Flying Pigs QRP Club
Bacon Bits Quarterly

Flying Pigs QRP Club International, W8PIG
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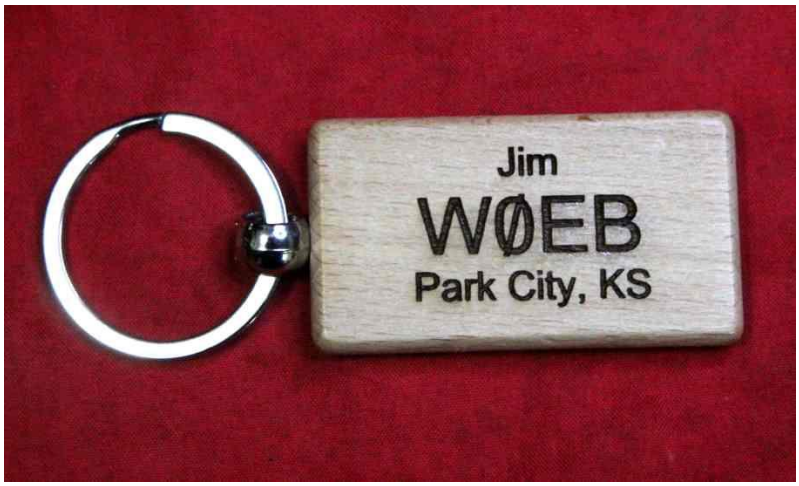
E-mail: n8ie@n8ie.com Web Page: https://fpqrp.org/

FPQRP membership is open to all licensed QRP operators who reside within 12,000 nautical miles of Cincinnati, Ohio.



January 2025

From the Editor

Welcome to the January 2025 issue of the ***Bacon Bits Quarterly Newsletter***!

It is 8 Degrees Fahrenheit outside today and as I stare out my shack window I sure am glad that I did some antenna maintenance last Fall. As I write the BBQ with a cup of warm coffee, I am also thinking of all the radio projects that I would like to get done. There are too many projects and not enough time unless I prioritize.

Here in Southern Ohio, Pike County, where I live we had our first real snow about one week ago. Today I am reminded of Winter Field Day 2025.

https://winterfieldday.org/

Winter Field Day will be here before we know it, so now is a good time to prepare if you want to participate.

I am requesting your input for the next issue of the BBQ. As you think about your radio projects, please consider sharing with the rest of us what you are up to!
Your articles can be about outings you've had, projects you're working on, antennas are always a great topic, SOTA/POTA/WWFF adventures, just about anything amateur radio related with a slant toward QRP. The due date for your articles is April 7, 2025. Please send your contributions in the following formats if possible: .doc, .pdf, .jpg, .txt, or .odt.

Send your contributions to me, the editor@fpqrp.org

I look forward to receiving your articles and thanks for your support!

73,
O. Alan Jones
N8WQ
FP#-4371

Cover Photo Spotlight

Jim Sheldon, W0EB provided the cover photo for this month's issue of the BBQ.

Flying Pig T-Shirt or Hoodie

Ok everyone….if you want a T-Shirt or a Hoodie…this is the place.

Order online, pay online, send nothing to me….

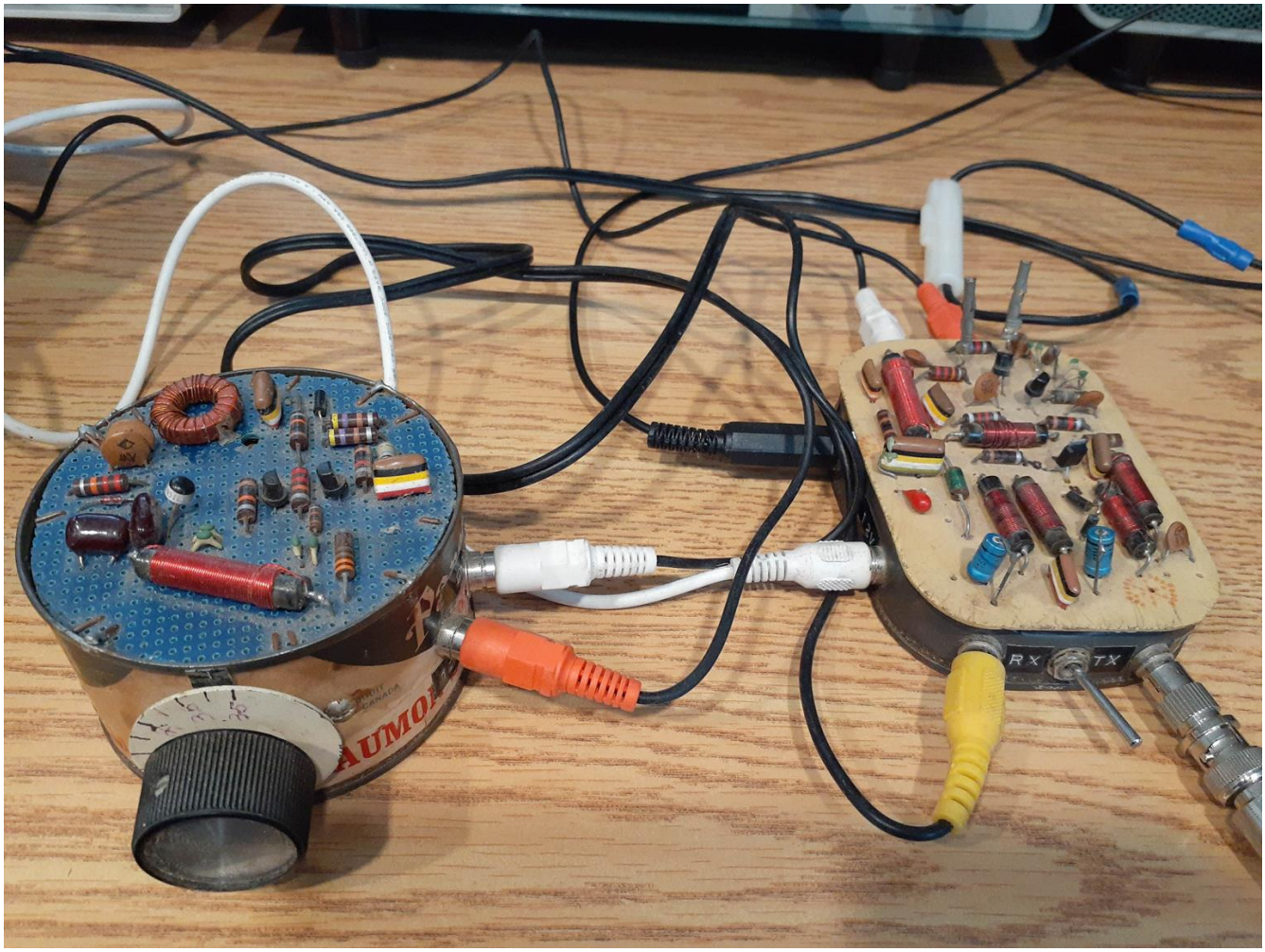
https://ourladysmantleshop.com/collections/flying-pig-shirts

They have agreed to do onesie orders for us, and not charge us for a bulk printing. The Logo is something that N8IE cooked up for us back in the early days, so it is vintage.

72 es OO
de KB9BVN

BLAST FROM THE PAST VINTAGE QRP STATION

The October 1978 issue of QST had a construction article for an 80 meter QRP rig. It was solid state and you could get all the parts from Radio Shack, in those days, except for the chassis, which was a sardine can. I built it and had a lot of fun with it. I worked 15 states and 3 provinces from VE3 with it. I built a vfo for it on a salmon can in keeping with the theme and then built a DC receiver to complete the station. I just pulled it out recently and put it on the air and made a contact about 100 miles away in the middle of the day.



A copy of the original article for the sardine sender can be found here:

https://www.worldradiohistory.com/Archive-DX/QST/60s/QST-1978-10.pdf

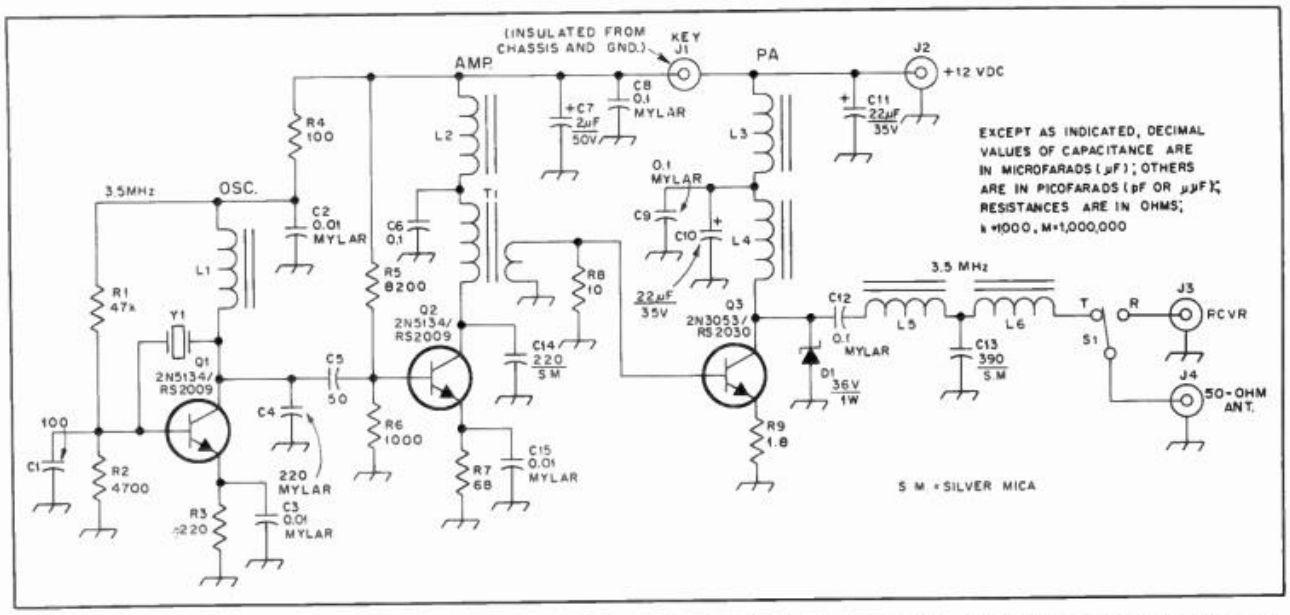


Fig. 50 — Schematic diagram of the Sardine Sender. Capacitors are disk ceramic unless otherwise noted. Resistors are 1/2-watt composition. Numbered components not appearing in the parts list are identified numerically for parts-placement information only. Polarized capacitors are electrolytic.

D1 — Zener diode, 36 V, 1 W.
J1-J4, incl. — Single-hole mount phone jack.
L1 — 100-μH choke, Radio Shack 273-102.
L2-L4, incl. — 10-μH choke, Radio Shack 273-101.
L5 — 12-μH inductor, Radio Shack 273-101 with 4 turns no. 26 enam. wire added.
L6 — 8.9-μH inductor, Radio Shack 273-101 with 3 turns removed.
T1 — Broadband transformer, Radio Shack 273-101 for primary, with 5-turn secondary of no. 26 enam. wire over C6 end of primary.
S1 — Miniature spdt toggle or slide switch.
Y1 — 80-meter fundamental type of crystal.

I expect it would be easy to replace the fixed inductors with toroids.

A copy of the sardine sender schematic can be found on page 177 of this link:

https://www.worldradiohistory.com/BOOKSHELF-ARH/Technology/ARRL/The-Radio-Amateur's-Handbook-ARRL-1979-56th.pdf

The vfo is built onto a perf board and mounted on a salmon can to keep with the theme.

Hints and Kinks

Conducted By Stuart Leland,* W1JEC

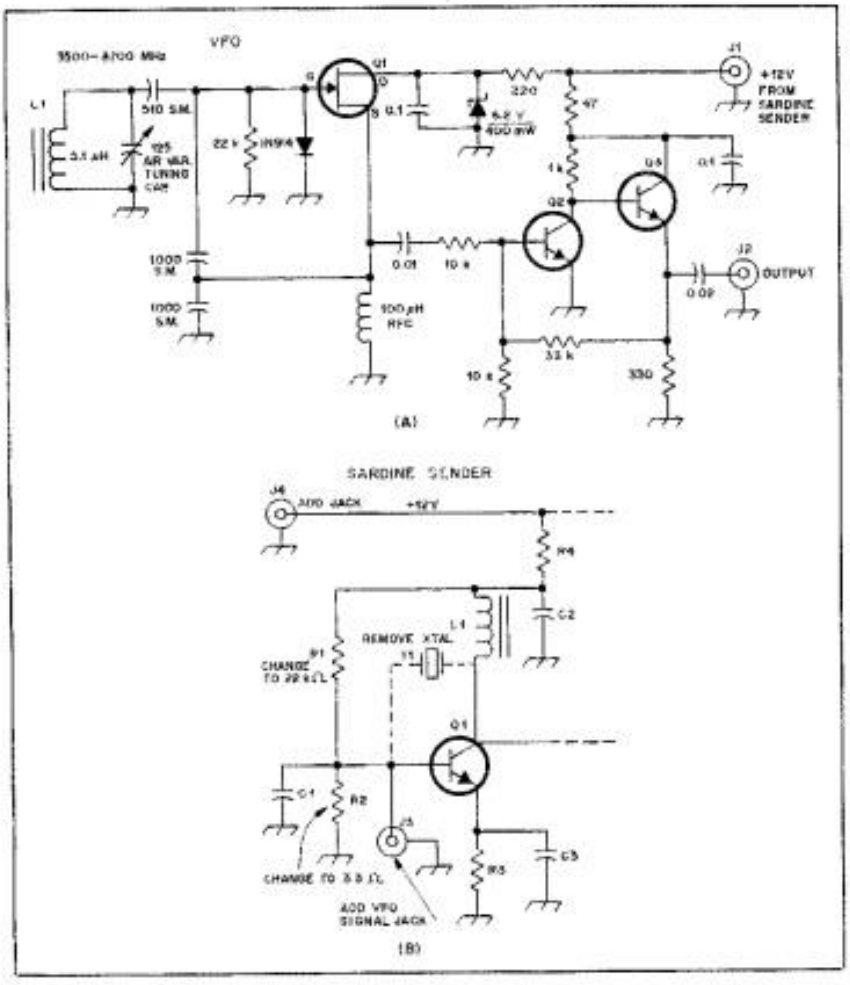
AN 80-METER VFO FOR THE SARDINE SENDER

When I received my October 1978 *QST*, the picture of the Sardine Sender caught my eye. After reading the article I decided to give it a whirl. A few days later, with a dummy load and a borrowed crystal, I gave the little rig the smoke test. To my surprise, it worked fine. It provided a half-watt of output. I was rewarded with an even greater surprise when VE3HKJ in Flora, ON, came back to me with a 589 report.

The restriction of crystal control led me to constructing the VFO described in the ARRL publication *Solid State Design for the Radio Amateur*. Components are mounted on a piece of perforated board and housed in a salmon can (Should we now call this the "Salmon Solid Sender"?). When I first coupled the VFO to the Sardine Sender, the transmitter produced only 1/4 watt of output. To obtain more power from the Sardine Sender, I changed R1 from 47 kΩ to 22 kΩ and R3 from 220 ohms to just 3.3 ohms. These modifications, which change the first stage biasing, do not affect operation when using a crystal. I key the power to the VFO. There is no evidence of chirp or instability. I do notice that if the VFO is placed close to the transmitter, rf gets into the VFO, resulting in a raspy sounding cw note. Putting a top cover over the VFO, or placing the units a foot apart, solves the problem.

To date, I've worked 15 states and three provinces with QSLs received from most of the stations. The total investment in the Sardine Sender and VFO is $12. Not included is the price of the sardines and the luxurious salmon. After all shouldn't those be charged to the XYL's food budget? — *D. Richards, VE3IDS, Hepworth, ON*

*Assistant Technical Editor, *QST*



The popular Sardine Sender (October 1978 QST) is no longer "rock bound," with the addition of this VFO. The configuration is taken from the ARRL publication *Solid State Design for the Radio Amateur*. Interconnection of the VFO and the Sardine Sender is accomplished by means of two short lengths of RG-174/U cable, or equivalent, with appropriate connectors for mating with coaxial jacks J1 through J4. J1 is connected to J4 and J2 to J3. Do not confuse these *new* jacks with those shown in the original Sardine Sender diagram (October 1978 *QST*). Resistances are in ohms. Capacitances are in picofarads except for decimal values which are in microfarads.
L1 — Type T-68-2 toroid core wound with 30 turns of no. 22 enameled wire.
Q1 — Motorola MPF102 JFET or equiv.
Q2, Q3 — Type 2N2222 general-purpose transistor or equiv.

MOBILE CW AT 25 WPM

Mobile cw at 25 wpm or more is easy when the keyer is built so that the paddle extends vertically from the far end of the chassis-box surface. In this way, the heel of the keying hand, resting on the box, and the fingers that move the paddle remain in the same position relative to each other regardless of the tilt or slope of the surface or the stability of the support.

In practice, the keyer chassis box may be placed on a knee or on the resilient surface of a bench-type auto seat. The keyer, after a little use, is soon operated with precision at a good clip.

The pictured unit uses a paddle made of 1/8-inch (3-mm) Plexiglas. Width of the paddle is 5/8 inch (16 mm) and the length is 3-3/4 inches (95 mm). Two inches (51 mm) extend above the box surface. This length permits moving the keying thumb and fingers up and down the paddle and opposite or not, as desired, to achieve the most comfortable feel for keying by varying opposing pressures on the paddle and amount of travel for those digits. The bottom end of the paddle is drilled and twisted 90 degrees under soldering-iron heat so that it may be mounted and swiveled on the axis of a 2-inch (51-mm) 10-24 machine screw mounted rigidly inside the box. Contacts for both dits and dahs are common, small microswitches that are mounted carefully on the underside of the box surface at the sides of the hole through which the paddle passes. Several mountings, made from furniture-type brass angle brackets (1-1/2-inch or 38-mm size) are used to mount the interior components of the keyer. These brackets may be soldered using a technique for soldering to aluminum, or they may be secured to the chassis with the aid of a glue gun and thermal gluing sticks.

Any of a variety of electronic-keyer circuits may be used for such a keyer. The useful "kink" is the paddle positioning in construction. In operation, this prototype keyer performs in a manner comparable to the "Bug." It provides automatic dits and solid-keyed dahs. A 555 IC timer serves as the dit generator while another 555 af tone generator operates as the keying monitor. Both are based on designs in "Simple Electronic Keyers," *Ham Radio* magazine for March 1973, page 38. Controls for varying the dit speed and for adjustment of audio volume (a means of minimizing battery drain) are visible on the box surface as is the

A Simple Receiver for Beginners

Good results are obtainable with the basic direct-conversion receiver presented here. The circuit is without frills, making it easy to construct and operate. Information is given for operation on 80 or 40 meters, with only four transistors, one IC and three diodes. No attempt has been made to provide cw selectivity, but reception of cw and ssb signals is entirely adequate for this first effort at receiver building.

The circuit of Fig. 50 is designed for headphone output. The overall receiver sensitivity is suitable for comfortable reception of even the weaker signals when a resonant antenna is used. The front-end filter, L1/L2/C1/C2/C3, is designed to work into a 50-ohm antenna. This network is fixed tuned, so it does not have to be adjusted across the tuning range once it has been preset for midrange in the coverage of the main-tuning dial. If a 50-ohm antenna is not available, the user can install a small antenna-matching circuit between the receiver and the antenna system (a small Transmatch) to provide the proper termination for FL1. A rough approximation of the proper settings for the tuner can be found by

Fig. 49 — Front view of the beginners receiver. The panels are made from double-sided pc board material.

The receiver is a direct conversion 80 meter and drives regular headphones. It is in the ARRL 1979 The Radio Amateur's Handbook chapter 8 page 28.

The ARRL 1979 The Radio Amateur's Handbook can be downloaded from here:

https://www.worldradiohistory.com/BOOKSHELF-ARH/Technology/ARRL/The-Radio-Amateur's-Handbook-ARRL-1979-56th.pdf

It was a fun project in the late seventies and hopefully it might inspire some more building within the group. Simple projects like these can bring lots of enjoyment.

73, OO

Don ve3ids

Editor's Note:

Good job on your rig Don!
I hope you don't mind me including these two documents in addition to your article.

Sardine Sender Updated

The Sardine Sender was a popular homebrew QRP rig published in QST October 1978 by Doug DeMaw W1FB. The name came from the use of a sardine tine as the chassis base for the rig. The connectors were mounted on the side walls of the sardine tin with the circuit board on top. The parts were mainly from Radio Shack which we know as Tandy.

An updated version appeared in QST November 2001 from Erik Westgard NY9D. The parts are mostly still available. The crystal used was a 3.579545 MHz colour burst crystal but other crystals can be used.

The main difficulty which had to be overcome was a source of suitable RFCs. This was overcome by modifying Radio Shack 100 microhenry chokes part number 273-102 to provide the required inductors.

The circuit board looks like a perforated prototype board but strip board or plain perforated board could be used. The size is set by the size of the sardine tin mounting base.

The circuit is given in Fig 3. There are relatively few critical components and most were sourced from Radio Shack or Tandy. Some small parts such as resistors and capacitors came from miscellaneous grab bag assortments sold by Tandy. All picofarad value capacitors should be NPO ceramic for preference. The higher value capacitors other than electrolytics could be monolithic ceramic types.

The 2N3053 transistor should be fitted with a heat sink.

The coil data is given in Table 1. All coils are based on a 100 microhenry RFC Radio Shack (Tandy) part number 273-102.

Table 1. Coil Data Using Radio Shack 273-102 100 microhenry RFCs.

L1	100 microhenry unmodified RFC
L2 - L4	10 microhenry choke. Unwind to 15 turns close wound near the centre of the choke.
L5	12 microhenry choke. Unwind all but 16 turns. Gives 11.8 microhenry.
L6	8.9 microhenry choke. Unwind all but 14 turns for 8.9 microhenry.
T1	Broadband impedance matching transformer. Unwind to 15 turns to give 10.6 microhenry. Save wire and use it to over wind a 2 turn secondary winding.

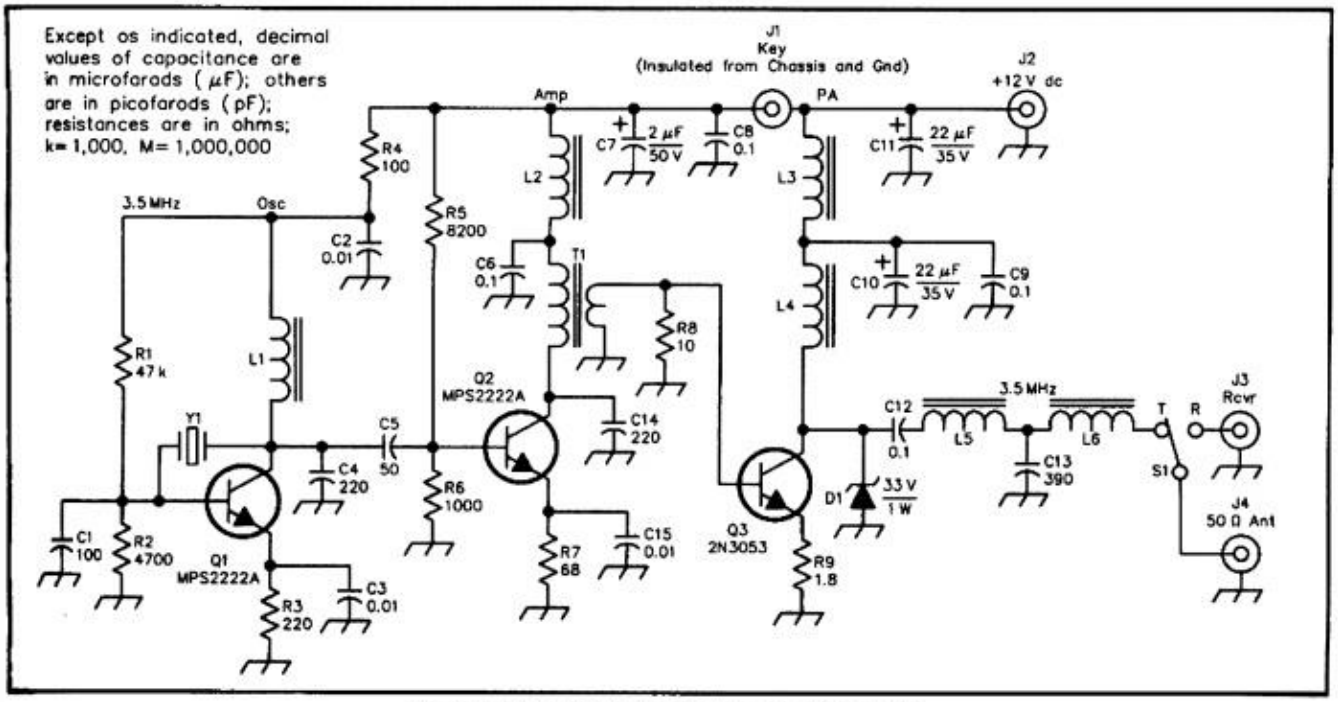


Fig 3. Updated W1FB Sardine Sender Transmitter.

By Erik Westgard, NY9D

Updating the W1FB 80-Meter "Sardine Sender"

Ingenuity is still the mother of invention. Follow this tale of determination and use NY9D's results to build your own 80-meter QRP transmitter.

Not long after acquiring a nice stock of RF parts from some old VCRs and television sets, I started wondering if it was possible to build a QRP (low power) rig with the parts they could provide, and possibly a few from the nearest RadioShack store. Each TV and VCR you take apart will reward you with transistors, capacitors, RF chokes and a color-burst crystal, which is in the 80-meter CW band. With that crystal and a common 2N2222 transistor you can build an oscillator. The difficulty lies in adding a power amplifier to that tiny transmitter so you can make some headway on 80 meters, which is not an easy place for milliwatt power.

In many published RF amplifier designs that use bipolar transistors, you have to contend with the impedance mismatch between oscillator outputs and RF amplifier inputs. In QRP construction books, there are schematics for transmitters with broadband matching transformers. Depending on the band, you can take the right toroid core, wind the correct number of turns for the primary, and use the square of the turns for calculating the impedance of the secondary.

A Toroid Alternative?

Would it be possible to accomplish the matching without a toroid? (Bear in mind that I wanted to keep the entire project as simple as possible without resorting to mail-order shopping.) I recalled that the classic 40-meter Tuna Tin 2 by Doug DeMaw, W1FB, worked its impedance-matching magic with 10-µH RF chokes. I soon discovered, however, that RadioShack no longer carried 10-µH chokes. These chokes weren't available in my VCR/TV scavenger assortment, either. Scaling Doug's design for 80 meters looked complicated as well.

Some more digging in my article archives revealed the 80-meter W1FB Sardine Sender transmitter (see Figure 1). This was exactly what I needed. All of the parts came from RadioShack, except the all-important 10-µH chokes, which were also used for the broadband transformer. Back to the books this time. How to adapt the currently available 100 µH Radio Shack 276-102 choke to be the broadband transformer?

There is a lot buried in the W1FB books the League publishes. In the original 1986 *QRP Notebook* (now out of print) there is a good discussion of broadband transformers and how to use the "A_L factor" to wind toroids. With that information

and the permeability factor, you can calculate the right number of turns for a given inductance. There was no mention of how to do to this with rods instead of toroids, or what to do without the A_L factor.

An e-mail response from Radioshack.com provided the permeability (220) for the core used in the 100 µH RadioShack 276-102 choke. No A_L was available. A helpful break occurred at the Midwinter Madness Hamfest in St Paul, Minnesota. One of the vendors was selling a Doug DeMaw book I had not seen before—*Ferromagnetic Core Design and Application Handbook* published by MFJ. On page 42 there was a critical bit of information: "It is difficult if not impossible to construct a set of A_L factors for rods and bars." This is because the location of windings on the bar or rod and the spacing of the turns had a big impact on the inductance. The identical number of turns spaced differently or on a different place on the rod, say at the end, might cause the inductance to change.

Doug provided, as usual, a hint for getting out of the dilemma. In a November 1974 *QST* article on building a 160-meter transmitter, he says it is okay to experiment your way out of design problems you can't solve by mathematics and theory, using "empirical effort," as he called it. So how do you measure inductance down to at least one decimal place?

I thought the answer could be found with an old Heathkit

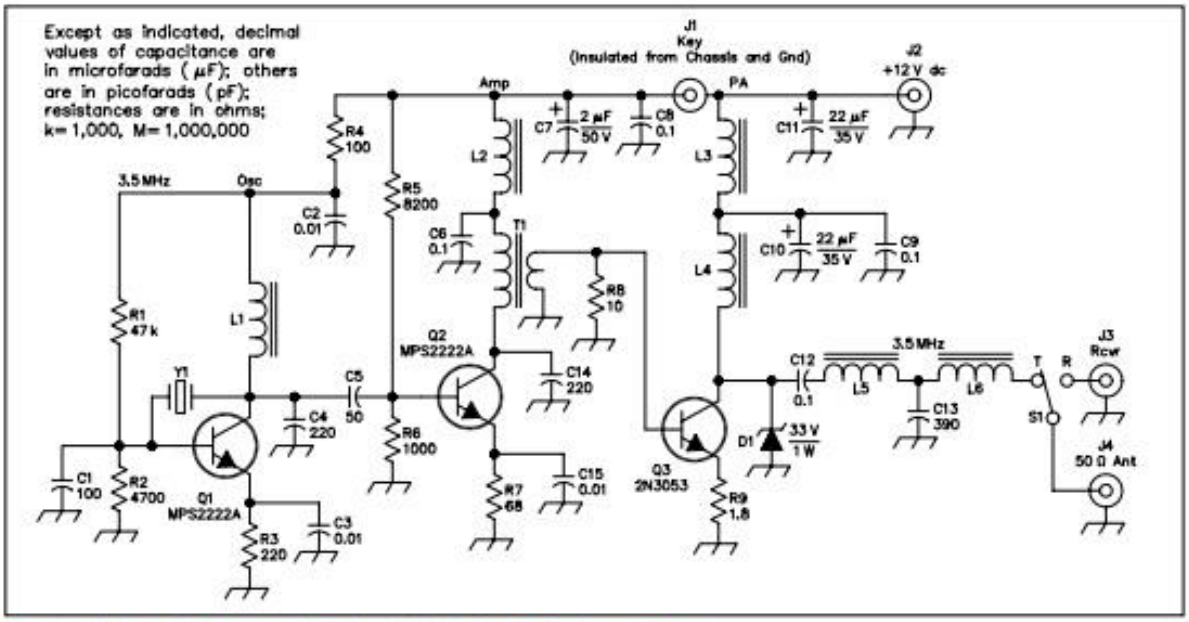


Figure 1—Schematic diagram of the updated W1FB Sardine Sender transmitter.

C1—100 pF ceramic.
C2, C3, C15—0.01 μF ceramic.
C4—220 pF ceramic.
C5—50 pF ceramic.
C6, C8, C9, C12—0.1 pF ceramic.
C7—2 μF electrolytic, 50 V.
C10, C11—22 μF electrolytic, 35 V.
C13—390 pF ceramic.
C14—220 pF ceramic.
D1—33-V, 1-W zener diode.
J1-4—Single-hole phono jacks.
L1—100-μH choke (RadioShack 273-102).
L2-L4—10-μH choke. Unwind the RadioShack 273-102 to 15 turns close-wound near the center of the choke for about 10.6 μH. Or use some 10-μH chokes (brown/black dots with black on the side) from an old TV or VCR.
L5—12-μH choke. Unwind all but 16 turns from a RadioShack 273-102 choke for 11.8 μH.
L6—8.9 μH choke. Unwind all but 14 turns from a RadioShack 273-102 choke for 8.9 μH.
Q1, Q2—MPS2222A transistors.
Q3—2N3053 transistor, heat sinked.
R1—47 kΩ.
R2—4.7 kΩ.
R3—220 Ω.
R4—100 Ω.
R5—8.2 kΩ.
R6—1 kΩ.
R7—68 Ω.
R8—10 Ω.
R9—1.8 Ω.
S1—SPDT toggle switch.
T1—Broadband impedance-matching transformer. See Figure 2 and caption.
Y1—Color burst crystal, 3.579545 MHz, or other 80-meter frequency of your choice.

IB-5281 impedance bridge that I picked up for $20 at an earlier hamfest. However, this one only provided a rough guess at the inductance of the RadioShack choke as I removed the windings. I tried for a few minutes to calculate how many turns I would need, but gave up. My saving grace appeared in the latest Ramsey Electronics catalog. That's where I found a new gadget—the $99 DMM 240 LCR meter, which could measure inductance down into the microhenry range. Sure, you can get multimeters that measure capacitance and inductance, but you need the smallest possible range for QRP designs where coils and chokes had microhenry values. The DMM 240 fit the bill.

Doug thoughtfully provided the μH values for most of the coils and windings in the Sardine Sender. I just took a stock of 100-μH RadioShack chokes and started unwinding and measuring. Once I reached my target, I scraped and soldered the wire end back on and I was done. The broadband transformer is shown in Figure 2. The test leads cause the readings to be a little high, but you can use the contact set on the body of the meter for greater accuracy.

The Sardine Sender Lives Again

The rest was pretty easy. I used a RadioShack universal board, which is a little larger than a sardine can. I saved board space by using some 10- and 100-μH chokes from scrap VCRs. I was a little nervous about the 10-μH VCR chokes—they were tiny and used fine wire.

For the first time I took the often-given kit-building advice and tried the oscillator stage first—it was fine. The big test was the transformer, output stage and filter coils. These were fine, too, but the resulting signal sounded grungy on my receiver. The power output was right on—slightly more than 1 W. I did some poking around, and shortened up some connections. On a hunch I tried my larger station power supply; the grunge was gone!

Figure 2—A close-up view of T1, the broadband transformer. I created my version by using a RadioShack 273-102 choke, unwound to 15 turns (10.6 μH) for the primary. Save the wire! The secondary windings consist of two turns of the removed wire.

The RadioShack disk capacitor assortment (272-809) is a useful resource. You can make up odd values by putting capacitors in series or parallel, such as the 390 pF made from a 56 pF and a 330 pF in parallel. Almost all the resistors are in stock, and you can make a 1.8-Ω out of two 1-Ω parts in series. I used mostly ¼-W resistors throughout, but don't substitute wirewound resistors as these are made from wire coils, which are inductive.

Conclusion

So there you have it—a classic updated, with all parts still available from RadioShack. It is interesting to note that RadioShack is still stocking the 2N3053 RF transistor after all these years. My only caveat concerns color-burst crystals. Beware of poor quality units. In fact, it may be best to order a crystal for popular 80-meter CW frequencies. I had trouble finding many stations active on 3.579545 MHz.

Above all, enjoy!

References

DeMaw, Doug, *QRP Notebook*, ARRL, First Edition, 1986. (Out of print)

DeMaw, Doug, "Build This Sardine Sender," *QST*, October 1978.

DeMaw, Doug, *Ferromagnetic Core Design and Application Handbook*, MFJ Publishing, Starkville, MS

DeMaw, Doug, "More Basics on Solid-State Transmitter Design," *QST*, November 1974.

DeMaw, Doug, *W1FB's QRP Notebook*, ARRL, second edition, 1999.

Ramsey Electronics, 793 Canning Parkway, Victor, NY 14564; 716-924-4560; www.ramseyelectronics.com/.

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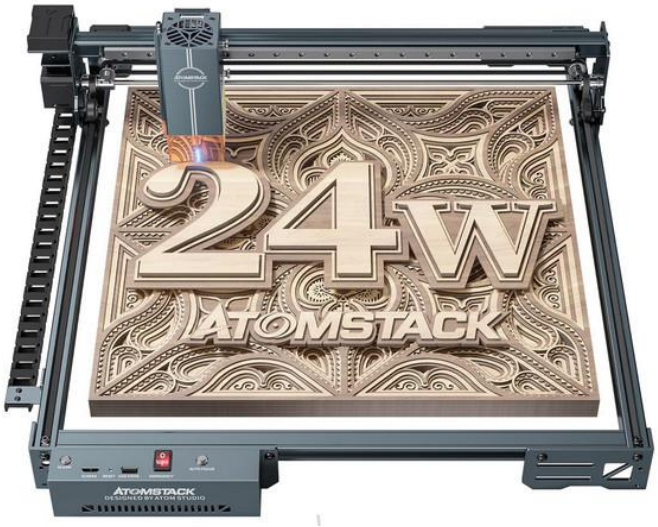
Laser Engraving/Cutting as applied to Amateur Radio

by: Jim Sheldon, W0EB

Ham radio operators have many associated hobbies as well as radio/electronics that they use to enhance their station's appearance. This article will touch on one of them, Laser Engraving/Cutting.
Laser engraving and cutting machines are currently ranging in price from around $200 to well into the thousands of dollars. There are a number of them that have dropped into the $200-$500 range, which may well fit into the budget of some of you that don't already have one.

The one I am basing this article is on is made by the Atomstack group (Chinese, but what isn't these days) . Their Model A20 Pro sports an actual 20-watt diode laser. By the way, if you are searching for a laser, don't be fooled by some of the advertisements indicating into the hundreds of watts for the power rating. That is oftentimes the overall power consumption of the machine when it's operating and it may only have a 5 – 10-watt laser, not 120-130 watts as advertised, though the overall power used is between 120 to 130 watts.
I was lucky in that I found a sale on the A20 a couple years ago for $399 and it came with a REAL 20-watt diode laser. I am able to engrave just about any image I like onto things like wood, acrylic, even anodized aluminum. 20 watts won't cut most metals, but will cut wood up to roughly 3/8 of an inch thick but this DOES depend on the material as some woods are harder than others. My rule of thumb for my own machine is don't try to cut anything thicker than a quarter inch and I haven't been disappointed yet.

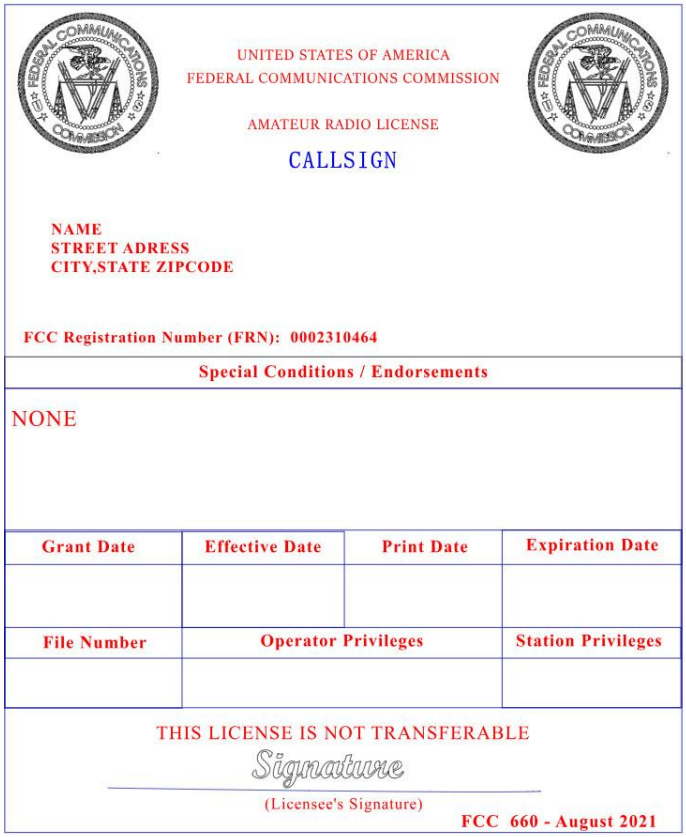
Mostly what I use are inexpensive 12" by 12" plywood sheets that fit nicely on the cutting/engraving bed of the A20 Pro.



Atomstack A20 Pro, (24-watt laser)

Now to the practical aspect of this part of the hobby, it seems as if the FCC is no longer providing a printed license certificate when one either gets a new license or renews an old one. They have gone super fugal and just send you a link to a printable PDF file of your license as they did mine when I renewed it again this last September. I decided that I would like to have something a bit nicer than a white piece of paper to frame and hang on the wall. I used my laser to create a very close engraved facsimile of the license on some really nice "Baltic Birch" plywood that was available from the distributors fairly inexpensively but had a really nice

surface after engraving. I do seal it with a clear enamel spray to protect it from dust and other contaminants such as insects that get in the house from time-to-time and leave nasty deposits on the surfaces they land on. I sized it to fit a 9 x 12-inch frame, but it is easily scaled in any of the editing/CAD programs available to the laser user. There are both free and commercial versions of the software. I use a commercial program called "Lightburn" as my CAD program and that's what I used to design this example. However, I save my files with the .svg extension (Scalable Vector Graphic) . The output file can be adjusted to any size desired on almost any of the CAD programs that work with the various laser machines. The following image is a picture of the template I use (adding name, address, issued callsign, actual FRN number, issue and expiration dates and all the other pertinent information on the actual license in the same format the FCC uses so it looks quite like the original).



UNITED STATES OF AMERICA
FEDERAL COMMUNICATIONS COMMISSION

AMATEUR RADIO LICENSE

CALLSIGN

NAME
STREET ADRESS
CITY,STATE ZIPCODE

FCC Registration Number (FRN): 0002310464

Special Conditions / Endorsements
NONE

Grant Date	Effective Date	Print Date	Expiration Date

File Number	Operator Privileges	Station Privileges

THIS LICENSE IS NOT TRANSFERABLE

Signature

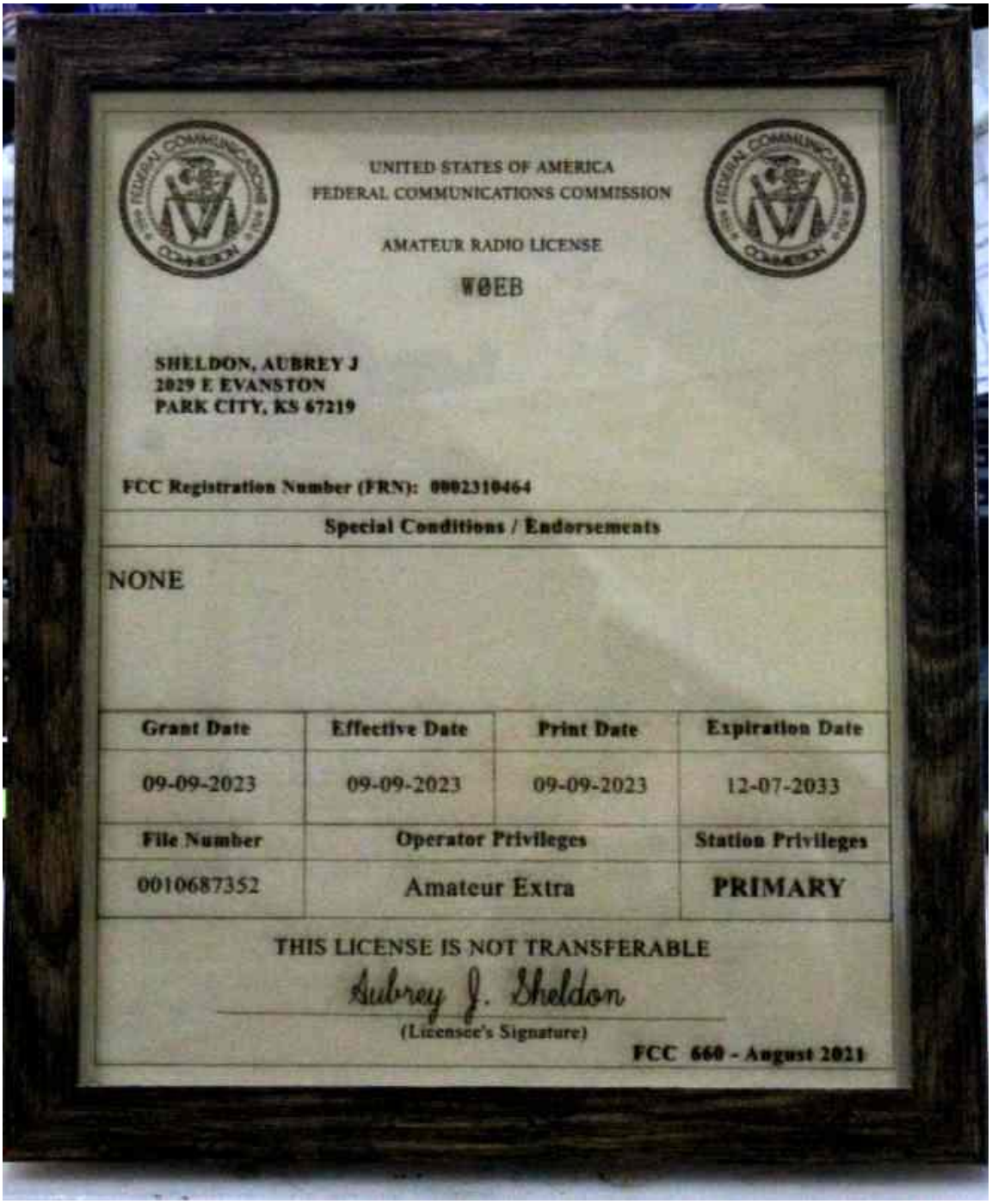
(Licensee's Signature)

FCC 660 - August 2021

The way I handle the individual's signature can be one of a couple of ways. Most CAD programs for the laser machines have "text" capability and there are numerous "script" type fonts available for PC's MAC's, LINUX machines and the like, so one of those could be used, OR even better if the individual can use a scanner to make an image file such as a .jpg or .png, that file can be inserted in the signature area as a graphic rather than a text file and sized appropriately to become a legible (or illegibly if the signature is sloppy – LOL) display.

Once all the information is filled in (in the appropriate blocks, of course), the engraving parameters need to be set in the CAD/Control program and I can't post them here as they vary quite a bit from machine to machine even amongst the same brand/power lasers. However, once you are comfortable with your own laser, these things become much easier and this article is merely intended as an introduction to Laser

Engraving/Cutting machines as a useful part of the ham radio hobby.



UNITED STATES OF AMERICA
FEDERAL COMMUNICATIONS COMMISSION

AMATEUR RADIO LICENSE

W0EB

SHELDON, AUBREY J
2029 E EVANSTON
PARK CITY, KS 67219

FCC Registration Number (FRN): 0002310464

Special Conditions / Endorsements
NONE

Grant Date	Effective Date	Print Date	Expiration Date
09-09-2023	09-09-2023	09-09-2023	12-07-2033
File Number	**Operator Privileges**		**Station Privileges**
0010687352	Amateur Extra		PRIMARY

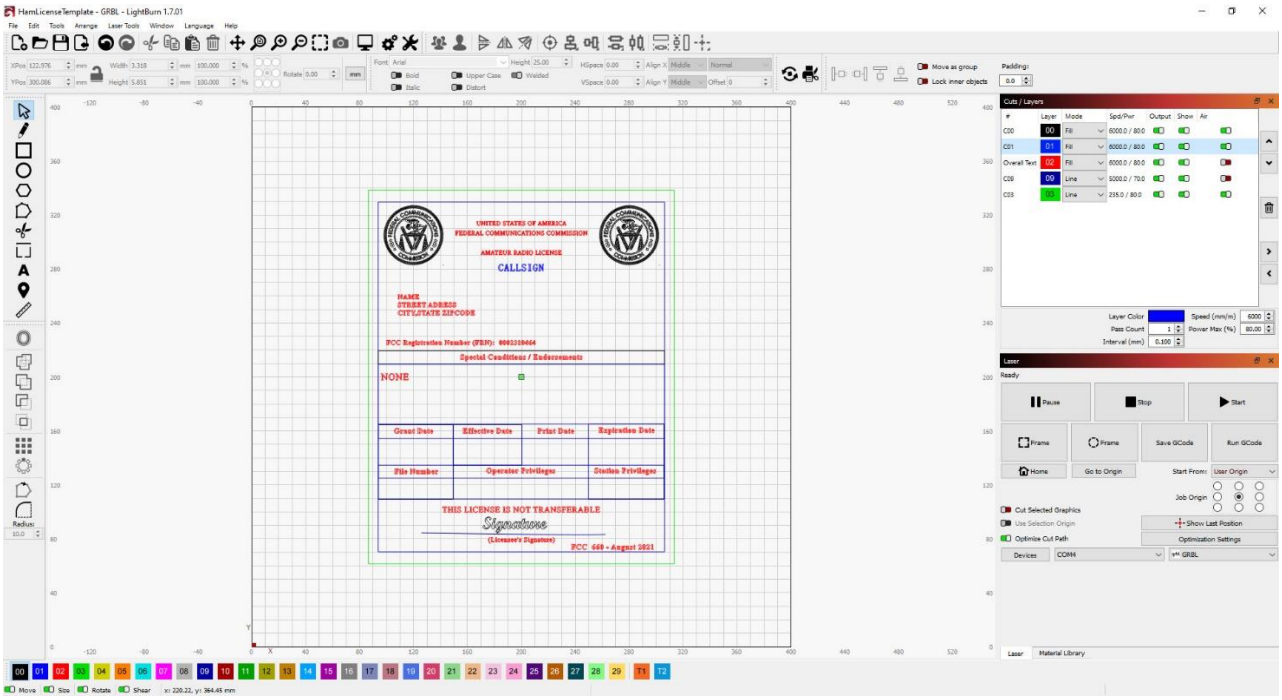
THIS LICENSE IS NOT TRANSFERABLE

Aubrey J. Sheldon

(Licensee's Signature)

FCC 660 - August 2021

The image above is an example of the finished engraving in a frame. My signature is in a script font for this image, but I have a version on the wall with my actual scanned signature on it. Here is a picture of the "Lightburn" CAD program I used to create the engraved license showing my settings for the A20 Pro (your settings will depend entirely on your own laser).



A further aspect of using the laser engraver is the ability to make things like key fobs with a person's first name (or full name if desired) , callsign, address, phone number, or anything else desired, such as a "Flying Pig" with the FP member's "Pig Number" on the reverse.

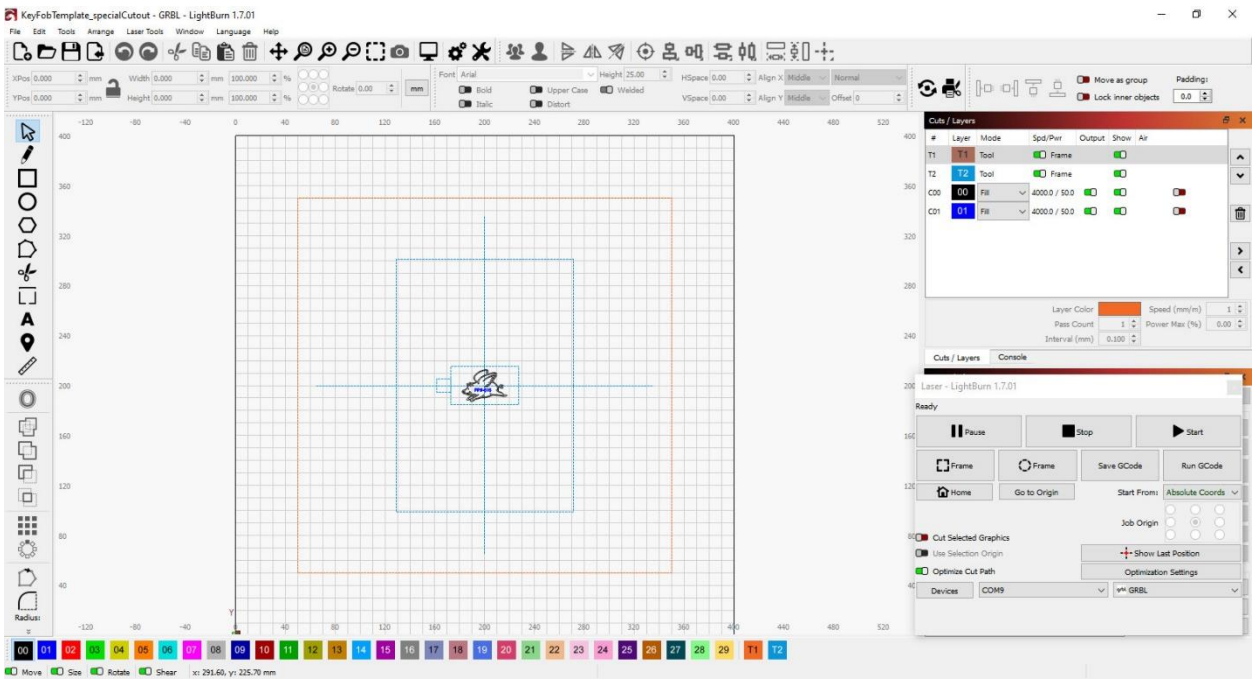
The same CAD program is used to do this and the easiest method was to create an overall template that accurately positions the key fob (minus the key ring part itself) in the center so the engravings look right on the wooden piece. These are a few examples of using other things besides radio equipment to actually enhance the enjoyment of our ham radio hobby.

I was able to buy some really nice blanks from Amazon for this particular project and I'll have them available to sell to anyone desiring one of their own.

Currently the cost to the individual (US Domestic addresses only) will be $6.00 for the key fob and $6.00 postage (includes tracking) for a total of $12 each.

If anyone wants one of these, contact me via email and we can arrange to customize it the way you want. – Email address is w0eb@cox.net

Here are the photo's of the completed "Key Fob" using my Name, Call, City & State on the front and FP# on the back along with a screenshot of the "Lightburn" CAD layout for the template itself.



Jim – W0EB, FP#-616 – Membership and Website Administrator

From Contest Admin Secret HQ:
Brian Murrey KB9BVN
FP-57

Calling all Flying Pigs!! Calling all Flying Pigs!!

Gang, the monthly Run for the Bacon Sprint is so much fun, and the band conditions are PERFECT for QRP, so why not join the flock and have a blast with us? It's easy! Here is a listing of upcoming events through March 2025

Daylight Savings Time resumes on March 9th 2025 – Adjust your time accordingly!

January 19th[t] - Run for the Bacon CW Sprint (2 Hours) 23:00Z to 01:00Z – Use the Auto logger.
February 16th - Run for the Bacon CW Sprint (2 Hours) 23:00Z to 01:00Z – Use the Auto logger.
March 16th - Run for the Bacon CW Sprint (2 Hours) 23:00Z to 01:00Z – Use the Auto logger.

RFTB Autologger is at https://qrpcontest.com/pigrun/

ALSO…for you Flying Pigs new to CW, or old to CW and want to participate in a slow code sprint event, we have the 40m Walk for the Bacon Slow Code CW Sprint. The WFTB sprints are 1 hour each night.

40m WFTB runs on the first Wednesday and Thursday of every month. The Wednesday night sprint begins at 00:00Z Wednesday evening for 1 hour from 00:00Z to 01:00Z, then it continues Thursday night from 02:00Z to 03:00Z. All logging is done on the autologger.

Evening of Wednesday January 1st at 00:00Z to 01:00Z on 40m 7050 Khz to 7065 Khz.
Evening of Thursday January 2nd at 02:00Z to 03:00Z on 40m. 7110 to 7115 Khz

Evening of Wednesday February 5th at 00:00Z to 01:00Z on 40m 7050 Khz to 7065 Khz.
Evening of Thursday February 6th at 02:00Z to 03:00Z on 40m 7110 to 7115 Khz .

Evening of Wednesday March 5th at 00:00Z to 01:00Z on 40m 7050 Khz to 7065 Khz.
Evening of Thursday March 6th at 02:00Z to 03:00Z on 40m 7110 to 7115 Khz.

WFTB 40m logger is at: https://qrpcontest.com/pigwalk40/

20m WFTB runs on the third Wednesday and Thursday of every month. The Wednesday night sprint begins at 00:00Z Wednesday evening for 1 hour from 00:00Z to 01:00Z, then it continues Thursday night from 02:00Z to 03:00Z. All logging is done on the autologger.

Evening of Wednesday January 15th at 00:00Z to 01:00Z on 20m 14061 Khz to 14065 Khz.
Evening of Thursday January 16th at 02:00Z to 03:00Z on 20m 14061Khz to 14065 Khz.

Evening of Wednesday February 19th at 00:00Z to 01:00Z on 20m 14061 Khz to 14065 Khz.
Evening of Thursday February 20th at 02:00Z to 03:00Z on 20m 14061 Khz to 14065 Khz.

Evening of Wednesday March 19th at 00:00Z to 01:00Z on 20m 14061 Khz to 14065 Khz.

Evening of Thursday March 20th at 02:00Z to 03:00Z on 20m 14061 Khz to 14065 Khz.

WFTB Autologger is at: https://qrpcontest.com/pigwalk20/

Good luck and we hope to hear from everyone on the air!!

Sprint Statistics for January through December 2024 – We have the winners!

DATE	EVENT	LOGS SUBMITTED	TOP SCORE	TOP FLYING PIG
01/21/24	RFTB	9	119	WB9HFK - Mark
02/18/24	RFTB	6	32	AA2YO - Gene
03/17/24	RFTB	22	528	NQ2W - Will
04/21/24	RFTB	41	2150	NQ2W - Will
05/19/24	RFTB	16	410	KA2KGP - TOM
06/16/24	RFTB	22	1533	NQ2W - Will
07/21/24	RFTB	18	611	NQ2W - Will
08/19/24	RFTB	11	442	NQ2W - Will
09/15/24	RFTB	17	672	N2TNN - DEAN
10/20/24	RFTB	12	369	KA2KGP - TOM
11/17/24	RFTB	20	442	NQ2W - Will
12/15/24	RFTB	10	375	AH6EK - Alan

With 12 RFTB's complete, NQ2W – Will is the RFTB 2024 Champion

01/03/24	WFTB40	10	27	WB9HFK - Mark
02/07/24	WFTB40	6	22	WB9HFK - Mark
03/06/24	WFTB40	6	17	AA2YO - Gene
04/03/24	WFTB40	10	27	K9NUD - Steve
05/01/24	WFTB40	7	20	W4NLT - Andy
06/05/24	WFTB40	18	48	KB9BVN - Brian
07/03/24	WFTB40	12	50	KA2KGP - Tom
08/07/24	WFTB40	15	46	WB9HFK - Mark
09/04/24	WFTB40	16	50	WB9HFK - MARK
10/02/24	WFTB40	14	56	WB9HFK - Mark
11/06/24	WFTB40	7	42	WB9HFK - Mark
12/04/24	WFTB40	15	19	K4NE - Phil

With 12 WFTB40's complete, WB9HFK – Mark is the WFTB40 2024 Champion!

01/17/24	WFTB20	5	6	N3AZB - Dennis
02/21/24	WFTB20	10	15	AA2YO - Gene
03/20/24	WFTB20	17	38	WB9HFK - Mark
04/17/24	WFTB20	19	35	AA2YO - Gene
05/15/24	WFTB20	11	27	WB9HFK - Mark
06/19/24	WFTB20	13	21	WB9HFK - Mark
07/17/24	WFTB20	13	28	W4NLT- ANDY
08/21/24	WFTB20	8	20	WB9HFK - Mark
09/18/24	WFTB20	7	21	N2TNN - DEAN
10/16/24	WFTB20 - TIE for 1st	15	18	AA2YO/K5KGK
11/20/24	WFTB 20	11	9	K9NUD - Steve
12/18/25	WFTB 20	6	9	K5KGK - Ken

With 12 WFTB20's complete, WB9HFK-Mark is the WFTB20 2024 Champion!

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Worked All Piggies Contest (WAP)

FPqrp - Worked All Pigs Event Levels!

FARMER: work 15 piggies
CADET: work 30 piggies
ACE: work 50 piggies
MAJOR: work 75 piggies
GENERAL: work 100 piggies!

Certificates will be awarded as a printable PDF file. One can be printed for you for a nominal fee.

Good Luck & have fun.!

Important Things to Remember about WAP

From Dan, N8IE, fpqrp #-6 (President)

ANY MODE of contact allowed by the FCC or the governing body of your country counts!
This is meant to be a fun and casual way to get our fellow piggies on the air and having fun. This is not a contest and no special award is given for getting a certificate first. Lol
As always, please practice good Amateur Radio Operator conduct!
BACKUP YOUR LOGS! I can't express this enough. We will do our best to keep the database up and running, but as everyone knows crap happens! Should there be a catastrophic failure, you may need to re-enter your contacts. Hopefully that's a worst case scenario.
If you're having problems entering your logs, please contact one of us listed on the web page and we'll get you some help.

The official exchange for the WAP Event is RST, SPC, NAME, FP #.
Both sides of the QSO must be QRP and have a FPQRP number to count for the WAP certificate.
The definition of QRP is as described by the ARRL.

Log website: https://fpqrp.org/wap/

From Jim, W0EB, FP#-616 (Membership Admin)

To all the FP members, Just to clarify things. Some of you are thinking of this Worked All Piggies "Event" as a contest. IT IS NOT and was never intended to be. Certificates WILL be awarded when an FP member (MUST BE A MEMBER) achieves various numbers of other members worked (non-member QSO's don't count and please don't log them in the autologger as that just confuses me when trying to determine how many piggies are worked by a given member), but the certificates are NOT numbered so there is absolutely no competition for who gets what certificate when, LOL.

We (the Flying Pigs Club, International) are a casual club, unlike some other clubs offering awards, and we'd like to keep it that way so there is no need for anyone to worry about completing this event before someone else. Work 'em as you hear 'em and use the autlogger (keep a paper log yourself as well for your own records) as the autologger is subject to failure if the server fails during an input. That usually isn't a problem, but CAN happen so be forewarned.

I (as membership Administrator for the club) try to keep my "on-hand" copy of the WAP database current every day so when someone indicates they have worked a certain number of "Piggies" and are eligible for a certificate (of any level), I can confirm that via the autolog results and quickly issue the PDF file of that certificate which the member can print themselves to hang on their wall. It's too expensive and also time consuming for me (or any of the other admins) to print them on paper and mail them out as the Club motto states, "NO DUES, NO RULES---"etc. That means there is no treasury or any other money incoming to do this and we don't have to become a small business or incorporate the club (which is also usually somewhat expensive).

The Worked All Piggies "Event" will be ongoing for as long as there is a Flying Pigs QRP International club and again, is open to ALL members of this club.

Flying Pigs Email Reflector

To subscribe to the club email reflector, send a message to fpqrp+subscribe@groups.io with the subject "subscribe" or go to the Flying Pigs groups.io page at https://groups.io/g/fpqrp and click on the "Join" button. Don't forget that all upcoming Flying Pigs related contests are advertised on our email reflector!

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OUR MISSION:
1: Have Fun.
2: No rules.
3: Be a friendly group which enjoys ham radio and sharing skills with their fellow hams.

CLUB MEMBERSHIP:
To join The Flying Pigs QRP Club, visit https://fpqrp.org/join.php

CLUB DISCORD SERVER:
https://discord.gg/zW6DhXcq

CLUB E-MAIL POLICY:

These are not rules--just common sense. Club email is not moderated, as we are not a stuffy group. You can send off topic messages about most subjects but please keep conversations clean and in good taste. We do like good-natured- ribbing and joking with each other, but we will not tolerate flaming other members or spamming the group. We will remove offenders who abuse our open policy. The word **eBay** is allowed.

CLUB WEB PAGE:
The club web page is our forum for sharing projects, and information about us. You are encouraged to submit your ideas and projects to be added to the web page. https://fpqrp.org/

CONTEST RESOURCES:

https://qrpcontest.com/
http://qrpspots.com/

FPQRP OFFICIAL FREQUENCIES:

160m – 1.814MHz 80m – 3.564MHz 40m – 7.044MHz 30m – 10.110MHz
20m - 14.062MHz 17m – 18.100MHz 15m – 21.064MHz 12m – 24.910MHz
10m – 28.064MHz 2m Hamfest Frequency – 145.72 Simplex

PROBLEM REPORTING:

If you are having problems with email, the web pages, or a fellow club member, please report this to either:
Dan, N8IE at dann8ie@gmail.com
Jim, W0EB at W0EB@cox.net

1 Motivation

In the Autumn 2024 edition of SPRAT, the journal of the G-QRP Club, Dick G0BPS described construction of a compact portable antenna that is a delta-loop made out of two six-meter telescoping whip antennas mounted right-angle to each other on a stick with the ends connected by a length of wire; the feed-point being the coax screen connected to the base of one whip, with the center conductor connected to the other whip, three loops of coax to act as a choke, and a pig-tail of coax with an SO-239 connector on the end.

Advantage of the delta-loop is that it doesn't need ground radials. Advantage of this implementation is that it is cheap, cheerful, and worth trying. So, I thought I would see what I could do inspired by the example of G0BPS.

2 W5AWS Delta-loop Antenna

Figure 1 shows the completed antenna ready for action oriented east-west at Chandler Park, Tulsa, Oklahoma, mounted on a photographic tripod.

Figure 1: W5AWS Portable delta-loop at Chandler Park, EM16xd

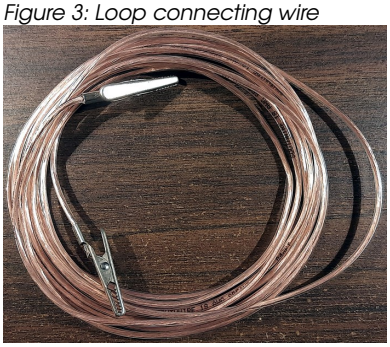
2.1 Whip Antennas

Figure 2: Manpack antenna folded

Instead of telescoping whip antennas, I ordered HF manpack shock-cord-sectioned antennas, 285 cm extended length that fold to 43.5 cm, threaded to fit CB antenna mounts, as shown in Figure 2 above.

2.2 Loop Top Connection

Figure 3: Loop connecting wire



At the tips of each manpack antenna—see the top right-hand corner of Figure 2 above—I removed the paint with a file, connecting the bared metal of each tip with crocodile clips on the end of some speaker-wire. I calculated the length of wire needed by adding the measured distance from the screw-end of the whips to the wire crossing point in the octagonal box: 8.5 cm + 285 cm = 293.5 cm then used Pythagoras's Theorem to get the final length = $\sqrt{293.5^2 \times 2}$ = 415 cm or 13 ft 7½ ins, which proved to be a good fit. Lastly, I pulled the "grounded" banana plug then checked the continuity of the loop with an ohmmeter.

2.3 Feed-point

Figure 4 shows the BNC feed-point to the octagonal electrical box and ad-hoc choke. Figure 5 shows the internal connections to the SO-239-side of the CB antenna mounts using banana plugs with the wire connection insulated by heat-shrink material—that probably has some capacitive influence on the antenna.

Figure 4: Feed-point and choke

Figure 5: Feed-point internal connections

2.4 Alternative Mounting

There is a mechanical turning moment that required me to strongly tighten the tripod attachment-screw, which is inconvenient. Using a short four-inch bar clamp,

Figure 6 below, increases the mounting versatility to any convenient place like a rail or flat surface that has an overhanging lip, eliminating the need for a heavy tripod.

Figure 6: Altenative antenna clamping arrangement

3 Station

Figure 7 below shows the operating position in the passenger seat of my vehicle that provides shelter during inclement weather and a quiet environment.

Figure 7: Operating position

3.1 Power Supply

For this event, I used my rechargeable battery pack, a bank of ten AA NiMH cells in the black box with meter and switch, Figure 7 above, connected to an 8–40 VDC buck-boost DC-DC converter that maintains a steady 13.8 VDC output as the voltage of the battery pack declines during discharge.

3.2 Antenna Matching Unit

Looking at the antenna with a RigExpert Stick Pro analyzer showed that it would need some impedance matching between it and the transceiver. I used my Emtech ZM-2 Z-Match ATU, Figure 7 above. Below 40 m, the SWR was far too high. On the 40 m band, the SWR was around 7:1, but there wasn't much POTA activity. On 20 m, I was able to get a match well below 2:1 across the band; similarly, on the 10 m band.

3.3 Transceiver

With the latest stable release of firmware installed, I used my Classic-band (tr)uSDX that I assembled from a kit, which covers the 80, 40, 20, 15, and 10 meter bands. Instead of the internal speaker and microphone, I used an external Retevis speaker-mic.

4 Operation

On Thursday, 14 November 2024 at Chandler Park, Tulsa, Oklahoma, there was a lot of activity on 10 and 20 meters. With 5W, I didn't have much luck hunting POTA on 10 m against the higher power stations. However, as I was tuning around, I heard KF2GQ calling CQ from Jupiter, FL; I replied, and we had a brief exchange; he reported my readability and strength at 53 whereas he boomed in at 59.

4.1 DX to Germany

Tuning away from KF2GQ, I heard DO1KAT calling CQ DX on 10 m from Ingolstadt, Germany, just over 5,000 miles (ca. 8,047 km) away to the north of Munich. I replied. He heard the first two characters of my callsign but was unable to catch the last three, so I must have been way down in the noise at his end. We failed to complete the contact. Readability and strength of his signal was 43. However, I was impressed that we were actually able to communicate partially with 5W SSB—band conditions on 10 m were very good.

4.2 Hunting POTA on 20 m

Changing bands to 20 m, I hunted a couple of SSB POTA contacts. Figure 8 below is a map showing the location of the contacts.

4.3 CW on 15 m

Time was passing, and I wanted to get some indication of antenna performance on CW, so I changed bands to 15 m and called CQ on the 21.060 MHz, which is the QRP CW Calling Frequency. I stayed long enough to get spotted by the Reverse Beacon Network (RBN), heard all over the country and as far south as Costa Rica, Figure 9 & Figure 10 below.

Figure 8: SSB QSO map

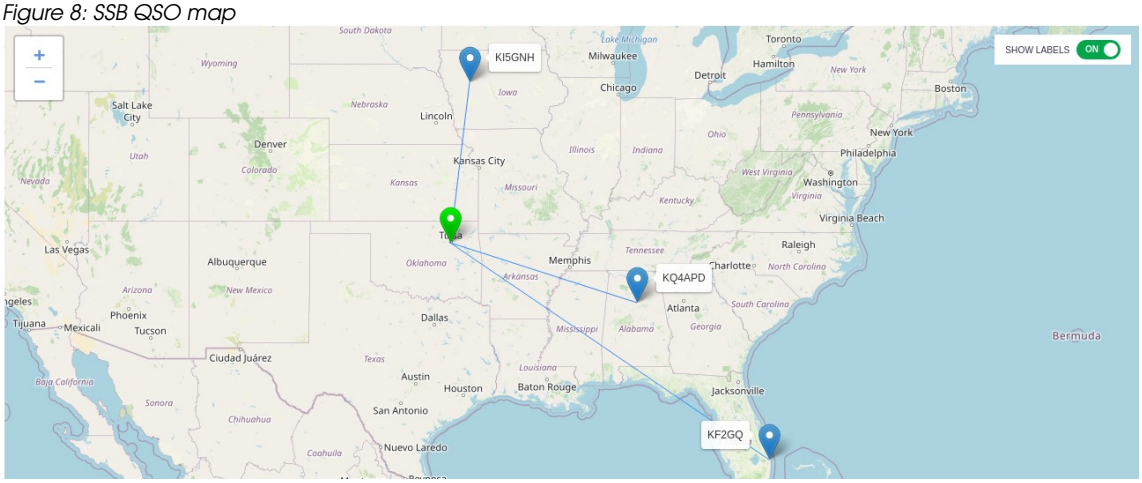


Figure 9: CW CQ heard by the Reverse Beacon Network

spotter	spotted	distance mi	freq	mode	type	snr	speed	time	seen
WZ7I	W5AWS	1165 mi	21059.8	CW	CQ	2 dB	14 wpm	1825z 14 Nov	6 hours ago
K9QC	W5AWS	649 mi	21059.8	CW	CQ	18 dB	13 wpm	1822z 14 Nov	6 hours ago
K3LR	W5AWS	904 mi	21059.8	CW	CQ	5 dB	14 wpm	1822z 14 Nov	6 hours ago
WC2L	W5AWS	1259 mi	21059.8	CW	CQ	1 dB	14 wpm	1822z 14 Nov	6 hours ago
TI7W	W5AWS	1884 mi	21059.9	CW	CQ	6 dB	14 wpm	1820z 14 Nov	6 hours ago
K7CO	W5AWS	913 mi	21059.9	CW	CQ	4 dB	14 wpm	1819z 14 Nov	7 hours ago
NU4F	W5AWS	1161 mi	21059.9	CW	CQ	2 dB	14 wpm	1819z 14 Nov	7 hours ago
W8WWV	W5AWS	867 mi	21059.8	CW	CQ	1 dB	14 wpm	1819z 14 Nov	7 hours ago
W3OA	W5AWS	840 mi	21059.9	CW	CQ	2 dB	14 wpm	1815z 14 Nov	7 hours ago
NG7M	W5AWS	931 mi	21059.9	CW	CQ	7 dB	14 wpm	1815z 14 Nov	7 hours ago

Version: v2.2.5

Figure 10: RBN CQ Map

5 Conclusion

From this exercise, I conclude that the delta-loop antenna is worth having available; it is compact and easy to deploy. Also, this isn't the cheapest way to go; you could

use bamboo sticks lashed together in a triangular shape with stranded wire loosely wound around the sticks, but obviously with less convenience.

6 Addendum

During this and some other operations with the (tr)uSDX, I received reports of my signal fading from the beginning of my transmissions. At first, I thought it was QSB then, on reflection, thought I should check the power output on the test bench.

At home, I connected the (tr)uSDX to my QRPoMeter[1] and held down the PTT on CW for about ten seconds. Power output went from about 6 W down to zero and stayed there; the FTD86256 power MOSFET had been weak and failing, just needing a good push into a dummy load to kill it outright.

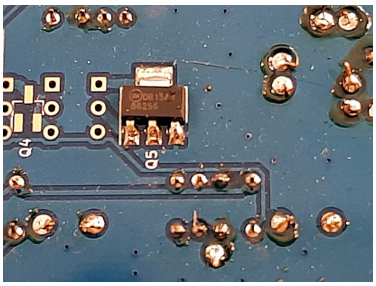
According to Mouser Electronics, the FTD86256 though still available is end-of-life and no longer in production. After reading a G-QRP *groups.io* post by Hans Summers, G0UPL, describing the virtues of the BS170 FET, I bought 100 at nine cents each from Mouser to use three to replace the blown FTD86256 that is ten-times more expensive, and have ample spares on hand.

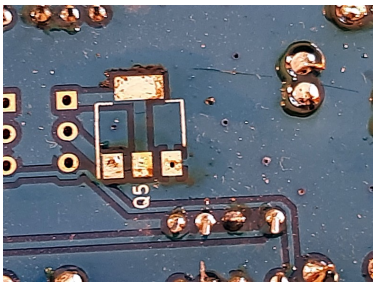
The RF board of the (tr)uSDX is equipped to receive either type of transistor, so it will merely require removing the SOT-223 package, replacing it with three TO-92 devices.

I like the (tr)uSDX. It is a lot of radio in a small package. Had the FTD86256 been working properly, I might have confirmed my QSO with DO1KAT in Germany on 10 m SSB. Oh, well! Better luck next time.

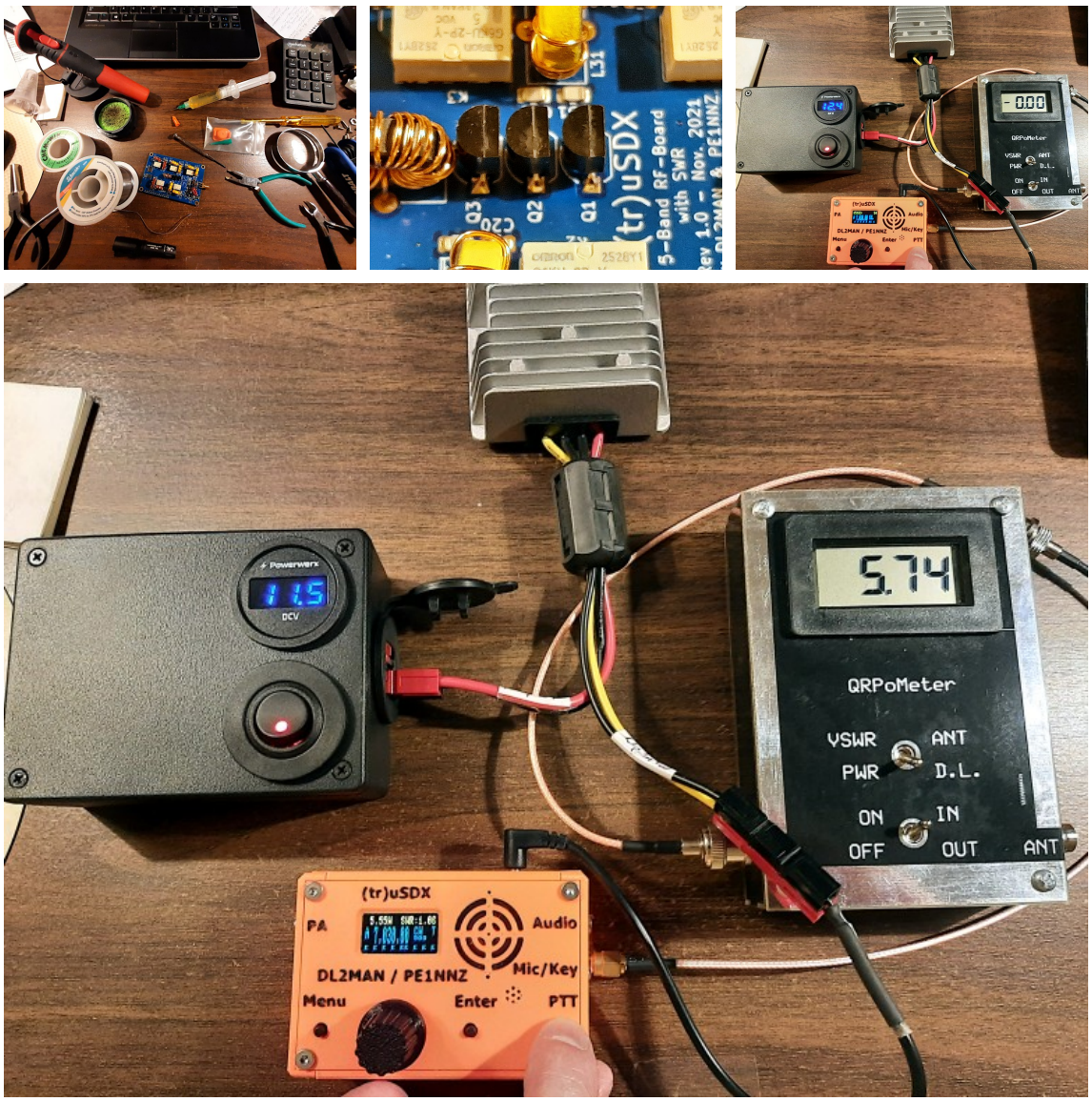
6.1 (tr)uSDX Repaired

Performing the power MOSFET replacement was an easy task; the most difficult part was pulling the knob that was a tight press-fit that responded to leverage with a screwdriver blade between it and the case. Here's the process in pictures. In the last picture, you can see that the (tr)uSDX shows it is delivering a power of 5.55 W whereas the QRPoMeter shows 5.74 W—it's close enough and stable. Supply voltage to the (tr)uSDX is a steady 13.8 VDC from the buck-boost DC-DC converter. Compare the last two pictures and note the sag in battery-pack voltage between 12.5 VDC on receive and 11.5 VDC on transmit; the load is the buck-boost electronics plus what's needed by the (tr)uSDX, voltage to the transceiver is 13.8 VDC.





1 QRPoMeter: https://www.ebay.com/itm/256638396862



By the way, I forgot to change menu-item *8.2 PA Bias max* from 160 to 128, remembering to do so while writing this.

7 Bill of Material

(a) HF Manpack Collapsible 7 Element Whip Antenna 285 CM Length, https://www.amazon.com/dp/B07DWN64CN

(b) Firestik K-4A CB Radio Antenna Heavy Duty SO-239 Stud Mount, https://www.amazon.com/dp/B0765QHQMZ

(c) BNC RF Coaxial Connectors Solder Receptacle, https://www.mouser.com/ProductDetail/TE-Connectivity/5227169-5?qs=GSeC4G%252BEqEWl%2FfHOS2iXuA%3D%3D

(d) VCELINK 4mm Speaker Banana Plugs-Open Screw Type, Insulated 24K Gold Plated Speaker Wire Banana Plugs, https://www.amazon.com/gp/product/B0897LB83Z

(e) Hubbell RACO Galvanized Steel New Work/Old Work Octagonal Electrical Box, https://www.lowes.com/pd/RACO-1-Gang-Metal-New-Work-Old-Work-Octagonal-Electrical-Box/3135051

(f) IRWIN QUICK-GRIP 2-Pack 4-1/4-in Micro Handed Bar Clamp, https://www.lowes.com/pd/IRWIN-2-Pack-QUICK-GRIP-Clamp/1003168318

8 Glossary

AA.....Standard size single cell cylindrical dry battery
ATU.....Antenna Tuning Unit
BNC.....Bayonet Neill–Concelman
ca.....Circa, or about
CB.....Citizens Band
CQ.....Seek You
CW.....Continuous Wave, otherwise known as Morse code
DC.....Direct Current
DX.....Long distance
FET.....Field Effect Transistor
FL.....Florida
G-QRP.....UK Low power operating club, 5 W or less CW, 10 W PEP SSB.
HF.....High Frequency
km.....Kilometers
m.....Meters
MHz.....Mega Hertz
MOSFET.....Metal Oxide Semiconductor Field Effect Transistor
NiMH.....Nickel Metal Hydride battery chemistry
PEP.....Peak Envelope Power
POTA.....Parks On The Air
QRP.....Reduce power
QSB.....Space-weather-induced signal fading
RF.....Radio Frequency
SPRAT.....Small Powered Radio Amateur Transmissions G-QRP club magazine
SSB.....Single Side-Band
SWR.....Standing Wave Ratio
UK.....United Kingdom
V.....Volts
VDC.....Volts DC
W.....Watts