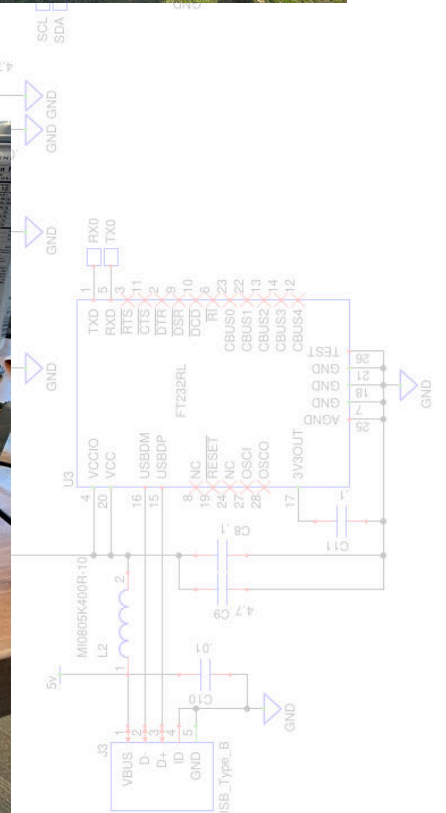
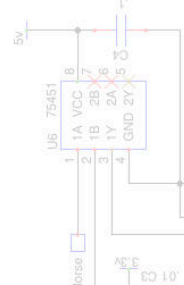


The Microvolt

May 2023



Prologue

Publication: *The Microvolt* (USPS 075-430) is the official publication of the Utah Amateur Radio Club, Incorporated, 3815 S 1915 E, Salt Lake City, UT 84106. It is published monthly except August. Subscription is included with club membership at \$20 per year. Single copy price is \$1.50. Periodicals postage paid at Salt Lake City, Utah. Postmaster: send address corrections to *The Microvolt*, c/o James Bennet, 4960 W 5400 S Kearns UT 84118.

Deadline for submissions is the 24th of each month prior to publication. Reprints are allowed with proper credits to *The Microvolt*, UARC, and authors. Changes in mailing address should be communicated to the Club Secretary: James Bennet, 4960 W 5400 S Kearns UT 84118.

Club: The Utah Amateur Radio Club was organized under its present name in 1927, although its beginnings may date back as early as 1909. In 1928, it became affiliated with the American Radio Relay League (club #1602) and is a non-profit organization under the laws of Utah. It holds a club station license with the call W7SP, a memorial call for Leonard (Zim) Zimmerman, an amateur radio pioneer in the Salt Lake City area.

Meetings: The club meets each month except July and August. The meetings are usually held on the second Thursday of the month at 7:30 PM in the University of Utah's Warnock Engineering Building, generally in room 1230 or 2230, sometimes in 2250 or 105.

Membership: Club membership is open to anyone interested in amateur radio; a current license is not required. Dues are \$20 per year, including a *Microvolt* subscription. The *Microvolt* and membership cannot be separated. Those living at the same address as a member who has paid \$20 may obtain a membership without a *Microvolt* subscription for \$12. Send dues to the Club Secretary: James Bennet, KK7AVS, 4960 W 5400 S Kearns UT 84118. Let the Secretary know if you prefer the electronic edition of *The Microvolt* instead of the printed version.

Contributions: Monetary contributions are gladly accepted. Send directly to the Club Treasurer: Chuck Johnson, 1612 W. 4915 S. Taylorsville, UT 84123-4244. For in-kind contributions, please contact any board member to make appropriate arrangements.

Repeaters: UARC maintains the 146.62- and 146.76- repeaters. The repeaters are administered by the UARC Repeater Committee. Comments and questions may be directed to any Committee member. The Lake Mountain repeater (146.76-) is IRLP node 3352. Instructions for IRLP use are on the club website <http://www.utaharc.org.irlp>.

Ham Hot-Line: The Utah Amateur Radio Club (UARC) has a Ham Hotline, 801-583-3002. Information regarding Amateur Radio can be obtained, including club, testing, meeting, and membership information. If no one answers leave your name, telephone number and a short message on the answering machine, and your call will be returned.

UARC 2023 Board

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Historian: Ron Speirs, K7RLS	801 904-3587
License Trustee: Brett Sutherland, N7KG	801 298-5399
Repeater Engineer: Clint Turner, KA7OEI	801 566-4497

Late Breaking News

For late breaking news listen to the UARC Information Net Sundays at 21:00 on 146.62 or set your browser to: <http://user.xmission.com/~uarc/announce.html>

Writing for *Microvolt*

Submission of original pictures, articles, book reviews, nuggets of humor and responses to editorials are encouraged. Photographs in the highest resolution are best. Plain text without embedded pictures but labeled to correspond to pictures. Have you written a program you'd like to share? E-mail to the editor: microvolt@utaharc.org.

We are grateful to the management of XMission, our Internet Service Provider (ISP), for the donation of this Web-Page service.



For account information go to: <http://www.xmission.com/>
Or call 801 539-0852

Latest News

UARC Meetings

UARC meetings are held on the second Thursday of each month except for July (annual steak-fry) and August (vacation). Meetings are held in the “Warnock Engineering Building” on the campus of the University of Utah. Watch the UARC website for the room and topics.

We encourage attendance of the live meeting, but we will also do our best to stream the meeting live on UARC’s YouTube page:

<https://www.youtube.com/c/UtahAmateurRadioClub>

From there, look for the feature that is marked “live.” The meeting should commence at 7:30. There should be some chatter on the channel by about 7 P.M. and you can connect in that period to make sure everything is working.

May Meeting

Thursday, May 11, Gary Crum, KK7DV will present the UARC HF Remote Transceivers and an update on the Leamington site. Dennis Nelson, N7FOD will discuss installing transceivers in vehicles.

Our Cover

The April 15th Neighborhoods on The Air, and the QSO Buildathon constructing 7.11 MHz QRP transceivers.

Photo Credits

Buildathon, Jed Marti KI7NNP, Elisabeth Barry KJ7MEB, NOTA James Bennet KK7AVS, Scott Rosenbush K7HSR, John Wurtz W6HJW, Stuart Thorpe K7PWS.

License Classes

Utah County:

In-person license classes will be offered at the City of Orem during 2023. Each course will cost \$10. Register at: <http://psclass.orem.org/>. These are homework courses; You’ll be expected to complete an assignment (and email me the results) by the start of every

class period, even the first one. No course textbooks are required. Then again, these courses will be casual, hands-on, and fun for those who remain awake.

Please contact Noji (nojiratz@hotmail.com or 801-368-1865) with any questions about the courses.

Salt Lake:

Technician: Zoom with KI7MTI and KK7AVS every Monday from 6:30 PM. Contact KI7MTI@gmail.com for invite.

General: KK7AVS 147.16 MHz, positive offset, tone 127.3, every Tuesday 7 PM – 9 PM.

Extra: In person, contact Ron Speirs K7RLS@comcast.net.

Local Beacons, SDR

K7JL: 10 watts, 28.2493 MHz CW, Sandy.

KK7AVS: SDR 33, 70 cm, 1.25M 2M 6M 10M 20M 40M, Kearns.

Click Me!

My View

Some time ago I decided to upgrade my desk-side computer and went on-line to build a custom machine. The robot first asked what I was going to use the machine for and was give the choices: casual, gamer, and content provider. None of these seemed to fit, perhaps they wouldn’t allow me to purchase their equipment. So I became a “content provider” whatever that is. Hopefully it’s akin to a farmer filling plastic containers with actual food content.

My primary use is writing programs but I recognize the dangers of being a content provider. First, there is the ever present temptation to monetize your content by accepting money for other people’s advertising. Second is to be the star of your own mini-series. Finally, avoidance of criticism. You’re so committed to your ideas that criticism can be ignored, you can start a flame war garnering even more publicity or you can just whip up some new content and ignore the old.

A welcome respite from the deluge of click bait is amateur radio: the rag chew, the social net, the DX contest. The soiree of a social net is not an invitation to Multilevel Marketing. When someone says “pause for

reset” it doesn’t mean breaking for a commercial. No one (hopefully) is going to try and sell you the latest skin care product, beet gummies to reduce high blood pressure, or a sure-fire cure for toenail fungus.

That’s not to say that amateur radio is free of advertising - far from it. Suppose I want to learn how to set up my HF transceiver but the manual is less than helpful. Content providers to the rescue. 20 minute videos with frequent click bait for “rare historic photos”, ogling skimpily clad sports figures in provocative poses, B-17 startup videos, and recipes for butter chicken that only take 10 minutes. What could be a single paragraph of instructions corrupted by attention seekers. This is amateur radio but not in the way the FCC envisioned.

Advertising isn’t all bad. If I browse a retailer’s website I expect some - a replacement for the actual human sales person. Unless the real person is practicing to be a politician they probably won’t remember me from one visit to the next - the retailer’s robot will. But I don’t expect their click bait to appear the next time I want to learn about class E amplifiers.

We’re suffering advertising overload. Network television spends about 25% of the time advertising and commercial radio about the same amount. Watch a movie, a few ads to get you hooked and then nearly non-stop at the end. As more and more content providers strive for the next big payday, the market has become saturated. Advertising costs have lowered and what there is has become more bizarre and less attractive.

What’s to be done? If you’re honest about getting money from amateur radio there’s many ways that don’t violate the rules. Write a book, give me one and I’ll review it. Develop a program and sell it. Design hardware, build, test, get FCC and UL certification and sell it. Advertise in QST where I might even look at it. I just don’t want to hear about it when I’m looking at butter chicken recipes.

KI7NNP

Buildathon

Elisabeth Barry KJ7MEB

Ted Cowan NA7C

Dave Western KF7NQY

James Bennet KK7AVS

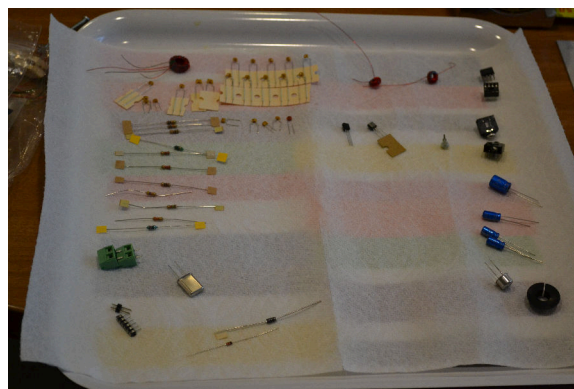
Four intrepid souls gathered at the Salt Lake Public Safety Building to build a 40 meter QRP transceiver

at breakneck speed. 85 of these were built across the country. Part of the QSO Today Virtual Ham Expo, from Rex Harper W1REX, you purchase a kit that includes a circuit board some parts, a wooden key with your laser burned call sign, and you supply a soup can, soldering iron, magnifying glass, some ear buds, and a lot of patience. A step-by-step on-line presentation helped smooth the way.

Let’s start with the soup can - first you need a hole for a screw to hold down the circuit board, somewhere near the center. Still smelling of chicken, you can’t be too fussy about how this is done. Don’t bother with a drill, get a bigger hammer.



Before you start, you’re supposed to sort out the parts in some fashion. This style is almost guaranteed to end up on the floor but don’t worry, they’re not surface mounts that can only be found with a vacuum cleaner.



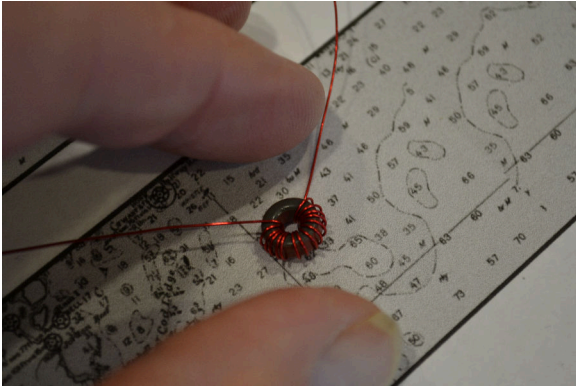
This is more like it, drop it on the floor (it will land upside down like buttered toast) but the parts will still be stuck in the foam. The group found that what looks like a green resistor with a pastel color code is actually an inductor. Is the resistor color code still on the FCC test or has it gone the way of Morse code requirement.



Winding the toroids was supposed to be done the night before, but counting 37 turns after 8 PM leads to lots of errors, rewinds and language the FCC doesn't like. Even counting fifteen turns is fraught with error. It's easy to unwind two extra turns, but you can't stretch the wire to get an extra turn.



And some of them are really small. I think I count 15 turns here but it's hard to tell. It's probably best to count several times and take the count that happened most often.



And if your fingers aren't big enough, add another set. If three people are counting turns out loud, mayhem ensues.



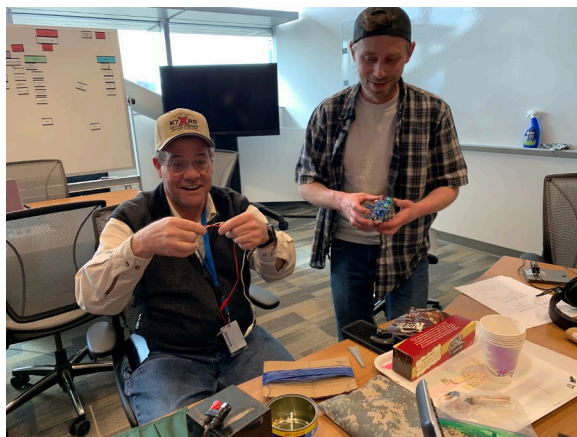
It helps to tin the leads. If you have an extra soldering iron laying around, this handy tool works wonders.



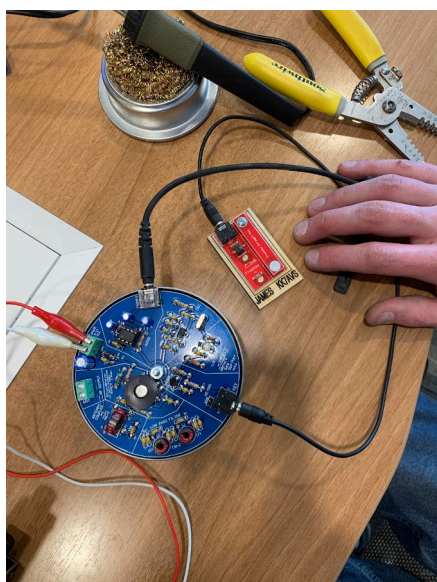
Evidently there are a lot of different can sizes, and you may need an emergency run to the hardware store (the nearest is Ace Hardware on 4th south) to get a longer (shorter) bolt.



There's the joy of examining parts perhaps you've never seen. Toroids were rare when most of us started and inductors were always in little square aluminum cans. These are alligator clips on the ends of wires - they can be melted if you put enough current through them.



After a number of hours, it's in the can.



The Sea Sprite has 3 transistors and an LM386 audio amplifier integrated circuit (10 more transistors). The receiver works by mixing an offset frequency generated by the crystal oscillator with the incoming signal and amplifying the low frequency result. The transmitter PA acts as the mixer in the receive mode while amplifying the unshifted frequency in transmit mode.

- Power 9-14 V_{dc}
- Frequency 7.11 MHz
- CW speed Operator dependent
- Transmit power 180 - 280 milli-watts
- Audio gain 46 dB

To get the most out of your sea Sprite you should join the Straight Key Century Club, <https://www.skccgroup.com/>. There's common frequencies, and a QRS Saunter (for those of us not very adept). Membership is free.



Double Duty

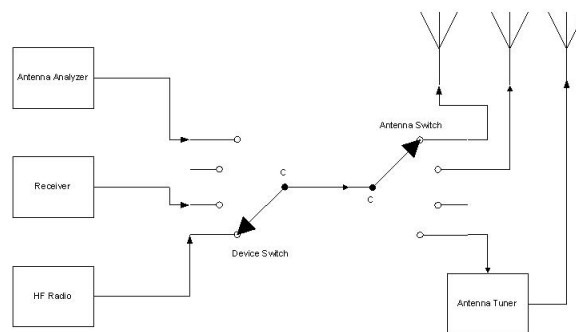
Allen Wolff KC7O ¹

Recently there have been two station accessories that would indicate a SWR null, “The Antenna Dipper”, by W3MEO[1], and “An SWR Null Meter” by W9AC[2]. Both articles spurred my interest in using a passive or semi passive device to check on my stations SWR and to tune my antenna tuner.

Since many Hams own antenna analyzers, why not put them to use when not adjusting antennas. By using an antenna switch with the common wired to the antenna tuner and the switched output wired to the rig, an antenna analyzer could be hooked up to another port and can be switched in line when a measurement is needed. It is impossible to damage the antenna analyzer that way and a quick SWR check or antenna tuner adjustment can be performed in seconds.

I have a BNC to UHF adapter on my old MFJ-249 and the stations 12V power is attached to the coaxial DC power plug. (I NEVER keep batteries in my analyzers and always use an external DC source – none of my analyzers have died due to battery corrosion).

Removing the coax with the BNC and pulling the power makes for a fast get-a-way to the field.



Kc7o@arrl.net

References

- [1] S. McCann, “The antenna dipper,” *QST*, p. 53, November 2009.
- [2] P. Christensen, “An SWR null meter,” *QST*, pp. 30–32, 2010.

¹Originally appeared in The Pasadena Radio Club Bulletin, January 2016.

Neighborhoods on the Air

Dave Western KF7NQY

On Saturday, April 15, many amateur radio operators participated in the NOTA (Neighborhoods On The Air) exercise. The purpose was to test how emergency communications around neighborhood elementary schools interact with the Emergency Operations Centers in the Salt Lake Public Safety Building and the Salt Lake County Emergency Center. The weather was perfect as hams trooped out early to their nearest elementary school to set up their field stations and to prepare for a check-in exercise on 147.500 MHz and 147.540 MHz frequencies. Those that could, also, tried peer to peer Winlink on 146.580 MHz.

Setups ranged from spartan:



to positively sybaritic.



Valuable lessons were learned. First, net control needs more than one operator. It's a law of fate that if you're monitoring two different frequencies, two important messages will arrive simultaneously. If you respond to one, the other will repeat their message with cascading effects.

Second, with the two net controllers Salt Lake Amateur Radio Club and Salt Lake County ARES, deciding which to report to became a problem that must be worked out in coming exercises.

Third, Winlink is very fussy, sometimes it worked, sometimes it didn't. Both sides need two programs running each with many more options than you could learn for a hobby. Set one wrong and nothing happens. Adding peer-to-peer is even messier. Attempts to get this automatically set up have not been successful.



Deployment to elementary schools needs to take place in a more timely manner. Ideally, amateurs should be ready in fifteen minutes - assure your family and own safety, grab your go-box, CERT backpack or green vest and go. However, the average time during this exercise was an hour.



Bring a comfy chair (is the above comfy?), snacks, water, and appropriate ARRL preprinted forms. You might be deployed for a long time. A big part of disaster preparedness is what happens afterward as lots of money is involved. You may be asked about your communications during court proceedings months after the event. A written record is important.

We look forward to repeating this exercise in September. By doing this twice a year, we hope to better prepare amateur operators for emergency situations.

Member of the Month

Samuel Earl KK7JEV



This month we feature Samuel Earl, KK7JEV, a brand-new general class amateur radio operator. It was Samuel's Grandfather Stanley R. Schulze, K7AIX who encouraged him to get his amateur radio license, and the results are impressive.

Samuel started with *hamstudy.org*, but got discouraged and wanted to give up. Samuel's Father Isaac Earl, KE7RWP, licensed as a Technician, convinced his son to keep on trying. His mother Wendy, KE7DQZ has her technician license too but his two brothers are not interested in amateur radio (yet).

Samuel's father showed him how to use *hamradio-prep.com*. He studied really hard and on November 18 of 2022, Samuel passed and received his technician license. On March 18 of 2023 Samuel passed his general class license exam.

Samuel has the Yaesu FT2800M and Yaesu FT8100R VHF and UHF mobile radios. He wants a Yaesu low band radio for his birthday so he can get on the HF bands. The radio he really wants is the FTDX10 (hint, hint grandpa!).

Samuel made his first contacts over the Herriman Amateur Radio Club Repeater. Tom, KJ7OAW told him about the Salt Lake Crossroads Amateur Radio Club's Social Net and Samuel checks in Monday through Friday at 7 PM and really likes it. He has learned a lot while participating in the net and has made many new friends. Samuel is a member of UARC and enjoys QSOs on the '62 repeater too.

Samuel is fascinated with all of the different communication modes and wants to learn about all of them if he can. Then he could decide which ones are the best to use. He is interested in PSK31 and packet radio. Some of the other communication modes he

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is interested in are EchoLink, WinLink, D-Star and DMR. Samuel even wanted to know what CB radio is all about.

Samuel wants to learn how to build his own ham radio station and hopes to accomplish this in the summer, transceivers, antennas, grounding and all.

Samuel is in the seventh grade at the North Star Academy Charter School in Bluffdale. He hopes he can get his class mates interested in amateur radio. Samuel's favorite subjects are science and history, this year Utah history. Samuel says he has the best teacher in the whole wide world.

After graduating from high school, Samuel is planning on going to college to get a degree in communication technology. He would like to learn all he can about designing, building, and testing antennas.

Samuel likes to read the great classics such as Jack London's "Call of the Wild" and "Twenty Thousand Leagues Under the Seas" by Jules Verne. He also likes The Chronicles of Narnia by C. S. Lewis.

Samuel, congratulations on getting your general class license. We wish you the best in all of your endeavors.

73, N7HVF Linda Reeder