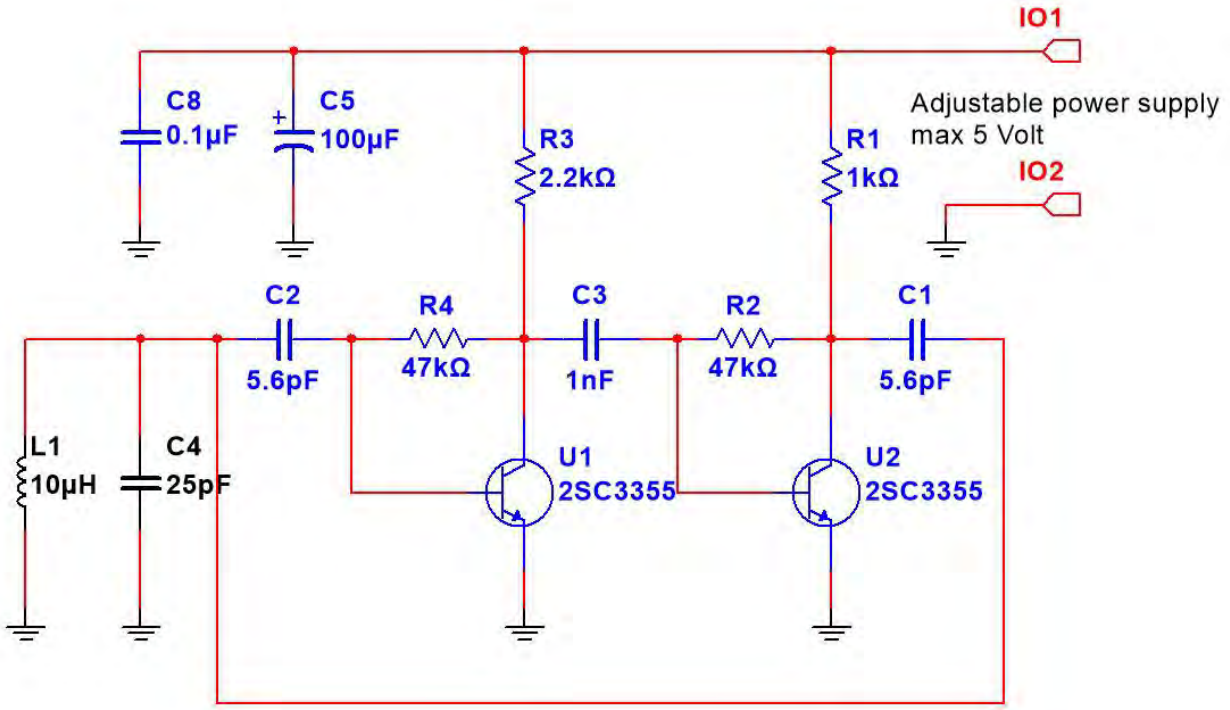
Note: If you try the above schematics on the breadboard, it might not work. The parasitic capacity of the breadboard might take the circuit out of oscilation, by entering in competition with C2 which is only 4.7 pF. It should work on any breadboard even with the values from the schematic, but one can safely increase C2 to 68 pF, in order to compensate the loses due to the unwanted large capacity of the breadboard. The strongest oscillation is obtained when the sources of the two JFET transistors are connected together, and with 1 kOhm (the maximum value of the R4 potentiometer) resistance to the ground. Those are just computer simulations. Practical schematics always require playing with the right amount of positive feedback.

A version of the previous schematic has the grid of the left FET transistor connected to the ground through a high value resistor. The resonant circuit C4L2 isolates DC from the oscillator itself with two capacitors of 4.7 pF capacity (C2 and C3). In this way it does not require a new LC resonant circuit for the Franklin oscillator/Multi Q, but can use the LC already existent in the receiver by just connecting to it through the two capacitors (C2 and C3). The multi Q effect is adjusted with R4 (1 KOhm).

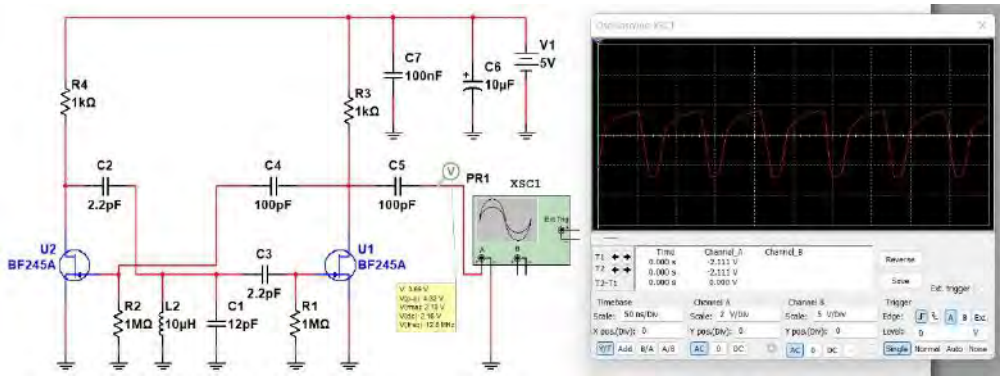


As with any positive reaction experiment, if done practically, the schematic should be adjusted for the positive loop feedback (oscillation threshold) with R4 and eventually by increasing C2 and C3 from 4.7 pF to 22-68 pF.

Since the two youtube video content creators (at the beginning of the article) used the same Franklin oscillator, but neither of them drew the schematics in a nice computer program, I re-drew the Franklin oscillator with two BJTs used by them:



The same note for this Franklin oscillator as for the one with the JFET requires one to play with the positive feedback. Your built would practically have different parasitic capacities, so do not expect to immediately replicate what the two youtube content creators did. You will need to adjust the values of C1 and C2.



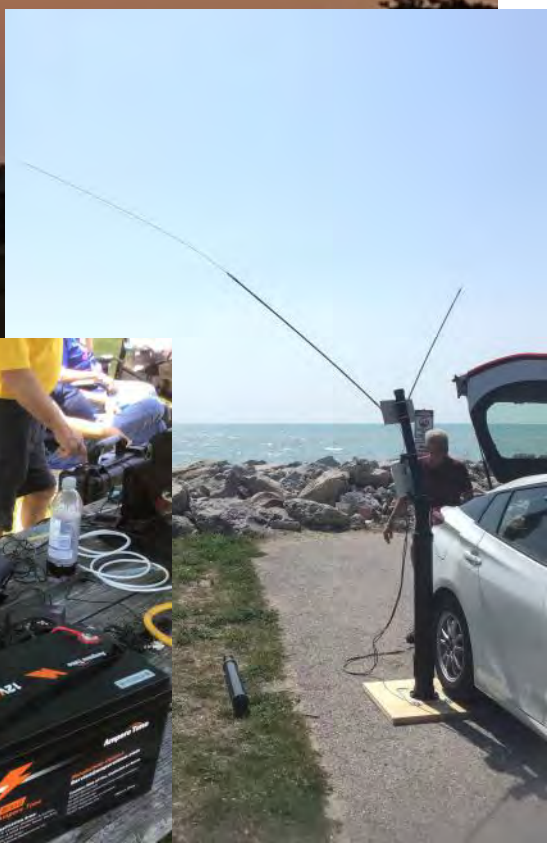
An interesting schematic, praised on the Internet as a good Franklin oscillator is made with two JFET transistors. It much resembles a multivibrator, and when I simulated the schematic, I could see on the virtual oscilloscope the generated signal is more rectangular than sine.

I hope this short article brought back memories of Q multiplier circuits, in which the Franklin oscillator was the main part. For those who are younger, this material might look like something new, but it is not.

Over the years I made several regenerative receivers. I tried several amplifiers with some regeneration (aka Multi Q) and my conclusion is that except for understanding the theory of how it works, it is obsolete in today's world. Today, using an inexpensive SDR dongle will do the same job. Using Multi Q circuits and – in general – any kind of regenerative receivers require a lot of patience, adjusting, re-adjusting and so on, for every single station.

2023 LIGHTHOUSE WEEKEND

POINT CLARK



The day began early, as indicated by Paul's (VA3PDC) picture of the beautiful sunrise. Frank VA3FJM had set up his trailer on Friday evening and his hamstick vertical is shown on page 1. Paul set up his dipole and as the morning progressed, there were additional antennas put up. Ted's (VE3TRQ) vertical is shown on the left and Hagen VE3QVY displays his antenna supported by the weight of his car on the right. In the centre Rick VE3IMG spent the greater part of the morning running cw.

As well as activating the Point Clark lighthouse, Paul had wanted to activate the National Park on P.O.T.A. as well. He began the POTA contacts first and after logging a significant number he switched over to making contacts for the lighthouse (#CA0011).


Hagen's VE3QVY station


Ted's VE3TRQ Go-Box


Paul VA3PDC running his station as Frank VA3FJM looks on.


Frank's VA3FJM Set-up.

While the ERC club members had to fight with band conditions that were not the best, and also had to compete with another contest that paralleled the Lighthouse weekend, there were a fair number of contacts made.


Bill VA3QB controlling his drone.

Ted VE3TRQ and Sandy

Tom VE3DXQ and Barb

Rob VE3PCP and Paul VA3PDC

Barry VE3ISX

There was great camaraderie.

Hagen VE3QVY

The Ladies also enjoyed themselves. Pictured are Ginny, Linda VE3CZ and Sandy.

Dinner at Boston Pizza brought a full day to a perfect end.