



Madison County Amateur Radio Club

QSO

www.w9vcf.org



JULY 2025

The July meeting will be held July 7, 2025



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From the President

The month of July once again provides us with the opportunity to showcase our club to our community at the Madison County 4-H Fair, July 20-26 at Alexandria. Sometimes we struggle to come up with topics to talk about as we promote amateur radio. So, I have put together a list of talking points to use: 1) Ham radio is the best back-up / emergency communications system in the world. 2) Ham radio introduces you to new friends. 3) Ham radio provides an opportunity for community service. 4) Ham radio makes you part of a world-wide community. 5) Ham radio promotes life-long learning. 6) Ham radio is fun!

You can provide a good overview of ham radio by elaborating on each of these points.

While we are promoting amateur radio, we also want to let those interest know that we are offering a technician's class that will take place on August 23rd and the 30th. We will provide info cards for those interested to fill out. Let's represent our club and ham radio in a positive manner.

73

Tim

KD9PSR

Vice-President Message

Hope everyone is enjoying the weather. I follow a lot of ham clubs and one club this month made a statement of how to kill a club in 7 words. We had the White River Run and the hams did a great job handling the comms. We learned a lot. One problem was we did not have the bib numbers by groups before the race. Next year we will mark the checkpoint on the asphalt so we know we are in the right spot. If anyone has a way to make it better let me know. After Pendleton we talked about eyeball QSO cards to give to those interested in ham radio, so I am working on that with Don W9BLY. The 4H fair is coming up this month and we still need hams to come out and promote our hobby. Hope to see everyone at this month's meeting

Dale N9OLC

The 7 words that will kill a club: "We never did it that way before."



Madison County Amateur Radio Club

200 North Delaware Street, Anderson IN 46016 Madison County EMA

Minutes from the June 2, 2025 monthly club meeting

1. Meeting called to order at 19:00 Hrs by President Tim Bailey
2. Pledge of allegiance
3. Questions regarding minutes of executive meeting / secretary's report
Motion to accept: Gary Sherman / Second: Mike Cook
4. Treasurer's report read by Paula Dixon
General fund balance: \$2,776.62 / Deposited: \$56.00 / Ending balance: \$2,832.62
Repeater fund balance: \$1,294.61 / Deposited: \$30.00 / Ending balance \$1,324.61
Motion to accept: Tony Poitras / Second: David Sargent
5. Old Business:
 - Discussion about changes to by-laws concerning paying dues and late payment. It was determined to table the topic until the July meeting.
6. New Business:
 - Vice President Dale Bloomer made an appeal for members to work the booth at the Pendleton June Jamboree and the Orestes Fair.
 - Details for the White River Run exercise were shared.
 - POTA Activation was discussed for June 21st at Shadyside Park.
 - Details for the Summer Field Day were discussed. It was decided to have Field Day at the EOC. Starting at 13:00 Hrs.
 - Update for EOC security gate was shared by Lynn Edens. Everything remains the same until further notice.
 - Vice President Dale Bloomer suggested the time for Wednesday night net be changed from 20:00 Hrs. to 21:00 Hrs. for the summer months. It was discussed, and the membership agreed to make the change.
7. Motion to adjourn: Mike Cook / Second: Paula Dixon

Tech Committee Report: July 2025

Tuning Out the Noise: Low-Pass Filters in Ham Radio

For ham radio operators, achieving clear, interference-free communication is the name of the game. Low-pass filters (LPFs) are essential tools in the amateur radio toolkit, helping to ensure clean transmissions by allowing low-frequency signals to pass while blocking unwanted higher frequencies. Whether you're working DX on 80 meters or fine-tuning your rig for a contest, LPFs play a critical role in keeping your signal sharp and compliant. Let's explore how low-pass filters power ham radio and why they're a must-have for any serious operator.

What is a Low-Pass Filter?

A low-pass filter is an electronic circuit or digital system that permits signals below a specific *cutoff frequency* to pass through with minimal distortion while attenuating higher frequencies. In ham radio, this means letting your desired transmit signal through while suppressing harmonics and spurious emissions that could interfere with other bands or violate regulations.

Key characteristics of LPFs include:

- **Cutoff Frequency**: The frequency where the filter begins to reduce signal amplitude, typically set just above the operating band (e.g., 4 MHz for 80 meters).
- **Roll-off Rate**: How steeply the filter attenuates higher frequencies, often measured in dB per octave (e.g., -30 dB/octave for a third-order filter).
- **Filter Order**: Higher-order filters provide sharper rejection of unwanted frequencies but add complexity to the circuit.

Why Low-Pass Filters Matter in Ham Radio

In ham radio, LPFs are critical for maintaining clean signals and adhering to regulatory standards like those set by the FCC or ITU. Transmitters, especially in homebrew or high-power rigs, can generate harmonics—multiples of the operating frequency—that interfere with other bands or services (e.g., TV or aviation frequencies). An LPF ensures these harmonics are suppressed, keeping your signal legal and your fellow hams happy.

For example, when operating on the 40-meter band (7.0–7.3 MHz), an LPF with a cutoff frequency around 7.5 MHz allows your signal to pass while attenuating harmonics at 14 MHz, 21 MHz, or higher. This not only prevents interference but also protects your reputation as a considerate operator.

How Low-Pass Filters Work in Ham Radio

LPFs in ham radio are typically analog circuits built with inductors (coils) and capacitors, forming a network that passes low frequencies and blocks higher ones. A common design is the **pi filter** (capacitor-inductor-capacitor configuration), valued for its simplicity and effectiveness. For multi-band operation, transceivers often include switchable LPFs tailored to each band, automatically selected by the rig's microcontroller.

In digital modes like FT8 or PSK31, software-based LPFs may complement hardware filters, cleaning up the signal before it's transmitted. The filter's frequency response shows a flat passband for the desired signal and a steep roll-off to block harmonics, ensuring your 100W signal on 20 meters doesn't splatter into 10 meters.

Applications in Ham Radio

Low-pass filters are indispensable across various ham radio scenarios:

1. ****Transmitter Output****: LPFs are placed after the power amplifier to suppress harmonics, ensuring compliance with regulations and preventing interference with other bands or services.
2. ****QRP and Homebrew Rigs****: In low-power (QRP) or DIY transmitters, LPFs are critical for cleaning up signals from simple circuits that may produce unwanted harmonics.
3. ****Antenna Tuning****: LPFs help match antennas to specific bands, reducing out-of-band emissions and improving efficiency.
4. ****Receiver Front-End****: In some receivers, LPFs filter out high-frequency noise or strong out-of-band signals, improving selectivity and reducing overload.
5. ****Contesting****: During crowded contests, LPFs help keep your signal clean, minimizing interference with nearby operators on other bands.

Designing and Choosing an LPF for Ham Radio

Selecting the right LPF depends on your operating needs:

- ****Cutoff Frequency****: Set just above your target band (e.g., 14.5 MHz for 20 meters) to pass the desired signal while blocking harmonics.
- ****Filter Type****: Chebyshev filters offer steep roll-off for strong harmonic suppression, while Butterworth filters provide smoother performance with less ripple.
- ****Power Handling****: Ensure the filter's components (e.g., capacitors and inductors) can handle your transmitter's power, whether it's 5W QRP or 1kW full legal limit.

- ****Band-Specific vs. Multi-Band****: Single-band LPFs are simple and effective for dedicated setups, while multi-band rigs require switchable or tunable filters.

Kits like those from QRP Labs or custom designs using toroid inductors are popular among hams for building LPFs. For example, a 7-element Chebyshev LPF for 80 meters might use air-core inductors and high-voltage capacitors to handle 100W with minimal loss.

Challenges and Trade-offs

LPFs aren't without challenges:

- ****Insertion Loss****: Poorly designed filters can slightly reduce your transmitted power, critical for QRP operators chasing distant contacts.
- ****Phase Distortion****: Higher-order filters may introduce phase shifts, potentially affecting digital mode performance.
- ****Component Quality****: Low-quality inductors or capacitors can overheat or fail under high power, leading to signal distortion or filter failure.

The Future of LPFs in Ham Radio

As ham radio evolves, so do low-pass filters. Software-defined radios (SDRs) are integrating digital LPFs for greater flexibility, allowing operators to tweak filter parameters on the fly. Meanwhile, advancements in materials science are yielding compact, high-power components for smaller, more efficient LPFs—perfect for portable operations like SOTA (Summits on the Air). Adaptive filters, which adjust cutoff frequencies based on real-time band conditions, are also on the horizon, promising cleaner signals in crowded spectrum environments.

Conclusion

Low-pass filters are the silent guardians of ham radio, ensuring your signal is clean, legal, and free of interference. Whether you're a seasoned contester, a QRP enthusiast, or a homebrew tinkerer, a well-designed LPF is key to getting your CQ heard from Timbuktu to Tokyo. Next time you fire up your rig, take a moment to appreciate the humble LPF—keeping the airwaves clear and your signal strong.

****Got a question about building your own LPF or optimizing your rig?
Let us know; that's what the Tech committee is for.***

Until next month

73!*

Greg K9ALC

-FOR SALE-

HAVE AN HAM RELATED ITEM FOR SALE? ADVERTISE HERE!! E-MAIL
w9vcf.mcarc@gmail.com with your Item, asking price and preferred contact info!!

EVENTS

Every Wednesday	MCARC 2M Net 9:00 PM - 145.390 pl 151.4 Followed by an informal ragchew on 28.465
Every Thursday	Donut Meeting 09:00 AM at the EOC, pending reserved meetings
Every Saturday	Breakfast at Anderson Grill 09:00 AM at 2038 S Scatterfield Rd, Anderson
July 7th	MC ARC Meeting at the EOC, 7pm
July 12 th	POTA Exercise
July 15th	VE Testing at the EOC 7pm
July 20 th – July 25 th	Madison County 4-H Fair
July 26 th	E. Central Indiana Hamfest
SPECIAL EVENTS	

Have something to contribute to the newsletter?

- Participated in any recent contest?
- Have an interesting QSO?
- Try an experimental antenna?
- Get a new piece of equipment you'd like to offer a review about?

We'd love to hear about it. You are more than welcome to write a piece about something above or something else you feel worthy of sharing. If you would like to write a piece for the newsletter, please submit your article, along with any pictures that you'd like included to the club email, w9vcf.mcarc@gmail.com.

Also, if you have anything for sale that you would like to advertise in the club newsletter, please send it to the above email.

Thank you, Gary - W9GNR

Madison County Amateur Radio Club

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Anderson, Indiana 46018

Officer Contact Information

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Meetings are at the Madison County EOC
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