



Smoke Signals

Newsletter of Fullerton Radio Club

October 2025

President's Column

Recently, Ray Rounds, Larry McDavid and I have been experimenting with D-Star. As most of you know, D-Star is a digital mode that allows linking repeaters. As it turns out, the Anaheim HRO store has three very under-utilized D-Star repeaters, on 2 meters, 70 centimeters and 23 centimeters respectively. The three of us have done a bit of testing on the first two repeaters, as well as experimenting on two different kinds of hotspots. You'll likely hear more about this in the future.

As I was dabbling with D-Star, I realized that the D-Star repeater with the best coverage of Orange county is the PAPA System repeater on Santiago Peak. That got me looking at the PAPA System (papasys.com) website. As a result, this past Saturday, Larry McDavid and I attended the PAPA System luncheon at the Sizzler in Fullerton. According to their website: "The PAPA System is a member-supported wide-area amateur radio network of inter-linked analog FM, D-STAR, DMR, and P25 repeaters, providing extensive coverage of the Southern California region and beyond." Their network is pretty impressive, consisting of 41 analog repeaters, 19 DMR repeaters, 12 D-Star repeaters, and 10 P25 repeaters. While I'm not real big on talking to strangers on repeaters, I am curious to learn more about this repeater system.

At the lunch meeting, one of the PAPA System members gave a recap of some of the more interesting exhibits at the Pacificon conference that was held this month in the bay area.

With Ray Rounds' support, Dick Palmer and I have recently installed Linux Mint on Intel laptops that were no longer able to securely run Windows, since the October 14 end of support for Windows 10. After installing Linux Mint, we installed a package called 73 Linux which includes many ham radio related applications. 73 Linux was created by YouTuber Jason Oleham (his real name!) KM4ACK.

When I find time, I'll explore Linux Mint as well as the 73 Linux apps in more depth.

Learning Electronics From a Muntz TV

By Joe Moell KO0V

Ours was probably the last family in our Nebraska town to get a television set. My parents didn't see it as worthwhile until Alan Shepard's space ride in 1961, when I was in ninth grade. The day before launch, my father brought home a used Muntz table model TV just so we could watch Walter Cronkite's coverage of this historic event.

Earl "Mad Man" Muntz was a self-taught engineer and entrepreneur who was notorious for simplifying circuits so he could profitably sell products for far less than the major manufacturers. Legend has it that Muntz would visit his design room with a pair of side cutters and remove components from a prototype under test. If the unit continued to work, he would chastise his designers for overengineering.

This Muntz black-and-white TV had just ten tubes, not including the picture tube. The sets being made by Emerson, Zenith, RCA and others often had twice as many. It had a good picture on one nearby station but didn't have enough sensitivity to get any distant stations. Fortunately, Cronkite was on the local channel.

After a few months, this TV developed an unusual problem. The picture only filled about 70 percent of the screen. I had to find out why, so I started by doing what most hams did back then. I took out all ten tubes, put them in a box and took them downtown to the U-Test-M tube tester at the Rexall drug store. Not surprisingly, some tested "marginal" and the druggist was more than happy to sell me replacements from his ample stock. After I installed them in the set, the picture was just as small.

Next I looked into our power line voltage. My bargain multimeter convinced me that it was 10% low which, I was sure, explained the shrunken picture. The transformer feeding our house was at the far end of the block and the voltage drop in the lines had to be the culprit. So I called the local power company and complained. (Really, I did!) A technician came out promptly, made measurements

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FRC October 1, 2025 Board Meeting Minutes

The monthly FRC Board Meeting was called to order by President Bob Houghton AD6QF at 5:35 pm on Wednesday, October 1, 2025 via Zoom.

Board Members present: Bob Houghton AD6QF, Robert Gimbel KG6WTQ, Ray Rounds K6RAX, Walter Clark, Bart Pulverman WB6WUW

Guests present: Ted Schulman KO6FKX

Board members absent: Gene Thorpe KB6CMO, Larry McDavid W6FUB

The September Board Meeting Minutes were reviewed and approved without amendment.

Treasurer's Report:

- New deposits: \$.02 interest + \$40
- New expenditures: None
- Bank balance: \$5,834.38 as of September 30 bank statement.

Membership:

- New members: Mike Klewer, K6MFK
- Bob's records show 29 paid members, plus 1 life member as of 9/30/2025.

Old Business:

- There was no old business carried over from the previous meeting.

New Business:

- Bob mentioned the upcoming Saturday in the Park plans, to be held on October 11. He will work with Ray Rounds.
- Those that had not yet responded to the ARRL HOA legislation letter were provided the link and completed the form.

Meeting was adjourned at 5:49 PM

Submitted by Ray Rounds K6RAX, Secretary

November schedule

Wednesday 11/5/25

5:30 pm Board Mtg (Zoom)

6:30 pm - Dual-mode Net

7:00 pm Zoom

Saturday 11/8/25

8:00 am Hillcrest Park & Lunch

Wednesday 11/12/25

TAG at Walter's

Wednesday 11/19/25

6:30 pm - Dual-mode Net

7:00 pm Zoom

Wednesday 11/26/25

6:30 pm - Dual-mode Net

7:00 pm Zoom

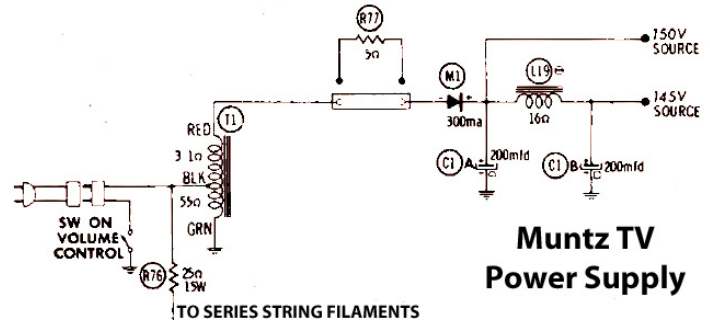
and told me that the voltage at our meter was only a few volts below nominal and well within tolerances. I was unconvinced and said as much.

A week later, a crew came out and installed a new and bigger transformer on the pole right behind our house. Maybe they had already been planning an upgrade, but I like to think that I had convinced them to do it. Afterward, our line voltage was right on spec, but the TV picture was still the same.

In those days, one couldn't simply go online and download service information for electronics. The only way I could get it was to buy the Photofact folder that included this model. In addition to the schematic, it had interior photos, parts placement drawings, voltages and important waveforms, compiled by the engineering staff of the Howard Sams publishing company.

I took the back off the set, powered it with a "cheater cord" to defeat the interlock and started making measurements. It was important to do this safely, because one side of the AC line was connected to the set's chassis. To my surprise, the main B+ voltage, which was supposed to be 150 volts, was only 100 volts.

winding in series, was being rectified to produce B+ output at a lower voltage.



I bought and installed a two-winding step-up transformer, powered the set with the cheater cord, and the picture was full-sized again. I was proud of myself until my hands slipped as I put on the back cover. There was a "tink" and then a hiss that lasted for a full minute. I had cracked the pinch-off at the cathode-ray tube socket and the tube "went to air." And that's when I learned how to source and replace the picture tube in a TV set.

PHOTOFACT Folder **EIA** **MUNTZ MODELS 821 Series, 824 Series, 827 Series**

SET 409 FOLDER 2 **MUNTZ MODELS 821 Series, 824 Series, 827 Series**

DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL

1. Remove 3 push-on type knobs from the side.
2. Remove 3 wood screws holding the knob escutcheon and remove the remaining knobs.
3. Remove 6 wood screws holding the rear cover. Remove the rear cover.
4. Remove 2 wing nuts holding the speaker.
5. Remove 4 chassis bolts from the bottom, holding the chassis mounting board.
6. Remove the chassis.

CAUTION NOTE

ONE SIDE OF AC LINE CONNECTED TO CHASSIS
Care should be exercised when connecting test equipment or physically contacting the chassis.

821 Series

TRADE NAME	Muntz	MODELS	821 Series, 824 Series, 827 Series
MANUFACTURER	Muntz TV Inc., 1000 Grey Avenue, Evanston, Illinois		
TYPE SET	Television Receiver		
TUBES	Eleven		
POWER SUPPLY	110-120 Volts AC, 60 Cycle	RATING	125 Watts, 1.25 Amp. @ 117 Volts AC
TUNING RANGE	Channels 2 thru 13 VHF, 14 thru 63 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)		

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustment of the VHF Oscillator is possible by removing the Channel Selector and Fine Tuning knobs. Set the Fine Tuning at the center of its range. One slug for HIGH band adjustment is located at 9 o'clock, and should be adjusted first. The LOW band adjustment is located at 9 o'clock. Adjust for best picture and sound.

PICTURE TUBE SAFETY GLASS CLEANING

Remove the wood screws holding the trim strip at the top edge of the safety glass. Tilt glass out at the top and lift up to remove.

FOCUS

The focus may be varied by the position of a strap on the base of the picture tube. The strap can be connected between pins 6 and 2, or 6 and 10. Readjust the Beam Alignment Magnet for the best focus consistent with maximum brightness.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENTS

For adjustment of the Horizontal Oscillator, it is necessary to remove the rear cover and supply power to set. Set the Horizontal Hold at the center of its range and adjust the Horizontal Frequency slug (B) until the picture synchronizes horizontally. (For location, see tube placement chart.)

SOUND IF DETECTOR BUZZ ADJUSTMENT

To eliminate intercarrier buzz, adjust the Discriminator secondary (AD) located on top of chassis.

FUSE DEVICE

A 50 fusible resistor (R77) is used for low voltage power supply protection. (For location, see tube placement chart.)

CENTERING

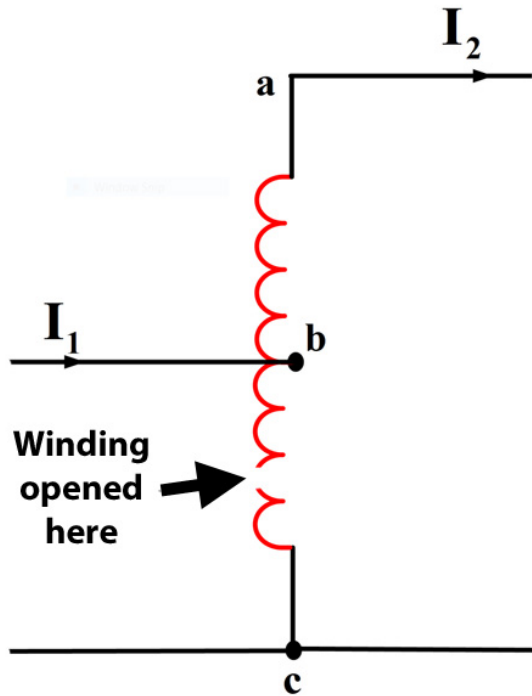
Centering is accomplished mechanically by adjusting two magnetic rings around the neck of the picture tube. Rotate the two rings around the neck of the tube until the picture is properly centered.

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DATE 8-58 SET 409 FOLDER 2



Muntz didn't just economize by taking out tubes and resistors. He also saved a few nickels by eliminating a multi-winding step-up power transformer and substituting an undersized autotransformer. As the set's power supply schematic shows, a step-up autotransformer has only one winding. Line voltage is applied to part of the winding and higher voltage develops across the entire winding.

The part of the winding connected across the AC line had opened, so there was no magnetic flux to produce high voltage. Line voltage, with part of the

Could this have become the most expensive Muntz TV ever?

Cost to repair: Some new tubes, a Photofact, cheater cord, two-winding transformer and replacement CRT.

Knowledge and experience gained by a teenaged ham: Priceless.

The End of Passwords? A Look at How Passkeys Work

Ray Rounds, K6RAX

In our ongoing series about keeping the internet safe, we've been chatting about the importance of strong passwords and protecting two-factor authentication (2FA). But what if we could ditch passwords altogether?

That's where **passkeys** come in. These are the new password-less authentication standard that's about to shake things up when you log in. Unlike a password, which you have to remember, a passkey is a unique cryptographic credential that lives on your device, super secure with your biometrics (like your face or fingerprint) or your device's PIN. Lots of online services are switching to passkeys and making things even safer—let's check them out.

How Passkeys Work

Passkeys are built on a security technology called **public key cryptography**. When you setup a passkey for an online account, your device instantly makes a pair of mathematically linked keys:

- **A Public Key:** The website gets this key and stores it on its servers. It's public and safe on its own.
- **A Private Key:** Your device keeps this key super securely. It never leaves your device and is the real secret.

When you want to log in and you send your username or email to the service, the website quietly sends a unique "challenge" back to your device. Your device uses its private key to "sign" (or authenticate) this challenge. To do this, you might confirm your identity with your face scan or fingerprint. The website gets the signed challenge and your public key, and instantly checks the signature. This process confirms you're the real deal **without ever sending a password or private key over the internet.**

Can a private key be guessed? Not even with the most advanced super computers trying every possible combination. For the shortest and advanced form of public keys at 256 bit lengths, that works out to:

115,792,089,237,316,195,423,570,985,008,687,907,
853,269,984,665,640,564,039,457584,007,913,129,
639,936

possibilities (whew!). Even with a supercomputer that could check a billion-billion key pairs per second, it would still take billions of years to find the right one. Many keys are 2048, 3072, or 4096-bits long. You have better odds just playing the PowerBall Lottery.

The Major Advantages

Passkeys are a game-changer when it comes to security and ease of use compared to traditional passwords:

- **Phishing-Resistant:** Since your passkey only works with the website that made it, a scammer can't trick you into using it on a fake site. This takes out a common way cyberattacks happen.
- **Immune to Data Breaches:** Your private key is never stored on the website's server, so it can't be stolen in a data breach. Hackers who steal public keys will find them useless.
- **Simpler and More Convenient:** Say goodbye to the headache of maintaining a bunch of complicated passwords! Just a quick biometric scan, and you're in.
- **Replaces 2FA:** The passkey process enhances built-in multi-factor authentication, mixing "something you have" (your device) with "something you are" (your biometrics), so you don't need separate 2FA codes anymore.

What companies are using or rolling out passkeys now? Here's a short list: Apple, Google, Microsoft, Amazon, Adobe, PayPal, 1Password, Discord, X (Twitter), Facebook, Instagram, and WhatsApp. These, in addition to many financial institutions, are actively working to eliminate passwords.

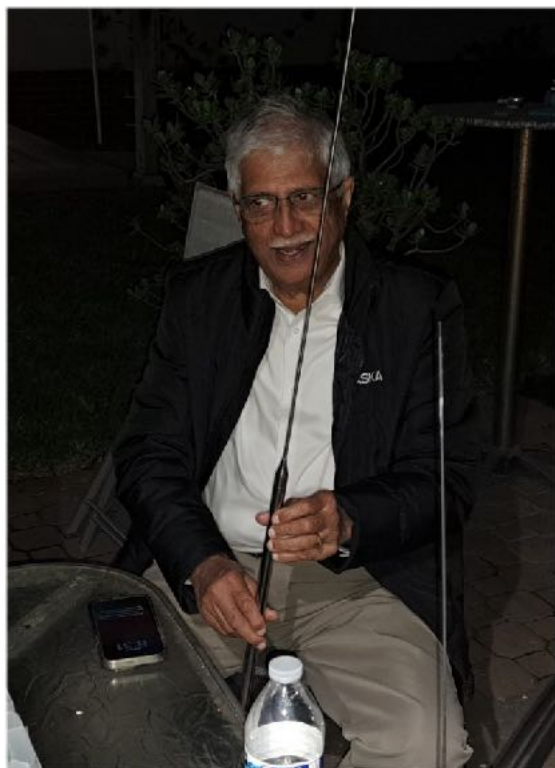
It might take a little while to get used to the password-less future, but as big tech companies jump on the passkey bandwagon, it's a clear sign that we're heading towards a much safer and easier digital world. By switching to this new standard, we can finally leave behind the frustrating and insecure world of passwords.

Let me know via email: [k6rax \(at\) rayrounds.com](mailto:k6rax@rayrounds.com) if this is something you've used.



TAG Activity Report for October 2025

Bart Pulverman was the opening discussion. How do we include him in the TAG discussion now that he's moved to Delaware? Then Bob brought up the point that it would be 10:30 at night for him if we went to the trouble of "televising" the meeting.



Harish Kumar demonstrated a 25 foot collapsable whip antenna with ground radials. Harish has HOA restrictions and needs to be stealthy about antennas, or, as in this case, deploy temporary antennas that can be taken down after operating.

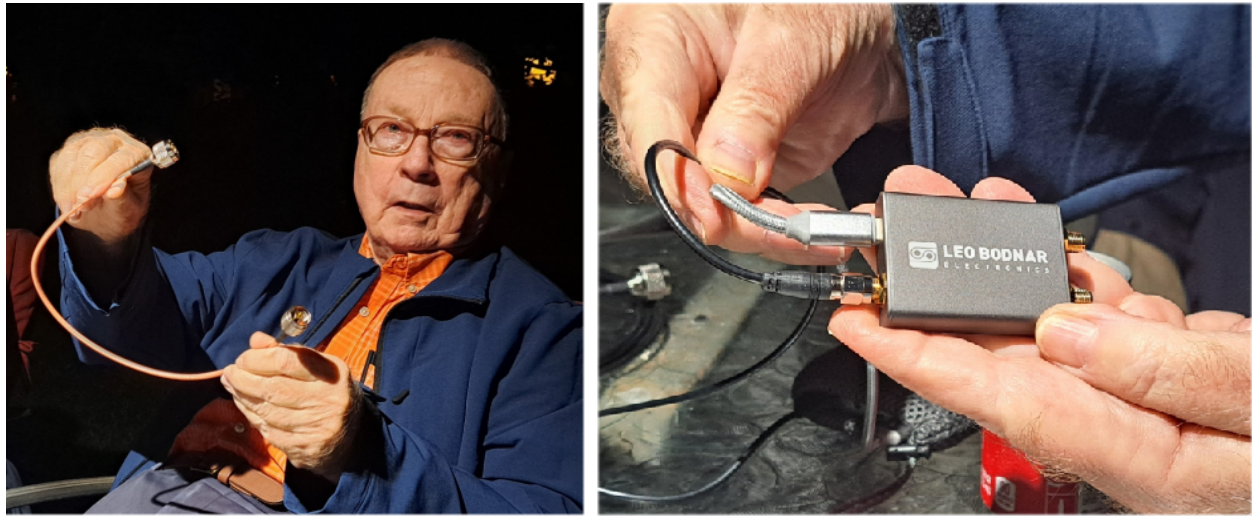
Larry McDavid in the picture below (next page), is holding up a new form of RF coax, well new for us. RG-400. Where the more familiar RG-58 has a solid center conductor this cable is stranded. Larry described RG-400 coax that he is now using, as having FEP Teflon insulation, stranded center conductor and two silver-plated copper, woven shields over a bonded aluminum

foil shield on the center insulation. This coax is low-loss, flexible and has very low RF leakage.

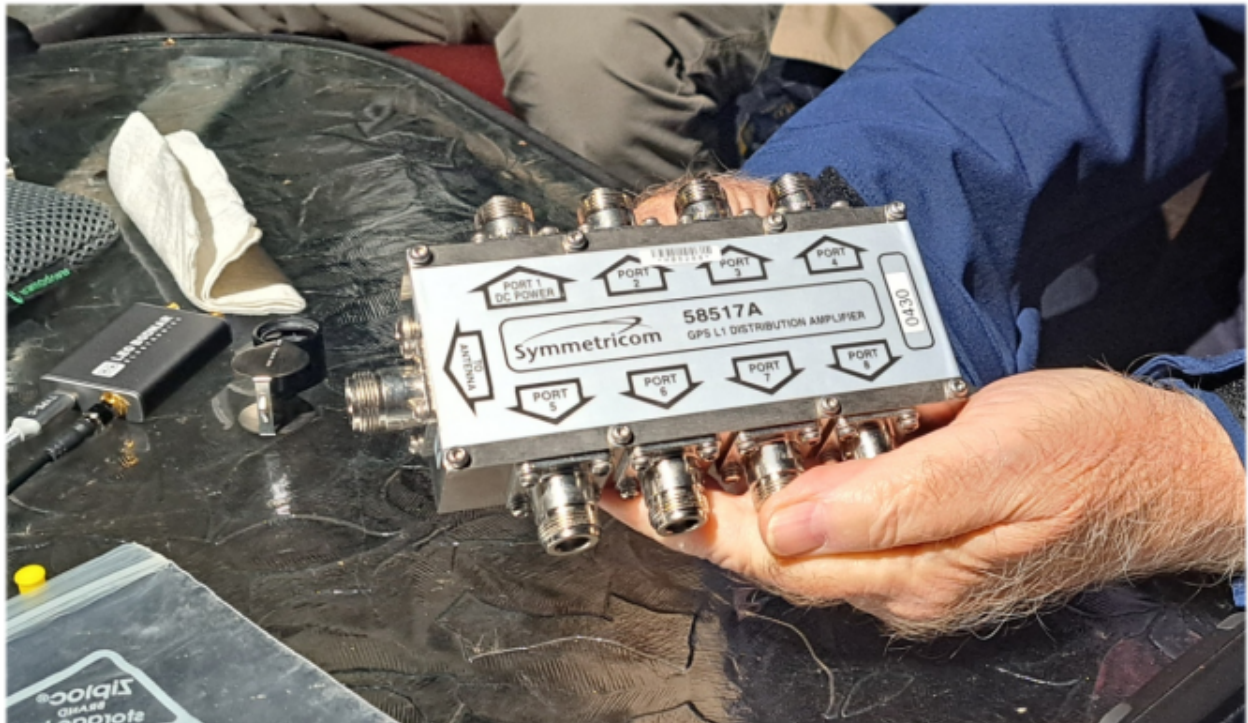
Larry also showed us a new Leo Bodnar GPSDO that has two programmable-frequency outputs. He will use the 49.152 MHz output to accurately set the frequency of his Icom IC-9700 transceiver; the other output can be set for precise 10 MHz or for 1 pulse-per-second sync'd to UTC (Coordinated Universal Time). He has other GPSDOs and GPS

clocks, and needed to share his rooftop GPS antenna using a new 8-way GPS antenna splitter.

Dick Bremer brought his Kenwood N800 and talked about using it to reach as many distant repeaters as he could on UHF 440 Mhz. He also mentioned installing a \$200 radio in an remote repeater installation in Carbon Canyon.



Below, Larry is holding an 8-way GPS antenna splitter.

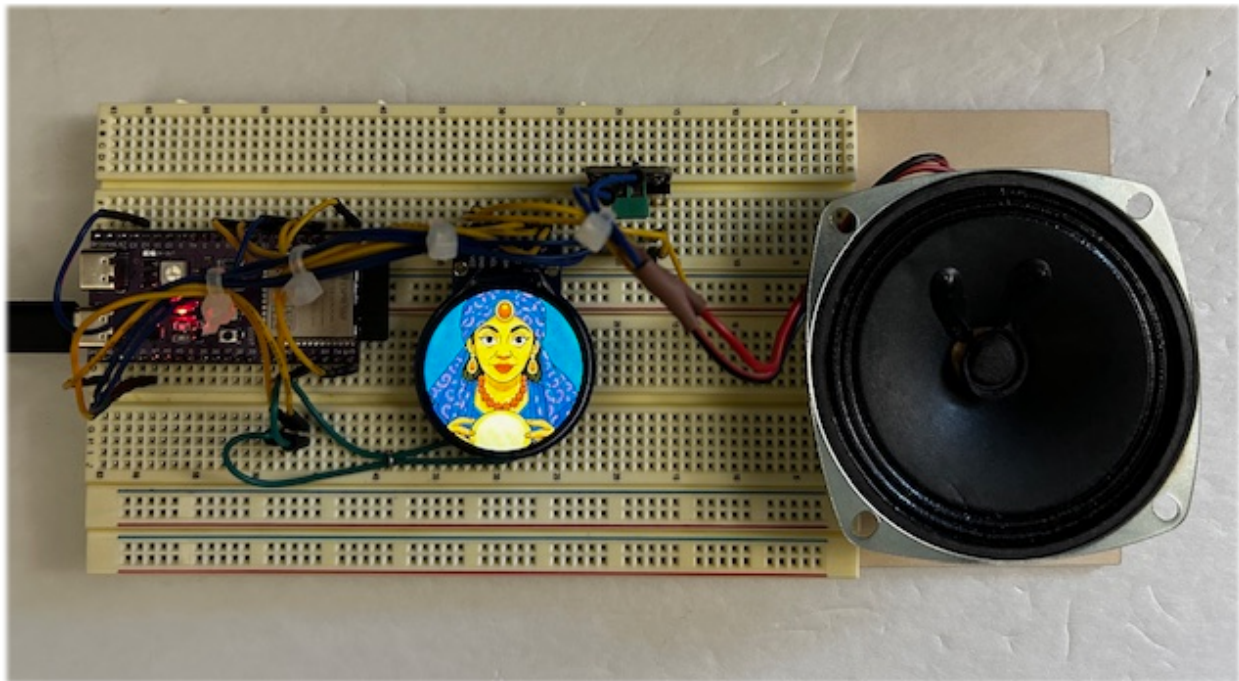


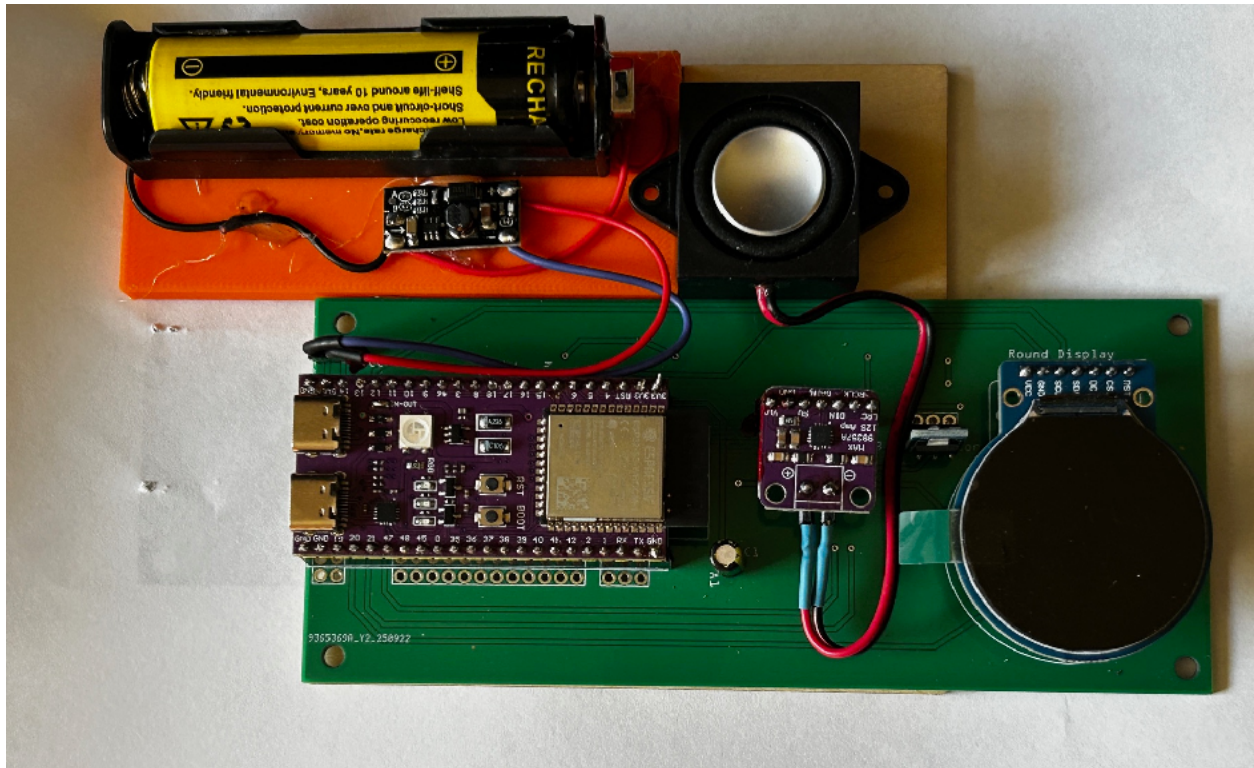
Tom Fisk described a project he's been working on for a while. A 50 year old Wurlitzer console. A friend of his and apparently someone known by others in the radio club, John Klewer, helped Tom with the 300 watt power supply. Tom also said he's brushing up on his code. Up to 15 wpm now. Mind you, the first time he learned code was in the 1940s.

Bill Webb is holding a two-sided, silk-screened printed circuit board. Boards like this are made in China and arrive in less than two weeks. Cost for a board this size is \$2-\$4 no matter how many traces.



<https://www.pcbway.com> You kick the process off by emailing the manufacturer a Gerber file. This board's Gerber file was designed on <https://fritzing.org> This particular board is for his Fortune Teller project. This is the prototype version and below that, the final version.





Here's a 3-D printed object he made for Walter. The way the structure folds makes the tip of the plastic point, point to the same place in space. It's weird.



It was asked of Bill if he had to pay Trump's tariff. He said that when he bought the last bunch of modules, the de minimis exemption was still in effect. It is a legal term meaning "the law cares not for small things". Initially, there was a de minimis limit on tariffs applied to Chinese imports. Shipments valued under \$800 were not subject to tariffs. This ended a few weeks ago. Tariffs now apply to all Chinese imports, even a \$5 order of LEDs. To which Walter asked, who collects that tribute and how big an army of inspectors are going to track down and punish those who don't collect that tax?

Dick Palmer showed us two similar sized modules. This one is obviously a filter. The other (not pictured) was a small HF amplifier. We have a few members who are interested in compact amplifiers for their QRP radios.

