

Microvolt

June 2024



Ham Radio Best Practices



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**Online version only*

Do **you** follow amateur radio best practices? What exactly are *best practices*? And *best* according to whom? Are these best practices governed by rule, or gentlemen's agreement?

Whether you've operated amateur radio for many years, or you're brand-spanking new, if you've ever communicated over radio, both you and others have likely developed a comfortable style and set of unique habits. But are they *good* habits?



Cover – Amateur radio best practices

The focus here is not on radio equipment installation, hardware guidelines, or safety, but following good on-air etiquette. According to the rules (Part 97.1e), one of the primary purposes of amateur radio is to enhance international goodwill. Where better to start that international effort than right at your own station? Yet, the rules don't specify exactly how to implement that enhancement, leaving the rest to your good judgment.

Regardless the situation, when interacting with other human beings, above all, the key attribute that should guide our words and actions is **kindness**. Whatever we say to others should be said *kindly*; whatever we do to or for them should be done in a *kind way*. If we find a situation in which it seems too difficult to be kind, it might be best to remove ourselves from the potential conflict and not say anything, rather than say or do something unkind.



In the amateur radio world, the art of mentoring or tutoring another ham is known as **elmering**, something we discussed here previously. **You** are an elmer, because other operators look to you for guidance or just a good example. There was no exam, no special certification; only your kindness and willingness to share and help, that qualified you to be an elmer.

Here are a few best-practice guidelines:

- When announcing your call sign, along with that of another, **put yourself last**, as in "K7XYZ, this is K7ABC" if your call sign is K7ABC.
- Leave some space between transmissions by waiting a second after your friend releases his PTT, before you press yours.
- Keep your mouth within an inch of your HT (handheld transceiver) microphone and within a



couple of inches of your hand microphone.

- Keep your HT antenna pointed upward.
- Avoid **kerchunking**, which is repeatedly pressing and releasing your PTT button to test your connection to the repeater, without saying your call sign.
- If you'd like to jump into an ongoing conversation, avoid using the word *break* or *contact*; instead, **say your call sign** between their transmissions.
- Avoid answering when you hear the word "testing" because it means "I'm running a test, so please don't interrupt me".
- Try and keep your comments positive and upbeat.
- Avoid talking about others behind their backs.
- Avoid transmitting bodily noises, such as burping, eating, coughing, and worse.

If possible, avoid the three Cs: **criticize**, **correct**, and **counsel**. *Counsel* simply means giving unsolicited advice. Yes, the person might thank you later, but leave the advice-giving to others, those of *his* choosing.

Are you a person who feels the need to get on the radio and correct an operator right away for making a mistake? If so, there is a way to **correct others over the radio**, but in general, **resist that urge**, especially if the offense is not all that important.

And if you should hear another person on the radio criticize or correct a newer operator, you might want to keep in mind that the offender might not realize his approach is offensive, simply because of his upbringing or background. Get on the radio and reassure the newbie, rather than confront the bad guy.

In a couple of weeks, you'll have a unique opportunity to test your Best Practices skills during **Field Day**. While you're hearing the examples of others, you can demonstrate your inner elmer as well.

Microvolt editorial staff

Editorial – Bandwidth

One piece of ham radio information we don't seem to talk about much is **bandwidth**, and maybe rightly so. This piece covers a very small but relevant subsection of the topic.

It's a radio setting and a signal configuration that's important, but by default, most of our radios set that appropriately, and we never concern ourselves with it. Still, if you use one bandwidth setting, and attempt to communicate with another station that's on a different bandwidth setting, you might sound to the other station like you have a bad cold.

Definition

Bandwidth is simply the amount of frequency spread your signal is occupying while talking, or the frequency range your radio is expecting to receive. There are two primary bandwidth settings in the VHF and UHF FM world, and we refer to them simply as **narrow** and **wide**. Some radios also include a third setting, but we'll focus on these two primary ones. When you're using your radio to communicate on simplex, as long as you and the other station are using the same bandwidth setting, that should work fine for you. The problem typically exhibits itself only when you're trying to communicate through a repeater, and you start sounding like Donald Duck.

Repeater bandwidth

In Utah, all repeaters are mandated by the **Band Plan** to use the **wide** bandwidth setting, meaning that your radio should also be set to the wide bandwidth setting to communicate through repeaters here. However, the policies in other states might differ from what you're used to, and you'll need to be aware of their bandwidth setting requirements before attempting to travel and use their repeaters.

One useful online tool for locating repeaters at any location, and discovering their bandwidth requirements, is **RepeaterBook.com**, which also has a free app you can install on your phone. Otherwise, select the **wide** bandwidth setting if you're unsure.

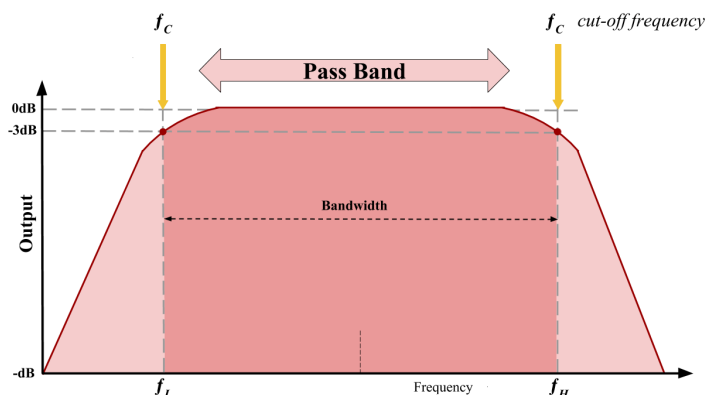
Bandwidth on HF

Bandwidth applies to HF (high frequency, or 1.8 MHz through 29.5 MHz) as well. For SSB (single sideband), the bandwidth is variable, but the maximum is typically about 3 kHz. Other modes, such as CW, FT8, and RTTY tend to occupy a smaller bandwidth, each



unique to the characteristics of the particular mode.

HF receiver bandwidth can be adjusted by several internal circuits, including band-pass filters, notch filters, and others. Many modern rigs have a control to adjust the **passband** width.



Antenna bandwidth

The bandwidth of an antenna is the frequency range within which it can effectively receive or transmit a signal. Typically, we consider "effective" to mean the range of frequencies for which the antenna presents an SWR of 2.0:1 or lower, known as the **SWR bandwidth**. If the antenna SWR is too high for the desired frequency range, we often use a tuner on HF, or a passive matching system on VHF to lower the SWR, and reduce the loss due to feed line attenuation.

The SWR bandwidth is determined by *the entire antenna system* (antenna, tuner / match, feed line, connectors, wire thickness, etc.) within the target frequency range. Furthermore, the antenna system can inadvertently include objects that it **couples** with, such as metal gutters, swing sets, and any nearby conductive object, thereby also affecting its bandwidth.

Noji Ratzlaff KNØJJ

Letters to the editor

Dear Editor:

Do you think they'll ever bring back the Morse code requirement?

Eli in Millcreek

Dear Eli:

Only as soon as they implement the FT8 requirement.

Dear Editor:

I hear people talk about sunspots and the sunspot cycle. What do sunspots have anything to do with radio? A Google search only results in websites that talk about the minimum, the maximum, and how long the cycle lasts, but nothing about their relevance to radio. What am I missing?

Dave in Salt Lake City

Dear Dave:

To make a long story short, sunspots are areas on the Sun's surface that are much lower in temperature than surrounding areas because they vent huge columns of pent-up high-temperature plasma, reducing the surrounding temperature. But along with that ejecta is a huge outpouring of energy in the form of UV (ultraviolet) radiation. When that high-energy radiation strikes Earth's atmosphere, it dissociates (removes) electrons from nitrogen (N_2) molecules, temporarily surrounding the Earth with a charged blanket known as the ionosphere. Because it's charged, the layer acts like an invisible reflector, allowing low-frequency radio waves to bounce off it and reach distant lands. But the blanket doesn't remain charged for long, due to ion recombination, and so new dissociations must occur continually to sustain reliable ionospheric communication. For this reason, the more sunspots there are, the longer the ionized layer remains able to refract the radio waves. And yes, that's the short version.

By the way, the reason 10-meter signals don't tend to work well at night for long distances is because their inherent energy ($E = hf$) is so strong that they easily penetrate the ionospheric E-layer and F-layer. But they tend to work well during the daytime because the same signals possess enough energy to overcome the ionospheric recombination rate of the lower D-layer and then refract off the strongly ionized F2-layer.



Dear Editor:

Is it ok to key up and talk over a repeater ID when it identifies itself?

Stacey in Holladay

Dear Stacey:

It's perfectly acceptable to transmit through a repeater while the repeater is attempting to transmit its call sign, whether it's using Morse code or recorded voice. In fact, many repeaters are programmed such that a transmitted carrier from you will take precedence over its ID for the transmission.

Dear Editor:

I have a friend who claims my ham radio generates deadly radiation that'll cook my gray matter or cause me to produce deformed children. Is there any truth to this?

Brian in Sandy

Dear Brian:

Devices that comply with amateur radio Part 97 (and other) regulations do not generate the type (frequency and power level) of radiation that can harm your body, as long as you comply with **minimum distance requirements**. Furthermore, the amateur radio frequencies we tend to use are classified as *non-ionizing*, which does not damage cellular genetic material. I can't really explain your deformed children, but you might ask your friend whether he/she uses a smartphone or spends any time under the Sun or in a tanning booth.

Send your thoughts to editor@utaharc.org

Club news

The May 2024 club meeting presentation was teamed by Mel Parkes NM7P and John Lloyd K7JL, representing the **Utah VHS Society**. They discussed the repeater systems, especially the **Intermountain Intertie**, that volunteers had set up in behalf of the Society for our benefit, and how to access them.



have had on the repeater antenna towers, with a couple of them having actually been destroyed.

Mel is the Utah VHF Society President and John is the Utah Frequency Coordinator.

John gave us a lesson on how to properly use an HT (handheld transceiver) to speak through a repeater, and demonstrated how it appears on a service monitor screen when we don't. He pointed out that, when people have troubles talking through repeaters, the issues are much more likely the operator, not the repeater or even the radio.

You can see the video presentation here: <https://www.youtube.com/watch?v=KtfofkFmopE>. You can also view past club meeting presentations on our YouTube channel: <https://www.youtube.com/@UtahAmateurRadioClub>

(Photos courtesy Mike McAinsh KI7MTI, et al)



John also gave us a slideshow tour of several Intermountain Intertie repeater sites, including those at Farnsworth Peak and Snowbird. He also showed us some of the effects weather, especially snow and ice,



Letters to the editor

Starting with the (March 2024) issue of *Microvolt*, we've been printing selected letters to the editor (see page 4). Please email submissions to editor@utaharc.org. We invite thoughtful, humorous, technical, and even controversial comments and questions, but please include your name and town. Entries will be accepted and edited for content at the discretion of the editorial staff. Speaking of which, if you're interested in joining said staff or would simply like to help proofread issues prior to publication, please also contact us.

For your information

Microvolt has expanded!

Your club newsletter *Microvolt* is now longer than the 8 pages you're used to. See the rest of the story in the online version, located at

user.xmission.com/~uarc/Microvolt/2024/June2024.pdf

Field Day 2024

Saturday noon 22 June through Sunday noon 23 June near **Payson Lakes**. We plan to start setting up Thursday night about 6:00 pm.

Annual UARC Steak Fry

Saturday 20 July 2024 the **Spruces Campground, site GRP7** starting around 3:00 pm.

License classes

Salt Lake:

General : Tuesdays 7:00 pm to 9:00 pm
147.160+ MHz (127.3 Hz tone)

Orem:

Extra : 5 Tuesdays, 6:30 to 9:30 pm
Jul 16, Jul 23, Jul 30, Aug 6, Aug 13
Visit psclass.orem.org to register (\$10)
Orem Traffic Training Room, 95 E Center St
HamStudy.org account required
Email nojiratz@hotmail.com for info

Eagle Mountain:

Technician : 5 Thursdays, 7 to 9 pm
May 23, May 30, Jun 06, Jun 13, Jun 20
Technician : 5 Thursdays, 7 to 9 pm
Aug 29, Sep 05, Sep 12, Sep 19, Sep 26
Email ki6oss6365@gmail.com to register (free)
Eagle Mountain City Hall, 1650 Stagecoach Run

Exam sessions

Salt Lake County:

- Email Garth Wiscombe W7PS w7ps@arrl.net
May 20, Jun 24, Jul 29, Aug 25, Sep 30, Oct 28, Nov 25
- Email Rick Morrison W7RIK w7rik@arrl.net



Utah County:

- Wed 19 Jun 7:00 pm : **Provo** : [signup](#)
- Wed 17 Jun 7:00 pm : **Provo** : [signup](#)
- Sat 22 Jun 10:00 am : **Eagle Mtn** : [signup](#)

Club repeaters

Farnsworth Peak : 146.620– MHz (no tone)

Scott Hill : 146.620– MHz (no tone)

Lake Mountain : 146.760– MHz (no tone)

SDRs and beacons

Northern Utah WebSDR : sdrutah.org

KK7AVS SDR : k7xrd.club

K7JL beacon 28.2493 MHz

HF remote and club transceiver stations

If you'd like to learn how to get started using the remote stations, visit the **HF Remotes link** on **the club website**:

<https://user.xmission.com/~uarc/HFRemote.html>

How can I help?

Reach out to the club leadership by sending an email to uarc@xmission.com. Also, add to this page by emailing editor@utaharc.org

Spotlight – Don Rawlinson K7DHR

Scientific things have always interested me, and so while serving my LDS mission at age 21 in Niue Island in the South Pacific near Samoa, I met a ham from New Zealand who had a station, and that sparked my interest. That was 1962. While living in Lindon some 10 years later, Larry Hall K7EYE, took me under his wing to help me get my Novice ticket, licensed as WN7VNQ. Another good mentor was Bryce Anderson K7UA (SK), (formerly K7SAI), who last lived in American Fork and was a very active DXer. That same year I took and passed the General, then later the Advanced Class exam in Salt Lake City, and got the call WA7VNQ. It wasn't until late in 1997, while living in Logan that I took and passed my Extra Class exam (the "old" way) through the VE system, where I also served as a VE. Eventually, in 2017 I changed my call sign to K7DHR.



It was my privilege to serve in the Bridgerland Amateur Radio Club as their President, and was on their Board of Directors for several years. There are so many great memories of my association with the Club. One of my special friends and mentors was Clayton Clark AC7O (SK), whose call sign now resides on the 146.720 repeater, located on Mount Logan in Cache Valley. He was a truly great mentor and friend.

My favorite mode right now is FT8 digital. Band conditions being what they are and with my limited power and moderate antennas, working SSB is really trying. I'm still active on the Beehive Utah Net, and handle traffic into Utah County when I can. And of course, I enjoy VHF as well, and have made many friends here on the repeaters.

I live in St. George now, but back at my QTH in Pleasant Grove, Utah, I ran a Kenwood TS2000 to a 7-band homebrew Windom at about 30 feet, in an inverted-V configuration. I have an end-fed 32-foot wire with a 9:1 (unun) coil and 31 feet of coax, which tunes well with the TS-2000.

An old Kenwood TS-50 serves as a backup radio, along with an MFJ mobile tuner. The TS-2000 also works as my shack 2 meter/70 cm rig, and I feed it to a dual-band Pockrus J-pole, also at 30 feet, allowing me to remain active on the local repeaters. The photo to the left shows my 80-10 Windom, the J-pole on top, and the end of a 60-foot end-fed. I purchased the J from Carl, but I built the rest.

– 73 from K7DHR



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We encourage you to submit original pictures (highest resolution), articles, book reviews, software and hardware descriptions, nuggets of humor, and responses to editorials. Email the content, pictures attached, to the editor at editor@utaharc.org by the 24th just prior to the target month.

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 **NOT** a 501(c)(3) non-profit organization. It holds a club station license with the call sign W7SP, a memorial to Leonard "Zim" Zimmerman, amateur radio pioneer in the Salt Lake City area.

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**, room 2230.

Club membership is open to anybody interested in amateur radio; a current license is not required. Dues are \$20 per year, including a *Microvolt* subscription, which cannot be separated from membership. Those at the same address as a member who has paid the \$20 can obtain a membership without a *Microvolt* subscription for \$12. Send dues to club secretary James Bennett, 4960 W 5400 S, Kearns, Utah 84118. Email address changes to kk7avs@gmail.com

Tax-deductible monetary contributions are gladly accepted. Send directly to the treasurer Shawn Evans, 1338 S Foothill Dr, #265, Salt Lake City, Utah 84108-2321. For in-kind contributions, please contact uarc@xmission.com to make arrangements.

UARC maintains the 146.620– and 146.760– repeaters, which are administered by the **UARC Repeater Committee**. Direct comments and questions to any committee member. The 146.760– repeater is on IRLP node 3352.

The **UARC Ham Hotline** at **801-583-3002** is for information regarding amateur radio, including club, testing, meeting, and membership information. Leave your name, number, and a short message, and we'll make a good-faith effort to return your call.

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UARC 2024 Board

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For late breaking news listen to the UARC Information Net Sundays at 9:00 pm on 146.620– or visit the [announcement page](#).

We are grateful to the management of our internet service provider XMission, for the donation of our web service. For account information go to <http://www.xmission.com/> or call 801-539-0852

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Tech corner – Your own PCBs, Part 3

In the previous articles, I discussed the design of a two-channel **electret microphone mixer** with an adjustable band-pass filter, and the **subsequent design of its PCB board** using *ExpressPCB Plus*.

This final installment populates the PCBs with SMD 0805 (medium sized) resistors and capacitors, LM358 integrated circuits or sockets, and 0.1" headers. If all goes well, and you have all the parts, this shouldn't take more than a few hours of assembly time. But, wiring up the potentiometers and microphone connectors is a time sink that took me several hours. 3-D printing the box after a few false starts soaked up additional time.

Beginner tools

You probably already have a soldering iron, but you're going to need something small; 5 to 10 watts is more than sufficient.

- You need **the appropriate solder**, the thinner the better
- **Water-soluble flux pen**
- Solder station : adjustable heat is desirable but you can get a low wattage iron from **Home Depot** that will suffice, with patience
- Tweezers. the more the merrier. Sharp points a necessity, keep band aids handy.
- Magnifying glass or microscope : especially if your eyes aren't what they used to be
- **Exacto knife** with sharp points : useful for cutting traces that shouldn't connect, or scraping off solder mask, or making plastic fit
- Wire cutters with flush faces
- Wire strippers : thermal is the best but expensive; for #30 hookup wire, you can use your teeth if your dentist doesn't know
- Rubbing alcohol : to remove the spent flux or Q-tips dipped in the alcohol
- **Solder wick** : copper braid to help remove solder
- Pizza oven : if you don't want to solder small parts

Part placement and soldering order

There's a best order for soldering parts:



1. The thin stuff first. SMDs, smaller through-hole items that don't stick up very far; wait on radial capacitors and headers that stand up straight
2. Work from the inside out
3. Headers and big connectors; it helps if your board will balance on them without tipping over
4. Through-hole parts

First board assembly: design errors

Error #1 : One of the test point labels ended up in copper rather than silk screen. Fortunately, no traces were shorted.

Error #2 : A process error, some through-hole vias had excess solder in them. For example, an 8-pin IC socket had pin #1 nearly full of solder.

Error #3 : -3V on U1 got connected to ground; corrected by Exacto knife

Minor #1 : Some part labels were in the wrong place, a few were missing

Minor #2 : No fixed resistor pads for balance and final gain stage

Substituting parts

Rifling through the junk box and borrowing from friends, I found enough 0603 (small) parts to assemble at least one board until the 0805 parts arrived. This required a microscope for ease of assembly, particularly for older eyes. A reasonable amount of flux that found its way around the board and was removed by an ultrasonic alcohol bath. The two channels are on the left, and the final balance amplifier on the right and the ICs are comfortably seated in their sockets.

Tech corner – Your own PCBs, cont'd



Toaster oven alternative

There's an easier way to solder surface-mount parts. You can still burn your fingers, but you have to try harder. Place flux on the board, put the parts in place, put them in the oven to bake, and you're done. If you're using lead-based solder, you probably want to avoid using the oven for food. You can find many DIY videos on this process by searching for "Using a pizza oven for surface-mount

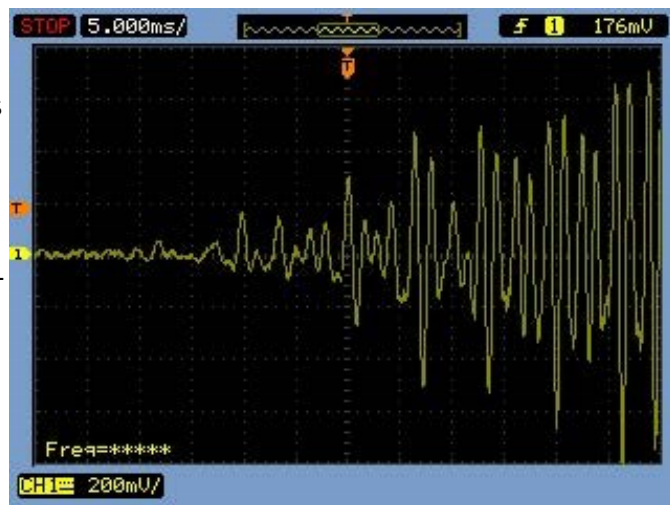
components" on the internet. You'll need either some solder paste or really sticky flux. Put the SMD parts in the right place, place the PCB in the oven until they're melted into place, and you're done. Check the internet for times and temperatures.

Debugging

A few minor problems:

1. Negative was shorted to ground : pin #8 on U1 is grounded, not -Vcc; another Exacto knife fix
2. Op-amp mix-up : TL072 is not the same as LM358...get the right chip!
3. The microphone jack got wired backwards : the PTT got connected rather than the electret

After fixing these problems, to the right is the output from TP4 on channel one volume set to the maximum and saying "One" into the microphone, as reported on an oscilloscope:

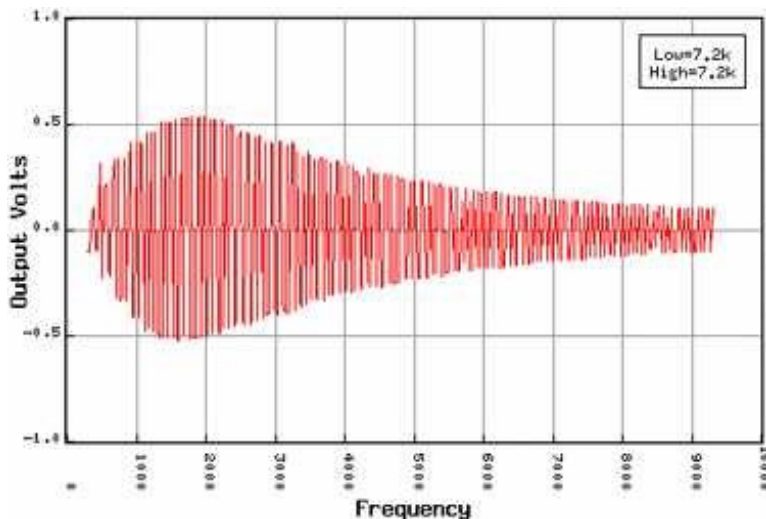


Band-pass

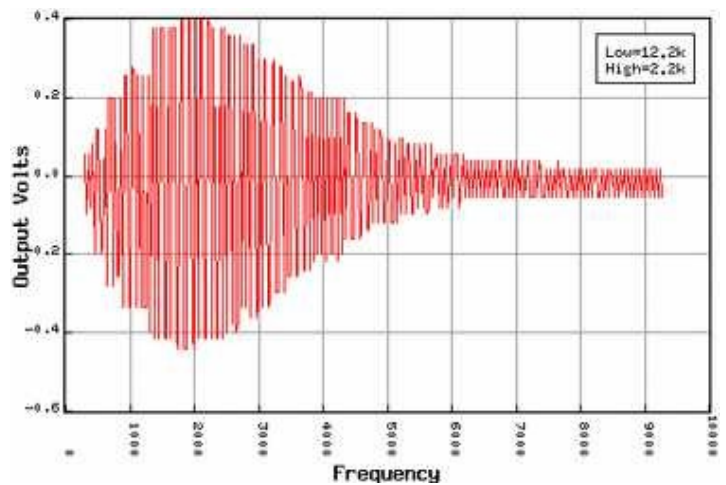
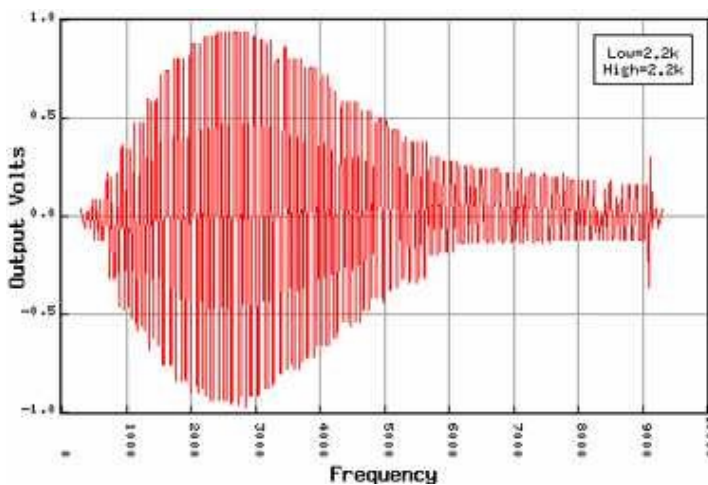
I built a board with a single-channel filter and no microphone pull-up. The first stage gain was set to 100, and two 10-k potentiometers connected for the filter resistor constants. The low-pass filter (high attenuation) capacitor is 0.01 μF and the high pass 0.047 μF . A sweep generator was connected to the microphone #1 input and set at 0.01 volts ranging from 300 hertz to 9300 hertz. I captured the signal by the oscilloscope and plotted the data.

Tech corner – Your own PCBs, cont'd

The band-pass for low/high both set at 7.2-k Ω resulted in a peak amplitude of around 1.6 kHz with a low cut-off at about 1 kHz. The high attenuation is more gradual with most attenuation after 5 kHz:



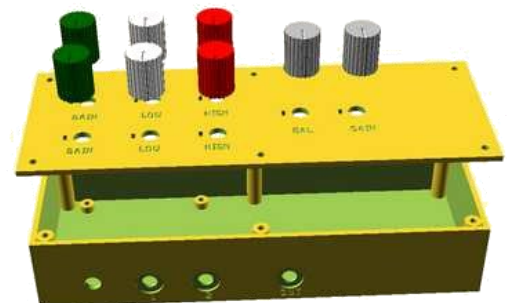
With both potentiometers set to 0 (i.e. 2.2 k Ω because of the two fixed resistors in series, we get more amplitude and sharper cutoffs (left image). Finally, setting the high-pass potentiometer to zero and the low-pass filter to 10 k Ω moves the low end of the band-pass to lower frequencies (right image).



Conclusion: The filter isn't terribly effective, but still cuts out low and high noise to a significant amount.

The wiring harness and the enclosure

After a few false starts, I printed a box for an enclosure, some knobs and face plate for all the potentiometers, a switch, and the microphone 3.5-mm jacks. There are board supports with holes to tap for #4 screws, same for the face plate. The knobs are friction-fit. There's a wiring harness for each set of microphone controls, the balance, final gain and microphone connectors and the battery/switch.



Tech corner – Your own PCBs, cont'd



And with all the screws in place:



The finished product

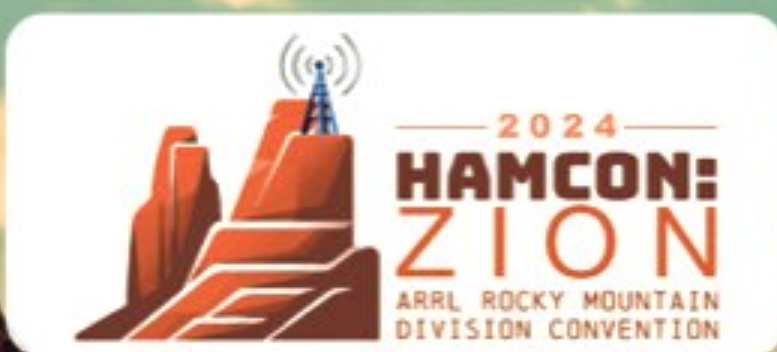
Does it work?

My transceiver has a 6 pin RJ-11 connector and DTMF keys. I haven't figured out how to test the box on it. My Icom has an 8-pin, screw-on jack, my GMRS base station has a 6-pin RJ-11 connector as well. More time needed to build adapters for each.

Jed Marti KI7NNP



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<https://HamConZion.com>



Silent key– Dan Reid KB6UNC

Dan was a person you could feel comfortable talking with, about anything. He had a calm, reassuring, peaceful, unassuming tone to his conversation, plus a quick wit. He could be heard calling CQ during any of several contests, especially on 80 meters.

One contributor wrote, "I was on my computer one night, when my radio blared to life. A newly licensed ham came on the '76 repeater, asking for help with his recently purchased HF rig. Dan answered the guy, then walked him through his troubles, until they got the new ham's HF rig working flawlessly. I recall the tail-end of the conversation like this, when Carl joined in:



New ham : *Wow, Dan, thanks for all your help. How did you ever figure out the meanings of all those knobs and menus?*

Dan : *Oh, luck I suppose, plus a little practice here and there*

Carl (breaking in) : *WE7OMG*

New ham : *Go ahead*

Carl : *Uh, did you know that Dan's blind?*

New ham : *WHAAAT?!?*

Needless to say, the new ham was blown away." It's true. Dan knew more about navigating the amateur radio world than most hams who have their sight. The fact that he was unable to see didn't slow him down from helping others come up to speed. And he was quick.

Several of us remember the QSO, in which Dan had to describe to Chad WE7CB how to locate his house in a difficult cul-de-sac. As Chad drove closer, he asked on the radio, "What color is your house?" to which Dan replied, "Seriously?"

This is an edited excerpt from Dan's obituary:

Daniel William Reid passed away at the age of 52 on July 26, 2019, surrounded by family and friends. He was born in Stockton, California, on August 27, 1966. Dan is survived by Virginia Reid (wife) and his three beautiful daughters Mirisa, Rachel, and Megan. He is also survived by Sam and Kathy Reid, and Sue Maro Reid, along with his two brothers Ken and Dennis, and sister Jody Reid. Dan had a passion for music and his ham radio club (76ers). He was a very hard worker and was determined to do whatever he put his mind to. He had a love for Chick-fil-A vanilla milkshakes but nothing beats the love he had for being a father to his three girls. Dan's passion in life was his family, friends, and serving others. He was an active member of the LDS church and was loved by all.

73, Dan. You'll be missed by us for years to come.

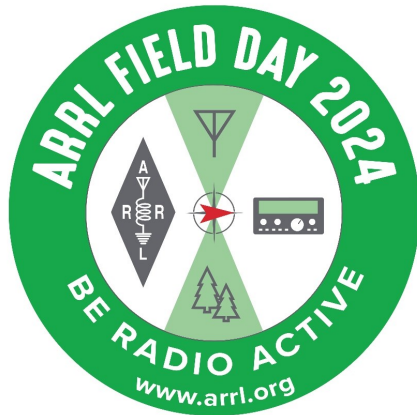


Strays – Field Day participation

Throughout the year, ham radio enthusiasts participate in a variety of activities, such as club meetings, nets, contesting, elmering, antenna-building, exams, and just plain chatting on the radio. But perhaps the largest annual amateur event, and the one many of us look forward to with eager anticipation, is **Field Day**.

On the fourth full weekend of June, those who participate descend on an agreed-upon location, set up their HF radio stations, and get on the air for 24 hours, at-

tempting to make as many contacts as possible with other participating hams across the nation. They log (or record) their contacts in software during that time, then submit their logs to the ARRL afterwards. A person can partici-



pate in Field Day alone, by using his or her own call sign, or with a club, using the club's call sign. And each participant can get on the air for a short time, or for the entire 24 hours.

The original purpose of Field Day, as established by **ARRL**, was to demonstrate emergency deployment readiness. Eventually, a system of points was developed, as an incentive to keep the station as primitive as possible. For example, extra points can be earned by working completely on emergency power, which means battery, generator, or solar. A Field Day location can be distant, in a nearby park, or right at home, with greater points awarded for setting up away from home. Also, part of the readiness demonstration is the requirement that the operators must



not set up their stations until a few hours before the official start of Field Day.

Operating an HF station is not the only activity available at Field Day, especially when people get involved as a club. There are many supporting tasks that need to be considered, such as securing permits, transportation of equipment, setting up, logging contacts, mentoring new hams or unlicensed folks, repairing antennas and coax, safety, publicity, tearing down, and food preparation, as applicable.

Field Day is not everybody's cup of tea, but it's one more potentially fun activity that can stretch and test our amateur radio abilities, and another way to get together with other hams and geek out. It's also a time many hams use as a goal to create and then test a new antenna, try out a new radio, or take advantage of the opportunity to get out of town and hear what many voices sound like, without all that city noise.

For example, say you've been wanting to try out your new solar panel, charge controller, and LiFePO₄ battery as a power source for your portable station, but the high level of noise from your house and those in your neighborhood make it nearly impossible to make a fair test. You don't have to wait for Field Day to check out your portable station power, but getting it out of town, and yet having a lot of nearby support, makes it easy for you to test your equipment.

Field Day challenges us to go just a little above and beyond what we normally do, in the name of readiness, and have fun in the process. At the end of it all, you pack up, go home, and submit your Field Day log of contacts in Cabrillo format. And who'll be the winner of this contest? You will be, for making the effort and having a great time!

